FOR CONTRACT NO.: 11-241514

INFORMATION HANDOUT

MATERIALS INFORMATION

Geotechnical Design Report dated October 8, 2010

Water Source Letter dated August 26, 2014

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ELECTRONIC FILES

Main Alignments and Profiles

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GEOTECHNICAL DESIGN REPORT
CLAIREMONT MESA BOULEVARD AND SR-163 INTERCHANGE, PHASE II
DISTRICT 11, SAN DIEGO, CALIFORNIA

PREPARED FOR:
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5620 Friars Road
San Diego, California 92110

PREPARED BY:
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October 8, 2010
Project No. 106665001

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Mr. Edgar Camerino, P.E.
Rick Engineering Company
5520 Friars Road
San Diego, California 92110

Subject: Geotechnical Design Report
Clairemont Mesa Boulevard and SR-163 Interchange, Phase II
District 11, San Diego, California

Dear Mr. Camerino:

In accordance with your request and authorization, we have performed a geotechnical evaluation for the proposed improvements associated with the Clairemont Mesa Boulevard and SR-163 Interchange, Phase II project in the City of San Diego, California. This report presents our geotechnical findings, conclusions, and recommendations regarding the proposed project. This report includes revisions made to out draft geotechnical design report (GDR) dated May 18, 2010 in order to address the review comments made by the City of San Diego and California Department of Transportation (Caltrans) following their review of our draft GDR.

We appreciate the opportunity to be of service on this project.

Respectfully submitted,
NINYO & MOORE

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1. INTRODUCTION

In accordance with your request and authorization, we have performed a geotechnical evaluation for the proposed improvements associated with the Clairemont Mesa Boulevard and State Route 163 (SR-163) Interchange, Phase II project in San Diego, California. Phase II of this project encompasses the Clairemont Mesa Boulevard on- and off-ramps along the western side of SR-163 (Figure 1). Specifically, Phase II of the project will include the removal of the existing "cloverleaf" southbound off-ramp and replacement with a new "diamond" interchange off-ramp at the northwest corner accompanied by a new signalized intersection. Also, the existing westbound to southbound cloverleaf on-ramp will be reconstructed with a new alignment. In addition, the western approach of Clairemont Mesa Boulevard will be widened from a four-lane to a six-lane roadway between the bridge and Kearny Mesa Road. Improvements will also be made to the intersection of Clairemont Mesa Boulevard and Kearny Mesa Road to accommodate this road widening. The purpose of our geotechnical evaluation was to evaluate the subsurface soil and geologic conditions underlying the project site, and to provide design recommendations in accordance with Caltrans guidelines. This Geotechnical Design Report (GDR) presents our findings, conclusions, and geotechnical recommendations regarding the subject project.

2. PERTINENT REPORTS AND INVESTIGATIONS

As part of our study, we have reviewed geological and geotechnical publications and documents, Caltrans publications, including as-built plans for the widening/retrofit of the existing overpass structure and preliminary plans prepared by Rick Engineering for the proposed improvements. The pertinent reports and bridge plans reviewed are listed in Section 15 of this report.

3. EXISTING FACILITIES AND PROPOSED IMPROVEMENTS

3.1. Existing Facilities

The existing Clairemont Mesa Boulevard and SR-163 interchange was originally constructed on level terrain as two projects during 1958 and 1964. The existing interchange consists of two separate, east-west trending four-span bridges. The northern bridge was con-

structed in 1958 while the southern bridge was constructed in 1964. The interchange has undergone several improvements over the years to accommodate the increased traffic. In 1995 both bridges underwent a seismic retrofit. The most recent improvement (in 2007) included the widening and retrofit of the easterly portion of the interchange. Currently, the bridges consist of three travel lanes each, with a cloverleaf pattern for the westerly transition ramps and a partial cloverleaf at the easterly transition ramps.

Currently, the SR-163 consists of eight travel lanes trending in a north-south direction. The roadway consists of Portland Cement Concrete (PCC) paved travel lanes with asphalt concrete (AC) paved shoulders.

3.2. Existing Developments

No significant developments are present in the vicinity of the project. The west and east side of SR-163 consists of collector-distribution roads that front commercial facilities. No habitable structures are in close proximity to the project.

3.3. Proposed Road Improvements

We understand that the project will include the reconstruction of the transition ramps for the Clairemont Mesa Boulevard and SR-163 interchange. The existing cloverleaf pattern will be replaced with a partial cloverleaf pattern. The new transition off-ramp from the southbound SR-163 will consist of four travel lanes while the new on-ramps from eastbound and westbound Clairemont Mesa Boulevard will consist of two travel lanes. Also, as part of the reconfiguration, the retaining wall at the base of the westerly abutment slope may be reconstructed. Grading is expected to consist of fills up to approximately 16 feet in height to create the embankments for the new transition ramps.

4. PHYSICAL SETTING

The following sections describe the climatic, topographic, drainage, and geological aspects of the project.

4.1. Climatic Conditions

Our review of climatic data for the project area within the city of San Diego indicates that the annual average temperature is approximately 71 degrees Fahrenheit (San Diego Convention & Visitors Bureau, 2010). The average low temperature is approximately 48 degrees Fahrenheit in January and the average high temperature is approximately 78 degrees Fahrenheit in August. Precipitation data indicate that the mean annual rainfall is less than approximately 10 inches with the precipitation occurring predominantly during the period of November through April.

4.2. Topography and Drainage

Topographically, the area surrounding the Clairemont Mesa Boulevard and SR-163 interchange is relatively flat with the exception of the approach embankments for the interchange bridges. The embankments along the western side of the interchange consist of fill slopes at inclinations that vary from approximately 4:1 to 2:1 (horizontal:vertical) with the westerly abutment slope at an inclination of approximately 1½:1. Elevations at the western side of the interchange vary from approximately 439 feet above mean sea level (MSL) at the top of the deck for the bridge crossings to approximately 412 feet above MSL within the northwesterly cloverleaf for the transition ramps. Vegetation within the transition ramps consist of several trees, ice plant, and shrubbery.

Drainage from the transition ramps consists of sheet flow into the center vegetated areas within the interior of the cloverleaf patterns. Within the cloverleaf patterns there are vegetated drainage swales.

4.3. Man-made and Natural Features of Engineering and Construction Significance

Significant man-made and natural features along the alignment include the following:

- Significant above-ground improvements include the existing Clairemont Mesa Boulevard overcrossing bridges, each supported by two abutments and three bents, and wingwalls associated with the abutments. Significant underground features include foundations for the abutments and bents and underground utilities.
- Fill and embankment slopes at the abutments and along the existing on- and off- ramps.

- Existing vegetation and drainage ditches.

4.4. Regional Geology

The project area is situated in the coastal foothill section of the Peninsular Ranges Geomorphic Province. This geomorphic province encompasses an area that extends approximately 900 miles from the Transverse Ranges and the Los Angeles Basin south to the southern tip of Baja California (Norris and Webb, 1990; Harden, 1998). The province varies in width from approximately 30 to 100 miles. In general, the province consists of rugged mountains underlain by Jurassic metavolcanic and metasedimentary rocks, and Cretaceous igneous rocks of the southern California batholith.

The Peninsular Ranges Province is traversed by a group of sub-parallel faults and fault zones trending approximately northwest. Several of these faults, shown on Figure 2, are considered active faults. The Elsinore, San Jacinto, and San Andreas faults are active fault systems located northeast of the project area and the Newport-Inglewood-Rose Canyon, Coronado Bank, and San Diego Trough faults are active faults located west of the project area. The active Newport-Inglewood-Rose Canyon fault zone (i.e., exhibits evidence of ground displacement within the last 11,000 years) is located approximately 4½ miles west of the site.

5. GEOTECHNICAL EXPLORATION

Our subsurface exploration was conducted on April 7, 2010. The exploration activities included the excavation, sampling, and logging of 10 exploratory test pits (TP-1 through TP-10). The approximate locations of the test pits are depicted on the Log of Test Boring (LOTB) sheet enclosed in Appendix A and Figure 3.

5.1. Excavation and Sampling

The exploratory test pits were advanced to depths ranging from approximately 3½ to 10 feet below ground surface using a conventional, rubber-tire backhoe with an 18-inch-wide buck-

et. A Ninyo & Moore representative logged each test pit. The test pit logs are presented on the LOTB sheets prepared by Ninyo & Moore during this study (Appendix A).

Bulk samples were obtained from the exploratory excavations. The samples were bagged and transported to our geotechnical laboratory for testing.

5.2. Exploration Notes

The subsurface materials within the project area are anticipated to consist of relatively easily excavatable fill materials. However, oversized materials and cemented native soils may be encountered and may result in difficult excavating conditions. Groundwater was not encountered in the test pits at the time of excavation. Groundwater was also not encountered during previous evaluations for the surrounding vicinity (Geocon, 2003). Based on review of nearby well data, groundwater is anticipated to be at a depth of approximately 25 feet (Geotracker, 2010).

5.3. Geologic Mapping

Extensive geologic mapping of the project site was not part of this exploration program. However, our review of geotechnical literature indicates that the site consists of fill underlain by very old paralic deposits, formerly known as the Lindavista Formation (Figure 4).

5.4. Geophysical Studies

Geophysical studies were not part of this exploration program.

5.5. Instrumentation

At this time, instrumentation of the subject segment was not considered applicable to the project and was not performed.

6. GEOTECHNICAL TESTING

The following sections describe the geotechnical testing that was performed during our subsurface evaluation of the project area.

6.1. Laboratory Testing

Geotechnical laboratory testing was performed on representative samples to evaluate the moisture content, gradation analysis, R-value and soil corrosivity including water-soluble sulfate and chloride content, pH, and electrical resistivity. The type of laboratory tests, the number of tests performed, and the applicable test method designations are summarized in Table 1. The results of the moisture content tests are recorded on the LOTB sheets (Appendix A). The other laboratory test results are presented in Appendix B.

Table 1 – Laboratory Testing

Number of Tests	Type of Test	Test Designation
10	Moisture Content	ASTM D 2216
5	Gradation Analysis	ASTM D 422
2	R-Value	CT 301
2	Corrosivity	CT 643, CT 417, CT 422

Notes:
ASTM – American Society for Testing and Materials
CT – California Test

7. GEOTECHNICAL CONDITIONS

The subject site is underlain by fill soils and very old paralic deposits. The following sections provide discussions relative to site geology, subsurface soil conditions, groundwater and surface water, faulting, and seismicity.

7.1. Site Geology

Based on our general field reconnaissance, subsurface exploration, and review of published geologic maps and stereoscopic aerial photographs, earth units present in the study area include fill and very old paralic deposits. The following sections provide generalized descriptions of the materials encountered. More detailed descriptions are presented on the LOTB sheets in Appendix A.

7.1.1. Lithology

Lithology is not considered applicable to this project. Discussion with regards to the subsurface conditions is presented in the following sections.

7.1.2. Fill Slope Stability

Existing embankment slopes are at inclinations varying from approximately 4:1 to 2:1 with abutment slopes at an inclination of approximately 1½:1. The stability of the exposed slopes adjacent to the abutments and the transitions ramps is dependent on the quality of the fill placement and compaction. Based on our observations and subsurface exploration, the stability of the fill slopes is generally not a design consideration for the project.

7.2. Subsurface Soil Conditions

The following sections describe subsurface soil conditions encountered in our exploratory test pits.

7.2.1. Fill

Fill materials encountered during our exploration consisted of loose to medium dense, silty to clayey sand and firm to very stiff, sandy clay. Gravel, cobbles and construction debris such as AC pieces and concrete rubble were observed in the fill materials. The fill materials encountered during our subsurface exploration extend to depths of approximately 10 feet or more. These fill soils were placed as part of the original construction for the interchange. Accordingly, fill thickness within the approach embankments may be on the order of 20 feet.

7.2.2. Very Old Paralic Deposits

Very old paralic deposits were encountered underlying the fill materials. These materials consisted of weakly to moderately cemented, silty sandstone and sandy conglomerate. Cobbles and boulders were observed within these deposits.

7.3. Water

The following sections describe the surface water conditions, including surface drainage patterns, scour and erosion, as well as the groundwater conditions.

7.3.1. Surface Water

Surface water was not observed during our field exploration. Based on our review of documents, surface water is typically directed along the roadways through sheet flow and diverted to storm drain systems.

7.3.1.1. Scour

The proposed improvements are anticipated to handle much of the surface runoff during periods of precipitation. Uncontrolled surface flow is anticipated to be generally limited to landscaped slopes. The potential for scour is likewise anticipated to be limited and is not a design consideration.

7.3.1.2. Erosion

Fills are considered erodible, although erodibility is not anticipated to be a constraint to project development.

7.3.2. Groundwater

Groundwater was not encountered in our recent subsurface exploration to depths of up to approximately 10 feet. Additionally, groundwater was not encountered during the subsurface evaluation for the eastern side of the interchange (to the explored depth of approximately 18 feet). Based on review of nearby well data, groundwater is anticipated to be at a depth of approximately 25 feet (Geotracker, 2010). It should be noted that seasonal conditions, changes in nearby irrigation practices, groundwater pumping, and other factors may cause fluctuations in groundwater elevations.

7.4. Site Seismicity

The subject site is considered to be in a seismically active area, as is much of southern California. Based on our review of pertinent geologic literature and our field reconnaissance, no active faults are known to underlie the subject site (Figure 2). Table 2 presents a list of se-

lected known potentially active and active faults in the area, approximate distance to these faults, and the Maximum Credible Earthquake magnitudes associated with each fault.

The subject site is located approximately 4½ miles east of the Newport-Inglewood-Rose Canyon fault zone. Several more distant faults have been classified as active in southern California. Therefore, the potential for strong ground motion at the project site is considered significant.

Table 2 – Seismic Parameters for Maximum Credible Earthquakes

Fault Name	Fault I.D. Number [1]	Fault to Site Distance (miles)	Type of Displacement [2]	Maximum Credible Earthquake Magnitude[2]
Newport-Inglewood-Rose Canyon (San Diego Section)	224	4.5	RLSS	7.5
San Joaquin Hills Blind Thrust	7	61	R	6.6
Elsinore (Coyote Mountain)	246	46.2	RLSS	7.6
Coronado Bank	141	17.8	RLSS	7.6
San Diego Trough	142	25	RLSS	7.6

Notes:
[1] Caltrans Deterministic Fault Data Base, 2007b
[2] RLSS – Right Lateral Strike Slip
[3] R – Reverse

7.4.1. Shaking and Strong Ground Motion

Considering the proximity of the site to active faults capable of producing a maximum moment magnitude of 6.0 or more, the project area has a high potential for experiencing strong ground motion. Based on the Caltrans Acceleration Response Spectra (ARS) (Caltrans, 2010) and the Caltrans Deterministic Peak Ground Acceleration (PGA) Map (Caltrans, 2007b), the design seismic event with respect to the proposed improvements should be an earthquake associated with the Newport-Inglewood-Rose Canyon fault zone (offshore). The Caltrans Deterministic PGA Map (Caltrans, 2007b) indicates that the site is located between the 0.4g and 0.5g peak ground acceleration contours (Figure 5). Based on our evaluation using the Caltrans ARS (Caltrans, 2010) and the probabilistic PGA from the United States Geological Survey (USGS) (USGS, 2010) ground motion calcula-

tor (web-based), it is our opinion that peak ground acceleration of 0.37g is appropriate for the site. The design ARS curve evaluated for the site is presented on Figure 6.

7.4.2. Surface Fault Rupture

Surface fault rupture is generally caused by relative displacement across a fault during an earthquake. No active or potentially active faults are known to underlie the project site; therefore, the potential for surface fault rupture is considered to be low.

7.4.3. Liquefaction and Seismically Induced Settlement

Liquefaction is the phenomenon in which loosely deposited granular soils with clay contents (particles less than 0.005 mm) of less than 15 percent, the liquid limit less than 35 percent, and the natural moisture content greater than 90 percent of the liquid limit and located below the water table undergo rapid loss of shear strength when subjected to strong earthquake-induced ground shaking. Ground shaking of sufficient duration results in the loss of grain-to-grain contact due to a rapid rise in pore water pressure causing the soil to behave as a fluid for a short period of time. Liquefaction is known generally to occur in saturated or near-saturated cohesionless soils at depths shallower than 50 feet. Factors known to influence liquefaction potential include composition and thickness of soil layers, grain size, relative density, groundwater level, degree of saturation, and both intensity and duration of ground shaking. Due to the presence of compacted fill overlying relatively dense formational materials, liquefaction is not considered to be a design consideration for the project. Consequently, the potential for liquefaction-induced dynamic settlement and lateral spread is also not a design consideration.

7.4.4. Tsunamis

Tsunamis are long seismic sea waves (long compared to ocean depth) generated by sudden movements of the sea floor caused by submarine earthquakes, landslides, or volcanic activity. Based on the distance to the coast, the potential for damage due to tsunamis is considered low for the project.

8. GEOTECHNICAL ANALYSIS AND DESIGN

Our geotechnical analyses for the improvements addressed in this GDR included settlement characteristics of the underlying soils and proposed embankments, evaluation of the stability of the proposed retaining walls, the corrosive potential of the on-site soils, and recommendations for the pavement structural sections. Our analyses and recommendations are based on the conditions encountered and the anticipated earthwork.

8.1. Earthwork

Earthwork for the project will include excavations to achieve grade and generate materials for fill and fill placement to achieve planned grades. Earthwork will also include removal of unsuitable soil to reduce ground settlement, the excavation and backfilling of utility trenches, and the placement of pavement sections. Excavations within the surficial soils should be achievable by conventional techniques. Earthwork should be conducted in accordance with Caltrans specifications.

8.1.1. Rippability

The excavations along the proposed widening are anticipated to be in fill and/or formational materials. The near-surface fill soils may be considered generally rippable with earthmoving equipment in good working order; however, excavations that encounter oversize materials such as construction debris or cemented zones in the very old paralic deposits may require the use of heavier equipment or more innovative excavation techniques.

8.1.2. Embankments

The following sections describe earthwork associated with the construction of the proposed embankments. Recommendations regarding site preparation, remedial grading (overexcavation), fill placement, embankment design, and embankment foundations are provided. Embankment work should be performed in accordance with Section 19 of the Caltrans Standard Specifications (2006b).

8.1.2.1. Site Preparation

Prior to performing site excavations, the surface areas should be cleared of existing vegetation, surface obstructions, and other deleterious materials. Existing utilities within the project limits should be re-routed or protected from damage by construction activities. Vegetation and debris from the clearing operations should be disposed of at a legal dumpsite away from the project area. Obstructions that extend below the finish grade, if any, should be removed and the resulting holes filled with compacted fill.

8.1.2.2. Excavation Characteristics

We anticipate that excavation in the fill and native materials present on site will be accomplished with grading equipment in good operating condition. Based on the results of our subsurface exploration, we expect that the subsurface soils will consist of predominantly silty to clayey sand and sandy clay with gravel, cobbles, and construction debris. Oversized materials were encountered in our test pits and are anticipated to be encountered during excavation. Thus, the contractor should be prepared to take appropriate measures to address the presence of oversized materials in the excavation.

8.1.2.3. Temporary Excavations and Shoring

We recommend that temporary excavations be designed and constructed in accordance with Occupational Safety and Health Administration (OSHA) regulations. These regulations provide trench sloping and shoring design parameters for excavations up to 20 feet deep based on the soil types encountered. For planning purposes, we recommend that the following OSHA soil classifications be used for temporary excavations and other purposes:

Fill	*Type C*
Very Old Paralic Deposits	*Type B*

Upon making the excavations, the soil classifications and excavation performance should be evaluated in the field by Ninyo & Moore in accordance with OSHA regula-

tions. Recommendations for temporary shoring can be provided, if requested. Excavation slope surfaces should be kept moist to retard raveling and sloughing. Water should not be allowed to flow over the top of excavations in an uncontrolled manner. Stockpiled material and/or equipment should be kept back from the top of excavations a distance equivalent to the height of the excavation or more. Workers should be protected from sloughing and raveling of the cut in accordance with OSHA regulations. We recommend that excavation slopes be observed by Ninyo & Moore so that appropriate additional recommendations based on actual field conditions may be provided. Temporary excavations are time sensitive, and failures are possible.

Groundwater, if encountered, should be dewatered by sumping and pumping, as appropriate. If foundation materials are disturbed during excavation, the loosened material should be removed and recompacted to a relative compaction of 95 percent as evaluated by American Society for Testing and Materials (ASTM) D 1557. Alternatively, the loosened material may be replaced with structure backfill compacted to 95 percent relative compaction.

8.1.2.4. Fill Material

In general, the existing on-site soils should be suitable for reuse as fill provided it is screened of oversized material. On-site and import fill material should be free of trash, debris, or other deleterious material. Material for use as fill should not contain rocks or lumps greater than approximately 3 inches in size. Fill material should generally be granular soils with a very low to low expansion potential (i.e., with an expansion index of 50 or less). Import material should also be generally non-corrosive in accordance with the Caltrans (2003) corrosion guidelines. Materials for use as fill should be evaluated by Ninyo & Moore's representative prior to filling or importing. The contractor should be responsible for the uniformity of imported materials brought to the site.

Structure backfill should conform to the requirements of Section 19 of Caltrans Standard Specifications (2006b). Structure backfill should be compacted to a relative

compaction of 95 percent in accordance with ASTM D 1557, should have a sand equivalent (SE) of 20 or more, and conform to the gradation presented in Table 3.

Table 3 – Gradation for Structure Backfill

Sieve Size	Percent Passing by Weight
3 inches	100
No. 4	35-100
No. 30	20-100

8.1.2.5. Overexcavation and Recompaction

New embankments are proposed for the new transition ramp alignments. The new embankments will include up to approximately 17 feet of additional fill materials. Due to the presence of vegetated drainage swales, we anticipate some soft and wet conditions along the proposed transition ramp alignments. In order to provide suitable support for the fill slope, we recommend that the subgrade soils underlying the proposed transition ramp embankments generally be removed and recompacted to a depth of approximately 2 feet below the toe grade of the embankments. The removals should extend laterally to approximately 4 feet outside the toe of the embankments. The depths and limits of the overexcavation should be evaluated by our representative at the time of construction. The planned fill should be properly keyed and benched into the existing slope as shown on Figure 7. The appropriateness of a subdrain at the toe of the slope should be evaluated by our representative at the time of construction.

8.1.2.6. Fill Placement and Compaction

Prior to placement of compacted fill, if any, the contractor should request an evaluation of the exposed ground surface by Ninyo & Moore. Unless otherwise recommended, the exposed ground surface should then be scarified to a depth of approximately 8 inches and watered or dried, as appropriate, to achieve moisture contents generally above the laboratory optimum moisture content. The scarified materials should then be compacted to a relative compaction of 95 percent in ac-

cordance with ASTM D 1557. The evaluation of compaction by the geotechnical consultant should not be considered to preclude any requirements for observation or approval by governing agencies. It is the contractor's responsibility to notify the owner's representative and the appropriate governing agency when project areas are ready for observation, and to provide reasonable time for that review.

Fill materials should be moisture conditioned to generally above the laboratory optimum moisture content prior to placement. The optimum moisture content will vary with material type and other factors. Moisture conditioning of fill soils should be generally consistent within the soil mass. Prior to placement of additional compacted fill material following a delay in the grading operations, the exposed surface of previously compacted fill should be prepared to receive fill. Preparation may include scarification, moisture conditioning, and recompaction as outlined above. Compacted fill should be placed in horizontal lifts of approximately 8 inches in loose thickness. Prior to compaction, each lift should be watered or dried as appropriate to achieve a moisture content generally above the laboratory optimum, mixed, and then compacted by mechanical methods to a relative compaction of 95 percent as evaluated by ASTM D 1557. Successive lifts should be treated in a like manner until the desired finished grades are achieved.

8.1.3. Grading Factors

The development of the new transition ramps will involve some grading activities. Based on our subsurface exploration and experience with similar materials in the project area, a grading factor of 0.95 (i.e., 5 percent shrinkage) may be used. This estimate is preliminary and may vary.

8.2. Slope Stability

The project area is relatively level with the exception of the existing fill slopes for the abutments and existing transition ramps. It is anticipated that the proposed fill slopes will be

designed at slope inclinations ranging from approximately 4:1 to 2:1 which should be stable against global and surficial instability.

8.3. Surface Drainage

Surface water should be diverted away from the tops of slopes and should not be allowed to pond at the toes of slopes. Positive drainage should be established at the toes of slopes and surface water should be diverted off site by means of appropriate erosion-reducing devices. Runoff should not be allowed to flow over the tops of slopes. Drainage for the proposed improvements should be in accordance with Chapter 800 of the Caltrans Highway Design Manual (2009a).

8.4. Corrosion

The corrosion potential of the on-site materials within the alignment was based on analyses of laboratory corrosivity testing performed on samples selected from the subsurface evaluation. The soils were analyzed to evaluate the effect of corrosion on underground and surface structures. The samples obtained were selected from various locations within or near the proposed improvements. The results of the corrosivity tests are included in Appendix B and Table 4.

Table 4 – Corrosivity Test Results

Boring No., Sample Depth (feet) and Soil Type	pH[1]	Minimum Electrical Resistivity (ohm-cm)[1]	Sulfate[2] (ppm)	Chloride[3] (ppm)
TP-2 @ 1.0 - 2.0; Clayey Sand (fill)	5.7	1,470	290	320
TP-6 @ 0.5 - 1.5; Silty Clay (fill)	5.9	2,550	380	390

Notes:
[1]Test performed in accordance with CT 643.
[2]Test performed in accordance with CT 417.
[3]Test performed in accordance with CT 422.
ohm-cm – ohm-centimeters
ppm – parts per million

Test results indicate that the pH values ranged from about 5.7 to 5.9. Electrical resistivity ranged from approximately 1,470 to 2,550 ohm-centimeters (ohm-cm). Testing indicates that chloride content ranged from about 320 to 390 parts per million (ppm) and soluble sulfate content ranged from approximately 0.029 to 0.038 percent (i.e., 290 to 380 ppm) by weight. In accordance with Caltrans Corrosion Guidelines (2003) and Memo 3.1 of the Bridge

Memo To Designers (Caltrans, 2005), a corrosive site is an area where the soil contains more than 500 ppm of chlorides, more than 2,000 ppm of sulfates, has a pH of less than 5.5, or an electrical resistivity of less than 1,000 ohm-cm. Therefore, the project site is not considered to be corrosive per Caltrans guidelines.

We recommend that concrete cover over reinforcing steel in foundations and other buried concrete be designed in accordance with Table 8.22.1 of the Bridge Design Specifications Manual. We further recommend that Type V cement be used with a water-cement ratio of 0.50 or less for structures that will be in contact with soils at the site.

The recommendations resulting from our evaluation of the corrosivity of the on-site soils also apply to import embankment material. The import material should be tested for corrosive properties prior to placement to evaluate its adequacy.

8.5. Minor Structure Foundations

Minor structure foundations may include foundations for signs, light standards and traffic signals. Foundations for roadside signs, overhead signs, light standards, and traffic signals should be designed in accordance with the Caltrans Standard Plans (Caltrans, 2006a).

8.6. Abutment Slope Retaining Wall

Retaining walls can be supported on conventional shallow, spread footings bearing on compacted fill and/or natural soil generally in accordance with the standard details for concrete block walls in Caltrans Standard Plans. Measures should be taken to reduce the potential for build-up of moisture behind the retaining walls. Drainage design should include free-draining backfill materials and perforated drains. Solid outlet pipes should be connected to the perforated drains and then routed to a suitable area for discharge of accumulated water. The portions of retaining walls supporting backfill should be coated with waterproofing compound or covered with a similar material to reduce the potential for infiltration of moisture through the walls. It is the responsibility of the project structural engineer and/or the retaining wall contractor to provide specifications for waterproofing materials and suitable methods of application.

8.7. Caltrans Pavement Structural Section Design

Caltrans pavement structural sections for transition ramps are based on Section 600 of the Caltrans Highway Design Manual (2009a). Resistance value (R-value) testing should be performed on the roadway subgrade during construction. The contractor is required to prepare soils with a design R-value of 40 or higher for the pavement subgrade material. If this is not achievable, then the recommended pavement sections should be reevaluated for R-values lower than the design R-value. Recommendations for R-value testing frequency during construction should be established in the construction quality control inspection procedures.

8.7.1. Design R-Value

Pavement sections associated with the proposed construction of this project will include the new transition ramps. Representative near-surface soil samples were tested for R-value in our laboratory to provide design pavement structural sections. The R-values of the tested samples are summarized in Table 5 and in Appendix B.

Table 5 – R-value Test Results

Boring No., Sample Depth (feet), and Soil Type	R-value[1]
TP-4 @ 0.5 - 1.5; Silty Sand (SM)	61
TP-6 @ 0.5 - 1.5; Clayey Sand (SC)	41

Note:
[1]Test performed in accordance with CT 301.

8.7.2. Design Recommendations

During our subsurface exploration, the on-site soils were sampled near the proposed transition ramp alignments. Based on our laboratory testing of the soils sampled, an R-value of 40 was used for the preliminary pavement design. The final pavement design used for construction should be based on R-values obtained from subgrade soils below the proposed roadway upon completion of site grading.

We anticipate that the traffic loading will consist of mostly passenger-type and heavy vehicles. Accordingly, we have assumed traffic indices (TI) of 10 and 13.5 for the design of pavement sections. Preliminary flexible and rigid pavement design sections were evaluated

in accordance with the California Department of Transportation Highway Design Manual (2009a). The recommended pavement structural sections are summarized in Table 6.

Table 6 – Caltrans Pavement Structural Sections

Traffic Index	Recommended Pavement Sections		
	Flexible Pavement		Rigid Pavement
	AC/CL2AB (inches)	Full Depth AC (inches)	JPCP/LCB (inches)
10 (Ramps)	6.0/11.5	11.5	9.0/5.0
13.5 (Main Lanes)	9.0/14.5	16.0	11.5/6.0

Notes:
AB – Class 2 Aggregate Base
AC – Asphalt Concrete Type A
JPCP – Jointed Plain Concrete Pavement
LCB – Lean Concrete Base

In order to provide suitable support for the proposed pavement areas, we recommend that the subgrade soils be scarified approximately 12 inches, moisture conditioned to slightly over optimum moisture content, and compacted to a relative compaction of 95 percent as evaluated by ASTM 1557. Aggregate base and lean concrete base should conform to Section 26 and 28, respectively, of Caltrans Standard Specifications (2006b). The aggregate base material should be placed at a relative compaction of 95 percent in accordance with ASTM D 1557. Asphalt concrete and jointed plain concrete should conform to Sections 39 and 40 of Caltrans Standard Specifications (2006b), respectively. We recommend that the paving operations be observed and tested by Ninyo & Moore.

8.8. City of San Diego Pavement Structural Section Design

City of San Diego pavement structural sections for Clairemont Mesa Boulevard and Kearny Mesa Road are based the requirements presented in *Schedule "J", Standard Special Provisions SDG-113* (City of San Diego, 2006). The contractor is required to prepare soils with a design R-value of 40 or higher for the pavement subgrade material. If this is not achievable, then the recommended pavement sections should be re-evaluated for R-values lower than the design R-value. Recommendations for R-value testing frequency during construction should be established in the construction quality control inspection procedures. We recom-

mend that Ninyo & Moore re-evaluate the pavement design based on actual TI values of the subject streets and the R-value of the subgrade material exposed at the time of construction.

Based on correspondence with the client, Kearny Mesa Road is classified as a 4-lane collector in an industrial and commercial area while Clairemont Mesa Boulevard is classified as a primary arterial. Based on Schedule J, the design TI for Kearny Mesa Road and Clairemont Mesa Boulevard are 9.5 and 11.5, respectively. The preliminary AC pavement sections for Kearny Mesa Road and Clairemont Mesa Boulevard are presented in the following table.

Table 7 – City of San Diego Pavement Structural Sections

Street	Classification	Traffic Index	AC (inches)	CTB (inches)
Kearny Mesa Road	Collector (Industrial/Commercial)	9.5	3.0	11.0
Clairemont Mesa Boulevard	Primary Arterial	11.5	4.0	13.5

9. MATERIAL SOURCES

According to the California Department of Conservation (2010), Office of Mine Reclamation, there are several mining operations in San Diego County.

9.1. Off-Site Material

A list of mining operations eligible to sell materials such as aggregates to the State of California in San Diego County can be found in Table 7.

Table 8 – Eligible Mining Operations (as of April 12, 2010)

CA Mine ID	Mine Name	Operated By
91-37-0007	Carroll Canyon Plant	Hanson Aggregate Co.
91-37-0010	Lakeside Sand Pit	C.W. McGrath, Inc.
91-37-0011	Hillsdale Granite Pit	C.W. McGrath, Inc.
91-37-0013	Miramar	Hanson Aggregates Pacific Southwest
91-37-0015	UCLH San Marcos	Hanson Aggregates Pacific Southwest
91-37-0019	TTT Quarry	Superior Ready Mix Concrete
91-37-0020	Hester's Granite	Hanson Aggregate Co.
91-37-0021	Slaughter House Canyon	Hanson Aggregates Pacific Southwest
91-37-0022	Tunnel Hill Pit	C.W. McGrath, Inc.
91-37-0024	Mission Gorge Pit	Superior Ready Mix Concrete

Table 8 – Eligible Mining Operations (as of April 12, 2010)

CA Mine ID	Mine Name	Operated By
91-37-0025	RCP Pits 1, 2,3, & 5 Inclusive	RCP Block & Brick Company, Inc.
91-37-0026	Mission Valley	Vulcan Lands, Inc.
91-37-0027	Sloan Canyon	Sycuan Tribal Development Corp.
91-37-0028	Mission Valley - Ex Fenton	Vulcan Lands, Inc.
91-37-0029	Carroll Canyon	Vulcan Lands, Inc.
91-37-0030	Calmat - Poway	Calmat Company
91-37-0034	El Monte Pit	Hanson Aggregate PSW, Inc.
91-37-0035	Otay Ranch Pit	Chris Otay Valley Rock, LLC
91-37-0036	Highway 67 & Vigilante Road Pit	Steve Hanson Aggregates West, Inc.
91-37-0044	Buckman Pit	County of San Diego Public Works
91-37-0045	Olive Street Pit	County of San Diego Public Works
91-37-0046	McCain Pit	County of San Diego Public Works
91-37-0047	Burnand Borrow Pit	Pacific Ohana Trust
91-37-0048	Warner Pit	County of San Diego Public Works
91-37-0052	National Quarries	National Quarries
91-37-0054	Inland Valley Materials	Inland Valley Materials
91-37-0056	Palo Verde Desiltation & Reclamation	Palo Verde Ranch HOA
91-37-0057	Pauma Valley Country Club	The Pauma Valley Country Club
91-37-0063	Lakeside Land Co., Inc.	Lakeside Land Company, Inc.
91-37-0064	Baxter Quarry	M.J. Baxter Drilling Company
91-37-0065	Channel Road	Hanson Aggregates West, Inc.
91-37-0066	Rosemary's Mountain	Granite Construction Company

Note:
Reference: California Department of Conservation, 2010, AB3098.

10. MATERIAL DISPOSAL

Grading operations may generate unsuitable materials such as oversized materials and previous construction debris. Unsuitable materials, if encountered, should be disposed of at a legal dump-site away from the project area.

11. CONSTRUCTION CONSIDERATIONS

The following sections provide considerations that may influence project design, specifications, construction monitoring, as well as hazardous waste considerations.

11.1. Construction Advisories

Underground utilities are present within the subject area. Considerations should be given to the location of these subsurface improvements relative to the new construction.

11.2. Construction Considerations that Influence Design

We anticipate that oversized materials including cobbles and construction debris will be encountered during performance of excavations. These oversized materials may cause difficulty for the performance of excavations at the site. Also, wet conditions may be encountered below existing drainage ditches. Additional processing (i.e., aeration) of site soils may be needed prior to reuse as compacted fill. Wet conditions may also require stabilization methods such as usage of gravel and/or a geotextile.

11.3. Construction Considerations that Influence Specifications

Project specific provisions and recommendations that are not part of Caltrans Standard Plans and Specifications have been provided herein to be incorporated into project specifications.

11.4. Construction Monitoring

We recommend that the grading operations be monitored and tested in accordance with Caltrans Standard Specifications and the project special provisions. Cut and fill slopes should be observed by Ninyo & Moore during grading to evaluate the actual conditions.

11.5. Hazardous Waste Considerations

A hazardous waste evaluation was beyond the scope of our services. No hazardous waste evaluation is included herein.

11.6. Differing Site Conditions

Variations may exist and conditions not observed or described in this report may be encountered during construction. The conclusions and recommendations presented in this report are based on an analysis of the observed conditions. We emphasize that early and frequent

communications between the Contractor, the Geotechnical Consultant, and the Construction Manager's Resident Engineer is imperative during construction. If conditions different from those described in this report are encountered, the Resident Engineer and the Geotechnical Consultant should be notified and additional recommendations, if required, will be provided.

12. RECOMMENDATIONS AND SPECIFICATIONS

The following is a listing of the geotechnical design and construction recommendations that should be considered for inclusion as special provisions:

- The contractor should prepare soils with a design R-value of 40 or higher for the pavement subgrade material. If this is not achievable, then the pavement sections recommended herein should be reevaluated for R-values lower than the design R-value. Recommendations for R-value testing frequency during construction shall be established in the construction quality control inspection procedures.

- Type II Modified or Type V Portland cement should be used for concrete structures exposed to earth materials associated with the project.

13. CONSTRUCTION OBSERVATION

The recommendations provided in this report are based on preliminary structural design information for the proposed construction and subsurface information disclosed by widely spaced exploratory borings and review of pertinent geotechnical literature. The assumed subsurface conditions should be checked in the field by the geotechnical consultant during construction. If actual conditions differ from the information provided in this report, the geotechnical consultant should be contacted. We further recommend that the project plans be reviewed by the geotechnical consultant prior to construction. Upon review of these documents, some recommendations presented in this report may be revised or modified to meet the project requirements.

14. LIMITATIONS

The field evaluation, laboratory testing, and geotechnical analyses presented in this geotechnical report have been conducted in general accordance with current practice and the standard of care

exercised by geotechnical consultants performing similar tasks in the project area. The conclusions, recommendations, and opinions presented in this report are subject to change should conditions differ significantly once construction has commenced. No warranty, expressed or implied is made regarding the contents of this report.

There is no evaluation detailed enough to reveal every subsurface condition. Variations may exist and conditions not observed or described in this report may be encountered during construction. Please also note that our evaluation was limited to assessment of the geotechnical aspects of the project, and did not include evaluation of structural issues, environmental concerns, or the presence of hazardous materials.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. Ninyo & Moore should be contacted if the reader requires additional information or has questions regarding the content, interpretations presented, or completeness of this document.

Our conclusions, recommendations, and opinions are based on our analysis of the observed site conditions. If geotechnical conditions different from those described in this report are encountered, our office should be notified, and additional recommendations, if warranted, will be provided upon request. It should be understood that the conditions of a site could change with time as a result of natural processes or the activities of man at the subject site or nearby sites. In addition, changes to the applicable laws, regulations, codes, and standards of practice may occur due to government action or the broadening of knowledge. The findings of this report may, therefore, be invalidated over time, in part or in whole, by changes over which Ninyo & Moore has no control.

This report is intended exclusively for use by the client. Any use or reuse of the findings, conclusions, and/or recommendations of this report by parties other than the client is undertaken at said parties' sole risk.

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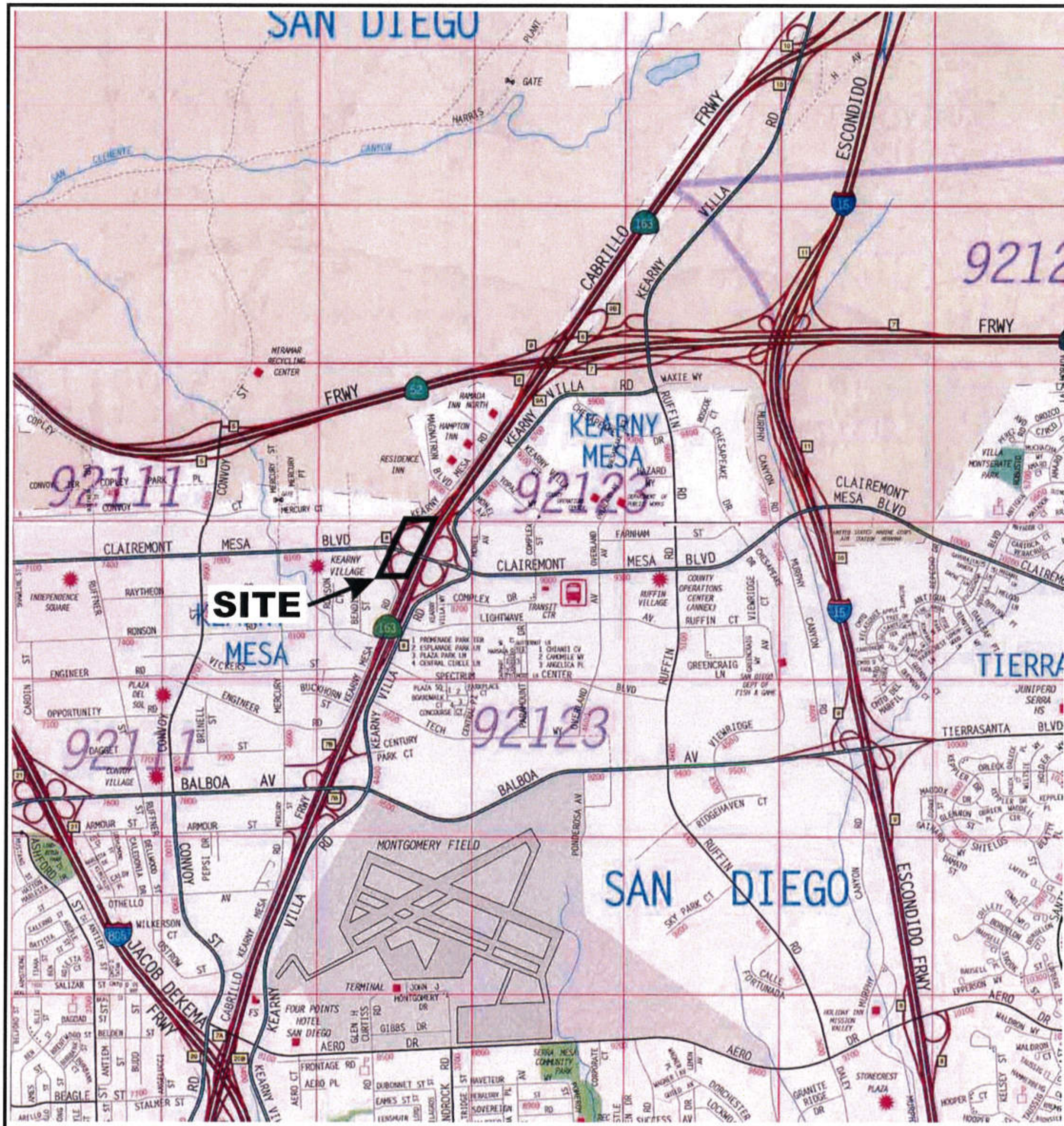


REFERENCE: 2005 THOMAS GUIDE FOR SAN DIEGO COUNTY, STREET GUIDE AND DIRECTORY,

APPROXIMATE SCALE

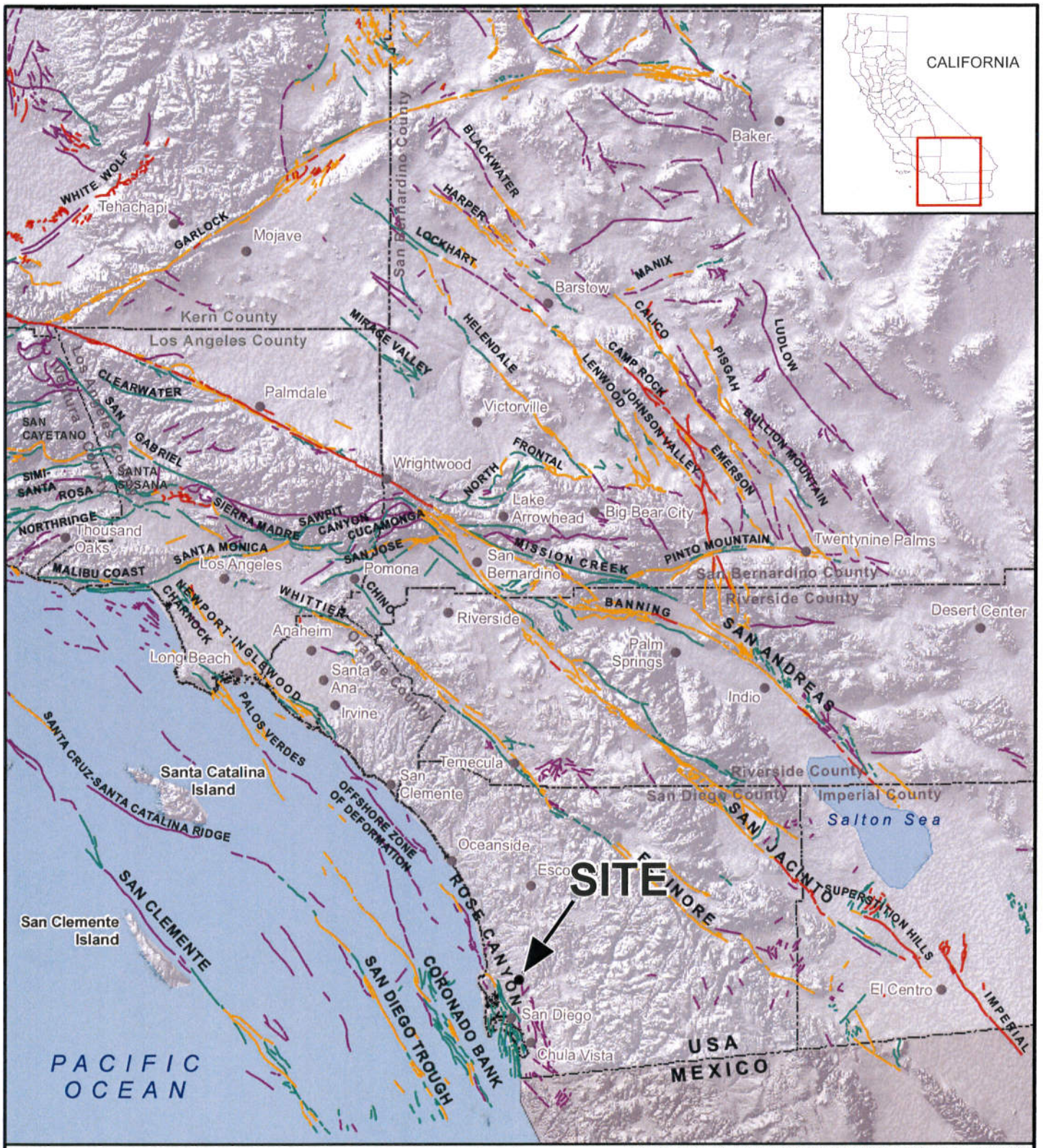
0 2400 4800 FEET

N

NOTE: ALL DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

Ninyo & Moore		SITE LOCATION MAP	FIGURE
PROJECT NO.	DATE	CLAIREMONT MESA BOULEVARD AND SR-163 INTERCHANGE, PHASE II DISTRICT 11, SAN DIEGO, CALIFORNIA	1
106665001	10/10		

fig1 106665001 slm.cdr



LEGEND

CALIFORNIA FAULT ACTIVITY

- HISTORICALLY ACTIVE
- HOLOCENE ACTIVE
- LATE QUATERNARY (POTENTIALLY ACTIVE)
- QUATERNARY (POTENTIALLY ACTIVE)
- STATE/COUNTY BOUNDARY

SOURCE: FAULTS - CA DEPT OF CONSERVATION, 2000; BASE - ESRI, 2008

N

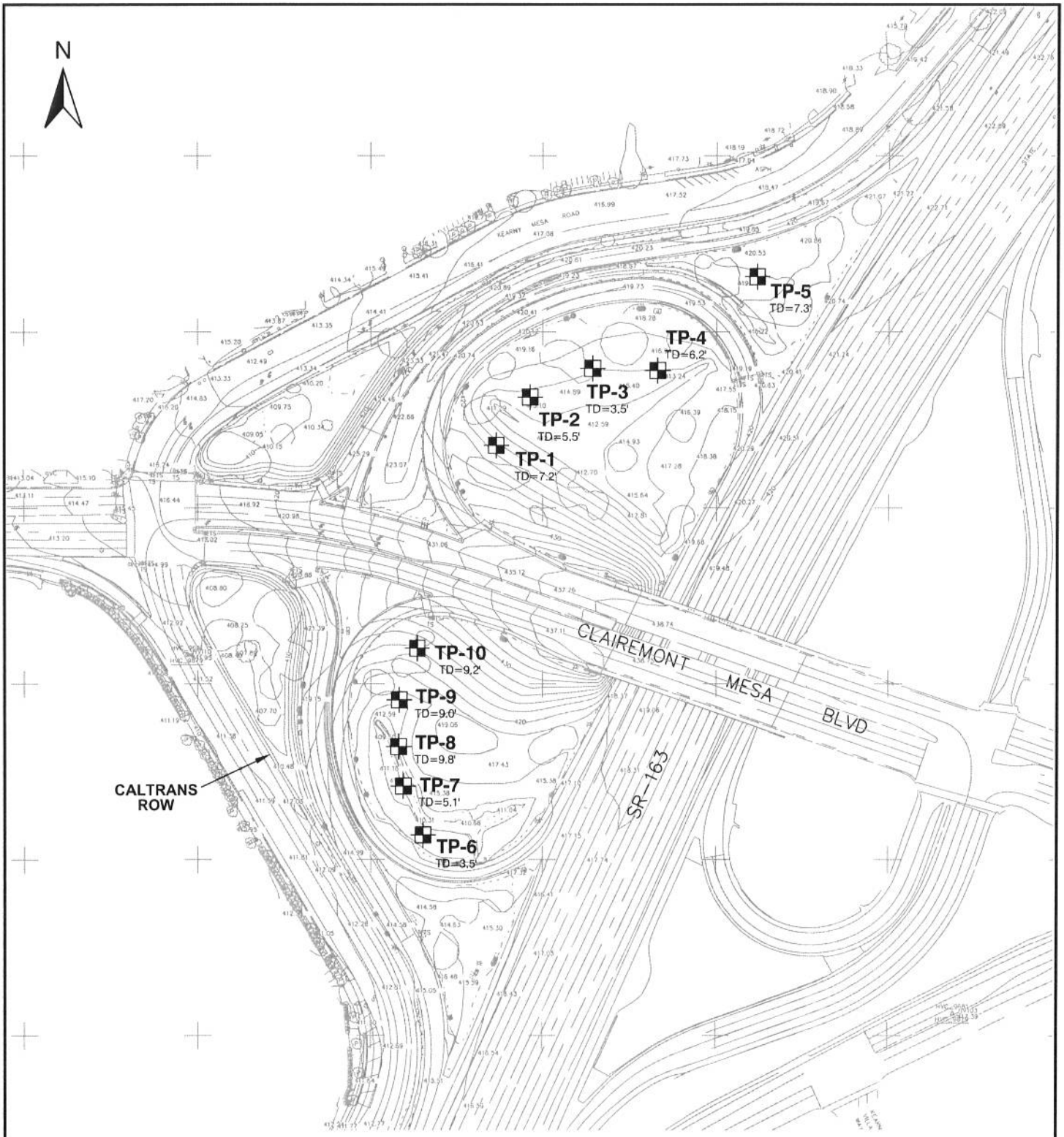
APPROXIMATE SCALE

0 25 50 MILES

NOTES: ALL DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE

fig2_106665001_fault.mxd

Ninyo & Moore	FAULT LOCATION MAP	FIGURE
PROJECT NO. 106665001 / DATE 10/10	CLAIREMONT MESA BOULEVARD AND SR-163 INTERCHANGE, PHASE II DISTRICT 11, SAN DIEGO, CALIFORNIA	2



APPROXIMATE SCALE

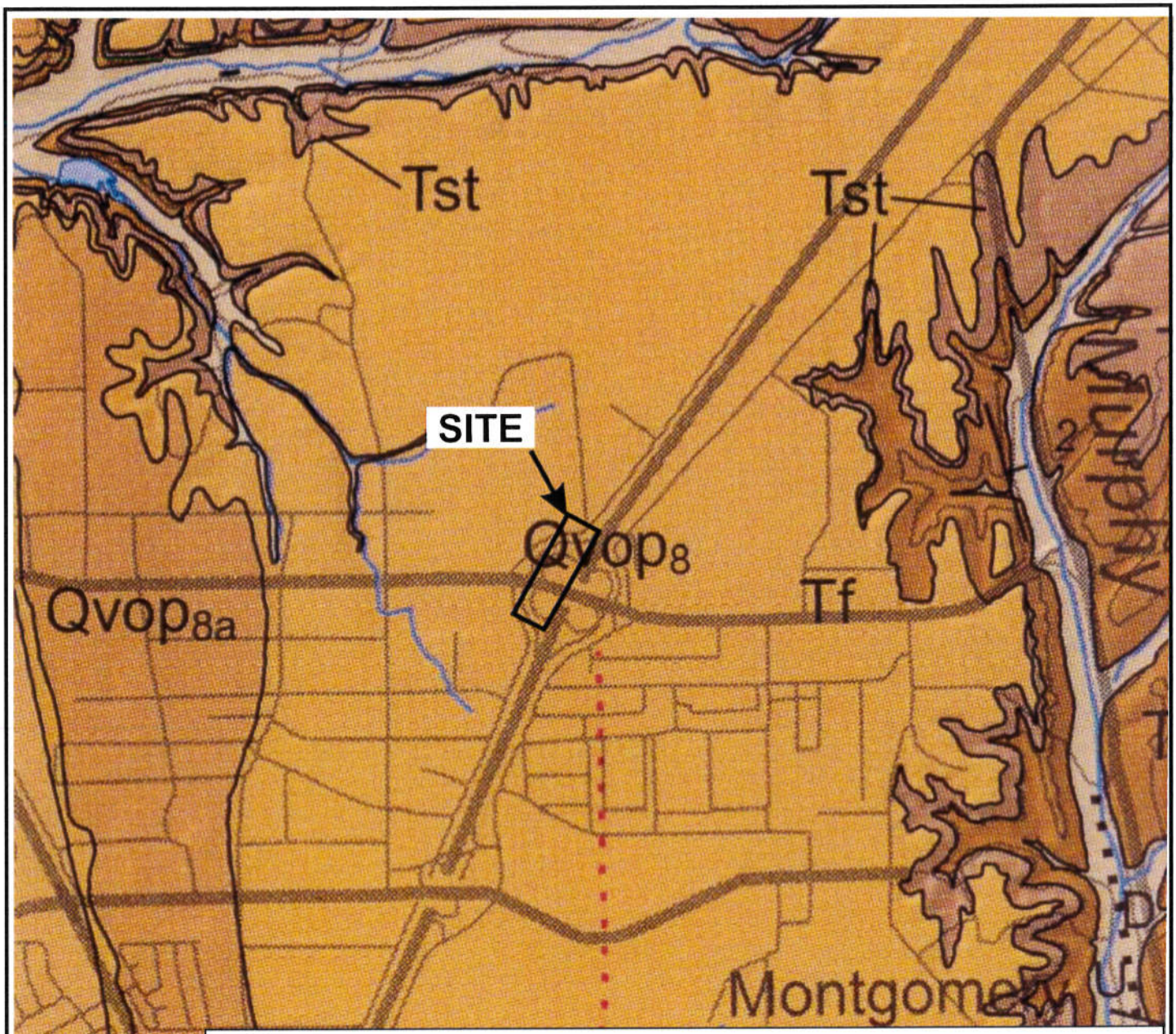
0 200 400 FEET

NOTE: ALL DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE

LEGEND	
TP-10 TD=9.2'	APPROXIMATE LOCATION OF PROPOSED TEST PIT
———	PROPOSED ROADWAYS
———	EXISTING ROADWAYS

Ninyo & Moore	SITE PLAN AND TEST PIT LOCATION MAP	FIGURE
PROJECT NO. 106665001 / DATE 10/10	CLAIREMONT MESA BOULEVARD AND SR-163 INTERCHANGE, PHASE II DISTRICT 11, SAN DIEGO, CALIFORNIA	3

fig3 106665001 site.dwg



LEGEND

Qya	YOUNG ALLUVIAL FLOODPLAIN DEPOSITS
Qvop8	OLD PARALIC DEPOSITS, UNIT 8
Qvop8a	OLD PARALIC DEPOSITS, UNIT 8A
Tmv	MISSION VALLEY FORMATION
Tst	STADIUM CONGLOMERATE
Tf	FRIARS FORMATION

70 — FAULT - SOLID WHERE ACCURATELY LOCATED, DASHED WHERE APPROXIMATE, DOTTED WHERE CONCEALED. ARROW AND NUMBER INDICATE DIRECTION AND ANGLE OF DIP OF FAULT PLANE

ANTICLINE - SOLID WHERE ACCURATELY LOCATED, DASHED WHERE APPROXIMATE, DOTTED WHERE CONCEALED. ARROW INDICATES DIRECTION OF AXIAL PLUNGE

2 — INCLINATION OF BEDDING

APPROXIMATE SCALE

0 2000 4000 FEET

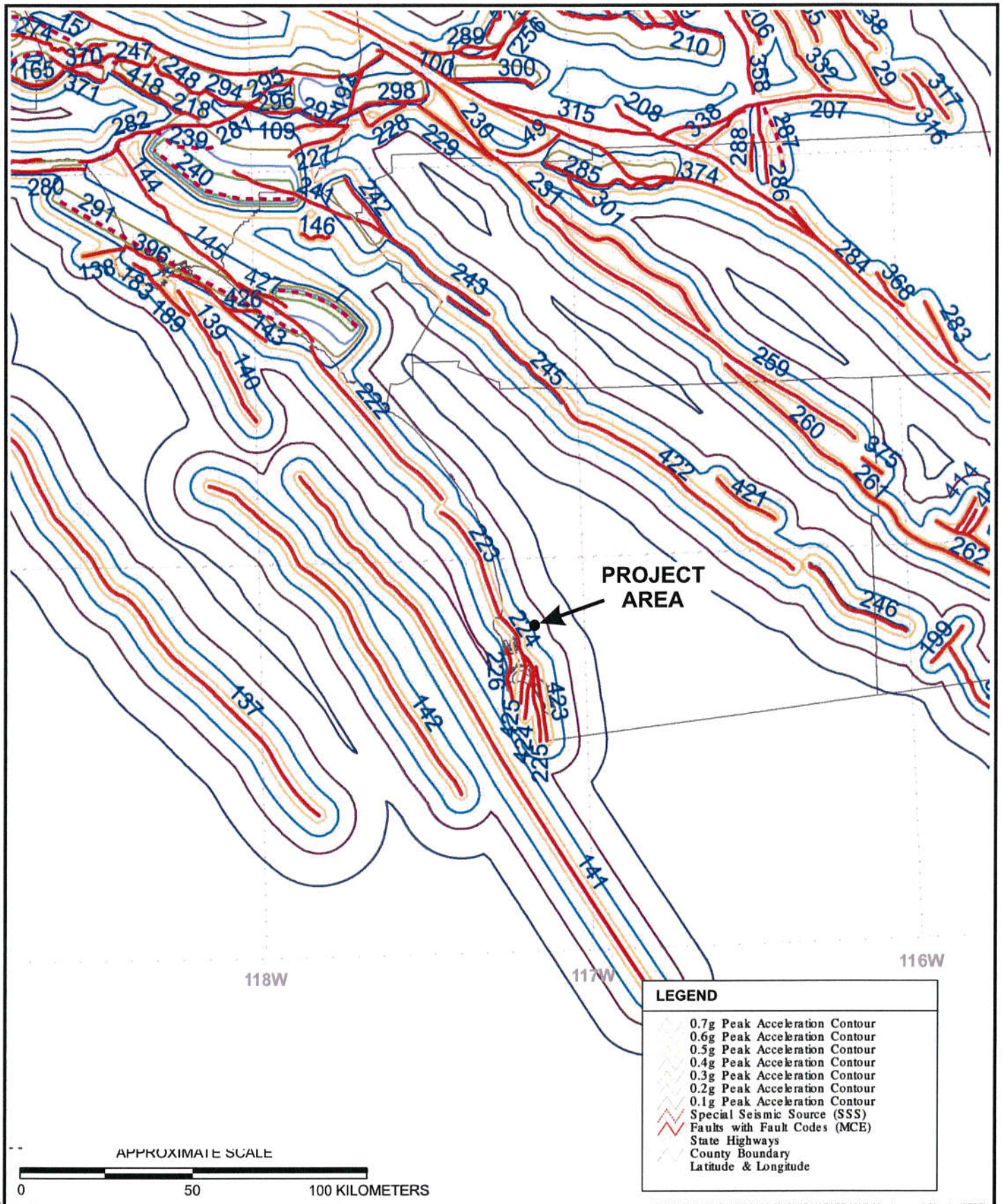
N

NOTE: ALL DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

REFERENCE: KENNEDY, M.P., AND TAN, S.S., 2008, GEOLOGIC MAP OF THE SAN DIEGO 30' X 60' QUADRANGLE, CALIFORNIA.

fig4 106665001 geologic.cdr

Ninyo & Moore	GEOLOGIC MAP	FIGURE
PROJECT NO. 106665001 / DATE 10/10	CLAIREMONT MESA BOULEVARD AND SR-163 INTERCHANGE, PHASE II DISTRICT 11, SAN DIEGO, CALIFORNIA	4



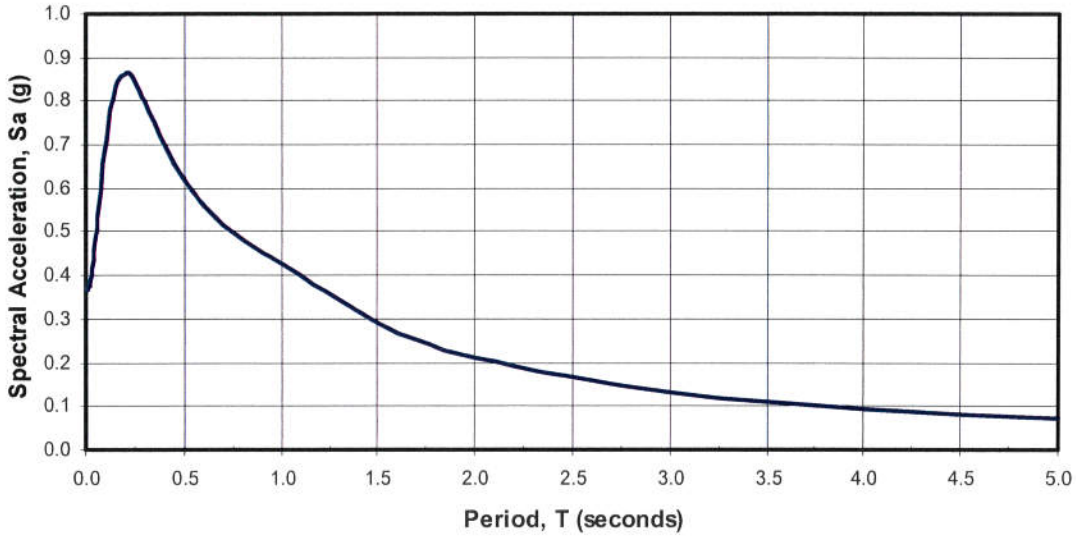
NOTE: ALL DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

REFERENCE: CALIFORNIA SEISMIC HAZARD MAP, Merriam and Shantz (2007).

Ninyo & Moore	PEAK ACCELERATION CONTOUR MAP	FIGURE
PROJECT NO. / 106665001	DATE / 10/10	CLAIREMONT MESA BOULEVARD AND SR-163 INTERCHANGE, PHASE II DISTRICT 11, SAN DIEGO, CALIFORNIA	5

fig5 106665001 peak.cdr

Acceleration Response Spectra for a Maximum Credible Earthquake

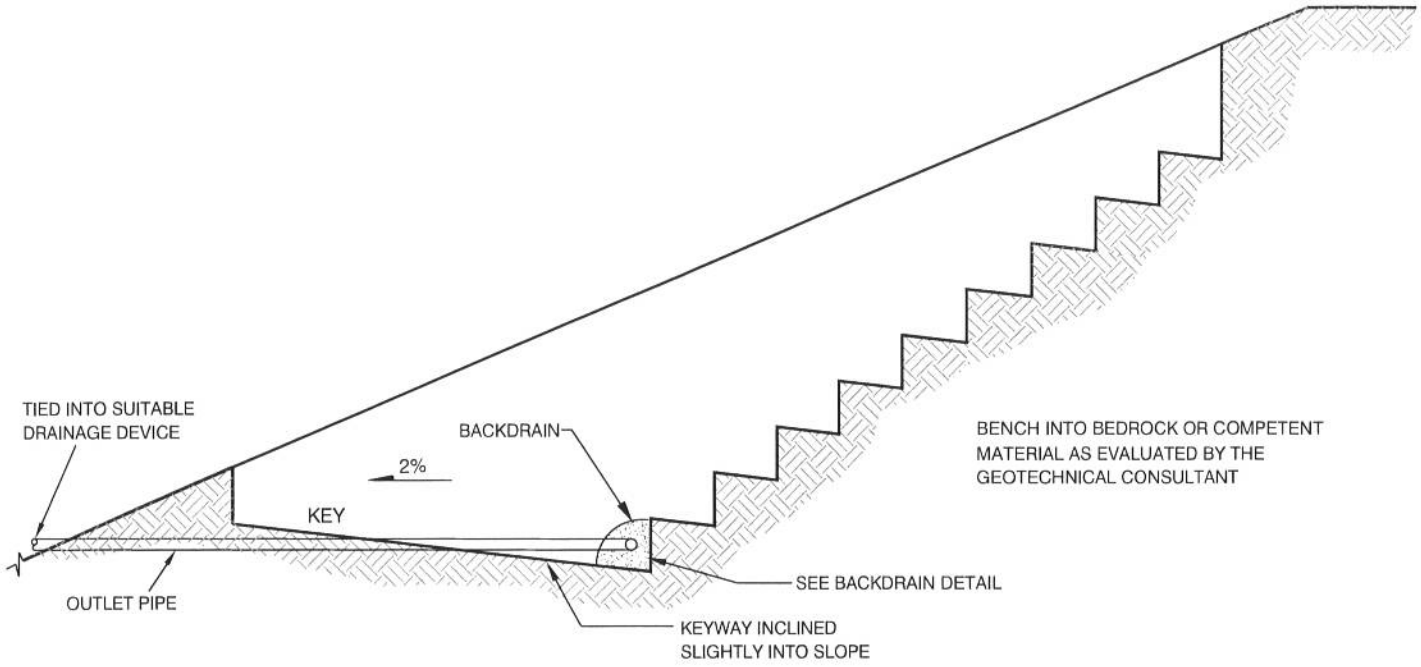


Period, T (seconds)	Spectral Acceleration, Sa (g)
0.010	0.368
0.020	0.375
0.030	0.401
0.050	0.485
0.100	0.710
0.150	0.831
0.200	0.867
0.250	0.838
0.300	0.796
0.400	0.698
0.500	0.615
0.600	0.557
0.700	0.514
0.800	0.479
0.900	0.452
1.000	0.428
1.500	0.291
2.000	0.210
3.000	0.130
4.000	0.092
5.000	0.072

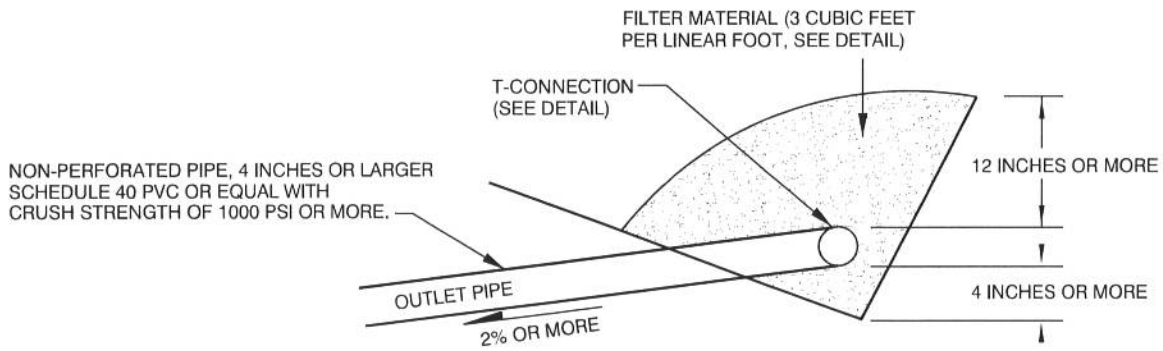
NOTES:
1. SITE LATITUDE = 32.8325
   SITE LONGITUDE = -117.1417
2. AVERAGE SHEAR WAVE VELOCITY (ASSUMED) = 560 m/s
3. THE CONTROLLING FAULT FOR THE SITE IS THE NEWPORT - INGLEWOOD - ROSE CANYON (SAN DIEGO SECTION)
4. PEAK BEDROCK ACCELERATION (PBA)=0.50g
5. PEAK GROUND ACCELERATION (PGA)=0.37g.

fig6 106665001 ars.dwg

Ninyo & Moore	SITE ACCELERATION RESPONSE SPECTRUM CURVE	FIGURE
PROJECT NO. 106665001 / DATE 10/10	CLAIREMONT MESA BOULEVARD AND SR-163 INTERCHANGE, PHASE II DISTRICT 11 SAN DIEGO, CALIFORNIA	6



BACKDRAIN DETAIL



T-CONNECTION DETAIL

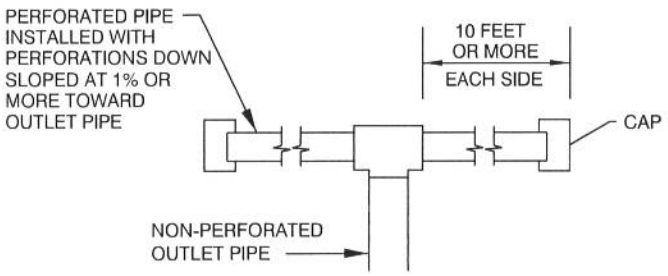


fig7 106665001 benching.dwg

Ninyo & Moore		TYPICAL BENCHING AND DRAINAGE DETAILS	FIGURE
PROJECT NO.	DATE	CLAIREMONT MESA BOULEVARD AND SR-163 INTERCHANGE, PHASE II DISTRICT 11, SAN DIEGO, CALIFORNIA	7
106665001	10/10		

APPENDIX A

LOG OF TEST BORINGS

BENCH MARK

B.M. 163 CMB 1 ELEVATION: 422.83 FEET, NAVD 88 DATUM
BRASS DISK
N: 1883444.491, E: 6289185.945
E.C. OF CURVE ON CENTER OF CLAIREMONT MESA BLVD.,
350 FEET EAST OF KEARNY VILKLA ROAD

DIST	COUNTY	ROUTE	TOTAL PROJECT	NO	TOTAL SHEETS
11	SD	SR-163	8.5/9.1		

Soumitra Guha 10/08/10
GEOTECHNICAL PROFESSIONAL DATE

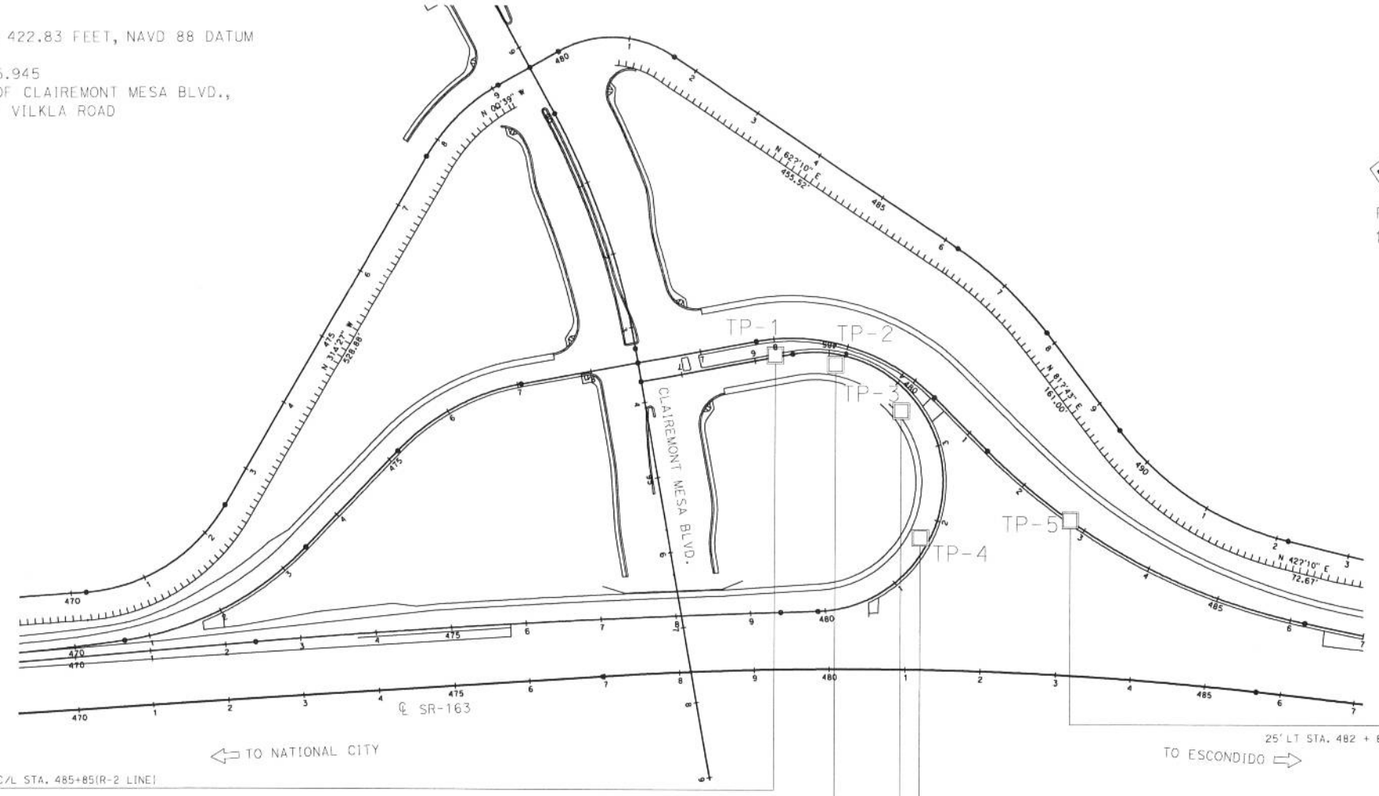
REGISTERED PROFESSIONAL ENGINEER — SOUMITRA GUHA — No. C 58967 — Exp. 06-30-11 — STATE OF CALIFORNIA

PLANS APPROVAL DATE

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

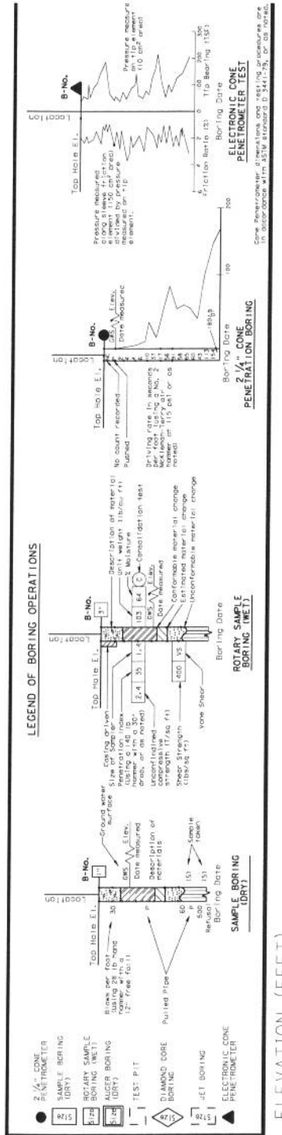
City of San Diego
1010 Second Avenue
San Diego, California

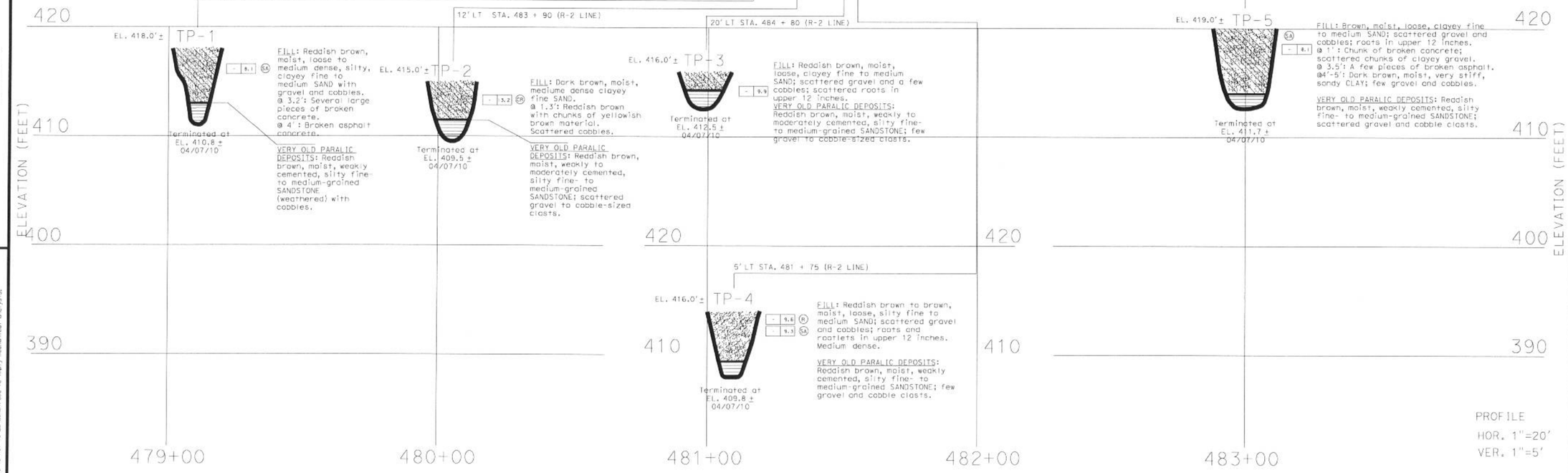
NINYO & MOORE
5710 Ruffin Road
San Diego, CA 92123
Phone (858) 576-1000



PLAN
1"=100'

IN-SITU, LAB & FIELD TEST DESIGNATIONS		Modified Split Barrel (Blows/ft)	Granular Soils
(#200)	200 WASH	0-7	Very Loose
(SA)	SIEVE ANALYSIS	8-18	Loose
(MD)	PROCTOR DENSITY	19-36	Medium Dense
(AL)	ATTERBERG LIMITS	37-59	Dense
(C)	CONSOLIDATION	60-110	Very Dense
(DS)	DIRECT SHEAR	Modified Split Barrel (Blows/ft)	Cohesive Soils
(CR)	CORROSION	≤3	Very Soft
(EI)	EXPANSION INDEX	3-5	Soft
(SE)	SAND EQUIVALENT	6-10	Firm
(R)	R-VALUE	11-20	Stiff
		21-39	Very Stiff
		≥39	Hard





PROFILE
HOR. 1"=20'
VER. 1"=5'

CONSISTENCY CLASSIFICATION FOR SOILS (According to the Standard Penetration Test)				
	SPT N-Value (Blows/Foot)	Granular	SPT N-Value (Blows/Foot)	Cohesive
	0-4	Very Loose	½	Very Soft
	5-10	Loose	2-4	Soft
	11-30	Medium Dense	5-8	Firm
	31-50	Dense	9-15	Stiff
	>50	Very Dense	16-30	Very Stiff
			>31	Hard

LEGEND OF EARTH MATERIALS
GRAVEL · SAND · SILT · CLAY · CLAYEY SILT · SANDY CLAY or CLAYEY SAND · SANDY SILT or SILTY SAND · SILTY CLAY · PEAT and/or ORGANIC MATTER · FILL MATERIAL · IGNEOUS ROCK · SEDIMENTARY ROCK · METAMORPHIC

NOTE: Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

SOUMITRA GUHA DESIGN OVERSIGHT	DRAWN BY	ALEXIS BALANE	ROBERT T. WHEELER FIELD INVESTIGATION BY:	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	JEFFREY T. KENT PROJECT ENGINEER	BRIDGE NO. 57-0368/ 57-0510	CLAIREMONT MESA BOULEVARD AND SR-163 INTERCHANGE, PHASE II
SIGN OFF DATE	CHECKED BY	SOUMITRA GUHA	DATE: 4/7/10			POST MILE 8.5/9.1	LOG OF TEST BORINGS

OSF GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 2/25/05)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

CU 08-228
EA 327801

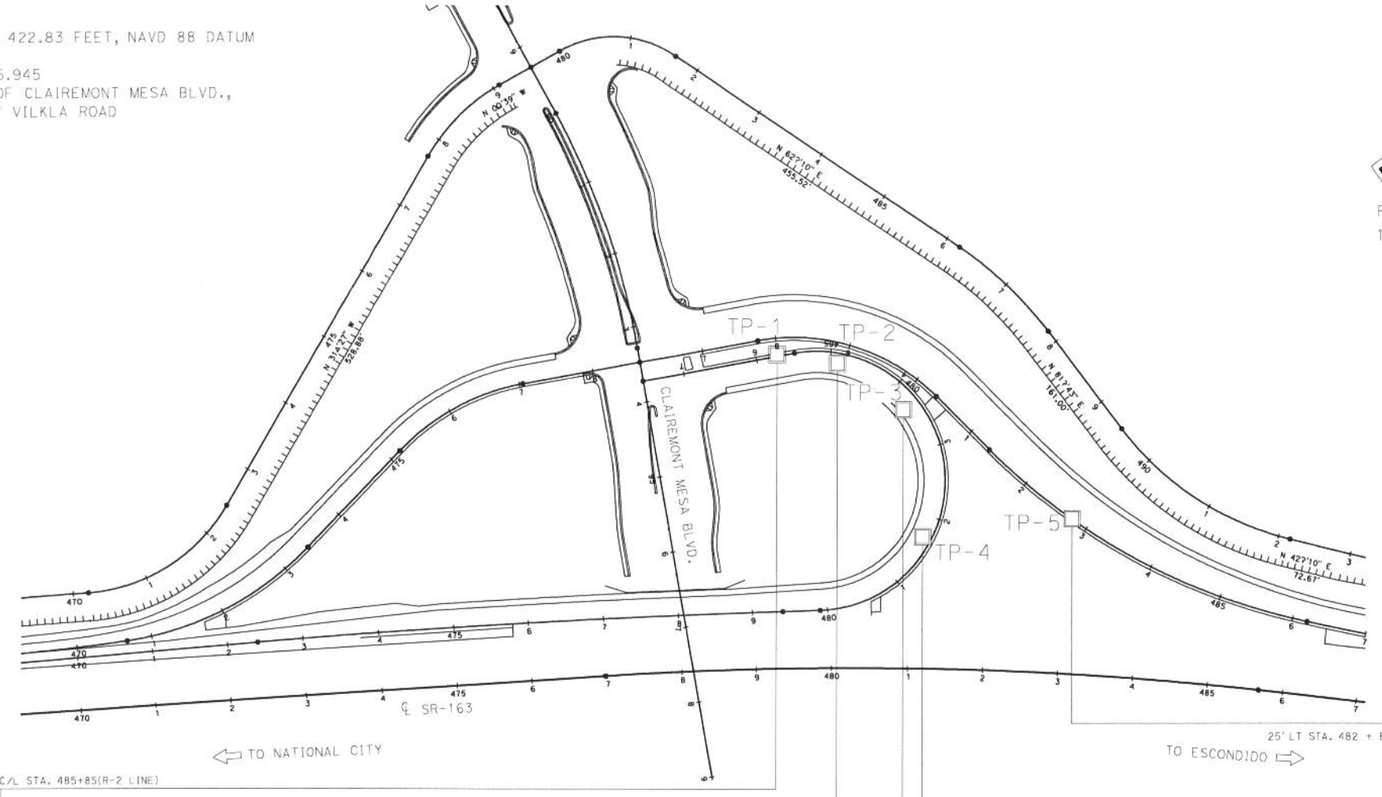
DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES (PRELIMINARY STAGE ONLY): 1

SHEET 1 OF 3

BENCH MARK

B.M. 163 CMB 1 ELEVATION: 422.83 FEET, NAVD 88 DATUM
BRASS DISK
N: 1883444.491, E: 6289185.945
E.C. OF CURVE ON CENTER OF CLAIREMONT MESA BLVD.,
350 FEET EAST OF KEARNY VILKLA ROAD



EL. 418.0'± TP-1

FILL: Reddish brown, moist, loose to medium dense, silty, clayey fine to medium SAND with gravel and cobbles. @ 3.2': Several large pieces of broken concrete. @ 4': Broken asphalt concrete.

VERY OLD PARALIC DEPOSITS: Reddish brown, moist, weakly cemented, silty fine- to medium-grained SANDSTONE (weathered) with cobbles.

Terminated at EL. 410.8 ± 04/07/10

EL. 415.0'± TP-2

FILL: Dark brown, moist, medium dense clayey fine SAND. @ 1.3': Reddish brown with chunks of yellowish brown material. Scattered cobbles.

VERY OLD PARALIC DEPOSITS: Reddish brown, moist, weakly to moderately cemented, silty fine- to medium-grained SANDSTONE; scattered gravel to cobble-sized clasts.

Terminated at EL. 409.5 ± 04/07/10

EL. 416.0'± TP-3

FILL: Reddish brown, moist, loose, clayey fine to medium SAND; scattered gravel and a few cobbles; scattered roots in upper 12 inches.

VERY OLD PARALIC DEPOSITS: Reddish brown, moist, weakly to moderately cemented, silty fine- to medium-grained SANDSTONE; few gravel to cobble-sized clasts.

Terminated at EL. 412.5 ± 04/07/10

EL. 416.0'± TP-4

FILL: Reddish brown to brown, moist, loose, silty fine to medium SAND; scattered gravel and cobbles; roots and rootlets in upper 12 inches. Medium dense.

VERY OLD PARALIC DEPOSITS: Reddish brown, moist, weakly cemented, silty fine- to medium-grained SANDSTONE; few gravel and cobble clasts.

Terminated at EL. 409.8 ± 04/07/10

EL. 419.0'± TP-5

FILL: Brown, moist, loose, clayey fine to medium SAND; scattered gravel and cobbles; roots in upper 12 inches. @ 1': Chunk of broken concrete; scattered chunks of clayey gravel. @ 3.5': A few pieces of broken asphalt. @4'-5': Dark brown, moist, very stiff, sandy CLAY; few gravel and cobbles.

VERY OLD PARALIC DEPOSITS: Reddish brown, moist, weakly cemented, silty fine- to medium-grained SANDSTONE; scattered gravel and cobble clasts.

Terminated at EL. 411.7 ± 04/07/10

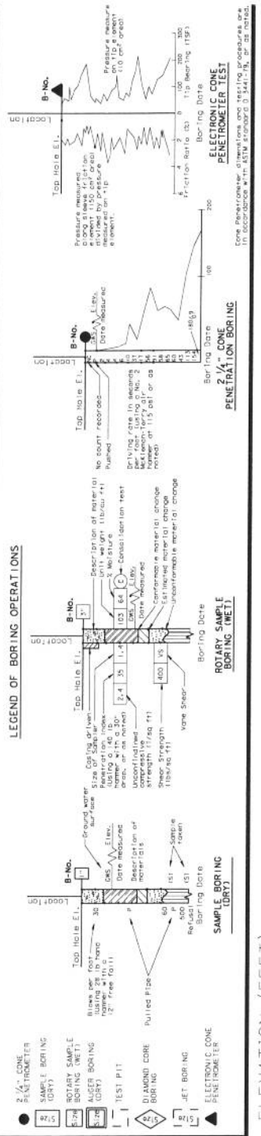
ELEVATION (FEET) 420 410 400 390

479+00 480+00 481+00 482+00 483+00

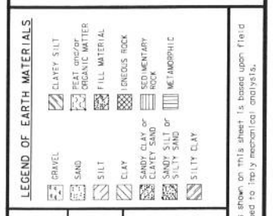
PROFILE
HOR. 1"=20'
VER. 1"=5'

IN-SITU, LAB & FIELD TEST DESIGNATIONS	Modified Split Barrel (Blows/ft)	Granular Soils
(R) 200 WASH	0-7	Very Loose
(SA) SIEVE ANALYSIS	8-18	Loose
(PD) PROCTOR DENSITY	19-36	Medium Dense
(AZ) ATTERBERG LIMITS	37-59	Dense
(C) CONSOLIDATION	60-110	Very Dense
(DS) DIRECT SHEAR	Modified Split Barrel (Blows/ft)	Cohesive Soils
(CR) CORROSION	<3	Very Soft
(EI) EXPANSION INDEX	3-5	Soft
(SE) SAND EQUIVALENT	6-10	Firm
(R) R-VALUE	11-20	Stiff
	21-39	Very Stiff
	>39	Hard

LEGEND OF BORING OPERATIONS



LEGEND OF EARTH MATERIALS



CONSISTENCY CLASSIFICATION FOR SOILS

According to the Standard Penetration Test

	SPT N-Value (Blows/Foot)	Granular	SPT N-Value (Blows/Foot)	Cohesive
	0-4	Very Loose	<2	Very Soft
	5-10	Loose	2-4	Soft
	11-30	Medium Dense	5-8	Firm
	31-50	Dense	9-15	Stiff
	50	Very Dense	16-30	Very Stiff
			31	Hard

NOTE: Classification of earth materials as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

DIST	COUNTY	ROUTE	TOTAL PROJECT	NO	SHEETS
11	SD	SR-163	8.5/9.1		

Soumitra Guha 10/08/10
GEOTECHNICAL PROFESSIONAL DATE

REGISTERED PROFESSIONAL ENGINEER — SOUMITRA GUHA — No. [illegible] — Exp. 06-30-11 — STATE OF CALIFORNIA

PLANS APPROVAL DATE

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

City of San Diego
1010 Second Avenue
San Diego, California

NINYO & MOORE
5710 Ruffin Road
San Diego, CA 92123
Phone (858) 576-1000

SOUMITRA GUHA DESIGN OVERSIGHT	DRAWN BY	ALEXIS BALANE	ROBERT T. WHEELER FIELD INVESTIGATION BY:	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	JEFFREY T. KENT PROJECT ENGINEER
SIGN OFF DATE	CHECKED BY	SOUMITRA GUHA	DATE: 4/7/10		

BRIDGE NO.	CLAIREMONT MESA BOULEVARD AND SR-163 INTERCHANGE, PHASE II
57-0368/ 57-0510	LOG OF TEST BORINGS
POST MILE 8.5/9.1	

OSF GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 2/25/05)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

CU 08-228
EA 327801

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES (PRELIMINARY STAGE ONLY)

SHEET 1 OF 3

DIST	COUNTY	ROUTE	TOTAL PROJECT	No	SHEETS
11	SD	SR-163	8.5/9.1		

Soumitra Guha 10/08/10
GEOTECHNICAL PROFESSIONAL DATE

REGISTERED PROFESSIONAL ENGINEER — SOUMITRA GUHA — No. C 58967 — EXP. 06-30-11 — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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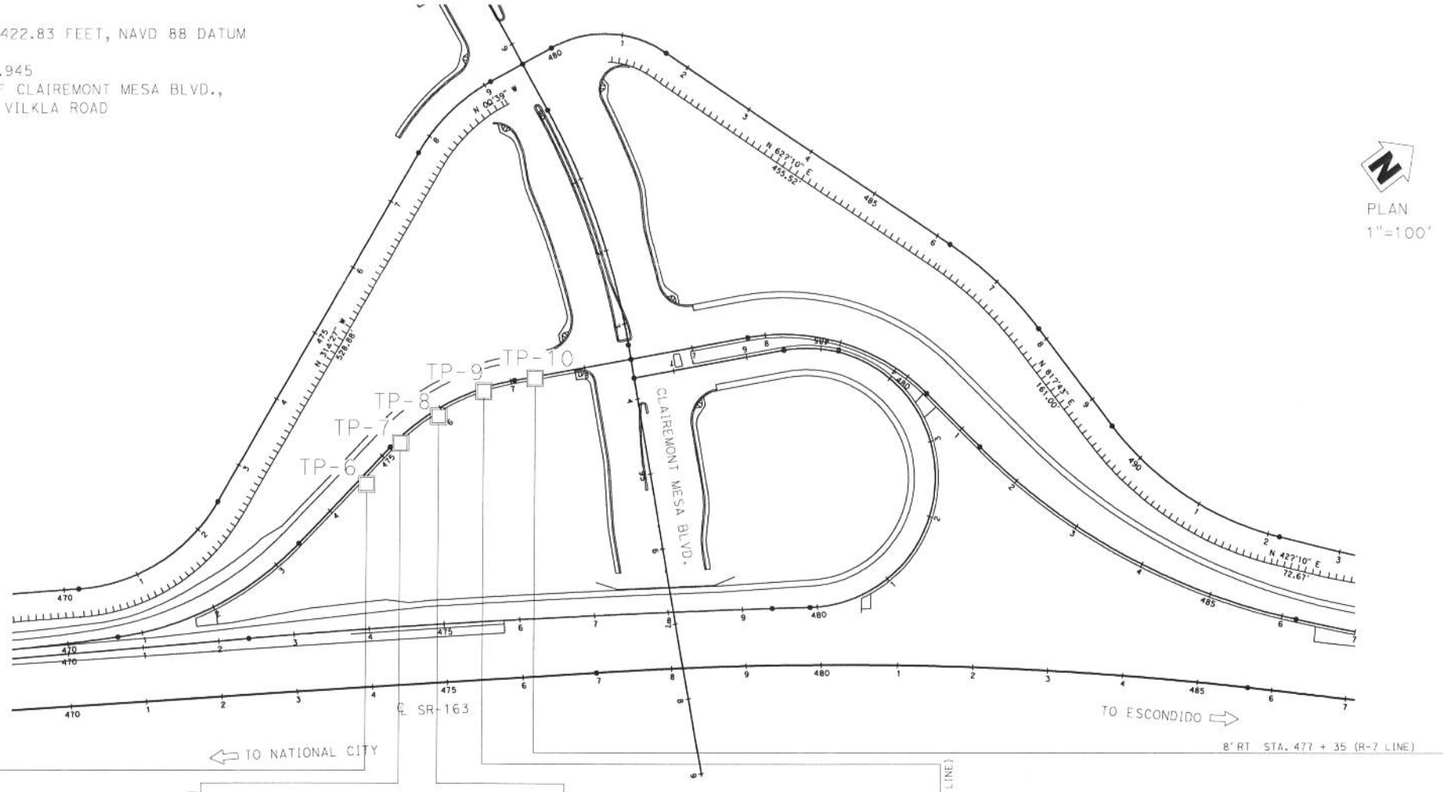
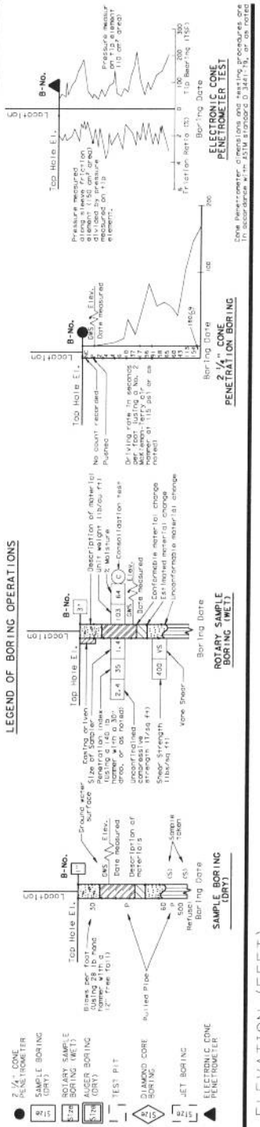
San Diego, California

NINYO & MOORE
5710 Ruffin Road
San Diego, CA 92123
Phone (858) 576-1000

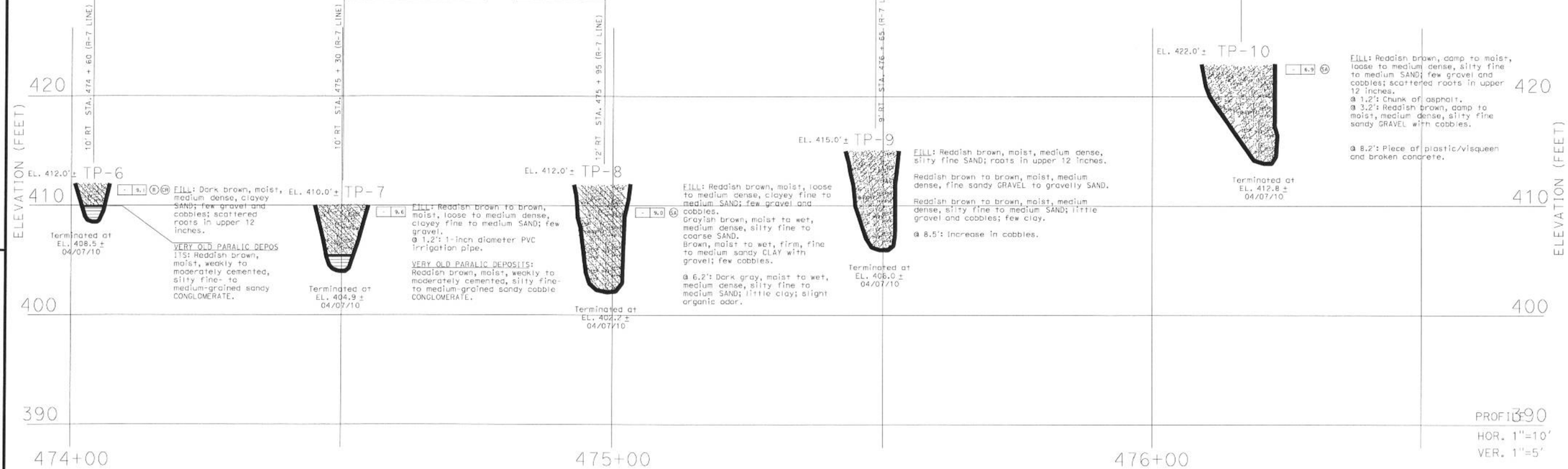
BENCH MARK

B.M. 163 CMB 1 ELEVATION: 422.83 FEET, NAVD 88 DATUM
BRASS DISK
N: 1883444.491, E: 6289185.945
E.C. OF CURVE ON CENTER OF CLAIREMONT MESA BLVD.,
350 FEET EAST OF KEARNY VILKLA ROAD





IN-SITU, LAB & FIELD TEST DESIGNATIONS	Modified Split Barrel (Blows/ft)	Granular Soils
(#) 200 WASH	0-7	Very Loose
(SA) SIEVE ANALYSIS	8-18	Loose
(MD) PROCTOR DENSITY	19-36	Medium Dense
(AZ) ATTERBERG LIMITS	37-59	Dense
(C) CONSOLIDATION	60-110	Very Dense
(DS) DIRECT SHEAR	Modified Split Barrel (Blows/ft)	Cohesive Soils
(CR) CORROSION	<3	Very Soft
(EI) EXPANSION INDEX	3-5	Soft
(SE) SAND EQUIVALENT	6-10	Firm
(R) R-VALUE	11-20	Stiff
	21-39	Very Stiff
	>39	Hard



SOUMITRA GUHA DESIGN OVERSIGHT	DRAWN BY	ALEXIS BALANE	ROBERT T. WHEELER FIELD INVESTIGATION BY:	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	JEFFREY T. KENT PROJECT ENGINEER
SIGN OFF DATE	CHECKED BY	SOUMITRA GUHA	DATE: 4/7/10		

BRIDGE NO.	CLAIREMONT MESA BOULEVARD AND SR-163 INTERCHANGE, PHASE II
57-0368/ 57-0510	LOG OF TEST BORINGS
POST MILE 8.5/9.1	

OSF GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 2/25/05)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

CU 08-228
EA 327801

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES (PRELIMINARY STAGE ONLY)

SHEET 2 OF 3

DIST	COUNTY	ROUTE	TOTAL PROJECT	NO	SHEETS
11	SD	SR-163	8.5/9.1		

Soumitra Guha 10/08/10
GEOTECHNICAL PROFESSIONAL DATE

REGISTERED PROFESSIONAL ENGINEER — SOUMITRA GUHA — No. C 59967 — Exp. 06-30-11 — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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City of San Diego
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San Diego, California

NINYO & MOORE
5710 Ruffin Road
San Diego, CA 92123
Phone (858) 576-1000

BENCH MARK
B.M. 163 CMB 1 ELEVATION: 422.83 FEET, NAVD 88 DATUM
BRASS DISK
N: 1883444.491, E: 6289185.945
E.C. OF CURVE ON CENTER OF CLAIREMONT MESA BLVD.,
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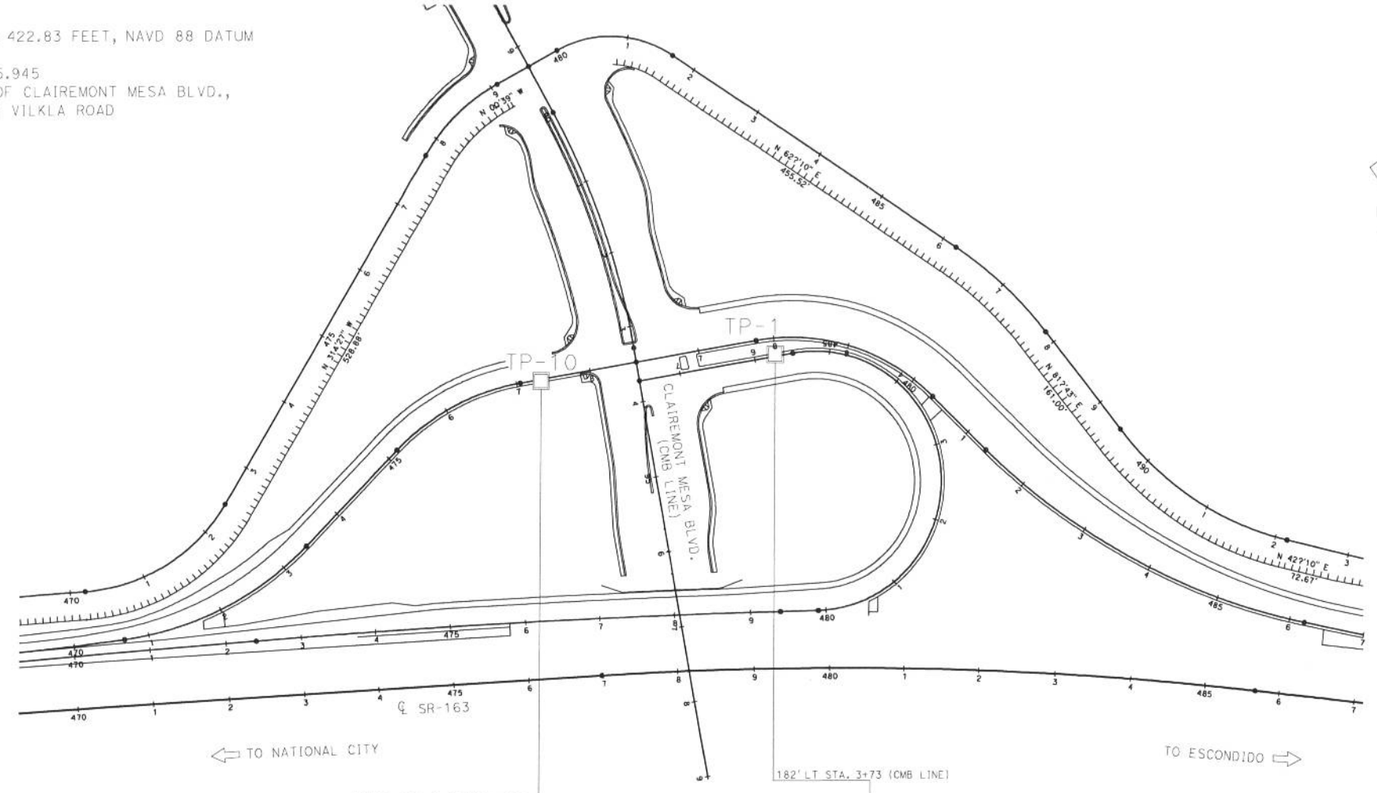
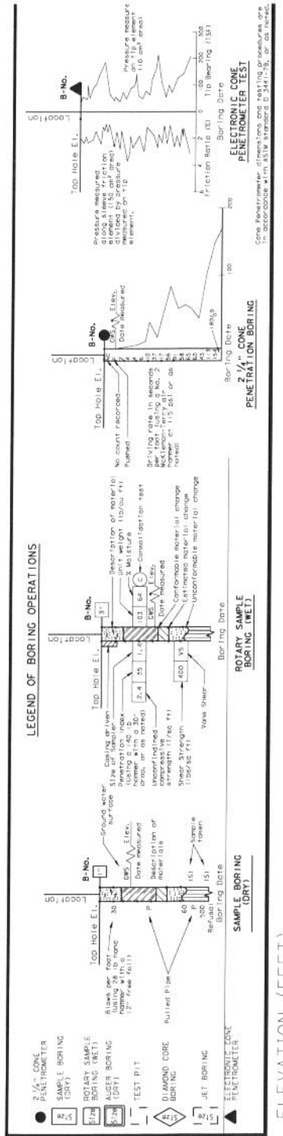
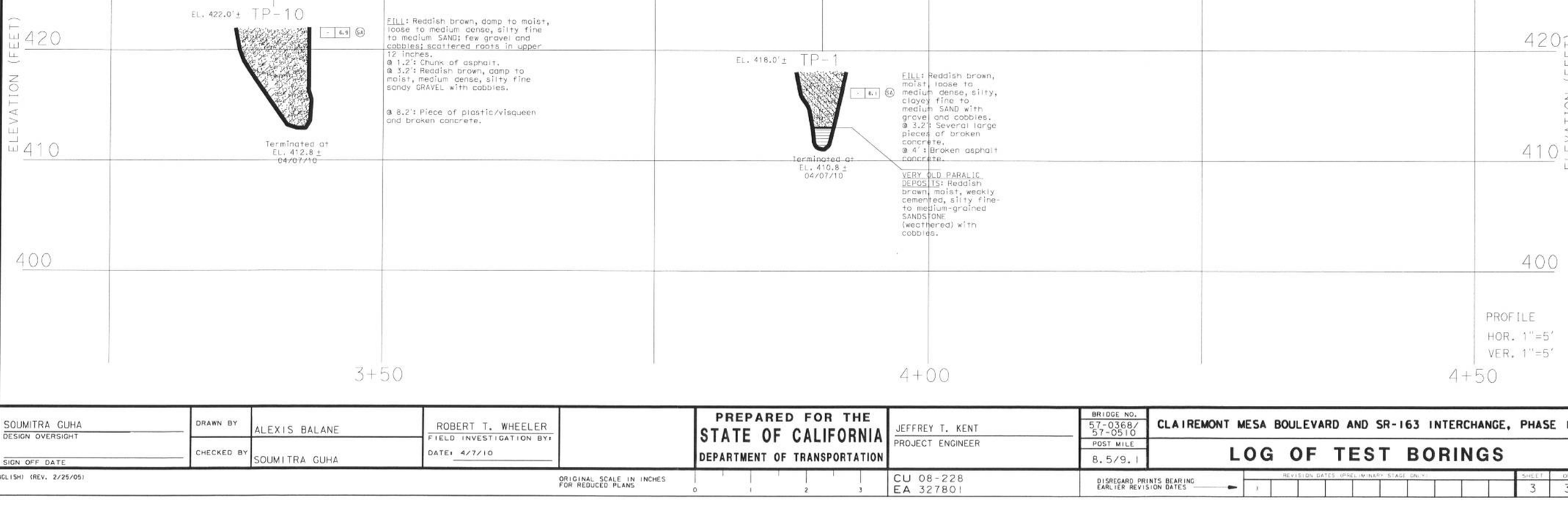


PLAN
1"=100'

IN-SITU, LAB & FIELD TEST DESIGNATIONS	Modified Split Barrel (Blows/ft)	Granular Soils
(W) 200 WASH	0-7	Very Loose
(SA) SIEVE ANALYSIS	8-18	Loose
(PD) PROCTOR DENSITY	19-36	Medium Dense
(AZ) ATTERBERG LIMITS	37-59	Dense
(C) CONSOLIDATION	60-110	Very Dense
(DS) DIRECT SHEAR	Modified Split Barrel (Blows/ft)	Cohesive Soils
(CR) CORROSION	<3	Very Soft
(EI) EXPANSION INDEX	3-5	Soft
(SE) SAND EQUIVALENT	6-10	Firm
(R) R-VALUE	11-20	Stiff
	21-39	Very Stiff
	339	Hard





SOUMITRA GUHA DESIGN OVERSIGHT	DRAWN BY	ALEXIS BALANE	ROBERT T. WHEELER FIELD INVESTIGATION BY:	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	JEFFREY T. KENT PROJECT ENGINEER
SIGN OFF DATE	CHECKED BY	SOUMITRA GUHA	DATE: 4/7/10		

BRIDGE NO.	CLAIREMONT MESA BOULEVARD AND SR-163 INTERCHANGE, PHASE II
57-0368/ 57-0510	LOG OF TEST BORINGS
POST MILE 8.5/9.1	

CU 08-228
EA 327801

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES (PRELIMINARY STAGE ONLY): 1

SHEET 3 OF 3

OSF GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 2/25/05)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

APPENDIX B

LABORATORY TESTING

Classification

Soils were visually and texturally classified in accordance with the Unified Soil Classification System (USCS) in general accordance with ASTM D 2488. Soil classifications are indicated on the LOTB sheets.

Moisture Content

The moisture content of samples obtained from the exploratory excavations was evaluated in accordance with ASTM D 2216. The test results are presented on the LOTB sheets in Appendix A.

Gradation Analysis

Gradation analysis tests were performed on selected representative soil samples in general accordance with ASTM D 422. The grain-size distribution curves are shown on Figures B-1 through B-5. These test results were utilized in evaluating the soil classifications in accordance with the USCS.

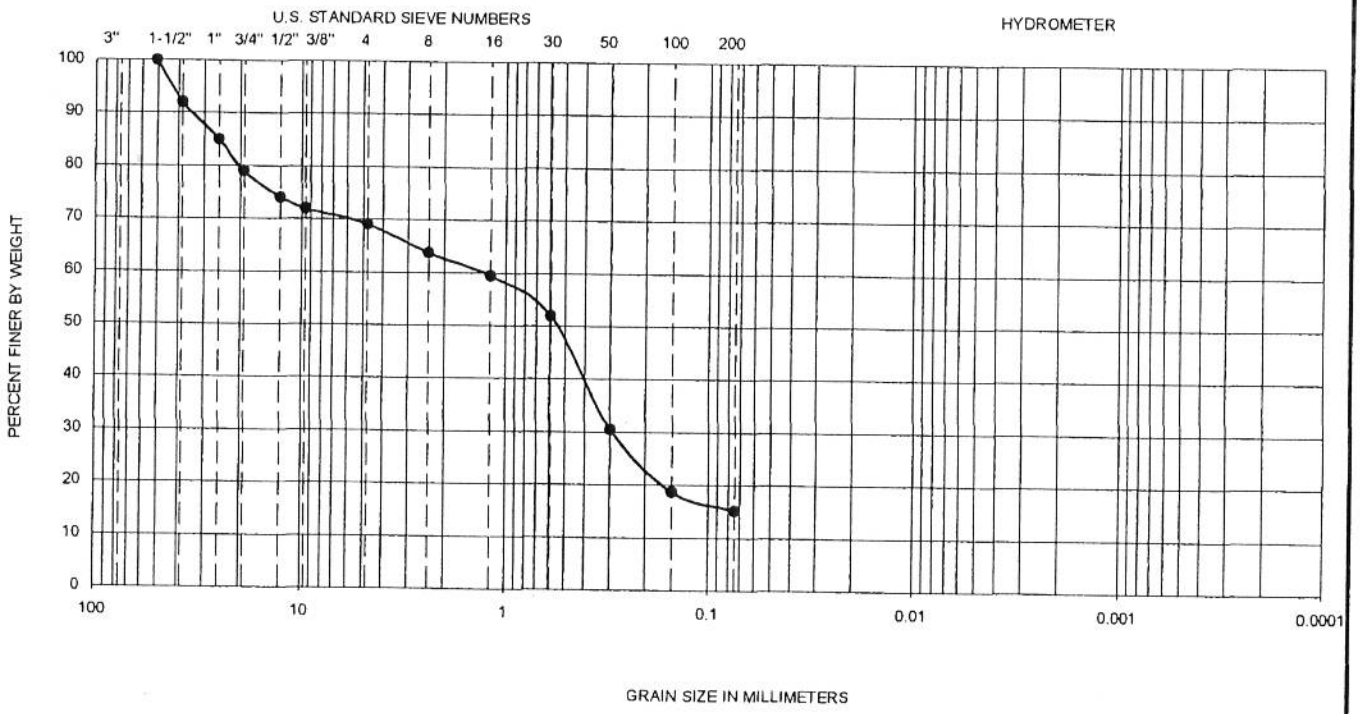
Soil Corrosivity Tests

Soil pH and resistivity tests were performed on representative samples in general accordance with CT method 643. The soluble sulfate and chloride content of selected samples were evaluated in general accordance with CT 417 and CT 422, respectively. The test results are presented on Figure B-6.

R-Value

The resistance value, or R-value, for near-surface site soils was evaluated in general accordance with CT 301. Samples were prepared and evaluated for exudation pressure and expansion pressure. The equilibrium R-value is reported as the lesser or more conservative of the two calculated results. The test results are summarized on Figure B-7.

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay



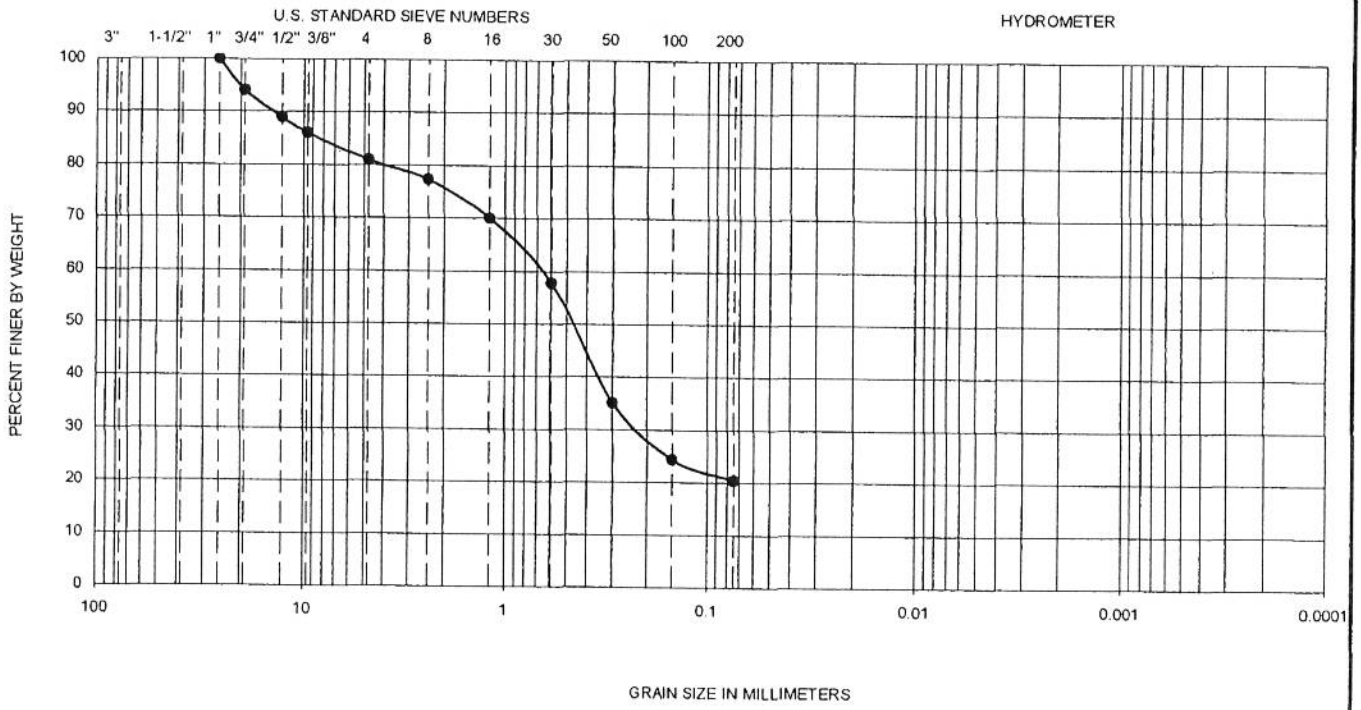
Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	U.S.C.S
●	TP-1	1.0-3.0	--	--	--	--	--	--	--	--	15	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. 106665001 / DATE 10/10	CLAIREMONT MESA BOULEVARD AND SR-163 INTERCHANGE, PHASE II DISTRICT 11, SAN DIEGO, CALIFORNIA	B-1

106665001 SIEVE TP-1 @ 1.0-3.0.xls

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay



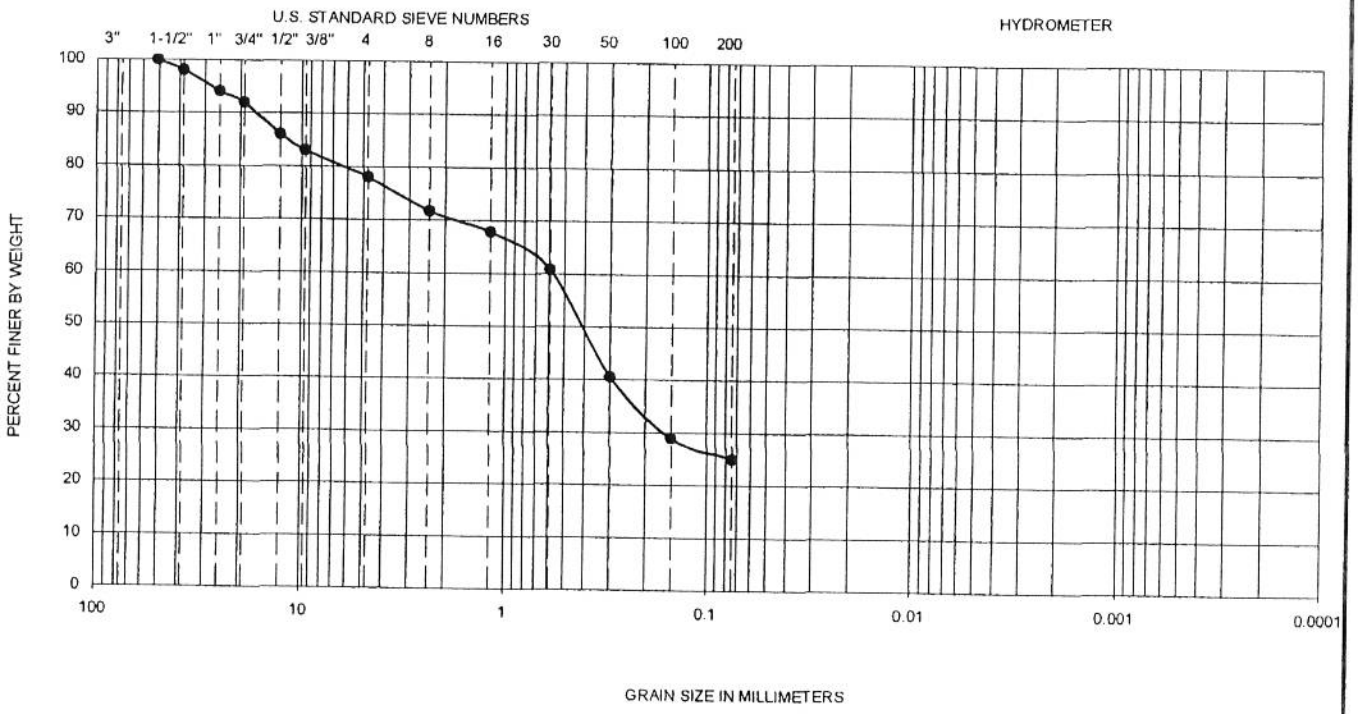
Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	U.S.C.S
●	TP-4	3.0-3.5	--	--	--	--	--	--	--	--	20	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. 106665001 / DATE 10/10	CLAIREMONT MESA BOULEVARD AND SR-163 INTERCHANGE, PHASE II DISTRICT 11, SAN DIEGO, CALIFORNIA	B-2

106665001 SIEVE TP-4 @ 3.0-3.5.xls

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay



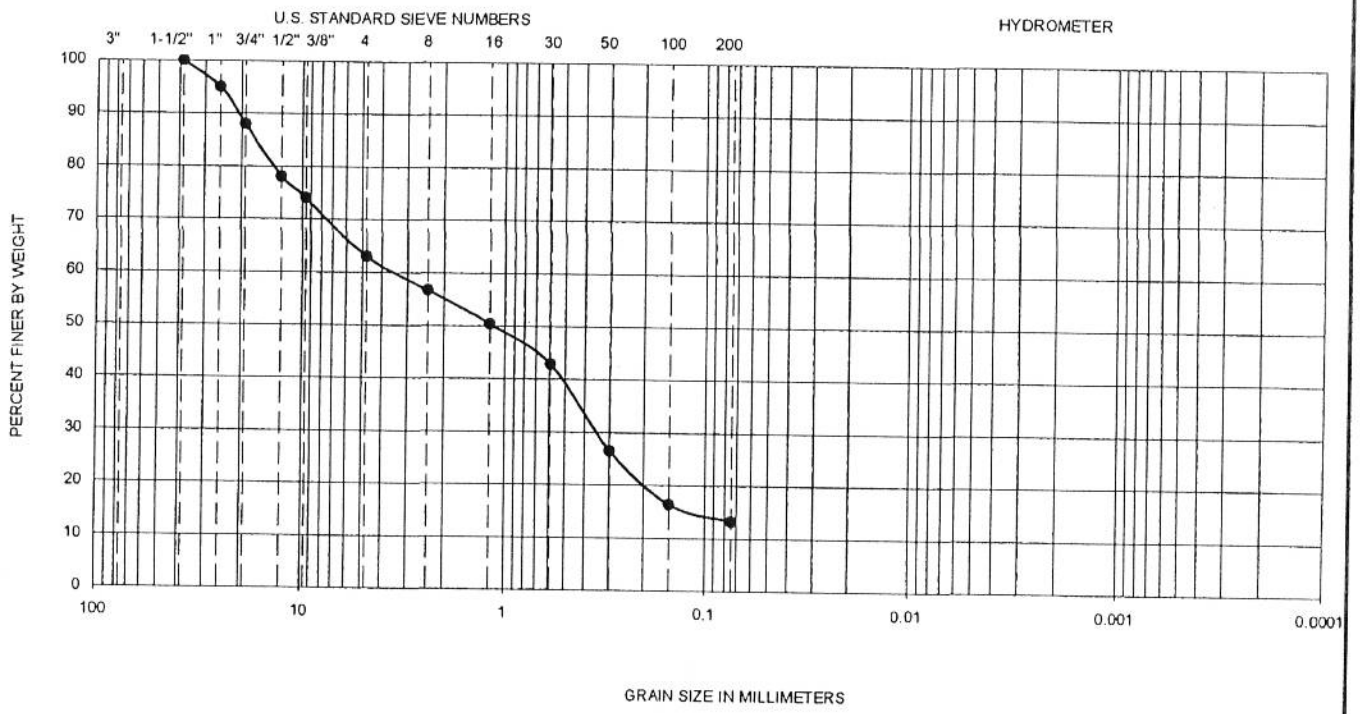
Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	U.S.C.S
●	TP-5	0.5-1.5	--	--	--	--	--	--	--	--	25	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. 106665001 / DATE 10/10	CLAIREMONT MESA BOULEVARD AND SR-163 INTERCHANGE, PHASE II DISTRICT 11, SAN DIEGO, CALIFORNIA	B-3

106665001 SIEVE TP-5 @ 0.5-1.5.xls

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay



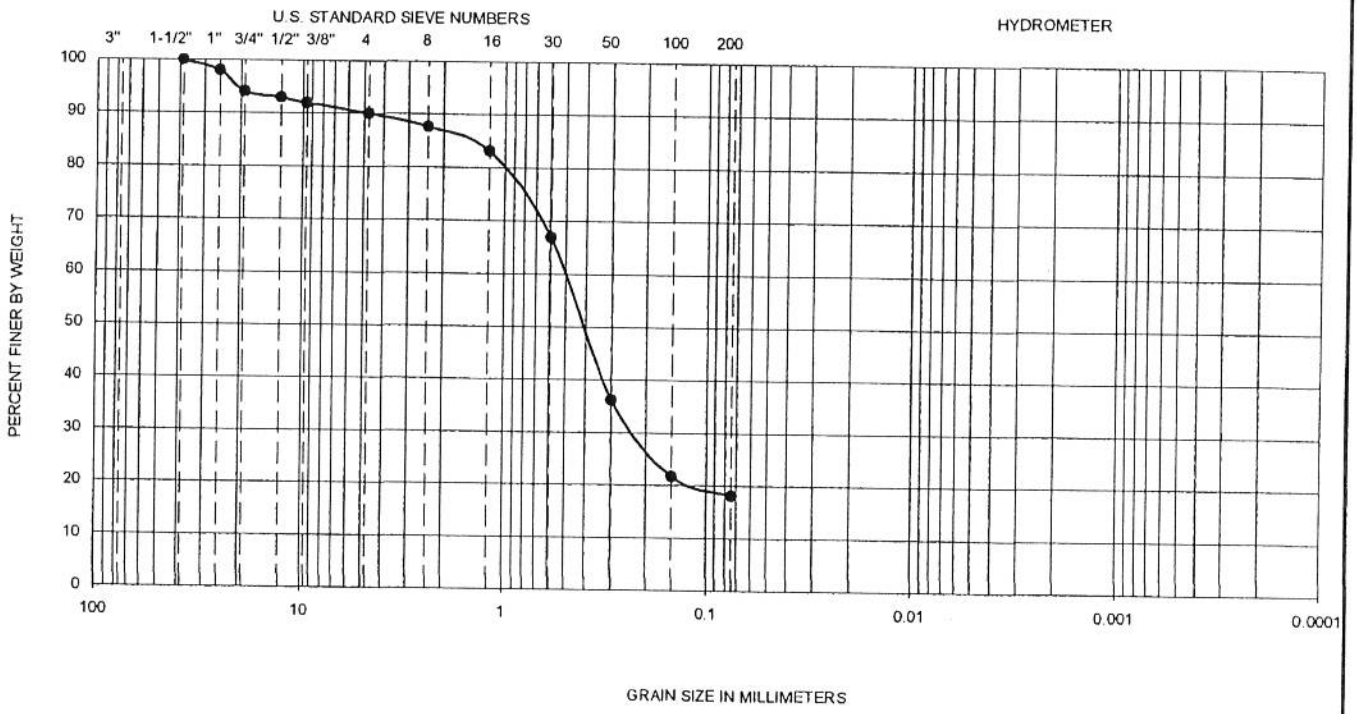
Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	U.S.C.S
●	TP-8	2.5-3.0	--	--	--	--	--	--	--	--	13	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. 106665001 / DATE 10/10	CLAIREMONT MESA BOULEVARD AND SR-163 INTERCHANGE, PHASE II DISTRICT 11, SAN DIEGO, CALIFORNIA	B-4

106665001 SIEVE TP-8 @ 2.5-3.0.xls

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay



Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	U.S.C.S
●	TP-10	0.5-2.0	--	--	--	--	--	--	--	--	18	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. 106665001 / DATE 10/10	CLAIREMONT MESA BOULEVARD AND SR-163 INTERCHANGE, PHASE II DISTRICT 11, SAN DIEGO, CALIFORNIA	B-5

106665001 SIEVE TP-10 @ 0.5-2.0.xls

SAMPLE LOCATION	SAMPLE DEPTH (FT)	pH [1]	RESISTIVITY [1] (Ohm-cm)	SULFATE CONTENT [2]		CHLORIDE CONTENT [3] (ppm)
				(ppm)	(%)	
TP-2	1.0-2.0	5.7	1,470	290	0.029	320
TP-6	0.5-1.5	5.9	2,550	380	0.038	390

[1] PERFORMED IN GENERAL ACCORDANCE WITH CALIFORNIA TEST METHOD 643
[2] PERFORMED IN GENERAL ACCORDANCE WITH CALIFORNIA TEST METHOD 417
[3] PERFORMED IN GENERAL ACCORDANCE WITH CALIFORNIA TEST METHOD 422

Ninyo & Moore		CORROSIVITY TEST RESULTS	FIGURE
PROJECT NO.	DATE	CLAIREMONT MESA BOULEVARD AND SR-163 INTERCHANGE, PHASE II DISTRICT 11, SAN DIEGO, CALIFORNIA	B-6
106665001	10/10		

SAMPLE LOCATION	SAMPLE DEPTH (FT)	SOIL TYPE	R-VALUE
TP-4	0.5-1.5	Silty SAND (SM)	61
TP-6	0.5-1.5	Clayey SAND (SC)	41

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2844/CT 301

Ninyo & Moore		R-VALUE TEST RESULTS	FIGURE
PROJECT NO.	DATE	CLAIREMONT MESA BOULEVARD AND SR-163 INTERCHANGE, PHASE II DISTRICT 11, SAN DIEGO, CALIFORNIA	B-7
106665001	10/10		

THE CITY OF SAN DIEGO

August 26, 2014

Mr. Ed Hajj, PE
Caltrans District 11
4050 Taylor Street
San Diego, California 92103

Subject: Clairemont Mesa Boulevard/SR-163 Interchange Phase II – Water Source Letter

Dear Mr. Ed Hajj:

Sufficient quantity of potable water is available within the project limits for construction of the Clairemont Mesa Boulevard/SR-163 Interchange Phase II Project.

The Contractor shall be responsible for obtaining and renting a water meter(s) for a fee from the Meter Shop Supervisor at Chollas Operations, 2797 Caminito Chollas. A meter shall be installed whenever water is required by the Contractor. The Contractor shall pay the regular monthly fee for water and a fee for quantity of water used.

Any use of water not purchased by the Contractor during construction is subject to a fine of $500 or six (6) months imprisonment, or both, under State Penal Code Section 499. Additionally, the Contractor would be subject to a civil liability to the City for such misappropriation.

Please feel free to contact me at (619) 533-4661 or by email at jmanchester@sandiego.gov should you have any questions

Best Regards,

Jeff Manchester

Jeffrey R Manchester, PE, QSD/P
Project Manager

cc: Oscar Aguilar, PE, Caltrans District 11
Edgar Camerino, PE, Rick Engineering
Mark Koll, PE, City of San Diego

CITY OF SAN DIEGO PUBLIC WORKS DEPARTMENT

Public Works Department – Right of Way Design
525 B St., Suite 750, MS 908A, San Diego, CA 92101
Tel (619) 533-5200 Fax (619) 236-5175

THE CITY OF SAN DIEGO

August 29, 2014

Mr. Rodney Mayfield
Project Landscape Architect
Department of Transportation
District 11
4050 Taylor Street, M.S. 120
San Diego, CA 92110

Dear Mr. Mayfield:

Subject: Installation of Landscape and Irrigation, and Perform Plant Establishment on State Route 163 North of Clairemont Mesa Boulevard Crossing

This is in response to your letter dated August 21, 2014 regarding water availability for the above subject project. Based upon the volume and duration of the project you provided, the City of San Diego has sufficient and available potable water capacity to serve your project.

Please note that effective July 1, 2014, the City of San Diego moved to Level 1 Drought Alert per the attached memo dated June 24, 2014. The Level 1 Drought Watch Condition lists voluntary water conservation measures that are added to the City's existing permanent restrictions. Please also note that utilizing existing potable water and/or irrigation meters City-wide will be subject to any City of San Diego City Council drought actions to conserve water, if enacted by City Council.

If you have any questions, please call me at 619-446-5420 or email me at Mrastakhiz@sandiego.gov.

Sincerely,

Mehdi Rastakhiz, PE
Associate Civil Engineer
Development Services Department
Water and Sewer Development Review
1222 First Avenue, MS 401
San Diego, CA 92101

Attachment: Level 1 Drought Alert memo dated June 24, 2014

THE CITY OF SAN DIEGO

MEMORANDUM

DATE: June 24, 2014

TO: All Department Directors

FROM: Halla Razak, Director of Public Utilities

SUBJECT: Level 1 Drought Alert starting July 1, 2014

The City of San Diego was in a Stage 2 Drought Alert Condition from June 1, 2009, through May 26, 2011. During that time, City departments played a vital role in saving water and setting a good example for the citizens in our community. During the height of that drought, City departments reduced metered water consumption by 31.4% from pre-drought levels.

The City Council recently approved moving the City to a Level 1 Drought Watch Condition starting July 1, 2014. This memo is provided to assist Departments in identifying water saving opportunities, creating water conservation plans and complying with permanent and voluntary water use regulations.

PRIOR WATER CONSERVATION EFFORTS

From 1992 to 1999, the Water Department implemented a City Facilities Retrofit Program that installed more than 2,384 ultra-low flush toilets and 702 urinals in 494 City owned and operated facilities. The City wanted to show its commitment to water conservation by installing the water conserving plumbing fixtures in our own facilities. That program was completed in 1999 and the biggest retrofit job, that of Qualcomm Stadium in 1998 (365 toilets and 196 urinals) in time for Super Bowl XXXII, was used in a national water conservation publication/article.

The Public Utilities Department has also worked for many years with the Park and Recreation Department to create water use budgets for City parks. Water budgets are estimates of how much water existing landscapes need based on weather information, plant watering needs, type of soil and irrigation systems used, and these estimates are translated into run times per irrigation valve to allow them to use water efficiently. Throughout the last drought, Park and Recreation staff closely monitored water consumption in all its irrigated areas, and this diligence was evident in the achieved 31% water use reduction.

PERMANENT WATER USE RESTRICTIONS

Before the City lifted Level 2 mandatory restrictions in 2011, City Council and City staff agreed that some of these restrictions should remain in place. Hence the San Diego Municipal Code Section SDMC §67.3803 was revised to reflect the permanent water use restrictions that are in effect every day in San Diego. These include the following limitations:

a) No runoff/excessive irrigation leaving the property;
b) Repair leaks upon discovery or within seventy-two hours of notification;
c) No watering of paved areas;
d) No overfilling swimming pools and spas;
e) No non-recirculating decorative water fountains;
f) Car washing only in a commercial car wash or using a hose with shutoff nozzle or a bucket;
g) New buildings must recycle cooling system water and car wash water;
h) Restaurants will only serve and refill water upon request;
i) Hotel guests must have the option of not laundering towels and linens daily; and
j) No watering after 10 am and before 4 pm (winter)/before 6 pm (summer).

Please ensure that staff within your Department is aware of these permanent water use restrictions.

VOLUNTARY WATER USE RESTRICTIONS

The Level 1 Drought Watch Condition lists voluntary water conservation measures that are added to the City's existing permanent water restrictions. These voluntary measures go into effect on July 1, 2014. Although these measures are voluntary for citizens, it is advised that City Departments take the lead and treat them as mandatory:

1) Landscape irrigation limited to three days per week;
2) When watering without an irrigation system a shut-off nozzle or garden hose sprinkler system on a timer is required;
3) Washing vehicles limited to the same schedule as irrigation (except for: boats which may be washed after use; vehicles with health/safety issues; at a commercial carwash that recycles water);
4) Use recycled or non-potable water for construction purposes;

5) Fire hydrants for firefighting only;
6) Construction operations can use water only as required by regulatory agencies; and
7) Irrigation is not permitted during rain event.

RECOMMENDED CONSERVATION MEASURES

Indoor Water Use

If the facility is one of those that received water conserving plumbing fixtures through the City Facilities Retrofit Program, City staff can inspect these fixtures for proper operation and leaks. Self-closing faucets should shut off after a determined amount of seconds. Make sure the valves are not sticking, which would prevent the faucet from shutting off automatically. If faucet aerators have been removed, install new ones that use 1.0 gallons per minute. If the facility has tank style toilets, place dye tablets or food coloring inside the tank and observe if the coloring makes it way to the bowl. This would indicate a leak and would require an adjustment or replacement of the toilet flapper mechanism. Always repair leaks, as even small ones can waste hundreds of gallons of water.

If the facility still has high volume plumbing fixtures, replace them with water efficient ones, such as high-efficiency toilets and urinals, and faucets with self-closing features. There may be some incentives available for replacing these older fixtures. Check with the Water Conservation Program (Luis Generoso at 619-533-5258) for up-to-date information on incentives for public facilities.

Here are a few other measures City staff can take:

- Increase employee awareness of the need to conserve water. The Water Conservation Program (contact Luis Generoso at 619-533-5258) has various brochures and reference materials that can help you.
- Install signs encouraging water conservation in employee and customer restrooms.
- Assign an employee to monitor water use and waste within the facility. Read your water meter weekly to monitor the success of your water conservation efforts, and to detect leaks. Monitor water usage when reviewing water bills. Information on your historic water usage can be obtained calling our Water Conservation Program.
- Check for obvious leaks, where there are consistent water puddles.
- Repair dripping faucets and showers, and continuously running toilets.
- Install faucet aerators where possible.
- Shut off water supply to equipment rooms not in use.
- Shut off cooling equipment when not in use, and minimize water used in cooling units. There may be a need to replace the cooling tower conductivity controller. Check for incentives offered for these controllers.
- Review rebates available in Southern California at http://www.bewaterwise.com .

If there are other function areas like cafeterias/food preparation areas, please contact our Water Conservation Program for tips on how to conserve water specific to those areas.

Outdoor Consumption

Significant water savings can be realized if attention is given to how much water we use outdoors. Here are things City staff can readily implement to help reduce outdoor water consumption:

- Stop hosing down sidewalks, driveways and parking lots. If you need to do so for health and safety reasons, consider using a water broom or a water efficient power washer. For more information, visit our website at www.sandiego.gov/water/conservation.
- Operate your irrigation system to water before 10 a.m. or after 6:00 p.m. to minimize water loss from evaporation or windy conditions.
- Water landscape only when needed. Usually two to three times a week is sufficient. Or you can use the Landscape Watering Calculator at the website mentioned above to prepare a water efficient irrigation schedule based on your plants watering needs, weather date, soil type, and irrigation system used. This easy-to-use tool developed by the Public Utilities Department has been recognized with multiple awards, and is endorsed by a number of landscape industry professionals.
- Consider installing a weather based irrigation controller. These "smart controllers" automatically adjust irrigation run times as the season/weather changes and can shut off your system when it rains. Check with our Water Conservation Program for incentives that may be available.
- Make sure your sprinklers irrigate only the landscape area and not driveways and parking lots. Avoid irrigation runoff that causes storm water pollution.
- Do not water on windy days.
- Should landscape conversion be an option, consider water efficient plants and irrigation systems. These plants provide color and beauty, and the plant choices are numerous. Check our website or visit the Water Conservation Garden at Cuyamaca College (www.thegarden.org) for more information. Rebates for landscape and irrigation system conversions are also available.

More information on how you can save water at home and at work can be found on the following websites:

City of San Diego
http://www.WasteNoWater.org

San Diego County Water Authority
http://www.sdcwa.org/whenindrought

Metropolitan Water District of Southern California
http://www.bewaterwise.com/

RECYCLED WATER OPTION

If the facility is located along the existing recycled water pipeline route you might consider retrofitting your irrigation system to accept recycled water. Irrigation retrofit rebates are now available under a Metropolitan Water District pilot program. For an interactive "recycled water availability zone map" visit http://www.sandiego.gov/water/recycled/availability/index.shtml or contact Dawnn Jackson at 619-533-4264.

Thank you for the cooperation in conserving water at City facilities and for providing a good example to the public. Please let me know if you should have any questions.

Halla Razak
Director of Public Utilities

LSG/lsg