FOR CONTRACT NO.: 07-3X4104

INFORMATION HANDOUT

PERMITS

US Department of Agriculture Forest Service Amendment Special Use Authorization-Amendment #16 Authorization ID LAR 102-Use Code 753

MATERIALS INFORMATION

Foundation Report for Rockfall Catchment at Postmile 32.5 (Dewey's Pit) Dated June 11, 2012

ROUTE: 07-LA-2-32.5

Auth ID: LAR102103
Contact ID: STATE OF CA
Use Code: 753

FS-2700-23 (v. 10/09)
OMB No. 0596-0082

U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
AMENDMENT
SPECIAL-USE AUTHORIZATION
Amendment#: 16

This amendment is attached to and made a part of the special use authorization issued to State of California on 09/29/1930 which is hereby amended as follows:

A failed slope on State Route 2 at PM 32.5 by Dewey's Pit. The project is located within the Angeles National Forest, Los Angeles River Ranger District, at about 1.5 miles west of the Clear Creek Station. The project will remove an active landslide by re-grading the slope to a stabilized angle, construct a debris catchment system, and build a soldier pile wall along the shoulder at the toe of the re-graded slope to prevent debris from entering the roadway.

This Amendment is accepted subject to the conditions set forth herein, and to conditions attached hereto and made a part of this Amendment. All regrading and construction will adhere to a FS Fire Plan (Exhibit A attached), FS Avoidance and Minimization Measures (Exhibit B attached) and FS Scenic Resource Evaluation and Visual Impact Assessment (Exhibit C attached).

PM

Holder

Authorized Office

RE

Holder

Forest Supervisor

Title

1/25/2013

Date

1/29/2013

Date

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0596-0082. The time required to complete this information collection is estimated to average one (1) hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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STATE OF CALIFORNIA (CALTRANS)
A FAILED SLOPE ON STATE ROUTE 2 AT PM 32.5 AT DEWEY'S PIT

(Ref: FSH 6309.32 and 6309.11)

1. **SCOPE:**

A failed slope on State Route 2 at PM 32.5 at Dewey's Pit. The project is located within the Angeles National Forest, Los Angeles River Ranger District, at about 1.5 miles west of the Clear Creek Station. The project will remove an active landslide by re-grading the slope to a stabilized angle, construct a debris catchment system, and build a soldier pile wall along the shoulder at the toe of the re-graded slope to prevent debris from entering the roadway. This exhibit is attached to and made a part of the special use authorization (Permit # LAR102103 [Permit Amendment #16]) issued to State of California on 09/29/1930.

All project equipment will operate within an area that is already accessible and thus no new roads or parking areas will be required for project implementation.

The following equipment will most likely be used for the project: CAT Dozer, Cat Excavator, Water Truck, 40' reach lift to assemble tower sections, Track Loader, Crane Truck, Drill Rig, Cement Truck, Concrete Pump, and Delivery Truck.

The provisions set forth below outline the responsibility for fire prevention and suppression activities and establish a suppression plan for fires within the permit area. The permit area is delineated by map attached to the permit. The provisions set forth below also specify conditions under which contract activities will be curtailed or shut down.

2. **RESPONSIBILITIES**:

A. Caltrans/Contractor

(1) Shall abide by the requirements of this Fire Plan.

(2) Shall take all steps necessary to prevent his/her employees, subcontractors and their employees from setting fires not required in completion of the contract, shall be responsible for preventing the escape of fires set directly or indirectly as a result of contract operations, and shall extinguish all such fires which may escape.

(3) Shall permit and assist in periodic testing and inspection of required fire equipment. Contractor shall certify compliance with specific fire precautionary measures in the fire plan, before beginning operations during Fire Precautionary Period and shall update such certification when operations change.

(4) Shall designate in the fire plan and furnish on Contract Area during operating hours a qualified fire supervisor authorized to act on behalf of Contractor in fire prevention and suppression matters.

Shall complete the Contractor's Plan Regarding Personnel and shall furnish the Contracting Officer (CO) with a copy prior to commencing work at the site. Shall currently advise the CO of any changes in personnel as the changes occur. Shall revise Section 6.B to reflect current activities upon request of the CO.

B. Forest Service

The Forest Service may conduct one or more inspections for compliance with the fire plan. The number, timing, and scope of such inspections will be at the discretion of agency employees responsible for contract administration. Such inspections do not relieve the Contractor of responsibility for correcting violations of the fire plan or for fire safety in general, as outlined in paragraph 2.A above.

3. **TOOLS AND EQUIPMENT:**

A. The Contractor shall comply with the following requirements during the fire precautionary period as defined by unit administering contracts unless waived in writing:

The Fire Precautionary Period is _____January, 2013____ to ___December, 2013___.

Contractor shall equip each operating tractor and any other internal combustion engine with a spark arrester, except for motor vehicles equipped with a maintained muffler as defined in C.P.R.C. Section 4442 or tractors with exhaust-operated turbochargers. Spark Arresters shall be a model tested and approved under Forest Service Standard 5100-1a as shown in the. National Wildlife Coordinating Group Spark Arrester Guide, Volumes 1 and 2, and shall be maintained in good operating condition.

Contractor shall meet minimum requirements of Sections 4427 and 4428 of the California Public Resources Code (C.P.R.C.). Fire tools kept at each operating landing shall be sufficient to equip all employees in the felling, yarding, loading, chipping, and material processing operations associated with each landing. Fire equipment shall include two tractor headlights for each tractor dozer used in Contractor's Operations. Tractor headlights shall be attachable to each tractor and served by an adequate power source.

Where cable yarding is used, Contractor shall provide a size 0 or larger shovel with an overall length of not less than 46 inches and a filled backpack can (4 or 5 gallon) with hand pump within 10 feet of each tail and corner block.

Trucks, tractors, pickups and other similar mobile equipment shall be equipped with and carry at all times a size 0 or larger shovel with an overall length of not less than 46 inches and a 2-1/2 pound axe or larger with an overall length of not less than 28 inches.

Contractor shall equip each internal combustion yarder, fuel truck, and loader with a fire extinguisher for oil and grease fires (4-A:60-B:C).

Contractor shall equip each mechanized harvesting machine with hydraulic systems, powered by an internal combustion engine (chipper, feller/buncher, harvester, forwarder, hot saws, stroke delimber, etc), except tractors and skidders, with at least two 4-A:60-B:C fire extinguishers or equivalent. In addition, concentrations of wood dust and debris shall be removed from such equipment daily. Additional extinguishers and sizes may be required at landings in accordance with Section 5.

Each power saw shall be equipped with a spark arrester approved according to C.P.R.C. Section 4442 or 4443 and shall be maintained in effective working order. One fire extinguisher meeting specifications of C.P.R.C. Section 4431 shall be kept with each operating power saw. A size 0 or larger shovel with an overall length of not less than 38 inches shall be kept with each gas can but not more than 300 feet from each power saw when used off cleared landing areas.

Contractor shall meet minimum requirements of Section 4430 of the California Public Resources Code (C.P.R.C.). Contractor shall provide a water tank truck or trailer on or in proximity to Contract Area during Contractor 's Operations hereunder during Fire Precautionary Period unless otherwise agreed. When Project Activity Level B or higher is in effect, a tank truck or trailer shall be on or immediately adjacent to each active landing unless otherwise excepted when hot saw technology is being used. See Section 5 for specific contract requirements.

The tank shall contain at least 300 gallons of water available for fire suppression. A water sprinkling tank truck will meet this requirement if provision is made to insure that the minimum of 300 gallons is available for fire suppression at all times. Ample power and hitch shall be readily available for promptly and safely moving tank over roads serving Contract Area. Tank truck or trailer shall be equipped with following:

(1) Pump, which at sea level, can deliver 23 gallons per minute at 175 pounds per square inch measured at the pump outlet. Pumps shall be tested on Contract Area using a 5/16 inch orifice in the Forester One Inch In-Line Gauge test kit. Pump shall meet or exceed the pressure value in the following table for nearest temperature and elevation:

Temp	Sea Level		1000 Feet		2000 Feet		3000 Feet		4000 Feet		5000 Feet		6000 Feet		7000 Feet		8000 Feet		9000 Feet		10000 Feet	
	PSI	GPM	PSI	GPM	PSI	GPM	PSI	GPM	PSI	GPM	PSI	GPM	PSI	GPM	PSI	GPM	PSI	GPM	PSI	GPM	PSI	GPM
55	179	23	174	23	169	23	165	22	161	22	157	22	153	22	150	21	146	21	142	21	139	21
70	175	23	171	23	166	22	162	22	158	22	154	22	150	21	147	21	143	21	139	21	136	20
85	171	23	168	23	163	22	159	22	155	22	151	21	147	21	144	21	140	21	136	20	133	20
100	168	23	164	23	159	22	155	22	152	22	148	21	144	21	141	21	137	20	133	20	131	20

The pump outlet shall be equipped with 1-1/2 inch National Standard Fire Hose thread. A bypass or pressure relief valve shall be provided for other than centrifugal pumps.

(2) 300 feet of 3/4-inch inside diameter rubber-covered high-pressure hose mounted on live reel attached to pump with no segments longer than approximately 50 feet, when measured to the extreme ends of the couplings. Hose shall have reusable compression wedge type 1-inch brass or lightweight couplings (aluminum or plastic). One end of hose shall be equipped with a coupling female section and the other end with a coupling male section. The hose shall, with the nozzle closed, be capable of withstanding 200 PSI pump pressure without leaking, distortions, slipping of couplings, or other failures.

(3) A shut-off combination nozzle that meets the following minimum performance standards when measured at 100 P.S.I. at the nozzle:

	G.P.M.	Horizontal Range
Straight Stream	10	38 feet
Fog Spray	6 - 20	N/A

(4) Sufficient fuel to run pump at least 2 hours and necessary service accessories to facilitate efficient operation of the pump.

When Contractor is using Hot Saw Technology, an additional 500 feet of not less than one (1) inch outside diameter serviceable hard rubber poly or rubber lined or fiber jacket rubber lined (FJRL) hose shall be immediately available for use and be capable of connecting to the 300 feet of hose and appurturances in (2) and (3) above. Synthetic hose may be used by agreement.

B Any additional fire plan requirements:

_____

_____

_____

_____

4. **GENERAL**

A. **State Law**. The Contractor shall comply with all applicable laws of the State of California. In particular, see California Public Resource Codes.

B. **Permits Required**. The Contractor must secure a special written permit from the District Ranger or designated representative before engaging in any of the activities listed below. The terms and conditions of any of the permits required for this contract are as shown on copies attached to the Fire Plan.

(1) Blasting and Storage of Explosives and Detonators. (Explosives Permit required by California Health & Safety Code, Section 12101.)

(2) Burning.

(3) Air Pollution. (Issued by local State or County Air Pollution Control Districts, as applicable.)

(4) Camp, Lunch and Warming Fires.

(5) Welding and Cutting.

C. **Regulations for Burning**. Before setting any fires whatsoever, the Contractor shall notify the CO of his/her intentions. Special care shall be taken to prevent scorching or causing any damage to adjacent structures, trees, and shrubbery. Piles of material to be burned shall be of such size and so placed that during burning no damage shall result to adjacent objects.

D. **Smoking and Fire Rules**. Smoking shall not be permitted during fire season, except in a barren area or in an area cleared to mineral soil at least three feet in diameter (CPRC 4423.4). In areas closed to smoking, the CO may approve special areas to be used for smoking. The Contractor shall sign designated smoking areas. Contractor shall post signs regarding smoking and fire rules in conspicuous places for all employees to see. Contractor's supervisory personnel shall require compliance with these rules. Under no circumstances shall smoking be permitted during fire season while employees are operating light or heavy equipment, or walking or working in grass and woodlands.

E. **Storage and Parking Areas**. Equipment service areas, parking areas, and gas and oil storage areas shall be cleared of all flammable material for a radius of at least 10 feet unless otherwise specified by local administrative unit. Small mobile or stationary internal combustion engine sites shall be cleared of flammable material for a slope distance of at least 10 feet from such engine. The COR shall approve such sites in writing.

F. **Welding**. Contractor shall confine welding activity to cleared areas having a minimum radius of ten feet measured from place of welding.

G. **Blasting**. Contractor shall use electric caps only unless otherwise agreed in writing. When blasting is necessary in slash areas, a watchperson equipped with a size 0 or larger shovel with an overall length of not less than 46 inches and a filled backpack can (4 or 5 gallon) with hand pump shall remain in the immediate area for an hour after blasting has been completed.

H. **Oil Filter and Glass Jugs**. Contractor shall remove from National Forest lands oily rags and used oil filters and shall prohibit use of glass bottles and jugs in Contractor's Operations.

I. **Reporting Fires**. As soon as feasible but no later than 15 minutes after initial discovery, Contractor shall notify Forest Service of any fires on Contract Area or along roads used by Contractor.

J. **Communications**. Contractor shall furnish a serviceable telephone, radio-telephone or radio system connecting each operating side with Contractor's headquarters. When such headquarters is at a location which makes communication to it clearly impractical, Forest Service may accept a reasonable alternative location. The communication system shall provide prompt and reliable communications between Contractor's headquarters (or agreed to alternative) and Forest Service via commercial or Forest Service telephone. The communications system shall be operable during Contractor's Operations in Fire Precautionary Period described in Section 3 and during the time fire patrolperson service is required. A radio-equipped fire patrolperson vehicle will satisfy this requirement if in operation during the time required except during PAL levels "D" and "Ev". See Section 5 for other communication requirements when operating on "D" and "Ev" days with hot saw technology. A CB is not acceptable communication because FCC Regulations prohibit commercial use.

K. **Fire Patrol Person**. Contractor shall furnish a qualified fire patrolperson each operating day when Project Activity Level B or higher is in effect. When on duty, sole responsibility of patrolperson shall be to patrol the operation for prevention and detection of fires, take suppression action where necessary and notify the Forest Service as required by Section 5.

By agreement, one patrolperson may provide patrol on this and adjacent projects or sales. No patrolperson shall be required on Specified Road construction jobs except during clearing operations unless otherwise specified.

L. **Time of Snag Felling.** Unless the felling of dead trees would interfere with the felling, skidding or yarding of green timber or be a safety hazard, or be prevented under Section 5, required felling of dead trees shall be concurrent with the felling of live timber. There shall be reasonably timely felling of dead trees to facilitate utilization and protection from fire.

M. Clearing of Fuels. Contractor shall clear away, and keep clear, fuels and logging debris as follows:

Welding equipment and stationary log loaders, yarders and other equipment listed in California State Law:	10 feet slope radius
Tail or corner haulback blocks:	5 feet slope radius
Lines near, between or above blocks:	Sufficient clearing to prevent line from rubbing on snags, down logs and other dead woody material

5. EMERGENCY MEASURES

The table set forth below establishes work restrictions and fire precautions that the Contractor must observe at each activity level. The restrictions are cumulative at each level.

The Forest Service, in its sole discretion, may change the predicted activity level if the current fire suppression situation, weather and vegetation conditions warrant additional restriction of activities. Contractor shall obtain the predicted Project Activity Level by calling the following phone number (661) 723-2752 before starting work each day. If practicable, Forest Service will determine the following day's activity level by 6:00 PM local time. If predictions made after 6:00 PM are significantly different than originally estimated, Forest Service will inform Contractor when changes in restrictions or industrial precautions are indicated.

The following definitions shall apply to these Project Activity Levels:

Cable Yarding Systems: A yarding system that takes logs from the stump area to a landing using an overhead system of winch-driven cables to which logs are attached with chokers or grapples.

Hot Saw Technology: A harvesting system that employs a high-speed (>1100 rpm) rotation felling heads (i.e., full rotation lateral tilt head).

Sunset: The time that sunset is reported in the local newspaper for that day.

Except for Project Activity Level days "Ev after 1:00 PM local time" and "E", Forest Service may issue substitute precautions(s) of the requirements below. Such agreements shall prescribe measures to be taken by Contractor to reduce risk of ignition and/or spread of fire.

Forest Service may change the Project Activity Levels to other values upon revision of the National Fire Danger Rating System and may change the specific Project Activity Levels and/or requirements when such changes are necessary for the protection of the National Forest. When sent to Contractor, the revised Project Activity Levels will supersede the levels below.

PROJECT ACTIVITY LEVEL –EMERGENCY PRECAUTIONS

Table version 6/13/2006

PROJECT ACTIVITY LEVEL

Level	*Project Activity Requirements*
A	Minimum required by Section 3 1. PAL levels are cumulative, Ev level would include all preceding PAL requirements.
B	1. A fire patrolperson is required for mechanical operations from cessation of operations until 2 hours after operations cease or sunset, which ever occurs first. 2. Tank truck or trailer shall be on or adjacent to each active landing. 3. When hot saw technology is being used, the tank truck or trailer (B2 above) may serve dual purpose as active landing tank truck provided it shall be kept readily available for use as follows: a. Within one quarter mile of the operating hot saw technology; and b. Within 10 minutes of the active landing; and c. Effective communications exist between hot saw technology and active landing. Otherwise, there shall be a tank truck or trailer at both the active landing and within one quarter mile of the operating hot saw technology. 4. (Additional restrictions specified by the forest.)
C	1. The following operations are prohibited from 1:00 PM until 8:00 PM local time: a. Blasting 2. Operations using hot saw technology are prohibited between 1:00 PM and sunset local time. Hot saw technology operations may continue if Contractor provides a portable fire suppression system capable of extinguishing a 20-foot by 20-foot wild land fire within five (5) minutes of discovery. The following equipment will meet the requirements above: a. Compressed Air Foam System with minimum requirements of 20 gallons stored energy, 100 feet of 1 inch hose and adjustable 1 inch nozzle, minimum discharge range of 60 feet and 1 spare air cylinder; or b. All terrain tank truck or equivalent capable of traveling throughout the cutting unit, containing not less than 300 gallons of water and complies with all tank truck requirements of Section 3. All terrain tank truck or equivalent may serve dual purpose as active landing tank truck provided: 1) Tank truck or equivalent shall be kept readily available to extinguish a fire within 5 minutes of discovery of the operating hot saw technology, 2) Tank truck or equivalent shall be no further than 10 minutes travel time to the active landing, 3) A 4-A:80-B:C extinguisher is maintained at the landing fire tool box and, 4) Effective communications exist between the hot saw technology, active landing and all terrain tank truck or equivalent. Otherwise shall be a tank truck at the active landing and an all terrain tank truck or equivalent with the hot saw technology. 3. (Additional restrictions specified by the forest.)
D	1. The following restrictions apply: a. No blasting after 10:00 AM b. Welding or cutting of metal only by special permit c. No Burning without a permit

	2. The following activities may not operate after 1:00 PM local time unless fire patrolperson(s) walks all areas operated that day once per hour until sunset local time and has the capability of notifying the designated Forest Service Dispatch Center within fifteen (15) minutes of discovery of a fire: a. Track-laying equipment b. Chipping outside of landings and roadbeds c. Equipment using Hot Saw Technology d. Chainsaw operations outside of landings and roadbeds e. Tree felling operations f. Ripping roads and landings g. Mastication h. Cable-yarding employing motorized carriages. 3. (Additional restrictions specified by the forest.)
Ev	1. The following operations are prohibited: a. Blasting b. Welding or cutting metal c. Burning 2. Following activities may operate when fire patrolperson walks from 9:00 AM until local sunset all areas once per hour that were mechanically operated that day. A. Activities that may operate all day: 1. Hauling and loading of logs decked at approved landings. 2. Hauling and loading of chips piled at approved landings. 3. Equipment servicing at approved sites. 4. Roads: Dust abatement or rock aggregate installation (does not include pit or quarry development) 5. Chainsaw or stroke delimber operation associated with loading at approved landing sites. B. All other Operations are permitted until 1:00 PM local time subject to the following: 1. When hot saw technology is being used a tractor or other equipment with blade capable of constructing fire line, shall be on standby and immediately available. Tractor will have effective communications with hot saw technology and be within one quarter mile of hot saw technology to quickly reach and effectively attack a fire start. C. (Additional restrictions specified by the forest.)
E	The following activities may operate subject to B1. and B2. 1. Hauling and loading of logs decked at approved landings. 2. Hauling and loading of chips piled at approved landings. 3. Equipment at approved sites may be serviced. 4 Roads: Dust abatement or rock aggregate installation (does not include pit development). 5. Chainsaw operation associated with loading at approved landings.

6. REPORTING ALL WILD FIRES

A. Contractor's employees shall report all fires as soon as possible but no later than 15 minutes after initial discovery to any of the following Forest Service facilities and/or personnel listed below, but not necessarily in the order shown:

	Name	Office Address and/or telephone	Home address and/or telephone
Dispatch Center	**A.N.F. E.C.C.**	**661-723-7619**	
Nearest FS Station	Angeles Crest	626-821-6760	
Inspector			
COR			
District Ranger	Mike McIntyre	818-899-1900	
D.R. Designated Rep			

When reporting a fire, provide the following information;

Your Name;
Call back telephone number;
Project name;
Location;
Legal description (Township, Range, Section); and
Descriptive location (Reference point);
Fire Information;
Acres;
Rate of Spread; and
Wind Conditions.

B. **Contractor's Plan Regarding Personnel.** The Contractor shall, prior to commencing work, furnish the following information relating to key personnel

Title	**Name**	**Address and/or telephone**
Fire Supervisor		
Fire Patrolperson		

ANGELES NATIONAL FOREST

SCENIC RESOURCE EVALUATION AND VISUAL IMPACT ASSESSMENT

STATE ROUTE 2 at PM 32.5 - DEWEY'S PIT SLOPE REPAIR PROJECT

Los Angeles River RD/Los Angeles County
January 15, 2013

PREPARED BY: _____ **DATE:** _____
Jose Henriquez
Forest Landscape Architect

I. INTRODUCTION

The purpose of this Visual Assessment is to analyze and display the visual effects of stabilizing a failed slope on State Route 2 at PM 32.5 at Dewey's Pit. The project is located within the Angeles National Forest, Los Angeles River Ranger District, at about 1.5 miles west of the Clear Creek Station. The project proposes to remove an active landslide by re-grading the slope to a stabilized angle, construct a debris catchment system, and build a soldier pile wall along the shoulder at the toe of the re-graded slope to prevent debris from entering the roadway.

State Route 2 is classified as a National Forest Scenic Byway as well as a designated California Scenic Highway. The visual quality along the entire State Route 2 consists of diverse natural vegetation, topographic variations, winding roadway, and a geographical setting of rock outcroppings mixed together with vegetated slopes. The site is located within the Front Country Place (a "Key" Place) and has a High Scenic Integrity Objective (SIO).

II. CURRENT MANAGEMENT DIRECTION

Management direction for scenery on the Forest comes from the Angeles National Forest Land Management Plan (LMP) adopted by the Record of Decision signed on September 20, 2005 (USDA 2005). Goals and Objectives, Standards, Management Prescriptions for specific land areas (management areas), and Monitoring, in combination, provide Management Direction.

The proposed slope stabilization project was evaluated for compliance with the Angeles National Forest (ANF) Land Management Plan (LMP, US Forest Service 2005). As previously mentioned, this project falls within the Angeles Crest Scenic Byway corridor, and is also within the Front Country Place (LMP, Part 2), which is a "Key" Place representing the most picturesque national forest locations. "Key" Places possess their own distinct landscape character and are particularly valued for their scenic quality. There is also a High SIO designation for the project site, which refers to landscapes where the valued (desired) landscape character "appears" intact or unaltered. Deviations may be present but must repeat the form, line, color, texture, pattern and scale common to the landscape character.

Specific direction related to scenery management come from Part 2 and 3 of the LMP Standards and Strategies. Below is a list of the LMP Standards and Strategies that apply:

Standards

S9: Design management activities to meet the Scenic Integrity Objectives (SIOs) shown on the Scenic Integrity Objectives Map.

S10: Scenic Integrity Objectives will be met with the following exceptions:

• Minor adjustments not to exceed a drop of one SIO level is allowable with the Forest Supervisor's approval.

• Temporary drops of more than one SIO level may be made during and immediately following project implementation providing they do not exceed three years in duration.

Strategies

LM 1 - Landscape Aesthetics

Manage landscapes and built elements to achieve scenic integrity objectives:

- Use best environmental design practices (BEIG) to harmonize changes in the landscape and advance environmentally sustainable design solutions.
- Mitigate ground disturbance to maintain scenic integrity objectives.

LM 2 - Landscape Restoration

Restore landscapes to reduce visual effects of nonconforming features:

- Prioritize landscape restoration activities in key places. Integrate restoration activities with other resource restoration.

LM 3 - Landscape Character

Maintain the character of key places to preserve their intact nature and valued attributes:

- Maintain the integrity of the expansive, unencumbered landscapes and traditional cultural features that provide the distinctive character of the place.
- Promote the planning and improvement of infrastructure along federal and state scenic travel routes.

Trans 1 - Transportation System

Plan, design, construct, and maintain National Forest System roads and trails to meet plan objectives, to promote sustainable resource conditions, and to safely accommodate anticipated levels and types of use:

- Implement Corridor Management Plan for the Angeles Crest Scenic Byway.

Under the Angeles Crest Scenic Byway (California State Route 2) Corridor Management Plan, National Forest scenic byways are classified as concern level 1. This indicates that the public is most concerned about alterations. A concern level 3 indicates the public is least concerned. Any projected alterations of the landscape character of key places will be examined in further detail when a project is proposed.

And under the L.A. County General Plan there is a goal of preservation and enhancement of aesthetic resources within scenic corridors. This goal is supported by the following policies:

- Protect and enhance aesthetic resources within corridors of designated scenic highways.
- Develop and apply standards to regulate the quality of development within corridors of designated scenic highways.
- Remove visual pollution from designated scenic highway corridors.

- Require the development and use of aesthetic design considerations for road construction, reconstruction, or maintenance for all designated scenic highways.
- Increase governmental commitment to the designation of scenic highways and protection of scenic corridors.
- Improve scenic highway coordination and implementation procedures between all levels of government.

III. DESCRIPTION OF PROPOSED PROJECT

The proposed project is located along State Route 2 at PM 32.5 within the Angeles National Forest, Los Angeles County in T2N, R12W, of US Geological Survey Topographic Map Quadrangle at Condor Peak, 34.26717, -118.172004 (see construction plans and maps). It is approximately a half mile west of Georges Gap and 1.5 miles west of Clear Creek Station at the Angeles Crest Highway/Angeles Forest Highway junction, at the southeast toe of Hoyt Mountain.

The Station Fire of 2010 and subsequent winter storms of the 2010-2011 seasons, caused multiple slip outs and road washouts. Most of these road failures were stabilized but the failed slope at PM 32.5 still needs to be stabilized.

The natural bedrock slope is covered with a layer of soil and rocks which is the cause of most of the debris that accumulates in the existing catchment. The storms of 2010-2011 have caused debris and sediment to wash down the canyon, filled the catchment basins and flowed over the roadway leaving an almost vertical scarp approximately halfway up the slope. More debris flows are possible from this vertical scarp and the remaining soil material further up the slope. Caltran's Office of Geotechnical Engineering recommended removal of the existing soil mantle over the bedrock slope and to build a catchment system. The slope will be scaled to remove loose hanging material and a catchment basin along with a wall will be built to hold back future material that will come down the slope. Excavators, front loaders and dump truck will be used to create a series of benches from the bottom to the top of the slope. The excess sediment will be stored in USFS approved stockpile storage areas to be used in the future.

According to the "Foundation Report for Rockfall Catchment at Postmile 32.5 (Dewey's Pit)", one option for a debris catchment system is a catchment wall founded on soldier piles placed approximately 30 feet left of the Route 2 center line. The maximum wall height would be approximately 8 feet. The total wall length would be approximately 150'. A rockfall analysis determined that a 5' wall would suffice, however, an 8-foot high catchment wall is being recommended in order to allow for material to accumulate behind the wall, since it is assumed that the area behind a wall could not easily be cleaned out too often.

Based on the input from Maintenance, another option would be to maintain a 5' berm. A rockfall simulation determined that an earthen berm of this size would be an effective rockfall catchment system. The logic behind the berm option is that removing material that accumulates behind the catchment wall would require a crane to lift a wall panel for access. Maintenance does not have a crane this size readily available, and the wall panel removal operation is time consuming. According to Maintenance, a berm can be cleaned out multiple times in one shift, if necessary, and can be easily rebuilt with available equipment.

IV. EXISTING CONDITIONS

The overall environmental setting in the project area is mountainous, with the elevation being approximately 3600-4000 ft. The dominant plant community is a mixed chaparral with costal shrub. However, due to the road cuts needed to make Highway 2, there are a lot of light colored and predominantly unvegetated rock faces on the south facing slope (See **Figure 1**).

Figure 1 - Appendix IV: Site Photo from Foundation Report for Rockfall Catchment at Postmile 32.5 (Dewey's Pit). – Small existing earthen berm circled.

V. EFFECTS

8' X 150' Soldier Pile Wall Option (See **Figure 2**) - Based on the project description, installation of the soldier pile wall would not meet High scenic integrity. Wood is a natural material that is common in the Forest, but the immediate site has very little vegetation and is mostly surrounded by light colored rock faces. The material and color contrast would be noticeable from a foreground distance. Considering the location, the nearby pullout, and the curvature of the road, most drivers/the public will only see this site from a foreground distance, which is the distance where the most detail is noticeable. There are mitigation measures (See Section **VI**), that will need to be adhered to in order to help maintain and potentially improve scenic conditions at the site throughout and after the construction process regardless of debris catchment system selected. However, the application of the following mitigation measures

would be required in order for the project to meet a Moderate scenic integrity level with the installation of a soldier pile wall:

- Apply a low maintenance and sustainable color treatment to the steel piles (i.e. Natina coloration, weathered steel, etc.) so that they blend in with the existing rock/soil

- Use the lightest color of wood available that would still be suitable for use on a soldier pile wall

Moderate scenic integrity is a classification that refers to landscapes where the valued (desired) landscape characters "appears slightly altered." Noticeable deviations must remain subordinate to the landscape character being viewed. However, under these circumstances, a Moderate scenic integrity level would only be allowed with the Forest Supervisor's approval (See Standard **S10**).

Figure 2 - Soldier pile wall on SR2 at pm 40 - Roughly half the size of what's being proposed

5' Berm Option - Based on the project description and with the application of the Project Specific mitigation measures, the installation of a 5' earthen berm would meet a High scenic integrity level. The berm would be composed the native material coming down from the mountain, which when fresh should have some contrast with the weathered stone, but it would be a common contrast caused by erosion throughout the forest. And once the berm has weathered a bit, it will blend in better and potentially grow some scattered vegetation that will help mask it better. A small example of this can be seen in **Figure 1** where the small existing

berm is identified by a red ellipse. Although not a very creative option, under these circumstances, the project would meet a High scenic integrity level and in turn would manage to comply with the scenery standards and strategies found in the LMP.

Colored/Stamped Concrete or Concrete Block Wall Option – A third option not considered in the project proposal would be to construct a concrete wall that would be stained on the road facing side to complement the native rock/soil color(s), and stamped with a pattern that would complement the shape/form of the existing rock found at the site. Concrete blocks like the ones used along Mt. Wilson Red Box Road are also a good alternative to the concrete wall. The images depicted in **Figure 3** are a good example of how this method blends into the setting and at the same time adds character to the road better than a berm or a soldier pile wall would. Combined with the Project Specific mitigation measures, this option would meet the criteria for High scenic integrity and would be in line with the L.A. County General Plan for Scenic Byways. It would address the requirement for "the development and use of aesthetic design considerations for road construction, reconstruction, or maintenance for all designated scenic highways." This retaining wall is being proposed as a solution to a reoccurring road maintenance problem, and this type of wall would solve that problem with a good aesthetic design along a scenic highway.

Figure 3 – Google Earth, Street View images of concrete block retaining walls, used along Mt. Wilson Red Box Road

VI. PROJECT SPECIFIC MITIGATION MEASURES

In addition to the Forest Plan standards and the Option specific mitigation measures, the following avoidance and minimization measures/mitigation measures should be considered part of the proposed action and implemented throughout:

- All trash will be contained and regularly removed from the site.
- When operations are complete, any excess materials or debris shall be removed from the work area.
- To the extent possible, equipment and maintenance and repair items are to be placed on existing hardened surfaces.
- After the slope is benched from the bottom to the top of the slope, vegetative restoration efforts shall be made in order to improve scenic quality and slope stability. Any seeding must utilize native species, be certified weed-free seed, and approved by the Forest Botanist. Mulch and hay brought to the site must also be certified weed free as well.
- All appropriate BMPs shall be implemented to minimize damage to surface soil structure and to reduce potential for erosion due to project activities.
- Any changes in color or material or project options not addressed in this report shall be brought up to the Forest Landscape Architect's attention so that he/she may provide comment or recommendations.

VII. CONCLUSION

With the application of the Project Specific mitigation measures, both the berm and concrete/concrete block wall options would have no significant visual impacts and would meet the High scenic integrity objective set for that area, and in turn manage to comply with the scenery standards and strategies found in the LMP.

The soldier pile wall option would need to include the option specific mitigation measures in order to meet a Moderate scenic integrity level, and in turn would only be allowed with the Forest Supervisor's approval (See Standard **S10**).

Should any questions or concerns arise, regarding this visual assessment please contact:

Jose Henriquez-Santos
Forest Landscape Architect
jhenriquezsantos@fs.fed.us
(626) 574-5277

Exhibit C

Avoidance and Minimization Measures for California Department of Transportation MM 32.5 Project

In addition to the Forest Plan standards, the following avoidance and minimization measures are considered part of the proposed action and will be implemented:

1. A Caltrans biologist will be present on the project site during the initial ground disturbance to ensure any species (plant or animal) present are either moved or are given the opportunity to vacate the work area. This may be adjusted with approval of the USFS.

2. Project activities will be monitored closely by the biology unit to assure that all environmental regulations are followed.

3. Litter and pollution laws shall be followed by all personnel working within the project area. All trash will be contained and regularly removed from the site. Containers will be sealed to prevent opening by wildlife.

4. When operations are complete, any excess materials or debris shall be removed from the work area and be placed in USFS approved stockpile storage sites.

5. The contractor will be required to follow a State Water Pollution Prevention Plan.

6. FSH 2509.22 and Best Management Practices will be utilized to protect area resources and to prevent excessive silt and other erosion from entering any drainage along the road.

7. To the extent possible, equipment and maintenance and repair items are to be placed on existing hardened surfaces.

8. If any sensitive biological resources are found during construction, all activities which may harm that resource shall cease until the Resident Engineer, district biologist, and the appropriate resource agencies are contacted to review options.

9. This BA/BE will be updated and reviewed as needed, species status changes, and as new information becomes available.

10. Prior to initiation of project activities, bat surveys will be conducted to determine if bat roosting occurs in proximity of the project site. Results will be used to develop additional protective measures if needed.

11. If work is conducted during the nesting season, a bird nesting survey will be conducted within five days of the work start date. If any nesting birds are found within the following distance of the project area, protective measures will be required: 500 feet for raptors and 150 feet for all other non-special status bird species.

12. All excavation must be implemented in a manner that reduces the potential for entrapment of small mammals, reptiles or amphibians. If an excavation is to remain open for more than 12 hours it must include some means for small mammals, reptiles and amphibians to escape. This can be accomplished by placement of a ramp that reasonably allows trapped individuals to crawl or walk out of the excavation. Before an excavation is backfilled, it must be checked to ensure that there are no live individuals inside. Backfilling cannot occur until the excavation is clear of all live individuals.

13. Any seeding must utilize native species, be certified weed-free seed and approved by the Forest Botanist. Mulch and hay brought to the site must also be certified weed free.

14. All TEPCS plant populations within the project area will be flagged prior to any ground disturbance and monitored during implementation to ensure avoidance.

15. The project area will be monitored post-implementation, and if/when problem areas arise, remedial and preventative actions would be taken as appropriate. Coordination with special use permit holders, public education, and signing would be used as appropriate.

16. To limit the spread and establishment of invasive plant species into the project area, all off-road heavy equipment used during project implementation will be free of noxious weeds and seeds or invasive exotic weeds and seeds before entering the project area. Vehicle washing guidelines will be implemented for all ground disturbing activities (Appendix A).

17. Post-treatment, surveys for noxious weeds will be conducted to determine presence of invasive species. Any new populations of noxious weeds will be immediately treated under the direction of the Forest B Exhibit C Continued

Exhibit C Continued

Equipment Cleaning

Forest Service policy provides direction regarding implementation of noxious weed control measures for activities with potential to spread invasive plants (FSM 2900, 12/05/2011). In response to FSM 2900, the following guidelines will be adhered to for all ground disturbing and vegetation treatment projects:

1) All tools and all equipment except trucks, vans, pickups, and cars used for daily transport of personnel, will be cleaned prior to entering Forest Service land. This includes all ground disturbing and vegetation removal tools, vehicle wheels, undercarriages, bumpers, or any equipment other than personnel transport vehicles.* All washing must take place where rinse water is collected and disposed of in either a sanitary sewer, a landfill, or other facility authorized to accept such rinse water.

2) Holder shall notify Forest Service at least 2 working days prior to moving each piece of equipment on to National Forest Land, unless otherwise agreed. Notification will include vehicle washing information. Upon request of Forest Service, arrangements will be made for Forest Service to inspect each piece of equipment prior to it being placed in service.

3) If equipment has operated in areas the Forest Service has identified as containing target invasive plant species, all equipment, and tools used at that site must also be washed AFTER work has been completed.

4) Holder shall certify in writing compliance with the terms of this provision prior to each start-up of operations. When vehicles and equipment are washed, a daily log must be kept, stating:

a. Location

b. Date and time

c. Methods used

d. Staff present

e. Equipment washed

f. Signature of responsible crew member

5) If any new infestations of invasive species are identified by the permitee or Forest Service staff on the project site or access routes it shall be promptly reported to the other party.

6) A current list of invasive species of concern will be provided.

* Equipment includes all machinery except trucks, vans, pickups, and cars used for daily transport of personnel. Even though it is not required, it would be ideal if transport vehicles such as cars, trucks, etc. were also washed regularly during the project.

CERTIFICATION OF CLEANING OF EQUIPMENT

Project Name: _____

Holder: _____

I certify that the following equipment is free of soil, seeds, vegetative matter, or other debris that could contain or hold seeds. Cleaning was done outside the proclaimed boundary of any National Forest.

Equipment Description, Identification Number	Location of last Operation or Storage	Cleaning Location	Date Cleaned
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

_____ _____

Signature of Holder or Authorized Representative Date

Inspected by Forest Service (at FS discretion): _____ _____

FS Representative Date

Certification is needed any time equipment is moved on to National Forest land for this project

State of California **Business, Transportation and Housing Agency**

M e m o r a n d u m

Flex your power!
Be energy efficient!

To: Mr. Oji Kalu
Office of Design B

Date: June 11, 2012

File: 07-LA-2-PM 32.5
EA: 07-3X4101
2010 Storm Damage Repairs

Attn: Quang Thai

From: **DEPARTMENT OF TRANSPORTATION**
DIVISION OF ENGINEERING SERVICES
Geotechnical Services
Office of Geotechnical Design South 1
Branch B

Subject: Foundation Report for Rockfall Catchment at Postmile 32.5 (Dewey's Pit).

At the request of Caltrans District 7 Maintenance dated April 18, 2010, a Foundation Report (FR) has been prepared for one area on State Route 2 at postmile 32.5 where a debris flow covered the roadway with material during the storms of 2010. Our office prepared preliminary recommendations for this location in a memo dated February 28, 2011. In our previous memo, we recommended removal of the existing soil mantle over the bedrock slope and a catchment system. The foundation recommendations in this report are for the proposed catchment system and are based on a geotechnical exploration program done for this project.

1.0 PROJECT DESCRIPTION

1.1 Existing Site Conditions

The site is located on State Route 2 in the Angeles National Forest, Los Angeles County. During the storms of January and February of 2010, many drainage basins filled up with sediment from the surrounding mountains. The amount of sediment was larger than for normal rain events due to the previous "Station Fire" removing most of the vegetation. In this location, the debris washing down the canyon filled the catchment area and flowed over the roadway. A site vicinity map is shown in Appendix I.

In this location, the slope above the roadway is approximately 800 feet high at approximately 39° from horizontal(1:1.25 H:V). The natural bedrock slope is covered with a layer of soil and rocks which is the cause of most of the debris that accumulates in the existing catchment. A large volume of this soil layer washed down the hill in 2010 leaving an almost vertical scarp approximately halfway up the slope. More debris flows are possible from this vertical scarp and the remaining soil material further up the slope.

1.2 Proposed Structure

One option for a debris catchment system at postmile 32.5 is a catchment wall founded on soldier piles placed approximately 30 feet left of the Route 2 center line. The maximum wall height would be approximately 8 feet. The total wall length would be approximately 150'.

Table No. 1 – Soldier Pile Wall Required Foundation Data

Max. Design Height of Wall (ft)	Design Length (ft)	Embedment Depth (ft)	Pile Spacing (ft)
8	**150**	**15**	**8**

After discussions with Maintenance, we have deemed it necessary to also provide recommendations for a 5' berm. Removing material that accumulates behind the catchment wall requires a crane to lift a wall panel for access. Maintenance does not have a crane this size readily available, and the wall panel removal operation is time consuming. According to Maintenance, a berm can be cleaned out multiple times in one shift, if necessary, and can be easily rebuilt with available equipment. The existing berm at the site has also proven effective in retaining several large (approx. 5-6') boulders that have rolled down the canyon.

2.0 FIELD EXPLORATION PROGRAM

Two borings were drilled in the southbound lane approximately 30 feet from the centerline of Route 2. One boring was drilled at the proposed center of the catchment wall and one was drilled at the proposed end of the wall. The borings were drilled by the Caltrans Office of Drilling Services and logged by a geologist from our office.

The borings were drilled on 5/9/12 using the mud rotary method. The Table below shows a summary of the boring data with elevations and locations.

Table No. 2 – Summary of Boring Locations

Boring	Station [1]	Offset [2]	Surface Elevation [2] ft	Drilled Depth ft	Bottom Elevation ft
RC-12-001	5+20.81	-33.04'	3513.186	23	3490.186
RC-12-002	4+66.97	-30.73'	3510.607	35	3475.607

Note: 1. Stationing and Offsets according to Center Line.
2. Elevations are Above Mean Sea Level (MSL) (1988 NAVD Datum).

Soil and rock samples were logged and sampled by coring with an HX diamond-impregnated drill bit. SPT samples were not attempted due to the gravel, cobbles, and boulders present within the fill. At the completion of the borings, the holes were backfilled with bentonite chips.

A boring location map is provided in Appendix II. Boring location will also be provided on the Log of Test Borings (LOTB). LOTBs are presently being prepared by the Office of Geotechnical Support and will be delivered at a later date.

3.0 LABORATORY TESTING

Laboratory testing was performed on stockpiled material from the area. This material is representative of the roadway fill in the embankment. Laboratory testing of material from postmile 32.5 included corrosion analyses. Laboratory testing of stockpiled material from previous storm damage projects in the area was also used in our analyses. These tests include grading analysis, remolded direct shear, and maximum density. Testing was performed in accordance with California Test Methods, ASTM, and EPA procedures (see Table No. 3 below). A summary of the laboratory results are included in Appendix III.

Table No. 3 – Laboratory Test Methods

Test	Standard
Corrosion	CTM 643
pH	EPA 9081
Grading Analysis	CTM 202
Remolded Direct Shear	ASTM D 3080
Maximum Density	CTM 216

4.0 SUBSURFACE CONDITIONS

The roadway fill is composed of well-graded, gravelly sands and sandy gravels with cobbles and boulders. The proposed catchment wall is underlain by the fill at the center of the wall. The underlying bedrock is exposed at the proposed ends of the wall. The bedrock is typically slightly weathered, moderately fractured, hard, granite with localized zones of slightly fractured material.

Ground water was not encountered, but may percolate through the fill during and after rainfall.

5.0 GEOLOGY

5.1 Regional Geology

The project is located within the San Gabriel Mountains of the Transverse Ranges geomorphic province. The Transverse Ranges Province is characterized by east-west trending mountain ranges unlike most of the other mountain ranges in California, which parallel the northwest-southeast trending San Andreas Fault.

5.2 Site Geology

The roadway fill is composed of gravelly sands and sandy gravels with cobbles and boulders derived from the colluvium of the surrounding mountains. The underlying bedrock is primarily slightly weathered, hard to very hard, granitics of Mesozoic age. Bedrock is moderately fractured with localized zones of slightly fractured rock. Joint orientations are random, and no clear patterns were observed.

6.0 SEISMICITY

The sites are not located within any Alquist-Priolo Earthquake Fault Zone as established by the California Geological Survey. Based on the Caltrans ARS Online site, the controlling faults are the Sierra Madre Fault Zone (B Section) and the USGS Probabilistic data. The average shear wave velocity of the upper 30 meters (Vs30) is approximately 1500 m/sec assuming hard rock conditions. The Peak Ground Acceleration (PGA) calculated for this site is 0.7g. A summary of the contributing fault parameters as given by ARS Online is shown below.

Table No. 4 – Fault and Design Ground Motion Parameters.

Fault	Fault ID	M_{max}	Type	Dip°	Dip Direction	R_{rup} (km)	R_{JB} (km)	R_x (km)
Sierra Madre Fault Zone (B Section)	248	7.2	R	55	N	4.02	0	5.69
USGS Probabilistic	NA	NA	NA	NA	NA	NA	NA	NA

6.1 Liquefaction Evaluation

Liquefaction is a phenomenon in which loose, saturated fine-grained, granular soils behave like a liquid while being subjected to high-intensity ground shaking. Liquefaction occurs when shallow ground water, low-density, fine, sandy soils and high-intensity ground motion exist in a site. Saturated, loose to medium dense, near-surface, cohesionless soils exhibit the highest liquefaction potential, while dense, cohesionless soils and cohesive soils exhibit low to negligible liquefaction potential.

Due to the shallow bedrock and lack of ground water, liquefaction is not expected to be a problem.

7.0 CORROSIVITY

A representative bulk sample of the roadway fill material was taken to the District 8 Materials Lab for corrosion testing. The test results are listed below and show that the site is not considered corrosive according to Caltrans guidelines.

Table No. 5 – Corrosion Test Results

Boring	Depth (ft)	Minimum Resistivity (Ohm-cm)	pH	Chloride Content (ppm)	Sulfate Content (ppm)
Bulk	0-5	14000	7.18	NA	NA

Note: Caltrans currently considers a site to be corrosive to foundation elements if one or more of the following conditions exist: Chloride concentration is greater than or equal to 500 ppm, sulfate concentration is greater than or equal to 2000 ppm, or the pH is 5.5 or less. A minimum Resistivity value of less than 1000 (Ohm-cm) indicates the presence of high quantities of soluble salts and a higher propensity for corrosion.

8.0 ROCKFALL ANALYSIS

The existing slope was surveyed by Caltrans District 7 Survey personnel. Using the data obtained from the survey and estimating the average slope that would exist after the grading operations have been completed, we analyzed the slope for the possibility of rockfall to affect the roadway. The maximum rock size measured at the site was 5' X 6'. This rock size was used in our analysis as the worst-case scenario. The Colorado Rockfall Simulation Program (CRSP) Version 4.0 was used to analyze our catchment design for rockfall retention.

Our analysis was run using an earthen berm and an 8' high catchment wall as two rockfall retention systems. These are discussed below.

Earthen Berm Analysis

The catchment area in our analysis was graded level, and the berm had 1:1 sloped sides with a minimum thickness of 1' at the top of the berm. Our analysis shows that a 5-foot high berm would be sufficient to contain 6' diameter rocks, which is the largest observed diameter at the site. In our simulation, the berm retained 98% of the 6-foot diameter rocks, but in reality, the vast majority of the rocks would be under 1 foot in diameter, and the catchment design retained 100% of the rocks in this size range.

Also, discussions with Maintenance personnel indicate that the existing berm is already effective in retaining the large boulders that fall from the existing slope. Therefore, field observations and our rockfall simulation are in agreement that an earthen berm would be an effective rockfall catchment system.

8' Catchment Wall Analysis

Since the 5-foot earthen berm retained the rockfall, a catchment wall of the same height would also be sufficient, however, we recommend a 8-foot high catchment wall. This would allow for material to accumulate behind the wall, since it is assumed that the area behind a wall could not be cleaned out as quickly as the area behind an earthen berm. The catchment wall does not need to be designed as a retaining wall, but it does need to be designed to withstand the expected rock impact forces.

9.0 RECOMMENDATIONS

We recommend that as much loose material as possible be removed from the slope face. This will decrease the amount of material that could come down during future storm events. However, the slope above the roadway is approximately 800 feet high at 1:1.25 H:V, so it is extremely difficult to access and work on the slope. A catchment system is needed to prevent material from entering the roadway regardless of the amount of material cleaned from the slope.

We recommend the earthen berm as our preferred catchment alternative. This option is the most cost-effective and easiest to maintain. The existing berm has also proven effective in retaining

large rocks that fall from the slope above.

If a catchment wall is preferred over the berm option, the catchment wall should be founded on 15' deep soldier piles space 8 feet apart. The piles should be 24-inch diameter CIDH piles for the entire length of the wall, regardless of the depth of bedrock encountered. These recommendations were based on an impact force of 1,750 ft-kips, which was derived from the rockfall analysis.

10.0 CONSTRUCTION CONSIDERATIONS

- Temporary or permanent casing will probably be required during pile drilling operations. The granular fill material will be subject to caving.

- Hard drilling conditions are expected. The fill contains gravel and hard, granitic cobbles and boulders. The bedrock is moderately to slightly fractured, hard granite. This bedrock material is expected to be encountered near the ends of the catchement wall. Please refer to the LOTBs.

- There is a risk of rockfall during construction operations.

If you have any questions, please contact Kristopher Barker at (213) 620-2334 or Sam Sukiasian at (213) 620-2135.

Prepared by:

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STATE OF CALIFORNIA

c.c. GS Corporate – Shira Rajendra
District Environmental Planning
Structure Construction R.E. Pending File
DES Office Engineer, Office of PS&E
District Materials Engineer

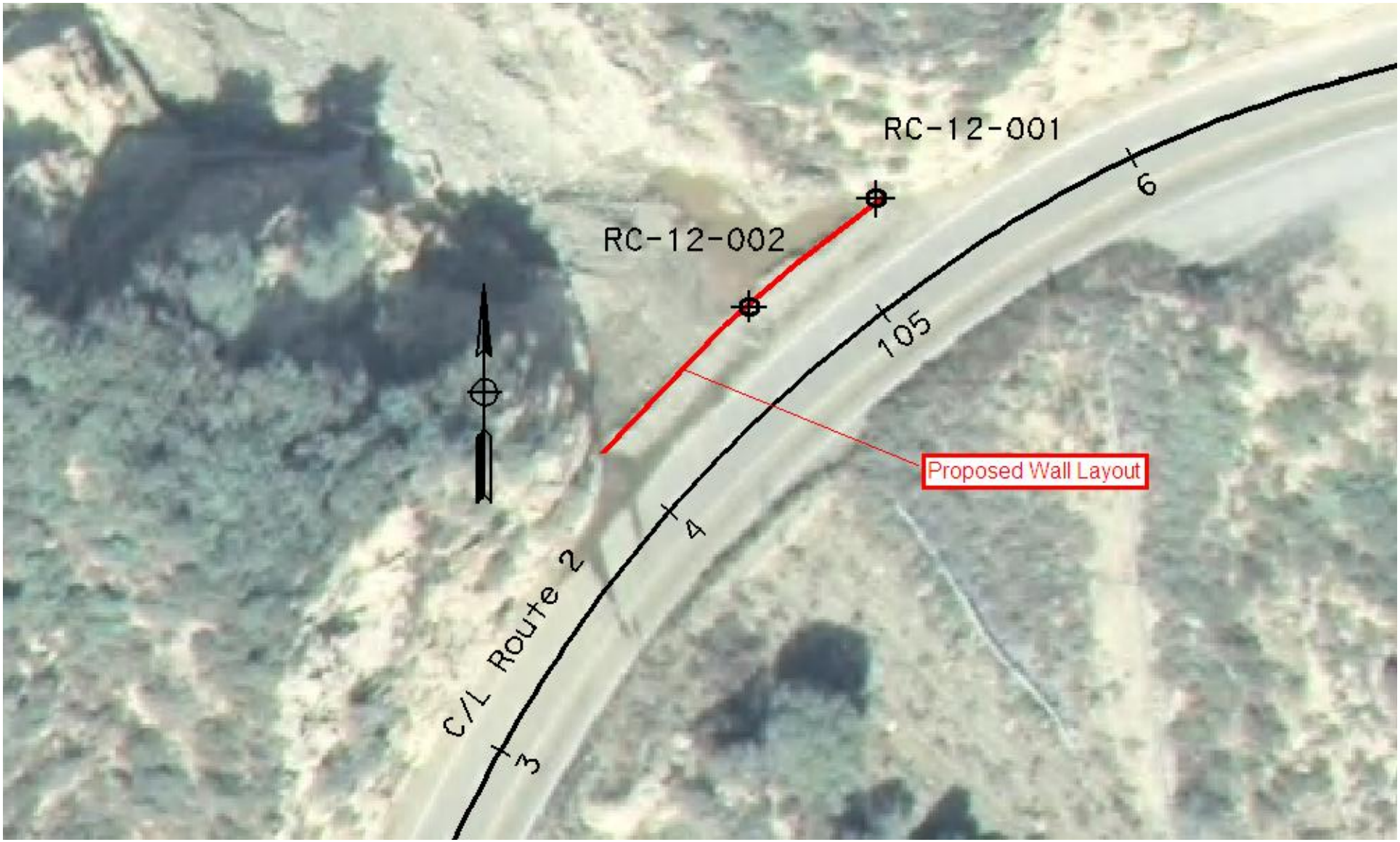
Attachments: Appendix I: Site Vicinity Map
Appendix II: Boring Location Map
Appendix III: Laboratory Results
Appendix IV: Site Photo

Appendix I: Site Vicinity Map

3000 ft Scale: 1 : 100,000 Detail: 11-0 Datum: WGS84

Appendix II: Boring Location Map

Boring Location Map



Appendix III: Laboratory Results

SRL SOIL & AGGREGATE TESTS

CONTRACT NO.	SAMPLE NO.	LAB. NO.
07-3X4101	B-1	2210B

Sample of: Soil

Sampled from: P.M. 32.5

Material Source:

Owner / Mfr.:

Date Sampled: 05/24/2012

SRL Lab. Stamp

By ________ for

D. OZOWARA

SRL Materials Engineer

R.E.: Kristopher Barker

Address: 100 S. Main St. 11th Floor, MS 18 Los Angeles, CA. 90012

Phone No.: (213) 620-2334

Fax. No.: (213) 620-2316

SOUTHERN REGIONAL LABORATORY
13970 Victoria Street
Fontana, CA 92336
Phone: (909) 350 9039
Fax: (909) 829 6294

DATE RCV'D: 05/29/2012 DATE OUT: 06/11/2012

NUMBER OF CONTAINERS: 1 Bag

NORMAL ✓ PRIORITY ☐ DATE NEEDED:

By: FAX ☐ MAIL ☐ PHONE ☐ OTHER ✓

GRADING ANALYSIS

Total Wt 19511 g By: SJ Date: 05/31/2012

Wt. Ret.	Size (mm)	Acc. Wt. Ret.	% Ret.	% Pass	Comb. % Pass	SPEC.
	87.5					
	75					
	62.5					
0	50	0	0		**100**	
1556	37.5	1556	8		**92**	
1386	25	2942	15		**85**	
1245	19	4187	21		**79**	
1475	12.5	5662	29		**71**	
905	9.5	6567	34		**66**	
2137	4.75	8704	45		**55**	
10807		19511				

FINE GRADE / MECHANICAL ANALYSIS

Dry Wt. (g)	Size	Acc. Wt. Ret.	% Ret.	% Pass	Comb. % Pass
			0	100	55
	2.36 mm	78	15	85	**47**
	1.18 mm	173	33	67	**37**
518.0 g	600 µm	243	47	53	**29**
	300 µm	304	59	41	**23**
	150 µm	364	70	30	**17**
	75 µm	413	80	20	**11**

MECH. / HYDRO.	R	Corr.	C.R.	Mat In Sus	Comb % In Sus
1hr. 5M					
24hr. 1M					

SAND EQUIVALENT

				Avg.	MIN. SPEC.
Sand R2					
Clay R1					
S.E. Value					

L.A.R.T.	Rev.	Wt.	Wt. Ret.	% Ret.	% Loss	% SPEC.
A B	100	5000g				
C D	500	5000g				

No. of spheres = Wt. of spheres =

DURABILITY INDEX

		SPEC.
Dura-Coarse	Sed.Ht.=	
Dura-Fine	R2/R1 =	

R-VALUE BATCH

% Run	Size	Wt.
	25 mm	
	19 mm	
	12.5 mm	
	9.5 mm	
	4.75 mm	

% CRUSHED PARTICLES (SPEC.)

%Ret.x(Wt.Cr./Tot.Wt.) = Prod.

Wtd. Avg. % CP Ret. No.4 =

% CP = P/R

R-VALUE SPEC. RESULT

SP. G. FINE (SSD)

(B) S.S. Dry
(A) Ov. Dry
ABS. %
Wt. S+C+H2O
Wt. S+C
W=Wt. H2O
Bulk = 500 / (500 - W) =

SP. GR. COARSE CT206/CT209, +4

(B) S.S. Dry
(A) Ov. Dry
ABS. %
(C) Wt. S. in H2O

$App = \frac{A}{A - C} =$

$SSD = \frac{B}{B - C} =$

$OD = \frac{A}{B - C} =$

MOISTURE CONTENT (SPEC.)

Gr. Wet
Gr. Dry
H2O
Tare
Net Dry
% H2O

PLASTICITY INDEX

L.L.
P.L.
P.I.

pH / RESISTIVITY

	Field	Lab.
Soil pH		**7.18**
H2O		**35 cc**
Min. Resistivity		**14000**

Based on 18 gauge CMP.

Estimated life: **37 yrs.**

CLEANNESS VALUE

NL	SED. HT.	RESULT

FILM STRIPPING: NM

ORGANIC IMPURITIES: Satisfactory / Unsatisfactory

TEST(S) REQUESTED ✓

	Test	No.	✓
■	Fine Grade	202	✓
■	Coarse Grade	202	✓
	Filler Material	202	
	Mech. Analysis	203	
	Plasticity Index	204	
	% Crushed Particles	205	
	SpG. Coarse	206	
	SpG. Fine (SSD)	207	
	SpG. of Soils	209	
	L.A.R.T.	211	
	Unit Wt.	212	
	Organic Impurities	213	
	Soundness	214	
	Relative Compaction	216	
	Sand Equivalent	217	
	Moisture Content	226	
	Cleaness Value	227	
	Durability Fine	229	
	Durability Coarse	229	
	Flat & Elongated	ASTM D 4791	
	R-Value	301	
	Fine Agg Angularity	AASHTO T 304	
	Mortar Strength	515	
	pH (RC)	532	
	Resistivity (RC)	532	
■	pH (CMP)	643	✓
■	Resistivity (CMP)	643	✓
	Expansion Index	UBC-29-2	
	Max. Dry Density/ Opt. Moist Content	ASTM-D1557	

SAMPLE TYPE ✓

A.B.		PCC	
A.S.		Bk.Fill	
EMB.		MISC.	
O.G.		Sub-Grade	
A.C. Agg.		SOIL	✓

TL-101 S.I.C. NO.

Expansion Index

Dry Density

Max. Dry Density (pcf)

Opt. Moist Content (%)

Laboratory Remarks:

SPECIFIC GRAVITY OF SOILS

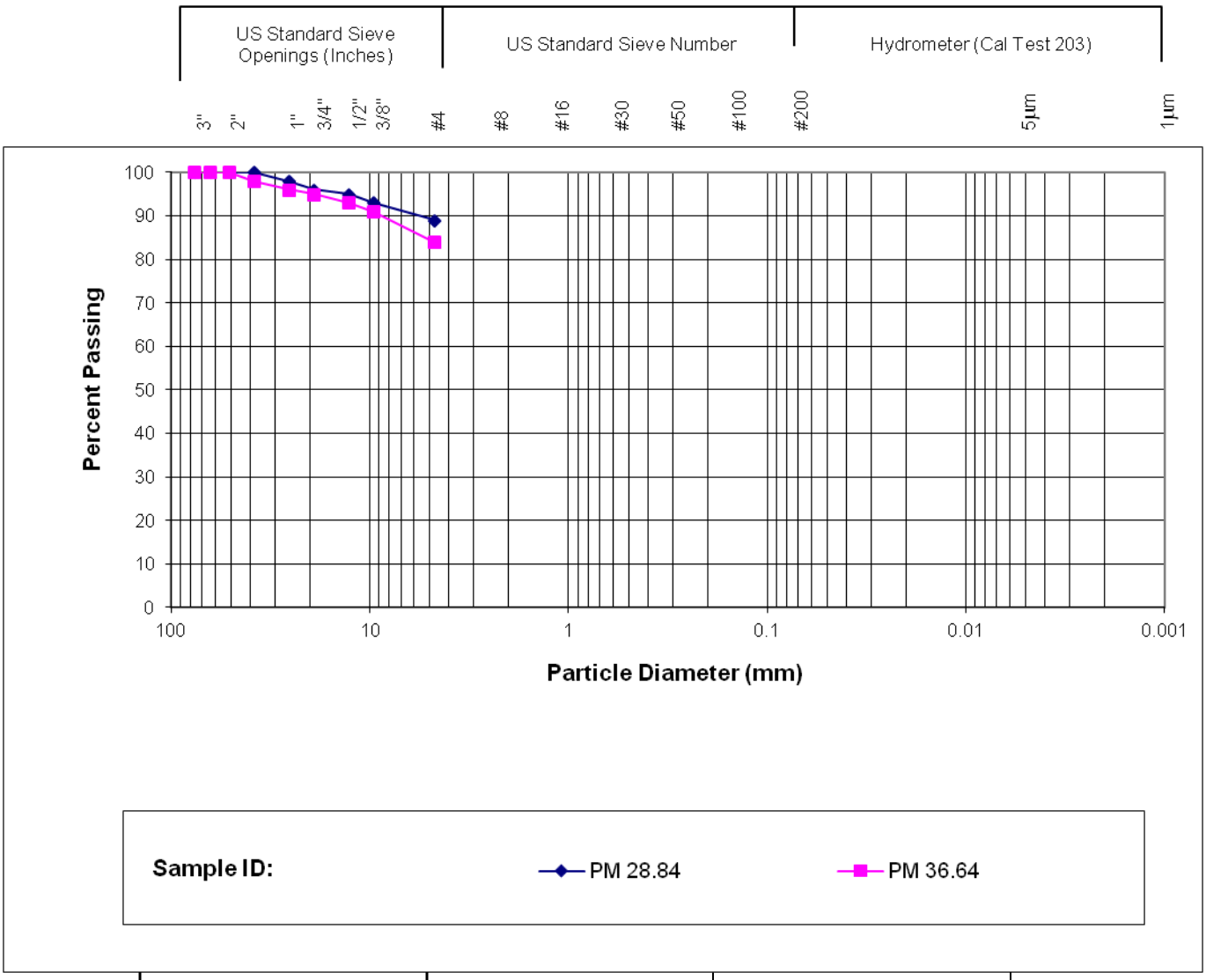
Wt Oven Dry Soil (Wo)
Wt Pycnometer + H_2O (Wa)
Wt Pycnometer + H2O + Soil (Wb)
Wo / (Wo + Wa - Wb)

Wo
Wa
Wb
Spec. Grav.

CONTRACT NO. 07-3X4101 LAB. NO. 2210B

07-AGG-SSD (RG/SD 7/93, Rev. HC 10/17/11)

Gradation Analysis Test Results



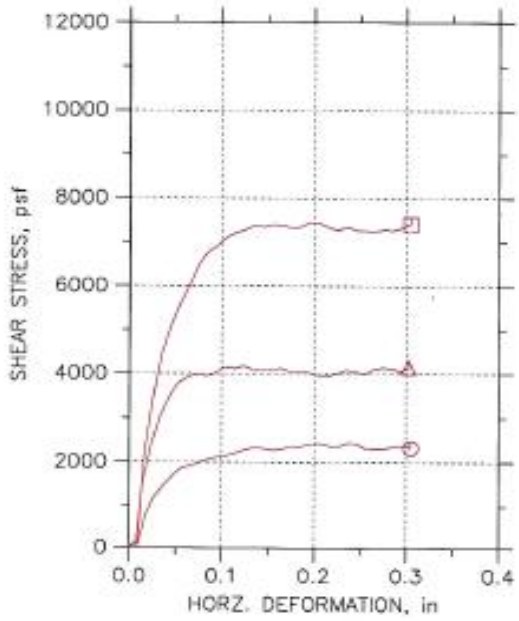
COBBLES	GRAVELS		SANDS			SILT	CLAY
	Coarse	Fine	Crse.	Medium	Fine		

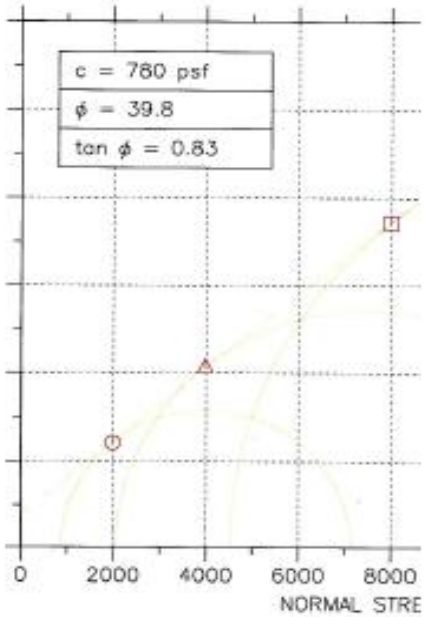
Caltrans

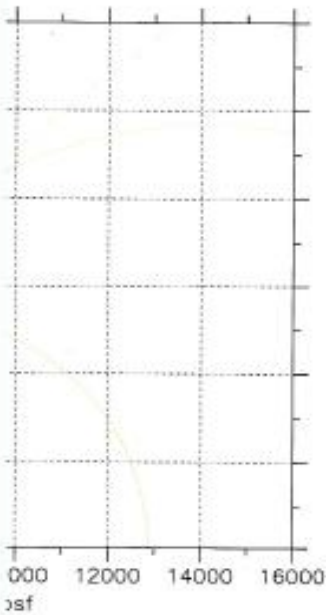
Engineering Services
Division of Geotechnical Services
Office of Geotechnical
Design - South 1

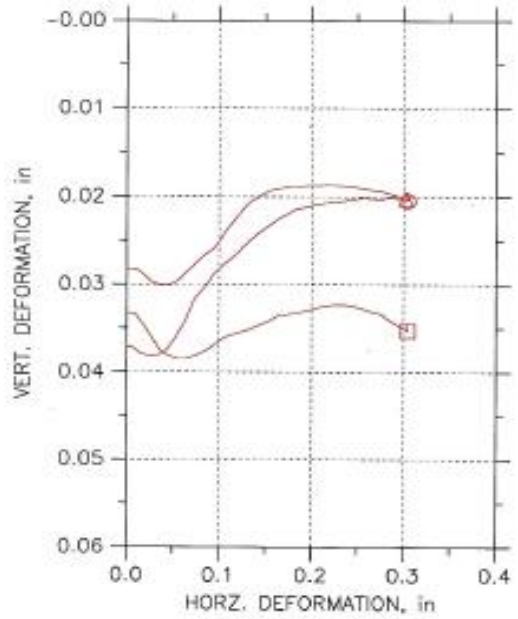
Project:	Route 2 Postmile 32.5
EA:	07-3X4101
Dist-Co-Rte-PM:	07-LA-2-32.5

DIRECT SHEAR TEST REPORT









Symbol		○	△	□	
Test No.		DS10001A	0018	DS10001C	
Sample No.		28.24	.24	28.24	
Shape		Circular	cular	Circular	
Initial	Dimension, in	1.94	.94	1.94	
	Area, in^2	2.9559	559	2.9559	
	Height, in	1	1	1	
	Water Content, %	7.58	67	7.58	
	Dry Density, pcf	107.94	3.21	107.94	
	Saturation, %	35.31	.96	35.31	
	Void Ratio	0.59053	3655	0.59053	
Consol. Height, in		0.97256	5458	0.9666	
Consol. Void Ratio		0.54689	3035	0.53741	
Final	Water Content, %	19.53	.18	17.97	
	Dry Density, pcf	110.2	0.45	111.88	
	Saturation, %	96.29	.12	92.46	
	Void Ratio	0.55788	5438	0.53445	
Normal Stress, psf		1996.6	101	8002.1	
Max. Shear Stress, psf		2412.9	59.3	7431.7	
Ult. Shear Stress, psf		2309.3	54.4	7406.8	
Time to Failure, min		24.001	002	20.003	
Disp. Rate, in/min		0.01	01	0.01	
Implied Specific Gravity		2.75	75	2.75	
Liquid Limit		---	--	---	
Plastic Limit		---	--	---	
Plasticity Index		---	--	---	

Project: Route 2 Storm Damage	
Location: 07-LA-2-28.24-36.64	
Project No.: 07-2X6803	
Boring No.: Bulk	
Sample Type: REMOLD	
Description: Moist, Looise, Sand with Silt. Remolded to 90% Relative Compation @ 7.7% Opt	1 MC
Remarks: ASTM D 3080.	

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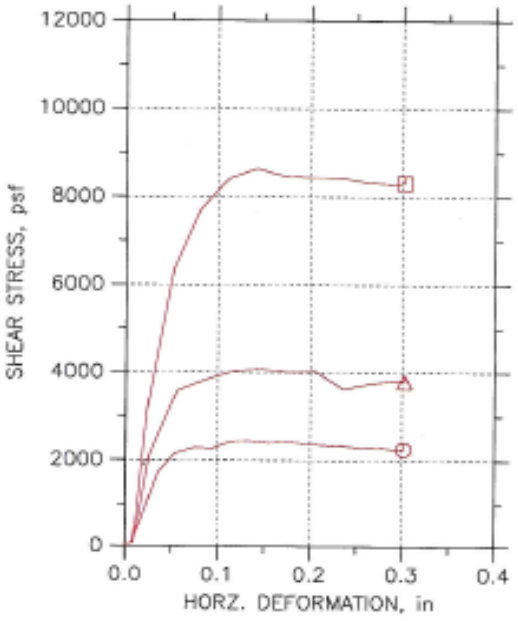
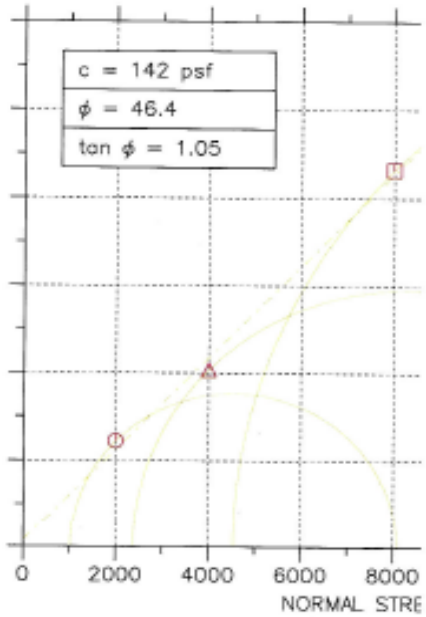
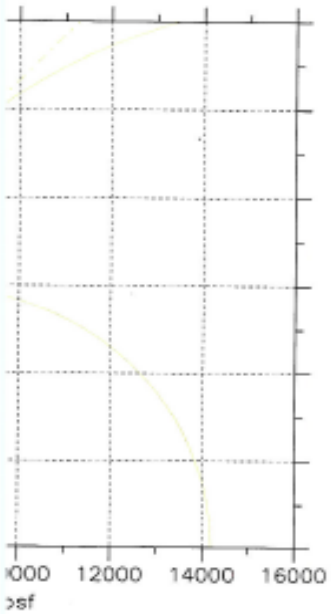
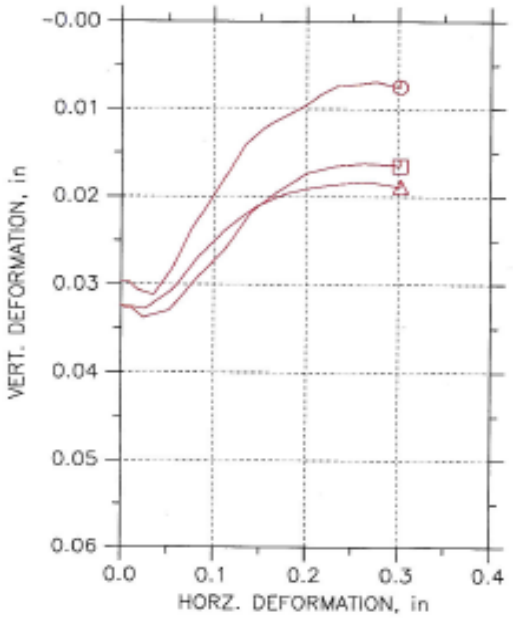
DIRECT SHEAR TEST REPORT









Symbol		○	△	□
Test No.		DS10002A	0002B	DS10002B
Sample No.		36.64	.64	36.64
Shape		Circular	cular	Circular
Initial	Dimension, in	1.94	.94	1.94
	Area, in^2	2.9559	9559	2.9559
	Height, in	1	1	1
	Water Content, %	8.12	.95	8.08
	Dry Density, pcf	114.91	5.09	116.03
	Saturation, %	45.20	.47	46.30
	Void Ratio	0.49402	9168	0.47959
Consol. Height, in		0.97074	6876	0.96838
Consol. Void Ratio		0.45031	4507	0.43281
Final	Water Content, %	16.55	.76	15.29
	Dry Density, pcf	115.78	7.3	117.98
	Saturation, %	94.29	.46	92.41
	Void Ratio	0.48283	3359	0.45515
Normal Stress, psf		2005.8	14.1	8003.4
Max. Shear Stress, psf		2435.2	074	8637.5
Ult. Shear Stress, psf		2243.7	788	8313.4
Time to Failure, min		7.003	5	5.0034
Disp. Rate, in/min		0.02	03	0.03
Implied Specific Gravity		2.75	75	2.75
Liquid Limit		---	--	---
Plastic Limit		---	--	---
Plasticity Index		---	--	---

Project: Route 2 Storm Damage
Location: 07-LA-2-28.24-36.64
Project No.: 07-2X6803
Boring No.: Bulk
Sample Type: REMOLD
Description: Moist, Looise, Sand with Silt. Remolded to 90% Relative Compation @ 8.2% Opt
Remarks: ASTM D 3080.

MC

Thu, 11-FEB-2010 09:44:22

Division of Engineering Services
Geotechnical Laboratory

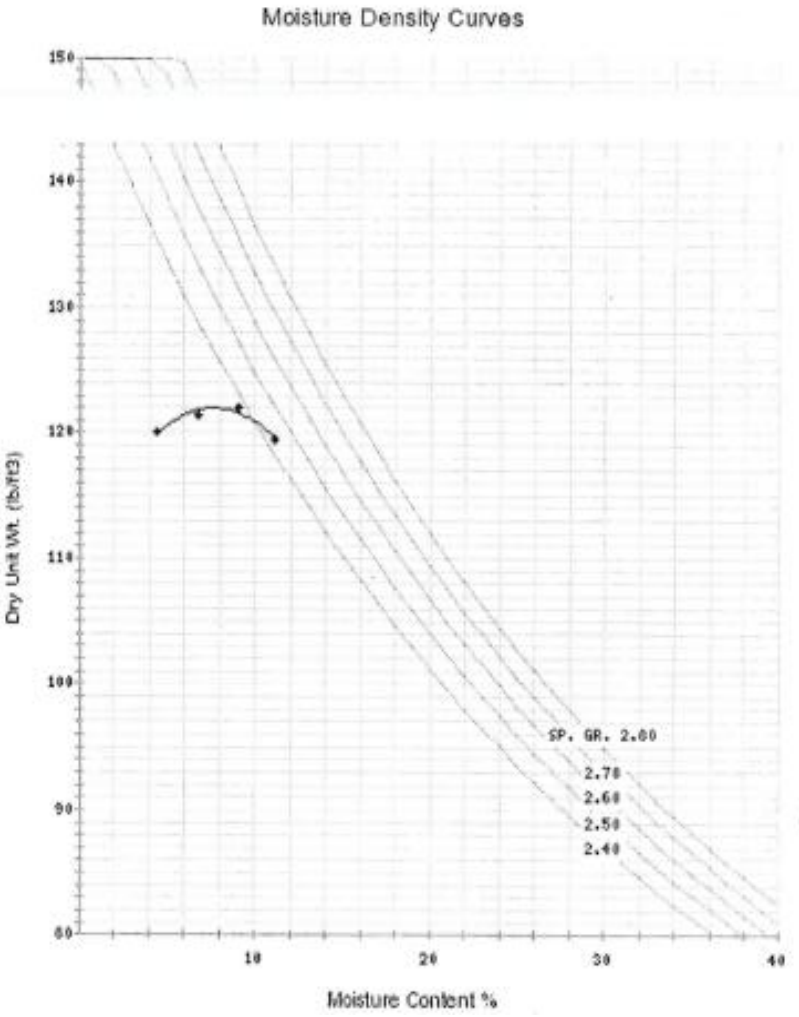
Compaction Curve

CTM 216

Dist-EA: 07-2X6803
Dist-Co-Rte-PM: LA-2-28.24/36.64
Sample ID: Bulk_28.24
GI Tracking No.: 10-011

Maximum Dry Density: 122.0 pcf
Optimum Moisture: 7.7 %
Moisture (as Received:) 4.8 %
Approved: February 9, 2010

Trial No.	Moisture Adjustment	Tamper Reading	Wet + Tare Weight (g)	Dry + Tare Weight (g)	Tare (g)	Moisture Content (%)	Dry Unit Weight (pcf)
1	100	10.80	3086	2988	783	4.4	120.1
2	150	10.65	3118	2969	771	6.8	121.4
3	200	10.60	3142	2944	744	9.0	122.1
4	250	10.80	3182	2938	745	11.1	119.4
5							
6							



Soil Description : grey sand and gravel

Remarks:

- SMEARING AT 250GRAMS OF WATER

Division of Engineering Services
Geotechnical Laboratory

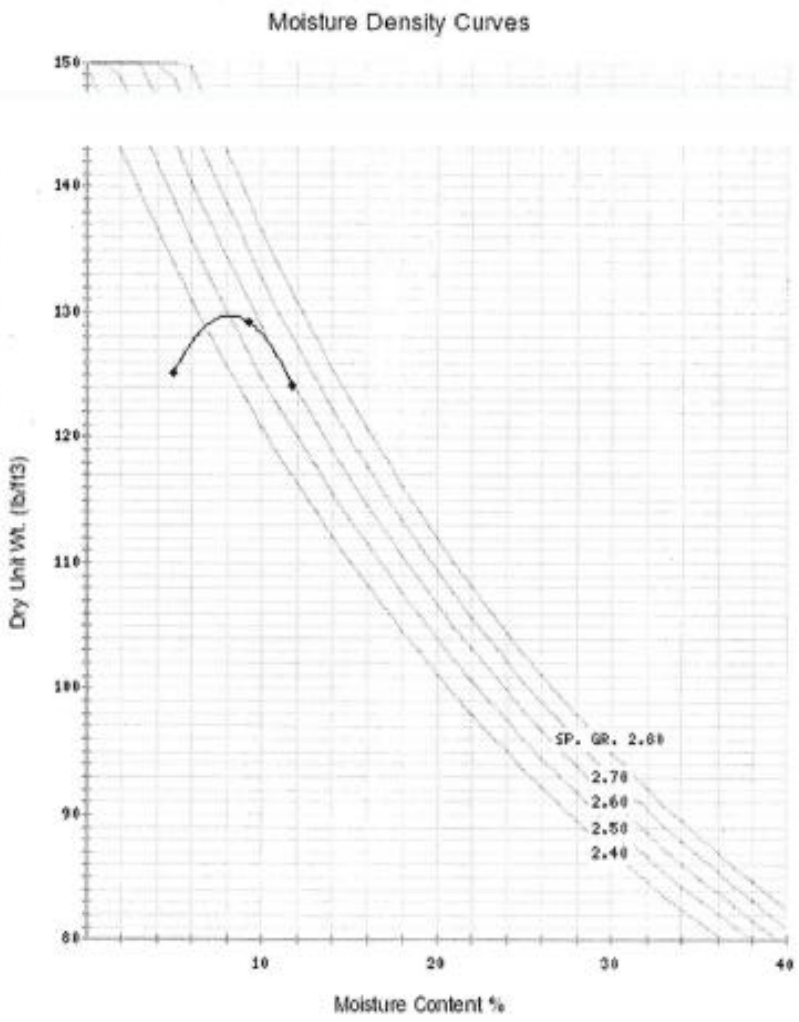
Compaction Curve

CTM 216

Dist-EA: 07-2X6803
Dist-Co-Rte-PM: LA-2-28.24/36.64
Sample ID: Bulk_36.64
GI Tracking No.: 10-011

Maximum Dry Density: 129.8 pcf
Optimum Moisture: 8.2 %
Moisture (as Received:) 7.0 %
Approved: February 9, 2010

Trial No.	Moisture Adjustment	Tamper Reading	Wet + Tare Weight (g)	Dry + Tare Weight (g)	Tare (g)	Moisture Content (%)	Dry Unit Weight (pcf)
1	100	10.30	3046	2937	744	5.0	125.2
2	200	10.00	3207	3004	807	9.2	129.2
3	250	10.35	3182	2926	743	11.7	124.1
4							
5							
6							



Soil Description : BROWN SILTY CAY WITH GRAVEL

Remarks:

Appendix IV:Site Photo