



June 24, 2019

Project No. 16-6239

Xebec Building Company
3010 Old Ranch Parkway, Suite 470
Seal Beach, California 92660

Attention: Steven Christie, Senior Development Manager

Subject: Geotechnical Work Plan, Signal Hill Business Park, 20th Street and Walnut Avenue, Signal Hill, California

References: TGR Geotechnical, 2016, Geotechnical Investigation Report, Signal Hill Business Park, 20th Street and Walnut Avenue, Signal Hill, California, Project 16-6239, dated June 21, 2019

CA Engineering, Inc., 2019, Conceptual Grading and Utility Plan #16, Walnut Ave., Signal Hill, California, Job No. 215-39, dated Feb. 6, 2019

Steven,

This document has been prepared in response to the City of Signal Hill's (the City's) request to prepare a Geotechnical Workplan that addresses site grading during upcoming site redevelopment. Please note that this Geotechnical Workplan does not replace the referenced Geotechnical Investigation Report. Based on our understanding, the City has requested that the following information be included:

- Subsurface conditions under 21st Street;
- The presence and proposed management of undocumented fill beneath the site;
- The presence and proposed management of construction debris (i.e. concrete, abandoned piping) beneath the site; and
- The requirement that all subsurface voids encountered during site grading are removed.

This Geotechnical Workplan presents and considers:

- Data from TGR's Geotechnical Investigation Report (TGR, 2019); and
- Recent pothole investigation activities.

In addition, it provides grading recommendations addressing the proposed management of undocumented fill and construction debris and addresses the removal of any voids encountered during site grading, including piping runs, concrete rubble, and other debris.

BACKGROUND

Geotechnical findings at the Site, based on data from five borings advanced in April 2017 to a maximum of 51.1 feet below ground surface (BGS) were documented in TGR's Preliminary Geotechnical Investigation Report (TGR, 2019). In order to supplement that information, TGR

was present during a potholing investigation for the subject site in July through August 2017. The investigation consisted of potholing at various locations across the northwest and southwest portions of the site. Based on the findings of the 2017 investigation, another round of pothole and trench exploration occurred from January through February 2019. The geotechnical information obtained during these rounds of exploration are presented herein and were utilized in preparation of this Geotechnical Workplan.

For reference, and further discussed below, attached are the proposed conceptual grading and utility plans (CA Engineering, 2019).

For purposes of this Geotechnical Workplan, the site has been broken down into three (3) parcels: the Northwest Parcel; the Southwest Parcel; and the East Parcel. The Northwest Parcel is bounded by existing development to the north, 21st Street to the south, Walnut Avenue to the east and Gundry Avenue to the west. The Southwest Parcel is bounded by Jenni Rivera Park to the southwest, Walnut Avenue to the east and 21st Street to the north. The East parcel is bounded existing development to the north, 20th Street and Alamitos Avenue to the south, Gaviota Avenue to the east and Walnut Avenue to the west.

FINDINGS

Following are the geotechnical findings of the 2019 field exploration for the three above-mentioned parcels:

Northwest Parcel – Where explored, the southern portion of this parcel is underlain by undocumented fill to shallow depths ranging from approximately 1 to 3 feet with an average depth of 2 feet. The northern elevated portion of this parcel, where explored, was underlain by approximately 2 to 4 feet of undocumented fill, with the exception of the northcentral area which contained trash and debris up to depths of approximately 10 feet. The undocumented fill and trash and debris in the northwest parcel is underlain by competent native soil.

Southwest Parcel – Where explored, this parcel is underlain by undocumented fill to shallow depths ranging from approximately 1 to 3 feet, with an average depth of 2 feet, except for the northeast area which contained a relatively small area of debris (brick). The undocumented fill and debris were underlain by competent native soil.

East Parcel – Where explored, this parcel is underlain by undocumented fill to shallow depths ranging from approximately 1 to 2 feet in the southern portion of this parcel. The northern portion of the parcel, where explored, was underlain by up to approximately 7 feet of undocumented fill. The undocumented fill was underlain by competent native soil.

Area Underneath 21st Street – TGR did not observe the subsurface conditions beneath 21st Street. It is our understanding that environmental conditions have been assessed and addressed in another report. However, we anticipate that soil conditions will be similar to those encountered directly to the north and south of the street. The protocols specified below are adequate for geotechnical considerations during construction underneath 21st Street.

Figure 2 presents the Conceptual Plan showing the depth to competent native soil from existing grade.

GRADING DESIGN

The currently proposed grading (CA Engineering, 2019) consists of cuts and fills to reach design grades for nine small industrial office buildings with associated parking, drive aisles and landscaping.

Northwest Parcel

The majority of the Northwest Parcel is a fill area where fills of up to 10 feet will be applied to the top of the existing undocumented fill to reach final design grade. Cut areas of up to 7 feet, are a relatively small portion of this parcel and are located in the northern portion and along the western boundary.

Southwest Parcel

The majority of the Southwest Parcel is a fill area where fills of up to 7 feet will be applied to the top of the existing undocumented fill to reach final design grade. The cut area of this parcel is limited to the southern tip, up to a depth of 1 foot.

East Parcel

The southern portion of this parcel is primarily a fill area, where 1 to 4 feet of fill will be applied to the top of the existing undocumented fill to reach final design grade. The northern portion of the parcel is a cut area, up to approximately 9 feet.

GRADING RECOMMENDATIONS

Fill Areas

Prior to placing new fill material, the existing undocumented fill shall be processed in place, moisture conditioned to a minimum of optimum moisture content and compacted to a minimum relative compaction of 90 percent in accordance with ASTM D1557 prior to the placement of fill to reach design grades. Simple Green will be incorporated into the water used for moisture conditioning. In-place processing of the undocumented fill shall consist of heavy ripping and cross-ripping to a depth of at least two feet with deeper ripping in areas of deeper undocumented fill and applying water to moisture condition the soil. Simple Green shall be incorporated into the water used for moisture conditioning. As further discussed on page 4, areas of trash and debris that are encountered during the processing of documented fill shall be removed, properly disposed of and replaced with properly compacted fill to reach design grades. Any import soils shall be non-expansive and approved by TGR Geotechnical Inc.

Cut Areas

Once cuts have been made to reach design grades, the exposed soils shall be observed to see if competent native soils are exposed. If potentially competent soils are exposed, the soils shall be tested in place to determine if they have a minimum relative compaction of 90 percent. If they do not, they shall be processed in place to a depth of 1 ft., moisture conditioned and compacted to a minimum relative compaction of 90 percent. Simple Green will be incorporated into the water used for moisture conditioning. If any undocumented fill is exposed at design cut grades, the fill shall be processed in place (depending on the depth), moisture conditioned to a minimum of optimum of optimum moisture content and compacted to a minimum relative compaction of 90 percent. Simple Green will be incorporated into the water used for moisture conditioning. In-place processing of the undocumented fill shall consist of heavy ripping and cross-ripping to a depth of at least two feet with deeper ripping in areas of deeper

undocumented fill and applying water to moisture condition the soil. Simple Green shall be incorporated into the water used for moisture conditioning. As further discussed on page 4, areas of trash and debris that are encountered shall be removed, properly disposed of and replaced with properly compacted fill to reach design grades.

FOUNDATION RECOMMENDATIONS

The proposed building foundations should be underlain by a minimum 2 feet of properly compacted fill with a minimum relative compaction of 90 percent or competent native soil with a minimum relative compaction of 90 percent.

REMOVAL OF SUBSURFACE TRASH AND DEBRIS

As detailed in the Soil Removal Action Plan (Apex, June 2019) debris pits and one area with observed free product are present in shallow soil based on the pothole/trench investigations conducted to date. Additional construction debris (i.e. concrete and abandoned piping), and soil containing free product may be encountered during:

- Excavation of cut and debris areas where undocumented fill and native soil will be removed (the depth to native soil to be excavation varies by location); and
- Geotechnical preparation of soil across the site, which will be processed in place by heavy ripping and cross-ripping to a depth of at least 2 feet.

All abandoned piping or structures, construction debris, trash, concrete rubble, voids, and soil containing free product that are encountered during site grading shall be removed during site grading activities and disposed of offsite pursuant to the Soil Removal Action Plan.

NOTE REGARDING SOIL CONTAMINATION

It is TGR's understanding that the site soils and soil vapor are impacted with petroleum-related constituents; that various control measures are required during site grading to protect workers from exposure to impacted soils and vapors generated during soil movement; and that all contractors and subcontractors performing subsurface work associated with Site Redevelopment are required to adhere to the practices and procedures specified in the Site's Health and Safety Plan, Former Chemoil Refinery, 2020 Walnut Avenue, Signal Hill, CA (RE Solutions, December 17, 2018).

Furthermore, it is TGR's understanding that soil sampling, field screening and management related to the environmental condition of the property will be handled by the Site's Environmental Consultant (Apex Companies, LLC); that soil cuttings generated from the excavation areas may not be reused at the Site without approval from the Environmental Consultant; that excavations may not be backfilled without approval from the Environmental Consultant; and that information regarding 1) contamination in the subsurface and 2) required soil management and planned disposition of excavated soil and waste is documented as specified in the Soil Removal Action Plan.

LIMITATIONS

This report was prepared for a specific client and a specific project, based on the client's needs, directions and requirements at the time.

This report was necessarily based upon data obtained from a limited number of observances, site visits, soil and/or other samples, tests, analyses, histories of occurrences, spaced subsurface exploration and limited information on historical events and observations. Such information is necessarily incomplete. Variations can be experienced within small distances and under various climatic conditions. Changes in subsurface conditions can and do occur over time.

This report is not authorized for use by and is not to be relied upon by any party except the client with whom TGR contracted for the work. Use or reliance on this report by any other party is at that party's sole risk. Unauthorized use of or reliance on this report constitutes an agreement to defend and indemnify TGR from and against any liability that may arise as a result of such use or reliance, regardless of any fault, negligence, or strict liability of TGR.

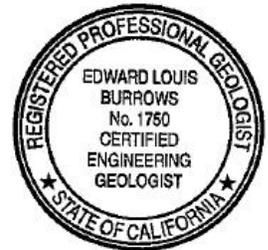
We thank you for this opportunity to be of service to you on this project. If you have any questions regarding this report, please do not hesitate to call this office.

Respectfully submitted,

TGR GEOTECHNICAL, INC.



Sanjay Govil, Ph.D., PE, GE 2382
Principal Geotechnical Engineer



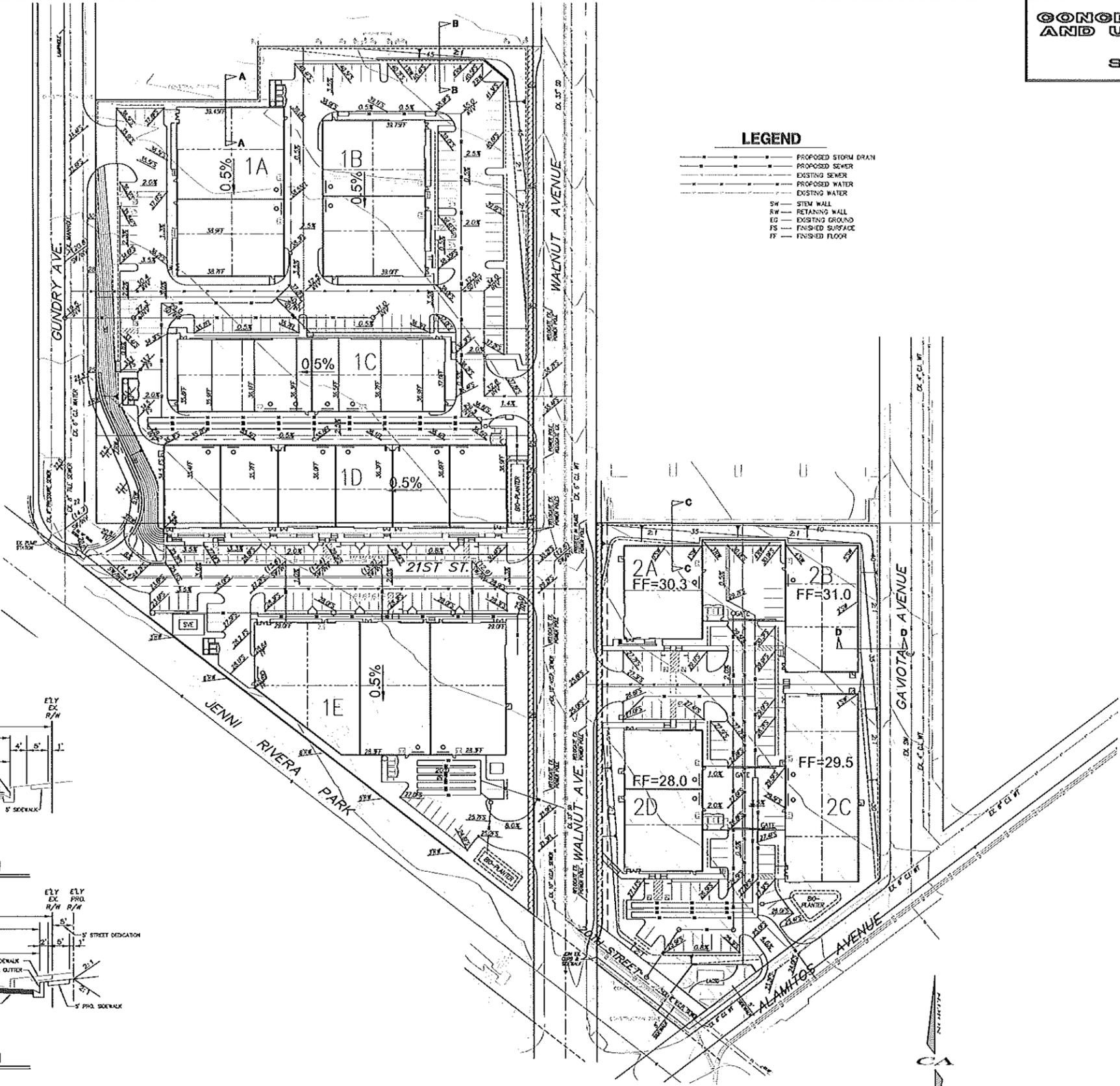
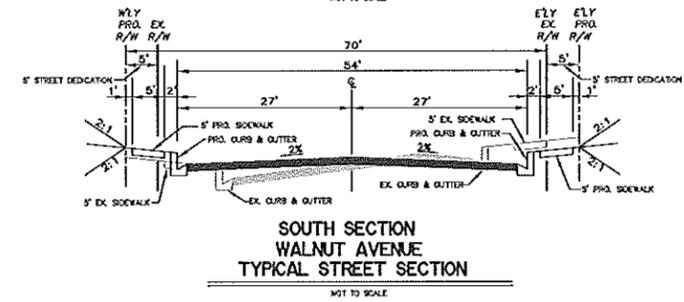
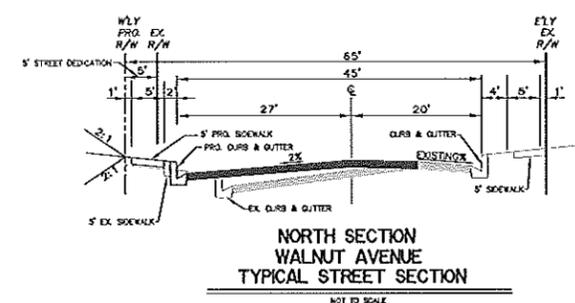
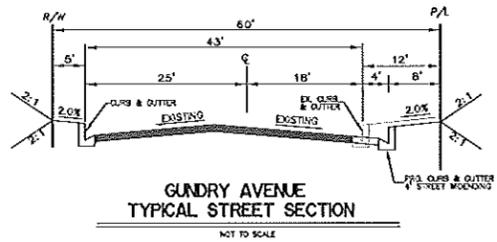
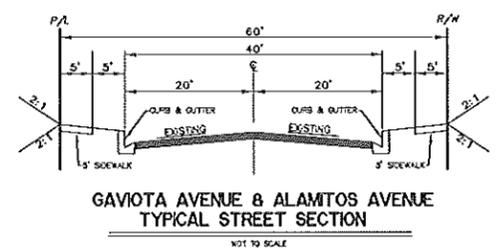
Edward Burrows, MS, PG, CEG 1750
Principal Engineering Geologist

Distribution: (1) Addressee

Enclosures: Figure 1 – Conceptual Grading and Utility Plan (CA Engineering, 2019)
Figure 2 – Conceptual Plan showing Depth from Existing Grade to Native

**CONCEPTUAL GRADING
AND UTILITY PLAN #10**
WALNUT AVE.
SIGNAL HILL, CA

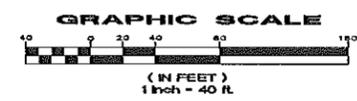
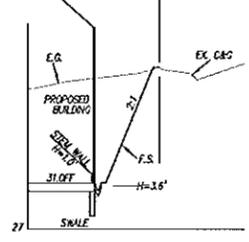
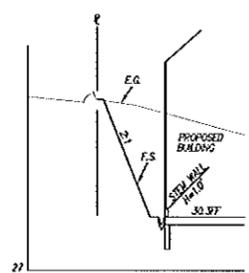
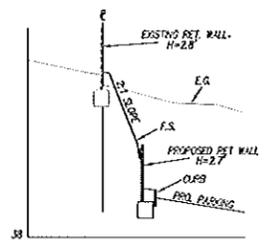
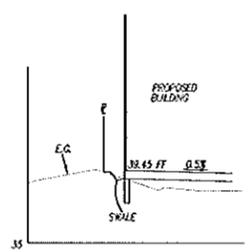
EARTHWORK ESTIMATE	QUANTITIES	
	CUT	FILL
ROUGH GRADING	14,303 CY	39,826 CY
OVER EXCAVATION	29,051 CY	29,051 CY
SUBSIDENCE (0.15')	(2,179) CY	
SHRINKAGE (12.5%)	(5,419) CY	
SUBTOTAL PROJECT EARTHWORK QUANTITIES	35,756 CY	68,877 CY
NET	33,121 CY (SHORT)	



LEGEND

- PROPOSED STORM DRAIN
- PROPOSED SEWER
- EXISTING SEWER
- PROPOSED WATER
- EXISTING WATER
- SW — STEM WALL
- RW — RETAINING WALL
- EG — EXISTING GROUND
- FS — FINISHED SURFACE
- FF — FINISHED FLOOR

SECTIONS
SCALES: HOR. 1"=20'; VERT. 1"=4'



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SEAL BEACH, CA 90740
562-546-0252
CONTACT: MR. STEVEN CHRISTIE

FIGURE 1

LAST REV.
Feb 05 2019
JOB NO.
215-39
SHEET 1 OF 1

**CONCEPTUAL GRADING
AND UTILITY PLAN #16**
WALNUT AVE.
SIGNAL HILL, CA



LEGEND

- PROPOSED STORM DRAIN
- PROPOSED SEWER
- EXISTING SEWER
- PROPOSED WATER
- EXISTING WATER
- SW — STEM WALL
- RW — RETAINING WALL
- S — PROPOSED CUT FROM EXISTING TO PROPOSED FINISHED SURFACE
- F — PROPOSED FILL FROM EXISTING TO PROPOSED FINISHED SURFACE
- DBF — DEPTH FROM EXISTING TO NATIVE SOIL

EARTHWORK ESTIMATE	QUANTITIES	
	CUT	FILL
ROUGH GRADING	14,330 CY	39,545 CY
SUBSIDENCE (0.15%)	(2,179) CY	
SHRINKAGE (12.5%)	(1,731) CY	
SUBTOTAL PROJECT EARTHWORK QUANTITIES	10,350 CY	39,545 CY
NET	29,195 CY (SHORT)	

ROUGH GRADING
OVER EXISTATION
SUBSIDENCE (0.15%)
SHRINKAGE (12.5%)
NET



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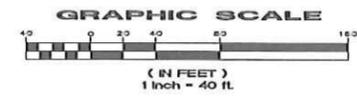


FIGURE 2
215-37
SHEET 1 OF 1

ALL DIMENSIONS UNLESS OTHERWISE SPECIFIED ARE IN FEET AND DECIMALS THEREOF.
 ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE CALIFORNIA CIVIL ENGINEERING BOARD'S STANDARD SPECIFICATIONS FOR HIGHWAY AND TRAIL CONSTRUCTION.
 ALL UTILITIES SHOWN ARE BASED ON RECORD DRAWINGS AND FIELD SURVEY. THE USER SHALL VERIFY THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO CONSTRUCTION.
 THE USER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES.
 THIS PLAN IS THE PROPERTY OF CA ENGINEERING, INC. AND IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, WITHOUT THE WRITTEN PERMISSION OF CA ENGINEERING, INC.