

R E P O R T

GEOTECHNICAL INVESTIGATION PALOMAR MEDICAL CENTER WEST ROADWAYS, PARKING, HARDSCAPES, UTILITES AND LANDSCAPES

**SW of Citracado Parkway and Vineyard Avenue
Escondido, California**

Prepared For

Palomar Pomerado Health
15255 Innovation Drive
Suite 204
Poway, California 92128-3410

URS

URS Corporation
915 Wilshire Boulevard, Suite 700
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Project No. 29401967

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January 5, 2007

Palomar Pomerado Health
15255 Innovation Drive, Suite 204
San Diego, CA 92128-3410

Attention: Mr. Michael Shanahan
Director, Facilities, Planning and Development

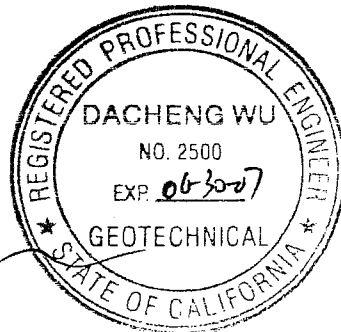
Subject: Report
Geotechnical Investigation
Roadways, Parking, Hardscapes, Utilities and Landscapes
Palomar Medical Center West
SW of Citracado Parkway and Vineyard Avenue, Escondido, California

Dear Mr. Shanahan:

URS Corporation is pleased to present our Report, "Geotechnical Investigation, Roadways, Parking, Hardscapes, Utilities and Landscapes, Palomar Medical Center West, Southwest of Citracado Parkway and Vineyard Avenue, Escondido, California". This report summarizes the results of our investigation and contains our conclusions and geotechnical recommendations for design and construction of the project.

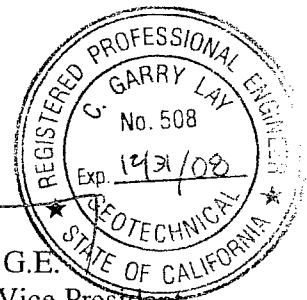
If you have any questions regarding this report, please contact us. We look forward to being of further assistance as the project progresses.

Very truly yours,



Da Cheng Wu, P.E., G.E.
Principal Engineer

William E. Gates, S.E.
Principal Engineer/Vice President



C. Garry Lay, P.E., G.E.
Principal Engineer/Vice President
Manager, Geotechnical Division

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1.0 INTRODUCTION

1.1 PROJECT BACKGROUND

This report presents the results of a series of geotechnical investigation performed by URS Corporation (URS) at the proposed Palomar Medical Center West to be located to the southwest of Citracado Parkway and Vineyard Avenue in the City of Escondido, California, approximately as shown on Figure 1. The site is located at approximately 33.1229 N and 117.1186 W° (NAD83), and is also known as the Escondido Research and Technology Center (ERTC) site. The proposed new medical center is shown on the Site Plan, Figure 2A. This geotechnical investigation was prepared specifically to address geotechnical conditions at the locations of roads, parking lots, site drainage, subterranean utilities, and landscaped areas. The OSHPD-regulated acute care buildings and the central plant for this project were addressed in a separate URS report dated April 21, 2006 with several addendums. The site was previously investigated by GEOCON in 2003 and was mass-graded under the purview of Geotechnical Exploration Incorporated (GEI) in 2005. The estimated thickness of cut and fill across the entire site as a result of the previous grading is shown on Figure 2B.

1.2 REPORT OBJECTIVE

The purpose of this study was to provide geotechnical recommendations for the design and construction of the proposed roads, parking lots, site drainage, subterranean utilities, hardscape and landscaped areas, which will be under the purview and jurisdiction of the City of Escondido.

2.0 FIELD INVESTIGATION AND LABORATORY TESTING

2.1 FIELD INVESTIGATION

A geotechnical field investigation at the medical center site, i.e., the northern portion of the ERTC site consisted of drilling 7 borings in the area for the hospital buildings and 5 borings in the area for the central plant by URS between May 2005 and January 2006. The field investigation locations are shown on the Site Plan, Figure 2A.

Borings in the areas for buildings, i.e., B-1, B-1A, and B-5 through B-9, were advanced to depths of 20 feet to 92 feet below the ground surface. Coring through rock was performed at these borings, except for B-1A, which was advanced by means of ODEX air hammer method. The borings in the central plant area, designated B-2, B-2A, and B-10 through B-12 were advanced by means of hollow-stem auger and ODEX air hammer drilling methods to depths of 6 to 89 feet. No undisturbed soil samples in fill were obtained due to the presence of abundant cobbles and boulders in fill. Logs of borings are attached in Appendix A.

In addition to the borings, URS also excavated a total of 94 shallow test pits in the rock cut areas and along the cut-to-fill lines to verify the transition zone between cut and fill. The locations of these test pits are also shown on Figure 2A. A summary of the test pits is included in Appendix A, as Table A-1.

2.2 LABORATORY TESTING

Laboratory testing was performed on selected samples obtained from URS's field investigation. The purpose of the laboratory testing was to help evaluate the geotechnical and chemical properties of the subsurface materials. The laboratory tests performed consist of unconfined compression testing of rock core samples and corrosivity testing of near surface soil. The results of the laboratory tests and additional details of the laboratory testing are provided in Appendix B.

3.0 REGIONAL AND SITE GEOLOGIC CONDITIONS

3.1 REGIONAL AND LOCAL GEOLOGY

The site is located entirely within a series of hills composed of granitic rocks of the Cretaceous age southern California batholith. The Escondido Valley is located east of the site and is underlain by Quaternary age alluvium. Figure 3 shows the general geologic setting for the site and surrounding area.

3.2 SITE SURFACE CONDITIONS

The overall ERTC site is a relatively flat rough graded building pad at an elevation of approximately 750 feet above mean sea level (msl). The pad was constructed by cutting down a previous hill consisting of granitic rock and filling the adjacent low areas surrounding the hill with fill consisting of soil and rock pieces broken down from the intact rock. The resulting cut/fill transition line forms an irregular ring around the center of the site as shown in Figures 2A and 2B. There are descending 2:1, horizontal to vertical (H:V) fill slopes on the northeastern and southwestern portions of the site. The northeastern slope at the location of the proposed central plant is about 80 feet in height. The site is currently vacant, however there are numerous soil and rock debris piles left on the site surface last observed in early 2006.

3.3 SITE SUBSURFACE CONDITIONS

The subsurface geologic materials at the site consist of artificial fill (Af) underlain by granitic rocks (Kg), as shown on the Geologic Map, Figure 3. The subsurface distributions of the fill and bedrock with respect to the proposed development are shown on the North-south and East-west Cross-sections, Figures 4A and 4B. The locations of the cross-sections are shown on the Site Plan, Figure 2A.

During our investigation, the subsurface along the cut/fill transition line was found to have thickness of fill ranging from approximately 0.5 to 7.5 feet around the general trend of the cut/fill transition line. In the north-central area of the site, the fill is relatively shallow, i.e., about five feet or less, while the fill thickness increases beyond the area of the proposed hospital building. For example, the fill is about 30 to 35 feet in the northeastern portion of the site. The fill consists of mostly a mixture of sands, gravels, cobbles, and boulders to 4 feet in size, according to the compaction report by GEI. Our field exploration revealed that the fill has abundant large voids as evidenced by borehole caving and lose of drilling fluid in the borings in fill. Further, our

review of the site grading history indicates that large boulders in the existing fill was not placed in the typical windrow manner, therefore the quality of the existing fill is considered substandard.

Immediately below the fill was varying thicknesses of weathered bedrock, which graded to harder and less weathered rock at depth. These materials are the igneous granitic rocks of the Green Valley Tonalite (Kgr). The rocks were found to be mostly light gray to brownish gray, with steep joints and fractures. The quality of rock is low near the surface, and increases with depth.

3.4 GROUNDWATER

According to the California Department of Water Resources (DWR) Well Data Records, no depth to groundwater data is available for the immediate site area. Groundwater data for Well No. 12S02W21N001S (approximately 9 feet below ground surface recorded in 1987), Well No. 120S2W29H001S (approximately 18 feet below ground surface recorded in 1987), and Well No. 120S2W29H001S (approximately 7 feet below ground surface recorded in 1987) does exist, however these wells are approximately five miles southeast of the site in the Escondido valley, and the top of the wells are around an elevation of approximately 650 feet above msl (DWR, 2006).

Additionally, considering the site is within the granitic hills surrounding the Escondido valley, true groundwater table is not expected within the upper 100 feet. However, perched groundwater was encountered in the borings to depth of about 56 feet, which was suspected to be resulted of water seepage from the last storm through the fills.

3.5 FAULTS, SEISMICITY AND GEOLOGICAL HAZARDS

Discussions of nearby faults, site seismicity, geological and seismic hazards of the site were included in our report of April 21, 2006. Provided our recommendations are implemented in the design and construction of the project, there is little potential of geological and seismic hazards at the site, except that the quality of the existing fill slope is questionable at this time, and should be evaluated further when any improvement related to areas affected by the slope is planned.

4.0 DISCUSSIONS AND RECOMMENDATIONS

4.1 GENERAL

The proposed roadways, utilities and landscapes may be underlain by existing fill with additional earthwork to reduce the potential of future damage to these improvements by fill settlement, while hardscapes should be underlain by native rock or shallow new engineered fill only. Existing fill at the site was found to consist of a mixture of sands, gravels, cobbles and boulders. Large voids are present in the existing fill and future settlement is likely, of which the magnitude and extent are difficult to estimate. Therefore, to reduce potential settlement to areas under roadways, parking lots, underground utility lines, and landscape areas, geogrid reinforcement should be placed under these areas and earthwork in terms of fill removal and recompaction are recommended. The following presents our recommendations for permanent and temporary conditions. We understand that there will be future phases for further construction of additional buildings in the “temporary” areas, as shown in Figure 2C.

4.2 EARTHWORK AND SUBGRADE PREPARATION – AREAS OF PERMANENT ROADS AND FLEXIBLE PAVEMENT

For any planned final grade over an existing fill thickness of less than 10 feet, the existing fill should be removed and replaced with new engineered fill as described in following Section 4.8. For any area with final grade over thick existing fill (i.e., over 10 feet), placement of “composite layers” consisting of geogrid, gravel and sand should be performed to a lateral extent of a minimum of 10 feet beyond the area of the proposed improvement, and the following criteria should apply:

- A) If the planned final grade is close to the current grade, then the top 10 feet of the existing fill should first be removed. Then a three-foot-thick “composite layer” should be placed as the following:
 - 1) A layer of geogrid similar to Mirafi BasXgrid 12 at the bottom,
 - 2) A one-foot-thick layer of sandy gravel backfill (see Section 4.9) on top of the geogrid; followed by
 - 3) A two-foot-thick layer of engineered soil fill (see Section 4.9) consisting of gravelly sand.

An additional two composite layers should then be placed above the bottom composite layer. The surface then can be finished with the new engineered fill and pavement sections.

- B) If the final grade requires placement of additional fill of less than 10 feet thick, then the bottom of the aforementioned composite layers should start at 10 feet below the final grade. After placement of three composite layers, the surface can be finished with new engineered fill and pavement sections.
- C) If the final subgrade requires placement of additional fill of over 10 feet thick, then three composite layers should be placed on top of the existing surface, followed by placement of new engineered fill without the geogrid layers, and finished with pavement sections.

Prior to placement of the bottom composite layer, a relatively smooth surface should be created by removal of the top 6 inches and recompaction. It should be noted that the placement of the composite layers will reduce the potential of future differential settlement under the proposed improvements. However, it is not possible to eliminate settlement.

4.3 EARTHWORK AND SUBGRADE PREPARATION – AREAS OF TEMPORARY ROADS AND FLEXIBLE PAVEMENT

If the final grade is over an existing fill of less than 5 feet thick, then the fill should be removed and replaced with new engineered fill. For any final grade over an existing fill of more than 5 feet thick, placement of a composite layer with geogrid, gravel and gravelly sand will be needed to a lateral extent of 5 feet beyond the improvement, and the following criteria should be used:

- 1) If the final grade is close to the existing surface, the top 3 feet of the fill should first be removed. Then a composite layer as recommended in Section 4.2 should be placed, while the thickness of top soil layer should be adjusted to allow placement of pavement sections.
- 2) If the final grade requires placement of less than three feet of additional new fill, then the composite layer should start at three feet below the final grade, and the thickness of top soil layer should be adjusted to allow placement of pavement sections.
- 3) If the final grade requires placement of more than three feet of additional new fill, then the composite layer should be placed on top of the existing surface, followed by placement of new engineered fill and the pavement sections.

Prior to placement of the composite layer, a relatively smooth surface should be created by removal of the top 6 inches of existing fill and recompaction.

4.4 ROADWAY PAVEMENT SECTIONS AND HARDSCAPES

The permanent roadway pavement section in areas of deep fill can be planned to have an asphalt concrete thickness of 5 inches and an aggregate base course of 7 inches for a traffic index of 10 or under. For the temporary surface parking lots, the asphalt concrete thickness should be a minimum of 4 inches, and can be directly placed on the engineered fill. Also, it should be noted that cracks will likely appear due to the nature of the deep fill, therefore, periodic inspection and maintenance of the on-site asphalt should be performed, and all minor cracks should be sealed immediately.

Given the possibility of future settlement from the existing fill underlying the site, hardscape or rigid pavement, i.e., concrete paving, should not be used for this project where the existing fill thickness is over 10 feet. If any hardscapes, either permanent or temporary, are planned for areas of fill, the fill should first be removed and replaced by new engineered fill.

Based on the Figure 2C – Site Plan, Palomar Phase I, 11/27/06”, there are two zones of permanent “extensive concrete paving, concrete sidewalk and/or hardscape pavers”, i.e., one around the Diagnostic & Treatment Building/the Nursing Tower where the surface is underlain by relatively shallow fill (about 10 feet thick or less), and the other to the east of the Central Plant, where the pad will be lowered by about 40 feet from the existing ground surface to ensure footing placement on native rock. Prior to placement of hardscape in these two zones, all existing fill should be removed to a lateral extent of 10 feet beyond the edge of the hardscape, and replaced with engineered fill. For any area of hardscapes that straddles both native rock and fill, the rock should be removed to a depth equivalent to the depth of the fill, or five feet, whichever is smaller, and replaced with engineered fill.

For hardscapes in the above two areas, a minimum reinforced concrete thickness of 6 inches over a layer of base of 6 inches should be used for areas with expected vehicular loadings. The assumed vehicular loading level is ADTT of 25, which should be checked by the design team. The minimum concrete thickness of 4 inches should be used for pedestrian loadings, and no base material below the pedestrian area is needed. The minimum 28-day strength of concrete for hardscapes should be 3,500 pounds per square inch (psi).

4.5 UNDERGROUND UTILITIES

Utility lines that are not under the jurisdiction of OSHPD should be placed along roadways where the recommended removal and replacement in earlier sections will reduce the potential of differential settlement.

For utilities that extend from deep fill areas to shallow fill or cut areas, a minimum of three geogrid/gravel/fill composite layers should be placed under the utility trenches in the deep fill

portion, while the shallow existing fill should be removed and replaced with new engineered fill. Due to the possibility of future settlement from the existing fill underlying the site, flexible joints should be used in the underground utilities, and also the span of an individual section of utility lines should be limited to 15 feet or less. Frequent inspection should be performed to check the performance of the utility lines, and early warning and detection systems are recommended to be installed for the utility lines.

4.6 LANDSCAPES

We understand that the majority of landscape areas currently planned will be permanent. The on-site rock fill consists mostly of sands, gravels, cobbles and boulders originated from the native granite rock, therefore, it may not be a good source to provide nutrients for plants, and import of planter soil is expected. We understand that the planter soil will be about 4 feet thick.

Due to the porous nature of the underlying soils, a geomembrane layer should be placed below the planter soil to reduce lose of planter soil. Any landscape area planned over 5 feet or thicker existing fill should be underlain with a soil/geomembrane/geogrid composit layer as the follows:

- 1) A geogrid layer similar to Mirafi BasXgrid 12 at the bottom
- 2) A one-foot-thick layer of engineered fill consisting of sandy gravels, and with subdrains consisting of perforated 4-inch-diameter pipes wrapped with Mirafi 140N or similar materials at a spacing of 20 feet, followed by
- 3) Another layer of geomembrane before the planter soil layer is placed.

If additional fill is required to reach the final grade, then the geogrid layer should be placed over the existing grade, followed by placement of a one foot layer of sandy gravel, and then placement of additional fill. The perforated drainage pipe wrapped in Mirafi 140N should be placed in the top one foot of the additional fill, followed by placement of a layer of geomembrane, then the planter soil.

Prior to placement of the geogrid layer, the subgrade should be inspected, and a relatively smooth surface should be created by removal of the top 6 inches and recompaction. Geomembrane is not needed for landscape areas underlain by shallow fill, or areas over-excavated in rock.

4.7 NEW BERM ALONG THE WESTERN BOUNDARY

We understand that a new 10-foot-wide permanent berm will be placed on top of an existing berm along the western boundary, by placement of about 4 to 6 feet of new fill. Prior to fill

placement, the subgrade should be inspected, and a relatively smooth surface should be created by removal of the top 6 inches and recompaction. A geogrid layer similar to Mirafi BasXgrid 12 should be placed on the smooth subgrade, followed by placement of a one-foot-thick layer of sandy gravel, and then placement of additional fill.

4.8 SITE PREPARATION AND GRADING RECOMMENDATIONS

Earthwork should be performed in accordance with the applicable portion of the grading code of the City of Escondido, as well as the recommendations of this report, and should be performed under the observation and testing of a geotechnical engineer. All references to relative compaction refer to the ratio, expressed in percent, of the in-place dry density of the compacted fill to the maximum dry density obtained by the latest version of ASTM D1557.

Prior to earthwork, the site should be cleared and stripped of all debris, deleterious materials, organics and vegetation, and remnants resulting from prior earthwork. Cleared and grubbed material, as well as all rubble waste that may be encountered or created, should be disposed of offsite. Areas of loose or otherwise unsuitable material beneath footings or other structures should be removed down to competent bedrock.

The exposed excavated surface should be observed by URS to confirm that competent bedrock has been encountered. If loose, soft, or undocumented fill is encountered at the bottom of the excavation, additional removals will be required.

It should be noted that most of the intact rock on site is un-rippable and excavation in rock may require blasting or other rock-splitting techniques.

Permanent vertical cut slopes to a height of 20 feet can be constructed in native un-weathered rock, provided that it is inspected by a geologist from our office, and it should be noted that rock-bolting may be needed to protect the slope based on the geologist's assessment.

4.9 FILL QUALITY

Fill should consist of granular material excavated from the project site, or granular materials imported from an off-site source, that, in the opinion of the Geotechnical Engineer, is suitable for use in constructing engineered fill. For the layer of sandy gravel fill required to be placed above geogrid layer, the material should conform to the specification of Caltrans Class II aggregate base with 37.5-mm maximum aggregate size. Soils for use as other engineered fill should be have gradations that conform to those of sandy materials and should not contain any materials that are over 2 inches in size. Fill materials should be free of organics, debris, or other

deleterious materials. No nesting of rocks should be permitted, nor should perishable, spongy, hazardous, or other improper materials be used in filling. It is our opinion that the on-site fill materials can be ground down to fit the above criteria. Fill material should be placed in lifts generally no greater than 8 to 12 inches, loose measurement. The water content of the fill material should be near optimum water content. Fill materials should be compacted to at least 95 percent relative compaction.

5.0 GENERAL CONDITIONS

This report presents our conclusions and recommendations pertaining to the subject site, based on the assumption that the geologic and subsurface conditions do not deviate appreciably from those used in this study. If additional subsurface information, slope movement, or exposures during field activities or construction indicate significant deviations or unexpected conditions from those subsurface conditions assumed herein, it is the responsibility of the Owner to bring such information to our attention for further evaluation.

Professional judgments presented in this report are based on evaluations of the technical information gathered, on our understanding of the proposed construction, and on our general experience in the geotechnical engineering field. We do not guarantee the performance of the project in any respect. For instance, we have no way of knowing the successful bidder's capabilities, experiences, his choices of crew and equipment, his choice of bidding and operating strategies, or limitations which may be imposed on him by the Owner or the designer. Therefore, we can only guarantee that URS's engineering work and judgments rendered meet the standard of care of our profession at this time.

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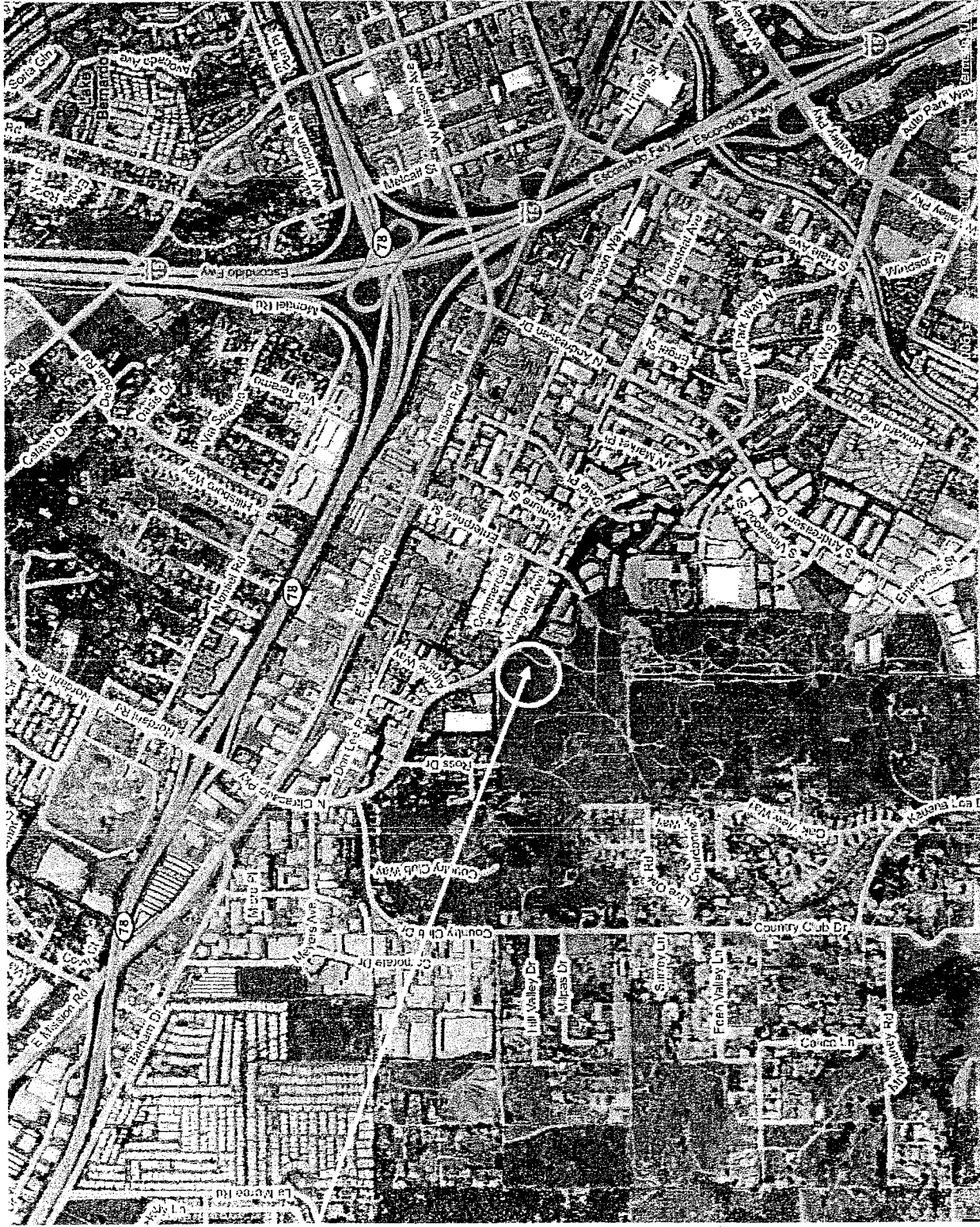
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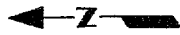
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GEOTECHNICAL INVESTIGATION

FIGURES

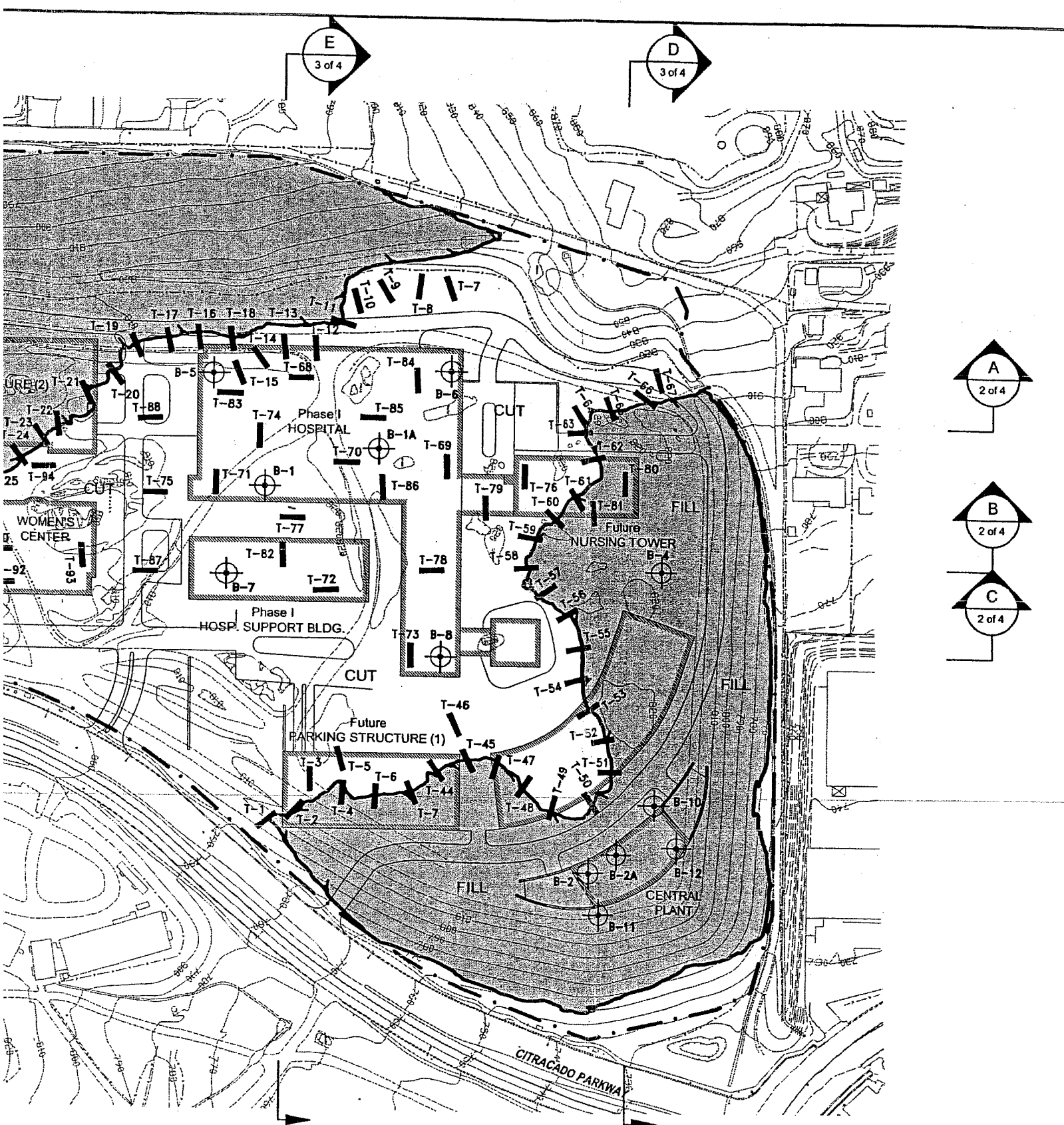


SITE



URS

VICINITY MAP
 PALOMAR MEDICAL CENTER WEST
 SW OF VINEYARD AVE. & CITRACADO PKWY., ESCONDIDO, CALIFORNIA
 FOR: PALOMAR POMERADO HEALTH



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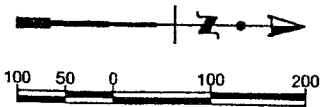
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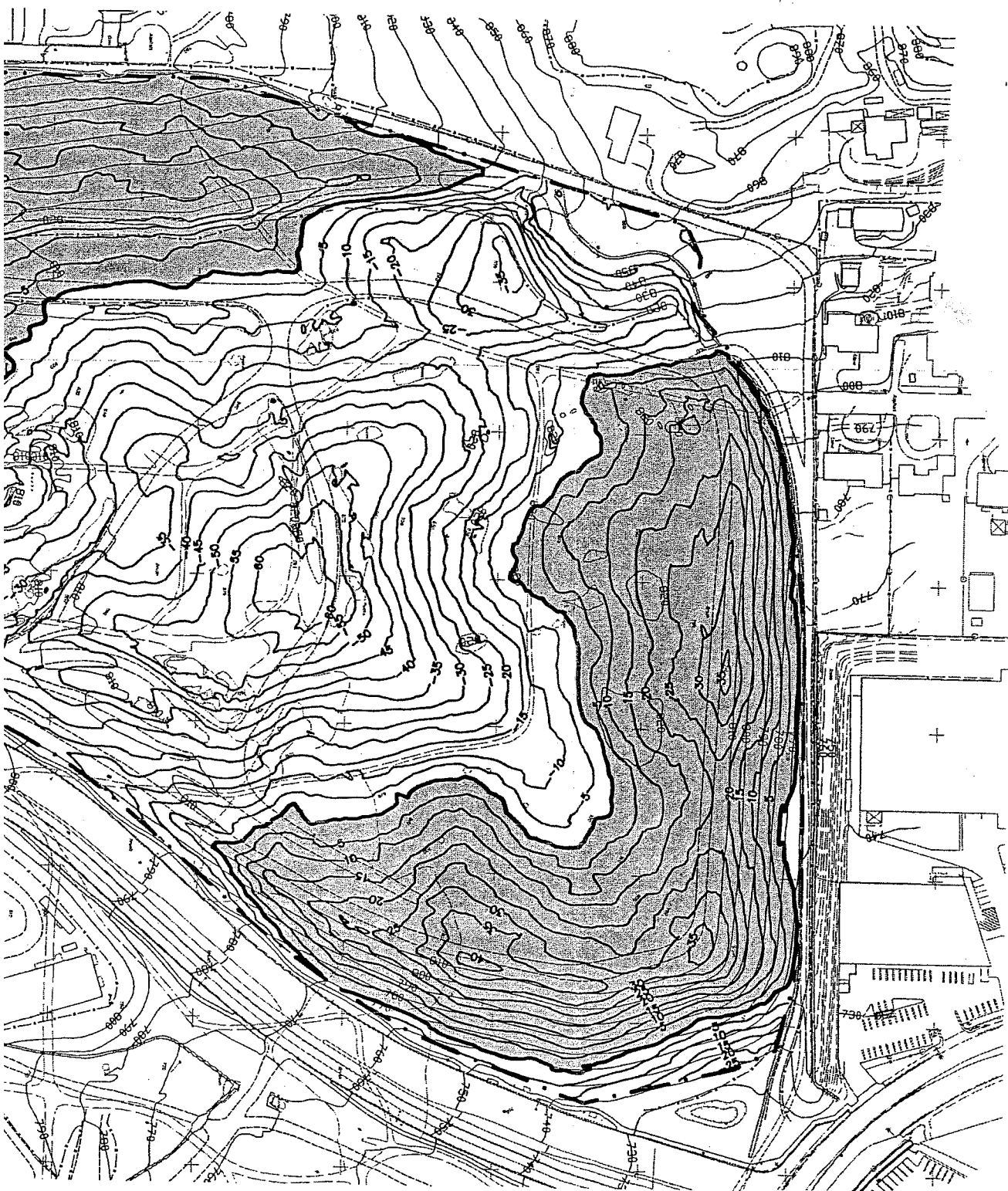
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PLAN
SCALE: 1" = 100'

A



DATE	APP'D	SCALE:	PALOMAR MEDICAL CENTER WEST - ESCONDIDO, CA SITE PLAN	DRAWING NUMBER Figure 2
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		BILL GATES		



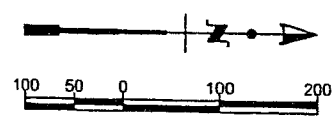
SECTION A-A
 ELEVATION OF EXISTING SITE SURFACE
 10 FEET TURNS AFTER GRADING AND
 FINAL SITE CONTOURS PRIOR TO
 GRADING.

Site Volume Table: Unadjusted

Cut cu.yds	Fill cu.yds	Net cu.yds	Method
627846	1310412	682566 (F)	Grid

Site Area Table


Rock Cut Area sq. ft	Fill Area Area ft
768563	1683366



DATE	APP'D	SCALE:
		DRAWN: D. Luong
		CHECKED:
		DESIGNED:
		PROJ. MGR.
		BILL GATES

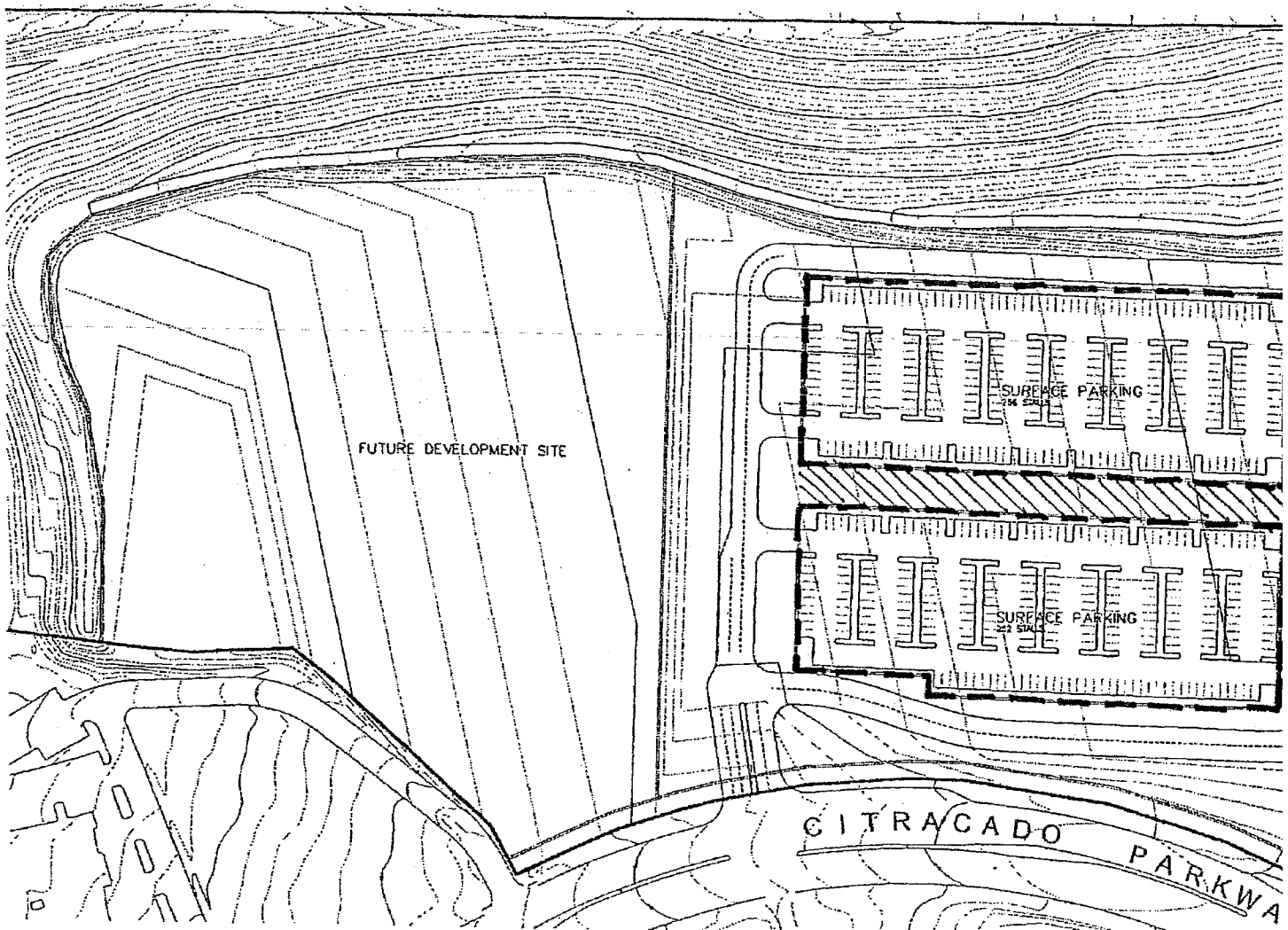
PALOMAR MEDICAL CENTER WEST - ESCONDIDO, CA

EXISTING CUT AND FILL THICKNESS

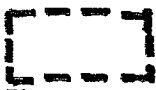


DRAWING NUMBER

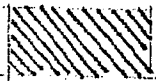
Figure 2B



KEY:



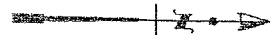
Phase I "Temporary" Surface Parking; future building pads.



Areas of extensive concrete paving, concrete sidewalk, and/or hardscape pavers.



Areas of cut-rock in lieu of retaining wall.

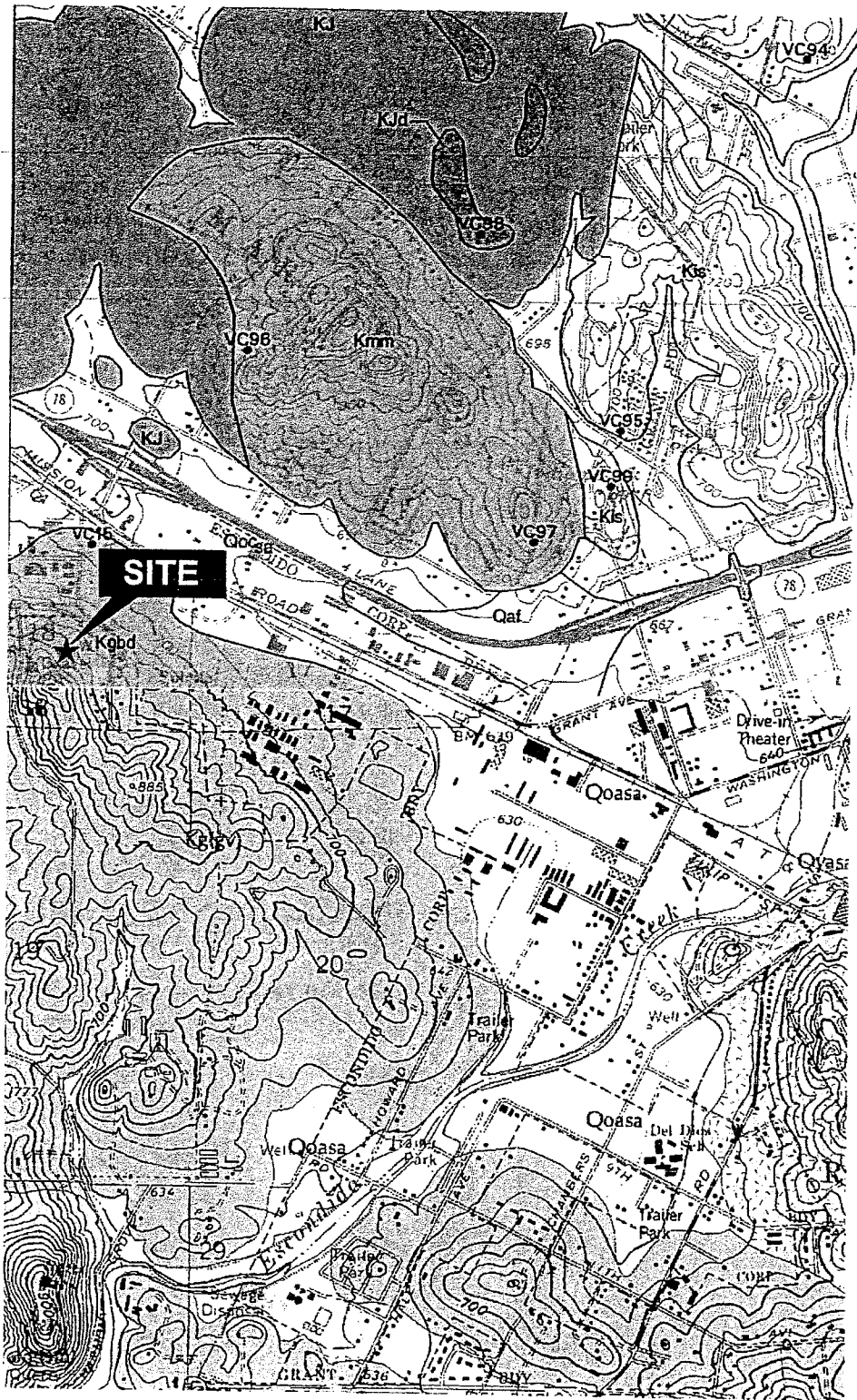


URS

815 WILSHIRE BOULEVARD
SUITE 700
LOS ANGELES, CA 90017
TEL: (213) 399-2200
FAX: (213) 396-2200

URS PROJECT NO. 20401067.00001

NO.	DATE	DESCRIPTION	BY	CHECKED	APPROVED



Source: USGS Geologic Map of the Escondido and Valley Center,
 7.5 Quadrangle San Diego County, CA.
 Department of Conservation Division of Mines and Geology.



DESCRIPTION OF MAP UNITS

MODERN SURFICIAL DEPOSITS -- Sediment recently deposited in washes and artificial fills.

Qaf

Artificial fill (late Holocene) - Sand, gravel, and boulders used for "man made" fills.

YOUNG SURFICIAL DEPOSITS -- Sedimentary units that are slightly consolidated to cemented and slightly to moderately dissected.

Qyasa

Young alluvial flood plain deposits (Holocene and late Pleistocene) - Mostly unconsolidated, poorly sorted, permeable flood plain sediment.

Qoc

Older colluvial deposits (Pleistocene, younger than 500,000 years) - Mostly moderately well consolidated, poorly sorted slope wash and stream deposits.

Qoasa

Older (Pleistocene, younger than 500,000 years) alluvial river deposits; moderately consolidated sediments; sa = silty sand with gravel and clay.

Kmm

Monzogranite of Merriam Mountain (Cretaceous) - Leucocratic hornblende-biotite monzogranite; medium to coarse grained, massive.

Kis

Granite of Indian Springs (Cretaceous) - Biotite granite: fine grained granite similar in appearance to Kdl.

Kqbd

Quartz bearing diorite undivided (Cretaceous) - Mostly biotite-hornblende, quartz bearing diorite; medium grained, dark gray, massive.

KJ

Metavolcanic and metasedimentary rocks undivided (Cretaceous and Jurassic) - low grade (greenschist facies) rocks that are in part coeval with and in part older than the Cretaceous plutonic rocks they lie in contact with.

Kjd

Metavolcanic dikes undivided (Cretaceous and Jurassic) - dikes that cut KJ; very fine grained, dark gray, massive.

Kg(gv)

Green Valley tonalite: medium-grained gray tonalite with minor granodiorite, gabbro and other basic igneous rocks.

Kgd

Miscellaneous granodiorite: undifferentiated types of granodiorite with minor tonalite.

0 2000' 4000'
Scale in Feet



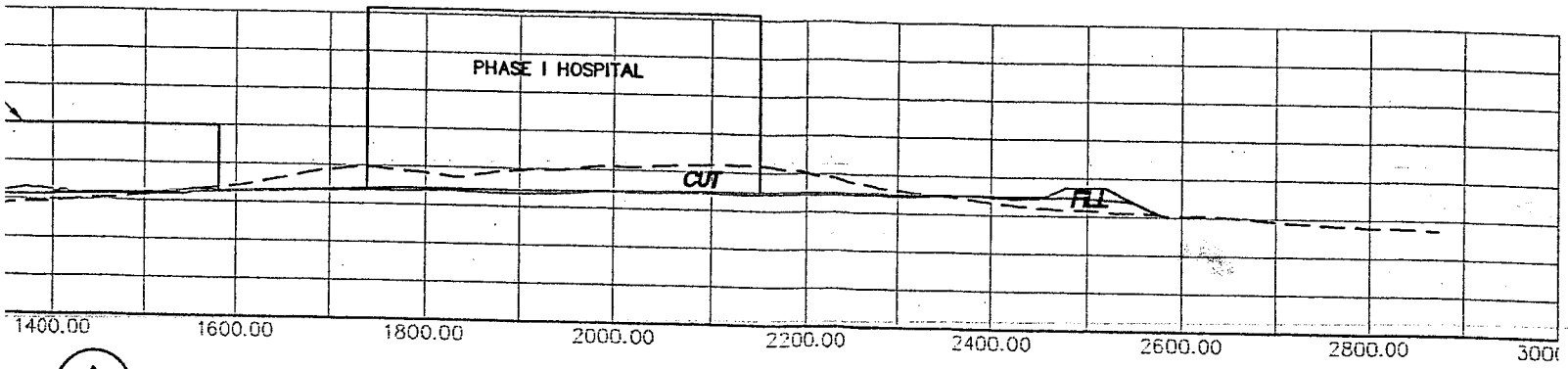
GEOLOGIC MAP

Project: PALOMAR MEDICAL CENTER WEST
ESCONDIDO, CALIFORNIA

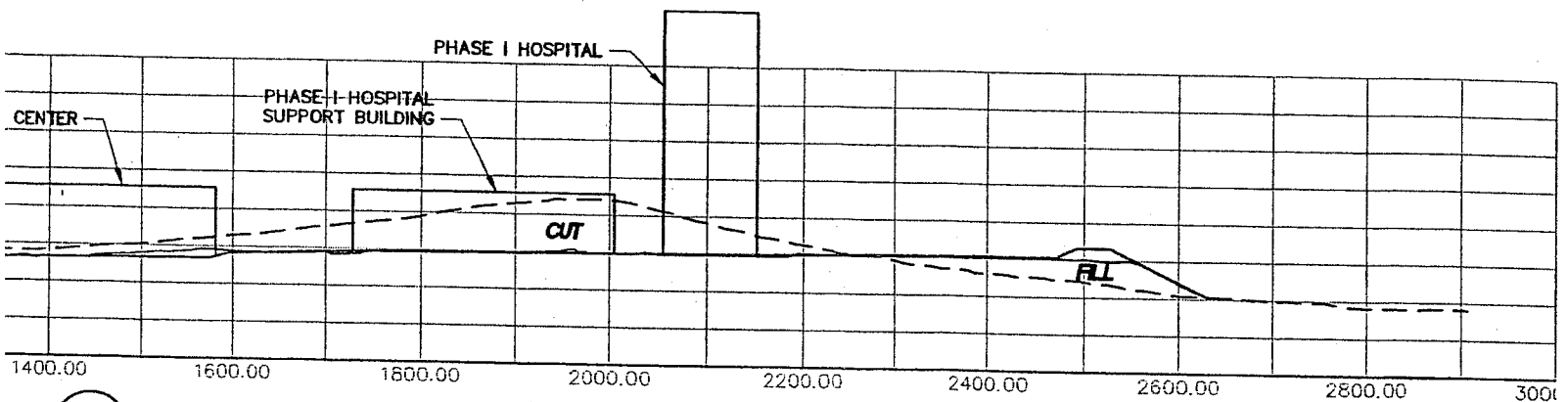
Project No.: 29402003

Date: MARCH 2006

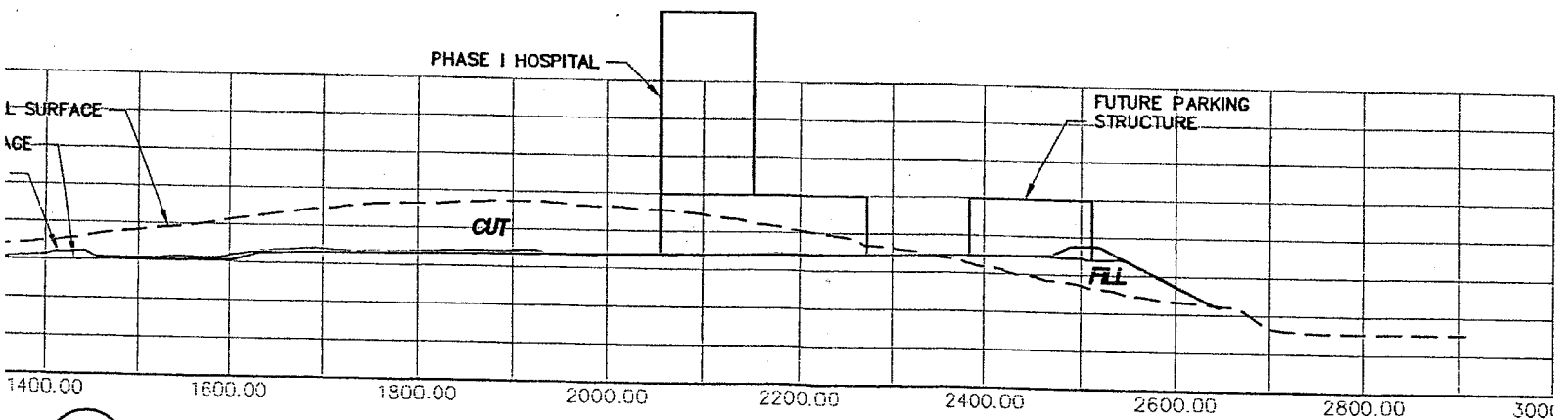
Figure 3




A
1 of 4

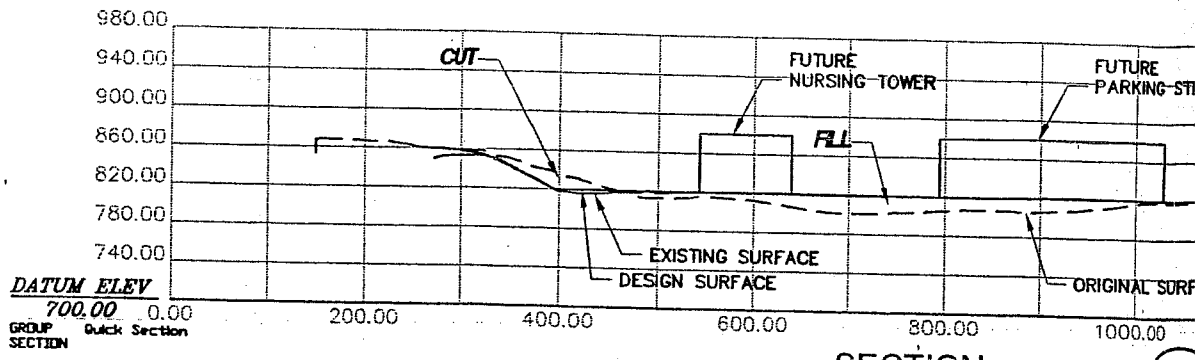


B
1 of 4

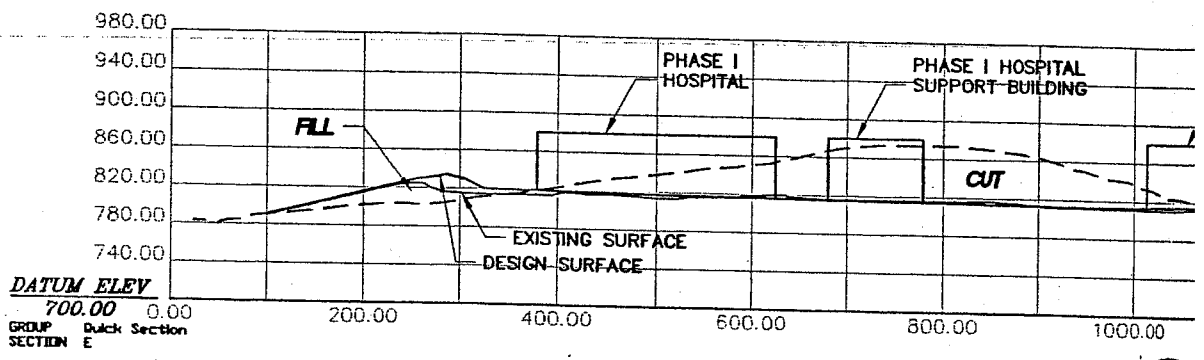


C
1 of 4

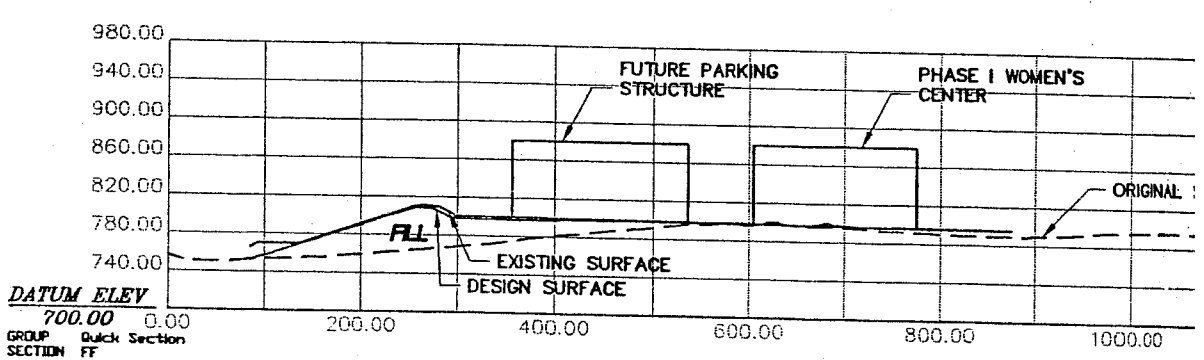
		DATE	APP'D	SCALE:	PALOMAR MEDICAL CENTER WEST - ESCONDIDO, CA	
				DRAWN: D. Luong	NORTH-SOUTH CROSS-SECTIONS	
				CHECKED:	DRAWING NUMBER	
				DESIGNED:	Figure 4A	
				PROJ. MGR.		
				BILL GATES		
				 PALOMAR POMARADO H.E.A. L.P.H.		



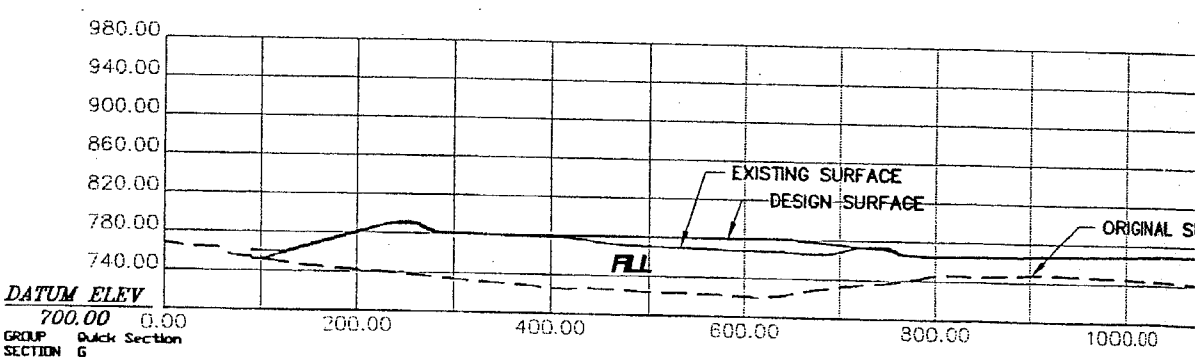
SECTION D
 SCALE: HORZ 1" = 100'
 VERT 1" = 10'



SECTION E
 SCALE: HORZ 1" = 100'
 VERT 1" = 10'



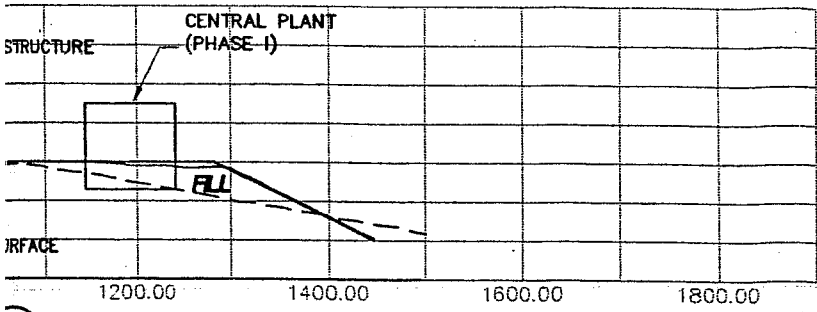
SECTION FF
 SCALE: HORZ 1" = 100'
 VERT 1" = 10'



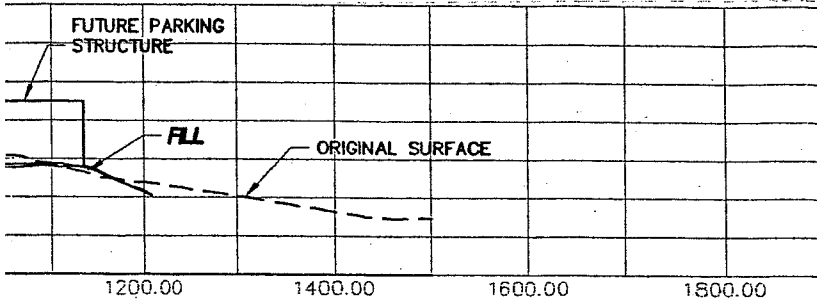
SECTION G
 SCALE: HORZ 1" = 100'
 VERT 1" = 10'

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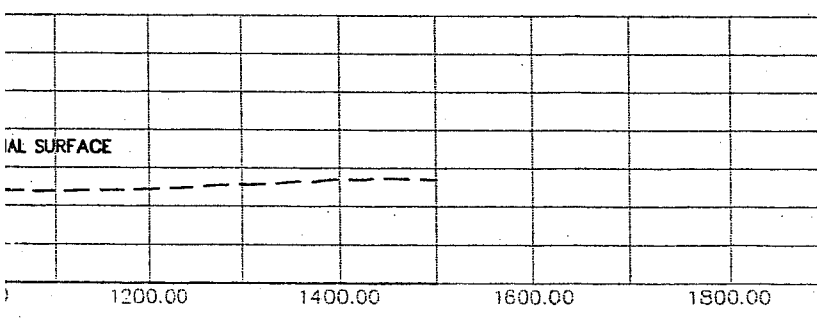
NO.	DATE	DRAWN	REVISIONS -	DATE	APP'D	NO.	DATE	DRAWN	REVISIONS -



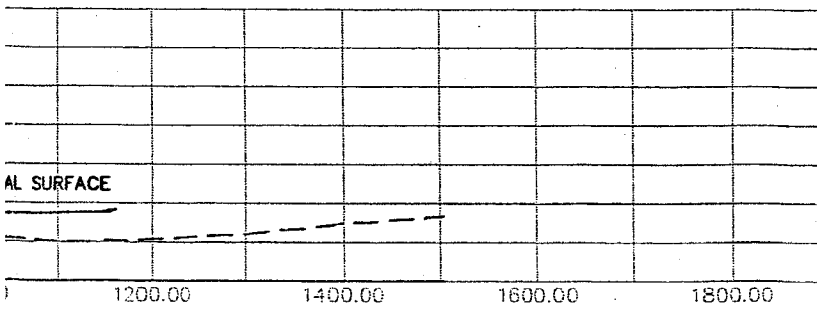
D
of 4




E
of 4



F
of 4



G
of 4

DATE		APP'D	SCALE	PALOMAR MEDICAL CENTER WEST - ESCONDIDO, CA	
				EAST-WEST CROSS-SECTIONS 	
			DRAWN: D. Luong		
			CHECKED:		
			DESIGNED:		
			PROJ. MGR.	DRAWING NUMBER	
			BILL GATES	Figure 4B	

GEOTECHNICAL INVESTIGATION

APPENDIX "A"

Appendix A
Field Investigation

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GP POORLY GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GM SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SP POORLY GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50		ML INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY	
			CL INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS	
			OL ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY	
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50		MH INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS	
			CH INORGANIC CLAYS OF HIGH PLASTICITY	
			OH ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS	
HIGHLY ORGANIC SOILS				PT PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: Dual symbols are used to indicate gravels or sand with 5-12% fines and soils with fines classifying as CL-ML. Symbols separated by a slash indicate borderline soil classifications.

Rock Material Symbols (examples)



Asphalt

Sampler and Symbol Descriptions

- Dames & Moore Type-U sample
- Standard Penetration Test
- No Recovery
- Bk Bulk sample
- Disturbed Type-U Sample
- Pitcher Tube Sample
- Shelby Tube Sample
- Rock Core Sample
- Approximate depth of perched water or groundwater

Note: Number of blows required to advance driven sample 12" (or length noted) is recorded; blow count recorded for seating interval (initial 6" of drive) is indicated by an asterisk.

Laboratory and Field Test Abbreviations

- CBR California Bearing Ratio(result in parentheses)
- COMP Compaction test
- CORR Corrosivity test
- CON Consolidation Test
- DSCD Consolidated drained direct shear test (normal pressure and shear strength results shown)
- EI Expansion Index(result in parentheses)
- LL=29 Liquid limit (Atterberg limits test)
- PERM Permeability test
- PI=11 Plasticity Index (Atterberg limits test)
- R-value R-Value Test(result in parentheses)
- SA Sieve Analysis (-200 result in parentheses)
- SA/HA Sieve and Hydrometer Analysis(-200 result in parentheses)
- UC Unconfined Compressive Strength test
- (0,21.4,0,0) (Methane/LEL in %,O2 in %,CO in ppm, H2S in ppm)
- 200 Percent passing #200 sieve (test result in parentheses)

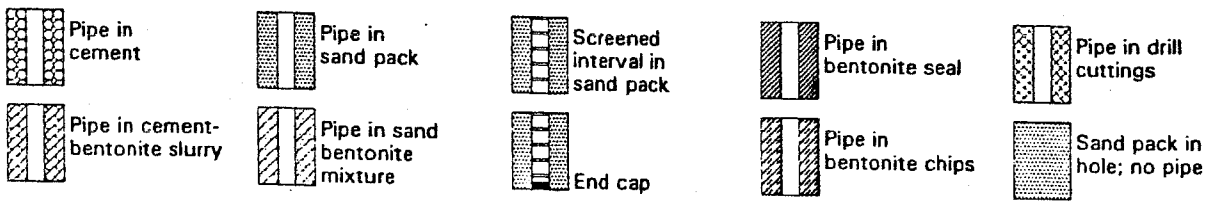
KEY TO LOG OF BORING

Palomar Medical Center West Site
Escondido, California
FOR: Palomar Pomerado Health

FIGURE A-1

Elevation, meters	Depth, meters	ROCK CORE								MATERIAL DESCRIPTION	Slope Incliner Casing Log	Drill Time (Rate, m/hr)	FIELD NOTES AND LAB TESTS
		Run No.	Box No.	Recovery, %	Frac. Freq.	R Q D, %	Fracture Drawing/Number	Lithology					
1	2	3	4	5	6	7	8	9	10	11	13	14	15
	0	1	1	100		80				Repetto Member of Fernando Formation Silty SANDSTONE, brownish yellow, damp, weak; 70% fine sand and 30% silt; highly weathered, highly fractured, moderately bedded, weakly cemented.		45	Slow drilling
	1							1		12: a b c d e f 1: 35°, J, closed, filled, gypsum, planar		15	Grout tremie device

- 1 Elevation:** Elevation (in meters) relative to mean sea level (MSL).
- 2 Depth:** Distance (in meters) from the collar of the borehole.
- 3 Run No.:** Number of the individual coring interval, starting at top of wireline core drilling.
- 4 Box No.:** Number of the core box that contains core from the corresponding run(s).
- 5 Recovery:** Amount (in percent) of core recovered from the coring interval; calculated as the length of core recovered divided by the length of the run.
- 6 Frac. Freq.:** (Fracture Frequency) The number of naturally occurring fractures in each half-meter of core; does not include mechanical breaks (M), which are considered to be induced by drilling.
- 7 R Q D:** (Rock Quality Designation) Amount (in percent) of intact core (pieces of sound core greater than 100 mm in length) in each coring interval; calculated as the sum of the lengths of intact core divided by the length of the core run.
- 8 Fracture Drawing:** Sketch of the naturally occurring fractures and mechanical breaks, showing the angle of the fractures relative to the cross-sectional axis of the core. "NR" indicates no recovery.
- 9 Fracture Number:** Location of each naturally occurring fracture (numbered) and mechanical break (labeled "M"). Naturally occurring fractures are described in Column 11 (keyed by number) using terms defined on Sheet 2 (Items a - f). Representative bedding is also numbered and similarly described.
- 10 Lithology:** A graphic log of material encountered using symbols to represent differing rock types; refer to Sheet 3 for an explanation of symbols.
- 11 Description:** Lithologic description in this order: Soil/Rock Type, Color, Moisture Content, Consistency/Strength, Weathering, Grain Size (include percentages), Fracturing Conditions, Bedding Thickness, Miscellaneous (fossils, cementation, etc.). Refer to Sheet 2 for an explanation of terminology.
- 12 Discontinuity Description:** Description of discontinuity corresponding to number listed in Column 9, using terms defined on Sheet 2 (Items a - f).
- 13 Incliner Casing Log:** Graphic depiction of casing installation; symbols explained below.



- 14 Drill Time (Rate):** Drill time reported in 24-hour clock at beginning and end of each core run. Rate (in feet per hour) of drilling advance for each core run is reported in parentheses.
- 15 Field Notes:** Comments on drilling, including water loss, reasons for core loss, and use of drilling mud; also, laboratory tests performed on core.



FIGURE A-1

KEY TO DESCRIPTIVE TERMS USED ON CORE LOGS

DISCONTINUITY DESCRIPTORS

<p>a Dip of Discontinuity</p>	<p>b Type of Discontinuity:</p> <p>B Bedding C Contact F Fault (fracture with displacement) J Joint (fracture without displacement) Sh Shear (surfaces exhibiting strain but minor relative displacement)</p>	<p>c Separation (mm):</p> <p>Closed 0.0 Very Narrow 0.0 - 0.1 Narrow 0.1 - 1.0 Wide 1.0 - 5.0 Very Wide > 5.0</p>
<p>d Type of Fracture</p> <p>Clean No fracture filling Stained Discoloration of fracture Lined Lined with recognizable mineral Filled Filled with recognizable mineral Wet Filled with water</p>	<p>e Type of Fracture Infilling</p> <p>Calcite Chlorite Clay Gypsum Iron Oxide Quartz Sand</p>	<p>f Surface Shape of Discontinuity</p> <p>Planar Wavy Stepped Irregular</p>

ROCK WEATHERING

Grade	Symbol	Diagnostic Features
Fresh	F	No visible sign of decomposition or discoloration. Rings when struck by hammer.
Slightly Weathered	WS	Slight discoloration inward from open fractures; otherwise, similar to Fresh (F).
Moderately Weathered	WM	Discoloration throughout. Weaker minerals, such as feldspar, decomposed. Strength somewhat less than fresh rock, but core cannot be broken by hand or scraped by knife. Texture preserved.
Highly Weathered	WH	Most minerals somewhat decomposed. Specimens can be broken by hand with effort or shaved with knife. Core stones present in rock mass. Texture becoming indistinct, but fabric preserved.
Completely Weathered	WC	Minerals decomposed to soil, but fabric and structure preserved (saprolite). Specimens can be easily crumbled or penetrated.
Residual Soil	RS	Advanced state of decomposition resulting in plastic soils. Rock fabric and structure completely destroyed. Large volume change.

ROCK STRENGTH

Class	Strength	Field Test	Approximate Range of Uniaxial Compression Strength kg/cm ² (tons/ft ²)
I	Extremely Strong	Many blows with geologic hammer required to break intact specimen.	> 2000
II	Very Strong	More than one blow with geologic hammer required to break hand-held specimen.	2000 - 1000
III	Strong	Cannot be scraped or peeled with knife; hand-held specimen can be broken with single moderate blow with hammer.	1000 - 500
IV	Moderately Strong	Can just be scraped or peeled with knife. Indentations 1 mm to 3 mm show in specimen with moderate blow with pick.	500 - 125
V	Moderately Weak to Weak	Material crumbles under moderate blow with pick and can be peeled with a knife, but is too hard to hand trim for triaxial test specimen.	125 - 12

FRACTURE SPACING

Intensely Fractured	Less than 50 mm
Highly Fractured	50 mm to 300 mm
Moderately Fractured	300 mm to 1 m
Slightly Fractured	1 m to 3 m
Massive	Greater than 3 m

BEDDING THICKNESS

Laminated	Less than 20 mm
Very Thinly	20 mm to 50 mm
Thinly	50 mm to 300 mm
Moderately	300 mm to 1 m
Thickly	1 m to 3 m
Massively	Greater than 3 m



FIGURE A-1

Date(s) Drilled	May 3 and 4, 2005	Logged By	J. Pyska	<h1>BORING B-1</h1> <h2>Sheet 1 of 3</h2>
Drilling Method	HQ-3 Wireline	Drill Bit Size/Type	8 inches O.D.(0-4 ft), 3.8 inches O.D.(below 4 ft)	
Drill Rig Type	CME-75	Diameter of Borehole (in.)	3.8 inches (O.D.)	
Drilling Contractor	Tri-County	Core Type/ Diameter (in.)	HQ	
Depth to Water and Date Measured	No groundwater encountered	Size and Type of Casing		
Type and Depths of Backfill	Bentonite cement entire borehole			
Comments	None			
Job Number	29401968			
Total Depth Drilled (ft)	31.6			
Approximate Ground Surface Elevation (ft)	815.0			

Elevation (ft)	Depth (ft)	ROCK CORE							MATERIAL DESCRIPTION	FIELD NOTES
		Run No.	Box No.	Recovery, %	Drill Time	R O D, %	Fracture Drawing	Lithology		
815	0								FILL Silty SAND: Yellowish brown, moist, fine to coarse grained, with abundant gravel	
	1									
	2									
	3									
	4	1		71	1020	46		x	BEDROCK GRANITE: Black, white, and brownish yellow, hard, slightly weathered to intact	
810	5							x		
	6							x		
	7		1					x		
	8							x		
	9							x		
805	10	2		100	1045	100		x	Grades with iron stains on fracture planes	
	11							x		
	12							x		
	13	3		100	1123	100		x	Grades with some light pinkish color	

Report: DMG10CALABASAS; Project File: G:\GINTW\PROJECT\VERTC.GPJ; Data Template:DMLA.GDT Printed: 3/16/06

This log is part of the report prepared by URS for this project and should be read together with the report. This summary applies only at the location of the exploration and at the time of drilling or excavation. Subsurface conditions may differ at other locations and may change at this location with time. Data presented are a simplification of actual conditions encountered.



LOG OF BORING
 Palomar Medical Center West Site
 Escondido, California
 FOR: Palomar Pomerado Health Figure A-2

Elevation (ft)	Depth (ft)	ROCK CORE						MATERIAL DESCRIPTION	FIELD NOTES
		Run No.	Box No.	Recovery, %	Drill Time	R Q D, %	Fracture Drawing		
800	14								
	15	4			1145	100			
	16								
	17		2					Grades more fractured	
	18								
795	20	5			1204	100		Grades with trace fractures	
	21								
	22								
	23								
	24								
790	25	6			1240	100			
	26		3						
	27								
	28							Grades gray and white, very hard, with trace staining and fractures	
	29								

Report: DMG10CALABASAS; Project File: G:\GINT\PROJECTS\ERTC.GPJ; Data Template: DMLA.GDT Printed: 3/16/06



Figure A-2

Elevation (ft)	Depth (ft)	ROCK CORE							MATERIAL DESCRIPTION	FIELD NOTES
		Run No.	Box No.	Recovery, %	Drill Time	R O D, %	Fracture Drawing	Lithology		
785	30	7			1006	100			1) Total depth: 31.6 feet below ground surface 2) No groundwater encountered 3) Shear wave velocity measurement conducted by Geovision 4) Boring backfilled with bentonite cement	
	31		4							
	32									
	33									
	34									
780	35									
	36									
	37									
	38									
	39									
775	40									
	41									
	42									
	43									
	44									
770	45									

Report: DMG10CALABASAS; Project File: G:\GINTW\PROJECTS\ERTC.GPJ; Data Template: DMLA.GDT Printed: 3/16/06

Date(s) Drilled	June 27, 2005	Logged By	J. Pyska	Boring B-1A Sheet 1 of 1	
Drilling Method	Percussion Hammer	Drill Bit Size/Type	6.75 inches O.D. (0-12 ft), 6 inches O.D. (below 12 ft)		
Drill Rig Type	CME-75	Hammer Data	N/A		
Sampling Method(s)	N/A				
Approximate Groundwater Depth and Date Measured		27 feet, June 27, 2005		Job Number	29401968
Comments		None		Total Depth Drilled (ft)	92.0
				Approximate Ground Surface Elevation (ft)	820.0

Elevation (ft)	Depth (ft)	SAMPLES			USCS	MATERIAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	OTHER TESTS and REMARKS
		Type	Number	Blows per 6-inches					
820	0					FILL Silty SAND: Yellowish brown, moist, fine to coarse grained, with abundant gravel			
810	10					WEATHERED ROCK			
800	20					BEDROCK GRANITE			
790	30								
780	40								
770	50								
760	60								
750	70								
740	80								
730	90								
720	100					1) Total depth: 92 feet below ground surface 2) Groundwater encountered at about 27 feet below ground surface 3) Shear wave velocity measurement conducted by Geovision 4) Boring grouted with bentonite cement			

Report: DMG4; Project File: G:\GINTWAPROJECTS\ERTC.GPJ; Data Template: DMILA.GDT Printed: 3/16/06

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LOG OF BORING
Palomar Medical Center West Site
Escondido, California
FOR: Palomar Pomerado Health



Figure A-3

Date(s) Drilled	June 28, 2005	Logged By	C. Shen	Boring B-2 Sheet 1 of 1	
Drilling Method	Percussion Hammer	Drill Bit Size/Type	6.75 inches O.D. (0-23 ft), 6 inches O.D. (below 23 ft)		
Drill Rig Type	CME-75	Hammer Data	N/A		
Sampling Method(s)	N/A				
Approximate Groundwater Depth and Date Measured	No groundwater encountered			Job Number	29401968
Comments	None			Total Depth Drilled (ft)	89.0
				Approximate Ground Surface Elevation (ft)	815.0

Elevation (ft)	Depth (ft)	SAMPLES		Graphic Log	USCS	MATERIAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	OTHER TESTS and REMARKS
		Type	Number						
0						FILL Mixture of SAND, GRAVEL, COBBLES and BOULDERS: Yellowish brown, moist			
810									
10									
800									
20						Hard drilling, shifting rocks grinding on casing			
790						WEATHERED ROCK			
30									
780									
40									
770						BEDROCK GRANITE			Drill mud poured into the hole for geophysical measurement. Mud dissipating fast in fill
50				x					
760				x					
60				x					
750				x					
70				x					
740				x					
80				x					
730				x					
90				x					
720						1) Total depth: 89 feet below ground surface 2) No groundwater encountered 3) Shear wave velocity measurement conducted by Geovision 4) Boring grouted with bentonite cement			
100									

LOG OF BORING

Palomar Medical Center West Site
Escondido, California
FOR: Palomar Pomerado Health

This log is part of the report prepared by URS for this project and should be read together with the report. This summary applies only at the location of the exploration and at the time of drilling or excavation. Subsurface conditions may differ at other locations and may change at this location with time. Data presented are a simplification of actual conditions encountered.

Date(s) Drilled	May 4, 2005	Logged By	J. Pyska	Boring B-2A Sheet 1 of 1	
Drilling Method	Hollow Stem	Drill Bit Size/Type	8 inches (O.D.)		
Drill Rig Type	CME-75	Hammer Data	140 lbs Hammer/30 inches drop, Downhole hammer		
Sampling Method(s)	SPT, Bulk			Job Number	29401968
Approximate Groundwater Depth and Date Measured	No groundwater encountered			Total Depth Drilled (ft)	7.0
Comments	None			Approximate Ground Surface Elevation(ft)	815.0

Elevation (ft)	Depth (ft)	SAMPLES		Graphic Log	USCS	MATERIAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	OTHER TESTS and REMARKS
		Type	Number						
0	0				Rock	Rock and gravel			
810	5	☒ BK-1	1	50/3"		Mixture of SAND, GRAVEL, COBBLES and BOULDERS: Grayish brown, moist, fine to coarse grained, with gravel and broken granite, loose rocks grinding on casing			Refusal for 1st attempt; moved 8 feet east for 2nd attempt, still refusal; moved 10 feet east for 3rd attempt
	10					1) Total depth: 7 feet below ground surface (Refusal) 2) No groundwater encountered 3) Boring grouted with bentonite cement			Refusal again; moved 18 feet north for 4th attempt, refusal at 1.5 feet; tried 5th attempt, refusal at 3 feet; collected bulk sample
800	15								
790	25								
	30								
780	35								
	40								

Report: DMG4; Project File: G:\GINT\PROJECTS\ERTC.GP; Data Template: DMLA.GDT Printed: 3/15/06

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Figure A-5

Date(s) Drilled	June 29, 2005	Logged By	C. Shen	Boring B-3 Sheet 1 of 1	
Drilling Method	Percussion Hammer	Drill Bit Size/Type	6.75 inches O.D. (0-18 ft), 6 inches O.D. (below 18 ft)		
Drill Rig Type	CME-75	Hammer Data	N/A		
Sampling Method(s)	N/A				
Approximate Groundwater Depth and Date Measured	62.6 feet, June 29, 2005			Job Number	29401968
Comments	None			Total Depth Drilled (ft)	62.8
				Approximate Ground Surface Elevation(ft)	800.0

Elevation (ft)	Depth (ft)	SAMPLES		Graphic Log	USCS	MATERIAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	OTHER TESTS and REMARKS
		Type	Number						
800	0					Mixture of yellowish brown sand, gravel, cobbles and boulders			
790	10					Hard drilling, shifting rocks grinding on casing			
780	20					BEDROCK GRANITE			
770	30								Drill mud poured into the hole for geophysical measurement. Mud dissipating fast in fi
760	40								
750	50								
740	60								
730	70					1) Total depth: 62.8 feet below ground surface 2) Groundwater encountered at 62.6 feet below ground surface 3) Shear wave velocity measurement conducted by Geovision 4) Boring grouted with bentonite cement			
720	80								
710	90								
700	100								

Report: DMG4; Project File: G:\GINTW\PROJECTS\ERTC.GPJ; Data Template: DMLA.GDT Printed: 3/16/06

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Figure A-6

Date(s) Drilled	February 6, 2006	Logged By	Tharma	BORING B-6 Sheet 1 of 3
Drilling Method	HQ-3 Wireline	Drill Bit Size/Type	8 inches O.D.(0-4 ft), 3.8 inches O.D.(below 4 ft)	
Drill Rig Type	CME-75	Diameter of Borehole (in.)	3.8 inches (O.D.)	
Drilling Contractor	Tri-County	Core Type/ Diameter (in.)	HQ	
Depth to Water and Date Measured	No groundwater encountered	Size and Type of Casing		
Type and Depths of Backfill	Bentonite cement entire borehole			
Comments	None			Job Number: 29401968 Total Depth Drilled (ft): 29.0 Approximate Ground Surface Elevation (ft): 815.0

Elevation (ft)	Depth (ft)	ROCK CORE							Lithology	MATERIAL DESCRIPTION	FIELD NOTES
		Run No.	Box No.	Recovery, %	Drill Time	R Q D, %	Fracture Drawing				
815	0									FILL Silty SAND: Yellowish brown, moist, fine to coarse grained, with abundant gravel, cobbles, and boulders	
	1										
	2										
	3										
	4										
	5										
810	6										
	7										
	8										
	9	1	B1	29	10:00	10				BEDROCK GRANITE: Black, white, and brownish yellow, hard, slightly weathered to intact	
	10										
805	11										
	12										
	13										

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 FOR: Palomar Pomerado Health Figure A-10



Date(s) Drilled	February 7, 2006	Logged By	Tharma	BORING B-9 Sheet 1 of 2	
Drilling Method	HQ-3 Wireline	Drill Bit Size/Type	8 inches O.D.(0-4 ft), 3.8 inches O.D.(below 4 ft)		
Drill Rig Type	CME-75	Diameter of Borehole (in.)	3.8 inches (O.D.)		
Drilling Contractor	Tri-County	Core Type/ Diameter (in.)	HQ		
Depth to Water and Date Measured	No groundwater encountered	Size and Type of Casing		Job Number	29401968
Type and Depths of Backfill	Bentonite cement entire borehole			Total Depth Drilled (ft)	22.5
Comments	None			Approximate Ground Surface Elevation (ft)	805.0

Elevation (ft)	Depth (ft)	ROCK CORE							MATERIAL DESCRIPTION	FIELD NOTES
		Run No.	Box No.	Recovery, %	Drill Time	R Q D, %	Fracture Drawing	Lithology		
805	0								FILL Silty SAND: Yellowish brown, moist, fine to coarse grained, with abundant gravel, cobbles, and boulders	
	1									
	2									
	3	1	B9	60	15:09	10		x	BEDROCK GRANITE: Black, white, and brownish yellow, hard, slightly weathered to intact	
	4							x		
	5							x		
800	6							x		
	7							x		
	8	2	B9	100	15:33	10		x		
	9							x		
	10							x		
795	11							x		
	12							x		
	13	3	B9	100	15:51	80		x		

Report: DMG10CALABASAS; Project File: G:\GINT\PROJECTS\ERTC.GPJ; Data Template: DMLA.GUT Printed: 3/16/06

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FOR: Palomar Pomerado Health Figure A-13




Elevation (ft)	Depth (ft)	ROCK CORE						MATERIAL DESCRIPTION	FIELD NOTES
		Run No.	Box No.	Recovery, %	Drill Time	R Q D, %	Fracture Drawing		
790	14								
	15								
	16								
	17								
	18	4	B9	100	16:25	90			
	19								
785	20								
	21								
	22								
	23								
	24								
780	25								
	26								
	27								
	28								
	29								

1) Total depth: 22.5 feet below ground surface
 2) No groundwater encountered
 3) Boring backfilled with bentonite cement

Report: DMG10CALABASAS; Project File: G:\GINT\PROJECTS\ERTC.GPJ; Data Template: DMLA.GDT Printed: 3/15/06

Date(s) Drilled	January 25, 2006	Logged By	J. Gratzer	Boring B-10 Sheet 1 of 1	
Drilling Method	Odex	Drill Bit Size/Type	8 inches (O.D.)		
Drill Rig Type	Schramm T660W	Hammer Data	N/A		
Sampling Method(s)	N/A			Job Number	29401968
Approximate Groundwater Depth and Date Measured	No groundwater encountered			Total Depth Drilled (ft)	18.0
Comments	None			Approximate Ground Surface Elevation(ft)	815.0

Elevation (ft)	Depth (ft)	SAMPLES		Graphic Log	USCS	MATERIAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	OTHER TESTS and REMARKS
		Type	Number						
0						Mixture of yellowish brown sand, gravel, cobbles and boulders			
810	5								
	10					Hard drilling, shifting rocks grinding on casing			
800	15								
	20					1) Total depth: 18 feet below ground surface (Refusal) 2) Boring grouted with bentonite cement			
790	25								
	30								
780	35								
	40								

Report: DMG4; Project File: G:\GINTWAPROJECTS\ERTC.GPJ; Data Template: DMLA.GDT Printed: 3/16/06

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Figure A-14

Date(s) Drilled	January 23, 2006	Logged By	J. Gratzer	Boring B-11 Sheet 1 of 1	
Drilling Method	Air Rotary, Tricore, Pneumatic downhole, odex	Drill Bit Size/Type	8 inches (O.D.)		
Drill Rig Type	Schramm T660W	Hammer Data	N/A		
Sampling Method(s)	N/A			Job Number	29401968
Approximate Groundwater Depth and Date Measured	No groundwater encountered			Total Depth Drilled (ft)	30.0
Comments	None			Approximate Ground Surface Elevation(ft)	815.0

Elevation (ft)	Depth (ft)	SAMPLES		Graphic Log	USCS	MATERIAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	OTHER TESTS and REMARKS
		Type	Number						
810	0					Mixture of yellowish brown sand, gravel, cobbles and boulders			Started with Air Rotary hammer
	5					Hard drilling, shifting rocks grinding on casing			Switched to Tricore hammer from 7 to 20 feet
800	10								
	15								Switched to Pneumatic Downhole hammer
790	20								
	25								Lost circulation Switched to Odex hammer
	30								
780	35					1) Total depth: 30 feet below ground surface (Refusal) 2) Boring grouted with bentonite cement			
	40								

Report: DMG4; Project File: G:\INTWP\PROJECTS\ERTC.GP.; Data Template: DMLA.GDT Printed: 3/18/06

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Date(s) Drilled	January 23 and 24, 2006	Logged By	J. Gratzer	Boring B-12 Sheet 1 of 1	
Drilling Method	Odex	Drill Bit Size/Type	8 inches (O.D.)		
Drill Rig Type	Schramm T660W	Hammer Data	N/A		
Sampling Method(s)	N/A			Job Number	29401968
Approximate Groundwater Depth and Date Measured	No groundwater encountered			Total Depth Drilled (ft)	23.0
Comments	None			Approximate Ground Surface Elevation(ft)	815.0

Elevation (ft)	Depth (ft)	SAMPLES		Graphic Log	USCS	MATERIAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	OTHER TESTS and REMARKS
		Type Number	Blows per 6-inches						
0						Mixture of yellowish brown sand, gravel, cobbles and boulders			
810	5								
	10					Hard drilling, shifting rocks grinding on casing			
800	15								
	20								
790	25					1) Total depth: 23 feet below ground surface (Refusal) 2) Boring grouted with bentonite cement			
	30								
780	35								
	40								

Report: DMG4; Project File: G:\GINTW\PROJECTS\ERTC.GPJ; Data Template: DMLA.GDT Printed: 1/10/06


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Figure A-16



Date(s) Drilled	January 25, 2006	Logged By	J. Gratzner	Boring B-13 Sheet 1 of 1	
Drilling Method	Odex	Drill Bit Size/Type	8 inches (O.D.)		
Drill Rig Type	Schramm T660W	Hammer Data	N/A		
Sampling Method(s)	N/A			Job Number	29401968
Approximate Groundwater Depth and Date Measured	No groundwater encountered			Total Depth Drilled (ft)	16.5
Comments	None			Approximate Ground Surface Elevation(ft)	788.0

Elevation (ft)	Depth (ft)	SAMPLES		Graphic Log	USCS	MATERIAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	OTHER TESTS and REMARKS
		Type	Number						
0						Mixture of yellowish brown sand, gravel, cobbles and boulders			
5									
780									
10						Hard drilling, shifting rocks grinding on casing			
15									
770									
20						1) Total depth: 16.5 feet below ground surface (Refusal) 2) Boring grouted with bentonite cement			
25									
760									
30									
35									
750									
40									

Report: DMG4; Project File: G:\GINTW\PROJECTS\ERTC.GPJ; Data Template: DMLA.GDT Printed: 3/16/06

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Figure A-17

Date(s) Drilled	January 25, 2006	Logged By	J. Gratzner	Boring B-14 Sheet 1 of 1	
Drilling Method	Odex	Drill Bit Size/Type	8 inches (O.D.)		
Drill Rig Type	Schramm T660W	Hammer Data	N/A		
Sampling Method(s)	N/A			Job Number	29401968
Approximate Groundwater Depth and Date Measured	No groundwater encountered			Total Depth Drilled (ft)	20.0
Comments	None			Approximate Ground Surface Elevation(ft)	770.0

Elevation (ft)	Depth (ft)	SAMPLES		Graphic Log	USCS	MATERIAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	OTHER TESTS and REMARKS
		Type Number	Blows per 6-inches						
770	0					Mixture of yellowish brown sand, gravel, cobbles and boulders			
	5								
760	10					Hard drilling, shifting rocks grinding on casing			
	15								
750	20					1) Total depth: 20 feet below ground surface (Refusal) 2) Boring grouted with bentonite cement			
	25								
740	30								
	35								
730	40								

Report: DMG4; Project File: G:\GINTWP\PROJECTS\ERTC.GPJ; Data Template: DMLA.GDT Printed: 3/10/06






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Figure A-18

Date(s) Drilled	January 25, 2006	Logged By	J. Gratzner	Boring B-15 Sheet 1 of 1	
Drilling Method	Odex	Drill Bit Size/Type	8 inches (O.D.)		
Drill Rig Type	Schramm T660W	Hammer Data	N/A		
Sampling Method(s)	N/A				
Approximate Groundwater Depth and Date Measured	No groundwater encountered			Job Number	29401968
Comments	None			Total Depth Drilled (ft)	20.0
				Approximate Ground Surface Elevation(ft)	785.0

Elevation (ft)	Depth (ft)	SAMPLES		Graphic Log	USCS	MATERIAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	OTHER TESTS and REMARKS
		Type	Number						
780	0					Mixture of yellowish brown sand, gravel, cobbles and boulders			
770	5								
	10					Hard drilling, shifting rocks grinding on casing			
	15								
	20								
760	25					1) Total depth: 20 feet below ground surface (Refusal) 2) Boring grouted with bentonite cement			
	30								
750	35								
	40								

Report: DMG4; Project File: G:\GINTW\PROJECTS\ERTC.GPJ; Data Template:DMLA.GDT Printed: 3/16/06

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Figure A-19

Table A-1

SUMMARY OF TEST PIT INVESTIGATIONS

TEST PIT #	Total Depth of Test Pit (feet)	Depth to Bedrock (feet)	COMMENTS
1	5	1	Flat graded surface
2	3	1	Flat graded surface
3	5	4	Debris pile approx. 2'
4	7	6	Debris pile approx. 3'
5	2.5	2	Flat graded surface
6	6	4.5	Debris pile approx. 2'
7	1.5	1	Flat graded surface
8	3	1	Flat graded surface
9	4	1.5	Flat graded surface
10	2	1	Flat graded surface
11	3	0.5	Flat graded surface
12	4	2.5	Flat graded surface
13	3	0.5	Flat graded surface
14	3	1	Debris pile approx. 1'
15	3	1.5	Debris pile approx. 1.5'
16	2	0.5	Flat graded surface
17	3	0	Flat graded surface
18	3	2	Flat graded surface
19	3	1	Flat graded surface
20	4	2.5	Debris pile approx. 2'
21	3	2	Debris pile approx. 2'
22	4	2.5	Debris pile approx. 2.5'
23	4	2	Debris pile approx. 2'
24	4	2.5	Debris pile approx. 2.5'
25	4	2	Debris pile approx. 2'
26	2	0.5	Flat graded surface
27	2	0.5	Flat graded surface
28	2	0	Flat graded surface
29	5.5	4	Flat graded surface
30	5	5	Flat graded surface
31	3	0	Flat graded surface
32	3	0.5	Flat graded surface
33	4	2	Debris pile approx. 2'
34	4	2	Debris pile approx. 2'
35	5	5	Flat graded surface
36	4	0.5	Flat graded surface
37	4	2	Flat graded surface

Table A-1 continued

TEST PIT #	Total Depth of Test Pit	Depth to Bedrock	COMMENTS
38	3	0.5	Flat graded surface
39	5.5	5	Flat graded surface
40	3	1	Flat graded surface
41	3	0.5	Flat graded surface
42	3.5	1	Flat graded surface
43	4	2	Debris pile approx. 2.5'
44	4	2	Debris pile approx. 2'
45	5	4	Debris pile approx. 2.5'
46	5	2	Debris pile approx. 2'
47	6	4.5	Debris pile approx. 4'
48	8.5	7.5	Debris pile approx. 3'
49	6.5	6	Debris pile approx. 3'
50	6	5.5	Debris pile approx. 3'
51	4	3	Debris pile approx. 2'
52	5	3	Debris pile approx. 2'
53	5	3	Debris pile approx. 2'
54	4	3	Debris pile approx. 2'
55	7	6	Debris pile approx. 3'
56	5	4	Debris pile approx. 3'
57	7	6	Debris pile approx. 3'
58	6.5	5.5	Debris pile approx. 3'
59	6.5	4.5	Debris pile approx. 3'
60	5	5	Debris pile approx. 3'
61	7	6	Debris pile approx. 2'
62	6	5	Debris pile approx. 2'
63	7	6	Flat graded surface
64	5	3	Debris pile approx. 3'
65	5	3	Debris pile approx. 3'
66	3	1	Flat graded surface
67	5	3	Flat graded surface
68	4	1	Flat graded surface
69	5	4	Debris pile approx. 3'
70	4	2	Debris pile approx. 2'
71	3	1	Debris pile approx. 1.5'
72	7	4	Debris pile approx. 3.5'
73	3	1	Flat graded surface
74	6	3	Debris pile approx. 3'
75	3	2.5	Debris pile approx. 2.5'

Table A-1 continued

TEST PIT #	Total Depth of Test Pit	Depth to Bedrock	COMMENTS
76	4	3.5	Debris pile approx. 2.5'
77	6	3	Debris pile approx. 2'
78	3	2	Debris pile approx. 2'
79	5	3.5	Debris pile approx. 2'
80	9	8.5	Debris pile approx. 2.5'
81	10	9.5	Debris pile approx. 2.5'
82	6	4	Debris pile approx. 3.5'
83	3.5	3	Debris pile approx. 2'
84	4	1.5	Debris pile approx. 1.5'
85	0.5	0.5	Flat graded surface
86	3	1	Flat graded surface
87	3.5	1.5	Debris pile approx. 1.5'
88	3.5	2	Debris pile approx. 2'
89	4	1	Debris pile approx. 0.5'
90	4	2.5	Debris pile approx. 2.5'
91	2	0.5	Flat graded surface
92	3	2.5	Flat graded surface
93	4	2	Debris pile approx. 2'
94	4	2	Debris pile approx. 2'