APPENDIX R

Storm Water Quality Management Plan

Priority Development Project
Storm Water Quality Management Plan
FOR
The Preserve at Torrey Highlands

PTS No. 442880, I.O. No. 24006166

September 28, 2016

Prepared By:
LEPPERT ENGINEERING CORPORATION
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SAN DIEGO, CA 92122
Job No. TH 06.07-13.15

Prepared For:
The Preserve at Torrey Highlands, LLC
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By: John D. Leppert, RCE 26283
Exp. 3/31/18

REGISTERED PROFESSIONAL ENGINEER
JOHN D. LEPPERT
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CIVIL
STATE OF CALIFORNIA

Date

Approved by: City of San Diego Date

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ACRONYMS

APN	Assessor's Parcel Number
ASBS	Area of Special Biological Significance
BMP	Best Management Practice
CEQA	California Environmental Quality Act
CGP	Construction General Permit
DCV	Design Capture Volume
DMA	Drainage Management Areas
ESA	Environmentally Sensitive Area
GLU	Geomorphic Landscape Unit
GW	Ground Water
HMP	Hydromodification Management Plan
HSG	Hydrologic Soil Group
HU	Harvest and Use
INF	Infiltration
LID	Low Impact Development
LUP	Linear Underground/Overhead Projects
MS4	Municipal Separate Storm Sewer System
N/A	Not Applicable
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
PDP	Priority Development Project
PE	Professional Engineer
POC	Pollutant of Concern
SC	Source Control
SD	Site Design
SDRWQCB	San Diego Regional Water Quality Control Board
SIC	Standard Industrial Classification
SWPPP	Stormwater Pollutant Protection Plan
SWQMP	Storm Water Quality Management Plan
TMDL	Total Maximum Daily Load
WMAA	Watershed Management Area Analysis
WPCP	Water Pollution Control Program
WQIP	Water Quality Improvement Plan

CERTIFICATION PAGE

The Preserve at Torrey Highlands
442880

I hereby declare that I am the Engineer in Responsible Charge of design of storm water BMPs for this project, and that I have exercised responsible charge over the design of the project as defined in Section 6703 of the Business and Professions Code, and that the design is consistent with the requirements of the BMP Design Manual, which is based on the requirements of SDRWQCB Order No. R9-2013-0001 as amended by R9-2015-0001 and R9-2015-0100 (MS4 Permit), and subsequent amendments.

I have read and understand that the City Engineer has adopted minimum requirements for managing urban runoff, including storm water, from land development activities, as described in the Storm Water Standards. I certify that this PDP SWQMP has been completed to the best of my ability and accurately reflects the project being proposed and the applicable source control and site design BMPs proposed to minimize the potentially negative impacts of this project's land development activities on water quality. I understand and acknowledge that the plan check review of this PDP SWQMP by the City Engineer is confined to a review and does not relieve me, as the Engineer in Responsible Charge of design of storm water BMPs for this project, of my responsibilities for project design.

____ ____________________
JOHN D. LEPPERT DATE
REGISTERED CIVIL ENGINEER – 26283
Exp. 3/31/18

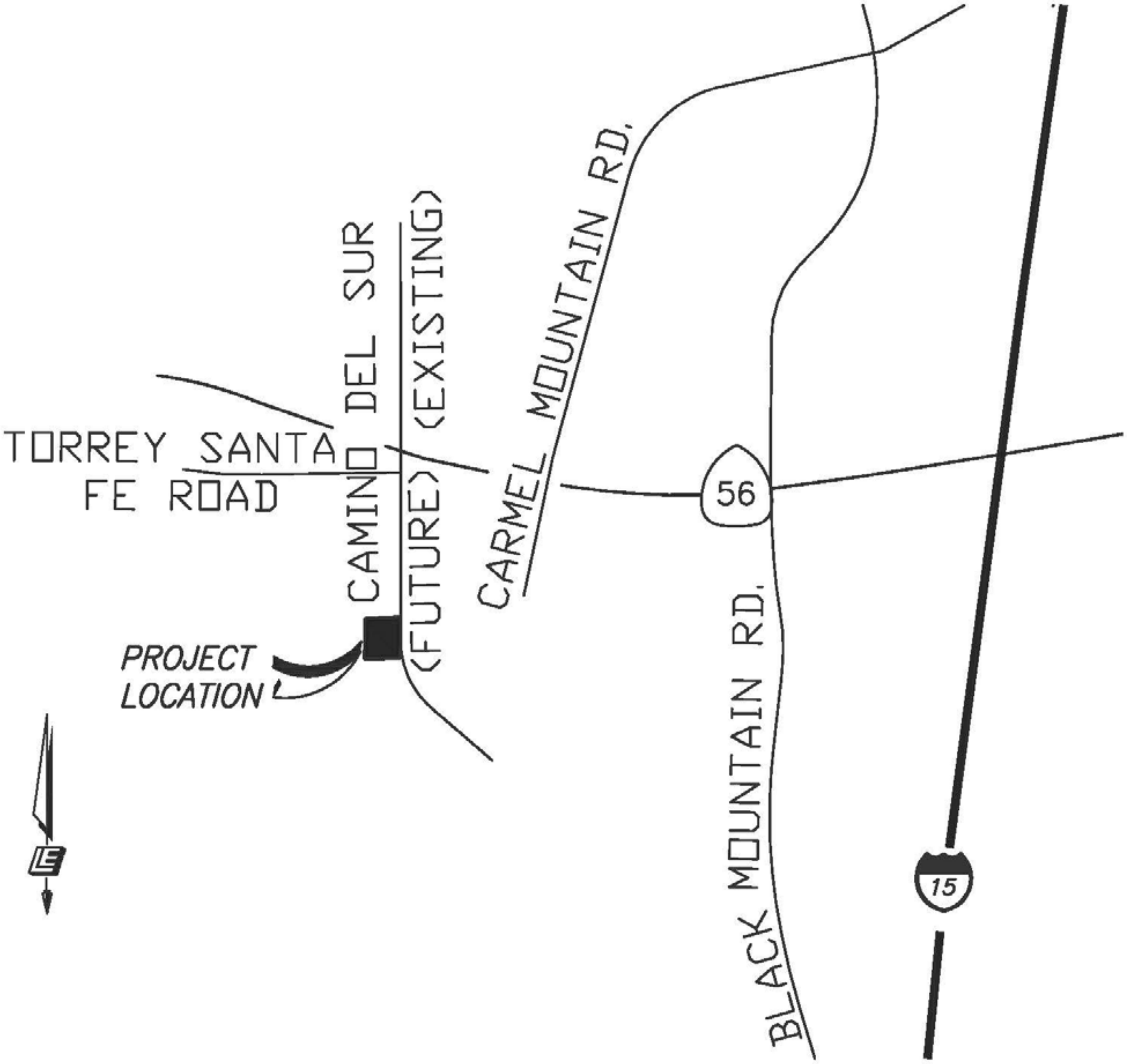
REGISTERED PROFESSIONAL ENGINEER
JOHN D. LEPPERT
C 26283
CIVIL
STATE OF CALIFORNIA

Use this Table to keep a record of submittals of this SWQMP. Each time the SWQMP is re-submitted, provide the date and status of the project. In last column indicate changes that have been made or indicate if response to plan check comments is included. When applicable, insert response to plan check comments behind this page.

Submittal Number	Date	Project Status	Changes
1	March 31, 2016	☒ Preliminary Design/ Planning/ CEQA ☐ Final Design	Initial SWQMP Submittal (2nd Resubmittal)
2	June 22, 2016	☒ Preliminary Design/ Planning/ CEQA ☐ Final Design	3rd Resubmittal
3	September 28, 2016	☒ Preliminary Design/ Planning/ CEQA ☐ Final Design	4th Resubmittal
4		☐ Preliminary Design/ Planning/ CEQA ☐ Final Design	

Project Vicinity Map

The Preserve at Torrey Highlands
442880



THE CITY OF SAN DIEGO

City of San Diego
Development Services
1222 First Ave., MS-302
San Diego, CA 92101
(619) 446-5000

Storm Water Requirements Applicability Checklist

FORM
DS-560
FEBRUARY 2016

Project Address:
SEQ State Route 56 & Camino Del Sur

Project Number *(for City Use Only)*:
442880

SECTION 1. Construction Storm Water BMP Requirements:

All construction sites are required to implement construction BMPs in accordance with the performance standards in the Storm Water Standards Manual. Some sites are additionally required to obtain coverage under the State Construction General Permit (CGP)[1], which is administered by the State Water Resources Control Board.

For all project complete PART A: If project is required to submit a SWPPP or WPCP, continue to PART B.

PART A: Determine Construction Phase Storm Water Requirements.

1. Is the project subject to California's statewide General NPDES permit for Storm Water Discharges Associated with Construction Activities, also known as the State Construction General Permit (CGP)? (Typically projects with land disturbance greater than or equal to 1 acre.)

☒ Yes; SWPPP required, skip questions 2-4 ☐ No; next question

2. Does the project propose construction or demolition activity, including but not limited to, clearing, grading, grubbing, excavation, or any other activity that results in ground disturbance and contact with storm water runoff?

☐ Yes; WPCP required, skip 3-4 ☐ No; next question

3. Does the project propose routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of the facility? (Projects such as pipeline/utility replacement)

☐ Yes; WPCP required, skip 4 ☐ No; next question

4. Does the project only include the following Permit types listed below?

- Electrical Permit, Fire Alarm Permit, Fire Sprinkler Permit, Plumbing Permit, Sign Permit, Mechanical Permit, Spa Permit.
- Individual Right of Way Permits that exclusively include only ONE of the following activities: water service, sewer lateral, or utility service.
- Right of Way Permits with a project footprint less than 150 linear feet that exclusively include only ONE of the following activities: curb ramp, sidewalk and driveway apron replacement, pot holing, curb and gutter replacement, and retaining wall encroachments.

☐ Yes; no document required

Check one of the boxes to the right, and continue to PART B:

☒ If you checked "Yes" for question 1,
a SWPPP is REQUIRED. Continue to PART B

☐ If you checked "No" for question 1, and checked "Yes" for question 2 or 3,
a WPCP is REQUIRED. If the project proposes less than 5,000 square feet of ground disturbance AND has less than a 5-foot elevation change over the entire project area, a Minor WPCP may be required instead. **Continue to PART B.**

☐ If you checked "No" for all questions 1-3, and checked "Yes" for question 4
PART B **does not apply and no document is required. Continue to Section 2.**

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1. More information on the City's construction BMP requirements as well as CGP requirements can be found at: www.sandiego.gov/stormwater/regulations/index.shtml

PART B: Determine Construction Site Priorit

This prioritization must be completed within this form, noted on the plans, and included in the SWPPP or WPCP. The city reserves the right to adjust the priority of projects both before and after construction. Construction projects are assigned an inspection frequency based on if the project has a "high threat to water quality." The City has aligned the local definition of "high threat to water quality" to the risk determination approach of the State Construction General Permit (CGP). The CGP determines risk level based on project specific sediment risk and receiving water risk. Additional inspection is required for projects within the Areas of Special Biological Significance (ASBS) watershed. **NOTE:** The construction priority does **NOT** change construction BMP requirements that apply to projects; rather, it determines the frequency of inspections that will be conducted by city staff.

Complete PART B and continued to Section 2

1. ☐ **ASBS**
   a. Projects located in the ASBS watershed.

2. ☒ **High Priority**
   a. Projects 1 acre or more determined to be Risk Level 2 or Risk Level 3 per the Construction General Permit and not located in the ASBS watershed.
   b. Projects 1 acre or more determined to be LUP Type 2 or LUP Type 3 per the Construction General Permit and not located in the ASBS watershed.

3. ☐ **Medium Priority**
   a. Projects 1 acre or more but not subject to an ASBS or high priority designation.
   b. Projects determined to be Risk Level 1 or LUP Type 1 per the Construction General Permit and not located in the ASBS watershed.

4. ☐ **Low Priority**
   a. Projects requiring a Water Pollution Control Plan but not subject to ASBS, high, or medium priority designation.

SECTION 2. Permanent Storm Water BMP Requirements.

Additional information for determining the requirements is found in the Storm Water Standards Manual.

PART C: Determine if Not Subject to Permanent Storm Water Requirements.

Projects that are considered maintenance, or otherwise not categorized as "new development projects" or "redevelopment projects" according to the Storm Water Standards Manual are not subject to Permanent Storm Water BMPs.

If "yes" is checked for any number in Part C, proceed to Part F and check "Not Subject to Permanent Storm Water BMP Requirements".

If "no" is checked for all of the numbers in Part C continue to Part D.

1.	Does the project only include interior remodels and/or is the project entirely within an existing enclosed structure and does not have the potential to contact storm water?	☐ Yes ☒ No
2.	Does the project only include the construction of overhead or underground utilities without creating new impervious surfaces?	☐ Yes ☒ No
3.	Does the project fall under routine maintenance? Examples include, but are not limited to: roof or exterior structure surface replacement, resurfacing or reconfiguring surface parking lots or existing roadways without expanding the impervious footprint, and routine replacement of damaged pavement (grinding, overlay, and pothole repair).	☐ Yes ☒ No

PART D: PDP Exempt Requirements.

PDP Exempt projects are required to implement site design and source control BMPs.

If "yes" was checked for any questions in Part D, continue to Part F and check the box labeled "PDP Exempt."

If "no" was checked for all questions in Part D, continue to Part E.

1. Does the project ONLY include new or retrofit sidewalks, bicycle lanes, or trails that:
   - Are designed and constructed to direct storm water runoff to adjacent vegetated areas, or other non-erodible permeable areas? Or;
   - Are designed and constructed to be hydraulically disconnected from paved streets and roads? Or;
   - Are designed and constructed with permeable pavements or surfaces in accordance with the Green Streets guidance in the City's Storm Water Standards manual?

   ☐ Yes; PDP exempt requirements apply ☒ No; next question

2. Does the project ONLY include retrofitting or redeveloping existing paved alleys, streets or roads designed and constructed in accordance with the Green Streets guidance in the City's Storm Water Standards Manual?

   ☐ Yes; PDP exempt requirements apply ☒ No; project not exempt. PDP requirements apply

PART E: Determine if Project is a Priority Development Project (PDP).

Projects that match one of the definitions below are subject to additional requirements including preparation of a Storm Water Quality Management Plan (SWQMP).

If "yes" is checked for any number in PART E, continue to PART F.

If "no" is checked for every number in PART E, continue to PART F and check the box labeled "Standard Development Project".

1. **New Development that creates 10,000 square feet or more of impervious surfaces collectively over the project site.** This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land. ☒ Yes ☐ No

2. **Redevelopment project that creates and/or replaces 5,000 square feet or more of impervious surfaces on an existing site of 10,000 square feet or more of impervious surfaces.** This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land. ☐ Yes ☒ No

3. **New development or redevelopment of a restaurant.** Facilities that sell prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (SIC 5812), and where the land development creates and/or replace 5,000 square feet or more of impervious surface. ☒ Yes ☐ No

4. **New development or redevelopment on a hillside.** The project creates and/or replaces 5,000 square feet or more of impervious surface (collectively over the project site) and where the development will grade on any natural slope that is twenty-five percent or greater. ☐ Yes ☒ No

5. **New development or redevelopment of a parking lot that creates and/or replaces 5,000 square feet or more of impervious surface (collectively over the project site).** ☒ Yes ☐ No

6. **New development or redevelopment of streets, roads, highways, freeways, and driveways.** The project creates and/or replaces 5,000 square feet or more of impervious surface (collectively over the project site). ☒ Yes ☐ No

7. **New development or redevelopment discharging directly to an Environmentally Sensitive Area.** The project creates and/or replaces 2,500 square feet of impervious surface (collectively over project site), and discharges directly to an Environmentally Sensitive Area (ESA). "Discharging directly to" includes flow that is conveyed overland a distance of 200 feet or less from the project to the ESA, or conveyed in a pipe or open channel any distance as an isolated flow from the project to the ESA (i.e. not commingled with flows from adjacent lands). ☐ Yes ☒ No

8. **New development or redevelopment projects of a retail gasoline outlet (RGO) that create and/or replaces 5,000 square feet of impervious surface.** The development project meets the following criteria: (a) 5,000 square feet or more or (b) has a projected Average Daily Traffic (ADT) of 100 or more vehicles per day. ☐ Yes ☒ No

9. **New development or redevelopment projects of an automotive repair shops that creates and/or replaces 5,000 square feet or more of impervious surfaces.** Development projects categorized in any one of Standard Industrial Classification (SIC) codes 5013, 5014, 5541, 7532-7534, or 7536-7539. ☐ Yes ☒ No

10. **Other Pollutant Generating Project.** The project is not covered in the categories above, results in the disturbance of one or more acres of land and is expected to generate pollutants post construction, such as fertilizers and pesticides. This does not include projects creating less than 5,000 sf of impervious surface and where added landscaping does not require regular use of pesticides and fertilizers, such as slope stabilization using native plants. Calculation of the square footage of impervious surface need not include linear pathways that are for infrequent vehicle use, such as emergency maintenance access or bicycle pedestrian use, if they are built with pervious surfaces of if they sheet flow to surrounding pervious surfaces. ☐ Yes ☒ No

PART F: Select the appropriate category based on the outcomes of PART C through PART E.

1. The project is **NOT SUBJECT TO STORM WATER REQUIREMENTS**. ☐

2. The project is a **STANDARD DEVELOPMENT PROJECT**. Site design and source control BMP requirements apply. See the <u>Storm Water Standards Manual</u> for guidance. ☐

3. The project is **PDP EXEMPT**. Site design and source control BMP requirements apply. See the <u>Storm Water Standards Manual</u> for guidance. ☐

4. The project is a **PRIORITY DEVELOPMENT PROJECT**. Site design, source control, and structural pollutant control BMP requirements apply. See the <u>Storm Water Standards Manual</u> for guidance on determining if project requires a hydromodification plan management ☒

Name of Owner or Agent *(Please Print)*: Matt DeVincenzo

Title: Agent for Owner

Signature: Matt DeVincenzo

Date: 03/31/2016

Form I-1: Applicability of Permanent, Post-Construction Storm Water BMP Requirements (Storm Water Intake Form for all Development Permit Applications)	**Form I-1:**
Project Identification	
Project Name: The Preserve at Torrey Highlands	
Permit Application Number: 442880	Date: September 28, 2016
Determination of Requirements	
The purpose of this form is to identify permanent, post-construction requirements that apply to the project. This form serves as a short summary of applicable requirements, in some cases referencing separate forms that will serve as the backup for the determination of requirements. Answer each step below, starting with Step 1 and progressing through each step until reaching "Stop". Refer to BMP Design Manual sections and/or separate forms referenced in each step below.	

Step	Answer	Progression
Step 1: Is the project a "development project"? See Section 1.3 of the BMP Design Manual for guidance.	☒ Yes	Go to Step 2.
	☐ No	Stop. Permanent BMP requirements do not apply. No SWQMP will be required. Provide discussion below.
Discussion / justification if the project is not a "development project" (e.g., the project includes only interior remodels within an existing building):		
Step 2: Is the project a Standard Project, Priority Development Project (PDP), or exception to PDP definitions? To answer this item, see Section 1.4 of the BMP Design Manual in its entirety for guidance, AND complete Storm Water Requirements Applicability Checklist.	☐ Standard Project	Stop. Standard Project requirements apply.
	☒ PDP	PDP requirements apply, including PDP SWQMP. Go to Step 3.
	☐ Exception to PDP definitions	Stop. Standard Project requirements apply. Provide discussion and list any additional requirements below.
Discussion / justification, and additional requirements for exceptions to PDP definitions, if applicable:		

Form I-1 Page 2

Step	Answer	Progression
Step 3. Is the project subject to earlier PDP requirements due to a prior lawful approval? See Section 1.10 of the BMP Design Manual for guidance.	☐ Yes	Consult the City Engineer to determine requirements. Provide discussion and identify requirements below. Go to Step 4.
	☒ No	BMP Design Manual PDP requirements apply. Go to Step 4.
Discussion / justification of prior lawful approval, and identify requirements (<u>not required if prior lawful approval does not apply</u>):		
Step 4. Do hydromodification control requirements apply? See Section 1.6 of the BMP Design Manual for guidance.	☒ Yes	PDP structural BMPs required for pollutant control (Chapter 5) and hydromodification control (Chapter 6). Go to Step 5.
	☐ No	Stop. PDP structural BMPs required for pollutant control (Chapter 5) only. Provide brief discussion of exemption to hydromodification control below.
Discussion / justification if hydromodification control requirements do <u>not</u> apply:		
Step 5. Does protection of critical coarse sediment yield areas apply? See Section 6.2 of the BMP Design Manual for guidance.	☐ Yes	Management measures required for protection of critical coarse sediment yield areas (Chapter 6.2). Stop.
	☒ No	Management measures not required for protection of critical coarse sediment yield areas. Provide brief discussion below. Stop.
Discussion / justification if protection of critical coarse sediment yield areas does <u>not</u> apply: No potential critical coarse sediment yield areas onsite, see attachment 2.		

Site Information Checklist For PDPs	Form I-3B
Project Summary Information	
Project Name	The Preserve at Torrey Highlands
Project Address	SEQ State Route 56 & Camino Del Sur
Assessor's Parcel Number(s) (APN(s))	306-050-16; 306-050-18 306-050-19; 306-050-28
Permit Application Number	442880
Project Watershed	Select One: ☐ San Dieguito River ☒ Penasquitos ☐ Mission Bay ☐ San Diego River ☐ San Diego Bay ☐ Tijuana River
Hydrologic subarea name with Numeric Identifier up to two decimal places (9XX.XX)	Miramar Reservoir-906.10
Parcel Area (total area of Assessor's Parcel(s) associated with the project)	10.2 Acres (443,721 Square Feet)
Area to be disturbed by the project (Project Area)	9.4 Acres (411,011 Square Feet)
Project Proposed Impervious Area (subset of Project Area)	5.8 Acres (253,472 Square Feet)
Project Proposed Pervious Area (subset of Project Area)	3.6 Acres (157,539 Square Feet)
Note: Proposed Impervious Area + Proposed Pervious Area = Area to be Disturbed by the Project. This may be less than the Parcel Area.	
The proposed increase or decrease in impervious area in the proposed condition as compared to the pre-project condition.	N/A because no existing impervious

Form I-3B Page 2 of 11

Description of Existing Site Condition and Drainage Patterns

Current Status of the Site (select all that apply):

- ☐ Existing development
- ☐ Previously graded but not built out
- ☐ Agricultural or other non-impervious use
- ☒ Vacant, undeveloped/natural

Description / Additional Information:

Existing Land Cover Includes (select all that apply):

- ☒ Vegetative Cover
- ☐ Non-Vegetated Pervious Areas
- ☐ Impervious Areas

Description / Additional Information

The project site is currently an undeveloped 11.10 acre site consisting of natural vegetation. All of the surrounding adjacent parcels are also undeveloped; however plans are in process for the extension of Camino Del Sur which will front the project. It is anticipated that those plans will be approved prior to this project, thus those improvements are reflected as "existing" for this project and decrease the project lot area to a 10.2 acre site after ROW acquisition.

Underlying Soil belongs to Hydrologic Soil Group (select all that apply):

- ☐ NRCS Type A
- ☐ NRCS Type B
- ☐ NRCS Type C
- ☒ NRCS Type D

Approximate Depth to Groundwater (GW):

- ☐ GW Depth < 5 feet
- ☐ 5 feet < GW Depth < 10 feet
- ☐ 10 feet < GW Depth < 20 feet
- ☒ GW Depth > 20 feet

Existing Natural Hydrologic Features (select all that apply):

- ☐ Watercourses
- ☐ Seeps
- ☐ Springs
- ☐ Wetlands
- ☒ None

Description / Additional Information:

Form I-3B Page 3 of 11

Description of Existing Site Topography and Drainage:

How is storm water runoff conveyed from the site? At a minimum, this description should answer:

1. Whether existing drainage conveyance is natural or urban;
2. If runoff from offsite is conveyed through the site? If yes, quantification of all offsite drainage areas, design flows, and locations where offsite flows enter the project site and summarize how such flows are conveyed through the site;
3. Provide details regarding existing project site drainage conveyance network, including storm drains, concrete channels, swales, detention facilities, storm water treatment facilities, and natural and constructed channels;
4. Identify all discharge locations from the existing project along with a summary of the conveyance system size and capacity for each of the discharge locations. Provide summary of the pre-project drainage areas and design flows to each of the existing runoff discharge locations.

Description / Additional Information:

Sub-basin 1:
The western edge of the site along the top ridge of the finger canyon of sub-basin 2. The runoff in this sub-basin drains to the north. An approximately 0.03 acres area drains from offsite through the project site. The peak runoff experienced on sub-basin 1 is 1.43 cfs.

Sub-basin 2:
The majority of the site, which sits over another finger canyon of Deer Canyon, which drains to the north. An approximately 1.12 acres area drains from offsite through the project site. The peak runoff experienced on sub-basin 2 is 10.56 cfs.

Sub-basin 3:
In its current state, the eastern edge of the site along the proposed extension of Camino Del Sur drains to the north into one of Deer Canyon's finger canyons. An approximately 0.10 acres area drains from offsite through the project site. The peak runoff experienced on sub-basin 3 is 2.22 cfs.

Basin	Area (SF)	Area (Acres)	C	Length (ft)	Upper Elev. (ft)	Lower Elev. (ft)	Slope (%)	Tc (min)	Intensity (in/hr)	Q_{100} (cfs)
1	52631	1.208	0.45	770	415	366	6.36%	17.53	2.63	1.43
2	368302	8.455	0.45	890	419	323	10.79%	15.81	2.78	10.56
3	77861	1.787	0.45	810	413	340	9.01%	16.01	2.75	2.22
									Total Q	**14.20**

Attachment 5 contains drainage calculations and basin maps for the site.

Form I-3B Page 4 of 11

Description of Proposed Site Development and Drainage Patterns

Project Description / Proposed Land Use and/or Activities:

Development of The Preserve at Torrey Highlands site will include the construction of 3 office buildings, a parking structure, a fitness center, and a café. Per the City of San Diego Drainage Design Manual, a developed condition runoff coefficient of 0.85 was chosen for this analysis, which corresponds to a Commercial land use.

List/describe proposed impervious features of the project (e.g., buildings, roadways, parking lots, courtyards, athletic courts, other impervious features):

The project proposes three corporate office buildings, one café building, one fitness center, and one parking structure.

-Building 1: Proposed 6-level office building containing 180,000 gross square feet, and 87 covered parking stalls beneath.

-Building 2: Proposed 4-level office building containing 120,000 gross square feet, and 69 covered parking stalls beneath.

-Building 3: Proposed 5-level office building containing 150,000 gross square feet, and 85 covered parking stalls beneath.

-Parking: Proposed 7.4-Level parking structure containing 0.4 subterranean and 7 above grade parking levels; providing 1,472 parking stalls.

-Café: Proposed 1-level on site café building; providing approximately 3,850 square feet of space.

-Fitness Center: Proposed 1-level Fitness Center beneath Building 2; providing approximately 5,000 square feet of space.

List/describe proposed pervious features of the project (e.g., landscape areas):

The project includes large amounts of pervious areas and a developed condition imperviousness of only 62%. This is significantly lower than the land use imperviousness of 80%. On site biofiltration areas and outdoor space amenities have been provided to minimize the development impact to the surrounding area.

Does the project include grading and changes to site topography?

☒ Yes
☐ No

Description / Additional Information:

The site will include a large amount of fill in the center portion of the project with cut coming from the surrounding area. The grading has been "contoured" to the natural ground to the maximum extent possible.

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Does the project include changes to site drainage (e.g., installation of new storm water conveyance systems)?

☒ Yes
☐ No

If yes, provide details regarding the proposed project site drainage conveyance network, including storm drains, concrete channels, swales, detention facilities, storm water treatment facilities, natural and constructed channels, and the method for conveying offsite flows through or around the proposed project site. Identify all discharge locations from the proposed project site along with a summary of the conveyance system size and capacity for each of the discharge locations. Provide a summary of pre and post-project drainage areas and design flows to each of the runoff discharge locations. Reference the drainage study for detailed calculations.

Description / Additional Information:

Onsite runoff will be plumbed to a private storm drain system of HDPE or PVC pipes, draining into the biofiltration areas, and ultimately discharging to the finger canyon at the northern property line of the property. All roof and garage drainage will also be plumbed to this system and directed to the biofiltration areas. A small amount of runoff will be conveyed via brow ditch around the project boundary to prevent comingling with the site runoff. There is one discharge location for the project, which is at the aforementioned finger canyon located to the north of the project site. The size and capacity of the storm drain pipe at this discharge location is 18 inches and 45.88 CFS, respectively.

Summary of pre-project drainage areas:

Basin	Q100 (cfs)	Discharge Location
1	1.43	1
2	10.56	2
3	2.22	3

Summary of post-project drainage areas:

Basin	Q100 (cfs)	Basin	Q100 (cfs)	Basin	Q100 (cfs)	Basin	Q100 (cfs)
1	1.81	7	1.68	13	0.06	19	2.02
2	0.41	8	2.62	14	2.15	20	0.22
3	0.28	9	6.04	15	0.73	21	5.16
4	0.30	10	0.35	16	0.50	22	2.78
5	0.30	11	0.89	17	2.58		
6	0.45	12	2.58	18	0.82		

Discharge location 1 for all basins

See "Drainage Study for The Preserve at Torrey Highlands" dated June 22, 2016, prepared by Leppert Engineering Corporation for detailed calculations, included as Attachment 5.

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Identify whether any of the following features, activities, and/or pollutant source areas will be present (select all that apply):

☒ On-site storm drain inlets
☒ Interior floor drains and elevator shaft sump pumps
☒ Interior parking garages
☒ Need for future indoor & structural pest control
☒ Landscape/Outdoor Pesticide Use
☐ Pools, spas, ponds, decorative fountains, and other water features
☒ Food service
☒ Refuse areas
☐ Industrial processes
☐ Outdoor storage of equipment or materials
☐ Vehicle and Equipment Cleaning
☐ Vehicle/Equipment Repair and Maintenance
☐ Fuel Dispensing Areas
☐ Loading Docks
☒ Fire Sprinkler Test Water
☐ Miscellaneous Drain or Wash Water
☒ Plazas, sidewalks, and parking lots
☐ Large Trash Generating Facilities
☐ Animal Facilities
☐ Plant Nurseries and Garden Centers
☐ Automotive-related Uses

Description / Additional Information:

Onsite storm drain inlets

- The proposed development will utilize onsite inlets will be stamped/marked with “No dumping! Flows to Bay.” or similar.

Interior floor drains and elevator shaft pumps

- The proposed development will utilize interior floor drains and elevator shaft pumps that will be plumbed to sanitary sewer.

Interior parking garage

- The proposed development will utilize interior parking garage drains that will be plumbed to sanitary sewer.

Need for future indoor & structural pest control

- It is possible pest control will be needed.

Landscape/Outdoor Pesticide use

- The proposed development will utilize pest resistant and drought tolerant plant species selected for the site’s soil/climate.
- Designing Irrigation Systems for individual area requirements to minimize runoff.
- Utilize rain shutoff devices.

Food Service

- Food Service will be provided onsite at the Café in the central courtyard area.

Refuse areas

- All refuse areas provided on-site are enclosed within the subterranean garage.

Fire sprinkler test water

- The proposed development will incorporate fire sprinklers that will discharge into the sanitary sewer during routine maintenance.

Plazas, sidewalks, and parking lots

- Runoff from these areas will be directed to biofiltration basins.

Form I-3B Page 7 of 11

Identification and Narrative of Receiving Water

Narrative describing flow path from discharge location(s), through urban storm conveyance system, to receiving creeks, rivers, and lagoons and ultimate discharge location to Pacific Ocean (or bay, lagoon, lake or reservoir, as applicable)

The project site runoff discharges directly into Deer Canyon for 2.4 miles, which is then tributary to Carmel Valley Creek for 3.2 miles, which then discharges into Peñasquitos Lagoon for 1.2 miles, prior to emptying into the Pacific Ocean a total of 6.8 miles from the discharge point.

Provide a summary of all beneficial uses of receiving waters downstream of the project discharge locations.

Los Peñasquitos Lagoon has a listed beneficial use of "Estuarine habitat", and Pacific Ocean Shoreline has a listed beneficial use of "Water contact recreation".

Identify all ASBS (areas of special biological significance) receiving waters downstream of the project discharge locations.

There are no ASBS receiving waters downstream of the project location.

Provide distance from project outfall location to impaired or sensitive receiving waters.

The project site runoff discharges directly into Deer Canyon for 2.4 miles, which is then tributary to Carmel Valley Creek for 3.2 miles, which then discharges into Peñasquitos Lagoon for 1.2 miles, prior to emptying into the Pacific Ocean a total of 6.8 miles from the discharge point. Peñasquitos Lagoon is impaired for sedimentation/siltation and the Pacific Ocean Shoreline, Miramar Reservoir HA, at Los Peñasquitos River Mouth is impaired for total coliform, per the 2012 California 303(d) List of Water Quality Segments.

Summarize information regarding the proximity of the permanent, post-construction storm water BMPs to the City's Multi-Habitat Planning Area and environmentally sensitive lands

There are no known MHPA or ESA areas adjacent to the project or its BMPs.

Form I-3B Page 8 of 11

Identification of Receiving Water Pollutants of Concern

List any 303(d) impaired water bodies within the path of storm water from the project site to the Pacific Ocean (or bay, lagoon, lake or reservoir, as applicable), identify the pollutant(s)/stressor(s) causing impairment, and identify any TMDLs and/or Highest Priority Pollutants from the WQIP for the impaired water bodies:

303(d) Impaired Water Body	Pollutant(s)/Stressor(s)	TMDLs/ WQIP Highest Priority Pollutant
Los Penasquitos Lagoon	Sedimentation/Siltation	Expected Completion Date 2019
Pacific Ocean Shoreline, Miramar Reservoir HA, at Los Penasquitos River mouth	Total Coliform	Expected Completion Date 2019

Identification of Project Site Pollutants*

*Identification of project site pollutants is only required if flow-thru treatment BMPs are implemented onsite in lieu of retention or biofiltration BMPs (note the project must also participate in an alternative compliance program unless prior lawful approval to meet earlier PDP requirements is demonstrated)

Identify pollutants expected from the project site based on all proposed use(s) of the site (see BMP Design Manual Appendix B.6):

Pollutant	Not Applicable to the Project Site	Expected from the Project Site	Also a Receiving Water Pollutant of Concern
Sediment	☐	☐	☐
Nutrients	☐	☐	☐
Heavy Metals	☐	☐	☐
Organic Compounds	☐	☐	☐
Trash & Debris	☐	☐	☐
Oxygen Demanding Substances	☐	☐	☐
Oil & Grease	☐	☐	☐
Bacteria & Viruses	☐	☐	☐
Pesticides	☐	☐	☐

Form I-3B Page 9 of 11

Hydromodification Management Requirements

Do hydromodification management requirements apply (see Section 1.6 of the BMP Design Manual)?

☒ Yes, hydromodification management flow control structural BMPs required.

☐ No, the project will discharge runoff directly to existing underground storm drains discharging directly to water storage reservoirs, lakes, enclosed embayment, or the Pacific Ocean.

☐ No, the project will discharge runoff directly to conveyance channels whose bed and bank are concrete-lined all the way from the point of discharge to water storage reservoirs, lakes, enclosed embayment, or the Pacific Ocean.

☐ No, the project will discharge runoff directly to an area identified as appropriate for an exemption by the WMAA for the watershed in which the project resides.

Description / Additional Information (to be provided if a 'No' answer has been selected above):

Critical Coarse Sediment Yield Areas*
***This Section only required if hydromodification management requirements apply**

Based on the maps provided within the WMAA, do potential critical coarse sediment yield areas exist within the project drainage boundaries?

☐ Yes

☒ No, No critical coarse sediment yield areas to be protected based on WMAA maps

If yes, have any of the optional analyses presented in Section 6.2 of the BMP Design Manual been performed?

☐ 6.2.1 Verification of Geomorphic Landscape Units (GLUs) Onsite

☐ 6.2.2 Downstream Systems Sensitivity to Coarse Sediment

☐ 6.2.3 Optional Additional Analysis of Potential Critical Coarse Sediment Yield Areas Onsite

☐ No optional analyses performed, the project will avoid critical coarse sediment yield areas identified based on WMAA maps

If optional analyses were performed, what is the final result?

☐ No critical coarse sediment yield areas to be protected based on verification of GLUs onsite

☐ Critical coarse sediment yield areas exist but additional analysis has determined that protection is not required. Documentation attached in Attachment 8 of the SWQMP.

☐ Critical coarse sediment yield areas exist and require protection. The project will implement management measures described in Sections 6.2.4 and 6.2.5 as applicable, and the areas are identified on the SWQMP Exhibit.

Discussion / Additional Information:

Form I-3B Page 10 of 11

Flow Control for Post-Project Runoff*
***This Section only required if hydromodification management requirements apply**

List and describe point(s) of compliance (POCs) for flow control for hydromodification management (see Section 6.3.1). For each POC, provide a POC identification name or number correlating to the project's HMP Exhibit and a receiving channel identification name or number correlating to the project's HMP Exhibit.

Three points of compliance are identified on Attachment 2a. Each of these is the discharge location for the corresponding biofiltration area and will be equipped with an orifice sized as shown in Attachment 2d.

Has a geomorphic assessment been performed for the receiving channel(s)?

☐ No, the low flow threshold is 0.1Q2 (default low flow threshold)

☐ Yes, the result is the low flow threshold is 0.1Q2

☐ Yes, the result is the low flow threshold is 0.3Q2

☒ Yes, the result is the low flow threshold is 0.5Q2

If a geomorphic assessment has been performed, provide title, date, and preparer:

Hydromodification Screening
for
The Preserve at Torrey Highlands
November 17, 2015
Chang Consultants
Wayne W. Chang

Discussion / Additional Information: (optional)

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Other Site Requirements and Constraints

When applicable, list other site requirements or constraints that will influence storm water management design, such as zoning requirements including setbacks and open space, or local codes governing minimum street width, sidewalk construction, allowable pavement types, and drainage requirements.

Optional Additional Information or Continuation of Previous Sections As Needed

This space provided for additional information or continuation of information from previous sections as needed.

Source Control BMP Checklist for All Development Projects

Form I-4

Project Identification

Project Name: The Preserve at Torrey Highlands

Permit Application Number: 442880

Source Control BMPs

All development projects must implement source control BMPs SC-1 through SC-6 where applicable and feasible. See Chapter 4 and Appendix E of the BMP Design Manual for information to implement source control BMPs shown in this checklist.

Answer each category below pursuant to the following.

- "Yes" means the project will implement the source control BMP as described in Chapter 4 and/or Appendix E of the BMP Design Manual. Discussion / justification is not required.
- "No" means the BMP is applicable to the project but it is not feasible to implement. Discussion / justification must be provided.
- "N/A" means the BMP is not applicable at the project site because the project does not include the feature that is addressed by the BMP (e.g., the project has no outdoor materials storage areas). Discussion / justification may be provided.

Source Control Requirement	Applied?		
SC-1 Prevention of Illicit Discharges into the MS4	☒ Yes	☐ No	☐ N/A
Discussion / justification if SC-1 not implemented:			
SC-2 Storm Drain Stenciling or Signage	☒ Yes	☐ No	☐ N/A
Discussion / justification if SC-2 not implemented:			
SC-3 Protect Outdoor Materials Storage Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	☐ Yes	☐ No	☒ N/A
Discussion / justification if SC-3 not implemented: No proposed outdoor materials storage areas.			
SC-4 Protect Materials Stored in Outdoor Work Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	☐ Yes	☐ No	☒ N/A
Discussion / justification if SC-4 not implemented: No proposed outdoor materials storage areas.			
SC-5 Protect Trash Storage Areas from Rainfall, Run-On, Runoff, and Wind	☒ Yes	☐ No	☐ N/A
Discussion / justification if SC-5 not implemented:			

Form I-4 Page 2 of 2

Source Control Requirement	Applied?		
SC-6 Additional BMPs Based on Potential Sources of Runoff Pollutants (must answer for each source listed below)			
☒ On-site storm drain inlets	☒ Yes	☐ No	☐ N/A
☒ Interior floor drains and elevator shaft sump pumps	☒ Yes	☐ No	☐ N/A
☒ Interior parking garages	☒ Yes	☐ No	☐ N/A
☒ Need for future indoor & structural pest control	☒ Yes	☐ No	☐ N/A
☒ Landscape/Outdoor Pesticide Use	☒ Yes	☐ No	☐ N/A
☐ Pools, spas, ponds, decorative fountains, and other water features	☐ Yes	☐ No	☒ N/A
☒ Food service	☒ Yes	☐ No	☐ N/A
☒ Refuse areas	☒ Yes	☐ No	☐ N/A
☐ Industrial processes	☐ Yes	☐ No	☒ N/A
☐ Outdoor storage of equipment or materials	☐ Yes	☐ No	☒ N/A
☐ Vehicle and Equipment Cleaning	☐ Yes	☐ No	☒ N/A
☐ Vehicle/Equipment Repair and Maintenance	☐ Yes	☐ No	☒ N/A
☐ Fuel Dispensing Areas	☐ Yes	☐ No	☒ N/A
☐ Loading Docks	☐ Yes	☐ No	☒ N/A
☒ Fire Sprinkler Test Water	☒ Yes	☐ No	☐ N/A
☐ Miscellaneous Drain or Wash Water	☐ Yes	☐ No	☒ N/A
☒ Plazas, sidewalks, and parking lots	☒ Yes	☐ No	☐ N/A
☐ SC-6A: Large Trash Generating Facilities	☐ Yes	☐ No	☒ N/A
☐ SC-6B: Animal Facilities	☐ Yes	☐ No	☒ N/A
☐ SC-6C: Plant Nurseries and Garden Centers	☐ Yes	☐ No	☒ N/A
☐ SC-6D: Automotive-related Uses	☐ Yes	☐ No	☒ N/A

Discussion / justification if SC-6 not implemented. Clearly identify which sources of runoff pollutants are discussed. Justification must be provided for all "No" answers shown above.

Site Design BMP Checklist for All Development Projects	Form I-5

Site Design BMPs

All development projects must implement site design BMPs SD-1 through SD-8 where applicable and feasible. See Chapter 4 and Appendix E of the BMP Design Manual (Part 1 of Storm Water Standards) for information to implement site design BMPs shown in this checklist.

Answer each category below pursuant to the following.

- "Yes" means the project will implement the site design BMP as described in Chapter 4 and/or Appendix E of the BMP Design Manual. Discussion / justification is not required.
- "No" means the BMP is applicable to the project but it is not feasible to implement. Discussion / justification must be provided.
- "N/A" means the BMP is not applicable at the project site because the project does not include the feature that is addressed by the BMP (e.g., the project site has no existing natural areas to conserve). Discussion / justification may be provided.

A site map with implemented site design BMPs must be included at the end of this checklist.

Site Design Requirement	Applied?		
SD-1 Maintain Natural Drainage Pathways and Hydrologic Features	☒ Yes	☐ No	☐ N/A
Discussion / justification if SD-1 not implemented:			
1-1 Are existing natural drainage pathways and hydrologic features mapped on the site map?	☒ Yes	☐ No	☐ N/A
1-2 Are trees implemented? If yes, are they shown on the site map?	☒ Yes	☐ No	☐ N/A
1-3 Implemented trees meet the design criteria in SD-1 Fact Sheet (e.g. soil volume, maximum credit, etc.)?	☒ Yes	☐ No	☐ N/A
1-4 Is tree credit volume calculated using Appendix B.2.2.1 and SD-1 Fact Sheet in Appendix E?	☐ Yes	☒ No	☐ N/A
SD-2 Have natural areas, soils and vegetation been conserved?	☒ Yes	☐ No	☐ N/A
Discussion / justification if SD-2 not implemented: Trees have been shown on the plans, however at this time the final engineering necessary to demonstrate the ability to take tree credits has not been completed. In final design of the project tree credits may be pursued in accordance with the storm water standards.			

Form I-5 Page 2 of 4			
Site Design Requirement	Applied?		
SD-3 Minimize Impervious Area	☒ Yes	☐ No	☐ N/A
Discussion / justification if SD-3 not implemented:			
SD-4 Minimize Soil Compaction	☒ Yes	☐ No	☐ N/A
Discussion / justification if SD-4 not implemented:			
SD-5 Impervious Area Dispersion	☐ Yes	☒ No	☐ N/A
Discussion / justification if SD-5 not implemented: There is not adequate pervious area on the site to meet the requirements of impervious area dispersion, i.e. – 10 foot width and maximum slope of 5%. All impervious area runoff is directed to Biofiltration Basins in lieu of impervious area dispersion, and pervious pavements are not feasible due to the existing soil type and geotechnical recommendations.			
5-1 Is the pervious area receiving runon from impervious area identified on the site map?	☐ Yes	☐ No	☒ N/A
5-2 Does the pervious area satisfy the design criteria in SD-5 Fact Sheet in Appendix E (e.g. maximum slope, minimum length, etc.)	☐ Yes	☐ No	☒ N/A
5-3 Is impervious area dispersion credit volume calculated using Appendix B.2.1.1 and SD-5 Fact Sheet in Appendix E?	☐ Yes	☐ No	☒ N/A

Form I-5 Page 3 of 4

Site Design Requirement	Applied?		
SD-6 Runoff Collection	☐ Yes	☒ No	☐ N/A
Discussion / justification if SD-6 not implemented: All roof areas are drain to biofiltration basins in lieu of providing green roofs, and pervious pavements are not feasible due to the existing soil type and geotechnical recommendations.			
6a-1 Are green roofs implemented in accordance with design criteria in SD-6A Fact Sheet? If yes, are they shown on the site map?	☐ Yes	☐ No	☒ N/A
6a-2 Is green roof credit volume calculated using Appendix B.2.1.2 and SD-6A Fact Sheet in Appendix E?	☐ Yes	☐ No	☒ N/A
6b-1 Are permeable pavements implemented in accordance with design criteria in SD-6B Fact Sheet? If yes, are they shown on the site map?	☐ Yes	☐ No	☒ N/A
6b-2 Is permeable pavement credit volume calculated using Appendix B.2.1.3 and SD-6B Fact Sheet in Appendix E?	☐ Yes	☐ No	☒ N/A
SD-7 Landscaping with Native or Drought Tolerant Species	☒ Yes	☐ No	☐ N/A
Discussion / justification if SD-7 not implemented:			
SD-8 Harvesting and Using Precipitation	☐ Yes	☒ No	☐ N/A
Discussion / justification if SD-8 not implemented: All roof drains are plumbed directly to biofiltration areas for treatment and hydromodification control. And there is no landscape irrigation demand within 96 hours of a rain event, preventing the rain barrel from being emptied in time.			
8-1 Are rain barrels implemented in accordance with design criteria in SD-8 Fact Sheet? If yes, are they shown on the site map?	☐ Yes	☐ No	☒ N/A
8-2 Is rain barrel credit volume calculated using Appendix B.2.2.2 and SD-8 Fact Sheet in Appendix E?	☐ Yes	☐ No	☒ N/A

Form I-5 Page 4 of 4

Insert Site Map with all site design BMPs identified:

Please see Attachment 1 and 4 for the site map and exhibits demonstrating the BMP implementation.

Summary of PDP Structural BMPs	Form I-6
Project Identification	
Project Name: The Preserve at Torrey Highlands	
Permit Application Number 442880	
PDP Structural BMPs	
All PDPs must implement structural BMPs for storm water pollutant control (see Chapter 5 of the BMP Design Manual). Selection of PDP structural BMPs for storm water pollutant control must be based on the selection process described in Chapter 5. PDPs subject to hydromodification management requirements must also implement structural BMPs for flow control for hydromodification management (see Chapter 6 of the BMP Design Manual). Both storm water pollutant control and flow control for hydromodification management can be achieved within the same structural BMP(s). PDP structural BMPs must be verified by the City at the completion of construction. This includes requiring the project owner or project owner's representative to certify construction of the structural BMPs (complete Form DS-563). PDP structural BMPs must be maintained into perpetuity (see Chapter 7 of the BMP Design Manual). Use this form to provide narrative description of the general strategy for structural BMP implementation at the project site in the box below. Then complete the PDP structural BMP summary information sheet (page 3 of this form) for each structural BMP within the project (copy the BMP summary information page as many times as needed to provide summary information for each individual structural BMP).	
Describe the general strategy for structural BMP implementation at the site. This information must describe how the steps for selecting and designing storm water pollutant control BMPs presented in Section 5.1 of the BMP Design Manual were followed, and the results (type of BMPs selected). For projects requiring hydromodification flow control BMPs, indicate whether pollutant control and flow control BMPs are integrated or separate. Storm Water Pollutant Control BMP Selection was done using Figures 5-1 & 5-2 "Storm Water Standards BMP Selection Flow Chart" from the City of San Diego BMP Design Manual, dated June 2016. See I-6 sheet 2 for a summary of each step in the flow chart: (Continue on page 2 as necessary.)	

Form I-6 Page 2 of 3

(Page reserved for continuation of description of general strategy for structural BMP implementation at the site)

(Continued from page 1)

DMA-1 Thru DMA-5

Step 1: Evaluate at DMA Scale

- There are 5 DMAs onsite, see Attachment 4.

Step 1A: Is the DMA "Self-mitigating" or "De Minimis" or "Self-retaining"

- DMAs 1 thru 5 are not "Self-mitigating" or "De Minimis" or "Self-retaining"
  - Proceed to Step 1B.

Step 1B: Adjust runoff factor to account for site design BMPs and estimate DCV

- DCV calculation performed using Worksheet B.2-1, see Attachment 1e.

Step 2: Is Harvest and Use Feasible

- No, Harvest and Use is not feasible, see calculations in Attachment 1c, based on Worksheet B.3-1.

Step 3: Step 3: Is Infiltration Feasible?

- Partial infiltration is feasible, see Attachment 1d.

Step 3 A&B: Partial Infiltration Condition

- Proceed to Step 3C

Step 3C: Compute Sizing Requirement

- Large footprint Biofiltration (BF-1) are selected BMP
- Sizing performed to provide treatment at a rate of 1.5 X the DCV not reliably retained on site, using Worksheet B.5-1; see Attachment 2d.
- Although Attachment 1d indicates a partial infiltration condition, the project will use biofiltration basins with impermeable liners, so an infiltration rate of 0 in/hr for Line 2 of Worksheet B.5-1. The Biofiltration Basins will be sized so that the required fraction of DCV retained in the BMP (Line 29 of Worksheet B.5-1) meets the required DCV retention value of 0.325 (Line 30 of Worksheet B.5-1).

Step 4: Can the BMP be designed for the remaining DCV?

- Yes, see calculations in 1e based on Worksheet B.5-1.

Step 4A:

- The biofiltration facilities have been sized based on the BF-1 fact sheets.
- Sizing accomplished using the BF-1 factsheet will produce a basin that is appropriately sized for the hydraulic loading rate, maximizes pollutant removal and retention and prevents scour or channeling within the BMP.

Step 6 & 7: The project is "Compliant with Pollutant Control BMP Sizing Requirements".

DMA-6 & DMA-7

Step 1: Evaluate at DMA Scale

- There are 2 DMAs onsite, see Attachment 4.

Step 1A: Is the DMA "Self-mitigating" or "De Minimis" or "Self-retaining"

- DMA-6 & DMA-7 are "Self-mitigating" or "De Minimis" or "Self-retaining"
  - DMAs are "Compliant with Pollutant Control BMP Sizing Requirements"

Form I-6 Page 3 of 3

Structural BMP Summary Information
(Copy this page as needed to provide information for each individual proposed structural BMP)

Structural BMP ID No.DMA-1 through DMA-5

Construction Plan Sheet No. N/A

Type of structural BMP:

- ☐ Retention by harvest and use (HU-1)
- ☐ Retention by infiltration basin (INF-1)
- ☐ Retention by bioretention
- ☐ (INF-2) Retention by permeable pavement (INF-3)
- ☐ Partial retention by biofiltration with partial retention (PR-1)
- ☒ Biofiltration (BF-1)
- ☐ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below)
- ☐ Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below)
- ☐ Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below)
- ☐ Detention pond or vault for hydromodification management
- ☐ Other (describe in discussion section below)

Purpose:

- ☐ Pollutant control only
- ☐ Hydromodification control only
- ☒ Combined pollutant control and hydromodification control
- ☐ Pre-treatment/forebay for another structural BMP
  Other (describe in discussion section below)

Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification form DS-563	To be determined based upon final design.
Who will be the final owner of this BMP?	Property owner
Who will maintain this BMP into perpetuity?	Property owner
What is the funding mechanism for maintenance?	Property owner payment from operating expenses.

THE CITY OF SAN DIEGO

City of San Diego
Development Services
1222 First Ave., MS-501
San Diego, CA 92101
(619) 236-5500

Permanent BMP Construction

Self Certification Form

FORM

DS-563

FEBRUARY 2013

Date Prepared:

Project No.:

Project Applicant:

Phone:

Project Address:

Project Engineer:

Phone:

The purpose of this form is to verify that the site improvements for the project, identified above, have been constructed in conformance with the approved Standard Urban Storm Water Mitigation Plan (SUSMP) documents and drawings.

This form must be completed by the engineer and submitted prior to final inspection of the construction permit. Completion and submittal of this form is required for all new development and redevelopment projects in order to comply with the City's Storm Water ordinances and NDPES Permit Order No. R9-2007-0001. Final inspection for occupancy and/or release of grading or public improvement bonds may be delayed if this form is not submitted and approved by the City of San Diego.

CERTIFICATION:
As the professional in responsible charge for the design of the above project, I certify that I have inspected all constructed Low Impact Development (LID) site design, source control and treatment control BMP's required per the approved SUSMP and Construction Permit No. ______; and that said BMP's have been constructed in compliance with the approved plans and all applicable specifications, permits, ordinances and Order No. R9-2007-0001 of the San Diego Regional Water Quality Control Board.

I understand that this BMP certification statement does not constitute an operation and maintenance verification.

Signature: ______________________

Date of Signature:

Printed Name:

Title:

Phone No.

Clear Form

Engineer's Stamp

Attachment 1

Backup for PDP Pollutant Control BMPs

Items included in this attachment:

Attachment Sequence	Contents	Checklist
Attachment 1a	**DMA Exhibit (Required)** **See DMA Exhibit Checklist.**	**Included**
Attachment 1b	Tabular summary of DMAs showing DMA ID matching DMA Exhibit, DMA Area, and DMA Type (Required)* *Provide table in this Attachment OR on DMA Exhibit in Attachment 1a	☒ Included on DMA exhibit in Attachment 1a ☐ Included as Attachment 1b, separate from DMA Exhibit
Attachment 1c	**Form I-7, Harvest and Use Feasibility Screening Checklist (Required unless the entire project will use infiltration BMPs)** **Refer to Appendix B.3-1 of the BMP design manual to complete Form I-7.**	☒ **Included** ☐ **Not included because the entire project will use infiltration BMPs**
Attachment 1d	Form I-8, Categorization of infiltration feasibility condition (Required unless the project will use harvest and use BMPs) Refer to Appendices C and D of the BMP design manual to complete Form I-8.	☒ Included ☐ Not included because the entire project will use harvest and use BMPs
Attachment 1e	**Pollutant Control BMP Design Worksheets/ Calculations (Required)** **Refer to Appendices B and E of the BMP design manual for structural pollutant control BMP design guidelines**	☒ **Included**

The DMA Exhibit must identify:

☐ Underlying hydrologic soil group
☐ Approximate depth to groundwater
☐ Existing natural hydrologic features (watercourses, seeps, springs, wetlands) Critical coarse sediment yield areas to be protected
☐ Existing topography and impervious areas
☐ Existing and proposed site drainage network and connections to drainage offsite
☐ Proposed grading
☐ Proposed impervious features
☐ Proposed design features and surface treatments used to minimize imperviousness
☐ Drainage management area (DMA) boundaries, DMA ID numbers, and DMA areas (square footage or acreage), and DMA type (i.e., drains to BMP, self-retaining, or self-mitigating)
☐ Potential pollutant source areas and corresponding required source controls (see Chapter 4, Appendix E.1, and Form I-3B)
☐ Structural BMPs (identify location, type of BMP, and size/detail)

BMP NOTES:

INTRODUCTION

RUNOFF CONVEYED AND DISCHARGED BY MUNICIPAL STORM WATER SYSTEMS HAS BEEN IDENTIFIED BY LOCAL, REGIONAL, AND NATIONAL RESEARCH PROGRAMS AS ONE OF THE PRINCIPAL CAUSES OF WATER QUALITY PROBLEMS IN URBAN AREAS SUCH AS THE CITY OF SAN DIEGO. THIS RUNOFF POTENTIALLY CONTAINS A HOST OF POLLUTANTS INCLUDING TRASH, DEBRIS, BACTERIA, VIRUSES, OIL, GREASE, SEDIMENTS, NUTRIENTS, METALS, AND TOXIC CHEMICALS. THESE CONTAMINANTS CAN ADVERSELY AFFECT THE BENEFICIAL USES OF RECEIVING CREEKS, COASTAL WATERS, ASSOCIATED WILDLIFE HABITAT, AND PUBLIC HEALTH. URBAN RUNOFF POLLUTION IS A PROBLEM DURING RAINY SEASONS AND ALSO
THROUGHOUT THE YEAR DUE TO URBAN WATER USES THAT DISCHARGE NON-STORM WATER RUNOFF VIA DRY WEATHER FLOWS TO THE STORM WATER CONVEYANCE SYSTEM.

THE MUNICIPAL STORM WATER NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM PERMIT (MUNICIPAL PERMIT), ISSUED ON JANUARY 24, 2007 TO THE CITY OF SAN DIEGO, REQUIRES THE DEVELOPMENT AND IMPLEMENTATION OF STORM WATER REGULATIONS ADDRESSING STORM WATER POLLUTION ISSUES IN DEVELOPMENT PLANNING AND CONSTRUCTION ASSOCIATED WITH PRIVATE AND PUBLIC DEVELOPMENT.

THE PURPOSE OF THIS PLAN, WITH RESPECT TO THE PROPOSED DEVELOPMENT, IS TO COMPLY WITH THE MUNICIPAL PERMIT, AND THE MODEL STANDARD URBAN STORM WATER MITIGATION PLAN (SUSMP) APPROVED BY THE REGIONAL BOARD ON MARCH 4, 2009 FOR THE IMPLEMENTATION OF PERMANENT AND CONSTRUCTION STORM WATER BMP REQUIREMENTS.

I. DETERMINATION OF STANDARD AND PRIORITY STORM WATER BMP REQUIREMENTS:

A) MATRIX TO DETERMINE IF PROJECT IS EXEMPT FROM PERMANENT STORM WATER BMP REQUIREMENTS:

DOES ANY OF THE FOLLOWING APPLY TO THE PROPOSED DEVELOPMENT.	YES	NO
1. THE PROJECT IS NOT A DEVELOPMENT PROJECT AS DEFINED BY THE STORM WATER STANDARDS MANUAL.		X
2. THE PROJECT IS ONLY THE CONSTRUCTION OF UNDERGROUND OR OVERHEAD LINEAR UTILITIES.		X
3. THE PROJECT QUALIFIES AS ROUTINE MAINTENANCE.		X
4. THE PROJECT ONLY INSTALLS SIDEWALKS, BIKE LANES, OR PEDESTRIAN RAMPS ON AND EXISTING ROAD, AND DOES NOT CHANGE DRAINAGE PATTERN.		X

B) MATRIX TO DETERMINE PRIORITY PROJECT PERMANENT STORM WATER BMP REQUIREMENTS:

DOES THE PROJECT MEET THE DEFINITION OF ONE OR MORE OF THE PRIORITY PROJECT CATEGORIES AS DEFINED IN THE STORM WATER STANDARDS?	YES	NO
1. RESIDENTIAL DEVELOPMENT OF 10 OR MORE UNITS.		X
2. COMMERCIAL DEVELOPMENT AND SIMILIAR NON-RESIDENTIAL DEVELOPMENTS > 1 ACRE.	X	
3. HEAVY INDUSTRIAL DEVELOPMENT > 1 ACRE.		X
4. AUTOMOTIVE REPAIR SHOP.		X
5. RESTAURANT.	X	
6. HILLSIDE DEVELOPMENT GREATER THAN 5,000 SQUARE FEET.		X
7. PROJECT WITHIN, DIRECTLY ADJACENT TO OR DISCHARGING TO RECEIVING WATERS WITHIN WATER QUALITY SENSITIVE AREAS.		X
8. PARKING LOT GREATER THAN OR EQUAL TO 5,000 SQ. FT. WITH AT LEAST 15 PARKING SPACES AND POTENTIALLY EXPOSED TO URBAN RUNOFF.	X	
9. STREETS, ROADS, HIGHWAYS, AND FREEWAYS THAT WOULD CREATE A NEW PAVED SURFACE THAT IS 5,000 SQ. FT. OR GREATER.		X
10. RETAIL GASOLINE OUTLETS.		X
11. SIGNIFICANT REDEVELOPMENT.		X
12. OTHER POLLUTANT GENERATING PROJECT.		X

C) DETERMINE WHETHER PROJECT IS EXEMPT, STANDARD OR A PRIORITY DESIGNATION:

1. IF "YES" IS CHECKED FOR ANY LINE IN PART A, THEN CHECK THIS BOX: ☐ EXEMPT PROJECT
2. IF "NO" IS CHECKED FOR ALL LINES IN PART A AND PART B, THEN CHECK THIS BOX: ☐ STANDARD DEVELOPMENT PROJECT
3. IF "NO" IS CHECKED FOR ALL LINES IN PART A, AND "YES" IS CHECKED FOR AT LEAST ONE OF THE ITEMS IN PART B, THEN CHECK THIS BOX: ☒ PRIORITY DEVELOPMENT PROJECT

II. DETERMINATION OF CONSTRUCTION STORM WATER BMP REQUIREMENTS:

D) DETERMINATION OF CONSTRUCTION PHASE STORM WATER REQUIREMENT:

WOULD THE PROJECT MEET ANY OF THESE CRITERIA DURING CONSTRUCTION?	YES	NO
1. IS THE PROJECT SUBJECT TO CALIFORNIA'S STATEWIDE GENERAL NPDES PERMIT FOR STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES?	X	
2. DOES THE PROJECT PROPOSE GRADING OR SOIL DISTURBANCE?	X	
3. WOULD STORM WATER OR URBAN RUNOFF HAVE THE POTENTIAL TO CONTACT ANY PORTION OF THE CONSTRUCTION AREA, INCLUDING WASHING AND STAGING AREAS?	X	
4. WOULD THE PROJECT USE ANY CONSTRUCTION MATERIALS THAT COULD NEGATIVELY AFFECT WATER QUALITY IF DISCHARGED FROM THE SITE (SUCH AS, PAINTS, SOLVENTS, CONCRETE, AND STUCCO)?	X	

5. CHECK THIS BOX IF "YES" IS CHECKED FOR LINE 1 ABOVE. ☒ SWPPP REQUIRED
6. CHECK THIS BOX IF "NO" IS CHECKED FOR LINE 1, AND "YES" IS CHECKED FOR ANY LINE 2-4: ☐ WPCP REQUIRED
7. CHECK THIS BOX IF "NO" IS CHECKED FOR ALL LINES 1-4: ☐ NO DOCUMENT REQUIRED

DMA SUMMARY (DISTURBED AREA ONLY)

BMP-#	DMA -#	AREA (SF)	ACRE	IMP. (SF)	PERV. (SF)	SOIL	SLOPE	TREATMENT
BMP-1								BIO-FILTRATION (BF-1)
	DMA-1	20,447		6,889	13,558	D	≤ 5% AVG.	
	DMA-2	104,985		71,540	33,445	D	≤ 5% AVG.	
BMP-2								BIO-FILTRATION (BF-1)
	DMA-3	134,584		83,940	50,644	D	≤ 5% AVG.	
BMP-3								BIO-FILTRATION (BF-1)
	DMA-4	48,011		37,708	10,303	D	≤ 5% AVG.	
	DMA-5	60,077		60,077	0	D	≤ 5% AVG.	
N/A								SELF-TREATING
	DMA-6	24,950		0	24,950	D	≥ 15% AVG.	
	DMA-7	19,149		0	19,149	D	≥ 15% AVG.	

E) DETERMINATION OF CONSTRUCTION SITE PRIORITY:

☒ 1. HIGH PRIORITY

A) PROJECTS WHERE THE SITE IS 50 ACRES OR MORE AND GRADING WILL OCCUR DURING THE WET SEASON.

B) PROJECTS 1 ACRE OR MORE AND TRIBUTARY TO AN IMPAIRED WATER BODY FOR SEDIMENT (e.g. PENASQUITOS WATERSHED).

C) PROJECTS 1 ACRE OR MORE WITHIN OR DIRECTLY ADJACENT TO OR DISCHARGING DIRECTLY TO A COASTAL LAGOON OR OTHER RECEIVING WATER WITHIN A WATER QUALITY SENSITIVE AREA.

D) PROJECTS SUBJECT TO PHASED GRADING OR ADVANCED TREATMENT REQUIREMENTS.

☐ 2. MEDIUM PRIORITY

1) PROJECTS 1 ACRE OR MORE BUT NOT SUBJECT TO HIGH PRIORITY DESIGNATION.

☐ 3. LOW PRIORITY

1) PROJECTS REQUIRING A WATER POLLUTION CONTROL PLAN BUT NOT SUBJECT TO A MEDIUM OR HIGH PRIORITY DESIGNATION.

III. IDENTIFICATION OF POLLUTANTS

A) PROJECT CATEGORY: COMMERCIAL DEVELOPMENT GREATER THAN 1 ACRE

1) POLLUTANTS OF CONCERN:

a. SEDIMENTS
b. NUTRIENTS
c. HEAVY METALS
d. ORGANIC COMPOUNDS
e. TRASH & DEBRIS
f. OXYGEN DEMANDING SUBSTANCES
g. OIL & GREASE
h. BACTERIA & VIRUSES
i. PESTICIDES

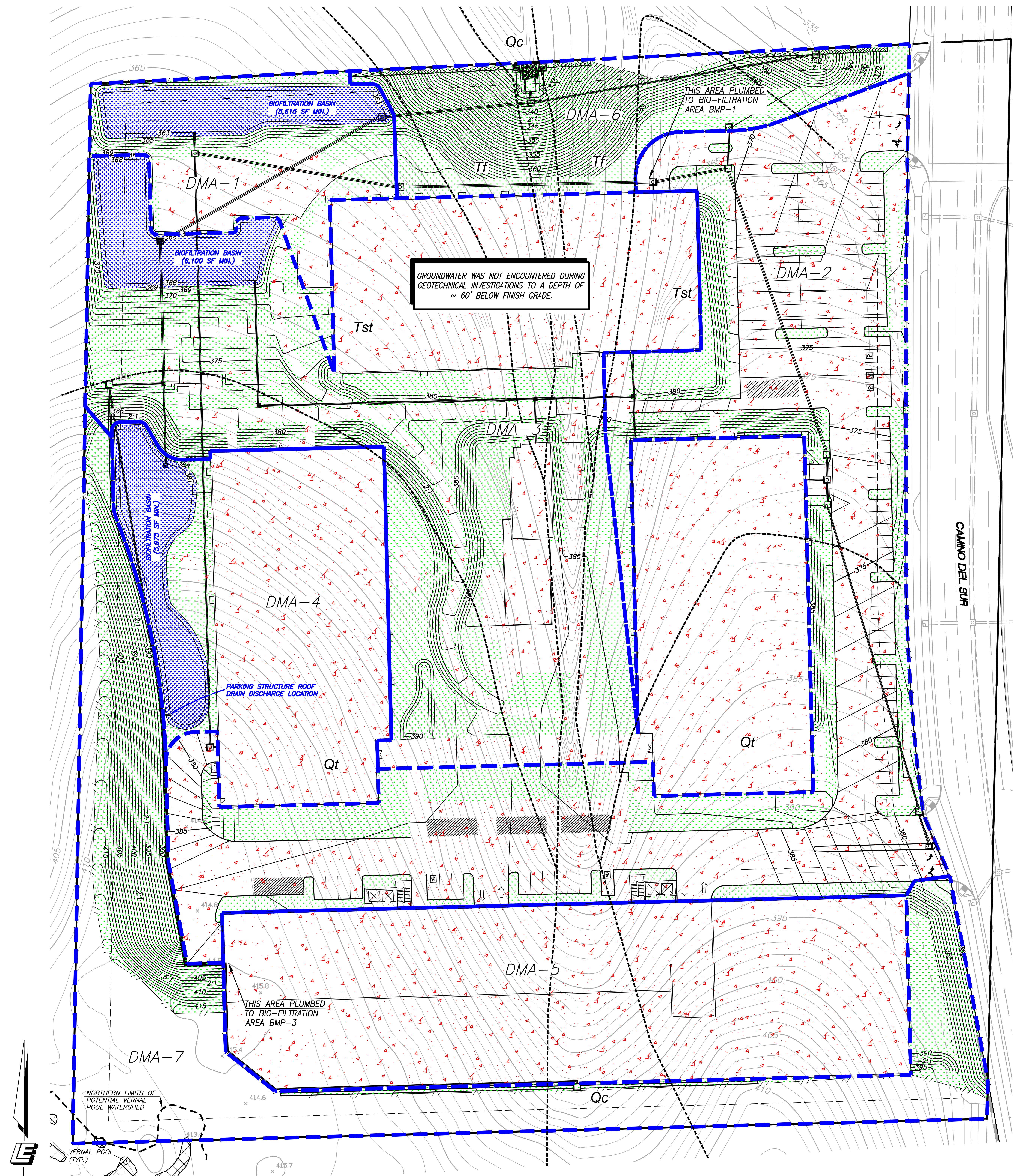
LEGEND

SUBDIVISION BOUNDARY
DMA-# DMA-#
DMA LIMITS
PROPOSED STORM DRAIN
EXISTING STORM DRAIN

PROPOSED PERVIOUS 🟩
PROPOSED IMPERVIOUS 🟥

GEOTECHNICAL LEGEND

Qc	........COLLOVIUM
Qt	........TERRACE DEPOSITS
Tst	........STADIUM CONGLOMERATEE
Tf	........FRIARS FORMATION
------------	........APPROX. LOCATION OF GEOLOGIC CONTACT



40 0 40 80
1" = 40'

DMA PLAN - PROPOSED CONDITION
SHEET 1 OF 1
THE PRESERVE AT TORREY HIGHLANDS

NO.	DATE	BY	DESCRIPTION	NO.	DATE	BY	DESCRIPTION
6				12			
5	09/28/2016	MFD	RESUBMITTAL 4	11			
4	06/22/2016	RL	RESUBMITTAL 3	10			
3	03/31/2016	MFD	RESUBMITTAL 2	9			
2	11/13/2015	RL	RESUBMITTAL 1	8			
1	08/01/2015	MFD	ORIGINAL	7			

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APPROVED BY ENGINEER OF WORK
REGISTRATION R C E 26283
FILE CODE TH 06.07-13.15
DATE

PREPARATION AND REVISION LOG

Harvest and Use Feasibility Checklist

Form I-7

1. Is there a demand for harvested water (check all that apply) at the project site that is reliably present during the wet season?

☒ Toilet and urinal flushing

☐ Landscape irrigation

☐ Other:____________

2. If there is a demand; estimate the anticipated average wet season demand over a period of 36 hours. Guidance for planning level demand calculations for toilet/urinal flushing and landscape irrigation is provided in Section B.3.2.

[Provide a summary of calculations here]

Total office space 471,491 SF = 10.82 Ac

1) Population office = 62.5 pop/net Ac

2) Total office population = 62.5 pop/Ac *10.82 Ac = 671 pop

3) Total 24 hr office demand = 671 pop * 7 gal/pop = 4,698 gal = 628 CF

4) 36 hr demand = 628 CF * 1.5 = 942 CF

5) Demand = 942 CF / 10,858 CF = 0.09

3. Calculate the DCV using worksheet B-2.1.

DCV = 8,144 (cubic feet)

3a. Is the 36 hour demand greater than or equal to the DCV? ☐ Yes / ☒ No ➡ ⬇	3b. Is the 36 hour demand greater than 0.25DCV but less than the full DCV? ☐ Yes / ☒ No ➡ ⬇	3c. Is the 36 hour demand less than 0.25DCV? ☒ Yes ⬇
Harvest and use appears to be feasible. Conduct more detailed evaluation and sizing calculations to confirm that DCV can be used at an adequate rate to meet drawdown criteria.	Harvest and use may be feasible. Conduct more detailed evaluation and sizing calculations to determine feasibility. Harvest and use may only be able to be used for a portion of the site, or (optionally) the storage may need to be upsized to meet long term capture targets while draining in longer than 36 hours.	Harvest and use is considered to be infeasible.

Is harvest and use feasible based on further evaluation?

☐ Yes, refer to Appendix E to select and size harvest and use BMPs.

☒ No, select alternate BMPs.

Table B.3-1. Toilet and Urinal Water Usage per Resident or Employee

Land Use Type	Toilet User Unit of Normalization	Per Capita Use per Day		Visitor Factor[4]	Water Efficiency Factor	Total Use per Resident or Employee
		Toilet Flushing[1,2]	Urinals[3]			
Residential	Resident	18.5	NA	NA	0.5	9.3
Office	Employee (non-visitor)	9.0	2.27	1.1	0.5	7 (avg)
Retail	Employee (non-visitor)	9.0	2.11	1.4	0.5	
Schools	Employee (non-student)	6.7	3.5	6.4	0.5	33
Various Industrial Uses (excludes process water)	Employee (non-visitor)	9.0	2	1	0.5	5.5

1- Based on American Waterworks Association Research Foundation,1999. Residential End Uses of Water. Denver, CO: AWWARF

2 - Based on use of 3.45 gallons per flush and average number of per employee flushes per subsector, Table D-1 for MWD (Pacific Institute, 2003)

3 - Based on use of 1.6 gallons per flush, Table D-4 and average number of per employee flushes per subsector, Appendix D (Pacific Institute, 2003)

4 - Multiplied by the demand for toilet and urinal flushing for the project to account for visitors. Based on proportion of annual use allocated to visitors and others (includes students for schools; about 5 students per employee) for each subsector in Table D-1 and D-4 (Pacific Institute, 2003)

5 – Accounts for requirements to use ultra low flush toilets in new development projects; assumed that requirements will reduce toilet and urinal flushing demand by half on average compared to literature estimates. Ultra low flush toilets are required in all new construction in California as of January 1, 1992. Ultra low flush toilets must use no more than 1.6 gallons per flush and Ultra low flush urinals must use no more than 1 gallon per flush. Note: If zero flush urinals are being used, adjust accordingly.

B.3.2.2 General Requirements for Irrigation Demand Calculations

The following guidelines should be followed for computing harvested water demand from landscape irrigation:

- If reclaimed water is planned for use for landscape irrigation, then the demand for harvested storm water should be reduced by the amount of reclaimed water that is available during the wet season.
- Irrigation rates should be based on the irrigation demand exerted by the types of landscaping that are proposed for the project, with consideration for water conservation requirements.
- Irrigation rates should be estimated to reflect the average wet season rates (defined as October through April) accounting for the effect of storm events in offsetting harvested water demand. In the absence of a detailed demand study, it should be assumed that irrigation demand is not present during days with greater than 0.1 inches of rain and the subsequent 3-day period. This irrigation shutdown period is consistent with standard practice in land application of wastewater and is applicable to storm water to prevent irrigation from resulting in dry weather runoff. Based on a statistical analysis of San Diego

TABLE 1-1
CITY OF SAN DIEGO SEWER DESIGN GUIDE DENSITY CONVERSIONS

Zone	Maximum Density (DU/Net Ac)	Population per DU	Equivalent Population (Pop/Net Ac)
AR-1-1, RE-1-1	0.1	3.5	0.4
RE-1-2	0.2	3.5	0.7
AR-1-2, RE-1-3	1	3.5	3.5
RS-1-1, RS-1-8	1	3.5	3.5
RS-1-2, RS-1-9	2	3.5	7.0
RS-1-3, RS-1-10	3	3.5	10.5
RS-1-4, RS-1-11	4	3.5	14.0
RS-1-5, RS-1-12	5	3.5	17.5
RS-1-6, RS-1-13	7	3.5	24.5
RS-1-7, RS-1-14	9	3.5	31.5
RX-1-1	11	3.4	37.4
RT-1-1	12	3.3	39.6
RX-1-2, RT-1-2, RU-1-1	14	3.2	44.8
RT-1-3, RM-1-2	17	3.1	52.7
RT-1-4	20	3.0	60.0
RM-1-3	22	3.0	66.0
RM-2-4	25	3.0	75.0
RM-2-5	29	3.0	87.0
RM-2-6	35	2.8	98.0
RM-3-7, RM-5-12	43	2.6	111.8
RM-3-8	54	2.4	129.6
RM-3-9	73	2.2	160.6
RM-4-10	109	1.8	196.2
RM-4-11	218	1.5	327.0

TABLE 1-1
CITY OF SAN DIEGO SEWER DESIGN GUIDE
DENSITY CONVERSIONS (Continued)

Zone	Maximum Density (DU / Net Ac)	Population Per DU	Equivalent Population (Pop/Net Ac)
Schools/Public	8.9	3.5	31.2
Offices	10.9	3.5	38.2*
Commercial/Hotels	12.5	3.5	43.7*
Industrial	17.9	3.5	62.5*
Hospital	42.9	3.5	150.0*

Figures with asterisk (*) represent equivalent population per floor of the building.

Definitions:
DU = Dwelling Units
Ac = Acreage
Pop = Population

Net Acreage is the developable lot area excluding areas that are dedicated as public streets in acres. Gross Area is the entire area in acres of the drainage basin, including lots, streets, etc.

For undeveloped areas, assume Net Acreage = 0.8 x Gross Area in Acres

For developed areas, calculate actual Net Acreage.

Tabulated figures are for general case. The tabulated figures shall not be used if more accurate figures are available.

Population is based on actual equivalent dwelling units (EDU) or the maximum estimate obtained from zoning.

Conversion of Fixture Units to Equivalent Dwelling Units (EDU): The Water Meter Data Card, maintained by the Development Services Department, contains a table of plumbing fixtures that should be used for determining the equivalent dwelling units (EDU's) for the purpose of estimating the rate of wastewater generation in residential, commercial, or industrial areas. Currently, the basis for conversion is: 20 fixtures = 1 EDU and 1 EDU = 280 gallons of wastewater per day.

In high rise building areas, flow rates shall be based on the most current, adopted edition of the applicable Plumbing Code, assuming one lateral per area. The most conservative flow rate shall govern.

<table>
<tr><th colspan="2">Categorization of Infiltration Feasibility Condition</th><th colspan="2">Form I-8</th></tr>
<tr><td colspan="4">Part 1 - Full Infiltration Feasibility Screening Criteria
Would infiltration of the full design volume be feasible from a physical perspective without any undesirable consequences that cannot be reasonably mitigated?</td></tr>
<tr><td>Criteria</td><td>Screening Question</td><td>Yes</td><td>No</td></tr>
<tr><td>1</td><td>Is the estimated reliable infiltration rate below proposed facility locations greater than 0.5 inches per hour? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.</td><td>☐</td><td>☐</td></tr>
<tr><td colspan="4">Provide basis:

An infiltration feasibility condition screening is deferred for this project until the Ministerial Permit Review because the project proposes biofiltration basins with impermeable liners sized so that the required fraction of DCV retained of 0.325 (Line 30 of Worksheet B.5-1) is achieved. In previous coordination with City Engineering Review Staff, this course of action was deemed allowable.</td></tr>
<tr><td>2</td><td>Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.</td><td>☐</td><td>☐</td></tr>
<tr><td colspan="4">Provide basis:

An infiltration feasibility condition screening is deferred for this project until the Ministerial Permit Review because the project proposes biofiltration basins with impermeable liners sized so that the required fraction of DCV retained of 0.325 (Line 30 of Worksheet B.5-1) is achieved. In previous coordination with City Engineering Review Staff, this course of action was deemed allowable.</td></tr>
</table>

<table>
<tr><th colspan="4">Form I-8 Page 2 of 4</th></tr>
<tr><td>Criteria</td><td>Screening Question</td><td>Yes</td><td>No</td></tr>
<tr><td>3</td><td>Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of groundwater contamination (shallow water table, storm water pollutants or other factors) that cannot be mitigated to an acceptable level? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.</td><td>☐</td><td>☐</td></tr>
<tr><td colspan="4">Provide basis:

An infiltration feasibility condition screening is deferred for this project until the Ministerial Permit Review because the project proposes biofiltration basins with impermeable liners sized so that the required fraction of DCV retained of 0.325 (Line 30 of Worksheet B.5-1) is achieved. In previous coordination with City Engineering Review Staff, this course of action was deemed allowable.</td></tr>
<tr><td>4</td><td>Can infiltration greater than 0.5 inches per hour be allowed without causing potential water balance issues such as change of seasonality of ephemeral streams or increased discharge of contaminated groundwater to surface waters? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.</td><td>☐</td><td>☐</td></tr>
<tr><td colspan="4">Provide basis:

An infiltration feasibility condition screening is deferred for this project until the Ministerial Permit Review because the project proposes biofiltration basins with impermeable liners sized so that the required fraction of DCV retained of 0.325 (Line 30 of Worksheet B.5-1) is achieved. In previous coordination with City Engineering Review Staff, this course of action was deemed allowable.</td></tr>
<tr><td rowspan="2">Part 1 Result*</td><td colspan="2">If all answers to rows 1 - 4 are “Yes” a full infiltration design is potentially feasible. The feasibility screening category is Full Infiltration</td><td>☐</td></tr>
<tr><td colspan="2">If any answer from row 1-4 is “No”, infiltration may be possible to some extent but would not generally be feasible or desirable to achieve a “full infiltration” design. Proceed to Part 2</td><td>☒</td></tr>
</table>

Form I-8 Page 3 of 4

Part 2 – Partial Infiltration vs. No Infiltration Feasibility Screening Criteria
Would infiltration of water in any appreciable amount be physically feasible without any negative consequences that cannot be reasonably mitigated?

Criteria	Screening Question	Yes	No
5	Do soil and geologic conditions allow for infiltration in any appreciable rate or volume? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.	☐	☐

Provide basis:

An infiltration feasibility condition screening is deferred for this project until the Ministerial Permit Review because the project proposes biofiltration basins with impermeable liners sized so that the required fraction of DCV retained of 0.325 (Line 30 of Worksheet B.5-1) is achieved. In previous coordination with City Engineering Review Staff, this course of action was deemed allowable.

Criteria	Screening Question	Yes	No
6	Can Infiltration in any appreciable quantity be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.	☐	☐

Provide basis:

An infiltration feasibility condition screening is deferred for this project until the Ministerial Permit Review because the project proposes biofiltration basins with impermeable liners sized so that the required fraction of DCV retained of 0.325 (Line 30 of Worksheet B.5-1) is achieved. In previous coordination with City Engineering Review Staff, this course of action was deemed allowable.

Form I-8 Page 4 of 4

Criteria	Screening Question	Yes	No
7	Can Infiltration in any appreciable quantity be allowed without posing significant risk for groundwater related concerns (shallow water table, storm water pollutants or other factors)? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	☐	☐
Provide basis: An infiltration feasibility condition screening is deferred for this project until the Ministerial Permit Review because the project proposes biofiltration basins with impermeable liners sized so that the required fraction of DCV retained of 0.325 (Line 30 of Worksheet B.5-1) is achieved. In previous coordination with City Engineering Review Staff, this course of action was deemed allowable.			
8	Can infiltration be allowed without violating downstream water rights? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	☐	☐
Provide basis: An infiltration feasibility condition screening is deferred for this project until the Ministerial Permit Review because the project proposes biofiltration basins with impermeable liners sized so that the required fraction of DCV retained of 0.325 (Line 30 of Worksheet B.5-1) is achieved. In previous coordination with City Engineering Review Staff, this course of action was deemed allowable.			
Part 2 Result*	If all answers from row 1-4 are yes then partial infiltration design is potentially feasible. The feasibility screening category is Partial Infiltration.		☐
	If any answer from row 5-8 is no, then infiltration of any volume is considered to be infeasible within the drainage area. The feasibility screening category is No Infiltration.		☐

SITE DCV FOR HARVEST AND USE ANALYSIS

Design Capture Volume		**Worksheet B.2-1**		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.53	inches
2	Area tributary to BMP (s)	A=	8.3	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.68	unitless
4	Trees Credit Volume	TCV=	0	cubic-feet
5	Rain barrels Credit Volume	RCV=	0	cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=	10,858	cubic-feet

1) Area Weighted Runoff Factor

Surfaces	Area(ac)	Factor
Roof & PCC	5.8	0.9
Landscape	0.9	0.3
Mulched Soils	1.6	0.1

C=[(5.8 * 0.9) + (0.9 * 0.3) + (1.6 * 0.1)] / (8.3) = 0.68

2) Design Capture Volume without Tree or Rain Barrels Credit Volumes

DCV = (3630 * 0.68 * 0.53 * 8.3) = 10,858 CF

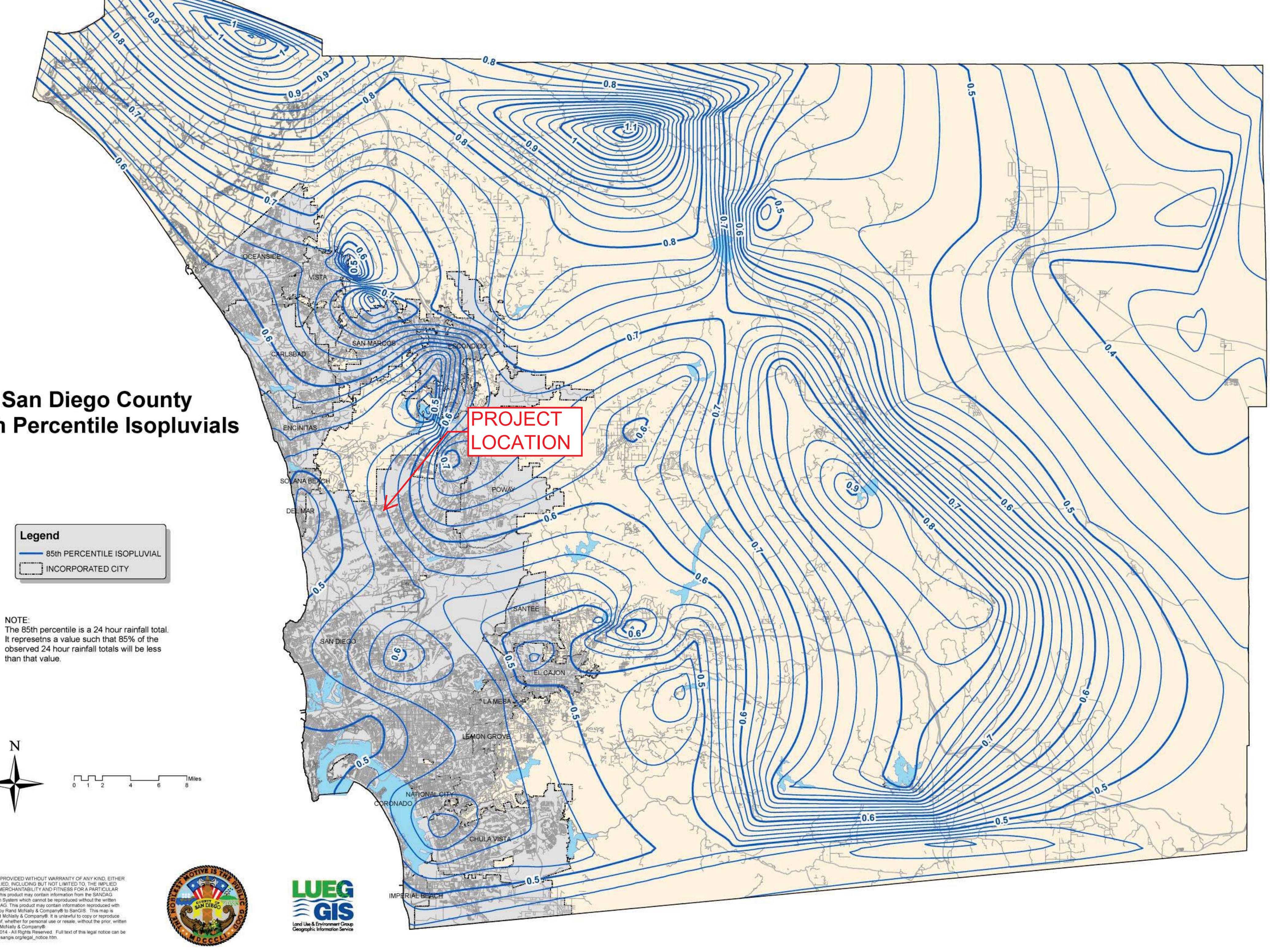


Figure B.1-1: 85th Percentile 24-hour Isopluvial Map

B.1.1 Runoff Factor

Estimate the area weighted runoff factor for the tributary area to the BMP using runoff factor (from Table B.1-1) and area of each surface type in the tributary area and the following equation.

Equation B.1-2: Estimating Runoff Factor for Area

$$C = \frac{\sum C_x A_x}{\sum A_x}$$

where:

C_x = Runoff factor for area X

A_x = Tributary area X (acres)

These runoff factors apply to areas receiving direct rainfall only. For conditions in which runoff is routed onto a surface from an adjacent surface, see Section B.2 for determining composite runoff factors for these areas.

Table B.1-1: Runoff factors for surfaces draining to BMPs – Pollutant Control BMPs

Surface	Runoff Factor
Roofs[1]	0.90
Concrete or Asphalt[1]	0.90
Unit Pavers (grouted)[1]	0.90
Decomposed Granite	0.30
Cobbles or Crushed Aggregate	0.30
Amended, Mulched Soils or Landscape[2]	0.10
Compacted Soil (e.g., unpaved parking)	0.30
Natural (A Soil)	0.10
Natural (B Soil)	0.14
Natural (C Soil)	0.23
Natural (D Soil)	0.30

[1] Surface is considered impervious and could benefit from use of Site Design BMPs and adjustment of the runoff factor per Section B.2.1.

[2] Surface shall be designed in accordance with SD-4 (Amended soils) fact sheet in Appendix E

BMP-1 DCV

Worksheet B.2-1 DCV

Design Capture Volume		Worksheet B.2-1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.53	inches
2	Area tributary to BMP (s)	A=	2.9	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.62	unitless
4	Trees Credit Volume	TCV=	0	cubic-feet
5	Rain barrels Credit Volume	RCV=	0	cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=	3,459	cubic-feet

1) Area Weighted Runoff Factor

Surfaces	Area(ac)	Factor
Roof & PCC	1.8	0.9
Landscape	0.3	0.3
Mulched Soils	0.8	0.1

C=[(1.8 * 0.9) + (0.3 * 0.3) + (0.8 * 0.1)] / (2.9) = 0.62

2) Design Capture Volume without Tree or Rain Barrels Credit Volumes

DCV = (3630 * 0.62 * 0.53 * 2.9) = 3,459 CF

BMP-1 MEDIA FILTRATION RATE

1) BMP controlled discharge rate Q = 0.351 CFS

2) BMP footprint S = 5,615 SF

3) Media filtration rate

R = (Q/S) * 12 (in/ft) * 3600 (sec/min) = 2.7 in/hr

Worksheet B.5-1: Simple Sizing Method for Biofiltration BMPs
BMP-1 (DMA-1 & DMA-2)

Simple Sizing Method for Biofiltration BMPs		Worksheet B.5-1 (Page 1 of 2)	
1	Remaining DCV after implementing retention BMPs	3,459	cubic-feet
Partial Retention			
2	Infiltration rate from Worksheet D.5-1 if partial infiltration is feasible	0	in/hr.
3	Allowable drawdown time for aggregate storage below the underdrain	36	hours
4	Depth of runoff that can be infiltrated [Line 2 x Line 3]	0	inches
5	Aggregate pore space	0.40	in/in
6	Required depth of gravel below the underdrain [Line 4/ Line 5]	0	inches
7	Assumed surface area of the biofiltration BMP	5,615	sq-ft
8	Media retained pore storage	0.1	in/in
9	Volume retained by BMP [[Line 4 + (Line 12 x Line 8)]/12] x Line 7	1,123	cubic-feet
10	DCV that requires biofiltration [Line 1 – Line 9]	2,336	cubic-feet
BMP Parameters			
11	Surface Ponding [6 inch minimum, 12 inch maximum]	10	inches
12	Media Thickness [18 inches minimum], also add mulch layer thickness to this line for sizing calculations	24	inches
13	Aggregate Storage above underdrain invert (12 inches typical) – use 0 inches for sizing if the aggregate is not over the entire bottom surface area	12	inches
14	Freely drained pore storage	0.2	in/in
15	Media filtration rate to be used for sizing (5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate which will be less than 5 in/hr.)	2.7	in/hr.
Baseline Calculations			
16	Allowable Routing Time for sizing	6	hours
17	Depth filtered during storm [Line 15 x Line 16]	16.2	inches
18	Depth of Detention Storage [Line 11 + (Line 12 x Line 14) + (Line 13 x Line 5)]	19.6	inches
19	Total Depth Treated [Line 17 + Line 18]	35.8	inches

Note: Line 7 is used to estimate the amount of volume retained by the BMP. Update assumed surface area in Line 7 until its equivalent to the required biofiltration footprint (either Line 21 or Line 23)

Worksheet B.5-1: Simple Sizing Method for Biofiltration BMPs

BMP-1 (DMA-1 & DMA-2)

Simple Sizing Method for Biofiltration BMPs		**Worksheet B.5-1 (Page 2 of 2)**	
Option 1 – Biofilter 1.5 times the DCV			
20	Required biofiltered volume [1.5 x Line 10]	3,504	cubic- feet
21	Required Footprint [Line 20/ Line 19] x 12	1,175	sq-ft
Option 2 - Store 0.75 of remaining DCV in pores and ponding			
22	Required Storage (surface + pores) Volume [0.75 x Line 10]	1,752	cubic- feet
23	Required Footprint [Line 22/ Line 18] x 12	1,073	sq-ft
Footprint of the BMP			
24	Area draining to the BMP	125,432	sq-ft
25	Adjusted Runoff Factor for drainage area (Refer to Appendix B.1 and B.2)	0.9	
26	BMP Footprint Sizing Factor (Default 0.03 or an alternative minimum footprint sizing factor from Worksheet B.5-2, Line 11)	0.03	
27	Minimum BMP Footprint [Line 24 x Line 25 x Line 26]	3,387	sq-ft
28	Footprint of the BMP = Maximum(Minimum(Line 21, Line 23), Line 27)	5,615	sq-ft
Check for Volume Reduction [Not applicable for No Infiltration Condition]			
29	Calculate the fraction of DCV retained in the BMP [Line 9/Line 1]	0.325	unitless
30	Minimum required fraction of DCV retained for partial infiltration condition	0.325	unitless
31	Is the retained DCV ≥ 0.325? If the answer is no increase the footprint sizing factor in Line 26 until the answer is yes for this criterion.	☑ Yes	☐ No

Note:

1. Line 7 is used to estimate the amount of volume retained by the BMP. Update assumed surface area in Line 7 until its equivalent to the required biofiltration footprint (either Line 21 or Line 23)
2. The DCV fraction of 0.325 is based on a 40% average annual percent capture and a 36-hour drawdown time.
3. The increase in footprint for volume reduction can be optimized using the approach presented in Appendix B.5.2. The optimized footprint cannot be smaller than the alternative minimum footprint sizing factor from Worksheet B.5.2.
4. If the proposed biofiltration BMP footprint is smaller than the alternative minimum footprint sizing factor from Worksheet B.5-2, but satisfies Option 1 or Option 2 sizing, it is considered a compact biofiltration BMP and may be allowed at the discretion of the City Engineer, if it meets the requirements in Appendix F.

BMP-2 DCV

Worksheet B.2-1 DCV

	Design Capture Volume	Worksheet B.2-1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.53	inches
2	Area tributary to BMP (s)	A=	3.1	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.72	unitless
4	Trees Credit Volume	TCV=	0	cubic-feet
5	Rain barrels Credit Volume	RCV=	0	cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=	3,757	cubic-feet

1) Area Weighted Runoff Factor

Surfaces	Area(ac)	Factor
Roof & PCC	1.9	0.9
Landscape	0.6	0.3
Mulched Soils	0.6	0.1

C=[(1.9 * 0.9) + (0.6 * 0.3) + (0.6 * 0.1)] / (3.1) = 0.63

2) Design Capture Volume without Tree or Rain Barrels Credit Volumes

DCV = (3630 * 0.63 * 0.53 * 3.1) = 3,757 CF

BMP-2 MEDIA FILTRATION RATE

1) BMP controlled discharge rate Q = 0.377 CFS

2) BMP footprint S = 6,100 SF

3) Media filtration rate

R = (Q/S) * 12 (in/ft) * 3600 (sec/min) = 2.7 in/hr

Worksheet B.5-1: Simple Sizing Method for Biofiltration BMPs

BMP-2 (DMA-3)

Simple Sizing Method for Biofiltration BMPs		**Worksheet B.5-1 (Page 1 of 2)**	
1	Remaining DCV after implementing retention BMPs	3,757	cubic-feet
Partial Retention			
2	Infiltration rate from Worksheet D.5-1 if partial infiltration is feasible	0	in/hr.
3	Allowable drawdown time for aggregate storage below the underdrain	36	hours
4	Depth of runoff that can be infiltrated [Line 2 x Line 3]	0	inches
5	Aggregate pore space	0.40	in/in
6	Required depth of gravel below the underdrain [Line 4/ Line 5]	0	inches
7	Assumed surface area of the biofiltration BMP	6,100	sq-ft
8	Media retained pore storage	0.1	in/in
9	Volume retained by BMP [[Line 4 + (Line 12 x Line 8)]/12] x Line 7	1,220	cubic-feet
10	DCV that requires biofiltration [Line 1 – Line 9]	2,537	cubic-feet
BMP Parameters			
11	Surface Ponding [6 inch minimum, 12 inch maximum]	10	inches
12	Media Thickness [18 inches minimum], also add mulch layer thickness to this line for sizing calculations	24	inches
13	Aggregate Storage above underdrain invert (12 inches typical) – use 0 inches for sizing if the aggregate is not over the entire bottom surface area	12	inches
14	Freely drained pore storage	0.2	in/in
15	Media filtration rate to be used for sizing (5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate which will be less than 5 in/hr.)	2.7	in/hr.
Baseline Calculations			
16	Allowable Routing Time for sizing	6	hours
17	Depth filtered during storm [Line 15 x Line 16]	16.2	inches
18	Depth of Detention Storage [Line 11 + (Line 12 x Line 14) + (Line 13 x Line 5)]	19.6	inches
19	Total Depth Treated [Line 17 + Line 18]	35.8	inches

Note: Line 7 is used to estimate the amount of volume retained by the BMP. Update assumed surface area in Line 7 until its equivalent to the required biofiltration footprint (either Line 21 or Line 23)

Worksheet B.5-1: Simple Sizing Method for Biofiltration BMPs

BMP-2 (DMA-3)

Simple Sizing Method for Biofiltration BMPs		Worksheet B.5-1 (Page 2 of 2)	
Option 1 – Biofilter 1.5 times the DCV			
20	Required biofiltered volume [1.5 x Line 10]	3,806	cubic- feet
21	Required Footprint [Line 20/ Line 19] x 12	1,276	sq-ft
Option 2 - Store 0.75 of remaining DCV in pores and ponding			
22	Required Storage (surface + pores) Volume [0.75 x Line 10]	1,903	cubic- feet
23	Required Footprint [Line 22/ Line 18] x 12	1,165	sq-ft
Footprint of the BMP			
24	Area draining to the BMP	134,584	sq-ft
25	Adjusted Runoff Factor for drainage area (Refer to Appendix B.1 and B.2)	0.9	
26	BMP Footprint Sizing Factor (Default 0.03 or an alternative minimum footprint sizing factor from Worksheet B.5-2, Line 11)	0.03	
27	Minimum BMP Footprint [Line 24 x Line 25 x Line 26]	3,634	sq-ft
28	Footprint of the BMP = Maximum(Minimum(Line 21, Line 23), Line 27)	6,100	sq-ft
Check for Volume Reduction [Not applicable for No Infiltration Condition]			
29	Calculate the fraction of DCV retained in the BMP [Line 9/Line 1]	0.325	unitless
30	Minimum required fraction of DCV retained for partial infiltration condition	0.325	unitless
31	Is the retained DCV ≥ 0.325? If the answer is no increase the footprint sizing factor in Line 26 until the answer is yes for this criterion.	☑ Yes	☐ No

Note:

1. Line 7 is used to estimate the amount of volume retained by the BMP. Update assumed surface area in Line 7 until its equivalent to the required biofiltration footprint (either Line 21 or Line 23)
2. The DCV fraction of 0.325 is based on a 40% average annual percent capture and a 36-hour drawdown time.
3. The increase in footprint for volume reduction can be optimized using the approach presented in Appendix B.5.2. The optimized footprint cannot be smaller than the alternative minimum footprint sizing factor from Worksheet B.5.2.
4. If the proposed biofiltration BMP footprint is smaller than the alternative minimum footprint sizing factor from Worksheet B.5-2, but satisfies Option 1 or Option 2 sizing, it is considered a compact biofiltration BMP and may be allowed at the discretion of the City Engineer, if it meets the requirements in Appendix F.

BMP-3 DCV

Worksheet B.2-1 DCV

Design Capture Volume		**Worksheet B.2-1**		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.53	inches
2	Area tributary to BMP (s)	A=	2.3	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.72	unitless
4	Trees Credit Volume	TCV=	0	cubic-feet
5	Rain barrels Credit Volume	RCV=	0	cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=	3,673	cubic-feet

1) Area Weighted Runoff Factor

Surfaces	Area(ac)	Factor
Roof & PCC	2.1	0.9
Mulched Soils	0.2	0.1

C=[(2.1 * 0.9) + (0.2 * 0.1)] / (2.3) = 0.83

2) Design Capture Volume without Tree or Rain Barrels Credit Volumes

DCV = (3630 * 0.83 * 0.53 * 2.3) = 3,673 CF

BMP-3 MEDIA FILTRATION RATE

1) BMP controlled discharge rate Q = 0.283 CFS

2) BMP footprint S = 5,975 SF

3) Media filtration rate

R = (Q/S) * 12 (in/ft) * 3600 (sec/min) = 2.1 in/hr

Worksheet B.5-1: Simple Sizing Method for Biofiltration BMPs
BMP-3 (DMA-4 & DMA-5)

Simple Sizing Method for Biofiltration BMPs		Worksheet B.5-1 (Page 1 of 2)	
1	Remaining DCV after implementing retention BMPs	3,673	cubic-feet
Partial Retention			
2	Infiltration rate from Worksheet D.5-1 if partial infiltration is feasible	0	in/hr.
3	Allowable drawdown time for aggregate storage below the underdrain	36	hours
4	Depth of runoff that can be infiltrated [Line 2 x Line 3]	0	inches
5	Aggregate pore space	0.40	in/in
6	Required depth of gravel below the underdrain [Line 4/ Line 5]	0	inches
7	Assumed surface area of the biofiltration BMP	5,975	sq-ft
8	Media retained pore storage	0.1	in/in
9	Volume retained by BMP [[Line 4 + (Line 12 x Line 8)]/12] x Line 7	1,195	cubic-feet
10	DCV that requires biofiltration [Line 1 – Line 9]	2,478	cubic-feet
BMP Parameters			
11	Surface Ponding [6 inch minimum, 12 inch maximum]	10	inches
12	Media Thickness [18 inches minimum], also add mulch layer thickness to this line for sizing calculations	24	inches
13	Aggregate Storage above underdrain invert (12 inches typical) – use 0 inches for sizing if the aggregate is not over the entire bottom surface area	12	inches
14	Freely drained pore storage	0.2	in/in
15	Media filtration rate to be used for sizing (5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate which will be less than 5 in/hr.)	2.1	in/hr.
Baseline Calculations			
16	Allowable Routing Time for sizing	6	hours
17	Depth filtered during storm [Line 15 x Line 16]	12.6	inches
18	Depth of Detention Storage [Line 11 + (Line 12 x Line 14) + (Line 13 x Line 5)]	19.6	inches
19	Total Depth Treated [Line 17 + Line 18]	32.2	inches

Note: Line 7 is used to estimate the amount of volume retained by the BMP. Update assumed surface area in Line 7 until its equivalent to the required biofiltration footprint (either Line 21 or Line 23)

Worksheet B.5-1: Simple Sizing Method for Biofiltration BMPs

BMP-3 (DMA-4 & DMA-5)

Simple Sizing Method for Biofiltration BMPs		Worksheet B.5-1 (Page 2 of 2)	
Option 1 – Biofilter 1.5 times the DCV			
20	Required biofiltered volume [1.5 x Line 10]	3,717	cubic- feet
21	Required Footprint [Line 20/ Line 19] x 12	1,385	sq-ft
Option 2 - Store 0.75 of remaining DCV in pores and ponding			
22	Required Storage (surface + pores) Volume [0.75 x Line 10]	1,859	cubic- feet
23	Required Footprint [Line 22/ Line 18] x 12	1,138	sq-ft
Footprint of the BMP			
24	Area draining to the BMP	101,088	sq-ft
25	Adjusted Runoff Factor for drainage area (Refer to Appendix B.1 and B.2)	0.9	
26	BMP Footprint Sizing Factor (Default 0.03 or an alternative minimum footprint sizing factor from Worksheet B.5-2, Line 11)	0.03	
27	Minimum BMP Footprint [Line 24 x Line 25 x Line 26]	2,729	sq-ft
28	Footprint of the BMP = Maximum(Minimum(Line 21, Line 23), Line 27)	5,975	sq-ft
Check for Volume Reduction [Not applicable for No Infiltration Condition]			
29	Calculate the fraction of DCV retained in the BMP [Line 9/Line 1]	0.325	unitless
30	Minimum required fraction of DCV retained for partial infiltration condition	0.325	unitless
31	Is the retained DCV ≥ 0.325? If the answer is no increase the footprint sizing factor in Line 26 until the answer is yes for this criterion.	☑ Yes	☐ No

Note:

1. Line 7 is used to estimate the amount of volume retained by the BMP. Update assumed surface area in Line 7 until its equivalent to the required biofiltration footprint (either Line 21 or Line 23)

2. The DCV fraction of 0.325 is based on a 40% average annual percent capture and a 36-hour drawdown time.

3. The increase in footprint for volume reduction can be optimized using the approach presented in Appendix B.5.2. The optimized footprint cannot be smaller than the alternative minimum footprint sizing factor from Worksheet B.5.2.

4. If the proposed biofiltration BMP footprint is smaller than the alternative minimum footprint sizing factor from Worksheet B.5-2, but satisfies Option 1 or Option 2 sizing, it is considered a compact biofiltration BMP and may be allowed at the discretion of the City Engineer, if it meets the requirements in Appendix F.

Attachment 2

Backup for PDP Hydromodification Control Measures

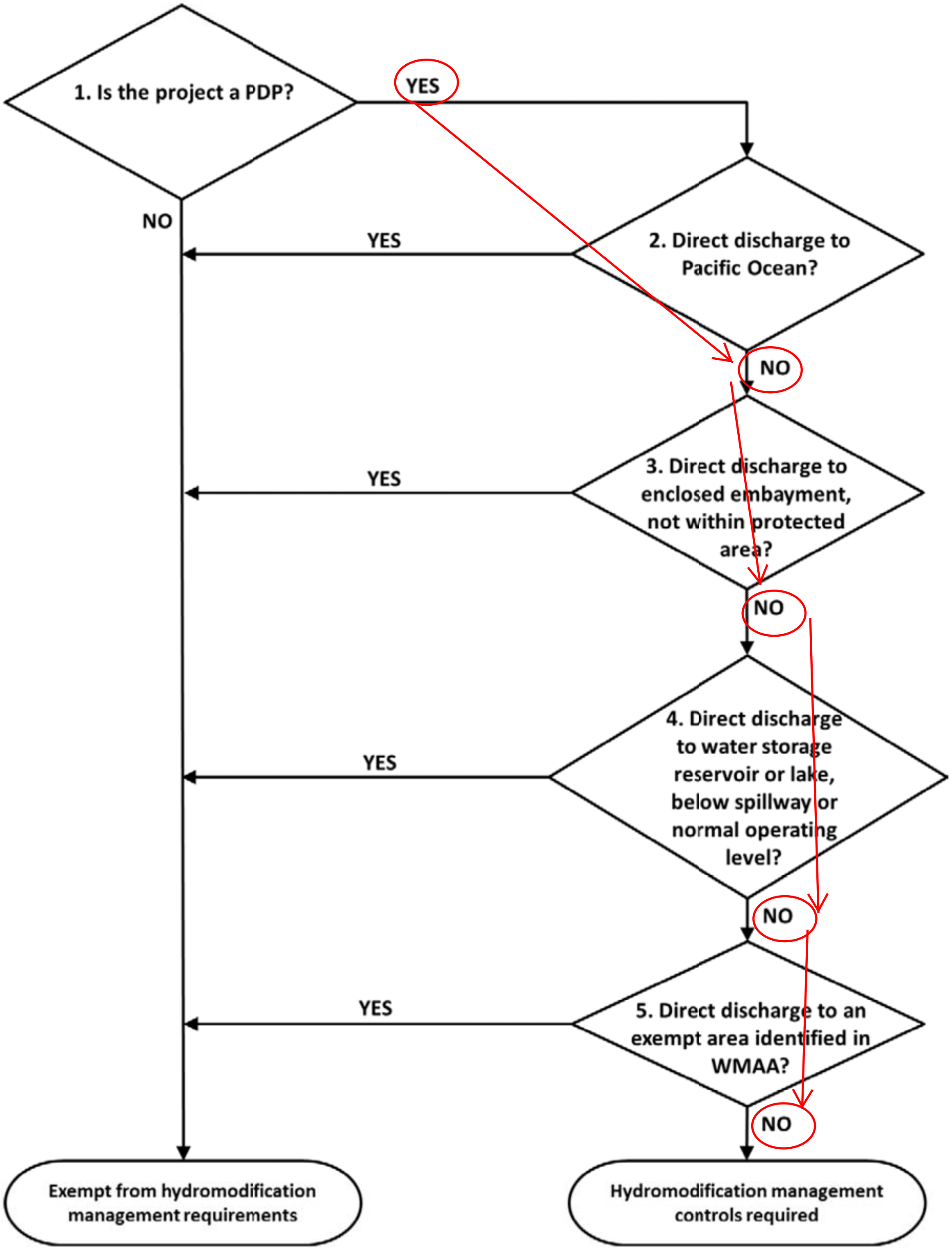
☐ Mark this box if this attachment is empty because the project is exempt from PDP hydromodification management requirements.

Items included in this attachment:

Attachment Sequence	Contents	Checklist
Attachment 2a	**Hydromodification management exhibit (Required)**	☒ **Included** **See hydromodification management exhibit Checklist.**
Attachment 2b	Management of critical coarse sediment yield areas (WMAA Exhibit is required, additional analyses are optional) See Section 6.2 of the BMP Design Manual.	☒ Exhibit showing project drainage boundaries marked on WMAA critical coarse sediment yield area map (Required) Optional analyses for critical coarse sediment yield area determination ☐ 6.2.1 Verification of geomorphic landscape units onsite ☐ 6.2.2 Downstream systems sensitivity to coarse sediment ☐ 6.2.3 Optional additional analysis of potential critical coarse sediment yield areas onsite
Attachment 2c	**Geomorphic assessment of receiving channels (Optional)** **See section 6.3.4 of the BMP design manual.**	☐ **Not performed** ☒ **Included** ☐ **Submitted as a separate stand-alone document**
Attachment 2d	Flow control facility design and structural BMP drawdown calculations (Required) Overflow design summary for each structural BMP See Chapter 6 and Appendix G of the BMP Design Manual	☒ Included ☐ Submitted as a separate stand-alone document
Attachment 2e	**Vector Control Plan** **(Required when structural BMPs will not drain in 96 hours)**	☐ **Included** ☒ **Not required because BMPs will drain in less than 96 hours**

The Hydromodification Management Exhibit must identify:

☐ Underlying hydrologic soil group
☐ Approximate depth to groundwater
☐ Existing natural hydrologic features (watercourses, seeps, springs, wetlands)
☐ Critical coarse sediment yield areas to be protected
☐ Existing topography
☐ Existing and proposed site drainage network and connections to drainage offsite
☐ Proposed grading
☐ Proposed impervious features
☐ Proposed design features and surface treatments used to minimize imperviousness
☐ Point(s) of Compliance (POC) for Hydromodification Management
☐ Existing and proposed drainage boundary and drainage area to each POC (when necessary, create separate exhibits for pre-development and post-project conditions)
☐ Structural BMPs for hydromodification management (identify location, type of BMP, and size/detail)



*Direct discharge refers to an uninterrupted hardened conveyance system; Note to be used in conjunction with Node Descriptions.

Figure 1-2. Applicability of Hydromodification Management BMP Requirements

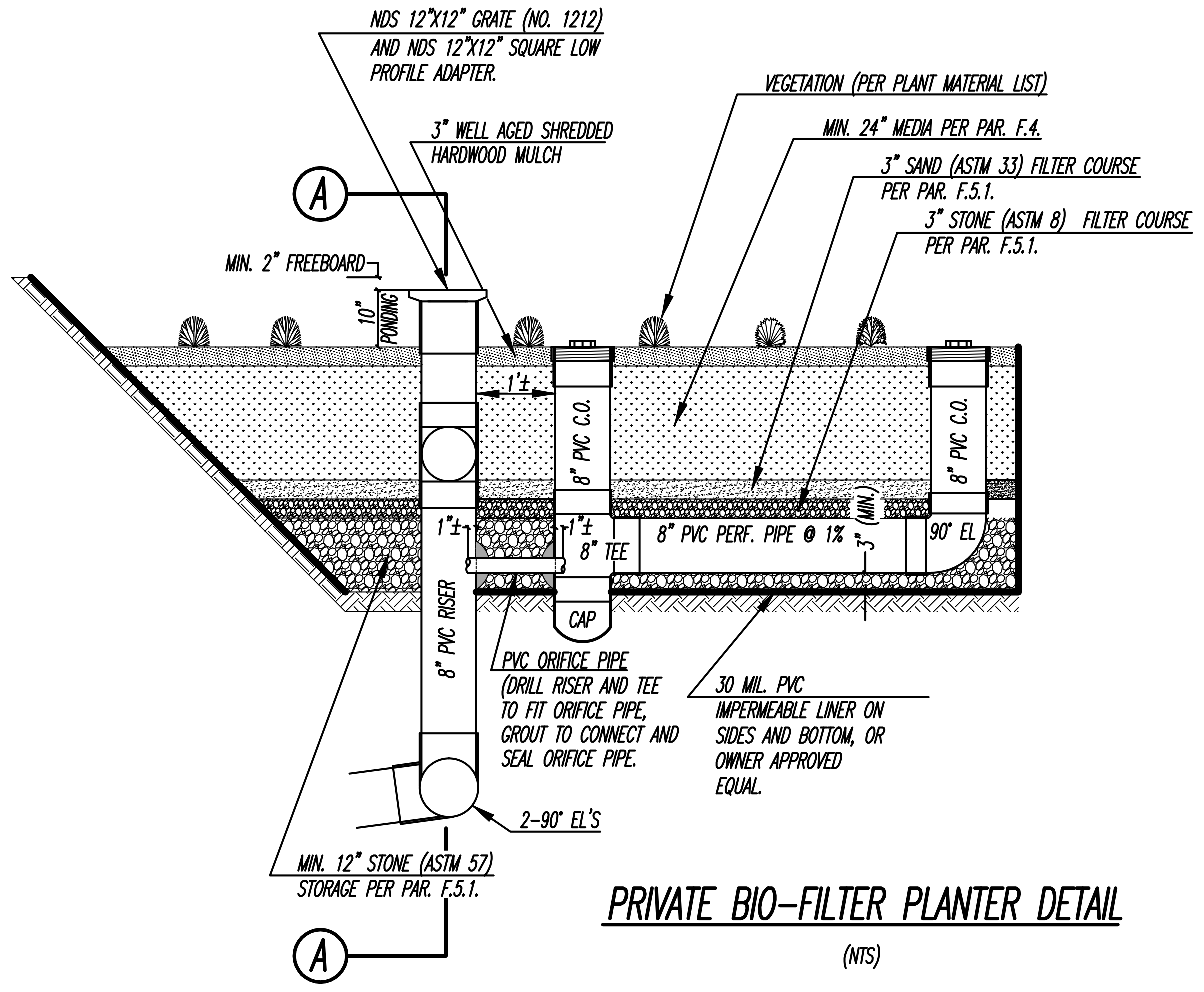
LEGEND

SUBDIVISION BOUNDARY — - - ——— - - —
DMA–# DMA–#
DMA LIMITS ▬ ▬ ▬ ▬
PROPOSED STORM DRAIN ═ ═ ═ ═
EXISTING STORM DRAIN ═ ═ ═ ═

PROPOSED PERVIOUS 🟩
PROPOSED IMPERVIOUS 🟥

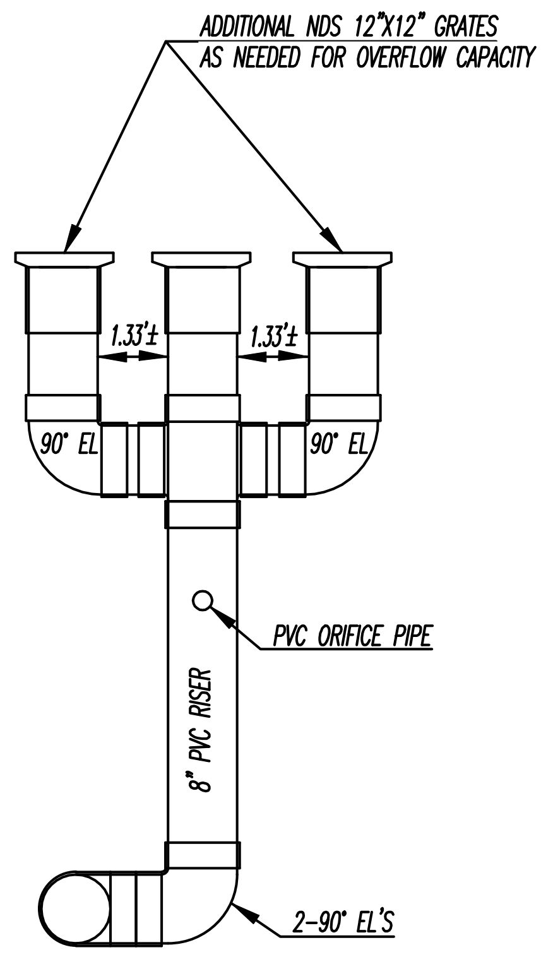
GEOTECHNICAL LEGEND

Qc	........COLLOVIUM
Qt	........TERRACE DEPOSITS
Tst	........STADIUM CONGLOMERATE
Tf	........FRIARS FORMATION
- - - - - - - -	........APPROX. LOCATION OF GEOLOGIC CONTACT



PRIVATE BIO–FILTER PLANTER DETAIL

(NTS)



SECTION A–A

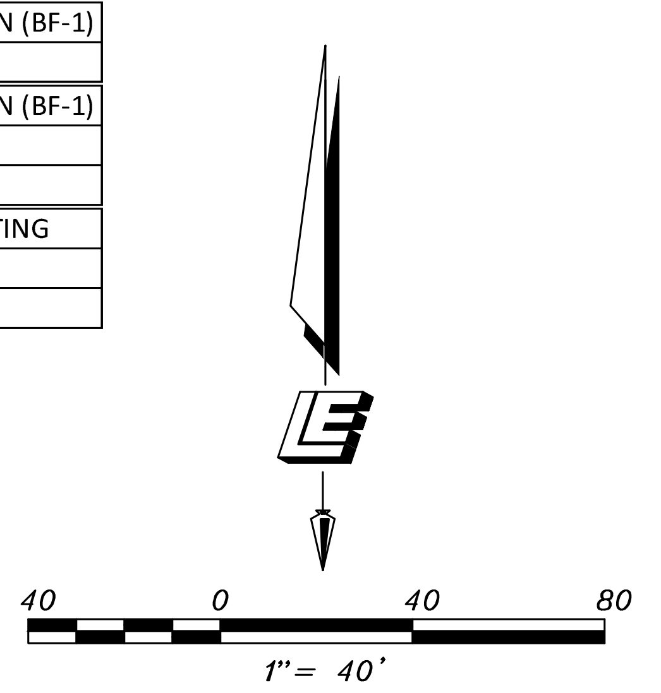
(NTS)

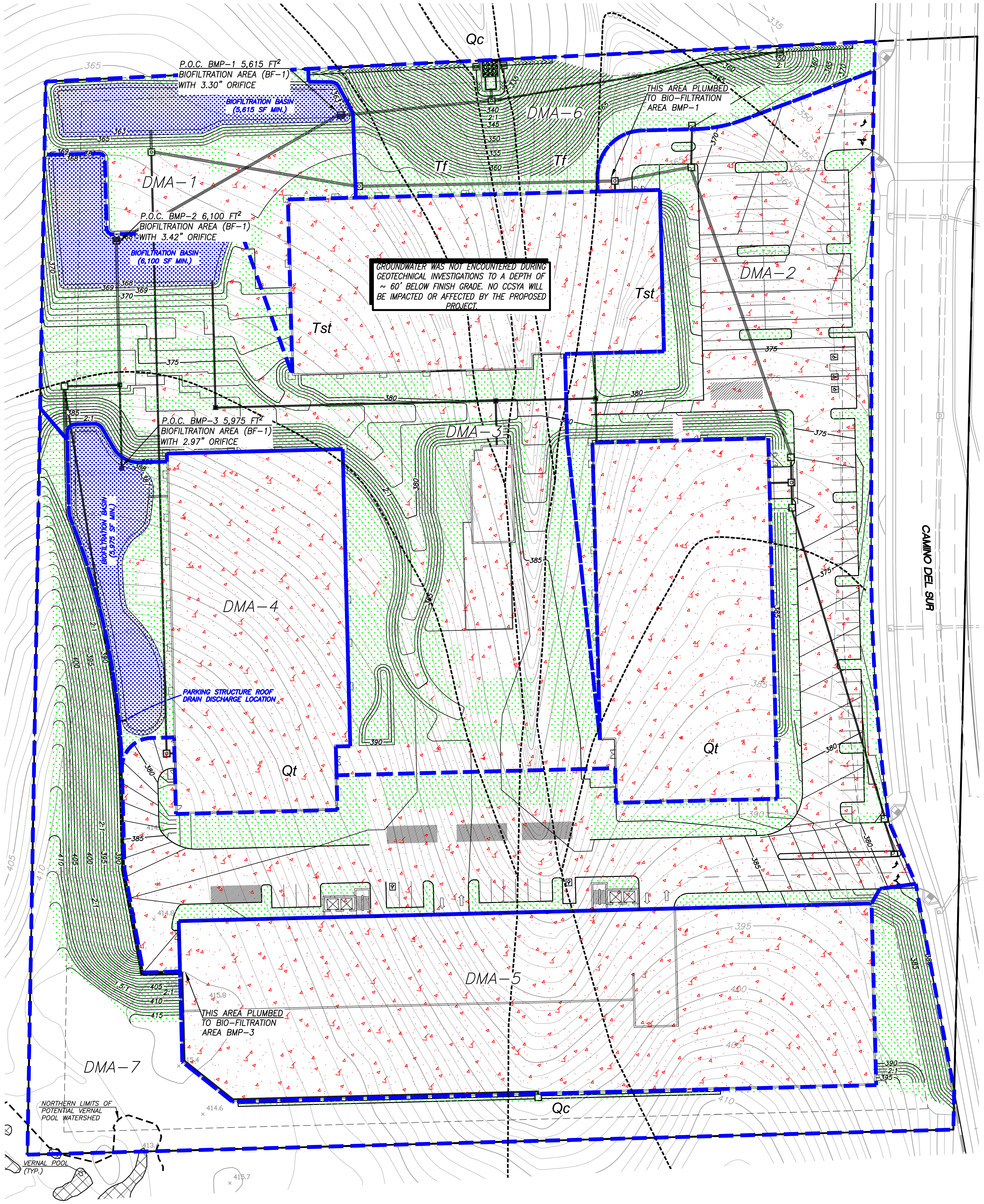
DMA SUMMARY (DISTURBED AREA ONLY)								
BMP-#	DMA -#	AREA (SF)	ACRE	IMP. (SF)	PERV. (SF)	SOIL	SLOPE	TREATMENT
BMP-1								BIO-FILTRATION (BF-1)
	DMA-1	20,447		6,889	13,558	D	≤ 5% AVG.	
	DMA-2	104,985		71,540	33,445	D	≤ 5% AVG.	
BMP-2								BIO-FILTRATION (BF-1)
	DMA-3	134,584		83,940	50,644	D	≤ 5% AVG.	
BMP-3								BIO-FILTRATION (BF-1)
	DMA-4	48,011		37,708	10,303	D	≤ 5% AVG.	
	DMA-5	60,077		60,077	0	D	≤ 5% AVG.	
N/A								SELF-TREATING
	DMA-6	24,950		0	24,950	D	≥ 15% AVG.	
	DMA-7	19,149		0	19,149	D	≥ 15% AVG.	

PERVIOUS VS. IMPERVIOUS:

EXISTING (DISTURBED AREA ONLY):
PERVIOUS: 412,473 SF
IMPERVIOUS: 0 SF

PROPOSED (DISTURBED AREA ONLY):
PERVIOUS: 159,319 SF
IMPERVIOUS: 253,154 SF





6				12			
5	09/28/2016	MFD	RESUBMITTAL 4	11			
4	06/22/2016	RL	RESUBMITTAL 3	10			
3	03/31/2016	MFD	RESUBMITTAL 2	9			
2	11/13/2015	RL	RESUBMITTAL 1	8			
1	08/01/2015	MFD	ORIGINAL	7			
NO.	DATE	BY	DESCRIPTION	NO.	DATE	BY	DESCRIPTION

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APPROVED BY ENGINEER OF WORK
REGISTRATION R C E 26283
FILE CODE TH 06.07–13.15
DATE

PREPARATION AND REVISION LOG

HMP PLAN – PROPOSED CONDITION
SHEET 1 OF 1
THE PRESERVE AT TORREY HIGHLANDS


Torrey Santa Fe Rd
Camino Del Sur
Sierra Ct
Sundance Ave
56
Abing Ave
Potential Critical Coarse Sediment Yield Areas (Offsite)
Rhodes Crossing
The Preserve at Torrey Highlands
Carmel Mountain Rd
Via Panacea
Via Escalada
Via Colmenar
Google earth
© 2015 Google
© 2015 INEGI
1000 ft
N

HYDROMODIFICATION SCREENING
FOR
THE PRESERVE AT
TORREY HIGHLANDS

November 17, 2015

Wayne W. Chang, MS, PE 46548

ChangConsultants
Civil Engineering ◦ Hydrology ◦ Hydraulics ◦ Sedimentation

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FOR REVIEW ONLY

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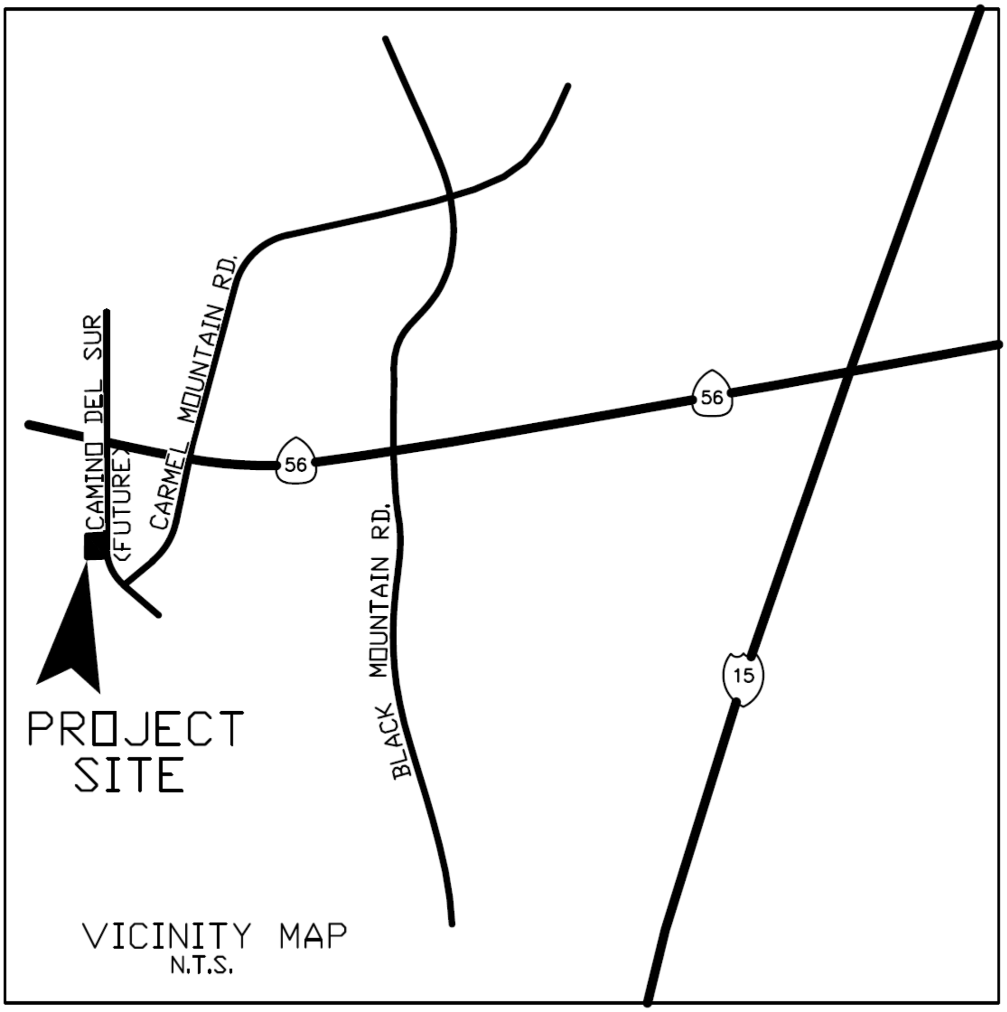
INTRODUCTION

The City of San Diego's January 14, 2011, *Storm Water Standards,* outline low flow thresholds for hydromodification analyses. The thresholds are based on a percentage of the pre-project 2-year flow (Q_2), i.e., $0.1Q_2$ (low flow threshold and high susceptibility to erosion), $0.3Q_2$ (medium flow threshold and medium susceptibility to erosion), or $0.5Q_2$ (high flow threshold and low susceptibility to erosion). A flow threshold of $0.1Q_2$ represents a natural downstream receiving conveyance system with a high susceptibility to bed and/or bank erosion. This is the default value used for hydromodification analyses and will result in the most conservative (largest) on-site facility sizing. A flow threshold of $0.3Q_2$ or $0.5Q_2$ represents downstream receiving conveyance systems with a medium or low susceptibility to erosion, respectively. In order to qualify for a medium or low erosion susceptibility rating, a project must perform a channel screening analysis based on the March 2010, *Hydromodification Screening Tools: Field Manual for Assessing Channel Susceptibility,* developed by the Southern California Coastal Water Research Project (SCCWRP). The SCCWRP results are compared with the critical shear stress calculator results from the County of San Diego's Critical Flow Calculator spreadsheet to establish the appropriate erosion susceptibility threshold of low, medium, or high.



Vicinity Map

This report provides a hydromodification screening analysis for The Preserve at Torrey Highlands project being designed by Leppert Engineering. The 11.10 acre site is located approximately 900 feet south of Torrey Santa Fe Road and along the west side of the future extension of Camino Del Sur in the city of San Diego (see the Vicinity Map). The site is bounded on all sides by natural, undeveloped areas although Camino Del Sur will need to be extend south to provide access to the site. The site and immediate surrounding area has historically contained natural undisturbed terrain and vegetation.

The proposed project will be developed with three corporate office towers, one café building, and one parking structure. The three towers will range from four to five stories with 120,000 to 180,000 gross square feet each. The café will be a single story building with approximately 4,500 square feet. The parking structure will have seven levels with two subterranean and five above grade.

Under pre-project conditions, storm runoff within the project footprint sheet flows across the moderately to steeply sloping natural ground surface to a small ravine in the middle of the site. The ravine conveys the runoff north a short distance to Deer Canyon. The Deer Canyon watercourse continues west and ultimately confluences with McGonigle Canyon, which flows into Carmel Valley Creek and Los Penasquitos Lagoon.

Under post-project conditions, the project's storm runoff will be collected by proposed on-site drainage facilities and conveyed to a single discharge location near the middle of the northerly site boundary. The discharge location is directly into the small ravine (see the Study Area Exhibit in Appendix A). There is also a small off-site area to the south that contributes run-on to the site. The off-site runoff will be conveyed to the same discharge location into the small ravine.

The SCCWRP screening tool requires both office and field work to establish the vertical and lateral susceptibility of a natural downstream receiving channel to erosion. The vertical and lateral assessments are performed independently of each other although the lateral results can be affected by the vertical rating. A screening analysis was performed to assess the low flow threshold for the project's point of compliance, which is the location where the proposed storm drain system discharges into the unnamed natural drainage course formed by the small ravine.

The initial step in performing the SCCWRP screening analysis is to establish the domain of analysis and the study reaches within the domain. This is followed by office and field components of the screening tool along with the associated analyses and results. The following sections cover these procedures in sequence.

DOMAIN OF ANALYSIS

SCCWRP defines an upstream and downstream domain of analysis, which establish the study limits. The County of San Diego's HMP specifies the downstream domain of analysis based on the SCCWRP criteria. The HMP indicates that the downstream domain is the first point where one of these is reached:

- at least one reach downstream of the first grade control point
- tidal backwater/lentic waterbody
- equal order tributary
- accumulation of 50 percent drainage area for stream systems or 100 percent drainage area for urban conveyance systems (storm drains, hardened channels, etc.)

The upstream limit is defined as:

- proceed upstream for 20 channel top widths or to the first grade control point, whichever comes first. Identify hard points that can check headward migration and evidence of active headcutting.

SCCWRP defines the maximum spatial unit, or reach (a reach is circa 20 channel widths), for assigning a susceptibility rating within the domain of analysis to be 200 meters (656 feet). If the domain of analysis is greater than 200 meters, the study area should be subdivided into smaller reaches of less than 200 meters for analysis. Most of the units in the HMP's SCCWRP analysis are metric. Metric units are used in this report only where given so in the HMP. Otherwise English units are used.

Downstream Domain of Analysis

The downstream domain of analysis location for the study area has been determined by assessing and comparing the four bullet items above. As discussed in the Introduction, the project runoff will be conveyed by a proposed storm drain system to a single location along the northerly property boundary that discharges into an unnamed natural drainage course within a small ravine (see the Study Area Exhibit in Appendix A). The location where the storm drain will discharge into the unnamed natural drainage course is the point of compliance (POC) for the project. The downstream domain of analysis is selected below this POC.

Per the first bullet item, the first permanent grade control below the POC was located. A site inspection did not identify a permanent grade control along the unnamed natural drainage course between the site and Deer Canyon. A review of Google Earth revealed that the first permanent grade control below the POC is likely at a retention facility within Deer Canyon approximately 1.3 miles west of the site. The containment berm at the lower edge of the retention facility is the permanent grade control structure.

The second bullet item is the tidal backwater or lentic (standing or still water such as ponds, pools, marshes, lakes, etc.) waterbody location. A lentic waterbody occurs within the aforementioned retention facility. Google Earth shows ponded water in the facility. The ponded water stored in the facility causes it to act as a lentic waterbody.

The third bullet item is met when the unnamed natural drainage course confluences into a stream with an equal order or larger tributary drainage area. The unnamed natural drainage course confluences with the Deer Canyon watercourse approximately 265 feet downstream (north) of the POC. The Study Area Exhibit shows that the drainage area tributary to the unnamed natural drainage course covers 11.62 acres. A Watershed Exhibit prepared for the Merge 56 project is included in Appendix A and shows that the drainage area tributary to Deer Canyon just upstream of the confluence with the unnamed natural drainage course covers 335.12 acres. Therefore, an equal order or larger tributary area occurs where the unnamed natural drainage course confluences with the Deer Canyon watercourse. Based on this, the third bullet item criteria will govern over the first and second bullet item criteria in establishing the downstream domain of analysis location since it is closer to the POC.

The fourth bullet item criteria will not be met prior to the third bullet item criteria. It is clear from the Study Area Exhibit, that the unnamed natural drainage course will not accumulate 50 percent of the drainage area tributary to the POC prior to the confluence with the Deer Canyon watercourse, i.e., on the Study Area Exhibit, the drainage area below the POC is less than 50 percent of the drainage area above the POC.

From the above assessment, the downstream domain of analysis location for the POC is based on the third bullet item, i.e., confluence with an equal order tributary. This is the location closest to the POC from the four bullet criteria.

Upstream Domain of Analysis

A natural channel does not exist upstream of the POC. The storm drain outlet at the POC discharges into the uppermost end of the receiving unnamed natural drainage course. Since the unnamed natural drainage course does not extend upstream of the POC, the upstream domain of analysis location will be at the POC.

Study Reaches within Domain of Analysis

The entire domain of analysis extends 265 feet from the upstream domain of analysis location at the POC to the downstream domain of analysis at the confluence with the Deer Canyon watercourse. The study reach was analyzed as a single reach, Reach 1, which meets the 656 foot (200 meters) maximum reach length described by SCCWRP (see the Study Area Exhibit).

INITIAL DESKTOP ANALYSIS

After the domain of analysis is established, SCCWRP requires an “initial desktop analysis” that involves office work. The initial desktop analysis establishes the watershed area, mean annual precipitation, valley slope, and valley width. These terms are defined in Form 1, which is included in Appendix A. SCCWRP recommends the use of National Elevation Data (NED) to determine the watershed area, valley slope, and valley width. The NED data is similar to USGS quadrangle mapping. For this project, more detailed topographic mapping was available, so it was used instead of USGS mapping. The data includes 1-foot contour interval mapping and the proposed grading for the project area as well as 2-foot contour interval SANGIS mapping for the off-site area. The watershed area was based on the proposed condition hydrology by Leppert Engineering. The area was extended downstream to cover the entire study area. The Watershed Exhibit is attached in Appendix A and shows that the watershed area covers approximately 11.62 acres (0.0182 square miles).

The valley slope and valley width of the study reach within the unnamed natural drainage course were determined from the site visit and the project's 1-foot contour interval topographic mapping as well as SANGIS' 2-foot contour interval topographic mapping (see the Study Area Exhibit in Appendix A), which will yield more accurate results than NED data. The valley slope is the longitudinal slope of the channel bed along the flow line and was measured from the mapping. The valley width is the valley bottom width dictated by breaks in the hillslope, i.e., the average bottom width of the unnamed natural drainage course, which was measured from the mapping. The tributary drainage area, valley slope, and valley width for Reach 1 are summarized in Table 1.

Reach	Tributary Drainage Area, sq. mi.	Valley Slope, m/m	Valley Width, m
1	0.0182	0.0921	0.30

Table 1. Summary of Drainage Area, Valley Slope, and Valley Width

The mean annual precipitation was obtained from the rain gages closest to the site. These are the Western Regional Climate Center's Lockwood Mesa gage in Solana Beach and their Poway Valley gage in Poway (see Appendix A). The average annual rainfall measured at the Lockwood Mesa gage for the period of record from 1940 to 1965 is 9.66 inches and at the Poway Valley gage for the period of record from 1893 to 2015 is 13.24 inches. The higher value, 13.24 inches, was used because it will yield a greater flow rate and more conservative results (i.e., greater erosion potential).

The above described values were input to a spreadsheet to calculate the simulated peak flow, screening index, and valley width index outlined in Form 1. The input data and results are tabulated in Appendix A. This completes the initial desktop analysis.

FIELD SCREENING

After the initial desktop analysis is complete, a field assessment must be performed. The field assessment is used to establish a natural channel's vertical and lateral susceptibility to erosion. SCCWRP states that although they are admittedly linked, vertical and lateral susceptibility are assessed separately for several reasons. First, vertical and lateral responses are primarily controlled by different types of resistance, which, when assessed separately, may improve ease of use and lead to increased repeatability compared to an integrated, cross-dimensional assessment. Second, the mechanistic differences between vertical and lateral responses point to different modeling tools and potentially different management strategies. Having separate screening ratings may better direct users and managers to the most appropriate tools for subsequent analyses.

The field screening tool uses combinations of decision trees and checklists. Decision trees are typically used when a question can be answered fairly definitively and/or quantitatively (e.g., $d_{50} < 16$ mm). Checklists are used where answers are relatively qualitative (e.g., the condition of a grade control). Low, medium, high, and very high ratings are applied separately to the vertical and lateral analyses. When the vertical and lateral analyses return divergent values, the most conservative value shall be selected as the flow threshold for the hydromodification analyses.

Vertical Stability

The purpose of the vertical stability decision tree (Figure 6-4 in the County of San Diego HMP) is to assess the state of the channel bed with a particular focus on the risk of incision (i.e., down cutting). The decision tree is included in Figure 5. The first step is to assess the channel bed resistance. There are three categories defined as follows:

1. Labile Bed – sand-dominated bed, little resistant substrate.

2. Transitional/Intermediate Bed – bed typically characterized by gravel/small cobble, Intermediate level of resistance of the substrate and uncertain potential for armoring.

3. Threshold Bed (Coarse/Armored Bed) – armored with large cobbles or larger bed material or highly-resistant bed substrate (i.e., bedrock).

Figures 4 contains a photograph of the channel material within Reach 1. A gravelometer is included for reference. Each square on the gravelometer indicates grain size in millimeters (the squares range from 2 mm to 180 mm). Based on the photograph and site investigation, the bed material and resistance is within the transitional/intermediate bed category. A pebble count was performed that determined the median (d_{50}) bed material size for the study reach is 32 millimeters (see Appendix B). Figure 6-4 in the County HMP indicates that a d_{50} of 16 mm or greater is within the transitional/intermediate bed category. Dr. Eric Stein from SCCWRP, who co-authored the *Hydromodification Screening Tools: Field Manual* in the *Final Hydromodification Management Plan* (HMP), stated that it would be appropriate to analyze channels with multiple factors that impact erodibility using the transitional/intermediate bed procedure. This requires the most rigorous steps and will generate the appropriate results for the size range.

Transitional/intermediate beds cover a wide susceptibility/potential response range and need to be assessed in greater detail to develop a weight of evidence for the appropriate screening rating. The three primary risk factors used to assess vertical susceptibility for channels with transitional/intermediate bed materials are:

1. Armoring potential – three states (Checklist 1)

2. Grade control – three states (Checklist 2)

3. Proximity to regionally-calibrated incision/braiding threshold (Mobility Index Threshold – Probability Diagram)

These three risk factors are assessed using checklists and a diagram (see Appendix B), and the results of each are combined to provide a final vertical susceptibility rating for the intermediate/transitional bed-material group. Each checklist and diagram contains a Category A, B, or C rating. Category A is the most resistant to vertical changes while Category C is the most susceptible.

Checklist 1 determines armoring potential of the channel bed. The channel bed along Reach 1 is within Category B, which represents intermediate bed material of unknown resistance or unknown armoring potential. The soil was probed and penetration was relatively difficult through the underlying layer, but the resistance is unknown without a soils investigation.

Checklist 2 determines grade control characteristics of the channel bed. SCCWRP states that grade controls can be natural. Examples are vegetation or confluences with a larger waterbody. As verified with photographs and during a site investigation, Reach 1 contains mature, dense, uniform vegetation (see Figures 1 through 3). The plant roots and tree trunks serve as a natural grade control. The spacing of these is much closer than the 50 meters identified in the checklist. Further evidence of the effectiveness of the natural grade controls is the absence of headcutting and mass wasting (large vertical erosion of a channel bank). Based on this information, Reach 1 is within Category A on Checklist 2. The presence of dense, mature vegetation throughout Reach 1 further confirms that it exhibits stability and is within Category A on Checklist 2.

The Screening Index Threshold is a probability diagram that depicts the risk of incising or braiding based on the potential stream power of the valley relative to the median particle diameter. The threshold is based on regional data from Dr. Howard Chang of Chang Consultants and others. The probability diagram is based on d_{50} as well as the screening index value determined in the initial desktop analysis (see Appendix A). d_{50} is derived from a pebble count in which a minimum of 100 particles are obtained along transects at the site. SCCRWP states that if fines less than ½-inch thick are at a sample point, it is appropriate to sample the coarser buried substrate. The d_{50} value is the particle size in which 50 percent of the particles are smaller and 50 percent are larger. The pebble count results for Reach 1 is included in Appendix B. The results show a d_{50} of 32 millimeters (mm). The screening index value for the study reach is tabulated in Appendix A. The Mobility Index Threshold diagram shows that there is less than 50 percent probability of incision if the screening index value is less than 0.070 for a 32 mm d_{50}. The screening index value in Appendix A is 0.0312 for Reach 1, so the reach has less than 50 percent probability of incision.

The overall vertical rating is determined from the Checklist 1, Checklist 2, and Screening Index Threshold results. The scoring is based on the following values:

Category A = 3, Category B = 6, Category C = 9

The vertical rating score for Reach 1 is based on these values and the equation:

$$\begin{aligned}\text{Vertical Rating} &= [(\text{armoring} \times \text{grade control})^{1/2} \times \text{screening index score}]^{1/2} \\ &= [(6 \times 3)^{1/2} \times 3]^{1/2} \\ &= 3.6\end{aligned}$$

Since the vertical rating is less than 4.5, Reach 1 has a low threshold for vertical susceptibility.

Lateral Stability

The purpose of the lateral decision tree (Figure 6-5 from County of San Diego HMP is included in Figure 6) is to assess the state of the channel banks with a focus on the risk of widening. Channels can widen from either bank failure or through fluvial processes such as chute cutoffs, avulsions, and braiding. Widening through fluvial avulsions/active braiding is a relatively straightforward observation. If braiding is not already occurring, the next logical step is to assess the condition of the banks. Banks fail through a variety of mechanisms; however, one of the most important distinctions is whether they fail in mass (as many particles) or by fluvial detachment of individual particles. Although much research is dedicated to the combined effects of weakening, fluvial erosion, and mass failure, SCCWRP found it valuable to segregate bank types based on the inference of the dominant failure mechanism (as the management approach may vary based on the dominant failure mechanism). A decision tree (Form 4 in Appendix B) is used in conducting the lateral susceptibility assessment. Definitions and photographic examples are also provided below for terms used in the lateral susceptibility assessment.

The first step in the decision tree is to determine if lateral adjustments are occurring. The adjustments can take the form of extensive mass wasting (greater than 50 percent of the banks are exhibiting planar, slab, or rotational failures and/or scalloping, undermining, and/or tension cracks). The adjustments can also involve extensive fluvial erosion (significant and frequent bank cuts on over 50 percent of the banks). Neither mass wasting nor extensive fluvial erosion was evident within Reach 1 during a field investigation (see Figures 1 through 3).

The next step in the Form 4 decision tree is to assess the consolidation of the bank material. The banks in Reach 1 were moderate to well-consolidated. This determination was made because the ground surface was difficult to penetrate with a probe. In addition, the banks showed no evidence of crumbling and were composed of relatively well-packed particles.

Form 6 (see Appendix B) is used to assess the probability of mass wasting. Form 6 identifies a 10, 50, and 90 percent probability based on the bank angle and bank height. From the site investigation and topographic mapping, the average bank angle in the study reach is 2:1 (26 degrees) or flatter. Form 6 shows that the probably of mass wasting and bank failure has less than 10 percent risk for a 26 degree bank angle or less regardless of the bank height.

The final two steps in the Form 4 decision tree are based on the braiding risk determined from the vertical rating as well as the Valley Width Index (VWI) calculated in Appendix A. If the vertical rating is high, the braiding risk is considered to be greater than 50 percent. Excessive braiding can lead to lateral bank failure. For Reach 1 the vertical rating is low, so the braiding risk is less than 50 percent. Furthermore, a VWI greater than 2 represents channels unconfined by bedrock or hillslope and, hence, subject to lateral migration. The VWI calculation in the spreadsheet in Appendix A shows that the VWI for Reach 1 (0.11) is less than 2.

From the above steps, the lateral susceptibility rating is low for Reach 1 (colored circles are included on the Form 4: Lateral Susceptibility Field Sheet decision tree in Appendix B showing the decision path).

CONCLUSION

The SCCWRP channel screening tools were used to assess the downstream channel susceptibility for The Preserve at Torrey Highlands project being designed by Leppert Engineering. The project runoff will be collected and then conveyed by a storm drain system that discharges at a single location into an unnamed natural drainage course just north of the site. A downstream channel assessment for the POC at the storm drain outlet was performed based on office analyses and field work. The results indicate a low threshold for vertical and lateral susceptibility for the study reach.

The HMP requires that these results be compared with the critical flow calculator results outlined in the County of San Diego HMP. The critical flow calculator results are included in Appendix B for Reach 1 using the spreadsheet provided by the County. The channel dimensions were estimated from the topographic mapping. Based on these values, the critical flow results returned a low threshold. Therefore, the SCCWRP analyses and critical flow calculator demonstrate that the project can be designed assuming a low susceptibility to erosion, i.e., 0.5Q2.

Figure 1. Looking South towards Deer Canyon and Reach 1 (center of figure)

Figure 2. Looking Upstream at Reach 1

Figure 3. Looking Downstream at Reach 1

Figure 4. Gravelometer in Reach 1

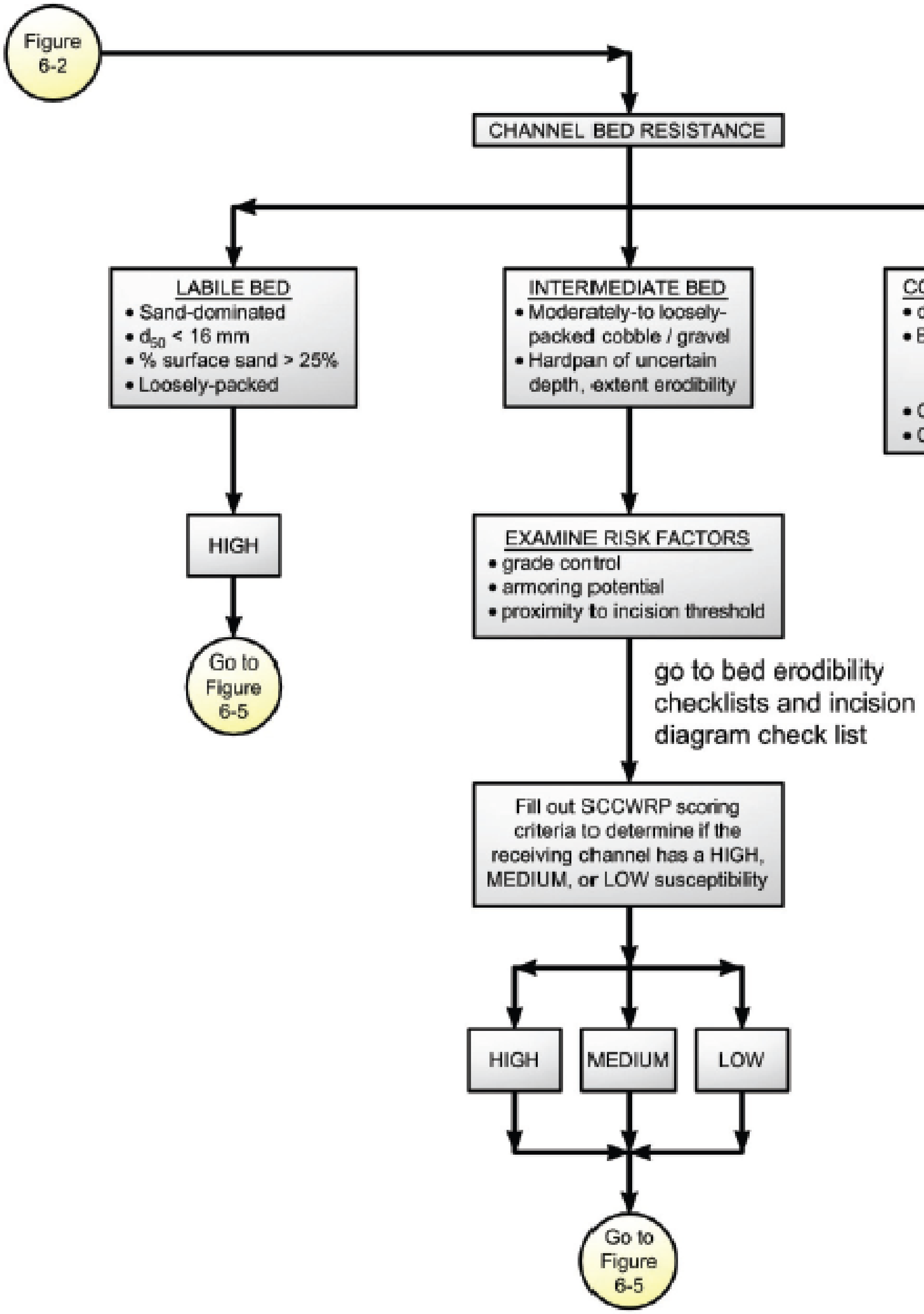


Figure 6-4. SCCWRP Vertical Susceptibility

Figure 5. SCCWRP Vertical Channel Susceptibility Matrix

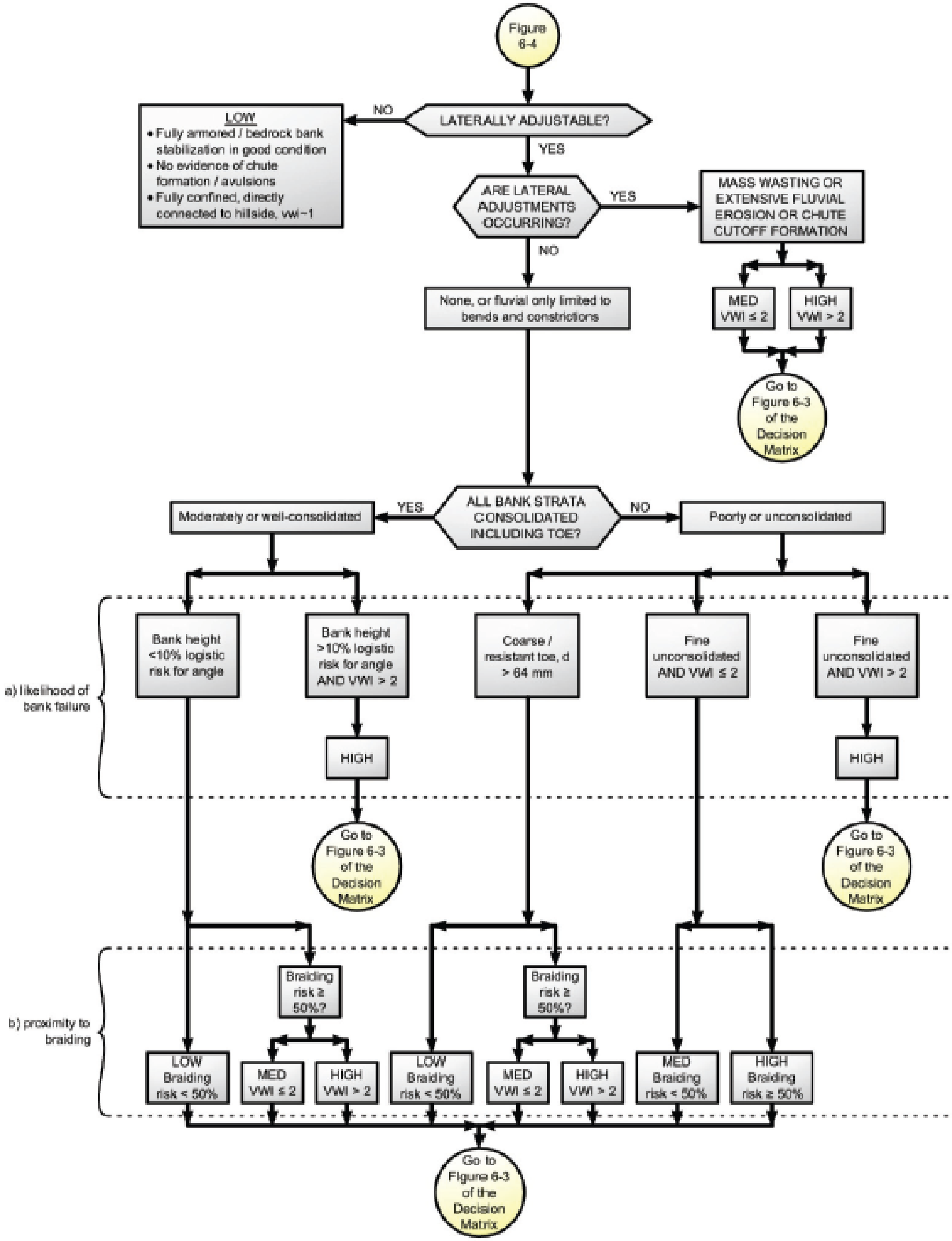


Figure 6-5. Lateral Channel Susceptibility

Figure 6. SCCWRP Lateral Channel Susceptibility Matrix

APPENDIX A

SCCWRP INITIAL DESKTOP ANALYSIS

FORM 1: INITIAL DESKTOP ANALYSIS

Complete all shaded sections.

IF required at multiple locations, circle one of the following site types:

Applicant Site / Upstream Extent / Downstream Extent

Location: Latitude: 32.9532 Longitude: -117.1538

Description (river name, crossing streets, etc.): The Preserve at Torrey Highlands

GIS Parameters: The International System of Units (SI) is used throughout the assessment as the field standard and for consistency with the broader scientific community. However, as the singular exception, US Customary units are used for contributing drainage area (A) and mean annual precipitation (P) to apply regional flow equations after the USGS. See SCCWRP Technical Report 607 for example measurements and "Screening Tool Data Entry.xls" for automated calculations.

Form 1 Table 1. Initial desktop analysis in GIS.

	Symbol	Variable	Description and Source	Value
Watershed properties (English units)	**A**	Area (mi^2)	Contributing drainage area to screening location via published Hydrologic Unit Codes (HUCs) and/or ≤ 30 m National Elevation Data (NED), USGS seamless server	See attached Form 1 table on next page for calculated values for study reach.
	P	Mean annual precipitation (in)	Area-weighted annual precipitation via USGS delineated polygons using records from 1900 to 1960 (which was more significant in hydrologic models than polygons delineated from shorter record lengths)	
Site properties (SI units)	**S_v**	Valley slope (m/m)	Valley slope at site via NED, measured over a relatively homogenous valley segment as dictated by hillslope configuration, tributary confluences, etc., over a distance of up to ~500 m or 10% of the main-channel length from site to drainage divide	
	W_v	Valley width (m)	Valley bottom width at site between natural valley walls as dictated by clear breaks in hillslope on NED raster, irrespective of potential armoring from floodplain encroachment, levees, etc. (imprecise measurements have negligible effect on rating in wide valleys where VWI is >> 2, as defined in lateral decision tree)	

Form 1 Table 2. Simplified peak flow, screening index, and valley width index. Values for this table should be calculated in the sequence shown in this table, using values from Form 1 Table 1.

Symbol	Dependent Variable	Equation	Required Units	Value
Q_{10cfs}	10-yr peak flow (ft^3/s)	$Q_{10cfs} = 18.2 * A^{0.87} * P^{0.77}$	A (mi^2) P (in)	See attached Form 1 table on next page for calculated values for study reach.
Q_{10}	10-yr peak flow (m^3/s)	$Q_{10} = 0.0283 * Q_{10cfs}$	Q_{10cfs} (ft^3/s)	
INDEX	10-yr screening index ($m^{1.5}/s^{0.5}$)	$INDEX = S_v * Q_{10}^{0.5}$	Sv (m/m) Q_{10} (m^3/s)	
W_{ref}	Reference width (m)	$W_{ref} = 6.99 * Q_{10}^{0.438}$	Q_{10} (m^3/s)	
VWI	Valley width index (m/m)	$VWI = W_v/W_{ref}$	W_v (m) W_{ref} (m)	

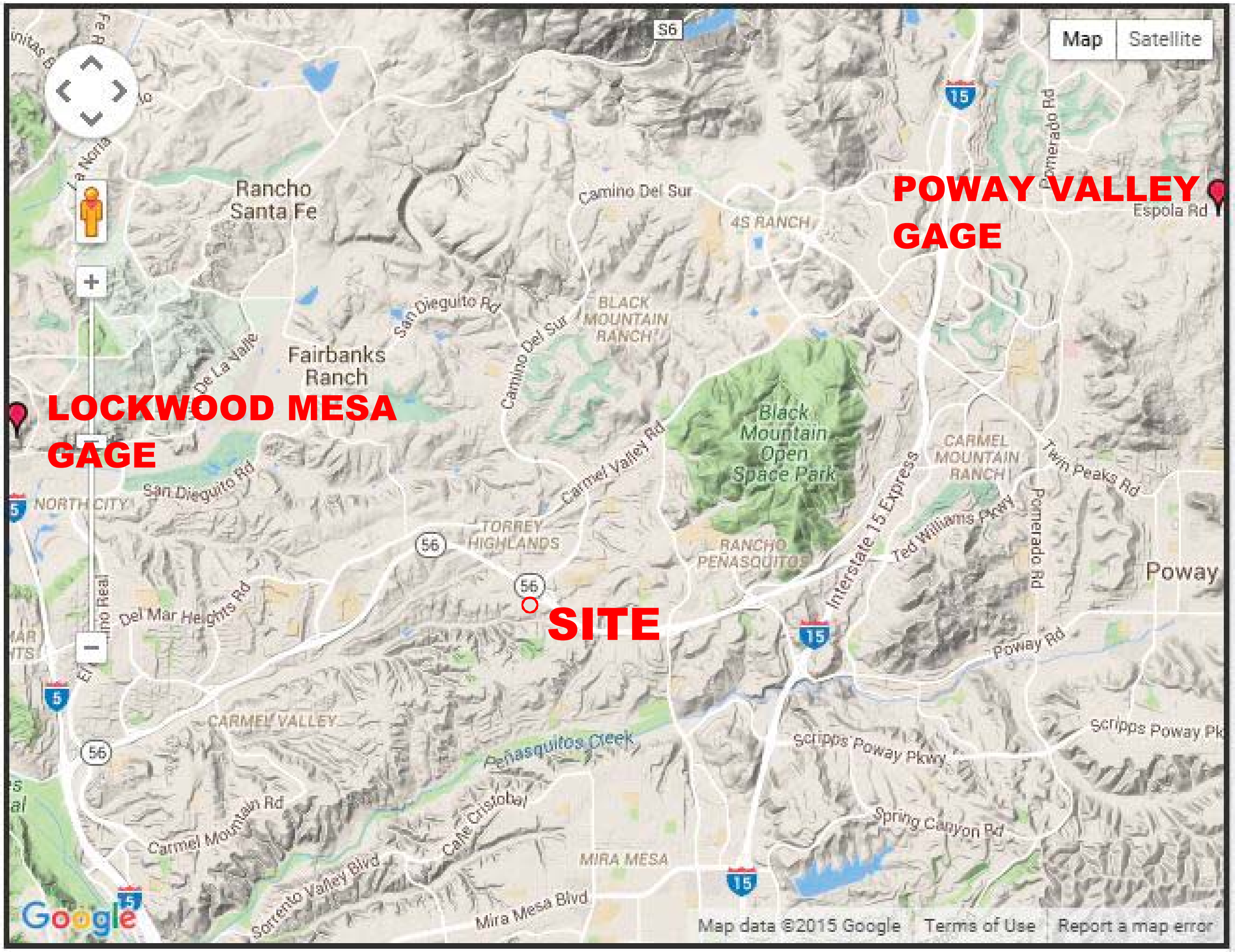
(Sheet 1 of 1)

SCCWRP FORM 1 ANALYSES

Reach	Area A, sq. mi.	Mean Annual Precip. P, inches	Valley Slope Sv, m/m	Valley Width Wv, m	10-Year Flow Q10cfs, cfs	10-Year Flow Q10, cms
1	0.0182	13.24	0.0921	0.30	4	0.1

Reach	10-Year Screening Index INDEX	Reference Width Wref, m	Valley Width Index VWI, m/m
1	0.0312	2.7	0.11

US COOP Station Map



RAIN GAGE LOCATIONS

LOCKWOOD MESA, CALIFORNIA (045023)

Period of Record Monthly Climate Summary

Period of Record : 9/ 1/1940 to 7/31/1965

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)					Insuff	icient	Data						
Average Min. Temperature (F)					Insuff	icient	Data						
Average Total Precipitation (in.)	1.84	1.43	1.65	1.06	0.29	0.05	0.01	0.08	0.19	0.45	0.95	1.65	9.66
Average Total SnowFall (in.)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Average Snow Depth (in.)	0	0	0	0	0	0	0	0	0	0	0	0	0

Percent of possible observations for period of record.
Max. Temp.: 0% Min. Temp.: 0% Precipitation: 97.5% Snowfall: 97.5% Snow Depth: 97.5%
Check Station Metadata or Metadata graphics for more detail about data completeness.

Western Regional Climate Center, wrcc@dri.edu

POWAY VALLEY, CALIFORNIA (047111)

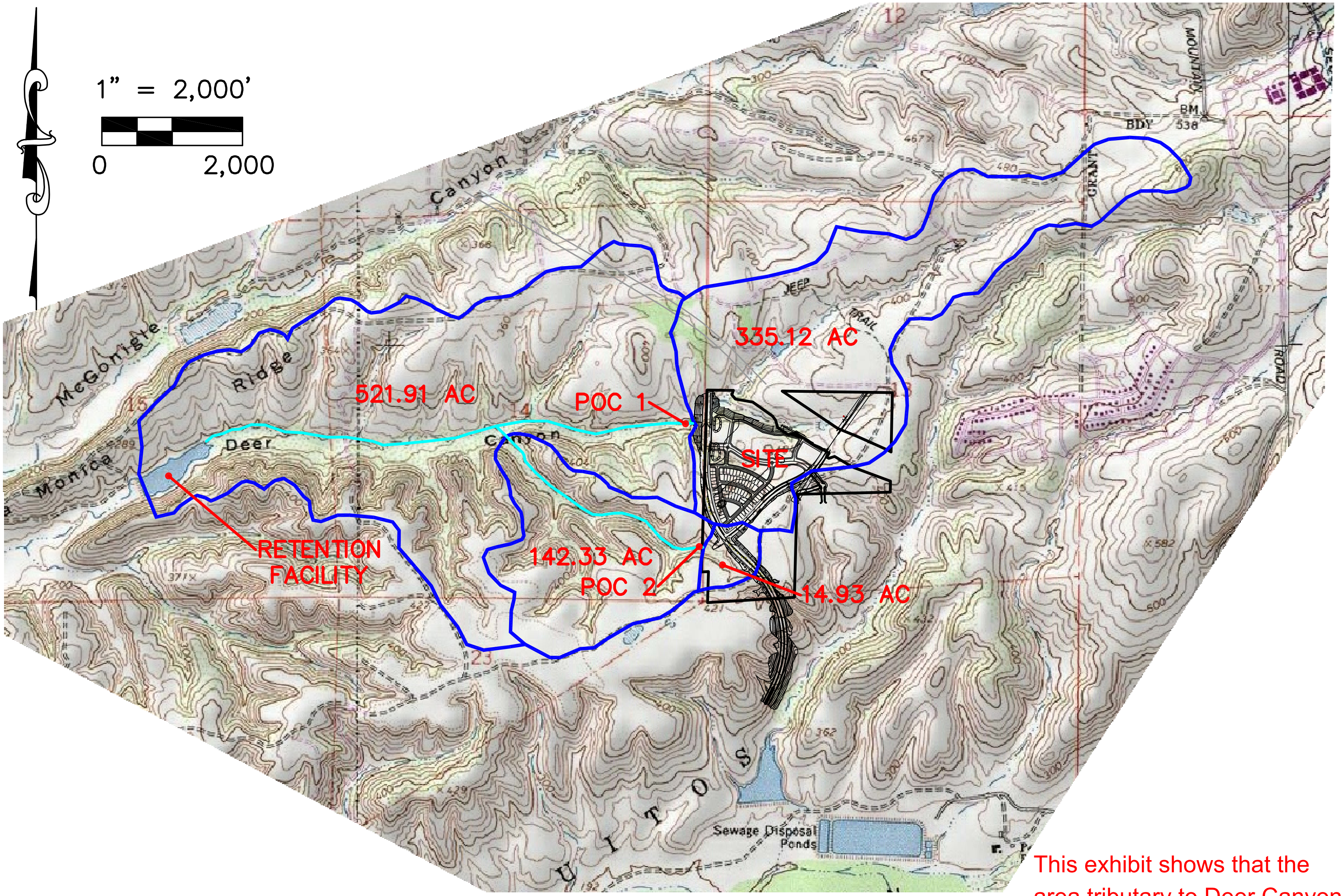
Period of Record Monthly Climate Summary

Period of Record : 01/01/1893 to 01/19/2015

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	66.6	66.0	67.4	72.1	74.2	80.9	85.6	86.4	84.4	79.2	71.7	67.3	75.1
Average Min. Temperature (F)	40.6	42.9	43.7	48.3	54.4	56.2	60.1	62.2	58.1	50.2	43.2	38.6	49.9
Average Total Precipitation (in.)	2.80	2.70	2.30	0.95	0.37	0.08	0.04	0.07	0.19	0.52	1.36	1.87	13.24
Average Total SnowFall (in.)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Average Snow Depth (in.)	0	0	0	0	0	0	0	0	0	0	0	0	0

Percent of possible observations for period of record.
Max. Temp.: 0.8% Min. Temp.: 0.8% Precipitation: 92.9% Snowfall: 93.3% Snow Depth: 92.9%
Check Station Metadata or Metadata graphics for more detail about data completeness.

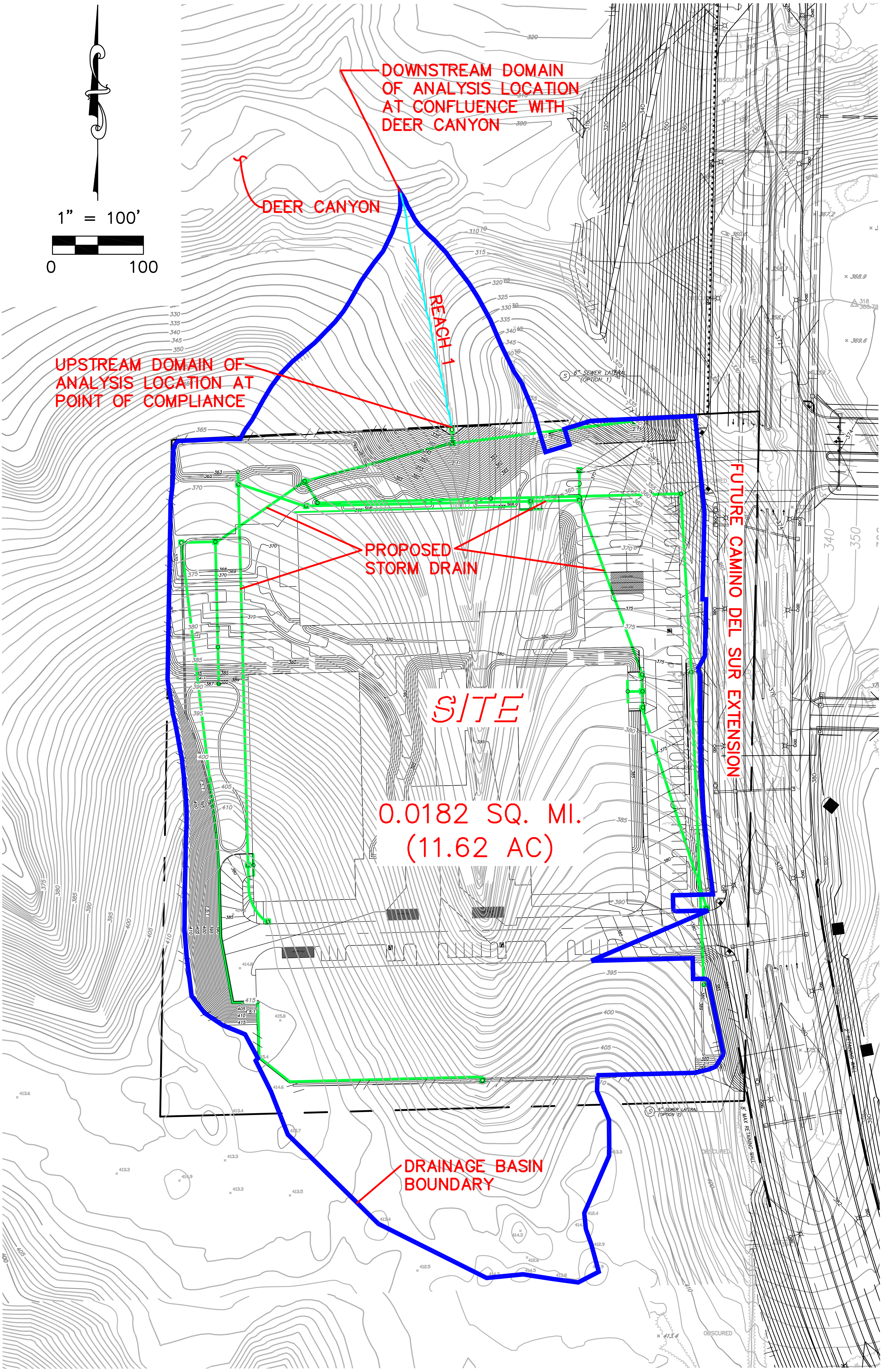
Western Regional Climate Center, wrcc@dri.edu



WATERSHED EXHIBIT

MERGE 56

This exhibit shows that the area tributary to Deer Canyon near its confluence with the unnammed natural drainage course covers 335.12 acres.



STUDY AREA EXHIBIT

THE PRESERVE AT TORREY HIGHLANDS

APPENDIX B

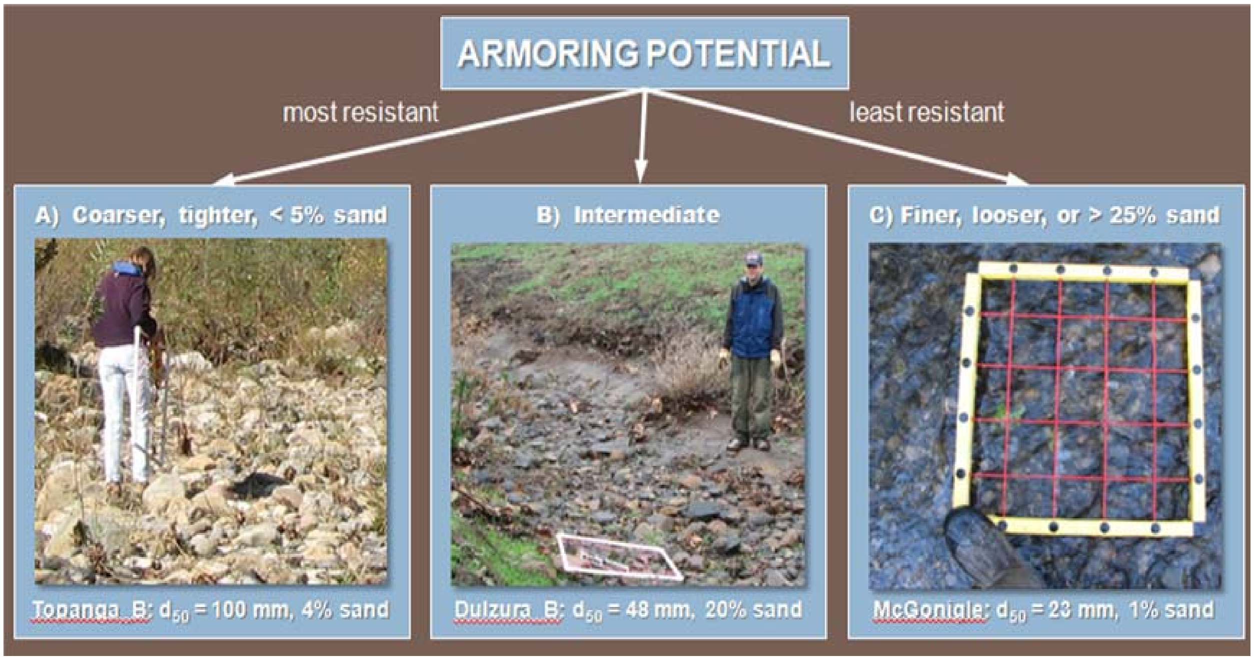
SCCWRP FIELD SCREENING DATA

Form 3 Support Materials

Form 3 Checklists 1 and 2, along with information recording in Form 3 Table 1, are intended to support the decisions pathways illustrated in Form 3 Overall Vertical Rating for Intermediate/Transitional Bed.

Form 3 Checklist 1: Armoring Potential

☐	A	A mix of coarse gravels and cobbles that are tightly packed with <5% surface material of diameter <2 mm
☒	B	Intermediate to A and C or hardpan of unknown resistance, spatial extent (longitudinal and depth), or unknown armoring potential due to surface veneer covering gravel or coarser layer encountered with probe
☐	C	Gravels/cobbles that are loosely packed or >25% surface material of diameter <2 mm



Form 3 Figure 2. Armoring potential photographic supplement for assessing intermediate beds (16 < d_{50} < 128 mm) to be used i**n conjunction with Form 3 Checklist 1.**

(Sheet 2 of 4)

REACH 1 RESULTS

Form 3 Checklist 2: Grade Control

☒ A Grade control is present with spacing <50 m or 2/S_v m

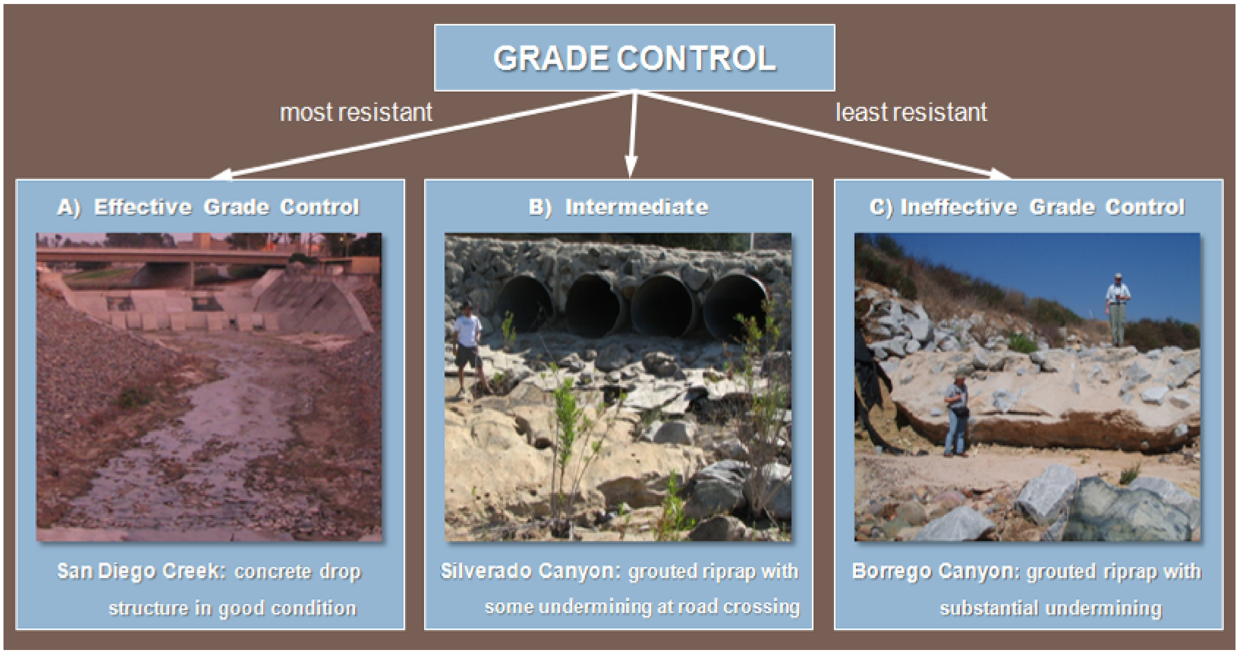
- No evidence of failure/ineffectiveness, e.g., no headcutting (>30 cm), no active mass wasting (analyst cannot say grade control sufficient if mass-wasting checklist indicates presence of bank failure), no exposed bridge pilings, no culverts/structures undermined

- Hard points in serviceable condition at decadal time scale, e.g., no apparent undermining, flanking, failing grout

- If geologic grade control, rock should be resistant igneous and/or metamorphic; For sedimentary/hardpan to be classified as 'grade control', it should be of demonstrable strength as indicated by field testing such as hammer test/borings and/or inspected by appropriate stakeholder

☐ B Intermediate to A and C – artificial or geologic grade control present but spaced 2/Sv m to 4/Sv m or potential evidence of failure or hardpan of uncertain resistance

☐ C Grade control absent, spaced >100 m or >4/S_v m, or clear evidence of ineffectiveness



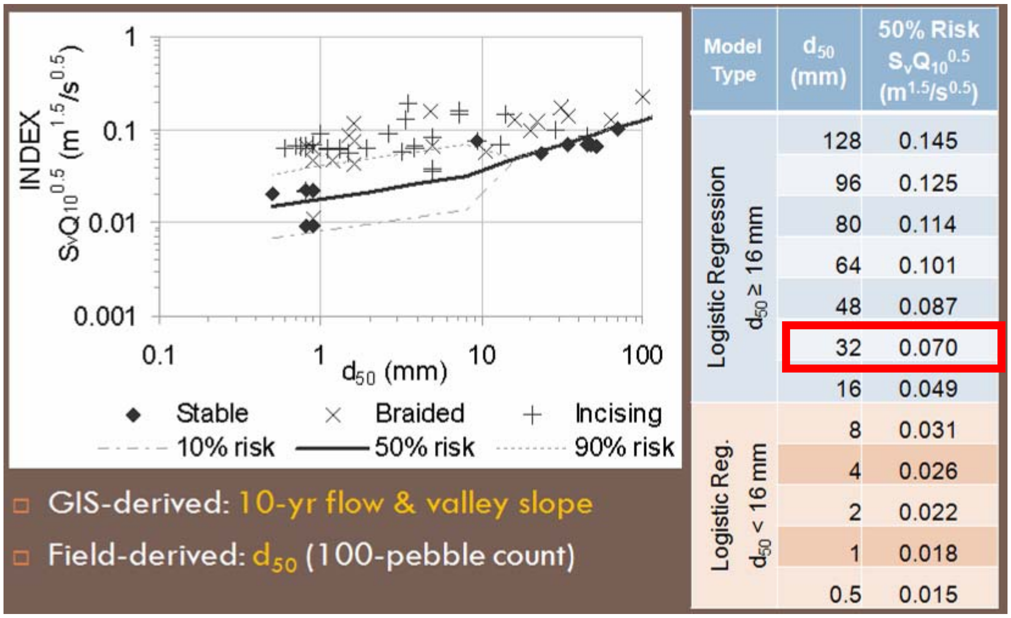
Form 3 Figure 3. Grade-control (condition) photographic supplement for assessing intermediate beds (16 < d_{50} < 128 mm) to be used in conjunction with Form 3 Checklist 2.

(Sheet 3 of 4)

REACH 1 RESULTS

Regionally-Calibrated Screening Index Threshold for Incising/Braiding

For transitional bed channels (d_{50} between 16 and 128 mm) or labile beds (channel not incised past critical bank height), use Form 3 Figure 3 to determine Screening Index Score and complete Form 3 Table 1.



Model Type	d_{50} (mm)	50% Risk $S_v Q_{10}^{0.5}$ ($m^{1.5}/s^{0.5}$)
Logistic Regression $d_{50} \geq 16$ mm	128	0.145
	96	0.125
	80	0.114
	64	0.101
	48	0.087
	32	0.070
	16	0.049
Logistic Reg. $d_{50} < 16$ mm	8	0.031
	4	0.026
	2	0.022
	1	0.018
	0.5	0.015

Form 3 Figure 4. Probability of incising/braiding based on logistic regression of Screening Index and d_{50} to be used in conjunction with Form 3 Table 1.

Form 3 Table 1. Values for Screening Index Threshold (probability of incising/braiding) to be used in conjunction with Form 3 Figure 4 (above) to complete Form 3 Overall Vertical Rating for Intermediate/Transitional Bed (below).. Screening Index Score: A = <50% probability of incision for current Q_{10}, valley slope, and d_{50}; B = Hardpan/d_{50} indeterminate; and C = $\geq$50% probability of incising/braiding for current Q_{10}, valley slope, and d_{50}.

d_{50} (mm) *From Form 2*	**$S_v*Q_{10}^{0.5}$ ($m^{1.5}/s^{0.5}$)** *From Form 1*	**$S_v*Q_{10}^{0.5}$ ($m^{1.5}/s^{0.5}$)** *50% risk of incising/braiding from table in Form 3 Figure 3 above*	**Screening Index Score (A, B, C)**

Overall Vertical Rating for Intermediate/Transitional Bed

Calculate the overall Vertical Rating for Transitional Bed channels using the formula below. Numeric values for responses to Form 3 Checklists and Table 1 as follows: A = 3, B = 6, C = 9.

$$Vertical\ Rating = \sqrt{\left\{\left(\sqrt{armoring * grade\ control}\right) * screening\ index\ score\right\}}$$

6 x 3 x 3 = 3.6

Vertical Susceptibility based on Vertical Rating: <4.5 = LOW; 4.5 to 7 = MEDIUM; and >7 = HIGH.

(Sheet 4 of 4)

REACH 1 RESULTS

PEBBLE COUNT

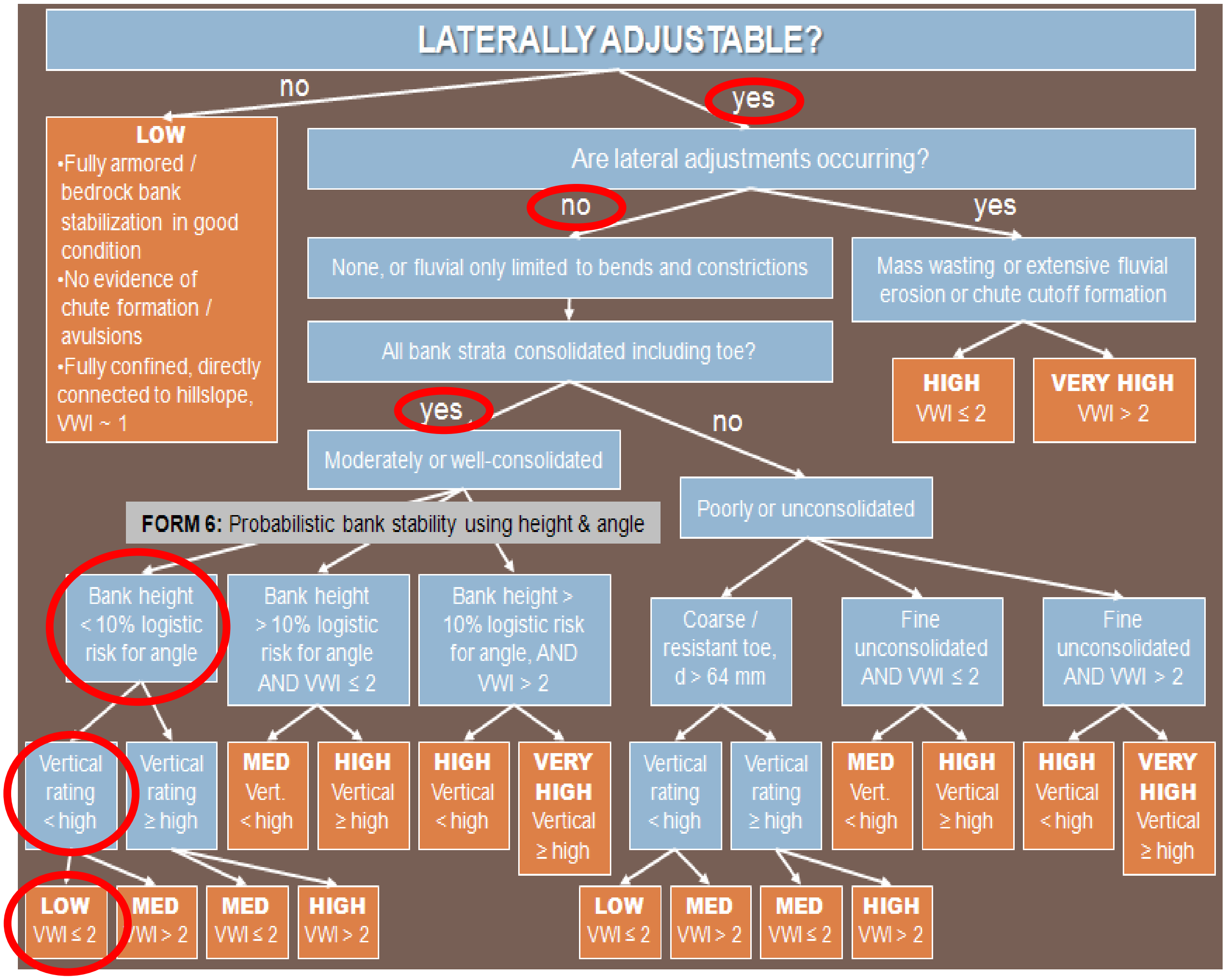
#	Diameter, mm
1	2.8
2	2.8
3	4
4	4
5	4
6	5.6
7	5.6
8	5.6
9	5.6
10	5.6
11	8
12	8
13	8
14	8
15	8
16	8
17	8
18	8
19	8
20	11
21	11
22	11
23	11
24	11
25	11
26	11
27	11
28	11
29	11
30	11
31	11
32	16
33	16
34	16
35	16
36	16
37	16
38	16
39	16
40	16
41	16
42	22.6
43	22.6

#	**Diameter, mm**	
44	22.6	
45	22.6	
46	22.6	
47	22.6	
48	22.6	
49	32	
50	32	D50
51	32	
52	32	
53	32	
54	32	
55	32	
56	32	
57	32	
58	32	
59	32	
60	32	
61	32	
62	32	
63	32	
64	45	
65	45	
66	45	
67	45	
68	45	
69	45	
70	45	
71	45	
72	45	
73	45	
74	45	
75	45	
76	45	
77	45	
78	45	
79	64	
80	64	
81	64	
82	64	
83	64	
84	64	
85	64	
86	64	
87	64	
88	90	

#	**Diameter, mm**
89	90
90	90
91	90
92	90
93	90
94	90
95	90
96	128
97	128
98	128
99	128
100	128

FORM 4: LATERAL SUSCEPTIBILTY FIELD SHEET

Circle appropriate nodes/pathway for proposed site
OR use sequence of questions provided in Form 5.



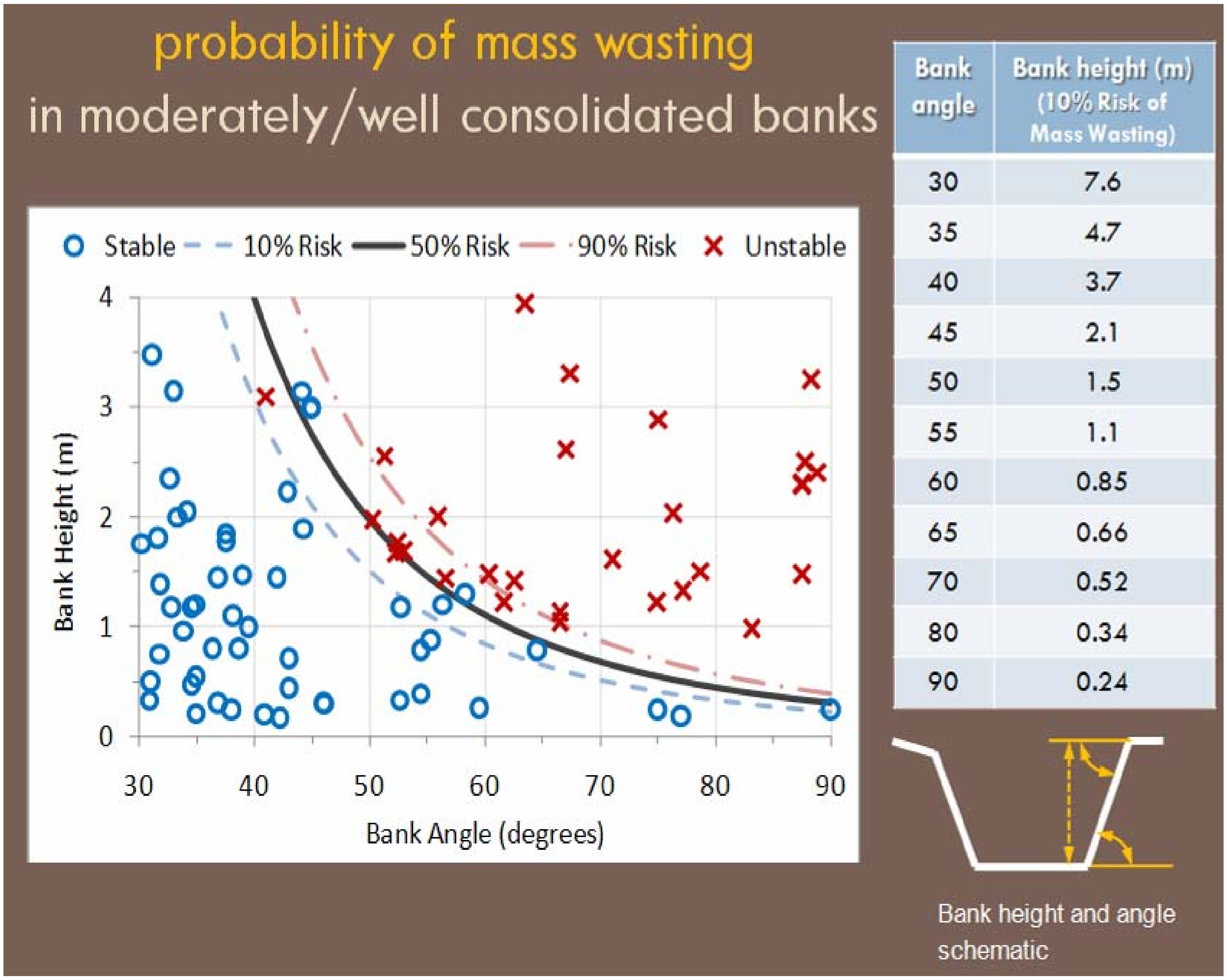
(Sheet 1 of 1)

REACH 1 RESULTS

FORM 6: PROBABILITY OF MASS WASTING BANK FAILURE

If mass wasting is not currently extensive and the banks are moderately- to well-consolidated, measure bank height and angle at several locations (i.e., at least three locations that capture the range of conditions present in the study reach) to estimate representative values for the reach. Use Form 6 Figure 1 below to determine if risk of bank failure is >10% and complete Form 6 Table 1. Support your results with photographs that include a protractor/rod/tape/person for scale.

	Bank Angle (degrees) *(from Field)*	**Bank Height (m)** *(from Field)*	**Corresponding Bank Height for 10% Risk of Mass Wasting (m)** *(from Form 6 Figure 1 below)*	**Bank Failure Risk** *(<10% Risk)* *(>10% Risk)*
Left Bank	<26.6 degrees (2:1)	---	---	<10%
Right Bank	>26.6 degrees (2:1)	---	---	<10%



Bank angle	Bank height (m) (10% Risk of Mass Wasting)
30	7.6
35	4.7
40	3.7
45	2.1
50	1.5
55	1.1
60	0.85
65	0.66
70	0.52
80	0.34
90	0.24

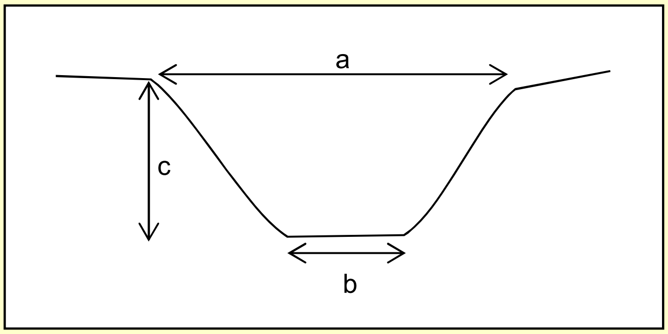
Form 6 Figure 1. Probability Mass Wasting diagram, Bank Angle:Height/% Risk table, and Band Height:Angle schematic.

(Sheet 1 of 1)

Critical Flow Calculator

enter all values in green cells
and drop down boxes

Ocean View Village



Inputs

a) Receiving channel width at top of bank (ft) - see figure on right	60.0
b) Channel width at bed (ft)	1.0
c) Bank height at top of bank (ft)	10.0
Channel gradient (ft/ft)	0.0921
Receiving channel roughness	Sluggish reaches, weedy, deep pools n=0.07

Channel materials (use weakest of bed or banks). If materials are varied use weakest material covering more than 20% of channel.

- unconsolidated sandy loam 0.035 lb/sq ft
- alluvial silt (non coloidal) 0.045 lb/sq ft
- medium gravel 0.12 lb/sq ft
- alluvial silt/clay 0.26 lb/sq ft
- 2.5 inch cobble 1.1 lb/sq ft
- enter own d50 (variable)
- vegetation (bed and banks) 0.6 lb/sq ft

Select method of calculating Q2

- Input own Q2
- Calculate Q2 using USGS regression

Receiving water watershed annual precip (inches)	13.24	Receiving water watershed area at PoC (sq mi)	0.0182
Project watershed annual precipitation (inches)	13.24	Project watershed area draining to PoC (sq mi)	0.0182

Outputs - Flow control range

Receiving water Q2	0.5	**Point of Compliance low flow rate (cfs)**	**0.3**
Project site Q2	0.5	**Low flow class**	**0.5Q2**
		Channel vulnerability	**Low**

BMP Sizing Spreadsheet V1.04

Project Name:	The Preserve
Project Applicant:	Cisterra
Jurisdiction:	City of San Diego
Parcel (APN):	306-050-16, -18, -19, & -28
Hydrologic Unit:	Penasquitos
Rain Gauge:	Oceanside
Total Project Area (sf):	361,104
Channel Susceptibility:	Low

BMP Sizing Spreadsheet V1.04			
Project Name:	The Preserve	Hydrologic Unit:	Penasquitos
Project Applicant:	Cisterra	Rain Gauge:	Oceanside
Jurisdiction:	City of San Diego	Total Project Area:	361104
Parcel (APN):	306-050-16, -18, -19, & -28	Low Flow Threshold:	0.5Q2
BMP Name:	BMP-1	BMP Type:	Bioretention
BMP Native Soil Type:	D	BMP Infiltration Rate (in/hr):	0.024

Areas Draining to BMP						HMP Sizing Factors			Minimum BMP Size		
DMA Name	Area (sf)	Soil Type	Slope	Post Project Surface Type	Runoff Factor (Table 4-2)	Surface Area	Surface Volume	Subsurface Volume	Surface Area (sf)	Surface Volume (cf)	Subsurface Volume (cf)
DMA-1 Impervious	6889	D	Flat	Impervious	1.0	0.065	0.0542	0.039	448	373	269
DMA-1 Pervious	13558	D	Flat	Pervious	0.1	0.065	0.0542	0.039	88	73	53
DMA-2 Impervious	71540	D	Flat	Impervious	1.0	0.065	0.0542	0.039	4650	3877	2790
DMA-2 Pervious	33445	D	Flat	Pervious	0.1	0.065	0.0542	0.039	217	181	130
Total BMP Area	125432							Minimum BMP Size	5403.4045	4506	3242
								Proposed BMP Size*	5615	5381	3369
									Soil Matrix Depth	24.00	in
									Minimum Ponding Depth	8.13	in
									Maximum Ponding Depth	259.33	in
									Selected Ponding Depth	10.00	in

Describe the BMP's in sufficient detail in your SWMP to demonstrate the area, volume, and other criteria can be met within the constraints of the site.

BMP's must be adapted and applied to the conditions specific to the development project such as unstable slopes or the lack of available head.
Designated Staff have final review and approval authority over the project design.

This Sizing Calculator has been developed in compliance with the Countywide Model SUSMP. For questions or concerns please contact the jurisdiction in which your project is located.

BMP Sizing Spreadsheet V1.04			
Project Name:	The Preserve	Hydrologic Unit:	Penasquitos
Project Applicant:	Cisterra	Rain Gauge:	Oceanside
Jurisdiction:	City of San Diego	Total Project Area:	361104
Parcel (APN):	06-050-16, -18, -19, & -2	Low Flow Threshold:	0.5Q2
BMP Name	BMP-1	BMP Type:	Bioretention

DMA Name	Rain Gauge	Existing Condition			Q2 Sizing Factor (cfs/ac)	DMA Area (ac)	Orifice Flow - %Q_2 (cfs)	**Orifice Area (in2)**
		Soil Type	Cover	Slope				
DMA-1 Impervious	Oceanside	D	Scrub	Steep	0.244	0.158	0.019	**0.47**
DMA-1 Pervious	Oceanside	D	Scrub	Steep	0.244	0.311	0.038	**0.93**
DMA-2 Impervious	Oceanside	D	Scrub	Steep	0.244	1.642	0.200	**4.89**
DMA-2 Pervious	Oceanside	D	Scrub	Steep	0.244	0.768	0.094	**2.29**

0.351	**8.58**	**3.30**
Tot. Allowable Orifice Flow (cfs)	**Tot. Allowable Orifice Area (in2)**	**Max Orifice Diameter (in)**

0.351	**8.57**	**3.30**
Actual Orifice Flow (cfs)	Actual Orifice Area (in2)	Selected Orifice Diameter (in)

Drawdown (Hrs)	3.7

BMP Sizing Spreadsheet V1.04			
Project Name:	The Preserve	Hydrologic Unit:	Penasquitos
Project Applicant:	Cisterra	Rain Gauge:	Oceanside
Jurisdiction:	City of San Diego	Total Project Area:	361104
Parcel (APN):	306-050-16, -18, -19, & -28	Low Flow Threshold:	0.5Q2
BMP Name:	BMP-2	BMP Type:	Bioretention
BMP Native Soil Type:	D	BMP Infiltration Rate (in/hr):	0.024

Areas Draining to BMP						HMP Sizing Factors			Minimum BMP Size		
DMA Name	Area (sf)	Soil Type	Slope	Post Project Surface Type	Runoff Factor (Table 4-2)	Surface Area	Surface Volume	Subsurface Volume	Surface Area (sf)	Surface Volume (cf)	Subsurface Volume (cf)
DMA-3 Impervious	83940	D	Flat	Impervious	1.0	0.065	0.0542	0.039	5456	4550	3274
DMA-3 Pervious	50644	D	Flat	Pervious	0.1	0.065	0.0542	0.039	329	274	198
Total BMP Area	134584							Minimum BMP Size	5785.286	4824	3471
								Proposed BMP Size*	6100	5846	3660
								Soil Matrix Depth		24.00	in
								Minimum Ponding Depth		7.99	in
								Maximum Ponding Depth		256.37	in
								Selected Ponding Depth		10.00	in

Describe the BMP's in sufficient detail in your SWMP to demonstrate the area, volume, and other criteria can be met within the constraints of the site.

BMP's must be adapted and applied to the conditions specific to the development project such as unstable slopes or the lack of available head.
Designated Staff have final review and approval authority over the project design.

This Sizing Calculator has been developed in compliance with the Countywide Model SUSMP. For questions or concerns please contact the jurisdiction in which your project is located.

BMP Sizing Spreadsheet V1.04			
Project Name:	The Preserve	Hydrologic Unit:	Penasquitos
Project Applicant:	Cisterra	Rain Gauge:	Oceanside
Jurisdiction:	City of San Diego	Total Project Area:	361104
Parcel (APN):	06-050-16, -18, -19, & -2	Low Flow Threshold:	0.5Q2
BMP Name	BMP-2	BMP Type:	Bioretention

DMA Name	Rain Gauge	Existing Condition			Q2 Sizing Factor (cfs/ac)	DMA Area (ac)	Orifice Flow - %Q_2 (cfs)	**Orifice Area (in2)**
		Soil Type	Cover	Slope				
DMA-3 Impervious	Oceanside	D	Scrub	Steep	0.244	1.927	0.235	**5.74**
DMA-3 Pervious	Oceanside	D	Scrub	Steep	0.244	1.163	0.142	**3.46**

0.377	**9.20**	**3.42**
Tot. Allowable Orifice Flow (cfs)	**Tot. Allowable Orifice Area (in2)**	**Max Orifice Diameter (in)**

0.377	**9.21**	**3.42**
Actual Orifice Flow (cfs)	Actual Orifice Area (in2)	Selected Orifice Diameter (in)

Drawdown (Hrs)	3.7

BMP Sizing Spreadsheet V1.04			
Project Name:	The Preserve	Hydrologic Unit:	Penasquitos
Project Applicant:	Cisterra	Rain Gauge:	Oceanside
Jurisdiction:	City of San Diego	Total Project Area:	361104
Parcel (APN):	306-050-16, -18, -19, & -28	Low Flow Threshold:	0.5Q2
BMP Name:	BMP-3	BMP Type:	Bioretention
BMP Native Soil Type:	D	BMP Infiltration Rate (in/hr):	0.024

Areas Draining to BMP						HMP Sizing Factors			Minimum BMP Size		
DMA Name	Area (sf)	Soil Type	Slope	Post Project Surface Type	Runoff Factor (Table 4-2)	Surface Area	Surface Volume	Subsurface Volume	Surface Area (sf)	Surface Volume (cf)	Subsurface Volume (cf)
DMA-4 Impervious	30708	D	Flat	Impervious	1.0	0.065	0.0542	0.039	1996	1664	1198
DMA-4 Pervious	10303	D	Flat	Pervious	0.1	0.065	0.0542	0.039	67	56	40
DMA-5 Impervious	60077	D	Flat	Impervious	1.0	0.065	0.0542	0.039	3905	3256	2343
Total BMP Area	101088							Minimum BMP Size	5967.9945	4976	3581
								Proposed BMP Size*	5975	5726	3585
								Soil Matrix Depth		24.00	in
								Minimum Ponding Depth		8.49	in
								Maximum Ponding Depth		196.66	in
								Selected Ponding Depth		10.00	in

Describe the BMP's in sufficient detail in your SWMP to demonstrate the area, volume, and other criteria can be met within the constraints of the site.

BMP's must be adapted and applied to the conditions specific to the development project such as unstable slopes or the lack of available head.
Designated Staff have final review and approval authority over the project design.

This Sizing Calculator has been developed in compliance with the Countywide Model SUSMP. For questions or concerns please contact the jurisdiction in which your project is located.

BMP Sizing Spreadsheet V1.04			
Project Name:	The Preserve	Hydrologic Unit:	Penasquitos
Project Applicant:	Cisterra	Rain Gauge:	Oceanside
Jurisdiction:	City of San Diego	Total Project Area:	361104
Parcel (APN):	06-050-16, -18, -19, & -2	Low Flow Threshold:	0.5Q2
BMP Name	BMP-3	BMP Type:	Bioretention

DMA Name	Rain Gauge	Existing Condition			Q2 Sizing Factor (cfs/ac)	DMA Area (ac)	Orifice Flow - %Q_2 (cfs)	**Orifice Area (in2)**
		Soil Type	Cover	Slope				
DMA-4 Impervious	Oceanside	D	Scrub	Steep	0.244	0.705	0.086	**2.10**
DMA-4 Pervious	Oceanside	D	Scrub	Steep	0.244	0.237	0.029	**0.70**
DMA-5 Impervious	Oceanside	D	Scrub	Steep	0.244	1.379	0.168	**4.11**

0.283	**6.91**	**2.97**
Tot. Allowable Orifice Flow (cfs)	**Tot. Allowable Orifice Area (in2)**	**Max Orifice Diameter (in)**

0.283	**6.92**	**2.97**
Actual Orifice Flow (cfs)	Actual Orifice Area (in2)	Selected Orifice Diameter (in)

Drawdown (Hrs)	4.9

Attachment 3

Structural BMP Maintenance Information

Items included in this attachment:

Attachment Sequence	Contents	Checklist
Attachment 3a	Structural BMP maintenance thresholds and actions (Required)	☒ Included (See structural BMP maintenance information checklist.)
Attachment 3b	Maintenance agreement (Form DS-3247) (when applicable)	☐ Included ☒ Not Applicable

Preliminary Design/Planning/CEQA level submittal:

- **Attachment 3a must identify:**

☒ Typical maintenance indicators and actions for proposed structural BMP(s) based on Section 7.7 of the BMP Design Manual

- Attachment 3b is not required for preliminary design / planning / CEQA level submittal.

Final Design level submittal:

Attachment 3a must identify:

☐ Specific maintenance indicators and actions for proposed structural BMP(s). This shall be based on Section 7.7 of the BMP Design Manual and enhanced to reflect actual proposed components of the structural BMP(s)
☐ How to access the structural BMP(s) to inspect and perform maintenance
☐ Features that are provided to facilitate inspection (e.g., observation ports, cleanouts, silt posts, or other features that allow the inspector to view necessary components of the structural BMP and compare to maintenance thresholds)
☐ Manufacturer and part number for proprietary parts of structural BMP(s) when applicable.
☐ Maintenance thresholds specific to the structural BMP(s), with a location-specific frame of reference (e.g., level of accumulated materials that triggers removal of the materials, to be identified based on viewing marks on silt posts or measured with a survey rod with respect to a fixed benchmark within the BMP)
☐ Recommended equipment to perform maintenance
☐ When applicable, necessary special training or certification requirements for inspection and maintenance personnel such as confined space entry or hazardous waste management

Attachment 3b: For private entity operation and maintenance, Attachment 3b must include a Storm Water Management and Discharge Control Maintenance Agreement (Form DS-3247). The following information must be included in the exhibits attached to the maintenance agreement:

☐ Vicinity map
☐ Site design BMPs for which DCV reduction is claimed for meeting the pollutant control obligations.
☐ BMP and HMP location and dimensions
☐ BMP and HMP specifications/cross section/model
☐ Maintenance recommendations and frequency
☐ LID features such as (permeable paver and LS location, dim, SF).

Table 7-2. Maintenance Indicators and Actions for Vegetated BMPs

Typical Maintenance Indicator(s) for Vegetated BMPs	Maintenance Actions
Accumulation of sediment, litter, or debris	Remove and properly dispose of accumulated materials, without damage to the vegetation.
Poor vegetation establishment	Re-seed, re-plant, or re-establish vegetation per original plans.
Overgrown vegetation	Mow or trim as appropriate, but not less than the design height of the vegetation per original plans when applicable (e.g. a vegetated swale may require a minimum vegetation height).
Erosion due to concentrated irrigation flow	Repair/re-seed/re-plant eroded areas and adjust the irrigation system.
Erosion due to concentrated storm water runoff flow	Repair/re-seed/re-plant eroded areas, and make appropriate corrective measures such as adding erosion control blankets, adding stone at flow entry points, or minor re-grading to restore proper drainage according to the original plan. If the issue is not corrected by restoring the BMP to the original plan and grade, the City Engineer shall be contacted prior to any additional repairs or reconstruction.
Standing water in vegetated swales	Make appropriate corrective measures such as adjusting irrigation system, removing obstructions of debris or invasive vegetation, loosening or replacing top soil to allow for better infiltration, or minor re-grading for proper drainage. If the issue is not corrected by restoring the BMP to the original plan and grade, the City Engineer shall be contacted prior to any additional repairs or reconstruction.
Standing water in bioretention, biofiltration with partial retention, or biofiltration areas, or flow-through planter boxes for longer than 96 hours following a storm event*	Make appropriate corrective measures such as adjusting irrigation system, removing obstructions of debris or invasive vegetation, clearing underdrains (where applicable), or repairing/replacing clogged or compacted soils.
Obstructed inlet or outlet structure	Clear obstructions.
Damage to structural components such as weirs, inlet or outlet structures	Repair or replace as applicable.
*These BMPs typically include a surface ponding layer as part of their function which may take 96 hours to drain following a storm event.	

Attachment 4

Permanent Storm Water BMP Plan

The BMP plan must identify:

- ☐ Structural BMP(s) with ID numbers matching Form I-6 Summary of PDP Structural BMPs
- ☐ The grading and drainage design shown on the plans must be consistent with the delineation of DMAs shown on the DMA exhibit
- ☐ Details and specifications for construction of structural BMP(s)
- ☐ Signage indicating the location and boundary of structural BMP(s) as required by the City Engineer
- ☐ How to access the structural BMP(s) to inspect and perform maintenance
- ☐ Features that are provided to facilitate inspection (e.g., observation ports, cleanouts, silt posts, or other features that allow the inspector to view necessary components of the structural BMP and compare to maintenance thresholds)
- ☐ Manufacturer and part number for proprietary parts of structural BMP(s) when applicable
- ☐ Maintenance thresholds specific to the structural BMP(s), with a location-specific frame of reference (e.g., level of accumulated materials that triggers removal of the materials, to be identified based on viewing marks on silt posts or measured with a survey rod with respect to a fixed benchmark within the BMP) Recommended equipment to perform maintenance
- ☐ When applicable, necessary special training or certification requirements for inspection and maintenance personnel such as confined space entry or hazardous waste management
- ☐ Include landscaping plan sheets showing vegetation requirements for vegetated structural
- ☐ BMP(s) All BMPs must be fully dimensioned on the plans
- ☐ When proprietary BMPs are used, site specific cross section with outflow, inflow and model number shall be provided. Brochure photocopies are not allowed.

IV. STANDARD/PRIORITY PERMANENT BEST MANAGEMENT PRACTICES (BMP'S)

LOW IMPACT DESIGN (LID) BMP'S:

① MINIMIZE IMPERVIOUS FOOTPRINT THROUGH EFFICIENT DESIGN, INCORPORATING MULTI-LEVEL RESIDENTIAL BUILDINGS, INDOOR PARKING, SHARED DRIVEWAYS AND MINIMUM WIDTHS ON IMPERVIOUS SURFACES (SD-3)

② LANDSCAPE AREAS TO BE MULCHED (SD-4)

③ DRAIN SIDEWALKS TO ADJACENT LANDSCAPING (SD-5)

④ USE OF PEST RESISTANT AND DROUGHT TOLERANT LANDSCAPING (SD-7)

SOURCE CONTROL BMP'S:

⑤ DRAIN A/C CONDENSATE TO LANDSCAPE AREAS (SC-1)

⑥ STENCIL OR STAMP ALL STORM DRAIN INLETS WITH WARNINGS TO DISCOURAGE "ILLEGAL" DUMPING OR DISCHARGE INTO THE STORM DRAIN SYSTEM (SC-2)

⑦ DESIGN TRASH STORAGE AREAS TO REDUCE POLLUTION CONTRIBUTION (SC-5)

⑧ INTERIOR PARKING GARAGE DRAINS PLUMBED TO SANITARY SYSTEM (SC-6)

TREATMENT CONTROL BMP'S:

⑨ USE OF LARGE FOOTPRINT BIO-FILTRATION BMPs TO FILTER RUNOFF (BF-1)

V. CONSTRUCTION STORM WATER BMP PERFORMANCE STANDARDS

A) A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) WILL BE REQUIRED PRIOR TO THE ISSUANCE OF ANY CONSTRUCTION PERMITS FOR THE PROJECT.

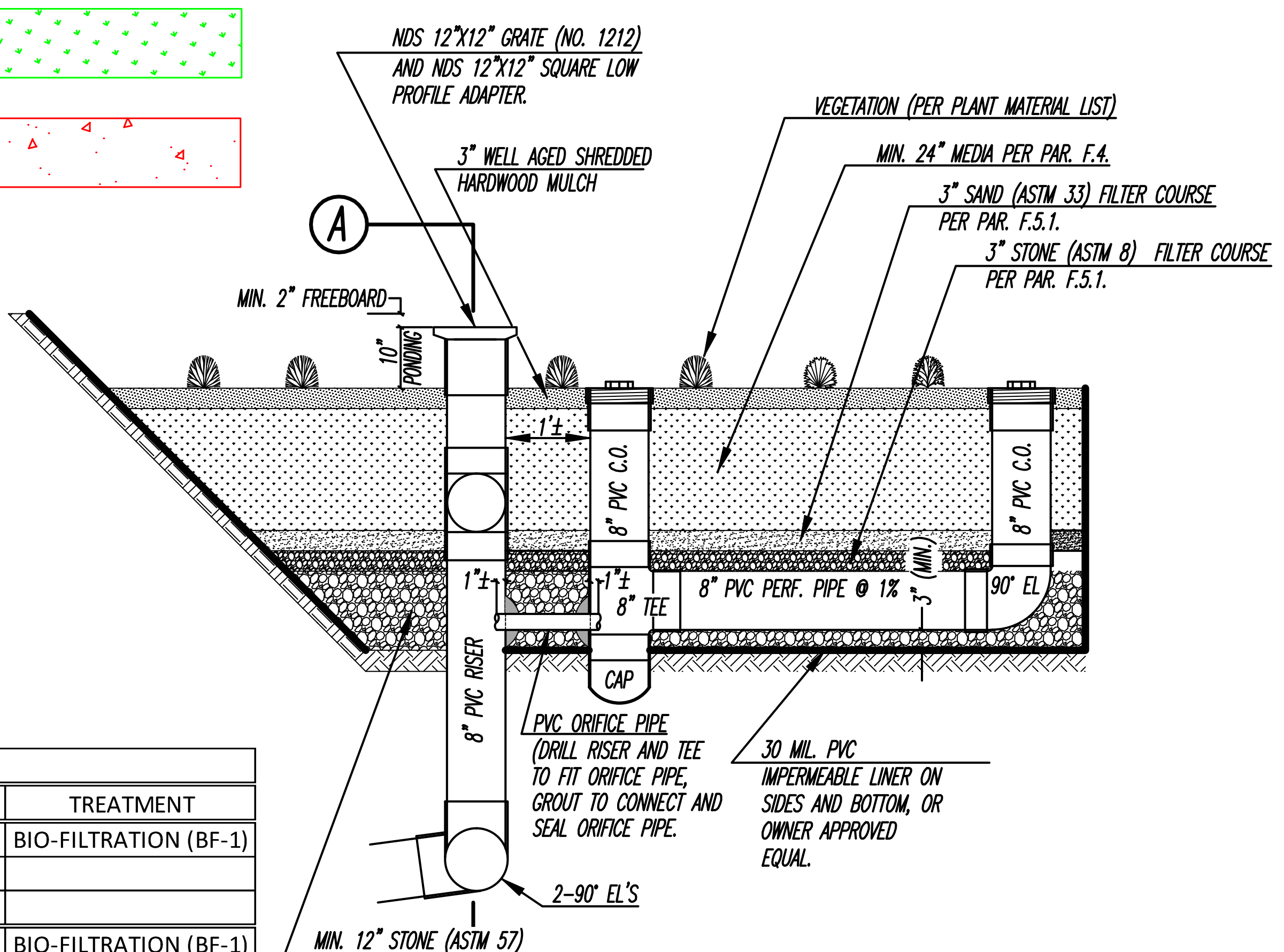
B) THE PERMITEE OR DESIGNEE SHALL INCORPORATE ANY CONSTRUCTION BEST MANAGEMENT PRACTICES (BMP'S) NECESSARY TO COMPLY WITH CHAPTER 14, ARTICLE 2, DIVISION 1 (GRADING REGULATIONS) OF THE LAND DEVELOPMENT CODE, INTO THE CONSTRUCTION PLANS AND/OR SPECIFICATIONS, SATISFACTORY TO THE CITY ENGINEER, PRIOR TO THE ISSUANCE OF ANY CONSTRUCTION PERMITS.

VI. IMPLEMENTATION AND MAINTENANCE REQUIREMENTS

A) THE PERMITEE OR DESIGNEE SHALL EXECUTE A MAINTENANCE AGREEMENT FOR ONGOING PERMANENT BMP MAINTENANCE, SATISFACTORY TO THE CITY ENGINEER, PRIOR TO THE ISSUANCE OF ANY CONSTRUCTION PERMITS FOR THE PROJECT.

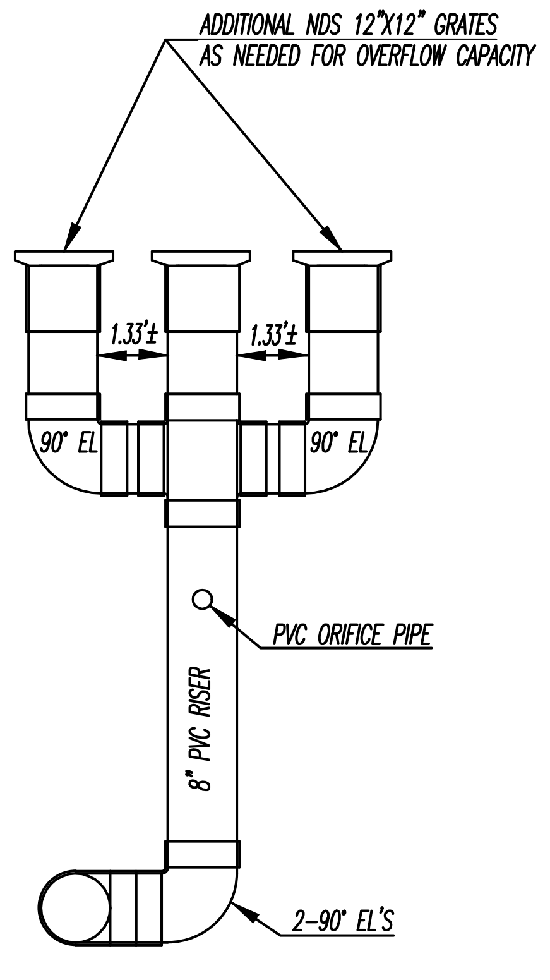
LEGEND

SUBDIVISION BOUNDARY	— - - — - - —
DMA-#	DMA-#
DMA LIMITS	▬ ▬ ▬ ▬
PROPOSED STORM DRAIN	═ ═ ═ ═
EXISTING STORM DRAIN	═ ═ ═ ═
BMP DESIGNATION	⑨
PROPOSED PERVIOUS	🟩
PROPOSED IMPERVIOUS	🟥



PRIVATE BIO-FILTER PLANTER DETAIL

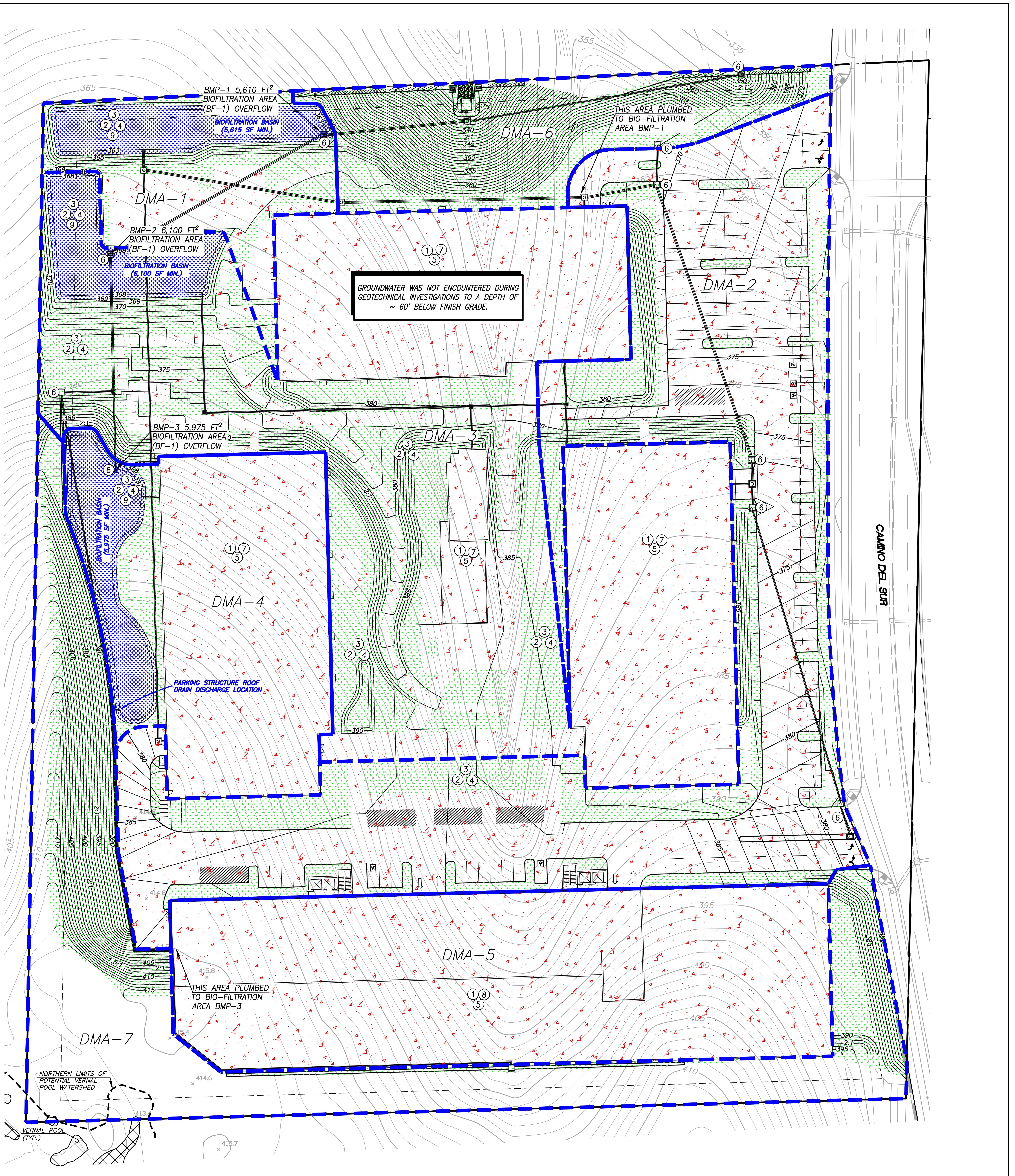
(NTS)

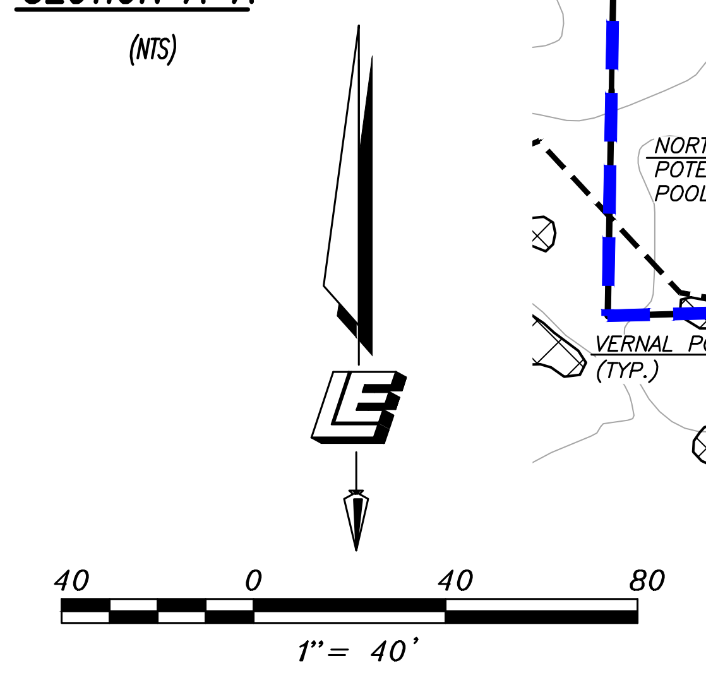


SECTION A-A

(NTS)

DMA SUMMARY (DISTURBED AREA ONLY)								
BMP-#	DMA -#	AREA (SF)	ACRE	IMP. (SF)	PERV. (SF)	SOIL	SLOPE	TREATMENT
BMP-1								BIO-FILTRATION (BF-1)
	DMA-1	20,447		6,889	13,558	D	≤ 5% AVG.	
	DMA-2	104,985		71,540	33,445	D	≤ 5% AVG.	
BMP-2								BIO-FILTRATION (BF-1)
	DMA-3	134,584		83,940	50,644	D	≤ 5% AVG.	
BMP-3								BIO-FILTRATION (BF-1)
	DMA-4	48,011		37,708	10,303	D	≤ 5% AVG.	
	DMA-5	60,077		60,077	0	D	≤ 5% AVG.	
N/A								SELF-TREATING
	DMA-6	24,950		0	24,950	D	≥ 15% AVG.	
	DMA-7	19,149		0	19,149	D	≥ 15% AVG.	





NO.	DATE	BY	DESCRIPTION	NO.	DATE	BY	DESCRIPTION
6				12			
5	09/28/2016	MFD	RESUBMITTAL 4	11			
4	06/22/2016	RL	RESUBMITTAL 3	10			
3	03/31/2016	MFD	RESUBMITTAL 2	9			
2	11/13/2015	RL	RESUBMITTAL 1	8			
1	08/01/2015	MFD	ORIGINAL	7			

Leppert Engineering
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APPROVED BY ENGINEER OF WORK
REGISTRATION R C E 26283
FILE CODE TH 06.07-13.15
DATE

PREPARATION AND REVISION LOG

BMP PLAN - PROPOSED CONDITION
SHEET 1 OF 1
THE PRESERVE AT TORREY HIGHLANDS

Attachment 5

Drainage Study

DRAINAGE STUDY
FOR
THE PRESERVE AT TORREY HIGHLANDS

PTS No. 442880, I.O. No. 24006166
June 22, 2016

Prepared By:
LEPPERT ENGINEERING CORPORATION
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SAN DIEGO, CA 92122
Job No. TH 06.07-13.15

Prepared For:
The Preserve at Torrey Highlands, LLC
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REGISTERED PROFESSIONAL ENGINEER
JOHN D. LEPPERT
C 26283
CIVIL
STATE OF CALIFORNIA

____
By: John D. Leppert, RCE 26283
Exp. 3/31/18

____
Date

Table of Contents

Exhibits

Appendices

Drainage Study
The Preserve at Torrey Highlands
June 22, 2016

Purpose

The purpose of this drainage study is to estimate the quantity of storm water runoff from the proposed development of The Preserve at Torrey Highlands and determine sizing of proposed storm drains.

Project Location

The proposed project is located in Torrey Highlands, which falls under the Miramar Reservoir Hydrologic Area (Hydrologic Sub-area 906.10) of the Peñasquitos Hydrologic unit. The project site is south of the intersection of Torrey Santa Fe Rd and Camino Del Sur just south of State Route 56, in the City of San Diego (see Exhibit A).

Project Description

The project proposes three corporate office buildings, one café building, one fitness center, and one parking structure.

-Building 1:
  Proposed 6-level office building containing 180,000 gross square feet, and 87 covered parking stalls beneath.
-Building 2:
  Proposed 4-level office building containing 120,000 gross square feet, and 69 covered parking stalls beneath.
-Building 3:
  Proposed 5-level office building containing 150,000 gross square feet, and 85 covered parking stalls beneath.
-Parking Structure:
  Proposed 7.4-Level parking structure containing 0.4 subterranean and 7 above grade parking levels; providing 1,472 parking stalls.
-Café:
  Proposed 1-level on site café building; providing approximately 3,850 square feet of space.
-Fitness Center:
  Proposed 1-level Fitness Center beneath Building 2; providing approximately 5,000 square feet of space.

Method of Calculation

This study calculates the total runoff from the site using the guidelines set forth in the City of San Diego's Drainage Design Manual, dated April 1984 (see Appendix I – Rational Method: City of San Diego Drainage Design Manual). The specific method used is the Rational Formula for watersheds under 0.5 square miles. A 100 year storm event was used for the analysis. Per the City of San Diego Drainage Design Manual, for tributary areas less than one square mile the storm drain system shall be designed so that the combination of storm drain system capacity and overflow will be able to carry the 100-year frequency storm without damage to or flooding of adjacent existing buildings or potential building sites, and Type D soil shall be used for all areas (see Appendix II– Runoff Coefficients: City of San Diego Drainage Design Manual).

Autodesk Storm and Sanitary Analysis was used for the storm analysis. Autodesk Storm and Sanitary Analysis is a link-node based model that performs hydrology, hydraulic, and water quality analysis of storm water and wastewater drainage systems, including sewage treatment plants and water quality control devices. A link represents a hydraulic element (i.e., a pipe, channel, pump, standpipe, culvert, or weir) that transports flow and constituents. A node can represent the junction of two or more links, a storm drain catch basin inlet, the location of a flow or pollutant input into the system, or a storage element (such as a detention pond, retention pond, settling pond, or lake).

Drainage basin boundaries, flow patterns, and topographic elevations are shown on the drainage basin maps located in the map pockets (see Exhibit B – Existing Condition Drainage Basin Map & Exhibit D – Proposed Condition Basin Map).

Existing Condition

The project site is currently an undeveloped 10.4 acre site designated by APN 306-050-16, 18, 19, & 28. All of the surrounding adjacent parcels are also undeveloped; however there are proposed plans for the extension of Camino Del Sur which will front the project. It is anticipated that those plans will be approved prior to this project as such those improvements are reflected as "existing" for this project. The existing condition analysis analyzes three basins as shown on Exhibit B- Existing condition Drainage Basin Map.

Sub-basin 1:

The western edge of the site along the top ridge of the finger canyon of sub-basin 2. The runoff in this sub-basin drains to the north. An approximately 0.03 acres area drains from offsite through the project site. The peak runoff experienced on sub-basin 1 is 1.43 cfs.

Sub-basin 2:

The majority of the site, which sits over another finger canyon of Deer Canyon, which drains to the north. An approximately 1.12 acres area drains from offsite through the project site. The peak runoff experienced on sub-basin 2 is 10.56 cfs.

Sub-basin 3:

In its current state, the eastern edge of the site along the proposed extension of Camino Del Sur drains to the north into one of Deer Canyon's finger canyons. An approximately 0.10 acres area drains from offsite through the project site. The peak runoff experienced on sub-basin 3 is 2.22 cfs.

Runoff calculations for each sub-basin are tabulated below:

Basin	Area (SF)	Area (Acres)	C	Length (ft)	Upper Elev. (ft)	Lower Elev. (ft)	Slope (%)	Tc (min)	Intensity (in/hr)	Q_{100} (cfs)
1	52631	1.208	0.45	770	415	366	6.36%	17.53	2.63	1.43
2	368302	8.455	0.45	890	419	323	10.79%	15.81	2.78	10.56
3	77861	1.787	0.45	810	413	340	9.01%	16.01	2.75	2.22
									Total Q	**14.20**

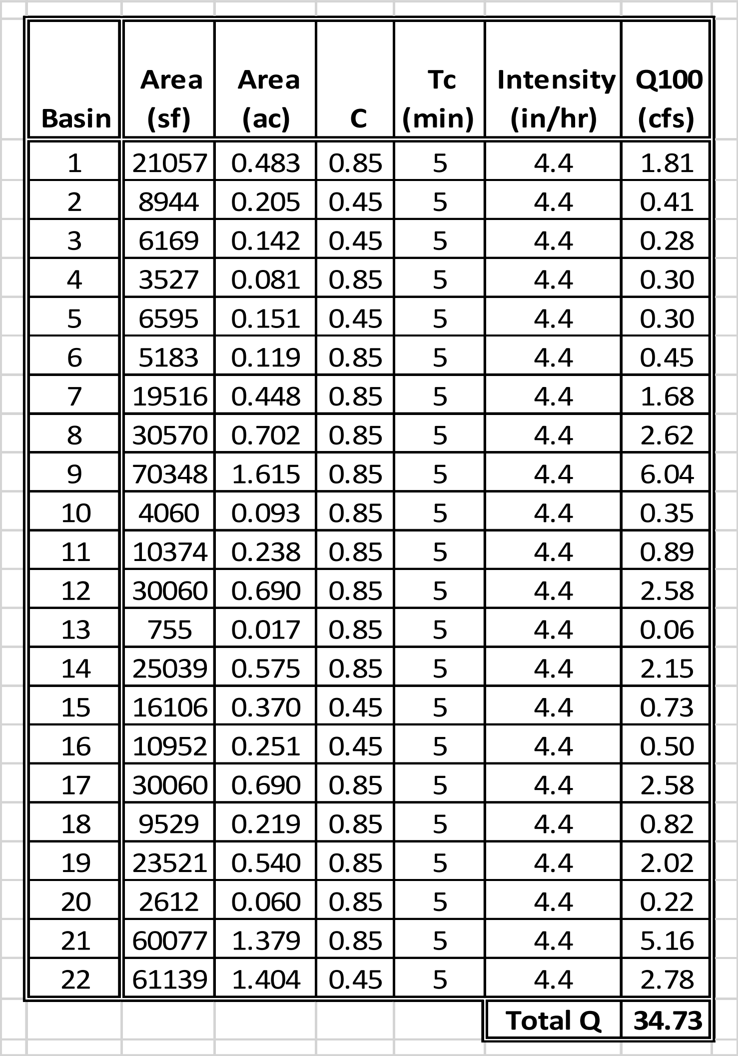
All runoff from the site flows through the finger canyons prior to joining additional offsite flows in Deer Canyon. Results from the SSA analysis can be found in Exhibit C-Existing Condition SSA Analysis Results. The total runoff experienced from the site is 14.20 cfs in the existing condition.

Proposed Condition

The proposed condition analysis analyzes twenty-one basins as shown on Exhibit D-Proposed Condition Basin Map. The runoff from each basin is collected, routed, and discharged to the finger canyon at the north of the property. Typically, runoff will be directed to biofiltration basins that will have an impermeable liner with perforated sub-drain and an overflow structure bypass. This drainage study will assume a flow through condition utilizing the overflow bypass for sizing of the storm drain pipe, the treatment will be discussed in the WQTR for this project.

Development of The Preserve at Torrey Highlands site will include the construction of 3 office buildings, a parking structure, a fitness center, and a café. Per the City of San Diego Drainage Design Manual, a developed condition runoff coefficient of 0.85 was chosen for this analysis, which corresponds to a Commercial land use (see Appendix III).

Runoff calculations for each sub-basin are tabulated below:



Basin	Area (sf)	Area (ac)	C	Tc (min)	Intensity (in/hr)	Q100 (cfs)
1	21057	0.483	0.85	5	4.4	1.81
2	8944	0.205	0.45	5	4.4	0.41
3	6169	0.142	0.45	5	4.4	0.28
4	3527	0.081	0.85	5	4.4	0.30
5	6595	0.151	0.45	5	4.4	0.30
6	5183	0.119	0.85	5	4.4	0.45
7	19516	0.448	0.85	5	4.4	1.68
8	30570	0.702	0.85	5	4.4	2.62
9	70348	1.615	0.85	5	4.4	6.04
10	4060	0.093	0.85	5	4.4	0.35
11	10374	0.238	0.85	5	4.4	0.89
12	30060	0.690	0.85	5	4.4	2.58
13	755	0.017	0.85	5	4.4	0.06
14	25039	0.575	0.85	5	4.4	2.15
15	16106	0.370	0.45	5	4.4	0.73
16	10952	0.251	0.45	5	4.4	0.50
17	30060	0.690	0.85	5	4.4	2.58
18	9529	0.219	0.85	5	4.4	0.82
19	23521	0.540	0.85	5	4.4	2.02
20	2612	0.060	0.85	5	4.4	0.22
21	60077	1.379	0.85	5	4.4	5.16
22	61139	1.404	0.45	5	4.4	2.78
					Total Q	**34.73**

For all sub-basins the time of concentration is conservatively assumed to be 5 minutes due to onsite storm drains and roof drains, so the minimum time of concentration of 5 minutes was used. Intensity values were determined using the City of San Diego Drainage Design Manual Rainfall Intensity Duration Frequency Curves (see Appendix IV).

Results from the SSA analysis can be found in Exhibit E-Proposed Condition SSA Analysis Results. The total of the runoff of each individual basin is 34.73 cfs, however due to routing time of the storm drain system, the total runoff from the site is 27.43 cfs.

Conclusions

As compared to the existing condition, the proposed condition will increase the quantity of runoff from the site for a 100-year storm event. However, the proposed development includes hydromodification features implemented in accordance with the California Regional Water Quality Control Board for the San Diego Region municipal storm water National Pollutant Discharge Elimination System permit (Municipal Separate Storm Sewer Systems [MS4] Permit), Order No. R9-2013-0001). The Storm Water Quality Management Plan for this project discusses hydromodification more thoroughly.

The proposed storm drains will be sized as indicated in the Autodesk Storm and Sanitary Analysis to provide adequate capacity.

EXHIBIT “A” – Location Map

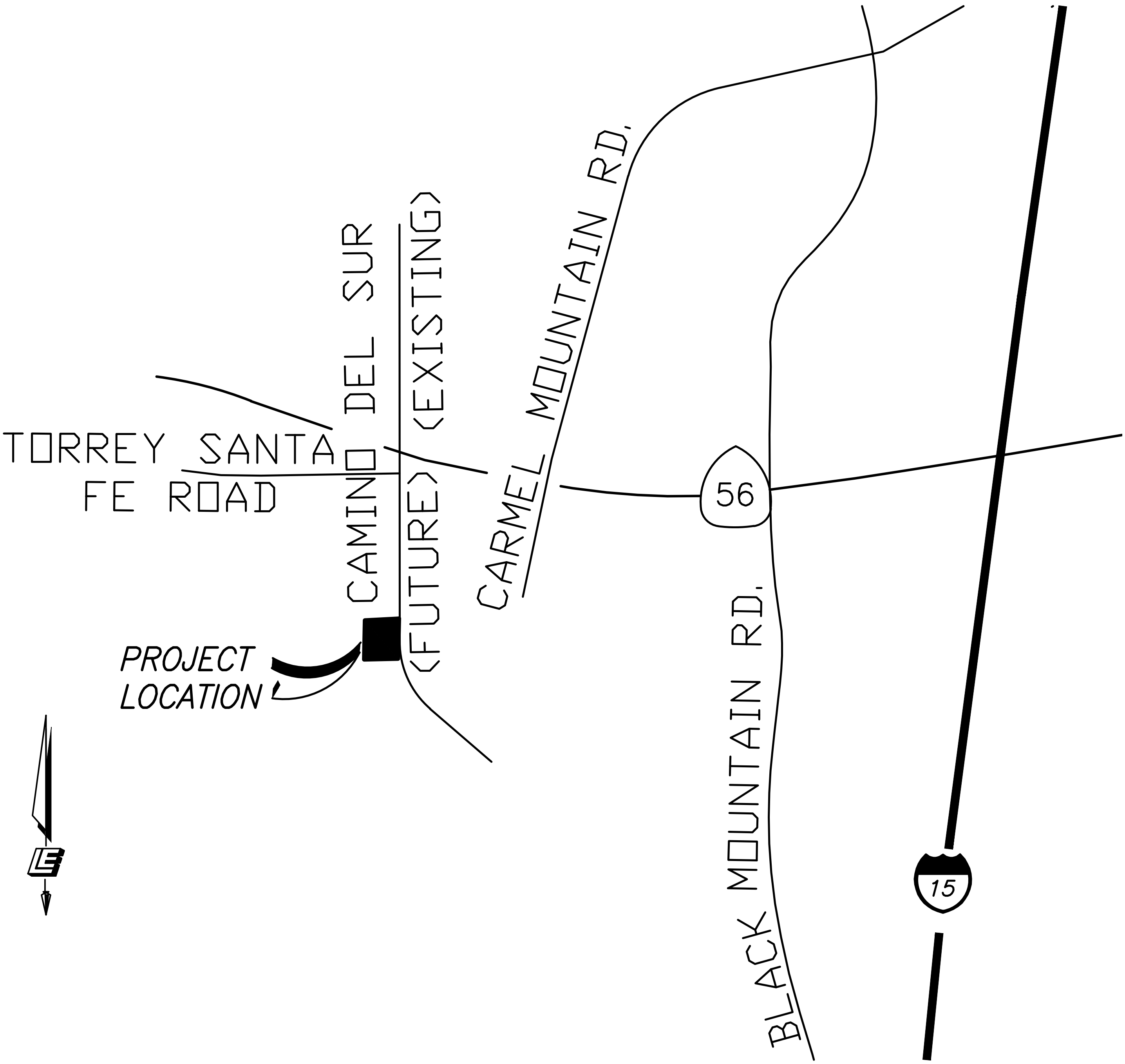

TORREY SANTA FE ROAD
CAMINO DEL SUR
(FUTURE)
(EXISTING)
CARMEL MOUNTAIN RD.
56
BLACK MOUNTAIN RD.
15
PROJECT LOCATION

EXHIBIT “B” – Existing Condition Drainage Basin Map

LEGEND

SUBDIVISION BOUNDARY — - - — - - —

DRAINAGE BASIN LIMITS ■ ■ ■ ■ ■ ■ ■

PROJECT AREA

PROJECT AREA = 443,721 S.F.

IMPERVIOUS AREA ▨

IMPERVIOUS AREA = 0 S.F. (0%)

PERVIOUS AREA 🟩

PERVIOUS AREA = 443,721 S.F. (100%)

Basin	Area (SF)	Area (Acres)	C	Length (ft)	Upper Elev. (ft)	Lower Elev. (ft)	Slope (%)	Tc (min)	Intensity (in/hr)	Q_{100} (cfs)
1	52631	1.208	0.45	770	415	366	6.36%	17.53	2.63	1.43
2	368302	8.455	0.45	890	419	323	10.79%	15.81	2.78	10.56
3	77861	1.787	0.45	810	413	340	9.01%	16.01	2.75	2.22
									Total Q	**14.20**

THE PRESERVE AT TORREY HILLS
EXISTING DRAINAGE MAP

NO.	DATE	BY	DESCRIPTION	NO.	DATE	BY	DESCRIPTION
6				12			
5				11			
4				10			
3	06/22/2016	RL	REVISION 2	9			
2	04/04/2016	RL	REVISION 1	8			
1	11/13/2015	RL	ORIGINAL	7			

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REGISTRATION R C E 26283
FILE CODE TH 06.07-13.15
DATE

PREPARATION AND REVISION LOG

EXHIBIT “C” – Existing Condition SSA Analysis Results

Project Description

File Name	SSA Analysis - Existing.SPF

Project Options

Flow Units	CFS
Elevation Type	Elevation
Hydrology Method	Rational
Time of Concentration (TOC) Method	User-Defined
Link Routing Method	Hydrodynamic
Enable Overflow Ponding at Nodes	YES
Skip Steady State Analysis Time Periods	NO

Analysis Options

Start Analysis On	Nov 11, 2014	00:00:00
End Analysis On	Nov 12, 2014	00:00:00
Start Reporting On	Nov 11, 2014	00:00:00
Antecedent Dry Days	0	days
Runoff (Dry Weather) Time Step	0 01:00:00	days hh:mm:ss
Runoff (Wet Weather) Time Step	0 00:05:00	days hh:mm:ss
Reporting Time Step	0 00:05:00	days hh:mm:ss
Routing Time Step	30	seconds

Number of Elements

	Qty
Rain Gages	0
Subbasins	3
Nodes	3
Junctions	0
Outfalls	3
Flow Diversions	0
Inlets	0
Storage Nodes	0
Links	0
Channels	0
Pipes	0
Pumps	0
Orifices	0
Weirs	0
Outlets	0
Pollutants	0
Land Uses	0

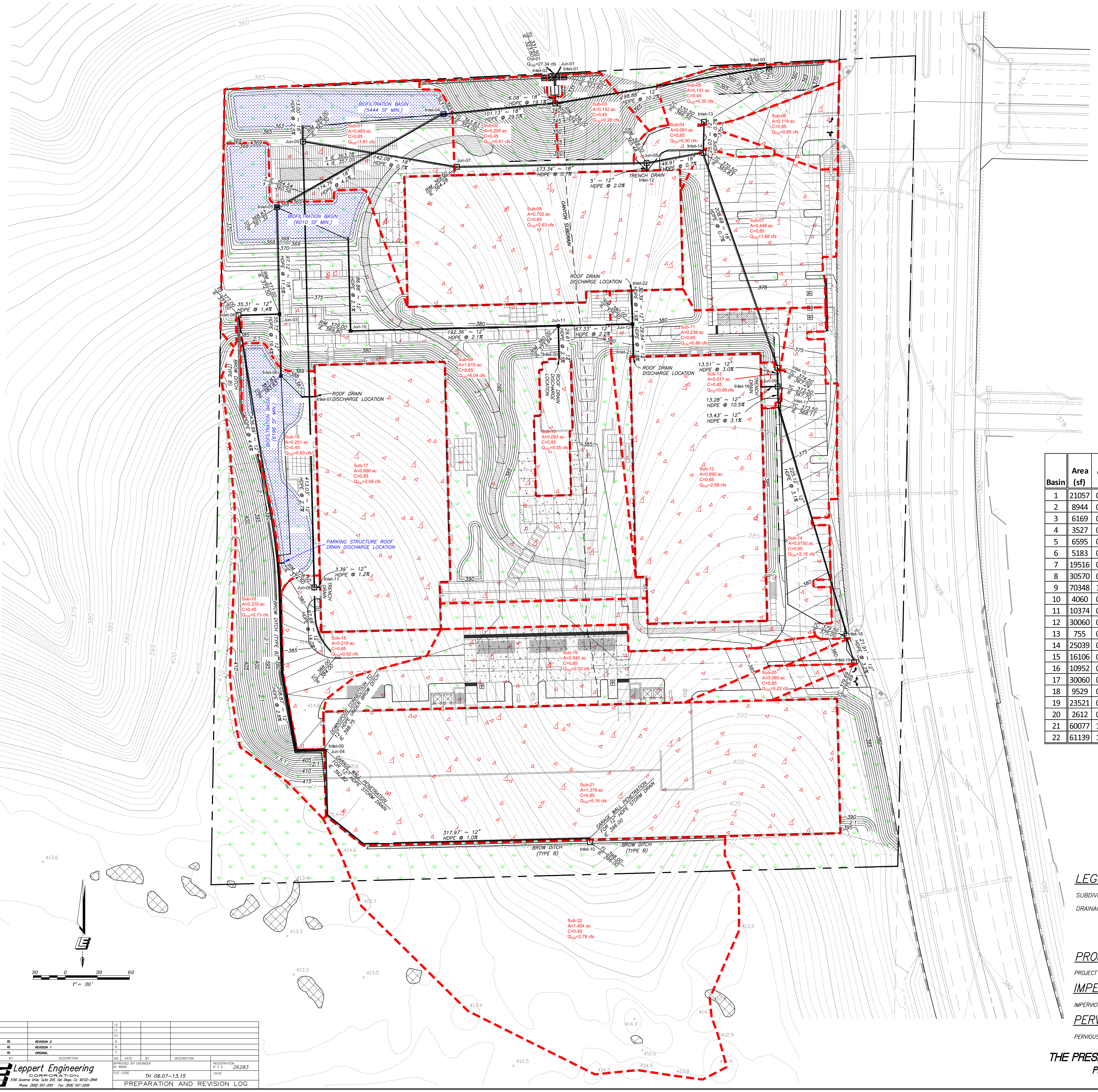
Rainfall Details

Return Period	100 year(s)

Subbasin Summary

SN	Subbasin ID	Area (ac)	Weighted Runoff Coefficient	Total Rainfall (in)	Total Runoff (in)	Total Runoff Volume (ac-in)	Peak Runoff (cfs)	Time of Concentration (days hh:mm:ss)
1	Sub-01	1.21	0.4500	0.77	0.35	0.42	1.43	0 00:17:31
2	Sub-02	8.46	0.4500	0.73	0.33	2.78	10.56	0 00:15:48
3	Sub-03	1.79	0.4500	0.74	0.33	0.59	2.22	0 00:16:00

EXHIBIT “D” – Proposed Condition Drainage Basin Map



Basin	Area (sf)	Area (ac)	C	Tc (min)	Intensity (in/hr)	Q100 (cfs)
1	21057	0.483	0.85	5	4.4	1.81
2	8944	0.205	0.45	5	4.4	0.41
3	6169	0.142	0.45	5	4.4	0.28
4	3527	0.081	0.85	5	4.4	0.30
5	6595	0.151	0.45	5	4.4	0.30
6	5183	0.119	0.85	5	4.4	0.45
7	19516	0.448	0.85	5	4.4	1.68
8	30570	0.702	0.85	5	4.4	2.62
9	70348	1.615	0.85	5	4.4	6.04
10	4060	0.093	0.85	5	4.4	0.35
11	10374	0.238	0.85	5	4.4	0.89
12	30060	0.690	0.85	5	4.4	2.58
13	755	0.017	0.85	5	4.4	0.06
14	25039	0.575	0.85	5	4.4	2.15
15	16106	0.370	0.45	5	4.4	0.73
16	10952	0.251	0.45	5	4.4	0.50
17	30060	0.690	0.85	5	4.4	2.58
18	9529	0.219	0.85	5	4.4	0.82
19	23521	0.540	0.85	5	4.4	2.02
20	2612	0.060	0.85	5	4.4	0.22
21	60077	1.379	0.85	5	4.4	5.16
22	61139	1.404	0.45	5	4.4	2.78
					Total Q	34.73

LEGEND

SUBDIVISION BOUNDARY	— - - — - - —
DRAINAGE BASIN LIMITS	▬ ▬ ▬ ▬ ▬

PROJECT AREA

PROJECT AREA = 443,721 S.F.

IMPERVIOUS AREA

IMPERVIOUS AREA = 254,152 S.F. (57%)

PERVIOUS AREA

PERVIOUS AREA = 189,569 S.F. (43%)

THE PRESERVE AT TORREY HIGHLANDS
PROPOSED DRAINAGE MAP

NO.	DATE	BY	DESCRIPTION	NO.	DATE	BY	DESCRIPTION
6				12			
5				11			
4				10			
3	06/22/2016	RL	REVISION 2	9			
2	04/04/2016	RL	REVISION 1	8			
1	11/13/2015	RL	ORIGINAL	7			

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FILE CODE TH 06.07-13.15
DATE

PREPARATION AND REVISION LOG

EXHIBIT “E” – Proposed Condition SSA Analysis

Project Description

File Name	SSA Analysis - Proposed.SPF

Project Options

Flow Units	CFS
Elevation Type	Elevation
Hydrology Method	Rational
Time of Concentration (TOC) Method	User-Defined
Link Routing Method	Hydrodynamic
Enable Overflow Ponding at Nodes	YES
Skip Steady State Analysis Time Periods	NO

Analysis Options

Start Analysis On	Mar 15, 2016	00:00:00
End Analysis On	Mar 16, 2016	00:00:00
Start Reporting On	Mar 15, 2016	00:00:00
Antecedent Dry Days	0	days
Runoff (Dry Weather) Time Step	0 01:00:00	days hh:mm:ss
Runoff (Wet Weather) Time Step	0 00:05:00	days hh:mm:ss
Reporting Time Step	0 00:05:00	days hh:mm:ss
Routing Time Step	30	seconds

Number of Elements

	Qty
Rain Gages	0
Subbasins	22
Nodes	35
Junctions	12
Outfalls	1
Flow Diversions	0
Inlets	22
Storage Nodes	0
Links	39
Channels	6
Pipes	33
Pumps	0
Orifices	0
Weirs	0
Outlets	0
Pollutants	0
Land Uses	0

Rainfall Details

Return Period	100 year(s)

Subbasin Summary

SN	Subbasin ID	Area (ac)	Weighted Runoff Coefficient	Total Rainfall (in)	Total Runoff (in)	Total Runoff Volume (ac-in)	Peak Runoff (cfs)	Time of Concentration (days hh:mm:ss)
1	Sub-01	0.48	0.8500	0.37	0.31	0.15	1.81	0 00:05:00
2	Sub-02	0.21	0.4500	0.37	0.17	0.03	0.41	0 00:05:00
3	Sub-03	0.14	0.4500	0.37	0.17	0.02	0.28	0 00:05:00
4	Sub-04	0.08	0.8500	0.37	0.31	0.03	0.30	0 00:05:00
5	Sub-05	0.15	0.4500	0.37	0.17	0.02	0.30	0 00:05:00
6	Sub-06	0.12	0.8500	0.37	0.31	0.04	0.45	0 00:05:00
7	Sub-07	0.45	0.8500	0.37	0.31	0.14	1.68	0 00:05:00
8	Sub-08	0.70	0.8500	0.37	0.31	0.22	2.63	0 00:05:00
9	Sub-09	1.62	0.8500	0.37	0.31	0.50	6.04	0 00:05:00
10	Sub-10	0.09	0.8500	0.37	0.31	0.03	0.35	0 00:05:00
11	Sub-11	0.24	0.8500	0.37	0.31	0.07	0.89	0 00:05:00
12	Sub-12	0.69	0.8500	0.37	0.31	0.22	2.58	0 00:05:00
13	Sub-13	0.02	0.8500	0.37	0.31	0.01	0.06	0 00:05:00
14	Sub-14	0.58	0.8500	0.37	0.31	0.18	2.15	0 00:05:00
15	Sub-15	0.37	0.4500	0.37	0.17	0.06	0.73	0 00:05:00
16	Sub-16	0.25	0.4500	0.37	0.17	0.04	0.50	0 00:05:00
17	Sub-17	0.69	0.8500	0.37	0.31	0.22	2.58	0 00:05:00
18	Sub-18	0.22	0.8500	0.37	0.31	0.07	0.82	0 00:05:00
19	Sub-19	0.54	0.8500	0.37	0.31	0.17	2.02	0 00:05:00
20	Sub-20	0.06	0.8500	0.37	0.31	0.02	0.22	0 00:05:00
21	Sub-21	1.38	0.8500	0.37	0.31	0.43	5.16	0 00:05:00
22	Sub-22	1.40	0.4500	0.37	0.17	0.23	2.78	0 00:05:00

Node Summary

SN	Element ID	Element Type	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Initial Water Elevation (ft)	Surcharge Elevation (ft)	Ponded Area (ft^2)	Peak Inflow (cfs)	Max HGL Elevation Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)	Time of Peak Flooding Occurrence (days hh:mm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
1	Jun-01	Junction	323.05	369.00	0.00	0.00	0.00	27.43	324.43	0.00	44.57	0 00:00	0.00	0.00
2	Jun-02	Junction	324.21	338.00	0.00	0.00	0.00	26.98	329.32	0.00	8.68	0 00:00	0.00	0.00
3	Jun-03	Junction	372.50	377.00	0.00	6.00	0.00	10.35	373.05	0.00	3.95	0 00:00	0.00	0.00
4	Jun-04	Junction	392.82	396.82	0.00	389.20	0.00	2.62	393.22	0.00	3.60	0 00:00	0.00	0.00
5	Jun-05	Junction	363.30	368.00	0.00	6.00	0.00	7.25	364.30	0.00	3.70	0 00:00	0.00	0.00
6	Jun-06	Junction	374.50	378.50	0.00	6.00	0.00	0.81	374.74	0.00	3.76	0 00:00	0.00	0.00
7	Jun-07	Junction	364.28	369.00	0.00	6.00	0.00	6.72	365.42	0.00	3.58	0 00:00	0.00	0.00
8	Jun-08	Junction	365.48	369.00	0.00	6.00	0.00	6.73	366.58	0.00	2.42	0 00:00	0.00	0.00
9	Jun-09	Junction	367.70	373.50	0.00	6.00	0.00	4.12	368.61	0.00	4.89	0 00:00	0.00	0.00
10	Jun-10	Junction	369.80	379.00	0.00	6.00	0.00	5.06	370.91	0.00	8.09	0 00:00	0.00	0.00
11	Jun-11	Junction	373.84	380.00	0.00	6.00	0.00	5.19	374.76	0.00	5.24	0 00:00	0.00	0.00
12	Jun-12	Junction	375.30	380.00	0.00	6.00	0.00	5.12	376.52	0.00	3.48	0 00:00	0.00	0.00
13	Out-01	Outfall	323.00					27.43	324.25					

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Diameter or Height (in)	Manning's Roughness	Peak Flow (cfs)	Design Flow Capacity (cfs)	Peak Flow/ Design Flow Ratio	Peak Flow Velocity (ft/sec)	Peak Flow Depth (ft)	Peak Flow Depth/ Total Depth Ratio	Total Time Surcharged (min)	Reported Condition
1	Link-02	Pipe	Inlet-01	Jun-01	5.00	323.60	323.55	1.0000	12.000	0.0130	0.28	3.56	0.08	1.88	0.85	0.85	0.00	Calculated
2	Link-03	Pipe	Inlet-02	Jun-01	5.00	323.60	323.55	1.0000	12.000	0.0130	0.41	3.56	0.11	2.07	0.85	0.85	0.00	Calculated
3	Link-04	Pipe	Jun-02	Jun-01	6.08	324.21	323.05	19.0800	18.000	0.0130	26.98	45.88	0.59	15.48	1.44	0.96	0.00	Calculated
4	Link-05	Pipe	Inlet-03	Jun-02	198.88	345.00	324.71	10.2000	12.000	0.0130	0.29	11.38	0.03	3.86	0.55	0.55	0.00	Calculated
5	Link-06	Pipe	Inlet-04	Jun-02	101.13	354.00	324.21	29.4600	18.000	0.0130	26.76	57.01	0.47	18.81	1.13	0.75	0.00	Calculated
6	Link-07	Pipe	Inlet-05	Inlet-04	174.76	361.32	354.00	4.1900	18.000	0.0130	18.71	21.50	0.87	14.39	1.13	0.75	0.00	Calculated
7	Link-08	Pipe	Jun-03	Inlet-05	97.12	372.50	361.32	11.5100	18.000	0.0130	10.35	35.64	0.29	8.03	1.03	0.68	0.00	Calculated
8	Link-09	Pipe	Inlet-06	Jun-03	55.73	383.83	373.00	19.4300	12.000	0.0130	8.01	15.71	0.51	18.32	0.54	0.54	0.00	Calculated
9	Link-10	Pipe	Inlet-07	Inlet-06	12.34	384.08	383.83	2.0300	12.000	0.0130	2.57	5.07	0.51	4.90	0.63	0.63	0.00	Calculated
10	Link-11	Pipe	Inlet-09	Inlet-06	208.87	398.75	387.00	5.6300	12.000	0.0130	5.00	8.45	0.59	10.92	0.57	0.57	0.00	Calculated
11	Link-12	Pipe	Inlet-08	Jun-03	35.31	373.50	373.00	1.4200	12.000	0.0130	2.92	4.24	0.69	5.07	0.69	0.69	0.00	Calculated
12	Link-13	Pipe	Jun-04	Inlet-08	436.99	392.82	373.50	4.4200	12.000	0.0130	2.50	7.49	0.33	5.52	0.58	0.58	0.00	Calculated
13	Link-14	Pipe	Inlet-10	Jun-04	317.97	396.00	392.82	1.0000	12.000	0.0130	2.62	3.56	0.73	5.78	0.56	0.56	0.00	Calculated
14	Link-15	Pipe	Jun-05	Inlet-04	12.00	363.30	363.00	2.5000	18.000	0.0130	7.11	16.61	0.43	6.97	0.84	0.56	0.00	Calculated
15	Link-16	Pipe	Jun-06	Jun-05	413.03	374.50	363.80	2.5900	12.000	0.0130	0.74	5.73	0.13	4.50	0.36	0.36	0.00	Calculated
16	Link-17	Pipe	Inlet-11	Jun-06	3.39	374.54	374.50	1.1800	12.000	0.0130	0.81	3.87	0.21	3.65	0.33	0.33	0.00	Calculated
17	Link-18	Pipe	Jun-10	Inlet-05	85.88	369.80	368.00	2.1000	12.000	0.0130	4.87	5.16	0.94	6.98	0.88	0.88	0.00	Calculated
18	Link-19	Pipe	Jun-11	Jun-10	192.36	373.84	369.80	2.1000	12.000	0.0130	5.06	5.16	0.98	6.79	0.95	0.95	0.00	Calculated
19	Link-20	Pipe	Inlet-20	Jun-11	29.61	374.46	373.84	2.0900	12.000	0.0130	0.50	5.16	0.10	2.21	0.62	0.62	0.00	Calculated
20	Link-21	Pipe	Jun-12	Jun-11	67.33	375.30	373.84	2.1700	12.000	0.0130	4.83	5.25	0.92	6.46	0.96	0.96	0.00	Calculated
21	Link-22	Pipe	Inlet-21	Jun-12	29.64	375.87	375.30	1.9200	12.000	0.0130	2.54	4.94	0.51	3.73	0.86	0.86	0.00	Calculated
22	Link-23	Pipe	Inlet-22	Jun-12	30.39	375.89	375.30	1.9400	12.000	0.0130	2.59	4.96	0.52	3.79	0.86	0.86	0.00	Calculated
23	Link-24	Pipe	Jun-07	Jun-05	142.08	364.28	363.30	0.6900	18.000	0.0130	6.62	8.72	0.76	4.94	1.06	0.71	0.00	Calculated
24	Link-25	Pipe	Jun-08	Jun-07	173.34	365.48	364.28	0.6900	18.000	0.0130	6.72	8.74	0.77	4.83	1.11	0.74	0.00	Calculated
25	Link-26	Pipe	Inlet-12	Jun-08	5.00	366.08	365.98	2.0000	12.000	0.0130	0.26	5.04	0.05	2.61	0.55	0.55	0.00	Calculated
26	Link-27	Pipe	Inlet-14	Jun-08	49.91	365.83	365.48	0.7000	18.000	0.0130	6.49	8.80	0.74	4.44	1.16	0.78	0.00	Calculated
27	Link-28	Pipe	Inlet-13	Inlet-14	25.03	366.50	366.33	0.6800	12.000	0.0130	0.37	2.94	0.12	2.10	0.65	0.65	0.00	Calculated
28	Link-29	Pipe	Inlet-15	Inlet-14	208.68	367.29	365.83	0.7000	18.000	0.0130	4.86	8.79	0.55	3.88	1.01	0.68	0.00	Calculated
29	Link-30	Pipe	Jun-09	Inlet-15	13.51	367.70	367.29	3.0300	12.000	0.0130	4.11	6.21	0.66	5.77	0.85	0.85	0.00	Calculated
30	Link-31	Pipe	Inlet-16	Jun-09	13.28	369.09	367.70	10.4700	12.000	0.0130	0.06	11.53	0.01	0.76	0.48	0.48	0.00	Calculated
31	Link-32	Pipe	Inlet-17	Jun-09	13.43	368.11	367.70	3.0500	12.000	0.0130	4.06	6.23	0.65	5.30	0.94	0.94	0.00	Calculated
32	Link-33	Pipe	Inlet-18	Inlet-17	225.12	375.00	368.11	3.0600	12.000	0.0130	2.17	6.23	0.35	3.94	0.69	0.69	0.00	Calculated
33	Link-34	Pipe	Inlet-19	Inlet-18	21.91	375.69	375.00	3.1500	12.000	0.0130	0.22	6.32	0.03	1.30	0.27	0.27	0.00	Calculated
34	Link-01	Channel	Jun-01	Out-01	9.00	323.05	323.00	0.5600	63.000	0.0320	27.43	198.22	0.14	3.09	1.31	0.25	0.00	
35	Link-35	Channel	Inlet-13	Inlet-12	96.00	370.50	369.00	1.5600	6.000	0.0320	0.00	8.10	0.00	0.00	0.00	0.00	0.00	
36	Link-36	Channel	Inlet-14	Inlet-12	61.12	370.50	369.00	2.4500	6.000	0.0320	0.00	10.15	0.00	0.00	0.00	0.00	0.00	
37	Link-37	Channel	Inlet-15	Inlet-17	36.70	374.50	373.50	2.7200	6.000	0.0320	0.00	10.69	0.00	0.00	0.00	0.00	0.00	
38	Link-38	Channel	Inlet-18	Inlet-17	249.85	379.50	373.50	2.4000	6.000	0.0320	0.00	10.04	0.00	0.00	0.00	0.00	0.00	
39	Link-39	Channel	Inlet-19	Inlet-18	23.18	0.00	375.00	-1617.7700	6.000	0.0320	0.00	29.13	0.00	0.00	0.20	0.41	0.00	

Inlet Summary

SN	Element ID	Inlet Manufacturer	Manufacturer Part Number	Inlet Location	Number of Inlets	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Initial Water Elevation (ft)	Ponded Area (ft^{2})	Peak Flow (cfs)	Peak Flow Intercepted by Inlet (cfs)	Peak Flow Bypassing Inlet (cfs)	Inlet Efficiency during Peak Flow (%)	Allowable Spread (ft)	Max Gutter Spread during Peak Flow (ft)	Max Gutter Water Elev. during Peak Flow (ft)
1	Inlet-01	FHWA HEC-22 GENERIC	N/A	On Sag	1	323.60	331.50	0.00	10.00	0.28	N/A	N/A	N/A	10.00	0.36	331.58
2	Inlet-02	FHWA HEC-22 GENERIC	N/A	On Sag	1	323.60	331.50	0.00	10.00	0.41	N/A	N/A	N/A	10.00	0.53	331.61
3	Inlet-03	FHWA HEC-22 GENERIC	N/A	On Sag	1	345.00	349.00	0.00	10.00	0.30	N/A	N/A	N/A	10.00	0.39	349.08
4	Inlet-04	FHWA HEC-22 GENERIC	N/A	On Sag	1	354.00	363.83	0.00	10.00	1.81	N/A	N/A	N/A	10.00	4.41	364.17
5	Inlet-05	FHWA HEC-22 GENERIC	N/A	On Sag	1	361.32	368.83	0.00	10.00	6.04	N/A	N/A	N/A	10.00	16.51	369.41
6	Inlet-06	FHWA HEC-22 GENERIC	N/A	On Sag	1	383.83	387.83	0.00	10.00	0.50	N/A	N/A	N/A	10.00	0.64	387.97
7	Inlet-07	FHWA HEC-22 GENERIC	N/A	On Sag	1	384.08	388.08	0.00	10.00	2.58	N/A	N/A	N/A	10.00	7.03	388.47
8	Inlet-08	FHWA HEC-22 GENERIC	N/A	On Sag	1	373.50	377.00	0.00	10.00	0.73	N/A	N/A	N/A	10.00	0.95	377.20
9	Inlet-09	FHWA HEC-22 GENERIC	N/A	On Sag	1	398.75	402.75	0.00	10.00	5.16	N/A	N/A	N/A	10.00	14.32	403.29
10	Inlet-10	FHWA HEC-22 GENERIC	N/A	On Sag	1	396.00	398.00	0.00	10.00	2.78	N/A	N/A	N/A	10.00	7.68	398.40
11	Inlet-11	FHWA HEC-22 GENERIC	N/A	On Sag	1	374.54	378.54	0.00	10.00	0.82	N/A	N/A	N/A	10.00	6.36	378.87
12	Inlet-12	FHWA HEC-22 GENERIC	N/A	On Sag	1	365.58	369.00	0.00	10.00	0.30	N/A	N/A	N/A	10.00	0.39	369.08
13	Inlet-13	FHWA HEC-22 GENERIC	N/A	On Grade	1	366.50	370.50	0.00	N/A	0.45	0.45	0.00	100.00	10.00	3.69	370.65
14	Inlet-14	FHWA HEC-22 GENERIC	N/A	On Grade	1	365.83	370.50	0.00	N/A	1.68	1.68	0.00	100.00	10.00	7.91	370.74
15	Inlet-15	FHWA HEC-22 GENERIC	N/A	On Grade	1	367.29	374.50	0.00	N/A	0.89	0.89	0.00	100.00	10.00	5.72	374.70
16	Inlet-16	FHWA HEC-22 GENERIC	N/A	On Sag	1	369.09	373.50	0.00	10.00	0.06	N/A	N/A	N/A	10.00	0.08	373.52
17	Inlet-17	FHWA HEC-22 GENERIC	N/A	On Sag	1	368.11	373.50	0.00	10.00	2.15	N/A	N/A	N/A	10.00	15.26	374.04
18	Inlet-18	FHWA HEC-22 GENERIC	N/A	On Grade	1	375.00	379.50	0.00	N/A	2.02	2.02	0.00	100.00	10.00	8.62	379.76
19	Inlet-19	FHWA HEC-22 GENERIC	N/A	On Grade	1	375.69	379.69	0.00	N/A	0.22	0.22	0.00	98.29	10.00	1.86	379.76
20	Inlet-20	FHWA HEC-22 GENERIC	N/A	On Sag	1	374.46	378.46	0.00	10.00	0.35	N/A	N/A	N/A	10.00	0.45	378.56
21	Inlet-21	FHWA HEC-22 GENERIC	N/A	On Sag	1	375.87	379.25	0.00	10.00	2.58	N/A	N/A	N/A	10.00	7.03	379.64
22	Inlet-22	FHWA HEC-22 GENERIC	N/A	On Sag	1	375.89	379.89	0.00	10.00	2.63	N/A	N/A	N/A	10.00	7.18	380.28

Junction Input

SN	Element ID	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Ground/Rim (Max) Offset (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)	Surcharge Elevation (ft)	Surcharge Depth (ft)	Ponded Area (ft²)	Minimum Pipe Cover (in)
1	Jun-01	323.05	369.00	45.95	0.00	-323.05	0.00	-369.00	0.00	0.00
2	Jun-02	324.21	338.00	13.79	0.00	-324.21	0.00	-338.00	0.00	0.00
3	Jun-03	372.50	377.00	4.50	0.00	-372.50	6.00	-371.00	0.00	0.00
4	Jun-04	392.82	396.82	4.00	0.00	-392.82	389.20	-7.62	0.00	0.00
5	Jun-05	363.30	368.00	4.70	0.00	-363.30	6.00	-362.00	0.00	0.00
6	Jun-06	374.50	378.50	4.00	0.00	-374.50	6.00	-372.50	0.00	0.00
7	Jun-07	364.28	369.00	4.72	0.00	-364.28	6.00	-363.00	0.00	0.00
8	Jun-08	365.48	369.00	3.52	0.00	-365.48	6.00	-363.00	0.00	0.00
9	Jun-09	367.70	373.50	5.80	0.00	-367.70	6.00	-367.50	0.00	0.00
10	Jun-10	369.80	379.00	9.20	0.00	-369.80	6.00	-373.00	0.00	0.00
11	Jun-11	373.84	380.00	6.16	0.00	-373.84	6.00	-374.00	0.00	0.00
12	Jun-12	375.30	380.00	4.70	0.00	-375.30	6.00	-374.00	0.00	0.00

Junction Results

SN	Element ID	Peak Inflow (cfs)	Peak Lateral Inflow (cfs)	Max HGL Elevation Attained (ft)	Max HGL Depth Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)	Average HGL Elevation Attained (ft)	Average HGL Depth Attained (ft)	Time of Max HGL Occurrence (days hh:mm)	Time of Peak Flooding Occurrence (days hh:mm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
1	Jun-01	27.43	0.00	324.43	1.38	0.00	44.57	323.17	0.12	0 00:06	0 00:00	0.00	0.00
2	Jun-02	26.98	0.00	329.32	5.11	0.00	8.68	324.53	0.32	0 00:06	0 00:00	0.00	0.00
3	Jun-03	10.35	0.00	373.05	0.55	0.00	3.95	372.55	0.05	0 00:05	0 00:00	0.00	0.00
4	Jun-04	2.62	0.00	393.22	0.40	0.00	3.60	392.85	0.03	0 00:06	0 00:00	0.00	0.00
5	Jun-05	7.25	0.00	364.30	1.00	0.00	3.70	363.38	0.08	0 00:07	0 00:00	0.00	0.00
6	Jun-06	0.81	0.00	374.74	0.24	0.00	3.76	374.52	0.02	0 00:05	0 00:00	0.00	0.00
7	Jun-07	6.72	0.00	365.42	1.14	0.00	3.58	364.37	0.09	0 00:06	0 00:00	0.00	0.00
8	Jun-08	6.73	0.00	366.58	1.10	0.00	2.42	365.57	0.09	0 00:06	0 00:00	0.00	0.00
9	Jun-09	4.12	0.00	368.61	0.91	0.00	4.89	367.77	0.07	0 00:05	0 00:00	0.00	0.00
10	Jun-10	5.06	0.00	370.91	1.11	0.00	8.09	369.87	0.07	0 00:06	0 00:00	0.00	0.00
11	Jun-11	5.19	0.00	374.76	0.92	0.00	5.24	373.91	0.07	0 00:06	0 00:00	0.00	0.00
12	Jun-12	5.12	0.00	376.52	1.22	0.00	3.48	375.37	0.07	0 00:05	0 00:00	0.00	0.00

Channel Input

SN	Element ID	Length (ft)	Inlet Invert Elevation (ft)	Inlet Invert Offset (ft)	Outlet Invert Elevation (ft)	Outlet Invert Offset (ft)	Total Drop (ft)	Average Slope (%)	Shape	Height (ft)	Width (ft)	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Additional Losses	Initial Flow (cfs)	Flap Gate
1	Link-01	9.00	323.05	0.00	323.00	0.00	0.05	0.5600	Rectangular	5.250	6.750	0.0320	0.2000	0.5000	0.0000	0.00	No
2	Link-35	96.00	370.50	4.00	369.00	3.42	1.50	1.5600	Rectangular	0.500	5.000	0.0320	0.2000	0.5000	0.0000	0.00	No
3	Link-36	61.12	370.50	4.67	369.00	3.42	1.50	2.4500	Rectangular	0.500	5.000	0.0320	0.2000	0.5000	0.0000	0.00	No
4	Link-37	36.70	374.50	7.21	373.50	5.39	1.00	2.7200	Rectangular	0.500	5.000	0.0320	0.2000	0.5000	0.0000	0.00	No
5	Link-38	249.85	379.50	4.50	373.50	5.39	6.00	2.4000	Rectangular	0.500	5.000	0.0320	0.2000	0.5000	0.0000	0.00	No
6	Link-39	23.18	0.00	-375.69	375.00	0.00	-375.00	-1617.7700	Rectangular	0.500	5.000	0.0320	0.5000	0.5000	0.0000	0.00	No

Channel Results

SN	Element ID	Peak Flow (cfs)	Time of Peak Flow Occurrence (days hh:mm)	Design Flow Capacity (cfs)	Peak Flow/ Design Flow Ratio	Peak Flow Velocity (ft/sec)	Travel Time (min)	Peak Flow Depth (ft)	Peak Flow Depth/ Total Depth Ratio	Total Time Surcharged (min)	Froude Number	Reported Condition
1	Link-01	27.43	0 00:06	198.22	0.14	3.09	0.05	1.31	0.25	0.00		
2	Link-35	0.00	0 00:00	8.10	0.00	0.00		0.00	0.00	0.00		
3	Link-36	0.00	0 00:00	10.15	0.00	0.00		0.00	0.00	0.00		
4	Link-37	0.00	0 00:00	10.69	0.00	0.00		0.00	0.00	0.00		
5	Link-38	0.00	0 00:05	10.04	0.00	0.00		0.00	0.00	0.00		
6	Link-39	0.00	0 00:05	29.13	0.00	0.00		0.20	0.41	0.00		

Pipe Input

SN	Element ID	Length (ft)	Inlet Invert Elevation (ft)	Inlet Invert Offset (ft)	Outlet Invert Elevation (ft)	Outlet Invert Offset (ft)	Total Drop (ft)	Average Slope (%)	Pipe Shape	Pipe Diameter or Height (in)	Pipe Width (in)	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Additional Losses	Initial Flow (cfs)	Flap Gate	No. of Barrels
1	Link-02	5.00	323.60	0.00	323.55	0.50	0.05	1.0000	CIRCULAR	12.000	12.000	0.0130	0.2000	1.0000	0.0000	0.00	No	1
2	Link-03	5.00	323.60	0.00	323.55	0.50	0.05	1.0000	CIRCULAR	12.000	12.000	0.0130	0.2000	1.0000	0.0000	0.00	No	1
3	Link-04	6.08	324.21	0.00	323.05	0.00	1.16	19.0800	CIRCULAR	18.000	18.000	0.0130	0.2000	1.0000	0.0000	0.00	No	1
4	Link-05	198.88	345.00	0.00	324.71	0.50	20.29	10.2000	CIRCULAR	12.000	12.000	0.0130	0.2000	0.9000	0.0000	0.00	No	1
5	Link-06	101.13	354.00	0.00	324.21	0.00	29.79	29.4600	CIRCULAR	18.000	18.000	0.0130	0.2000	0.9000	0.0000	0.00	No	1
6	Link-07	174.76	361.32	0.00	354.00	0.00	7.32	4.1900	CIRCULAR	18.000	18.000	0.0130	0.2000	0.6000	0.0000	0.00	No	1
7	Link-08	97.12	372.50	0.00	361.32	0.00	11.18	11.5100	CIRCULAR	18.000	18.000	0.0130	0.2000	0.6000	0.0000	0.00	No	1
8	Link-09	55.73	383.83	0.00	373.00	0.50	10.83	19.4300	CIRCULAR	12.000	12.000	0.0130	0.2000	0.5000	0.0000	0.00	No	1
9	Link-10	12.34	384.08	0.00	383.83	0.00	0.25	2.0300	CIRCULAR	12.000	12.000	0.0130	0.2000	0.5000	0.0000	0.00	No	1
10	Link-11	208.87	398.75	0.00	387.00	3.17	11.75	5.6300	CIRCULAR	12.000	12.000	0.0130	0.2000	0.5000	0.0000	0.00	No	1
11	Link-12	35.31	373.50	0.00	373.00	0.50	0.50	1.4200	CIRCULAR	12.000	12.000	0.0130	0.2000	0.7000	0.0000	0.00	No	1
12	Link-13	436.99	392.82	0.00	373.50	0.00	19.32	4.4200	CIRCULAR	12.000	12.000	0.0130	0.2000	0.8000	0.0000	0.00	No	1
13	Link-14	317.97	396.00	0.00	392.82	0.00	3.18	1.0000	CIRCULAR	12.000	12.000	0.0130	0.2000	0.8000	0.0000	0.00	No	1
14	Link-15	12.00	363.30	0.00	363.00	9.00	0.30	2.5000	CIRCULAR	18.000	18.000	0.0130	0.2000	0.5000	0.0000	0.00	No	1
15	Link-16	413.03	374.50	0.00	363.80	0.50	10.70	2.5900	CIRCULAR	12.000	12.000	0.0130	0.2000	0.5000	0.0000	0.00	No	1
16	Link-17	3.39	374.54	0.00	374.50	0.00	0.04	1.1800	CIRCULAR	12.000	12.000	0.0130	0.2000	0.8000	0.0000	0.00	No	1
17	Link-18	85.88	369.80	0.00	368.00	6.68	1.80	2.1000	CIRCULAR	12.000	12.000	0.0130	0.2000	0.5000	0.0000	0.00	No	1
18	Link-19	192.36	373.84	0.00	369.80	0.00	4.04	2.1000	CIRCULAR	12.000	12.000	0.0130	0.2000	0.8000	0.0000	0.00	No	1
19	Link-20	29.61	374.46	0.00	373.84	0.00	0.62	2.0900	CIRCULAR	12.000	12.000	0.0130	0.2000	0.7000	0.0000	0.00	No	1
20	Link-21	67.33	375.30	0.00	373.84	0.00	1.46	2.1700	CIRCULAR	12.000	12.000	0.0130	0.2000	0.5000	0.0000	0.00	No	1
21	Link-22	29.64	375.87	0.00	375.30	0.00	0.57	1.9200	CIRCULAR	12.000	12.000	0.0130	0.2000	0.8000	0.0000	0.00	No	1
22	Link-23	30.39	375.89	0.00	375.30	0.00	0.59	1.9400	CIRCULAR	12.000	12.000	0.0130	0.2000	0.8000	0.0000	0.00	No	1
23	Link-24	142.08	364.28	0.00	363.30	0.00	0.98	0.6900	CIRCULAR	18.000	18.000	0.0130	0.2000	0.8000	0.0000	0.00	No	1
24	Link-25	173.34	365.48	0.00	364.28	0.00	1.20	0.6900	CIRCULAR	18.000	18.000	0.0130	0.2000	0.6000	0.0000	0.00	No	1
25	Link-26	5.00	366.08	0.50	365.98	0.50	0.10	2.0000	CIRCULAR	12.000	12.000	0.0130	0.2000	0.6000	0.0000	0.00	No	1
26	Link-27	49.91	365.83	0.00	365.48	0.00	0.35	0.7000	CIRCULAR	18.000	18.000	0.0130	0.2000	0.6000	0.0000	0.00	No	1
27	Link-28	25.03	366.50	0.00	366.33	0.50	0.17	0.6800	CIRCULAR	12.000	12.000	0.0130	0.2000	0.9000	0.0000	0.00	No	1
28	Link-29	208.68	367.29	0.00	365.83	0.00	1.46	0.7000	CIRCULAR	18.000	18.000	0.0130	0.2000	0.9000	0.0000	0.00	No	1
29	Link-30	13.51	367.70	0.00	367.29	0.00	0.41	3.0300	CIRCULAR	12.000	12.000	0.0130	0.2000	0.5000	0.0000	0.00	No	1
30	Link-31	13.28	369.09	0.00	367.70	0.00	1.39	10.4700	CIRCULAR	12.000	12.000	0.0130	0.2000	0.7000	0.0000	0.00	No	1
31	Link-32	13.43	368.11	0.00	367.70	0.00	0.41	3.0500	CIRCULAR	12.000	12.000	0.0130	0.2000	0.5000	0.0000	0.00	No	1
32	Link-33	225.12	375.00	0.00	368.11	0.00	6.89	3.0600	CIRCULAR	12.000	12.000	0.0130	0.2000	0.6000	0.0000	0.00	No	1
33	Link-34	21.91	375.69	0.00	375.00	0.00	0.69	3.1500	CIRCULAR	12.000	12.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1

Pipe Results

SN	Element ID	Peak Flow (cfs)	Time of Peak Flow Occurrence (days hh:mm)	Design Flow Capacity (cfs)	Peak Flow/ Design Flow Ratio	Peak Flow Velocity (ft/sec)	Travel Time (min)	Peak Flow Depth (ft)	Peak Flow Depth/ Total Depth Ratio	Total Time Surcharged (min)	Froude Number	Reported Condition
1	Link-02	0.28	0 00:04	3.56	0.08	1.88	0.04	0.85	0.85	0.00		Calculated
2	Link-03	0.41	0 00:05	3.56	0.11	2.07	0.04	0.85	0.85	0.00		Calculated
3	Link-04	26.98	0 00:06	45.88	0.59	15.48	0.01	1.44	0.96	0.00		Calculated
4	Link-05	0.29	0 00:05	11.38	0.03	3.86	0.86	0.55	0.55	0.00		Calculated
5	Link-06	26.76	0 00:06	57.01	0.47	18.81	0.09	1.13	0.75	0.00		Calculated
6	Link-07	18.71	0 00:06	21.50	0.87	14.39	0.20	1.13	0.75	0.00		Calculated
7	Link-08	10.35	0 00:05	35.64	0.29	8.03	0.20	1.03	0.68	0.00		Calculated
8	Link-09	8.01	0 00:05	15.71	0.51	18.32	0.05	0.54	0.54	0.00		Calculated
9	Link-10	2.57	0 00:05	5.07	0.51	4.90	0.04	0.63	0.63	0.00		Calculated
10	Link-11	5.00	0 00:05	8.45	0.59	10.92	0.32	0.57	0.57	0.00		Calculated
11	Link-12	2.92	0 00:06	4.24	0.69	5.07	0.12	0.69	0.69	0.00		Calculated
12	Link-13	2.50	0 00:06	7.49	0.33	5.52	1.32	0.58	0.58	0.00		Calculated
13	Link-14	2.62	0 00:05	3.56	0.73	5.78	0.92	0.56	0.56	0.00		Calculated
14	Link-15	7.11	0 00:07	16.61	0.43	6.97	0.03	0.84	0.56	0.00		Calculated
15	Link-16	0.74	0 00:05	5.73	0.13	4.50	1.53	0.36	0.36	0.00		Calculated
16	Link-17	0.81	0 00:05	3.87	0.21	3.65	0.02	0.33	0.33	0.00		Calculated
17	Link-18	4.87	0 00:06	5.16	0.94	6.98	0.21	0.88	0.88	0.00		Calculated
18	Link-19	5.06	0 00:06	5.16	0.98	6.79	0.47	0.95	0.95	0.00		Calculated
19	Link-20	0.50	0 00:06	5.16	0.10	2.21	0.22	0.62	0.62	0.00		Calculated
20	Link-21	4.83	0 00:05	5.25	0.92	6.46	0.17	0.96	0.96	0.00		Calculated
21	Link-22	2.54	0 00:05	4.94	0.51	3.73	0.13	0.86	0.86	0.00		Calculated
22	Link-23	2.59	0 00:05	4.96	0.52	3.79	0.13	0.86	0.86	0.00		Calculated
23	Link-24	6.62	0 00:07	8.72	0.76	4.94	0.48	1.06	0.71	0.00		Calculated
24	Link-25	6.72	0 00:06	8.74	0.77	4.83	0.60	1.11	0.74	0.00		Calculated
25	Link-26	0.26	0 00:05	5.04	0.05	2.61	0.03	0.55	0.55	0.00		Calculated
26	Link-27	6.49	0 00:06	8.80	0.74	4.44	0.19	1.16	0.78	0.00		Calculated
27	Link-28	0.37	0 00:05	2.94	0.12	2.10	0.20	0.65	0.65	0.00		Calculated
28	Link-29	4.86	0 00:05	8.79	0.55	3.88	0.90	1.01	0.68	0.00		Calculated
29	Link-30	4.11	0 00:05	6.21	0.66	5.77	0.04	0.85	0.85	0.00		Calculated
30	Link-31	0.06	0 00:05	11.53	0.01	0.76	0.29	0.48	0.48	0.00		Calculated
31	Link-32	4.06	0 00:05	6.23	0.65	5.30	0.04	0.94	0.94	0.00		Calculated
32	Link-33	2.17	0 00:05	6.23	0.35	3.94	0.95	0.69	0.69	0.00		Calculated
33	Link-34	0.22	0 00:05	6.32	0.03	1.30	0.28	0.27	0.27	0.00		Calculated

Inlet Input

SN	Element ID	Inlet Manufacturer	Manufacturer Part Number	Inlet Location	Number of Inlets	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Inlet Depth (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)	Ponded Area (ft^2)	Grate Clogging Factor (%)
1	Inlet-01	FHWA HEC-22 GENERIC	N/A	On Sag	1	323.60	331.50	7.90	0.00	0.00	10.00	0.00
2	Inlet-02	FHWA HEC-22 GENERIC	N/A	On Sag	1	323.60	331.50	7.90	0.00	0.00	10.00	0.00
3	Inlet-03	FHWA HEC-22 GENERIC	N/A	On Sag	1	345.00	349.00	4.00	0.00	0.00	10.00	0.00
4	Inlet-04	FHWA HEC-22 GENERIC	N/A	On Sag	1	354.00	363.83	9.83	0.00	0.00	10.00	0.00
5	Inlet-05	FHWA HEC-22 GENERIC	N/A	On Sag	1	361.32	368.83	7.51	0.00	0.00	10.00	0.00
6	Inlet-06	FHWA HEC-22 GENERIC	N/A	On Sag	1	383.83	387.83	4.00	0.00	0.00	10.00	0.00
7	Inlet-07	FHWA HEC-22 GENERIC	N/A	On Sag	1	384.08	388.08	4.00	0.00	0.00	10.00	0.00
8	Inlet-08	FHWA HEC-22 GENERIC	N/A	On Sag	1	373.50	377.00	3.50	0.00	0.00	10.00	0.00
9	Inlet-09	FHWA HEC-22 GENERIC	N/A	On Sag	1	398.75	402.75	4.00	0.00	0.00	10.00	0.00
10	Inlet-10	FHWA HEC-22 GENERIC	N/A	On Sag	1	396.00	398.00	2.00	0.00	0.00	10.00	0.00
11	Inlet-11	FHWA HEC-22 GENERIC	N/A	On Sag	1	374.54	378.54	4.00	0.00	0.00	10.00	0.00
12	Inlet-12	FHWA HEC-22 GENERIC	N/A	On Sag	1	365.58	369.00	3.42	0.00	0.00	10.00	0.00
13	Inlet-13	FHWA HEC-22 GENERIC	N/A	On Grade	1	366.50	370.50	4.00	0.00	0.00	N/A	0.00
14	Inlet-14	FHWA HEC-22 GENERIC	N/A	On Grade	1	365.83	370.50	4.67	0.00	0.00	N/A	0.00
15	Inlet-15	FHWA HEC-22 GENERIC	N/A	On Grade	1	367.29	374.50	7.21	0.00	0.00	N/A	0.00
16	Inlet-16	FHWA HEC-22 GENERIC	N/A	On Sag	1	369.09	373.50	4.41	0.00	0.00	10.00	0.00
17	Inlet-17	FHWA HEC-22 GENERIC	N/A	On Sag	1	368.11	373.50	5.39	0.00	0.00	10.00	0.00
18	Inlet-18	FHWA HEC-22 GENERIC	N/A	On Grade	1	375.00	379.50	4.50	0.00	0.00	N/A	0.00
19	Inlet-19	FHWA HEC-22 GENERIC	N/A	On Grade	1	375.69	379.69	4.00	0.00	0.00	N/A	0.00
20	Inlet-20	FHWA HEC-22 GENERIC	N/A	On Sag	1	374.46	378.46	4.00	0.00	0.00	10.00	0.00
21	Inlet-21	FHWA HEC-22 GENERIC	N/A	On Sag	1	375.87	379.25	3.38	0.00	0.00	10.00	0.00
22	Inlet-22	FHWA HEC-22 GENERIC	N/A	On Sag	1	375.89	379.89	4.00	0.00	0.00	10.00	0.00

Roadway & Gutter Input

SN	Element ID	Roadway Longitudinal Slope (ft/ft)	Roadway Cross Slope (ft/ft)	Roadway Manning's Roughness	Gutter Cross Slope (ft/ft)	Gutter Width (ft)	Gutter Depression (in)	Allowable Spread (ft)
1	Inlet-01	N/A	0.0200	0.0160	0.0620	2.00	0.0656	10.00
2	Inlet-02	N/A	0.0200	0.0160	0.0620	2.00	0.0656	10.00
3	Inlet-03	N/A	0.0200	0.0160	0.0620	2.00	0.0656	10.00
4	Inlet-04	N/A	0.0200	0.0160	0.0620	2.00	0.0656	10.00
5	Inlet-05	N/A	0.0200	0.0160	0.0620	2.00	0.0656	10.00
6	Inlet-06	N/A	0.0200	0.0160	0.0620	2.00	0.0656	10.00
7	Inlet-07	N/A	0.0200	0.0160	0.0620	2.00	0.0656	10.00
8	Inlet-08	N/A	0.0200	0.0160	0.0620	2.00	0.0656	10.00
9	Inlet-09	N/A	0.0200	0.0160	0.0620	2.00	0.0656	10.00
10	Inlet-10	N/A	0.0200	0.0160	0.0620	2.00	0.0656	10.00
11	Inlet-11	N/A	0.0200	0.0160	0.0620	2.00	0.0656	10.00
12	Inlet-12	N/A	0.0200	0.0160	0.0620	2.00	0.0656	10.00
13	Inlet-13	0.0100	0.0200	0.0160	0.0620	2.00	0.0656	10.00
14	Inlet-14	0.0100	0.0200	0.0160	0.0620	2.00	0.0656	10.00
15	Inlet-15	0.0100	0.0200	0.0160	0.0620	2.00	0.0656	10.00
16	Inlet-16	N/A	0.0200	0.0160	0.0620	2.00	0.0656	10.00
17	Inlet-17	N/A	0.0200	0.0160	0.0620	2.00	0.0656	10.00
18	Inlet-18	0.0100	0.0200	0.0160	0.0620	2.00	0.0656	10.00
19	Inlet-19	0.0100	0.0200	0.0160	0.0620	2.00	0.0656	10.00
20	Inlet-20	N/A	0.0200	0.0160	0.0620	2.00	0.0656	10.00
21	Inlet-21	N/A	0.0200	0.0160	0.0620	2.00	0.0656	10.00
22	Inlet-22	N/A	0.0200	0.0160	0.0620	2.00	0.0656	10.00

Inlet Results

SN	Element ID	Peak Flow (cfs)	Peak Lateral Inflow (cfs)	Peak Flow Intercepted by Inlet (cfs)	Peak Flow Bypassing Inlet (cfs)	Inlet Efficiency during Peak Flow (%)	Max Gutter Spread during Peak Flow (ft)	Max Gutter Water Elev. during Peak Flow (ft)	Max Gutter Water Depth during Peak Flow (ft)	Time of Max Depth Occurrence (days hh:mm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
1	Inlet-01	0.28	0.28	N/A	N/A	N/A	0.36	331.58	0.08	0 00:06	0.00	0.00
2	Inlet-02	0.41	0.41	N/A	N/A	N/A	0.53	331.61	0.11	0 00:06	0.00	0.00
3	Inlet-03	0.30	0.30	N/A	N/A	N/A	0.39	349.08	0.08	0 00:05	0.00	0.00
4	Inlet-04	1.81	1.81	N/A	N/A	N/A	4.41	364.17	0.34	0 00:06	0.00	0.00
5	Inlet-05	6.04	6.04	N/A	N/A	N/A	16.51	369.41	0.58	0 00:06	0.00	0.00
6	Inlet-06	0.50	0.50	N/A	N/A	N/A	0.64	387.97	0.14	0 00:05	0.00	0.00
7	Inlet-07	2.58	2.58	N/A	N/A	N/A	7.03	388.47	0.39	0 00:05	0.00	0.00
8	Inlet-08	0.73	0.73	N/A	N/A	N/A	0.95	377.20	0.20	0 00:06	0.00	0.00
9	Inlet-09	5.16	5.16	N/A	N/A	N/A	14.32	403.29	0.54	0 00:05	0.00	0.00
10	Inlet-10	2.78	2.78	N/A	N/A	N/A	7.68	398.40	0.40	0 00:05	0.00	0.00
11	Inlet-11	0.82	0.82	N/A	N/A	N/A	6.36	378.87	0.33	0 00:01	0.00	0.00
12	Inlet-12	0.30	0.30	N/A	N/A	N/A	0.39	369.08	0.08	0 00:06	0.00	0.00
13	Inlet-13	0.45	0.45	0.45	0.00	100.00	3.69	370.65	0.15	0 00:06	0.00	0.00
14	Inlet-14	1.68	1.68	1.68	0.00	100.00	7.91	370.74	0.24	0 00:06	0.00	0.00
15	Inlet-15	0.89	0.89	0.89	0.00	100.00	5.72	374.70	0.20	0 00:05	0.00	0.00
16	Inlet-16	0.06	0.06	N/A	N/A	N/A	0.08	373.52	0.02	0 00:05	0.00	0.00
17	Inlet-17	2.15	2.15	N/A	N/A	N/A	15.26	374.04	0.54	0 00:05	0.00	0.00
18	Inlet-18	2.02	2.02	2.02	0.00	100.00	8.62	379.76	0.26	0 00:05	0.00	0.00
19	Inlet-19	0.22	0.22	0.22	0.00	98.29	1.86	379.76	0.07	0 00:05	0.00	0.00
20	Inlet-20	0.35	0.35	N/A	N/A	N/A	0.45	378.56	0.10	0 00:06	0.00	0.00
21	Inlet-21	2.58	2.58	N/A	N/A	N/A	7.03	379.64	0.39	0 00:05	0.00	0.00
22	Inlet-22	2.63	2.63	N/A	N/A	N/A	7.18	380.28	0.39	0 00:05	0.00	0.00

APPENDIX I – Rational Method: City of San Diego Drainage Design Manual

APPENDIX I

RATIONAL METHOD

Watersheds Less than 0.5 Square Mile

Method of Computing Runoff

Use the Rational Formula Q = CIA where:

Q is the peak rate of flow in cubic feet per second.

C is a runoff coefficient expressed as that percentage of rainfall which becomes surface runoff.

I is the average rainfall intensity in inches per hour for a storm duration equal to the time of concentration (T_c) of the contributing drainage area.

A is the drainage area in acres tributary to design point.

(1) Runoff Coefficient, C

Appendix I-A lists the estimated coefficients for urban areas.

For urban areas select an appropriate coefficient for each type of land use from Table, 2, Appendix I-A. Multiply this coefficient by the percentage of the total area included in that class. The sum of the products for all land uses in San Diego County is the weighted runoff coefficient.

(2) Rainfall Intensity, I

Intensity - duration - frequency curves applicable to all areas within San Diego County are given in Appendix I-B.

(3) Time of Concentration, Tc

The time of concentration is the time required for runoff to flow from the most remote part of the watershed to the outlet point under consideration.

APPENDIX II – Design Runoff: City of San Diego Drainage Design Manual

TABLE 2

RUNOFF COEFFICIENTS (RATIONAL METHOD)

DEVELOPED AREAS (URBAN)

Land Use	Coefficient, C Soil Type (1)
	D
Residential:	
Single Family	.55
Multi-Units	.70
Mobile Homes	.65
Rural (lots greater than 1/2 acre)	.45
Commercial (2) 80% Impervious	.85
Industrial (2) 90% Impervious	.95

NOTES:

(1) Type D soil to be used for all areas.

(2) Where actual conditions deviate significantly from the tabulated imperviousness values of 80% or 90%, the values given for coefficient C, may be revised by multiplying 80% or 90% by the ratio of actual imperviousness to the tabulated imperviousness. However, in no case shall the final coefficient be less than 0.50. For example: Consider commercial property on D soil.

Actual imperviousness = 50%

Tabulated imperviousness = 80%

Revised C = $\frac{50}{80} \times 0.85$ = 0.53

APPENDIX III – Runoff Coefficients: City of San Diego Drainage Design Manual

TABLE 2

RUNOFF COEFFICIENTS (RATIONAL METHOD)

DEVELOPED AREAS (URBAN)

Land Use	Coefficient, C Soil Type (1)
	D
Residential:	
Single Family	.55
Multi-Units	.70
Mobile Homes	.65
Rural (lots greater than 1/2 acre)	.45
Commercial (2)	
80% Impervious	.85
Industrial (2)	
90% Impervious	.95

NOTES:

(1) Type D soil to be used for all areas.

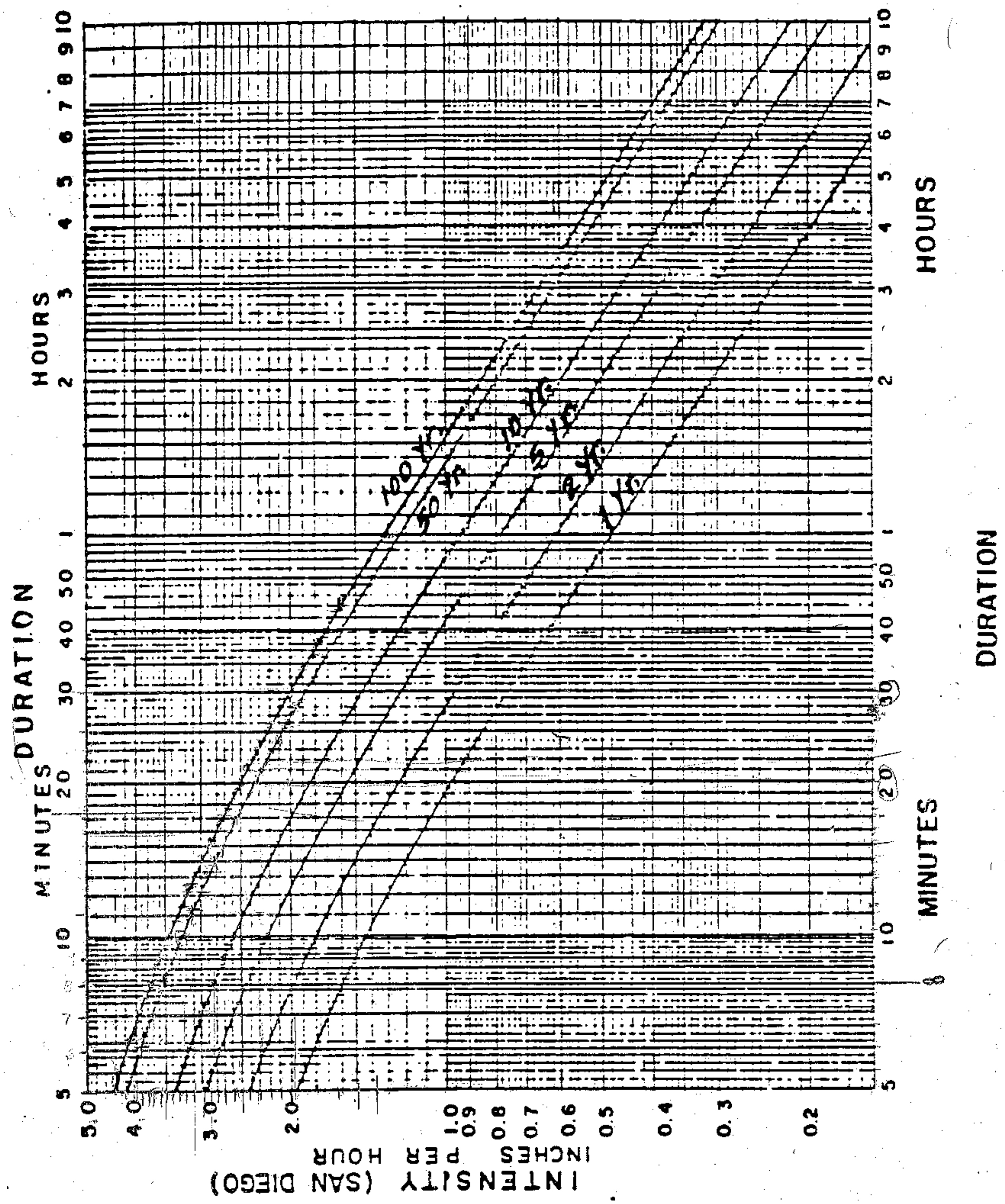
(2) Where actual conditions deviate significantly from the tabulated imperviousness values of 80% or 90%, the values given for coefficient C, may be revised by multiplying 80% or 90% by the ratio of actual imperviousness to the tabulated imperviousness. However, in no case shall the final coefficient be less than 0.50. For example: Consider commercial property on D soil.

Actual imperviousness = 50%

Tabulated imperviousness = 80%

Revised C = $\frac{50}{80}$ x 0.85 = 0.53

APPENDIX IV – Rainfall Intensity-Duration-Frequency Curves: City of San Diego Drainage Design Manual



ELEV.	FACTOR
0–1500	1.00
1500–3000	1.25
3000–4000	1.42
4000–5000	1.60
5000–6000	1.70
DESERT	1.25

To obtain correct intensity, multiply intensity on chart by factor for design elevation.

RAINFALL
INTENSITY - DURATION - FREQUE
CURVES
for
COUNTY OF SAN DIEGO

APPEND

I-B

ATTACHMENT 6

GEOTECHNICAL AND GROUNDWATER INVESTIGATION REPORT

KLEINFELDER
Bright People. Right Solutions.

November 11, 2015
Project No. 20162077.001A

Ms. Linda Hrenko
The Preserve at Torrey Highlands, LLC
3580 Carmel Mountain Rd., Ste. 460
San Diego, California 92130

Subject: **Geotechnical Investigation**
The Preserve at Torrey Highlands
San Diego, California

Dear Ms. Hrenko:

This report presents the results of our geotechnical investigation for the proposed Preserve at Torrey Highlands. The report provides a description of the site conditions and our recommendations for earthwork construction and foundation design.

We appreciate this opportunity to be of service and look forward to continue working with you in the future. If you have any questions about this report or need additional services please contact us at (619) 831-4600.

Respectfully submitted,

KLEINFELDER

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Senior Program Manager

GEOTECHNICAL INVESTIGATION
THE PRESERVE AT TORREY HIGHLANDS
SAN DIEGO, CALIFORNIA
20162077.001A

NOVEMBER 11, 2015

A Report Prepared for:

Ms. Linda Hrenko
The Preserve at Torrey Highlands, LLC
3580 Carmel Mountain Rd., Ste. 460
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THE PRESERVE AT TORREY HIGHLANDS
SAN DIEGO, CALIFORNIA

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November 11, 2015
20162077.001A

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1 INTRODUCTION

1.1 BACKGROUND

This report presents the results of our geotechnical investigation for the proposed Preserve at Torrey Highlands in the western portion of the Rancho Peñasquitos area of San Diego, California. The purpose of our geotechnical investigation was to evaluate the subsurface conditions at the site, evaluate potential geologic/seismic hazards, perform geotechnical engineering evaluations, and provide geotechnical recommendations for project design. This report presents the results of our review of existing published geologic information and a previous geotechnical investigation by Geotechnics, Inc. (2000), geophysical survey and geologic mapping of the site, geotechnical analyses, and geotechnical conclusions and recommendations pertaining to the project site.

1.2 LOCATION

The project site is located on the west side of the future extension of Camino Del Sur approximately 1,000 feet south of State Route 56 as depicted in Figure 1, Vicinity Map. Specifically, it is located at 12902 1/3 Camino Del Sur. An aerial photograph of the project site is presented as Figure 2, Site Aerial Photograph. The approximate latitude and longitude coordinates of the project site are:

Latitude:	32.9536°N
Longitude:	117.1540°W

1.3 SITE AND PROJECT DESCRIPTION

The site consists of approximately 11 acres of undeveloped property located in northern San Diego in the western portion of Rancho Peñasquitos. Specifically, the site is located within the southeast quarter of Section 14, Township 14 South, Range 3 West, San Bernardino Base and Meridian.

The topography at the site consists of an eroded mesa incised centrally by a drainage, dividing the property into western and eastern ridges, as presented in Figure 3, Site Plan and Geologic Map. The southern portion of the site is relatively flat-lying while the northern half descends northward toward Deer Canyon. Elevations range from approximately +415 feet Mean Sea Level (MSL) on the mesa near the southwestern corner of the site to +322 feet MSL in the central drainage along the northern boundary. We understand that several small shallow vernal pools are located in the southwest corner of the site. Drainages also exist east and west of the site. Minor trails and access roads exist on the southerly mesa and both ridges within the site. A steep and narrow trail is located along the eastern site boundary along the proposed extension of Camino Del Sur. The site contains a moderate to dense cover of chaparral-type vegetation and natural trees.

The adjacent property to the south is a National Wildlife Refuge managed by the US Department of the Interior, Fish and Wildlife Service. This land was not accessed during our site reconnaissance and investigation due to prohibited public entry in this area. The property to the west of the site is owned by the City of San Diego. The property to the north of the site is private land. The future extension of Camino Del Sur is located along the east property boundary.

The proposed project consists of an 11-acre office/commercial development with three office buildings (four to six stories), a six-level parking structure, a cafeteria building and associated surface pavement and landscaping. The currently planned development is presented in Figurte 4, Proposed Development Plan. Planned site grading and earthwork will essentially lower the east and west ridgelines as much as 40 to 50 feet toward the south property boundary and place up to 40 feet of fill in the central to north-central portion of the site. It is anticipated that excavated cut slopes may be as high as 30 feet with inclinations of 1½H:1V and 2H:1V. Excavations for underground parking below the three proposed office buildings will be less than 15 feet deep. However, excavations for the principal parking structure located adjacent to the south property boundary may be up to 50 feet deep. The south wall of this parking structure is expected to require a soil nail retaining wall.

Excavated materials will be used as compacted fill in the central drainage and along the north property boundary. A slightly concave 2H:1V compacted fill slope up to about 40 feet high is planned adjacent to the north-central property boundary. Site entrances will be located along the east property boundary adjacent to the proposed future extension of Camino Del Sur. Numerous low retaining walls less than 15 feet high consisting of conventional reinforced concrete cantilever walls, mechanically stabilized earth walls or other specialty wall system are planned.

We understand that storm water runoff will be collected and stored in buried tanks or lined basins prior to any treatment and released to an authorized storm drain or to Deer Creek Canyon adjacent to the north property boundary.

1.4 EXISTING GEOTECHNICAL INFORMATION

A geotechnical investigation for the project site entitled "Geotechnical Investigation, Our Lady of Mount Carmel, Southwest of Proposed State Route 56 and Camino Ruiz, San Diego California", dated July 5, 2000 was prepared by Geotechnics, Inc. (Project No. 0068-002-01). This geotechnical investigation consisted of performing two large diameter bucket-auger borings and eight shallow test pit excavations. The two borings (B-1 and B-2) were located along the east and west ridgelines of the site and were drilled to depths of approximately 48 and 66 feet, respectively. The eight shallow test pits excavations (TP-1 to TP-8) were performed mainly along accessible locations along the two ridgelines to depth ranging from 3 ½ to 11 feet.

Geotechnics performed a laboratory testing program to substantiate field classifications and evaluate selected physical characteristics and engineering properties of the soils encountered. Moisture content, unit weight, plasticity index, sieve analyses, compaction (Modified Proctor), R-value, direct shear strength, expansion index, pH, electrical resistivity and sulfate content tests were performed in general accordance with the applicable ASTM or Caltrans test methods.

Based on a review of the field exploration logs and laboratory test results contained in this report, it is our opinion that this information is valid and applicable for use in our evaluation of geologic conditions and geotechnical characterization of the site.

Excerpts of pertinent geologic and geotechnical information; including key figures, borehole logs and laboratory test results information from this report are presented in Appendix A, Existing Relevant Geotechnical Information.

1.5 PURPOSE AND SCOPE OF SERVICES

Our scope of services for this project is based on our understanding of the proposed construction, our review of the referenced geotechnical report, the results of a geophysical survey, our engineering analyses, and our experience with similar projects. This geotechnical investigation report has been prepared in accordance with the following statutory requirements:

- California Code of Regulations (California Building Code), 2013
- City of San Diego, Guidelines for Geotechnical Reports, 2011
- City of San Diego, Info Bulletin 515, Geotechnical Study Requirements March 2009

Our specific scope of services for this study includes the following:

- Review available geologic/geotechnical reports and historical aerial photographs.
- Perform surface geophysical surveys and geologic mapping of the site.
- This report includes the following:
    - Site plan showing approximate locations of prior subsurface explorations
    - Copies of the boring logs and laboratory test results performed by Geotechnics, Inc.
    - The locations and results of surface geophysical surveys
    - Discussion of the site and subsurface conditions
    - Geologic map and cross sections of the site
    - Discussion of potential geologic hazards
    - CBC Site Class and ground motion parameters for seismic design
    - Discussion of anticipated excavation conditions
    - Discussion of groundwater conditions
    - Temporary shoring for the parking structure excavation
    - Permanent slope inclinations and construction
    - Guidelines for earthwork construction, including recommendations for site preparation, removal depths of unsuitable soil, fill/backfill placement, and compaction
    - Discussion of the foundation types and geotechnical recommendations for design
    - Estimated foundation settlements
    - Lateral earth pressures for retaining structures
    - Recommendations for supporting concrete slabs-on-grade and exterior flatwork
    - Recommendations for flexible and rigid pavement design
    - Anticipated corrosion potential native soil which could affect concrete and steel.

The recommendations contained within this report are subject to the limitations presented in Section 6.

2 INVESTIGATION METHODS

2.1 GEOLOGIC EVALUATION

Our geologic evaluation consisted of reviewing a previous geotechnical report prepared for the site by Geotechnics, Inc. (2000), reviewing historical aerial photographs and geologic maps, performing a geologic site reconnaissance on October 20, 2015 and analysis of these data to interpret the surface and subsurface geologic conditions.

The investigation performed by Geotechnics, Inc. (Geotechnics) consisted of advancing and geologic logging two large diameter borings to depths of approximately 48 and 66 feet and excavating and logging of 8 test pits ranging from approximately 3 ½ feet to 11 feet deep. The field work was conducted on May 17, 2000. Copies of the boring and test pit logs are included in Appendix A. The approximate location of these explorations are shown on the Geotechnics Site Plan, also included in Appendix A and on Figure 3, Site Plan and Geologic Map. It should be noted that the Geotechnics field investigation sufficiently covered the accessible portions of the site. Site accessibility at the time of our study is essentially the same as it was in 2000. Therefore, no additional subsurface explorations in unexplored areas of the site were performed. Likewise, pioneering and grading of access roads in native vegetation could have increased the risk of fire hazard during the current investigation period due the severe drought conditions in San Diego.

During our field reconnaissance, we were able to identify the two large diameter boring locations and several of the test pit locations made by Geotechnics in 2000. The borings were identified by the presence of a large spoil pile and backfill settlement at the location of boring penetration. At boring location B-1, the boring had settled up to 6 feet. We used a Trimble GPS to obtain positional readings of these locations with horizontal accuracy of up to approximately 2 feet. Of note, was a significant difference in the location of Boring B-1 from that shown on the Geotechnics site plan. Geotechnics had this boring located up to 150 feet north of the actual location.

It is recommended that additional explorations, laboratory testing and geologic mapping be performed under the direction of Kleinfelder before or during the clearing and grubbing phase of the planned construction. This will be of particular importance in the bottom of the alluvial drainage that bisects the site where the depth of poorly consolidated materials should be determined and subsequently removed before new compacted fill soils are placed therein. In addition, supplemental explorations may need to be performed in areas of planned building footprints and deep excavations.

2.2 GEOPHYSICAL SURVEY

Two seismic refraction surveys to evaluate compression wave velocity (P-wave) and two refraction microtremor (ReMi) surveys to evaluate shear wave velocity (S-wave) were performed along the crest of the east and west ridgelines of the project site. This work was performed by Southwest Geophysics, Inc. of San Diego, California on September 2, 2015. The geophysical report is dated September 21, 2015 and is presented in Appendix B, Geophysical Survey Results. Descriptions of the geophysical methods and results are presented therein.

In general, the results of the geophysical surveys indicate that the project area is underlain by undisturbed natural formational materials with a shear wave velocity ranging from about 1,000 to 2,000 ft/sec within the upper 50 feet from the ground surface. The shear wave velocity increases to about 2,000 to 3,000 ft/sec at a depth of about 50 to 100 feet. The average characteristic shear wave velocity for a depth of 100 feet (30 m) (Vs30) is on the order of 1,600 to 1,800 ft/sec. This shear wave velocity corresponds to a California Building Code (CBC) Site Class "C" (Very Dense Soil and Soft Rock).

The geophysical survey results also indicate that the upper 30 to 40 feet of the west and east ridgelines have compression wave velocities on the order of 3,000 to 6,000 ft/sec and 4,000 to 8,000 f/sec, respectively. These compression wave velocities correspond to rippable material using a Caterpillar D10 bulldozer with single- or multiple-shank rippers (Caterpillar, 2000).

In our opinion, the geophysical data corroborates and supports the findings and descriptions of the subsurface conditions presented in the Geotechnics report (2000).

2.3 LABORATORY TESTING

No new laboratory tests were performed for this investigation. It is recommended that supplemental field explorations and laboratory testing be performed under the direction of Kleinfelder before or during the clearing and grubbing phase of the planned construction.

3 SITE CONDITIONS

3.1 REGIONAL GEOLOGIC SETTING

San Diego County resides within the Peninsular Ranges Geomorphic Province (California Geologic Survey (CGS), 2002; Norris and Webb, 1990). This geomorphic province encompasses an area that extends approximately 900 miles from the Transverse Ranges north of the Los Angeles Basin and south to the southern tip of Baja California, Mexico. It varies in width from approximately 30 to 100 miles (Norris and Webb, 1990) and is characterized by mountainous terrain on the east composed mostly of Mesozoic igneous and metamorphic rocks, and relatively low-lying coastal terraces (coastal plain) to the west underlain by late Cretaceous, Tertiary, and Quaternary age sedimentary rocks.

The coastal plain which encompasses the site ranges from approximately ¼ mile wide in northern San Diego County and up to approximately 14 miles wide in the central and southern county regions. It is underlain by relatively undeformed, near shore marine sedimentary rocks, deposited during intermittent intervals between late Mesozoic through Quaternary time. These sedimentary units are comprised of a westward thickening clastic wedge deposited on bedrock of Cretaceous to Jurassic age igneous and metamorphic rocks. They are divided into three packages of deposits based on their sequence and age of deposition. The oldest sequence consists of claystone, siltstone, sandstone, and conglomerate deposited during late Cretaceous time as an apparent submarine fan. These units crop out on Mt. Soledad in La Jolla, Point Loma and Carlsbad.

The second sequence of sediments was deposited during the Tertiary period (Eocene and Pliocene) within an embayment that stretched from at least northern San Diego County and into Mexico (Kennedy, 1975; Kennedy and Tan, 2008). The sediments consist of a variety of claystone, siltstone, sandstone and conglomerate. The third sequence is associated with Pleistocene marine terrace deposits and consists of weakly to moderately consolidate conglomerates, sandstone, siltstone and claystone.

The regional geologic map for the area by Kennedy (1975) shown on Figure 5, Regional Geologic Map, and information from the Geotechnics report (2000) indicates the project site is underlain by material of both early to middle Pleistocene age marine terrace deposits over Eocene age Stadium Conglomerate and Friars Formation. Thin colluvial deposits also occur within the bottom of the central drainage feature.

The project site is located within Geologic Hazard Zones 51 and 53 as shown on the City of San Diego Seismic Safety Study (2008). Zone 51 is characterized by level mesas underlain by terrace deposits and bedrock having nominal risk. Zone 53 is characterized by level or sloping to steep terrain with unfavorable geologic structure having low to moderate risk. In general, Zones 51 and 53 may be differentiated by ground surface elevations above and below an elevations of approximately +410 feet MSL, respectively.

3.2 TECTONIC SETTING AND FAULTING

Southern California is cut by a system of numerous active faults associated with the San Andreas fault. The San Andreas fault delineates the boundary between two global tectonic plates consisting of the North American Plate on the east and the Pacific Plate on the west. The San Andreas fault stretches from the Gulf of California in Mexico along a northwest alignment through the desert region of Southern California up to Northern California, where it eventually trends offshore north of San Francisco. Right lateral slip movement along the plate boundary of the San Andreas fault is by far the most dominant factor controlling the seismicity throughout northern and southern California (Wallace, 1990; Weldon and Sieh, 1985). Within Southern California, the strain associated with the plate boundary movement extends well westward for up to 150 miles from the main San Andreas fault strand in the Imperial Valley to well offshore of San Diego (CDMG, 1999).

The major faults east of San Diego (from east to west) include the San Andreas fault, the San Jacinto fault and the Elsinore fault (see Regional Fault Map and Earthquake Epicenters, Figure 5). Major faults west of San Diego include the Palos Verdes-Coronado Bank fault, the San Diego Trough fault, and the Santa Clemente fault (Kennedy and Welday, 1980). The dominant zone of faulting within the San Diego region is several faults associated with the Rose Canyon Fault Zone (RCFZ).

Most of the seismic energy and associated fault displacement occurs along the fault structures closest to the plate boundary on the Elsinore, San Jacinto, and San Andreas faults, which account for up to 85 percent of the total displacement. The remaining 15 percent is accommodated across the various offshore faults and Rose Canyon fault. Studies within Rose Canyon east of Mt. Soledad have revealed fault strands that have clearly displaced Holocene soil horizons with slip rates from 1 to 2.4 mm/yr (Lindvall et al., 1990, Lindvall and Rockwell, 1995, Rockwell, 2010).

The Rose Canyon fault may be part of a more extensive fault zone that includes the Offshore Zone of Deformation and the Newport-Inglewood fault to the north, and several possible extensions southward, both onshore and offshore (Treiman, 1993). The Rose Canyon fault zone is made of predominantly right-lateral strike-slip faults that extend southwest-southeast through the San Diego metropolitan area. Various fault strands display strike slip, normal, oblique, or reverse components of displacement (Treiman, 1993). The fault zone extends offshore at La Jolla and continues north-northwest subparallel to the coastline. To the south in the San Diego downtown area the fault zone appears to splay out into a group of generally right-normal oblique faults extending into San Diego Bay (Treiman, 1993; Kennedy and Clarke, 1999).

The local onshore portion of the RCFZ extends from La Jolla along a south-southeast alignment over Mt Soledad and along the general trend of Interstate I-5 into downtown San Diego. Through downtown, the fault appears to branch and is expressed southward across San Diego Bay as three faults consisting of the Silver Strand fault, the Coronado fault and the Spanish Bight fault. The California Geologic Survey has designated portions of the fault zone in the Mount Soledad, Rose Canyon, Port of San Diego, Coronado, and downtown San Diego areas as active Earthquake Fault Zones. Most of the onshore and offshore portions of the Rose Canyon are considered active. An active fault is a fault which has undergone movement within the last 11,000 years which spans the Holocene period. The closest section of the active Rose Canyon fault is within the offshore zone approximately 8.2 miles west of the project site.

The closest faults to the site are two unnamed structures located approximately 1.8 miles to the north and 0.9 miles to the east. These faults have been classified by the referenced City of San Diego Seismic Safety Study (2008) as “Potentially Active, Inactive, Presumed Inactive or Activity Unknown”. These faults are likely pre-Holocene in age and are likely related to an earlier incipient phase of development of the Rose Canyon Fault. Caltrans (2013) does not consider these faults as seismogenic for design purposes

Characterization of the hazard from strong ground shaking at the site is provided in Section 4.1 of this report. Regional Seismicity is shown on Figure 6, Regional Fault Map and Earthquake Epicenters.

3.3 SITE GEOLOGY AND SUBSURFACE CONDITIONS

Four geologic units have been identified at the project site based on review of the previous Geotechnics report and published geologic maps, and observations made during our site reconnaissance on October 20, 2015. From youngest to oldest, these units consist colluvial deposits, marine terrace deposits, Stadium Conglomerate, and Friars Formation. A brief description of these units is provided in the paragraphs below. Additional data can be reviewed on Geotechnics boring logs in Appendix A. Subsurface conditions and structure are depicted in the geologic cross-sections on Figures 7, 8 and 9.

3.3.1 Colluvial Deposits (Qc)

Colluvial deposits typically occur along the lower portions of existing hill slopes. They are primarily derived from sheet flow erosion during rainstorms that carries detrital material downslope where it typically accumulates along the side edges of slopes, along drainages or as fan-shaped masses at the base of slopes. Geotechnics encountered colluvial deposits in most of its explorations where it ranged from 1 ½ feet to 3 feet thick and consists mostly of brown to dark brown silty sand and sandy clay. Thicker accumulations of colluvial deposits that could range from 5 to 10 feet in thickness are anticipated within the bottom of the central, north-directed drainage feature. This material is anticipated to be compressible and should be removed prior to placement of fill soils.

3.3.2 Terrace Deposits (Qt)

Early to middle Pleistocene age marine terrace deposits outcrop on the upper mesa surface along the southern portion of the site. This unit is designated as the Lindavista Formation on the Kennedy geologic map (1975). Geotechnics describes this unit as ranging from silty to clayey sandstone and sandstone with gravel and cobble. The gravel layers may contain clasts up to 12 inches in size. However, the majority of the clasts are less than 6 inches in maximum size. It ranges from moderately to well cemented, and brown to reddish brown in color. The well cemented layers can present a challenge during grading, particularly for trench and footing excavations. We have mapped the approximate bottom elevation contact of this unit at slightly below +380 feet MSL based on review of the Geotechnics logs and our geologic mapping. The structure of this unit is anticipated to be relatively level across the site.

3.3.3 Stadium Conglomerate (Tst)

As presented in Figure 3, the Eocene-age Stadium Conglomerate occurs directly below the marine terrace deposits. This units consists of a cobble conglomerate with up to 70 percent gravel and cobble size clasts. The maximum sized clasts noted in the Geotechnics report and during our site reconnaissance were up to 10 inches, but based on experience, some occasional larger size clasts in excess of 12 inches can be anticipated. The soil matrix typically consists of a fine to medium grained sand in a moderately to strongly cemented condition. Geotechnics penetrated the bottom of this unit in Boring B-1 at a depth of 20 feet, which we corresponds to an elevation of approximately +356 feet MSL.

3.3.4 Friars Formation (Tf)

The Eocene-age Friars Formation was logged by Geotechnics below the Stadium Conglomerate at a depth of approximately 20 feet at the location Boring B-1, which corresponds to an elevation of approximately +356 feet MSL (Figure 3). This unit was penetrated to a maximum depth of 66 feet at this location which corresponds to an elevation of approximately +310 feet MSL. The upper seven feet of the Friars Formation at Boring B-1 consisted of clayey sandstone and interbedded siltstone and sandstone. The remainder consisted of silty sandstone to the bottom of the boring. This was the only location the Friars Formation was penetrated in any of the Geotechnics exploration locations. We observed this unit at two locations within the bottom of the central drainage and offsite of the property near the northeast corner. The material consisted of silty sandstone at both locations.

The Geotechnics boring logs do not note any structural attitudes on the Friars Formation or overlying Stadium Conglomerate. Additionally, they make no mention in their report of identifying the contact between these two formations at other locations on the site. The regional geologic map by Kennedy does not show any bedding structure nearby the site. In general, the Kennedy map shows regional contact lines of Eocene units following topographic contours which means that the bedding has a horizontal to low dipping structure. Because of this, Geotechnics mapped the contact as essentially horizontal. We have also done the same for our geologic map, based on the lack of additional data points on the contact. One of the important issues in regards to this is whether or not the Friars Formation will be exposed in the excavation for the parking structure wall on the south side of the site. In order to determine this, additional explorations at the south side of the site would be required.

3.3.5 Groundwater

Perched groundwater or a regional groundwater table was not observed within any of the Geotechnics explorations penetrated to a maximum elevation of +310 feet MSL. Seeps or springs were not observed on the site during our geologic reconnaissance, although an exhaustive observation was not performed. The majority of the excavated soils identified in the previous explorations were in a moist condition, well below saturation levels. Fluctuations of the groundwater level, localized zones of perched water, and variations in soil moisture content should be anticipated during and following periods of rainfall. Seepage into proposed excavations or holes for drilled piers may also occur after periods of rainfall or from irrigation on and adjacent to the site.

4 DISCUSSIONS, ANALYSIS, AND RECOMMENDATIONS

Geotechnical engineering discussions, conclusions and recommendations presented herein are based on Kleinfelder's understanding of the project, the information provided to us, review of available maps, our site reconnaissance, field explorations and laboratory testing performed by Geotechnics, Inc. (2000), geophysical survey results, engineering evaluations and analyses, and our professional judgment.

It should be recognized that no new subsurface explorations or laboratory testing were performed for this investigation. It is recommended that supplemental field explorations and laboratory testing be performed under the direction of Kleinfelder before or during the clearing and grubbing phase of the planned construction in order to confirm actual site conditions.

4.1.1 POTENTIAL GEOLOGIC HAZARDS

We have assessed the potential geologic and seismic hazards for the project area. These hazards include; landslides, liquefaction and seismically induced settlement, fault surface rupture, seismic shaking, flooding and expansive soils. The City of San Diego Seismic Safety Study designates the project site within geologic hazard category zones 51 and 53. Zone 51 is a level mesa underlain by terrace deposits and bedrock of nominal geologic risk above an approximate elevation of +410 feet MSL. Zone 53 consist of level or sloping terrain with unfavorable geologic structure with low to moderate risk below and elevation of approximately +410 feet MSL. The following sections discuss these hazards and other geologic conditions and their potential risk at this site.

4.1.2 Landslides

Landslides are comprised of a variety of deep-seated ground failures (several tens to hundreds of feet deep) in which a large mass of a slope becomes unstable, decoupling from the underlying intact slope material and slides downhill. The most common landslide types in this region of San Diego are accurate shaped rotational failures, block failures and debris flows. Landslides are not to be confused with minor slope failures (slumps), which are usually limited to the upper topsoil zone (usually less than 10 feet thick) and can occur on slopes composed of almost any geologic material. Landslides can cause damage to structures both above and below the slide mass. Structures above the slide area are typically damaged by undermining of foundations. Areas below a slide mass can be damaged by being overridden and crushed by the failed slope material.

Several geologic units within San Diego County are notorious for being prone to landslides, one of which is the Friars Formation that has been identified at the site. Much of the Friars Formation typically has a high clay content with weak strength parameters which makes it prone instability on moderate to steep slopes. The instability can be exacerbated where the geologic structure dips downward out of the face of the slope. The Friars Formation as observed at the project site does not have a significant portion of clay. Fine grained material of siltstone and some clayey sandstone was confined to only the upper 7 feet of the Friars Formation as encountered within Geotechnics Boring B-1. The Friars Formation was also observed at two additional localities during our site reconnaissance on October 20, 2015 and was comprised of silty sandstone. In general, the structure of the Friars Formation and overlying Stadium Conglomerate are relatively flat-lying as indicated by regional outcrop patterns, although no conclusive data was obtained at the site. Our review of aerial images and observation during our site reconnaissance did not reveal indication of past gross slope instability in form of deep-seated landslides. We did observe areas of likely surficial slumping, but this is a normal erosional process and may occur on slopes comprised of the on-site materials.

4.1.3 Fault Surface Rupture

The site does not lie within a California Geologic Survey (CGS) Earthquake Fault Zone. The closest mapped active fault to the site is the Rose Canyon fault which is located 8.2 miles west of the project site. The closest faults to the site are two unnamed structures located approximately 1.8 miles to the north and 0.9 miles to the east. Based on the location of the faults in proximity to the site, it is our opinion that the potential for ground rupture due to faulting at the subject site is low.

4.1.4 Seismic Shaking and CBC Seismic Design Parameters

The site is located in a seismically active region of southern California that is likely to experience ground shaking as a result of earthquakes on nearby or more distant faults. The Rose Canyon Fault Zone and Elsinore Fault Zone dominate the seismicity of the area. Based on the fault types and their locations, this site is expected to be affected by seismic shaking from earthquake events during its lifetime. The most significant seismic event likely to affect the project site would be an earthquake with a moment magnitude of approximately 7 (Petersen et al. 2008) resulting from the rupture on the Newport-Inglewood-Rose Canyon fault zone, which is located approximately 8.2 miles west of the site.

Our recommendations for seismic design parameters are in accordance with the 2013 California Building Code (CBC) and ASCE 7-10 (July 2013 errata) Minimum Design Loads for Buildings and Other Structures.

Based on the geophysical surveys performed at the site, the average characteristic shear wave velocity for a depth of 100 feet (30 m) (Vs30) is on the order of 1,600 to 1,800 ft/sec. Therefore, following ASCE 7-10, Section 20.3.1, Table 20.3-1-Site Classification, the existing site in its natural state can be classified as Site Class C (Very Dense Soil and Soft Rock) with Vs30 within the upper 100 feet between 1,200 ft/sec to 2,500 ft/sec, average SPT N>50, or average undrained shear strength su ≥ 2,000 psf.

Based on the Site Class C designation and on the site location, the recommended seismic design parameters are summarized in Table 1. These parameters were generated using the U.S. Geological Survey's online Earthquake Hazards Program for Seismic Design Maps (http://earthquake.usgs.gov/designmaps/us/application.php).

Table 1

Recommended 2013 CBC Seismic Design Parameters

DESIGN PARAMETER	SYMBOL	RECOMMENDED VALUE	2013 CBC / (ASCE 7-10) REFERENCE(S)
Site Class	--	C	Section 1613.3.2 (Section 11.4.2)
Mapped MCE_R (5% damped) spectral acceleration for short periods (Site Class B)	S_s	0.939 g	Section 1613.3.1 (Section 11.4.1)
Mapped MCE_R (5% damped) spectral acceleration for a 1-sec period (Site Class B)	S_1	0.365 g	Section 1613.3.1 (Section 11.4.1)
Short Period Site Coefficient	F_a	1.024	Table 1613.3.3(1) (Table 11.4-1)
Long Period Site Coefficient (at 1-second period)	F_v	1.435	Table 1613.3.3(2) (Table 11.4-2)
MCE_R Peak Ground Acceleration adjusted for site class effects (S_M at T=0)	PGA_M	0.375 g	N/A
MCE_R (5% damped) spectral response acceleration for short periods adjusted for site class (F_a*S_S)	S_{MS}	0.962 g	Section 1613.3.3 / (Section 11.4.3)

Table 1 (continued)

Recommended 2013 CBC Seismic Design Parameters

DESIGN PARAMETER	SYMBOL	RECOMMENDED VALUE	2013 CBC / (ASCE 7-10) REFERENCE(S)
MCE_R (5% damped) spectral response acceleration at 1-second period adjusted for site class (F_v*S_1)	S_{M1}	0.524 g	Section 1613.3.3 / (Section 11.4.3)
Peak Ground Acceleration	PGA	0.361 g	(Section 11.4.5)
Design spectral response acceleration (5% damped) at short periods (2/3*S_{MS})	S_{DS}	0.641 g	Section 1613.3.4 / (Section 11.4.4)
Design spectral response acceleration (5% damped) at 1-second period (2/3*S_{M1})	S_{D1}	0.349 g	Section 1613.3.4 / (Section 11.4.4)

Notes: *MCE_R: Risk-Targeted Maximum Considered Earthquake

In our opinion, properly compacted fill soils generated from the sand and gravel laden onsite marine terrace deposits and Stadium Conglomerate may have a shear wave velocity on the order of 800 to 1,200 ft/sec. In this respect, the CBC Seismic Design Parameters presented in Table 1 may be used for all building areas of the project site where properly compacted fill soil thickness will be less than 40 feet. The maximum anticipated compacted fill thickness at the site will be less than 40 feet.

4.1.5 Liquefaction and Seismic Settlement

Liquefaction is a phenomenon whereby a loose (unconsolidated) cohesionless saturated soil loses its shear strength (liquefies) during periods of oscillatory ground motion caused by an event such as an earthquake. Liquefied soils undergo significant loss in support capacity, which can result in settlement of structures. Soils prone to liquefaction consist of poorly consolidated sands and sandy silts in areas of high groundwater.

The project site is not designated within any liquefaction zone hazard zones on the City of San Diego Seismic Hazard maps. The central portion of the site is underlain by a narrow zone of clayey colluvial soils of relatively shallow depth. Based on the moist conditions of these soils and lack of groundwater, it is our opinion that there is negligible potential for liquefaction of this unit.

Seismic compaction is a phenomenon in which loose, unsaturated sands tend to densify and settle during strong earthquake shaking. Once again, the only material which could be prone to this phenomena would be the colluvial soil. However, due to the relatively high clay content and lack of groundwater, it is our opinion that there is negligible potential for liquefaction of this unit. In addition, this material will be removed during grading. Based on the density of the formational soils, that the hazard with respects to seismic settlement is negligible.

4.1.6 Compressible Soils

The strip of colluvial material within the central drainage of the site is considered compressible and should be removed during earthwork operations prior to placement of fill or construction of buildings or walls. In general, the colluvial material may be reused as compacted fill. The majority of the geologic material at the site is comprised of very dense sandstone and conglomerate and is not prone to compressibility.

4.1.7 Tsunami, Flood and Seiche Hazards

A tsunami is defined as a sea wave generated by submarine earthquakes, landslides, or volcanic activity that displaces a relatively large volume of water in a very short period of time. Considering that the site lies approximately 6.5 miles from the ocean shoreline and at approximately +315 to +415 feet MSL, the potential for significant tsunami effects at the site is considered low.

Seiches are defined as oscillations in a closed body of water such as a lake or reservoir due to earthquake shaking or earthquake rupture. The hazard to the project posed by seiches is considered low due to the absence of nearby large surface water bodies.

Flooding occurs as a result of several factors in developed areas. These factors include rainfall rates that exceed an area’s ability to absorb or control the runoff; impounded water retained behind a flood control structure (upstream-inundation), failure of a flood control structure (downstream-inundation), seiches, or tsunami.

The Federal Emergency and Management Administration (FEMA) maintains a collection of Flood Insurance Rate Maps (FIRM), which cover the entire United States. These maps identify those areas which may be subjected to 100-year and 500-year cycle floods. A set of these maps for the County of San Diego are available for viewing on the FEMA website (http://msc.fema.gov/webapp/wcs/stores/servlet/FemaWelcomeView). Based on our review of

FEMA map panel 06073C1334G, the site is not within any designated flood zones and therefore the potential for flooding of the proposed development is considered low.

4.1.8 Expansive Soils

Expansive soils are characterized by their ability to undergo significant volume changes (shrink or swell/heave) due to variations in moisture content. Changes in soil moisture content can result from precipitation, landscape irrigation, utility leakage, concentrated drainage, perched groundwater, drought, or other factors and may result in unacceptable settlement or heave of structures or concrete slabs supported on grade.

Two Expansion Index (EI) tests were performed by Geotechnics during their study of the site. These test were performed on a clay layer within the terrace deposit and colluvial material from the central drainage area. The clay material from the terrace deposits yielded an expansion potential of 40 and the colluvial material was 0. This corresponds to a low to very low expansion potential. Most of the material at the site is composed of sandstone and conglomerate and based on this and the testing performed by Geotechnics, the hazard with respect to expansion potential of site soils is considered low. Notwithstanding, expansive soils may be encountered during grading.

4.2 EARTHWORK

4.2.1 General

Based on the results of our site reconnaissance, document review, previous field explorations, laboratory testing, and data analysis, it is our opinion that the construction of the proposed project is feasible from a geotechnical standpoint provided our recommendations are incorporated into the design and construction of the project.

Preliminary project development and grading are presented in Figure 4. Proposed site grading will consist of extensive. Planned site grading and earthwork will essentially lower the east and west ridgelines as much as 40 feet toward the south property boundary. It is anticipated that excavated cut slopes may be as high as 30 feet with inclinations of 2H:1V. Excavations for underground parking below the three proposed office building will be less than 15 feet deep. However, excavations for the principal parking structure located adjacent to the south property boundary may be up to 40 feet deep. The south wall of this parking structure is expected to require a specially designed retaining wall consisting of either soil nails or a conventional tie-back anchor wall.

Excavated materials will be used as compacted fill in the central drainage and along the north property boundary. A slightly concave 2H:1V compacted fill slope up to about 40 feet high is planned adjacent to the north-central property boundary. Site entrances will be located along the east property boundary adjacent to the proposed future extension of Camino Del Sur. Several low retaining walls less than 15 feet high consisting of conventional reinforced concrete cantilever walls, mechanically stabilized earth walls or other specialty wall system are planned.

We understand that storm water runoff will be collected and stored in buried tanks or lined basins prior to any treatment and release to an authorized storm drain or to Deer Creek Canyon adjacent to the north property boundary.

The proposed multi-story office buildings and parking structure will have heavily loaded foundations. Finish floor elevations for these buildings will fall within the range of +360 and +380 feet MSL. These structures should be supported by foundations that derive their load bearing capacity from undisturbed natural very dense cemented sandstone and conglomerate material of the Stadium Conglomerate. The north office building will be situated such that it straddles the infilled central drainage at the site. Building foundation elements in this area should consist of conventional drilled pier foundations that penetrate the compacted fill soils and extend a specified minimum embedment depth into competent formational soils. The single-story café building will be lightly loaded and may be founded directly upon properly compacted fill soils. Foundations design recommendations are presented in Section 4.6 of this report.

Grading and foundation plans should be reviewed by Kleinfelder prior to plan finalization. The plans should be reviewed for conformance to the recommendations presented herein and the grading guidelines of the City of San Diego. Prior to the start of the grading operations, a pre-construction conference should be held with representatives of owner, developer, grading contractor, civil engineer, and Kleinfelder. Specific earthwork issues can be discussed at that time.

All site preparation and earthwork operations should be performed in accordance with applicable codes. All reference to maximum dry density is established in accordance with American Society for Testing and Materials (ASTM) D 1557. We recommend that site earthwork and construction be performed in accordance with the following recommendations.

4.2.2 Excavation Characteristics

The project site is underlain by colluvial deposits (Qc), marine terrace deposits (Qt), Stadium Conglomerate (Tst) and Friar Formation (Tf). Anticipated excavations and grading will be within virgin undisturbed ground. There are no known existing fill soils at the site.

The majority of planned excavations will be in the terrace deposits and Stadium Conglomerate. It has been our experience that excavations in these materials may be accomplished with medium to very strong ripping effort using conventional heavy-duty grading equipment. Highly cemented zones with significant gravel and cobble (including possible concretions) may be encountered in both the terrace deposits and Stadium Conglomerate which could result in locally difficult excavation. Utility trench and footing excavations in cemented zones and cobblely material will be more problematic than open cut grading. This material can also cause difficulty in achieving clean foundation excavations at the specified elevation and in achieving vertical cuts for temporary shoring at the specified location. Oversized materials generated from excavations will require extra handling and screening to meet recommended maximum sizes for fill and backfill material or disposed offsite.

Colluvial deposits and other surficial soils within the root zone of native vegetation may be accomplished with medium to strong ripping effort using conventional heavy-duty grading equipment.

4.2.3 Construction Observation

The recommendations presented in this report are based on our understanding of the proposed project and anticipated site conditions. The interpolated subsurface conditions should be evaluated by Kleinfelder in the field during construction. Final project drawings and specifications should be reviewed by Kleinfelder prior to the commencement of construction. Kleinfelder should continuously observe the clearing/grubbing, earthwork/grading, foundation excavation/preparation, retaining wall construction (including soil nails and tie-back anchors) and wall/trench backfilling operations. Such observations are considered essential to identify field conditions that differ from those anticipated, to adjust designs to actual field conditions and to determine that the grading is accomplished in general accordance with the recommendations of this report. Recommendations presented herein are contingent on Kleinfelder performing such services. Our personnel should perform sufficient testing of fill during grading to support our professional opinion as to compliance with earthwork recommendations.

4.2.4 Site Preparation

To prepare the site for grading, all surficial vegetation, deleterious material and colluvial deposits that exists in proposed improvement areas should be stripped and completely removed. The stripping operation should expose a firm, non-yielding subgrade that is free of large voids, organics, and deleterious materials. The subgrade exposed at the bottom of excavations should be observed by Kleinfelder prior to the placement of any fill to observe that potentially unsuitable soils have been removed. Additional removals may be required as a result of observation and testing of the exposed subgrade soils. The excavation of unsuitable materials should be conducted in a manner that minimizes the disturbance of competent materials.

4.2.5 Keyways and Benching

Keyways should be excavated at the base of fill slopes under the observation of Kleinfelder. The width and depth/elevation of each keyway should be provided by Kleinfelder based on an evaluation of the actual observed site conditions. The minimum key width is 15 feet. The entire key width should be excavated into competent formational material and tilted downward away from the slope toe at an inclination of at least 2 percent. The exposed keyway should be scarified to a minimum depth of 12 inches, brought to slightly above the optimum moisture content and recompacted prior to placing additional fill. The need for scarification should be evaluated at the time of grading by Kleinfelder and potentially waived in cemented and conglomeratematerial.

4.2.6 Subsurface Drainage

To reduce the potential for water related distress to the proposed improvements, it is recommended that a canyon subdrain be installed along the bottom of the central drainage at the site. Typical canyon subdrain details are presented in Figure 3 of Appendix A. Generally, the location and lateral extent of subsurface drains should be determined in the field based on conditions observed by Kleinfelder during site grading.

4.2.7 Engineered Fill

The majority of onsite materials may be used as engineered fill, provided that they are free of oversized rock, organic materials, expansive clay, and deleterious debris. Oversize material in excess of 12 inches in diameter should not be used in structural fill. This should be limited to a maximum size of 6 inches in the upper foot below building floor areas. Although the optimum lift thickness for fill soils will be dependent on the type of compaction equipment utilized, fill should generally be placed in uniform lifts not exceeding approximately 12 inches in loose thickness. Based on the volume of export, it is highly recommended that the contractor stockpile good fill from excavations into the terrace deposits for use in trench backfill and wall backfill, rather than utilize the lower excavations into Stadium Conglomerate which contain a high quantity of cobble.

The onsite soil placed as engineered fill should be moisture conditioned to between optimum and 2 percent above optimum moisture content, and compacted to a minimum of 90 percent of the ASTM D 1557 maximum dry density. We recommend that engineered fill below building areas be compacted to at least of 95 percent within building footprint areas. An adjustment to the maximum dry density and optimum moisture content should be performed when there is more than 5 percent oversize particles (larger than ¾ inch) in the fill material. The adjustment should follow ASTM D4718.

4.2.8 Bulking and Shrinkage

Excavation of the onsite undisturbed formational materials for reuse as compacted fill will results in some bulking. Shrinkage may occur in loose surficial soils including colluvial deposits. The estimated bulking of the formational materials may be on the order of 5 to 15 percent. The estimated shrinkage of surficial soils including colluvial deposits may be on the order of 0 to 10 percent. Screening of oversize cobbles would impact these estimated values.

4.2.9 Expansive Soils

In general, expansive soils are not anticipated at the project site. Notwithstanding, if encountered in cut areas at finish grade in building areas, we recommend that these materials be overexcavated below finish grade and replaced with soils of negligible to low expansion potential. The expansive materials may be disposed of in deeper fills. Placement of the expansive materials in the deeper fills may require extra handling and stockpiling during remedial grading. We recommend that the formational materials in cut areas be checked during grading for expansive material near finish grade. Overexcavation depths should be at least 5 feet below building pads and 2 feet below exterior flatwork. Select replacement material should consist of clean, granular material with a very low to low expansion index (expansion index of 50 or less) as evaluated by ASTM D 4829.

4.2.10 Import Materials

Import materials (if any) should have an expansion index less than 30, a minimum R-value of 20, no greater than 30 percent of the particles passing the No. 200 sieve, and no particles greater than 3 inches in dimension.

4.2.11 Pavement and Slab-on-Grade Subgrade Preparation

In pavement areas and slab-on-grade for walkways or other flatwork areas, the upper 12 inches of subgrade soils should be moisture conditioned between optimum to 2 percent above optimum content, and compacted to at least 95 percent relative compaction of the maximum laboratory dry density, as evaluated by ASTM D 1557. The maximum size clast in this zone should be limited to 3 inches in size.

4.2.12 Pipe Bedding and Trench Backfill

Pipe bedding should consist of sand or similar granular material having a Sand Equivalent of not less than 30. The sand should be placed in a zone that extends a minimum of 6 inches below and 12 inches above the pipe for the full trench width. The bedding material should be compacted to a minimum of 90 percent of the maximum dry density. Trench backfill above pipe bedding may consist of approved, onsite or import soils placed in lifts no greater than 8 inches loose thickness and compacted to 90 percent of the maximum dry density. Backfill should not contain rocks over 6 inches in size.

4.2.13 Temporary Excavations

Temporary utility trench excavations are anticipated for installation, and potential removal, of utility lines. If very steep or vertical-sided excavations in excess of five feet deep are necessary, we recommend the sidewalls be supported in accordance with OSHA standards to provide temporary trench stability during construction or sloped based on the soil type classifications as discussed below. The contractor should be responsible for the structural design and safety of the temporary shoring system and we recommend that this design be submitted to Kleinfelder for review and comment.

For preliminary planning of OSHA sloping and shoring requirements, we recommend that formational soils be considered as Type B soils. Compacted fill soils may be considered as Type C soils. With restrictions such as seepage or flowing sands, temporary excavations up to 20 feet deep in Type B and C soils should be sloped at 1H:1V and 1½H:1V, respectively. The actual OSHA soil type should be determined by the contractor's "competent person" based on conditions exposed in the field. Temporary excavations that encounter seepage or other potentially adverse conditions should be evaluated by Kleinfelder. Remedial measures may include shoring or reducing slope inclinations.

Heavy construction loads, such as those resulting from stockpiles and heavy machinery, should be kept a distance on the order of the depth of the excavation away from the top of the excavation to prevent unanticipated surcharge loading. All surface water should be diverted away from excavations.

4.2.14 Estimated Settlement of Deep Fill

In general, deep fills are expected to settle with time due to their self-weight and changing moisture conditions. The magnitude of such settlement may range from 0.2 to 0.4 percent of the initial thickness of the fill, depending on the specific material characteristics, proximity to fill slopes and actual compaction conditions. Since the proposed fill depths over the site may range from zero to about 40 feet, it is our opinion that up to 1 to 2 inches of long-term surface settlement may be anticipated. This estimated maximum fill settlement would likely occur beneath the middle portion of the north building which will straddle the existing central drainage at the site.

Differential settlement due to this mechanism will vary across the site but should be greatest where the fill thickness gradient is the greatest. Differential settlement in should not exceed about ½ to 1 inch over a horizontal distance of 25 feet. If this anticipated differential settlement is not acceptable, we can provide recommendations for remedial measures. As an example, placement of proposed deep fills at a higher compaction effort (e.g., at least 95 percent relative compaction) may reduce the post-construction settlement by 25 to 50 percent. This settlement may take 5 to 10 years (or longer to complete).

In general, long-term fill settlements would likely manifest in the form of a gentle tilt across the affected area. Such an occurrence should not adversely affect properly designed and constructed structures where the placed fill thickness does not vary greatly. However, due to the steep side walls of the existing central drainage at the site, settlement of fill soils below the northwest corner of east building and the central portion of the northern building could be significant and not tolerable.

4.2.15 Erosion Prevention and Sedimentation Control

The potential for soil erosion is largely impacted by local soil characteristics, vegetative cover, topographic relief, and the frequency and intensity of rainfall and wind. Removal of vegetation and disturbance to surficial soils by construction activities may result in local increases of erosion rates in unprotected areas. As a result, sedimentation may increase in local drainages at site perimeters and slope intersections. Uncontrolled diversion of storm water runoff from the site to unlined drainage channels could result in erosion of the drainage channels due to concentrated flow. This is particularly true during and immediately following site grading.

Site development normally increases the amount of impervious area, thus increasing the volume of storm water runoff. Concentration of flow in drainage structures can result in increased flow velocities and erosion potential. Soils on slopes exposed by site development will be subject to erosion by wind and water. This can result in increased turbidity of runoff to the downstream area.

Erosion prevention and sedimentation control is a complex issue and is usually best addressed by sound planning and the use of Best Management Practices (BMPs). Erosion control BMPs are the “best” available technologies that are consistent with conventional local control practices. Implementation is dependent on site conditions and applicability of proven cost-effective methods. The selection and implementation of construction BMPs is dependent on what existing features need to be protected or mitigated.

BMPs for erosion and sediment control are selected to meet the specific objectives based on site conditions, serviceability, and cost. Various BMPs in combination or succession may be needed for a given area. Selection of erosion control BMPs should be based on minimizing disturbed areas, stabilizing disturbed areas, and protecting slopes and channels. It also should be based on retaining sediment on-site and controlling the site perimeter. All implemented BMPs should be regularly monitored and controlled after initial installation, as well as during and after any storm generating runoff, to determine maintenance requirements and the general condition of the installed system.

To reduce soil erosion and sediment transport, protective material such as gravel, crushed stone, pavement, and other effective erosion control materials should be used to stabilize exposed soils. Slopes should be provided with temporary drainage and erosion control measures during construction until permanent measures can be installed. Storm water runoff from construction areas should be conveyed to temporary diked detention areas for sediment deposition, then discharged to the existing natural drainage courses with velocities slow enough to prevent further erosion in the drainage courses.

Control of erosion and sedimentation on recently graded construction sites require both vegetative and structural measures. Vegetative species used to control erosion should be selected to accommodate the soil characteristics and climate at the site. Storm runoff control should be provided during and after completion of site grading by using diversion dikes and permanent drainage facilities. Sediment retention structures such as sediment basins, sediment traps or silt fences should be used to keep eroded material on the site. Straw bales used alone, or in combination with geotextiles, can be effective sediment retention structures when properly installed and maintained.

We recommend the following practices be part of the project:

- Use temporary plant cover, mulching, and/or structures to control runoff and protect areas subject to erosion during construction.
- Minimize soil exposure during the rainy season by proper timing of grading and construction and be prepared to shut down all earthwork if heavy precipitation occurs.
- Have erosion control equipment and materials onsite if needed in an emergency to quickly construct temporary collectors, diversion channels, intercept drains, berm, dikes, or filters.
- Accommodate the surface runoff from all disturbed areas. Prepare drainage-ways that handle concentrated or increased runoff from disturbed areas by using riprap or other lining materials to control erosion.
- Trap sediment-laden runoff in basins to allow soil particles to settle out before flows are released to receiving waters.
- Reduce erosion by limiting the area and time of exposure, and by the provision of diversion channels.

4.2.16 Site Drainage

Final elevations at the site should be planned so that positive drainage is established around structures such that surface water runoff is directed away from building foundations, floor slabs, pavements, top of slopes and other proposed elements of the project. Positive drainage is defined as a slope of 2 percent or more for a distance of 5 feet or more away from structure foundations. Roof gutters and downspouts should be installed on structures. Downspouts should discharge to controlled drainage systems. Planters should be built so that water exiting from them will not seep into the foundation areas or beneath slabs and pavement.

In any event, the maintenance personnel should be instructed to limit irrigation to the minimum actually necessary to properly sustain the landscaping plants. Should excessive irrigation, waterline breaks, or unusually high rainfall occur, saturated zones and perched groundwater may develop. Consequently, the site should be graded so that water drains away readily without saturating the foundation or landscaped areas. Potential sources of water, such as water pipes, drains, garden ponds, and the like, should be frequently examined for signs of leakage or damage. Any such leakage or damage should be repaired promptly.

4.2.17 Stormwater Infiltration

The feasibility of a stormwater infiltration system is dependent on the geologic, hydrogeologic and geotechnical conditions of a site. In general, formational soils at the site are dense to very dense, moderately to strongly cemented with very low permeability. For practical purposes, the Stadium Conglomerate may be considered impermeable. Based on our evaluation and experience with site materials, both properly compacted fill and formational soils are expected to have an infiltration rate less than 0.5 in/hr. Based on our understanding of the overall site conditions and planned construction, the use of a stormwater infiltration system which would permit uncontrolled wetting and saturation of both compacted fill soils and natural undisturbed formational soils should not be utilized in the project design and construction. It is our opinion the site is not suitable for stormwater infiltration and that further evaluation by field testing is not warranted.

In our opinion, purposely allowing compacted fill soils at the site to become wetter than their controlled placed moisture content is not recommended. Wetting of compacted fill soils would increase the potential risks related to site settlement (hydro-consolidation), heaving of expansive soils, instability of the 40-foot high fill slope adjacent to the north property boundary and hydrostatic pressure build up behind basement and other retaining walls. In our opinion, no appreciable amount of stormwater infiltration is physically feasible without negative consequences that can be reasonably mitigated. If bioswales or bioretention systems are used, we recommend that they be lined with an impermeable geosynthetic to mitigate the potential for undesirable infiltration.

4.3 SLOPE STABILITY

The existing slopes at the project site primarily include natural vegetated slopes capped with surficial soils and slopewash. We understand that the proposed site grading will produce both permanent excavated cut and compacted fill slopes as shown on Figure 4, Proposed Development Plan and Figure 7, 8 and 9, Geologic Cross Sections A-A' through F-F'.

We understand that proposed cut and fill slopes will have maximum heights on the order of about 30 and 50 feet, respectively. In general, the cut slopes will be made within the terrace deposits in the central and southern portions of the site. Fill slopes will be located in the central and northern portions of the site. It should be noted that the southern wall of the proposed parking structure is planned to have a significant vertical excavation with a maximum height of approximately 40 feet which will require the design and construction of a permanent retaining wall system. Design recommendations for retaining walls are presented in Section 4.4.

For our study, we have performed slope stability analyses for the maximum height cut and fill slopes anticipated using the computer program Slope/W (Geo-Slope International, 2013). Our results are based on the Spencer method-of-slices for circular moment-equilibrium stability analyses. The primary material expected in cut slopes consist of natural undisturbed terrace deposits and to some degree the Stadium Conglomerate. Fill slopes will consist of recompacted soils derived from the site excavations in the same material. Based on the field explorations and laboratory test results presented in the Geotecnics report (2000), our recent geophysical survey of the site, correlations with published information and our experience with similar formational soils in the general area, we have used the following geotechnical parameters in our analyses.

Table 2

Geotechnical Strength Parameters

MATERIAL	UNIT WEIGHT (PCF)	COHESION (PSF)	INTERNAL FRICTION ANGLE (DEGREES)	MODULUS OF SUBGRADE REACTION (TCF)
Compacted Fill	120	100	32	150
Terrace Deposits	125	200	34	200

Table 2 (continued)

Geotechnical Strength Parameters

MATERIAL	UNIT WEIGHT (PCF)	COHESION (PSF)	INTERNAL FRICTION ANGLE (DEGREES)	MODULUS OF SUBGRADE REACTION (TCF)
Stadium Conglomerate	135	300	38	300
Friars Formation	130	400	30	250

The results of deep-seated stability analyses, assuming no potential sources of weaker material and using the above parameters for the proposed slopes indicate calculated Safety Factors in excess of 1.5 for static conditions for the cases analyzed. A conventional seismic (pseudo-static) analyses of slopes consisted of the application of a coincident peak lateral acceleration of Kh=0.18g which is equivalent to ½ of the estimated Peak Ground Acceleration (PGA = 0.361g in Table 1). In our opinion, this value is reasonable for seismic analyses of slopes in the project area. The results of our analyses indicate that for the assumed seismic conditions, the Safety Factor against deep-seated slope failure is in excess of 1.1. The results of slope stability analyses and calculated Safety Factors are presented Table 3 and in Appendix C.

Table 3

Slope Stability Analyses Summary

SLOPE DESCRIPTION	CONDITION	SAFETY FACTOR
Cut 30' high @ 2H:1V	Static	2.42
	Seismic 0.18g	1.67
Cut 30' high @ 1 ½ H:1V	Static	2.07
	Seismic 0.18g	1.49

Table 3 (continued)
Slope Stability Analyses Summary

SLOPE DESCRIPTION	CONDITION	SAFETY FACTOR
Fill 50' high @ 2H:1V	Static	1.62
	Seismic 0.18g	1.14

Slope stability analyses require using geotechnical parameters selected form a wide range of possible values. There is a finite possibility that slopes having calculated Safety Factors as indicated above could become unstable. In our opinion, the probability of slopes having a calculated Safety Factor greater than 1.5 (static) and 1.1 (seismic) becoming unstable is low.

Conditions of proposed slope excavation and construction should be further evaluated during mass grading by a representative from Kleinfelder. Additional investigation and analyses may be required if adverse geologic conditions such as perched groundwater, adversely oriented bedding, or weak soils are encountered.

Fill slopes are particularly susceptible to shallow slope sloughing in periods of rainfall, heavy irrigation and upslope runoff. Period slope maintenance may be required including rebuilding the outer one to two feet of fill slopes. Sloughing of fill slopes can be reduced by overbuilding and cutting back to the desired slope. To a lesser extent, sloughing can be reduced by backrolling slopes at frequent intervals during grading. A minimum, we recommend that all fill slopes be trackwalked so that a dozer track covers all surfaces at least twice. We recommend that all cut and fill slopes be planted, drained and maintained with a minimum amount of surface irrigation in accordance with the recommendations of the project landscape architect.

All slopes are subject to some creep movement, whether the slopes are natural or man-made. Slope creep is a very slow, down-slope movement of the near surface soil along the slope face. The degree and depth of the movement is influenced by the soil type and moisture conditions. This movement is typical in slopes and is not considered a geologic hazard. However, it may affect structures built on or near the slope face/crest. We recommend that structures not be located within 10 feet of the top of slopes, unless specific evaluations of the structure's foundation is conducted by both the geotechnical consultant and structural engineers.

4.4 RETAINING WALLS

Various conventional types of retaining walls of heights are planned for the project. Cantilevered masonry, cast-in-place concrete (CIP) and mechanically stabilized earth (MSE) walls are considered suitable for site retaining walls. We recommend that the walls be designed and constructed in accordance with the recommendations presented below. In the case of proprietary walls systems (e.g., Reinforced Earth™ or Keystone™), their design should be in accordance with the manufacturer's requirements.

4.4.1 Foundations

Short masonry and CIP concrete site retaining walls may be supported on shallow continuous footings founded entirely on either undisturbed in-place formational soils or properly compacted fill. Shallow foundations should be designed in accordance with the recommendations presented in Section 4.5.1 of this report.

Retaining wall foundations should have a minimum width determined based on the structural and stability analyses performed by the wall designer. Retaining wall foundations should be embedded at least two feet below the lowest adjacent grade or to the depth necessary to provide adequate factors of safety against sliding and overturning as determined by the retaining wall designer, whichever is greater. Reinforcement should be provided as required by the Regional Standard Drawings (if used) or as directed by the wall designer for load carrying purposes.

All footing excavations should be observed by a representative of Kleinfelder prior to placing reinforcing steel or concrete to verify proper subgrade conditions. Estimated total settlements for retaining walls constructed in accordance with the recommendations contained herein are anticipated to be less than ½ inch. Differential settlements are expected to be less than ¼ inch within 50 feet.

4.4.2 Active and At-Rest Lateral Earth Pressures

The following lateral earth pressure values (Table 2) for level or sloping backfill are provided for walls backfilled with select granular, free-draining materials. For retaining wall design, select backfill material may be assumed to have a unit weight of 120 pcf and internal friction angle of 34 degrees. The geotechnical strength parameters for the retained material behind the backfill zone and below the foundation zone may be taken from Table 4.

Table 4
Equivalent Fluid Weight for Retaining Wall Design

CONDITIONS	LEVEL	2:1 SLOPE
Active	35 pcf	55 pcf
At-Rest	55 pcf	85 pcf

Unrestrained (yielding) cantilever walls should be designed for the active equivalent fluid weight values provided above. At-rest earth pressures should be used in the design of restrained (non-yielding) walls where the top of the wall is not expected to move laterally more than 0.001H (where H is the unbalanced wall height). Examples of restrained walls are generally walls for subterranean building levels, buried vaults and loading docks. These values assume: a triangular distribution; backfill with on-site or imported, non-expansive sandy soils (SP, SM, SC); and that the backfill is well drained. Thirty percent of any uniform area surcharge placed at the top of the wall may be assumed to act as a uniform horizontal pressure over the entire wall for unrestrained retaining walls. This value should be increased to 50 percent for restrained retaining walls such as basement walls.

In addition to the recommended earth pressures, walls adjacent to vehicular traffic should be designed to resist a uniform lateral earth pressure of 120 psf acting as a result of normal mixed traffic loads behind the wall. The above lateral earth pressures assume no hydrostatic pressures. All walls should be provided with an adequate internal drainage system to reduce the likelihood of hydrostatic pressures.

4.4.3 Passive Pressures

Resistance to lateral loads (including those due to wind or seismic forces) may be provided by frictional resistance between the bottom of concrete foundations and the underlying soil, and by passive soil pressure against the sides of the foundations. An ultimate coefficient of friction of 0.40 may be used between cast-in-place concrete foundations and the underlying soil. Allowable passive pressure available in engineered fill may be taken as equivalent to the pressure exerted by a fluid weighing 350 pounds per cubic foot (pcf). Passive pressure and base friction can be combined without reduction to resist lateral loads.

4.4.4 Earthquake Loading

The walls should be designed to resist earthquake loading utilizing the following recommendations for design. Based on ½PGA of 0.18g discussed in Section 4.1.3, the resultant seismic force (in pounds) for each linear foot of wall can be estimated as 10*H2 where H is the height of the wall (in feet) above its base. The resultant seismic force acts at 0.4*H above the wall base. For restrained walls, this force should be added to the active earth pressure rather than at rest pressure.

Allowable bearing pressure values described in previous sections of this report can be increased by one-third when calculating resistance caused by loads of short duration, such as earthquake loads. Restraining passive pressure and friction values should not be increased by this amount, but a lower factor of safety than is normally applied to static loads could be used. The factor of safety for dynamic load conditions should not be less than 1.1.

4.4.5 Wall Drainage

The recommended earth pressures do not include lateral pressures due to hydrostatic water pressures generated by infiltrating surface water that may accumulate behind the walls. Therefore, wall backfill materials should be free draining and provisions should be made to collect and remove excess water that may accumulate behind earth retaining structures.

Wall drainage may be provided by free-draining gravel surrounded by non-woven synthetic filter fabric or by prefabricated, synthetic drain panels. In either case, drainage should be collected by perforated pipes at the base of the wall and directed to a sump, storm drain, weep hole(s), or other suitable location for disposal. Note that the City of San Diego requires that the actual drainage location be shown on the as-built plans by the civil engineer and that the geotechnical engineer also observe and document the location.

The drainage should not be permitted to discharge over soil in a manner that would cause erosion. If utilized, we recommend that drainage gravel consist of durable stone having 100 percent passing the 1-inch sieve and zero percent passing the No. 4 sieve. Synthetic filter fabric should have an equivalent opening size (EOS), U.S. Standard Sieve, of between 40 and 70, a permeability of at least 0.02 centimeters per second, a minimum flow rate of 50 gallons per minute per square foot of fabric, and a minimum puncture strength of 50 pounds. The geotextile manufacturer's recommendations should be followed for installation of a drainage fabric system.

4.4.6 Backfill Placement

All backfill should be placed and compacted in accordance with recommendations provided for engineered fill. During grading and backfilling adjacent to any walls, heavy equipment should not be allowed to operate within a lateral distance of 5 feet from the wall, or within a lateral distance equal to the wall height, whichever is greater, to avoid overstressing of the wall. Within this zone, only hand operated equipment ("whackers", vibratory plates or pneumatic compactors) should be used to compact backfill soils.

4.4.7 Mechanically Stabilized Earth Walls

We understand that Mechanically Stabilized Earth (MSE) retaining walls up to 15 feet in maximum height may be considered for the project. Typical MSE retaining walls consist of steel or geogrids internal reinforcing attached to precast, segmental blocks, panels or geocells. The walls are infilled with granular soil while retaining the backfill soil. Reinforcement placed in horizontal layers throughout the height of the wall provides the tensile strength to hold the soil together. The reinforced soil mass, along with the facing, forms the wall. The main advantages of MSE walls compared to conventional reinforced concrete walls are their ease of installation and quick construction. They do not require formwork or curing and each layer is structurally sound as it is laid, reducing the need for support, scaffolding or cranes.

In general, MSE retaining walls have three zones which include the reinforced, retained and foundations zones. The wall should be supported by properly compacted fill soil or undisturbed formational soils. The geotechnical strength parameters presented in Table 2 should be used for design of MSE retaining walls in the retained zone and foundation zones. Properly compacted select granular fill soil should be used in the reinforced zone. The cohesionless reinforced zone may be designed assuming a unit weight of 120 pcf and minimum internal friction angle of 35 degrees.

We recommend that internal reinforcement for all MSE retaining walls be at least 70 percent of the wall height even though minimum length calculations may be computed to be less. This recommendation is provided to limit overall deformation during construction and the effect of "first-time wetting". The minimum embedment below lowest adjacent grade should be 12 inches of 10 percent of the wall height, whichever is greater. We recommend that the foundation leveling material consist of ¾-inch crushed rock and be at least 6 inches think. The stone may be tamped in place in order to ensure tight interlocking. Compaction testing need not be performed on the leveling stone.

All MSE retaining walls should be designed with redundant measures of internal and external drainage control. Surface drainage control should be provided by the use of tightly compacted ground surface and incorporation of a brow ditch along the top of the wall. Internal drainage should consist of crushed stone which extends at least 1 foot behind the back edge of the wall facing unit. A non-woven filter fabric (i.e., Mirafi 140N of equivalent) should be provide between the crushed stone and the select soil of the reinforced zone. A perforated drain pipe should be provided behind the lowest level of the MSE retaining wall and directed to drain to an appropriate outlet.

4.4.8 Soil Nail Walls

We understand that the south wall of the proposed parking structure may be constructed using a soil nail wall. Soil nailing is a construction technique that involves the systematic insertion of reinforcing elements consisting of steel rebar and cement grout. Reinforcing bars installed using drilling techniques are usually fully grouted and installed at a slight downward inclination with bars installed at regularly spaced points across the slope face. A rigid concrete facing (i.e., shotcrete) with isolated soil nail head plates is often used at the wall face. The design and construction of a soil nail wall should be performed by a structural engineer and contractor, respectively, with at least 5 years of experience with soil nail walls.

Design considerations include wall layout, soil nail vertical and horizontal spacing, pattern on wall face, reinforcement inclination, reinforcement length and distribution, material properties, etc. Soil nail length, diameter and spacing typically control external and internal stability of the wall. These parameters can be adjusted during design until all external and internal stability requirements are met. The soil nail wall must be designed for external and internal failure modes, seismic considerations and aesthetic qualities.

The subject wall may be up to 40 feet high and set back only 30 feet from the southern property line. This wall may have both level and inclined back-slope conditions. It is anticipated that the retained zone of this wall will consist primarily of undisturbed formational soil consisting of terrace deposits. The geotechnical strength parameters presented in Table 2 should be used for design of soil nail walls. The ultimate bond strength between the pressure grouted soil nail and terrace deposits may be taken as 1,000 psf for design purposes. We recommend that the soil nail wall be designed using an equivalent pseudo-static horizontal acceleration of 0.18g for seismic design.

The wall should be designed with redundant measures of internal and external drainage control. Surface drainage should be provided by use of a concrete brow ditch along the top of the wall. Internal drainage control should consist of uniformly spaced composite drainage panels and provided with facial outlets at regular intervals (e.g., every 5 top 10 feet on-center). We recommend that the soil nail wall reinforcement and anchor connections be designed for corrosive soil conditions.

Inspection activities play a vital role in the production of high-quality soil nail walls because conformance to project plans and specifications should result in a soil nail wall that will perform its intended duty for its designed duration. Inspections usually involve evaluation and conformance of system components to material specification, construction methods to execution specifications, short-term performance specifications and long-term monitoring. Short-term performance specifications are checked with loads tests, which utilize hydraulic jacks and pumps to perform several load applications. Three common load tests for short-term performance are verification or ultimate load tests, proof tests and creep tests. Verification or ultimate load tests are conducted to verify the compliance of the soil nails with pullout capacity and strengths resulting from the contractor's installation method. Proof tests are intended to verify that the contractor's construction procedure has been consistent and that the nails have not been drilled and grouted in a soil zone not tested in the verification stage. Creep tests are performed to ensure that the nail design loads can be safely carried throughout the structure's service life.

Long-term performance monitoring is used to collect data to ensure adequate performance and refine future design practices. Parameters to be measured include vertical and horizontal movement of the wall face, local movements or deterioration of facing elements, drainage to the ground, loads, load distribution and load changes in the nails, temperature and rainfall. These parameters are measured using several specific tools including inclinometers, load cells and strain gauges.

4.5 FOUNDATIONS

Based on the presence of formational soils (cut) or compacted fill soils within the footprint the proposed buildings, we recommend that each structure be supported on the foundation systems presented in Table 5.

Table 5
Recommended Foundation Systems

BUILDING	FINISH FLOOR ELEVATION (FEET, MSL)	LOWER LEVER FLOOR ELEVATION (FEET, MSL)	LOWER LEVEL SUBGRADE CONDITION	FOUNDATION SYSTEM
Building 1	+385.0	+373.5	Cut / Fill	Shallow Footings
Building 2	+380.0	+368.5	Cut / Fill	Shallow Footing / Drilled Piers
Building 3	+389.9	+377.5	Cut	Shallow Footings
Parking Structure	+387.0	+375.5	Cut	Shallow Footings
Cafeteria	+387.0	NA	Fill	Shallow Footings

In order to minimize the possibility of adverse differential settlement, it is recommended that shallow footings in the northwest corner of Building 1 be deepened to extend into undisturbed formational soils such that no foundations is directly supported by fill soils. All footings should penetrate at least 2 feet into undisturbed formational soil. The estimated maximum footing depth at the northwest corner of Building 1 may be on the order of 6 to 8 feet.

In order to minimize the possibility of adverse differential settlement of Building 2, it is recommended that shallow footings founded in undisturbed formational soil be used in the southeast corner and western 1/3 of the building footprint. All shallow footings should penetrate at least 2 feet into undisturbed formational soil. It is recommended that foundations for the remaining central and eastern portions of the building consist of cast-in-drilled-hole (CIDH) foundations which extend through the fill soils and penetrate into undisturbed formational soils. Due to the proximity to a planned fill sloe along the northern side of the building, all foundations which penetrate fill soils should be integrated with reinforced concrete grade beams in order to limit any potential lateral movement. The project structural engineer should determine if the lower level parking area floor slab should be designed as a grade beam supported structural mat or a conventional slab-on-grade floor depending on the tolerance for ground movement due to potential fill soil compression.

It is recommended that Building 3 and the parking structure be founded on shallow footings that are embedded at least 2 feet into undisturbed formational soils. It is recommended that the cafeteria building be founded on shallow footings that are embedded at least 2 feet into properly compacted fill soils.

Design recommendations for shallow and deep foundations are presented in the following sections.

4.5.1 Shallow Foundations

Shallow foundations founded on properly compacted fill soils and undisturbed formational soils may be designed using a maximum allowable bearing pressure of 3,000 psf and 5,000 psf, respectively. These design values can be increased by one-third for short term loads such as those due to wind and seismic forces. Total settlements may be on the order of ½ inch and 1 inch, respectively.

Resistance to horizontal loadings can be developed by passive earth pressure on the sides of footings and frictional resistance developed along the footing bottoms. Passive resistance to lateral earth pressure may be calculated using an equivalent fluid unit weight of 300 pcf and 350 pcf for shallow footing embedded in properly compacted fill soils and undisturbed formational soils, respectively. A frictional coefficient of 0.35 and 0.40 may be applied to vertical dead loads supported on properly compacted fill soils and undisturbed formational soils, respectively. The passive pressure and frictional resistance can be combined to resist lateral loads if the larger of the two values is reduced by 50 percent.

Footings may experience a reduction in bearing capacity, or an increased potential to settle, when located in close proximity to existing or future utility trenches. Furthermore, stresses imposed by the footings on the utility lines may cause cracking, collapse, and/or loss of serviceability. To reduce the risk, utility excavations should not extend below a 2H:1V plane projected downward from 1 foot above the bottom of the outside edge of the footing. Also, no parallel utility excavations should be made within a lateral distance of 2 feet outside the footing.

Prior to placing reinforcing steel or concrete, footing excavations should be cleaned of all debris, loose or soft soil, and water. All footing excavations should be observed by the project geotechnical engineer or an engineering technician under the direction of the project geotechnical engineer prior to placement of reinforcing steel and concrete to check that the recommendations contained herein are implemented during construction.

4.5.2 Deep Foundations

It is recommended that portions of Building 2 be supported on structural elements consisting of CIDH foundations that fully penetrate fill soils and sufficiently extend into undisturbed formational soils. CIDH foundations should have a minimum diameter of 36 inches and a minimum penetration of 10 feet into the underlying formational material. CIDH foundations may be designed with a maximum allowable tip soil bearing pressure of 10,000 psf (dead plus live loads). The CIDH foundations may designed with an allowable shaft friction of 2,000 psf (dead plus live loads) in formational material. Shaft friction should be discounted in fill soils due to potential long-term compression and settlement. The downward capacity of CIDH foundations may be increased by up to one-third for loads that include wind and seismic forces. However, no additional increase should be allowed for uplift loading conditions. Full length reinforcement should be provided for uplift loads. The weight of the CIDH foundations may be added to the calculated uplift capacity. Estimate settlement of CIDH foundations that are designed as recommended herein should not exceed 1 inch.

Belled CIDH foundations may also be used. Bell diameters should be no larger than 3 times the shaft diameter. No reinforcement is required in the flared portion of the belled CIDH foundation. For belled CIDH foundations, the surface generating the uplift resistance may be assumed to have a diameter equal to the bell diameter or the by the annular soil bearing against the bell in the upward direction. For the latter case, available uplift resistance of the annular portion of the CIDH bell may be taken as 5,000 psf. The allowable uplift resistance should be governed by the lesser of either the 1) upward annular bearing resistance plus concrete/soil friction plus foundation weight or 2) soil/soil friction of a cylinder projected upward from the outer edge of the bell plus soils weight plus pier weight. Further evaluation of design parameters may be possible based on the results of load testing of individual shafts.

The analyses of CIDH foundations for lateral conditions is highly dependent on the shaft dimensions, structural restraints, loading combinations, subsurface soil conditions and tolerable stresses/deformations. Typically it is desired to limit ground-line deformations to less than ¼ inch. We recommend that lateral load analyses and design of CIDH foundations be performed using finite element computer modeling that utilize the P-y resistance methodology and the geotechnical strength parameters presented in Table 2. A computer program such as LPILE (Ensoft) may be used for analyses and design. Kleinfelder can assist the project structural engineer with the analyses and design of the CIDH foundations upon request.

In addition, the allowable bending moment resistance of CIDH foundations may also govern in the selection of allowable loads. In most cases, a closely spaced cluster of shafts has a total axial and lateral capacity that is less than the sum of the capacity of individual shafts in a group. We recommend that CIDH shafts be designed with a center-to-center spacing of no closer than 3 times the shaft diameter. Group efficiencies for CIDH shafts are presented in Table 6.

Table 6
CIDH Foundation Group Efficiencies

CENTER-TO-CENTER SPACING (B = SHAFT DIAMETER)	AXIAL GROUP EFFICIENCY	LATERAL GROUP EFFICIENCY (INLINE W/ GROUP)	LATERAL GROUP EFFICIENCY (PERPENDICULAR TO GROUP)
3B	0.70	0.80	1.00
4B	0.75	0.84	1.00
5B	0.85	0.88	1.00
6B	0.90	0.92	1.00
7B	0.95	0.96	1.00
8B	1.00	1.00	1.00

Boulders and cemented which could hinder the drilling may be present in the undisturbed portions of the Stadium Conglomerate. If encountered during drilling, the oversized material may have to be jackhammered and removed. We recommend that an engineer from our firm observe the CIDH excavations and check the embedment into the formational material and bottom cleanliness prior to the placement of steel and concrete. The end bearing surfaces of the CIDH foundations are designed for high contact pressures. The bottom of the excavation should be cleaned of all loose or softened materials, debris or other substances which may cause settlement or affect the concrete strength. In our opinion, there should be no more than ½ inch of loose material at the bottom of the excavation.

Concrete should be placed in a manner that precludes segregation of particles or other occurrence that may decrease the strength of concrete. Free-fall concrete may be used provided it is directed through a hopper, or equivalent, such that the fall is vertical down the center of the drilled hole without hitting the sides of reinforcing. The maximum allowable free fall of concrete should not exceed 20 feet. The reinforcement cage must be able to withstand the forces of fresh concrete and not be allowed to twist of deform during placement of the concrete or extraction of casing (if used). Caving soils should not be allowed to mix with the fresh concrete. It is recommended that a tremmie pipe be used during concrete placement. The bottom of the tremie pipe should be located below the top of surface of the concrete during placement. The concrete should be vibrated to allow for consolidation while it is being placed. The drilling, cleaning, observation and concrete placement should be carried out as quickly as practical.

4.6 CONCRETE SLABS-ON-GRADE

Subgrade fill soils supporting concrete slabs should be scarified to a depth of 12 inches, moisture conditioned to within optimum and to 2 percent above optimum and compacted to at least 95 percent relative compaction per ASTM D 1557. We recommend that formational soils consisting of Stadium Conglomerate be over-excavated a minimum depth of 12 inches and recompacted with material having a maximum rock size of 3 inches.

If required, a vertical modulus of subgrade reaction (k) of 150 pounds per cubic inch (pci) can be used to design floors, pavements, and walkways on the compacted fill subgrades. Floor slabs should be designed by the project structural engineer. However, we recommend a minimum thickness of 5 inches and a minimum reinforcement of No. 4 rebars with 24-inch horizontal spacing in both directions. The reinforcement should be placed near the center of the concrete slab.

Special precautions should be taken during the placement and curing of all concrete slabs. Excessive slump (high water-cement ratio) of the concrete and/or improper curing procedures used during either hot or cold weather conditions could lead to excessive shrinkage, cracking, or curling of the slabs. High water-cement ratio and/or improper curing may also greatly increase the water vapor permeability of concrete. We recommend a maximum water-cement ratio of 0.45 for floor slab concrete. We recommend that all concrete placement, joint spacing, and curing operations be performed in accordance with the recommended guidelines of the American Concrete Institute (ACI).

Provided that the subgrade is prepared as described above, an aggregate subbase is not required for structural support of the floor slab. In cases where the floor may have a vapor/moisture sensitive covering (e.g. tile, linoleum, carpet, wood), may be in a humidity controlled environment, or may likely have one or both of these conditions in the future, we recommend a polyolefin vapor barrier membrane be utilized between the prepared subgrade and the bottom of the floor slab.

Subsurface moisture and moisture vapor naturally migrate upward through the soil and, where the soil is covered by a building or pavement, this subsurface moisture will collect and transmit through the concrete slab-on-grade. Traditional Visqueen vapor barriers may be considered marginally effective and eventually disintegrate with time. To reduce the impact of this subsurface moisture and the potential impact of future introduced moisture (such as landscape irrigation or precipitation) we recommend utilizing a polyolefin vapor barrier membrane between the subgrade and slab-on-grade. This vapor barrier membrane should consist of a polyolefin sheeting at least 15 mil in thickness, have a water vapor permeance less than 0.01 perms (ASTM F 1249), a puncture resistance of at least 2200 grams (ASTM D 1709), and a tensile strength of at least 45 lbf/in (ASTM D 882).

The material specified above should be highly resistant to tearing, cracking, flaking, or puncturing during construction and should not disintegrate with time. A granular subbase below the membrane or a sand or gravel layer on top of the membrane is not required. In accordance with recommendations in ACI guidelines and many flooring companies, placement of the concrete slab may be directly on the vapor barrier. This eliminates the potential for water to be trapped in the blotter layer that could later be transmitted through the slab and adversely affect the flooring system. However, a reduced joint spacing, slab reinforcement, a low shrinkage mix design, and/or other measures to reduce the potential for slab curl should be implemented by the concrete slab designer.

We recommend that the vapor barrier be installed in accordance with ASTM E 1643, “Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs”. Some salient features of ASTM E 1643 are discussed below. All joints and seams should have a minimum 6-inch overlap and be taped. The area of tape adhesion should be free from dust, dirt and moisture. All penetrations must be sealed using a combination of membrane, tape and mastic. The tape and mastic used should conform to the vapor barrier manufacturer’s recommendations. Care should be taken at the lateral terminations so that vapors do not go around the membrane. This may be accomplished by placing the membrane on top of the footing and against the vertical wall so that the membrane will be sandwiched between the footing, vertical wall and poured concrete floor slab. If damaged, the membrane should be repaired prior to placing concrete.

It is emphasized that we are not floor moisture proofing experts. We make no warranty or guarantee, nor provide any assurance that the recommendation above will reduce concrete slab-on-grade floor moisture penetration to any specific rate or level. The designers should consider all available measures for slab moisture protection. Exterior grading and/or adjacent landscaping have an impact on the potential moisture beneath floor slabs. Exterior grading and/or adjacent landscaping should be designed to address the potential for increased moisture below moisture sensitive slabs and should at least reference the recommendations contained in the Site Drainage section of this report.

4.7 EXTERIOR CONCRETE FLATWORK

Flatwork and exterior concrete should be supported on at least 12 inches of compacted, low to very low expansive engineered fill or undisturbed formational material. To mitigate the potential for localized point loads of cobble on concrete, we recommend a maximum particle size of 3 inches within the upper 12 inches. The concrete slabs for walkways and sidewalks should have a nominal thickness of 4 inches thick. Concrete slabs should be designed by the structural engineer but minimally should be reinforced with welded wire mesh placed at mid depth. To reduce the potential manifestation of distress due to movement of the underlying soil, we recommend that such flatwork be constructed with crack-control joints at appropriate spacing as designed by the structural engineer.

Subgrade should be prepared in accordance with the earthwork recommendations presented earlier in this report but generally consist of scarifying the upper 6 inches, uniformly moisture conditioning to between optimum and 2 percent above optimum moisture content, and compacting to at least 95 percent relative compaction as per ASTM D 1557. Loose or yielding subgrade identified during earthwork operations may require additional remedial measures. Positive drainage should be established and maintained adjacent to flatwork.

4.8 PAVEMENTS

Pavements are planned for various area of the project site. Pavement sections are provided herein for preliminary planning purposes, as the actual material present at pavement subgrade is not known at this time. Final pavement design should be based on R-value test results from samples of the finished subgrade soils in pavement areas. Flexible pavement sections consisting of asphalt concrete (AC) over aggregate base (AB) were evaluated in general accordance with Chapter 600 of the Caltrans Highway Design Manual (Caltrans, 2014) method for flexible pavement design with subgrade design R values of 10, 20, 30 and 40. For planning and budgeting purposes, we recommend utilizing an R-value of 20. Flexible pavement sections are based on Traffic Indexes (TI's) of 4.0, 5.0, and 6.0. An R-value of 78 was used for Caltrans Class II AB in our design. Preliminary flexible pavement sections are presented in Table 7.

Table 7
Flexible Pavement Sections

SUBGRADE DESIGN R-VALUE	TRAFFIC INDEX					
	4.0		5.0		6.0	
	ASPHALT CONCRETE (INCHES)	CLASS 2 AGGREGATE BASE (INCHES)	ASPHALT CONCRETE (INCHES)	CLASS 2 AGGREGATE BASE (INCHES)	ASPHALT CONCRETE (INCHES)	CLASS 2 AGGREGATE BASE (INCHES)
20	3	5	3 ½	6	4	8 ½

The AC and AB should conform to and be placed in accordance with current Caltrans Specifications. The AB and the upper 12 inches of subgrade should be compacted to a minimum of 95 percent relative compaction as obtained by the ASTM D 1557 test procedure.

We recommend that all pavement areas conform to the following criteria:

1. All trench backfill should be properly placed and adequately compacted to provide a stable subgrade. Trench backfill below the 18 inches of pavement soil subgrade should be compacted to a minimum of 90 percent relative compaction (ASTM D 1557).
2. An adequate drainage system should be provided to prevent surface water from saturating the subgrade soil.
3. A periodic maintenance program should be incorporated to include sealing cracks and other measures.
4. Concrete curbs, if utilized, should extend below the bottom of adjacent aggregate base materials.

If it is desired to use cement treated base (CTB) instead of AB, we recommend that pavement sections be designed in accordance with Schedule "J" of the Pavement Design Standards from the City of San Diego Standard Drawings.

At locations where heavily loaded vehicles start, turn and stop frequently, the useful service life of AC pavement sections may be shortened significantly. At these locations, we recommend the use of Portland Cement Concrete (PCC) pavement section in lieu of a flexible AC pavement section. The PCC pavement section should consist of at least 6 inches of PCC (Class A) over at least 8 inches of compacted Class 2 AB over prepared subgrade. We recommend that concrete pavements be provided with expansion joints at regular intervals. Expansion joints and construction control joints (if required) are recommended at regular intervals and should be provided with load transfer devices, such as keys of dowels.

4.9 SOIL AGGRESIVITY

Two soil samples were collected by Geotechnics during their original field study which were tested for preliminary corrosion screening. Laboratory test results for pH, minimum electrical resistivity, and soluble sulfate content are provided in Table 8, and included in Appendix A. No testing for water soluble chlorides were performed. Additional testing of the finish subgrade soils is recommended during the construction phase of the project.

Table 8

Corrosion Test Results

BORING	DEPTH (ft)	MINIMUM RESISTIVITY (ohm-cm)	PH	WATER SOLUBLE SULFATES (%)
B-2	7 to 8	307	5.1	0.04
TP-8	10 to 11	NT	NT	0.02

NT = Not Tested

Although Kleinfelder does not practice corrosion engineering, resistivity values less than 1,000 ohm-cm are normally considered severely corrosive to buried ferrous metals. The minimum resistivity value obtained for the sample tested was 307 ohm-cm, and therefore, representative of an environment that is considered severely corrosive to unprotected metals.

Caltrans (2003) defines a “corrosive site” as one where one or more representative soil and/or water samples contain concentrations of soluble chloride of 0.05 percent (by weight) or greater, soluble sulfate concentrations of 0.2 percent or greater or the pH is 5.5 or less. Based on the laboratory test results, the sampled material is considered “corrosive” by the Caltrans definition.

The Portland Cement Association (PCA, 1988) defines concrete exposure to sulfate attack as negligible for soil with a water soluble sulfate content of 0.00 to 0.10 percent (by weight), moderate for a sulfate content of 0.10 to 0.20 percent, severe for a sulfate content of 0.2 to 2.00 percent, and very severe for a sulfate content over 2.00 percent. Based on the results of the corrosivity testing, the exposure of concrete to sulfate attack from the onsite soils is considered to be negligible by the PCA standards. We recommend that Type II or V cement should be used for concrete structures in contact with soil.

The corrosion tests are preliminary in nature. Additional sampling and testing should be performed during supplemental drilling by Kleinfelder and after completion of grading. We recommend that a qualified corrosion engineer be retained to evaluate the general corrosion potential with respect to construction materials at this site and review the proposed design.

5 ADDITIONAL STUDIES

The review of plans and specifications, and the observation and testing by Kleinfelder of earthwork related construction activities, are an integral part of the conclusions and recommendations made in this report. If Kleinfelder is not retained for these services, the client will be assuming our responsibility for potential claims that may arise during or after construction. The required tests, observations, and consultation during construction includes, but are not limited to:

- Supplemental subsurface explorations and laboratory testing prior to construction
- Review of plans and specifications (i.e., erosion control, civil, structural and architectural)
- Observation and density testing of compacted fill material, trench backfill, retaining wall backfill, subgrade, base and asphalt concrete
- Observation and testing of soil nails and/or tie-back anchors for retaining walls
- Observation of foundation excavations and foundation construction

6 LIMITATIONS

Recommendations contained in this report are based on our field observations and subsurface explorations, laboratory tests, and our present knowledge of the proposed project. It is possible that soil conditions could vary between or beyond the points explored. If soil conditions are encountered during construction, which differ from those described herein, we should be notified immediately in order that a review may be made and any supplemental recommendations provided. If the scope of the proposed project, including the proposed foundation systems or structural locations, changes from that described in this report, our recommendations should also be reviewed and a response issued. We have not reviewed the grading plans or foundation plans for the project. References to elevations and locations provided within this report were based upon general information provided for our use. Kleinfelder, Inc. did not provide surveying services.

Our corrosion recommendations are preliminary in general. Kleinfelder is not a corrosion engineering consultant. Specific recommendations for corrosion protection should be obtained from a corrosion specialist.

Other standards or documents referenced in any given standard cited in this report, or otherwise relied upon by the authors of this report, are only mentioned in the given standard; they are not incorporated into it or "included by reference", as the latter term is used relative to contracts or other matters of law.

We have strived to prepare the findings, conclusions, and recommendations in this report in a manner consistent with the standards of care and skill ordinarily exercised by members of this profession practicing under similar conditions in the geographic vicinity and at the time the services were performed. No warranty or guarantee, express or implied, is made. The recommendations provided in this report are based on the assumption that Kleinfelder will be retained to provide a program of tests and observations during the construction phase in order to evaluate compliance with our recommendations and to evaluate the site conditions exposed. Information and recommendations presented in this report should not be extrapolated to other areas or be used for other projects without our prior review and response.

This report may be used only by The Preserve at Torrey Highlands, LLC and only for the purposes stated, within a reasonable time from its issuance. Land use, site conditions (both on site and off site) or other factors may change over time, and additional work could be required with the passage of time. Any party other than The Preserve at Torrey Highlands, LLC who wishes to use this report shall notify Kleinfelder of such intended use. Based on the intended use of the report, Kleinfelder may require that additional work be performed and that an updated report be issued. Non-compliance with any of these requirements by the client or anyone else will release Kleinfelder from any liability resulting from the use of this report by any unauthorized party.

Kleinfelder will assume no responsibility or liability whatsoever for any claim, damage, or injury which results from pre-existing hazardous materials being encountered or present on the project site, or from the discovery of such hazardous materials.

Additional important information about this report is presented in the attached Geotechnical Business Council insert in Appendix D.

7 REFERENCES

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FIGURES

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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PROJECT NO. 20162077
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VICINITY MAP

THE PRESERVE AT TORREY HIGHLANDS
SAN DIEGO, CALIFORNIA

FIGURE
1

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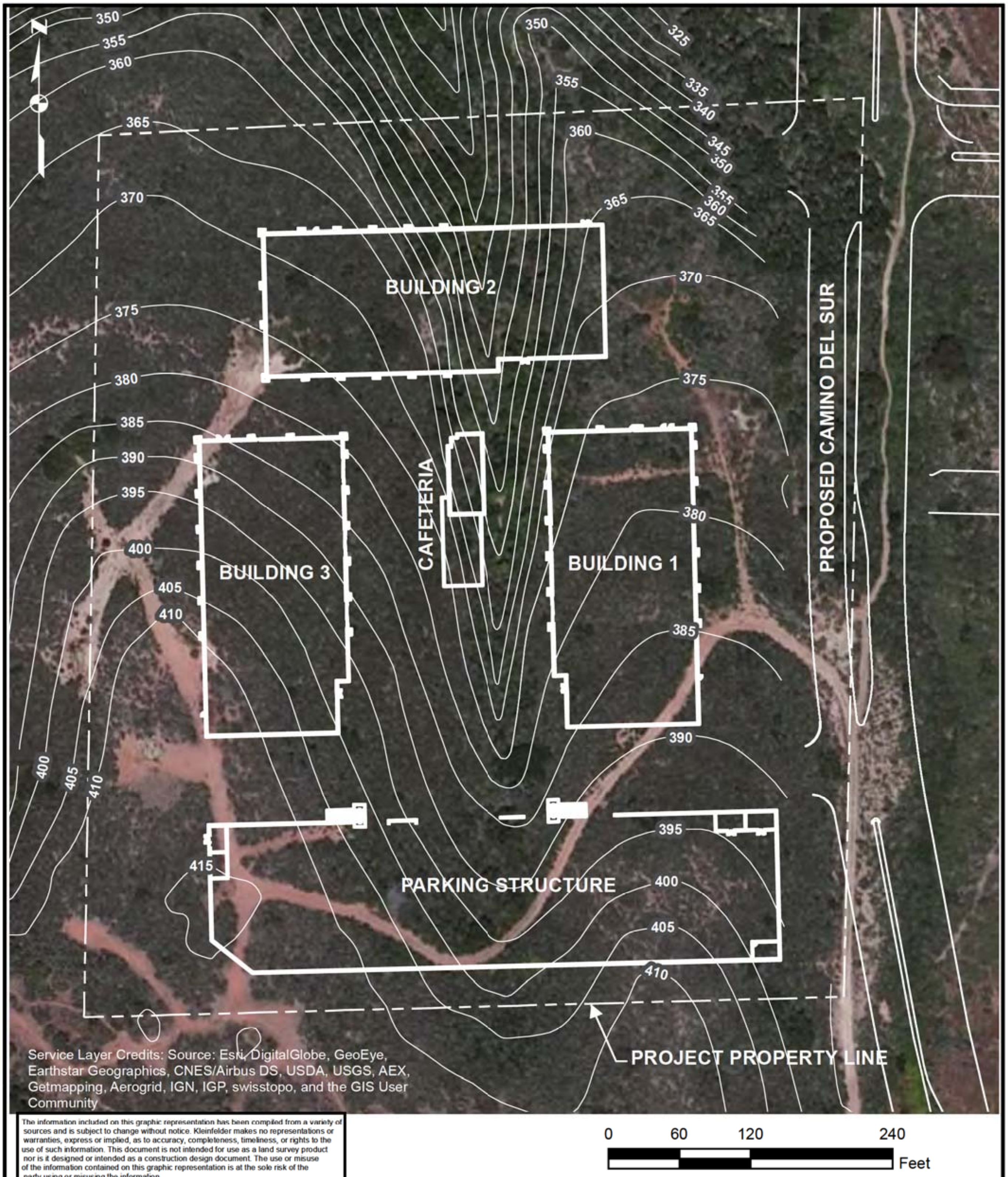

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FILE NAME: 20162077_Aerial.mxd

SITE AERIAL PHOTOGRAPH

THE PRESERVE AT TORREY HIGHLANDS
SAN DIEGO, CALIFORNIA

FIGURE
2

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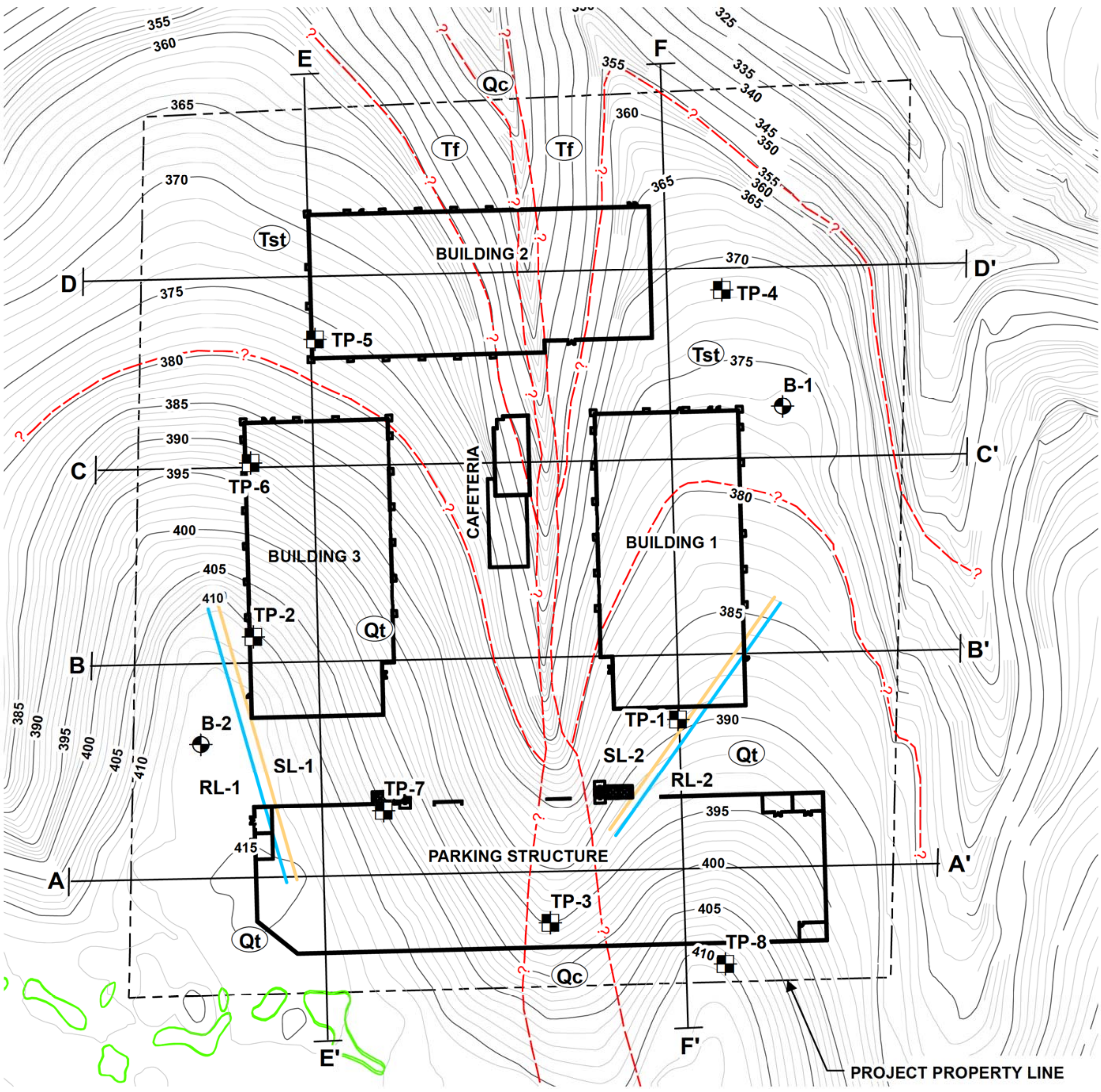

LEGEND

Qc COLLUVIUM
Qt TERRACE DEPOSITS
Tst STADIUM CONGLOMERATE
Tf FRIARS FORMATION
APPROXIMATE LOCATION OF ReMi LINE
APPROXIMATE LOCATION OF SEISMIC LINE

B-2 ⊕ APPROXIMATE LOCATION OF BORING (GEOTECHNICS, INC. 2000)
TP-8 ▨ APPROXIMATE LOCATION OF TEST PIT (GEOTECHNICS, INC. 2000)
?— — APPROXIMATE GEOLOGIC CONTACT
F├─┤F' CROSS SECTION LOCATION
VERNAL POOL

N

0 50 100 200 Feet

1 FOOT ELEVATION CONTOUR INTERVAL

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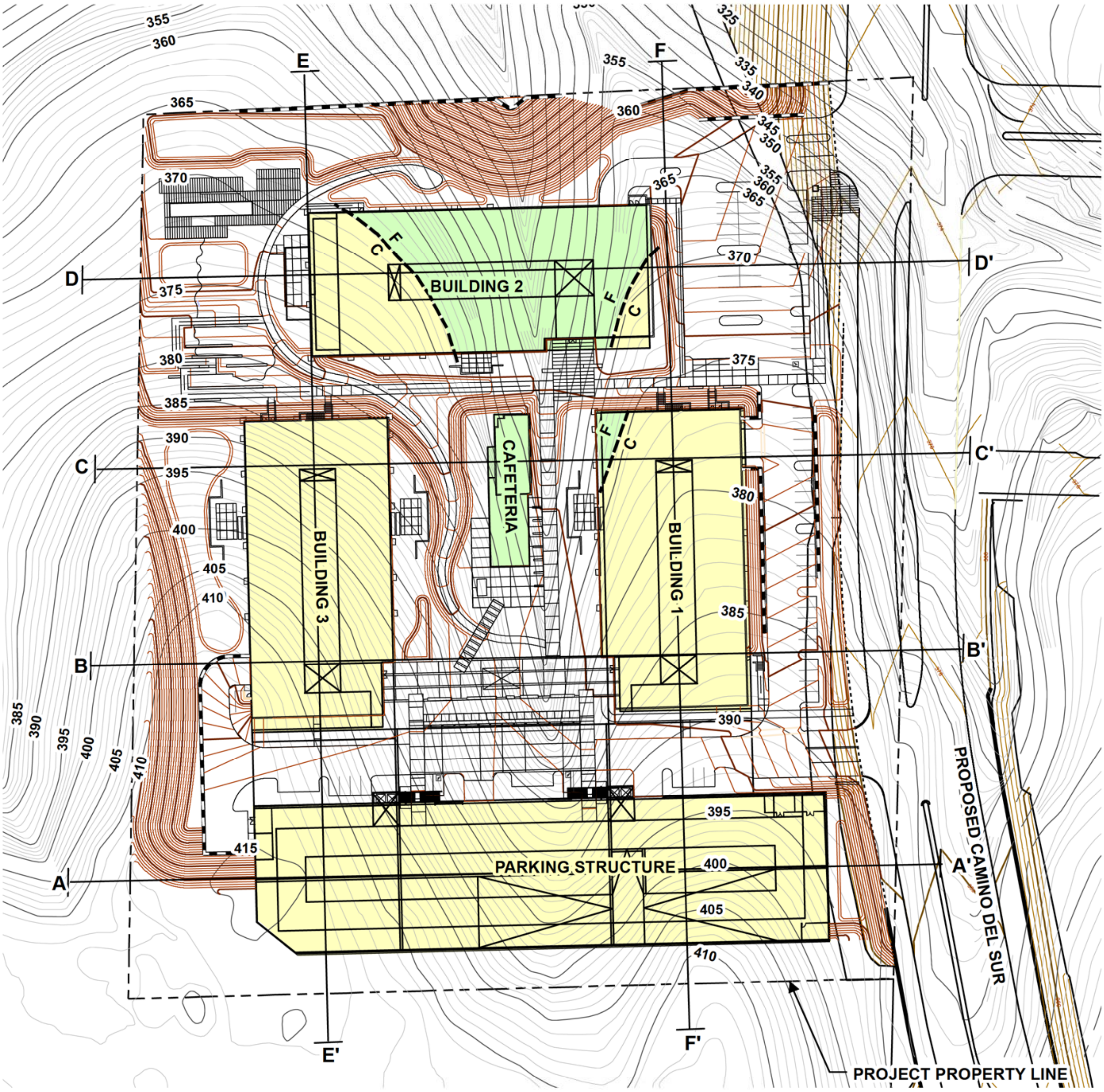
FILE NAME: 20162077_Site.mxd

SITE PLAN AND GEOLOGIC MAP

THE PRESERVE AT TORREY HIGHLANDS
SAN DIEGO, CALIFORNIA

FIGURE

3



BUILDING ELEVATIONS AND SUBGRADE			
BUILDING	FINISH FLOOR	LOWER LEVEL	SUBGRADE
1	+ 385'	+ 373.5'	CUT/FILL
2	+ 380'	+ 368.5'	CUT/FILL
3	+ 389'	+ 377.5'	CUT
PARKING STRUCTURE	+ 387'	+ 375.5'	CUT
CAFETERIA	+ 387'	NA	FILL

LEGEND

EXISTING TOPOGRAPHIC CONTOUR
PROPOSED GRADING CONTOUR
PROPOSED CURB, SIDEWALK, IMPROVEMENT
PROPOSED RIGHT-OF-WAY
PROPOSED WALL
F├┤F' CROSS SECTION LOCATION
C / F PROPOSED DAYLIGHT LINE WITHIN BUILDINGS
C = CUT, F = FILL

N

0 50 100 200 Feet

1 FOOT ELEVATION CONTOUR INTERVAL

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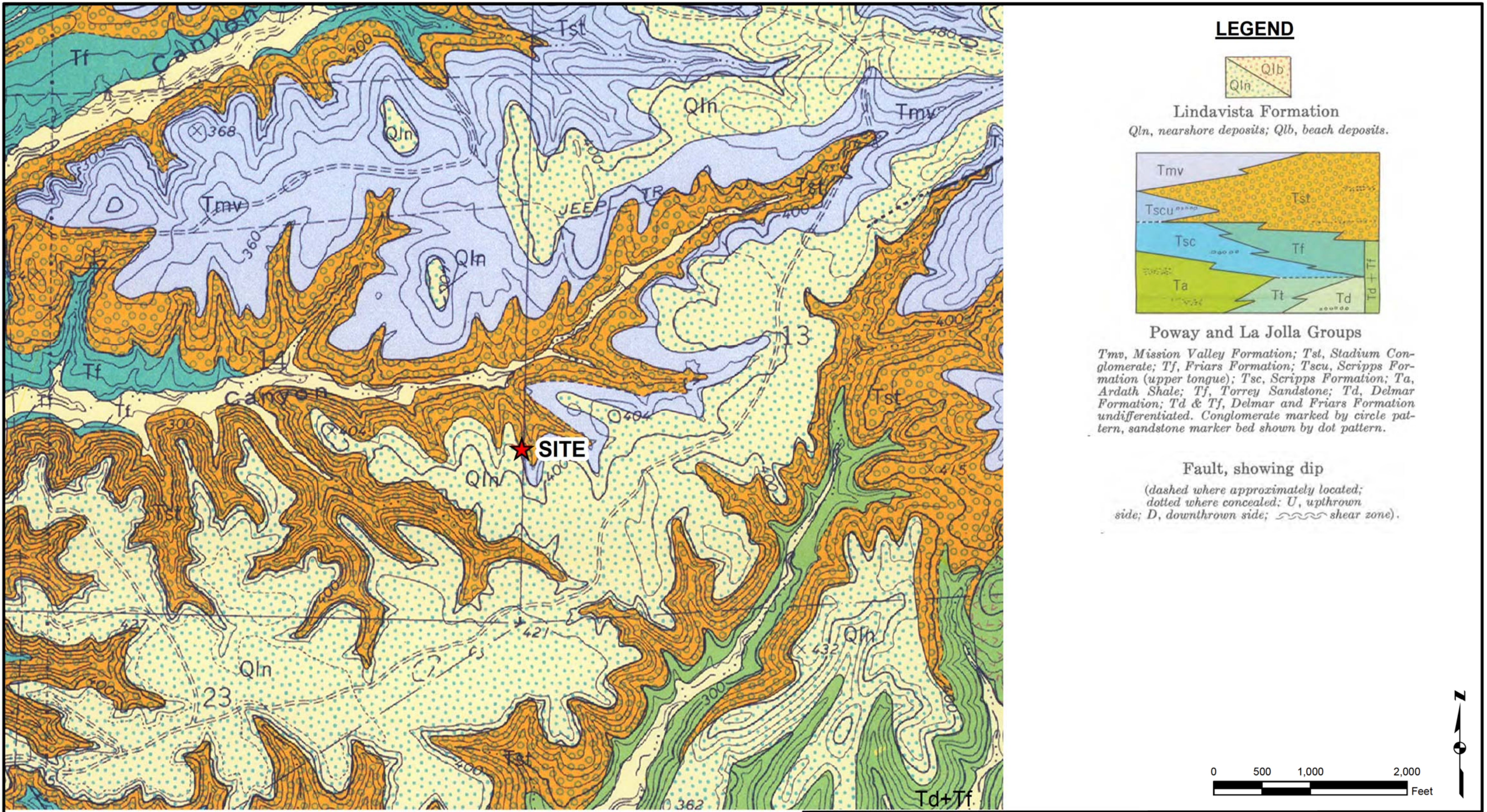
FILE NAME:
20162077_Site2.mxd

PROPOSED SITE DEVELOPMENT

THE PRESERVE AT TORREY HIGHLANDS
SAN DIEGO, CALIFORNIA

FIGURE
4



LEGEND

Lindavista Formation

Qln, nearshore deposits; Qlb, beach deposits.

Poway and La Jolla Groups

Tmv, Mission Valley Formation; Tst, Stadium Conglomerate; Tf, Friars Formation; Tscu, Scripps Formation (upper tongue); Tsc, Scripps Formation; Ta, Ardath Shale; Tt, Torrey Sandstone; Td, Delmar Formation; Td & Tf, Delmar and Friars Formation undifferentiated. Conglomerate marked by circle pattern, sandstone marker bed shown by dot pattern.

Fault, showing dip

(dashed where approximately located; dotted where concealed; U, upthrown side; D, downthrown side; ~~~ shear zone).

SOURCE:
BULLETIN 200, CALIFORNIA DIVISION OF
MINES AND GEOLOGY, KENNEDY, 1975.

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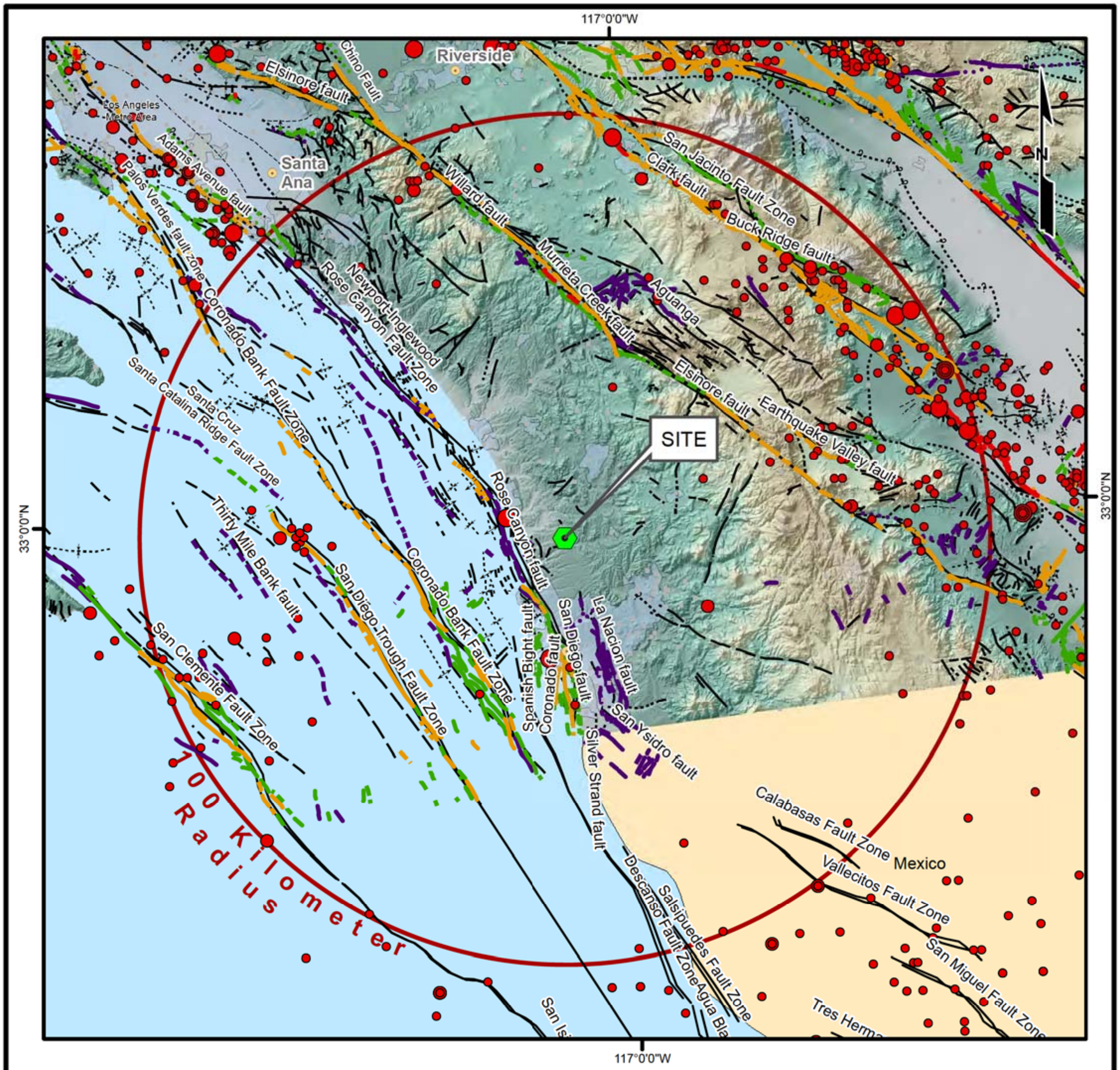
DRAWN: 10/30/2015
DRAWN BY: JP
CHECKED BY: SR
FILE NAME: 20162077_GEO.mxd

REGIONAL GEOLOGIC MAP

THE PRESERVE AT TORREY HIGHLANDS
SAN DIEGO, CALIFORNIA

FIGURE
5

J:_clients\Torrey_Highlands\mxd\20162077_GEO.mxd



Faulting Legend

Quaternary Faults (Bryant, 2005; USGS, 2009)

Historic displacement (< 200 years)
- — Mapped Fault Location
- - - Dashed were Approximated
- ••••• Concealed

Holocene displacement (< 11,000 years)
- — Mapped Fault Location
- - - Dashed were Approximated
- ••••• Concealed

Late Quaternary displacement (< 750,000 years)
- — Mapped Fault Location
- - - Dashed were Approximated
- ••••• Concealed

Quaternary displacement (< 1,600,000 years)
- — Mapped Fault Location
- - - Dashed were Approximated
- ••••• Concealed

Pre-Quaternary Geologic Structures (CGS, 2000)
- — - fault, approx. located
- —?- fault, approx. located, queried
- — fault, certain
- ----- fault, concealed
- ?----- fault, concealed, queried
- —?- - fault, inferred, queried

ANSS Earthquakes

Magnitude
- ● 4.0 - 4.9
- ● 5.0 - 5.9
- ● 6.0 - 6.9
- ● 7.0 - 7.9
- ● 8.0 - 8.9

35 17.5 0 35
Kilometers

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CHECKED BY: MA
FILE NAME: 20162077_EQ.MXD

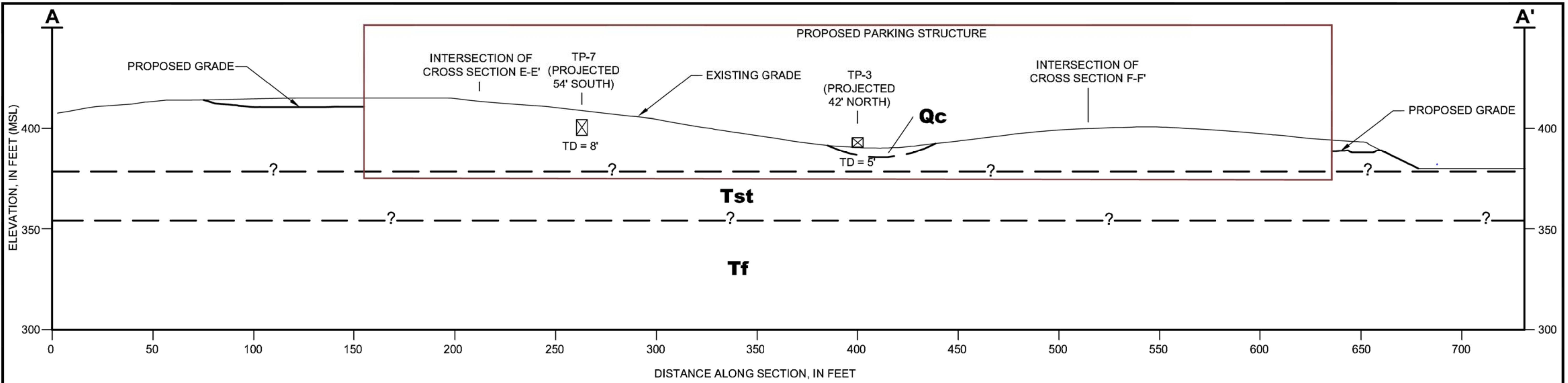
REGIONAL FAULT MAP AND EARTHQUAKE EPICENTERS (1800 - JUNE 2015)

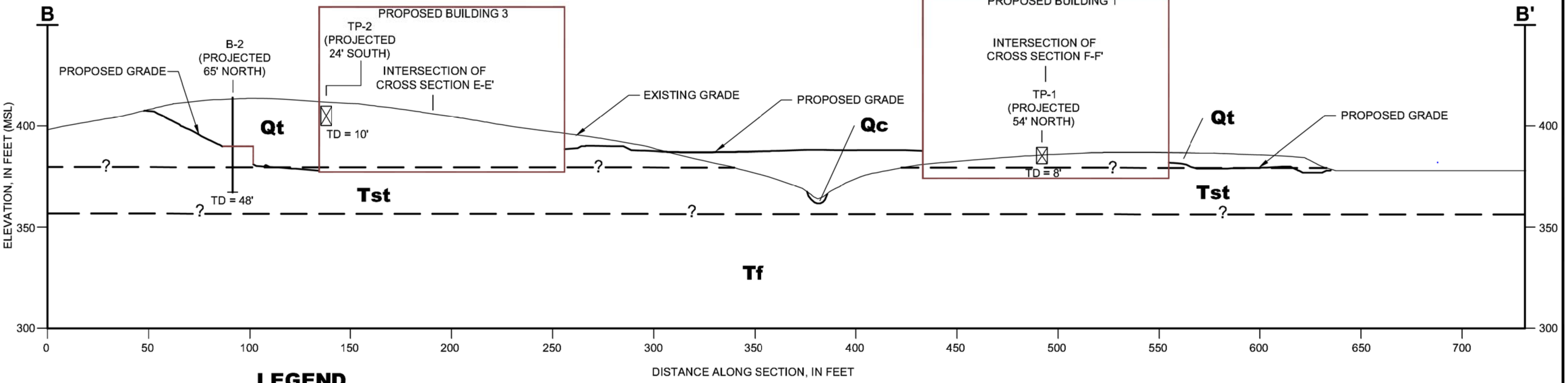
THE PRESERVE AT TORREY HIGHLANDS
SAN DIEGO, CALIFORNIA

FIGURE
6

J:_clients\Torrey_Highlands\mxd\20162077_EQ.mxd

PLOTTED: 09 Nov 2015, 2:49pm, JPatay LAYOUT: Layout1 CAD FILE: J:_clients\Torrey_Highlands\mxd\ san diego, ca





LEGEND

Qc	COLLUVIUM
Qt	TERRACE DEPOSITS
Tst	STADIUM CONGLOMERATE
Tf	FRIARS FORMATION
—?—	APPROXIMATE LOCATION OF GEOLOGIC CONTACT, QUERIED WHERE UNCERTAIN
B-2 TD = 48'	APPROXIMATE LOCATION OF BORING SHOWING PROJECTION, AND TOTAL DEPTH IN FEET
TP-8 ☒ TD = 8'	APPROXIMATE LOCATION OF TEST PIT SHOWING PROJECTION, AND TOTAL DEPTH IN FEET

50 25 0 50
APPROXIMATE SCALE (feet)

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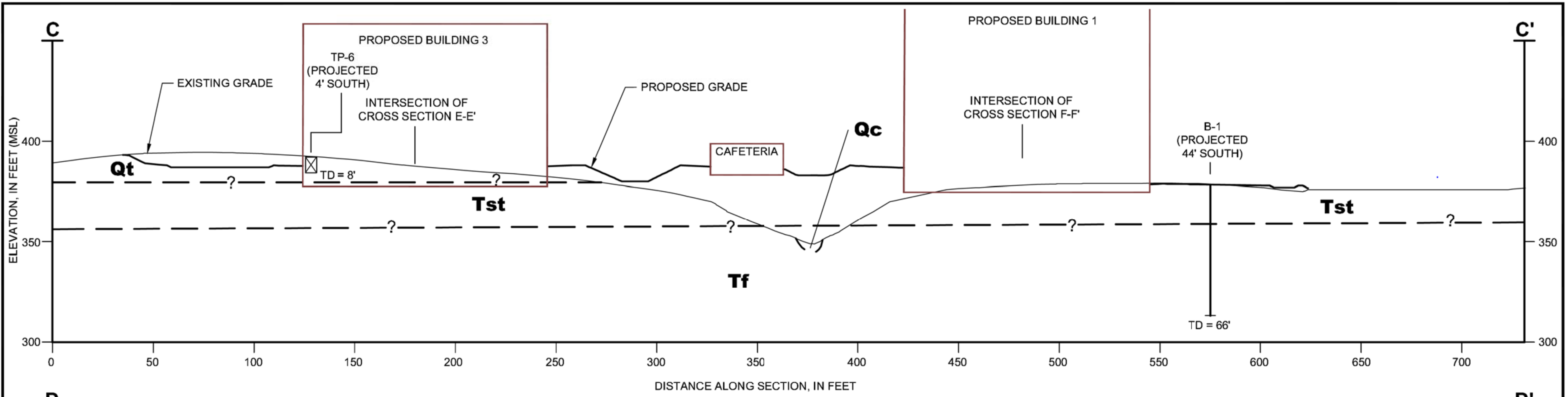
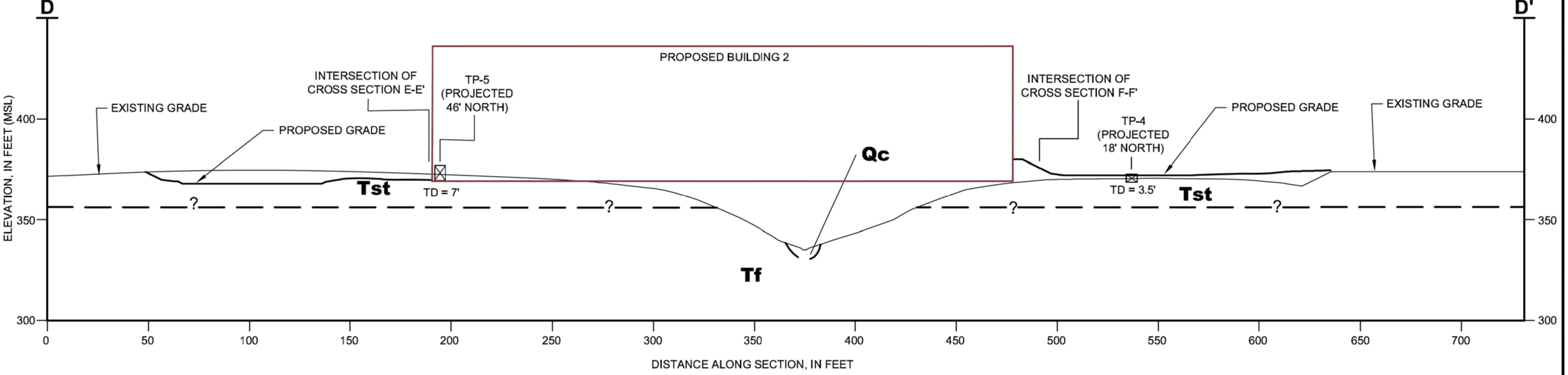
DRAWN BY: JP
CHECKED BY: SR
FILE NAME:
20162077_Sections.dwg

GEOLOGIC CROSS SECTIONS A-A' AND B-B'

THE PRESERVE AT TORREY HIGHLANDS
SAN DIEGO, CALIFORNIA

FIGURE
7





LEGEND

Qc	COLLUVIUM
Qt	TERRACE DEPOSITS
Tst	STADIUM CONGLOMERATE
Tf	FRIARS FORMATION
—?—	APPROXIMATE LOCATION OF GEOLOGIC CONTACT, QUERIED WHERE UNCERTAIN
B-2 ⊥ TD = 48'	APPROXIMATE LOCATION OF BORING SHOWING PROJECTION, AND TOTAL DEPTH IN FEET
TP-8 ☒ TD = 8'	APPROXIMATE LOCATION OF TEST PIT SHOWING PROJECTION, AND TOTAL DEPTH IN FEET

50 25 0 50
APPROXIMATE SCALE (feet)

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DRAWN BY:	JP
CHECKED BY:	SR
FILE NAME:	20162077_Sections.dwg

GEOLOGIC
CROSS SECTIONS C-C' AND D-D'

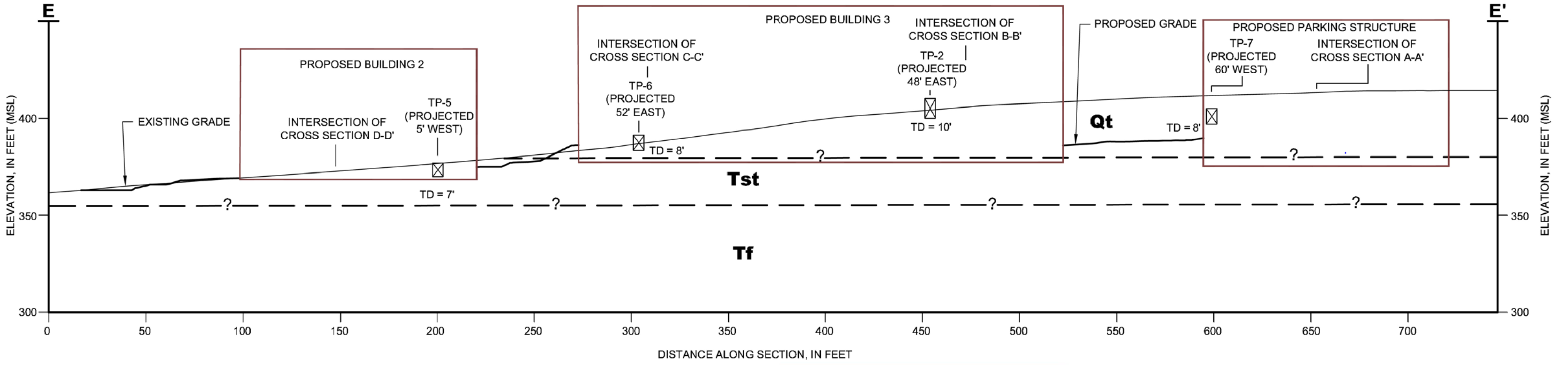
THE PRESERVE AT TORREY HIGHLANDS
SAN DIEGO, CALIFORNIA

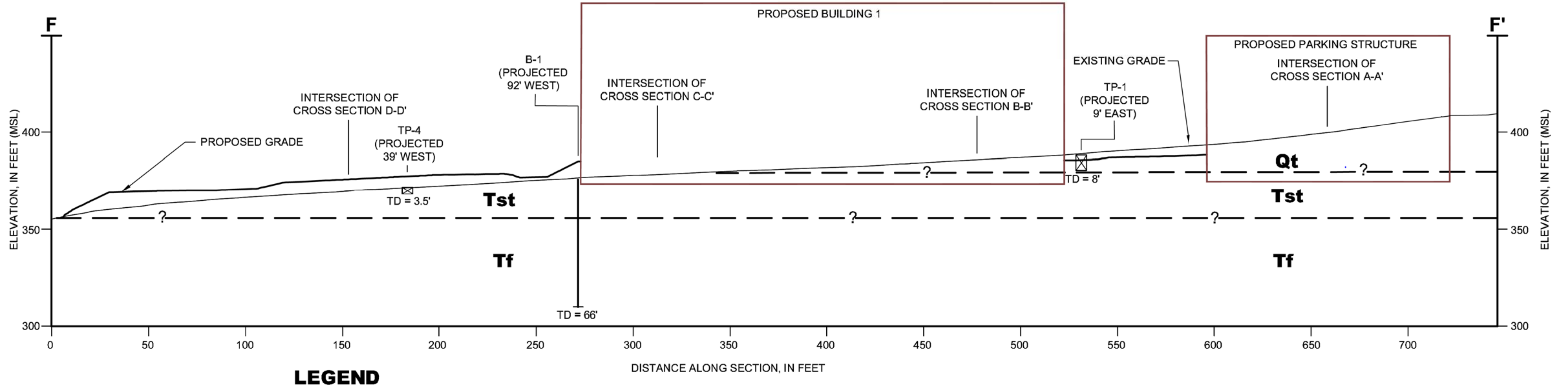
FIGURE
8

PLOTTED: 09 Nov 2015, 3:00pm, JPatay

LAYOUT: Layout3

CAD FILE: J:_clients\Torrey_Highlands\mxd\





LEGEND

Qc	COLLUVIUM	B-2 TD = 48'	APPROXIMATE LOCATION OF BORING SHOWING PROJECTION, AND TOTAL DEPTH IN FEET
Qt	TERRACE DEPOSITS		
Tst	STADIUM CONGLOMERATE	TP-8 ☒ TD = 8'	APPROXIMATE LOCATION OF TEST PIT SHOWING PROJECTION, AND TOTAL DEPTH IN FEET
Tf	FRIARS FORMATION		
—?—	APPROXIMATE LOCATION OF GEOLOGIC CONTACT, QUERIED WHERE UNCERTAIN		

50 25 0 50

APPROXIMATE SCALE (feet)

san diego, ca

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DRAWN:	11/9/15
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FILE NAME: 20162077_Sections.dwg	

GEOLOGIC CROSS SECTIONS E-E' AND F-F'

THE PRESERVE AT TORREY HIGHLANDS
SAN DIEGO, CALIFORNIA

FIGURE

9

APPENDIX A

Existing Relevant Geotechnical Information

Geotechnics
Incorporated

TH6.02-16.00
LEC COPY

Principals:
Anthony F. Belfast
Michael P. Imbriglio
W. Lee Vanderhurst

GEOTECHNICAL INVESTIGATION
OUR LADY OF MOUNT CARMEL
SOUTHWEST OF
PROPOSED STATE ROUTE 56
AND CAMINO RUIZ
SAN DIEGO, CALIFORNIA

prepared for:

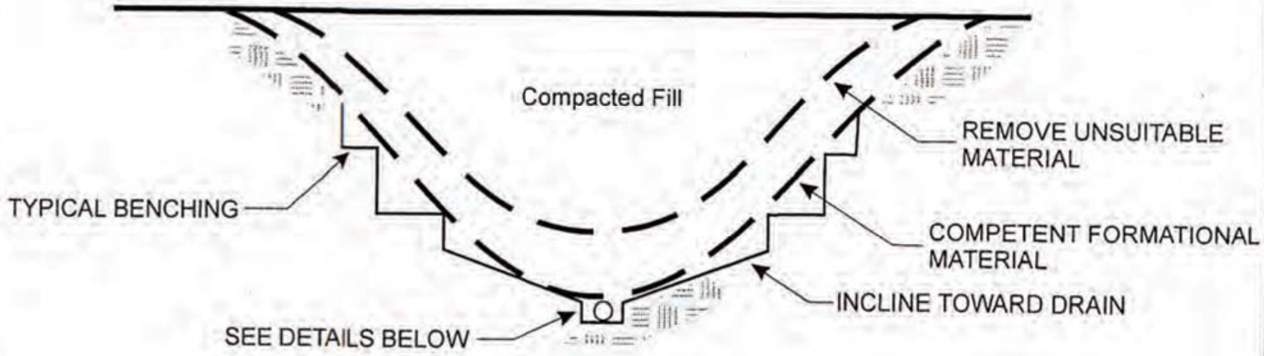
Diocese of San Diego
P.O. Box 85728
San Diego, CA 92186

by:

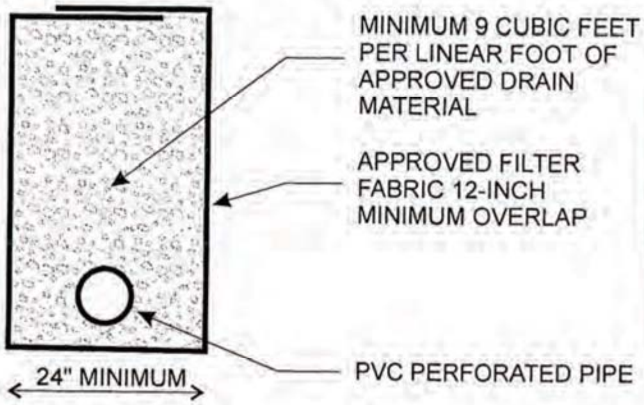
GEOTECHNICS INCORPORATED
Project No. 0068-002-01
Document No. 0-0458

July 5, 2000

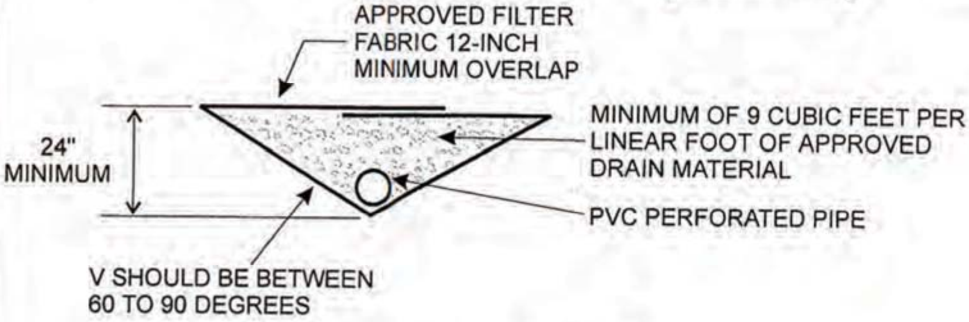
CANYON SUBDRAIN DETAILS



DRAIN DETAIL



OPTIONAL V-DITCH DETAIL



NOTES

1) The need for perforated pipe and pipe diameter to be determined by geotechnical consultant based on field conditions.
2) Perforated pipe should outlet through a solid pipe to a free gravity outfall. Perforated pipe and outlet pipe should have a fall of at least 1%.
3) Filter fabric should consist of Mirafi 140N, Supac 5NP, Amoco 4599, or similar approved fabric. Filter fabric should be overlapped at least 12-inches.
4) Drain material should consist of minus 1½-inch, minus 1-inch, or minus ¾-inch crushed rock.
5) Drain installation should be observed by the geotechnical consultant prior to backfilling.

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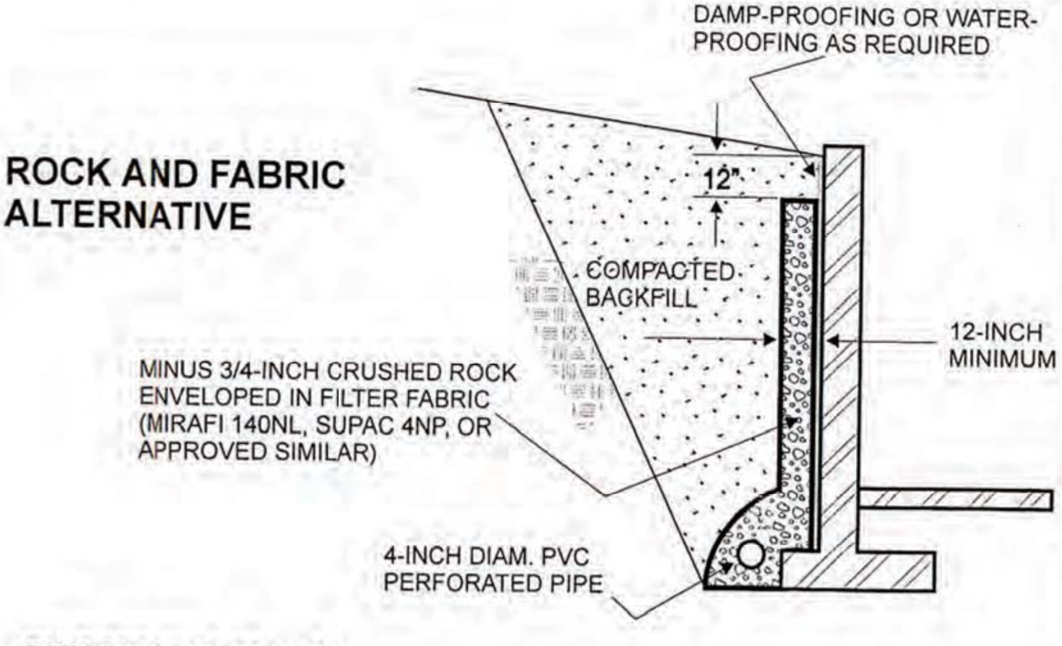
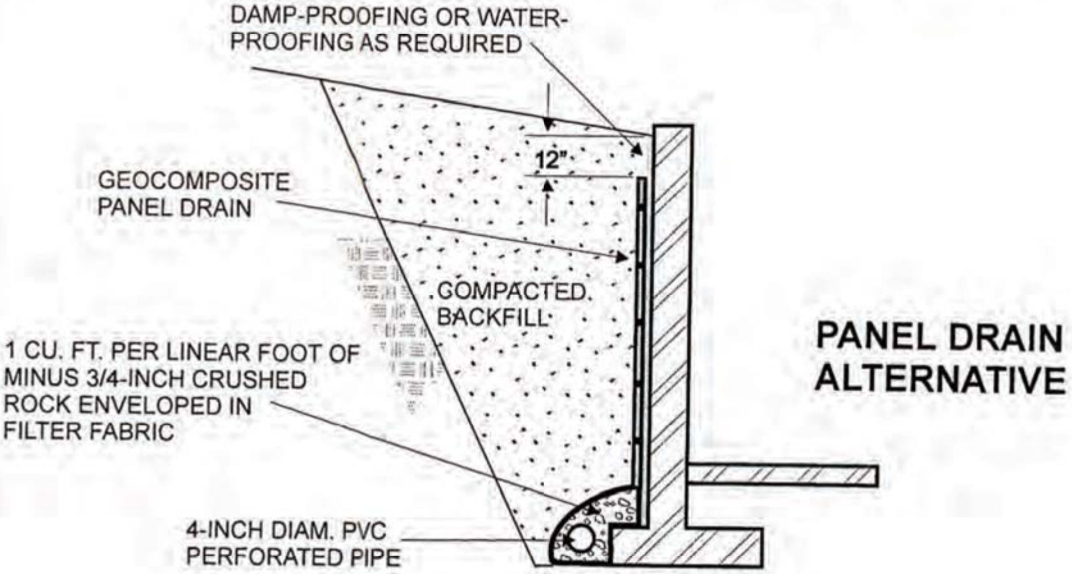
SUBDRAIN DETAIL

Project No. 0068-002-01
Document No. 0-0458

FIGURE 3

Rev. 6/00





NOTES

1) Perforated pipe should outlet through a solid pipe to a free gravity outfall. Perforated pipe and outlet pipe should have a fall of at least 1%.
2) As an alternative to the perforated pipe and outlet, weep holes may be included in the bottom of the wall. Weepholes should be at least 2 inches in diameter, and be spaced no greater than 8 feet.
3) Filter fabric should consist of Mirafi 140N, Supac 5NP, Amoco 4599, or similar approved fabric. Filter fabric should be overlapped at least 6-inches.
4) Geocomposite panel drain should consist of Miradrain 6000, J-DRain 400, Supac DS-15, or approved similar product.
5) Drain installation should be observed by the geotechnical consultant prior to backfilling.

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WALL DRAIN DETAILS

Project No. 0068-002-01
Document No. 0-0458

FIGURE 5

Rev. 6/99

APPENDIX B

FIELD EXPLORATION

Field exploration consisted of a visual reconnaissance of the site, two 30-inch diameter borings, and 8 test pit excavations. Explorations were conducted on May 17 and 18, 2000. The test pits were excavated using a John Deere 710D backhoe mounted with a 24-inch wide bucket. The borings were drilled with a truck-mounted, bucket-auger drilling rig. The approximate locations of the borings and test pits are shown on the Geotechnical Map, Plate 1. Logs describing the subsurface conditions encountered are presented in Figures B-1 through B-13, Logs of Exploration Borings and Test Pits.

The materials encountered in our explorations were visually classified in the field. Relatively undisturbed and bulk samples were obtained at selected intervals for laboratory testing. The sample locations are indicated on the logs with shading.

Bulk samples were sealed in plastic bags, labeled, and returned to the laboratory for testing. Relatively undisturbed samples were collected using a modified California (CAL) sampler . The CAL sampler is a ring-lined tube with an inside diameter of 2 $^{3}/_{8}$ inches and an outside diameter of 3 inches. Ring samples were sealed in plastic bags, placed in rigid plastic containers, labeled, and returned to the laboratory for testing. The hammer used to drive the CAL sampler weighed 4,500 pounds (from 0 to 27 feet), 3,700 pounds (from 27 to 52feet), and 2,700 pounds (from 52 to 80 feet). A free fall of 12 inches was used to drive the sampler. The number of blows needed to drive the CAL sampler 12 inches is shown on the boring logs.

The boring and test pit locations shown on the Geotechnical Map were determined by measuring distances from landmarks shown on the map. The locations shown should not be considered more accurate than is implied by the method of measurement used and the scale of the map. The lines designating the interface between differing soil materials on the logs may be abrupt or gradational. Further, soil conditions at locations between the excavations may be substantially different from those at the specific locations explored. It should be recognized that the passage of time can result in changes in the soil conditions reported in our logs.

LOG OF EXPLORATION BORING NO. 1

Logged by: JAA
Method of Drilling: 30-inch Diameter Bucket
Date: 5/17/00
Elevation: 368' MSL

DEPTH (FEET)	BLOWS PER FT.	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE %	DESCRIPTION	LAB TESTS
1						**COLLUVIUM (Qcol):** Silty sand (SM), reddish brown, dry, fine grained, nonplastic, subrounded to rounded cobble clasts.	
2							
3						**STADIUM CONGLOMERATE (Tst):** Cobble conglomerate, light reddish brown, dry to moist, fine grained, moderately cemented, nonplastic, approximately 70% clasts matrix supported, silty sand, rounded to subrounded cobble clasts to 10 inches.	
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19						Abrupt sub-horizontal contact	
20			▨				
21						**FRIARS FORMATION (Tf):** Clayey sandstone, light brown to grayish brown, moist, fine grained, low plasticity, weakly cemented, friable, massive. (LL = 32, PI = 15)	Atterberg Limits, Maximum Density, Direct Shear
22						Wet, iron stains, few subrounded cobble clasts to 6 inches.	
23						Approximate 6 inch thick concretionary zone.	
24	5	CAL		115	17.1		
25						Siltstone with interbedded sandstone, light gray to reddish brown, moist, fine grained, nonplastic, well indurated, iron stains, interbeds of sandstone, weakly cemented, to 1/2 inch thick.	
26							
27							
28						Silty sandstone, light gray, moist, fine grained, nonplastic, moderately cemented, friable, massive.	
29							
30		▨					

PROJECT NO. 0068-002-01 **GEOTECHNICS INCORPORATED** **FIGURE: B-1**

LOG OF EXPLORATION BORING NO. 1 (CONT.)

Logged by: JAA
Method of Drilling: 30-inch Diameter Bucket
Date: 5/17/00
Elevation: 368' MSL

DEPTH (FEET)	BLOWS PER FT.	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE %	DESCRIPTION	LAB TESTS
31	7	CAL		119	10.3	**FRIARS FORMATION (Tf) (Continued):** Silty sandstone, light gray, moist, fine to medium grained, weakly cemented, very friable, massive.	Direct Shear
32							
33							
34							
35						Approximate 1/2 inch thick siltstone bed, greenish gray, moist, low plasticity, well indurated, EW 5° S	
36							
37						Light gray to yellowish gray, carbonate cementation.	
38							
39							
40	7	CAL		114	9.0		
41							
42			▨			(18% passing No. 200 sieve)	Percent Passing No. 200 Sieve
43							
44							
45							
46							
47							
48							
49							
50	10	CAL		115	6.7		
51						Approximate 4 inch thick gravel bed, subrounded to rounded gravels to 3 inches.	
52							
53							
54							
55							
56							
57							
58							
59							
60		▨					

LOG OF EXPLORATION BORING NO. 1 (CONT.)

Logged by: JAA
Method of Drilling: 30-inch Diameter Bucket
Date: 5/17/00
Elevation: 368' MSL

DEPTH (FEET)	BLOWS PER FT.	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE %	DESCRIPTION	LAB TESTS
61	15	CAL		115	7.5	**FRIARS FORMATION (Tf) (Continued):** Silty sandstone, light gray, moist, fine to medium grained, weakly cemented, very friable, massive.	
62							
63							
64						Silty sandstone with interbedded siltstone, greenish gray, moist, fine grained, well cemented, nonplastic, interbeds of siltstone, well indurated, to 1/2 inch thick. (27% passing No. 200 sieve)	
65			▨				Percent Passing No. 200 Sieve
66							
67						Total depth: 66 feet No groundwater encountered Backfilled 5/17/00	
68							
69							
70							
71							
72							
73							
74							
75							
76							
77							
78							
79							
80							
81							
82							
83							
84							
85							
86							
87							
88							
89							
90							

LOG OF EXPLORATION BORING NO. 2

Logged by: JAA
Method of Drilling: 30-inch Diameter Bucket
Date: 5/17/00
Elevation: 412' MSL

DEPTH (FEET)	BLOWS PER FT.	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE %	DESCRIPTION	LAB TESTS
1						**COLLUVIUM (Qcol):** Silty sand (SM), reddish brown, dry, fine grained, nonplastic, subrounded to rounded cobble clasts to 8 inches, few roots.	
2							
3						**TERRACE DEPOSITS (Qt):** Silty sandstone, light reddish brown to light brown, moist, fine to medium grained, moderately cemented, nonplastic, friable, few subrounded gravels to 3 inches.	
4							
5							
6							
7			▨			Approximate 1 foot thick zone subrounded to rounded cobbles, to 8 inches.	pH, Resistivity, Sulfate
8						Weakly cemented.	
9							
10	4	CAL		109	10.3		Direct Shear
11							
12						Approximate 8 inch thick lens clayey sand (SC), moist, dark reddish brown, fine grained sand, low plasticity, dense.	
13							
14							
15							
16						Approximate 6 inch thick lens siltstone, dark greenish gray, moist, moderately indurated, low plasticity, horizontal to subhorizontal.	
17							
18							
19							
20	6	CAL		138	4.1		
21						Abrupt, subhorizontal contact.	
22						**STADIUM CONGLOMERATE (Tst):** Cobble conglomerate, light reddish brown, dry to moist, fine grained, moderately cemented, nonplastic, approximately 70% clasts matrix supported, silty sand, rounded to subrounded cobble clasts to 8 inches.	
23							
24							
25							
26							
27							
28							
29							
30							

PROJECT NO. 0068-002-01 **GEOTECHNICS INCORPORATED** **FIGURE: B-4**

LOG OF EXPLORATION BORING NO. 2 (CONT.)

Logged by: JAA

Date: 5/17/00

Method of Drilling: 30-inch Diameter Bucket

Elevation: 412' MSL

DEPTH (FEET)	BLOWS PER FT.	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE %	DESCRIPTION	LAB TESTS
31						<u>STADIUM CONGLOMERATE (Tst) (Continued):</u> Cobble conglomerate, light reddish brown, dry to moist, fine grained, moderately cemented, nonplastic, approximately 70% clasts matrix supported, silty sand, rounded to subrounded cobble clasts to 8 inches.	
32							
33							
34							
35							
36							
37							
38							
39							
40							
41						Approximate 1 foot thick lens silty sand with gravel (SM), light reddish brown to light gray, moist, fine grained, nonplastic, very dense.	
42							
43							
44							
45							
46							
47							
48						Total depth: 48 feet No groundwater encountered Backfilled 5/17/00	
49							
50							
51							
52							
53							
54							
55							
56							
57							
58							
59							
60							

LOG OF EXPLORATION TEST PIT NO. 1

Logged by: DP
Equipment Use JD 710D with 24-inch bucket
Date Excavated: 5/17/00
Elevation: 392' MSL

DEPTH (FT)	BULK SAMPLE	DESCRIPTION	LAB TESTS
1		<u>COLLUVIUM (Qcol):</u> Sandy clay (CL), brown, dry, fine grained sand, low plasticity, appears firm, few subrounded cobble clasts to 6 inches.	
2			
3		<u>TERRACE DEPOSITS (Qt):</u> Silty sandstone, light brown to light reddish brown, dry, fine to medium grained, nonplastic, moderately cemented.	
4			
5			
6			
7	▨	Gravel with sand (GP), light reddish brown, dry, fine to medium grained sand, appears dense, subrounded gravel to 3 inches, few subrounded cobble clasts to 4 inches.	Particle Size Analysis
8			
9		Total depth: 8 feet No groundwater encountered Backfilled 5/17/00	
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

LOG OF EXPLORATION TEST PIT NO. 2

Logged by: DP
Equipment Use JD 710D with 24-inch bucket
Date Excavated: 5/17/00
Elevation: 410' MSL

DEPTH (FT)	BULK SAMPLE	DESCRIPTION	LAB TESTS
1		**COLLUVIUM (Qcol):** Gravel with sand (GP), light brown, dry, fine to medium grained sand, appears loose, nonplastic, subrounded gravels to 3 inches.	
2			
3		**TERRACE DEPOSITS (Qt):** Sand with gravel (SW), light brown to light reddish brown, dry, fine to coarse grained, appears dense, nonplastic, subrounded gravels to 3 inches.	
4			
5		Sand with gravel (SP), light reddish brown, moist, fine to medium grained, appears dense, nonplastic, few subrounded cobble clasts to 6 inches.	
6			
7			
8			
9	▨	Clay (CL), grayish brown, dry to moist, appears hard, moderate plasticity, few fine to medium sand. (LL = 43, PI = 17)	Expansion Index
10			
11		Total depth: 10 feet No groundwater encountered Backfilled 5/17/00	
12			
13			
14			
15			
16			
17			
18			
19			
20			

LOG OF EXPLORATION TEST PIT NO. 3

Logged by: DP
Equipment Use JD 710D with 24-inch bucket
Date Excavated: 5/17/00
Elevation: 400' MSL

DEPTH (FT)	BULK SAMPLE	DESCRIPTION	LAB TESTS
1		**COLLUVIUM (Qcol):** Sandy clay (CL), brown, dry, fine grained sand, low plasticity, appears firm, few subrounded cobble clasts to 6 inches.	
2			
3			
4	▨	**TERRACE DEPOSITS (Qt):** Silty sand with gravel (SM), light brown to light reddish brown,. moist, fine to medium grained, appears dense, nonplastic, subrounded gravels to 3 inches.	Particle Size Analysis
5	▨		
6		Total depth: 5 feet No groundwater encountered Backfilled 5/17/00	
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

LOG OF EXPLORATION TEST PIT NO. 4

Logged by: DP
Equipment Use JD 710D with 24-inch bucket
Date Excavated: 5/17/00
Elevation: 360' MSL

DEPTH (FT)	BULK SAMPLE	DESCRIPTION	LAB TESTS
1		**COLLUVIUM (Qcol):** Silty sand (SM), brown, dry, fine grained sand, low plasticity, appears medium dense, few subrounded gravels to 3 inches.	
2		**STADIUM CONGLOMERATE (Tst):** Cobble conglomerate, light reddish brown, dry, fine grained, moderately cemented, nonplastic, approximately 70% clasts matrix supported, silty sand, subrounded to rounded cobble clasts to 10 inches.	
3			
4		Total depth: 3.5 feet No groundwater encountered Backfilled 5/17/00	
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

PROJECT NO. 0068-002-01 **GEOTECHNICS INCORPORATED** **FIGURE B-9**

LOG OF EXPLORATION TEST PIT NO. 5

Logged by: DP
Equipment Use JD 710D with 24-inch bucket
Date Excavated: 5/17/00
Elevation: 375' MSL

DEPTH (FT)	BULK SAMPLE	DESCRIPTION	LAB TESTS
1		**<u>COLLUVIUM (Qcol)</u>:** Silty sand (SM), brown, dry, fine grained sand, low plasticity, appears medium dense, few subrounded gravels to 3 inches.	
2		**<u>STADIUM CONGLOMERATE (Tst)</u>:** Clayey sand (SC), reddish brown, moist, appears dense, low plasticity, few subrounded to rounded gravel and cobble clasts to 6 inches.	
3			
4		Silty sandstone, light reddish brown, moist, fine to medium grained, weakly cemented, nonplastic, subrounded gravels to 2 inches.	
5			
6		Well cemented.	
7		Refusal at 7 feet.	
8		Total depth: 7 feet No groundwater encountered Backfilled 5/17/00	
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

PROJECT NO. 0068-002-01 **GEOTECHNICS INCORPORATED** **FIGURE B-10**

LOG OF EXPLORATION TEST PIT NO. 6

Logged by: DP
Equipment Use JD 710D with 24-inch bucket
Date Excavated: 5/17/00
Elevation: 391' MSL

DEPTH (FT)	BULK SAMPLE	DESCRIPTION	LAB TESTS
1		**COLLUVIUM (Qcol):** Sandy clay (CL), brown, moist, fine grained sand, low plasticity, appears stiff, few subrounded gravels to 3 inches.	
2			
3		**TERRACE DEPOSITS (Qt):** Silty sandstone, light brown to light reddish brown, dry, fine to medium grained, nonplastic, weakly cemented.	
4			
5			
6			
7	▨	Moderate to well cemented. (13% passing No. 200 sieve)	Percent Passing No. 200 Sieve
8	▨		
9		Total depth: 8 feet No groundwater encountered Backfilled 5/17/00	
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

LOG OF EXPLORATION TEST PIT NO. 7

Logged by: DP
Equipment Use JD 710D with 24-inch bucket
Date Excavated: 5/17/00
Elevation: 400' MSL

DEPTH (FT)	BULK SAMPLE	DESCRIPTION	LAB TESTS
1	▨	**COLLUVIUM (Qcol):** Silty sand (SM), brown, dry, fine grained sand, nonplastic, appears dense, few subrounded gravels to 3 inches.	Atterberg Limits, Expansion Index, R-Value
2			
3		**TERRACE DEPOSITS (Qt):** Sand with gravel (SP), light brown to light reddish brown, moist, fine to medium grained, appears dense, nonplastic, subrounded gravels to 3 inches.	
4			
5		Silty sandstone, light reddish brown, moist, fine to medium grained, nonplastic, weakly cemented, few subrounded gravels to 3 inches.	
6		Moderately cemented.	
7			
8		Well cemented.	
9		Total depth: 8 feet No groundwater encountered Backfilled 5/17/00	
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

LOG OF EXPLORATION TEST PIT NO. 8

Logged by: DP
Equipment Use JD 710D with 24-inch bucket
Date Excavated: 5/17/00
Elevation: 410' MSL

DEPTH (FT)	BULK SAMPLE	DESCRIPTION	LAB TESTS
1		**COLLUVIUM (Qcol):** Silty sand (SM), brown, dry, fine grained sand, nonplastic, appears dense, few subrounded gravels to 3 inches.	
2			
3		**TERRACE DEPOSITS (Qt):** Silty sandstone, light reddish brown, moist, fine to medium grained, nonplastic, weakly cemented, few subrounded gravels to 3 inches.	
4			
5		Moderate to well cemented.	
6		Clayey sandstone, brown to reddish brown, moist, fine grained, low plasticity, moderately cemented.	
7			
8			
9		Silty sandstone, light reddish brown to brownish gray, moist, nonplastic, moderately cemented,	
10	▨		Sulfate
11			
12		Total depth: 11 feet No groundwater encountered Backfilled 5/17/00	
13			
14			
15			
16			
17			
18			
19			
20			

PROJECT NO. 0068-002-01 **GEOTECHNICS INCORPORATED** **FIGURE B-13**

APPENDIX C

LABORATORY TESTING

Laboratory testing was conducted in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing under similar conditions and in the same locality. No other warranty, expressed or implied, is made as to the correctness or serviceability of the test results or the conclusions derived from these tests. Where a specific laboratory test method has been referenced, such as ASTM, Caltrans, or AASHTO, the reference applies only to the specified laboratory test method and not to associated referenced test method(s) or practices, and the test method referenced has been used only as a guidance document for the general performance of the test and not as a "Test Standard." A brief description of the tests performed follows:

Atterberg Limits: The liquid limit, plastic limit, and plasticity index of selected fine-grained soil samples were estimated in general accordance with the laboratory procedures outlined in ASTM D4318. The results are shown on the boring and test pit logs in Appendix B.

Classification: Soils were classified visually according to the Unified Soil Classification System as established by the American Society of Civil Engineers. Visual classification was supplemented by laboratory testing of selected soil samples and classification in general accordance with the laboratory soil classification tests outlined in ASTM D2487. The resultant soil classifications are shown on the logs in Appendix B.

Direct Shear: The shear strengths of selected soil samples were assessed through direct shear testing performed in general accordance with ASTM D3080. Bulk samples were remolded to 90 percent of the maximum dry density determined by ASTM D 1557-91. The results are presented on Figures C-3.1 through C-3.3.

Expansion Index: The expansion potential of selected soils was evaluated in general accordance with the laboratory procedures outlined in ASTM D4829. Figure C-2.2 provides the results of the tests.

In-Situ Moisture/Dry Density: The in-place moisture content and dry unit weight of selected soil samples were determined using relatively undisturbed samples from the liner rings of a CAL sampler. The dry unit weight and moisture content are shown on the boring logs in Appendix B.

Maximum Density/Optimum Moisture: The maximum density and optimum moisture of a selected soil sample were determined in general accordance with test method ASTM D1557-91, modified Proctor. The test results are summarized in Figure C-2.3.

APPENDIX C

LABORATORY TESTING (continued)

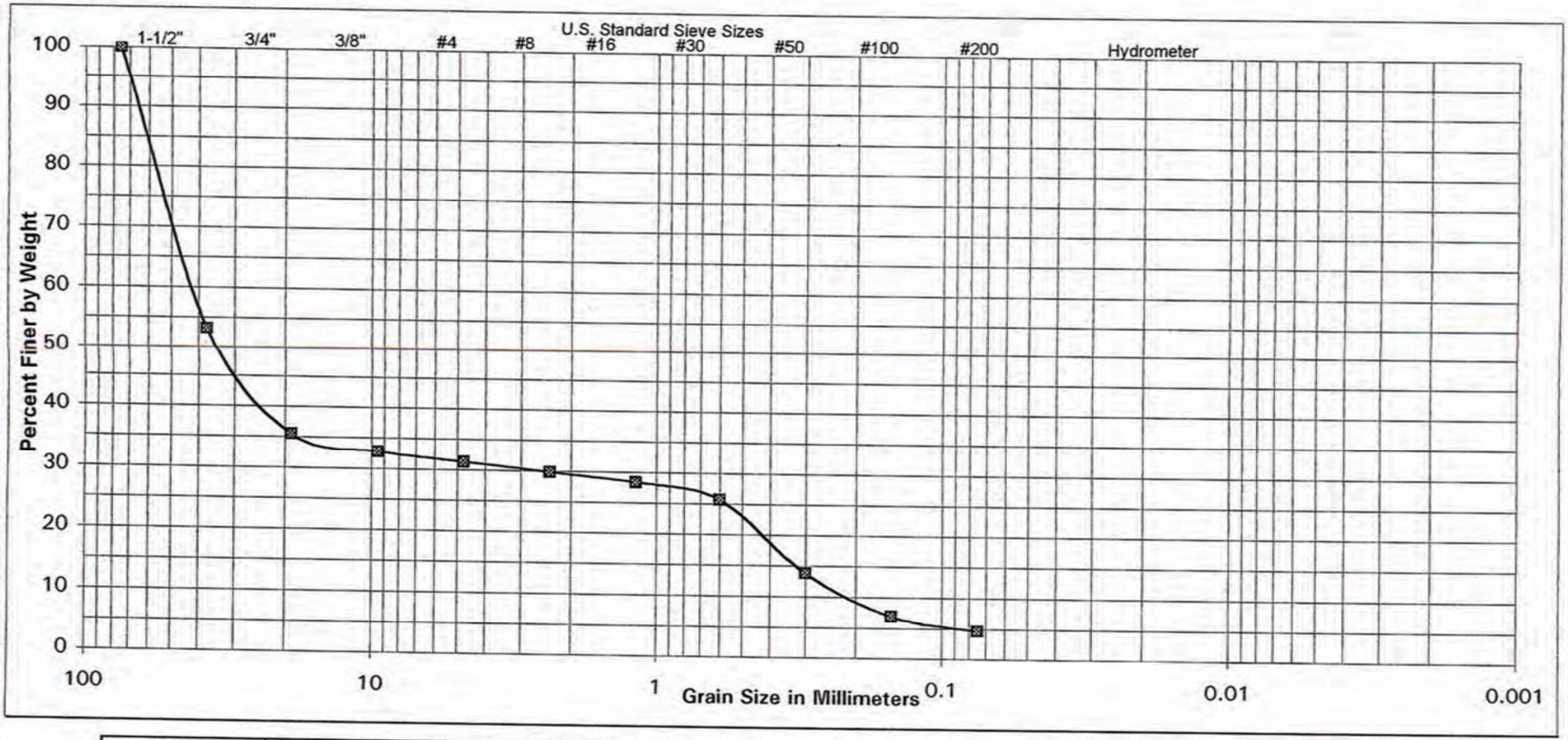
Particle Size Analysis: Particle size analyses were performed in general accordance with the laboratory procedures outlined in ASTM D422. The grain size distribution was used to estimate presumptive soil strength parameters and foundation design criteria. The results are given in Figures C-1.1 and C-1.2.

Percent Passing the No. 200 Sieve: The fine fraction of selected soil samples was determined using guidelines of ASTM D1140. The test results, shown as a percent of dry soil weight, are shown on the logs of Appendix B.

pH and Resistivity: To assess the potential for reactivity with buried metal pipe and below grade ferrous materials, selected soil samples were tested for pH and resistivity in general accordance with procedures outlined in Caltrans test method 643. The results are shown on Figure C-2.1.

R-Value: To assess the potential strength of the on-site soils as pavement subgrade materials, R-value testing was performed on a selected bulk sample of the near-surface materials in accordance with Caltrans Test Method 301. The results are presented in Figure C-2.3.

Sulfate Content: To assess the potential for reactivity with below grade concrete, selected soil samples were tested for water-soluble sulfate content. The water soluble sulfate was extracted under vacuum from the soil using a 20:1 (water to dry soil) dilution ratio. The extracted solution was then tested for water soluble sulfate in general accordance with ASTM D516. The results are presented on Figure C-2.1.



COARSE	FINE	COARSE	MEDIUM	FINE	SILT AND CLAY
GRAVEL		SAND			

SAMPLE

EXPLORATION NUMBER: TP1

SAMPLE LOCATION: 7' - 8'

UNIFIED SOIL CLASSIFICATION: GP

DESCRIPTION: POORLY GRADED GRAVEL WITH SAND

ATTERBERG LIMITS

LIQUID LIMIT: NT

PLASTIC LIMIT: NT

PLASTICITY INDEX: NT

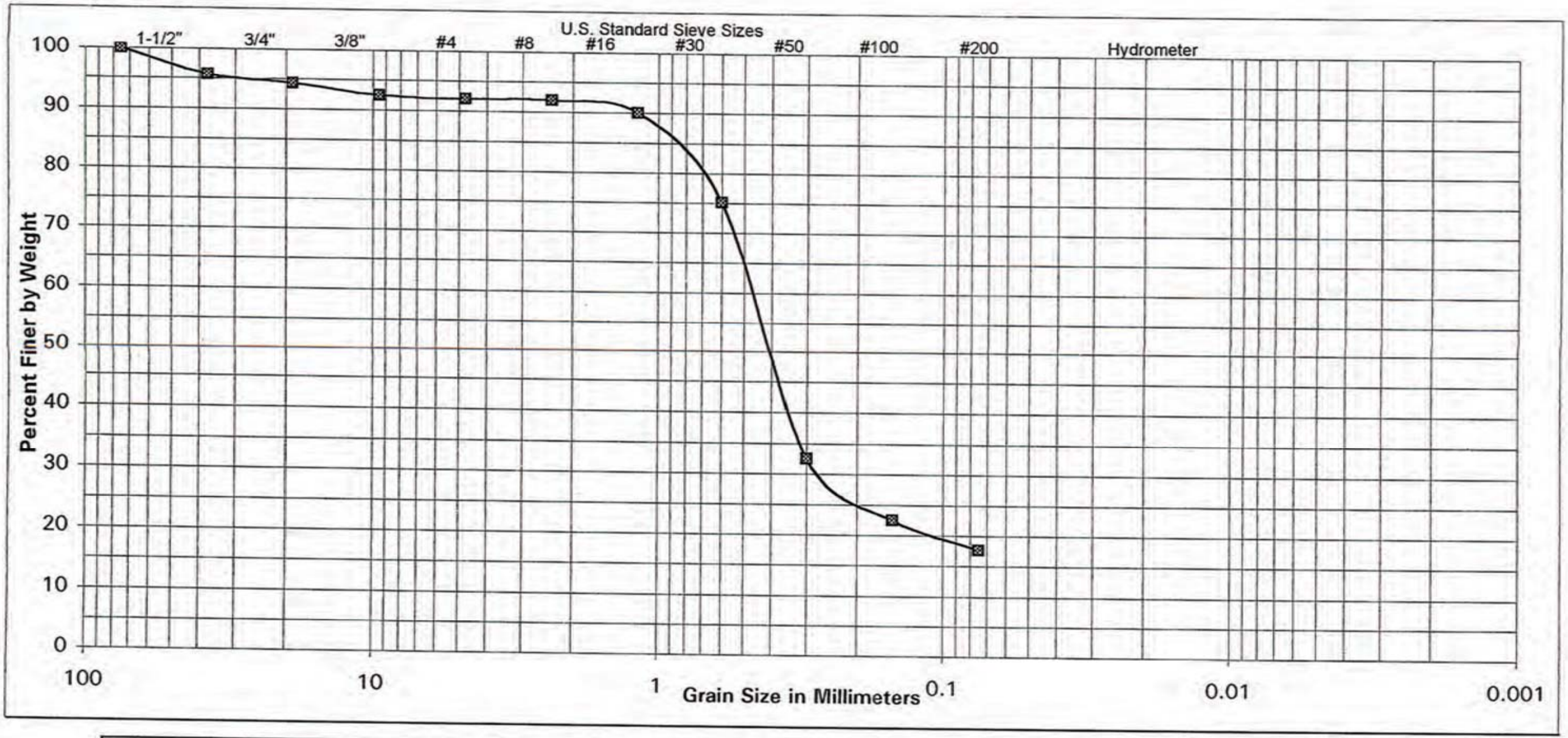
Geotechnics Incorporated

SOIL CLASSIFICATION

Project No. 0068-002-01

Document No. 0-0458

FIGURE C-1.1



COARSE	FINE	COARSE	MEDIUM	FINE	SILT AND CLAY
GRAVEL		SAND			

SAMPLE

EXPLORATION NUMBER: TP3

SAMPLE LOCATION: 4' - 5'

UNIFIED SOIL CLASSIFICATION: SM

DESCRIPTION: SILTY SAND WITH GRAVEL

ATTERBERG LIMITS

LIQUID LIMIT: NT

PLASTIC LIMIT: NT

PLASTICITY INDEX: NT

Geotechnics Incorporated

SOIL CLASSIFICATION

Project No. 0068-002-01

Document No. 0-0458

FIGURE C-1.2

SULFATE, pH, and RESISTIVITY

SAMPLE	SULFATE CONTENT (% of Dry Soil Weight) (modified ASTM D516)	pH (CALTRANS 643)	RESISTIVITY (ohm-cm) (CALTRANS 643)	
			As-Received	Saturated
B2 @ 7' - 8'	0.04	5.1	- -	307
TP8 @ 10' - 11'	0.02	NT*	NT	NT

NT - not tested.

Soil Resistivity in ohm-cm	General Degree of Corrosivity to Ferrous Metal
0 to 1,000	Very Corrosive
1,000 to 2,000	Corrosive
2,000 to 5,000	Moderately Corrosive
5,000 to 10,000	Mildly Corrosive
Greater than 10,000	Slightly Corrosive

Water Soluble Chloride (Cl) Content in % of Dry Soil Weight	General Degree of Corrosivity to Metal
over 0.15%	Severely Corrosive
0.15 % to 0.03%	Corrosive
0.03 % to 0.00%	Negligible

Water Soluble Sulfate (SO_4) Content in % of Dry Soil Weight	General Degree of Reactivity with Concrete
over 2.00 %	Very Severely Reactive
2.00 % to 0.2 %	Severely Reactive
0.20 % to 0.10 %	Moderately Reactive
0.10 % to 0.00%	Negligible

Reference: Table 19-A-4, 1997 Uniform Building Code.

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CORROSION TEST RESULTS

Project No. 0068-002-01
Document No. 0-0458

FIGURE C-2.1

EXPANSION TEST RESULTS
(ASTM D4829)

SAMPLE	DESCRIPTION	EXPANSION INDEX
TP2 @ 9' - 10'	Greyish brown clay (CL)	49
TP7 @ 0' - 1'	Brown silty sand (SM)	0

UBC TABLE 18-I-B, CLASSIFICATION OF EXPANSIVE SOIL

EXPANSION INDEX	POTENTIAL EXPANSION
0-20	Very low
21-50	Low
51-90	Medium
91-130	High
Above 130	Very high

MAXIMUM DENSITY/OPTIMUM MOISTURE CONTENT

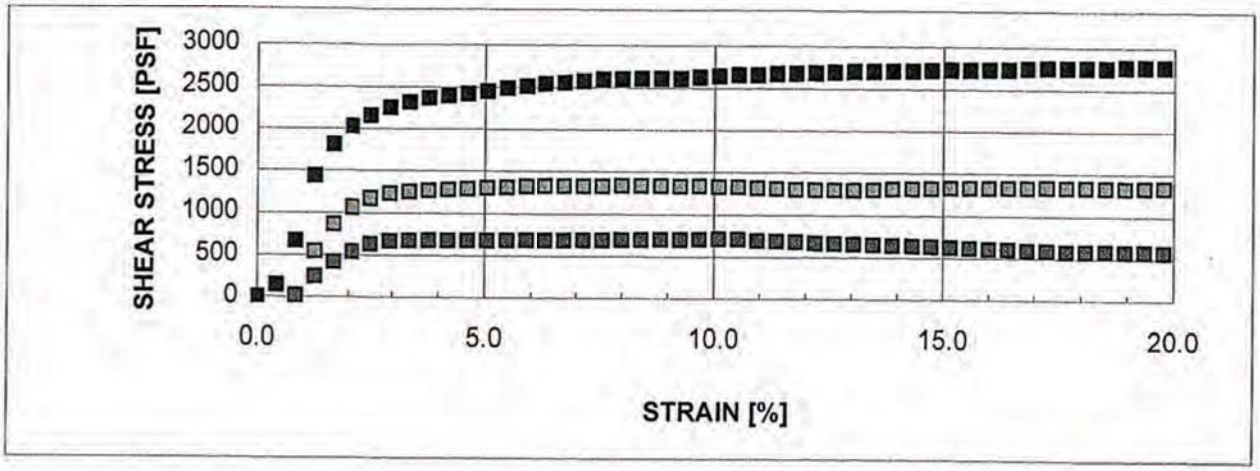
(ASTM D1557-91)

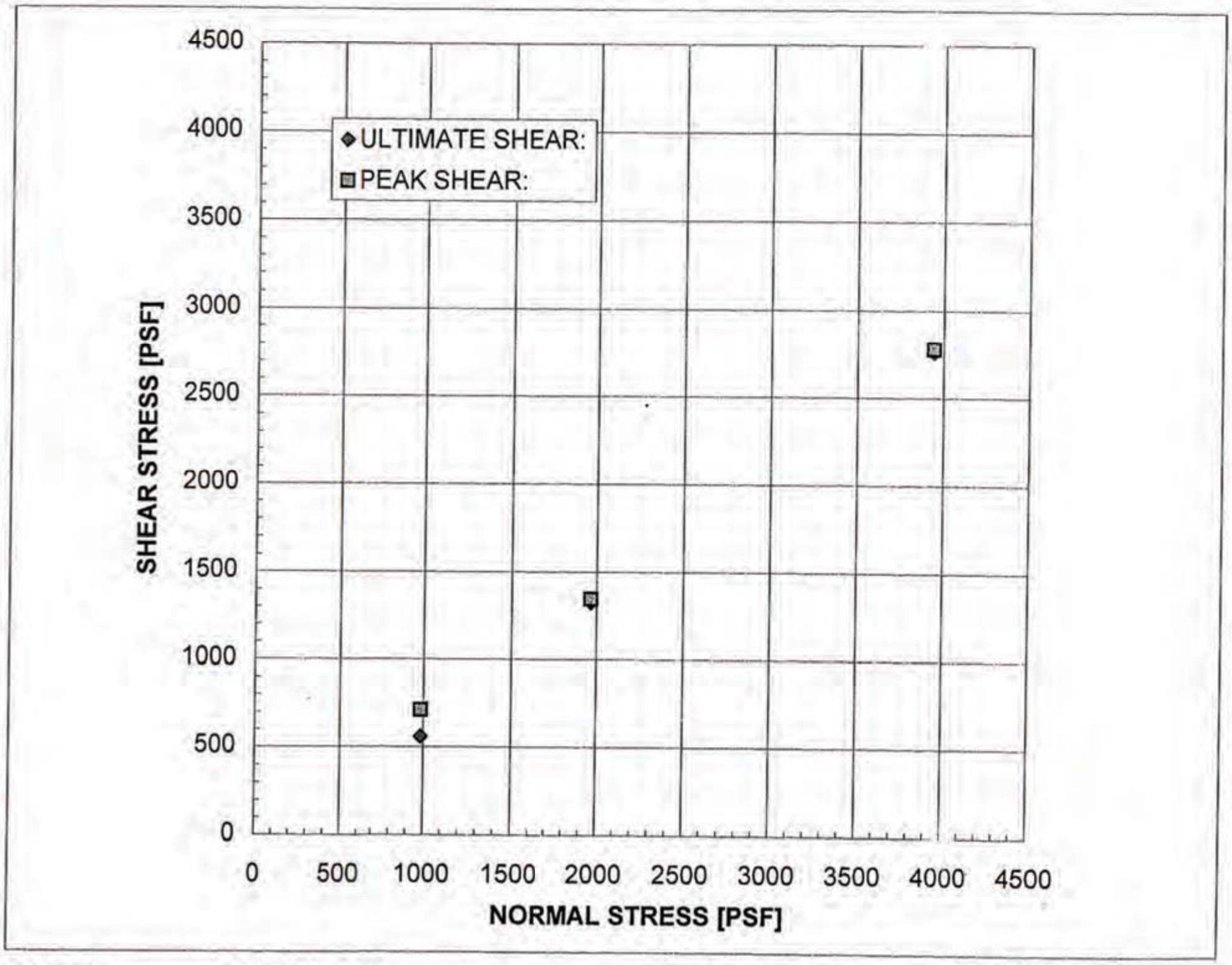
SAMPLE	SAMPLE DESCRIPTION	MAXIMUM DENSITY (pcf)	OPTIMUM MOISTURE CONTENT (%)
B1 @ 20' - 21'	Light brown clayey sand (SC)	124	11

R-VALUE

(Caltrans Test Method 301)

SAMPLE	DESCRIPTION	R-VALUE
TP7 @ 0' - 1'	Brown silty sand (SM)	64





SAMPLE: B1 @ 20' - 21'

FRIARS FORMATION (Tf): Light brown clayey sandstone (remolded).

STRAIN RATE: 0.0100 IN/MIN
(Sample was consolidated and drained)

	PEAK	ULTIMATE
φ'	32 °	32 °
C'	100 PSF	0 PSF

	IN-SITU	AS-TESTED
γ_d	111.5 PCF	111.5 PCF
w_c	11.1 %	21.0 %

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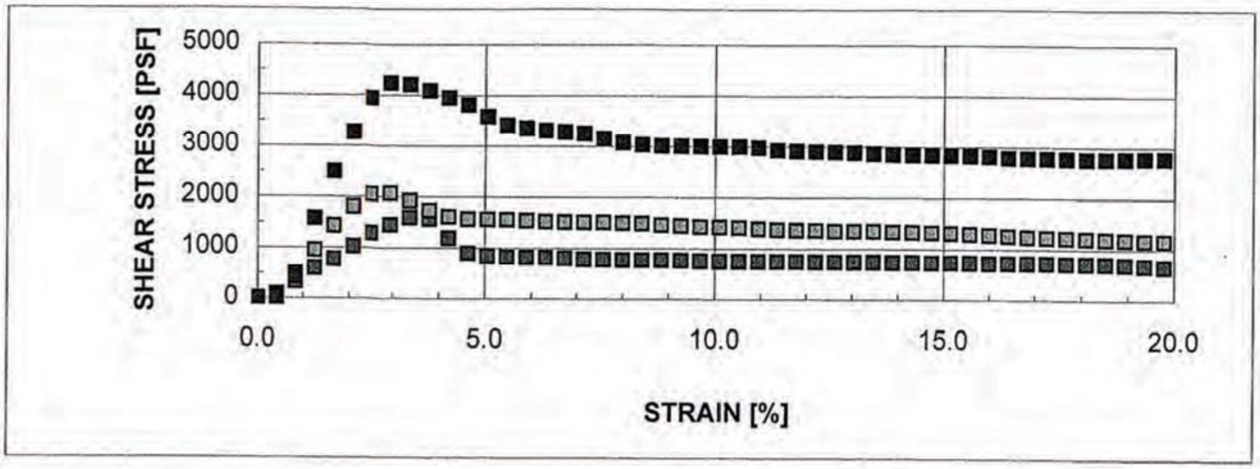
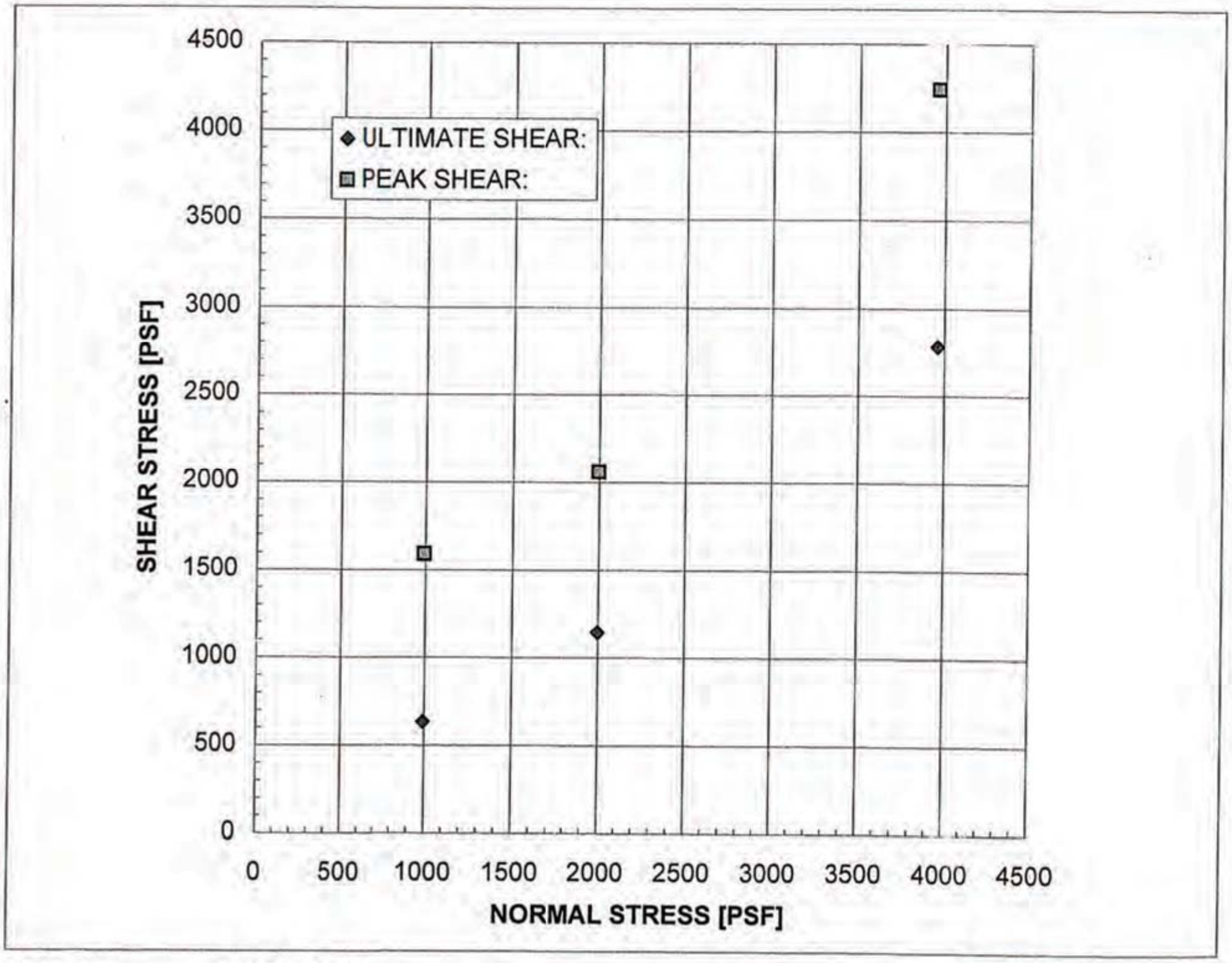
DIRECT SHEAR TEST RESULTS

Project No. 0068-002-01
Document No. 0-0458
FIGURE C-3.1





SAMPLE: B1 @ 30' - 31'

FRIARS FORMATION (Tf): Light grey silty sandstone.

STRAIN RATE: 0.0100 IN/MIN

(Sample was consolidated and drained)

	PEAK	ULTIMATE
ϕ'	36 °	30 °
C'	400 PSF	100 PSF

	IN-SITU	AS-TESTED
γ_d	119.1 PCF	119.1 PCF
w_c	10.3 %	20.4 %

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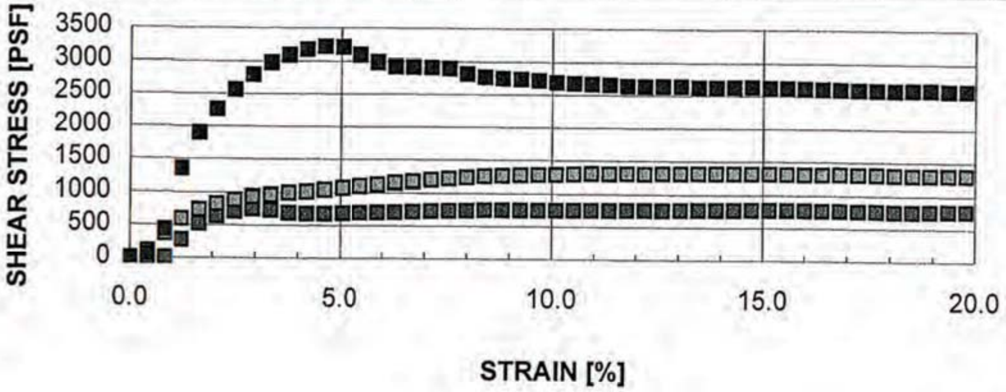
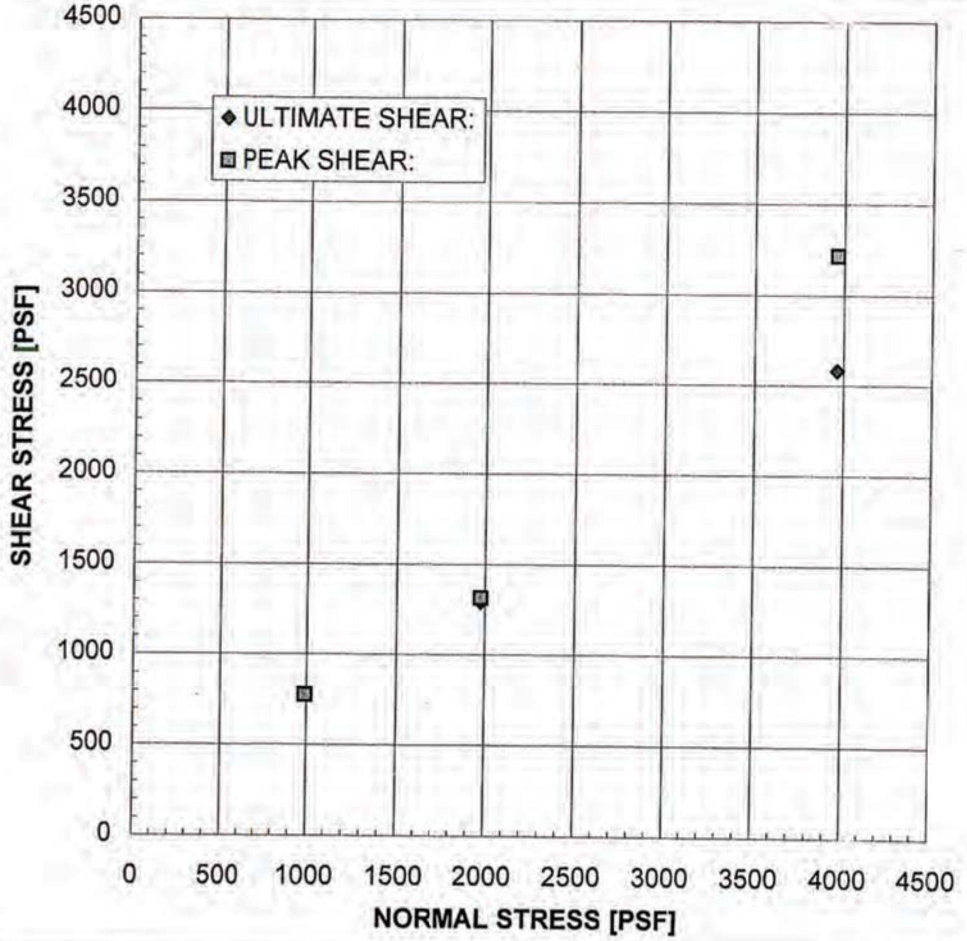
DIRECT SHEAR TEST RESULTS

Project No. 0068-002-01
Document No. 0-0458
FIGURE C-3.2





SAMPLE: B2 @ 10' - 11'

TERRACE DEPOSITS (Qt): Light brown silty sandstone.

	PEAK	**ULTIMATE**
φ'	30 °	30 °
C'	200 PSF	100 PSF

STRAIN RATE: 0.0100 IN/MIN
(Sample was consolidated and drained)

	IN-SITU	**AS-TESTED**
γ_d	109.3 PCF	109.3 PCF
w_c	10.3 %	25.1 %

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DIRECT SHEAR TEST RESULTS

Project No. 0068-002-01
Document No. 0-0458
FIGURE C-3.3

N SCALE: 1" = 30'

EXPLANATION

Qal	Alluvium
Qt	Terrace Deposits
Tst	Stadium Conglomerate
Tf	Friars Formation
— — -?	Approximate location of geologic contact (queried where inferred)
B-2	Boring number and approximate location
TP-8	Test Pit number and approximate location
B B'	Geotechnical cross section

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GEOTECHNICAL SITE PLAN

[illegible]	[illegible]
[illegible]	PLATE 1

APPENDIX B

Geophysical Survey Report

SEISMIC SURVEY
THE PRESERVE AT TORREY HIGHLANDS
SAN DIEGO, CALIFORNIA

PREPARED FOR:

Kleinfelder, Inc.
550 West C Street, Suite 1200
San Diego, CA 92101

PREPARED BY:

Southwest Geophysics, Inc.
8057 Raytheon Road, Suite 9
San Diego, CA 92111

September 21, 2015
Project No. 115432

SOUTHWEST
GEOPHYSICS, INC.
YOUR SUBSURFACE SOLUTION

September 21, 2015
Project No. 115432

Mr. Moi Arzamendi
Kleinfelder, Inc.
550 West C Street, Suite 1200
San Diego, CA 92101

Subject: Seismic Survey
The Preserve at Torrey Highlands
San Diego, California

Dear Mr. Arzamendi:

In accordance with your authorization, we have performed a seismic survey pertaining to The Preserve at Torrey Highlands located in San Diego, California. Specifically, our survey consisted of performing two P-wave refraction traverses and two refraction microtremor (ReMi) profiles at the project site. The purpose of our study was to characterize the subsurface conditions in the study area. This data report presents our survey methodology, equipment used, analysis, and results.

We appreciate the opportunity to be of service on this project. Should you have any questions related to this report, please contact the undersigned at your convenience.

Sincerely,
SOUTHWEST GEOPHYSICS, INC.

Hans van de Vrugt

Aaron T. Puente
Project Geologist/Geophysicist

Hans van de Vrugt, C.E.G., P.Gp.
Principal Geologist/Geophysicist

REGISTERED GEOPHYSICIST
Hans van de Vrugt
No 1012
Exp. 2/29/16
STATE OF CALIFORNIA

HV/ATP/hv

Distribution: (1) Addressee (electronic)

8057 Raytheon Road, Suite 9 • San Diego • California 92111 • Telephone 858-527-0849 • Fax 858-225-0114

TABLE OF CONTENTS

1. INTRODUCTION

In accordance with your authorization, we have performed a seismic survey pertaining to The Preserve at Torrey Highlands located in San Diego, California (Figure 1). Specifically, our survey consisted of performing two P-wave refraction traverses and two refraction microtremor (ReMi) profiles at the project site. The purpose of our study was to characterize the subsurface conditions in the study area. This data report presents our survey methodology, equipment used, analysis, and results.

2. SCOPE OF SERVICES

Our scope of services included:

- Performance of two seismic P-wave refraction lines; SL-1 and SL-2.
- Performance of two ReMi profiles; RL-1 and RL-2.
- Compilation and analysis of the data collected.
- Preparation of this illustrated data report presenting our results.

3. SITE DESCRIPTION

The subject site is located south of highway 56 (Ted Williams Freeway) and west of Carmel Mountain Road in the north county area of San Diego (Figure 1). The study area is generally undeveloped with several unpaved roads transecting the site. The seismic survey was conducted along existing dirt roads (see Figures 1 and 2). Figures 2 and 3 depict the general site conditions in the project area and along the seismic lines.

4. SURVEY METHODOLOGY AND ANALYSIS

As previously indicated, the primary purpose of our services was to characterize the subsurface conditions at pre-selected locations through the collection of seismic data. The following sections provide an overview of the methodologies used during our study.

4.1. P-wave Refraction Survey

The seismic refraction method uses first-arrival times of refracted seismic waves to estimate the thicknesses and seismic velocities of subsurface layers. Seismic P-waves (compression waves) generated at the surface are refracted at boundaries separating materials of contrasting velocities. These refracted seismic waves are then detected by a series of surface vertical component 14-Hz geophones, and recorded with a 24-channel Geometrics Geode seismograph. The travel times of the seismic P-waves are used in conjunction with the shot-to-geophone distances to obtain thickness and velocity information on the subsurface materials. In general, the effective depth of evaluation for a seismic refraction traverse is approximately one-third to one-fifth the length of the traverse. The refraction method requires that subsurface velocities increase with depth. A layer having a velocity lower than that of the layer above will not generally be detectable by the seismic refraction method and, therefore, could lead to errors in the depth calculations of subsequent layers. In addition, lateral variations in velocity, such as those caused by buried boulders, cemented zones, etc. can result in the misinterpretation of the subsurface conditions.

Two 240-foot long seismic traverses, SL-1 and SL-2, were conducted in the study area, the locations of which were selected by your office (see Figure 2). Shot points (signal generator locations) were conducted at the ends and intermediate points along the lines. The P-wave signal (shot) was generated using a 16-pound hammer and an aluminum plate placed on a rubber mat.

The collected data were processed using SIPwin (Rimrock Geophysics, 2003), a seismic interpretation program, and analyzed using SeisOpt Pro (Optim, 2008). SeisOpt Pro uses first arrival picks and elevation data to produce subsurface velocity models through a nonlinear optimization technique called adaptive simulated annealing. The resulting velocity model provides a tomography image of the estimated geologic conditions. Both vertical and lateral velocity information is contained in the tomography model. Changes in layer velocity are revealed as gradients rather than discrete contacts, which typically are more representative of actual conditions.

4.2. ReMi Survey

The refraction microtremor technique uses recorded surface waves (specifically Rayleigh waves) which are contained in the background noise to develop a shear wave velocity profile of the site down to a depth, in this case, up to approximately 100 feet. Fifteen records, 32 seconds long were collected with a 24-channel Geometrics Geode seismograph and 4.5-Hz vertical component geophones. Unlike the refraction method, described above, the ReMi method does not require an increase of material velocity with depth. Therefore, low velocity zones (velocity inversions) are detectable with ReMi. The depth of exploration is dependent on the length of the line and the frequency content of the background noise. The results of the ReMi method are displayed as a one dimensional sounding which represents the average condition across the length of the line.

Collected ReMi data were processed using SeisOpt® ReMi™ software (© Optim LLC, 2005), which uses the refraction microtremor method (Louie, 2001). The program generates phase-velocity dispersion curves for each record and provides an interactive dispersion modeling tool where the users determines the best fitting model. The result is a one-dimensional shear-wave velocity model of the site with roughly 5 to 15 percent accuracy.

5. RESULTS

Figure 4 presents the results from the P-wave refraction survey. Table 1 and Figure 5 present the ReMi results. The P-wave tomography results reveal that the subsurface velocity structure generally increases with depth and is highly variable cross the survey area. The cause of these variations is unknown, but they are likely related to differential weathering and cementation of the subsurface materials. The shear-wave models presented in Figure 5 also indicate an increase in velocity with depth. It should be noted however, that the ReMi models represent an average condition along the length of the lines.

Based on our analysis of the collected ReMi data, the average characteristic site Shear-wave velocity for a depth of 100 feet (Vs100) is 1,601 (ft/sec) for RL-1, and 1,837 (ft/sec) for RL-2. These values correspond to site classifications of **C**.

Table 1 – ReMi Results

Line No.	Depth (feet)	Shear Wave Velocity (feet/second)
RL-1	0 – 21	1,187
	21 – 38	1,361
	38 – 61	1,698
	61 – 100	2,089
RL-2	0 – 20	1,063
	20 – 34	1,305
	34 – 56	2,204
	56 – 100	2,974

6. LIMITATIONS

The field evaluation and geophysical analyses presented in this report have been conducted in general accordance with current practice and the standard of care exercised by consultants performing similar tasks in the project area. No warranty, express or implied, is made regarding the conclusions, recommendations, and opinions presented in this report. There is no evaluation detailed enough to reveal every subsurface condition. Variations may exist and conditions not observed or described in this report may be present. Uncertainties relative to subsurface conditions can be reduced through additional subsurface exploration. Additional subsurface surveying will be performed upon request.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. Southwest Geophysics, Inc. should be contacted if the reader requires additional information or has questions regarding the content, interpretations presented, or completeness of this document. This report is intended exclusively for use by the client. Any use or reuse of the findings, conclusions, and/or recommendations of this report by parties other than the client is undertaken at said parties' sole risk.

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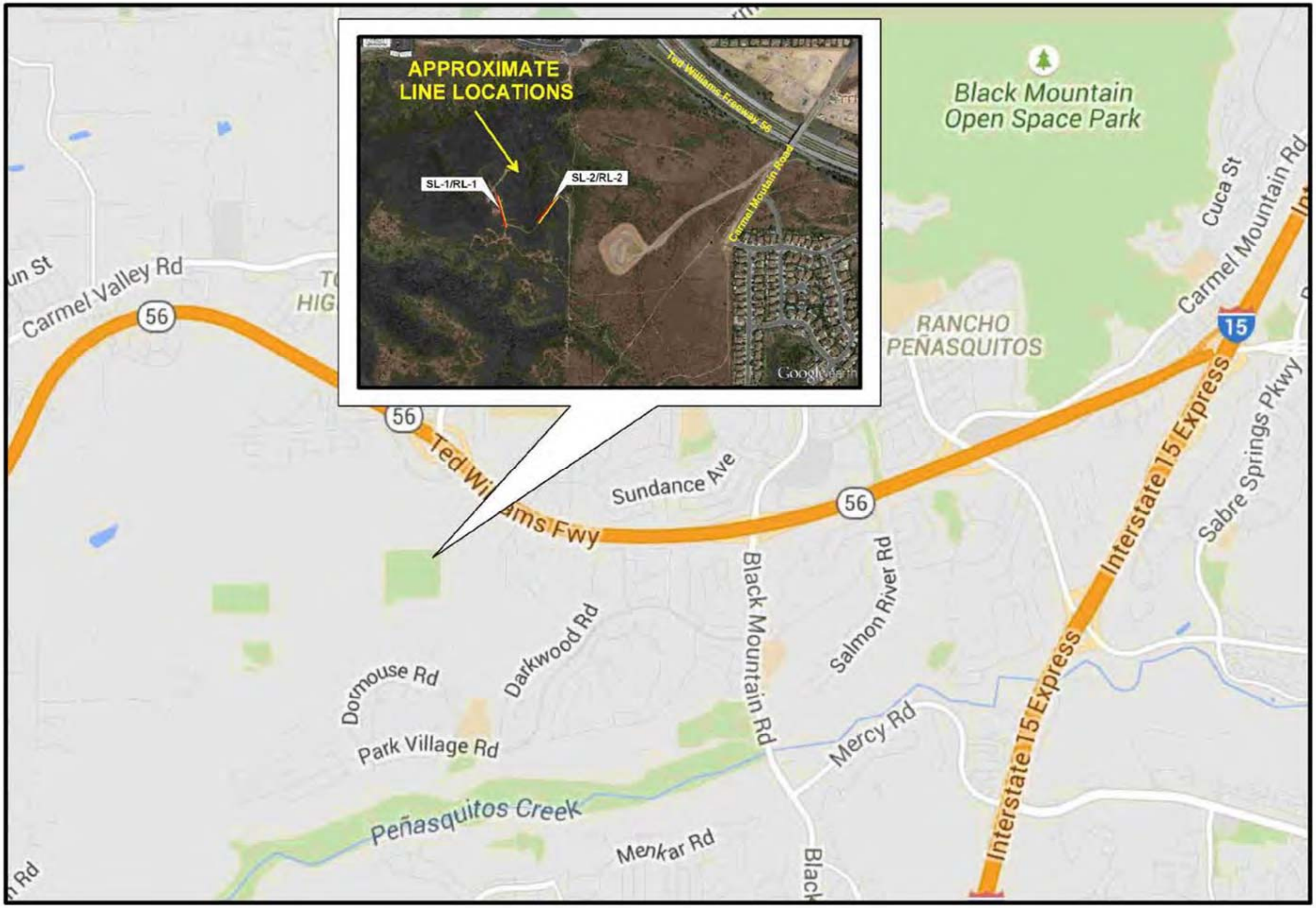


SITE LOCATION MAP

N

The Preserve at Torrey Highlands
San Diego, California

Project No.: 115432

Date: 09/15

SOUTHWEST GEOPHYSICS INC.

Figure 1

LINE LOCATION MAP

N

The Preserve at Torrey Highlands
San Diego, California

Project No.: 115432

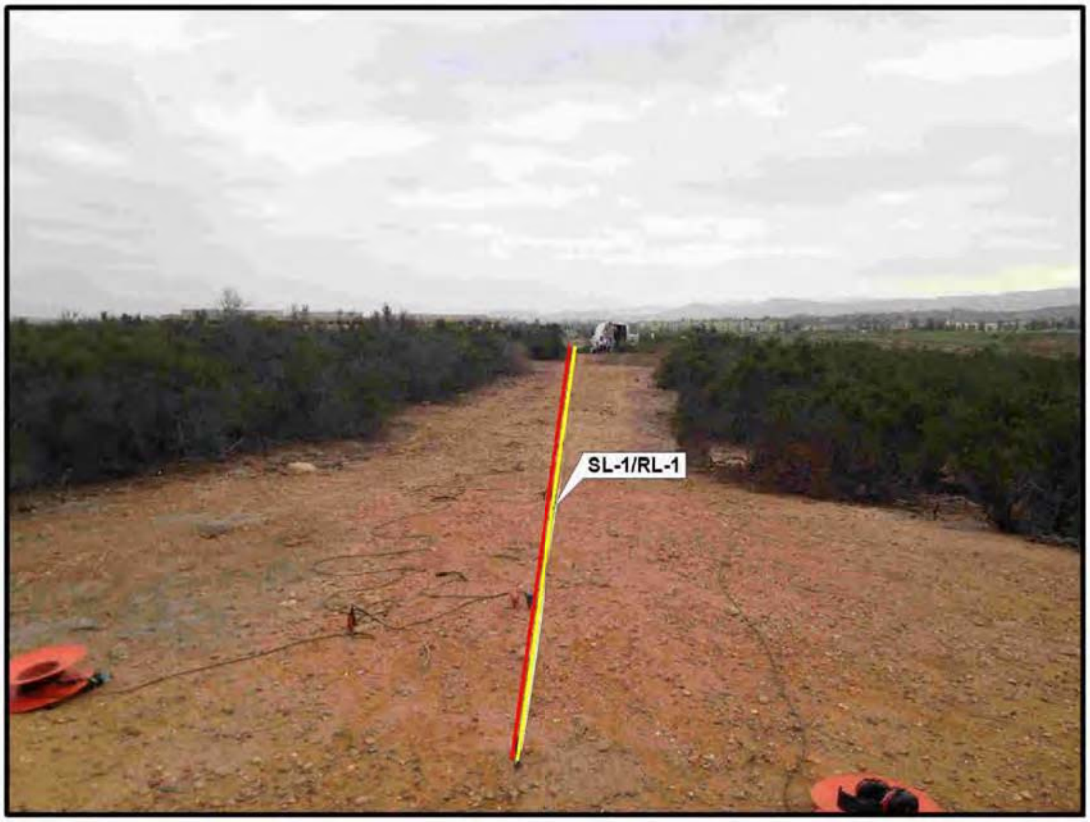
Date: 09/15

SOUTHWEST GEOPHYSICS INC.

Figure 2

0 150 300

approximate scale in feet



SITE PHOTOGRAPHS

The Preserve at Torrey Highlands
San Diego, California

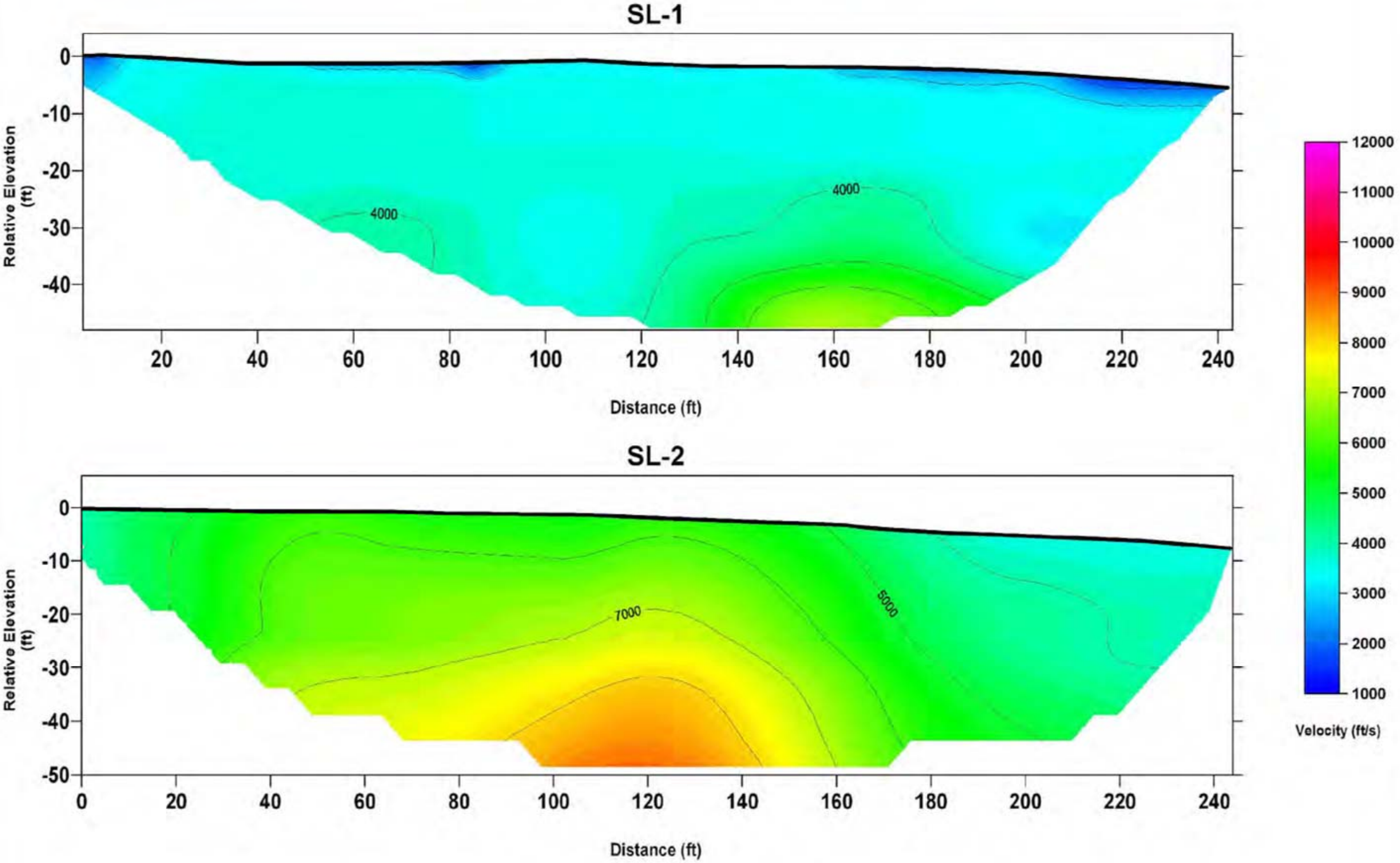
Project No.: 115432

Date: 09/15

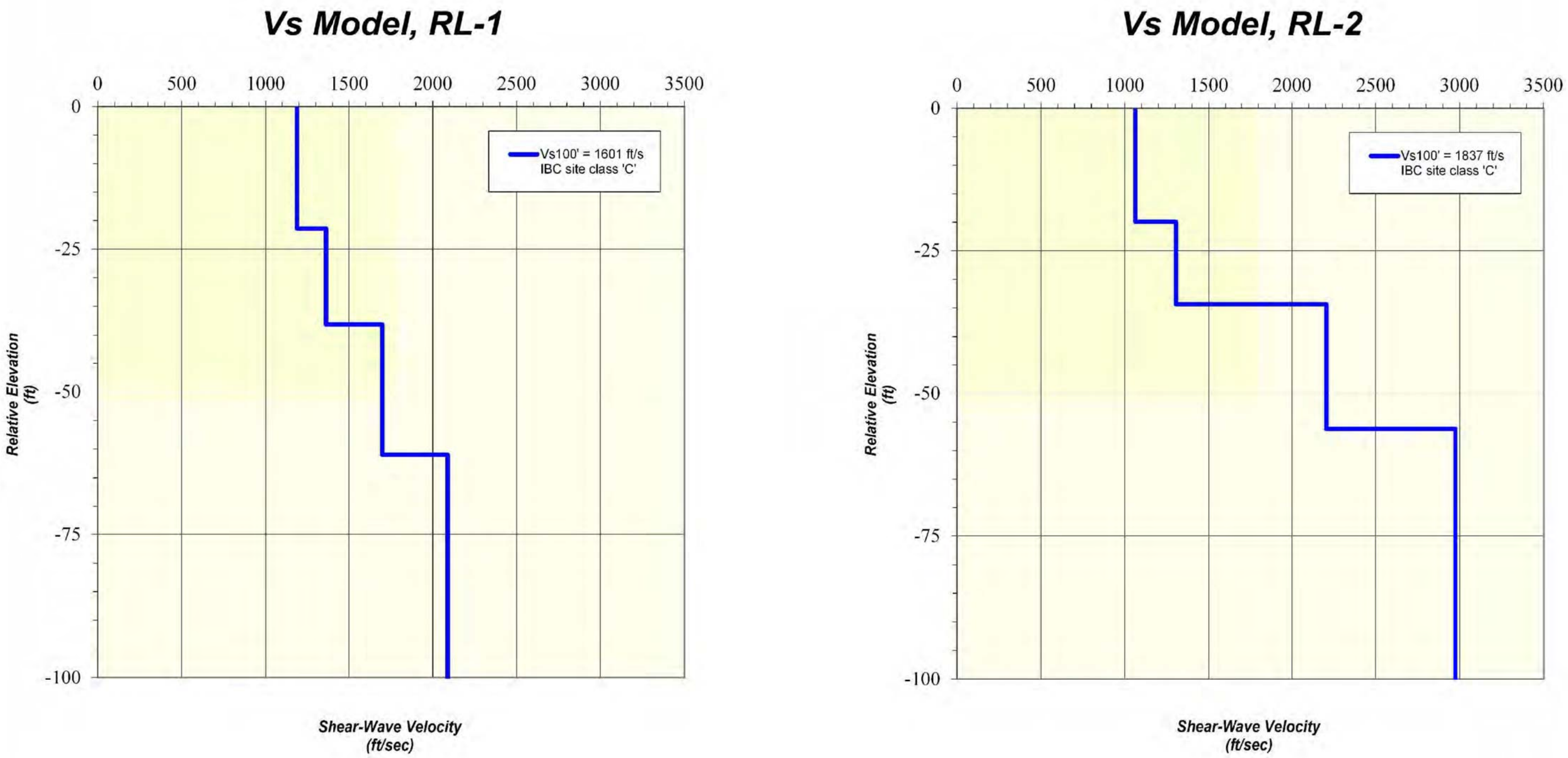
SOUTHWEST GEOPHYSICS INC.

Figure 3

TOMOGRAPHY MODELS



SEISMIC PROFILES **SL-1 & SL-2**	The Preserve at Torrey Highlands San Diego, California Project No.: 115432 Date: 09/15	SOUTHWEST GEOPHYSICS INC. Figure 4	**Note: Contour Interval = 1,000 feet per second**



ReMi RESULTS

The Preserve at Torrey Highlands
San Diego, California

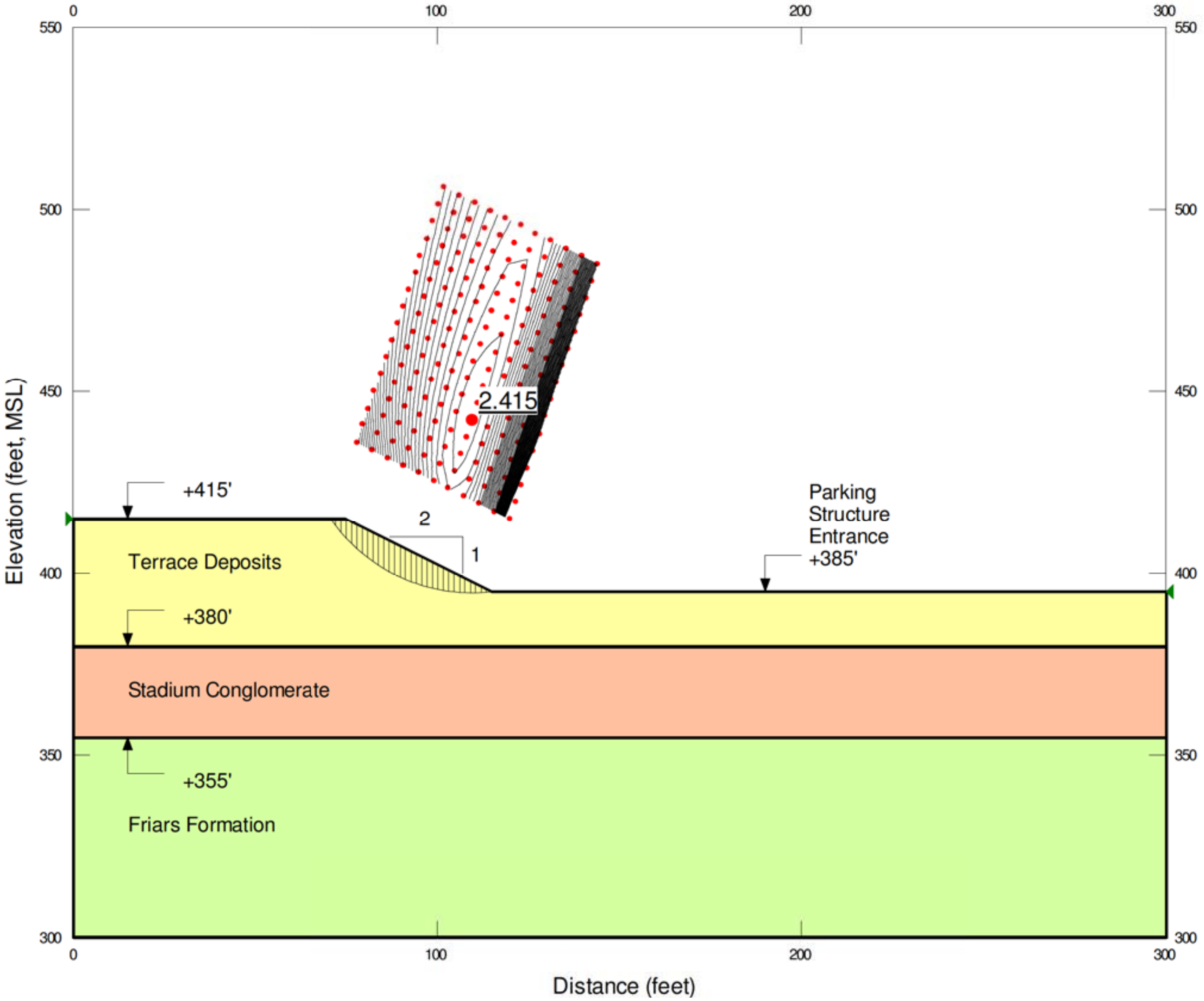
Project No.: 115432
Date: 09/15

SOUTHWEST GEOPHYSICS INC.

Figure 5

APPENDIX C

Slope Stability Analyses Results



KLEINFELDER
Bright People. Right Solutions.

DESIGNED BY: M. Arzamendi	DATE 11/9
DRAWN BY: M. Arzamendi	11/9
CHECKED BY: S. Rugg	11/9

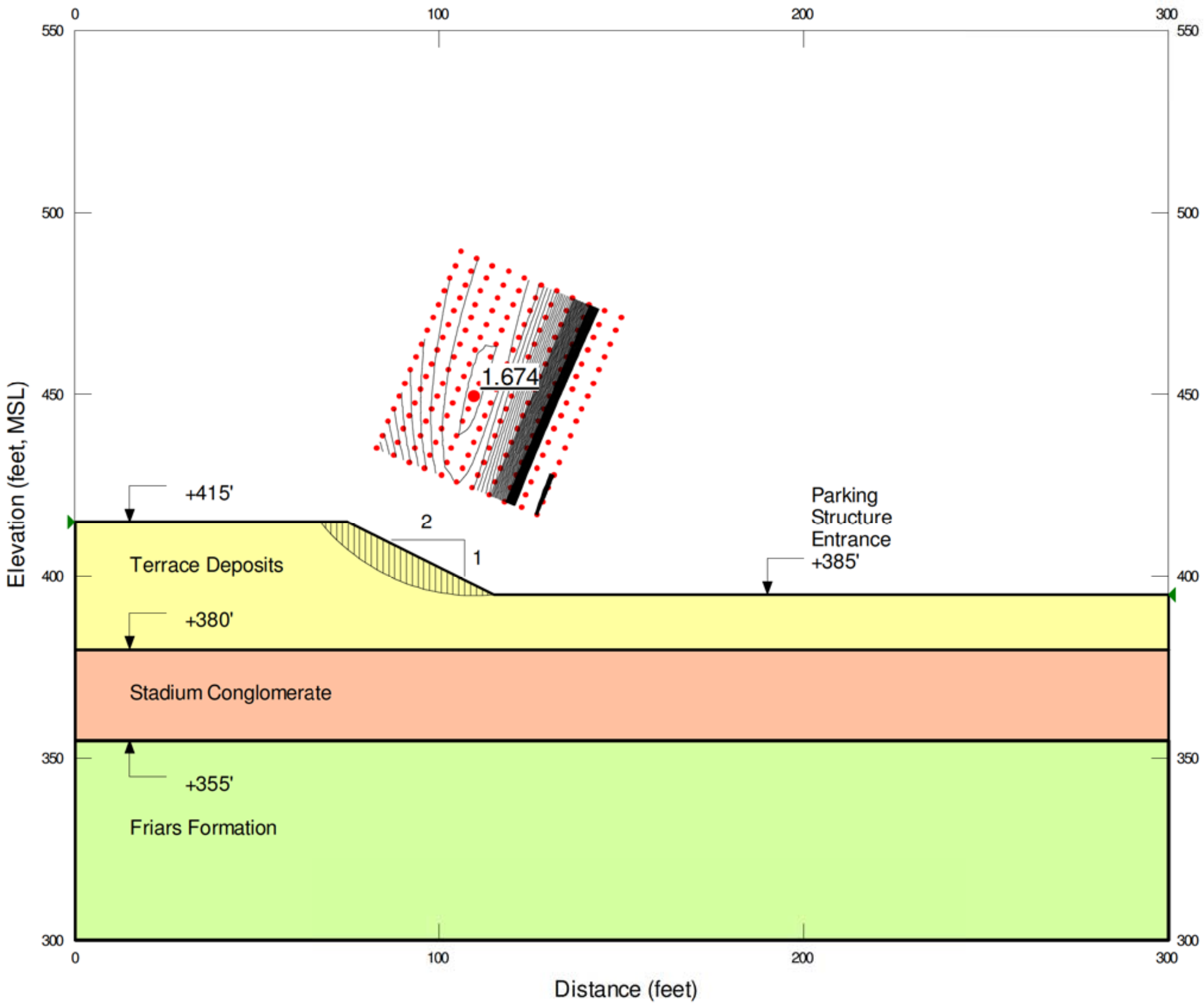
THE PRESERVE AT TORREY HIGHLANDS
SAN DIEGO, CALIFORNIA

SLOPE STABILITY ANALYSES
CUT 30' HIGH @ 2H:1V
STATIC

SCALE
AS SHOWN

20162077.001A

FIGURE NO.
C-1



DESIGNED BY: M. Arzamendi	DATE 11/9	THE PRESERVE AT TORREY HIGHLANDS SAN DIEGO, CALIFORNIA		SCALE AS SHOWN
DRAWN BY: M. Arzamendi	11/9			
CHECKED BY: S. Rugg	11/9	SLOPE STABILITY ANALYSES CUT 30' HIGH @ 2H:1V SEISMIC 0.18g		20162077.001A
				FIGURE NO. C-2

KLEINFELDER
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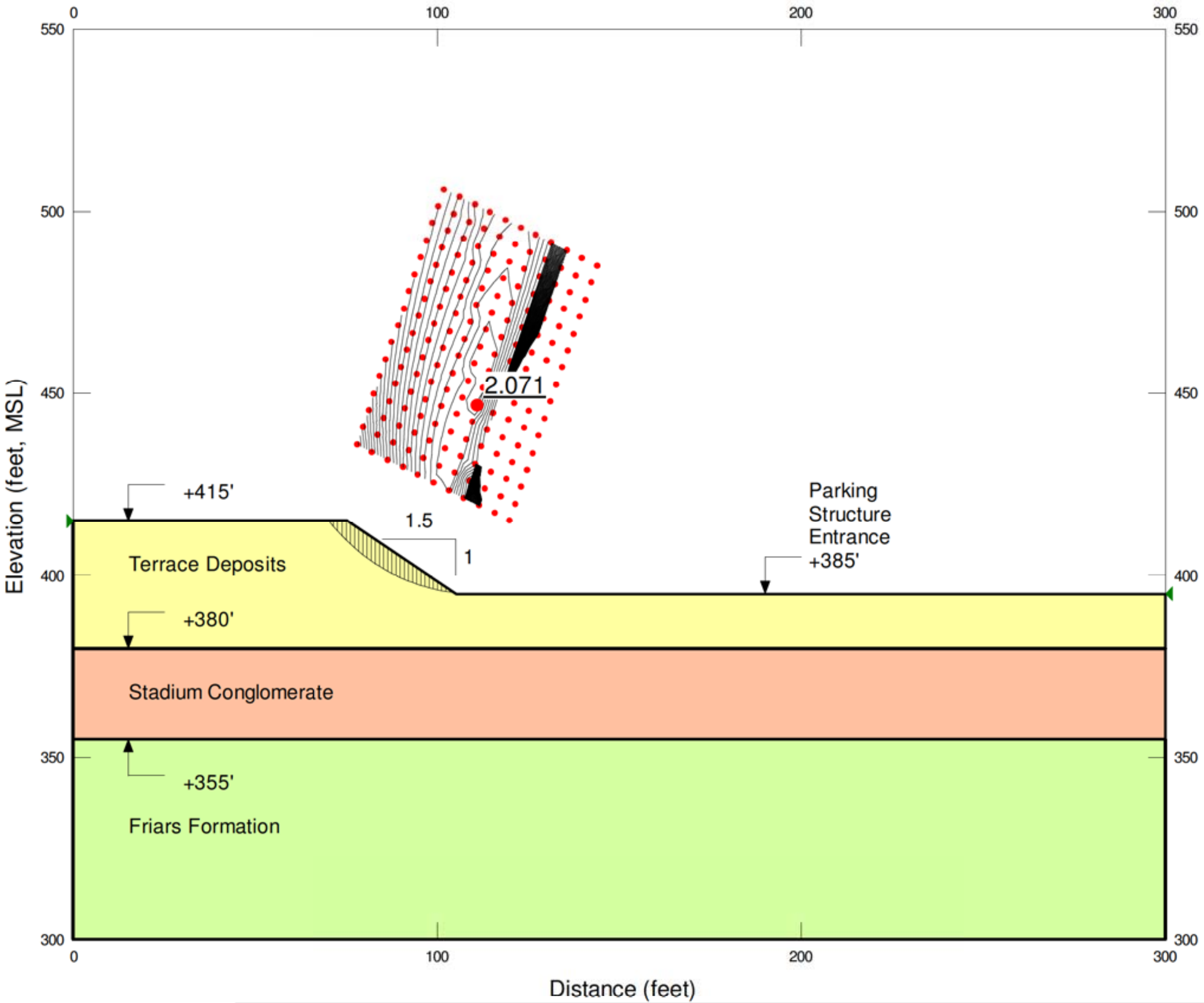


KLEINFELDER
Bright People. Right Solutions.

DESIGNED BY: M. Arzamendi
DATE 11/9
DRAWN BY: M. Arzamendi
11/9
CHECKED BY: S. Rugg
11/9

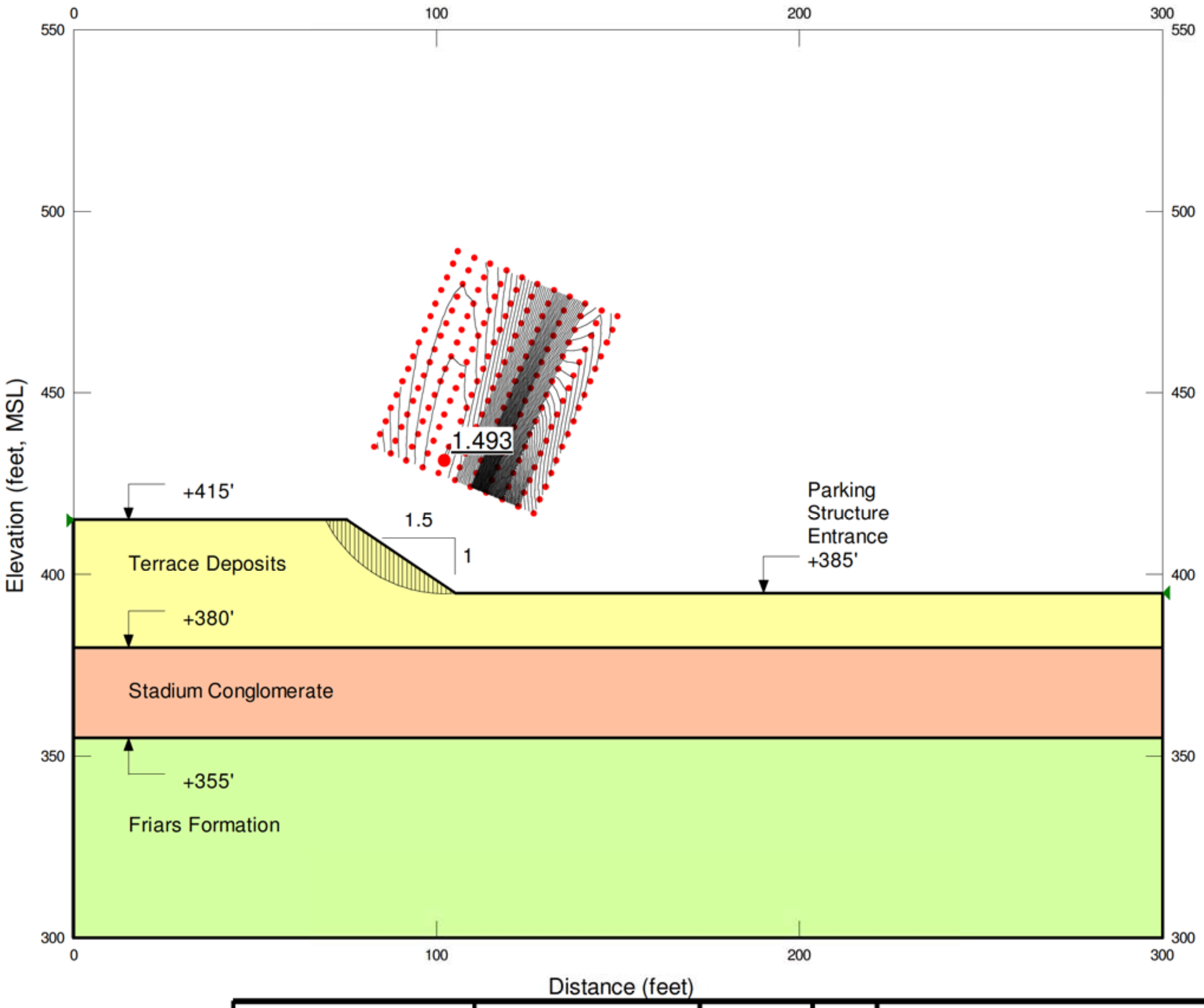
THE PRESERVE AT TORREY HIGHLANDS
SAN DIEGO, CALIFORNIA

SLOPE STABILITY ANALYSES
CUT 30' HIGH @ 1-1/2H:1V
STATIC

SCALE
AS SHOWN

20162077.001A

FIGURE NO.
C-3



DESIGNED BY: M. Arzamendi	DATE 11/9
DRAWN BY: M. Arzamendi	11/9
CHECKED BY: S. Rugg	11/9

KLEINFELDER
Bright People. Right Solutions.

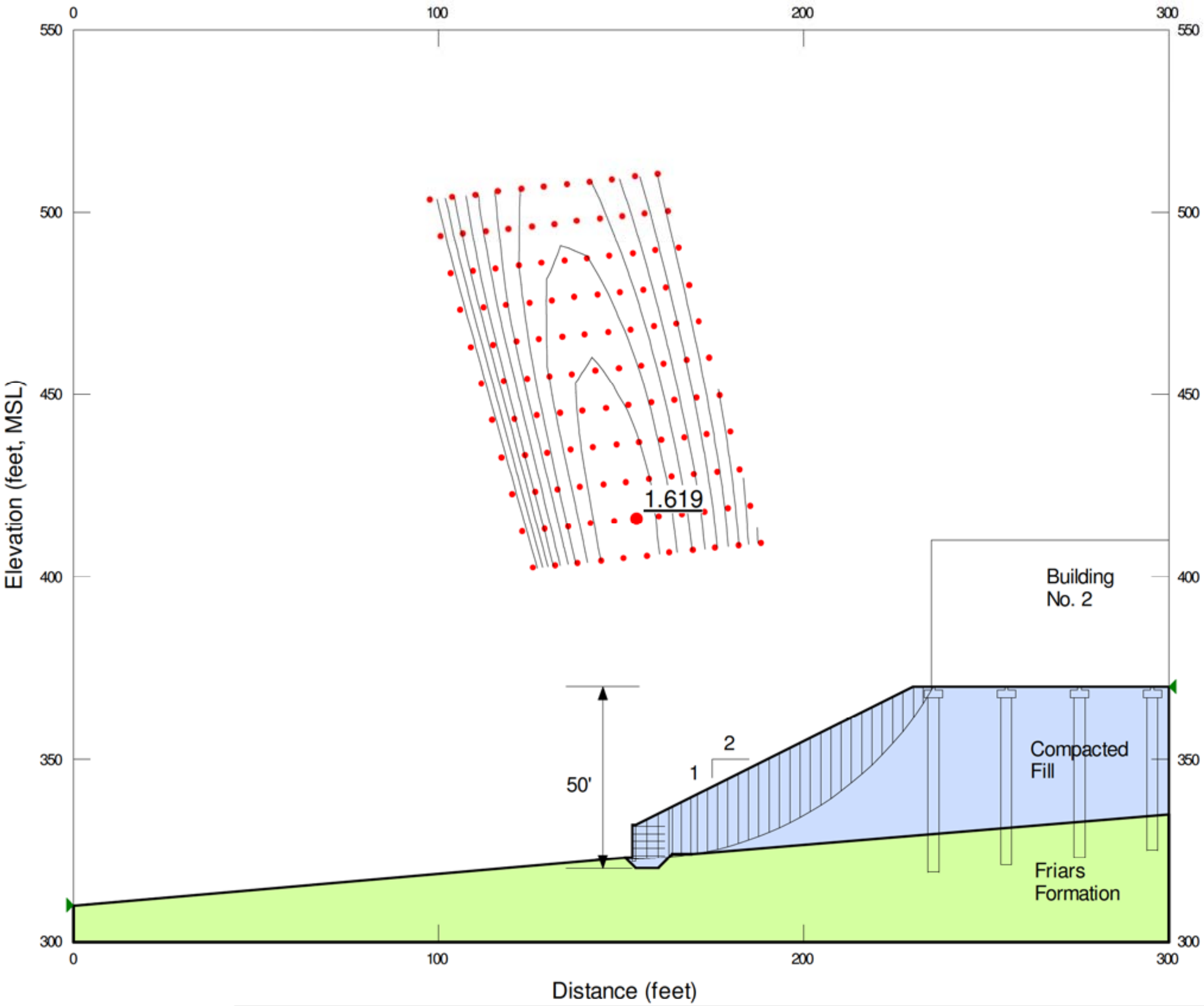
THE PRESERVE AT TORREY HIGHLANDS
SAN DIEGO, CALIFORNIA

SLOPE STABILITY ANALYSES
CUT 30' HIGH @ 1-1/2H:1V
SEISMIC 0.18g

SCALE
AS SHOWN

20162077.001A

FIGURE NO.
C-4



DESIGNED BY: M. Arzamendi	DATE 11/9	THE PRESERVE AT TORREY HIGHLANDS SAN DIEGO, CALIFORNIA	SCALE AS SHOWN
DRAWN BY: M. Arzamendi	11/9		20162077.001A
CHECKED BY: S. Rugg	11/9	SLOPE STABILITY ANALYSES FILL 40' HIGH @ 2H:1V STATIC	FIGURE NO. C-5

KLEINFELDER
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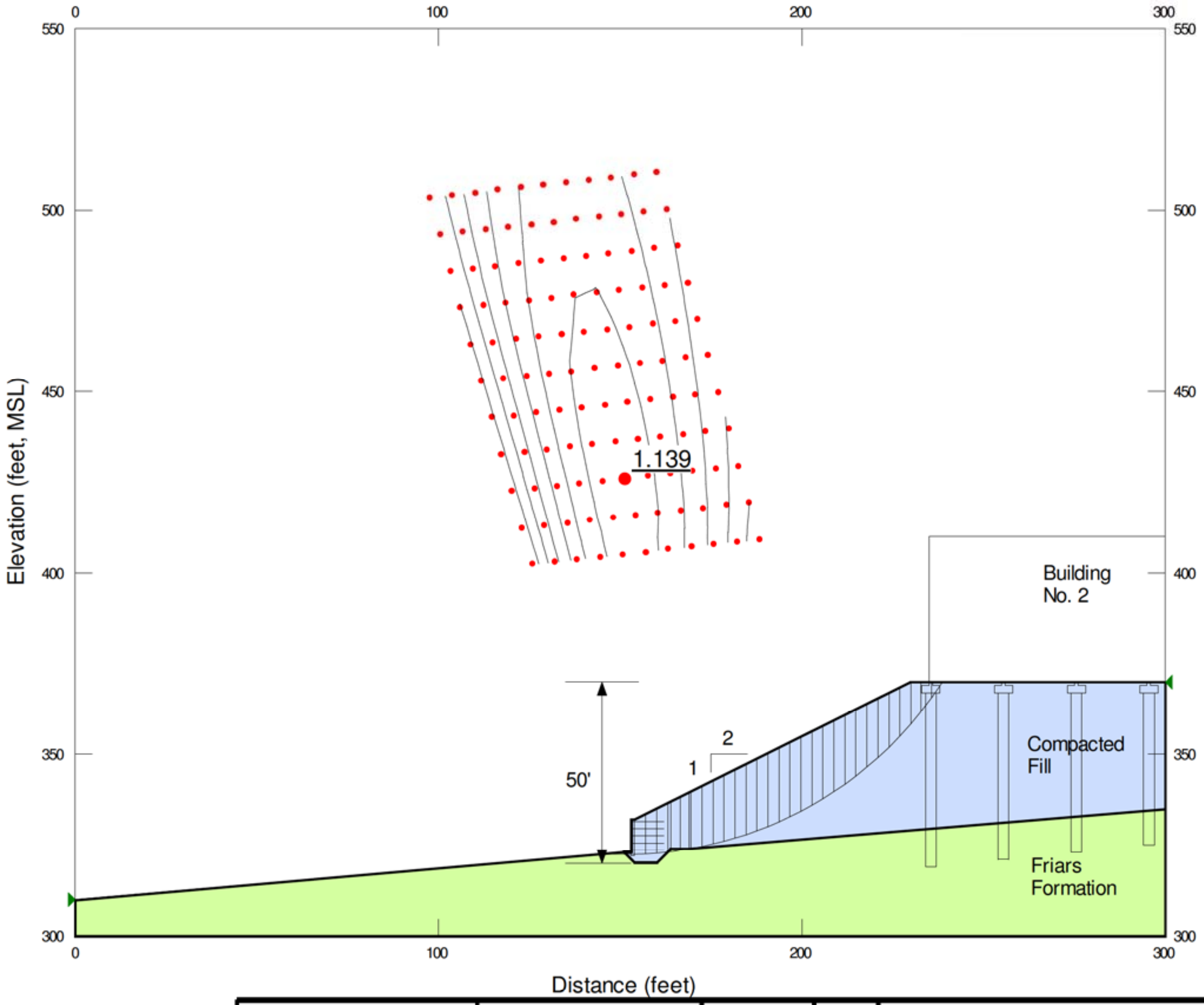

DESIGNED BY: M. Arzamendi	DATE 11/9	
DRAWN BY: M. Arzamendi	11/9	
CHECKED BY: S. Rugg	11/9	

THE PRESERVE AT TORREY HIGHLANDS
SAN DIEGO, CALIFORNIA

SLOPE STABILITY ANALYSES
FILL 40' HIGH @ 2H:1V
SEISMIC 0.18g

SCALE
AS SHOWN

20162077.001A

FIGURE NO.
C-6

APPENDIX D

Geotechnical Business Council Insert

Important Information about This

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a civil engineer may not fulfill the needs of a constructor — a construction contractor — or even another civil engineer. Because each geotechnical- engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. No one except you should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you* — should apply this report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical-engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

Geotechnical Engineers Base Each Report on a Unique Set of Project-Specific Factors

Geotechnical engineers consider many unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk-management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical-engineering report that was:

- not prepared for you;
- not prepared for your project;
- not prepared for the specific site explored; or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical-engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical-engineering report is based on conditions that existed at the time the geotechnical engineer performed the study. *Do not rely on a geotechnical-engineering report whose adequacy may have been affected by*: the passage of time; man-made events, such as construction on or adjacent to the site; or natural events, such as floods, droughts, earthquakes, or groundwater fluctuations. *Contact the geotechnical engineer before applying this report to determine if it is still reliable.* A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ — sometimes significantly — from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide geotechnical-construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are Not Final

Do not overrely on the confirmation-dependent recommendations included in your report. *Confirmation-dependent recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations *only* by observing actual subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's confirmation-dependent recommendations if that engineer does not perform the geotechnical-construction observation required to confirm the recommendations' applicability.*

A Geotechnical-Engineering Report Is Subject to Misinterpretation

Other design-team members' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Constructors can also misinterpret a geotechnical-engineering report. Confront that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing geotechnical construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical-engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make constructors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give constructors the complete geotechnical-engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise constructors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure constructors have sufficient time* to perform additional study. Only then might you be in a position to give constructors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and constructors fail to recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Environmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform an *environmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold-prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, many mold- prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical- engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; *none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.*

Rely, on Your GBC-Member Geotechnical Engineer for Additional Assistance

Membership in the Geotechnical Business Council of the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project. Confer with you GBC-Member geotechnical engineer for more information.

GBC GEOTECHNICAL BUSINESS COUNCIL
of the Geoprofessional Business Association

8811 Colesville Road/Suite G106, Silver Spring, MD 20910
Telephone: 301/565-2733 Facsimile: 301/589-2017
e-mail: info@geoprofessional.org www.geoprofessional.org

APPENDIX S

Deer Canyon Conservation Credits

Deer Canyon
Environmental Mitigation Preserve, LLC
2516 La Costa Avenue Carlsbad, CA 92009 (760) 942-2397 FAX (760) 942-5015

ACKNOWLEDGMENT OF SALE OF CONSERVATION CREDITS

The undersigned seller hereby acknowledges that it has sold and conveyed to Catholic Diocese of San Diego, 4.89 credits of off-site Conservation Credits consisting of 0.5 credit of Tier I Southern Maritime Chaparral habitat and 4.39 credits of Tier III Chaparral habitat from the Deer Canyon Conservation Bank. All terms of this conveyance shall be governed by the provisions of the Conservation Credit Purchase Agreement and Acknowledgment between Purchaser and the undersigned dated March 14, 2006.

SELLER: Deer Canyon Environmental Mitigation Preserve, LLC

By: J Carter, Manager

James B. Carter
Authorized Agent - Manager

Dated: September 1, 2006

DEER CANYON
CONSERVATION BANK AGREEMENT

THIS CONSERVATION AGREEMENT [Agreement] made and entered into this 21st day of September, 2005 between Deer Canyon Environmental Mitigation Preserve, LLC[Property Owner], and the City of San Diego [City]. The Deer Canyon Environmental Mitigation Preserve, LLC and the City are referred to herein individually as "Party" and jointly as the "Parties". The purpose of this Agreement is to establish the terms and conditions for a conservation bank for certain real property to be known as the Deer Canyon Conservation Bank.

RECITALS

A. The Property Owner is the owner of 60 acres of real property located in the County of San Diego, California, and more completely described in Exhibit A [General Location Map and Legal Description] and illustrated in Exhibit B [Legal Parcel Map] attached hereto [Conservation Bank Lands]. The entire 60 acres of land will be managed as a single unit known as the Deer Canyon Conservation Bank [Conservation Bank]. There are a total of 60 credits available for mitigation credit sales. The 60 mitigation credits will be used for calculation of the endowment funds necessary to provide management of the lands.

B. Under the City of San Diego Implementing Agreement (Section 9.14) between the United States Fish and Wildlife Service [USFWS] and the California Department of Fish and Game [CDFG] [together "Wildlife Agencies"], the City has the authority to enter into a Conservation Bank Agreement with private parties for the purposes of natural conservation consistent with the adopted Multiple Species Conservation Program Subarea Plan, which has been prepared consistent with the State of California Official Policy on Conservation Banks issued by the California Resources Agency (April 1995) and the Supplemental Policy regarding Conservation Banks within the NCCP area of Southern California issued by the United States Fish and Wildlife Service and the California Department of Fish and Game (January 24, 1996).

C. Under the California Endangered Species Act, California Fish and Game Code § 2050 et seq. [CESA], California Fish and Game Code § 1802, and other State laws, CDFG has jurisdiction over the conservation, protection, restoration, enhancement and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species. CDFG is also the manager and trustee of fish and wildlife resources and their habitat pursuant to California Fish and Game Code Section 1802.

D. USFWS has jurisdiction over the conservation, protection, restoration, enhancement and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species pursuant to the provisions of various federal laws including the Endangered Species Act, 16 USC § 1531 et seq. ("ESA"), the Fish and Wildlife Coordination Act, 16 U.S.C. §§ 661-666c, and the Fish and Wildlife Act of 1956, 16 U.S.C. § 742(f) et seq.

E. The Deer Canyon Environmental Mitigation Preserve, LLC, a California limited liability corporation, was formed on May 8, 2003 for the sole and exclusive purpose of holding title to the Conservation Bank Lands during the period in which the sale of the environmental credits would take place.

F. Establishment of the Deer Canyon Conservation Bank Agreement represents an opportunity to implement the ongoing regional biological resource planning efforts in San Diego County by conserving highly valuable resources within an area that is recognized as an essential part of a regional biological preserve system. More specifically, the Conservation Bank Lands are strategically located within the City of San Diego's Multi-Habitat Planning Area [MHPA]. The City's Subarea Plan and MHPA have been accepted as a habitat conservation plan by the Wildlife Agencies. The primary goals of the Multiple Species Conservation Program [MSCP] are to conserve biodiversity in the MSCP Plan Area and to provide for the permanent protection of plant and wildlife species (and the habitats on which they depend) which are currently listed, or may in the future become listed, as threatened or endangered under the federal or state endangered species acts through the establishment of a permanent preserve. The City's MHPA is depicted on Exhibit C and the site's Habitat Value on Exhibit D.

G. It is anticipated that construction and development activity within the Natural Community Conservation Planning area (NCCP) in San Diego County [Credit Area], will necessitate the mitigation of impacts to endangered, threatened and sensitive species and biologically sensitive habitats through the preservation of off-site lands which possess comparable habitat values. The biological resources report and credit area can be found in Exhibit E.

H. The Conservation Bank Lands support 35.97 acres of Tier I habitat, including California Adolphia; 0.2 acre of Tier II habitat; and 23.83 acres of Tier III habitat. The various Tiers provide habitat that is suitable for a variety of endangered, threatened and sensitive species as depicted on Exhibit E [Biological Resources Report]. The biological values on site, along with the Conservation Bank Lands' proximity to adjacent large areas of natural habitat and its connectivity to the protected open space lands occupied by listed and sensitive species, led to the inclusion of the Conservation Bank Lands within the City's MHPA.

I. The City has determined that the Conservation Bank Lands are generally suitable to mitigate for impacts to certain sensitive and declining vegetation types, habitat for certain species designated endangered or threatened under CESA or ESA, certain rare or sensitive species, and multi-species habitat values within the Credit Area. Certain rare endemic and/or listed species may not have similar or comparable habitat requirements and use of the Conservation Bank may not be appropriate to mitigate for impacts to those species. Use of the Conservation Bank to mitigate for impacts to wildlife and plants and the vegetation communities on which they depend shall be governed by Section Article IV of this Agreement.

J. The Parties desire to enter into this Agreement to set forth the terms and conditions pursuant to which the Deer Canyon Conservation Bank will be established and implemented. including the method and requirements for the sale of Conservation Bank credits by the Property Owner to third party purchasers [Credit Purchasers] in need of mitigation.

K. The parties acknowledge that various Natural Community Conservation Planning Act (Fish & Game Code Section 2800, et seq.,) plans [NCCP] and Endangered Species Act Section 10(a)(1)(B) Habitat Conservation Plans [HCP] covering all or a part of the Credit Area may be adopted or approved by the applicable Wildlife Agencies. As used herein, the term "NCCP/HCP" specifically includes the MSCP, the Subarea Plans approved or proposed in the MSCP, the MHCP for the northern portion of San Diego County, subarea plans contemplated in the MSCP and MHCP and other subarea plans now or hereafter proposed (each such subarea is referred to hereinafter as a "Subarea Plan"). Once an NCCP/HCP is approved by the Wildlife Agencies, and for so long as it is in effect, the NCCP/HCP shall, for projects within its ambit that are within the Credit Area, establish the offsite mitigation requirements of all habitats and species covered by the plan.

NOW, THEREFORE, in consideration of the foregoing recitals and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Parties hereby agree as follows:

ARTICLE I. DEFINITIONS

1.1 Agreement. This Deer Canyon Conservation Bank Agreement.

1.2 CDFG. The California Department of Fish and Game, a subdivision of the California Resources Agency.

1.3 CEQA. The California Environmental Quality Act (California Public Resources Code Sections 21000 et seq.); guidelines for implementation at California Public Resources Code Sections 15000 et seq., including all regulations promulgated pursuant to that Act.

1.4 CESA. The California Endangered Species Act (California Fish and Game Code sections 2050 et seq.), including all regulations promulgated pursuant to that Act.

1.5 Conservation Credit. A mitigation credit, one acre of habitat equals one conservation credit.

1.6 Covered Species. Those species within a designated MSCP regional planning area which the Wildlife Agencies have determined will be adequately conserved by that regional plan when the Plan(s) is implemented through the Subarea Plans.

1.7 Credit Area. The geographic area within which impacts that occur may be mitigated through use of conservation credits on the Deer Canyon Conservation Bank consistent with the Agreement.

1.8 Conservation Easement. A recorded conservation easement established to conserve biological resources, and which imposes certain habitat management obligations for the Conservation Bank Lands.

1.9 ESA. The federal Endangered Species Act (U.S.C. §§ 1531 et seq.), including all regulations promulgated pursuant to that Act.

1.10 Habitat Conservation Plan also HCP. Conservation plans prepared pursuant to Section l0(a)(2)(A) of the ESA (16 U.S.C. section 539(a)(2)(A)) and each Subarea Plan approved by the Wildlife Agencies.

1.11 Management Deposit. The sum of money deposited into the Management Fund to be used for the management and maintenance of the of the Conservation Bank Lands for the benefit of biological resources.

1.12 Management Fund A segregated, interest bearing fund maintained by the Fund Manager to be used exclusively for the management and maintenance of the Conservation Bank Lands in accordance with the Management Plan and the Conservation Easement.

1.13 Management Plan. The plan, attached as Exhibit F, intended to describe the activities required for the management and maintenance of the Conservation Bank Lands and to be carried out by the Managing Agency during the term of this Agreement..

1.14 MHCP. The Multiple Habitat Conservation Program, a comprehensive habitat conservation planning program which addresses multiple species habitat needs and the preservation of native vegetation in northwestern San Diego County, California.

1.15 MSCP. The Multiple Species Conservation Program, a comprehensive habitat conservation planning program which addresses multiple species habitat needs and the preservation of native vegetation in southwestern San Diego County, California.

1.16 NCCP Act. The California Natural Community Conservation Planning Act of 1991, enacted by Chapter 765 of the California statutes of 1991 (A.B. 2172) codified in part at California Fish and Game Code section 2800, et seq.) including all regulations promulgated pursuant to that Act.

1.17 NCCP Authorization. Any authorization issued by CDFG under the NCCP Act (including but not limited to, California Fish and Game Code sections 2825(c) or 2835), or by the California Fish and Game Commission under the NCCP Act (including but not limited to California Fish and Game Code § 2830) to authorize the Take of a species listed under CESA as threatened or endangered, or of a species which is a candidate for such a listing, or of a species identified pursuant to Section 2835. These legal authorities are wholly independent of each other.

1.18 NCCP Plan. A plan developed in accordance with the NCCP Act which provides comprehensive management and conservation of multiple wildlife species, and which identifies and provides for the regional or area-wide protection and perpetuation of natural wildlife diversity while allowing compatible and appropriate development and growth.

1.19 Subarea Plan. The plan prepared by the jurisdictions and reviewed and approved by the USFWS and CDFG, to implement the MSCP or MHCP within its jurisdictional boundaries.

1.20 USFWS. The United States Fish and Wildlife Service, an agency of the United States Department of the Interior.

ARTICLE II. TERM OF THE AGREEMENT

2.1 **Term.** The Term of this Agreement shall commence on Execution of this Agreement and shall extend for a period of five (5) years following the sale of the first (1st) Conservation Credit.

2.1.1 *Extension of Term.* The Property Owner and the City of San Diego may extend the Term of this Agreement by written agreement for an additional two years in order to effectuate the sale of Conservation Credits and/or the continued management and maintenance of Conservation Bank Lands. In order to extend the Term, the Property Owner will make additional deposits into the Management Fund as required by the Managing Agency to pay the costs and expenses associated with the management and monitoring for the additional term.

ARTICLE III. ESTABLISHMENT OF THE CONSERVATION BANK

3.1 **Requirements for the Establishment of the Conservation Bank.** The Conservation Bank shall be deemed established when all of the following requirements are met:

3.1.1 *Evaluation of Conservation Bank Lands.* For the purpose of determining the extent of biological resources, including wildlife, whether sensitive, endangered or threatened species, and their habitats, attributable to the land proposed to be used as Conservation Bank Lands, all necessary inspection and/or studies of the land shall be conducted to establish values and existence of such biological resources.

3.1.2 *Approval of Conservation Bank Lands.* The City shall review all reports provided and determine whether and to what extent the biological values are supported.

3.1.2.1 Approval Prior to this Agreement. With respect to this Agreement, representatives of the City have already reviewed the Biological Resources Report [Report] for purposes of determining its biological values in connection with the sale of Conservation Credits. The City Representatives concur with the findings in the Report. As a result of benefits accruing to wildlife resources, including sensitive, endangered and threatened species and their habitats, and upon the establishment of the Conservation Bank for conservation purposes, the City acknowledges and agrees that as described in Recitals F,G,H,and I and subject to the limitations provided in this Agreement, the Property possesses biological values which support the Conservation Credits acknowledged in section 4 below.

3.1.3 *Execution of the Agreement.* Execution of this Agreement shall occur on the date this Agreement is approved by the City in the manner required by the City Charter and signed by the appropriate City Representative.

3.1.4 *Conveyance and Recording of the Conservation Easement.* Concurrent with the execution of this Agreement, the Property Owner shall deliver to the City of San Diego, with a copy to USFWS, and CDFG the following:

3.1.4.1 A duly executed and acknowledged Conservation Easement in the form attached hereto as Exhibit G-1 [Conservation Easement].

3.1.4.2 A detailed map of the lands covered by the Conservation Easement.

3.1.4.3 A duly executed and acknowledged Grant Deed, attached hereto as Exhibit G-2, conveying title of the Property to the City of San Diego and containing provisions requiring that the property be held and managed in perpetuity as open space lands [Grant Deed]. The Grant Deed, however, shall not be recorded until transfer of Conservation Bank Lands pursuant to section 7.1

3.1.4.4 A current title report in the form attached hereto as Exhibit H.

ARTICLE IV. CONSERVATION CREDITS - PURPOSE, VALUE, USE, AND SALE.

4.1 **Purpose.** Deer Canyon Conservation Bank Conservation Credits are intended to serve as mitigation for adverse biological impacts to land within the Credit Area possessing similar or comparable habitat values with the following exceptions:

4.1.1 *Inconsistent Impacts*. Impacts which are inconsistent with a Subarea Plan or compromise the biological integrity outside the Subarea Plan in which the Property is located.

4.1.2 *Habitat Linkage Area*. The area for which the credit holder is seeking mitigation is a designated as an important habitat linkage area.

4.1.3 *Non-represented Habitat or Species*. The habitat or species impacted requires like-kind mitigation and that habitat or species is not represented within the Deer Canyon Conservation Bank.

4.1.3.1 Tiers. With respect to certain projects under City control, mitigation may be allowed with similar or comparable habitat values if within the same Tier and City Regulations permit the use of such similar or comparable habitat values as mitigation.

4.2 **Value.** One (1) acre of Conservation Bank Land shall have the value of one (1) Conservation Credit. The total number of credits available shall be based on 60 acres of Conservation Bank Land; thus, a total of sixty (60) Conservation Credits will be created, acknowledged, and accepted by the City in accordance with the terms and conditions of this Agreement. The Parties acknowledge that the level of Conservation Credits provided to Property Owner hereunder have been negotiated with the express understanding that no enhancement of the Conservation Bank lands to increase Conservation Credits is contemplated.

4.2.1 *Reduction in Value*. Notwithstanding anything to the contrary contained in this Agreement, in the event that the City reasonably determine that portions of the Property have been damaged subsequent to the date of this Agreement, and prior to the official date of transfer of conservation easement and: (i) the effect has been to materially impair the habitat values on such damaged property; and (ii) the Property Owner has not reasonably restored habitat value to such damaged area or provided the City with reasonable evidence that habitat value will be restored, then the City may, at its discretion, either reduce the number of Conservation Credits allocated to the Property in question in proportion to such damaged area or, if it determines that the habitat values of the property have been so impaired as to render it unsuitable as a Conservation Bank, terminate this Agreement.

4.2.2 *Number and Type.* For development projects located within the ambit of a Wildlife Agency approved NCCP/HCP within San Diego County, subject to section 4.1, the Implementing Agreement [IA] of the jurisdiction issuing the development approval will control the appropriate number and type of mitigation acres required to mitigate biological impacts to covered endangered, threatened or sensitive species and habitats.

4.3 **Sale or Conveyance of Conservation Credits.**

4.3.1 *No Further Assessment.* Once the Conservation Bank has been established in accordance with the procedures set forth in section 4, no further evaluation or assessment by the City shall be required as a prerequisite to the sale of the Conservation Credits, or the City acknowledgment and acceptance thereof, except as provided in sections 5.3 and 6.1 et seq..

4.3.2 *Entitlement*. The Property Owner shall be entitled to sell Conservation Credits to Credit Purchasers, or apply such Conservation Credits against any mitigation applicable to other properties owned by the Property Owner in the Credit Area, during the Term of the Agreement and in a manner consistent with Recital I and sections 4.1 and 4.2 above. Subject to the Management Fund obligations under section 5.3 below, the Property Owner shall have the exclusive right to determine the price for any and all Conservation Credits offered for sale or conveyance.

4.3.3 *Number*. Under this Agreement, no more than sixty (60) Conservation Credits may be sold or transferred. Once all Conservation Credits have been conveyed, no further Conservation Credits shall be acknowledged by the City.

4.3.4 *Accounting for Sale or Conveyance*. The sale or conveyance of Conservation Credits shall be accounted for in accordance with section 6.1 below.

ARTICLE V. MANAGEMENT OF CONSERVATION LANDS

5.1 **Managing Agency.** During the Term of this Agreement, HDR, its successors, or assigns, shall oversee, manage, and maintain the Conservation Bank Lands in order to preserve its habitat and conservation values in accordance with the terms of this Agreement, the Conservation Easement, and the Management Monitoring Plan. The rights and obligations of the Managing Agency shall include:

5.1.1 *Management and Monitoring Plan*. The Managing Agency shall create a Managing and Monitoring Plan, which address all of the Minimum Management and Monitoring Requirements referred to in section 5.2 [Management Plan].

5.1.2.1 The Management Plan shall provide for the implementation of the specific management measures and tasks identified in Exhibit F and shall prioritize the importance of the various measures and tasks. The Management Plan shall be subject to the approval of the City, which approval shall not be withheld unreasonably. Once the Management Plan has been approved by the City, the Managing Agency shall implement the Management Plan in accordance with the terms of the Conservation Easement and this Agreement. The Managing Agency and the City shall meet and confer from time to time, upon the request of any one of them, to revise the Management Plan to better preserve the habitat and conservation values of the Property.

5.1.2.1.1 Prior to development of the Management Plan, the Property Owner shall manage the property consistent with the purposes of this Agreement and the Conservation Easement to preserve the habitat and conservation values of the Property.

5.1.2 *Reasonable Efforts*. The Managing Agency shall use reasonable efforts to prevent third party use of the Property in a manner not permitted under this Agreement or the Conservation Easement.

5.1.3 *Right to Restrict Access*. The Managing Agency shall share with the Property Owner the right to restrict public access to the Property. Representatives of the City shall have a right to enter the Property at any time and guests of the City may enter with twenty-four (24) hour notice to the Property Owner and the Managing Agency.

5.1.4 *Cash Flow*. The Managing Agency shall establish a Cash Flow Worksheet, which includes all anticipated expenditures, in order to provide the Fund Manager with a basis for anticipating Management Fund balances. The worksheet shall be updated monthly during the Management Term and the anticipated Cash Flow shall be compared to the actual monthly expenditures.

5.2 **Minimum Management and Monitoring Requirements.** The Parties have agreed to Management and Monitoring Requirements, attached as Exhibit F, which detail the minimum level and type of activities required for the Management and Monitoring of the Conservation Bank Lands. These requirements shall be used by the Managing Agency to create an appropriate Management Plan. Any reduction in level or type of activities shall be considered a material breach of this Agreement for which the City may avail itself of the remedies in Article IX of this Agreement, including termination.

5.3 **Funding.** The Property Owner shall be obligated to fund the Management and Monitoring of the Conservation Bank Lands to provide all of the activities required by the Management Plan. Funding shall be provided in the following manner:

5.3.1 *Establish Management Fund.* Concurrent with the execution of this Agreement, the Property Owner shall establish a dedicated, interest bearing account, to be known as the Deer Canyon Conservation Bank Lands Management and Maintenance Fund [Management Fund], for the exclusive purpose of managing the Deer Canyon Conservation Bank Lands in accordance with the Management and Monitoring Plan.

5.3.2 *Management Deposit.* Prior to or concurrent with the sale, transfer, or use of the first (1st) Conservation Credit, the Property Owner shall deposit $41,567.00 into the Management Fund. The Deposit is intended to defray the costs of managing the Conservation Bank in accordance with the requirements of the Management and Monitoring Plan.

5.3.2.1 The Management Deposit shall be a non-refundable deposit with no right of reimbursement to the Property Owner.

5.3.3 *Minimum Balance.* Property Owner shall maintain a Minimum Balance in the amount determined by the Fund Manager, pursuant to section 5.4.2, in the Management Fund at all times. If, at any time, the Management Fund balance falls below the minimum, Property Owner shall deposit, within thirty (30) Calendar Days of such time, the difference between the Minimum Balance and the actual balance into the Management Fund.

5.3.4 *Interest.* The accrued interest and earnings from the Management Fund shall be used exclusively to fund the management of the Conservation Bank Lands in accordance with the Management and Monitoring Plan.

5.4 **Fund Manager.** The Fund Manager shall hold and manage the Management Fund described in section 5.3.1 in trust for the purposes specified in this Agreement. The Fund Manager may invest Management Funds in a low risk money market accounts or similar low risk market vehicles and shall expend the funds to pay costs and expenses reasonably incurred in the execution of the management and monitoring activities for the Conservation Bank Lands under the Management Plan, including, without limitation, property taxes, contracts, equipment, and reasonable administrative costs of the Managing Agency, not to exceed five percent (5%) of the cost of the tasks performed, pursuant to this Agreement.

5.4.1 *Non-Profit.* The Fund Manager shall be a duly organized and authorized 501(c)(3) non-profit organization. Prior to contracting with the Fund Manager for its services under this Agreement, the Property Owner shall seek and obtain City approval.

5.4.2 *Duty to Determine Minimum Fund Balance.* The Fund Manager, in cooperation with the City and the Managing Agency, shall use daily, monthly/quarterly, and annual reporting information identified in Article VI to determine the actual costs of managing, monitoring, and maintaining the Conservation Bank Lands. The actual costs of managing, monitoring, and maintaining shall be used in combination with the cash flow worksheets provided by the Managing Agency, and any other relevant information to determine the cash balance necessary in the Management Fund to meet the daily financial obligations of the Fund Manager. This dollar amount shall be the Minimum Balance necessary to effectively and efficiently manage the Conservation Bank Lands and required under section 5.3.3.

ARTICLE VI. REPORTING AND MAINTENANCE OF RECORDS

6.1 **Reporting Requirements.** In addition to any reporting requirements imposed by law, the Property Owner, the Managing Agency, and the Fund Manager shall have the following reporting requirements during the Term of this Agreement:

6.1.1 *Reporting Per Occurrence.*

6.1.1.1 Sales or Transfers. Every sale or transfer of a Conservation Credit shall be reported by the Property Owner to the City within thirty (30) Calendar Days of the sale or transfer. The first sale, transfer, application or use of a Conservation Credit shall be accompanied by a Deposit Receipt for such sale or transfer in the amount of the Management Deposit identified in section 5.3.2 of this Agreement.

6.1.1.1.1 Deposit Receipt. The Deposit Receipt shall identify the amount of the Management Deposit, the date of the deposit, and the account into which the Deposit was made.

6.1.1.2 Damage to Conservation Bank Lands. In the event that major damage occurs to the Conservation Bank Lands, the Managing Agency shall notify the City and the Property Owner immediately.

6.1.1.2.1 Managing Agency and Property Owner shall consult with the City to identify remedial measures and tasks which shall be performed to the biological resources. A time line to complete the tasks shall be established. If the Managing Agency or the Property Owner fail to perform the tasks within the agreed upon time line, the remaining unsold credits will be held in abeyance by the City until such time that the agreed upon tasks are completed.

6.1.1.3 Managing and Monitoring Activities. If, at any time during the term of this Agreement, the Managing Agency anticipates that the actual expenditures will deviate from the Cash Flow Worksheet, whether increasing or decreasing expenditures, the Managing Agency shall immediately report the expected change in the Cash Flow to the Fund Manager.

6.1.1.4 Fund Balance Falls Below Minimum. If, at any time, the Management Fund balance falls below the Minimum Balance, the Fund Manager shall immediately notify the Property Owner and the City.

6.1.2 *Monthly/Quarterly Accounting.*

6.1.2.1 Management Fund. At the end of each quarter, during the Term of this Agreement, the Fund Manager, shall provide to the City, the Property Owner, and the Managing Agency, a quarterly accounting of all expenditures from and deposits to the Management Fund. This accounting shall be accompanied by the quarterly statement from the Bank or institution in which the Funds reside.

6.1.2.2 Cash Flow. At the end of each quarter, during the Term of this Agreement, the Managing Agency shall provide the Cash Flow Worksheet to the City, the Property Owner, and the Fund Manager.

6.1.2.3 Proof of Expenditures. At the end of each month, the Managing Agency shall provide proof of all expenses incurred during that month to the Fund Manager.

6.1.2 *Annual Reporting, Accounting and Audit.*

6.1.2.1 Management Fund. The Fund Manager shall provide an accounting of all funds received and expended for the management of the Conservation Bank Lands using Generally Accepted Accounting Principals [GAAP]. The accounting and the activities of the Managing Agency shall be audited annually, and the accounting and the results of the audits shall be provided to the City of San Diego as part of the Annual Accounting and Property Management Report due on or before January 15th of each year in accordance with section 6.1.2.2. The annual accounting and results of the audit shall also be made available to the public.

6.1.2.2 Annual Accounting and Property Management Report. The Managing Agency shall provide to the City an Annual Accounting and Property Management Report on or before January 15th of each year. The Accounting and Property Management Report shall include the following:

6.1.2.2.1 The annual accounting and results of the audit described in section 6.1.2.1.

6.1.2.2.2 A general description of the status of the biological resources on the Property.

6.1.2.2.3 The results of any biological monitoring or studies conducted on the Property.

6.1.2.2.4 A description of all management actions taken on the property and the costs thereof.

6.1.2.2.5 A description of any problems encountered in managing the property.

6.1.2.2.6 A description of management actions and the anticipated costs thereof that the Managing Agency will undertake, in accordance with the Management Plan, in the coming year.

6.2 **Maintenance of Records.** Property Owner, Managing Agency, and Fund Manager shall maintain any and all records related to the Conservation Bank, including sales or transfer of credits, deposits and expenditures or funds, and other records in support of the reporting requirements in section 6.1 for a period of five (5) years following the completion of the maintenance and reporting term or the termination of this Agreement pursuant to Article IX, whichever occurs first.

ARTICLE VII. TRANSFER OF CONSERVATION BANK LANDS.

7.1 **Transfer of Title.** Upon the conclusion of the Term of this Agreement including any extension to the Term pursuant to section 2.1.1, or upon termination of this Agreement, whichever occurs first, the Property Owner, at the option of the City, shall transfer the Conservation Bank Lands by a Grant Deed to either (i) the City of San Diego or (ii) a Trust established for the purpose of maintaining Conservation Bank Lands and approved by the City [Trust].

7.1.1 *Earlier Transfer*. If all conservation credits from the Deer Canyon Conservation Bank have been sold or transferred in accordance with this Agreement, the Conservation Bank Lands may be transferred to the City or Trust at that time, provided the following requirements are met:

7.1.1.1 The Managing Agency provides to the City and the Property Owner an estimate of the Management and Monitoring expenses for the balance of the 5 year Management and Monitoring Term.

7.1.1.2 The Property Owner makes a deposit into the Management Fund in the amount of the estimate.

7.1.1.3 The City agrees in writing to accept the Conservation Bank Lands or to allow the transfer to the Trust.

7.1.2 *Charges Associated with Transfer*. The Property Owner shall pay all transfer taxes and recording charges associated with the conveyance of the Property.

7.1.3 *Encumbrances*. The conveyance of the Conservation Bank Lands by the Property Owner hereunder shall be subject to any and all rights of way, easements, encumbrances, and other matters existing at the time of creation of the Conservation Bank and reflected in the Title Report.

7.2 **Remaining Funds.** Except as provided in sections 5.3.2.1, 7.1.1, and 9.1.2.2, any balance remaining in the Management Fund at the time of the Transfer of Title shall be returned to the Property Owner.

7.3 **Documents and Records.** Copies of all books and records shall be provided to the City of San Diego or the Trust.

ARTICLE VIII. PROPERTY OWNER COVENANTS

8.1 **Convenants.** Property Owner hereby agrees and covenants for so long as this Agreement is in effect and has not been terminated pursuant to Article IX below, that Property Owner:

8.1.1 *Hazardous Materials.* Property Owner shall not discharge or release on the Conservation Bank Lands, or permit others to discharge or release on the Conservation Bank Lands, any material or substance deemed hazardous or toxic under any applicable federal, state, or local environmental laws.

8.1.2 *Additional Encumbrances.* Property Owner shall not create any encumbrances to the title of the Conservation Bank Lands other than those set forth in the Title Report, attached hereto as Exhibit H, nor shall Property Owner execute, renew, or extend any liens, licenses or similar interests if the proposed encumbrances, liens, lease, license or similar interests will affect the biological values of property as determined by the City, or execute, renew, or extend any leases, licenses or similar interests covering any lands within the Deer Canyon Conservation Bank without the prior written consent of the City of San Diego, Planning Department/MSCP and Park and Recreation Department/Open Space.

8.1.3 *Construction or Development.* Property Owner shall not construct any structure or engage in any development activities on or uses of the Conservation Bank Lands that degrade biological value, or allow any other party to do so without the prior written consent of the City.

8.1.4. *Maintain Biological Value.* Property Owner shall maintain the biological value of lands to insure the suitability as habitat for wildlife and plant species.

ARTICLE IX. DEFAULT, BREACH, AND TERMINATION

9.1 **Default.** The failure of the Property Owner or the Managing Agency to fulfill or adequately perform any obligation or duty under the Conservation Easement or this Agreement shall be deemed a breach of this Agreement. In addition, the breach of one or more of the covenants under the Conservation Easement or this Agreement shall also be deemed a breach of this Agreement.

9.1.1 *Notice of Default.* The City shall provide a Notice of Default to the Property Owner and the Managing Agency, explaining the nature of the default and the actions that must be taken to remedy the default.

9.1.1.1 Failure to Provide Notice of Default. The failure of the City to provide a Notice of Default shall not be a waiver of the obligations of the Property Owner or the Managing Agency, nor shall it relieve them from liability therefrom. The Notice of Default shall only be used to establish the beginning of the timeframe under which the Property Owner and Managing Agency have the right to cure and the date on which the City may begin the suspension of Conservation Credit sales.

9.1.2 *Remedies.* In addition to those remedies available by law or equity, the City shall have the following remedies:

9.1.2.1 Right to Suspend. The City shall have the right to suspend the sale of Conservation Credits if financing, management, and/or reporting are not undertaken in a manner consistent with the Management Plan and this Agreement. The suspension of the sale of

Conservation Credits shall begin on the date the Notice of Default is mailed or faxed and continue until such time as all deficiencies have been remedied.

9.1.2.2 Terminate for Default. If the Property Owner or the Managing Agency fails to undertake all reasonable efforts to the satisfaction of the City, within thirty (30) Calendar Days of receiving written notice from the City specifying the nature of the Default, in order to ensure that the Default will be fully and completely remedied within a reasonable period of time thereafter, the City may immediately cancel and/or terminate this Agreement, and terminate each and every right of the Property Owner, and any person claiming any rights by or through the Property Owner under this Agreement. The rights and remedies of the City enumerated in this Section are cumulative and shall not limit, waive, or deny any of the City's rights under any other provision of this Agreement. Nor does this section otherwise waive or deny any right or remedy, at law or in equity, existing as of the date of this Agreement or hereinafter enacted or established, that may be available to the City against the Property Owner.

9.1.2.2.1 In the event of a Default, to the extent that any Conservation Credits have been sold, transferred, applied, or used, the City may require the Property Owner to transfer the equivalent amount of Conservation Bank Land to the City or Trust, in the manner required and according to the conditions for Earlier Transfer in section 7.1.1, as if the Default were an Earlier Transfer of title under this Agreement. This remedy shall not be exclusive of other remedies, nor shall it otherwise waive or deny any right or remedy, at law or in equity, existing as of the date of this Agreement or hereinafter enacted or established, that may be available to the City against the Property Owner or the Managing Agency.

9.1.3 *Delay*. If a delay in the performance of work required under this Agreement is caused by unforeseen events beyond the control of the Parties, such delay may entitle the Property Owner or the Managing Agency to a reasonable extension of time. Any such extension of time must be approved in writing by the City. The following conditions may justify such a delay: war; changes in law or government regulation; labor disputes; strikes; fires, floods, adverse weather or other similar condition of the elements necessitating cessation of the Managing Agency's work; inability to obtain materials, equipment, or labor; required additional Professional Services; or other specific reasons agreed to between the City and the Property Owner or Managing Agency; provided, however, that: (i) this provision shall not apply to, and the Property Owner or the Managing Agency shall not be entitled to an extension of time, additional costs, or expenses for, a delay caused by the acts or omissions of the Property Owner or Managing Agency, its consultants, contractors, employees, or other agents.

9.2 **Right to Terminate.** In addition to the right to Terminate for Default under section 9.1.2.2, the City shall have the Right to Terminate this Agreement based on the following:

9.2.1 *Bankruptcy or Assignment for the Benefit of Creditors*. If the Property Owner or the Managing Agency files a voluntary petition in bankruptcy, is adjudicated bankrupt, or makes a general assignment for the benefit of creditors, the City may at its option and without further notice to or demand upon the Property Owner or Managing Agency, immediately cancel and/or terminate this Agreement, and terminate each and every right of the Property Owner and Managing Agency under this Agreement, and any person claiming any rights by or through the Property Owner or Managing Agency. The rights and remedies of the City enumerated in this Section are cumulative and shall not limit, waive, or deny any of the City's rights under any other provision of this Agreement. Nor does this section otherwise waive or deny any right or remedy, at law or in equity, existing as of the date of this Agreement or hereinafter enacted or established, that may be available to the City against the Property Owner or the Managing Agency.

9.2.2 *Transfer of Conservation Bank Lands*.

9.2.2.1 Prior to the Establishment of the Conservation Bank. The Property Owner shall have the right to convey or transfer the Conservation Bank Lands prior to establishment of the Conservation Bank in accordance with Article III. In the event that such transfer is made without the prior written concurrence of the City, such transfer shall result in the termination of this Agreement.

9.2.2.2 After the Establishment of the Conservation Bank. Once the Conservation Bank has been established, no conveyance or assignment of any portion of, or interest in, the Conservation Bank Lands shall be made absent the following:

9.2.2.2.1 Prior written approval of the City.

9.2.2.2.2 The successor or assignee assumes all of the management and other obligations under this Agreement and the Conservation Easement.

9.2.2.2.3 The successor or assignee has sufficient financial capacity to carry out any unfunded obligations under this Agreement.

9.2.2.2.3.1 As a condition to granting approval, the City may require, in its sole discretion, that the transferee (i) deposit a letter of credit to cover the estimated costs of the Management and Monitoring obligations remaining as of the date of such transfer; or (ii) deposit other substantially equivalent security for such transferee's obligations to deliver Management Deposits and Minimum Balances as required under Article V.

9.3 **Natural Termination.** This Agreement shall terminate upon the filing of the final annual report to the City described in section 6.1.2 (filed after all Credits have been applied to development projects), provided that (i) the Management and Monitoring obligations, including funding requirements, under the Management and Monitoring Plan have been completed in accordance with this Agreement, (ii) the Conservation Lands have been transferred according to section 7.1, (iii) the Conservation Easement continues in perpetuity as a covenant running with the land, and (iv) the balance of the Management Fund has been transferred in accordance with section 7.2.

ARTICLE X. NOTICES

10.1 **Writing.** Any demand upon or notice required or permitted to be given by one Party to the other Party shall be in writing.

10.2 **Effective Date.** Except as otherwise provided by law, any demand upon or notice required or permitted to be given by one Party to the other Party shall be effective: (i) on personal delivery, (ii) on the second business day after mailing by certified or registered U.S. Mail, return receipt requested, (iii) on the succeeding business day after mailing by Express Mail or after deposit with a private delivery service of general use (e.g., Federal Express) postage or fee prepaid as appropriate, or (iv) upon successful transmission of facsimile.

10.3 **Recipients.** All demands or notices required or permitted to be given shall be sent to all of the following:

10.3.1 City Agency:
City of San Diego
Planning Department, MS 5A
202 C Street
San Diego, CA 92101

10.3.2 Property Owner:
Mr. James Carter
2516 La Costa Avenue
Rancho La Costa, CA 92009

10.3.3 Managing Agency:
HDR
8690 Balboa Avenue
Suite 200
San Diego, CA 92123

10.3.4 Fund Manager:
The San Diego Foundation
1420 Kettner Blvd., Suite 500
San Diego, CA 92101-9693

10.4 Copies of Notices. Copies of all Notices shall be provided to the following:

CDFG:
California Department of Fish and Game
Legal Advisor's Office
1416 9th Street
Sacramento, California 94236
Fax No. (916) 654-3805

California Department of Fish and Game
NCCP Office
4949 Viewridge Ave
San Diego, California 92123

USFWS:
United States Fish and Wildlife Service
911 N.W. 11th Ave.
Portland, Oregon
Attn: Regional Director
Fax No. (503) 872-2716

United States Fish and Wildlife Service
6010 Hidden Valley Road
Carlsbad, California 92008
Attn: Field Supervisor
Fax No. (760) 431-9618

10.4 **Change of Address(es)**. Notice of change of address shall be given in the manner set forth in this Article.

10.5 **Facsimiles.** The Parties agree to accept facsimile transmitted signed documents and agree to rely upon such documents as if they bore original signatures. Each Party agrees to provide to the other Parties, within seventy-two (72) hours after transmission, such documents bearing the original signatures.

ARTICLE XI. JURISDICTION

11.1 **No Limitation of Jurisdiction of Municipality, County, or Agencies.** Nothing contained in this Agreement shall be deemed to limit the City, other local jurisdictions or the Wildlife Agencies' respective jurisdiction over impacts and applicable mitigation of endangered, threatened, and sensitive species and biological resources, or to restrict the ability of CDFG and USFWS to fully discharge their responsibilities under applicable law, including, without limitation, CESA and ESA, respectively; provided, however, that subject to Section 2, the City will not object to the use of Conservation Credits for mitigation on a one acre-for-one credit basis.

ARTICLE XII. MISCELLANEOUS PROVISIONS

12.1 **Headings.** All article headings are for convenience only and shall not affect the interpretation of this Agreement.

12.2 **Gender & Number.** Whenever the context requires, the use herein of (i) the neuter gender includes the masculine and the feminine genders and (ii) the singular number includes the plural number.

12.3 **Reference to Paragraphs.** Each reference in this Agreement to a section refers, unless otherwise stated, to a section this Agreement.

12.4 **Incorporation of Recitals.** All recitals herein are incorporated into this Agreement and are made a part hereof.

12.5 **Covenants and Conditions.** All provisions of this Agreement expressed as either covenants or conditions on the part of the City or the Consultant, shall be deemed to be both covenants and conditions.

12.6 **Integration.** This Agreement and the Exhibits and references incorporated into this Agreement fully express all understandings of the Parties concerning the matters covered in this Agreement. No change, alteration, or modification of the terms or conditions of this Agreement, and no verbal understanding of the Parties, their officers, agents, or employees shall be valid unless made in the form of a written change agreed to in writing by both Parties or an amendment to this Agreement agreed to by both Parties. All prior negotiations and agreements are merged into this Agreement.

12.7 **Severability.** The unenforceability, invalidity, or illegality of any provision of this Agreement shall not render any other provision of this Agreement unenforceable, invalid, or illegal.

12.8 **Drafting Ambiguities.** The Parties agree that they are aware that they have the right to be advised by counsel with respect to the negotiations, terms and conditions of this Agreement, and the decision of whether or not to seek advice of counsel with respect to this Agreement is a decision which is the sole responsibility of each Party. This Agreement shall not be construed in favor of or against either Party by reason of the extent to which each Party participated in the drafting of the Agreement.

12.9 **Conflicts Between Terms.** If an apparent conflict or inconsistency exists between the main body of this Agreement and the Exhibits, the main body of this Agreement shall control. If a conflict exists between an applicable federal, state, or local law, rule, regulation, order, or code and this Agreement, the law, rule, regulation, order, or code shall control. Varying degrees of stringency among the main body of this Agreement, the Exhibits, and laws, rules, regulations, orders, or codes are not deemed conflicts, and the most stringent requirement shall control. Each Party shall notify the other immediately upon the identification of any apparent conflict or inconsistency concerning this Agreement.

12.10 **Prompt Performance.** Time is of the essence of each covenant and condition set forth in this Agreement.

12.11 **Good Faith Performance.** The parties shall cooperate with each other in good faith, and assist each other in the performance of the provisions of this Contract, which shall include the following:

12.11.1 Confirming to prospective Credit Purchasers that Conservation Credits are available to offset biological mitigation as provided in Sections 2 and 4 above.

12.11.2 Acknowledging the delivery of the Interim Management Funds Endowment Deposits when actually delivered in accordance with Section 5 above.

12.11.3 Acknowledging, to the extent applicable, that this Agreement remains in full force and effect.

12.11.4 Acknowledging that the Deer Canyon Conservation Bank is a conservation bank "approved" by the City and prepared consistent with the State's Guidelines.

12.11.5 Agreement by the Parties to meet annually, if requested, following the delivery of the annual report provided by the Managing Agency to the City to discuss and coordinate any and all activities related to the Funding, Management, and Monitoring of the Conservation Bank Lands.

12.12 **Further Assurances.** City and Property Owner each agree to execute and deliver such additional documents as may be required to effectuate the purposes of this Agreement.

12.13 **Exhibits.** Each of the following Exhibits is attached hereto and incorporated herein by this reference:

Exhibit A - General Location Map and Legal Decryption of the Property
Exhibit B - Assessor's Parcel map of Property
Exhibit C - Multi-Habitat Planning Area Map
Exhibit D - Habitat Value Map
Exhibit E - Biological Resources Report and Credit Area
Exhibit F - Management and Monitoring Plan
Exhibit G-1 - Conservation Easement
Exhibit G-2 - Grant Deed
Exhibit H - Title Report
Exhibit I-1 - Fund Management Agreement
Exhibit I-2 - Managing Agency Agreement
Exhibit J - Environmental Credit Sales
Exhibit K - Phase I Environmental Site Assessment

12.14 **Compliance with Controlling Law.** The Property Owner and Managing Agency shall comply with all laws, ordinances, regulations, and policies of the federal, state, and local governments applicable to this Agreement, This Agreement shall be governed by and construed in accordance with the City of San Diego Incidental Take Permit dated July 17, 1997 and other associated documents approved pursuant to the MSCP, internal laws of the State of California, the Federal Endangered Species Act and other applicable federal law.

12.15 **Jurisdiction, Venue, and Attorney Fees.** The venue for any suit or proceeding concerning this Agreement, the interpretation or application of any of its terms, or any related disputes shall be in the County of San Diego, State of California. The prevailing Party in any such suit or proceeding shall be entitled to a reasonable award of attorney fees in addition to any other award made in such suit or proceeding.

12.16 **Municipal Powers.** Nothing contained in this Agreement shall be construed as a limitation upon the powers of the City as a chartered city of the State of California.

12.17 **Third Party Relationships.** Nothing in this Agreement shall create a contractual relationship between City and any third party; however, the Parties understand and agree that City, to the extent permitted by law, is an intended third party beneficiary of all Property Owner's contracts, purchase orders and other contracts between Property Owner and third party services. Property Owner shall incorporate this provision into its contracts, supply agreements and purchase orders.

12.18 **Non-Assignment.** The Property Owner shall not assign the obligations under this Agreement, whether by express assignment or by sale of the company, nor any monies due or to become due, without the City's prior written approval. Any assignment in violation of this paragraph shall constitute a Default and is grounds for immediate termination of this Agreement, at the sole discretion of the City. In no event shall any putative assignment create a contractual relationship between the City and any putative assignee.

12.19 **Successors in Interest.** This Agreement and all rights and obligations created by this Agreement shall be in force and effect whether or not any Parties to the Agreement have been succeeded by another entity, and all rights and obligations created by this Agreement shall be vested and binding on any Party's successor in interest.

12.20 **Independent Contractors.** The Property Owner, any consultants, contractors, subcontractors, and any other individuals employed by the Property Owner shall be independent contractors and not agents of the City. Any provisions of this Agreement that may appear to give the City any right to direct the Property Owner concerning the details of performing the Services under this Agreement, or to exercise any control over such performance, shall mean only that the Property Owner shall follow the direction of the City concerning the end results of the performance.

12.21 **Approval.** Where the consent or approval of a party is required or necessary under this Agreement, the consent or approval shall not be unreasonably withheld.

12.22 **No Waiver.** No failure of the City to insist upon the strict performance of any covenant, term or condition of this Agreement, nor any failure to exercise any right or remedy consequent upon a breach of any covenant, term, or condition of this Agreement, shall constitute a waiver of any such breach of such covenant, term or condition. No waiver of any breach shall affect or alter this Agreement, and each and every covenant, condition, and term hereof shall continue in full force and effect to any existing or subsequent breach.

12.23 **Signing Authority.** The representative for each Party signing on behalf of a corporation, partnership, joint venture or governmental entity hereby declares that authority has been obtained to sign on behalf of the corporation, partnership, joint venture, or entity and agrees to hold the other Party or Parties hereto harmless if it is later determined that such authority does not exist.

12.24 **Additional Agreements.** Property Owner shall enter into agreements with the Fund Manager and the Managing Agency. Such agreements shall incorporate the obligations of the Fund Manager and Managing Agency identified in this Agreement and obligate the Fund Manager and Managing Agency to perform the obligations so identified.

[THE REMAINDER OF THIS PAGE HAS BEEN LEFT BLANK INTENTIONALLY]

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IN WITNESS HEREOF, the Parties hereto have executed and delivered this Conservation Bank Agreement as of the date first forth below.

This Agreement is dated September 21, 2005 and this date shall constitute the effective date of this Agreement.

PROPERTY OWNER:

By: J. Slater

Date: 9/13/05

Title: Manager

CITY OF SAN DIEGO:

By: G. Gail Goldberg

Date: 9/19/05

Title: Planning Director

Approved as to form and legality:

Dated 9/21/05

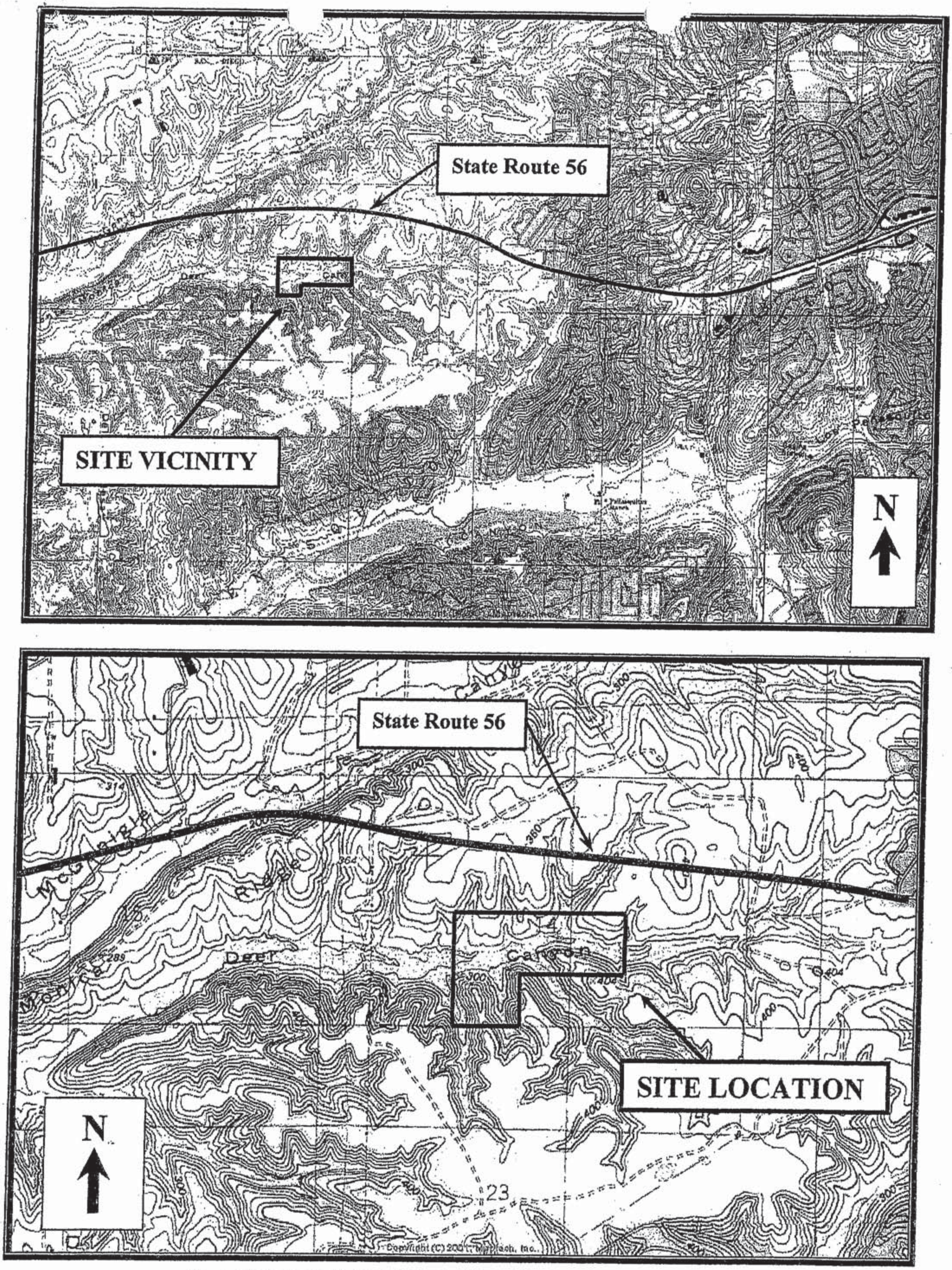
Michael J. Aguirre, City Attorney

By:

Deputy City Attorney

EXHIBIT A

General Location Map and Legal Description of Property



60-ACRE DEL MAR MESA MITIGATION SITE
Site Location and Vicinity Map

ATTACHMENT 6

ENVIRONMENTAL CREDIT SALES AT DEER CANYON CONSERVATION BANK

Total Bank Acreage - 60.0 acres

RESOURCES

CREDIT ALLOCATION BY TIER TYPE Presence of CA Adolphia and San Diego Barrel Cactus	TIER I So.Marit Chap.	TIER II Coastal Sage	TIER III Chamise Chap	California Adolphia 745 Plants		Barrel Cactus 132 plant	CREDIT TOTAL
TOTAL BY TIER TYPE	35.97	0.2	23.83	745		132	60

CLOSED SALES AND COMMITTED RESOURCES

	CLOSED SALE STATUS	BUYER / PROJECT NAME	TIER I	TIER II	TIER III	CA Adolphia 745 Plants		Barrel Cactus	CREDIT TOTAL	PROJECT JURISDICTION
1	Closed 9/20/05	Barry O'Brien (TPM 20477)			0.8	20			0.8	COUNTY OF SD
2	Closed 9/20/05	Sher Lot Split (TPM 2068)	0.73						0.73	COUNTY OF SD
3	Closed 9/20/05	Lawrence (L-14309)	0.10						0.10	COUNTY OF SD
4	Closed 9/20/05	Lux Art Institute	1.11						1.11	ENCINITAS
5	Closed 6/6/06	Tom Clotfelter (TM 5406RLP2)	3.30						3.30	COUNTY OF SD
6	Closed 7/14/06	Village Comm. Church P72-108WP	0.27						0.27	COUNTY OF SD
7	Closed 9/1/06	Carmel Valley Catholic Church	0.50		4.39				4.89	CITY OF SD
8	Closed 9/25/06	Leonard Bloom (Artesian Trails)			3	76			3	COUNTY OF SD
9	Closed 1/25/07	Belmont Trust (VAC 05-007)	3.22						3.22	COUNTY OF SD
10	Closed 4/4/07	Singh Project (L-14748)		0.2	2.8	520			3	COUNTY OF SD
11	Closed 4/9/08	Lin (VAC02-005)	3.30					1	3.30	COUNTY OF SD
12	Closed 10/7/09	Levie (TPM 21065; ER 07-08-005)			0.1	4			0.1	COUNTY OF SD
13	Closed 12/1/09	Carmel View (#72282)	3.54		1.65				5.19	CITY OF SD
14	Closed 12/30/09	Brett Ames (MND 99387)	0.39		0.39				0.78	CITY OF SD
15	Closed 6/1/07	Bridges at Pointsettia	2.50						2.50	CARLSBAD
16	Closed 8/30/10	Rhodes Crossing	14.6		10.7	125		131	25.3	CITY OF SD
17	Closed 6/14/12	La Jolla Centre III (# 176134)	2.41						2.41	
		Total Closed Escrow	35.97	0.2	23.83	745		132	60	
		Remaining Available CREDITS	0.00	0	0	0		0	0	

APPENDIX T

Development Plans

Gensler
Architect
225 Broadway
Suite 100
San Diego CA 92101
Telephone: 619.557.2500
Facsimile: 619.557.2520

THE PRESERVE AT TORREY HIGHLANDS

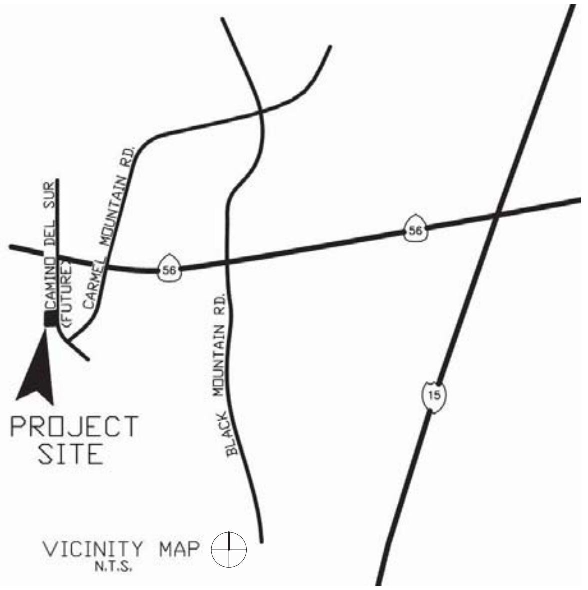
THE PRESERVE AT TORREY HIGHLANDS

SEQ STATE ROUTE 56 & CAMINO DEL SUR
SAN DIEGO, CA 92129

APN # 306-050-16, 306-050-18, 306-050-19, 306-050-28

11/20/2017

SDP SUBMITTAL #5



I HEREBY ACKNOWLEDGE AND CERTIFY THAT:

THE PROPOSED PROJECT EXCEEDS THE CITY'S SIGNIFICANCE DETERMINATION THRESHOLDS AND A SPECIFIC PALEONTOLOGICAL RESOURCES MITIGATION, MONITORING AND REPORTING PROGRAM MAY BE REQUIRED PRIOR TO A FORMAL ENVIRONMENTAL DOCUMENT DETERMINATION BEING MADE.

SIGNATURE ____________________ DATE 11/20/17

PALEONTOLOGICAL MONITORING ACKNOWLEDGEMENT:

CODE ANALYSIS (BASED ON 2013 C.B.C.)

	OFFICE BLDG 1	OFFICE BLDGS 2 & 3	PKG STRUCT
USE	COMMERCIAL OFFICE	COMMERCIAL OFFICE	PARKING
OCCUPANCY	B	B	S-2
CONSTRUCTION TYPE	TYPE I - B	TYPE III - A	TYPE I - B
SPRINKLERS	YES	YES	YES
ALLOWABLE AREA			
BASE AREA (TABLE 503)	UL	28,500	79,000
FRONTAGE INCREASE (PER 506.2) **		0	0
SPRINKLER INCREASE (PER 506.3)		57000	158000
ALLOWABLE AREA PER FLOOR		85,500	237,000
LARGEST PROPOSED AREA PER FLOOR	30,000	30,000	59,800
NUMBER OF STORIES (TABLE 503)	11	5	11
SPRINKLER STORY INCREASE (PER504.2)	1	1	1
TOTAL ALLOWABLE STORIES	12	6	12
PROPOSED STORIES	6	4 TO 5	7.4
TOTAL BLDG AREA MULTIPLIER (PER 506.4)		3	3
TOTAL AREA ALLOWABLE	UL	256,500	711,000
LARGEST PROPOSED AREA	180,000	150,000	439,690
BUILDING HEIGHT			
BASE HEIGHT (TABLE 503)	160'-0"	65'-0"	160'-0"
SPRINKLER INCREASE (PER 504.2)	20'-0"	20'-0"	20'-0"
TOTAL ALLOWABLE HEIGHT	180'-0"	85'-0"	180'-0"
MAXIMUM PROPOSED HEIGHT	99'-0"	84'-6"	73'-0"
BUILDING ELEMENTS - FIRE RATING (HOURS) (PER TABLE 601)			
PRIMARY STRUCTURAL FRAME	2	1	2
BEARING WALLS EXTERIOR	2	2	2
BEARING WALLS INTERIOR	2	1	2
NON-BEARING WALLS EXTERIOR	PER DISTANCE TO P.L.	PER DISTANCE TO P.L.	PER DISTANCE TO P.L.
NON-BEARING WALLS INTERIOR	0	0	0
FLOOR CONSTRUCTION	2	1	2
ROOF CONSTRUCTION	1	1	1
SHAFT ENCLOSURES ***	1 TO 2	1 TO 2	1 TO 2
INTERIOR EXIT STAIRWAY AND RAMPS ****	1 TO 2	1 TO 2	1 TO 2
EXIT PASSAGEWAY *****	2	2	2

** FRONTAGE INCREASE NOT I FRONTAGE INCREASE NOT NEEDED

*** 2-HR WHEN CONNECTING 4 2-HR WHEN CONNECTING 4 OR MORE STORIES (INCLUD

**** 2-HR WHEN CONNECTING 4 2-HR WHEN CONNECTING 4 OR MORE STORIES PER SEC.

***** ENTIRE EXIT PASSAGEWAY S ENTIRE EXIT PASSAGEWAY SHALL MAINTAIN INTERIOR E

TRAVEL DISTANCES

DEAD END CORRIDOR	50'-0"	PER SEC. 1018.4 EXCEPTION	PER SEC. 1018.4 EXCEPTION 2
EXIT ACCESS TRAVEL DISTANCE	300'-C	PER TABLE 1016.2	PER TABLE 1016.2
CORRIDOR FIRE RESISTANCE RATING	0	PER TABLE 1018.1 (WITH AP	PER TABLE 1018.1 (WITH APPROVED SPRINKLER SYSTEM)

BUILDING CODE ANALYSIS

SCALE: 1" = 1'-0"

ON BEHALF OF OUR CLIENT, THE PRESERVE AT TORREY HIGHLANDS, LLC, PLEASE ACCEPT THIS LETTER AS OUR DESCRIPTION OF HOW THE SUBJECT PROJECT ANTICIPATES COMPLYING WITH THE AFFORDABLE/IN-FILL HOUSING & SUSTAINABLE BUILDINGS EXPEDITE PROGRAM IN ACCORDANCE WITH INFO BULLETIN NO. 538, AND THE CITY OF SAN DIEGO GENERAL PLAN CONSERVATION ELEMENT (CE) DATED MARCH 2008:

1. PER CE-A.2: THE PROJECT INTENDS TO REDUCE FUEL EMISSION LEVELS BY ENCOURAGING ALTERNATIVE MODES OF TRANSPORTATION AND INCREASING FUEL EFFICIENCY BY PROVIDING SECURE BICYCLE STORAGE AND SHOWER FACILITY FOR EMPLOYEES WHO BIKE TO WORK, AND EV CHARGING STATIONS TO ENCOURAGE THE USE OF ELECTRIC VEHICLES.
2. PER CE-A.2: THE PROJECT INTENDS TO REDUCE THE URBAN HEAT ISLAND EFFECT THROUGH SUSTAINABLE DESIGN AND BUILDING PRACTICES, INCLUDING REFLECTIVE COOL ROOFING, SHADE STRUCTURES OVER PARKING STALLS, AND THE PLANTING OF TREES (CONSISTENT WITH HABITAT AND WATER CONSERVATION POLICIES) FOR THEIR MANY ENVIRONMENTAL BENEFITS, INCLUDING NATURAL CARBON SEQUESTRATION.
3. PER CE-A.2: THE PROJECT WILL REDUCE WASTE BY IMPROVING MANAGEMENT AND RECYCLING PROGRAMS, BOTH DURING AND AFTER CONSTRUCTION.
4. PER CE-A.5: THE PROJECT WILL EMPLOY SUSTAINABLE OR "GREEN" BUILDING TECHNIQUES FOR THE CONSTRUCTION AND OPERATION OF THE BUILDINGS.
5. PER CE-A.7: THE PROJECT WILL CONSTRUCT AND OPERATE BUILDINGS USING MATERIALS, METHODS, AND MECHANICAL AND ELECTRICAL SYSTEMS THAT ENSURE A HEALTHFUL INDOOR AIR QUALITY. AVOID CONTAMINATION BY CARCINOGENS, VOLATILE ORGANIC COMPOUNDS, FUNGI, MOLDS, BACTERIA, AND OTHER KNOWN TOXINS.
6. PER CE-A.9: THE PROJECT WILL USE MATERIALS THAT HAVE RECYCLED CONTENT, OR USE MATERIALS THAT ARE DERIVED FROM SUSTAINABLE OR RAPIDLY RENEWABLE SOURCES TO THE EXTENT POSSIBLE.
7. PER CE-A.10: THE PROJECT WILL INCLUDE FEATURES IN BUILDINGS TO FACILITATE RECYCLING OF WASTE GENERATED BY BUILDING OCCUPANTS AND ASSOCIATED REFUSE STORAGE AREAS.
8. PER CE-A.11: THE PROJECT WILL IMPLEMENT SUSTAINABLE LANDSCAPE DESIGN AND MAINTENANCE.
9. PER CE-A.12: THE PROJECT INTENDS TO REDUCE THE SAN DIEGO URBAN HEAT ISLAND.
10. PER CE-B.1: THE PROJECT INTENDS TO PROTECT AND CONSERVE OPEN SPACES TO THE EXTENT POSSIBLE.
11. PER CE-B.2: THE PROJECT INTENDS TO APPLY THE APPROPRIATE ZONING AND ENVIRONMENTALLY SENSITIVE LANDS (ESL) REGULATIONS TO LIMIT DEVELOPMENT OF FLOODPLAINS, SENSITIVE BIOLOGICAL AREAS INCLUDING WETLANDS, STEEP HILLSIDES, AND CANYONS.
12. PER CE-B.3: THE PROJECT DESIGN WILL USE NATURAL LANDFORMS AND FEATURES AS INTEGRATING ELEMENTS IN PROJECT DESIGN TO COMPLEMENT AND ACCENTUATE THE CITY'S FORM.
13. PER CE-B.4: THE PROJECT WILL LIMIT AND CONTROL RUNOFF, SEDIMENTATION, AND EROSION BOTH DURING AND AFTER CONSTRUCTION ACTIVITY.
14. PER CE-B.5: THE PROJECT WILL MAXIMIZE THE INCORPORATION OF TRAILS AND GREENWAYS LINKING LOCAL AND REGIONAL OPEN SPACE AND RECREATION AREAS INTO THE PLANNING AND DEVELOPMENT REVIEW PROCESSES.
15. PER CE-B.6: THE PROJECT WILL PROVIDE AN APPROPRIATE DEFENSIBLE SPACE BETWEEN OPEN SPACE AND URBAN AREAS THROUGH THE MANAGEMENT OF BRUSH, THE USE OF TRANSITIONAL LANDSCAPING, AND THE DESIGN OF STRUCTURES. THE OWNER WILL CONTINUE TO IMPLEMENT A BRUSH MANAGEMENT SYSTEM.
16. PER CE-E.2: THE PROJECT WILL APPLY WATER QUALITY PROTECTION MEASURES TO LAND DEVELOPMENT PROJECTS EARLY IN THE PROCESS-DURING PROJECT DESIGN, PERMITTING, CONSTRUCTION, AND OPERATIONS-IN ORDER TO MINIMIZE THE QUANTITY OF RUNOFF GENERATED ON-SITE, THE DISRUPTION OF NATURAL WATER FLOWS AND THE CONTAMINATION OF STORM WATER RUNOFF.
17. PER CE-E.3: THE PROJECT WILL REQUIRE CONTRACTORS TO COMPLY WITH ACCEPTED STORM WATER POLLUTION PREVENTION PLANNING PRACTICES FOR ALL PROJECTS.

SUSTAINABILITY SUMMARY

***NOTE:** SEE SEPERATE SUSTAINABILITY LETTER FOR FURTHER DETAILS.

OWNER / PROPERTY MGR.

CISTERRA DEVELOPMENT
3580 CARMEL MOUNTAIN ROAD
SUITE 460
SAN DIEGO, CA 92130
PHONE: 619-615-0200
CONTACT: JASON WOOD (PROJECT PRINCIPAL)

ARCHITECT

GENSLER
225 BROADWAY
SUITE 1600
SAN DIEGO, CA 92101
PHONE: 619-557-2500
FAX: 619-557-2520
CONTACT: DARREL FULLBRIGHT

CIVIL

LEPPERT ENGINEERING CORPORATION
5190 GOVERNOR DRIVE
SUITE 205
SAN DIEGO, CA 92122
PHONE: 858-597-2001
FAX: 858-597-2009
CONTACT: JOHN LEPPERT

LANDSCAPE

GROUNDLEVEL LANDSCAPE ARCHITECTURE
2605 STATE STREET
SUITE B
SAN DIEGO, CA 92103
PHONE: 619-325-1995
CONTACT: SCOTT L SANDEL, ASLA, PRINCIPAL

ENVIRONMENTAL

DUDEK
605 THIRD STREET
ENCINITAS, CA 92024
PHONE: 760-479-4858
CONTACT: ASHA R. BLEIER, AICP, LEED AP BD+C

PROJECT TEAM

SCALE: 1" = 1'-0"

DRAWING INDEX

#	Sheet Number	Sheet Name
1	G00.00	COVER
2	G00.01	PROJECT INFO / INDEX
3	C-1	GRADING & DRAINAGE
4	C-2	TOPO & SLOPE ANALYSIS
5	L1.1	LANDSCAPE PLAN
6	L1.2	LANDSCAPE LEGEND & NOTES
7	L1.3	IRRIGATION PLAN AND CALCULATIONS
8	L1.4	BRUSH MANAGEMENT PLAN
9	L1.5	BRUSH MANAGEMENT NOTES
10	L1.6	LANDSCAPE DIAGRAM AND CALCULATIONS
11	A00.01	EXTERIOR PERSPECTIVE VIEWS
12	A00.50	SITE PLAN
13	A00.51	FIRE ACCESS PLAN
14	A00.52	SUBTERRANEAN PARKING PLAN
15	A00.53	TRAIL CONNECTION PLAN
16	A02.01	OFFICE BLDG 1 - FLOOR PLANS
17	A02.02	OFFICE BLDG 1 - FLOOR PLANS
18	A02.03	OFFICE BLDG 1 - FLOOR PLANS
19	A02.04	OFFICE BLDG 1 - FLOOR PLANS & ROOF PLAN
20	A02.05	OFFICE BLDG 2 - FLOOR PLANS
21	A02.06	OFFICE BLDG 2 - FLOOR PLANS
22	A02.07	OFFICE BLDG 2 - FLOOR PLANS
23	A02.08	OFFICE BLDG 2 - ROOF PLAN
24	A02.09	OFFICE BLDG 3 - FLOOR PLANS
25	A02.10	OFFICE BLDG 3 - FLOOR PLANS
26	A02.11	OFFICE BLDG 3 - FLOOR PLANS
27	A02.12	OFFICE BLDG 3 - ROOF PLAN
28	A02.13	CAFE - FLOOR PLANS & ROOF PLAN
29	A02.14	PARKING STRUCTURE - FLOOR PLANS
30	A02.15	PARKING STRUCTURE - FLOOR PLANS
31	A02.16	PARKING STRUCTURE - FLOOR PLANS
32	A02.17	PARKING STRUCTURE - FLOOR & ROOF PLAN
33	A09.01	OFFICE BLDG 1 - EXTERIOR ELEVATIONS
34	A09.02	OFFICE BLDG 1 - EXTERIOR ELEVATIONS
35	A09.03	OFFICE BLDG 2 - EXTERIOR ELEVATIONS
36	A09.04	OFFICE BLDG 2 - EXTERIOR ELEVATIONS
37	A09.05	OFFICE BLDG 3 - EXTERIOR ELEVATIONS
38	A09.06	OFFICE BLDG 3 - EXTERIOR ELEVATIONS
39	A09.07	CAFE - EXTERIOR ELEVATIONS
40	A09.08	PARKING STRUCTURE - EXTERIOR ELEVATIONS
41	A09.09	PARKING STRUCTURE - EXTERIOR ELEVATIONS
42	A09.10	PARKING STRUCTURE - EXTERIOR ELEVATIONS
43	A09.11	SITE SECTIONS
43		

DRAWING INDEX

1. PROCESS (5) COMMUNITY PLAN AMENDMENT (CPA)
2. PROCESS (5) REZONE
3. PROCESS (5) SITE DEVELOPMENT PERMIT (SDP)
4. PROCESS (3) PLANNED DEVELOPMENT PERMIT (PDP)
5. DETERMINATION FROM THE SDCR AIRPORT AUTHORITY & MCAS MIRAMAR

PERMIT & DISCRETIONARY ACTION LIST

SCOPE OF WORK

CONSTRUCT THREE NEW COMMERCIAL OFFICE BUILDINGS (4 STORY, 5 STORY & 6 STORY) WITH ONE LEVEL SUBTERRANEAN PARKING, ONE AMENITY BUILDING (1 STORY) AND ONE ABOVE GRADE PARKING STRUCTURE (7 LEVELS UP / 1 LEVELS DOWN). PERMIT ALSO INCLUDES SITE IMPROVEMENTS INCLUDING SURFACE PARKING, DRIVEWAYS, WALKWAYS, LANDSCAPING, GRADING, AND 1,093 LINEAR FEET OF RETAINING WALL. NO EXISTING STRUCTURES OR SITE IMPROVEMENTS EXIST ON THE SITE.

DEVELOPMENT SUMMARY

OVERALL SITE	11.10 ACRES
SITE WITHIN LIMIT OF WORK	10.33 ACRES
TOTAL OFFICE BLDG. 1	180,000 SF
TOTAL OFFICE BLDG. 2	120,000 SF
TOTAL OFFICE BLDG. 3	150,000 SF
TOTAL = 450,000 SF	
IP-3-1 MAXIMUM FAR: 2.0 *PARKING STRUCTURE IS EXCLUDED FROM FAR AS IT MEETS AT LEAST TWO OF THE FOLLOWING CRITERIA: 1. PER SEC 113.0234 (D)(3)(B)(I), THE PARKING STRUCTURE INCLUDES AT LEAST ONE SUBTERRANEAN FLOOR. 2. PER SEC 113.0234 (D)(3)(B)(IV), THE PARKING STRUCTURE IS AT LEAST 40 PERCENT OPEN ON AT LEAST TWO ELEVATIONS.	0.98 FAR

ACCESSORY SUMMARY

AMENITY CAFE BLDG.	3,850 SF
FITNESS CENTER	5,000 SF

ZONING SUMMARY

	ALLOWABLE	PROPOSED
TYPE I-B		
(N) OFFICE BLDG. 1	180'-0"	99'-0"
(N) PARKING STRUCTURE	180'-0"	75'-0"
TYPE III-A		
(N) OFFICE BLDG. 2	85'-0"	70'-0"
(N) OFFICE BLDG. 3	85'-0"	84'-6"

PROJECT ADDRESS:

SEQ STATE ROUTE 56 & CAMINO DEL SUR
SAN DIEGO, CA 92129

APN: 306-050-16, 306-050-18, 306-050-19, 306-050-28

LEGAL DESCRIPTION

THE PROPERTY CONSISTS OF FOUR CONTIGUOUS PARCELS: (1) THE NORTHWEST QUARTER OF THE SOUTHEAST QUARTER OF THE NORTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 14, TOWNSHIP 14 SOUTH; (2) THE NORTHEAST QUARTER OF THE SOUTHEAST QUARTER OF THE NORTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 14, TOWNSHIP 14 SOUTH; (3) THE SOUTHWEST QUARTER OF THE SOUTHEAST QUARTER OF THE NORTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 14, TOWNSHIP 14 SOUTH; AND (4) THE SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER OF THE NORTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 14, TOWNSHIP 14 SOUTH, ALL IN RANGE 3 WEST, SAN BERNARDINO BASE AND MERIDIAN, IN THE COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT THEREOF. ALL FOUR PARCELS ARE SHOWN ON RECORD OF SURVEY, NO. 15686.

ZONING CLASSIFICATION

IP-3-1
INDUSTRIAL PARK ZONE

SETBACKS

FRONT = 25'
STREET SIDE = N/A
SIDE = 15'
REAR = 25'

NOTE: PARKING SPACES MAY ENCROACH UP TO 5'-0" INTO STANDARD 25' SETBACK

APPLICABLE BUILDING CODES

2016 CALIFORNIA BUILDING CODE (CBC)
2016 CALIFORNIA ELECTRICAL CODE (CEC)
2016 CALIFORNIA MECHANICAL CODE (CMC)
2016 CALIFORNIA PLUMBING CODE (CPC)
2016 CALIFORNIA FIRE CODE (CFC)
2016 BUILDING ENERGY EFFICIENCY STANDARDS (TITLE 24)
NFPA 13 (FIRE SPRINKLERS)

THE PRESERVE AT TORREY HIGHLANDS

SEQ STATE ROUTE 56 & CAMINO DEL SUR
SAN DIEGO, CA 92129

APN# 306-050-16, 306-050-18, 306-050-19, 306-050-28

Gensler
225 Broadway
Suite 100
San Diego CA 92101
Tel: 619.557.2500
Fax: 619.557.2520

△ Issue	Date & Issue Description	By	Check
2015-08-31	SDP SUBMITTAL		
2015-11-18	SDP SUBMITTAL #2		
2016-02-29	SDP SUBMITTAL #3		
2017-03-15	SDP SUBMITTAL #4		
2017-11-20	SDP SUBMITTAL #5		

Seal/Signature

LICENSED ARCHITECT
JAMES K HEINLY
C 26830
REN. 9/30/19
STATE OF CALIFORNIA

Project Name
THE PRESERVE AT TORREY HIGHLANDS

Project Number
55.7511.000

Description
PROJECT INFO / INDEX

Scale
As indicated

G00.01
2 of 43

Ref. North

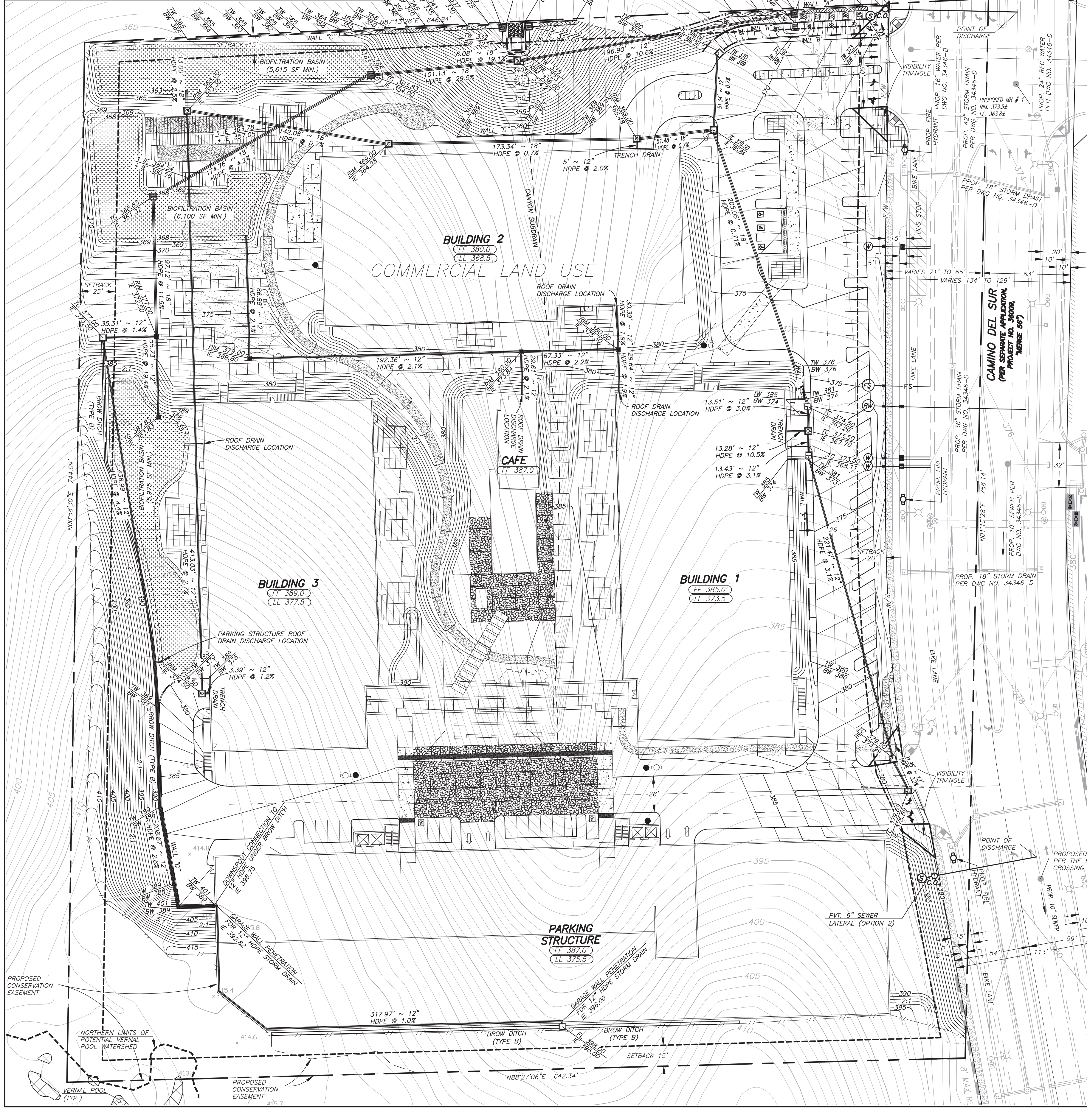
NO.	DATE	BY	DESCRIPTION	NO.	DATE	BY	DESCRIPTION
6	06/06/18	RL	CONSERVATION EASEMENT REVISION	12			
5	11/21/17	RL	RESUBMITTAL 4	11			
4	03/15/17	NK	RESUBMITTAL 3	10			
3	04/04/16	RL	RESUBMITTAL 2	9			
2	11/18/15	RL	RESUBMITTAL 1	8			
1	08/31/15	RL	ORIGINAL	7			

Leppert Engineering CORPORATION
5190 Governor Drive, Suite 205
San Diego, Ca. 92122–2848
Phone: (858) 597–2001 Fax: (858) 597–2009

APPROVED BY ENGINEER OF WORK
REGISTRATION R C E 26283
FILE CODE TH 06.07–13.15
DATE

PREPARATION AND REVISION LOG

JOHN D. LEPPERT C 26283



LEGEND:

PROPERTY LINE		▬ ▬ ▬
DAYLIGHT LINE		— // —
PROPOSED RETAINING WALL		▬▬
PROPOSED SEWER LATERAL		(S)
PROPOSED FIRE SERVICE		(FS)
PROPOSED RECLAIMED WATER SERVICE		(RW)
PROPOSED DUAL 2" WATER SERVICE		(W)
FINISHED FLOOR ELEVATION		FF 376.0
GARAGE LOWER LEVEL ELEVATION		LL 353.0
NATURAL DRAINAGE FLOW		←
FIRE HYDRANT		
STANDPIPE		●
EXISTING TOPO		340
PROPOSED TOPO		394
ENERGY DISSIPATER AND RIP RAP	SDD–105, SDD–104	▨
CATCH BASIN (TYPE I)	D–29	▤
CATCH BASIN (TYPE F)	SSD–119	☐
STORM DRAIN CLEANOUT (TYPE A)	D–9	▣
CURB INLET (TYPE B)	SDD–116	☐
BROOKS BOX WITH GRATE		▤
BROOKS BOX WITH LID		■
VERNAL POOL		▦
LIMIT OF POTENTIAL VERNAL POOL WATERSHED		– – – –

GRADING INFORMATION:

TOTAL CUT: 127,000C.Y. ±
TOTAL FILL: 78,000 C.Y. ±
TOTAL EXPORT: 49,000 C.Y. ±
MAX. HEIGHT OF CUT SLOPE: 25'± (VARIES 1.5:1 TO 2:1)
MAX. HEIGHT OF FILL SLOPE: 37' (2:1)
MAX. DEPTH OF FILL: 39'±
MAX. DEPTH OF CUT: 40'±
AREA OF DISTURBANCE: 9.44 AC. (NET)
PERCENT DISTURBANCE: 93% (BASED ON NET AREA)
RETAINING WALL INFORMATION:
- A. 174 L.F., 1' – 9' HIGH
- B. 104 L.F., 1' – 11' HIGH
- C. 318 L.F., 1' – 9' HIGH
- D. 89 L.F., 1' – 6' HIGH
- E. 37 L.F., 1' – 11' HIGH
- F. 158 L.F., 1' – 11' HIGH
- G. 215 L.F., 1' – 12' HIGH
- H. 125 L.F., 1' – 9' HIGH

GEOLOGIC HAZARD CATEGORY: 51 & 53

EASEMENTS: NONE

VISIBILITY TRIANGLES:
NO OBSTRUCTION INCLUDING LANDSCAPING, SOLID WALLS OR MONUMENT SIGNS IN THE VISIBILITY AREA SHALL EXCEED 3 FEET IN HEIGHT.

ENCROACHMENT MAINTENANCE REMOVAL AGREEMENT:
EMRA REQUIRED FOR PRIVATE SEWER LATERAL IN PUBLIC RIGHT OF WAY.

SCALE: 1"= 30'

30 0 30 60
1"= 30'

LEGAL DESCRIPTION:
THE PROPERTY CONSISTS OF FOUR CONTIGUOUS PARCELS: (1) THE NORTHWEST QUARTER OF THE SOUTHEAST QUARTER OF THE NORTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 14, TOWNSHIP 14 SOUTH; (2) THE NORTHEAST QUARTER OF THE SOUTHEAST QUARTER OF THE NORTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 14, TOWNSHIP 14 SOUTH; (3) THE SOUTHWEST QUARTER OF THE SOUTHEAST QUARTER OF THE NORTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 14, TOWNSHIP 14 SOUTH; AND (4) THE SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER OF THE NORTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 14, TOWNSHIP 14 SOUTH, ALL IN RANGE 3 WEST, SAN BERNARDINO BASE AND MERIDIAN, IN THE COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT THEREOF. ALL FOUR PARCELS ARE SHOWN ON RECORD OF SURVEY, NO. 15686.

ASSESSOR'S PARCEL NUMBERS: 306–050–16, 306–050–18, 306–050–19, 306–050–28

SITE AREA: GROSS AREA: 11.10 ACRES
NET AREA: 10.19 ACRES

ZONING, LOTS AND ACREAGE:
THE PROPERTY IS CURRENTLY ZONED AR–1–1. A REZONE IS BEING PROCESSED WITH THIS SDP TO CHANGE THE ZONE TO IP–3–1. THE PROPERTY CURRENTLY EXISTS IN THE FORM OF FOUR SEPARATE, BUT CONTIGUOUS, PARCELS. THE PROPOSED PROJECT WILL BUILD OVER THE EXISTING INTERNAL PARCEL LINES.

THE EXISTING OWNERSHIP CONSISTS OF APPROXIMATELY 11.10 ACRES. AFTER DEDICATION OF CAMINO DEL SUR ALONG THE EASTERLY PROJECT FRONTAGE, THE NET ACREAGE IS ESTIMATED TO BE 10.33 ACRES.

GRADING:
GRADING SHOWN HEREON IS PRELIMINARY AND IS SUBJECT TO MODIFICATION IN FINAL DESIGN. ALL GRADED SLOPES ARE DESIGNED WITH A 2:1 SLOPE GRADIENT, OTHER THAN THAN A SMALL PORTION OF THE CUT SLOPE ALONG THE WEST PROPERTY LINE NEAR THE CONSERVATION EASEMENT THAT IS 1.5:1.

STREETS AND ACCESS:
THE PROJECT WILL OBTAIN ACCESS TO CAMINO DEL SUR AT TWO LOCATIONS APPROXIMATELY AS SHOWN. CAMINO DEL SUR WILL MOST LIKELY BE BUILT BY OTHERS AS AN FBA–FUNDED IMPROVEMENT IN ADVANCE OF DEVELOPMENT OF THE SUBJECT PROJECT. THIS PROJECT SHALL PARTICIPATE IN THE CONSTRUCTION OF CAMINO DEL SUR BY PAYING ITS FAIR SHARE OF FBA FEES. (SEE TORREY HIGHLANDS PFFP, PROJECTS T–3.1B AND T–3.2B). THE PROPOSED PRIVATE DRIVE AT THE NORTH END OF THE SUBJECT PROJECT HAS BEEN DESIGNED TO LINE UP WITH THE ACCESS PROPOSED FOR THE DEVELOPMENT ACROSS THE STREET. TRAFFIC SIGNALS WILL BE PROVIDED AT BOTH OF THESE ACCESS POINTS.

DRAINAGE:
OFFSITE FLOWS FROM THE SOUTH AND WEST OF THE PROPERTY ARE DIVERTED AROUND THE PROJECT VIA A BROW DITCH AND STORM DRAIN SYSTEM THAT DISCHARGES TO NORTHWEST CORNER OF THE PROPERTY. THE PROPOSED ON–SITE DRAINAGE SYSTEM WILL MAINTAIN THE EXISTING DRAINAGE PATTERNS. SURFACE WATER WILL FLOW IN A PRIVATE ON–SITE SYSTEM, APPROXIMATELY AS SHOWN, AND WILL BE DISCHARGED THROUGH AN ENERGY DISSIPATER STRUCTURE, E.G. RSD D–42, ADJACENT TO THE NORTHERLY PROPERTY LINE. THE DISSIPATER STRUCTURE WILL BE DESIGNED TO REDUCE EXIT VELOCITIES TO A NON–EROSIVE LEVEL.

SEWER AND WATER:
A MASTER WATER STUDY HAS ALREADY BEEN APPROVED FOR THE TORREY HIGHLANDS COMMUNITY. THIS STUDY SHOWS A 16" WATER MAIN IN CAMINO DEL SUR ALONG THE ENTIRE FRONTAGE OF THE SUBJECT PROJECT. THIS MAIN WILL PROVIDE WATER SERVICE TO THE PROJECT. IT IS ANTICIPATED THAT THIS LINE WILL BE CONSTRUCTED CONCURRENTLY WITH THE CONSTRUCTION OF CAMINO DEL SUR. THIS WATER LINE IS ALSO AN FBA–FUNDED IMPROVEMENT (SEE TORREY HIGHLAND PFFP, PROJECT NO. U–3).

A MASTER SEWER STUDY HAS ALSO BEEN APPROVED FOR THE TORREY HIGHLANDS COMMUNITY. THIS PROJECT WILL BE SERVED BY EITHER THE OUTFALL SEWER MAIN THAT IS NOW LOCATED WITHIN THE TORREY SANTA FE ROAD RIGHT–OF–WAY, I.E. NORTHERLY OF THE SUBJECT PROJECT OR A NEW SEWER MAIN, LOCATED WITHIN THE PROPOSED CAMINO DEL SUR RIGHT–OF–WAY, THAT WILL SERVE THE SUBJECT PROJECT AS WELL AS THE PROPOSED DEVELOPMENT ACROSS THE STREET.

RECLAIMED WATER IS AVAILABLE IN CAMINO DEL SUR, WHICH THIS PROJECT WILL UTILIZE FOR ONSITE LANDSCAPING IRRIGATION.

BENCHMARK:
CALIFORNIA DEPARTMENT OF TRANSPORTATION BRASS DISK 56–5.25 1987
ELEVATION = 412.79 M.S.L. NAVD29 3RD ORDER.
TOPOGRAPHIC INFORMATION PER FLOWN TOPOGRAPHY PREPARED BY MORENO PHOTO SURVEYS, DATED SEPTEMBER 10, 1998

STORM WATER DISCHARGE:
AT THE STORM WATER DISCHARGE LOCATION, A SUITABLE ENERGY DISSIPATER IS TO BE INSTALLED TO REDUCE THE DISCHARGE TO NON–ERODIBLE VELOCITIES.

STORM WATER NOTES:

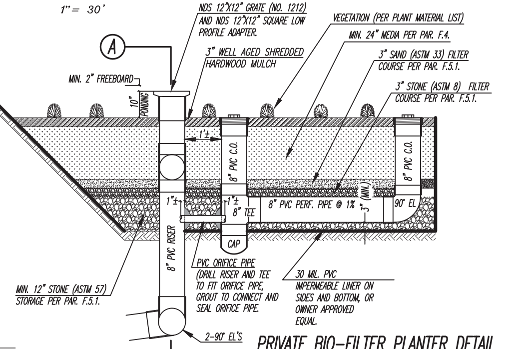
1. PRIOR TO THE ISSUANCE OF ANY CONSTRUCTION PERMIT, THE OWNER/PERMITTEE SHALL ENTER INTO A MAINTENANCE AGREEMENT FOR THE ONGOING PERMANENT BMP MAINTENANCE, SATISFACTORY TO THE CITY ENGINEER.

2. PRIOR TO THE ISSUANCE OF ANY CONSTRUCTION PERMIT, THE OWNER/PERMITTEE SHALL INCORPORATE ANY CONSTRUCTION BEST MANAGEMENT PRACTICES NECESSARY TO COMPLY WITH CHAPTER 14, ARTICLE 2, DIVISION 1 (GRADING REGULATIONS) OF THE SAN DIEGO MUNICIPAL CODE, INTO THE CONSTRUCTION PLANS OR SPECIFICATIONS.

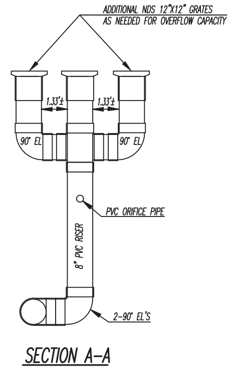
3. DEVELOPMENT OF THIS PROJECT SHALL COMPLY WITH ALL STORM WATER CONSTRUCTION REQUIREMENTS OF THE STATE CONSTRUCTION GENERAL PERMIT, ORDER NO. 2009–00090DWQ, OR SUBSEQUENT ORDER, AND THE MUNICIPAL STORM WATER PERMIT, ORDER NO. R9–2007–0001, OR SUBSEQUENT ORDER. IN ACCORDANCE WITH ORDER NO. 2009–0009DWQ, OR SUBSEQUENT ORDER, A RISK LEVEL DETERMINATION SHALL BE CALCULATED FOR THE SITE AND A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) SHALL BE IMPLEMENTED CONCURRENTLY WITH THE COMMENCEMENT OF GRADING ACTIVITIES.

4. PRIOR TO ISSUANCE OF A GRADING OR A CONSTRUCTION PERMIT, A COPY OF THE NOTICE OF INTENT (NOI) WITH A VALID WASTE DISCHARGE ID NUMBER (WDID#) SHALL BE SUBMITTED TO THE CITY OF SAN DIEGO AS A PROOF OF ENROLLMENT UNDER THE CONSTRUCTION GENERAL PERMIT. WHEN OWNERSHIP OF THE ENTIRE SITE OR PORTIONS OF THE SITE CHANGES PRIOR TO FILING OF THE NOTICE OF TERMINATION (NOT), A REVISED NOI SHALL BE SUBMITTED ELECTRONICALLY TO THE STATE WATER RESOURCES BOARD IN ACCORDANCE WITH THE PROVISIONS AS SET FORTH IN SECTION II.C OF ORDER NO. 2009–0009–DWQ AND A COPY SHALL BE SUBMITTED TO THE CITY.

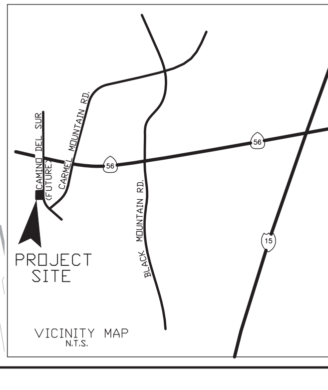
5. PRIOR TO THE ISSUANCE OF ANY CONSTRUCTION PERMIT, THE APPLICANT SHALL SUBMIT A TECHNICAL REPORT THAT WILL BE SUBJECT TO FINAL REVIEW AND APPROVAL BY THE CITY ENGINEER, BASED ON THE STORM WATER STANDARDS IN EFFECT AT THE TIME OF THE CONSTRUCTION PERMIT ISSUANCE.



PRIVATE BIO–FILTER PLANTER DETAIL
(NTS)



SECTION A–A
(NTS)



VICINITY MAP
N.T.S.

PREPARED BY:
NAME: LEPPERT ENGINEERING CORPORATION
ADDRESS: 5190 GOVERNOR DRIVE, SUITE 205
SAN DIEGO, CALIFORNIA 92122–2848
PHONE #: (858) 597–2001

PROJECT ADDRESS:
SEQ STATE ROUTE 56 & CAMINO DEL SUR
SAN DIEGO, CALIFORNIA 92129

PROJECT NAME:
THE PRESERVE AT TORREY HIGHLANDS

SHEET TITLE:
PROPOSED GRADING & DRAINAGE

REVISION 14:
REVISION 13:
REVISION 12:
REVISION 11:
REVISION 10:
REVISION 9:
REVISION 8:
REVISION 7:
REVISION 6:
REVISION 5: 06/06/2018
REVISION 4: 11/21/2017
REVISION 3: 03/15/2017
REVISION 2: 04/04/2016
REVISION 1: 11/18/2015

ORIGINAL DATE: 8/31/2015

SHEET 3 (C–1) OF 43

DEP#

NO.	DATE	BY	DESCRIPTION	NO.	DATE	BY	DESCRIPTION
6				12			
5				11			
4	11/21/17	RL	RESUBMITTAL 4	10			
3	04/04/16	RL	RESUBMITTAL 2	9			
2	11/18/15	RL	RESUBMITTAL 1	8			
1	8/31/15	RL	ORIGINAL	7			

Leppert Engineering
CORPORATION
5190 Governor Drive, Suite 205
San Diego, Ca. 92122-2848
Phone: (858) 597-2001 Fax: (858) 597-2009

APPROVED BY ENGINEER OF WORK
REGISTRATION R C E 26283
FILE CODE TH 06.07-13.15
DATE

PREPARATION AND REVISION LOG

JOHN D. LEPPERT
C 26283

SLOPE ANALYSIS:

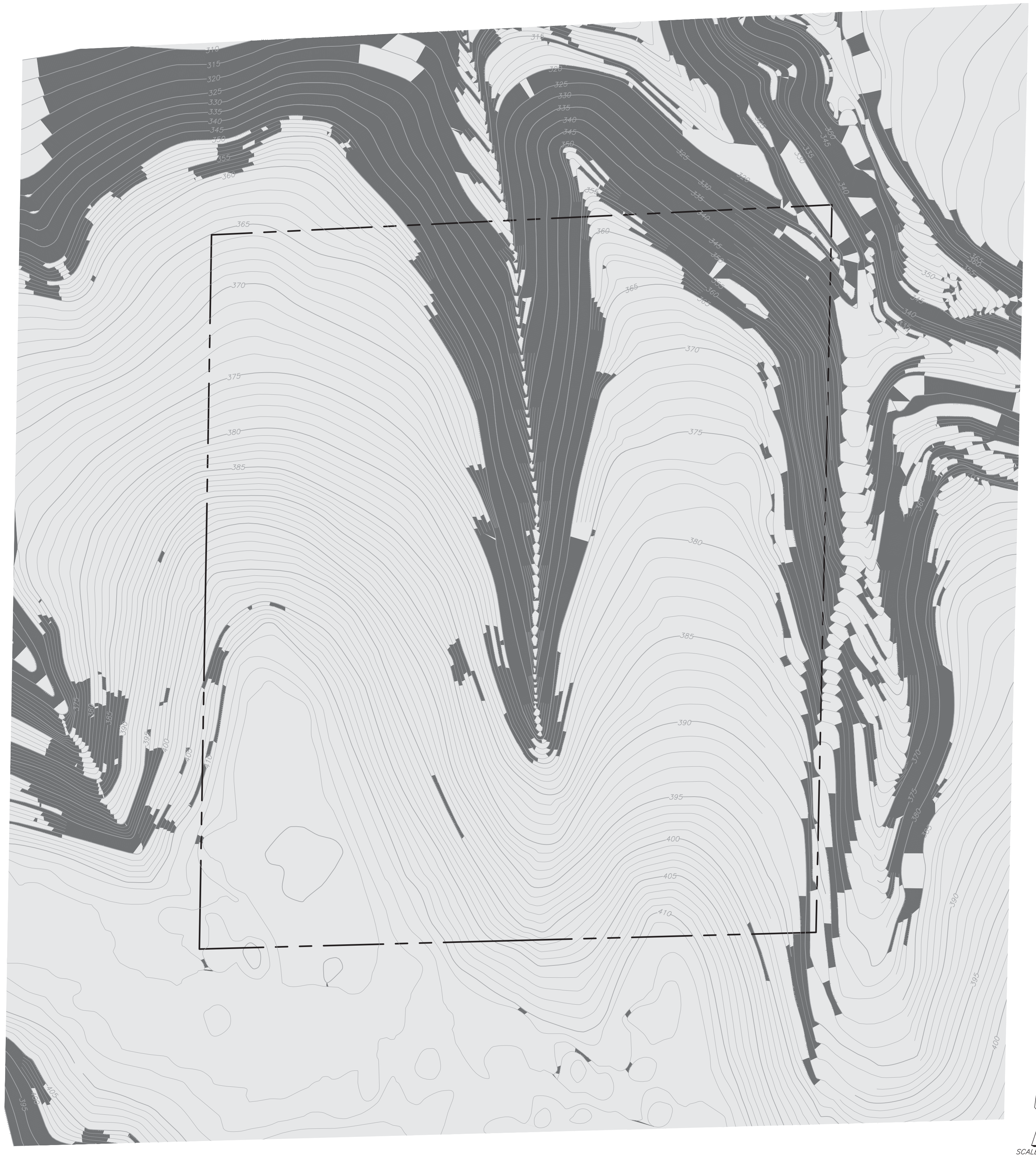
COLOR	SLOPE IN PERCENT	PERCENT OF SITE	AREA (SF)
☐	0-25	79.5	384,459
■	25+	20.5	98,880
			483,339

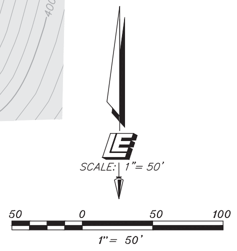
STEEP HILLSIDES:

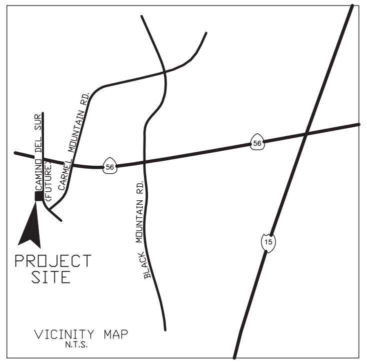
THERE ARE NO STEEP HILLSIDES ON SITE. PER SECTION 1131.01003 OF THE CITY MUNICIPAL CODE, STEEP HILLSIDES ARE DEFINED AS FOLLOWS – "STEEP HILLSIDES MEANS ALL LANDS THAT HAVE A SLOPE WITH A NATURAL GRADIENT OF 25 PERCENT (4 FEET OF HORIZONTAL DISTANCE FOR EVERY 1 FOOT OF VERTICAL DISTANCE) OR GREATER AND A MINIMUM ELEVATION DIFFERENTIAL OF 50 FEET, OR A NATURAL GRADIENT OF 200 PERCENT (1 FOOT OF HORIZONTAL DISTANCE FOR EVERY 2 FEET OF VERTICAL DISTANCE) OR GREATER AND A MINIMUM ELEVATION DIFFERENTIAL OF 10 FEET." THERE ARE SLOPES WITH A NATURAL GRADIENT OF 25 PERCENT OR GREATER, BUT THE ELEVATION DIFFERENTIAL IS LESS THAN 50 FEET.

TOPOGRAPHY:

TOPOGRAPHIC INFORMATION PER FLOWN TOPOGRAPHY, PREPARED BY MORENO PHOTO SURVEYS, DATED SEPTEMBER 10, 1998.







VICINITY MAP
N.T.S.

PREPARED BY:
NAME: LEPPERT ENGINEERING CORPORATION
ADDRESS: 5190 GOVERNOR DRIVE, SUITE 205
SAN DIEGO, CALIFORNIA 92122-2848
PHONE #: (858) 597-2001

PROJECT ADDRESS:
SEQ STATE ROUTE 56 & CAMINO DEL SUR
SAN DIEGO, CALIFORNIA 92129

PROJECT NAME:
THE PRESERVE AT TORREY HIGHLANDS

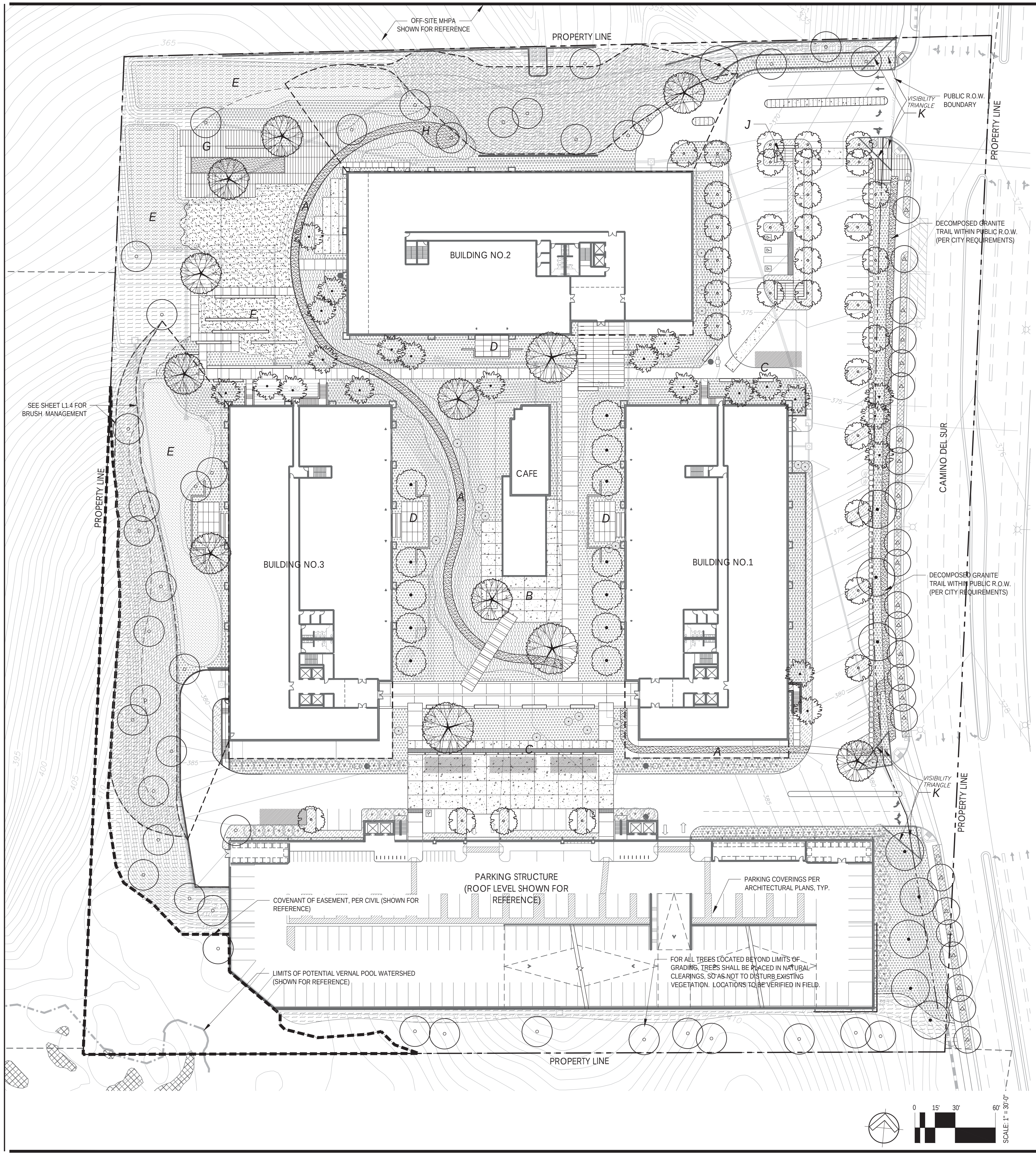
SHEET TITLE:
TOPOGRAPHIC MAP & SLOPE ANALYSIS SHEET

REVISION 14:
REVISION 13:
REVISION 12:
REVISION 11:
REVISION 10:
REVISION 9:
REVISION 8:
REVISION 7:
REVISION 6:
REVISION 5:
REVISION 4:
REVISION 3: 11/21/2017
REVISION 2: 04/04/2016
REVISION 1: 11/18/2015

ORIGINAL DATE: 8/31/2015

SHEET 4 (C-2) OF 43

DEP#



PLANT MATERIAL LEGEND

See sheet L1.2 for plant species and sizing information

HERITAGE TREE
Character defining tree that brings the feeling of the chaparral natural surroundings into the site interior while providing a large canopy of shade

CANOPY TREE AT PROJECT PERIMETER
Formal trees arranged in an informal manner to allude to the site's natural character; also provide screening of the parking lot from Camino Del Sur

CANOPY TREE IN PROJECT INTERIOR
For shade and to establish a formal plane of vegetation that flanks the architecture

CANOPY TREE IN PARKING COURTS
For shade

PERIMETER SCREEN TREE
To blend boundaries of site and the adjacent open space

STREET TREE
Trees along the public Right-of-Way

SMALL FLOWERING ACCENT TREE
Pedestrian scale accents

BAMBOO GROVE
To soften architecture of parking structure

'ARROYO PATH' PLANTINGS

INTERIOR GARDEN SHRUBS AND GROUNDCOVER

EVERGREEN HEDGES AT PARKING

SPECIMEN GARDEN ACCENTS

EVERGREEN SHRUBS IN PARKING COURTS

PARKWAY SHRUBS

BIOFILTRATION BASIN PLANTINGS

BRUSH MANAGEMENT ZONE 2 PLANTING

MHPA BUFFER PLANTINGS

TURF GRASS

NOTE: ALL SHRUBS AND GROUNDCOVERS SHOWN AS HATCHES SHALL BE SPACED IN A TRIANGULAR PATTERN

PAVING FINISH LEGEND

STANDARD GRAY CONCRETE

ENHANCED CONCRETE PAVING: SUCH AS INTEGRAL COLOR, SCORING, OR TEXTURE / SEEDING

DECOMPOSED GRANITE PAVING

NOTE: Driveway/parking areas that not designated as enhanced concrete are asphalt, typical.

PLAN KEY

A	Arroyo path with native chaparral character	F	Amphitheater space with staggered seat walls
B	Cafe Patio with Outdoor Dining	G	Outdoor gathering space with bocce ball court
C	Pedestrian drop-off zone	H	Overlook Seating Area
D	Outdoor collaboration space	J	Pedestrian 'nodes' along connection to adjacent multi-use project
E	Biofiltration Basins, Per Civil Plans	K	Visibility Triangles - No landscape over 24"

THE PRESERVE AT TORREY HIGHLANDS

SEQ STATE ROUTE 56 & CAMINO DEL SUR
SAN DIEGO, CA 92129

APN# 306-050-16, 306-050-18, 306-050-19, 306-050-28

Gensler

225 Broadway
Suite 1600
San Diego CA 92101
Tel: 619.557.2500
Fax: 619.557.2520

GROUNDLEVEL
Landscape Architecture

2605 State Street, Suite B
San Diego, CA 92103
(619) 325-1990
groundlevelsd.com

△ Issue	Date & Issue Description	By	Check
2015-08-31	SDP SUBMITTAL		
2015-11-18	SDP RESUBMITTAL		
2015-04-04	SDP RESUBMITTAL		
2017-03-15	SDP RESUBMITTAL		
2017-11-20	SDP RESUBMITTAL		
2018-06-08	SDP RESUBMITTAL		

Seal/Signature

REGISTERED LANDSCAPE ARCHITECT
SCOTT LANGSTON SANDEL
3026
SIGNATURE
DATE
EXP. 1-31-18
STATE OF CALIFORNIA

Project Name
THE PRESERVE AT TORREY HIGHLANDS

GL Project Number
15060

Description
LANDSCAPE PLAN

Scale
As indicated

L1.1

PLANT MATERIAL LEGEND

Plant sizes are indicated for general reference by height x width.

HERITAGE TREE

✺ (12) IN TOTAL

Character defining tree that brings the feeling of the chaparral natural surroundings into the site interior while providing a large canopy of shade

20% 60" box size, 80% 36" box size [60" box = 100 points; 36" box = 50 points]
- Quercus agrifolia (Coast Live Oak), 40' x 50'
- Quercus virginiana (Southern Live Oak), 40' x 60'
- Platanus racemosa (California Sycamore), 50' x 35'

CANOPY TREE AT PROJECT PERIMETER

⊙ (9) IN TOTAL

Formal trees arranged in an informal manner to allude to the site's natural character; also provide screening of the parking lot from Camino Del Sur

36" box size [50 points each]
- Arbutus 'Marina' (Marina Strawberry Tree), 30' x 30'
- Lophostemon confertus (Brisbane Box), 30' x 25'
- Koelreuteria bipinatta (Chinese Flame Tree), 35' x 35'

CANOPY TREE IN PROJECT INTERIOR

⊙ (12) IN TOTAL

For shade and to establish a formal plane of vegetation that flanks the architecture

50% 24" box size, 50% 36" box size [24" box = 20 points; 36" box = 50 points]
- Arbutus 'Marina' (Marina Strawberry Tree), 30' x 30'
- Parkinsonia aculeata (Mexican Palo Verde), 20' x 20'

CANOPY TREE IN PARKING COURTS

⊙ (33) IN TOTAL

For shade

48" box size [100 points each]
- Arbutus 'Marina' (Marina Strawberry Tree), 30' x 30'
- Pyrus calleryana (Bradford Pear), 30' x 20'
- Koelreuteria bipinatta (Chinese Flame Tree), 35' x 35'

PERIMETER SCREEN TREE

○ (42) IN TOTAL

To blend boundaries of site and the adjacent open space

75% 24" box size, 25% 36" box size [24" box = 20 points; 36" box = 50 points]
- Quercus agrifolia (Coast Live Oak), 40' x 50'

STREET TREE

△ (24) IN TOTAL

Trees along the public Right-of-Way

24" box size [20 points each]
- Arbutus 'Marina' (Marina Strawberry Tree), 30' x 30'
- Geijera parviflora (Australian Willow), 30' x 20'
- Quercus agrifolia (Coast Live Oak), 50' x 50'

SMALL FLOWERING ACCENT TREE

✺ (22) IN TOTAL

Pedestrian scale accents

24" box size [20 points each]
- Cercis canadensis 'Forest Pansy' (Redleaf Eastern Redbud), 25' x 25'
- Lagerstroemia indica (Crape Myrtle), 20' x 20'
- Tabebuia sp. (Trumpet Tree), 25' x 25'

BAMBOO GROVE

⁂ (71) IN TOTAL

To soften architecture of parking structure

15 gallon size [10 pints each, in street yard only as bamboo is serving as a large screen]
- Bambusa spp. (Timber Bamboo), 20-40' x 15

▨ 'ARROYO PATH' PLANTINGS

50% 5 gallon size, 50% 1 gallon size
- Agrostis pallens (Seashore Bentgrass), spreading
- Baccharis 'Centennial' (Centennial Coyote Brush), 3' x 4-5'
- Dianella cultivars (Flax Lily), 2' x 2'
- Eriogonum crocatum (Saffron Buckwheat), 2' x 3'
- Festuca microstachys (Small Fescue), 0.5 x 1' spreading
- Pennisetum messiacum (Red Bunny Tails Grass), 2' x 2'
- Salvia clevelandii 'Winnifred Gilman' (Blue Sage), 5' x 5'

▨ INTERIOR GARDEN SHRUBS AND GROUNDCOVER

20% 5 gallon/60% 1 gallon at 42" on center, 20% seed or flatted groundcover at 18" o. c.
- Aloe spp. (Aloe), 2' x 3'
- Agave spp. (Agave), 2' x 4'
- Bougainvillea 'Rosenka' (Rosenka Bougainvillea), 3' x 6-8'
- Carissa m. cultivars (Natal Plum), 3-4' x 3-5'
- Chondropetalum tectorum (Cape Rush), 4' x 6'
- Diosma pulchra (Pink Breath Of Heaven), 5' x 6'
- Escallonia spp. (Escallonia), 3-6' x 3-6'
- Euphorbia milii 'Jerry's Choice' (Crown-of-Thorns), 4' x 2'
- Fatsia japonica (Japanese Aralia), 15' x 10'
- Festuca microstachys (Small Fescue), 0.5 x 1'
- Lantana cultivars (Lantana), 2-4' x 4-8'
- Macfadyena unguis-cacti (Catclaw Vine), vine
- Miscanthus tranmorrissonensis (Evergreen Maiden Grass), 5' x 5'
- Muhlenbergia dubia (Pine Muhly Grass), 3' x 3'
- Pittosporum sp. and cultivars (Pittosporum), 4-10' x 4-10'
- Pittosporum tenuifolium 'Golf Ball' (Golf Ball Kohuhu), 3' x 3'
- Phormium tenax cultivars (New Zealand Flax), size varies
- Rhaphiolepis umbellatum 'Minor' (Dwarf Yeddo Hawthorn), 4' x 3'
- Senecio mandraliscae (Kleinia), 2' x 2'
- Sesleria autumnalis (Autumn Moor Grass), 2.5' x 2.5'
- Strelitzia reginae (Bird of Paradise), 4' x 4'
- Trachelospermum jasminoides (Star Jasmine), 2' x 4'
- Westringia cultivars (Coast Rosemary), 4' x 8'

▭ EVERGREEN SHRUBS FOR HEDGES AT PARKING

Plants from the Torrey Highlands Subarea Plan are underlined and are proposed for the "public face" of the project. Other plants augment this list due to water conservation needs and a desire to not utilize invasives.

5 gallon size, planted at 36" on center (pruned to manageable size)
- Callistemon viminalis 'Little John (Dwarf Bottlebrush), 3' x 5'
- Ligustrum 'Texanum' (Texas Privet), 8' x 6'
- Lophomyrtus x ralphii 'Red Dragon' (Red Dragon New Zealand Myrtle), 6' x 3'
- Pittosporum tobira 'Variegata' (Variegated Mock Orange), 5' x 8'
- Rhaphiolepis umbellata 'Minor' (Dwarf Yeddo Hawthorn), 4' x 3'
- Westringia fruticosa 'Blue Gem', (Coast Rosemary), 4' x 4'

▨ TURF GRASS

Provided only at amphitheater area to accommodate group gatherings and events.
Turf amounts to about 4% of total landscape area on site.
- Paspalum vaginatum (Seashore paspalum) sod

⊙ SPECIMEN GARDEN ACCENTS

50% 5 gallon size, 50% 15 gallon size
- Aloe spp. (Tree Form), 6-15' x 5-8'
- Dasylirion spp. (Mexican Grass Tree), 4' x 4'
- Draceno draco (Dragon Tree), 12' x 15'
- Euphorbia ingens (Candelabra Tree), up to 40'
- Furcraea spp. (Green aloe), 4' x 6'

▨ EVERGREEN SHRUBS IN PARKING COURTS

Plants from the Torrey Highlands Subarea Plan are underlined and are proposed for the "public face" of the project.

100% 5 gallon size, average spacing 36" on center
- Carissa m. 'Tuttle' (Natal Plum), 3-4' x 3-5'
- Dietes bicolor (Yellow Butterfly Iris), 3' x 3'
- Escallonia compacta (Dwarf Escallonia), 3' x 4'
- Ilex vomitoria 'Nana' (Dwarf Yaupon Holly), 3' x 3'
- Rhaphiolepis umbellatum 'Minor' (Dwarf Yeddo Hawthorn), 3' x 3'

▨ PARKWAY SHRUBS

5 gallon size, planted at 30" on center (pruned to manageable size).
- Callistemon viminalis 'Little John' (Dwarf Bottlebrush), 3' x 5'
- Carissa macrocarpa 'Boxwood Beauty' (Boxwood Beauty Natal Plum), 2' x 2'
- Dianella sp. dwarf hybrids (Flax Lily), 18" x 2' - for use in site visibility zones
- Rhaphiolepis indica 'Ballerina' (Ballerina Indian Hawthorn), 3' x 4'

▨ BIOFILTRATION BASIN PLANTINGS

25% flats & liners, average spacing 24"-36" o.c. / 75% hydroseed
- *Agrostis spp. (Bentgrass), spreading
- Carex spp. (Sedge), spreading
- Chondropetalum tectorum (Small Cape Rush), 2-3' x 3-4'
- *Festuca microstachys (Small Fescue), 0.5 x 1'
- *Iva hayesiana (San Diego Marsh Elder), 2' x 3'
- Juncus spp (California Gray Rush) 1' x 2'
- *Hordeum brachyantherum ssp. californicum (California Barley), 1' x 1'
- *Elymus (Leymus) triticoides (Beardless Wild Rye), 1'x1', spreading

*Indicates species allowed within Brush Management Zone 2

▨ BRUSH MANAGEMENT ZONE 2 PLANTING

LOW, NATURALIZING PROSTRATE SHRUBS AND NATIVE GRASS:
Natives will be used and irrigated initially and separate from zone 1, according to hydrozones. Zone 2 is a transition between ornamental and natural. No invasive plants will be used. New planting occurs within graded areas.

All remaining native plant material will be pruned and thinned per the Zone 2 requirements. Unless shown planted otherwise, plant all of Zone 2 with an informal mixture of the following (plant layouts to be reviewed by Landscape Architect in field):

80% 1 gallon size, average spacing 48" o.c.
- Artemisia californica (California Sagebrush), 2' x 10'
- Baccharis pilularis (Coyote Brush), spreading
- Epilobium californica (California Fuchsia), 2' x 3'
- Eriogonum fasciculatum (Flat-Top Buckwheat), 3' x 9'
- Iva hayesiana (Poverty Weed), 4' x 9'

20% plugs, average spacing 12" o.c.
- Agrostis pallens (Seashore Bentgrass) and
- Stipa pulchra (Purple Needlegrass) - in plugs

☰ MHPA BUFFER PLANTINGS

To provide a seamless transition between the project plant palette and the natural vegetation within the MHPA open space.

75% 1 gallon size, average spacing 72" o.c.
- Agrostis pallens (Seashore Bentgrass)
- Artemisia californica (California Sagebrush), 2' x 10'
- Baccharis pilularis (Coyote Brush), spreading
- Mimulus puniceus (Red Monkey Flower), 2' x 3'
- Mimulus aurantiacus (Orange Monkey Flower), 2' x 3'
- Epilobium californica (California Fuchsia), 2' x 3'
- Eriogonum fasciculatum (Flat-Top Buckwheat), 3' x 9'
- Heteromeles arbutifolia (Toyon), 10' x 12'
- Iva hayesiana (Poverty Weed), 4' x 9'
- Rhus integrifolia (Lemonadeberry), 8' x 12'

25% Hydroseed, per mix below:

SPECIES	PURE LIVE SEED LBS/ACRE
MIMULUS AURANTIACUS	0.25
LOTUS SCOPARIUS	5.0
ERIOGONUM FASCICULATUM	1.0
ACMISPON GLABER	3.0
LUPINUS BICOLOR	2.0
ISOCOMA MENZIESII	0.25
CAMISSONIA CHEIRANTHIFOLIA	1.0
LASTHENIA CALIFORNICA	0.25
ERIOPHYLLUM CONFERTIFLORUM	1.0
ARTEMSIA CALIFORNICA	3.0
ENCELIA CALIFORNICA	4.0
TOTAL	20.75 LBS/ACRE

▨ MHPA BUFFER PLANTINGS - WITHIN BRUSH MANAGEMENT ZONE 2

Buffer species within Zone 2 shall be limited to the following:

75% 1 gallon size, average spacing 48" o.c.
- Agrostis pallens (Seashore Bentgrass)
- Artemisia californica (California Sagebrush), 2' x 10'
- Baccharis pilularis (Coyote Brush), spreading
- Epilobium californica (California Fuchsia), 2' x 3'
- Eriogonum fasciculatum (Flat-Top Buckwheat), 3' x 9'
- Iva hayesiana (Poverty Weed), 4' x 9'

25% plugs, average spacing 12" o.c.
- Agrostis pallens (Native Seashore Bentgrass) and
- Stipa pulchra (Purple Needle Grass) - in plugs

▨ MHPA BUFFER PLANTINGS - WITHIN BIOFILTRATION BASINS

Species shall be limited to the following:

25% flats & liners, average spacing 24"-36" o.c. / 75% hydroseed
- Agrostis pallens (Seashore Bentgrass)
- Elymus (Leymus) triticoides (Beardless Wild Rye), 1'x1', spreading
- Festuca microstachys (Small Fescue), 0.5 x 1'
- Hordeum brachyantherum ssp. californicum (California Barley), 1' x 1'
- Iva hayesiana (San Diego Marsh Elder), 2' x 3'

DESIGN STATEMENT

THIS UNIQUE PROJECT OFFERS AN ALTERNATIVE TO THE TRADITIONAL OFFICE PARK. NESTLED AMONG OPEN SPACE, THE PROJECT CHARACTER REFLECTS IT'S SURROUNDINGS, IMPLYING THAT THE NATURAL CHAPARRAL LANDSCAPE HAS RE-CLAIMED THE INTERIOR COURTYARD OF THE SITE. THIS POWERFUL GESTURE IS SEEN IN THE FORM OF THE "ARROYO PATH" WHICH WINDS SINUOUSLY THROUGH THE SITE, BRINGING THE ALLURE OF THE NATURAL SURROUNDINGS WITH IT.

THE PROPOSED LANDSCAPE DEVELOPMENT FOR THIS PROJECT ADHERES TO THE PRINCIPALS OF THE TORREY HIGHLANDS SUBAREA PLAN: PRESERVE AND ENHANCE THE NATURAL CHARACTER OF THE COMMUNITY, PROVIDE A COORDINATED PROGRAM FOR STREET LANDSCAPING AND PROVIDE FIRE PROTECTION ZONES BETWEEN NATIVE AREAS AND STRUCTURES. THE UNIQUE CHARACTER OF "THE PRESERVE" PROJECT INTEGRATES INTO THE SURROUNDING MSCP PRESERVE AND PROVIDES VISUAL BLENDING BETWEEN USES AND APPROPRIATE BUFFERS BETWEEN THE BUILT LANDSCAPE AND NATURAL OPEN SPACE. FUEL MANAGEMENT HAS BEEN CAREFULLY CONSIDERED ON THIS SITE WITH THE INTENT TO PRESERVE, PROTECT AND SAFEGUARD HUMAN LIVES AND PROPERTY AND THE NATURAL HABITAT. THE PROPOSED BRUSH MANAGEMENT PLAN CONFORMS TO THE REQUIREMENTS OF THE CITY'S MUNICIPAL CODE THROUGH MEANS OF ALTERNATIVE COMPLIANCE.

THE PLANT PALETTE RELATES TO THE NATURAL CONCEPT BY UTILIZING SOME NATIVE (AND NO INVASIVE) PLANTS, INCLUDING SPECIES FROM THE TORREY HIGHLANDS RECOMMENDED PLANT LIST. WORKING IN CONCERT WITH OUR PROJECT BIOLOGIST AND CITY STAFF AT MSCP, WE HAVE DEVELOPED A "MHPA BUFFER PLANTINGS" ZONE THAT BRINGS SELECT NATIVE PLANT SPECIES INTO THE PERIMETER OF THE PRESERVE. LANDSCAPE DESIGN IS FOLLOWING THE CONCEPT OF "XERISCAPE," IN THAT AREAS OF WATER USE SHALL BE GROUPED ACCORDING TO WATER NEEDS. TURF GRASS IS RESERVED FOR USE ON ONE KEY AREA OF THE SITE, TO SERVE AS A GATHERING SPACE FOR PICNICS AND GROUP FUNCTIONS. EVERGREEN PLANT MATERIAL BUFFERS VIEWS OF THE PARKING, CONTRIBUTING TO AN APPEALING STREET FRONTAGE. A COMBINATION OF GRADING AND SCREEN TREES WILL HELP TO INTEGRATE THE PARKING STRUCTURE INTO THE SURROUNDING TERRAIN AND MASK ANY VIEWS FROM THE SOUTH. TO PROMOTE PEDESTRIAN CIRCULATION, MULTIPLE CONNECTIONS HAVE BEEN PROVIDED BETWEEN THE SITE AND THE STREET FRONTAGE, FOR EASY ACCESS TO THE PLANNED RETAIL CENTER.

USAGE AREAS VARY IN TYPE AND SCALE, RANGING FROM A LARGE CAFÉ PATIO AND AMPHITHEATER GATHERING SPACE TO OUTDOOR COLLABORATION SPACES FOR SMALL GROUPS. THE SITE PLAN TAKES ADVANTAGE OF SCENIC VIEWS BOTH WITHIN THE PROJECT INTERIOR AND ALONG THE EDGES OF THE SITE.

GENERAL NOTES

A THOROUGH SOIL ANALYSIS BY A QUALIFIED AGRONOMIST WILL INFLUENCE FINAL PLANT SELECTION, SOIL AMENDMENT, IRRIGATION SYSTEM DESIGN AND USE, AND FUTURE MAINTENANCE PRACTICES.

ALL LANDSCAPE MAINTENANCE SHALL BE PROVIDED BY THE OWNER. THE INITIAL MAINTENANCE PERIOD WILL BE SUFFICIENT IN DURATION TO INSURE THAT ALL SPECIFICATIONS ARE MET. THIS INCLUDES REMOVAL OF NOXIOUS WEEDS, RESODDING OR PLANT REPLACEMENT WHERE NECESSARY, INSECT AND DISEASE CONTROL, AND CONTINUED FERTILIZATION AS RECOMMENDED BY THE AGRONOMIST.

ALL LANDSCAPE AND IRRIGATION SHALL CONFORM TO THE STANDARDS OF THE CITY-WIDE LANDSCAPE REGULATIONS & LAND DEVELOPMENT MANUAL LANDSCAPE STANDARDS, PRECISE PLAN, PACIFIC CORPORATE CENTER GUIDELINES P.I.O. NO. 88-0133.

PLANT MATERIALS HAVE BEEN SELECTED THAT ARE SUITABLE FOR THE CLIMATE, AND THAT INTEGRATE WITH THE ARCHITECTURAL THEME.

LANDSCAPE DRAINS SHALL BE INSTALLED IN PLANTING AREAS AS NEEDED TO PREVENT DRAINAGE ACROSS WALKWAYS AND PATIO SURFACE.

TREE ROOT BARRIERS SHALL BE INSTALLED WHERE TREES ARE PLACED WITHIN 5 FEET OF PUBLIC IMPROVEMENTS.

PER MUNICIPAL CODE SECTION 142.0412-D: BRUSH MANAGEMENT ACTIVITIES ARE PROHIBITED WITHIN COASTAL SAGE SCRUB MARITIME SUCCULENT SCRUB, AND COASTAL SAGE-CHAPARRAL HABITATS FROM MARCH 1 THROUGH AUGUST 15, EXCEPT WHERE DOCUMENTED TO THE SATISFACTION OF THE CITY MANAGER THAT THE THINNING WOULD BE CONSISTENT WITH CONDITIONS OF SPECIES COVERAGE DESCRIBED IN THE CITY OF SAN DIEGO'S MSCP SUBAREA PLAN.

ALL REQUIRED PLANTING AREAS SHALL BE COVERED WITH MULCH TO A MINIMUM DEPTH OF 2 INCHES, EXCLUDING SLOPES REQUIRING REVEGETATION AND AREAS PLANTED WITH GROUNDCOVER. ALL EXPOSED SOIL AREAS WITHOUT VEGETATION SHALL ALSO BE MULCHED TO THIS MINIMUM DEPTH (LDC 142.0413(B)).

"ALL LANDSCAPE AND IRRIGATION SHALL CONFORM TO THE STANDARDS OF THE CITY-WIDE LANDSCAPE REGULATIONS AND THE CITY OF SAN DIEGO LAND DEVELOPMENT MANUAL LANDSCAPE STANDARDS AND ALL OTHER LANDSCAPE RELATED CITY AND REGIONAL STANDARDS."

MINIMUM TREES SEPARATION DISTANCES SHALL MEET THE FOLLOWING CRITERIA:
- IMPROVEMENT / MINIMUM DISTANCE TO STREET TREE
- TRAFFIC SIGNALS (STOP SIGNS) - 20 FEET
- UNDERGROUND UTILITY LINES - 5 FEET (10' FOR SEWER)
- ABOVE GROUND UTILITY STRUCTURES - 10 FEET
- DRIVEWAY (ENTRIES) - 10 FEET
- INTERSECTIONS (INTERSECTING CURB LINES OF TWO STREETS) - 25 FEET

DRIVEWAYS, UTILITIES, DRAINS, WATER AND SEWER LATERALS SHALL BE DESIGNED SO AS NOT TO PROHIBIT THE PLACEMENT OF STREET TREES.

ALL GRADED, DISTURBED OR ERODED AREAS THAT WILL NOT BE PERMANENTLY PAVED OR COVERED BY STRUCTURES SHALL BE PERMANENTLY REVEGETATED AND IRRIGATED AS SHOWN IN TABLE 142-04F AND IN ACCORDANCE WITH THE STANDARDS IN THE LAND DEVELOPMENT MANUAL (142.0411(A))

GRASSCRETE PAVING SHALL COMPLY WITH FIRE DEPARTMENT POLICY A-96-6, MODIFIED ACCESS ROADWAYS.

BOLLARDS SHALL COMPLY WITH CITY OF SAN DIEGO STANDARD DRAWING M-16, DEMOUNTABLE POST.

AS RECOMMENDED BY THE TORREY HIGHLANDS SUBAREA PLAN, THE IMPACT OF SITE RETAINING WALLS WILL BE REDUCED THROUGH THE USE OF LANDSCAPE. THE VISUAL APPEARANCE OF SITE RETAINING WALLS WILL BE SOFTENED BY INTEGRATING PLANT MATERIAL ON / INTO THE WALL OR BY PLACING LARGER PLANT MATERIAL AT THE BASE OF LOW WALLS.

PRIOR TO INSTALLATION OF PLANT MATERIAL, OWNER SHALL ENSURE THAT ALL PLANTS ARE FREE OF PESTS, WEEDS, OR DISEASES. THIS INCLUDES BUT IS NOT LIMITED TO ARGENTINE ANTS. ANY PLANTS WITH PESTS, WEEDS, OR DISEASES SHALL BE DISCARDED AND SHALL NOT BE INSTALLED ON SITE.

MAINTENANCE

"MAINTENANCE: ALL REQUIRED LANDSCAPE AREAS SHALL BE MAINTAINED BY THE OWNER. LANDSCAPE & IRRIGATION AREAS IN THE PUBLIC ROW SHALL BE MAINTAINED BY THE OWNER. THE LANDSCAPE AREAS SHALL BE MAINTAINED FREE OF DEBRIS AND LITTER AND ALL PLANT MATERIAL SHALL BE MAINTAINED IN A HEALTHY GROWING CONDITION. DISEASED OR DEAD PLANT MATERIAL SHALL BE SATISFACTORILY TREATED OR REPLACED PER THE CONDITIONS OF THE PERMIT."

THE PRESERVE AT TORREY HIGHLANDS

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2015-04-04	SDP RESUBMITTAL		
2017-03-15	SDP RESUBMITTAL		
2017-11-20	SDP RESUBMITTAL		
2018-06-08	SDP RESUBMITTAL		

Seal/Signature

REGISTERED LANDSCAPE ARCHITECT
SCOTT LANGSTON SANDEL
3026
Scott Sandel
SIGNATURE
DATE
EXP. 1-31-18
STATE OF CALIFORNIA

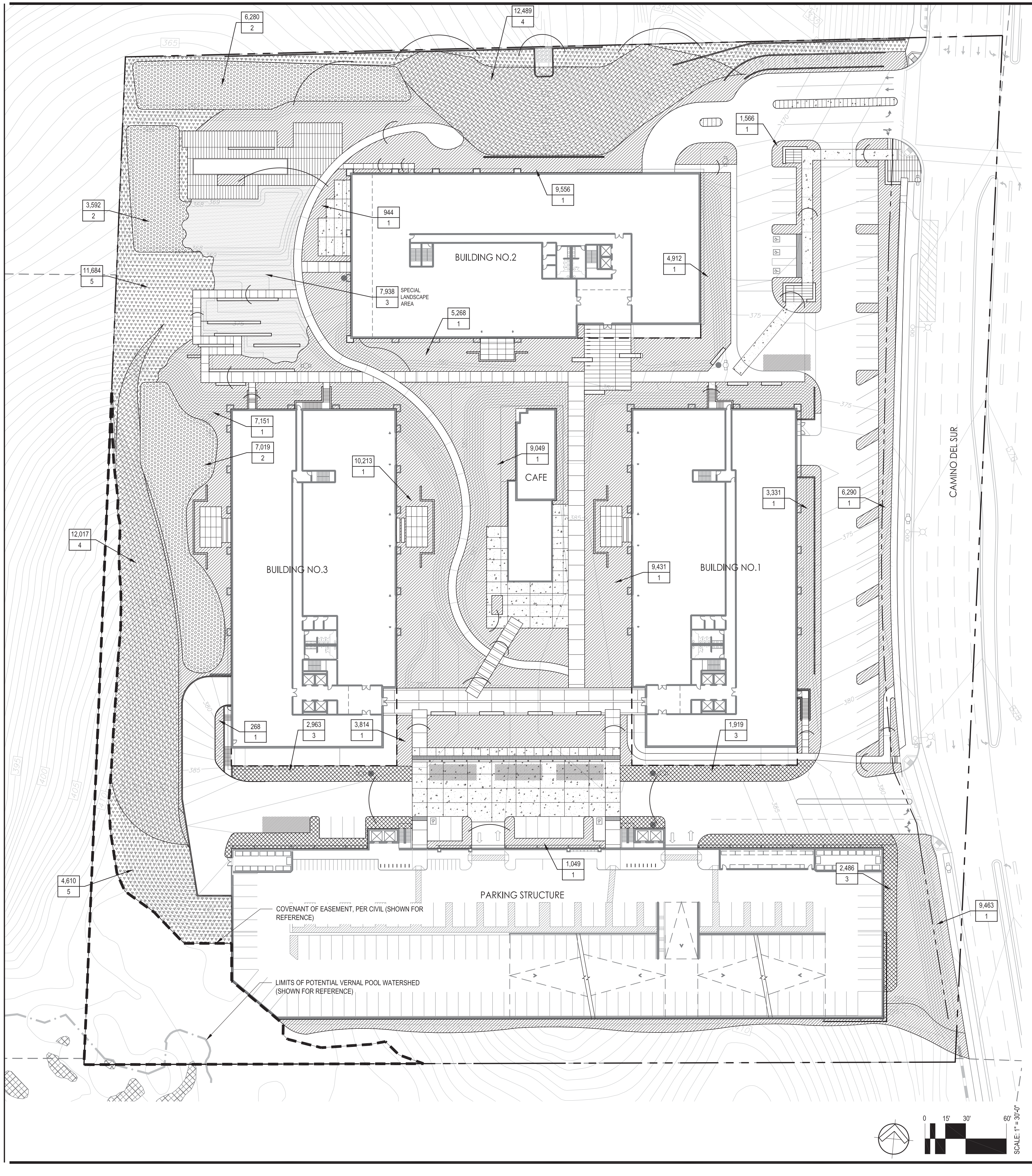
Project Name
THE PRESERVE AT TORREY HIGHLANDS

GL Project Number
15060

Description
LANDSCAPE LEGEND & NOTES

Scale
As indicated

L1.2



IRRIGATION WATER BUDGET CALCULATION

WATER BUDGET:

(ETo)(0.62)[(0.7)(LA) + (0.3)(SLA)]

(47)(0.62)[(0.7)(147,364) + (0.3)(7,983)] = **3,075,718 GAL./YR.**

ESTIMATED TOTAL WATER USE:

[(ETo)(0.62)][(PF x HA / IE) + SLA]

▨ HYDROZONE 1 - PERIMETER & INTERIOR SHRUBS & GROUNDCOVER
[(47)(0.62)][(0.2x 82,305/ 0.8) + 0] = 599,592 GAL./YR.

▨ HYDROZONE 2 - BIORETENTION BASINS / SWALES
[(47)(0.62)][(0.5x 16,891 / 0.75) + 0] = 328,136 GAL./YR.

▨ ▨ HYDROZONE 3 - HIGH WATER USE SHRUBS & TURF
[(47)(0.62)][(0.8x 7,368 / 0.55) + 7,983] = 544,921 GAL./YR.

▨ HYDROZONE 4 - BM ZONE 2 NATIVE SHRUBS
[(47)(0.62)][(0.2x 24,506 / 0.70) + 0] = 204,030 GAL./YR.

▨ HYDROZONE 5 - PERIMETER NATIVE SHRUBS
[(47)(0.62)][(0.2x 16,294 / 0.70) + 0] = 135,659 GAL./YR.

TOTAL ESTIMATED WATER USE = 1,812,338 GAL./YR.

X,XXX — AREA IN SQUARE FEET
X — HYDROZONE ID

ID	HYDROZONE	PF	AREA(SF)	%AREA
1	LOW	0.2	82,305	53.0%
2	MEDIUM	0.5	16,891	10.9%
3	HIGH	0.8	15,351	9.8%
4	LOW (BM 2)	0.2	24,506	15.8%
5	LOW (NATIVE)	0.2	16,294	10.5%
	TOTAL		155,347	100%

I HAVE COMPLIED WITH THE CRITERIA OF THE ORDINANCE AND APPLIED THEM FOR THE EFFICIENT USE OF WATER IN THE LANDSCAPE DESIGN PLAN.

IRRIGATION NOTES

AN AUTOMATIC, ELECTRICALLY CONTROLLED IRRIGATION SYSTEM SHALL BE PROVIDED AS REQUIRED FOR PROPER IRRIGATION, DEVELOPMENT, AND MAINTENANCE OF THE VEGETATION IN A HEALTHY, DISEASE-RESISTANT CONDITION. THE DESIGN OF THE SYSTEM SHALL PROVIDE ADEQUATE SUPPORT FOR THE VEGETATION SELECTED.THIS SYSTEM WILL BE CONTROLLED BY A DUAL PROGRAM ELECTRONIC TIME CLOCK AND REMOTE CONTROL VALVES POP-UP TYPE HEADS WILL BE USED ADJACENT TO WALKWAYS AND ROADWAYS. BUBBLER HEADS WILL BE USED FOR LANDSCAPED AREAS LESS THAN 6' WIDE. DRIP IRRIGATION OR LOW-FLOW BUBBLERS SHALL BE USED IN PARKING AREAS AND ADJACENT TO LOW-LEVEL BUILDING GLASS. THE SYSTEM WILL BE INSTALLED AS SOON AS POSSIBLE AFTER CONSTRUCTION AND PRIOR TO PLACEMENT OF PLANT MATERIALS.

A DEDICATED LANDSCAPE IRRIGATION METER WILL BE PROVIDED.

THE PRESERVE AT TORREY HIGHLANDS

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2017-11-20	SDP RESUBMITTAL		
2018-06-08	SDP RESUBMITTAL		

Seal/Signature

SCOTT LANGSTON SANDEL
3026
EXP. 1-31-18

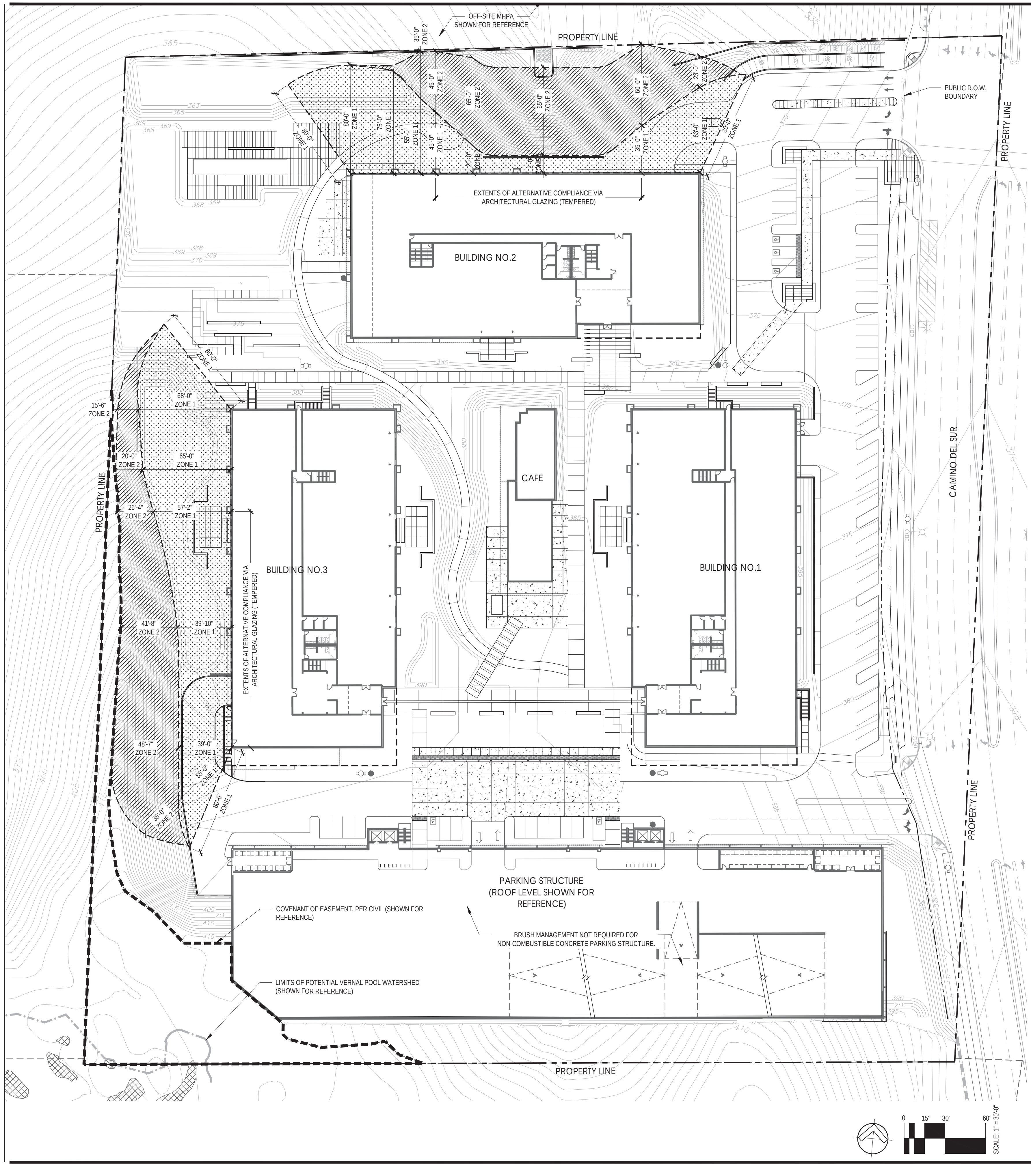
Project Name
THE PRESERVE AT TORREY HIGHLANDS

GL Project Number
15060

Description
IRRIGATION PLAN AND CALCULATIONS

Scale
As indicated

L1.3



ZONE 1 PLANT MATERIAL LEGEND

▨

*SEE SHEET L1.2 FOR FULL PLANT LEGEND

ZONE 2 PLANT MATERIAL LEGEND

▨

*SEE SHEET L1.2 FOR FULL PLANT LEGEND

ALL SALVAGEABLE PLANT MATERIAL BEYOND THE LIMIT OF GRADING WILL BE PRESERVED AND MAINTAINED PER ZONE 2 REQUIREMENTS.

BRUSH MANAGEMENT ZONE WIDTH REDUCTION DISCUSSION

THE WIDTH OF ZONE 2 HAS BEEN REDUCED IN AREAS WHERE ZONE 1 (PERMANENTLY IRRIGATED LANDSCAPE) HAS BEEN INCREASED. PER SECTION 142.0412 AND TABLE 142.14H, "THE ZONE TWO WIDTH MAY BE DECREASED BY 1½ FEET FOR EACH 1 FOOT OF INCREASE IN ZONE ONE WIDTH."

AS PER CODE REQUIREMENTS, THE COMBINED WIDTH OF ZONES 1 AND 2 NEVER EXCEEDS 100 FEET.

REFER TO ARCHITECTURAL PLANS FOR INFORMATION REGARDING THE FIRE-RATING OF THE PLANNED "PARKING STRUCTURE."

THE PRESERVE AT TORREY HIGHLANDS

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Seal/Signature

REGISTERED LANDSCAPE ARCHITECT
SCOTT LANGSTON SANDEL
3026
SIGNATURE
DATE
EXP. 1-31-18
STATE OF CALIFORNIA

Project Name
THE PRESERVE AT TORREY HIGHLANDS

GL Project Number
15060

Description
BRUSH MANAGEMENT PLAN

Scale
As indicated

L1.4

BRUSH MANAGEMENT NOTES FROM "OUTLINE FOR PREPARING BRUSH MANAGEMENT EXHIBITS" [PAGES 3-6]

VI. BRUSH MANAGEMENT – VEGETATION

A. Thinning and Pruning, Native/Naturalized Vegetation [SDMC §142.0412(d), (g) & (h), Landscape Standards §3.2-2.04, 3.2-3.01] – Two key factors in creating a fire safe landscape are providing fuel discontinuity by the separation of the flammable plant cover (thinning) and reduction in fuel load by cutting out dead and excess growth of the native/naturalized vegetation (pruning). Plants to be retained should be consistent with the allowable coverage, massing and spacing required in the Brush Management Regulations and the Landscape Standards. Whenever possible, a person knowledgeable about the use and maintenance of native plants should be consulted to oversee the selection, thinning, and pruning of these plants. The progression of work should proceed as follows: 1) remove dead plants, 2) thin out brush management areas to the required coverage, 3) prune remaining plants, 4) dispose or mulch debris and trimmings, and 5) maintain Zone One on a year-round basis, Zone Two on a seasonal basis. Note that brush management activities are prohibited within coastal sage scrub, maritime succulent scrub, and coastal sage-chaparral habitats from March 1 through August 15, except where documented to the satisfaction of the City Mayor's Designee that the thinning would be consistent with conditions of species coverage described in the City of San Diego's MSCP Subarea Plan.

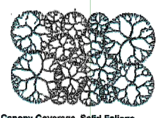
1) Thinning – This first step requires identification of the native/naturalized species and a familiarity with their various characteristics such as rooting depth, fuel loads, flammability, as well as habitat and aesthetic value. Thinning should be prioritized as follows: 1) invasive non-native species with the exception of eucalyptus trees in Eucalyptus Woodland areas, 2) non-native species, 3) flammable native species, 4) native species, and 5) regionally sensitive species. All vegetation that is not to be removed during the initial thinning should be noted or flagged. The remaining plants which are not to be saved should be cut six inches above the ground without pulling out the roots.

For Eucalyptus Woodland areas that fall within Zone Two Brush Management, all trees 3 inches or less in diameter at breast height (dbh) shall be removed with the exception of indigenous, native species. The removal of live (includes "diseased") eucalyptus trees over 3 inches dbh, should only occur:

a) when needed to remove adjacent dead trees;
b) to achieve tree/shrub vertical requirements;
c) where deemed a specific liability or fire safety hazard by the Fire Chief; or
d) on private property when adhering to the horizontal spacing criteria shown in the Tree & Shrub Spacing Chart under Section VI.B.

Certain native plants, such as those found in coastal sage scrub, should be cut back to within 12 inches of the root crown. As sprouting and re-growth occur, these plants can be maintained as low, succulent mounds. Examples include Artemisia californica (California Sagebrush), Salvia mellifera (Black Sage), Adenostoma fasciculatum (Chamise) and Eriogonum fasciculatum (Buckwheat).

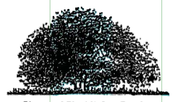
PLAN VIEW



100% Canopy Coverage, Solid Foliage Mass with no Spaces between Plants

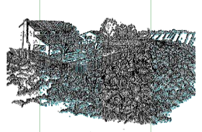
Reduced to 50% by Combination of Thinning and Removal of Canopy Coverage

2) Pruning – After thinning of the native/naturalized vegetation, the fuel load should be further reduced by pruning the plants that have not been removed. While pruning individual plants is not feasible in coastal sage scrub, it is very effective for many hard chaparral species, such as Ceanothus (Wild Lilac), Heteromeles (Toyon), Rhus (Lemonade Berry, Sugarbush), and Rhamnus (Coffeeberry, Redberry). These plants can be shaped into attractive, fire safe specimens by pruning dead and excessively twiggy growth. The figure below illustrates pruning of native shrubs. Note that the limbs touching the ground have been removed, and that a large volume of material has been taken from the canopy. The limbs that remain should be those with young, vigorous shoots.

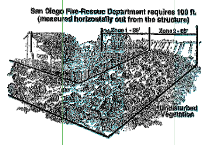


Chaparral Plant Before Pruning

Chaparral Plant After Pruning



Before Brush Management

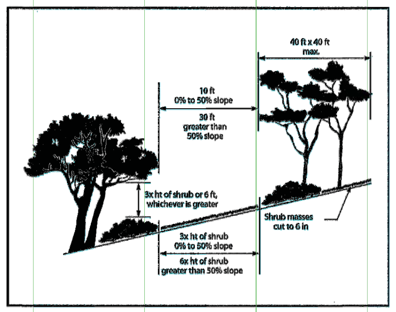


After Thinning and Pruning

B. Thinning and Pruning, Trees [Landscape Standards §3.2-1.03, 1.05] – Trees are allowed within the defensible space, provided the horizontal and vertical distance between trees and shrubs masses complies with required spacing for the slope gradient shown in the following Tree and Shrub Spacing Chart:

Tree & Shrub Spacing Chart		
Trees[a, b]	*Minimum horizontal space From edge of one tree canopy spread (max. 40-ft x 40-ft) to the edge of the next*	
	Slope	*Spacing*
	0% to 50% (2:1)	*10 feet*
	Greater than 50% (2:1)	*30 feet*
Shrubs	*Minimum horizontal space between edges of shrub*	
	Slope	*Spacing*
	0% to 50% (2:1)	*3 times the height of the shrub mass*
	Greater than 50% (2:1)	*6 times the height of the shrub mass*
Vertical Space	*Minimum vertical space between top of shrub and bottom of lower tree branches: 3 times the height of the shrub mass or 6 feet, whichever is greater*	

a. Trees greater than 3 inches dbh located in Eucalyptus Woodland areas are exempt from the minimum horizontal tree spacing requirement.
b. Indigenous, native trees in all areas are exempt from the minimum horizontal tree spacing requirement.



TREE & SHRUB SPACING

Vertical clearance between trees and shrubs can be created by pruning up the tree canopy, reducing height of the shrubs, or a combination thereof. Canopies of existing trees that extend to within 10 feet of any structure shall be pruned to maintain a minimum horizontal and vertical clearance of 10 feet. Portions of tree canopies that extend within 10 feet of the outlet of a chimney shall be pruned to maintain a minimum horizontal and vertical clearance of 10 feet.

BRUSH MANAGEMENT PROGRAM [SDMC 142.0412]

BRUSH MANAGEMENT ZONES 1 AND 2 HAVE BEEN PROVIDED PER LDC SECTION 142.0412. MAINTENANCE AND IMPLEMENTATION OF BOTH ZONES SHALL BE AS DESCRIBED IN THE LANDSCAPE DEVELOPMENT CODE SECTION 142.0412 AND AS LISTED BELOW. LONG TERM MAINTENANCE AND MONITORING OF THE BRUSH MANAGEMENT ZONES SHALL BE THE RESPONSIBILITY OF THE OWNER. THINNING AND PRUNING SHALL BE PERFORMED ANNUALLY BY THE OWNER.

THE WIDTHS OF ZONES ONE AND TWO HAVE BEEN ALTERED FOR ALTERNATIVE COMPLIANCE. SEE BRUSH MANAGEMENT PLAN FOR DETAILED INFORMATION.

BRUSH MANAGEMENT REQUIREMENTS [SDMC 142.0412]

ZONE ONE REQUIREMENTS

1. THE REQUIRED ZONE ONE WIDTH SHALL BE PROVIDED BETWEEN NATIVE OR NATURALIZED VEGETATION AND ANY STRUCTURE AND SHALL BE MEASURED FROM THE EXTERIOR OF THE STRUCTURE TO THE VEGETATION.
2. ZONE ONE SHALL CONTAIN NO HABITABLE STRUCTURES, STRUCTURES THAT ARE DIRECTLY ATTACHED TO HABITABLE STRUCTURES, OR OTHER COMBUSTIBLE CONSTRUCTION THAT PROVIDES A MEANS FOR TRANSMITTING FIRE TO THE HABITABLE STRUCTURES. STRUCTURES SUCH AS FENCES, WALLS, PALAPAS, PLAY STRUCTURES AND NON-HABITABLE GAZEBOS THAT ARE LOCATED WITHIN BRUSH MANAGEMENT ZONE ONE SHALL BE OF NONCOMBUSTIBLE CONSTRUCTION.
3. PLANTS WITHIN ZONE ONE SHALL BE PRIMARILY LOW-GROWING AND LESS THAN 4 FEET IN HEIGHT WITH THE EXCEPTION OF TREES. PLANTS SHALL BE LOW-FUEL AND FIRE-RESISTIVE. REFER TO PLANT MATERIAL LEGEND AT LEFTT FOR PLANT MATERIAL WITHIN THE BRUSH MANAGEMENT ZONES.
4. TREES WITHIN ZONE ONE SHALL BE LOCATED AWAY FROM STRUCTURES TO A MINIMUM DISTANCE OF 10 FEET AS MEASURED FROM THE STRUCTURES TO THE DRIP LINE OF THE TREE AT MATURITY IN ACCORDANCE WITH THE LANDSCAPE STANDARDS OF THE LAND DEVELOPMENT MANUAL.
5. PERMANENT IRRIGATION IS REQUIRED FOR ALL PLANTING AREAS WITHIN ZONE ONE EXCEPT AS FOLLOWS:
    a. WHEN PLANTING AREAS CONTAIN ONLY SPECIES THAT DO NOT GROW TALLER THAN 24 INCHES IN HEIGHT, OR
    b. WHEN PLANTING AREAS CONTAIN ONLY NATIVE OR NATURALIZED SPECIES THAT ARE NOT SUMMER-DORMANT AND HAVE A MAXIMUM HEIGHT AT PLANT MATURITY OF LESS THAN 24 INCHES.
6. ZONE ONE IRRIGATION OVER SPRAY AND RUNOFF SHALL NOT BE ALLOWED INTO ADJACENT AREAS OF NATIVE OR NATURALIZED VEGETATION.
7. ZONE ONE SHALL BE MAINTAINED ON A REGULAR BASIS BY PRUNING AND THINNING PLANTS, CONTROLLING WEEDS, AND MAINTAINING IRRIGATION SYSTEMS.

ZONE TWO REQUIREMENTS

1. THE REQUIRED ZONE TWO WIDTH SHALL BE PROVIDED BETWEEN ZONE ONE AND THE UNDISTURBED, NATIVE OR NATURALIZED VEGETATION, AND SHALL BE MEASURED FROM THE EDGE OF ZONE ONE THAT IS FARTHEST FROM THE HABITABLE STRUCTURE, TO THE EDGE OF UNDISTURBED VEGETATION.
2. NO STRUCTURES SHALL BE CONSTRUCTED IN ZONE TWO.
3. WITHIN ZONE TWO, 50 PERCENT OF THE PLANTS OVER 18 INCHES IN HEIGHT SHALL BE CUT AND CLEARED TO A HEIGHT OF 6 INCHES.
4. WITHIN ZONE TWO, ALL PLANTS REMAINING AFTER 50 PERCENT ARE CUT AND CLEARED SHALL BE PRUNED TO REDUCE FUEL LOADING IN ACCORDANCE WITH THE LANDSCAPE STANDARDS IN THE LAND DEVELOPMENT MANUAL. NON-NATIVE PLANTS SHALL BE PRUNED BEFORE NATIVE PLANTS ARE PRUNED.
5. THE FOLLOWING STANDARDS SHALL BE USED WHERE ZONE TWO IS IN AN AREA PREVIOUSLY GRADED AS PART OF LEGAL DEVELOPMENT ACTIVITY AND IS PROPOSED TO BE PLANTED WITH NEW PLANT MATERIAL INSTEAD OF CLEARING EXISTING NATIVE OR NATURALIZED VEGETATION:
    a. ALL NEW PLANT MATERIAL FOR ZONE TWO SHALL BE NATIVE, LOW-FUEL, AND FIRE-RESISTANT. NO NON-NATIVE PLANT MATERIAL MAY BE PLANTED IN ZONE TWO EITHER INSIDE THE MHPA OR IN THE COASTAL OVERLAY ZONE, ADJACENT TO AREAS CONTAINING SENSITIVE BIOLOGICAL RESOURCES.
    b. NEW PLANTS SHALL BE LOW-GROWING WITH A MAXIMUM HEIGHT AT MATURITY OF 2 FEET. SINGLE SPECIMENS OF FIRE-RESISTANT NATIVE TREES MAY EXCEED THIS LIMITATION IF THEY ARE LOCATED TO REDUCE THE CHANCE OF TRANSMITTING FIRE FROM NATIVE OR NATURALIZED VEGETATION TO HABITABLE STRUCTURES AND IF THE VERTICAL DISTANCE BETWEEN THE LOWEST BRANCHES OF THE TREES AND THE TOP OF ADJACENT PLANTS ARE THREE TIMES THE HEIGHT OF THE ADJACENT PLANTS TO REDUCE THE SPREAD OF FIRE THROUGH LADDER FUELING.
    c. ALL NEW ZONE TWO PLANTINGS SHALL BE TEMPORARILY IRRIGATED UNTIL ESTABLISHED TO THE SATISFACTION OF THE CITY MANAGER. ONLY LOW-FLOW, LOW-GALLONAGE SPRAY HEADS MAY BE USED IN ZONE TWO. OVERSPRA AND RUNOFF FROM THE IRRIGATION SHALL NOT DRIFT OR FLOW INTO ADJACENT AREAS OF NATIVE OR NATURALIZED VEGETATION. TEMPORARY IRRIGATION SYSTEMS SHALL BE REMOVED UPON APPROVED ESTABLISHMENT OF THE PLANTINGS. PERMANENT IRRIGATION IS NOT ALLOWED IN ZONE TWO.
    d. WHERE ZONE TWO IS BEING REVEGETATED AS A REQUIREMENT OF SECTION 142.0411(A), REVEGETATION SHALL COMPLY WITH THE SPACING STANDARDS IN THE LAND DEVELOPMENT MANUAL. FIFTY PERCENT OF THE PLANTING AREA SHALL BE PLANTED WITH MATERIAL THAT DOES NOT GROW TALLER THAN 24 INCHES. THE REMAINING PLANTING AREA MAY BE PLANTED WITH TALLER MATERIAL, BUT THIS MATERIAL SHALL BE MAINTAINED IN ACCORDANCE WITH THE REQUIREMENTS FOR EXISTING PLANT MATERIAL IN ZONE TWO.
6. ZONE TWO SHALL BE MAINTAINED ON A REGULAR BASIS BY PRUNING AND THINNING PLANTS, REMOVING INVASIVE SPECIES, AND CONTROLLING WEEDS.
7. EXCEPT AS PROVIDED IN SECTION 142.0412(i), WHERE THE REQUIRED ZONE ONE WIDTH SHOWN IN TABLE 142-04H CANNOT BE PROVIDED ON PREMISES WITH EXISTING STRUCTURES, THE REQUIRED ZONE TWO WIDTH SHALL BE INCREASED BY ONE FOOT FOR EACH FOOT OF REQUIRED ZONE ONE WIDHT THAT CANNOT BE PROVIDED.

SECTION III - LANDSCAPE STANDARDS MANUAL [PAGES 27-28]

SECTION III: BRUSH MANAGEMENT

3-1 BRUSH MANAGEMENT – DESCRIPTION

Fire safety in the landscape is achieved by reducing the readily flammable fuel adjacent to structures. This can be accomplished by pruning and thinning of native and naturalized vegetation, revegetation with low fuel volume plantings or a combination of the two. Implementing brush management in an environmentally appropriate manner requires a reduction in the amount and continuity of highly flammable fuel while maintaining plant coverage for soil protection. Such a transition will minimize the visual, biological and erosion impacts while reducing the risks of wildland fires.

3-2 BRUSH MANAGEMENT- REQUIREMENTS

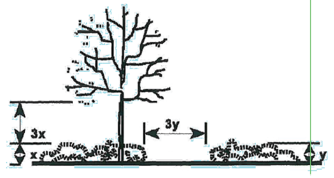
3.2-1 Basic requirements – All Zones

3.2-1.01 For zone two, plants shall not be cut below six inches.

3.2-1.02 Debris and trimmings produced by thinning and pruning shall be removed from the site or if left, shall be converted into mulch by a chipping machine and evenly dispersed, non-irrigated, to a maximum depth of 6 inches.

3.2-1.03 Trees and large tree form shrubs (e.g., Oaks, Sumac, Toyon) which are being retained shall be pruned to provide clearance of three times the height of the under story plant material or six feet whichever is higher (**Figure 3-1**). Dead and excessively twiggy growth shall also be removed.

FIGURE 3-1
PRUNING TREES TO PROVIDE CLEARANCE FOR BRUSH MANAGEMENT



3.2-1.04 All plants or plant groupings except cacti, succulents, trees and tree-form shrubs shall be separated by a distance three times the height of the tallest adjacent plants (**Figure 3-1**).

3.2-1.05 Maximum coverage and area limitations as stated herein shall not apply to indigenous native tree species (i.e., Pinus, Quercus, Platanus, Salix and Populus).

3.2-2 Zone 1 Requirements - All Structures

3.2-2.01 Do not use, and remove if necessary, highly flammable plant materials (see **Appendix "B"**).

3.2-2.02 Trees should not be located any closer to a structure than a distance equal to the tree's mature spread.

3.2-2.03 Maintain all plantings in a succulent condition.

3.2-2.04 Non-irrigated plant groupings over six inches in height may be retained provided they do not exceed 100 square feet in area and their combined coverage does not exceed 10 percent of the total Zone 1 area.

3.2-3 Zone 2 Requirements – All Structures

3.2-3.01 Individual non-irrigated plant groupings over 24 inches in height may be retained provided they do not exceed 400 square feet in area and their combined coverage does not exceed 30 percent of the total Zone 2 area.

THE PRESERVE AT TORREY HIGHLANDS

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2017-03-15	SDP RESUBMITTAL		
2017-11-20	SDP RESUBMITTAL		
2018-06-08	SDP RESUBMITTAL		

Seal/Signature

SCOTT LANGSTON SANDEL
3026
SIGNATURE
DATE
EXP. 1-31-16

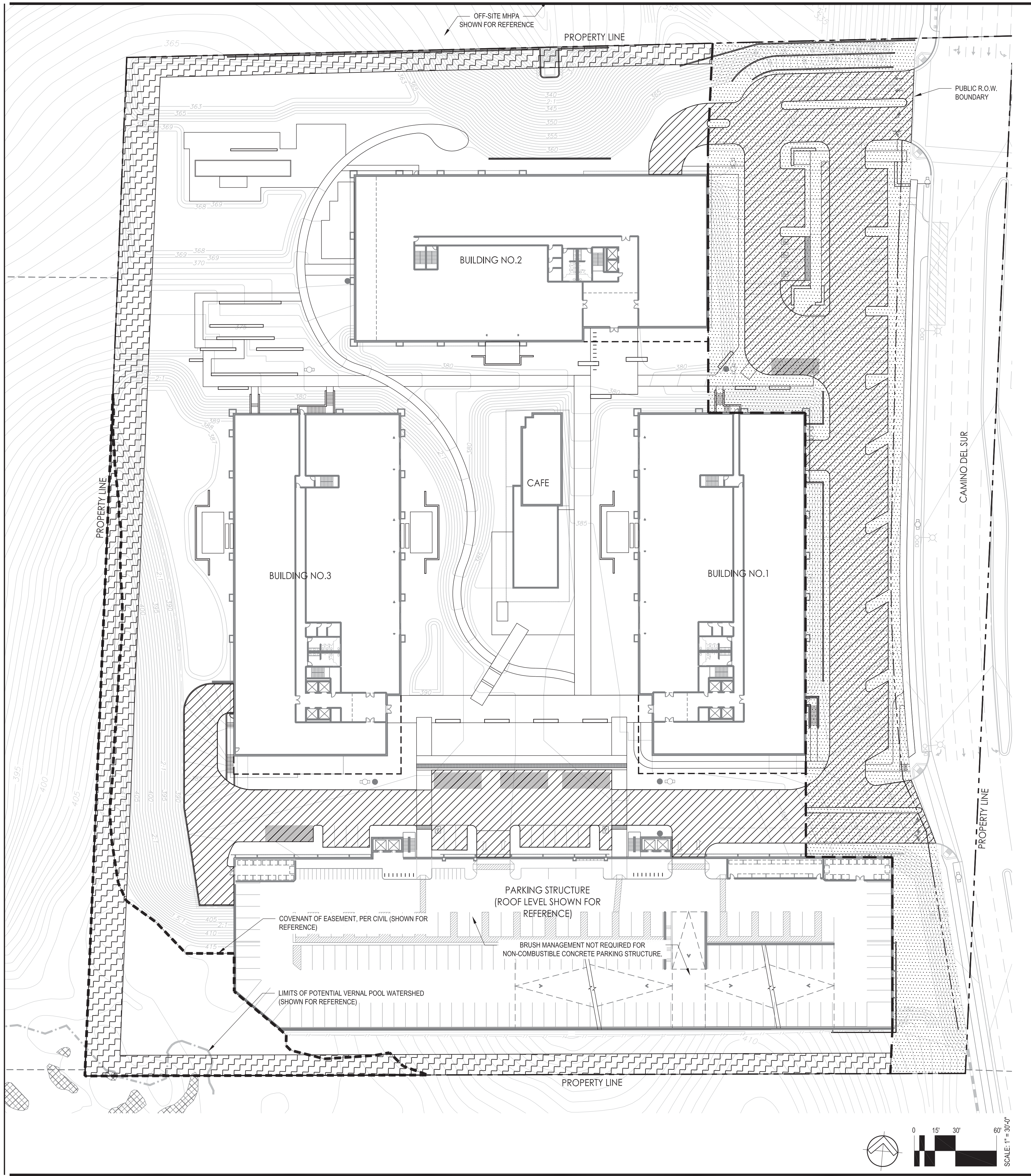
Project Name
THE PRESERVE AT TORREY HIGHLANDS

GL Project Number
15060

Description
BRUSH MANAGEMENT NOTES

Scale
As indicated

L1.5



LANDSCAPE CALCULATIONS DIAGRAM LEGEND

— — —	STREET WALL LINE
⋯	STREET YARD AREA
▨	VEHICULAR USE AREA (OUTSIDE OF STREET YARD)
▨	VEHICULAR USE AREA (INSIDE OF STREET YARD)
≷	REMAINING YARD AREA

STREET TREE PLANTING

SECTION 142.0409 OF THE SD MUNICIPAL CODE REQUIRES "ONE 24-INCH BOX TREE FOR EVERY 30 FEET OF STREET FRONTAGE."

TOTAL STREET FRONTAGE = 731 LINEAR FEET
NUMBER OF TREES REQUIRED = (24) 24" BOX TREES
NUMBER OF TREES PROVIDED = (24) 24" BOX TREES

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THE CITY OF SAN DIEGO

Landscape Calculations Worksheet

Industrial Development in RM and C Zones
Commercial Development in All Zones

Provide the following information on the Landscape Plans. The Landscape Calculations determine the planting area and points required by the Landscape Regulations, Chapter 14, Article 2, Division 4 of the Land Development Code.

STREET YARD

Industrial and Commercial Development (except Auto Service Stations; see below):

Planting Area Required [142.0404]	Planting Area Provided	Excess Area Provided
Total Area 70,719 sq. ft. x 25%= 17,680 sq. ft.	27,185 sq. ft.	9,505 sq. ft.

Planting Points Required [142.0404]	Plant Points Provided - To be achieved with trees only	Excess Points Provided
Total Area 70,719 sq. ft. x 0.05= 3,536 points	3,830 points	294 points

**Bamboo is being used to screen the parking structure from the road. Bamboo was selected over a traditional tree because it is a highly effective screen that will soften the parking str. facade, therefore it has been counted as a 15 gallon 'tree' for 10 pts each.*

Auto Service Stations Only

Planting Area Required [142.0405(c)(2)]	Planting Area Provided	Excess Area Provided
Total Area ______ sq. ft. x 15%= ______ sq. ft. N/A	______ sq. ft.	______ sq. ft.

Plant Points Required [142.0405(c)(2)]	Plant Points Provided	Excess Points Provided
Total Area ______ sq. ft. x 0.03= ______ points N/A	______ points	______ points

Note: All required Street Yard planting areas located outside the Vehicular Use Area (VUA) except for auto service stations may consist of hardscape or unattached unit pavers, excluding the minimum area required for trees. [142.0405(C)(1)]

REMAINING YARD

Planting Area Required [142.0404]	Planting Area Provided	Excess Area Provided
Total Area 33,080 sq. ft. x 30%= 9,924 sq. ft.	32,090 sq. ft.	22,166 sq. ft.

Plant Points Required [142.0404]	Plant Points Provided	Excess Points Provided
Total Area 33,080 sq. ft. x 0.05= 1,654 points	875 points	-779 points

**The Remaining Yard on this site presents a unique condition as it is directly adjacent to MHPA land for its entire extent, and overlaps with portions of the Covenant of Easement. In an effort to minimize impact to the natural environment, our landscape plans do not show any replacement of existing vegetation beyond the limits of grading. As a result, 45% of the remaining yard will consist of existing vegetation, protected in place. Where new planting does occur within the Remaining Yard, it is serving as a "buffer zone" in which high-density planting would not be appropriate. Due to this unique condition, we feel that it is appropriate to have a reduced point total for Remaining Yard. The current plan achieves 53% of the typical plant points required.*

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THE CITY OF SAN DIEGO

Landscape Calculations Worksheet

Vehicular Use Areas (VUA)

Provide the following information on the Landscape Plans. The Landscape Calculations determine the planting area and points required by the Landscape Regulations, Chapter 14, Article 2, Division 4 of the Land Development Code.

One tree (minimum 24-inch box size) is required within 30 ft. of each parking space. (If palm trees are used, one palm (minimum 8 ft. brown trunk height) is required within 15 ft. of each parking space.)

VEHICULAR USE AREA (<6,000 sf) [142.0406 - 142.0407]

Planting Area Required: provide 40 sq. ft. per tree (with no dimension less than 5')

Plant Points Required	Plant Points Provided	Excess Points Provided
Total VUA: ______ sq. ft. x 0.05 = ______ points N/A	______ points	______ points

Points achieved through trees (at least half): ______ **points**

VEHICULAR USE AREA (≥6,000 sf) [142.0406 - 142.0407]

	Required Planting Area	Planting Area Provided	Excess Area Provided
VUA inside Street Yard:	36,051 sq. ft. x 0.05 = 1,803 sq. ft.	2,989 sq. ft.	1,186 sq. ft.
VUA outside Street Yard:	23,478 sq. ft. x 0.03 = 704 sq. ft.	1,306 sq. ft.	602 sq. ft.

	Required Plant Points	Plant Points Provided	Points Provided with Trees (at least half)
VUA inside Street Yard:	36,051 sq. ft. x 0.05 = 1,803 points	2,924 points	1,121 points
VUA outside Street Yard:	23,478 sq. ft. x 0.03 = 704 points	748 points	44 points

TEMPORARY VEHICULAR USE AREA [142.0408]

Required Planting Area	Planting Area Provided
Length of Public Right-of-Way adjacent to VUA: ______ ft. x 3 ft. = ______ sq. ft. N/A	______ sq. ft.

- **Provide planting area between Public Right-of-Way and VUA.**
- **Plant with evergreen shrubs.**
- **Shrubs must achieve a minimum height of 30" within 2 years of installation over at least 50% of the required planting area.**

ADDITIONAL YARD PLANTING AREA AND POINT REQUIREMENTS

If any of the requirements of Landscape Regulations, Section 142.0405 (a) 1, 2, or 3 apply to your project, provide a written summary explaining how requirements are being met.

THE PRESERVE AT TORREY HIGHLANDS

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2015-11-18	SDP RESUBMITTAL		
2015-04-04	SDP RESUBMITTAL		
2017-03-15	SDP RESUBMITTAL		
2017-11-20	SDP RESUBMITTAL		
2018-06-08	SDP RESUBMITTAL		

Seal/Signature

SCOTT LANGSTON SANDEL
3026
EXP. 1-31-18

Project Name
THE PRESERVE AT TORREY HIGHLANDS

GL Project Number
15060

Description
LANDSCAPE DIAGRAM AND CALCULATIONS

Scale
As indicated

L1.6

CAMINO DEL SUR NORTH VIEW 2

NOTE: RENDERINGS MAY NOT REFLECT THE MOST RECENT MINOR CHANGES TO THE DESIGN SUCH AS THE ADDITION OF BALCONIES TO THE UPPER FLOORS. THE FLOOR PLANS AND ELEVATIONS TAKE PRECEDENT OVER THE RENDERINGS.

CAMINO DEL SUR SOUTH ENTRANCE VIEW 1

ARROYO TRAIL COURTYARD VIEW 4

PEDESTRIAN DROP-OFF ZONE VIEW 3

THE PRESERVE AT TORREY HIGHLANDS

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2015-08-31	SDP SUBMITTAL		
2015-11-18	SDP SUBMITTAL #2		
2016-02-29	SDP SUBMITTAL #3		
2017-03-15	SDP SUBMITTAL #4		
2017-11-20	SDP SUBMITTAL #5		

Seal/Signature

LICENSED ARCHITECT
JAMES K HEINLY
C 26830
REN. 9/30/19
STATE OF CALIFORNIA

Project Name
THE PRESERVE AT TORREY HIGHLANDS

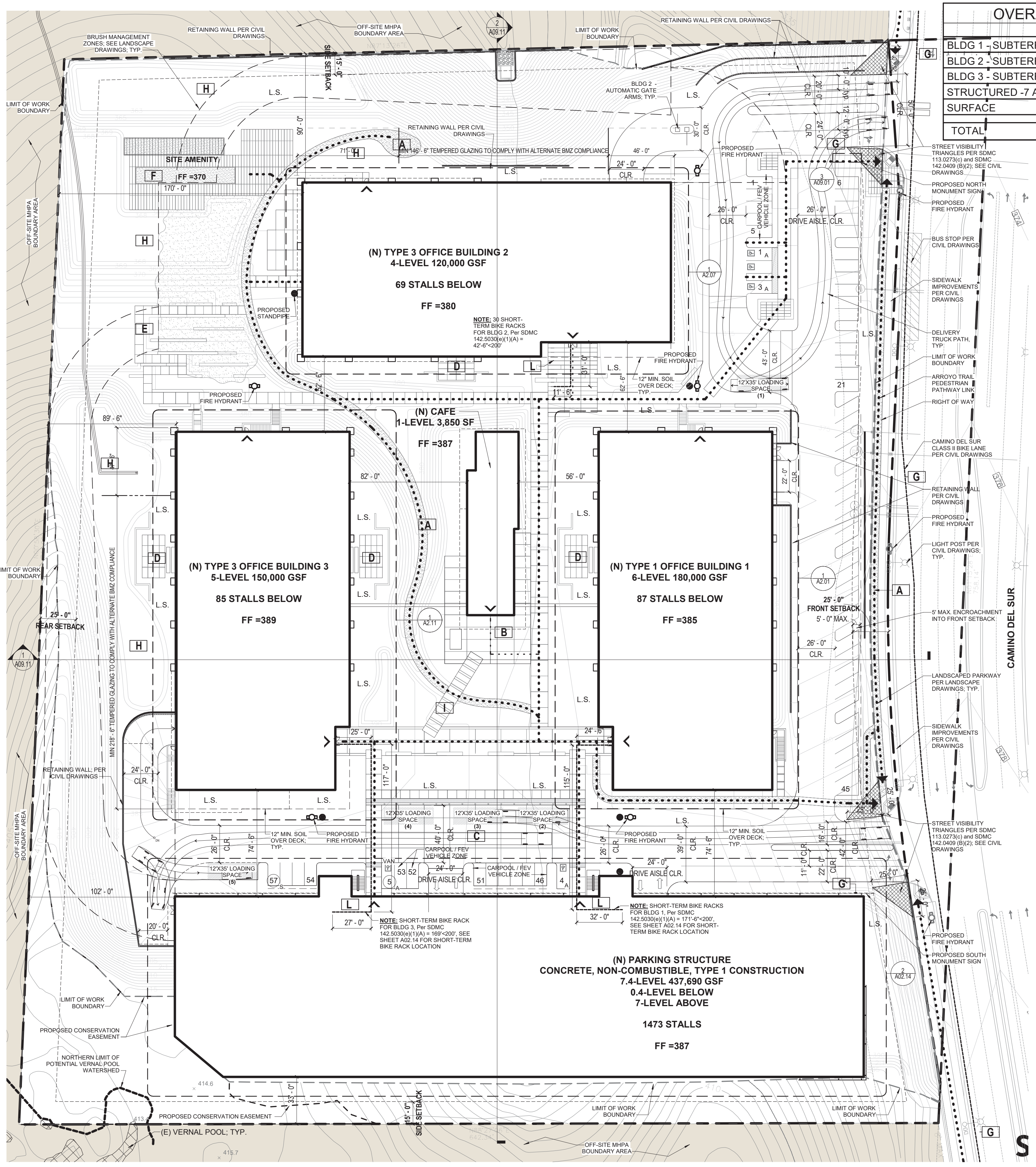
Project Number
55.7511.000

Description
EXTERIOR PERSPECTIVE VIEWS

Scale

A00.01
11 of 43

Ref. North



Site Plan
SCALE: 1" = 30'-0"

1

OVERALL PARCEL PARKING TABULATION

	STANDARD	ACCESSIBLE	TOTAL	TOTAL SF	SF/ CAR
				SUBTERRANEAN / STRUCT. PARKING SF / CAR TABULATION	
BLDG 1 - SUBTERRANEAN	83	4 (1 VAN)	87	30,000 SF	345
BLDG 2 - SUBTERRANEAN	66	3 (1 VAN)	69	25,000 SF	362
BLDG 3 - SUBTERRANEAN	81	4 (1 VAN)	85	30,000 SF	353
STRUCTURED -7 ABOVE, 1 BELOW	1,448	30 (5 VAN)	1,478	437,690 SF	297
SURFACE	57	5 (1 VAN)	62	▨	▨
TOTAL	1,735	46 (9 VAN)	**1,781**	522,690 SF	305

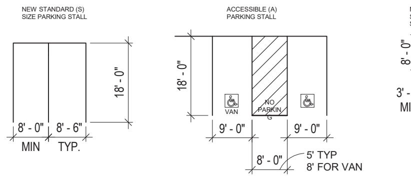
REQUIRED PARKING RATIO 450,000 SF (3.3 / 1000 GSF) = 1,485 SPACES

PROVIDED PARKING RATIO 450,000 SF (3.96 / 1000 GSF) = **1,781 SPACES**

OVERALL PARKING RATIOS

TOTAL PARKING - 1,781 SPACES	REQUIRED	PROVIDED
CARPOOL & F.E.V SPACES (10%)	179	179
MOTORCYCLE SPACES (2%)	36	36
BIKE LOCKERS - SHORT-TERM (5%)	90	90
BIKE LOCKERS - LONG-TERM (5%)	90	115
LOADING SPACES (0.1% / 1000 SF)	5	5
*__NOTE:__ SEE SHEET A02.14 FOR SHORT & LONG-TERM BIKE TABULATION		

PROPOSED PARKING DIM.



LEGEND

— – – — – – —	**PROPERTY LINE**
– – – – – – –	**SETBACK**
▬ ▬ ▬ ▬ ▬	**LIMIT OF WORK**
◀• • • • • • • •	**PATH OF TRAVEL / ACCESSIBLE PATH**
<- - - - - - - - -	**CAMINO DEL SUR BIKE PATH**
♿	INTERNATIONAL SYMBOL OF ACCESSIBILITY
⊸	ACCESSIBLE PARKING AND TOW AWAY SIGN
L.S.	LANDSCAPED AREA
#	TOTAL NUMBER OF STALLS TYPE DESIGNATOR S=STANDARD A=ACCESSIBLE M=MOTORCYCLE E=EXISTING
<	BUILDING EXIT

KEYNOTES

A	ARROYO PATH
B	CAFE PATIO W/ OUTDOOR DINING
C	PEDESTRIAN DROP-OFF ZONE
D	OUTDOOR COLLABORATION SPACE
E	AMPHITEATHER SPACE WITH STAGGERED SEAT WALLS
F	OUTDOOR GATHERING SPACE W/ BOCCE BALL COURT
G	PROJECT PROPOSED SIGNAGE
H	WATER QUALITY ZONES
I	PEDESTRIAN WALKWAY
J	WATER FEATURES
K	CAMINO DEL SUR BIKE PATH
L	90 SHORT-TERM BIKE RACKS

SITE PLAN NOTES

1. ARROYO PEDESTRIAN TRAIL WILL DEAD END AND NOT BE CONNECTING TO CAMINO DEL SUR CONNECTION TRAILS UNTIL FURTHER DEVELOPMENT HAS BEEN IDENTIFIED AND CONFIRMED.
2. ALL DOORS SHALL BE WELL MAINTAINED AND HAVE STRONG SPRINGS THAT CLOSE PROPERLY AT ALL TIMES. ALL BUILDING ENTRY AND EXITS SHALL BE ACCOMPANIED WITH PROPER EMERGENCY SIGNAGE, CAMERA, AND ALARM SYSTEM.
3. ALL BUILDING STAIRWELL ENTRY AND EXITS SHALL BE KEPT UNLOCKED DURING NORMAL OPERATING HOURS IN CASE OF AN EMERGENCY.
4. CAFE IS ACCESSORY TO THE PRIMARY OFFICE USES ON SITE ONLY AND WILL NOT BE OPEN TO THE GENERAL PUBLIC.
5. BUILDING ADDRESS NUMBER SHALL BE VISABLE AND LEGIBLE FROM THE STREET OR ROAD FRONTING THE PROPERTY.
6. IF A 3" OR LARGER METER IS REQUIRED FOR THIS PROJECT, THE
7. OWNER/PERMITTEE SHALL CONSTRUCT THE NEW METER AND PRIVATE BACKFLOW DEVICE ON SITE, ABOVE GROUND, WITHIN AN ADEQUATELY SIZED WATER EASEMENT, IN A MANNER SATISFACTORY TO THE DIRECTOR OF THE PUBLIC UTILITIES DEPARTMENT AND THE CITY ENGINEER.
8. LIGHTING SHALL BE DIRECTED AWAY FROM ALL NATURAL HABITAT, RUNOFF FROM PARKING AREAS SHALL NOT BE DISCHARGED DIRECTLY INTO THE MHPA, AND INVASIVE SPECIES SHALL NOT BE PLANTED ADJACENT TO THE MHPA.
9. NO OBJECT HIGHER THAN 36 INCHES ARE PROPOSED IN VISIBILITY AREAS.
10. IF VISIBILITY AREAS LIES WITHIN THE PUBLIC RIGH-OF-WAY; NO VEGETATION OTHER THAN TREES IN THESE AREAS WILL EXCEED 24 INCHES IN HEIGHT.
11. TRASH & DELIVERY TRUCKS WILL USE THE SAME CIRCULATION AS THE FIRE TRUCKS ALONG THE FIRE LANE. TRASH BINS WITHIN THE STRUCTURES WILL BE WHEELED OUT INDIVIDUALLY BEFORE BEING PICKED UP.
12. PARKING STRUCTURE HAS BEEN DESIGNATED AS TYPE 1 CONSTRUCTION. THE ENTIRE STRUCTURE WILL BE CONCRETE AND METAL, AND WILL NOT BE COMBUSTIBLE.
13. ALL EXISTING WETLANDS AND VERNAL POOLS SHALL BE AVOIDED IN ITS ENTIRETY.
14. PARKING STRUCTURE HAS BEEN DESIGNATED AS TYPE 1 CONSTRUCTION. THE ENTIRE STRUCTURE WILL BE CONCRETE AND METAL, AND WILL NOT BE COMBUSTIBLE.
15. THE 3,850 SF CAFE WILL BE AN ACCESSORY TO THE PRIMARY OFFICE USES ON SITE ONLY. THE CAFE WILL NOT BE OPEN TO THE GENERAL PUBLIC AT ANY TIME. THE CAFE SHALL COMPLY TO MEET ALL SDMC ACCESSORY USE STANDARDS.

THE PRESERVE AT TORREY HIGHLANDS

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2018-06-05	SDP SUBMITTAL #6		

Seal/Signature

JAMES K HEINLY
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REN. 9/30/19

Project Name
THE PRESERVE AT TORREY HIGHLANDS

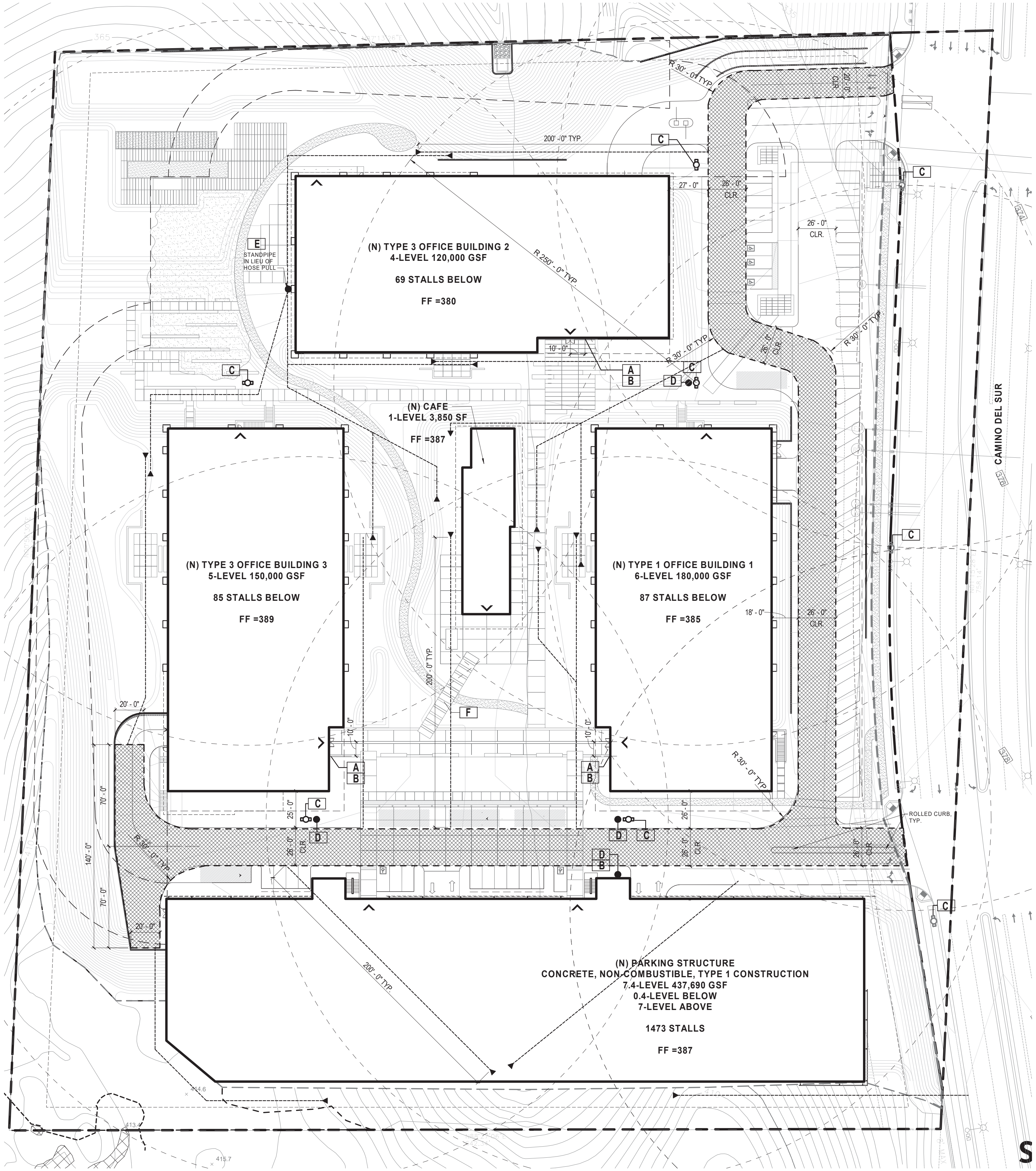
Project Number
55.7511.000

Description
SITE PLAN

Scale
As indicated

A00.50
12 of 43

Ref. North



FIRE ACCESS PLAN
SCALE: 1" = 30'-0"

1

FIRE ACCESS PLAN NOTES

1. ALL DOORS AT STAIRWAYS EXISTING DIRECTLY TO EXTERIOR OF BUILDING SHALL COMPLY WITH FIRE DEPARTMENT ACCESS REQUIREMENTS.
2. STAIRWAYS EXISTING DIRECTLY TO THE EXTERIOR OF THE BUILDING FOUR OR MORE STORIES IN HEIGHT SHALL BE PROVIDED WITH A MEANS OF EMERGENCY ENTRY FOR FIRE DEPARTMENT ACCESS.
3. THE REQUIRED WIDTH OF ACCESS ROADWAYS SHALL NOT BE OBSTRUCTED IN ANY MANNER, INCLUDING THE PARKING OF VEHICLES. WHERE NO SPACE IS PROVIDED FOR PARKING ALONG ACCESS ROADWAYS, THEY SHALL BE KEPT CLEAR BY THE POSTING OF SIGNS OR THE PAINTING OF CURBS PER POLICY A-14-1.
4. POST INDICATOR VALVES, FIRE DEPARTMENT CONNECTIONS, AND ALARM BELL ARE TO BE LOCATED ON THE ADDRESS/ACCESS SIDE OF THE BUILDING. DSD LIFE SAFETY REQUIRES FDC/PIV 40 FT. FROM BUILDING. IF CLEARANCE CANNOT BE OBTAINED FDC ON BLDG. 20' FROM OPENINGS. < 20 FT. 1 HR RATED OPENINGS.
5. VEGETATION SHALL BE SELECTED AND MAINTAINED IN SUCH A MANNER AS TO ALLOW IMMEDIATE ACCESS TO ALL HYDRANTS, VALVES, FIRE DEPARTMENT CONNECTIONS, PULL STATIONS, EXTINGUISHERS, SPRINKLER RISERS, ALARM CONTROL PANELS, RESCUE WINDOWS, AND OTHER DEVICES OR AREAS USED FOR FIREFIGHTING PURPOSES. VEGETATION OR BUILDING FEATURES SHALL NOT OBSTRUCT ADDRESS NUMBERS OR INHIBIT THE FUNCTIONING OF ALARM BELLS, HORNS OR STROBES.
6. PER CBC SEC. 3002.4A - GENERAL STRETCHER REQUIREMENTS - ALL BUILDINGS AND STRUCTURES WITH ONE OR MORE PASSENGER SERVICE ELEVATORS SHALL BE PROVIDED WITH NOT LESS THAN ONE MEDICAL EMERGENCY SERVICE ELEVATOR TO ALL LANDINGS.
7. PER CFC 504.3 - NEW BUILDINGS FOUR OR MORE STORIES ABOVE GRADE PLANE, EXCEPT THOSE WITH A ROOF SLOPE GREATER THAN FOUR UNITS VERTICAL IN 12 UNITS HORIZONTAL SHALL BE PROVIDED WITH A STAIRWAY TO THE ROOF.
8. PER CFC APPENDIX B, SECTION B104.3; THE FIRE-FLOW CALCULATION AREA OF BUILDINGS CONSTRUCTED OF TYPE 1A AND TYPE 1B CONSTRUCTION SHALL BE THE AREA OF THE THREE LARGEST SUCCESSIVE FLOORS. FIRE-FLOW CALCULATION AREA FOR OPEN PARKING GARAGES SHALL BE DETERMINED BY THE AREA OF THE LARGEST FLOOR.
9. STANDPIPE IN LIEU OF HOSE PULL FOR BUILDING 2; REFER TO SITE PLAN FOR LOCATION AND HOSE PULL COVERAGE.

LEGEND

—— – – —— – – ——	**PROPERTY LINE**
- - - - - - - - - -	**SETBACK**
------------------------	**HOSE PULLS, 200' MAX.**
– – – – – – – – – –	**HYDRANT SPACING PER FIRE-FLOW REQ.**
▨	**FIRELANE**
♿	INTERNATIONAL SYMBOL OF ACCESSIBILITY
⊸	ACCESSIBLE PARKING AND TOW AWAY SIGN
L.S.	LANDSCAPED AREA
#	TOTAL NUMBER OF STALLS TYPE DESIGNATOR S=STANDARD A=ACCESSIBLE E=EXISTING
<	BUILDING EXIT

KEYNOTES

A	KNOX BOX	C	FIRE HYDRANTS	E	STANDPIPE
B	ALARM BELL	D	FDC/PIV	F	WALKWAY

THE PRESERVE AT TORREY HIGHLANDS

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2017-11-20	SDP SUBMITTAL #5		
2018-06-12	SDP SUBMITTAL #6		

Seal/Signature

JAMES K HEINLY
C 26830
REN. 9/30/19

Project Name
THE PRESERVE AT TORREY HIGHLANDS

Project Number
55.7511.000

Description
FIRE ACCESS PLAN

Scale
As indicated

A00.51
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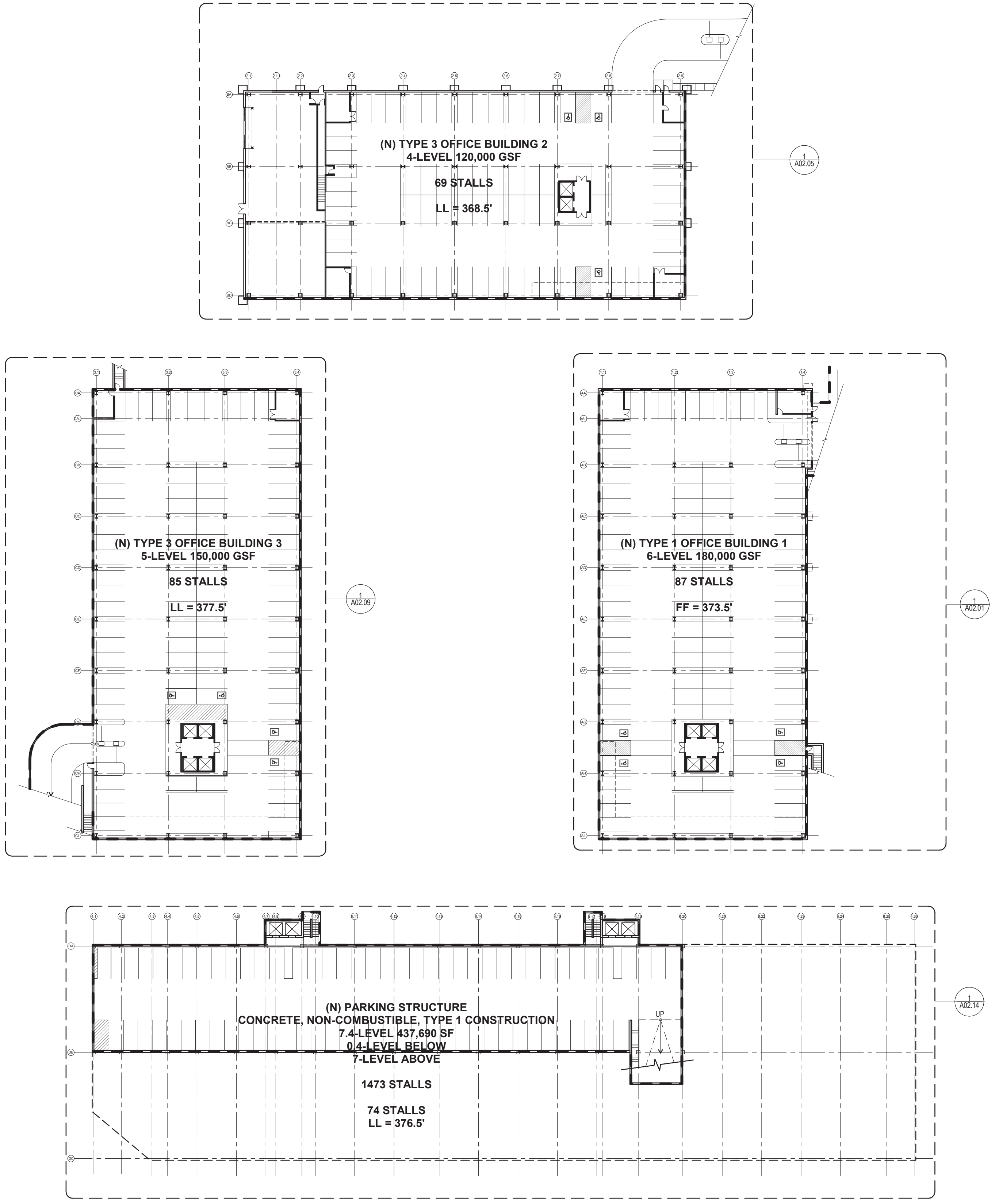
Ref. North



SUBTERRANEAN PARKING PLAN 1
SCALE: 1" = 30'-0"

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Seal/Signature

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REN. 9/30/19

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THE PRESERVE AT TORREY HIGHLANDS

Project Number
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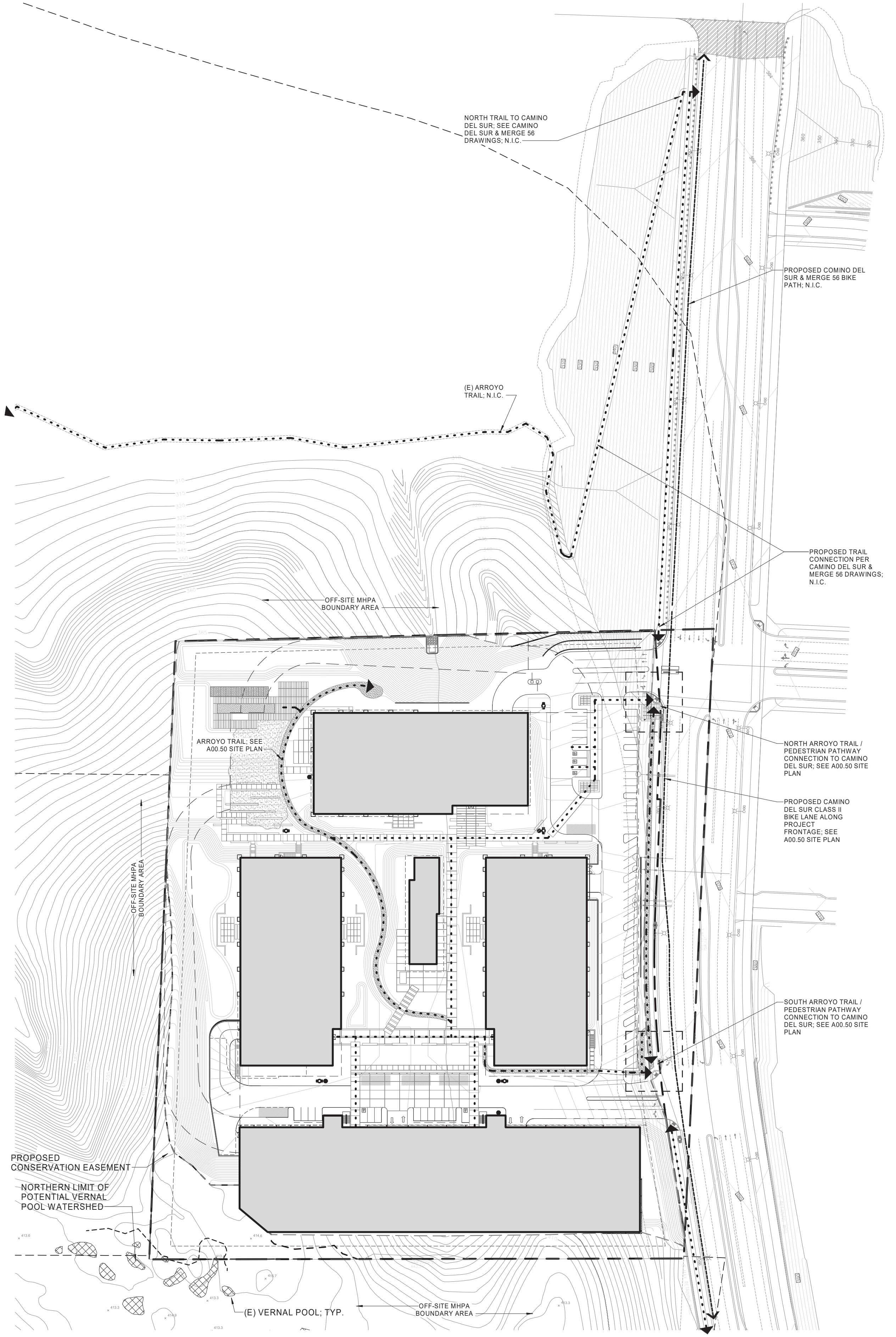
Description
SUBTERRANEAN PARKING PLAN

Scale
1" = 30'-0"

A00.52
14 of 43

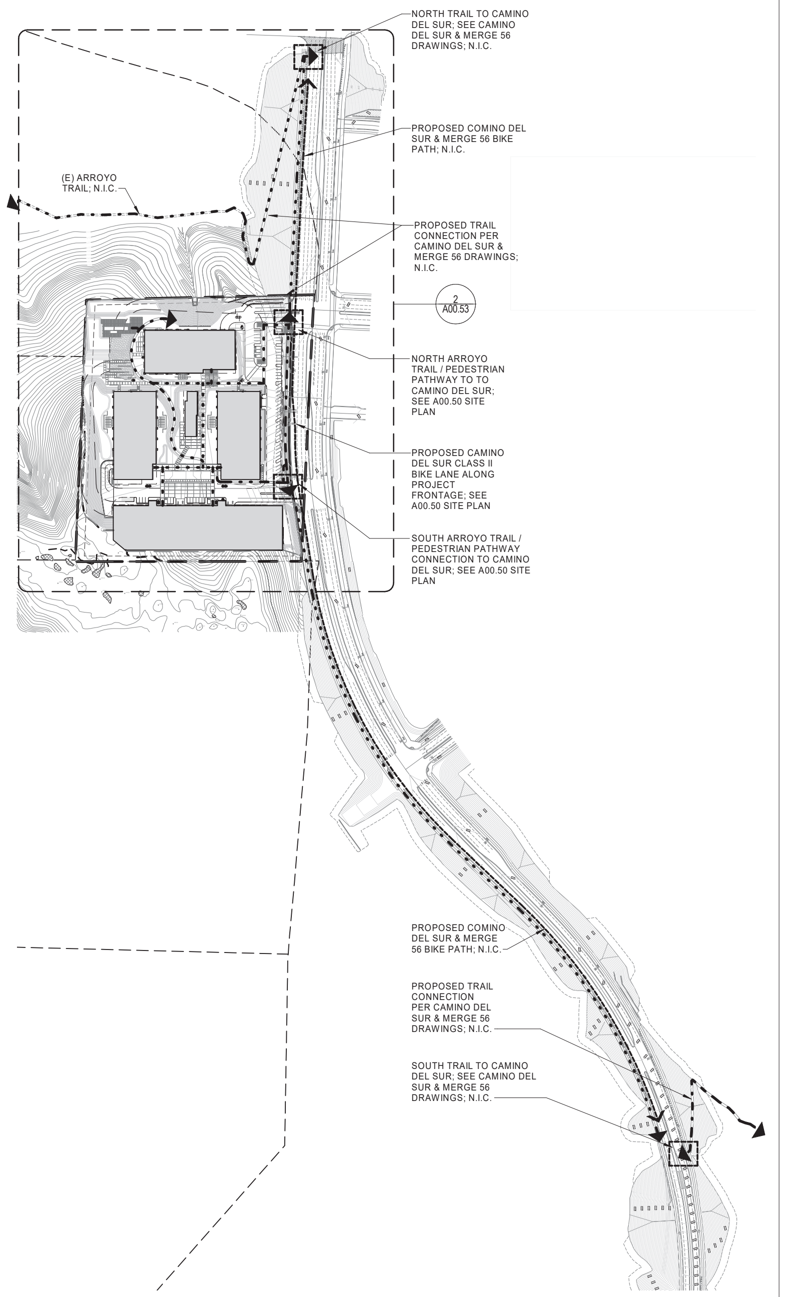
Ref. North



ENLARGED TRAIL CONNECTION PLAN

SCALE: 1" = 60'-0"

2



TRAIL CONNECTION KEY PLAN

SCALE: 1" = 200'-0"

1

TRAIL CONNECTION PLAN NOTES

1. ARROYO PEDESTRIAN PATHWAY WILL NOT CONNECT UNTIL FURTHER DEVELOPMENT OF THE CAMINO DEL SUR TRAIL LOCATION IS IDENTIFIED AND CONFIRMED. ARROYO PATHWAY ON-SITE WILL DEAD END ON THE NORTHERN SIDE OF THE SITE; U.N.O.
2. ALL CAMINO DEL SUR BIKE LANES WILL BE BUILT ON THE IMPROVEMENT PLANS THAT BUILD CAMINO DEL SUR; THIS WILL WORK IN CORRISPONDANCE WITH THE MERGE 56 PROJECT SUBMITTAL; BIKE LANES UNDER SEPERATE PERMIT.

LEGEND

PROPERTY LINE

SETBACK

LIMIT OF WORK

ARROYO TRAIL PATH OF TRAVEL

CAMINO DEL SUR BIKE PATH

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Seal/Signature

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THE PRESERVE AT TORREY HIGHLANDS

Project Number
55.7511.000

Description
TRAIL CONNECTION PLAN

Scale
As indicated

A00.53

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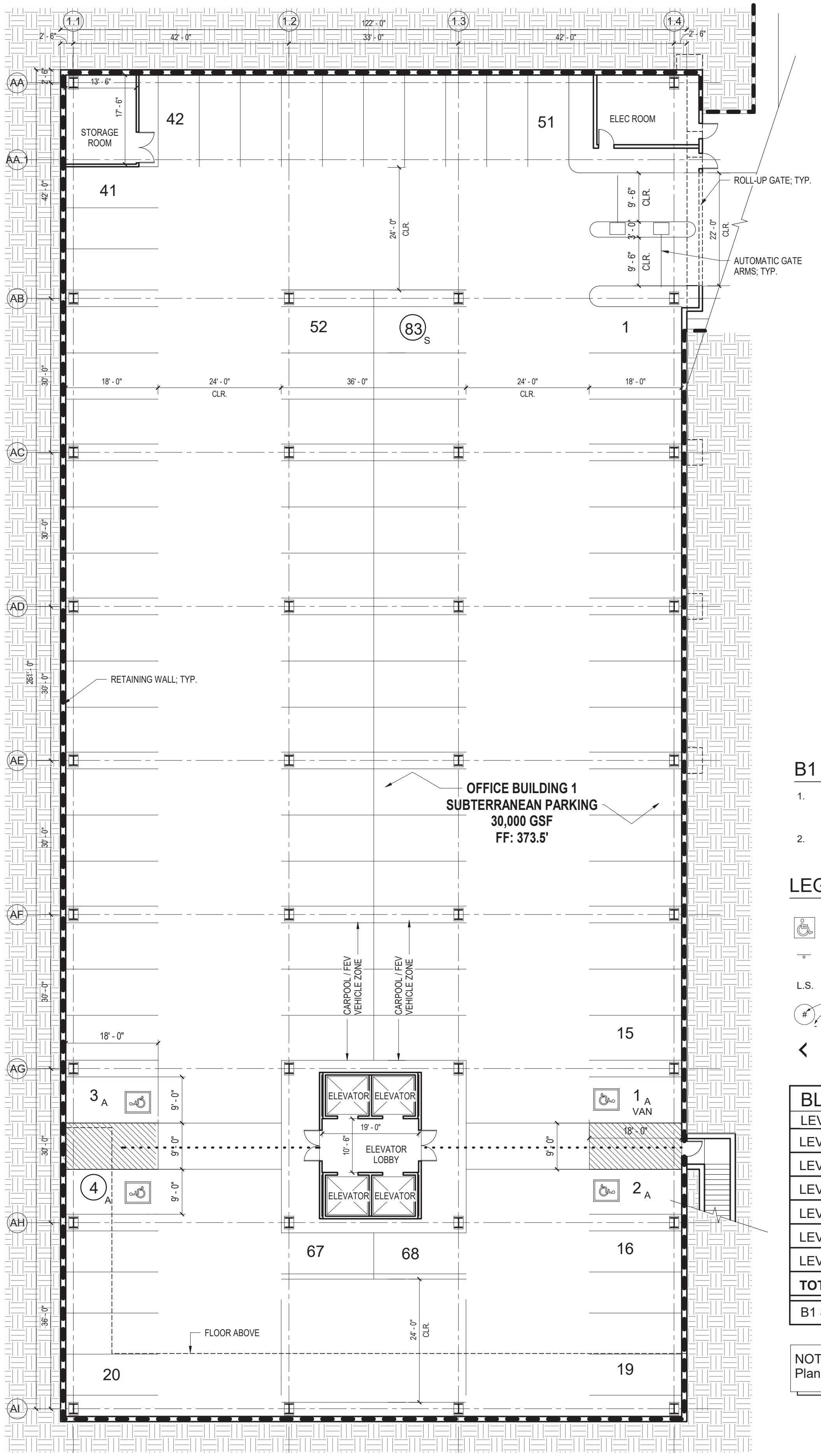
Ref. North

BUILDING FIXTURE UNIT SUMMARY

BLDG	FIXTURE		TYPE	QTY	WATER		WASTE	
					FU	TOTAL	FU	TOTAL
OFFICE BLDG 1 (6-LEVELS)	LAVATORY		-	36	-	-	-	-
	MOP SINK		-	6	-	-	-	-
	WATER CLOSET		FLUSH VALVE	36	-	-	-	-
	DRINKING FOUNTAIN		-	12	-	-	-	-
	HOSE BIBB		-	-	-	-	-	-
	URINAL		FLUSH VALVE	12	-	-	-	-
	SHOWERS		-	0	-	-	-	-
OFFICE BLDG 2 (4-LEVELS)	LAVATORY		-	24	-	-	-	-
	MOP SINK		-	4	-	-	-	-
	WATER CLOSET		FLUSH VALVE	24	-	-	-	-
	DRINKING FOUNTAIN		-	8	-	-	-	-
	HOSE BIBB		-	-	-	-	-	-
	URINAL		FLUSH VALVE	8	-	-	-	-
	SHOWERS		-	0	-	-	-	-
OFFICE BLDG 3 (5-LEVELS)	LAVATORY		-	30	-	-	-	-
	MOP SINK		-	5	-	-	-	-
	WATER CLOSET		FLUSH VALVE	30	-	-	-	-
	DRINKING FOUNTAIN		-	10	-	-	-	-
	HOSE BIBB		-	-	-	-	-	-
	URINAL		FLUSH VALVE	10	-	-	-	-
	SHOWERS		-	0	-	-	-	-
FITNESS CENTER (1-LEVEL)	LAVATORY		-	6	-	-	-	-
	MOP SINK		-	1	-	-	-	-
	WATER CLOSET		FLUSH VALVE	4	-	-	-	-
	DRINKING FOUNTAIN		-	4	-	-	-	-
	HOSE BIBB		-	-	-	-	-	-
	URINAL		FLUSH VALVE	2	-	-	-	-
	SHOWERS		-	10	-	-	-	-
CAFE (1-LEVEL)	RESTROOMS	LAVATORY	-	4	-	-	-	-
		WATER CLOSET	FLUSH VALVE	6	-	-	-	-
		DRINKING FOUNTAIN	-	2	-	-	-	-
		HOSE BIBB	-	-	-	-	-	-
		URINAL	FLUSH VALVE	2	-	-	-	-
		SHOWERS	-	0	-	-	-	-
	KITCHEN	MOP SINK	-	1	-	-	-	-
		HAND SINK	-	7	-	-	-	-
		PREP SINK	-	3	-	-	-	-
		DUMP SINK	-	1	-	-	-	-
		3 COMPARTMENT SINK	-	1	-	-	-	-
		WAREWASHER	-	1	-	-	-	-
		WATER STATION	-	1	-	-	-	-
		SODA DISPENSER	-	1	-	-	-	-
		ICE MACHINE	-	1	-	-	-	-
	TOTAL FU					-		-
	TOTAL GPM					-		-



OFFICE BLDG 1 - B1 SUBTERRANEAN PARKING PLAN
SCALE: 3/32" = 1'-0"

BLDG 1 - B1 SUB. PARKING - 30,000 SF | 87 CARS | 345 SF / CAR

1

B1 SUB. PARKING NOTES

1. PARKING STRUCTURE SHALL REQUIRE ROLL-UP GATE AT ENTRY AND EXITS. GATE SHALL BE OPEN DURING BUSINESS HOURS AT ALL TIMES. NO FOB OR CONTROL GATE WILL BE REQUIRED.
2. ALL STALLS @ 8'-6"; U.N.O.

LEGEND

♿	INTERNATIONAL SYMBOL OF ACCESSIBILITY
⏀	ACCESSIBLE PARKING AND TOW AWAY SIGN
L.S.	LANDSCAPED AREA
#	TOTAL NUMBER OF STALLS TYPE DESIGNATOR S=STANDARD A=ACCESSIBLE M=MOTORCYCLE E=EXISTING
<	BUILDING EXIT

BLDG 1 - GSF TABULATION	
LEVEL DESCRIPTION	TOTAL GSF
LEVEL 1	30,000 GSF
LEVEL 2	30,000 GSF
LEVEL 3	30,000 GSF
LEVEL 4	30,000 GSF
LEVEL 5	30,000 GSF
LEVEL 6	30,000 GSF
TOTAL	**180,000 GSF**
B1 SUBTERRANEAN	30,000 GSF

NOTE: See Sheet A00.50 Site Plan for Overall Parking Ratio

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2017-11-20	SDP SUBMITTAL #5		

Seal/Signature

LICENSED ARCHITECT
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REN. 9/30/19
STATE OF CALIFORNIA

Project Name
THE PRESERVE AT TORREY HIGHLANDS

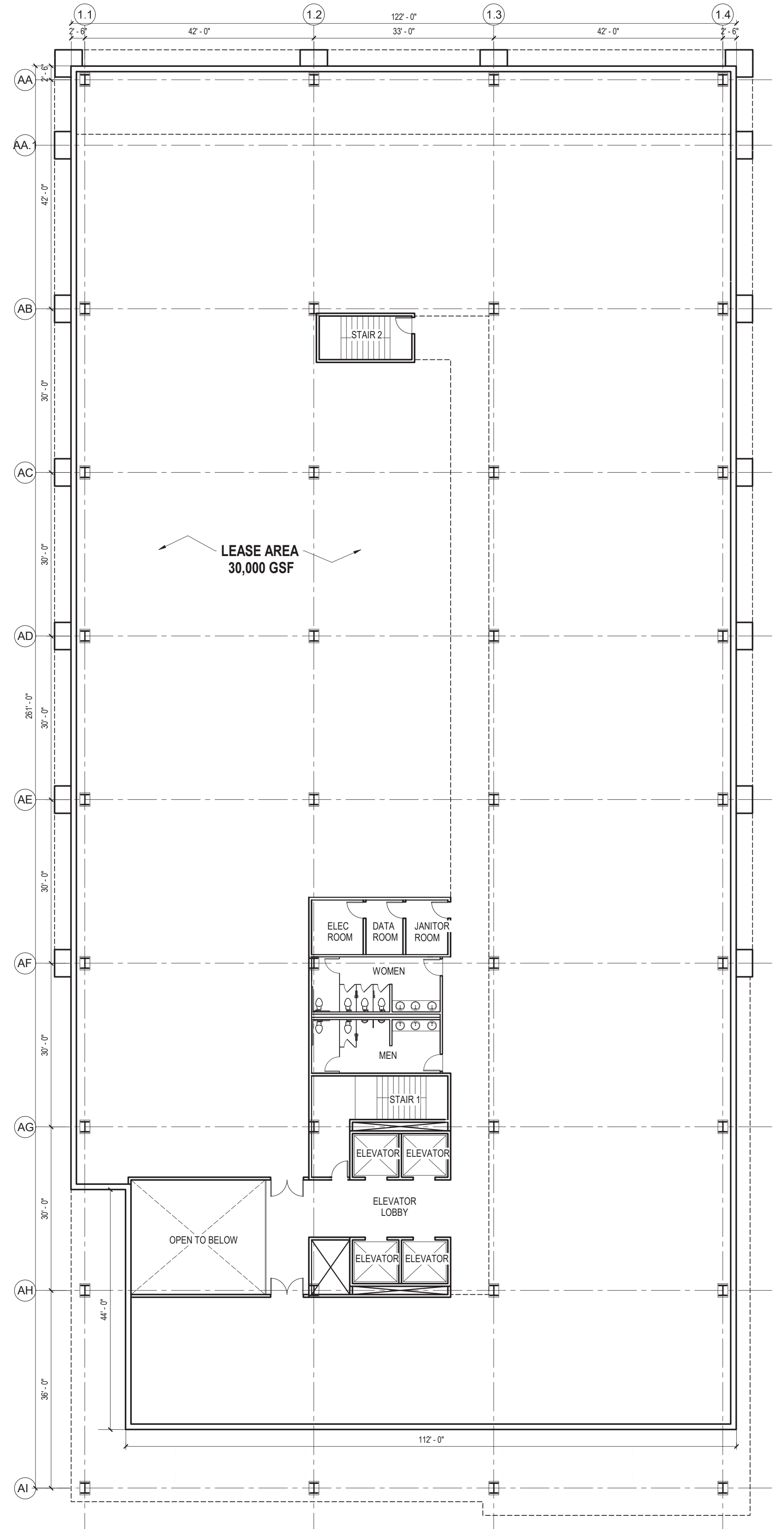
Project Number
55.7511.000

Description
OFFICE BLDG 1 - FLOOR PLANS

Scale
As indicated

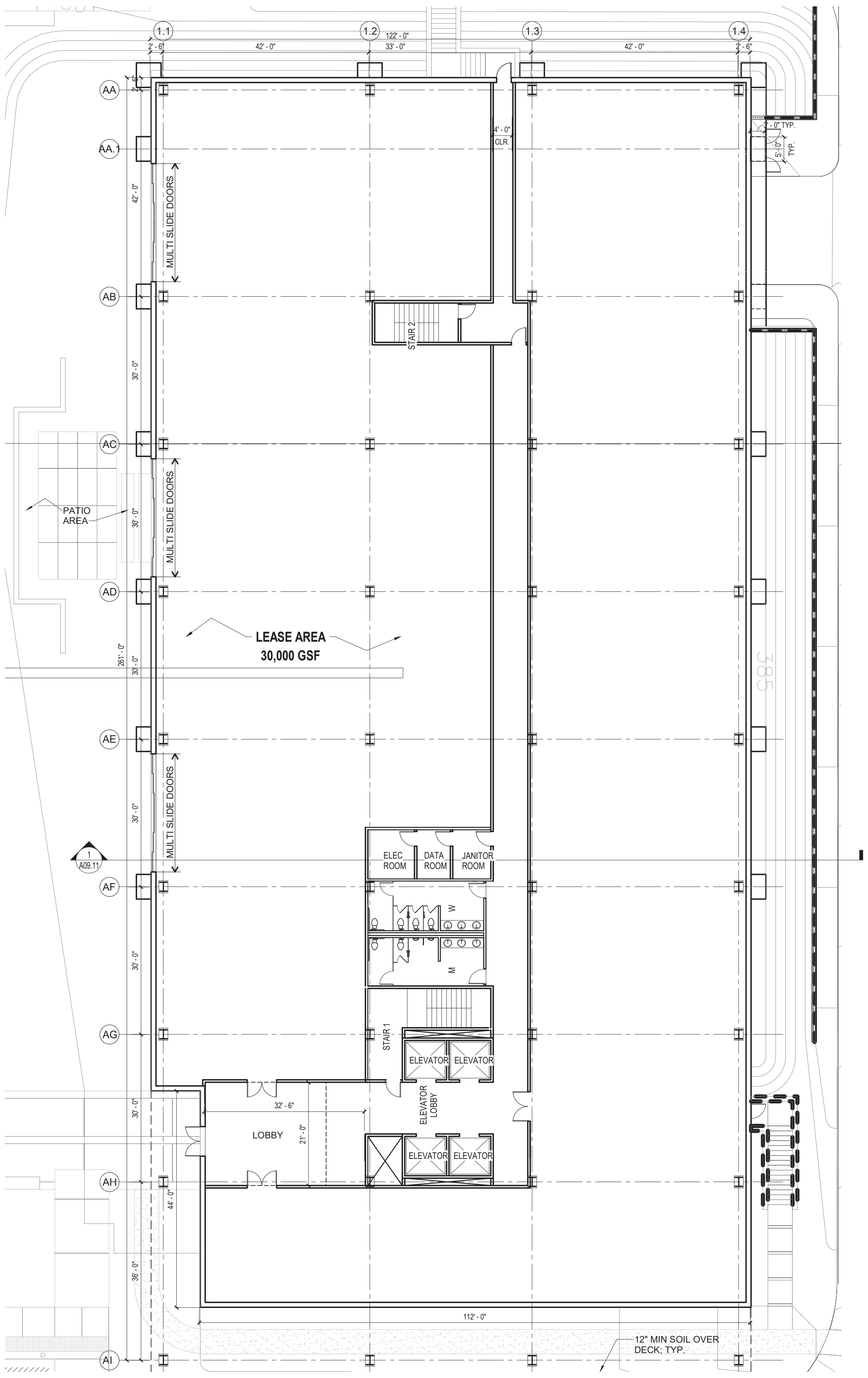
A02.01
16 of 43

Ref. North



OFFICE BLDG 1 - CONSTRUCTION PLAN LEVEL 2 2

SCALE: 3/32" = 1'-0"



OFFICE BLDG 1 - CONSTRUCTION PLAN LEVEL 1 1

SCALE: 3/32" = 1'-0"

THE PRESERVE AT TORREY HIGHLANDS

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Seal/Signature

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THE PRESERVE AT TORREY HIGHLANDS

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Description
OFFICE BLDG 1 - FLOOR PLANS

Scale
3/32" = 1'-0"

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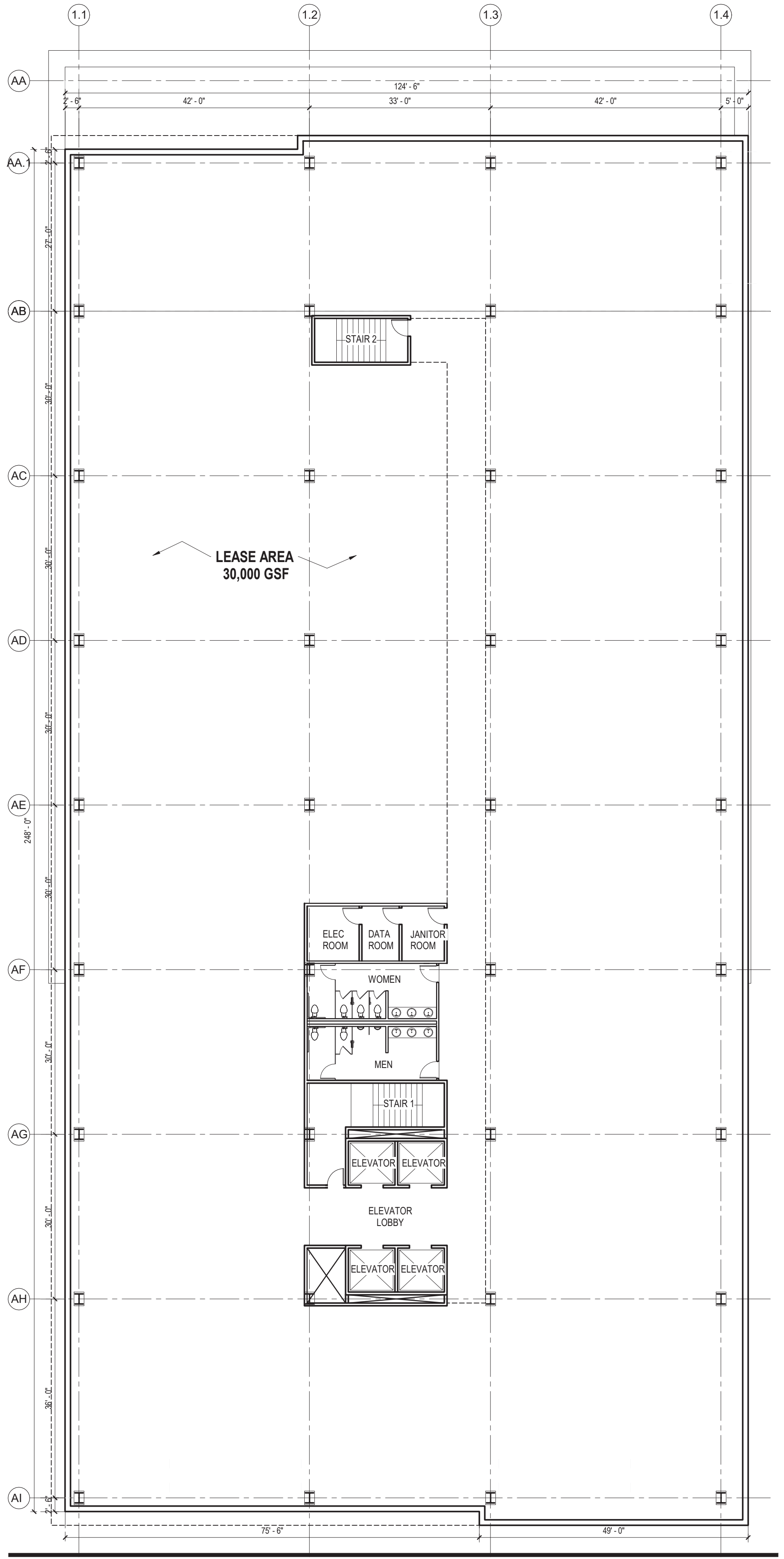
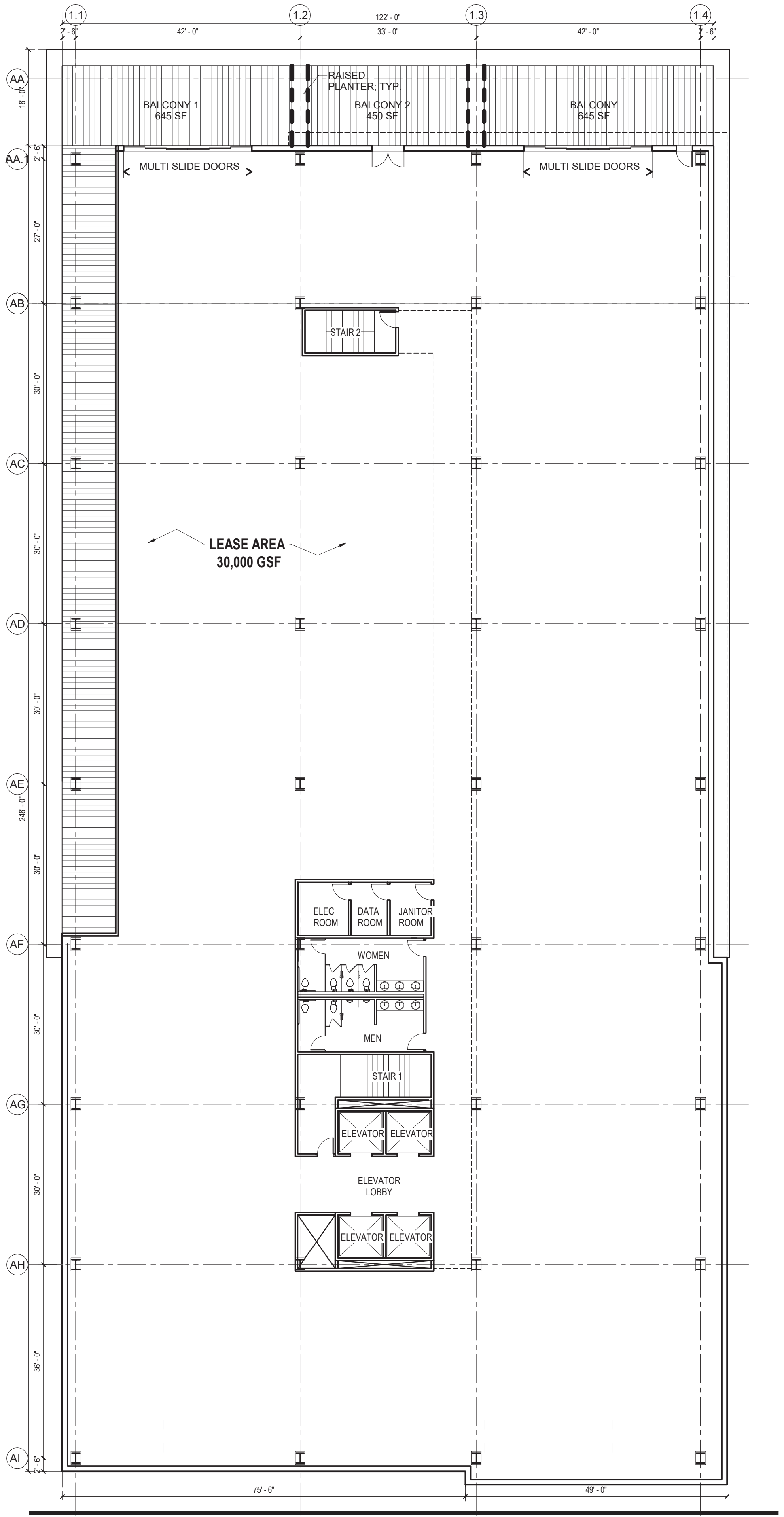
17 of 43

Ref. North



OFFICE BLDG 1 - CONSTRUCTION PLAN LEVEL 4
SCALE: 3/32" = 1'-0"
2



OFFICE BLDG 1 - CONSTRUCTION PLAN LEVEL 3
SCALE: 3/32" = 1'-0"
1

THE PRESERVE AT TORREY HIGHLANDS

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2017-03-15	SDP SUBMITTAL #4		
2017-11-20	SDP SUBMITTAL #5		

Seal/Signature

JAMES K HEINLY
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Project Name
THE PRESERVE AT TORREY HIGHLANDS

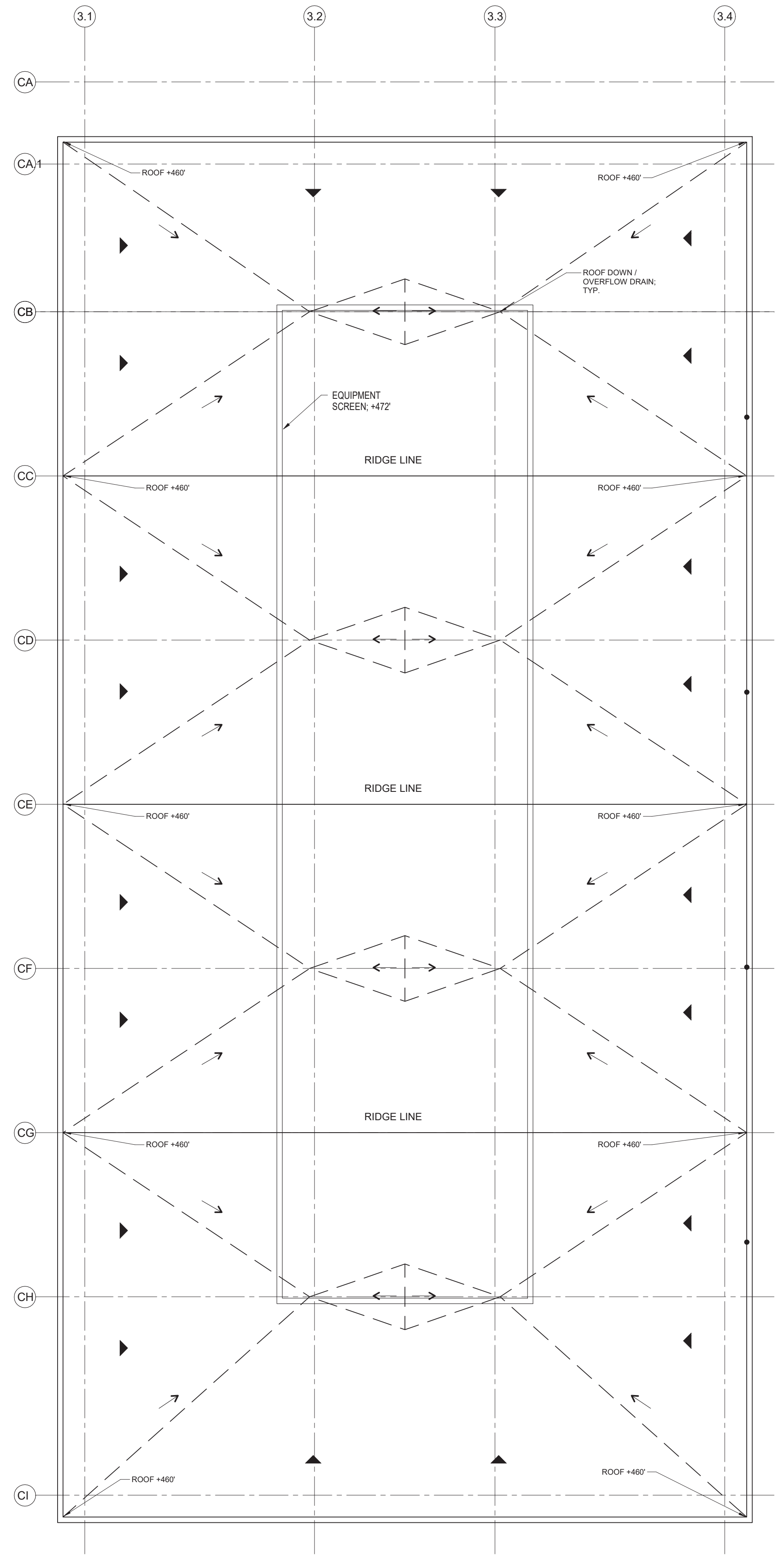
Project Number
55.7511.000

Description
OFFICE BLDG 1 - FLOOR PLANS

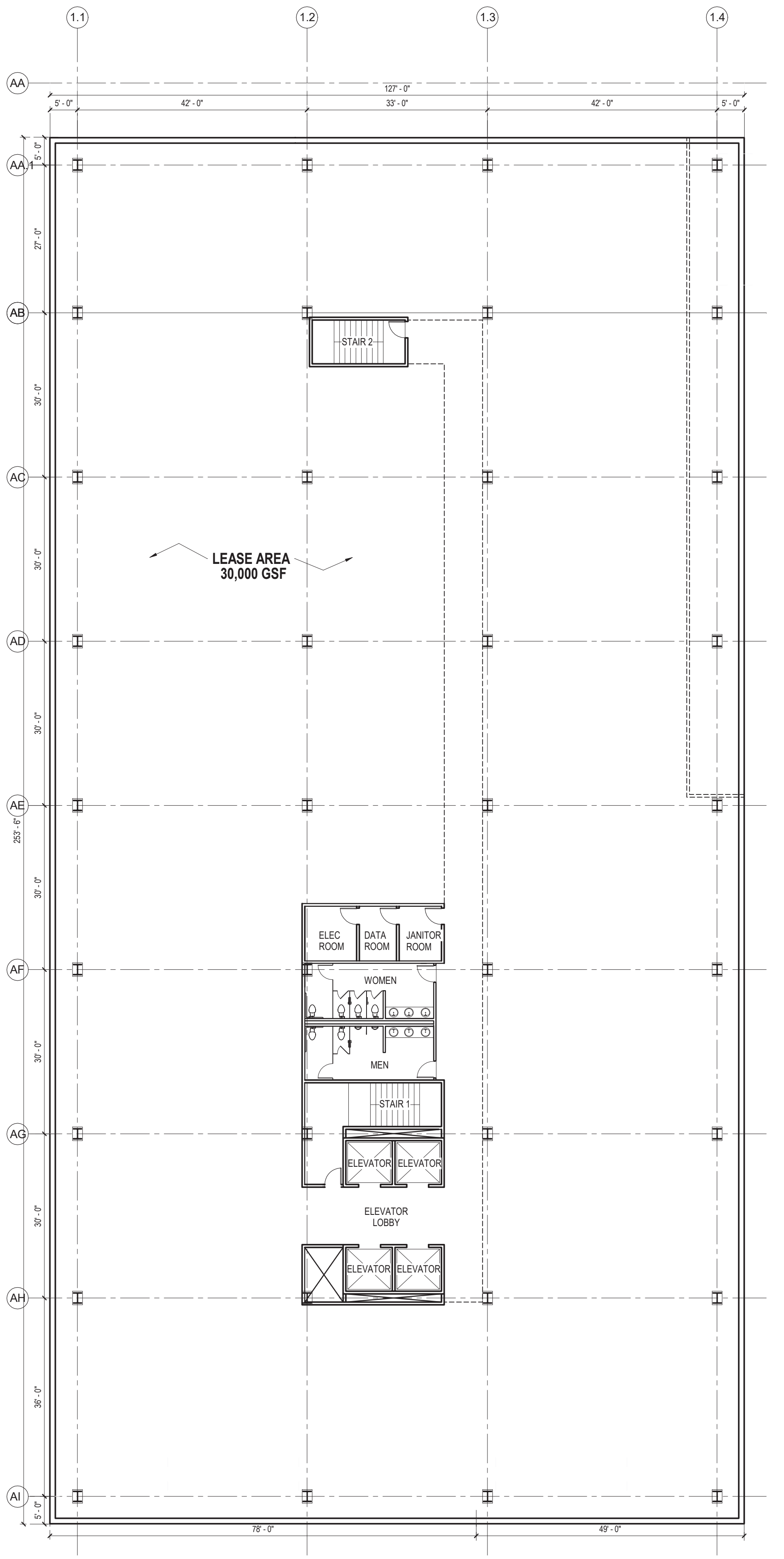
Scale
3/32" = 1'-0"

A02.03
18 of 43

Ref. North



OFFICE BLDG 1 - ROOF PLAN
SCALE: 3/32" = 1'-0"
2



OFFICE BLDG 1 - CONSTRUCTION PLAN LEVEL 5-6
SCALE: 3/32" = 1'-0"
1

THE PRESERVE AT TORREY HIGHLANDS

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2017-11-20	SDP SUBMITTAL #5		

Seal/Signature

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REN. 9/30/19

Project Name
THE PRESERVE AT TORREY HIGHLANDS

Project Number
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Description
OFFICE BLDG 1 - FLOOR PLANS & ROOF PLAN

Scale
3/32" = 1'-0"

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19 of 43

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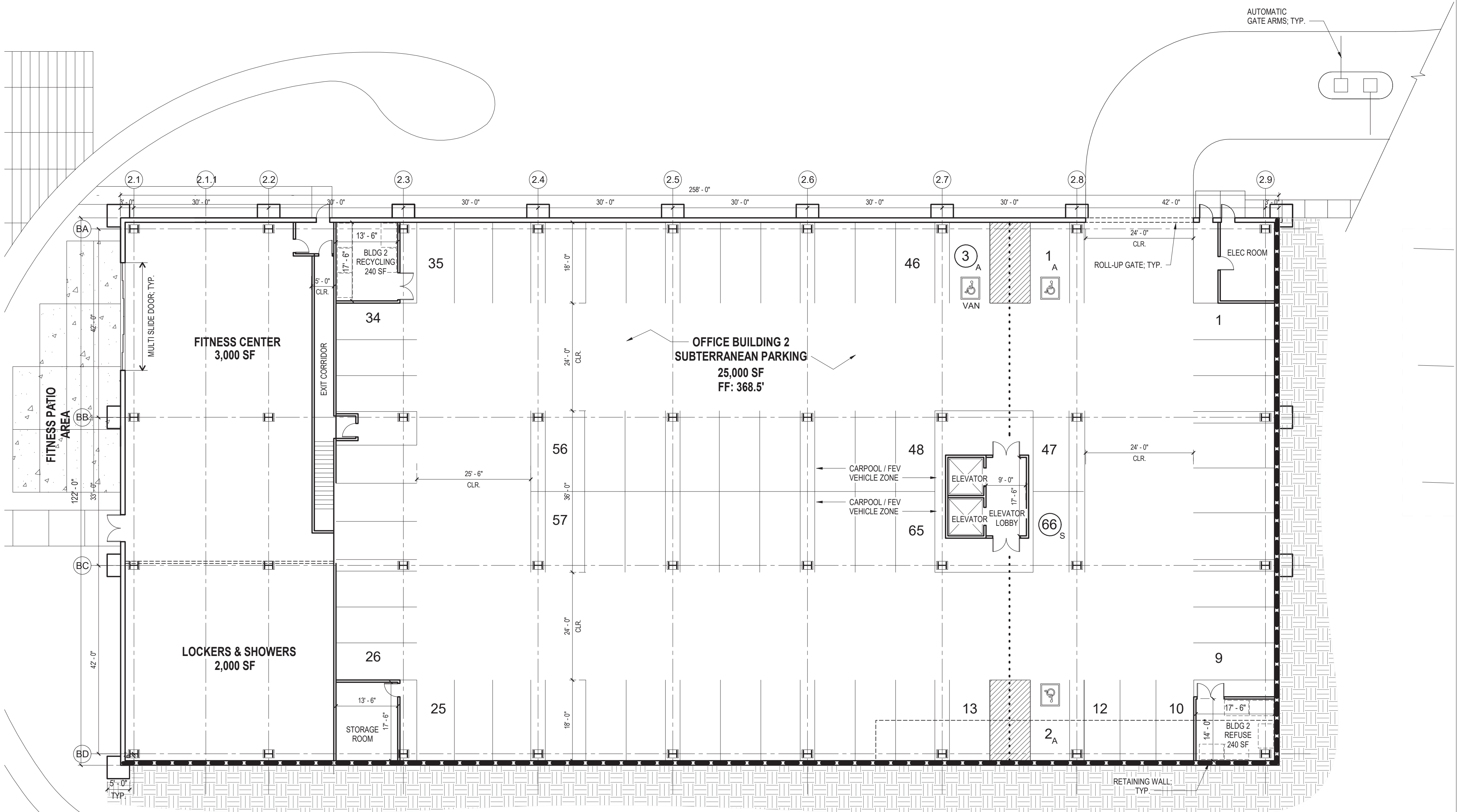

OFFICE BLDG 2 - B1 SUBTERRANEAN PARKING

SCALE: 3/32" = 1'-0"

BLDG 2 - B1 SUB. PARKING - 25,000 SF | 69 CARS | 362 SF / CAR 1

OVERALL BICYCLE PARKING TABULATION

*PER Section 142.0530(e)(1)(D), The minimum long-term and short-term bicycle parking spaces shall be 5% of the required automobile parking space minimum.	SHORT-TERM BICYCLE PARKING		LONG-TERM BICYCLE PARKING	
	REQUIRED (5%)	PROVIDED	REQUIRED (5%)	PROVIDED
BLDG 1 - SUBTERRANEAN	-	-	-	-
BLDG 2 - SUBTERRANEAN	-	-	-	-
BLDG 3 - SUBTERRANEAN	-	-	-	-
STRUCTURED -7 ABOVE, 1 BELOW	-	60	-	115
SURFACE	-	30	-	-
TOTAL	89	**90**	89	**115**

BLDG 1 - GSF TABULATION

LEVEL DESCRIPTION	TOTAL GSF
LEVEL 1	30,000 GSF
LEVEL 2	30,000 GSF
LEVEL 3	30,000 GSF
LEVEL 4	30,000 GSF
TOTAL	**120,000 GSF**
B1 SUBTERRANEAN	25,000 GSF
FITNESS CENTER	5,000 GSF

NOTE: See Sheet A00.50 Site Plan for Overall Parking Ratio

REFUSE & RECYCLABLE STORAGE AREA TABUL.

*PER SDMC 142.0830 TABLE 142-08C; Refuse and Recyclable storage area per development requires 192 SF per 100,001 GSF plus 48 SF for every 25,000 SF of building area after.	REFUSE		RECYCLABLE	
	REQUIRED	PROVIDED	REQUIRED	PROVIDED
BLDG 1 - 180,000 GSF	384 SF	390 SF	384 SF	390 SF
BLDG 2 - 120,000 GSF	240 SF	240 SF	240 SF	240 SF
BLDG 3 - 150,000 GSF	288 SF	343 SF	288 SF	343 SF
TOTAL	912 SF	**973 SF**	912 SF	**973 SF**

B1 SUBTERRANEAN PARKING NOTES

1. PER SDMC 142.5030; EMPLOYEE SHOWER FACILITIES SHALL BE PROVIDED ON SITE AT THE FITNESS LOCKER AND SHOWER DESIGNATED AREA.
2. PARKING STRUCTURE SHALL REQUIRE ROLL-UP GATE AT ENTRY AND EXITS. GATE SHALL BE OPEN DURING BUSINESS HOURS AT ALL TIMES. NO FOB OR CONTROL GATE WILL BE REQUIRED.
3. ALL STALLS @ 8'-6"; U.N.O.

LEGEND

♿	INTERNATIONAL SYMBOL OF ACCESSIBILITY
⏀	ACCESSIBLE PARKING AND TOW AWAY SIGN
L.S.	LANDSCAPED AREA
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Description
OFFICE BLDG 2 - FLOOR PLANS

Scale
As indicated

A02.05
20 of 43

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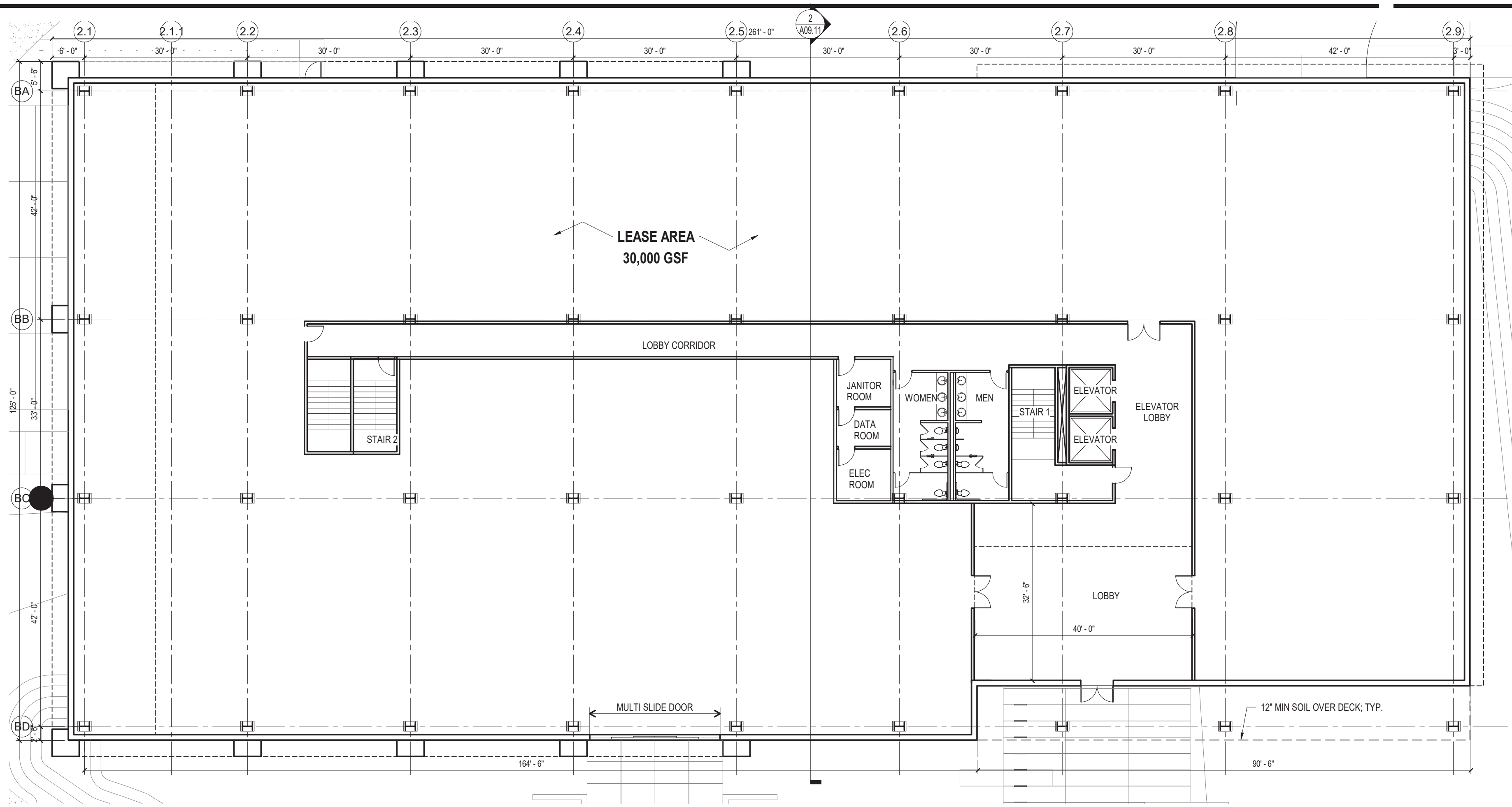
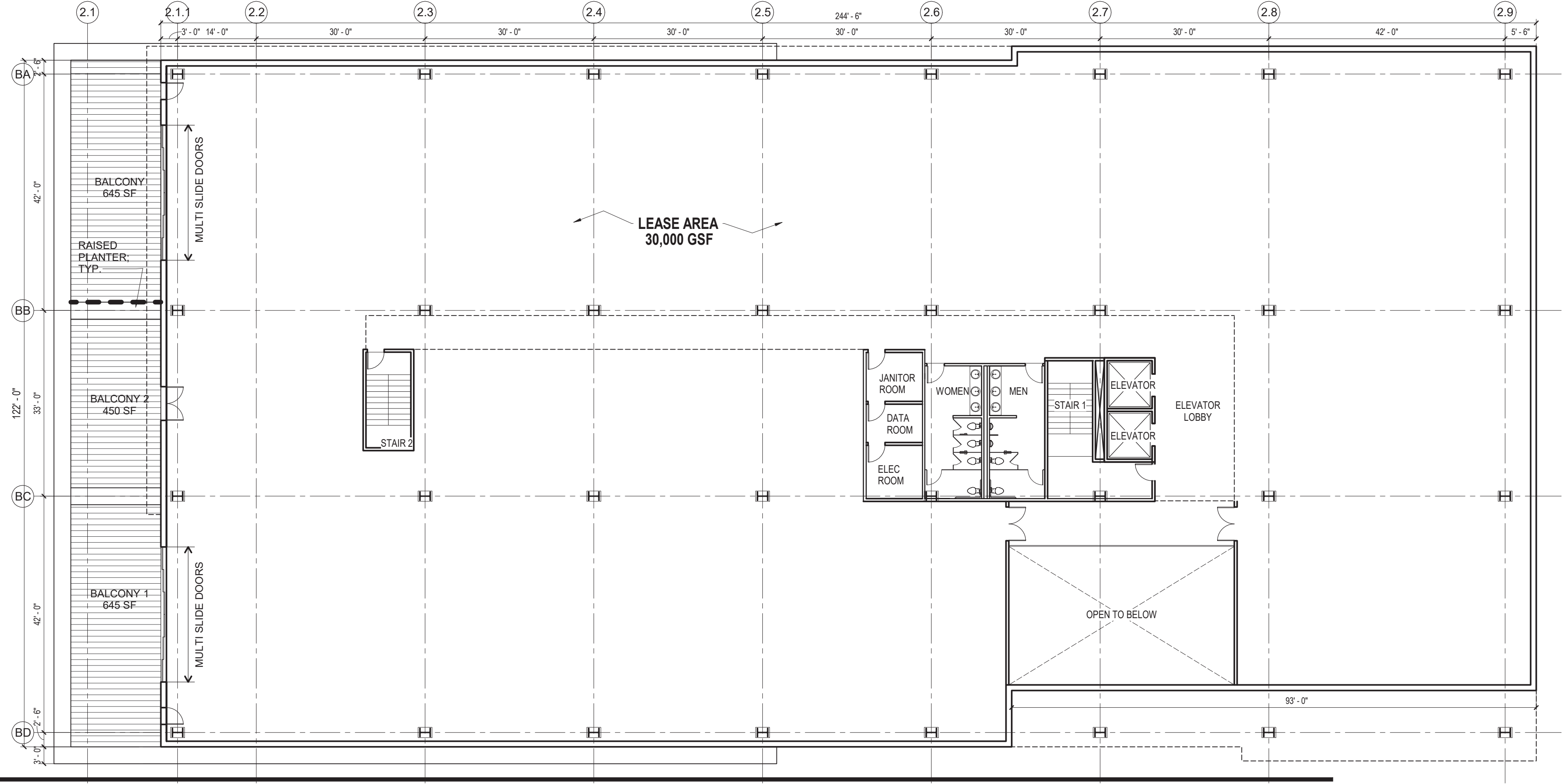


OFFICE BLDG 2 - CONSTRUCTION PLAN LEVEL 1
SCALE: 3/32" = 1'-0"

1



OFFICE BLDG 2 - CONSTRUCTION PLAN LEVEL 2
SCALE: 3/32" = 1'-0"

2

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OFFICE BLDG 2 - FLOOR PLANS

Scale
3/32" = 1'-0"

A02.06

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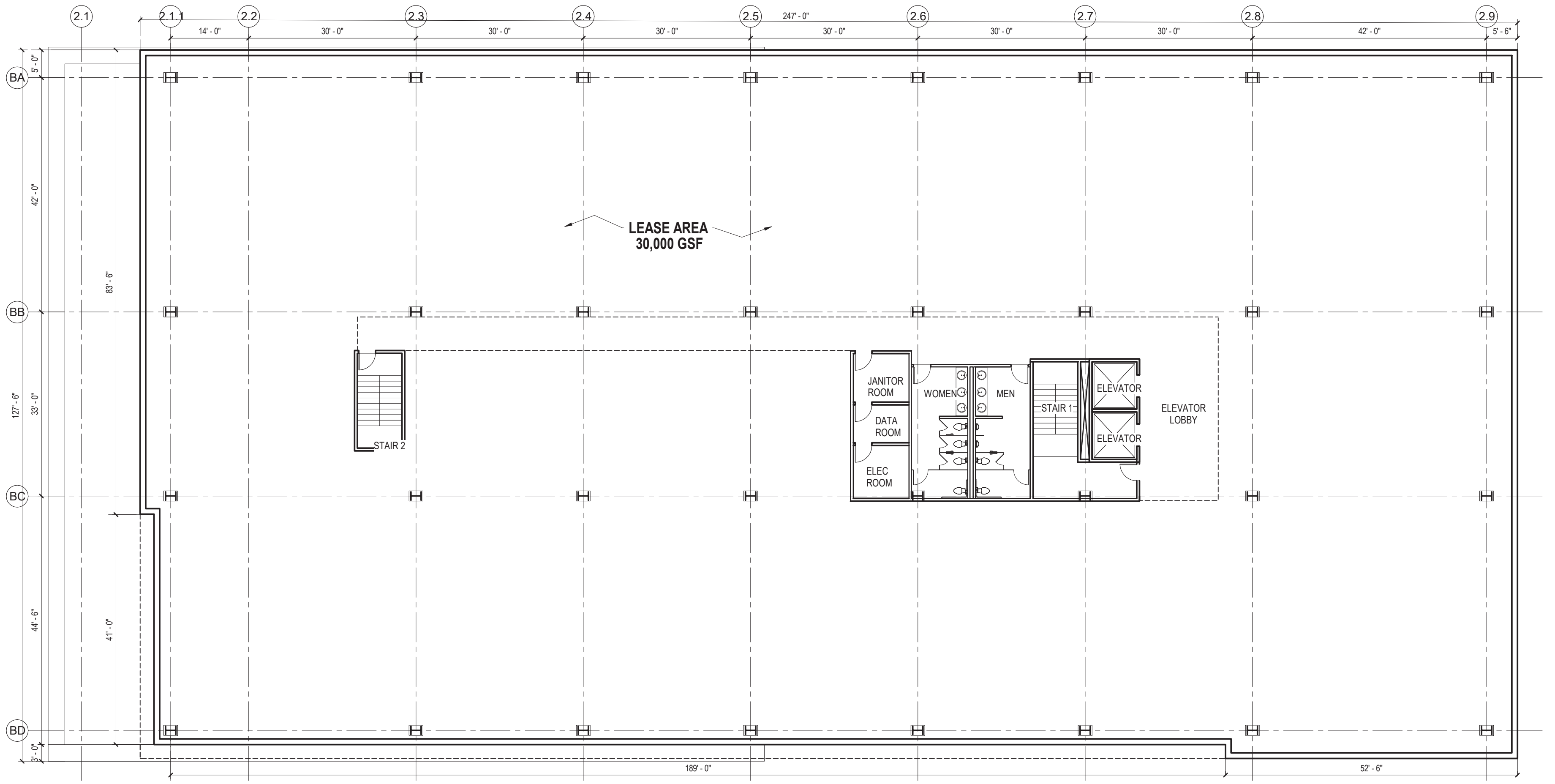
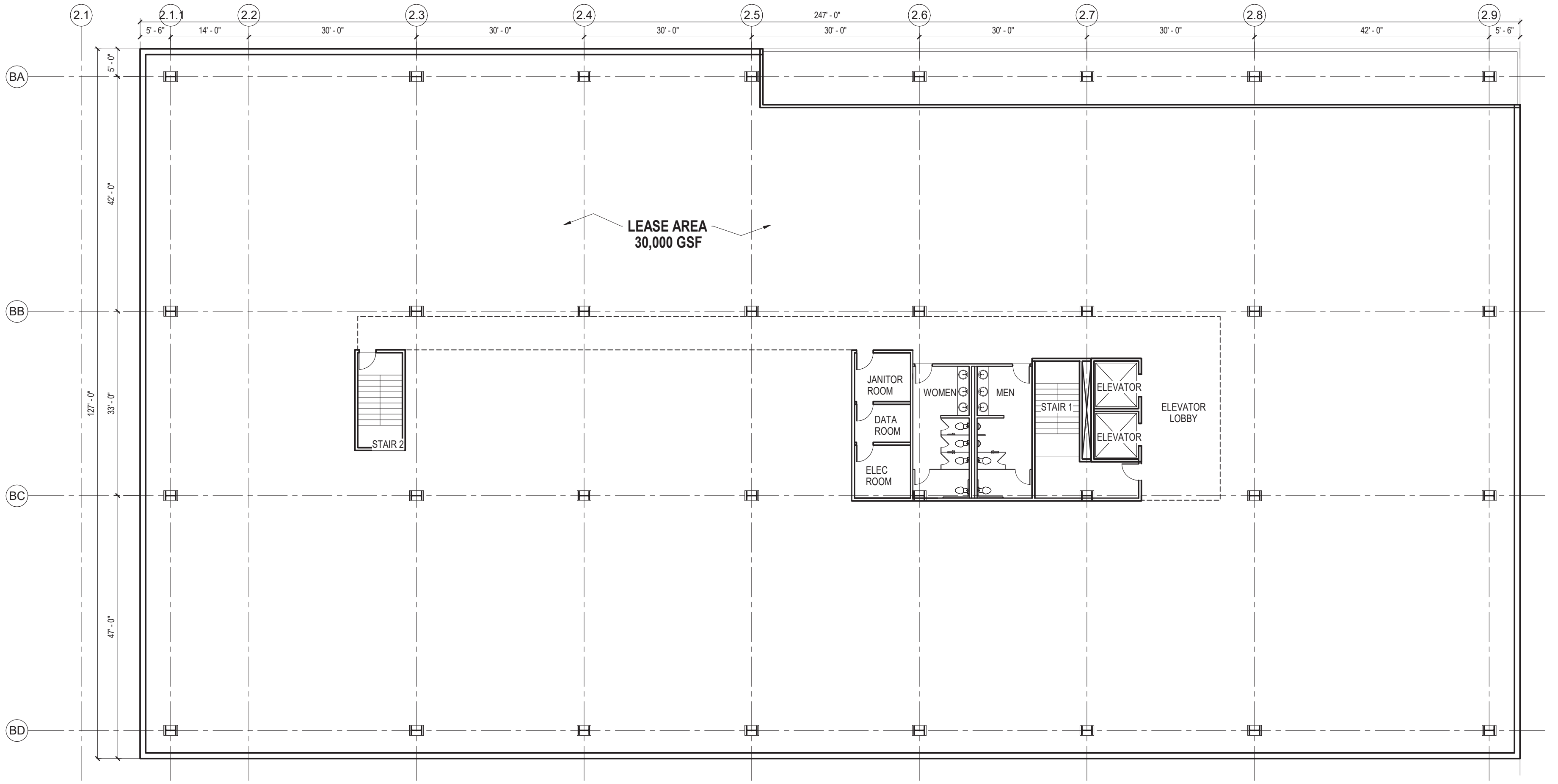
Ref. North



OFFICE BLDG 2 - CONSTRUCTION PLAN LEVEL 3
SCALE: 3/32" = 1'-0"

2



OFFICE BLDG 2 - CONSTRUCTION PLAN LEVEL 4
SCALE: 3/32" = 1'-0"

1

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3/32" = 1'-0"

A02.07
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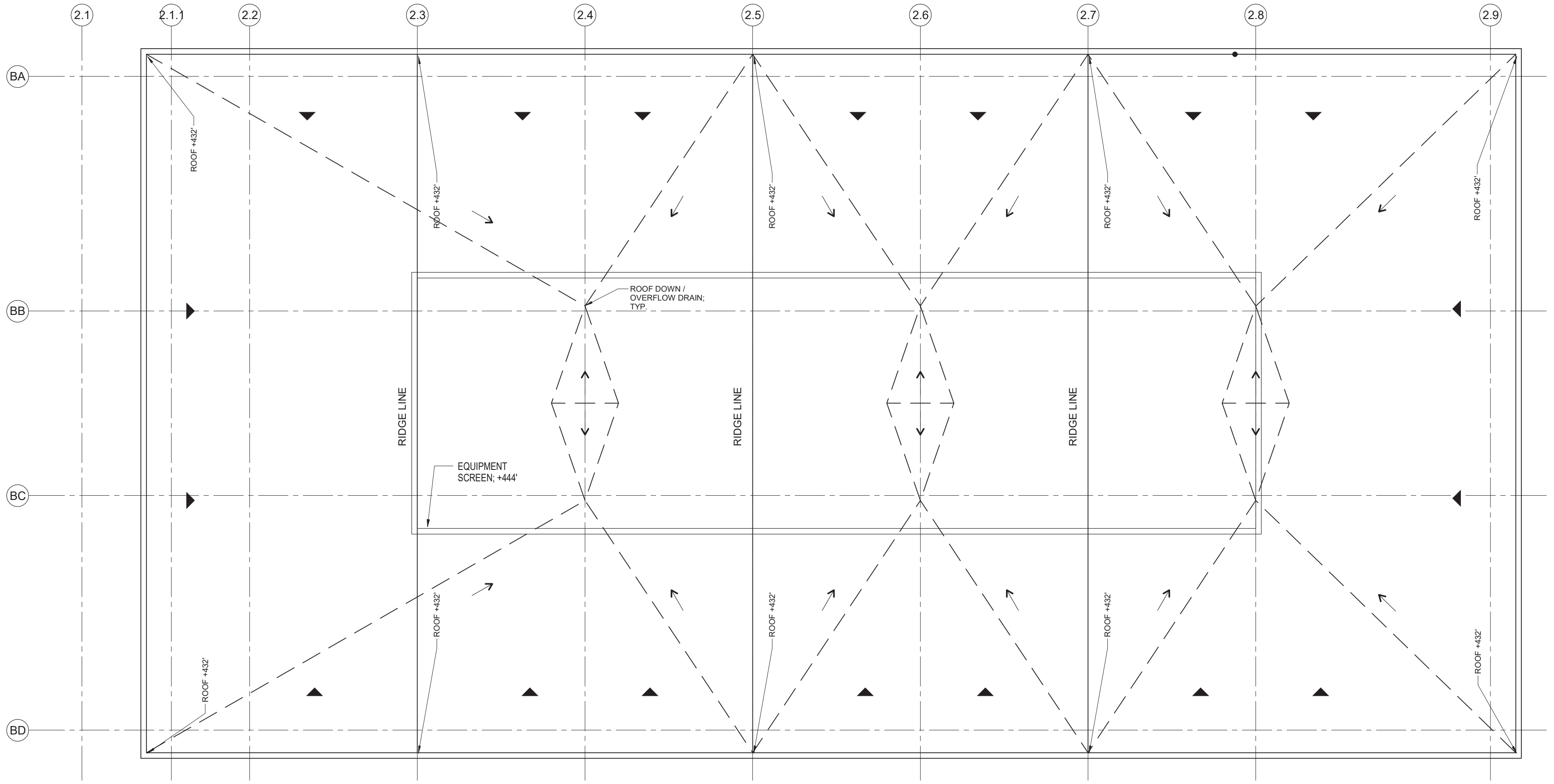
Ref. North



OFFICE BLDG 2 - ROOF PLAN

SCALE: 3/32" = 1'-0"

1

THE PRESERVE AT TORREY HIGHLANDS

Gensler

225 Broadway
Suite 100
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Fax: 619.557.2520

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2017-03-15	SDP SUBMITTAL #4		
2017-11-20	SDP SUBMITTAL #5		

Seal/Signature

JAMES K HEINLY
C 26830
REN. 9/30/19

Project Name
THE PRESERVE AT TORREY HIGHLANDS

Project Number
55.7511.000

Description
OFFICE BLDG 2 - ROOF PLAN

Scale
3/32" = 1'-0"

A02.08

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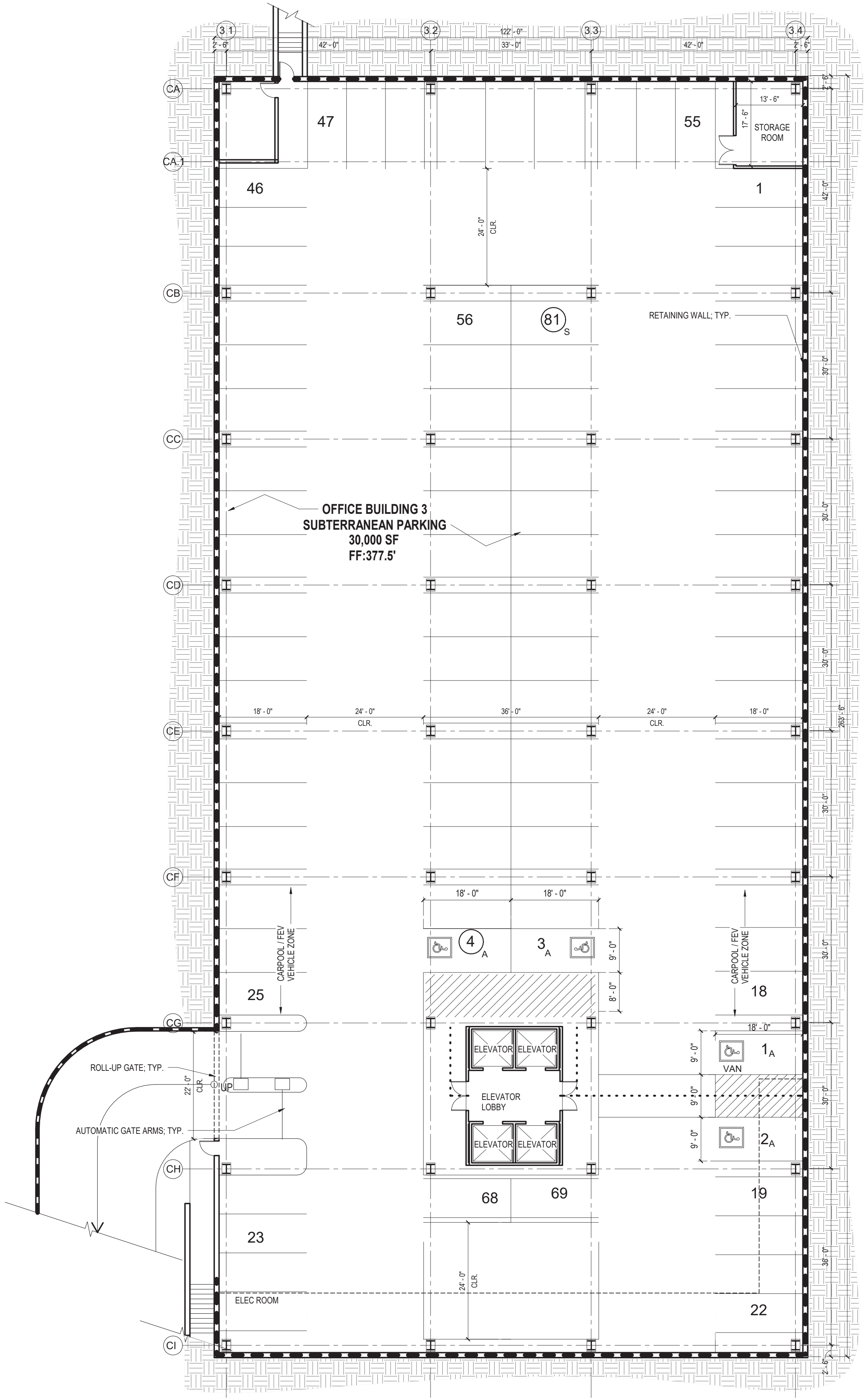
Ref. North



OFFICE BLDG 3 - B1 SUBTERRANEAN PARKING PLAN
SCALE: 3/32" = 1'-0"

BLDG 3 - B1 SUB. PARKING - 30,000 SF | 85 CARS | 353 SF / CAR

1

BLDG 1 - GSF TABULATION	
LEVEL DESCRIPTION	TOTAL GSF
LEVEL 1	30,000 GSF
LEVEL 2	30,000 GSF
LEVEL 3	30,000 GSF
LEVEL 4	30,000 GSF
LEVEL 5	30,000 GSF
TOTAL	**150,000 GSF**
B1 SUBTERRANEAN	30,000 GSF

NOTE: See Sheet A00.50 Site Plan for Overall Parking Ratio

OVERALL BICYCLE PARKING TABULATION				
*PER Section 142.0530(e)(1)(D), The minimum long-term and short-term bicycle parking spaces shall be 5% of the required automobile parking space minimum.	SHORT-TERM BICYCLE PARKING		LONG-TERM BICYCLE PARKING	
	REQUIRED (5%)	PROVIDED	REQUIRED (5%)	PROVIDED
BLDG 1 - SUBTERRANEAN	-	-	-	-
BLDG 2 - SUBTERRANEAN	-	-	-	-
BLDG 3 - SUBTERRANEAN	-	-	-	-
STRUCTURED -7 ABOVE, 1 BELOW	-	60	-	115
SURFACE	-	30	-	-
TOTAL	89	**90**	89	**115**

B1 SUB. PARKING NOTES

1. PARKING STRUCTURE SHALL REQUIRE ROLL-UP GATE AT ENTRY AND EXITS. GATE SHALL BE OPEN DURING BUSINESS HOURS AT ALL TIMES. NO FOB OR CONTROL GATE WILL BE REQUIRED.
2. ALL STALLS @ 8'-6"; U.N.O.

LEGEND

♿	INTERNATIONAL SYMBOL OF ACCESSIBILITY
⏀	ACCESSIBLE PARKING AND TOW AWAY SIGN
L.S.	LANDSCAPED AREA
#	TOTAL NUMBER OF STALLS TYPE DESIGNATOR S=STANDARD A=ACCESSIBLE M=MOTORCYCLE E=EXISTING
<	BUILDING EXIT

THE PRESERVE AT TORREY HIGHLANDS

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2017-11-20	SDP SUBMITTAL #5		

Seal/Signature

LICENSED ARCHITECT
JAMES K HEINLY
C 26830
REN. 9/30/19
STATE OF CALIFORNIA

Project Name
THE PRESERVE AT TORREY HIGHLANDS

Project Number
55.7511.000

Description
OFFICE BLDG 3 - FLOOR PLANS

Scale
As indicated

A02.09
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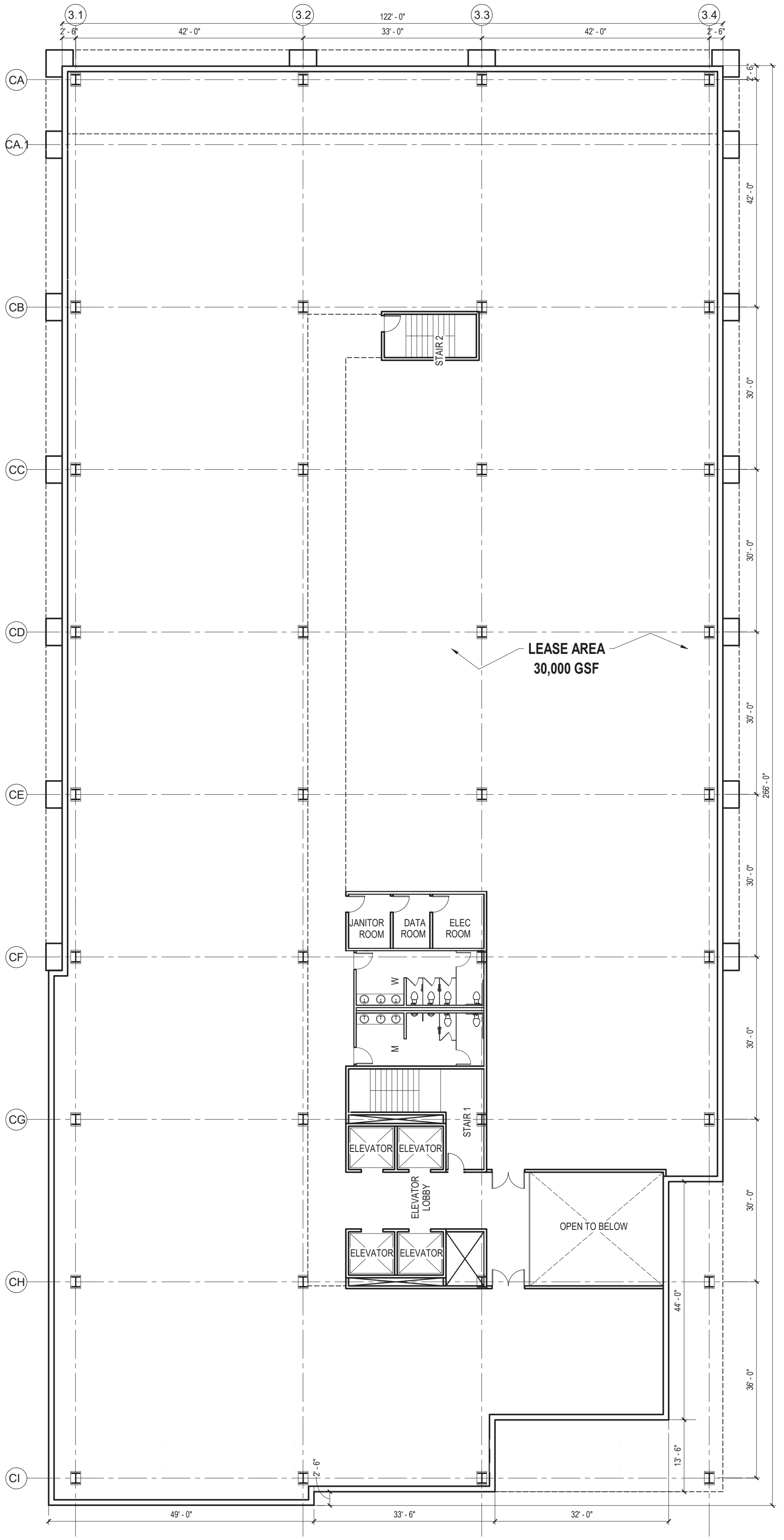
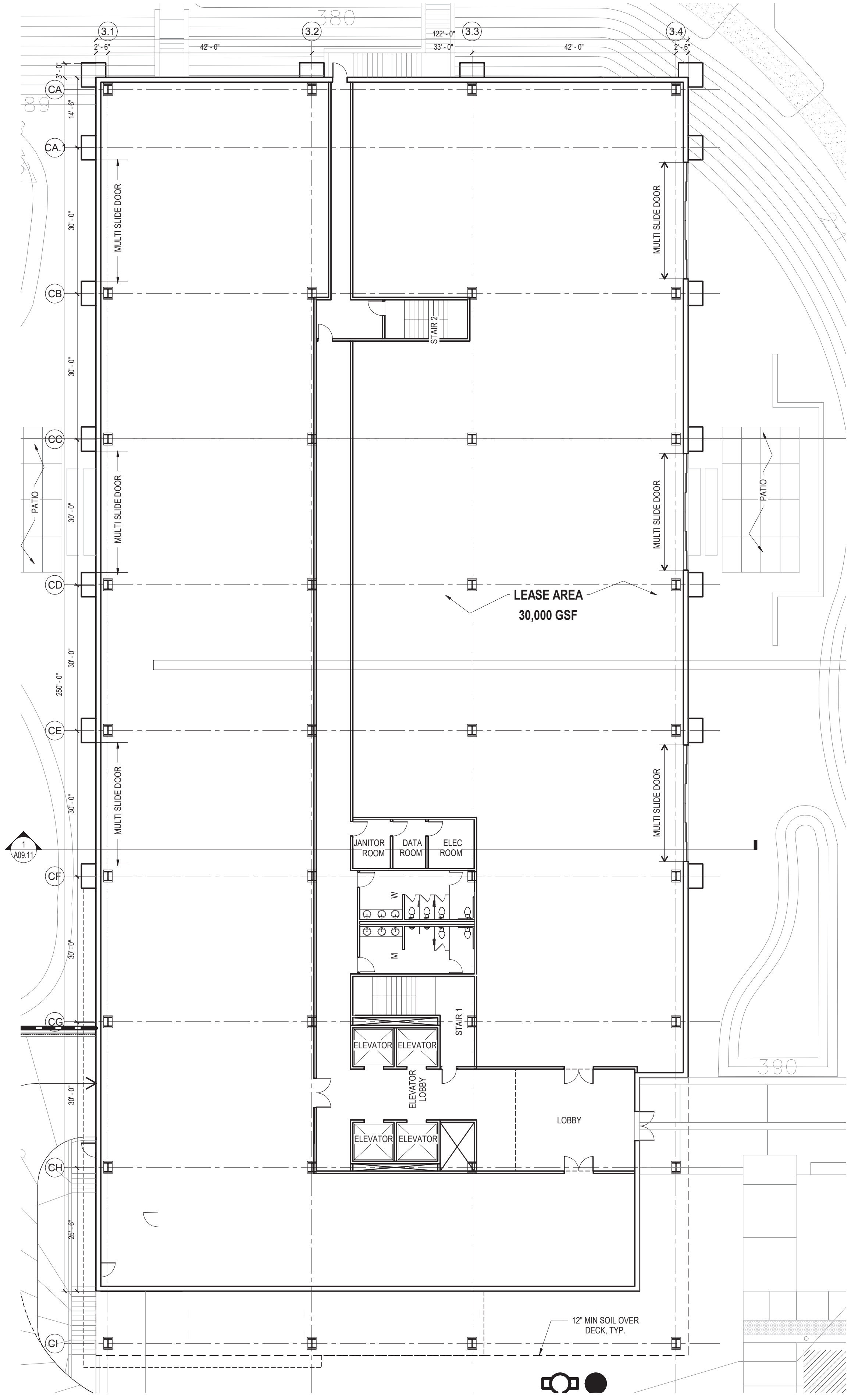
Ref. North



OFFICE BLDG 3 - CONSTRUCTION PLAN LEVEL 2

SCALE: 3/32" = 1'-0"

2



OFFICE BLDG 3 - CONSTRUCTION PLAN LEVEL 1

SCALE: 3/32" = 1'-0"

1

THE PRESERVE AT TORREY HIGHLANDS

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Seal/Signature

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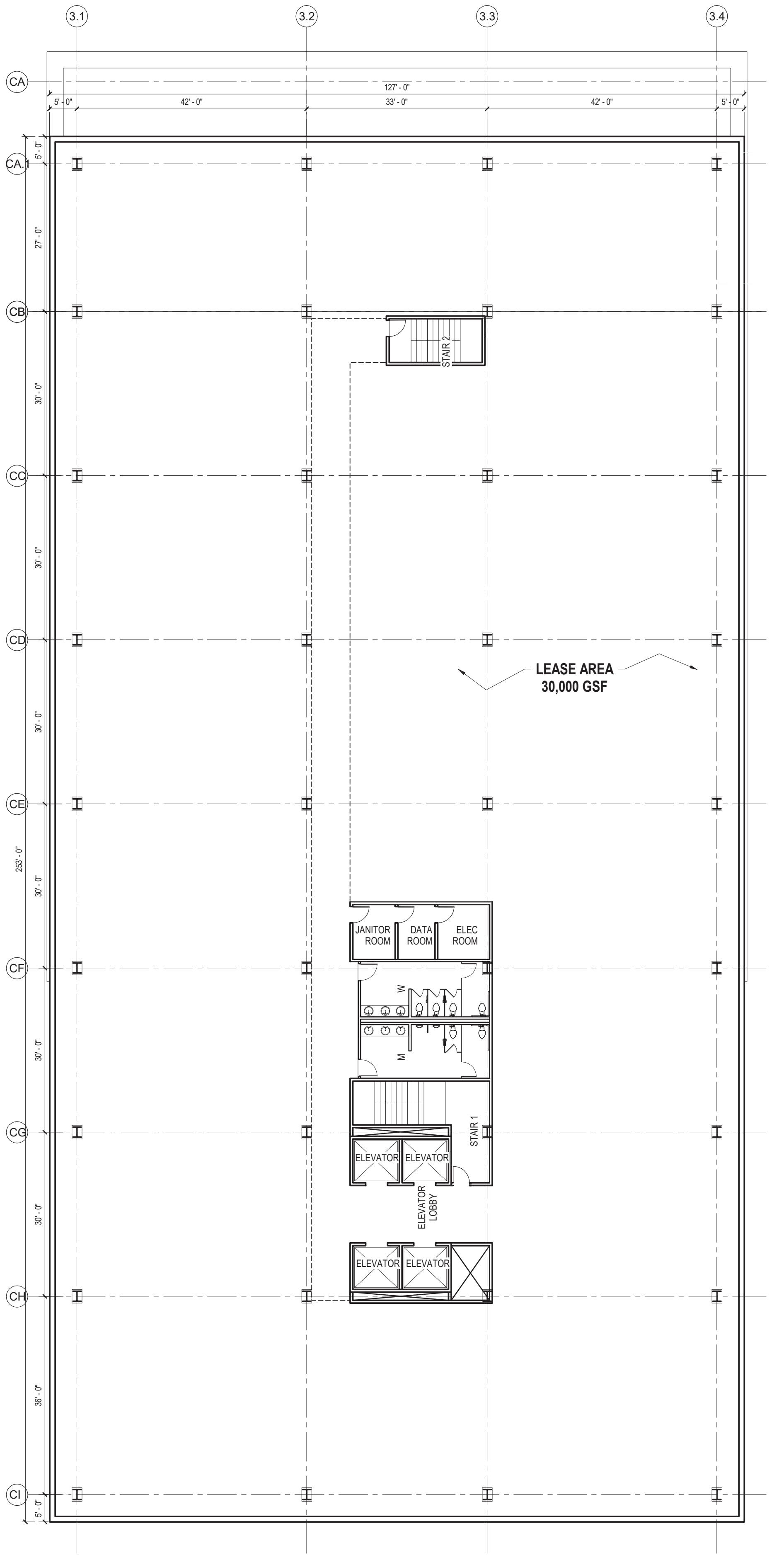
Description
OFFICE BLDG 3 - FLOOR PLANS

Scale
3/32" = 1'-0"

A02.10
25 of 43

Ref. North



OFFICE BLDG 3 - CONSTRUCTION PLAN LEVEL 4 & 5
SCALE: 3/32" = 1'-0"
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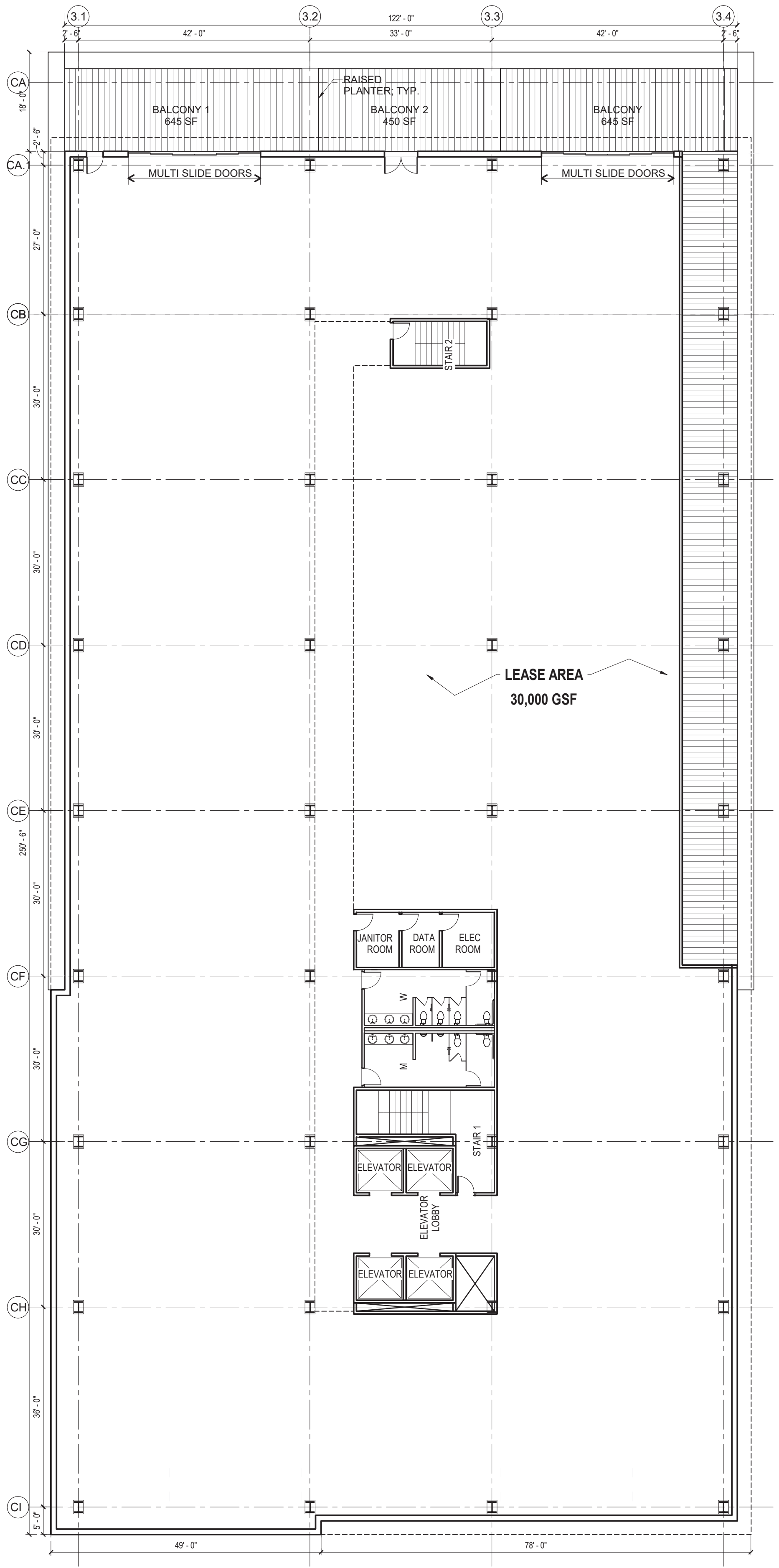

OFFICE BLDG 3 - CONSTRUCTION PLAN LEVEL 3
SCALE: 3/32" = 1'-0"
1

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Seal/Signature

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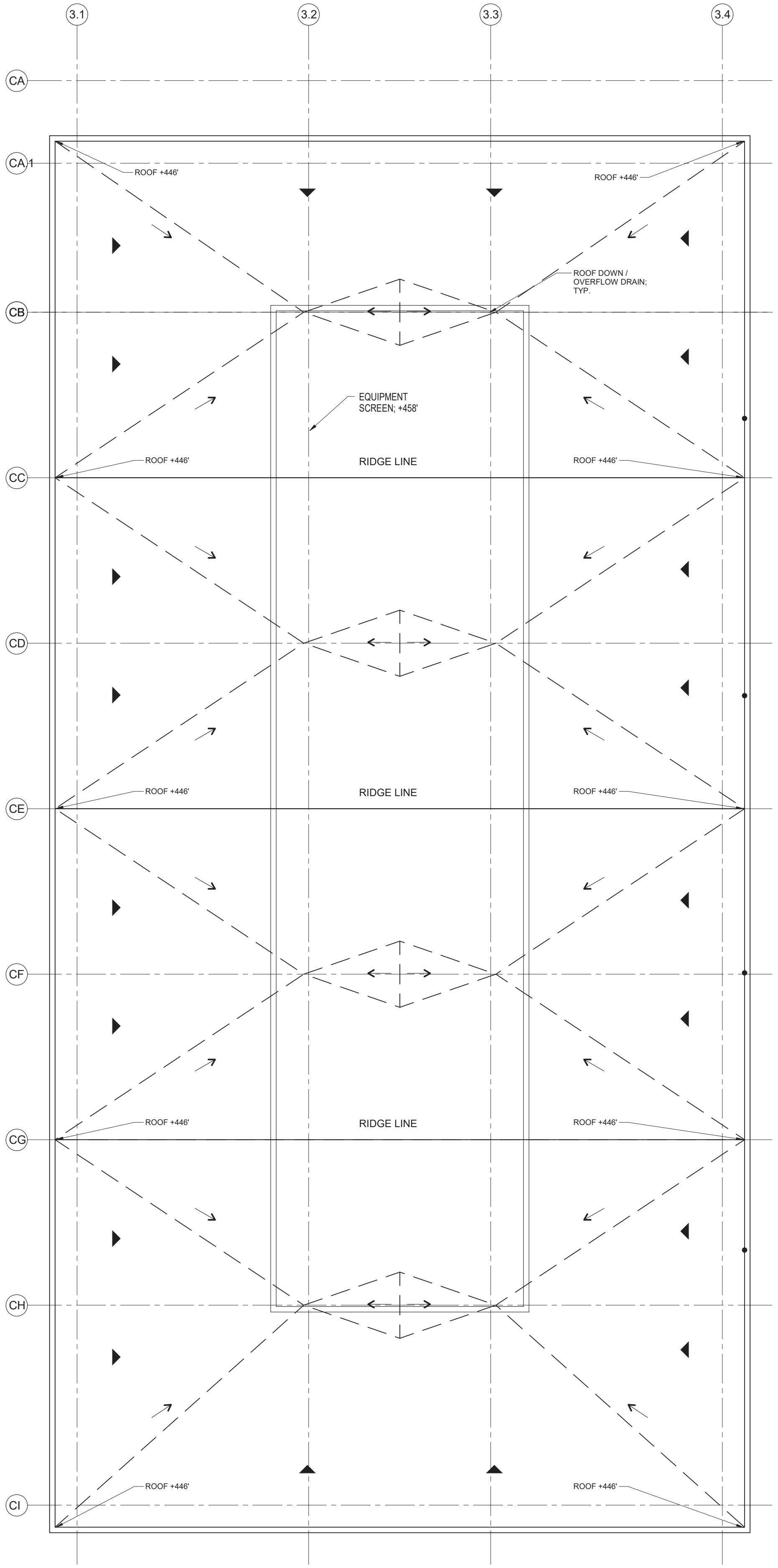
Description
OFFICE BLDG 3 - FLOOR PLANS

Scale
3/32" = 1'-0"

A02.11
26 of 43

Ref. North



OFFICE BLDG 3 - ROOF PLAN

SCALE: 3/32" = 1'-0"

1

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Seal/Signature

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Description
OFFICE BLDG 3 - ROOF PLAN

Scale
3/32" = 1'-0"

A02.12
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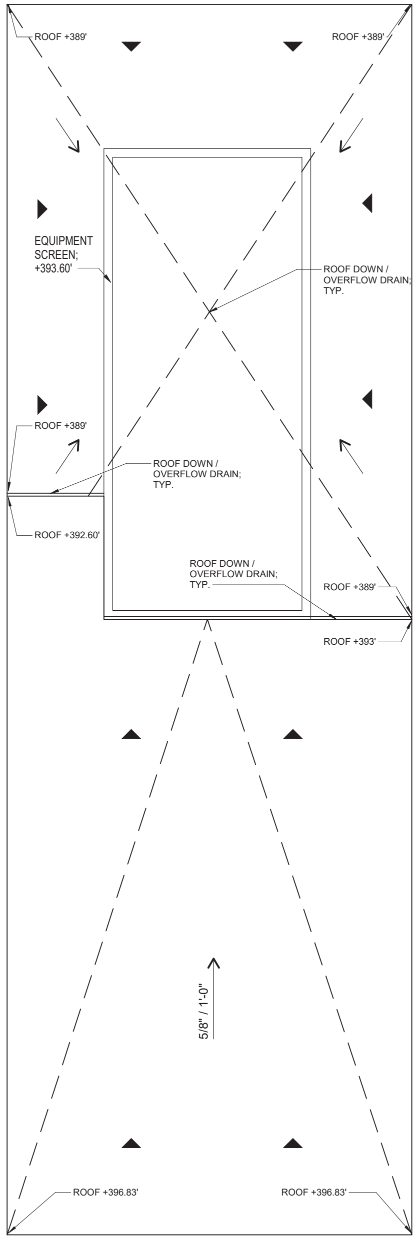
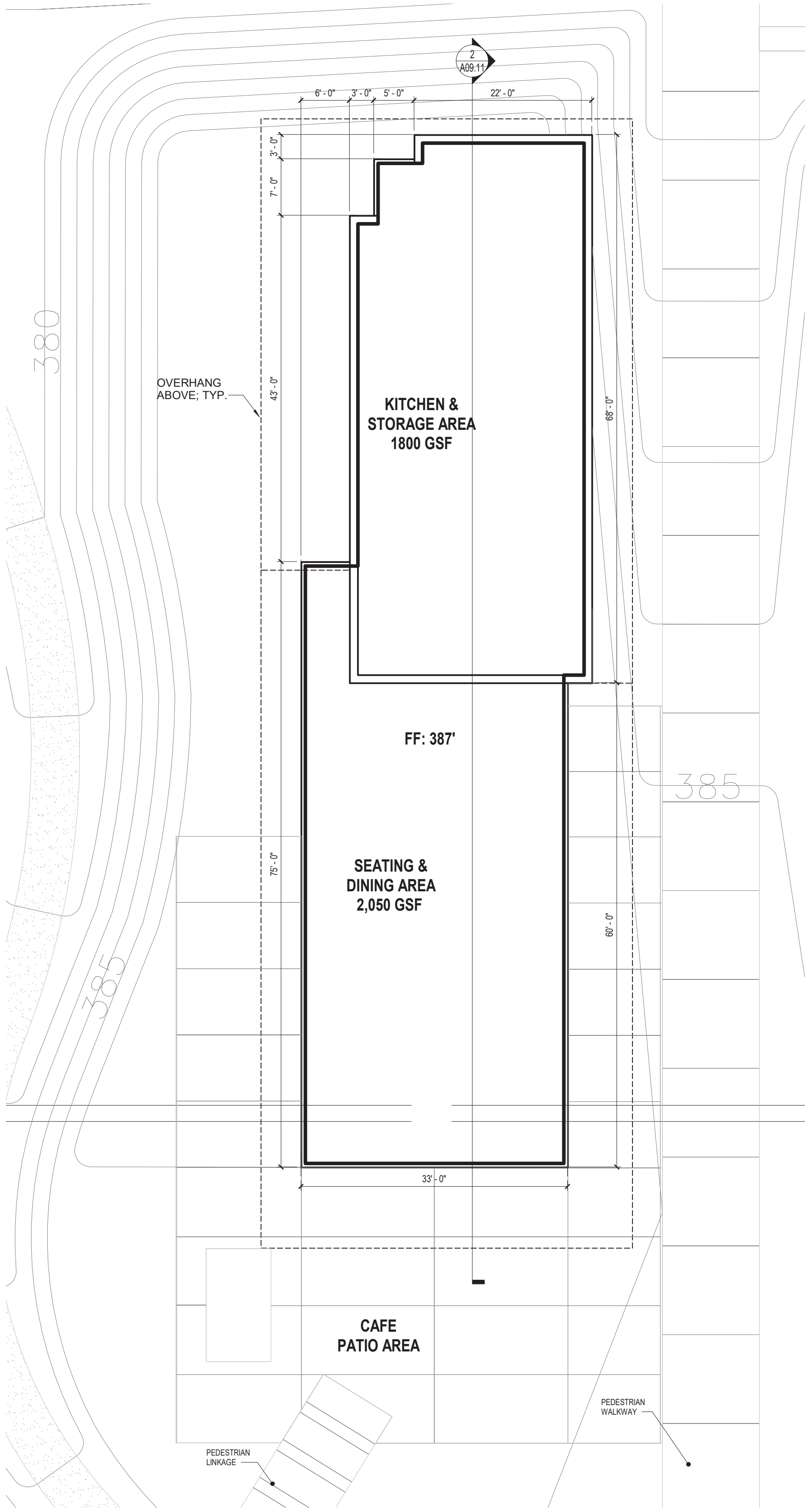
Ref. North



CAFE - ROOF PLAN
SCALE: 1/8" = 1'-0"

2



CAFE - CONSTRUCTION PLAN LEVEL 1
SCALE: 1/8" = 1'-0"

1

CAFE NOTES

1. SCOPE INCLUDES SHEEL AND SITE IMPROVEMENTS ONLY. INTERIOR BUILD-OUT NOT INCLUDED IN THIS PERMIT.
2. THE CAFE WILL BE AN ACCESSORY TO THE PRIMARY OFFICE USES ON SITE ONLY. THE CAFE WILL NOT BE OPEN TO THE GENERAL PUBLIC AT ANY TIME.

THE PRESERVE AT TORREY HIGHLANDS

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Seal/Signature

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C 26830
REN. 9/30/19

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Project Number
55.7511.000

Description
CAFE - FLOOR PLANS & ROOF PLAN

Scale
1/8" = 1'-0"

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Ref. North

OVERALL BICYCLE PARKING TABULATION

*PER Section 142.0530(e)(1)(D), The minimum long-term and short-term bicycle parking spaces shall be 5% of the required automobile parking space minimum.	SHORT-TERM BICYCLE PARKING		LONG-TERM BICYCLE PARKING	
	REQUIRED (5%)	PROVIDED	REQUIRED (5%)	PROVIDED
BLDG 1 - SUBTERRANEAN	-	-	-	-
BLDG 2 - SUBTERRANEAN	-	-	-	-
BLDG 3 - SUBTERRANEAN	-	-	-	-
STRUCTURED -7 ABOVE, 1 BELOW	-	60	-	115
SURFACE	-	30	-	-
TOTAL	89	**90**	89	**115**

OVERALL PARKING STRUC. PARCEL PARKING TABULATION

	STANDARD	ACCESSIBLE	**TOTAL**	**TOTAL SF**	**SF / CAR**
LEVEL B1	75	0	75	20,000 SF	267
LEVEL 1	116	30 (5 VAN)	146	58,890 SF	403
LEVEL 2 (208 STANDARD PER FL)	208	0	208	59,800 SF	288
LEVEL 3 - 6 (209 STANDARD PER FL)	627	0	836	239,200 SF	286
LEVEL 7 ROOF	213	0	213	59,800 SF	281
TOTAL	1,448	30 (5 VAN)	**1,478**	437,690 SF	297

OVERALL MOTORCYCLE PARKING TABUL.

*PER SDMC Table 142.5030(g); Motocycle parking shall be provided at a ratio of 2 percent of the minimum number of automobile parking spaces required	REQUIRED (2%)	PROVIDED
LEVEL B1	-	0
LEVEL 1	-	30
LEVEL 2 - 6 (1 PER FL)	-	5
LEVEL 7 ROOF	-	1
TOTAL	36	**36**

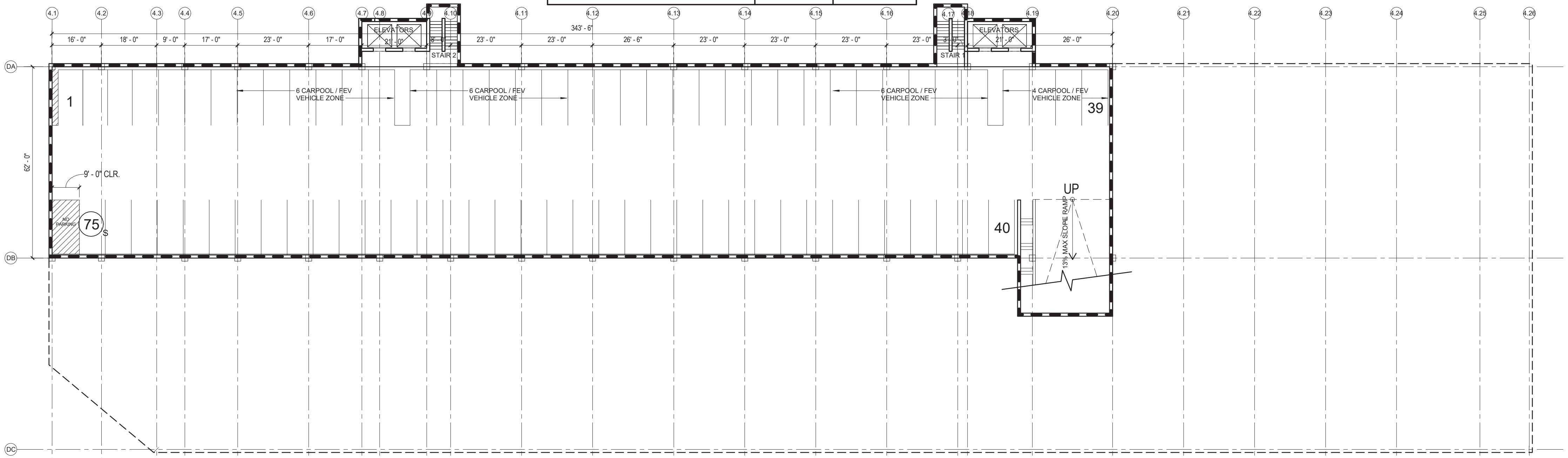
NOTE: See Sheet A00.50 Site Plan for Overall Parking Ratio

PARKING STRUCTURE NOTES

1. 36 MOTORCYCLE SPACES SHALL BE PROVIDED WITHIN PARKING STRUCTURE TO COMPLY WITH SDMC 142.5030 (G) REQUIREMENTS.
2. ALL STALLS @ 8'-6"; U.N.O.

REFUSE & RECYCLABLE STORAGE AREA TABUL.

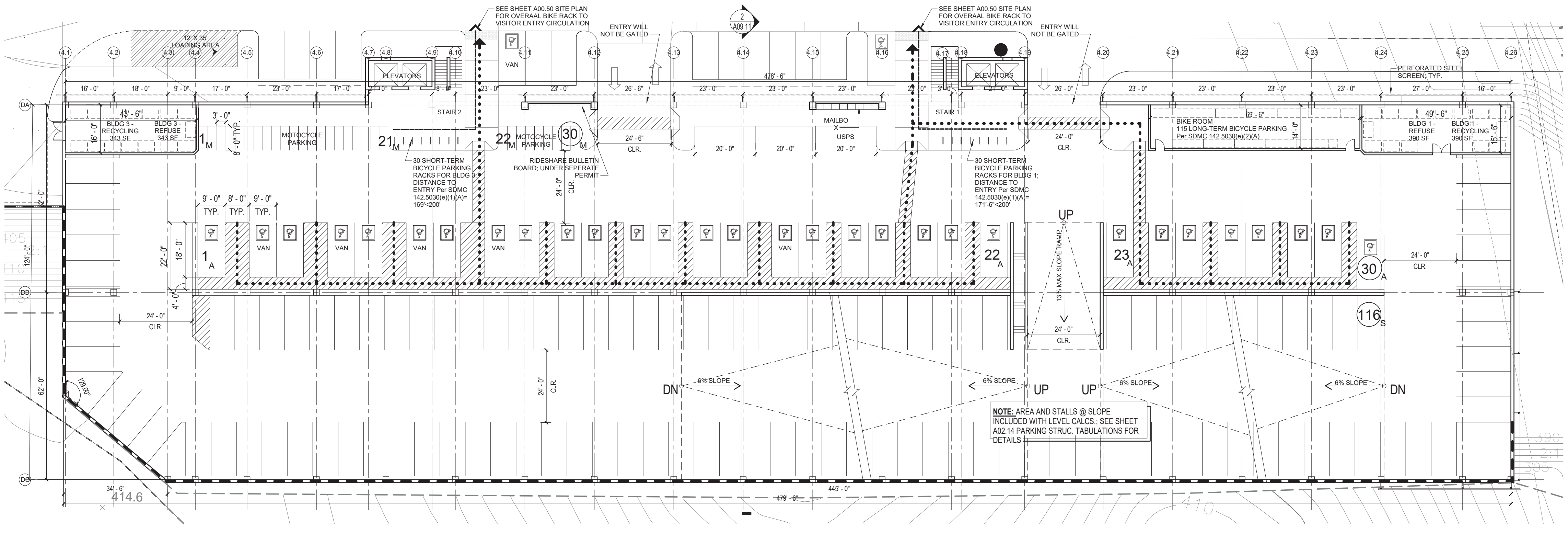
*PER SDMC 142.0830 TABLE 142-08C; Refuse and Recyclable storage area per development requires 192 SF per 100,001 GSF plus 48 SF for every 25,000 SF of building area after.	REFUSE		RECYCLABLE	
	REQUIRED	PROVIDED	REQUIRED	PROVIDED
BLDG 1 - 180,000 GSF	384 SF	390 SF	384 SF	390 SF
BLDG 2 - 120,000 GSF	240 SF	240 SF	240 SF	240 SF
BLDG 3 - 150,000 GSF	288 SF	343 SF	288 SF	343 SF
TOTAL	912 SF	**973 SF**	912 SF	**973 SF**



PARKING STRUCTURE - CONSTRUCTION PLAN LEVEL B1

SCALE: 1/16" = 1'-0"

LEVEL B1 - 20,000 SF | 74 CARS | 270 SF / CAR 1



PARKING STRUCTURE - CONSTRUCTION PLAN LEVEL 1

SCALE: 1/16" = 1'-0"

LEVEL 1 - 58,890 SF | 146 CARS | 403 SF / CAR 2

THE PRESERVE AT TORREY HIGHLANDS

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Seal/Signature

JAMES K HEINLY
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Project Number
55.7511.000

Description
PARKING STRUCTURE - FLOOR PLANS

Scale
1/16" = 1'-0"

A02.14

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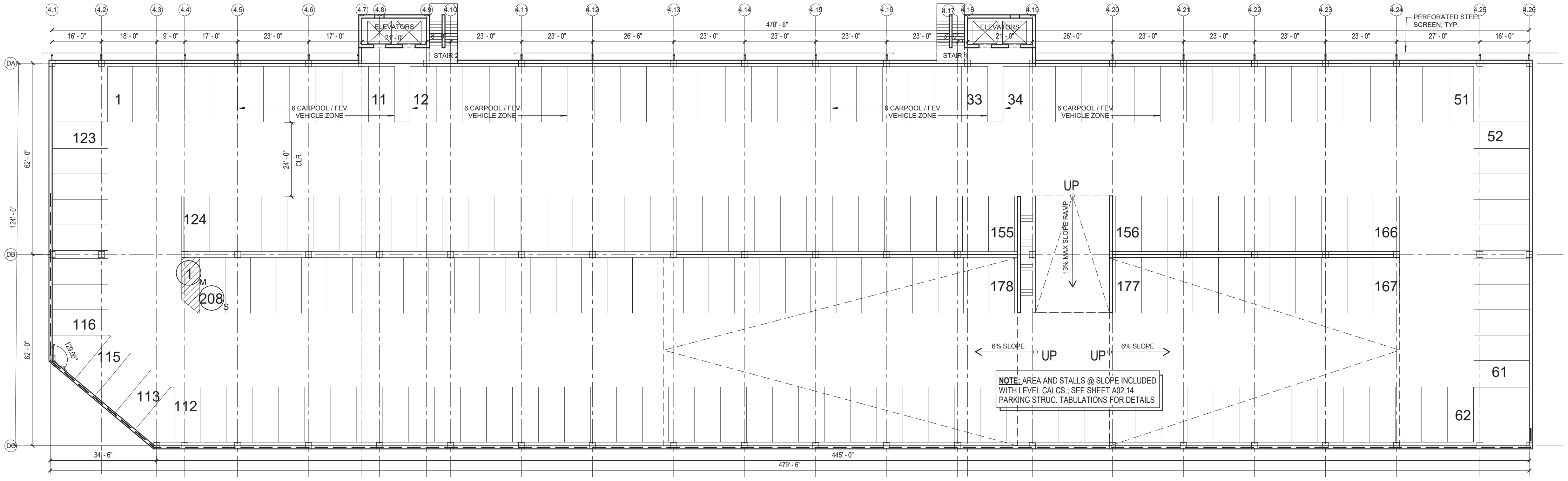
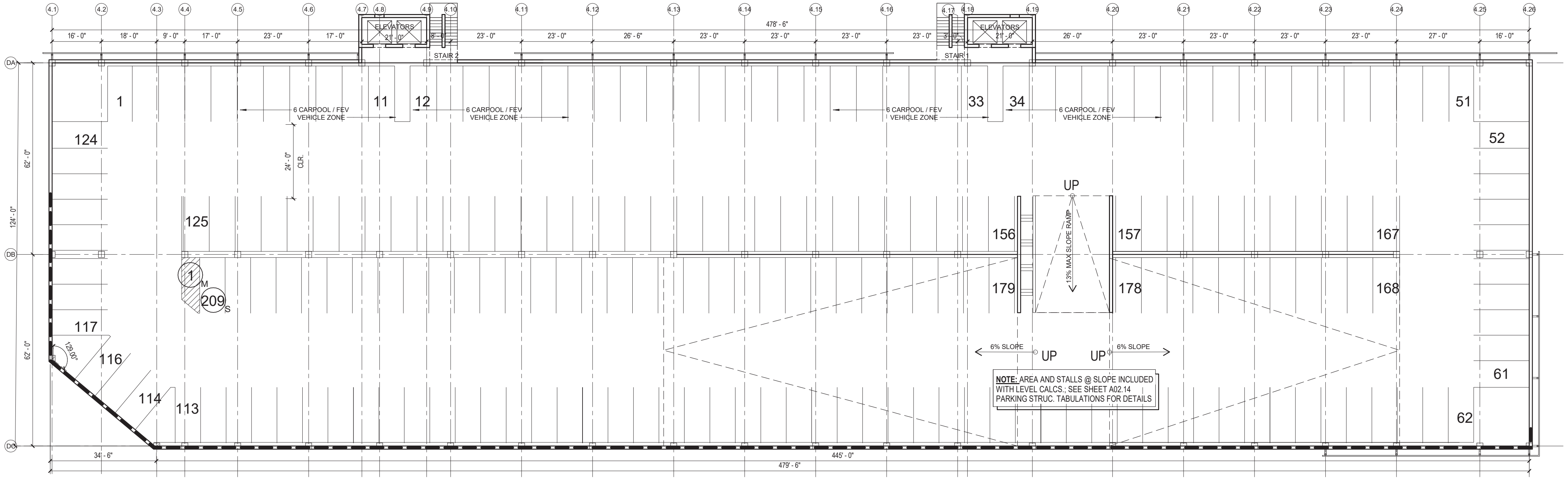
Ref. North



PARKING STRUCTURE - CONSTRUCTION PLANS LEVEL 2

SCALE: 1/16" = 1'-0"

LEVEL 2 - 59,800 SF | 208 CARS | 288 SF / CAR 1



PARKING STRUCTURE - CONSTRUCTION PLANS LEVEL 3

SCALE: 1/16" = 1'-0"

LEVEL 3 - 59,800 SF | 208 CARS | 288 SF / CAR 2

THE PRESERVE AT TORREY HIGHLANDS

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Seal/Signature

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Description
PARKING STRUCTURE - FLOOR PLANS

Scale
1/16" = 1'-0"

A02.15

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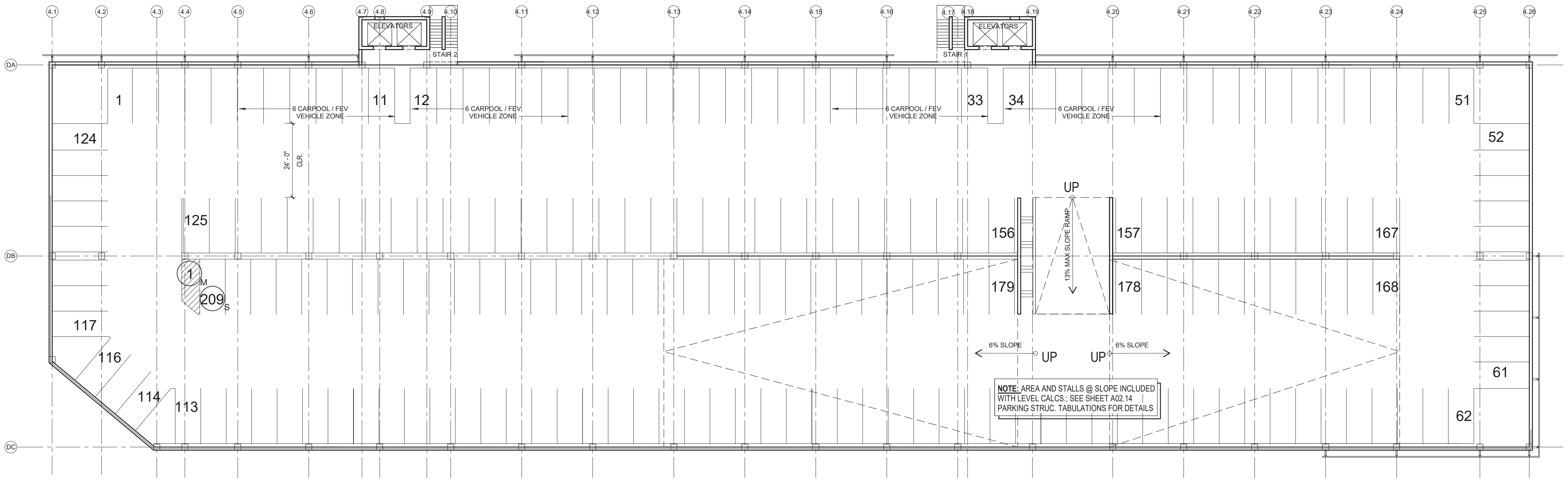
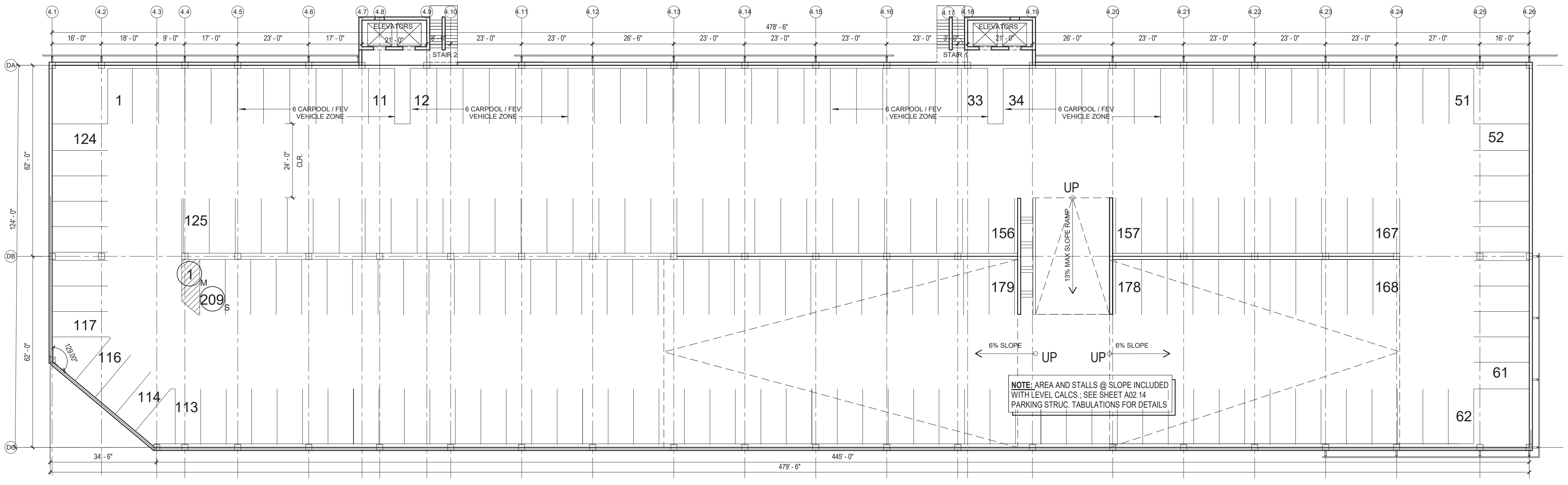
Ref. North



NOTE: AREA AND STALLS @ SLOPE INCLUDED WITH LEVEL CALCS.; SEE SHEET A02.14 PARKING STRUC. TABULATIONS FOR DETAILS

PARKING STRUCTURE - CONSTRUCTION PLANS LEVEL 4
SCALE: 1/16" = 1'-0"

LEVEL 4 - 59,800 SF | 208 CARS | 288 SF / CAR 1



NOTE: AREA AND STALLS @ SLOPE INCLUDED WITH LEVEL CALCS.; SEE SHEET A02.14 PARKING STRUC. TABULATIONS FOR DETAILS

PARKING STRUCTURE - CONSTRUCTION PLANS LEVEL 5
SCALE: 1/16" = 1'-0"

LEVEL 5 - 59,800 SF | 208 CARS | 288 SF / CAR 2

THE PRESERVE AT TORREY HIGHLANDS

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Seal/Signature

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PARKING STRUCTURE - FLOOR PLANS

Scale
1/16" = 1'-0"

A02.16
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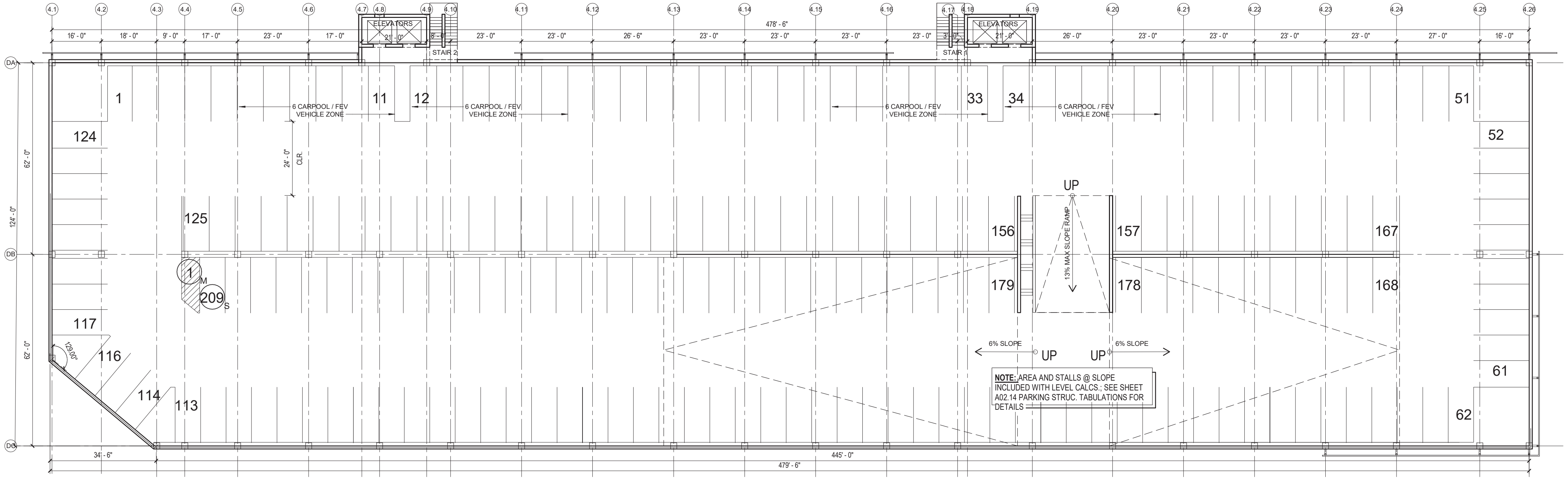
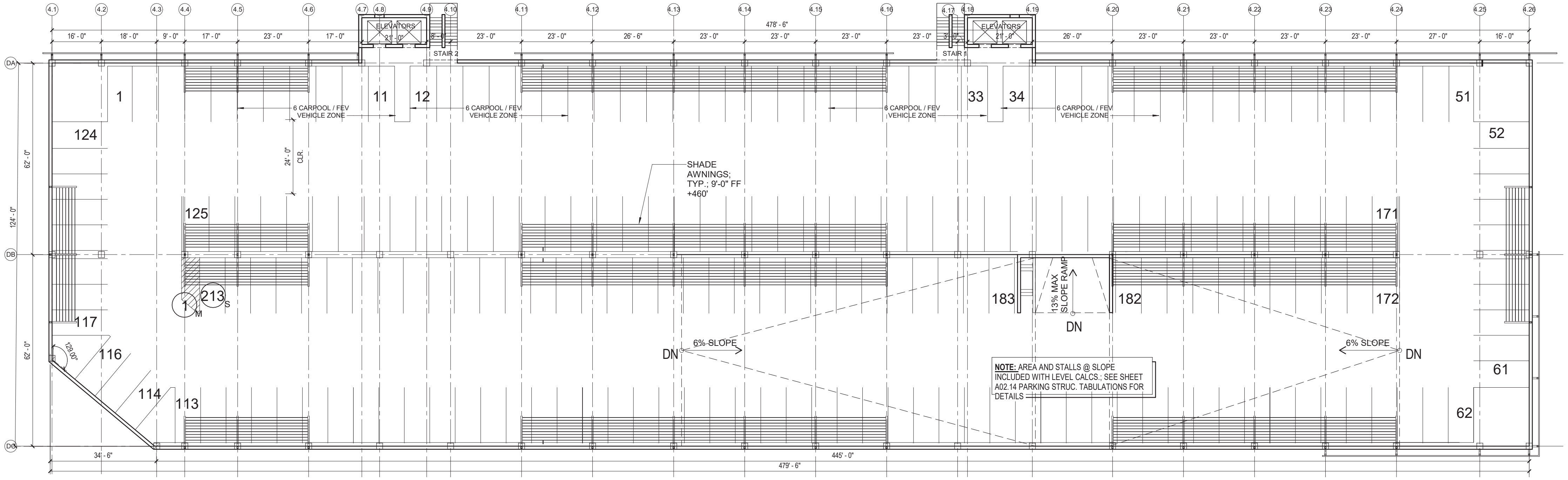
Ref. North



PARKING STRUCTURE - CONSTRUCTION PLANS LEVEL 6

SCALE: 1/16" = 1'-0"

LEVEL 6 - 59,800 SF | 208 CARS | 288 SF / CAR 1



PARKING STRUCTURE - ROOF PLAN LEVEL 7

SCALE: 1/16" = 1'-0"

LEVEL 7 - 59,800 SF | 212 CARS | 282 SF / CAR 2

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Seal/Signature

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REN. 9/30/19
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Description
PARKING STRUCTURE - FLOOR & ROOF PLAN

Scale
1/16" = 1'-0"

A02.17

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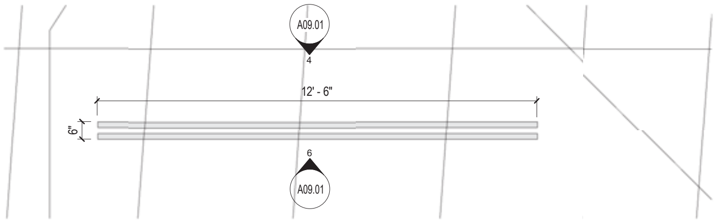
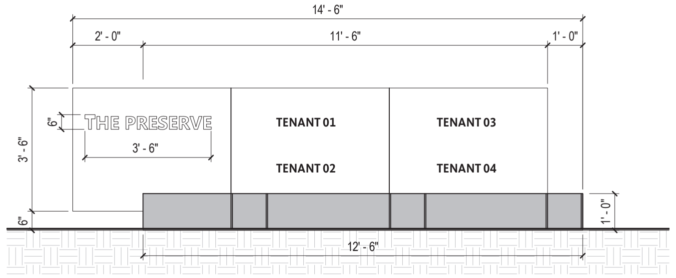
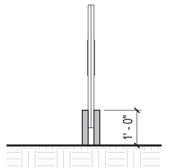
Ref. North



Monument Sign Plan
SCALE: 1/2" = 1'-0"
3



North Monument Sign Elevation
SCALE: 1/2" = 1'-0"
4



East Monument Sign Elevation
SCALE: 1/2" = 1'-0"
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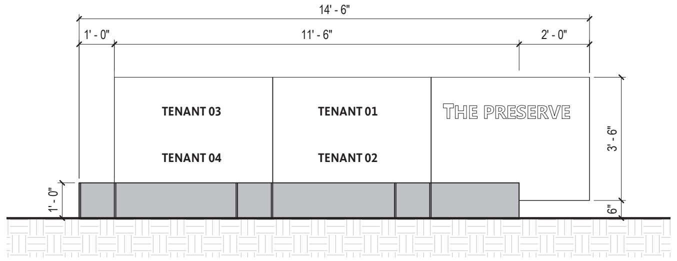
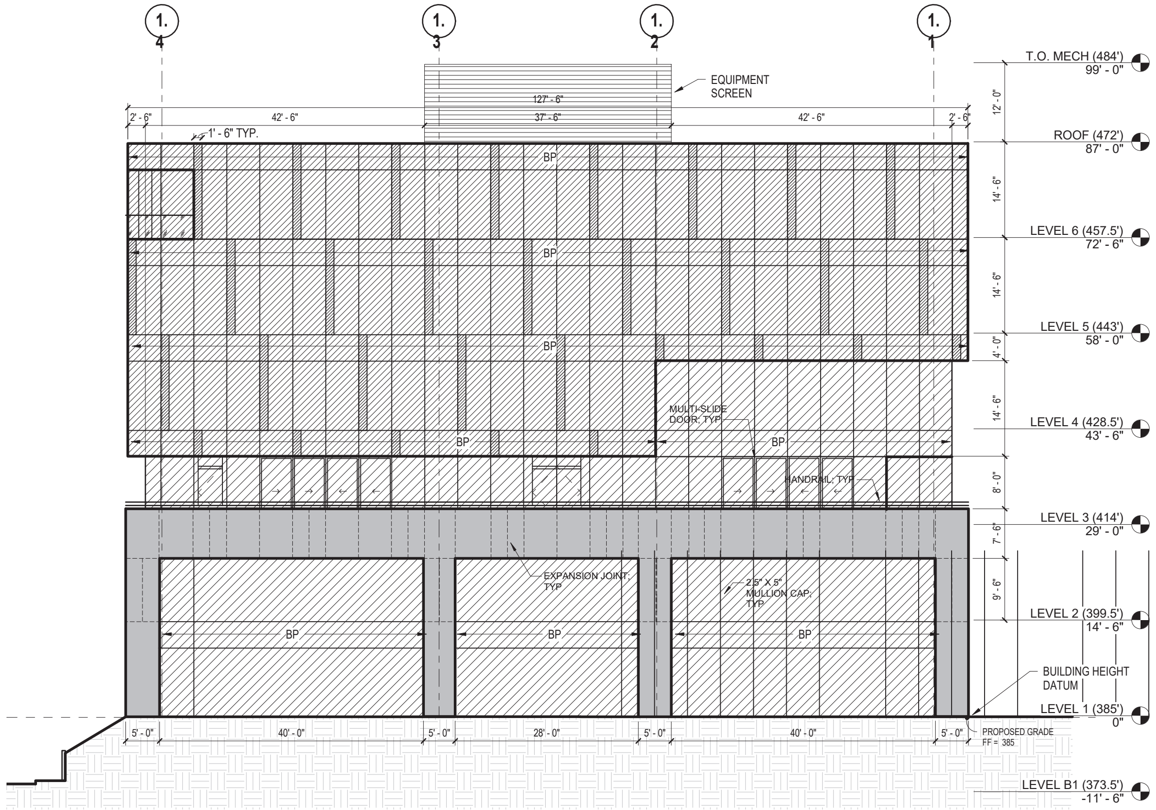
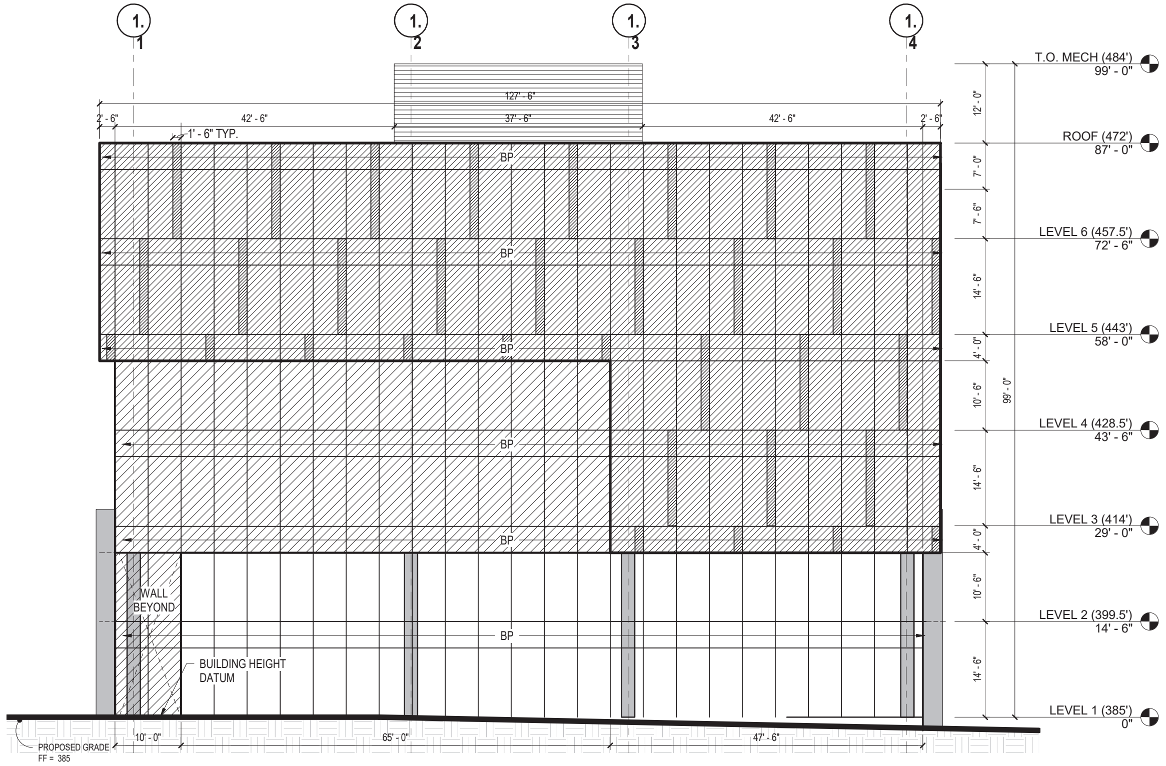


South Monument Sign Elevation
SCALE: 1/2" = 1'-0"
6



OFFICE BLDG 1 - NORTH EXTERIOR ELEVATION
SCALE: 3/32" = 1'-0"
1



OFFICE BLDG 1 - SOUTH EXTERIOR ELEVATION
SCALE: 3/32" = 1'-0"
2

▤	**3" ALUMINUM PANEL**	▩	**GREY PERFORATED METAL PANEL**	BP	**GL-1B**	1" INSULATED GLASS STARFIRE W/ BACK PAN	▨	**GL-3**	1" INSULATED GLASS SOLARBAN Z75 OPTIBLUE	▨ BP	**GL-4B**	1" INSULATED GLASS SOLARBAN 70XL W/ BACK PAN
░	**CAST-IN-PLACE GREY CONCRETE, PAINTED IN MUTED EARTH TONES**	■	**METAL CLADDING**	▨	**GL-2**	1" INSULATED GLASS SOLARBAN 70XL	▨ BP	**GL-3B**	1" INSULATED GLASS SOLARBAN Z75 OPTIBLUE W/ BACK PAN			
▦	**STONE TILE WALL**	☐	**GL-1** 1" INSULATED GLASS STARFIRE	▨ BP	**GL-2B**	1" INSULATED GLASS SOLARBAN 70XL W/ BACK PAN	▨	**GL-4**	1" INSULATED GLASS SOLARBAN 70XL			

ELEVATIONS
SCALE: 1/2" = 1'-0"

THE PRESERVE AT TORREY HIGHLANDS

SEQ STATE ROUTE 56 & CAMINO DEL SUR
SAN DIEGO, CA 92129

APN# 306-050-16, 306-050-18, 306-050-19, 306-050-28

Gensler

225 Broadway
Suite 100
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Tel: 619.557.2500
Fax: 619.557.2520

△ Issue	Date & Issue Description	By	Check
2015-08-31	SDP SUBMITTAL		
2015-11-18	SDP SUBMITTAL #2		
2016-02-29	SDP SUBMITTAL #3		
2017-03-15	SDP SUBMITTAL #4		
2017-11-20	SDP SUBMITTAL #5		

Seal/Signature

JAMES K HEINLY
C 26830
REN. 9/30/19

Project Name
THE PRESERVE AT TORREY HIGHLANDS

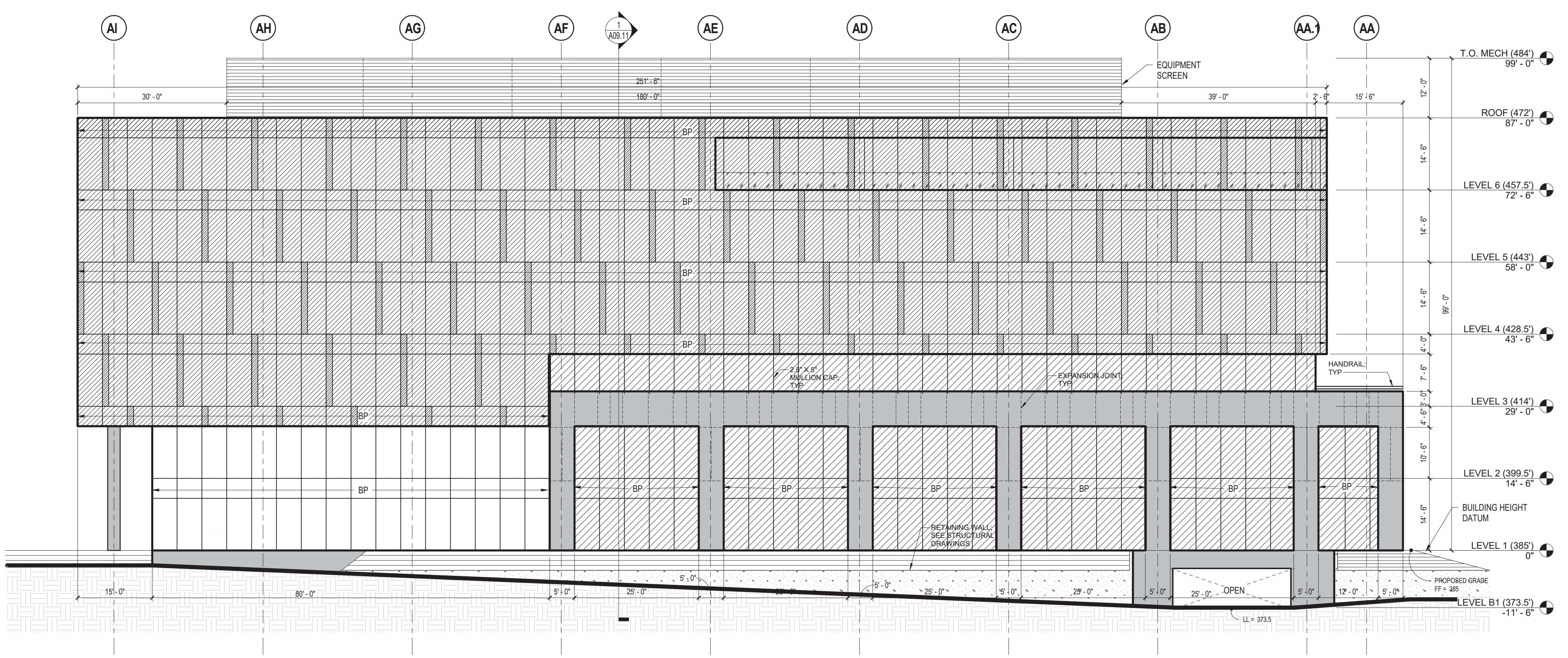
Project Number
55.7511.000

Description
OFFICE BLDG 1 - EXTERIOR ELEVATIONS

Scale
As indicated

A09.01
33 of 43

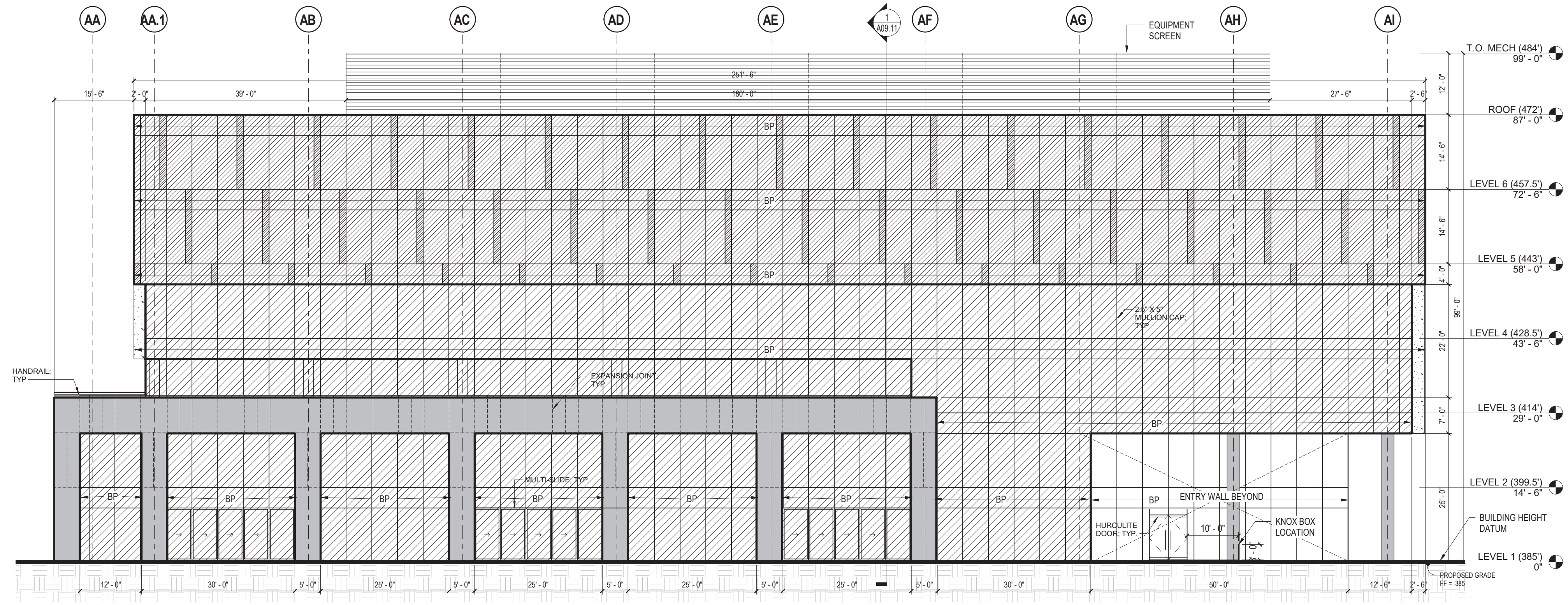
Ref. North



OFFICE BLDG 1 - EAST EXTERIOR ELEVATION

SCALE: 3/32" = 1'-0"

3



OFFICE BLDG 1 - WEST EXTERIOR ELEVATION

SCALE: 3/32" = 1'-0"

4

THE PRESERVE AT TORREY HIGHLANDS

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△ Issue	Date & Issue Description		By	Check
1	SDP Submittal	08/31/15		
2015-08-31	**SDP SUBMITTAL**			
2015-11-18	**SDP SUBMITTAL #2**			
2016-02-29	**SDP SUBMITTAL #3**			
2017-03-15	**SDP SUBMITTAL #4**			
2017-11-20	**SDP SUBMITTAL #5**			

Seal/Signature

JAMES K HEINLY
C 26830
REN. 9/30/19

Project Name
THE PRESERVE AT TORREY HIGHLANDS

Project Number
55.7511.000

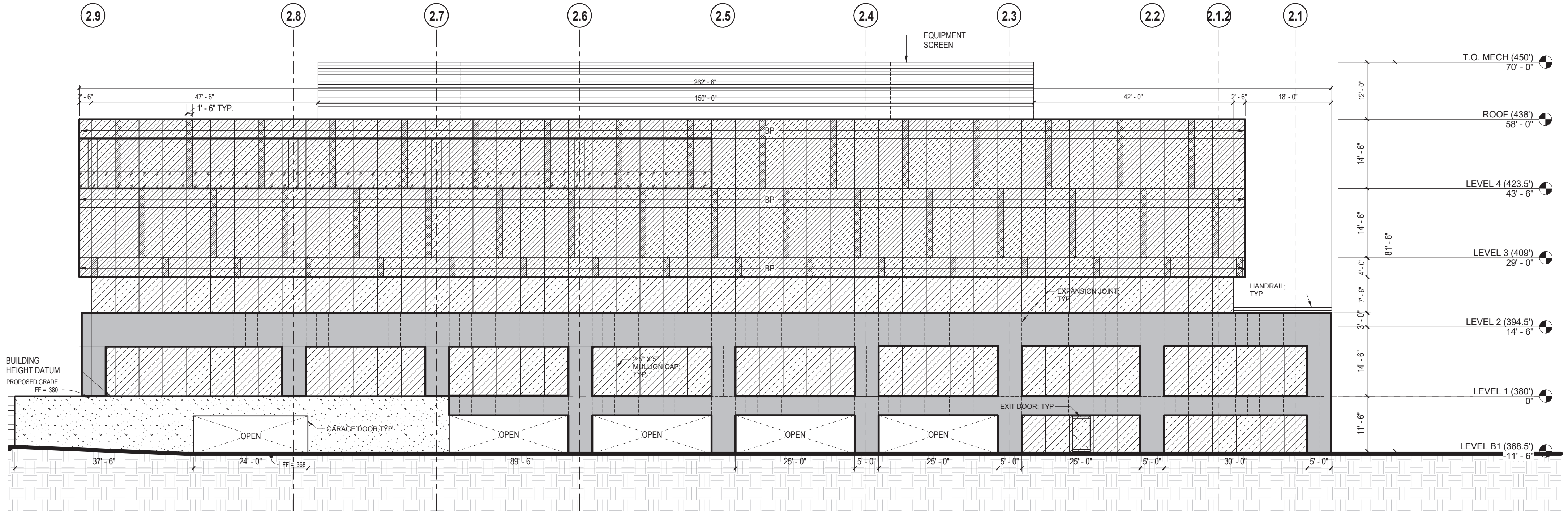
Description
OFFICE BLDG 1 - EXTERIOR ELEVATIONS

Scale
3/32" = 1'-0"

A09.02

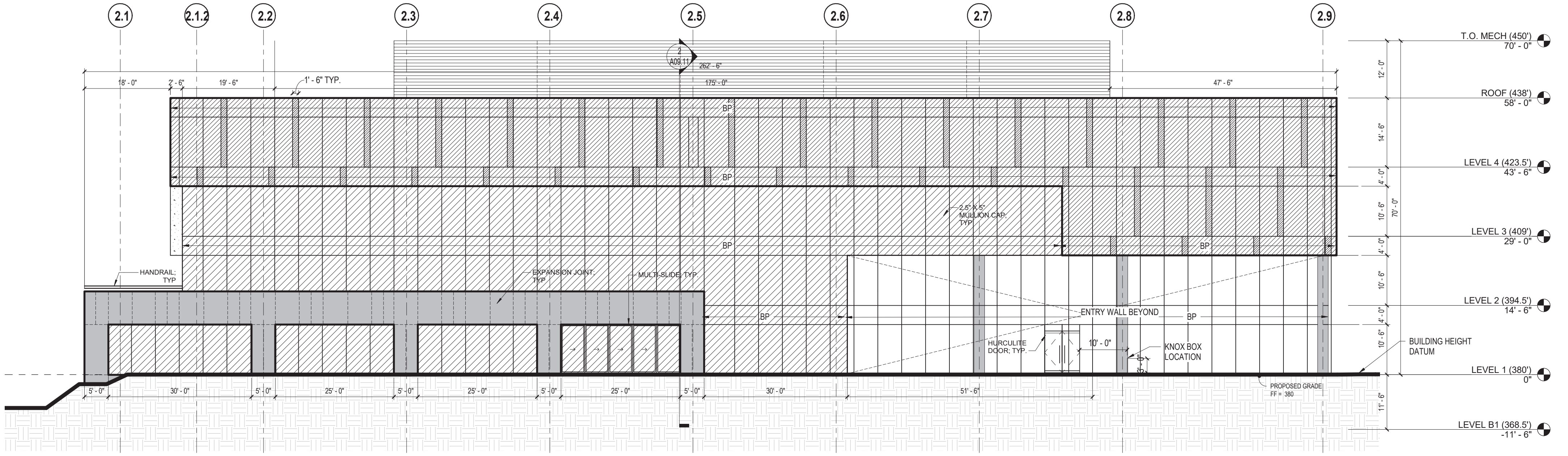
34 of 43

Ref. North



OFFICE BLDG 2 - NORTH EXTERIOR ELEVATION
SCALE: 3/32" = 1'-0"

1



OFFICE BLDG 2 - SOUTH EXTERIOR ELEVATION
SCALE: 3/32" = 1'-0"

2

▤	**3" ALUMINUM PANEL**	
░	**CAST-IN-PLACE GREY CONCRETE**	
▦	**STONE TILE WALL**	
▩	**GREY PERFORATED METAL PANEL**	
■	**METAL CLADDING**	
☐	**GL-1**	1" INSULATED GLASS STARFIRE
BP	**GL-1B**	1" INSULATED GLASS STARFIRE W/ BACK PAN
▨	**GL-2**	1" INSULATED GLASS SOLARBAN 70XL
BP	**GL-2B**	1" INSULATED GLASS SOLARBAN 70XL W/ BACK PAN
▨	**GL-3**	1" INSULATED GLASS SOLARBAN Z75 OPTIBLUE
BP	**GL-3B**	1" INSULATED GLASS SOLARBAN Z75 OPTIBLUE W/ BACK PAN
▨	**GL-4**	1" INSULATED GLASS SOLARBAN 70XL
BP	**GL-4B**	1" INSULATED GLASS SOLARBAN 70XL W/ BACK PAN

ELEVATION 01
SCALE: 1/2" = 1'-0"

THE PRESERVE AT TORREY HIGHLANDS

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2017-03-15	SDP SUBMITTAL #4		
2017-11-20	SDP SUBMITTAL #5		

Seal/Signature

LICENSED ARCHITECT
JAMES K HEINLY
C 26830
REN. 9/30/19
STATE OF CALIFORNIA

Project Name
THE PRESERVE AT TORREY HIGHLANDS

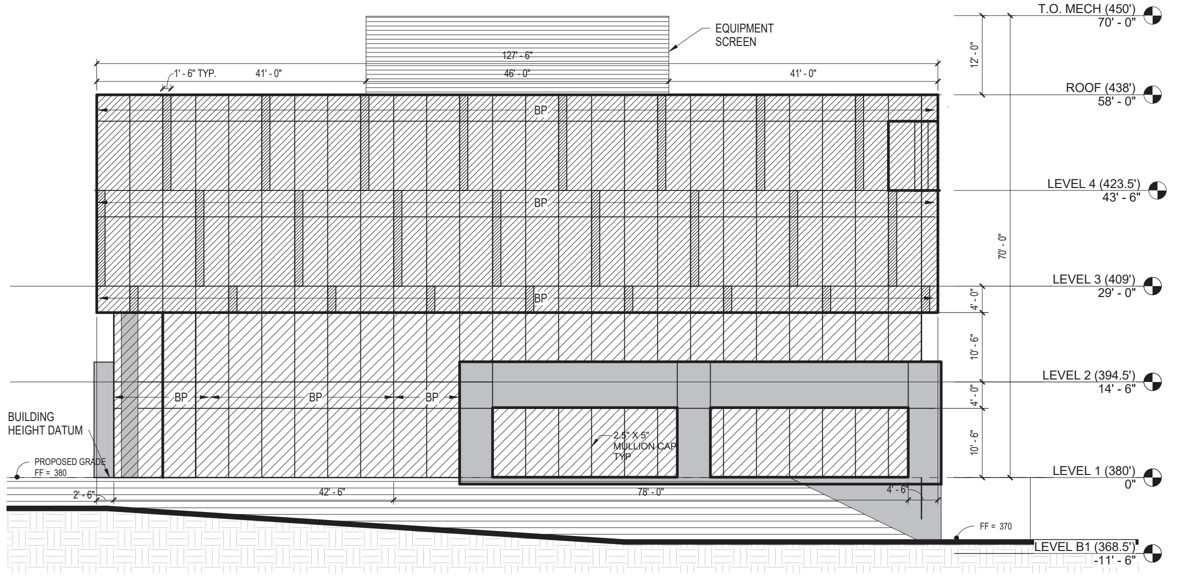
Project Number
55.7511.000

Description
OFFICE BLDG 2 - EXTERIOR ELEVATIONS

Scale
As indicated

A09.03

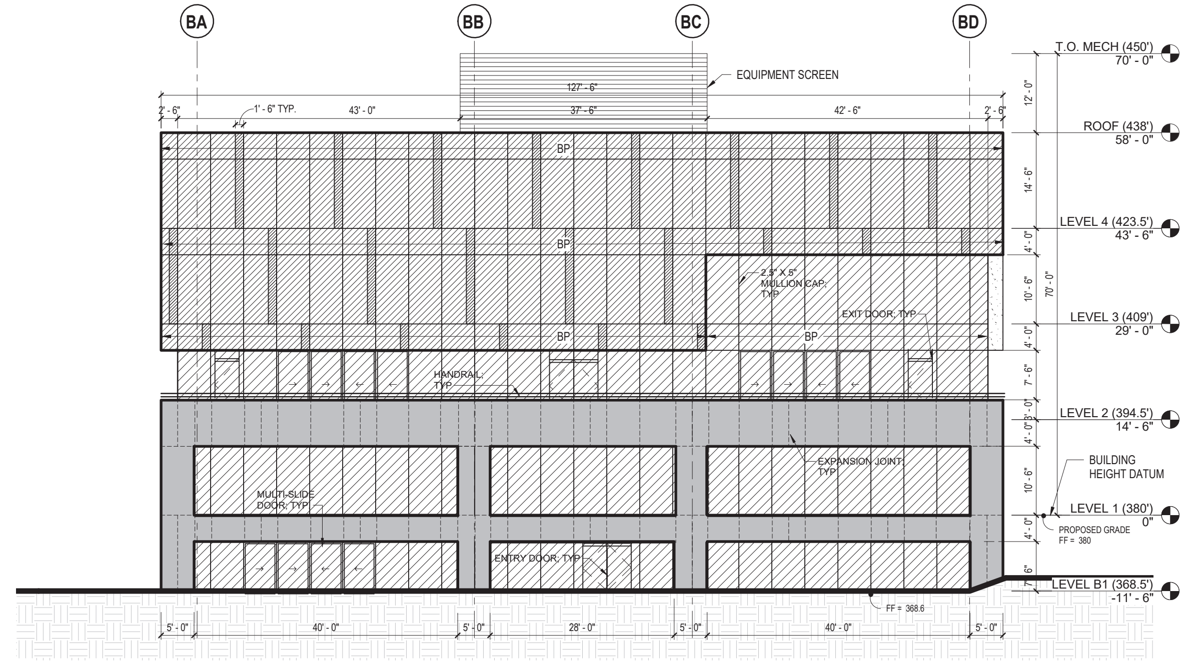
Ref. North



OFFICE BLDG 2 - EAST EXTERIOR ELEVATION

SCALE: 3/32" = 1'-0"

3



OFFICE BLDG 2 - WEST EXTERIOR ELEVATION

SCALE: 3/32" = 1'-0"

4

▤	**3" ALUMINUM PANEL**	
⁘	**CAST-IN-PLACE GREY CONCRETE**	
▦	**STONE TILE WALL**	
▩	**GREY PERFORATED METAL PANEL**	
■	**METAL CLADDING**	
□	**GL-1**	1" INSULATED GLASS STARFIRE
BP	**GL-1B**	1" INSULATED GLASS STARFIRE W/ BACK PAN
▨	**GL-2**	1" INSULATED GLASS SOLARBAN 70XL
BP	**GL-2B**	1" INSULATED GLASS SOLARBAN 70XL W/ BACK PAN
▨	**GL-3**	1" INSULATED GLASS SOLARBAN Z75 OPTIBLUE
BP	**GL-3B**	1" INSULATED GLASS SOLARBAN Z75 OPTIBLUE W/ BACK PAN
▨	**GL-4**	1" INSULATED GLASS SOLARBAN 70XL
BP	**GL-4B**	1" INSULATED GLASS SOLARBAN 70XL W/ BACK PAN

ELEVATION

SCALE: 1/2" = 1'-0"

THE PRESERVE AT TORREY HIGHLANDS

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2017-03-15	SDP SUBMITTAL #4		
2017-11-20	SDP SUBMITTAL #5		

Seal/Signature

JAMES K HEINLY
C 26830
REN. 9/30/19

Project Name
THE PRESERVE AT TORREY HIGHLANDS

Project Number
55.7511.000

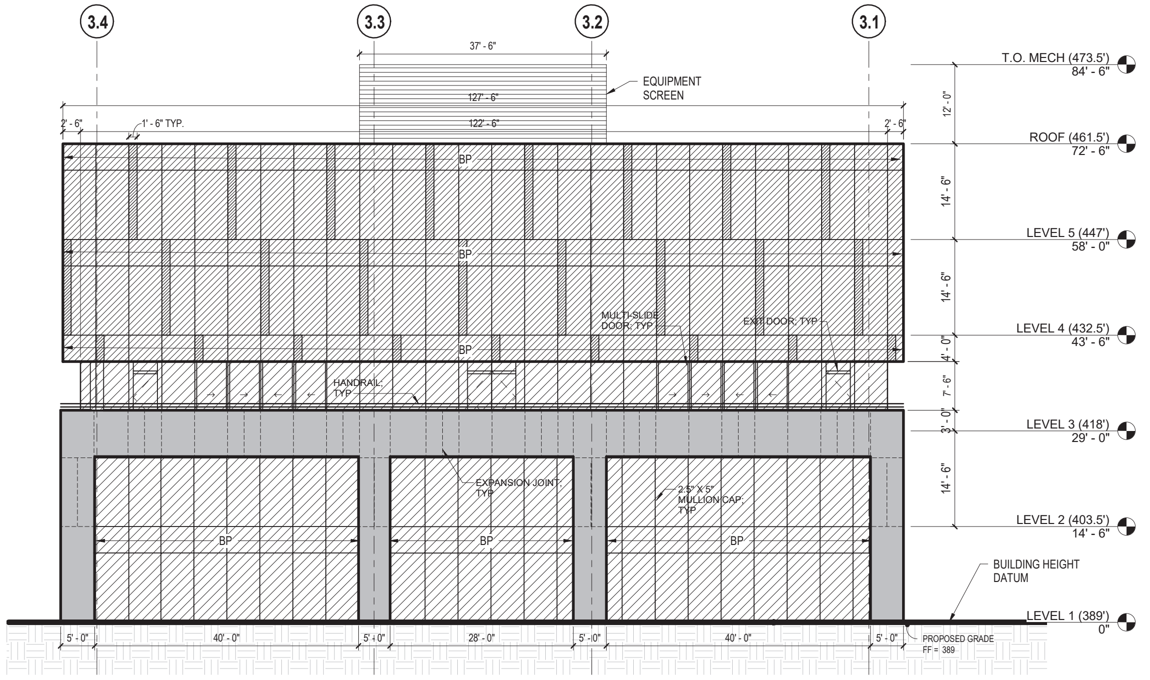
Description
OFFICE BLDG 2 - EXTERIOR ELEVATIONS

Scale
As indicated

A09.04

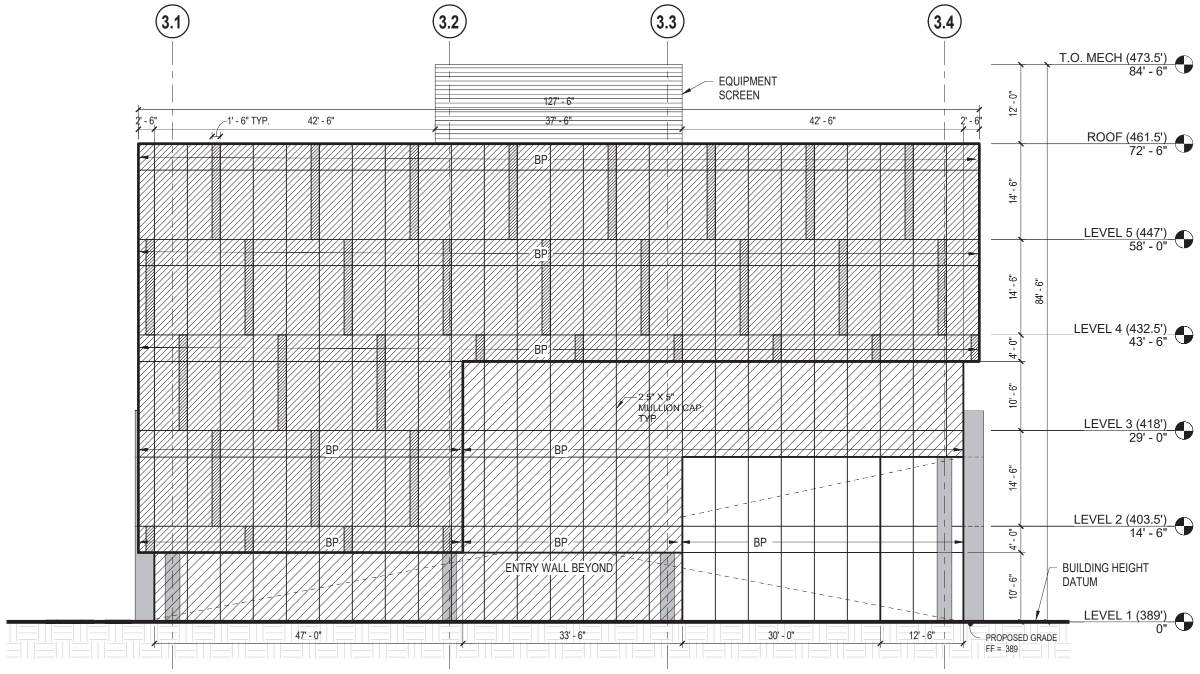
36 of 43

Ref. North



OFFICE BLDG 3 - NORTH EXTERIOR ELEVATION
SCALE: 3/32" = 1'-0"

1



OFFICE BLDG 3 - SOUTH EXTERIOR ELEVATION
SCALE: 3/32" = 1'-0"

2

☰	**3" ALUMINUM PANEL**	
░	**CAST-IN-PLACE GREY CONCRETE**	
▦	**STONE TILE WALL**	
▩	**GREY PERFORATED METAL PANEL**	
■	**METAL CLADDING**	
☐	**GL-1**	1" INSULATED GLASS STARFIRE
BP	**GL-1B**	1" INSULATED GLASS STARFIRE W/ BACK PAN
▨	**GL-2**	1" INSULATED GLASS SOLARBAN 70XL
▨ BP	**GL-2B**	1" INSULATED GLASS SOLARBAN 70XL W/ BACK PAN
▨	**GL-3**	1" INSULATED GLASS SOLARBAN Z75 OPTIBLUE
▨ BP	**GL-3B**	1" INSULATED GLASS SOLARBAN Z75 OPTIBLUE W/ BACK PAN
▨	**GL-4**	1" INSULATED GLASS SOLARBAN 70XL
▨ BP	**GL-4B**	1" INSULATED GLASS SOLARBAN 70XL W/ BACK PAN

ELEVATION
SCALE: 1/2" = 1'-0"

THE PRESERVE AT TORREY HIGHLANDS

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2017-03-15	SDP SUBMITTAL #4		
2017-11-20	SDP SUBMITTAL #5		

Seal/Signature

LICENSED ARCHITECT
JAMES K HEINLY
C 26830
REN. 9/30/19
STATE OF CALIFORNIA

Project Name
THE PRESERVE AT TORREY HIGHLANDS

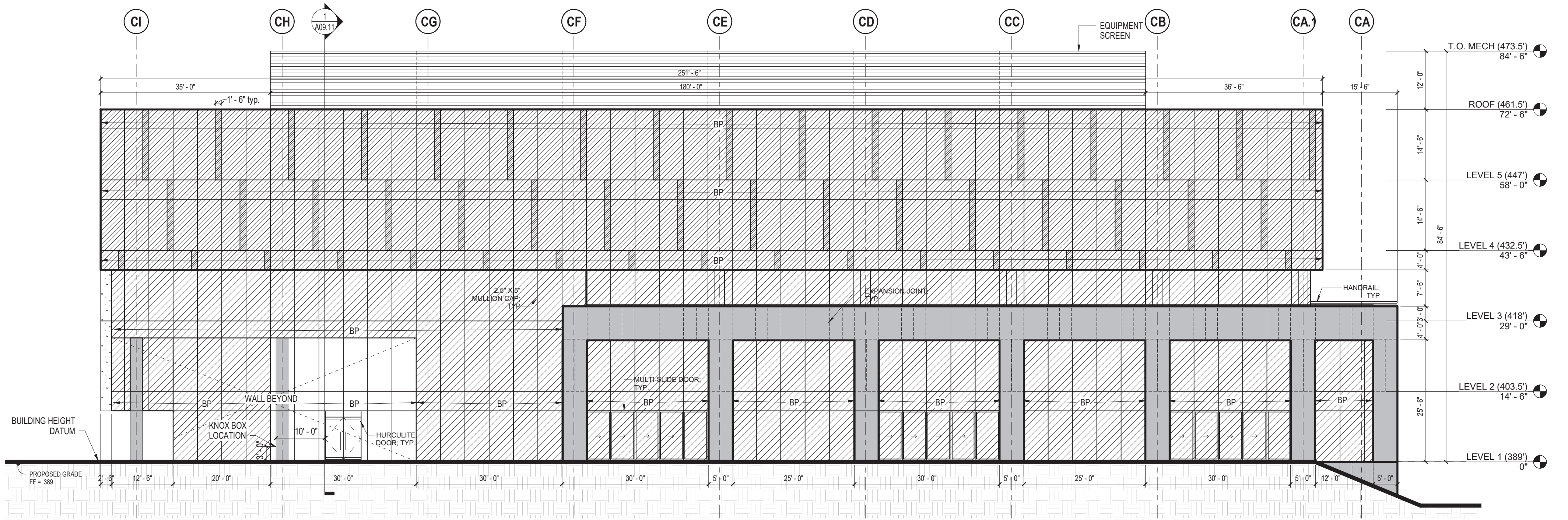
Project Number
55.7511.000

Description
OFFICE BLDG 3 - EXTERIOR ELEVATIONS

Scale
As indicated

A09.05
37 of 43

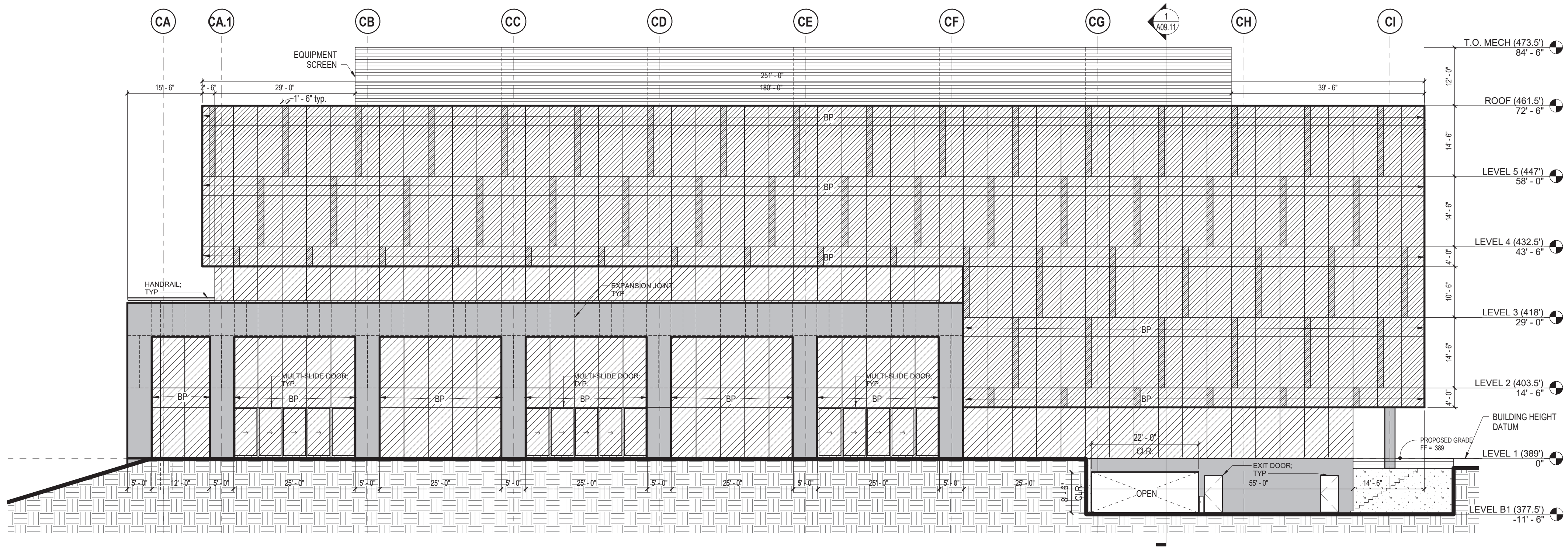
Ref. North



OFFICE BLDG 3 - EAST EXTERIOR ELEVATION

SCALE: 3/32" = 1'-0"

3



OFFICE BLDG 3 - WEST EXTERIOR ELEVATION

SCALE: 3/32" = 1'-0"

4

THE PRESERVE AT TORREY HIGHLANDS

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2017-03-15	SDP SUBMITTAL #4		
2017-11-20	SDP SUBMITTAL #5		

Seal/Signature

JAMES K HEINLY
C 26830
REN. 9/30/19

Project Name
THE PRESERVE AT TORREY HIGHLANDS

Project Number
55.7511.000

Description
OFFICE BLDG 3 - EXTERIOR ELEVATIONS

Scale
3/32" = 1'-0"

A09.06
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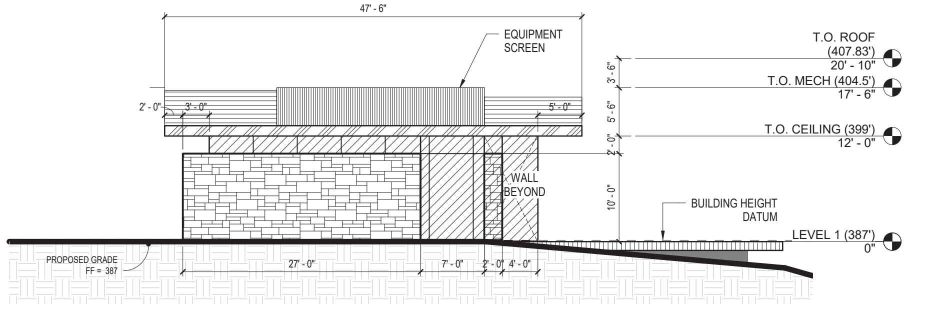
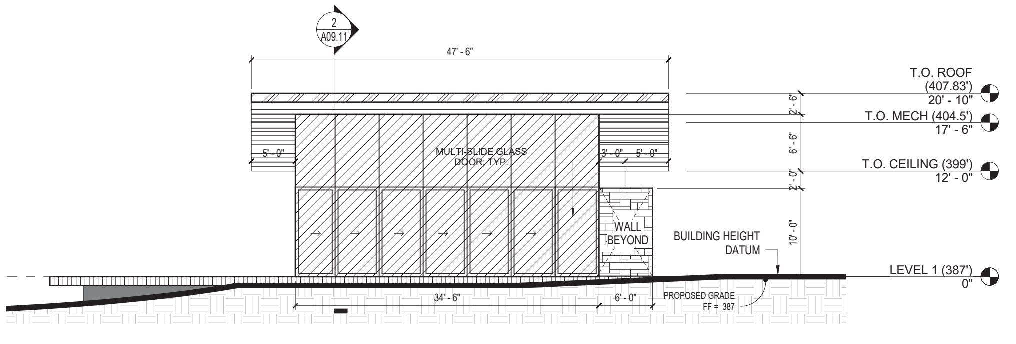
Ref. North



CAFE - NORTH EXTERIOR ELEVATION

SCALE: 1/8" = 1'-0"

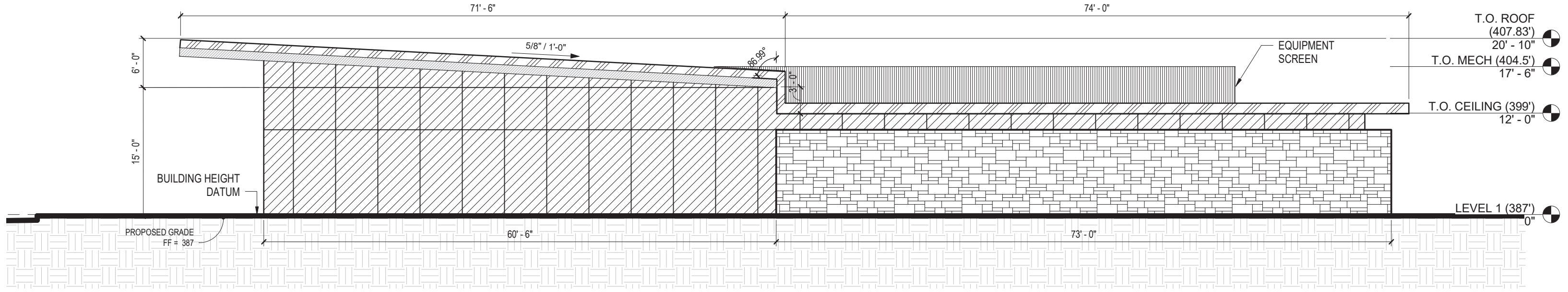
1



CAFE - SOUTH EXTERIOR ELEVATION

SCALE: 1/8" = 1'-0"

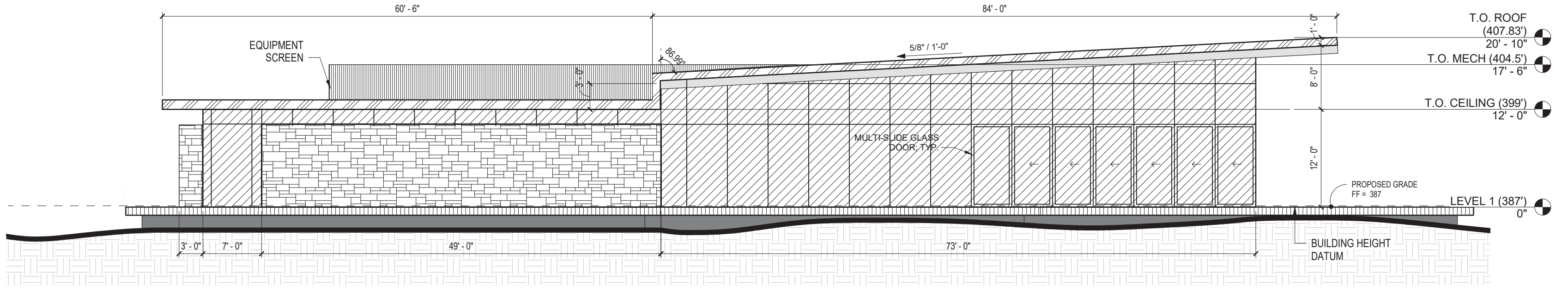
2



CAFE - EAST EXTERIOR ELEVATION

SCALE: 1/8" = 1'-0"

3



CAFE- WEST EXTERIOR ELEVATION

SCALE: 1/8" = 1'-0"

4

▤	**3" ALUMINUM PANEL**	
⁘	**CAST-IN-PLACE GREY CONCRETE**	
▦	**STONE TILE WALL**	
▩	**GREY PERFORATED METAL PANEL**	
■	**METAL CLADDING**	
□	**GL-1**	1" INSULATED GLASS STARFIRE
BP	**GL-1B**	1" INSULATED GLASS STARFIRE W/ BACK PAN
▨	**GL-2**	1" INSULATED GLASS SOLARBAN 70XL
▨ BP	**GL-2B**	1" INSULATED GLASS SOLARBAN 70XL W/ BACK PAN
▨	**GL-3**	1" INSULATED GLASS SOLARBAN Z75 OPTIBLUE
▨ BP	**GL-3B**	1" INSULATED GLASS SOLARBAN Z75 OPTIBLUE W/ BACK PAN
▨	**GL-4**	1" INSULATED GLASS SOLARBAN 70XL
▨ BP	**GL-4B**	1" INSULATED GLASS SOLARBAN 70XL W/ BACK PAN

ELEVATION

SCALE: 1/2" = 1'-0"

THE PRESERVE AT TORREY HIGHLANDS

SEQ STATE ROUTE 56 & CAMINO DEL SUR
SAN DIEGO, CA 92129

APN# 306-050-16, 306-050-18, 306-050-19, 306-050-28

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2017-11-20	SDP SUBMITTAL #5		

Seal/Signature

LICENSED ARCHITECT
JAMES K HEINLY
C 26830
REN. 9/30/19
STATE OF CALIFORNIA

Project Name
THE PRESERVE AT TORREY HIGHLANDS

Project Number
55.7511.000

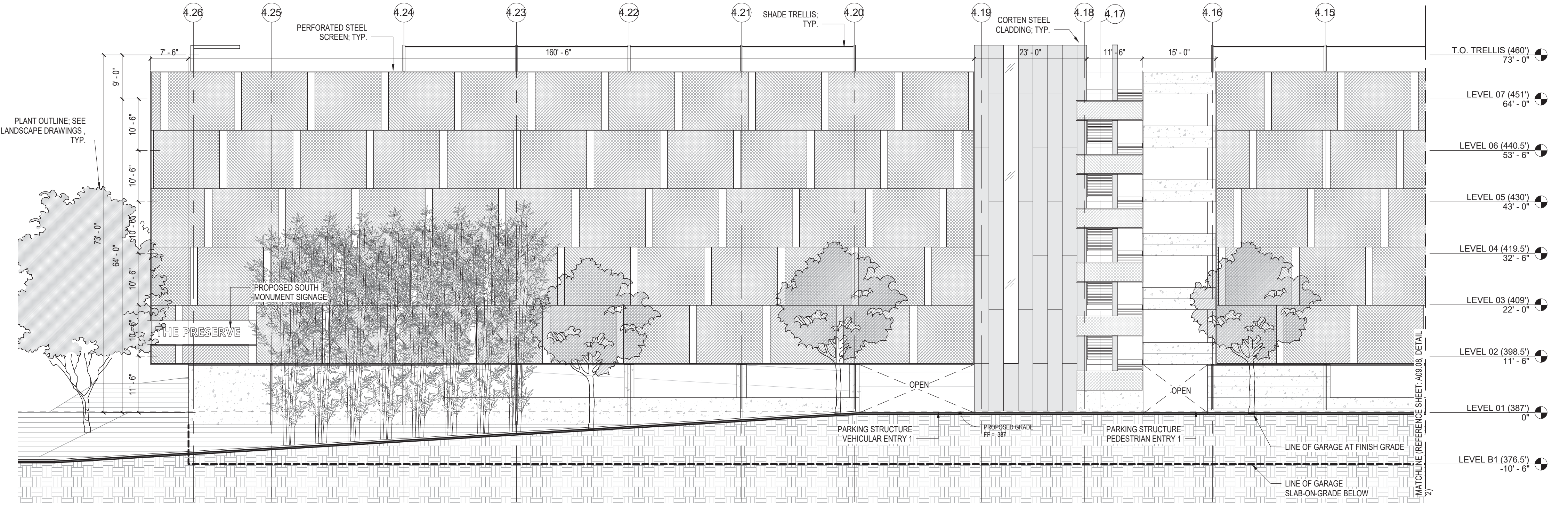
Description
CAFE - EXTERIOR ELEVATIONS

Scale
As indicated

A09.07

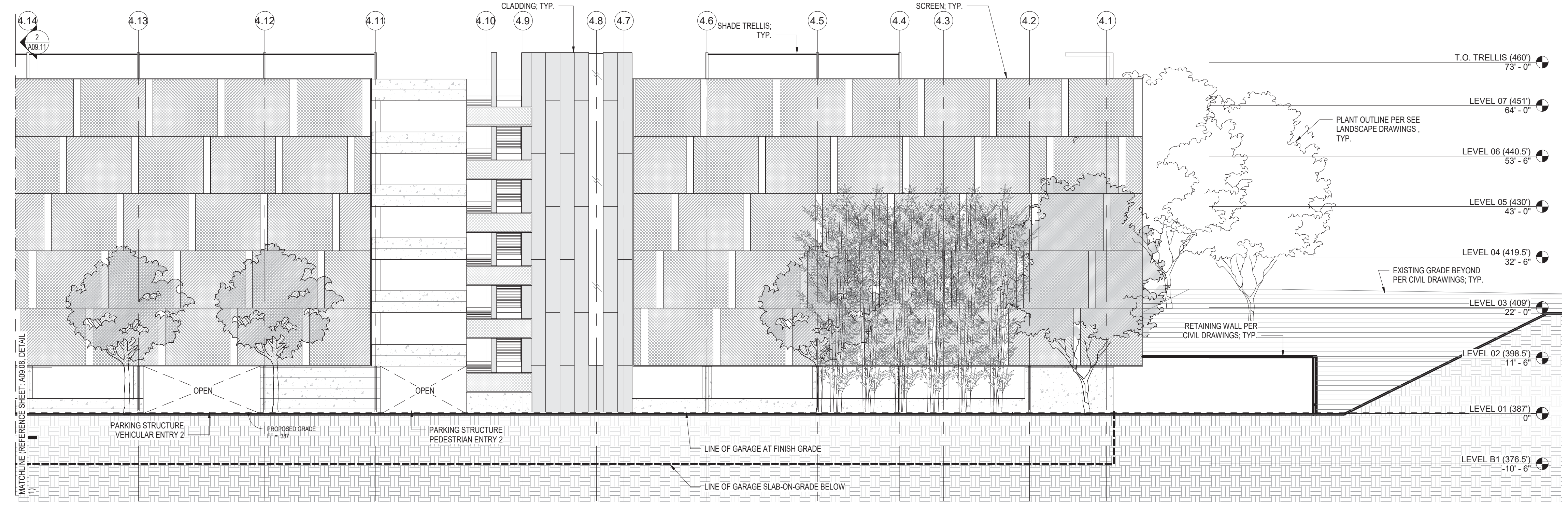
39 of 43

Ref. North



PARKING STRUCTURE - NORTH EXTERIOR ELEVATION 1
SCALE: 1" = 10'-0"

1



PARKING STRUCTURE - NORTH EXTERIOR ELEVATION 2
SCALE: 1" = 10'-0"

2

▤	**3" ALUMINUM PANEL**	
⋯	**CAST-IN-PLACE GREY CONCRETE, PAINTED IN MUTED EARTH TONES**	
▦	**STONE TILE WALL**	
▩	**GREY PERFORATED METAL PANEL**	
■	**METAL CLADDING**	
☐	**GL-1**	1" INSULATED GLASS STARFIRE
BP	**GL-1B**	1" INSULATED GLASS STARFIRE W/ BACK PAN
▨	**GL-2**	1" INSULATED GLASS SOLARBAN 70XL
▨ BP	**GL-2B**	1" INSULATED GLASS SOLARBAN 70XL W/ BACK PAN
▨	**GL-3**	1" INSULATED GLASS SOLARBAN Z75 OPTIBLUE
▨ BP	**GL-3B**	1" INSULATED GLASS SOLARBAN Z75 OPTIBLUE W/ BACK PAN
▨	**GL-4**	1" INSULATED GLASS SOLARBAN 70XL
▨ BP	**GL-4B**	1" INSULATED GLASS SOLARBAN 70XL W/ BACK PAN

ELEVATIONS
SCALE: 1/2" = 1'-0"

THE PRESERVE AT TORREY HIGHLANDS

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2017-11-20	SDP SUBMITTAL #5		

Seal/Signature

JAMES K HEINLY
C 26830
REN. 9/30/19

Project Name
THE PRESERVE AT TORREY HIGHLANDS

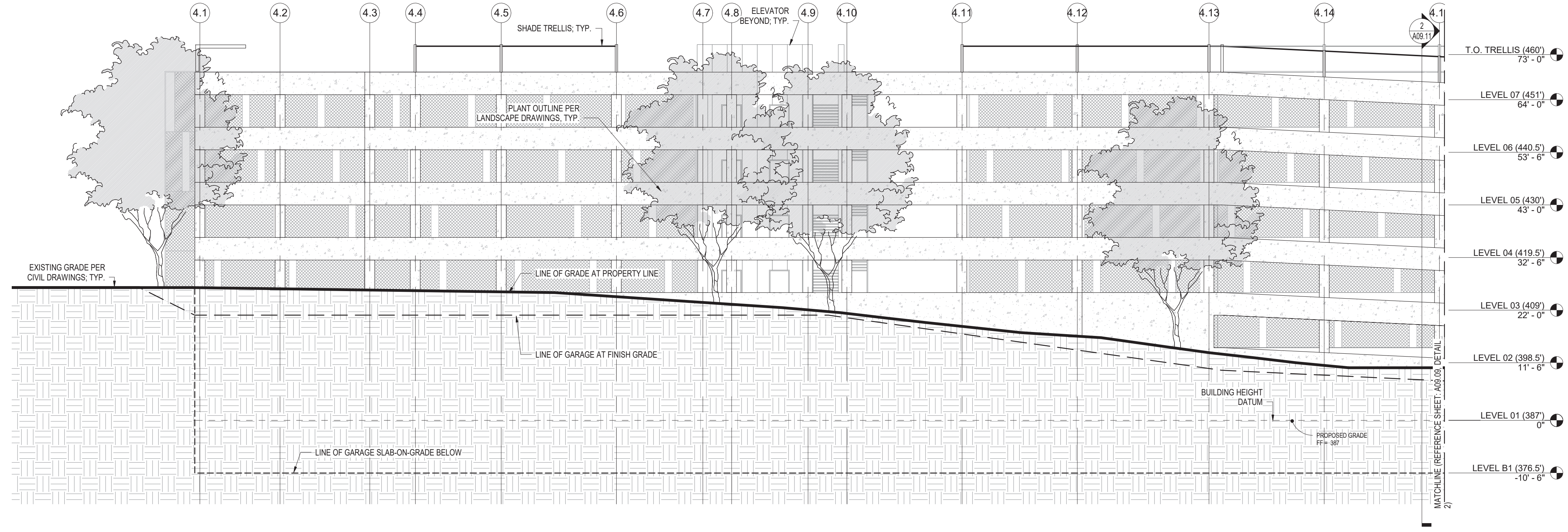
Project Number
55.7511.000

Description
PARKING STRUCTURE - EXTERIOR ELEVATIONS

Scale
As indicated

A09.08
40 of 43

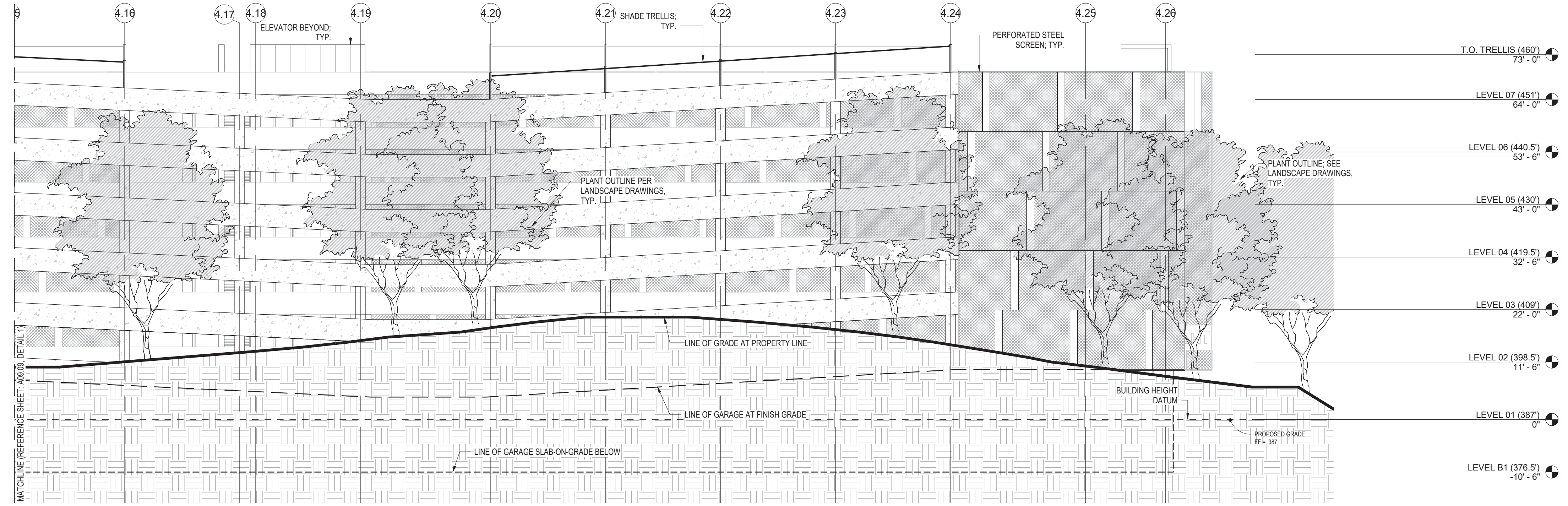
Ref. North



PARKING STRUCTURE - SOUTH EXTERIOR ELEVATION 1

SCALE: 1" = 10'-0"

1



PARKING STRUCTURE - SOUTH EXTERIOR ELEVATION 2

SCALE: 1" = 10'-0"

2

☰	**3" ALUMINUM PANEL**	▩	**GREY PERFORATED METAL PANEL**		BP	**GL-1B**	1" INSULATED GLASS STARFIRE W/ BACK PAN	▨	**GL-3**	1" INSULATED GLASS SOLARBAN Z75 OPTIBLUE	BP	**GL-4B**	1" INSULATED GLASS SOLARBAN 70XL W/ BACK PAN
░	**CAST-IN-PLACE GREY CONCRETE, PAINTED IN MUTED EARTH TONES**	■	**METAL CLADDING**		▨	**GL-2**	1" INSULATED GLASS SOLARBAN 70XL	BP	**GL-3B**	1" INSULATED GLASS SOLARBAN Z75 OPTIBLUE W/ BACK PAN			
▤	**STONE TILE WALL**	☐	**GL-1**	1" INSULATED GLASS STARFIRE	BP	**GL-2B**	1" INSULATED GLASS SOLARBAN 70XL W/ BACK PAN	▨	**GL-4**	1" INSULATED GLASS SOLARBAN 70XL			

ELEVATIONS

SCALE: 1/2" = 1'-0"

THE PRESERVE AT
TORREY
HIGHLANDS

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2017-03-15	SDP SUBMITTAL #4		
2017-11-20	SDP SUBMITTAL #5		

Seal/Signature

JAMES K HEINLY
C 26830
REN. 9/30/19

Project Name
THE PRESERVE AT TORREY HIGHLANDS

Project Number
55.7511.000

Description
PARKING STRUCTURE - EXTERIOR ELEVATIONS

Scale
As indicated

A09.09
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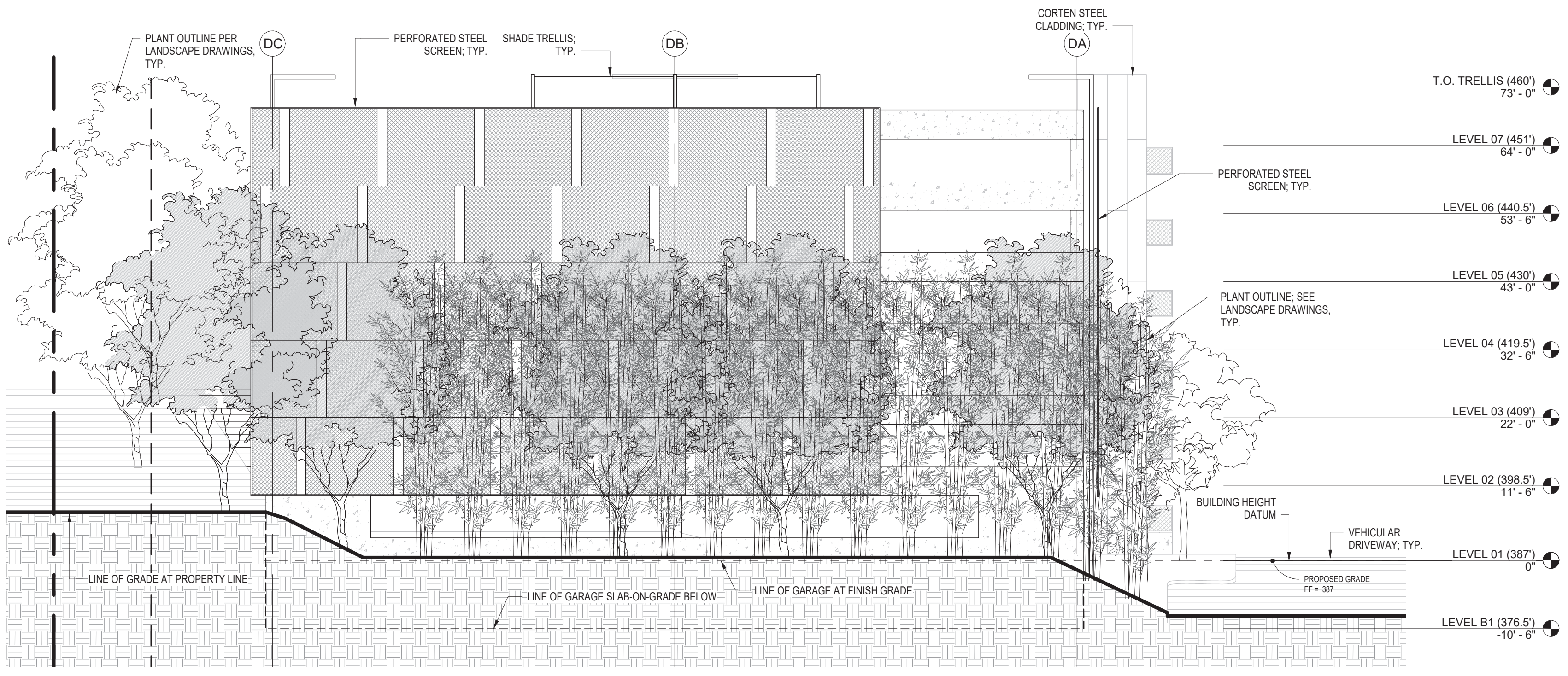
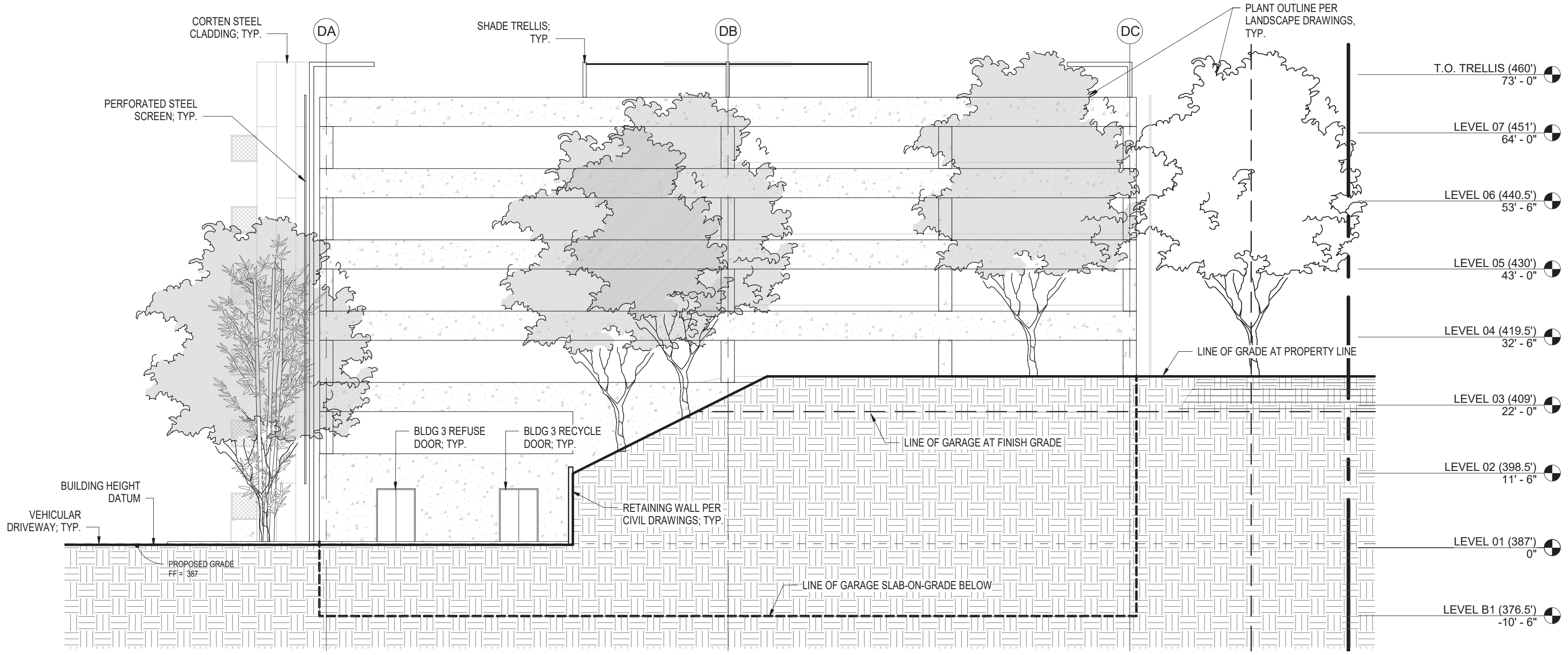
Ref. North



PARKING STRUCTURE - EAST EXTERIOR ELEVATION

SCALE: 1" = 10'-0"

2



PARKING STRUCTURE - WEST EXTERIOR ELEVATION

SCALE: 1" = 10'-0"

1

▤	**3" ALUMINUM PANEL**	
░	**CAST-IN-PLACE GREY CONCRETE, PAINTED IN MUTED EARTH TONES**	
▦	**STONE TILE WALL**	
▩	**GREY PERFORATED METAL PANEL**	
▓	**METAL CLADDING**	
☐	**GL-1**	1" INSULATED GLASS STARFIRE
BP	**GL-1B**	1" INSULATED GLASS STARFIRE W/ BACK PAN
▨	**GL-2**	1" INSULATED GLASS SOLARBAN 70XL
BP	**GL-2B**	1" INSULATED GLASS SOLARBAN 70XL W/ BACK PAN
▨	**GL-3**	1" INSULATED GLASS SOLARBAN Z75 OPTIBLUE
BP	**GL-3B**	1" INSULATED GLASS SOLARBAN Z75 OPTIBLUE W/ BACK PAN
▨	**GL-4**	1" INSULATED GLASS SOLARBAN 70XL
BP	**GL-4B**	1" INSULATED GLASS SOLARBAN 70XL W/ BACK PAN

ELEVATIONS

SCALE: 1/2" = 1'-0"

THE PRESERVE AT
TORREY
HIGHLANDS

Gensler

225 Broadway
Suite 100
San Diego CA 92101
Tel: 619.557.2500
Fax: 619.557.2520

△ Issue	Date & Issue Description	By	Check
2015-08-31	SDP SUBMITTAL		
2015-11-18	SDP SUBMITTAL #2		
2016-02-29	SDP SUBMITTAL #3		
2017-03-15	SDP SUBMITTAL #4		
2017-11-20	SDP SUBMITTAL #5		

Seal/Signature

LICENSED ARCHITECT
JAMES K HEINLY
C 26830
REN. 9/30/19
STATE OF CALIFORNIA

Project Name
THE PRESERVE AT TORREY HIGHLANDS

Project Number
55.7511.000

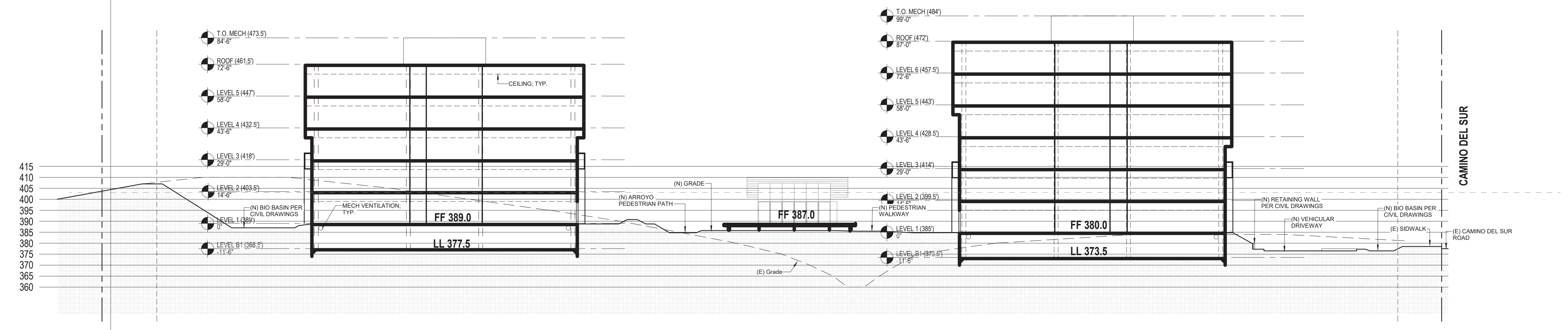
Description
PARKING STRUCTURE - EXTERIOR ELEVATIONS

Scale
As indicated

A09.10

42 of 43

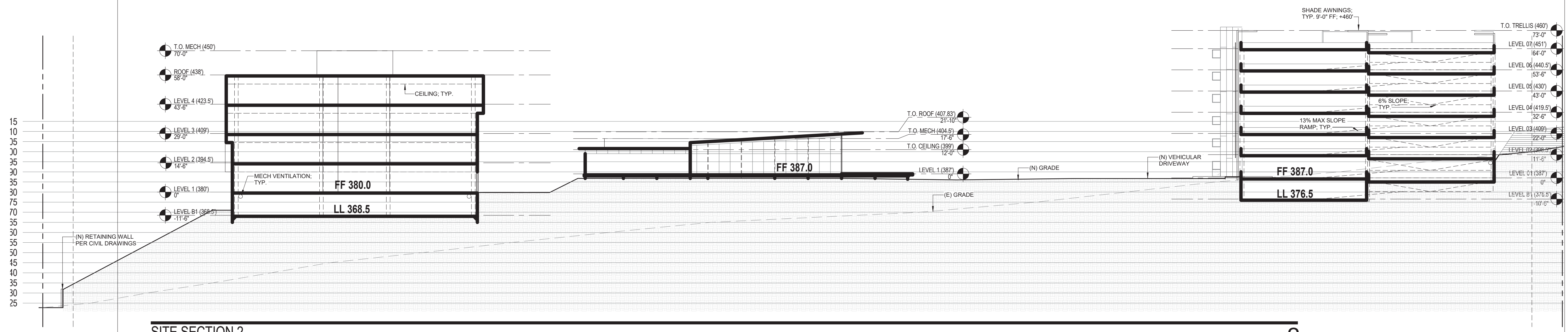
Ref. North



SITE SECTION 1

SCALE: 1" = 20'-0"

1



SITE SECTION 2

SCALE: 3/64" = 1'-0"

2

LEGEND

— - — - ——— - — - — PROPERTY LINE

- - - - - - - - - - - - SETBACK

— — — — — — — LIMIT OF WORK

THE PRESERVE AT TORREY HIGHLANDS

SEQ STATE ROUTE 56 & CAMINO DEL SUR
SAN DIEGO, CA 92129

APN# 306-050-16, 306-050-18, 306-050-19, 306-050-28

Gensler

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Seal/Signature

LICENSED ARCHITECT
JAMES K HEINLY
C 26830
REN. 9/30/19
STATE OF CALIFORNIA

Project Name
THE PRESERVE AT TORREY HIGHLANDS

Project Number
55.7511.000

Description
SITE SECTIONS

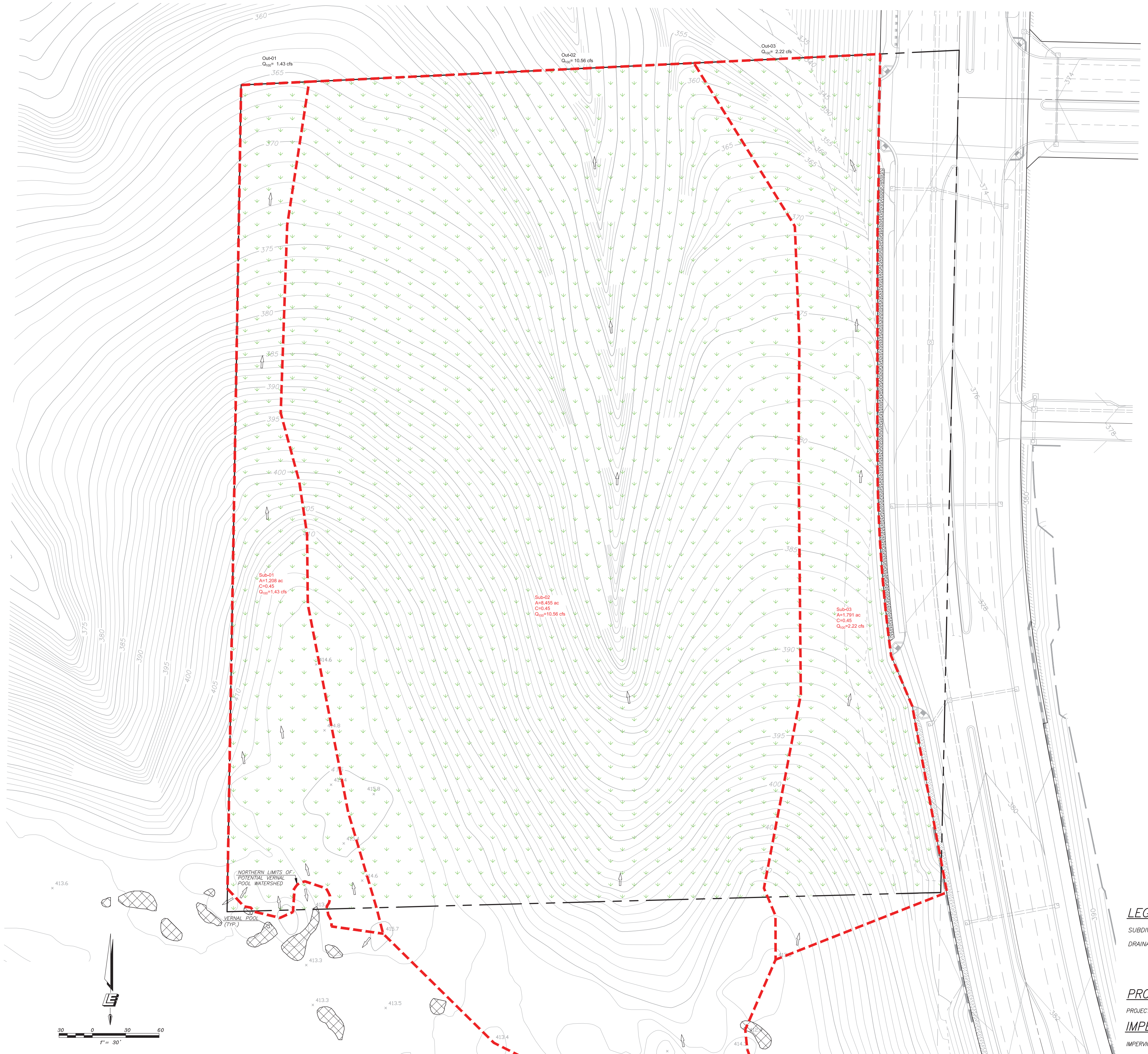
Scale
As indicated

A09.11
43 of 43

Ref. North

APPENDIX U

Vernal Pool Hydrology Analysis



Basin	Area (SF)	Area (Acres)	C	Length (ft)	Upper Elev. (ft)	Lower Elev. (ft)	Slope (%)	Tc (min)	Intensity (in/hr)	Q_{100} (cfs)
1	52631	1.208	0.45	770	415	366	6.36%	17.53	2.63	1.43
2	368302	8.455	0.45	890	419	323	10.79%	15.81	2.78	10.56
3	77861	1.787	0.45	810	413	340	9.01%	16.01	2.75	2.22
									Total Q	14.20

LEGEND

SUBDIVISION BOUNDARY	—— - - ——— - - ——
DRAINAGE BASIN LIMITS	🟥 🟥 🟥 🟥 🟥 🟥 🟥

PROJECT AREA

PROJECT AREA = 443,721 S.F.

IMPERVIOUS AREA ▨

IMPERVIOUS AREA = 0 S.F. (0%)

PERVIOUS AREA ▨

PERVIOUS AREA = 443,721 S.F. (100%)

THE PRESERVE AT TORREY HILLS

EXISTING DRAINAGE MAP

NO.	DATE	BY	DESCRIPTION	NO.	DATE	BY	DESCRIPTION
6				12			
5				11			
4				10			
3	06/22/2016	RL	REVISION 2	9			
2	04/04/2016	RL	REVISION 1	8			
1	11/13/2015	RL	ORIGINAL	7			

Leppert Engineering
CORPORATION
5190 Governor Drive, Suite 205, San Diego, Ca. 92122-2848
Phone: (858) 597-2001 Fax: (858) 597-2009

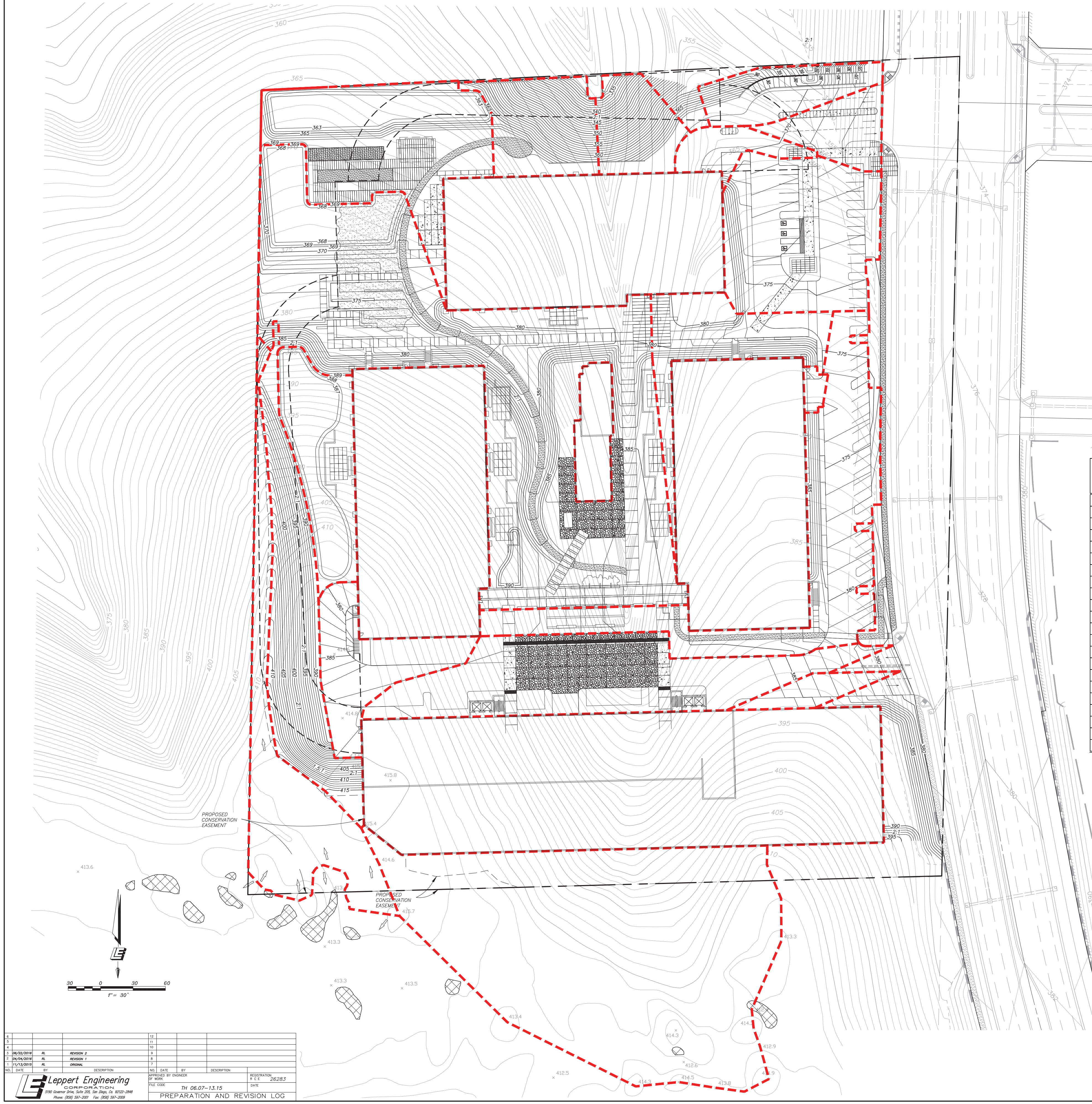
APPROVED BY ENGINEER OF WORK

REGISTRATION R C E 26283

FILE CODE TH 06.07-13.15

DATE

PREPARATION AND REVISION LOG



Basin	Area (sf)	Area (ac)	C	Tc (min)	Intensity (in/hr)	Q100 (cfs)
1	21057	0.483	0.85	5	4.4	1.81
2	8944	0.205	0.45	5	4.4	0.41
3	6169	0.142	0.45	5	4.4	0.28
4	3527	0.081	0.85	5	4.4	0.30
5	6595	0.151	0.45	5	4.4	0.30
6	5183	0.119	0.85	5	4.4	0.45
7	19516	0.448	0.85	5	4.4	1.68
8	30570	0.702	0.85	5	4.4	2.62
9	70348	1.615	0.85	5	4.4	6.04
10	4060	0.093	0.85	5	4.4	0.35
11	10374	0.238	0.85	5	4.4	0.89
12	30060	0.690	0.85	5	4.4	2.58
13	755	0.017	0.85	5	4.4	0.06
14	25039	0.575	0.85	5	4.4	2.15
15	16106	0.370	0.45	5	4.4	0.73
16	10952	0.251	0.45	5	4.4	0.50
17	30060	0.690	0.85	5	4.4	2.58
18	9529	0.219	0.85	5	4.4	0.82
19	23521	0.540	0.85	5	4.4	2.02
20	2612	0.060	0.85	5	4.4	0.22
21	60077	1.379	0.85	5	4.4	5.16
22	61139	1.404	0.45	5	4.4	2.78
					Total Q	**34.73**

LEGEND

SUBDIVISION BOUNDARY	—-—-—
DRAINAGE BASIN LIMITS	🟥 - - -

PROJECT AREA

PROJECT AREA = 443,721 S.F.

IMPERVIOUS AREA

IMPERVIOUS AREA = 254,152 S.F. (57%)

PERVIOUS AREA

PERVIOUS AREA = 189,569 S.F. (43%)

THE PRESERVE AT TORREY HIGHLANDS
PROPOSED DRAINAGE MAP

NO.	DATE	BY	DESCRIPTION	NO.	DATE	BY	DESCRIPTION
6				12			
5				11			
4				10			
3	06/22/2016	RL	REVISION 2	9			
2	04/04/2016	RL	REVISION 1	8			
1	11/13/2015	RL	ORIGINAL	7			

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REGISTRATION R C E 26283

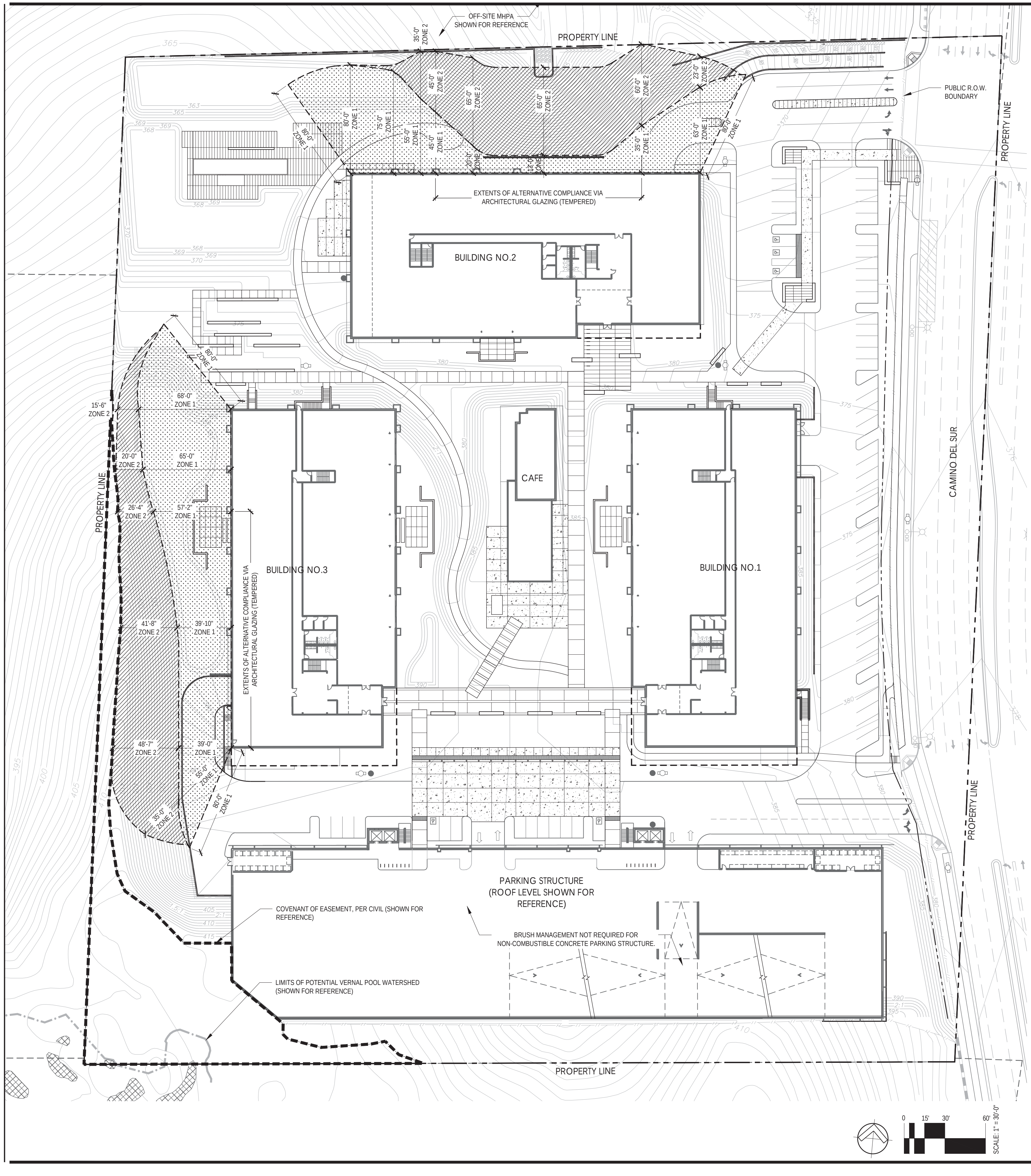
FILE CODE TH 06.07-13.15

DATE

PREPARATION AND REVISION LOG

APPENDIX V

Brush Management Notes



ZONE 1 PLANT MATERIAL LEGEND

▒

*SEE SHEET L1.2 FOR FULL PLANT LEGEND

ZONE 2 PLANT MATERIAL LEGEND

▨

*SEE SHEET L1.2 FOR FULL PLANT LEGEND

ALL SALVAGEABLE PLANT MATERIAL BEYOND THE LIMIT OF GRADING WILL BE PRESERVED AND MAINTAINED PER ZONE 2 REQUIREMENTS.

BRUSH MANAGEMENT ZONE WIDTH REDUCTION DISCUSSION

THE WIDTH OF ZONE 2 HAS BEEN REDUCED IN AREAS WHERE ZONE 1 (PERMANENTLY IRRIGATED LANDSCAPE) HAS BEEN INCREASED. PER SECTION 142.0412 AND TABLE 142.14H, "THE ZONE TWO WIDTH MAY BE DECREASED BY 1½ FEET FOR EACH 1 FOOT OF INCREASE IN ZONE ONE WIDTH."

AS PER CODE REQUIREMENTS, THE COMBINED WIDTH OF ZONES 1 AND 2 NEVER EXCEEDS 100 FEET.

REFER TO ARCHITECTURAL PLANS FOR INFORMATION REGARDING THE FIRE-RATING OF THE PLANNED "PARKING STRUCTURE."

THE PRESERVE AT TORREY HIGHLANDS

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Architecture
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groundlevelsd.com

△ Issue	Date & Issue Description	By	Check
2015-08-31	SDP SUBMITTAL		
2015-11-18	SDP RESUBMITTAL		
2015-04-04	SDP RESUBMITTAL		
2017-03-15	SDP RESUBMITTAL		
2017-11-20	SDP RESUBMITTAL		
2018-06-08	SDP RESUBMITTAL		

Seal/Signature

REGISTERED LANDSCAPE ARCHITECT
SCOTT LANGSTON SANDEL
3026
SIGNATURE
DATE
EXP. 1-31-18
STATE OF CALIFORNIA

Project Name
THE PRESERVE AT TORREY HIGHLANDS

GL Project Number
15060

Description
BRUSH MANAGEMENT PLAN

Scale
As indicated

L1.4

BRUSH MANAGEMENT NOTES FROM "OUTLINE FOR PREPARING BRUSH MANAGEMENT EXHIBITS" [PAGES 3-6]

VI. BRUSH MANAGEMENT – VEGETATION

A. Thinning and Pruning, Native/Naturalized Vegetation [SDMC §142.0412(d), (g) & (h), Landscape Standards §3.2-2.04, 3.2-3.01] – Two key factors in creating a fire safe landscape are providing fuel discontinuity by the separation of the flammable plant cover (thinning) and reduction in fuel load by cutting out dead and excess growth of the native/naturalized vegetation (pruning). Plants to be retained should be consistent with the allowable coverage, massing and spacing required in the Brush Management Regulations and the Landscape Standards. Whenever possible, a person knowledgeable about the use and maintenance of native plants should be consulted to oversee the selection, thinning, and pruning of these plants. The progression of work should proceed as follows: 1) remove dead plants, 2) thin out brush management areas to the required coverage, 3) prune remaining plants, 4) dispose or mulch debris and trimmings, and 5) maintain Zone One on a year-round basis, Zone Two on a seasonal basis. Note that brush management activities are prohibited within coastal sage scrub, maritime succulent scrub, and coastal sage-chaparral habitats from March 1 through August 15, except where documented to the satisfaction of the City Mayor's Designee that the thinning would be consistent with conditions of species coverage described in the City of San Diego's MSCP Subarea Plan.

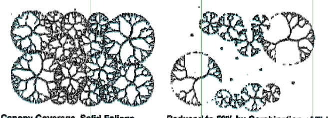
1) Thinning – This first step requires identification of the native/naturalized species and a familiarity with their various characteristics such as rooting depth, fuel loads, flammability, as well as habitat and aesthetic value. Thinning should be prioritized as follows: 1) invasive non-native species with the exception of eucalyptus trees in Eucalyptus Woodland areas, 2) non-native species, 3) flammable native species, 4) native species, and 5) regionally sensitive species. All vegetation that is not to be removed during the initial thinning should be noted or flagged. The remaining plants which are not to be saved should be cut six inches above the ground without pulling out the roots.

For Eucalyptus Woodland areas that fall within Zone Two Brush Management, all trees 3 inches or less in diameter at breast height (dbh) shall be removed with the exception of indigenous, native species. The removal of live (includes "diseased") eucalyptus trees over 3 inches dbh, should only occur:

a) when needed to remove adjacent dead trees;
b) to achieve tree/shrub vertical requirements;
c) where deemed a specific liability or fire safety hazard by the Fire Chief; or
d) on private property when adhering to the horizontal spacing criteria shown in the Tree & Shrub Spacing Chart under Section VI.B.

Certain native plants, such as those found in coastal sage scrub, should be cut back to within 12 inches of the root crown. As sprouting and re-growth occur, these plants can be maintained as low, succulent mounds. Examples include Artemisia californica (California Sagebrush), Salvia mellifera (Black Sage), Adenostoma fasciculatum (Chamise) and Eriogonum fasciculatum (Buckwheat).

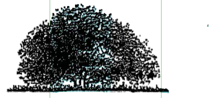
PLAN VIEW



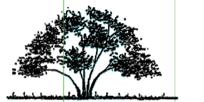
100% Canopy Coverage, Solid Foliage Mass with no Spaces between Plants

Reduced to 50% by Combination of Thinning and Removal of Canopy Coverage

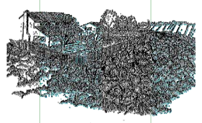
2) Pruning – After thinning of the native/naturalized vegetation, the fuel load should be further reduced by pruning the plants that have not been removed. While pruning individual plants is not feasible in coastal sage scrub, it is very effective for many hard chaparral species, such as Ceanothus (Wild Lilac), Heteromeles (Toyon), Rhus (Lemonade Berry, Sugarbush), and Rhamnus (Coffeeberry, Redberry). These plants can be shaped into attractive, fire safe specimens by pruning dead and excessively twiggy growth. The figure below illustrates pruning of native shrubs. Note that the limbs touching the ground have been removed, and that a large volume of material has been taken from the canopy. The limbs that remain should be those with young, vigorous shoots.



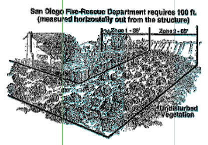
Chaparral Plant Before Pruning



Chaparral Plant After Pruning



Before Brush Management

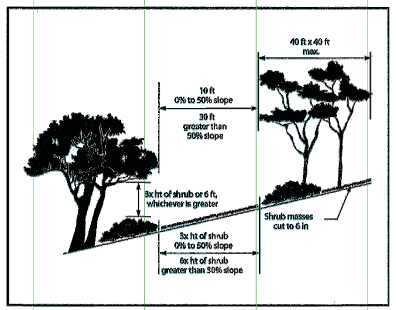


After Thinning and Pruning

B. Thinning and Pruning, Trees [Landscape Standards §3.2-1.03, 1.05] – Trees are allowed within the defensible space, provided the horizontal and vertical distance between trees and shrubs masses complies with required spacing for the slope gradient shown in the following Tree and Shrub Spacing Chart:

Tree & Shrub Spacing Chart		
Trees^{a,b}	*Minimum horizontal space From edge of one tree canopy spread (max. 40-ft x 40-ft) to the edge of the next*	
	Slope	*Spacing*
	0% to 50% (2:1)	*10 feet*
	Greater than 50% (2:1)	*30 feet*
Shrubs	*Minimum horizontal space between edges of shrub*	
	Slope	*Spacing*
	0% to 50% (2:1)	*3 times the height of the shrub mass*
	Greater than 50% (2:1)	*6 times the height of the shrub mass*
Vertical Space	*Minimum vertical space between top of shrub and bottom of lower tree branches: 3 times the height of the shrub mass or 6 feet, whichever is greater*	

a. Trees greater than 3 inches dbh located in Eucalyptus Woodland areas are exempt from the minimum horizontal tree spacing requirement.
b. Indigenous, native trees in all areas are exempt from the minimum horizontal tree spacing requirement.



TREE & SHRUB SPACING

Vertical clearance between trees and shrubs can be created by pruning up the tree canopy, reducing height of the shrubs, or a combination thereof. Canopies of existing trees that extend to within 10 feet of any structure shall be pruned to maintain a minimum horizontal and vertical clearance of 10 feet. Portions of tree canopies that extend within 10 feet of the outlet of a chimney shall be pruned to maintain a minimum horizontal and vertical clearance of 10 feet.

BRUSH MANAGEMENT PROGRAM [SDMC 142.0412]

BRUSH MANAGEMENT ZONES 1 AND 2 HAVE BEEN PROVIDED PER LDC SECTION 142.0412. MAINTENANCE AND IMPLEMENTATION OF BOTH ZONES SHALL BE AS DESCRIBED IN THE LANDSCAPE DEVELOPMENT CODE SECTION 142.0412 AND AS LISTED BELOW. LONG TERM MAINTENANCE AND MONITORING OF THE BRUSH MANAGEMENT ZONES SHALL BE THE RESPONSIBILITY OF THE OWNER. THINNING AND PRUNING SHALL BE PERFORMED ANNUALLY BY THE OWNER.

THE WIDTHS OF ZONES ONE AND TWO HAVE BEEN ALTERED FOR ALTERNATIVE COMPLIANCE. SEE BRUSH MANAGEMENT PLAN FOR DETAILED INFORMATION.

BRUSH MANAGEMENT REQUIREMENTS [SDMC 142.0412]

ZONE ONE REQUIREMENTS

1. THE REQUIRED ZONE ONE WIDTH SHALL BE PROVIDED BETWEEN NATIVE OR NATURALIZED VEGETATION AND ANY STRUCTURE AND SHALL BE MEASURED FROM THE EXTERIOR OF THE STRUCTURE TO THE VEGETATION.
2. ZONE ONE SHALL CONTAIN NO HABITABLE STRUCTURES, STRUCTURES THAT ARE DIRECTLY ATTACHED TO HABITABLE STRUCTURES, OR OTHER COMBUSTIBLE CONSTRUCTION THAT PROVIDES A MEANS FOR TRANSMITTING FIRE TO THE HABITABLE STRUCTURES. STRUCTURES SUCH AS FENCES, WALLS, PALAPAS, PLAY STRUCTURES AND NON-HABITABLE GAZEBOS THAT ARE LOCATED WITHIN BRUSH MANAGEMENT ZONE ONE SHALL BE OF NONCOMBUSTIBLE CONSTRUCTION.
3. PLANTS WITHIN ZONE ONE SHALL BE PRIMARILY LOW-GROWING AND LESS THAN 4 FEET IN HEIGHT WITH THE EXCEPTION OF TREES. PLANTS SHALL BE LOW-FUEL AND FIRE-RESISTIVE. REFER TO PLANT MATERIAL LEGEND AT LEFTT FOR PLANT MATERIAL WITHIN THE BRUSH MANAGEMENT ZONES.
4. TREES WITHIN ZONE ONE SHALL BE LOCATED AWAY FROM STRUCTURES TO A MINIMUM DISTANCE OF 10 FEET AS MEASURED FROM THE STRUCTURES TO THE DRIP LINE OF THE TREE AT MATURITY IN ACCORDANCE WITH THE LANDSCAPE STANDARDS OF THE LAND DEVELOPMENT MANUAL.
5. PERMANENT IRRIGATION IS REQUIRED FOR ALL PLANTING AREAS WITHIN ZONE ONE EXCEPT AS FOLLOWS:
    a. WHEN PLANTING AREAS CONTAIN ONLY SPECIES THAT DO NOT GROW TALLER THAN 24 INCHES IN HEIGHT, OR
    b. WHEN PLANTING AREAS CONTAIN ONLY NATIVE OR NATURALIZED SPECIES THAT ARE NOT SUMMER-DORMANT AND HAVE A MAXIMUM HEIGHT AT PLANT MATURITY OF LESS THAN 24 INCHES.
6. ZONE ONE IRRIGATION OVER SPRAY AND RUNOFF SHALL NOT BE ALLOWED INTO ADJACENT AREAS OF NATIVE OR NATURALIZED VEGETATION.
7. ZONE ONE SHALL BE MAINTAINED ON A REGULAR BASIS BY PRUNING AND THINNING PLANTS, CONTROLLING WEEDS, AND MAINTAINING IRRIGATION SYSTEMS.

ZONE TWO REQUIREMENTS

1. THE REQUIRED ZONE TWO WIDTH SHALL BE PROVIDED BETWEEN ZONE ONE AND THE UNDISTURBED, NATIVE OR NATURALIZED VEGETATION, AND SHALL BE MEASURED FROM THE EDGE OF ZONE ONE THAT IS FARTHEST FROM THE HABITABLE STRUCTURE, TO THE EDGE OF UNDISTURBED VEGETATION.
2. NO STRUCTURES SHALL BE CONSTRUCTED IN ZONE TWO.
3. WITHIN ZONE TWO, 50 PERCENT OF THE PLANTS OVER 18 INCHES IN HEIGHT SHALL BE CUT AND CLEARED TO A HEIGHT OF 6 INCHES.
4. WITHIN ZONE TWO, ALL PLANTS REMAINING AFTER 50 PERCENT ARE CUT AND CLEARED SHALL BE PRUNED TO REDUCE FUEL LOADING IN ACCORDANCE WITH THE LANDSCAPE STANDARDS IN THE LAND DEVELOPMENT MANUAL. NON-NATIVE PLANTS SHALL BE PRUNED BEFORE NATIVE PLANTS ARE PRUNED.
5. THE FOLLOWING STANDARDS SHALL BE USED WHERE ZONE TWO IS IN AN AREA PREVIOUSLY GRADED AS PART OF LEGAL DEVELOPMENT ACTIVITY AND IS PROPOSED TO BE PLANTED WITH NEW PLANT MATERIAL INSTEAD OF CLEARING EXISTING NATIVE OR NATURALIZED VEGETATION:
    a. ALL NEW PLANT MATERIAL FOR ZONE TWO SHALL BE NATIVE, LOW-FUEL, AND FIRE-RESISTANT. NO NON-NATIVE PLANT MATERIAL MAY BE PLANTED IN ZONE TWO EITHER INSIDE THE MHPA OR IN THE COASTAL OVERLAY ZONE, ADJACENT TO AREAS CONTAINING SENSITIVE BIOLOGICAL RESOURCES.
    b. NEW PLANTS SHALL BE LOW-GROWING WITH A MAXIMUM HEIGHT AT MATURITY OF 2 FEET. SINGLE SPECIMENS OF FIRE-RESISTANT NATIVE TREES MAY EXCEED THIS LIMITATION IF THEY ARE LOCATED TO REDUCE THE CHANCE OF TRANSMITTING FIRE FROM NATIVE OR NATURALIZED VEGETATION TO HABITABLE STRUCTURES AND IF THE VERTICAL DISTANCE BETWEEN THE LOWEST BRANCHES OF THE TREES AND THE TOP OF ADJACENT PLANTS ARE THREE TIMES THE HEIGHT OF THE ADJACENT PLANTS TO REDUCE THE SPREAD OF FIRE THROUGH LADDER FUELING.
    c. ALL NEW ZONE TWO PLANTINGS SHALL BE TEMPORARILY IRRIGATED UNTIL ESTABLISHED TO THE SATISFACTION OF THE CITY MANAGER. ONLY LOW-FLOW, LOW-GALLONAGE SPRAY HEADS MAY BE USED IN ZONE TWO. OVERSPRA AND RUNOFF FROM THE IRRIGATION SHALL NOT DRIFT OR FLOW INTO ADJACENT AREAS OF NATIVE OR NATURALIZED VEGETATION. TEMPORARY IRRIGATION SYSTEMS SHALL BE REMOVED UPON APPROVED ESTABLISHMENT OF THE PLANTINGS. PERMANENT IRRIGATION IS NOT ALLOWED IN ZONE TWO.
    d. WHERE ZONE TWO IS BEING REVEGETATED AS A REQUIREMENT OF SECTION 142.0411(A), REVEGETATION SHALL COMPLY WITH THE SPACING STANDARDS IN THE LAND DEVELOPMENT MANUAL. FIFTY PERCENT OF THE PLANTING AREA SHALL BE PLANTED WITH MATERIAL THAT DOES NOT GROW TALLER THAN 24 INCHES. THE REMAINING PLANTING AREA MAY BE PLANTED WITH TALLER MATERIAL, BUT THIS MATERIAL SHALL BE MAINTAINED IN ACCORDANCE WITH THE REQUIREMENTS FOR EXISTING PLANT MATERIAL IN ZONE TWO.
6. ZONE TWO SHALL BE MAINTAINED ON A REGULAR BASIS BY PRUNING AND THINNING PLANTS, REMOVING INVASIVE SPECIES, AND CONTROLLING WEEDS.
7. EXCEPT AS PROVIDED IN SECTION 142.0412(i), WHERE THE REQUIRED ZONE ONE WIDTH SHOWN IN TABLE 142-04H CANNOT BE PROVIDED ON PREMISES WITH EXISTING STRUCTURES, THE REQUIRED ZONE TWO WIDTH SHALL BE INCREASED BY ONE FOOT FOR EACH FOOT OF REQUIRED ZONE ONE WIDHT THAT CANNOT BE PROVIDED.

SECTION III - LANDSCAPE STANDARDS MANUAL [PAGES 27-28]

SECTION III: BRUSH MANAGEMENT

3-1 BRUSH MANAGEMENT – DESCRIPTION

Fire safety in the landscape is achieved by reducing the readily flammable fuel adjacent to structures. This can be accomplished by pruning and thinning of native and naturalized vegetation, revegetation with low fuel volume plantings or a combination of the two. Implementing brush management in an environmentally appropriate manner requires a reduction in the amount and continuity of highly flammable fuel while maintaining plant coverage for soil protection. Such a transition will minimize the visual, biological and erosion impacts while reducing the risks of wildland fires.

3-2 BRUSH MANAGEMENT- REQUIREMENTS

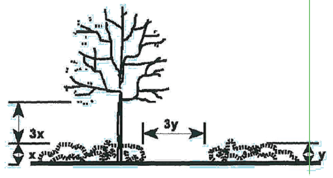
3.2-1 Basic requirements – All Zones

3.2-1.01 For zone two, plants shall not be cut below six inches.

3.2-1.02 Debris and trimmings produced by thinning and pruning shall be removed from the site or if left, shall be converted into mulch by a chipping machine and evenly dispersed, non-irrigated, to a maximum depth of 6 inches.

3.2-1.03 Trees and large tree form shrubs (e.g., Oaks, Sumac, Toyon) which are being retained shall be pruned to provide clearance of three times the height of the under story plant material or six feet whichever is higher (**Figure 3-1**). Dead and excessively twiggy growth shall also be removed.

FIGURE 3-1
PRUNING TREES TO PROVIDE CLEARANCE FOR BRUSH MANAGEMENT



3.2-1.04 All plants or plant groupings except cacti, succulents, trees and tree-form shrubs shall be separated by a distance three times the height of the tallest adjacent plants (**Figure 3-1**).

3.2-1.05 Maximum coverage and area limitations as stated herein shall not apply to indigenous native tree species (i.e., Pinus, Quercus, Platanus, Salix and Populus).

3.2-2 Zone 1 Requirements - All Structures

3.2-2.01 Do not use, and remove if necessary, highly flammable plant materials (see **Appendix "B"**).

3.2-2.02 Trees should not be located any closer to a structure than a distance equal to the tree's mature spread.

3.2-2.03 Maintain all plantings in a succulent condition.

3.2-2.04 Non-irrigated plant groupings over six inches in height may be retained provided they do not exceed 100 square feet in area and their combined coverage does not exceed 10 percent of the total Zone 1 area.

3.2-3 Zone 2 Requirements – All Structures

3.2-3.01 Individual non-irrigated plant groupings over 24 inches in height may be retained provided they do not exceed 400 square feet in area and their combined coverage does not exceed 30 percent of the total Zone 2 area.

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SAN DIEGO, CA 92129

APN# 306-050-16, 306-050-18, 306-050-19, 306-050-28

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GROUNDLEVEL
Landscape
Architecture

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groundlevelsd.com

△ Issue	Date & Issue Description	By	Check
2015-08-31	SDP SUBMITTAL		
2015-11-18	SDP RESUBMITTAL		
2015-04-04	SDP RESUBMITTAL		
2017-03-15	SDP RESUBMITTAL		
2017-11-20	SDP RESUBMITTAL		
2018-06-08	SDP RESUBMITTAL		

Seal/Signature

SCOTT LANGSTON SANDEL
3026
EXP. 1-31-16

Project Name
THE PRESERVE AT TORREY HIGHLANDS

GL Project Number
15060

Description
BRUSH MANAGEMENT NOTES

Scale
As indicated

L1.5