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# **Appendix I**

SQUIMP Report for Los Robles Cancer Center,  
May 2022



**SQUIMP Report**  
**PDS-1068**

*for*

**Los Robles Cancer Center**

400 Rolling Oaks Drive  
Thousand Oaks, CA 91361

**May 2022**  
**Updated**

Prepared for:

*HCA  
One Park Plaza, Bldg II-E  
Nashville, TN 37203*

Prepared by:

*Kimley-Horn and Associates, Inc.  
1100 W Town and Country Road, Suite 700  
Orange, CA 92868  
(714) 939 - 1030*

**Received by**  
*JKendall*  
**July 28, 2022**

**VENTURA COUNTYWIDE STORMWATER QUALITY PROGRAM  
POST-CONSTRUCTION STORMWATER MANAGEMENT PLAN (PCSMP)  
FOR  
Los Robles MOB  
PARCEL #: 681-0-180-265**

**Project Name:** Los Robles MOB

**Preparation/Revision Date:** May-22

**Prepared for:**

Name of Owner/Developer: HCA  
Stress Address: One Park Plaza, Bldg II-E  
City, State, Zip Code: Nashville, TN 37203  
Telephone: xxx

**Prepared by:**

Name and Title of Preparer: Nicole Kerry, PE  
Company Name: Kimley-Horn and Associates, Inc.  
Stress Address: 660 South Figueroa St. #2050  
City, State, Zip Code: Los Angeles, CA 90017  
Telephone: 213-261-4060

I hereby certify that the information provided in this Application is correct.

Application Prepared by: Nicole Kerry, PE - Kimley-Horn and Associates  
Print Name and Firm

Signed \_\_\_\_\_  
Signature of Project Engineer in the Firm Named Above

Title \_\_\_\_\_  
Affix Professional registration stamp of the person named above with signature and expiration date

**Project Name:** Los Robles MOB

**STEP 1: DETERMINE PROJECT APPLICABILITY**

*Instructions:*

For new development projects, answer yes, no, or NA to questions (1) - (10) below.

For redevelopment projects, answer yes, no, or NA to questions (11) - (13) below.

<b>NEW DEVELOPMENT PROJECTS</b>	
<i>Does the new development project fall within categories (1) - (10) below?</i>	
<b>Project Type and/or Characteristics</b>	<b>Y/N/NA</b>
1) Development projects equal to 1 acre or greater of disturbed area that adds more than 10,000 square feet of impervious surface area →go to Step 2	N
2) Industrial parks with 10,000 square feet or more of total altered surface area →go to Step 2	N
3) Commercial strip malls with 10,000 square feet or more of impervious surface area →go to Step 2	N
4) Retail gasoline outlets with 5,000 square feet or more of total altered surface area →go to Step 2	N
5) Restaurants (Standard Industrial Classification (SIC) of 5812) with 5,000 square feet or more of total altered surface area →go to Step 2	N
6) Parking lots with 5,000 square feet or more of impervious surface area, or with 25 or more parking spaces →go to Step 2	Y
7) Streets, roads, highways, and freeway construction of 10,000 square feet or more of impervious surface area → go to Roadway Projects	N
8) Automotive service facilities (Standard Industrial Classification (SIC) of 5013, 5014, 5511, 5541, 7532-7534 and 7536-7539) of 5,000 square feet or more of total altered surface area →go to Step 2	N
9) Projects located in or directly adjacent to, or discharging directly to an Environmentally Sensitive Area (ESA), where the development will: a. Discharge stormwater runoff that is likely to impact a sensitive biological species or habitat; and b. Create 2,500 square feet or more of impervious surface area →go to Step 2	N

10) Single-family hillside homes (see Section 2 of the TGM for specific requirements) →go to <b>SF Hillside</b>	N
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**Project Name:** Los Robles MOB

**PROJECT APPLICABILITY, CONT.**

<b>REDEVELOPMENT PROJECTS</b>	
<p><i>For redevelopment projects that fall within categories (1) through (9) above, and that conduct land-disturbing activities that result in the creation, or addition, or replacement of 5,000 square feet or more of impervious surface area on an already developed site, answer questions 11-13 below. Existing single-family dwelling and accessory structures are exempt from redevelopment projects unless such projects create, add, or replace 10,000 square feet of impervious surface area.</i></p>	
<b>Project Type and/or Characteristics</b>	<b>Y/N/NA</b>
<p>11) Projects where redevelopment results in an alteration to more than fifty percent of impervious surfaces of a previously existing development, and the existing development <u>was not</u> subject to the post development stormwater quality control requirements of Board Order 00-108, these projects must mitigate the entire redevelopment project area  <b>→go to Step 2</b></p>	Y
<p>12) Projects where redevelopment results in an alteration to more than fifty percent of impervious surfaces of a previously existing development, and the existing development <u>was</u> subject to the post development stormwater quality control requirements of Board Order 00-108, the project must mitigate only the altered portion of the redevelopment project area and not the entire project area  <b>→go to Step 2</b></p>	N
<p>13) Projects where redevelopment results in an alteration of less than fifty percent of impervious surfaces of a previously existing development these projects must mitigate only the altered portion of the redevelopment project area and not the entire project area  <b>→go to Step 2</b></p>	N

**Project Name:**

Los Robles MOB

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**STEP 2: ASSESS SITE CONDITIONS**

*Provide an assessment of the project site using the following tables*

**New Development Project General Characteristics**

<b>General Project Characteristics</b>	<b>Area (acres)</b>
Total Project Site Area	0.00
Total Disturbed Area	0.00
Total Existing (Pre-Project) Impervious Area	0.00
Post-Project Impervious Area [1]	0.00
Area of Green Roof (ET-1) [1]	0.00
Area Draining to Hydrologic Source Controls (ET-2) [1]	0.00
Revised Post-Project Impervious Area	0.00
Project Imperviousness (%)	

**Redevelopment Project General Characteristics**

<b>General Project Characteristics</b>	<b>Area (acres)</b>
Total Project Site Area	4.74
Total Altered Area [6]	4.74
Total Existing (Pre-Project) Impervious Area	0.90
Was existing (pre-project) impervious area subject to post-development stormwater quality control requirements? [2]	N
Amount of Existing Impervious Area Altered [3]	0.90
Amount of Impervious Area Added	2.55
% Alteration of Existing Impervious Area [4]	383.33%
Post-Project Impervious Area (Impervious Area to be Mitigated) [1], [4]	3.45
Area of Green Roof (ET-1) [1]	0.00
Area Draining to Hydrologic Source Controls (ET-2) [1]	0.00
Revised Post-Project Impervious Area	3.45
Project Imperviousness (%) [5]	72.78%

**Project Name:**

Los Robles MOB

**Project Description**

Briefly describe project:

The proposed project consists of constructing a 59,000 square foot 2-story medical building located on an 4.74-acre site at 400 East Rolling Oaks Drive in the city of Thousand Oaks within the County of Ventura, California. The existing building and site improvements will be demolished. The site is currently developed as a child daycare. The project site is composed of one parcel. Throughout the project there will be four MWS-L-8-12 present, along with two detention system identified as BMP#1 and BMP #2.

Describe current and proposed zoning and land use designation:

The General Plan Land Use designation and zoning designation for the parcel is Commercial Use. The zoning will not change.

Describe topography of project area. Identify low and high points and the location of steep slopes (provide a range of grades):

Overall site topography surrounding the building generally slopes downward to the north towards the hillside terrain. The maximum site elevation is 898 feet msl along the southern portion of property. The minimum site elevation is 780 feet along the north portion of the property. The existing overall drainage pattern is maintained with the proposed development.

Describe the site's soil types (A, B, C, D) and geological conditions:

Site soil type is made up of very rocky bedrock with poor stormwater infiltration, classifying as hydrologic soil group type C soils.

*Attach soil type information*

**Project Name:**

Los Robles MOB

**Project Description, cont'd**

Describe the site's groundwater conditions (e.g. depth to seasonal high groundwater):

Groundwater was not encountered at any of the borings. This implies that there is no high levels of groundwater in this area. Although this was expected there was an encounter of seepage during construction along the section of Rolling Oaks Drive east of the intersection with Los Padres Drive.

Is there offsite drainage on the site? If so, identify the location(s) and source(s) of offsite drainage and the volume of water running onto the site:

Yes, there is an encounter of offsite drainage on this site. The location of this offsite drainage is south of the site, where a hill is present. The runoff from the hillside flows in the northerly direction and flows through the project site as sheet flow. A portion of the drainage is collected by swales and concrete ditches that discharge into an existing storm drain headwall on the western perimeter of the site.

Describe any existing utilities within the project area that would limit the possible locations of certain BMPs:

N/A

Describe any environmentally sensitive areas (e.g. riparian areas, wetlands) within the project area:

N/A

**Geotechnical considerations:**

<i>Does the site contain any of the following characteristics:</i>	<b>Y/N/NA</b>
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Collapsible Soil	N/A
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Expansion Soil	Y
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Potential for seismically-induced soil liquefaction	N
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Additional considerations:

*Attach relevant geotechnical information*

**Project Name:**

Los Robles MOB

**STEP 2: POLLUTANTS OF CONCERN****Pollutants of Concern (See Section 3.3 of 2011 TGM)**

Activity / Potential Land Uses	Potential Pollutant*								
	Sediment	Nutrients	Metals	Pesticides	Oxygen Demanding Substances	Toxic Organics	Oil & Grease	Bacteria	Trash and Debris
Parking Lots	X		X		X	X			X
Commercial Developments	X	X	X		X	X		X	X
Other [fill in if necessary]									
Other [fill in if necessary]									

\*Denote potential pollutant with "x"

**Receiving Waterbody Listings (see Section 3.3. of 2011 TGM)**

Receiving Waterbody (watershed indicated in parentheses)	Constituent Group [7]	Distance to Project (ft)
Calleguas Creek below Potrero Rd. and Mugu Lagoon (Calleguas Creek)	Bacteria, Metals, Nutrients, Pesticides, PCBs, Sediment	2716.66
Other [fill in if necessary]		

[1] Applicant should enter post-project impervious cover prior to accounting for green roof and hydrologic source control (HSC) credits. Volume reduction provided by green roofs and HSCs are accounted for implicitly in the sizing calculations for BMPs by assuming the roof area covered by a green roof or the area draining to a HSC is pervious rather than impervious when calculating the runoff coefficient for the site. Green roofs and HSCs are not required to be considered for all project locations and types. **In order to obtain credit, Green Roofs and HSCs must be designed as specified in the 2011 TGM.** Additional detail on Green Roofs (ET-1) and HSCs (ET-2) can be found in Section 6 of the 2011 TGM.

[2] Land-disturbing activity that results in the creation or addition or replacement of less than 5,000 square feet of impervious surface area on an already developed site, or that results in a decrease in impervious area which was subject to the post development stormwater quality control requirements of Board Order 00-108, is not subject to mitigation unless so directed by the local permitting agency

[3] Redevelopment does not include routine maintenance activities that are conducted to maintain the original line and grade, hydraulic capacity, or original purpose of the facility or emergency redevelopment activity required to protect public health and safety. Impervious surface replacement, such as the reconstruction of parking lots and roadways, that does not disturb additional area and maintains the original grade and alignment, is considered a routine maintenance activity. Agencies' flood control, drainage, and wet utilities projects that maintain original line and grade or hydraulic capacity are considered routine maintenance. Redevelopment also does not include the repaving of existing roads to maintain original line and grade.

[4] "% Alteration of Existing Impervious Area" determines the 50% threshold which is key in determining portion of site that must comply with post-construction requirements - see Step 1 redevelopment categories for more detail. The amount of "Post Project Impervious Area" that must adhere to post-construction requirements is dependant on 50% threshold

[5] "Project Imperviousness" is calculated using the "Total Project Area" except when redevelopment projects that must mitigate only the altered portion of the redevelopment project area. In this case, the "Total Disturbed Area" is used to calculate "Project Imperviousness"

[6] For the purposes of this calculation, Total Altered Area shall mean any area that is altered as a result of land disturbance, such as clearing, grading, grubbing, and excavation. This excludes areas used exclusively for temporary stockpiling.

[7] If a waterbody is listed for "toxicity" and the cause and/or contribution to toxicity is known, then the constituent group known to contribute to toxicity are listed here (in lieu of listing "toxicity")

**Project Name:**

Los Robles MOB

**STEP 3: APPLY SITE DESIGN PRINCIPLES AND TECHNIQUES**

*Provide a brief description of site design principles and techniques included within the proposed project site.*

<b>Site Design Measures [1]</b>	<b>Included? Y/N/NA</b>	<b>Brief Description of the Site Design Measure</b>
Site Planning	Y	Site will be designed to ensure stormwater flows away from the building and directed towards grate inlets located at low points to catch and direct drainage to BMPs.
Protect and Restore Natural Areas	Y	Site plan maximizes landscape areas as much as possible.
Minimize Land Disturbance	N	
Minimize Impervious Cover	Y	Landscape areas are being maximized in the proposed site design.
Apply LID at Various Scales	Y	Multiple BMPs are proposed for the site to ensure all runoff is treated.
Implement Integrated Water Resource Management Practices	Y	The proposed inlet and infiltration basin system with bypass measures will protect people, property and the environment from flood threats up to 100-year storm.

[1] Refer to Section 4.2 - 4.7 of the 2011 TGM for applicable Design Criteria.

**Project Name:** Los Robles MOB

**STEP 4: APPLY SOURCE CONTROL MEASURES**

*Provide a brief description of the source control measures included in the proposed project site.*

<b>Site-Specific Source Control Measures[1]</b>	<b>Included? Y/N/NA</b>	<b>Brief Description of the Source Control Measure</b>
S-1: Storm Drain Message and Signage	Y	Storm drain messages or placards will be located at all curbs inlets within the project site boundary
S-2: Outdoor Material Storage Area Design	N	
S-3: Outdoor Trash Storage and Waste Handling Area Design	Y	Trash enclosures are provided per city standards
S-4: Outdoor Loading/Unloading Dock Area Design	N	
S-5: Outdoor Repair/Maintenance Bay Design	N	
S-6: Outdoor Vehicle /Equipment/ Accessory Washing Area Design	N	
S-7: Fueling Area Design	N	
S-8: Proof of Control Measure Maintenance	Y	An operation and maintenance plans is included with this report along with standard infiltration chamber BMP guidelines. See Appendix C

[1] Refer to Fact Sheets in Section 5 of the 2011 TGM for detailed information and design criteria

**STEP 5: APPLY BMPS TO REDUCE EIA TO <=5%**

*New development and redevelopment projects (Categories 1-6, 8, and 9) must reduce EIA to <=5%*

**Step 5a: Calculate Allowable EIA**

EIA is defined as impervious area that is hydrologically connected via sheet flow over a hardened conveyance or impervious surface without any intervening medium to mitigate flow volume.

The allowable "EIA" for a project is calculated as:

$$EIA_{\text{allowable}} = (A_{\text{project}}) * (\%_{\text{allowable}}) \quad \text{Equation 2-1}$$

Where:

$EIA_{\text{allowable}}$  = The maximum impervious area from which runoff can be treated and discharged offsite (and not retained onsite) [acres]

$A_{\text{project}}$  = The total project area [acres] [1]

$\%_{\text{allowable}}$  = 5 percent

Input:		Units
$A_{\text{project}}$ [1]	4.74	Acres
$\%_{\text{allowable}}$	5.00%	Percent
<b><math>EIA_{\text{allowable}}</math></b>	<b>0.24</b>	Acres

**Step 5b: Calculate Impervious Area to be Retained**

The impervious area from which runoff must be retained onsite is the total impervious area minus the EIA allowable, which should be calculated as follows:

$$A_{\text{retain}} = TIA - EIA_{\text{allowable}} = (\text{IMP} * A_{\text{project}}) - EIA_{\text{allowable}} \quad \text{Equation 2-2}$$

Where:

$A_{\text{retain}}$  = the drainage area from which runoff must be retained [acres]

TIA = total impervious area [acres]

IMP = imperviousness of project area (%)

Input:		Units
Imperviousness	72.78%	
$A_{\text{project}}$ [1]	4.74	Acres
$EIA_{\text{allowable}}$	0.24	Acres
<b><math>A_{\text{retain}}</math></b>	<b>3.21</b>	Acres

**Project Name:** Los Robles MOB

**BMPS TO REDUCE EIA TO <=5%, CONT.**

**Step 5c: Calculate the Volume to be Retained (SQDV)**

The runoff volume that is to be retained onsite should be calculated using Equation 2-3 below:

$$V_{\text{retain}} = C * (0.75/12) * A_{\text{retain}} \quad \text{Equation 2-3}$$

Where:

$V_{\text{retain}}$  = The stormwater quality design volume (SQDV) that must be retained onsite [ac-ft]  
C = runoff coefficient (equals 0.95 for impervious surfaces)

<b>Input:</b>	<b>Units</b>
C	0.95
$A_{\text{retain}}$	3.21 Acres
$V_{\text{retain}}$	0.191 ac-ft 62,163.7 gallons 8,310.0 cu.ft.

*Continue to Step 5d*

**Project Name:**

Los Robles MOB

**STEP 5d: SELECT RETENTION BMPs**

Select and size Retention BMPs to meet the 5% EIA Requirement. Retention BMPs include INF1-6, RWH-1, and ET 1 and 2. See 2011 TGM, Section 6 for more information.

Retention BMPs	Included?	Drainage Area Retained (acres) [2]	Drainage Area Runoff Coefficient	Volume Retained (SQDV) (ac-ft) [1],[2]	If not applicable, state brief reason
	Y/N				
<i>Infiltration BMPs</i>					
INF-1: Infiltration Basin	N	0.00	0.95		infiltration is infeasible for the site
INF-2: Infiltration Trench	N	0.00	0.95		infiltration is infeasible for the site
INF-3: Bioretention	N	0.00	0.95		infiltration is infeasible for the site
INF-4: Drywell	N	0.00	0.95		infiltration is infeasible for the site
INF-5: Permeable Pavement	N	0.00	0.95		infiltration is infeasible for the site
INF-6: Proprietary Infiltration	N	0.00	0.95		infiltration is infeasible for the site
<i>Rainwater Harvesting BMPs</i>					
RWH-1: Rainwater Harvesting	N	0.00	2		infiltration is infeasible for the site
TOTAL Volume Retained				0.000	ac-ft
				0.0	gallons
				0.0	cu.ft.
REMAINING Volume to meet 5% EIA requirement				0.2	ac-ft
				62,164	gallons
				8,310	cu.ft.

[1] SQDV Methodology #3 used here.

[2] If a Retention BMP is used more than once on a site (i.e., 2 Infiltration Trenches implemented on one site) then drainage area and volume retained shown here should be additive. A separate BMP sizing worksheet (see Appendix E of the 2011 TGM) should be submitted for each BMP.

**ADDITIONAL INSTRUCTIONS: Retention BMPs must be used onsite to the maximum extent practicable. If the remaining volume to meet 5% EIA cannot be met, then project applicants must demonstrate technical infeasibility. Consult Section 3.2 of the 2011 TGM for infeasibility criteria. A technical infeasibility site-specific analysis must be submitted. Projects that cannot prove technical infeasibility must reduce EIA to <=5% using Retention BMPs.**

If onsite Retention BMPs cannot feasibly be used to meet the 5% EIA Requirement, move onto Step 5e; if 5% EIA Requirement is met go to Step 7

	Y/N/NA
A completed copy of the applicable "BMP Sizing Worksheet(s)" for the project's Retention BMPs from Appendix E of the 2011 TGM is included as an attachment. BMPs must be sized to meet the SQDV or SQDF (See Section 2 Step 7 of the 2011 TGM).	N

**Project Name:** Los Robles MOB

**STEP 5e: SELECT AND SIZE BIOFILTRATION BMPs TO REDUCE EIA TO <=5%**

*New development and redevelopment projects that demonstrate technical infeasibility (see Section 3.2 of 2011 TGM) for reducing EIA to <= 5% using Retention BMPs are eligible to use Biofiltration BMPs to achieve the 5% EIA Requirement.*

	<b>Y/N</b>
Is it technically infeasible for Retention BMPs to meet the 5% EIA Requirement?	Y
If yes, volume-based biofiltration BMPs shall be sized to treat 1.5 times the volume not retained using Retention BMPs.	

**ADDITIONAL INSTRUCTIONS: Submit Technical Infeasibility documentation.**

The onsite biofiltered volume ( $V_{\text{biofilter}}$ ), should be calculated as follows:

$$V_{\text{biofilter}} = (V_{\text{retain}} - V_{\text{achieved}}) * 1.5 \quad \text{Equation 2-4}$$

Where:

- $V_{\text{biofilter}}$  = the volume that must be captured and treated in a Biofiltration BMP [ac-ft]
- $V_{\text{retain}}$  = the stormwater quality design volume (SQDV) that must be retained [ac-ft]
- $V_{\text{achieved}}$  = the volume retained onsite using Retention BMPs [ac-ft]

Input	Value	Units
$V_{\text{achieved}}$	0.000	ac-ft
$V_{\text{retain}}$	0.191	ac-ft
$V_{\text{biofilter}}$	<b>0.29</b>	ac-ft
	<b>93,245</b>	gallons
	<b>12,465</b>	cu.ft.

## LID SWQDV Calculations

All calculations based on the Ventura County Technical Guidance Manual for Stormwater Quality Control Measures, July 13, 2011 with a  
2018 Errata Update, for Ventura County

Project Name: Los Robles  
 Completed by: Ana Gonzalez  
 Reviewed by:  
 Date: 17-May-22  
 County: Ventura

SQDV & SQDF Calculation	A-1	A-2	A-3 and A-5	A-4	
Area, $A_{\text{project}}$ (acres)	1.41	1.28	1.10	0.81	
Total Impervious Area, TIA (acres)	0.99	1.00	0.84	0.71	
Impervious fraction, IMP (ft/ft)	0.70	0.78	0.76	0.87	
Soil Type	3.00	3.00	3.00	3.00	
Pervious runoff coefficient, $C_p$	0.10	0.10	0.10	0.10	
Runoff coefficient, C	0.70	0.76	0.75	0.84	
$t_c$ (min)	5.00	5.00	5.00	5.00	
Design Intensity for 150% Sizing (in/hr)	0.35	0.35	0.35	0.35	
$SQDF$ ( $ft^3/s$ )	0.344	0.342	0.289	0.239	
Modular Wetland System	L-8-12	L-8-12	L-8-12	L-8-12	
Dimensions	8'x12'	8'x12'	8'x12'	8'x12'	
Capacity	0.346	0.346	0.346	0.346	

**BIOFILTRATION BMPs, CONT.**

<b>Biofiltration BMPs</b>	<b>Included? Y/N</b>	<b>Drainage Area Biofiltered (acres) [3]</b>	<b>Drainage Area Runoff Coefficient</b>	<b>Volume Biofiltered (1.5xSQDV) (ac-ft) [2],[3]</b>	<b>If not applicable, state brief reason</b>
BIO-1: Bioretention with Underdrain	N	0.00	0.95		
BIO-2: Planter Box	N	0.00	0.95		
BIO-3: Vegetated Swale [1]	N	0.00	0.95		
BIO-4: Vegetated Filter Strip [1]	N	0.00	0.95		
BIO-5: Proprietary Biotreatment [1]	Y	4.74	0.95	0.422	
TOTAL Volume Biofiltered				0.42	ac-ft
				137,561.0	gallons
				18,389.1	cu.ft
REMAINING Volume to be addressed by Alternative Compliance				0.00	ac-ft
				0.0	gallons
				0.0	cu.ft

[1] BIO-3 and BIO-4 are flow-based and should be calculated using SQDF for sizing (see Table 2-1 of the TGM for the applicable design criteria for sizing). The SQDV is shown here for 5% EIA Requirement compliance purposes only.

[2] SQDV Methodology #3 used here.

[3] If a Biofiltration BMP is used more than once on a site (e.g., 2 Planter Boxes implemented on one site) then drainage area and volume biofiltered shown here be additive. A separate BMP sizing worksheet (see Appendix E of the 2011 TGM) should be submitted for each BMP.

If onsite Retention BMPs and/or Biofiltration BMPs cannot feasibly be used to meet the 5% EIA standard, move onto Step 6, otherwise, skip Step 6.

	Y/N/NA
A completed a copy of the applicable "BMP Sizing Worksheet(s)" for the project's Biofiltration BMPs from Appendix E of the 2011 TGM is included as an attachment.. BMPs must be sized to meet the 1.5 times SQDV or SQDF (see Section 2, Step 7 of the 2011 TGM) requirement. Guidance on flow based design for 150% sizing provided in Table 2-1 of the 2011 TGM.	Y

# Appendix A

## Water Quality Site Exhibit and Construction Documents

**ARCHITECT**

HKS ARCHITECTS, INC.  
350 N SAINT PAUL ST, SUITE 100  
DALLAS, TX 75201-4240

**INTERIOR DESIGNER**

HKS ARCHITECTS, INC.  
350 N SAINT PAUL ST, SUITE 100  
DALLAS, TX 75201-4240

**CIVIL ENGINEER**

KIMLEY-HORN AND ASSOCIATES, INC.  
660 S. FIGUEROA ST, SUITE 2050  
LOS ANGELES, CA 90017

**LANDSCAPE**

KIMLEY-HORN AND ASSOCIATES, INC.  
660 S. FIGUEROA ST, SUITE 2050  
LOS ANGELES, CA 90017

**STRUCTURAL ENGINEER**

KPFF, INC.  
6080 CENTER DRIVE, SUITE 300  
LOS ANGELES, CA 90045

**MEP/LOW VOLTAGE ENGINEER**

WSP USA BUILDINGS, INC.  
405 HOWARD STREET, SUITE 500  
SAN FRANCISCO, CA 94105

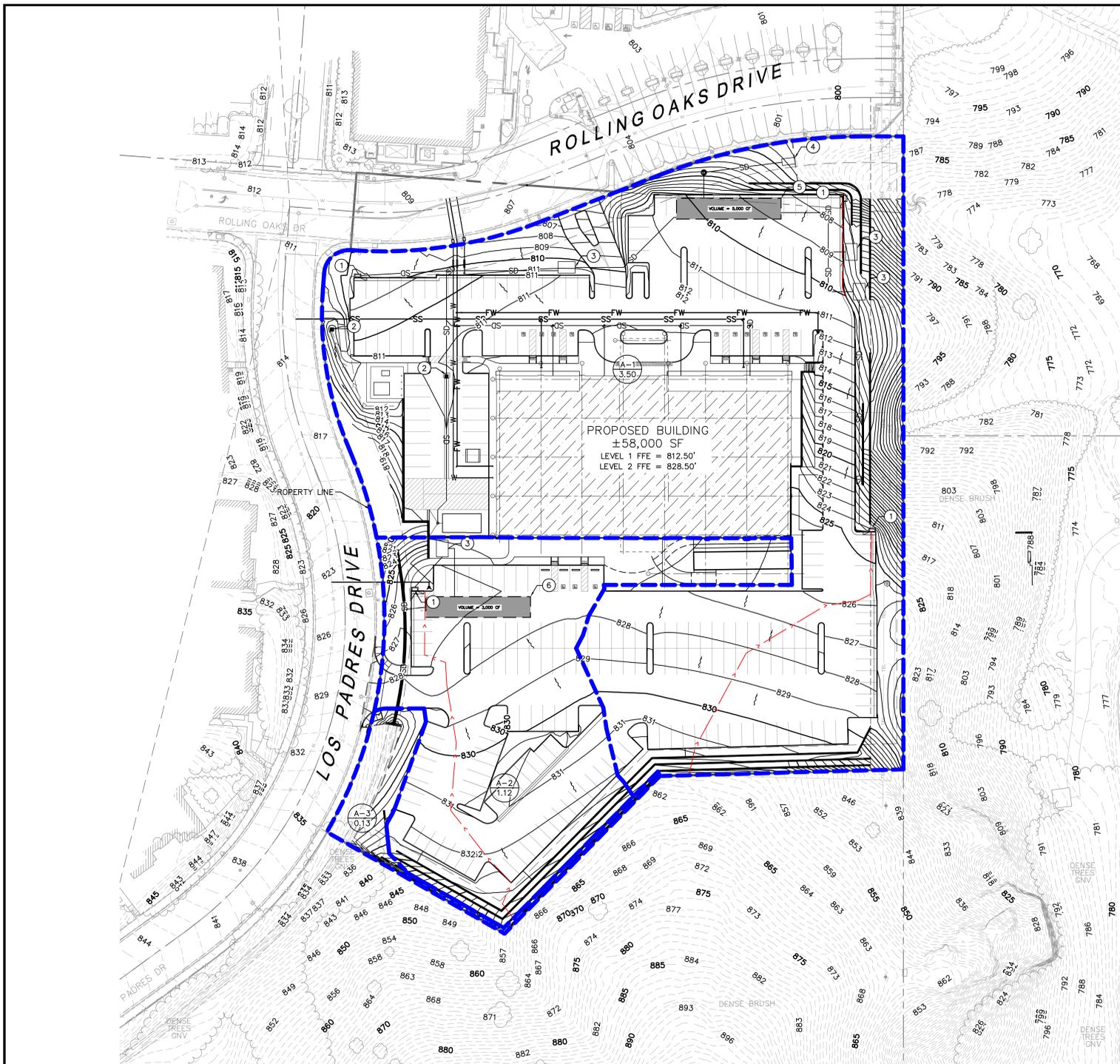
**HCA VENDORS**

STERIS  
BRIAN HARTMAN - Brian\_Hartman@steris.com

PHILIPS HEALTHCARE  
ERIC WILLIAMS - Eric.Williams@philips.com

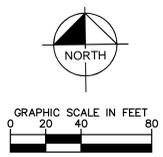
GE HEALTHCARE  
TAREY ISBELL - Tarey.Isbell@ge.com

QUANTUM MEDICAL  
TINA DARON - tina@quantummedical.com



**LEGEND**

- 575 — PROPOSED CONTOUR
- - - 575 - - - EXISTING CONTOUR
- — — — — PROPERTY LINE
- - - - - DMA BOUNDARY
- ⊙ DA XX  
XX AC ⊙ DRAINAGE AREA NAME
- — — — — AREA (IN ACRES)
- → → → → FLOW PATH
- - - - - RIGHT-OF-WAY
- SD — PROPOSED STORM DRAIN



DRAINAGE AREA SUMMARY					
DRAINAGE AREA	AREA (AC)	BMP ID	WATER QUALITY VOLUME (CF)	WATER QUALITY FLOW RATE (CFS)	BMP CAPACITY
A-1	3.50	BMP 1	8,310	9.04	5,000
A-2	1.12	BMP 2		27.11	3,000
A-3	0.13	DE MINIMIS		-	-
<b>TOTAL</b>	<b>4.74</b>	<b>-</b>	<b>-</b>	<b>36.15</b>	<b>8,000</b>

**LID NOTES**

- ① PROPOSED CATCH BASIN
- ② PROPOSED GRATE INLET
- ③ PROPOSED MWS-L-8-12 PER DETAIL SHEET 2
- ④ ENERGY DISSIPATOR
- ⑤ BMP 1 - OLD CASTLE DETENTION SYSTEM
- ⑥ BMP 2 - OLD CASTLE DETENTION SYSTEM

Los Robles Hospital & Medical Center

**MEDICAL OFFICE BUILDING**

400 ROLLING OAKS DR.  
THOUSAND OAKS, CA 91381

**OWNER**

HOSPITAL CORPORATION OF AMERICA (HCA)  
ONE PARK PLAZA  
BUILDING II, EAST 3RD FLOOR  
NASHVILLE, TN, 37203

**FACILITY**

LOS ROBLES HOSPITAL & MEDICAL CENTER  
215 W. JANSSE ROAD  
THOUSAND OAKS, CA 91380

**REVIEW ONLY**

These documents are incomplete, and are released for owner review and/or budgeting. These documents are not suitable for bidding, permit or construction purposes.

KEY PLAN

REVISION

NO.	DATE	DESCRIPTION

HKS PROJECT NUMBER  
23775.000  
HCA PROJECT NUMBERS  
3055500030

CITY PROJECT NUMBER  
XXX

DATE  
05/27/22

ISSUE

SHEET TITLE  
SQUIMP

SHEET NO.  
1

REVIEWED FOR PERMIT ISSUANCE BY: CITY OF THOUSAND OAKS		CITY OF THOUSAND OAKS PUBLIC WORKS DEPARTMENT	
DEVELOPMENT ENGINEER	DATE		
PLANNING DIVISION	DATE	SQUIMP 400 ROLLING OAKS DRIVE THOUSAND OAKS, CA 91361 DP XXXX / SUMN XXXX-XXXX APN: 681-018-0265 CITY OF THOUSAND OAKS DWG. NO. XX-XXXX	
TRAFFIC ENGINEER	DATE		
BLDG. DIVISION - ADA COMPLIANCE	DATE		
COSCA	DATE	CITY OF THOUSAND OAKS DWG. NO. XX-XXXX	

**811**  
Know what's below.  
Call before you dig.  
DIAL TOLL FREE  
8 1 1  
AT LEAST TWO DAYS  
BEFORE YOU DIG  
UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

REV.	SYMBOL	DESCRIPTION OF CHANGE	R.C.E.	DATE	P.D.E.	DATE
1		REVISED PER PUBLIC WORKS COMMENTS		10/31/18		

DESIGNED BY:  
LAC  
DATE

DRAWN BY:  
JD  
DATE

CHECKED BY:  
AG  
DATE

ENGINEER'S SEAL

PREPARED BY:  
NICOLE K. DERRY, PE  
REGISTERED ENGINEER

58449  
RCE NUMBER

PLOT DATE: 4/25/2022 10:03:52 AM TEMPLATE VERSION: 3.0.0.270863 This document, together with the contracts and design presentation herein, is intended only for the specific purpose and client for which it was prepared. Review of and reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

**ARCHITECT**  
HKS ARCHITECTS, INC.  
350 N SAINT PAUL ST, SUITE 100  
DALLAS, TX 75201-4340

**INTERIOR DESIGNER**  
HKS ARCHITECTS, INC.  
350 N SAINT PAUL ST, SUITE 100  
DALLAS, TX 75201-4340

**CIVIL ENGINEER**  
KIMLEY-HORN AND ASSOCIATES, INC.  
660 S. FIGUEROA ST, SUITE 2050  
LOS ANGELES, CA 90017

**LANDSCAPE**  
KIMLEY-HORN AND ASSOCIATES, INC.  
660 S. FIGUEROA ST, SUITE 2050  
LOS ANGELES, CA 90017

**STRUCTURAL ENGINEER**  
KPF, INC.  
6060 CENTER DRIVE, SUITE 300  
LOS ANGELES, CA 90045

**ME/LOW VOLTAGE ENGINEER**  
WSP USA BUILDINGS, INC.  
406 HOWARD STREET, SUITE 600  
SAN FRANCISCO, CA 94105

**HCA VENDORS**  
STERS  
BRIAN HARTMAN - Brian\_Hartman@sters.com  
PHILIPS HEALTHCARE  
ERIC WILLIAMS - Eric.Williams@philips.com  
GE HEALTHCARE  
TAREY ISBELL - Tarey.Isbell@ge.com  
QUANTUM MEDICAL  
TINA DARON - Tina@quantummedical.com

**Los Robles Hospital & Medical Center  
MEDICAL OFFICE BUILDING**  
400 ROLLING OAKS DR.  
THOUSAND OAKS, CA 91361

**OWNER**  
HOSPITAL CORPORATION OF AMERICA (HCA)  
ONE FRANK PLAZA  
BUILDING II, EAST 3RD FLOOR  
NASHVILLE, TN, 37203

**FACILITY**  
LOS ROBLES HOSPITAL & MEDICAL CENTER  
215 W. JANSIS ROAD  
THOUSAND OAKS, CA 91360

**REVIEW ONLY**  
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KEY PLAN

REVISION

HKS PROJECT NUMBER  
23775.000  
HCA PROJECT NUMBERS  
3055500030

CITY PROJECT NUMBER  
XXX

DATE  
05/27/22

ISSUE

SHEET TITLE  
MWS DETAIL

SHEET NO.  
2

SITE SPECIFIC DATA			
PROJECT NUMBER			
PROJECT NAME			
PROJECT LOCATION			
STRUCTURE ID			
TREATMENT REQUIRED			
VOLUME BASED (CF)		FLOW BASED (CFS)	
N/A		0.346	
PEAK BYPASS REQUIRED (CFS) - IF APPLICABLE			
PIPE DATA		I.E.	MATERIAL
INLET PIPE 1			
INLET PIPE 2		N/A	N/A
OUTLET PIPE			
		PRETREATMENT	BIOFILTRATION
RIM ELEVATION			
SURFACE LOAD		PEDESTRIAN	
FRAME & COVER		2EA Ø30"	OPEN PLANTER Ø24"
NOTES:			

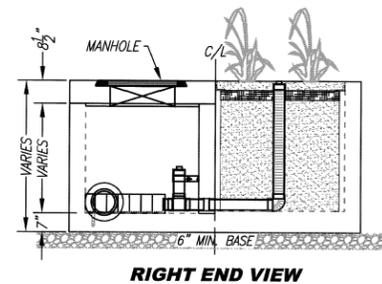
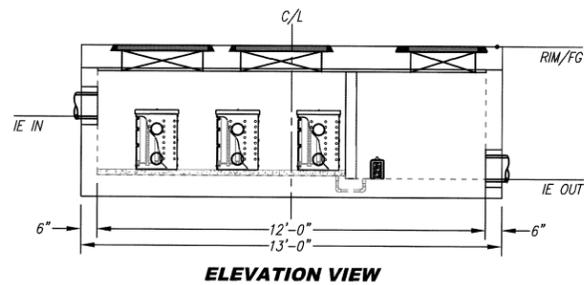
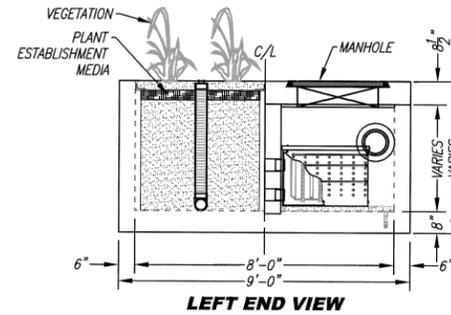
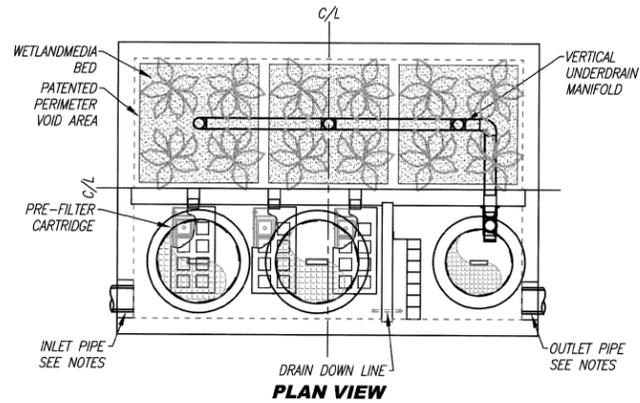
\* PRELIMINARY NOT FOR CONSTRUCTION

**INSTALLATION NOTES**

- CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURERS CONTRACT.
- UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE TO VERIFY PROJECT ENGINEERS RECOMMENDED BASE SPECIFICATIONS.
- CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL PIPES SHALL BE SEALED WATER TIGHT PER MANUFACTURERS STANDARD CONNECTION DETAIL.
- CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
- VEGETATION SUPPLIED AND INSTALLED BY OTHERS. ALL UNITS WITH VEGETATION MUST HAVE DRIP OR SPRAY IRRIGATION SUPPLIED AND INSTALLED BY OTHERS.
- CONTRACTOR RESPONSIBLE FOR CONTACTING BIO CLEAN FOR ACTIVATION OF UNIT. MANUFACTURERS WARRANTY IS VOID WITH OUT PROPER ACTIVATION BY A BIO CLEAN REPRESENTATIVE.

**GENERAL NOTES**

- MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
- ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT BIO CLEAN.



TREATMENT FLOW (CFS)	0.346
OPERATING HEAD (FT)	3.4
PRETREATMENT LOADING RATE (GPM/SF)	2.0
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

**MWS-L-8-12-V  
STORMWATER BIOFILTRATION SYSTEM  
STANDARD DETAIL**



## ARCHITECT

HKS ARCHITECTS, INC.  
350 N SAINT PAUL ST, SUITE 100  
DALLAS, TX 75201-4240

## INTERIOR DESIGNER

HKS ARCHITECTS, INC.  
350 N SAINT PAUL ST, SUITE 100  
DALLAS, TX 75201-4240

## CIVIL ENGINEER

KIMLEY-HORN AND ASSOCIATES, INC.  
660 S. FIGUEROA ST, SUITE 2050  
LOS ANGELES, CA 90017

## LANDSCAPE

KIMLEY-HORN AND ASSOCIATES, INC.  
660 S. FIGUEROA ST, SUITE 2050  
LOS ANGELES, CA 90017

## STRUCTURAL ENGINEER

KPFF, INC.  
6080 CENTER DRIVE, SUITE 300  
LOS ANGELES, CA 90045

## MEP/LOW VOLTAGE ENGINEER

WSP USA BUILDINGS, INC.  
405 HOWARD STREET, SUITE 500  
SAN FRANCISCO, CA 94105

## HCA VENDORS

STERIS  
BRIAN HARTMAN - Brian\_Hartman@steris.com

PHILIPS HEALTHCARE  
ERIC WILLIAMS - Eric.Williams@philips.com

GE HEALTHCARE  
TAREY ISBELL - Tarey.Isbell@ge.com

QUANTUM MEDICAL  
TINA DARON - tina@quantummedical.com

# ON-SITE IMPROVEMENT PLANS

FOR

## LOS ROBLES

### MEDICAL OFFICE BUILDING

400 ROLLING OAKS DRIVE  
THOUSAND OAKS, CA 91361

### PROJECT OWNER AND CONSULTANTS

OWNER/APPLICANT  
HCA HEALTHCARE  
ONE PARK PLAZA  
NASHVILLE, TN 37203  
Tel: (615) 344-9551

STRUCTURAL ENGINEERS  
KPFF, INC.  
6080 CENTER DR., SUITE 300  
LOS ANGELES, CA 90017  
Tel: (310) 665-1536

ARCHITECT  
HKS ARCHITECTS INC.  
350 N. SAINT PAUL ST, STE 100  
DALLAS, TX 75201  
Tel: (214) 969-5599

MEP ENGINEERS  
WSP BUILDINGS, INC.  
2625 NORTH HALL ST., SUITE 1300  
THOUSAND OAKS, CA  
Tel: (214) 521-1661

CIVIL ENGINEER/LANDSCAPE ARCHITECT  
KIMLEY-HORN AND ASSOC., INC.  
660 S. FIGUEROA ST., SUITE 2050  
ANGELES, CA 90017

GEOTECHNICAL ENGINEERS  
GORIAN AND ASSOCIATES, INC.  
3595 OLD CONEJO ROAD  
THOUSAND OAKS, CA 91320  
Tel: (805) 375-9262

### AGENCY CONTACT LISTING

TRANSPORTATION  
CITY OF THOUSAND OAKS  
2100 OLSEN ROAD  
THOUSAND OAKS, CA  
Tel: (213) 217-6000

SEWER  
CITY OF THOUSAND OAKS  
2100 OLSEN ROAD  
THOUSAND OAKS, CA  
Tel: (805) 805-449-2201

STORMWATER  
CITY OF THOUSAND OAKS  
2100 THOUSAND OAKS BLVD  
THOUSAND OAKS, CA  
Tel: (805) 449-2201

CITY OF THOUSAND OAKS  
2100 OLSEN ROAD  
THOUSAND OAKS, CA  
Tel: (213) 217-6000

GAS  
S. CALIFORNIA GAS CO.  
9400 OAKDALE  
CHATSWORTH, CA  
Tel: (800) 427-2200

WATER  
CALIFORNIA-AMERICAN WATER CO.  
2459 WEST HILLCREST DR.  
NEWBURY PARK, CA 91320  
Tel: (805) 498-6770

ELECTRIC  
S. CALIFORNIA EDISON  
3589 FOOTHILL DR  
THOUSAND OAKS, CA 91361  
Tel: (800) 655-4555

TELEPHONE  
VERIZON  
201 FLYNN ROAD  
CAMARILLO, CA 93012  
Tel: (805) 388-7337

CABLE  
TIME WARNER CABLE  
2323 TELLER ROAD  
NEWBURY PARK, CA 91320  
Tel: (888) 892-2253

### PROPERTY DESCRIPTION

THE LAND REFERRED TO IN THIS COMMITMENT IS SITUATED IN THE CITY OF THOUSAND OAKS, COUNTY OF VENTURA, STATE OF CALIFORNIA, AND IS DESCRIBED AS FOLLOWS:

PARCEL 1:

PARCEL "D" IN THE CITY OF THOUSAND OAKS, COUNTY OF VENTURA, STATE OF CALIFORNIA, AS SHOWN ON THE PARCEL MAP FILED IN BOOK 2, PAGE 29 OF PARCEL MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

EXCEPT AN UNDIVIDED ONE-HALF INTEREST IN ALL OIL, GAS, HYDROCARBON SUBSTANCES AND OTHER MINERALS OF ALL KINDS WHETHER LIKE OR UNLIKE HYDROCARBONS BELOW A DEPTH OF 500 FEET OF THE SURFACE OF SAID LAND, WITHOUT, HOWEVER, THE RIGHT TO ENTER UPON THE SURFACE OF SUCH REAL PROPERTY AS RESERVED BY JANSSE DEVELOPMENT CO., A GENERAL PARTNERSHIP, IN THE DEED RECORDED NOVEMBER 16, 1971, IN BOOK 3886, PAGE 296, OFFICIAL RECORDS.

PARCEL 2:

A PORTION OF SECTION 16, TOWNSHIP 1 NORTH, RANGE 19 WEST, RANCHO EL CONEJO, IN THE CITY OF THOUSAND OAKS, ACCORDING TO THE MAP THEREOF RECORDED IN BOOK 8, PAGE 51 OF MISCELLANEOUS RECORDS (MAPS) IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY DESCRIBED AS FOLLOWS:

BEGINNING AT THE EASTERLY TERMINUS OF THE NORTHERLY RIGHT OF WAY LINE OF ROLLING OAKS DRIVE (FORMERLY E. MODOC ROAD, 60 FEET WIDE) SHOWN AS SOUTH 85°10'11" EAST 514.33 FEET ON THE MAP OF TRACT NO. 1687, RECORDED IN BOOK 45, PAGE 24 OF MISCELLANEOUS RECORDS (MAPS), IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY AND EASTERLY TERMINUS BEING THE MOST NORTHERLY CORNER OF PARCEL "D" AS SHOWN ON THE PARCEL MAP RECORDED IN BOOK 2, PAGE 29 OF PARCEL MAPS IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY; THENCE ALONG THE NORTHERLY LINE OF SAID PARCEL "D" SOUTH 85°10'11" EAST 199.59 FEET TO THE TRUE POINT OF BEGINNING; THENCE CONTINUING ALONG SAID NORTHERLY LINE,

1ST: SOUTH 85°10'11" EAST 231.19 FEET TO THE NORTHEAST CORNER SAID PARCEL "D" SAID NORTHEAST CORNER BEING ON THE EASTERLY LINE OF SAID SECTION 16; THENCE ALONG SAID EASTERLY LINE,

2ND: NORTH 00° 54' 33" EAST 60.00 FEET; THENCE AT RIGHT ANGLES LEAVING SAID EASTERLY LINE,

3RD: NORTH 89° 25' 27" WEST 42.19 FEET TO THE BEGINNING OF A TANGENT CURVE CONCAVE SOUTHEASTERLY HAVING A RADIUS OF 420.00 FEET; THENCE,

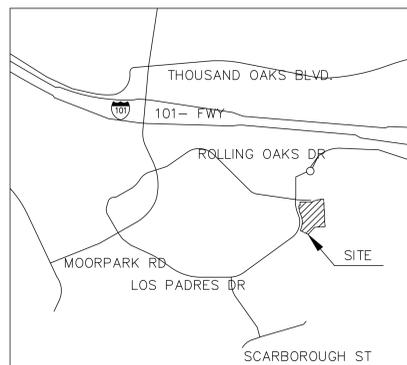
4TH: WESTERLY ALONG THE LAST MENTIONED CURVE THROUGH A CENTRAL ANGLE 21°35'16" AN ARC DISTANCE OF 158.25 FEET; THENCE,

5TH: SOUTH 68°59'17" WEST 36.39 FEET TO THE TRUE POINT OF BEGINNING.

EXCEPT AN UNDIVIDED ONE-HALF INTEREST IN ALL OIL, GAS, HYDROCARBON SUBSTANCES AND OTHER MINERALS OF ALL KINDS WHETHER LIKE OR UNLIKE HYDROCARBONS BELOW A DEPTH OF 500 FEET OF THE SURFACE OF SAID LAND, WITHOUT, HOWEVER, THE RIGHT TO ENTER UPON THE SURFACE OF SUCH REAL PROPERTY, AS RESERVED BY JANSSE DEVELOPMENT GENERAL PARTNERSHIP, IN THE DEED RECORDED NOVEMBER 16, 1971, IN BOOK 3886, PAGE 296 OF OFFICIAL RECORDS

ALSO EXCEPT AN UNDIVIDED ONE-HALF INTEREST IN ALL OIL, GAS, HYDROCARBON SUBSTANCES AND OTHER MINERAL OF ALL KINDS WHETHER LIKE OR UNLIKE HYDROCARBONS BELOW A DEPTH OF 500 FEET OF THE SURFACE OF THE REAL PROPERTY DESCRIBED HEREIN, WITHOUT, HOWEVER, THE RIGHT TO ENTER UPON THE SURFACE OF EACH PROPERTY, AS RESERVED BY RANCHO A LIMITED PARTNERSHIP, IN THE DEED RECORDED FEBRUARY 10, 1972, IN BOOK 3918, PAGE 401 OF OFFICIAL RECORDS.

APN: 681-0-180-265 (AFFECTS: PARCEL 1) AND 681-0-180-275 (AFFECTS: PARCEL 2)



VICINITY MAP  
SCALE: 1" = 500'



### SHEET INDEX

SHEET NO.	SHEET TITLE
C1.00	COVER SHEET
C1.01	GENERAL NOTES
C1.02	GENERAL NOTES
C2.00	EXISTING CONDITIONS (FOR REFERENCE ONLY)
C2.01	EXISTING CONDITIONS (FOR REFERENCE ONLY)
C2.02	EXISTING CONDITIONS (FOR REFERENCE ONLY)
C2.03	EXISTING CONDITIONS (FOR REFERENCE ONLY)
C2.04	EXISTING CONDITIONS (FOR REFERENCE ONLY)
C3.00	EROSION CONTROL PLAN
C3.01	EROSION CONTROL PLAN
C3.02	EROSION CONTROL DETAILS
C4.00	DEMOLITION PLAN
C4.01	DEMOLITION PLAN
C5.00	HORIZONTAL CONTROL AND PAVING PLAN
C5.01	HORIZONTAL CONTROL AND PAVING PLAN
C6.00	GRADING AND DRAINAGE PLAN
C6.01	GRADING AND DRAINAGE PLAN
C7.00	UTILITY PLAN
C7.01	UTILITY PLAN
C8.00	DETAILS
C8.01	DETAILS
C8.02	DETAILS
C8.03	DETAILS
C8.04	DETAILS

### ABBREVIATIONS

AB	AGGREGATE BASE
AC	ASPHALT
AHJ	AUTHORITY HAVING JURISDICTION
BC	BACK OF CURB
BS	BOTTOM OF STAIR
BLOG	BACK OF WALK
BW	BACK OF WALK
CAB	COMPACTED AGGREGATE BASE
CB	CATCH BASIN
CF	CURB FACE
C/L	CENTERLINE
CONC.	CONCRETE
CONST.	CONSTRUCT, CONSTRUCTION
CSG	COMPACTED SUBGRADE
DF	DEEPEMED FOOTING
DI	DRAIN INLET
DW	DOMESTIC WATER
E	EAST
EG	EDGE OF GUTTER
ELEC	ELECTRIC
EP	EDGE OF PAVEMENT
FF	FINISHED FLOOR
FG	FINISHED GRADE
FL	FLOW LINE
FS	FINISHED SURFACE
FW	FIRE WATER
G	GAS
GB	GRADE BREAK
HP	HIGH POINT
INV	INVERT
IRR	IRRIGATION WATER
JS	JUNCTION STRUCTURE
LF	LOW POINT
MH	MANHOLE
N	NORTH
PCC	PORTLAND CEMENT CONCRETE
P/L	PROPERTY LINE
PUE	PUBLIC UTILITY EASEMENT
PVC	POLYVINYL CHLORIDE
R	RADIUS OR RIDGE
RD	ROOF DRAIN
RW	RECLAIMED WATER
R/W	RIGHT-OF-WAY
S	SEWER OR SOUTH
SD	STORM DRAIN
STA	STATION
SS	SANITARY SEWER
SPPWC	STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION
SW	SIDE WALK
T	TELEPHONE
TC	TOP OF CURB
TS	TOP OF STAIR
VIF	VERIFY IN FIELD
W	WATER OR WEST
XXX.XX	PROPOSED ELEVATION
(XXX.XX)	EXISTING ELEVATION

### SITE INFORMATION

SITE ADDRESS:	400 ROLLING OAKS DRIVE THOUSAND OAKS, CA 91361 681-018-0265
APN:	681-018-0265
TOTAL SITE AREA:	4.74 AC
ZONING CLASSIFICATION:	R-E
EXISTING USE:	VACANT
PROPOSED USE:	MEDICAL OFFICE BUILDING
IMPERVIOUS COVERAGE:	
STRUCTURES	28% (58,000 SF / 4.74AC)
PARKING AREA	44% (91,500 SF / 4.74AC)
LANDSCAPED AREA TOTAL:	26% (54,332 SF / 4.74AC)
LANDSCAPED AREA WITHIN PARKING AREA	2% (4,370 SF / 4.74AC)

### EARTHWORK QUANTITIES

THE QUANTITIES LISTED BELOW ARE APPROXIMATE AND FOR PERMIT PROCESS ONLY. QUANTITIES HAVE BEEN CALCULATED FROM EXISTING FINISHED GRADES TO PROPOSED SUBGRADE. THE CONTRACTOR SHALL MAKE THEIR OWN DETERMINATION OF THE QUANTITIES INVOLVED AND BASE THEIR BID ON THEIR OWN ESTIMATE.

### PROJECT TOTAL

CUT =	30,000 C.Y.
FILL =	17,000 C.Y.
NET CUT =	13,000 C.Y.

### GEOTECHNICAL

ALL GRADING AND PAVING SHALL BE DONE IN ACCORDANCE WITH THE GORIAN & ASSOCIATES, INC. GEOTECHNICAL REPORT DATED APRIL 24, 2020, AND ALL ADDENDA. ALL EARTHWORK SHALL BE PERFORMED ACCORDING TO THE RECOMMENDATIONS PROVIDED IN THE REFERENCED REPORTS.

### BASIS OF BEARINGS

THE BEARINGS AND DISTANCES SHOWN HEREON ARE BASED ON THE CALIFORNIA COORDINATE SYSTEM OF 1983 (CCS83) ZONE V, RELATIVE TO THE NORTH AMERICAN DATUM OF 1983 (2017.50 EPOCH) AND WERE DETERMINED BY STATIC GPS TIES TO TWO CONTIGUOUS OPERATING REFERENCE STATIONS (CORS) REFERRED TO AS "CSC0" AND "MPWD". THE BEARING BETWEEN BOTH STATIONS BEING NORTH N46°59'33.53"E WEST BASED ON POSITIONS PUBLISHED IN THE CALIFORNIA SPATIAL REFERENCE CENTER.

ALL DISTANCES SHOWN ARE GROUND, UNLESS OTHERWISE NOTED.

**NOTE:** NOTIFY PUBLIC WORKS INSPECTOR A MINIMUM OF 48 HOURS PRIOR TO START OF CONSTRUCTION.

**NOTE:** CONTRACTOR SHALL TELEPHONE UNDERGROUND SERVICE ALERT (USA) 811 OR 1(800) 422-4133 A MINIMUM OF 48 HOURS PRIOR TO START OF CONSTRUCTION.

REVIEWED IN ACCORDANCE WITH CITY'S POLICY CONDITIONS OF APPROVAL BY:	THIS PLAN HAS BEEN REVIEWED BY _____ AND APPEARS TO BE IN GENERAL CONFORMITY WITH THE GEOTECHNICAL RECOMMENDATIONS IN OUR REPORT(S) DATED _____ MAKES NO REPRESENTATION AS TO THE ACCURACY OF DIMENSIONS, MEASUREMENTS, CALCULATIONS OR ANY PORTION OF THE DESIGN OTHER THAN GEOTECHNICAL.
SIGNATURE _____ DATE _____	
R.C.E. NO. _____ EXP. DATE _____	REGISTERED GEOLOGIST NO. _____ DATE _____ SOILS ENGINEER NO. _____ DATE _____

<p>Know what's below. Call before you dig.</p> <p>UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA</p>	DESIGNED BY: KRK DATE _____	<p>ENGINEER'S SEAL</p>	PREPARED BY: NICOLE D. KERRY, PE REGISTERED ENGINEER 58449 RCE NUMBER
	DRAWN BY: NDK DATE _____		CHECKED BY: NDK DATE _____
1	REVISED PER PUBLIC WORKS COMMENTS	10/31/18	
REV. SYMBOL	DESCRIPTION OF CHANGE	R.C.E.	DATE P.D.E. DATE

REVIEWED FOR PERMIT ISSUANCE BY: CITY OF THOUSAND OAKS	CITY OF THOUSAND OAKS PUBLIC WORKS DEPARTMENT
DEVELOPMENT ENGINEER DATE _____	COVER SHEET
PLANNING DIVISION DATE _____	400 ROLLING OAKS DRIVE THOUSAND OAKS, CA 91361 DP XXXX / SUMN XXXX-XXXX APN: 681-018-0265 CITY OF THOUSAND OAKS DWG. NO. XXX-XXXX
TRAFFIC ENGINEER DATE _____	
BLDG. DIVISION - ADA COMPLIANCE DATE _____	
COSCA DATE _____	

### Los Robles Hospital & Medical Center

### MEDICAL OFFICE BUILDING

400 ROLLING OAKS DR.  
THOUSAND OAKS, CA 91361

### OWNER

HOSPITAL CORPORATION OF AMERICA (HCA)  
ONE PARK PLAZA  
BUILDING # EAST 3RD FLOOR  
NASHVILLE, TN 37203

### FACILITY

LOS ROBLES HOSPITAL & MEDICAL CENTER  
215 W. JANSSE ROAD  
THOUSAND OAKS, CA 91360

### REVIEW ONLY

These documents are incomplete, and are released for owner review and/or budgeting. These documents are not suitable for bidding, permit or construction purposes.

KEY PLAN

REVISION

HKS PROJECT NUMBER  
23776.000  
HCA PROJECT NUMBERS  
3055500030

CITY PROJECT NUMBER  
XXX

DATE  
04/29/22

ISSUE  
100% CONSTRUCTION  
DOCUMENTS CHECK  
SET

SHEET TITLE  
COVER SHEET

SHEET NO.

# C1.00



**ARCHITECT**

HKS ARCHITECTS, INC.  
350 N SAINT PAUL ST, SUITE 100  
DALLAS, TX 75201-4240

**INTERIOR DESIGNER**

HKS ARCHITECTS, INC.  
350 N SAINT PAUL ST, SUITE 100  
DALLAS, TX 75201-4240

**CIVIL ENGINEER**

KIMLEY-HORN AND ASSOCIATES, INC.  
660 S. FIGUEROA ST, SUITE 2050  
LOS ANGELES, CA 90017

**LANDSCAPE**

KIMLEY-HORN AND ASSOCIATES, INC.  
660 S. FIGUEROA ST, SUITE 2050  
LOS ANGELES, CA 90017

**STRUCTURAL ENGINEER**

KPFF, INC.  
6080 CENTER DRIVE, SUITE 300  
LOS ANGELES, CA 90045

**MEP/LOW VOLTAGE ENGINEER**

WSP USA BUILDINGS, INC.  
405 HOWARD STREET, SUITE 500  
SAN FRANCISCO, CA 94105

**HCA VENDORS**

STERIS  
BRIAN HARTMAN - Brian\_Hartman@steris.com

PHILIPS HEALTHCARE  
ERIC WILLIAMS - Eric.Williams@philips.com

GE HEALTHCARE  
TAREY ISBELL - Tarey.Isbell@ge.com

QUANTUM MEDICAL  
TINA DARON - tina@quantummedical.com

**Los Robles Hospital & Medical Center  
MEDICAL OFFICE BUILDING**

400 ROLLING OAKS DR.  
THOUSAND OAKS, CA 91361

**OWNER**

HOSPITAL CORPORATION OF AMERICA (HCA)  
ONE PARK PLAZA  
BUILDING # EAST 3RD FLOOR  
NASHVILLE, TN, 37203

**FACILITY**

LOS ROBLES HOSPITAL & MEDICAL CENTER  
215 W. JANS ROAD  
THOUSAND OAKS, CA 91360

**REVIEW ONLY**  
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KEY PLAN

REVISION

HKS PROJECT NUMBER  
23776.000  
HCA PROJECT NUMBERS  
3055500030

CITY PROJECT NUMBER  
XXX

DATE  
04/29/22

ISSUE  
100% CONSTRUCTION  
DOCUMENTS CHECK  
SET

SHEET TITLE  
**GENERAL NOTES**

SHEET NO.

**GENERAL GRADING NOTES**

- ALL IMPOSED CONDITIONS FOR THE APPLICABLE ENTITLEMENT PERMIT SHALL APPLY.
- ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE CITY OF THOUSAND OAKS GRADING ORDINANCE, TITLE 7, CHAPTER 3, REGULATING THE EXCAVATION, GRADING AND FILLING OF LAND AND ANY AMENDMENTS THERETO EXCEPT AS WAIVED OR MODIFIED AS SET FORTH IN THE CONDITIONS OF APPROVAL.
- ESTIMATED EARTHWORK QUANTITIES:  
CUT: XXX C.Y. EXPORT: XXX C.Y.  
FILL: XXX C.Y. IMPORT:  
REMOVAL AND RECOMPACTION:
- ALL GEOLOGIC AND SOIL RECOMMENDATIONS IMPOSED BY THE SOILS ENGINEER OR CONTAINED IN THE SOILS AND GEOLOGIC REPORT ARE TO BE COMPLIED WITH AND ARE HEREBY MADE AN INTEGRAL PART OF THE GRADING PLANS AND PERMIT.  
  
GEOLOGIC AND SOILS REPORT DATED: XXXX XX, 20XX  
REPORT NUMBERS: W.O. # XXXXXXXXXX  
BY: GORIAN & ASSOCIATES, INC.
- NO CUT OR FILL SLOPES MAY BE STEEPER THAN 2:1 (H:V) MAXIMUM.
- IN THE EVENT ADVERSE BEDDING PLANES ARE DISCOVERED DURING CONSTRUCTION REQUIRING SLOPE STABILIZATION TECHNIQUES, SUCH WORK SHALL BE APPROVED BY THE CITY ENGINEER UNDER A REVISED GRADING PLAN AND CHANGE ORDER.
- ROUGH GRADED PAD DRAINAGE SHALL BE 2% MINIMUM. FINE GRADING AROUND STRUCTURES SHALL DRAIN AWAY FROM FOOTINGS, TO THE SATISFACTION OF THE PUBLIC WORKS INSPECTOR, TO SWALES WITH 1% MINIMUM SLOPE TO APPROVED DRAINAGE POINTS.
- ANY AREA TO RECEIVE FILL SHALL BE PREPARED BY SCARIFYING TO A MINIMUM DEPTH OF 6", MOISTENED OR DRIED TO NEAR OPTIMUM MOISTURE AND COMPACTED TO A RELATIVE DENSITY OF 90% BEFORE PLACING ADDITIONAL FILL. PRIOR TO PLACING OF ANY FILL MATERIAL, THE AREA SHALL BE APPROVED BY THE PUBLIC WORKS INSPECTOR. SHOULD ADVERSE SOIL CONDITIONS BE ENCOUNTERED, STABILIZATION TECHNIQUES SHALL BE APPROVED BY A CHANGE ORDER.  
  
THE OUTER 12 INCHES OF ALL FILL SLOPE SURFACES SHALL BE TAMPED AND GRID ROLLED TO THE SATISFACTION OF THE SOILS ENGINEER AND THE PUBLIC WORKS INSPECTOR, UNLESS OTHERWISE SPECIFIED.
- THE DISPOSITION OF ANY EXISTING WELL SHALL BE IN ACCORDANCE WITH THE CITY OF THOUSAND OAKS MUNICIPAL CODE SECTION 6-4.04 TO THE SATISFACTION OF THE CITY ENGINEER AND THE VENTURA COUNTY HEALTH DEPARTMENT.
- WITHIN SIX (6) MONTHS AFTER COMMENCEMENT OF GRADING, THE DEVELOPER SHALL PLANT ALL MANUFACTURED SLOPES 3 FEET AND HIGHER WITH SUITABLE GROUND COVER, SHRUBS AND TREES, AND INSTALL A PERMANENT IRRIGATION SYSTEM TO EFFECTIVELY AND IN EROSION CONTROL, ALL TO THE SATISFACTION OF THE CITY ENGINEER. A LANDSCAPING AND IRRIGATION PLAN SHALL BE SUBMITTED TO THE COMMUNITY DEVELOPMENT DEPARTMENT FOR APPROVAL PRIOR TO MAKING SUCH INSTALLATIONS.
- ANY CHANGES IN THE WORK SHOWN HEREON SHALL BE SUBJECT TO THE APPROVAL OF THE CITY ENGINEER.
- THE DEVELOPER'S LANDSCAPE ARCHITECT SHALL SUBMIT WRITTEN CERTIFICATION AFTER SATISFACTORY COMPLETION OF LANDSCAPING AND IRRIGATION REQUIREMENTS TO THE PUBLIC WORKS AND THE COMMUNITY DEVELOPMENT DEPARTMENTS. FIELD MEASUREMENTS MAY BE REQUIRED TO ASCERTAIN THE PRECISE HEIGHTS OF CUT AND FILL SLOPES AND/OR SLOPE SURFACE AREA.
- NO STOCKPILING AND/OR IMPORT/EXPORT HAULING SHALL BE PERMITTED UNLESS APPROVED ON THE GRADING PERMIT.
- THE PERMITTEE SHALL EMPLOY A REGISTERED CIVIL ENGINEER TO PROVIDE CONSTANT ON-SITE GRADING SUPERVISION TO ASSURE COMPLIANCE WITH THE APPROVED PLANS AND A SOILS ENGINEER TO PROVIDE CONSTANT SOILS INSPECTION IN ACCORDANCE WITH SECTION 7-3.17 (C & D) OF THE THOUSAND OAKS MUNICIPAL CODE. THE PERMITTEE SHALL SUBMIT RECOMMENDATIONS TO THE CITY ENGINEER WHO SHALL APPROVE THE SELECTION OF THE CIVIL ENGINEER AND SOILS ENGINEER. WEEKLY PROGRESS REPORTS SUBMITTED TO THE CITY ENGINEER BY THE CIVIL ENGINEER MAY BE REQUIRED.
- UPON RECOMMENDATIONS MADE BY THE SOILS ENGINEER AND APPROVED BY THE CITY ENGINEER PRIOR TO THE GRADING OF ANY PROJECT, ROCK WITH DIMENSION FROM EIGHT (8") INCHES TO THIRTY SIX (36") INCHES MAY BE PLACED IN DESIGNATED ROCK DISPOSAL SITES. SUCH OVERSIZED ROCK SHALL NOT BE IN THE UPPER TEN (10') FEET OF COMPACTED FILL OR NEARER THAN (20') FEET TO THE SURFACE OF ANY FILL SLOPE. SUCH ROCK DISPOSAL SITES SHALL BE SHOWN ON THE "RECORD DRAWINGS" AND CERTIFIED TO BE COMPACTED BY THE SOILS ENGINEER.
- ALL RETAINING WALLS SHALL BE CONSTRUCTED UNDER A SEPARATE PERMIT, TO BE OBTAINED PRIOR TO THE ISSUANCE OF THE GRADING PERMIT.
- OAK TREE NOTES:**
  - ALL OAK TREES WITHIN THE PROJECT BOUNDARIES AND WITHIN 100 FEET OF THE PROJECT BOUNDARIES SHALL BE FENCED AT THE PROTECTED ZONE (5 FEET OUTSIDE THE DRUPLINE) UNTIL PRESERVATION MEASURES, SUBMITTED BY THE SUBDIVIDER, ARE APPROVED BY THE CITY ENGINEER AND COMMUNITY DEVELOPMENT DEPARTMENT. SAID FENCING SHALL CONSIST OF AT LEAST A 5 FOOT HIGH CHAIN LINK MATERIAL FASTENED TO STEEL STAKES 8 FEET ON CENTER.
  - ALL OAK TREE WORK SHALL BE DONE IN ACCORDANCE WITH THE CITY OF THOUSAND OAKS OAK TREE ORDINANCE 937-NS AND OAK TREE PRESERVATION AND PROTECTION GUIDELINES RESOLUTION NO. 2010-14.
  - UNDER NO CONDITION SHALL ANY WORK BE DONE WITHIN THE PROTECTED ZONES OF ANY OAK TREE, WITHOUT OBTAINING AN OAK TREE ENCRoACHMENT PERMIT AND GIVING 48 HOURS ADVANCE NOTICE TO THE CITY. NO PROTECTIVE FENCING SHALL BE RELOCATED OR MOVED WITHOUT CITY APPROVAL.

**18. ACCESSIBILITY**

TO THE EXTENT THE PROVISIONS APPLY, THE DEVELOPER SHALL COMPLY WITH THE REQUIREMENTS OF TITLE 24, BUILDING STANDARDS OF THE CALIFORNIA ADMINISTRATIVE CODE IN REGARDS TO PROVIDING ACCESS TO THE PHYSICALLY DISABLED.

**19. EROSION CONTROL MEASURES**

- STOCK PILE SANDBAGS IN PARKWAY AREAS FOR RAPID PLACEMENT IN THE EVENT OF A STORM.
- EXCEPT AS OTHERWISE DIRECTED BY THE PUBLIC WORKS INSPECTOR, ALL DRAINAGE DEVICES SHOWN SHALL BE IN PLACE AT THE END OF EACH WORKING DAY WHEN THE FORECAST OF RAIN PROBABILITY IS 40% AND MAINTAINED DURING THE RAINY SEASON (OCTOBER 1ST TO APRIL 15).
- APPROVED EROSION CONTROL DEVICES MUST BE IN PLACE DURING THE ABOVE STATED PERIOD.
- CLEAN OUT MUD AND SILT AFTER EACH RAIN OR AS DIRECTED BY THE PUBLIC WORKS INSPECTOR.

**20. SPECIAL NOTES FOR STORMWATER POLLUTION PREVENTION**

- A STORMWATER POLLUTION CONTROL PLAN (SWPCP) IS REQUIRED FOR ALL PROJECTS FOR WHICH THE DISTURBED AREA IS GREATER THAN 1 ACRE. SWPCP FORMS ARE AVAILABLE AT THE PUBLIC WORKS DEPARTMENT. A COPY OF THE SWPCP SHALL BE ON FILE WITH THE CITY PRIOR TO ISSUANCE OF A GRADING PERMIT, AND A COPY SHALL BE MAINTAINED AT THE JOB SITE AT ALL TIMES.
- CONSTRUCTION ACTIVITY INCLUDING CLEARING, GRADING, DISTURBANCES TO SOIL SUCH AS STOCKPILING, OR EXCAVATION THAT RESULTS IN DISTURBANCES OF AT LEAST ONE ACRE OF TOTAL LAND AREA ARE REQUIRED BY THE STATE TO APPLY FOR AN NPDES GENERAL PERMIT FOR STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITY. DEVELOPER SHALL FILE A NOTICE OF INTENT (NOI) WITH THE APPROPRIATE FEE TO THE STATE WATER RESOURCES CONTROL BOARD AT THE FOLLOWING ADDRESS:  
  
STATE WATER RESOURCES CONTROL BOARD  
DIVISION OF WATER QUALITY  
STORM WATER PERMIT UNIT  
P.O. BOX 1977, SACRAMENTO, CALIFORNIA 95812 - 1977  
  
PROOF OF FILING THE NOI SHALL BE ON FILE WITH THE CITY PRIOR TO ISSUANCE OF A GRADING PERMIT. A COPY OF THE SWPCP SHALL BE MAINTAINED AT THE JOBSITE AT ALL TIMES.

TOTAL LAND AREA TO BE DISTURBED IS: XX.XX ACRES.  
(INCLUDING CLEARING, GRADING, STOCKPILING, AND/OR EXCAVATION)

**21. SPECIAL NOTE FOR ON-SITE PAVING PLANS**

THIS PLAN MAY HAVE BEEN REVIEWED ONLY AS A FINE GRADING, DRAINAGE AND PAVING PLAN FOR THE PURPOSE OF DOING FINE GRADING AND CONSTRUCTION OF PARKING LOT(S) WITH THE APPROPRIATE DRAINAGE DEVICES. THE REVIEW DOES NOT SUPERSEDE ANY COMMUNITY DEVELOPMENT DEPARTMENT CONDITIONS AND ALL ITEMS RELATING TO THE PLOT PLAN MUST BE FULFILLED. IT IS THE OWNER/DEVELOPER OR HIS REPRESENTATIVE'S RESPONSIBILITY TO ASCERTAIN THAT EVERYTHING SHOWN HEREON AGREES WITH THE PLOT PLAN (I.E. CONCRETE CURBS, PLANTER AREAS, LIGHTING, ETC.)

AN ON-SITE PAVING PERMIT SHALL BE OBTAINED FROM THE DEPARTMENT OF PUBLIC WORKS, AND FEES PAID PRIOR TO PAVING PARKING AND DRIVEWAY AREAS.

MAXIMUM PAVEMENT SLOPES ARE AS FOLLOWS:  
PARKING AREAS: 2% MAXIMUM HANDICAP PARKING  
2 1/2% MAXIMUM (OTHER PARKING)  
DRIVEWAY AREAS: 7% MAXIMUM FOR COMMERCIAL USES  
15% MAXIMUM FOR RESIDENTIAL USES

**24. SEISMIC HAZARDS MAPPING ACT**

PRIOR TO APPROVAL OF THE GRADING PLANS AND THE ISSUANCE OF A GRADING PERMIT, THE DEVELOPER'S CIVIL ENGINEER OR ENGINEERING GEOLOGIST SHALL DETERMINE IF THE PROPOSED DEVELOPMENT IS LOCATED WITHIN A LIQUEFACTION OR LANDSLIDE AREA AS IDENTIFIED ON THE SEISMIC HAZARDS MAP PREPARED BY THE STATE OF CALIFORNIA. IF THE DEVELOPMENT IS WITHIN SUCH AN AREA, THE DEVELOPER'S CIVIL ENGINEER OR ENGINEERING GEOLOGIST SHALL PREPARE A REPORT WHICH EVALUATES THE POTENTIAL GEOLOGICAL HAZARD WITH RECOMMENDATIONS FOR SUITABLE MITIGATION MEASURES. PURSUANT TO THE SEISMIC HAZARDS MAPPING ACT, THE DEVELOPER SHALL SUBMIT THE REPORT TO THE STATE DEPARTMENT OF CONSERVATION, DIVISION OF MINES AND GEOLOGY, AT THE FOLLOWING ADDRESS, CONCURRENT WITH SUBMITTAL TO THE CITY:  
  
SEISMIC HAZARDS MAPPING  
801 K STREET MS 12 - 78  
SACRAMENTO, CA 95814 - 3531

THE DEVELOPER SHALL PROVIDE A RETURN RECEIPT OR OTHER PROOF OF SUCH SUBMITTAL TO THE CITY ENGINEER, ALONG WITH A COPY OF THE REPORT, PRIOR TO THE ISSUANCE OF THE GRADING PERMIT.

**INFILTRATION NOTES**

**SUBGRADE PREPARATION**

- EXISTING SUBGRADE UNDER BED AREAS SHALL NOT BE COMPACTED OR SUBJECT TO CONSTRUCTION EQUIPMENT TRAFFIC PRIOR TO GEOTEXTILE AND RETENTION LAYER PLACEMENT.
- CONTRACTOR SHALL DETERMINE SUBGRADE PERMEABILITY IN ACCORDANCE WITH ASTM D 3385 BEFORE CONCRETE PLACEMENT. CONTRACTOR SHALL PROVIDE PERMEABILITY TESTING FOR SUBGRADE TO CONFIRM THAT SUBGRADE PERMEABILITY MEETS REQUIREMENTS OF CONTRACT DOCUMENTS.
- CONTRACTOR SHALL PREPARE SUBGRADE AS SPECIFIED IN THE CONTRACT DOCUMENTS, INSURING THE BOTTOM OF THE RETENTION LAYER IS AT LEVEL GRADE.
- CONTRACTOR SHALL KEEP ALL TRAFFIC OFF OF THE SUBGRADE DURING CONSTRUCTION TO THE MAXIMUM EXTENT PRACTICAL. CONTRACTOR SHALL REGRADE AND RE-COMPACT SUBGRADE DISTURBED BY RETENTION LAYER DELIVERY VEHICLES OR OTHER CONSTRUCTION TRAFFIC, AS NEEDED.
- CONTRACTOR SHALL CONSTRUCT SUBGRADE TO ENSURE THAT THE REQUIRED PAVEMENT THICKNESS IS OBTAINED IN ALL LOCATIONS.
- CONTRACTOR SHALL SCARIFY SUBGRADE TO A MINIMUM DEPTH OF TWELVE (12) INCHES PRIOR TO PLACING THE NON-WOVEN GEOTEXTILE MATERIAL.

**RETENTION LAYER NOTES**

- WHERE SPECIFIED, CONTRACTOR SHALL PREPARE RETENTION LAYER IN ACCORDANCE WITH CONTRACT DOCUMENTS.
- THE NON-WOVEN GEOTEXTILE AND RETENTION LAYER AGGREGATE SHALL BE PLACED IMMEDIATELY AFTER APPROVAL OF SUBGRADE PREPARATION. ANY ACCUMULATION OF DEBRIS OR SEDIMENT WHICH HAS TAKEN PLACE AFTER APPROVAL OF SUBGRADE SHALL BE REMOVED PRIOR TO INSTALLATION OF GEOTEXTILE AT NO EXTRA COST TO THE OWNER.
- PLACE GEOTEXTILE IN ACCORDANCE WITH MANUFACTURER'S STANDARDS AND RECOMMENDATIONS. ADJACENT STRIPS OF GEOTEXTILE SHALL OVERLAP A MINIMUM OF SIXTEEN INCHES (16"). SECURE GEOTEXTILE AT LEAST FOUR FEET (4') OUTSIDE OF BED AND TAKE ANY STEPS NECESSARY TO PREVENT ANY RUNOFF OR SEDIMENT FROM ENTERING THE RETENTION LAYER.
- INSTALL COARSE AGGREGATE IN 8-INCH MAXIMUM LIFTS. AGGREGATE SHALL MEET THE REQUIREMENTS SPECIFIED IN THE CONTRACT DOCUMENTS. LIGHTLY COMPACT EACH LAYER WITH EQUIPMENT, KEEPING EQUIPMENT MOVEMENT OVER RETENTION LAYER AND SUBGRADE TO A MINIMUM. INSTALL AGGREGATE TO GRADES INDICATED IN THE CONTRACT DOCUMENTS.
- CONSTRUCT RETENTION LAYER TO ENSURE THAT THE REQUIRED PAVEMENT THICKNESS IS OBTAINED IN ALL LOCATIONS.
- FOLLOWING PLACEMENT OF RETENTION LAYER AGGREGATE, THE GEOTEXTILE SHALL BE FOLDED BACK ALONG ALL BED EDGES TO PROTECT FROM SEDIMENT WASHOUT ALONG RETENTION LAYER EDGES. AT LEAST A FOUR (4) FOOT EDGE STRIP SHALL BE USED TO PROTECT BEDS FROM ADJACENT BARE SOIL. THIS EDGE STRIP SHALL REMAIN IN PLACE UNTIL ALL BARE SOILS CONTIGUOUS TO BEDS ARE STABILIZED AND VEGETATED. IN ADDITION, TAKE ANY OTHER NECESSARY STEPS TO PREVENT SEDIMENT FROM WASHING OR TRACKING INTO BEDS DURING SITE DEVELOPMENT. WHEN THE SITE IS FULLY STABILIZED, TEMPORARY SEDIMENT CONTROL DEVICES SHALL BE REMOVED.

**RECORD DRAWINGS**

- WHERE LOCAL JURISDICTIONS REQUIRE RECORD DRAWINGS, THE CONTRACTOR SHALL PROVIDE TO THE ENGINEER AND OWNER COPIES OF A PAVING, GRADING AND DRAINAGE RECORD DRAWING AND A SEPARATE UTILITY RECORD DRAWING, BOTH PREPARED BY A CALIFORNIA REGISTERED SURVEYOR. THE RECORD DRAWINGS SHALL VERIFY ALL DESIGN INFORMATION INCLUDED ON THE DESIGN PLANS OF THE SAME NAME.

**PROJECT CLOSEOUT**

CONTRACTOR SHALL PROVIDE THE NECESSARY ITEMS INCLUDING ANY TESTING, REPORTS, OR CERTIFICATION DOCUMENTS REQUIRED BY THE GOVERNING JURISDICTIONS TO PROPERLY CLOSEOUT THE PROJECT BEFORE IT CAN BE DEEMED COMPLETE.

REV.	SYMBOL	DESCRIPTION OF CHANGE	R.C.E.	DATE	P.D.E.	DATE
1		REVISED PER PUBLIC WORKS COMMENTS		10/31/18		

DESIGNED BY: KRK	DATE
DRAWN BY:	DATE
CHECKED BY: NDK	DATE



PREPARED BY: NICOLE D. KERRY, PE	58449
REGISTERED ENGINEER	RCE NUMBER

REVIEWED FOR PERMIT ISSUANCE BY: CITY OF THOUSAND OAKS	
DEVELOPMENT ENGINEER	DATE
PLANNING DIVISION	DATE
TRAFFIC ENGINEER	DATE
BLDG. DIVISION - ADA COMPLIANCE	DATE
COSCA	DATE

**CITY OF THOUSAND OAKS  
PUBLIC WORKS DEPARTMENT**

**GENERAL NOTES**

400 ROLLING OAKS DRIVE  
THOUSAND OAKS, CA 91361  
DP XXXX / SUMN XXXX-XXXX  
APN: 681-018-0265  
CITY OF THOUSAND OAKS DWG. NO. XX-XXXX

PLOT DATE: 4/29/2022 10:03:59 AM. LATEST VERSION: 3/10/2022 10:03:59 AM. This document, together with the contracts and designs presented herein, is an instrument of service, is intended only for the specific purpose and credit for which it was prepared. Review of and reliance on this document without written authorization and distribution by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.





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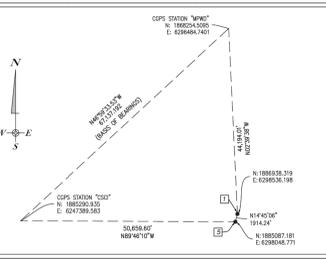
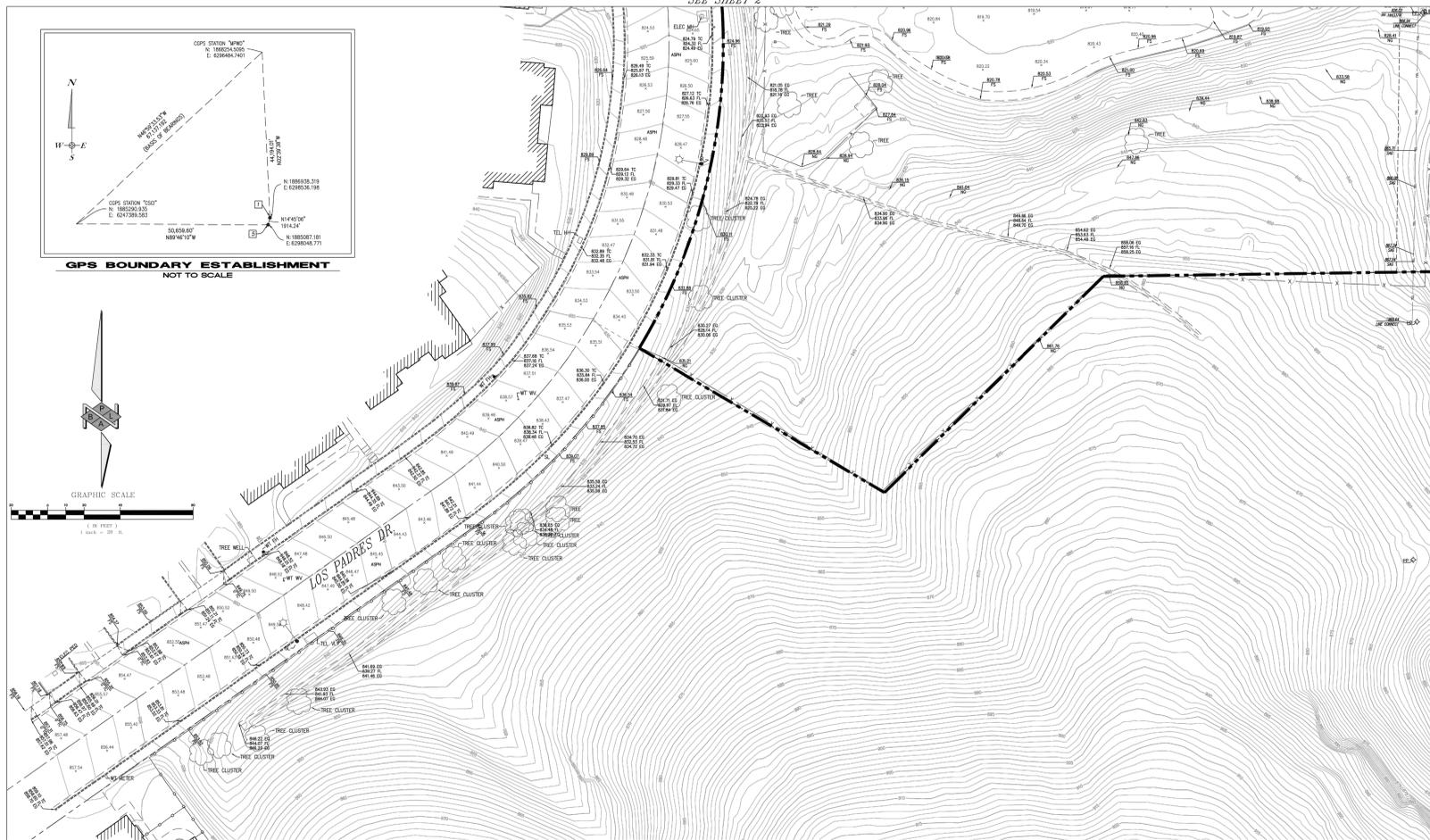
SHEET NO.

**C2.02**

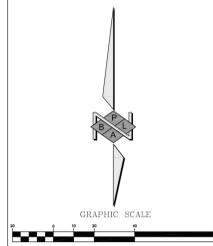
## TOPOGRAPHIC SURVEY

CITY OF THOUSAND OAKS, VENTURA COUNTY, STATE OF CALIFORNIA

SEE SHEET 2



**GPS BOUNDARY ESTABLISHMENT**  
NOT TO SCALE



**BASIS OF BEARINGS, BENCHMARK, AND LEGEND**  
SEE SHEET 1

PREPARED BY:	DATE:	BY:	REVISION:	APPROVED:	JOB NO.:
PILA SURVEYING, INC. Planning Engineering Surveying 1481 FORD ST., STE 201 REDLANDS, CALIF 92373 1888 714-9642 1740388-9081 FAX	01/27/20	MF	FIRST RELEASE	PW	5001-224
					SH. 3 of 3

REV.	SYMBOL	DESCRIPTION OF CHANGE	R.C.E.	DATE	P.D.E.	DATE
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PREPARED BY:  
NICOLE D. KERRY, PE  
REGISTERED ENGINEER

58449  
RCE NUMBER

REVIEWED FOR PERMIT ISSUANCE BY: CITY OF THOUSAND OAKS	
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PLANNING DIVISION	DATE
TRAFFIC ENGINEER	DATE
BLDG. DIVISION - ADA COMPLIANCE	DATE
COSCA	DATE

**CITY OF THOUSAND OAKS  
PUBLIC WORKS DEPARTMENT**

**EXISTING CONDITIONS (FOR  
REFERENCE ONLY)**

400 ROLLING OAKS DRIVE  
THOUSAND OAKS, CA 91361  
DP XXXX / SUMN XXXX-XXXX  
APN: 681-018-0265  
CITY OF THOUSAND OAKS DWG. NO. XX-XXXX

4/7/2022 10:03:59 AM - LATEST VERSION: 3:10:27:0923  
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SHEET TITLE  
**EXISTING CONDITIONS  
(FOR REFERENCE ONLY)**

SHEET NO.

**C2.04**

## A.L.T.A./N.S.P.S. SURVEY

### CITY OF THOUSAND OAKS, VENTURA COUNTY, STATE OF CALIFORNIA

**LEGEND**

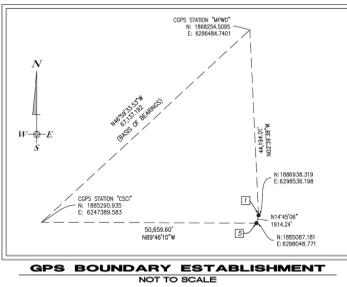
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---	LOT/PARCEL LINE	W	WEST
---	CONTIGUOUS LINE	E	EAST
---	BOUNDARY LINE	SE	SOUTHWEST
---	EASEMENT LINE	SW	SOUTHWEST
---	SETBACK LINE	NE	NORTHEAST
---	CL. TO LINE	NW	NORTHWEST
---	GPS TO LINE	SE	SOUTHWEST
---	CONCRETE	SW	SOUTHWEST
---	CURB	SE	SOUTHWEST
---	WALL	SW	SOUTHWEST
---	FENCE	SE	SOUTHWEST
---	CONCRETE/ASPHALT	SW	SOUTHWEST
---	BUILDING	SE	SOUTHWEST
---	STREET LIGHT	SW	SOUTHWEST
---	POLE	SE	SOUTHWEST
---	WATER BFP	SW	SOUTHWEST
---	MANHOLE	SE	SOUTHWEST
---	SEWER CLEAN OUT	SW	SOUTHWEST
---	YARD LIGHT	SE	SOUTHWEST
---	SIGN	SW	SOUTHWEST
---	VALVE	SE	SOUTHWEST
---	TREE	SW	SOUTHWEST

**LINE TABLE**

LINE	BEARING	LENGTH	PER (R)
L1	N02°01'00"W	81.27	(PER R1)
L2	S89°10'28"W	36.30	(PER R4)
L3	S69°10'28"W	86.57	(PER R4)
L4	S89°10'28"W	30.96	(31.02' PER R4)
L5	S69°10'28"W	36.30	(PER R4)
L6	S89°10'28"W	30.96	(PER R1)
L7	S02°01'00"W	100.00	(PER R1)
L8	S69°10'28"W	81.94	(PER R1)
L9	S02°01'00"W	12.27	(PER R1)
L10	N02°01'00"W	20.00	(PER R1)

**Curve Table**

CURVE	LENGTH	RAADIUS	DELTA	PER (R)
C1	142.70	289.68	02°17'30"	(PER R1)
C2	135.31	270.62	02°25'30"	(PER R4)
C3	169.52	339.04	02°30'10"	(PER R4)
C4	158.20	316.40	02°30'10"	(PER R1, R2)
C5	305.58	611.16	02°30'10"	(PER R1, R2)
C6	128.47	256.94	02°17'30"	(PER R1, R2)
C7	148.84	297.68	02°25'30"	(PER R1)
C8	29.82	59.64	09°07'00"	(PER R1)



**PARCEL 2 (PTR) NOTE**

THE COURSE CALL OF NORTH 89°10'28" EAST 86.57' (NEAR THE SOUTHEAST CORNER OF PARCEL 1) OF THE PTR WAS ESTABLISHED BY INTERSECTION WITH THE NORTHERLY PROLONGATION OF THE EAST LINE OF TRACT NO. 2788-1 (P2) IN THE RECORD REFERENCES AS SHOWN ON SHEET 13. THIS COURSE IS IN CONFORMITY WITH THE RECORD DISTANCE PER THE PARCEL MAP REFERENCED IN IT SHOWN ON SAID REFERENCE LISTING (PER PARCEL 1) OF THE PTR. SAID COURSE DISTANCE IS 84.94 FEET. THE DISTANCE OF THE NORTHERLY LINE OF PARCEL 1 OF THE PTR IS IN CONFORMITY WITH THE RECORD DISTANCE OF 81.94 FEET MEASURED.

THE ESTABLISHMENT OF THE NORTHERLY LINE OF PARCEL 2 OF THE PTR WAS BASED ON ESTABLISHING THE CORNER OF ROLLING OAKS DRIVE EAST OF THE INTERSECTION AT LOS PADRES DR. (PER R4 NOTED ON SHEET 1) WITH THE FINAL COURSE INTERSECTION WITH THE NORTHERLY PROLONGATION OF THE EAST LINE OF PARCEL 1. PER R2 AND R4 (THE MEASURED DISTANCE WAS 30.96 FEET VERSUS 31.02 FEET RECORD PER R4). THE NORTHERLY LINE WAS OFFSET BY RECORD DISTANCE (20.00 FEET) SOUTHERLY FROM THE R4 COURSE TO INTERSECT WITH THE NORTHERLY LINE OF SAID PARCEL 1.

HOLDING THE COURSE CALL ON ADJACENT 2 OF THE PTR 224.00 FEET FROM THE EASTERN LINE OF SAID PARCEL 1<sup>2</sup> WOULD RESULT IN AN IRREGULAR POSITION. THE POSITION WAS ESTABLISHED BY HOLDING THE DISTANCE MEASUREMENT OF THE EASTERN LINE OF PARCEL 1 NORTHERLY FROM THE NORTHERLY CORNER OF PARCEL 1. THE RESULT OF THIS NOW DISPLAYS THAT EXISTING SIZE TRANSFORMER LING WITHIN THE BOUNDARY OF THE EXISTING EASEMENT.

**PREPARED BY:**

PBLA SURVEYING, INC.	DATE	BY	REVISION	APPD
Planning: Engineering, Surveying	03/22/20	DK	FIRST SUBMITTAL	PW
485 FORD ST. STE 201				
HEALAND, CALIF 92579				
(888) 714-8642 • (714) 388-9191 FAX				

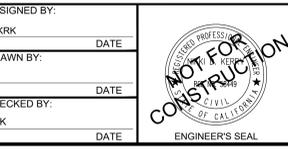
REV.	SYMBOL	DESCRIPTION OF CHANGE	R.C.E.	DATE	P.D.E.	DATE
1		REVISED PER PUBLIC WORKS COMMENTS		10/31/18		

**DESIGNED BY:**  
KRR

**DRAWN BY:**  
DATE

**CHECKED BY:**  
NDK

**DATE**



**PREPARED BY:**  
NICOLE D. KERRY, PE  
REGISTERED ENGINEER

58449  
RCE NUMBER

**REVIEWED FOR PERMIT ISSUANCE BY:**  
CITY OF THOUSAND OAKS

DEVELOPMENT ENGINEER	DATE
PLANNING DIVISION	DATE
TRAFFIC ENGINEER	DATE
BLDG. DIVISION - ADA COMPLIANCE	DATE
COSCA	DATE

**CITY OF THOUSAND OAKS  
PUBLIC WORKS DEPARTMENT**

**EXISTING CONDITIONS (FOR REFERENCE ONLY)**

400 ROLLING OAKS DRIVE  
THOUSAND OAKS, CA 91361  
DP XXXX / SUMN XXXX-XXXX  
APN: 681-018-0265

CITY OF THOUSAND OAKS DWG. NO. XX-XXXX

PLOT DATE: 4/7/2022 10:03:59 AM | LATEST VERSION: 3/10/2022 10:03:59 AM | This document, together with the concepts and designs presented herein, is intended only for the specific purpose and client for which it was prepared. Review of and approval of these documents by any third party without the written authorization of HKS Architects, Inc. shall be without liability to HKS Architects, Inc.

### GENERAL EROSION CONTROL NOTES

1. ERODED SEDIMENTS AND OTHER POLLUTANTS MUST BE RETAINED ON SITE AND MAY NOT BE TRANSPORTED FROM THE SITE VIA SHEET PILING, SWALES, AREA DRAINS, NATURAL DRAINAGE COURSES OR WIND.
2. STOCKPILES OF EARTH AND OTHER CONSTRUCTION RELATED MATERIALS MUST BE PROTECTED FROM BEING TRANSPORTED FROM THE SITE BY THE FORCES OF WIND OR WATER.
3. FUELS, OILS, SOLVENTS, AND OTHER TOXIC MATERIALS MUST BE STORED IN ACCORDANCE WITH THEIR USING AND MUST NOT CONTAMINATE THE SOIL AND SURFACE WATERS. ALL APPROVED STORAGE CONTAINERS ARE TO BE PROTECTED FROM THE WEATHER. SPILLS MUST BE CLEANED UP IMMEDIATELY AND DISPOSED OF IN A PROPER MANNER. SPILLS MAY NOT BE WASHED INTO THE DRAINAGE SYSTEM.
4. EXCESS OR WASTE CONCRETE MAY NOT BE WASHED INTO THE PUBLIC WAY OR ANY OTHER DRAINAGE SYSTEM. PROVISIONS SHALL BE MADE TO RETAIN CONCRETE WASTES ON SITE UNTIL THEY CAN BE DISPOSED OF AS SOLID WASTE.
5. TRASH AND CONSTRUCTION RELATED SOLID WASTES MUST BE DEPOSITED INTO A COVERED RECEPTACLE TO PREVENT CONTAMINATION OF RAINWATER AND DISPERSAL BY WIND.
6. SEDIMENTS AND OTHER MATERIALS MAY NOT BE TRACKED FROM THE SITE BY VEHICLE TRAFFIC. THE CONSTRUCTION ENTRANCE ROADWAYS MUST BE STABILIZED SO AS TO INHIBIT SEDIMENTS FROM BEING DEPOSITED INTO THE PUBLIC WAY. ACCIDENTAL DEPOSITIONS MUST BE SWEEPED UP IMMEDIATELY AND MAY NOT BE WASHED DOWN BY RAIN OR ANY OTHER MEANS.
7. ANY SLOPES WITH DISTURBED SOILS OR DENuded OF VEGETATION MUST BE STABILIZED SO AS TO INHIBIT EROSION BY WIND AND WATER.
8. STORM WATER POLLUTION CONTROL REQUIREMENTS MUST BE INTEGRATED ONTO THE EROSION CONTROL PLANS FOR ANY CONSTRUCTION BETWEEN OCTOBER 1 AND APRIL 15. THE FOLLOWING NOTES AND BMP'S AS OUTLINED IN, BUT NOT LIMITED TO, THE BEST MANAGEMENT PRACTICE HANDBOOK, CALIFORNIA STORM WATER QUALITY TASK FORCE, SACRAMENTO, CALIFORNIA, 1993, OR THE LATEST REVISED EDITION MAY APPLY DURING THE CONSTRUCTION OF PROJECT (ADDITIONAL MEASURES MAY BE REQUIRED IF DEEMED APPROPRIATE BY CITY INSPECTIONS).
9. TEMPORARY EROSION CONTROL DEVICES SHOWN ON THE PLAN WHICH INTERFERE WITH THE WORK SHALL BE RELOCATED OR MODIFIED AS AND WHEN THE CONTRACTOR AND/OR THE INSPECTOR SO DIRECTS AS THE WORK PROGRESSES.
10. ALL STANDARDS REFERENCED FROM 2009 CASQA CONSTRUCTION BMP BOOK.

### MAINTENANCE NOTES

ALL MEASURES STATED ON THIS SITE MAP, AND IN THE STORM WATER POLLUTION PREVENTION PLAN, SHALL BE MAINTAINED IN FULLY FUNCTIONAL CONDITION UNTIL NO LONGER REQUIRED FOR A COMPLETED PHASE OF WORK OR FINAL STABILIZATION OF THE SITE. ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE CHECKED BY A QUALIFIED PERSON IN ACCORDANCE WITH THE CONTRACT DOCUMENTS OR THE APPLICABLE PERMIT, WHICHEVER IS MORE STRINGENT, AND REPAIRED IN ACCORDANCE WITH THE FOLLOWING:

1. INLET PROTECTION DEVICES AND BARRIERS SHALL BE REPAIRED OR REPLACED IF THEY SHOW SIGNS OF UNDERMINING OR DETERIORATION.
2. ALL SEEDED AREAS SHALL BE CHECKED REGULARLY TO SEE THAT A GOOD STAND IS MAINTAINED. AREAS SHOULD BE FERTILIZED, WATERED, AND RESEED AS NEEDED.
3. THE CONSTRUCTION EXITS SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOW OF MUD ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING OF THE CONSTRUCTION EXITS AS CONDITIONS DEMAND.
4. THE TEMPORARY PARKING AND STORAGE AREA SHALL BE KEPT IN GOOD CONDITION (SUITABLE FOR PARKING AND STORAGE). THIS MAY REQUIRE PERIODIC TOP DRESSING OF THE TEMPORARY PARKING AREA AS CONDITIONS DEMAND.
5. OUTLET STRUCTURES IN THE SEDIMENTATION BASINS SHALL BE MAINTAINED IN OPERATIONAL CONDITIONS AT ALL TIMES. SEDIMENT SHALL BE REMOVED FROM SEDIMENT BASINS OR TRAPS WHEN THE DESIGN CAPACITY HAS BEEN REDUCED BY 50%.

### EROSION CONTROL NOTES

- 1 WM-1, MATERIAL DELIVERY AND STORAGE.
- 2 WM-3, STOCKPILE MANAGEMENT, CONTRACTOR TO SET UP STOCKPILE AREA.
- 3 WM-5, SANITARY AREA.
- 4 WM-6, HAZARDOUS WASTE MANAGEMENT.
- 5 WM-8, CONCRETE WASTE MANAGEMENT.
- 6 SE-1 - SILT FENCE; REFER TO DETAIL 01, SHEET C3.02. CONTRACTOR TO MAINTAIN DURING ALL GRADING & MOBILIZATION ACTIVITIES.
- 7 SE-10, STORM DRAIN INLET PROTECTION. REFER TO DETAIL 02 AND DETAIL 03, SHEET C3.02.
- 8 TR-1, STABILIZED CONSTRUCTION ENTRANCE/EXIT; REFER TO DETAIL 04, SHEET C3.02.
- 9 TR-3, ENTRANCE/OUTLET TIRE WASH; REFER TO DETAIL 05, SHEET C3.02.
- 10 NS-10, VEHICLE AND EQUIPMENT MAINTENANCE.
- 11 SD-32, TRASH STORAGE AREA.
- 12 SE-4, GRAVEL BAG CHECK DAM

### SEQUENCE OF CONSTRUCTION

UPON IMPLEMENTATION AND INSTALLATION OF THE FOLLOWING AREAS: TRAILER, PARKING, LAYDOWN, PORTA-POTTY, WHEEL WASH, CONCRETE WASHOUT, FUEL AND MATERIAL STORAGE CONTAINERS, SOLID WASTE CONTAINERS, IMMEDIATELY NOTIFY THEM ON THE SITE MAPS AND NOTE ANY CHANGES IN LOCATION AS THEY OCCUR THROUGHOUT THE CONSTRUCTION PROCESS.

- PHASE 1:
1. CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE (1) AND CHAIN LINK FENCE WITH GREEN SCREEN AND THEN SILT FENCE WHERE SHOWN ON PLAN.
  2. CONSTRUCT AND STABILIZE SEDIMENT BASIN AND DRAINAGE SWALES WITH APPROPRIATE OUTFALL STRUCTURES (CLEAR ANY THOSE AREAS NECESSARY TO INSTALL CONTROL DEVICES LISTED ABOVE).
  3. INSTALL INLET PROTECTION AT EXISTING INLET(S).
  4. INSTALL AND STABILIZE ANY NECESSARY HYDRAULIC CONTROL STRUCTURES (DIKES, CHECK DAMS, OUTLET TRAPS, RISER PIPE DISCHARGE POINT, ETC).
  5. PREPARE CLEARING AND GRUBBING OF THE SITE, IF APPLICABLE.
- PHASE 2:
6. PERFORM MASS GRADING, ROUGH GRADE TO ESTABLISH PROPOSED DRAINAGE PATTERNS.
  7. START CONSTRUCTION OF THE BUILDING PAD AND STRUCTURES.
  8. TEMPORARILY SEED WITH PURE LIVE SEED, THROUGHOUT CONSTRUCTION, DISTURBED AREAS THAT WILL BE INACTIVE FOR 7 DAYS OR MORE OR AS REQUIRED BY GENERIC PERMIT.

HALT ALL ACTIVITIES AND CONTACT THE CONSULTANT TO PERFORM INSPECTION AND CERTIFICATION OF BMP'S. GENERAL CONTRACTOR SHALL SCHEDULE AND CONDUCT STORM WATER PRE-CONSTRUCTION MEETING WITH CONSULTANT AND ALL GRADING-DISTURBING CONTRACTORS BEFORE PROCEEDING WITH CONSTRUCTION.

CONTRACTOR RESPONSIBLE FOR TRAFFIC CONTROL AND PEDESTRIAN CONTROL WHILE PERFORMING WORK IN THE PUBLIC RIGHT-OF-WAY.

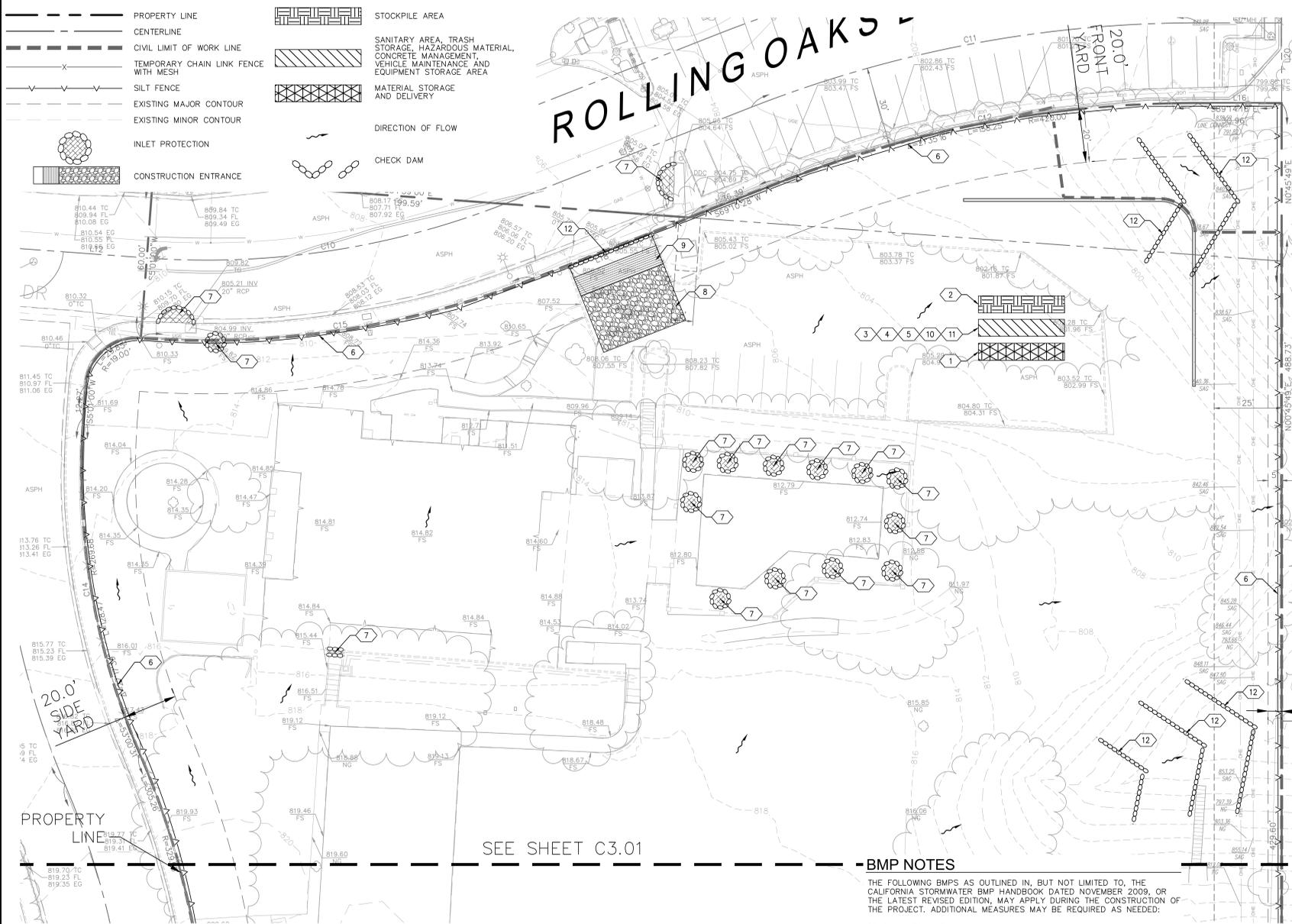
SITE PREPARATION SHOULD BE IN ACCORDANCE WITH GEOTECHNICAL INVESTIGATION.

ANY ADDITIONAL STORM WATER PROTECTION MEASURE REQUIRED BY GOV INSPECTOR SHALL BE IMPLEMENTED WITHIN 48 HOURS OR BEFORE THE NEXT RAIN EVENT.

REVIEWED FOR PERMIT ISSUANCE BY: CITY OF THOUSAND OAKS		CITY OF THOUSAND OAKS PUBLIC WORKS DEPARTMENT	
DEVELOPMENT ENGINEER	DATE	EROSION CONTROL PLAN	
PLANNING DIVISION	DATE	400 ROLLING OAKS DRIVE THOUSAND OAKS, CA 91361 DP XXXX / SUMN XXXX-XXXX APN: 681-018-0265 CITY OF THOUSAND OAKS DWG. NO. XX-XXXX	
TRAFFIC ENGINEER	DATE		
BLDG. DIVISION - ADA COMPLIANCE	DATE		
COSCA	DATE		

### LEGEND

- |               |                                      |  |   |
|---------------|--------------------------------------|--|---|
| — — — — —     | PROPERTY LINE                        |  | STOCKPILE AREA  |
| — — — — —     | CENTERLINE                           |  | SANITARY AREA, TRASH STORAGE, HAZARDOUS MATERIAL, CONCRETE MANAGEMENT, VEHICLE MAINTENANCE AND EQUIPMENT STORAGE AREA |
| — — — — —     | CIVIL LIMIT OF WORK LINE             |  | MATERIAL STORAGE AND DELIVERY   |
| — x — x — x — | TEMPORARY CHAIN LINK FENCE WITH MESH |  | DIRECTION OF FLOW   |
| — v — v — v — | SILT FENCE                           |  | CHECK DAM   |
| — — — — —     | EXISTING MAJOR CONTOUR               |  |   |
| — — — — —     | EXISTING MINOR CONTOUR               |  |   |
|               | INLET PROTECTION                     |  |   |
|               | CONSTRUCTION ENTRANCE                |  |   |



### BMP NOTES

THE FOLLOWING BMP'S AS OUTLINED IN, BUT NOT LIMITED TO, THE CALIFORNIA STORMWATER BMP HANDBOOK DATED NOVEMBER 2009, OR THE LATEST REVISED EDITION, MAY APPLY DURING THE CONSTRUCTION OF THE PROJECT. ADDITIONAL MEASURES MAY BE REQUIRED AS NEEDED:

- EC-1, SCHEDULING
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- EC-3, HYDRAULIC MULCH
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CONTRACTOR TO USE BEST MANAGEMENT PRACTICES TO ENSURE COMPLIANCE WITH NPDES AND WATER MANAGEMENT DISTRICT REGULATIONS FOR STORMWATER DISCHARGE FROM CONSTRUCTION ACTIVITIES AND DEWATERING OPERATIONS.



**811** DIAL TOLL FREE  
Know what's below. Call before you dig.  
AT LEAST TWO DAYS BEFORE YOU DIG  
UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

REV.	SYMBOL	DESCRIPTION OF CHANGE	R.C.E.	DATE	P.D.E.	DATE
1		REVISED PER PUBLIC WORKS COMMENTS		10/31/18		

DESIGNED BY:  
KRK  
DATE

DRAWN BY:  
DATE

CHECKED BY:  
NDK  
DATE

ENGINEER'S SEAL

PREPARED BY:  
NICOLE D. KERRY, PE  
REGISTERED ENGINEER  
58449  
RCE NUMBER

4/29/2022 10:03:59 AM  
 PLT DATE  
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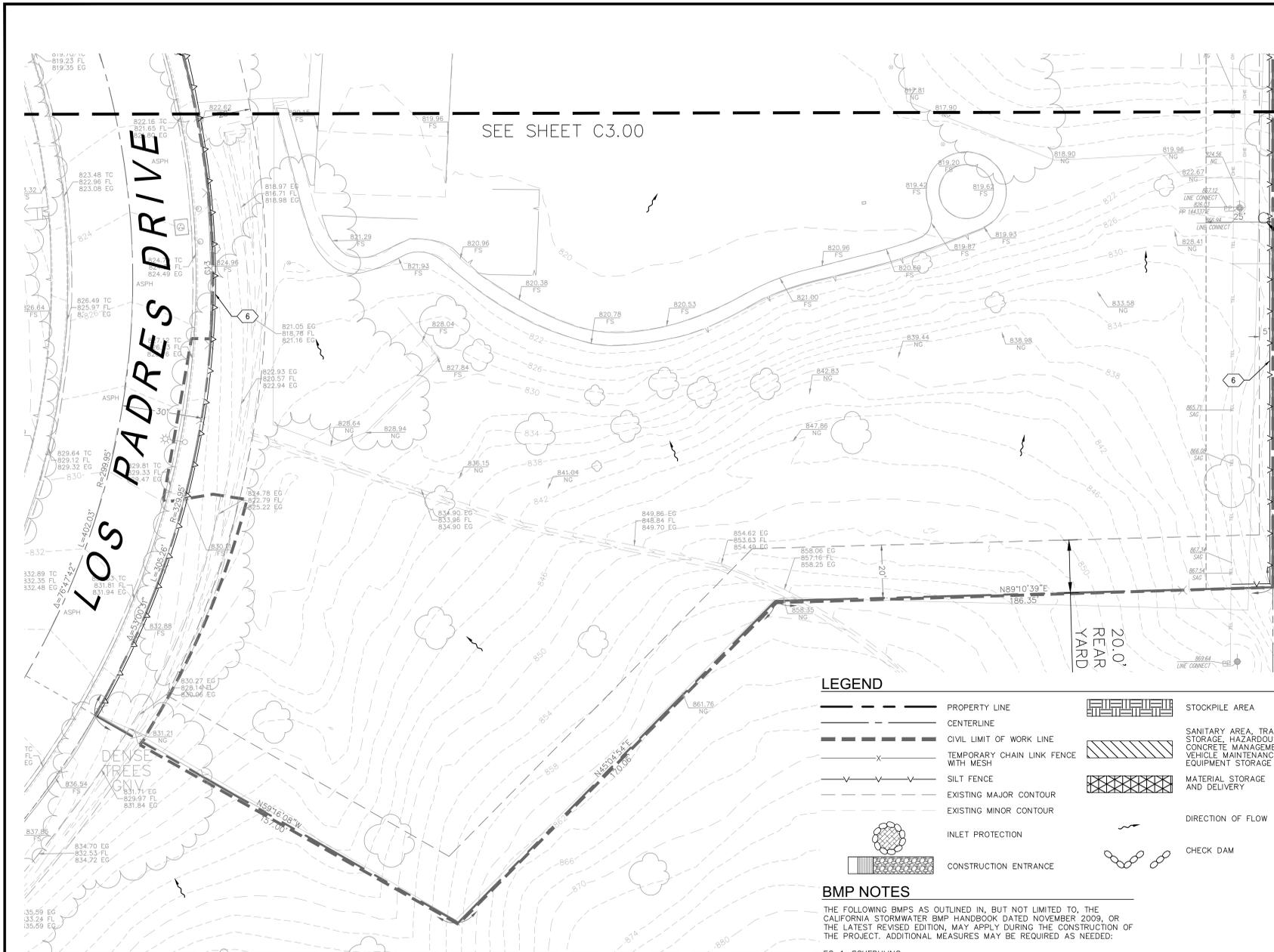
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### LEGEND

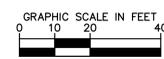
	PROPERTY LINE		STOCKPILE AREA
	CENTERLINE		SANITARY AREA, TRASH STORAGE, HAZARDOUS MATERIAL, CONCRETE MANAGEMENT, VEHICLE MAINTENANCE AND EQUIPMENT STORAGE AREA
	CIVIL LIMIT OF WORK LINE		MATERIAL STORAGE AND DELIVERY
	TEMPORARY CHAIN LINK FENCE WITH MESH		DIRECTION OF FLOW
	SILT FENCE		CHECK DAM
	EXISTING MAJOR CONTOUR		CONSTRUCTION ENTRANCE
	EXISTING MINOR CONTOUR		
	INLET PROTECTION		

### BMP NOTES

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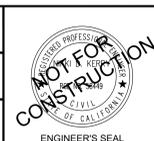
REVIEWED FOR PERMIT ISSUANCE BY: CITY OF THOUSAND OAKS	
DEVELOPMENT ENGINEER	DATE
PLANNING DIVISION	DATE
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BLDG. DIVISION - ADA COMPLIANCE	DATE
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### CITY OF THOUSAND OAKS PUBLIC WORKS DEPARTMENT

### EROSION CONTROL PLAN

400 ROLLING OAKS DRIVE  
THOUSAND OAKS, CA 91361  
DP XXXX / SUMN XXXX-XXXX  
APN: 681-018-0265  
CITY OF THOUSAND OAKS DWG. NO. XX-XXXX

DESIGNED BY: KRK	DATE
DRAWN BY:	DATE
CHECKED BY: NDK	DATE



PREPARED BY: NICOLE D. KERRY, PE REGISTERED ENGINEER	58449 RCE NUMBER
--	---------------------

REV.	SYMBOL	DESCRIPTION OF CHANGE	R.C.E.	DATE	P.D.E.	DATE
1		REVISED PER PUBLIC WORKS COMMENTS		10/31/18		

**811**  
DIAL TOLL FREE  
8 1 1  
Know what's below.  
Call before you dig.  
AT LEAST TWO DAYS BEFORE YOU DIG  
UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

DATE REVISED: 9-14-18

PLOT DATE: 4/29/2022 10:03:39 AM | TEMPLATE VERSION: 3.0.0.20170923 | This document, together with the concepts and designs presented herein, is an instrument of service, as an instrument of service, to be used only for the specific purpose and shall be without liability to KIMLEY-HORN AND ASSOCIATES, INC.







### CONSTRUCTION NOTES

- 1 CONSTRUCT 6" CURB PER DETAIL 01, SHEET C8.00.
- 2 CONSTRUCT 6" CURB AND GUTTER PER DETAIL 02, SHEET C8.00.
- 3 CONSTRUCT 4" CURB PER DETAIL 01, SHEET C8.00.
- 4 CONSTRUCT 0" CURB PER DETAIL 03, SHEET C8.00.
- 5 CONSTRUCT REINFORCED CONCRETE RETAINING CURB PER DETAIL 04, SHEET C8.00.
- 6 CONSTRUCT VALLEY GUTTER PER DETAIL 06, SHEET C8.00.
- 7 CONSTRUCT CONCRETE SIDEWALK PER DETAIL 10, SHEET C8.00.
- 8 CONSTRUCT ACCESSIBLE RAMP PER DETAIL 20, SHEET C8.01.
- 9 INSTALL STANDARD 90° PARKING STALL STRIPING PER DETAIL 12, SHEET C8.00.
- 10 INSTALL COMPACT 90° PARKING STALL STRIPING PER DETAIL 12, SHEET C8.00.
- 11 INSTALL ACCESSIBLE 90° PARKING STALL STRIPING PER DETAIL 15, SHEET C8.01.
- 12 INSTALL ACCESSIBLE 90° VAN PARKING STALL STRIPING PER DETAIL 15, SHEET C8.01.
- 13 INSTALL ACCESSIBLE PATH STRIPING PER DETAIL 13, SHEET C8.01.
- 14 INSTALL ACCESSIBLE PARKING STALL SIGN PER DETAIL 16, SHEET C8.01.
- 15 CONSTRUCT RETAINING WALL. SEE STRUCTURAL PLANS FOR FURTHER DETAIL.
- 16 SITE STAIR. REFER TO PLANS BY STRUCTURAL.
- 17 CONCRETE CHANNEL GUTTER. REFER TO GRADING & DRAINAGE PLANS.
- 18 INSTALL PEDESTRIAN CROSSWALK STRIPING PER DETAIL 11, SHEET C8.00.
- 19 DUMPSTER PAD PER DETAIL 09, SHEET C8.00.
- 20 MONUMENT SIGN. REFER TO ARCHITECTURAL PLANS.
- 21 CONSTRUCT HEADWALL PER DETAIL X, SHEET XX.XX
- 22 CONSTRUCT SITE STAIRS. REFER TO ARCHITECTURAL PLANS.
- 23 INSTALL MOUNTABLE CURB PER DETAIL 25, SHEET C8.02.

### PAVEMENT LEGEND

REFER TO DETAIL 07, SHEET C8.00 FOR PAVEMENT SPECIFICATIONS AND SUBGRADE PREPARATION.

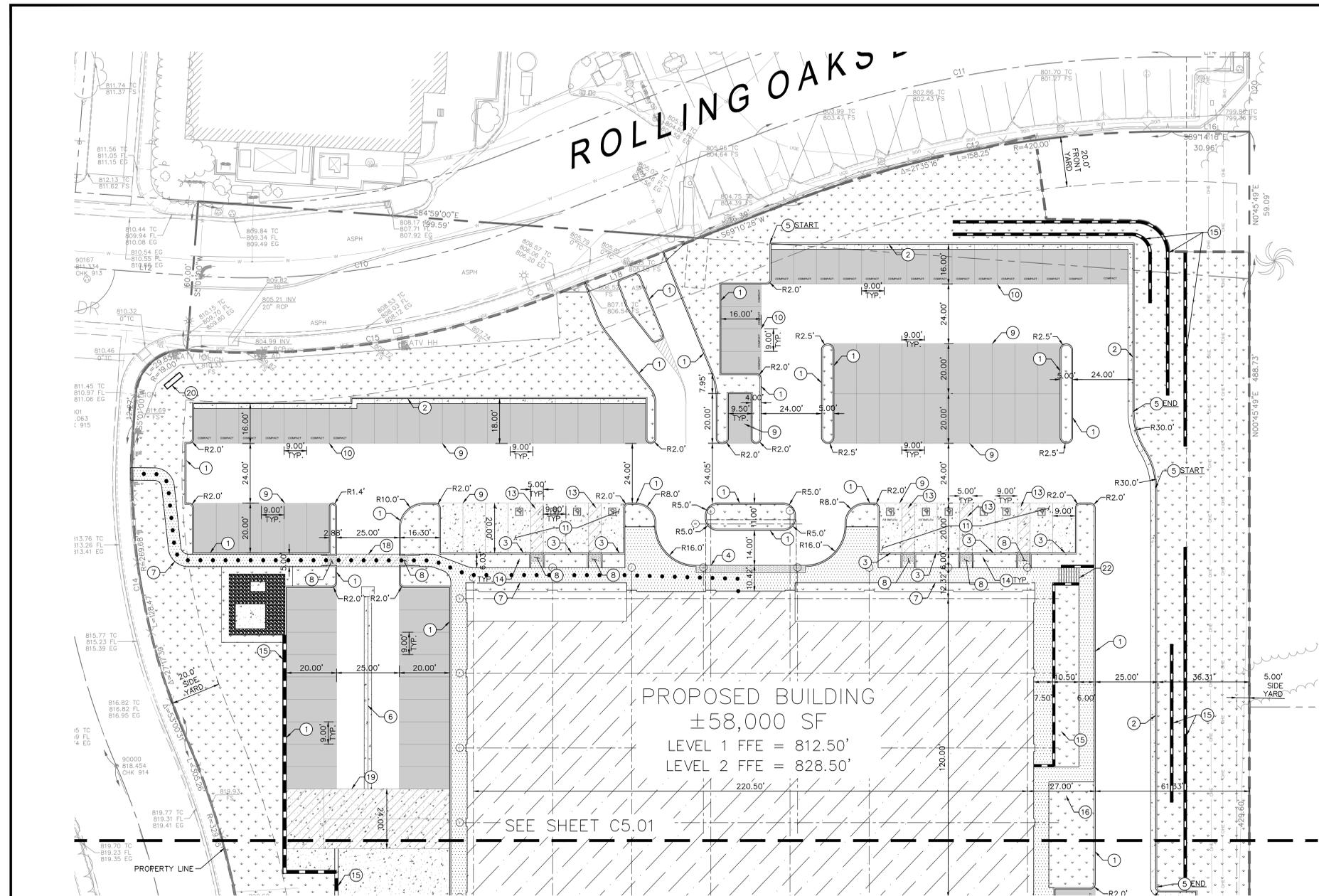
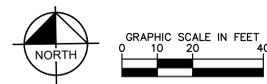
- STANDARD DUTY CONCRETE PAVEMENT  
REFER TO DETAIL 07, SHEET C8.00
- HEAVY DUTY CONCRETE PAVEMENT  
REFER TO DETAIL 07, SHEET C8.00, THICKENED EDGE  
AT ALL EDGE CONDITIONS. REFER TO DETAIL 08, SHEET C8.00
- STANDARD DUTY ASPHALT CONCRETE PAVEMENT  
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- HEAVY DUTY ASPHALT CONCRETE PAVEMENT  
REFER TO DETAIL 07, SHEET C8.00
- LANDSCAPE/PLANTER AREA, REFER TO LANDSCAPE PLANS
- TRUNCATED DOMES
- GRAVEL
- LOADING ZONE STRIPING
- NO PARKING STRIPING

### LEGEND

- GRADING LIMITS OF WORK
- PROPERTY LINE
- CENTERLINE
- CIVIL LIMIT OF WORK LINE
- ACCESSIBLE PATH OF TRAVEL  
(DO NOT PAINT, FOR REFERENCE ONLY)
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- BUILDING OVERHEAD
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED RETAINING WALL

### EXISTING UTILITY NOTE

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1		REVISED PER PUBLIC WORKS COMMENTS	10/31/18		

DESIGNED BY:  
KRK  
DATE

DRAWN BY:  
DATE

CHECKED BY:  
NDK  
DATE

ENGINEER'S SEAL

PREPARED BY:  
NICOLE D. KERRY, PE  
REGISTERED ENGINEER  
58449  
RCE NUMBER

REVIEWED FOR PERMIT ISSUANCE BY: CITY OF THOUSAND OAKS	
DEVELOPMENT ENGINEER	DATE
PLANNING DIVISION	DATE
TRAFFIC ENGINEER	DATE
BLDG. DIVISION - ADA COMPLIANCE	DATE
COSCA	DATE

**CITY OF THOUSAND OAKS  
PUBLIC WORKS DEPARTMENT**

**HORIZONTAL CONTROL AND PAVING PLAN**

400 ROLLING OAKS DRIVE  
THOUSAND OAKS, CA 91361  
DP XXXX / SUMN XXXX-XXXX  
APN: 681-018-0265  
CITY OF THOUSAND OAKS DWG. NO. XX-XXXX

**Los Robles Hospital & Medical Center  
MEDICAL OFFICE  
BUILDING**  
400 ROLLING OAKS DR.  
THOUSAND OAKS, CA 91361

**OWNER**  
HOSPITAL CORPORATION OF AMERICA (HCA)  
ONE PARK PLAZA  
BUILDING II, EAST 3RD FLOOR  
NASHVILLE, TN, 37203

**FACILITY**  
LOS ROBLES HOSPITAL & MEDICAL CENTER  
215 W. JANSS ROAD  
THOUSAND OAKS, CA 91360

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KEY PLAN

REVISION


HKS PROJECT NUMBER  
23776.000  
HCA PROJECT NUMBERS  
3055500030  
CITY PROJECT NUMBER  
XXX

DATE  
04/29/22

ISSUE  
100% CONSTRUCTION  
DOCUMENTS CHECK  
SET

SHEET TITLE  
**HORIZONTAL CONTROL  
AND PAVING PLAN**

SHEET NO.  
**C5.00**

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### CONSTRUCTION NOTES

- 1 CONSTRUCT 6" CURB PER DETAIL 01, SHEET C8.00.
- 2 CONSTRUCT 6" CURB AND GUTTER PER DETAIL 02, SHEET C8.00.
- 3 CONSTRUCT 4" CURB PER DETAIL 01, SHEET C8.00.
- 4 CONSTRUCT 0" CURB PER DETAIL 03, SHEET C8.00.
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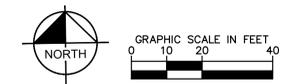
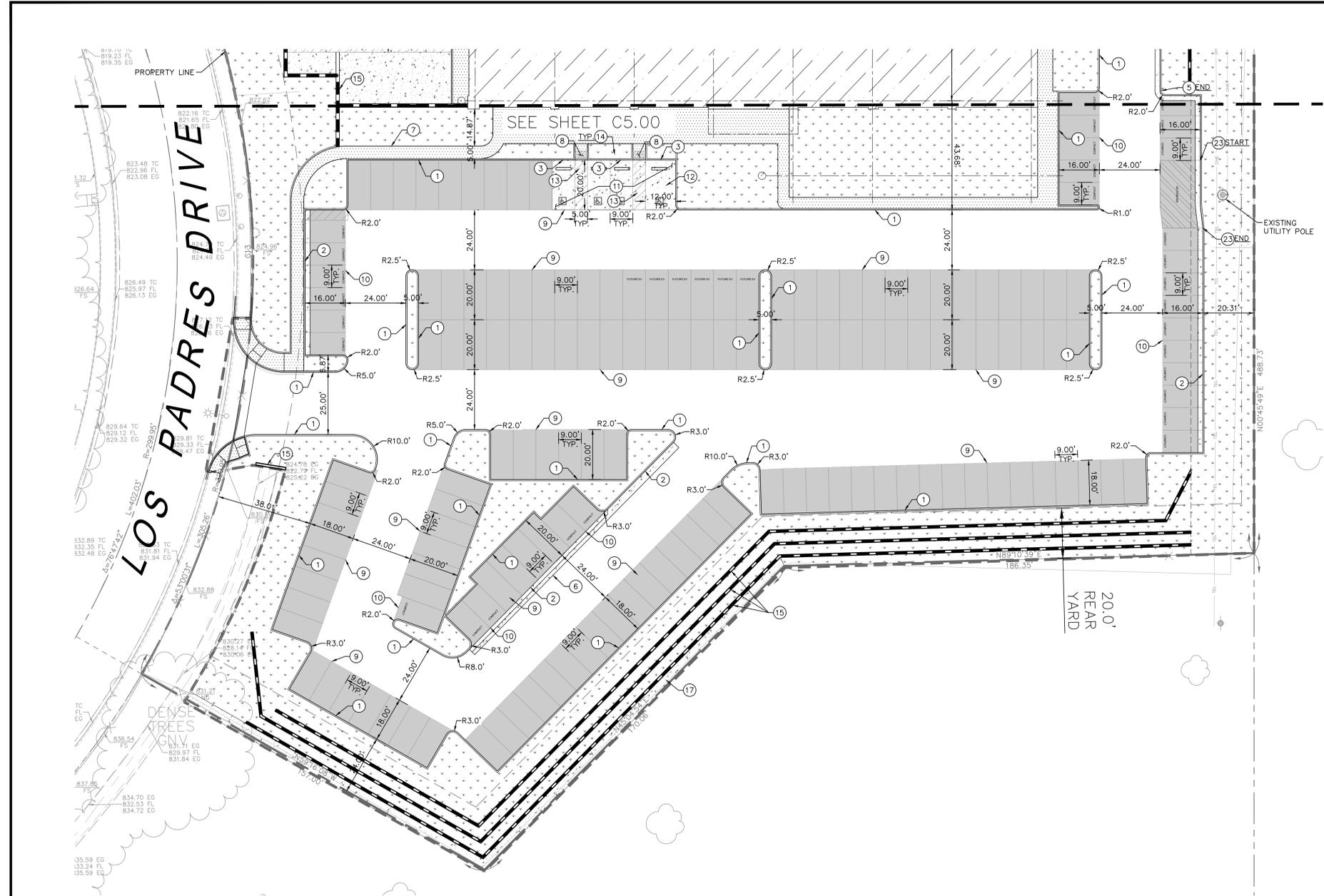
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### LEGEND

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### Los Robles Hospital & Medical Center MEDICAL OFFICE BUILDING

400 ROLLING OAKS DR.  
THOUSAND OAKS, CA 91361

**OWNER**  
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**FACILITY**  
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HKS PROJECT NUMBER  
23775.000  
HCA PROJECT NUMBERS  
3055500030

CITY PROJECT NUMBER  
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SHEET TITLE  
**HORIZONTAL CONTROL  
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SHEET NO.

# C5.01

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DESIGNED BY:  
KRK

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CHECKED BY:  
NDK

DATE

DATE

DATE

DATE

ENGINEER'S SEAL

PREPARED BY:  
NICOLE D. KERRY, PE  
REGISTERED ENGINEER

58449  
RCE NUMBER

REVIEWED FOR PERMIT ISSUANCE BY:  
CITY OF THOUSAND OAKS

DEVELOPMENT ENGINEER	DATE
PLANNING DIVISION	DATE
TRAFFIC ENGINEER	DATE
BLDG. DIVISION - ADA COMPLIANCE	DATE
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CITY OF THOUSAND OAKS  
PUBLIC WORKS DEPARTMENT

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CITY OF THOUSAND OAKS DWG. NO. XX-XXXX

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**INTERIOR DESIGNER**

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DALLAS, TX 75201-4240

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**LANDSCAPE**

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LOS ANGELES, CA 90045

**MEP/LOW VOLTAGE ENGINEER**

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405 HOWARD STREET, SUITE 500  
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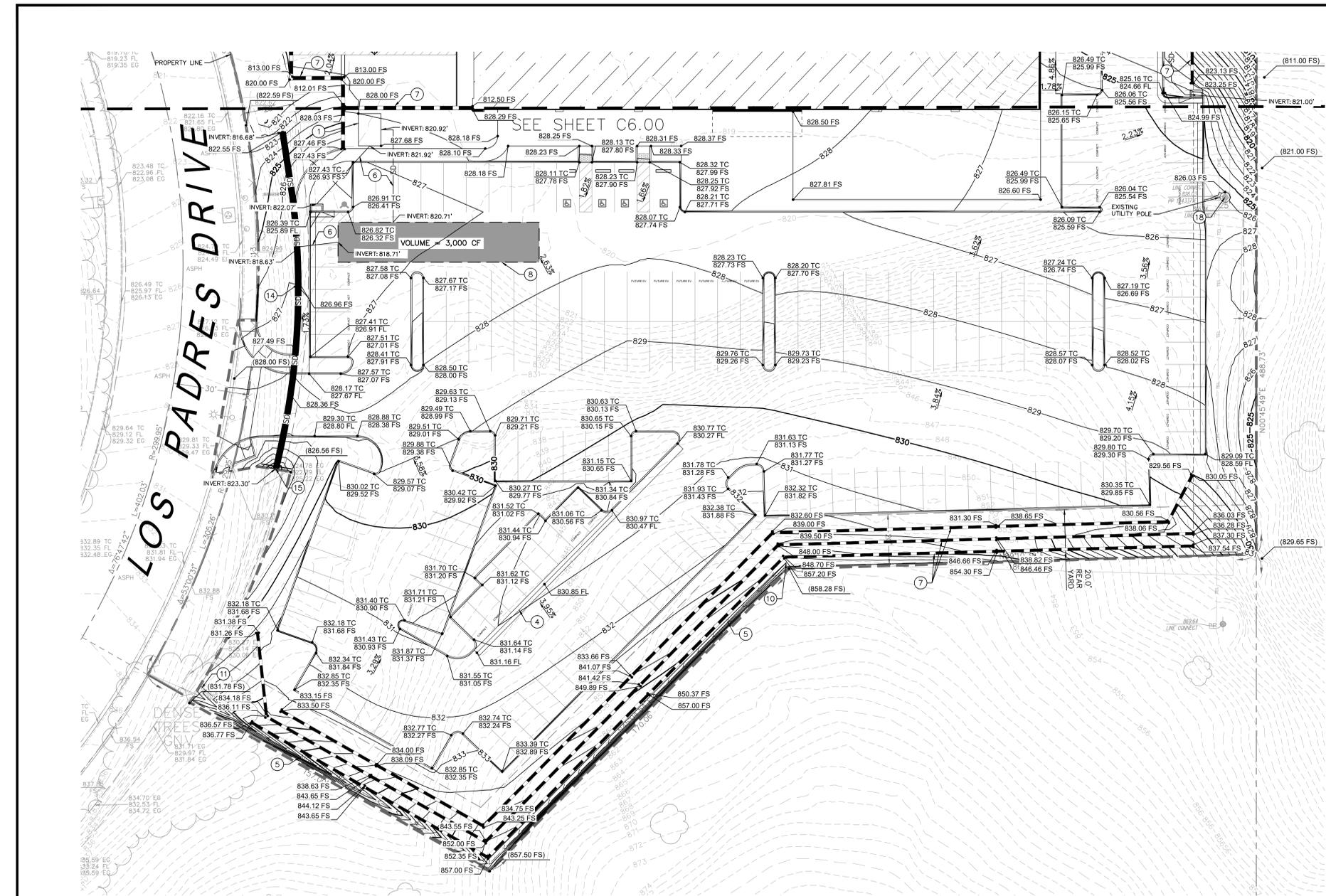
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QUANTUM MEDICAL  
TINA DARON - tina@quantummedical.com



**LEGEND**

	GRADING LIMITS OF WORK
	PROPERTY LINE
	CENTERLINE
	CIVIL LIMIT OF WORK LINE
	EXISTING MAJOR CONTOUR
	EXISTING MINOR CONTOUR
	BUILDING OVERHEAD
	PROPOSED MINOR CONTOUR
	PROPOSED MAJOR CONTOUR
	PROPOSED RETAINING WALL
	PROPOSED SPOT ELEVATION
	TC = TOP OF CURB
	FS = FINISHED SURFACE
	TW = TOP OF WALL
	BW = BOTTOM OF WALL
	FFE = FINISHED FLOOR ELEV.
	GB = GRADE BREAK

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- DRAINAGE NOTES**
- BIOFILTRATION TREATMENT SYSTEM, MODULAR WETLANDS SYSTEM, OR APPROVED EQUAL.
  - ROOF DRAIN. REFER TO MEP PLANS.
  - SUB-SOIL DRAIN. REFER TO MEP PLANS.
  - VALLEY GUTTER PER DETAIL 06, SHEET C8.00.
  - CONCRETE CHANNEL GUTTER PER DETAIL 05, SHEET C8.00.
  - PVC STORM DRAIN LINE. SIZE PER PLAN. TRENCH PER DETAIL 19, SHEET C8.01.
  - RETAINING WALL. REFER TO PLANS BY OTHERS.
  - UNDERGROUND STORMWATER VAULT BY OLD CASTLE, STORMTRAP, OR APPROVED EQUAL.
  - ENERGY DISSIPATOR PER SPPWC STD. 384-3.
  - CONNECT EXISTING V-CHANNEL TO PROPOSED CHANNEL GUTTER.
  - CONNECT PROPOSED CHANNEL GUTTER TO EXISTING V-CHANNEL.
  - CONSTRUCT 7" CATCH BASIN PER SPPWC STD. PLAN 300-3.
  - INSTALL 24" X 24" GRATE INLET BY JENSEN OR APPROVED EQUAL.
  - INSTALL 30" HDPE STORM DRAIN PIPE. TO UNDERGROUND PORTION OF EXISTING V-CHANNEL. CONTRACTOR SHALL CONNECT LINE EXISTING HEADWALL TO PROPOSED HEADWALL.
  - PROPOSED HEADWALL CONNECT TO PROPOSED 30" HDPE PIPE.
  - REMOVE EXISTING HEADWALL & CONNECT TO PROPOSED 30" HDPE PIPE.
  - CURB DRAIN PER SPPWC STD. 150-3, SHEET C8.04
  - EXISTING SCE POWER POLE. MAINTAIN EXISTING GRADE AT POLE BASE.
  - CONNECTION TO GENERATOR YARD AREA DRAIN. REFER TO MEP PLANS.

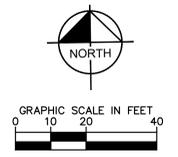
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REVISION	1	REV. SYMBOL	REVISED PER PUBLIC WORKS COMMENTS
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PREPARED BY:

NICOLE D. KERRY, PE	58449
REGISTERED ENGINEER	RCE NUMBER

REVIEWED FOR PERMIT ISSUANCE BY:  
CITY OF THOUSAND OAKS

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PLANNING DIVISION	DATE
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**CITY OF THOUSAND OAKS  
PUBLIC WORKS DEPARTMENT**

**GRADING AND DRAINAGE PLAN**

400 ROLLING OAKS DRIVE  
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CITY PROJECT NUMBER  
XXX

DATE  
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SHEET TITLE  
**GRADING AND  
DRAINAGE PLAN**

SHEET NO.  
**C6.01**

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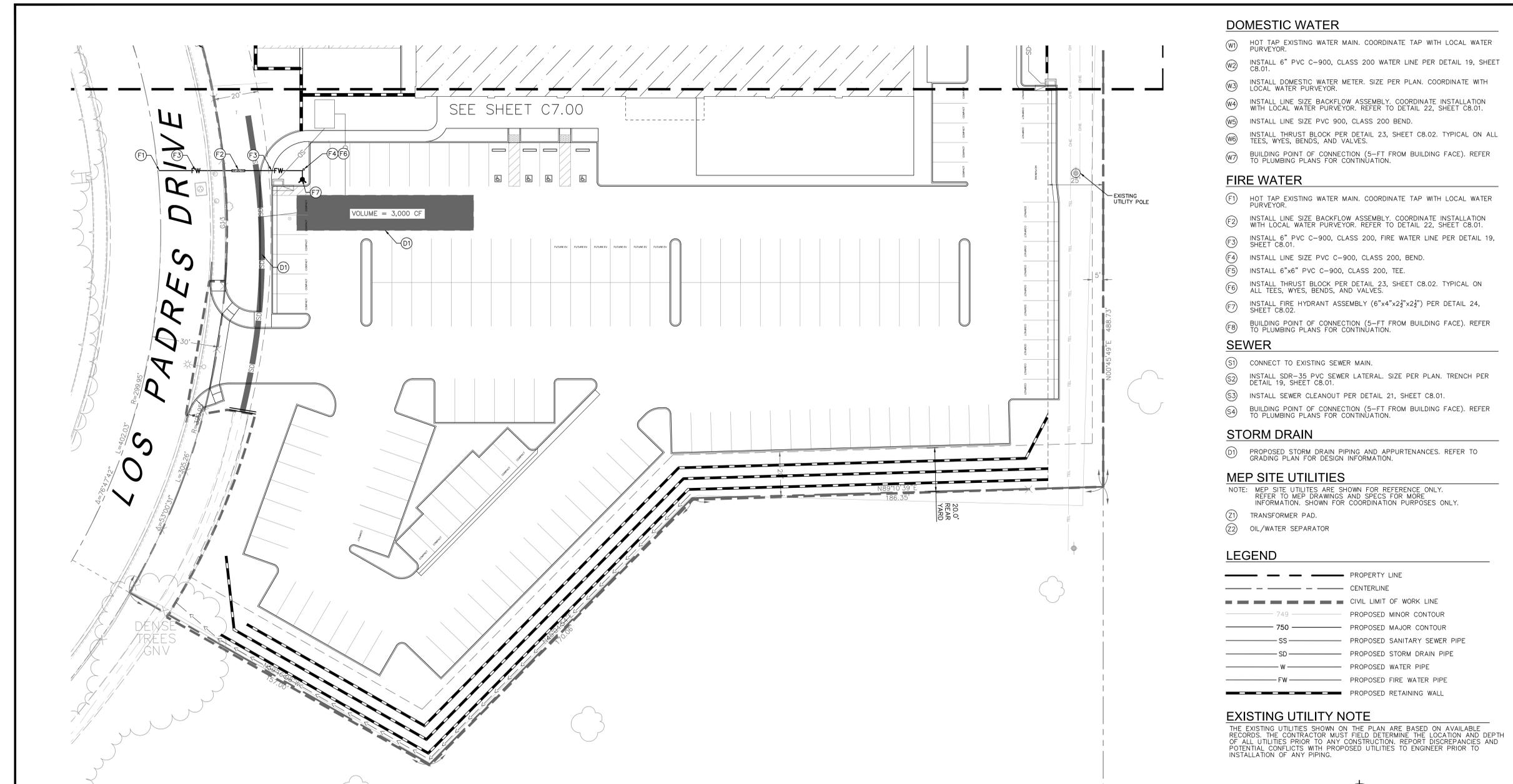
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ERIC WILLIAMS - Eric.Williams@philips.com

GE HEALTHCARE  
TAREY ISBELL - Tarey.Isbell@ge.com

QUANTUM MEDICAL  
TINA DARON - tina@quantummedical.com



**DOMESTIC WATER**

- (W1) HOT TAP EXISTING WATER MAIN. COORDINATE TAP WITH LOCAL WATER PURVEYOR.
- (W2) INSTALL 6" PVC C-900, CLASS 200 WATER LINE PER DETAIL 19, SHEET C8.01.
- (W3) INSTALL DOMESTIC WATER METER. SIZE PER PLAN. COORDINATE WITH LOCAL WATER PURVEYOR.
- (W4) INSTALL LINE SIZE BACKFLOW ASSEMBLY. COORDINATE INSTALLATION WITH LOCAL WATER PURVEYOR. REFER TO DETAIL 22, SHEET C8.01.
- (W5) INSTALL LINE SIZE PVC 900, CLASS 200 BEND.
- (W6) INSTALL THRUST BLOCK PER DETAIL 23, SHEET C8.02. TYPICAL ON ALL TEES, WYES, BENDS, AND VALVES.
- (W7) BUILDING POINT OF CONNECTION (5'-FT FROM BUILDING FACE). REFER TO PLUMBING PLANS FOR CONTINUATION.

**FIRE WATER**

- (F1) HOT TAP EXISTING WATER MAIN. COORDINATE TAP WITH LOCAL WATER PURVEYOR.
- (F2) INSTALL LINE SIZE BACKFLOW ASSEMBLY. COORDINATE INSTALLATION WITH LOCAL WATER PURVEYOR. REFER TO DETAIL 22, SHEET C8.01.
- (F3) INSTALL 6" PVC C-900, CLASS 200, FIRE WATER LINE PER DETAIL 19, SHEET C8.01.
- (F4) INSTALL LINE SIZE PVC C-900, CLASS 200, BEND.
- (F5) INSTALL 6"x6" PVC C-900, CLASS 200, TEE.
- (F6) INSTALL THRUST BLOCK PER DETAIL 23, SHEET C8.02. TYPICAL ON ALL TEES, WYES, BENDS, AND VALVES.
- (F7) INSTALL FIRE HYDRANT ASSEMBLY (6"x4"x2 1/2"x2 1/2") PER DETAIL 24, SHEET C8.02.
- (F8) BUILDING POINT OF CONNECTION (5'-FT FROM BUILDING FACE). REFER TO PLUMBING PLANS FOR CONTINUATION.

**SEWER**

- (S1) CONNECT TO EXISTING SEWER MAIN.
- (S2) INSTALL SDR-35 PVC SEWER LATERAL. SIZE PER PLAN. TRENCH PER DETAIL 19, SHEET C8.01.
- (S3) INSTALL SEWER CLEANOUT PER DETAIL 21, SHEET C8.01.
- (S4) BUILDING POINT OF CONNECTION (5'-FT FROM BUILDING FACE). REFER TO PLUMBING PLANS FOR CONTINUATION.

**STORM DRAIN**

- (D1) PROPOSED STORM DRAIN PIPING AND APPURTENANCES. REFER TO GRADING PLAN FOR DESIGN INFORMATION.

**MEP SITE UTILITIES**

NOTE: MEP SITE UTILITIES ARE SHOWN FOR REFERENCE ONLY. REFER TO MEP DRAWINGS AND SPECS FOR MORE INFORMATION. SHOWN FOR COORDINATION PURPOSES ONLY.

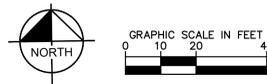
- (Z1) TRANSFORMER PAD.
- (Z2) OIL/WATER SEPARATOR

**LEGEND**

---	PROPERTY LINE
---	CENTERLINE
---	CIVIL LIMIT OF WORK LINE
---	PROPOSED MINOR CONTOUR
---	PROPOSED MAJOR CONTOUR
---	PROPOSED SANITARY SEWER PIPE
---	PROPOSED STORM DRAIN PIPE
---	PROPOSED WATER PIPE
---	PROPOSED FIRE WATER PIPE
---	PROPOSED RETAINING WALL

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REVIEWED FOR PERMIT ISSUANCE BY:  
CITY OF THOUSAND OAKS

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PLANNING DIVISION DATE  
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**CITY OF THOUSAND OAKS  
PUBLIC WORKS DEPARTMENT**

**UTILITY PLAN**

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NICOLE D. KERRY, PE  
REGISTERED ENGINEER

58449  
RCE NUMBER

DATE REVISED: 9-14-18

**Los Robles Hospital & Medical Center  
MEDICAL OFFICE  
BUILDING**

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THOUSAND OAKS, CA 91361

**OWNER**  
HOSPITAL CORPORATION OF AMERICA (HCA)  
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BUILDING II, EAST 3RD FLOOR  
NASHVILLE, TN, 37203

**FACILITY**  
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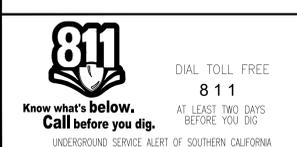
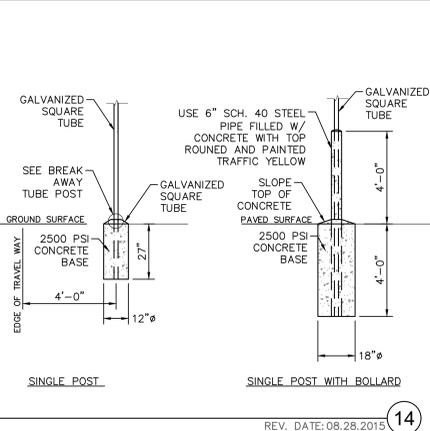
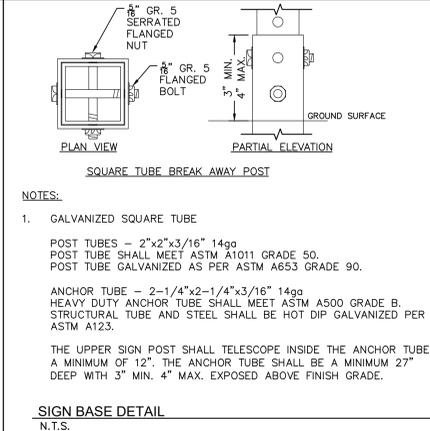
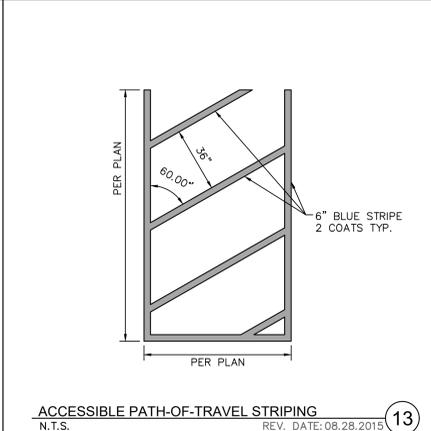
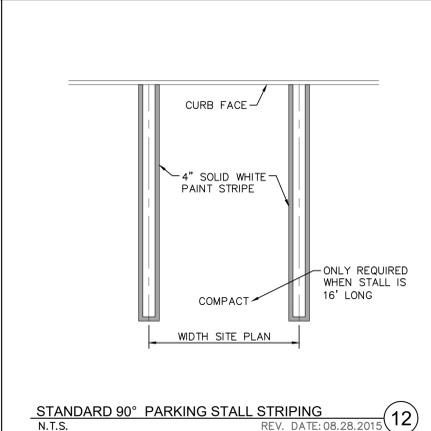
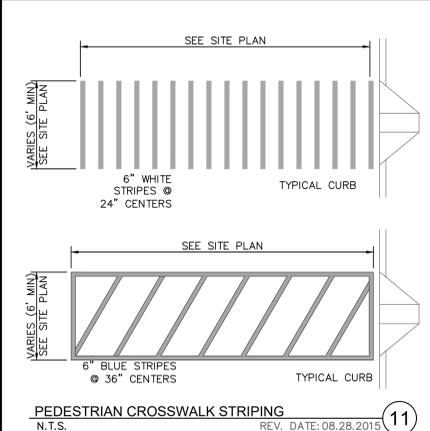
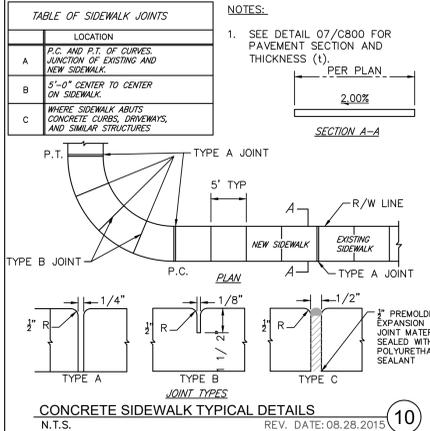
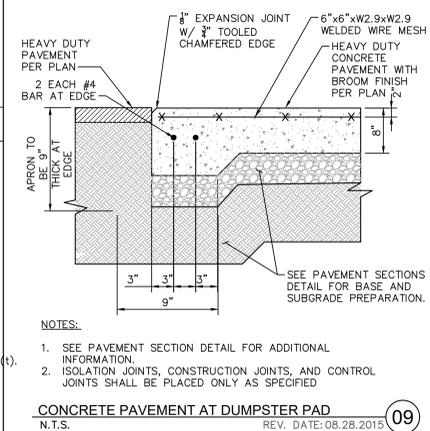
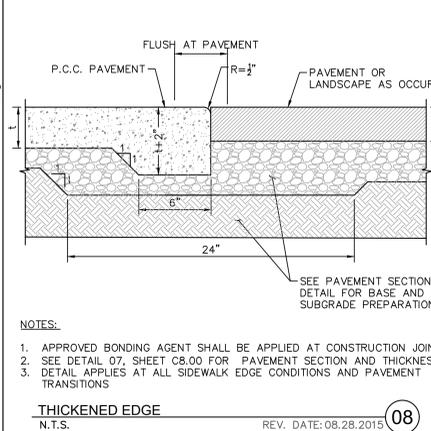
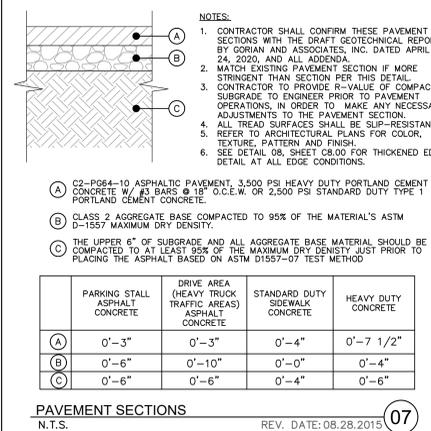
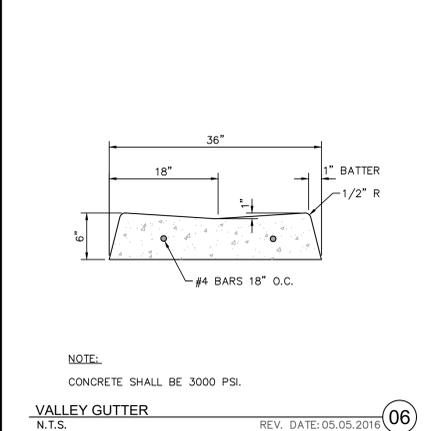
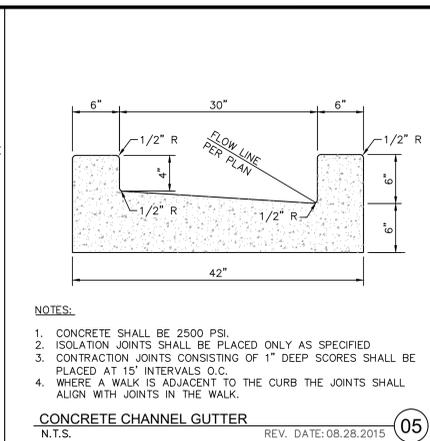
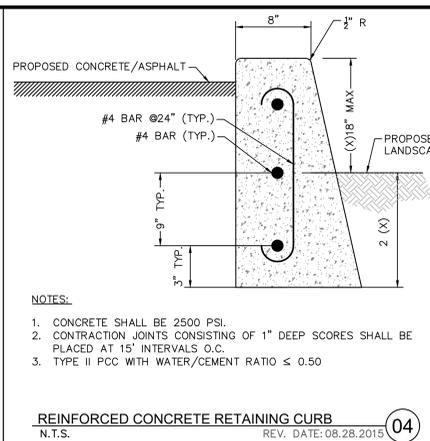
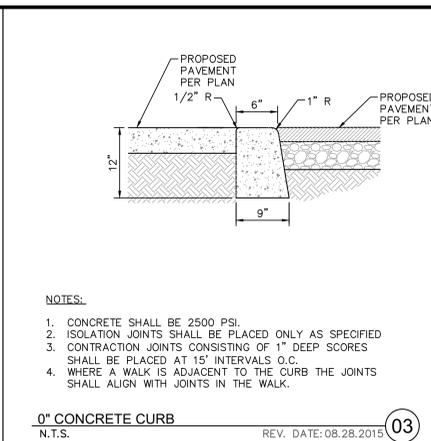
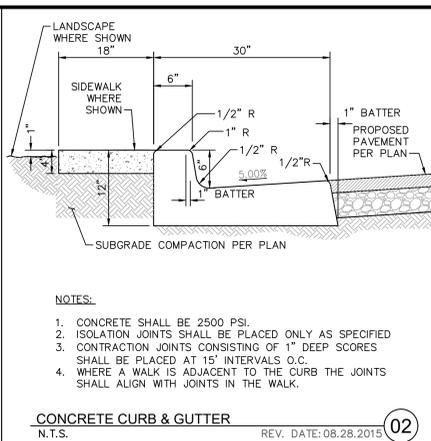
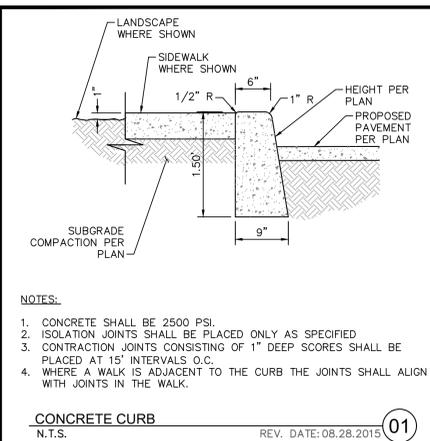
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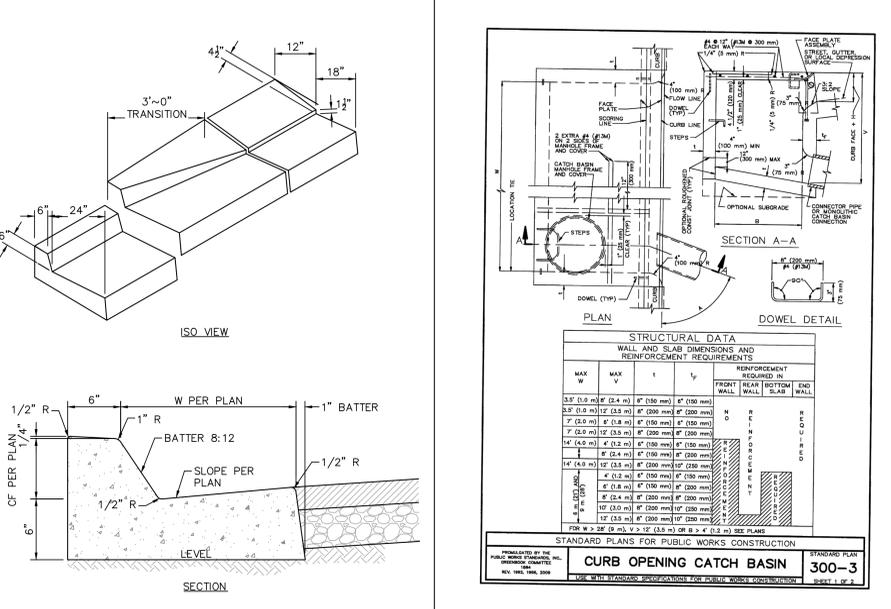
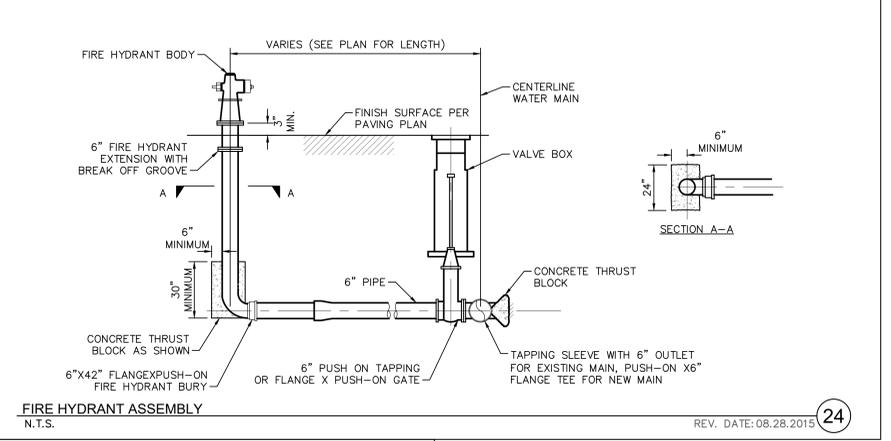
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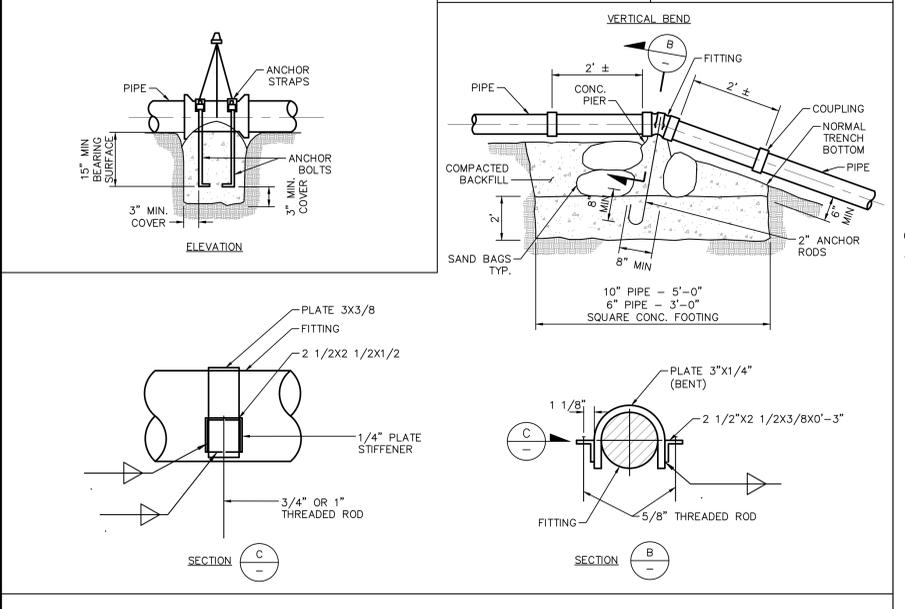
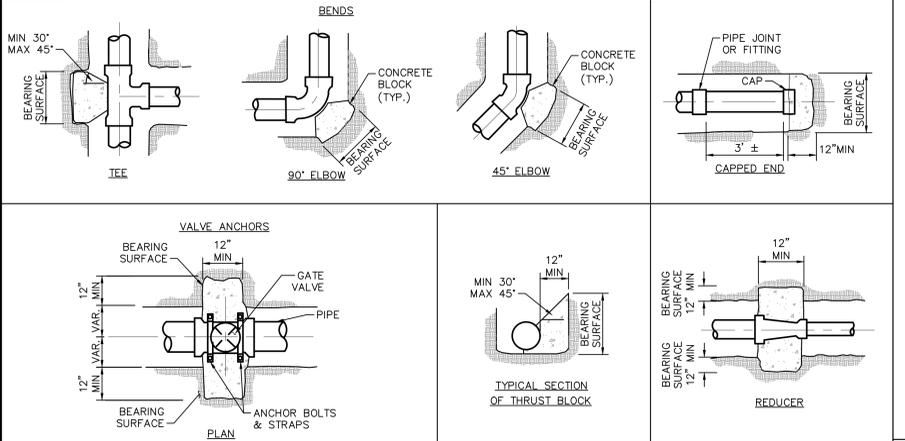




**NOTES:**

- SEE CONCRETE CURB AND GUTTER DETAIL 2, SHEET 49.
- CURBS CONSTRUCTED ADJACENT TO EXISTING CURBS HAVING A BATTER OTHER THAN THAT SPECIFIED FOR THE NEW CURBS SHALL BE CONSTRUCTED WITH A TRANSITION SECTION BETWEEN THE CURBS HAVING DIFFERENT BATTERS. THE MINIMUM TRANSITION LENGTH SHALL BE:

TYPE OF CURB	MINIMUM TRANSITION LENGTH
BARRIER CURB TO BARRIER CURB	5'
MOUNTABLE CURB TO MOUNTABLE CURB	10'
BARRIER CURB TO MOUNTABLE CURB	20'



**THRUST BLOCK BEARING AREAS - S.F.**

MAIN SIZE	TEE	BEND			
		90°	45°	22.5°	11.25°
4"	4	4	4	3	2
6"	4	4	4	3	2
8"	5	7	4	3	2
10"	9	12	6	4	3
12"	12	16	9	6	3

\* INCLUDES TEES, PLUGS, CAPS, HYDRANTS & VALVES.

**NOTES:**

- ALL THRUST/ANCHOR BLOCKS SHALL BEAR AGAINST UNDISTURBED SOIL.
- CONCRETE SHALL ATTAIN A MINIMUM COMPRESSIVE STRENGTH OF 2000 PSI.
- ALL ANCHOR RODS AND ANCHOR BOLTS SHALL BE MINIMUM 1/2" DIA. & ANCHOR STRAPS SHALL BE 1/2" X 2" BAR.
- THRUST BLOCK DESIGN IS BASED ON A WATER PRESSURE OF 150 P.S.I., AND A MAXIMUM ALLOWABLE SOIL BEARING VALUE OF 2000 P.S.F. FOR MAXIMUM SOIL BEARING VALUES OF 1000 P.S.F. INCREASE BEARING VALUES BY A FACTOR OF 2.
- THE RATIO OF WIDTH TO HEIGHT OF THRUST BLOCKS SHALL NOT EXCEED 1.5 TO 1.

**THRUST AND ANCHOR BLOCK DETAILS**  
N.T.S.

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REGISTERED ENGINEER  
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**Los Robles Hospital & Medical Center**

**MEDICAL OFFICE BUILDING**

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THOUSAND OAKS, CA 91361

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BUILDING II, EAST 3RD FLOOR  
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**FACILITY**

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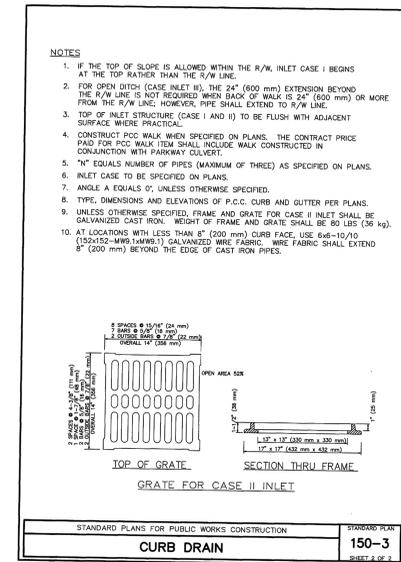
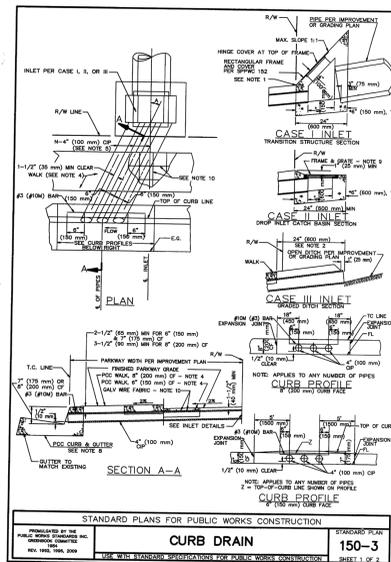
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**NOTES**

- IF THE TOP OF SLOPE IS ALLOWED WITHIN THE R/W, INLET CASE I BEGINS AT THE TOP RATHER THAN THE R/W LINE.
- FOR OPEN DITCH (CASE INLET II), THE 24" (600 mm) EXTENSION BEYOND THE R/W LINE IS NOT REQUIRED WHEN BACK OF WALK IS 24" (600 mm) OR MORE FROM THE R/W LINE. HOWEVER, PIPE SHALL EXTEND TO R/W LINE.
- TOP OF INLET STRUCTURE (CASE I AND II) TO BE FLUSH WITH ADJACENT SURFACE WHERE PRACTICAL.
- CONSTRUCT P.C.C. WALK WHEN SPECIFIED ON PLANS. THE CONTRACT PRICE PAID FOR P.C.C. WALK ITEM SHALL INCLUDE WALK CONSTRUCTED IN CONJUNCTION WITH PARKWAY COLLECTOR.
- "N" EQUALS NUMBER OF PIPES (MAXIMUM OF THREE) AS SPECIFIED ON PLANS.
- INLET CASE TO BE SPECIFIED ON PLANS.
- ANGLE A EQUALS 0°, UNLESS OTHERWISE SPECIFIED.
- TYPE, DIMENSIONS AND ELEVATIONS OF P.C.C. CURB AND GUTTER PER PLANS.
- UNLESS OTHERWISE SPECIFIED, FRAME AND GRATE FOR CASE II INLET SHALL BE GALVANIZED CAST IRON. WEIGHT OF FRAME AND GRATE SHALL BE 80 LBS (36 kg).
- AT LOCATIONS WITH LESS THAN 8" (200 mm) CURB FACE, USE 6x6-10/10 (152x152-MW9.5LMPIS) GALVANIZED WIRE FABRIC. WIRE FABRIC SHALL EXTEND 8" (200 mm) BEYOND THE EDGE OF CAST IRON PIPES.

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# Appendix B

## Geotechnical Report

**Geotechnical Site Evaluation Report  
HCA Medical Office Building  
Southeast Corner of Rolling Oaks  
and  
Los Padres Drives  
400 East Rolling Oaks Drive  
APN 681-0-180-265**

prepared for:

**HCA**  
One Park Plaza, Bldg II-E  
Nashville, TN 37203

Draft



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- Figure2: Regional Geologic Map
- Appendix A: Logs of Subsurface Data
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April 24, 2020

**HCA**

One Park Plaza, Bldg II-E  
Nashville, TN 37203

Work Order: 64-0-0-100

Attention: Mr. Zach Wideman  
Design and Construction

Subject: **Geotechnical Site Evaluation Report, HCA Medical Office Building, Southeast Corner of Rolling Oaks and Los Padres Drives (400 East Rolling Oaks Drive, APN 681-0-180-265), Thousand Oaks, California.**

**1. INTRODUCTION**

The following report contains the results of our geotechnical site evaluation addressing design and construction of a medical building for HCA at 400 East Rolling Oaks Drive in the southeast corner of Rolling Oaks and Los Padres Drives in Thousand Oaks, California (see Figure 1). The project will consist of grading a building pad for construction of a two-story medical building totaling 59,000 gross square feet of space. Details regarding the project were obtained from an information packet by Perkins + Will with the project layout shown on Plate 1 based on a conceptual grading plan by Kimley Horn. Parking will be provided in a surface parking lot around the building.

The site was previously developed for a child day care center. Grading for this center created three relatively level pads of which the building was in the center pad. The new building will require regrading of the site to accommodate the larger footprint of the medical building. The required grading will encounter a relatively thin layer of soil over Miocene-age bedrock of the Conejo Volcanics.

Field exploration for the project consisted of eight borings that was supplemented with laboratory testing to determine mechanical properties of the earth units. Based on our site evaluation, the site is suitable for the proposed construction from a geotechnical standpoint provided recommendations presented herein are implemented in the project design and construction. Descriptions of the site and geologic units along with our conclusions and recommendations are presented within the text of this report.

Testing for onsite stormwater infiltration was performed during the field exploration phase of this site evaluation. However, the testing indicated onsite stormwater infiltration was not feasible for the project.

**2. PROPOSED DEVELOPMENT**

HCA is proposing construction of a 59,000 gross square foot two-story medical building on the site of a previous child care center. The building will be OSHPD 3 structure for outpatients only and therefore, under the jurisdiction of the city of Thousand Oaks. The building will be comprised of three seismically

independent structures consisting of a two-story medical building, one-story linear accelerator, and entry canopy. The main building and entry are anticipated to be of metal framing, whereas the accelerator will be of reinforced concrete.

The building will be roughly centered within the site as shown on Plate 1. Due to the increase in grade (surface elevation) toward the south, the building will be stepped into the hillside terrain. Therefore, the southern parking lot will be roughly at the elevation of the second floor of the building. Whereas, the northern parking lot will be at roughly at the elevation of the first floor. This grade change will require retaining walls in the eastern and southern walls of the building as shown in cross sections A-A' and B-B' on Plate 2 along with cuts to create a level building pad. Street access to the southern parking will be from Los Padres Drive and access to the northern parking lot will be from Rolling Oaks Drive. The two parking areas will be connected by a gently sloped parking area long the east side of the building. Additional retaining walls will be needed along the west and east sides and northeast boundaries of the project. Fill slopes anticipated along Rolling Oaks and Los Padres Drives. The project will also include on-site structures, such as fences/walls, light poles, bollards and a 297-space surface parking lot.

### **3. SCOPE OF GEOTECHNICAL SERVICES**

Gorian and Associates, Inc. conducted the site evaluation outlined in our Proposal Number: 6886-10 dated March 10, 2020 to evaluate the geotechnical site conditions affecting design and construction of the HCA Medical Building project. All phases of the evaluation were conducted by or under the supervision of a State registered geotechnical engineer and certified engineering geologist.

#### **3.1. ARCHIVAL REVIEW**

Pertinent site geotechnical and geologic information in our files was reviewed and incorporated into this site evaluation.

#### **3.2. SITE EVALUATION / FIELD EXPLORATION3**

Subsurface exploration was performed using a subcontracted supplied and operated truck mounted 8-inch diameter hollow stem auger drill rig to excavate a total of eight borings on the site to observe and sample the subsurface conditions. Four borings were geotechnical in nature and four borings were drilled for stormwater infiltration testing. The borings were extended to depths of 7 to 14 feet with all borings extended to bedrock. Refusal to advance the borings was noted in borings B-2 and B-4 through B-8.

The field exploration activities were observed by a geologist from this office, who logged the underlying materials extracted from the excavations. Bulk soil samples were obtained from borings B-4 through B-7 and Standard Penetration Tests (SPT) were performed in the borings intended for stormwater infiltration testing. Relatively undisturbed samples were not recoverable within the bedrock and shallow soil cover.

At the conclusion of logging and sampling, the borings were backfilled with spoils from the boring cuttings. However, the backfill may settle over time and the site representative should fill any depression that may occur, as necessary.

#### **3.3. STORMWATER INFILTRATION TESTING**

Four locations (two deep and two shallow) were proposed to be tested for stormwater infiltration. Ventura County requirements for storm water infiltration testing involve performing at least two infiltration tests; one at the proposed bottom of the infiltration BMP and a second test 11 feet below the bottom of the infiltration BMP. For infiltration testing, hollow-stem auger borings were excavated at four locations within the areas of the proposed BMPs. Borings B-1 and B-3 were extended to 8 feet 4 inches and 9 feet below the existing ground surface respectively for the shallow testing. Borings B-2 and B-4 were intended to be used for the deep testing; however, refusal conditions were encountered at depths of 7 feet (B-

2) and 14 feet (B-4). These borings were terminated in highly indurated volcanic bedrock and deep testing was not conducted.

At the conclusion of logging and soil sampling, the two hollow-stem borings (B-1 and B-3) were converted to infiltration rate test wells by placing a 2-inch diameter pipe in each boring subsequent to the placement of 1 foot of medium bentonite chips in the bottom of the boring. The lower 5 feet of pipe was slotted (0.02). The annular space between the slotted pipe and the wall of the excavation was backfilled using clean #3 sand. The upper portion annular space was sealed off with bentonite chips and soil.

The test zone will be pre-soaked by filling to the top of each casing with water. The water will be allowed to pre-soak for a maximum period of 24 hours. However, after the presoak period water remained in the borings indicating a lack of infiltration into the subgrade.

### **3.4. GEOTECHNICAL LABORATORY TESTING**

A program of laboratory testing was performed to evaluate geotechnical properties of selected soil samples obtained during the subsurface exploration. Testing included compaction characteristics, shear strength parameters, and expansion potential. Corrosion potential testing was performed for this report by an independent corrosion engineer.

### **3.5. SITE EVALUATION ENGINEERING ANALYSES AND REPORT PREPARATION**

The results of our laboratory testing, in conjunction with our field findings are the basis for our engineering analyses. We have prepared geotechnical recommendations for design and construction of the proposed project. In addition, the results of our laboratory testing, in conjunction with our field findings are the basis for our evaluation of the potential for onsite stormwater infiltration. The following will be provided in this report

1. A Geotechnical Map (Plate 1) showing the site and location of the exploratory excavations along with Geotechnical Cross Sections A-A' and B-B' (Plate 2) through proposed area of construction.
2. Logs of Subsurface Data providing a description of the encountered subsurface strata and observed groundwater conditions (Appendix A).
3. A description of the laboratory testing program, including test results (Appendix B).
4. Discussion and geotechnical recommendations regarding:
  - a) Geologic hazards including seismic setting of the site and faulting;
  - b) Groundwater conditions if encountered;
  - c) Seismic design criteria for new buildings;
  - d) Soil collapse and expansion potential;
  - e) Site preparation and remedial grading;
  - f) Conventional foundation design and construction;
  - g) Estimated settlements;
  - h) Retaining wall design and construction;
  - i) Pavement (for multiple traffic indices) and hardscape design recommendations;
  - j) Stormwater infiltration; and
  - k) Soil chemistry analysis, by subcontract.

### **4. EXISTING SITE AND CONDITIONS**

The 4.84 acres parcel was previously developed for a child daycare center. Rough grading of the site resulted in three terraces within the graded area. The lower terrace supports an asphalt (AC) parking lot accessed from Rolling Oaks Drive. The middle terrace supported the main building and swimming pool.

The foundation and slab of this building remain after removal of the building. Also, portions of the prior pool remain. The upper terrace supports a playfield and sports court. The grade differences between the terraces are supported by either graded slopes or retaining walls. Numerous items from the daycare center remain onsite consisting of walks, walls, fences, and trees.

The site was graded by performing cuts into the ridgeline that ascends to the south from the upper pad. Compacted fill (Gorian, 1973) was placed onsite as indicated on Plate 1. Cuts were made during grading into the underlying bedrock consisting of Conejo Volcanics. The fill was derived from the cuts and consists predominately of clayey sand with either volcanic clasts or gravels.

## **5. REGIONAL GEOLOGY**

The site is within the Conejo Valley basin area of Ventura County. The Conejo Valley basin is a non-structural basin bounded on the south and west by the western Santa Monica Mountains and on the north and east by highlands formed of the Conejo Volcanics (see Regional Geologic Map, Figure 2). The basin is part of the Transverse Ranges Province, a series of sub parallel east to west trending ridgelines and valleys. This province is tectonically characterized by active compression in a north south direction with associated east to west trending reverse/thrust faulting, folding, and normal faulting.

The site is on the northwestern edge of the northern flank of the Santa Monica Mountains and is underlain by fill and alluvial soils mantling bedrock at depth within the flat portion of the property and bedrock mantled by minor topsoil/colluvial soils on the hillsides. The source of the alluvial materials is generally attributed to the erosion of the Santa Monica Mountains, immediately south of the site. Bedrock underlying the alluvium at depth and exposed on the hillside is comprised of Quaternary-age bedrock of the Conejo Volcanics (following the nomenclature of Dibblee, 1992).

## **6. SITE GEOLOGY**

The site is underlain by Miocene-age volcanic bedrock referred to as the Conejo Volcanics mantled locally with Quaternary-age older alluvium and artificial fill deposits. General descriptions of these units, sans topsoil, are presented below and in the attached Logs of Subsurface Data (Appendix A). The approximate spatial relationships are shown on the attached Geotechnical Map (Plate 1).

### **6.1. CONEJO VOLCANICS**

Miocene-age bedrock of the Conejo Volcanics underlies the site and was encountered in all eight borings at depths ranging from 1 foot (B-5 and B-8) to 8.5 feet (B-3) below the existing ground surface. As encountered, the volcanic bedrock generally consists of red to yellowish brown to brown to dark gray to dark gray mottled with red and green fine-grained basalt in a damp and indurated condition. Some manganese oxide staining was noted on fracture surfaces. All borings were terminated in bedrock when the drilling reaching refusal conditions.

### **6.2. OLDER ALLUVIUM**

Quaternary-age older alluvium locally mantles the bedrock on the site and was encountered in boring B-1 at a depth from 4 to 7.5 feet below the existing ground surface. As encountered, the older alluvium generally consists of pale brown sandy clay with a few fine gravels in a damp and hard condition.

### **6.3. ARTIFICIAL FILL**

Artificial fill deposits were encountered in all eight borings and ranges in thickness from 1 foot (B-5 and B-8) to 8.5 feet (B-3). Artificial fill soils are soil deposits generated by man. The approximate areas of compacted fill (Gorian, 1973) placed onsite for the construction of the child daycare center are indicated on Plate 1. As encountered, the artificial fill generally consists of brown silty fine sand to brown to yellowish brown to gray clayey fine to coarse sand with some fine to coarse gravels in a damp to moist and loose to dense condition. Locally the artificial fill consists of brown sandy silty clay (B-5 and B-7) in a wet and soft condition.

#### **6.4. GROUNDWATER**

Groundwater was not encountered during the subsurface exploration program to the maximum depth drilled of 14 feet below the ground surface. In addition, the *Seismic Hazard Zone Report for the Thousand Oaks 7.5-minute Quadrangle, Ventura County, California* (CDMG 2002) does not indicate a high groundwater level in this area. However, seepage was encountered during the construction of the section of Rolling Oaks Drive east of the intersection with Los Padres Drive (Gorian, 1974). Seepage can occur within fractures within the Conejo Volcanic Bedrock. As in any groundwater situation, groundwater level fluctuations should be anticipated during the life of the project.

#### **6.5. LANDSLIDES**

No landslides are present within or near the site nor are any shown on regional geologic maps.

#### **7. FAULTING AND SEISMICITY**

The Conejo Valley/Santa Monica Mountains area is in a seismically active region prone to occasional damaging earthquakes. The destructive power of earthquakes can be grouped into fault-rupture, ground shaking (strong motion), and secondary effects of ground shaking such as tsunamis, liquefaction, settlement, landslides, etc. The hazard of fault-rupture is generally thought to be associated with a relatively narrow zone along well-defined pre-existing active or potentially active faults. No doubt there are and will be exceptions to this, because it is not possible to predict the precise location of a new fault where none existed before (CDMG, 1975).

No active or potentially active faults are known to cross or be in close vicinity to the site. No faults are known to cross the site or adjacent vicinity and the site is currently not within an Alquist-Priolo Earthquake Fault Zone as defined by the State Geologist (CGS 2018). The closest active fault is the Simi Santa Rosa Fault Zone which lies to the north of the site. The potential for ground rupture on-site due to faulting during the time period of concern is considered remote.

Nevertheless, the property will be subjected to ground motion from occasional earthquakes in the region. Significant earthquakes have occurred within a 40-mile radius of the site within the last 25 years. Such as the 1994 Northridge earthquake that produced strong ground motions within Thousand Oaks. Significant earthquakes will likely occur in this area within the life expectancy of the proposed project and the site will experience strong ground shaking from these events.

Based on the United States Geological Survey (USGS) interactive web application, <https://earthquake.usgs.gov/hazards/interactive/> probabilistic seismic hazard analyses (PSHA) predict the Design Basis Earthquake for a 475-year return period (10% chance of being exceeded in 50 years) peak horizontal ground acceleration will be on the order of 0.38g for the bedrock conditions on site. The mean magnitude from this PSHA is 6.7 (Mw) with a mean distance of 17.8 km from the property.

The Design Basis Earthquake for a 2475-year return period (2% chance of being exceeded in 50 years) peak horizontal ground acceleration will be on the order of 0.68g for the bedrock conditions. The mean magnitude from this PSHA is 6.8 (Mw) with a mean distance of 13.4 km from the property.

Secondary effects of strong ground motion include tsunamis, seiche, liquefaction, seismic settlement, earthquake triggered landslides, and flooding from dam failures. Tsunamis are impulsively generated water waves that can cause damage to ocean shoreline areas. A seiche is an oscillation wave within an enclosed body of water. The site is not near the ocean or adjacent a body of water and, therefore, is not subject to tsunami and seiche hazards. Furthermore, the site is not in the vicinity of a dam failure inundation zone. Earthquake induced landslides, liquefaction, and seismic settlement affecting the proposed site development are discussed below.

## **8. LIQUEFACTION AND SEISMICALLY INDUCED LANDSLIDE HAZARD**

The proposed development is not within an area shown to have a potential for liquefaction on the State's Seismic Hazard Zones Map (CDMG, 2000). The bedrock and alluvium underlying the site are not considered susceptible to liquefaction or seismic induced settlement.

Areas prone to seismically induced landslides are slopes with steep gradients covered with weakly indurated bedrock, loose weak soils, or debris from previous landslides. These soil conditions combined with strong ground shaking caused by an earthquake can cause the cohesive strength of soils to weaken and move down slope under the force of gravity. Site grading is not anticipated to create significant slopes that will fall within the range of conditions considered susceptible to seismic slope instability as discussed above.

## **9. ONSITE STORMWATER INFILTRATION**

As previously indicated, testing was performed for onsite stormwater infiltration. Shallow test wells were constructed in the northern portion of the site. Deeper infiltration test wells were not constructed due to the encountered bedrock in which refusal to advance the auger occurred. Water was introduced into the wells to presoak the soils prior to performing infiltration testing. However, the presoak water did not fully dissipate into the surrounding soils indicating a lack of infiltration. Therefore, onsite stormwater infiltrator is not considered feasible for the site due to the presence of the underlying bedrock and soils that are not suitable for stormwater infiltration.

## **10. CONCLUSIONS AND RECOMMENDATIONS**

### **10.1. GENERAL**

The site at 400 East Rolling Oaks Drive was evaluated from a geotechnical standpoint for the proposed medical office building. The construction described herein is feasible provided the following geotechnical recommendations are incorporated into the design and construction of the project. Use of this report constitutes the owner and parties using this report have fully read and understand the contents of this report. Construction including site preparation, grading, and fill placement should be per applicable building codes.

### **10.2. GEOLOGIC CONDITIONS**

The site is underlain by shallow bedrock as indicated in the logs of borings. The bedrock is hard (indurated) and stable, therefore, some difficult excavation should be anticipated during site preparation operations. In Gorian, 1973, it is indicated that the fill was generated from cuts onsite and the cut material was predominantly volcanic basalt with a clayey sand matrix readily rippable with a D-9 dozer. Also, indicated is that the rocky material was easily broken down to eight-inch maximum size under the compactive effort applied by a 5 x 5 sheepsfoot roller. However, in a bedrock site, the rock hardness can vary due to weathering and depth with the hardness generally increasing with depth.

### **10.3. SITE PREPARATION OPTIONS**

As shown on Plate 1, the building will be centered roughly within the site. The building pad will be graded mostly with shallow cuts to the south. More detailed information regarding the grading within the building pad will be available when a fine grading plan is available for review. However, currently it appears there are two limited areas of fill within the building area, on the west there is an area of prior fill and on the east an area of proposed fill. Therefore, there are two options regarding preparation of the building pad. The first is to grade the site as shown without removal of the daylight (contact between fill and cut) from the building pad. This will require all footings be embedded or extended into the underlying bedrock. This may require deepening of footings above that planned based on encountered field conditions. The second option is to undercut the pad to a minimum of 3 feet below the footings to remove the daylight line. Either option is suitable from a geotechnical standpoint. The daylight line would not need

to be removed for slab support. Grading of the site should be reviewed when fine grading plans area available.

#### 10.4. SEISMIC DESIGN PARAMETERS

As previously discussed, active faults identified by the State are not onsite nor is the site within an Alquist-Priolo Earthquake Fault Zone. Nevertheless, the site is within a seismically active region prone to occasional damaging earthquakes.

Structures within the site may be designed using procedures for seismic design presented in ASCE/SEI 7-16. Mapped acceleration parameters are initially determined for sites having a shear wave velocity of 2,500 feet per second (Section C11.4.4). The  $S_s$  and  $S_1$  values are adjusted to obtain the maximum considered earthquake (MCE) spectral acceleration values for the site based on its site class of C. The seismic design parameters for the site's coordinates (latitude 34.1737 N and longitude 118.8692 W) were obtained from the USGS web based spectral acceleration response maps and calculator: (<http://earthquake.usgs.gov/hazards/designmaps/>). The parameters are presented below. The complete Design Maps Detailed Report is attached hereto in Appendix C.

#### Risk Category II and III

SEISMIC PARAMETER	VALUE PER CBC
Short Period Mapped Acceleration ( $S_s$ )	1.45g
Long Period Mapped Acceleration ( $S_1$ )	0.52g
Site Class Definition	C
Site Coefficient ( $F_a$ )	1.2
Site Coefficient ( $F_v$ )	1.48
$S_{MS} = F_a S_s$	1.74g
$S_{M1} = F_v S_1$	0.77g
$S_{DS} = 2/3 S_{MS}$	1.16g
$S_{D1} = 2/3 S_{M1}$	0.51g
$PGA_M$	0.61g

The purpose of the building code earthquake provisions is primarily to safeguard against major structural failures and loss of life, not to limit damage nor maintain function. Therefore, values provided in the building code should be considered minimum design values and should be used with the understanding site acceleration could be higher than addressed by code-based parameters. Cracking of walls and possible structural damage should be anticipated in a significant seismic event.

#### 10.5. GROUNDWATER

As previously indicated, groundwater was not encountered during the subsurface exploration program to the maximum depth drilled of 14 feet below the ground surface. Therefore, groundwater is not anticipated to be encountered during the project construction. However, seasonal seepage can occur within fractures of the Conejo Volcanic bedrock. As in any groundwater situation, groundwater level fluctuations should be anticipated during the life of the project.

#### 10.6. SITE PREPARATION AND GRADING

##### 10.6.1. General

As previously discussed, the site may be graded with or without undercutting of the pad. Recommendations are provided below for grading of the site along with undercutting recommendations is this option is selected for the site.

The following sections contain geotechnical recommendations concerning site preparation and grading. All aspects of grading should be per the City of Thousand Oaks Building Code unless superseded by recommendations herein.

#### **10.6.2. Existing Utilities**

Existing utilities are present in the street with laterals to the lot. Therefore, protection of existing utilities to remain will be necessary during remedial grading and care should be taken to avoid surcharging them with proposed construction or building loads.

#### **10.6.3. Site Clearing**

The site should be cleared of unnecessary improvements, vegetation, and debris prior to beginning remedial removal operations. Material generated during site clearing should be removed from the site prior to starting earthwork. The removal should include soils disturbed during the removal process.

#### **10.6.4. Tree Removal**

Tree removal will be necessary within the proposed area of construction. A two to three cubic soil loss should be anticipated with each root ball removed. The resulting cavity from the tree removal should be cleaned and observed by this office prior to fill placement. Roots over one-half inch diameter should be removed from the fill and when encountered within the areas of soil removal. Brush should be cut from the slopes and not pulled resulting in disturbance of the slope surface.

#### **10.6.5. Soil Removals**

The upper loose or soft topsoil or native alluvial soils and existing non-engineered fill soils should be removed and replaced as engineered compacted fill for the support of the proposed construction. For planning purposes, the minimum removal is estimated at one foot. The removals should be measured from the existing or finished subgrade, whichever is the deeper removal. However, if deeper unsuitable areas are uncovered, the additional removal should be determined based on field observations by this office. Soil removals should be performed within all areas of construction (cut or fill areas) including parking and drive areas.

After removals are completed as addressed above, the exposed ground surface should be observed and tested by a field representative of this office to determine if additional soil removal is required. Fill soils should not be placed until the geotechnical observation of removal areas is complete.

#### **10.6.6. Building Pad Undercut (building pad over-excavation)**

If it is desired to have the footings supported uniformly in compacted fill in lieu of bedrock, the building pad should be undercut. The undercut should be performed to a minimum depth of 5 feet below the proposed pad grade within the building footprint or a minimum of 3 feet of compacted fill beneath the footings, whichever is the deeper removal. The removal should extend a minimum of 5 feet past the building footprint. However, the removals may be reduced if a uniform thickness of fill can be placed directly over in place bedrock as determined by this office.

After the removals are completed, the exposed removal bottom should be observed by a representative of this office to evaluate if additional removals are needed. After removals, fill can be recompacted as outlined below.

#### **10.6.7. Retaining Wall Soil Removal**

No additional retaining wall soil removal is necessary other than a minimum of 1 foot as describe above providing the footings area established in firm in place bedrock, engineered compacted fill, or firm alluvial soils. Expansion joints are suggested where a retaining wall will cross a daylight line. Footing excavations should be observed by this office prior to determine if additional soil removal is necessary.

**10.6.8. Oversized Rock**

Oversized rock should be anticipated within the cuts made into the Conejo Volcanics along the southern portion of the site. Rock over 8 inches should not be placed in the fill and over 6 inches should not be placed in the building areas. Rock over these sizes should be removed from the site.

**10.6.9. Processing**

The surface of the in-place soils should be processed prior to fill placement. Processing of the in-place soils should consist of scarification to a depth of 6 to 8 inches. The scarified surface should be relatively free of uneven features that would prevent uniform compaction. Soils should be moisture conditioned and compacted to at least 90% relative compaction. Hard in place rock need not be scarified.

**10.6.10. Fill Placement**

Soils excavated from within the site may be used as fill providing the soils are cleaned of major vegetation, trash, and debris. However, clayey soils should be salvaged to build fill slope faces (if constructed). Sandier soils may not have sufficient cohesion for slope construction.

Fill soils should be placed in thin uniform lifts not exceeding 8 inches in depth. The moisture content should be controlled so the fills are slightly over the optimum moisture content prior to compaction. Fills should be compacted to a minimum density of 90% relative compaction. Soils placed within building pad areas should be mixed and blended so the completed engineered compacted fill pad is relatively uniform.

**10.6.11. Utility Trenches**

Utility trenches, including those associated with site drainage piping systems, should be compacted to at least 90% relative compaction. Utilities should be constructed in accordance with current practice and standards (such as the current *Green Book*).

**10.6.12. Relative Compaction**

Relative Compaction is the ratio of in-place dry soil density to the maximum dry soil density determined in general conformance with ASTM test method D 1557-91.

**10.6.13. Shrinkage/Bulking**

Shrinkage is the volume loss of soils from cut to fill and from removal areas. Bulking is the volume expansion of the earth materials from cut to fill. The amount of volume change will depend on the material in situ density, the final compacted density achieved, losses due to spillage, etc. Subsidence is considered to account for densification on the upper 6 inches of surface soils over the site and stripping of vegetation from the site, and is expected to remove about 2 to 3 inches of grade. Removal of asphalt and prior construction could result in higher subsidence values.

Shrinkage will vary depending upon placement and compaction and could range from 5 to 10 percent shrinkage (soil bulking is not anticipated). Bulking in the bedrock areas could be 5 percent or more depending upon the amount of oversized rock excavated. Estimated factors based on an assumption the fills will be placed and compacted as recommended herein. The values are provided for gross estimating purposes only.

**10.7. EXCAVATIONS****10.7.1. General**

The following sections are for support of temporary cuts and excavations for retaining wall construction. Temporary slopes will encounter a varied bedrock/soil profile and should conform to the requirements of CAL/OSHA and any other applicable regulations.

### **10.7.2. Temporary Slopes**

When construction plans are available, they should be evaluated for temporary slopes. Temporary slopes in bedrock may be made at a 1/2(horizontal):1(vertical) gradient. However, if fracture bedrock is exposed in the backcut, the backcut may need to be laid back to a flatter gradient or other protective measures provide to protect against loose rock. Surcharge loading, such as construction equipment or vehicle traffic, should be kept back sufficient distances from excavations onsite.

### **10.7.3. Shored Excavation**

Shoring will be required whenever vertical cuts are made such as for utility installation over the depth allowed for the soil conditions outlined in CAL/OSHA. Temporary shoring should be designed for an active pressure of 30 pounds per cubic foot. Additional recommendations can be provided when the need for shoring is known.

## **10.8. SHORING**

### **10.8.1. General**

Shoring within the site may be required based on the project is laid out and how the cuts are made for the basement and retaining walls. Recommendations for tiebacks are not included in this report, however, they can be provided if necessary.

The project civil engineer should prepare an excavation plan detailing the excavation and relationship to existing utilities and structures. This office should review the excavation plan prior to starting construction. In addition, this office should evaluate possible loads (such as crane loading) than may surcharge the excavation.

### **10.8.2. Shored Excavation**

Shoring for excavation may consist of cantilevered soldier piles. Lagging should be used to support the cut between the piles. Grouting is the preferred method to fill the voids between the cut and lagging. The shoring should be designed to include the lowest construction elevation. Care will be required to avoid damaging buried utilities or foundations of adjacent structures. The shoring will the subsurface profile as described previously herein and in the attached Logs of Subsurface Data (Appendix A).

### **10.8.3. Surcharge Loading**

An area surcharge of 300 psf should be included in the shoring design where the shoring is near street traffic. The lateral pressure on the shoring due to a uniform area surcharge of intensity  $q$  (force/area) is equal to a uniform pressure of  $0.4q$  over the entire height of the wall. Surcharge on the shoring from construction equipment (e.g. crane or concrete pump) directly adjacent the top of a shored cut should be evaluated by this office on an individual basis.

### **10.8.4. Soil Pressure**

Shoring should be designed for lateral earth pressure plus lateral pressure imposed by existing adjacent foundations or surcharges. Cantilevered shoring systems should be designed for an active earth pressure distribution of 30 pounds per cubic foot (pcf) with level ground behind the shoring. Additional pressures can be provided based on the shoring locations and loading. This shoring pressure (cantilever walls) does not include lateral loads from surcharges (such as crane loading or adjacent structures) near the top of the excavation. The value of 30 pcf is an ultimate value without a factor of safety. The width of active pressure acting on the pile below the bottom of the excavation should be two pile diameters for a cantilevered soldier pile.

### **10.8.5. Soldier Pile Passive Pressure and Vertical Capacity**

The lower ends of the soldier piles will be seated in alluvial deposits is as described previously herein and in the attached Logs of Subsurface Data (Appendix A). For isolated piles (spaced at least 3 diame-

ters center to center) the passive earth pressure should start at zero at the excavated grade. This value may be increased at a rate of 300 pounds per cubic foot for each foot of depth below the proposed base of excavation to a maximum of 3000 pounds per square foot. The surface area (pile diameter) that the allowable passive pressure may induce passive resistance may be doubled for soldier beams that are a minimum of 3 diameters apart center to center.

For vertical support, a unit friction value of 300 pounds per square foot may be used for that portion of the soldier pile encased in structural concrete or drilled and cast concrete pile extending below the lowest depth of excavation. The unit of friction is independent of the pile diameter; however, the piles should be at least 24-inch diameter with a minimum embedment depth of 15 feet below the lowest excavation depth. Fixity may be assumed at 5 feet below the lowest unsupported grade (such as the basement excavation).

#### **10.8.6. Cantilever Shoring Tilt**

Similar to a cantilever retaining wall, cantilever shoring designed for an active pressure can yield at the top to develop full active pressure. Generally, tilt is a function of the wall height and is estimated at .001 to .002 of the wall height.

#### **10.8.7. Lagging**

Lagging consisting of treated timber will be required the entire depth of the shored excavation. Wood lagging should be new rough timber (full dimension) Douglas Fir, straight, free of bends, and free from defects that might impair structural strength. Lagging to be left in-place shall be pressure treated for contact with soil. The upper two feet of the shoring and lagging measured from the adjacent grade should be removed when the shoring is no longer needed for support of the excavation. The resulting cavity from removed shoring should be backfilled with grout/slurry or soil compacted to a minimum of 90% relative compaction.

Lagging should be designed to resist an equivalent fluid pressure equal to 30 pcf measured below the ground surface. A maximum lagging pressure of 400 psf may be assumed where the maximum spacing of soldier piles does not exceed 8 feet center to center. An alternate to installing lagging would be to construct the shoring as a continuous gunite/shotcrete wall descending as the excavation proceeds. Cavities behind the lagging and retained soils should be filled with sand/cement slurry (preferred).

#### **10.8.8. General Considerations**

The basement excavation can be made with ordinary excavating equipment. Soils between the existing foundations and proposed shoring system should be maintained in an undisturbed and intact condition. Caving of soldier beam excavations should be anticipated since sandy materials will be encountered in the excavations. The shoring contractor should be prepared to provide methods to prevent caving such as the use of hollow stem augers, casing, or drilling mud.

#### **10.8.9. Barricades**

Appropriate barricades should be placed at the top of all temporary excavations that are approached by pedestrians or public vehicle traffic (such as in streets or parking areas).

#### **10.8.10. Shoring System Monitoring**

The shoring system should be monitored for vertical and horizontal movements at the top of each soldier beam. A licensed surveyor should perform the surveying.

The reference points and pile tops should be read prior to commencing the excavation. To create a baseline, all soldier piles should be surveyed twice (approximately one day apart) before beginning excavation. Additional readings should be performed roughly biweekly throughout construction until the shoring and excavation is complete. More frequent reads may be required at critical times of construc-

tion or if significant movement is indicated. After completion of the shoring construction and excavation, readings may be taken biweekly until the shoring is no longer needed for support of the excavation.

The survey data should be submitted to Gorian and Associates, Inc. within 24 hours of the measurements. The tolerable movement for any location within the structure will be evaluated with the data and is dependent on the soil conditions at that location, the stage of construction, and adjacent structures or loading. Some movement of the shoring can be expected and is considered tolerable. In general, movement in excess of 2 inches horizontally or vertically will require supplemental shoring before excavation continues.

## **10.9. SLOPE CONSTRUCTION**

### **10.9.1. General**

Excavations for the proposed development may be supported by cut slopes and retaining walls. Cut slopes within bedrock may be made at a 1-1/2(horizontal):1(vertical) gradient. Fill slopes and slopes within a soil profile should be made at a 2(horizontal):1(vertical) gradient.

### **10.9.2. Cut Slopes**

Cut slopes within bedrock may be made at a 1-1/2(horizontal):1(vertical) gradient. Cut slopes along the southern perimeter of the site will encounter Conejo Volcanic bedrock at shallow depths as illustrated in the attached cross sections. The tops of these slopes should be rounded where topsoil is exposed in the cut. Cut slopes should be observed by an engineering geologist from this office for the presence of adverse geologic conditions. Hard rock conditions may be encountered within the Conejo Volcanics.

### **10.9.3. Cut Slope Seepage**

Cut slopes within the volcanics are known to seep water after significant rainfall through fracturing within the bedrock. Generally, this condition is not detrimental to the slope.

### **10.9.4. Fill Slopes**

Fill slopes (if constructed) should be keyed and benched into firm competent native materials per the City of Thousand Oaks Building Code. All keyways should be a minimum of 15 feet wide and cut to a minimum depth of 2 feet at the toe into firm competent in place materials (see the Soil Removals Section). Keyways should be tilted into the slope and should be at least 3 feet deep at the heel (measured from below the slope toe elevation). A representative of this office should observe the keyways prior to fill placement.

Select grading will be required when placing fill materials within 15 feet of slope faces. Fill soils near slope faces should have enough clay to develop at least 250 pounds per square foot of cohesive shear strength for a 2(horizontal):1(vertical) slope. This is a minimum cohesion based on standard practice to provide for surficial slope stability. However, highly expansive clayey soils should not be placed near a slope face.

Where possible the outer slope faces should be overfilled and trimmed back to provide for firm, well-compacted surfaces. The slope faces should be tested and reworked as necessary to achieve the required compaction.

### **10.9.5. Slope Maintenance**

Slopes constructed within the site will require maintenance or protection to reduce the risk of erosion and degradation with time due to natural or man-made conditions. Future performance of slopes will depend on control of rodents and maintenance of drainage structures and slope vegetation as discussed below. Drainage should be provided away from the top or toe of the slopes.

Slope (fill or soil cut slopes) planting should consist of dense, deep rooting, drought resistant ground-cover and shrubs or trees. Hard rock areas may not be suitable for planting. A reliable irrigation system should be installed, adjusted so over-watering does not occur, and periodically checked for leakage. Over-watering of slopes can cause expansion, erosion, and surficial failures, and should be avoided. Care should be taken to maintain a uniform, near optimum moisture content below the slope surface, and to avoid over drying, or excess irrigation. These conditions can reduce the potential for soil softening and strength loss, which could lead to slumping of the slope face. Drainage structures should be kept in good condition and cleaned the entire length to the outlet in an approved drainage course. Burrowing animals (e.g., ground squirrels) can destroy slopes; therefore, where present, immediate measures should be taken to eliminate them.

#### **10.10. SOIL EXPANSIVENESS**

An expansion test performed for the site indicate the onsite soils are moderately expansive (51-90 soil expansion range). Additional expansion tests will be required to determine the expansiveness of the completed building pad.

Expansive soils contain clay particles that change in volume (shrink or swell) due to a change in the soil moisture content. The amount of volume change depends upon the soil swell potential, availability of water, and the soil restraining pressure. Swelling occurs when clay soils become wet due to excessive water. Excessive water can be caused by poor surface drainage, over-irrigation of lawns and planters, and sprinkler or plumbing leaks.

Expansive clay soils can cause distress both as uplift and shrinkage or settlement. Construction on expansive soil has an inherent risk that should be acknowledged and understood by the builder and property owner. Recommendations presented in this report are intended to reduce the potential for expansive soil action. However, these recommendations are not intended, nor designed to provide complete and full mitigation of expansive soil conditions. Additional recommendations can be provided to further reduce the risk of expansive soil movement.

#### **10.11. FOUNDATION RECOMMENDATIONS**

##### **10.11.1. General**

As previously indicated the building foundations may be supported entirely in bedrock or engineered compacted fill. However, the footings should not be supported in both bedrock and fill. Therefore, if supported in fill, the building should be undercut to provide a minimum of 3 feet of fill below the footings.

##### **10.11.2. Conventional Foundation Design Data**

Conventional footings within the underlying bedrock or compacted fill for the building structural support may be designed using an allowable bearing pressure of 4,000 pounds per square foot (psf). Light structures such as site walls or monument structures may be designed using a bearing pressure of 1,500 pounds per square foot when embedded in compacted fill or firm in-place native soils. The bearing pressure is for dead plus live loads and may be increased by one-third when considering wind or seismic loads.

Footings should have a minimum width of 12 and 24 inches for continuous and isolated footings, respectively. The embedment should be a minimum of 24 inches for perimeter and interior footings. The lowest adjacent grade is the lowest soil grade adjacent the footings, interior or exterior. Embedment of interior and retaining wall footings may be measured from the top of the interior concrete slab on-grade. Deepening of the footing may be necessary to reach firm in-place bedrock below any weathered bedrock zone.

Shallow footings adjacent a retaining wall should be stepped down below a 2(horizontal):1(vertical) plane projecting upward from the bottom of the retaining wall footings or the wall should be designed for the added surcharge. Steel reinforcement should be per the structural engineer's recommendations. However, minimum reinforcement for continuous footings should consist of two number five bars in the top and bottom.

### **10.11.3. Lateral Resistance**

Lateral forces on foundations may be resisted by passive earth pressure and base friction. For the sides of footings bearing against engineered compacted fill or competent native materials, the lateral passive earth pressure may be considered equal to an equivalent fluid having a density of 300 pounds per cubic foot (pcf). Base friction may be computed at 0.4 times the normal load. Base friction and passive earth pressure may be combined without reduction and may be increased by one-third when considering wind or seismic loads.

The lateral resistance is an ultimate design in that no safety factor is included to preclude the use of a 1.5 safety factor in the design of retaining walls. However, the values may be increased by one third for temporary loading.

### **10.11.4. Estimated Foundation Settlements**

Settlement of footings should be evaluated once building footing locations and structural loads are known. However, footing settlement for static loading is anticipated on the order of  $\frac{1}{4}$  to  $\frac{1}{2} \pm$  inch, with a maximum differential settlement of  $\frac{1}{2} \pm$  inch over a span of approximately 30 feet or between adjacent individual footings. This is provided building construction is started directly after footing excavation, footings are cast soon after the footing excavation, and construction is completed in a timely manner. Settlements due to static loading are expected to occur rapidly as the loads are applied.

All structures settle during construction and some minor settlement of the structures can occur after construction during the life of the project. Minor wall cracking could occur within the structure associated with expansion and contraction of the structural wood members due to thermal or moisture changes. In addition, wall or slab cracking may be associated with settlement or expansive soil movement. Additional settlement/soil movement could occur if the soils become saturated due to excessive water infiltration generally caused by excessive irrigation, poor drainage, etc.

### **10.11.5. Footing Excavations**

Footings should be cut square and level and cleaned of slough. Soil excavated from footing and utility trenches should not be spread over areas of construction unless properly compacted. A representative of this office should observe the footing excavations prior to placing reinforcing steel. Soils silted into the footing excavations during moistening operations should be removed prior to casting the concrete. Footings should be cast as soon as possible to avoid deep desiccation of the footing subsoils.

### **10.11.6. Footing Subgrade Moisture**

Footing subgrade soils should be kept in a moist condition until concrete placement. Saturated soils should be removed from the footing excavations prior to casting the footings.

## **10.12. SLABS-ON-GRADE**

### **10.12.1. Site Preparation**

Concrete slabs on-grade may be supported on compacted engineered fill soils or in place bedrock. Subgrade soils should be recompacted prior to placing the sand subbase, if the soils were disturbed during footing or utility construction.

**10.12.2. Design Data**

Concrete slabs on-grade should be 5 inches thick and underlain by 6 inches of  $3/4\pm$  clean aggregate. Recommendations for exterior concrete drives are provided later herein under *Preliminary Pavement Design* later herein. Slab should be reinforced with a minimum of number 3 bars at 18-inch centers in each direction. Reinforcement should be placed and kept at slab mid-depth.

Exterior concrete slabs-on-grade (non-auto traffic) and walkways should be a minimum of 4 inches thick and underlain by a minimum of 4 inches of sand. Exterior slabs should be reinforced with minimum No. 3 bars on 24-inch centers in each direction. Reinforcement should be placed at mid-depth of the slab. Sidewalks may be constructed of non-reinforced concrete provided they are cut into square panels (i.e., 4-foot-wide walks should be cut into 4 by 4-foot squares).

**10.12.3. Premoistening**

Soils under lightly loaded slabs on-grade should be premoistened to 3% over the optimum moisture content for a depth of 18 inches.

**10.12.4. Moisture Vapor Retarder Layer**

A moisture vapor retarder layer should be incorporated into the slab on-grade design within the building interior. The water vapor retarder should be one that is specifically designed as a vapor retarder and consist of a minimum 15 mil extruded polyolefin plastic and comply with Class A requirements under ASTM E1745 (*Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs*). The vapor retarder should be installed in accordance with ASTM E1643. The water vapor retarder should be installed in direct contact with the concrete slab along with a concrete mix design to control bleeding, shrinkage, and curling (ACI 302.2R). The vapor retarder shall be installed over a 4-inch-thick layer of  $1/2$  inch or larger clean aggregate or per applicable building codes, whichever is the more restrictive. The vapor retarder should be placed per the manufacturer's recommendations ASTM E1643-98(2005) *Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs*. All joints should be lapped and sealed along with proper sealing of perforations such as for plumbing. In addition, various trades and the concrete contractor should be required to protect the moisture retarder during construction.

Perforations through the moisture vapor retarder such as at pipes, conduits, columns, grade beams, and wall footing penetrations should be sealed per the manufacturer's specifications or ASTM E1643. Proper construction practices should be followed during construction of slabs on-grade. Repair and seal tears or punctures in the moisture barrier that may result from the construction process prior to concrete placement.

Minimizing shrinkage cracks in the slab on-grade can further minimize moisture vapor emissions. A properly cured slab utilizing low-slump concrete will reduce the risk of shrinkage cracks in the slab as described herein.

The concrete contractor should be made aware of the moisture vapor retarder and required to protect the layer. The concrete contractor should make the necessary changes in the concrete placement and curing for concrete placed directly over the retarder. Placing the concrete directly on top of the moisture vapor retarder layer allows the layer to be observed for damage directly prior to concrete placement.

The slabs should be tested for moisture content prior to the selection of the flooring and adhesives. Moisture in the slabs should not exceed the flooring manufacturer's specifications. The concrete surface should be sealed per the manufacturer's specifications if the moisture readings are excessive. It may be necessary to select floor coverings that are applicable to high moisture conditions.

**10.13. SUBTERRANEAN DRAINAGE AND WATERPROOFING**

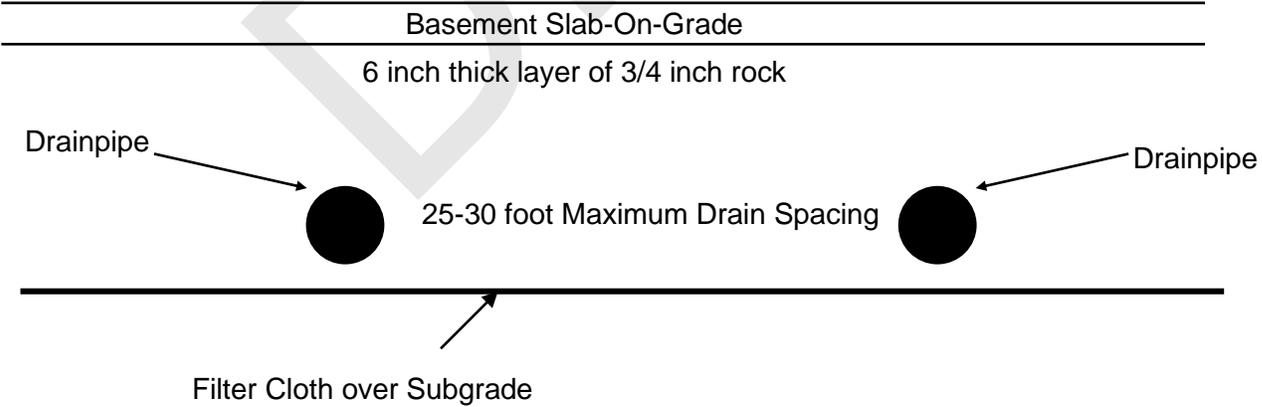
The bedrock within the area of the subterranean portion of the first floor can seep through fractures. Therefore, it is recommended that a subdrain be placed below the slab within the portion of the first floor adjacent the southern building retaining wall. In addition, the retaining walls should be waterproofed with back drains.

**10.13.1. Below Slab Drain**

Below slab drains are intended to provide drainage of groundwater from below the interior floor. However, drains will not drain water naturally held by the soils or stop vapor migration.

The interior slab in the area of bedrock cut should be constructed on 6 inches of 3/4± rock. An acceptable gradation would be as specified in the Standard Specifications for Public Works Construction (Greenbook) Table 200-1.2, Crushed Rock and Rock Dust for 3/4-inch rock. However, the rock may be rounded or crushed. The rock should be placed on a properly prepared subgrade as addressed herein and should be separated from the subgrade by a single layer of filter cloth. Filter cloth having a maximum equivalent opening of 0.212 mm (70 U.S. sieve size) should be lapped at least 12 inches at the seams and the seams sealed per the manufacture’s specifications.

Directly above the filter cloth within the rock, at least one row of 4-inch PVC (Schedule 40) perforated pipe should be placed with holes down roughly parallel to and roughly 10 feet in from the southern retaining wall. Should it be desirable to add additional drains, the drains should be placed at a maximum pipe spacing of 25-30 feet and preferably with a slight slope to drain (or horizontal if necessary). Piping should be routed around footings and grade beams wherever possible however should not extend below any footing. Where piping must cross a structural element, a sleeve should be constructed per the structural engineer’s design. Manifold piping or solid piping connecting the drains to the sump system or storm drain may be 4 inch or larger PVC (Schedule 40) that is non-perforated with glued connections. Drainpipes should be connected to a single outlet pipe prior to exiting the building. Connector pipes should be placed preferably with a slight slope to drain (or horizontal if necessary). Rock should be carefully placed over the piping so as not to disturb the pipe layout or distort the piping.



**Suggested Below Slab Drain Detail (NTS)**

## 10.14. RETAINING WALLS

### 10.14.1. General

Retaining walls will be required to develop the site as shown on Plate 1. The walls may be either conventional, segmental (mechanically stabilized earth, MSE), soldier beam and lagging, or soil nailed. All of these walls have been used within the City in one form or another. A soil nail wall would be ideal of the southern wall except that the nail would extend offsite and therefore require an offsite easement. A segmental wall could be used along the eastern boundary of the site. The different wall types should be evaluated for use within the project. Additional, design parameters can be provided based on the selected wall type.

### 10.14.2. Lateral Earth Pressures

Site retaining walls allowed yield at the top should resist an active pressure exerted by compacted backfill or retained soil. Walls that may yield at the top should be designed for an equivalent fluid pressure equal to 30, 45, 55 pcf for a level, 2(horizontal):1(vertical) and 1-1/2(horizontal):1(vertical) condition behind the wall, respectively. The wall pressures are for low to moderate expansive backfill materials. Wall heights are measured from the top of the retained material to the bottom of the foundation.

Permanent braced retaining walls (including basement walls) should be designed for a pressure of 30H (psf) where H is the height of the retained soil. The pressure distribution may be trapezoidal with the pressure increasing from zero at the base of the wall to full pressure at .2H measured from the base of the wall. H is the wall height. The pressure may be reduced starting at .8H to zero pressure at the ground surface.

Shallow footings adjacent a retaining wall should be stepped down below a 2(horizontal):1(vertical) plane projecting upward from the bottom of the retaining wall footings or the wall should be designed for the added surcharge. Surcharge on the wall from loads directly adjacent the wall can be evaluated by this office on an individual basis.

Surcharges may be treated as additional height of backfill. Assume one foot of additional height for each 125 psf of areal surcharge. Vehicle wheel loads (light to moderate) should be taken as two feet of additional surcharge. Lateral loads imposed by adjacent shallow foundations should be added to the lateral earth pressure. A surface surcharge of 300 pounds per square foot (psf) should be included in the design where the shoring is near street traffic zones.

### 10.14.3. Seismic Pressure

Walls less than 6 feet in height should not require a seismic pressure. Walls above a height of 6 feet high should be designed for a dynamic load ( $\Delta P_{ae}$ ) as provided in Agusti and Sitar (2013) as follows:

Basement (restrained) walls with level backfill:  $\Delta P_{ae} = \frac{1}{2} * \gamma * H^2 (0.68 PG_{AM}/g)$

Cantilever (unrestrained) wall with level backfill:  $\Delta P_{ae} = \frac{1}{2} * \gamma * H^2 (0.42 PG_{AM}/g)$

Cantilever (unrestrained) wall with sloping backfill\*:  $\Delta P_{ae} = \frac{1}{2} * \gamma * H^2 (0.70 PG_{AM}/g)$

\*Applicable for sloping backfill that is no steeper than 2:1 (horizontal:vertical).

H = retained earth height (use  $\gamma = 120$  pcf for compacted backfill)

$PG_{AM} = 0.61g$

For cohesionless soils, the point of application of the dynamic load increment is at 1/3H, where H is the retained height. For soils with cohesion, the point of application may vary between 0.37H to 0.40H; for additional information, see Agusti and Sitar (2013) listed in the references.



### 10.16. SOIL CORROSION

The results are presented herein of analytical laboratory testing to evaluate the potential for corrosion of materials in contact with the onsite soils. Testing was performed by Project X Corrosion Engineering on a soil sample considered to represent the onsite soils (the test results are attached hereto in Appendix B). From ACI Table 19.3.1.1, the evaluated soil is categorized as Class S0. The required concrete design requirements for this exposure class can be obtained from ACI Table 19.3.2.1. The potential for corrosion of metals in contact with the onsite soils is very severely corrosive as determined from Table 1. For specific recommendations, a corrosion engineer should be consulted.

**ACI Table 19.3.1.1 – Exposure Categories and Classes**

Category	Class	Water-soluble sulfate (SO <sub>4</sub> <sup>2-</sup> ) in soil, percent by mass	Dissolved sulfate (SO <sub>4</sub> <sup>2-</sup> ) in water, ppm <sup>1</sup>
Sulfate (S)	S0	SO <sub>4</sub> <sup>2-</sup> < 0.10	SO <sub>4</sub> <sup>2-</sup> < 150
	S1	0.10 ≤ SO <sub>4</sub> <sup>2-</sup> < 0.20	150 ≤ SO <sub>4</sub> <sup>2-</sup> < 1500 or seawater
	S2	0.20 ≤ SO <sub>4</sub> <sup>2-</sup> < 2.00	1500 ≤ SO <sub>4</sub> <sup>2-</sup> < 10,000
	S3	SO <sub>4</sub> <sup>2-</sup> > 2.00	SO <sub>4</sub> <sup>2-</sup> > 10,000

1 ppm (parts per million) = milligrams per kilogram mg/kg of dry soil weight

**ACI Table 19.3.2.1 – Requirements for Concrete by Exposure Class**

Exposure Class	Maximum w/cm	Minimum f' <sub>c</sub> , psi	Cementitious materials - Types			Calcium chloride admixture
			ASTM C150	ASTM C595	ASTM C1157	
S0	N/A	2500	No type restriction	No type restriction	No type restriction	No restriction
S1	0.50	4000	II	Types IP, IS, or IT with (MS) designation	MS	No restriction
S2	0.45	4500	V	Types IP, IS, or IT with (MS) designation	HS	Not permitted
S3	0.45	4500	V plus pozzolan or slag cement	Types IP, IS, or IT with (MS) designation plus pozzolan or slag cement	HS plus pozzolan or slab cement	Not permitted

ACI Tables 19.3.1.1 and 19.3.2.1 - ACI 318-14 Building Code Requirements for Structural Concrete

**Table 1. Relationship Between Soil Resistivity and Soil Corrosivity**

Soil Resistivity, ohm-cm	Classification of Soil Corrosiveness
0 to 900	Very severe corrosion
900 to 2,300	Severely corrosive
2,300 to 5,000	Moderately corrosive
5,000 to 10,000	Mildly corrosive
10,000 to >10,000	Very mildly corrosive

F. O. Waters, Soil Resistivity Measurements for Corrosion Control, Corrosion. 1952, Vol. 12, 1952, p. 407.

### 10.17. SITE DRAINAGE

Positive drainage should be provided away from structures and hardscape during and after construction per the grading plan or applicable building codes. Water should not be allowed to gather or pond against foundations. In addition, planters near a structure should be constructed so that irrigation water will not saturate footing and slab subgrade soils. Landscape planting and trees should be located to avoid roots extending beneath foundations and slabs. Irrigation lines and landscape watering should be kept away

from building lines wherever possible. Irrigation lines and sprinklers should be placed so that water is not sprayed on the footings or saturates the soil adjacent the footings.

## 11. CLOSURE

This report was prepared under the direction of State registered geotechnical engineer and certified engineering geologist for the addressee and design consultants solely for design and construction of the project as described herein. No warranty, express or implied, is made as to conclusions and professional advice included in this report. Gorian and Associates, Inc. disclaim any and all responsibility and liability for problems that may occur if the recommendations presented in this report are not followed.

This report may not contain sufficient information for other uses or the purposes of other parties. Recommendations should not be extrapolated to other areas or used for other facilities without consulting Gorian and Associates, Inc. Services of this office should not be construed to relieve the owner or contractors of their responsibilities or liabilities.

The scope of the services provided by Gorian and Associates, Inc. and its staff, excludes responsibility and/or liability for work conducted by others. Such work includes, but is not limited to, means and methods of work performance, quality control of the work, superintendence, sequencing of construction and safety in, on, or about the jobsite.

The recommendations are based on interpretations of the subsurface conditions concluded from information gained from subsurface explorations and a surficial site reconnaissance. The interpretations may differ from actual subsurface conditions, which can vary horizontally and vertically across the site. Due to possible subsurface variations, this office should observe all aspects of field construction addressed in this report. Individuals using this report for bidding or construction purposes should perform such independent investigations as they deem necessary.

oOo

Please do not hesitate to call if you have any questions concerning this geotechnical report or require additional information.

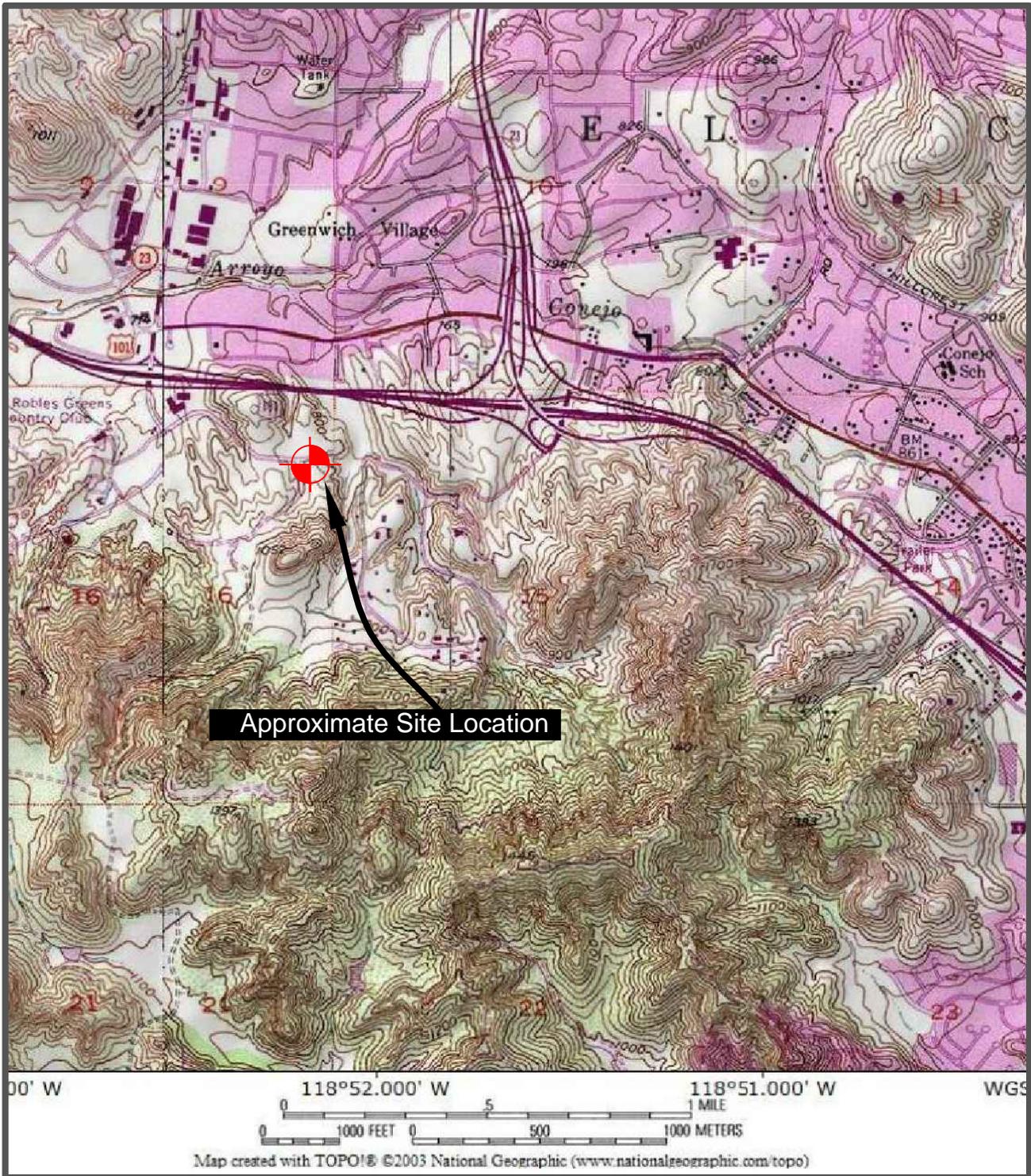
Respectfully,  
**Gorian and Associates, Inc.**

By: Jerome J Blunck, GE 151  
Principal Geotechnical Engineer

William F. Cavan, Jr., CEG 1161  
Principal Engineering Geologist

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**Source**  
 United States Geological Survey, *Thousand Oaks Quadrangle, California-Ventura County, 7.5 Minute Series (Topographic)*



**SITE LOCATION MAP**

400 Rolling Oaks Dr.  
 Thousand Oaks, California

 <b>Gorlan &amp; Associates, Inc.</b> <i>Applied Earth Sciences</i>	
Job No: 64-0-0-100	Date: April 2020
Scale: 1" = 2000'	Drawn by: _____ Approved by: _____
Figure 1	



Source: Dibblee, Jr., Thomas W. (1992) and Helmut E. Ehrenspeck (1992), *GEOLOGIC MAP OF THE THOUSAND OAKS QUADRANGLE, VENTURA COUNTY, CALIFORNIA*, Dibblee Geology Center Map # DF-49.

### Explanation

Tcvad - andesite-dacite breccia of Westlake; light colored, composed of moderately to poorly sorted, mostly cobble-boulder sized angular fragments of very fine grained feldspathic andesite-dacite in semi-coherent, detrial or tuffaceous (?) matrix of same rock; crudely stratified.

Tcvb - basaltic flows and breccias; dark colored, massive to vaguely bedded, incoherent and crumbly where weathered, weakly resistant to erosion; range from basalt to basaltic andesite composed of feldspar and ferromagnesian minerals.

## REGIONAL GEOLOGIC MAP

400 Rolling Oaks Drive  
Thousand Oaks, California

<b>G</b> Applied Earth Sciences	<b>Gorian &amp; Associates, Inc.</b>	
	Job No: 64-0-0-100	Date: April 2020
Scale: 1" = 1000'	Drawn by:	Figure 2
	Approved by:	



**APPENDIX A**

**LOGS OF SUBSURFACE DATA**

Draft

















**APPENDIX B****LABORATORY TESTING****General**

A series of laboratory tests were conducted on selected relatively undisturbed and bulk samples. The tests were performed to evaluate physical and engineering properties of the encountered earth materials. Test procedures and results are described below.

**Maximum Density-Optimum Moisture**

Three maximum density/optimum moisture tests (compaction characteristics) were performed on selected bulk samples of the soils encountered. The tests were performed in general accordance with ASTM test method D 1557. The results are as follows: The test results from Calwest, 2016 are attached in this appendix.

<b>Boring Number</b>	<b>Depth (feet)</b>	<b>Visual Classification</b>	<b>Maximum Dry Density – pcf</b>	<b>Optimum Moisture Content - %</b>
B-7	0-1	Fill, brown sandy clay.	115.2	13.6

**Soil Expansion Test**

A soil expansion index test was performed on a selected bulk sample of the upper soils in general accordance with ASTM test method D4829. The results are as follows:

<b>Sample</b>	<b>Expansion Index</b>	<b>Expansion Index Range</b>	<b>Expansion Potential</b>
B-7 @ 0-1'	87	51-90	Moderate Expansion

**Direct Shear Test**

Direct shear testing was performed on a remolded sample of the earth materials encountered during our exploratory program. The sample set was saturated prior to shearing under axial loads ranging from 920 to 3,680 pounds per square foot at a rate of 0.02 inches per minute. The shear strength results are attached as a graphic summary.



### Soil Analysis Lab Results

Client: Gorian & Associates, Inc.  
 Job Name: Rolling Oaks  
 Client Job Number: 64-0-0-100  
 Project X Job Number: S200326B  
 March 30, 2020

Bore# / Description	Method Depth	ASTM D4327		ASTM D4327		ASTM G187		ASTM G51	ASTM G200	SM 4500-S2-D	ASTM D4327	ASTM D6919	ASTM D4327	ASTM D4327					
		Sulfates		Chlorides		Resistivity		pH	Redox	Sulfide	Nitrate	Ammonium	Lithium	Sodium	Potassium	Magnesium	Calcium	Flouride	Phosphate
		SO <sub>4</sub> <sup>2-</sup>	Cl <sup>-</sup>	As Rec'd	Minimum														
	(ft)	(mg/kg)	(wt%)	(mg/kg)	(wt%)	(Ohm-cm)	(Ohm-cm)		(mV)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
B-7	0.0-1.0	23.0	0.0023	7.7	0.0008	737	737	7.9	361.0	3.6	0.3	ND	ND	104.1	0.7	71.6	197.1	6.4	1.6

Cations and Anions, except Sulfide and Bicarbonate, tested with Ion Chromatography  
 mg/kg = milligrams per kilogram (parts per million) of dry soil weight  
 ND = 0 = Not Detected | NT = Not Tested | Unk = Unknown  
 Chemical Analysis performed on 1:3 Soil-To-Water extract

**APPENDIX**  
**C**

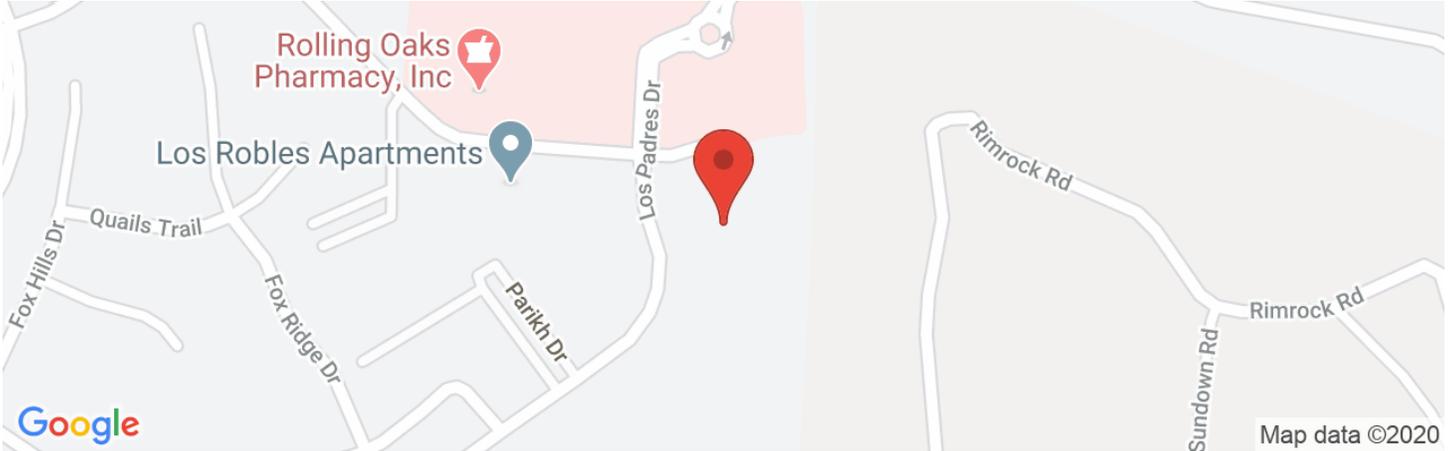
**DESIGN MAPS DETAIL REPORT**

Draft



# HCA Medical Office Building

Latitude, Longitude: 34.1737, -118.8692



<b>Date</b>	4/21/2020, 12:01:12 PM
<b>Design Code Reference Document</b>	ASCE7-16
<b>Risk Category</b>	III
<b>Site Class</b>	C - Very Dense Soil and Soft Rock

Type	Value	Description
$S_S$	1.45	$MCE_R$ ground motion. (for 0.2 second period)
$S_1$	0.519	$MCE_R$ ground motion. (for 1.0s period)
$S_{MS}$	1.74	Site-modified spectral acceleration value
$S_{M1}$	0.769	Site-modified spectral acceleration value
$S_{DS}$	1.16	Numeric seismic design value at 0.2 second SA
$S_{D1}$	0.512	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	D	Seismic design category
$F_a$	1.2	Site amplification factor at 0.2 second
$F_v$	1.481	Site amplification factor at 1.0 second
PGA	0.504	$MCE_G$ peak ground acceleration
$F_{PGA}$	1.2	Site amplification factor at PGA
$PGA_M$	0.605	Site modified peak ground acceleration
$T_L$	8	Long-period transition period in seconds
$SsRT$	1.45	Probabilistic risk-targeted ground motion. (0.2 second)
$SsUH$	1.579	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
$SsD$	1.5	Factored deterministic acceleration value. (0.2 second)
$S1RT$	0.519	Probabilistic risk-targeted ground motion. (1.0 second)
$S1UH$	0.569	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
$S1D$	0.6	Factored deterministic acceleration value. (1.0 second)
$PGAd$	0.504	Factored deterministic acceleration value. (Peak Ground Acceleration)
$C_{RS}$	0.919	Mapped value of the risk coefficient at short periods
$C_{R1}$	0.912	Mapped value of the risk coefficient at a period of 1 s

## DISCLAIMER

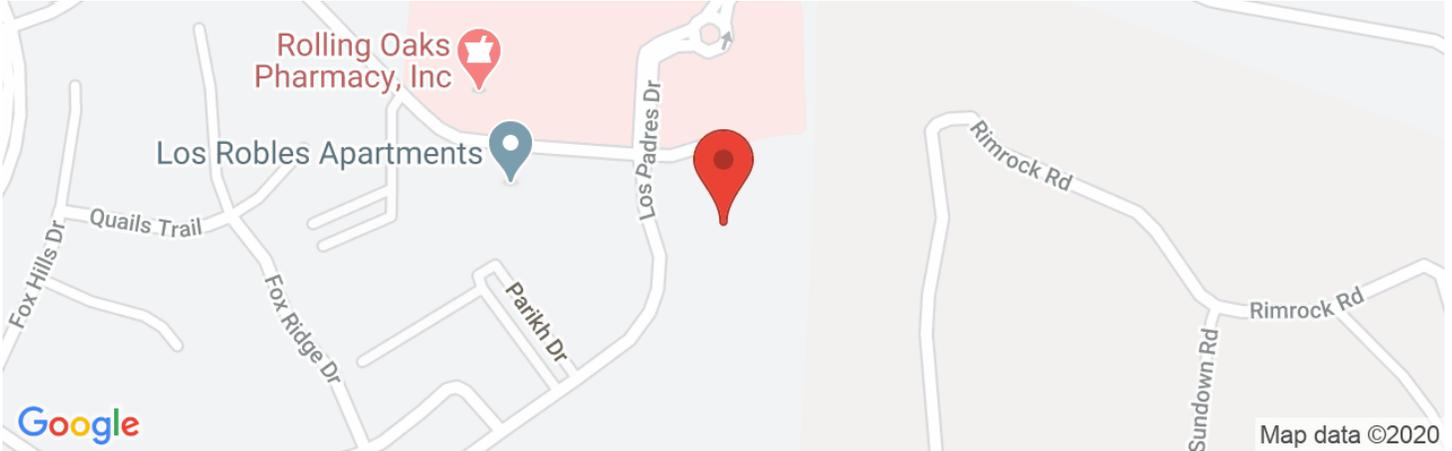
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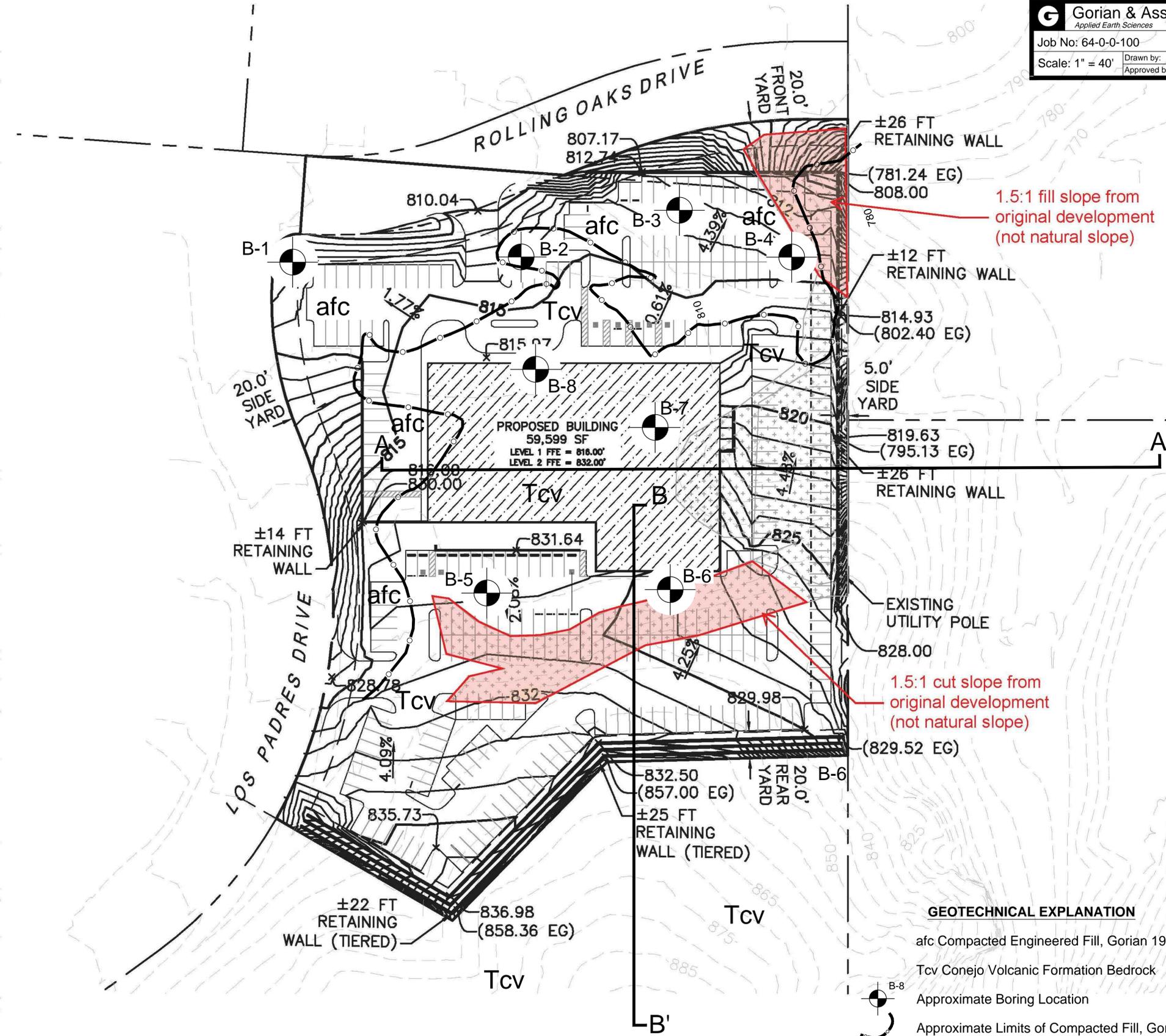
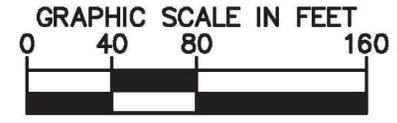
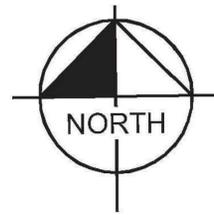
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# GEOTECHNICAL MAP

<b>G</b> Gorian & Associates, Inc. <i>Applied Earth Sciences</i>	
Job No: 64-0-0-100	Date: April 2020
Scale: 1" = 40'	Drawn by: _____ Approved by: _____
<b>PLATE 1</b>	



- X XXX.XX PROPOSED GRADE
- (XXX.XX EG) EXISTING GRADE
- [Stippled Area] ESTIMATED ONSITE NATURAL SLOPES GREATER THAN 25% (0.75-1.25 ACRES)

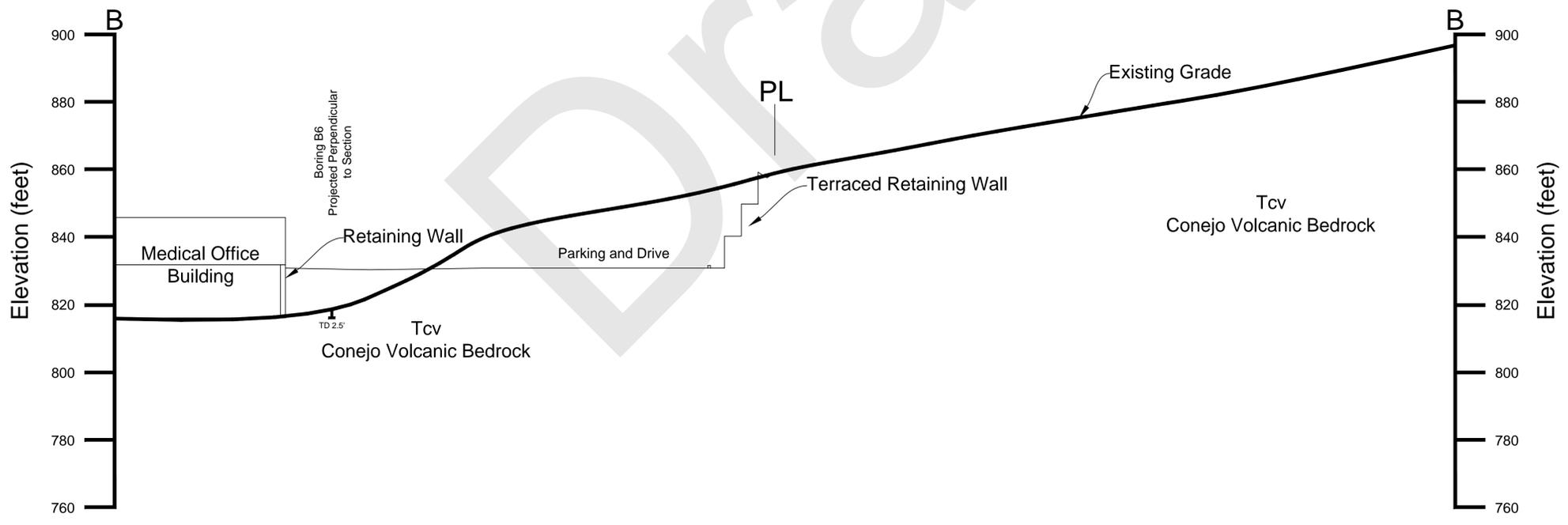
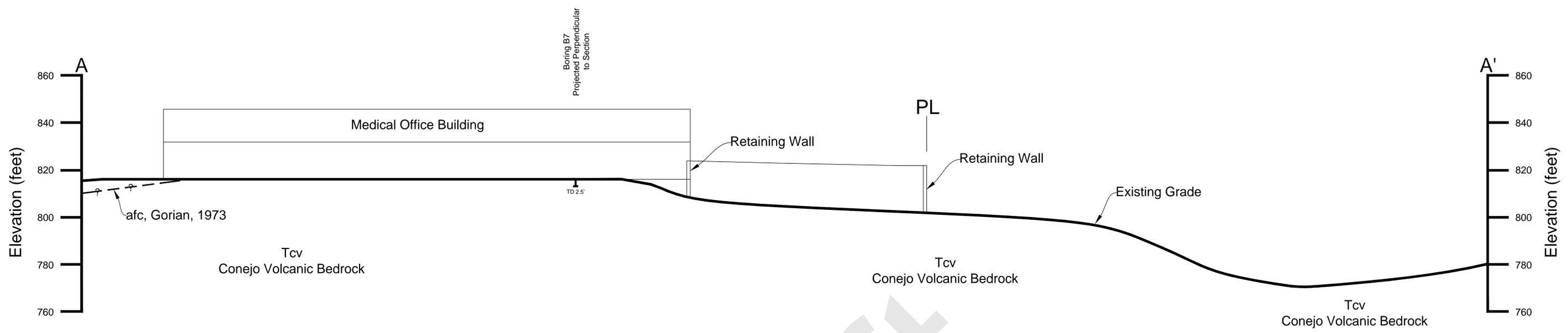
**EARTHWORK ESTIMATE:**  
 CUT = 21,000 CY  
 FILL = 29,000 CY  
 NET = 8,000 CY (IMPORT)

NOTE: THE ABOVE QUANTITIES ARE APPROXIMATE IN PLACE VOLUMES CALCULATED FROM THE EXISTING GROUND TO THE PROPOSED FINISHED GRADE. EXISTING GROUND IS DEFINED BY THE CONTOURS AND SPOT GRADES ON THE BASE SURVEY. PROPOSED FINISHED GRADE IS DEFINED AS THE FINAL GRADE AS INDICATED ON THE GRADING PLAN(S).

THE EARTHWORK QUANTITIES ABOVE ARE FOR PERMIT PURPOSES ONLY. THEY HAVE NOT BEEN FACTORED TO ACCOUNT FOR CHANGES IN VOLUME DUE TO BULKING, CLEARING AND GRUBBING, SHRINKAGE, OVER-EXCAVATION AND RE-COMPACTION, AND CONSTRUCTION METHODS. NOR DO THEY ACCOUNT FOR THE THICKNESS OF PAVEMENT SECTIONS, FOOTINGS, SLABS, REUSE OF PULVERIZED MATERIALS THAT WILL UNDERLIE NEW PAVEMENTS, ETC. THE CONTRACTOR SHALL RELY ON THEIR OWN EARTHWORK ESTIMATES FOR BIDDING PURPOSES.

- GEOTECHNICAL EXPLANATION**
- afc Compacted Engineered Fill, Gorian 1973
  - Tcv Conejo Volcanic Formation Bedrock
  - B-8 Approximate Boring Location
  - [Stippled Area] Approximate Limits of Compacted Fill, Gorian 1973

KHA PROJECT 099691002	DATE 3/5/2020	SCALE AS SHOWN	DESIGNED BY	DRAWN BY	CHECKED BY	NO.	REVISIONS	DATE	BY
<b>CONCEPTUAL GRADING PLAN</b>						 © 2020 KIMLEY-HORN AND ASSOCIATES, INC. 860 SOUTH FIGUEROA STREET, SUITE 2050 LOS ANGELES, CA 90017 PHONE: 213-261-4040 WWW.KIMLEY-HORN.COM			
LOS ROBLES CANCER CENTER 400 ROLLING OAKS DRIVE PREPARED FOR HCA THOUSAND OAKS, CA									
SHEET NUMBER						EX-02			



# GEOTECHNICAL CROSS SECTIONS

<b>Gorlan &amp; Associates, Inc.</b> <i>Applied Earth Sciences</i>	
Job No: 64-0-0-100	Date: April 2020
Scale: 1" = 20'	Drawn by: _____ Approved by: _____
<b>PLATE 2</b>	

# Appendix C

## Operation and Maintenance Plan



# Modular Wetlands<sup>®</sup> Linear

A Stormwater Biofiltration Solution

## OPERATION & MAINTENANCE MANUAL



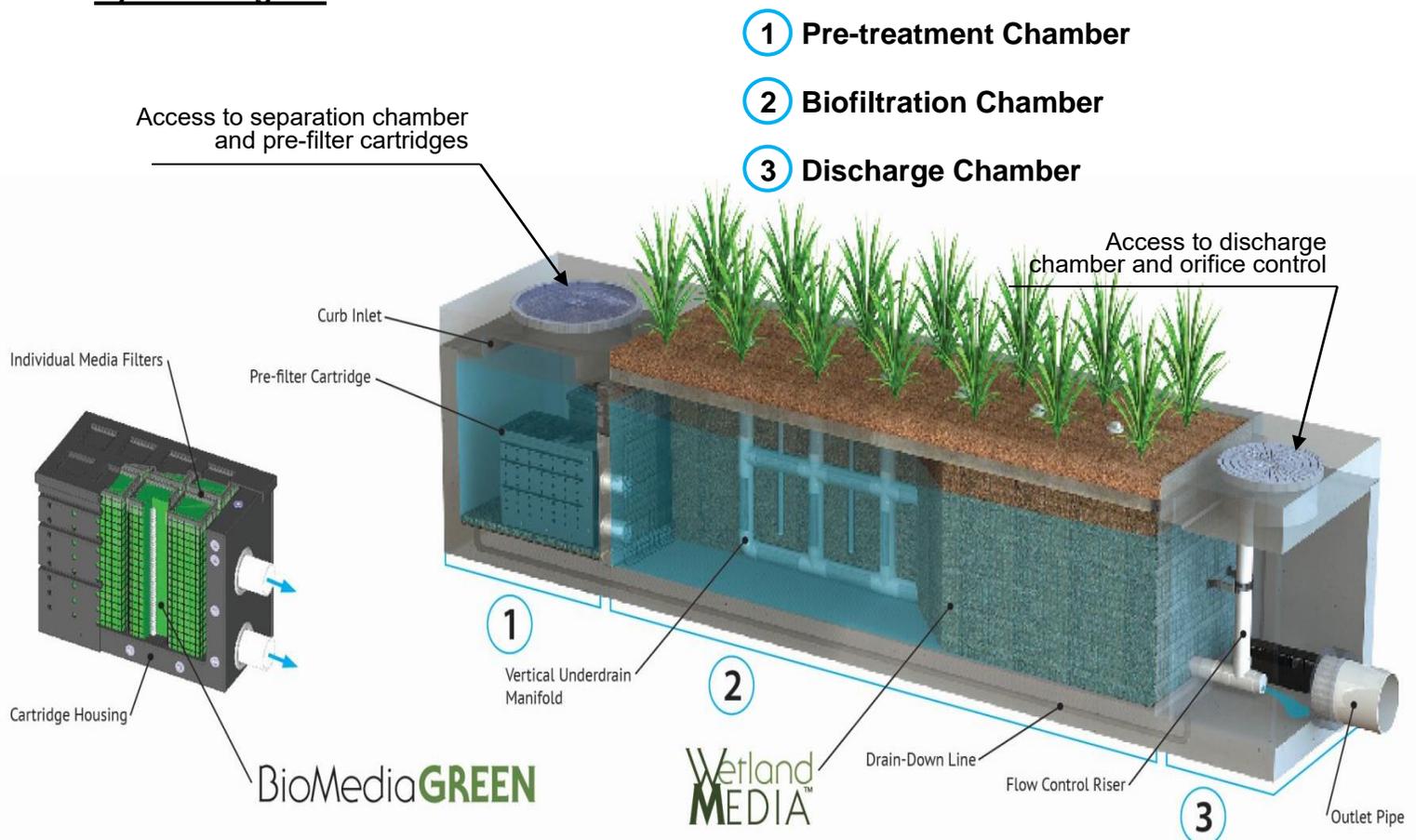


# Inspection Guidelines for Modular Wetland System - Linear

## Inspection Summary

- Inspect Pre-Treatment, Biofiltration and Discharge Chambers – average inspection interval is 6 to 12 months.
  - *(15 minute average inspection time).*
- NOTE: Pollutant loading varies greatly from site to site and no two sites are the same. Therefore, the first year requires inspection monthly during the wet season and every other month during the dry season in order to observe and record the amount of pollutant loading the system is receiving.

## System Diagram



## Inspection Overview

As with all stormwater BMPs inspection and maintenance on the MWS Linear is necessary. Stormwater regulations require that all BMPs be inspected and maintained to ensure they are operating as designed to allow for effective pollutant removal and provide protection to receiving water bodies. It is recommended that inspections be performed multiple times during the first year to assess the site specific loading conditions. This is recommended because pollutant loading and pollutant characteristics can vary greatly from site to site. Variables such as nearby soil erosion or construction sites, winter sanding on roads, amount of daily traffic and land use can increase pollutant loading on the system. The first year of inspections can be used to set inspection and maintenance intervals for subsequent years to ensure appropriate maintenance is provided. Without appropriate maintenance a BMP will exceed its storage capacity which can negatively affect its continued performance in removing and retaining captured pollutants.

### Inspection Equipment

Following is a list of equipment to allow for simple and effective inspection of the MWS Linear:

- Modular Wetland Inspection Form
- Flashlight
- Manhole hook or appropriate tools to remove access hatches and covers
- Appropriate traffic control signage and procedures
- Measuring pole and/or tape measure.
- Protective clothing and eye protection.
- 7/16" open or closed ended wrench.
- Large permanent black marker (initial inspections only – first year)
- Note: entering a confined space requires appropriate safety and certification. It is generally not required for routine inspections of the system.





## **Inspection Steps**

The core to any successful stormwater BMP maintenance program is routine inspections. The inspection steps required on the MWS Linear are quick and easy. As mentioned above the first year should be seen as the maintenance interval establishment phase. During the first year more frequent inspections should occur in order to gather loading data and maintenance requirements for that specific site. This information can be used to establish a base for long term inspection and maintenance interval requirements.

The MWS Linear can be inspected through visual observation without entry into the system. All necessary pre-inspection steps must be carried out before inspection occurs, especially traffic control and other safety measures to protect the inspector and near-by pedestrians from any dangers associated with an open access hatch or manhole. Once these access covers have been safely opened the inspection process can proceed:

- Prepare the inspection form by writing in the necessary information including project name, location, date & time, unit number and other info (see inspection form).
- Observe the inside of the system through the access hatches. If minimal light is available and vision into the unit is impaired utilize a flashlight to see inside the system and all of its chambers.
- Look for any out of the ordinary obstructions in the inflow pipe, pre-treatment chamber, biofiltration chamber, discharge chamber or outflow pipe. Write down any observations on the inspection form.
- Through observation and/or digital photographs estimate the amount of trash, debris and sediment accumulated in the pre-treatment chamber. Utilizing a tape measure or measuring stick estimate the amount of trash, debris and sediment in this chamber. Record this depth on the inspection form.

- Through visual observation inspect the condition of the pre-filter cartridges. Look for excessive build-up of sediments on the cartridges, any build-up on the top of the cartridges, or clogging of the holes. Record this information on the inspection form. The pre-filter cartridges can further be inspected by removing the cartridge tops and assessing the color of the BioMediaGREEN filter cubes (requires entry into pre-treatment chamber – see notes above regarding confined space entry). Record the color of the material. New material is a light green in color. As the media becomes clogged it will turn darker in color, eventually becoming dark brown or black. Using the below color indicator record the percentage of media exhausted.



The biofiltration chamber is generally maintenance free due to the system's advanced pre-treatment chamber. For units which have open planters with vegetation it is recommended that the vegetation be inspected. Look for any plants that are dead or showing signs of disease or other negative stressors. Record the general health of the plants on the inspection and indicate through visual observation or digital photographs if trimming of the vegetation is needed. The discharge chamber houses the orifice control structure, drain down filter and is connected to the outflow pipe. It is important to check to ensure the orifice is in proper operating conditions and free of any obstructions. It is also important to assess the condition of the drain down filter media which utilizes a block form of the BioMediaGREEN. Assess in the same manner as the cubes in the Pre-Filter Cartridge as mentioned above. Generally, the discharge chamber will be clean and free of debris. Inspect the water marks on the side walls. If possible, inspect the discharge chamber during a rain event to assess the amount of flow leaving the system while it is at 100% capacity (pre-treatment chamber water level at peak hydraulic grade lines or HGL). The water level of the flowing water should be compared to the watermark level on the side walls which is an indicator of the highest discharge rate the system achieved when initially installed. Record on the form if there is any difference in level from watermark in inches.

- NOTE: During the first few storms the water level in the outflow chamber should be observed and a 6 inch long horizontal watermark line drawn (using a large permanent marker) at the water level in the discharge chamber while the system is operating at 100% capacity. The diagram below illustrates where a line should be drawn. This line is a reference point for future inspections of the system:



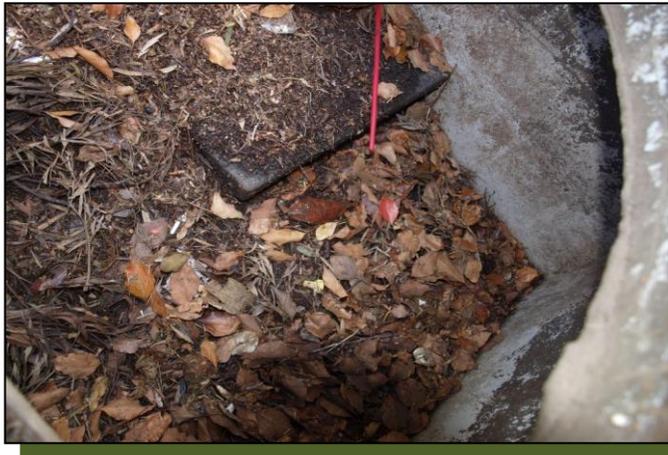
Using a permanent marker draw a 6 inch long horizontal line, as shown, at the higher water level in the MWS Linear discharge chamber.

- Water level in the discharge chamber is a function of flow rate and pipe size. Observation of water level during the first few months of operation can be used as a benchmark level for future inspections. The initial mark and all future observations shall be made when system is at 100% capacity (water level at maximum level in pre-treatment chamber). If future water levels are below this mark when system is at 100% capacity this is an indicator that maintenance to the pre-filter cartridges may be needed.
- *Finalize inspection report for analysis by the maintenance manager to determine if maintenance is required.*

## Maintenance Indicators

Based upon observations made during inspection, maintenance of the system may be required based on the following indicators:

- Missing or damaged internal components or cartridges.
- Obstructions in the system or its inlet or outlet.
- Excessive accumulation of floatables in the pre-treatment chamber in which the length and width of the chamber is fully impacted more than 18”.



Excessive accumulation of sediment in the pre-treatment chamber of more than 6 inches in depth.



- Excessive accumulation of sediment on the BioMediaGREEN media housed within the pre-filter cartridges. The following chart shows photos of the condition of the BioMediaGREEN contained within the pre-filter cartridges. When media is more than 85% clogged replacement is required.



- Excessive accumulation of sediment on the BioMediaGREEN media housed within the drain down filter. The following photos show of the condition of the BioMediaGREEN contained within the drain down filter. When media is more than 85% clogged replacement is required.



- Overgrown vegetation.



- Water level in discharge chamber during 100% operating capacity (pre-treatment chamber water level at max height) is lower than the watermark by 20%.



## **Inspection Notes**

1. Following maintenance and/or inspection, it is recommended the maintenance operator prepare a maintenance/inspection record. The record should include any maintenance activities performed, amount and description of debris collected, and condition of the system and its various filter mechanisms.
2. The owner should keep maintenance/inspection record(s) for a minimum of five years from the date of maintenance. These records should be made available to the governing municipality for inspection upon request at any time.
3. Transport all debris, trash, organics and sediments to approved facility for disposal in accordance with local and state requirements.
4. Entry into chambers may require confined space training based on state and local regulations.
5. No fertilizer shall be used in the Biofiltration Chamber.
6. Irrigation should be provided as recommended by manufacturer and/or landscape architect. Amount of irrigation required is dependent on plant species. Some plants may not require irrigation after initial establishment.

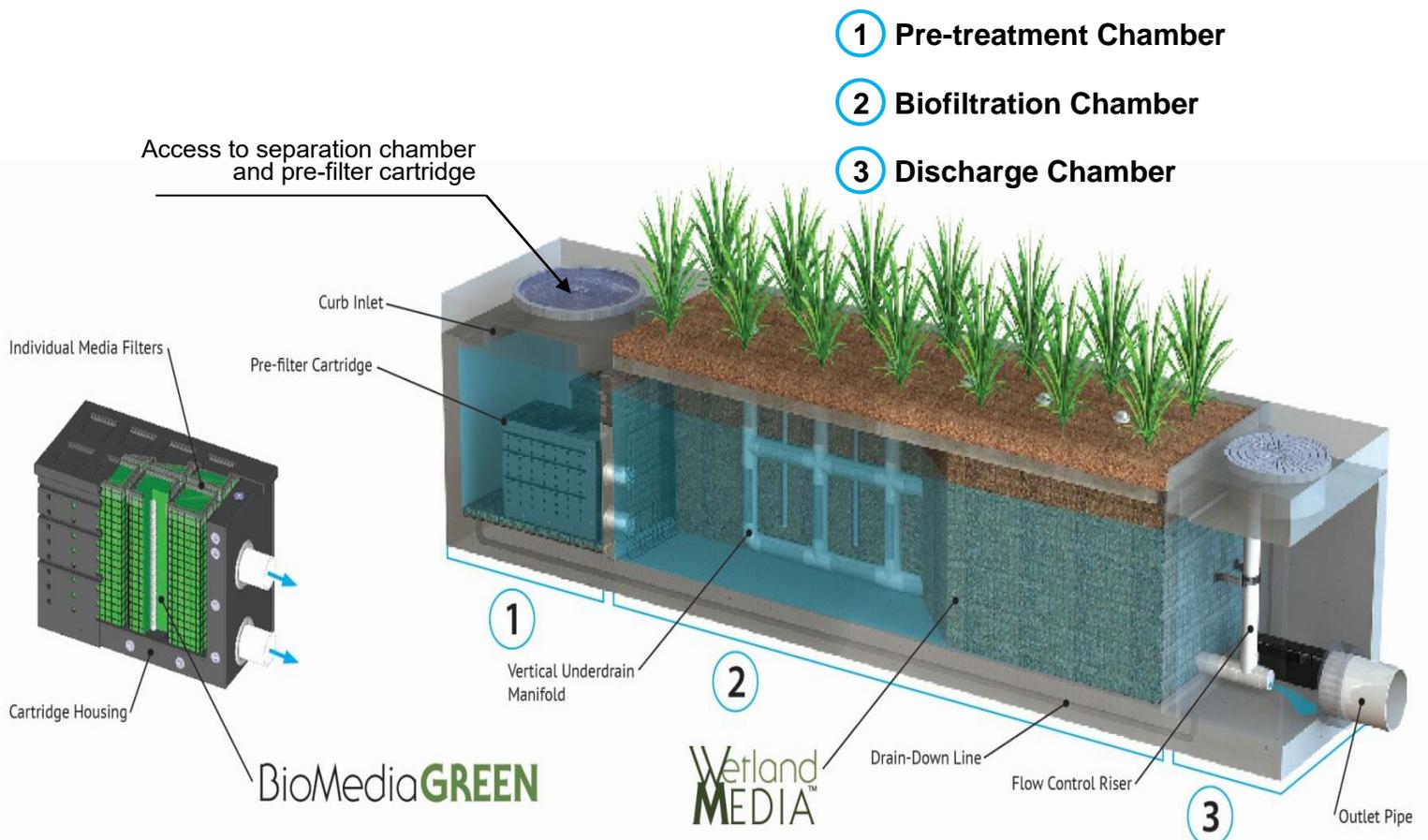


# Maintenance Guidelines for Modular Wetland System - Linear

## Maintenance Summary

- Remove Sediment from Pre-Treatment Chamber – average maintenance interval is 12 to 24 months.
  - (10 minute average service time).
- Replace Pre-Filter Cartridge Media – average maintenance interval 12 to 24 months.
  - (10-15 minute per cartridge average service time).
- Trim Vegetation – average maintenance interval is 6 to 12 months.
  - (Service time varies).

## System Diagram



## Maintenance Overview

The time has come to maintain your Modular Wetland System Linear (MWS Linear). To ensure successful and efficient maintenance on the system we recommend the following. The MWS Linear can be maintained by removing the access hatches over the systems various chambers. All necessary pre-maintenance steps must be carried out before maintenance occurs, especially traffic control and other safety measures to protect the inspector and near-by pedestrians from any dangers associated with an open access hatch or manhole. Once traffic control has been set up per local and state regulations and access covers have been safely opened the maintenance process can begin. It should be noted that some maintenance activities require confined space entry. All confined space requirements must be strictly followed before entry into the system. In addition the following is recommended:

- Prepare the maintenance form by writing in the necessary information including project name, location, date & time, unit number and other info (see maintenance form).
- Set up all appropriate safety and cleaning equipment.
- Ensure traffic control is set up and properly positioned.
- Prepare a pre-checks (OSHA, safety, confined space entry) are performed.

### Maintenance Equipment

Following is a list of equipment required for maintenance of the MWS Linear:

- Modular Wetland Maintenance Form
- Manhole hook or appropriate tools to access hatches and covers
- Protective clothing, flashlight and eye protection.
- 7/16" open or closed ended wrench.
- Vacuum assisted truck with pressure washer.
- Replacement BioMediaGREEN for Pre-Filter Cartridges if required (order from manufacturer).



## Maintenance Steps

1. Pre-treatment Chamber (bottom of chamber)
  - A. Remove access hatch or manhole cover over pre-treatment chamber and position vacuum truck accordingly.
  - B. With a pressure washer spray down pollutants accumulated on walls and pre-filter cartridges.
  - C. Vacuum out Pre-Treatment Chamber and remove all accumulated pollutants including trash, debris and sediments. Be sure to vacuum the floor until pervious pavers are visible and clean.
  - D. If Pre-Filter Cartridges require media replacement move onto step 2. If not, replace access hatch or manhole cover.



Removal of access hatch to gain access below.



Insertion of vacuum hose into separation chamber.



Removal of trash, sediment and debris.



Fully cleaned separation chamber.

2. Pre-Filter Cartridges (attached to wall of pre-treatment chamber)

- A. After finishing step 1 enter pre-treatment chamber.
- B. Unscrew the two bolts holding the lid on each cartridge filter and remove lid.

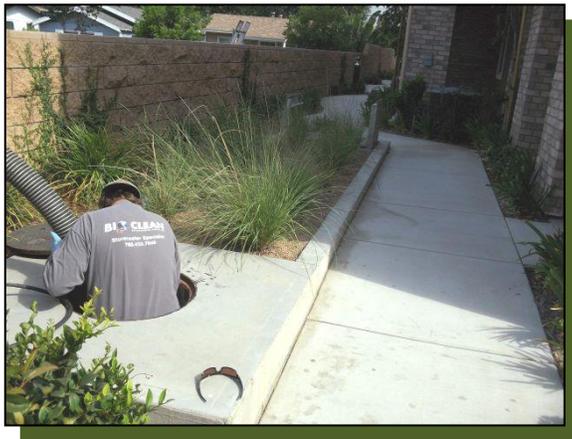


Pre-filter cartridges with tops on.



Inside cartridges showing media filters ready for replacement.

- C. Place the vacuum hose over each individual media filter to suck out filter media.



Vacuuming out of media filters.

- D. Once filter media has been sucked use a pressure washer to spray down inside of the cartridge and it's containing media cages. Remove cleaned media cages and place to the side. Once removed the vacuum hose can be inserted into the cartridge to vacuum out any remaining material near the bottom of the cartridge.

- E. Reinstall media cages and fill with new media from manufacturer or outside supplier. Manufacturer will provide specification of media and sources to purchase. Utilize the manufacture provided refilling tray and place on top of cartridge. Fill tray with new bulk media and shake down into place. Using your hands slightly compact media into each filter cage. Once cages are full removed refilling tray and replace cartridge top ensuring bolts are properly tightened.



Refilling tray for media replacement.



Refilling tray on cartridge with bulk media.



- F. Exit pre-treatment chamber. Replace access hatch or manhole cover.

### 3. Biofiltration Chamber (middle vegetated chamber)

- A. In general, the biofiltration chamber is maintenance free with the exception of maintaining the vegetation. Using standard gardening tools properly trim back the vegetation to healthy levels. The MWS Linear utilizes vegetation similar to surrounding landscape areas therefore trim vegetation to match surrounding vegetation. If any plants have died replace plants with new ones:



B. Over time, sediment will accumulate in the perimeter void area and will need to be vacuumed out. The media surface may also require power washing if it becomes occluded with sediment. In addition, the wetland media will eventually need to be replaced after 10 plus years of service. A vacuum truck is recommended to fully remove all wetland media. Once old media is removed the entire chamber, media cage, and netting should be power washed. The netting may require replacement before installing new media. New wetland media should be purchased directly from the manufacture. It can be delivered either in bulk or in super sacks for easy installation.

4. Discharge Chamber (contains drain down cartridge & connected to pipe)

- A. Remove access hatch or manhole cover over discharge chamber.
- B. Enter chamber to gain access to the drain down filter. Unlock the locking mechanism and lift up drain down filter housing to remove used BioMediaGREEN filter block as shown below:



- C. Insert new BioMediaGREEN filter block and lock drain down filter housing back in place. Replace access hatch or manhole cover over discharge chamber.



## **Inspection Notes**

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## Inspection Form



Modular Wetland System, Inc.

P. 760.433-7640

F. 760-433-3176

E. [Info@modularwetlands.com](mailto:Info@modularwetlands.com)

[www.modularwetlands.com](http://www.modularwetlands.com)



## Maintenance Report



**Modular Wetland System, Inc.**

**P. 760.433-7640**

**F. 760-433-3176**

**E. [Info@modularwetlands.com](mailto:Info@modularwetlands.com)**

**[www.modularwetlands.com](http://www.modularwetlands.com)**

# Appendix D

## Covenant and Agreement Regarding

## Stormwater Treatment Device Maintenance