Appendix 5.8-1 Preliminary Project Specific Water Quality Management Plan

Appendices

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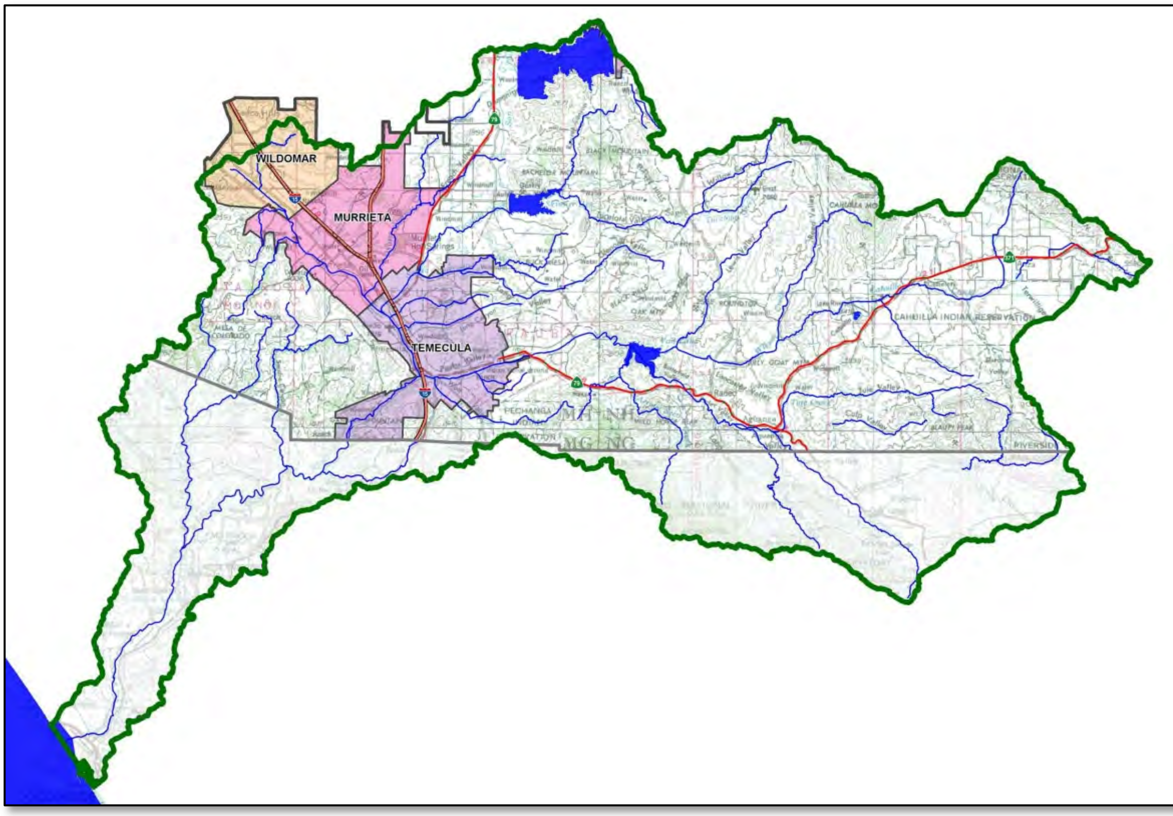
Project Specific Water Quality Management Plan

A Template for preparing Project Specific WQMPs for Priority Development Projects located within the ***Santa Margarita Region*** *of Riverside County*

Project Title: Inland Valley Medical Center Expansion

Development No:

Design Review/Case No:



☒ **Preliminary**
☐ **Final**

Original Date Prepared: September 13, 2020

Revision Date(s): July 23, 2021

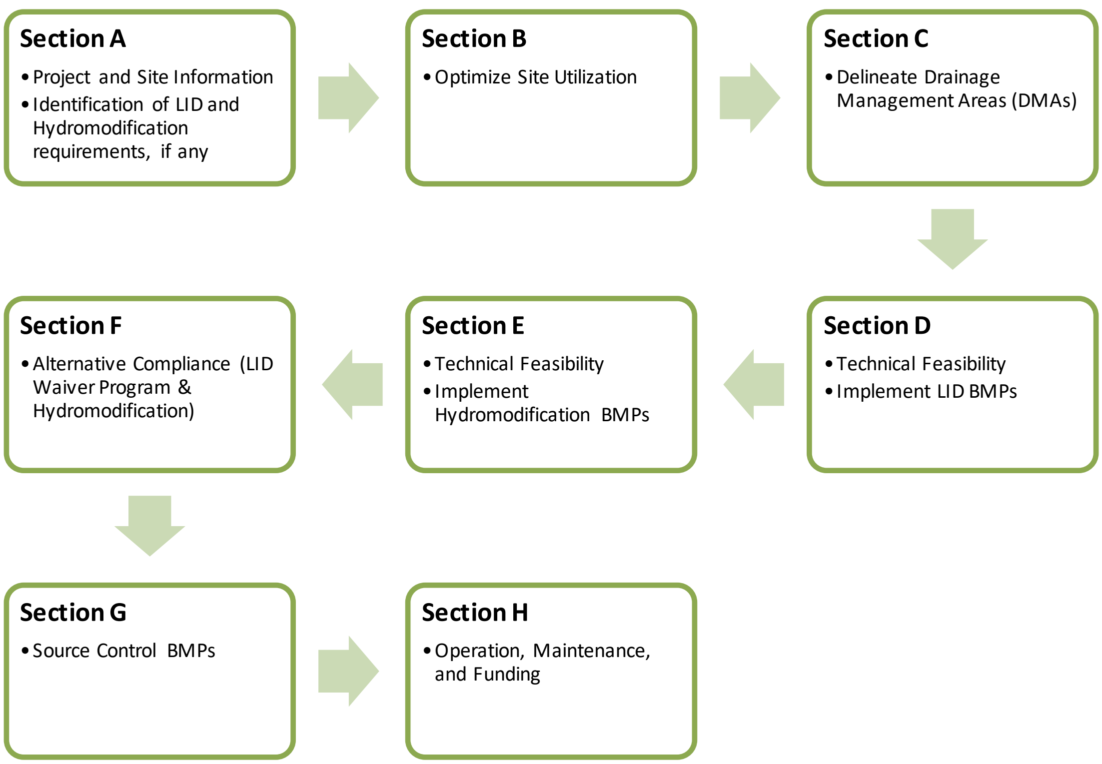
Contact Information:
Prepared for: Universal Health Service, Inc. Loren Williams 310-596-0320
Prepared by: Kimley-Horn and Associates, Inc. Nikki Kerry, P.E. 714-939-1030

Prepared for Compliance with

Regional Board Order No. **R9-2013-0001 as Amended by Order Nos. R9-2015-0001 and R9-2015-0100**

A Brief Introduction

The Municipal Separate Stormwater Sewer System (MS4) Permit[1] for the **Santa Margarita Region** (SMR) requires preparation of a Project-Specific Water Quality Management Plan (WQMP) for all Development Projects as defined in section F.1.d.(1) of the Permit. This Project-Specific WQMP Template for Development Projects in the **Santa Margarita Region** has been prepared to help document compliance and prepare a WQMP submittal. Below is a flowchart for the layout of this Template that will provide the steps required to document compliance.



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[1] Order No. R9-2010-0016, NPDES No. CAS0108766, Waste Discharge Requirements for Discharges from the MS4 Draining the County of Riverside, the Incorporated Cities of Riverside County, and the Riverside County Flood Control and Water Conservation District within the San Diego Region, California Regional Water Quality Control Board, November 10, 2010.

OWNER'S CERTIFICATION

This Project-Specific WQMP has been prepared for Universal Health Service, Inc. by Kimley-Horn and Associates, Inc. for the Inland Valley Medical Center Expansion project.

This WQMP is intended to comply with the requirements of Wildomar for 8.36 which includes the requirement for the preparation and implementation of a Project-Specific WQMP.

The undersigned, while owning the property/project described in the preceding paragraph, shall be responsible for the implementation and funding of this WQMP and will ensure that this WQMP is amended as appropriate to reflect up-to-date conditions on the site. In addition, the property owner accepts responsibility for interim operation and maintenance of Stormwater Best Management Practices until such time as this responsibility is formally transferred to a subsequent owner. This WQMP will be reviewed with the facility operator, facility supervisors, employees, tenants, maintenance and service contractors, or any other party (or parties) having responsibility for implementing portions of this WQMP. At least one copy of this WQMP will be maintained at the project site or project office in perpetuity. The undersigned is authorized to certify and to approve implementation of this WQMP. The undersigned is aware that implementation of this WQMP is enforceable under the City of Wildomar Water Quality Ordinance (Municipal Code Section 8.36).

"I, the undersigned, certify under penalty of law that the provisions of this WQMP have been reviewed and accepted and that the WQMP will be transferred to future successors in interest."

Owner's Signature	Date
Owner's Printed Name	Owner's Title/Position

PREPARER'S CERTIFICATION

"The selection, sizing and design of stormwater treatment and other stormwater quality and quantity control Best Management Practices in this plan meet the requirements of Regional Water Quality Control Board Order No. **R9-2010-0016** and any subsequent amendments thereto."

	07/23/2021
Preparer's Signature	Date
Nikki Kerry, P.E.	Project Engineer
Preparer's Printed Name	Preparer's Title/Position

Preparer's Licensure: 58449

REGISTERED PROFESSIONAL ENGINEER
NIKKI D. KERRY
RCE NO. 58449
CIVIL
STATE OF CALIFORNIA

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Section A: Project and Site Information

PROJECT INFORMATION	
Type of Project:	Commercial - Hospital
Planning Area:	N/A
Community Name:	N/A
Development Name:	Inland Valley Medical Center Expansion
PROJECT LOCATION	
Latitude & Longitude (DMS): 33.591382, -117.237680	
Project Watershed and Sub-Watershed: Santa Margarita; Cole Canyon-Murrieta Creek	
APN(s): 380-250-026-4; 380-250-009-9; 380-250-027-5; 380-260-037-5; 380-250-029-8; 380-260-001-2	
Map Book and Page No.:	
PROJECT CHARACTERISTICS	
Proposed or potential land use(s)	Medical Offices -Hospital
Proposed or Potential SIC Code(s)	8051 – Skilled Nursing Care Facilities 8069 – Specialty Hospitals, Except Psychiatric
Area of Impervious Project Footprint (SF)	420,911 sf
Total area of <u>proposed</u> Impervious Surfaces within the Project Limits (SF)/or Replacement	420,911 sf
Total Project Area (ac)	15.28 acres
Does the project consist of offsite road improvements?	☐ Y ☒ N
Does the project propose to construct unpaved roads?	☐ Y ☒ N
Is the project part of a larger common plan of development (phased project)?	☐ Y ☒ N
Is the project exempt from HMP Performance Standards?	☐ Y ☒ N
EXISTING SITE CHARACTERISTICS	
Total area of <u>existing</u> Impervious Surfaces within the project limits (SF)	393,800 sf
Is the project located within any Multi-Species Habitat Conservation Plan (MSHCP Criteria Cell?	☐ Y ☒ N
If so, identify the Cell number:	N/A
Are there any natural hydrologic features on the project site?	☐ Y ☒ N
Is a Geotechnical Report attached?	☒ Y ☐ N
If no Geotech. Report, list the Natural Resources Conservation Service (NRCS) soils type(s) present on the site (A, B, C and/or D)	N/A
What is the Water Quality Design Storm Depth for the project?	0.70

A.1 Maps and Site Plans

When completing your Project-Specific WQMP, include a map of the Project vicinity and existing site. In addition, include all grading, drainage, landscape/plant palette and other pertinent construction plans in Appendix 2. At a **minimum**, your WQMP Site Plan should include the following:

- Drainage Management Areas (DMAs)
- Proposed Structural Best Management Practices (BMPs)
- Drainage Path
- Drainage infrastructure, inlets, overflows
- Source Control BMPs
- Buildings, Roof Lines, Downspouts
- Impervious Surfaces
- Standard Labeling

Use your discretion on whether or not you may need to create multiple sheets or can appropriately accommodate these features on one or two sheets. Keep in mind that the Copermittee plan reviewer must be able to easily analyze your Project utilizing this template and its associated site plans and maps.

A.2 Identify Receiving Waters

Using Table A.1 below, list in order of upstream to downstream, the Receiving Waters that the Project site is tributary to. Continue to fill each row with the Receiving Water's 303(d) listed impairments (if any), designated Beneficial Uses, and proximity, if any, to a RARE Beneficial Use. Include a map of the Receiving Waters in Appendix 1. *(http://www.waterboards.ca.gov/sandiego/water_issues/programs/basin_plan/)*

Table A.1 Identification of Receiving Waters

Receiving Waters	USEPA Approved 303(d) List Impairments	Designated Beneficial Uses	Proximity to RARE Beneficial Use
Murrieta Creek	Chlorpyrifos, Indicator Bacteria, Copper, Iron, Manganese, Nitrogen, Phosphorus, Toxicity	MUNI, AGR, IND, PROC, REC2, WARM, WILD	
Santa Margarita River (Upper)	Indicator bacteria, Iron, Manganese, Nitrogen, Phosphorus, Selenium, Toxicity	MUN, AGR, IND, REC1, REC2, WARN, COLD, WILD, **RARE**	The site is approximately 5 miles northwest from the confluence of Murrieta Creek and the Santa Margarita River.
Santa Margarita River (Lower)	Benthic Community Effect, Chlorpyrifos, Indicator Bacteria, Nitrogen, Phosphorus, Toxicity	MUN, AGR, IND, REC1, REC2, WARN, COLD, WILD, **RARE**	

A.3 Drainage System Susceptibility to Hydromodification

Using Table A.2 below, list in order of the point of discharge at the project site down to the Santa Margarita River, each drainage system or receiving water that the project site is tributary to. Continue to fill each row with the material of the drainage system, the storm drain susceptibility using the SWCT2 (Stormwater & Water Conservation Tracking Tool - http://rivco.permitrack.com/) or Map 2 of the Hydromodification Susceptibility Documentation Report and Mapping: Santa Margarita Region (Appendix D of the SMR HMP), and the condition for exempting the drainage system, if applicable. If the exemption includes receiving waters that were not evaluated in Appendix D, provide supporting documentation in Appendix 7 to demonstrate that they classify as Engineered, Fully Hardened and Maintained (EFHM) channels, consistent with the definition provided in Appendix D. Include a map exhibiting each drainage system and the associated susceptibility in Appendix 1.

Table A.2 Identification of Susceptibility to Hydromodification

Drainage System	Drainage System Material	Susceptibility of Drainage System	Hydromodification Exemption
Murrietta Creek 4.6 miles	Native bottom	Potentially Susceptible.	Exempt at the confluence and downstream of Warm Springs Creek

Drainage System	Drainage System Material	Susceptibility of Drainage System	Hydromodification Exemption
Santa Margarita River 26 miles	Engineered	Potentially Susceptible.	Exempt.

A.4 Additional Permits/Approvals required for the Project:

Table A.3 Other Applicable Permits

Agency	Permit Required	
State Department of Fish and Game, 1602 Streambed Alteration Agreement	☐ Y	☒ N
State Water Resources Control Board, Clean Water Act Section 401 Water Quality Certification	☐ Y	☒ N
US Army Corps of Engineers, Clean Water Act Section 404 Permit	☐ Y	☒ N
US Fish and Wildlife, Endangered Species Act Section 7 Biological Opinion	☐ Y	☒ N
Statewide Construction General Permit Coverage	☒ Y	☐ N
Statewide Industrial General Permit Coverage	☐ Y	☒ N
Western Riverside MSHCP Consistency Approval (e.g., JPR, DBESP)	☐ Y	☒ N
Other *(please list in the space below as required)*	☐ Y	☒ N

If yes is answered to any of the questions above, the Copermittee may require proof of approval/coverage from those agencies as applicable including documentation of any associated requirements that may affect this Project-Specific WQMP.

Section B: Optimize Site Utilization (LID Principles)

The following section identifies the principal constraints on site design and selection of LID BMPs as well as opportunities to reduce imperviousness and incorporate LID Principles into the site and landscape design. Constraints for this site include soils with very low infiltration rates and high runoff potential. Opportunities might include existing landscape amenities including open space and buffers (which can lower runoff rates). A brief narrative for each of the site optimization strategies described follow below.

The 2010 SMR MS4 Permit further requires that LID Retention BMPs (Infiltration Only or Harvest and Use) be used unless it can be shown that those BMPs are infeasible. Per the Geotechnical Investigation Report included in Appendix 3, on-site infiltration is not feasible due to the low measured infiltration rates.

Site Optimization

The following questions are based upon Section 3.2 of the WQMP Guidance Document.

- Did you identify and preserve existing drainage patterns? If so, how? If not, why?

  Yes, under existing conditions, the site is divided in 3 major drainage areas. Drainage Area (DA) A drains northwest, DA-B drains southwest and DA-C drains south. Majority of the proposed redevelopment will continue to follow these existing drainage patterns except for a small portion of DA-A which is proposed to drain southwest to DA-B.

- Did you identify and protect existing vegetation? If so, how? If not, why?

  Existing vegetated slopes along the northwest perimeter in DA-A and south in DA-C will be protected and no redevelopment has been proposed in these areas.

- Did you identify and preserve natural infiltration capacity? If so, how? If not, why?

  The Geotechnical Investigation prepared for this project identified low infiltration rates and therefore no infiltration BMPs have been identified.

- Did you identify and minimize impervious area? If so, how? If not, why?

  Impervious areas have been minimized to the maximum extent practicable. Impervious areas are included for parking, sidewalks, and the medical building expansion. Parking lots, drive aisles, and sidewalks have all been designed to the minimum dimensions allowed.

- Did you identify and disperse runoff to adjacent pervious areas? If so, how? If not, why?

  Based on the parking lot parking aisles, and proposed walkways, runoff dispersion will be limited to DA-A. Runoff from the proposed development in DA-A will ultimately discharge to the vegetated slope along the northwest perimeter.

Section C: Delineate Drainage Management Areas (DMAs)

Utilizing the procedure in Section 3.3 of the WQMP Guidance Document, Kimley-Horn has delineated and mapped the project site into individual DMAs. Table C.1 categorize the types of classification (e.g., Type A, Type B, etc.) per DMA for the project site.

Table C.1 DMA Classifications

DMA Name or Identification	Surface Type(s)[1]	Area (Sq. Ft.)	DMA Type
A-1	Asphalt, Concrete, and Landscape	48289	Type D
A-2	Asphalt, Concrete, and Landscape	26180	DeMinimis
A-3	Asphalt, Concrete, and Landscape	23518	DeMinimis
B-1	Asphalt, Concrete, and Landscape	314422	Type D
B-3a	Asphalt, Concrete, and Landscape	52656	Type D
B-3c	Asphalt, Concrete, and Landscape	31784	Type D
B-3d	Asphalt, Concrete, and Landscape	88003	Type D
B-4	Asphalt, Concrete, and Landscape	12400	DeMinimis
B-5	Landscape	56566	Self Treating
C	Landscape	11625	Self Treating

[1]*Reference Table 2-1 in the WQMP Guidance Document to populate this column*

Table C.2 Type 'A', Self-Treating Areas

DMA Name or Identification	Area (Sq. Ft.)	Stabilization Type	Irrigation Type (if any)
B-5	56566	Vegetation	-
C	11625	Vegetation	-

Table C.3 Type 'B', Self-Retaining Areas – **Not Applicable**

Self-Retaining Area				Type 'C' DMAs that are draining to the Self-Retaining Area		
DMA Name/ ID	Post-project surface type	Area (square feet) [A]	Storm Depth (inches) [B]	DMA Name / ID	[C] from Table C.4 = [C]	Required Retention Depth (inches) [D]

$$[D] = [B] + \frac{[B] \cdot [C]}{[A]}$$

Table C.4 Type 'C', Areas that Drain to Self-Retaining Areas – **Not Applicable**

DMA					**Receiving Self-Retaining DMA**		
DMA Name/ ID	Area (square feet)	Post-project surface type	Runoff factor	Product	DMA name /ID	Area (square feet)	Ratio
	[A]		[B]	[C] = [A] x [B]		[D]	[C]/[D]

Note: (See Section 3.3 of WQMP Guidance Document) Ensure that partially pervious areas draining to a Self-Retaining area do not exceed the following ratio:

$$\left(\frac{\mathbf{2}}{\boldsymbol{Impervious\ Fraction}}\right) : \mathbf{1}$$

(Tributary Area: Self-Retaining Area)

Table C.5 Type 'D', Areas Draining to BMPs

DMA Name or ID	**BMP Name or ID**
A-1	A-2
B-1	B-1
B-3a	B-3a
B-3c	B-3c
B-3d	B-3d

Note: More than one DMA may drain to a single LID BMP; however, one DMA may not drain to more than one BMP.

Section D: Implement LID BMPs

D.1 Infiltration Applicability

An assessment of the feasibility of utilizing Infiltration BMPs is required for all projects, *except in the following case:*

☐ Harvest and Use BMPs will be implemented to address the Design Capture Volume (see the Harvest and Use Assessment below) for all Drainage Management Areas AND the project is exempt from HMP Performance Standards (*Proceed to Section D.2 and Section E*).

As the above box remains unchecked, Kimley-Horn performed a site-specific evaluation of the feasibility of Infiltration BMPs using each of the applicable criteria identified in Chapter 3.4.1 of the WQMP Guidance Document and complete the remainder of Section D.1.

Is there an infiltration concern (see discussion in Chapter 2.3.4 of the WQMP Guidance Document for further details)? ☒ Y ☐ N

Per the Geotechnical Report, the design infiltration rate at the site is 0.01 in/hour. In consideration of this and the known geology for the site, full infiltration has not been recommended for the site.

Geotechnical Report

A Geotechnical Report or Phase I Environmental Site Assessment may be required by the Copermittee to confirm present and past site characteristics that may affect the use of Infiltration BMPs. In addition, the Copermittee, at their discretion, may not require a geotechnical report for small projects as described in Chapter 2 of the WQMP Guidance Document. If a geotechnical report has been prepared, include it in Appendix 3. In addition, if a Phase I Environmental Site Assessment has been prepared, include it in Appendix 4.

Is this project classified as a small project consistent with the requirements of Chapter 2 of the WQMP Guidance Document? ☐ Y ☒ N

An updated Geotechnical Investigation Report, dated December 12, 2019 was prepared for the site by NOVA Services Inc. An upper fill layer consists of relatively dense sands and stiff silts. Other sandstone/siltstone was encountered below the fill materials. The observed infiltration rates ranged from 0.01 to 0.08 in/hour at depths between 9-15 feet bgs. After applying a factor of safety of F-3, the lowest design infiltration rates ranged from 0.00 to 0.03 in/hour. As a result, infiltration BMPs were not recommended to meet LID requirements.

Infiltration Feasibility

Table D.1 below is meant to provide a simple means of assessing which DMAs on your site support Infiltration BMPs and is discussed in the WQMP Guidance Document in Chapter 2.3.4. Check the appropriate box for each question and then list affected DMAs as applicable. If additional space is needed, add a row below the corresponding answer.

Table D.1 Infiltration Feasibility

Does the project site...	YES	NO
…have any DMAs with a seasonal high groundwater mark shallower than 10 feet?		X
If Yes, list affected DMAs:		
…have any DMAs located within 100 feet of a water supply well?		X
If Yes, list affected DMAs:		
…have any areas identified by the geotechnical report as posing a public safety risk where infiltration of stormwater could have a negative impact?		X
If Yes, list affected DMAs:		
…have measured in-situ infiltration rates of less than 1.6 inches / hour?	X	
If Yes, list affected DMAs: DMA A-C		
…have significant cut and/or fill conditions that would preclude in-situ testing of infiltration rates at the final infiltration surface?		X
If Yes, list affected DMAs:		
…have any contaminated groundwater plume in the vicinity of the site?		X
If Yes, list affected DMAs:		
…geotechnical report identifies other site-specific factors that would preclude effective and safe infiltration?		X
Describe here:		

As we have answered "Yes" to one of the questions above for any DMA, Infiltration BMPs should not be used.

D.2 Harvest and Use Assessment

Please check what applies*:*

☐ Reclaimed water will be used for the non-potable water demands for the Project.

☐Downstream water rights may be impacted by Harvest and Use as approved by the Regional Board (verify with the Copermittee).

☐The Design Capture Volume (DCV) will be addressed using Infiltration Only BMPs. In such a case, Harvest and Use BMPs are still encouraged, but it would not be required if the DCV will be infiltrated or evapotranspired.

As none of the above boxes have been checked, Harvest and Use BMPs need to be assessed for the site. If neither of the above criteria applies, the steps below have been used to assess the feasibility of irrigation use, toilet use and other non-potable uses (e.g., industrial use).

Irrigation Use Feasibility

Complete the following steps to determine the feasibility of harvesting stormwater runoff for Irrigation Use BMPs on your site:

Step 1: Identify the total area of irrigated landscape on the site, and the type of landscaping used.

Total Area of Irrigated Landscape: 5.95 acres

Type of Landscaping (Conservation Design or Active Turf): Conservation Design

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for irrigation use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: 9.33 acres

Step 3: Cross reference the Design Storm depth for the project site (see Exhibit A of the WQMP Guidance Document) with the left column of Table 2-4 in Chapter 2 to determine the minimum area of Effective Irrigated Area per Tributary Impervious Area (EIATIA).

Enter your EIATIA factor: 1.81

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum irrigated area that would be required.

Minimum required irrigated area: 16.89 acres

Step 5: Determine if harvesting stormwater runoff for irrigation use is feasible for the project by comparing the total area of irrigated landscape (Step 1) to the minimum required irrigated area (Step 4).

Minimum required irrigated area (Step 4)	Available Irrigated Landscape (Step 1)
16.89 acres	5.61 acres

Other Non-Potable Use Feasibility

There are no non-potable uses for stormwater runoff on the site (e.g. industrial use).

Since Irrigation, Toilet and Other Use feasibility anticipated demands are less than the applicable minimum values, Harvest and Use BMPs are not required.

D.3 Bioretention and Biotreatment Assessment

Other LID Bioretention and Biotreatment BMPs as described in Chapter 2.3 of the WQMP Guidance Document are feasible on nearly all development sites with sufficient advance planning.

Select one of the following:

☒ LID Bioretention/Biotreatment BMPs will be used for some or all DMAs of the Project as noted below in Section D.4

☐ A site-specific analysis demonstrating the technical infeasibility of all LID BMPs has been performed and is included in Appendix 5. If you plan to submit an analysis demonstrating the technical infeasibility of LID BMPs, request a pre-submittal meeting with the Copermittee with jurisdiction over the Project site to discuss this option. Proceed to Section E to document your alternative compliance measures.

Table D-2 Evaluation of Biofiltration BMP Feasibility

DMA ID	Is Partial/ Incidental Infiltration Allowable? (Y/N)	Basis for Infeasibility of Partial Infiltration (provide summary and include supporting basis if partial infiltration not feasible)
A-1	Y	
B-1	Y	
B-3a	Y	
B-3c	Y	
B-3d	Y	

D.4 Other Limiting Geotechnical Conditions

There are no other limiting geotechnical conditions per the Geotechnical Investigation Report for the project.

Table D.3 Geotechnical Concerns for Onsite Retention Table

Type of Geotechnical Concern	DMAs Feasible (By Name or ID)	DMAs Infeasible (By Name or ID)

D.5 Feasibility Assessment Summaries

From the Infiltration, Harvest and Use, Bioretention and Biotreatment Sections above, complete Table D.3 below to summarize which LID BMPs are technically feasible, and which are not, based upon the established hierarchy.

Table D.4 LID Prioritization Summary Matrix

DMA Name/ID	LID BMP Hierarchy				No LID (Alternative Compliance)
	1. Infiltration	2. Harvest and use	3. Bioretention	4. Biotreatment	
A-1	☐	☐	☐	☒	☐
B-1	☐	☐	☐	☒	☐
B-3a	☐	☐	☐	☒	☐
B-3c	☐	☐	☐	☒	☐
B-3d	☐	☐	☐	☒	☐

D.6 LID BMP Sizing

Each LID BMP must be designed to ensure that the DCV or water quality flow rate will be addressed by the selected BMPs. First, calculate the DCV for each LID BMP using the V_{BMP} worksheet in Appendix F of the LID BMP Design Handbook. Second, design the LID BMP to meet the required V_{BMP} using a method approved by the Copermittee with jurisdiction over the Project site. Utilize the worksheets found in the LID BMP Design Handbook or consult with the Copermittee to assist you in correctly sizing your LID BMPs. Complete Table D.4 below to document the DCV and the Proposed Volume for each LID BMP. Provide the completed design procedure sheets for each LID BMP in Appendix 6. You may add additional rows to the table below as needed.

Table D.5 DCV Calculations for LID BMPs

DMA Type/ID	DMA (square feet) [A]	Post-Project Surface Type	Effective Impervious Fraction, I_f [B]	DMA Runoff Factor [C]	DMA Areas x Runoff Factor [A] x [C]	BMP ID	Design Storm Depth (in)	DCV, V_{BMP} (cubic feet)	Proposed Volume on Plans (cubic feet)
A-1	*48289*	*Mixed*	*0.78*	*0.58*	*28007*	*A-2*	*0.7*	*1628*	*See Table D.6*
B-1	*314422*	*Mixed*	*0.77*	*0.57*	*179220*	*B-1*		*10370*	*14525*
B-3a	*52656*	*Mixed*	*0.76*	*0.55*	*28961*	*B-3a*		*1698*	*2882*
B-3c	*31784*	*Mixed*	*0.66*	*0.46*	*14621*	*B-3c*		*846*	*2881*
B-3d	*88003*	*Mixed*	*0.61*	*0.41*	*36081*	*B-3d*		*2120*	*3212*
							[E]	$[F] = \frac{[D]x[E]}{12}$	[G]

[B], [C] is obtained as described in Section 2.5 of the WQMP Guidance Document
[E] is obtained from Exhibit A in the WQMP Guidance Document
[G] is obtained from a design procedure sheet, such as in LID BMP Design Handbook and placed in Appendix 6

Each LID BMP must be designed to ensure that the Design Capture Volume (DCV). Since drainage area A-1 uses flow-through biofiltration systems, BMP A-1 was sized using the BMP design flow rate. After obtaining each BMP design flow rate, design the LID BMP to meet the required Q_{BMP} using a method approved by the Copermittee. Utilize the worksheets found in the LID BMP Design Handbook or consult with your Copermittee. Complete Table D.5 below to document the Design Capture Volume and the Proposed Volume for each LID BMP. You can add rows to the table as needed. Alternatively, the Santa Margarita Hydrology Model (SMRHM) can be used to size LID BMPs to address the DCV and, if applicable, to size Hydrologic Control BMPs to meet the Hydrologic Performance Standard of the SMR HMP, as identified in Section E.

Table D.6 LID BMP Sizing

BMP Name / ID	DMA No.	BMP Type / Description	Water Quality Flow (cfs)	Design Flow Rate (cfs)	BMP Capacity (cfs)
A-1	A-1	BioPod Tree 6'x12'	0.13	0.20	0.203

BMP A-1 is a proprietary biofiltration system (Old Castle's BioPod Tree) and will have an internal bypass system. Discharge exceeding the design storm will discharge via the internal bypass. BMPs B-1, B-3a, B-B-3c, and B-3d will treat runoff via a non-proprietary biofiltration system. Treated runoff from these BMPs will discharge via an underdrain that ultimately discharges to the project's proposed storm drain system (see WQMP exhibit).

Section E: Implement Hydrologic Control BMPs and Sediment Supply BMPs

If a completed Table A.2 demonstrates that the project is exempt from HMP Performance Standards, specify N/A of proceed to Section F, if applicable, and Section G.

E.1 Onsite Feasibility of Hydrologic Control BMPs

An assessment of the feasibility of implementing onsite Hydrologic Control BMPs is required for all projects.

Select one of the following:

☒Yes – The implementation of Hydrologic Control BMPs is feasible onsite. *(Proceed to Step E.3 and Step E.4)*

- *Or* -

☐ No – The project site is larger than one acre and the implementation of Hydrologic Control BMPs is not feasible onsite. *(Proceed to Step E.5 and Step F for Alternative Compliance upon approval of the Technical Feasibility Assessment by the Copermittee)*

☐ No – The project site is smaller than one acre and the implementation of Hydrologic Control BMPs is not feasible onsite. *(Proceed to Step E.2)*

If the reasons for infeasibility are different from those listed in Section D.1, describe the technical or spatial reasons that preclude the implementation of onsite Hydrologic Control BMPs. If none, write N/A:

N/A

Approval of the condition for infeasibility, if any, is required by the Copermittee. Has the condition for infeasibility been approved by the Copermittee?

☐ Y ☐ N ☐ N/A

E.2 Meeting the HMP Performance Standard for Small Project Sites

This section is not applicable.

E.3 Hydrologic Control BMP Selection

Capture of the DCV and achievement of the Hydrologic Performance Standard may be met by combined and/or separate structural BMPs. Similarly, compliance with the two identified requirements may be fully or partially achieved onsite.

For each DMA, identify in Table E.1 if the DCV is fully or partially captured onsite, if the Hydrologic Performance Standard is fully or partially met onsite (by using the SMRHM identified in Step E.4), and if structural BMPs for compliance with the LID requirement and the Hydrologic Performance Standard are combined.

Table E.1 LID & Hydromodification BMP Location

DMA	LID BMP	Hydrologic Control BMP	Combined BMP	BMP type and ID
A-1	☒ Onsite ☐ Partially Onsite ☐ Offsite ☐ None Required	☒ Onsite ☐ Partially Onsite ☐ Offsite ☐ None Required	☐ Yes ☒ No	8'x8' Biopod system (A-2) Old Castle StormCapture Underground Detention System (B-1)
A-2	☐ Onsite ☐ Partially Onsite ☐ Offsite ☒ None Required	☐ Onsite ☐ Partially Onsite ☐ Offsite ☒ None Required	☐ Yes ☒ No	Area cannot be routed to a BMP due to grading constraints.
A-3	☐ Onsite ☐ Partially Onsite ☐ Offsite ☒ None Required	☐ Onsite ☐ Partially Onsite ☐ Offsite ☒ None Required	☐ Yes ☒ No	Area cannot be routed to a BMP due to grading constraints.
B-1	☒ Onsite ☐ Partially Onsite ☐ Offsite ☐ None Required	☒ Onsite ☐ Partially Onsite ☐ Offsite ☐ None Required	☒ Yes ☐ No	Detention/Biofiltration Pond (B-1).
B-3a	☒ Onsite ☐ Partially Onsite ☐ Offsite ☐ None Required	☒ Onsite ☐ Partially Onsite ☐ Offsite ☐ None Required	☒ Yes ☐ No	Detention(B-3) /Biofiltration (B-3a).
B-3c	☒ Onsite ☐ Partially Onsite ☐ Offsite ☐ None Required	☒ Onsite ☐ Partially Onsite ☐ Offsite ☐ None Required	☒ Yes ☐ No	Detention(B-3)/Biofiltration Pond (B-3c).

B-3d	☒ Onsite ☐ Partially Onsite ☐ Offsite ☐ None Required	☒ Onsite ☐ Partially Onsite ☐ Offsite ☐ None Required	☒ Yes ☐ No	Detention(B-3)/Biofiltration Pond (B-3d).
B-4	☐ Onsite ☐ Partially Onsite ☐ Offsite ☒ None Required	☐ Onsite ☐ Partially Onsite ☐ Offsite ☒ None Required	☐ Yes ☒ No	Area cannot be routed to a BMP due to grading constraints.
B-5	☐ Onsite ☐ Partially Onsite ☐ Offsite ☒ None Required	☐ Onsite ☐ Partially Onsite ☐ Offsite ☒ None Required	☐ Yes ☒ No	Area is self-treating. Area cannot be routed to a BMP due to grading constraints.
C	☐ Onsite ☐ Partially Onsite ☐ Offsite ☒ None Required	☐ Onsite ☐ Partially Onsite ☐ Offsite ☒ None Required	☐ Yes ☒ No	Area is self-treating. Area cannot be routed to a BMP due to grading constraints.

Hydrologic Control BMP Sizing

Each Hydrologic Control BMP must be designed to ensure that the flow duration curve of the post-development DMA will not exceed that of the pre-existing, naturally occurring, DMA by more than ten percent over a one-year period. Using SMRHM, the applicant shall demonstrate that the performance of each designed Hydrologic Control BMP complies with the Hydrologic Performance Standard. Complete Table E.2 below and identify, for each DMA, the type of Hydrologic Control BMP, if the SMRHM model confirmed the management (Identified as "passed" in SMRHM), the total volume capacity of the Hydrologic Control BMP, the Hydrologic Control BMP footprint at top floor elevation, and the drawdown time of the Hydrologic Control BMP. SMRHM summary reports should be documented in Appendix 7. Refer to the SMRHM Guidance Document for additional information on SMRHM. You can add rows to the table as needed.

Table E.2 Hydrologic Control BMP Sizing

BMP Name / ID	DMA No.	BMP Type / Description	SMRHM Passed	BMP Volume (ac-ft)	BMP Footprint (ac)	Drawdown time (hr)
A-1	A-1	StormCapture Underground Detention System (4')	☒	0.24	0.07	120
B-1	B-1	Detention/Biofiltration Pond	☒	2.46	0.78	120
B-3	B-3a B-3b B-3c B-3d	StormCapture Underground Detention System (7')	☒	1.19	0.20	120

Note: At the time of this report, the Santa Margarita Region Hydrology Model software was not functional, thus the updated output was not included in this report. Clear Creek is working on a solution to the software issue. The updated output will be included prior to final approval.

Some infiltration will occur for the areas that drain to the detention systems; however, low infiltration rates will not allow for full infiltration. Remaining flow will exit detention systems via a controlled outlet structure and be designed to mimic existing flows. Each detention system has been sized to meet the hydromodification requirements using the Santa Margarita Region Hydrology Model.

E.4 Implement Sediment Supply BMPs

The site was previously developed and is being redeveloped. Therefore, the site shall not be required to consider sediment component as part of the HMP mitigation.

Section F: Alternative Compliance

LID BMPs and Hydrologic Control BMPs are expected to be feasible on virtually all projects. Where LID BMPs and/or Hydrologic Control BMPs have been demonstrated to be infeasible as documented in Section D and/or Section E, respectively, other Treatment Control BMPs or alternative compliance approaches must be used (subject LID waiver and/or HMP alternative compliance approval by the Copermittee).

In addition, if supporting documentation demonstrates the infeasibility to implement Sediment Supply BMPs onsite (See Section E.5), the applicant may refer to Section F.5.

Check one of the following boxes:

☒ LID Principles, LID BMPs, Hydrologic Control BMPs, and Sediment Supply BMPs have been incorporated into the site design to fully address all Drainage Management Areas. No alternative compliance measures are required for this project and thus this Section is not required to be completed.

F.1 Identify Pollutants of Concern

Utilizing Table A.1 from Section A above which noted your project's Receiving Waters and their associated USEPA approved 303(d) listed impairments, cross reference this information with that of your selected Priority Development Project Category in Table F.1 below. If the identified General Pollutant Categories are the same as those listed for your Receiving Waters, then these will be your Pollutants of Concern and the appropriate box or boxes will be checked on the last row. The purpose of this is to document compliance and to help you appropriately plan for mitigating your Pollutants of Concern in lieu of implementing LID BMPs.

Table F.1 Potential Pollutants by Land Use Type

Priority Development Project Categories and/or Project Features (check those that apply)		General Pollutant Categories							
		Bacterial Indicators	Metals	Nutrients	Pesticides	Toxic Organic Compounds	Sediments	Trash & Debris	Oil & Grease
☐	Detached Residential Development	P	N	P	P	N	P	P	P
☐	Attached Residential Development	P	N	P	P	N	P	P	P(2)
☒	Commercial/Industrial Development	P(3)	P	P(1)	P(1)	P(5)	P(1)	P	P
☐	Automotive Repair Shops	N	P	N	N	P(4, 5)	N	P	P
☐	Restaurants (>5,000 ft^2)	P	N	N	N	N	N	P	P
☐	Hillside Development (>5,000 ft^2)	P	N	P	P	N	P	P	P
☐	Parking Lots (>5,000 ft^2)	P(6)	P	P(1)	P(1)	P(4)	P(1)	P	P
☐	Retail Gasoline Outlets	N	P	N	N	P	N	P	P

Project Priority Pollutant(s) of Concern	☐	☒	☐	☐	☐	☐	☒	☒

P = Potential
N = Not Potential
(1) *A potential Pollutant if non-native landscaping exists or is proposed onsite; otherwise not expected*
(2) *A potential Pollutant if the project includes uncovered parking areas; otherwise not expected*
(3) *A potential Pollutant is land use involving animal waste*
(4) *Specifically petroleum hydrocarbons*
(5) *Specifically solvents*
(6) *Bacterial indicators are routinely detected in pavement runoff*

F.2 Stormwater Credits

This section is not applicable.

F.3 Sizing Criteria

Treatment control BMPs for the site include BioPod biofiltration system units and non-proprietary biofiltration systems. The BioPod system (BMP A-2) has been selected based on the flow capacities provided by the manufacturer. The non-proprietary biofiltration systems were designed using the Santa Margarita Region's WQMP Guidance Manual. These systems were designed to assume no infiltration will occur since infiltration is less than 0.01 in/hr. BMPs B-1, B-2, and B-3 meet both criteria defined in the guidance document for biofiltration systems with no infiltration.

F.4 Treatment Control BMP Selection

Treatment Control BMPs typically provide proprietary treatment mechanisms to treat potential Pollutants in runoff, but do not sustain significant biological processes. Treatment Control BMPs must have a removal efficiency of a medium or high effectiveness as quantified below:

- **High**: equal to or greater than 80% removal efficiency
- **Medium**: between 40% and 80% removal efficiency

Such removal efficiency documentation (e.g., studies, reports, etc.) as further discussed in Chapter 3.5.2 of the WQMP Guidance Document, must be included in Appendix 6. In addition, ensure that proposed Treatment Control BMPs are properly identified on the WQMP Site Plan in Appendix 1.

Table F.2 Treatment Control BMP Selection

Selected Treatment Control BMP Name or ID[1]	Priority Pollutant(s) of Concern to Mitigate[2]	Removal Efficiency Percentage[3]
A-2	TSS	80%
B-1	TSS	80%
B-2	TSS	80%
B-3	TSS	80%

[1] Treatment Control BMPs must not be constructed within Receiving Waters. In addition, a proposed Treatment Control BMP may be listed more than once if they possess more than one qualifying pollutant removal efficiency.
[2] Cross Reference Table E.1 above to populate this column.
[3] As documented in a Copermittee Approved Study and provided in Appendix 6.

F.5 Hydrologic Performance Standard – Alternative Compliance Approach

This section is not applicable.

F.6 Sediment Supply Performance Standard - Alternative Compliance

This section is not applicable.

Section G: Source Control BMPs

Source Control BMPs include permanent, structural features that may be required in your Project plans — such as roofs over and berms around trash and recycling areas — and Operational BMPs, such as regular sweeping and "housekeeping", that must be implemented by the site's occupant or user. The Maximum Extent Practicable (MEP) standard typically requires both types of BMPs. In general, Operational BMPs cannot be substituted for a feasible and effective structural BMP. Using the Pollutant Sources/Source Control Checklist in Appendix 8, review the following procedure to specify Source Control BMPs for your site:

Table G.1 Structural and Operational Source Control BMP

Potential Sources of Runoff Pollutants	Structural Source Control BMPs	Operational Source Control BMPs
Storm Drain Inlets	Mark inlets with "Only Rain Down the Storm Drain"	Maintain and Periodically repaint of replace inlet markings. See CASQA Fact Sheet SC-44.
Trash Storage Areas	Refuse areas to be covered and marked with "Do Not Dump Hazardous Materials Here".	Provide adequate number of receptacles. Inspect receptacles regularly; repair or replace leaky receptacles. Pick liter up litter daily and clean up spills immediately. See CAQA Fact Sheet SC-34.
Fire Sprinkler Test/Maintenance Water	Provide means to drain fire sprinkler test water to the sanitary sewer.	Prevent and reduce the discharge of pollutants to stormwater from building. See CASQA Fact Sheet SC-22.
Plazas, Sidewalks, and Parking Lots		Sweep sidewalks and parking lots regularly to prevent accumulation of litter and debris.

Section H: Construction Plan Checklist

Populate Table H.1 below to assist the plan checker in an expeditious review of your project. The first two columns will contain information that was prepared in previous steps, while the last column will be populated with the corresponding plan sheets. **This table is to be completed with the submittal of your final Project-Specific WQMP. As such, the table below is included as a placeholder only.**

Table H.1 Construction Plan Cross-reference

BMP No. or ID	BMP Identifier and Description	Corresponding Plan Sheet(s)
A-1	Old Castle Storm Capture Underground Detention system (4') located northeast of the proposed CUP	Grading & Drainage Plans Storm Drain Plans Civil Details
A-2	6'x12' Biopod Biolfiltration System	Grading & Drainage Plans Storm Drain Plans Civil Details
B-1	Detention/Biofiltration Pond (Located on the south corner of the site)	Grading & Drainage Plans Storm Drain Plans Civil Details
B-3	Old Castle Storm Capture Underground Detention system (7') located east of the proposed NC3-Building N	Grading & Drainage Plans Storm Drain Plans Civil Details
B-3a	Biofiltration without infiltration in parking island	Grading & Drainage Plans Storm Drain Plans Civil Details
B-3c	Biofiltration without infiltration in parking island	Grading & Drainage Plans Storm Drain Plans Civil Details
B-3d	Biofiltration without infiltration in parking island	Grading & Drainage Plans Storm Drain Plans Civil Details

Section I: Operation, Maintenance and Funding

The City of Wildomar will periodically verify that BMPs on the Project are maintained and continue to operate as designed. To make this possible, the Copermittee will:

1. A means to finance and implement maintenance of BMPs in perpetuity, including replacement cost.
2. Acceptance of responsibility for maintenance from the time the BMPs are constructed until responsibility for operation and maintenance is legally transferred. A warranty covering a period following construction may also be required.
3. An outline of general maintenance requirements for the Stormwater BMPs you have selected.
4. Figures delineating and designating pervious and impervious areas, location, and type of Stormwater BMP, and tables of pervious and impervious areas served by each facility. Geo-locating the BMPs using a coordinate system of latitude and longitude is recommended to help facilitate a future statewide database system.
5. A separate list and location of self-retaining areas or areas addressed by LID Principles that do not require specialized Operations and Maintenance or inspections but will require typical landscape maintenance as noted in Chapter 5, in the WQMP Guidance. Include a brief description of typical landscape maintenance for these areas.

The City of Wildomar will also require that you prepare and submit a detailed BMP Operation and Maintenance Plan that sets forth a maintenance schedule for each of the BMPs built on your site. An agreement assigning responsibility for maintenance and providing for inspections and certification may also be required.

Details of these requirements and instructions for preparing a BMP Operation and Maintenance Plan are in Chapter 5 of the WQMP Guidance Document.

Maintenance Mechanism: Maintenance agreement recorded against the property.

Will the proposed BMPs be maintained by a Homeowners' Association (HOA) or Property Owners Association (POA)?

☐ Y ☒ N

An Operation and Maintenance Plan and Maintenance Mechanism in Appendix 9. Additionally, all pertinent forms of educational materials for those personnel that will be maintaining the proposed BMPs within this Project-Specific WQMP are included in Appendix 10.

Acronyms, Abbreviations and Definitions

2010 SMR MS4 Permit	Order No. R9-2010-0016, an NPDES Permit issued by the San Diego Regional Water Quality Control Board.
Applicant	Public or private entity seeking the discretionary approval of new or replaced improvements from the Copermittee with jurisdiction over the project site. The Applicant has overall responsibility for the implementation and the approval of a Priority Development Project. The WQMP uses consistently the term "user" to refer to the applicant such as developer or project proponent. The WQMP employs also the designation "user" to identify the Registered Professional Civil Engineer responsible for submitting the Project-Specific WQMP, and designing the required BMPs.
Best Management Practice (BMP)	Defined in 40 CFR 122.2 as schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the United States. BMPs also include treatment requirements, operating procedures and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. In the case of municipal storm water permits, BMPs are typically used in place of numeric effluent limits.
BMP Fact Sheets	BMP Fact Sheets are available in the LID BMP Design Handbook. Individual BMP Fact Sheets include sitting considerations, and design and sizing guidelines for seven types of structural BMPs (infiltration basin, infiltration trench, permeable pavement, harvest-and-use, bioretention, extended detention basin, and sand filter).
California Stormwater Quality Association (CASQA)	Publisher of the California Stormwater Best Management Practices Handbooks, available at www.cabmphandbooks.com.
Conventional Treatment Control BMP	A type of BMP that provides treatment of stormwater runoff. Conventional treatment control BMPs, while designed to treat particular Pollutants, typically do not provide the same level of volume reduction as LID BMPs, and commonly require more specialized maintenance than LID BMPs. As such, the 2010 SMR MS4 Permit and this WQMP require the use of LID BMPs wherever feasible, before Conventional Treatment BMPs can be considered or implemented.
Copermittees	The 2010 SMR MS4 Permit identifies the Cities of Murrieta, Temecula, and Wildomar, the County, and the District, as Copermittees for the SMR.
County	The abbreviation refers to the County of Riverside in this document.

CEQA	California Environmental Quality Act - a statute that requires state and local agencies to identify the significant environmental impacts of their actions and to avoid or mitigate those impacts, if feasible.
CIMIS	California Irrigation Management Information System - an integrated network of 118 automated active weather stations all over California managed by the California Department of Water Resources.
CWA	Clean Water Act - is the primary federal law governing water pollution. Passed in 1972, the CWA established the goals of eliminating releases of high amounts of toxic substances into water, eliminating additional water pollution by 1985, and ensuring that surface waters would meet standards necessary for human sports and recreation by 1983. CWA Section 402(p) is the federal statute requiring NPDES permits for discharges from MS4s.
CWA Section 303(d) Waterbody	Impaired water in which water quality does not meet applicable water quality standards and/or is not expected to meet water quality standards, even after the application of technology based pollution controls required by the CWA. The discharge of urban runoff to these water bodies by the Copermittees is significant because these discharges can cause or contribute to violations of applicable water quality standards.
Design Storm	The 2010 SMR MS4 Permit has established the 85th percentile, 24-hour storm event as the "Design Storm". The applicant may refer to Exhibit A to identify the applicable Design Storm Depth (D85) to the project.
DCV	Design Capture Volume (DCV) is the volume of runoff produced from the Design Storm to be mitigated through LID Retention BMPs, Other LID BMPs and Volume Based Conventional Treatment BMPs, as appropriate.
Design Flow Rate	The design flow rate represents the minimum flow rate capacity that flow-based conventional treatment control BMPs should treat to the MEP, when considered.
DCIA	Directly Connected Impervious Areas - those impervious areas that are hydraulically connected to the MS4 (i.e. street curbs, catch basins, storm drains, etc.) and thence to the structural BMP without flowing over pervious areas.
Discretionary Approval	A decision in which a Copermittee uses its judgment in deciding whether and how to carry out or approve a project.
District	Riverside County Flood Control and Water Conservation District.
DMA	A Drainage Management Area - a delineated portion of a project site that is hydraulically connected to a common structural BMP or conveyance point. The Applicant may refer to Section 3.3 for further guidelines on how to delineate DMAs.

Drawdown Time	Refers to the amount of time the design volume takes to pass through the BMP. The specified or incorporated drawdown times are to ensure that adequate contact or detention time has occurred for treatment, while not creating vector or other nuisance issues. It is important to abide by the drawdown time requirements stated in the fact sheet for each specific BMP.
Effective Area	Area which 1) is suitable for a BMP (for example, if infiltration is potentially feasible for the site based on infeasibility criteria, infiltration must be allowed over this area) and 2) receives runoff from impervious areas.
ESA	An Environmental Sensitive Area (ESA) designates an area "in which plants or animals life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which would be easily disturbed or degraded by human activities and developments". (Reference: California Public Resources Code § 30107.5).
ET	Evapotranspiration (ET) is the loss of water to the atmosphere by the combined processes of evaporation (from soil and plant surfaces) and transpiration (from plant tissues). It is also an indicator of how much water crops, lawn, garden, and trees need for healthy growth and productivity
FAR	The Floor Area Ratio (FAR) is the total square feet of a building divided by the total square feet of the lot the building is located on.
Flow-Based BMP	Flow-based BMPs are conventional treatment control BMPs that are sized to treat the design flow rate.
FPPP	Facility Pollution Prevention Plan
HCOC	Hydrologic Condition of Concern - Exists when the alteration of a site's hydrologic regime caused by development would cause significant impacts on downstream channels and aquatic habitats, alone or in conjunction with impacts of other projects.
HMP	Hydromodification Management Plan – Plan defining Performance Standards for PDPs to manage increases in runoff discharge rates and durations.
Hydrologic Control BMP	BMP to mitigate the increases in runoff discharge rates and durations and meet the Performance Standards set forth in the HMP.
HSG	Hydrologic Soil Groups – soil classification to indicate the minimum rate of infiltration obtained for bare soil after prolonged wetting. The HSGs are A (very low runoff potential/high infiltration rate), B, C, and D (high runoff potential/very low infiltration rate)

Hydromodification	The 2010 SMR MS4 Permit identifies that increased volume, velocity, frequency and discharge duration of storm water runoff from developed areas has the potential to greatly accelerate downstream erosion, impair stream habitat in natural drainages, and negatively impact beneficial uses.
JRMP	A separate Jurisdictional Runoff Management Plan (JRMP) has been developed by each Copermittee and identifies the local programs and activities that the Copermittee is implementing to meet the 2010 SMR MS4 Permit requirements.
LID	Low Impact Development (LID) is a site design strategy with a goal of maintaining or replicating the pre-development hydrologic regime through the use of design techniques. LID site design BMPs help preserve and restore the natural hydrologic cycle of the site, allowing for filtration and infiltration which can greatly reduce the volume, peak flow rate, velocity, and pollutant loads of storm water runoff.
LID BMP	A type of stormwater BMP that is based upon Low Impact Development concepts. LID BMPs not only provide highly effective treatment of stormwater runoff, but also yield potentially significant reductions in runoff volume – helping to mimic the pre-project hydrologic regime, and also require less ongoing maintenance than Treatment Control BMPs. The applicant may refer to Chapter 2.
LID BMP Design Handbook	The LID BMP Design Handbook was developed by the Copermittees to provide guidance for the planning, design and maintenance of LID BMPs which may be used to mitigate the water quality impacts of PDPs within the County.
LID Bioretention BMP	LID Bioretention BMPs are bioretention areas are vegetated (i.e., landscaped) shallow depressions that provide storage, infiltration, and evapotranspiration, and provide for pollutant removal (e.g., filtration, adsorption, nutrient uptake) by filtering stormwater through the vegetation and soils. In bioretention areas, pore spaces and organic material in the soils help to retain water in the form of soil moisture and to promote the adsorption of pollutants (e.g., dissolved metals and petroleum hydrocarbons) into the soil matrix. Plants use soil moisture and promote the drying of the soil through transpiration. The 2010 SMR MS4 Permit defines “retain” as to keep or hold in a particular place, condition, or position without discharge to surface waters.
LID Biotreatment BMP	BMPs that reduce stormwater pollutant discharges by intercepting rainfall on vegetative canopy, and through incidental infiltration and/or evapotranspiration, and filtration, and other biological and chemical processes. As stormwater passes down through the planting soil, pollutants are filtered, adsorbed, biodegraded, and sequestered by the soil and plants, and collected through an underdrain.

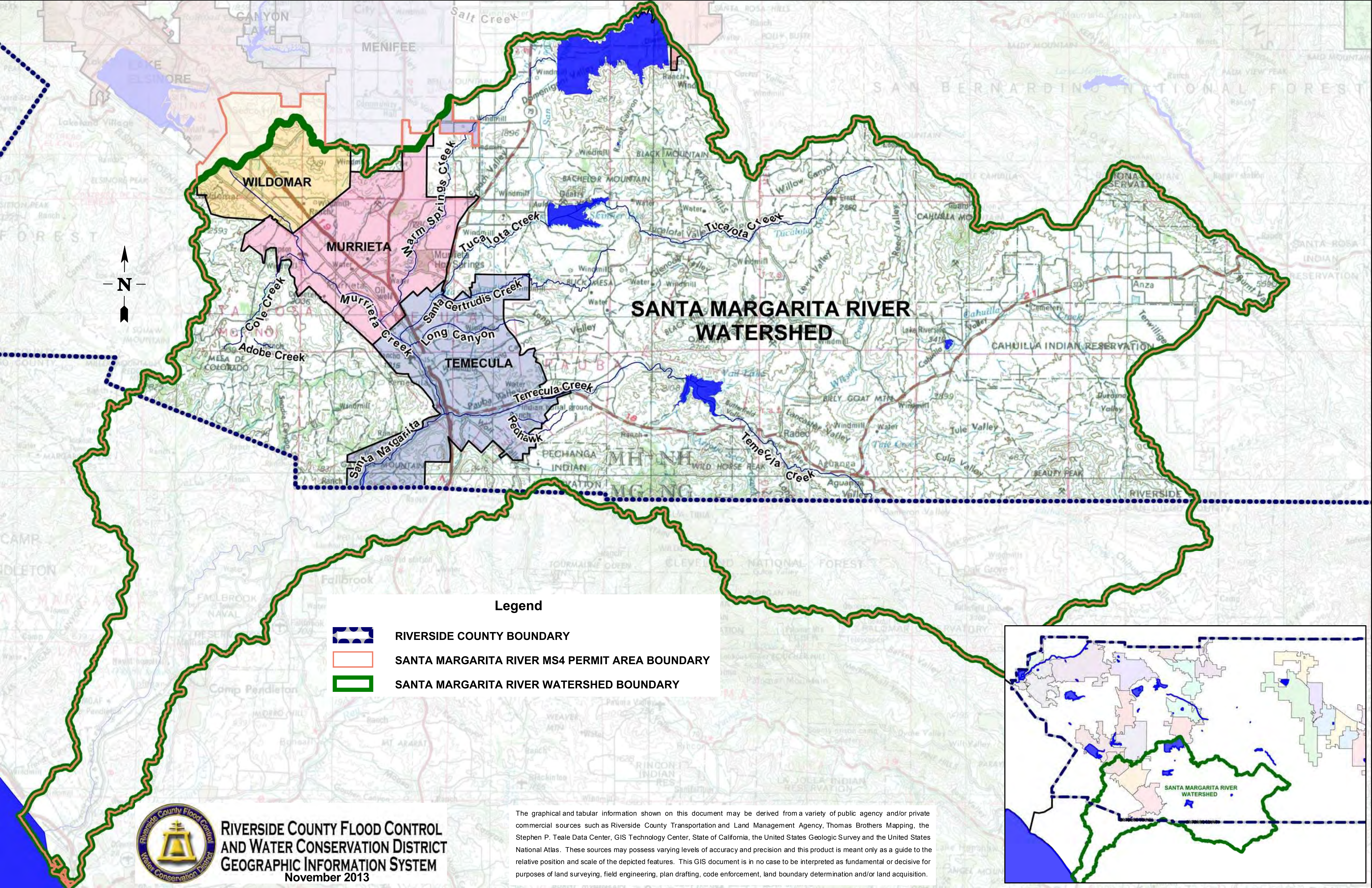
LID Harvest and Reuse BMP	BMPs used to facilitate capturing Stormwater Runoff for later use without negatively impacting downstream water rights or other Beneficial Uses.
LID Infiltration BMP	BMPs to reduce stormwater runoff by capturing and infiltrating the runoff into in-situ soils or amended onsite soils. Typical LID Infiltration BMPs include infiltration basins, infiltration trenches and pervious pavements.
LID Retention BMP	BMPs to ensure full onsite retention without runoff of the DCV such as infiltration basins, bioretention, chambers, trenches, permeable pavement and pavers, harvest and reuse.
LID Principles	Site design concepts that prevent or minimize the causes (or drivers) of post-construction impacts, and help mimic the pre-development hydrologic regime.
MEP	Maximum Extent Practicable - standard established by the 1987 amendments to the CWA for the reduction of Pollutant discharges from MS4s. Refer to Attachment C of the 2010 SMR MS4 Permit for a complete definition of MEP.
MF	Multi-family – zoning classification for parcels having 2 or more living residential units.
MS4	Municipal Separate Storm Sewer System (MS4) is a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains): (i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or designated and approved management agency under section 208 of the CWA that discharges to waters of the United States; (ii) Designated or used for collecting or conveying storm water; (iii) Which is not a combined sewer; (iv) Which is not part of the Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.26.
New Development Project	Defined by the 2010 MS4 permit as 'Priority Development Projects' if the project, or a component of the project meets the categories and thresholds described in Section 1.1.1.
NPDES	National Pollution Discharge Elimination System - Federal program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 318, 402, and 405 of the CWA.
NRCS	Natural Resources Conservation Service

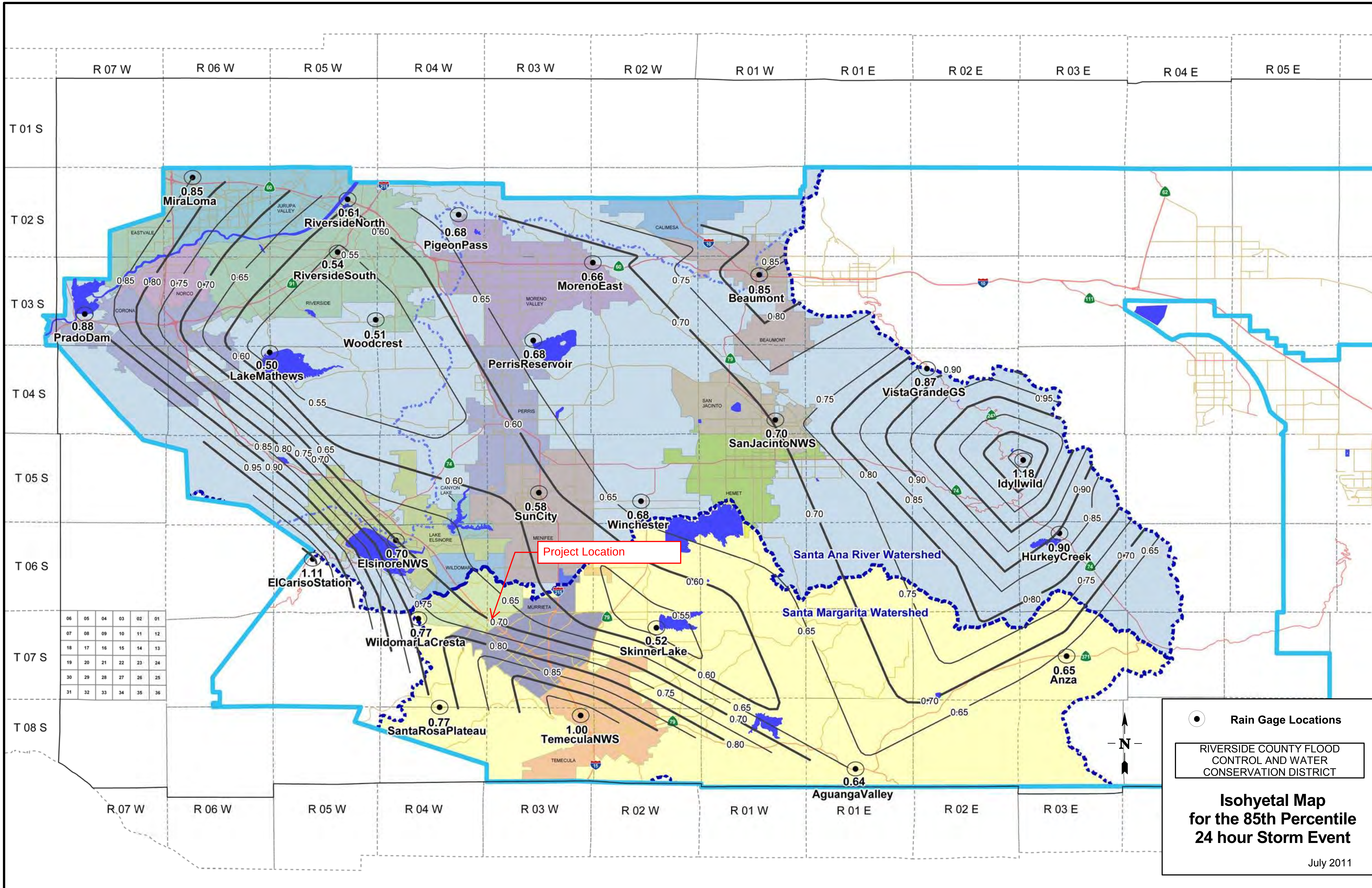
PDP	Priority Development Project - Includes New Development and Redevelopment project categories listed in Section F.1.d(2) of Order No. R9-2009-0002.
Priority Pollutants of Concern	Pollutants expected to be present on the project site and for which a downstream water body is also listed as Impaired under the CWA Section 303(d) list or by a TMDL.
Project-Specific WQMP	A plan specifying and documenting permanent LID Principles and Stormwater BMPs to control post-construction Pollutants and stormwater runoff for the life of the PDP, and the plans for operation and maintenance of those BMPs for the life of the project.
Receiving Waters	Waters of the United States.
Redevelopment Project	The creation, addition, and or replacement of impervious surface on an already developed site. Examples include the expansion of a building footprint, road widening, the addition to or replacement of a structure, and creation or addition of impervious surfaces. Replacement of impervious surfaces includes any activity that is not part of a routine maintenance activity where impervious material(s) are removed, exposing underlying soil during construction. Redevelopment does not include trenching and resurfacing associated with utility work; resurfacing existing roadways; new sidewalk construction, pedestrian ramps, or bike lane on existing roads; and routine replacement of damaged pavement, such as pothole repair. Project that meets the criteria described in Section 1.
Runoff Fund	Runoff Funds have not been established by the Copermittees and are not available to the Applicant. If established, a Runoff Fund will develop regional mitigation projects where PDPs will be able to buy mitigation credits if it is determined that implementing onsite controls is infeasible.
San Diego Regional Board	San Diego Regional Water Quality Control Board - The term "Regional Board", as defined in Water Code section 13050(b), is intended to refer to the California Regional Water Quality Control Board for the San Diego Region as specified in Water Code Section 13200. State agency responsible for managing and regulating water quality in the SMR.
SCCWRP	Southern California Coastal Water Research Project
Site Design BMP	Site design BMPs prevent or minimize the causes (or drivers) of post-construction impacts, and help mimic the pre-development hydrologic regime.
SF	Parcels with a zoning classification for a single residential unit.
SMC	Southern California Stormwater Monitoring Coalition
SMR	The Santa Margarita Region (SMR) represents the portion of the Santa Margarita Watershed that is included within the County of Riverside.

Source Control BMP	Source Control BMPs land use or site planning practices, or structural or nonstructural measures that aim to prevent runoff pollution by reducing the potential for contamination at the source of pollution. Source control BMPs minimize the contact between Pollutants and runoff.
Stormwater Credit	Stormwater Credit can be claimed by an Applicant if certain development practices that provide broad-scale environmental benefits to communities are incorporated into the project design. Refer to Section 3.5.4 for additional information on Stormwater Credits.
Structural BMP	Structures designed to remove pollutants from stormwater runoff and mitigate hydromodification impacts.
SWPPP	Storm Water Pollution Prevention Plan
Tentative Tract Map	Tentative Tract Maps are required for all subdivision creating five (5) or more parcels, five (5) or more condominiums as defined in Section 783 of the California Civil Code, a community apartment project containing five (5) or more parcels, or for the conversion of a dwelling to a stock cooperative containing five (5) or more dwelling units.
TMDL	Total Maximum Daily Load - the maximum amount of a Pollutant that can be discharged into a waterbody from all sources (point and non-point) and still maintain Water Quality Standards. Under CWA Section 303(d), TMDLs must be developed for all waterbodies that do not meet Water Quality Standards after application of technology-based controls.
USEPA	United States Environmental Protection Agency
Volume-Based BMP	Volume-Based BMPs applies to BMPs where the primary mode of pollutant removal depends upon the volumetric capacity such as detention, retention, and infiltration systems.
WQMP	Water Quality Management Plan
Wet Season	The 2010 SMR MS4 Permit defines the wet season from October 1 through April 30.

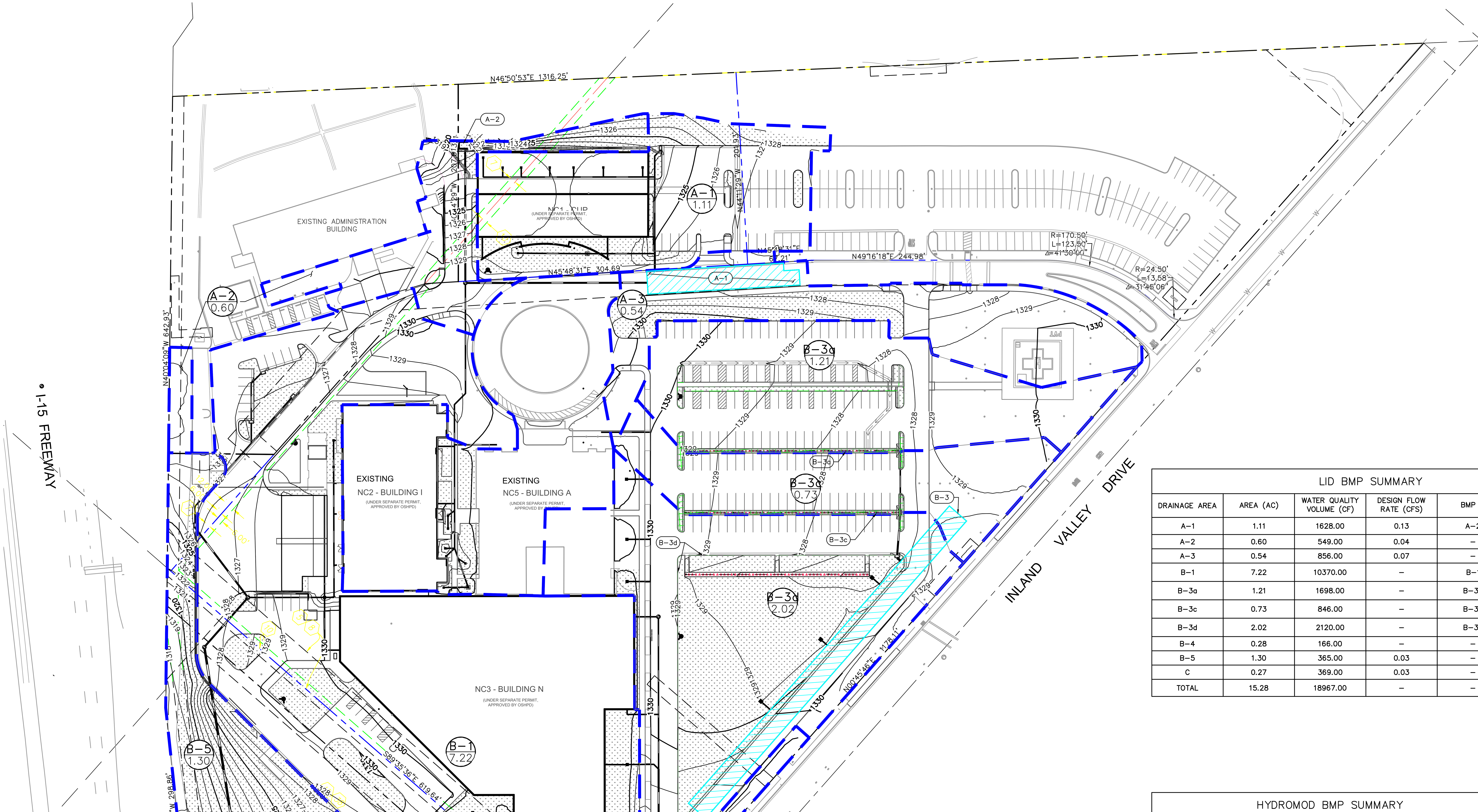
Appendix 1: Maps and Site Plans

Location Map, WQMP Site Plan and Receiving Waters Map


SANTA MARGARITA RIVER WATERSHED
WILDOMAR
MURRIETA
TEMECULA
N
Legend
RIVERSIDE COUNTY BOUNDARY
SANTA MARGARITA RIVER MS4 PERMIT AREA BOUNDARY
SANTA MARGARITA RIVER WATERSHED BOUNDARY
Warm Springs Creek
Tucalota Creek
Murrieta Creek
Santa Gertrudis Creek
Long Canyon
Cole Creek
Adobe Creek
Temecula Creek
Pechanga
Santa Margarita
SAN BERNARDINO NATIONAL FOREST
CLEVELAND NATIONAL FOREST
CAHUILLA INDIAN RESERVATION
Anza
Fallbrook
Camp Pendleton
SANTA MARGARITA RIVER WATERSHED
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT GEOGRAPHIC INFORMATION SYSTEM
November 2013
The graphical and tabular information shown on this document may be derived from a variety of public agency and/or private commercial sources such as Riverside County Transportation and Land Management Agency, Thomas Brothers Mapping, the Stephen P. Teale Data Center, GIS Technology Center, State of California, the United States Geologic Survey and the United States National Atlas. These sources may possess varying levels of accuracy and precision and this product is meant only as a guide to the relative position and scale of the depicted features. This GIS document is in no case to be interpreted as fundamental or effective for purposes of land surveying, field engineering, plan drafting, code enforcement, land boundary determination and/or land acquisition.



Rain Gage Locations
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
Isohyetal Map for the 85th Percentile 24 hour Storm Event
July 2011
Project Location
Santa Ana River Watershed
Santa Margarita Watershed
0.85 MiraLoma
0.61 RiversideNorth
0.68 PigeonPass
0.54 RiversideSouth
0.66 MorenoEast
0.85 Beaumont
0.88 PradoDam
0.51 Woodcrest
0.50 LakeMathews
0.68 PerrisReservoir
0.87 VistaGrandeGS
0.70 SanJacintoNWS
1.18 Idyllwild
0.58 SunCity
0.68 Winchester
0.70 ElsinoreNWS
1.11 ElCarisoStation
0.90 HurkeyCreek
0.77 WildomarLaCresta
0.52 SkinnerLake
0.65 Anza
0.77 SantaRosaPlateau
1.00 TemeculaNWS
0.64 AguangaValley
R 07 W
R 06 W
R 05 W
R 04 W
R 03 W
R 02 W
R 01 W
R 01 E
R 02 E
R 03 E
R 04 E
R 05 E
T 01 S
T 02 S
T 03 S
T 04 S
T 05 S
T 06 S
T 07 S
T 08 S
N



LID BMP SUMMARY					
DRAINAGE AREA	AREA (AC)	WATER QUALITY VOLUME (CF)	DESIGN FLOW RATE (CFS)	BMP #	BMP DESCRIPTION
A-1	1.11	1628.00	0.13	A-2	BioPod Tree 8'x8'
A-2	0.60	549.00	0.04	–	DEMINIMUS
A-3	0.54	856.00	0.07	–	DEMINIMUS
B-1	7.22	10370.00	–	B-1	BIOFILTRATION WITH UNDERDRAIN
B-3a	1.21	1698.00	–	B-3a	BIOFILTRATION WITH UNDERDRAIN
B-3c	0.73	846.00	–	B-3c	BIOFILTRATION WITH UNDERDRAIN
B-3d	2.02	2120.00	–	B-3d	BIOFILTRATION WITH UNDERDRAIN
B-4	0.28	166.00	–	–	DEMINIMUS
B-5	1.30	365.00	0.03	–	SELF-TREATING
C	0.27	369.00	0.03	–	SELF-TREATING
TOTAL	15.28	18967.00	–	–	–

HYDROMOD BMP SUMMARY			
DMA NO.	BMP ID	BMP DESCRIPTION	BMP VOLUME (AC-FT)
A-1	A-1	STORMCAPTURE (4' HEIGHT)	0.24
B-1, B-2	B-1	DETENTION/BIOFILTRATION POND	0.19
B-3a,b,c,d	B-3	STORMCAPTURE (7' HEIGHT)	1.19

LEGEND

- CENTER LINE
- PROPERTY LINE
- RIGHT-OF-WAY LINE / LEASE LINE
- EASEMENT LINE
- PROJECT LIMITS
- SD — EXISTING STORM DRAIN LINE
- SD — PROPOSED STORM DRAIN LINE
- DENOTES DRAINAGE MANAGEMENT AREA BOUNDARY
- A-# 0.00 — SUBAREA NAME AREA (AC)
- # — BMP #
- UNDERGROUND DETENTION SYSTEM
- BIORETENTION AREA LIMITS

BMP NOTES

- A-1 — OLD CASTLE STORM CAPTURE UNDERGROUND DETENTION SYSTEM. REFER TO DETAIL ON CIVIL PLANSHEET CGD7.5.
- A-2 — 8'X8' BIOPOD SYSTEM WITH INTERNAL BYPASS OR APPROVED EQUAL. REFER TO DETAIL ON CIVIL PLANSHEET CGD7.4.
- B-1 — DETENTION/BIOFILTRATION POND. REFER TO DETAIL 4 ON CIVIL PLANSHEET CGD7.2.
- B-2 — NOT USED.
- B-3 — OLD CASTLE CAPTURE UNDERGROUND SYSTEM. REFER TO DETAIL ON CIVIL PLANSHEET CGD7.5.
- B-3a — BIOFILTRATION AREA WITH UNDERDRAIN. REFER TO DETAIL 5 ON CIVIL PLANSHEET CGD7.2.
- B-3b — BIOFILTRATION AREA WITH UNDERDRAIN. REFER TO DETAIL 5 ON CIVIL PLANSHEET CGD7.2.
- B-3c — BIOFILTRATION AREA WITH UNDERDRAIN. REFER TO DETAIL 5 ON CIVIL PLANSHEET CGD7.2.
- B-3d — BIOFILTRATION AREA WITH UNDERDRAIN. REFER TO DETAIL 5 ON CIVIL PLANSHEET CGD7.2.

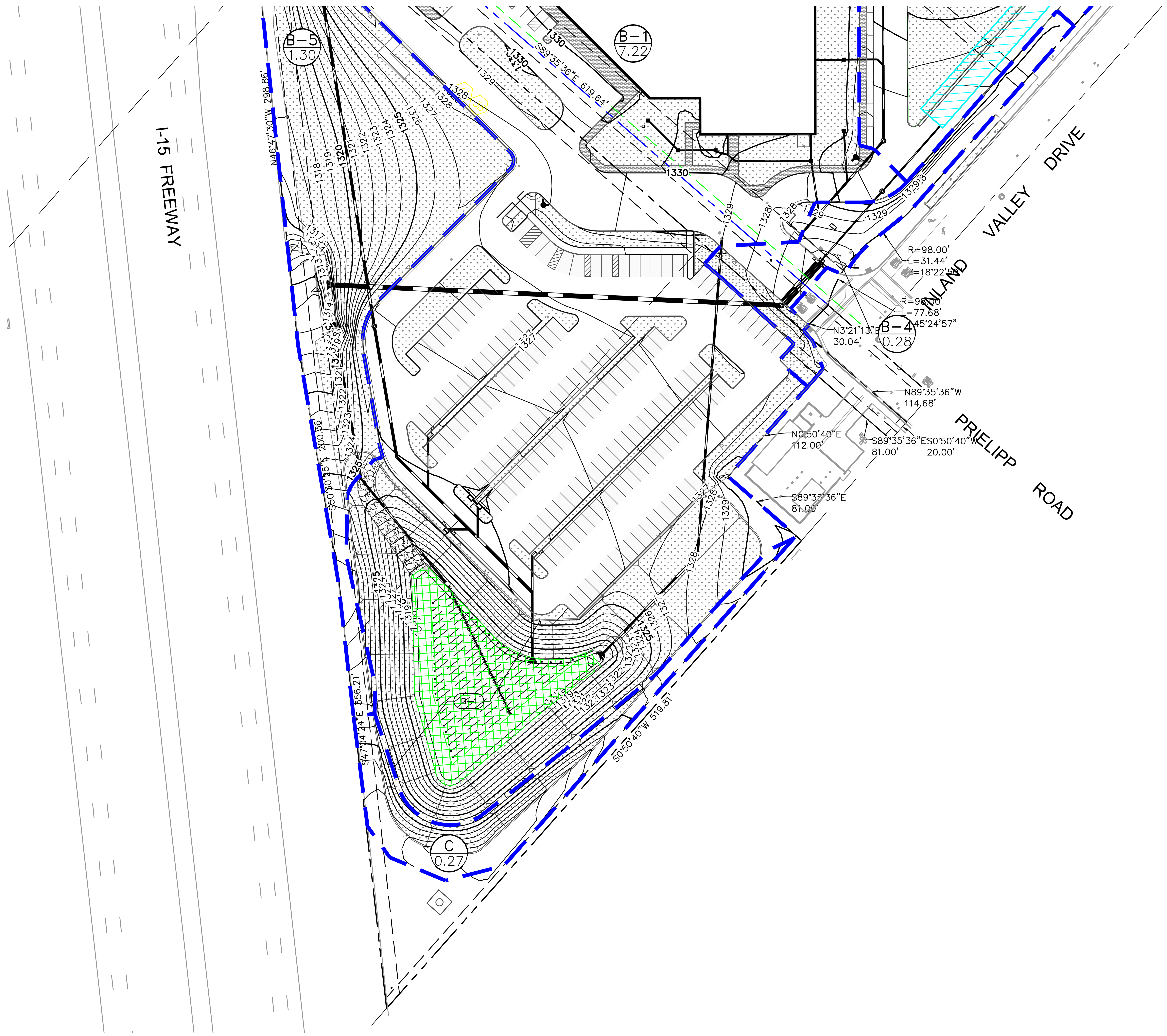
NORTH

GRAPHIC SCALE IN FEET
0 25 50 100

INLAND VALLEY MEDICAL CENTER
WQMP EXHIBIT
MAY 2021
SHEET 1 OF 2

Kimley»Horn

1100 TOWN AND COUNTRY RD SUITE 700, ORANGE, CA 92868
PHONE: 714-939-1030



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NORTH

GRAPHIC SCALE IN FEET
0 25 50 100

INLAND VALLEY MEDICAL CENTER
WQMP EXHIBIT
MAY 2021
SHEET 2 OF 2

Kimley»Horn

1100 TOWN AND COUNTRY RD SUITE 700, ORANGE, CA 92868
PHONE: 714–939–1030

Appendix 2: Construction Plans

Grading and Drainage Plans; Stormdrain Utility Plans; and Detail Sheets

ONSITE IMPROVEMENT PLANS

FOR

INLAND VALLEY MEDICAL CENTER

36485 INLAND VALLEY DR.
WILDOMAR, CA 92595

PROJECT TEAM

OWNER/DEVELOPER
LOREN WILLIAMS
UNIVERSAL HEALTH SERVICE, INC.
367 SOUTH GULPH ROAD
KING OF PRUSSIA, PA 19406
(310) 596-0320
LOREN.WILLIAMS@UHSINC.COM

ARCHITECT
PAUL MORGAN
HOK
9530 JEFFERSON BOULEVARD
CULVER CITY, CA 90232
(424) 298-4590
PAUL.MORGAN@HOK.COM

SURVEYOR
JOEL PAULSON
NV5
15092 AVENUE OF SCIENCE, SUITE 200
SAN DIEGO, CA 92128
(858) 385-0500
JOEL.PAULSON@NV5.COM

CIVIL ENGINEER
NIKKI KERRY, PE
KIMLEY-HORN AND ASSOCIATES, INC.
1100 TOWN AND COUNTRY ROAD, SUITE 700
ORANGE, CA 92868
(714) 939-1030
(714) 938-9488 FAX
NIKKI.KERRY@KIMLEY-HORN.COM

GEOTECHNICAL CONSULTANT
JESSE BEARFIELD, PE
NOVA SERVICES INC.
24632 SAN JUAN AVENUE
SUITE 100
DANA POINT, CA 92629
(949) 338-7710

UTILITY PURVEYORS

WATER & SEWER
EVMWD
31315 CHANEY ST.
LAKE ELSINORE, CA 92530
(951) 674-3146

ELECTRICITY
SOUTHERN CALIFORNIA EDISON (SCE)
(714) 796-9932

GAS
SOUTHERN CALIFORNIA GAS COMPANY
1981 W. LUGONIA AVE.
REDLANDS, CA 9237
(714) 634-6278

CABLE TV/INTERNET PROVIDER
SPECTRUM
7337 CENTRAL AVE.
RIVERSIDE, CA 92504
(951) 406-1690

FRONTIER
32477 HAUN RD.
MENIFEE, CA 91710
(951) 723-0736

SITE INFORMATION

SITE ADDRESS:	36485 INLAND VALLEY DR. WILDOMAR, CA 92595
APN:	380-250-026-4, 380-250-009-9, 380-250-027-5, 380-260-037-5, 380-260-029-8 & 380-260-001-2
TOTAL SITE AREA:	22.35 AC

ESTIMATED EARTHWORK QUANTITIES

CUT:	33,840 CY
FILL:	34,979 CY
NET:	1,139 CY (FILL)

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

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

LEGAL DESCRIPTION PER TITLE REPORT

PRELIMINARY TITLE REPORT NO. NCS-915190-ORL, DATED JULY 16, 2018.

REAL PROPERTY IN THE CITY OF WILDOMAR, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, DESCRIBED AS FOLLOWS:

PARCEL A: 380-250-009-9 AND 380-250-027-5

PARCEL 1 AND PARCEL 3 OF PARCEL MAP 25065 AS SHOWN BY MAP ON FILE IN BOOK 168, PAGES 92 AND 93 OF PARCEL MAPS, RIVERSIDE COUNTY RECORDS.

PARCEL B: APN: 380-250-026-4

PARCEL 2 OF PARCEL MAP NO. 25065, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, RECORDED JANUARY 30, 1991 IN BOOK 168, PAGES 92 AND 93 OF PARCEL MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF RIVERSIDE.

PARCEL B1:

A NON-EXCLUSIVE EASEMENT FOR INGRESS AND EGRESS OVER THAT CERTAIN PRIVATE EASEMENT OF VARYING WIDTH LYING WITHIN THE NORTH AND NORTHWEST PORTIONS OF PARCEL 1 OF PARCEL MAP NO. 25065 ON FILE IN BOOK 168 PAGES 92 AND 93 OF PARCEL MAPS, RIVERSIDE COUNTY RECORDS.

PARCEL C: APNS: 380-260-029-8 AND 380-260-037-5

PARCEL 1 AND PARCEL 2 OF PARCEL MAP 13346 AS SHOWN BY MAP ON FILE IN BOOK 70, PAGE 57 OF PARCEL MAPS, RIVERSIDE COUNTY RECORDS, TOGETHER WITH SUCH RIGHTS AS WOULD PASS BY OPERATION OF LAW ACCURE IN AND TO LETTERED LOT "A" AND LETTERED LOT "B".

EXCEPTING THEREFROM THAT PORTION OF PARCEL 2, CONVEYED TO ELSINORE VALLEY MUNICIPAL WATER DISTRICT BY DEED RECORDED ON JUNE 28, 2006 AS INSTRUMENT NO. 2006-0467701 OF OFFICIAL RECORDS OF SAID COUNTY.

PARCEL D: APNS: 380-260-001-2 AND 380-260-009-0

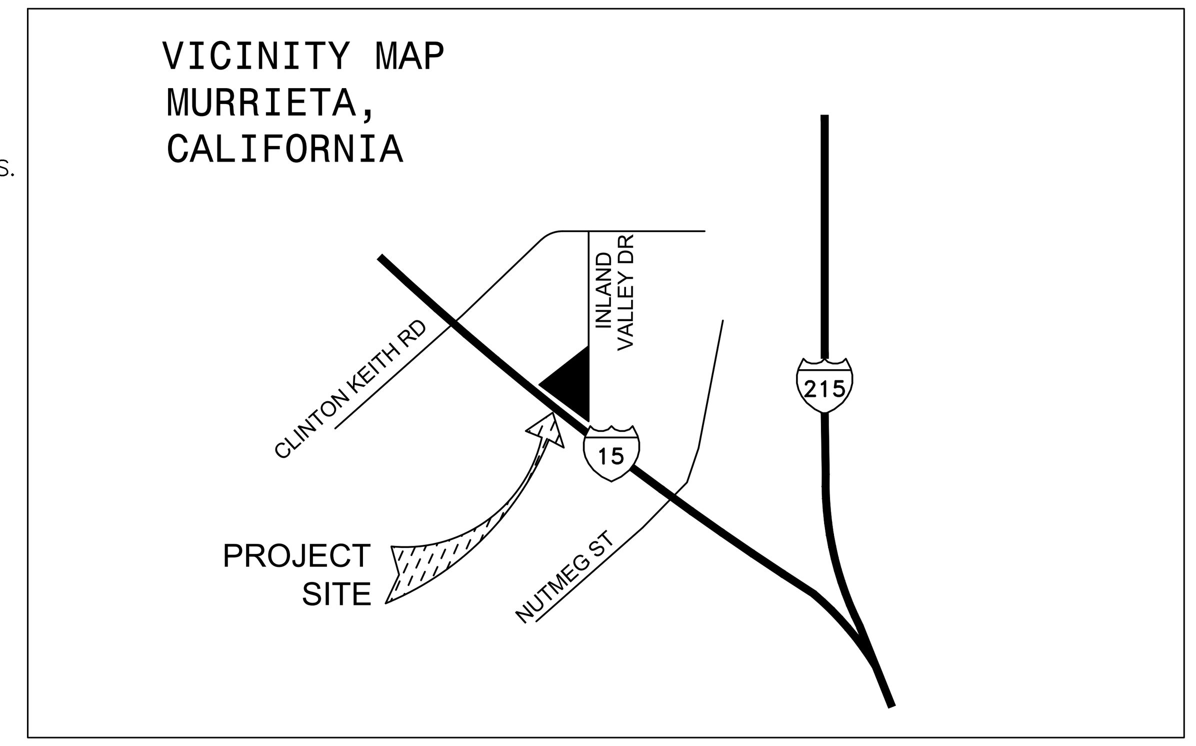
LOT 4 OF WENTWORTH'S SUBDIVISION, AS SHOWN BY MAP ON FILE IN BOOK 14, PAGE(S) 664 THEREOF OF MAPS, RECORDS OF SAN DIEGO COUNTY, CALIFORNIA;

EXCEPTING THEREFROM THAT PORTION CONVEYED TO THE STATE OF CALIFORNIA FOR FREEWAY PURPOSES BY DEED RECORDED APRIL 06, 1955 AS INSTRUMENT NO. 22388 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA;

ALSO EXCEPTING THEREFROM THAT PORTION CONVEYED TO THE STATE OF CALIFORNIA FOR FREEWAY PURPOSES BY DEED RECORDED MAY 24, 1978

CIVIL DRAWINGS UNDER SEPERATE PERMIT

1. BUILDING PLAN SET – PRIVATE SEWER, PRIVATE WATER, AND RETAINING WALLS.
2. EVMWD – WATERLINE AND SEWER LATERAL POINTS OF CONNECTION TO EVMWD PIPES. ALL CROSSINGS, ENCROACHMENTS, AND BACKFILL WITHIN EVMWD EASEMENTS.



VICINITY MAP
SCALE: NTS

NORTH

GEOTECHNICAL REPORT

THE PROPOSED MULTI-STORY TOWER AND CUP AREA INLAND VALLEY REGIONAL MEDICAL CENTER DATED DECEMBER 12, 2019 PREPARED BY NOVA SERVICES, INC. AND ALL ADDENDA SHALL BE CONSIDERED PART OF THESE CONSTRUCTION DOCUMENTS.

BENCHMARK NOTE

COORDINATES ARE REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 AND ARE EXPRESSED IN TERMS OF THE CALIFORNIA COORDINATE SYSTEM 1983, ZONE VI, AT EPOCH 2010.0 AND ARE BASED ON NGS OPUS SOLUTION AT CONTROL POINT #999, ESTABLISHED FROM CALIFORNIA CORS STATION "DG9740", "AF9684" AND "DH7093". POINT #999 VALUE = N:2159624.41 SFT, E:6260821.96 SFT. ELEVATION = 1317.14 SFT.

BASIS OF BEARINGS NOTE

BEARINGS ARE REFERENCED TO GRID NORTH AS DEFINED BY THE CALIFORNIA COORDINATE SYSTEM 1983, ZONE VI.

RECORD DRAWING NOTE

THE EXISTING CONDITIONS SURVEY PLAN REFLECTS TO THE EXTENT PRACTICAL, EXISTING UTILITIES BASED ON FIELD SURVEY BY NV5 DATED 04/23/2019 WITH ADDITIONAL SURVEY DATES 07/31/2020, POTHOLING BY BADGER DATED 05/12/2020 AND 05/14/2020, VISUAL OBSERVATION, AND READILY AVAILABLE RECORD DRAWINGS FROM THE FOLLOWING SOURCES:

1. EVMWD UTILITY REQUEST MAP (2019)
2. EVMWD TITLE (2019)
3. TRUNK SEWER ALONG PRIELIPP ROAD (2007)
4. CLINTON KEITH TRANSMISSION MAIN (1986)
5. SEWER AND WATER EXTENSIONS FOR INLAND MEDICAL PLAZA (1993)
6. PALOMA STREET SEWER LINE (1986)
7. AULD VALLEY WATERLINE PHASE II (1989)

THE ACCURACY AND COMPLETENESS OF THE INFORMATION ON THESE DRAWINGS WAS NOT VERIFIED IN THE FIELD FOR EVERY UTILITY AT EVERY LOCATION. CONTRACTOR SHALL MAKE THEMSELVES FAMILIAR WITH THESE DRAWINGS AND FIELD CONDITIONS AND SHALL MAKE THEIR OWN DETERMINATION AS TO EXISTENCE, TYPE, SIZE, MATERIAL, AND LOCATION OF ALL UNDERGROUND UTILITIES.

CERTIFICATION STATEMENT FOR THE SURVEYOR

I HEREBY STATE THAT ALL EASEMENTS AS INDICATED IN FIRST AMERICAN TITLE COMPANY PRELIMINARY TITLE REPORT NO. NCS-915190-ORL DATED AS OF MARCH 25, 2020 HAVE BEEN SHOWN HEREON AND/OR HAVE BEEN ACCOUNTED FOR IN NOTE PLACED HEREON. ALL EASEMENTS PROPOSED TO BE ABANDONED OR QUITCLAIMED AND/OR ALL EASEMENTS THAT CANNOT BE LOCATED ARE NOTED HEREON.

SIGNATURE STAMP PRINT NAME LICENSE NO.

CERTIFICATION STATEMENT FOR THE SOILS ENGINEER:

THESE GRADING PLANS HAVE BEEN REVIEWED BY ME OR UNDER MY DIRECTION AND CONFORM TO THE RECOMMENDATIONS MADE IN THE SOILS REPORT/GEOTECHNICAL REPORT ENTITLED UPDATED REPORT GEOTECHNICAL INVESTIGATION: PROPOSED MULTI-STORY TOWER AND CUP AREA PREPARED BY NOVA SERVICES, INC., DATED DECEMBER 12, 2019. AND ADDENDUM MEMO DATED SEPTEMBER 3, 2020.

SOILS ENGINEER'S NAME LICENSE NO. STAMP

LEGEND

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- CENTER LINE
- EASEMENT OR SETBACK LINE
- CIVIL LIMIT OF WORK LINE
- CIVIL LIMIT OF GRADING
- SAWCUT LINE
- EXTENT OF DEMOLITION
- DEEPENED FOOTING (DF) OR STEM WALL (SW)
- GB — GRADE BREAK LINE
- R — RIDGE LINE
- SS — PROPOSED SANITARY SEWER PIPE
- SD — PROPOSED STORM DRAIN PIPE (< 12"ø)
- PROPOSED STORM DRAIN PIPE (> 12"ø)
- W — PROPOSED WATER PIPE
- DW — PROPOSED DOMESTIC WATER PIPE
- FW — PROPOSED FIRE WATER PIPE
- RETAINING WALL
- FLOW LINE
- TOP / TOE — 2:1 SLOPE (MAX)
- 49.50 TC / 49.00 FS — PROPOSED SPOT GRADE
- (49.50 TC) / (49.00 FS) — EXISTING SPOT GRADE
- 2.00% — PROPOSED FLOW (DIRECTION AND SLOPE)
- STANDARD DUTY CONCRETE PAVEMENT
- HEAVY DUTY CONCRETE PAVEMENT
- STANDARD DUTY ASPHALT CONCRETE PAVEMENT
- HEAVY DUTY ASPHALT CONCRETE PAVEMENT
- GRAVEL
- LANDSCAPE/PLANTER AREA
- SAND/DECOMPOSED GRANITE
- PROPOSED BUILDING
- TRUNCATED DOMES
- POINT OF CONNECTION (@ BLDG)
- POINT OF CONNECTION (TO EXISTING)
- PIPE END CAP
- PROPOSED CLEANOUT
- D S — STORM DRAIN AND SANITARY SEWER MANHOLE
- CATCH BASIN INLET
- CURB DRAIN INLET
- AREA DRAIN
- TRENCH DRAIN
- VALVE
- PIPE BEND AND TRUST BLOCK
- BACK FLOW PREVENTION DEVICE
- METER BOX
- FIRE HYDRANT
- PIV
- FDC

UTILITY PURVEYORS

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

INDEX OF SHEETS:

DIGALERT
DIAL BEFORE YOU DIG
TWO WORKING DAYS BEFORE YOU DIG
TOLL FREE 1-800-227-2600
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

NOTE:
WORK CONTAINED WITHIN THESE PLANS SHALL NOT COMMENCE UNTIL AN ENCROACHMENT PERMIT AND/OR A GRADING PERMIT HAS BEEN ISSUED.

The private engineer signing these plans is responsible for assuring the accuracy and acceptability of the design hereon. In the event of discrepancies arising after City acceptance or during construction, the private engineer shall be responsible for determining an acceptable solution and revising the plans for acceptance by the City.

MARK	BY	DATE	REVISIONS	APPR.	DATE
ENGINEER				CITY	

CITY OF WILDOMAR — Est. 1886 — Inc. 2008 — Tradition ~ Opportunity ~ Progress

CITY OF WILDOMAR
ACCEPTED BY:
Date:
Daniel A. York, Director of Public Works/ City Engineer, PE 43212
ACCEPTANCE AS TO CONFORMANCE WITH APPLICABLE CITY STANDARDS AND PRACTICES

SEAL ENGINEER:
REGISTERED PROFESSIONAL ENGINEER
NIKKI D. KERRY
RCE NO. 58449
CIVIL
STATE OF CALIFORNIA

Kimley»Horn
1100 Town and Country Road, Suite 700
Orange, CA 92868
714.939.1030
PREPARED BY:
NIKKI KERRY
R.C.E. No. 59448 EXP. 12/22/2021

BENCHMARK:
Elevation = 1317.14
Datum = NAD 83
BENCHMARK #
THIS SURVEY WAS PERFORMED ON 04/23/19 BY JOEL PAULSON L.S. 6637
SCALE:
H: As Noted V: As Noted

PP, CUP, PM, TM, etc. Project XX-XXXX
CITY OF WILDOMAR
INLAND VALLEY MEDICAL CENTER
ONSITE IMPROVEMENT PLANS
COVER SHEET

SHEET No. CGD0.0
OF 69 SHTS

ISSUED FOR BID SET 5/21/2021

CITY GRADING NOTES

GENERAL

1. ALL GRADING SHALL CONFORM TO THE CURRENTLY ADOPTED CALIFORNIA BUILDING CODE AND CITY ORDINANCES.
2. ALL PROPERTY CORNERS SHALL BE CLEARLY DELINEATED IN THE FIELD PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION/GRADING.
3. ALL WALLS (RETAINING AND NON-RETAINING) ARE APPROVED PER SEPARATE PLAN AND PERMIT.
4. ALL WORK UNDER THIS GRADING PERMIT SHALL BE LIMITED TO WORK WITHIN THE PROPERTY LINES. ALL WORK WITHIN THE CITY RIGHT-OF-WAY WILL REQUIRE SEPARATE PLANS AND AN ENCROACHMENT PERMIT.
5. GRADING SHALL BE DONE UNDER THE SUPERVISION OF A SOILS ENGINEER IN CONFORMANCE WITH RECOMMENDATIONS OF THE PRELIMINARY SOILS INVESTIGATION BY AECOM DATED SEPTEMBER 25, 2019; DECEMBER 12, 2019; SEPTEMBER 3, 2020; RESPONSE TO COMMENTS AND ADDENDA DATED MARCH 20, 2020; APRIL 16, 2020; AND REVISED PAVEMENT SECTION DATED OCTOBER 1, 2020.
6. COMPACTED FILL TO SUPPORT ANY STRUCTURES SHALL COMPLY WITH SECTION 1803.5. PROJECTS WITHOUT PRELIMINARY SOILS REPORT SHALL HAVE DETAILED SPECIFICATIONS SATISFYING THE REQUIREMENTS IN SECTION 1803.5 PREPARED BY THE EOR.
7. THE CONTRACTOR SHALL NOTIFY THE BUILDING AND SAFETY DEPARTMENT AT LEAST 24 HOURS IN ADVANCE TO REQUEST FINISH LOT GRADE AND DRAINAGE INSPECTION. THIS INSPECTION MUST BE APPROVED PRIOR TO BUILDING PERMIT FINAL INSPECTION FOR EACH LOT.
8. THE CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT, TWO DAYS BEFORE DIGGING AT 1-800- 227-2600.

CUT / FILL

9. MAXIMUM CUT AND FILL SLOPE = 2:1.
10. NO FILL SHALL BE PLACED ON EXISTING GROUND UNTIL THE GROUND HAS BEEN CLEARED OF WEEDS, DEBRIS, TOPSOIL AND OTHER DELETERIOUS MATERIAL. FILLS SHOULD BE PLACED IN THIN LIFTS (8-INCH MAX OR AS RECOMMENDED IN SOILS REPORT), COMPACTED AND TESTED AS GRADING PROCESS UNTIL FINAL GRADES ARE ATTAINED. ALL FILLS ON SLOPES STEEPER THAN 5 TO 1 (H/V) AND A HEIGHT GREATER THAN 5 FEET SHALL BE KEYED AND BENCHED INTO FIRM NATURAL SOIL FOR FULL SUPPORT. THE BENCH UNDER THE TOE MUST BE 10 FEET WIDE MIN.
11. THE SLOPE STABILITY FOR CUT AND FILL SLOPES OVER 30' IN VERTICAL HEIGHT, OR SLOPES STEEPER THAN 2:1 MUST BE VERIFIED WITH A FACTOR OF SAFETY OF AT LEAST 1.5.
12. NO ROCK OR SIMILAR IRREDUCIBLE MATERIAL WITH A MAXIMUM DIMENSION GREATER THAN 12 INCHES SHALL BE BURIED OR PLACED IN FILLS CLOSER THAN 10 FEET TO THE FINISHED GRADE.

DRAINAGE AND EROSION/ DUST CONTROL

13. DRAINAGE ACROSS THE PROPERTY LINE SHALL NOT EXCEED THAT WHICH EXISTED PRIOR TO GRADING. EXCESS OR CONCENTRATED DRAINAGE SHALL BE CONTAINED ON SITE OR DIRECTED TO AN APPROVED DRAINAGE FACILITY.
14. PROVIDE A SLOPE INTERCEPTOR DRAIN ALONG THE TOP OF CUT SLOPES WHERE THE DRAINAGE PATH IS GREATER THAN 40 FEET TOWARDS THE CUT SLOPE.
15. PROVIDE 5 ' WIDE BY 1' HIGH BERM ALONG THE TOP OF ALL FILL SLOPES STEEPER THAN 3:1.
16. THE GROUND IMMEDIATELY ADJACENT TO THE BUILDING FOUNDATION SHALL BE SLOPED AWAY WITH 5% MIN FOR A MIN DISTANCE OF 10 HORIZONTAL FEET. SWALES WITHIN 10 FEET FROM BUILDING SHALL HAVE 2% MINIMUM SLOPE.
17. NO OBSTRUCTION OF NATURAL WATER COURSES SHALL BE PERMITTED.
18. DURING ROUGH GRADING OPERATIONS AND PRIOR TO CONSTRUCTION OF PERMANENT DRAINAGE STRUCTURES, TEMPORARY DRAINAGE CONTROL (BEST MANAGEMENT PRACTICES, BMPS) SHALL BE PROVIDED TO PREVENT PONDING WATER AND DAMAGE TO ADJACENT PROPERTIES.
19. DUST SHALL BE CONTROLLED BY WATERING OR OTHER APPROVED METHODS.
20. ALL EXISTING DRAINAGE COURSES ON THE PROJECT SITE MUST CONTINUE TO FUNCTION. PROTECTIVE MEASURES AND TEMPORARY DRAINAGE PROVISIONS MUST BE USED TO PROTECT ADJOINING PROPERTIES DURING GRADING OPERATIONS.
21. FOR SLOPES 3 TO 1 (H/V) OR STEEPER:

    ALL SLOPES EQUAL TO OR GREATER THAN 3 ' IN VERTICAL HEIGHT, ARE REQUIRED TO BE PLANTED WITH GRASS OR ROSEA ICE PLANT (OR EQUAL) GROUND COVER AT A MAXIMUM SPACING OF 12" ON CENTER. SLOPES EXCEEDING 15 ' IN VERTICAL HEIGHT SHALL BE PLANTED WITH APPROVED SHRUBS NOT TO EXCEED 10' ON CENTER, OR TREES SPACED NOT TO EXCEED 20 ' ON CENTER OR SHRUBS NOT TO EXCEED 10 ', OR A COMBINATION OF SHRUBS AND TREES NOT TO EXCEED 15 ' IN ADDITION TO THE GRASS OR GROUND COVER. SLOPES THAT REQUIRE PLANTING SHALL BE PROVIDED WITH AN IN-GROUND IRRIGATION SYSTEM EQUIPPED WITH AN APPROPRIATE BACKFLOW DEVICE PER U.P.C., CHAPTER 10. THE SLOPE PLANTING AND IRRIGATION SYSTEM SHALL BE INSTALLED PRIOR TO PRECISE GRADING FINAL.

COMPLETION OF WORK

22. A REGISTERED CIVIL ENGINEER SHALL PREPARE FINAL COMPACTION REPORT/ GRADING REPORT AND IT SHALL BE SUBMITTED FOR REVIEW AND APPROVAL. THE REPORT SHALL ALSO PROVIDE BUILDING FOUNDATION DESIGN PARAMETERS INCLUDING ALLOWABLE SOIL PRESSURES, EXPANSION INDEX AND REMEDIAL MEASURES IF EI > 20, WATER SOLUBLE SULFATE CONTENT, CORROSIVITY AND REMEDIAL MEASURES IF NECESSARY.
23. EXCEPT FOR NON-TRACT SINGLE RESIDENTIAL LOT GRADING, THE COMPACTION REPORT SHALL INCLUDE THE SPECIAL INSPECTION VERIFICATIONS LISTED IN TABLE 1705.6 AND APPLICABLE INSPECTION VERIFICATIONS IN SECTION 1704.5 OF THE CALIFORNIA BUILDING CODE.
24. A REGISTERED CIVIL ENGINEER SHALL SUBMIT TO THE BUILDING AND SAFETY DEPARTMENT WRITTEN CERTIFICATION OF COMPLETION OF GRADING IN ACCORDANCE WITH THE APPROVED GRADING PLAN PRIOR TO REQUESTING INSPECTION AND ISSUANCE OF THE BUILDING PERMIT. CERTIFICATION SHALL INCLUDE LINE GRADE, SURFACE DRAINAGE, ELEVATION, AND LOCATION OF PERMITTED GRADING ON THE LOT.

CITY NPDES NOTES

1. CONSTRUCTION SITE BEST MANAGEMENT PRACTICES (BMPS) FOR THE MANAGEMENT OF STORM WATER AND NON-STORMWATER DISCHARGES SHALL BE DOCUMENTED ON THE GRADING PLAN. ARRANGEMENTS SHALL BE MADE BY THE DEVELOPER TO RETAIN THE SWPPP AND/OR THE EROSION/SEDIMENT CONTROL PLAN ON THE JOBSITE THROUGHOUT THE TIME OF CONSTRUCTION. THE IMPLEMENTATION AND MAINTENANCE OF SITE BMPS IS REQUIRED TO MINIMIZE JOBSITE EROSION AND SEDIMENTATION. ARRANGEMENTS SHALL BE MADE BY THE DEVELOPER TO MAINTAIN THOSE BMPS THROUGHOUT THE TIME OF CONSTRUCTION.
2. EROSION CONTROL BMPS SHALL BE IMPLEMENTED AND MAINTAINED TO MINIMIZE THE ENTRAINMENT OF SOIL IN RUNOFF FROM DISTURBED SOIL AREAS ON CONSTRUCTION SITES.
3. SEDIMENT CONTROL BMPS SHALL BE IMPLEMENTED AND MAINTAINED TO MINIMIZE THE TRANSPORT OF SOIL FROM THE CONSTRUCTION SITE.
4. GRADING SHALL BE PHASED TO LIMIT THE AMOUNT OF DISTURBED AREAS EXPOSED TO THE EXTENT FEASIBLE.
5. AREAS THAT ARE CLEARED AND GRADED SHALL BE LIMITED TO ONLY THE PORTION OF THE SITE THAT IS NECESSARY FOR CONSTRUCTION. THE CONSTRUCTION SITE SHALL BE MANAGED TO MINIMIZE THE EXPOSURE TIME OF DISTURBED SOIL AREAS THROUGH PHASING AND SCHEDULING OF GRADING AND THE USE OF TEMPORARY AND PERMANENT SOIL STABILIZATION.
6. ONCE DISTURBED, SLOPES (TEMPORARY OR PERMANENT) SHALL BE STABILIZED IF THEY WILL NOT BE WORKED WITHIN 14 DAYS. ALL SLOPES SHALL BE STABILIZED PRIOR TO A PREDICTED STORM EVENT. CONSTRUCTION SITES SHALL BE REVEGETATED AS EARLY AS FEASIBLE AFTER SOIL DISTURBANCE.
7. STOCKPILES OF SOIL SHALL BE PROPERLY CONTAINED TO ELIMINATE OR REDUCE SEDIMENT TRANSPORT FROM THE SITE TO STREETS, DRAINAGE FACILITIES OR ADJACENT PROPERTIES VIA RUNOFF, VEHICLE TRACKING, OR WIND.
8. CONSTRUCTION SITES SHALL BE MAINTAINED IN SUCH A CONDITION THAT A STORM DOES NOT CARRY WASTES OR POLLUTANTS OFF THE SITE. DISCHARGES OTHER THAN STORMWATER (NON-STORMWATER DISCHARGES) ARE PROHIBITED, EXCEPT AS AUTHORIZED BY AN INDIVIDUAL NPDES PERMIT, THE STATEWIDE GENERAL PERMIT-CONSTRUCTION ACTIVITY. POTENTIAL POLLUTANTS INCLUDE BUT ARE NOT LIMITED TO: SOLID OR LIQUID CHEMICAL SPILLS; WASTES FROM PAINTS, STAINS, SEALANTS, SOLVENTS, DETERGENTS, GLUES, LIME, PESTICIDES, HERBICIDES, FERTILIZERS, WOOD PRESERVATIVES, AND ASBESTOS FIBERS, PAINT FLAKES OR STUCCO FRAGMENTS; FUELS, OILS LUBRICANTS, AND HYDRAULIC, RADIATOR OR BATTERY FLUIDS; CONCRETE AND RELATED CUTTING OR CURING RESIDUES; FLOATABLE WASTES; WASTES FROM ENGINE/EQUIPMENT STEAM CLEANING OR CHEMICAL DEGREASING; WASTES FROM STREET CLEANING; AND SUPER-CHLORINATED POTABLE WATER FROM LINE FLUSHING AND TESTING. DURING CONSTRUCTION, DISPOSAL OF SUCH MATERIALS SHOULD OCCUR IN A SPECIFIED AND CONTROLLED TEMPORARY AREA ON-SITE PHYSICALLY SEPARATED FROM POTENTIAL STORMWATER RUNOFF, WITH ULTIMATE DISPOSAL IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REQUIREMENTS.
9. RUNOFF FROM EQUIPMENT AND VEHICLE WASHING SHALL BE CONTAINED AT THE CONSTRUCTION SITE AND MUST NOT BE DISCHARGED TO RECEIVING WATERS OR THE LOCAL STORM DRAIN SYSTEM.
10. APPROPRIATE BMPS FOR CONSTRUCTION-RELATED MATERIALS, WASTES, SPILLS OR RESIDUES SHALL BE IMPLEMENTED TO ELIMINATE OR REDUCE TRANSPORT FROM THE SITE TO STREETS, DRAINAGE FACILITIES, OR ADJOINING PROPERTIES BY WIND OR RUNOFF.
11. ALL CONSTRUCTION CONTACTORS AND SUBCONTRACTOR PERSONNEL ARE TO BE MADE AWARE OF THE REQUIRED BMPS AND GOOD HOUSEKEEPING MEASURES FOR THE PROJECT SITE AND ANY ASSOCIATED CONSTRUCTION STAGING AREAS.
12. DISCHARGING CONTAMINATED GROUNDWATER PRODUCED BY DEWATERING GROUNDWATER THAT HAS INFILTRATED INTO THE CONSTRUCTION SITE IS PROHIBITED. DISCHARGING OF CONTAMINATED SOILS VIA SURFACE EROSION IS ALSO PROHIBITED. DISCHARGING NON-CONTAMINATED GROUNDWATER PRODUCED BY DEWATERING ACTIVITIES MAY REQUIRE A NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT FROM THE REGIONAL WATER QUALITY CONTROL BOARD.
13. BMPS SHALL BE MAINTAINED AT ALL TIMES. IN ADDITION, BMPS SHALL BE INSPECTED PRIOR TO PREDICTED STORM EVENTS AND FOLLOWING STORM EVENTS.
14. AT THE END OF EACH DAY OF CONSTRUCTION ACTIVITY, ALL CONSTRUCTION DEBRIS AND WASTE MATERIALS SHALL BE COLLECTED AND PROPERLY DISPOSED OF IN TRASH OR RECYCLE BINS.

CITY PAVING NOTES

1. MINIMUM PARKING LOT GRADE SHALL BE 1%.
2. MINIMUM GRADE FOR RIBBON DRAINS SHALL BE 0.5%.
3. AN APPROVED SOIL STERILIZER SHALL BE USED ON ALL SUBGRADE SURFACES PRIOR TO PLACEMENT OF PAVING.
4. ASPHALTIC EMULSION (FOG SEAL) SHALL BE APPLIED NO LESS THAN FOURTEEN DAYS FOLLOWING PLACEMENT OF THE ASPHALT SURFACING AND SHALL BE APPLIED AT A RATE OF 0.05 GALLONS PER SQUARE YARD, ASPHALT EMULSION SHALL CONFORM TO SECTION 37, 39 AND 94 OF THE STATE STANDARD SPECIFICATIONS.
5. THE SUBDIVIDER OR CONTRACTOR SHALL APPLY TO THE CITY ENGINEERING DEPARTMENT FOR AN ENCROACHMENT PERMIT FOR ALL WORK WITHIN THE RIGHT-OF-WAY.
6. TWO SPECIAL INSPECTIONS ARE REQUIRED BY THE CITY ENGINEERING DEPARTMENT. ONE INSPECTION AT THE TIME THE BASE IS PLACED AND THE SECOND WHEN THE A.C. HAS BEEN PLACED.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CLEARING OF THE PROPOSED WORK AREA, AND RELOCATION AND COST OF ALL EXISTING UTILITIES. THE CITY SHALL BE INFORMED 48 HOURS PRIOR TO BEGINNING OF CONSTRUCTION AT (951)304-2489.
8. A COMPACTION REPORT BY A SOIL ENGINEER SHALL CERTIFY 95% COMPACTION OF BASE PRIOR TO CALLING FOR SECOND INSPECTION AND PLACEMENT OF ASPHALT PAVING.

QUANTITIES

QUANTITIES LISTED ON THIS SHEET ARE FOR PERMITTING AND CITY PURPOSES ONLY. THE CONTRACTOR SHALL RELY ON THEIR OWN QUANTITY ESTIMATES FOR BIDDING PURPOSES.

CN	DEMO	QUANTITY	UNIT
1	DEMOLISH AND REMOVE EXISTING CURB	8,985	LF
2	DEMOLISH AND REMOVE EXISTING CURB AND GUTTER	4,065	LF
3	DEMOLISH AND REMOVE EXISTING LIGHT POLE AND LOW VOLTAGE LINE PER ELECTRICAL PLANS	90	EA
4	DEMOLISH AND REMOVE EXISTING LANDSCAPE	39,209	SF
5	DEMOLISH AND REMOVE EXISTING POST INDICATING VALVE	5	EA
6	REMOVE AND RELOCATE EXISTING FIRE HYDRANT	6	EA
7	DEMOLISH AND REMOVE EXISTING FIRE DEPARTMENT CONNECTION	3	EA
8	DEMOLISH AND REMOVE EXISTING WATER LINE AND APPURTENANCES	2,040	LF
9	DEMOLISH AND REMOVE EXISTING STORM DRAIN LINE	540	LF
10	DEMOLISH AND REMOVE EXISTING CATCH BASIN	8	EA
11	DEMOLISH AND REMOVE EXISTING GAS LINE	-	LF
12	DEMOLISH AND REMOVE TRASH ENCLOSURE	1	EA
13	DEMOLISH AND REMOVE EXISTING CURB RAMP	18	EA
14	DEMOLISH AND REMOVE EXISTING TREE	138	EA
15	REMOVE AND RELOCATE EXISTING MONUMENT SIGN	1	EA
16	DEMOLISH AND REMOVE EXISTING SITE WALL	50	LF
17	DEMOLISH AND REMOVE EXISTING BENCH	1	EA
18	DEMOLISH AND REMOVE EXISTING POWER POLE AND OVERHEAD UTILITY	6	EA
19	DEMOLISH AND REMOVE EXISTING SEWER LINE	1,390	LF
20	DEMOLISH AND REMOVE EXISTING SEWER MANHOLE	1	EA
CN	**EROSION CONTROL**	QUANTITY	UNIT
1	WM-1, MATERIAL DELIVERY AND STORAGE.	4	EA
2	WM-3, STOCKPILE MANAGEMENT, CONTRACTOR TO SET UP STOCKPILE AREA.	4	EA
3	WM-5, SANITARY AREA.	4	EA
4	WM-6, HAZARDOUS WASTE MANAGEMENT.	4	EA
5	WM-8, CONCRETE WASTE MANAGEMENT.	4	EA
6	CONSTRUCTION FENCE.	4,580	LF
7	SD-32, TRASH STORAGE AREA.	4	EA
8	TR-1, STABILIZED CONSTRUCTION ENTRANCE/EXIT.	4	EA
9	TR-3, ENTRANCE/OUTLET TIRE WASH.	4	EA
10	NS-10, VEHICLE AND EQUIPMENT MAINTENANCE.	4	EA
11	SE-10, STORM DRAIN INLET PROTECTION FOR FUTURE CATCH BASINS AND INLETS.	17	EA
	*PROVIDE INLET PROTECTION FOR PUBLIC CURB INLET DOWNSTREAM OFF SITE		
12	GRAVEL BAG.	5,030	LF
13	SE-1 - SILT FENCE PER CASQA STORMWATER BMP HANDBOOK. CONTRACTOR TO MAINTAIN THROUGHOUT CONSTRUCTION.	2,140	LF
CN	**GRADING AND DRAINAGE**	QUANTITY	UNIT
1	CONSTRUCT CONCRETE 6" CURB.	8,930	LF
2	INSTALL CONCRETE CURB AND GUTTER.	3,760	LF
3	INSTALL VALLEY GUTTER.	70	LF
4	INSTALL 0" CURB.	260	LF
5	INSTALL STORM DRAIN MANHOLE	7	EA
6	ROOF DRAIN POINT OF CONNECTION. REFER TO PLUMBING PLANS FOR CONTINUATION.	11	EA
7	CONSTRUCT RETAINING WALL.	268	LF
CN	**HORIZONTAL & PAVING**	QUANTITY	UNIT
1	INSTALL STANDARD 90° PARKING STALL STRIPING.	-	EA
2	INSTALL ACCESSIBLE 90° PARKING STALL STRIPING.	-	EA
3	INSTALL ACCESSIBLE PARKING STALL SIGN AND SIGN BASE.	-	EA
4	6" CONCRETE CURB.	8,930	LF
5	6" CONCRETE CURB AND GUTTER.	3,760	LF
6	CONCRETE SIDEWALK.	24,360	SF
7	CONCRETE VALLEY GUTTER.	70	LF
8	INSTALL ACCESSIBLE RAMP WITH CAST IN PLACE DETECTABLE WARNING (TRUNCATED DOMES)	22	EA
9	INSTALL CLEAN AIR/VANPOOL/EV PARKING STRIPING PER CALIFORNIA GREEN CODE REQUIREMENTS.	-	EA
10	INSTALL 6.0' WIDE CONCRETE WHEEL STOPS.	-	EA
11	INSTALL ACCESSIBLE PATH OF TRAVEL STRIPING.	3,269	SF
12	RETAINING WALL PER STRUCTURAL PLANS.	175	LF
13	INSTALL MOUNTABLE CURB	58	LF
14	3' WIDE CURB CUT.	2	EA
15	INSTALL 0" CURB AND GUTTER	254	LF
16	TURF BLOCK FIRE LANE	2	EA
17	REPLACE EXISTING DATA/TELECOM VAULT/MANHOLE COVER WITH TRAFFIC RATED LID.	2	EA
18	THICKENED CONCRETE EDGE.	184	LF
CN	**STORM DRAIN**	QUANTITY	UNIT
1	INSTALL 4" PVC STORM DRAIN PIPE; PIPE TRENCH AND BEDDING	7	LF
2	INSTALL 6" PVC STORM DRAIN PIPE; PIPE TRENCH AND BEDDING	1,192	LF
3	INSTALL 10" PVC STORM DRAIN PIPE; PIPE TRENCH AND BEDDING	416	LF
4	INSTALL 12" HDPE STORM DRAIN PIPE; PIPE TRENCH AND BEDDING	1,335	LF
5	INSTALL 18" HDPE STORM DRAIN PIPE; PIPE TRENCH AND BEDDING	1,548	LF
6	INSTALL 24" HDPE STORM DRAIN PIPE; PIPE TRENCH AND BEDDING	578	LF
7	INSTALL 42" HDPE STORM DRAIN PIPE; PIPE TRENCH AND BEDDING	706	LF
8	INSTALL 4' DIA. MANHOLE	7	EA
9	INSTALL OLDCASTLE BIOPOD BIOFILTERVAULT WITH INTERNAL BYPASS.	1	EA
10	INSTALL STORM DRAIN DETENTION SYSTEM	1	EA
11	INSTALL TRENCH DRAIN	85	LF
12	INSTALL STORM DRAIN CURB OPENING CATCH BASIN	17	EA
13	INSTALL 12"X12" AREA DRAIN	14	EA
14	INSTALL PRECAST 24"X24" DROP INLET	6	EA
15	CORE THROUGH EXISTING CHANNEL WALL AND GROUT AROUND PIPE	2	EA
16	INSTALL DETENTION POND OUTLET STRUCTURE	3	EA
17	BUILDING POINT OF CONTINUATION	14	EA
18	INSTALL HDPE WYE CONNECTION	4	EA
19	INSTALL HDPE TEE CONNECTION	11	EA
20	INSTALL JUNCTION STRUCTURE	3	EA
21	INSTALL HDPE BEND	16	EA
22	INSTALL HDPE REDUCER	5	EA
23	FLARED END SECTION	6	EA
24	CLASS III RIP RAP	5	EA
25	INSTALL RECTANGULAR CURB DRAIN	4	EA

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NOTE:

WORK CONTAINED WITHIN THESE PLANS SHALL NOT COMMENCE UNTIL AN ENCROACHMENT PERMIT AND/OR A GRADING PERMIT HAS BEEN ISSUED.

The private engineer signing these plans is responsible for assuring the accuracy and acceptability of the design hereon. In the event of discrepancies arising after City acceptance or during construction, the private engineer shall be responsible for determining an acceptable solution and revising the plans for acceptance by the City.

MARK	BY	DATE	REVISIONS	APPR.	DATE
ENGINEER				CITY	

CITY OF WILDOMAR — Est. 1886 — Inc. 2008 — Tradition ~ Opportunity ~ Progress

CITY OF WILDOMAR
ACCEPTED BY:

Date:

Daniel A. York, Director of Public Works/ City Engineer, PE 43212

ACCEPTANCE AS TO CONFORMANCE WITH APPLICABLE CITY STANDARDS AND PRACTICES

SEAL-ENGINEER:
REGISTERED PROFESSIONAL ENGINEER — NIKKI D. KERRY — RCE NO. 58449 — CIVIL — STATE OF CALIFORNIA

Kimley»Horn
1100 Town and Country Road, Suite 700
Orange, CA 92868
714.939.1030 F 714.938.9488
www.kimley-horn.com

PREPARED BY: NIKKI KERRY
R.C.E. No. 58449 EXP. 12/31/22

BENCHMARK:
Elevation = 1317.14
Datum = NAD 83
BENCHMARK # ____________

THIS SURVEY WAS PERFORMED ON 04/23/19 BY JOEL PAULSON L.S. 6637

SCALE: H: As Noted V: As Noted

PP, CUP, PM, TM, etc. Project XX-XXXX

CITY OF WILDOMAR
INLAND VALLEY MEDICAL CENTER
ONSITE IMPROVEMENT PLANS
CITY NOTES AND QUANTITIES

SHEET No. CGD0.1

OF 69 SHTS

ISSUED FOR BID SET 5/21/21

DESIGN ENGINEER'S NOTES

1. THE TERM "DESIGN ENGINEER" USED HEREIN SHALL MEAN THE ENGINEER WHO HAS SIGNED AND SEALED HIS/HER RESPECTIVE PLAN SHEETS AND IS IN RESPONSIBLE CHARGE OF THE ENGINEERING DESIGN ON THOSE SHEETS. THE TERM "CONTRACTOR" USED HEREIN SHALL MEAN ANY GENERAL CONTRACTOR OR SUBCONTRACTOR USING THESE PLANS.
2. THE DESIGN ENGINEER SHALL NOT PROVIDE, OBSERVE, COMMENT ON NOR ENFORCE ANY SAFETY MEASURES OR REGULATIONS. THE CONTRACTOR SHALL DESIGN, IMPLEMENT, AND MAINTAIN ALL SAFETY MEASURES AND SHALL BE SOLELY RESPONSIBLE FOR ALL REQUIRED SAFETY MEASURES, PROCEDURES AND PROGRAMS AND COMPLYING WITH ALL LOCAL, STATE AND FEDERAL SAFETY AND HEALTH STANDARDS, LAWS, AND REGULATIONS. THE CONTRACTOR AGREES THAT SHE/HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOBSITE CONDITIONS AND SAFETY OF ALL PERSONS AND PROPERTY DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.
3. THE DESIGN ENGINEER SHALL HAVE NO RESPONSIBILITY FOR ANY OF THE CONTRACTOR'S MEANS AND METHODS OF CONSTRUCTION, TECHNIQUES, EQUIPMENT CHOICE AND USAGE, SEQUENCE, SCHEDULE, SAFETY PROGRAMS, OR SAFETY PRACTICES, NOR SHALL THE DESIGN ENGINEER HAVE ANY AUTHORITY OR RESPONSIBILITY TO DIRECT OR STOP THE WORK OF ANY CONTRACTOR.
4. ANY CHANGES MADE BY THE CONTRACTOR TO THE CONTRACTUALLY AGREED UPON SCOPE, SCHEDULE AND/OR FEE, WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF THE OWNER, IS THE SOLE RESPONSIBILITY AND LIABILITY OF THE CONTRACTOR. THE DESIGN ENGINEER IS NOT RESPONSIBLE FOR DIRECTING, IMPLICITLY OR EXPLICITLY ANY SUCH CHANGES AND THE CONTRACTOR ASSUMES ALL RISK OF UNDERTAKING ANY SUCH CHANGES.
5. THE CONTRACTOR SHALL DEFEND, INDEMNIFY, AND HOLD THE DESIGN ENGINEER AND OWNER, THEIR OFFICERS, AGENTS AND EMPLOYEES, HARMLESS FROM ANY AND ALL CLAIMS, DEMANDS, JUDGMENTS, LOSS, DAMAGES, COSTS, EXPENSES, FEES OR LIABILITY WHATSOEVER, REAL OR ALLEGED, IN CONNECTION WITH, IN WHOLE OR IN PART, DIRECTLY OR INDIRECTLY, THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR THE DESIGN ENGINEER.
6. IF THERE ARE ANY QUESTIONS REGARDING THESE PLANS, THE CONTRACTOR SHALL REQUEST IN WRITING FROM THE DESIGN ENGINEER AND THE OWNER, AN INTERPRETATION BEFORE PERFORMING ANY RELATED OR IMPACTED WORK.
7. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR PREPARING ITS BID, IN WHOLE AND IN PART, BASED UPON THE DESIGN SHOWN ON THESE PLANS. THE CONTRACTOR SHALL VERIFY ALL QUANTITIES SHOWN ON THESE PLANS PRIOR TO UTILIZING ANY SUCH INFORMATION IN ITS BID AND SHALL BE SOLELY RESPONSIBLE FOR ITS BID. THE DESIGN ENGINEER MAKES NO WARRANTY OR REPRESENTATION AS TO THE SUITABILITY OF ANY INFORMATION SHOWN HEREON FOR DETERMINING A CONTRACTOR BID.
8. ANYTHING MENTIONED IN THE SPECIFICATIONS, IF ANY, AND NOT SHOWN ON THE DRAWINGS, OR SHOWN ON THE DRAWINGS AND NOT MENTIONED IN THE SPECIFICATIONS, SHALL BE OF LIKE EFFECT AS IF SHOWN OR MENTIONED IN BOTH.
9. THE EXISTENCE, LOCATION, TYPE, CONDITION AND SIZE OF UNDERGROUND UTILITIES, FACILITIES OR STRUCTURES ("FACILITIES") SHOWN ON THESE PLANS WAS OBTAINED FROM A SEARCH OF READILY AVAILABLE RECORDS, OR AS PROVIDED BY OTHERS. NO REPRESENTATION IS MADE AS TO THE ACCURACY OR COMPLETENESS OF SAID INFORMATION. THE CONTRACTOR SHALL CONFIRM SAID INFORMATION BY FIELD MEASUREMENTS, OBSERVATIONS AND WHATEVER MEANS NECESSARY, PRIOR TO CONSTRUCTION. THE CONTRACTOR WILL IMMEDIATELY INFORM THE DESIGN ENGINEER IN WRITING IF ANY DISCREPANCIES OR CONFLICTING INFORMATION IS FOUND. THE CONTRACTOR SHALL PROTECT THE FACILITIES SHOWN HEREON AND ANY OTHERS NOT OF RECORD OR NOT SHOWN ON THESE PLANS, AS NEEDED. ALL DAMAGES THERETO CAUSED BY THE CONTRACTOR SHALL BE REPAIRED TO THE APPROPRIATE SPECIFICATIONS AND STANDARDS AT THE SOLE EXPENSE OF THE CONTRACTOR.
10. THE CONTRACTOR SHALL MAKE EXPLORATORY EXCAVATIONS AND LOCATE EXISTING UNDERGROUND FACILITIES AS NEEDED, SUFFICIENTLY AHEAD OF CONSTRUCTION TO PERMIT REVISIONS TO PLANS IF REVISIONS ARE NECESSARY DUE TO THE ACTUAL LOCATION, SIZE, TYPE, OR CONDITION OF EXISTING FACILITIES DIFFERING FROM WHAT IS SHOWN ON THESE PLANS. THE CONTRACTOR SHALL BE FULLY AND SOLELY RESPONSIBLE FOR ALL DAMAGES DUE TO THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ALL SUCH FACILITIES WHETHER NOTED ON THESE PLANS OR NOT. THE DESIGN ENGINEER ASSUMES NO LIABILITY FOR ANY DAMAGES SUSTAINED OR COST INCURRED BECAUSE OF THE OPERATIONS IN THE VICINITY OF EXISTING FACILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL OF ANY DAMAGE TO THE EXISTING IMPROVEMENTS AND REPLACEMENT TO THE SATISFACTION OF THE OWNER AND/OR AUTHORITY HAVING JURISDICTION AS NEEDED.
11. THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES PRIOR TO STARTING WORK ADJACENT TO, ABOVE OR BELOW THEIR FACILITIES AND SHALL COORDINATE ALL WORK WITH UTILITY COMPANY REPRESENTATIVES.
12. THE CONTRACTOR SHALL VERIFY ALL EXISTING AND PROPOSED GRADING ELEMENTS BEFORE THE START OF CONSTRUCTION AND SHALL IMMEDIATELY NOTIFY THE DESIGN ENGINEER OF ANY DISCREPANCIES.
13. THE EARTHWORK QUANTITIES SHOWN ON THESE PLANS ARE APPROXIMATE, IN PLACE VOLUMES AND ARE FOR PERMIT PURPOSES ONLY. NO REPRESENTATIONS OF SUCH QUANTITIES OR A BALANCED SITE CONDITION ARE MADE BY THE DESIGN ENGINEER. IN PLACE VOLUMES ARE MEASURED FROM EXISTING SURFACE TO PROPOSED SURFACE. EXISTING SURFACE IS DEFINED BY THE CONTOURS AND SPOT GRADES ON THE BASE TOPOGRAPHIC SURVEY PROVIDED BY NVS SURVEY DATED 6-23-19. PROPOSED SURFACE IS DEFINED BY THE FINAL GRADES AS INDICATED ON THE GRADING PLANS HEREIN. THE EARTHWORK QUANTITIES DO NOT INCLUDE ANY FACTORS FOR BULKING; SHRINKAGE; OVER EXCAVATION; RE-COMPACTION; REMEDIATION; GROUND IMPROVEMENTS; CONSTRUCTION METHODS AND/OR SEQUENCING; SPOILS; LANDSCAPING; PAVEMENT, SLAB, FOOTING, SIDEWALK, OR SUBBASE THICKNESSES, OR ANY OTHER SUCH FACTORS. THE CONTRACTOR SHALL RELY SOLELY ON THEIR OWN EARTHWORK ESTIMATES FOR BIDDING PURPOSES.
14. PROPOSED BUILDING PAD ELEVATIONS, IF SHOWN, ARE BASED ON INFORMATION AVAILABLE AT THE TIME OF PREPARATION OF THESE PLANS. CONTRACTOR SHALL CONFIRM SLAB STRUCTURAL SECTION THICKNESSES AND PAD PREPARATION REQUIREMENTS PRIOR TO GRADING FINISHED PADS.
15. THE CONTRACTOR SHALL THOROUGHLY CHECK COORDINATION OF CIVIL, LANDSCAPE, MEP, ARCHITECTURAL AND ALL OTHER PLANS PRIOR TO COMMENCING CONSTRUCTION. SHOULD DISCREPANCIES OR CONFLICTING INFORMATION BE FOUND ON ANY PLANS, OR IN ANY SPECIFICATIONS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER AND DESIGN ENGINEER IN WRITING BEFORE PROCEEDING WITH THE WORK IN QUESTION.
16. THE PROPOSED BUILDING FOOTPRINT(S) SHOWN IN THESE PLANS WAS PROVIDED TO THE DESIGN ENGINEER BY THE PROJECT ARCHITECT AT THE TIME OR PREPARATION OF THESE PLANS. THE DESIGN ENGINEER MAKES NO REPRESENTATION AS TO THE ACCURACY OF THIS FOOTPRINT AND THE CONTRACTOR IS SOLELY RESPONSIBLE FOR CONFIRMING WITH THE RELEVANT DESIGN TEAM PROFESSIONALS, AND USING THE FINAL, CORRECT VERSION OF THE FOOTPRINT. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR CONFIRMING THE BUILDING'S FINAL POSITION ON THE SITE BASED UPON THE FINAL ARCHITECTURAL FOOTPRINT, CIVIL PLANS, SURVEY AND ANY OTHER RELEVANT DOCUMENTS. ANY DIFFERENCES FOUND SHALL BE IMMEDIATELY REPORTED TO THE DESIGN ENGINEER AND OWNER/PROJECT ARCHITECT.
17. THE CONTRACTOR SHALL TAKE ALL NECESSARY STEPS TO PROTECT THE PROJECT PROPERTY FROM ANY EROSION AND SILTATION THAT RESULT FROM CONTRACTOR OPERATIONS, BY APPROPRIATE MEANS, OR BY SPECIFIC MEANS DESCRIBED IN THE PROJECT'S PLANS, SPECIFICATIONS OR STORM WATER POLLUTION PREVENTION REPORT, UNTIL SUCH TIME THAT THE PROJECT IS COMPLETED AND ACCEPTED FOR MAINTENANCE BY WHOMEVER IS TO BE ULTIMATELY RESPONSIBLE FOR MAINTENANCE AND THE AGENCY HAVING JURISDICTION. THE DESIGN ENGINEER SHALL HAVE NO RESPONSIBILITY TO DIRECT THE CONTRACTOR REGARDING THE MEANS AND METHODS OF STORMWATER POLLUTION PREVENTION, SEQUENCE, OR SCHEDULE.
18. ALL SHOP DRAWINGS, RFIS AND ANY OTHER DOCUMENTS THAT REQUIRE DESIGN ENGINEER REVIEW SHALL BE SUBMITTED BY THE CONTRACTOR SUFFICIENTLY IN ADVANCE OF CONSTRUCTION OF THAT ITEM, TO ALLOW ADEQUATE REVIEW, COORDINATION AND RESPONSE. SAID DOCUMENTS ARE NOT A DIRECTION FROM THE DESIGN ENGINEER TO MODIFY THE CONTRACTORS SCOPE, SCHEDULE OR PRICE, AND THE CONTRACTOR WARRANTS NOT TO USE THEM AS SUCH.
19. THE CONTRACTOR SHALL ENSURE APPROPRIATE LICENSED PROFESSIONALS HAVE BEEN RETAINED BY THE CONTRACTOR TO PROVIDE ANY/ALL REQUIRED PROJECT CERTIFICATIONS AS MAY BE REQUIRED BY ANY AUTHORITY HAVING JURISDICTION. THE DESIGN ENGINEER WILL NOT PROVIDE ANY PROJECT CERTIFICATIONS UNLESS SPECIFICALLY RETAINED BY THE OWNER TO PROVIDE LIMITED SERVICES.
20. CONTRACTOR SHALL RETAIN A LICENSED SURVEYOR TO DOCUMENT ALL CHANGES TO THE APPROVED CONSTRUCTION DOCUMENTS DURING CONSTRUCTION. THE LICENSED SURVEYOR SHALL PREPARE A SIGNED AND SEALED "AS-BUILT" DRAWING UPON COMPLETION OF CONSTRUCTION. THE DESIGN ENGINEER IS NOT RESPONSIBLE FOR THE PREPARATION IN WHOLE OR IN PART OF THE "AS-BUILT" DRAWINGS.
21. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY MONUMENTATION AND BENCHMARKS WHICH WILL BE DISTURBED OR DESTROYED BY CONSTRUCTION. SUCH POINTS SHALL BE REFERENCED AND REPLACED WITH APPROPRIATE MONUMENTATION BY A LICENSED LAND SURVEYOR OR REGISTERED CIVIL ENGINEER AUTHORIZED TO PRACTICE LAND SURVEYING. A CORNER RECORD OR RECORD OF SURVEY, AS APPROPRIATE, SHALL BE FILED BY THE LICENSED LAND SURVEYOR OR REGISTERED CIVIL ENGINEER AS REQUIRED BY THE MOST CURRENT VERSION OF THE LAND SURVEYORS ACT.

GENERAL DEMOLITION NOTES

1. THE CONTRACTOR SHALL CLEAR THE PROJECT SITE AREA WITHIN THE CONFINES OF THE DEMOLITION LIMIT LINE. THE CONTRACTOR SHALL CAP IN PLACE ALL EXISTING UTILITIES AT THE DEMOLITION LIMIT LINE, UNLESS NOTED ON THE PLAN. THE CONTRACTOR SHALL DEMOLISH AND REMOVE FROM THE SITE ALL EXISTING UTILITY STRUCTURES, PLANTERS, TREES, AND ALL OTHER SITE FEATURES, UNLESS OTHERWISE NOTED ON THE PLAN.
2. DEMOLITION AND REMOVAL OF PAVEMENT INCLUDES PAVEMENT THICKNESS AS WELL AS BASE COURSE THICKNESS.
3. REMOVAL OF LANDSCAPING SHALL INCLUDE ROOTS AND ORGANIC MATERIAL.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ANY AND ALL PERMITS AND SHALL PAY ALL FEES NECESSARY FOR ENCROACHMENT, GRADING, DEMOLITION, AND DISPOSAL OF SAID MATERIALS AS REQUIRED BY PRIVATE, LOCAL AND STATE JURISDICTIONS.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR A SITE INSPECTION TO FULLY ACKNOWLEDGE THE EXTENT OF DEMOLITION WORK.
6. THE CONTRACTOR SHALL VERIFY AND LOCATE ALL EXISTING ABOVE AND UNDERGROUND UTILITIES. LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE AND ARE SHOWN FOR GENERAL INFORMATION ONLY.
7. DAMAGE TO ANY EXISTING UTILITIES AND SERVICES TO REMAIN SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. CONTRACTOR SHALL REPAIR AND/OR REPLACE IN KIND.
8. EROSION CONTROL MEASURES SHALL BE IMPLEMENTED TO PREVENT DEBRIS AND UNSUITABLE MATERIALS FROM ENTERING STORM DRAINS, SANITARY SEWERS AND STREETS.
9. DUST CONTROL MEASURES SHALL BE IMPLEMENTED DURING DEMOLITION.
10. DEMOLITION IS LIMITED TO WITHIN THE DEMOLITION LIMIT LINE UNLESS OTHERWISE NOTED.
11. CONTRACTOR SHALL REMOVE DEMOLISHED MATERIALS FROM THE SITE AS WORK PROGRESSES.
12. THE DRAWINGS MAY NOT INDICATE IN DETAIL ALL DEMOLITION WORK TO BE PERFORMED. THE CONTRACTOR SHALL EXAMINE EXISTING CONDITIONS TO DETERMINE THE FULL EXTENT OF DEMOLITION.
13. ALL DEMOLITION SHALL COMPLY WITH CHAPTER 33 OF THE CALIFORNIA FIRE CODE.
14. CONTRACTOR TO USE CARE IN HANDLING DEBRIS FROM SITE TO ENSURE THE SAFETY OF THE PUBLIC. HAUL ROUTE TO BE CLOSELY MONITORED FOR DEBRIS OR MATERIALS TRACKED ONTO ADJOINING ROADWAYS, SIDEWALKS, ETC. ROADWAYS AND WALKWAYS TO BE CLEARED DAILY OR AS NECESSARY TO MAINTAIN PUBLIC SAFETY.
15. SEE EROSION CONTROL PLAN FOR REMAINING INLET PROTECTION AND EROSION PREVENTION.
16. CONTRACTOR TO INSTALL CHAIN LINK FENCE WITH MESH SCREEN TO PROTECT PUBLIC FROM ENTERING CONSTRUCTION AREA.
17. CONTINUOUS ACCESS SHALL BE MAINTAINED FOR SURROUNDING PROPERTIES AT ALL TIMES DURING DEMOLITION OF EXISTING FACILITIES. CONTRACTOR SHALL MAINTAIN PEDESTRIAN AND VEHICULAR ACCESS TO ADJACENT FACILITIES DURING CONSTRUCTION. ADEQUATE WAYFINDING SIGNAGE AS APPROVED BY CITY OF MURRIETA SHALL BE APPROVED TO DIRECT PEDESTRIANS AN VEHICLES AROUND THE CONSTRUCTION AREA. THE CONTRACTOR SHALL COORDINATE WITH STAFF TO MINIMIZE IMPACTS TO ONGOING OPERATIONS.

SPECIAL NOTES - EROSION CONTROL

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

SPECIAL NOTES - EROSION CONTROL (CONT.)

9. TEMPORARY EROSION CONTROL DEVICES SHOWN ON THE PLAN WHICH INTERFERE WITH THE WORK SHALL BE RELOCATED OR MODIFIED AS AND WHEN THE CONTRACTOR AND/OR THE INSPECTOR SO DIRECTS AS THE WORK PROGRESSES.
10. ALL STANDARDS REFERENCED FROM 2009 CASQA CONSTRUCTION BMP BOOK.
11. SHOULD DEWATERING AT THE SITE BE REQUIRED, A SEPARATE PERMIT FROM THE RWQCB MAY BE REQUIRED. CONTRACTOR IS RESPONSIBLE FOR ALL RWQCB PERMITTING.

SPECIAL NOTES - MAINTENANCE

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

1. INLET PROTECTION DEVICES AND BARRIERS SHALL BE REPAIRED OR REPLACED IF THEY SHOW SIGNS OF UNDERMINING OR DETERIORATION.
2. ALL SEEDED AREAS SHALL BE CHECKED REGULARLY TO SEE THAT A GOOD STAND IS MAINTAINED. AREAS SHOULD BE FERTILIZED, WATERED, AND RESEEDED AS NEEDED.
3. THE CONSTRUCTION EXITS SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOW OF MUD ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING OF THE CONSTRUCTION EXITS AS CONDITIONS DEMAND.
4. THE TEMPORARY PARKING AND STORAGE AREA SHALL BE KEPT IN GOOD CONDITION (SUITABLE FOR PARKING AND STORAGE). THIS MAY REQUIRE PERIODIC TOP DRESSING OF THE TEMPORARY PARKING AREA AS CONDITIONS DEMAND.

SPECIAL NOTES - CONSTRUCTION

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

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

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A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

NOTE:

WORK CONTAINED WITHIN THESE PLANS SHALL NOT COMMENCE UNTIL AN ENCROACHMENT PERMIT AND/OR A GRADING PERMIT HAS BEEN ISSUED.

The private engineer signing these plans is responsible for assuring the accuracy and acceptability of the design hereon. In the event of discrepancies arising after City acceptance or during construction, the private engineer shall be responsible for determining an acceptable solution and revising the plans for acceptance by the City.

MARK	BY	DATE	REVISIONS	APPR.	DATE
ENGINEER				CITY	

CITY OF WILDOMAR — Est. 1886 — Inc. 2008 — Tradition ~ Opportunity ~ Progress

CITY OF WILDOMAR
ACCEPTED BY:

Date:

Daniel A. York, Director of Public Works/ City Engineer, PE 43212

ACCEPTANCE AS TO CONFORMANCE WITH APPLICABLE CITY STANDARDS AND PRACTICES

SEAL-ENGINEER:
REGISTERED PROFESSIONAL ENGINEER
NIKKI D. KERRY
RCE NO. 58449
CIVIL
STATE OF CALIFORNIA

Kimley»Horn
1100 Town and Country Road, Suite 700
Orange, CA 92868
714.939.1030 F 714.938.9488
www.kimley-horn.com

PREPARED BY: NIKKI KERRY
R.C.E. No. 58449 EXP. 12/31/22

BENCHMARK:
Elevation = 1317.14
Datum = NAD 83
BENCHMARK # ____________

THIS SURVEY WAS PERFORMED ON 04/23/19 BY JOEL PAULSON L.S. 6637

SCALE:
H: As Noted V: As Noted

PP, CUP, PM, TM, etc. Project XX-XXXX

CITY OF WILDOMAR
INLAND VALLEY MEDICAL CENTER
ONSITE IMPROVEMENT PLANS
DESIGN ENGINEER'S NOTES

SHEET No. CGD0.2

OF 69 SHTS

ISSUED FOR BID SET 5/21/21

LEGAL DESCRIPTION

PRELIMINARY TITLE REPORT No. NCS-915190-ORL, DATED JULY 16, 2018.

REAL PROPERTY IN THE CITY OF WILDOMAR, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, DESCRIBED AS FOLLOWS:

PARCEL A: 380-250-009-9 AND 380-250-027-5

PARCEL 1 AND PARCEL 3 OF PARCEL MAP 25065 AS SHOWN BY MAP ON FILE IN BOOK 168, PAGES 92 AND 93 OF PARCEL MAPS, RIVERSIDE COUNTY RECORDS.

PARCEL B: APN: 380-250-026-4

PARCEL 2 OF PARCEL MAP NO. 25065, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, RECORDED JANUARY 30, 1991 IN BOOK 168, PAGES 92 AND 93 OF PARCEL MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF RIVERSIDE COUNTY.

PARCEL B1:

A NON-EXCLUSIVE EASEMENT FOR INGRESS AND EGRESS OVER THAT CERTAIN PRIVATE EASEMENT OF VARYING WIDTH LYING WITHIN THE NORTH AND NORTHWEST PORTIONS OF PARCEL 1 OF PARCEL MAP NO. 25065 ON FILE IN BOOK 168 PAGES 92 AND 93 OF PARCEL MAPS, RIVERSIDE COUNTY RECORDS.

PARCEL C: APNS 380-260-029-8 AND 380-260-037-5

PARCEL 1 AND PARCEL 2 OF PARCEL MAP 13346 AS SHOWN BY MAP ON FILE IN BOOK 70, PAGE 57 OF PARCEL MAPS, RIVERSIDE COUNTY RECORDS, TOGETHER WITH SUCH RIGHTS AS WOULD PASS BY OPERATION OF LAW ACCURE IN AND TO LETTERED LOT "A" AND LETTERED LOT "B".

EXCEPTING THEREFROM THAT PORTION OF PARCEL 2, CONVEYED TO ELSINORE VALLEY MUNICIPAL WATER DISTRICT BY DEED RECORDED ON JUNE 28, 2006 AS INSTRUMENT NO. 2006-0467701 OF OFFICIAL RECORDS OF SAID COUNTY.

PARCEL D: APNS: 380-260-001-2 AND 380-260-009-0

LOT 4 OF WENTWORTH'S SUBDIVISION, AS SHOWN BY MAP ON FILE IN BOOK 14, PAGE(S) 664 THEREOF OF MAPS, RECORDS OF SAN DIEGO COUNTY, CALIFORNIA;

EXCEPTING THEREFROM THAT PORTION CONVEYED TO THE STATE OF CALIFORNIA FOR FREEWAY PURPOSES BY DEED RECORDED APRIL 06, 1955 AS INSTRUMENT NO. 22388 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA;

ALSO EXCEPTING THEREFROM THAT PORTION CONVEYED TO THE STATE OF CALIFORNIA FOR FREEWAY PURPOSES BY DEED RECORDED MAY 24, 1978

MONUMENT NOTES

▲ DENOTES FOUND MONUMENTS AS NOTED BELOW

1. FOUND 1.5IN IRON PIPE WITH PLASTIC CAP, MARKED "LS 5464"; ACCEPTED AS THE W. CORNER OF PARCEL 2 PER (R1)
2. FOUND 1IN IRON PIPE (OPEN); ACCEPTED AS N. CORNER OF PARCEL 2 PER (R1)
3. POINT ON CENTERLINE ESTABLISHED FROM FOUND LEAD & TACK MONUMENTS SET IT TOP OF CURB; ACCEPTED AS TIES TO CENTERLINE, NO RECORD
4. FOUND 1.5IN IRON PIPE WITH PK NAIL IN TOP OF CURB IN LIEU OF LEAD & TACK SET IN TOP OF CURB; S84°47'07"W 0.54' FROM THE OFFSET OF THE SE COR. OF PARCEL 2 PER (R1)
5. FOUND 1.5IN IRON PIPE WITH PK NAIL IN TOP OF CURB IN LIEU OF LEAD & TACK SET IN TOP OF CURB; S29°46'27"W 0.61' FROM THE ANGLE POINT OFFSET ON THE SE'LY LINE OF PARCEL 2 PER (R1)
6. FOUND 1.5IN IRON PIPE (OPEN) IN TOP OF CURB IN LIEU OF LEAD & TACK SET IN TOP OF CURB; ACCEPTED AS ANGLE POINT IN SE'LY LINE OF PARCEL 2 PER (R1)
7. FOUND 1IN IRON PIPE WITH TAG STAMPED "L.S. 3698"; ACCEPTED AS THE INTERSECTION OF THE SW'LY RIGHT-OF-WAY LINE OF HWY 71 WITH THE N'LY LINE OF LOT 4 (R2); PER (R2)
8. FOUND 1IN IRON PIPE (BROKEN); LIES 0.15' SOUTH OF & 0.15' EAST OF THE INTERSECTION OF THE NE'LY RIGHT-OF-WAY LINE OF HWY 71 WITH THE N'LY LINE OF LOT 4 (R2)
9. FOUND 1IN IRON PIPE WITH PLASTIC CAP (ILLEGIBLE); LIES 0.50' EAST OF SW CORNER OF PARCEL 1 (R1)
10. FOUND 1IN IRON PIPE WITH PK NAIL (BROKEN); ACCEPTED AS THE SE CORNER OF LOT 2 (R2); PER (R2)
11. FOUND 1IN IRON PIPE WITH TAG STAMPED "L.S. 3698"; ACCEPTED AS THE INTERSECTION OF THE SW'LY RIGHT-OF-WAY LINE OF HWY 71 WITH THE E'LY LINE OF LOT 4 (R2); PER (R2)
12. FOUND 1 1/4IN IRON PIPE (OPEN); ACCEPTED A POINT ON THE W'LY LINE OF PARCEL 1 OF P.M. NO. 12198; PER (R4)
13. FOUND 1 1IN IRON PIPE WITH TAG STAMPED "L.S. 3698" ACCEPTED AS THE NW CORNER OF LOT 7 (R2); PER (R2)

THIS PLAT WAS PREPARED BY ME OR UNDER MY DIRECTION IN CONFORMANCE WITH THE LAND SURVEYOR'S ACT ON APRIL 22, 2019.

Joel Paulson

JOEL F. PAULSON LS 6637

BASIS OF BEARINGS

BEARINGS ARE REFERENCED TO GRID NORTH AS DEFINED BY THE CALIFORNIA COORDINATE SYSTEM 1983, ZONE VI.

BASIS OF COORDINATES

COORDINATES ARE REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 AND ARE EXPRESSED IN TERMS OF THE CALIFORNIA COORDINATE SYSTEM 1983, ZONE VI, AT EPOCH 2010.0 AND ARE BASED ON NGS OPUS SOLUTION AT CONTROL POINT #999, ESTABLISHED FROM CALIFORNIA CORS STATIONS "DG9740", "AF9684" AND "DH7093". POINT #999 VALUE = N:2159624.41 SFT, E: 6260821.96 SFT. ELEVATION = 1317.14 SFT.

GENERAL NOTES

1. THE BASIS FOR THIS MAP IS A PRELIMINARY TITLE REPORT PREPARED BY CHICAGO TITLE COMPANY UNDER REPORT No. 12207683-993-SD2-CFU DATED MAY 13, 2016. NO RESPONSIBILITY AS TO THE ACCURACY OF THIS TITLE REPORT IS ASSUMED BY THIS SURVEY.

2. GEOGRAPHICALLY LOCATABLE ITEMS FROM SAID TITLE REPORT (SUCH AS EASEMENTS) WHICH AFFECT THE SUBJECT PROPERTY AS DESCRIBED HEREON, ARE SHOWN ON THIS MAP AND ARE NUMERICALLY KEYED TO SAID TITLE REPORT. OTHER ITEMS LISTED IN SCHEDULE "B" OF SAID TITLE REPORT WHICH MAY AFFECT THE SUBJECT PROPERTY ARE ALSO NUMERICALLY KEYED TO SAID TITLE REPORT AND ARE AS FOLLOWS:

1. GENERAL AND SPECIAL TAXES AND ASSESSMENTS FOR THE FISCAL YEAR 2018-2019, A LIEN NOT YET DUE OR PAYABLE.

2. THE LIEN OF SUPPLEMENTAL TAXES, IF ANY, ASSESSED PURSUANT TO CHAPTER 3.5 COMMENCING WITH SECTION 75 OF THE CALIFORNIA REVENUE AND TAXATION CODE.

THE FOLLOWING MATTERS AFFECT PARCELS A AND B:

(3) AN EASEMENT FOR INGRESS, EGRESS AND INCIDENTAL PURPOSES, RECORDED AUGUST 29, 1928 IN BOOK 775, PAGE 491 OF DEEDS OF OFFICIAL RECORDS IN FAVOR OF F.V. IRELAND AND BELLE I. IRELAND AFFECTS: AS DESCRIBED THEREIN THE LOCATION OF THE EASEMENT CANNOT BE DETERMINED FROM RECORD INFORMATION.

(4) ABUTTER'S RIGHTS OF INGRESS AND EGRESS TO OR FROM FREEWAY ADJOINING THE HEREIN DESCRIBED PROPERTY HAVE BEEN RELINQUISHED IN THE DOCUMENT RECORDED APRIL 06, 1955 IN BOOK 1718, PAGE 563 AND MAY 24, 1978 AS INSTRUMENT NOS. 104062 AND 104063, ALL OF OFFICIAL RECORDS.

(5) ~~AN EASEMENT FOR INGRESS, EGRESS, PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED MARCH 02, 1977 AS INSTRUMENT NO. 34360 OF OFFICIAL RECORDS IN FAVOR OF HONG KONG BANK OF CALIFORNIA~~ **(TO BE VACATED)**

(6) COVENANTS, CONDITIONS, RESTRICTIONS AND EASEMENTS IN THE DOCUMENT RECORDED AUGUST 04, 1977 AS INSTRUMENT NO. 149760 OF OFFICIAL RECORDS.

(7) ~~AN EASEMENT FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED NOVEMBER 01, 1977 AS INSTRUMENT NO. 216958, DECEMBER 29, 1978 AS INSTRUMENT NO. 274899 AND APRIL 03, 1979 AS INSTRUMENT NO. 65479 ALL OF OFFICIAL RECORDS IN FAVOR OF OAK SPRINGS RANCHO, A LIMITED PARTNERSHIP AFFECTS: AS DESCRIBED THEREIN~~ **(TO BE VACATED)**

(8) ~~THE EFFECT OF A DECLARATION OF DEDICATION DATED NOVEMBER 07, 1977, EXECUTED BY OAK SPRINGS RANCHO, PURPORTING TO IRREVOCABLY DEDICATE IN PERPETUITY FOR PUBLIC ROAD PURPOSES, PUBLIC UTILITY AND PUBLIC SERVICES, THE PROPERTY DESCRIBED THEREIN, RECORDED NOVEMBER 08, 1977 AS INSTRUMENT NO. 223244 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA~~ **(TO BE VACATED)**

(9) AN EASEMENT FOR POLE LINES, CONDUITS AND UNDERGROUND FACILITIES AND INCIDENTAL PURPOSES, RECORDED MAY 24, 1978 AS INSTRUMENT NO. 104319 OF OFFICIAL RECORDS IN FAVOR OF SOUTHERN CALIFORNIA EDISON COMPANY, A CORPORATION.

(10) ~~AN EASEMENT FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED DECEMBER 29, 1978 AS INSTRUMENT NO. 274899 OF OFFICIAL RECORDS IN FAVOR OF OAK SPRINGS RANCHO.~~ **(TO BE VACATED)**

(11) THE EFFECT OF A MAP PURPORTING TO SHOW THE LAND AND OTHER PROPERTY, FILED BOOK 65, PAGE 9 OF RECORD OF SURVEYS.

(12) AN EASEMENT FOR THE HEREINAFTER SPECIFIC PURPOSE AND INCIDENTAL PURPOSES, AS SHOWN ON A RECORD OF SURVEY OF SAID LAND, ON FILE IN BOOK 65, PAGE 9 OF RECORDS OF SURVEY, RECORDS OF RIVERSIDE COUNTY, CALIFORNIA.

(13) AN EASEMENT FOR PUBLIC ROAD AND DRAINAGE PURPOSES AND INCIDENTAL PURPOSES, RECORDED MAY 19, 1986 AS INSTRUMENT NO. 115666 AND RE-RECORDED JUNE 05, 1986 AS INSTRUMENT NO. 130637 BOTH OF OFFICIAL RECORDS IN FAVOR OF COUNTY OF RIVERSIDE.

(14) AN EASEMENT FOR PUBLIC ROAD AND DRAINAGE PURPOSES AND INCIDENTAL PURPOSES, RECORDED JUNE 05, 1986 AS INSTRUMENT NO. 130638 OF OFFICIAL RECORDS IN FAVOR OF COUNTY OF RIVERSIDE.

(15) AN EASEMENT FOR PUBLIC ROAD AND DRAINAGE PURPOSES AND INCIDENTAL PURPOSES, RECORDED JUNE 05, 1986 AS INSTRUMENT NO. 130639 OF OFFICIAL RECORDS IN FAVOR OF COUNTY OF RIVERSIDE.

(16) AN EASEMENT FOR COMMUNICATION SYSTEMS AND INCIDENTAL PURPOSES, RECORDED JUNE 05, 1986 AS INSTRUMENT NO. 130904 OF OFFICIAL RECORDS IN FAVOR OF SOUTHERN CALIFORNIA EDISON COMPANY.

(17) AN EASEMENT FOR UNDERGROUND ELECTRICAL SUPPLY SYSTEMS AND INCIDENTAL PURPOSES, RECORDED JUNE 05, 1986 AS INSTRUMENT NO. 130905 OF OFFICIAL RECORDS IN FAVOR OF SOUTHERN CALIFORNIA EDISON COMPANY, A CORPORATION

(18) COVENANTS, CONDITIONS, RESTRICTIONS AND EASEMENTS IN THE DOCUMENT RECORDED MAY 15, 1991 AS INSTRUMENT NO. 162947 OF OFFICIAL RECORDS.

(19) AN EASEMENT FOR ACCESS AND PUBLIC UTILITY AND INCIDENTAL PURPOSES, RECORDED SEPTEMBER 21, 1988 AS INSTRUMENT NO. 273068 OF OFFICIAL RECORDS IN FAVOR OF BENNETT AND JEAN CORAZZA AND HARRY AND PHYLLIS WERNER.

(20) THE EFFECT OF AN ENVIRONMENTAL CONSTRAINT NOTE AFFECTING SAID MAP ON FILE IN THE OFFICE OF THE RIVERSIDE COUNTY SURVEYOR, IN E.C.S. BOOK 22, PAGE(S) 14..

(20) AN EASEMENT FOR INGRESS, EGRESS AND INCIDENTAL PURPOSES SHOWN OR DEDICATED ON THE MAP OF PARCEL MAP 25065 RECORDED JANUARY 30, 1991 AND ON FILE IN BOOK 168, PAGE 92, OF PARCEL MAPS.

(22) AN EASEMENT FOR POLE LINES, CONDUITS OR UNDERGROUND FACILITIES AND INCIDENTAL PURPOSES, RECORDED MAY 18, 1989 AS INSTRUMENT NO. 161722 OF OFFICIAL RECORDS IN FAVOR OF SOUTHERN CALIFORNIA EDISON COMPANY, A CORPORATION.

(23) THE EFFECT OF A NOTICE OF ELECTION BY LAND DIVIDER TO DEFER PAYMENT OF DRAINAGE FEES, AND THAT SAID FEES ARE REQUIRED TO BE PAID AT THE TIME OF ISSUANCE OF EITHER A GRADING OR A BUILDING PERMIT, AND THAT SAID FEES MUST BE PAID AT THE RATE IN EFFECT AT THE TIME OF ISSUANCE OF THE ACTUAL PERMIT, RECORDED JANUARY 30, 1991 AS INSTRUMENT NO. 34360 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA.

(24) AN EASEMENT FOR INGRESS, EGRESS AND INCIDENTAL PURPOSES, RECORDED SEPTEMBER 09, 1999 AS INSTRUMENT NO. 1999-405247 OF OFFICIAL RECORDS IN FAVOR OF UNION BANK OF CALIFORNIA, N.A.

(25) AN EASEMENT FOR INGRESS, EGRESS AND INCIDENTAL PURPOSES, RECORDED JULY 13, 2001 AS INSTRUMENT NO. 2001-324678 OF OFFICIAL RECORDS IN FAVOR OF NORM ENTERPRISES, LLC, A CALIFORNIA LIMITED LIABILITY COMPANY.

GENERAL NOTES (CONT'D)

(26) NOTICE OF PENDENCY OF ACTION RECORDED DECEMBER 12, 2001 AS INSTRUMENT NO. 2001-617337 OF OFFICIAL RECORDS.

(27) THE RIGHTS, IF ANY, OF A CITY, PUBLIC UTILITY OR SPECIAL DISTRICT TO PRESERVE A PUBLIC EASEMENT IN PRIELIPP ROAD AS THE SAME WAS VACATED BY THE DOCUMENT RECORDED MARCH 16, 2006 AS INSTRUMENT NO. 2006- 0186581 OF OFFICIAL RECORDS.

(28) THE TERMS, PROVISIONS AND EASEMENT(S) CONTAINED IN THE DOCUMENT ENTITLED "EASEMENT AND LICENSE FOR SIGNAGE AGREEMENT" RECORDED FEBRUARY 23, 2010 AS INSTRUMENT NO. 2010-0081722 OF OFFICIAL RECORDS.

(29) THE TERMS, PROVISIONS AND EASEMENT(S) CONTAINED IN THE DOCUMENT ENTITLED "DECLARATION OF COVENANTS, CONDITIONS, RESTRICTIONS AND RESERVATION OF EASEMENTS" RECORDED MAY 25, 2012 AS INSTRUMENT NO. 2012-0242041 OF OFFICIAL RECORDS.

(30) A DEED OF TRUST TO SECURE AN ORIGINAL INDEBTEDNESS OF $3,395,000.00 RECORDED SEPTEMBER 28, 2016 AS INSTRUMENT NO. 2016-0423321 OF OFFICIAL RECORDS DATED SEPTEMBER 23, 2016.

(31) A COPY OF THE WRITTEN CONSENT GIVEN BY THE ATTORNEY GENERAL TO THE CONTEMPLATED TRANSACTION, PURSUANT TO CHAPTER 9 OF PART 2 OF DIVISION 2 OF TITLE 1 OF THE CALIFORNIA CORPORATIONS CODE.

(32) ANY RIGHT OF THE UNITED STATES TO RECOVER FUNDS FROM THE OWNER OR FROM ANY TRANSFEREE OF THE LAND, OR OF ANY PORTION THEREOF, BY REASON OF ADVANCES OF FEDERAL FUNDS, INCLUDING BUT NOT LIMITED TO THOSE AUTHORIZED UNDER THE HILL-BURTON ACT OR SIMILAR ACTS OR STATUTES.

(33) RIGHTS OF THE PUBLIC IN AND TO THAT PORTION OF THE LAND LYING WITHIN ANY ROADS, STREETS AND/OR HIGHWAYS.

(34) ANY FACTS, RIGHTS, INTERESTS OR CLAIMS WHICH WOULD BE DISCLOSED BY A CORRECT ALTA/NSPS SURVEY.

(35) RIGHTS OF PARTIES IN POSSESSION.

THE FOLLOWING MATTERS AFFECT PARCEL C:

(36) AN EASEMENT SHOWN OR DEDICATED ON THE MAP FILED OR RECORDED OCTOBER 04, 1979 IN BOOK 70, PAGE 57 OF PARCEL MAP NO. 13346 FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES.

(37) ABUTTER'S RIGHTS OF INGRESS AND EGRESS TO OR FROM FREEWAY ADJOINING THE PROPERTY HAVE BEEN RELINQUISHED IN THE DOCUMENT RECORDED APRIL 06, 1955 IN BOOK 1718, PAGE 563 OF OFFICIAL RECORDS.

(38) ~~AN EASEMENT FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED MARCH 02, 1977 AS INSTRUMENT NO. 34360 OF OFFICIAL RECORDS IN FAVOR OF HONG KONG BANK~~

~~THE RIGHTS OF SAID EASEMENT HAVE BEEN QUITCLAIMED TO OAK SPRINGS ROAD, A LIMITED PARTNERSHIP BY DOCUMENT RECORDED AUGUST 01, 1978 AS INSTRUMENT NO. 160192 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA.~~ **(TO BE VACATED)**

(39) COVENANTS, CONDITIONS, RESTRICTIONS AND EASEMENTS IN THE DOCUMENT RECORDED AUGUST 04, 1977 AS INSTRUMENT NO. 149760 OF OFFICIAL RECORDS.

(40) ~~THE EFFECT OF A DECLARATION OF DEDICATION DATED NOVEMBER 07, 1977, RECORDED NOVEMBER 08, 1977 AS INSTRUMENT NO. 223244 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA.~~ **(TO BE VACATED)**

(41) THE EFFECT OF A RESOLUTION BY THE RIVERSIDE COUNTY BOARD OF SUPERVISORS ACCEPTING SAID OFFER OF DEDICATION FOR THE PURPOSE OF VESTING TITLE IN THE COUNTY OF RIVERSIDE ON BEHALF OF THE PUBLIC, BUT NOT AS PART OF THE COUNTY-MAINTAINED ROAD SYSTEM, RECORDED FEBRUARY 09, 1987 AS INSTRUMENT NO. 36277 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA.

(42) ABUTTER'S RIGHTS OF INGRESS AND EGRESS TO OR FROM FREEWAY ADJOINING THE PROPERTY ON THE SOUTHWEST HAVE BEEN RELINQUISHED IN THE DOCUMENT RECORDED MAY 24, 1978 AS INSTRUMENT NO. 104063 OF OFFICIAL RECORDS.

(43) AN EASEMENT FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED MAY 24, 1978 AS INSTRUMENT NO. 104319 OF OFFICIAL RECORDS IN FAVOR OF SOUTHERN CALIFORNIA EDISON COMPANY

(44) THE EFFECT OF AN AGREEMENT EXECUTED JUNE 09, 1978 BY OAKS SPRINGS RANCHO AND OWNERS OF 20 PARCELS OF LAND LOCATION IN WILDOMAR, RECORDED JUNE 09, 1978 AS INSTRUMENT NO. 118189 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA. REFERENCE HEREBY BEING MADE TO THE RECORD FOR FULL PARTICULARS.

(45) AN EASEMENT FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED JULY 05, 1978 AS INSTRUMENT NO. 137479 OF OFFICIAL RECORDS IN FAVOR OF OAK SPRINGS RANCHO.

(46) THE EFFECT OF A DECLARATION OF DEDICATION AS SHOWN BY THE OWNERS CERTIFICATE ON SAID MAP, PURPORTING TO IRREVOCABLY DEDICATE IN PERPETUITY FOR PUBLIC ROAD PURPOSES, PUBLIC UTILITY AND PUBLIC SERVICES, THE PROPERTY DESCRIBED THEREIN.

THE EFFECT OF A RESOLUTION, ON SAID MAP, BY THE RIVERSIDE COUNTY BOARD OF SUPERVISORS ACCEPTING SAID OFFER OF DEDICATION FOR THE PURPOSE OF VESTING TITLE IN THE COUNTY OF RIVERSIDE ON BEHALF OF THE PUBLIC, BUT NOT AS PART OF THE COUNTY-MAINTAINED ROAD SYSTEM.

(47) THE EFFECT OF A MAP PURPORTING TO SHOW THE LAND AND OTHER PROPERTY, FILED IN BOOK 65, PAGE 9 OF RECORD OF SURVEYS.

(48) AN EASEMENT FOR POLE LINES, CONDUITS OR UNDERGROUND FACILITIES AND INCIDENTAL PURPOSES, RECORDED MARCH 14, 1980 AS INSTRUMENT NO. 50204 OF OFFICIAL RECORDS IN FAVOR OF GENERAL TELEPHONE COMPANY OF CALIFORNIA

(49) AN EASEMENT FOR PUBLIC ROAD AND DRAINAGE PURPOSES, INCLUDING PUBLIC UTILITY AND PUBLIC SERVICES PURPOSES, RECORDED SEPTEMBER 17, 2007 AS INSTRUMENT NO. 2007-0584507 OF OFFICIAL RECORDS IN FAVOR OF COUNTY OF RIVERSIDE, A POLITICAL SUBDIVISION

(50) AN EASEMENT FOR PUBLIC UTILITY AND INCIDENTAL PURPOSES, RECORDED MAY 20, 2008 AS INSTRUMENT NO. 2008-0269350 OF OFFICIAL RECORDS IN FAVOR OF SOUTHERN CALIFORNIA EDISON COMPANY, A CORPORATION, ITS SUCCESSORS AND ASSIGNS.

(51) WATER RIGHTS, CLAIMS OR TITLE TO WATER, WHETHER OR NOT SHOWN BY THE PUBLIC RECORDS.

(52) ANY FACTS, RIGHTS, INTERESTS OR CLAIMS WHICH WOULD BE DISCLOSED BY A CORRECT ALTA/NSPS SURVEY.

(53) RIGHTS OF PARTIES IN POSSESSION.

THE FOLLOWING MATTERS AFFECT PARCEL D:

(54) ABUTTER'S RIGHTS OF INGRESS AND EGRESS TO OR FROM FREEWAY HAVE BEEN RELINQUISHED IN THE DOCUMENT RECORDED APRIL 06, 1955 AS INSTRUMENT NO. 22388 OF OFFICIAL RECORDS.

(55) AN EASEMENT FOR FOR INGRESS, EGRESS AND PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED MARCH 02, 1977 AS INSTRUMENT NO. 34360 OF OFFICIAL RECORDS IN FAVOR OF THE HONG KONG BANK OF CALIFORNIA

(56) COVENANTS, CONDITIONS, RESTRICTIONS AND EASEMENTS IN THE DOCUMENT RECORDED AUGUST 04, 1977 AS INSTRUMENT NO. 149760 OF OFFICIAL RECORDS.

(57) ~~AN OFFER OF DEDICATION FOR PUBLIC ROAD PURPOSES, PUBLIC UTILITY AND PUBLIC SERVICES AND INCIDENTAL PURPOSES, RECORDED NOVEMBER 08, 1977 AS INSTRUMENT NO. 223244 OF OFFICIAL RECORDS TO COUNTY OF RIVERSIDE.~~ **(TO BE VACATED)**

(58) AN EASEMENT FOR EITHER OR BOTH POLE LINES, CONDUITS OR UNDERGROUND FACILITIES AND INCIDENTAL PURPOSES, RECORDED MAY 24, 1978 AS INSTRUMENT NO. 104319 OF OFFICIAL RECORDS IN FAVOR OF SOUTHERN CALIFORNIA EDISON COMPANY, A CORPORATION, ITS SUCCESSORS AND ASSIGNS.

(59) THE TERMS AND PROVISIONS CONTAINED IN THE DOCUMENT ENTITLED "AGREEMENT" RECORDED JUNE 09, 1978 AS INSTRUMENT NO. 118189 OF OFFICIAL RECORDS.

GENERAL NOTES (CONT'D)

(60) AN EASEMENT FOR PUBLIC UTILITY AND INCIDENTAL PURPOSES, RECORDED JUNE 21, 1978 AS INSTRUMENT NO. 126730 OF OFFICIAL RECORDS IN FAVOR OF OAK SPRINGS RANCHO.

(61) THE EFFECT OF A MAP PURPORTING TO SHOW THE LAND AND OTHER PROPERTY, FILED IN BOOK 65, PAGE 9 OF RECORD OF SURVEYS.

(62) AN EASEMENT FOR WATER SEWER LINE AND INCIDENTAL PURPOSES, RECORDED MAY 09, 1986 AS INSTRUMENT NO. 107431 OF OFFICIAL RECORDS IN FAVOR OF ELSINORE VALLEY MUNICIPAL WATER DISTRICT.

(63) THE EFFECT OF A RESOLUTION NO. 87-39 EXECUTED FEBRUARY 03, 1987 BY COUNTY OF RIVERSIDE BOARD OF SUPERVISORS FOR DEDICATION OF PUBLIC ROADS, RECORDED FEBRUARY 09, 1987 AS INSTRUMENT NO. 36277 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA.

(64) THE EFFECT OF A (N) RESOLUTION #92-169 EXECUTED MAY 14, 1991 BY THE BOARD OF SUPERVISORS OF RIVERSIDE COUNTY FOR ESTABLISHING ROAD AND BUDGE BENEFIT DISTRICT, RECORDED APRIL 17, 1992 AS INSTRUMENT NO. 137846 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA. REFERENCE HEREBY BEING MADE TO THE RECORD FOR FULL PARTICULARS.

(65) THE EFFECT OF A DOCUMENT ENTITLED "SPECIAL POWER OF ATTORNEY", RECORDED APRIL 29, 1986 AS INSTRUMENT NO. 97434 OF OFFICIAL RECORDS.

(66) THE EFFECT OF A DOCUMENT ENTITLED "SPECIAL POWER OF ATTORNEY", RECORDED MAY 09, 1986 AS INSTRUMENT NO. 107429 OF OFFICIAL RECORDS.

(67) WATER RIGHTS, CLAIMS OR TITLE TO WATER, WHETHER OR NOT SHOWN BY THE PUBLIC RECORDS.

(68) ANY FACTS, RIGHTS, INTERESTS OR CLAIMS WHICH WOULD BE DISCLOSED BY A CORRECT ALTA/NSPS SURVEY.

(69) RIGHTS OF PARTIES IN POSSESSION.

3. UTILITY EASEMENTS SHOWN (ON SURVEY), IF ANY, REPRESENT INTENDED LOCATIONS OF SAID UTILITY. ACTUAL LOCATION OF UTILITY PIPES AND STRUCTURES MAY OR MAY NOT COINCIDE WITH EASEMENT.

4. THE UTILITIES, SHOWN HEREON, IF ANY, ARE BASED ON FIELD LOCATIONS OF THAT FACILITY. PRIOR TO FUTURE GRADING OR CONSTRUCTION, AN INDEPENDENT SITE VERIFICATION SHOULD BE PERFORMED.

5. BUILDING DIMENSIONS AND FOOTPRINT AREAS WERE DERIVED FROM PHOTOGRAMMETRIC MAPPING AND VISUAL INSPECTION, I.E. THEY WERE NOT DIRECTLY MEASURED.

6. PHOTOGRAMMETRY WAS PREPARED BY NV5, INC. ON 02/19/2019.

SURVEYOR'S NOTES

(A) BUILDING LIES WITHIN EASEMENT #17 (INST. #130905, REC. 6-5-86)

FOR REFERENCE ONLY

DATE:	02-04-2019
TIME:	
SERVER:	
LAYOUT:	
PATH:	N:\18-0000481-01\CADD\SURVEY
DRAWING NAME:	481-01_INLAND-VALLEY-WILDOMAR_EXHIBIT.DWG
PAGE SETUP:	SHT1
DESIGNER:	
PROJ. MGR:	ARJ

NO.	BY	DATE	REVISIONS:
1	JFP	4/21/2019	ADDED DIMENSIONS TO EASEMENTS, ADDED RECORD GAS LINE IN STREET, PLACED ADDITIONAL UTILITY LINES FROM MARKOUT.

CAUTION: The engineer preparing these plans will not be responsible for, or liable for, unauthorized changes to or uses of these plans. All changes to the plans must be in writing and must be approved by the preparer of these plans.

NV5

15092 AVENUE OF SCIENCE, SUITE 200
SAN DIEGO, CA 92128
P: 858.385.0500 WWW.NV5.COM

INLAND VALLEY REGIONAL MEDICAL CENTER
36243 & 36485 Inland Valley Drive
Wildomar, CA

PREPARED FOR: THE BARRIE COMPANY

DATE SUBMITTED: 4-23-19

SHEET NUMBER 1 OF 4 SHEETS

SCALE

JOB NUMBER 18-0000481-01

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MARK	BY	DATE	REVISIONS	APPR.	DATE
	ENGINEER			CITY	

CITY OF WILDOMAR

CITY OF WILDOMAR ACCEPTED BY:

Date:

Daniel A. York, Director of Public Works/ City Engineer, PE 43212

ACCEPTANCE AS TO CONFORMANCE WITH APPLICABLE CITY STANDARDS AND PRACTICES

SEAL ENGINEER: NIKKI D. KERRY RCE NO. 58449 CIVIL STATE OF CALIFORNIA

Kimley»Horn

1100 Town and Country Road, Suite 700
Orange, CA 92868
714.939.1030 F 714.938.9488
www.kimley-horn.com

PREPARED BY: NIKKI KERRY

R.C.E. No. 58449 EXP. 12/31/22

BENCHMARK:
Elevation = 1317.14
Datum = NAD 83
BENCHMARK # ___________

THIS SURVEY WAS PERFORMED ON 04/23/19 BY JOEL PAULSON L.S. 6637

SCALE: H: As Noted V: As Noted

PP, CUP, PM, TM, etc. Project XX-XXXX

CITY OF WILDOMAR
INLAND VALLEY MEDICAL CENTER
ONSITE IMPROVEMENT PLANS
EXISTING CONDITIONS

SHEET No. CGD0.3 OF 69 SHTS

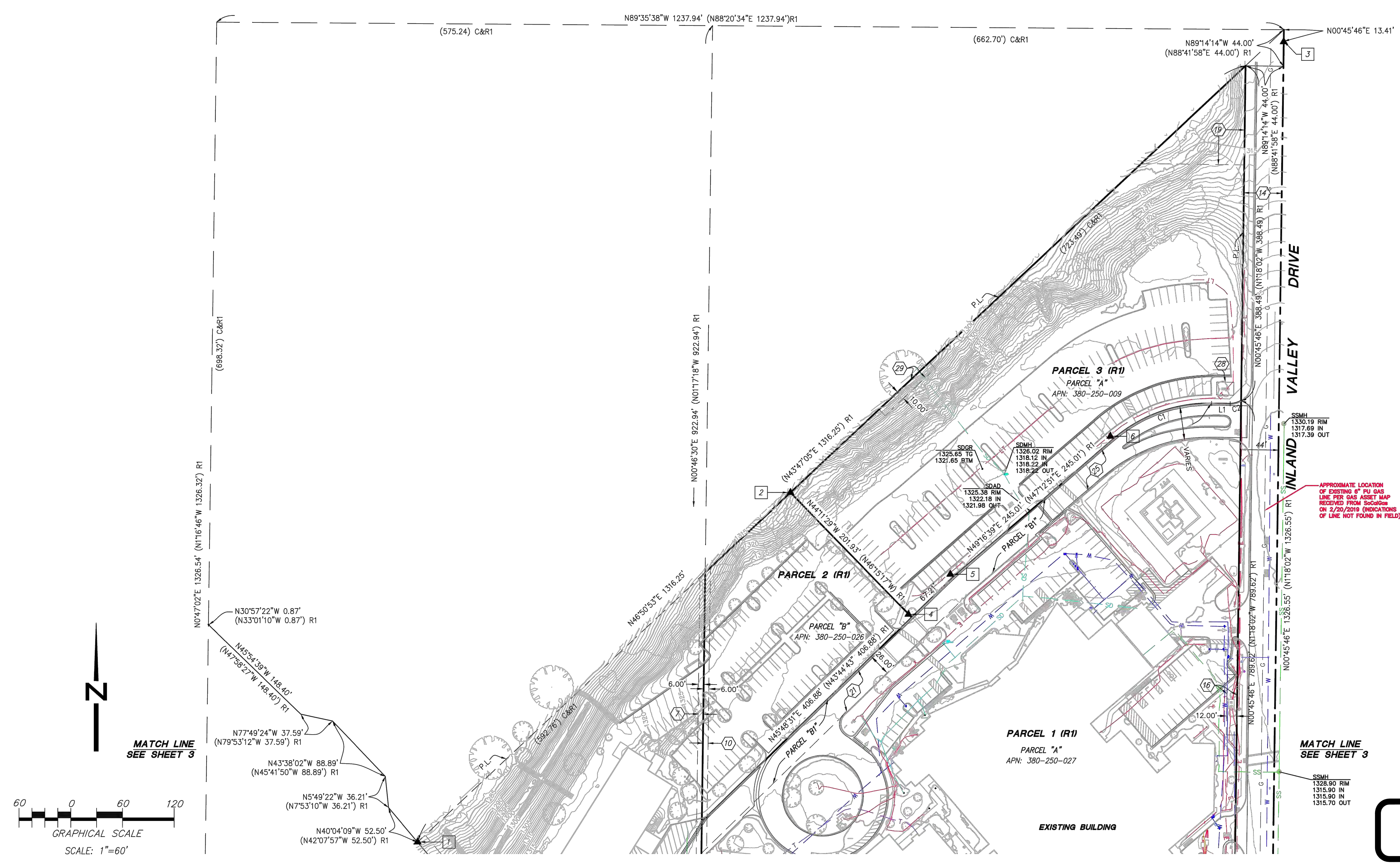
ISSUED FOR BID SET 5/21/21

UTILITY LEGEND

ELECTRIC	E
GAS	G
SANITARY SEWER	SS
STORM DRAIN	SD
STREET LIGHT PAINT	LT
TELEPHONE	T
WATER	W

LEGEND

(C)	CALCULATED DATA
(R1)	PARCEL MAP NO. 25065
(R2)	RECORD OF SURVEY NO. 65/9
(R3)	PARCEL MAP NO. 13346
(R4)	PARCEL MAP NO. 12198
SDAD	STORM DRAIN – AREA DRAIN
SDGR	STORM DRAIN GRATE
SDIN	STORM DRAIN INLET
SDMH	STORM DRAIN MANHOLE
SSMH	SANITARY SEWER MANHOLE



LINE TABLE		
L1	N89°13'20"W	21.55'
L1 (R1)	N88°42'51"E	21.52'
L2	N80°10'13"E	41.04'
L2 (R3)	N78°06'25"E	41.04'
L3	N89°35'36"W	328.58'
L3 (R3)	N88°20'36"E	328.58'
L4	N00°50'40"E	64.00'
L4 (R3)	N01°13'08"W	63.69'
L5	N89°35'36"W	224.61'
L5 (R3)	N88°20'36"E	224.61'
L6	N89°35'36"W	81.00'
L7	N00°50'40"E	112.00'
L8	N89°35'36"W	81.00'
L9	N00°50'40"E	20.00'

CURVE TABLE

CURVE	RADIUS	DELTA	LENGTH
C1	170.50'	41°30'00"	123.50'
C2	24.50'	31°45'06"	13.58'
C3	70.00'	36°16'30"	44.32'
C3(R3)	70.00'	36°03'12"	44.05'
C4	100.00'	10°14'11"	17.84'
C4(R3)	100.00'	10°14'11"	17.84'
C5	98.00'	45°24'39"	77.67'
C6	98.00'	18°22'50"	31.44'

FOR REFERENCE ONLY

DATE: 02-04-2019 TIME:
SERVER: LAYOUT:
PATH: N:\18-0000481-01\CADD\SURVEY
DRAWING NAME: 481-01_INLAND-VALLEY-WILDOMAR_EXHIBIT.DWG
PAGE SETUP: SHT1
DESIGNER: PROJ. MGR: ARJ

NO.	BY	DATE	REVISIONS:
1	JFP	4/21/2019	ADDED DIMENSIONS TO EASEMENTS, ADDED RECORD GAS LINE IN STREET, PLACED ADDITIONAL UTILITY LINES FROM MARKOUT.

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SAN DIEGO, CA 92128
P: 858.385.0500 WWW.NV5.COM

INLAND VALLEY REGIONAL MEDICAL CENTER
36243 & 36485 Inland Valley Drive
Wildomar, CA

PREPARED FOR: THE BARRIE COMPANY
DATE SUBMITTED: 4-23-19

SHEET NUMBER 2 OF 4 SHEETS
SCALE
JOB NUMBER 18-0000481-01

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MARK	BY	DATE	REVISIONS	APPR.	DATE
	ENGINEER				CITY

CITY OF WILDOMAR
ACCEPTED BY:
Date:
Daniel A. York, Director of Public Works/ City Engineer, PE 43212
ACCEPTANCE AS TO CONFORMANCE WITH APPLICABLE CITY STANDARDS AND PRACTICES

SEAL-ENGINEER:
REGISTERED PROFESSIONAL ENGINEER — NIKKI D. KERRY — RCE NO. 58449 — CIVIL — STATE OF CALIFORNIA

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www.kimley-horn.com
PREPARED BY: NIKKI KERRY
R.C.E. No. 58449 EXP. 12/31/22

BENCHMARK:
Elevation = 1317.14
Datum = NAD 83
BENCHMARK #
THIS SURVEY WAS PERFORMED ON 04/23/19 BY JOEL PAULSON L.S. 6637
SCALE: H: As Noted V: As Noted

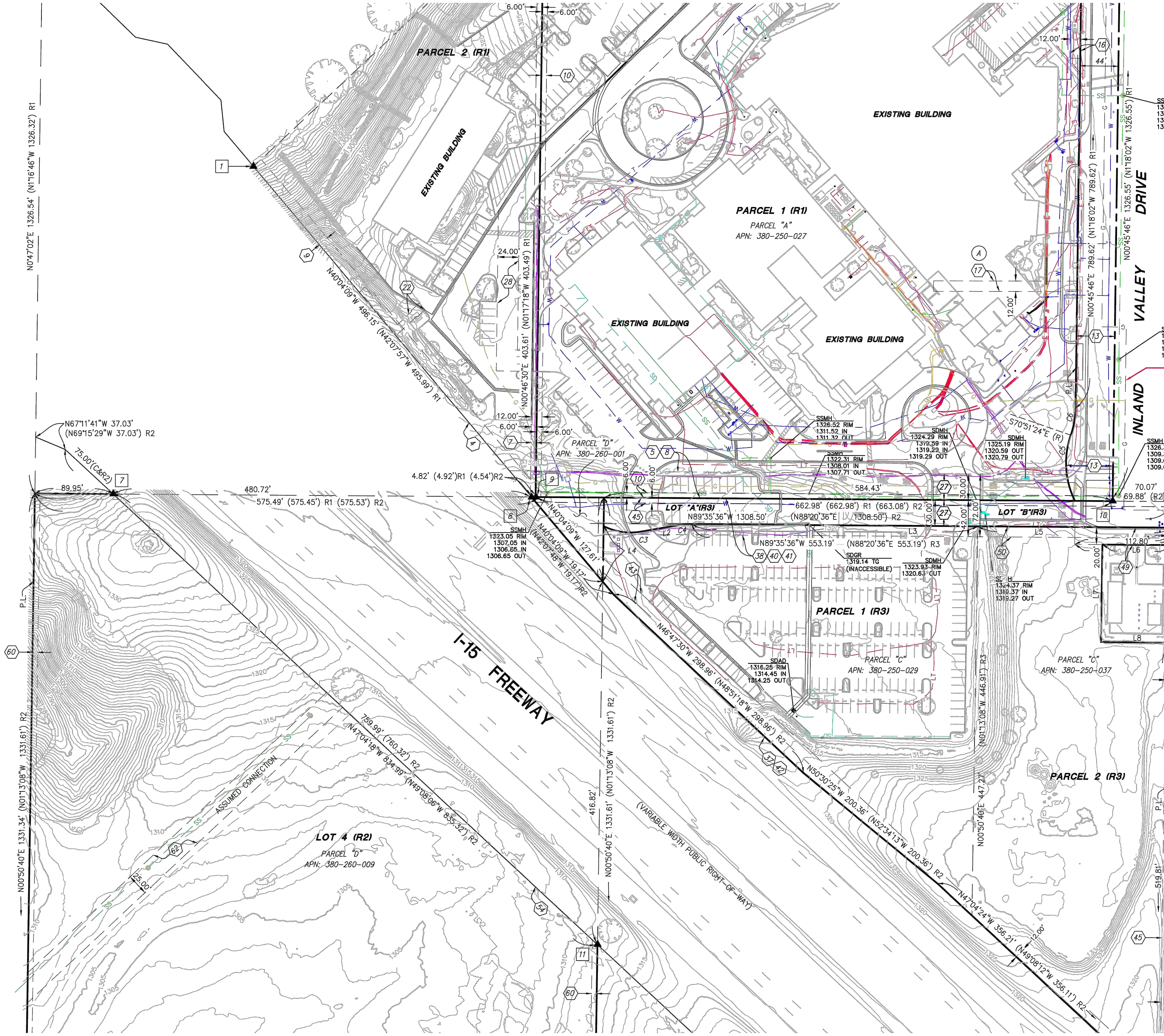
PP, CUP, PM, TM, etc. Project XX-XXXX
CITY OF WILDOMAR
INLAND VALLEY MEDICAL CENTER
ONSITE IMPROVEMENT PLANS
EXISTING CONDITIONS

SHEET No. CGD0.4
OF 69 SHTS

ISSUED FOR BID SET 5/21/21

SEE SHEET 2
MATCH LINE

SEE SHEET 2
MATCH LINE



LEGEND

(C) CALCULATED DATA
(R1) PARCEL MAP NO. 25065
(R2) RECORD OF SURVEY NO. 65/9
(R3) PARCEL MAP NO. 13346
(R4) PARCEL MAP NO. 12198

SDAD STORM DRAIN – AREA DRAIN
SDGR STORM DRAIN GRATE
SDIN STORM DRAIN INLET
SDMH STORM DRAIN MANHOLE
SSMH SANITARY SEWER MANHOLE

UTILITY LEGEND

ELECTRIC — E
GAS — G
SANITARY SEWER — SS
STORM DRAIN — SD
STREET LIGHT PAINT — LT
TELEPHONE — T
WATER — W

LINE TABLE

L1	N89°13'21"W	21.52'
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CURVE TABLE

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MATCH LINE
SEE SHEET 4

MATCH LINE
SEE SHEET 4

N

60 0 60 120
GRAPHICAL SCALE
SCALE: 1"=60'

FOR REFERENCE ONLY

DATE: 02-04-2019 TIME:
SERVER: LAYOUT:
PATH: N:\18-0000481-01\CADD\SURVEY
DRAWING NAME: 481-01_INLAND-VALLEY-WILDOMAR_EXHIBIT.DWG
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Wildomar, CA

PREPARED FOR: THE BARRIE COMPANY
DATE SUBMITTED: 4-23-19

SHEET NUMBER 3 OF 4 SHEETS
SCALE
JOB NUMBER 18-0000481-01

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	ENGINEER				CITY

CITY OF WILDOMAR
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Date:
Daniel A. York, Director of Public Works/ City Engineer, PE 43212
ACCEPTANCE AS TO CONFORMANCE WITH APPLICABLE CITY STANDARDS AND PRACTICES

SEAL-ENGINEER:
REGISTERED PROFESSIONAL ENGINEER
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PREPARED BY: NIKKI KERRY
R.C.E. No. 58449 EXP. 12/31/22

BENCHMARK:
Elevation = 1317.14
Datum = NAD 83
BENCHMARK #
THIS SURVEY WAS PERFORMED ON 04/23/19 BY JOEL PAULSON L.S. 6637
SCALE:
H: As Noted V: As Noted

PP, CUP, PM, TM, etc. Project XX-XXXX
CITY OF WILDOMAR
INLAND VALLEY MEDICAL CENTER
ONSITE IMPROVEMENT PLANS
EXISTING CONDITIONS

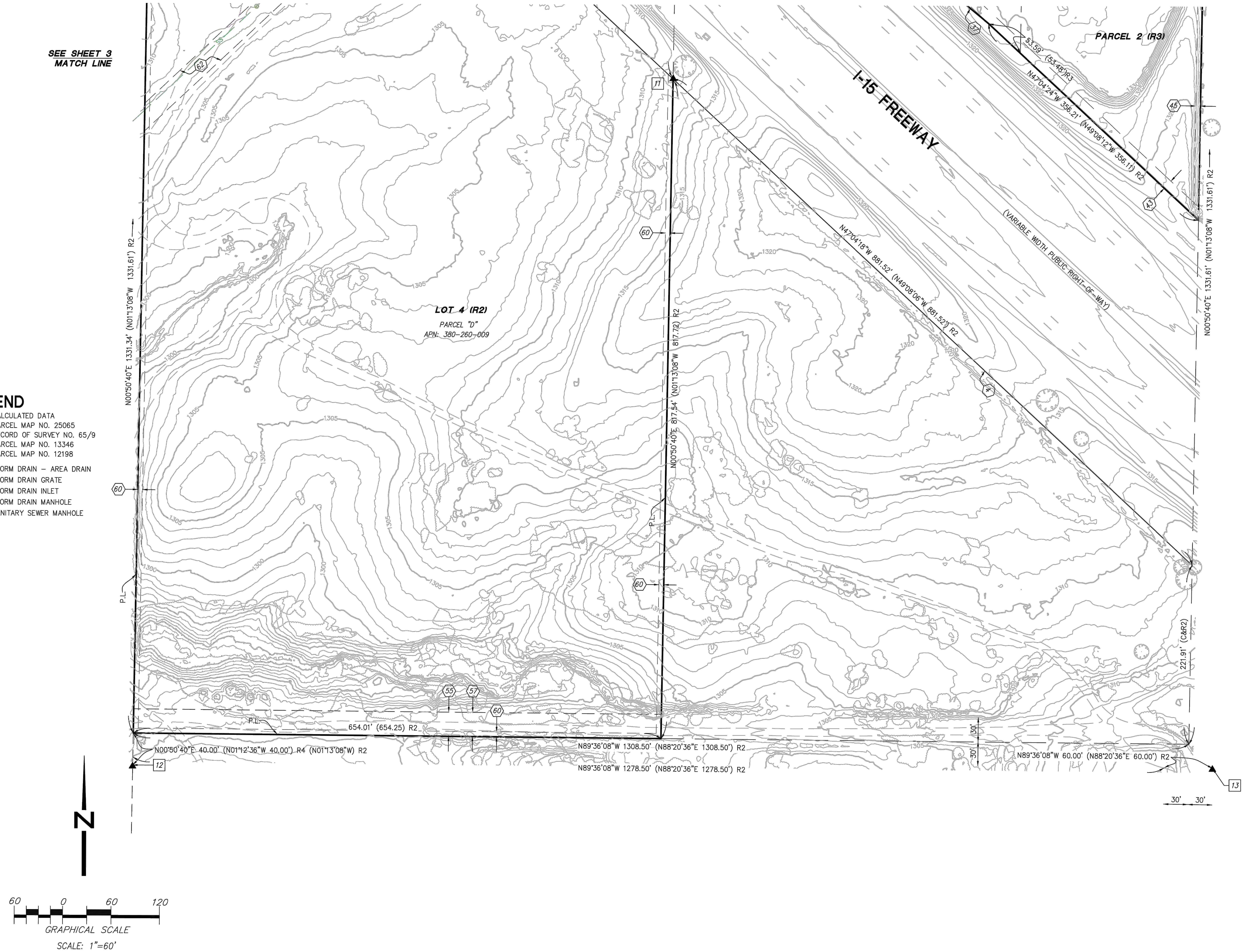
SHEET No. CGD0.5
OF 69 SHTS

ISSUED FOR BID SET 5/21/21

LEGEND

(C) CALCULATED DATA
(R1) PARCEL MAP NO. 25065
(R2) RECORD OF SURVEY NO. 65/9
(R3) PARCEL MAP NO. 13346
(R4) PARCEL MAP NO. 12198

SDAD STORM DRAIN – AREA DRAIN
SDGR STORM DRAIN GRATE
SDIN STORM DRAIN INLET
SDMH STORM DRAIN MANHOLE
SSMH SANITARY SEWER MANHOLE



SEE SHEET 3
MATCH LINE

UTILITY LEGEND

ELECTRIC — E
GAS — G
SANITARY SEWER — SS
STORM DRAIN — SD
STREET LIGHT PAINT — LT
TELEPHONE — T
WATER — W

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CURVE TABLE

CURVE	RADIUS	DELTA	LENGTH
C1	170.50'	41°30'00"	123.50'
C2	24.50'	31°45'06"	13.58'
C3	70.00'	36°16'30"	44.32'
C3(R3)	70.00'	36°03'12"	44.05'
C4	100.00'	10°14'11"	17.84'
C4(R3)	100.00'	10°14'11"	17.84'
C5	98.00'	45°24'39"	77.67'
C6	98.00'	18°22'50"	31.44'

FOR REFERENCE ONLY

DATE: 02-19-2019 TIME:
SERVER: LAYOUT:
PATH: N:\18-0000481-01\CADD\SURVEY
DRAWING NAME: 481-01_INLAND-VALLEY-WILDOMAR_EXHIBIT.DWG
PAGE SETUP: SHT1
DESIGNER: PROJ. MGR: ARJ

NO.	BY	DATE	REVISIONS:
1	JFP	4/21/2019	ADDED DIMENSIONS TO EASEMENTS, ADDED RECORD GAS LINE IN STREET, PLACED ADDITIONAL UTILITY LINES FROM MARKOUT.

CAUTION: The engineer preparing these plans will not be responsible for, or liable for, unauthorized changes to or uses of these plans. All changes to the plans must be in writing and must be approved by the preparer of these plans.

NV5
15092 AVENUE OF SCIENCE, SUITE 200
SAN DIEGO, CA 92128
P: 858.385.0500 WWW.NV5.COM

INLAND VALLEY REGIONAL MEDICAL CENTER
36243 & 36485 Inland Valley Drive
Wildomar, CA

PREPARED FOR: THE BARRIE COMPANY
DATE SUBMITTED: 4-23-19

SHEET NUMBER 4 OF 4 SHEETS
SCALE
JOB NUMBER 18-0000481-01

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MARK	BY	DATE	REVISIONS	APPR.	DATE
ENGINEER				CITY	

CITY OF WILDOMAR
ACCEPTED BY:

Date:
Daniel A. York, Director of Public Works/ City Engineer, PE 43212

ACCEPTANCE AS TO CONFORMANCE WITH APPLICABLE CITY STANDARDS AND PRACTICES

SEAL ENGINEER:
REGISTERED PROFESSIONAL ENGINEER
NIKKI D. KERRY
RCE NO. 58449
CIVIL
STATE OF CALIFORNIA

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Orange, CA 92868
714.939.1030 F 714.938.9488
www.kimley-horn.com

PREPARED BY:
NIKKI KERRY
R.C.E. No. 58449 EXP. 12/31/22

BENCHMARK:
Elevation = 1317.14
Datum = NAD 83
BENCHMARK #

THIS SURVEY WAS PERFORMED ON 04/23/19 BY JOEL PAULSON L.S. 6637

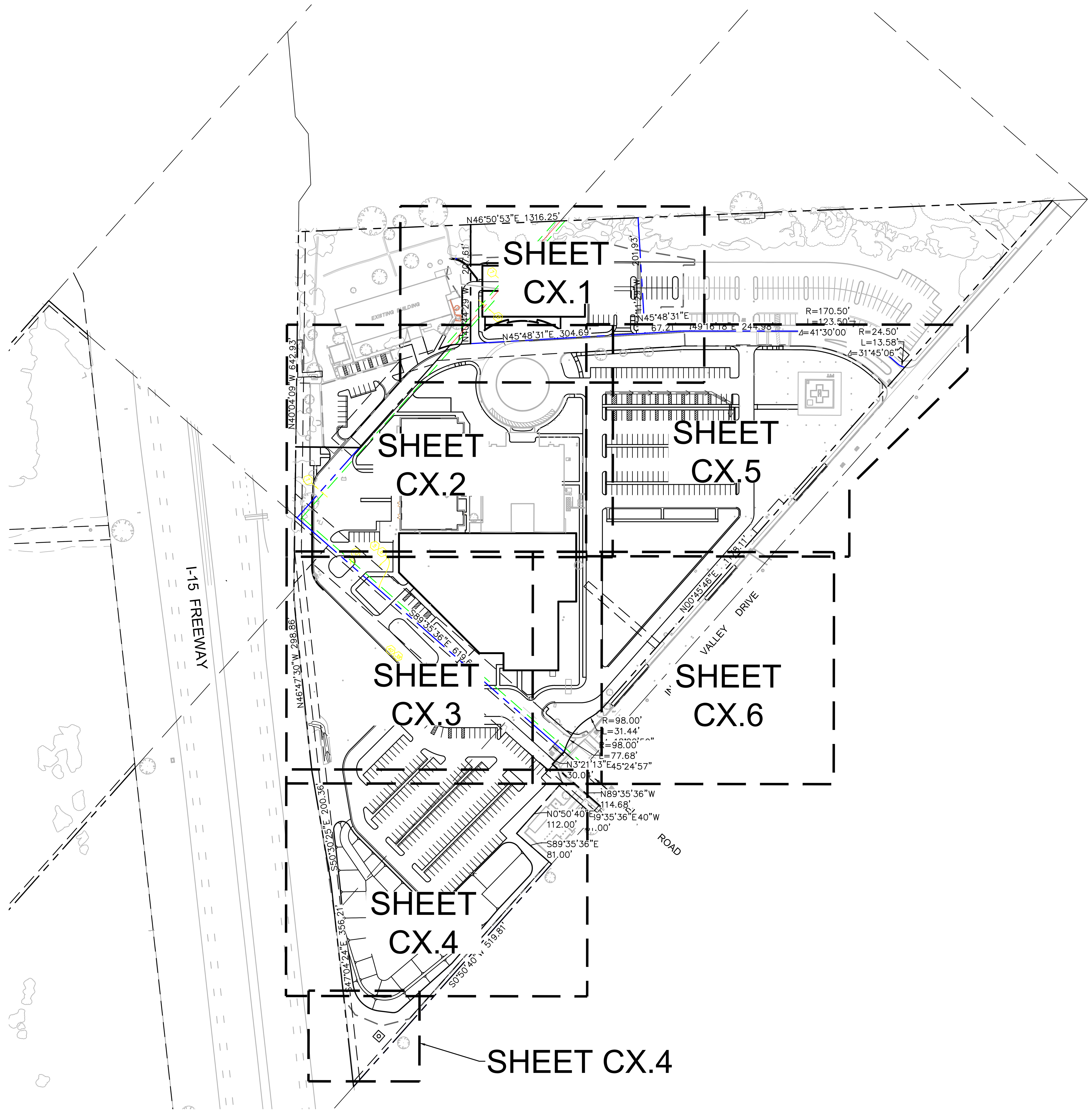
SCALE:
H: As Noted V: As Noted

PP, CUP, PM, TM, etc. Project XX-XXXX

CITY OF WILDOMAR
INLAND VALLEY MEDICAL CENTER
ONSITE IMPROVEMENT PLANS
EXISTING CONDITIONS

SHEET No. CGD0.6
OF 69 SHTS

ISSUED FOR BID SET 5/21/21



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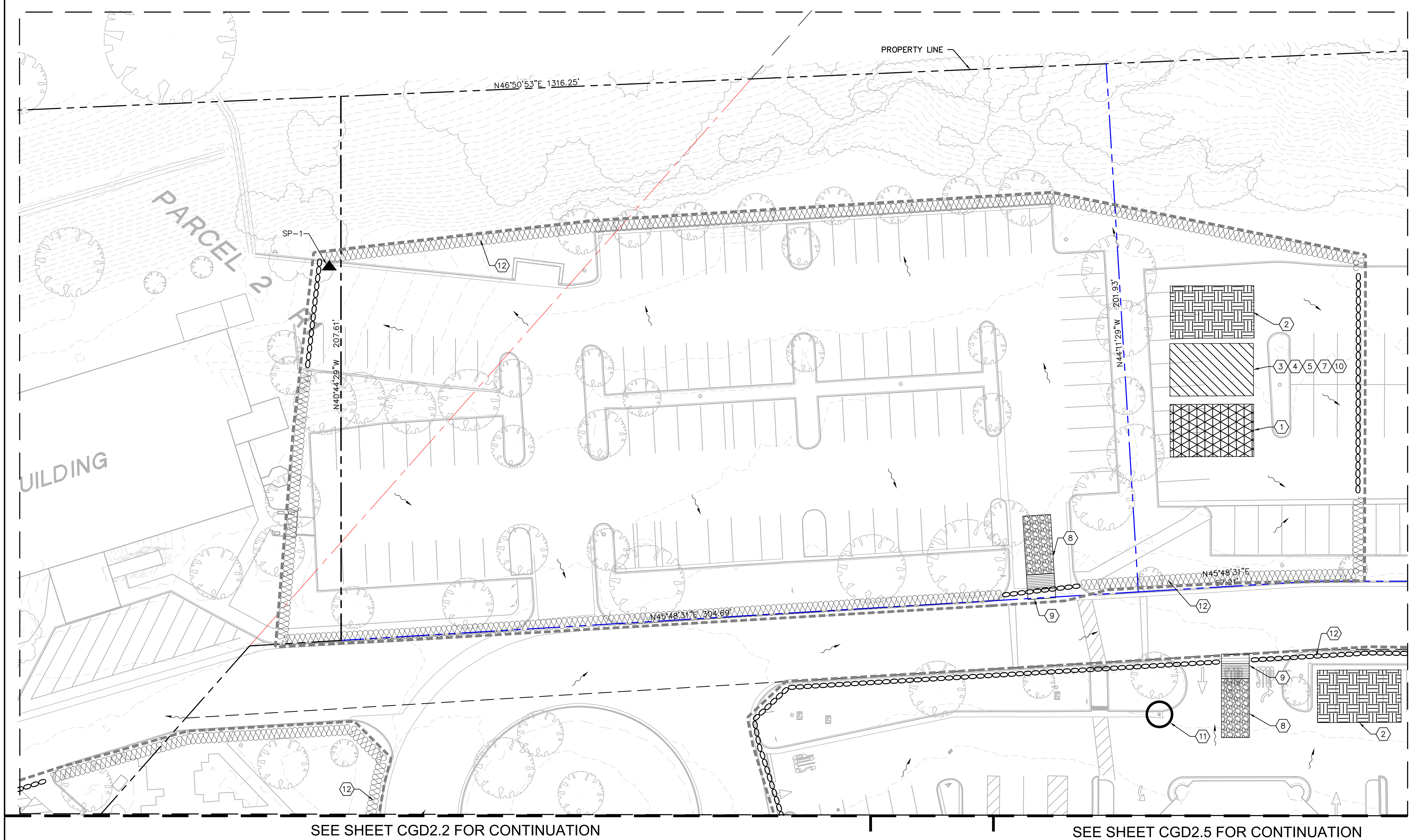
CITY OF WILDOMAR
INLAND VALLEY MEDICAL CENTER
ONSITE IMPROVEMENT PLANS
SHEET INDEX

SHEET No. CGD1.0
OF 69 SHTS

ISSUED FOR BID SET 5/21/21



LEGEND

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- CENTER LINE
- EASEMENT OR SETBACK LINE
- CIVIL LIMIT OF WORK LINE
- TEMPORARY CHAIN LINK FENCE
- INLET PROTECTION
- CONSTRUCTION ENTRANCE
- STOCKPILE AREA
- SANITARY AREA, TRASH STORAGE, HAZARDOUS MATERIAL, CONCRETE WASTE MANAGEMENT, VEHICLE MAINTENANCE AND EQUIPMENT STORAGE AREA
- MATERIAL STORAGE AND DELIVERY
- DIRECTION OF FLOW
- GRAVEL BAGS
- SAMPLE POINT
- FIBER ROLLS

EROSION CONTROL CONST. NOTES

1. WM-1, MATERIAL DELIVERY AND STORAGE.
2. WM-3, STOCKPILE MANAGEMENT, CONTRACTOR TO SET UP STOCKPILE AREA.
3. WM-9, SANITARY/SEPTIC WASTE MANAGEMENT.
4. WM-6, HAZARDOUS WASTE MANAGEMENT.
5. WM-8, CONCRETE WASTE MANAGEMENT.
6. CONSTRUCTION FENCE.
7. WM-5, SOLID WASTE MANAGEMENT.
8. TR-1, STABILIZED CONSTRUCTION ENTRANCE/EXIT; REFER TO DETAIL 1, SHEET ######.
9. TR-3, ENTRANCE/OUTLET TIRE WASH RACK; REFER TO DETAIL 2, SHEET ######.
10. NS-10, VEHICLE AND EQUIPMENT MAINTENANCE.
11. SE-10, STORM DRAIN INLET PROTECTION FOR CURB OPENINGS, CATCH BASINS, AND INLETS. REFER TO DETAILS 3 AND 5, SHEET ######. OR APPROVED EQUAL. *PROVIDE INLET PROTECTION FOR PUBLIC CURB INLET DOWNSTREAM OFF SITE PER DETAIL 3, SHEET CGD7.0.
12. SE-5, FIBER ROLLS. REFER TO DETAIL 6, SHEET ######.
13. SE-1 – SILT FENCE PER DETAIL 7, SHEET CGD7.0.
14. SE-4 – CHECK DAM PER DETAIL 4, SHEET CGD7.0.

BMP NOTES

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- EC1 SCHEDULING
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- EC3 HYDRAULIC MULCH
- EC4 HYDROSEEDING
- EC5 SOIL BINDERS
- EC6 STRAW MULCH
- EC7 GEOTEXTILES & MATS
- EC8 WOOD MULCHING
- EC9 EARTH DIKES AND DRAINAGE SWALES
- EC10 VELOCITY DIECIPATION DEVICES
- EC11 SLOPE DRAINS
- EC12 STREAMBANK STABILIZATION
- EC13 RESERVED
- EC14 COMPOST BLANKETS
- EC15 SOIL PREPARATION\ROUGHENING
- EC16 NON-VEGETATED STABILIZATION

TEMPORARY SEDIMENT CONTROL
- SE1 SILT FENCE
- SE2 SEDIMENT BASIN
- SE3 SEDIMENT TRAP
- SE4 CHECK DAM
- SE5 FIBER ROLLS
- SE6 GRAVEL BAG BERM
- SE7 STREET SWEEPING AND VACUUMING
- SE8 SANDBAG BARRIER
- SE9 STRAW BALE BARRIER
- SE10 STORM DRAIN INLET PROTECTION
- SE11 ACTIVE TREATMENT SYSTEMS
- SE12 MANUFACTURED LINEAR SEDIMENT CONTROLS
- SE13 COMPOST SOCKS & BERMS
- SE14 BIOFILTER BAGS

WIND EROSION CONTROL
- WE1 WIND EROSION CONTROL

TEMPORARY TRACKING CONTROL
- TC1 STABILIZED CONSTRUCTION ENTRANCE EXIT
- TC2 STABILIZED CONSTRUCTION ROADWAY
- TC3 ENTRANCE/OUTLET TIRE WASH

NON-STORMWATER MANAGEMENT
- NS1 WATER CONSERVATION PRACTICES
- NS2 DEWATERING OPERATIONS
- NS3 PAVING AND GRINDING OPERATIONS
- NS4 TEMPORARY STREAM CROECING
- NS5 CLEAR WATER DIVERSION
- NS6 ILLICIT CONNECTION/DISEHARGE
- NS7 POTABLE WATER/IRRIGATION
- NS8 VEHICLE AND EQUIPMENT CLEANING
- NS9 VEHICLE AND EQUIPMENT FUELING
- NS10 VEHICLE AND EQUIPMENT MAINTENANCE
- NS11 PILE DRIVING OPERATIONS
- NS12 CONCRETE CURING
- NS13 CONCRETE FINISHING
- NS14 MATERIAL AND EQUIPMENT USE
- NS15 DEMOLITION ADJACENT TO WATER
- NS16 TEMPORARY BATCH PLANTS

WASTE MANAGEMENT & MATERIAL POLLUTION CONTROL
- WM1 MATERIAL DELIVERY AND STORAGE
- WM2 MATERIAL USE
- WM3 STOCKPILE MANAGEMENT
- WM4 SPILL PREVENTION AND CONTROL
- WM5 SOLID WASTE MANAGEMENT
- WM6 HAZARDOUS WASTE MANAGEMENT
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- WM9 SANITARY/SEPTIC WASTE MANAGEMENT
- WM10 LIQUID WASTE MANAGEMEN

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4. CONTRACTOR CAN PLACE FIBER ROLLS IN LIEU OF GRAVEL BAGS AT CONSTRUCTION ENTRANCES ONLY.

BMP'S SHOWN ON THESE PLANS DO NOT ACCOUNT FOR PROJECT PHASING. CONTRACTOR TO USE APPROPRIATE BEST MANAGEMENT PRACTICE FOR ALL PROJECT SUBPHASES.

GRAPHIC SCALE IN FEET
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BENCHMARK:
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Datum = NAD 83
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PP, CUP, PM, TM, etc. Project XX-XXXX
CITY OF WILDOMAR
INLAND VALLEY MEDICAL CENTER
ONSITE IMPROVEMENT PLANS
EROSION CONTROL PLAN

SHEET No. CGD2.1
OF 25 SHTS

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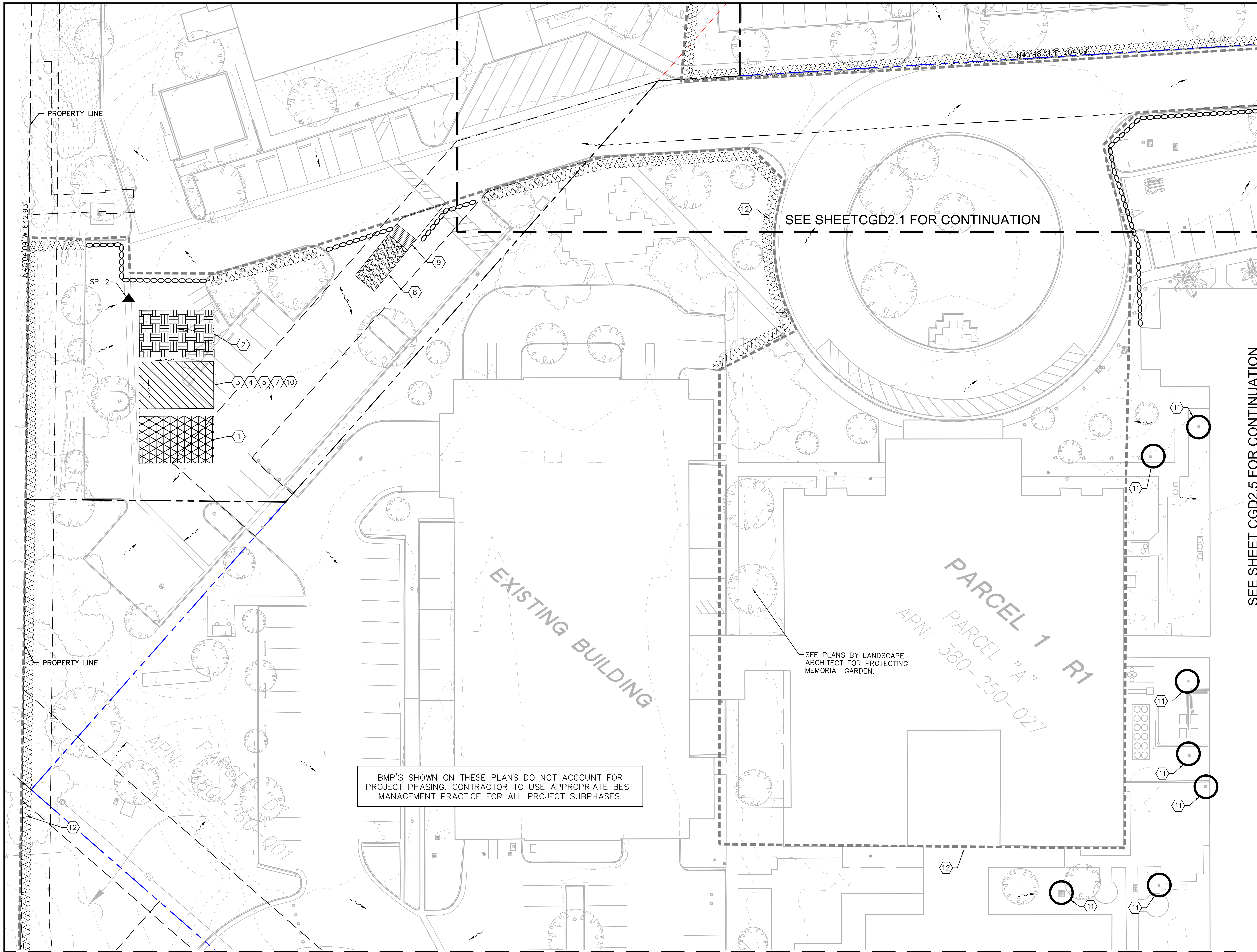

LEGEND

PROPERTY LINE	SANITARY AREA, TRASH STORAGE, HAZARDOUS MATERIAL, CONCRETE WASTE MANAGEMENT, VEHICLE MAINTENANCE AND EQUIPMENT STORAGE AREA
RIGHT-OF-WAY LINE	MATERIAL STORAGE AND DELIVERY
CENTER LINE	DIRECTION OF FLOW
EASEMENT OR SETBACK LINE	GRAVEL BAGS
CIVIL LIMIT OF WORK LINE	SAMPLE POINT
TEMPORARY CHAIN LINK FENCE	FIBER ROLLS
INLET PROTECTION	
CONSTRUCTION ENTRANCE	
STOCKPILE AREA	

EROSION CONTROL CONST. NOTES

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EROSION CONTROL PLAN

SHEET No. CGD2.2
OF 25 SHTS

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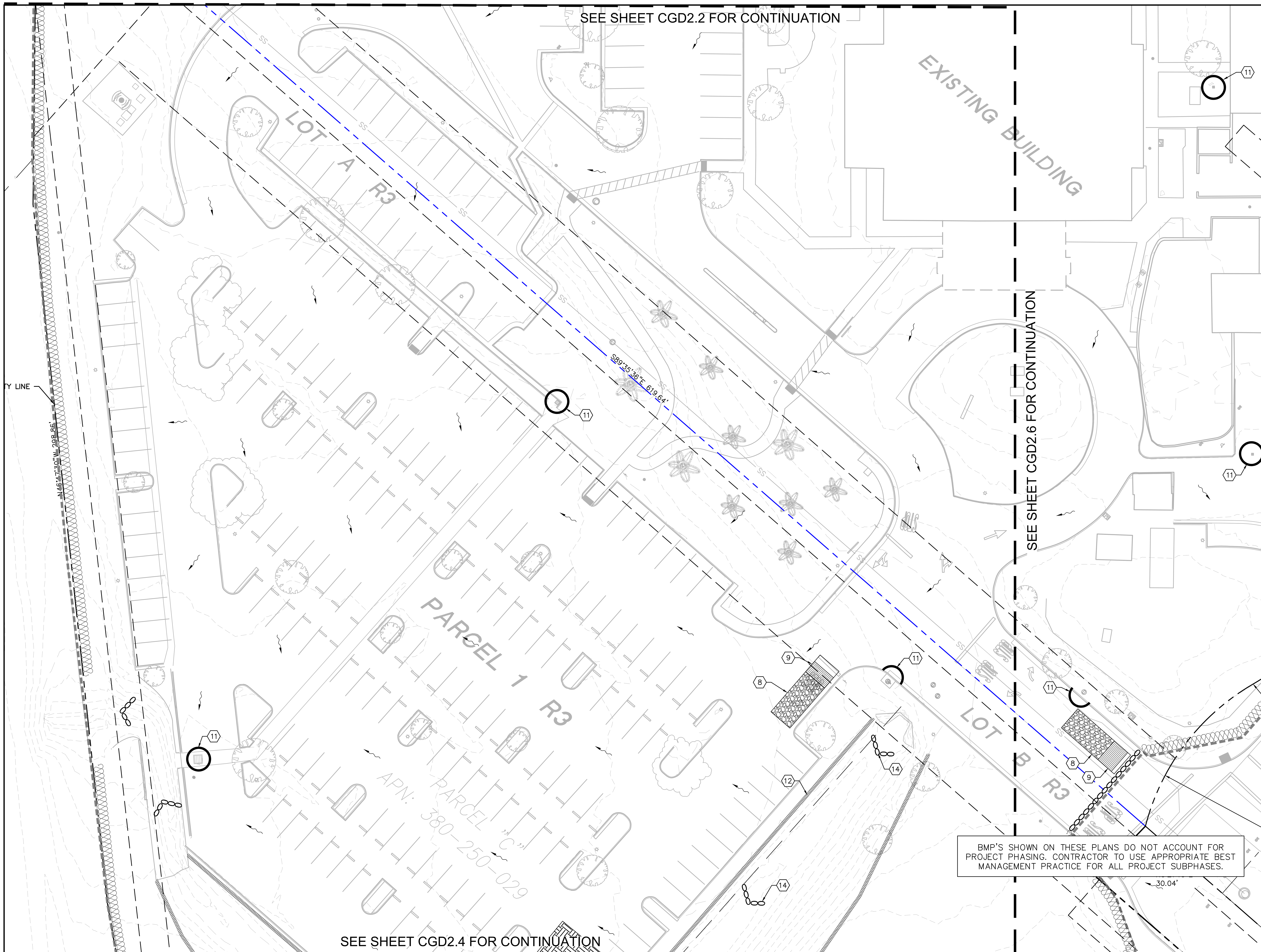
SEE SHEET CGD2.2 FOR CONTINUATION



SEE SHEET CGD2.6 FOR CONTINUATION

SEE SHEET CGD2.4 FOR CONTINUATION

LEGEND

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- RIGHT-OF-WAY LINE
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NOTES:

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GRAPHIC SCALE IN FEET
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NORTH

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ENGINEER				CITY	

CITY OF WILDOMAR · Est. 1886 · Inc. 2008

CITY OF WILDOMAR
ACCEPTED BY:
Date:
Daniel A. York, Director of Public Works/ City Engineer, PE 43212
ACCEPTANCE AS TO CONFORMANCE WITH APPLICABLE CITY STANDARDS AND PRACTICES

SEAL ENGINEER:
REGISTERED PROFESSIONAL ENGINEER
NIKKI D. KERRY
RCE NO. 58449
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STATE OF CALIFORNIA

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PREPARED BY: NIKKI KERRY
R.C.E. No. 58449 EXP. 12/31/22

BENCHMARK:
Elevation = 1317.14
Datum = NAD 83
BENCHMARK # ___________
THIS SURVEY WAS PERFORMED ON 04/23/19 BY JOEL PAULSON L.S. 6637
SCALE: H: As Noted V: As Noted

PP, CUP, PM, TM, etc. Project XX-XXXX
CITY OF WILDOMAR
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ONSITE IMPROVEMENT PLANS
EROSION CONTROL PLAN

SHEET No. CGD2.3
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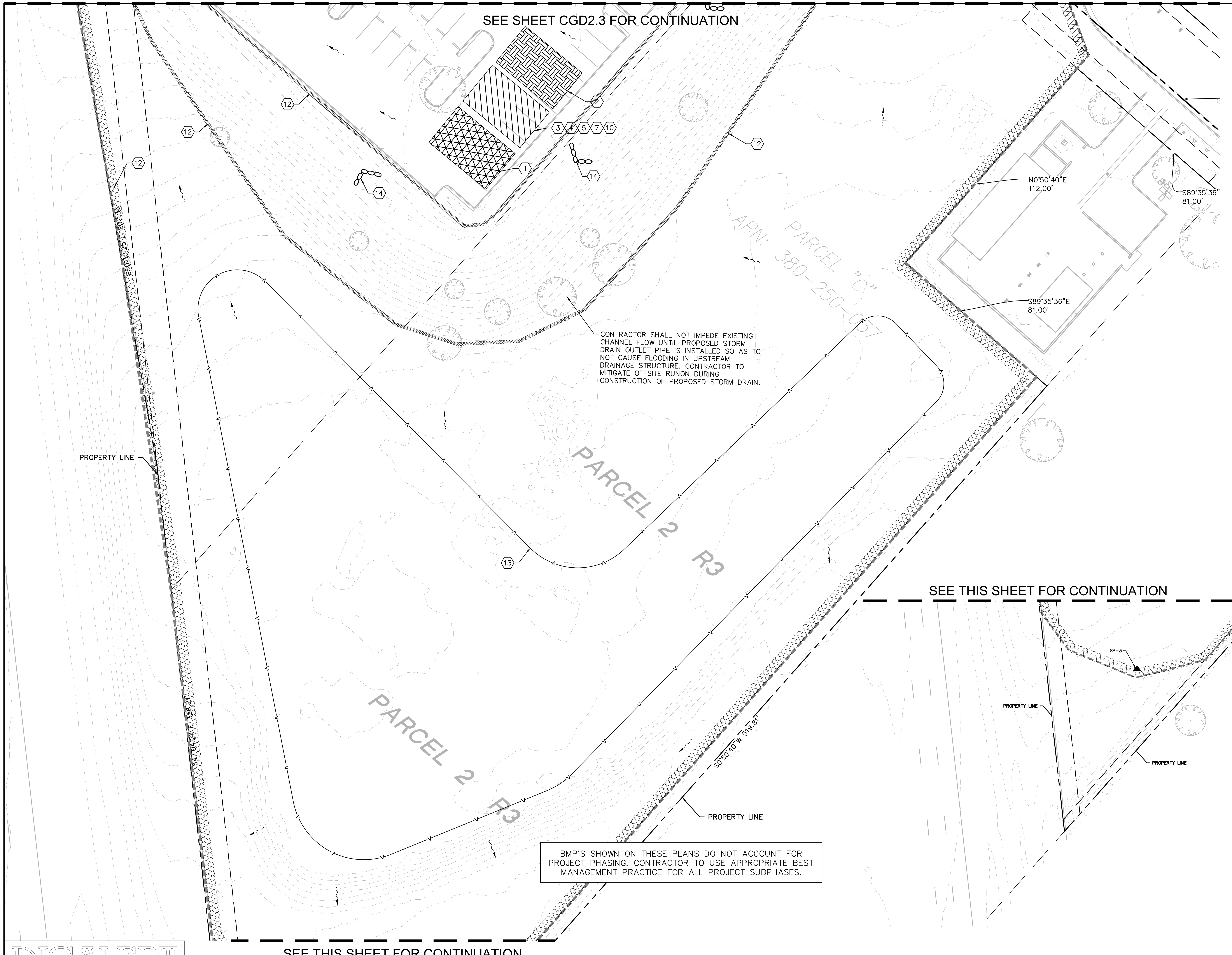
ISSUED FOR BID SET 5/21/21



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- DIRECTION OF FLOW
- GRAVEL BAGS
- SAMPLE POINT
- FIBER ROLLS

EROSION CONTROL CONST. NOTES

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SE4 CHECK DAM
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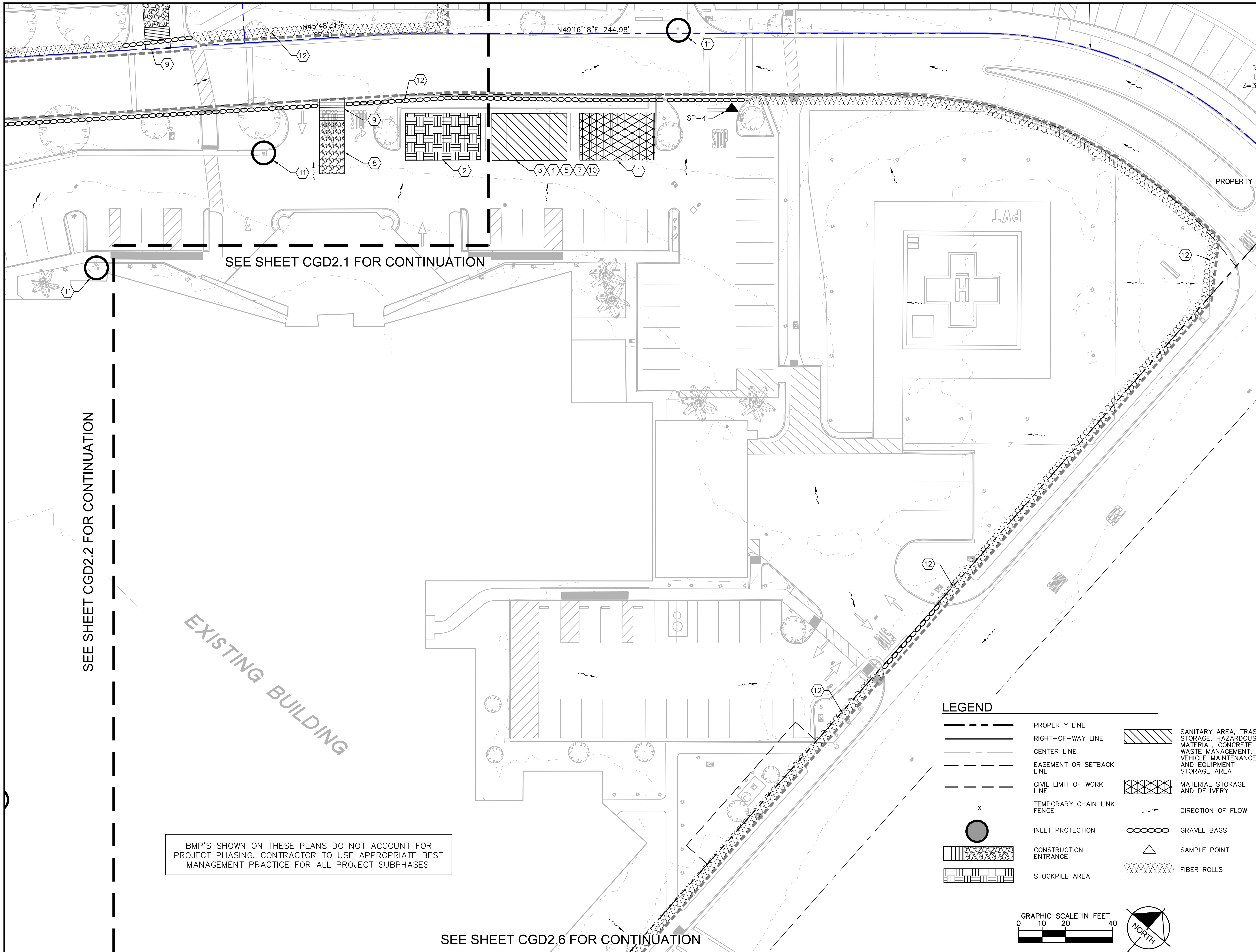

BMP'S SHOWN ON THESE PLANS DO NOT ACCOUNT FOR PROJECT PHASING. CONTRACTOR TO USE APPROPRIATE BEST MANAGEMENT PRACTICE FOR ALL PROJECT SUBPHASES.

EROSION CONTROL CONST. NOTES

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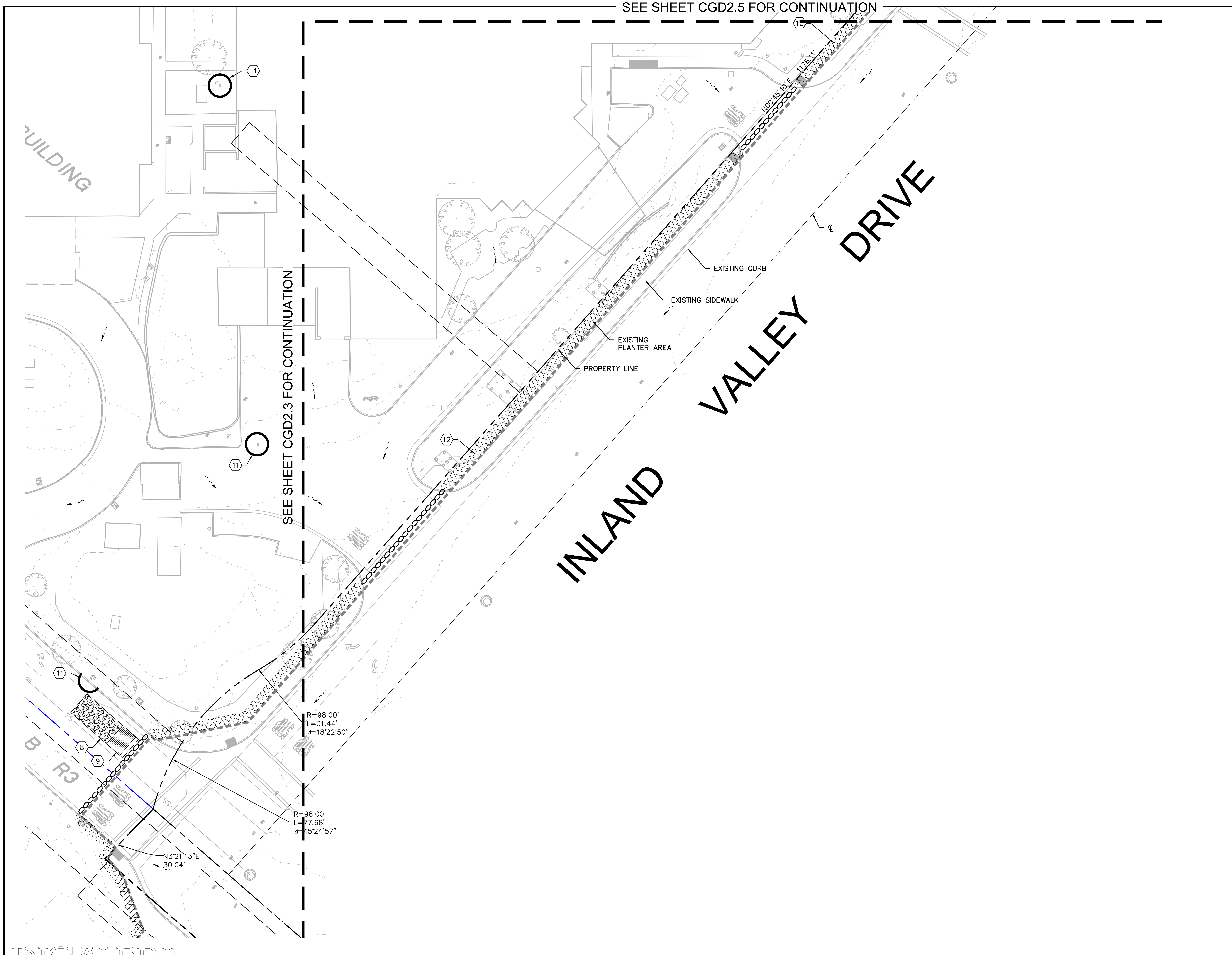

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QUANTITIES NOTE:
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EROSION CONTROL CONST. NOTES — QUANTITIES

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MARK	BY	DATE	REVISIONS	APPR.	DATE
ENGINEER				CITY	

CITY OF WILDOMAR

ACCEPTED BY:

Date:

Daniel A. York, Director of Public Works/ City Engineer, PE 43212

ACCEPTANCE AS TO CONFORMANCE WITH APPLICABLE CITY STANDARDS AND PRACTICES

SEAL ENGINEER

REGISTERED PROFESSIONAL ENGINEER — NIKKI D. KERRY — RCE NO. 58449 — CIVIL — STATE OF CALIFORNIA

Kimley»Horn

1100 Town and Country Road, Suite 700
Orange, CA 92868
714.939.1030 F 714.938.9488
www.kimley-horn.com

PREPARED BY: NIKKI KERRY

R.C.E. No. 58449 EXP. 12/31/22

BENCHMARK:
Elevation = 1317.14
Datum = NAD 83
BENCHMARK # ___________

THIS SURVEY WAS PERFORMED ON 04/23/19 BY JOEL PAULSON L.S. 6637

SCALE: H: As Noted V: As Noted

PP, CUP, PM, TM, etc. Project XX-XXXX

CITY OF WILDOMAR

INLAND VALLEY MEDICAL CENTER

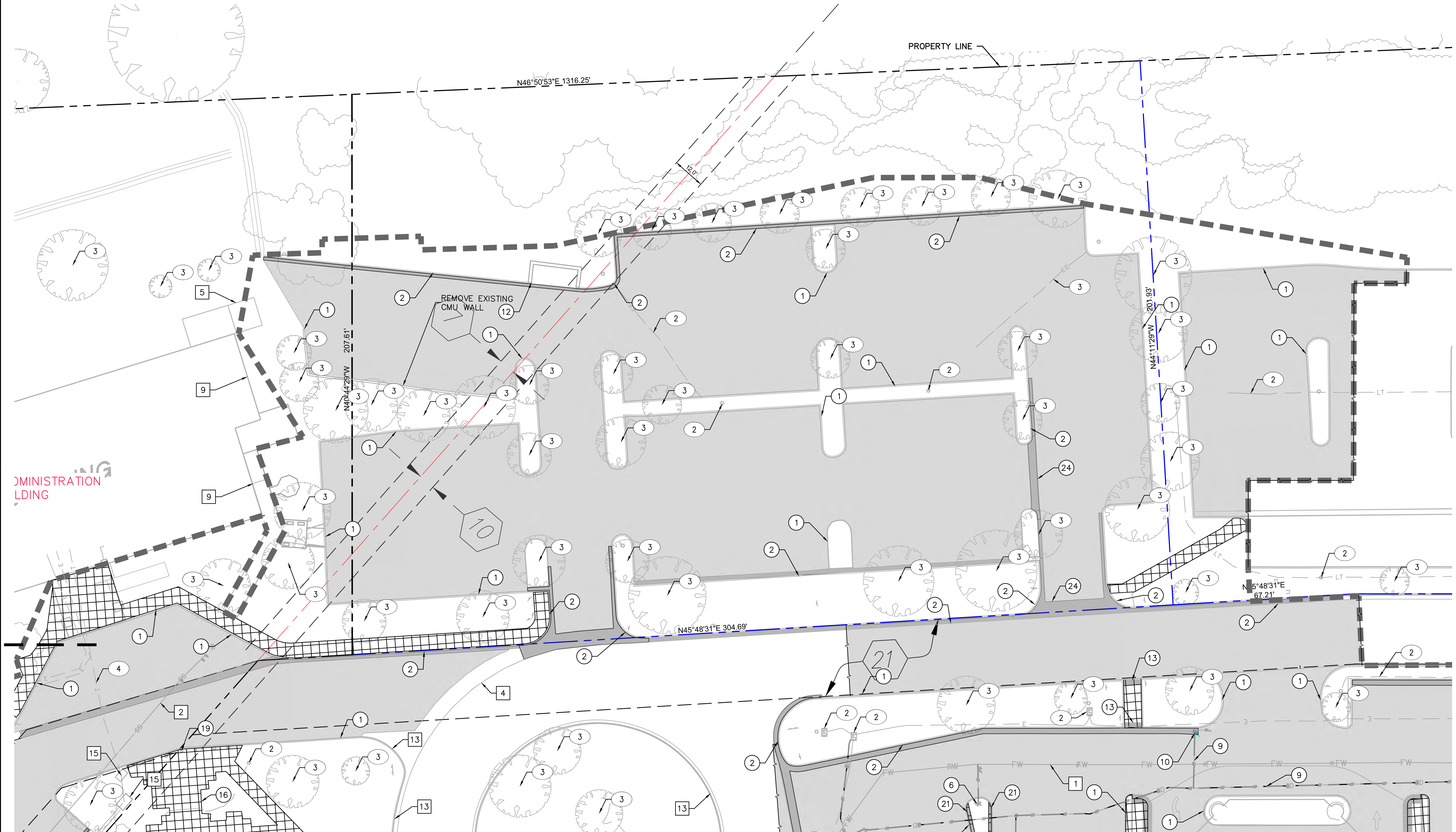
ONSITE IMPROVEMENT PLANS

OVERALL DEMOLITION PLAN

SHEET No. CGD3.0

OF 25 SHTS

ISSUED FOR BID SET 5/21/21



SEE SHEET CGD3.1 FOR CONTINUATION

SEE SHEET CGD3.1 FOR CONTINUATION

LEGEND

- PROPERTY LINE
- CENTER LINE
- DEMOLITION LIMIT LINE ON-SITE
- SAWCUT TO NEAREST CONSTRUCTION JOINT OR EDGE AND JOIN PER DETAIL 8, SHEET CGD7.0.
- TEMPORARY CHAIN LINK FENCE WITH MESH
- DEMOLISH UTILITY
- REMOVE EXISTING CONCRETE SIDEWALK.
- REMOVE EXISTING ASPHALT CONCRETE PAVEMENT AND WHEEL STOPS.
- REMOVE EXISTING CONCRETE CURB, GUTTER, CURB AND GUTTER, AND/OR WALK OFF STRIP.
- REMOVE EXISTING BUILDING. UNDER SEPARATE PERMIT (APPROVED BY OSHPD)
- REMOVE EXISTING CENTRAL UTILITY PLANT. UNDER SEPARATE PERMIT (APPROVED BY OSHPD)
- REMOVE EXISTING CONCRETE PAVEMENT, CURB, GUTTERS.
- G — EXISTING GAS
- E — EXISTING ELECTRICAL
- T — EXISTING TECHNOLOGY
- SEE NOTES ON CGD0.3 FOR EASEMENTS.

PROTECTION NOTES

1. PROTECT-IN-PLACE EXISTING WATER LINE.
2. PROTECT-IN-PLACE EXISTING SEWER.
3. PROTECT-IN-PLACE EXISTING STORM DRAIN.
4. PROTECT-IN-PLACE EXISTING GUTTER.
5. PROTECT-IN-PLACE EXISTING PAVEMENT.
6. PROTECT-IN-PLACE EXISTING SIDEWALK.
7. PROTECT-IN-PLACE EXISTING CURB.
8. PROTECT-IN-PLACE EXISTING FIRE HYDRANT.
9. PROTECT-IN-PLACE EXISTING BUILDING.
10. PROTECT-IN-PLACE EXISTING BOLLARD.
11. PROTECT-IN-PLACE EXISTING UTILITY ENCLOSURES.
12. PROTECT-IN-PLACE EXISTING BUS STOP.
13. PROTECT-IN-PLACE EXISTING CURB AND GUTTER.
14. PROTECT-IN-PLACE EXISTING DRIVEWAY.
15. PROTECT-IN-PLACE EXISTING DATA/TELECOM VAULT/MANHOLE. ADD TRAFFIC RATED LIDS.

COORD. NOTES

1. EXISTING GAS. REFER TO PLUMBING PLANS FOR REMOVAL AND/OR PROTECTION IN PLACE.
2. EXISTING ELECTRICAL. REFER TO ELECTRICAL PLANS FOR REMOVAL AND/OR PROTECTION.
3. EXISTING LANDSCAPING/SITE SIGNAGE. REFER TO LANDSCAPING PLANS FOR REMOVAL AND/OR PROTECTION.
4. EXISTING TECHNOLOGY. REFER TO TECHNOLOGY PLANS FOR REMOVAL AND/OR PROTECTION IN PLACE.

DEMOLITION CONSTRUCTION NOTES

1. REMOVE EXISTING CURB.
2. REMOVE EXISTING CURB AND GUTTER.
3. EXISTING MONUMENT SIGN TO BE RELOCATED UNDER SEPARATE PERMIT.
4. REMOVE EXISTING POWER POLE AND OVERHEAD UTILITY. SEE SCE AND MEP PLANS FOR FURTHER DETAIL.
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7. REMOVE EXISTING FIRE DEPARTMENT CONNECTION.
8. REMOVE EXISTING WATER LINE AND APPURTENANCES.
9. REMOVE EXISTING STORM DRAIN LINE.
10. REMOVE EXISTING CATCH BASIN.
11. REMOVE EXISTING FENCE, WALLS, WALL FOOTINGS, AND SLABS.
12. REMOVE TRASH ENCLOSURE.
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15. REMOVE EXISTING SITE WALL.
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17. REMOVE EXISTING SEWER LINE, MANHOLES, AND ALL APPURTENANCES.
18. REMOVE FLAG POLE AND FOUNDATION.
19. REMOVE BOLLARD AND FOUNDATION.
20. REMOVE BIKE RACK. COORDINATE NEW LOCATION WITH OWNER.
21. REMOVE GATE ARMS AND GATE CONTROLS.
22. REMOVE CONCRETE HEADWALL AND FOOTINGS.
23. REMOVE STAIRS.
24. REMOVE EXISTING GUTTER.

GRAPHIC SCALE IN FEET
0 10 20 40

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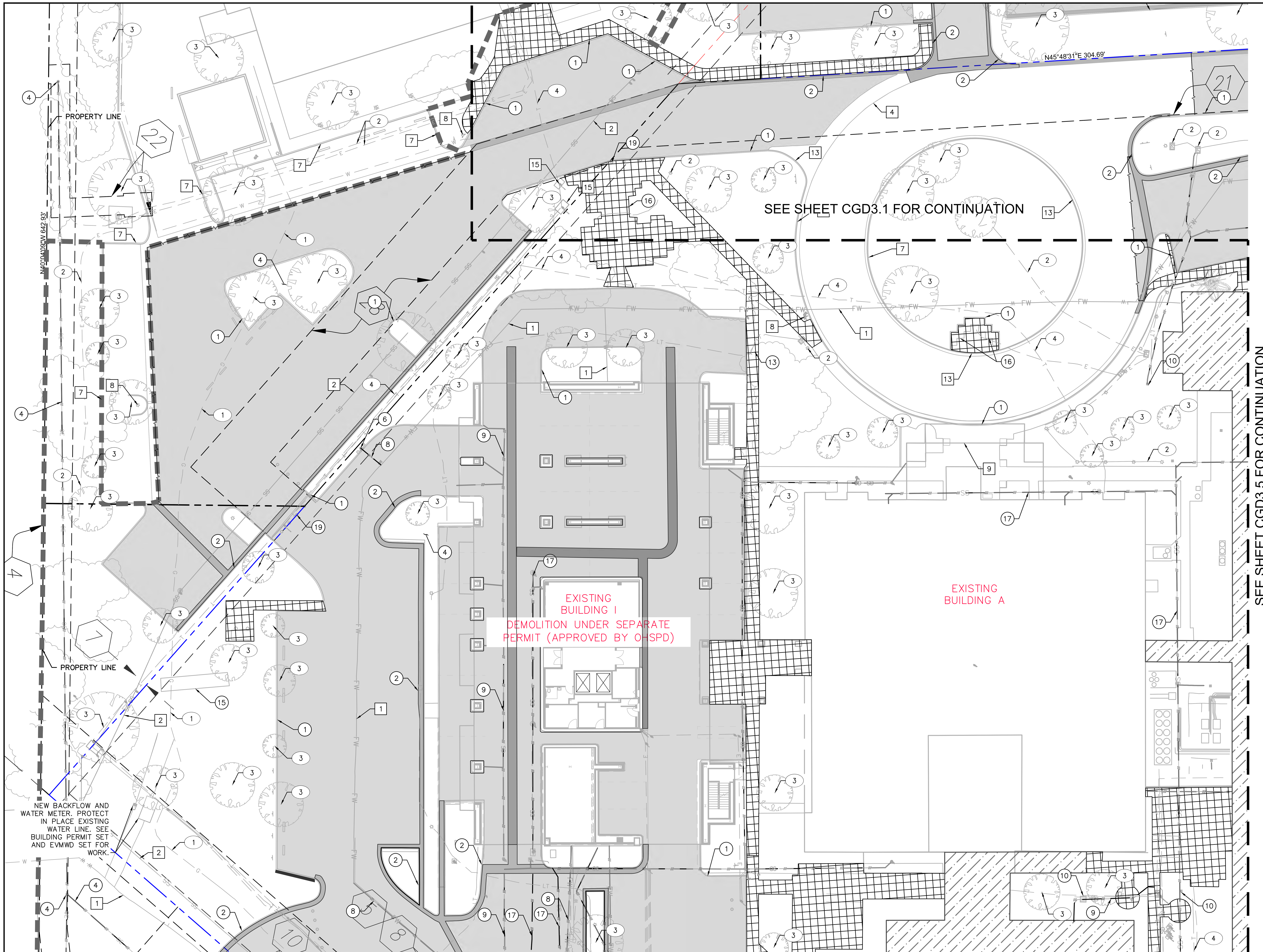
CITY OF WILDOMAR
INLAND VALLEY MEDICAL CENTER
ONSITE IMPROVEMENT PLANS
DEMOLITION PLAN

SHEET No.
CGD3.1
OF 25 SHTS

ISSUED FOR BID SET 5/21/21



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LEGEND

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- DEMOLITION LIMIT LINE ON-SITE
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- REMOVE EXISTING ASPHALT CONCRETE PAVEMENT AND WHEEL STOPS.
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PROTECTION NOTES

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ACCEPTED BY:
Date:
Daniel A. York, Director of Public Works/ City Engineer, PE 43212
ACCEPTANCE AS TO CONFORMANCE WITH APPLICABLE CITY STANDARDS AND PRACTICES

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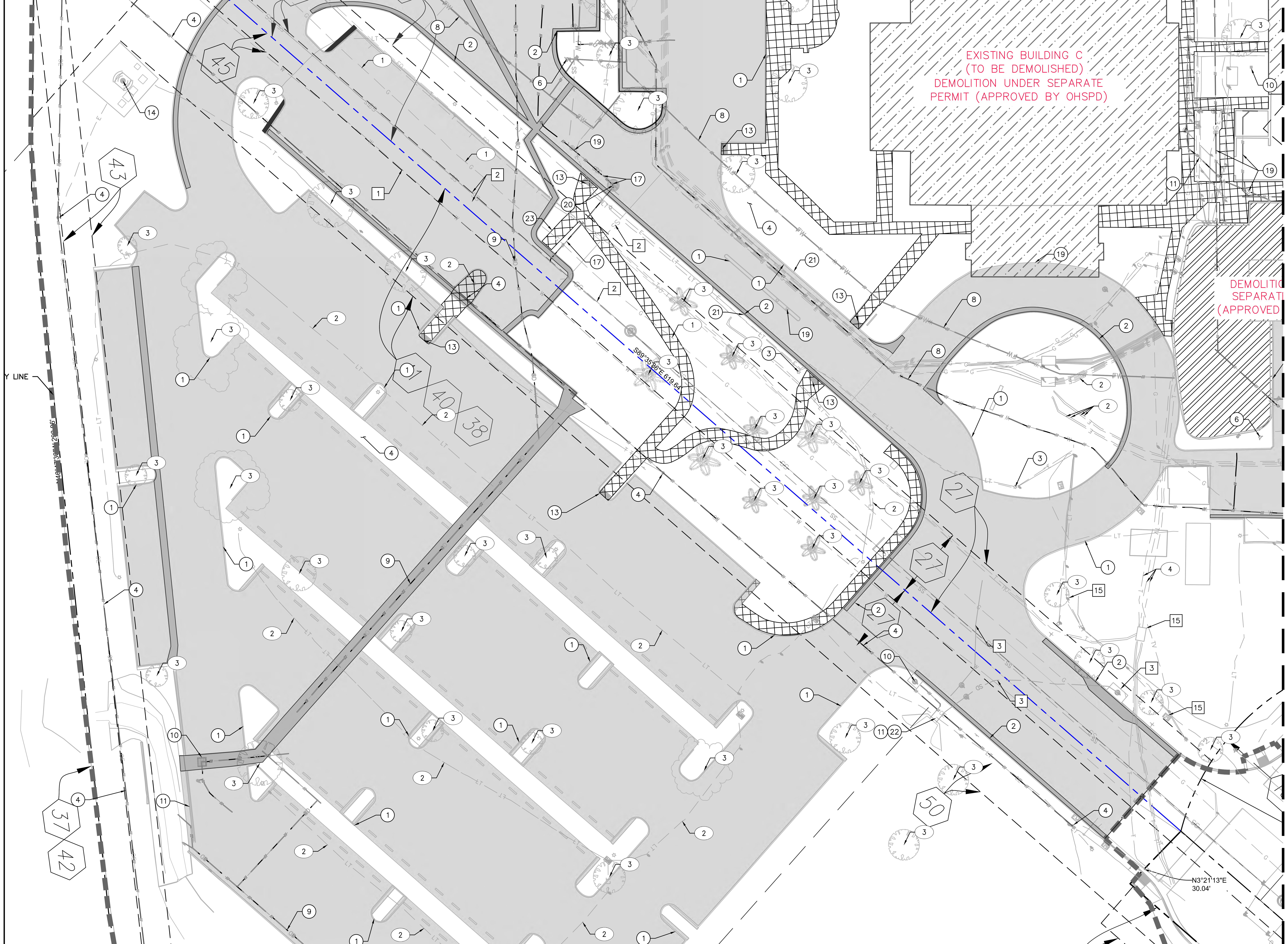
CITY OF WILDOMAR
INLAND VALLEY MEDICAL CENTER
ONSITE IMPROVEMENT PLANS
DEMOLITION PLAN

SHEET No.
CGD3.2
OF 25 SHTS

ISSUED FOR BID SET 5/21/21

SEE SHEET CGD3.2 FOR CONTINUATION



SEE SHEET CGD3.4 FOR CONTINUATION

SEE SHEET CGD3.6 FOR CONTINUATION

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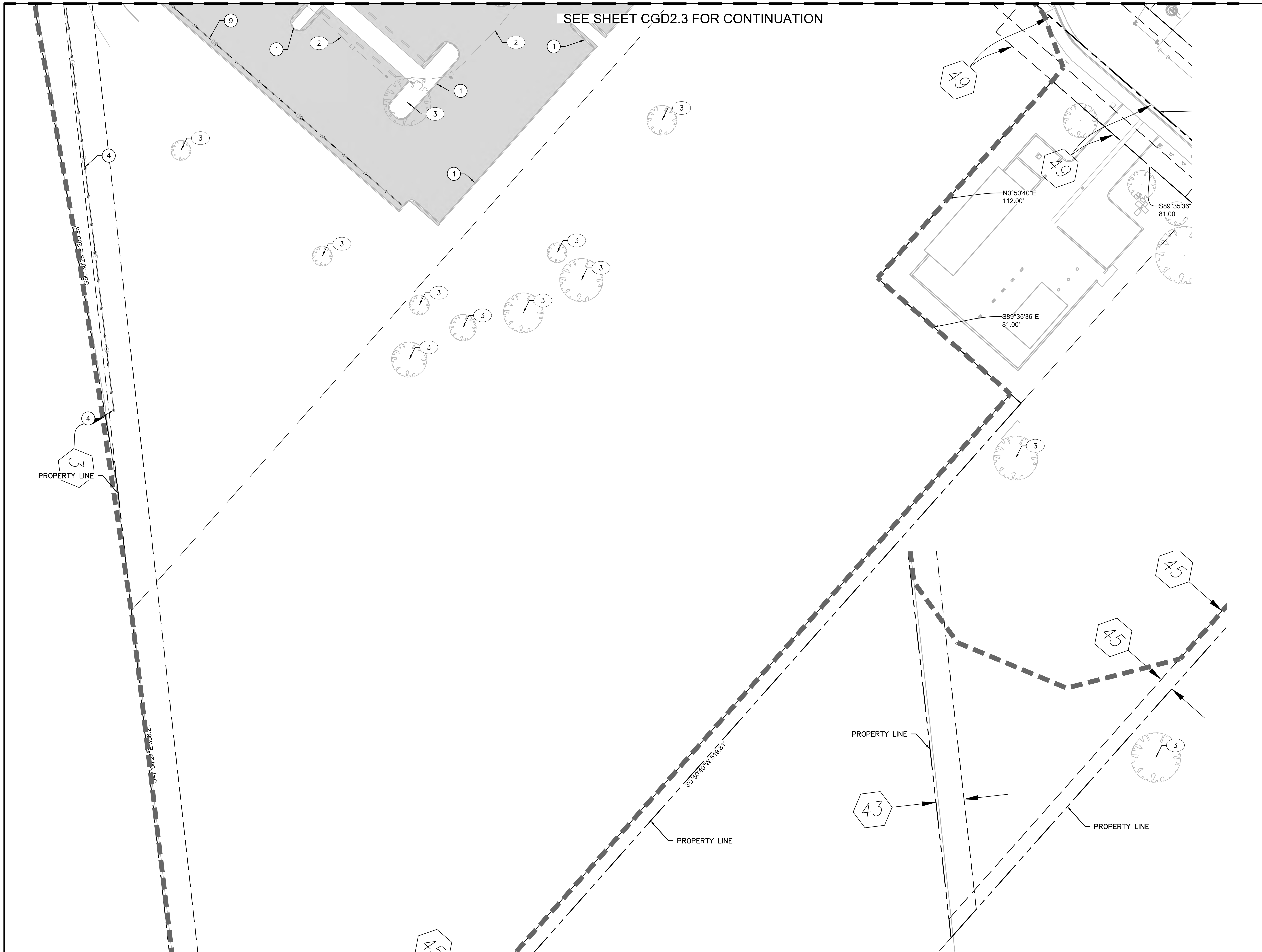
DEMOLITION PLAN

SHEET No. CGD3.3
OF 25 SHTS

ISSUED FOR BID SET 5/21/21

SEE SHEET CGD2.3 FOR CONTINUATION



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OF 25 SHTS

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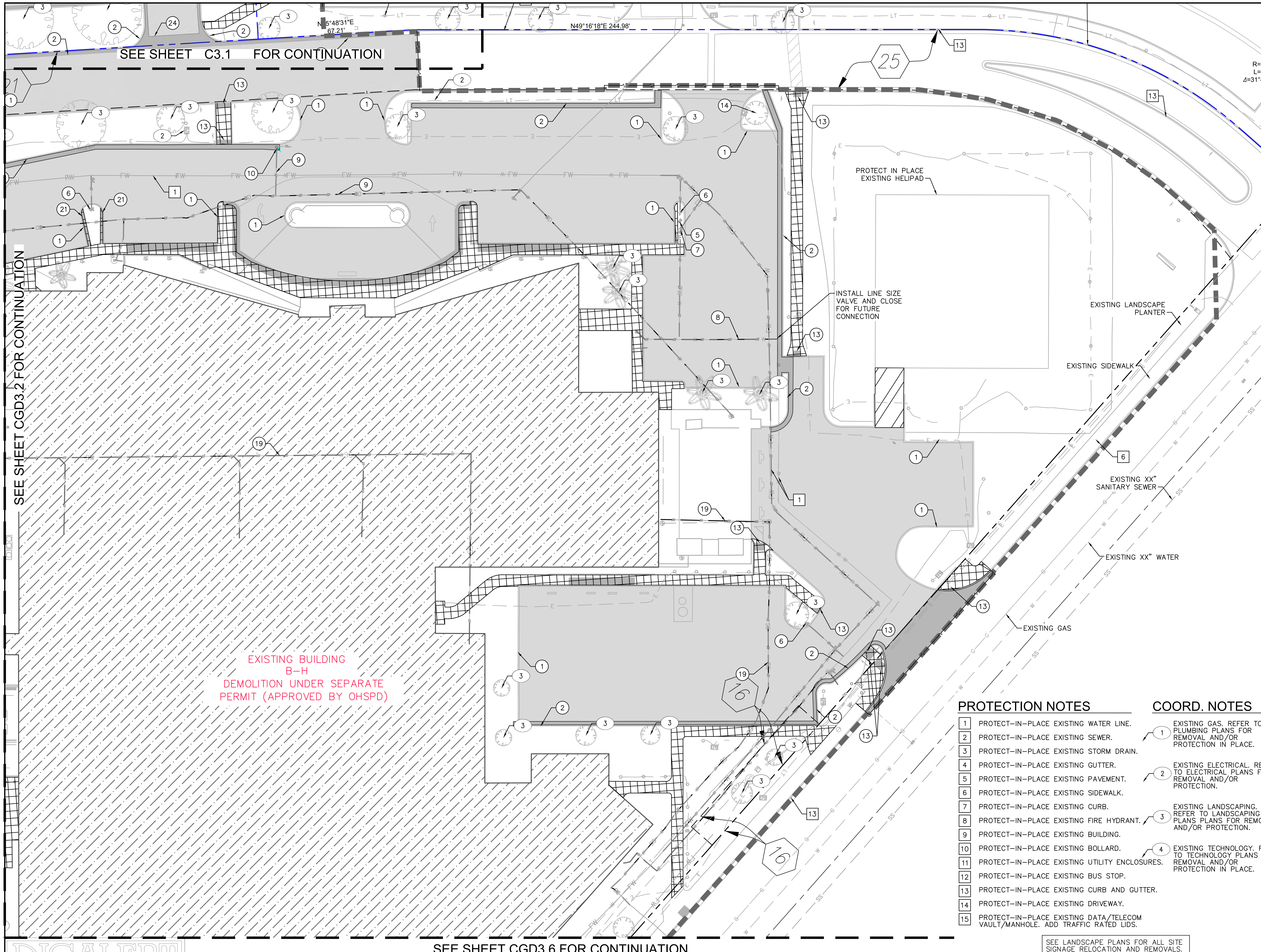

DEMOLITION CONSTRUCTION NOTES

1. REMOVE EXISTING CURB.
2. REMOVE EXISTING CURB AND GUTTER.
3. EXISTING MONUMENT SIGN TO BE RELOCATED UNDER SEPARATE PERMIT.
4. REMOVE EXISTING POWER POLE AND OVERHEAD UTILITY. SEE SCE AND MEP PLANS FOR FURTHER DETAIL.
5. REMOVE EXISTING POST INDICATING VALVE.
6. REMOVE EXISTING FIRE HYDRANT.
7. REMOVE EXISTING FIRE DEPARTMENT CONNECTION.
8. REMOVE EXISTING WATER LINE AND APPURTENANCES.
9. REMOVE EXISTING STORM DRAIN LINE.
10. REMOVE EXISTING CATCH BASIN.
11. REMOVE EXISTING FENCE, WALLS, WALL FOOTINGS, AND SLABS.
12. REMOVE TRASH ENCLOSURE.
13. REMOVE EXISTING CURB RAMP AND/OR HANDRAILS.
14. EXISTING CELL TOWER TO BE RELOCATED UNDER SEPARATE PERMIT.
15. REMOVE EXISTING SITE WALL.
16. REMOVE EXISTING BENCH, BUS SHELTER.
17. REMOVE EXISTING SEWER LINE, MANHOLES, AND ALL APPURTENANCES.
18. REMOVE FLAG POLE AND FOUNDATION.
19. REMOVE BOLLARD AND FOUNDATION.
20. REMOVE BIKE RACK. COORDINATE NEW LOCATION WITH OWNER.
21. REMOVE GATE ARMS AND GATE CONTROLS.
22. REMOVE CONCRETE HEADWALL AND FOOTINGS.
23. REMOVE STAIRS.
24. REMOVE EXISTING GUTTER.

LEGEND

- PROPERTY LINE
- CENTER LINE
- DEMOLITION LIMIT LINE ON–SITE
- SAWCUT TO NEAREST CONSTRUCTION JOINT OR EDGE AND JOIN PER DETAIL 8, SHEET CGD7.0.
- TEMPORARY CHAIN LINK FENCE WITH MESH
- DEMOLISH UTILITY
- REMOVE EXISTING CONCRETE SIDEWALK.
- REMOVE EXISTING ASPHALT CONCRETE PAVEMENT AND WHEEL STOPS.
- REMOVE EXISTING CONCRETE CURB, GUTTER, CURB AND GUTTER, AND/OR WALK OFF STRIP.
- REMOVE EXISTING BUILDING. UNDER SEPARATE PERMIT (APPROVED BY OSHPD)
- REMOVE EXISTING CENTRAL UTILITY PLANT. UNDER SEPARATE PERMIT (APPROVED BY OSHPD)
- REMOVE EXISTING CONCRETE PAVEMENT, CURBS, AND GUTTERS.
- EXISTING GAS
- EXISTING ELECTRICAL
- EXISTING TECHNOLOGY

PROTECTION NOTES

1. PROTECT–IN–PLACE EXISTING WATER LINE.
2. PROTECT–IN–PLACE EXISTING SEWER.
3. PROTECT–IN–PLACE EXISTING STORM DRAIN.
4. PROTECT–IN–PLACE EXISTING GUTTER.
5. PROTECT–IN–PLACE EXISTING PAVEMENT.
6. PROTECT–IN–PLACE EXISTING SIDEWALK.
7. PROTECT–IN–PLACE EXISTING CURB.
8. PROTECT–IN–PLACE EXISTING FIRE HYDRANT.
9. PROTECT–IN–PLACE EXISTING BUILDING.
10. PROTECT–IN–PLACE EXISTING BOLLARD.
11. PROTECT–IN–PLACE EXISTING UTILITY ENCLOSURES.
12. PROTECT–IN–PLACE EXISTING BUS STOP.
13. PROTECT–IN–PLACE EXISTING CURB AND GUTTER.
14. PROTECT–IN–PLACE EXISTING DRIVEWAY.
15. PROTECT–IN–PLACE EXISTING DATA/TELECOM VAULT/MANHOLE. ADD TRAFFIC RATED LIDS.

COORD. NOTES

1. EXISTING GAS. REFER TO PLUMBING PLANS FOR REMOVAL AND/OR PROTECTION IN PLACE.
2. EXISTING ELECTRICAL. REFER TO ELECTRICAL PLANS FOR REMOVAL AND/OR PROTECTION.
3. EXISTING LANDSCAPING. REFER TO LANDSCAPING PLANS PLANS FOR REMOVAL AND/OR PROTECTION.
4. EXISTING TECHNOLOGY. REFER TO TECHNOLOGY PLANS FOR REMOVAL AND/OR PROTECTION IN PLACE.

SEE LANDSCAPE PLANS FOR ALL SITE SIGNAGE RELOCATION AND REMOVALS.

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MARK	BY	DATE	REVISIONS	APPR.	DATE
	ENGINEER			CITY	

CITY OF WILDOMAR
ACCEPTED BY:
Date:
Daniel A. York, Director of Public Works/ City Engineer, PE 43212
ACCEPTANCE AS TO CONFORMANCE WITH APPLICABLE CITY STANDARDS AND PRACTICES

SEAL ENGINEER:
REGISTERED PROFESSIONAL ENGINEER — NIKKI D. KERRY — RCE NO. 58449 — CIVIL — STATE OF CALIFORNIA

Kimley»Horn
1100 Town and Country Road, Suite 700
Orange, CA 92868
714.939.1030 F 714.938.9488
www.kimley-horn.com
PREPARED BY: NIKKI KERRY
R.C.E. No. 58449 EXP. 12/31/22

BENCHMARK:
Elevation = 1317.14
Datum = NAD 83
BENCHMARK # ___________
THIS SURVEY WAS PERFORMED ON 04/23/19 BY JOEL PAULSON L.S. 6637
SCALE: H: As Noted V: As Noted

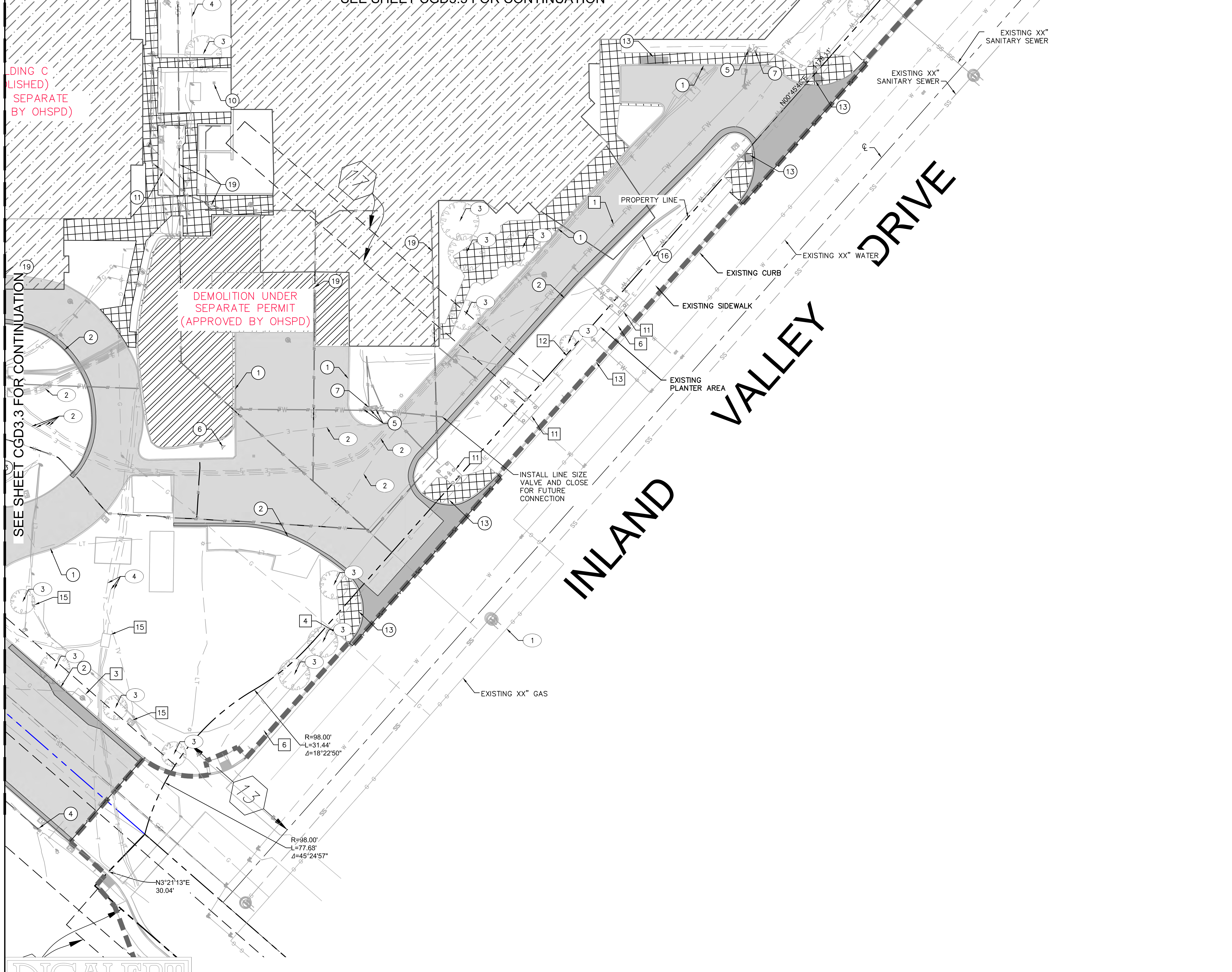
PP, CUP, PM, TM, etc. Project XX-XXXX
CITY OF WILDOMAR
INLAND VALLEY MEDICAL CENTER
ONSITE IMPROVEMENT PLANS
DEMOLITION PLAN

SHEET No. CGD3.5
OF 25 SHTS

ISSUED FOR BID SET 5/21/21

SEE SHEET CGD3.5 FOR CONTINUATION

SEE SHEET CGD3.3 FOR CONTINUATION



SEE SHEET CGD3.6 FOR CONTINUATION

LEGEND

- PROPERTY LINE
- CENTER LINE
- DEMOLITION LIMIT LINE ON-SITE
- SAWCUT TO NEAREST CONSTRUCTION JOINT OR EDGE AND JOIN PER DETAIL 8, SHEET CGD7.0.
- TEMPORARY CHAIN LINK FENCE WITH MESH
- DEMOLISH UTILITY
- REMOVE EXISTING CONCRETE SIDEWALK.
- REMOVE EXISTING ASPHALT CONCRETE PAVEMENT AND WHEEL STOPS.
- REMOVE EXISTING CONCRETE CURB, GUTTER, CURB AND GUTTER, AND/OR WALK OFF STRIP.
- REMOVE EXISTING BUILDING. UNDER SEPARATE PERMIT (APPROVED BY OSHPD)
- REMOVE EXISTING CENTRAL UTILITY PLANT. UNDER SEPARATE PERMIT (APPROVED BY OSHPD)
- REMOVE EXISTING CONCRETE PAVEMENT, CURB, GUTTERS.
- G EXISTING GAS
- E EXISTING ELECTRICAL
- T EXISTING TECHNOLOGY

PROTECTION NOTES

1. PROTECT-IN-PLACE EXISTING WATER LINE.
2. PROTECT-IN-PLACE EXISTING SEWER.
3. PROTECT-IN-PLACE EXISTING STORM DRAIN.
4. PROTECT-IN-PLACE EXISTING GUTTER.
5. PROTECT-IN-PLACE EXISTING PAVEMENT.
6. PROTECT-IN-PLACE EXISTING SIDEWALK.
7. PROTECT-IN-PLACE EXISTING CURB.
8. PROTECT-IN-PLACE EXISTING FIRE HYDRANT.
9. PROTECT-IN-PLACE EXISTING BUILDING.
10. PROTECT-IN-PLACE EXISTING BOLLARD.
11. PROTECT-IN-PLACE EXISTING UTILITY ENCLOSURES.
12. PROTECT-IN-PLACE EXISTING BUS STOP.
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14. PROTECT-IN-PLACE EXISTING DRIVEWAY.
15. PROTECT-IN-PLACE EXISTING DATA/TELECOM VAULT/MANHOLE. ADD TRAFFIC RATED LIDS.

COORD. NOTES

1. EXISTING GAS. REFER TO PLUMBING PLANS FOR REMOVAL AND/OR PROTECTION IN PLACE.
2. EXISTING ELECTRICAL. REFER TO ELECTRICAL PLANS FOR REMOVAL AND/OR PROTECTION.
3. EXISTING LANDSCAPING/SITE SIGNAGE. REFER TO LANDSCAPING PLANS PLANS FOR REMOVAL AND/OR PROTECTION.
4. EXISTING TECHNOLOGY. REFER TO TECHNOLOGY PLANS FOR REMOVAL AND/OR PROTECTION IN PLACE.

DEMOLITION CONSTRUCTION NOTES

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24. REMOVE EXISTING GUTTER.

GRAPHIC SCALE IN FEET
0 10 20 40

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	ENGINEER			CITY	

CITY OF WILDOMAR
ACCEPTED BY:
Date:
Daniel A. York, Director of Public Works/ City Engineer, PE 43212
ACCEPTANCE AS TO CONFORMANCE WITH APPLICABLE CITY STANDARDS AND PRACTICES

SEAL ENGINEER:
REGISTERED PROFESSIONAL ENGINEER
NIKKI D. KERRY
RCE NO. 58449
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BENCHMARK:
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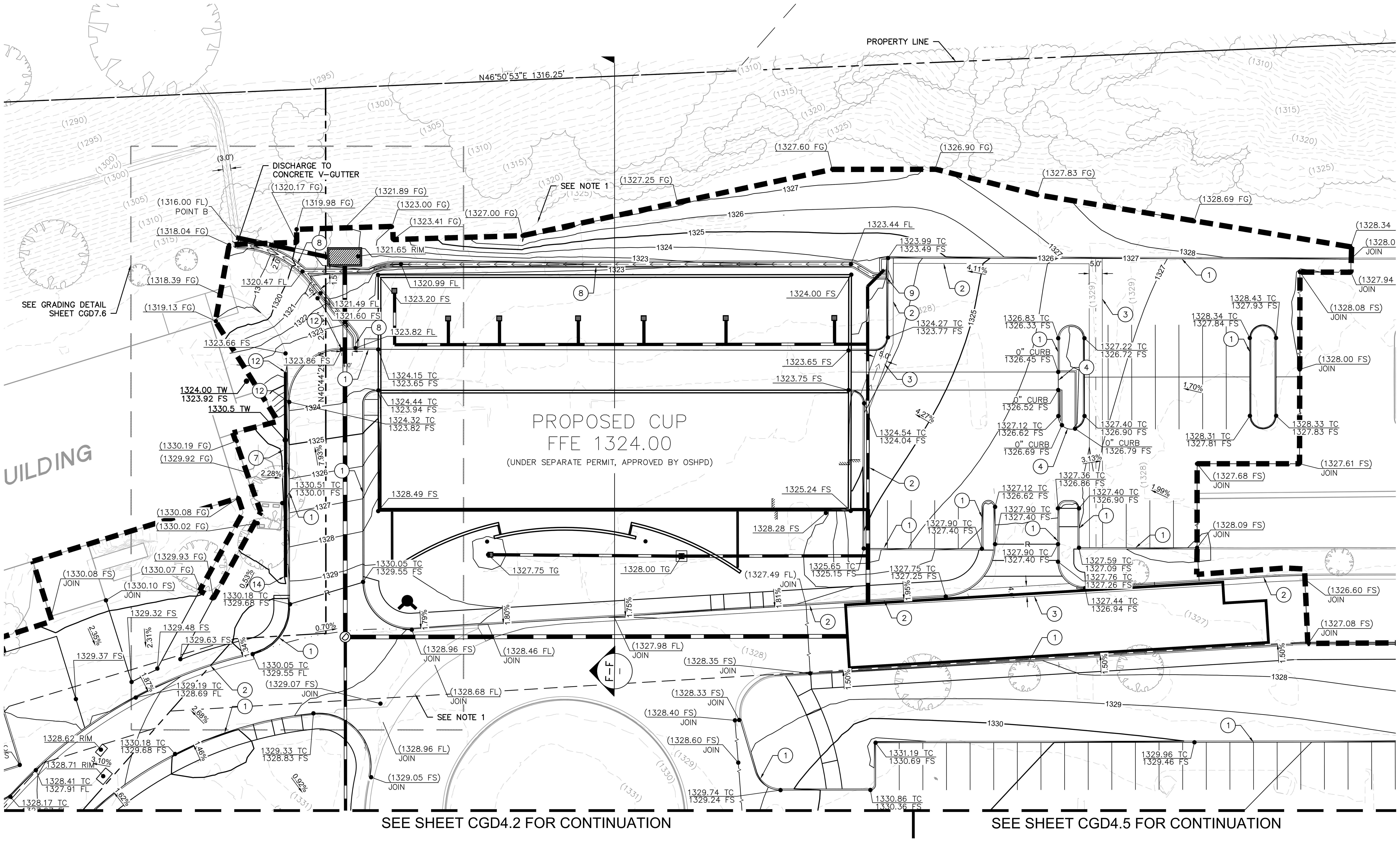
SCALE:
H: As Noted V: As Noted

PP, CUP, PM, TM, etc. Project XX-XXXX
CITY OF WILDOMAR
INLAND VALLEY MEDICAL CENTER
ONSITE IMPROVEMENT PLANS
DEMOLITION PLAN

SHEET No.
CGD3.6
OF 25 SHTS

ISSUED FOR BID SET 5/21/21



LEGEND

	PROPERTY LINE
	CENTER LINE
	EASEMENT OR SETBACK LINE
	CIVIL LIMIT OF WORK LINE
	DEEPENED FOOTING (DF) OR STEM WALL (SW)
GB	GRADE BREAK LINE
R	RIDGE LINE
	FLOW LINE
	SAWCUT
	RETAINING WALL BY SEPARATE PERMIT THROUGH BUILDING AND SAFETY
	APPROX. LIMITS OF OVER EXCAVATION. 2' FOR PROPOSED PAVEMENT AND 5' FOR BUILDINGS PER GEOTECHNICAL REPORT
XX	AREA UNDER DETENTION NOT TO BE RECOMPACTED TO PROVIDE INFILTRATION
XX.XX TC / XX.XX FS	PROPOSED SPOT GRADE
(XX.XX TC) / (XX.XX FS)	EXISTING SPOT GRADE
X.XX%	PROPOSED FLOW (DIRECTION AND SLOPE)
	OLDCASTLE BIOPOD BIOFILTRATION. REFER TO SHEET CGD7.4.
D	STORM DRAIN MANHOLE
	STORM DRAIN
	CATCH BASIN
	STEPPED FOOTING

*NOTE: SEE SHEET CGD7.1 FOR PAVEMENT SECTIONS

GRADING CONSTRUCTION NOTES

1. INSTALL CONCRETE 6" CURB PER DETAIL 1, SHEET CGD7.1.
2. INSTALL CONCRETE CURB AND GUTTER PER DETAIL 2, SHEET CGD7.1.
3. INSTALL VALLEY GUTTER PER DETAIL 4, SHEET CGD7.1. *VALLEY GUTTER IN LANDSCAPING DOES NOT NEED REINFORCEMENT.
4. INSTALL 0" CURB PER DETAIL 3, SHEET CGD7.1.
5. INSTALL 4' CHANNEL GUTTER PER DETAIL 10, SHEET C8.1.
6. INSTALL DETENTION BASIN OVERFLOW CHANNEL PER DETAIL 11, SHEET CGD7.1
7. INSTALL RETAINING WALL PER SEPARATE PERMIT.
8. CONSTRUCT DRAINAGE GUTTER PER DETAIL 10, SHEET CGD7.1.
9. INSTALL CONCRETE 4" CURB FOR 2-LF FOR OVERFLOW PER DETAIL 1, CGD7.1.
10. DOCK WALL (UNDER SEPARATE PERMIT APPROVED BY OSHPD)
11. ADJUST MANHOLE/LID/STRUCTURE TO NEW GRADE. PROVIDE TRAFFIC RATED GRATE AND/OR STRUCTURE IF IN PAVEMENT.
12. INSTALL MOUNTABLE CURB PER DETAIL 6, SHEET CGD7.1.
13. DETENTION PND ACCESS ROAD. SEE PAVING PLAN.
14. INSTALL HANDRAIL. SEE ARCHITECTURAL PLANS.

NOTE:
1. CONTRACTOR TO FIELD VERIFY ALL JOIN POINTS (XXXX.XX) PRIOR TO START OF GRADING AND NOTIFY ENGINEER OF ANY DISCREPANCIES.

NORTH

GRAPHIC SCALE IN FEET
0 10 20 40

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CITY OF WILDOMAR
ACCEPTED BY:
Date:
Daniel A. York, Director of Public Works/ City Engineer, PE 43212
ACCEPTANCE AS TO CONFORMANCE WITH APPLICABLE CITY STANDARDS AND PRACTICES

SEAL ENGINEER:
REGISTERED PROFESSIONAL ENGINEER — NIKKI D. KERRY — RCE NO. 58449 — CIVIL — STATE OF CALIFORNIA

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www.kimley-horn.com
PREPARED BY: NIKKI KERRY
R.C.E. No. 58449 EXP. 12/31/22

BENCHMARK:
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Datum = NAD 83
BENCHMARK #
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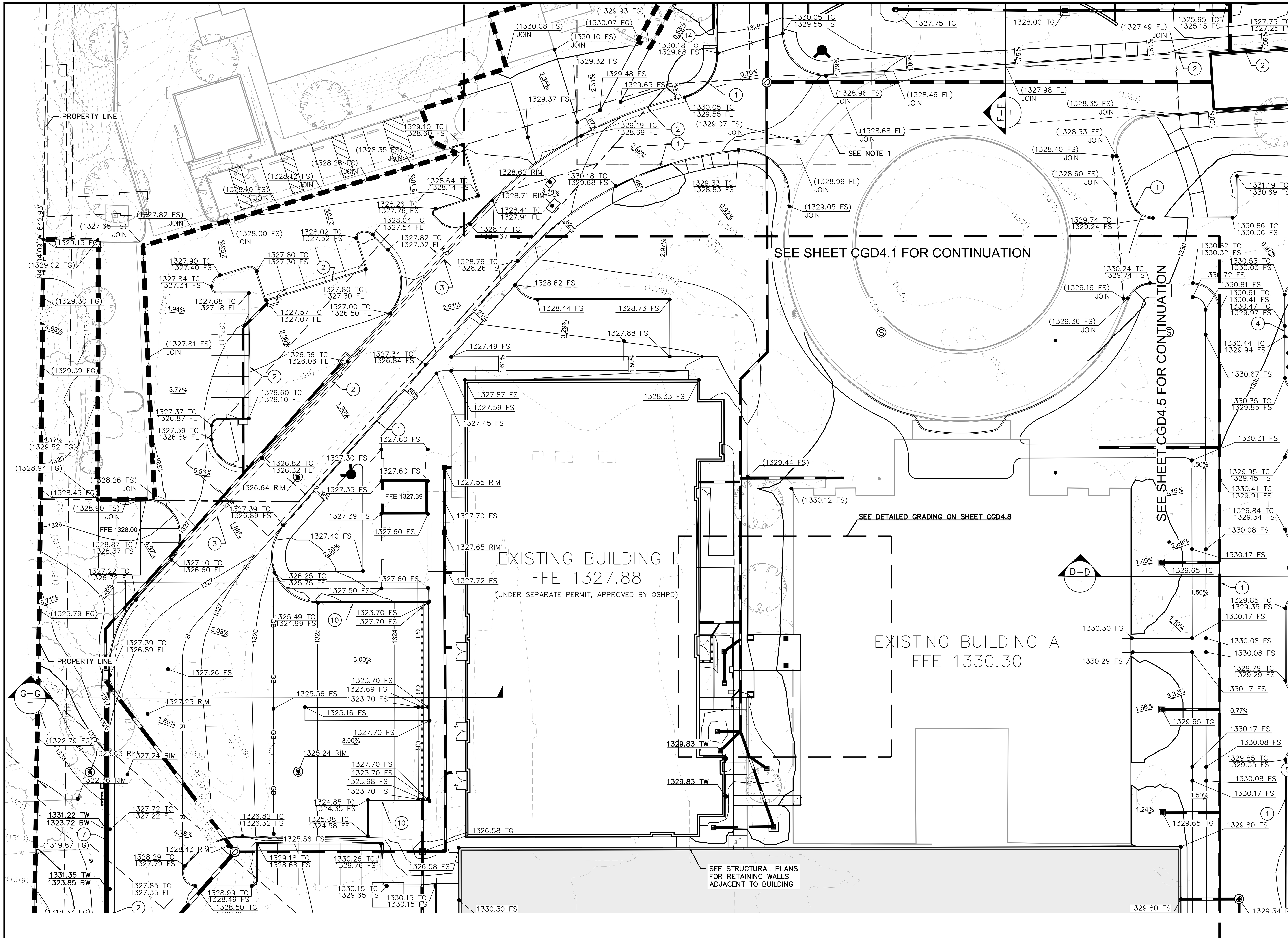
SCALE: H: As Noted V: As Noted

PP, CUP, PM, TM, etc. Project XX-XXXX
CITY OF WILDOMAR
INLAND VALLEY MEDICAL CENTER
ONSITE IMPROVEMENT PLANS
PRECISE GRADING PLAN

SHEET No. CGD4.1
OF 69 SHTS

ISSUED FOR BID SET 5/21/21



SEE SHEET CGD4.3 FOR CONTINUATION

LEGEND

	PROPERTY LINE
	CENTER LINE
	EASEMENT OR SETBACK LINE
	CIVIL LIMIT OF WORK LINE
	DEEPENED FOOTING (DF) OR STEM WALL (SW)
GB	GRADE BREAK LINE
R	RIDGE LINE
	FLOW LINE
	SAWCUT
	RETAINING WALL BY SEPARATE PERMIT THROUGH BUILDING AND SAFETY
	APPROX. LIMITS OF OVER EXCAVATION. 2' FOR PROPOSED PAVEMENT AND 5' FOR BUILDINGS PER GEOTECHNICAL REPORT
XX	AREA UNDER DETENTION NOT TO BE RECOMPACTED TO PROVIDE INFILTRATION
XX.XX TC / XX.XX FS	PROPOSED SPOT GRADE
(XX.XX TC) / (XX.XX FS)	EXISTING SPOT GRADE
X.XX%	PROPOSED FLOW (DIRECTION AND SLOPE)
	OLDCASTLE BIOPOD BIOFILTRATION. REFER TO SHEET CGD7.4.
D	STORM DRAIN MANHOLE
	STORM DRAIN
	CATCH BASIN
	STEPPED FOOTING

*NOTE: SEE SHEET CGD7.1 FOR PAVEMENT SECTIONS

GRADING CONSTRUCTION NOTES

1. INSTALL CONCRETE 6" CURB PER DETAIL 1, SHEET CGD7.1.
2. INSTALL CONCRETE CURB AND GUTTER PER DETAIL 2, SHEET CGD7.1.
3. INSTALL VALLEY GUTTER PER DETAIL 4, SHEET CGD7.1. *VALLEY GUTTER IN LANDSCAPING DOES NOT NEED REINFORCEMENT.
4. INSTALL 0" CURB PER DETAIL 3, SHEET CGD7.1.
5. INSTALL 4' CHANNEL GUTTER PER DETAIL 10, SHEET C8.1.
6. INSTALL DETENTION BASIN OVERFLOW CHANNEL PER DETAIL 11, SHEET CGD7.1
7. INSTALL RETAINING WALL PER SEPARATE PERMIT.
8. CONSTRUCT DRAINAGE GUTTER PER DETAIL 10, SHEET CGD7.1.
9. INSTALL CONCRETE 4" CURB FOR 2–LF FOR OVERFLOW PER DETAIL 1, CGD7.1.
10. DOCK WALL (UNDER SEPARATE PERMIT APPROVED BY OSHPD)
11. ADJUST MANHOLE/LID/STRUCTURE TO NEW GRADE. PROVIDE TRAFFIC RATED GRATE AND/OR STRUCTURE IF IN PAVEMENT.
12. INSTALL MOUNTABLE CURB PER DETAIL 6, SHEET CGD7.1.
13. DETENTION PND ACCESS ROAD. SEE PAVING PLAN.
14. INSTALL HANDRAIL. SEE ARCHITECTURAL PLANS.

NOTE:
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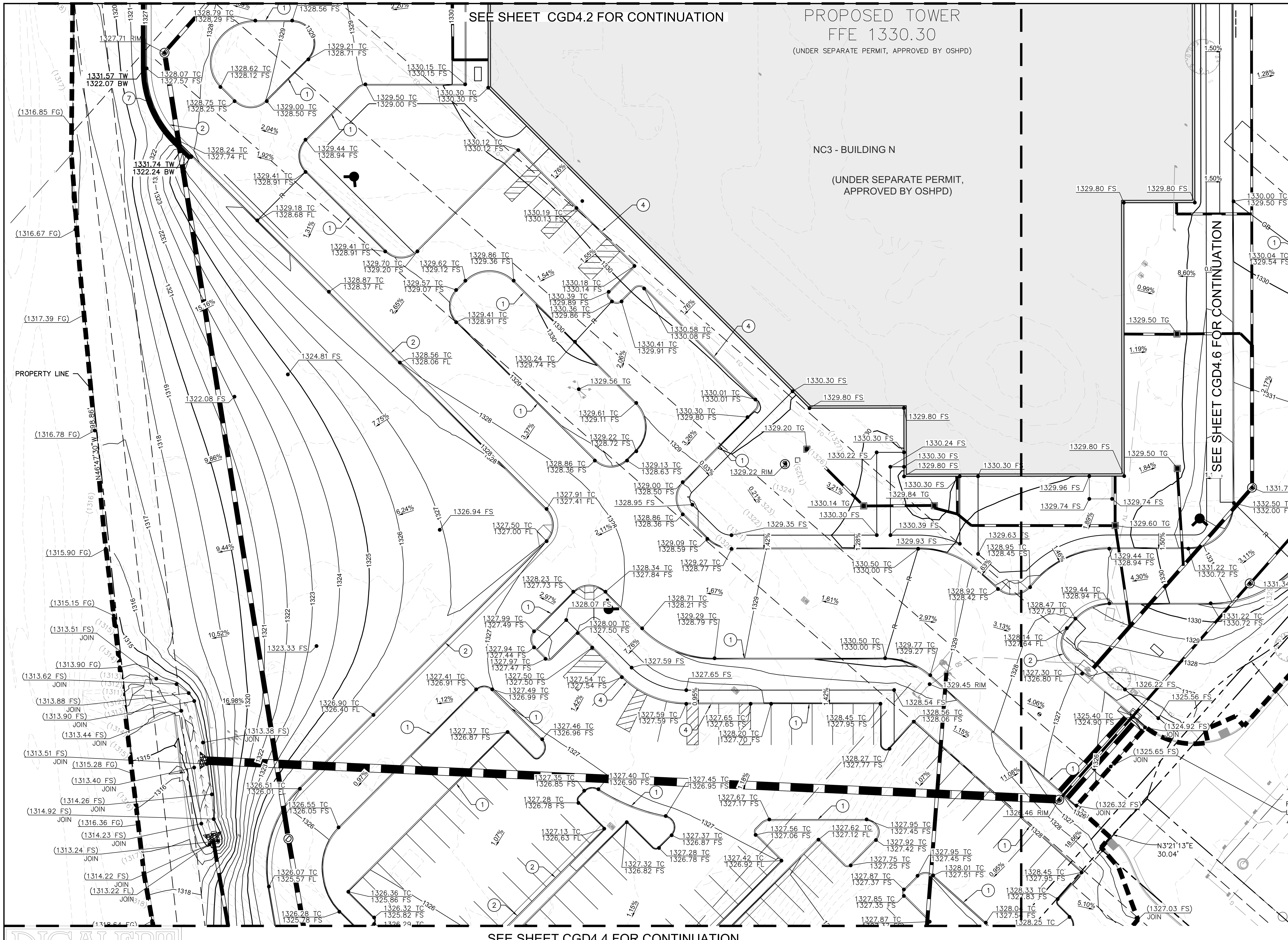
PP, CUP, PM, TM, etc. Project XX-XXXX
CITY OF WILDOMAR
INLAND VALLEY MEDICAL CENTER
ONSITE IMPROVEMENT PLANS
PRECISE GRADING PLAN

SHEET No. CGD4.2
OF 69 SHTS

ISSUED FOR BID SET 5/21/21



LEGEND

- PROPERTY LINE
- CENTER LINE
- EASEMENT OR SETBACK LINE
- CIVIL LIMIT OF WORK LINE
- DEEPENED FOOTING (DF) OR STEM WALL (SW)
- GB — GRADE BREAK LINE
- R — RIDGE LINE
- FLOW LINE
- SAWCUT
- RETAINING WALL BY SEPARATE PERMIT THROUGH BUILDING AND SAFETY
- APPROX. LIMITS OF OVER EXCAVATION. 2' FOR PROPOSED PAVEMENT AND 5' FOR BUILDINGS PER GEOTECHNICAL REPORT
- XX — AREA UNDER DETENTION NOT TO BE RECOMPACTED TO PROVIDE INFILTRATION
- XX.XX TC / XX.XX FS — PROPOSED SPOT GRADE
- (XX.XX TC) / (XX.XX FS) — EXISTING SPOT GRADE
- X.XX% — PROPOSED FLOW (DIRECTION AND SLOPE)
- OLDCASTLE BIOPOD BIOFILTRATION. REFER TO SHEET CGD7.4.
- D — STORM DRAIN MANHOLE
- STORM DRAIN
- CATCH BASIN
- STEPPED FOOTING

*NOTE: SEE SHEET CGD7.1 FOR PAVEMENT SECTIONS

GRADING CONSTRUCTION NOTES

1. INSTALL CONCRETE 6" CURB PER DETAIL 1, SHEET CGD7.1.
2. INSTALL CONCRETE CURB AND GUTTER PER DETAIL 2, SHEET CGD7.1.
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4. INSTALL 0" CURB PER DETAIL 3, SHEET CGD7.1.
5. INSTALL 4' CHANNEL GUTTER PER DETAIL 10, SHEET C8.1.
6. INSTALL DETENTION BASIN OVERFLOW CHANNEL PER DETAIL 11, SHEET CGD7.1
7. INSTALL RETAINING WALL PER SEPARATE PERMIT.
8. CONSTRUCT DRAINAGE GUTTER PER DETAIL 10, SHEET CGD7.1.
9. INSTALL CONCRETE 4" CURB FOR 2-LF FOR OVERFLOW PER DETAIL 1, CGD7.1.
10. DOCK WALL (UNDER SEPARATE PERMIT APPROVED BY OSHPD)
11. ADJUST MANHOLE/LID/STRUCTURE TO NEW GRADE. PROVIDE TRAFFIC RATED GRATE AND/OR STRUCTURE IF IN PAVEMENT.
12. INSTALL MOUNTABLE CURB PER DETAIL 6, SHEET CGD7.1.
13. DETENTION PND ACCESS ROAD. SEE PAVING PLAN.
14. INSTALL HANDRAIL. SEE ARCHITECTURAL PLANS.

NOTE:
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0 10 20 40

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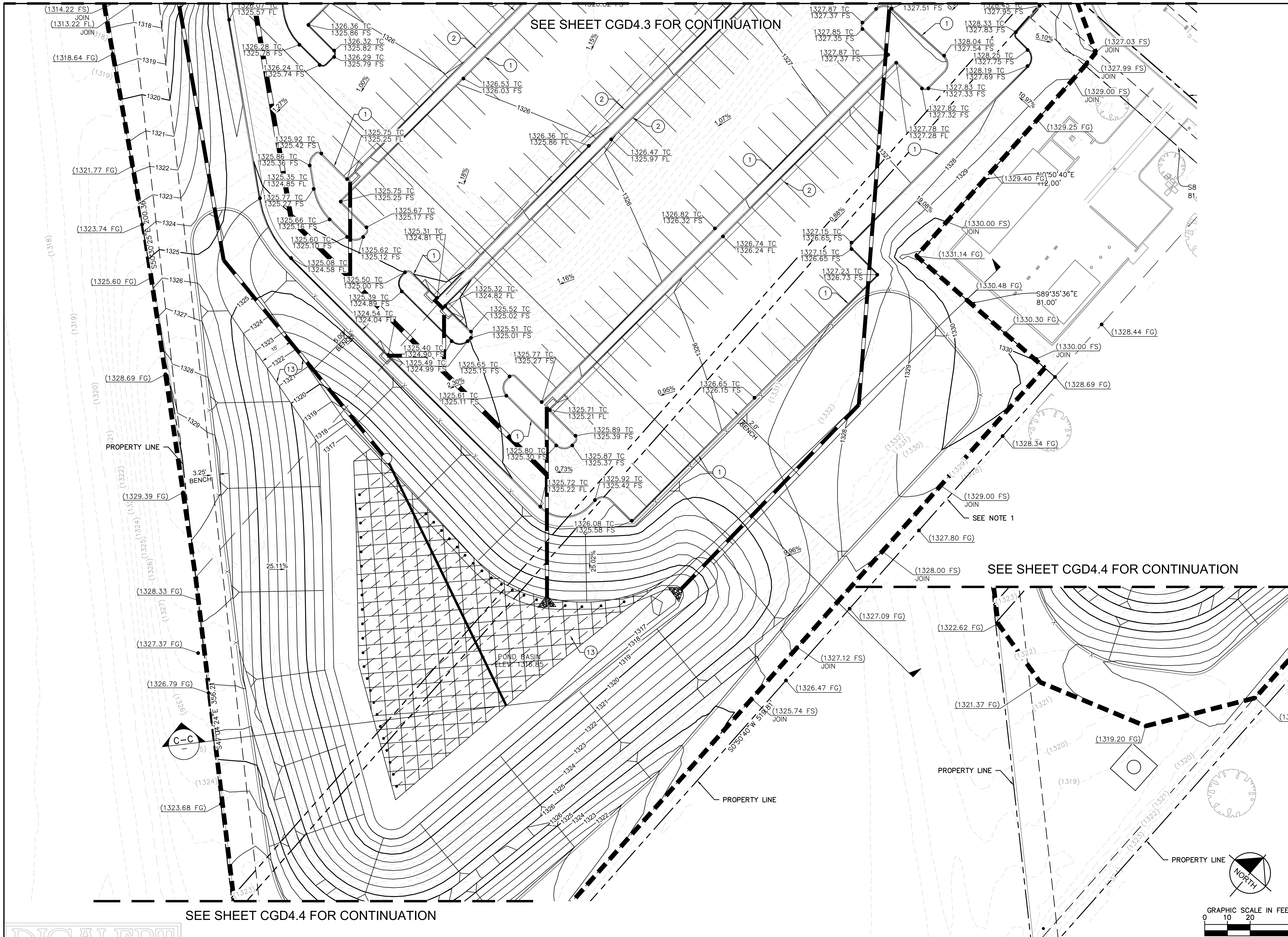
PRECISE GRADING PLAN

SHEET No. CGD4.3
OF 69 SHTS

ISSUED FOR BID SET 5/21/21



LEGEND

- PROPERTY LINE
- CENTER LINE
- EASEMENT OR SETBACK LINE
- CIVIL LIMIT OF WORK LINE
- DEEPENED FOOTING (DF) OR STEM WALL (SW)
- GB — GRADE BREAK LINE
- R — RIDGE LINE
- FLOW LINE
- SAWCUT
- RETAINING WALL BY SEPARATE PERMIT THROUGH BUILDING AND SAFETY
- APPROX. LIMITS OF OVER EXCAVATION. 2' FOR PROPOSED PAVEMENT AND 5' FOR BUILDINGS PER GEOTECHNICAL REPORT
- XX — AREA UNDER DETENTION NOT TO BE RECOMPACTED TO PROVIDE INFILTRATION
- XX.XX TC / XX.XX FS — PROPOSED SPOT GRADE
- (XX.XX TC) / (XX.XX FS) — EXISTING SPOT GRADE
- X.XX% — PROPOSED FLOW (DIRECTION AND SLOPE)
- OLDCASTLE BIOPOD BIOFILTRATION. REFER TO SHEET CGD7.4.
- D — STORM DRAIN MANHOLE
- STORM DRAIN
- CATCH BASIN
- STEPPED FOOTING

*NOTE: SEE SHEET CGD7.1 FOR PAVEMENT SECTIONS

GRADING CONSTRUCTION NOTES

1. INSTALL CONCRETE 6" CURB PER DETAIL 1, SHEET CGD7.1.
2. INSTALL CONCRETE CURB AND GUTTER PER DETAIL 2, SHEET CGD7.1.
3. INSTALL VALLEY GUTTER PER DETAIL 4, SHEET CGD7.1. *VALLEY GUTTER IN LANDSCAPING DOES NOT NEED REINFORCEMENT.
4. INSTALL 0" CURB PER DETAIL 3, SHEET CGD7.1.
5. INSTALL 4' CHANNEL GUTTER PER DETAIL 10, SHEET C8.1.
6. INSTALL DETENTION BASIN OVERFLOW CHANNEL PER DETAIL 11, SHEET CGD7.1
7. INSTALL RETAINING WALL PER SEPARATE PERMIT.
8. CONSTRUCT DRAINAGE GUTTER PER DETAIL 10, SHEET CGD7.1.
9. INSTALL CONCRETE 4" CURB FOR 2-LF FOR OVERFLOW PER DETAIL 1, CGD7.1.
10. DOCK WALL (UNDER SEPARATE PERMIT APPROVED BY OSHPD)
11. ADJUST MANHOLE/LID/STRUCTURE TO NEW GRADE. PROVIDE TRAFFIC RATED GRATE AND/OR STRUCTURE IF IN PAVEMENT.
12. INSTALL MOUNTABLE CURB PER DETAIL 6, SHEET CGD7.1.
13. DETENTION PND ACCESS ROAD. SEE PAVING PLAN.
14. INSTALL HANDRAIL. SEE ARCHITECTURAL PLANS.

NOTE:
1. CONTRACTOR TO FIELD VERIFY ALL JOIN POINTS (XXXX.XX) PRIOR TO START OF GRADING AND NOTIFY ENGINEER OF ANY DISCREPANCIES.

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MARK	BY	DATE	REVISIONS	APPR.	DATE
	ENGINEER				CITY

CITY OF WILDOMAR
ACCEPTED BY:
Date:
Daniel A. York, Director of Public Works/ City Engineer, PE 43212
ACCEPTANCE AS TO CONFORMANCE WITH APPLICABLE CITY STANDARDS AND PRACTICES

SEAL ENGINEER:
REGISTERED PROFESSIONAL ENGINEER — NIKKI D. KERRY — RCE NO. 58449 — CIVIL — STATE OF CALIFORNIA

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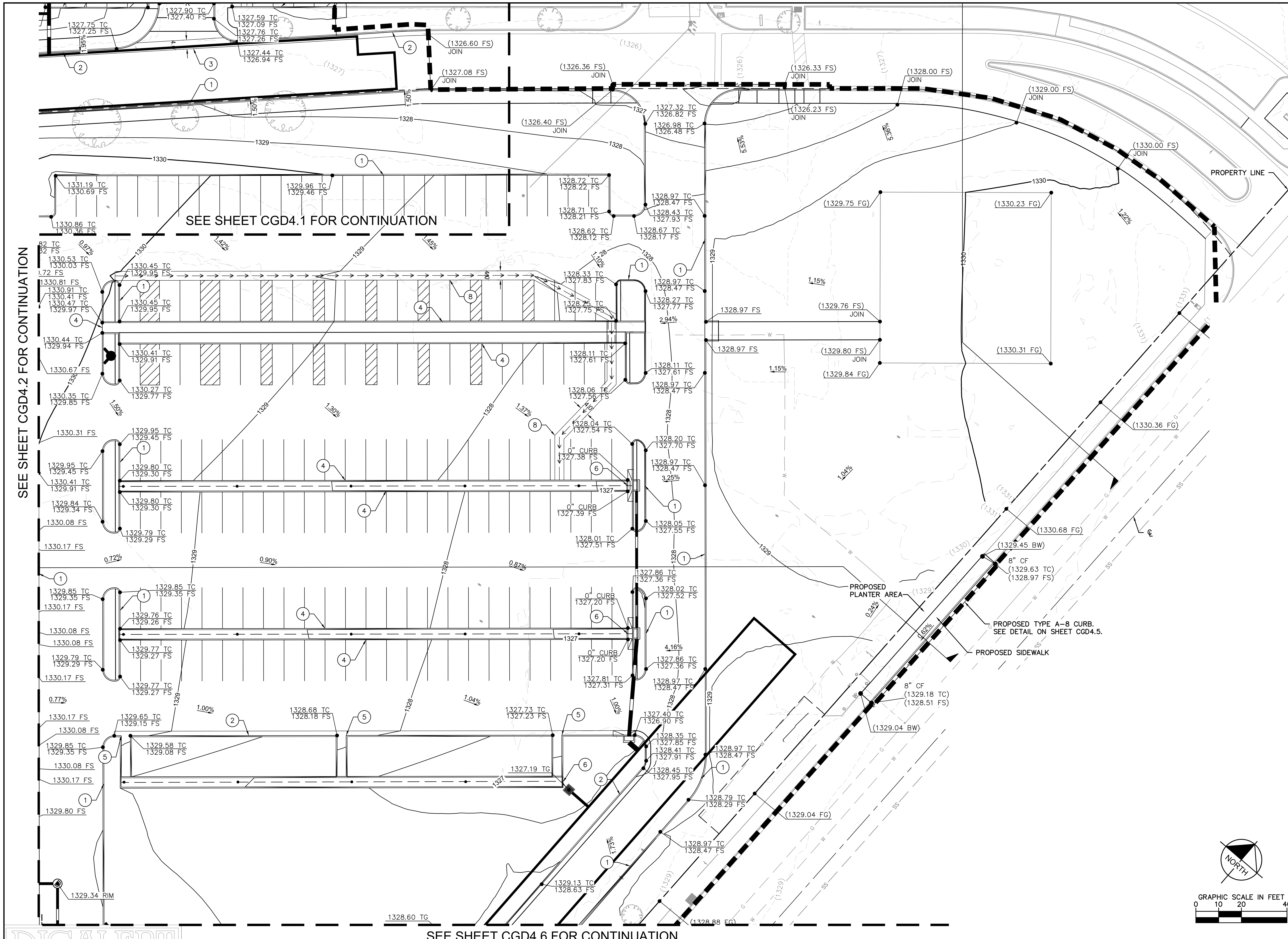
Orange, CA 92868
714.939.1030 F 714.938.9488
www.kimley-horn.com
PREPARED BY: NIKKI KERRY
R.C.E. No. 58449 EXP. 12/31/22

BENCHMARK:
Elevation = 1317.14
Datum = NAD 83
BENCHMARK #
THIS SURVEY WAS PERFORMED ON 04/23/19 BY JOEL PAULSON L.S. 6637
SCALE: H: As Noted V: As Noted

PP, CUP, PM, TM, etc. Project XX-XXXX
CITY OF WILDOMAR
INLAND VALLEY MEDICAL CENTER
ONSITE IMPROVEMENT PLANS
PRECISE GRADING PLAN

SHEET No. CGD4.4
OF 69 SHTS

ISSUED FOR BID SET 5/21/21



LEGEND

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	CIVIL LIMIT OF WORK LINE
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	SAWCUT
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XX	AREA UNDER DETENTION NOT TO BE RECOMPACTED TO PROVIDE INFILTRATION
XX.XX TC / XX.XX FS	PROPOSED SPOT GRADE
(XX.XX TC) / (XX.XX FS)	EXISTING SPOT GRADE
X.XX%	PROPOSED FLOW (DIRECTION AND SLOPE)
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D	STORM DRAIN MANHOLE
	STORM DRAIN
	CATCH BASIN
	STEPPED FOOTING

*NOTE: SEE SHEET CGD7.1 FOR PAVEMENT SECTIONS

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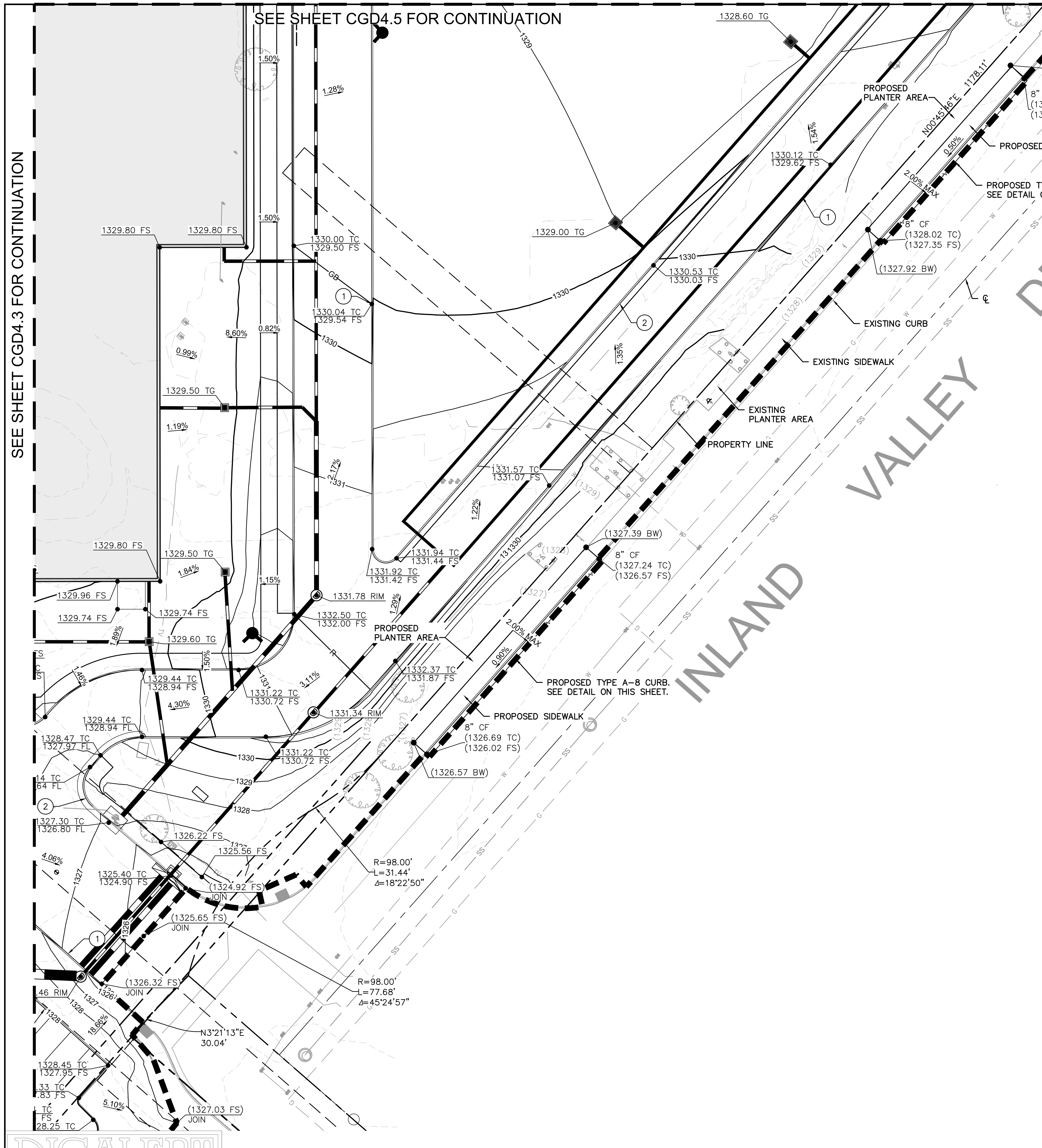
PP, CUP, PM, TM, etc. Project XX-XXXX
CITY OF WILDOMAR
INLAND VALLEY MEDICAL CENTER
ONSITE IMPROVEMENT PLANS
PRECISE GRADING PLAN

SHEET No. CGD4.5
OF 69 SHTS

ISSUED FOR BID SET 5/21/21



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- Ⓓ STORM DRAIN MANHOLE
- STORM DRAIN
- CATCH BASIN
- STEPPED FOOTING

*NOTE: SEE SHEET CGD7.1 FOR PAVEMENT SECTIONS

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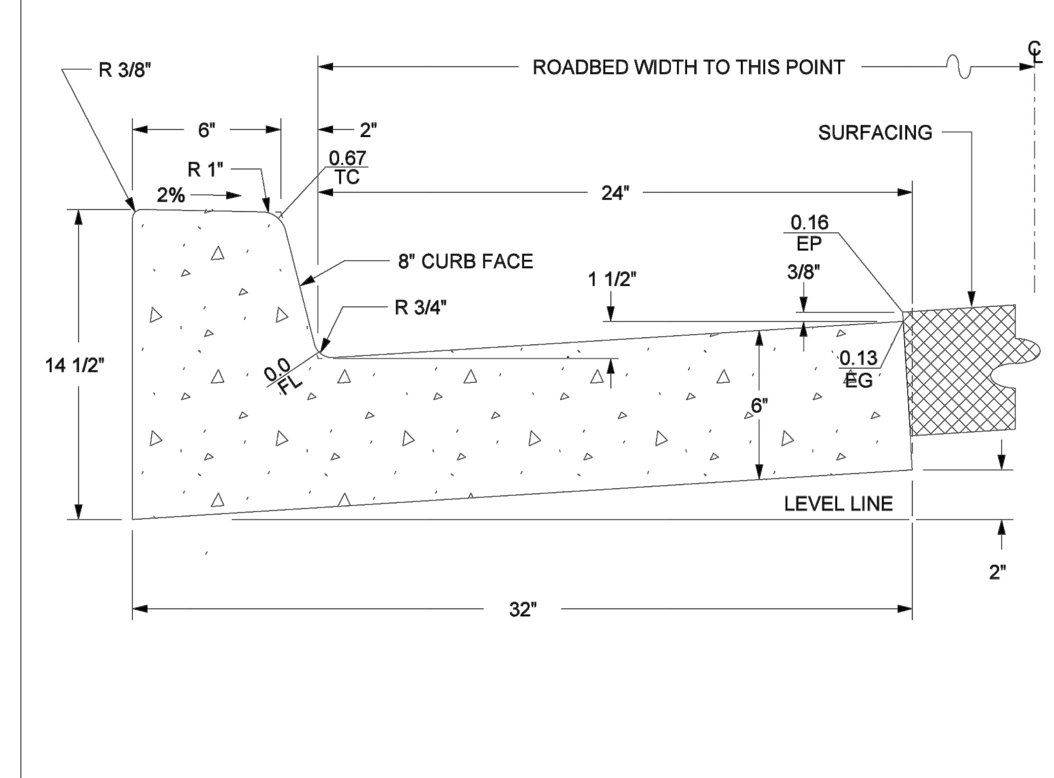

CLASS "B" CONCRETE
1.73 CU. FT. / L.F.
1 CU. YD. = 15.60 L.F.

ABBREVIATIONS:
TC = TOP OF CURB
FL = FLOWLINE
EG = EDGE OF GUTTER
EP = EDGE OF PAVEMENT

APPROVED BY:
DIRECTOR OF TRANSPORTATION
GEORGE A. JOHNSON, RCE 42328
DATE: 05/01/07

REVISIONS	REV.	BY:	APR'D	DATE	REV.	BY:	APR'D	DATE
8-71, 9-88	1				4			
2-90, 11-04	2				5			
	3				6			

COUNTY OF RIVERSIDE
TYPE A-8 CURB
STANDARD NO. 201

GRAPHIC SCALE IN FEET
0 10 20 40

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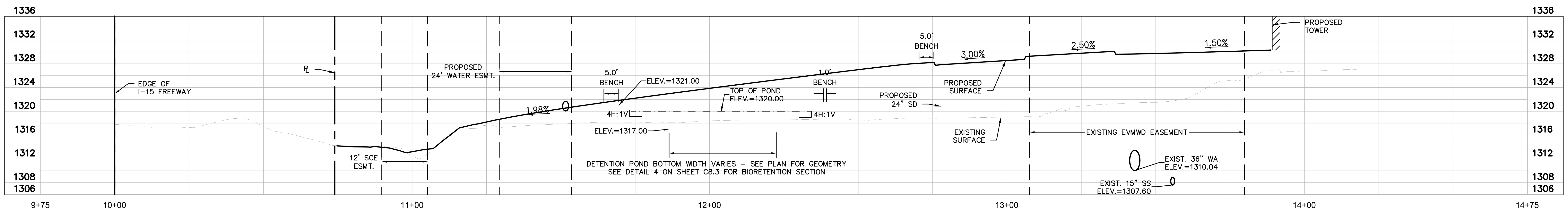
CITY OF WILDOMAR
INLAND VALLEY MEDICAL CENTER
ONSITE IMPROVEMENT PLANS
PRECISE GRADING PLAN

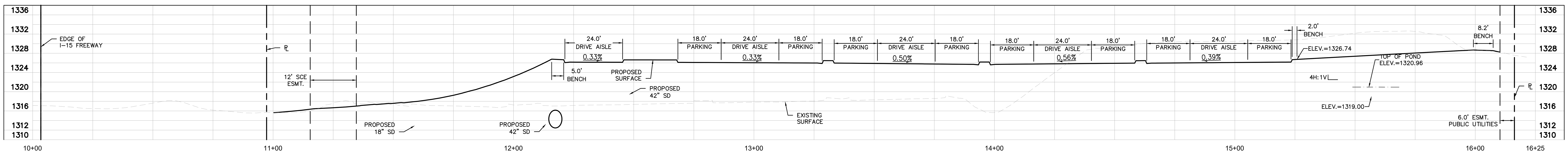
SHEET No. CGD4.6
OF 69 SHTS

ISSUED FOR BID SET 5/21/21



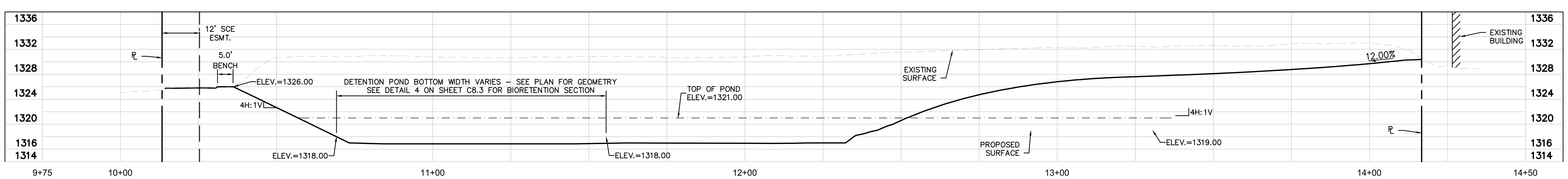
TYPICAL SECTION A–A

SCALE: NTS



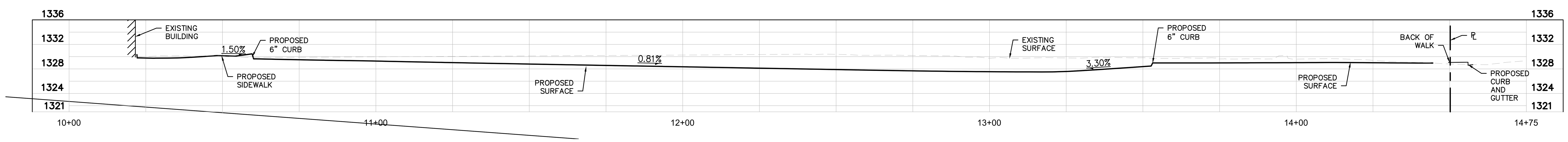
TYPICAL SECTION B–B

SCALE: NTS



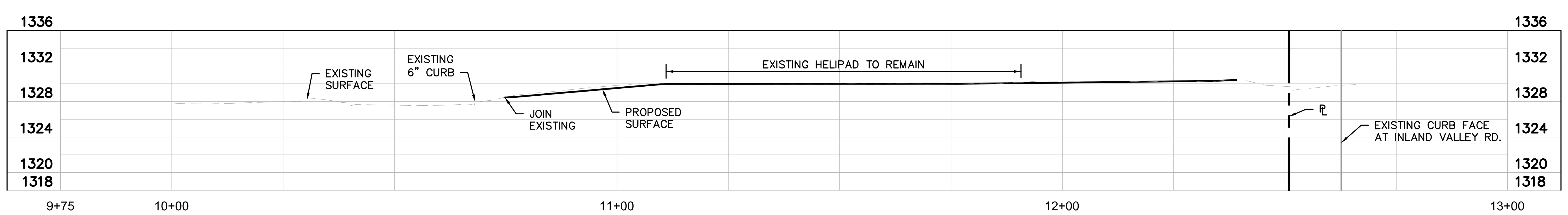
TYPICAL SECTION C–C

SCALE: NTS



TYPICAL SECTION D–D

SCALE: NTS



TYPICAL SECTION E–E

SCALE: NTS

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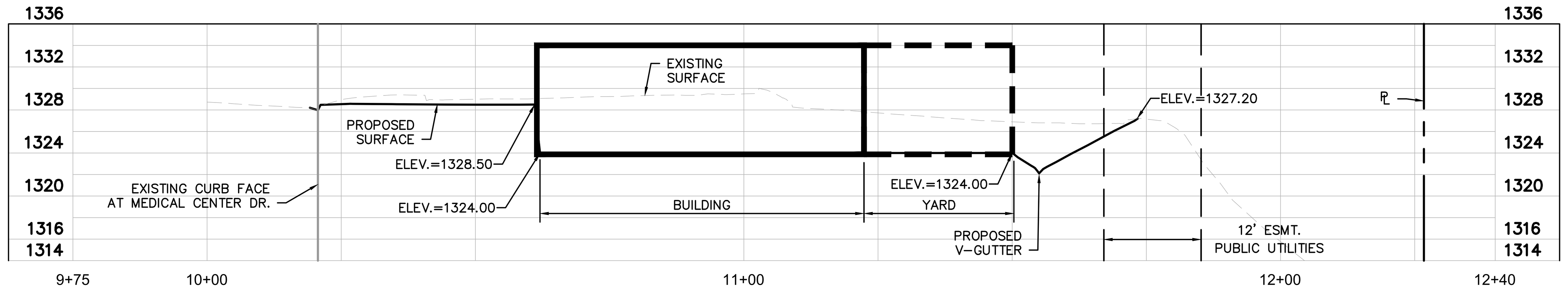
PP, CUP, PM, TM, etc. Project XX-XXXX

CITY OF WILDOMAR
INLAND VALLEY MEDICAL CENTER
ONSITE IMPROVEMENT PLANS
GRADING SECTIONS

SHEET No. CGD4.7

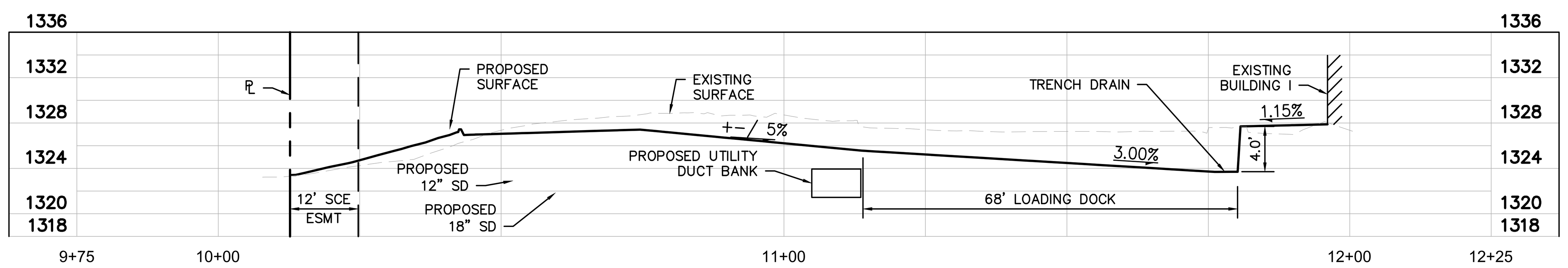
OF 69 SHTS

ISSUED FOR BID SET 5/21/21



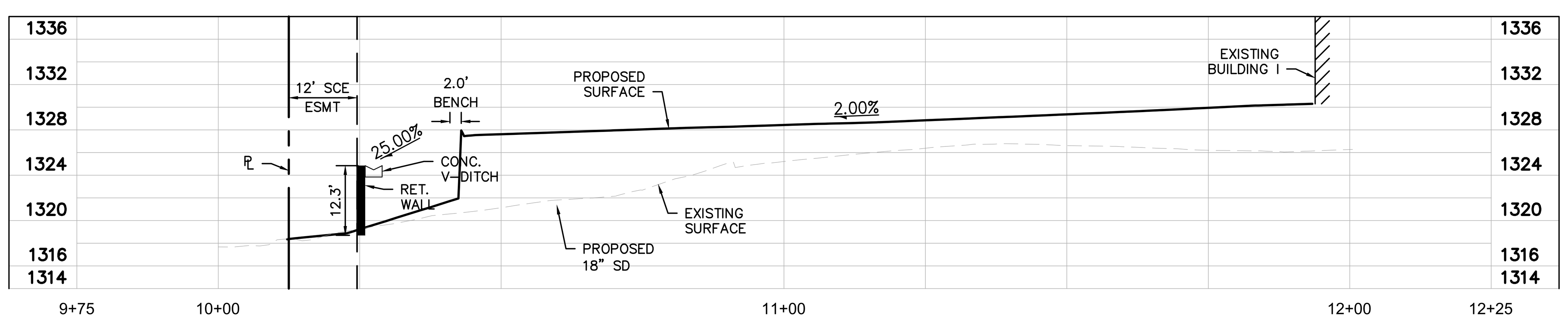
TYPICAL SECTION F-F

SCALE: NTS



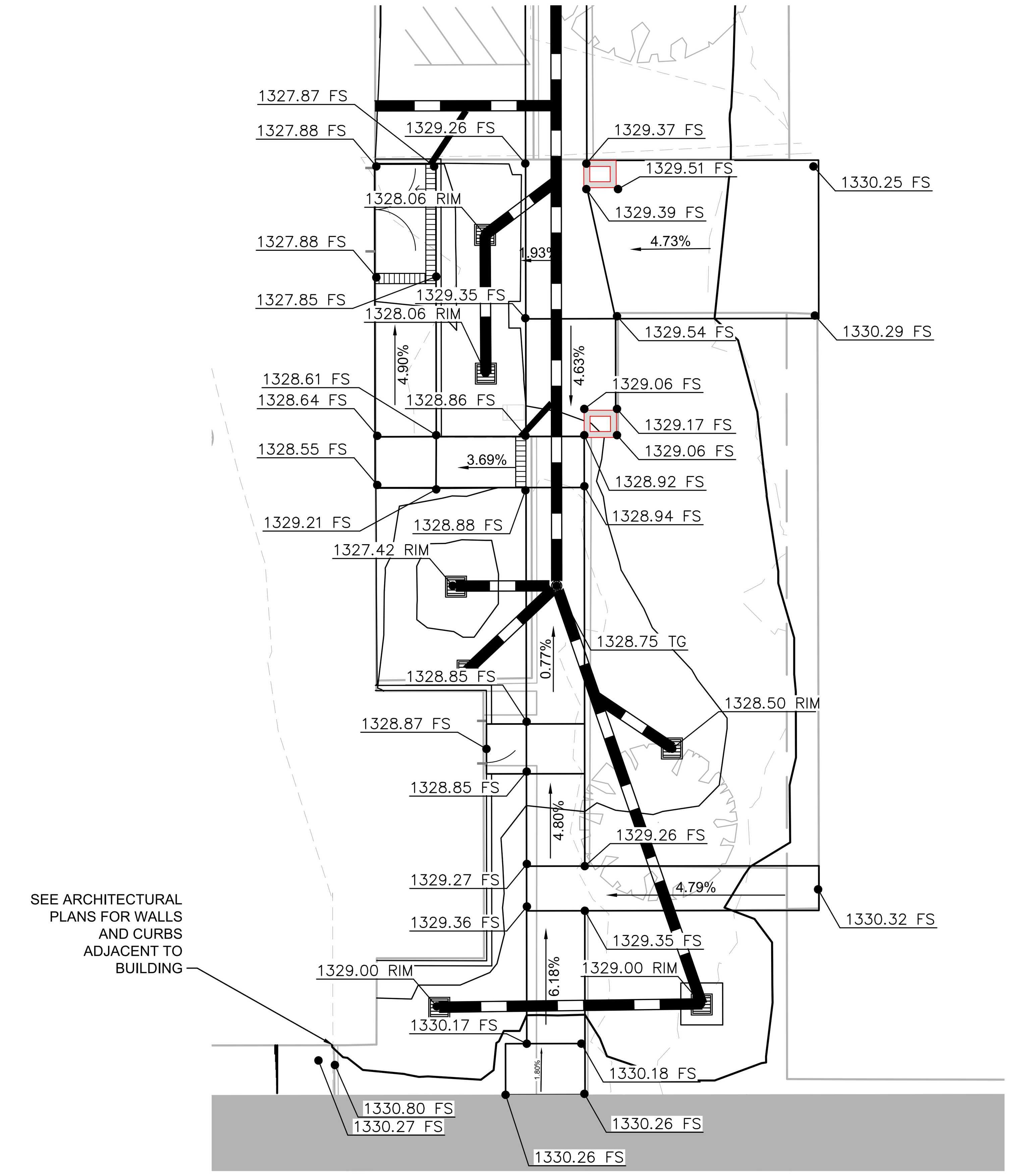
TYPICAL SECTION G-G

SCALE: NTS



TYPICAL SECTION H-H

SCALE: NTS



GRADING DETAIL

SCALE: 1"=10'

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CITY OF WILDOMAR

INLAND VALLEY MEDICAL CENTER

ONSITE IMPROVEMENT PLANS

GRADING SECTIONS

SHEET No. CGD4.8

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SHEET No.
CGD4.9
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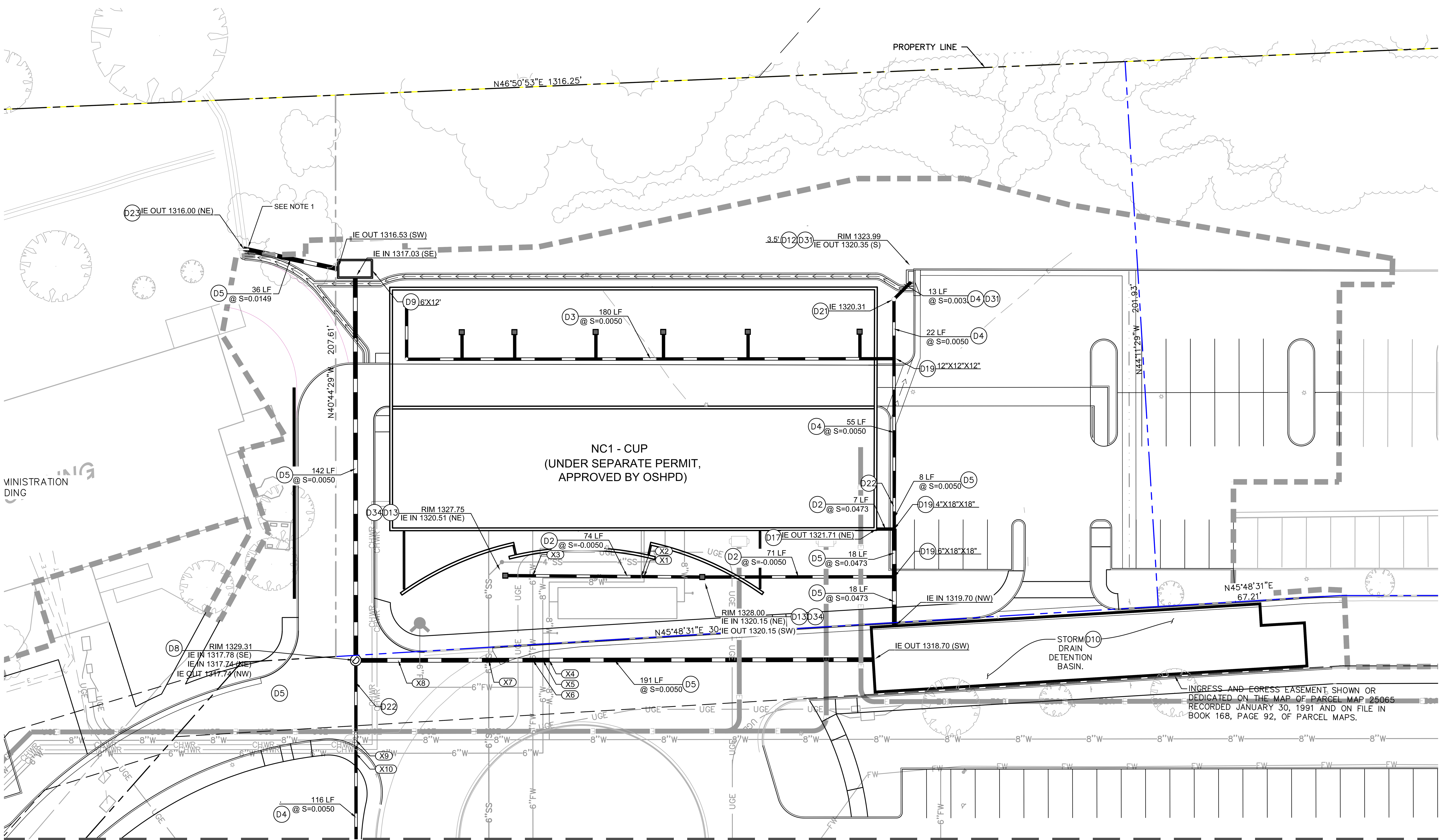

SEE SHEET CGD5.2 FOR CONTINUATION

SEE SHEET CGD5.5 FOR CONTINUATION

STORM DRAIN KEYNOTES

- D1 INSTALL 4" PVC STORM DRAIN PIPE; PIPE TRENCH AND BEDDING PER DETAIL 01, SHEET CGD7.2.
- D2 INSTALL 6" PVC STORM DRAIN PIPE; PIPE TRENCH AND BEDDING PER DETAIL 01, SHEET CGD7.2.
- D3 INSTALL 10" PVC STORM DRAIN PIPE; PIPE TRENCH AND BEDDING PER DETAIL 01, SHEET CGD7.2.
- D4 INSTALL 12" HDPE STORM DRAIN PIPE; PIPE TRENCH AND BEDDING PER DETAIL 01, SHEET CGD7.2.
- D5 INSTALL 18" HDPE STORM DRAIN PIPE; PIPE TRENCH AND BEDDING PER DETAIL 01, SHEET CGD7.2.
- D6 INSTALL 24" HDPE STORM DRAIN PIPE; PIPE TRENCH AND BEDDING PER DETAIL 01, SHEET CGD7.2.
- D7 INSTALL 42" HDPE STORM DRAIN PIPE; PIPE TRENCH AND BEDDING PER DETAIL 01, SHEET CGD7.2.
- D8 INSTALL MANHOLE PER SSPWC STANDARD PLANS 321-2, SHEET CGD7.4.
- D9 INSTALL OLDCASTLE BIOPOD BIOFILTERVAULT WITH INTERNAL BYPASS. SIZE PER PLAN. REFER TO DETAILS, SHEET CGD7.4.
- D10 INSTALL STORM DRAIN DETENTION SYSTEM PER DETAILS, SHEET CGD7.5.
- D11 INSTALL TRENCH DRAIN PER DETAIL 02, SHEET CGD7.2.
- D12 INSTALL STORM DRAIN CURB OPENING CATCH BASIN PER SPPWC STANDARD DRAWING 300-3, SHEET CGD7.3. SIZE PER PLAN.
- D13 INSTALL AREA DRAIN: ROUND GRATE W/ NDS SPEE-D BASIN INLET & OUTLET PIPE REFER TO DETAIL 12, SHEET CGD7.1.
- D14 INSTALL JENSEN PRECAST 24"X24" DROP INLET AND FLOGARD OR APPROVED EQUAL PER DETAIL 06, SHEET CGD7.2.
- D15 CORE THROUGH EXISTING CHANNEL WALL AND GROUT AROUND PIPE.
- D16 INSTALL DETENTION POND OUTLET STRUCTURE PER DETAIL 04, SHEET CGD7.2.
- D17 BUILDING POINT OF CONNECTION. SEE PLUMBING PLANS FOR CONTINUATION.
- D18 INSTALL HDPE WYE CONNECTION BY ADS OR APPROVED EQUAL. SIZE PER PLAN.
- D19 INSTALL HDPE TEE CONNECTION BY ADS OR APPROVED EQUAL. SIZE PER PLAN.
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	ENGINEER				CITY

CITY OF WILDOMAR
ACCEPTED BY:
Date:
Daniel A. York, Director of Public Works/ City Engineer, PE 43212
ACCEPTANCE AS TO CONFORMANCE WITH APPLICABLE CITY STANDARDS AND PRACTICES

SEAL ENGINEER:
REGISTERED PROFESSIONAL ENGINEER — NIKKI D. KERRY — RCE NO. 58449 — CIVIL — STATE OF CALIFORNIA

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PREPARED BY: NIKKI KERRY
R.C.E. No. 58449 EXP. 12/31/22

BENCHMARK:
Elevation = 1317.14
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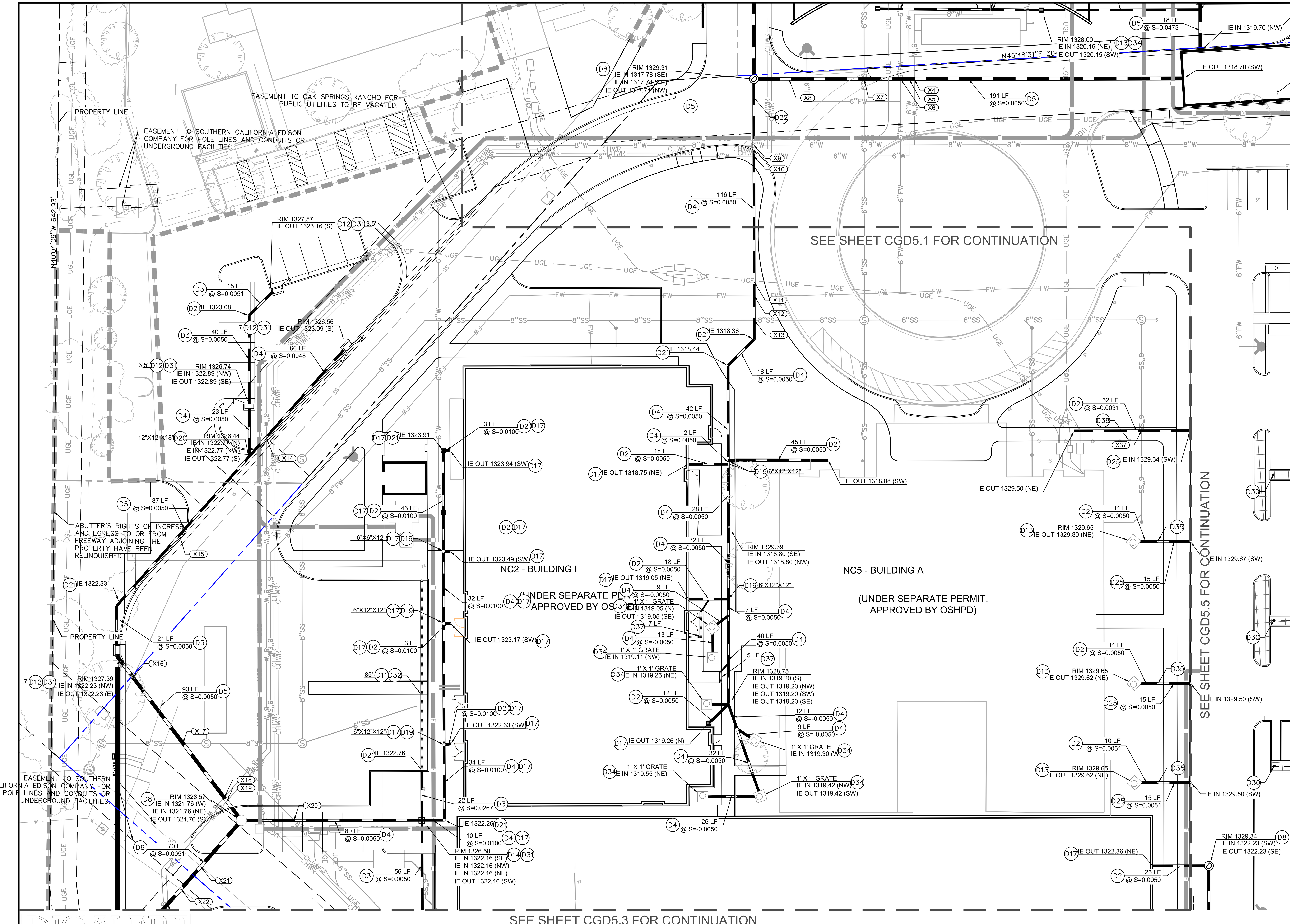
BENCHMARK # ____________
THIS SURVEY WAS PERFORMED ON 04/23/19 BY JOEL PAULSON L.S. 6637
SCALE: H: As Noted V: As Noted

PP, CUP, PM, TM, etc. Project XX-XXXX
CITY OF WILDOMAR
INLAND VALLEY MEDICAL CENTER
ONSITE IMPROVEMENT PLANS
STORM DRAIN PLAN

SHEET No. CGD5.1
OF 69 SHTS

ISSUED FOR BID SET 5/21/21



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Date:

Daniel A. York, Director of Public Works/ City Engineer, PE 43212

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PREPARED BY: NIKKI KERRY
R.C.E. No. 58449 EXP. 12/31/22

BENCHMARK:
Elevation = 1317.14
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BENCHMARK # ___________

THIS SURVEY WAS PERFORMED ON 04/23/19 BY JOEL PAULSON L.S. 6637

SCALE: H: As Noted V: As Noted

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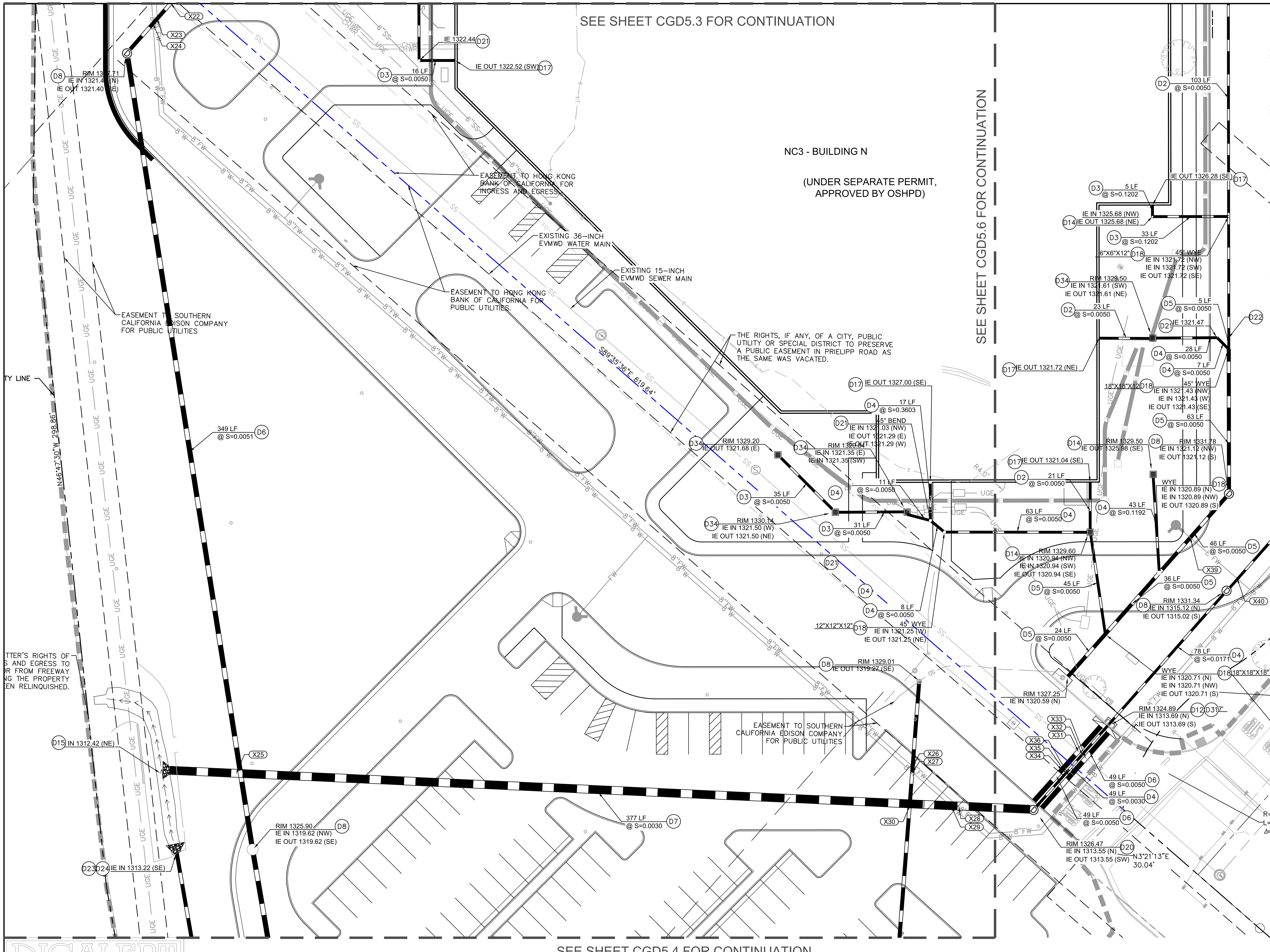
CITY OF WILDOMAR
INLAND VALLEY MEDICAL CENTER
ONSITE IMPROVEMENT PLANS
STORM DRAIN PLAN

SHEET No. CGD5.2
OF 69 SHTS

ISSUED FOR BID SET 5/21/21



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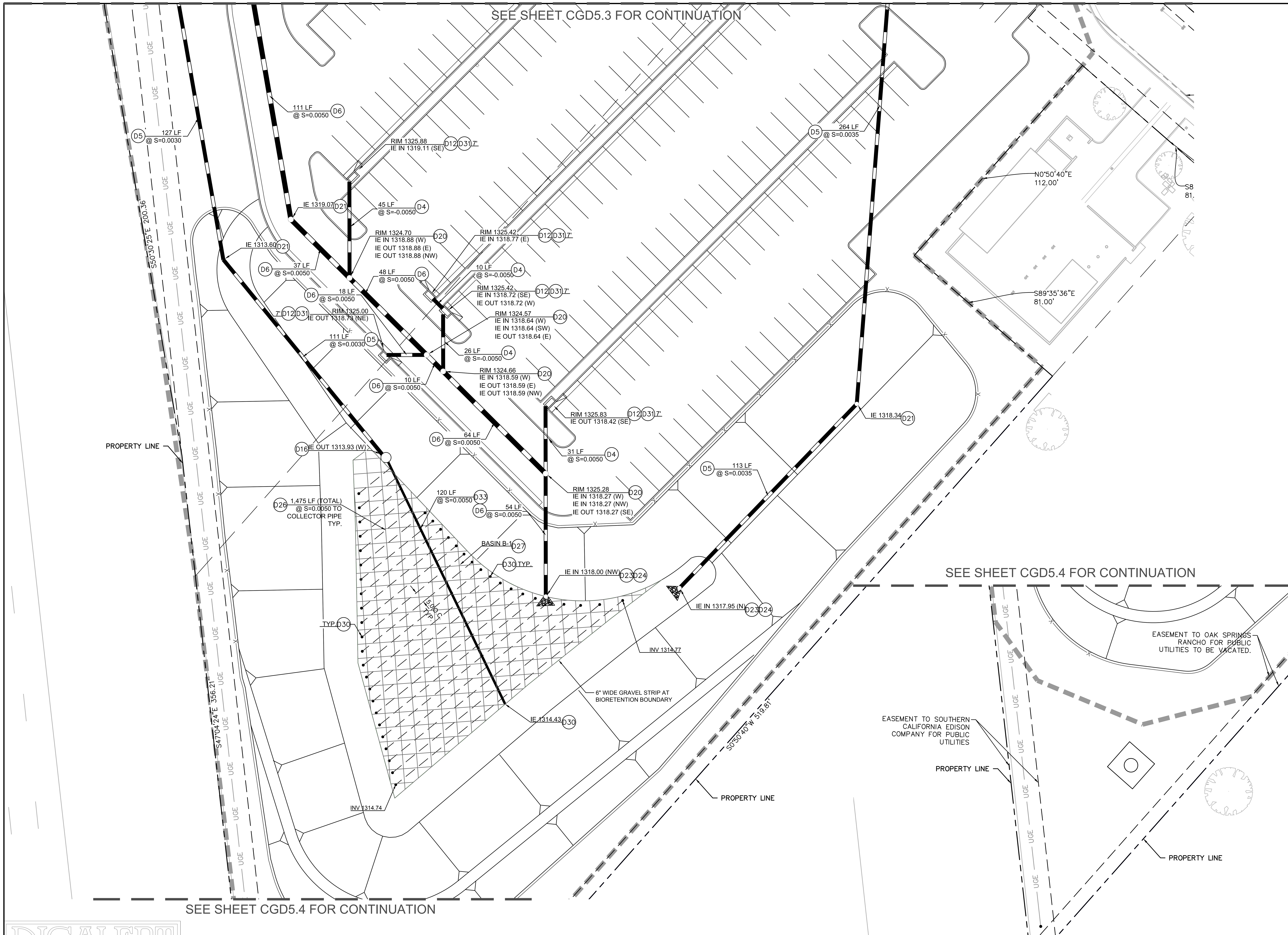

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STATE OF CALIFORNIA

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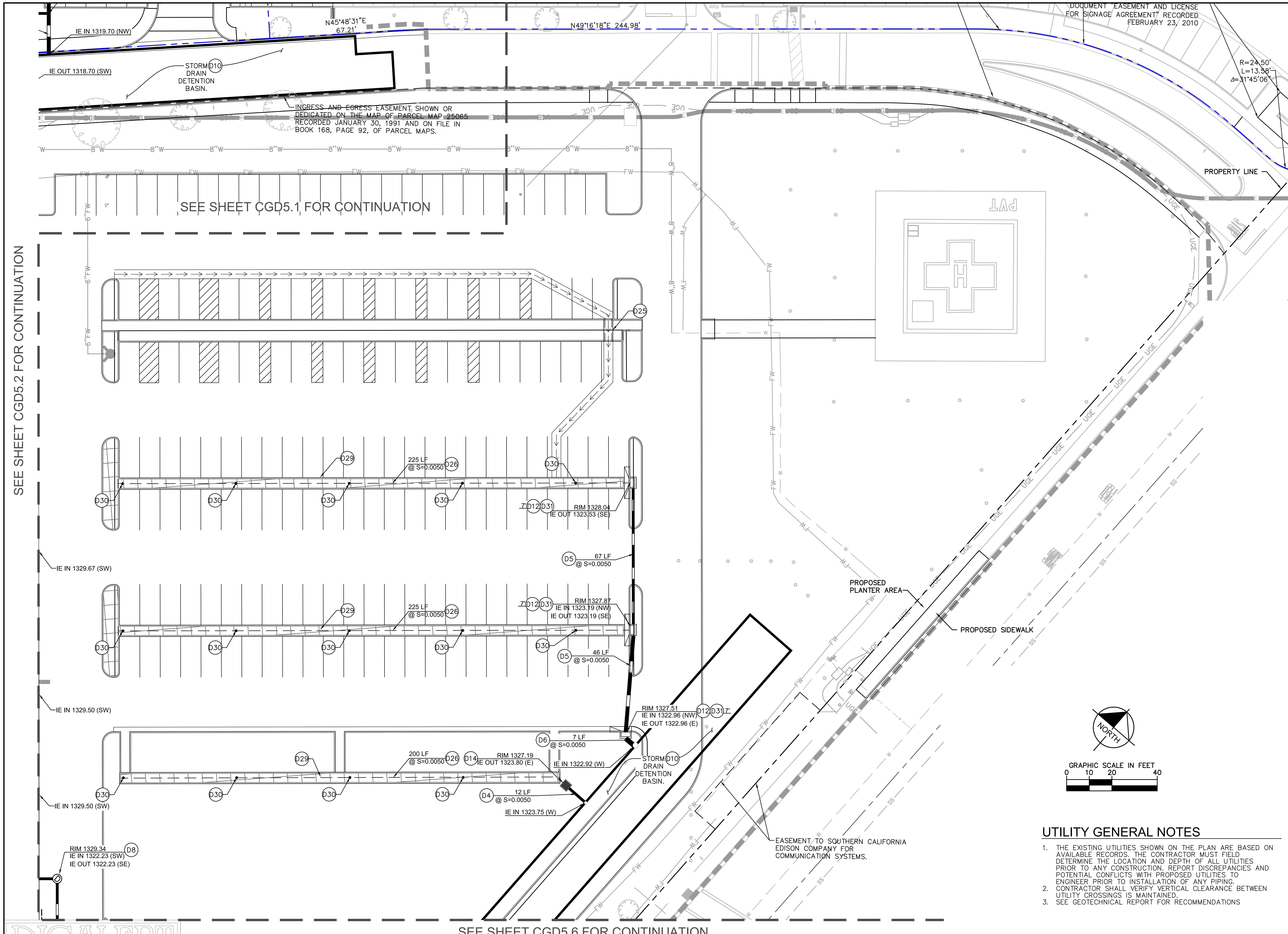
1100 Town and Country Road, Suite 700
Orange, CA 92868
714.939.1030 F 714.938.9488
www.kimley-horn.com
PREPARED BY: NIKKI KERRY
R.C.E. No. 58449 EXP. 12/31/22

BENCHMARK:
Elevation = 1317.14
Datum = NAD 83
BENCHMARK # __________
THIS SURVEY WAS PERFORMED ON 04/23/19 BY JOEL PAULSON L.S. 6637
SCALE: H: As Noted V: As Noted

PP, CUP, PM, TM, etc. Project XX-XXXX
CITY OF WILDOMAR
INLAND VALLEY MEDICAL CENTER
ONSITE IMPROVEMENT PLANS
STORM DRAIN PLAN

SHEET No.
CGD5.4
OF 69 SHTS

ISSUED FOR BID SET 5/21/21



STORM DRAIN KEYNOTES

- D1 INSTALL 4" PVC STORM DRAIN PIPE; PIPE TRENCH AND BEDDING PER DETAIL 01, SHEET CGD7.2.
- D2 INSTALL 6" PVC STORM DRAIN PIPE; PIPE TRENCH AND BEDDING PER DETAIL 01, SHEET CGD7.2.
- D3 INSTALL 10" PVC STORM DRAIN PIPE; PIPE TRENCH AND BEDDING PER DETAIL 01, SHEET CGD7.2.
- D4 INSTALL 12" HDPE STORM DRAIN PIPE; PIPE TRENCH AND BEDDING PER DETAIL 01, SHEET CGD7.2.
- D5 INSTALL 18" HDPE STORM DRAIN PIPE; PIPE TRENCH AND BEDDING PER DETAIL 01, SHEET CGD7.2.
- D6 INSTALL 24" HDPE STORM DRAIN PIPE; PIPE TRENCH AND BEDDING PER DETAIL 01, SHEET CGD7.2.
- D7 INSTALL 42" HDPE STORM DRAIN PIPE; PIPE TRENCH AND BEDDING PER DETAIL 01, SHEET CGD7.2.
- D8 INSTALL MANHOLE PER SSPWC STANDARD PLANS 321–2, SHEET CGD7.4.
- D9 INSTALL OLDCASTLE BIOPOD BIOFILTERVAULT WITH INTERNAL BYPASS. SIZE PER PLAN. REFER TO DETAILS, SHEET CGD7.4.
- D10 INSTALL STORM DRAIN DETENTION SYSTEM PER DETAILS, SHEET CGD7.5.
- D11 INSTALL TRENCH DRAIN PER DETAIL 02, SHEET CGD7.2.
- D12 INSTALL STORM DRAIN CURB OPENING CATCH BASIN PER SPPWC STANDARD DRAWING 300–3, SHEET CGD7.3. SIZE PER PLAN.
- D13 INSTALL AREA DRAIN: ROUND GRATE W/ NDS SPEE–D BASIN INLET & OUTLET PIPE REFER TO DETAIL 12, SHEET CGD7.1.
- D14 INSTALL JENSEN PRECAST 24"X24" DROP INLET AND FLOGARD OR APPROVED EQUAL PER DETAIL 06, SHEET CGD7.2.
- D15 CORE THROUGH EXISTING CHANNEL WALL AND GROUT AROUND PIPE.
- D16 INSTALL DETENTION POND OUTLET STRUCTURE PER DETAIL 04, SHEET CGD7.2.
- D17 BUILDING POINT OF CONNECTION. SEE PLUMBING PLANS FOR CONTINUATION.
- D18 INSTALL HDPE WYE CONNECTION BY ADS OR APPROVED EQUAL. SIZE PER PLAN.
- D19 INSTALL HDPE TEE CONNECTION BY ADS OR APPROVED EQUAL. SIZE PER PLAN.
- D20 INSTALL JUNCTION STRUCTURE PER SPPWC STD PLANS 331–3 AND 332–2, SHEET CGD7.3. SIZE PER PLAN.
- D21 INSTALL HDPE BEND BY ADS OR APPROVED EQUAL. SIZE PER PLAN.
- D22 INSTALL HDPE REDUCER BY ADS OR APPROVED EQUAL. SIZE PER PLAN.
- D23 INSTALL CSP FLARED END SECTION PER SSPWC STANDARD PLANS 351–2, SHEET CGD7.3. SIZE PER PLAN.
- D24 CLASS III RIP RAP (12–INCH SIZE/150–LB).
- D25 INSTALL PARKWAY DRAIN PER SSPWC STANDARD PLANS 151–2, SHEET CGD7.3.
- D26 INSTALL 6" BASIN DRAIN PERFORATED PIPE AT 0.5% SLOPE (ASTM C700) PER DETAIL 4, SHEET CGD7.2.
- D27 BIORETENTION BASIN PER DETAIL 04, SHEET CGD7.2. DELINEATE BOUNDARY WITH 6–INCH WIDE GRAVEL STRIP ON SURFACE.
- D28 CONNECT 6–INCH PERFORATED PIPE TO BIORETENTION AREA DRAIN PER DETAIL 04, SHEET CGD7.2.
- D29 BIOFILTRATION SYSTEM PER DETAIL 09, SHEET CGD7.2.
- D30 INSTALL CLEANOUT FOR DRAIN SYSTEM AT END OF LINE AND AT 50' O.C. PER DETAIL 04 AND 05, SHEET CGD7.2.
- D31 FLOGARD CATCH BASIN INSERT OR APPROVED EQUAL PER DETAIL 08, SHEET CGD7.2.
- D32 FLOGARD TRENCH DRAIN FILTER OR APPROVED EQUAL PER DETAIL 08, SHEET CGD7.2.
- D33 INSTALL 6" PVC COLLECTOR PIPE AT 0.5% SLOPE (ASTM D–2665) PER DETAIL 04, SHEET CGD7.2.
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- D35 TRANSITION FROM 6" PIPE TO 4"X8" RECTANGULAR DRAIN.
- D36 INSTALL MANHOLE PER SSPWC STANDARD PLANS 320–2, SHEET CGD7.4.
- D37 INSTALL ZURN PERMA–TRENCH Z886 WITH LONGITUDINAL ADA GRATE OR APPROVED EQUAL

UTILITY GENERAL NOTES

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ACCEPTED BY:
Date:
Daniel A. York, Director of Public Works/ City Engineer, PE 43212
ACCEPTANCE AS TO CONFORMANCE WITH APPLICABLE CITY STANDARDS AND PRACTICES

SEAL ENGINEER:
REGISTERED PROFESSIONAL ENGINEER — NIKKI D. KERRY — RCE NO. 58449 — CIVIL — STATE OF CALIFORNIA

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STORM DRAIN PLAN

SHEET No. CGD5.5
OF 69 SHTS

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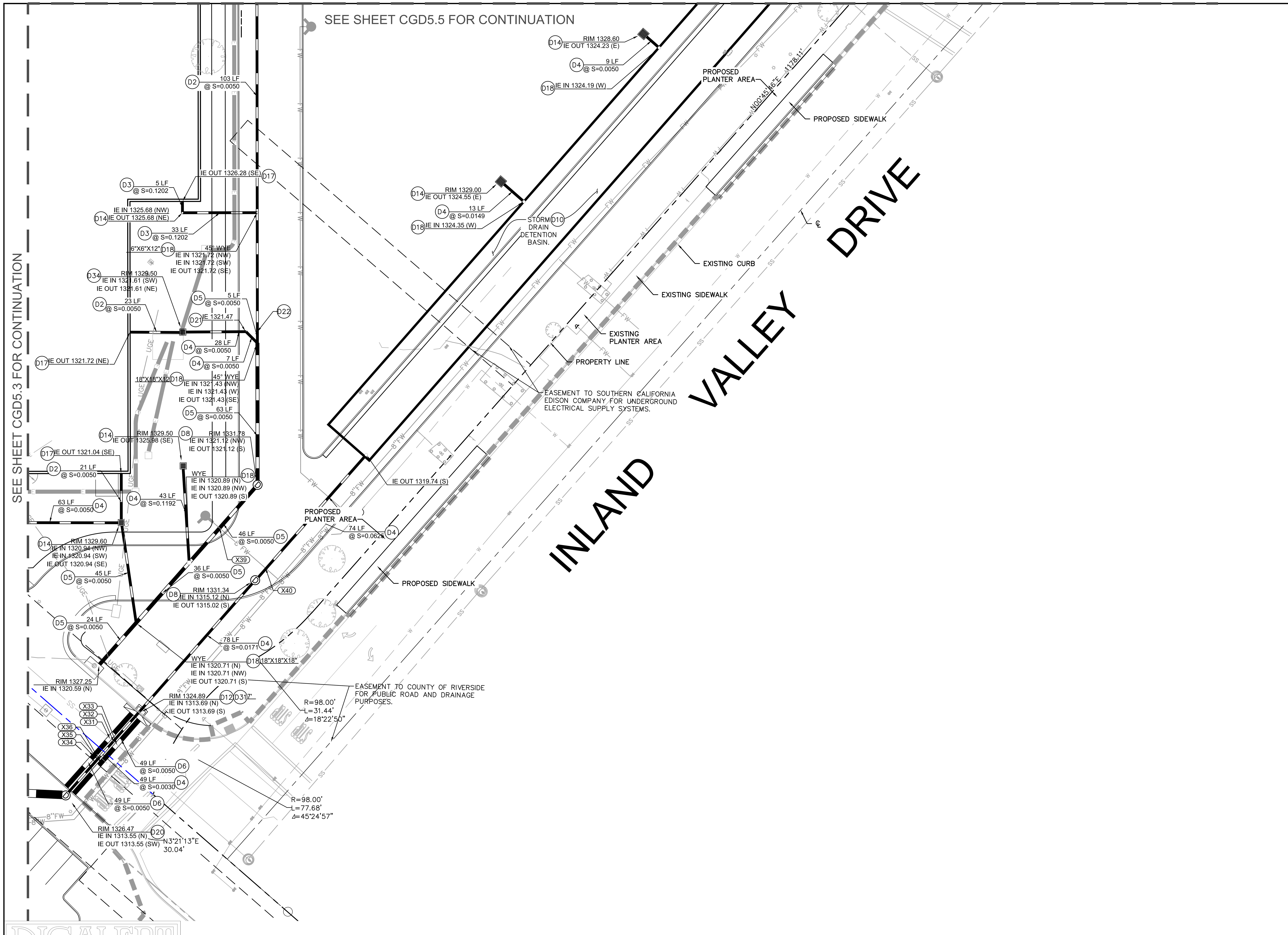

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- D38 CONNECT EXISTING CATCH BASIN TO NEW STORM DRAIN PIPE.

UTILITY GENERAL NOTES

1. CONTRACTOR TO FIELD VERIFY ALL JOIN CONDITIONS PRIOR TO START OF CONSTRUCTION AND NOTIFY ENGINEER OF ANY DISCREPANCIES. ALL STORM DRAIN SHALL BE CONSTRUCTED DOWNSTREAM TO UPSTREAM.
2. THE EXISTING UTILITIES SHOWN ON THE PLAN ARE BASED ON AVAILABLE RECORDS. THE CONTRACTOR MUST FIELD DETERMINE THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO ANY CONSTRUCTION. REPORT DISCREPANCIES AND POTENTIAL CONFLICTS WITH PROPOSED UTILITIES TO ENGINEER PRIOR TO INSTALLATION OF ANY PIPING.
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4. SEE GEOTECHNICAL REPORT FOR UTILITY AND BACKFILL RECOMMENDATIONS

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CITY OF WILDOMAR
INLAND VALLEY MEDICAL CENTER
ONSITE IMPROVEMENT PLANS
STORM DRAIN PLAN

SHEET No. CGD5.6
OF 69 SHTS

ISSUED FOR BID SET 5/21/21

UTILITY CROSSING TABLE

Point	Utility Above	Invert	Utility Below	Top
X1	DW	1324.67	SD	1322.59
X2	DW	1324.81	SD	1322.60
X3	FW	1324.92	SD	1322.80
X4	DW	1324.18	SD	1320.96
X5	DW	1324.76	SD	1320.95
X6	FW	1324.75	SD	1320.96
X7	SD	1319.23	SS	1316.26
X8	FW	1324.70	SD	1320.68
X9	DW	1325.01	SD	1323.06
X10	DW	1325.04	SD	1323.14
X11	COMM	1326.33	SD	1324.04
X12	DW	1324.69	SD	1324.14
X13	SD	1323.22	SS	1313.65
X14	SD	1322.78	DW	1320.46
X15	SD	1322.37	NGAS	1319.78
X16	SD	1322.11	SS	1308.11
X17	SD	1321.91	SS	1308.38
X18	SD	1321.76	DW	1319.19
X19	SD	1321.75	FW	1319.31
X20	SD	1321.83	SS	1311.23
X21	SD	1321.56	SS	1308.32
X22	SD	1321.49	DW	1309.45
X23	SD	1321.45	FW	1315.71
X24	SD	1321.43	DW	1315.72
X25	SD	1319.71	SD	1316.11
X26	FW	1322.93	SD	1320.67
X27	DW	1322.31	SD	1320.65
X28	FW	1323.03	SD	1317.05
X29	DW	1322.62	SD	1317.04
X30	SD	1318.97	SD	1316.99
X31	SD	1320.40	SS	1310.05
X32	SD	1313.59	SS	1310.06
X33	SD	1320.40	SS	1310.06
X34	SD	1320.35	DW	1319.30
X35	DW	1315.93	SD	1314.66
X36	SD	1320.35	DW	1319.38
X37	SD	1329.37	SS	1318.31
X38	FW	1322.86	SD	1319.23
X39	FW	1322.89	SD	1322.55
X40	FW	1322.59	SD	1316.61

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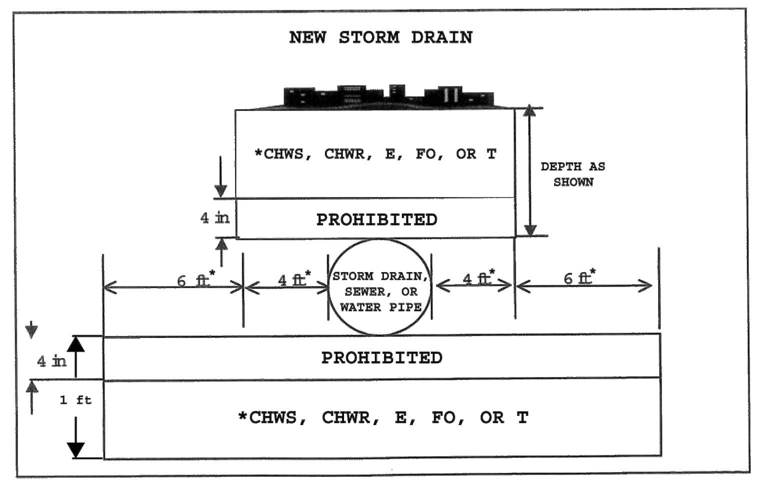

***NOTE:**

WHERE CHWS AND/OR CHWR CROSS WATER OR SEWER PIPE, THERE SHALL BE NO JOINTS IN EITHER PIPE.

"NO JOINTS" DOES NOT APPLY TO STORM DRAIN PIPE.

SEWER/WATER CROSSING FO,T,CHWS,CHWR, E (1)
N.T.S.

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ONSITE IMPROVEMENT PLANS
UTILITY CROSSING TABLE & DETAILS

SHEET No. CGD5.7
OF 69 SHTS

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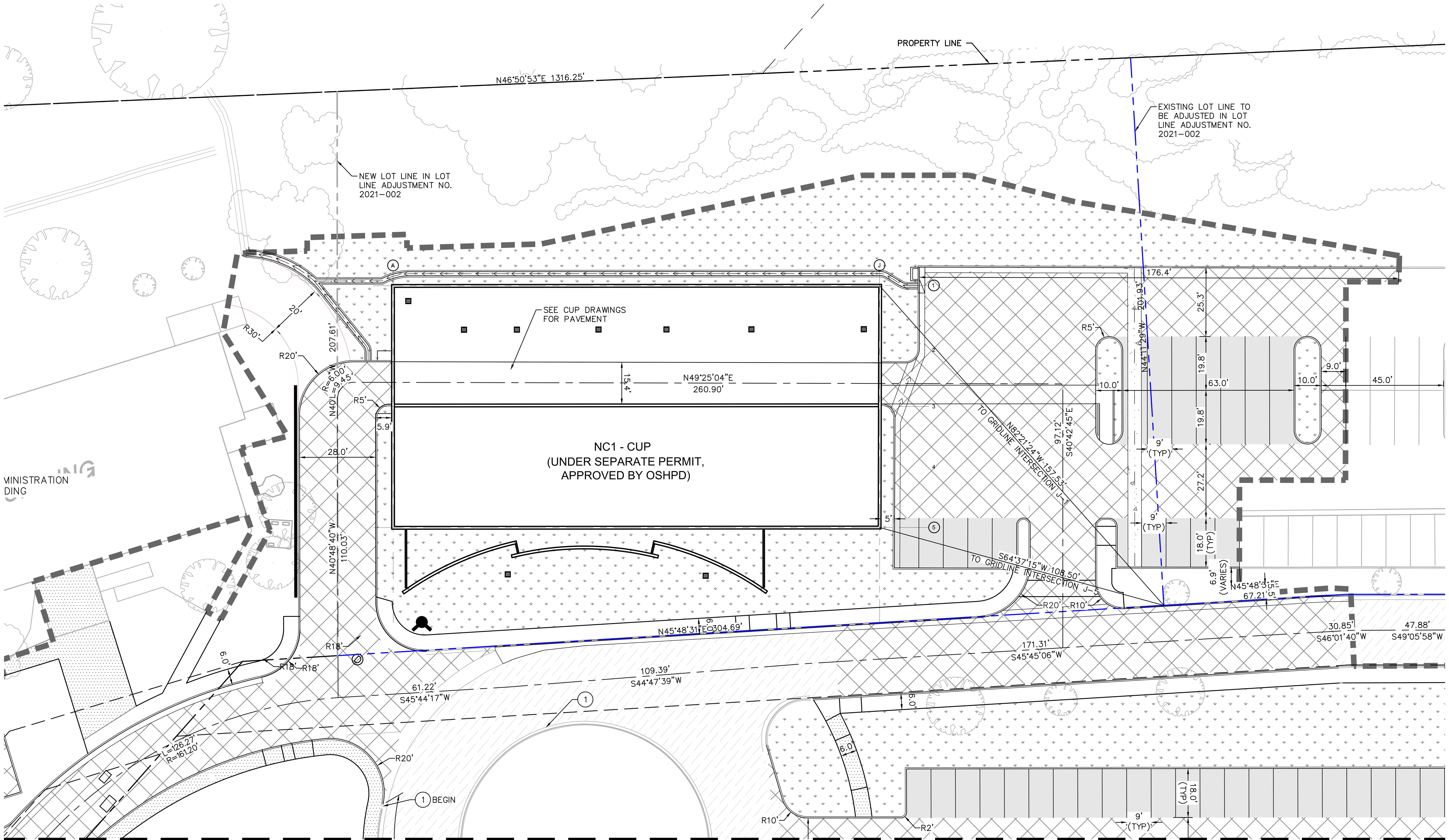


SEE SHEET CGD6.2 FOR CONTINUATION

SEE SHEET CGD6.5 FOR CONTINUATION

PAVEMENT LEGEND

REFER TO DETAIL 7, SHEET CGD7.1 FOR PAVEMENT SECTIONS AND SUBGRADE PREPARATION.

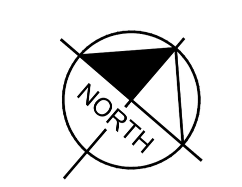
- STANDARD DUTY ASPHALT CONCRETE PAVEMENT (3" AC OVER 7.5" CMB) PER DETAIL 7, SHEET CGD7.1.
- HEAVY DUTY ASPHALT CONCRETE PAVEMENT (4" AC OVER 10.5" CMB) PER DETAIL 7, SHEET CGD7.1.
- INSTALL STANDARD DUTY CONCRETE PAVEMENT COLOR, THICKNESS, REINFORCEMENT, AND FINISH PER LANDSCAPE PLANS.
- LANDSCAPE/PLANTER AREA
- 3250 PSI HEAVY DUTY DOWELED CONCRETE PAVEMENT (6"CONC. OVER 6" CAB) PER DETAIL 7, SHEET CGD7.1.
- SLURRY SEAL AND RESTRIPE.
- DECOMPOSED GRANITE OVER 95% COMPACTED BASE WITH REDWOOD HEADER AT EDGE.
- BIOFILTRATION AREA PER DETAIL 04, SHEET CGD7.2.
- RIPARIAN AREA PER DETAIL XX, SHEET CGD7.6.

LEGEND

- PROPERTY LINE
- RIGHT- OF-WAY
- CENTER LINE
- EASEMENT OR SETBACK LINE
- CIVIL LIMIT OF WORK LINE
- ACCESSIBLE ROUTE (LOCATION PURPOSES ONLY, DO NOT PAINT)
- PROPOSED SITE LIGHT POLES PER ELECTRICAL PLANS
- PROPOSED SIGNAGE PER LANDSCAPE PLANS
- PROPOSED WHEEL STOP PER DETAIL 1, SHEET CGD7.1.

PAVING CONSTRUCTION NOTES

1. SANDBLAST EXISTING CURB AND REPAINT RED WITH "NO PARKING" "FIRE LANE".
2. DELINEATE BIORETENTION BOUNDARY WITH A 6" WIDE GRAVEL STRIP.



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HORIZONTAL & PAVING PLAN

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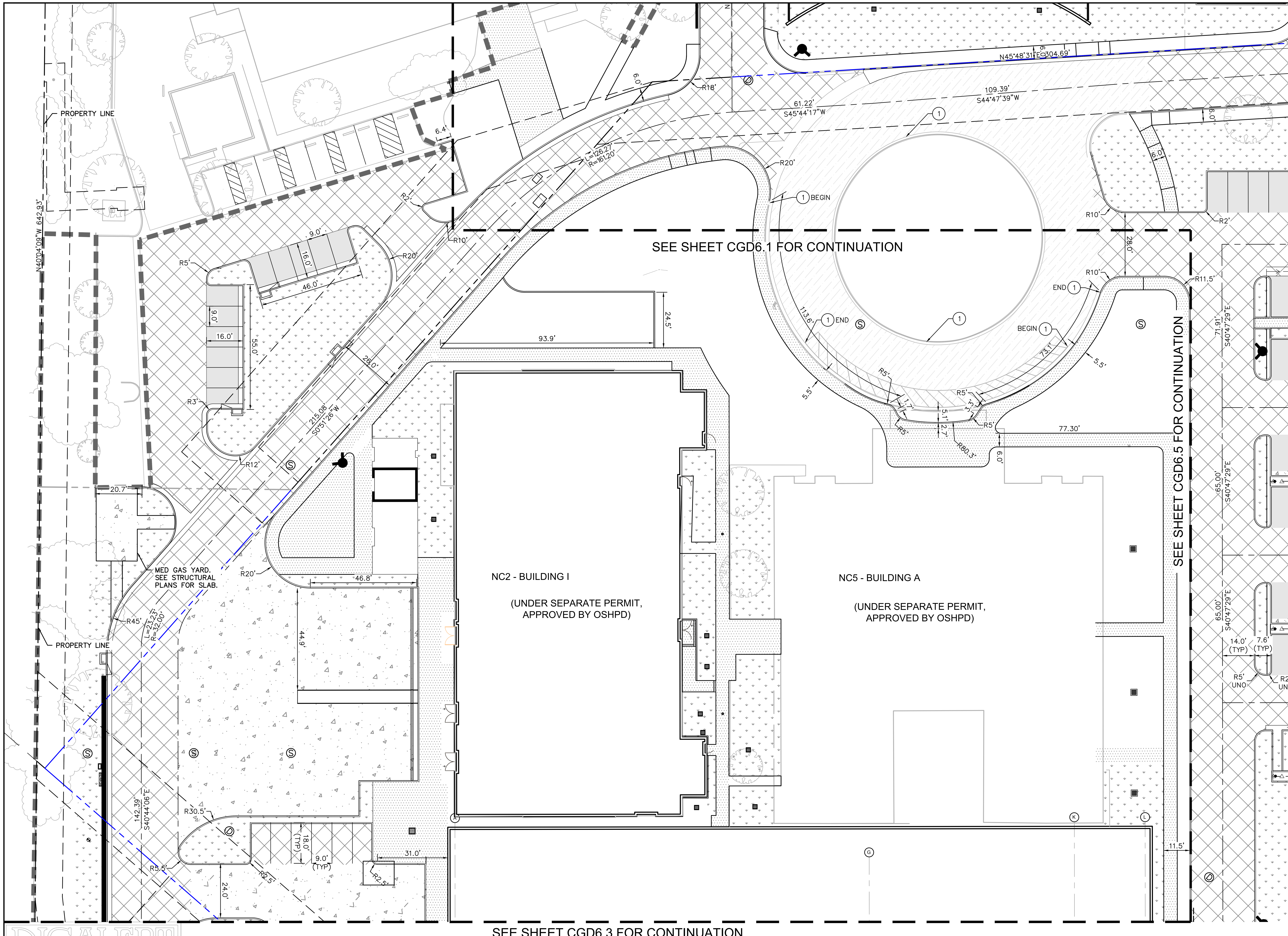

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	ENGINEER				CITY

CITY OF WILDOMAR
ACCEPTED BY:
Date:
Daniel A. York, Director of Public Works/ City Engineer, PE 43212
ACCEPTANCE AS TO CONFORMANCE WITH APPLICABLE CITY STANDARDS AND PRACTICES

SEAL ENGINEER:
REGISTERED PROFESSIONAL ENGINEER
NIKKI D. KERRY
RCE NO. 58449
CIVIL
STATE OF CALIFORNIA

Kimley»Horn
1100 Town and Country Road, Suite 700
Orange, CA 92868
714.939.1030 F 714.938.9488
www.kimley-horn.com
PREPARED BY: NIKKI KERRY
R.C.E. No. 58449 EXP. 12/31/22

BENCHMARK:
Elevation = 1317.14
Datum = NAD 83
BENCHMARK # ___________
THIS SURVEY WAS PERFORMED ON 04/23/19 BY JOEL PAULSON L.S. 6637
SCALE: H: As Noted V: As Noted

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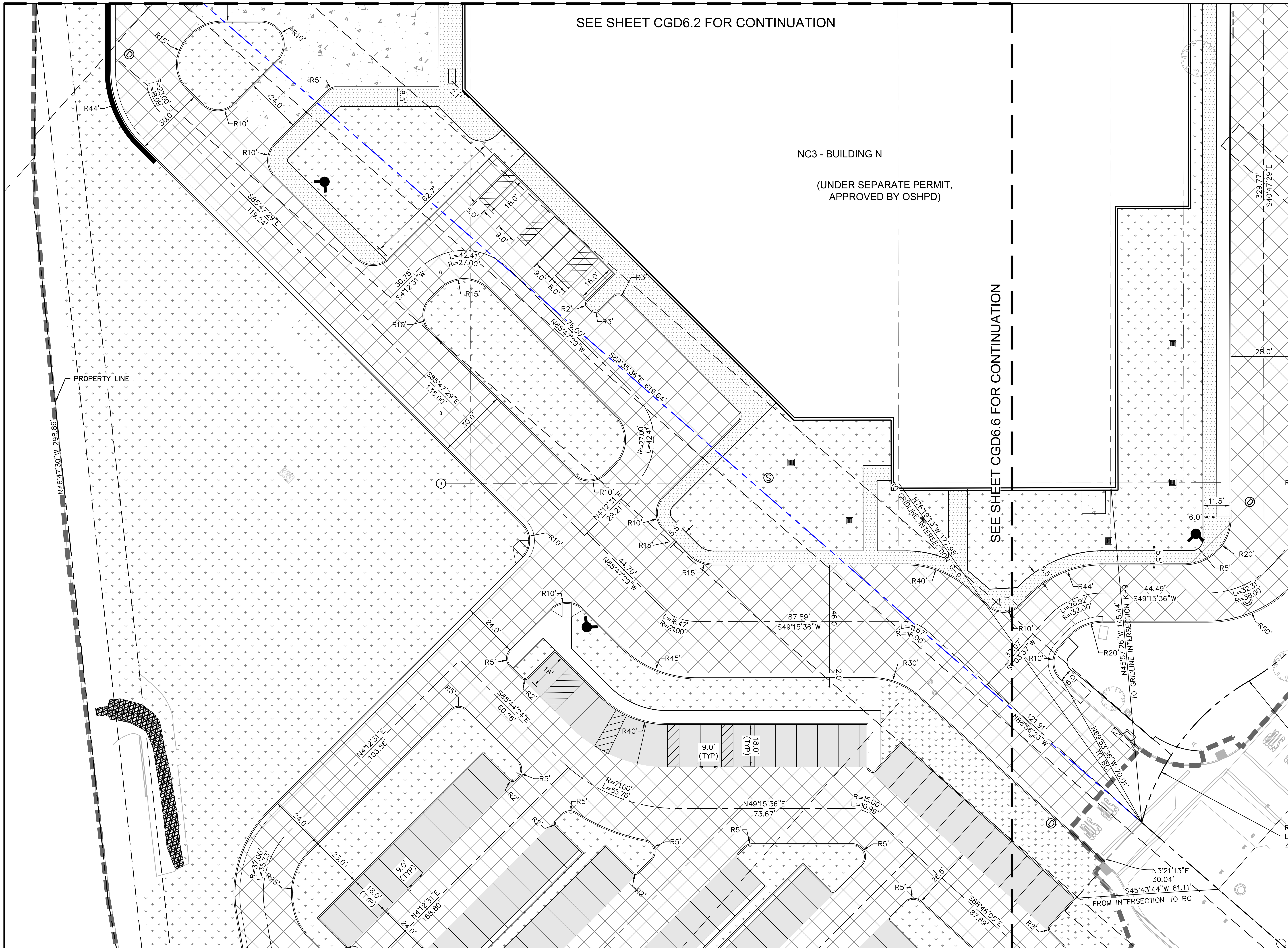
CITY OF WILDOMAR
INLAND VALLEY MEDICAL CENTER
ONSITE IMPROVEMENT PLANS
HORIZONTAL & PAVING PLAN

SHEET No. CGD6.2
OF 69 SHTS

ISSUED FOR BID SET 5/21/21



PAVEMENT LEGEND

REFER TO DETAIL 7, SHEET CGD7.1 FOR PAVEMENT SECTIONS AND SUBGRADE PREPARATION.

- STANDARD DUTY ASPHALT CONCRETE PAVEMENT (3" AC OVER 7.5" CMB) PER DETAIL 7, SHEET CGD7.1.
- HEAVY DUTY ASPHALT CONCRETE PAVEMENT (4" AC OVER 10.5" CMB) PER DETAIL 7, SHEET CGD7.1.
- INSTALL STANDARD DUTY CONCRETE PAVEMENT COLOR, THICKNESS, REINFORCEMENT, AND FINISH PER LANDSCAPE PLANS.
- LANDSCAPE/PLANTER AREA
- 3250 PSI HEAVY DUTY DOWELED CONCRETE PAVEMENT (6"CONC. OVER 6" CAB) PER DETAIL 7, SHEET CGD7.1.
- SLURRY SEAL AND RESTRIPE.
- DECOMPOSED GRANITE OVER 95% COMPACTED BASE WITH REDWOOD HEADER AT EDGE.
- BIOFILTRATION AREA PER DETAIL 04, SHEET CGD7.2.
- RIPARIAN AREA PER DETAIL XX, SHEET CGD7.6.

LEGEND

- PROPERTY LINE
- RIGHT- OF-WAY
- CENTER LINE
- EASEMENT OR SETBACK LINE
- CIVIL LIMIT OF WORK LINE
- ACCESSIBLE ROUTE (LOCATION PURPOSES ONLY, DO NOT PAINT)
- PROPOSED SITE LIGHT POLES PER ELECTRICAL PLANS
- PROPOSED SIGNAGE PER LANDSCAPE PLANS
- PROPOSED WHEEL STOP PER DETAIL 1, SHEET CGD7.1.

PAVING CONSTRUCTION NOTES

1. SANDBLAST EXISTING CURB AND REPAINT RED WITH "NO PARKING" "FIRE LANE".
2. DELINEATE BIORETENTION BOUNDARY WITH A 6" WIDE GRAVEL STRIP.

NORTH

GRAPHIC SCALE IN FEET
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SHEET No. CGD6.3 OF 69 SHTS

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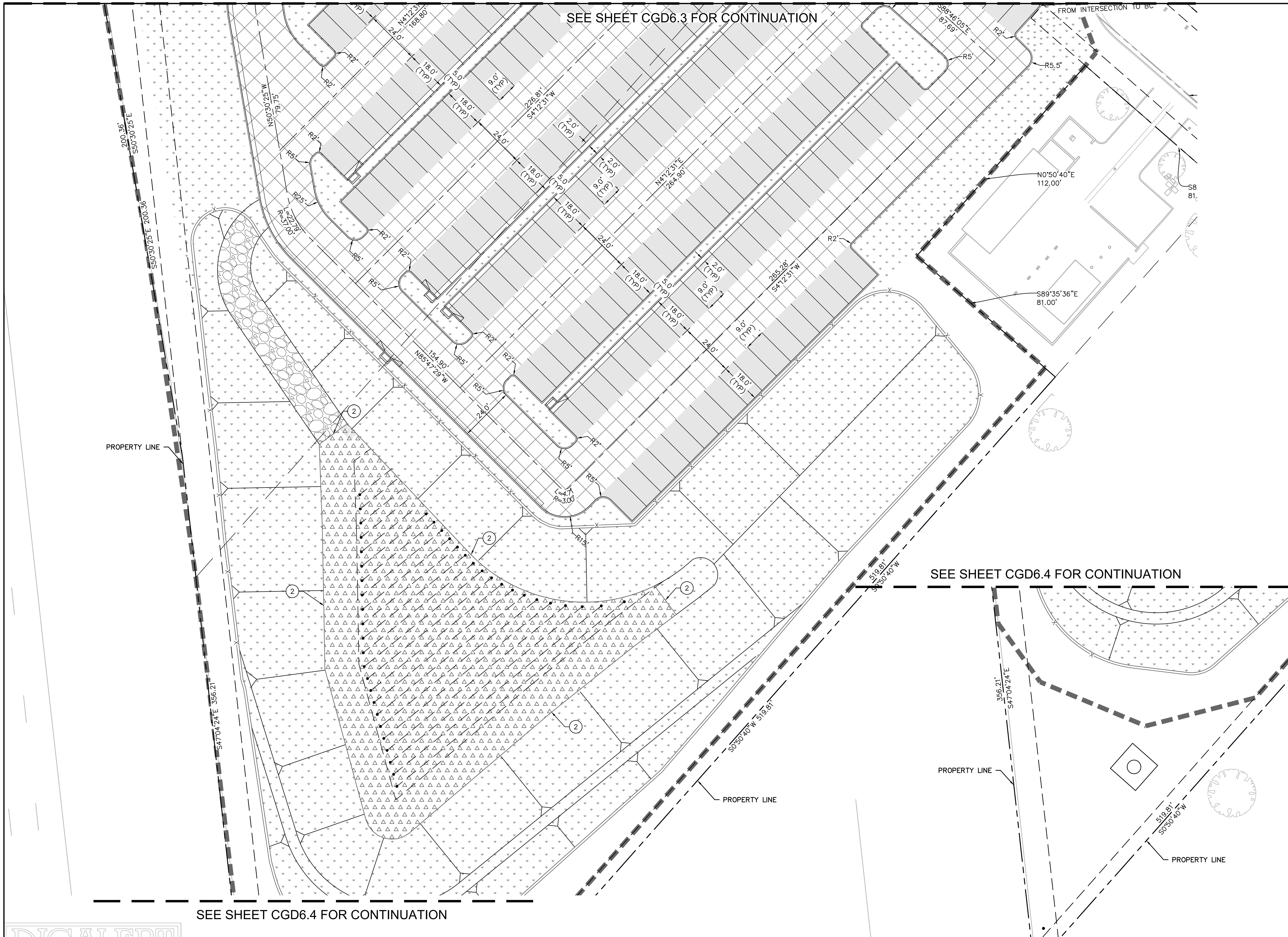

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SHEET No. CGD6.4
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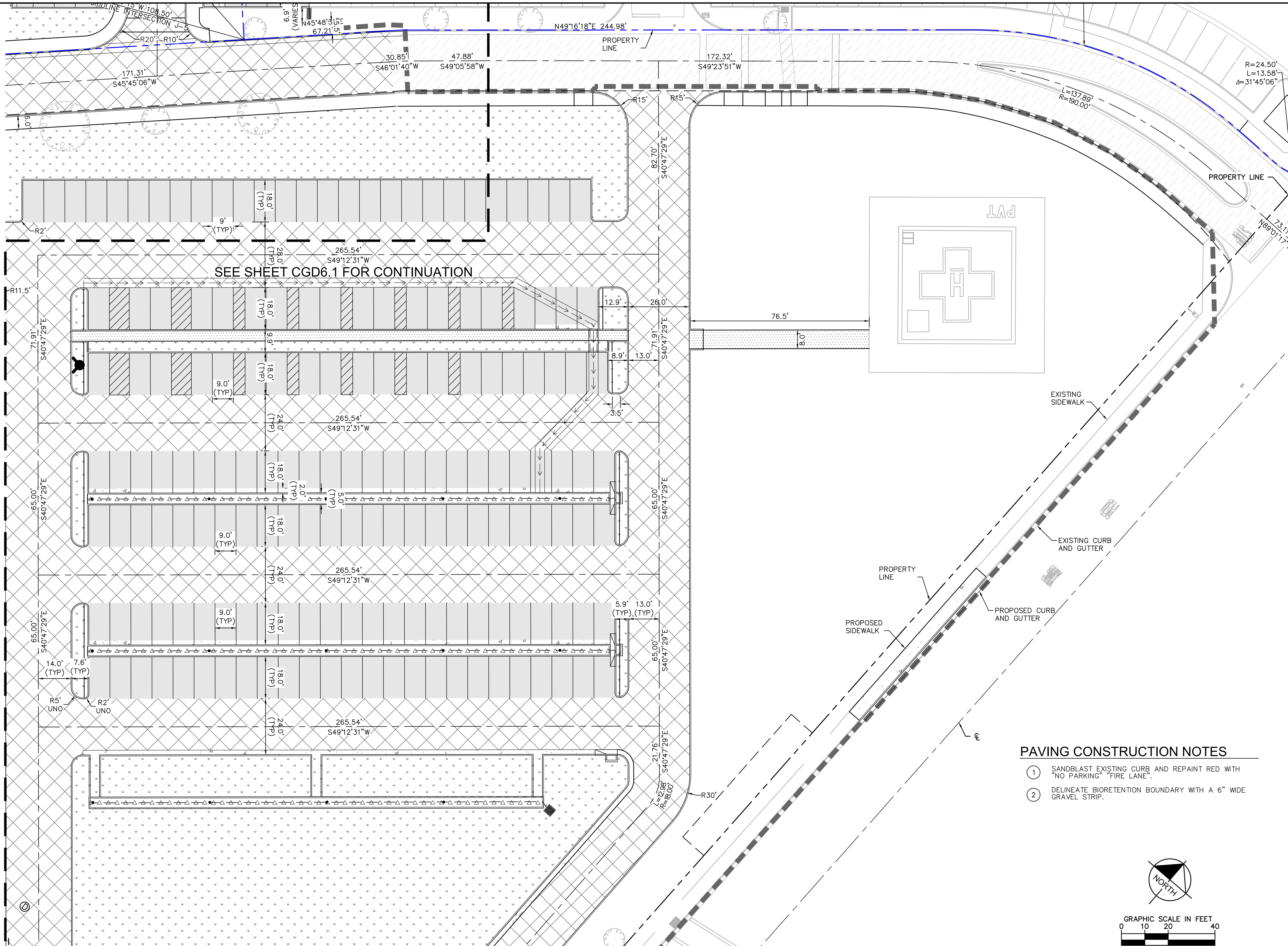

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SHEET No. CGD6.5
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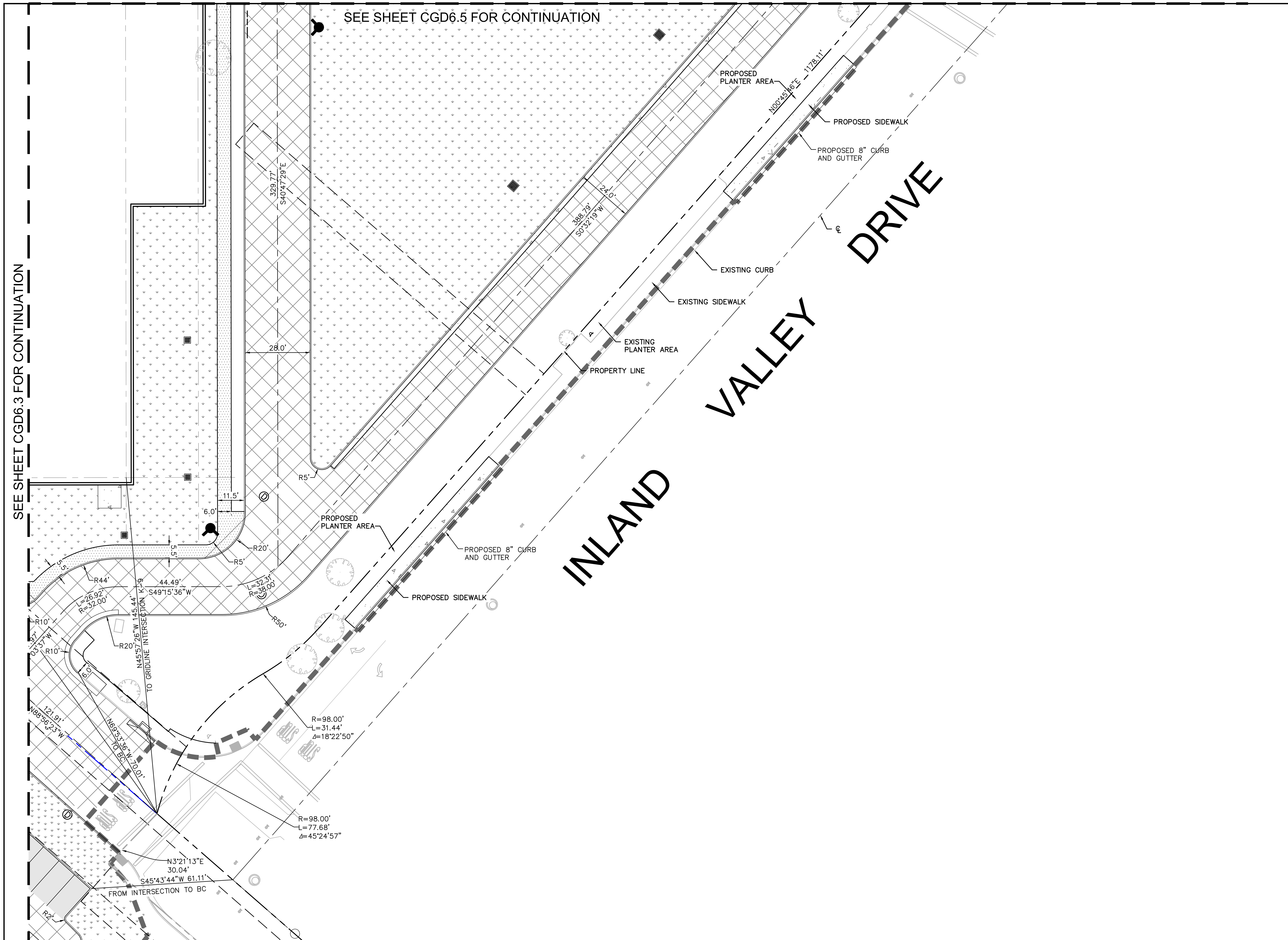

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CITY OF WILDOMAR — Est. 1886 — Inc. 2008 — Tradition ~ Opportunity ~ Progress

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SHEET No. CGD6.6
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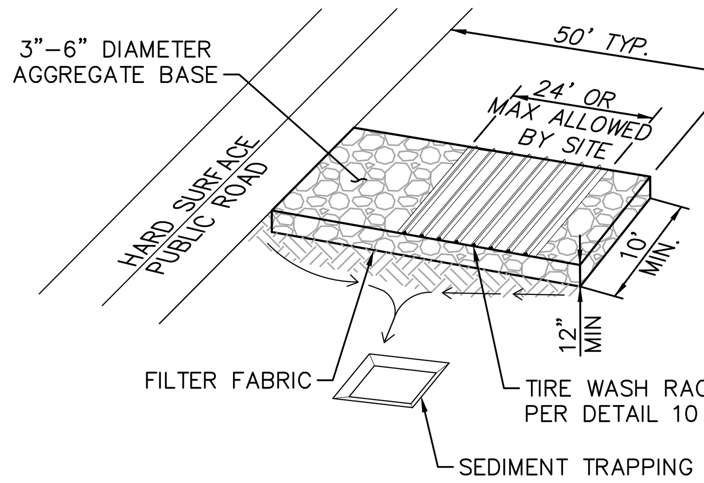


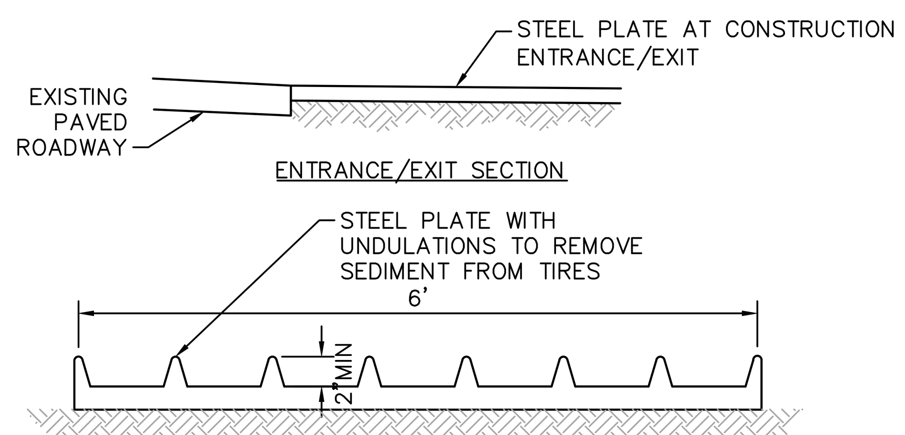
NOTES:

1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.

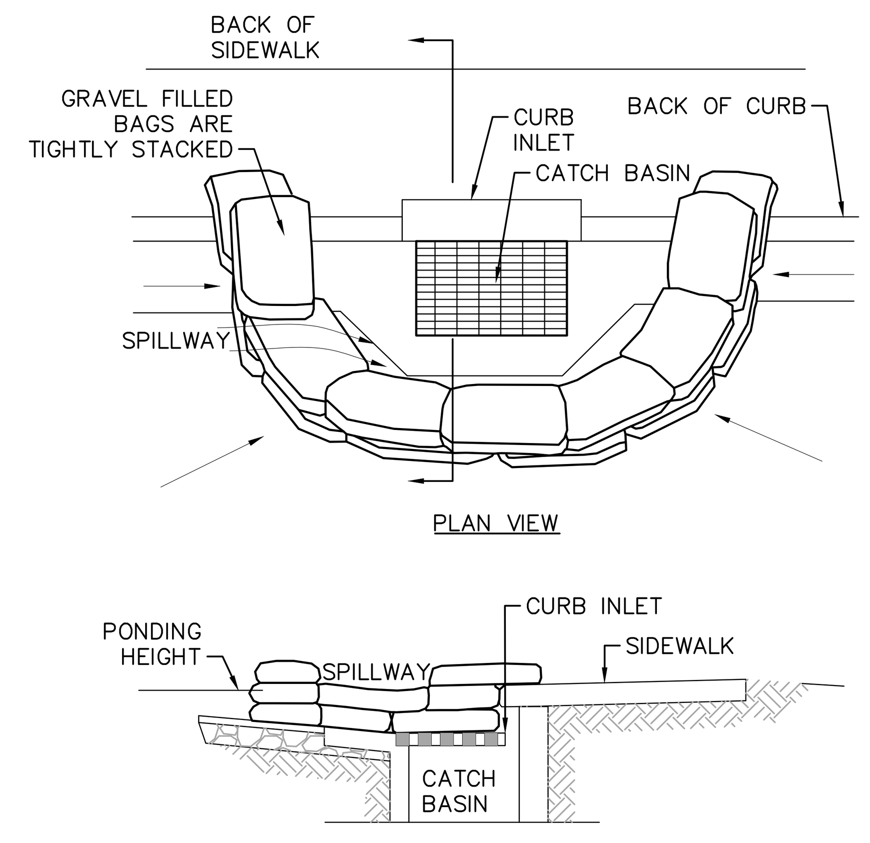
2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.

3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.

STABILIZED CONSTRUCTION ENTRANCE/EXIT (1)
N.T.S.



TIRE WASH RACK (2)
N.T.S.



NOTES:

1. PLACE CURB TYPE SEDIMENT BARRIERS ON GENTLY SLOPING STREET SEGMENTS, WHERE WATER CAN POND AND ALLOW SEDIMENT TO SEPARATE FROM RUNOFF.

2. GRAVEL BAG MATERIAL: POLYPROPYLENE, POLYETHYLENE OR POLYMIDE WOVEN FABRIC, MINIMUM UNIT WEIGHT 4 OUNCES PER SQUARE YARD, MULLEN BURST STRENGTH EXCEEDING 300 PSI AND ULTRAVIOLET STABILITY EXCEEDING 70%.

3. GRAVEL BAG SHALL BE FILLED WITH 3/4" ROCK OR 1/4" PEA GRAVEL.

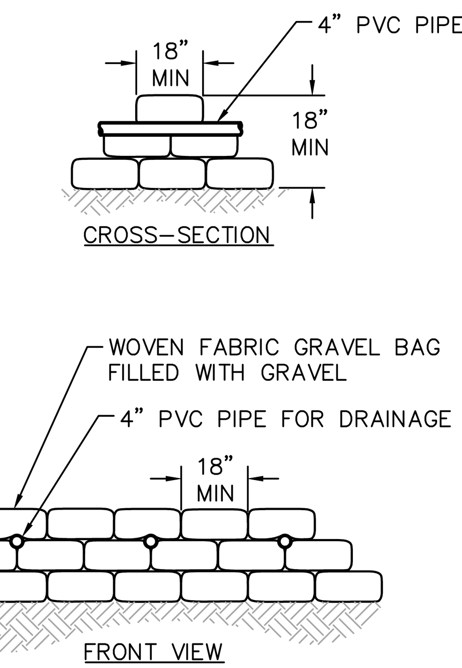
4. PLACE SEVERAL LAYERS OF SAND BAGS (12" MINIMUM HIGH) OVERLAPPING THE BAGS AND PACKING THEM TIGHTLY TOGETHER.

5. LEAVE GAP OF ONE BAG ON THE TOP ROW TO SERVE AS A SPILLWAY.

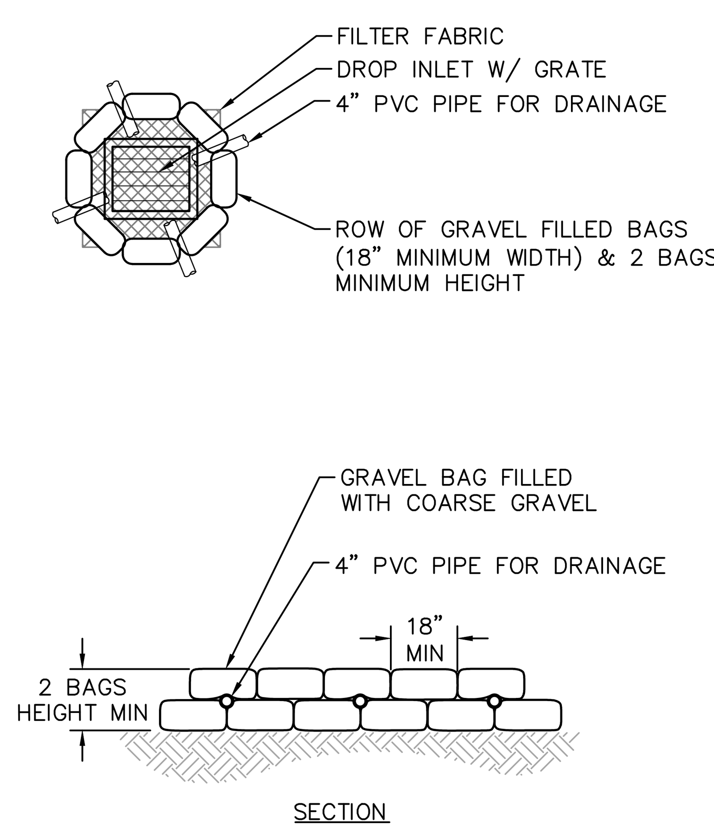
6. PLACE FILTER FABRIC OVER WIRE MESH. FILTER FABRIC SHALL BE MANUFACTURED FROM UV RESISTANT POLYPROPYLENE, NYLON, POLYESTER, OR ETHYLENE FABRIC WITH AN EQUIVALENT OPENING SIZE NOT GREATER THAN 20 SIEVE AND WITH A MINIMUM FLOW RATE OF 40 GALLONS/MINUTE/SQ. FT.

7. INSPECT BARRIERS AND REMOVE SEDIMENT AFTER EACH STORM EVENT. SEDIMENT AND GRAVEL MUST BE REMOVED FROM THE TRAVELED WAY IMMEDIATELY.

CURB INLET SEDIMENT BARRIER (3)
N.T.S.



GRAVEL BAG CHECK DAM DETAIL (4)
N.T.S.



NOTES:

1. GRAVEL BAG MATERIAL: POLYPROPYLENE, POLYETHYLENE OR POLYMIDE WOVEN FABRIC, MINIMUM UNIT WEIGHT 4 OUNCES PER SQUARE YARD, MULLEN BURST STRENGTH EXCEEDING 300 PSI AND ULTRAVIOLET STABILITY EXCEEDING 70%

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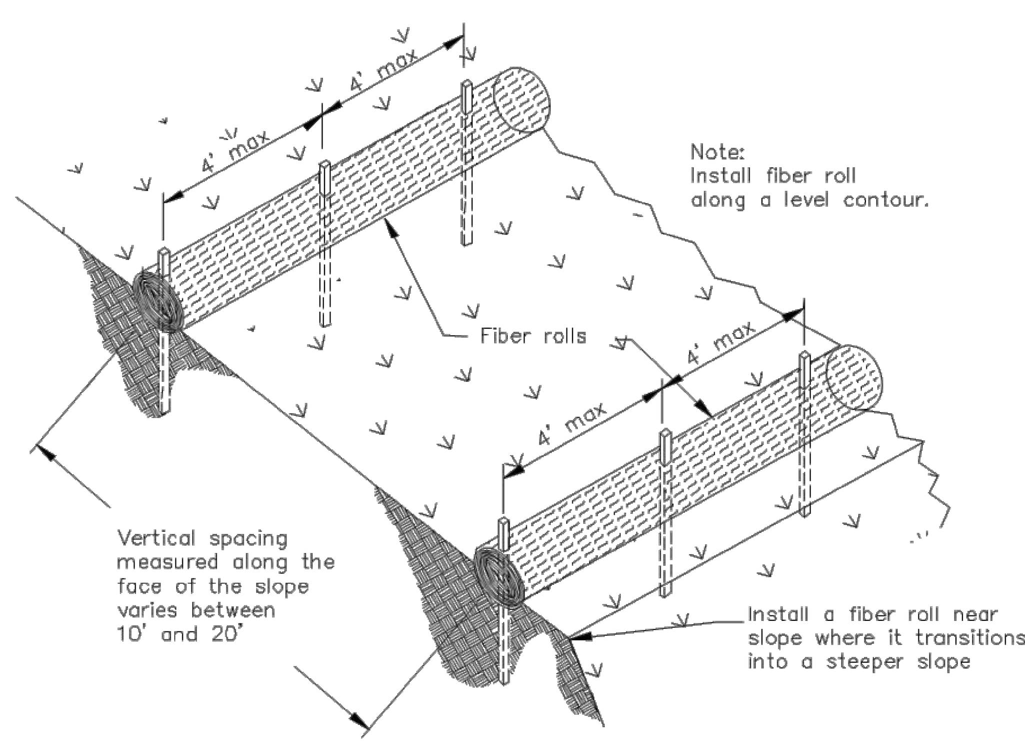
4. LEAVE GAP OF ONE BAG ON THE TOP ROW TO SERVE AS A SPILLWAY.

5. PLACE WIRE MESH OVER AND 1' (MINIMUM) BEYOND THE INLET STRUCTURE.

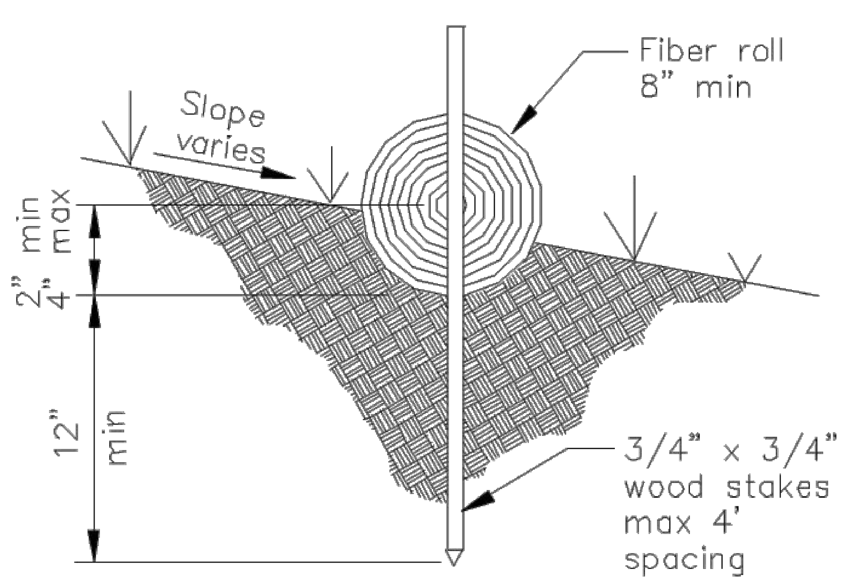
6. PLACE FILTER FABRIC OVER WIRE MESH. FILTER FABRIC SHALL BE MANUFACTURED FROM UV RESISTANT POLYPROPYLENE, NYLON, POLYESTER, OR ETHYLENE FABRIC WITH AN EQUIVALENT OPENING SIZE NOT GREATER THAN 20 SIEVE AND WITH A MINIMUM FLOW RATE OF 40 GALLONS/MINUTE/SQ. FT.

7. INSPECT BARRIERS AND REMOVE SEDIMENT AFTER EACH STORM EVENT.

DROP INLET SEDIMENT BARRIER (5)
N.T.S.

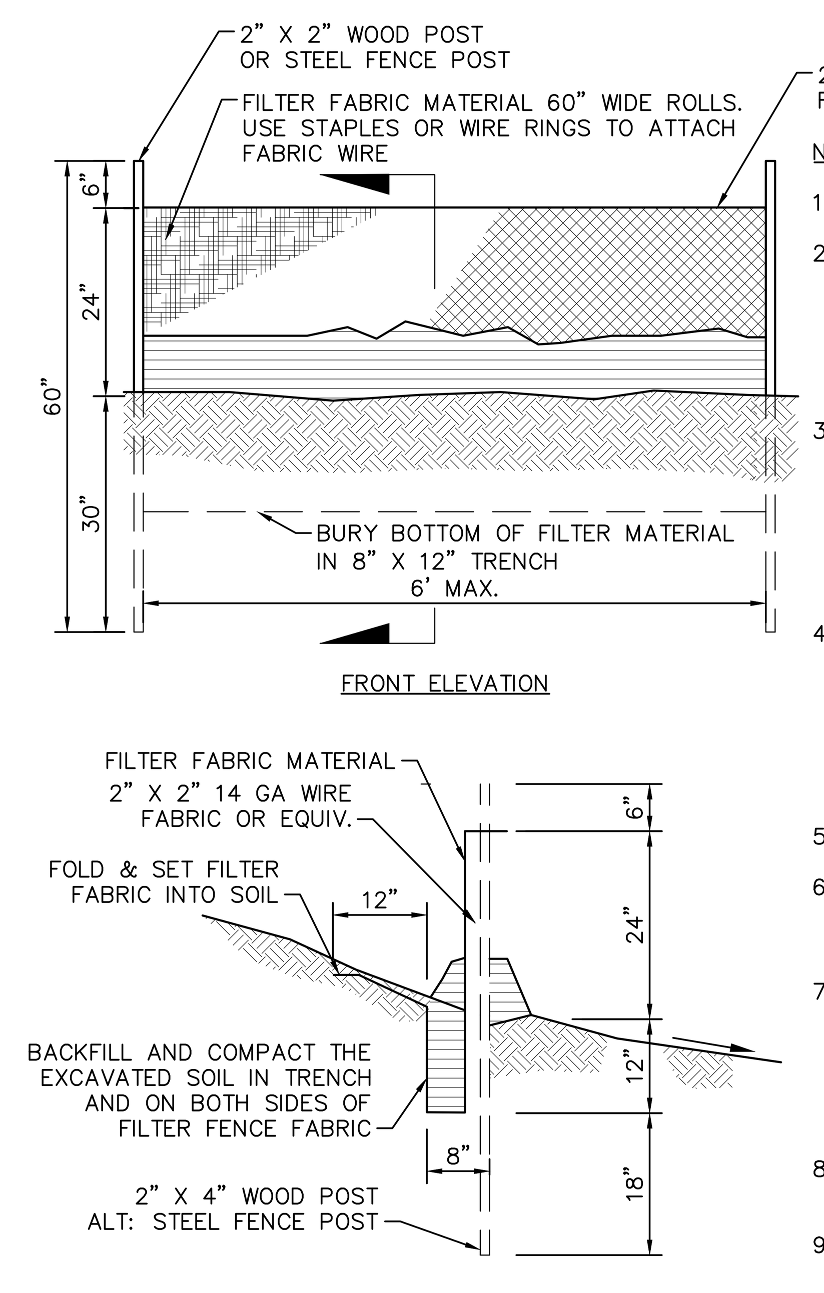


TYPICAL FIBER ROLL INSTALLATION
N.T.S.



ENTRENCHMENT DETAIL
N.T.S.

FIBER ROLLS (PER CASQA SE-5 DETAIL) (6)
N.T.S.



NOTES:

1. CONSTRUCT SILT FENCE ALONG A LEVEL CONTOUR.
2. WHEN STANDARD STRENGTH FILTER FABRIC IS USED A WIRE MESH SUPPORT FENCE SHALL BE FASTENED TO THE UPSLOPE SIDE OF THE POSTS USING HEAVY- DUTY WIRE STAPLES AR LEAST 1" LONG TIE WIRES OR HOG RINGS. THE WIRE SHALL EXTEND INTO THE TRENCH A MINIMUM OF 4".
3. STANDARD STRENGTH FILTER FABRIC SHALL BE STAPLED OR WIRED TO THE FENCE AND 40" OF THE FABRIC SHALL EXTEND INTO THE TRENCH. WHEN EXTRA-STRENGTH FILTER FABRIC AND CLOSER POST SPACING ARE USED THE WIRE MESH SUPPORT FENCE MAY BE ELIMINATED AND THE FILTER FABRIC STAPLED OR WIRED DIRECTLY TO THE POSTS.
4. FILTER FABRIC SHALL BE PURCHASED IN A CONTINUOUS ROLL THEN CUT TO THE LENGTH OF THE BARRIER. WHEN JOINTS ARE NECESSARY FILTER CLOTH SHALL BE SPICED TOGETHER ONLY TO A SUPPORT POST WITH A MINIMUM 6" OVERLAP AND BOTH AND SECURELY FASTENED TO THE POST.
5. THE TRENCH SHALL BE BACKFILLED WITH IMPACTED NATIVE MATERIAL.
6. IF 85% OR MORE OF A SOIL BY WEIGHT PASSES THROUGH THE OPENINGS IN A NO. 200 SIEVE (U.S. STANDARD) FILTER FABRIC SHALL NOT BE USED.
7. FILTER FABRIC MATERIAL SHALL CONTAIN ULTRAVIOLET RAY INHIBITORS AND STABILIZERS TO PROVIDE A MINIMUM OF 6 MONTHS OF EXPECTED USABLE CONSTRUCTION LIFE AT A TEMPERATURE RANGE OF 0 DEGREES FAHRENHEIT TO 120 DEGREES FAHRENHEIT.
8. SILT FENCES SHALL REMAIN IN PLACE UNTIL THE SLOPED AREA IS PERMANENTLY STABILIZED.
9. LEAVE AN UNDISTURBED OR STABILIZED AREA IMMEDIATELY DOWNSLOPE FROM THE FENCE.

SILT FENCE (7)
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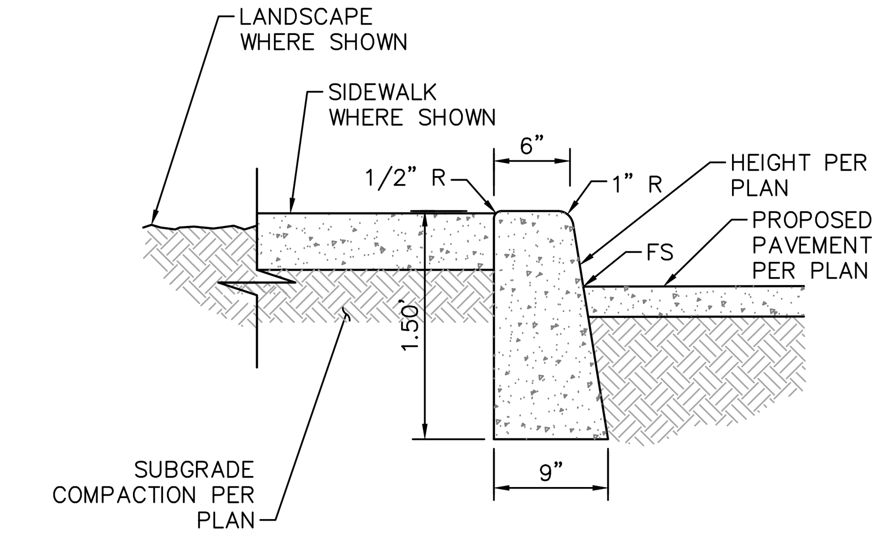
Datum = NAD 83
BENCHMARK # ___________
THIS SURVEY WAS PERFORMED ON 04/23/19 BY JOEL PAULSON L.S. 6637
SCALE: H: As Noted V: As Noted

PP, CUP, PM, TM, etc. Project XX-XXXX
CITY OF WILDOMAR
INLAND VALLEY MEDICAL CENTER
ONSITE IMPROVEMENT PLANS
EROSION CONTROL DETAILS

SHEET No. CGD7.0
OF 25 SHTS

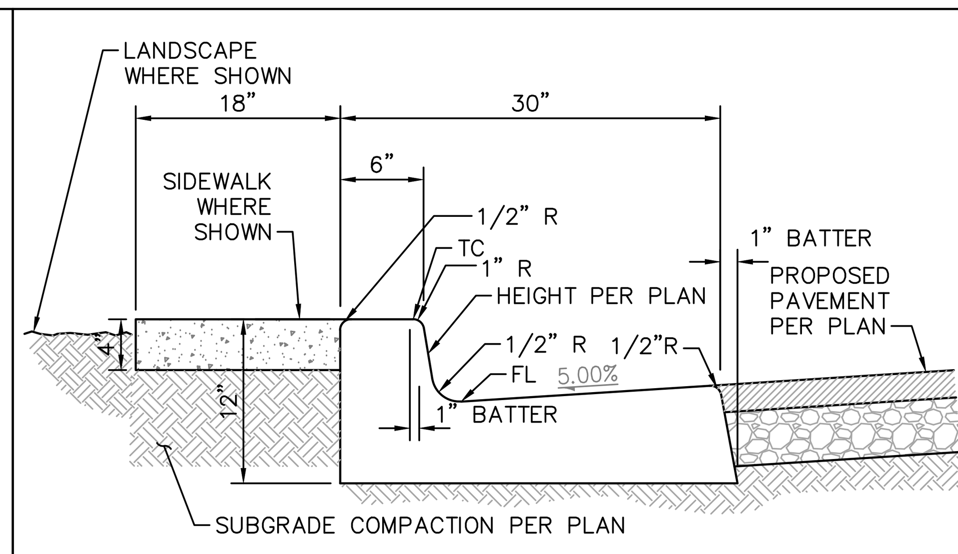
ISSUED FOR BID SET 5/21/21



NOTES:

1. CONCRETE SHALL BE 3250 PSI.
2. ISOLATION JOINTS SHALL BE PLACED ONLY AS SPECIFIED
3. CONTRACTION JOINTS CONSISTING OF 1" DEEP SCORES SHALL BE PLACED AT 15' INTERVALS O.C.
4. WHERE A WALK IS ADJACENT TO THE CURB THE JOINTS SHALL ALIGN WITH JOINTS IN THE WALK.

CONCRETE CURB (1)
N.T.S.



NOTES:

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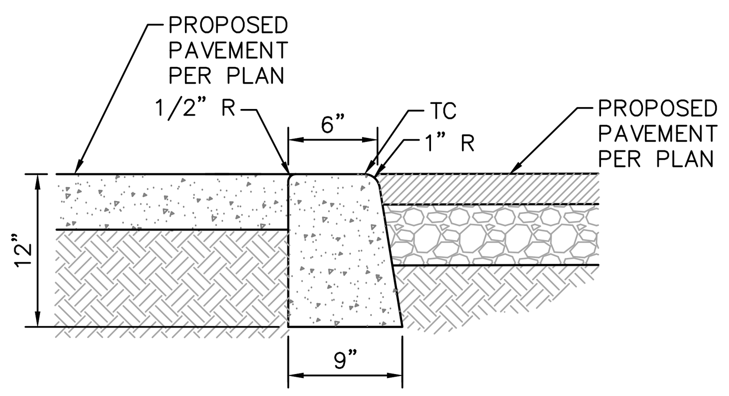
4. WHERE A WALK IS ADJACENT TO THE CURB THE JOINTS SHALL ALIGN WITH JOINTS IN THE WALK.

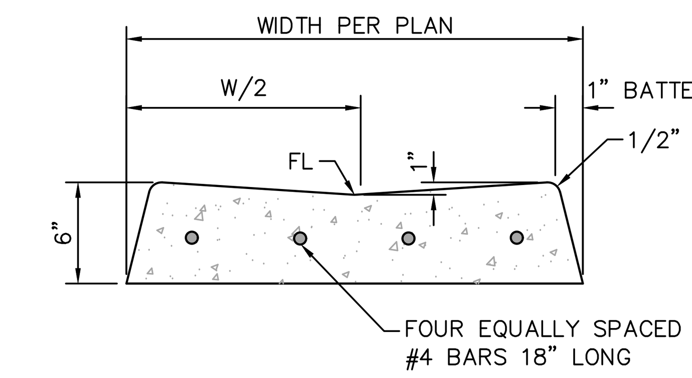
CONCRETE CURB & GUTTER (2)
N.T.S.



NOTES:

1. CONCRETE SHALL BE 3250 PSI.
2. ISOLATION JOINTS SHALL BE PLACED ONLY AS SPECIFIED
3. CONTRACTION JOINTS CONSISTING OF 1" DEEP SCORES SHALL BE PLACED AT 15' INTERVALS O.C.
4. WHERE A WALK IS ADJACENT TO THE CURB THE JOINTS SHALL ALIGN WITH JOINTS IN THE WALK.

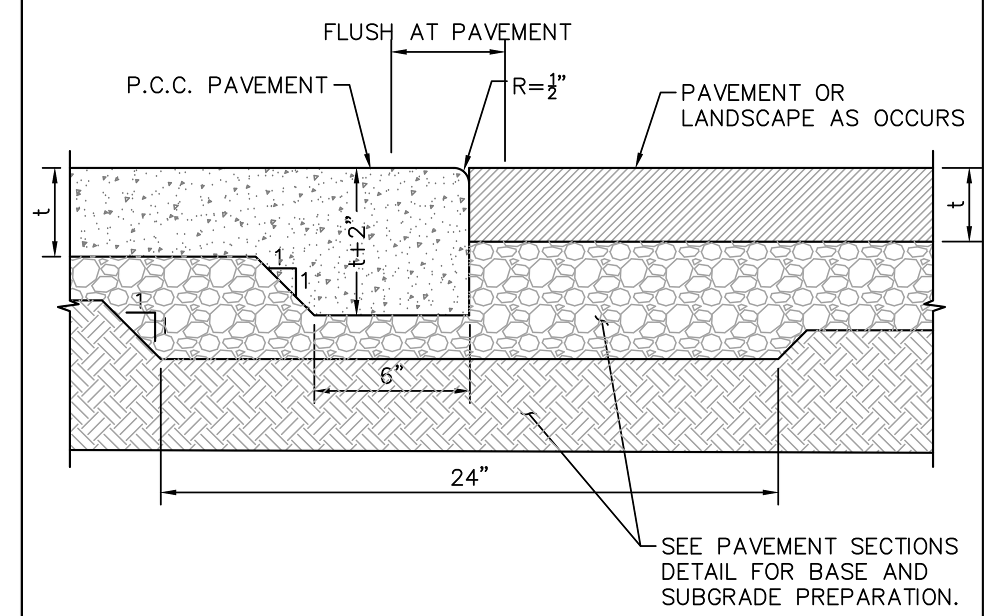
0" CONCRETE CURB (3)
N.T.S.



NOTE:

CONCRETE SHALL BE 3250 PSI.

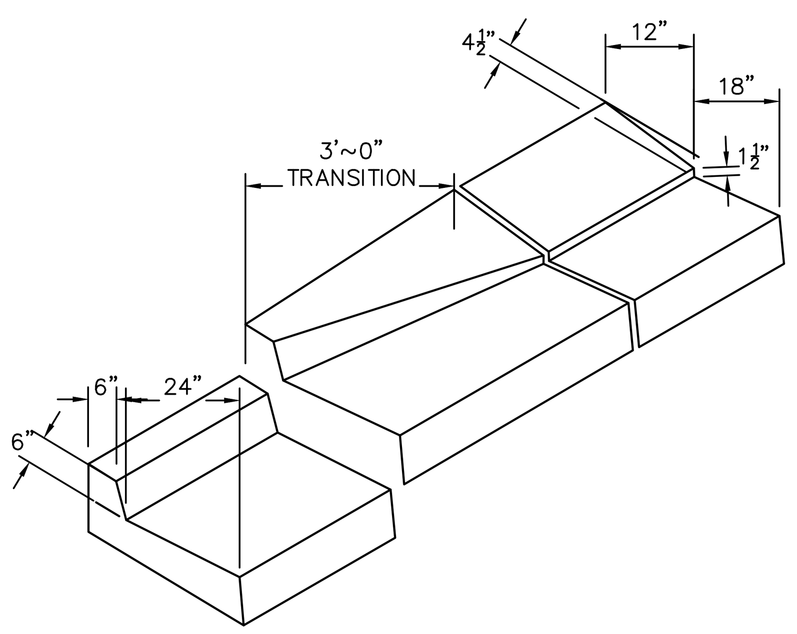
VALLEY GUTTER (4)
N.T.S.



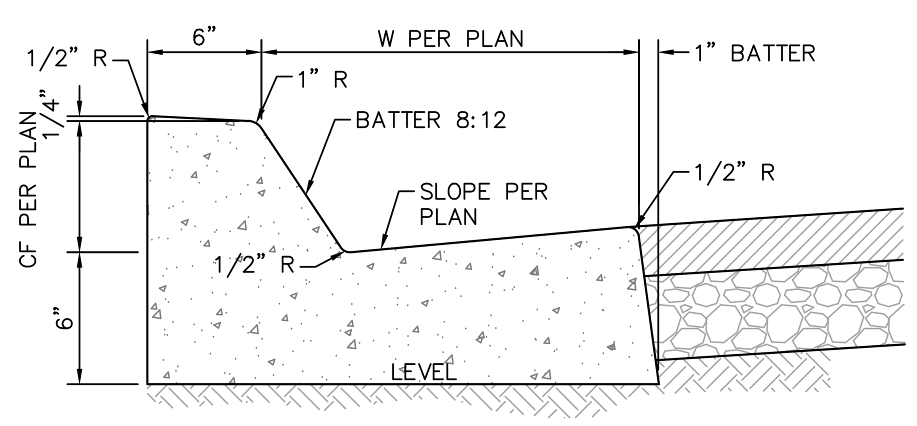
NOTES:

1. APPROVED BONDING AGENT SHALL BE APPLIED AT CONSTRUCTION JOINT.
2. SEE DETAIL 7 SHEET CGD7.1 FOR PAVEMENT SECTION AND THICKNESS (t).
3. DETAIL APPLIES AT ALL SIDEWALK EDGE CONDITIONS AND PAVEMENT TRANSITIONS

THICKENED EDGE (5)
N.T.S.



ISO VIEW



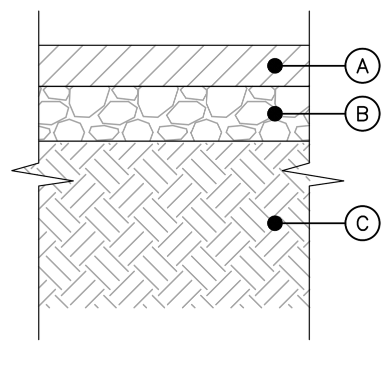
SECTION

NOTES:

1. SEE CONCRETE CURB AND GUTTER DETAIL 2, SHEET CGD7.1.
2. CURBS CONSTRUCTED ADJACENT TO EXISTING CURBS HAVING A BATTER OTHER THAN SPECIFIED FOR THE NEW CURBS SHALL BE CONSTRUCTED WITH A TRANSITION SECTION BETWEEN THE CURBS HAVING DIFFERENT BATTERS. THE MINIMUM TRANSITION LENGTH SHALL BE:

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

MOUNTABLE CURB AND GUTTER (6)
N.T.S.



NOTES:

1. CONTRACTOR SHALL CONFIRM THESE PAVEMENT SECTIONS WITH THE GEOTECHNICAL REPORT BY NOVA SERVICES, INC. PREPARED ON DECEMBER 12, 2019 AND ALL ADDENDA.
2. MATCH EXISTING PAVEMENT SECTION IF MORE STRINGENT THAN SECTION PER THIS DETAIL.
3. CONTRACTOR TO PROVIDE R-VALUE OF COMPACTED SUBGRADE TO ENGINEER PRIOR TO PAVEMENT OPERATIONS, IN ORDER TO MAKE ANY NECESSARY ADJUSTMENTS TO THE PAVEMENT SECTION. R-VALUE OF 20 MUST BE ACHIEVED FOR PAVEMENT SECTIONS BELOW.
4. ALL TREAD SURFACES SHALL BE SLIP-RESISTANT.
5. REFER TO ARCHITECTURAL PLANS FOR COLOR, TEXTURE, PATTERN AND FINISH.
6. SEE DETAIL 5 SHEET CGD7.1 FOR THICKENED EDGE DETAIL AT ALL EDGE CONDITIONS.

(A) C2-PG64-10 ASPHALTIC PAVEMENT, 3,250 PSI HEAVY DUTY DOWELED PORTLAND CEMENT CONCRETE.

(B) CLASS III AGGREGATE BASE OR CRUSHED MISCELLANEOUS BASE COMPACTED TO 95% MAXIMUM DRY DENSITY BASED ON ASTM D1557-07 TEST METHOD.

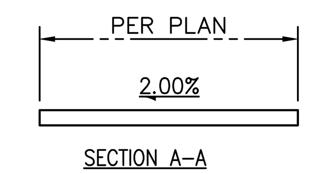
(C) SUBGRADE SCARIFIED AND RECOMPACTED TO 95% MAXIMUM DRY DENSITY BASED ON ASTM D1557-07 TEST METHOD

	AUTO PARKING STALL ASPHALT CONCRETE	CIRCULATION DRIVE ASPHALT CONCRETE	DRIVE AISLE PAVEMENTS W/ DOWELS
(A)	0'-3"	0'-3"	0'-6"
(B)	0'-7 1/2"	0'-10 1/2"	0'-6"
(C)	1'-0"	1'-0"	1'-0"

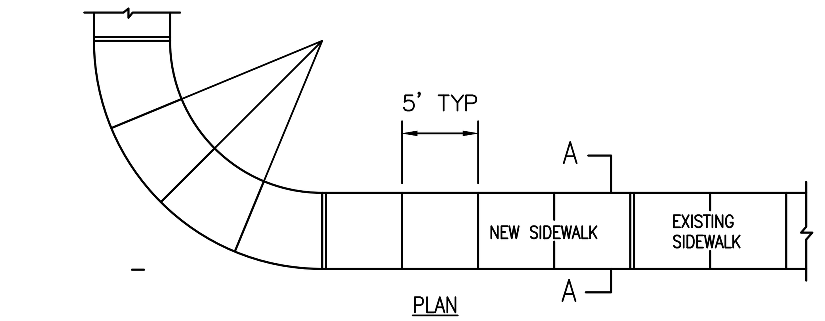
PAVEMENT SECTIONS (7)
N.T.S.

TABLE OF SIDEWALK JOINTS

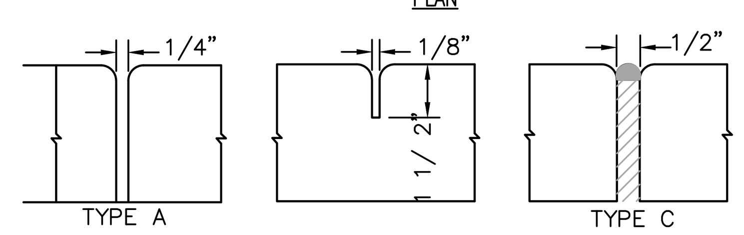
	LOCATION
A	P.C. AND P.T. OF CURVES. JUNCTION OF EXISTING AND NEW SIDEWALK.
B	5'-0" CENTER TO CENTER ON SIDEWALK.
C	WHERE SIDEWALK ABUTS CONCRETE CURBS, DRIVEWAYS, AND SIMILAR STRUCTURES



SECTION A-A

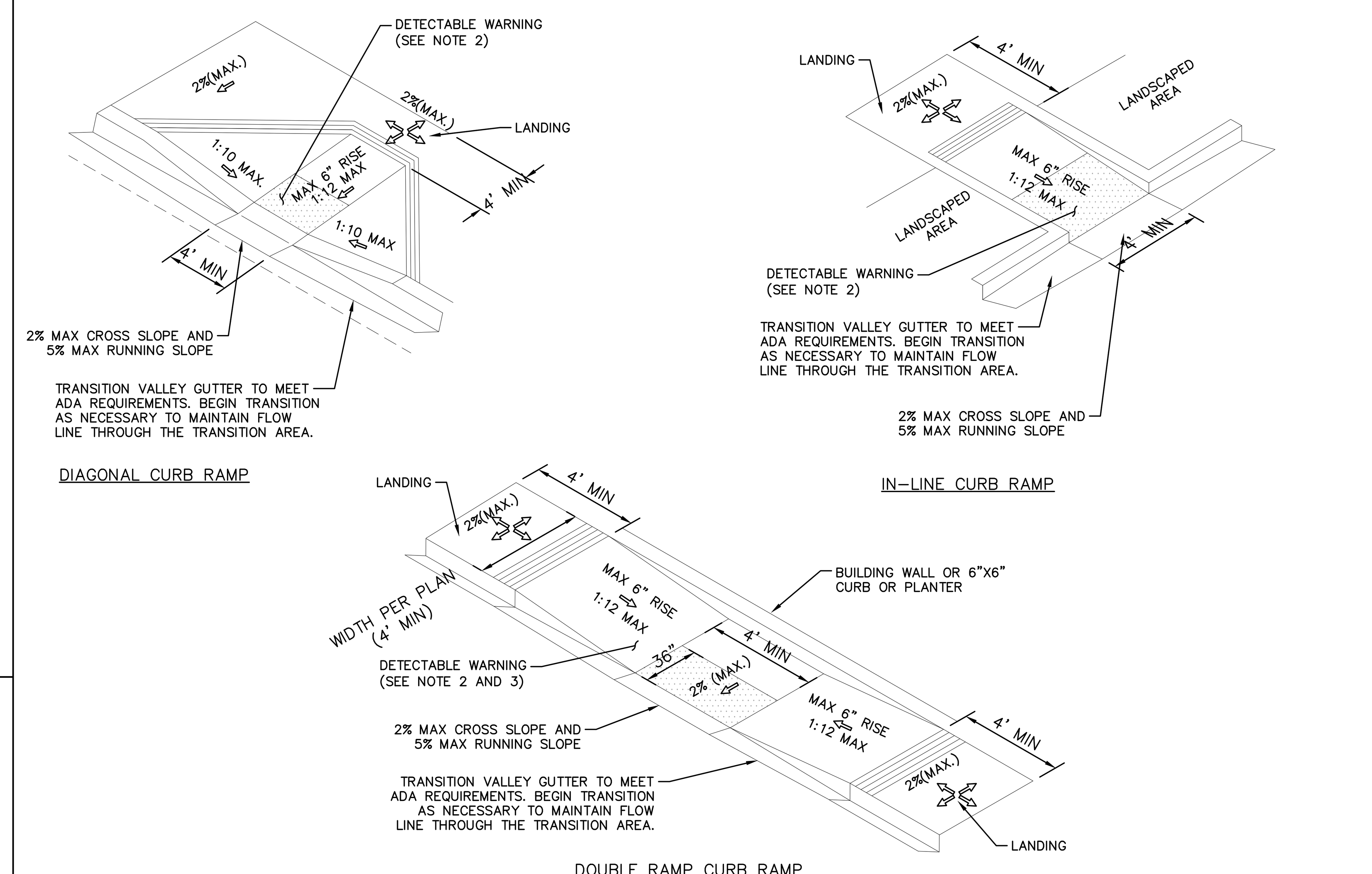


PLAN



JOINT TYPES

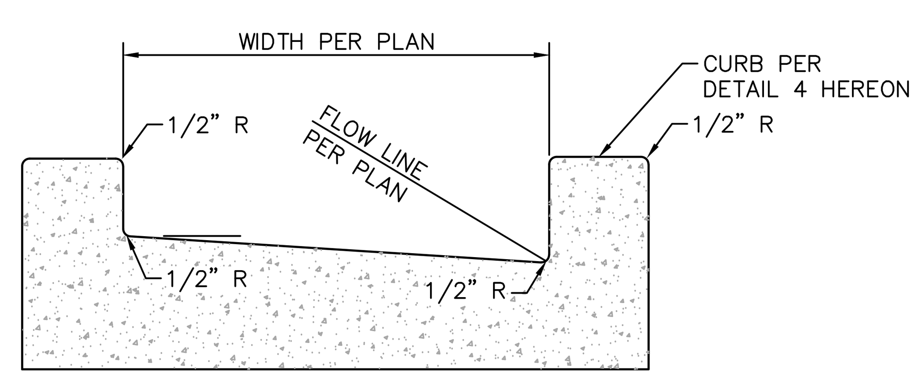
CONCRETE SIDEWALK TYPICAL DETAILS (8)
N.T.S.



NOTES:

1. ALL ACCESSIBLE COMPONENTS CONSTRUCTED AS PART OF THESE PLANS SHALL COMPLY WITH THE LOCAL, STATE, AND FEDERAL REGULATIONS WHICHEVER ARE MORE STRINGENT.
2. CURB RAMPS SHALL HAVE A DETECTABLE WARNING EXTENDING THE FULL WIDTH OF THE CURB RAMP AND 3' DEEP. GROOVED SURFACES ON OUTDOOR CURB RAMPS ARE NOT PERMITTED. VERIFY LOCAL REQUIREMENTS WITH THE BUILDING DEPARTMENT. REFER TO TRUNCATED DOMES DETAIL AND REQUIREMENTS IN THE CALIFORNIA BUILDING CODE.
3. PARALLEL CURB RAMPS SHALL HAVE A DETECTABLE WARNING EXTENDING 36" DEEP ALONG THE FLUSH TRANSITION BETWEEN STREET AND SIDEWALK. REFER TO TRUNCATED DOMES DETAIL.
4. PUBLIC SIDEWALK CURB RAMPS CONSTRUCTED WITHIN A PUBLIC RIGHT- OF -WAY, IN ABSENCE OF LOCAL ROADWAY GUIDELINES, SHALL MEET OR EXCEED LOCAL REGULATIONS.
5. CURB RAMP SURFACES (FLARES AND RAMP) SHALL HAVE A DIFFERENT TEXTURE FROM THE SURROUNDING PAVEMENT.
6. CURB RAMPS SHALL BE CONCRETE WITH STRENGTH OF 2500 PSI.
7. INSTALL 1/4" EXPANSION JOINT FILLER MATERIAL BETWEEN A NEW CURB RAMP AND THE EXISTING SIDEWALKS.
8. TOOLED JOINT – PROVIDE 1' OF 1/4" DEEP GROVES WITH 1/4" RADIUS EDGES AT THE LEVEL SURFACE AT THE TOP OF THE RAMP, GROVES SHALL NOT EXTEND TO BOTTOM CURB OR GUTTER.
9. WATER PONDING WITHIN THE CURB RAMP LIMITS IS NOT ALLOWED.
10. NO GRADE BREAK IS ALLOWED ALONG THE RAMP SURFACE.
11. CROSS SLOPE OF THE CURB RAMP SURFACE SHALL BE LESS THAN 2%.
12. TRANSITION CHANGE IN ELEVATION IS NOT TO EXCEED 1/2" WITHIN AN ACCESSIBLE ROUTE.
13. DIAGONAL CURB RAMP SIDE SLOPE VARIES UNIFORMLY FROM A MAXIMUM OF UP TO 10% AT CURB TO CONFORM WITH LONGITUDINAL SIDEWALK SLOPE ADJACENT TO TOP OF THE RAMP.

ACCESSIBLE RAMP DETAILS (9)
N.T.S.



NOTES:

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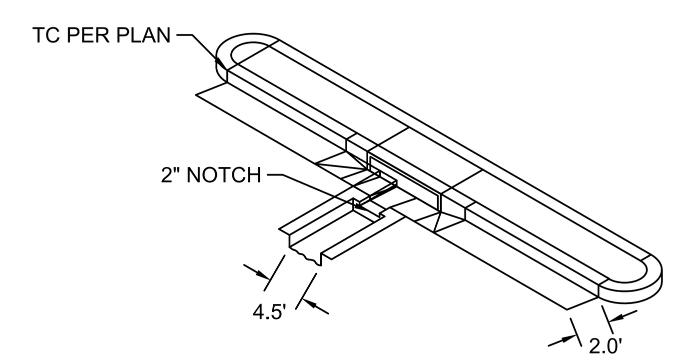
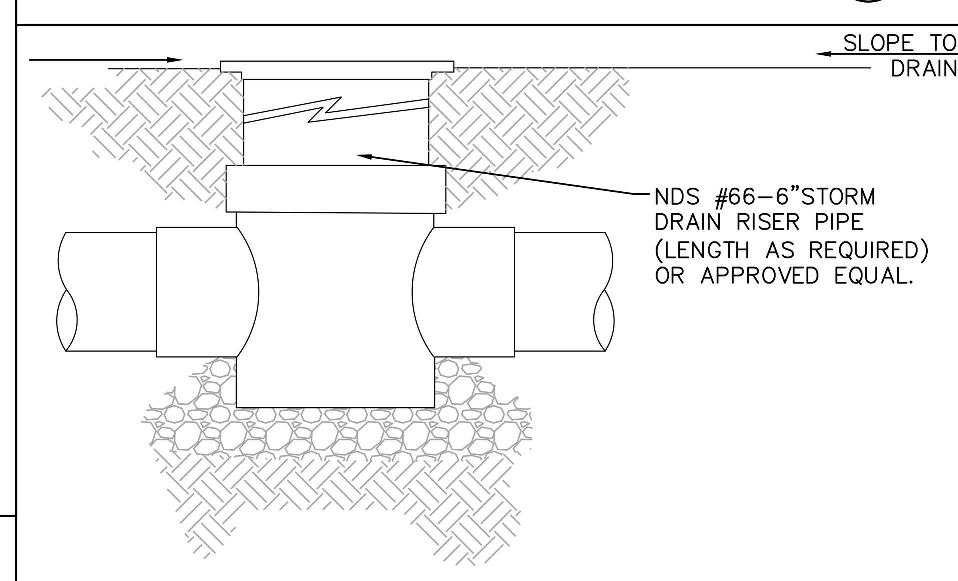
CONCRETE CHANNEL GUTTER (10)
N.T.S.



DETENTION BASIN OVERFLOW DRAIN (11)
N.T.S.



AREA DRAIN: ROUND GRATE w/ NDS SPEE-D BASIN INLET & OUTLET PIPE (12)
N.T.S.

DIGALERT
DIAL BEFORE YOU DIG
TWO WORKING DAYS BEFORE YOU DIG
TOLL FREE 1-800-227-2600
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

NOTE:
WORK CONTAINED WITHIN THESE PLANS SHALL NOT COMMENCE UNTIL AN ENCROACHMENT PERMIT AND/OR A GRADING PERMIT HAS BEEN ISSUED.

The private engineer signing these plans is responsible for assuring the accuracy and acceptability of the design hereon. In the event of discrepancies arising after City acceptance or during construction, the private engineer shall be responsible for determining an acceptable solution and revising the plans for acceptance by the City.

MARK	BY	DATE	REVISIONS	APPR.	DATE
ENGINEER				CITY	

CITY OF WILDOMAR
ACCEPTED BY:
Date:
Daniel A. York, Director of Public Works/ City Engineer, PE 43212
ACCEPTANCE AS TO CONFORMANCE WITH APPLICABLE CITY STANDARDS AND PRACTICES

SEAL ENGINEER:
REGISTERED PROFESSIONAL ENGINEER NIKKI D. KERRY RCE NO. 58449 CIVIL STATE OF CALIFORNIA

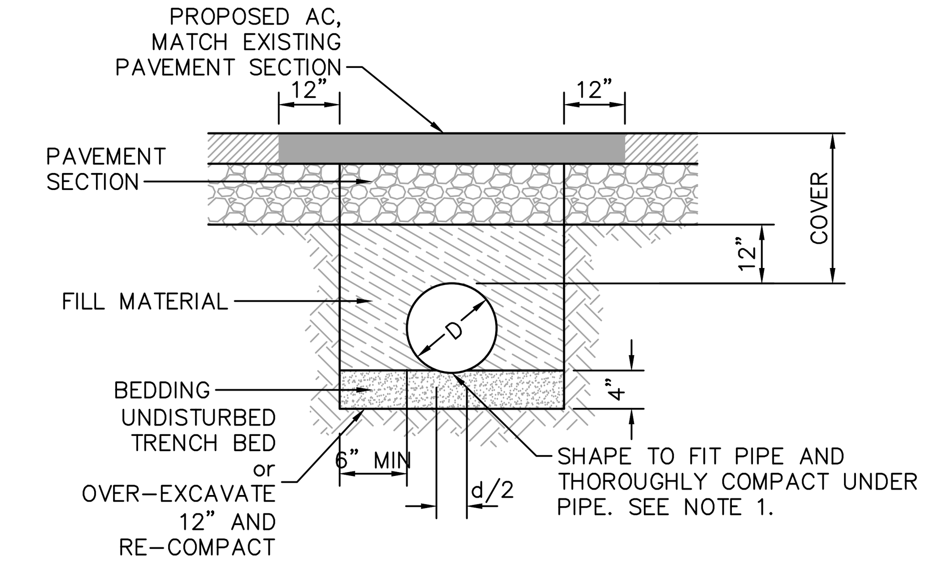
Kimley»Horn
1100 Town and Country Road, Suite 700
Orange, CA 92868
714.939.1030 F 714.938.9488
www.kimley-horn.com
PREPARED BY: NIKKI KERRY
R.C.E. No. 58449 EXP. 12/31/22

BENCHMARK:
Elevation = 1317.14
Datum = NAD 83
BENCHMARK #
THIS SURVEY WAS PERFORMED ON 04/23/19 BY JOEL PAULSON L.S. 6637
SCALE: H: As Noted V: As Noted

PP, CUP, PM, TM, etc. Project XX-XXXX
CITY OF WILDOMAR
INLAND VALLEY MEDICAL CENTER
PAVEMENT DETAILS

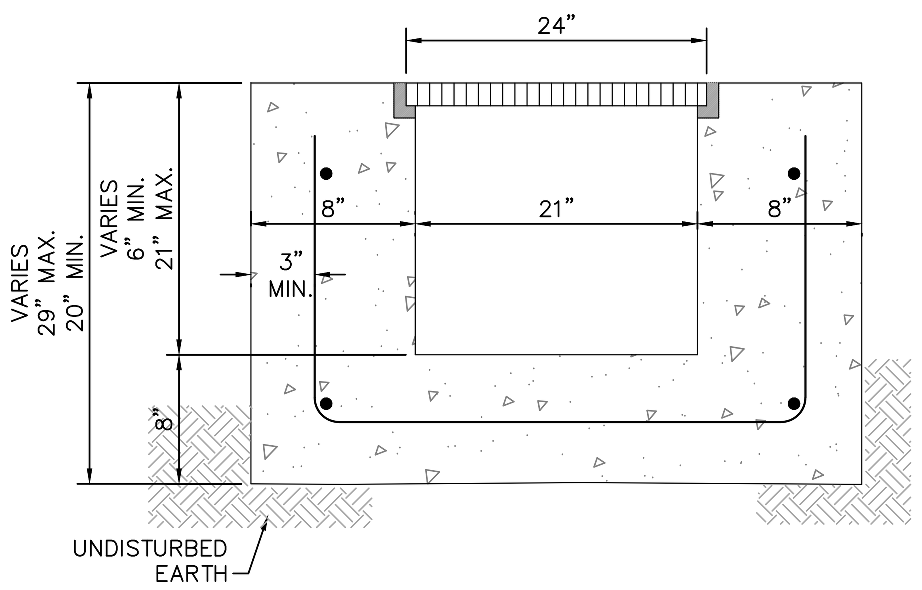
SHEET No. CGD7.1
OF SHTS

ISSUED FOR BID SET 5/21/21



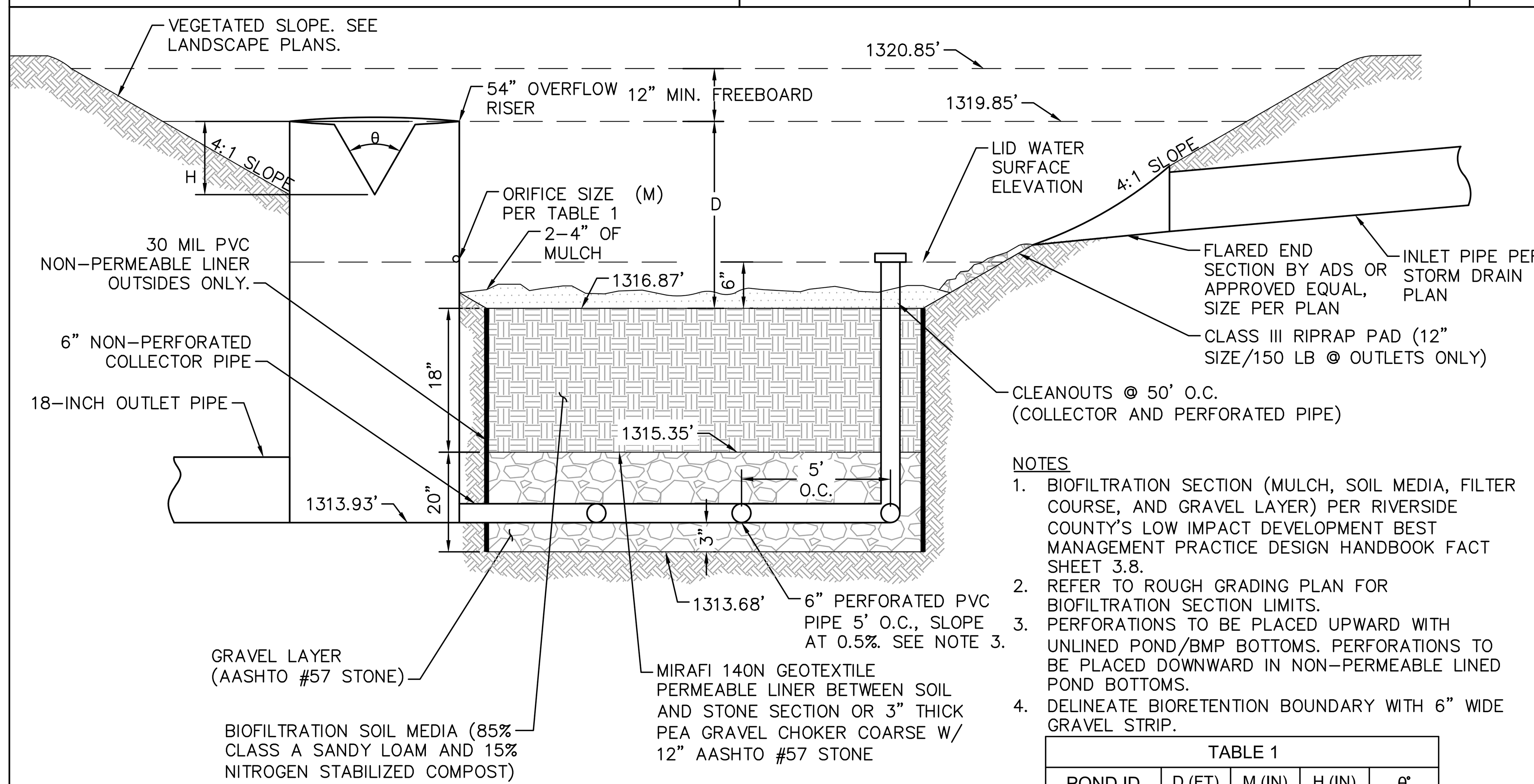
NOTES	
BEDDING:	CLEAN COARSE SAND
FILL MATERIAL:	NATIVE MATERIAL – MAXIMUM SIZE NOT TO EXCEED 1 1/2"
COVER:	36" MINIMUM, OR MINIMUM OF AGENCY HAVING JURISDICTION
NOTE 1:	EXCAVATE FOR BELLS OR HUBS SO FULL LOAD IS CARRIED BY PIPE BARRELS.
NOTE 2:	REFER TO SECTION ______ IN GEOTECHNICAL REPORT FOR BEDDING RECOMMENDATIONS

FLEXIBLE PIPE BEDDING AND TRENCH DETAIL (01)
N.T.S.



24" TRENCH DRAIN DETAIL (02)
N.T.S.

NOT_USED (03)

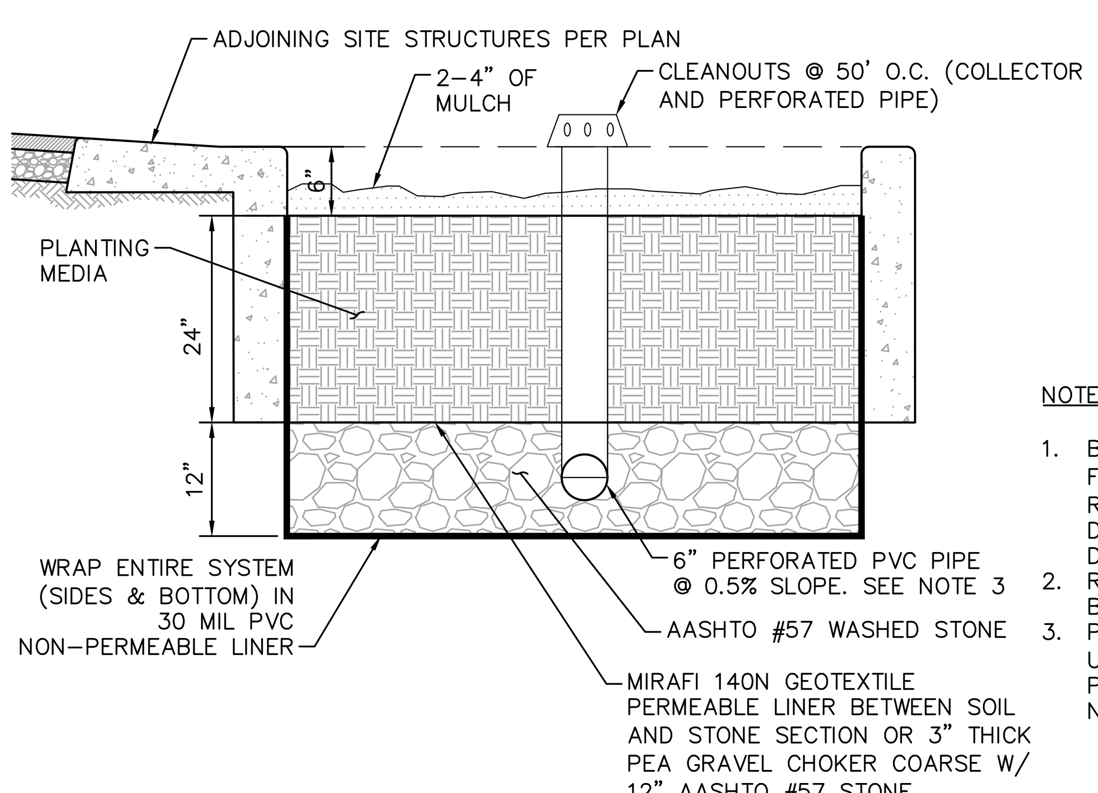


NOTES
1. BIOFILTRATION SECTION (MULCH, SOIL MEDIA, FILTER COURSE, AND GRAVEL LAYER) PER RIVERSIDE COUNTY'S LOW IMPACT DEVELOPMENT BEST MANAGEMENT PRACTICE DESIGN HANDBOOK FACT SHEET 3.8.
2. REFER TO ROUGH GRADING PLAN FOR BIOFILTRATION SECTION LIMITS.
3. PERFORATIONS TO BE PLACED UPWARD WITH UNLINED POND/BMP BOTTOMS. PERFORATIONS TO BE PLACED DOWNWARD IN NON-PERMEABLE LINED POND BOTTOMS.
4. DELINEATE BIORETENTION BOUNDARY WITH 6" WIDE GRAVEL STRIP.

TABLE 1

POND ID	D (FT)	M (IN)	H (IN)	θ°
B-1	3	0.9	6	45°

DETENTION/BIOFILTRATION_POND (04)
N.T.S.



NOTES
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2. REFER TO ROUGH GRADING PLAN FOR BIOFILTRATION SECTION LIMITS.
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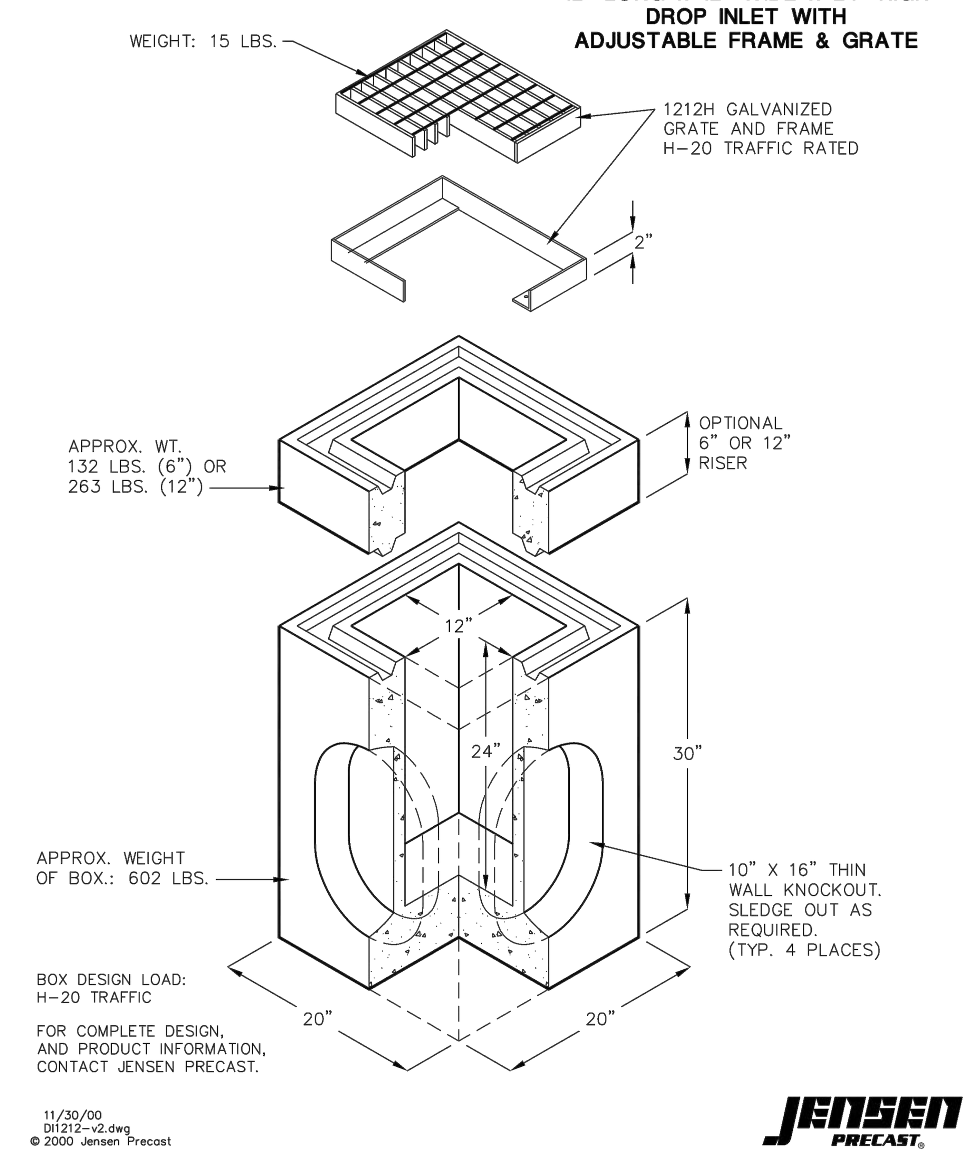
BIOFILTRATION_UNDERDRAIN_SYSTEM (05)
N.T.S.

1212-HDI
12" LONG x 12" WIDE x 24" HIGH DROP INLET WITH ADJUSTABLE FRAME & GRATE



BOX DESIGN LOAD: H-20 TRAFFIC

FOR COMPLETE DESIGN, AND PRODUCT INFORMATION, CONTACT JENSEN PRECAST.

11/30/00
DI1212-v2.dwg
© 2000 Jensen Precast

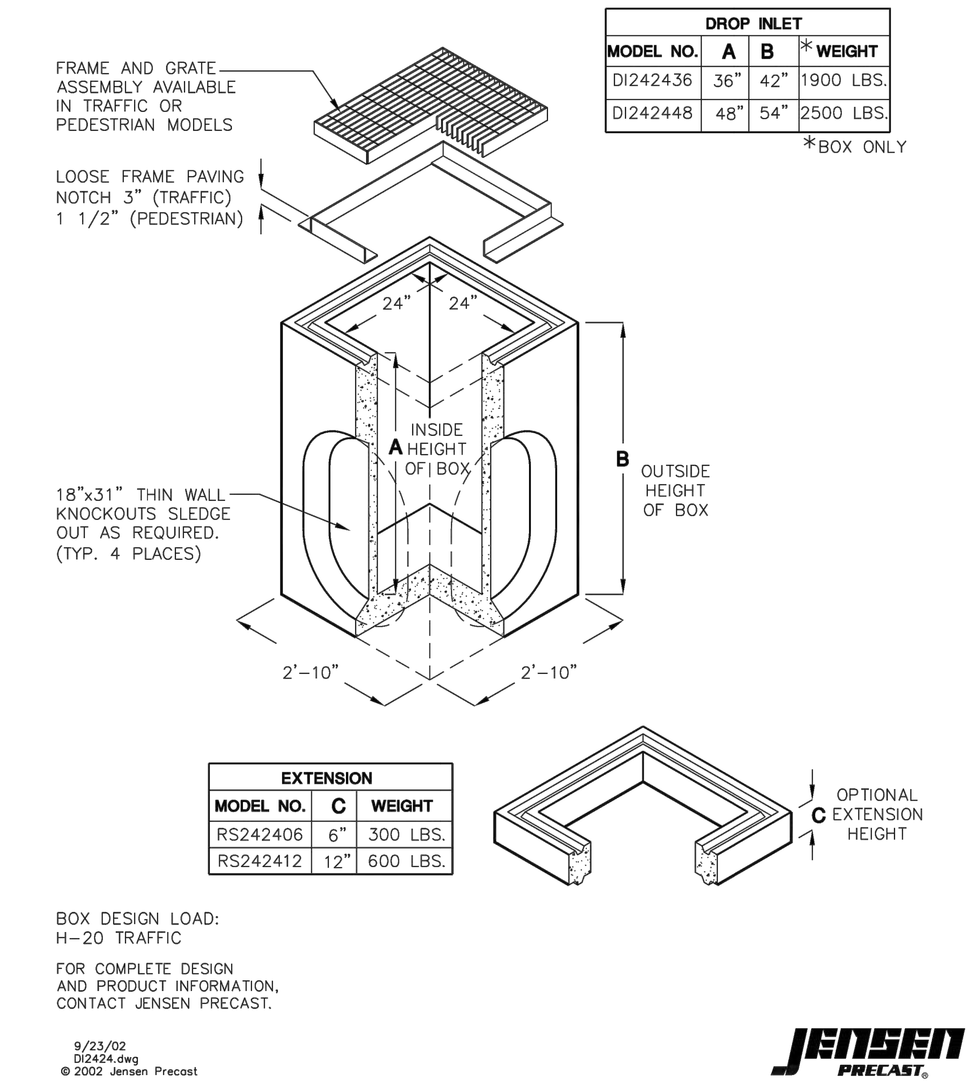
JENSEN PRECAST

JENSEN 12"X12" DROP INLET (06)
N.T.S.

24"x24" DROP INLET

DROP INLET			
MODEL NO.	A	B	* WEIGHT
DI242436	36"	42"	1900 LBS.
DI242448	48"	54"	2500 LBS.

*BOX ONLY



EXTENSION		
MODEL NO.	C	WEIGHT
RS242406	6"	300 LBS.
RS242412	12"	600 LBS.

BOX DESIGN LOAD: H-20 TRAFFIC

FOR COMPLETE DESIGN AND PRODUCT INFORMATION, CONTACT JENSEN PRECAST.

9/23/02
DI2424.dwg
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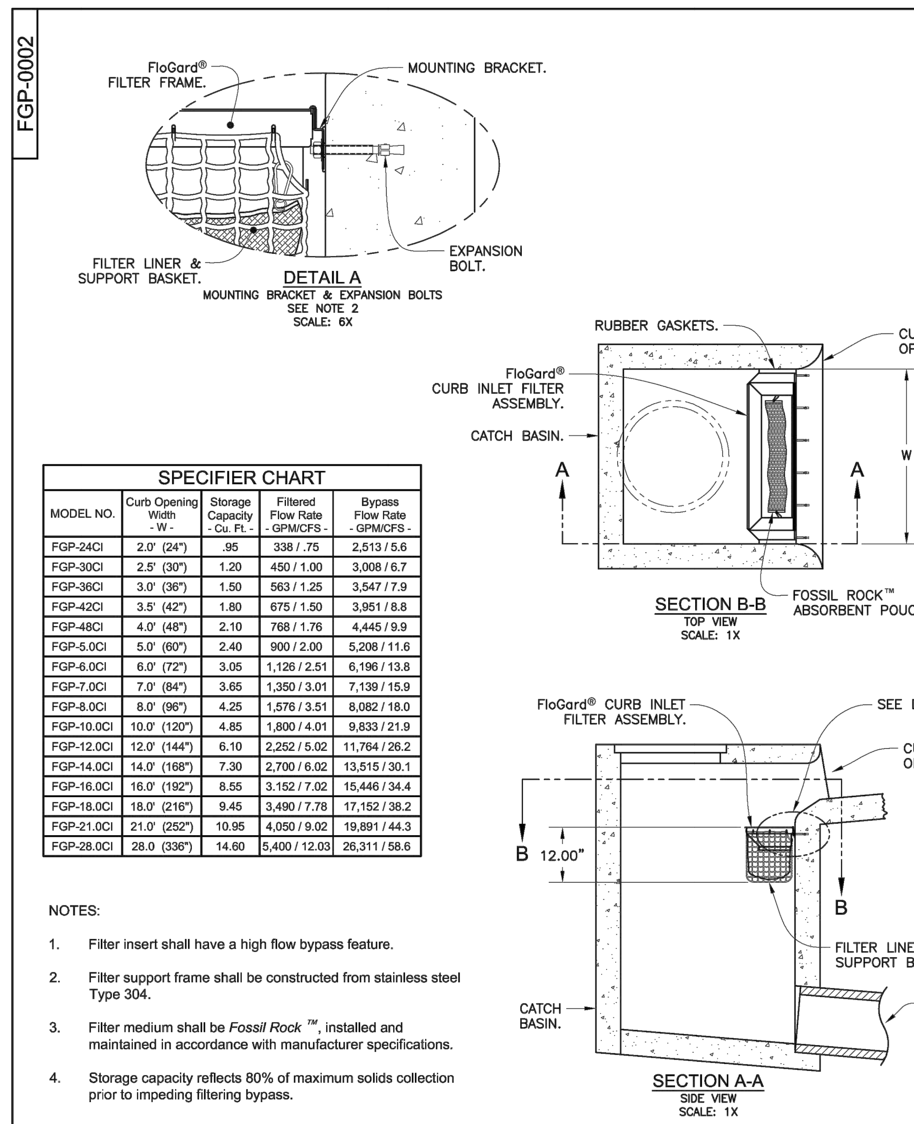
JENSEN PRECAST

JENSEN 24"X24" DROP INLET (07)
N.T.S.

FGP-0002



SPECIFIER CHART

MODEL NO.	Curb Opening Width - W -	Storage Capacity - Cu. Ft. -	Filtered Flow Rate - GPM/CFS -	Bypass Flow Rate - GPM/CFS -
FGP-24CI	2.0' (24")	.95	338 / .75	2,513 / 5.6
FGP-30CI	2.5' (30")	1.20	450 / 1.00	3,008 / 6.7
FGP-36CI	3.0' (36")	1.50	563 / 1.25	3,547 / 7.9
FGP-42CI	3.5' (42")	1.80	675 / 1.50	3,951 / 8.8
FGP-48CI	4.0' (48")	2.10	768 / 1.76	4,445 / 9.9
FGP-5.0CI	5.0' (60")	2.40	900 / 2.00	5,208 / 11.6
FGP-6.0CI	6.0' (72")	3.05	1,126 / 2.51	6,196 / 13.8
FGP-7.0CI	7.0' (84")	3.65	1,350 / 3.01	7,139 / 15.9
FGP-8.0CI	8.0' (96")	4.25	1,576 / 3.51	8,082 / 18.0
FGP-10.0CI	10.0' (120")	4.85	1,800 / 4.01	9,833 / 21.9
FGP-12.0CI	12.0' (144")	6.10	2,252 / 5.02	11,764 / 26.2
FGP-14.0CI	14.0' (168")	7.30	2,700 / 6.02	13,515 / 30.1
FGP-16.0CI	16.0' (192")	8.55	3.152 / 7.02	15,446 / 34.4
FGP-18.0CI	18.0' (216")	9.45	3,490 / 7.78	17,152 / 38.2
FGP-21.0CI	21.0' (252")	10.95	4,050 / 9.02	19,891 / 44.3
FGP-28.0CI	28.0 (336")	14.60	5,400 / 12.03	26,311 / 58.6

NOTES:
1. Filter insert shall have a high flow bypass feature.
2. Filter support frame shall be constructed from stainless steel Type 304.
3. Filter medium shall be *Fossil Rock* ™, installed and maintained in accordance with manufacturer specifications.
4. Storage capacity reflects 80% of maximum solids collection prior to impeding filtering bypass.

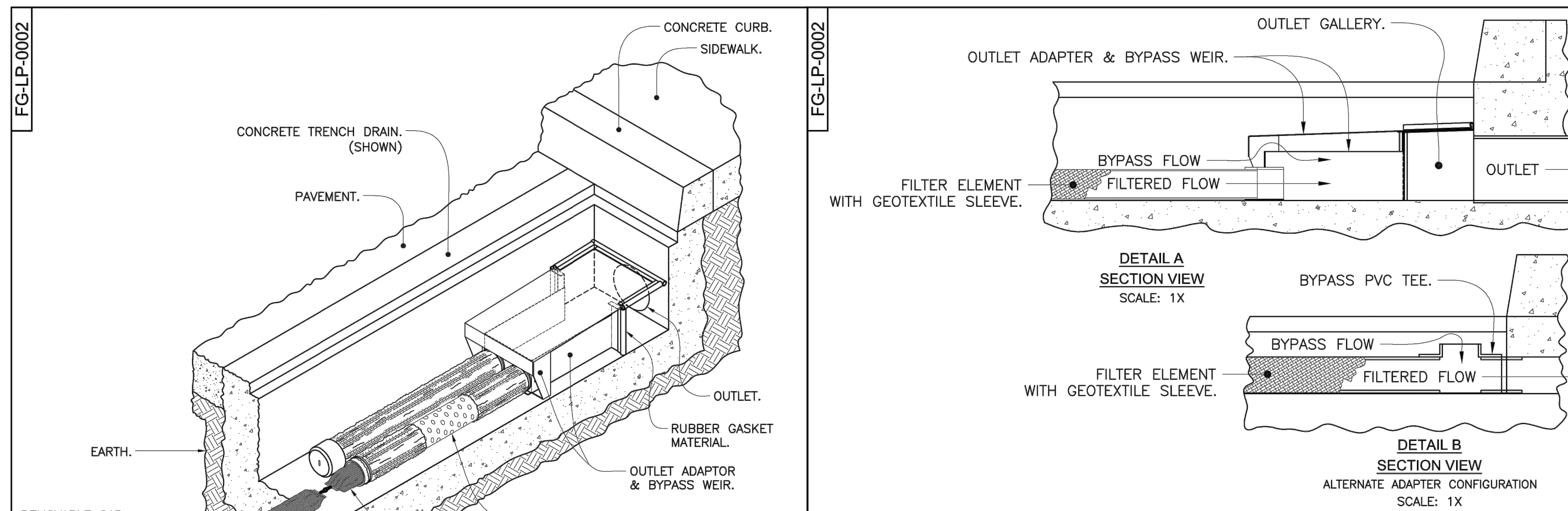
Inlet Filtration
FloGard®
Catch Basin Insert Filter
Curb Inlet Style

Oldcastle® Stormwater Solutions
7921 Southpark Plaza, Suite 200 | Littleton, CO | 80120 | Ph: 800.579.8819 | oldcastlestormwater.com

DRAWING NO.	REV	ECO	DATE	
FGP-0002	E	ECO-0127 JPR 5/18/15	JPR 1/3/06	SHEET 1 OF 1

OLDCASTLE FLOGARD CATCH BASIN INSERT FILTER (08)
N.T.S.

FG-LP-0002



NOTES:
1. Filter insert shall have a high flow bypass feature.
2. Filter outlet adapter shall be constructed from stainless steel Type 304. Alternate outlet adaptor for shallow installations shall be PVC SCH-40. See detail B, sheet 2 of 2.
3. Filter medium shall be *Fossil Rock* ™, installed and maintained in accordance with manufacturer specifications.
4. Storage capacity reflects 80% of maximum solids collection prior to impeding filtering bypass.
5. For alternate outlet adapter configurations used for extremely shallow trench drains contact Oldcastle Stormwater Solutions for engineering assistance.
6. Filter element should be a minimum of one half the length of trench. Confirm flow rate upon order.

SPECIFIER CHART

MODEL	FILTER TYPE	TRENCH WIDTH "ID" (CLEAR OPENING)	MINIMUM TRENCH DEPTH (FROM BOTTOM OF GRATE)	SOLIDS STORAGE CAPACITY CUBIC FEET **	FILTERED FLOW CUBIC FEET / SECOND **	TOTAL BYPASS CAPACITY CUBIC FEET /SECOND
FG-TDOF3	PIPE *	3.0	6.5	0.1	0.5	0.1
FG-TDOF4	PIPE *	4.0	6.5	0.2	0.5	0.1
FG-TDOF6	PIPE	6.0	6.5	0.4	0.5	0.2
FG-TDOF8	PIPE	8.0	6.5	0.7	0.5	0.3
FG-TDOF10	PIPE	10.0	6.5	0.9	0.5	0.5
FG-TDOF12	PIPE	12.0	6.5	0.9	1.0	0.6
FG-TDOF18	PIPE	18.0	6.5	1.3	1.5	1.1
FG-TDOF24	PIPE	24.0	6.5	1.8	2.0	1.5
FG-TDOA6	PANEL	6.0	4.5	0.4	0.2	0.2
FG-TDOA8	PANEL	8.0	4.5	0.7	0.2	0.3
FG-TDOA10	PANEL	10.0	4.5	0.8	0.3	0.5
FG-TDOA12	PANEL	12.0	4.5	1.0	0.4	0.6
FG-TDOA18	PANEL	18.0	4.5	1.4	0.8	1.1
FG-TDOA24	PANEL	24.0	4.5	1.8	1.1	1.5

* ALTERNATE ADAPTER CONFIGURATION. SEE DETAIL B.
**CAPACITY PER 5-FT. SEGMENT USED.

Inlet Filtration
FloGard®
Catch Basin Insert Filter
Trench Drain Style

Oldcastle® Stormwater Solutions
7921 Southpark Plaza, Suite 200 | Littleton, CO | 80120 | Ph: 800.579.8819 | oldcastlestormwater.com

DRAWING NO.	REV	ECO	DATE	
FG-LP-0002	H	ECO-0142 JPR 7/13/16	JPR 2/21/07	SHEET 1 OF 2
FG-LP-0002	H	ECO-0142 JPR 7/13/16	JPR 2/21/07	SHEET 2 OF 2

OLDCASTLE FLOGARD CATCH BASIN INSERT FILTER (09)
N.T.S.

DIGALERT
DIAL BEFORE YOU DIG — TWO WORKING DAYS BEFORE YOU DIG
TOLL FREE 1-800-227-2600
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

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MARK	BY	DATE	REVISIONS	APPR.	DATE
	ENGINEER			CITY	

CITY OF WILDOMAR
ACCEPTED BY:
Date:
Daniel A. York, Director of Public Works/ City Engineer, PE 43212
ACCEPTANCE AS TO CONFORMANCE WITH APPLICABLE CITY STANDARDS AND PRACTICES

SEAL ENGINEER:
REGISTERED PROFESSIONAL ENGINEER — NIKKI D. KERRY — RCE NO. 58449 — CIVIL — STATE OF CALIFORNIA

Kimley»Horn
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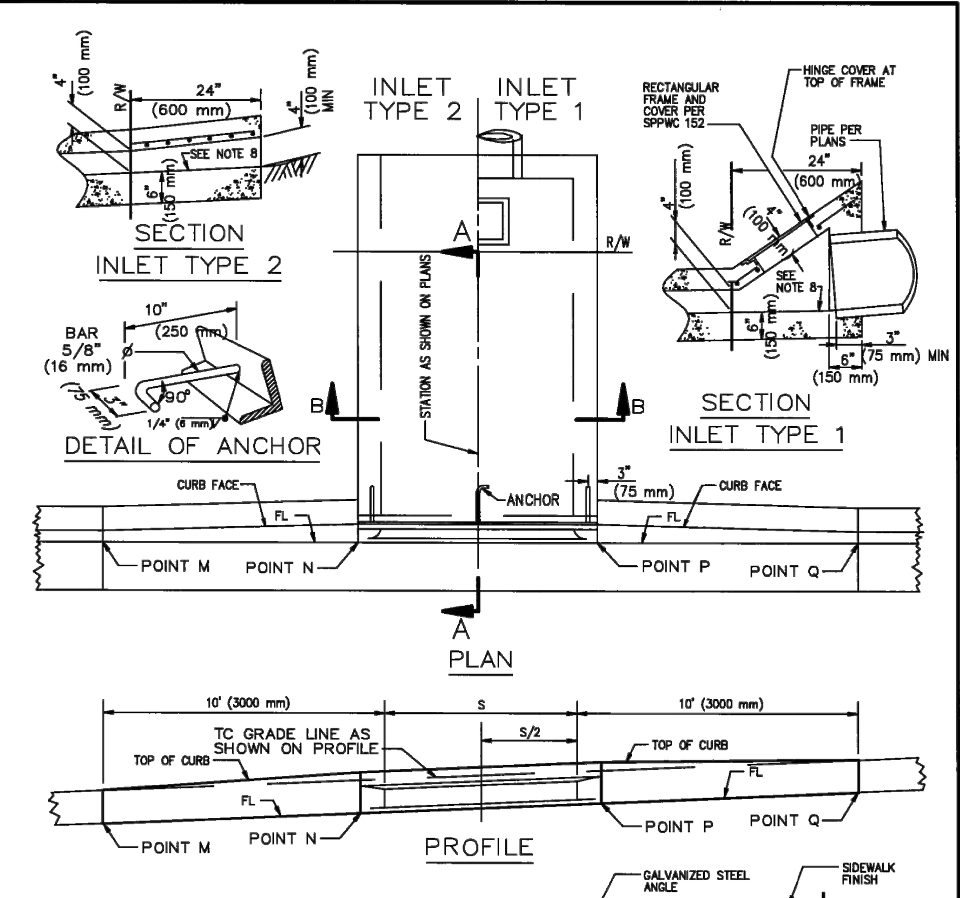
PREPARED BY: NIKKI KERRY
R.C.E. No. 58449 EXP. 12/31/22

BENCHMARK:
Elevation = 1317.14
Datum = NAD 83
BENCHMARK # ___________
THIS SURVEY WAS PERFORMED ON 04/23/19 BY JOEL PAULSON L.S. 6637
SCALE: H: As Noted V: As Noted

PP, CUP, PM, TM, etc. Project XX-XXXX
CITY OF WILDOMAR
INLAND VALLEY MEDICAL CENTER
STORM DRAIN DETAILS

SHEET No. CGD7.2
OF SHTS

ISSUED FOR BID SET 5/21/21



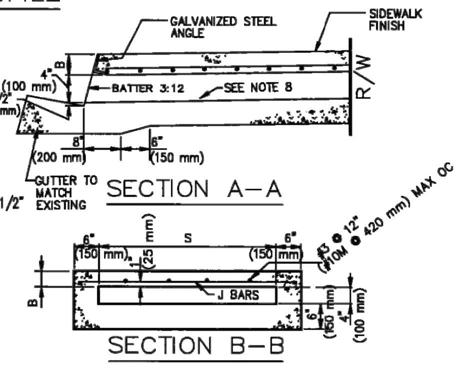
S, INCHES (mm)	J BAR SPACING
12" (300)	7" (240)
18" (450)	7" (240)
24" (600)	7" (240)
30" (750)	7" (240)
36" (900)	7" (240)
42" (1050)	6" (210)
48" (1200)	5" (180)
54" (1350)	6-1/2" (225)
60" (1500)	5" (180)
66" (1650)	4" (180)
72" (1800)	3-1/2" (120)

FOR S = 30" (750 mm) AND LESS, USE 2 ANCHORS. OTHERWISE, USE 3 ANCHORS.

FOR S = 48" (1200 mm) AND LESS, B = 3" (75 mm)
USE 2-1/2"x2"x3/8" (64x51x9.5) GALVANIZED STEEL ANGLE.

OTHERWISE, B = 4" (100 mm).USE 3-1/2"x3"x1/2" (89x76x12.7) GALVANIZED STEEL ANGLE.

J BARS ARE #3 (#10M).



STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

PROMULGATED BY THE PUBLIC WORKS STANDARDS INC. GREENBOOK COMMITTEE 1993 REV. 1996, 2009

PARKWAY DRAIN — STANDARD PLAN 151–2 — SHEET 1 OF 2

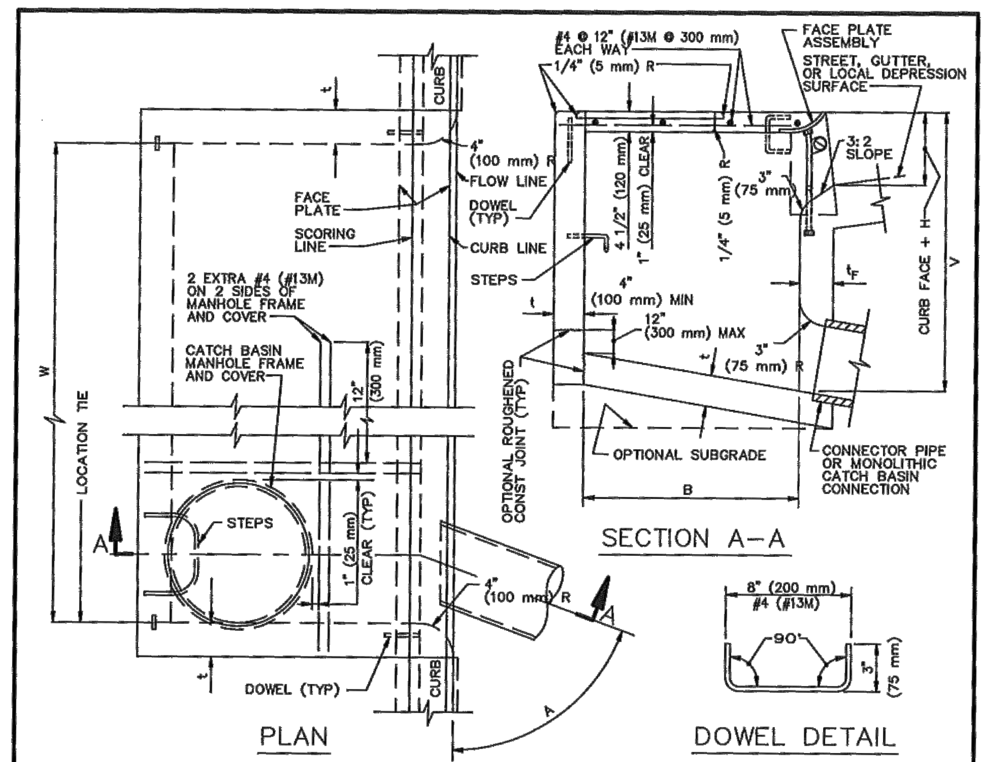
USE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION

NOTES

1. FLOOR OF BOX SHALL BE TROWELED SMOOTH.
2. IF THE TOE OF SLOPE IS ALLOWED WITHIN THE R/W, INLET TYPE 1 BEGINS AT THE TOE RATHER THAN AT THE R/W LINE.
3. FOR OPEN DITCH (TYPE 2), THE 24" (600 mm) EXTENSION BEYOND THE R/W LINE IS NOT REQUIRED WHEN BACK OF WALK IS 24" (600 mm) OR MORE FROM THE R/W LINE; HOWEVER, THE PIPE SHALL EXTEND TO THE R/W LINE IN ANY EVENT.
4. TOP OF INLET STRUCTURE (TYPE 1 & 2) SHALL BE FLUSH WITH ADJACENT SURFACE WHERE PRACTICAL.
5. A HEADED STEEL STUD 5/8" x 6-3/8" WITH A 1" HEAD (16 x 160 mm, 25 mm HEAD) ATTACHED BY A FULL PENETRATION BUTT WELD MAY BE USED AS AN ALTERNATE ANCHOR.
6. NORMAL CURB FACE AT POINT M AND Q. CURB FACE IS B + 5" (125 mm) AT POINT N AND P.
7. THE 3" (75 mm) LEG OF THE 5/8" (16 mm) DIA ANCHORS SHALL BE PARALLEL TO THE TOP OF SIDEWALK.
8. SLOPE = 2.0%.

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

PARKWAY DRAIN — STANDARD PLAN 151–2 — SHEET 2 OF 2



STRUCTURAL DATA

WALL AND SLAB DIMENSIONS AND REINFORCEMENT REQUIREMENTS

MAX W	MAX V	t	t_F	REINFORCEMENT REQUIRED IN: FRONT WALL	REAR WALL	BOTTOM SLAB	END WALL
3.5' (1.0 m)	8' (2.4 m)	6" (150 mm)	6" (150 mm)				
3.5' (1.0 m)	12' (3.5 m)	8" (200 mm)	8" (200 mm)				
7' (2.0 m)	6' (1.8 m)	6" (150 mm)	6" (150 mm)				
7' (2.0 m)	12' (3.5 m)	8" (200 mm)	8" (200 mm)				
14' (4.0 m)	4' (1.2 m)	6" (150 mm)	6" (150 mm)				
	8' (2.4 m)	6" (150 mm)	8" (200 mm)				
14' (4.0 m)	12' (3.5 m)	8" (200 mm)	10" (250 mm)				
6 m (21') AND 9 m (28')	4' (1.2 m)	6" (150 mm)	6" (150 mm)				
	6' (1.8 m)	6" (150 mm)	8" (200 mm)				
	8' (2.4 m)	8" (200 mm)	8" (200 mm)				
	10' (3.0 m)	8" (200 mm)	10" (250 mm)				
	12' (3.5 m)	8" (200 mm)	10" (250 mm)				

NO REINFORCEMENT REQUIRED / REINFORCEMENT REQUIRED

FOR W > 28' (9 m), V > 12' (3.5 m) OR B > 4' (1.2 m) SEE PLANS

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

PROMULGATED BY THE PUBLIC WORKS STANDARDS, INC., GREENBOOK COMMITTEE 1984 REV. 1992, 1996, 2009

CURB OPENING CATCH BASIN — STANDARD PLAN 300–3 — SHEET 1 OF 2

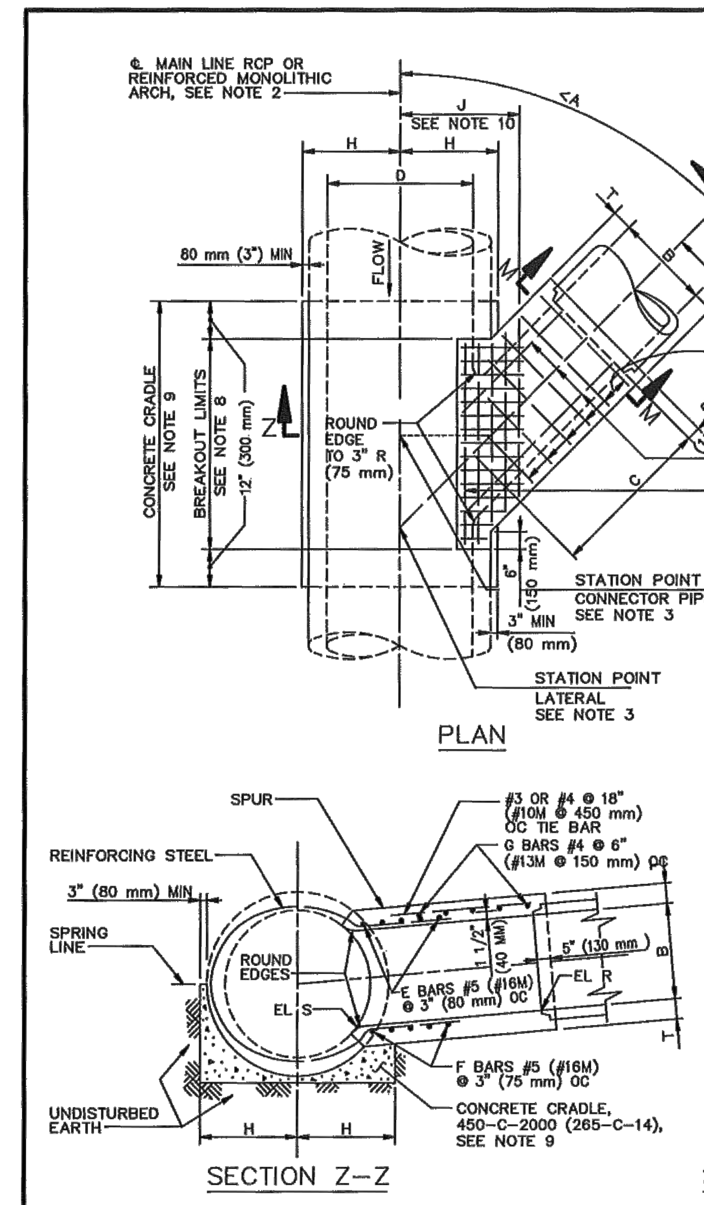
USE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION

NOTES:

1. WHERE THE BASIN IS TO BE CONSTRUCTED WITHIN THE LIMITS OF EXISTING OR PROPOSED SIDEWALK OR IS CONTIGUOUS TO SUCH SIDEWALK, THE TOP SLAB OF THE BASIN MAY BE POURED EITHER MONOLITHIC WITH THE SIDEWALK OR SEPARATELY, USING THE SAME CLASS OF CONCRETE AS IN THE BASIN. WHEN POURED MONOLITHICALLY, THE SIDEWALK SHALL BE PROVIDED WITH A WEAKENED PLANE OR A 1" (25 mm) DEEP SAWCUT CONTINUOUSLY AROUND THE EXTERNAL PERIMETER OF THE CATCH BASIN WALLS, INCLUDING ACROSS THE FULL WIDTH OF THE SIDEWALK. SURFACE OF ALL EXPOSED CONCRETE SHALL CONFORM IN SLOPE, GRADE, COLOR, FINISH, AND SCORING TO EXISTING OR PROPOSED CURB AND WALK ADJACENT TO THE BASIN.
2. ALL CURVED CONCRETE SURFACES SHALL BE FORMED BY CURVED FORMS, AND SHALL NOT BE SHAPED BY PLASTERING.
3. FLOOR OF BASIN SHALL BE GIVEN A STEEL TROWEL FINISH AND SHALL HAVE A LONGITUDINAL AND LATERAL SLOPE OF 1:12 MINIMUM AND 1:3 MAXIMUM, EXCEPT WHERE THE GUTTER GRADE EXCEEDS 8%, IN WHICH CASE THE LONGITUDINAL SLOPE OF THE FLOOR SHALL BE THE SAME AS THE GUTTER GRADE. SLOPE FLOOR FROM ALL DIRECTIONS TO THE OUTLET.
4. DIMENSIONS:
   - B = 3'-2" (970 mm)
   - V = THE DIFFERENCE IN ELEVATION BETWEEN THE TOP OF THE CURB AND THE INVERT OF THE CATCH BASIN AT THE OUTLET = 4.5' (1.35 m).
   - V_U = THE DIFFERENCE IN ELEVATION BETWEEN THE TOP OF THE CURB AND THE INVERT AT THE UPSTREAM END OF THE BASIN, AND SHALL BE DETERMINED BY THE REQUIREMENTS OF NOTE 3, BUT SHALL NOT BE LESS THAN CURB FACE PLUS 12" (300 mm).
   - V_I = THE DIFFERENCE IN ELEVATION BETWEEN THE TOP OF THE CURB AND THE INVERT OF THE INLET, NOTED ON THE PLANS.
   - H = NOTED ON THE PLANS.
   - W = NOTED ON THE PLANS.
   - A = THE ANGLE, IN DEGREES, INTERCEPTED BY THE CENTERLINE OF THE CONNECTOR PIPE AND THE CATCH BASIN WALL TO WHICH THE CONNECTOR PIPE IS ATTACHED.
5. PLACE CONNECTOR PIPES AS INDICATED ON THE PLANS. UNLESS OTHERWISE SPECIFIED, THE CONNECTOR PIPE SHALL BE LOCATED AT THE DOWNSTREAM END OF THE BASIN. WHERE THE CONNECTOR PIPE IS SHOWN AT A CORNER, THE CENTERLINE OF THE PIPE SHALL INTERSECT THE INSIDE CORNER OF THE BASIN. THE PIPE MAY BE CUT AND TRIMMED AT A SKEW NECESSARY TO INSURE MINIMUM 3" (80 mm) PIPE EMBEDMENT, ALL AROUND, WITHIN THE CATCH BASIN WALL, AND 3" (75 mm) RADIUS OF ROUNDING OF STRUCTURE CONCRETE, ALL AROUND, ADJACENT TO PIPE ENDS. A MONOLITHIC CATCH BASIN CONNECTION SHALL BE USED TO JOIN THE CONNECTOR PIPE TO THE CATCH BASIN WHENEVER ANGLE "A" IS LESS THAN 70° OR GREATER THAN 110°, OR WHENEVER THE CONNECTOR PIPE IS LOCATED IN A CORNER. THE OPTIONAL USE OF A MONOLITHIC CATCH BASIN CONNECTION IN ANY CASE IS PERMITTED. MONOLITHIC CATCH BASIN CONNECTIONS MAY BE CONSTRUCTED TO AVOID CUTTING STANDARD LENGTHS OF PIPE.
6. STEPS SHALL BE LOCATED AS SHOWN. IF THE CONNECTOR PIPE INTERFERES WITH THE STEPS, THEY SHALL BE LOCATED AT THE CENTERLINE OF THE DOWNSTREAM END WALL. STEPS SHALL BE SPACED 12" (300 mm) APART. THE TOP STEP SHALL BE 7" (175 mm) BELOW THE TOP OF THE MANHOLE AND PROJECT 2-1/2" (65 mm). ALL OTHER STEPS SHALL PROJECT 5" (130 mm).
7. DOWELS ARE REQUIRED AT EACH CORNER AND AT 7' (2 m) ON CENTER (MAXIMUM) ALONG THE BACKWALL.
8. THE FOLLOWING SPPWC ARE INCORPORATED HEREIN:
   - 308 MONOLITHIC CATCH BASIN CONNECTION
   - 309 CATCH BASIN REINFORCEMENT
   - 310 CATCH BASIN FACE PLATE ASSEMBLY AND PROTECTION BAR
   - 312 CATCH BASIN MANHOLE FRAME AND COVER
   - 635 STEEL STEP
   - 636 POLYPROPYLENE PLASTIC STEP

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

CURB OPENING CATCH BASIN — STANDARD PLAN 300–3 — SHEET 2 OF 2



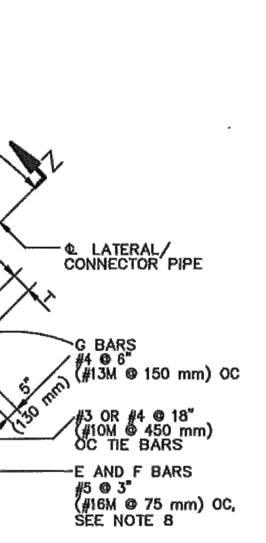
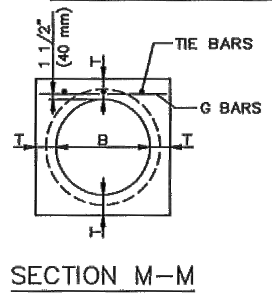


TABLE OF VALUES FOR T

B	T
12" (300 mm)	5" (130 mm)
15" (375 mm)	5" (130 mm)
18" (450 mm)	5" (130 mm)
21" (525 mm)	5" (130 mm)
24" (600 mm)	5 1/2" (140 mm)
27" (675 mm)	5 1/2" (140 mm)
30" (750 mm)	6" (150 mm)
33" (825 mm)	6 1/2" (170 mm)
36" (900 mm)	6 1/2" (170 mm)
39" (975 mm)	7" (180 mm)



STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

PROMULGATED BY THE PUBLIC WORKS STANDARDS INC. GREENBOOK COMMITTEE 1984 REV. 1996, 1998, 2009

JUNCTION STRUCTURE–PIPE TO PIPE INLET ID ≥ 24" (600 mm) OR OD > 1/2 MAIN LINE ID — STANDARD PLAN 331–3 — SHEET 1 OF 2

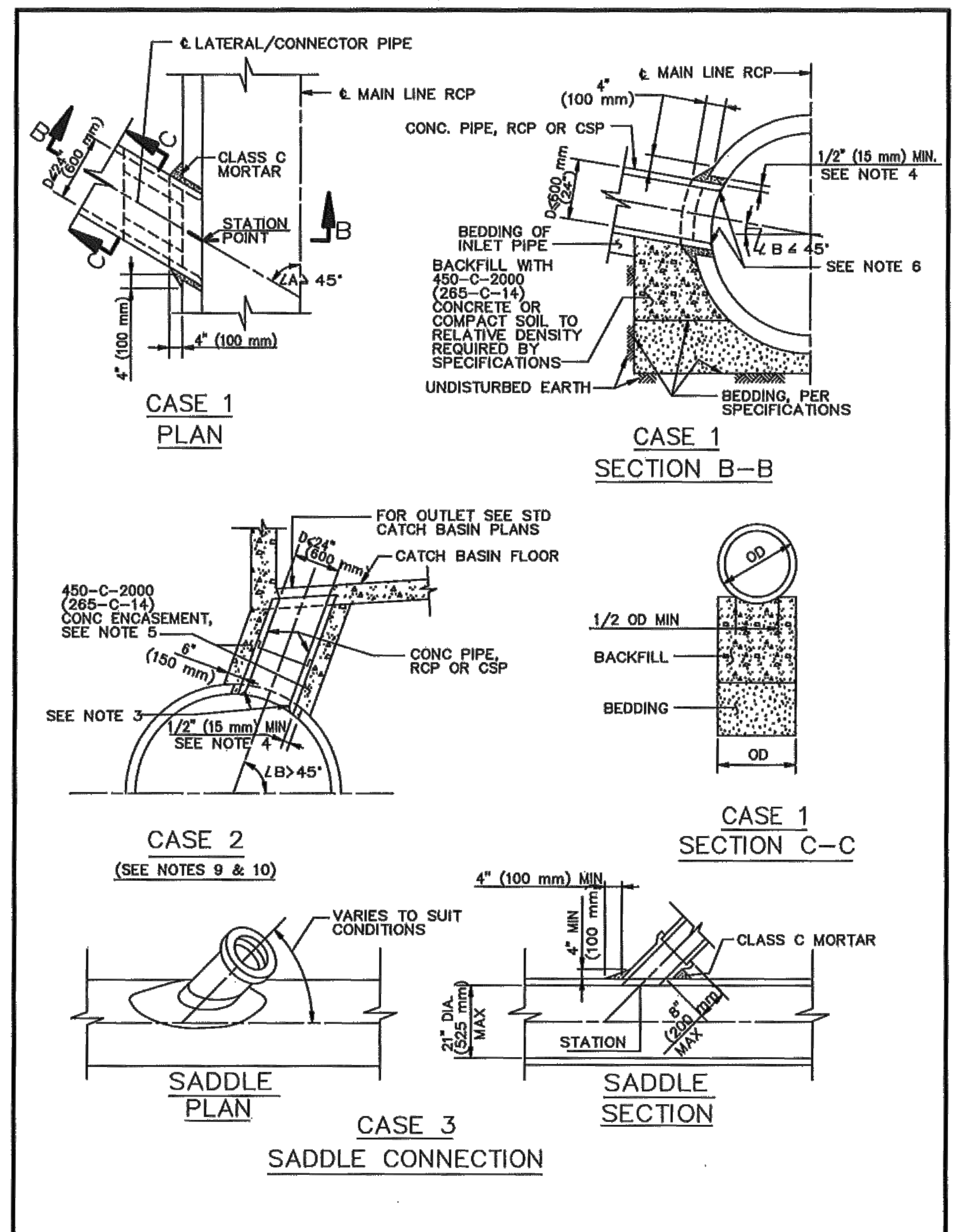
USE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION

NOTES

1. THIS JUNCTION STRUCTURE SHALL BE USED WHEN THE OUTSIDE DIAMETER OF THE LATERAL IS GREATER THAN 1/2 THE INSIDE DIAMETER D OF THE MAIN LINE; OR WHEN THE INSIDE DIAMETER B OF THE LATERAL IS GREATER THAN 24" (600 mm). B SHALL NOT EXCEED 0.75 D OR 39" (975 mm).
2. IF THE MAIN LINE IS A REINFORCED MONOLITHIC ARCH STORM DRAIN, D SHALL REFER TO THE CLEAR SPAN OF THE ARCH. REINFORCING STEEL SHALL BE CUT AND BENT INTO THE JUNCTION STRUCTURE IN THE SAME MANNER AS FOR A PIPE. A CONCRETE CRADLE IS NOT REQUIRED FOR A REINFORCED MONOLITHIC ARCH.
3. STATIONS SHOWN ON THE PLANS FOR LATERALS APPLY AT THE INTERSECTION OF CENTERLINES OF MAIN LINE AND LATERAL. STATIONS SHOWN ON THE PLANS FOR CATCH BASIN CONNECTOR PIPES APPLY AT THE INTERSECTION OF THE INSIDE WALL OF THE MAIN LINE WITH THE CONNECTOR PIPE CENTERLINE.
4. VALUES FOR A, B, C AND D SHALL BE SHOWN ON THE PLANS. ELEVATION R AND ELEVATION S SHALL BE SHOWN ONLY WHEN REQUIRED PER NOTE 5.
5. a. ELEVATIONS R AND S NEED NOT BE SHOWN ON THE PLANS IF THE INLET PIPE IS TO ENTER THE MAIN LINE RADIALLY.
   b. ELEVATION R SHALL BE SHOWN ON THE PLANS ONLY IF A STUB IS TO BE PROVIDED IN THE MAIN LINE FOR FUTURE CONNECTION OF AN INLET PIPE.
   c. ELEVATION S SHALL BE SHOWN ON THE PLANS IF AN INLET PIPE IS TO ENTER THE MAIN LINE OTHER THAN RADIALLY. INLET PIPE SHALL BE LAID ON A STRAIGHT GRADE FROM ELEVATION S TO THE CATCH BASIN OR GRADE BREAK IN LINE.
6. THE INLET PIPE SHALL ENTER THE MAIN LINE RADIALLY UNLESS OTHERWISE INDICATED. THE INLET PIPE MAY ENTER THE MAIN LINE OTHER THAN RADIALLY IF ANGLE A IS GREATER THAN 45°, B IS LESS THAN OR EQUAL TO 24" (600 mm) AND THE OUTSIDE DIAMETER OF THE INLET PIPE IS LESS THAN 0.5 D: OTHERWISE, SPPWC 340 SHALL BE USED.
7. NO MORE THAN ONE OPENING SHALL BE MADE IN ANY ONE SECTION OF PIPE.
8. THE OPENING FOR THE BREAKOUT SHALL BE RECTANGULAR AND CUT NORMAL TO THE PIPE SURFACE WITHOUT DAMAGING THE REINFORCING STEEL. THE TRANSVERSE REINFORCEMENT OF THE MAIN LINE SHALL BE CUT AT THE CENTER OF THE OPENING AND BENT INTO THE TOP AND BOTTOM SLABS OF THE SPUR.
9. THE MAIN LINE SHALL BE REINFORCED WITH A CONCRETE CRADLE AND ENCASEMENT (AS APPLICABLE). A CONCRETE ENCASEMENT IS REQUIRED IF A JOINT IN THE MAIN LINE FALLS WITHIN THE LIMITS OF THE CRADLE. THE CONCRETE ENCASEMENT SHALL EXTEND 12" (300 mm) ABOVE THE TOP OF THE MAIN LINE AND TO THE LIMITS OF THE CRADLE. IF CONNECTING TO AN EXISTING STORM DRAIN, PORTION OF CRADLE OPPOSITE INLET MAY BE OMITTED.
10. REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 40, (ASTM A 615M, GRADE 300), AND BE PLACED 1 1/2" (40 mm) CLEAR FROM CONCRETE SURFACES, UNLESS OTHERWISE SHOWN F BARS SHALL BE CARRIED TO A POINT NOT LESS THAN J DISTANCE FROM CENTER LINE WITH J=7D/12 + 6" (150 mm).
11. FLOOR OF THE SPUR SHALL BE STEEL–TROWELED TO THE SPRING LINE OF THE SPUR.

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

JUNCTION STRUCTURE–PIPE TO PIPE INLET ID≥24" (600 mm) OR OD>1/2 MAIN LINE ID — STANDARD PLAN 331–3 — SHEET 2 OF 2



PROMULGATED BY THE PUBLIC WORKS STANDARDS INC. GREENBOOK COMMITTEE 1984 REV. 1996, 2009

JUNCTION STRUCTURE – PIPE TO PIPE ID ≤ 24" (600 mm) — STANDARD PLAN 332–2 — SHEET 1 OF 2

USE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION

NOTES

CASE 1 AND CASE 2

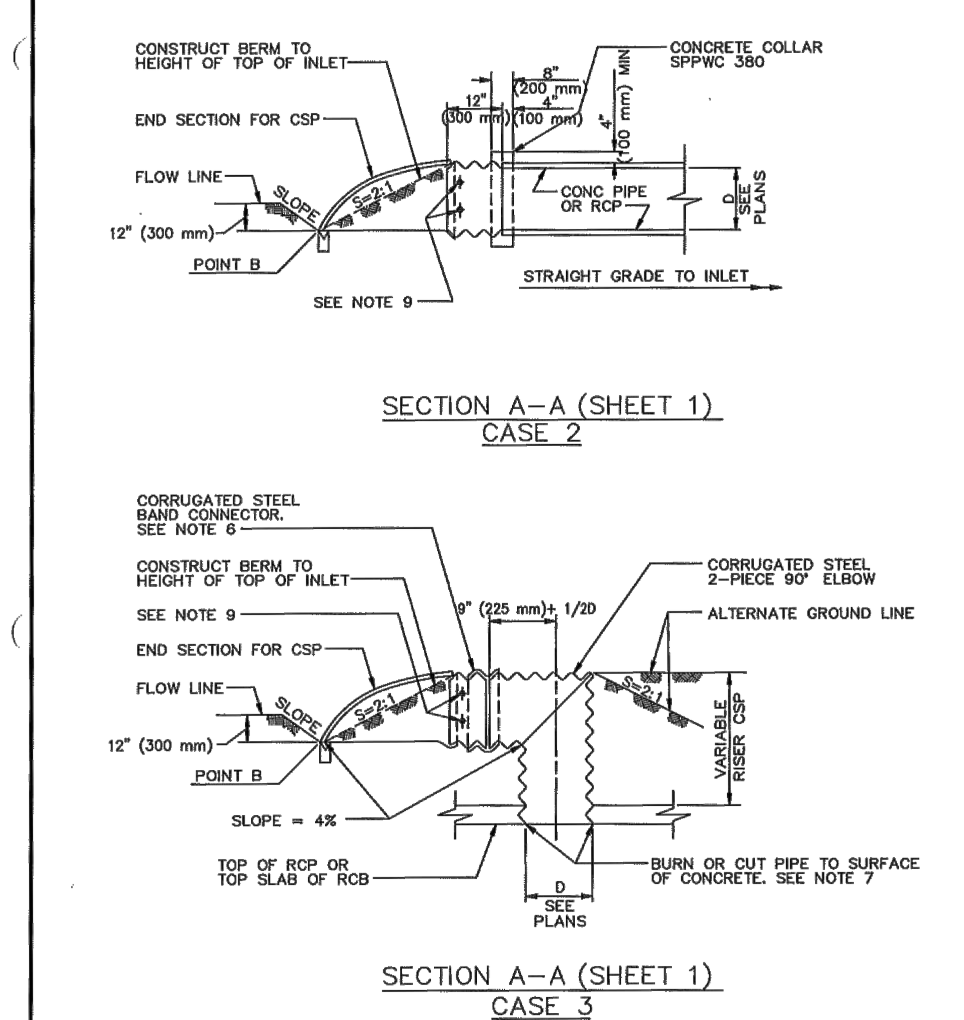
1. IF ANGLE A IS LESS THAN 45 OR IF D IS LARGER THAN 24" (600 mm), THEN ANOTHER STANDARD STRUCTURE SHALL BE SPECIFIED.
2. THE OUTSIDE DIAMETER OF THE INLET PIPE SHALL NOT EXCEED 1/2 THE INSIDE DIAMETER OF THE MAIN LINE.
3. THE INLET PIPE SHALL ENTER THE MAIN LINE RADIALLY. IF THE INLET PIPE CANNOT ENTER RADIALLY, THEN ANOTHER STANDARD STRUCTURE SHALL BE SPECIFIED.
4. THE SIZE OF THE OPENING INTO THE MAIN LINE SHALL BE THE OUTSIDE DIAMETER OF THE INLET PIPE PLUS 1" (30 mm) MINIMUM TO 3" (75 mm) MAXIMUM.
5. ALL CONNECTOR PIPES FOR CASE 2 SHALL BE ENCASED IN CONCRETE IF LAID WITHIN THE MAIN LINE EXCAVATED TRENCH OR IF LAID ON FILL WHICH HAS NOT BEEN DENSIFIED.
6. BURN OR CHIP END OF CONNECTOR PIPE FLUSH WITH INNER SURFACE OF MAIN LINE. ROUND EDGE OF CONCRETE PIPE OR RCP.
7. ALL CSP AND FITTINGS SHALL BE GALVANIZED.
8. STATION SPECIFIED ON THE PLANS APPLIES AT THE INTERSECTION OF THE INSIDE WALL OF MAIN LINE AND THE CENTERLINE OF INLET PIPE.
9. CASE 2 SHALL NOT BE USED TO CONNECT TO THE FLOOR OF A GRATING CATCH BASIN WHERE THE GRATE WILL BE SUBJECT TO VEHICLE TRAFFIC.
10. FOR CASE 2, NOT MORE THAN 12' (3.5 m) OF INLET PIPE SHALL BE LOCATED WITHIN THE MAIN LINE EXCAVATED TRENCH.

CASE 3

11. CONNECTIONS TO PIPES 21" (525 mm) OR LESS IN DIAMETER WITHOUT JUNCTION STRUCTURES OR PRECAST Y BRANCHES SHALL BE MADE WITH SADDLES.
12. THE OUTSIDE DIAMETER OF THE INLET PIPE SHALL NOT EXCEED ONE–HALF THE INSIDE DIAMETER OF THE MAIN LINE.
13. TRIM OR CUT SADDLE TO FIT SNUGLY OVER THE OUTSIDE OF THE MAIN LINE SO ITS AXIS WILL BE ON THE LINE AND GRADE OF THE CONNECTOR PIPE.
14. THE OPENING INTO THE PIPE SHALL BE CUT AND TRIMMED TO FIT THE SADDLE SO THAT NO PART WILL PROJECT WITHIN THE BORE OF THE SADDLE PIPE.
15. THE CONNECTOR PIPE SHALL BE SUPPORTED AS SHOWN IN CASES 1 AND 2.

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

JUNCTION STRUCTURE – PIPE TO PIPE (ID ≤ 24" (600 mm)) — STANDARD PLAN 332–2 — SHEET 2 OF 2



STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

CSP FLARED INLET — STANDARD PLAN 351–2 — SHEET 2 OF 3

NOTES

1. ANGLE A MAY BE ANY ANGLE AS REQUIRED.
2. ELEVATION OF POINT A SHOWN ON PLANS.
3. POINT B SHALL BE PLACED 12" (300 mm) BELOW THE FLOW LINE OF EXISTING DITCH UNLESS OTHERWISE SPECIFIED ON PLANS. SLOPE SHALL BE SET IN FIELD BY THE ENGINEER.
4. THE HEIGHT OF THE RISER FOR CASE 1 & 3 SHALL VARY AS DETERMINED BY THE ELEVATION OF POINTS A & B, OR BY THE TOP OF STORM DRAIN CONDUIT AND ELEVATION OF POINT B.
5. CORRUGATED STEEL BAND CONNECTOR IS NOT REQUIRED FOR INLET SIZES 24" (600 mm) DIAMETER OR LESS.
6. IN ALL CASES, CONNECTION TO THE STORM DRAIN CONDUIT SHALL BE IN ACCORDANCE WITH THE APPLICABLE JUNCTION STRUCTURE, TRANSITION STRUCTURE, OR MANHOLE.
7. ALL CSP AND FITTINGS SHALL BE GALVANIZED.
8. PUNCH HOLES IN CSP AND WELD 3/4" (20 mm) GALVANIZED BARS HORIZONTALLY IN PLACE ACROSS OPENING.
9. COAT WELDED, CUT AND ABRADED SURFACES AS SPECIFIED IN SSPWC 210–3.5.
10. INLET SHALL NOT BE USED IN WATER COURSES SUBJECT TO DEBRIS FLOWS. A STRUCTURE HAVING A PROTECTION BARRIER SHOULD BE USED.
11. END SECTION MAY BE ARMCO STANDARD END SECTION, BETHLEHEM STEEL CO. FLARED END SECTION FOR CSP, OR AN AGENCY–APPROVED EQUAL.

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

CSP FLARED INLET — STANDARD PLAN 351–2 — SHEET 3 OF 3

DIGALERT
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TOLL FREE 1-800-227-2600
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

NOTE:
WORK CONTAINED WITHIN THESE PLANS SHALL NOT COMMENCE UNTIL AN ENCROACHMENT PERMIT AND/OR A GRADING PERMIT HAS BEEN ISSUED.

The private engineer signing these plans is responsible for assuring the accuracy and acceptability of the design hereon. In the event of discrepancies arising after City acceptance or during construction, the private engineer shall be responsible for determining an acceptable solution and revising the plans for acceptance by the City.

MARK	BY	DATE	REVISIONS	APPR.	DATE
ENGINEER				CITY	

CITY OF WILDOMAR
ACCEPTED BY:
Date:
Daniel A. York, Director of Public Works/ City Engineer, PE 43212
ACCEPTANCE AS TO CONFORMANCE WITH APPLICABLE CITY STANDARDS AND PRACTICES

SEAL-ENGINEER: REGISTERED PROFESSIONAL ENGINEER NIKKI D. KERRY RCE NO. 58449 CIVIL STATE OF CALIFORNIA

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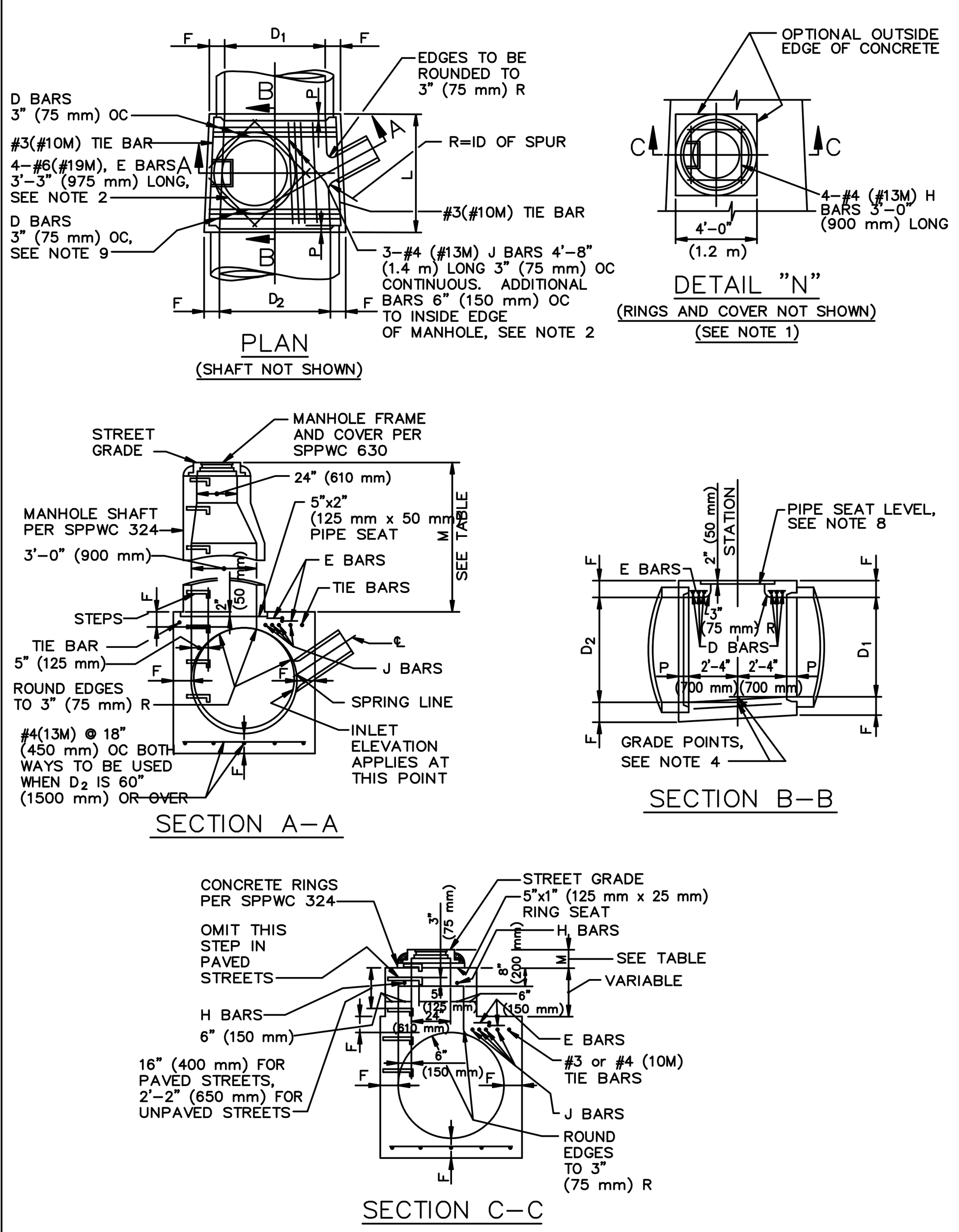
PREPARED BY: NIKKI KERRY
R.C.E. No. 58449 EXP. 12/31/22

BENCHMARK:
Elevation = 1317.14
Datum = NAD 83
BENCHMARK # ____________
THIS SURVEY WAS PERFORMED ON 04/23/19 BY JOEL PAULSON L.S. 6637
SCALE: H: As Noted V: As Noted

PP, CUP, PM, TM, etc. Project XX-XXXX
CITY OF WILDOMAR
INLAND VALLEY MEDICAL CENTER
STORM DRAIN DETAILS

SHEET No. CGD7.3
OF SHTS

ISSUED FOR BID SET 5/21/21



STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

MANHOLE PIPE-TO-PIPE
MAIN LINE ID=36" (900 mm) OR LARGER

STANDARD PLAN 320-2 SHEET 1 OF 4

USE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION

NOTES

1. WHEN DEPTH M FROM STREET GRADE TO THE TOP OF THE BOX IS LESS THAN 2'-10 1/2" (867 mm) FOR PAVED STREETS OR 3'-6" (1060 mm) FOR UNPAVED STREETS, CONSTRUCT MONOLITHIC SHAFT PER SECTION C-C AND DETAIL "N". SHAFT FOR ANY DEPTH OF MANHOLE MAY BE CONSTRUCTED PER SECTION C-C. WHEN DIAMETER D_1 IS 48" (1200 mm) OR LESS, CENTER OF SHAFT MAY BE LOCATED PER NOTE 2.
2. CENTER OF MANHOLE SHAFT SHALL BE LOCATED OVER CENTER LINE OF STORM DRAIN WHEN DIAMETER D_1 IS 48" (1200 mm) OR LESS, IN WHICH CASE PLACE E BARS SYMMETRICALLY AROUND SHAFT AT 45° WITH CENTERLINE AND OMIT J BARS.
3. L AND P SHALL HAVE THE FOLLOWING VALUES UNLESS OTHERWISE SHOWN ON THE PROJECT DRAWINGS:
   A. D_2=96" (2400 mm) OR LESS, L=5'-6" (1.7 m), P=5" (130 mm)
   B. D_2 OVER 96" (2400 mm), L=6'-0" (1.8 m), P=8" (210 mm)
   L MAY BE INCREASED OR LOCATION OF MANHOLE SHIFTED TO MEET PIPE ENDS. WHEN L GREATER THAN THAT SHOWN ABOVE IS SPECIFIED, D BARS SHALL BE CONTINUED 6" (150 mm) OC.
4. STATIONS OF MANHOLES SHOWN ON PLANS APPLY AT CENTERLINE OF SHAFT. ELEVATIONS ARE SHOWN AT CENTERLINE OF SHAFT AND REFER TO THE PROLONGED INVERT GRADE LINES.
5. REINFORCEMENT SHALL CONFORM TO ASTM A 615M, GRADE 300 (ASTM A 615, GRADE 40), AND SHALL TERMINATE 1 1/2" (40 mm) CLEAR OF CONCRETE SURFACES UNLESS OTHERWISE SHOWN.
6. FLOOR OF MANHOLE SHALL BE STEEL TROWELED TO SPRING LINE.
7. BODY OF MANHOLE SHALL BE POURED IN ONE CONTINUOUS OPERATION EXCEPT THAT A CONSTRUCTION JOINT WITH A LONGITUDINAL KEYWAY MAY BE PLACED AT SPRING LINE.
8. THICKNESS OF THE DECK SHALL VARY WHEN NECESSARY TO PROVIDE A LEVEL SEAT BUT SHALL NOT BE LESS THAN THE TABULAR VALUES FOR F SHOWN ON SHEET 2.
9. D BARS SHALL BE #4 (#13M) FOR D_2=39" (975 mm) OR LESS, #5 (#16M) FOR D_2= 42" (1050 mm) TO 84" (2100 mm) INCLUSIVE AND #6 (#19M) FOR D_2= 90" (2250 mm) OR OVER.
10. CENTERLINE OF INLET PIPE SHALL INTERSECT INSIDE FACE OF CONE AT SPRING LINE UNLESS OTHERWISE SHOWN.
11. STEPS SHALL CONFORM TO SPPWC 635 OR 636. UNLESS OTHERWISE SHOWN, STEPS SHALL BE UNIFORMLY SPACED 14" (350 mm) TO 15" (375 mm) OC. THE LOWEST STEP SHALL NOT BE MORE THAN 24" (600 mm) ABOVE THE INVERT.
12. THE FOLLOWING CRITERIA SHALL BE USED FOR THIS MANHOLE:
   A. MAIN LINE = 36" (900 mm) INSIDE DIAMETER OR LARGER. EXCEPT IF THE MAIN LINE RCP DOWNSTREAM OF MANHOLE IS 36" (900 mm) TO 42" (1050 mm) INSIDE DIAMETER AND THE MAIN LINE RCP UPSTREAM IS 33" (825 mm) OR LESS SPPWC 321 SHALL BE USED.

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

MANHOLE PIPE-TO-PIPE
MAIN LINE ID = 36" (900 mm) OR LARGER

STANDARD PLAN 320-2 SHEET 3 OF 4

   B. THE OUTSIDE DIAMETER OF THE LATERAL MUST BE LESS THAN OR EQUAL TO 1/2 THE INSIDE DIAMETER OF THE MAIN LINE. IF THE UPSTREAM AND DOWNSTREAM DIAMETERS OF THE MANHOLE ARE NOT THE SAME, THE GOVERNING INSIDE DIAMETER OF THE MAIN LINE SHALL BE CONSIDERED TO BE THAT WHERE THE EXTENDED CENTERLINE OF THE LATERAL ENTERS THE MANHOLE.
   C. IN NO INSTANCE SHALL THE INSIDE DIAMETER OF THE LATERAL TO THE MANHOLE BE GREATER THAN 30" (750 mm).
13. MANHOLE FRAME AND COVER SHALL CONFORM TO SPPWC 630 UNLESS OTHERWISE SHOWN.
14. MANHOLE SHAFT SHALL CONFORM TO SPPWC 324 UNLESS OTHERWISE SHOWN.
15. WHERE A MANHOLE SHAFT – 36" (900 mm) WITHOUT REDUCER IS SPECIFIED REFER TO SPPWC 326.
16. WHERE A PRESSURE MANHOLE SHAFT – WITH ECCENTRIC REDUCER IS SPECIFIED REFER TO SPPWC 328.
17. WHERE A PRESSURE MANHOLE SHAFT – 914 mm (36") WITHOUT REDUCER IS SPECIFIED REFER TO SPPWC 329.
18. THE FOLLOWING SPPWC ARE INCORPORATED HEREIN:
   324 MANHOLE SHAFT – WITH ECCENTRIC REDUCER
   326 MANHOLE SHAFT – 36" (900 mm) WITHOUT REDUCER
   328 PRESSURE MANHOLE SHAFT – WITH ECCENTRIC
   329 PRESSURE MANHOLE SHAFT 36" (914 mm) WITHOUT REDUCER
   630 24" (610 mm) MANHOLE FRAME AND COVER
   633 36" (914 mm) MANHOLE FRAME AND COVER
   635 STEEL STEP
   636 POLYPROPYLENE PLASTIC STEP

TABLE OF VALUES FOR F	
D_2	F
42" (1050 mm)	7 1/2" (190 mm)

TABLE OF VALUES FOR M (SEE NOTE 1)				
SECTION	PAVED STREET		UNPAVED STREET	
	MAX	MIN	MAX	MIN
A-A		2'-10 1/2" (867 mm)		3'-6" (1060 mm)
C-C	11" (282 mm)	8 1/2" (217 mm)	16" (410 mm)	15" (380 mm)

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

MANHOLE PIPE-TO-PIPE
MAIN LINE ID = 36" (900 mm) OR LARGER

STANDARD PLAN 320-2 SHEET 4 OF 4

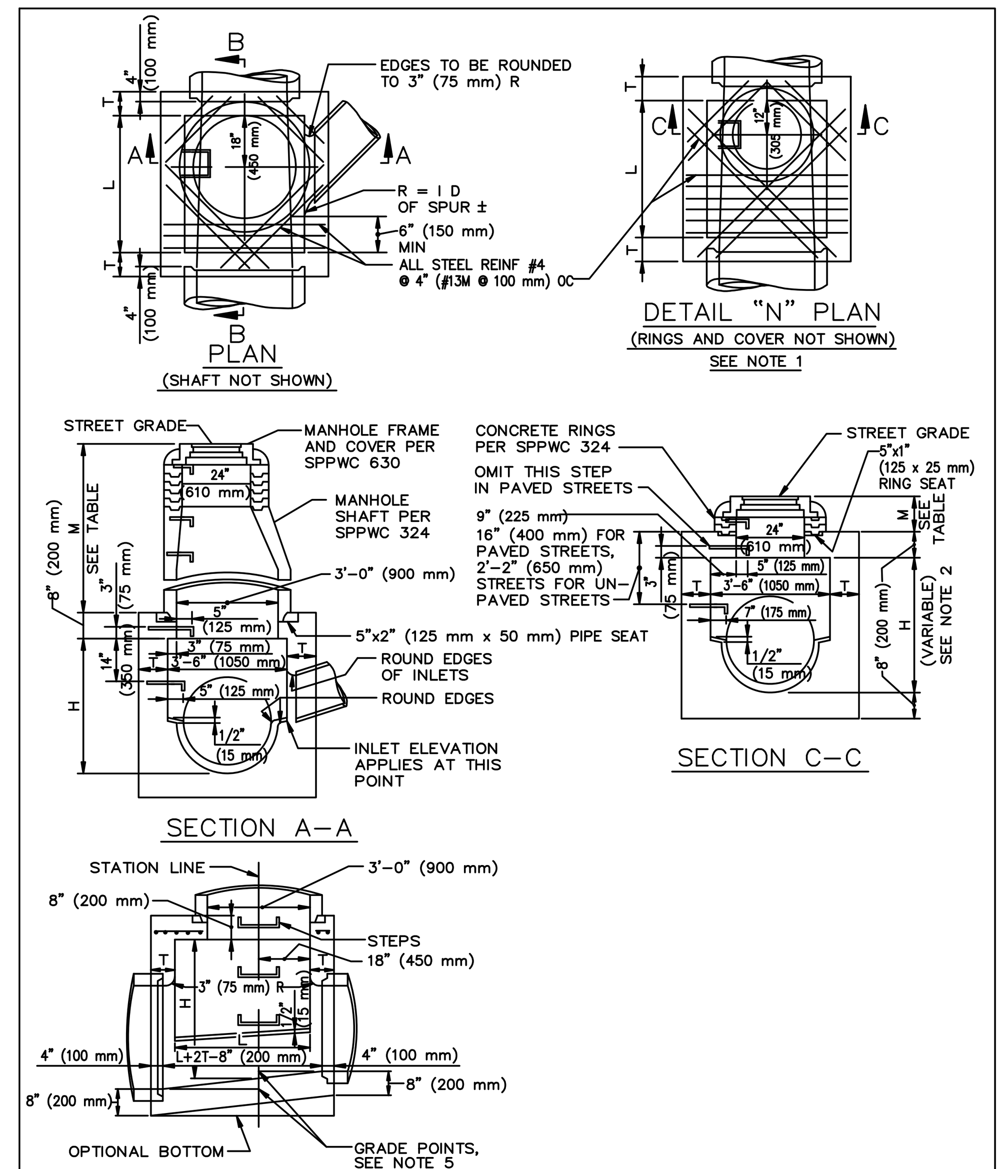


TABLE OF VALUES FOR M (SEE NOTE 1)				
SECTION	PAVED STREET		UNPAVED STREET	
	MAX	MIN	MAX	MIN
A-A		2'-10 1/2" (867 mm)		3'-6" (1060 mm)
C-C	11" (282 mm)	8 1/2" (217 mm)	16" (410 mm)	15" (380 mm)

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

MANHOLE PIPE-TO-PIPE (ONE OR BOTH
MAIN LINE IDS 33" (825 mm) OR SMALLER)

STANDARD PLAN 321-2 SHEET 1 OF 3

USE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION

NOTES

1. WHEN DEPTH M FROM STREET GRADE TO THE TOP OF THE BOX IS LESS THAN 2'-10 1/2" (867 mm) FOR PAVED STREETS OR 3'-6" (1060 mm) FOR UNPAVED STREETS, CONSTRUCT SHAFT PER SECTION C-C AND DETAIL "N". DEPTH M MAY BE REDUCED TO AN ABSOLUTE LIMIT OF 6" (150 mm) WHEN LARGER VALUES OF M WOULD REDUCE H IN SECTION C-C TO 3'-6" (1060 mm) OR LESS.
2. H (IN SECTION A-A AND B-B) SHALL NOT BE LESS THAN 4'-0" (1.2 m), BUT MAY BE INCREASED PROVIDED THAT THE VALUE OF M SHALL NOT BE LESS THAN THE MINIMUM SPECIFIED AND THAT THE REDUCER SHALL BE USED. FOR H (IN SECTION C-C) SEE NOTE 1.
3. L SHALL BE 4'-0" (1.2 m) UNLESS OTHERWISE SHOWN. L MAY BE INCREASED OR LOCATION OF MANHOLE SHIFTED TO MEET PIPE ENDS, BUT ANY CHANGE IN LOCATION OF THE SPUR MUST BE APPROVED BY THE ENGINEER.
4. T SHALL BE 8" (200 mm) FOR VALUES OF H UP TO AND INCLUDING 8'-0" (2.4 m) AND 10" (250 mm) FOR VALUES OF H OVER 8'-0" (2.4 m).
5. STATIONS OF MANHOLES SHOWN ON PLANS APPLY AT CENTERLINE OF SHAFT. ELEVATIONS ARE SHOWN AT CENTERLINE OF SHAFT AND REFER TO THE PROLONGED INVERT GRADE LINES. SEE NOTE 3.
6. REINFORCEMENT SHALL CONFORM TO ASTM A 615, GRADE 40 (ASTM A 615M, GRADE 300), AND SHALL TERMINATE 1 1/2" (40 mm) CLEAR OF CONCRETE SURFACES UNLESS OTHERWISE SHOWN.
7. FLOOR OF MANHOLE SHALL BE STEEL TROWELED TO SPRING LINE.
8. BODY OF MANHOLE SHALL BE POURED IN ONE CONTINUOUS OPERATION EXCEPT THAT A CONSTRUCTION JOINT WITH A LONGITUDINAL KEYWAY MAY BE PLACED AT SPRING LINE.
9. THICKNESS OF THE DECK SHALL VARY WHEN NECESSARY TO PROVIDE A LEVEL SEAT BUT SHALL NOT BE LESS THAN 8" (200 mm).
10. STEPS SHALL CONFORM TO SPPWC 635 OR 636. UNLESS OTHERWISE SHOWN, STEPS SHALL BE UNIFORMLY SPACED 14" (350 mm) TO 15" (375 mm) OC. THE LOWEST STEP SHALL NOT BE MORE THAN 24" (600 mm) ABOVE THE LEDGE AT THE SIDE OF THE MANHOLE.

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

MANHOLE PIPE-TO-PIPE (ONE OR BOTH
MAIN LINE IDS 33" (825 mm) OR SMALLER)

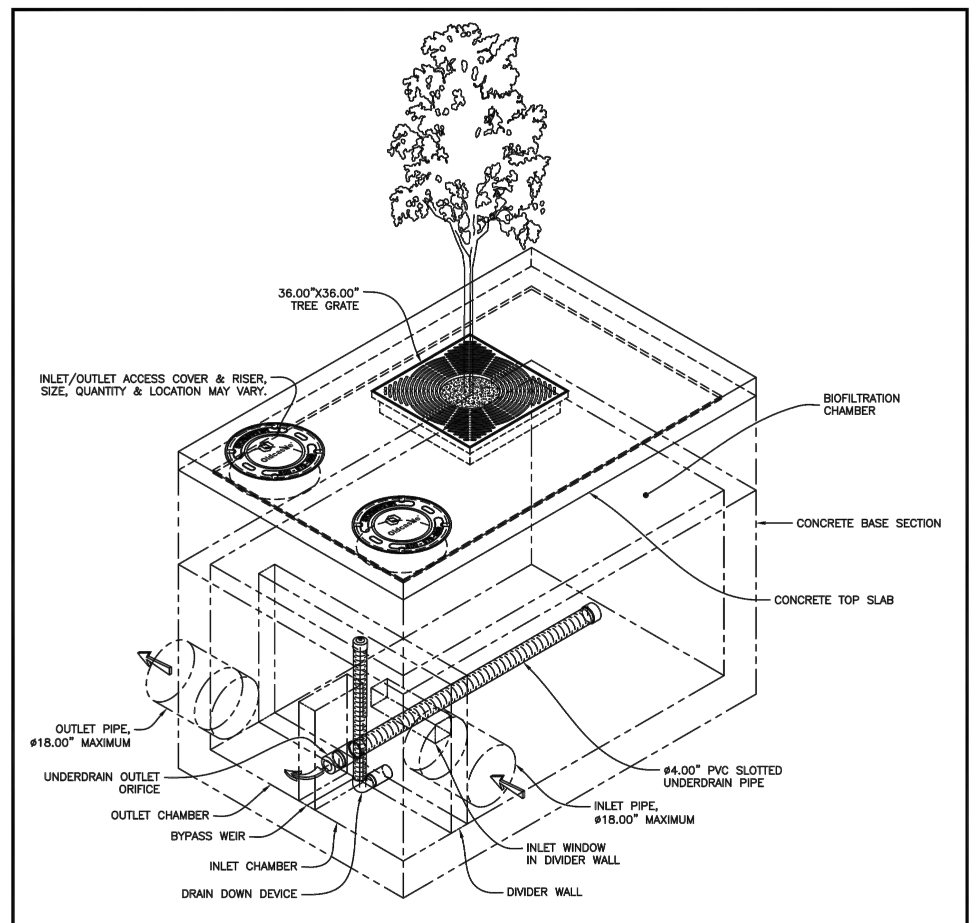
STANDARD PLAN 321-2 SHEET 2 OF 3

11. THE FOLLOWING CRITERIA SHALL BE USED FOR THIS MANHOLE:
   A. MAIN LINE = 33" (825 mm) INSIDE DIAMETER OR LESS. (EXCEPTION – IF THE MAIN LINE RCP DOWNSTREAM OF THE MANHOLE IS 36" (900 mm) TO 42" (1050 mm) INSIDE DIAMETER AND THE MAIN LINE RCP UPSTREAM IS 33" (825 mm) OR LESS.) SPPWC 320 OR 322 IS NOT APPLICABLE WHERE THE MAIN LINE CONDUIT IS LESS THAN 36" (900 mm) IN DIAMETER.
   B. SEE SECTION A – A. THE MAXIMUM SIZE LATERAL THAT MAY BE CONNECTED TO THIS MANHOLE IS SUCH THAT THE DISTANCE FROM THE OUTSIDE (TOP) OF THE LATERAL TO THE BOTTOM OF THE 8" (200 mm) THICK TOP OF THE MANHOLE CHAMBER, MEASURED VERTICALLY FROM THE END OF THE RCP, SHALL BE A MINIMUM OF 6" (150 mm).
   C. IF THE SIZE OF THE LATERAL IS SUCH THAT THE ABOVE-SPECIFIED MINIMUM DISTANCES CANNOT BE MAINTAINED, THEN ONE OF THE FOLLOWING ALTERNATE SOLUTIONS MUST BE USED.
      1. PROVIDE A SPECIAL STRUCTURE.
      2. PROVIDE TWO STANDARD STRUCTURES, CONSISTING OF THIS MANHOLE PLACED UPSTREAM OR DOWNSTREAM FROM THE APPLICABLE JUNCTION STRUCTURE OR TRANSITION STRUCTURE.
12. MANHOLE FRAME AND COVER SHALL CONFORM TO SPPWC 630 UNLESS OTHERWISE SHOWN.
13. MANHOLE SHAFT SHALL CONFORM TO SPPWC 324 UNLESS OTHERWISE SHOWN.
14. WHERE A MANHOLE SHAFT – 36" (900 mm) WITHOUT REDUCER IS SPECIFIED REFER TO SPPWC 336.
15. WHERE A PRESSURE MANHOLE SHAFT – WITH ECCENTRIC REDUCER IS SPECIFIED REFER TO SPPWC 328.
16. WHERE A PRESSURE MANHOLE SHAFT – 36" (900 mm) WITHOUT REDUCER IS SPECIFIED REFER TO SPPWC 329.
17. THE FOLLOWING SPPWC ARE INCORPORATED HEREIN:
   324 MANHOLE SHAFT – WITH ECCENTRIC REDUCER
   326 MANHOLE SHAFT – 36" (900 mm) WITHOUT REDUCER
   328 PRESSURE MANHOLE SHAFT – WITH ECCENTRIC
   329 PRESSURE MANHOLE SHAFT – 36" (900 mm) WITHOUT REDUCER
   630 24" (610 mm) MANHOLE FRAME AND COVER
   633 36" (900 mm) MANHOLE FRAME AND COVER
   635 STEEL STEP
   636 POLYPROPYLENE PLASTIC STEP

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

MANHOLE PIPE-TO-PIPE (ONE OR BOTH
MAIN LINE IDS 33" (825 mm) OR SMALLER)

STANDARD PLAN 321-2 SHEET 3 OF 3



ISOMETRIC VIEW
FILTER MEDIA & DRAIN ROCK NOT SHOWN FOR CLARITY.
SCALE: 1X

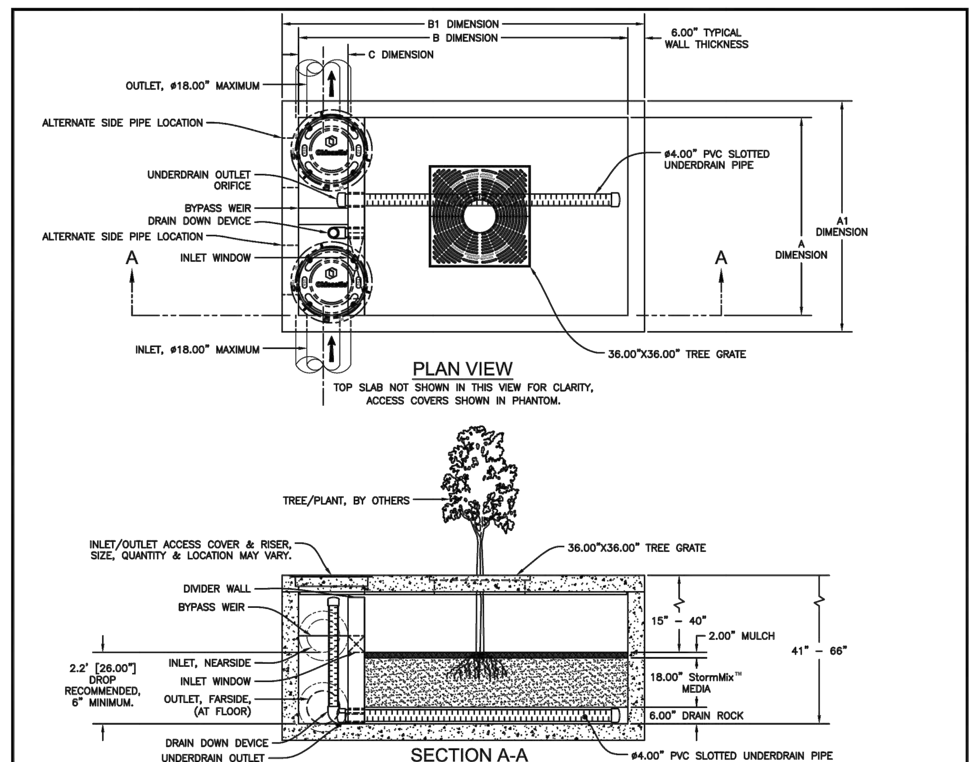
NOTES:
1. LEFT CONFIGURATION SHOWN, MIRROR RIGHT CONFIGURATION OF INLET AND OUTLET CHAMBER AVAILABLE.
2. CONTACT OLDCASTLE INFRASTRUCTURE FOR ENGINEERING ASSISTANCE AND DETAIL DRAWINGS.
3. CONCRETE COMPONENTS SHALL BE MANUFACTURED IN ACCORDANCE WITH ASTM C890 & C913.

US Patents Pending

BioPod™ Biofilter Tree
Vault with Internal Bypass & Piped Inlet

Oldcastle Infrastructure™ A CRH COMPANY

DRAWING NO. BPT-IB-PI-SoCal | REV NR | ECO ECO-0171 TJR 3/30/20 | DATE PPS 3/30/20 | SHEET 1 OF 2



PLAN VIEW
TOP SLAB NOT SHOWN IN THIS VIEW FOR CLARITY, ACCESS COVERS SHOWN IN PHANTOM.

SECTION A-A

MODEL	VAULT SIZE [1] (ID)			VAULT FOOTPRINT [1] (OD)		TREATMENT FLOW CAPACITY (GPM/CFS)	
	A DIM	B DIM	C DIM	A1 DIM	B1 DIM	1.6 GPM/SF (WA GULD[2])	1.8 GPM/SF (NJCAT[3])
BPT-46IB	4'	6'	1.5'	5'	7'	25.6 / 0.057	28.8 / 0.064
BPT-48IB	4'	8'	1.5'	5'	9'	38.4 / 0.086	43.2 / 0.096
BPT-412IB	4'	12'	1.5'	5'	13'	64.0 / 0.143	72.0 / 0.160
BPT-66IB	6'	6'	1.5'	7'	7'	38.4 / 0.086	43.2 / 0.096
BPT-68IB	6'	8'	1.5'	7'	9'	57.6 / 0.128	64.8 / 0.144
BPT-612IB	6'	12'	2'	7'	13'	91.2 / 0.203	102.6 / 0.229
BPT-88IB	8'	8'	2'	9'	9'	76.8 / 0.171	86.4 / 0.193
BPT-812IB	8'	12'	2'	9'	13'	121.6 / 0.271	136.8 / 0.305
BPT-816IB	8'	16'	2'	9'	17'	172.8 / 0.385	194.4 / 0.433

[1] All Dimensions are nominal, ID=Inside Dimension, OD=Outside Dimension.
[2] Treartment flow capacity at 1.6 gpm/sf media surface area based on an WA Ecology GULD Approval for Basic, Enhanced & Phosphorus.
[3] Treatment flow capacity at 1.8 gpm/sf media surface area based on an NJCAT Verification & NJ DEP Certification.

SITE SPECIFIC DATA				
Structure ID				
Model Size				
Orientation (Left or Right)				
Treatment Flow Rate (cfs)				
Peak Flow Rate (cfs)				
Rim Elevation				
Pipe Data	Pipe Location (Front or Side)	Pipe Size	Pipe Type	Invert Elevation
Inlet				
Outlet				
Notes:				

US Patents Pending

BioPod™ Biofilter Tree
Vault with Internal Bypass & Piped Inlet

Oldcastle Infrastructure™ A CRH COMPANY

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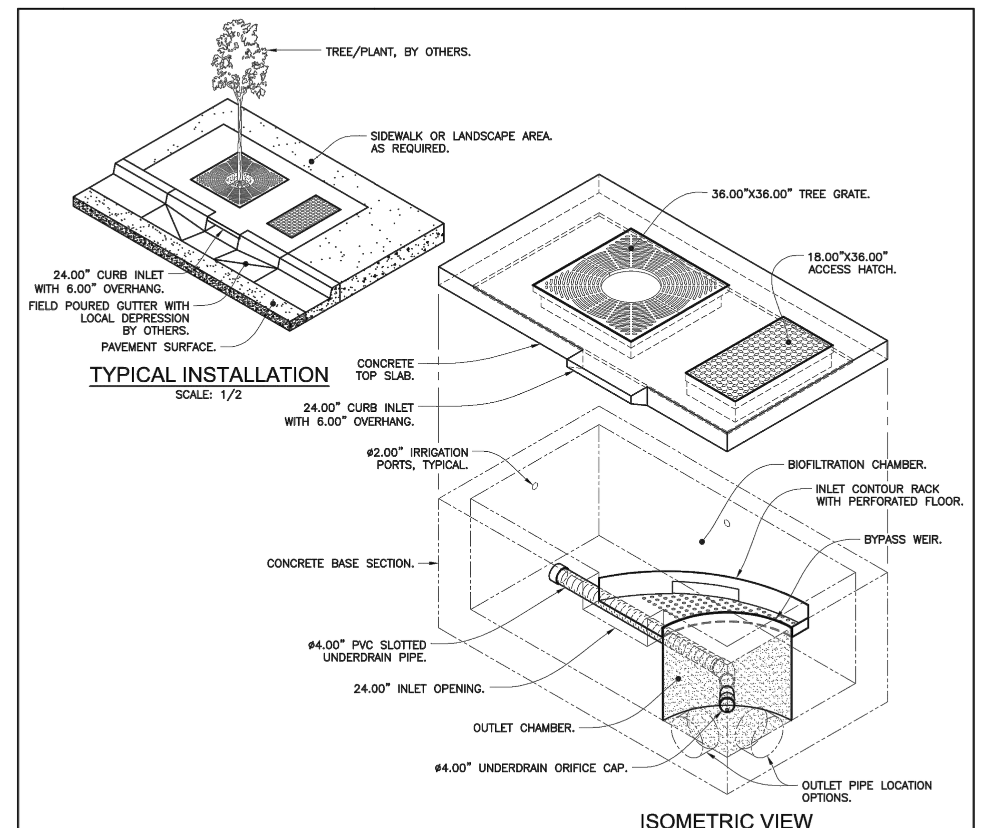
DRAWING NO. BPT-IB-PI-SoCal | REV NR | ECO ECO-0171 TJR 3/30/20 | DATE PPS 3/30/20 | SHEET 2 OF 2



TYPICAL INSTALLATION
SCALE: 1/2

ISOMETRIC VIEW
FILTER MEDIA & DRAIN ROCK NOT SHOWN FOR CLARITY.

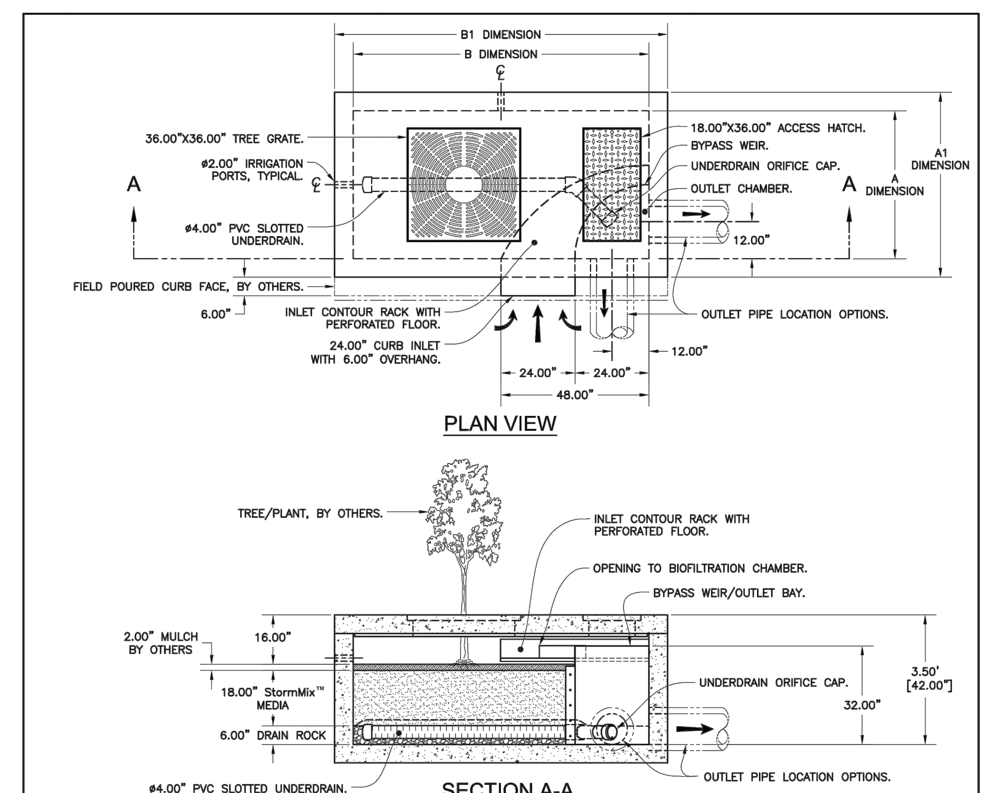
NOTES:
1. RIGHT CONFIGURATION SHOWN, MIRROR LEFT CONFIGURATION OF INLET RACK AND BYPASS WEIR IS AVAILABLE TO ACCOMMODATE OTHER OUTLET PIPE LOCATIONS.
2. STANDARD UNITS CAN ACCOMMODATE UP TO A 15 INCH DIAMETER RCP OUTLET PIPE.
3. SEPARATE BYPASS STRUCTURE IS REQUIRED IF PEAK FLOW RATE EXCEEDS 2.0 CFS INTERNAL BYPASS CAPACITY.
4. 18"X36" DIAMOND PLATE ACCESS HATCH STANDARD, SLIP RESISTANT OPTION AVAILABLE.
5. CONTACT OLDCASTLE® INFRASTRUCTURE FOR ENGINEERING ASSISTANCE AND DETAIL DRAWINGS.
6. CONCRETE COMPONENTS SHALL BE MANUFACTURED IN ACCORDANCE WITH ASTM C890 & C913.
7. VEGETATION BY OTHERS. CUSTOMER TO SPECIFY. INSTALLED AT TIME OF ACTIVATION. THE OWNER IS RESPONSIBLE FOR THE SURVIVAL OF THE VEGETATION AND MUST IRRIGATE AS NECESSARY.

US Patents Pending

BioPod™ Biofilter Tree
Side Inlet & Internal Bypass

Oldcastle® INFRASTRUCTURE
Ph: 800.579.8819 | oldcastlestormwater.com

DRAWING NO. BPT-IB-SI | REV A | ECO ECO-0155 JPR 9/7/18 | DATE JPR 6/12/18 | SHEET 1 OF 2



PLAN VIEW

SECTION A-A

MODEL	VAULT SIZE [1] (ID)		VAULT FOOTPRINT [1] (OD)		TREATMENT FLOW CAPACITY [2] (GPM/CFS)	TREATMENT FLOW CAPACITY [3] (GPM/CFS)
	A DIM	B DIM	A1 DIM	B1 DIM		
BPT-46IB-SI	4'	6'	5'	7'	33.4 / 0.074	37.5 / 0.084
BPT-48IB-SI	4'	8'	5'	9'	46.2 / 0.103	51.9 / 0.116
BPT-412IB-SI	4'	12'	5'	13'	71.8 / 0.160	80.7 / 0.180
BPT-66IB-SI	6'	6'	7'	7'	52.6 / 0.117	59.1 / 0.132
BPT-68IB-SI	6'	8'	7'	9'	71.8 / 0.160	80.7 / 0.180
BPT-612IB-SI	6'	12'	7'	13'	110.2 / 0.245	123.9 / 0.276
BPT-816IB-SI	8'	16'	9'	17'	199.8 / 0.445	224.7 / 0.501

[1] All Dimensions Are Nominal
[2] Based on an WA Ecology GULD Approval for Basic, Enhanced & Phosphorus. At 1.60 gpm/sf Media Surface Area.
[3] Based on an NJCAT Verification & NJ DEP Certification. At 1.80 gpm/sf Media Surface Area.

US Patents Pending

BioPod™ Biofilter Tree
Side Inlet & Internal Bypass

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DRAWING NO. BPT-IB-SI | REV A | ECO ECO-0155 JPR 9/7/18 | DATE JPR 6/12/18 | SHEET 2 OF 2

DIGALERT
DIAL BEFORE YOU DIG
TWO WORKING DAYS BEFORE YOU DIG
TOLL FREE 1-800-227-2600
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

NOTE:
WORK CONTAINED WITHIN THESE PLANS SHALL NOT COMMENCE UNTIL AN ENCROACHMENT PERMIT AND/OR A GRADING PERMIT HAS BEEN ISSUED.

The private engineer signing these plans is responsible for assuring the accuracy and acceptability of the design hereon. In the event of discrepancies arising after City acceptance or during construction, the private engineer shall be responsible for determining an acceptable solution and revising the plans for acceptance by the City.

MARK	BY	DATE	REVISIONS	APPR.	DATE
	ENGINEER				CITY

CITY OF WILDOMAR
ACCEPTED BY:
Date:
Daniel A. York, Director of Public Works/ City Engineer, PE 43212
ACCEPTANCE AS TO CONFORMANCE WITH APPLICABLE CITY STANDARDS AND PRACTICES

SEAL-ENGINEER:
REGISTERED PROFESSIONAL ENGINEER
NIKKI D. KERRY
RCE NO. 58449
CIVIL
STATE OF CALIFORNIA

Kimley»Horn
1100 Town and Country Road, Suite 700
Orange, CA 92868
714.939.1030 F 714.938.9488
www.kimley-horn.com
PREPARED BY: NIKKI KERRY
R.C.E. No. 58449 EXP. 12/31/22

BENCHMARK:
Elevation = 1317.14
Datum = NAD 83
BENCHMARK # ____________
THIS SURVEY WAS PERFORMED ON 04/23/19 BY JOEL PAULSON L.S. 6637
SCALE: H: As Noted V: As Noted

PP, CUP, PM, TM, etc. Project XX-XXXX
CITY OF WILDOMAR
INLAND VALLEY MEDICAL CENTER
STORM DRAIN DETAILS

SHEET No. CGD7.4
OF SHTS

ISSUED FOR BID SET 5/21/21

MODULE NOTES

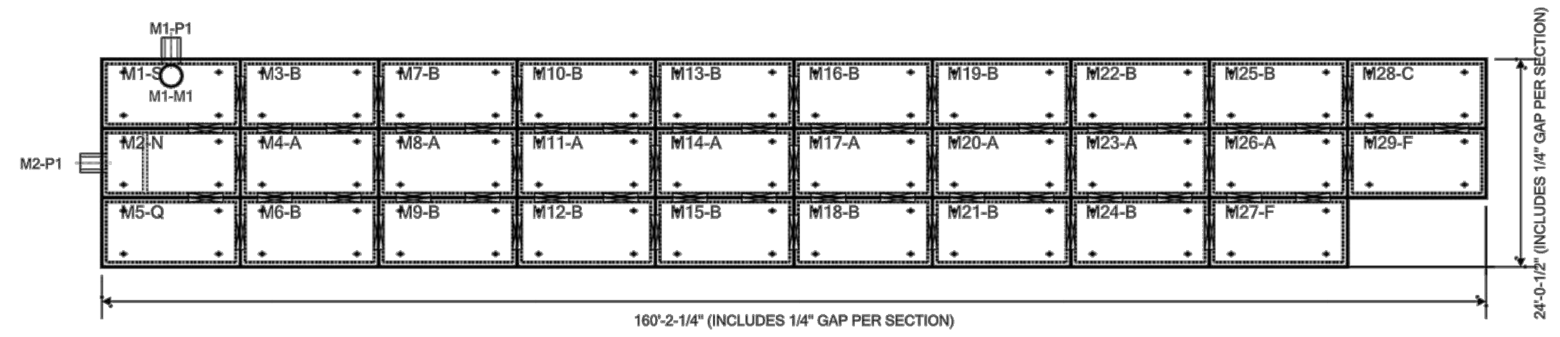
TYPE	QUANTITY	HEIGHT
S	1	5
N	1	5
B	15	5
A	8	5
Q	1	5
F	2	5
C	1	5
TOTAL	29	
VOLUME	12656	CUBIC FEET

PIPE SCHEDULE

PIPE	SIZE	INVERT
M1-P1	18" HDPE	1321.50'
M2-P1	18" HDPE	1320.00'

MANHOLE SCHEDULE

MANHOLE	TYPE	RIM
M1-M1	30" DIA. F&C	1327.54'



PLAN VIEW
SCALE: 1/16" = 1'-0"

DESIGN NOTES:
1. DESIGN LOADINGS:
   A. AASHTO HS-20-44 W/ IMPACT.
   B. DEPTH OF COVER = 6" - 5'-0" (120 PCF ASSUMED).
   C. ASSUMED WATER TABLE = BELOW BOTTOM OF PRECAST.
   D. DRY LATERAL EARTH PRESSURE (EFP) = 45 PCF.
   E. LATERAL LIVE LOAD SURCHARGE = 80 PSF (APPLIED TO 8' BELOW GRADE).
   F. NO LATERAL SURCHARGE FROM ADJACENT BUILDINGS, WALL PIERS, OR FOUNDATIONS.
2. CONCRETE 28 DAY COMPRESSIVE STRENGTH SHALL BE 6,000 PSI.
3. STEEL REINFORCEMENT: REBAR, ASTM A-615 OR A-706, GRADE 60.
4. MESH REINFORCEMENT: ASTM A-1064, S1.2, GRADE 80.
5. CEMENT: ASTM C-150 SPECIFICATION.
6. STORMCAPTURE MODULE TYPE = RETENTION
7. REQUIRED BASE LAYER DEPTH = NOT APPLICABLE.
8. REQUIRED NATIVE ALLOWABLE SOIL BEARING PRESSURE = 2,500 PSF. NATIVE SOIL SHOULD BE LEVEL/SCREEDED AND COMPACTED ADEQUATELY TO ALLOW FOR REQUIRED BEARING CAPACITY.
9. REFERENCE STANDARDS:
   A. ASTM C 890
   B. ASTM C 891
   C. ASTM C 913
10. CONSTRUCTION EQUIPMENT EXCEEDING DESIGN LOADING SHALL NOT BE ALLOWED ON STRUCTURE. ANY DESIGN CONSTRAINT DIFFERENT FROM ABOVE REQUIRES CUSTOM STRUCTURAL DESIGN AND MAY REQUIRE THICKER SUBGRADE AND REVISED PRICING.

NOTES TO REVIEWING ENGINEER:
1. THIS SYSTEM IS DESIGNED TO THE PARAMETERS NOTED. PLEASE VERIFY THAT THESE PARAMETERS MEET PROJECT REQUIREMENTS (I.E. LIVE LOAD AND FILL RANGE). IF DESIGN PARAMETERS ARE INCORRECT NOTIFY OLDCASTLE IMMEDIATELY FOR REDESIGN AND RE-PRICING.
2. ENGINEER OF RECORD TO CONFIRM ALL PIPE PENETRATION LOCATIONS, SIZES, AND INVERTS.
3. ENGINEER OF RECORD TO CONFIRM ALL MANWAY ACCESS LOCATIONS AND RIM ELEVATIONS.
4. UNLESS OTHERWISE NOTED, ALL PIPE SUPPLIED AND INSTALLED BY OTHERS.
5. THIS SYSTEM IS DESIGNED FOR A GROUNDWATER TABLE BELOW SYSTEM INVERT. ENGINEER OF RECORD TO VERIFY THAT THE DESIGN GROUNDWATER TABLE IS BELOW INVERT OF PRECAST. IF DESIGN PARAMETERS ARE INCORRECT NOTIFY OLDCASTLE IMMEDIATELY FOR REDESIGN AND REVISED PRICING.
6. THIS SYSTEM IS DESIGNED WITHOUT A CONTAINMENT MEMBRANE LINER. IF A LINER IS NEEDED PLEASE CONTACT OLDCASTLE TO PROVIDE THIS OPTION IN THE FINAL DESIGN.

- PRELIMINARY –
NOT FOR CONSTRUCTION

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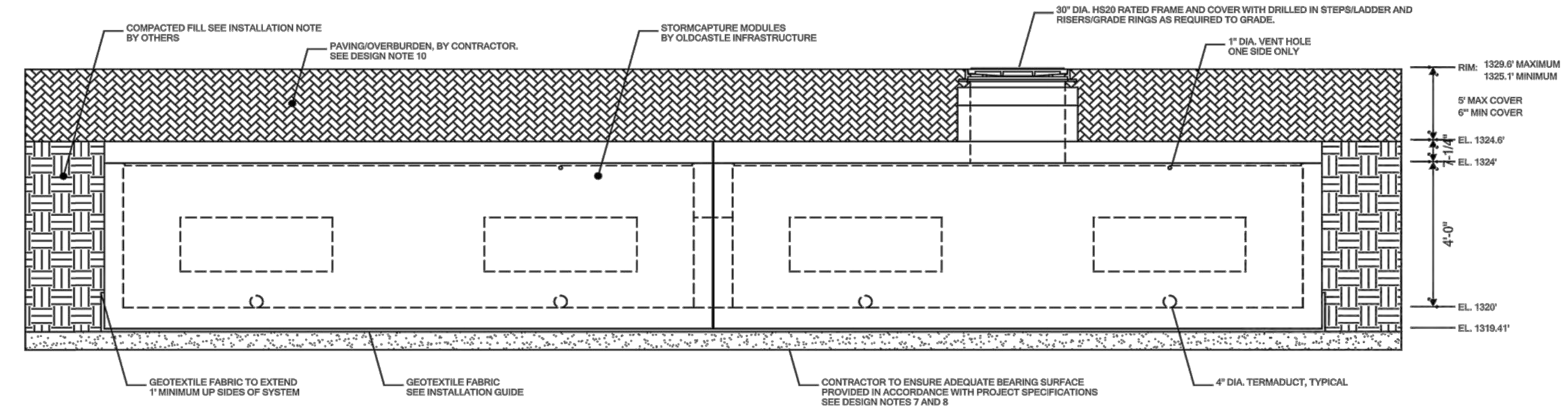
STORMCAPTURE ®
SC1 RETENTION SYSTEM

CUSTOMER:		
Kimley-Horn		
JOB NAME & LOCATION:		
UHS Inland Valley A-1 - Wildomar,CA		
DRAWING NUMBER	REVISION	SHEET
WSCDD-1150-0_SC1_RT	- REV DATE 12/11/20	1 OF 2

Detention/ Infiltration



TYPICAL ELEVATION
SCALE: 3/8" = 1'-0"

NOTE:
TERMADUCT INSERTS TO BE KNOCKED OUT AT SPECIFIED LOCATIONS ONLY (BY OTHERS)

- PRELIMINARY –
NOT FOR CONSTRUCTION

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A CRH COMPANY
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STORMCAPTURE ®
SC1 RETENTION SYSTEM

CUSTOMER:		
Kimley-Horn		
JOB NAME & LOCATION:		
UHS Inland Valley A-1 - Wildomar,CA		
DRAWING NUMBER	REVISION	SHEET
WSCDD-1150-0_SC1_RT	- REV DATE 12/11/20	2 OF 2

MODULE NOTES

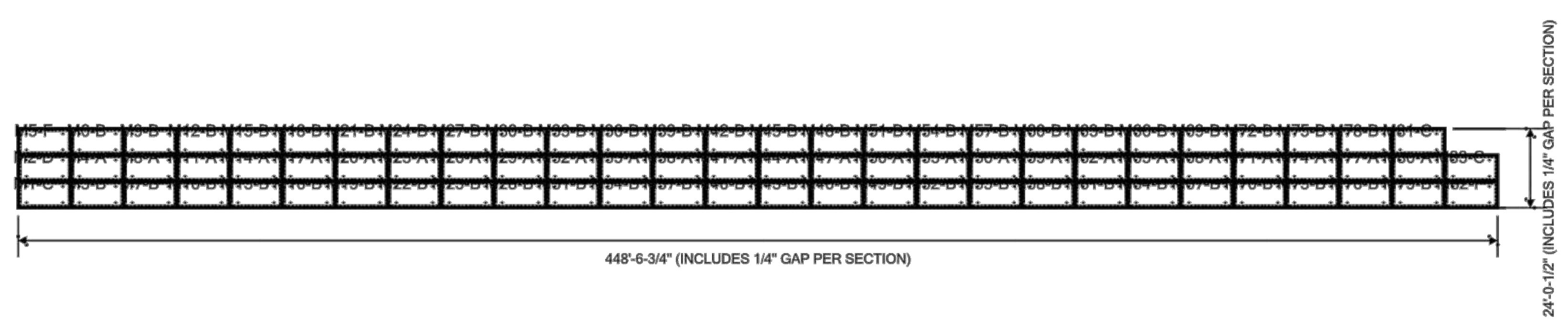
TYPE	QUANTITY	HEIGHT
C	3	7
D	1	7
B	51	7
A	26	7
F	2	7
TOTAL	83	
VOLUME	64425	CUBIC FEET

PIPE SCHEDULE

PIPE	SIZE	INVERT

MANHOLE SCHEDULE

MANHOLE	TYPE	RIM



PLAN VIEW
SCALE: 1" = 40'-0"

DESIGN NOTES:
1. DESIGN LOADINGS:
   A. AASHTO HS-20-44 W/ IMPACT.
   B. DEPTH OF COVER = 6" - 5'-0" (120 PCF ASSUMED).
   C. ASSUMED WATER TABLE = BELOW BOTTOM OF PRECAST.
   D. DRY LATERAL EARTH PRESSURE (EFP) = 45 PCF.
   E. LATERAL LIVE LOAD SURCHARGE = 80 PSF (APPLIED TO 8' BELOW GRADE).
   F. NO LATERAL SURCHARGE FROM ADJACENT BUILDINGS, WALL PIERS, OR FOUNDATIONS.
2. CONCRETE 28 DAY COMPRESSIVE STRENGTH SHALL BE 6,000 PSI.
3. STEEL REINFORCEMENT: REBAR, ASTM A-615 OR A-706, GRADE 60.
4. MESH REINFORCEMENT: ASTM A-1064, S1.2, GRADE 80.
5. CEMENT: ASTM C-150 SPECIFICATION.
6. STORMCAPTURE MODULE TYPE = INFILTRATION.
7. DEPTH OF AGGREGATE BEARING LAYER = 1'-4" ON ASSUMED ALLOWABLE BEARING PRESSURE = 2,500 PSF AND MAXIMUM COVER = 5'. DEPTH TO BE CONFIRMED BY GEOTECHNICAL ENGINEER (SEE OLDCASTLE TECH NOTE SC-01). NATIVE SOIL SHOULD BE LEVEL/SCREEDED AND COMPACTED ADEQUATELY TO ALLOW FOR REQUIRED BEARING CAPACITY.
8. ALLOWABLE SOIL BEARING PRESSURE ADDRESSED IN OLDCASTLE TECH NOTE SC-01.
9. REFERENCE STANDARDS:
   A. ASTM C 890
   B. ASTM C 891
   C. ASTM C 913
10. CONSTRUCTION EQUIPMENT EXCEEDING DESIGN LOADING SHALL NOT BE ALLOWED ON STRUCTURE. ANY DESIGN CONSTRAINT DIFFERENT FROM ABOVE REQUIRES CUSTOM STRUCTURAL DESIGN AND MAY REQUIRE THICKER SUBGRADE AND REVISED PRICING.

NOTES TO REVIEWING ENGINEER:
1. THIS SYSTEM IS DESIGNED TO THE PARAMETERS NOTED. PLEASE VERIFY THAT THESE PARAMETERS MEET PROJECT REQUIREMENTS (I.E. LIVE LOAD AND FILL RANGE). IF DESIGN PARAMETERS ARE INCORRECT NOTIFY OLDCASTLE IMMEDIATELY FOR REDESIGN AND RE-PRICING.
2. ENGINEER OF RECORD TO CONFIRM ALL PIPE PENETRATION LOCATIONS, SIZES, AND INVERTS.
3. ENGINEER OF RECORD TO CONFIRM ALL MANWAY ACCESS LOCATIONS AND RIM ELEVATIONS.
4. UNLESS OTHERWISE NOTED, ALL PIPE SUPPLIED AND INSTALLED BY OTHERS.
5. THIS SYSTEM IS DESIGNED FOR A GROUNDWATER TABLE BELOW SYSTEM INVERT. ENGINEER OF RECORD TO VERIFY THAT THE DESIGN GROUNDWATER TABLE IS BELOW INVERT OF PRECAST. IF DESIGN PARAMETERS ARE INCORRECT NOTIFY OLDCASTLE IMMEDIATELY FOR REDESIGN AND REVISED PRICING.
6. THIS SYSTEM IS DESIGNED WITHOUT A CONTAINMENT MEMBRANE LINER. IF A LINER IS NEEDED PLEASE CONTACT OLDCASTLE TO PROVIDE THIS OPTION IN THE FINAL DESIGN.

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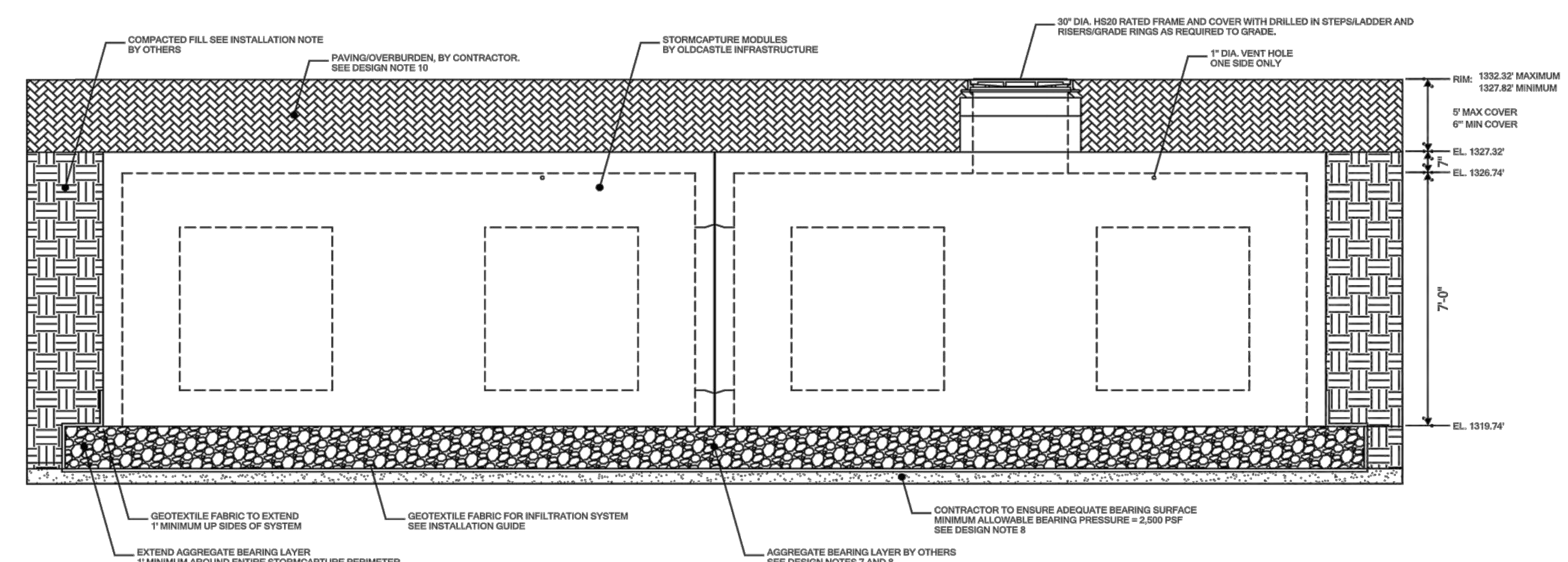
STORMCAPTURE ®
SC1 INFILTRATION SYSTEM

CUSTOMER:		
Kimley-Horn		
JOB NAME & LOCATION:		
UHS Inland Valley B-3 - Wildomar,CA		
DRAWING NUMBER	REVISION	SHEET
WSCDD-1165-0_SC1_IN	- REV DATE 12/16/20	1 OF 2

Detention/ Infiltration



TYPICAL ELEVATION
SCALE: 3/8" = 1'-0"

NOTE:
FOR INFILTRATTION - EXFILTRATION SYSTEMS,
THE AGGREGATE SUBGRADE MUST BE WASHED AND I

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STORMCAPTURE ®
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CUSTOMER:		
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UHS Inland Valley B-3 - Wildomar,CA		
DRAWING NUMBER	REVISION	SHEET
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MARK	BY	DATE	REVISIONS	APPR.	DATE
	ENGINEER			CITY	

CITY OF WILDOMAR
ACCEPTED BY:
Date:
Daniel A. York, Director of Public Works/ City Engineer, PE 43212
ACCEPTANCE AS TO CONFORMANCE WITH APPLICABLE CITY STANDARDS AND PRACTICES

SEAL ENGINEER:
REGISTERED PROFESSIONAL ENGINEER NIKKI D. KERRY RCE NO. 58449 CIVIL STATE OF CALIFORNIA

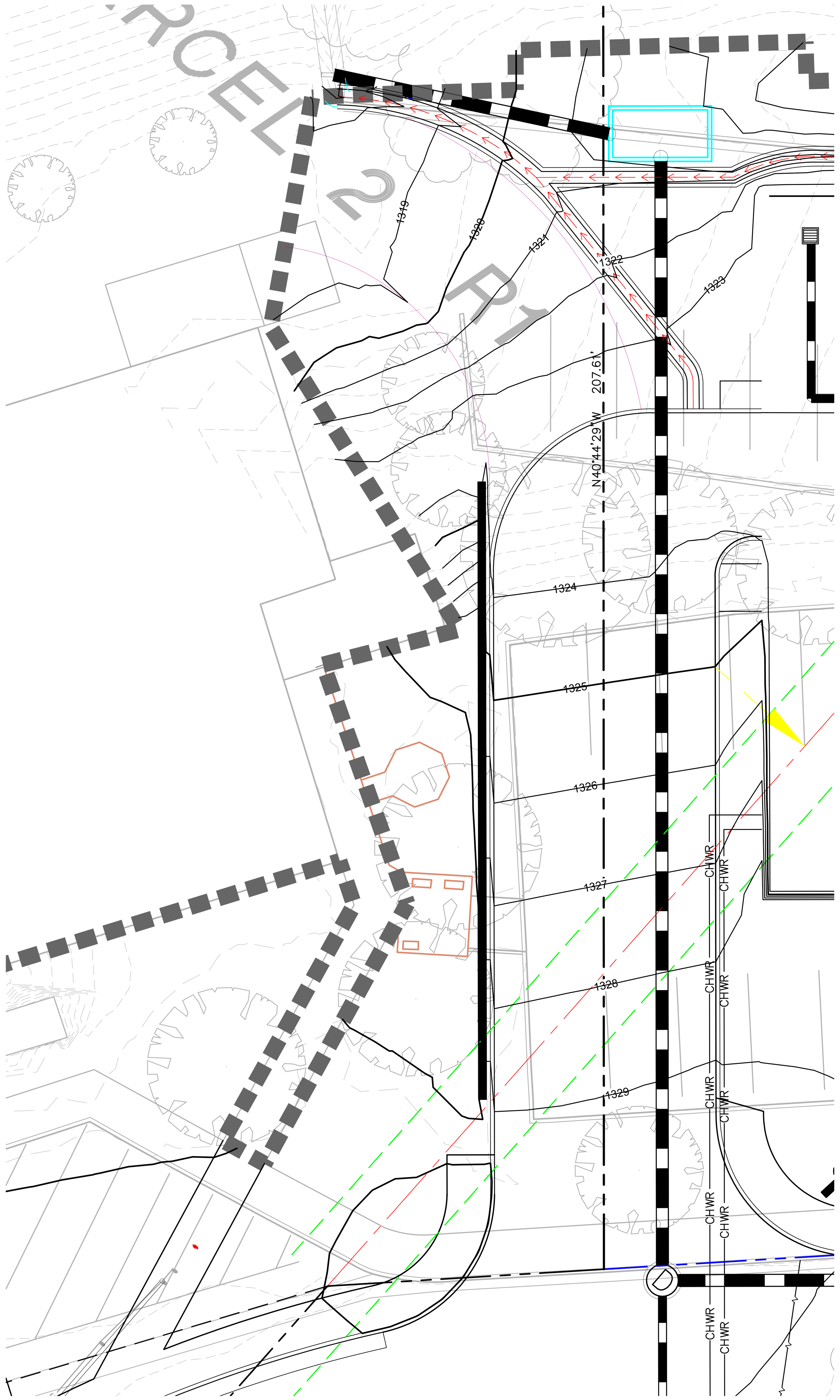
Kimley»Horn
1100 Town and Country Road, Suite 700
Orange, CA 92868
714.939.1030 F 714.938.9488
www.kimley-horn.com
PREPARED BY: NIKKI KERRY
R.C.E. No. 58449 EXP. 12/31/22

BENCHMARK:
Elevation = 1317.14
Datum = NAD 83
BENCHMARK # ____________
THIS SURVEY WAS PERFORMED ON 04/23/19 BY JOEL PAULSON L.S. 6637
SCALE: H: As Noted V: As Noted

PP, CUP, PM, TM, etc. Project XX-XXXX
CITY OF WILDOMAR
INLAND VALLEY MEDICAL CENTER
STORM DRAIN DETAILS

SHEET No. CGD7.5
OF SHTS

ISSUED FOR BID SET 5/21/21



GRADING DETAIL
SCALE: 1"=10'

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MARK	BY	DATE	REVISIONS	APPR.	DATE
ENGINEER				CITY	

CITY OF WILDOMAR
ACCEPTED BY:
Date:
Daniel A. York, Director of Public Works/ City Engineer, PE 43212
ACCEPTANCE AS TO CONFORMANCE WITH APPLICABLE CITY STANDARDS AND PRACTICES

SEAL-ENGINEER:
NIKKI D. KERRY RCE NO. 58449 CIVIL STATE OF CALIFORNIA

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www.kimley-horn.com
PREPARED BY: NIKKI KERRY
R.C.E. No. 58449 EXP. 12/31/22

BENCHMARK:
Elevation = 1317.14
Datum = NAD 83
BENCHMARK # ___________
THIS SURVEY WAS PERFORMED ON 04/23/19 BY JOEL PAULSON L.S. 6637
SCALE: H: As Noted V: As Noted

PP, CUP, PM, TM, etc. Project XX-XXXX
CITY OF WILDOMAR
INLAND VALLEY MEDICAL CENTER
ONSITE IMPROVEMENT PLANS
GRADING DETAILS

SHEET No. CGD 7.6
OF 69 SHTS

ISSUED FOR BID SET 5/21/21

Appendix 3: Soils Information

Geotechnical Study and Other Infiltration Testing Data

UPDATE REPORT
GEOTECHNICAL INVESTIGATION

Proposed Multi-Story Tower and CUP Area
Inland Valley Regional Medical Center
36485 Inland Valley Drive, Wildomar, California

PREPARED FOR

UHS of Delaware, Inc.
C/O The Barrie Company
9434 Chesapeake Drive, Suite 1208
San Diego, CA 92123

PREPARED BY

NOVA Services, Inc.
24632 San Juan Avenue, Suite 100
Dana Point, CA 92629

NOVA Project No. 3019060

December 12, 2019

GEOTECHNICAL ■ MATERIALS ■ SPECIAL INSPECTIONS
SBE ■ DVBE

UHS of Delaware, Inc.
c/o The Barrie Company
9434 Chesapeake Drive, Suite 1208
San Diego, CA 92123

December 12, 2019
NOVA Project No. 3019060

Attention: Mrs. Elizabeth Barrie

Subject: Update Report
Geotechnical Investigation
Proposed Inland Valley Regional Medical Center Multi-Story Tower and CUP Area
36485 Inland Valley Drive, Wildomar, California

Dear Mrs. Barrie:

NOVA Services, Inc. (NOVA) is pleased to present herewith this report of its geotechnical investigation for the above-referenced project. The work reported therein was completed by NOVA for UHS of Delaware, Inc., in accordance with the scope of work identified in NOVA's proposal dated July 16, 2019, as authorized on July 26, 2019. This report has been updated and includes 2019 California Building Code (CBC) Seismic Design Parameters after ASCE 7-16.

NOVA appreciates the opportunity to be of continued service to The Barrie Company and UHS of Delaware, Inc. Should you have any questions, please do not hesitate to contact the undersigned at (949) 388-7710.

Sincerely,

NOVA Services, Inc.

Jesse D. Bearfield, R.C.E.
Senior Engineer

REGISTERED PROFESSIONAL ENGINEER
JESSE D. BEARFIELD
C 84335
CIVIL
STATE OF CALIFORNIA

Tim Tavernetti, P.G.
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STATE OF CALIFORNIA

John F. O'Brien, G.E.
Principal Geotechnical Engineer

REGISTERED PROFESSIONAL ENGINEER
JOHN F. O'BRIEN
651
EXPIRES 3-31-2021
GEOTECHNICAL
STATE OF CALIFORNIA

Melissa Stayner PG, CEG
Senior Geologist

CERTIFIED ENGINEERING GEOLOGIST
MELISSA STAYNER
2707
STATE OF CALIFORNIA

UPDATE REPORT
GEOTECHNICAL INVESTIGATION

Proposed Multi-Story Tower and CUP Area
UHS Inland Valley Regional Medical Center
Wildomar, California

TABLE OF CONTENTS

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1.0 INTRODUCTION

1.1 Terms of Reference

This report presents the findings of a geotechnical investigation of the site of a proposed multi-story tower and CUP area, to be constructed within the southern central area of the Inland Valley Regional Medical Center campus.

The work reported herein was completed by NOVA Services, Inc. (NOVA) for UHS of Delaware, Inc. and The Barrie Company in accordance with the scope of work identified in NOVA's proposal dated July 16, 2019, as authorized on July 26, 2019.

Figure 1-1 depicts the vicinity of the Inland Valley Regional Medical Center campus.

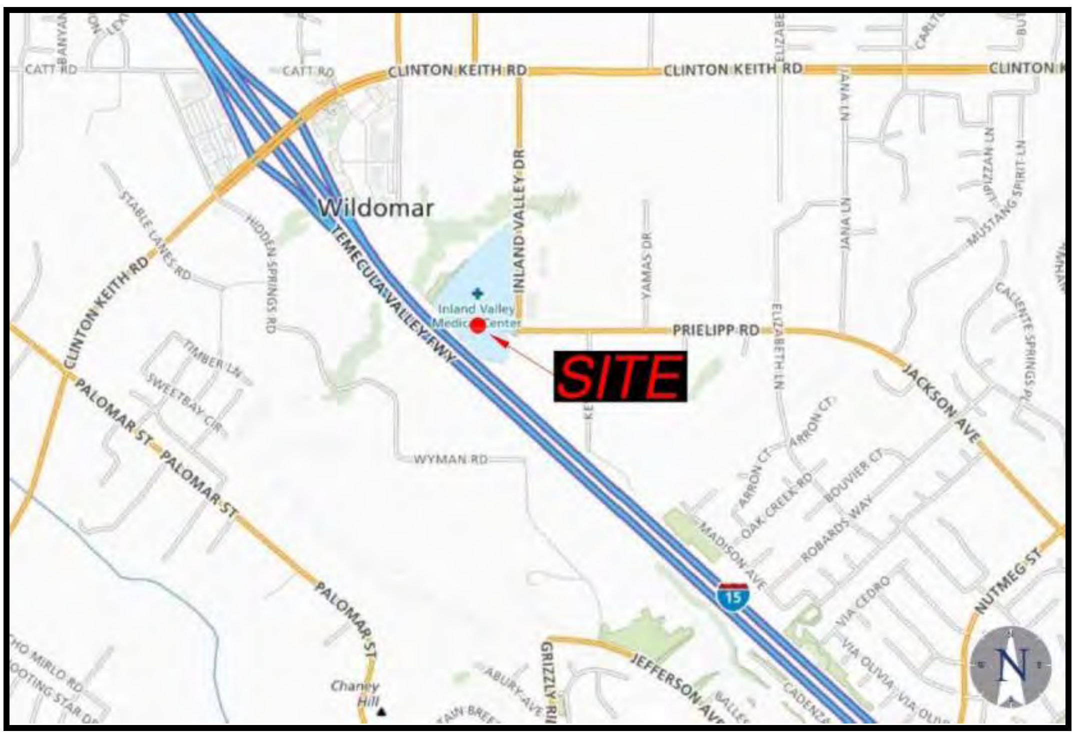

Figure 1-1. Vicinity Map

1.2 Objectives, Scope and Limitations of This Work

1.2.1 Objectives

The objectives of the work reported herein are twofold: (i) to characterize the subsurface conditions at the site in a manner sufficient to develop recommendations for geotechnical-related design and construction; and, (ii) to conduct percolation testing to support development of recommendations for siting and design of permanent stormwater infiltration Best Management Practices ('BMPs').

1.2.2 Scope

In order to accomplish the above objective, NOVA's undertook the task-based scope of services described below.

- Task 1, Review. Reviewed background data, including geotechnical reports, fault investigation reports and maps, topographic maps, geologic data, aerial photographs and preliminary development plans for the project. Coordinated with the Structural Engineer to obtain current structural information.

- Task 2, Field Exploration. Completed a subsurface exploration that included the subtasks listed below.

  - *Subtask 2-1, Reconnaissance.* Conducted a site reconnaissance, including layout of the engineering borings and soundings. Underground Service Alert was notified for utility mark-out services.

  - *Subtask 2-2, Engineering Borings.* Drilled, logged and sampled ten (10) engineering borings to depths of about 15 to 50 feet below existing ground surface (bgs). The borings were drilled and sampled using ASTM methodologies.

  - *Subtask 2-3, Soundings.* Advanced seven (7) static cone penetration test (CPT) soundings to depths of about 25 to 55 feet bgs after ASTM D5778.

  - *Subtask 2-4, Percolation Testing.* Drilled five (5) percolation test borings, following which percolation testing was completed in each boring.

  - *Subtask 2-5, Seismic Traverse.* Performed one (1) seismic refraction line to survey, verify and determine Site Class after 2019 California Building Code.

  - *Subtask 2-6, Closure*. The engineering borings and percolation test borings were each closed following completion. Closure consisted of backfilling the borings with a mix of bentonite and cuttings from the drilling, as required by the City of Temecula. Thereafter, the area around each boring was cleaned and restored to its approximate condition prior to drilling.

- Task 3, Laboratory Testing. Laboratory testing of both bulk and relatively undisturbed samples was completed using ASTM testing methods.

- Task 4, Engineering Evaluations. Utilizing the findings of the preceding tasks, conducted engineering evaluations that address the geotechnical-related aspects of the planned construction.

- Task 5, Reporting. Preparation of this report providing NOVA's findings and preliminary geotechnical recommendations completes the scope of work described in NOVA's proposal.

1.2.3 Limitations

The construction recommendations in this report are not final. These recommendations are developed by NOVA using judgment and opinion and based upon the limited information available from the borings and soundings. NOVA can finalize its recommendations only by observing actual subsurface conditions revealed during construction. At the time of preparation of this report, neither construction nor proposed plans had been developed for the site. NOVA cannot assume responsibility or liability for the report's recommendations if NOVA does not perform construction observation.

This report does not provide any environmental assessment or investigation of the presence or absence of hazardous or toxic materials in the soil, groundwater, or surface water within or beyond the site.

Appendix A to this report provides important additional guidance regarding the use and limitations of this report. This information should be reviewed by all users of the report.

1.3 Report Organization

The remainder of this report is organized as described below.

- Section 2 reviews the presently available project information.
- Section 3 describes the subsurface investigation and related laboratory testing.
- Section 4 describes the geologic setting and site-specific subsurface conditions.
- Section 5 reviews geologic, soil and siting-related hazards that commonly affect civil development in this region considering each for its potential to affect this site.
- Section 6 provides recommendations for earthwork and foundation-related design.
- Section 7 provides recommendations for development of stormwater infiltration BMPs.
- Section 8 provides recommendations for development of pavements.
- Section 9 lists the principal references utilized in preparation of this report.

Tables and figures that amplify discussion in the text of the report are embedded at the point at which they are referenced. Plates that provide larger scale views of certain figures are provided immediately following the text of the report.

The report is supported by six appendices.

- Appendix A presents guidance regarding use of this report.
- Appendix B provides logs of the engineering borings.
- Appendix C provides logs of the penetrometer soundings.
- Appendix D provides records of geotechnical laboratory testing.
- Appendix E provides documentation related to stormwater infiltration.
- Appendix F provides records of NOVA's assessment of liquefaction potential and seismic settlement.

2.0 PROJECT INFORMATION

2.1 Location

The Inland Valley Regional Medical Center is located at the address of 36485 Inland Valley Drive in the city of Wildomar, California. The proposed multi-story tower is to be located within the southern central portion of the campus currently occupied with a single-story structure and a small parking area. A proposed Conditional Use Permit (CUP) area is located at the undeveloped southwestern region of the site, designated as Parcel 2.

The medical campus and proposed project areas are bounded by Interstate 15 to the west and southwest, Inland Valley Drive to the east and, a drainage area adjacent to partially developed property to the north. Access to the medical campus is provided via Prielipp Road to the south and Inland Valley Drive to the east.

Figure 2-1 provides a recent aerial view that depicts the location and approximate limits of the approximate project area at the site.

Figure 2-1. Location and Limits of the Site
(Source: adapted from Google Earth 2019)

2.2 Current and Historic Site Use

2.2.1 Current

As is evident by review of Figure 2-1, the proposed project areas are currently developed with a single-story structure, asphalt covered parking areas, and landscaping space. The average ground surface elevation in the vicinity of the planned multi-story tower ranges between ±1,332 and ±1,334 feet mean sea level and the CUP area ranges between about ±1,334 and ±1,336 feet mean sea level (msl), respectively.

2.2.2 Historic

NOVA reviewed historic aerial photography and topographic mapping dating to 1938 as a basis for understanding historical uses of the site. This review indicates that prior to development of the Inland Valley Regional Medical Center during the period between 1982 and 1996, the site area had minimal development. Historic uses of the area appear to be agricultural and ranching-related.

Aerial photos of the site from 1982 indicate that there was a small water basin adjacent to the location of the proposed CUP building. Figure 2-2 below presents the approximate location of the proposed building overlaid on this aerial photo.

Based on review of referenced reporting documents, NOVA understands a geotechnical investigation report titled "*Preliminary Investigation for a Subject Site Located on Prielipp Road in Wildomar California,"* Academy Soils Engineering, Project No. F-8451-85 April 8, 1985 was prepared for the original development of the property. The reporting was not available for preparation of this report.

Figure 2-2. 1982 Aerial Photography and Approximate CUP Site

2.3 Previous Reporting

Previous geotechnical reporting for the development for some of the existing improvements and structures at Inland Valley Regional Medical Center campus were reviewed. References to these reports are presented below. Boring logs from previous reporting are included herein and are attached following NOVA Boring and Percolation logs in Appendix B and locations presented on Plate 1B.

- Leighton 1998. *Geotechnical Investigation Report for the Proposed O.R./Ambulatory Care Addition,* Leighton and Associates, Project No. 11980284-001, December 16, 1998.

- MACTEC 2003. *Report of Geotechnical Investigation, Proposed Additions,* MACTEC, Project 4953-03-1451, June 17, 2003.

- Twining 2008a. *Geotechnical Engineering Evaluation Report, Inland medical Center New Parking Lot,* Twining Laboratories, Project No.: 080154.3, March 26, 2008.

- Twining 2008b. *Recommendations for Site Pavements, Inland Valley Medical Center – ER, ICU, Radiology and CCU Expansion,* Twining Laboratories, Project No.: 080071.3, December 11, 2008.

2.4 Schematic Planning

2.4.1 General

NOVA's understanding of current planning for the new multi-story tower and CUP Area building is based upon discussions with Carrier Johnson, as well as review of the schematic design drawings that are listed below:

- HOK 2019. *Site Plan, Phase 3 Plan with Survey, Inland Valley Regional Medical Center*, HOK, undated.

- KH 2019. *Inland Valley Regional Medical Center – Rough Grading (North Option),* Kimley Horn and Associates, 2019.

- NV5. *As-Built Utility Plan, Inland Valley Regional Medical Center*, NV5, February 25, 2019.

2.4.2 Architectural

Plans for the development of the project are within the preliminary stages of development. Based on discussions with the project architect, NOVA understands the new tower structure will be 7 stories in height with 2 podium levels at the base of the structure. The CUP building will be one-story in height.

2.4.3 Structural

Limited information is available regarding structural concepts for the multi-story tower. Based upon experience with similar structures, NOVA expects that the new facility will be developed on shallow foundations, utilizing isolated and continuous foundations to support columns and walls. The interior floor slab will be a ground-supported mat. As noted above, it is expected that the structure will be steel framed.

Because design is still schematic, structural loads are unknown. However, Table 2-1 provides NOVA's estimate of the range of foundation reactions for this relatively light structure.

Table 2-1. Expected Column and Wall Loads (DL +LL)

Structure	Typical Exterior Col. Loads (kips)	Typical Interior Col. Loads (kips)	Typical Wall Loads (kips per lineal foot)
Multi-Story Tower	300 - 400	400 - 600	2 - 4
CUP Area Structure	25- 35	40 - 50	2 - 4

2.4.4 Civil

The layout and design for the new multi-story tower and CUP area building are not yet finalized. Current planning indicates the building footprints and finish floor elevations for the 1st level of the proposed structures. Figure 2-4 depicts one option that is under consideration for site development. Figures 2-3 and 2-4 present the layouts of the proposed new buildings.

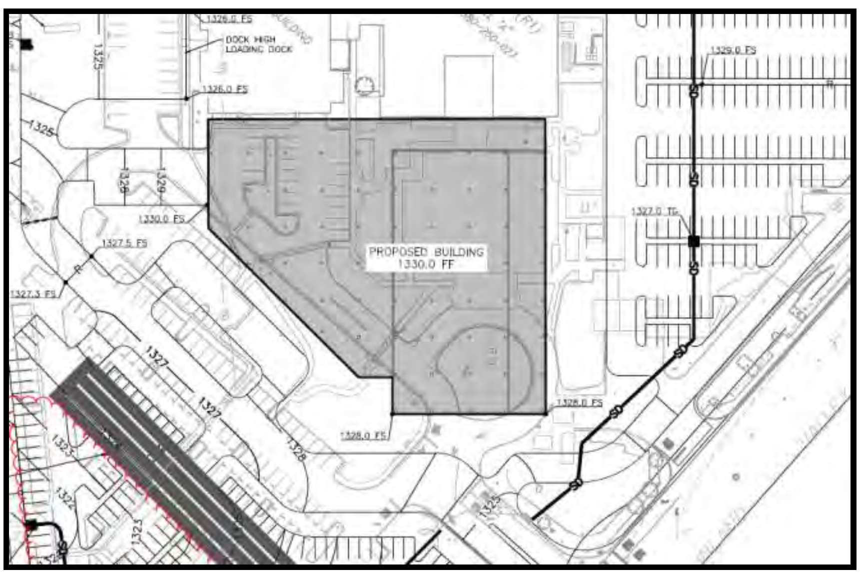

Figure 2-3. Proposed Multi-Story Tower
(Source: *Rough Grading, (South Option)*, Kimley Horn 2019)

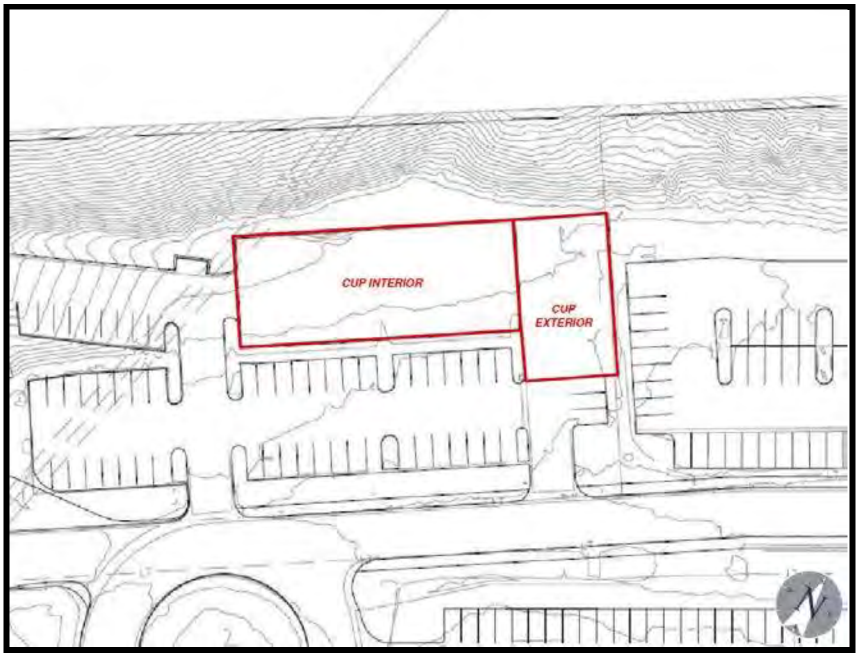

Figure 2-4. Proposed Building at CUP Area (North Option)

No below grade structures are depicted on the planning that has been reviewed by NOVA. Grading plans are not yet developed for the new facility. It is expected that development of the site will likely involve grading and placing about two to three feet of engineered fill to adapt the new buildings to the existing site and adjacent roadways.

There is a stormwater management area located southwest of the proposed tower. This area is conceptual as of the date of this report.

2.4.5 Demolition and Earthwork

Prior to the start of construction for the proposed site redevelopment, the existing structure, flatwork, and pavement in the areas of the new construction will be demolished. Existing utilities will be removed and realigned to accommodate the new site configuration.

3.0 FIELD EXPLORATION AND LABORATORY TESTING

3.1 Overview

The field exploration of the site was conducted over the period of August 9, August 27-28, October 7 and November 2, 2019. NOVA completed ten engineering borings ('B-1' through 'B-10'), seven CPT soundings ('CPT-1' through 'CPT-7'), five percolation tests ('P-1' through 'P-5'), and one seismic traverse (ST-1). The borings were drilled to a maximum depth of 50 feet below existing ground surface (bgs). Laboratory testing was completed on samples recovered from the borings. The CPTs were advanced to depths of about 25 to 55 feet bgs. The seismic analysis provided shear wave velocity data to 220 feet below ground surface. Velocities in the top 100 feet were used to classify the site in accordance with ASCE 7-16 Table 20.3-1.

Figure 3-1 provides a plan view of the site indicating the locations of the engineering borings, CPT soundings, percolation test borings, and seismic traverse. Plate 1, provided immediately following the text of this report, provides this graphic in larger detail.

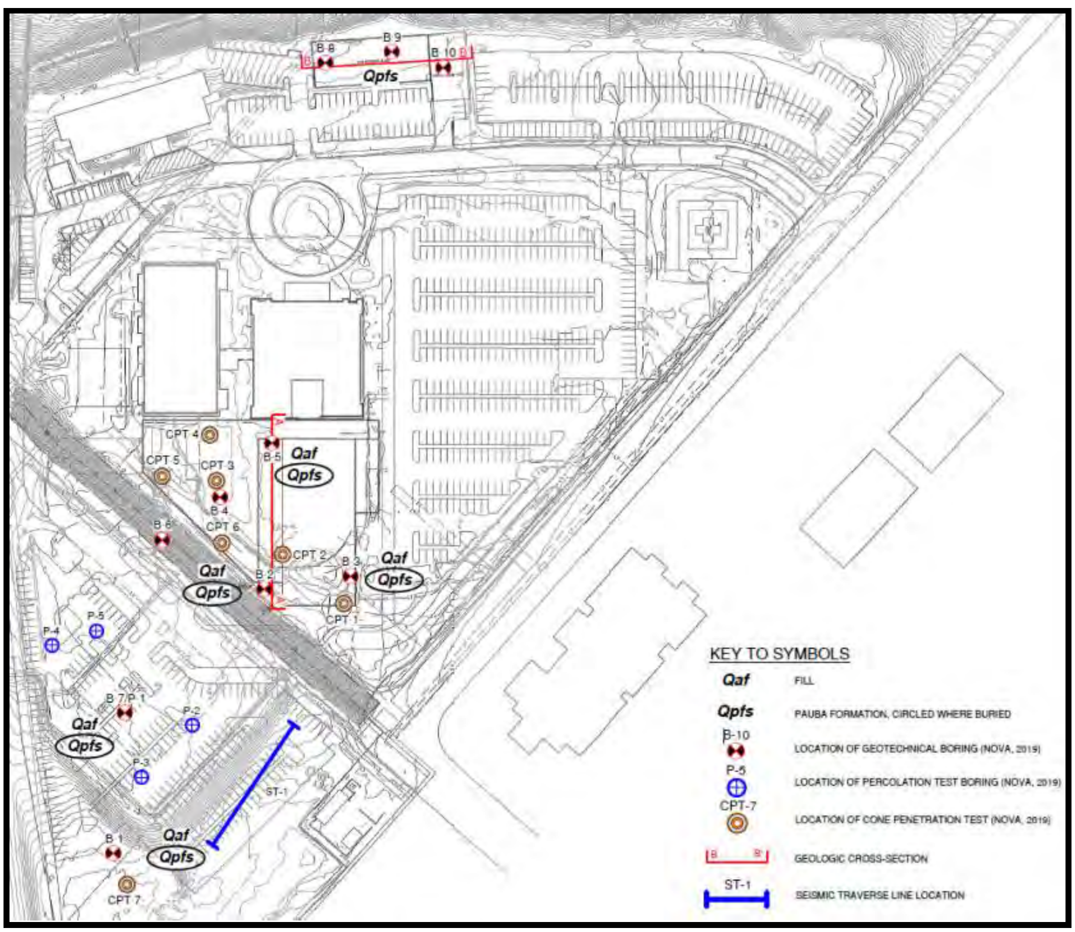

Figure 3-1. Engineering Borings, CPT Soundings, Percolation Test Boring and Seismic Traverse Locations

3.2 Engineering Borings

3.2.1 Drilling

The geotechnical borings were advanced with a truck-mounted drill rig utilizing hollow stem drilling equipment. The borings were drilled at locations determined in the field by a NOVA geologist, then completed under the surveillance of the geologist. Figure 3-2 depicts the drilling operation.

Figure 3-2. Geotechnical Test Boring B-1

Table 3-1 provides an abstract of the engineering borings.

Table 3-1. Abstract of the Engineering Borings

Ref	Approx. Elev. (feet, msl)	Depth (feet)*	Boring Termination Elev. (feet, msl)	Depth to Ground Water (feet)
B-1	± 1,329	50.0	± 1,279	Not Encountered
B-2	± 1,328	26.5	± 1,301	Not Encountered
B-3	± 1,328	26.5	± 1,301	Not Encountered
B-4	± 1,328	50.0	± 1,278	Not Encountered
B-5	± 1,329	26.0	± 1,303	Not Encountered
B-6	± 1,327	25.0	± 1,302	Not Encountered
B-7	± 1,325	15.0	± 1,310	Not Encountered
B-8	± 1,326	20.0	± 1,306	Not Encountered
B-9	± 1,326	50.0	± 1,276	47.6
B-10	± 1,327	20.0	± 1,307	Not Encountered

3.2.2 Sampling

Both disturbed and relatively undisturbed samples were recovered from the borings. Soil sampling was as described below.

1. The Modified California sampler ('ring sampler', after ASTM D 3550) was driven using a 140-pound hammer falling for 30 inches with a total penetration of 18 inches, recording blow counts for each 6 inches of penetration.

2. The Standard Penetration Test sampler ('SPT', after ASTM D1586) was driven in the same manner as the ring sampler, recording blow counts in the same fashion. SPT blow counts for the final 12-inches of penetration comprise the SPT 'N' value, an index of soil consistency.

3. Bulk samples were recovered from the subsurface soils, providing composite samples for index testing.

4. Figure 3-3. Sample from B-1 at 30' bgs

3.2.3 Closure

Upon completion, each boring was backfilled with a mix of bentonite and soil cuttings and patched to match the existing surfacing.

Records of the engineering borings are presented in Appendix B.

3.3 Cone Penetration Test Soundings

3.3.1 General

The CPT soundings were completed to depths of about 25 to 55 feet bgs. Like the engineering borings, the locations of the soundings were determined in the field by the NOVA geologist. The soundings were performed by a specialty subcontractor retained by NOVA working under the direction of the geologist.

Figure 3-4. CPT-3 Sounding

The soundings were completed in general conformance with ASTM D5778 "*Standard Test Method for Electronic Friction Cone and Piezocone Penetration Testing of Soils.*" NOVA employs this exploration tool to supplement engineering borings, providing continuous profiles, reliable and repeatable (i.e. the influence of the equipment operator is minimized) soil data, and a good estimate of common soil engineering properties.

Table 3-2 abstracts the indications of the soundings. Logs of the soundings are provided in Appendix C.

Table 3-2. Abstract of the CPT Soundings

Sounding	Approximate Elevation (feet, msl)	Total Depth (feet)	Termination Elevation (feet, msl)
CPT-1	±1,328	27.0	±1,301.0
CPT-2	±1,328	30.5	±1,297.5
CPT-3	±1,328	31.0	±1,297.0
CPT-4	±1,328	25.5	±1,302.5
CPT-5	±1,328	37.5	±1,290.5
CPT-6	±1,328	41.0	±1,287.0
CPT-7	±1,328	55.5	±1,272.5

3.3.2 Strength and Compressibility of the Subsurface

Figure 3-5 (following page) provides a summary graphic that indicates the variation of subsurface compressibility with depth. Review of Figure 3-5 indicates the following:

1. Compressibility. The subsurface materials at and below the planned structure are generally very dense- exhibiting very low potential for compressibility under the planned development. As may be seen by review of Figure 3-5, Young's modulus (E_s) of the soil below the foundation level is characteristically near 2,000 tons per square foot (tsf). This stiffness is characteristic of very dense, relatively unyielding soils.

2. Strength. The soils reflected by Figure 3-5 will behave as sands, with shear strength (τ) developing as a function of soil confining stress (σ'), cohesion (c') and angle of friction (ϕ'), where t = c' + σ' tan (ϕ'). As may also be seen by review of Figure 3-2, the soil mass in the near surface is of higher relative density (D_r), and capable of developing very high strength by virtue of the high angle of friction.

Section 4 discusses the geology and soils of the site in more detail. As discussed in Section 4, the soils are comprised entirely of sandy soils of Holocene age.

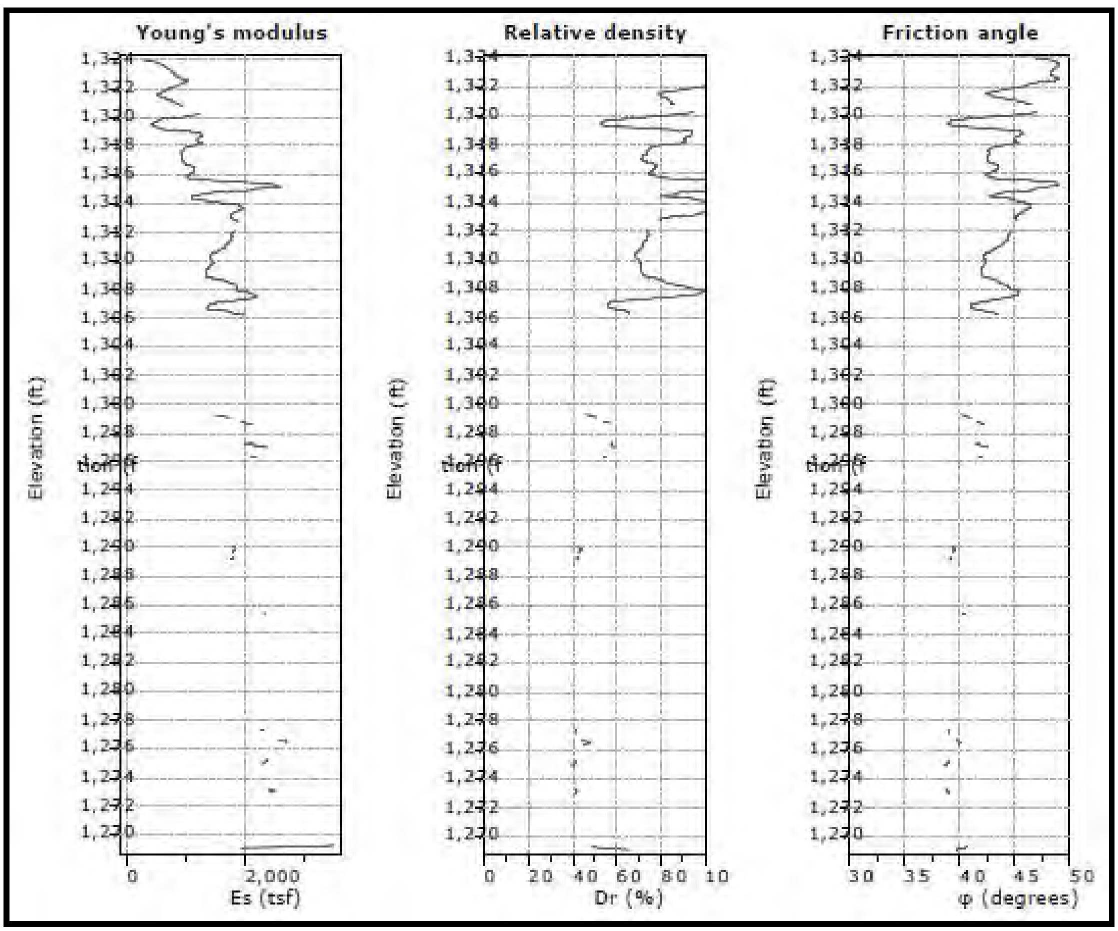

Figure 3-5. Compressibility and Strength of the Subsurface, CPT-2

3.4 Percolation Testing

3.4.1 General

NOVA directed the excavation and construction of five (5) percolation test borings, following the recommendations for percolation testing presented in the *Riverside County, Santa Margarita River Watershed Region Design Handbook for Low Impact Development, Best Management Practices*, Riverside County Flood Control and Water Conservation District, Revised June 2018. The locations of these borings are shown in Figure 3-1.

3.4.2 Drilling

Borings were drilled with a truck mounted 8-inch hollow stem auger to the level of the base of expected stormwater infiltration BMPs, about 10-15 feet bgs. Field measurements were taken to confirm that the borings were excavated to approximately 8-inches in diameter.

The borings were logged by a NOVA geologist, who observed and recorded exposed soil cuttings and the boring conditions.

3.4.3 Conversion to Percolation Wells

Once the test borings were drilled to the design depth, the percolation test borings were converted to percolation wells by placing an approximately 2-inch layer of ¾-inch gravel on the bottom, then extending 3-inch diameter Schedule 40 perforated PVC pipe to the ground surface. The ¾-inch gravel was used to partially fill the annular space around the perforated pipe below existing grade to minimize the potential of soil caving.

3.4.4 Percolation Testing

The percolation test borings were pre-soaked by filling the holes with water to the ground surface elevation. Testing was conducted the following day, within a 24-hour window.

Water levels were recorded every 30 minutes for 6 hours (minimum of 12 readings), or until the water percolation stabilized after each reading. At the start of each half-hour test interval, the water level was raised to approximately the same height of previous tests, in order to maintain a near constant head during the 6 hour test. Water level (depth) measurements were obtained from the top of the pipe. Table 3-3 (following page) abstracts the indications of the percolation testing.

Table 3-3. Abstract of the Percolation Testing

Boring	Approx. Elevation (feet, msl) [2]	Total Depth (feet)	Approximate Percolation Test Elev. (feet, msl)	Percolation Rate (in/hour)	Subsurface Unit Tested[1]
P-1	± 1,325	15.0	± 1,310	4.66	Qpfs
P-2	± 1,327	10.0	± 1,317	0.72	Qpfs
P-3	± 1,327	10.0	± 1,317	0.41	Qpfs
P-4	± 1,322	11.0	± 1,311	1.27	Qpfs
P-5	± 1,324	10.0	± 1,314	0.64	Qpfs

Notes:
1. 'Qpfs' indicates 'Pauba Formation', occurring as a dense sandstone
2. Percolation test elevations are estimated.

3.4.5 Closure

At the conclusion of the percolation testing, the upper sections of the PVC pipe were removed and the resulting holes backfilled with soil cuttings and patched to match the existing surfacing.

3.5 Shear Wave Velocity Analysis

3.5.1 General

A seismic shear wave survey was performed on November 2, 2019 by a Professional Geophysicist (PGP). The purpose of the survey was to assess the one-dimensional average shear-wave velocity of the underlying site soils to a minimum depth of 100 feet bgs in order to classify the site in accordance with ASCE 7-16 Table 20.3-1. Multi-channel analysis of surface waves (MASW) and microtremor array measurement (MAM) methods were used for the analysis. Combining results of both methods maximizes the depth and resolution of the data.

Figure 3-6. Seismic Survey Line, View Towards the North

The seismic survey of the subject site included one seismic shear wave survey traverse, approximately 220 feet in length. The approximate location is shown on Figure 3-7 and Plates 1A and 1B. A 24-channel Geometrics StrataVisor NZXP model signal-enhancement refraction seismograph was used in conjunction with 24 4.5-Hz geophones spaced at regular intervals. For the MASW survey, two seismic records were obtained by multiple hammer strikes of a 16-pound sledge hammer on steel plates positioned 25 feet from the end of each terminus of the seismic line. Vibrations were recorded using a one second record length at a sampling rate of 0.5 milliseconds. The MAM survey records vibrations from background and ambient noise. The ground vibrations were recorded using 32-second record length at 2-milisecond sampling rate with 30 separate records obtained for quality control purposes.

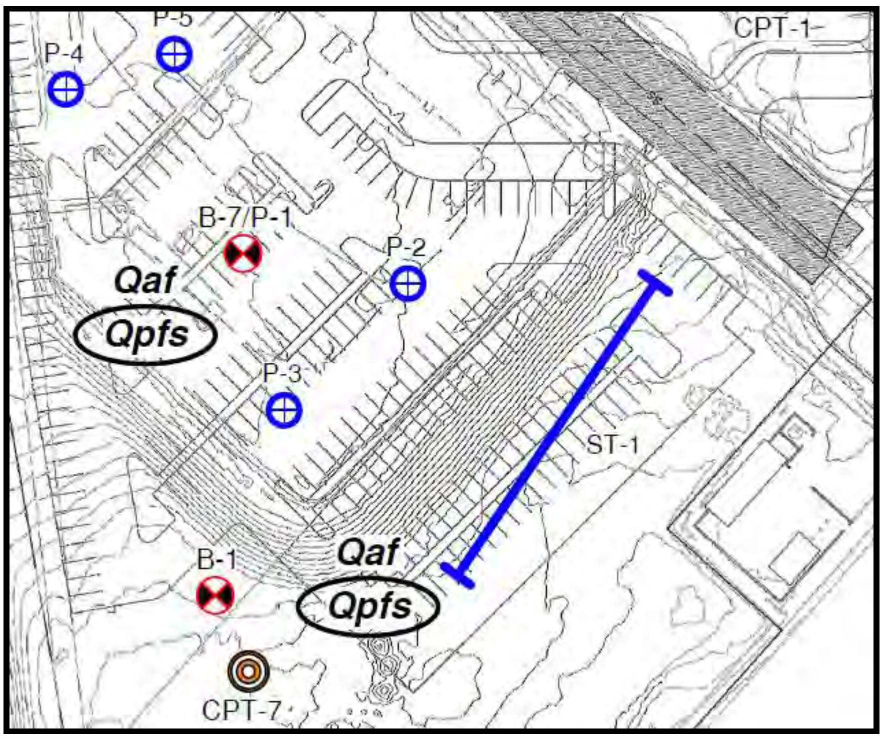

Figure 3-7. Approximate Seismic Traverse Location

After the field data was collected, the geophysicist combined the MASW and MAM survey results using specialized software specific to this purpose. The weighted average for velocity in the upper 100 feet of the site (referred to as V_{100} or V_s30) was computed from ASCE 7-16 Equation 20.4-1. The seismic model indicates that the average shear-wave velocity (weighted average) in the upper 100 feet is 1462.3 feet/sec. This average velocity classifies the underlying soils as Site Class C. Figure 3-8 presents the results of the shear-wave analysis.

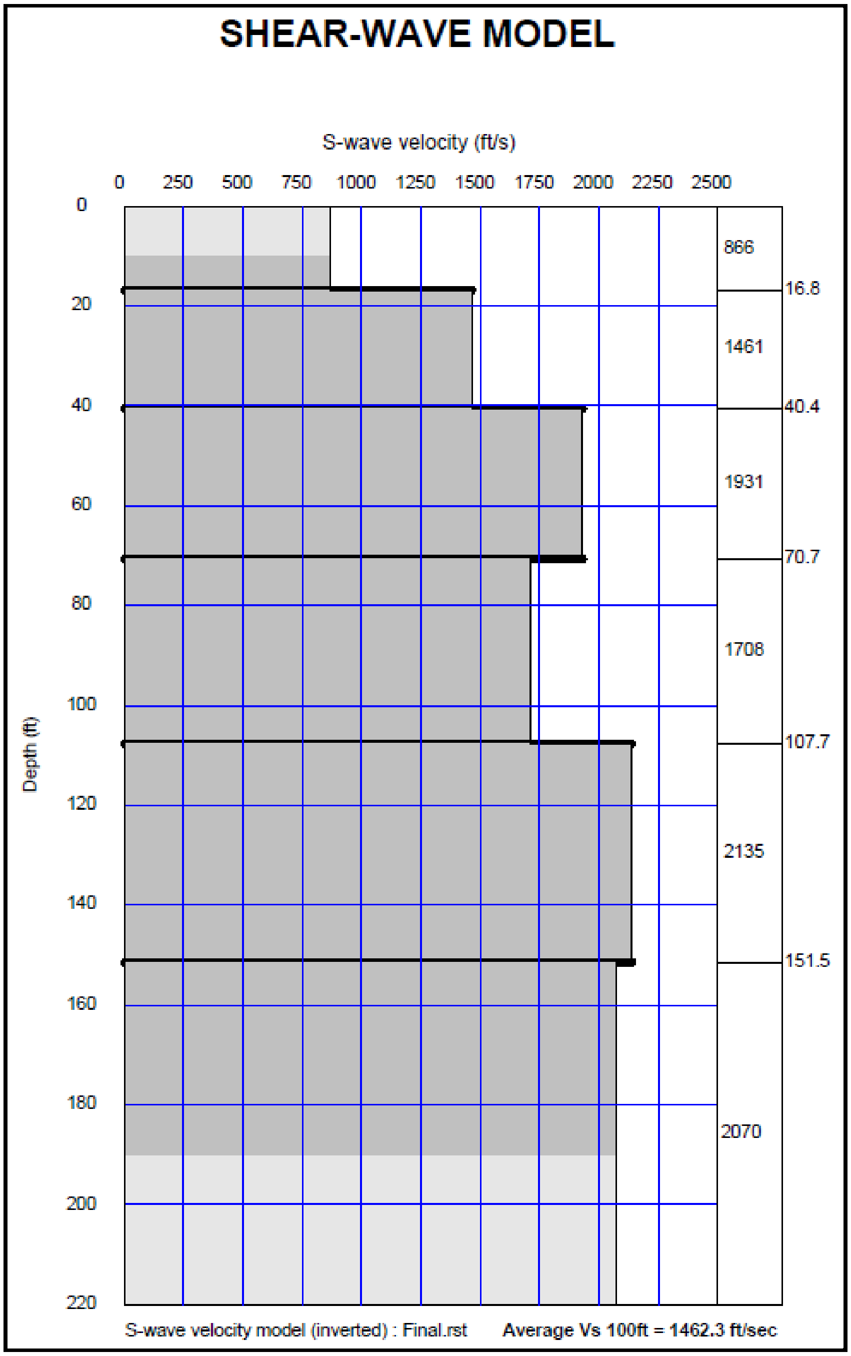

Figure 3-8. Shear Wave Model

3.6 Laboratory Testing

3.6.1 General

Following completion of the fieldwork, representative samples of the subsurface soils recovered from the engineering borings were transferred to NOVA's geotechnical laboratory for testing.

An experienced geotechnical engineer classified each soil sample on the basis of texture and plasticity in accordance with the Unified Soil Classification System (USCS). The group symbols for each soil type are indicated on the boring logs. The geotechnical engineer grouped the various soil types into the major zones noted on the boring logs. The stratification lines designating the interfaces between earth materials on the boring logs and profiles are approximate; *in-situ*, the transitions may be gradual.

Representative soil samples were selected and tested in NOVA's materials laboratory to check visual classifications and to determine pertinent engineering properties. The laboratory work included visual classifications of all soil samples as well as strength and index testing on selected soil samples. Testing was performed in general accordance with ASTM standards.

Records of the geotechnical laboratory testing are presented in Appendix D.

3.6.2 Gradation

The visual classifications were supplemented by soil gradation analyses after ASTM D6913. The results of these analyses were used to support soil classification after ASTM D2488. Table 3-4 summarizes the results of this testing.

Table 3-4. Summary of the Soil Gradation Testing

Sample Reference		Percent Finer Than the U.S. No 200 Sieve	Classification after ASTM D2488
Boring	Depth (feet)		
1	0 - 5	39	SM
6	15 - 20	34	SM

Note 1: The U.S. # 200 sieve is 0.074 mm,
Note 2. Gradation testing after ASTM D6913.

3.6.3 Moisture Density Relationships of the Near Surface Soils

Laboratory compaction testing was completed after ASTM D1557 on a composite sample of soil from the upper five feet of B-1. This testing indicated an optimum dry unit weight ($\gamma_{dry\ opt}$) of 120.7 lb/ft^3 at a moisture content of 13.2%. A second sample from of soil from the upper five feet of B-5 was tested and indicated an optimum dry unit weight ($\gamma_{dry\ opt}$) of 128.9 lb/ft^3 at a moisture content of 7.3%.

Table 3-5. Optimum Moisture Content and Maximum Dry Density

Sample Reference		Optimum Percent Moisture	Density (pcf)
Boring	Depth (feet)		
1	0 - 5	13.2	120.7
5	0 - 5	7.3	128.9

3.6.4 *In Situ* Moisture and Density

In-situ moisture content and dry unit weight testing were performed within NOVA's laboratory. Table 3-5 summarizes the results of this testing.

Table 3-6. In-Situ Moisture and Density

Sample Reference		Percent Moisture	Density (pcf)
Boring	Depth (feet)		
1	5	3.7	125.6
1	15	7.5	119.2
1	25	14.1	122.9
1	35	17.6	110.4
1	45	19.4	108.3
4	10	33.1	81.5
4	20	13.0	123.8
4	30	8.8	127.8
4	40	13.0	119.0
5	5	6.4	117.3

Note 1: The U.S. # 200 sieve is 0.074 mm,
Note 2. Gradation testing after ASTM D6913.

3.6.5 Corrosivity Testing

Resistivity, sulfate content and chloride contents were determined to estimate the potential corrosivity of on-site soils. These chemical tests were performed on a representative sample of the near-surface soils by Clarkson Laboratory and Supply, Inc. Table 3-7 summarizes the results of this testing.

Table 3-7. Summary of Corrosivity Testing of the Near Surface Soil

Parameter	Units	Boring B-1, 0-5 feet	Boring B-5, 0-5'
pH	standard unit	7.1	7.9
Resistivity	Ohm-cm	860	1800
Water Soluble Chloride	ppm	130	21
Water Soluble Sulfate	ppm	87	30

4.0 SITE CONDITIONS

4.1 Geologic Setting

4.1.1 Regional

The site is located within the northern portion of the Peninsular Range Geomorphic Province. This province, which stretches from the Los Angeles basin to the tip of Baja California, is characterized by a series of northwest trending mountain ranges separated by subparallel fault zones, and a coastal plain of subdued landforms. The mountain ranges are underlain primarily by Mesozoic metamorphic rocks that were intruded by plutonic rocks of the southern California batholith. The active Elsinore fault zone, considered part of the larger San Andreas fault system, divides the Santa Ana Mountains block to the west from the Perris block to the east.

4.1.2 Site Specific

Bedrock underlying the site is the sandstone member of the Pauba Formation (Qpfs). The Pauba Formation was deposited during the early to middle Pleistocene and primarily consists of alluvial stream deposits composed of interbeds and mixtures of brownish siltstones, sandstones, and conglomerates that are moderately cemented. The Pauba Formation includes two informal members: an upper sandstone member consisting of brown, moderately well-indurated, cross-bedded sandstone with sparse cobble to boulder conglomerate interbeds; and a lower fanglomerate member (Qpf) consisting of grayish brown, well-indurated, poorly sorted fanglomerate and mudstone. According to Kennedy and Morton, only the upper sandstone member is exposed near the site (CGS, 2003). Figure 4-1 presents the geologic mapping in the site vicinity.

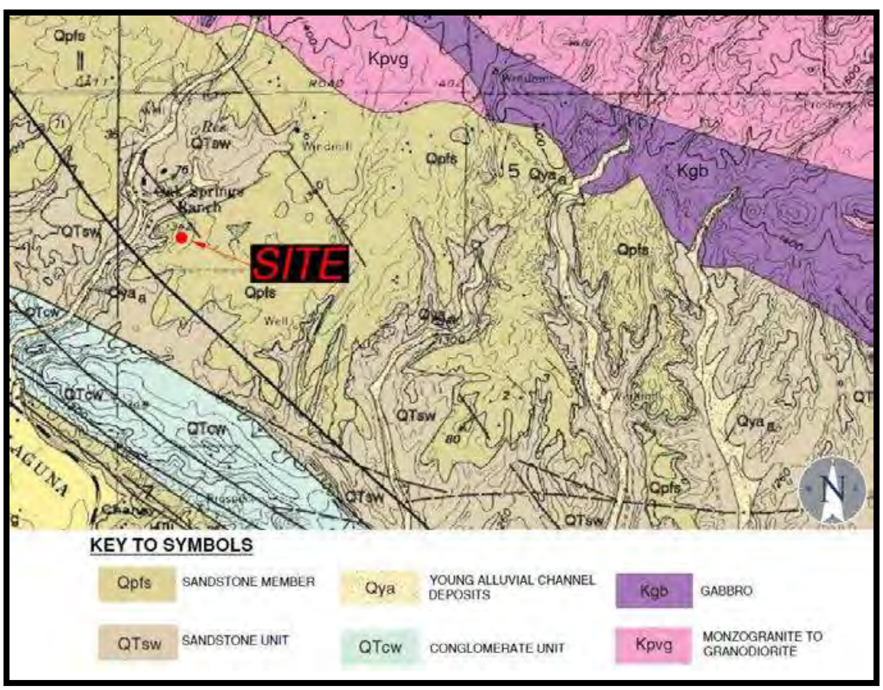

Figure 4-1. Geologic Map of the Site Area
(source: USGS Geologic Map of the Murrieta 7.5' Quadrangle, 2003)

4.1.3 Faulting

There are no known active faults underlying the property. The nearest mapped active fault zone is the Elsinore fault zone, Temecula section (Wildomar Fault), about 0.63 miles to the southwest.

Figure 4-2 maps faulting in the site area. Active faults are shown in orange, and late Quaternary faults, not considered active, are shown in green.

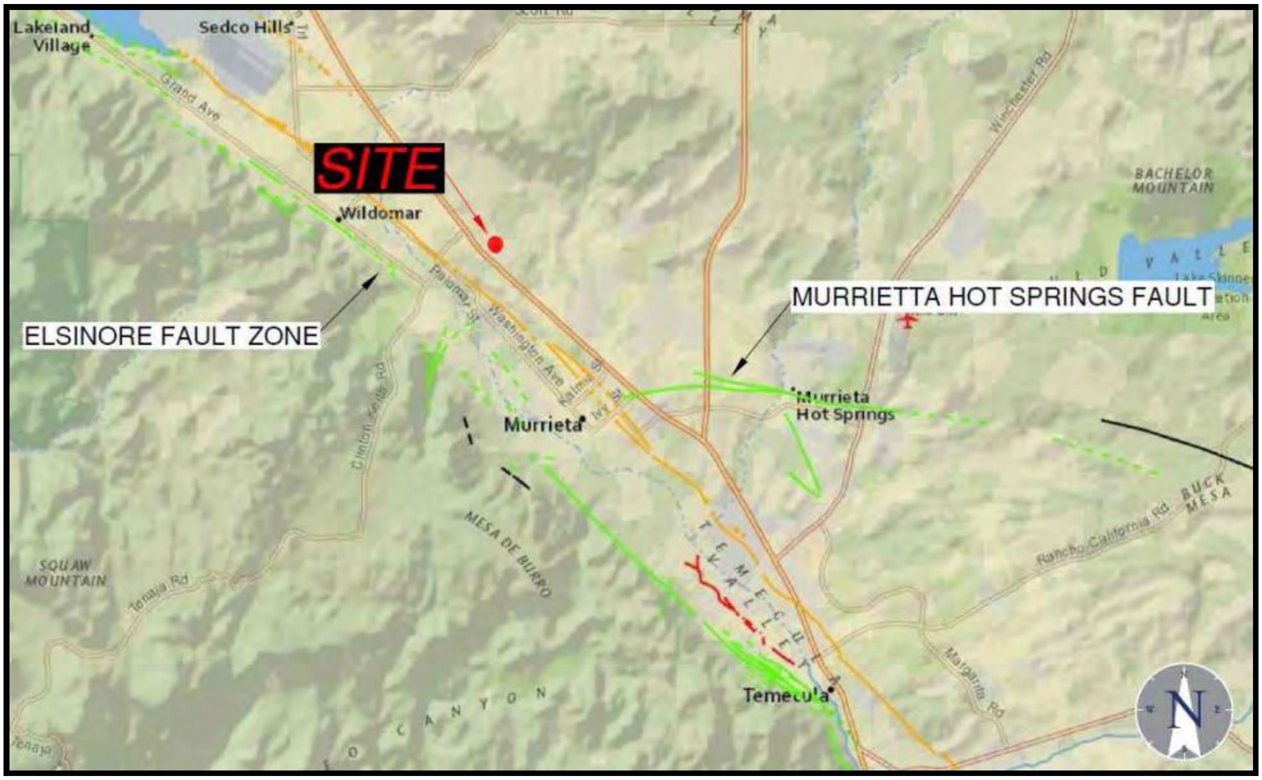

Figure 4-2. Fault Proximity Map
(source: *USGS Quaternary Fault Maps*, 2014)

4.1.4 Seismic Hazard Mapping

Seismic hazard mapping developed by the California Geological Survey indicates the site is not located in an area at risk for liquefaction in the event of a severe seismic event. This highly seismic area can expect ground surface accelerations ('a') on the order of ~ 0.85g during a Magnitude 7 earthquake. Liquefaction refers to the loss of soil strength and related subsidence that occurs when saturated (i.e., below the water table), predominately sandy soils are subject to earthquake shaking.

Figure 4-3 (following page) reproduces liquefaction hazard mapping of the general site area. Recognizing the identified hazard for liquefaction, Section 5 of this report provides detailed evaluation of this risk.

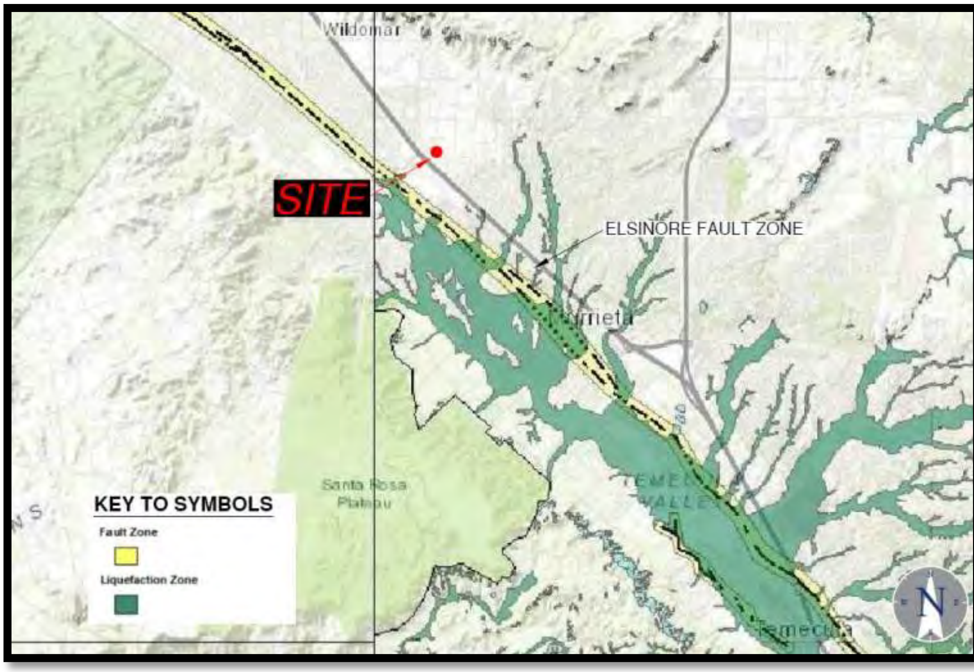

Figure 4-3. Liquefaction Hazard Mapping of the Site Area
(Source: *California Geological Survey AP Zone, Murrieta Quadrangle*, Jan. 11, 2018)

4.2 Site Conditions

4.2.1 Surface

As discussed in Section 2, the site is currently developed with a single-story structure and asphalt covered parking areas, and landscaping space. Review of aerial photography dating to 1938 indicates that the site has had minimal historical development. Development of the site occurred with relatively recent construction of the medical center.

The ground surface across the site is relatively level, descending from a high elevation of about +1,335 feet msl at the northeast corner of the site to about +1,322 feet msl at the southwest corner.

4.2.2 Subsurface

For the purposes of this report, the sequence of soils that underlie the site may be described as follows.

- Unit 1, Fill (Qaf). The upper approximately 1 foot to about 11 feet of the subsurface is silty and sandy fill. The CPT tip resistance (Qt_{ave}) is generally near at least 75 tsf over this interval with much of the material with at least 200-300 tsf. The materials characteristic of a relatively dense sands and stiff silts.
- Unit 2, Pauba Formation (Qpfs). Light to dark brown and reddish-brown siltstone and sandstone of the Pauba Formation was encountered below the overlying fill materials. $Qt_{ave} \sim$ 150 tsf over this interval. As encountered in NOVA's field exploration the unit was found to consist of very dense sands and very stiff silts/clays, with $qt_{ave} > 200$tsf.

Figure 4-4 (following page) provides a statistical summary of the tip resistance encountered by the CPT soundings.

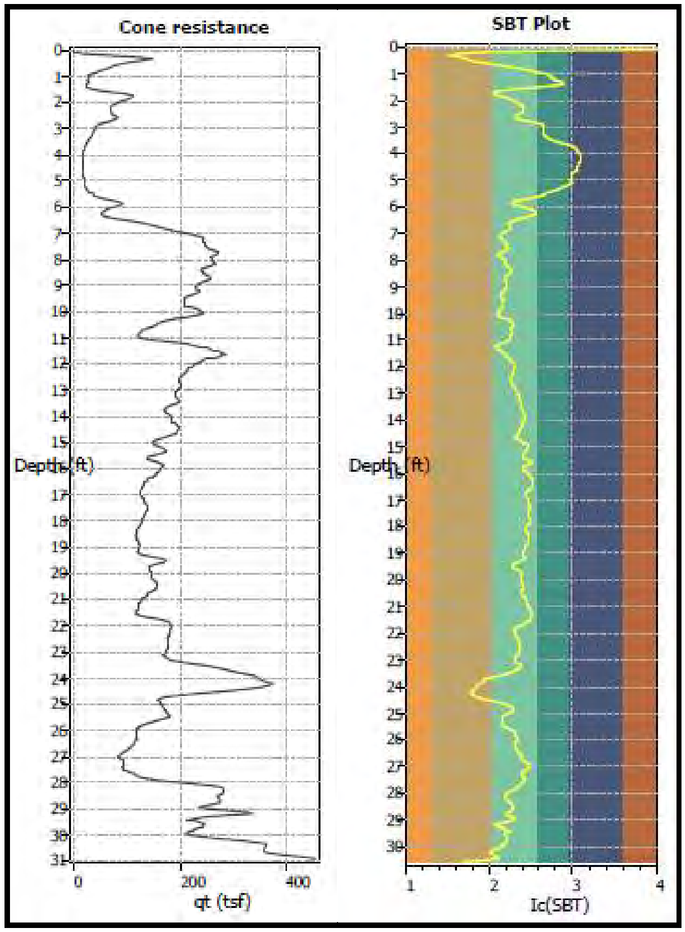

Figure 4-4. Numerical Average CPT Profile, CPT-3

4.2.3 Groundwater

Groundwater was encountered in engineering boring B-9 at a depth of approximately 47 feet bgs (elevation +1279 MSL) during NOVA's subsurface investigation.

NOVA has reviewed previous reporting and other available references (CDWR 2015). State Well Number 07S03W06E001S, is located about 1,100 feet of the site. Data for this well indicates that groundwater was at a depth of 16 feet bgs (1,274 feet MSL) measured on February 1, 1968. Data from previous reporting has indicated groundwater at elevations of about 1,298 feet MSL or deeper. Based on this review depth to historic groundwater is estimated to be at least 29 feet bgs.

4.2.4 Surface Water

No surface water was evident on the site at the time of NOVA's work. There was no evidence of springs, seeps, surface erosion, or staining that would indicate historic or current problems with surface water.

5.0 REVIEW OF GEOLOGIC, SOIL AND SITING HAZARDS

5.1 General

This section provides a review of soil, geologic and siting-related hazards common to this region of California, considering each for its potential to affect the planned facility. The primary hazards identified by this review are abstracted below.

1. Strong Ground Motion. The site is at risk for moderate-to-severe ground shaking in response to a large-magnitude earthquake during the lifetime of the planned development. The expectation of strong ground motion is common to all civil works in this area of California.

2. Liquefaction. Strong ground motion associated with a large magnitude earthquake will effect some liquefaction and related ground settlement. However, ground movements will be small- about 0.6 inches or less- and will not threaten the integrity of the planned structure.

The following subsections describe NOVA's review of soil and geologic hazards.

5.2 Geologic Hazards

5.2.1 Strong Ground Motion

The site is not located within a currently designated Alquist-Priolo Earthquake Zone (CGS, 2018). No known active faults are mapped on the site.

The nearest known active fault to the site is the Temecula section of the Elsinore Fault Zone, located approximately 0.6 miles to the southwest of the subject site at its closest point. This fault strand generally trend northwest. The Elsinore Fault system has the potential to be a source of strong ground motion, generating an earthquake of Richter magnitude (M) of about M = 6.8, with a risk-based peak ground acceleration (PGA_M) of PGA_M = 0.85g.

5.2.2 Fault Rupture

There are no known active faults mapped as crossing the subject property and the property is not located within an Alquist-Priolo earthquake fault zone. NOVA's site reconnaissance did not present any indications of active faulting. In consideration of these findings, NOVA does not consider the potential for onsite surface rupture from a seismic event a significant hazard.

5.2.3 Landslide

As used herein, 'landslide' describes downslope displacement of a mass of rock, soil, and/or debris by sliding, flowing, or falling. Such mass earth movements are greater than about 10 feet thick and larger than 300 feet across. Landslides typically include cohesive block glides and disrupted slumps that are formed by translation or rotation of the slope materials along one or more slip surfaces.

The causes of classic landslides start with a preexisting condition- characteristically a plane of weak soil or rock inherent within the rock or soil mass. Thereafter, movement may be precipitated by earthquakes, wet weather, and changes to the structure or loading conditions on a slope (e.g., by erosion, cutting, filling, release of water from broken pipes, etc.). The site is set in a relatively flat area, in a geologic unit not generally recognized to have potential for landslides. NOVA considers the landslide hazard to be 'low' for the site and the surrounding area in their current condition.

5.3 Soil Hazards

5.3.1 Liquefaction

General

"Liquefaction" refers to the loss of soil strength during a seismic event. The phenomenon is observed in geologically 'young' soils that include a shallow water table and coarse grained (i.e., 'sandy') soils of loose to medium dense consistency. Earthquake ground motions increase soil water pressures, decreasing grain-to-grain contact among the soil particles, causing the soil mass to lose strength. Liquefaction resistance increases with increasing soil density, plasticity (associated with clay-sized particles), geologic age, cementation, and stress history.

As is discussed in Section 4.1, the site is NOT mapped in an area that is identified by the State of California to be at risk for liquefaction.

Liquefaction Analyses

NOVA utilized the information obtained from the CPT soundings to complete quantitative analyses of liquefaction potential. The principal elements of these analyses are abstracted below.

- Seismic Event. Analyses utilized the ground surface acceleration (PGA_M) for the Maximum Considered Earthquake (MCE). As is discussed in Section 5.2, the expected ground surface acceleration associated with this event is PGA_M = 0.85g.

- Groundwater. As discussed in Section 3, groundwater was not encountered. Review of recent historic ground water levels in the site area indicates that groundwater may have been as high as 29 feet below existing ground within the general site area. Conservatively, liquefaction analyses were completed assuming groundwater at 12 feet depth bgs (i.e., at about +1,316 feet msl).

Records of NOVA's assessment of liquefaction potential are included in Appendix F.

Lateral Spreading

Lateral spreading is a phenomenon in which large blocks of intact, non-liquefied soil move downslope on a liquefied soil layer. Lateral spreading is often a regional event. For lateral spreading to occur, a liquefiable soil zone must be laterally continuous, unconstrained laterally, and free to move along sloping ground.

Settlement related to liquefaction will minimal. Based on the potential for liquefaction to occur the potential for lateral spreading is very low.

5.3.2 Expansive Soils

Expansive soils are characteristically clayey, able to undergo significant volume changes (shrinking or swelling) due to variations in soil moisture content (drying or wetting). These volume changes can be damaging to structures. Nationally, the value of property damage caused by expansive soils is exceeded only by that caused by termites.

In consideration of the largely sandy soils that comprise the subsurface at this site, as supported by the index testing provided in Section 3, the potential for problems associated with soil expansivity is low. Surface reconnaissance and the subsurface investigation did not reveal the presence of potentially expansive soils that could affect development. Based on visual observation and laboratory testing of a representative near surface sample, soils are not considered to be expansive.

5.3.3 Embankment Stability

As used herein, 'embankment stability' is intended to mean the safety of localized natural or man-made embankments against failure. Unlike landslides described above, embankment stability can include smaller scale slope failures such as erosion-related washouts and more subtle, less evident processes such as slope 'creep.'

No permanent slopes are planned as part of the proposed development. There is no risk of embankment instability for permanent construction. Section 7 provides guidance for management of the stability of temporary embankments and excavations during construction.

5.3.4 Collapsible Soils

Hydro-collapsible soils are common in the arid climates of the western United States in specific depositional environments (principally, in areas of young alluvial fans, debris flow sediments, and loess (wind-blown sediment)) deposits. These soils are characterized by low *in situ* density, low moisture contents and relatively high unwetted strength.

The soil grains of hydro-collapsible soils were initially deposited in a loose state (i.e., high initial 'void ratio') and thereafter lightly bonded by water sensitive binding agents (e.g., clay particles, low-grade cementation, etc.). While relatively strong in a dry state, the introduction of water into these soils causes the binding agents to fail. Destruction of the bonds/binding causes relatively rapid densification and volume loss (collapse) of the soil. This change is manifested at the ground surface as subsidence or settlement. Ground settlements from the wetting can be damaging to structures and civil works. Human activities that can facilitate soil collapse include: irrigation, water impoundment, changes to the natural drainage, disposal of wastewater, etc.

Based upon the indications of the CPT soundings, the site soils are not at risk for hydro-collapse.

5.3.5 Corrosive Soils

Chemical testing of the near surface soils indicates the soils contain low concentrations of soluble sulfates and chlorides. The tested soils will be corrosive to embedded metals, but not to embedded concrete. Section 6 addresses this consideration in more detail.

5.4 Siting Hazards

5.4.1 Effect on Adjacent Properties

The proposed project will not affect the structural integrity of adjacent properties or existing public improvements and public right-of-ways located adjacent to the site if the recommendations of this report are incorporated into project design.

5.4.2 Flood

The site is located within a flood zone designated as Flood "Zone X" (FEMA, Map 06065C2705G, effective 08/28/08). Zone X describes "*Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.*" Figure 5-3 reproduces flood mapping of the site area.

Figure 5-1. Flood Mapping of the Site Area
(source: FEMA, Map 06065C3305G, effective 08/28/2008)

6.0 EARTHWORK AND FOUNDATIONS

6.1 Overview

6.1.1 Review of Site Hazards

Section 5 provides a review of soil and geologic hazards common to development of civil works in the project area. The primary hazards identified by that review are abstracted below.

1. Strong Ground Motion. The site is at risk for moderate-to-severe ground shaking in response to a large-magnitude earthquake during the lifetime of the planned development. The expectation of strong ground motion is common to all civil works in this area of California. Section 6.2 addresses seismic design parameters

2. Liquefaction. Strong ground motion associated with a large magnitude earthquake will affect some liquefaction and related ground settlement. However, ground movements will be small- about 1 inch or less- and will not threaten the integrity of the planned structure. With this consideration, the site is suitable for development of the facility on shallow foundations. Section 6.5 addresses design parameters for shallow foundations.

6.1.2 Site Suitability

Based upon the indications of the field and laboratory data developed for this investigation, as well as review of previously developed subsurface information, it is the opinion of NOVA that the site is suitable for development of the planned structure on shallow foundations, provided the geotechnical recommendations described herein are followed.

6.1.3 Review and Surveillance

The subsections following provide geotechnical recommendations for the planned development as it is now understood. It is intended that these recommendations provide sufficient geotechnical information to develop the project in general accordance with 2016 California Building Code (CBC) requirements.

NOVA should be given the opportunity to review the grading plan, foundation plan, and geotechnical-related specifications as they become available to confirm that the recommendations presented in this report have been incorporated into the plans prepared for the project.

All earthwork related to site and foundation preparation should be completed under the observation of NOVA.

6.2 Seismic Design Parameters

6.2.1 Site Class

From site-specific test boring data, the Site Class was determined from ASCE 7-16, Table 20.3-1. The site-specific data used to determine the Site Class typically includes borings drilled to 100 feet or a seismic refraction study to determine shear wave velocities (Vs30 or V_{100}) for the upper 100 feet of the subsurface. A shear wave analysis was performed on the site by a California Professional Geophysicist, with the calculated velocity for the underlying 100 feet of soils (V_{100}) to be 1462.3 feet/sec, classifying this site as Site Class C.

6.2.2 Seismic Design Parameters

Table 6-1 provides seismic design parameters for the site in accordance after ASCE 7-16 utilizing resource provided by the USGS and SEAOC for this determination (found at: https://seismicmaps.org/).

Table 6-1. Seismic Design Parameters
Site Class C, Risk Category IV after ASCE 7-16 and 2019 CBC

Parameter	Symbol	Value
Site Latitude (decimal degrees)	---	33.592°N
Site Longitude (decimal degrees)	---	-117.238°W
Site Coefficient	F_a	1.2
Site Coefficient	F_v	1.4
Mapped Spectral Acceleration Value, Period = 0.2 sec	S_S	1.619g
Mapped Spectral Acceleration Value, Period = 1.0 sec	S_1	0.605g
Short Period Spectral Acceleration Adjusted for Site Class, Period = 0.2 sec	S_{MS}	1.943g
Spectral Acceleration Adjusted for Site Class, Period = 1.0 (sec)	S_{M1}	0.847g
Design Spectral Response Acceleration Occupancy Category IV per 2016 CBC Table 1604A.5 Period = 0.2 (sec)	S_{DS}	1.295g
Design Spectral Response Acceleration Occupancy Category IV per 2016 CBC Table 1604A.5 Period = 1.0 (sec)	S_{D1}	0.565g
Peak Ground Acceleration Adjusted for Site Class Effects	PGA_M	0.852g

6.3 Corrosivity and Sulfates

6.3.1 Corrosivity

Electrical resistivity, chloride content, sulfate contents and pH level are all indicators of a soil's tendency to corrode/attack metals and concrete. Chemical testing was performed on representative samples of soils from the site. The results of the testing are tabulated on Table 6-2.

Table 6-2. Summary of Corrosivity Testing of the Unit 1 Soil

Parameter	Units	Boring B-1, 0-5	Boring B-5, 0-5'	Boring B-9, 1-5'
pH	standard unit	7.1	7.9	N/A
Resistivity	Ohm-cm	860	1800	N/A
Water Soluble	ppm	130	21	27
Water Soluble Sulfate	ppm	87	30	N/A

6.3.2 Metals

Caltrans considers a site to be corrosive if one or more of the following conditions exist for representative soil and/or water samples:

- chloride concentration is 500 parts per million (ppm) or greater;

- sulfate concentration is 2,000 ppm (0.2%) or greater; or,
- the pH is 5.5 or less.

Based on the Caltrans criteria, the on-site soils would not be considered corrosive to buried metals. Records of this testing are provided in Appendix D. These records include estimates of the life expectancy of buried metal culverts of varying gauge.

In addition to the above parameters, the risk of soil corrosivity buried metals is considered by determination of electrical resistivity (ρ). Soil resistivity may be used to express the corrosivity of soil only in unsaturated soils. Corrosion of buried metal is an electrochemical process in which the amount of metal loss due to corrosion is directly proportional to the flow of DC electrical current from the metal into the soil. As the resistivity of the soil decreases, the corrosivity generally increases. A common qualitative correlation (cited in Romanoff 1989, NACE 2007) between soil resistivity and corrosivity to ferrous metals is tabulated below.

Table 6-3. Soil Resistivity and Corrosion Potential

Minimum Soil Resistivity (Ω-cm)	**Qualitative Corrosion Potential**
0 to 2,000	Severe
2,000 to 10,000	Moderate
10,000 to 30,000	Mild
Over 30,000	Not Likely

The resistivity testing summarized on Table 6-2 suggests that design should consider that the soils may be corrosive to embedded metals. Typical recommendations for mitigation of such corrosion potential in embedded ferrous metals include:

- a high quality protective coating such as an 18 mil plastic tape, extruded polyethylene, coal tar enamel, or Portland cement mortar;

- electrical isolation from above grade ferrous metals and other dissimilar metals by means of dielectric fittings in utilities and exposed metal structures breaking grade; and,

- steel and wire reinforcement within concrete having contact with the site soils should have at least 2 inches of concrete cover.

If extremely sensitive ferrous metals are expected be placed in contact with the site soils, it may be desirable to consult a corrosion specialist regarding choosing the construction materials and/or protection design for the objects of concern

6.3.3 Sulfate Attack

As shown on Table 6-2, the soil sample tested indicated water-soluble sulfate (SO_4) content of the soils than 0.01 percent by weight. With $SO_4 < 0.10$ percent by weight, the American Concrete Institute (ACI) publication ACI 318-08 considers a soil to have no potential (S0) for sulfate attack. Table 6-4 reproduces the sulfate Exposure Categories considered by ACI.

Table 6-4. Exposure Categories and Requirements for Water-Soluble Sulfates

Exposure Category	Class	Water-Soluble Sulfate (SO_4) In Soil (percent by weight)	Cement Type (ASTM C150)	Max Water-Cement Ratio	Min. f'_c (psi)
Not Applicable	S0	$SO_4 < 0.10$	-	-	-
Moderate	S1	$0.10 \leq SO_4 < 0.20$	II	0.50	4,000
Severe	S2	$0.20 \leq SO_4 \leq 2.00$	V	0.45	4,500
Very severe	S3	$SO_4 > 2.0$	V + pozzolan	0.45	4,500

Adapted from: ACI 318-08, Building Code Requirements for Structural Concrete

6.3.4 Limitations

Testing to determine several chemical parameters that indicate a potential for soils to be corrosive to construction materials are traditionally completed by the Geotechnical Engineer, comparing testing results with a variety of indices regarding corrosion potential.

Like most geotechnical consultants, NOVA does not practice in the field of corrosion protection, since this is not specifically a geotechnical issue. Should more information be required, a specialty corrosion consultant should be retained to address these issues.

6.4 Earthwork

6.4.1 General

Earthwork should be performed in accordance with Section 300 of the most recent approved edition of the "*Standard Specifications for Public Works Construction*" and "*Regional Supplement Amendments*."

6.4.2 Select Fill

Materials

Any engineered fill should be 'Select'; i.e., soil with at least 40 percent of the material less than ¼-inches in size, a maximum particle size of 1 inch, with an expansion index ('EI', after ASTM D4829) of EI < 20. Select Fill should not include fibrous organic, perishable, spongy, deleterious, environmentally affected, or otherwise unsuitable material.

The sandy Unit 1 soils will be suitable for use as Select Fill. If a detention pond is developed on site, this feature may be a good source of Select Fill.

Placement

All engineered fill should be compacted to a minimum of 90% relative compaction after ASTM D1557 (the 'modified Proctor') following moisture conditioning to at least 2% above the optimum moisture content.

Fill should be placed in loose lifts no thicker than the ability of the compaction equipment to thoroughly densify the lift. For most construction equipment, this limit loose lifts to on the order of 10-inches or less. Fill placed in relatively constrained areas (for example, utility trenches or backfill around manholes) demanding the use of hand-operated equipment will require loose lifts on the order of 4 inches or less.

Fill should be densified with task-specific equipment. Densification of the characteristically sandy fill at this site will require the use of vibratory equipment to achieve adequate densification.

6.4.3 Site Preparation and Remedial Grading

Any abandoned utilities should be removed and properly disposed off-site before the start of excavation operations. The area planned for structures and pavements should be cleared of vegetative material, including the root zone. Thereafter, remedial grading to improve and proof the quality of the Unit 1 fill should be undertaken in the step-wise manner described below.

1. Step 1, Excavation/Densification. For the proposed tower structure, the upper 5 feet of the Unit 1/Unit 2 soil or 3 feet below deepest planned foundation element, whichever is greater, should be removed within the limits of planned tower structure should be excavated and staged for later replacement. Laterally, removals should extend outward at least 5 feet for of the tower structure footprint.

   Remedial grading for the CUP area building should consist of removing the existing fill to contact with competent Pauba Formation extending outward at least 3 feet of the proposed structure. Removed soils may be reused as structural fill and compacted to at least 90 percent relative compaction.

   Based on review of the historic aerial photographs (Figure 2-2), a water basin was located within close proximity of the proposed CUP structure. Foundations or grading based on this historic use may require deepened removals and excavation within the southern portion of this area.

   Removals for areas receiving pavements should extend to at least 2 feet below existing or proposed grade, whichever is deeper. Laterally, removals should extend outward at least 2 feet for pavements and flatwork.

   The exposed ground surface disturbed by excavations should be densified to at 90% relative compaction after ASTM D1557 (the 'modified Proctor') following moisture conditioning to 2% above the optimum moisture content.

2. Step 2, Proof-Rolling. After the completion of compaction/densification of the excavated surface, the area should be proof-rolled. A loaded dump truck or similar should be used to aid in identifying localized soft or unsuitable material. Any soft or unsuitable materials encountered during this proof-rolling should be removed, replaced with an approved backfill, and compacted.

3. Step 3, Replacement. The soil excavated by Step 2 should be replaced in conformance with the criteria identified in Section 6.4.2 and Section 6.4.3.

6.4.4 New Fill

New fill to establish site grades should be placed in conformance with the criteria identified in Section 6.4.2 and Section 6.4.3.

Shallow foundations should be constructed as soon as possible following subgrade approval. The Contractor should be responsible for maintaining the subgrade in its approved condition (i.e., at the compacted moisture content, frees of disturbance, etc.) until foundations are constructed.

6.4.5 Trenching and Backfilling for Utilities

Excavation for utility trenches must be performed in conformance with OSHA regulations contained in 29 CFR Part 1926.

Utility trench excavations have the potential to degrade the properties of the adjacent soils. Utility trench walls that are allowed to move laterally will reduce the bearing capacity and increase settlement of adjacent footings and overlying slabs.

Backfill for utility trenches is as important as the original subgrade preparation or engineered fill placed to support either a foundation or slab. Backfill for utility trenches must be placed to meet the project specifications for the engineered fill of this project. Unless otherwise specified, the backfill for the utility trenches should be placed in 4 to 6-inch loose lifts and compacted to a minimum of 90 percent relative compaction after ASTM D1557 (the 'modified Proctor') at soil moisture +2 percent of the optimum moisture content. Up to 4 inches of bedding material placed directly under the pipes or conduits placed in the utility trench can be compacted to 90 percent relative compaction with respect to the Modified Proctor.

6.4.6 Flatwork

Prior to casting exterior flatwork, the upper one foot of subgrade soils- either Unit 1 sands or Select Fill- should be moisture conditioned densified as recommended in Section 6.4.2. Concrete slabs for pedestrian traffic or landscaping should be at least four (4) inches thick.

6.5 Shallow Foundations

6.5.1 Isolated and Continuous Foundations

Unit 1 fill improved as described in Section 6.4 and any new fill placed as described in Section 6.4 may be used to support isolated and continuous footings, as described below. Additionally, foundations may be founded and deepened into competent Unit 2 Pauba Formation. All foundations should be founded entirely in uniform bearing strata consisting entirely of fill or Pauba Formation.

Isolated Foundations
Isolated foundations for interior columns may be designed for an allowable contact stress of 3,000 psf for dead and commonly applied live loads (DL+LL). This bearing values may be increased by one-third for transient loads such as wind and seismic. These foundation units for the tower should have a minimum width of 30 inches, embedded a minimum of 24 inches below surrounding grade.

Continuous Foundations
Continuous foundations may be designed for an allowable contact stress of 2,500 psf for dead and commonly applied live loads (DL+LL). This bearing value may be increased by one-third for transient loads such as wind and seismic.

Continous footings for the tower structure must be a minimum of 18 inches in width and embedded a minimum of 24 inches below surrounding grade. Foundations for the CUP area structure should have a minimum width of 15 inches, embedded a minimum of 18 inches below surrounding grade and be founded at least 6-inches into competent Pauba Formation.

Retaining Walls and Ancillary Structures

Bearing values for these structures may be designed for an allowable contact stress of 2,5000 psf for dead and commonly applied live loads (DL+LL). Continuous foundations for retaining walls and ancillary structures should have a minimum width of 15 inches, embedded a minimum of 18 inches below surrounding grade. Isolated foundations for ancillary structures should be a minimum with of 24 inches embedded at least 24 inches below surrounding grade.

Resistance to Lateral Loads
Lateral loads to shallow foundations may be resisted by passive earth pressure against the face of the footing, calculated as a fluid density of 200 psf per foot of depth, neglecting the upper 1 foot of soil below surrounding grade in this calculation. Additionally, a coefficient of friction of 0.30 between soil and the concrete base of the footing may be used with dead loads.

Settlement
Supported as recommended above, the structure will settle on the order of 0.5 inch. This movement will occur elastically, as dead load (DL) and permanent live loads (LL) are applied. In usual circumstance, about 50% of this settlement will occur during the construction period. Angular distortion due to differential settlement of adjacent, unevenly loaded footings should be less than 1 inch in 40 feet (i.e., Δ/L less than 1:480).

6.5.2 Ground Supported Slabs

The ground level of the planned facility may employ a conventional on-grade (ground-supported) slab designed using a modulus of subgrade reaction (k) of 150 pounds per cubic inch (i.e., k = 150 pci).

The actual slab thickness and reinforcement should be designed by the Structural Engineer. NOVA recommends the slab be a minimum 5 inches thick, reinforced by at least #4 bars placed at 16 inches on center each way within the middle third of the slabs by supporting the steel on chairs or concrete blocks ("dobies").

Minor cracking of concrete after curing due to drying and shrinkage is normal. Cracking is aggravated by a variety of factors, including high water/cement ratio, high concrete temperature at the time of placement, small nominal aggregate size, and rapid moisture loss due during curing. The use of low-slump concrete or low water/cement ratios can reduce the potential for shrinkage cracking.

To reduce the potential for excessive cracking, concrete slabs-on-grade should be provided with construction or ‘weakened plane’ joints at frequent intervals. Joints should be laid out to form approximately square panels and never exceeding a length to width ratio of 1.5 to 1. Proper joint spacing and depth are essential to effective control of random cracking. Joints are commonly spaced at distances equal to 24 to 30 times the slab thickness. Joint spacing that is greater than 15 feet should include the use of load transfer devices (dowels or diamond plates). Contraction/ control joints must be established to a depth of ¼ the slab thickness as depicted in Figure 6-1.

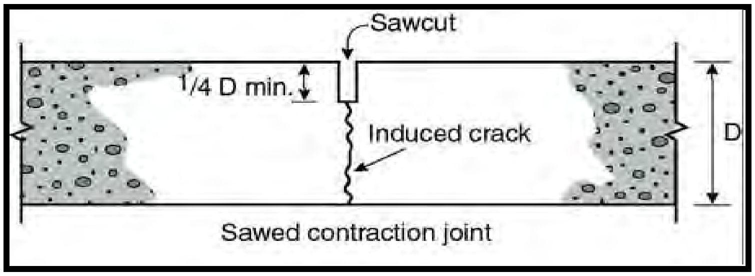

Figure 6-1. Sawed Contraction Joint

6.6 Capillary Break and Underslab Vapor Retarder

6.6.1 Capillary Break

The requirements for a capillary break ('sand layer') beneath the ground supported slab should be determined in accordance with ACI Publication 302 "*Guide for Concrete Floor and Slab Construction*."

A capillary break may consist of a 4-inch thick layer of compacted, well-graded sand should be placed below the floor slab. This porous fill should be clean coarse sand or sound, durable gravel with not more than 5 percent coarser than the 1-inch sieve or more than 10 percent finer than the No. 4 sieve, such as AASHTO Coarse Aggregate No. 57.

6.6.2 Vapor Retarder

Responsibility

Soil moisture vapor that penetrates ground-supported concrete slabs can result in damage to moisture-sensitive floors, some floor sealers, or sensitive equipment in direct contact with the floor. It is not the responsibility of the geotechnical consultant to provide recommendations for vapor retarders to address this concern. This responsibility usually falls to the Architect. Decisions regarding the appropriate vapor retarder are principally driven by the nature of the building space above the slab, floor coverings, anticipated penetrations, concerns for mold or soil gas, and a variety of other environmental, aesthetic and materials factors known only to the Architect.

Products

A variety of specialty polyethylene (polyolefin)-based vapor retarding products are available to retard moisture transmission into and through concrete slabs. This remainder of this section provides an overview of design and installation guidance, and considers the use of vapor retarders in the building construction in the San Diego area.

Detail to support selection of vapor retarders and to address the issue of moisture transmission into and through concrete slabs is provided in a variety of publications by the American Society for Testing and Materials (ASTM) and the American Concrete Institute (ACI). A partial listing of those publications is provided below.

- ASTM E1745-97 (2009). *Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs.*

- ASTM E154-88 (2005). *Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover.*

- ASTM E96-95 (2005). *Standard Test Methods for Water Vapor Transmission of Materials.*

- ASTM E1643-98 (2009). *Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs.*

- ACI 302.2R-06. *Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials.*

Vapor retarders employed for ground supported slabs are commonly specified as minimum 15 mil polyolefin plastic that conforms to the requirements of ASTM E1745 as a Class A vapor retarder (i.e., a maximum vapor permeance of 0.1 perms, minimum 45 lb/in tensile strength and 2,200 grams puncture resistance). Among the commercial products that meet this requirement are the series of Yellow Guard® vapor retarders vended by Poly-America, L.P.; the Perminator® products by W. R. Meadows; and, Stego®Wrap products by Stego Industries, LLC. The person responsible for design of the vapor barrier should consult with product vendors to ensure selection of the vapor retarder that best meets the project requirements. For example, concrete slabs with particularly sensitive floor coverings may require lower permeance or other performance-related factors are specified by the ASTM E1745 class rating.

The performance of vapor retarders is particularly sensitive to the quality of installation. Installation should be performed in accordance with the vendor's recommendations under full-time surveillance.

6.7 Control of Moisture Around Foundations

6.7.1 Erosion and Moisture Control During Construction

Surface water should be controlled during construction, via berms, gravel/sandbags, silt fences, straw wattles, siltation basins, positive surface grades, or other methods to avoid damage to the finish work or adjoining properties. The Contractor should take measures to prevent erosion of graded areas until such time as permanent drainage and erosion control measures have been installed. After grading, all excavated surfaces should exhibit positive drainage and eliminate areas where water might pond.

6.7.2 Design

Design for the structure should include care to control accumulations of moisture around and below the garage. Such design will require coordination from among the Design Team; at a minimum to include the Architect, the Civil Engineer, and the Landscape Architect.

Design for the areas around foundations should be undertaken with a view to the maintenance of an environment that encourages drainage away from below grade walls. Roof and surface drainage, landscaping, and utility connections should be designed to limit the potential for mounding of water near subterranean walls. In particular, rainfall to roofs should be collected in gutters and discharged away from foundations.

Proper surface drainage will be required to minimize the potential of water seeking the level of the garage walls and pavements. In areas where sidewalks or paving do not immediately adjoin the structure, protective slopes should be provided with a minimum grade (away from the structure) of approximately 3 percent for at least 5 feet. A minimum gradient of 1 percent is recommended in hardscape areas.

6.8 Retaining Walls

6.8.1 Lateral Pressures

Lateral earth pressures for retaining walls are related to the type of backfill, drainage conditions, slope of the backfill surface, and the allowable rotation of the wall. Table 6-5 provides recommendations for lateral soil for retaining walls with level backfill for varying conditions of wall yield.

Table 6-5. Lateral Earth Pressures to Retaining Walls

Condition	Equivalent Fluid Pressure (psf/foot) for Approved Backfill Notes A, B	
	Level Backfill	2:1 Backfill Sloping Upwards
Active	35	55
At Rest	55	80
Passive	250	300

Note A: site-sourced Unit 1 sands or similar imported soil.
Note B: assumes wall includes appropriate drainage and no hydrostatic pressure.

If footings or other surcharge loads are located a short distance outside the wall, these influences should be added to the lateral stress considered in the design of the wall. Surcharge loading should consider wall loads that may develop from adjacent streets and sidewalks. To account for such potential loads, a surcharge pressure of 75 psf can be applied uniformly over the wall to a depth of about 12 feet.

6.8.2 Seismic Increment

The seismic load increment should be calculated as a uniform 22H psf (with H the height of the wall in feet).

6.8.3 Drainage

Design for retaining walls should include drainage to limit accumulation of water behind the wall. Figure 6-3 provides guidance for such design. Note that the guidance provided on Figure 6-3 is conceptual. A variety of options are available to drain permanent below grade walls.

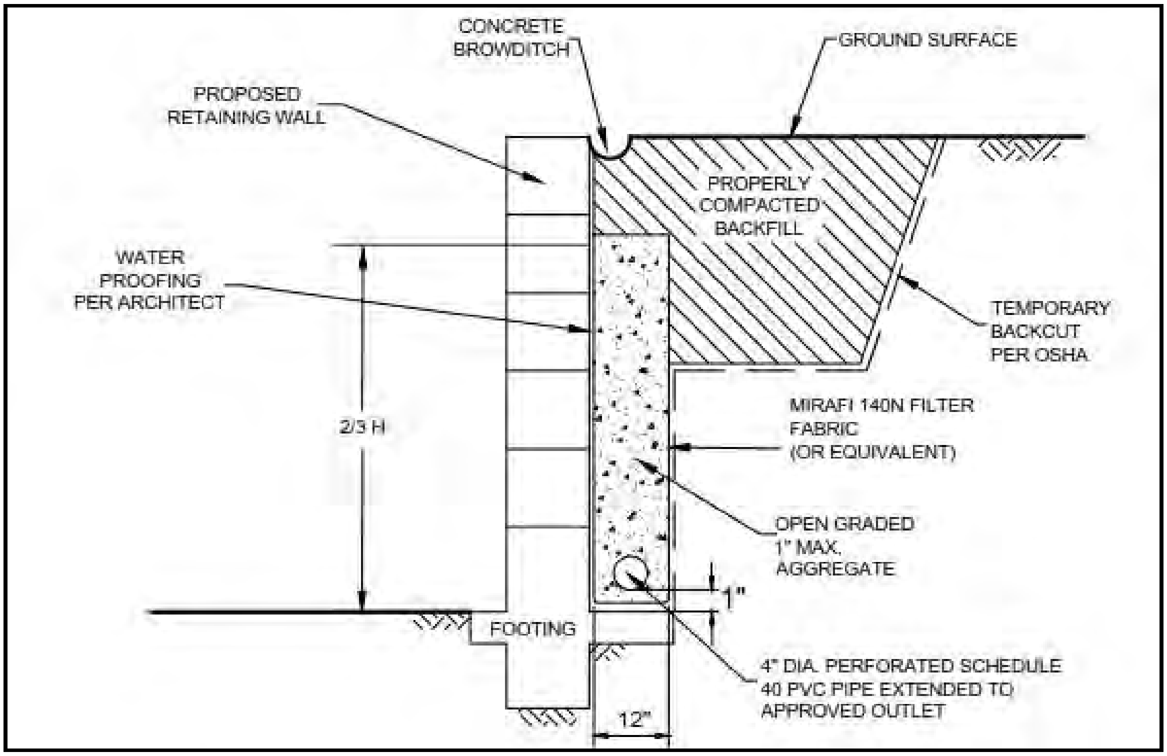

Figure 6-2. Conceptual Design for Retaining Wall Drainage

6.8.4 Elevator Pits

Elevators will likely be included within the projects final design. Elevators may require pits that extend below the lowest slab level. An elevator pit slab and related retaining wall footings will derive suitable support from the Unit 2 sandstones around it. Design for the elevator pit walls should consider the circumstances and conditions described below.

1. Wall Yield. NOVA expects that proper function of the elevator pit should not allow yielding of the elevator pit walls. As such, walls should be designed to resist 'at rest' lateral soil pressures and seismic pressures provided above, also allowing for any structural surcharge.

2. Construction. Design of the elevator pit walls should include consideration for surcharge conditions that will occur during and after construction.

6.9 Temporary Slopes

Any temporary slopes should be made in conformance with OSHA requirements. All temporary excavations should comply with local safety ordinances, as well all Occupational Safety and Health Administration (OSHA) requirements, as applied to California. These requirements may be found at http://www.dir.ca.gov/title8/sb4a6.html.

7.0 STORMWATER INFILTRATION

7.1 Overview

Based upon the indications of the field exploration and laboratory testing reported herein, NOVA has evaluated the site as abstracted below after guidance contained in *Riverside County, Santa Margarita River Watershed Region Design Handbook for Low Impact Development, Best Management Practices*, Riverside County Flood Control and Water Conservation District, Revised June 2018 (hereafter, 'the BMP Manual').

Appendix A provides a description of the fieldwork undertaken to complete the testing. Figure 3-1 depicts the location of the testing. This section provides the results of that testing and related recommendations for management of stormwater in conformance with the BMP Manual.

As is well-established in the BMP Manual, the feasibility of stormwater infiltration is principally dependent on geotechnical and hydrogeologic conditions at the project site. In consideration of the measured infiltration rates at this site, NOVA concludes that the site is not feasible for development of permanent stormwater infiltration BMPs.

This section provides NOVA's assessment of the feasibility of stormwater infiltration BMPs utilizing the information developed by the field exploration described in Section 3.4, as well as other elements of the site assessment.

7.2 Infiltration Rates

7.2.1 General

The percolation rate of a soil profile is not the same as its infiltration rate ('I'). Therefore, the measured/calculated field percolation rate (see Table 3-3) was converted to an estimated infiltration rate utilizing the Porchet Method in accordance with guidance contained in the BMP Manual. Table 7-1 provides a summary of the infiltration rates determined by the percolation testing.

Table 7-1. Infiltration Rates Determined by Percolation Testing

Boring	Approximate Ground Elevation (feet, msl)	Depth of Test (feet)	Approximate Test Elevation (feet, msl)	Infiltration Rate (inches/hour)	Design Infiltration Rate (in/hour, F=3*)
P-1	± 1325	15.0	± 1310	0.08	0.03
P-2	± 1327	10.5	± 1316.5	0.02	0.01
P-3	± 1327	10.0	± 1317	0.01	0.00
P-4	± 1322	10.5	± 1311.5	0.03	0.01
P-5	± 1324	9.0	± 1315	0.02	0.01

Notes: (1) 'F' indicates 'Factor of Safety' (2) elevations are approximate and should be reviewed

7.2.2 Design Infiltration Rate

As may be seen by review of Table 7-1, in consideration of the nature and variability of subsurface materials, as well as the natural tendency of infiltration structures to become less efficient with time, the infiltration rates measured in the testing should be modified to use at least a factor of safety (F) of F=3 for preliminary design purposes.

The preliminary design basis infiltration rates are 0.03, 0.01, 0.00, 0.01 and 0.01 inches per hour for P-1 through P-5 respectively, using a preliminary F = 3, as is indicated in Table 7-1.

7.3 Review of Geotechnical Feasibility Criteria

7.3.1 Overview

It is common that seven factors be considered by the project geotechnical professional while assessing the feasibility of infiltration related to geotechnical conditions. These factors are:

1) Soil and Geologic Conditions
2) Settlement and Volume Change
3) Slope Stability
4) Utility Considerations
5) Groundwater Mounding
6) Retaining Walls and Foundations
7) Other Factors

The above geotechnical feasibility criteria are reviewed in the following subsections.

7.3.2 Soil and Conditions

The soil borings, CPT soundings and percolation tests borings completed for this assessment disclose the sequence of soil units described below.

- Unit 1, Fill (Qaf). The upper approximately 1 foot to about 11 feet of the subsurface is silty and sandy fill. The CPT tip resistance (Qt_{ave}) is generally near at least 75 tsf over this interval with much of the material with at least 200-300 tsf. The materials characteristic of a relatively dense sands and stiff silts.
- Unit 2, Pauba Formation (Qpfs). Light to dark brown and reddish-brown siltstone and sandstone of the Pauba Formation was encountered below the overlying fill materials. $Qt_{ave} \sim$ 150 tsf over this interval. The base of this layer is characterized by the occurrence of very dense sands and very stiff silts/clays, with $qt_{ave} > 200$tsf.

7.3.3 Settlement and Volume Change

The sandy Unit 1 soils have very low expansion potential. These soils will not be prone to swelling upon wetting. These soils will not be prone to hydro-collapse on wetting.

7.3.4 Slope Stability

BMPs will not be located near slopes. There are no material slopes on site, nor are any planned.

7.3.5 Utilities

Infiltration can potentially damage subsurface and underground utilities. BMPs should be sited a minimum of 10 feet away from underground utilities.

7.3.6 Groundwater Mounding

Stormwater infiltration can result in groundwater mounding during wet periods, affecting utilities, pavements, flat work, and foundations.

7.3.7 Retaining Walls and Foundations

BMPs should not be located near foundations. BMPs should be sited a minimum of 25 feet away from any foundations or retaining walls.

7.4 Suitability of the Site for Stormwater Infiltration

It is NOVA's judgment that the site is not suitable for development of stormwater infiltration BMP's. This judgment is based upon consideration of the variety of factors detailed above, most significantly (i) the low design infiltration rate (I) of I = 0.00 to 0.03 – inches per hour and related potential for groundwater mounding, and (ii) the limited space to achieve the minimum setbacks of stormwater infiltration BMP's from foundations, retaining walls, slopes and underground utilities.

Appendix E provides completed forms related to stormwater infiltration.

8.0 PAVEMENTS

8.1 Overview

8.1.1 General

The structural design of pavement sections depends primarily on anticipated traffic conditions, subgrade soils, and construction materials. For the purposes of the preliminary evaluation provided in this section, NOVA has assumed a Traffic Index (TI) of 5.0 for passenger car parking, and 6.0 for the driveways. These traffic indices should be confirmed by the project civil engineer prior to final design.

8.1.2 Design to Limit Infiltration

The surface grades of pavements and related design features to limit infiltration should conform with the concepts discussed in Section 6.

An important consideration in the design and construction of pavements is surface and subsurface drainage. Where standing water develops, either on the pavement surface or within the base course, softening of the subgrade and other problems related to the deterioration of the pavement can be expected. Furthermore, good drainage should minimize the risk of the subgrade materials becoming saturated over a long period of time. The following recommendations should be considered to limit the amount of excess moisture, which can reach the subgrade soils:

- site grading at a minimum 2% grade away from the pavements;
- compaction of any utility trenches for landscaped areas to the same criteria as the pavement subgrade;
- sealing all landscaped areas in or adjacent to pavements to minimize or prevent moisture migration to subgrade soils near pavements; and,
- concrete curbs bordering landscaped areas should have a deepened edge to provide a cutoff for moisture flow beneath pavements (generally, the edge of the curb can be extended an additional twelve inches below the base of the curb).

8.1.3 Maintenance

Preventative maintenance should be planned and provided for. Preventative maintenance activities are intended to slow the rate of pavement deterioration and to preserve the pavement investment. Preventative maintenance consists of both localized maintenance (e.g. crack sealing and patching) and global maintenance (e.g. surface sealing). Preventative maintenance is usually the first priority when implementing a planned pavement maintenance program and provides the highest return on investment for pavements.

8.1.4 Review and Surveillance

The Geotechnical Engineer-of-Record should review the planning and design for pavement to confirm that the recommendations presented in this report have been incorporated into the plans prepared for the project. The preparation of subgrades for roadways should be observed on a full-time basis by a representative of the Geotechnical Engineer-of-Record.

8.2 Subgrade Preparation

8.2.1 Control of Moisture

Moisture must be controlled around and beneath pavements. Moreover, where standing water develops either on the pavement surface or within the base course, softening of the subgrade and other problems related to the deterioration of the pavement can be expected. Furthermore, good drainage should minimize the risk of the subgrade materials becoming saturated and weakened over a long period of time.

The following recommendations should be considered to limit the amount of excess moisture which can reach the subgrade soils:

- maintain surface gradients at a minimum 2% grade away from the pavements;
- compact utility trenches for landscaped areas to the same criteria as the pavement subgrade;
- seal all landscaped areas in or adjacent to pavements to minimize or prevent moisture migration to subgrade soils;
- planters should not be located next to pavements (otherwise, subdrains should be used to drain the planter to appropriate outlets);
- place compacted backfill against the exterior side of curbs and gutters; and
- concrete curbs bordering landscaped areas should have a deepened edge to provide a cutoff for moisture flow beneath pavements (generally, the edge of the curb can be extended an additional twelve inches below the base of the curb).

8.2.2 Planning for Preventive Maintenance

Preventative maintenance should be planned and provided for. Preventative maintenance activities are intended to slow the rate of pavement deterioration and to preserve the pavement investment. Preventative maintenance consists of both localized maintenance (e.g. crack sealing and patching) and global maintenance (e.g. surface sealing). Preventative maintenance is usually the first priority when implementing a planned pavement maintenance program and provides the highest return on investment for pavements.

8.2.3 Rough Grading

Grading for paved areas should be as described in Section 6.4, densifying pavement subgrade to at least 95% relative compaction after ASTM D 1557 (the ‘modified Proctor’).

After the completion of compaction/densification, areas to receive pavements should be proof-rolled. A loaded dump truck or similar should be used to aid in identifying localized soft or unsuitable material. Any soft or unsuitable materials encountered during this proof-rolling should be removed, replaced with an approved backfill, and compacted. The Geotechnical Engineer can provide alternative options such as using geogrid and/or geotextile to stabilize the subgrade at the time of construction, if necessary.

Construction should be managed such that preparation of the subgrade immediately precedes placement of the base course. Proper drainage of the paved areas should be provided to reduce moisture infiltration to the subgrade.

The preparation of roadway and parking area subgrades should be observed on a full-time basis by a representative of NOVA to confirm that any unsuitable materials have been removed and that the subgrade is suitable for support of the proposed driveways and parking areas.

8.3 Flexible Pavements

Previous R-Value testing was performed at the site as referenced within both Twining 2008a and Twining 2008b. The results of this testing are summarized in Table 8-1 below. Additional R-value testing should be performed on actual soils during grading at the design subgrade levels to confirm the pavement design.

Table 8-1. R-Value Test Results

Ref:	Test Location	R-Value
Leighton 1998	Boring B-2 @ 2' – 5'	34
Twining 2008a	Boring B-1 @ 0'-5'	22
	Boring B-4 @ 0'-5'	5
	Boring B-5 @ 5'-10'	22
	Boring B-6 @ 2.5'–7'	8
Twining 2008b	Stockpile	26

Provided the subgrade in paved areas is prepared per the recommendations in Section 8.2, and based on the locations and results of previous testing NOVA recommends that an R-value of 5 can be assumed. Table 8-2 provides recommended sections for flexible pavements. The recommended pavement sections are for planning purposes only.

Table 8-2. Preliminary Recommendations for Flexible Pavements

Area	Assumed Subgrade R-Value	Traffic Index	Asphalt Thickness (in)	Base Course Thickness (in)
Auto Driveways/Parking	5	5.0	4.0	7.5
Roadways	5	6.0	4.0	11.5

The above sections assume properly prepared subgrade consisting of at least 12 inches of select soil compacted to a minimum of 95% relative compaction. The aggregate base materials should also be placed at a minimum relative compaction of 95%. Construction materials (asphalt and aggregate base) should conform to the current *Standard Specifications for Public Works Construction (Green Book)*.

8.4 Rigid Pavements

The flexible pavement specifications used in roadways and parking stalls may not be adequate for truck loading and turnaround areas, if such features are planned. In this event, NOVA recommends that a rigid concrete pavement section be provided. The pavement section should consist of 6 inches of concrete over a 6-inch base course. The aggregate base materials should also be placed at a minimum relative compaction of 95%. The concrete should be obtained from a mix design that conforms with the minimum properties shown in Table 8-2.

Longitudinal and transverse joints should be provided as needed in concrete pavements for expansion/ contraction and isolation. Sawed joints should be cut within 24-hours of concrete placement, and should be a minimum of 25% of slab thickness plus 1/4 inch. All joints should be sealed to prevent entry of foreign material and doweled where necessary for load transfer. Where dowels cannot be used at joints accessible to wheel loads, pavement thickness should be increased by 25 percent at the joints and tapered to regular thickness in 5 feet.

Table 8-2. Recommendations for Concrete Pavements

Property	Recommended Requirement
Compressive Strength @ 28 days	3,250 psi minimum
Strength Requirements	ASTM C94
Minimum Cement Content	5.5 sacks/cu. yd.
Cement Type	Type V Portland
Concrete Aggregate	ASTM C33
Aggregate Size	1-inch maximum
Maximum Water Content	0.5 lb/lb of cement
Maximum Allowable Slump	4 inches

9.0 REFERENCES

9.1 Project Specific

9.1.1 Previous Reporting

Leighton 1998. *Geotechnical Investigation Report for the Proposed O.R./Ambulatory Care Addition,* Leighton and Associates, Project No. 11980284-001, December 16, 1998.

MACTEC 2003. *Report of Geotechnical Investigation, Proposed Additions,* MACTEC, Project 4953-03-1451, June 17, 2003.

Twining 2008a. *Geotechnical Engineering Evaluation Report, Inland medical Center New Parking Lot,* Twining Laboratories, Project No.: 080154.3, March 26, 2008.

Twining 2008b. *Recommendations for Site Pavements, Inland Valley Medical Center – ER, ICU, Radiology and CCU Expansion,* Twining Laboratories, Project No.: 080071.3, December 11, 2008.

9.1.2 Project Plans

HOK 2019. *Site Plan, Phase 3 Plan with Survey, Inland Valley Regional Medical Center*, HOK, undated.

KH 2019. *Inland Valley Regional Medical Center – Rough Grading (South Option)*, Kimley Horn and Associates, undated.

NV5. A*s-Built Utility Plan, Inland Valley Regional Medical Center,* NV5, February 25, 2019.
Geotechnical/Structural

9.2 Geotechnical/Structural

American Concrete Institute, 2002, *Building Code Requirements for Structural Concrete* (ACI 318-02) and Commentary (ACI 318R-02).

American Concrete Institute, 2015, *Guide to Concrete Floor and Slab Construction,* ACI Publication 302.1R-15.

American Concrete Institute, 2016, *Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials* (ACI 302.2R-06)

ASTM, 2005, *Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover*, ASTM E154-88.

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ASTM, 2009, *Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs*, ASTM E1643-98

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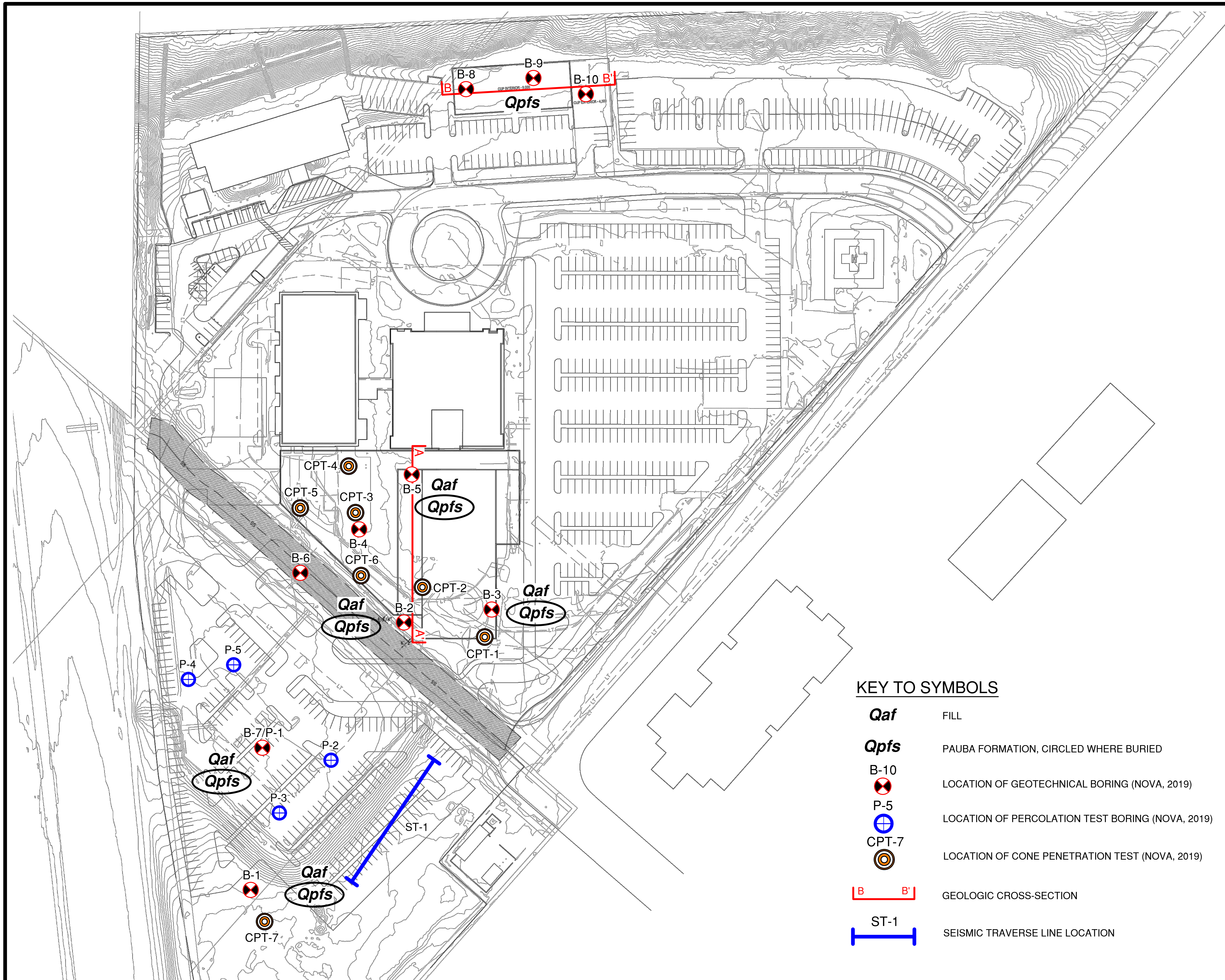
PLATES



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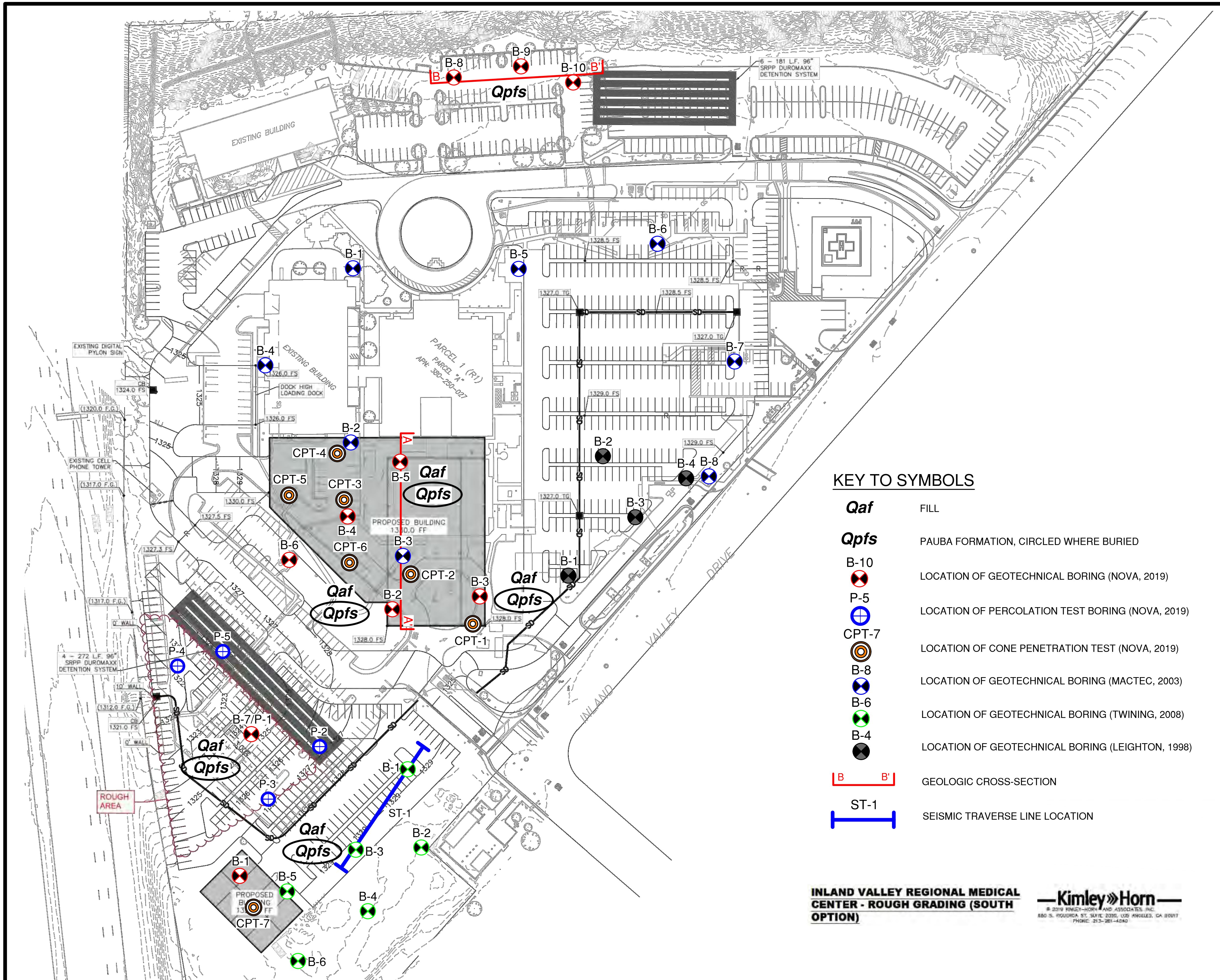
NOVA SUBSURFACE EXPLORATION MAP ON UPDATED PLAN

0 120' 240'

PLATE 1A



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DATE:	DEC 2019
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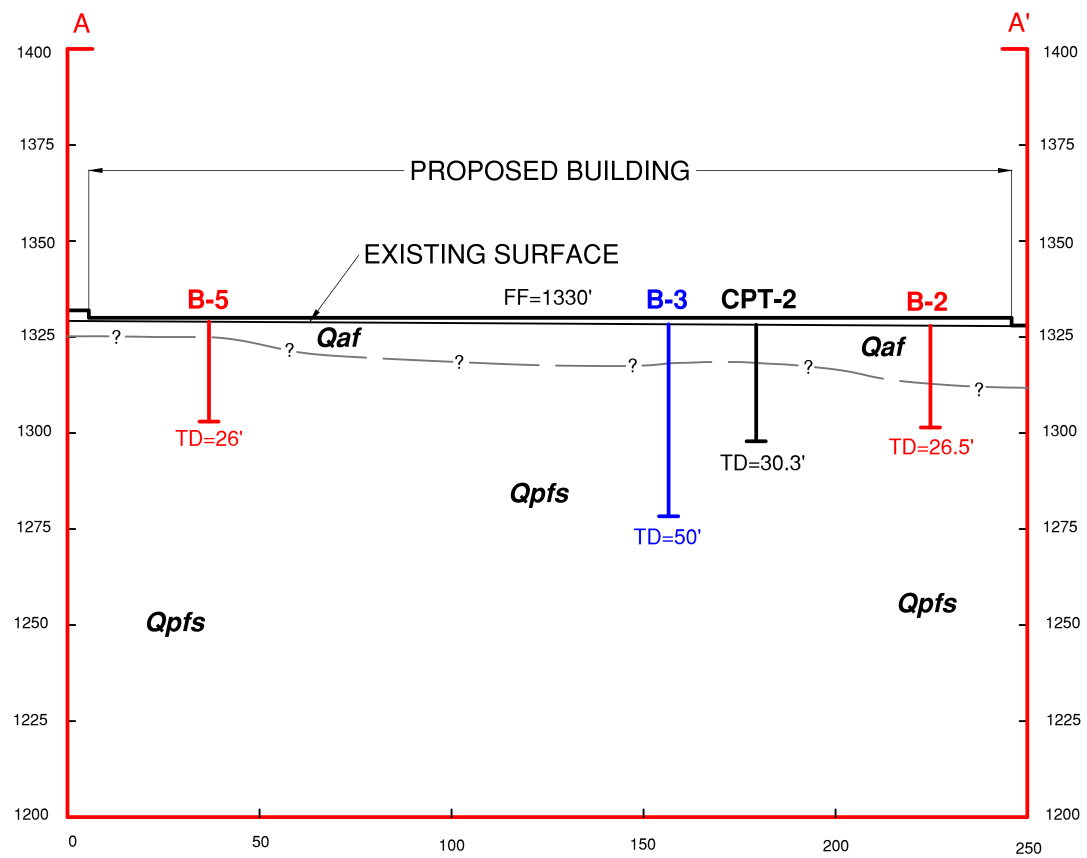
COLLABORATIVE SUBSURFACE EXPLORATION MAP

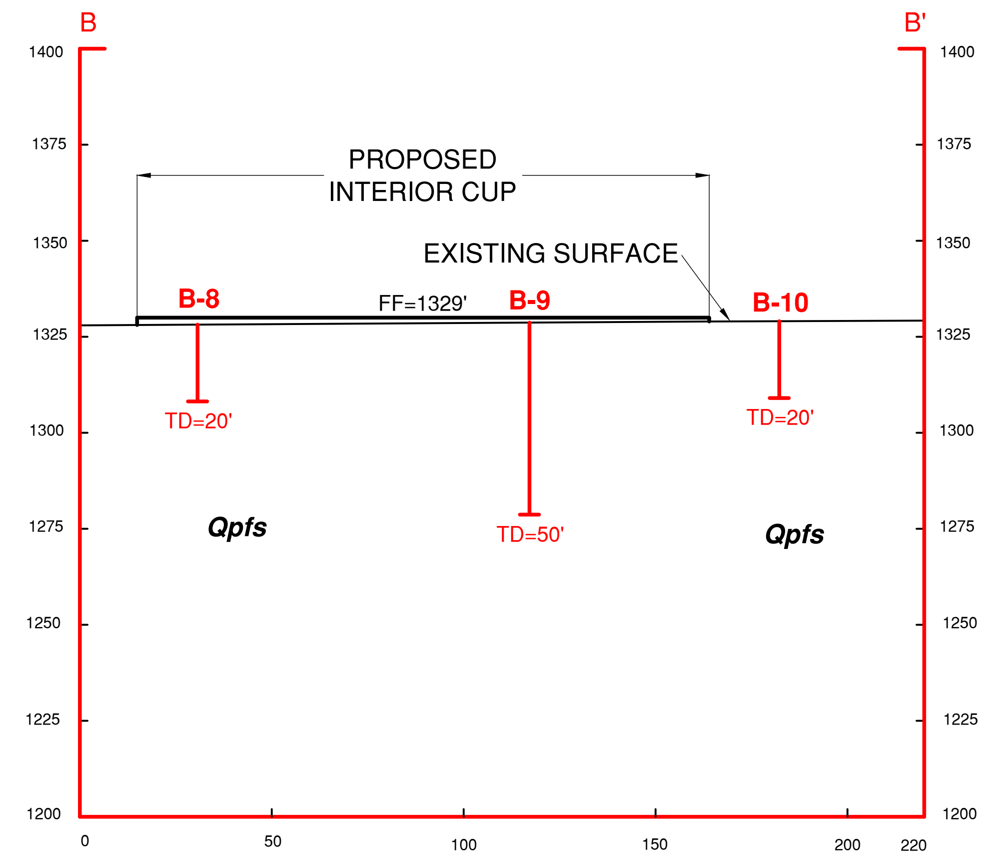
0 120' 240'

PLATE 1B

GEOLOGIC CROSS-SECTION AA'



GEOLOGIC CROSS-SECTION BB'



KEY TO SYMBOLS

Qaf	FILL
Qpfs	PAUBA FORMATION
B-10	LOCATION OF GEOTECHNICAL BORING (NOVA, 2019)
B-3	LOCATION OF GEOTECHNICAL BORING (MACTEC, 2003)
CPT-2	LOCATION OF CONE PENETRATION TEST (NOVA, 2019)
?	GEOLOGIC CONTACT, QUERIED WHERE INFERRED

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PROJECT NO:	3019060
DATE:	DEC 2019
DRAWN BY:	DTW
REVIEWED BY:	JDB

GEOLOGIC
CROSS-SECTION AA' & BB'

0 50' 100'

PLATE 2

APPENDIX A

USE OF THE GEOTECHNICAL REPORT

Important Information About Your

Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

The following information is provided to help you manage your risks.

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 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 your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you* — should apply the 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.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of 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,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- 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 study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the 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 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 construction recommendations included in your report. *Those 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 recommendations if that engineer does not perform construction observation.*

A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower 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. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing 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 Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors 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 contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors 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 contractors do not 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.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental 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 geoenvironmental 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, a number of 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 ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/The Best People on Earth exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with you ASFE-member geotechnical engineer for more information.

ASFE
The Best People on Earth

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APPENDIX B

LOGS OF BORINGS

BORING LOG B-1

DATE EXCAVATED:	AUGUST 27, 2019	**EQUIPMENT:**	CME 75 DRILL RIG
EXCAVATION DESCRIPTION:	8 INCH DIAMETER AUGER BORING	**GPS COORD.:**	
GROUNDWATER DEPTH:	NOT ENCOUNTERED	**ELEVATION:**	± 1329 FT MSL

LAB TEST ABBREVIATIONS

CR	CORROSIVITY
MD	MAXIMUM DENSITY
DS	DIRECT SHEAR
EI	EXPANSION INDEX
AL	ATTERBERG LIMITS
SA	SIEVE ANALYSIS
RV	RESISTANCE VALUE
CN	CONSOLIDATION
SE	SAND EQUIVALENT

DEPTH (FT)	SOIL CLASS. (USCS)	BLOWS PER 12-INCHES	SOIL DESCRIPTION *SUMMARY OF SUBSURFACE CONDITIONS (USCS; COLOR, MOISTURE, DENSITY, GRAIN SIZE, OTHER)*	LABORATORY	REMARKS
0	ML		**FILL (Qaf):** SANDY SILT; YELLOW BROWN, DAMP, VERY DENSE, FINE TO MEDIUM GRAINED, TRACE GRAVEL.		
	SM	>70#	**PAUBA FORMATION (Qpfs):** SANDSTONE; RED BROWN, DRY, VERY DENSE, FINE TO COARSE GRAINED, TRACE GRAVEL, ABUNDANT IRON STAINING.	MD RV CR SA	120.7 PCF, @ 13.2% RV = 30 SO_4 = 0.009% (87 PPM)
5		>70#			125.6 PCF, @ 3.7%
10		>50	SCATTERED GRAVEL.		
15		>70	SILTY SANDSTONE; GRAY GREEN, DAMP, FINE GRAINED, SOME MEDIUM TO COARSE GRAINS.		119.2 PCF, @ 7.5%
20	SM	24	SANDY SILTSTONE; OLIVE GRAY, MOIST, VERY STIFF, FINE GRAINED, SCATTERED IRON STAINING.		
25		>70	SOME MICA, SCATTERED COARSE GRAINED SAND.		122.9 PCF, @ 14.1%
30					

KEY TO SYMBOLS

▼/▽	GROUNDWATER / STABILIZED	#	ERRONEOUS BLOW COUNT
☒	BULK SAMPLE	*	NO SAMPLE RECOVERY
⧄	SPT SAMPLE (ASTM D1586)	———	GEOLOGIC CONTACT
■	CAL. MOD. SAMPLE (ASTM D3550)	— — —	SOIL TYPE CHANGE

36485 INLAND VALLEY DRIVE
WILDOMAR, CALIFORNIA

NOVA

LOGGED BY:	TDT	DATE:	DEC 2019
REVIEWED BY:	JDB	PROJECT NO.: 3019060	APPENDIX B.1

CONTINUED BORING LOG B-1

DATE EXCAVATED:	AUGUST 27, 2019	**EQUIPMENT:**	CME 75 DRILL RIG
EXCAVATION DESCRIPTION:	8 INCH DIAMETER AUGER BORING	**GPS COORD.:**	
GROUNDWATER DEPTH:	NOT ENCOUNTERED	**ELEVATION:**	± 1329 FT MSL

LAB TEST ABBREVIATIONS

CR	CORROSIVITY
MD	MAXIMUM DENSITY
DS	DIRECT SHEAR
EI	EXPANSION INDEX
AL	ATTERBERG LIMITS
SA	SIEVE ANALYSIS
RV	RESISTANCE VALUE
CN	CONSOLIDATION
SE	SAND EQUIVALENT

DEPTH (FT)	GRAPHIC LOG	BULK SAMPLE	CAL/SPT SAMPLE	SOIL CLASS. (USCS)	BLOWS PER 12-INCHES	**SOIL DESCRIPTION** *SUMMARY OF SUBSURFACE CONDITIONS* *(USCS; COLOR, MOISTURE, DENSITY, GRAIN SIZE, OTHER)*	LABORATORY	REMARKS
30			SPT	SM	>50#	SILTSTONE; OLIVE GRAY, MOIST, HARD, FINE GRAINED, SOME MICA, SCATTERED COARSE SAND GRAINS, SHATTERED ROCK WITHIN SAMPLER.	SA	
35			CAL. MOD.		>70	TRACE FINE GRAINED SAND.		110.4 PCF, @ 17.6%
40			SPT		42			
45			CAL. MOD.		>70			108.3 PCF, @ 19.4%
			SPT		>50	DARK GRAY, MOIST TO WET, SCATTERED MICA.		
50						BORING TERMINATED AT 50 FT. NO GROUNDWATER ENCOUNTERED. NO CAVING. BACKFILLED WITH BORING CUTTINGS.		
55								
60								

KEY TO SYMBOLS

▼/▽	GROUNDWATER / STABILIZED	#	ERRONEOUS BLOW COUNT
☒	BULK SAMPLE	*	NO SAMPLE RECOVERY
◪	SPT SAMPLE (ASTM D1586)	———	GEOLOGIC CONTACT
■	CAL. MOD. SAMPLE (ASTM D3550)	— — —	SOIL TYPE CHANGE

36485 INLAND VALLEY DRIVE
WILDOMAR, CALIFORNIA

LOGGED BY:	TDT	DATE:	DEC 2019
REVIEWED BY:	JDB	PROJECT NO.:	3019060

NOVA

APPENDIX B.2

BORING LOG B-2

DATE EXCAVATED:	AUGUST 27, 2019	**EQUIPMENT:**	CME 75 DRILL RIG
EXCAVATION DESCRIPTION:	8 INCH DIAMETER AUGER BORING	**GPS COORD.:**	
GROUNDWATER DEPTH:	NOT ENCOUNTERED	**ELEVATION:**	± 1328 FT MSL

LAB TEST ABBREVIATIONS

CR	CORROSIVITY
MD	MAXIMUM DENSITY
DS	DIRECT SHEAR
EI	EXPANSION INDEX
AL	ATTERBERG LIMITS
SA	SIEVE ANALYSIS
RV	RESISTANCE VALUE
CN	CONSOLIDATION
SE	SAND EQUIVALENT

DEPTH (FT)	GRAPHIC LOG	BULK SAMPLE	CAL/SPT SAMPLE	SOIL CLASS. (USCS)	BLOWS PER 12-INCHES	**SOIL DESCRIPTION** *SUMMARY OF SUBSURFACE CONDITIONS (USCS; COLOR, MOISTURE, DENSITY, GRAIN SIZE, OTHER)*	LABORATORY	REMARKS
0				SM		**FILL (Qaf):** SILTY SAND; LIGHT BROWN, DAMP, LOOSE, FINE TO COARSE GRAINED, SCATTERED MICA.		
			SPT		10			
5			CAL. MOD.		36			
10			SPT	CL	8	SANDY CLAY; DARK BROWN, MOIST, FIRM, FINE TO MEDIUM GRAINED.		
15			SPT	SM	30	**PAUBA FORMATION (Qpfs):** SANDSTONE; BROWN TO DARK BROWN, MOIST, MEDIUM DENSE, FINE GRAINED, TRACE MICA.		
20			SPT		>50	CALICHE BLEBS.		
25			SPT		>50	SILTY SANDSTONE; LIGHT BROWN, DAMP, VERY DENSE, FINE TO MEDIUM GRAINED, SCATTERED MICA.		
						BORING TERMINATED AT 26.5 FT. NO GROUNDWATER ENCOUNTERED. NO CAVING. BACKFILLED WITH BORING CUTTINGS.		
30								

KEY TO SYMBOLS

▼/▽	GROUNDWATER / STABILIZED	#	ERRONEOUS BLOW COUNT
☒	BULK SAMPLE	*	NO SAMPLE RECOVERY
⧄	SPT SAMPLE (ASTM D1586)	———	GEOLOGIC CONTACT
■	CAL. MOD. SAMPLE (ASTM D3550)	— — —	SOIL TYPE CHANGE

36485 INALND VALLEY DRIVE

WILDOMAR, CALIFORNIA

LOGGED BY:	TDT	DATE:	DEC 2019
REVIEWED BY:	JDB	PROJECT NO.:	3019060

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APPENDIX B.3

BORING LOG B-3

DATE EXCAVATED:	AUGUST 27, 2019	**EQUIPMENT:**	CME 75 DRILL RIG
EXCAVATION DESCRIPTION:	8 INCH DIAMETER AUGER BORING	**GPS COORD.:**	
GROUNDWATER DEPTH:	NOT ENCOUNTERED	**ELEVATION:**	± 1328 FT MSL

LAB TEST ABBREVIATIONS

CR	CORROSIVITY
MD	MAXIMUM DENSITY
DS	DIRECT SHEAR
EI	EXPANSION INDEX
AL	ATTERBERG LIMITS
SA	SIEVE ANALYSIS
RV	RESISTANCE VALUE
CN	CONSOLIDATION
SE	SAND EQUIVALENT

DEPTH (FT)	GRAPHIC LOG	BULK SAMPLE	CAL/SPT SAMPLE	SOIL CLASS. (USCS)	BLOWS PER 12-INCHES	SOIL DESCRIPTION *SUMMARY OF SUBSURFACE CONDITIONS* *(USCS; COLOR, MOISTURE, DENSITY, GRAIN SIZE, OTHER)*	LABORATORY	REMARKS
0						**ASPHALT: 5 INCHES, AGGREGATE BASE; 7 INCHES**		
				SM		**FILL (Qaf):** SILTY SAND; LIGHT BROWN, DAMP TO MOIST, MEDIUM DENSE, FINE TO COARSE GRAINED, TRACE CLAY, SCATTERED MICA, TRACE GRAVEL.		
			SPT		11			
5			CAL	SP	14	POORLY GRADED SAND; LIGHT TO DARK BROWN, MOIST, MEDIUM DENSE, FINE TO COARSE GRAINED, TRACE CLAY.		
				CL		CLAY; DARK BROWN, MOIST, FIRM, TRACE MICA.		
10			SPT	SM	36	**PAUBA FORMATION (Qpfs):** SANDSTONE; LIGHT TO DARK BROWN, DAMP, DENSE, FINE TO COARSE GRAINED, SCATTERED MICA.		
15			SPT		47			
20			SPT		>50	OLIVE BROWN, DAMP, VERY DENSE, FINE GRAINED, SOME MICA.		
25			SPT		>50	TRACE IRON STAINING.		
						BORING TERMINATED AT 26.5 FT. NO GROUNDWATER ENCOUNTERED. NO CAVING. BACKFILLED WITH BORING CUTTINGS. CAPPED WITH AC COLD PATCH.		
30								

KEY TO SYMBOLS

▼/▽	GROUNDWATER / STABILIZED	#	ERRONEOUS BLOW COUNT
⊠	BULK SAMPLE	*	NO SAMPLE RECOVERY
◿	SPT SAMPLE (ASTM D1586)	———	GEOLOGIC CONTACT
■	CAL. MOD. SAMPLE (ASTM D3550)	– – –	SOIL TYPE CHANGE

36485 INLAND VALLEY DRIVE
WILDOMAR, CALIFORNIA

NOVA

LOGGED BY:	TDT	DATE:	DEC 2019
REVIEWED BY:	JDB	PROJECT NO.: 3019060	APPENDIX B.4

BORING LOG B-4

DATE EXCAVATED:	AUGUST 27, 2019	**EQUIPMENT:**	CME 75 DRILL RIG
EXCAVATION DESCRIPTION:	8 INCH DIAMETER AUGER BORING	**GPS COORD.:**	
GROUNDWATER DEPTH:	NOT ENCOUNTERED	**ELEVATION:**	± 1328 FT MSL

LAB TEST ABBREVIATIONS

CR	CORROSIVITY
MD	MAXIMUM DENSITY
DS	DIRECT SHEAR
EI	EXPANSION INDEX
AL	ATTERBERG LIMITS
SA	SIEVE ANALYSIS
RV	RESISTANCE VALUE
CN	CONSOLIDATION
SE	SAND EQUIVALENT

SOIL DESCRIPTION
SUMMARY OF SUBSURFACE CONDITIONS
(USCS; COLOR, MOISTURE, DENSITY, GRAIN SIZE, OTHER)

DEPTH (FT)	GRAPHIC LOG	BULK SAMPLE	CAL/SPT SAMPLE	SOIL CLASS. (USCS)	BLOWS PER 12-INCHES	SOIL DESCRIPTION	LABORATORY	REMARKS
0						**ASPHALT: 5 INCHES, AGGREGATE BASE; 7 INCHES**		
				SM		**FILL (Qaf):** SILTY SAND; LIGHT BROWN TO LIGHT GRAY, MOIST, MEDIUM DENSE, FINE TO COARSE GRAINED, TRACE TO SCATTERED CLAY.		
			CAL. MOD.		20			
5			SPT	CL	7	SILTY CLAY; DARK BROWN, MOIST, STIFF, TRACE FINE GRAINS.	EI SA	
10			CAL. MOD.			MOIST TO WET.		81.5 PCF, @ 33.1%
				ML	>70	**PAUBA FORMATION (Qpfs):** SILTSTONE; LIGHT BROWN, DAMP TO MOIST, HARD, FINE GRAINED.	DS	
15			SPT	SM	>50	SANDSTONE; LIGHT TO DARK BROWN, DAMP TO MOIST, VERY DENSE, FINE GRAINED, ABUNDANT MICA.		
20			CAL. MOD.		>70	SANDSTONE WITH SILTSTONE INTERBEDS; LIGHT BROWN, MOIST, VERY DENSE, FINE GRAINED, INDISTINCT LENSE OF MEDIUM TO COARSE GRAINS.		123.8 PCF, @ 13.0%
25			SPT		45			
30								

KEY TO SYMBOLS

	GROUNDWATER / STABILIZED	#	ERRONEOUS BLOW COUNT
	BULK SAMPLE	*	NO SAMPLE RECOVERY
	SPT SAMPLE (ASTM D1586)		GEOLOGIC CONTACT
	CAL. MOD. SAMPLE (ASTM D3550)		SOIL TYPE CHANGE

36485 INLAND VALLEY DRIVE
WILDOMAR, CALIFORNIA

LOGGED BY:	TDT	DATE:	DEC 2019
REVIEWED BY:	JDB	PROJECT NO.:	3019060

NOVA

APPENDIX B.5

CONTINUED BORING LOG B-4

DATE EXCAVATED:	AUGUST 27, 2019	**EQUIPMENT:**	CME 75 DRILL RIG
EXCAVATION DESCRIPTION:	8 INCH DIAMETER AUGER BORING	**GPS COORD.:**	
GROUNDWATER DEPTH:	NOT ENCOUNTERED	**ELEVATION:**	± 1328 FT MSL

LAB TEST ABBREVIATIONS

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CN	CONSOLIDATION
SE	SAND EQUIVALENT

DEPTH (FT)	GRAPHIC LOG	BULK SAMPLE	CAL/SPT SAMPLE	SOIL CLASS. (USCS)	BLOWS PER 12-INCHES	**SOIL DESCRIPTION** *SUMMARY OF SUBSURFACE CONDITIONS (USCS; COLOR, MOISTURE, DENSITY, GRAIN SIZE, OTHER)*	LABORATORY	REMARKS
30				SW	>70	WELL GRADED SAND; LIGHT TO DARK GRAY, DAMP, VERY DENSE, FINE TO MEDIUM GRAINED, SOME CLAYSTONE LENSES.		127.8 PCF, @ 8.8%
35					>50#	CLAYSTONE LENSES NOT PRESENT, SHATTERED ROCK IN UPPER PORTION OF SAMPLER.		
40				ML	>70	SILTSTONE; BROWN TO DARK BROWN, DAMP, HARD, FINE TO MEDIUM GRAINED SAND LENSES.		119.0 PCF, @ 13.0%
45				SM	>50	SANDSTONE; LIGHT TO DARK GRAY, DAMP, VERY DENSE, MEDIUM TO COARSE GRAINED, SOME MICA, TRACE IRON STAINING.		
					50/4"			
50						BORING TERMINATED AT 50 FT. NO GROUNDWATER ENCOUNTERED. NO CAVING. BACKFILLED WITH BORING CUTTINGS. CAPPED WITH AC COLD PATCH.		
55								
60								

KEY TO SYMBOLS

▼/▽	GROUNDWATER / STABILIZED	#	ERRONEOUS BLOW COUNT
☒	BULK SAMPLE	*	NO SAMPLE RECOVERY
◫	SPT SAMPLE (ASTM D1586)	———	GEOLOGIC CONTACT
■	CAL. MOD. SAMPLE (ASTM D3550)	— — —	SOIL TYPE CHANGE

36485 INLAND VALLEY DRIVE
WILDOMAR, CALIFORNIA

LOGGED BY:	TDT	DATE:	DEC 2019
REVIEWED BY:	JDB	PROJECT NO.:	3019060

NOVA

APPENDIX B.6

BORING LOG B-5

DATE EXCAVATED: AUGUST 27, 2019
EQUIPMENT: CME 75 DRILL RIG
EXCAVATION DESCRIPTION: 8 INCH DIAMETER AUGER BORING
GPS COORD.:
GROUNDWATER DEPTH: NOT ENCOUNTERED
ELEVATION: ± 1329 FT MSL

LAB TEST ABBREVIATIONS

CR	CORROSIVITY
MD	MAXIMUM DENSITY
DS	DIRECT SHEAR
EI	EXPANSION INDEX
AL	ATTERBERG LIMITS
SA	SIEVE ANALYSIS
RV	RESISTANCE VALUE
CN	CONSOLIDATION
SE	SAND EQUIVALENT

SOIL DESCRIPTION
SUMMARY OF SUBSURFACE CONDITIONS
(USCS; COLOR, MOISTURE, DENSITY, GRAIN SIZE, OTHER)

DEPTH (FT)	SOIL CLASS. (USCS)	BLOWS PER 12-INCHES	SOIL DESCRIPTION	LABORATORY	REMARKS
0	SM		**FILL (Qaf):** SILTY SAND; LIGHT BROWN, DAMP, VERY DENSE, MEDIUM TO COARSE GRAINED, SCATTERED FINE GRAINS.	MD CR	128.9 PCF, @ 7.3% SO_4 = 0.003% (30 PPM)
5	SM	>70	**PAUBA FORMATION (Qpfs):** SANDSTONE; BROWN, DAMP TO MOIST, VERY DENSE, FINE GRAINED, TRACE MICA, SCATTERED IRON STAINING, SILTSTONE INTERBEDS, ABUNDANT MICA.		117.3 PCF, @ 6.4%
10		22			
15		37	SANDY SILTSTONE INTERBEDS; RED BROWN, DAMP STIFF, FINE GRAINED, SCATTERED MICA, TRACE IRON STAINING.		
20		>50	SANDSTONE; LIGHT GRAY TO LIGHT BROWN, DAMP, MEDIUM DENSE, FINE TO MEDIUM GRAINED, ABUNDANT MICA, TRACE IRON STAINING.		
25		50/3"	SANDSTONE; WELL GRADED, LIGHT GRAY, DAMP, VERY DENSE, MEDIUM TO COARSE GRAINED, TRACE FINE GRAINED LENSES.		
			BORING TERMINATED AT 26.0 FT. NO GROUNDWATER ENCOUNTERED. NO CAVING. BACKFILLED WITH BORING CUTTINGS.		
30					

KEY TO SYMBOLS

GROUNDWATER / STABILIZED	# ERRONEOUS BLOW COUNT
BULK SAMPLE	* NO SAMPLE RECOVERY
SPT SAMPLE (ASTM D1586)	GEOLOGIC CONTACT
CAL. MOD. SAMPLE (ASTM D3550)	SOIL TYPE CHANGE

36485 INLAND VALLEY DRIVE
WILDOMAR, CALIFORNIA

NOVA

LOGGED BY:	TDT	DATE:	DEC 2019
REVIEWED BY:	JDB	PROJECT NO.:	3019060

APPENDIX B.7

BORING LOG B-6

DATE EXCAVATED:	AUGUST 27, 2019	**EQUIPMENT:**	CME 75 DRILL RIG
EXCAVATION DESCRIPTION:	8 INCH DIAMETER AUGER BORING	**GPS COORD.:**	
GROUNDWATER DEPTH:	NOT ENCOUNTERED	**ELEVATION:**	± 1327 FT MSL

LAB TEST ABBREVIATIONS

CR	CORROSIVITY
MD	MAXIMUM DENSITY
DS	DIRECT SHEAR
EI	EXPANSION INDEX
AL	ATTERBERG LIMITS
SA	SIEVE ANALYSIS
RV	RESISTANCE VALUE
CN	CONSOLIDATION
SE	SAND EQUIVALENT

DEPTH (FT)	GRAPHIC LOG	BULK SAMPLE	CAL/SPT SAMPLE	SOIL CLASS. (USCS)	BLOWS PER 12-INCHES	**SOIL DESCRIPTION** *SUMMARY OF SUBSURFACE CONDITIONS (USCS; COLOR, MOISTURE, DENSITY, GRAIN SIZE, OTHER)*	LABORATORY	REMARKS
0						**ASPHALT: 4.5 INCHES, AGGREGATE BASE; 4.5 INCHES**		
				SM		**FILL (Qaf):** SILTY SAND; LIGHT BROWN, MOIST, LOOSE, FINE TO MEDIUM GRAINED, SCATTERED MICA.		
			SPT		8			
5			CAL. MOD.	SM	41	**PAUBA FORMATION (Qpfs):** SANDSTONE; LIGHT GRAY, DAMP, DENSE, FINE GRAINED, SOME MICA, SILTSTONE INTERBEDS.		
10		BULK (10–15)	SPT	SM	42	SANDSTONE; LIGHT TO DARK BROWN, DENSE, FINE TO MEDIUM GRAINED, SOME MICA, SCATTERED IRON STAINING, TRACE GRAVEL.		
15			SPT		38	MEDIUM GRAINED, SOME FINE GRAINS, SOME SILT.	SA	
20			SPT		50/4"#	SHATTERED ROCK IN SAMPLER.		
			SPT	SM	>50	SILTY SANDSTONE; RED BROWN, DAMP, VERY DENSE, FINE TO MEDIUM GRAINED, SOME MICA, SOME IRON STAINING.		
25						BORING TERMINATED AT 25 FT. NO GROUNDWATER ENCOUNTERED. NO CAVING. BACKFILLED WITH BORING CUTTINGS. CAPPED WITH AC COLD PATCH.		
30								

KEY TO SYMBOLS

▼/▽	GROUNDWATER / STABILIZED	#	ERRONEOUS BLOW COUNT
⊠	BULK SAMPLE	*	NO SAMPLE RECOVERY
◪	SPT SAMPLE (ASTM D1586)	———	GEOLOGIC CONTACT
■	CAL. MOD. SAMPLE (ASTM D3550)	— — —	SOIL TYPE CHANGE

36485 INLAND VALLEY DRIVE

WILDOMAR, CALIFORNIA

LOGGED BY:	TDT	DATE:	DEC 2019
REVIEWED BY:	JDB	PROJECT NO.:	3019060

NOVA

APPENDIX B.8

BORING LOG B-7/ P-1

DATE EXCAVATED:	AUGUST 27, 2019	**EQUIPMENT:**	CME 75 DRILL RIG
EXCAVATION DESCRIPTION:	8 INCH DIAMETER AUGER BORING	**GPS COORD.:**	
GROUNDWATER DEPTH:	NOT ENCOUNTERED	**ELEVATION:**	± 1325 FT MSL

LAB TEST ABBREVIATIONS

CR	CORROSIVITY
MD	MAXIMUM DENSITY
DS	DIRECT SHEAR
EI	EXPANSION INDEX
AL	ATTERBERG LIMITS
SA	SIEVE ANALYSIS
RV	RESISTANCE VALUE
CN	CONSOLIDATION
SE	SAND EQUIVALENT

SOIL DESCRIPTION
SUMMARY OF SUBSURFACE CONDITIONS
(USCS; COLOR, MOISTURE, DENSITY, GRAIN SIZE, OTHER)

DEPTH (FT)	GRAPHIC LOG	BULK SAMPLE	CAL/SPT SAMPLE	SOIL CLASS. (USCS)	BLOWS PER 12-INCHES	SOIL DESCRIPTION	LABORATORY	REMARKS
0						**ASPHALT: 3 INCHES; AGGREGATE BASE: 9 INCHES**		
				ML		**FILL (Qaf):** SANDY SILT; YELLOW BROWN, DAMP, HARD, FINE TO MEDIUM GRAINED, TRACE GRAVEL.		
5				SM	35	**PAUBA FORMATION (Qpfs):** SANDSTONE; LIGHT TO DARK BROWN, DAMP, DENSE, FINE TO COARSE GRAINED, SCATTERED MICA, TRACE GRAVEL.		
10				ML	41	TRACE MICA, TRACE IRON STAINING.	SA	
15						BORING TERMINATED AT 15 FT. NO GROUNDWATER ENCOUNTERED. NO CAVING. BACKFILLED WITH CUTTINGS. CAPPED WITH AC COLD PATCH.		
20								
25								
30								

KEY TO SYMBOLS

GROUNDWATER / STABILIZED	# ERRONEOUS BLOW COUNT
BULK SAMPLE	* NO SAMPLE RECOVERY
SPT SAMPLE (ASTM D1586)	GEOLOGIC CONTACT
CAL. MOD. SAMPLE (ASTM D3550)	SOIL TYPE CHANGE

36485 INLAND VALLEY DRIVE
WILDOMAR, CALIFORNIA

LOGGED BY:	TDT	DATE:	DEC 2019
REVIEWED BY:	JDB	PROJECT NO.:	3019060

NOVA

APPENDIX B.9

BORING LOG B-8

DATE EXCAVATED:	OCTOBER 7, 2019	**EQUIPMENT:**	CME 75 DRILL RIG
EXCAVATION DESCRIPTION:	8 INCH DIAMETER AUGER BORING	**GPS COORD.:**	
GROUNDWATER DEPTH:	NOT ENCOUNTERED	**ELEVATION:**	± 1326 FT MSL

LAB TEST ABBREVIATIONS

CR	CORROSIVITY
MD	MAXIMUM DENSITY
DS	DIRECT SHEAR
EI	EXPANSION INDEX
AL	ATTERBERG LIMITS
SA	SIEVE ANALYSIS
RV	RESISTANCE VALUE
CN	CONSOLIDATION
SE	SAND EQUIVALENT

DEPTH (FT)	GRAPHIC LOG	BULK SAMPLE	CAL/SPT SAMPLE	SOIL CLASS. (USCS)	BLOWS PER 12-INCHES	**SOIL DESCRIPTION** *SUMMARY OF SUBSURFACE CONDITIONS* *(USCS; COLOR, MOISTURE, DENSITY, GRAIN SIZE, OTHER)*	LABORATORY	REMARKS
0						**ASPHALT: 2.5 INCHES, AGGREGATE BASE; 9 INCHES**		
				SM		**PAUBA FORMATION (Qpfs):** SILTY SANDSTONE, YELLOW-BROWN, DAMP, VERY DENSE, FINE TO COARSE GRAINED, SOME MICA.		
			CAL. MOD.		> 70			
5			CAL. MOD.	SP	> 70	POORLY GRADED SANDSTONE, LIGHT GRAY, DAMP, VERY DENSE, FINE TO COARSE GRAINED, SOME MICA.		
10			SPT		> 50	SOME SILT.		
15			CAL. MOD.		> 70	RED-BROWN, TRACE MICA.		
			SPT		> 50	SCATTERED MICA.		
20						BORING TERMINATED AT 20 FT. NO GROUNDWATER ENCOUNTERED. NO CAVING. BACKFILLED WITH BORING CUTTINGS.		
25								
30								

KEY TO SYMBOLS

▼/▽	GROUNDWATER / STABILIZED	#	ERRONEOUS BLOW COUNT
☒	BULK SAMPLE	*	NO SAMPLE RECOVERY
◩	SPT SAMPLE (ASTM D1586)	———	GEOLOGIC CONTACT
■	CAL. MOD. SAMPLE (ASTM D3550)	— — —	SOIL TYPE CHANGE

36485 INLAND VALLEY DRIVE
WILDOMAR, CALIFORNIA

LOGGED BY:	TDT	DATE:	DEC 2019
REVIEWED BY:	JDB	PROJECT NO.:	3019060

NOVA

APPENDIX B.10

BORING LOG B-9

DATE EXCAVATED: OCTOBER 7, 2019
EQUIPMENT: CME 75 DRILL RIG
EXCAVATION DESCRIPTION: 8 INCH DIAMETER AUGER BORING
GPS COORD.:
GROUNDWATER DEPTH: 47.5'
ELEVATION: ±1326 FT MSL

LAB TEST ABBREVIATIONS

CR	CORROSIVITY
MD	MAXIMUM DENSITY
DS	DIRECT SHEAR
EI	EXPANSION INDEX
AL	ATTERBERG LIMITS
SA	SIEVE ANALYSIS
RV	RESISTANCE VALUE
CN	CONSOLIDATION
SE	SAND EQUIVALENT

DEPTH (FT)	GRAPHIC LOG	BULK SAMPLE	CAL/SPT SAMPLE	SOIL CLASS. (USCS)	BLOWS PER 12-INCHES	**SOIL DESCRIPTION** *SUMMARY OF SUBSURFACE CONDITIONS (USCS; COLOR, MOISTURE, DENSITY, GRAIN SIZE, OTHER)*	LABORATORY	REMARKS
0						**ASPHALT: 2.5 INCHES, AGGREGATE BASE; 11.0 INCHES**		
				SP		**PAUBA FORMATION (Qpfs):** SILTY SANDSTONE, YELLOW-BROWN, DAMP, VERY DENSE, FINE TO COARSE GRAINED, TRACE GRAVEL, SCATTERED IRON STAINING.	EI CR	EI = 0, VERY LOW; SO_4 = 0.003% (27 PPM), LOW
					> 70#			
5					> 70	LIGHT GRAY, NO IRON STAINING.		
10					> 70			
15					> 50#	BROKEN GRANITE ROCK IN SAMPLE		
20					> 70			
25					> 50	TRACE MICA, TRACE CLAY.		
30								

KEY TO SYMBOLS

	GROUNDWATER / STABILIZED	#	ERRONEOUS BLOW COUNT
	BULK SAMPLE	*	NO SAMPLE RECOVERY
	SPT SAMPLE (ASTM D1586)		GEOLOGIC CONTACT
	CAL. MOD. SAMPLE (ASTM D3550)		SOIL TYPE CHANGE

36485 INLAND VALLEY DRIVE
WILDOMAR, CALIFORNIA

LOGGED BY: TDT | DATE: DEC 2019
REVIEWED BY: JDB | PROJECT NO.: 3019060

NOVA

APPENDIX B.11

CONTINUED BORING LOG B-9

DATE EXCAVATED:	OCTOBER 7, 2019	**EQUIPMENT:**	CME 75 DRILL RIG
EXCAVATION DESCRIPTION:	8 INCH DIAMETER AUGER BORING	**GPS COORD.:**	
GROUNDWATER DEPTH:	47.5'	**ELEVATION:**	±1326 FT MSL

LAB TEST ABBREVIATIONS

CR	CORROSIVITY
MD	MAXIMUM DENSITY
DS	DIRECT SHEAR
EI	EXPANSION INDEX
AL	ATTERBERG LIMITS
SA	SIEVE ANALYSIS
RV	RESISTANCE VALUE
CN	CONSOLIDATION
SE	SAND EQUIVALENT

DEPTH (FT)	GRAPHIC LOG	BULK SAMPLE	CAL/SPT SAMPLE	SOIL CLASS. (USCS)	BLOWS PER 12-INCHES	**SOIL DESCRIPTION** *SUMMARY OF SUBSURFACE CONDITIONS (USCS; COLOR, MOISTURE, DENSITY, GRAIN SIZE, OTHER)*	LABORATORY	REMARKS
30			CAL. MOD.	SP	50/ 6"	**PAUBA FORMATION (Qpfs):** SILTY SANDSTONE, YELLOW-BROWN, DAMP, VERY DENSE, FINE TO COARSE GRAINED.		
35			SPT		50/ 6"	TRACE GRAVEL.		
40			CAL. MOD.		50/ 4"	BROWN, MOIST, POCKET OF FINE GRAINED SAND.		
45			SPT		> 50	WET, THIN LENSES OF FINE GRAINED SAND, SOME MICA.		
			SPT		> 50	TRACE GRAVEL, SCATTERED MICA.		
50						BORING TERMINATED AT 50 FT. GROUNDWATER ENCOUNTERED AT 48.2 FT, STABILIZED AT 47.6 FT, BACKFILLED WITH BORING CUTTINGS.		
55								
60								

KEY TO SYMBOLS

▼/▽	GROUNDWATER / STABILIZED	#	ERRONEOUS BLOW COUNT
☒	BULK SAMPLE	*	NO SAMPLE RECOVERY
◪	SPT SAMPLE (ASTM D1586)	———	GEOLOGIC CONTACT
■	CAL. MOD. SAMPLE (ASTM D3550)	— — —	SOIL TYPE CHANGE

36485 INLAND VALLEY DRIVE
WILDOMAR, CALIFORNIA

LOGGED BY:	TDT	DATE:	DEC 2019
REVIEWED BY:	JDB	PROJECT NO.: 3019060	

NOVA

APPENDIX B.12

BORING LOG B-10

DATE EXCAVATED:	OCTOBER 7, 2019	**EQUIPMENT:**	CME 75 DRILL RIG
EXCAVATION DESCRIPTION:	8 INCH DIAMETER AUGER BORING	**GPS COORD.:**	
GROUNDWATER DEPTH:	NOT ENCOUNTERED	**ELEVATION:**	±1327 FT MSL

LAB TEST ABBREVIATIONS

CR	CORROSIVITY
MD	MAXIMUM DENSITY
DS	DIRECT SHEAR
EI	EXPANSION INDEX
AL	ATTERBERG LIMITS
SA	SIEVE ANALYSIS
RV	RESISTANCE VALUE
CN	CONSOLIDATION
SE	SAND EQUIVALENT

DEPTH (FT)	GRAPHIC LOG	BULK SAMPLE	CAL/SPT SAMPLE	SOIL CLASS. (USCS)	BLOWS PER 12-INCHES	**SOIL DESCRIPTION** *SUMMARY OF SUBSURFACE CONDITIONS (USCS; COLOR, MOISTURE, DENSITY, GRAIN SIZE, OTHER)*	LABORATORY	REMARKS
0						**ASPHALT: 2.5 INCHES, AGGREGATE BASE; 10 INCHES**		
				SP		**PAUBA FORMATION (Qpfs):** POORLY GRADED SANDSTONE; LIGHT BROWN TO LIGHT GRAY, DAMP, VERY DENSE, FINE TO COARSE GRAINED, SCATTERED MICA, TRACE GRAVEL.		
			CAL. MOD.		> 70			
5			CAL. MOD.		> 70	SOME TO ABUNDANT MICA.		
10			SPT		> 50	SCATTERED IRON STAINING.		
15			SPT	SM	> 50	SILTY SANDSTONE; LIGHT GRAY, DAMP, VERY DENSE, FINE TO MEDIUM GRAINED, SCATTERED MICA, TRACE COARSE GRAINED SAND.		
			SPT	SP	> 50	POORLY GRADED SANDSTONE; LIGHT GRAY, DAMP, VERY DENSE, FINE TO COARSE GRAINED, SCATTERED MICA.		
20						BORING TERMINATED AT 20 FT. NO GROUNDWATER ENCOUNTERED. NO CAVING. BACKFILLED WITH BORING CUTTINGS.		
25								
30								

KEY TO SYMBOLS

▼/▽	GROUNDWATER / STABILIZED	#	ERRONEOUS BLOW COUNT
☒	BULK SAMPLE	*	NO SAMPLE RECOVERY
◪	SPT SAMPLE (ASTM D1586)	———	GEOLOGIC CONTACT
■	CAL. MOD. SAMPLE (ASTM D3550)	— — —	SOIL TYPE CHANGE

36485 INLAND VALLEY DRIVE
WILDOMAR, CALIFORNIA

LOGGED BY: TDT	DATE: DEC 2019	NOVA	
REVIEWED BY: JDB	PROJECT NO.: 3019060	APPENDIX B.13	

BORING LOG B-7/ P-1

DATE EXCAVATED:	AUGUST 27, 2019	**EQUIPMENT:**	CME 75 DRILL RIG
EXCAVATION DESCRIPTION:	8 INCH DIAMETER AUGER BORING	**GPS COORD.:**	
GROUNDWATER DEPTH:	NOT ENCOUNTERED	**ELEVATION:**	± 1325 FT MSL

LAB TEST ABBREVIATIONS

CR	CORROSIVITY
MD	MAXIMUM DENSITY
DS	DIRECT SHEAR
EI	EXPANSION INDEX
AL	ATTERBERG LIMITS
SA	SIEVE ANALYSIS
RV	RESISTANCE VALUE
CN	CONSOLIDATION
SE	SAND EQUIVALENT

DEPTH (FT)	GRAPHIC LOG	BULK SAMPLE	CAL/SPT SAMPLE	SOIL CLASS. (USCS)	BLOWS PER 12-INCHES	SOIL DESCRIPTION *SUMMARY OF SUBSURFACE CONDITIONS (USCS; COLOR, MOISTURE, DENSITY, GRAIN SIZE, OTHER)*	LABORATORY	REMARKS
0						**ASPHALT: 3 INCHES; AGGREGATE BASE: 9 INCHES**		
				ML		**FILL (Qaf):** SANDY SILT; YELLOW BROWN, DAMP, HARD, FINE TO MEDIUM GRAINED, TRACE GRAVEL.		
5		X	X	SM	35	**PAUBA FORMATION (Qpfs):** SANDSTONE; LIGHT TO DARK BROWN, DAMP, DENSE, FINE TO COARSE GRAINED, SCATTERED MICA, TRACE GRAVEL.		
10		X	X	ML	41	TRACE MICA, TRACE IRON STAINING.	SA	
15						BORING TERMINATED AT 15 FT. NO GROUNDWATER ENCOUNTERED. NO CAVING. BACKFILLED WITH CUTTINGS. CAPPED WITH AC COLD PATCH.		
20								
25								
30								

KEY TO SYMBOLS

	GROUNDWATER / STABILIZED	#	ERRONEOUS BLOW COUNT
	BULK SAMPLE	*	NO SAMPLE RECOVERY
	SPT SAMPLE (ASTM D1586)		GEOLOGIC CONTACT
	CAL. MOD. SAMPLE (ASTM D3550)		SOIL TYPE CHANGE

36485 INLAND VALLEY DRIVE

WILDOMAR, CALIFORNIA

LOGGED BY:	TDT	DATE:	DEC 2019
REVIEWED BY:	JDB	PROJECT NO.:	3019060

NOVA

APPENDIX B.14

BORING LOG P-2

DATE EXCAVATED:	AUGUST 27, 2019	**EQUIPMENT:**	CME 75 DRILL RIG
EXCAVATION DESCRIPTION:	8 INCH DIAMETER AUGER BORING	**GPS COORD.:**	
GROUNDWATER DEPTH:	NOT ENCOUNTERED	**ELEVATION:**	± 1327 FT MSL

LAB TEST ABBREVIATIONS

CR	CORROSIVITY
MD	MAXIMUM DENSITY
DS	DIRECT SHEAR
EI	EXPANSION INDEX
AL	ATTERBERG LIMITS
SA	SIEVE ANALYSIS
RV	RESISTANCE VALUE
CN	CONSOLIDATION
SE	SAND EQUIVALENT

DEPTH (FT)	GRAPHIC LOG	BULK SAMPLE	CAL/SPT SAMPLE	SOIL CLASS. (USCS)	BLOWS PER 12-INCHES	**SOIL DESCRIPTION** *SUMMARY OF SUBSURFACE CONDITIONS (USCS; COLOR, MOISTURE, DENSITY, GRAIN SIZE, OTHER)*	LABORATORY	REMARKS
0						**ASPHALT: 4 INCHES, AGGREGATE BASE: 6 INCHES**		
				SC		**FILL (Qaf):** CLAYEY SAND; RED BROWN, DAMP, LOOSE TO MEDIUM DENSE, FINE TO COARSE GRAINED, TRACE MICA.		
5								
				SM		**PAUBA FORMATION (Qpfs):** SANDSTONE; LIGHT TO DARK BROWN, MOIST, MEDIUM DENSE TO DENSE, FINE TO COARSE GRAINED.		
10						BORING TERMINATED AT 10 FT. NO GROUNDWATER ENCOUNTERED. NO CAVING. BACKFILLED WITH CUTTINGS. CAPPED WITH AC COLD PATCH.		
15								
20								
25								
30								

KEY TO SYMBOLS

▼/▽	GROUNDWATER / STABILIZED	#	ERRONEOUS BLOW COUNT
☒	BULK SAMPLE	*	NO SAMPLE RECOVERY
⊘	SPT SAMPLE (ASTM D1586)	———	GEOLOGIC CONTACT
■	CAL. MOD. SAMPLE (ASTM D3550)	— — —	SOIL TYPE CHANGE

36485 INLAND VALLEY DRIVE

WILDOMAR, CALIFORNIA

LOGGED BY:	TDT	DATE:	DEC 2019
REVIEWED BY:	JDB	PROJECT NO.:	3019060

NOVA

APPENDIX B.15

BORING LOG P-3

DATE EXCAVATED:	AUGUST 27, 2019	**EQUIPMENT:**	CME 75 DRILL RIG
EXCAVATION DESCRIPTION:	8 INCH DIAMETER AUGER BORING	**GPS COORD.:**	
GROUNDWATER DEPTH:	NOT ENCOUNTERED	**ELEVATION:**	± 1327 FT MSL

LAB TEST ABBREVIATIONS

CR	CORROSIVITY
MD	MAXIMUM DENSITY
DS	DIRECT SHEAR
EI	EXPANSION INDEX
AL	ATTERBERG LIMITS
SA	SIEVE ANALYSIS
RV	RESISTANCE VALUE
CN	CONSOLIDATION
SE	SAND EQUIVALENT

DEPTH (FT)	GRAPHIC LOG	BULK SAMPLE	CAL/SPT SAMPLE	SOIL CLASS. (USCS)	BLOWS PER 12-INCHES	**SOIL DESCRIPTION** *SUMMARY OF SUBSURFACE CONDITIONS* *(USCS; COLOR, MOISTURE, DENSITY, GRAIN SIZE, OTHER)*	LABORATORY	REMARKS
0						**ASPHALT: 4 INCHES, AGGREGATE BASE: 9 INCHES**		
				SC		**FILL (Qaf):** CLAYEY SAND; RED BROWN, DAMP, LOOSE TO MEDIUM DENSE, FINE TO COARSE GRAINED, TRACE MICA.		
5				SM		**PAUBA FORMATION (Qpfs):** SANDSTONE; LIGHT TO DARK BROWN, MOIST, MEDIUM DENSE TO DENSE, FINE TO COARSE GRAINED.		
10						BORING TERMINATED AT 10 FT. NO GROUNDWATER ENCOUNTERED. NO CAVING. BACKFILLED WITH CUTTINGS. CAPPED WITH AC COLD PATCH.		
15								
20								
25								
30								

KEY TO SYMBOLS

▼/▽	GROUNDWATER / STABILIZED	#	ERRONEOUS BLOW COUNT
☒	BULK SAMPLE	*	NO SAMPLE RECOVERY
◿	SPT SAMPLE (ASTM D1586)	———	GEOLOGIC CONTACT
■	CAL. MOD. SAMPLE (ASTM D3550)	— — —	SOIL TYPE CHANGE

36485 INLAND VALLEY DRIVE
WILDOMAR, CALIFORNIA

LOGGED BY:	TDT	DATE:	DEC 2019
REVIEWED BY:	JDB	PROJECT NO.:	3019060

NOVA

APPENDIX B.16

BORING LOG P-4

DATE EXCAVATED:	AUGUST 27, 2019	**EQUIPMENT:**	CME 75 DRILL RIG
EXCAVATION DESCRIPTION:	8 INCH DIAMETER AUGER BORING	**GPS COORD.:**	
GROUNDWATER DEPTH:	NOT ENCOUNTERED	**ELEVATION:**	± 1322 FT MSL

LAB TEST ABBREVIATIONS

CR	CORROSIVITY
MD	MAXIMUM DENSITY
DS	DIRECT SHEAR
EI	EXPANSION INDEX
AL	ATTERBERG LIMITS
SA	SIEVE ANALYSIS
RV	RESISTANCE VALUE
CN	CONSOLIDATION
SE	SAND EQUIVALENT

DEPTH (FT)	GRAPHIC LOG	BULK SAMPLE	CAL/SPT SAMPLE	SOIL CLASS. (USCS)	BLOWS PER 12-INCHES	**SOIL DESCRIPTION** *SUMMARY OF SUBSURFACE CONDITIONS (USCS; COLOR, MOISTURE, DENSITY, GRAIN SIZE, OTHER)*	LABORATORY	REMARKS
0						**ASPHALT: 3 INCHES, AGGREGATE BASE: 10 INCHES**		
				SC		**FILL (Qaf):** CLAYEY SAND; BROWN TO RED BROWN, MOIST, LOOSE TO MEDIUM DENSE, FINE TO COARSE GRAINED, TRACE MICA, TRACE GRAVEL.		
5								
				SM		**PAUBA FORMATION (Qpfs):** SANDSTONE; LIGHT BROWN, MOIST, MEDIUM DENSE TO DENSE, FINE TO MEDIUM GRAINED, SCATTERED COARSE GRAINS.		
10								
						BORING TERMINATED AT 11 FT. NO GROUNDWATER ENCOUNTERED. NO CAVING. BACKFILLED WITH CUTTINGS. CAPPED WITH AC COLD PATCH		
15								
20								
25								
30								

KEY TO SYMBOLS

▼/▽	GROUNDWATER / STABILIZED	#	ERRONEOUS BLOW COUNT
☒	BULK SAMPLE	*	NO SAMPLE RECOVERY
⧄	SPT SAMPLE (ASTM D1586)	———	GEOLOGIC CONTACT
■	CAL. MOD. SAMPLE (ASTM D3550)	— — —	SOIL TYPE CHANGE

36485 INLAND VALLEY DRIVE

WILDOMAR, CALIFORNIA

LOGGED BY:	TDT	DATE:	DEC 2019
REVIEWED BY:	JDB	PROJECT NO.:	3019060

NOVA

BORING LOG P-5

DATE EXCAVATED:	AUGUST 27, 2019	**EQUIPMENT:**	CME 75 DRILL RIG
EXCAVATION DESCRIPTION:	8 INCH DIAMETER AUGER BORING	**GPS COORD.:**	
GROUNDWATER DEPTH:	NOT ENCOUNTERED	**ELEVATION:**	± 1324 FT MSL

LAB TEST ABBREVIATIONS

CR	CORROSIVITY
MD	MAXIMUM DENSITY
DS	DIRECT SHEAR
EI	EXPANSION INDEX
AL	ATTERBERG LIMITS
SA	SIEVE ANALYSIS
RV	RESISTANCE VALUE
CN	CONSOLIDATION
SE	SAND EQUIVALENT

DEPTH (FT)	GRAPHIC LOG	BULK SAMPLE	CAL/SPT SAMPLE	SOIL CLASS. (USCS)	BLOWS PER 12-INCHES	**SOIL DESCRIPTION** *SUMMARY OF SUBSURFACE CONDITIONS (USCS; COLOR, MOISTURE, DENSITY, GRAIN SIZE, OTHER)*	LABORATORY	REMARKS
0						**ASPHALT: 3 INCHES, AGGREGATE BASE: 9 INCHES**		
				SC		**FILL (Qaf):** CLAYEY SAND; LIGHT TO DARK BROWN, MOIST, LOOSE TO MEDIUM DENSE, FINE TO COARSE GRAINED, TRACE MICA.		
5								
				SM		**PAUBA FORMATION (Qpfs):** SANDSTONE; LIGHT TO DARK BROWN, MOIST, MEDIUM DENSE TO DENSE, FINE TO MEDIUM GRAINED.		
10						BORING TERMINATED AT 10 FT. NO GROUNDWATER ENCOUNTERED. NO CAVING. BACKFILLED WITH CUTTINGS. CAPPED WITH AC COLD PATCH.		
15								
20								
25								
30								

KEY TO SYMBOLS

▼/▽	GROUNDWATER / STABILIZED	#	ERRONEOUS BLOW COUNT
⊠	BULK SAMPLE	*	NO SAMPLE RECOVERY
⧄	SPT SAMPLE (ASTM D1586)	———	GEOLOGIC CONTACT
■	CAL. MOD. SAMPLE (ASTM D3550)	— — —	SOIL TYPE CHANGE

36485 INLAND VALLEY DRIVE

WILDOMAR, CALIFORNIA

LOGGED BY:	TDT	DATE:	DEC 2019
REVIEWED BY:	JDB	PROJECT NO.:	3019060

NOVA

APPENDIX B.18

GEOTECHNICAL BORING LOG B-1

Date 11-11-98 | Sheet 1 of 2
Project INLAND VALLEY MEDICAL CENTER AMBULATORY CARE ADDITION | Project No. 11980284-001
Drilling Co. WEST HAZMAT | Type of Rig HSA
Hole Diameter 8 in. | Drive Weight 140 lbs | Drop 30 in.
Elevation Top of Hole +/- ft. | Ref. or Datum See Geotechnical Map

Logged By SER
Sampled By SER

Elevation Feet	Depth Feet	Graphic Log	Notes	Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION	Type of Tests
	0								TOPSOIL	
			Bag 3 @ 1-4'	1	54	115.3	12.0	SM/SC	@ 2': Dark brown to red-brown, wet, medium dense to dense, clayey SAND; abundant roots and organic material	
	5			2	90	103.3	15.5	SC	@ 5': Same as above, increased percent of clay, red clay pockets observed, dense to very dense	
									UNNAMED SANDSTONE	
	10			4	92			SM	@ 10': Brown, moist, dense to very dense, silty SAND; fine to medium grained	
	15								BEDROCK GRANITICS	
				5	82	110.7	15.9	SM	@ 15': Brown to dark brown, moist, dense to very dense, silty SAND; fine to coarse grained, some pockets of olive clay and coarse sand material	
	20			6	92		11.0	SP	@ 20': Light brown to brown, dry to moist, very dense SAND; medium to coarse grained, slightly to non-weathered	
	25			7	99	117.5	14.4	SP	@ 25': Same as above	
	30									

SAMPLE TYPES:
- S SPLIT SPOON
- D RING SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:
- DS DIRECT SHEAR
- MD MAXIMUM DENSITY
- CN CONSOLIDATION
- CR CORROSION
- SA SIEVE ANALYSIS
- AL ATTERBERG LIMITS
- RV R VALUE
- EI EXPANSION INDEX

LEIGHTON & ASSOCIATES

GEOTECHNICAL BORING LOG B-1

Date 11-11-98 | Sheet 2 of 2
Project INLAND VALLEY MEDICAL CENTER AMBULATORY CARE ADDITION | Project No. 11980284-001
Drilling Co. WEST HAZMAT | Type of Rig HSA
Hole Diameter 8 in. | Drive Weight 140 lbs | Drop 30 in.
Elevation Top of Hole +/- ft. | Ref. or Datum See Geotechnical Map

Logged By SER
Sampled By SER

Elevation Feet	Depth Feet	Graphic Log	Notes	Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION	Type of Tests
	30			8	88		16.3	SP	@ 30': Light brown to brown, moist to wet, very dense, SAND, medium to coarse grained, slightly to non-weathered	
									Boring Terminated @ 31' No Groundwater Encountered No Caving Backfilled 11-11-98	
	35									
	40									
	45									
	50									
	55									
	60									

SAMPLE TYPES:
- S SPLIT SPOON
- D RING SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:
- DS DIRECT SHEAR
- MD MAXIMUM DENSITY
- CN CONSOLIDATION
- CR CORROSION
- SA SIEVE ANALYSIS
- AL ATTERBERG LIMITS
- RV R VALUE
- EI EXPANSION INDEX

GEOTECHNICAL BORING LOG B-2

Date 11-17-98 | Sheet 1 of 2
Project INLAND VALLEY MEDICAL CENTER AMBULATORY CARE ADDITION | Project No. 11980284-001
Drilling Co. 2R DRILLING | Type of Rig HSA
Hole Diameter 8 in. | Drive Weight 140 lbs | Drop 30 in.
Elevation Top of Hole +/- ft. | Ref. or Datum See Geotechnical Map

Logged By SER
Sampled By SER

Elevation Feet	Depth Feet	Graphic Log	Notes	Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION	Type of Tests
	0								TOPSOIL	
			Bag 2 @ 2-5'					SC	@ 2': Dark brown to red-brown, wet, loose to medium dense, clayey SAND; abundant organic material	
									BEDROCK GRANITICS	
	5			1	50/5"	107.1	7.5	SM/SC	@ 5': Light brown, moist, very dense, silty SAND with clay; fine to coarse grained, rock fragments up to 2" in diameter	
	10			3	56		11.2	SP	@ 10': White to light brown, damp, dense, SAND; medium to coarse grained	
	15			4	40	108.2	14.7	SP	@ 15': Same as above; iron-staining present	
	20			5	50/6"		12.5	SP	@ 20': White to light brown, damp, very dense, SAND; medium to coarse grained, iron-staining	
	25				50/4"			SP	@ 25': Same as above; (no recovery)	
									@ 29': Groundwater Encountered	
	30									

SAMPLE TYPES:
S SPLIT SPOON
D RING SAMPLE
B BULK SAMPLE
T TUBE SAMPLE

TYPE OF TESTS:
DS DIRECT SHEAR
MD MAXIMUM DENSITY
CN CONSOLIDATION
CR CORROSION
SA SIEVE ANALYSIS
AL ATTERBERG LIMITS
RV R VALUE
EI EXPANSION INDEX

GEOTECHNICAL BORING LOG B-2

Date 11-17-98 | Sheet 2 of 2
Project INLAND VALLEY MEDICAL CENTER AMBULATORY CARE ADDITION | Project No. 11980284-001
Drilling Co. 2R DRILLING | Type of Rig HSA
Hole Diameter 8 in. | Drive Weight 140 lbs | Drop 30 in.
Elevation Top of Hole +/- ft. | Ref. or Datum See Geotechnical Map

Elevation Feet	Depth Feet	Graphic Log	Notes	Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION Logged By SER Sampled By SER	Type of Tests
	30			6	67		16.7	SP	@ 30': Light brown, wet, very dense, SAND; medium to coarse grained	
	35			7	50/5"	108.2	19.9	SP	@ 35': Same as above (partial recovery)	
	40								@ 40': difficult drilling	
									Boring Terminated @ 41.5' Groundwater Encountered @ 29' Backfilled 11-17-98	
	45									
	50									
	55									
	60									

SAMPLE TYPES:
- S SPLIT SPOON
- D RING SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:
- DS DIRECT SHEAR
- MD MAXIMUM DENSITY
- CN CONSOLIDATION
- CR CORROSION
- SA SIEVE ANALYSIS
- AL ATTERBERG LIMITS
- RV R VALUE
- EI EXPANSION INDEX

GEOTECHNICAL BORING LOG B-3

Date: 11-17-98 — Sheet 1 of 1

Project: INLAND VALLEY MEDICAL CENTER AMBULATORY CARE ADDITION — Project No. 11980284-001

Drilling Co.: 2R DRILLING — Type of Rig: HSA

Hole Diameter: 8 in. — Drive Weight: 140 lbs — Drop: 30 in.

Elevation Top of Hole +/- ft. — Ref. or Datum: See Geotechnical Map

Logged By: SER

Sampled By: SER

Elevation Feet	Depth Feet	Graphic Log	Notes	Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION	Type of Tests
	0								TOPSOIL	
				1	50	113.4	11.1	SC	@ 2': Light brown to red, moist, loose to medium dense, sandy CLAY; pockets of red clay observed, abundant organic material small rock fragments (.5-1")	
	5			2	85		12.1	SP	BEDROCK GRANITICS @ 5': Light brown, moist, dense to very dense, SAND; sharp distinct transition from red clay topsoil to sand, small rock fragments observed (<.5")	
	10			3	55	119.1	10.9	SP	@ 10': Brown to red, moist, dense SAND; with some clay, minor root material	
	15			4	69		9.3	SP	@ 15': Light brown to red-brown, moist, dense SAND; medium to coarse grained, iron-staining present	
	20			5	54	111.6	12.7	SP	@ 20': Same as above, minor amount of clay	
	25			6	70		10.3	SP	@ 25': Same as above	
									Boring Terminated @ 26' No Groundwater Encountered Backfilled 11-17-98	
	30									

SAMPLE TYPES:
- S SPLIT SPOON
- D RING SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:
- DS DIRECT SHEAR
- MD MAXIMUM DENSITY
- CN CONSOLIDATION
- CR CORROSION
- SA SIEVE ANALYSIS
- AL ATTERBERG LIMITS
- RV R VALUE
- EI EXPANSION INDEX

LEIGHTON & ASSOCIATES

GEOTECHNICAL BORING LOG B-4

Date 11-17-98 | Sheet 1 of 1
Project INLAND VALLEY MEDICAL CENTER AMBULATORY CARE ADDITION | Project No. 11980284-001
Drilling Co. 2R DRILLING | Type of Rig HSA
Hole Diameter 8 in. | Drive Weight 140 lbs | Drop 30 in.
Elevation Top of Hole +/- ft. | Ref. or Datum See Geotechnical Map

Logged By SER
Sampled By SER

Elevation Feet	Depth Feet	Graphic Log	Notes	Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION	Type of Tests
	0								TOPSOIL	
				1	36	117.1	14.0	SC	@ 2': Brown to red, moist to wet, loose to medium dense, sandy CLAY; abundant root and organic material	
	5			2	50/4"	110.6	12.8	SP	@ 5': Layer of gravel observed (< 1" in diameter)	
									UNNAMED SANDSTONE @ 5 1/2': White to light brown, moist, very dense, SAND; minor root material, rock fragments up to 1" observed, iron-staining present, medium to coarse grained	
	10			3	50/5"		12.2	SP	@ 10': White to light brown, moist, very dense, SAND; medium to coarse grained, iron-staining present (partial recovery)	
	15			4	50/6"	111.4	9.6	SP	@ 15': Same as above	
									Boring Terminated @ 15.5' No Groundwater Encountered Backfilled 11-17-98	
	20									
	25									
	30									

SAMPLE TYPES:
- S SPLIT SPOON
- D RING SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:
- DS DIRECT SHEAR
- MD MAXIMUM DENSITY
- CN CONSOLIDATION
- CR CORROSION
- SA SIEVE ANALYSIS
- AL ATTERBERG LIMITS
- RV R VALUE
- EI EXPANSION INDEX

BORING 1

DATE DRILLED: April 21, 2003
EQUIPMENT USED: Hollow Stem Auger
HOLE DIAMETER (in.): 8
ELEVATION: 1,326.5**

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

"N" VALUE STD.PEN.TEST	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT* (blows/ft)	USCS	DESCRIPTION
					4" Thick Asphalt Concrete - 4" Thick Base Course
	10.9	114	15	SM	FILL - SILTY SAND - loose, moist, light brown
	14.2	111	16		becomes medium dense
	13.6	118	15		becomes loose
	13.7	114	15		
				SW	WELL-GRADED SAND - medium dense, slightly moist, light brown and white, few gravel
	5.1	118	41		
47	10.9				becomes dense, becomes moist
	6.5	121	88		becomes very dense, becomes slightly moist
58	9.1				
	9.2	113	75		
					4" thick layer of lean clay
78	13.5				becomes moist

Elevation (ft): 1325, 1320, 1315, 1310, 1305, 1300, 1295, 1290
Depth (ft): 5, 10, 15, 20, 25, 30, 35, 40

END OF BORING AT 30½'.

NOTES:

Water not encountered. No caving. Boring backfilled with soil cuttings, tamped, and patched.

* Number of blows required to drive the Crandall sampler 12 inches using a 140 pound hammer falling 30 inches.

** Elevations based on topographic map provided by Nicholas J. Nowicki, Limited.

Field Tech: GMC
Prepared By: MM
Checked By: VA

B12SOIL CRANDALL 31451.GPJ LAW CRAN.GDT 6/17/03

BORING 2

DATE DRILLED: April 21, 2003
EQUIPMENT USED: Hollow Stem Auger
HOLE DIAMETER (in.): 8
ELEVATION: 1,325.0**

ELEVATION (ft)	DEPTH (ft)	"N" VALUE STD.PEN.TEST	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT* (blows/ft)	SAMPLE LOC.	USCS	DESCRIPTION
								3" Thick Asphalt Concrete - 3½" Thick Base Course
							CL	SANDY LEAN CLAY - hard, moist, light brown, some cemented layers some sandier layers
			12.8	115	65	⊠		
								(LL = 32; PI = 9)
1320	5		31.5	90	22	⊠		(55% passing No. 200 sieve) becomes stiff
							SW	WELL-GRADED SAND - very dense, moist, light brown and white, thin layers of light brown clay
			10.6	120	75/11"	⊠		
1315	10							
			10.1	116	90/11"	⊠		
1310	15		5.7	117	60/6"	⊠		becomes slightly moist
							CL	SANDY LEAN CLAY - hard, moist, light brown, layers of well-graded sand
1305	20		13.9	118	85/9"	⊠		
							SW	WELL-GRADED SAND - very dense, slightly moist, white, lenses of clay
1300	25		6.2	110	60/6"	⊠		
							CL	SANDY LEAN CLAY - hard, moist, light brown
							SW	WELL-GRADED SAND - very dense, slightly moist, white
1295	30		6.9	107	60/6"	⊠		END OF BORING AT 30'
1290	35							
	40							

NOTES:

Water not encountered. No caving. Boring backfilled with soil cuttings, tamped, and patched.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

Field Tech: GMC
Prepared By: MM
Checked By: JA

BORING 3

DATE DRILLED: April 21, 2003
EQUIPMENT USED: Hollow Stem Auger
HOLE DIAMETER (in.): 8
ELEVATION: 1,327.0**

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

ELEVATION (ft)	DEPTH (ft)	"N" VALUE STD.PEN.TEST	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT* (blows/ft)	USCS	DESCRIPTION
1325	0					SM	HAND AUGERED 0-5' FILL - SILTY SAND - loose, very moist, mottled grey and brown, few gravel; cobbles up to 6" in size
	5		5.2	126	26	SM	SILTY SAND - medium dense, slightly moist, grey to dark grey, rootlets and charcoal fragments
1320						CL	SANDY LEAN CLAY - hard, moist, light brown
			14.1	121	88/9"		
1315	10		15.3	114	85/9"		
	15	57	13.7				
1310			20.9	109	85		(56% passing No. 200 sieve)
	20	67	18.3				
1305			9.0	122	60/6"	SC	CLAYEY SAND - very dense, slightly moist, light brown (14% passing No. 200 sieve)
	25					CL	SANDY LEAN CLAY - hard, moist, light brown
1300		36	19.5				
	30		27.8	96	50		
1295		33	21.7				
	35		29.7	92	87	SC	CLAYEY SAND - very dense, moist, brown
1290		57	14.8				
						CL	SANDY LEAN CLAY - hard, moist, light brown
	40						

Field Tech: GMC
Prepared By: MM
Checked By: VA

(CONTINUED ON FOLLOWING FIGURE)

BORING 3 (Continued)

DATE DRILLED: April 21, 2003
EQUIPMENT USED: Hollow Stem Auger
HOLE DIAMETER (in.): 8
ELEVATION: 1,327.0**

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

ELEVATION (ft)	DEPTH (ft)	"N" VALUE STD.PEN.TEST	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT* (blows/ft)	SAMPLE LOC.
1285			22.3	103	56	⊠
	45	31	40.0			⊠
1280						
	50		37.0	87	76/11"	⊠
1275						
	55					
1270						
	60					
1265						
	65					
1260						
	70					
1255						
	75					
1250						
	80					

END OF BORING AT 50'

NOTES:

Water not encountered. No caving. Boring backfilled with soil cuttings, tamped, and patched.

Field Tech: GMC
Prepared By: MM
Checked By: JA

B12SOIL CRANDALL 31451.GPJ LAW CRAN.GDT 6/17/03

Inland Valley Medical Center
Wildomar, California

MACTEC

LOG OF BORING
Project: 4953-03-1451 Figure: A-1.3b

BORING 4

DATE DRILLED: April 21, 2003
EQUIPMENT USED: Hollow Stem Auger
HOLE DIAMETER (in.): 8
ELEVATION: 1,324.5 **

ELEVATION (ft)	DEPTH (ft)	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT* (blows/ft)	SAMPLE LOC.	USCS	DESCRIPTION
	0						4" Thick Asphalt Concrete - 4" Thick Base Course
						SW	WELL-GRADED SAND - very dense, moist, light brown and white
		10.0	122	78	⊠		
1320	5	9.2	116	60	⊠		becomes dense, becomes slightly moist
		9.2	120	81/11"	⊠		becomes very dense
1315	10	8.2	115	66	⊠		becomes dense
1310	15	8.7	118	60	⊠		
1305	20	6.9	112	83/11"	⊠		becomes very dense
						CL	LEAN CLAY - hard, moist, light brown
1300	25	23.6	105	70	⊠		
						SW	WELL-GRADED SAND - dense, slightly moist, white
1295	30	5.4	108	72	⊠		
							END OF BORING AT 30'
1290	35						
1285	40						

NOTES:

Water not encountered. No caving. Boring backfilled with soil cuttings, tamped, and patched.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

Field Tech: GMC
Prepared By: MM
Checked By: JA

BORING 5

DATE DRILLED: May 20, 2003
EQUIPMENT USED: Hollow Stem Auger
HOLE DIAMETER (in.): 8
ELEVATION: 1,327.5 **

ELEVATION (ft)	DEPTH (ft)	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT* (blows/ft)	SAMPLE LOC.	USCS	DESCRIPTION
	0						3" Thick Asphalt Concrete
						SM	FILL - SILTY SAND - medium dense, moist, ligth brown
1325							
		15.0	110	20	X		concrete fragment encountered - boring moved 2' north
						SW	WELL-GRADED SAND - medium dense, moist, light brown few gravel
	5						
		7.3	118	37	X		becomes slightly moist
1320							
	10	6.7	117	60	X		becomes dense
1315		7.4	114	55	X		
	15	9.1	113	78	X		becomes very dense
1310							
	20	5.9	116	70	X		becomes dense
1305							
	25	6.6	115	79	X		becomes very dense
1300							
	30	9.5	107	75/10"	X		END OF BORING AT 30'
1295							
	35						
1290							
	40						

NOTES:

Water not encountered. No caving. Boring backfilled with soil cuttings, tamped, and patched.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

Field Tech: GMC
Prepared By: MM
Checked By: JA

BORING 6

DATE DRILLED: May 20, 2003
EQUIPMENT USED: Hollow Stem Auger
HOLE DIAMETER (in.): 8
ELEVATION: 1,326.5**

ELEVATION (ft)	DEPTH (ft)	"N" VALUE STD.PEN.TEST	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT* (blows/ft)	SAMPLE LOC.	USCS	DESCRIPTION
								4" Thick Asphalt Concrete
1325							SM	FILL - SILTY SAND - medium dense, moist, light brown
							SM	SILTY SAND - medium dense, moist, light brown, thin layers of sandy lean clay (16% passing No. 200 sieve)
			16.4	98	16			
	5							
1320			6.5	116	68/11"			becomes dense, few gravel
							SW	WELL-GRADED SAND - dense, slightly moist, light brown layers with small cobbles
	10		5.1	121	50			
1315		51	6.5					becomes very dense
	15							
1310			10.5	124	54			becomes dense, becomes moist
	20	50	9.3					becomes very dense, becomes slightly moist
1305								
	25		6.9	115	82/11"			
1300								
	30	51	8.1					
1295								
	35		9.9	111	77			
1290								
	40	36	17.6					thin layers of lean clay

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

(CONTINUED ON FOLLOWING FIGURE)

Field Tech: GMC
Prepared By: MM
Checked By: JA

B12SOIL CRANDALL 31451.GPJ LAW CRAN.GDT 6/17/03

Inland Valley Medical Center
Wildomar, California

MACTEC

LOG OF BORING
Project: 4953-03-1451 Figure: A-1.6a

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

BORING 6 (Continued)

DATE DRILLED: May 20, 2003
EQUIPMENT USED: Hollow Stem Auger
HOLE DIAMETER (in.): 8
ELEVATION: 1,326.5**

ELEVATION (ft)	DEPTH (ft)	"N" VALUE STD.PEN.TEST	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT* (blows/ft)	SAMPLE LOC.	DESCRIPTION
1285							(37% passing No. 200 sieve) becomes dense
	45		18.1	110	66		
1280							
	50	85 for 11"	15.6				becomes very dense END OF BORING AT 50'
1275							
	55						
1270							
	60						
1265							
	65						
1260							
	70						
1255							
	75						
1250							
	80						

NOTES:

Water measured at a depth of 42½' 10 minutes after completion of drilling. No caving. Boring backfilled with soil cuttings, tamped, and patched.

Field Tech: GMC
Prepared By: MM
Checked By: JA

Inland Valley Medical Center
Wildomar, California

MACTEC

LOG OF BORING
Project: 4953-03-1451 Figure: A-1.6b

BORING 7

DATE DRILLED: May 20, 2003
EQUIPMENT USED: Hollow Stem Auger
HOLE DIAMETER (in.): 8
ELEVATION: 1,028.5**

ELEVATION (ft)	DEPTH (ft)	"N" VALUE STD.PEN.TEST	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT* (blows/ft)	SAMPLE LOC.	USCS	DESCRIPTION
								4" Thick Asphalt Concrete
							SM	FILL - SILTY SAND - medium dense, moist, light brown
							SW	WELL-GRADED SAND - medium dense, slightly moist, light yellowish-brown
			7.9	114	45			
1025	5		7.8	112	43			
1020			5.8	120	75			becomes dense
	10		11.9	117	72			becomes moist
1015	15		10.0	111	70			
1010	20		8.6	108	80/11"			becomes very dense, becomes slightly moist
1005	25		3.5	113	90/9"			
1000	30		7.7	103	88/9"			END OF BORING AT 30'
995	35							
990	40							

NOTES:

Water not encountered. No caving. Boring backfilled with soil cuttings, tamped, and patched.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

Field Tech: GMC
Prepared By: MM
Checked By: JA

B12SOIL_CRANDALL_31451.GPJ LAW_CRAN.GDT 6/17/03

BORING 8

DATE DRILLED: May 20, 2003
EQUIPMENT USED: Hollow Stem Auger
HOLE DIAMETER (in.): 8
ELEVATION: 1,329.0 **

ELEVATION (ft)	DEPTH (ft)	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT* (blows/ft)	SAMPLE LOC.	USCS	DESCRIPTION
	0						4" Thick Asphalt Paving
						SM	FILL - SILTY SAND - medium dense, moist, light brown
						SW	WELL-GRADED SAND - dense, moist, light yellowish-brown
1325	5	12.0	119	60	X		
1320	10	8.8	112	60	X		becomes slightly moist
		11.5	110	59	X		becomes moist
1315	15	7.3	111	67	X		becomes slightly moist
1310	20	8.4	111	81/10"	X		becomes very dense
1305	25	3.5	119	88/10"	X		
1300	30	12.6	118	85/11"	X		becomes moist END OF BORING AT 29'
1295	35						
1290	40						

NOTES:

Water not encountered. No caving. Boring backfilled with soil cuttings, tamped, and patched.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

Field Tech: GMC
Prepared By: MM
Checked By: JA

DATE DRILLED	2/18/08	LOGGED BY	SP	BORING NO.	B-1
DRIVE WEIGHT	140 lbs.	DROP	30 inches	DEPTH TO GROUNDWATER	NE
DRILLING METHOD	Hollow Stem Auger	DRILLER	JET Drilling, Inc.	SURFACE ELEVATION	1325 ft +(MSL)*

ELEVATION (feet)	DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS / FOOT	MOISTURE (%)	DRY DENSITY (pcf)	ADDITIONAL TESTS	GRAPHIC LOG	U.S.C.S. CLASSIFICATION	DESCRIPTION
		Bulk				EI, RV		SM	ALLUVIUM: Silty SAND, red-brown, moist; fine-grained
									- light brown
1320	5	Driven	75	9.2	110.1				- very dense; rust and black staining; fine to medium-grained
1315	10	Driven	75	10.3	112.6				- fine-grained
									Total Depth = 11.5 feet Groundwater not encountered Backfilled on 2/18/2008
1310	15								
1305	20								
1300	25								
1295	30								
1290	35								* Note: Elevation based on plan provided by Nicholas J. Nowickl, Ltd.

TWINING LABORATORIES OF SOUTHERN CALIFORNIA

LOG OF BORING

Inland Valley Medical Center New Parking Lot
36485 Inland Valley Drive
Wildomar, California

PROJECT NO.	REPORT DATE	FIGURE A-2
080154.3	March 2008	Sheet 1 of 1

DATE DRILLED	2/18/08	LOGGED BY	SP	BORING NO.	B-2
DRIVE WEIGHT	140 lbs.	DROP	30 inches	DEPTH TO GROUNDWATER	NE
DRILLING METHOD	Hollow Stem Auger	DRILLER	JET Drilling, Inc.	SURFACE ELEVATION	1325 ft ±(MSL)*

ELEVATION (feet)	DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS / FOOT	MOISTURE (%)	DRY DENSITY (pcf)	ADDITIONAL TESTS	GRAPHIC LOG	U.S.C.S. CLASSIFICATION	DESCRIPTION
	0						MAX		SM	ALLUVIUM: Silty SAND, red-brown, moist; fine-grained
										- light brown
1320	5			50	12.5	96.4				- dark brown, dense
1315	10			44	12.6	107.3				- dense
										Total Depth = 11.5 feet Groundwater not encountered Backfilled on 2/18/2008
1310	15									
1305	20									
1300	25									
1295	30									
1290	35									* Note: Elevation based on plan provided by Nicholas J. Nowickl, Ltd.

TWINING LABORATORIES OF SOUTHERN CALIFORNIA

LOG OF BORING

Inland Valley Medical Center New Parking Lot
36485 Inland Valley Drive
Wildomar, California

PROJECT NO.	REPORT DATE	FIGURE A-3
080154.3	March 2008	Sheet 1 of 1

DATE DRILLED	2/18/08	LOGGED BY	SP	BORING NO.	B-3
DRIVE WEIGHT	140 lbs.	DROP	30 inches	DEPTH TO GROUNDWATER	NE
DRILLING METHOD	Hollow Stem Auger	DRILLER	JET Drilling, Inc.	SURFACE ELEVATION	1325 ft ±(MSL)*

ELEVATION (feet)	DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS / FOOT	MOISTURE (%)	DRY DENSITY (pcf)	ADDITIONAL TESTS	GRAPHIC LOG	U.S.C.S. CLASSIFICATION	DESCRIPTION
								SM	ALLUVIUM: Silty SAND, brown to red-brown, moist, fine-grained
		Driven	32	8.2	126.1	WASH			- red-brown, medium dense; fine to medium-grained
1320	5	Driven	41	11.2	98.8				
1315	10	Driven	28						- fine to coarse-grained
									Total Depth = 11.5 feet Groundwater not encountered Backfilled on 2/18/2008
1310	15								
1305	20								
1300	25								
1295	30								
									* Note: Elevation based on plan provided by Nicholas J. Nowickl, Ltd.
1290	35								

TWINING LABORATORIES OF SOUTHERN CALIFORNIA

LOG OF BORING

Inland Valley Medical Center New Parking Lot
36485 Inland Valley Drive
Wildomar, California

PROJECT NO.	REPORT DATE	FIGURE A-4
080154.3	March 2008	Sheet 1 of 1

DATE DRILLED	2/18/08	LOGGED BY	SP	BORING NO.	B-4
DRIVE WEIGHT	140 lbs.	DROP	30 inches	DEPTH TO GROUNDWATER	NE
DRILLING METHOD	Hollow Stem Auger	DRILLER	JET Drilling, Inc.	SURFACE ELEVATION	1325 ft ±(MSL)*

ELEVATION (feet)	DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS / FOOT	MOISTURE (%)	DRY DENSITY (pcf)	ADDITIONAL TESTS	GRAPHIC LOG	U.S.C.S. CLASSIFICATION	DESCRIPTION
	0	X					ATT, EI, MAX, RV, WASH		CL	FILL: Sandy Lean CLAY, dark brown, moist
1320	5		X	27	9.3	106.7			SM	ALLUVIUM: Silty SAND, dark-brown, moist, medium dense; fine-grained
1315	10		X	46						- brown
										Total Depth = 11.5 feet Groundwater not encountered Backfilled on 2/18/2008
1310	15									
1305	20									
1300	25									
1295	30									
1290	35									* Note: Elevation based on plan provided by Nicholas J. Nowickl, Ltd.

TWINING LABORATORIES OF SOUTHERN CALIFORNIA

LOG OF BORING

Inland Valley Medical Center New Parking Lot
36485 Inland Valley Drive
Wildomar, California

PROJECT NO.	REPORT DATE	FIGURE A-5
080154.3	March 2008	Sheet 1 of 1

DATE DRILLED	2/18/08	LOGGED BY	SP	BORING NO.	B-5
DRIVE WEIGHT	140 lbs.	DROP	30 inches	DEPTH TO GROUNDWATER	NE
DRILLING METHOD	Hollow Stem Auger	DRILLER	JET Drilling, Inc.	SURFACE ELEVATION	1325 ft +(MSL)*

ELEVATION (feet)	DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS / FOOT	MOISTURE (%)	DRY DENSITY (pcf)	ADDITIONAL TESTS	GRAPHIC LOG	U.S.C.S. CLASSIFICATION	DESCRIPTION
								SM	ALLUVIUM: Silty SAND, red-brown, moist; fine-grained
		Driven	36	7.0	124.8	WASH			- some gravel, medium dense
1320	5	Driven	36	9.0	105.4	RV			- rusty and black staining
		Bulk							
1315	10	Driven	27						- fine to coarse-grained
									Total Depth = 11.5 feet Groundwater not encountered Backfilled on 2/18/2008
1310	15								
1305	20								
1300	25								
1295	30								
									* Note: Elevation based on plan provided by Nicholas J. Nowickl, Ltd.
1290	35								

TWINING LABORATORIES OF SOUTHERN CALIFORNIA

LOG OF BORING

Inland Valley Medical Center New Parking Lot
36485 Inland Valley Drive
Wildomar, California

PROJECT NO.	REPORT DATE	FIGURE A-6
080154.3	March 2008	Sheet 1 of 1

DATE DRILLED	2/18/08	LOGGED BY	SP	BORING NO.	B-6
DRIVE WEIGHT	140 lbs.	DROP	30 inches	DEPTH TO GROUNDWATER	NE
DRILLING METHOD	Hollow Stem Auger	DRILLER	JET Drilling, Inc.	SURFACE ELEVATION	1325 ft ±(MSL)*

ELEVATION (feet)	DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS / FOOT	MOISTURE (%)	DRY DENSITY (pcf)	ADDITIONAL TESTS	GRAPHIC LOG	U.S.C.S. CLASSIFICATION	DESCRIPTION
									SM	FILL: Silty SAND, brown, moist; fine-grained
									CL	Sandy Lean CLAY, gray, moist
			X	32	12.3	111.0	ATT, EI, RV, WASH			- very stiff
1320	5		X	26	17.3	105.9	CORR, WASH			
									SM	ALLUVIUM: Silty SAND, red-brown, moist, very dense; fine-grained
1315	10			75/11"						
										Total Depth = 10.9 feet Groundwater not encountered Backfilled on 2/18/2008
1310	15									
1305	20									
1300	25									
1295	30									
										* Note: Elevation based on plan provided by Nicholas J. Nowickl, Ltd.
1290	35									

TWINING LABORATORIES OF SOUTHERN CALIFORNIA

LOG OF BORING

Inland Valley Medical Center New Parking Lot
36485 Inland Valley Drive
Wildomar, California

PROJECT NO.	REPORT DATE	FIGURE A-7
080154.3	March 2008	Sheet 1 of 1

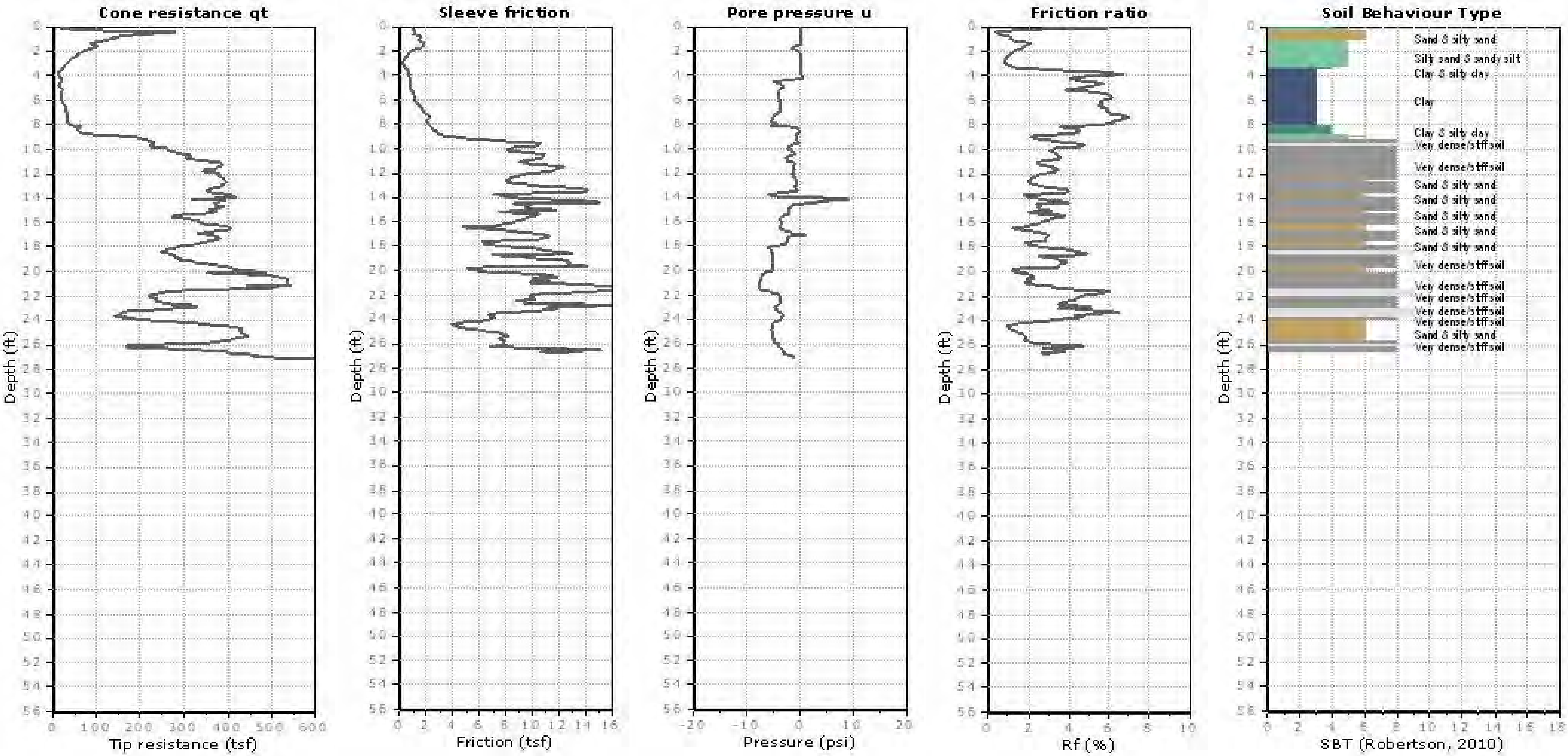
APPENDIX C

LOGS OF CONE PENETROMETER SOUNDINGS

Kehoe Testing and Engineering
714-901-7270
steve@kehoetesting.com
www.kehoetesting.com

Project: **Nova Services** **CPT-1**

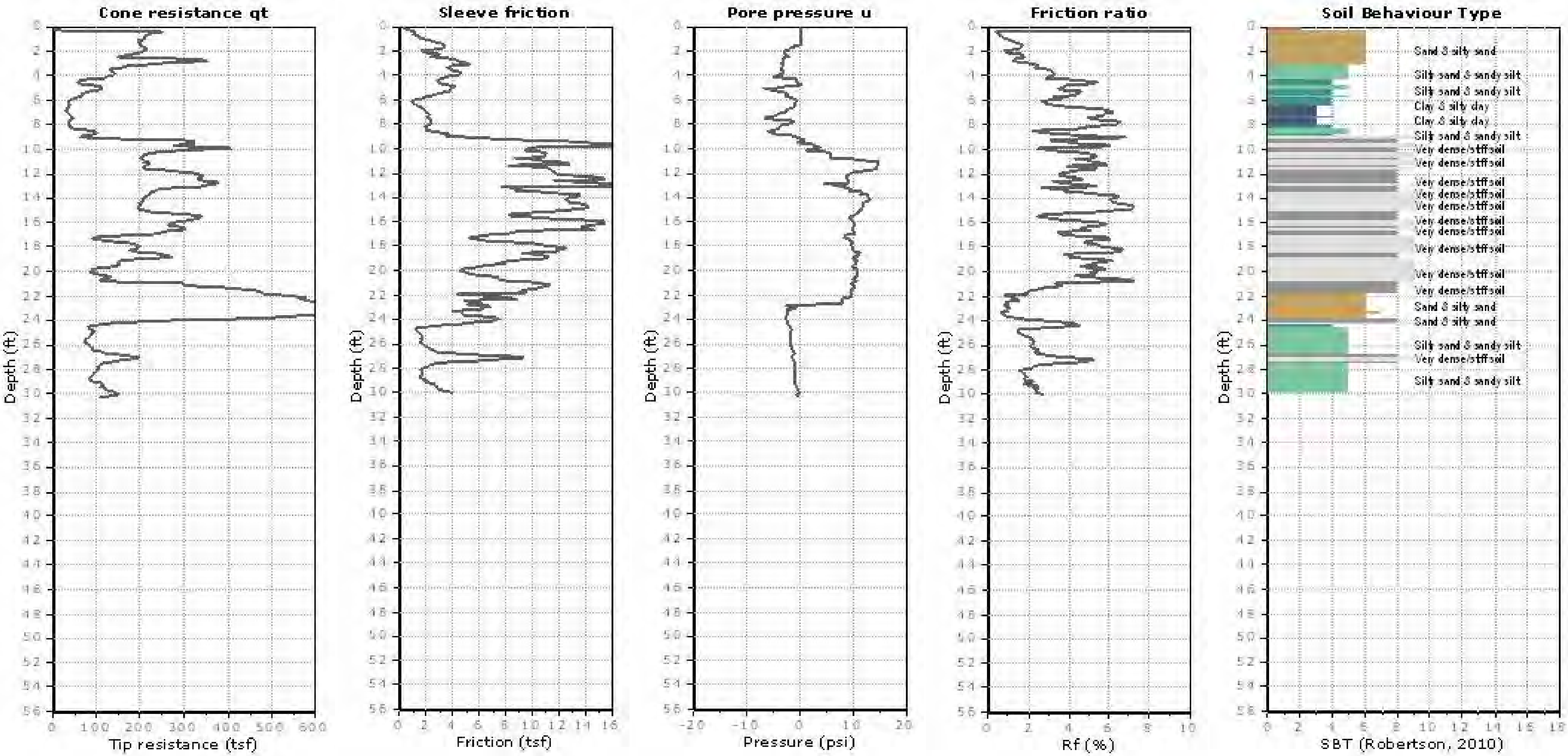
Location: **36845 Inland Valley Dr, Wildomar, CA** Total depth: 27.10 ft, Date: 8/9/2019



Kehoe Testing and Engineering
714-901-7270
steve@kehoetesting.com
www.kehoetesting.com

Project: Nova Services **CPT-2**

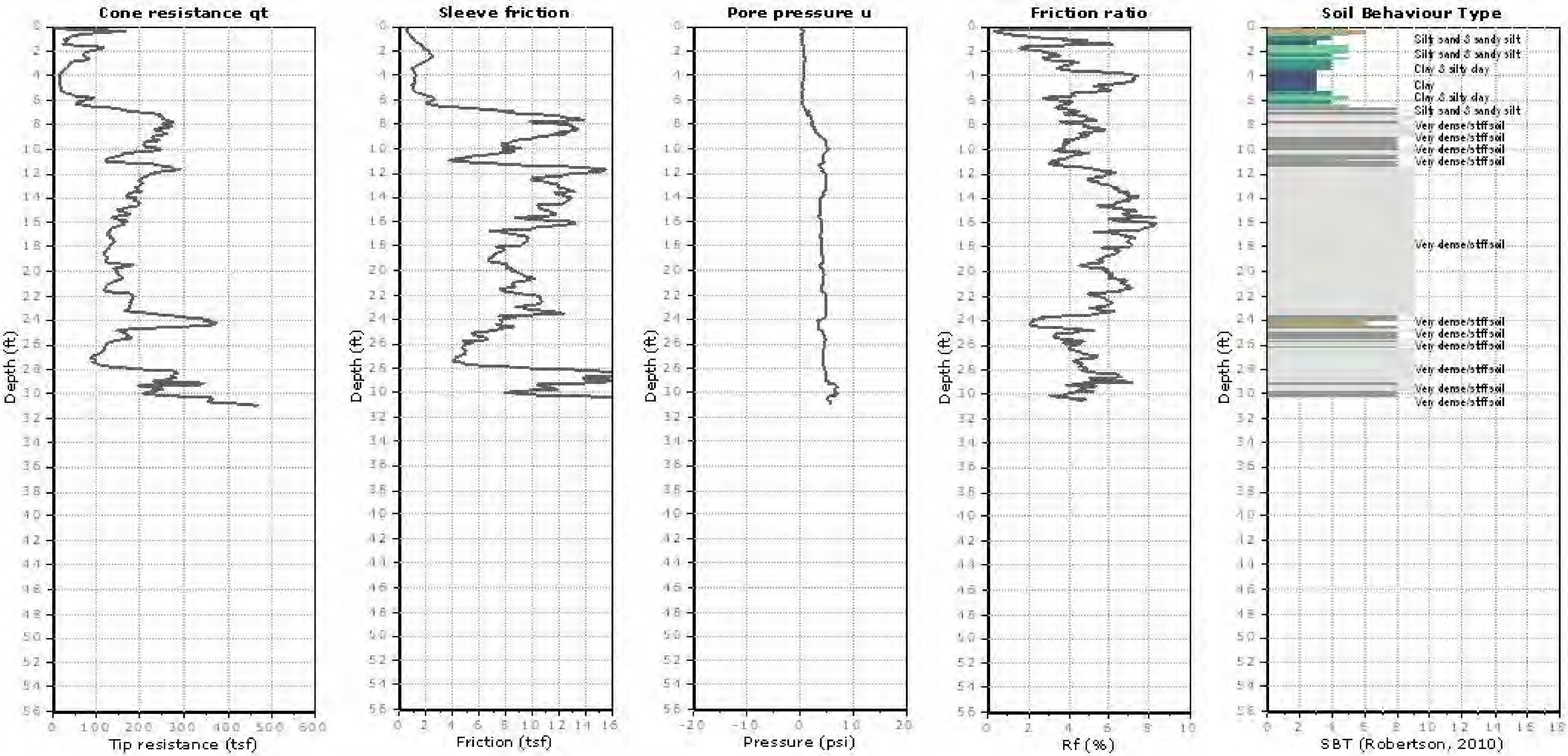
Location: 36845 Inland Valley Dr, Wildomar, CA Total depth: 30.34 ft, Date: 8/9/2019



Kehoe Testing and Engineering
714-901-7270
steve@kehoetesting.com
www.kehoetesting.com

Project: **Nova Services** **CPT-3**

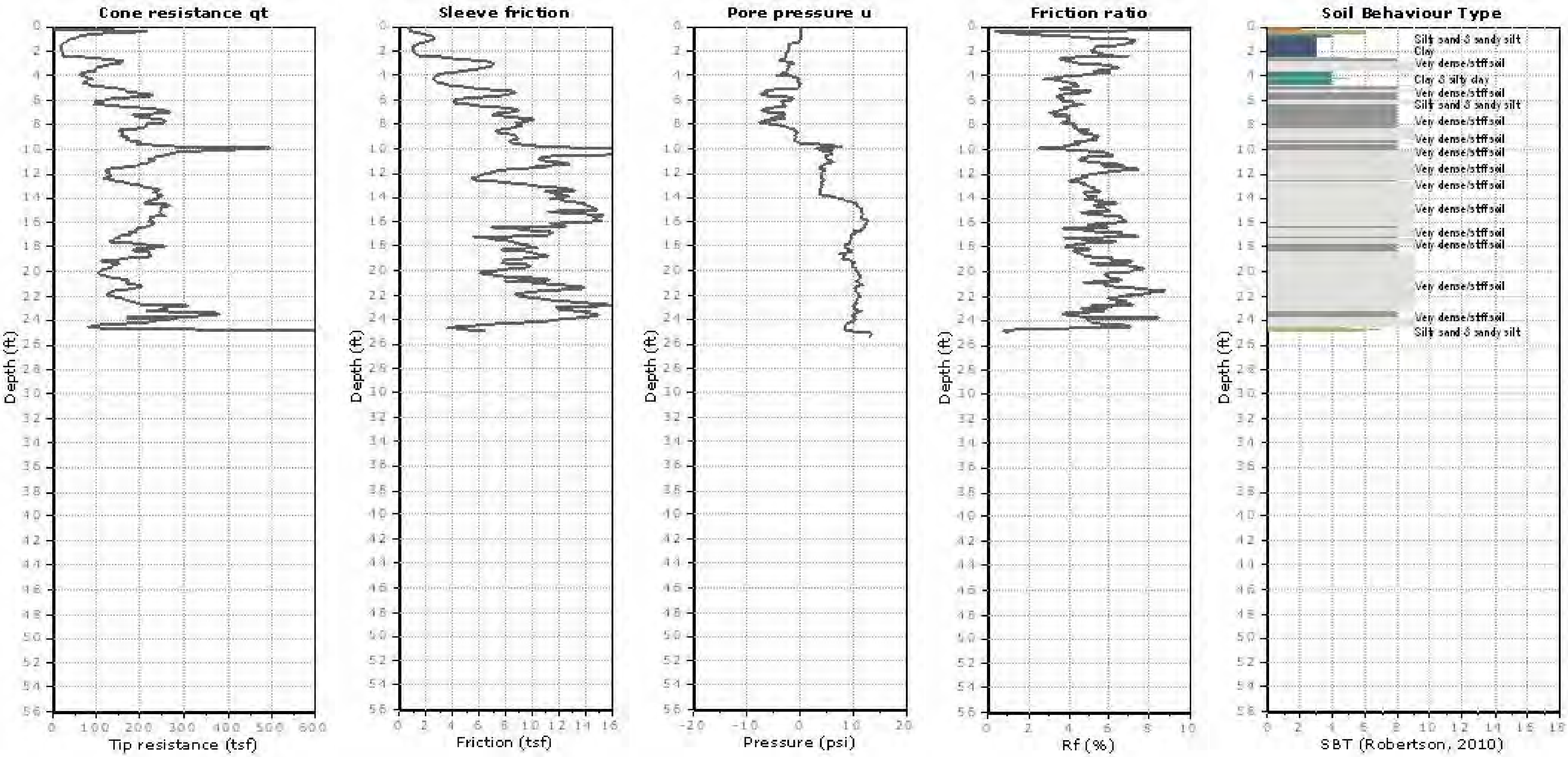
Location: **36845 Inland Valley Dr, Wildomar, CA** Total depth: 30.91 ft, Date: 8/9/2019



Kehoe Testing and Engineering
714-901-7270
steve@kehoetesting.com
www.kehoetesting.com

Project: **Nova Services** **CPT-4**

Location: **36845 Inland Valley Dr, Wildomar, CA** Total depth: 25.33 ft, Date: 8/9/2019



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steve@kehoetesting.com
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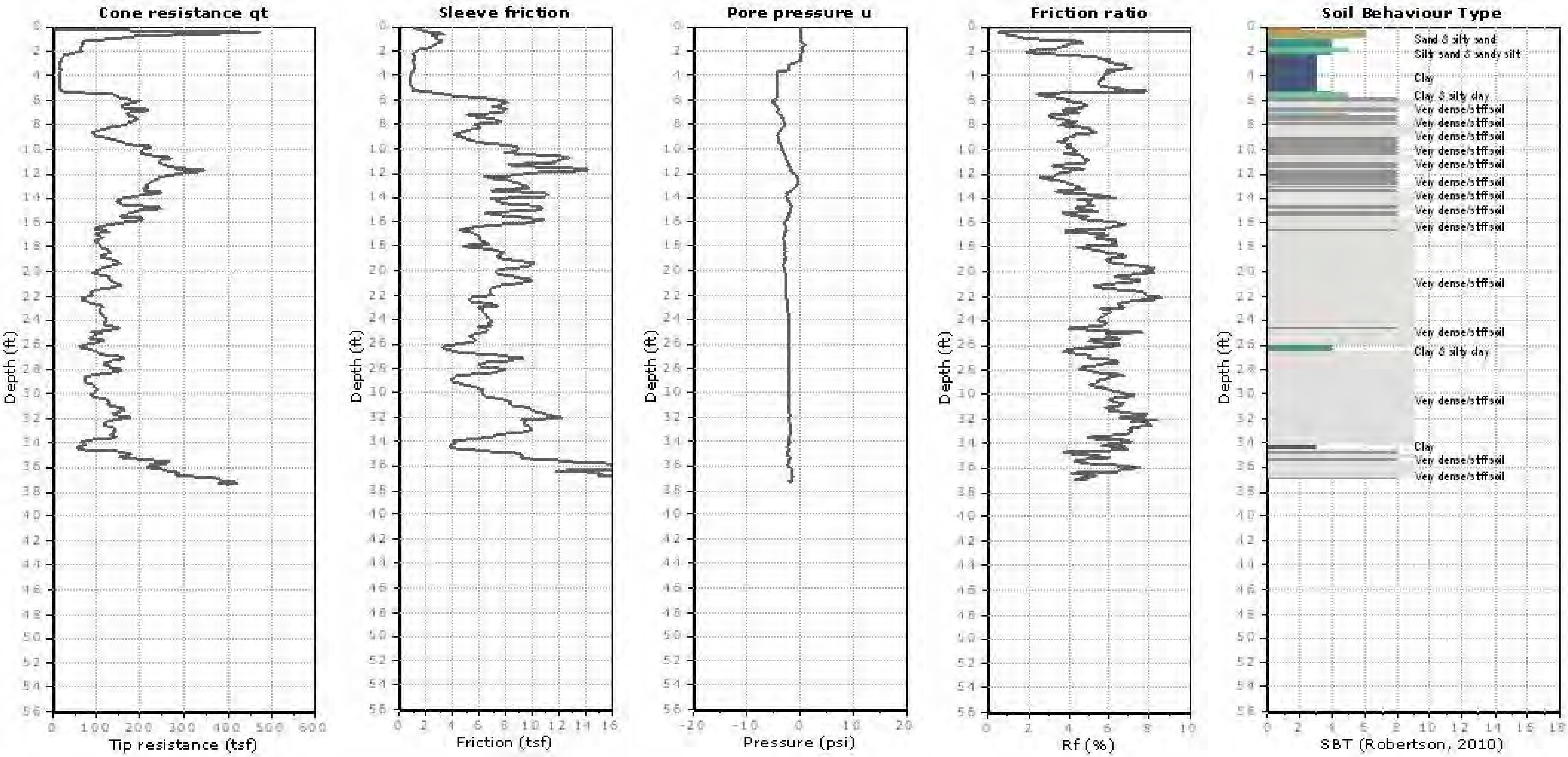
Project: Nova Services

Location: 36845 Inland Valley Dr, Wildomar, CA

CPT-5

Total depth: 37.41 ft, Date: 8/9/2019



Kehoe Testing and Engineering
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steve@kehoetesting.com
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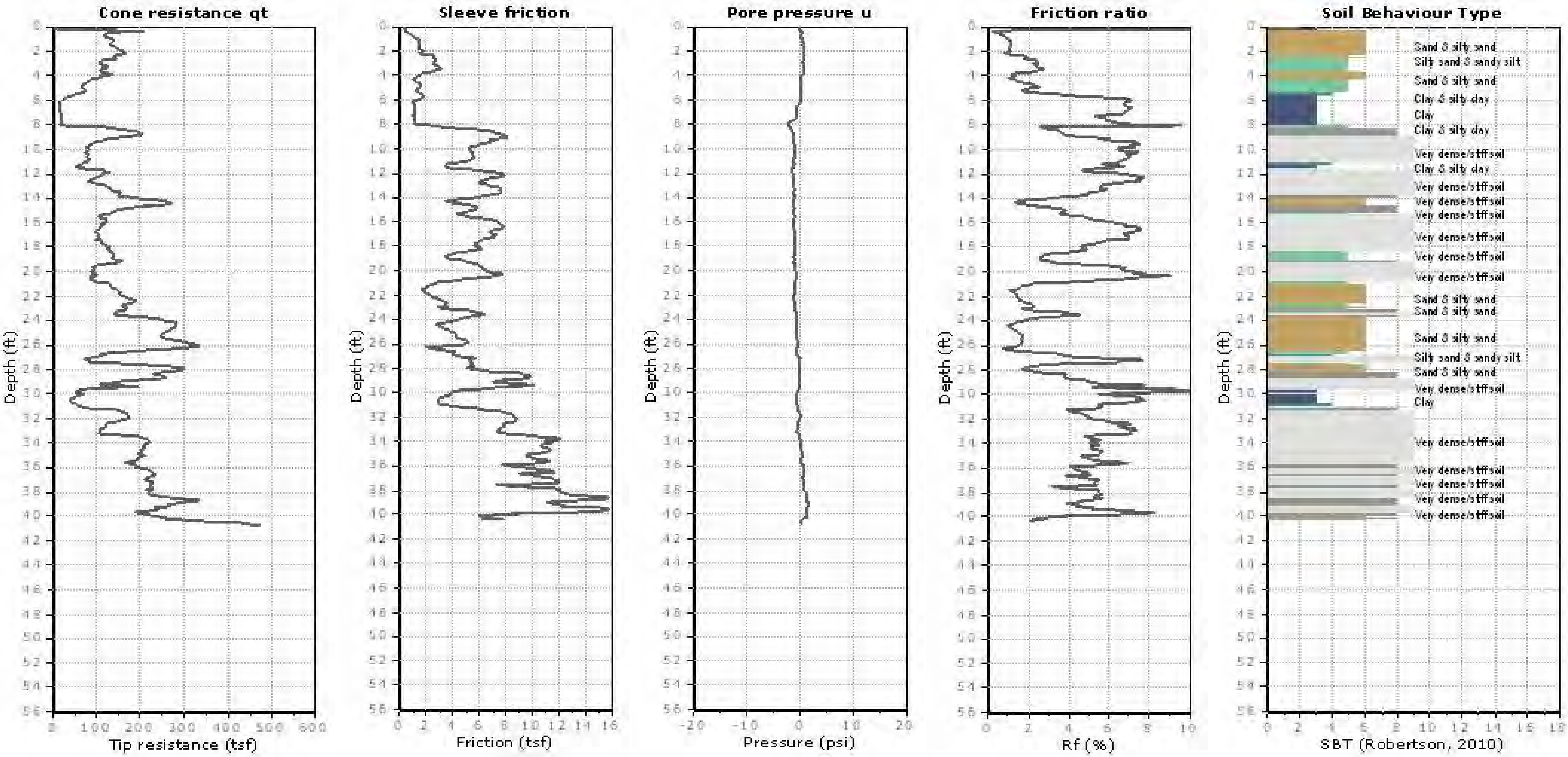
Project: Nova Services
Location: 36845 Inland Valley Dr, Wildomar, CA

CPT-6
Total depth: 40.75 ft, Date: 8/9/2019



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steve@kehoetesting.com
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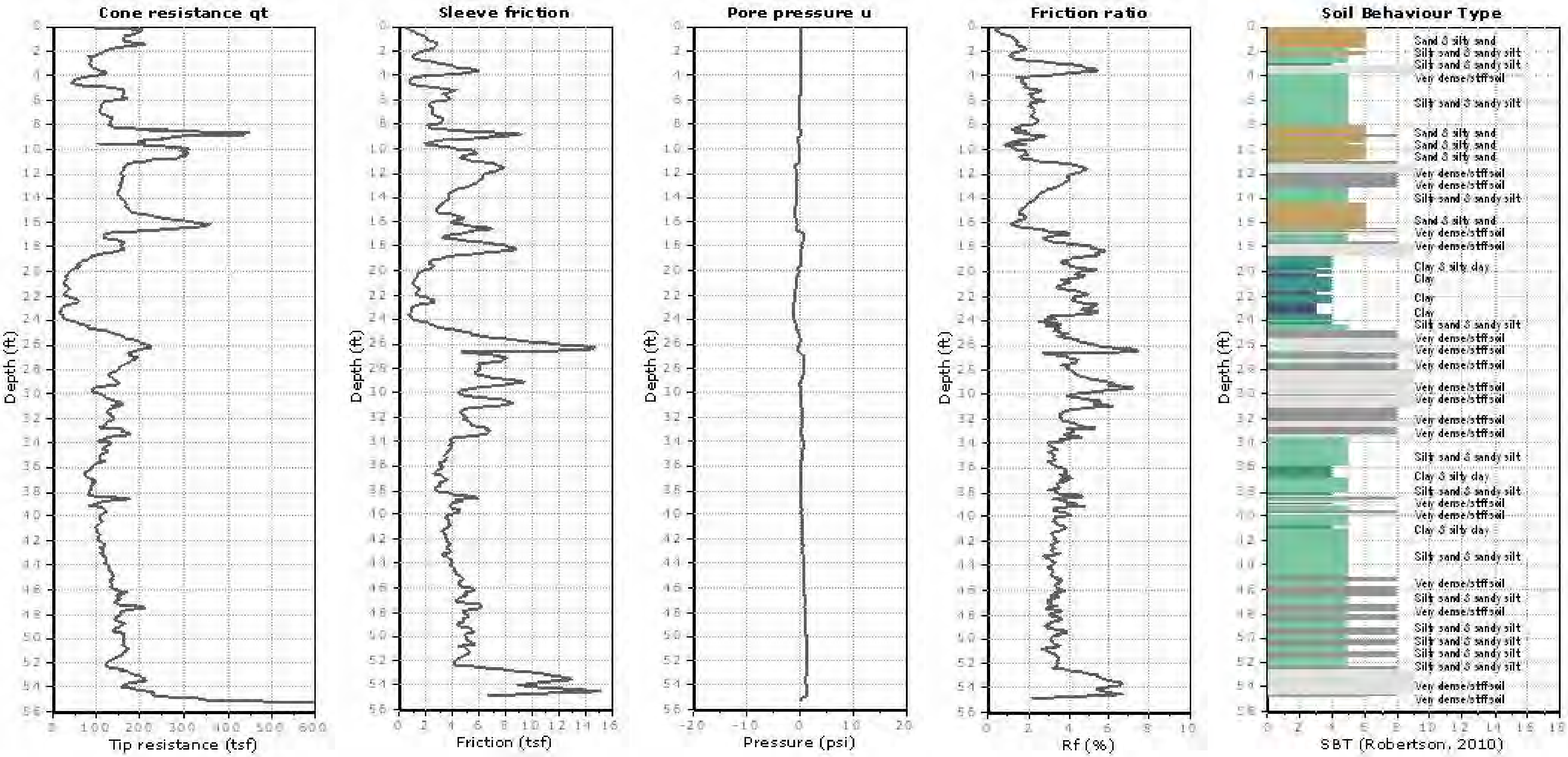
Project: Nova Services
Location: 36845 Inland Valley Dr, Wildomar, CA

CPT-7
Total depth: 55.25 ft, Date: 8/9/2019



APPENDIX D

LABORATORY ANALYTICAL RESULTS

Laboratory tests were performed in accordance with the generally accepted American Society for Testing and Materials (ASTM) test methods or suggested procedures. Brief descriptions of the tests performed are presented below:

- **CLASSIFICATION:** *Field classifications were verified in the laboratory by visual examination. The final soil classifications are in accordance with the Unified Soils Classification System and are presented in the exploration logs.*
- **DENSITY OF SOIL IN PLACE (ASTM D2937):** *In-place moisture contents and dry densities were determined for representative soil samples. This information was an aid to classification and permitted recognition of variations in material consistency with depth. The dry unit weight is determined in pounds per cubic foot, and the in-place moisture content is determined as a percentage of the soil's dry weight. The results are summarized in the exploration logs.*
- **MAXIMUM DENSITY AND OPTIMUM MOISTURE CONTENT (ASTM D1557 METHOD A,B,C):** *The maximum dry density and optimum moisture content of typical soils were determined in the laboratory in accordance with ASTM Standard Test D1557, Method A, Method B, Method C.*
- **DIRECT SHEAR TEST (ASTM D3080):** *Direct shear tests were performed on remolded and relatively undisturbed samples in general accordance with ASTM D3080 to evaluate the shear stregth characteristics of selected materials. The samples were inundated during shearing to represent adverse field conditions.*
- **CORROSIVITY TEST (CAL. TEST METHOD 417, 422, 643):** *Soil PH, and minimum resistivity tests were performed on a representative soil sample in general accordance with test method CT 643. The sulfate and chloride content of the selected sample were evaluated in general accordance with CT 417 and CT 422, respectively.*
- **R-VALUE (ASTM D2844):** *The resistance Value, or R-Value, for near-surface site soils were evaluated in general accordance with California Test (CT) 301 and ASTM D2844. Samples were prepared and evaluated for exudation pressure and expansion pressure. The equilibrium R-value is reported as the lesser or more conservative of the two calculated results.*
- **EXPANSION INDEX (ASTM D 4829):** *The expansion index of selected materials was evaluated in general accordance with ASTM D 4829. Specimens were molded under a specified compactive energy at approximately 50 percent saturation (plus or minus 1 percent). The prepared 1-inch thich by 4-inch diameter specimens were loaded with a surcharge of 144 pounds per square foot and were inundated with tap water. Readings of volumetric swell were made for a period of 24 hours.*
- **GRADATION ANALYSIS (ASTM C 136 and/or ASTM D422):** *Tests were performed on selected representative soil samples in general accordance with ASTM D422. The grain size distributions of selected samples were determined in accordance with ASTM C 136 and/or ASTM D422.*

Expansion Index (ASTM D4829)

Sample Location	Sample Depth (ft.)	Expansion Index	Expansion Potential
B-9	1.0'-5.0'	0	Very Low

Density of Soil in Place (ASTM D2937)

Sample Location	Sample Depth (ft)	Moisture (%)	Dry Density (pcf)
B-1	5.0'	3.7	125.6
B-1	15.0'	7.5	119.2
B-1	25.0	14.1	122.9
B-1	35.0'	17.6	110.4
B-1	45.0'	19.4	108.3
B-4	10.0'	33.1	81.5
B-4	20.0'	13.0	123.8
B-4	30.0'	8.8	127.8
B-4	40.0'	13.0	119.0
B-5	5.0'	6.4	117.3

Resistance Value (Cal. Test Method 301 & ASTM D2844)

Sample Location	Sample Depth (ft.)	R-Value
B-1	0.0'-5.0'	30

Maximum Dry Density and Optimum Moisture Content (ASTM D1557)

Sample Location	Sample Depth (ft.)	Maximum Dry Density (pcf)	Optimum Moisture Content (%)
B-1	0.0' - 5.0'	120.7	13.2
B-5	0.0' - 5.0'	128.9	7.3

Direct Shear (ASTM D3080)

Sample Location	Depth (feet)	Friction Angle (degrees)	Apparent Cohesion (psf)
B-4	10.0'	39	397

Corrosivity (Cal. Test Method 417,422,643)

Sample Location	Sample Depth (ft.)	pH	Resistivity (Ohm-cm)	Sulfate Content (ppm)	Sulfate Content (%)	Chloride Content (ppm)	Chloride Content (%)
B-1	0.0'-5.0'	7.1	860	87	0.009	130	0.013
B-5	0.0'-5.0'	7.9	1800	30	0.003	21	0.002
B-9	1.0'-5.0'	N/A	N/A	27	0.003	N/A	N/A

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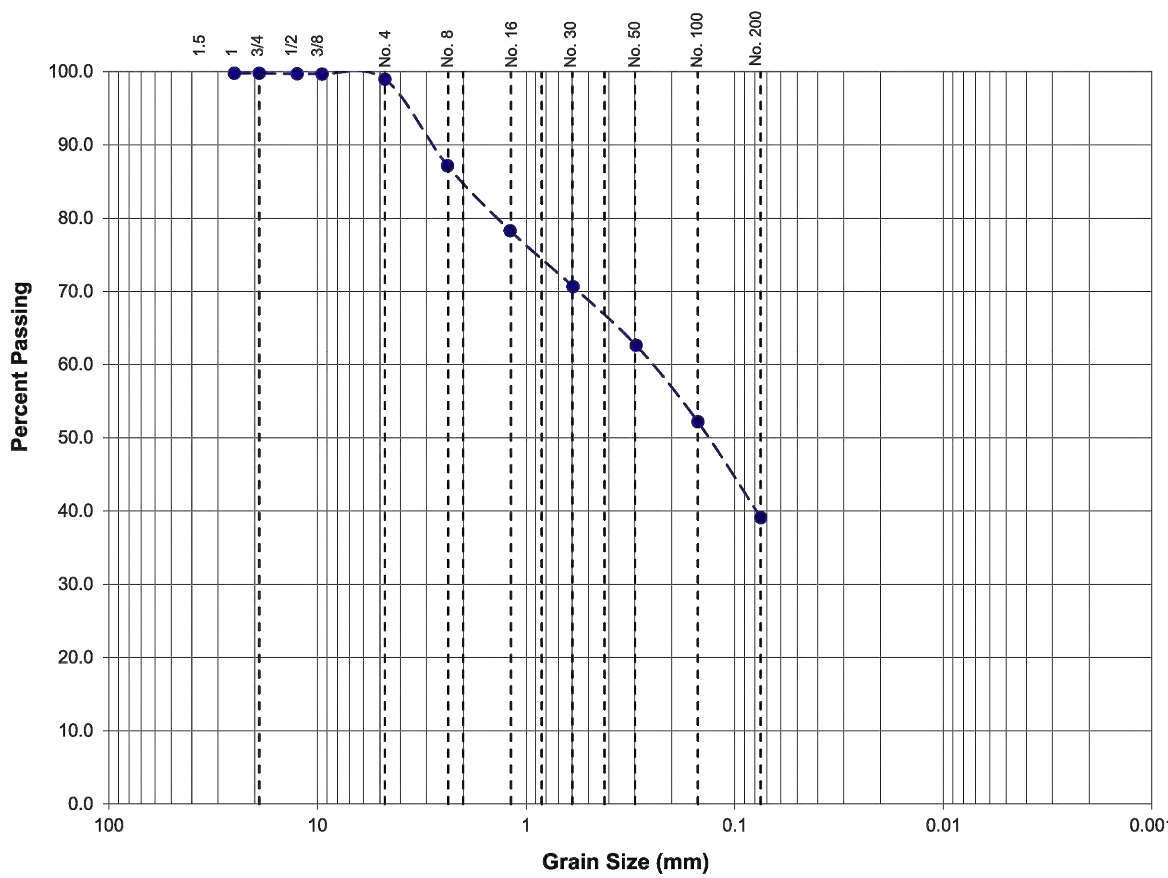
LAB TEST RESULTS

UHS TOWER & CUP AREA
36485 INLAND VALLEY DRIVE
WILDOMAR, CALIFORNIA

BY: DTW | DATE: DECEMBER 2019 | PROJECT: 3019060



Gravel		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample Location: B-1

Depth (ft): 0.0'-5.0'

USCS Soil Type: SM

Passing No. 200 (%): 39

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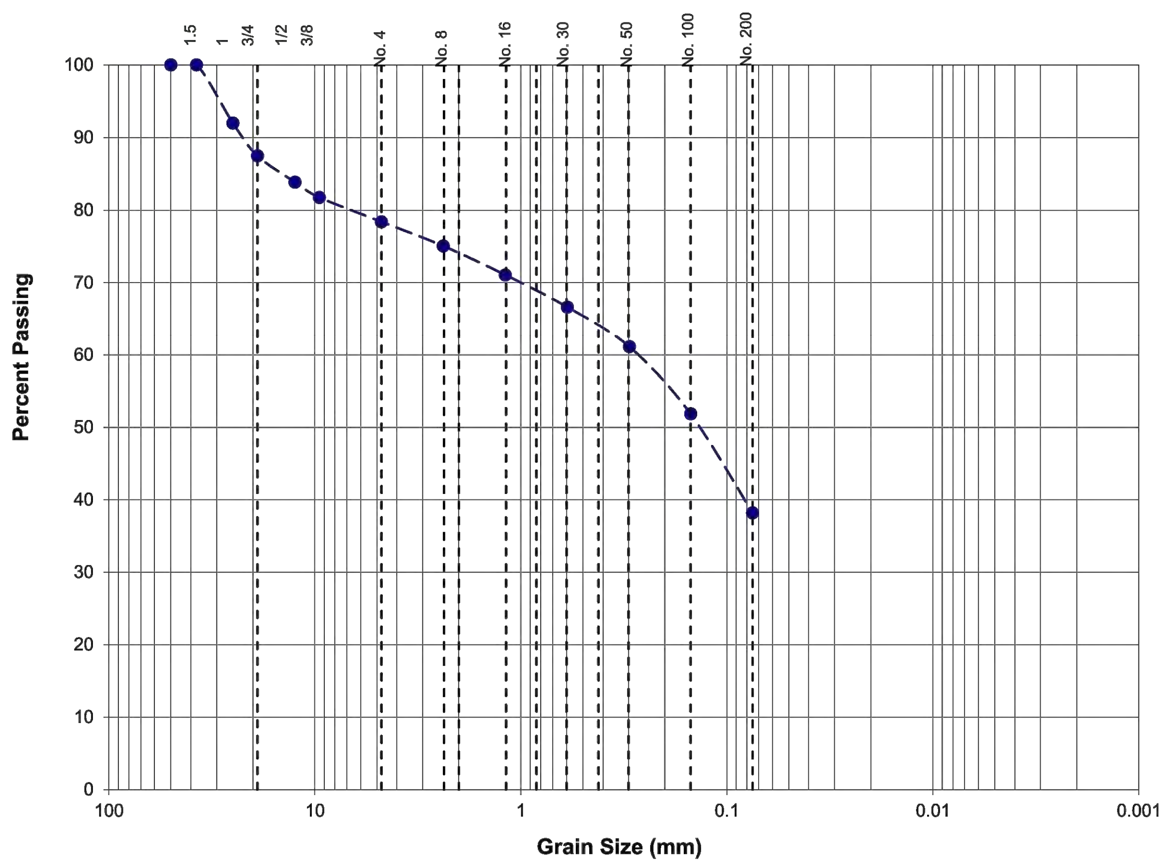
GRADATION ANALYSIS TEST RESULTS

UHS TOWER & CUP AREA
36485 INLAND VALLEY DRIVE
WILDOMAR, CALIFORNIA

BY: DTW	DATE: DECEMBER 2019	PROJECT: 3019060



Gravel		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample Location: B-1

Depth (ft): 30.0'

USCS Soil Type: SM

Passing No. 200 (%): 38

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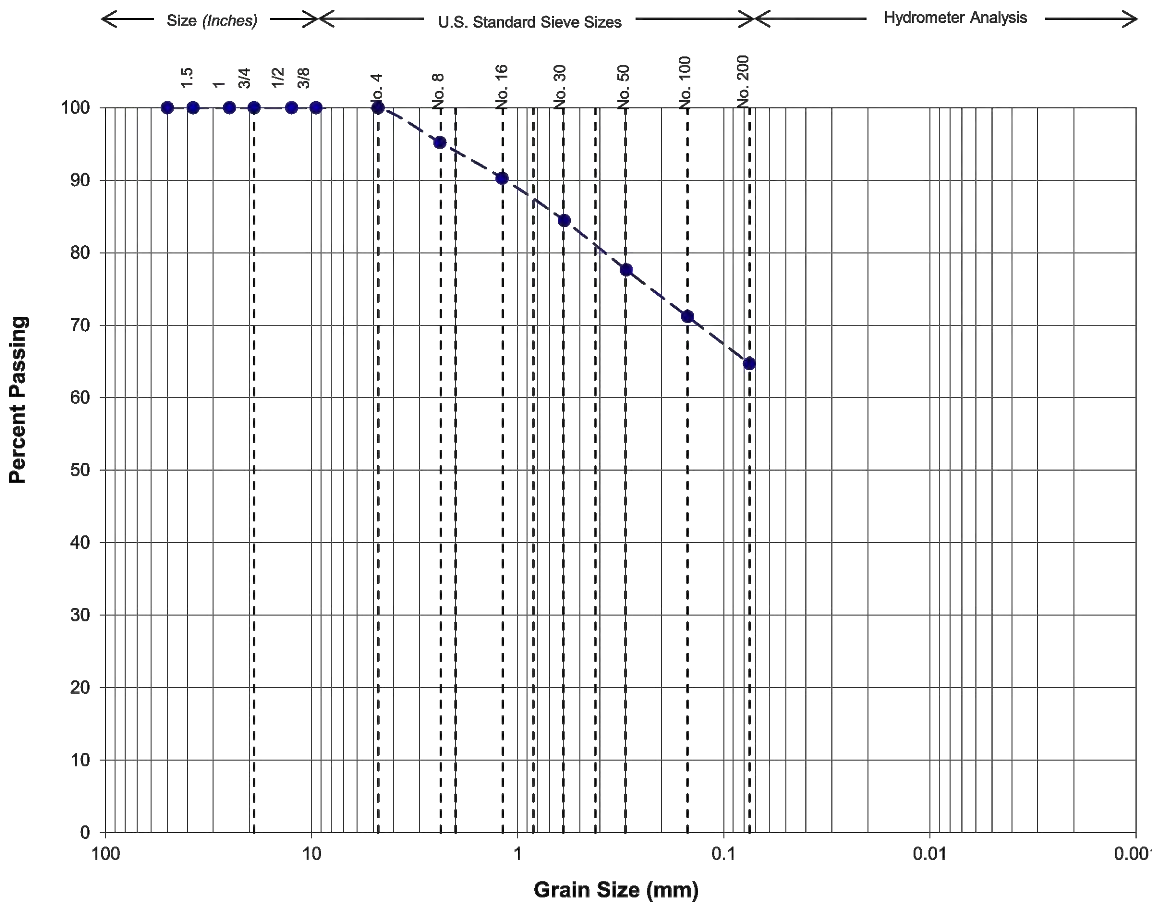
GRADATION ANALYSIS TEST RESULTS

UHS TOWER & CUP AREA
36485 INLAND VALLEY DRIVE
WILDOMAR, CALIFORNIA

BY: DTW	DATE: DECEMBER 2019	PROJECT: 3019060



Gravel		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample Location: B-4

Depth (ft): 5.0'

USCS Soil Type: CL

Passing No. 200 (%): 65

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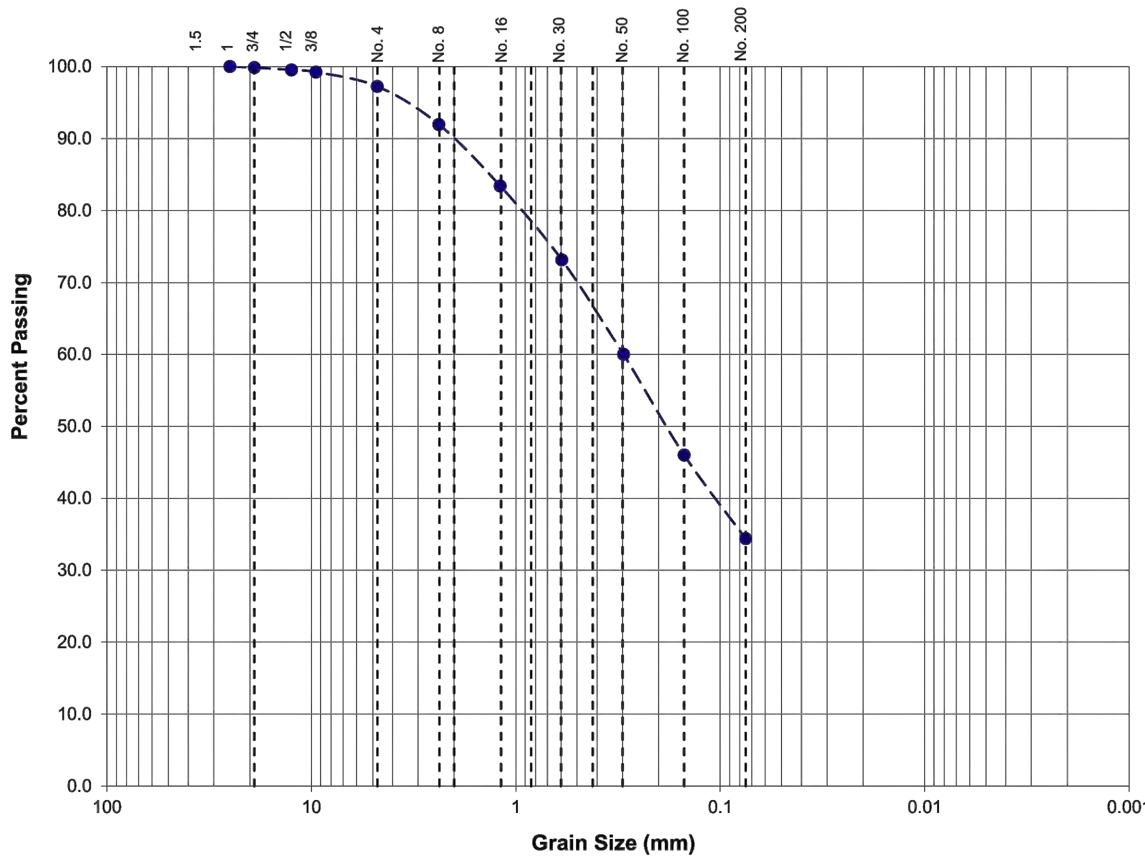
GRADATION ANALYSIS TEST RESULTS

UHS TOWER & CUP AREA
36485 INLAND VALLEY DRIVE
WILDOMAR, CALIFORNIA

BY: DTW	DATE: DECEMBER 2019	PROJECT: 3019060



<table>
<tr><td colspan="2">Gravel</td><td colspan="3">Sand</td><td rowspan="2">Silt or Clay</td></tr>
<tr><td>Coarse</td><td>Fine</td><td>Coarse</td><td>Medium</td><td>Fine</td></tr>
</table>

Sample Location:	B-6
Depth (ft):	10.0'-15.0
USCS Soil Type:	SM
Passing No. 200 (%):	34

NOVA

24632 SAN JUAN AVE, SUITE 100

DANA POINT, CALIFORNIA

(949) 388-7710 WWW.USA-NOVA.COM

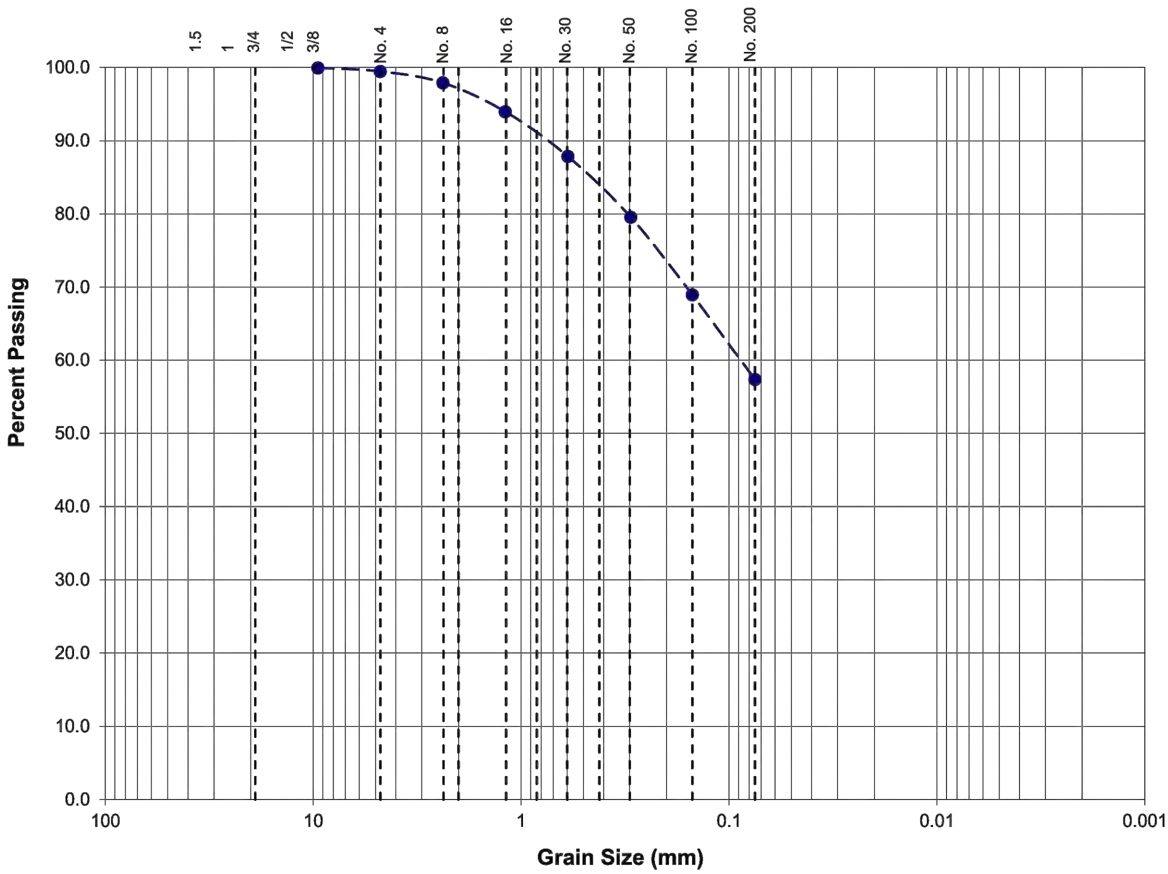
GRADATION ANALYSIS TEST RESULTS

UHS TOWER & CUP AREA

36485 INLAND VALLEY DRIVE

WILDOMAR, CALIFORNIA

BY: DTW	DATE: DECEMBER 2019	PROJECT: 3019060



<table>
<tr><td colspan="2">Gravel</td><td colspan="3">Sand</td><td rowspan="2">Silt or Clay</td></tr>
<tr><td>Coarse</td><td>Fine</td><td>Coarse</td><td>Medium</td><td>Fine</td></tr>
</table>

Sample Location: B-7

Depth (ft): 10.0'-15.0'

USCS Soil Type: ML

Passing No. 200 (%): 57

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UHS TOWER & CUP AREA

36485 INLAND VALLEY DRIVE

WILDOMAR, CALIFORNIA

BY: DTW	DATE: DECEMBER 2019	PROJECT: 3019060

APPENDIX E

STORMWATER INFILTRATION

PERCOLATION TEST DATA SHEET **P - __1___**

Project:	36485 Inland Valley		Project No:	3019060		Date:	8/28/2019
Test Hole No: P - 1			Tested By:	Tim Tavernetti			
Depth of test Hole:		15' (180")	USCS Soil Classification: Sandy Silt (ML)				
Test Hole Dimensions (inches)						Length	Width
Diameter (if round) =		8	Sides (if rectangular) =				
Sandy Soil Criteria Test*							
Trail No.	Start Time	Stop Time	Time Interval (min.)	Intital Depth to Water (in.)	Final Depth to Water (in.)	Change in Water Level (in.)	Greater than or Equal to 6"? (y/n)
1							
2							

* If two consecutive measurements show that six inches of water seps away in less than 25 minutes, the test shall be run for an additional hour with measurements taken every 10 minutes. Otherwise, pre-soak (fill) overnight. Obtain at least twelve measurements per hole over at least six hours (approximately 30 minute intervals) with a precision of at lease 0.25".

Trail No.	Start Time	Stop Time	Time Interval (min)	Initial Depth to Water (ft)	Final Depth to Water (ft)	Change in Water Level (in)	Percolation Rate (min/ in)
1	8:21	8:40	19	4.55	4.56	0.12	0.01
2	8:41	9:15	34	4.56	4.65	1.08	0.03
3	9:16	9:49	33	4.65	4.70	0.60	0.02
4	9:50	10:20	30	4.70	4.72	0.24	0.01
5	10:20	10:50	30	4.72	4.80	0.96	0.03
6	10:50	11:20	30	4.80	5.00	2.40	0.08
7	22:20	11:52	32	5.00	5.30	3.60	0.11
8	11:52	12:28	36	5.30	5.46	1.92	0.05
9	12:29	12:55	26	5.46	5.53	0.84	0.03
10	12:55	13:26	31			0.00	0.00
11	13:26	13:49	25	4.79	5.06	3.24	0.13
12	13:49	14:23	34	5.06	5.28	2.64	0.08

Error in reading 10; Line omitted

PERCOLATION TEST DATA SHEET P - __2___

Project:	36485 Inland Valley		Project No:	3019060		Date:	8/28/2019
Test Hole No: P - 2			Tested By:	Tim Tavernetti			
Depth of test Hole:		10.5' (126")	USCS Soil Classification: Silty Sand (SM)				
Test Hole Dimensions (inches)						Length	Width
Diameter (if round) =		8	Sides (if rectangular) =				
Sandy Soil Criteria Test*							
Trail No.	Start Time	Stop Time	Time Interval (min.)	Intital Depth to Water (in.)	Final Depth to Water (in.)	Change in Water Level (in.)	Greater than or Equal to 6"? (y/n)
1							
2							

* If two consecutive measurements show that six inches of water seps away in less than 25 minutes, the test shall be run for an additional hour with measurements taken every 10 minutes. Otherwise, pre-soak (fill) overnight. Obtain at least twelve measurements per hole over at least six hours (approximately 30 minute intervals) with a precision of at lease 0.25".

Trail No.	Start Time	Stop Time	Time Interval (min)	Initial Depth to Water (ft)	Final Depth to Water (ft)	Change in Water Level (in)	Percolation Rate (min/ in)
1	8:22	8:39	17	3.65	3.75	1.20	14.17
2	8:40	9:10	30	3.75	3.80	0.60	50.00
3	9:11	9:41	30	3.80	4.00	2.40	12.50
4	9:45	10:15	30	3.60	3.82	2.64	11.36
5	10:17	10:46	29	3.59	3.87	3.36	8.63
6	10:46	11:16	30	3.60	3.62	0.24	125.00
7	11:16	11:48	32	3.62	4.05	5.16	6.20
8	11:49	12:21	32	4.05	4.15	1.20	26.67
9	12:22	12:52	30	3.80	4.00	2.40	12.50
10	12:52	13:22	30	4.00	4.15	1.80	16.67
11	13:22	13:46	24	4.15	4.19	0.48	50.00
12	13:46	14:16	30	4.19	4.22	0.36	83.33

PERCOLATION TEST DATA SHEET

P - 3

Project:	36485 Inland Valley	Project No:	3019060	Date:	8/28/2019
Test Hole No: P - 3		Tested By:	Tim Tavernetti		
Depth of test Hole:	10' (120")	USCS Soil Classification: Silty Sand (SM)			
Test Hole Dimensions (inches)				Length	Width
Diameter (if round) =	8	Sides (if rectangular) =			

Sandy Soil Criteria Test*

Trail No.	Start Time	Stop Time	Time Interval (min.)	Intital Depth to Water (in.)	Final Depth to Water (in.)	Change in Water Level (in.)	Greater than or Equal to 6"? (y/n)
1							
2							

* If two consecutive measurements show that six inches of water seps away in less than 25 minutes, the test shall be run for an additional hour with measurements taken every 10 minutes. Otherwise, pre-soak (fill) overnight. Obtain at least twelve measurements per hole over at least six hours (approximately 30 minute intervals) with a precision of at lease 0.25".

Trail No.	Start Time	Stop Time	Time Interval (min)	Initial Depth to Water (ft)	Final Depth to Water (ft)	Change in Water Level (in)	Percolation Rate (min/ in)
1	8:22	8:44	22	2.65	2.69	0.48	45.83
2	8:45	9:17	32	2.69	2.75	0.72	44.44
3	9:18	9:51	33	2.75	2.80	0.60	55.00
4	9:51	10:21	30	2.80	2.85	0.60	50.00
5	10:22	10:51	29	2.85	2.90	0.60	48.33
6	10:51	11:21	30	2.90	2.92	0.24	125.00
7	11:21	11:52	31	2.92	2.98	0.72	43.06
8	11:52	12:30	38	2.98	3.05	0.84	45.24
9	12:31	12:56	25	3.05	3.05	0.00	0.00
10	12:56	13:29	33	3.05	3.09	0.48	68.75
11	13:29	13:50	31	3.09	3.13	0.48	64.58
12	13:50	14:25	35	3.13	3.15	0.24	145.83

PERCOLATION TEST DATA SHEET

P - __4___

Project:	36485 Inland Valley	Project No:	3019060	Date:	8/28/2019
Test Hole No: P - 4		Tested By:	Tim Tavernetti		
Depth of test Hole:	10.5' (126")	USCS Soil Classification: Silty Sand (SM)			
Test Hole Dimensions (inches)				Length	Width
Diameter (if round) =	8	Sides (if rectangular) =			

Sandy Soil Criteria Test*

Trail No.	Start Time	Stop Time	Time Interval (min.)	Intital Depth to Water (in.)	Final Depth to Water (in.)	Change in Water Level (in.)	Greater than or Equal to 6"? (y/n)
1							
2							

* If two consecutive measurements show that six inches of water seps away in less than 25 minutes, the test shall be run for an additional hour with measurements taken every 10 minutes. Otherwise, pre-soak (fill) overnight. Obtain at least twelve measurements per hole over at least six hours (approximately 30 minute intervals) with a precision of at lease 0.25".

Trail No.	Start Time	Stop Time	Time Interval (min)	Initial Depth to Water (ft)	Final Depth to Water (ft)	Change in Water Level (in)	Percolation Rate (min/ in)
1	8:20	8:42	22	2.50	2.56	0.72	30.56
2	8:43	9:13	30	2.56	2.63	0.84	35.71
3	9:14	9:47	33	2.63	2.70	0.84	39.29
4	9:48	10:19	31	2.70	2.71	0.12	258.33
5	10:20	10:48	28	2.71	2.74	0.36	77.78
6	10:49	11:19	30	2.74	2.79	0.60	50.00
7	11:19	11:51	32	2.79	2.82	0.36	88.89
8	11:51	12:23	33	2.82	2.86	0.48	68.75
9	12:24	12:53	29	2.86	2.90	0.48	0.00
10	12:53	13:26	33	2.90	2.94	0.48	68.75
11	13:26	13:47	21	2.94	3.00	0.72	29.17
12	13:48	14:22	34	3.00	3.06	0.72	47.22

PERCOLATION TEST DATA SHEET P - __5___

Project:	36485 Inland Valley	Project No:	3019060	Date:	8/28/2019
Test Hole No: P - 5		Tested By:	Tim Tavernetti		
Depth of test Hole:	9.0' (108")	USCS Soil Classification: Silty Sand (SM)			
Test Hole Dimensions (inches)				Length	Width
Diameter (if round) =	8	Sides (if rectangular) =			

Sandy Soil Criteria Test*

Trail No.	Start Time	Stop Time	Time Interval (min.)	Intital Depth to Water (in.)	Final Depth to Water (in.)	Change in Water Level (in.)	Greater than or Equal to 6"? (y/n)
1							
2							

* If two consecutive measurements show that six inches of water seps away in less than 25 minutes, the test shall be run for an additional hour with measurements taken every 10 minutes. Otherwise, pre-soak (fill) overnight. Obtain at least twelve measurements per hole over at least six hours (approximately 30 minute intervals) with a precision of at lease 0.25".

Trail No.	Start Time	Stop Time	Time Interval (min)	Initial Depth to Water (ft)	Final Depth to Water (ft)	Change in Water Level (in)	Percolation Rate (min/ in)
1	8:18	8:41	23	2.30	2.39	1.08	21.30
2	8:42	9:12	30	2.39	2.40	0.12	250.00
3	9:13	9:46	33	2.40	2.43	0.36	91.67
4	9:46	10:18	32	2.43	2.49	0.72	44.44
5	10:19	10:48	29	2.49	2.55	0.72	40.28
6	10:48	11:18	30	2.55	2.56	0.12	250.00
7	11:18	11:50	32	2.56	2.60	0.48	66.67
8	11:50	12:23	33	2.60	2.65	0.60	55.00
9	12:24	12:53	29	2.65	2.69	0.48	0.00
10	12:53	13:23	30	2.69	2.72	0.36	83.33
11	13:23	13:47	24	2.72	2.73	0.12	200.00
12	13:47	14:21	34	2.73	2.76	0.36	94.44

APPENDIX F

ASSESSMENT OF LIQUEFACTION POTENTIAL

T A B L E   O F   C O N T E N T S

NOVA Services, Inc.
4373 Viewridge, Suite B
San Diego, CA 92123
858-292-7575

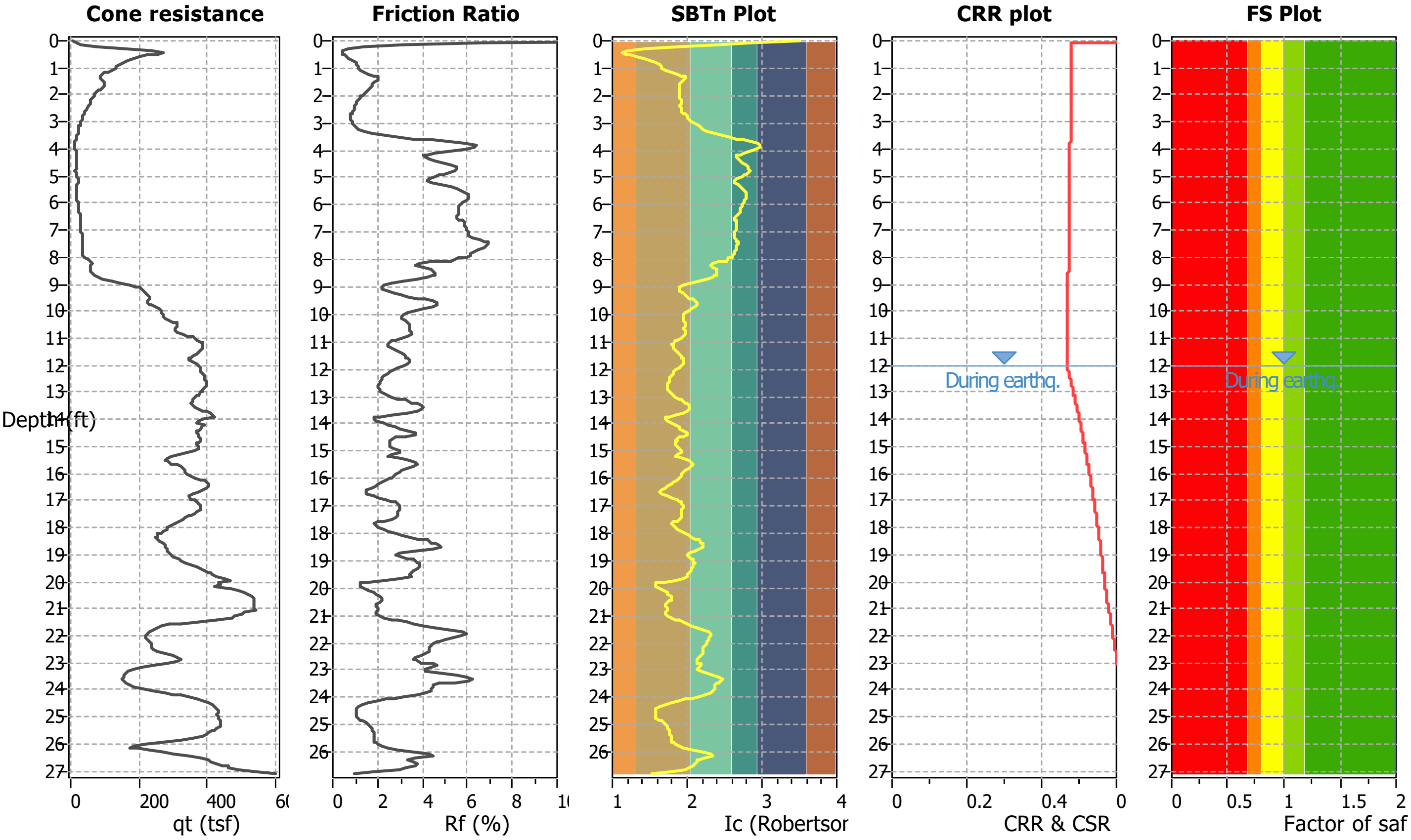
LIQUEFACTION ANALYSIS REPORT

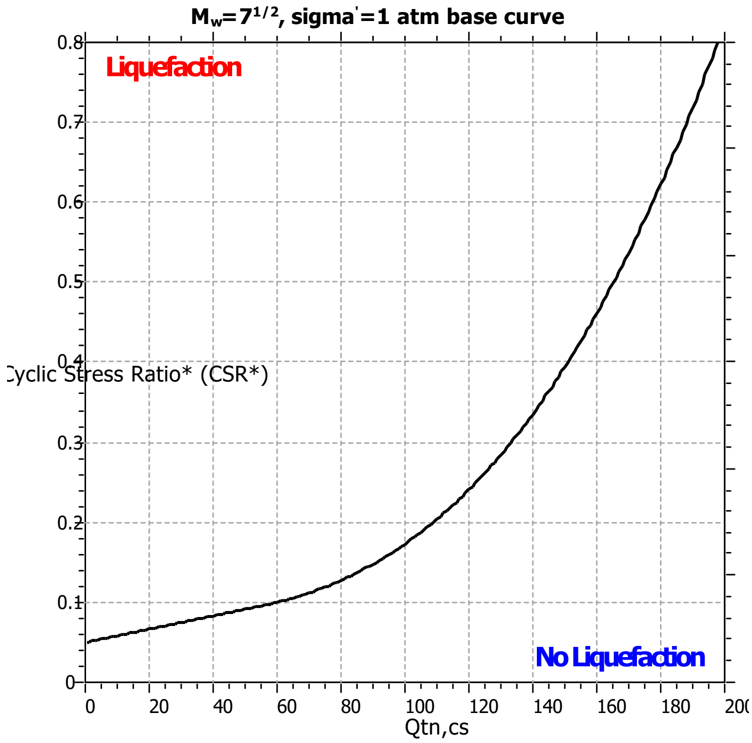
Project title : UHS Inland Valley Reg. Med. Center **Location : 36485 Inland Valley Dr., Wildomar, CA**

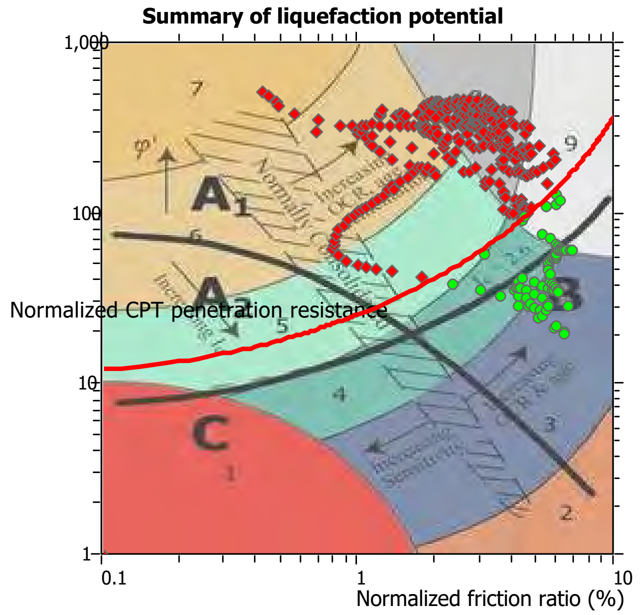
CPT file : CPT-1

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	60.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	12.00 ft	Fill height:	N/A	Limit depth applied:	Yes
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	40.00 ft
Earthquake magnitude M_w:	7.00	Ic cut-off value:	2.40	Trans. detect. applied:	No	MSF method:	Method based
Peak ground acceleration:	0.88	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

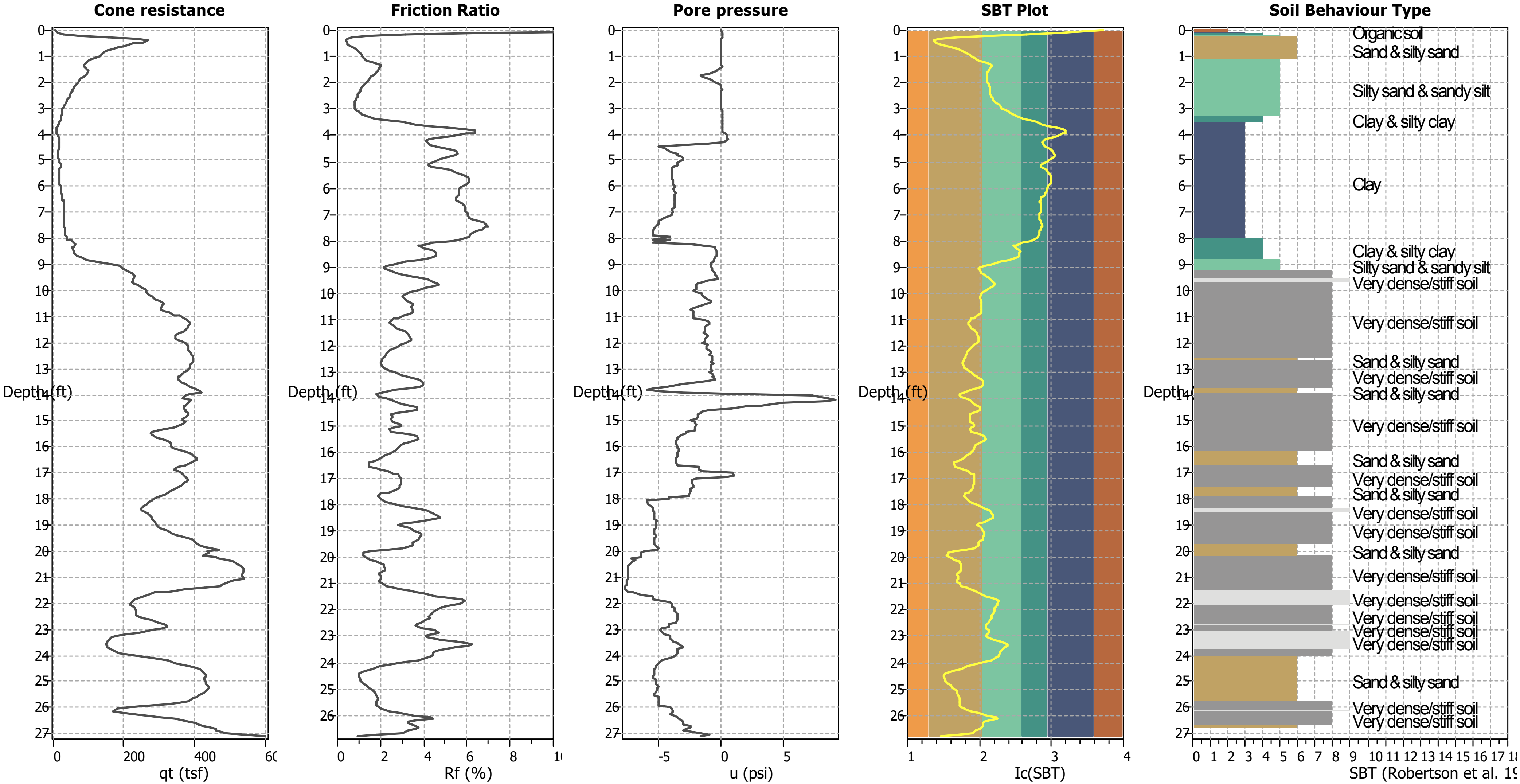






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



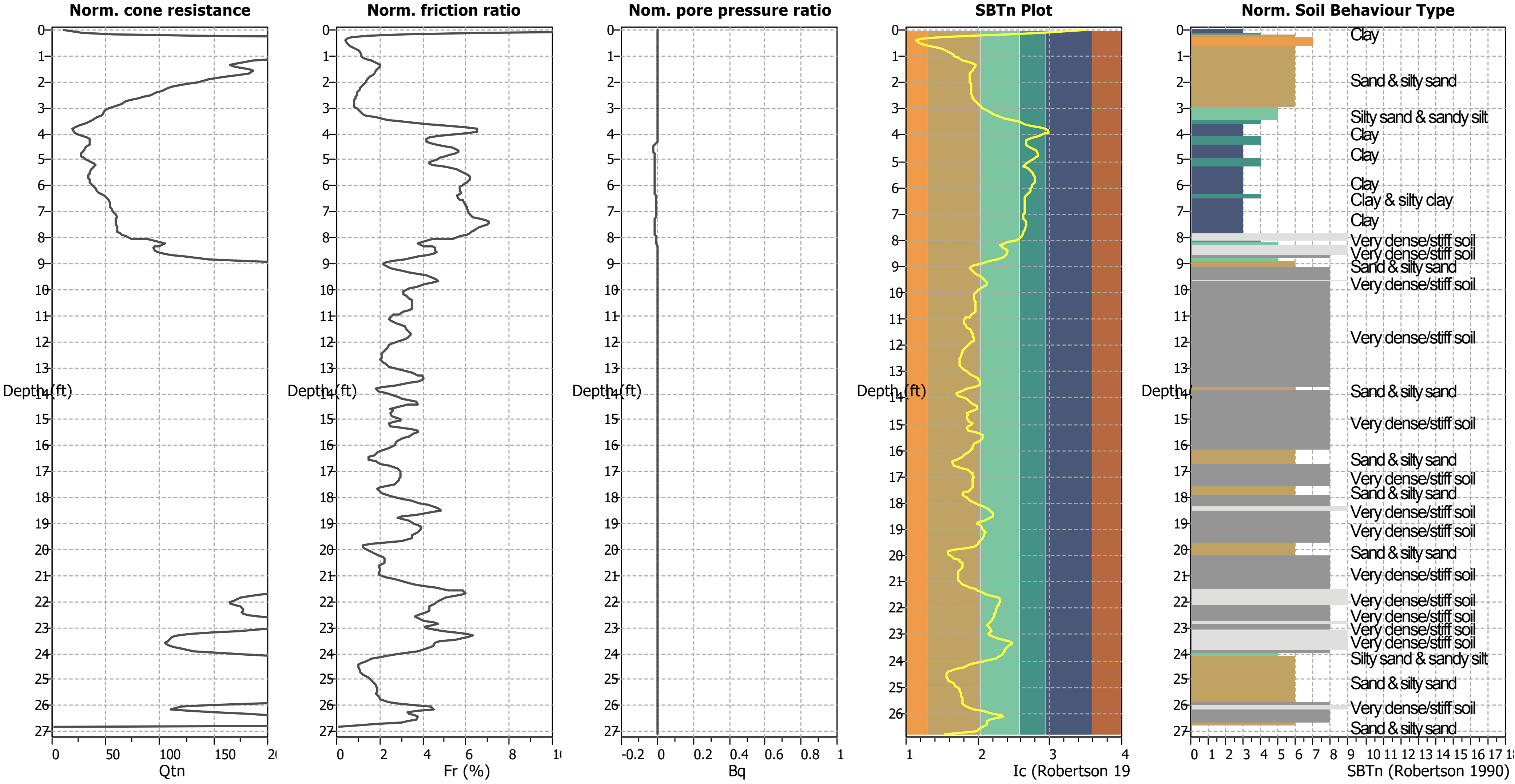
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	12.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.40	K_σ applied:	Yes
Earthquake magnitude M_w:	7.00	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.88	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	60.00 ft	Fill height:	N/A	Limit depth:	40.00 ft

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



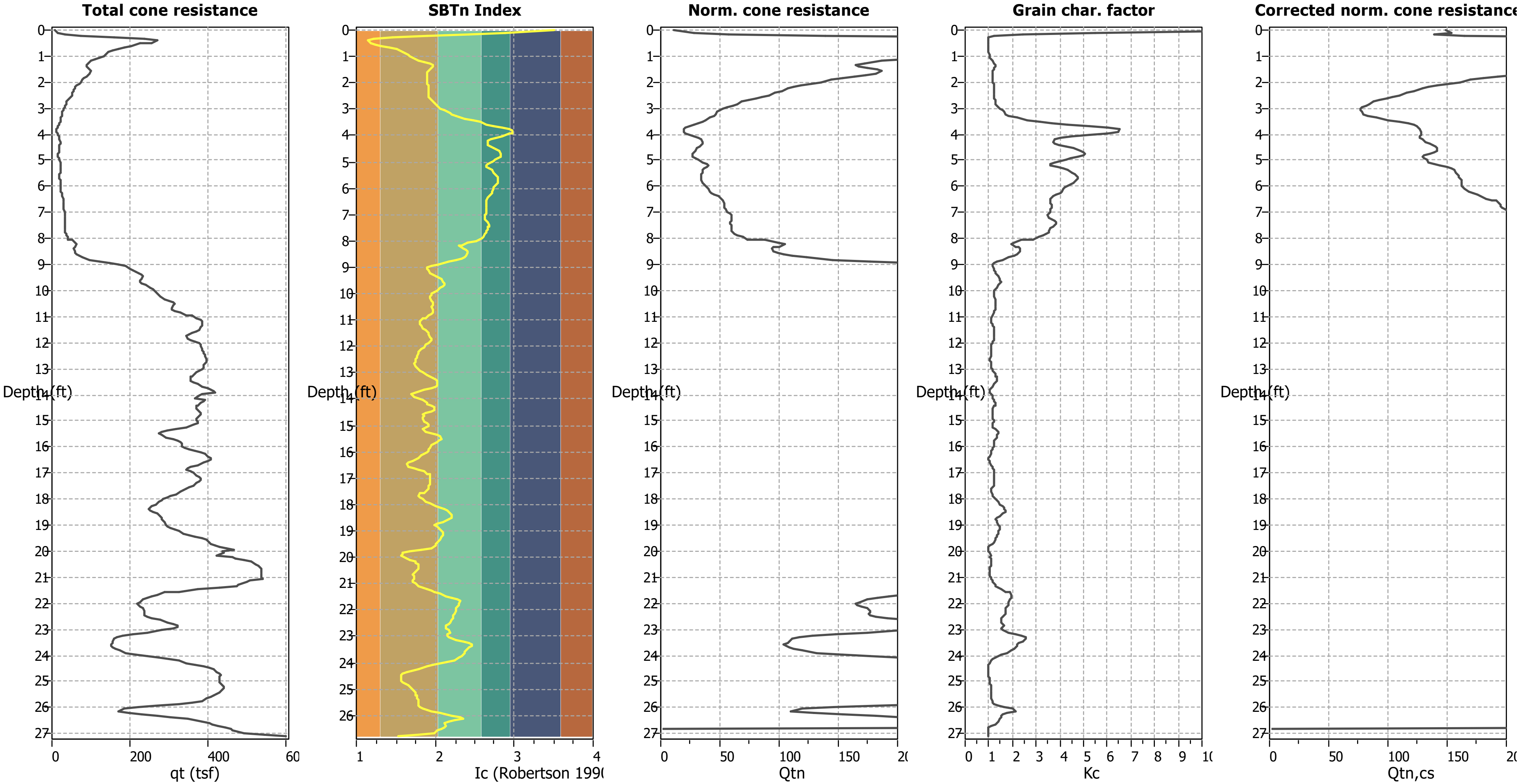
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	12.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.40	K_σ applied:	Yes
Earthquake magnitude M_w:	7.00	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.88	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	60.00 ft	Fill height:	N/A	Limit depth:	40.00 ft

SBTn legend

- 1. Sensitive fine grained
- 2. Organic material
- 3. Clay to silty clay
- 4. Clayey silt to silty
- 5. Silty sand to sandy silt
- 6. Clean sand to silty sand
- 7. Gravely sand to sand
- 8. Very stiff sand to
- 9. Very stiff fine grained

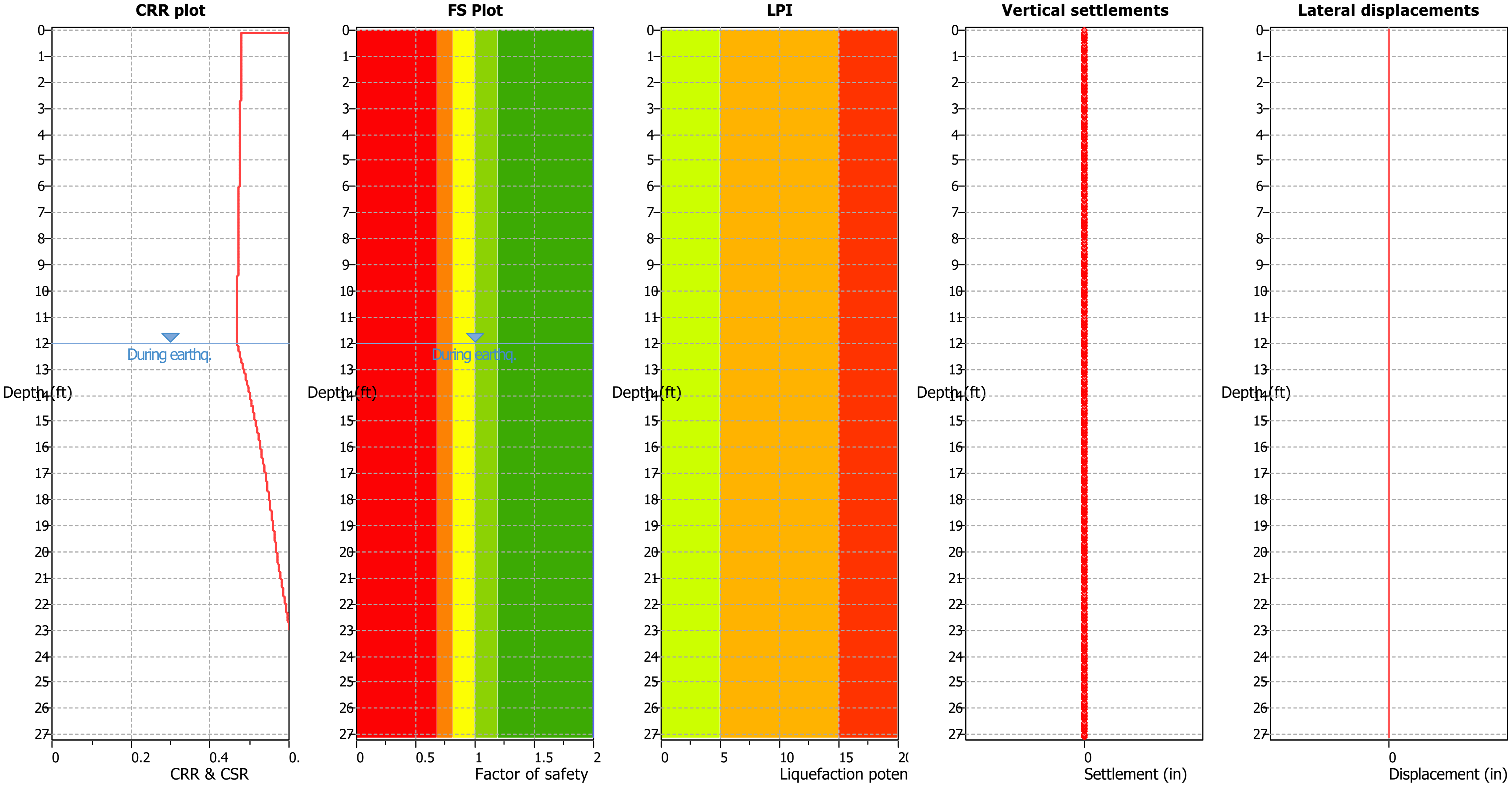
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	12.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.40	K_σ applied:	Yes
Earthquake magnitude M_w:	7.00	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.88	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	60.00 ft	Fill height:	N/A	Limit depth:	40.00 ft

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	12.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.40	K_σ applied:	Yes
Earthquake magnitude M_w:	7.00	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.88	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	60.00 ft	Fill height:	N/A	Limit depth:	40.00 ft

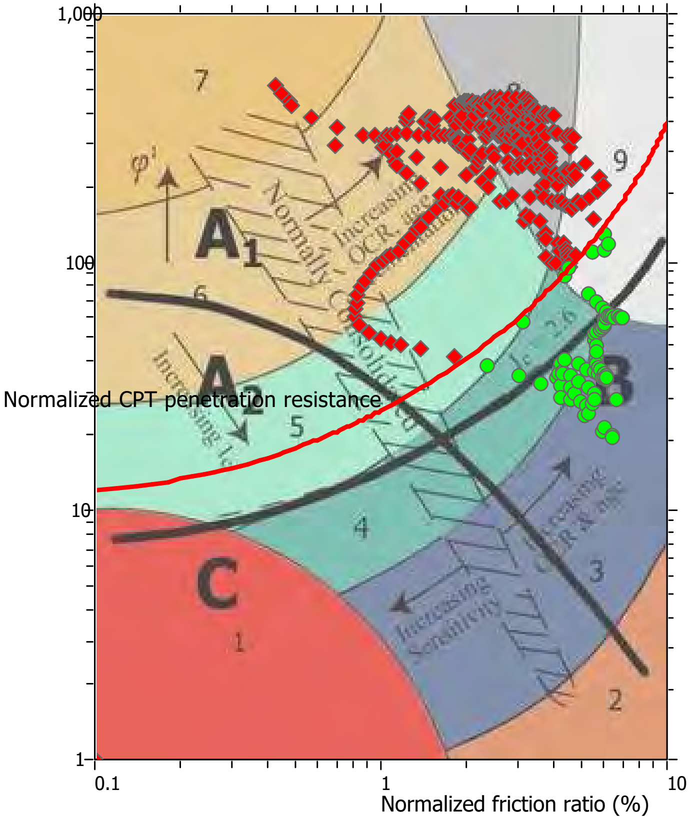
F.S. color scheme

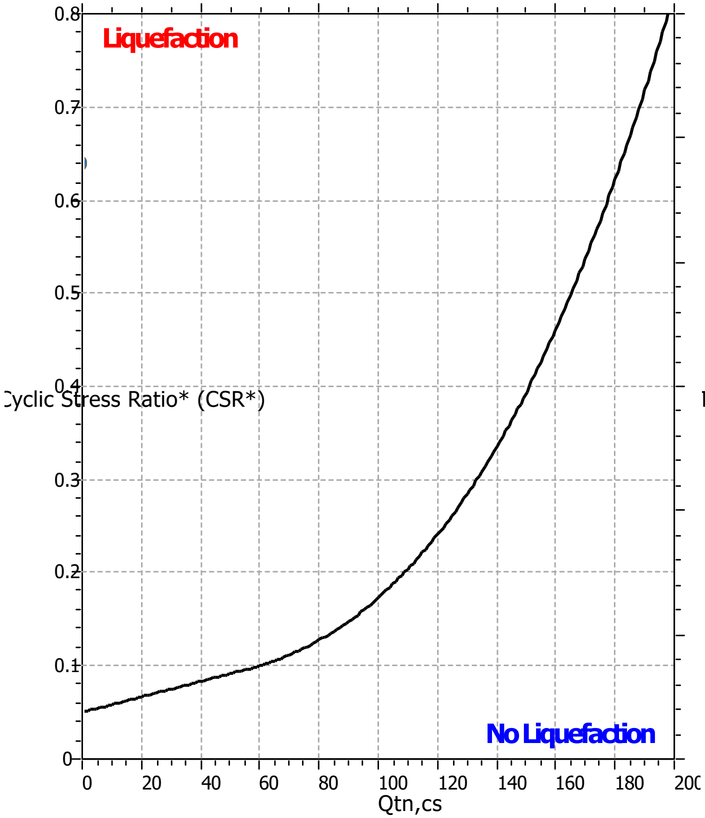
- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

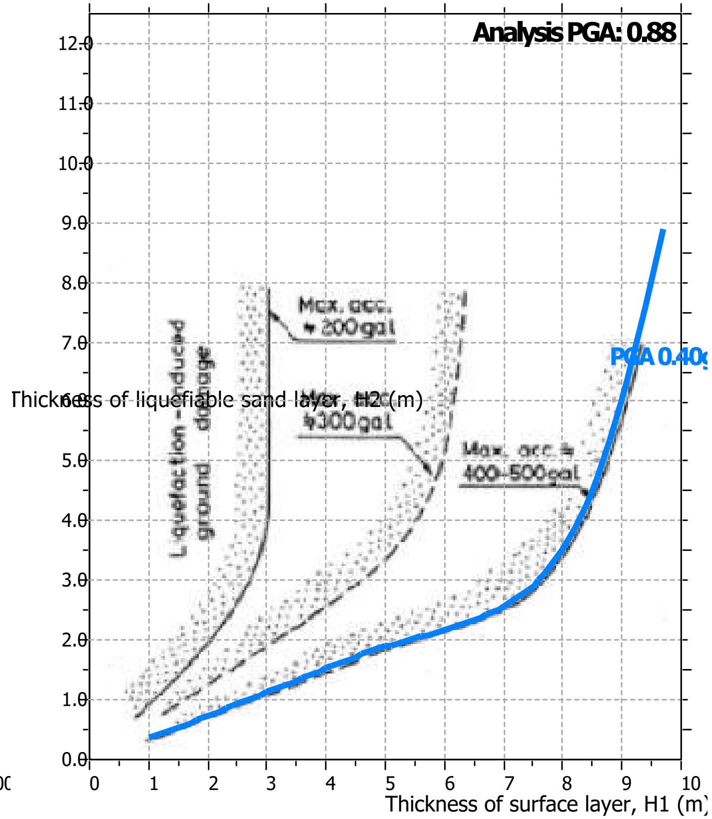
LPI color scheme

- Very high risk
- High risk
- Low risk

Liquefaction analysis summary plots



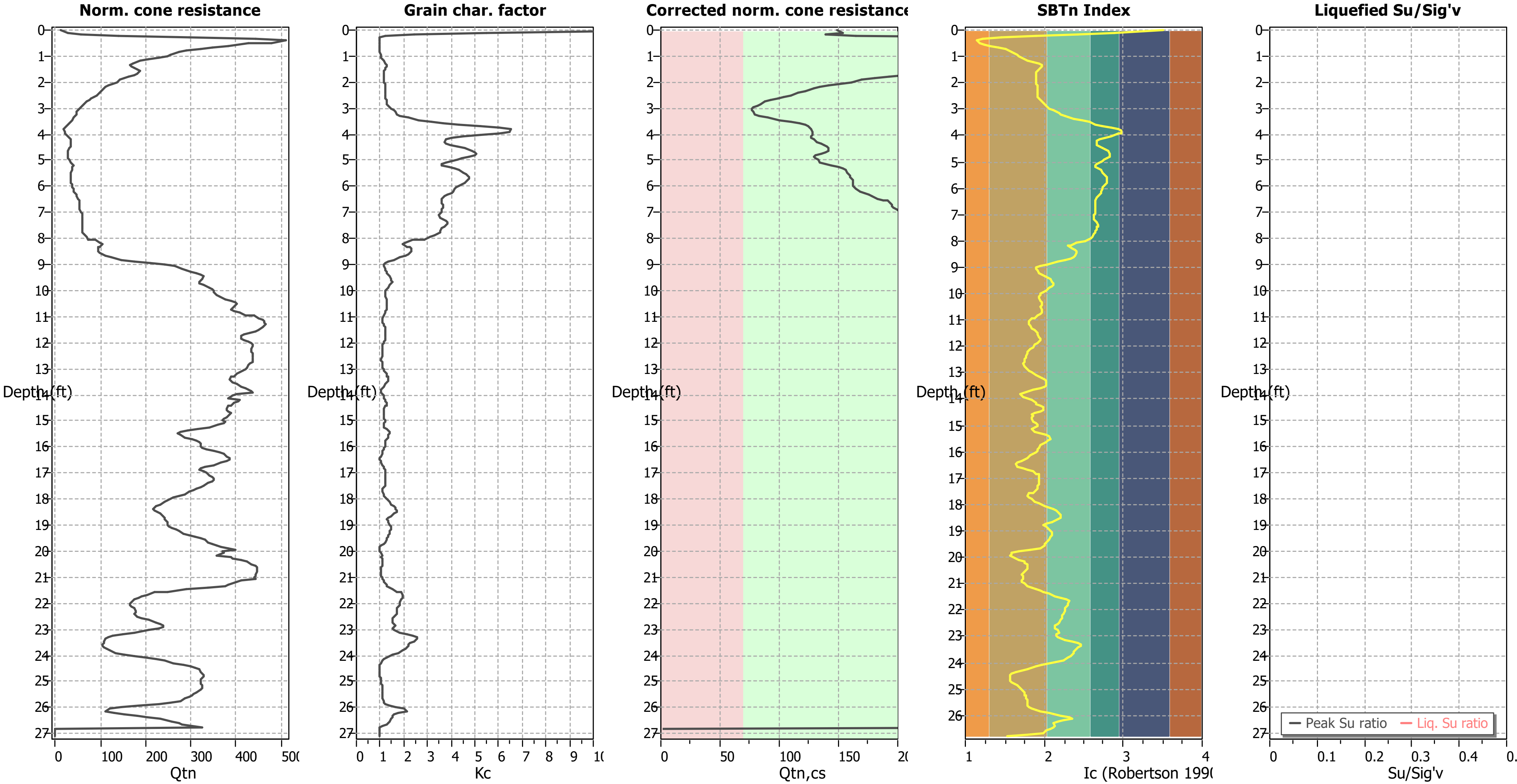




Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	12.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.40	K_σ applied:	Yes
Earthquake magnitude M_w:	7.00	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.88	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	60.00 ft	Fill height:	N/A	Limit depth:	40.00 ft

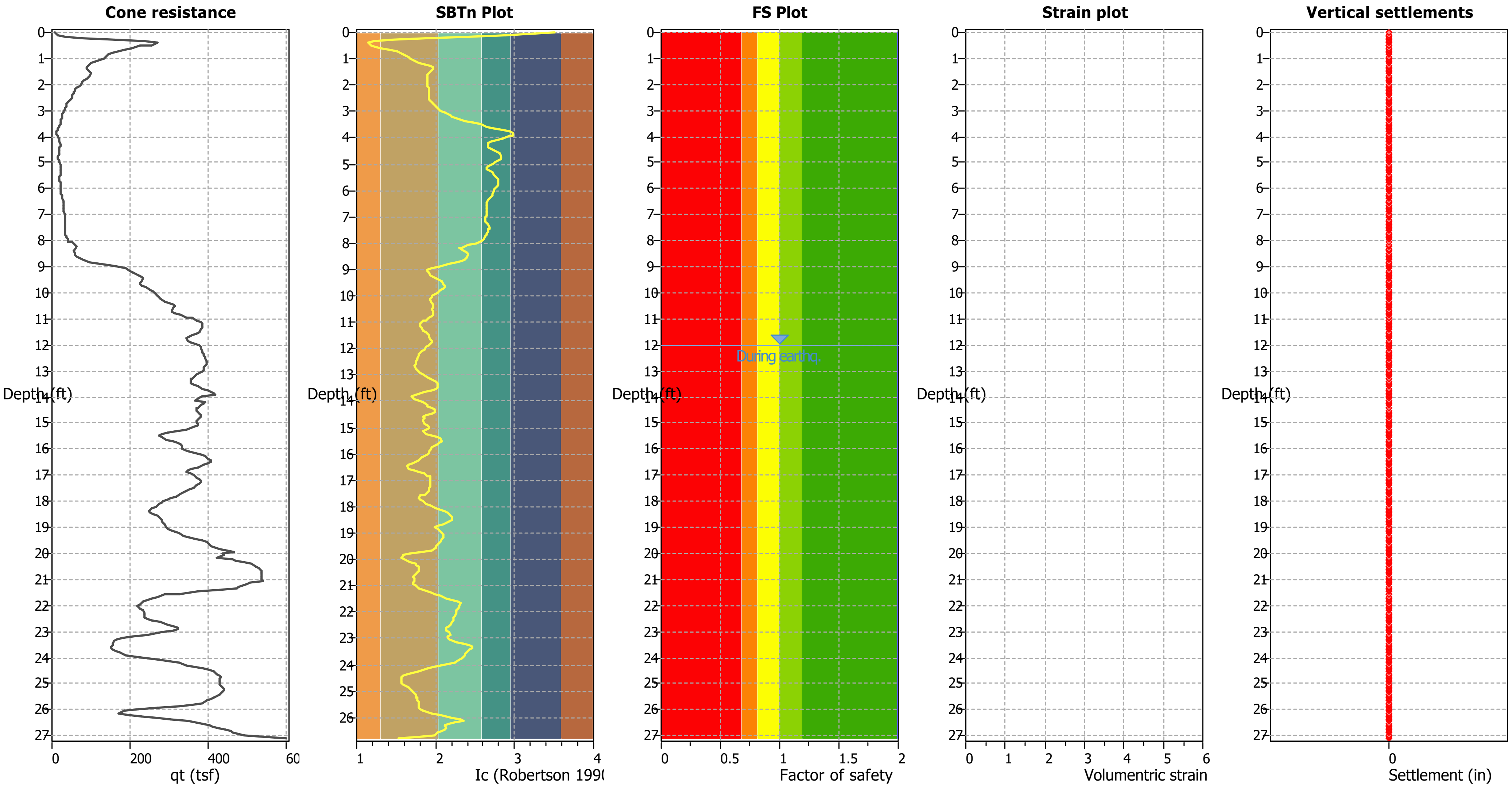
Check for strength loss plots (Robertson (2010))



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	12.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.40	K_σ applied:	Yes
Earthquake magnitude M_w:	7.00	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.88	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	60.00 ft	Fill height:	N/A	Limit depth:	40.00 ft

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

NOVA Services, Inc.
4373 Viewridge, Suite B
San Diego, CA 92123
858-292-7575

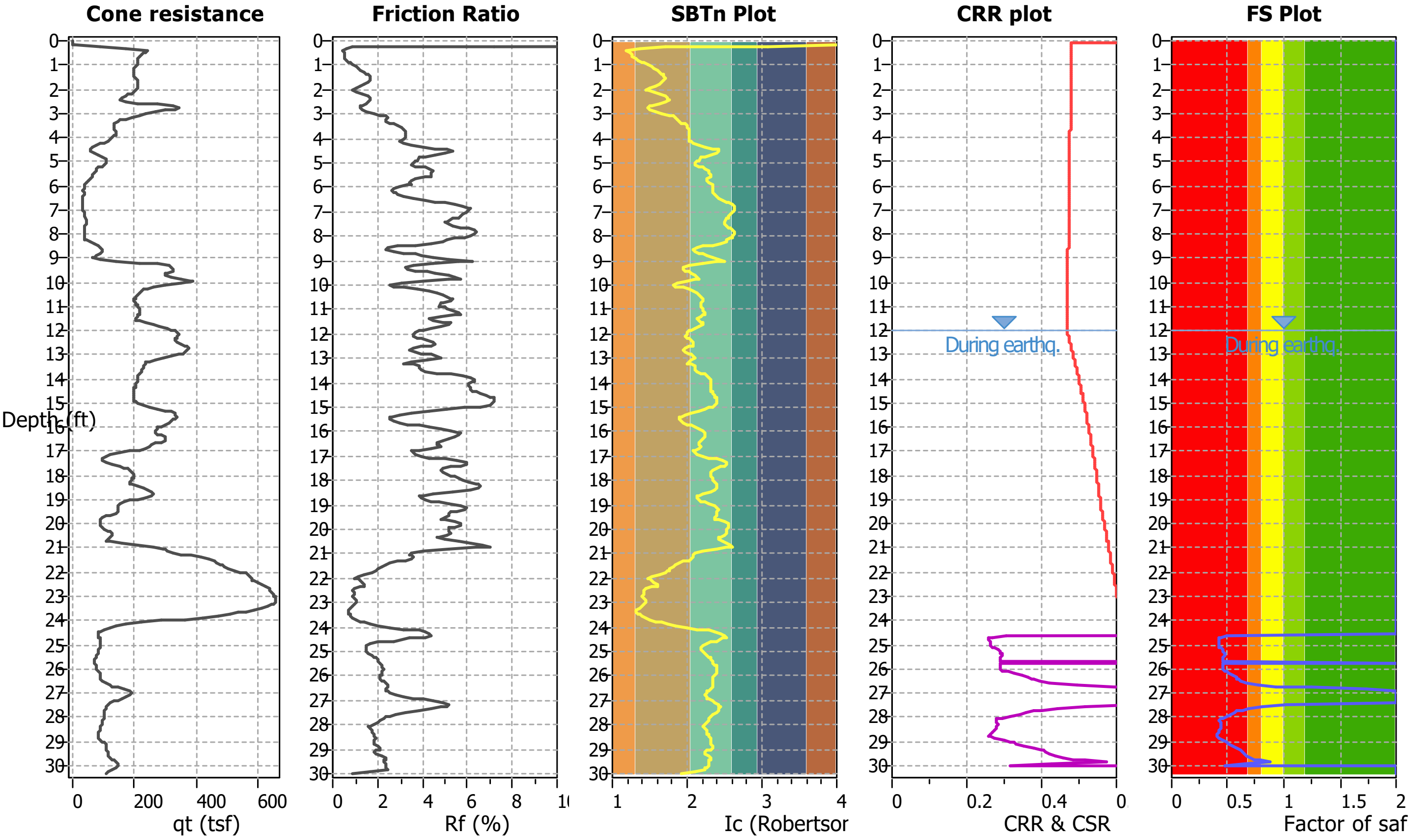
LIQUEFACTION ANALYSIS REPORT

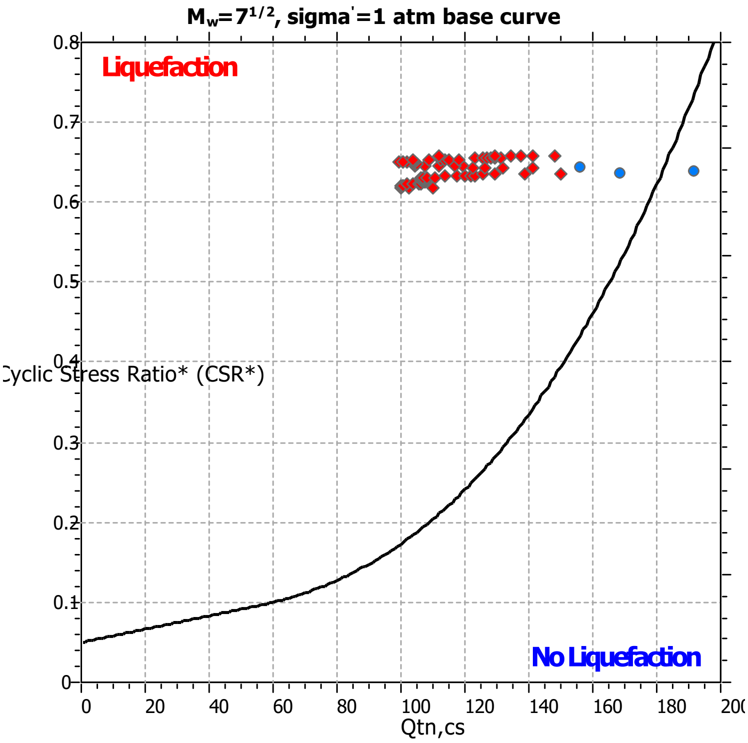
Project title : UHS Inland Valley Reg. Med. Center **Location : 36485 Inland Valley Dr., Wildomar, CA**

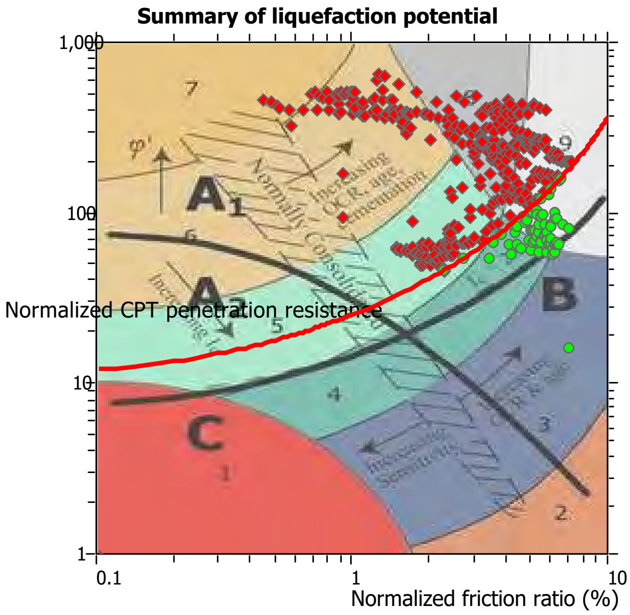
CPT file : CPT-2

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	60.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	12.00 ft	Fill height:	N/A	Limit depth applied:	Yes
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	40.00 ft
Earthquake magnitude M_w:	7.00	Ic cut-off value:	2.40	Trans. detect. applied:	No	MSF method:	Method based
Peak ground acceleration:	0.88	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

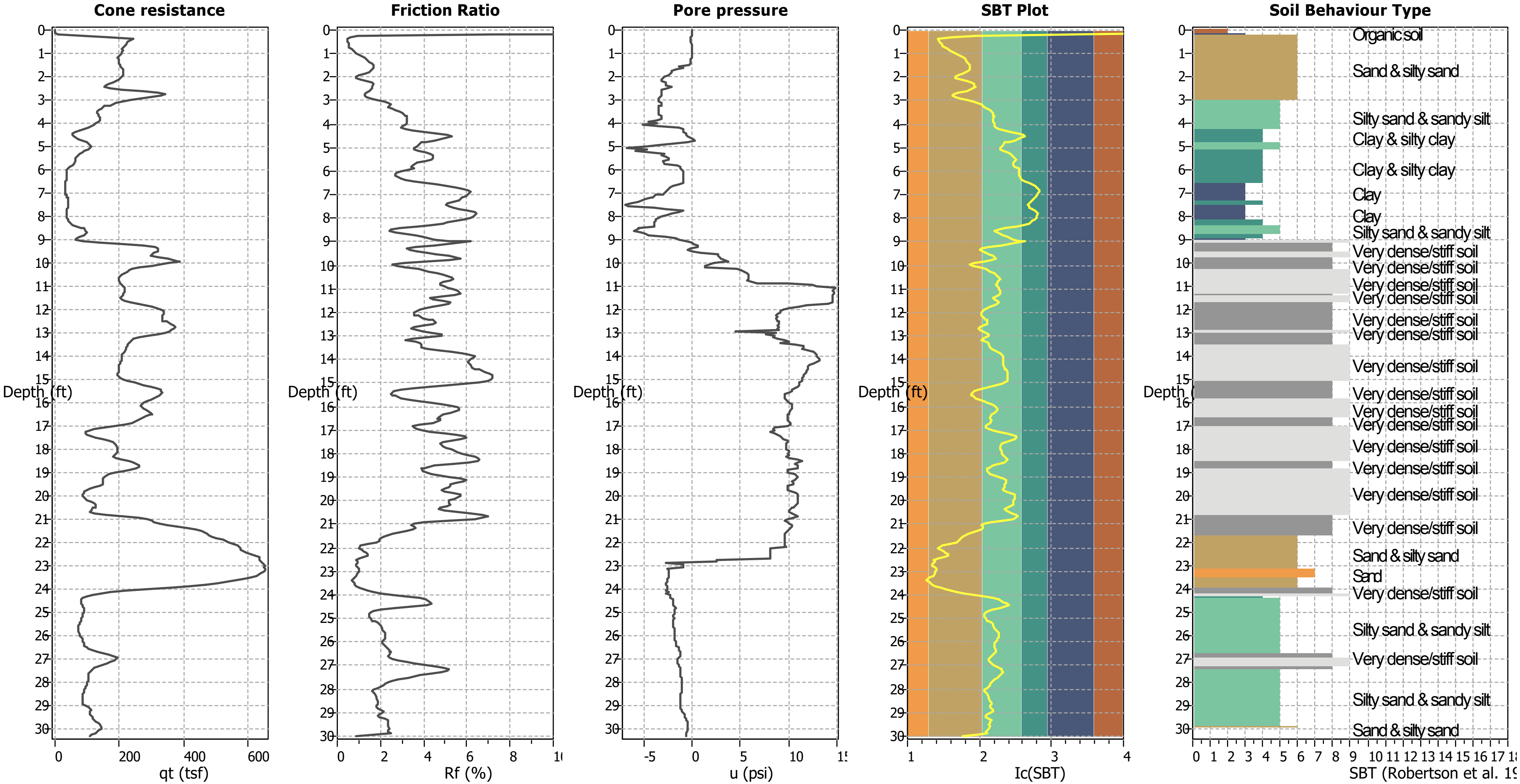






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



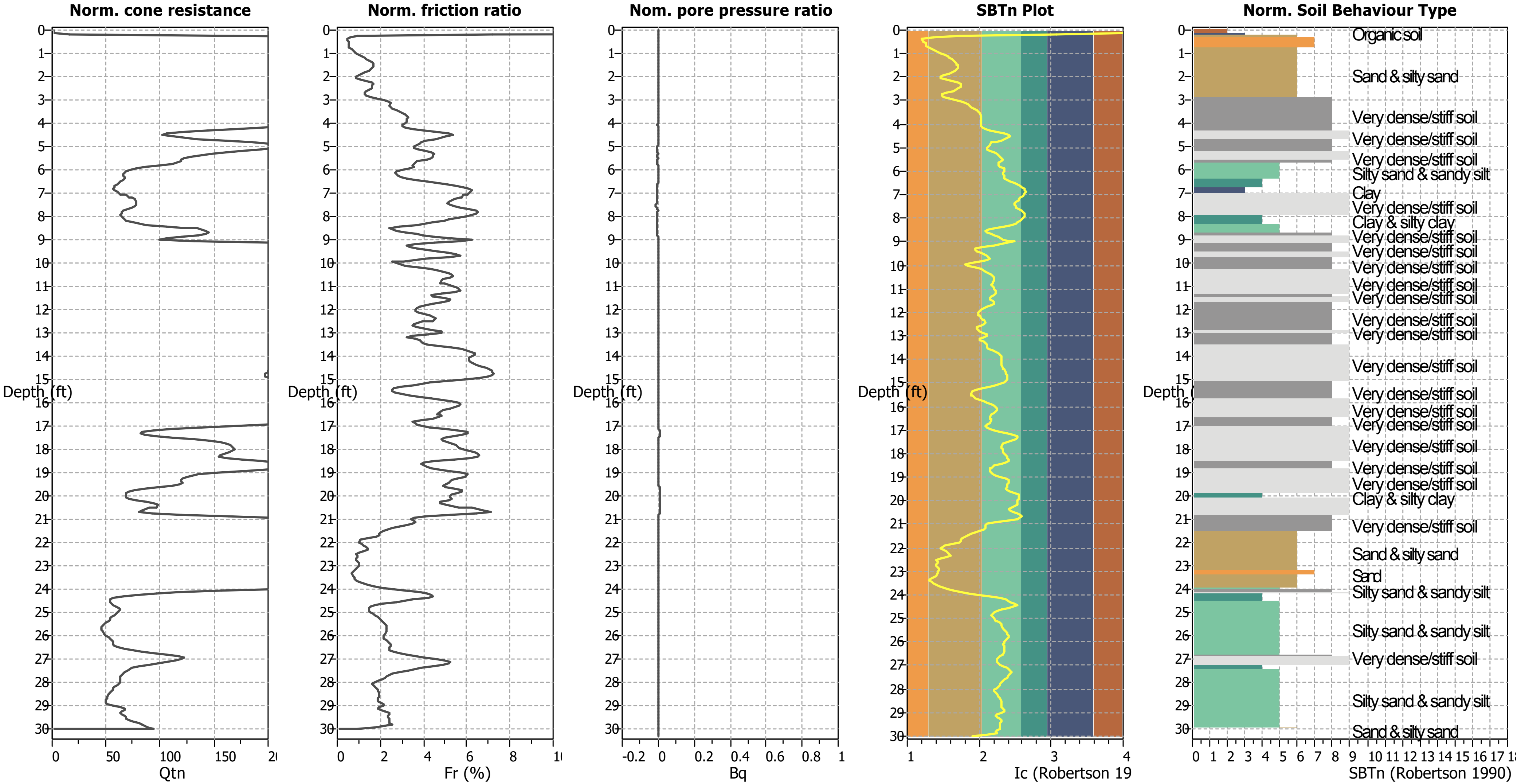
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	12.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.40	K_σ applied:	Yes
Earthquake magnitude M_w:	7.00	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.88	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	60.00 ft	Fill height:	N/A	Limit depth:	40.00 ft

SBT legend

- 1. Sensitive fine grained
- 2. Organic material
- 3. Clay to silty clay
- 4. Clayey silt to silty
- 5. Silty sand to sandy silt
- 6. Clean sand to silty sand
- 7. Gravely sand to sand
- 8. Very stiff sand to
- 9. Very stiff fine grained

CPT basic interpretation plots (normalized)



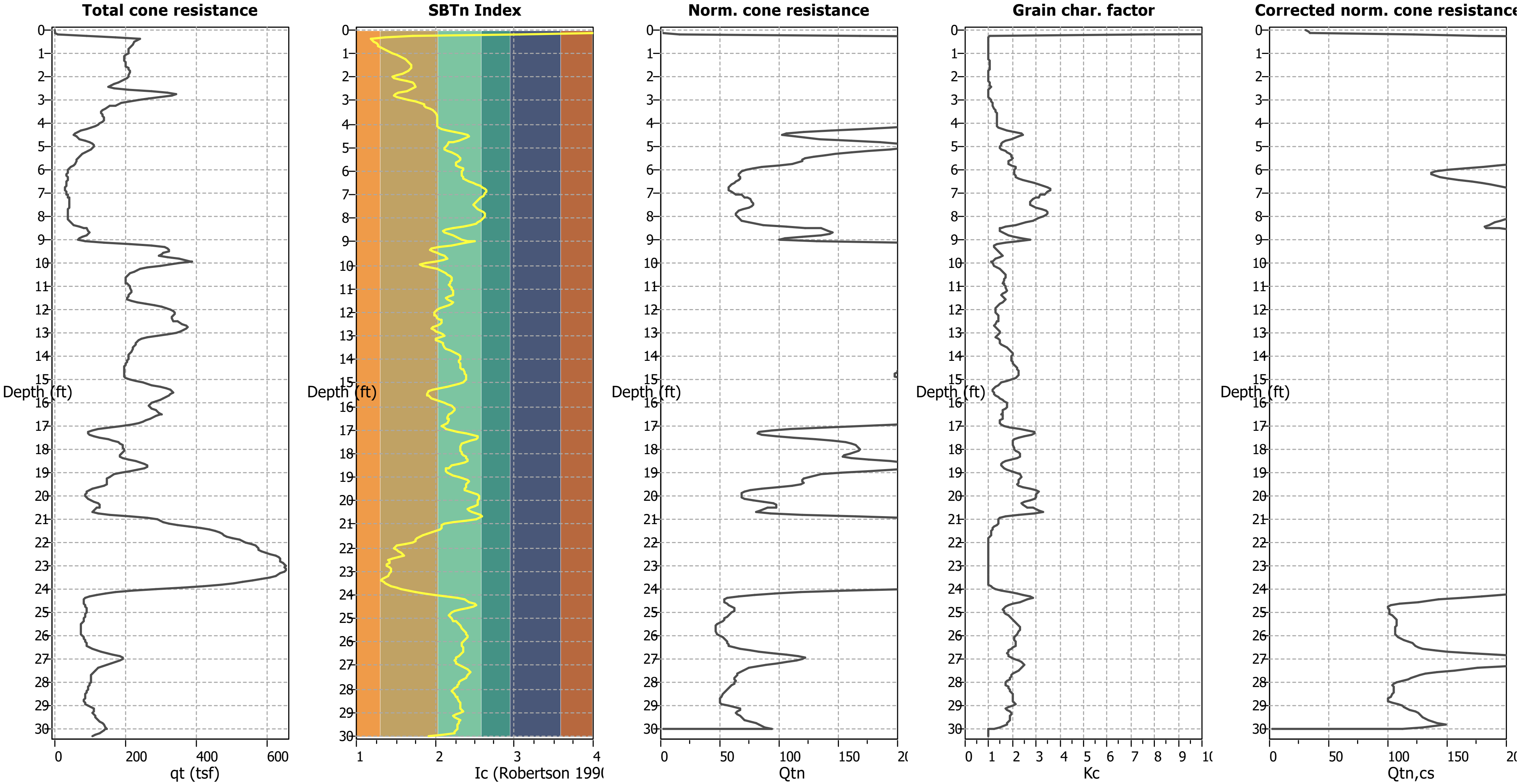
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	12.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.40	K_σ applied:	Yes
Earthquake magnitude M_w:	7.00	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.88	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	60.00 ft	Fill height:	N/A	Limit depth:	40.00 ft

SBTn legend

1. Sensitive fine grained	4. Clayey silt to silty	7. Gravely sand to sand
2. Organic material	5. Silty sand to sandy silt	8. Very stiff sand to
3. Clay to silty clay	6. Clean sand to silty sand	9. Very stiff fine grained

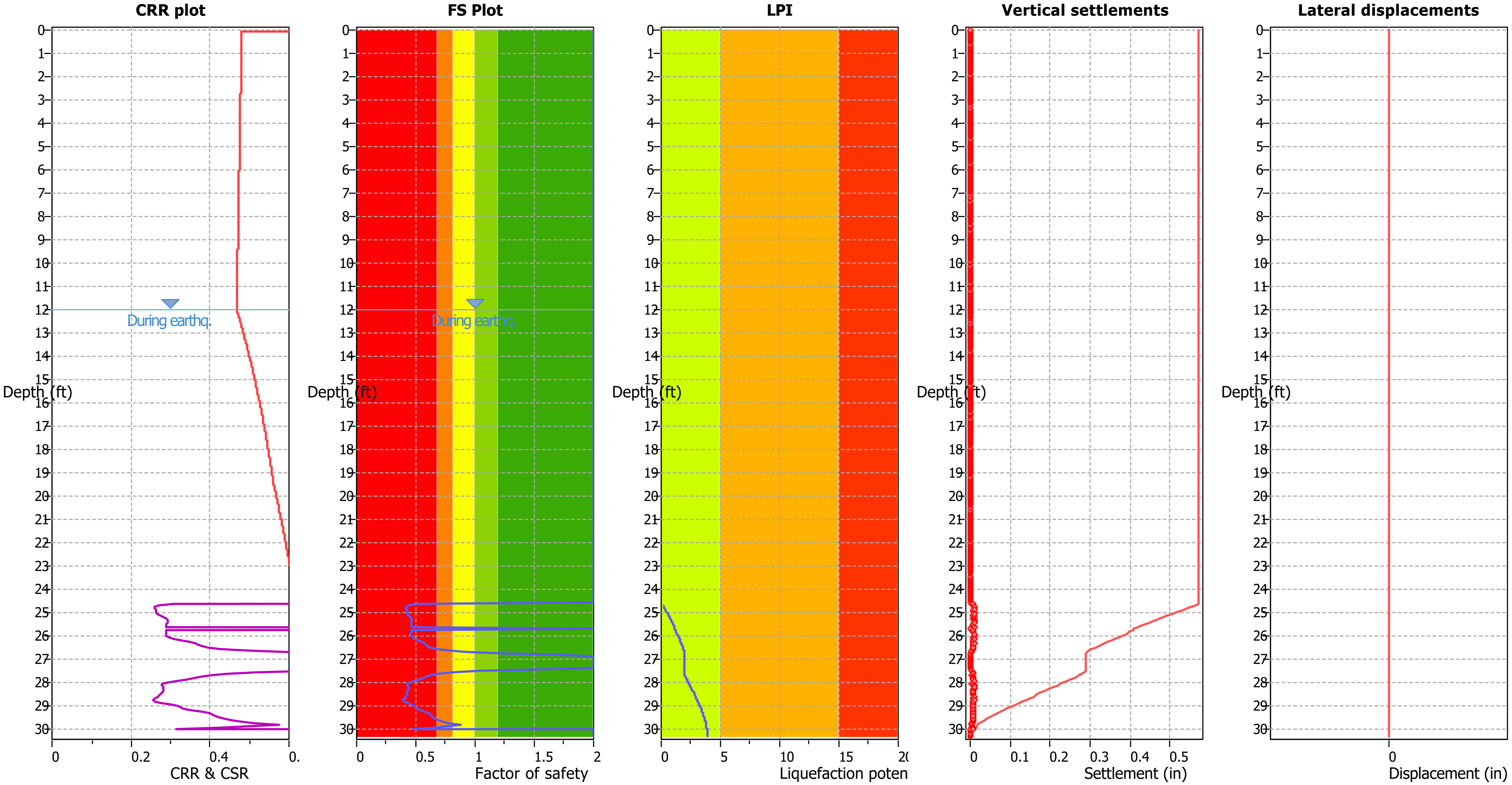
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	12.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.40	K_σ applied:	Yes
Earthquake magnitude M_w:	7.00	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.88	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	60.00 ft	Fill height:	N/A	Limit depth:	40.00 ft

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	12.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.40	K_σ applied:	Yes
Earthquake magnitude M_w:	7.00	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.88	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	60.00 ft	Fill height:	N/A	Limit depth:	40.00 ft

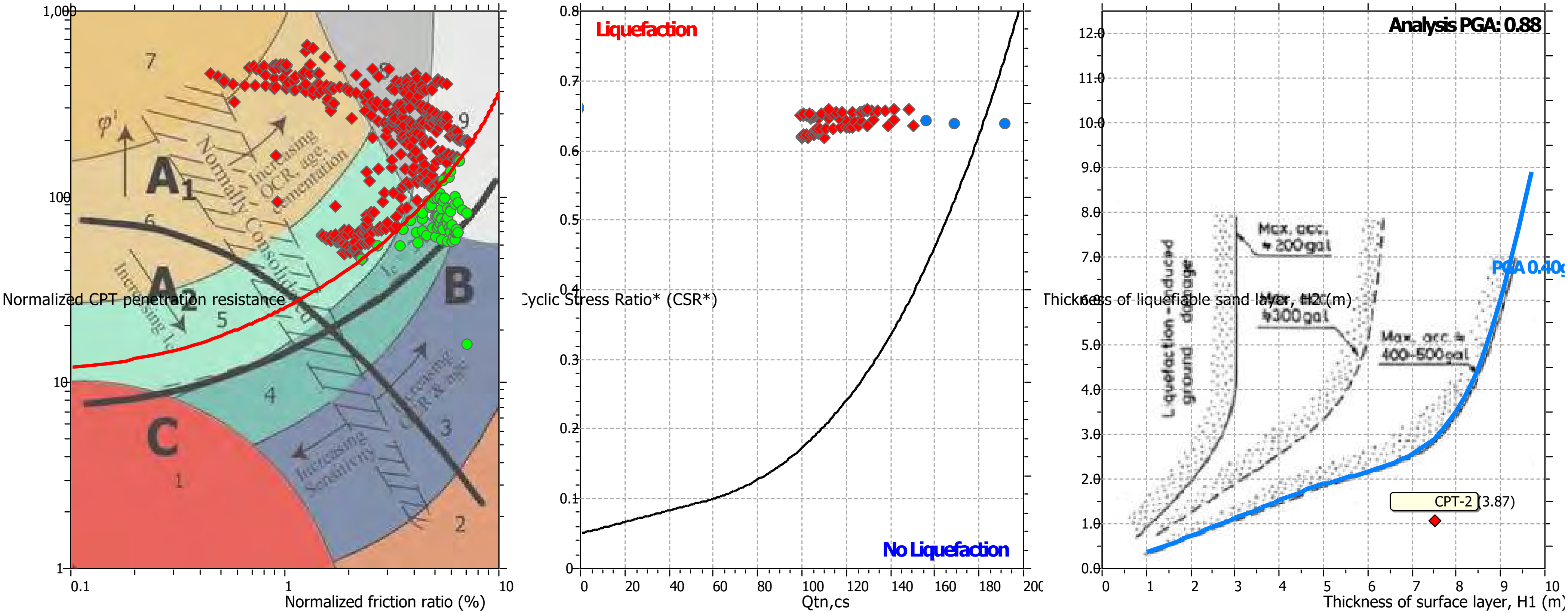
F.S. color scheme

- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

LPI color scheme

- Very high risk
- High risk
- Low risk

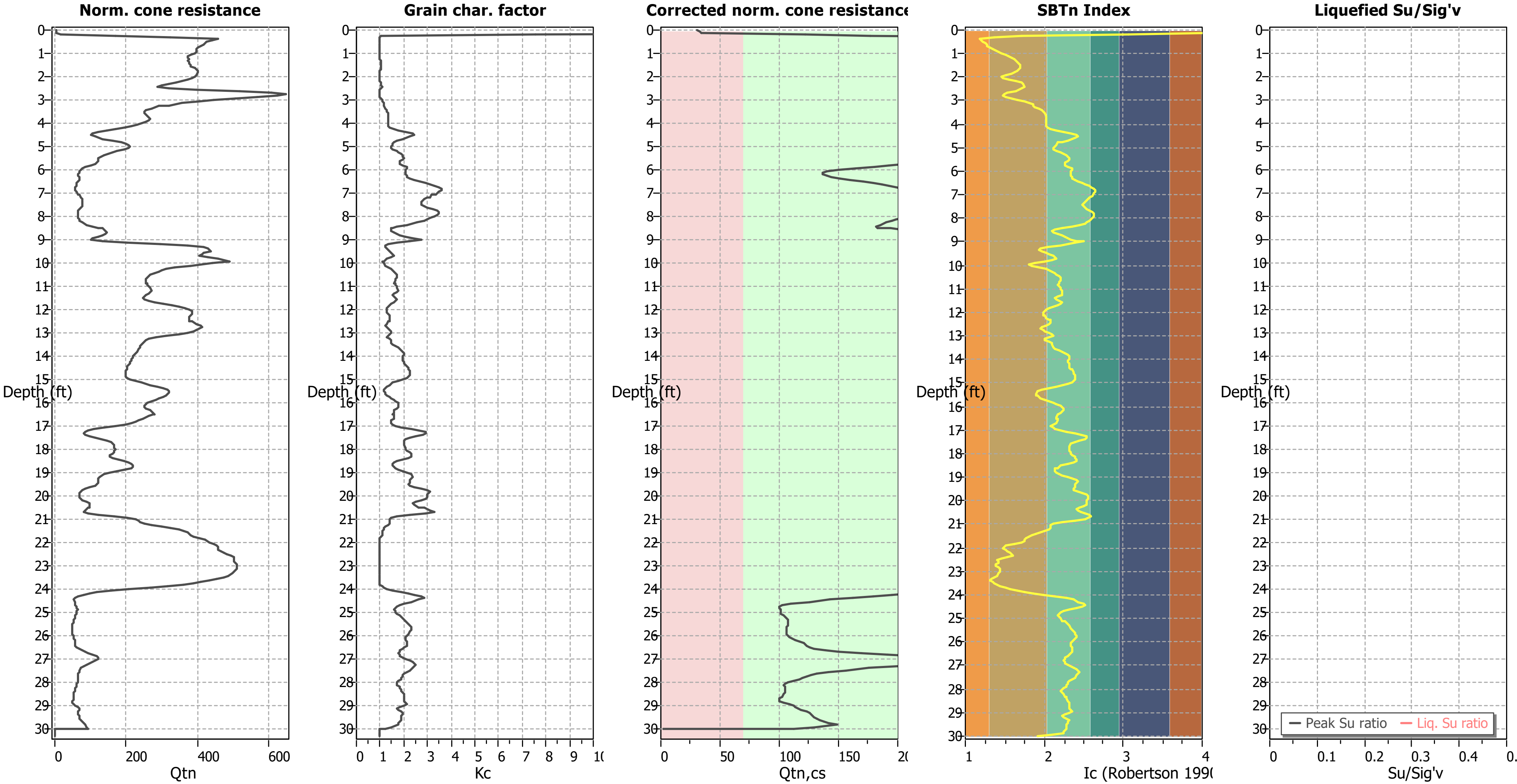
Liquefaction analysis summary plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	12.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.40	K_σ applied:	Yes
Earthquake magnitude M_w:	7.00	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.88	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	60.00 ft	Fill height:	N/A	Limit depth:	40.00 ft

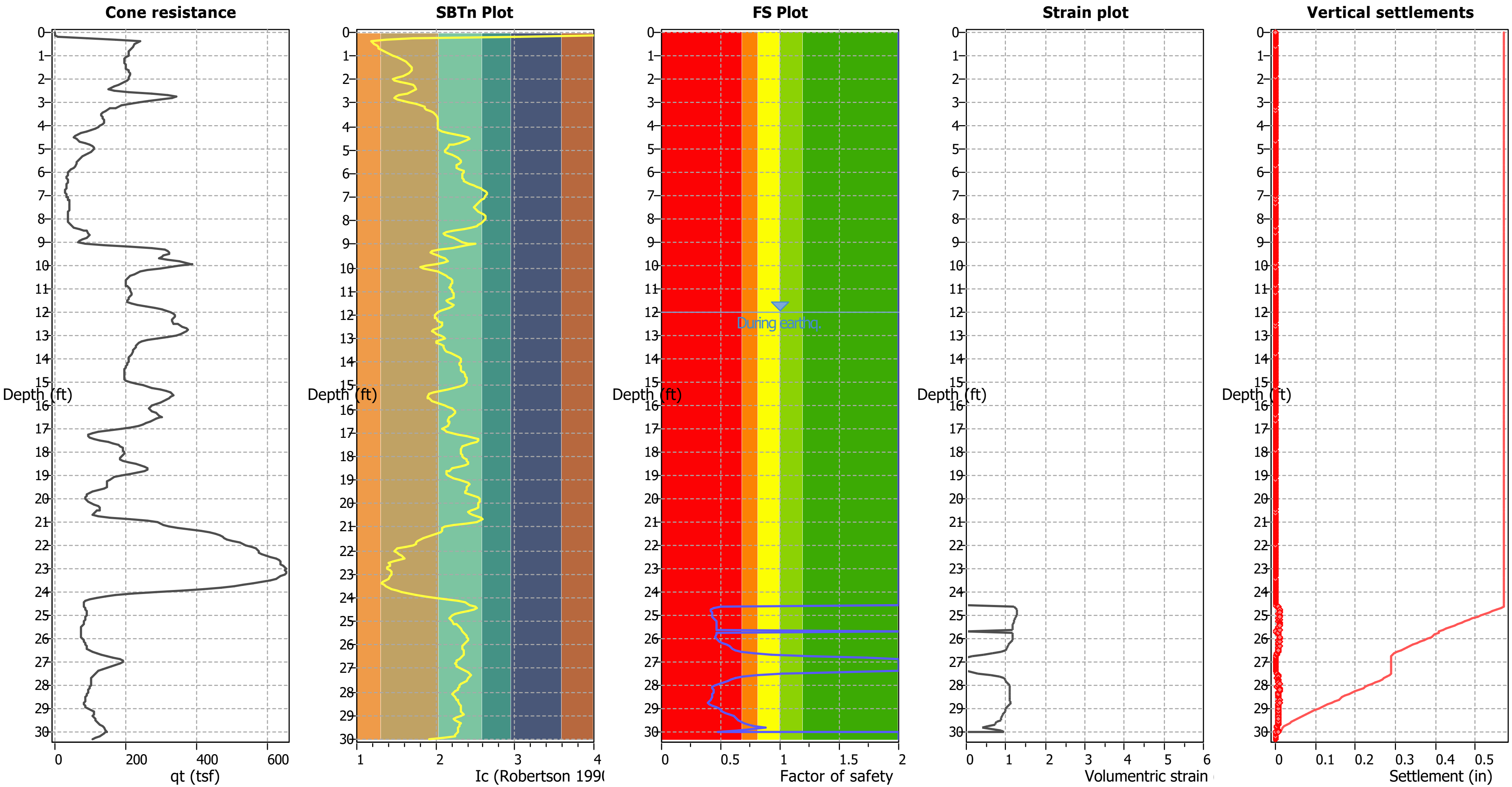
Check for strength loss plots (Robertson (2010))



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	12.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.40	K_σ applied:	Yes
Earthquake magnitude M_w:	7.00	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.88	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	60.00 ft	Fill height:	N/A	Limit depth:	40.00 ft

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

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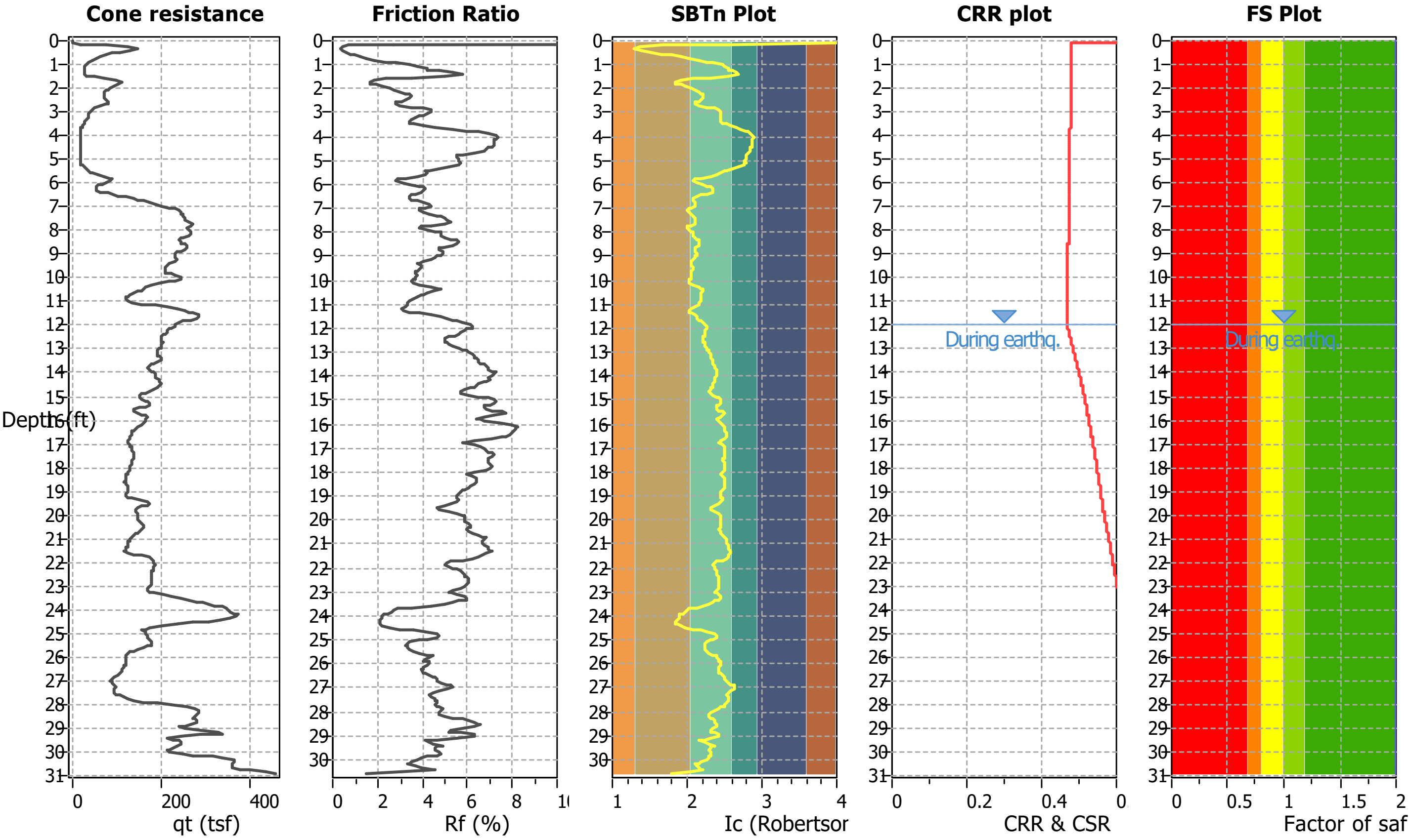
LIQUEFACTION ANALYSIS REPORT

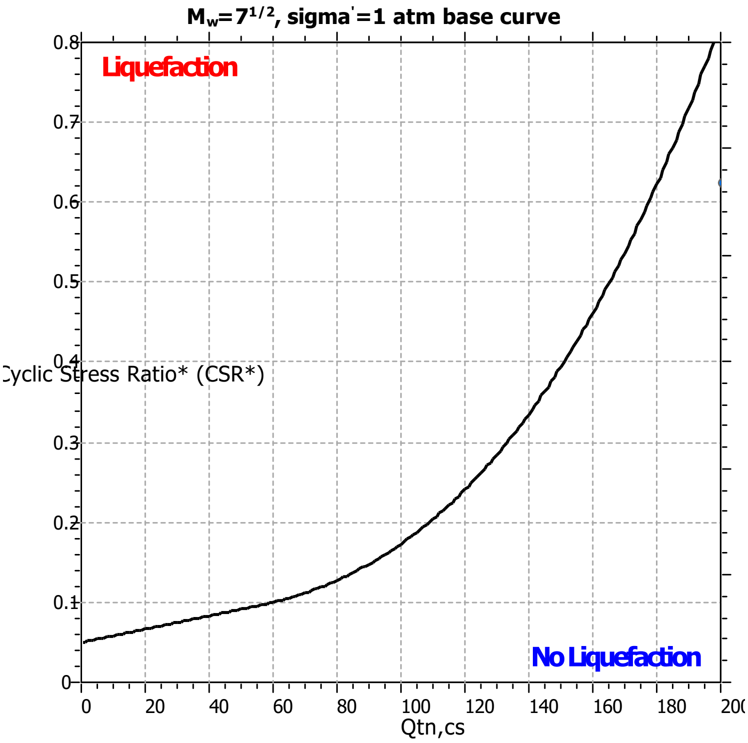
Project title : UHS Inland Valley Reg. Med. Center **Location : 36485 Inland Valley Dr., Wildomar, CA**

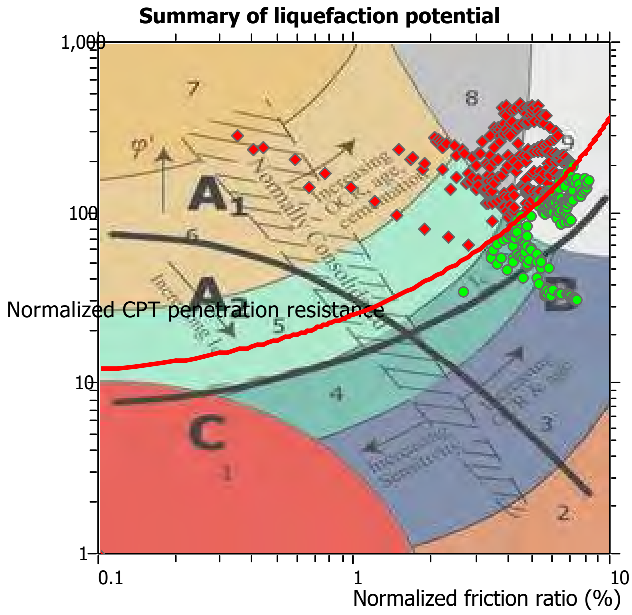
CPT file : CPT-3

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	60.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	12.00 ft	Fill height:	N/A	Limit depth applied:	Yes
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	40.00 ft
Earthquake magnitude M_w:	7.00	Ic cut-off value:	2.40	Trans. detect. applied:	No	MSF method:	Method based
Peak ground acceleration:	0.88	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

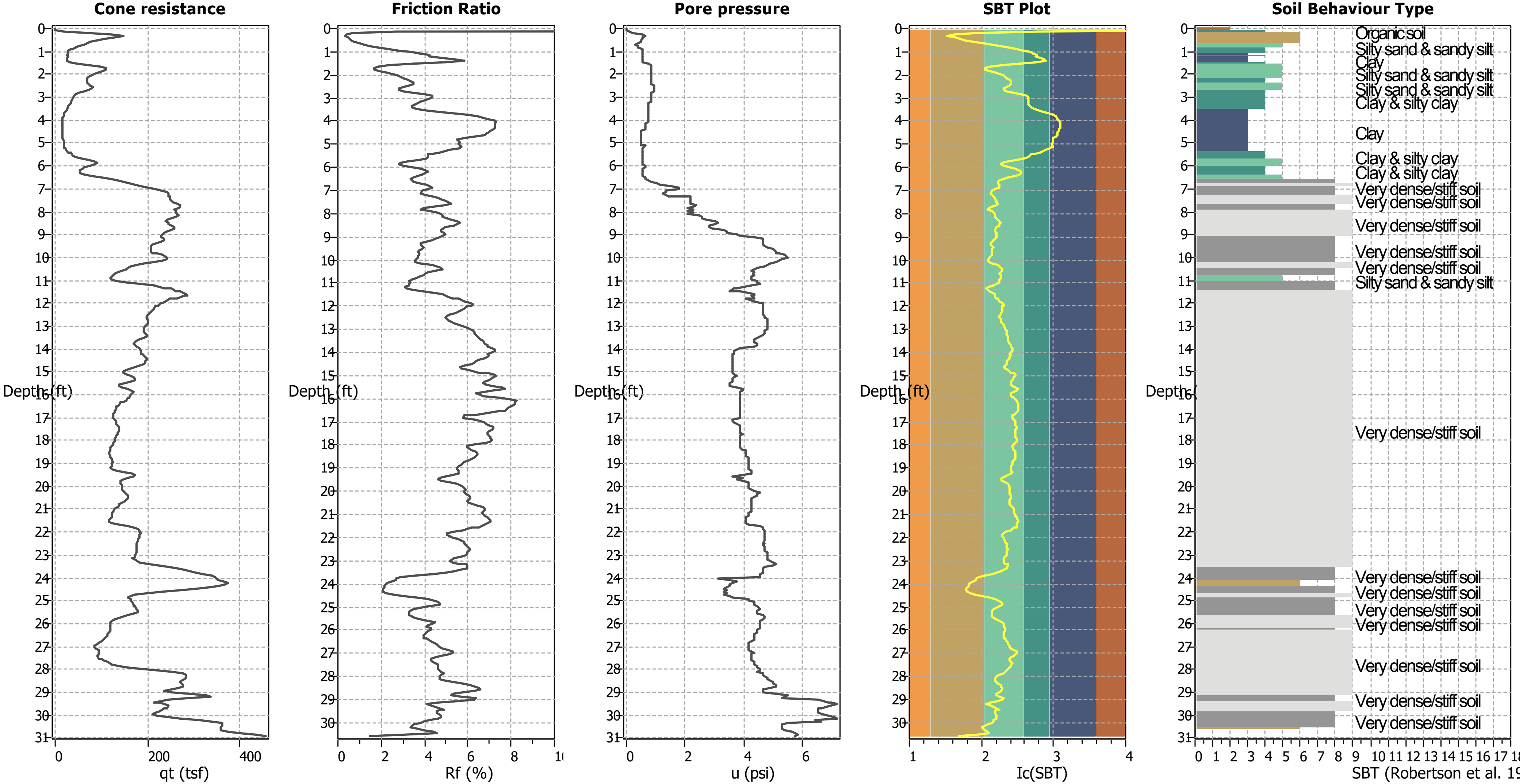






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



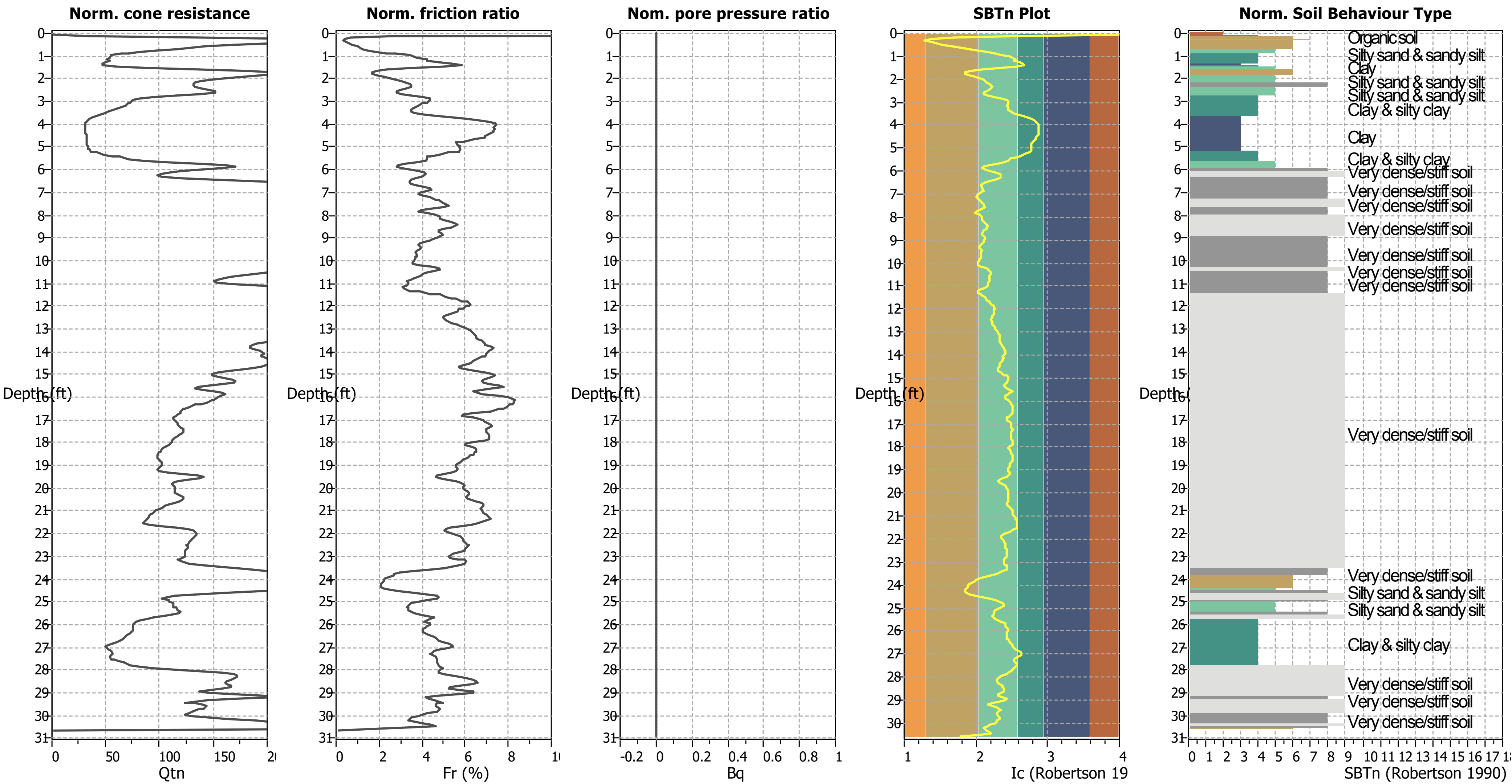
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	12.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.40	K_{σ} applied:	Yes
Earthquake magnitude M_w:	7.00	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.88	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	60.00 ft	Fill height:	N/A	Limit depth:	40.00 ft

SBT legend

- 1. Sensitive fine grained
- 2. Organic material
- 3. Clay to silty clay
- 4. Clayey silt to silty
- 5. Silty sand to sandy silt
- 6. Clean sand to silty sand
- 7. Gravely sand to sand
- 8. Very stiff sand to
- 9. Very stiff fine grained

CPT basic interpretation plots (normalized)



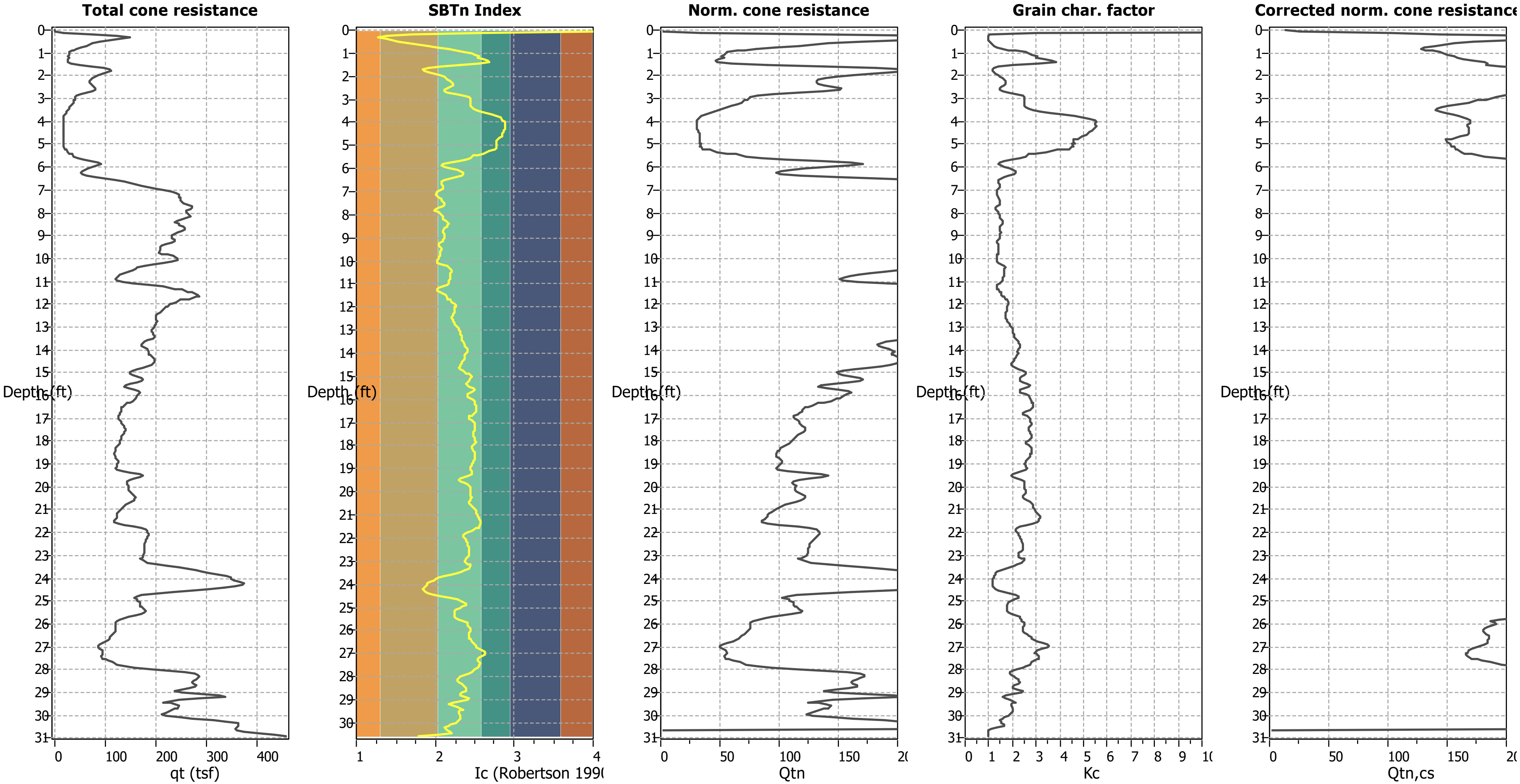
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	12.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.40	K_σ applied:	Yes
Earthquake magnitude M_w:	7.00	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.88	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	60.00 ft	Fill height:	N/A	Limit depth:	40.00 ft

SBTn legend

1. Sensitive fine grained	4. Clayey silt to silty	7. Gravely sand to sand
2. Organic material	5. Silty sand to sandy silt	8. Very stiff sand to
3. Clay to silty clay	6. Clean sand to silty sand	9. Very stiff fine grained

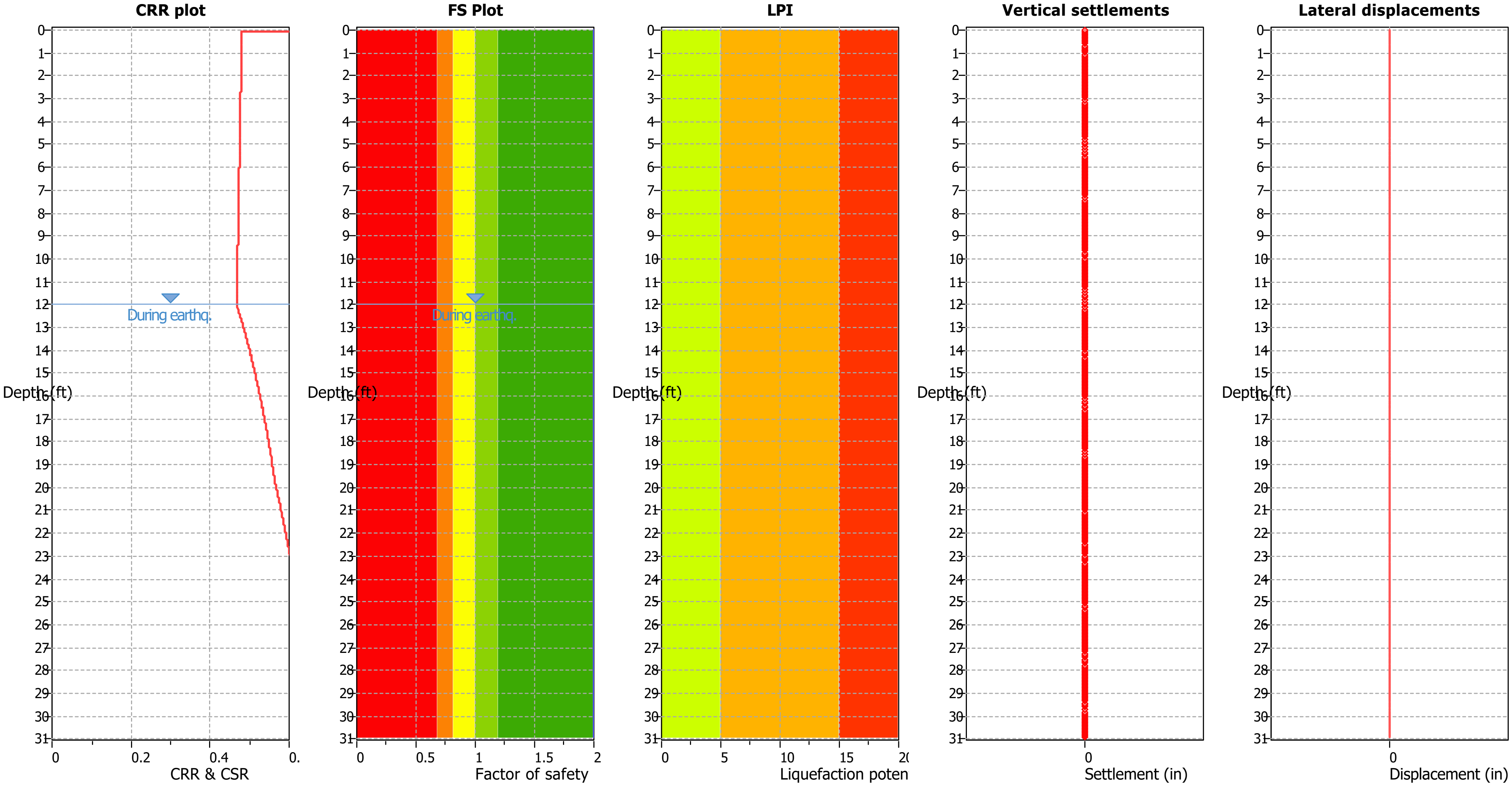
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	12.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.40	K_σ applied:	Yes
Earthquake magnitude M_w:	7.00	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.88	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	60.00 ft	Fill height:	N/A	Limit depth:	40.00 ft

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	12.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.40	K_σ applied:	Yes
Earthquake magnitude M_w:	7.00	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.88	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	60.00 ft	Fill height:	N/A	Limit depth:	40.00 ft

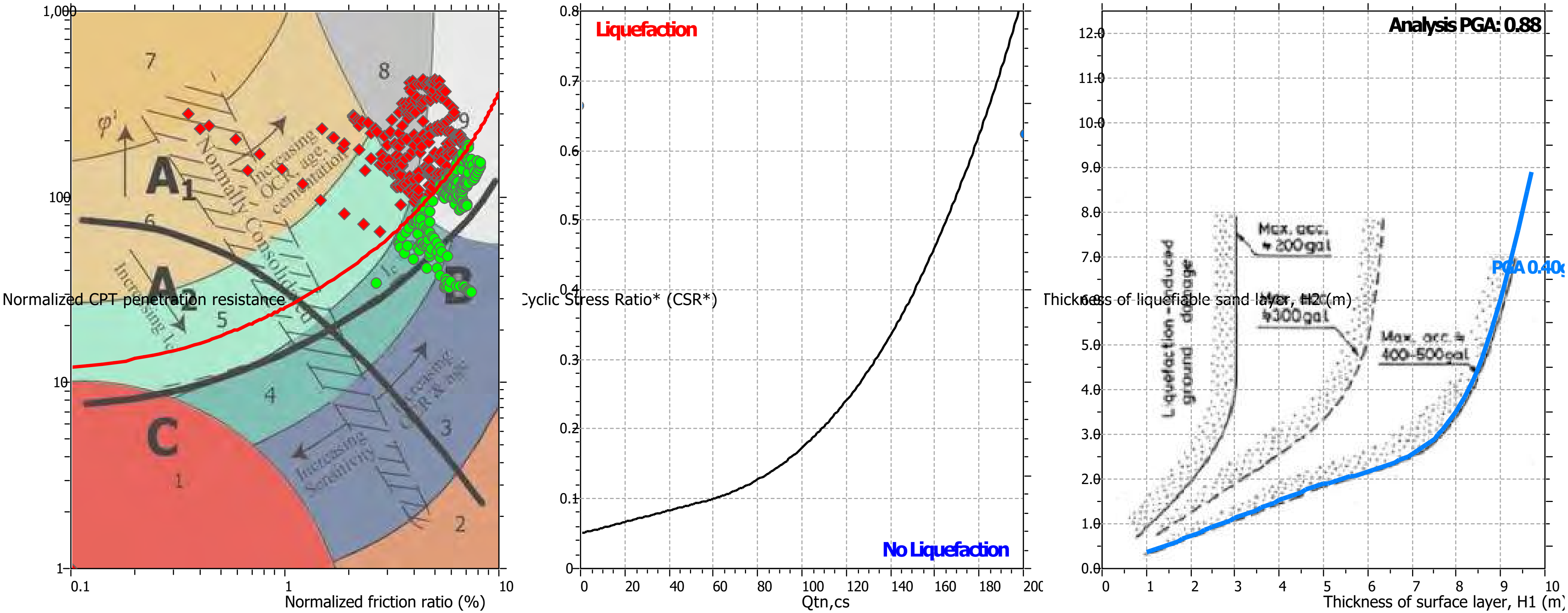
F.S. color scheme

- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

LPI color scheme

- Very high risk
- High risk
- Low risk

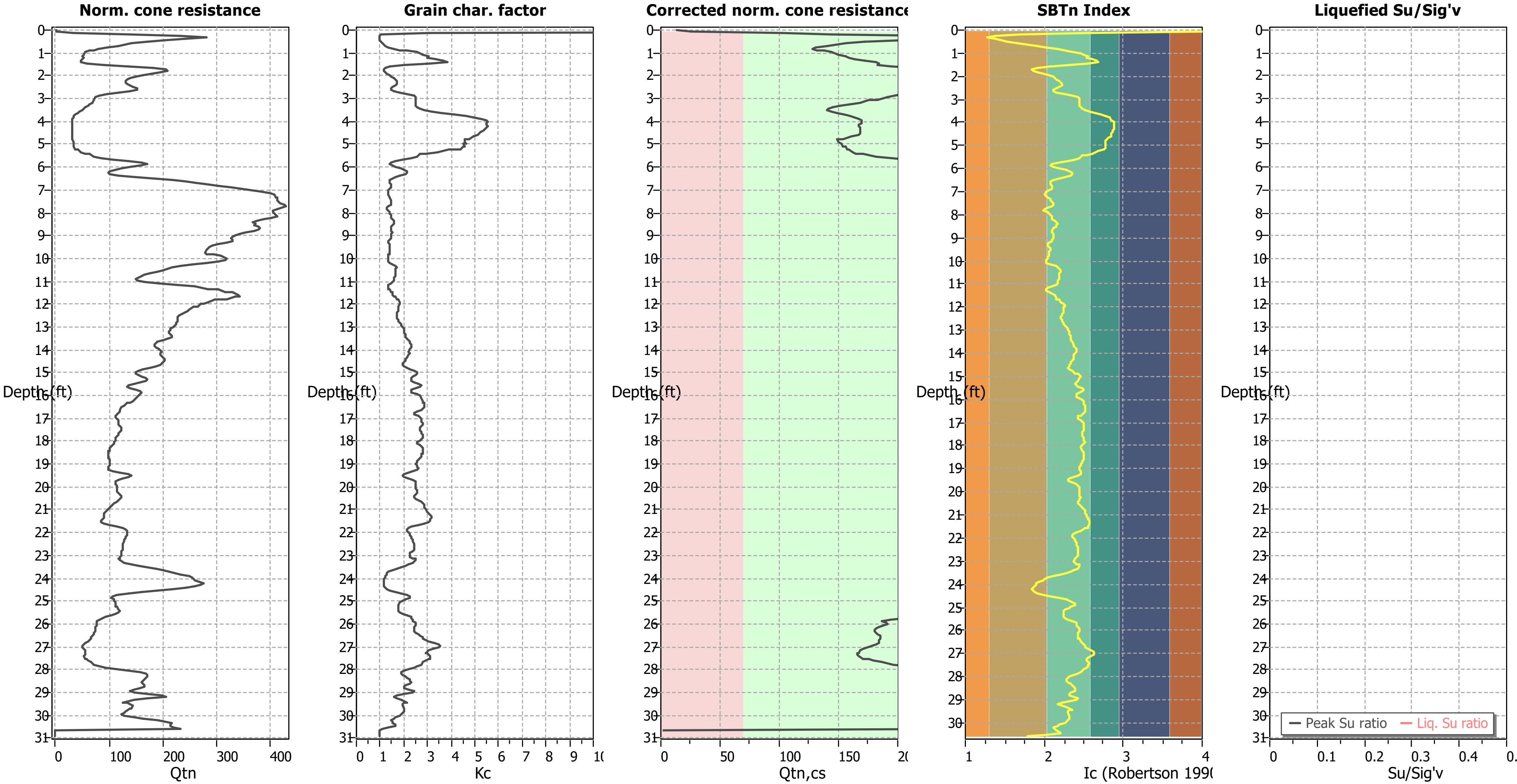
Liquefaction analysis summary plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	12.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.40	K_σ applied:	Yes
Earthquake magnitude M_w:	7.00	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.88	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	60.00 ft	Fill height:	N/A	Limit depth:	40.00 ft

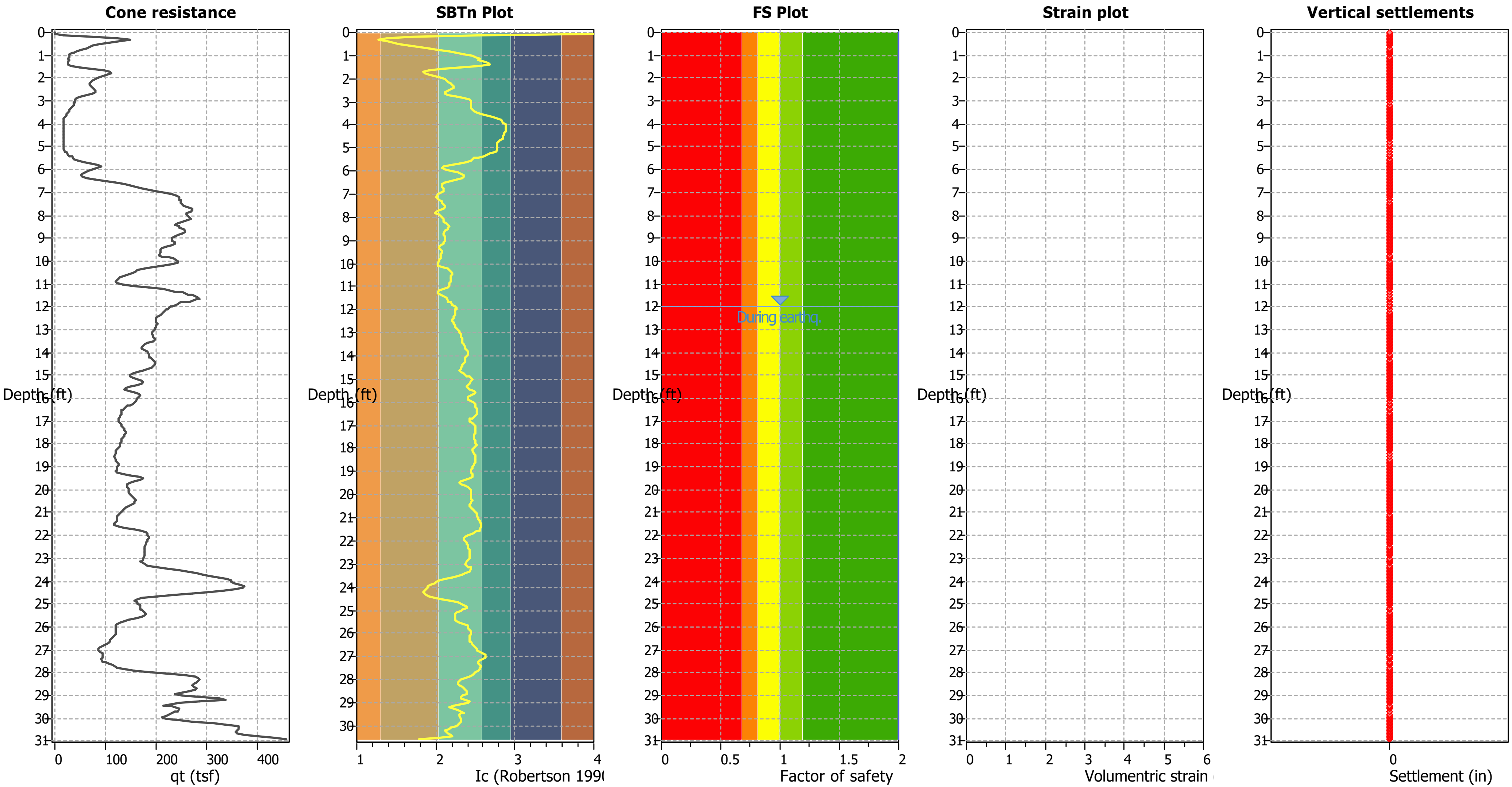
Check for strength loss plots (Robertson (2010))



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	12.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.40	K_σ applied:	Yes
Earthquake magnitude M_w:	7.00	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.88	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	60.00 ft	Fill height:	N/A	Limit depth:	40.00 ft

Estimation of post-earthquake settlements



Abbreviations

q_t: Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c: Soil Behaviour Type Index
FS: Calculated Factor of Safety against liquefaction
Volumentric strain: Post-liquefaction volumentric strain

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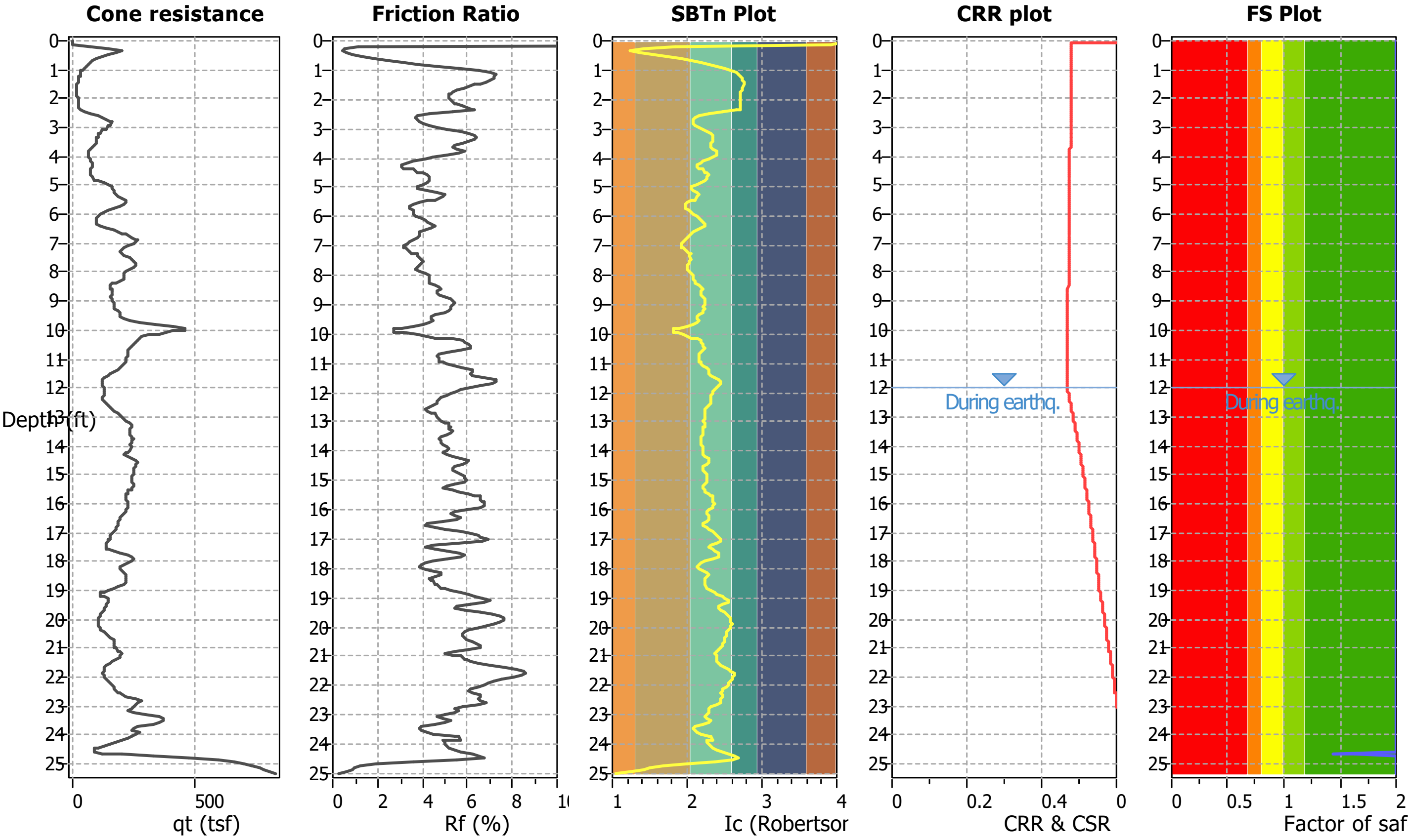
LIQUEFACTION ANALYSIS REPORT

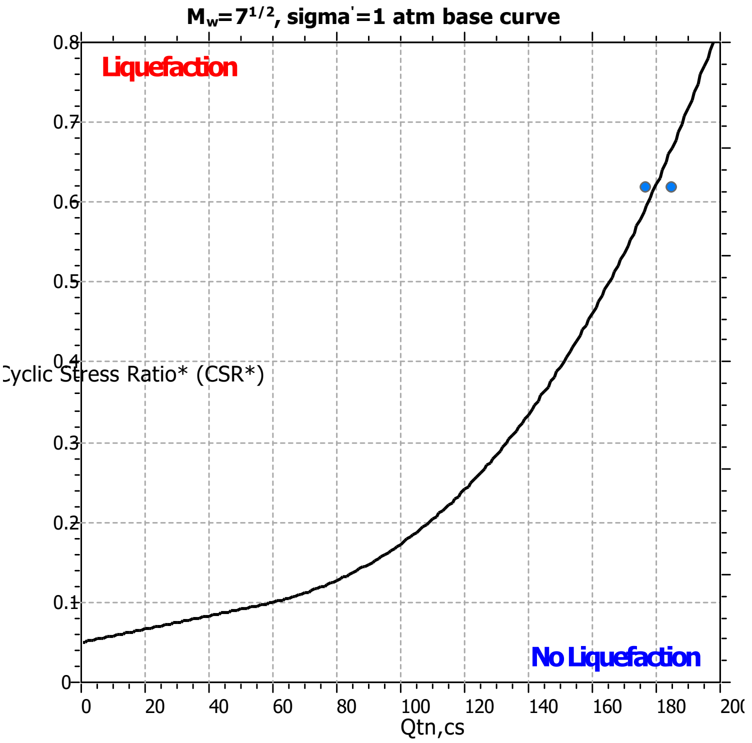
Project title : UHS Inland Valley Reg. Med. Center **Location : 36485 Inland Valley Dr., Wildomar, CA**

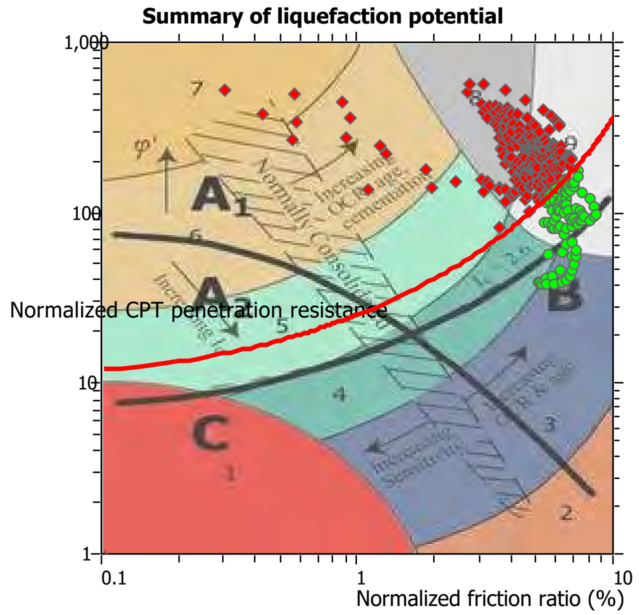
CPT file : CPT-4

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	60.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	12.00 ft	Fill height:	N/A	Limit depth applied:	Yes
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	40.00 ft
Earthquake magnitude M_w:	7.00	Ic cut-off value:	2.40	Trans. detect. applied:	No	MSF method:	Method based
Peak ground acceleration:	0.88	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

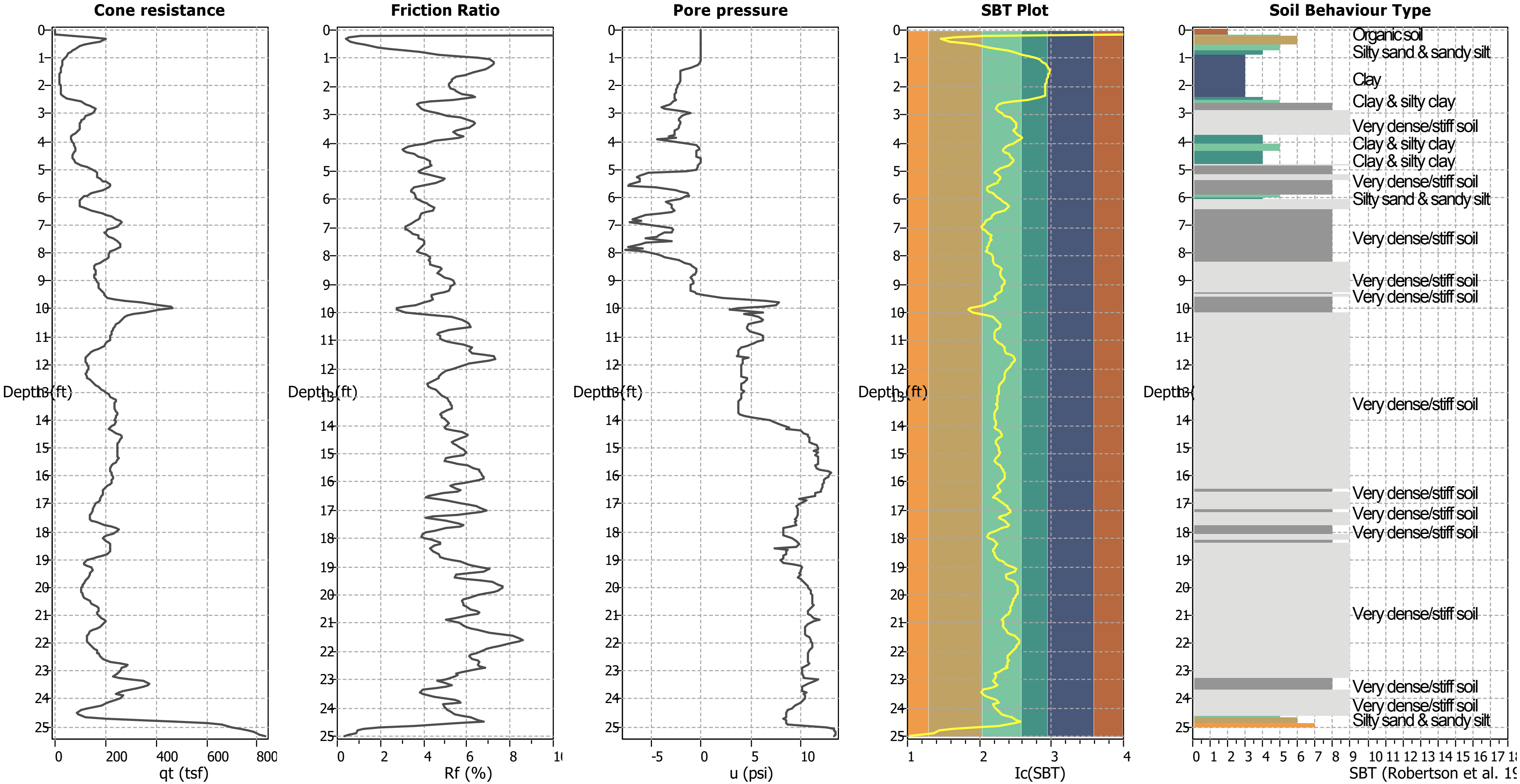






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



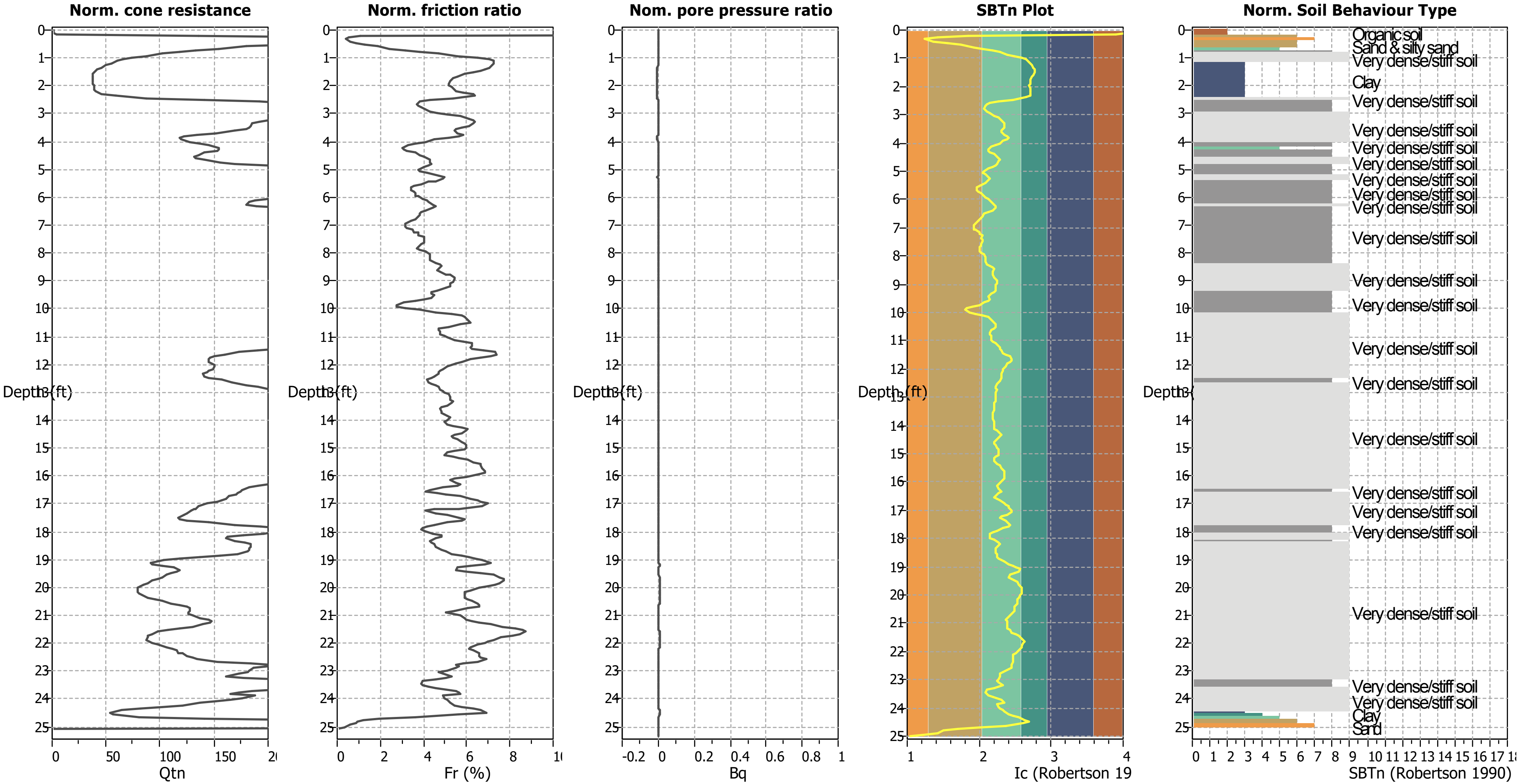
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	12.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.40	K_{σ} applied:	Yes
Earthquake magnitude M_w:	7.00	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.88	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	60.00 ft	Fill height:	N/A	Limit depth:	40.00 ft

SBT legend

1. Sensitive fine grained	4. Clayey silt to silty	7. Gravely sand to sand
2. Organic material	5. Silty sand to sandy silt	8. Very stiff sand to
3. Clay to silty clay	6. Clean sand to silty sand	9. Very stiff fine grained

CPT basic interpretation plots (normalized)



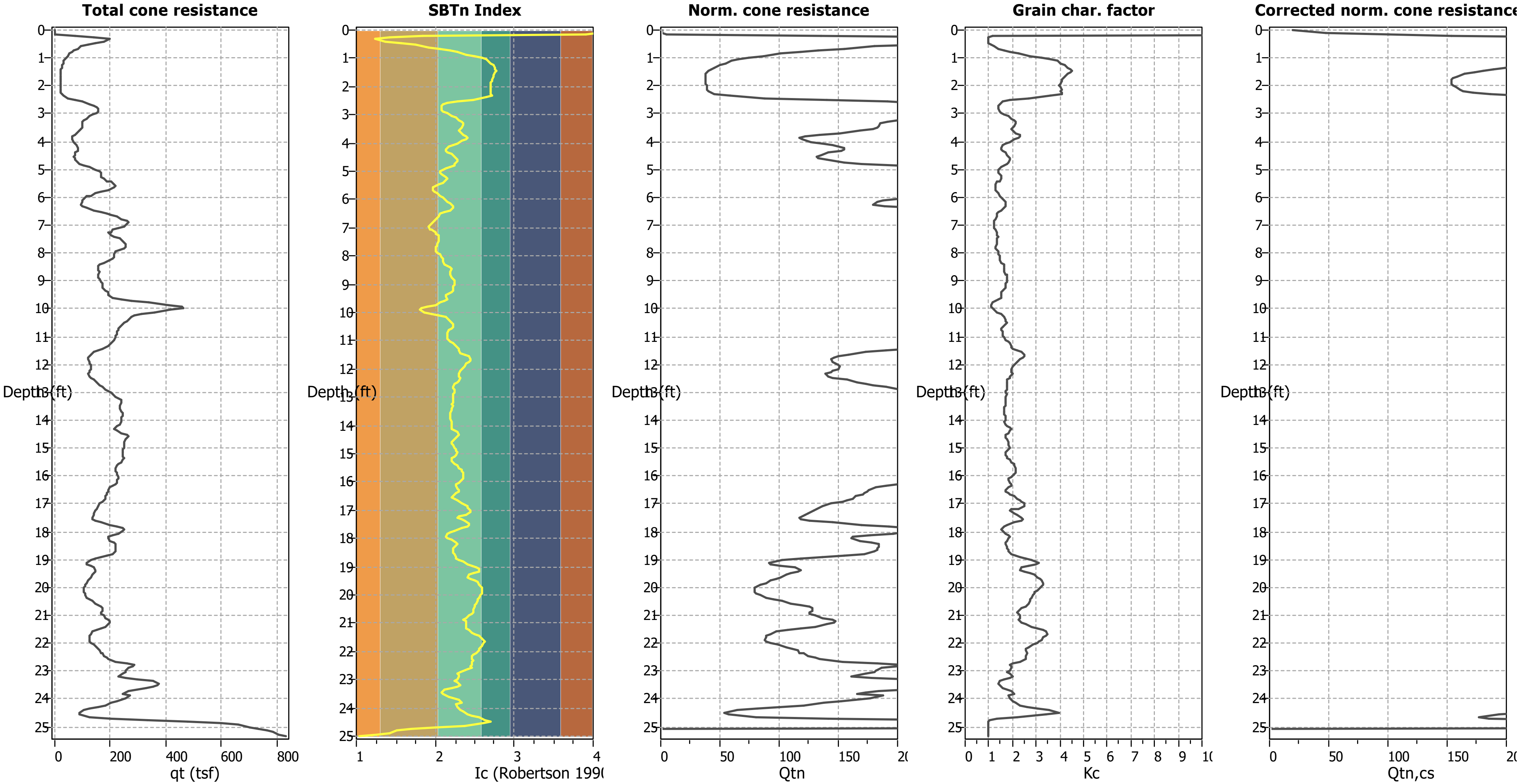
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	12.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.40	K_σ applied:	Yes
Earthquake magnitude M_w:	7.00	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.88	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	60.00 ft	Fill height:	N/A	Limit depth:	40.00 ft

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

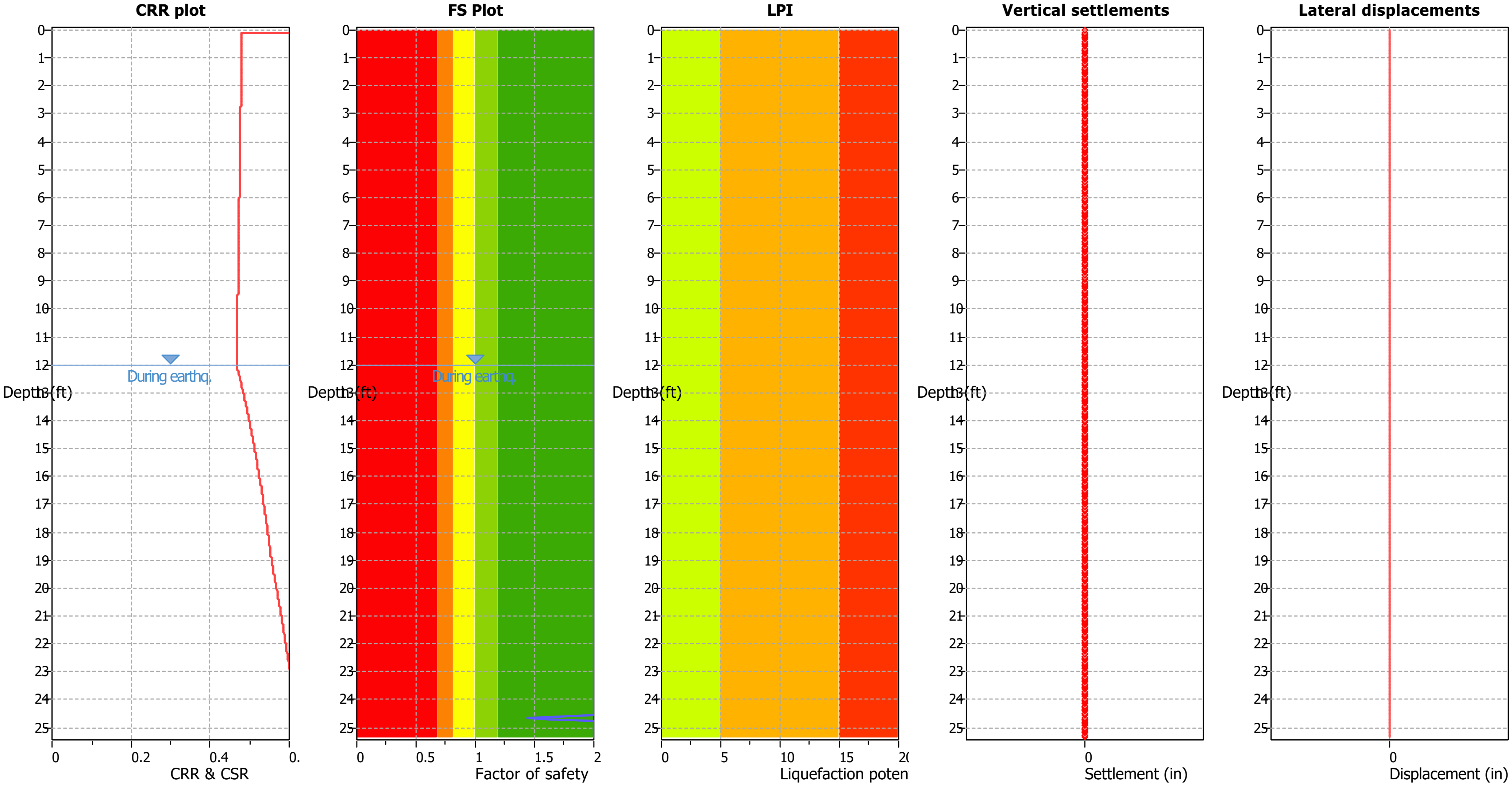
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	12.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.40	K_{σ} applied:	Yes
Earthquake magnitude M_w:	7.00	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.88	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	60.00 ft	Fill height:	N/A	Limit depth:	40.00 ft

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	12.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.40	K_σ applied:	Yes
Earthquake magnitude M_w:	7.00	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.88	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	60.00 ft	Fill height:	N/A	Limit depth:	40.00 ft

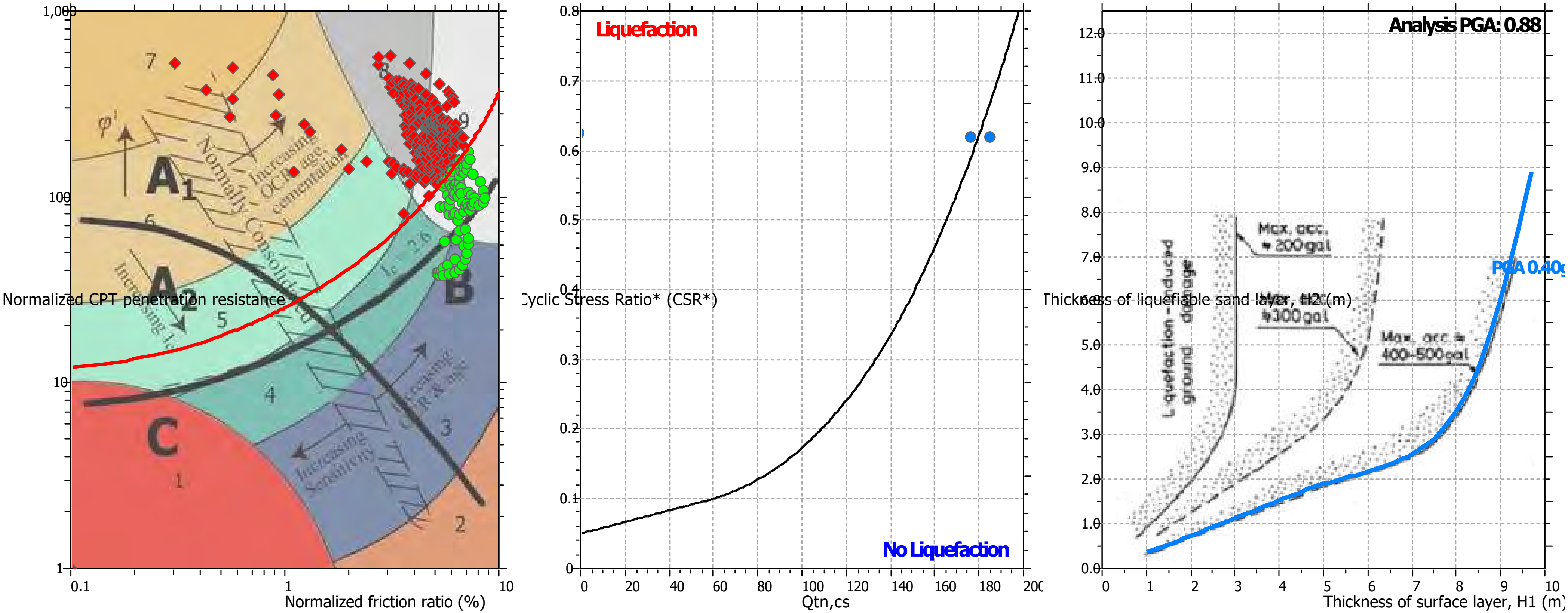
F.S. color scheme

- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

LPI color scheme

- Very high risk
- High risk
- Low risk

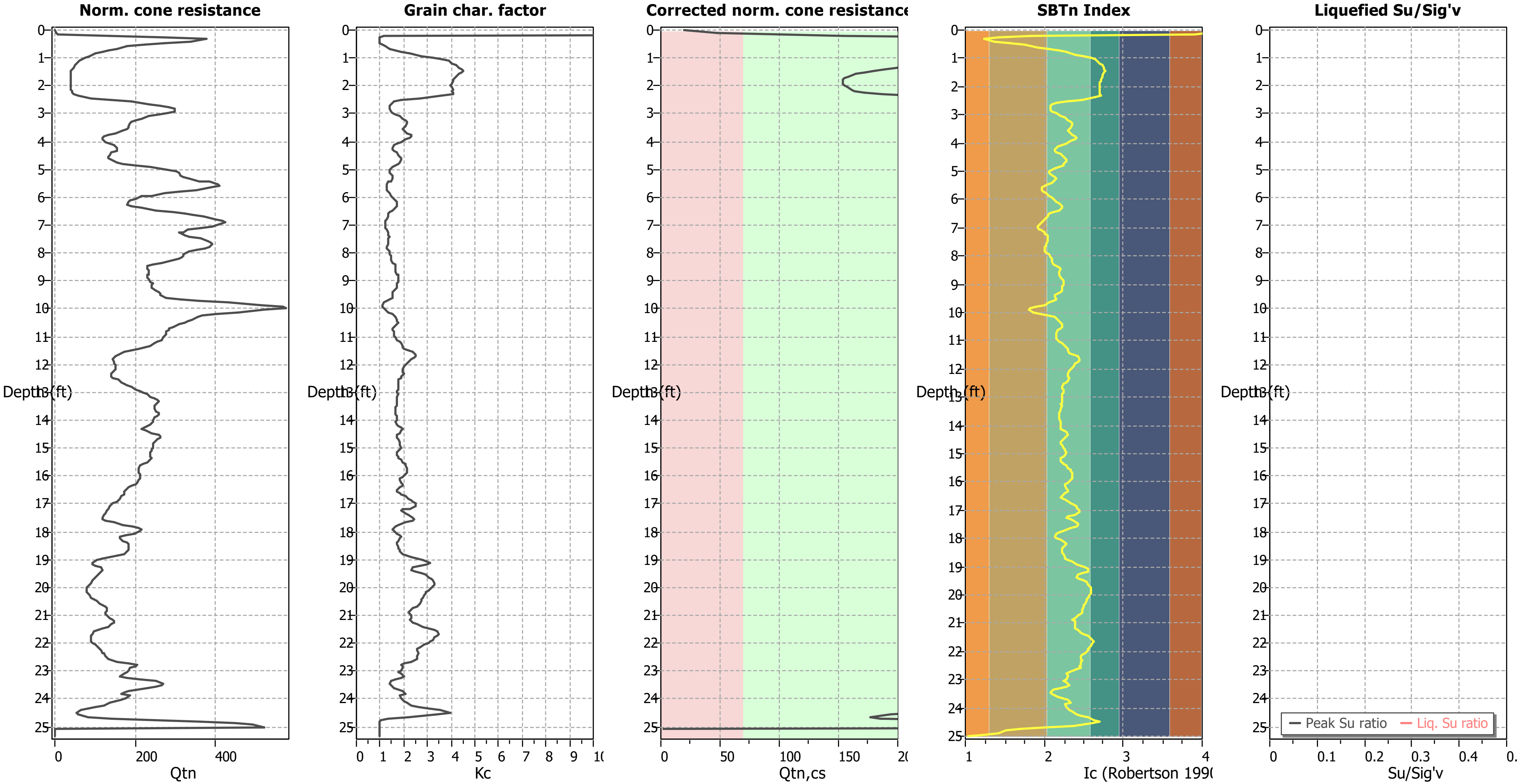
Liquefaction analysis summary plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	12.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.40	K_{σ} applied:	Yes
Earthquake magnitude M_w:	7.00	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.88	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	60.00 ft	Fill height:	N/A	Limit depth:	40.00 ft

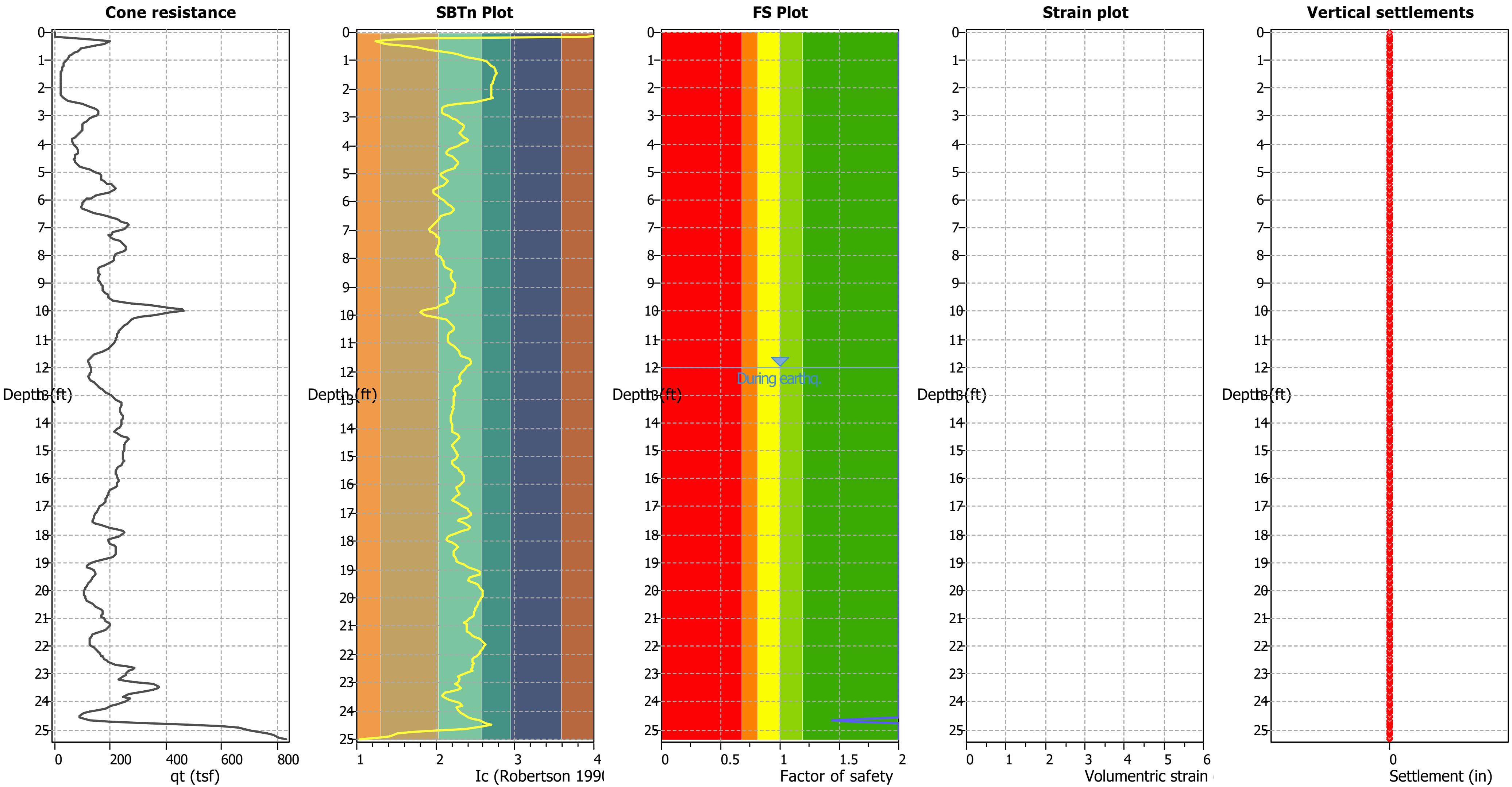
Check for strength loss plots (Robertson (2010))



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	12.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.40	K_σ applied:	Yes
Earthquake magnitude M_w:	7.00	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.88	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	60.00 ft	Fill height:	N/A	Limit depth:	40.00 ft

Estimation of post-earthquake settlements



Abbreviations

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I_c:	Soil Behaviour Type Index
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Volumentric strain:	Post-liquefaction volumentric strain

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858-292-7575

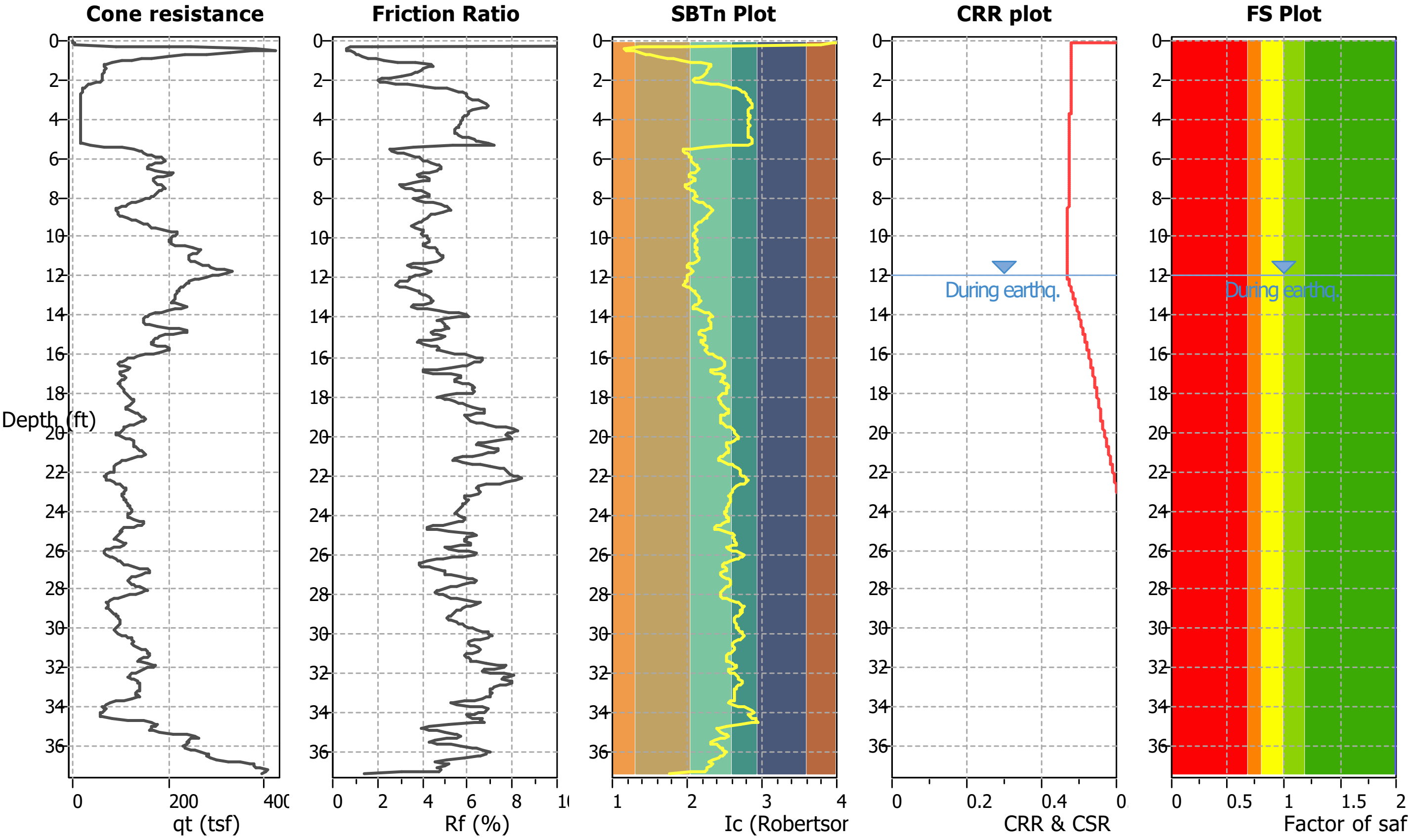
LIQUEFACTION ANALYSIS REPORT

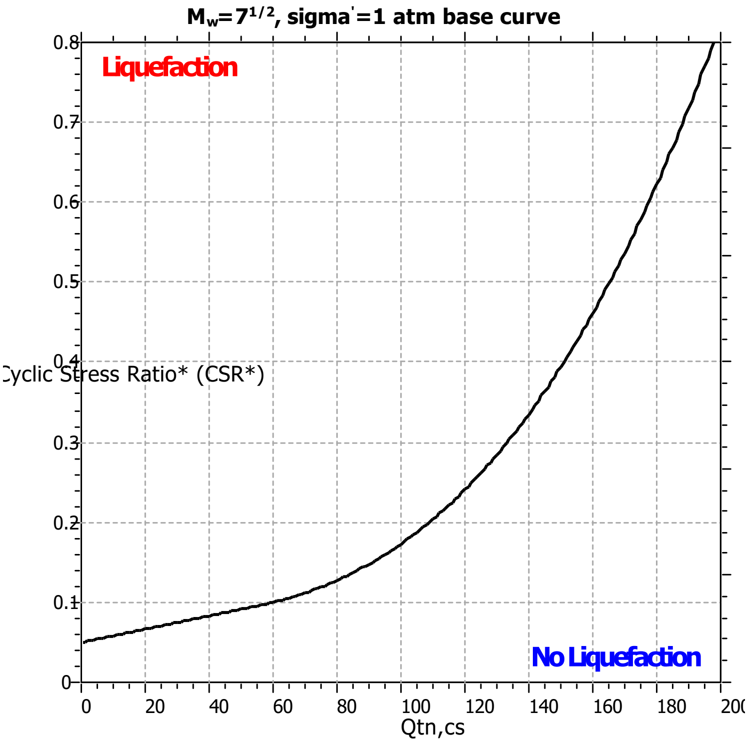
Project title : UHS Inland Valley Reg. Med. Center **Location : 36485 Inland Valley Dr., Wildomar, CA**

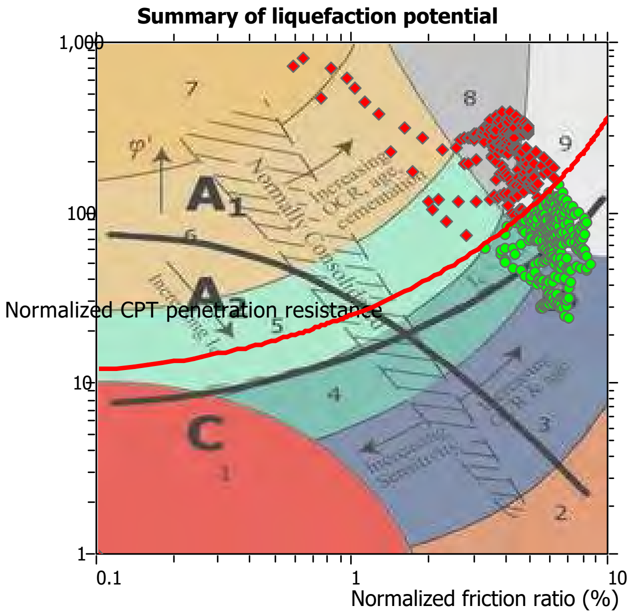
CPT file : CPT-5

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	60.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	12.00 ft	Fill height:	N/A	Limit depth applied:	Yes
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	40.00 ft
Earthquake magnitude M_w:	7.00	Ic cut-off value:	2.40	Trans. detect. applied:	No	MSF method:	Method based
Peak ground acceleration:	0.88	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

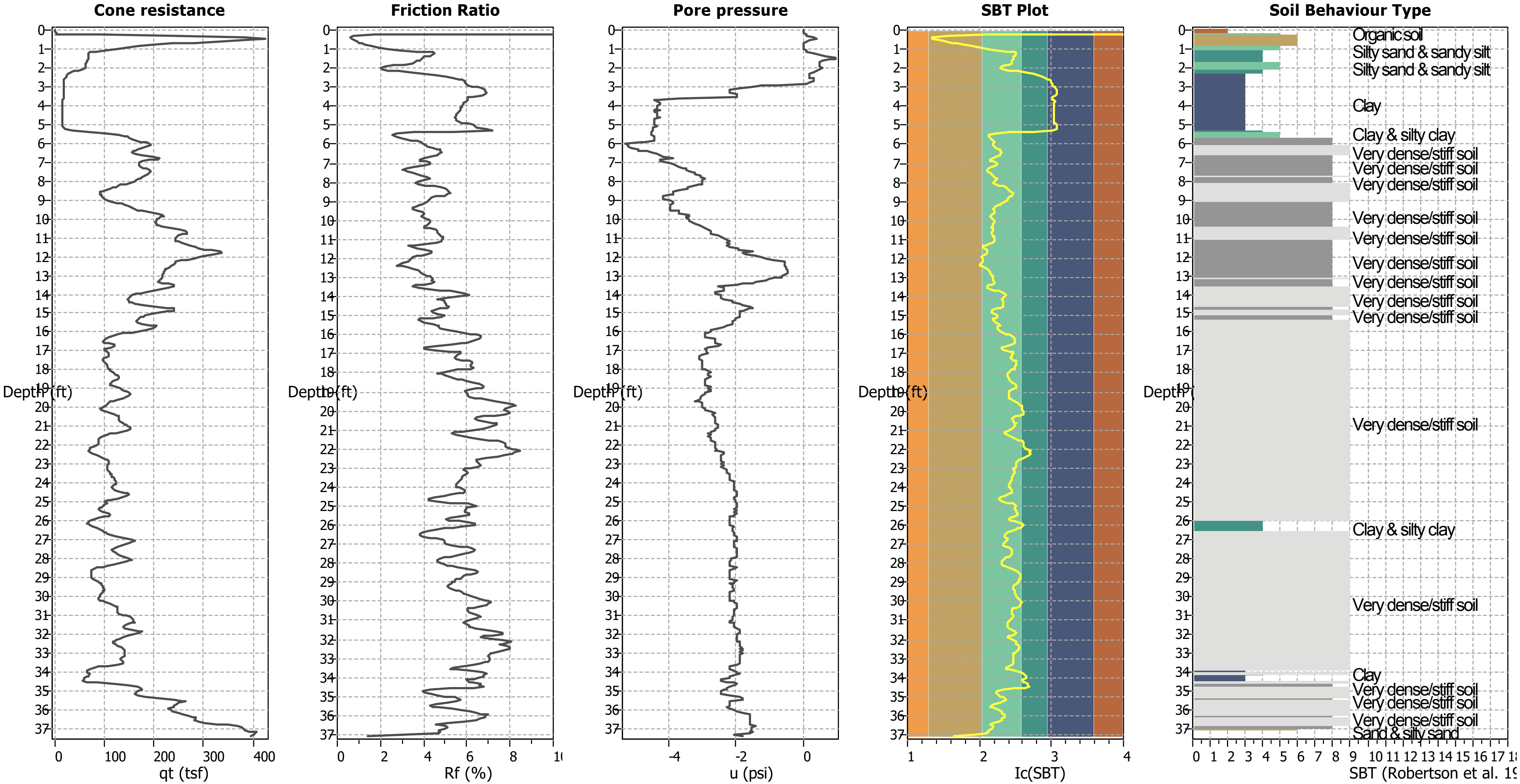






Zone A_1 : Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



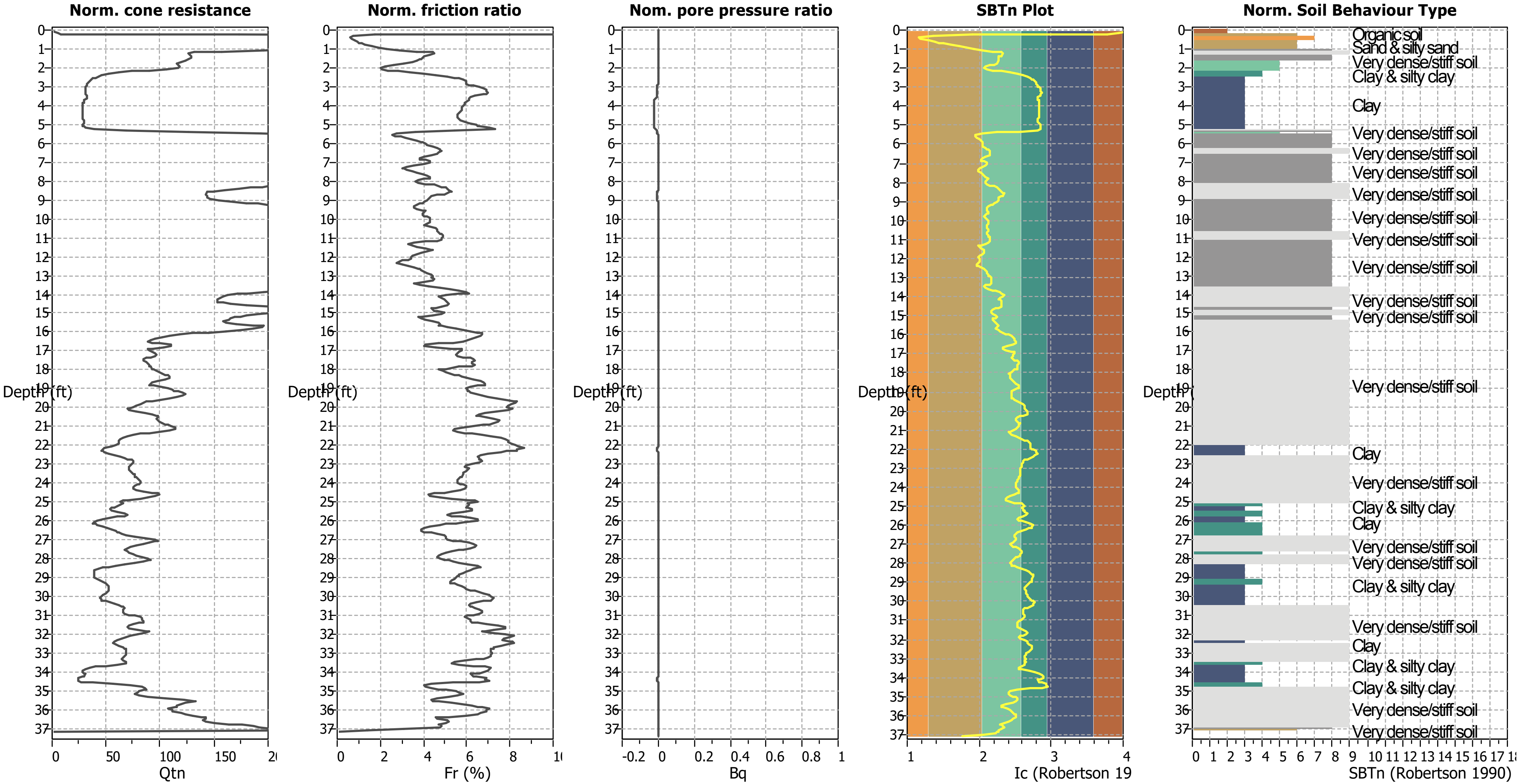
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	12.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.40	K_σ applied:	Yes
Earthquake magnitude M_w:	7.00	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.88	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	60.00 ft	Fill height:	N/A	Limit depth:	40.00 ft

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	12.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.40	K_σ applied:	Yes
Earthquake magnitude M_w:	7.00	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.88	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	60.00 ft	Fill height:	N/A	Limit depth:	40.00 ft

SBTn legend

1. Sensitive fine grained
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4. Clayey silt to silty
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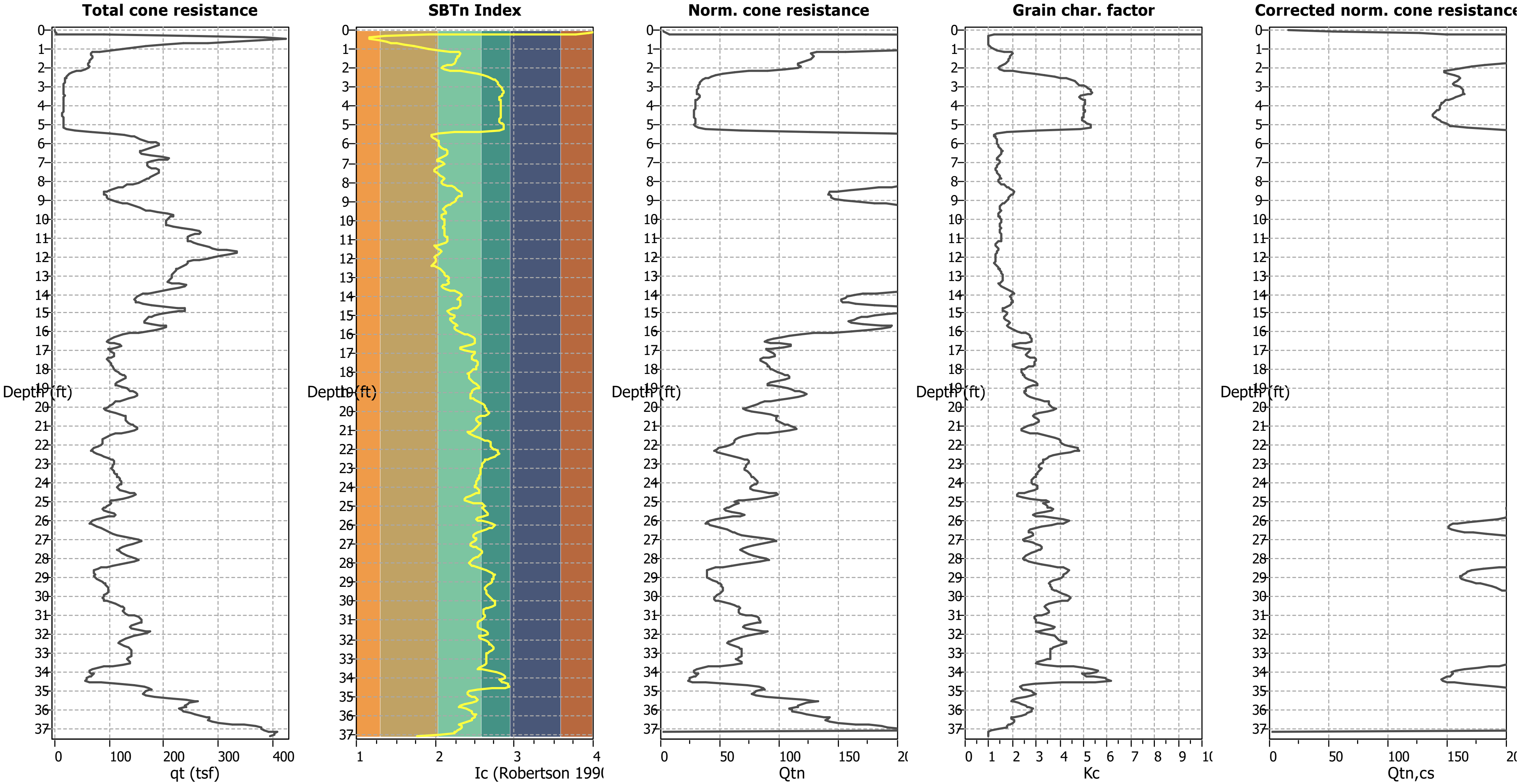
9. Very stiff fine grained

Liquefaction analysis overall plots (intermediate results)



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Analysis method:	NCEER (1998)	Depth to water table (erthq.):	12.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
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Earthquake magnitude M_w:	7.00	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.88	Use fill:	No	Limit depth applied:	Yes
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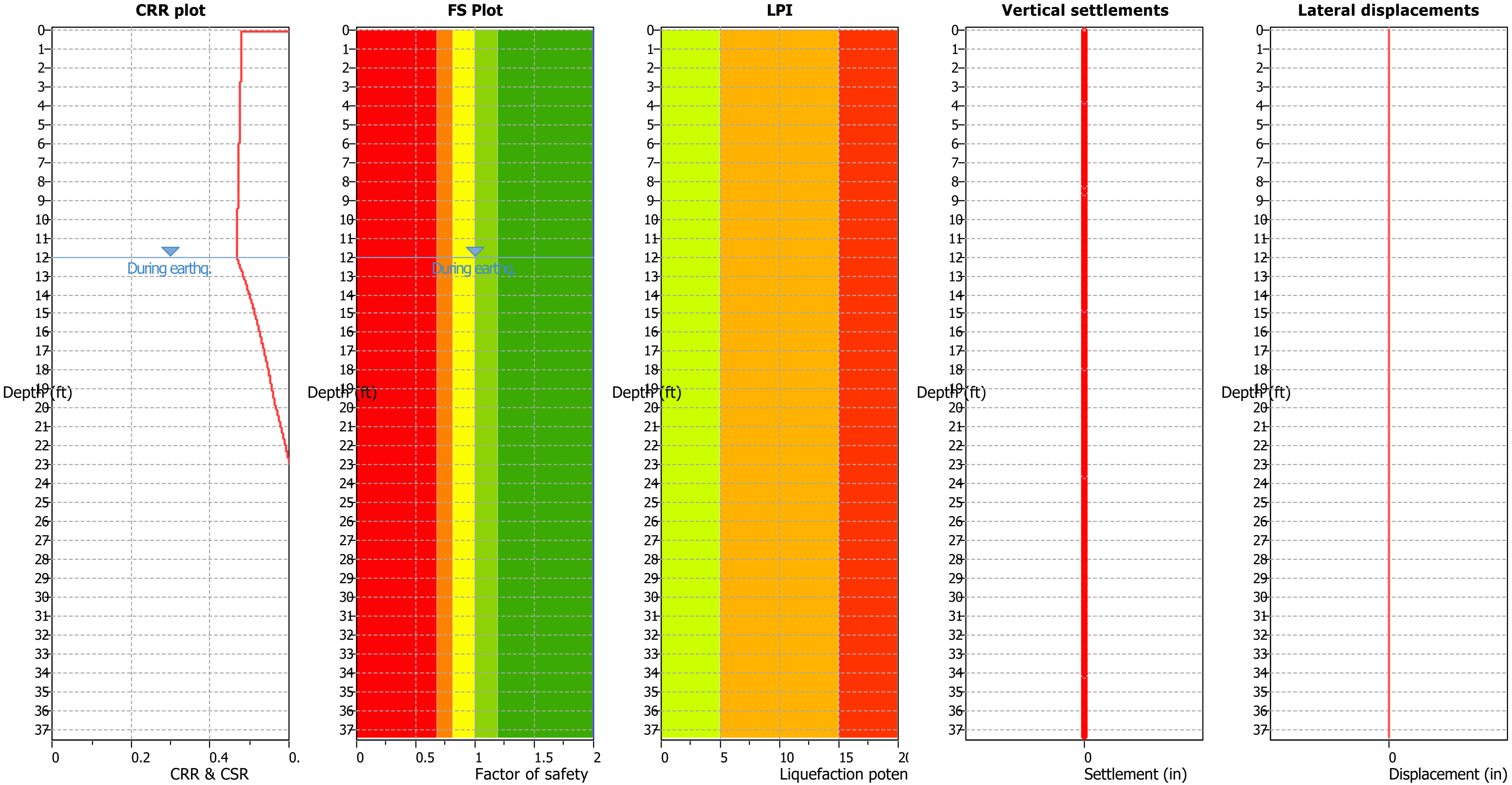
Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	12.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.40	K_σ applied:	Yes
Earthquake magnitude M_w:	7.00	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.88	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	60.00 ft	Fill height:	N/A	Limit depth:	40.00 ft

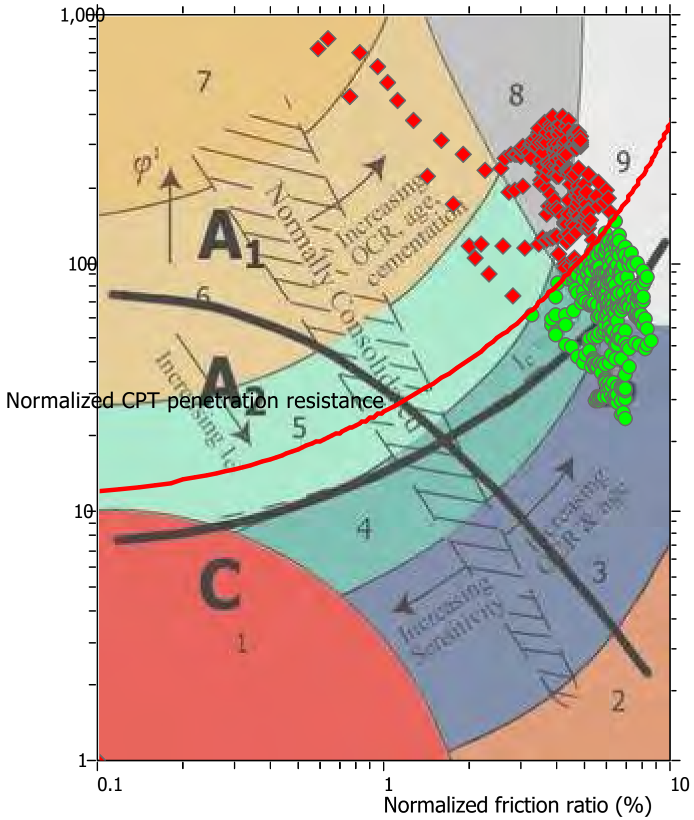
F.S. color scheme

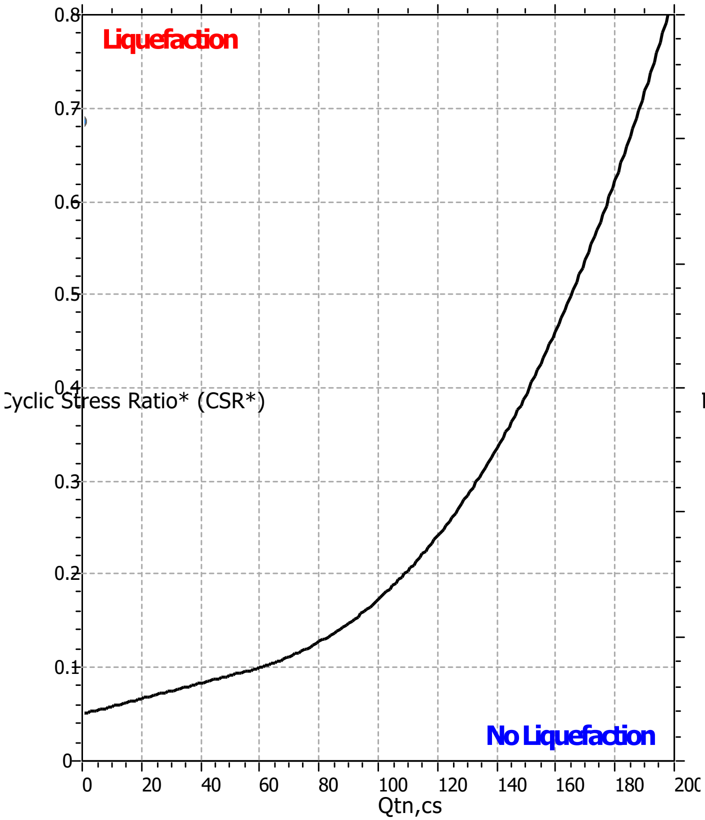
- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

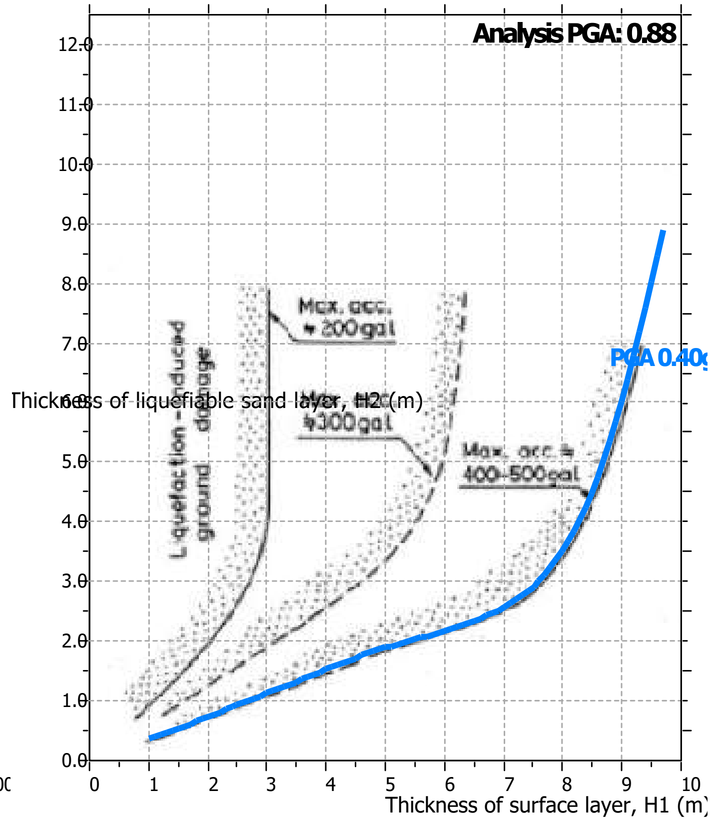
LPI color scheme

- Very high risk
- High risk
- Low risk

Liquefaction analysis summary plots







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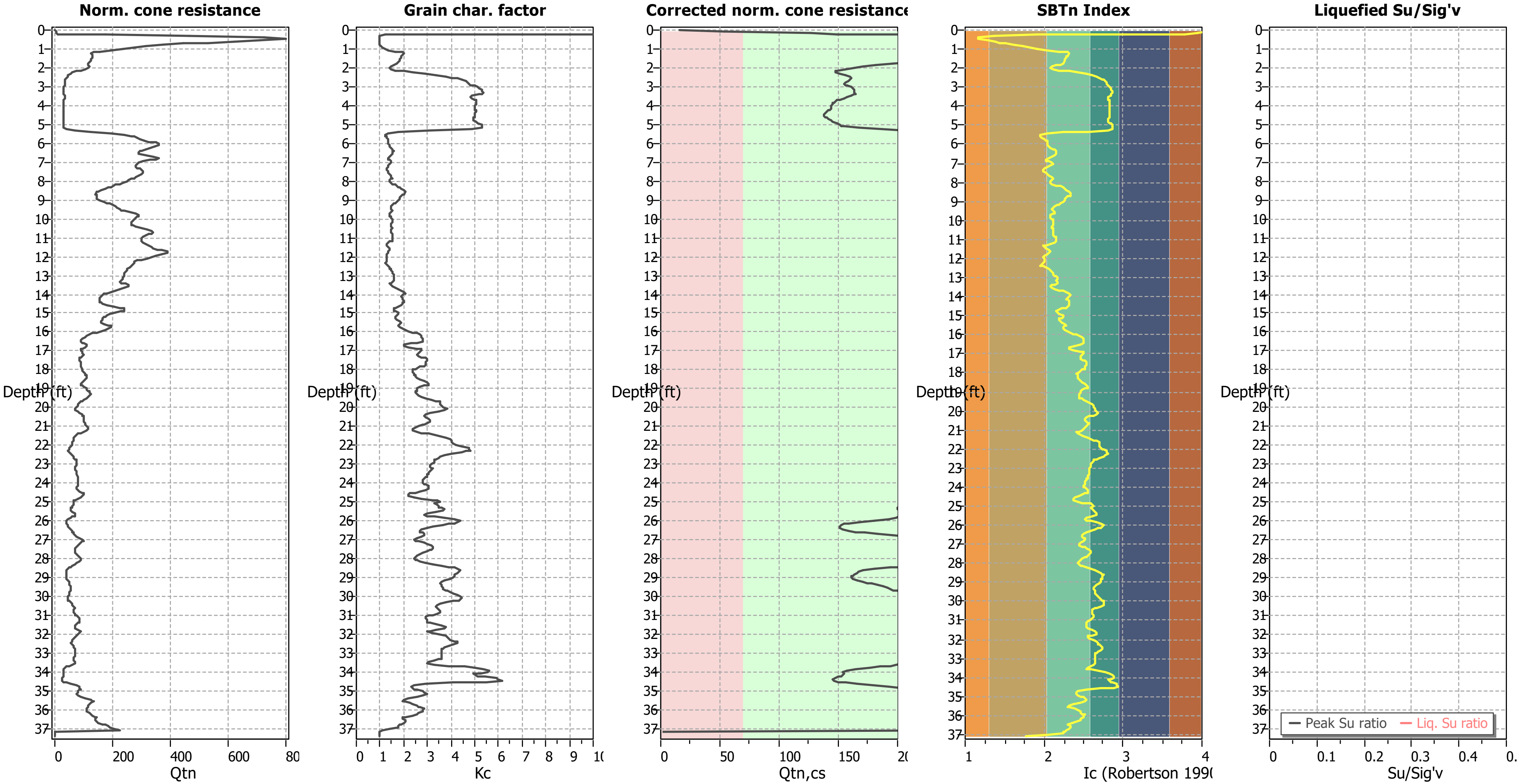
Analysis method:	NCEER (1998)	Depth to water table (erthq.):	12.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.40	K_σ applied:	Yes
Earthquake magnitude M_w:	7.00	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.88	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	60.00 ft	Fill height:	N/A	Limit depth:	40.00 ft

Check for strength loss plots (Robertson (2010))



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	12.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
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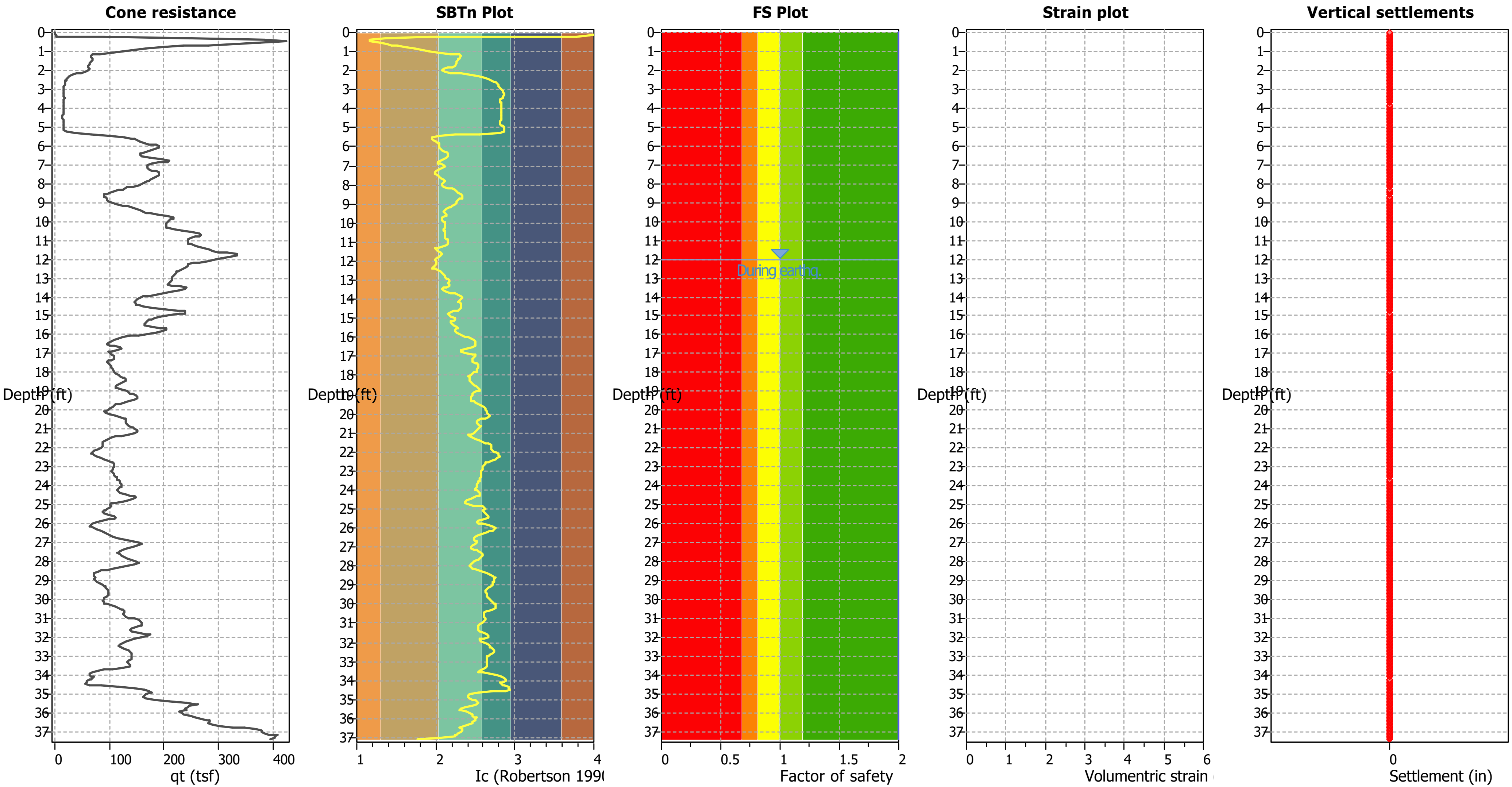
Earthquake magnitude M_w:	7.00	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.88	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	60.00 ft	Fill height:	N/A	Limit depth:	40.00 ft

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

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San Diego, CA 92123
858-292-7575

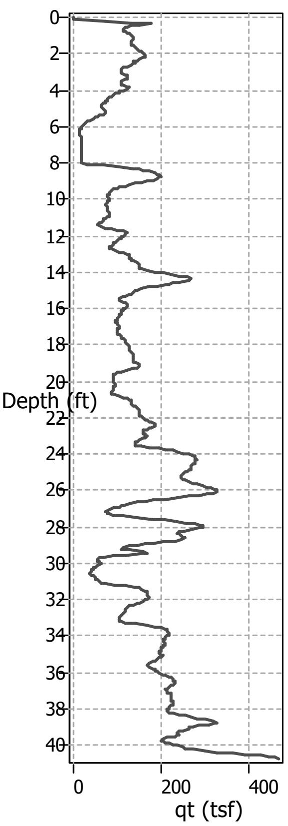
LIQUEFACTION ANALYSIS REPORT

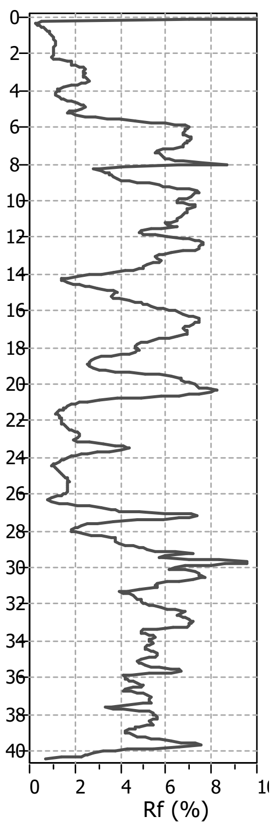
Project title : UHS Inland Valley Reg. Med. Center **Location : 36485 Inland Valley Dr., Wildomar, CA**

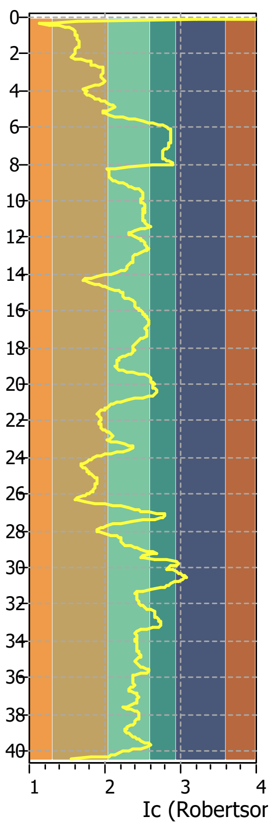
CPT file : CPT-6

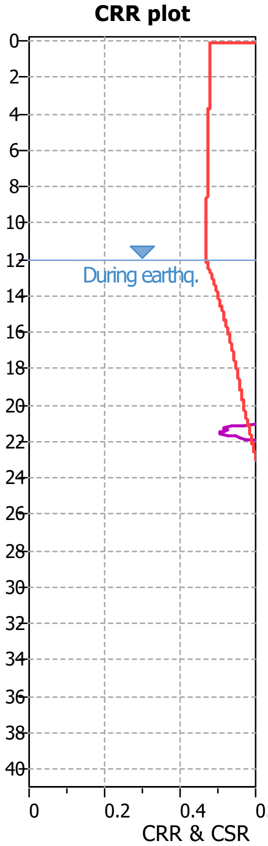
Input parameters and analysis data

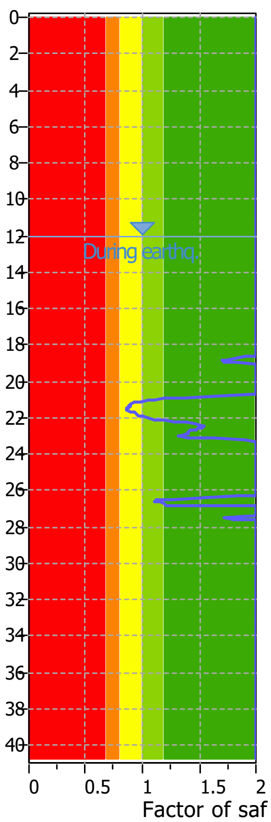
Analysis method:	NCEER (1998)	G.W.T. (in-situ):	60.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	12.00 ft	Fill height:	N/A	Limit depth applied:	Yes
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	40.00 ft
Earthquake magnitude M_w:	7.00	Ic cut-off value:	2.40	Trans. detect. applied:	No	MSF method:	Method based
Peak ground acceleration:	0.88	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

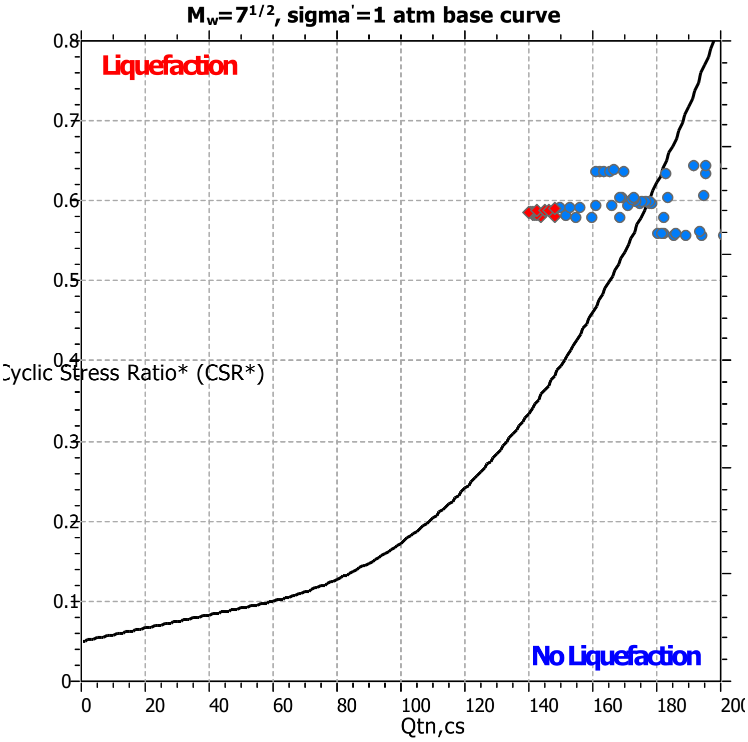


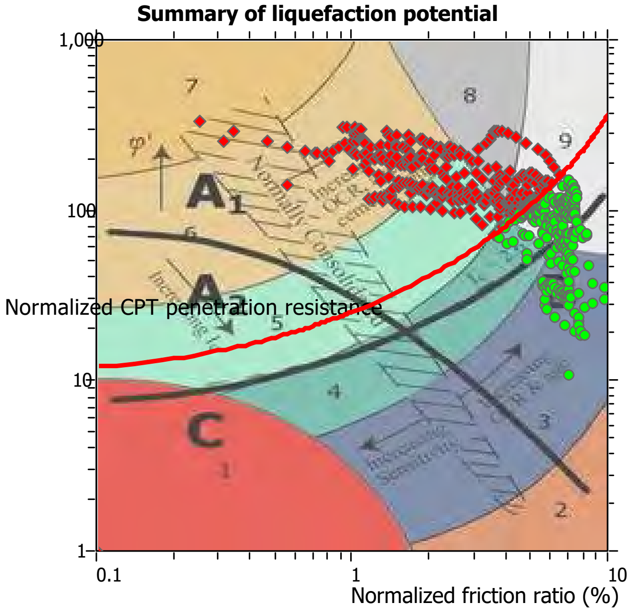






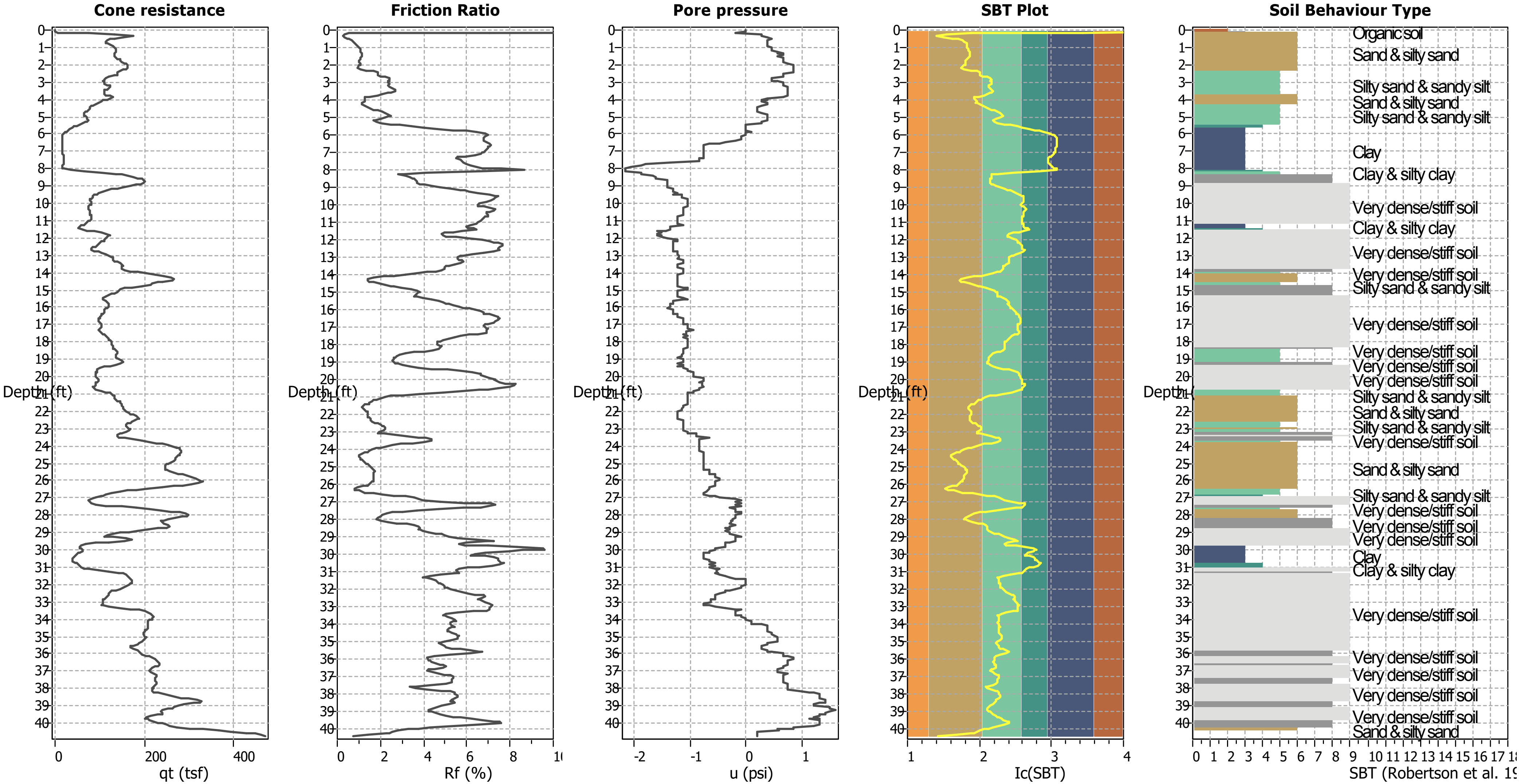






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



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Analysis method:	NCEER (1998)	Depth to water table (erthq.):	12.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.40	K_σ applied:	Yes
Earthquake magnitude M_w:	7.00	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.88	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	60.00 ft	Fill height:	N/A	Limit depth:	40.00 ft

SBT legend

1. Sensitive fine grained
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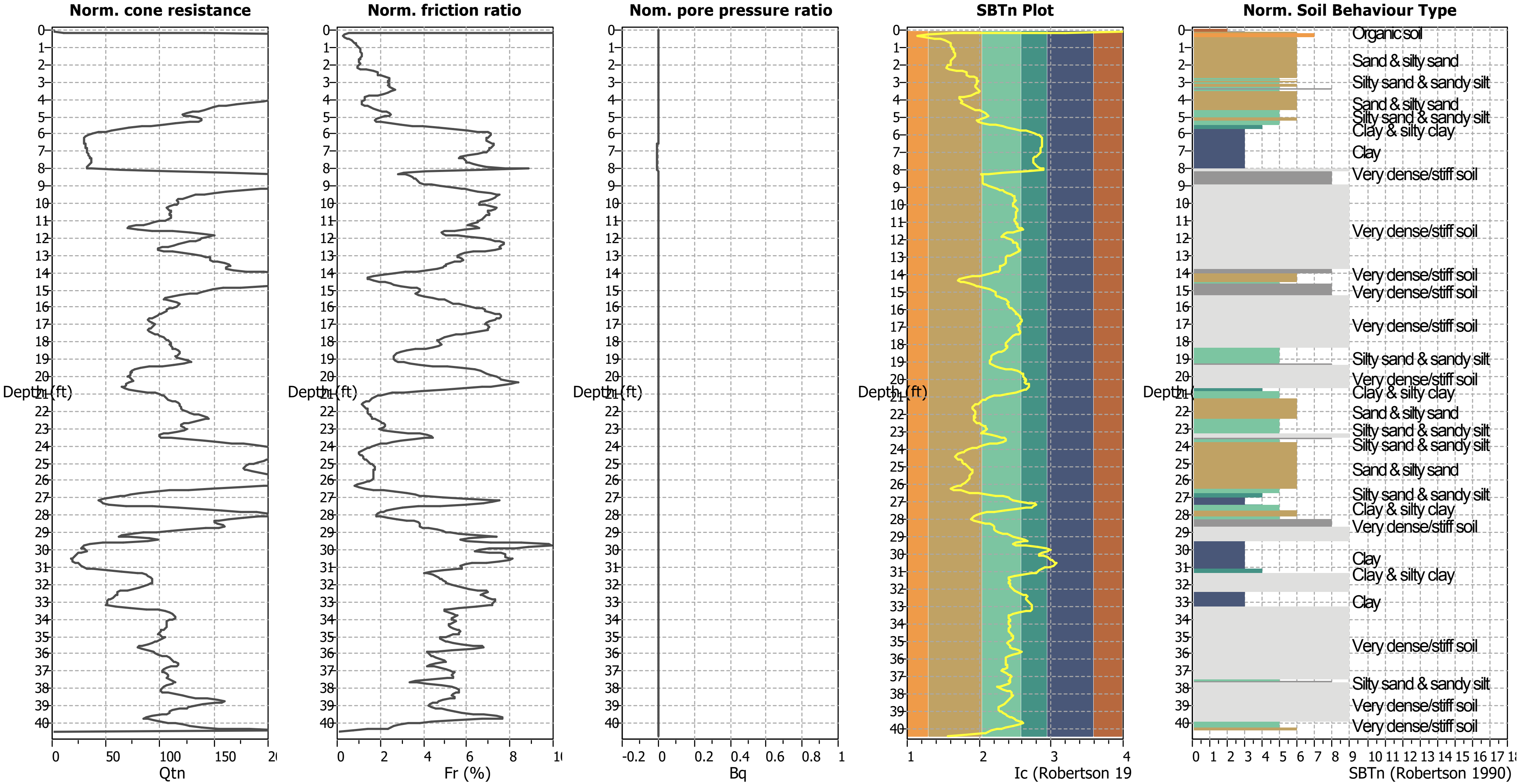
CPT basic interpretation plots (normalized)



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Analysis method:	NCEER (1998)	Depth to water table (erthq.):	12.00 ft	Fill weight:	N/A
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Earthquake magnitude M_w:	7.00	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.88	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	60.00 ft	Fill height:	N/A	Limit depth:	40.00 ft

SBTn legend

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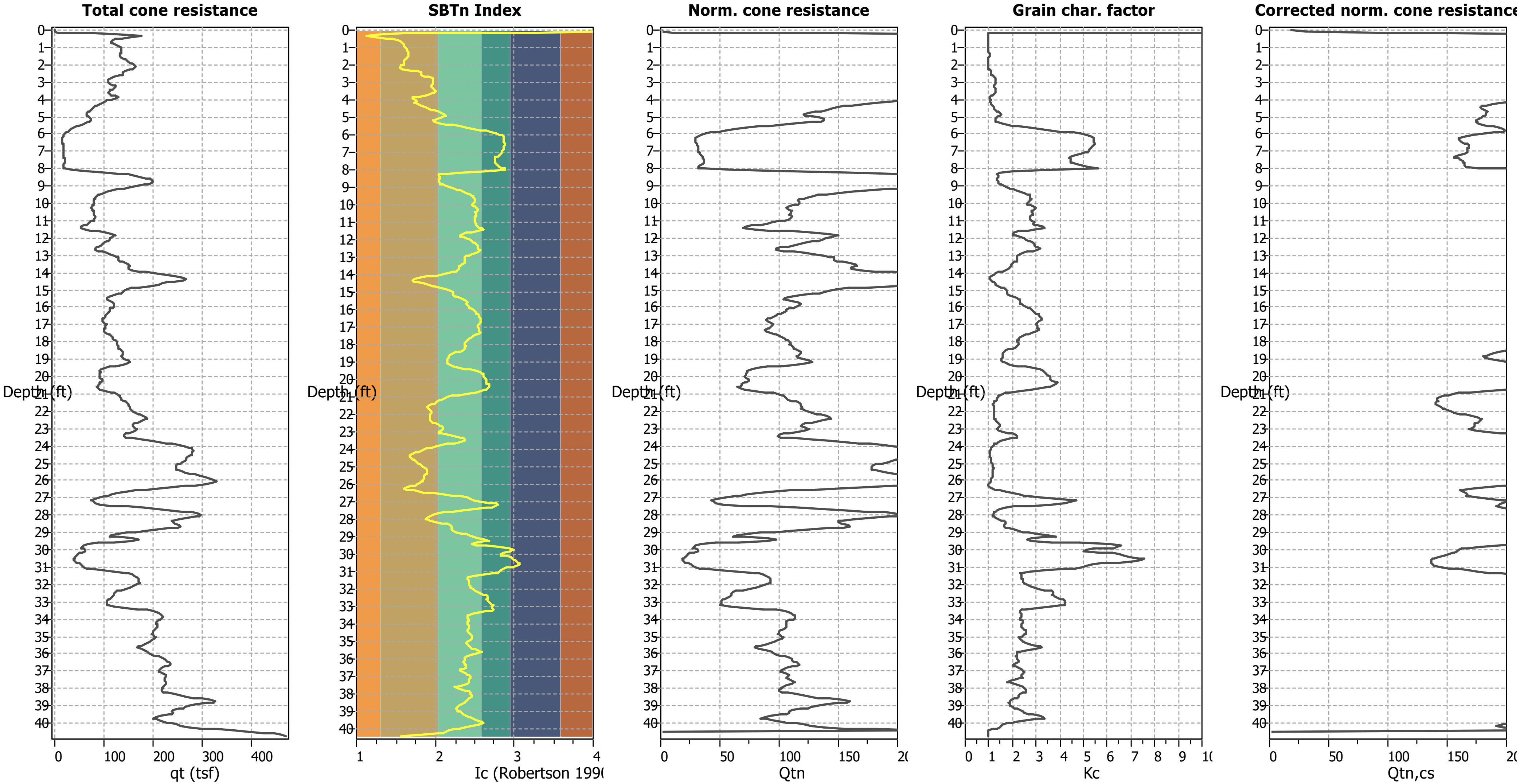
3. Clay to silty clay	6. Clean sand to silty sand	9. Very stiff fine grained

Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	12.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.40	K_σ applied:	Yes
Earthquake magnitude M_w:	7.00	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.88	Use fill:	No	Limit depth applied:	Yes
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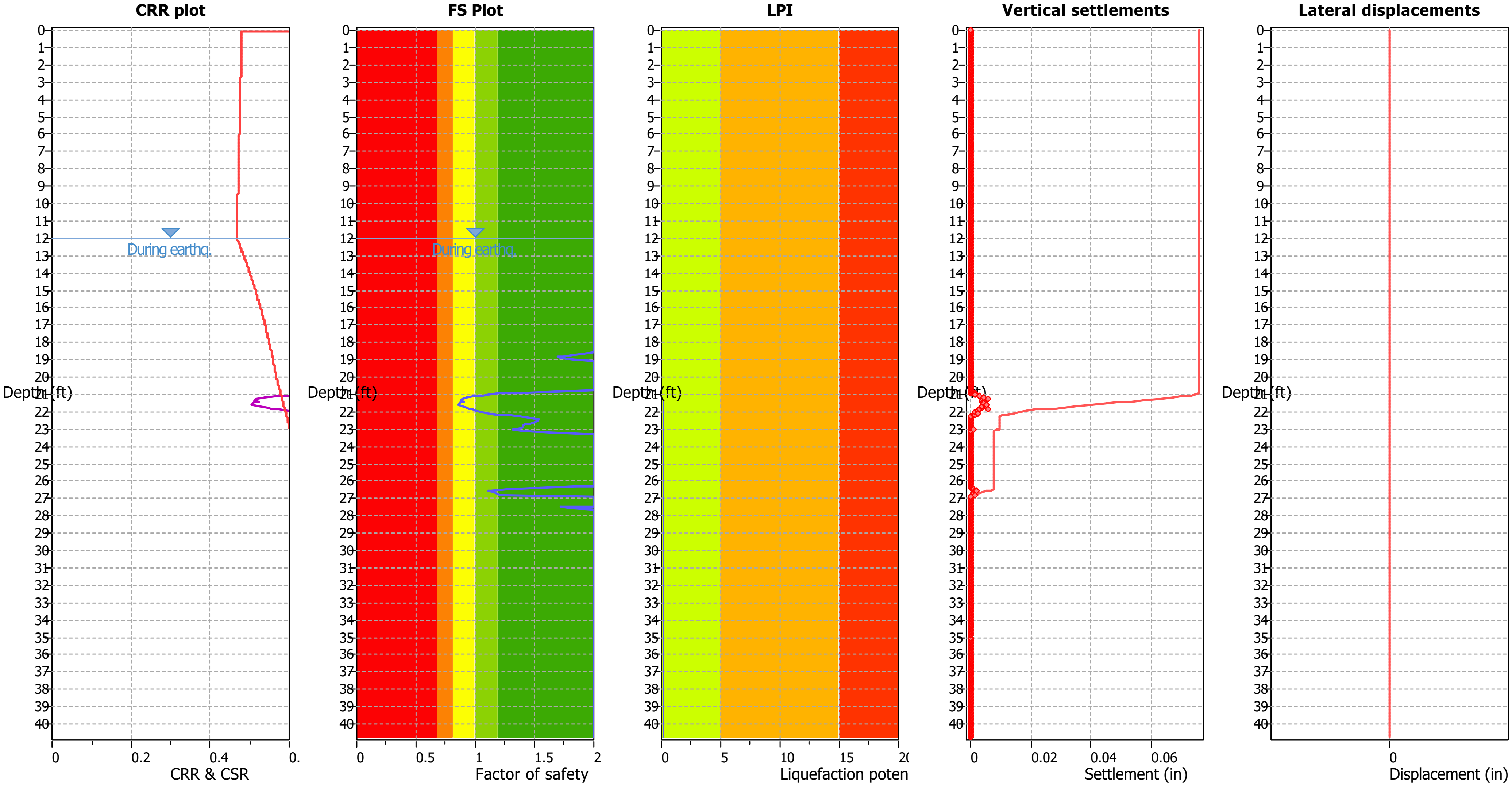
Liquefaction analysis overall plots



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Analysis method:	NCEER (1998)	Depth to water table (erthq.):	12.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
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Earthquake magnitude M_w:	7.00	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.88	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	60.00 ft	Fill height:	N/A	Limit depth:	40.00 ft

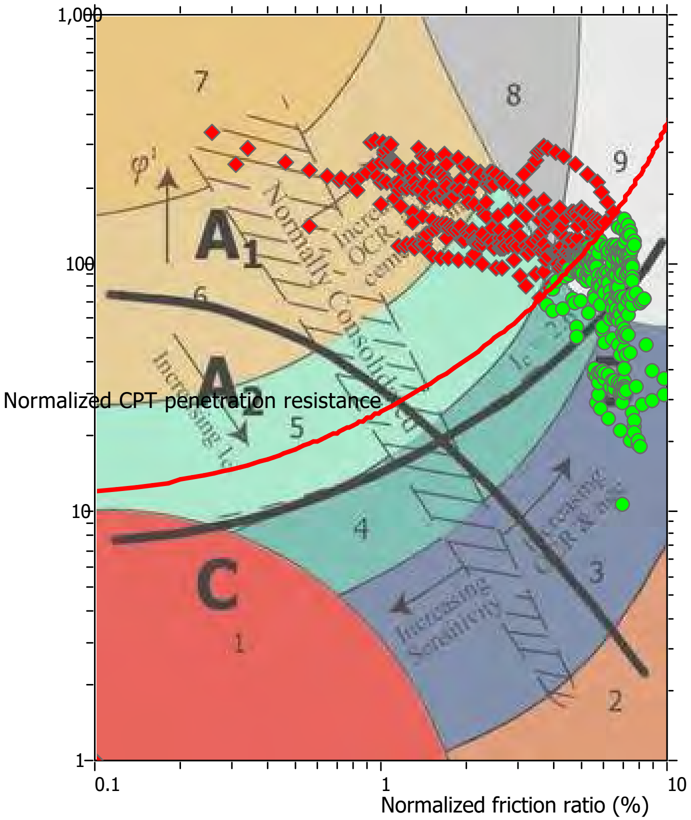
F.S. color scheme

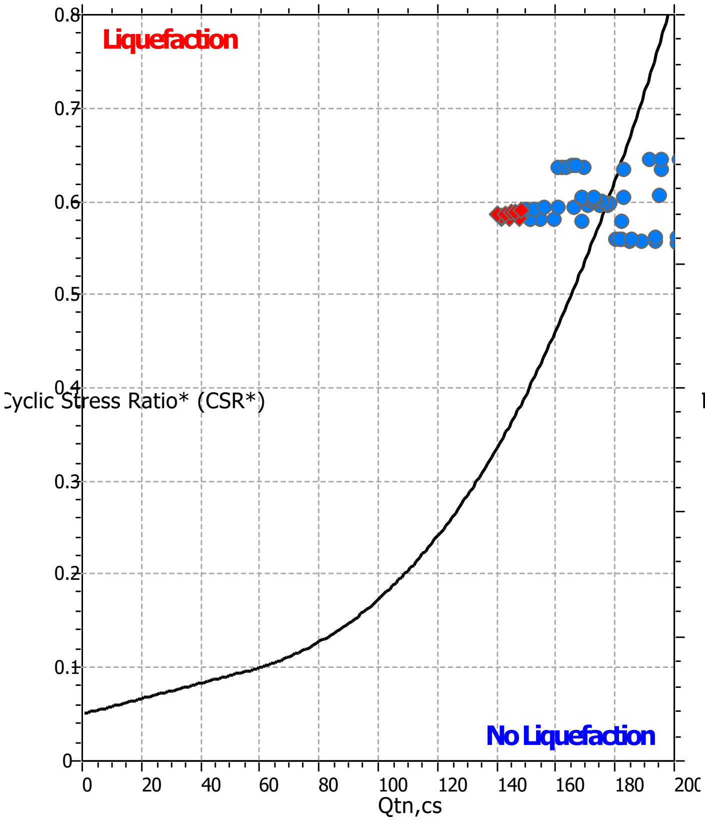
- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

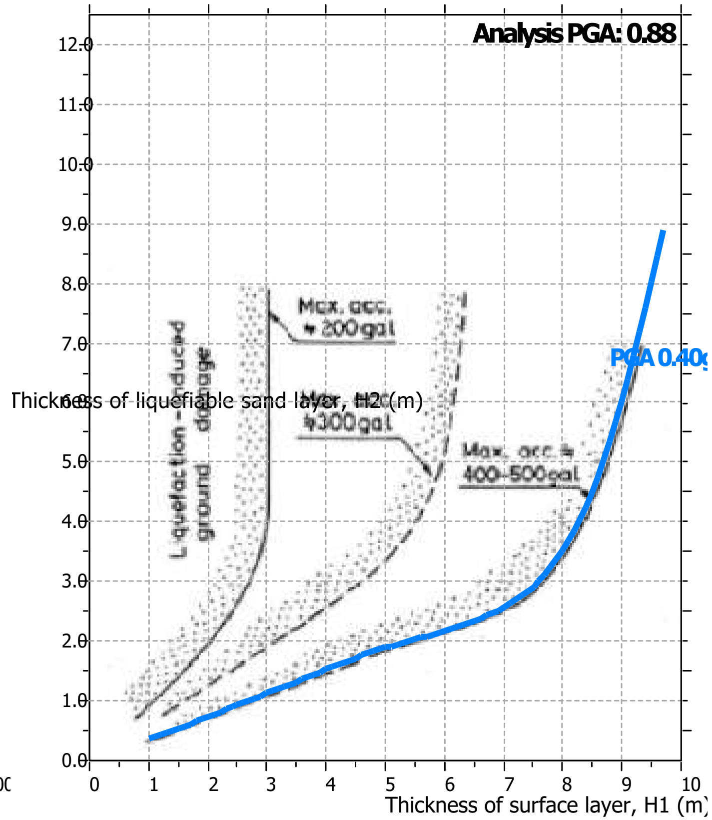
LPI color scheme

- Very high risk
- High risk
- Low risk

Liquefaction analysis summary plots







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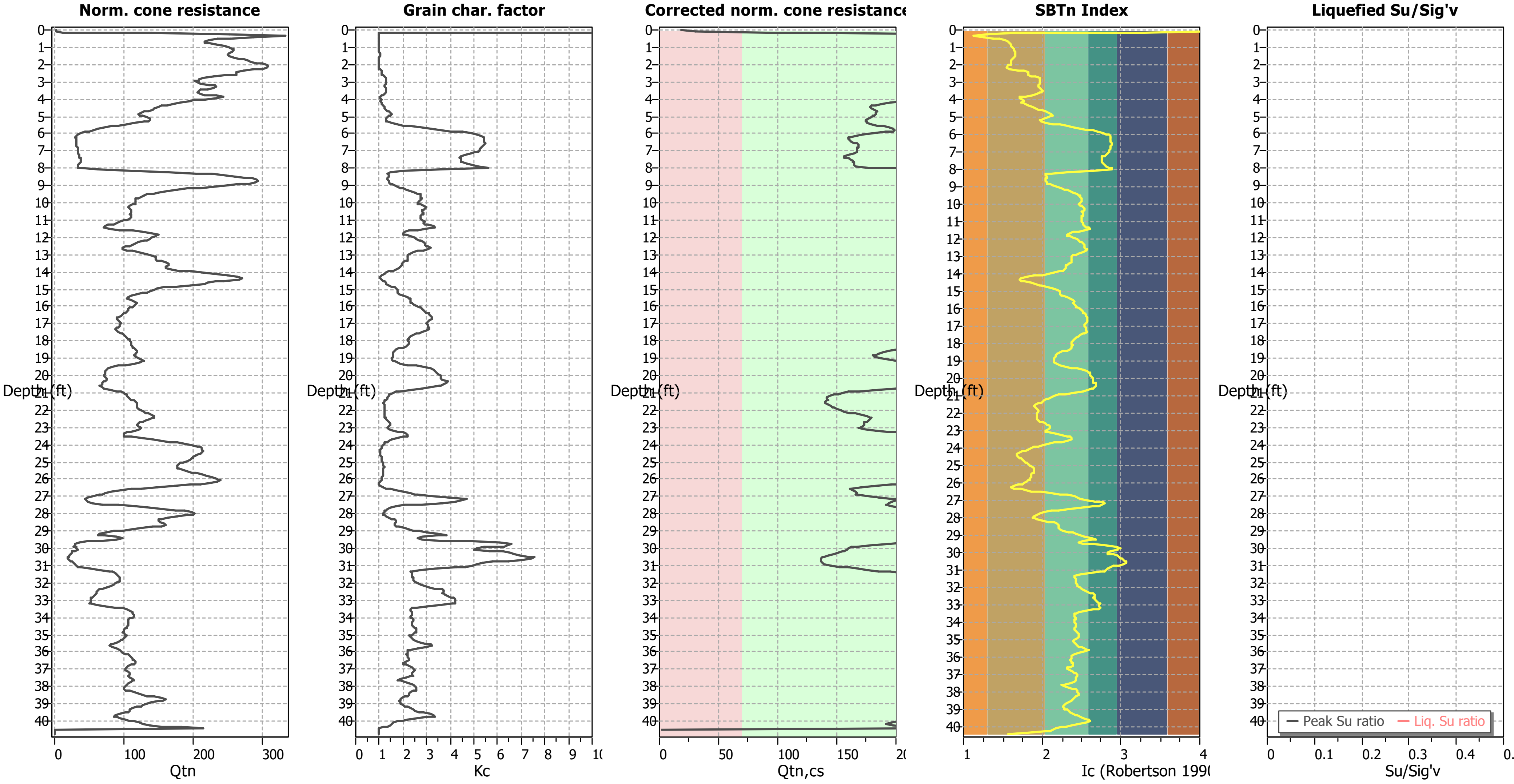
Check for strength loss plots (Robertson (2010))



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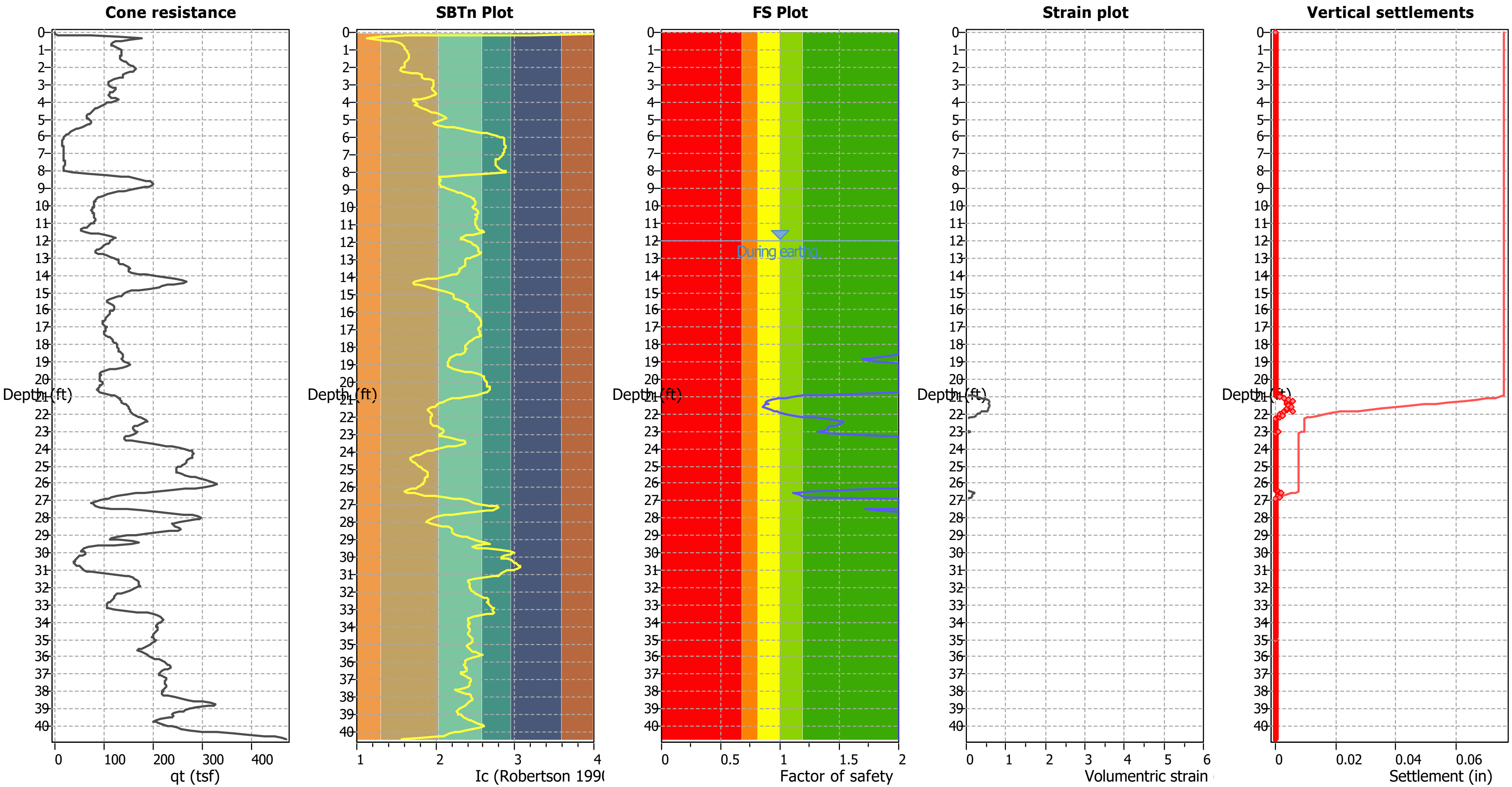
Earthquake magnitude M_w:	7.00	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.88	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	60.00 ft	Fill height:	N/A	Limit depth:	40.00 ft

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

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San Diego, CA 92123
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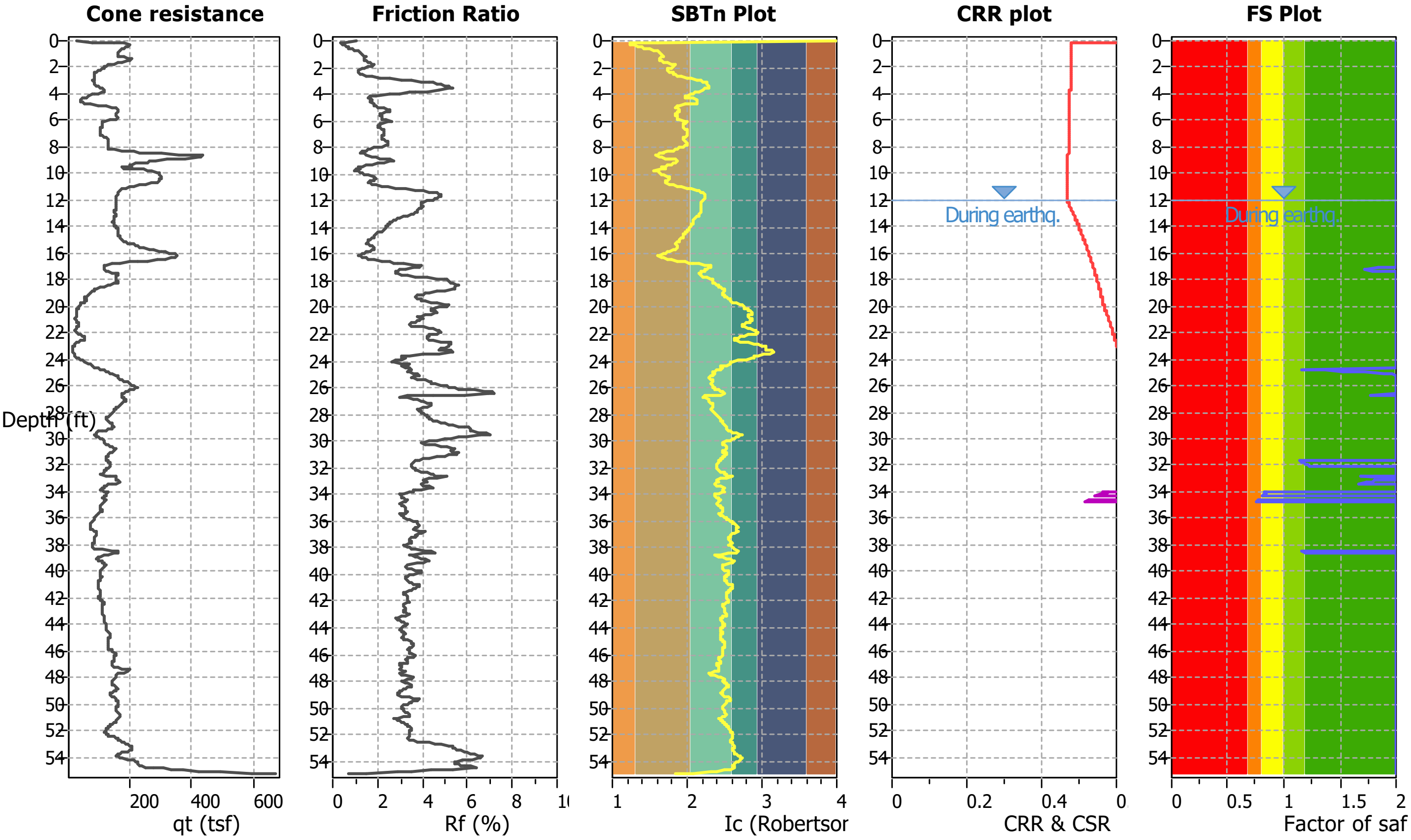
LIQUEFACTION ANALYSIS REPORT

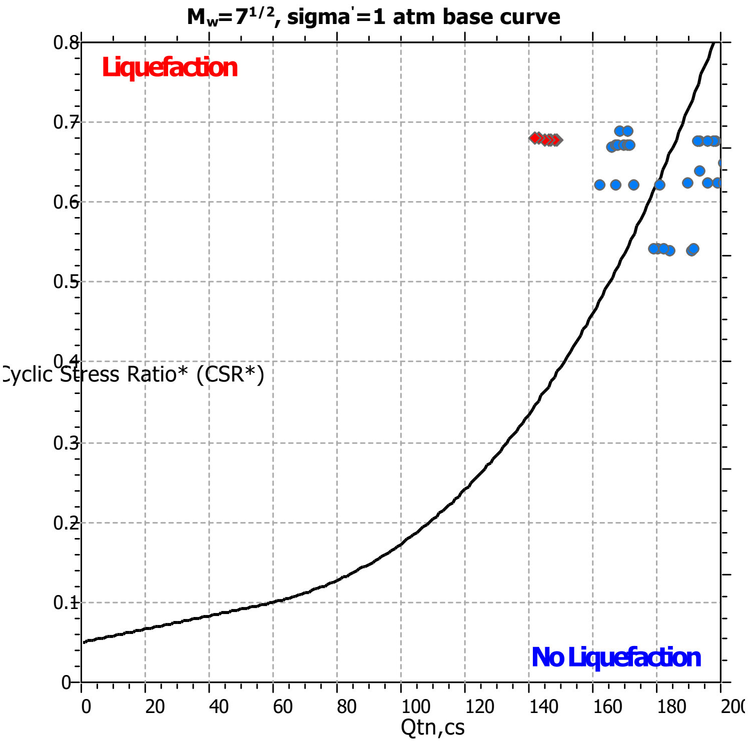
Project title : UHS Inland Valley Reg. Med. Center **Location : 36485 Inland Valley Dr., Wildomar, CA**

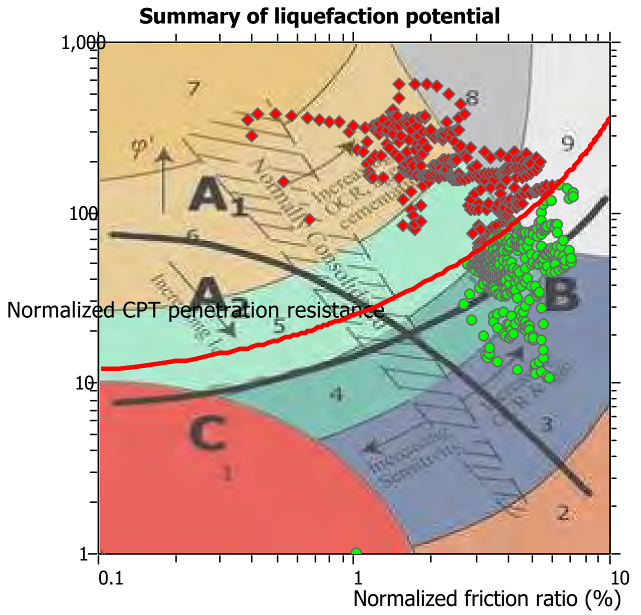
CPT file : CPT-7

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	60.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	12.00 ft	Fill height:	N/A	Limit depth applied:	Yes
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	40.00 ft
Earthquake magnitude M_w:	7.00	Ic cut-off value:	2.40	Trans. detect. applied:	No	MSF method:	Method based
Peak ground acceleration:	0.88	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		







Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
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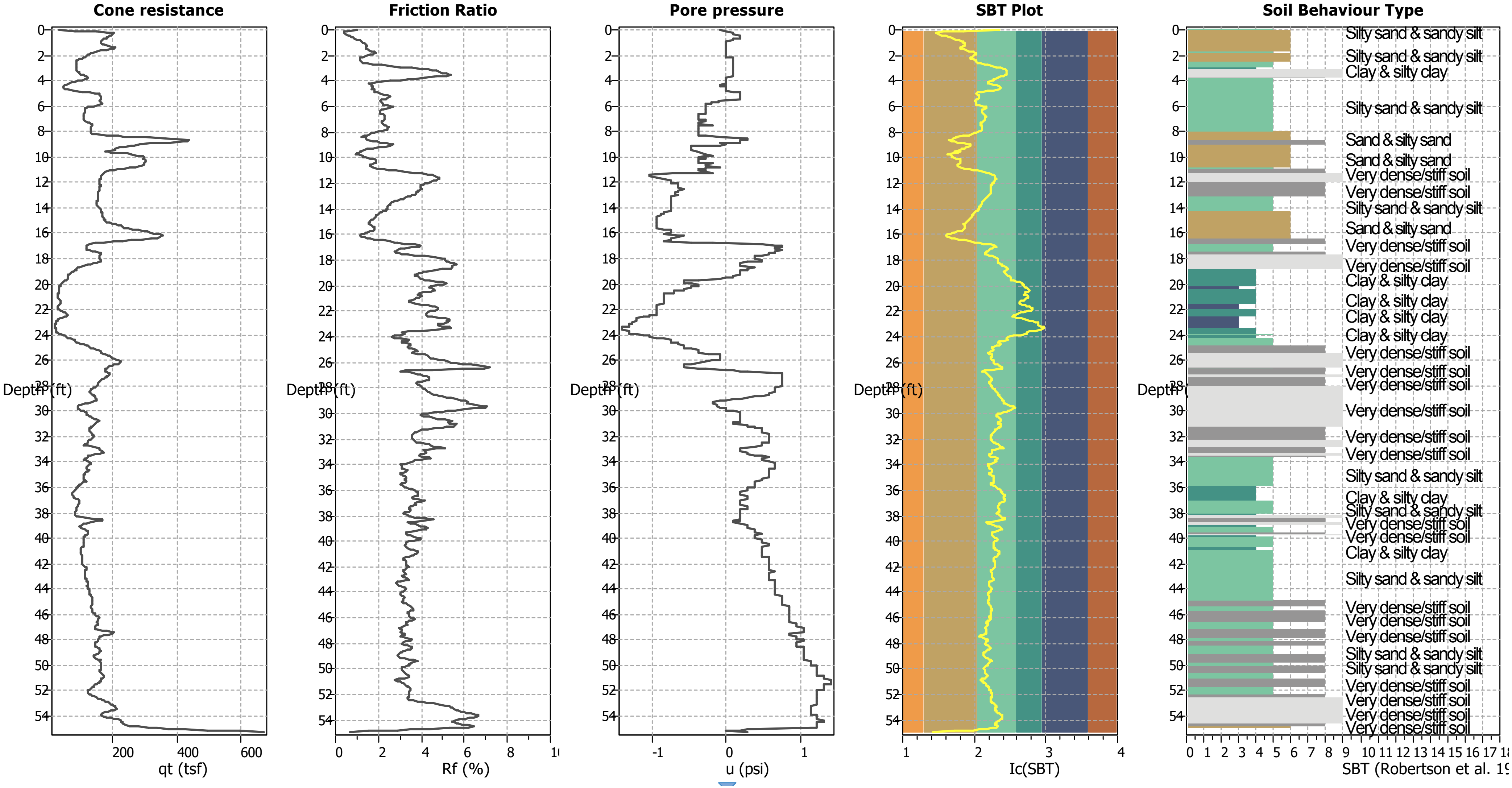
CPT basic interpretation plots



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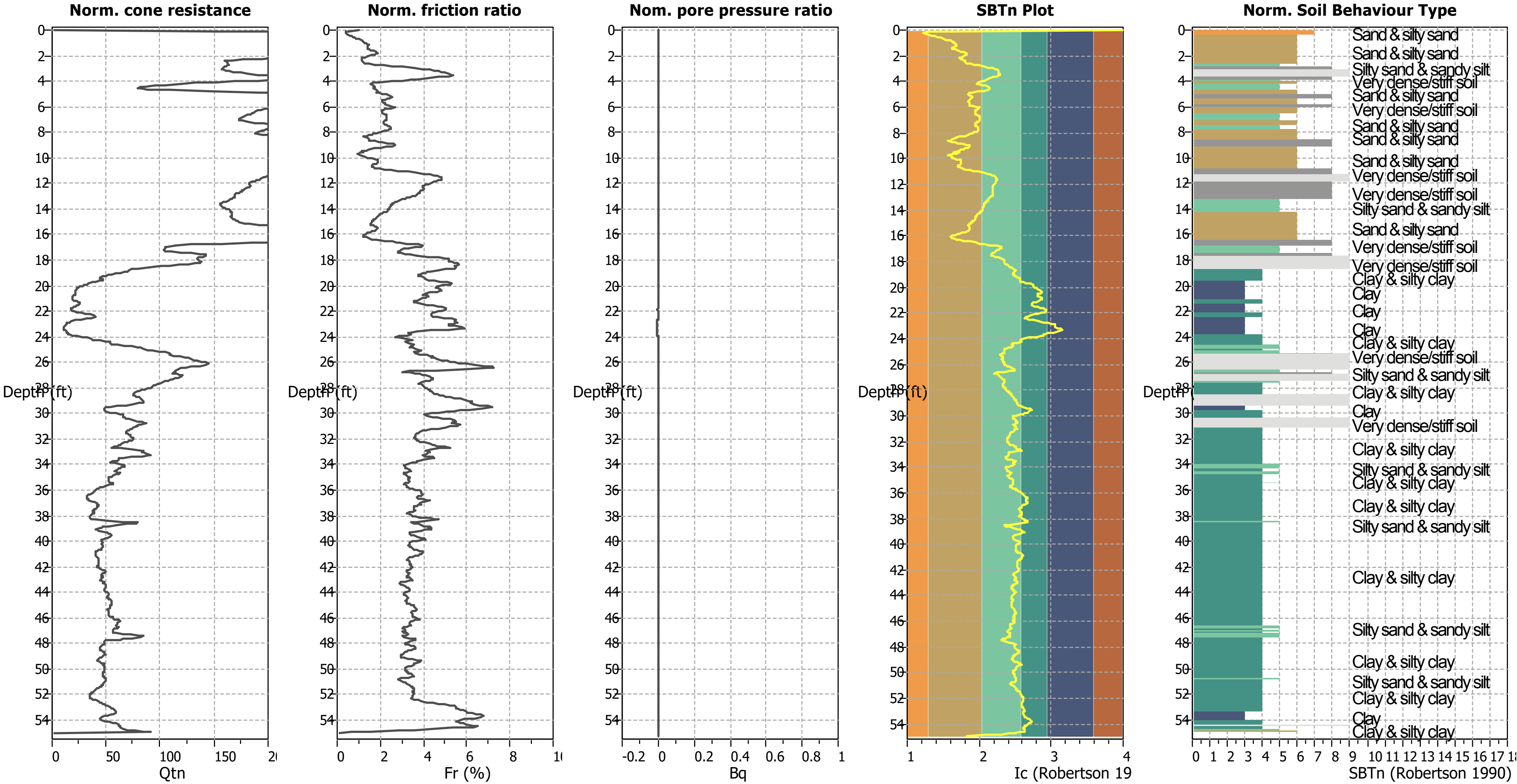
Earthquake magnitude M_w:	7.00	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.88	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	60.00 ft	Fill height:	N/A	Limit depth:	40.00 ft

SBT legend

1. Sensitive fine grained	4. Clayey silt to silty	7. Gravely sand to sand
2. Organic material	5. Silty sand to sandy silt	8. Very stiff sand to
3. Clay to silty clay	6. Clean sand to silty sand	9. Very stiff fine grained

CPT basic interpretation plots (normalized)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	12.00 ft	Fill weight:	N/A
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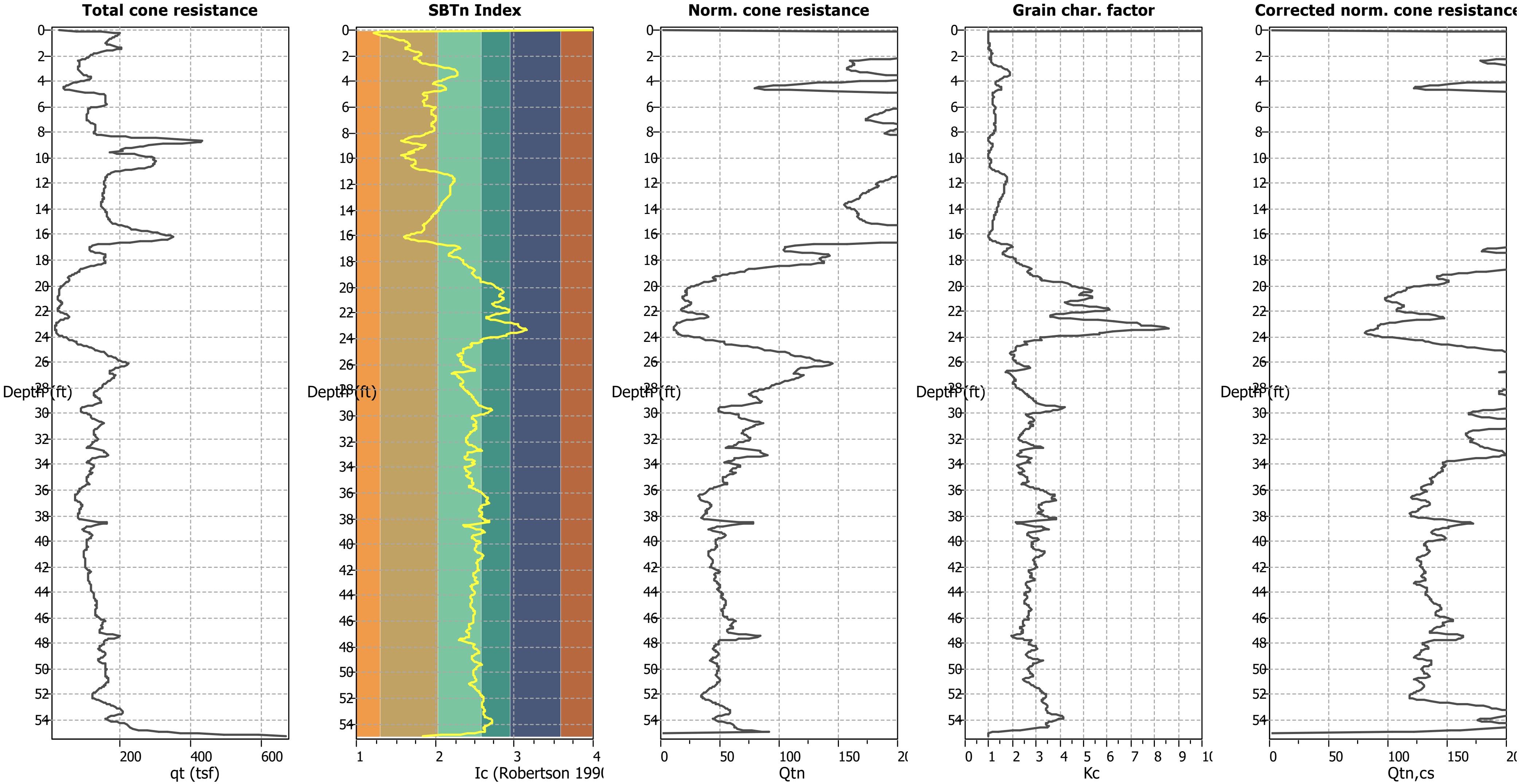
Points to test:	Based on Ic value	Ic cut-off value:	2.40	K_σ applied:	Yes
Earthquake magnitude M_w:	7.00	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.88	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	60.00 ft	Fill height:	N/A	Limit depth:	40.00 ft

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

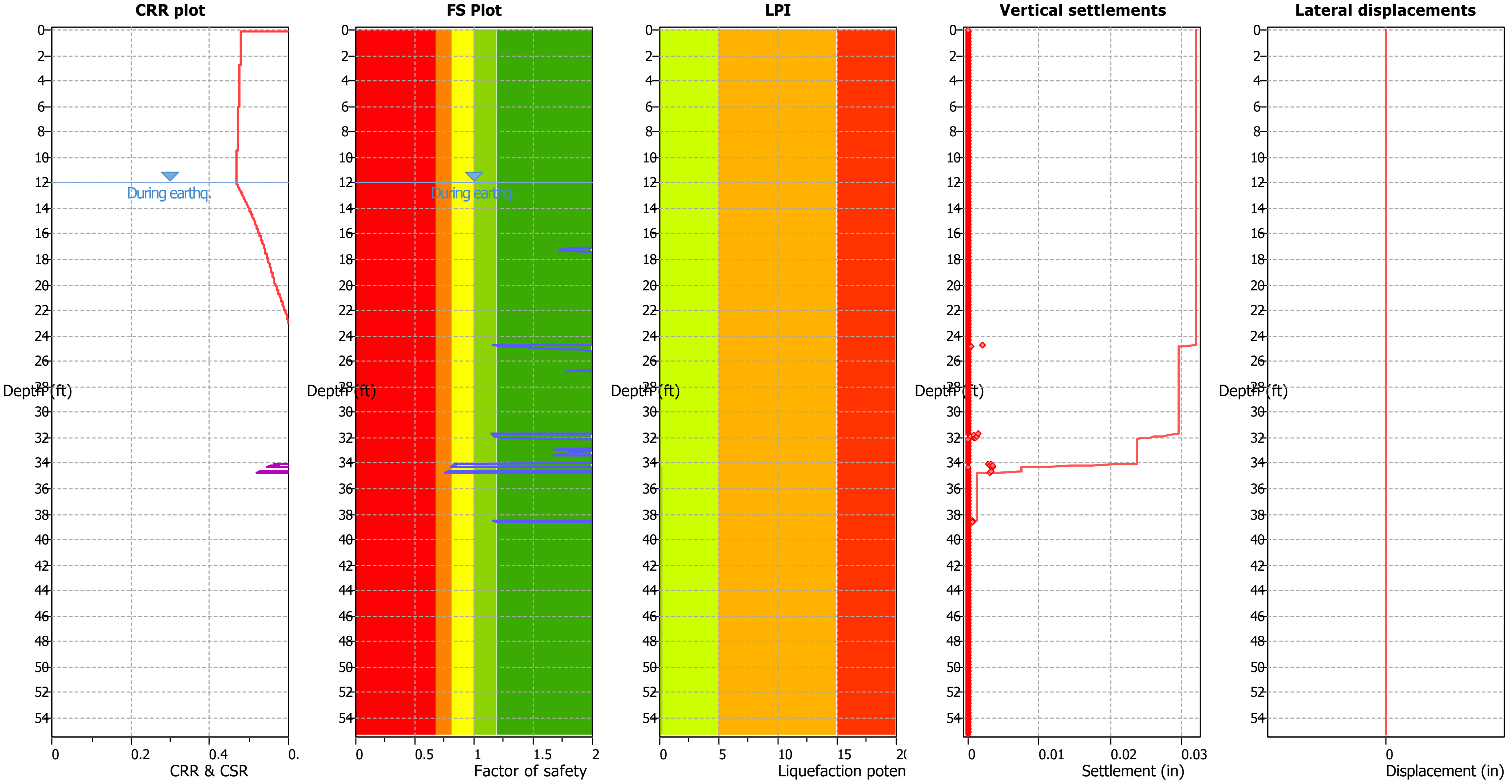
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	12.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.40	K_σ applied:	Yes
Earthquake magnitude M_w:	7.00	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.88	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	60.00 ft	Fill height:	N/A	Limit depth:	40.00 ft

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	12.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.40	K_σ applied:	Yes
Earthquake magnitude M_w:	7.00	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.88	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	60.00 ft	Fill height:	N/A	Limit depth:	40.00 ft

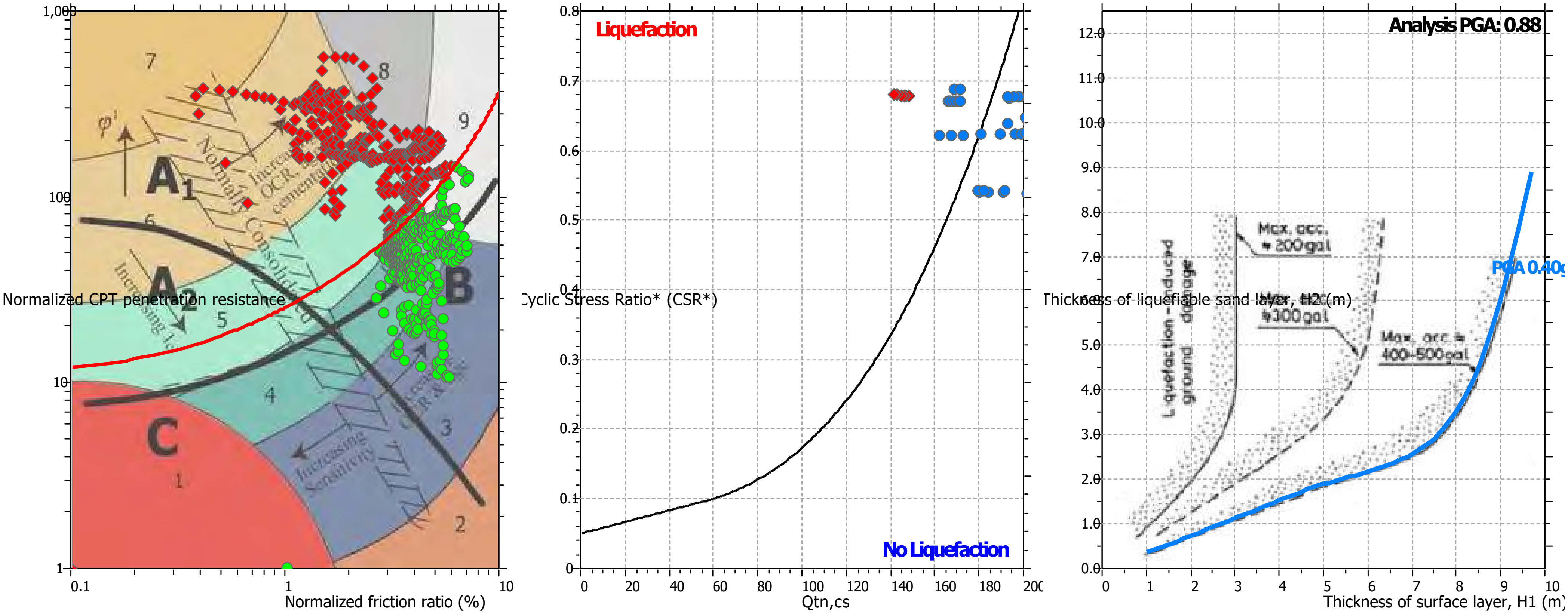
F.S. color scheme

- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

LPI color scheme

- Very high risk
- High risk
- Low risk

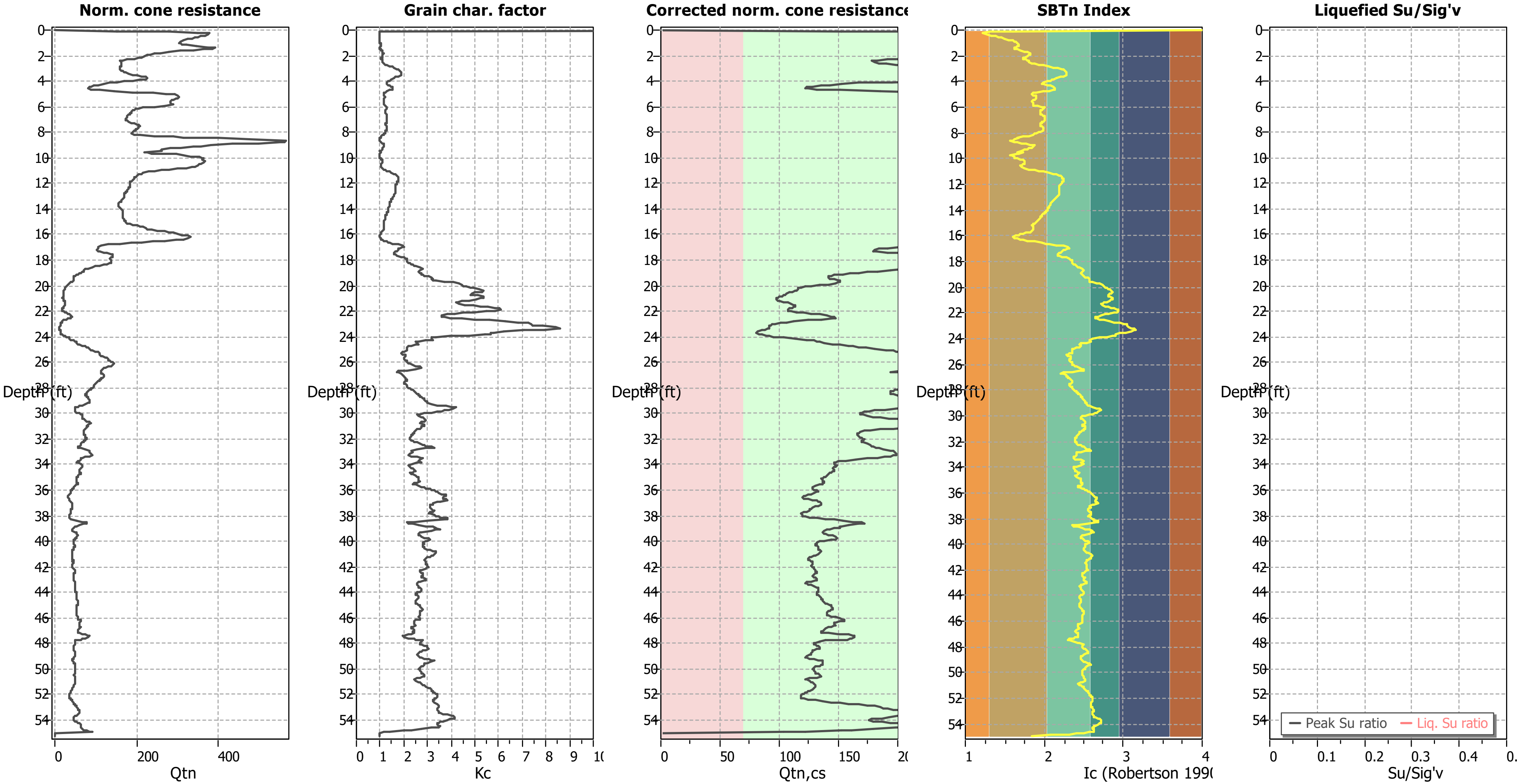
Liquefaction analysis summary plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	12.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.40	K_σ applied:	Yes
Earthquake magnitude M_w:	7.00	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.88	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	60.00 ft	Fill height:	N/A	Limit depth:	40.00 ft

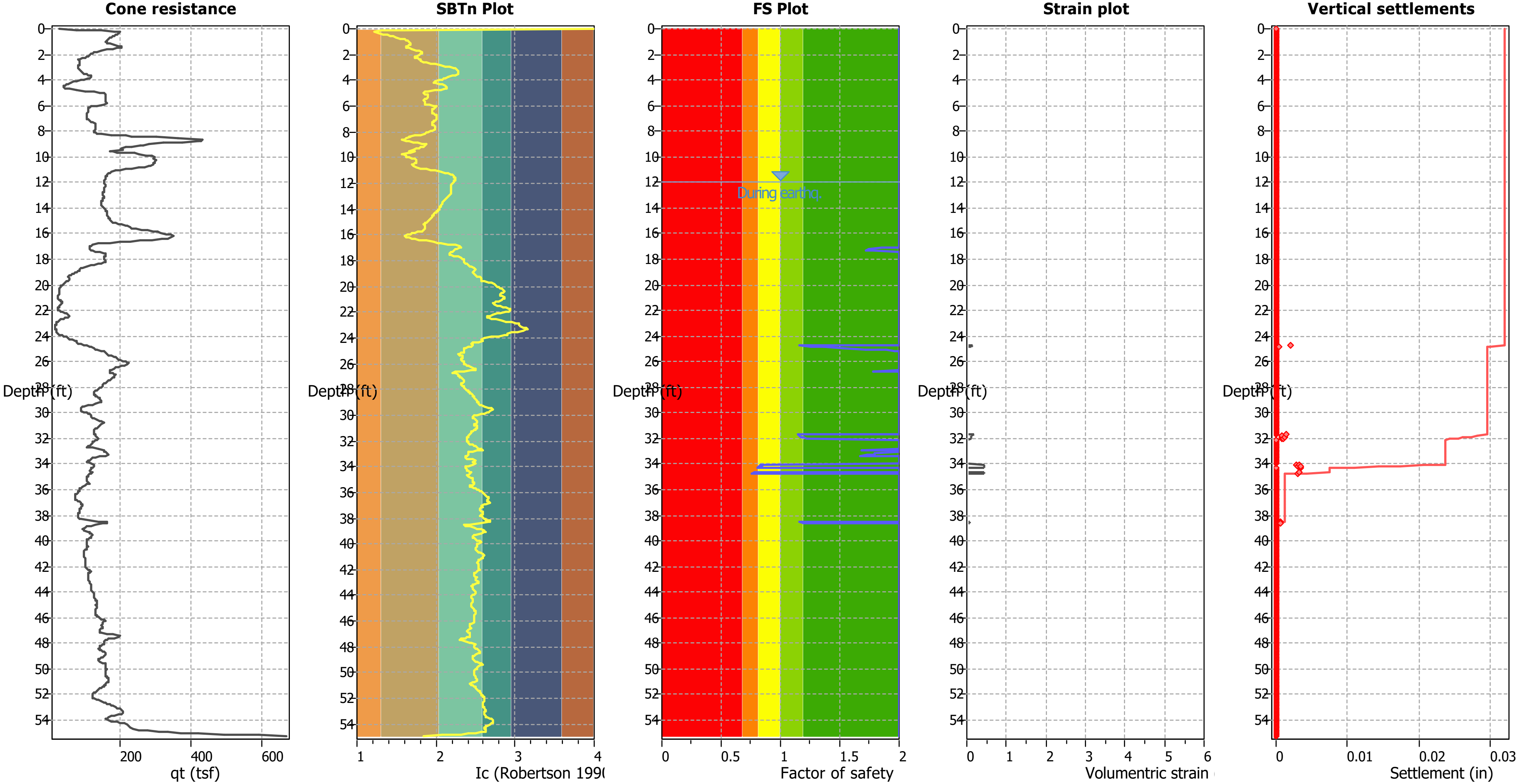
Check for strength loss plots (Robertson (2010))



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	12.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.40	K_σ applied:	Yes
Earthquake magnitude M_w:	7.00	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.88	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	60.00 ft	Fill height:	N/A	Limit depth:	40.00 ft

Estimation of post-earthquake settlements

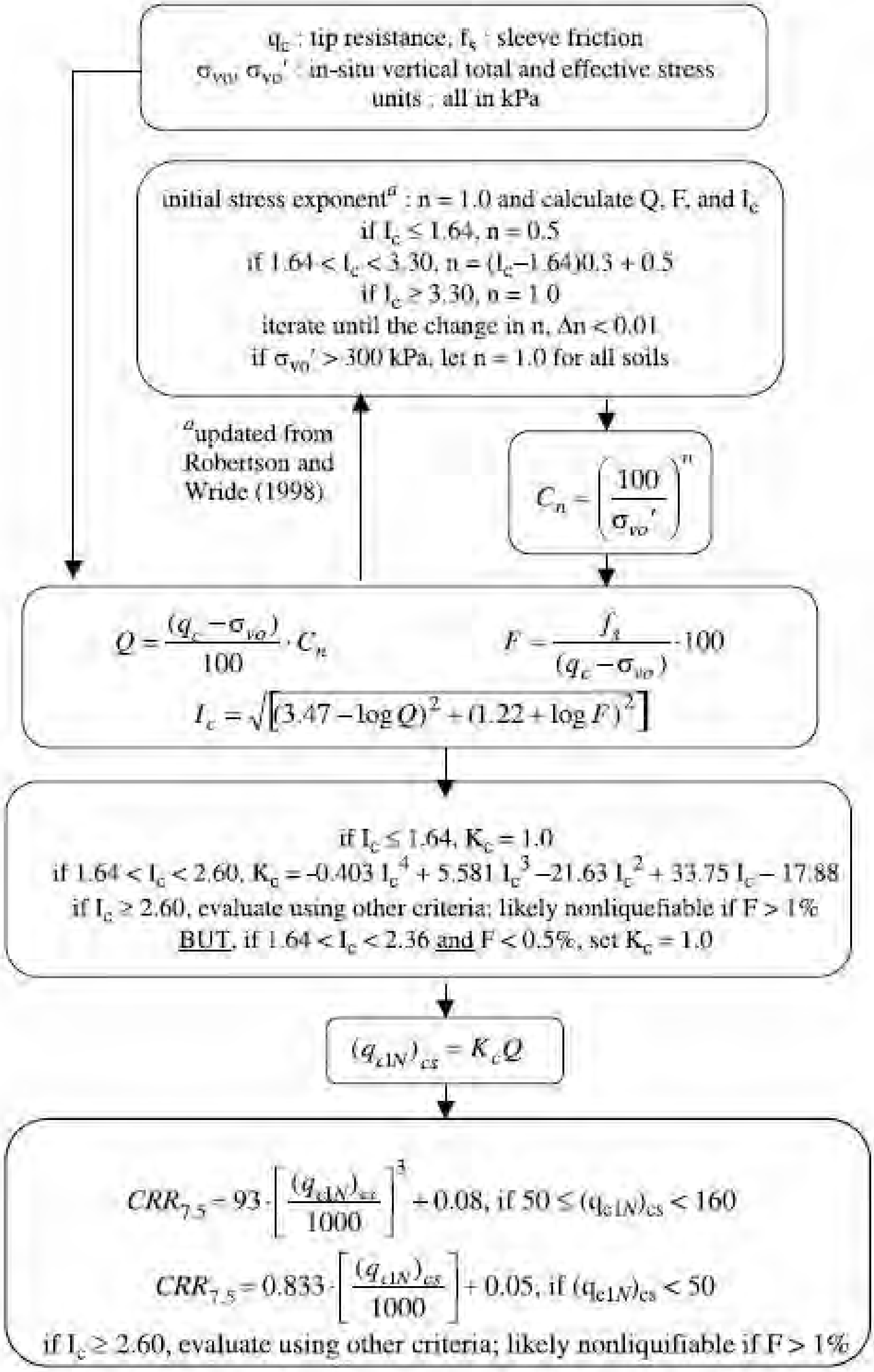


Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

Procedure for the evaluation of soil liquefaction resistance, NCEER (1998)

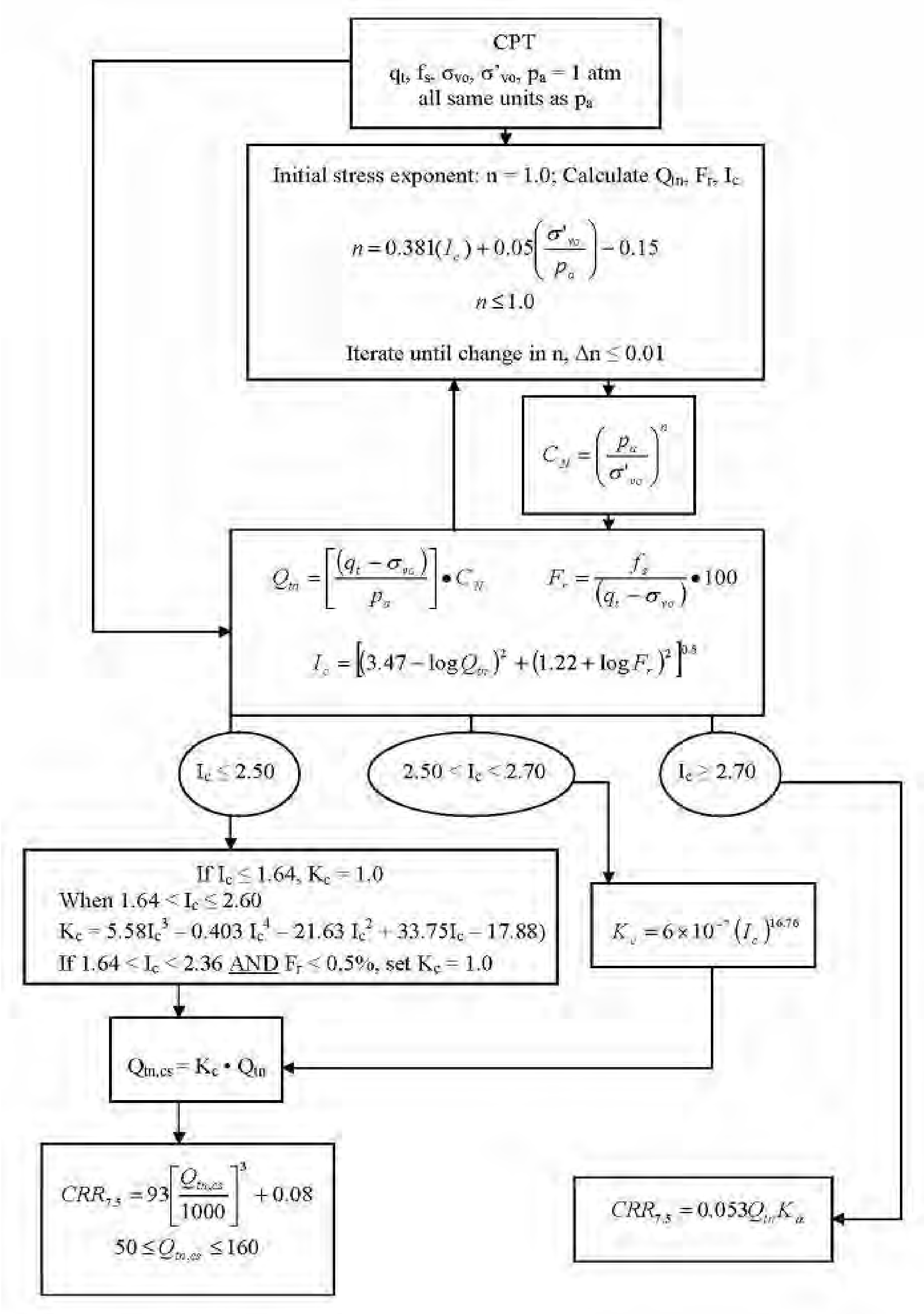
Calculation of soil resistance against liquefaction is performed according to the Robertson & Wride (1998) procedure. The procedure used in the software, slightly differs from the one originally published in NCEER-97-0022 (Proceedings of the NCEER Workshop on Evaluation of Liquefaction Resistance of Soils). The revised procedure is presented below in the form of a flowchart[1]:



[1] "Estimating liquefaction-induced ground settlements from CPT for level ground", G. Zhang, P.K. Robertson, and R.W.I. Brachman

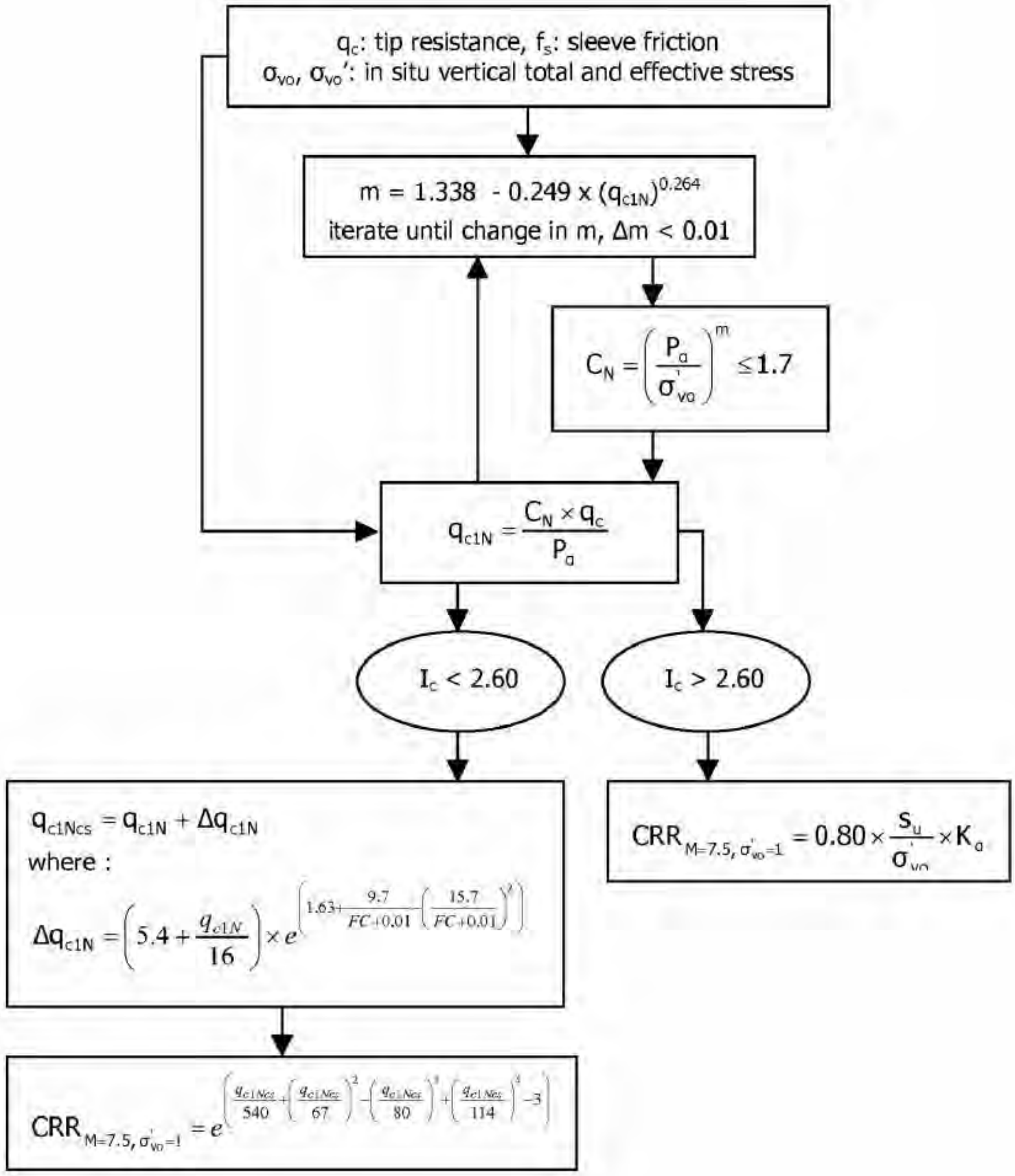
Procedure for the evaluation of soil liquefaction resistance (all soils), Robertson (2010)

Calculation of soil resistance against liquefaction is performed according to the Robertson & Wride (1998) procedure. This procedure used in the software, slightly differs from the one originally published in NCEER-97-0022 (Proceedings of the NCEER Workshop on Evaluation of Liquefaction Resistance of Soils). The revised procedure is presented below in the form of a flowchart[1]:

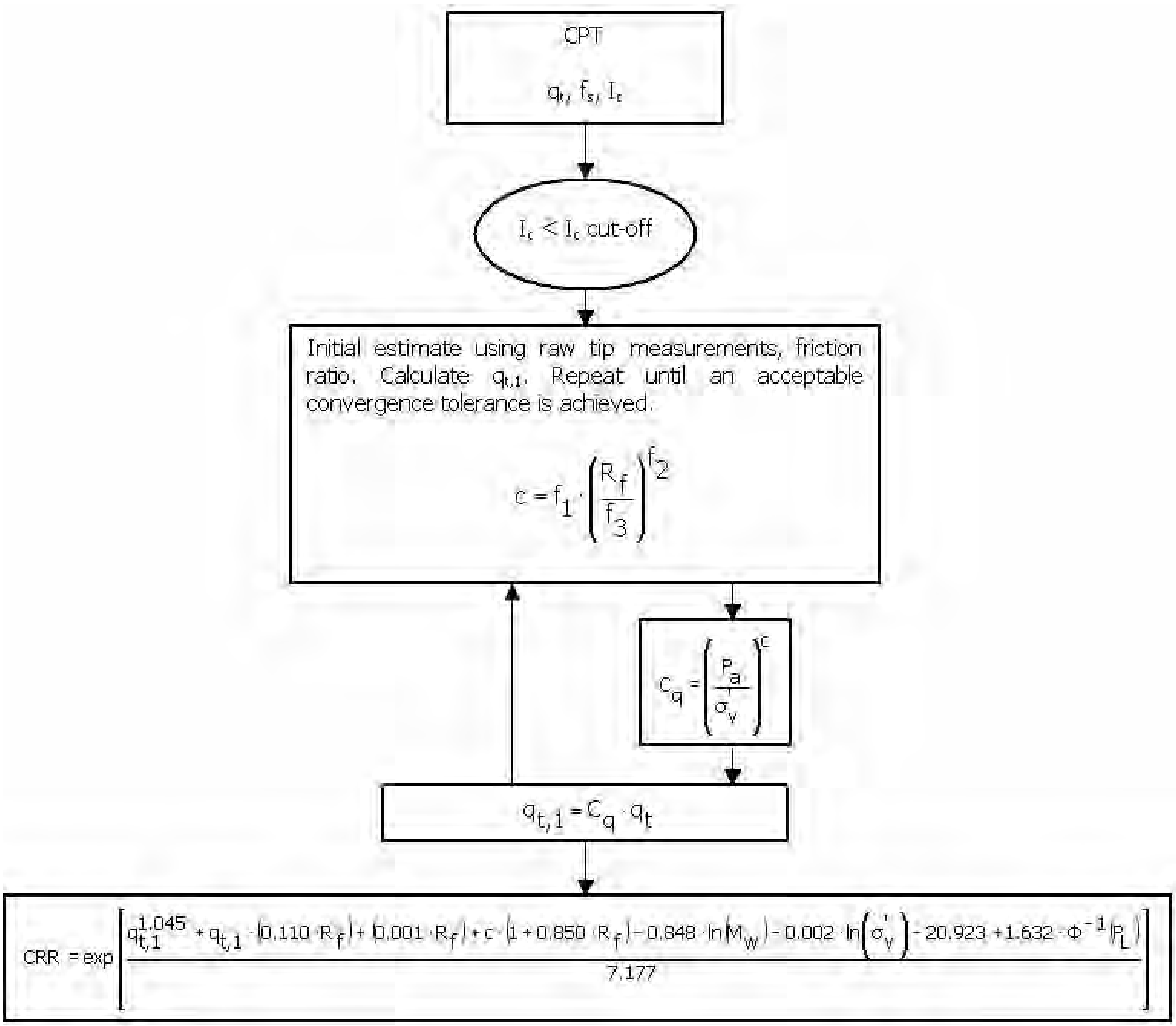


[1] P.K. Robertson, 2009. "Performance based earthquake design using the CPT", Keynote Lecture, International Conference on Performance-based Design in Earthquake Geotechnical Engineering – from case history to practice, IS-Tokyo, June 2009

Procedure for the evaluation of soil liquefaction resistance, Idriss & Boulanger (2008)



Procedure for the evaluation of soil liquefaction resistance (sandy soils), Moss et al. (2006)



Procedure for the evaluation of soil liquefaction resistance, Boulanger & Idriss(2014)

$$FS_{liq} = \frac{CRR_{M=7.5,\sigma'_v=1atm}}{CSR_{M=7.5,\sigma'_v=1atm}}$$

$$CSR_{M=7.5,\sigma'_v=1atm} = 0.65\frac{\sigma_v}{\sigma'_v}\frac{a_{\max}}{g} r_d \frac{1}{MSF}\frac{1}{K_\sigma}$$

$$r_d = \exp\left[\alpha(z)+\beta(z)\cdot M\right]$$

$$\alpha(z) = -1.012 - 1.126\sin\left(\frac{z}{11.73}+5.133\right)$$

$$\beta(z) = 0.106 + 0.118\sin\left(\frac{z}{11.28}+5.142\right)$$

$$K_\sigma = 1 - C_\sigma \ln\left(\frac{\sigma'_v}{P_a}\right) \le 1.1$$

$$C_\sigma = \frac{1}{37.3 - 8.27\left(q_{c1Ncs}\right)^{0.264}} \le 0.3$$

$$MSF = 1 + \left(MSF_{max} - 1\right)\left(8.64\exp\left(\frac{-M}{4}\right) - 1.325\right)$$

$$MSF_{max} = 1.09 + \left(\frac{q_{c1Ncs}}{180}\right)^3 \le 2.2$$

σ'_v *and* σ_v *at start of earthquake shaking*

$$CRR_{M=7.5,\sigma'_v=1atm} = \exp\left(\frac{q_{c1Ncs}}{113} + \left(\frac{q_{c1Ncs}}{1000}\right)^2 - \left(\frac{q_{c1Ncs}}{140}\right)^3 + \left(\frac{q_{c1Ncs}}{137}\right)^4 - 2.80\right)$$

$$q_{c1Ncs} = q_{c1N} + \Delta q_{c1N}$$

$$\Delta q_{c1N} = \left(11.9 + \frac{q_{c1N}}{14.6}\right)\exp\left(1.63 - \frac{9.7}{FC+2} - \left(\frac{15.7}{FC+2}\right)^2\right)$$

$$q_{c1N} = C_{N_q}\frac{q_c}{P_a}$$

$$C_{N_q} = \left(\frac{P_a}{\sigma'_v}\right)^m \le 1.7$$

$$m = 1.338 - 0.249\left(q_{c1Ncs}\right)^{0.264} \quad with \quad 0.264 \le m \le 0.782$$

$$FC = 80\left(I_C + C_{FC}\right) - 137 \quad with \quad 0\% \le FC \le 100\%$$

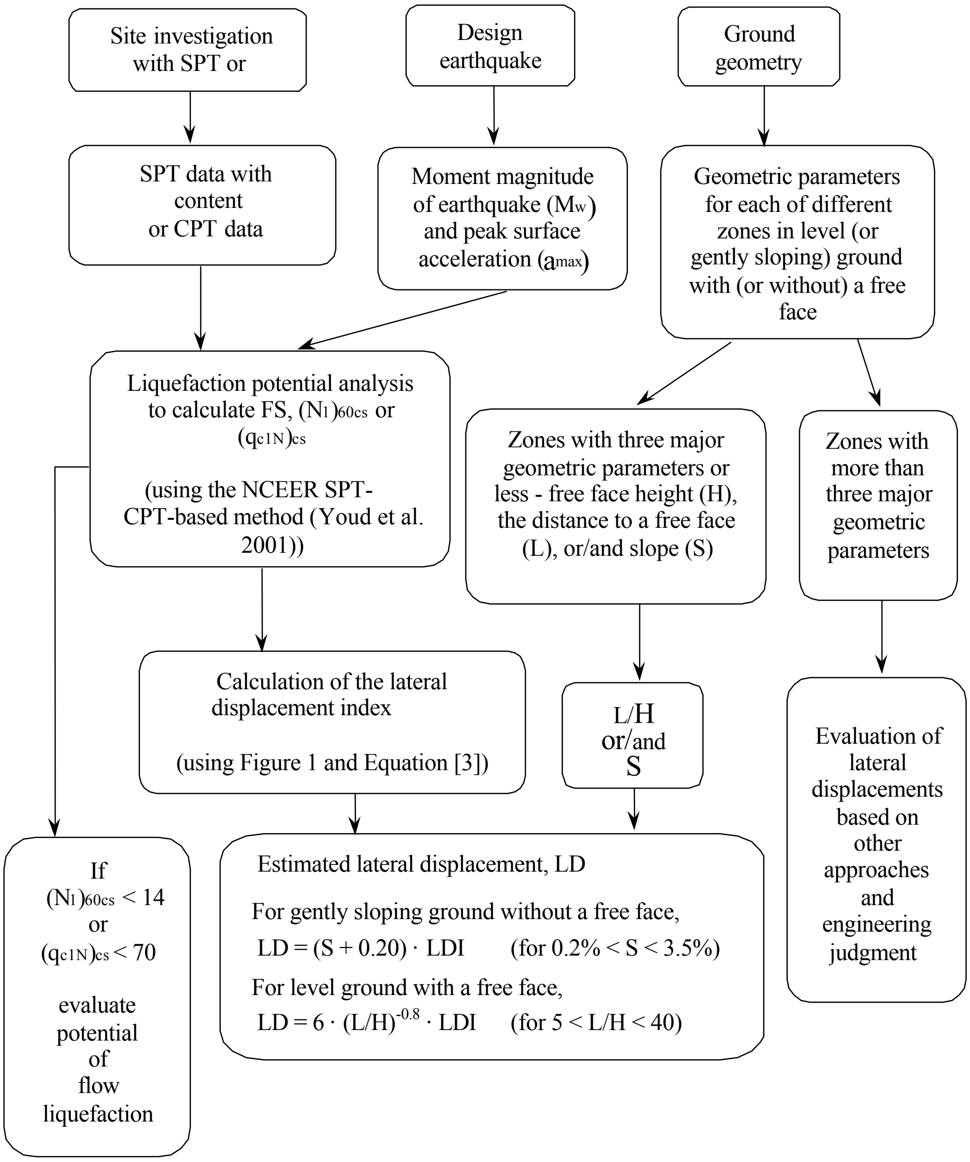
$$I_c = \left[\left(3.47 - \log(Q)\right)^2 + \left(1.22 + \log(F)\right)^2\right]^{0.5}$$

$$Q = \left(\frac{q_c - \sigma_{vc}}{P_a}\right)\left(\frac{P_a}{\sigma'_{vc}}\right)^n \quad with\ 0.5 \le n \le 1.0\ per\ Robertson\ \&\ Wride\ (1998)$$

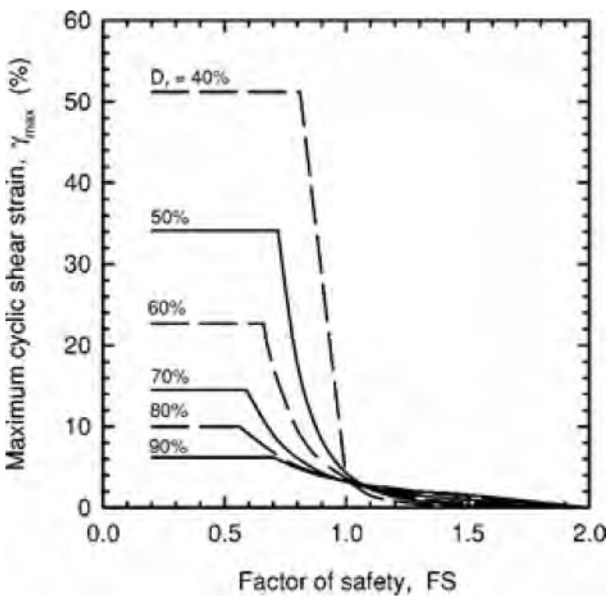
$$F = \left(\frac{f_s}{q_c - \sigma_{vc}}\right)\cdot 100\%$$

σ'_v *at time of CPT sounding*

Procedure for the evaluation of liquefaction-induced lateral spreading displacements



[1] Flow chart illustrating major steps in estimating liquefaction-induced lateral spreading displacements using the proposed approach



[1] **Figure 1**

$$LDI = \int_0^{Z_{max}} \gamma_{max} \, dz$$

[1] **Equation [3]**

[1] "Estimating liquefaction-induced ground settlements from CPT for level ground", G. Zhang, P.K. Robertson, and R.W.I. Brachman

Procedure for the estimation of seismic induced settlements in dry sands

Average shear stress, τ_{av}

$$\tau_{av} = CSR^{*} \cdot \sigma_{v0}' = 0.65 \cdot \frac{a_{max}}{g} \cdot \sigma_{v0} \cdot r_d$$

Estimate small shear strain modulus, G_0

$$G_0 = 0.0188 \cdot \left[10^{(0.55 I - 1.68)}\right] \cdot (q_t - \sigma_v)$$

Estimate shear strain amplitude, γ (based on Pradel (1998))

$$\gamma = \left[\frac{1 + \alpha \cdot e^{bR}}{1 + \alpha}\right] \cdot R \cdot 100\ (\%)$$

$$R = \frac{\tau_{av}}{G_0} \text{ (Note } \tau_{av} \text{ and } G_0 \text{ same units)}$$

$$\alpha = 0.0389 \cdot \left(\frac{\sigma_v}{p_a}\right) + 0.124$$

$$b = 6400 \cdot \left(\frac{\sigma_v}{p_a}\right)$$

Estimate volumetric strain in 15 cycles

$$\varepsilon_{vol(15)} = \gamma \cdot \left[\frac{(N_1)_{60cs}}{20}\right]^{-1.20}$$

$$(N_1)_{60cs} = \frac{Q_{tn,cs}}{8.5 \cdot \left[1 - \frac{I_c}{4.6}\right]}$$

Volumetric strain in design earthquake

$$\Sigma_{vol} = \varepsilon_{vol(15)} \cdot \left[\frac{N_c}{15}\right]^{0.45}$$

$$N_c = (M - 4)^{2.17}$$

Seismic settlement, s

$$s = 2 \cdot \int_0^{GWT} \Sigma_{vol} \cdot dz$$

Robertson, P.K. and Lisheng, S., 2010, "Estimation of seismic compression in dry soils using the CPT" FIFTH INTERNATIONAL CONFERENCE ON RECENT ADVANCES IN GEOTECHNICAL EARTHQUAKE ENGINEERING AND SOIL DYNAMICS, Symposium in honor of professor I. M. Idriss, San Diego, CA

Liquefaction Potential Index (LPI) calculation procedure

Calculation of the Liquefaction Potential Index (LPI) is used to interpret the liquefaction assessment calculations in terms of severity over depth. The calculation procedure is based on the methology developed by Iwasaki (1982) and is adopted by AFPS.

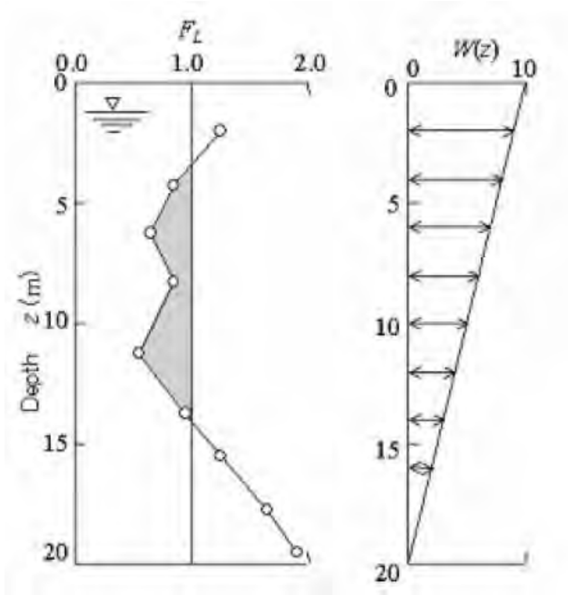
To estimate the severity of liquefaction extent at a given site, LPI is calculated based on the following equation:

$$\textbf{LPI} = \int_{0}^{20} (10 - 0{,}5_{z}) \times F_{L} \times d_{z}$$

where:
F_L = 1 - F.S. when F.S. less than 1
F_L = 0 when F.S. greater than 1
z depth of measurment in meters

Values of LPI range between zero (0) when no test point is characterized as liquefiable and 100 when all points are characterized as susceptible to liquefaction. Iwasaki proposed four (4) discrete categories based on the numeric value of LPI:

- LPI = 0 : Liquefaction risk is very low
- 0 < LPI <= 5 : Liquefaction risk is low
- 5 < LPI <= 15 : Liquefaction risk is high
- LPI > 15 : Liquefaction risk is very high



Graphical presentation of the LPI calculation procedure

Shear-Induced Building Settlement (Ds) calculation procedure

The shear-induced building settlement (Ds) due to liquefaction below the building can be estimated using the relationship developed by Bray and Macedo (2017):

$$Ln(Ds) = c1 + c2 * LBS + 0.58 * Ln\left(Tanh\left(\frac{HL}{6}\right)\right) +$$
$$4.59 * Ln(Q) - 0.42 * Ln(Q)^2 - 0.02 * B +$$
$$0.84 * Ln(CAVdp) + 0.41 * Ln(Sa1) + \varepsilon$$

where Ds is in the units of mm, c1= -8.35 and c2= 0.072 for LBS ≤ 16, and c1= -7.48 and c2= 0.014 otherwise. Q is the building contact pressure in units of kPa, HL is the cumulative thickness of the liquefiable layers in the units of m, B is the building width in the units of m, CAVdp is a standardized version of the cumulative absolute velocity in the units of g-s, Sa1 is 5%-damped pseudo-acceleration response spectral value at a period of 1 s in the units of g, and ε is a normal random variable with zero mean and 0.50 standard deviation in Ln units. The liquefaction-induced building settlement index (LBS) is:

$$LBS = \sum W * \frac{\varepsilon_{shear}}{z} dz$$

where z (m) is the depth measured from the ground surface > 0, W is a foundation-weighting factor wherein W = 0.0 for z less than Df, which is the embedment depth of the foundation, and W = 1.0 otherwise. The shear strain parameter (ε_shear) is the liquefaction-induced free-field shear strain (in %) estimated using Zhang et al. (2004). It is calculated based on the estimated Dr of the liquefied soil layer and the calculated safety factor against liquefaction triggering (FSL).

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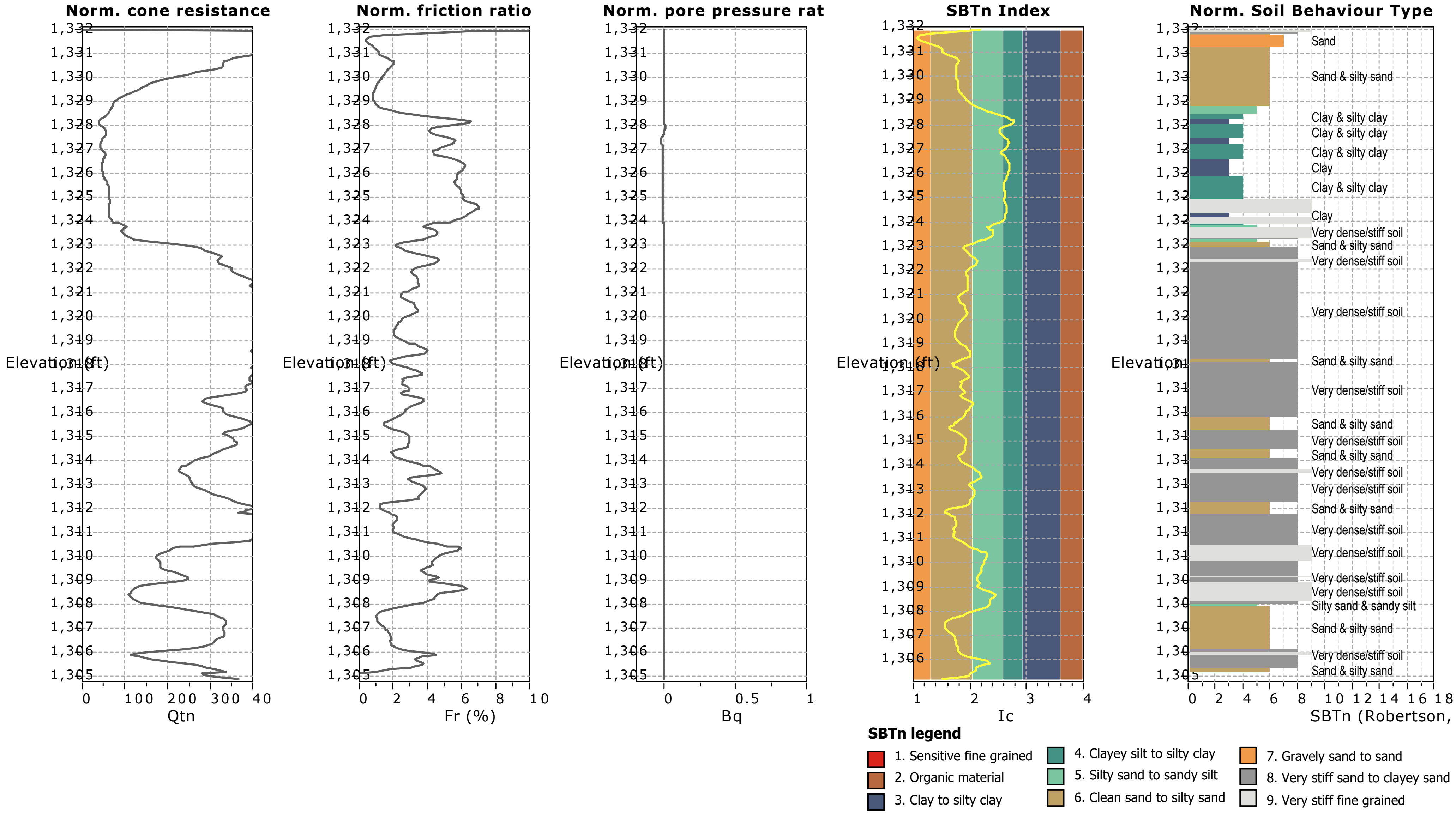
NOVA Services, Inc.
4373 Viewridge, Suite B
San Diego, CA 92123
858-292-7575

CPT: CPT-1
Total depth: 27.10 ft, Date: 8/9/2019
Surface Elevation: 1332.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Vertec
Cone Operator: Kehoe Testing & Engineering

Project: UHS Inland Valley Reg. Med. Center
Location: 36485 Inland Valley Dr., Wildomar, CA



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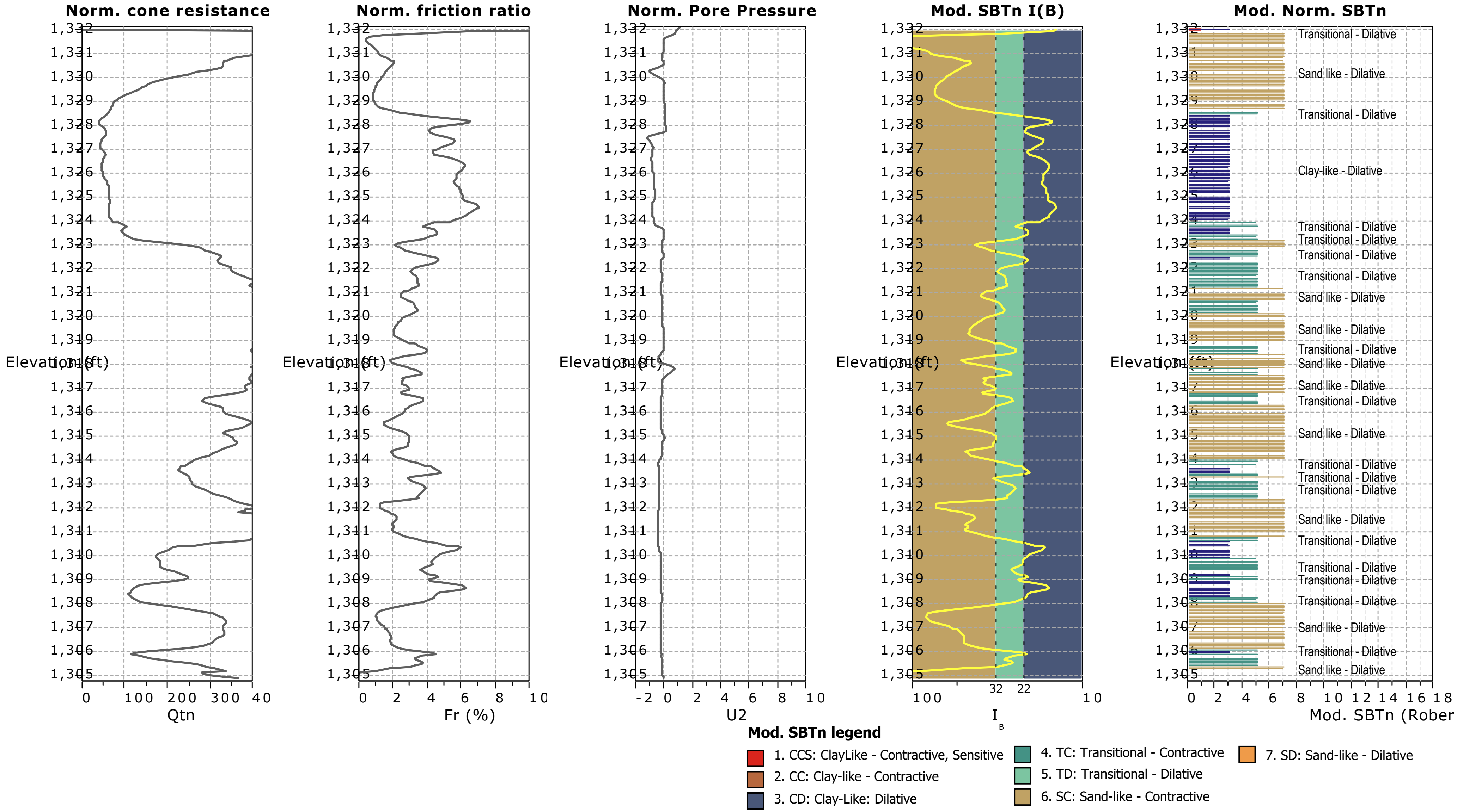

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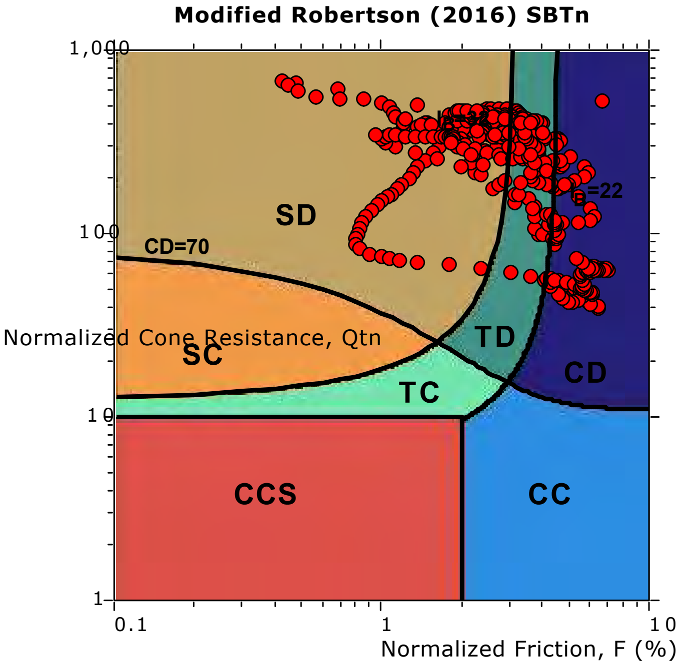
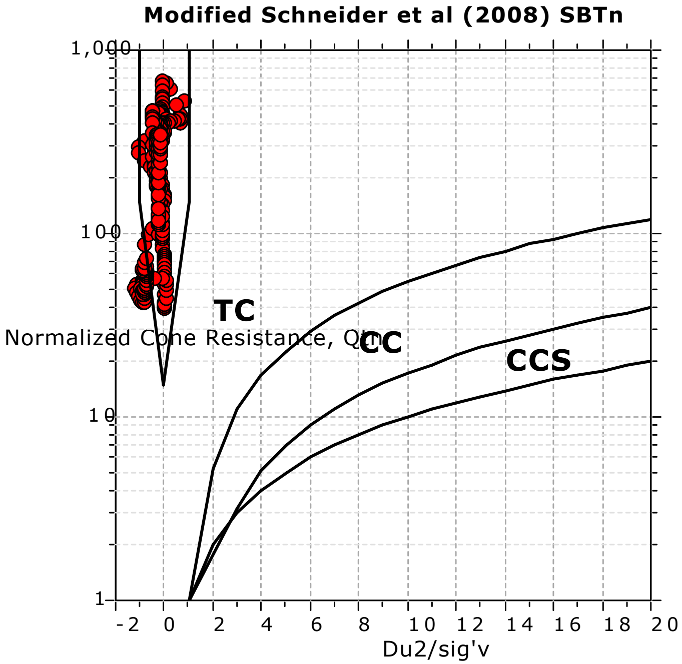
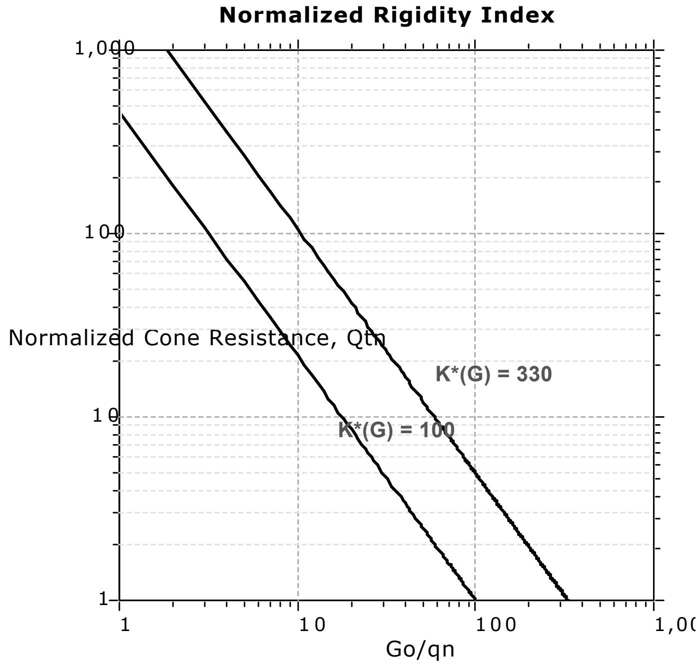
Updated SBTn plots







CCS: Clay-like - Contractive - Sensitive
CC: Clay-like - Contractive
CD: Clay-like - Dilative
TC: Transitional - Contractive
TD: Transitional - Dilative
SC: Sand-like - Contractive
SD: Sand-like - Dilative

K(G) > 330: Soils with significant microstructure (e.g. age/cementation)

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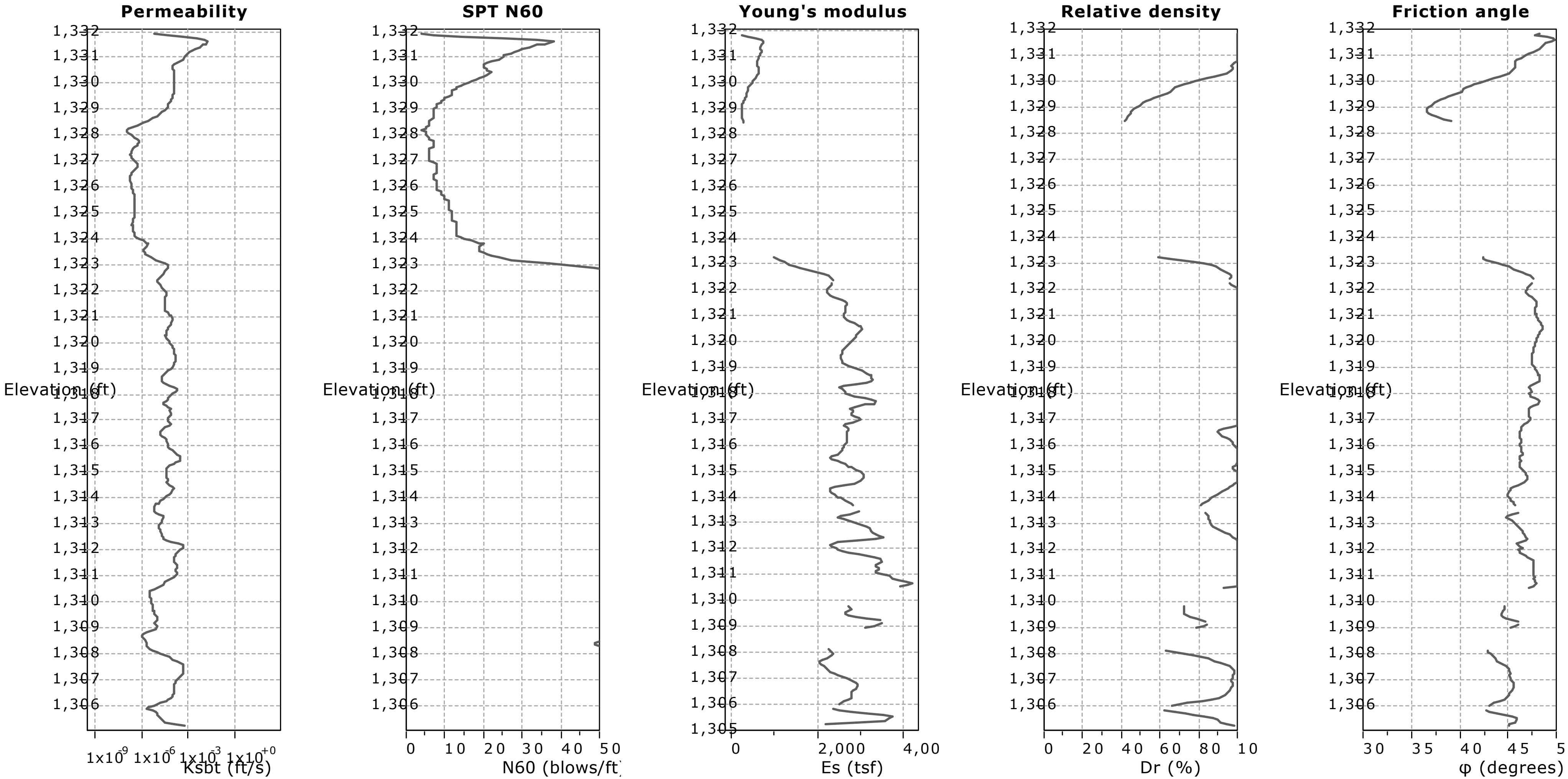
Surface Elevation: 1332.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Vertec
Cone Operator: Kehoe Testing & Engineering

Project: **UHS Inland Valley Reg. Med. Center**
Location: **36485 Inland Valley Dr., Wildomar, CA**



Calculation parameters
Permeability: Based on SBT_n
SPT N_{60}: Based on I_c and q_t
Young's modulus: Based on variable alpha using I_c (Robertson, 2009)
Relative density constant, C_{Dr}: 350.0
Phi: Based on Kulhawy & Mayne (1990)
User defined estimation data

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858-292-7575

Project: UHS Inland Valley Reg. Med. Center
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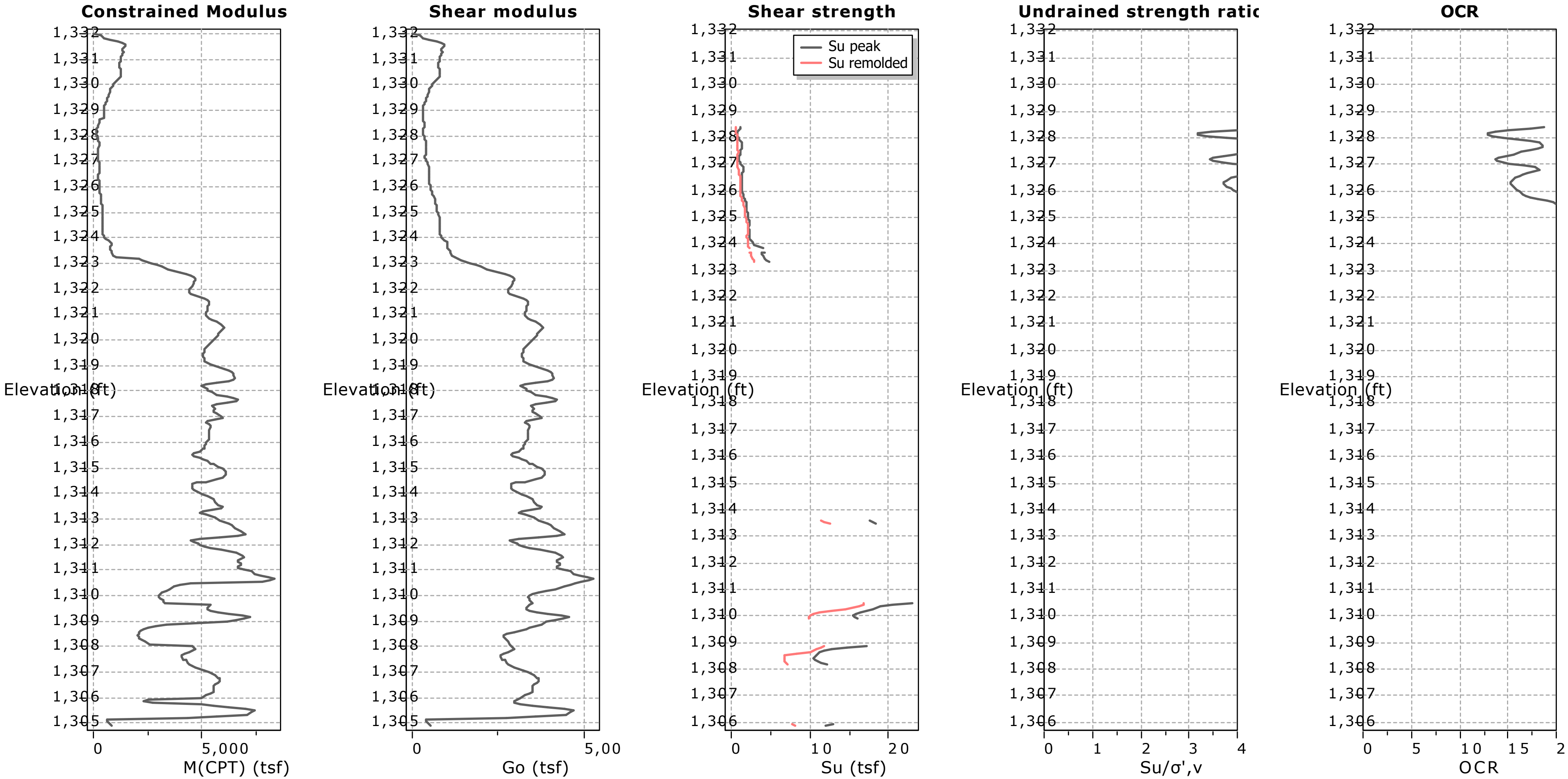
CPT: CPT-1
Total depth: 27.10 ft, Date: 8/9/2019
Surface Elevation: 1332.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Vertec
Cone Operator: Kehoe Testing & Engineering



Calculation parameters

Constrained modulus: Based on variable alpha using I_c and Q_{tn} (Robertson, 2009)
Go: Based on variable alpha using I_c (Robertson, 2009)
Undrained shear strength cone factor for clays, N_{kt}: 14
OCR factor for clays, N_{kt}: 0.33
User defined estimation data
Flat Dilatometer Test data

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858-292-7575

CPT: CPT-1
Total depth: 27.10 ft, Date: 8/9/2019
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Coords: X:0.00, Y:0.00
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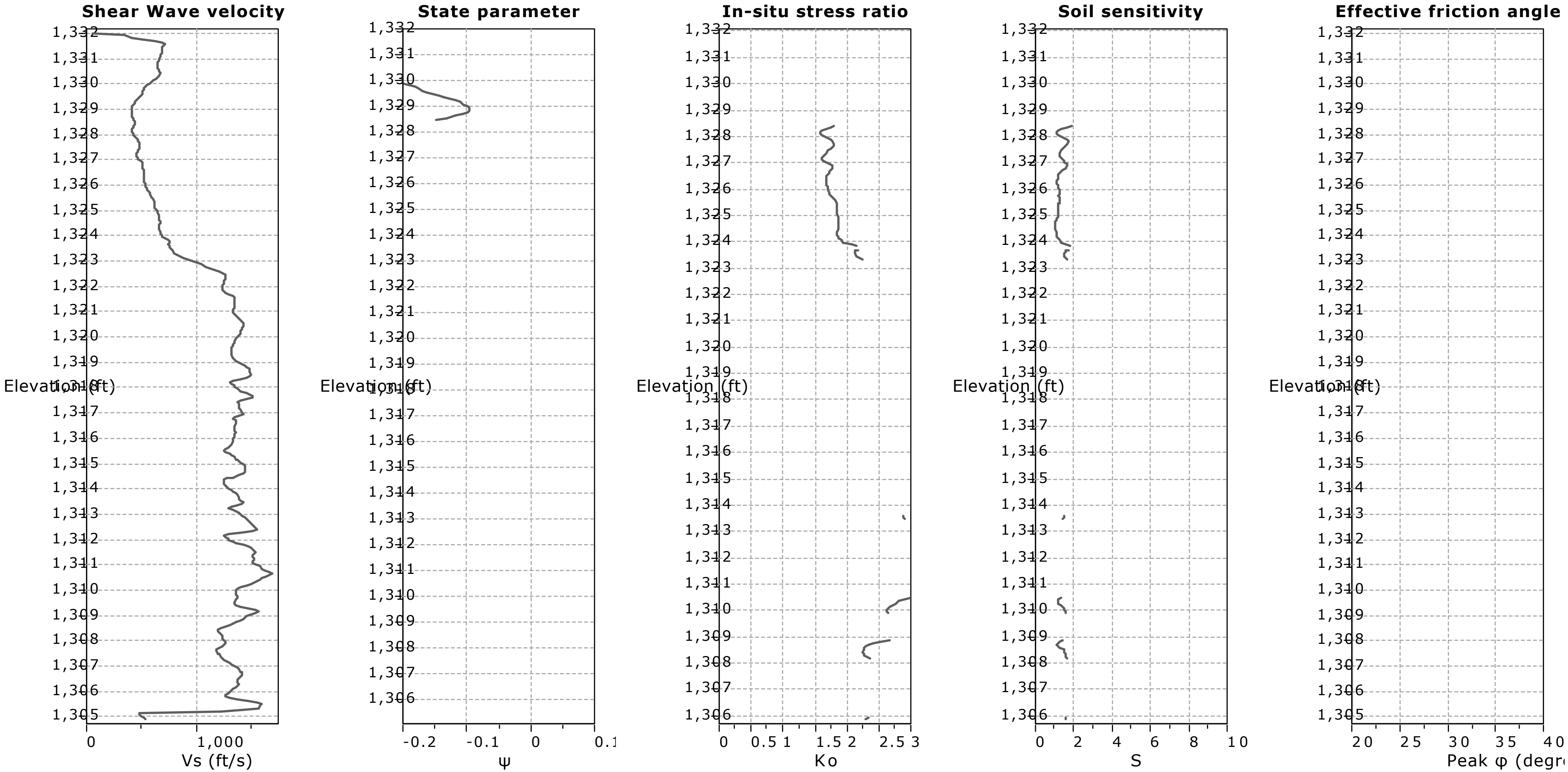
Project: **UHS Inland Valley Reg. Med. Center**
Location: **36485 Inland Valley Dr., Wildomar, CA**



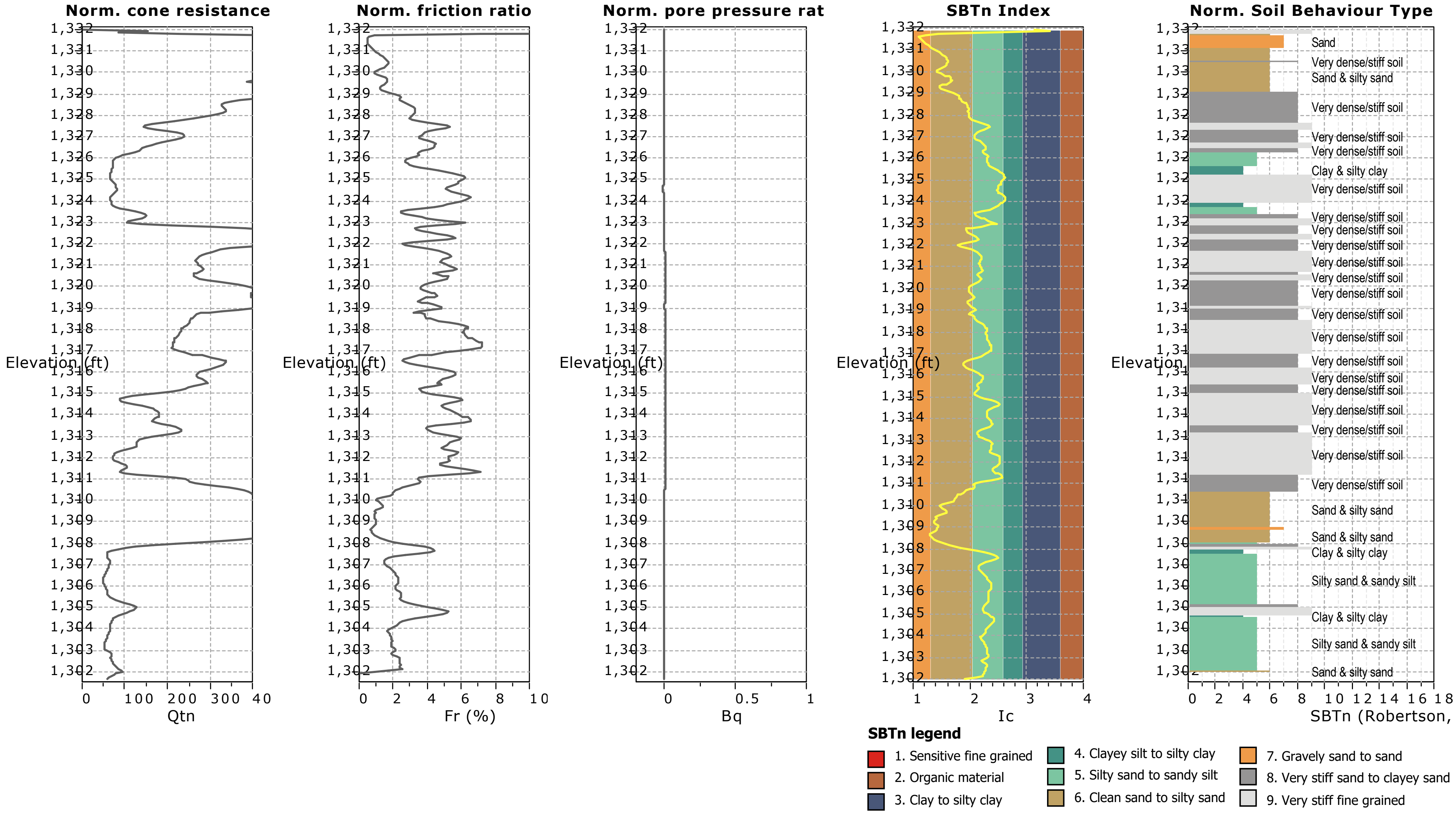
Calculation parameters

Soil Sensitivity factor, N_S: 7.00
User defined estimation data

NOVA Services, Inc.
4373 Viewridge, Suite B
San Diego, CA 92123
858-292-7575

Project: UHS Inland Valley Reg. Med. Center
Location: 36485 Inland Valley Dr., Wildomar, CA

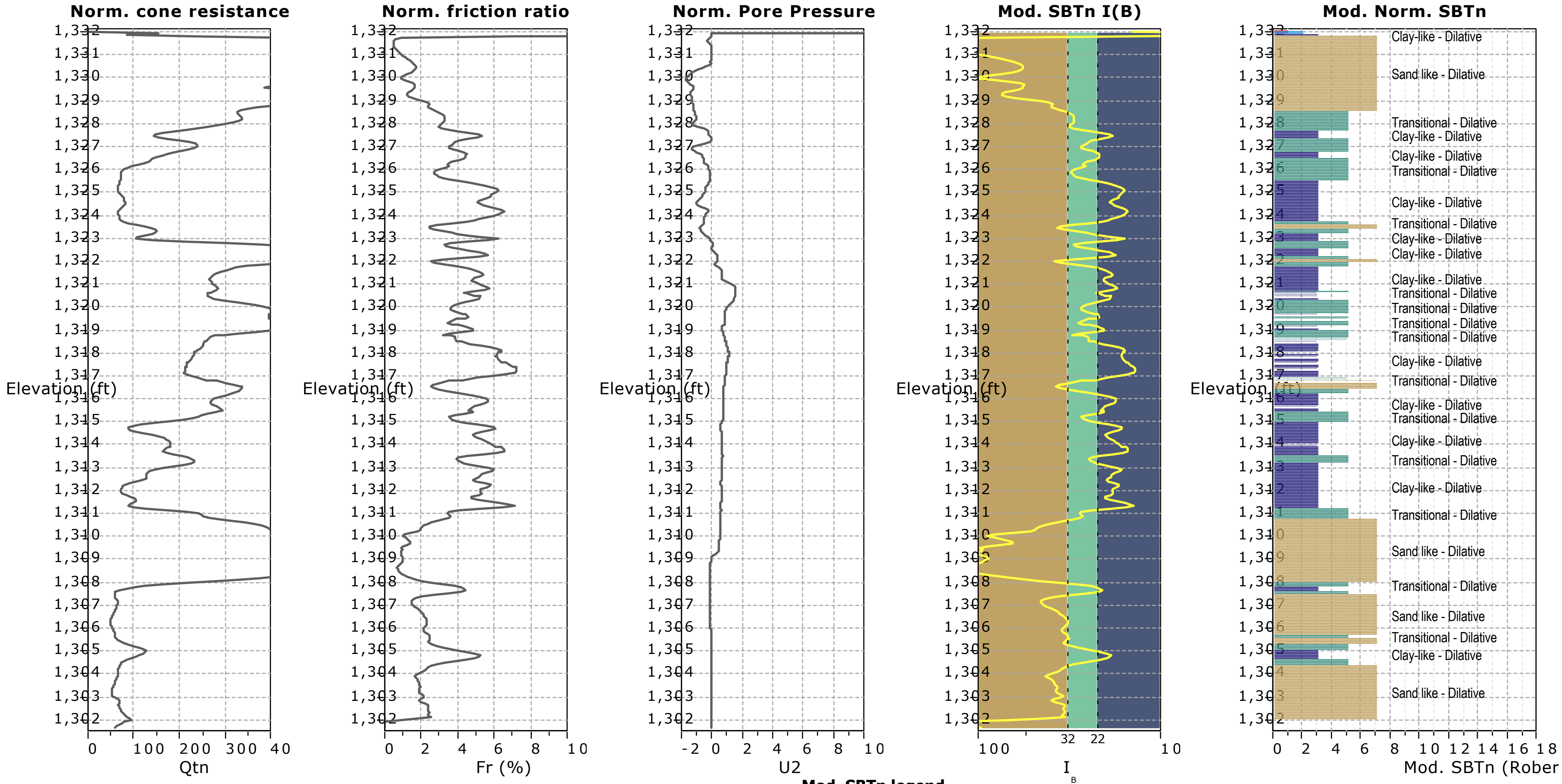
CPT: CPT-2
Total depth: 30.34 ft, Date: 8/9/2019
Surface Elevation: 1332.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Vertec
Cone Operator: Kehoe Testing & Engineering



NOVA Services, Inc.
4373 Viewridge, Suite B
San Diego, CA 92123
858-292-7575

Project: **UHS Inland Valley Reg. Med. Center**
Location: **36485 Inland Valley Dr., Wildomar, CA**

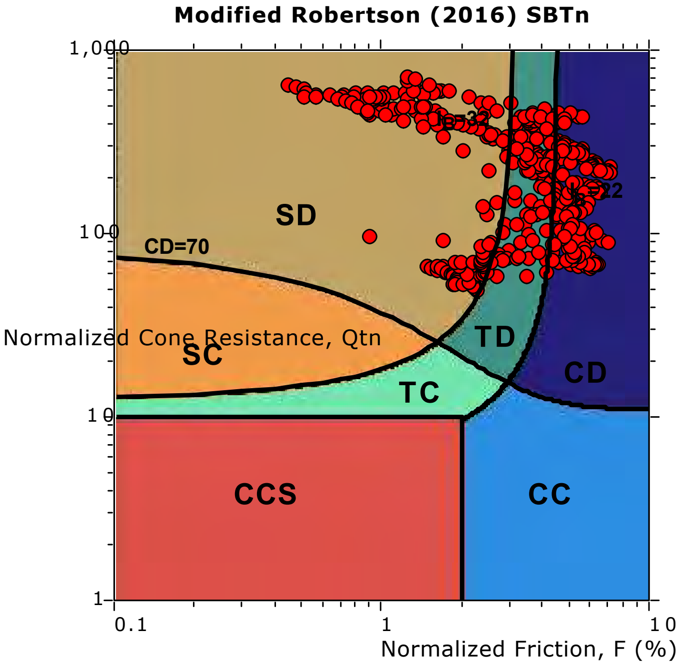
CPT: CPT-2
Total depth: 30.34 ft, Date: 8/9/2019
Surface Elevation: 1332.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Vertec
Cone Operator: Kehoe Testing & Engineering

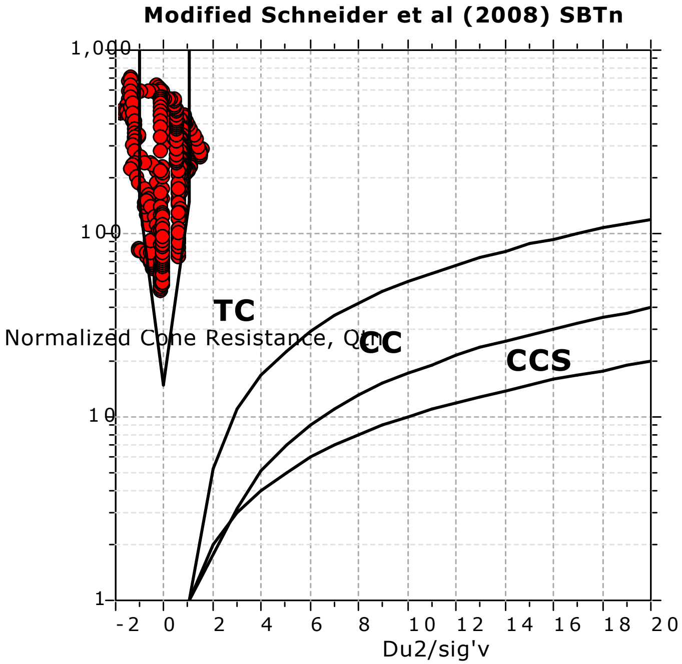


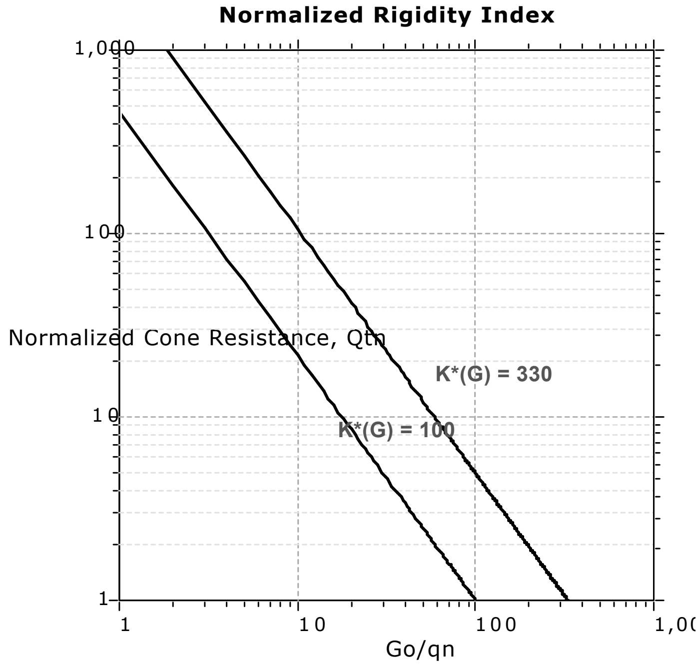
Mod. SBTn legend

- 1. CCS: ClayLike - Contractive, Sensitive
- 2. CC: Clay-like - Contractive
- 3. CD: Clay-Like: Dilative
- 4. TC: Transitional - Contractive
- 5. TD: Transitional - Dilative
- 6. SC: Sand-like - Contractive
- 7. SD: Sand-like - Dilative

Updated SBTn plots







CCS: Clay-like - Contractive - Sensitive
CC: Clay-like - Contractive
CD: Clay-like - Dilative
TC: Transitional - Contractive
TD: Transitional - Dilative
SC: Sand-like - Contractive
SD: Sand-like - Dilative

K(G) > 330: Soils with significant microstructure (e.g. age/cementation)

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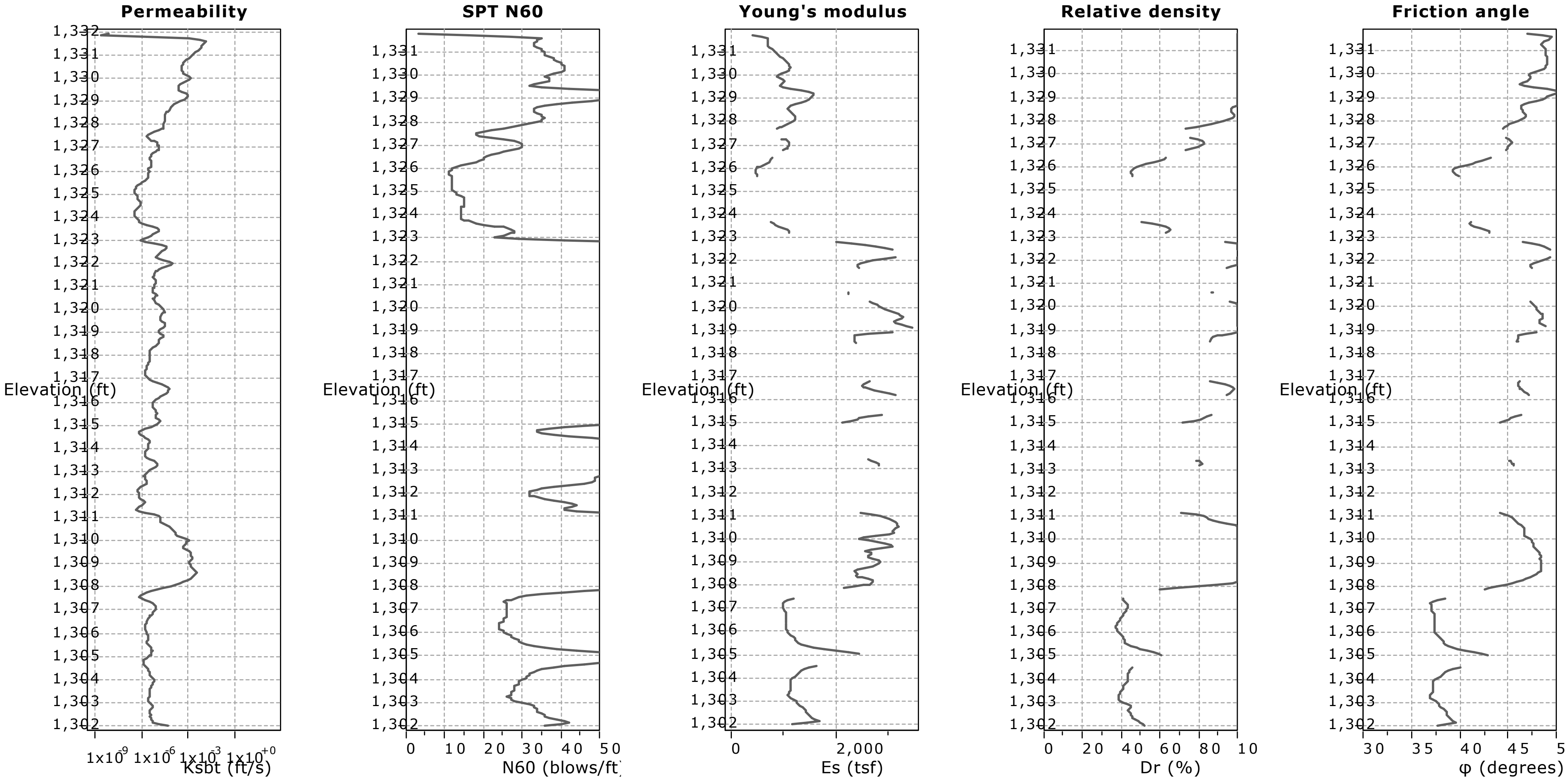
4373 Viewridge, Suite B
San Diego, CA 92123
858-292-7575

CPT: CPT-2
Total depth: 30.34 ft, Date: 8/9/2019
Surface Elevation: 1332.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Vertec
Cone Operator: Kehoe Testing & Engineering

Project: **UHS Inland Valley Reg. Med. Center**
Location: **36485 Inland Valley Dr., Wildomar, CA**



Calculation parameters
Permeability: Based on SBT_n
SPT N_{60}: Based on I_c and q_t
Young's modulus: Based on variable alpha using I_c (Robertson, 2009)
Relative density constant, C_{Dr}: 350.0
Phi: Based on Kulhawy & Mayne (1990)
User defined estimation data

NOVA Services, Inc.
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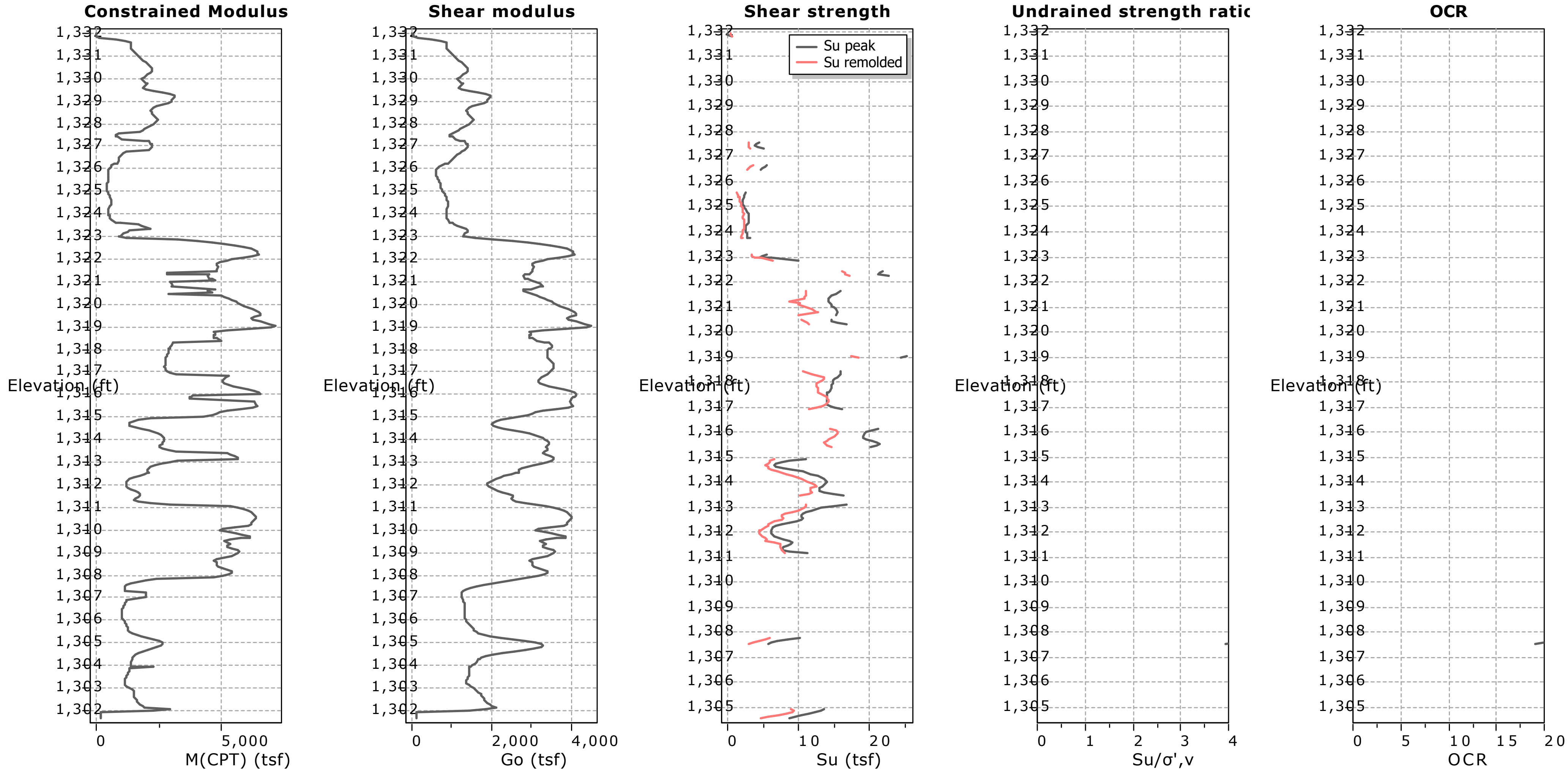
San Diego, CA 92123
858-292-7575

CPT: CPT-2
Total depth: 30.34 ft, Date: 8/9/2019
Surface Elevation: 1332.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Vertec
Cone Operator: Kehoe Testing & Engineering

Project: UHS Inland Valley Reg. Med. Center
Location: 36485 Inland Valley Dr., Wildomar, CA



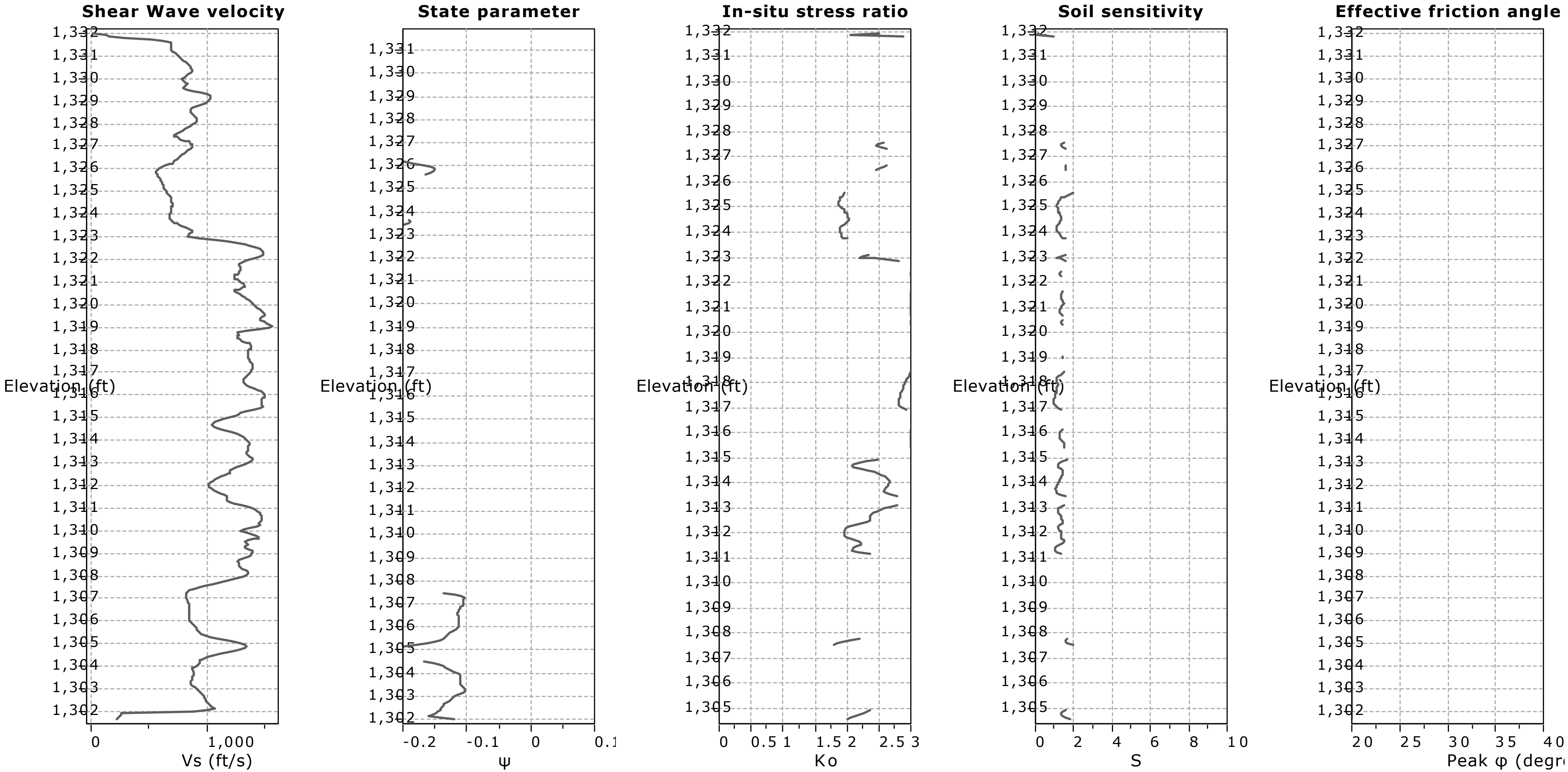
Calculation parameters

Constrained modulus: Based on variable alpha using I_c and Q_{tn} (Robertson, 2009)
Go: Based on variable alpha using I_c (Robertson, 2009)
Undrained shear strength cone factor for clays, N_{kt}: 14
OCR factor for clays, N_{kt}: 0.33
User defined estimation data
Flat Dilatometer Test data

NOVA Services, Inc.
4373 Viewridge, Suite B
San Diego, CA 92123
858-292-7575

CPT: CPT-2
Total depth: 30.34 ft, Date: 8/9/2019
Surface Elevation: 1332.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Vertec
Cone Operator: Kehoe Testing & Engineering

Project: **UHS Inland Valley Reg. Med. Center**
Location: **36485 Inland Valley Dr., Wildomar, CA**



Calculation parameters

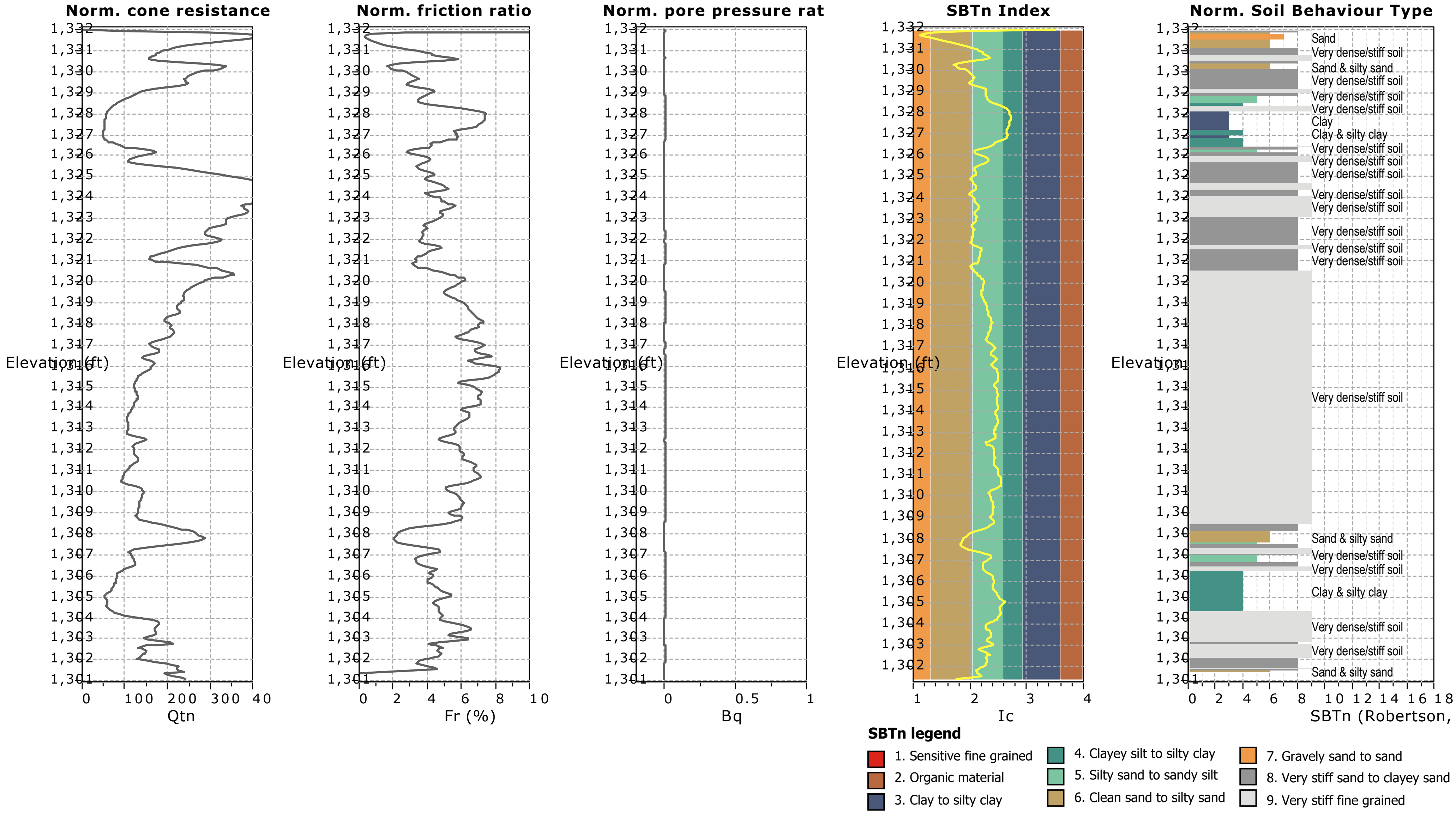
Soil Sensitivity factor, N_S: 7.00

User defined estimation data

NOVA Services, Inc.
4373 Viewridge, Suite B
San Diego, CA 92123
858-292-7575

CPT: CPT-3
Total depth: 30.91 ft, Date: 8/9/2019
Surface Elevation: 1332.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Vertec
Cone Operator: Kehoe Testing & Engineering

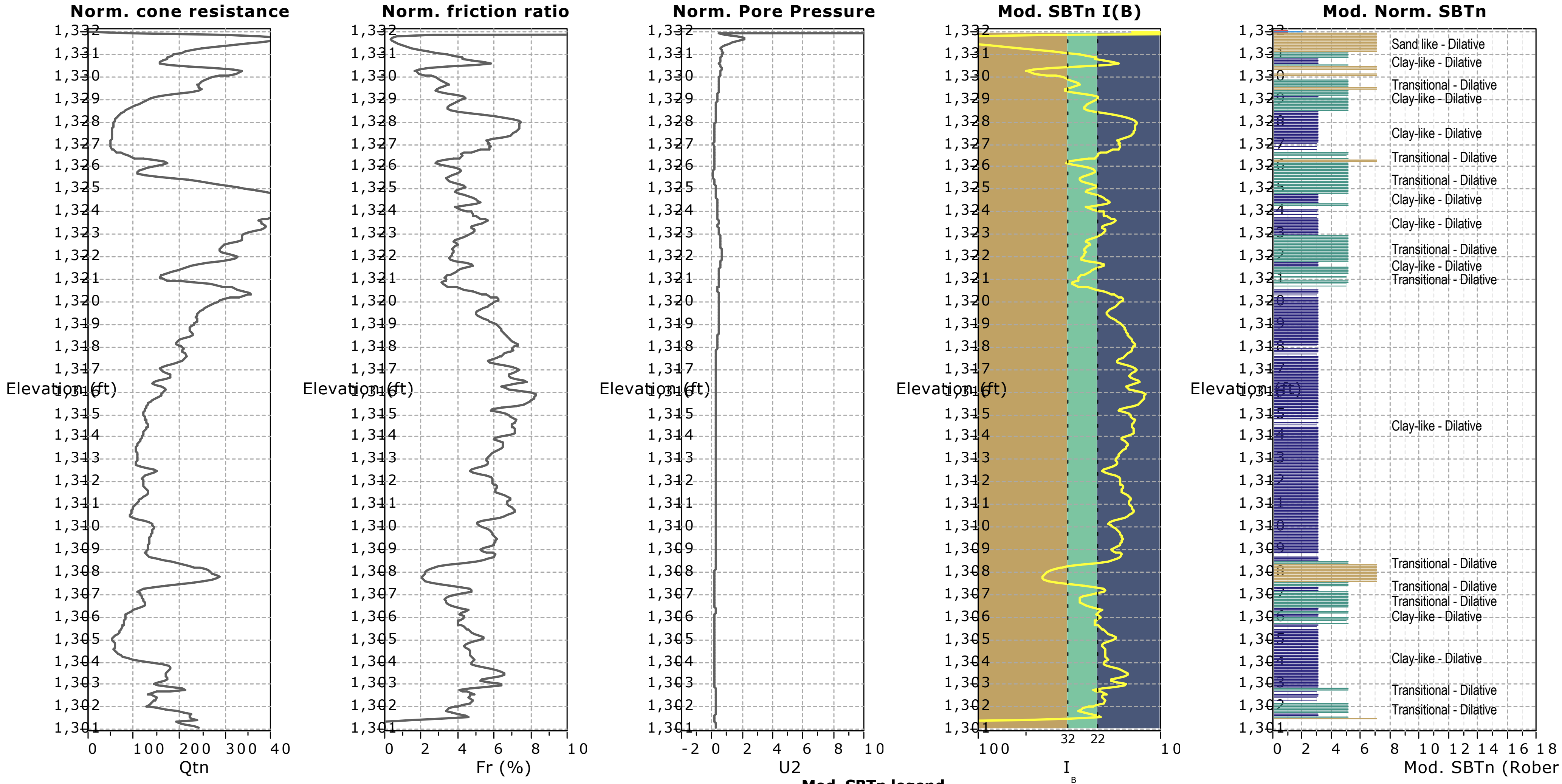
Project: UHS Inland Valley Reg. Med. Center
Location: 36485 Inland Valley Dr., Wildomar, CA



NOVA Services, Inc.
4373 Viewridge, Suite B
San Diego, CA 92123
858-292-7575

Project: UHS Inland Valley Reg. Med. Center
Location: 36485 Inland Valley Dr., Wildomar, CA

CPT: CPT-3
Total depth: 30.91 ft, Date: 8/9/2019
Surface Elevation: 1332.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Vertec
Cone Operator: Kehoe Testing & Engineering



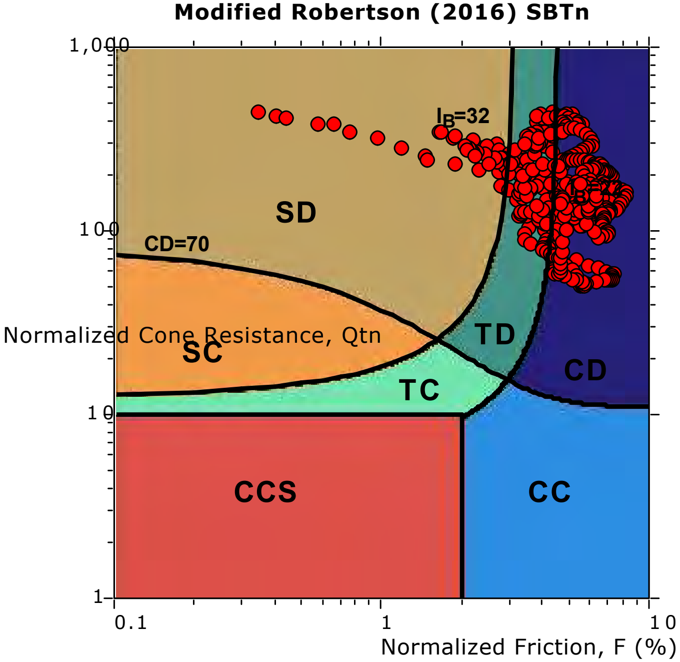
Mod. SBTn legend
1. CCS: ClayLike - Contractive, Sensitive
2. CC: Clay-like - Contractive
3. CD: Clay-Like: Dilative
4. TC: Transitional - Contractive
5. TD: Transitional - Dilative
6. SC: Sand-like - Contractive
7. SD: Sand-like - Dilative

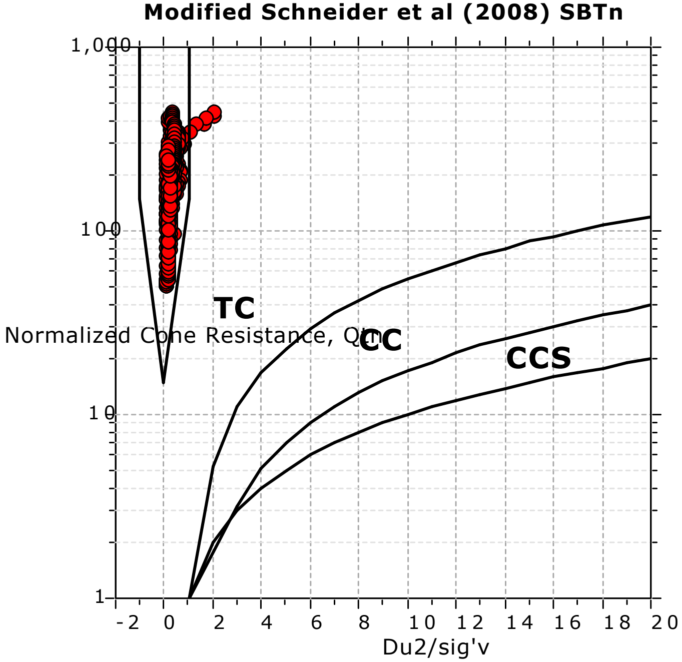
NOVA Services, Inc.
4373 Viewridge, Suite B
San Diego, CA 92123
858-292-7575

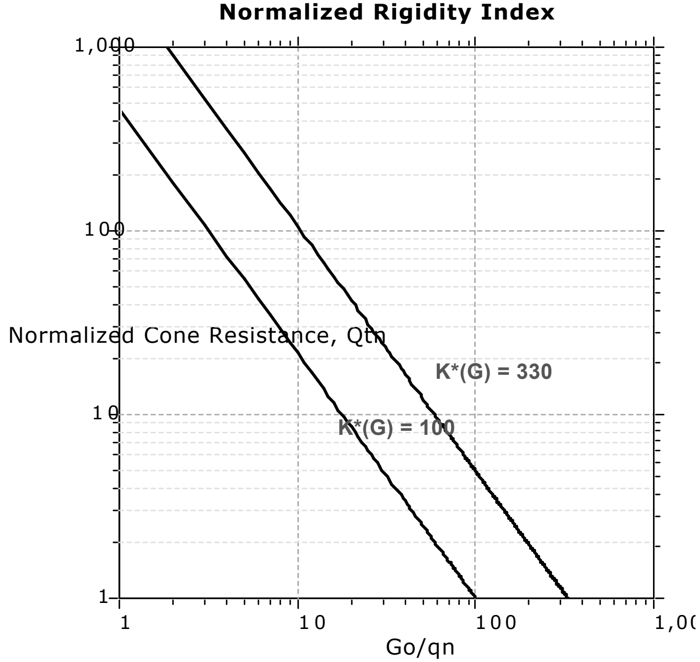
CPT: CPT-3
Total depth: 30.91 ft, Date: 8/9/2019
Surface Elevation: 1332.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Vertec
Cone Operator: Kehoe Testing & Engineering

Project: UHS Inland Valley Reg. Med. Center
Location: 36485 Inland Valley Dr., Wildomar, CA

Updated SBTn plots







CCS: Clay-like - Contractive - Sensitive
CC: Clay-like - Contractive
CD: Clay-like - Dilative
TC: Transitional - Contractive
TD: Transitional - Dilative
SC: Sand-like - Contractive
SD: Sand-like - Dilative

K(G) > 330: Soils with significant microstructure (e.g. age/cementation)

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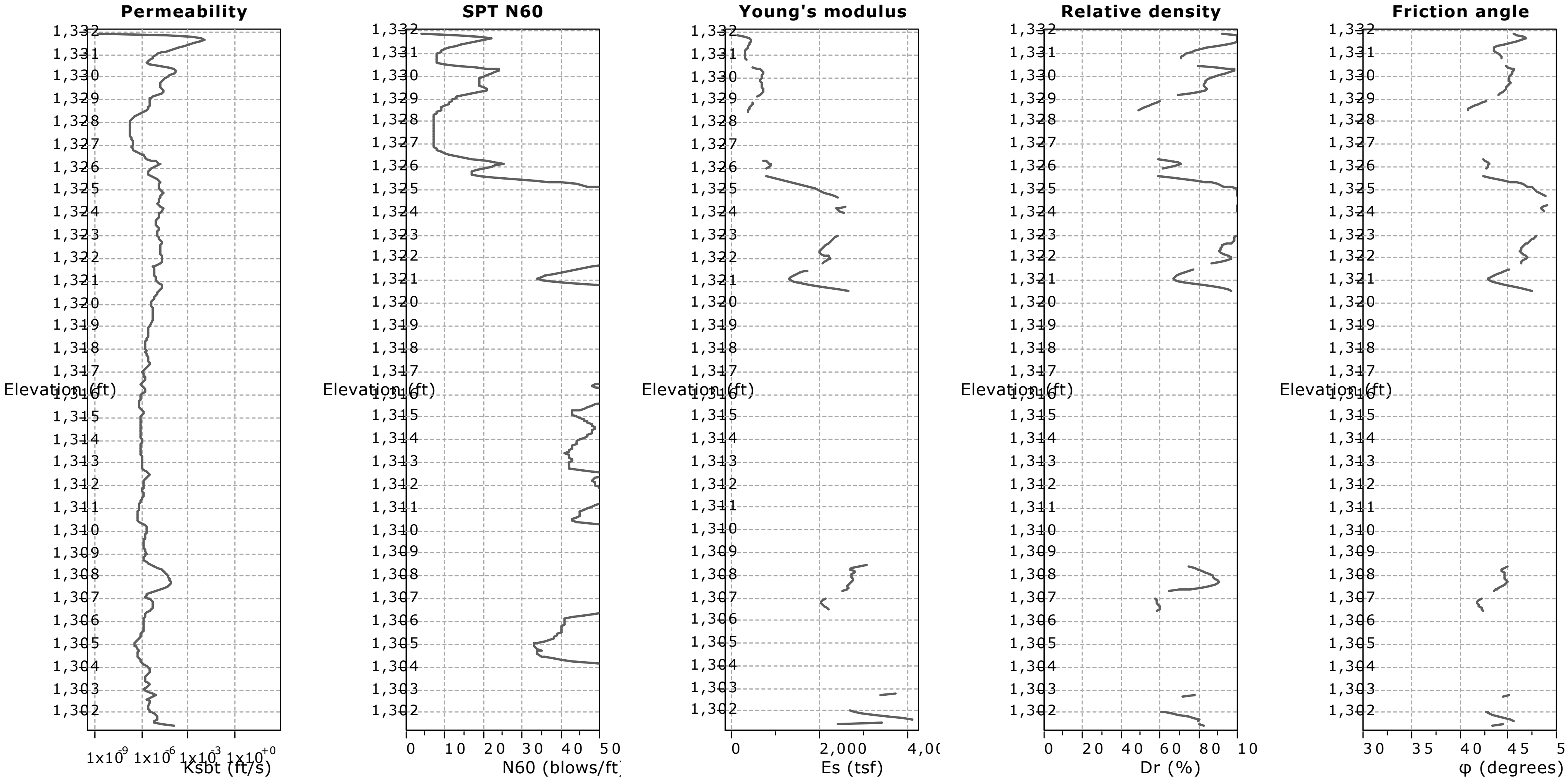
4373 Viewridge, Suite B
San Diego, CA 92123
858-292-7575

CPT: CPT-3
Total depth: 30.91 ft, Date: 8/9/2019
Surface Elevation: 1332.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Vertec
Cone Operator: Kehoe Testing & Engineering

Project: **UHS Inland Valley Reg. Med. Center**
Location: **36485 Inland Valley Dr., Wildomar, CA**

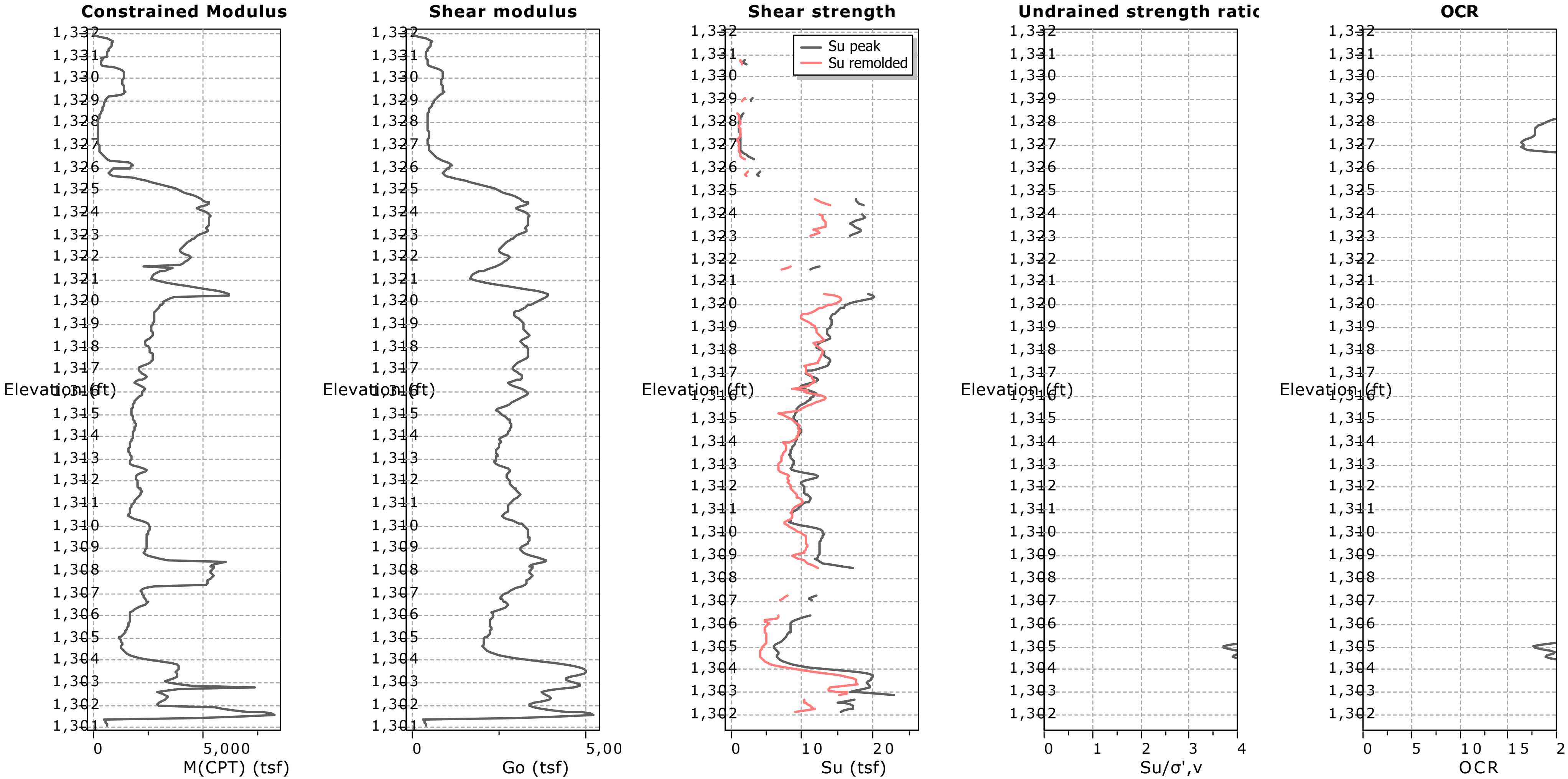


Calculation parameters
Permeability: Based on SBT_n
SPT N_{60}: Based on I_c and q_t
Young's modulus: Based on variable alpha using I_c (Robertson, 2009)
Relative density constant, C_{Dr}: 350.0
Phi: Based on Kulhawy & Mayne (1990)
User defined estimation data

NOVA Services, Inc.
4373 Viewridge, Suite B
San Diego, CA 92123
858-292-7575

CPT: CPT-3
Total depth: 30.91 ft, Date: 8/9/2019
Surface Elevation: 1332.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Vertec
Cone Operator: Kehoe Testing & Engineering

Project: **UHS Inland Valley Reg. Med. Center**
Location: **36485 Inland Valley Dr., Wildomar, CA**



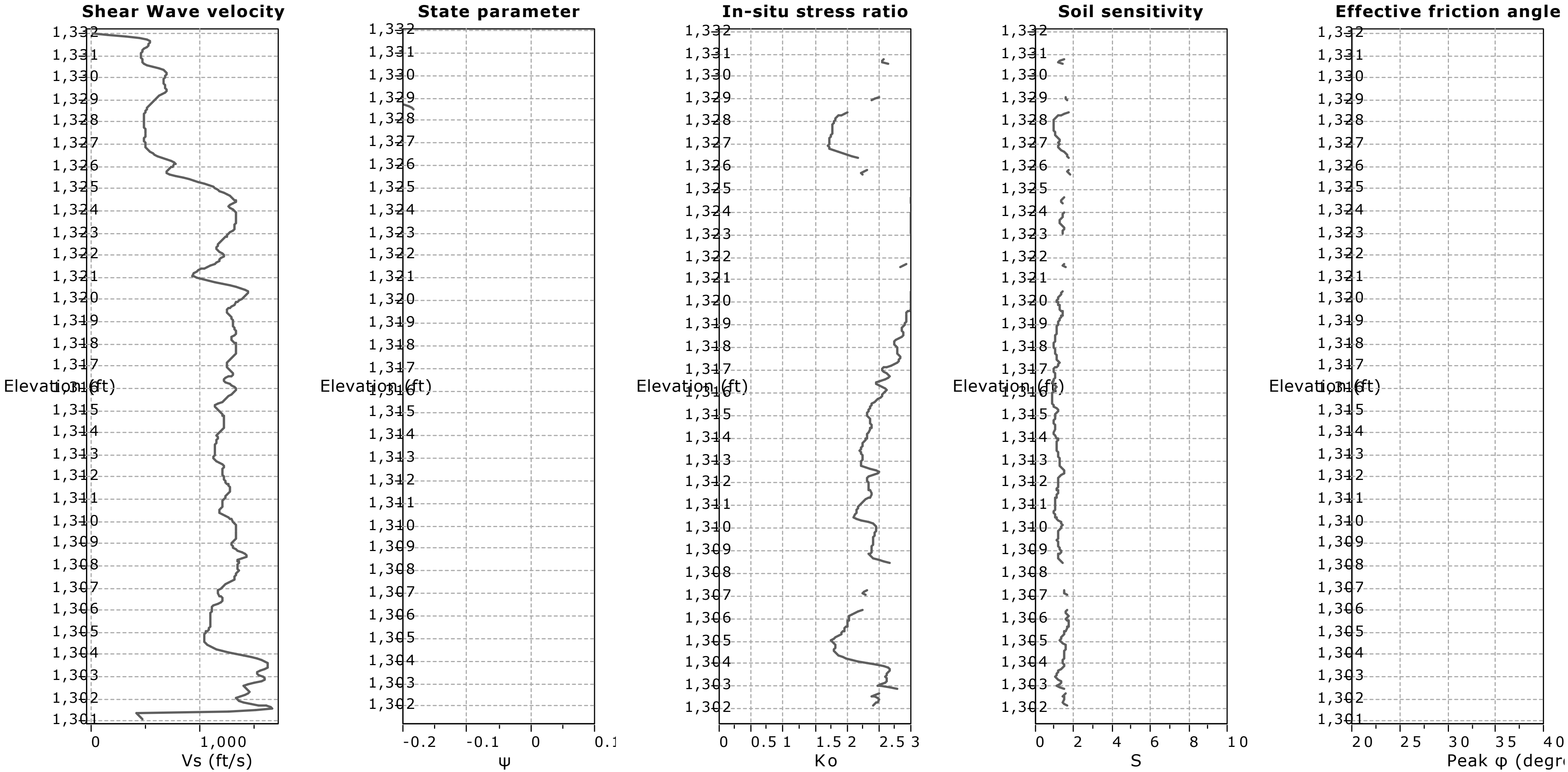
Calculation parameters
Constrained modulus: Based on variable alpha using I_c and Q_{tn} (Robertson, 2009)
Go: Based on variable alpha using I_c (Robertson, 2009)
Undrained shear strength cone factor for clays, N_{kt}: 14

OCR factor for clays, N_{kt}: 0.33
User defined estimation data
Flat Dilatometer Test data

NOVA Services, Inc.
4373 Viewridge, Suite B
San Diego, CA 92123
858-292-7575

CPT: CPT-3
Total depth: 30.91 ft, Date: 8/9/2019
Surface Elevation: 1332.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Vertec
Cone Operator: Kehoe Testing & Engineering

Project: UHS Inland Valley Reg. Med. Center
Location: 36485 Inland Valley Dr., Wildomar, CA



Calculation parameters

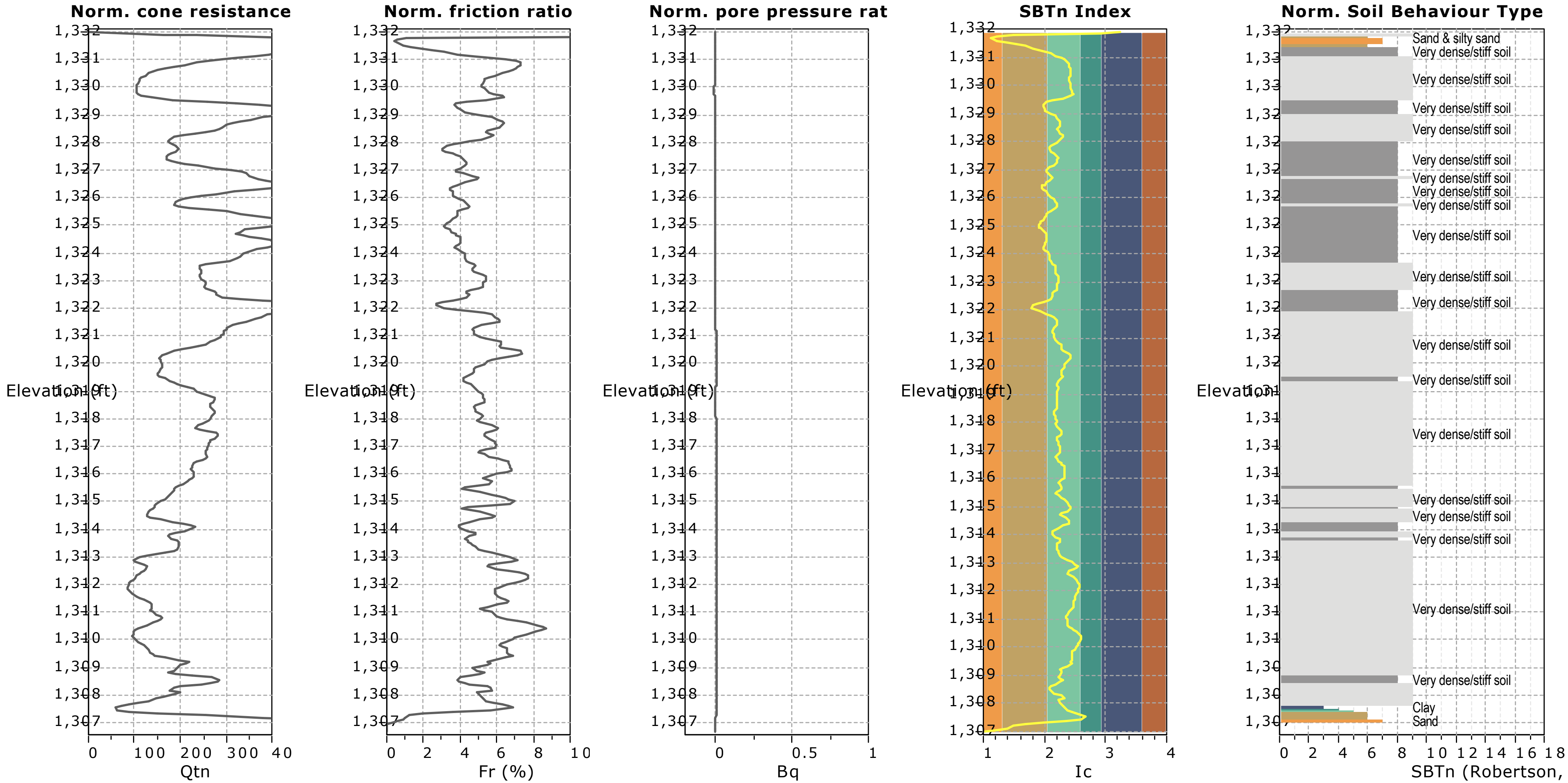
Soil Sensitivity factor, N_S: 7.00
User defined estimation data

NOVA Services, Inc.
4373 Viewridge, Suite B
San Diego, CA 92123
858-292-7575

CPT: CPT-4

Total depth: 25.33 ft, Date: 8/9/2019
Surface Elevation: 1332.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Vertec
Cone Operator: Kehoe Testing & Engineering

Project: UHS Inland Valley Reg. Med. Center
Location: 36485 Inland Valley Dr., Wildomar, CA



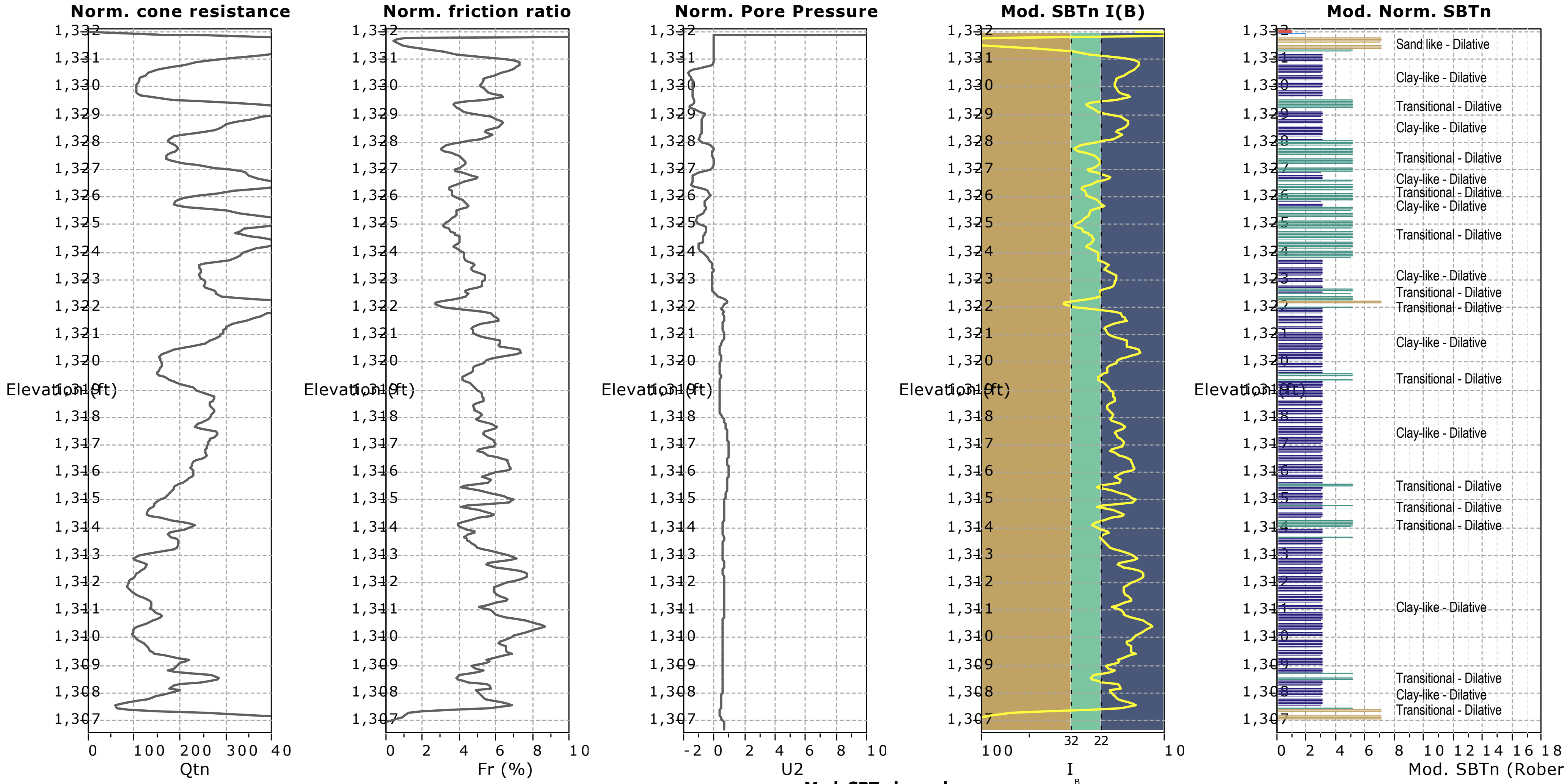
SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty clay
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to clayey sand
9. Very stiff fine grained

NOVA Services, Inc.
4373 Viewridge, Suite B
San Diego, CA 92123
858-292-7575

CPT: CPT-4
Total depth: 25.33 ft, Date: 8/9/2019
Surface Elevation: 1332.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Vertec
Cone Operator: Kehoe Testing & Engineering

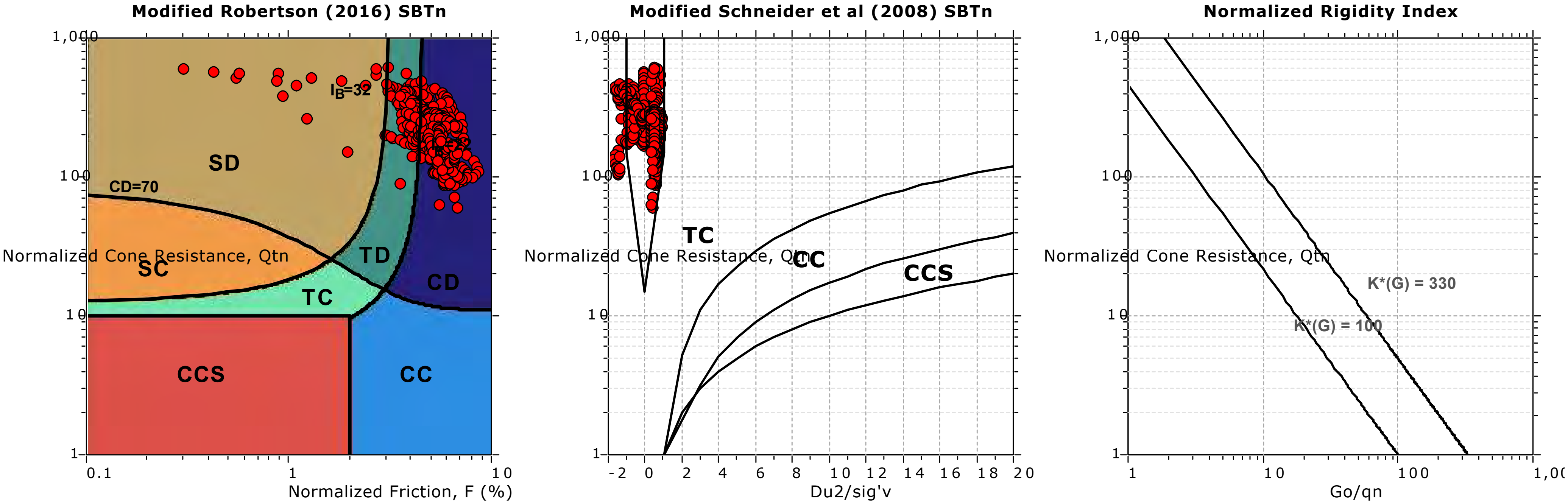
Project: UHS Inland Valley Reg. Med. Center
Location: 36485 Inland Valley Dr., Wildomar, CA



Mod. SBTn legend

1. CCS: ClayLike - Contractive, Sensitive
2. CC: Clay-like - Contractive
3. CD: Clay-Like: Dilative
4. TC: Transitional - Contractive
5. TD: Transitional - Dilative
6. SC: Sand-like - Contractive
7. SD: Sand-like - Dilative

Updated SBTn plots



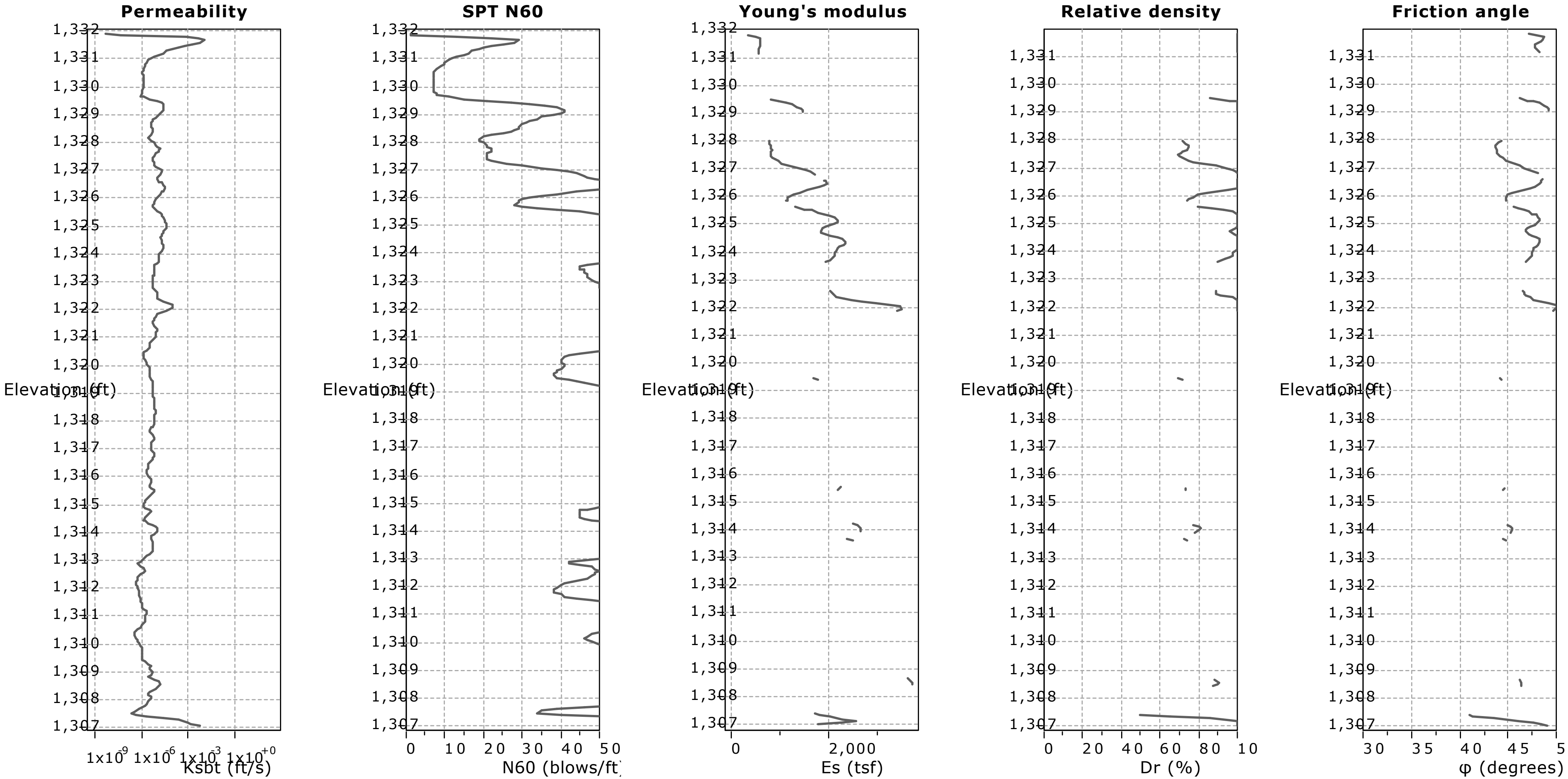
CCS: Clay-like - Contractive - Sensitive
CC: Clay-like - Contractive
CD: Clay-like - Dilative
TC: Transitional - Contractive
TD: Transitional - Dilative
SC: Sand-like - Contractive
SD: Sand-like - Dilative

K(G) > 330: Soils with significant microstructure (e.g. age/cementation)

NOVA Services, Inc.
4373 Viewridge, Suite B
San Diego, CA 92123
858-292-7575

CPT: CPT-4
Total depth: 25.33 ft, Date: 8/9/2019
Surface Elevation: 1332.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Vertec
Cone Operator: Kehoe Testing & Engineering

Project: **UHS Inland Valley Reg. Med. Center**
Location: **36485 Inland Valley Dr., Wildomar, CA**



Calculation parameters

Permeability: Based on SBT_n
SPT N_{60}: Based on I_c and q_t
Young's modulus: Based on variable alpha using I_c (Robertson, 2009)
Relative density constant, C_{Dr}: 350.0
Phi: Based on Kulhawy & Mayne (1990)
User defined estimation data

NOVA Services, Inc.
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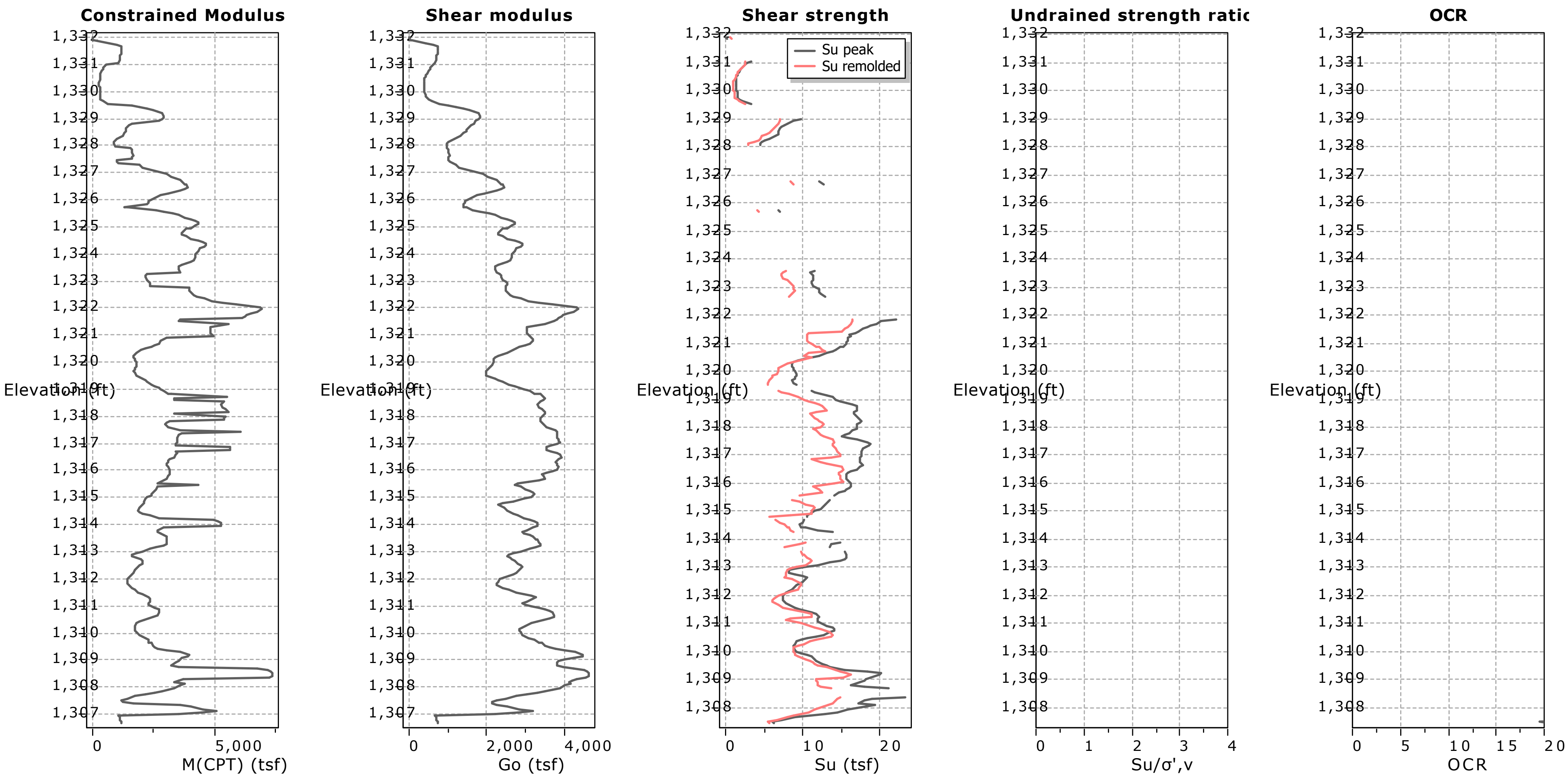
San Diego, CA 92123
858-292-7575

CPT: CPT-4

Total depth: 25.33 ft, Date: 8/9/2019
Surface Elevation: 1332.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Vertec
Cone Operator: Kehoe Testing & Engineering

Project: UHS Inland Valley Reg. Med. Center
Location: 36485 Inland Valley Dr., Wildomar, CA



Calculation parameters

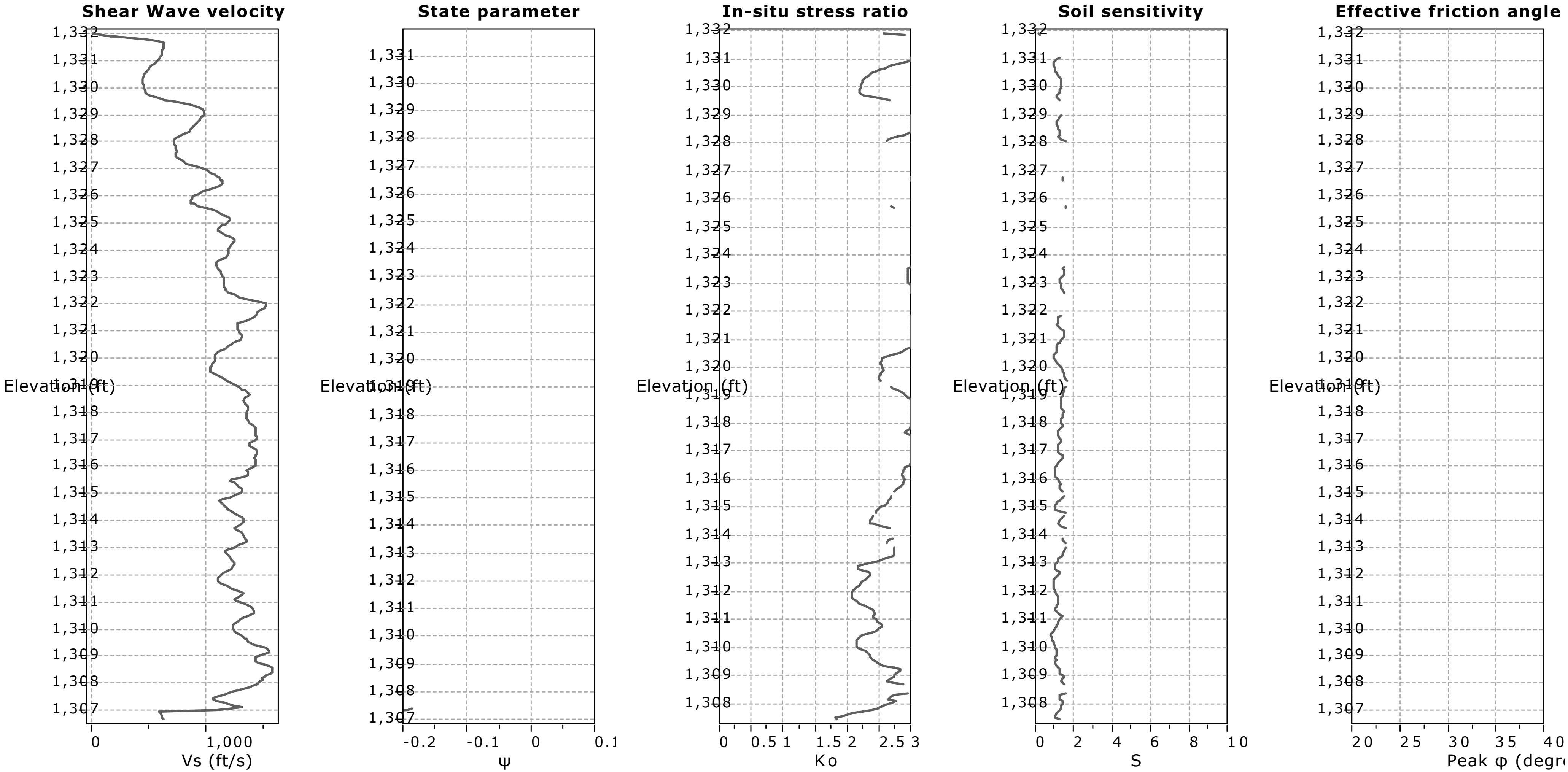
Constrained modulus: Based on variable alpha using I_c and Q_{tn} (Robertson, 2009)
Go: Based on variable alpha using I_c (Robertson, 2009)
Undrained shear strength cone factor for clays, N_{kt}: 14

OCR factor for clays, N_{kt}: 0.33
User defined estimation data
Flat Dilatometer Test data

NOVA Services, Inc.
4373 Viewridge, Suite B
San Diego, CA 92123
858-292-7575

CPT: CPT-4
Total depth: 25.33 ft, Date: 8/9/2019
Surface Elevation: 1332.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Vertec
Cone Operator: Kehoe Testing & Engineering

Project: **UHS Inland Valley Reg. Med. Center**
Location: **36485 Inland Valley Dr., Wildomar, CA**



Calculation parameters

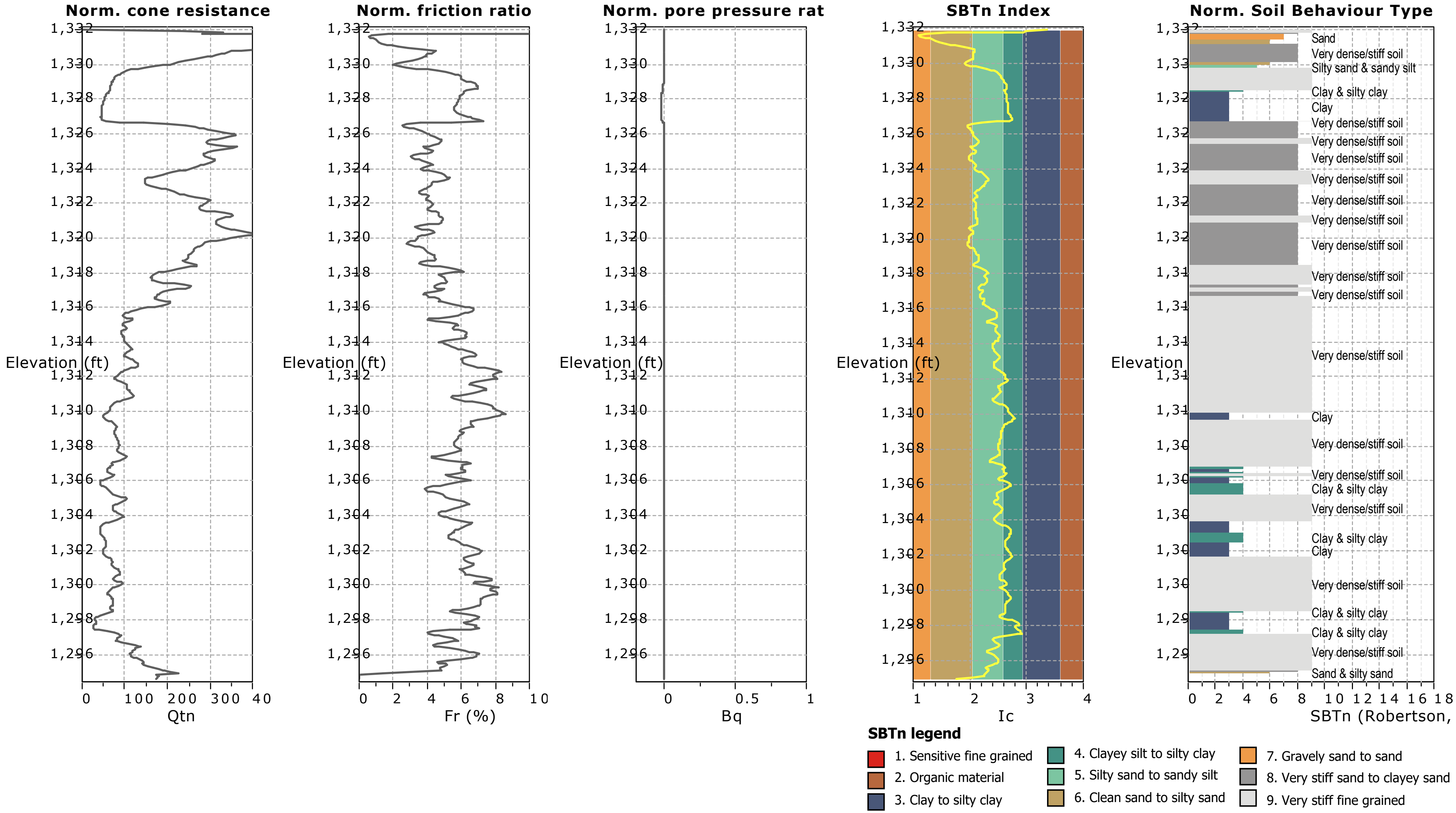
Soil Sensitivity factor, N_S: 7.00
User defined estimation data

NOVA

NOVA Services, Inc.
4373 Viewridge, Suite B
San Diego, CA 92123
858-292-7575

CPT: CPT-5
Total depth: 37.41 ft, Date: 8/9/2019
Surface Elevation: 1332.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Vertec
Cone Operator: Kehoe Testing & Engineering

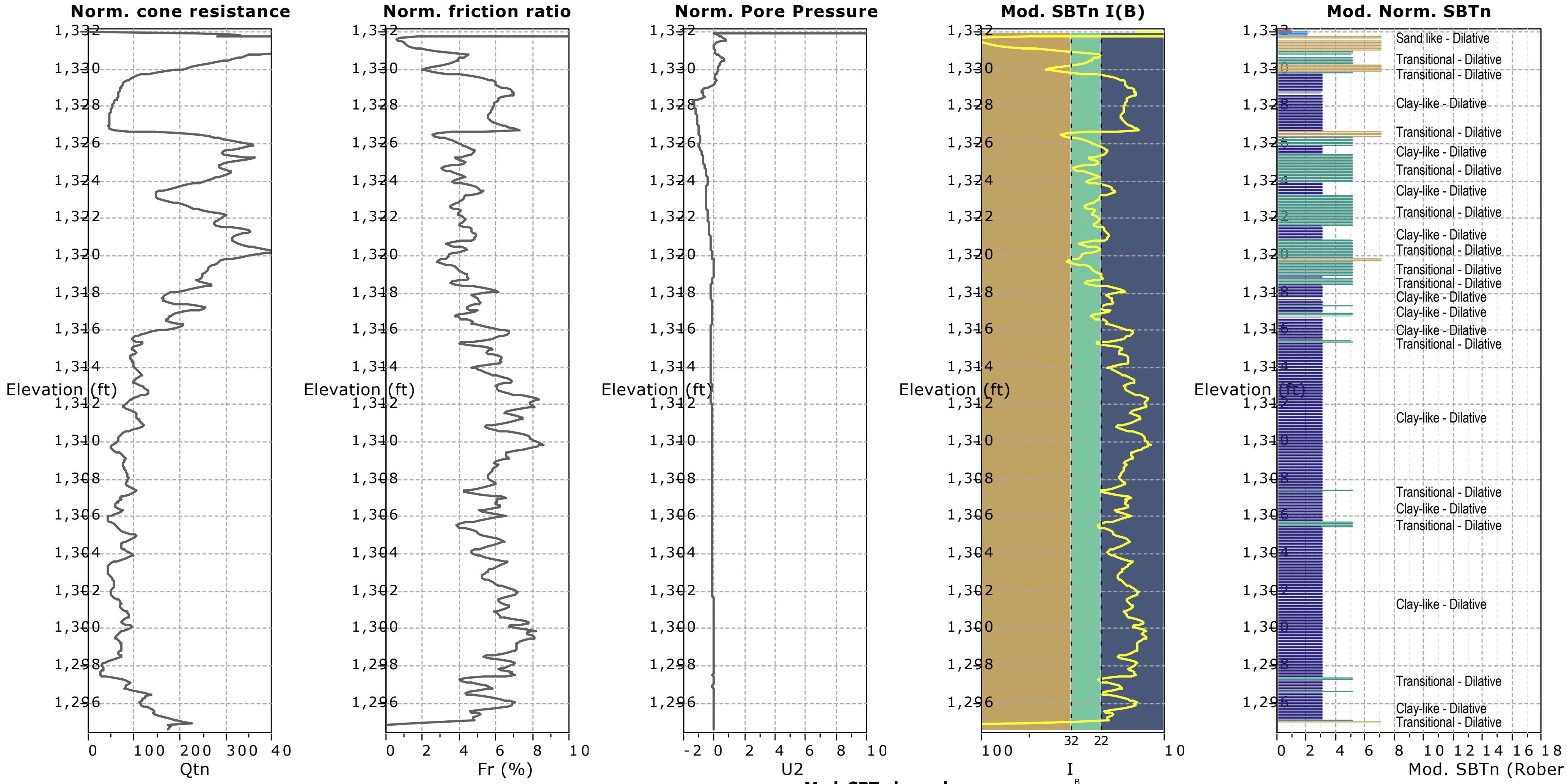
Project: UHS Inland Valley Reg. Med. Center
Location: 36485 Inland Valley Dr., Wildomar, CA



NOVA Services, Inc.
4373 Viewridge, Suite B
San Diego, CA 92123
858-292-7575

CPT: CPT-5
Total depth: 37.41 ft, Date: 8/9/2019
Surface Elevation: 1332.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Vertec
Cone Operator: Kehoe Testing & Engineering

Project: UHS Inland Valley Reg. Med. Center
Location: 36485 Inland Valley Dr., Wildomar, CA



Mod. SBTn legend

- 1. CCS: ClayLike - Contractive, Sensitive
- 2. CC: Clay-like - Contractive
- 3. CD: Clay-Like: Dilative
- 4. TC: Transitional - Contractive
- 5. TD: Transitional - Dilative
- 6. SC: Sand-like - Contractive
- 7. SD: Sand-like - Dilative

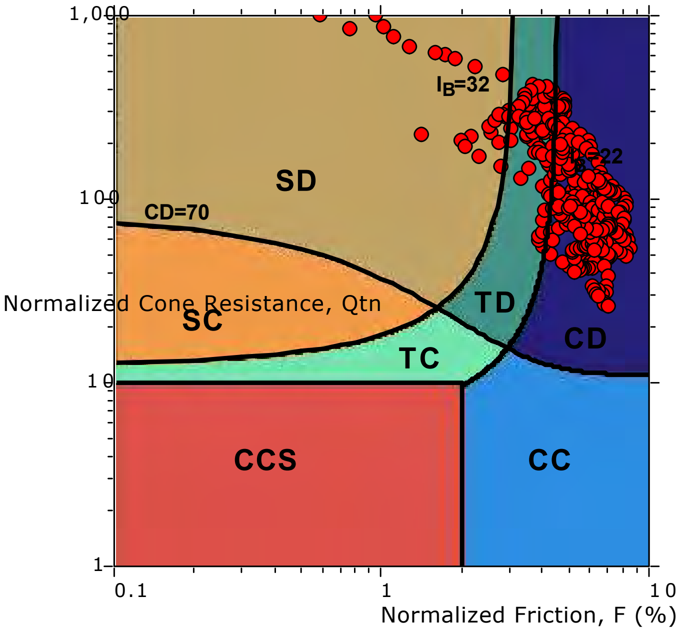
NOVA Services, Inc.
4373 Viewridge, Suite B
San Diego, CA 92123
858-292-7575

CPT: CPT-5
Total depth: 37.41 ft, Date: 8/9/2019
Surface Elevation: 1332.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Vertec
Cone Operator: Kehoe Testing & Engineering

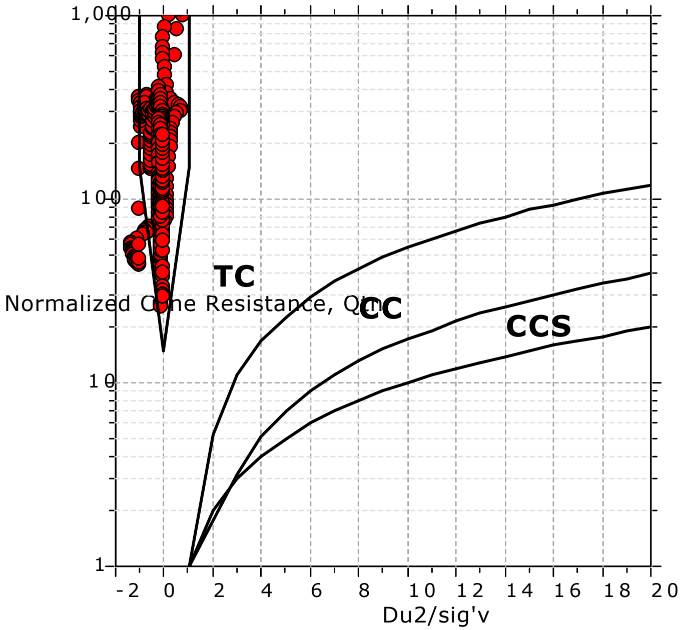
Project: **UHS Inland Valley Reg. Med. Center**
Location: **36485 Inland Valley Dr., Wildomar, CA**

Updated SBTn plots

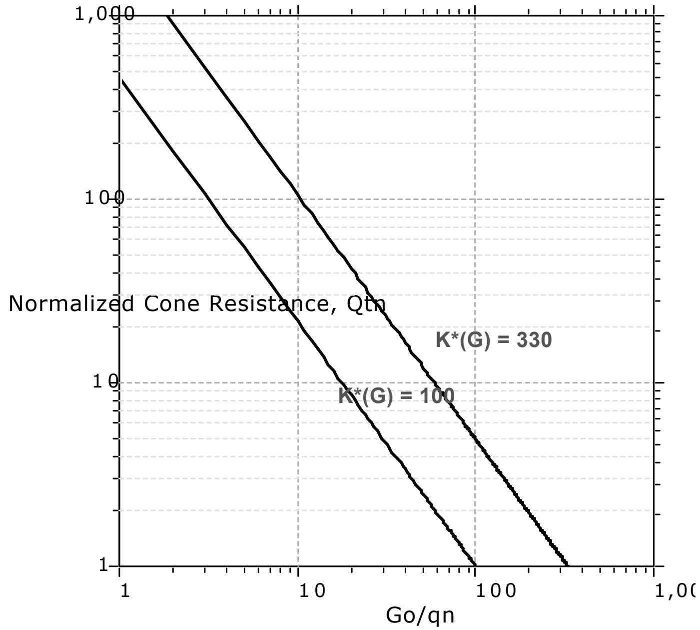
Modified Robertson (2016) SBTn



Modified Schneider et al (2008) SBTn



Normalized Rigidity Index



CCS: Clay-like - Contractive - Sensitive
CC: Clay-like - Contractive
CD: Clay-like - Dilative
TC: Transitional - Contractive
TD: Transitional - Dilative
SC: Sand-like - Contractive
SD: Sand-like - Dilative

K(G) > 330: Soils with significant microstructure (e.g. age/cementation)

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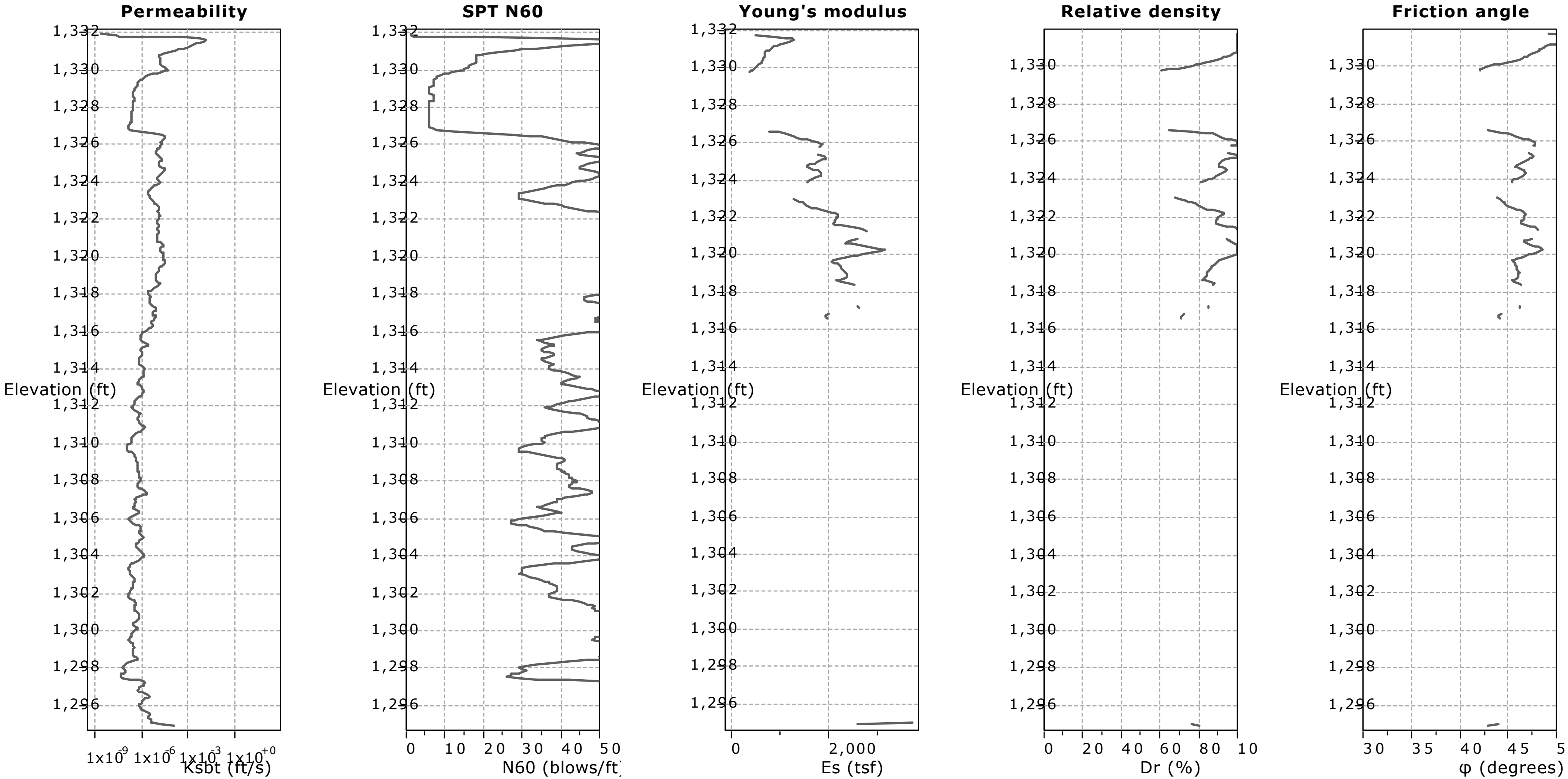
858-292-7575

CPT: CPT-5
Total depth: 37.41 ft, Date: 8/9/2019
Surface Elevation: 1332.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Vertec
Cone Operator: Kehoe Testing & Engineering

Project: **UHS Inland Valley Reg. Med. Center**
Location: **36485 Inland Valley Dr., Wildomar, CA**



Calculation parameters
Permeability: Based on SBT_n
SPT N_{60}: Based on I_c and q_t
Young's modulus: Based on variable alpha using I_c (Robertson, 2009)
Relative density constant, C_{Dr}: 350.0
Phi: Based on Kulhawy & Mayne (1990)
User defined estimation data

NOVA Services, Inc.
4373 Viewridge, Suite B
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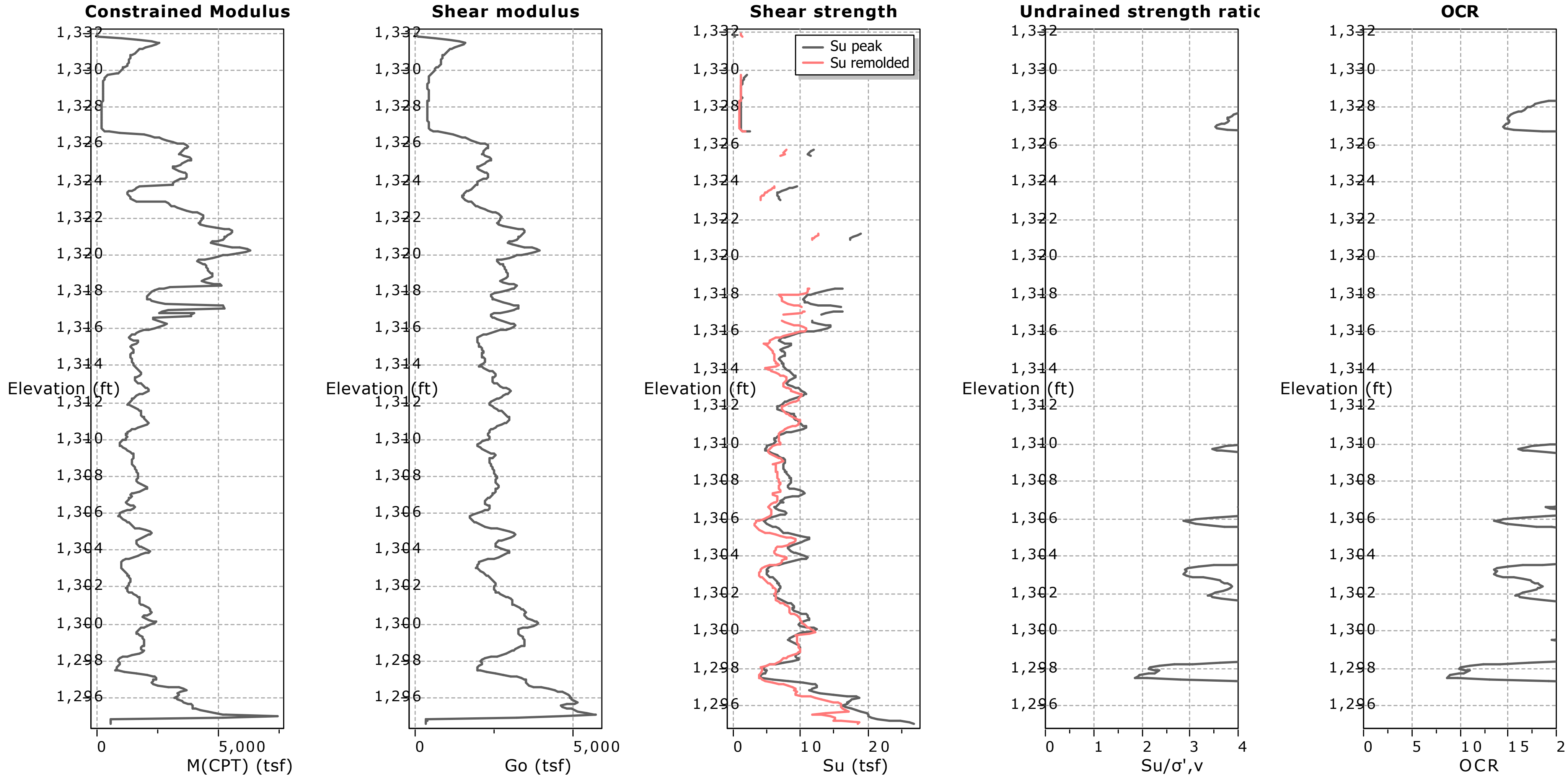
CPT: CPT-5
Total depth: 37.41 ft, Date: 8/9/2019
Surface Elevation: 1332.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Vertec
Cone Operator: Kehoe Testing & Engineering

Project: **UHS Inland Valley Reg. Med. Center**
Location: **36485 Inland Valley Dr., Wildomar, CA**



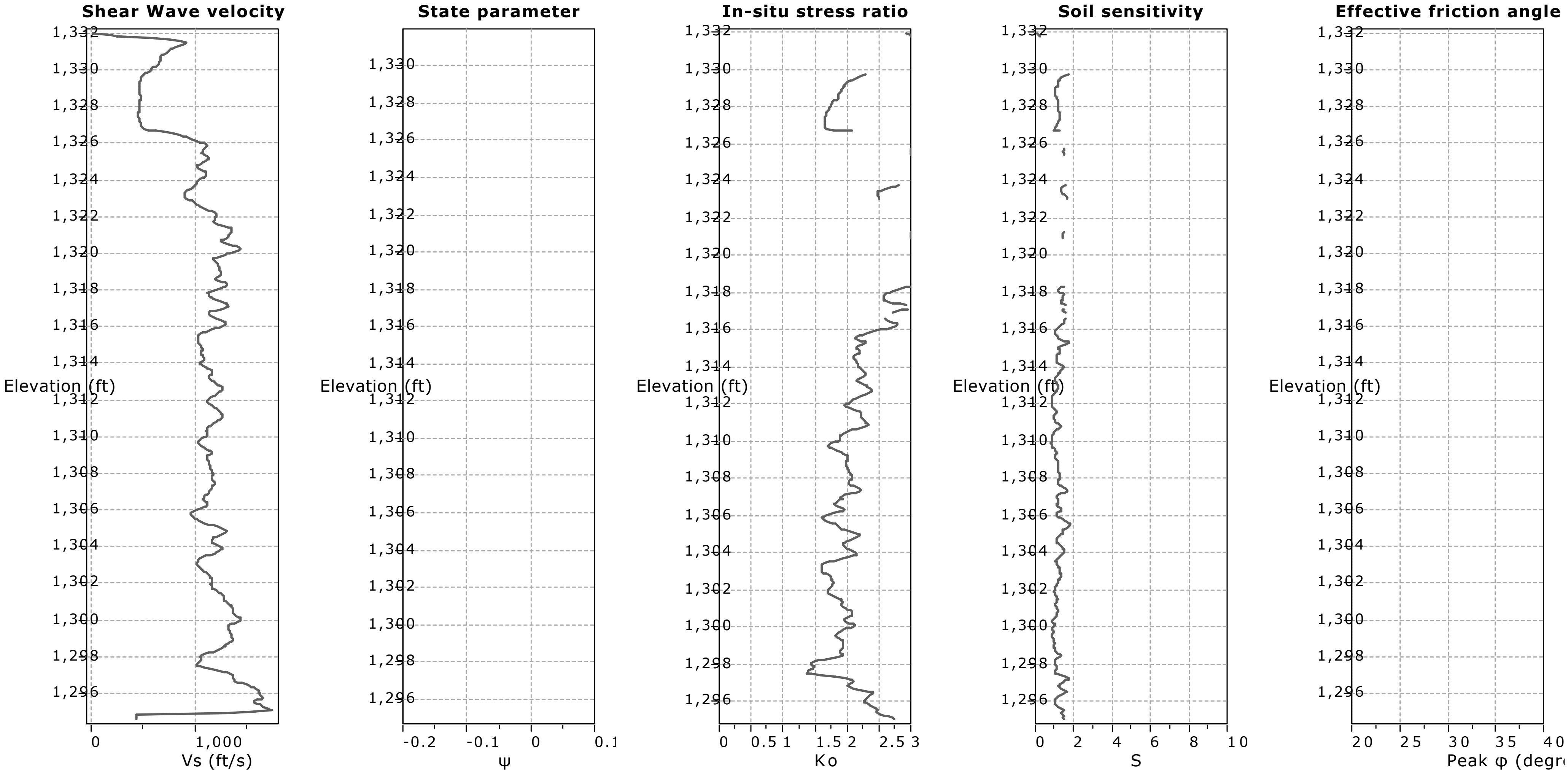
Calculation parameters
Constrained modulus: Based on variable alpha using I_c and Q_{tn} (Robertson, 2009)
Go: Based on variable alpha using I_c (Robertson, 2009)
Undrained shear strength cone factor for clays, N_{kt}: 14

OCR factor for clays, N_{kt}: 0.33
User defined estimation data
Flat Dilatometer Test data

NOVA Services, Inc.
4373 Viewridge, Suite B
San Diego, CA 92123
858-292-7575

CPT: CPT-5
Total depth: 37.41 ft, Date: 8/9/2019
Surface Elevation: 1332.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Vertec
Cone Operator: Kehoe Testing & Engineering

Project: **UHS Inland Valley Reg. Med. Center**
Location: **36485 Inland Valley Dr., Wildomar, CA**



Calculation parameters

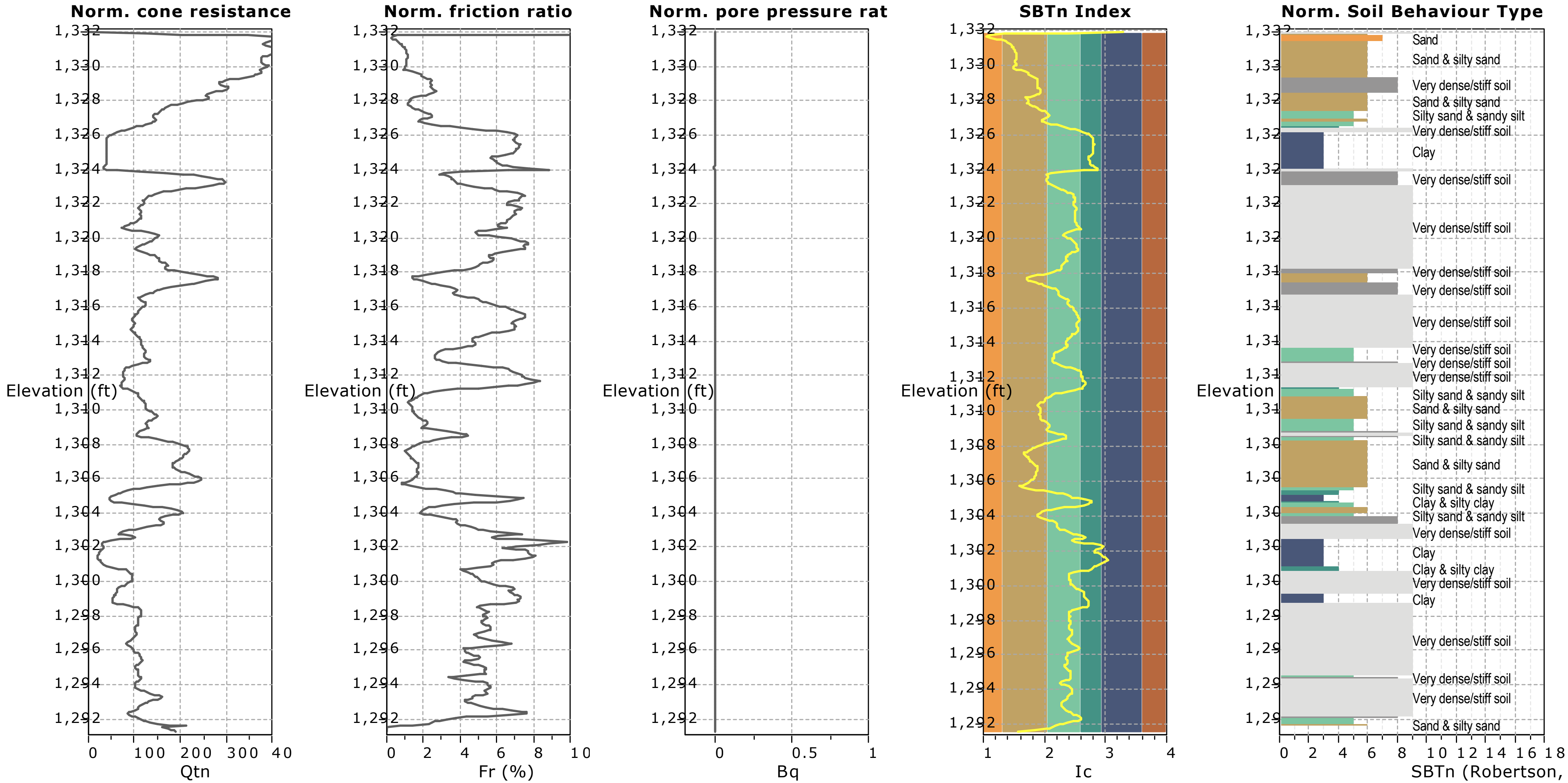
Soil Sensitivity factor, N_S: 7.00

User defined estimation data

NOVA Services, Inc.
4373 Viewridge, Suite B
San Diego, CA 92123
858-292-7575

CPT: CPT-6
Total depth: 40.75 ft, Date: 8/9/2019
Surface Elevation: 1332.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Vertec
Cone Operator: Kehoe Testing & Engineering

Project: **UHS Inland Valley Reg. Med. Center**
Location: **36485 Inland Valley Dr., Wildomar, CA**



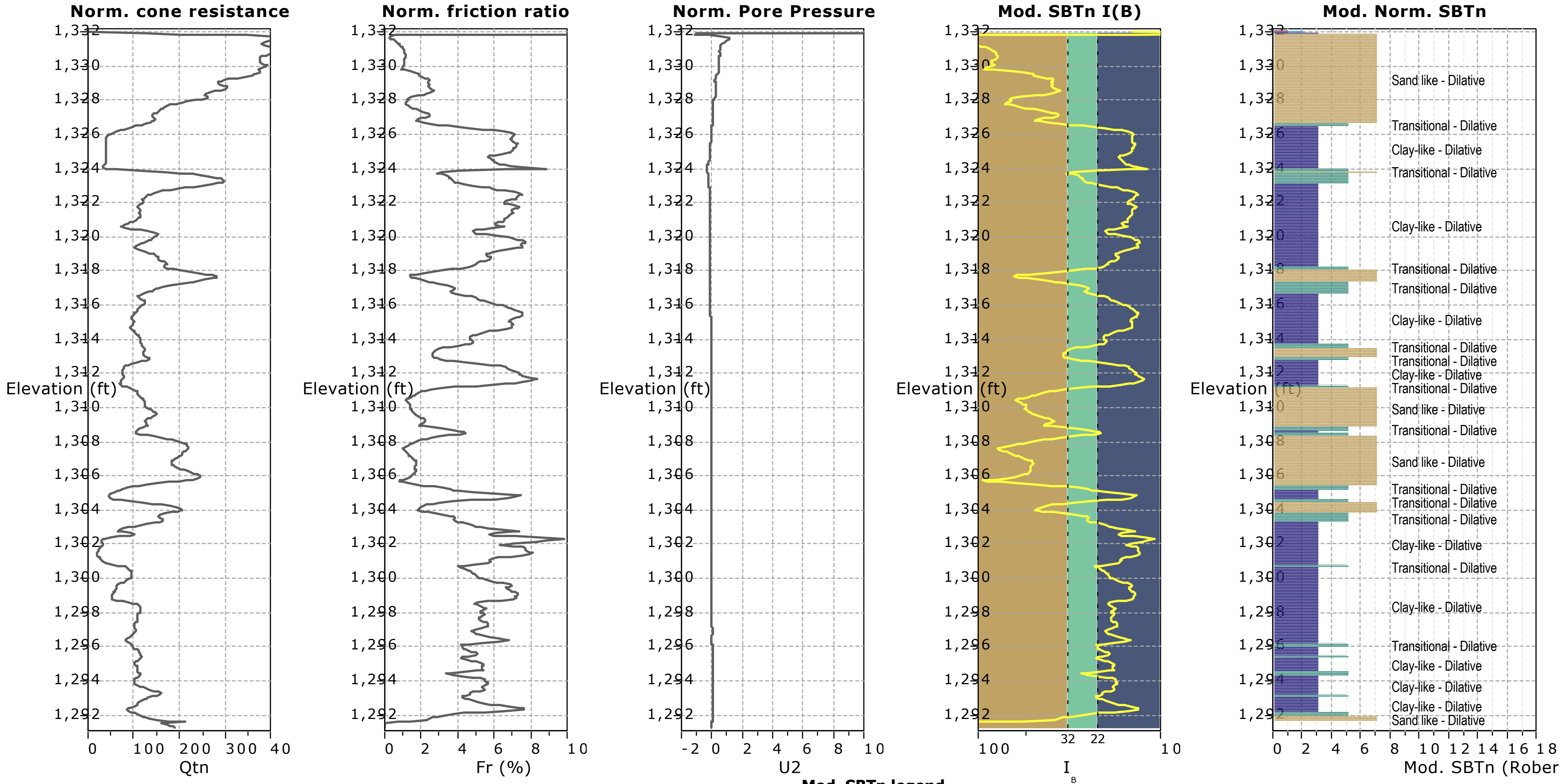
SBTn legend

- 1. Sensitive fine grained
- 2. Organic material
- 3. Clay to silty clay
- 4. Clayey silt to silty clay
- 5. Silty sand to sandy silt
- 6. Clean sand to silty sand
- 7. Gravely sand to sand
- 8. Very stiff sand to clayey sand
- 9. Very stiff fine grained

NOVA Services, Inc.
4373 Viewridge, Suite B
San Diego, CA 92123
858-292-7575

CPT: CPT-6
Total depth: 40.75 ft, Date: 8/9/2019
Surface Elevation: 1332.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Vertec
Cone Operator: Kehoe Testing & Engineering

Project: **UHS Inland Valley Reg. Med. Center**
Location: **36485 Inland Valley Dr., Wildomar, CA**



Mod. SBTn legend

- 1. CCS: ClayLike - Contractive, Sensitive
- 2. CC: Clay-like - Contractive
- 3. CD: Clay-Like: Dilative
- 4. TC: Transitional - Contractive
- 5. TD: Transitional - Dilative
- 6. SC: Sand-like - Contractive
- 7. SD: Sand-like - Dilative

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Project: UHS Inland Valley Reg. Med. Center
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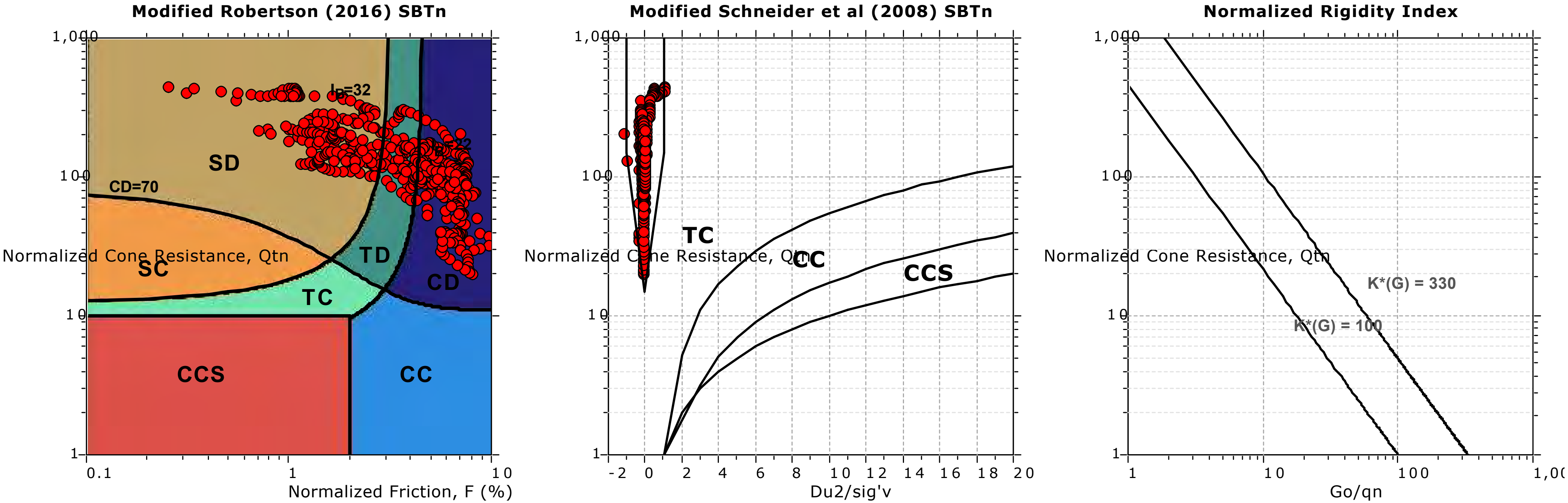
Cone Type: Vertec
Cone Operator: Kehoe Testing & Engineering

Updated SBTn plots



CCS: Clay-like - Contractive - Sensitive
CC: Clay-like - Contractive
CD: Clay-like - Dilative
TC: Transitional - Contractive
TD: Transitional - Dilative
SC: Sand-like - Contractive
SD: Sand-like - Dilative

K(G) > 330: Soils with significant microstructure (e.g. age/cementation)

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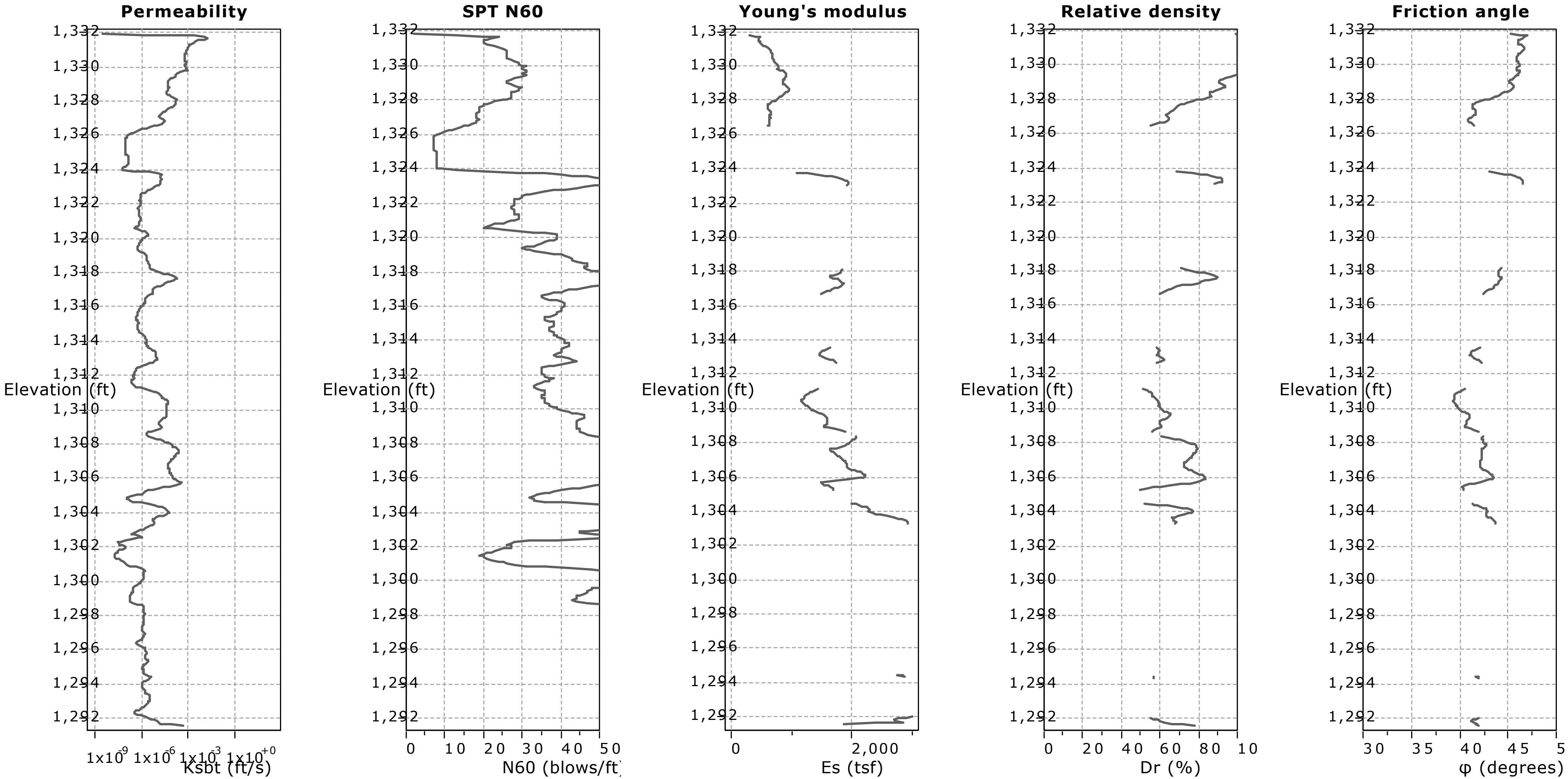

Calculation parameters
Permeability: Based on SBT_n
SPT N_{60}: Based on I_c and q_t
Young's modulus: Based on variable alpha using I_c (Robertson, 2009)
Relative density constant, C_{Dr}: 350.0
Phi: Based on Kulhawy & Mayne (1990)
User defined estimation data

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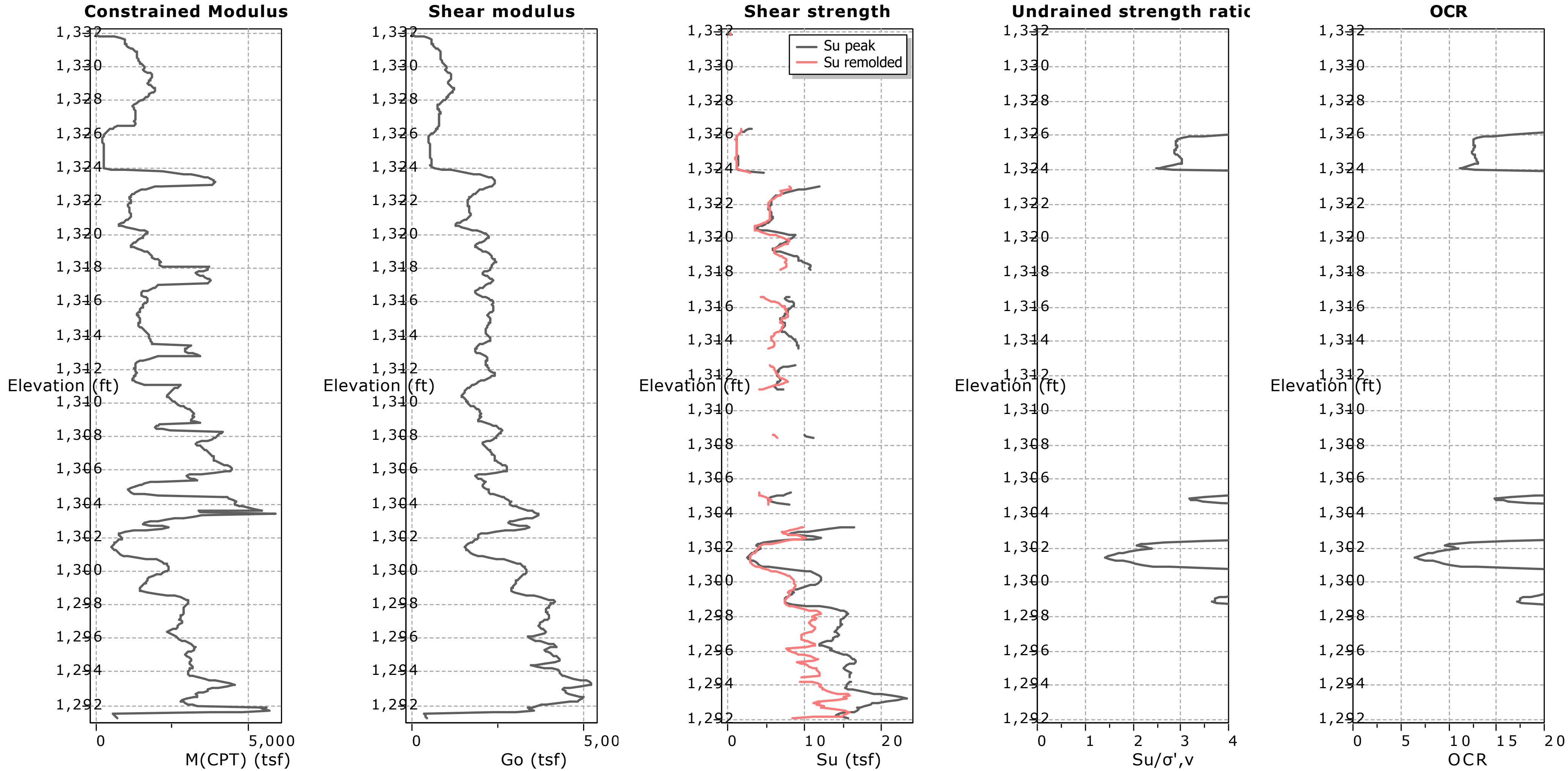

Calculation parameters
Constrained modulus: Based on variable alpha using I_c and Q_{tn} (Robertson, 2009)
Go: Based on variable alpha using I_c (Robertson, 2009)
Undrained shear strength cone factor for clays, N_{kt}: 14
OCR factor for clays, N_{kt}: 0.33
User defined estimation data
Flat Dilatometer Test data

NOVA Services, Inc.
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San Diego, CA 92123
858-292-7575

CPT: CPT-6
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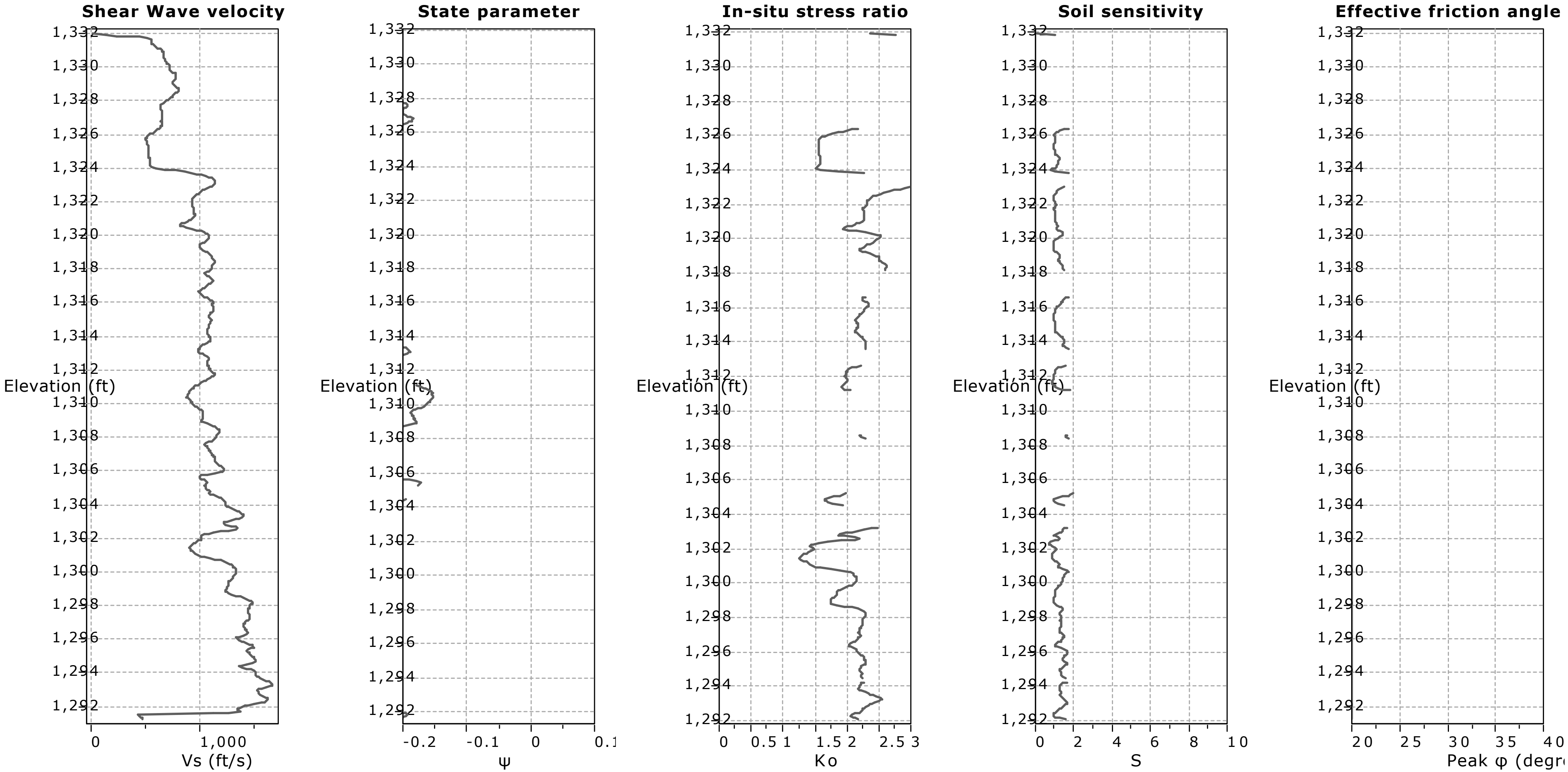
Surface Elevation: 1332.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Vertec
Cone Operator: Kehoe Testing & Engineering

Project: UHS Inland Valley Reg. Med. Center
Location: 36485 Inland Valley Dr., Wildomar, CA



Calculation parameters

Soil Sensitivity factor, N_S: 7.00

User defined estimation data

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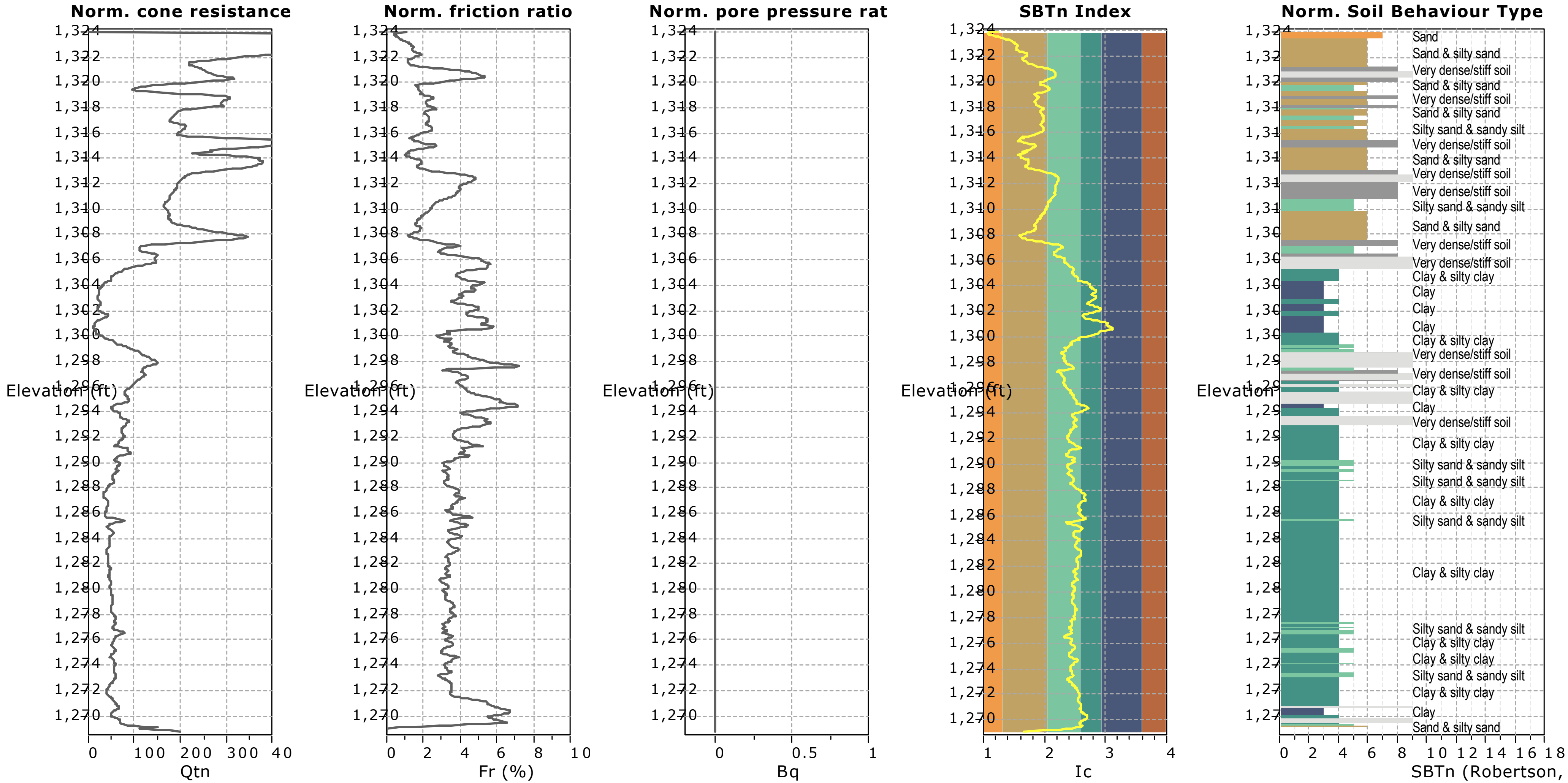
San Diego, CA 92123
858-292-7575

CPT: CPT-7
Total depth: 55.25 ft, Date: 8/9/2019
Surface Elevation: 1324.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Vertec
Cone Operator: Kehoe Testing & Engineering

Project: **UHS Inland Valley Reg. Med. Center**
Location: **36485 Inland Valley Dr., Wildomar, CA**



SBTn legend

- 1. Sensitive fine grained
- 2. Organic material
- 3. Clay to silty clay
- 4. Clayey silt to silty clay
- 5. Silty sand to sandy silt
- 6. Clean sand to silty sand
- 7. Gravely sand to sand
- 8. Very stiff sand to clayey sand
- 9. Very stiff fine grained

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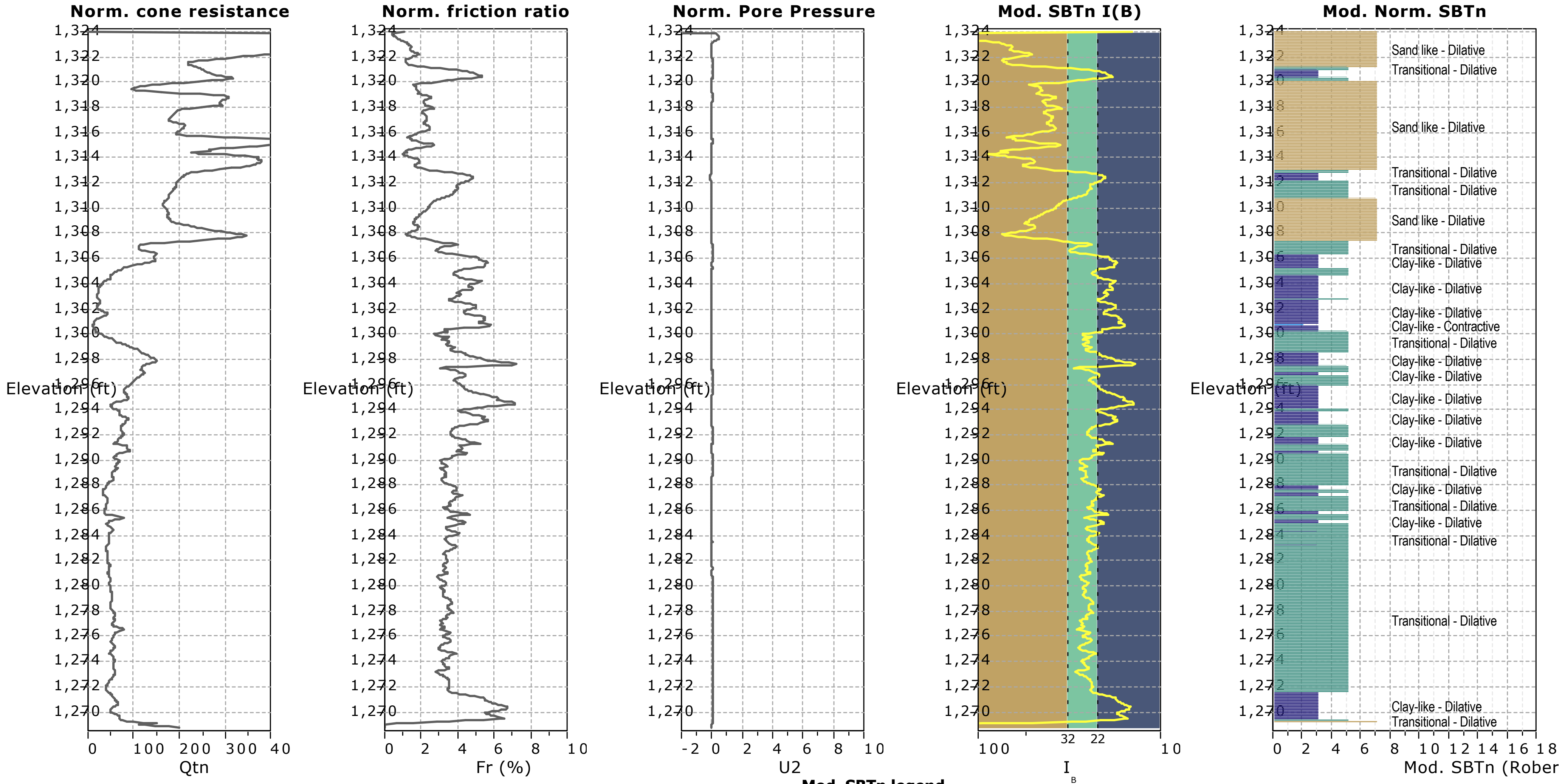
Project: UHS Inland Valley Reg. Med. Center
Location: 36485 Inland Valley Dr., Wildomar, CA

CPT: CPT-7
Total depth: 55.25 ft, Date: 8/9/2019
Surface Elevation: 1324.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Vertec
Cone Operator: Kehoe Testing & Engineering



Mod. SBTn legend

1. CCS: ClayLike - Contractive, Sensitive
2. CC: Clay-like - Contractive
3. CD: Clay-Like: Dilative
4. TC: Transitional - Contractive
5. TD: Transitional - Dilative
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CPT: CPT-7
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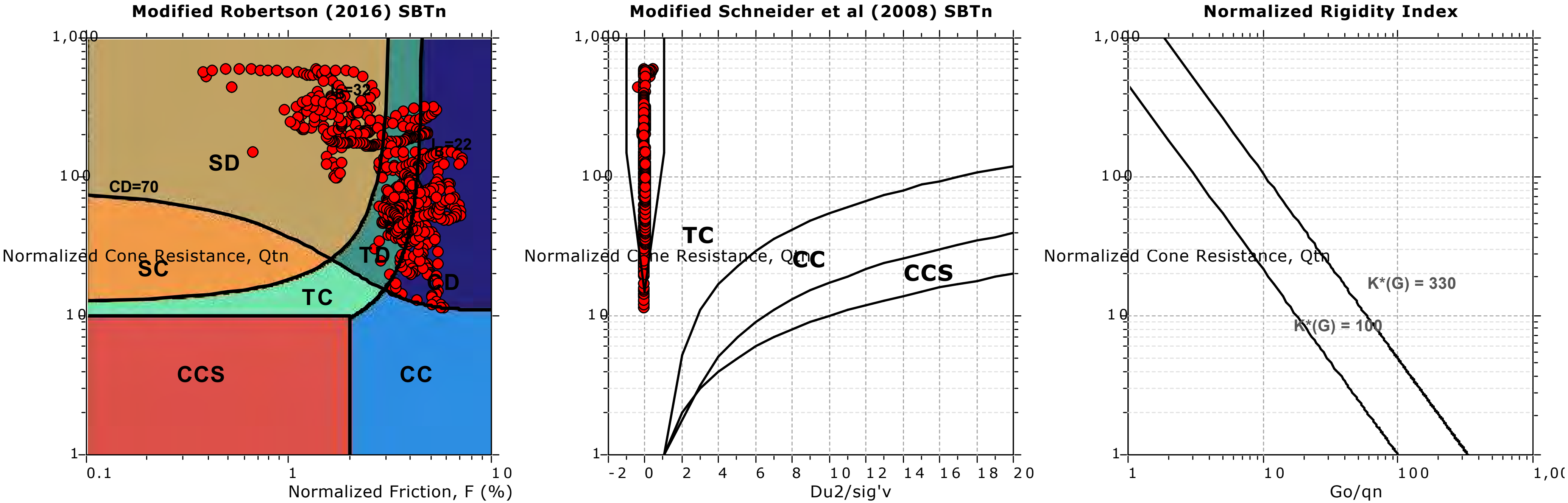
Cone Type: Vertec
Cone Operator: Kehoe Testing & Engineering

Project: UHS Inland Valley Reg. Med. Center
Location: 36485 Inland Valley Dr., Wildomar, CA

Updated SBTn plots



CCS: Clay-like - Contractive - Sensitive
CC: Clay-like - Contractive
CD: Clay-like - Dilative
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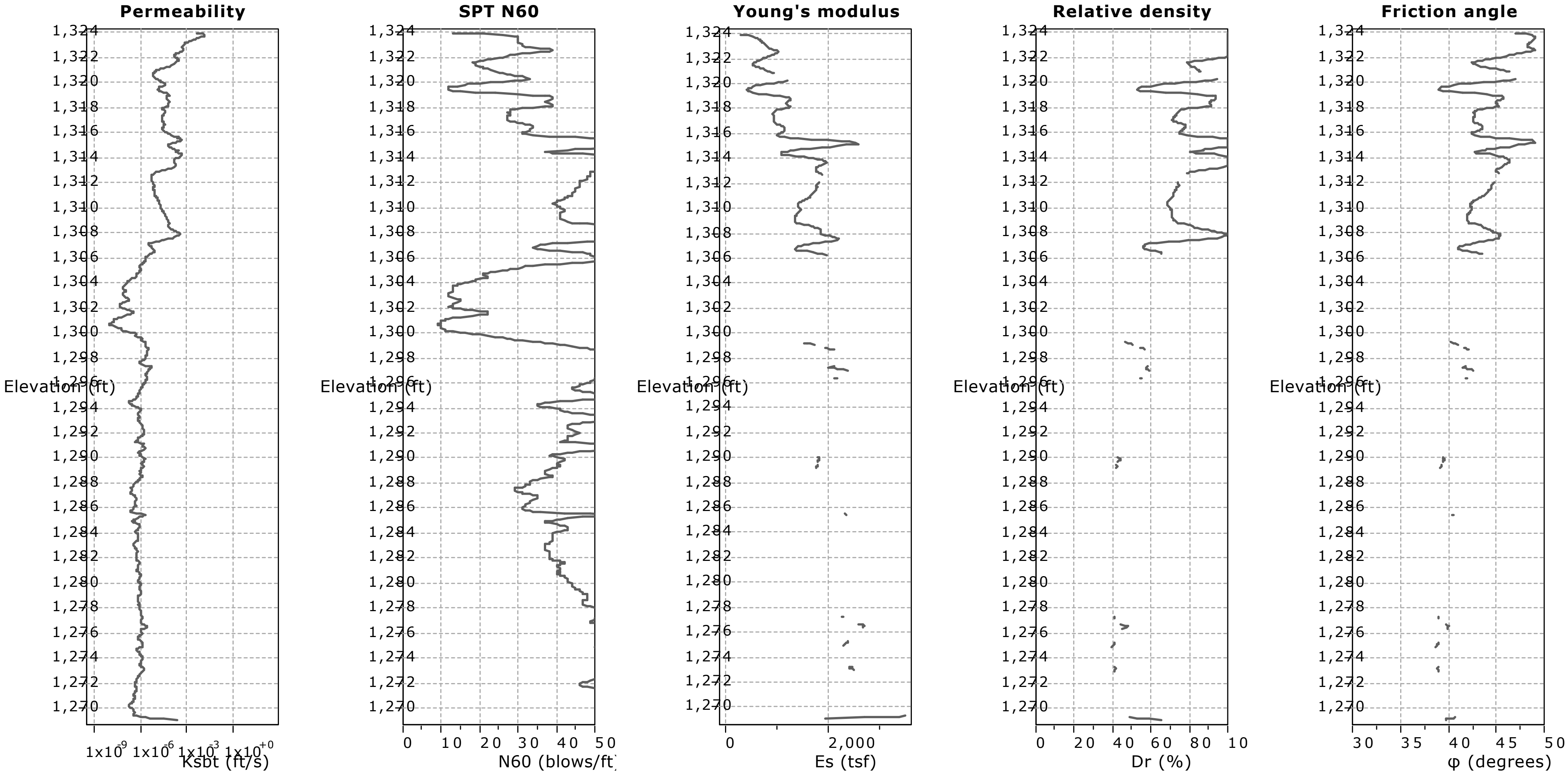

Calculation parameters
Permeability: Based on SBT_n
SPT N_{60}: Based on I_c and q_t
Young's modulus: Based on variable alpha using I_c (Robertson, 2009)
Relative density constant, C_{Dr}: 350.0
Phi: Based on Kulhawy & Mayne (1990)
User defined estimation data

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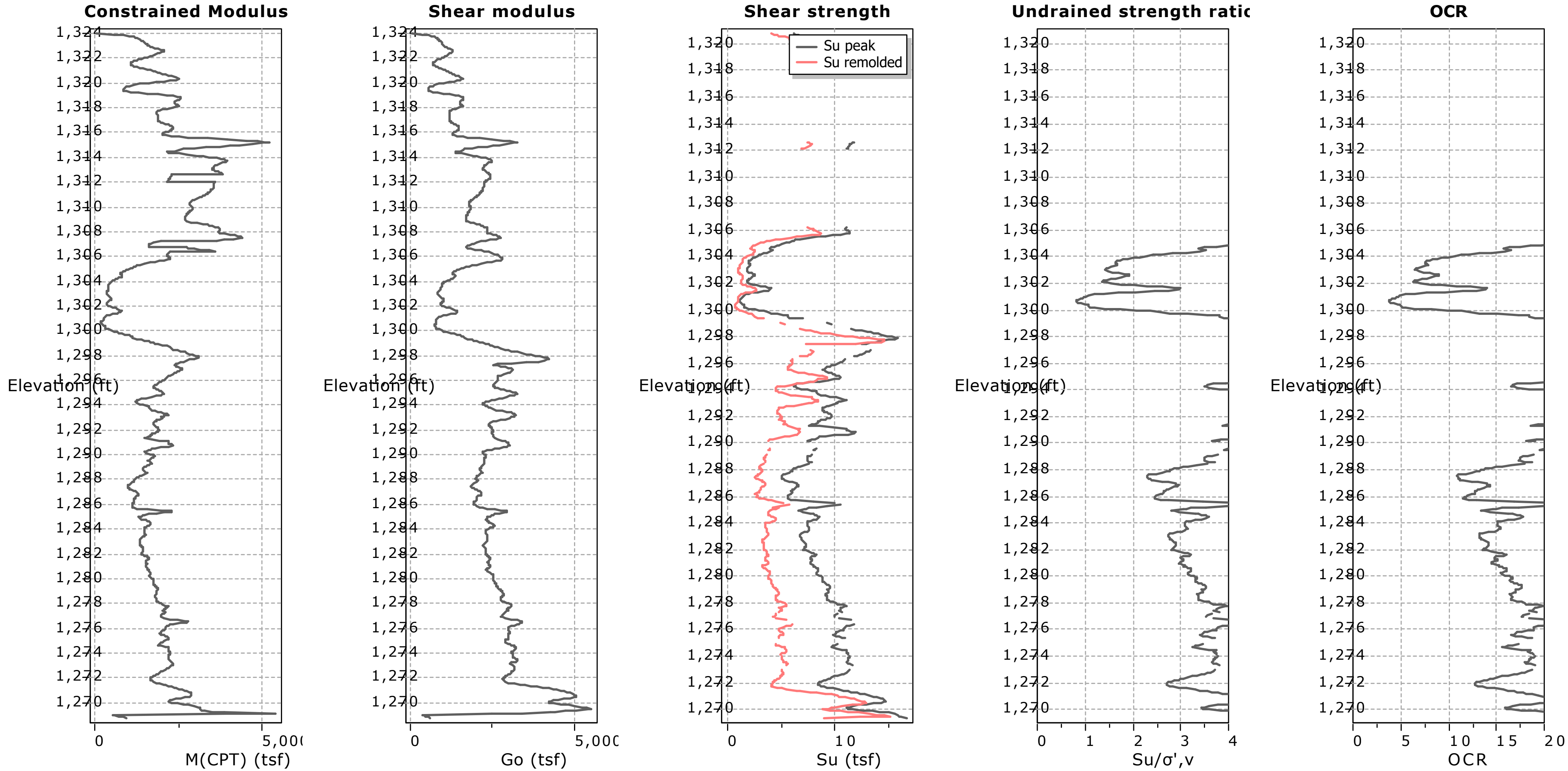

Calculation parameters
Constrained modulus: Based on variable alpha using I_c and Q_{tn} (Robertson, 2009)
Go: Based on variable alpha using I_c (Robertson, 2009)
Undrained shear strength cone factor for clays, N_{kt}: 14

OCR factor for clays, N_{kt}: 0.33
User defined estimation data
Flat Dilatometer Test data

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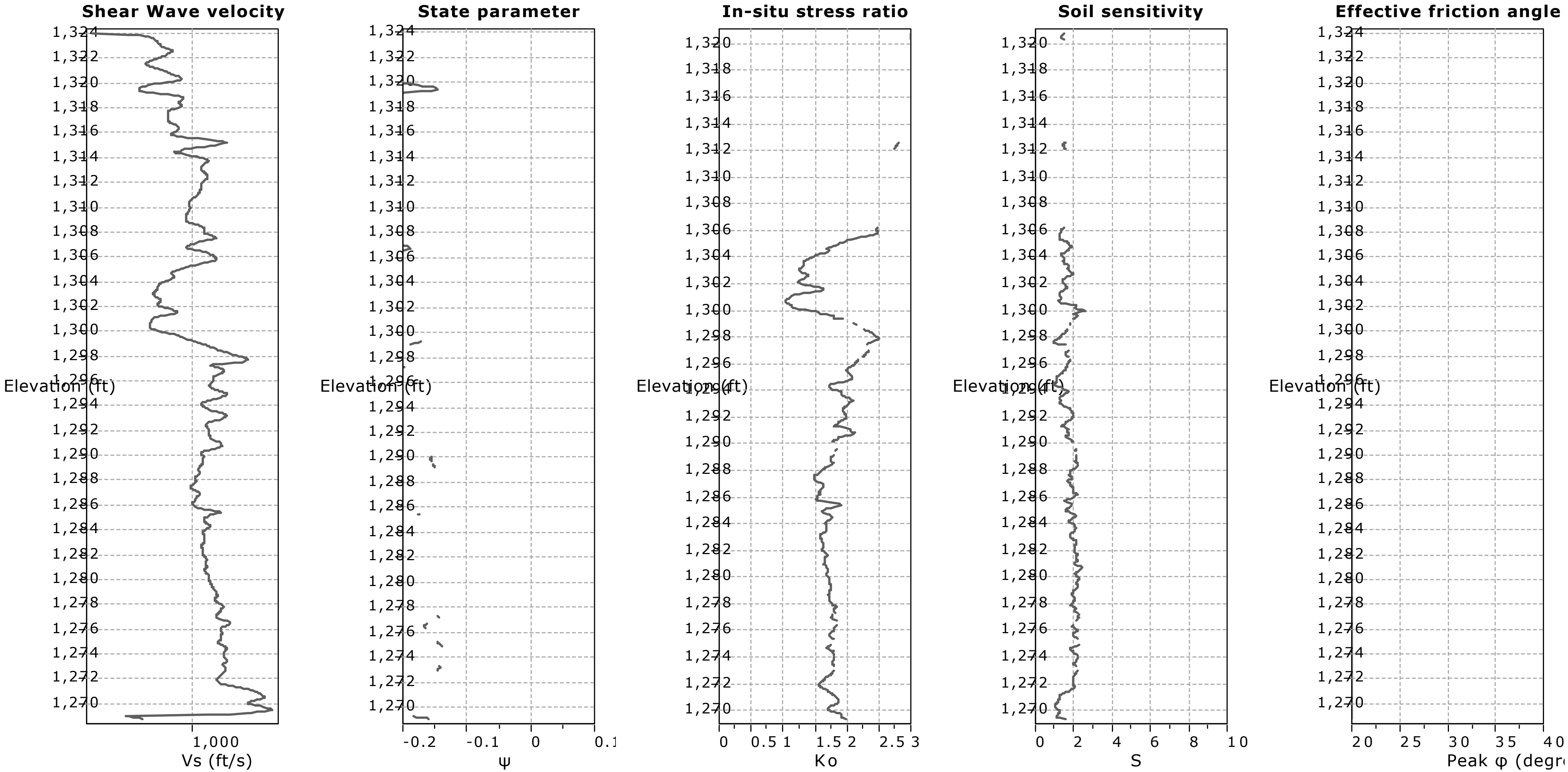


Calculation parameters

Soil Sensitivity factor, N_S: 7.00
User defined estimation data

Presented below is a list of formulas used for the estimation of various soil properties. The formulas are presented in SI unit system and assume that all components are expressed in the same units.

:: Unit Weight, g (kN/m³) ::

$$g = g_w \cdot \left(0.27 \cdot \log(R_f) + 0.36 \cdot \log(\frac{q_t}{p_a}) + 1.236\right)$$

where g_w = water unit weight

:: Permeability, k (m/s) ::

$I_c < 3.27$ and $I_c > 1.00$ then $k = 10^{0.952-3.04 \cdot I_c}$

$I_c \leq 4.00$ and $I_c > 3.27$ then $k = 10^{-4.52-1.37 \cdot I_c}$

:: N_{SPT} (blows per 30 cm) ::

$$N_{60} = \left(\frac{q_c}{P_a}\right) \cdot \frac{1}{10^{1.1268-0.2817 \cdot I_c}}$$

$$N_{1(60)} = Q_{tn} \cdot \frac{1}{10^{1.1268-0.2817 \cdot I_c}}$$

:: Young's Modulus, Es (MPa) ::

$$(q_t - \sigma_v) \cdot 0.015 \cdot 10^{0.55 \cdot I_c + 1.68}$$

(applicable only to $I_c < I_{c\_cutoff}$)

:: Relative Density, Dr (%) ::

$$100 \cdot \sqrt{\frac{Q_{tn}}{k_{DR}}}$$

(applicable only to SBT_n: 5, 6, 7 and 8 or $I_c < I_{c\_cutoff}$)

:: State Parameter, ψ ::

$$\psi = 0.56 - 0.33 \cdot \log(Q_{tn,cs})$$

:: Peak drained friction angle, φ (°) ::

$$\varphi = 17.60 + 11 \cdot \log(Q_{tn})$$

(applicable only to SBT_n: 5, 6, 7 and 8)

:: 1-D constrained modulus, M (MPa) ::

If $I_c > 2.20$

$a = 14$ for $Q_{tn} > 14$

$a = Q_{tn}$ for $Q_{tn} \leq 14$

$M_{CPT} = a \cdot (q_t - \sigma_v)$

If $I_c \leq 2.20$

$M_{CPT} = (q_t - \sigma_v) \cdot 0.0188 \cdot 10^{0.55 \cdot I_c + 1.68}$

:: Small strain shear Modulus, Go (MPa) ::

$$G_0 = (q_t - \sigma_v) \cdot 0.0188 \cdot 10^{0.55 \cdot I_c + 1.68}$$

:: Shear Wave Velocity, Vs (m/s) ::

$$V_s = \left(\frac{G_0}{\rho}\right)^{0.50}$$

:: Undrained peak shear strength, Su (kPa) ::

$N_{kt} = 10.50 + 7 \cdot \log(F_r)$ or user defined

$$S_u = \frac{(q_t - \sigma_v)}{N_{kt}}$$

(applicable only to SBT_n: 1, 2, 3, 4 and 9 or $I_c > I_{c\_cutoff}$)

:: Remolded undrained shear strength, Su(rem) (kPa) ::

$S_{u(rem)} = f_s$ (applicable only to SBT_n: 1, 2, 3, 4 and 9 or $I_c > I_{c\_cutoff}$)

:: Overconsolidation Ratio, OCR ::

$$k_{OCR} = \left[\frac{Q_{tn}^{0.20}}{0.25 \cdot (10.50 \cdot + 7 \cdot \log(F_r))}\right]^{1.25}$$ or user defined

$$OCR = k_{OCR} \cdot Q_{tn}$$

(applicable only to SBT_n: 1, 2, 3, 4 and 9 or $I_c > I_{c\_cutoff}$)

:: In situ Stress Ratio, Ko ::

$$K_O = (1 - \sin\varphi') \cdot OCR^{\sin\varphi'}$$

(applicable only to SBT_n: 1, 2, 3, 4 and 9 or $I_c > I_{c\_cutoff}$)

:: Soil Sensitivity, S_t ::

$$S_t = \frac{N_S}{F_r}$$

(applicable only to SBT_n: 1, 2, 3, 4 and 9 or $I_c > I_{c\_cutoff}$)

:: Effective Stress Friction Angle, φ<sun>' (°) ::

$$\varphi' = 29.5° \cdot B_q^{0.121} \cdot (0.256 + 0.336 \cdot B_q + \log Q_t)$$

(applicable for $0.10 < B_q < 1.00$)

References

• Robertson, P.K., Cabal K.L., Guide to Cone Penetration Testing for Geotechnical Engineering, Gregg Drilling & Testing, Inc., 5th Edition, November 2012

• Robertson, P.K., Interpretation of Cone Penetration Tests - a unified approach., Can. Geotech. J. 46(11): 1337–1355 (2009)

Appendix 4: Historical Site Conditions

Phase I Environmental Site Assessment

N/A

Appendix 5: LID Infeasibility

LID Technical Infeasibility Analysis

Infiltration Feasibility

Downstream Impacts (SMR WQMP Section 2.3.3.a)		
Does the project site…	**YES**	**NO**
…have any DMAS where infiltration would negatively impact downstream water rights or other Beneficial uses?		X
If Yes, list affected DMAs:		
Groundwater Protection (SMR WQMP Section 2.3.3.b)		
Does the project site…	**YES**	**NO**
…have any DMAs with industrial, and other land uses that pose a high threat to water quality, which cannot be treated by Bioretention BMPs? Or have DMAs with active industrial process areas?		X
If Yes, list affected DMAs:		
…have any DMAs with a seasonal high groundwater mark shallower than 10 feet?		X
If Yes, list affected DMAs:		
…have any DMAs located within 100 feet of a water supply well?		X
If Yes, list affected DMAs:		
…have any DMAs that would restrict BMP locations to within a 2:1 (horizontal: vertical) influence line extending from any septic leach line?		X
If Yes, list affected DMAs:		
…have any DMAs been evaluated by a licensed Geotechnical Engineer, Hydrogeologist, or Environmental Engineer, who has concluded that the soils do not have adequate physical and chemical characteristics for the protection of groundwater, and has treatment provided by amended media layers in Bioretention BMPs been considered in evaluating this factor?		X
If Yes, list affected DMAs:		
Public Safety and Offsite Improvements (SMR WQMP Section 2.3.3.c)		
Does the project site…	**YES**	**NO**
…have any areas identified by the geotechnical report as posing a public safety risk where infiltration of stormwater could have a negative impact?		X
If Yes, list affected DMAs:		
Infiltration Characteristics for LID BMPs (SMR WQMP Section 2.3.3.d)		
Does the project site…	**YES**	**NO**
…have factored infiltration rates of less than 0.8 inches/hour? (Note: on a case by case basis, the Local Jurisdiction may allow a factor of safety as low as 1.0 to support selection of full infiltration BMPs. Therefore, measured infiltration rates could be as low as 0.8 in/hr to support full infiltration. A higher factor of safety would be required for design in accordance with the LID BMP Design Handbook).	X	
If Yes, list affected DMAs: DMAs A-C		
Cut/Fill Conditions (SMR WQMP Section 2.3.3.e)		
Does the project site…	**YES**	**NO**
…have significant cut and/or fill conditions that would preclude in-situ testing of infiltration rates at the final infiltration surface?		X
If Yes, list affected DMAs:		
Other Site-Specific Factors (SMR WQMP Section 2.3.3.f)		
Does the project site…	**YES**	**NO**
…have DMAs where the geotechnical report discovered other site-specific factors that would preclude effective and safe infiltration?		X
Describe here:		

If you answered "Yes" to any of the questions above for any DMA, Infiltration BMPs that rely solely on infiltration should not be used for those DMAs and you should proceed to the assessment for Biofiltration BMPs.

Refer to Appendix 3 for Soils Information.

Appendix 6: BMP Design Details

BMP Sizing, Design Details, and other Supporting Documentation

Water Quality Calculations Summary
Project: UHS Inland Valley
Date: 5/27/2021

Sub Drainage Area	Total Area	Pervious Area	Impervious Area	Impervious Fraction	Area (ac)	BMP #	Water Quality Volume (cf)	Water Quality Flow Rate (cfs)
A-1	48289	11761	36528	0.78	1.11	A-2	1,628	0.13
A-2	26180	13606	12574	0.53	0.60	Deminimis	549	0.04
A-3	23518	4685	18833	0.82	0.54	Deminimis	856	0.07
B-1	314422	80347	234075	0.77	7.22	B-1	10370	-
B-3a	52656	14162	38494	0.76	1.21	B-3a	1698	-
B-3c	31784	12075	19710	0.66	0.73	B-3c	846	-
B-3d	88003	38598	49405	0.61	2.02	B-3d	2120	-
B-4	12400	9426	2974	0.32	0.28	Deminimis	166	-
B-5	56566	56566	0	0.10	1.30	Self treating	365	0.03
C	11625	3307	8318	0.74	0.27	Self treating	369	0.03
Total	665443	244533	420911		15.28		18967	

Santa Margarita Watershed

BMP Design Volume, V_{BMP}

(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)

Company Name	Kimley Horn and Associates, Inc.	Date	5/27/2021
Designed by	LAC	County/City Case No	
Company Project Number/Name	UHS Inland Valley		
Drainage Area Number/Name	A-1		

Enter the Area Tributary to this Feature $A_T =$ 1.11 acres

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

Site Location: 36485 Inland Valley Dr, Wildomar, CA 92595

Enter the 85th Percentile, 24-hour Rainfall Depth $D_{85} =$ 0.70

Determine the Effective Impervious Fraction

Type of post-development surface cover: Mixed Surface Types

Effective Impervious Fraction $I_f =$ 0.78

Calculate the composite Runoff Coefficient, C for the BMP Tributary Area

Use the following equation based on the WEF/ASCE Method

$C = 0.858I_f^3 - 0.78I_f^2 + 0.774I_f + 0.04$ $C =$ 0.58

Determine Design Storage Volume, V_{BMP}

Calculate V_U, the 85% Unit Storage Volume $V_U = D_{85} \times C$ $V_u =$ 0.40 (in*ac)/ac

Calculate the design storage volume of the BMP, V_{BMP}.

$$V_{BMP}\ (ft^3) = \frac{V_U\ (in\text{-}ac/ac) \times A_T\ (ac) \times 43{,}560\ (ft^2/ac)}{12\ (in/ft)}$$

$V_{BMP} =$ 1,628 ft^3

Notes:

This spreadsheet was modified to account for a post-development surface cover of "Mixed Surface Types" since this drainage area contains both pervious and impervious elements

Santa Margarita Watershed

BMP Design Flow Rate, Q_{BMP}

Company Name	Kimley Horn and Associates, Inc.	Date	9/11/2020
Designed by	LAC	County/City Case No	
Company Project Number/Name	UHS Inland Valley		
Drainage Area Number/Name	A-1		

Enter the Area Tributary to this Feature $A_T =$ 1.11 acres

Determine the Effective Impervious Fraction

Type of post-development surface cover: Mixed Surface Types

Effective Impervious Fraction $I_f =$ 0.78

Calculate the composite Runoff Coefficient, C for the BMP Tributary Area

Use the following equation based on the WEF/ASCE Method

$C = 0.858I_f^3 - 0.78I_f^2 + 0.774I_f + 0.04$ $C =$ 0.58

BMP Design Flow Rate

$Q_{BMP} = C \times I \times A_T$ $Q_{BMP} =$ 0.13 ft^3/s

Notes:

Santa Margarita Watershed

BMP Design Volume, V_{BMP}

(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)

Company Name	Kimley Horn and Associates, Inc.	Date	9/11/2020
Designed by	LAC	County/City Case No	
Company Project Number/Nam	UHS Inland Valley		
Drainage Area Number/Name	A-2		

Enter the Area Tributary to this Feature A_T = 0.60 acres

85^{th} Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

Site Location: 36485 Inland Valley Dr, Wildomar, CA 92595

Enter the 85^{th} Percentile, 24-hour Rainfall Depth D_{85} = 0.70

Determine the Effective Impervious Fraction

Type of post-development surface cover: Mixed Surface Types

Effective Impervious Fraction I_f = 0.53

Calculate the composite Runoff Coefficient, C for the BMP Tributary Area

Use the following equation based on the WEF/ASCE Method

$C = 0.858I_f^3 - 0.78I_f^2 + 0.774I_f + 0.04$ C = 0.36

Determine Design Storage Volume, V_{BMP}

Calculate V_U, the 85% Unit Storage Volume $V_U = D_{85} \times C$ V_u = 0.25 (in*ac)/ac

Calculate the design storage volume of the BMP, V_{BMP}.

$$V_{BMP}\ (ft^3) = \frac{V_U\ (in\text{-}ac/ac) \times A_T\ (ac) \times 43{,}560\ (ft^2/ac)}{12\ (in/ft)}$$

V_{BMP} = 549 ft^3

Notes:
This spreadsheet was modified to account for a post-development surface cover of "Mixed Surface Types" since this drainage area contains both pervious and impervious elements

Santa Margarita Watershed

BMP Design Flow Rate, Q_{BMP}

Company Name	Kimley Horn and Associates, In	Date	9/11/2020
Designed by	LAC	County/City Case No	
Company Project Number/Name	UHS Inland Valley		
Drainage Area Number/Name	A-2		

Enter the Area Tributary to this Feature $A_T =$ 0.60 acres

Determine the Effective Impervious Fraction

Type of post-development surface cover: Mixed Surface Types

Effective Impervious Fraction $I_f =$ 0.53

Calculate the composite Runoff Coefficient, C for the BMP Tributary Area

Use the following equation based on the WEF/ASCE Method

$C = 0.858I_f^3 - 0.78I_f^2 + 0.774I_f + 0.04$ C = 0.36

BMP Design Flow Rate

$Q_{BMP} = C \times I \times A_T$ $Q_{BMP} =$ 0.04 ft^3/s

Notes:

Santa Margarita Watershed

BMP Design Volume, V_{BMP}

(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)

Company Name	Kimley Horn and Associates, Inc.	Date	9/11/2020
Designed by	LAC	County/City Case No	
Company Project Number/Name	UHS Inland Valley		
Drainage Area Number/Name	A-3		

Enter the Area Tributary to this Feature $A_T =$ 0.54 acres

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

Site Location

36485 Inland Valley Dr
Wildomar, CA 92595

Enter the 85th Percentile, 24-hour Rainfall Depth $D_{85} =$ 0.70

Determine the Effective Impervious Fraction

Type of post-development surface cover: Mixed Surface Types

Effective Impervious Fraction $I_f =$ 0.82

Calculate the composite Runoff Coefficient, C for the BMP Tributary Area

Use the following equation based on the WEF/ASCE Method

$C = 0.858I_f^3 - 0.78I_f^2 + 0.774I_f + 0.04$ $C =$ 0.62

Determine Design Storage Volume, V_{BMP}

Calculate V_U, the 85% Unit Storage Volume $V_U = D_{85} \times C$ $V_u =$ 0.44 (in*ac)/ac

Calculate the design storage volume of the BMP, V_{BMP}.

$$V_{BMP}\,(ft^3) = \frac{V_U\,(in\text{-}ac/ac) \times A_T\,(ac) \times 43{,}560\,(ft^2/ac)}{12\,(in/ft)}$$

$V_{BMP} =$ 856 ft^3

Notes:

This spreadsheet was modified to account for a post-development surface cover of "Mixed Surface Types" since this drainage area contains both pervious and impervious elements

Santa Margarita Watershed

BMP Design Flow Rate, Q_{BMP}

Company Name	Kimley Horn and Associates, In	Date	9/11/2020
Designed by	LAC	County/City Case No	
Company Project Number/Name	UHS Inland Valley		
Drainage Area Number/Name	A-3		

Enter the Area Tributary to this Feature $A_T =$ 0.54 acres

Determine the Effective Impervious Fraction

Type of post-development surface cover: Mixed Surface Types

Effective Impervious Fraction $I_f =$ 0.82

Calculate the composite Runoff Coefficient, C for the BMP Tributary Area

Use the following equation based on the WEF/ASCE Method

$C = 0.858I_f^3 - 0.78I_f^2 + 0.774I_f + 0.04$ $C =$ 0.62

BMP Design Flow Rate

$Q_{BMP} = C \times I \times A_T$ $Q_{BMP} =$ 0.07 ft^3/s

Notes:

Santa Margarita Watershed

BMP Design Volume, V_{BMP}

(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)

Company Name	Kimley Horn and Associates, Inc.	Date	9/11/2020
Designed by	LAC	County/City Case No	
Company Project Number/Name	UHS Inland Valley		
Drainage Area Number/Name	B-1		

Enter the Area Tributary to this Feature A_T = 7.22 acres

85^{th} Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

Site Location: 36485 Inland Valley Dr, Wildomar, CA 92595

Enter the 85^{th} Percentile, 24-hour Rainfall Depth D_{85} = 0.70

Determine the Effective Impervious Fraction

Type of post-development surface cover: Mixed Surface Types

Effective Impervious Fraction I_f = 0.77

Calculate the composite Runoff Coefficient, C for the BMP Tributary Area

Use the following equation based on the WEF/ASCE Method

$C = 0.858I_f^3 - 0.78I_f^2 + 0.774I_f + 0.04$ C = 0.57

Determine Design Storage Volume, V_{BMP}

Calculate V_U, the 85% Unit Storage Volume $V_U = D_{85} \times C$ V_u = 0.40 (in*ac)/ac

Calculate the design storage volume of the BMP, V_{BMP}.

$$V_{BMP}\ (ft^3) = \frac{V_U\ (in\text{-}ac/ac) \times A_T\ (ac) \times 43{,}560\ (ft^2/ac)}{12\ (in/ft)}$$

V_{BMP} = 10,370 ft^3

Notes:

This spreadsheet was modified to account for a post-development surface cover of "Mixed Surface Types" since this drainage area contains both pervious and impervious elements

Biofiltration with No Infiltration Facility - Design Procedure	BMP ID	Legend:	Required Entries
	B-2		Calculated Cells

Company Name:	Kimley-Horn	Date:	9/11/2020
Designed by:	LAC	County/City Case No.:	

Design Volume

Enter the area tributary to this feature — A_T= 7.22 acres

Enter V_{BMP} determined from Section 2.1 of this Handbook — V_{BMP}= 10,370 ft^3

Estimated footprint of BMP, $Area_{BMP}$ (available space or 3% imp. area) — $Area_{BMP}$= 13,205 ft^2

Note: This area shall be measured at the mid-ponding depth of the BMP. For systems with side-slopes, this should be the contour that is midway between the floor of the basin and the maximum water quality ponding elevation of the basin. The underlying gravel layer for drain pipes should extend to this contour. For systems with vertical walls, the effective area is the full footprint.

Biofiltration with No Infiltration Facility Surface Area

Depth of Surface Ponding Layer (6" minimum, 12" maximum) — d_P = 6.0 inches

Depth of Engineered Soil Media (24" to 36"; 18" if vertically constrained) — d_S = 24.0 inches

Design Media Filtration Rate (2.5 in/hr) — I_{design} = 2.5 in/hr

Allowable Routing Period, $T_{routing}$ (5 hrs) — $T_{routing}$ = 5.0 hr

Effective Biofiltration Depth, d_{E_bio}

d_{E_bio} (ft) = (d_P + (0.3 x d_S) + (I_{design} * $T_{routing}$)) (ft) — d_{E_bio} = 2.1 ft

Effective Static Depth, $d_{E\_bio\_static}$

$d_{E\_bio\_static}$ = (d_P + (0.3 * d_S)) (ft) — $d_{E\_bio\_static}$ = 1.1 ft

$V_{biofiltered} = d_{E\_bio} * Area_{BMP}$ — $V_{biofiltered}$ = 28280.7 ft^3

$V_{biofiltered\_static} = d_{E\_bio\_static} * Area_{BMP}$ — $V_{biofiltered\_static}$ = 14525.5 ft^3

Sizing Option 1 Result

Criteria 1: $V_{biofiltered\ (with\ routing)} \geq 150\%$ of V_{BMP} — Results: PASS

Sizing Option 2 Result

Criteria 2: $V_{biofiltered\_static} \geq 0.75 \times V_{BMP}$ — Results: PASS

Note

If neither of these criteria are met increase the footprint and rerun calculations. This calculation is inherently iterative.

Biofiltration with No Retention Facility Properties

Side Slopes in Partial Retention with Biofiltration Facility	z =	4	:1
Diameter of Underdrain		6	inches
Longitudinal Slope of Site (3% maximum)		3	%
Check Dam Spacing		10	feet
Describe Vegetation:			

Notes:

Santa Margarita Watershed

BMP Design Volume, V_{BMP}

(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)

Company Name	Kimley Horn and Associates, Inc.	Date	12/16/2020
Designed by	LAC	County/City Case No	
Company Project Number/Name	UHS Inland Valley		
Drainage Area Number/Name	B-3a		

Enter the Area Tributary to this Feature $A_T =$ 1.21 acres

85^{th} Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

Site Location: 36485 Inland Valley Dr, Wildomar, CA 92595

Enter the 85^{th} Percentile, 24-hour Rainfall Depth $D_{85} =$ 0.70

Determine the Effective Impervious Fraction

Type of post-development surface cover: Mixed Surface Types

Effective Impervious Fraction $I_f =$ 0.76

Calculate the composite Runoff Coefficient, C for the BMP Tributary Area

Use the following equation based on the WEF/ASCE Method

$C = 0.858I_f^3 - 0.78I_f^2 + 0.774I_f + 0.04$ $C =$ 0.55

Determine Design Storage Volume, V_{BMP}

Calculate V_U, the 85% Unit Storage Volume $V_U = D_{85} \times C$ $V_u =$ 0.39 (in*ac)/ac

Calculate the design storage volume of the BMP, V_{BMP}.

$$V_{BMP}\ (ft^3) = \frac{V_U\ (in\text{-}ac/ac) \times A_T\ (ac) \times 43{,}560\ (ft^2/ac)}{12\ (in/ft)}$$

$V_{BMP} =$ 1,698 ft^3

Notes:

This spreadsheet was modified to account for a post-development surface cover of "Mixed Surface Types" since this drainage area contains both pervious and impervious elements

Biofiltration with No Infiltration Facility - Design Procedure	BMP ID	Legend:	Required Entries	
	B-3a		Calculated Cells	

Company Name:	Kimley-Horn	Date:	12/16/2020
Designed by:	LAC	County/City Case No.:	

Design Volume

Enter the area tributary to this feature	$A_T=$	1.21	acres
Enter V_{BMP} determined from Section 2.1 of this Handbook	$V_{BMP}=$	1,698	ft^3
Estimated footprint of BMP, $Area_{BMP}$ (available space or 3% imp. area)	$Area_{BMP}=$	1,346	ft^2

Note: This area shall be measured at the mid-ponding depth of the BMP. For systems with side-slopes, this should be the contour that is midway between the floor of the basin and the maximum water quality ponding elevation of the basin. The underlying gravel layer for drain pipes should extend to this contour. For systems with vertical walls, the effective area is the full footprint.

Biofiltration with No Infiltration Facility Surface Area

Depth of Surface Ponding Layer (6" minimum, 12" maximum)	$d_P =$	6.0	inches
Depth of Engineered Soil Media (24" to 36"; 18" if vertically constrained)	$d_S =$	24.0	inches
Design Media Filtration Rate (2.5 in/hr)	$I_{design} =$	2.5	in/hr
Allowable Routing Period, $T_{routing}$ (5 hrs)	$T_{routing} =$	5.0	hr

Effective Biofiltration Depth, d_{E_bio}

d_{E_bio} (ft) = (d_P + (0.3 x d_S) + (I_{design} * $T_{routing}$)) (ft) — $d_{E\_bio} =$ 2.1 ft

Effective Static Depth, $d_{E\_bio\_static}$

$d_{E\_bio\_static}$ = (d_P + (0.3 * d_S)) (ft) — $d_{E\_bio\_static} =$ 1.1 ft

$V_{biofiltered} = d_{E\_bio} * Area_{BMP}$ — $V_{biofiltered} =$ 2882.0 ft^3

$V_{biofiltered\_static} = d_{E\_bio\_static} * Area_{BMP}$ — $V_{biofiltered\_static} =$ 1480.2 ft^3

Sizing Option 1 Result

Criteria 1: $V_{biofiltered\ (with\ routing)} \geq$ 150% of V_{BMP} — Results: PASS

Sizing Option 2 Result

Criteria 2: $V_{biofiltered\_static} \geq 0.75 \times V_{BMP}$ — Results: PASS

Note

If neither of these criteria are met increase the footprint and rerun calculations. This calculation is inherently iterative.

Biofiltration with No Retention Facility Properties

Side Slopes in Partial Retention with Biofiltration Facility	z =	4	:1
Diameter of Underdrain		6	inches
Longitudinal Slope of Site (3% maximum)		3	%
Check Dam Spacing		10	feet
Describe Vegetation:			

Notes:

Santa Margarita Watershed

BMP Design Volume, V_{BMP}

(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)

Company Name	Kimley Horn and Associates, Inc.	Date	12/16/2020
Designed by	LAC	County/City Case No	
Company Project Number/Name	UHS Inland Valley		
Drainage Area Number/Name	B-3c		

Enter the Area Tributary to this Feature $A_T =$ 0.73 acres

85^{th} Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

Site Location

36485 Inland Valley Dr
Wildomar, CA 92595

Enter the 85^{th} Percentile, 24-hour Rainfall Depth $D_{85} =$ 0.70

Determine the Effective Impervious Fraction

Type of post-development surface cover: Mixed Surface Types

Effective Impervious Fraction $I_f =$ 0.66

Calculate the composite Runoff Coefficient, C for the BMP Tributary Area

Use the following equation based on the WEF/ASCE Method

$C = 0.858I_f^3 - 0.78I_f^2 + 0.774I_f + 0.04$ $C =$ 0.46

Determine Design Storage Volume, V_{BMP}

Calculate V_U, the 85% Unit Storage Volume $V_U = D_{85} \times C$ $V_u =$ 0.32 (in*ac)/ac

Calculate the design storage volume of the BMP, V_{BMP}.

$$V_{BMP}\ (ft^3) = \frac{V_U\ (in\text{-}ac/ac) \times A_T\ (ac) \times 43{,}560\ (ft^2/ac)}{12\ (in/ft)}$$

$V_{BMP} =$ 846 ft^3

Notes:
This spreadsheet was modified to account for a post-development surface cover of "Mixed Surface Types" since this drainage area contains both pervious and impervious elements

Biofiltration with No Infiltration Facility - Design Procedure	BMP ID	Legend:	Required Entries
	B-3c		Calculated Cells

Company Name:	Kimley-Horn	Date:	12/16/2020
Designed by:	LAC	County/City Case No.:	

Design Volume

Enter the area tributary to this feature	A_T=	0.73	acres
Enter V_{BMP} determined from Section 2.1 of this Handbook	V_{BMP}=	846	ft^3
Estimated footprint of BMP, $Area_{BMP}$ (available space or 3% imp. area)	$Area_{BMP}$=	1,345	ft^2

Note: This area shall be measured at the mid-ponding depth of the BMP. For systems with side-slopes, this should be the contour that is midway between the floor of the basin and the maximum water quality ponding elevation of the basin. The underlying gravel layer for drain pipes should extend to this contour. For systems with vertical walls, the effective area is the full footprint.

Biofiltration with No Infiltration Facility Surface Area

Depth of Surface Ponding Layer (6" minimum, 12" maximum)	d_P =	6.0	inches
Depth of Engineered Soil Media (24" to 36"; 18" if vertically constrained)	d_S =	24.0	inches
Design Media Filtration Rate (2.5 in/hr)	I_{design} =	2.5	in/hr
Allowable Routing Period, $T_{routing}$ (5 hrs)	$T_{routing}$ =	5.0	hr

Effective Biofiltration Depth, d_{E_bio}

d_{E_bio} (ft) = (d_P + (0.3 x d_S) + (I_{design} * $T_{routing}$)) (ft) — d_{E_bio} = 2.1 ft

Effective Static Depth, $d_{E\_bio\_static}$

$d_{E\_bio\_static}$ = (d_P + (0.3 * d_S)) (ft) — $d_{E\_bio\_static}$ = 1.1 ft

$V_{biofiltered} = d_{E\_bio} * Area_{BMP}$ — $V_{biofiltered}$ = 2880.5 ft^3

$V_{biofiltered\_static} = d_{E\_bio\_static} * Area_{BMP}$ — $V_{biofiltered\_static}$ = 1479.5 ft^3

Sizing Option 1 Result

Criteria 1: $V_{biofiltered\ (with\ routing)} \geq 150\%$ of V_{BMP} — Results: PASS

Sizing Option 2 Result

Criteria 2: $V_{biofiltered\_static} \geq 0.75 \times V_{BMP}$ — Results: PASS

Note

If neither of these criteria are met increase the footprint and rerun calculations. This calculation is inherently iterative.

Biofiltration with No Retention Facility Properties

Side Slopes in Partial Retention with Biofiltration Facility	z =	4	:1
Diameter of Underdrain		6	inches
Longitudinal Slope of Site (3% maximum)		3	%
Check Dam Spacing		10	feet
Describe Vegetation:			

Notes:

Santa Margarita Watershed

BMP Design Volume, V_{BMP}

(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)

Company Name	Kimley Horn and Associates, Inc.	Date	5/27/2021
Designed by	LAC	County/City Case No	
Company Project Number/Name	UHS Inland Valley		
Drainage Area Number/Name	B-3d		

Enter the Area Tributary to this Feature A_T = 2.02 acres

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

Site Location: 36485 Inland Valley Dr, Wildomar, CA 92595

Enter the 85th Percentile, 24-hour Rainfall Depth D_{85} = 0.70

Determine the Effective Impervious Fraction

Type of post-development surface cover: Mixed Surface Types

Effective Impervious Fraction I_f = 0.61

Calculate the composite Runoff Coefficient, C for the BMP Tributary Area

Use the following equation based on the WEF/ASCE Method

$C = 0.858I_f^3 - 0.78I_f^2 + 0.774I_f + 0.04$ C = 0.41

Determine Design Storage Volume, V_{BMP}

Calculate V_U, the 85% Unit Storage Volume $V_U = D_{85} \times C$ V_u = 0.29 (in*ac)/ac

Calculate the design storage volume of the BMP, V_{BMP}.

$$V_{BMP}\ (ft^3) = \frac{V_U\ (in\text{-}ac/ac) \times A_T\ (ac) \times 43{,}560\ (ft^2/ac)}{12\ (in/ft)}$$

V_{BMP} = 2,120 ft^3

Notes:
This spreadsheet was modified to account for a post-development surface cover of "Mixed Surface Types" since this drainage area contains both pervious and impervious elements

Biofiltration with No Infiltration Facility - Design Procedure	BMP ID	Legend:	Required Entries	
	B-3d		Calculated Cells	

Company Name:	Kimley-Horn	Date:	5/27/2021
Designed by:	LAC	County/City Case No.:	

Design Volume

Enter the area tributary to this feature	A_T=	2.02	acres
Enter V_{BMP} determined from Section 2.1 of this Handbook	V_{BMP}=	2,120	ft^3
Estimated footprint of BMP, $Area_{BMP}$ (available space or 3% imp. area)	$Area_{BMP}$=	1,500	ft^2

Note: This area shall be measured at the mid-ponding depth of the BMP. For systems with side-slopes, this should be the contour that is midway between the floor of the basin and the maximum water quality ponding elevation of the basin. The underlying gravel layer for drain pipes should extend to this contour. For systems with vertical walls, the effective area is the full footprint.

Biofiltration with No Infiltration Facility Surface Area

Depth of Surface Ponding Layer (6" minimum, 12" maximum)	d_P =	6.0	inches
Depth of Engineered Soil Media (24" to 36"; 18" if vertically constrained)	d_S =	24.0	inches
Design Media Filtration Rate (2.5 in/hr)	I_{design} =	2.5	in/hr
Allowable Routing Period, $T_{routing}$ (5 hrs)	$T_{routing}$ =	5.0	hr

Effective Biofiltration Depth, d_{E_bio}

d_{E_bio} (ft) = (d_P + (0.3 x d_S) + (I_{design} * $T_{routing}$)) (ft) — d_{E_bio} = 2.1 ft

Effective Static Depth, $d_{E\_bio\_static}$

$d_{E\_bio\_static}$ = (d_P + (0.3 * d_S)) (ft) — $d_{E\_bio\_static}$ = 1.1 ft

$V_{biofiltered}$ = d_{E_bio} * $Area_{BMP}$ — $V_{biofiltered}$ = 3212.5 ft^3

$V_{biofiltered\_static}$ = $d_{E\_bio\_static}$ * $Area_{BMP}$ — $V_{biofiltered\_static}$ = 1650.0 ft^3

Sizing Option 1 Result

Criteria 1: $V_{biofiltered\ (with\ routing)} \geq$ 150% of V_{BMP} — Results: PASS

Sizing Option 2 Result

Criteria 2: $V_{biofiltered\_static} \geq 0.75 \times V_{BMP}$ — Results: PASS

Note

If neither of these criteria are met increase the footprint and rerun calculations. This calculation is inherently iterative.

Biofiltration with No Retention Facility Properties

Side Slopes in Partial Retention with Biofiltration Facility	z =	4	:1
Diameter of Underdrain		6	inches
Longitudinal Slope of Site (3% maximum)		3	%
Check Dam Spacing		10	feet
Describe Vegetation:			

Notes:

Santa Margarita Watershed

BMP Design Volume, V_{BMP}

(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)

Company Name	Kimley Horn and Associates, Inc.	Date	12/16/2020
Designed by	LAC	County/City Case No	
Company Project Number/Name	UHS Inland Valley		
Drainage Area Number/Name	B-4		

Enter the Area Tributary to this Feature $A_T =$ 0.28 acres

85^{th} Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

Site Location: 36485 Inland Valley Dr, Wildomar, CA 92595

Enter the 85^{th} Percentile, 24-hour Rainfall Depth $D_{85} =$ 0.70

Determine the Effective Impervious Fraction

Type of post-development surface cover: Mixed Surface Types

Effective Impervious Fraction $I_f =$ 0.32

Calculate the composite Runoff Coefficient, C for the BMP Tributary Area

Use the following equation based on the WEF/ASCE Method

$C = 0.858I_f^3 - 0.78I_f^2 + 0.774I_f + 0.04$ $C =$ 0.23

Determine Design Storage Volume, V_{BMP}

Calculate V_U, the 85% Unit Storage Volume $V_U = D_{85} \times C$ $V_u =$ 0.16 (in*ac)/ac

Calculate the design storage volume of the BMP, V_{BMP}.

$$V_{BMP}\ (ft^3) = \frac{V_U\ (in\text{-}ac/ac) \times A_T\ (ac) \times 43{,}560\ (ft^2/ac)}{12\ (in/ft)}$$

$V_{BMP} =$ 166 ft^3

Notes:
This spreadsheet was modified to account for a post-development surface cover of "Mixed Surface Types" since this drainage area contains both pervious and impervious elements

Santa Margarita Watershed

BMP Design Flow Rate, Q_{BMP}

Company Name	Kimley Horn and Associates, In	Date	12/16/2020
Designed by	LAC	County/City Case No	
Company Project Number/Name	UHS Inland Valley		
Drainage Area Number/Name	B-4		

Enter the Area Tributary to this Feature $A_T =$ 0.28 acres

Determine the Effective Impervious Fraction

Type of post-development surface cover: Mixed Surface Types

Effective Impervious Fraction $I_f =$ 0.32

Calculate the composite Runoff Coefficient, C for the BMP Tributary Area

Use the following equation based on the WEF/ASCE Method

$C = 0.858I_f^3 - 0.78I_f^2 + 0.774I_f + 0.04$

C = 0.23

BMP Design Flow Rate

$Q_{BMP} = C \times I \times A_T$

$Q_{BMP} =$ 0.01 ft^3/s

Notes:

Santa Margarita Watershed

BMP Design Volume, V_{BMP}

(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)

Company Name	Kimley Horn and Associates, Inc.	Date	12/16/2020
Designed by	LAC	County/City Case No	
Company Project Number/Name	UHS Inland Valley		
Drainage Area Number/Name	B-5		

Enter the Area Tributary to this Feature $A_T =$ 1.30 acres

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

Site Location: 36485 Inland Valley Dr, Wildomar, CA 92595

Enter the 85th Percentile, 24-hour Rainfall Depth $D_{85} =$ 0.70

Determine the Effective Impervious Fraction

Type of post-development surface cover: Mixed Surface Types

Effective Impervious Fraction $I_f =$ 0.10

Calculate the composite Runoff Coefficient, C for the BMP Tributary Area

Use the following equation based on the WEF/ASCE Method

$C = 0.858I_f^3 - 0.78I_f^2 + 0.774I_f + 0.04$ $C =$ 0.11

Determine Design Storage Volume, V_{BMP}

Calculate V_U, the 85% Unit Storage Volume $V_U = D_{85} \times C$ $V_u =$ 0.08 (in*ac)/ac

Calculate the design storage volume of the BMP, V_{BMP}.

$$V_{BMP}\,(ft^3) = \frac{V_U\,(\text{in-ac/ac}) \times A_T\,(\text{ac}) \times 43{,}560\,(ft^2/\text{ac})}{12\,(\text{in/ft})}$$

$V_{BMP} =$ 365 ft^3

Notes:
This spreadsheet was modified to account for a post-development surface cover of "Mixed Surface Types" since this drainage area contains both pervious and impervious elements

Santa Margarita Watershed

BMP Design Flow Rate, Q_{BMP}

Company Name	Kimley Horn and Associates	Date	12/16/2020
Designed by	LAC	County/City Case No	
Company Project Number/Name	UHS Inland Valley		
Drainage Area Number/Name	B-5		

Enter the Area Tributary to this Feature $A_T =$ 1.30 acres

Determine the Effective Impervious Fraction

Type of post-development surface cover: Mixed Surface Types

Effective Impervious Fraction $I_f =$ 0.10

Calculate the composite Runoff Coefficient, C for the BMP Tributary Area

Use the following equation based on the WEF/ASCE Method

$C = 0.858I_f^3 - 0.78I_f^2 + 0.774I_f + 0.04$ $C =$ 0.11

BMP Design Flow Rate

$Q_{BMP} = C \times I \times A_T$ $Q_{BMP} =$ 0.03 ft^3/s

Notes:

Santa Margarita Watershed

BMP Design Volume, V_{BMP}

(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)

Company Name	Kimley Horn and Associates, Inc.	Date	9/11/2020
Designed by	LAC	County/City Case No	
Company Project Number/Name	UHS Inland Valley		
Drainage Area Number/Name	C		

Enter the Area Tributary to this Feature $A_T =$ 0.27 acres

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

Site Location: 36485 Inland Valley Dr, Wildomar, CA 92595

Enter the 85th Percentile, 24-hour Rainfall Depth $D_{85} =$ 0.70

Determine the Effective Impervious Fraction

Type of post-development surface cover: Mixed Surface Types

Effective Impervious Fraction $I_f =$ 0.74

Calculate the composite Runoff Coefficient, C for the BMP Tributary Area

Use the following equation based on the WEF/ASCE Method

$C = 0.858I_f^3 - 0.78I_f^2 + 0.774I_f + 0.04$ $C =$ 0.54

Determine Design Storage Volume, V_{BMP}

Calculate V_U, the 85% Unit Storage Volume $V_U = D_{85} \times C$ $V_u =$ 0.38 (in*ac)/ac

Calculate the design storage volume of the BMP, V_{BMP}.

$$V_{BMP}\,(ft^3) = \frac{V_U\,(in\text{-}ac/ac) \times A_T\,(ac) \times 43{,}560\,(ft^2/ac)}{12\,(in/ft)}$$

$V_{BMP} =$ 369 ft^3

Notes:

This spreadsheet was modified to account for a post-development surface cover of "Mixed Surface Types" since this drainage area contains both pervious and impervious elements

Santa Margarita Watershed

BMP Design Flow Rate, Q_{BMP}

Company Name Kimley Horn and Associates, In — Date 9/11/2020

Designed by LAC — County/City Case No

Company Project Number/Name UHS Inland Valley

Drainage Area Number/Name C

Enter the Area Tributary to this Feature $A_T =$ 0.27 acres

Determine the Effective Impervious Fraction

Type of post-development surface cover: Mixed Surface Types

Effective Impervious Fraction $I_f =$ 0.74

Calculate the composite Runoff Coefficient, C for the BMP Tributary Area

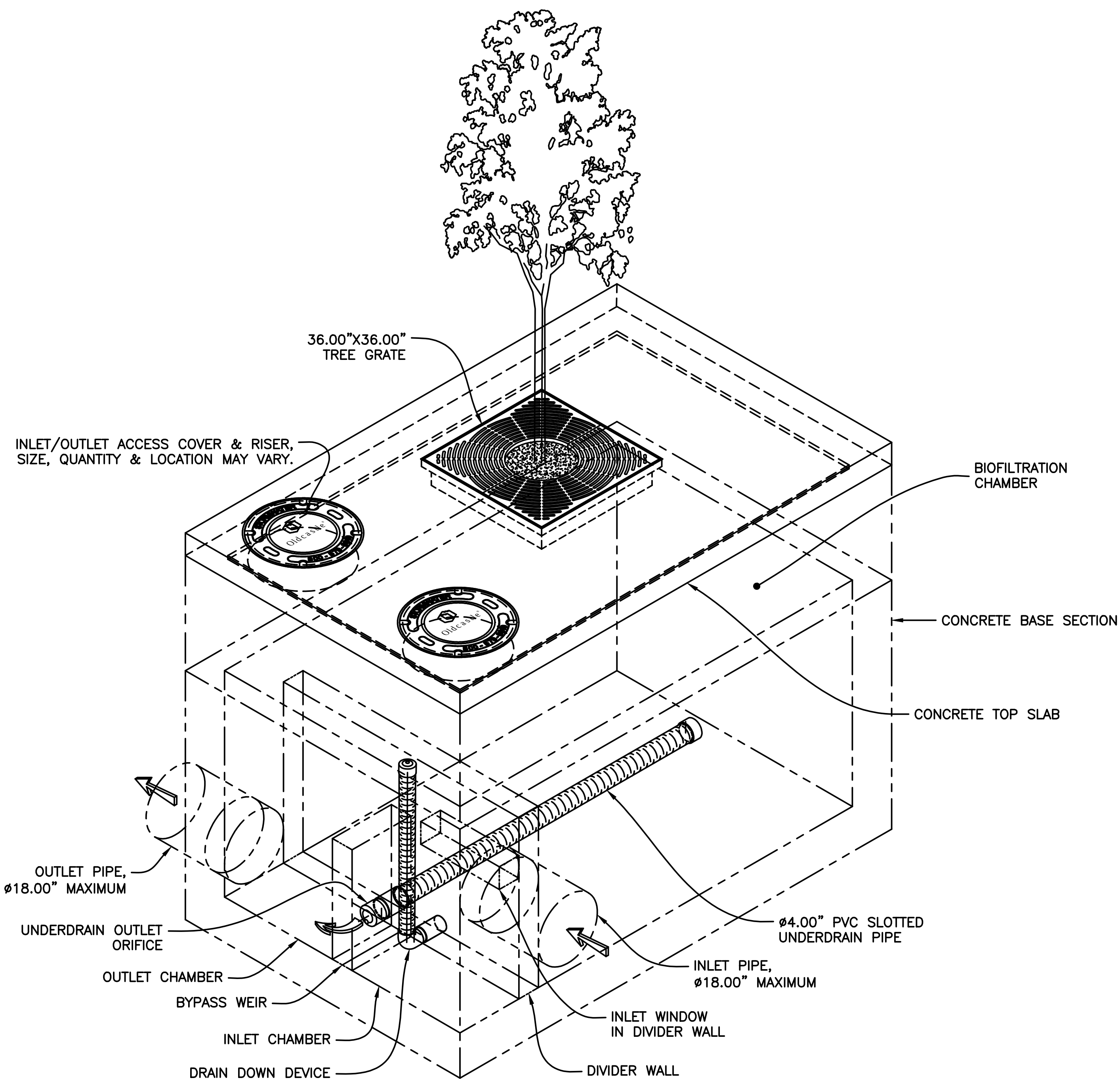
Use the following equation based on the WEF/ASCE Method

$C = 0.858I_f^3 - 0.78I_f^2 + 0.774I_f + 0.04$ $C =$ 0.54

BMP Design Flow Rate

$Q_{BMP} = C \times I \times A_T$ $Q_{BMP} =$ 0.03 ft^3/s

Notes:



ISOMETRIC VIEW

FILTER MEDIA & DRAIN ROCK NOT SHOWN FOR CLARITY.

SCALE: 1X

NOTES:

1. LEFT CONFIGURATION SHOWN, MIRROR RIGHT CONFIGURATION OF INLET AND OUTLET CHAMBER AVAILABLE.
2. CONTACT OLDCASTLE INFRASTRUCTURE FOR ENGINEERING ASSISTANCE AND DETAIL DRAWINGS.
3. CONCRETE COMPONENTS SHALL BE MANUFACTURED IN ACCORDANCE WITH ASTM C890 & C913.

US Patents Pending

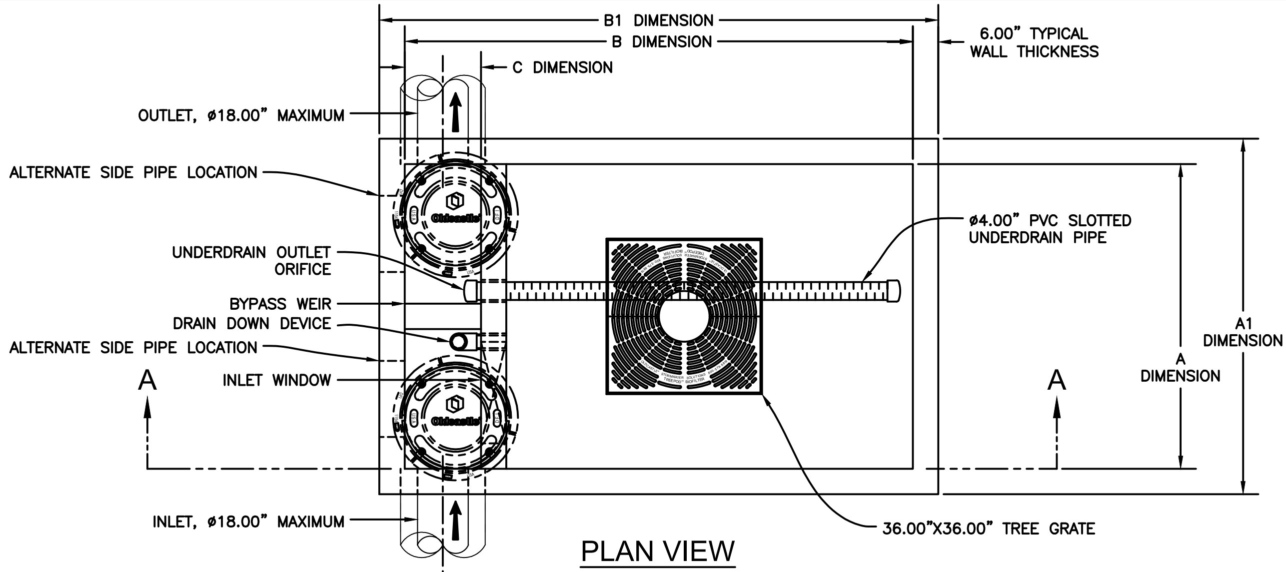
Bioretention/
Biofiltration

BioPod™ Biofilter Tree

Vault with Internal
Bypass & Piped Inlet

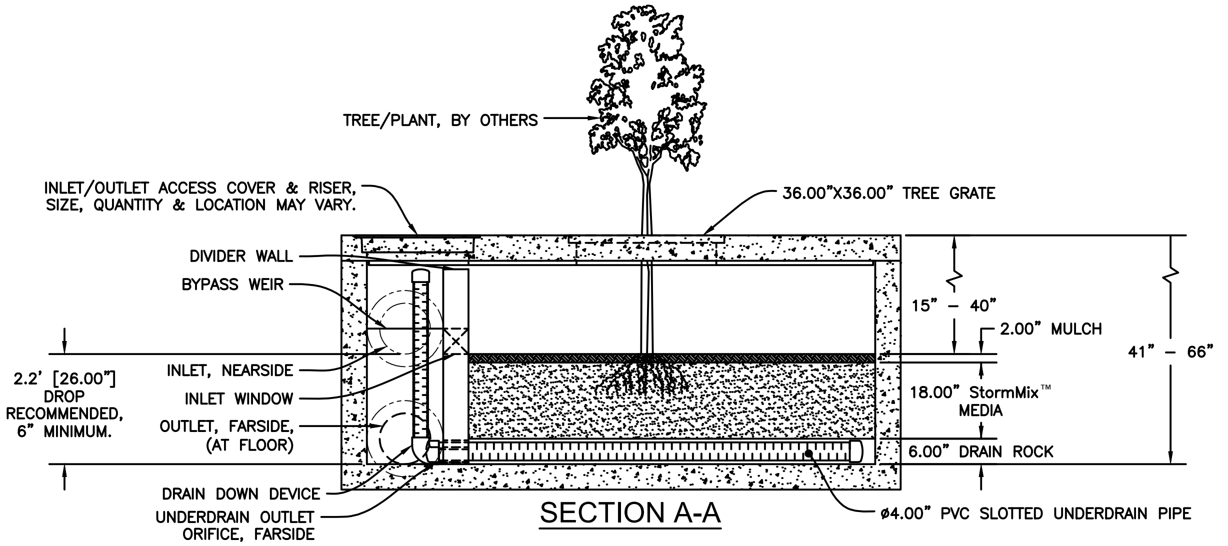
Oldcastle Infrastructure™
A CRH COMPANY

DRAWING NO.	REV	ECO	DATE	
BPT-IB-PI-SoCal	NR	ECO-0171 TJR 3/30/20	PPS 3/30/20	SHEET 1 OF 2



PLAN VIEW

TOP SLAB NOT SHOWN IN THIS VIEW FOR CLARITY, ACCESS COVERS SHOWN IN PHANTOM.



SECTION A-A

MODEL	VAULT SIZE [1] (ID)			VAULT FOOTPRINT [1] (OD)		TREATMENT FLOW CAPACITY (GPM/CFS)	
	A DIM	B DIM	C DIM	A1 DIM	B1 DIM	1.6 GPM/SF (WA GULD[2])	1.8 GPM/SF (NJCAT[3])
BPT-46IB	4'	6'	1.5'	5'	7'	25.6 / 0.057	28.8 / 0.064
BPT-48IB	4'	8'	1.5'	5'	9'	38.4 / 0.086	43.2 / 0.096
BPT-412IB	4'	12'	1.5'	5'	13'	64.0 / 0.143	72.0 / 0.160
BPT-66IB	6'	6'	1.5'	7'	7'	38.4 / 0.086	43.2 / 0.096
BPT-68IB	6'	8'	1.5'	7'	9'	57.6 / 0.128	64.8 / 0.144
BPT-612IB	6'	12'	2'	7'	13'	91.2 / 0.203	102.6 / 0.229
BPT-88IB	8'	8'	2'	9'	9'	76.8 / 0.171	86.4 / 0.193
BPT-812IB	8'	12'	2'	9'	13'	121.6 / 0.271	136.8 / 0.305
BPT-816IB	8'	16'	2'	9'	17'	172.8 / 0.385	194.4 / 0.433

SITE SPECIFIC DATA				
Structure ID				
Model Size				
Orientation (Left or Right)				
Treatment Flow Rate (cfs)				
Peak Flow Rate (cfs)				
Rim Elevation				
Pipe Data	Pipe Location (Front or Side)	Pipe Size	Pipe Type	Invert Elevation
Inlet				
Outlet				
Notes:				

[1] All Dimensions are nominal, ID=Inside Dimension, OD=Outside Dimension.
[2] Treartment flow capacity at 1.6 gpm/sf media surface area based on an WA Ecology GULD Approval for Basic, Enhanced & Phosphorus.
[3] Treatment flow capacity at 1.8 gpm/sf media surface area based on an NJCAT Verification & NJ DEP Certification.

US Patents Pending

BioPod™ Biofilter Tree

Vault with Internal Bypass & Piped Inlet

Bioretention/ Biofiltration

Oldcastle Infrastructure™
A CRH COMPANY

DRAWING NO.	REV	ECO	DATE	
BPT-IB-PI-SoCal	NR	ECO–0171 TJR 3/30/20	PPS 3/30/20	SHEET 2 OF 2

STORMCAPTURE®

Design Summary

PROJECT INFORMATION

PROJECT NAME: UHS Inland Valley A-1

PROJECT CITY: Wildomar

PROJECT STATE: CA

COMPANY: Kimley-Horn

SITE TYPE: Commercial

SYSTEM DESIGN

System Type:
| Retention

Module Construction Type:
| Base with Top Slab

Storage Volume Required (cf):
| 12180

Configured Storage Volume (cf):
| 12656

System Internal Height (ft):
| 4

Nominal Module Capacity (cf):
| 420

Required Number of Modules:
| 29

Module Designation:
| SC1 0-4

SITE DESIGN

System Invert Elevation (ft):
| 1320.00

Top of Module Elevation (ft):
| 1324.60

Maximum Rim Elevation (ft):
| 1327.54

Depth of Cover (ft):
| 2.94

Minimum Inlet Elevation (ft):
| 1321.50

Maximum Inlet Elevation (ft):
| 1321.50

Minimum Outlet Elevation (ft):
| 1320.00

Maximum Outlet Elevation (ft):
| 1320.00

MODULE NOTES

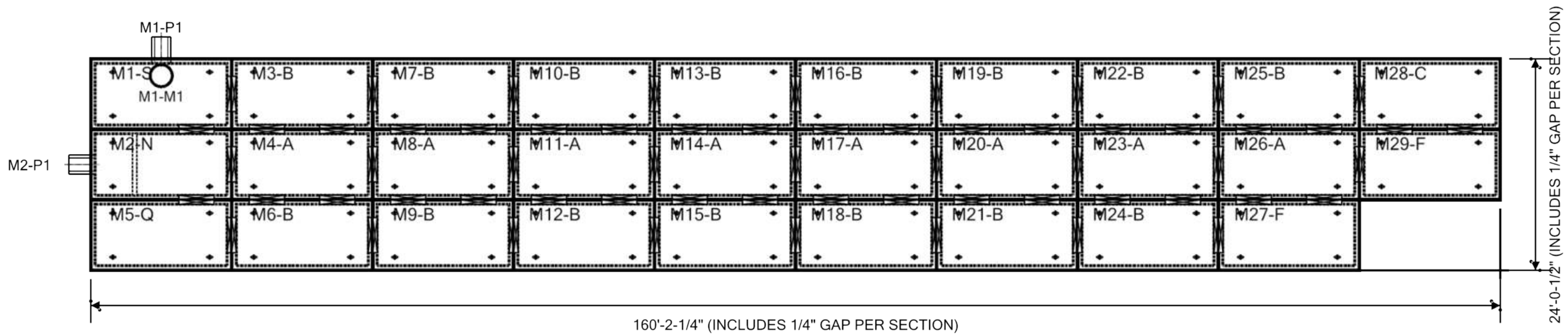
TYPE	QUANTITY	HEIGHT
S	1	5
N	1	5
B	15	5
A	8	5
Q	1	5
F	2	5
C	1	5
TOTAL	29	
VOLUME	12656	CUBIC FEET

PIPE SCHEDULE

PIPE	SIZE	INVERT
M1-P1	18" HDPE	1321.50'
M2-P1	18" HDPE	1320.00'

MANHOLE SCHEDULE

MANHOLE	TYPE	RIM
M1-M1	30" DIA. F&C	1327.54'



PLAN VIEW
SCALE: 1/16" = 1'-0"

DESIGN NOTES:
1. DESIGN LOADINGS:
   A. AASHTO HS-20-44 W/ IMPACT.
   B. DEPTH OF COVER = 6" - 5'-0" (120 PCF ASSUMED).
   C. ASSUMED WATER TABLE = BELOW BOTTOM OF PRECAST.
   D. DRY LATERAL EARTH PRESSURE (EFP) = 45 PCF.
   E. LATERAL LIVE LOAD SURCHARGE = 80 PSF (APPLIED TO 8' BELOW GRADE).
   F. NO LATERAL SURCHARGE FROM ADJACENT BUILDINGS, WALL PIERS, OR FOUNDATIONS.
2. CONCRETE 28 DAY COMPRESSIVE STRENGTH SHALL BE 6,000 PSI.
3. STEEL REINFORCEMENT: REBAR, ASTM A-615 OR A-706, GRADE 60.
4. MESH REINFORCEMENT: ASTM A-1064, S1.2, GRADE 80.
5. CEMENT: ASTM C-150 SPECIFICATION.
6. STORMCAPTURE MODULE TYPE = RETENTION
7. REQUIRED BASE LAYER DEPTH = NOT APPLICABLE.
8. REQUIRED NATIVE ALLOWABLE SOIL BEARING PRESSURE = 2,500 PSF. NATIVE SOIL SHOULD BE LEVEL/SCREEDED AND COMPACTED ADEQUATELY TO ALLOW FOR REQUIRED BEARING CAPACITY.
9. REFERENCE STANDARDS:
   A. ASTM C 890
   B. ASTM C 891
   C. ASTM C 913
10. CONSTRUCTION EQUIPMENT EXCEEDING DESIGN LOADING SHALL NOT BE ALLOWED ON STRUCTURE. ANY DESIGN CONSTRAINT DIFFERENT FROM ABOVE REQUIRES CUSTOM STRUCTURAL DESIGN AND MAY REQUIRE THICKER SUBGRADE AND REVISED PRICING.

NOTES TO REVIEWING ENGINEER:
1. THIS SYSTEM IS DESIGNED TO THE PARAMETERS NOTED. PLEASE VERIFY THAT THESE PARAMETERS MEET PROJECT REQUIREMENTS (I.E. LIVE LOAD AND FILL RANGE). IF DESIGN PARAMETERS ARE INCORRECT NOTIFY OLDCASTLE IMMEDIATELY FOR REDESIGN AND RE-PRICING.
2. ENGINEER OF RECORD TO CONFIRM ALL PIPE PENETRATION LOCATIONS, SIZES, AND INVERTS.
3. ENGINEER OF RECORD TO CONFIRM ALL MANWAY ACCESS LOCATIONS AND RIM ELEVATIONS.
4. UNLESS OTHERWISE NOTED, ALL PIPE SUPPLIED AND INSTALLED BY OTHERS.
5. THIS SYSTEM IS DESIGNED FOR A GROUNDWATER TABLE BELOW SYSTEM INVERT. ENGINEER OF RECORD TO VERIFY THAT THE DESIGN GROUNDWATER TABLE IS BELOW INVERT OF PRECAST. IF DESIGN PARAMETERS ARE INCORRECT NOTIFY OLDCASTLE IMMEDIATELY FOR REDESIGN AND REVISED PRICING.
6. THIS SYSTEM IS DESIGNED WITHOUT A CONTAINMENT MEMBRANE LINER. IF A LINER IS NEEDED PLEASE CONTACT OLDCASTLE TO PROVIDE THIS OPTION IN THE FINAL DESIGN.

- PRELIMINARY –
NOT FOR CONSTRUCTION

Detention/ Infiltration

Oldcastle Infrastructure™ A CRH COMPANY

Ph: 800.579.8819 | www.oldcastleinfrastructure.com/stormwater

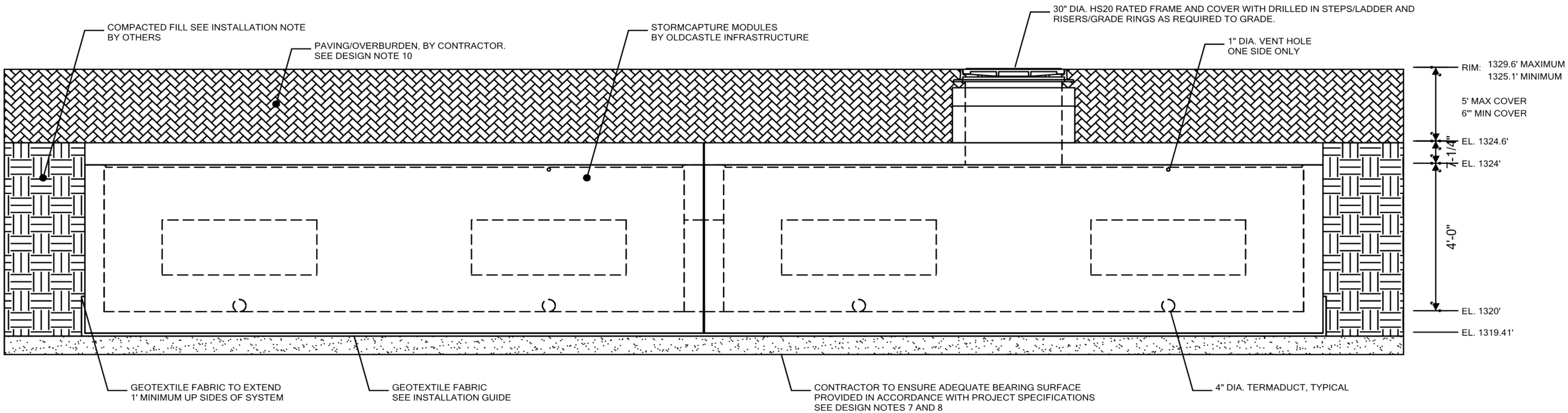
STORMCAPTURE ®

SC1 RETENTION SYSTEM

CUSTOMER:
Kimley-Horn

JOB NAME & LOCATION:
UHS Inland Valley A-1 - Wildomar,CA

DRAWING NUMBER	REVISION	SHEET
WSCDD-1150-0_SC1_RT	- REV DATE 12/11/20	1 OF 2



NOTE:
TERMADUCT INSERTS TO BE KNOCKED OUT
AT SPECIFIED LOCATIONS ONLY (BY OTHERS)

- PRELIMINARY –
NOT FOR CONSTRUCTION

TYPICAL ELEVATION
SCALE: 3/8" = 1'-0"

Oldcastle Infrastructure™
A CRH COMPANY

Ph: 800.579.8819 | www.oldcastleinfrastructure.com/stormwater

STORMCAPTURE ®
SC1 RETENTION SYSTEM

CUSTOMER:
Kimley-Horn

JOB NAME & LOCATION:
UHS Inland Valley A-1 - Wildomar,CA

DRAWING NUMBER	REVISION	SHEET
WSCDD-1150-0_SC1_RT	- REV DATE 12/11/20	2 OF 2

Detention/ Infiltration

STORMCAPTURE®

Installation Manual

Water

Oldcastle Infrastructure™
A CRH COMPANY

INTRODUCTION

SITE PREPARATION

DELIVERY & INSTALLATION

LINKSLABS

BACKFILL

INTRODUCTION

StormCapture (shown in **Figure 1**) is a total storm water management system. The highly-configurable module has many solutions for detention, retention, infiltration, treatment and harvesting. Multiple modules can be arranged into endless formations to meet the needs of even the most challenging sites. The rectangular design facilitates rapid and easy installation, plus stress-free maintenance. The precast concrete provides long-term reliability and low lifecycle costs.

The engineer of record is responsible for reviewing and approving the system design, storage volume, required depth of cover, vehicular loading, water table elevation, backfill material and soil bearing capacity. Any variations found during construction to those stated on the plans must be reported to the engineer and Oldcastle Infrastructure.

This manual is not intended to be all-inclusive and is a reference guide only.

FIGURE 1

Detention System

Single Module

FIGURE 2

StormCapture System During Installation Process

SITE PREPARATION

TIMING

- Excavation and subgrade shall be completed prior to StormCapture delivery.

EXCAVATION (See **Figures 3 & 4**)

- Depth
  Concrete invert: Depth of fill* + Module outside height + 2" subgrade depth
  Open bottom: Depth of fill* + Module outside height + subgrade depth**
  ** 6" minimum, 5' maximum, unless otherwise noted*
  *** Subgrade depth determined in accordance with StormCapture Tech Note SC-01*
- Excavation shall be large enough to allow access around structure for backfilling and compaction equipment.
- Trench sloping shall follow OSHA requirements.
- To prevent excessive water pressure build up on the outside of the modules, the site must be prepared and graded for proper drainage around the StormCapture system.
- Dewatering is required when water level is above bottom of subgrade.

SUBGRADE (See **Figures 3 & 4**)

1 Native soil shall be level and compacted adequately to allow for required bearing capacity on design documents.
2 Add 2" of sand for leveling purposes.
3 Geotextile fabric and containment membrane liner.

- An 8 oz. non-woven geotextile fabric must be used as a separation layer around the StormCapture system.
- When the project requires a containment membrane liner, a layer of 8 oz. non-woven geotextile fabric must be used on both the inside and outside face of the liner.
- Install containment membrane liner per manufacturer's recommendations.

4 Aggregate bearing layer (See **Figure 3**)

- Open-bottom modules only are required to be placed on a crushed aggregate bearing layer to a depth in accordance with StormCapture Tech Note SC-01. Material shall be clean, durable crushed aggregate compacted as directed by the engineer of record. Oldcastle recommends size 5, 56 or 57 (per ASTM C33).
- Extend aggregate bearing layer a minimum of 1' around the system perimeter.
- Aggregate bearing layer must be level and compacted prior to module placement.
- An 8 oz. non-woven geotextile fabric must be used as a separation layer around the aggregate material and StormCapture system.

Note: *Further investigation by a geotechnical engineer may be required where there are concerns with seasonally high water table, and/or poor soil conditions such as low allowable bearing capacity, permafrost and seasonal freeze/thaw cycles.*

FIGURE 3

1-Piece Module - With Liner

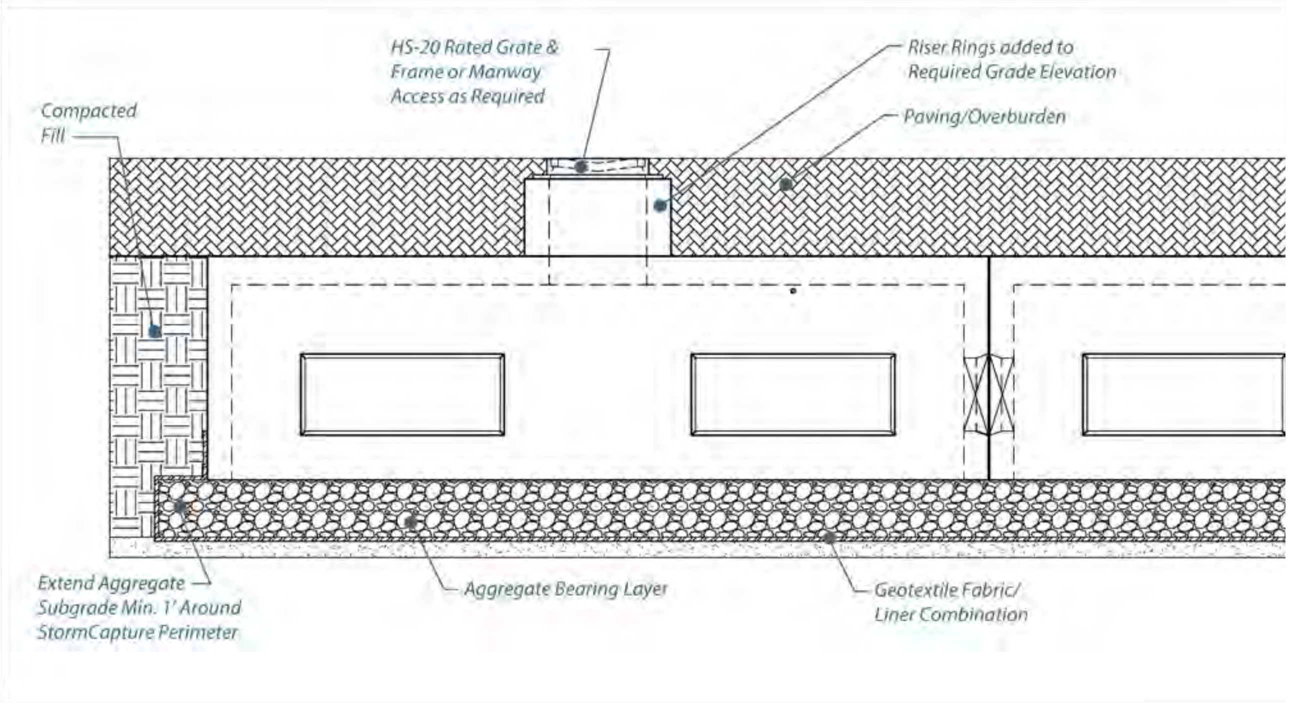
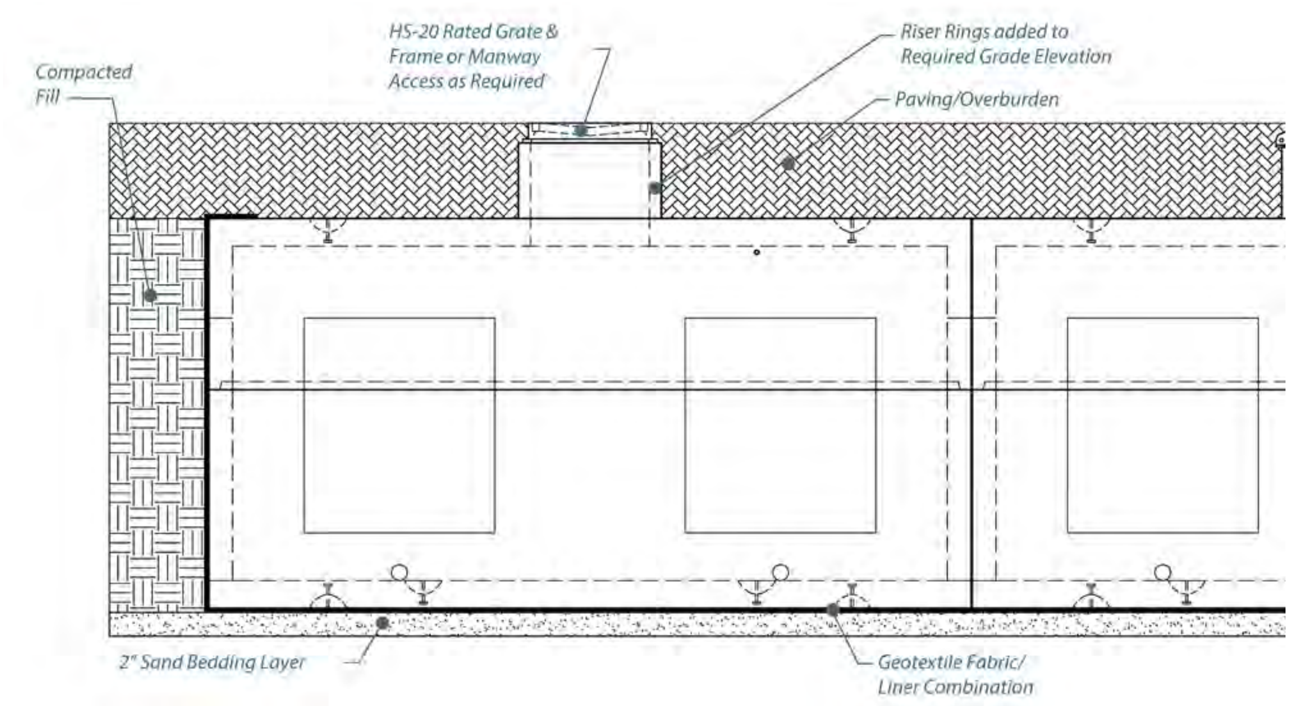


FIGURE 4

2-Piece Module - With Liner



DELIVERY & INSTALLATION

StormCapture modules are to be installed in accordance with ASTM C891-90, Installation of Underground Precast Utility Structures. Project plan and specifications must be followed along with any applicable regulations.

TIMING

- Plan for first delivery of StormCapture modules after site preparation is completed.
- Individual pieces can be installed in as little as 10 minutes.

DELIVERY

- Verify that equipment can handle module weights as noted on construction documents prior to delivery.
- StormCapture modules will be delivered on flatbed trucks.

HANDLING

- StormCapture modules are lifted by the designed embedded lifers at points provided by Oldcastle (**Figure 5**).
- Designed embedded lifters must be used. Use proper rigging to assure all lifters are equally engaged with a minimum 60° angle on slings (**Figure 6**).
- Special lifting clutches are required and shall be coordinated with the producing plant.
- Always follow safety protocols for handling StormCapture modules during installation as illustrated on this page.
- Never stand under load (**Figure 7**).
- Never place hands in the lift gear (**Figure 8**).
- Never place hands under load (**Figure 9**).

PLACEMENT

- Use the plan line, grade and elevations shown on the construction documents to install the modules. The sand bedding or aggregate bearing layer must be level.
- Modules must be placed as close together as possible with gaps no greater than 3/4".
- All vertical & top joints shall be covered with an 8" minimum width self-adhesive joint wrap as shown in **Figure 10**.
- Horizontal joints between modules or slabs shall be sealed with Conseal CS-102 butyl rubber sealant as shown in **Figure 11**.
- Seal pipe penetrations to containment membrane liner with pipe boots per liner manufacturer's recommendations.

FIGURE 5

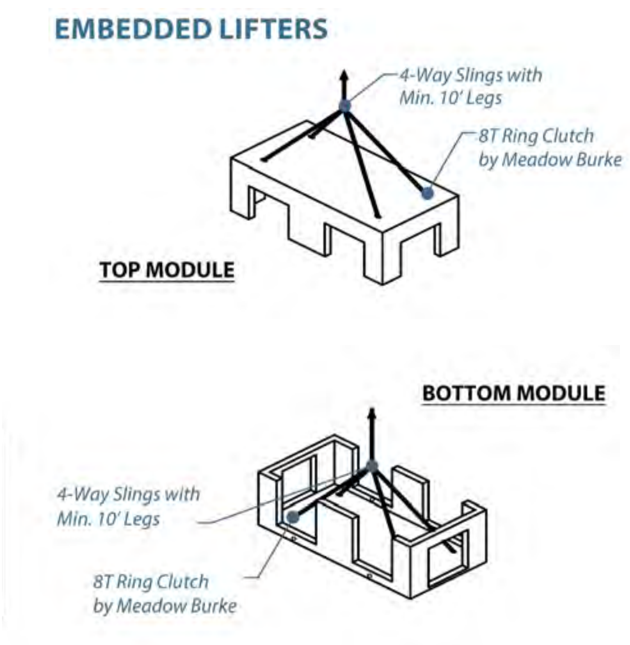


FIGURE 6

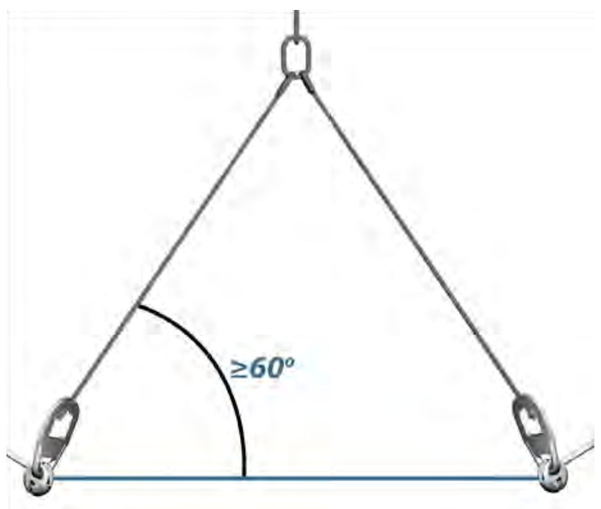


FIGURE 7

FIGURE 8

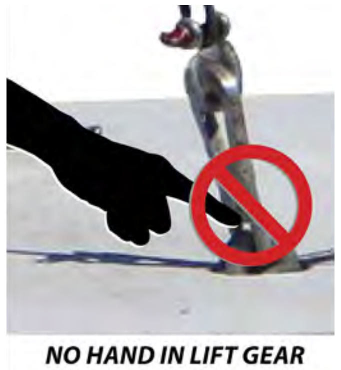


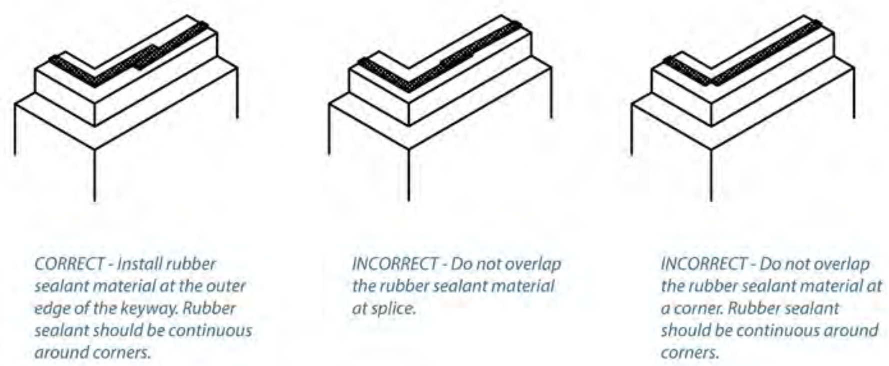
FIGURE 9

FIGURE 10

- Sealed Joints Between Modules

FIGURE 11

Keyways must be free of dirt, rocks and water. Rocks and dirt prevent the vault sections from seating and sealing properly. Remove all protective paper from rubber sealant material. Splice rubber sealant material with a "side by side" joint, away from corners. Corner splicing will not seal properly.

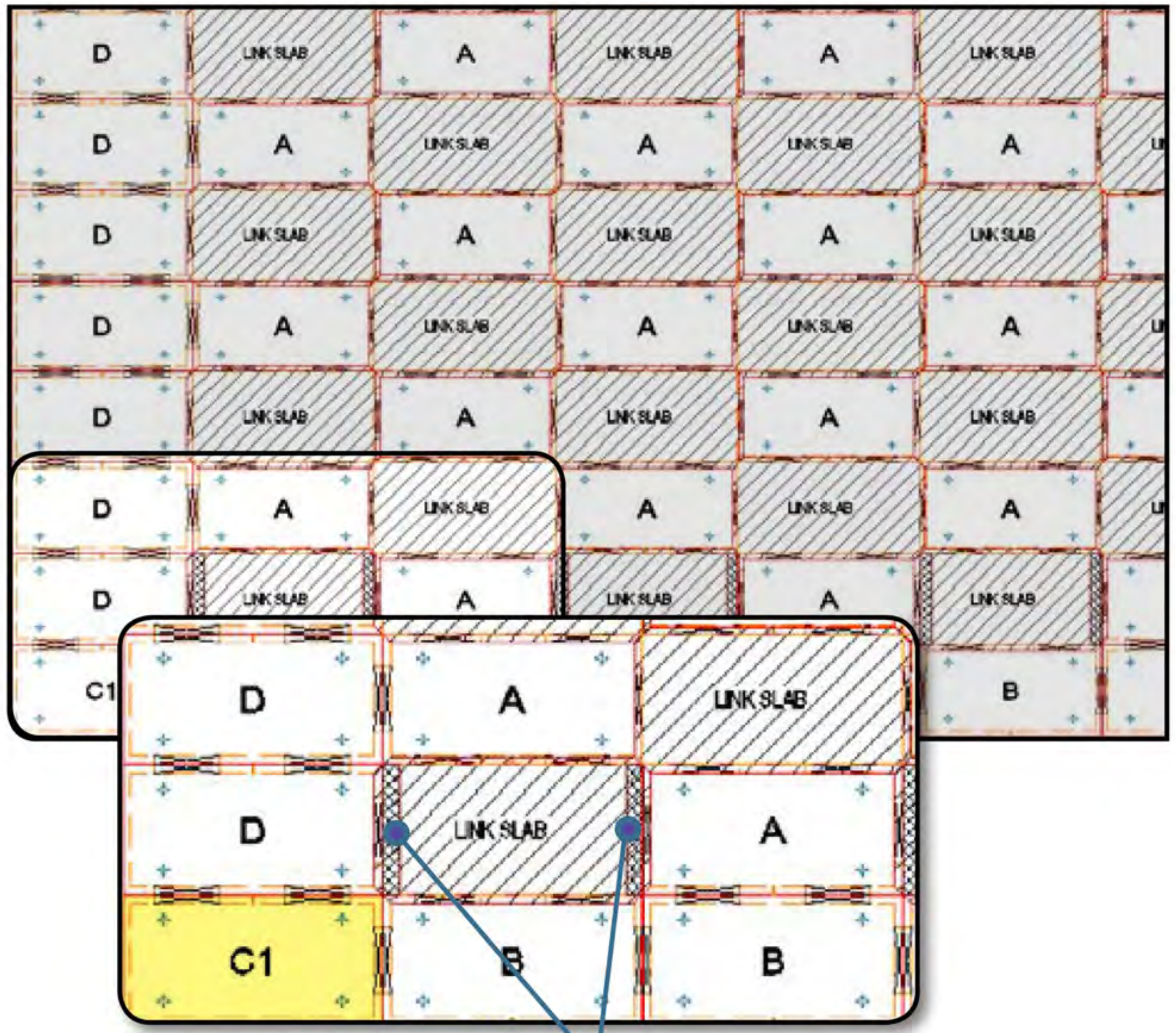


LINKSLAB® PROCEDURE

These procedures reference the diagram below. This diagram is not indicative of all site layouts. Refer to the site plan for the project specific configuration.

FIGURE 12

| Example Layout



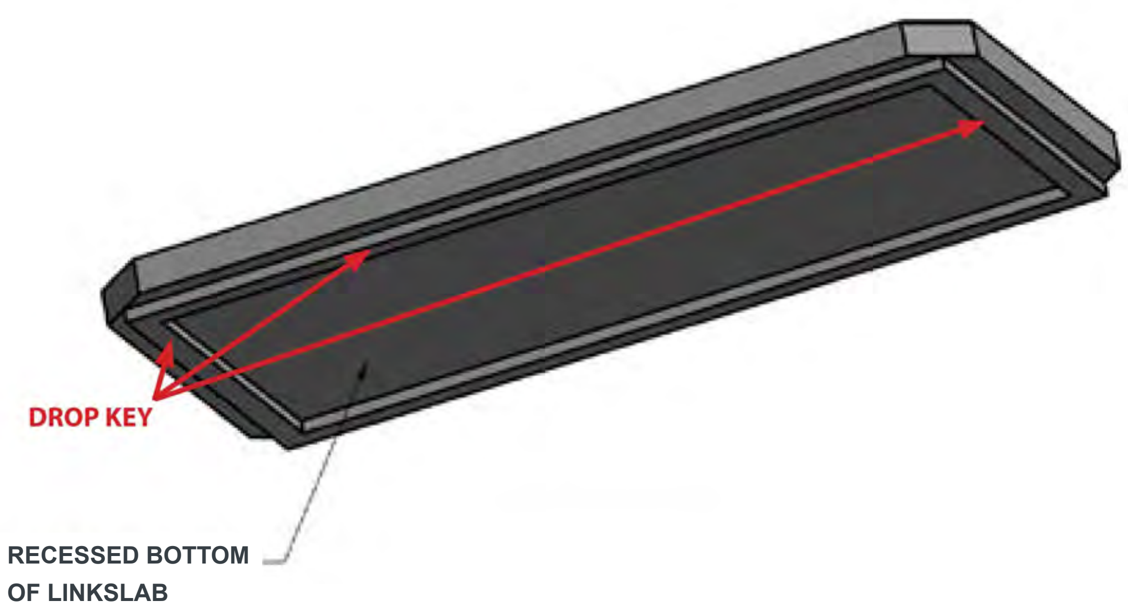
LINKSLAB PROCEDURE

Maintaining proper line and grade is critical to installation. A qualified surveyor on the site with proper equipment is recommended to ensure a square, level and straight layout. Subgrade must be compacted.

1 Start in the corner of the layout and place the first bottom module C1.
2 Place adjacent bottom modules B, B, D, D. Be sure to set the corners square and straight (from C1 up with D modules, and from C1 right with B modules).
3 Where called out on plans, place reinforcement beams between the modules where the LinkSlab will sit (between B and A). Reinforcement beams may not be required at all locations, so refer to the project specific configuration.
4 Place interior modules A, A.
| Check the distance between pieces when there is a gap for a LinkSlab. Both bottom corners should be between 8′ and 8′-1 ¼″.
5 Place Conseal CS-102 at the horizontal joints.
6 Place top modules (C1, B, B, D, D, A, A).
| Check the distance between pieces when there is a gap for a LinkSlab. Both top corners should be 8′ and 8′-1 ¼″.
7 Place Conseal CS-102 for the horizontal LinkSlab joints at D, A, A and B.
8 Place the LinkSlab. Ensure that it fits tightly between all adjacent modules. The drop key should fit inside the adjacent modules. Do not allow the LinkSlab to rest on the drop key.
| Ensure surface contact with the bottom of the LinkSlab and the top of the adjacent modules. Reset adjacent modules as necessary to correct the problem.
9 Continue placing adjacent modules and LinkSlabs.
| Oldcastle Precast recommends placing each LinkSlab as soon as the supporting modules are in place to ensure proper fit.
10 Continue installation procedure as recommended in the StormCapture Installation Manual.

FIGURE 13

| LinkSlab Isometric View



BACKFILL

Once all modules are in place with joints sealed and geotextile fabric wrapped, the StormCapture system shall be inspected by the engineer of record or an accepted representative. Upon approval, backfilling can begin.

- Do not compact within 6" of module to avoid damaging the system. Care shall be taken during placement of backfill not to displace modules, joint wrap, containment membrane liner or geotextile fabric.
- Backfilling shall be in 1' lifts with proper compaction between lifts. Typical backfill shall be compacted to 95% standard proctor density or as specified.
- Expansive soil material shall not be used as backfill around the structure.
- Compaction shall be adequate to support expected loads on top of the system and surrounding area. Consult with geotechnical engineer for the project.
- Once installed, StormCapture modules are ready for paving or overburden material (**Figure 14**).
- Finished grading, paving and landscaping shall be per construction documents.
- Construction equipment exceeding design loading shall not be allowed on structure. Consult Oldcastle Infrastructure if unsure.
- Contact Oldcastle Infrastructure and the engineer of record if the live loads are greater than HS-20.
- Track vehicles including D-4 type dozers or lighter are permitted.

INSTALLATION IS NOW COMPLETE

Project specific conditions may apply. Please refer to design documents for any special circumstances regarding installation or infiltration. ***Oldcastle Infrastructure is not liable for installation.***

FIGURE 14

Backfill

PRECONSTRUCTION MEETING CHECKLIST

Project Name: ______________________ Date: __________ Time: __________

Installer Name: ______________________ Address: ______________________

Oldcastle Rep: ______________________ ______________________

- ☐ Cover the installation manual
- ☐ Installer has the **approved** drawings
- ☐ Crane sizing and proper rigging
- ☐ Coordinate with installer to borrow lifting clutches for installation
  - ☐ Recommend $1,600 deposit (paid to plant from contractor), with money to be repaid upon return of undamaged clutches.
- ☐ Hole sizing
  - ☐ Extra space for liner weld if needed
- ☐ Hole prep (base prep)
- ☐ Liner (if applicable)
  - ☐ Extra hands for unrolling liner needed
- ☐ Project date of install: ______________
- ☐ Delivery truck access to the site
  - ☐ Will a truck with a sleeper cab fit?
  - ☐ Do construction site items need to be moved for access?
- ☐ Timing of trucks
  - ☐ Splash pads first
  - ☐ Order of modules to install with ease
  - ☐ Assume 10-15 minutes per piece
- ☐ Installing of modules
- ☐ Joint Wrap
- ☐ Other: ______________________

SIGNATURES:

Project Superintendent: ______________________ Other: ______________

Project Foreman: ______________________ Other: ______________

OUR MARKETS

Building Structures

Communications

Water

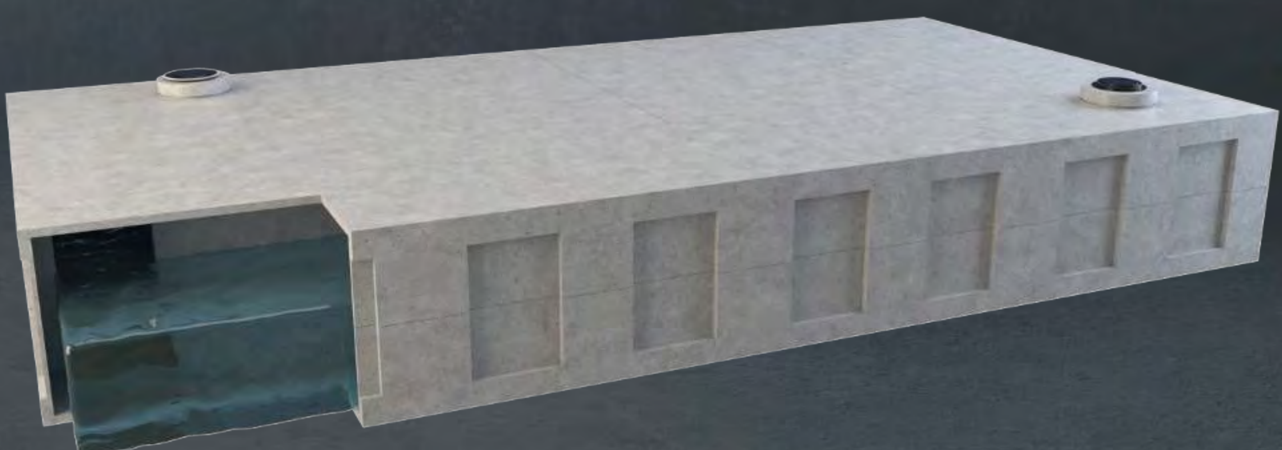
Energy

Transportation

Oldcastle Infrastructure™
A CRH COMPANY

STORMCAPTURE®

Design Summary



PROJECT INFORMATION

PROJECT NAME: UHS Inland Valley B-3

PROJECT CITY: Wildomar

PROJECT STATE: CA

COMPANY: Kimley-Horn

SITE TYPE: Commercial

SYSTEM DESIGN

System Type:
| Infiltration

Module Construction Type:
| Top Only

Storage Volume Required (cf):
| 60637

Configured Storage Volume (cf):
| 64425

System Internal Height (ft):
| 7

Nominal Module Capacity (cf):
| 735

Required Number of Modules:
| 83

Module Designation:
| SC1 7-0

SITE DESIGN

System Invert Elevation (ft):
| 1319.74

Top of Module Elevation (ft):
| 1327.32

Maximum Rim Elevation (ft):
| 1327.82

Depth of Cover (ft):
| 0.50

Minimum Inlet Elevation (ft):
| 0.00

Maximum Inlet Elevation (ft):
| 0.00

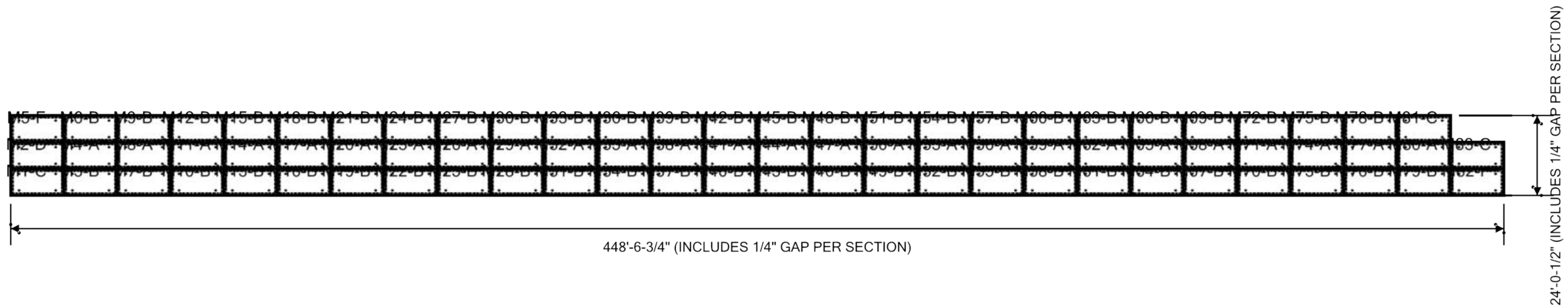
Minimum Outlet Elevation (ft):
| 0.00

Maximum Outlet Elevation (ft):
| 0.00

MODULE NOTES		
TYPE	QUANTITY	HEIGHT
C	3	7
D	1	7
B	51	7
A	26	7
F	2	7
TOTAL	83	
VOLUME	64425	CUBIC FEET

PIPE SCHEDULE		
PIPE	SIZE	INVERT

MANHOLE SCHEDULE		
MANHOLE	TYPE	RIM



PLAN VIEW
SCALE: 1" = 40'-0"

DESIGN NOTES:

1. DESIGN LOADINGS:
   A. AASHTO HS-20-44 W/ IMPACT.
   B. DEPTH OF COVER = 6" - 5'-0" (120 PCF ASSUMED).
   C. ASSUMED WATER TABLE = BELOW BOTTOM OF PRECAST.
   D. DRY LATERAL EARTH PRESSURE (EFP) = 45 PCF.
   E. LATERAL LIVE LOAD SURCHARGE = 80 PSF (APPLIED TO 8' BELOW GRADE).
   F. NO LATERAL SURCHARGE FROM ADJACENT BUILDINGS, WALL PIERS, OR FOUNDATIONS.
2. CONCRETE 28 DAY COMPRESSIVE STRENGTH SHALL BE 6,000 PSI.
3. STEEL REINFORCEMENT: REBAR, ASTM A-615 OR A-706, GRADE 60.
4. MESH REINFORCEMENT: ASTM A-1064, S1.2, GRADE 80.
5. CEMENT: ASTM C-150 SPECIFICATION.
6. STORMCAPTURE MODULE TYPE = INFILTRATION.
7. DEPTH OF AGGREGATE BEARING LAYER = 1'-4" ON ASSUMED ALLOWABLE BEARING PRESSURE = 2,500 PSF AND MAXIMUM COVER = 5'. DEPTH TO BE CONFIRMED BY GEOTECHNICAL ENGINEER (SEE OLDCASTLE TECH NOTE SC-01). NATIVE SOIL SHOULD BE LEVEL/SCREEDED AND COMPACTED ADEQUATELY TO ALLOW FOR REQUIRED BEARING CAPACITY.
8. ALLOWABLE SOIL BEARING PRESSURE ADDRESSED IN OLDCASTLE TECH NOTE SC-01.
9. REFERENCE STANDARDS:
   A. ASTM C 890
   B. ASTM C 891
   C. ASTM C 913
10. CONSTRUCTION EQUIPMENT EXCEEDING DESIGN LOADING SHALL NOT BE ALLOWED ON STRUCTURE. ANY DESIGN CONSTRAINT DIFFERENT FROM ABOVE REQUIRES CUSTOM STRUCTURAL DESIGN AND MAY REQUIRE THICKER SUBGRADE AND REVISED PRICING.

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1. THIS SYSTEM IS DESIGNED TO THE PARAMETERS NOTED. PLEASE VERIFY THAT THESE PARAMETERS MEET PROJECT REQUIREMENTS (I.E. LIVE LOAD AND FILL RANGE). IF DESIGN PARAMETERS ARE INCORRECT NOTIFY OLDCASTLE IMMEDIATELY FOR REDESIGN AND RE-PRICING.
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3. ENGINEER OF RECORD TO CONFIRM ALL MANWAY ACCESS LOCATIONS AND RIM ELEVATIONS.
4. UNLESS OTHERWISE NOTED, ALL PIPE SUPPLIED AND INSTALLED BY OTHERS.
5. THIS SYSTEM IS DESIGNED FOR A GROUNDWATER TABLE BELOW SYSTEM INVERT. ENGINEER OF RECORD TO VERIFY THAT THE DESIGN GROUNDWATER TABLE IS BELOW INVERT OF PRECAST. IF DESIGN PARAMETERS ARE INCORRECT NOTIFY OLDCASTLE IMMEDIATELY FOR REDESIGN AND REVISED PRICING.
6. THIS SYSTEM IS DESIGNED WITHOUT A CONTAINMENT MEMBRANE LINER. IF A LINER IS NEEDED PLEASE CONTACT OLDCASTLE TO PROVIDE THIS OPTION IN THE FINAL DESIGN.

- PRELIMINARY –
NOT FOR CONSTRUCTION

Oldcastle Infrastructure™
A CRH COMPANY

Ph: 800.579.8819 | www.oldcastleinfrastructure.com/stormwater

STORMCAPTURE ®

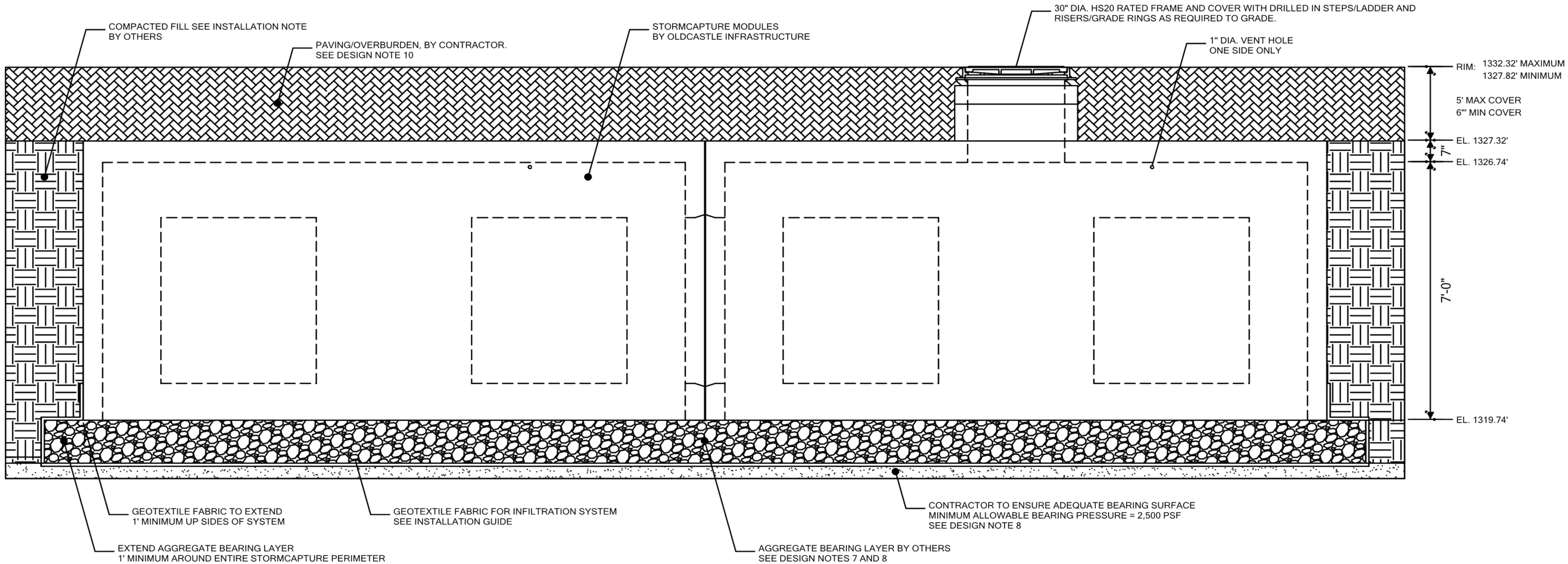
SC1 INFILTRATION SYSTEM

CUSTOMER:
Kimley-Horn

JOB NAME & LOCATION:
UHS Inland Valley B-3 - Wildomar,CA

Detention/ Infiltration

DRAWING NUMBER	REVISION	SHEET
WSCDD-1165-0_SC1_IN	- REV DATE 12/16/20	1 OF 2



NOTE:
FOR INFILTRATTION - EXFILTRATION SYSTEMS,
THE AGGREGATE SUBGRADE MUST BE WASHED AND

- PRELIMINARY –
NOT FOR CONSTRUCTION

TYPICAL ELEVATION
SCALE: 3/8" = 1'-0"

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STORMCAPTURE ®
SC1 INFILTRATION SYSTEM

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DRAWING NUMBER	REVISION	SHEET
WSCDD-1165-0_SC1_IN	- REV DATE 12/16/20	2 OF 2

Detention/ Infiltration

STORMCAPTURE®

Installation Manual

Water

Oldcastle Infrastructure™
A CRH COMPANY

INTRODUCTION

SITE PREPARATION

DELIVERY & INSTALLATION

LINKSLABS

BACKFILL

INTRODUCTION

StormCapture (shown in **Figure 1**) is a total storm water management system. The highly-configurable module has many solutions for detention, retention, infiltration, treatment and harvesting. Multiple modules can be arranged into endless formations to meet the needs of even the most challenging sites. The rectangular design facilitates rapid and easy installation, plus stress-free maintenance. The precast concrete provides long-term reliability and low lifecycle costs.

The engineer of record is responsible for reviewing and approving the system design, storage volume, required depth of cover, vehicular loading, water table elevation, backfill material and soil bearing capacity. Any variations found during construction to those stated on the plans must be reported to the engineer and Oldcastle Infrastructure.

This manual is not intended to be all-inclusive and is a reference guide only.

FIGURE 1

Detention System

Single Module

FIGURE 2

StormCapture System During Installation Process

SITE PREPARATION

TIMING

| Excavation and subgrade shall be completed prior to StormCapture delivery.

EXCAVATION (See **Figures 3 & 4**)

| Depth

Concrete invert: Depth of fill* + Module outside height + 2" subgrade depth

Open bottom: Depth of fill* + Module outside height + subgrade depth**

** 6" minimum, 5' maximum, unless otherwise noted*

*** Subgrade depth determined in accordance with StormCapture Tech Note SC-01*

| Excavation shall be large enough to allow access around structure for backfilling and compaction equipment.

| Trench sloping shall follow OSHA requirements.

| To prevent excessive water pressure build up on the outside of the modules, the site must be prepared and graded for proper drainage around the StormCapture system.

| Dewatering is required when water level is above bottom of subgrade.

SUBGRADE (See **Figures 3 & 4**)

1 Native soil shall be level and compacted adequately to allow for required bearing capacity on design documents.

2 Add 2" of sand for leveling purposes.

3 Geotextile fabric and containment membrane liner.

| An 8 oz. non-woven geotextile fabric must be used as a separation layer around the StormCapture system.

| When the project requires a containment membrane liner, a layer of 8 oz. non-woven geotextile fabric must be used on both the inside and outside face of the liner.

| Install containment membrane liner per manufacturer's recommendations.

4 Aggregate bearing layer (See **Figure 3**)

| Open-bottom modules only are required to be placed on a crushed aggregate bearing layer to a depth in accordance with StormCapture Tech Note SC-01. Material shall be clean, durable crushed aggregate compacted as directed by the engineer of record. Oldcastle recommends size 5, 56 or 57 (per ASTM C33).

| Extend aggregate bearing layer a minimum of 1' around the system perimeter.

| Aggregate bearing layer must be level and compacted prior to module placement.

| An 8 oz. non-woven geotextile fabric must be used as a separation layer around the aggregate material and StormCapture system.

Note: *Further investigation by a geotechnical engineer may be required where there are concerns with seasonally high water table, and/or poor soil conditions such as low allowable bearing capacity, permafrost and seasonal freeze/thaw cycles.*

FIGURE 3

| 1-Piece Module - With Liner

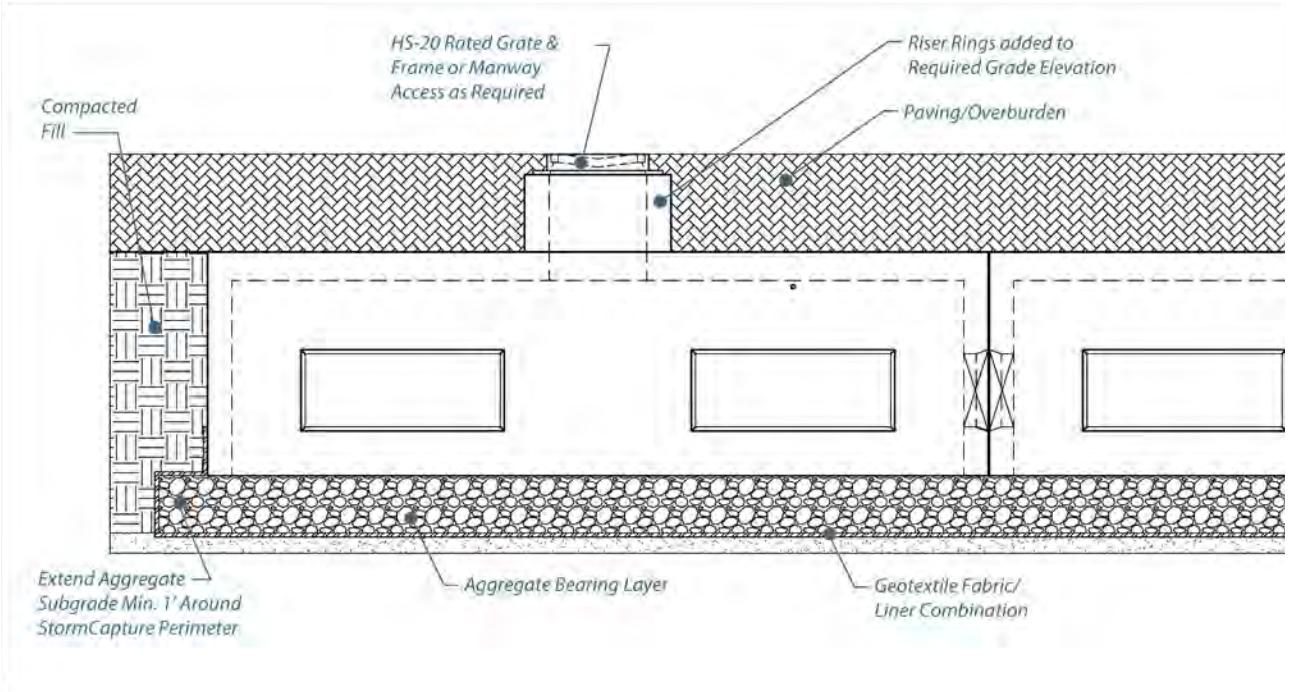
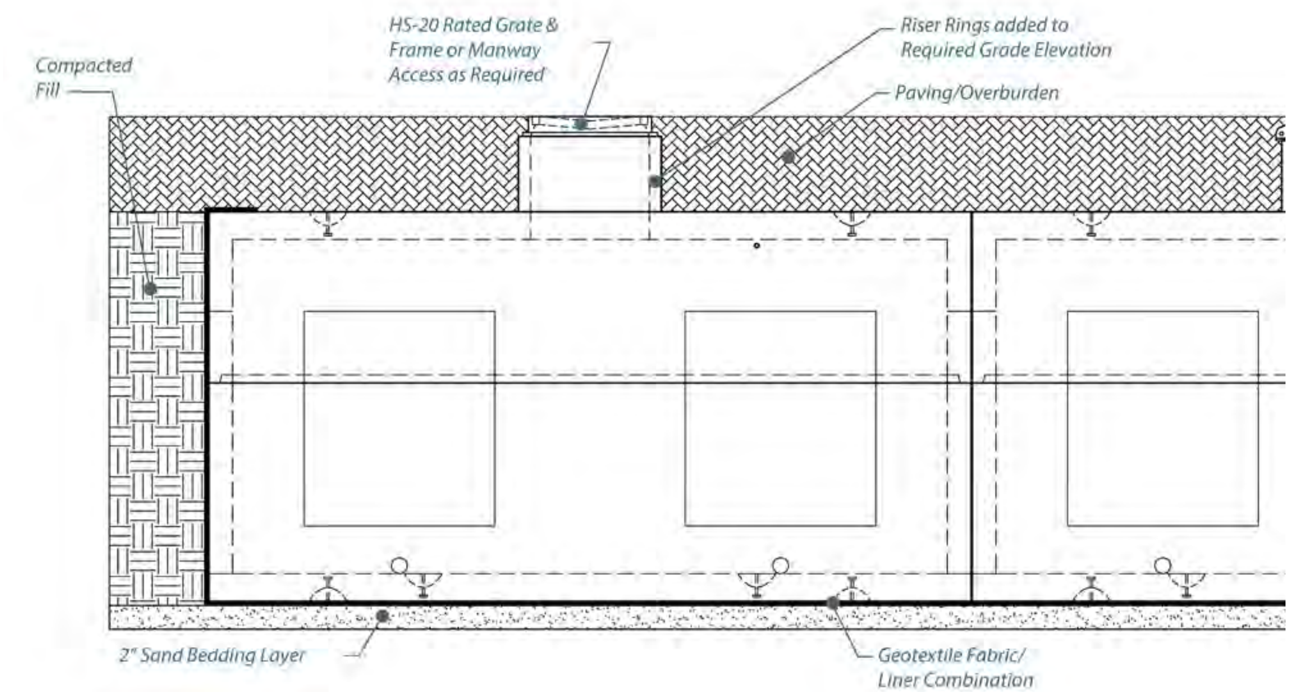


FIGURE 4

| 2-Piece Module - With Liner



DELIVERY & INSTALLATION

StormCapture modules are to be installed in accordance with ASTM C891-90, Installation of Underground Precast Utility Structures. Project plan and specifications must be followed along with any applicable regulations.

TIMING

- Plan for first delivery of StormCapture modules after site preparation is completed.
- Individual pieces can be installed in as little as 10 minutes.

DELIVERY

- Verify that equipment can handle module weights as noted on construction documents prior to delivery.
- StormCapture modules will be delivered on flatbed trucks.

HANDLING

- StormCapture modules are lifted by the designed embedded lifers at points provided by Oldcastle (**Figure 5**).
- Designed embedded lifters must be used. Use proper rigging to assure all lifters are equally engaged with a minimum 60° angle on slings (**Figure 6**).
- Special lifting clutches are required and shall be coordinated with the producing plant.
- Always follow safety protocols for handling StormCapture modules during installation as illustrated on this page.
- Never stand under load (**Figure 7**).
- Never place hands in the lift gear (**Figure 8**).
- Never place hands under load (**Figure 9**).

PLACEMENT

- Use the plan line, grade and elevations shown on the construction documents to install the modules. The sand bedding or aggregate bearing layer must be level.
- Modules must be placed as close together as possible with gaps no greater than 3/4".
- All vertical & top joints shall be covered with an 8" minimum width self-adhesive joint wrap as shown in **Figure 10**.
- Horizontal joints between modules or slabs shall be sealed with Conseal CS-102 butyl rubber sealant as shown in **Figure 11**.
- Seal pipe penetrations to containment membrane liner with pipe boots per liner manufacturer's recommendations.

FIGURE 5

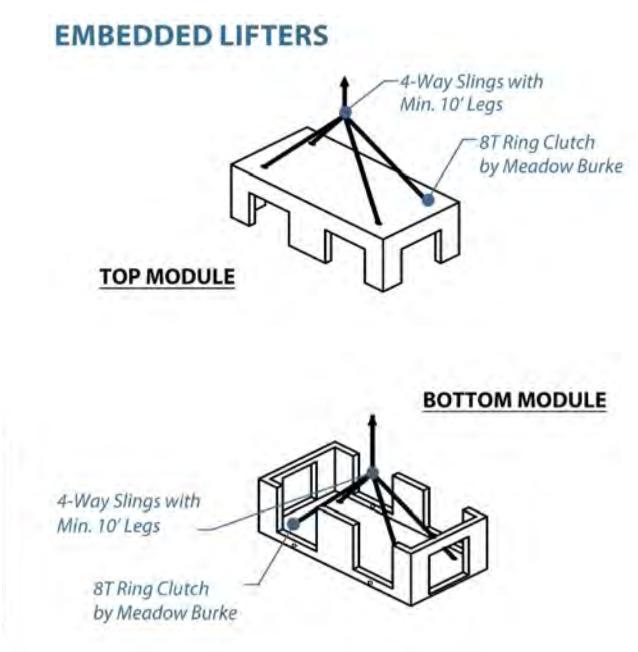


FIGURE 6

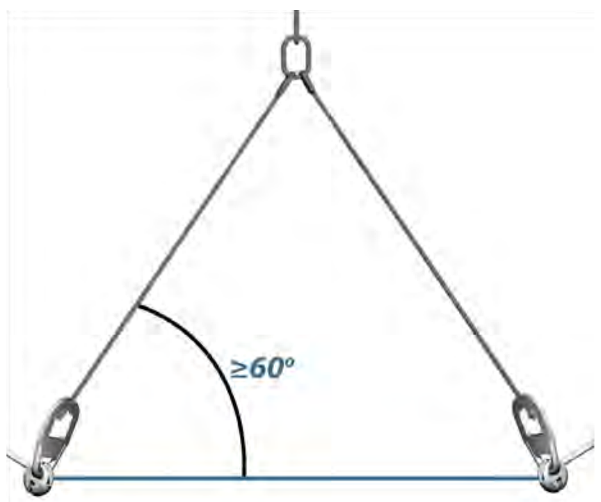


FIGURE 7

FIGURE 8

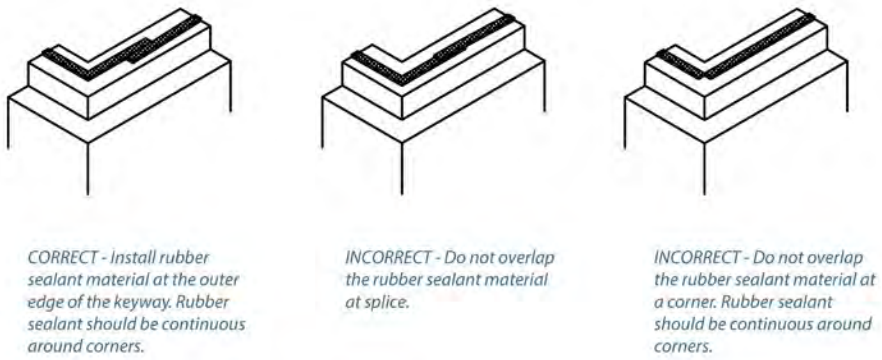
FIGURE 9

FIGURE 10

- Sealed Joints Between Modules

FIGURE 11

Keyways must be free of dirt, rocks and water. Rocks and dirt prevent the vault sections from seating and sealing properly. Remove all protective paper from rubber sealant material. Splice rubber sealant material with a "side by side" joint, away from corners. Corner splicing will not seal properly.

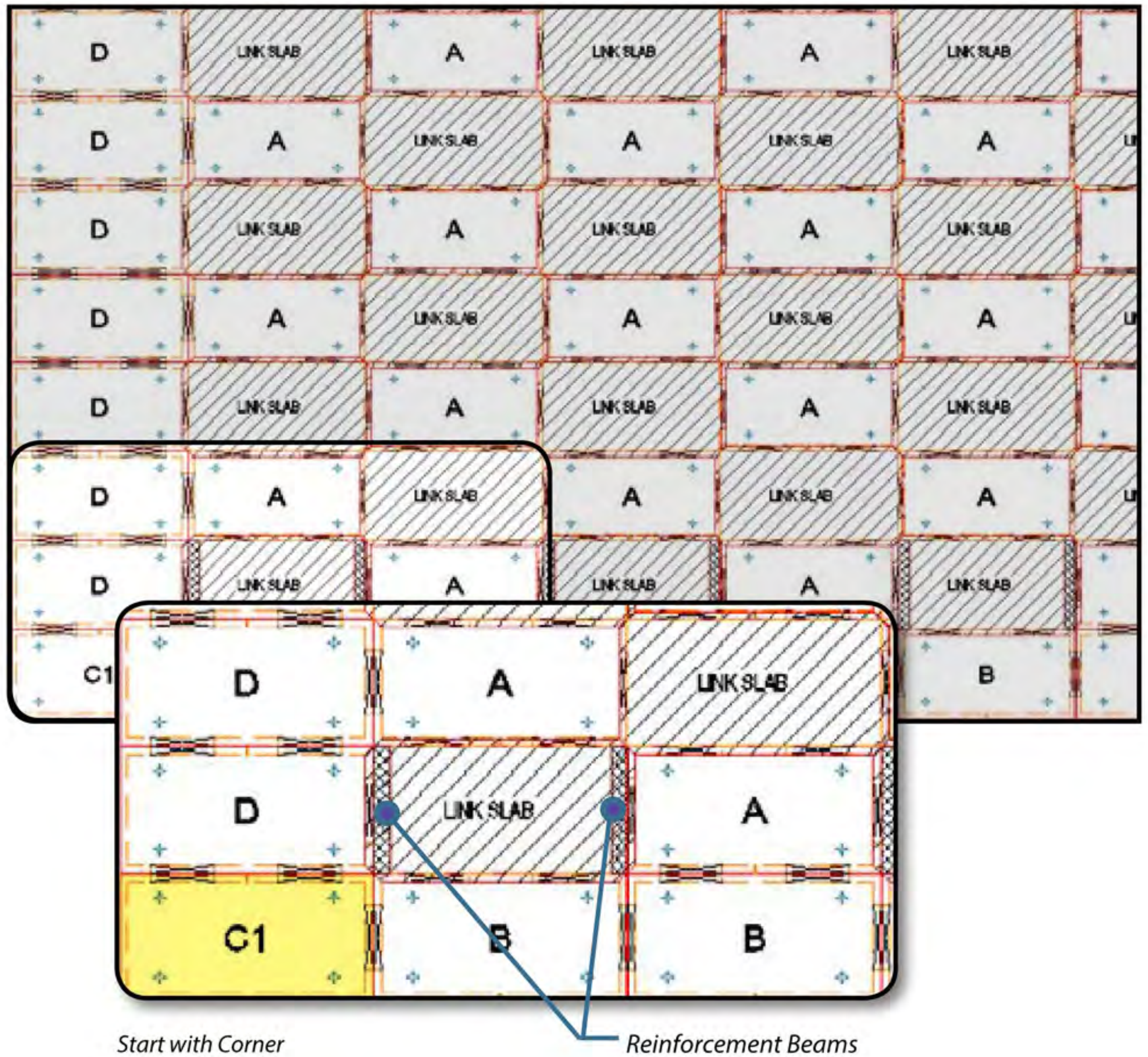


LINKSLAB® PROCEDURE

These procedures reference the diagram below. This diagram is not indicative of all site layouts. Refer to the site plan for the project specific configuration.

FIGURE 12

| Example Layout



LINKSLAB PROCEDURE

Maintaining proper line and grade is critical to installation. A qualified surveyor on the site with proper equipment is recommended to ensure a square, level and straight layout. Subgrade must be compacted.

1 Start in the corner of the layout and place the first bottom module C1.

2 Place adjacent bottom modules B, B, D, D. Be sure to set the corners square and straight (from C1 up with D modules, and from C1 right with B modules).

3 Where called out on plans, place reinforcement beams between the modules where the LinkSlab will sit (between B and A). Reinforcement beams may not be required at all locations, so refer to the project specific configuration.

4 Place interior modules A, A.

| Check the distance between pieces when there is a gap for a LinkSlab. Both bottom corners should be between 8' and 8'-1 ¼".

5 Place Conseal CS-102 at the horizontal joints.

6 Place top modules (C1, B, B, D, D, A, A).

| Check the distance between pieces when there is a gap for a LinkSlab. Both top corners should be 8' and 8'-1 ¼".

7 Place Conseal CS-102 for the horizontal LinkSlab joints at D, A, A and B.

8 Place the LinkSlab. Ensure that it fits tightly between all adjacent modules. The drop key should fit inside the adjacent modules. Do not allow the LinkSlab to rest on the drop key.

| Ensure surface contact with the bottom of the LinkSlab and the top of the adjacent modules. Reset adjacent modules as necessary to correct the problem.

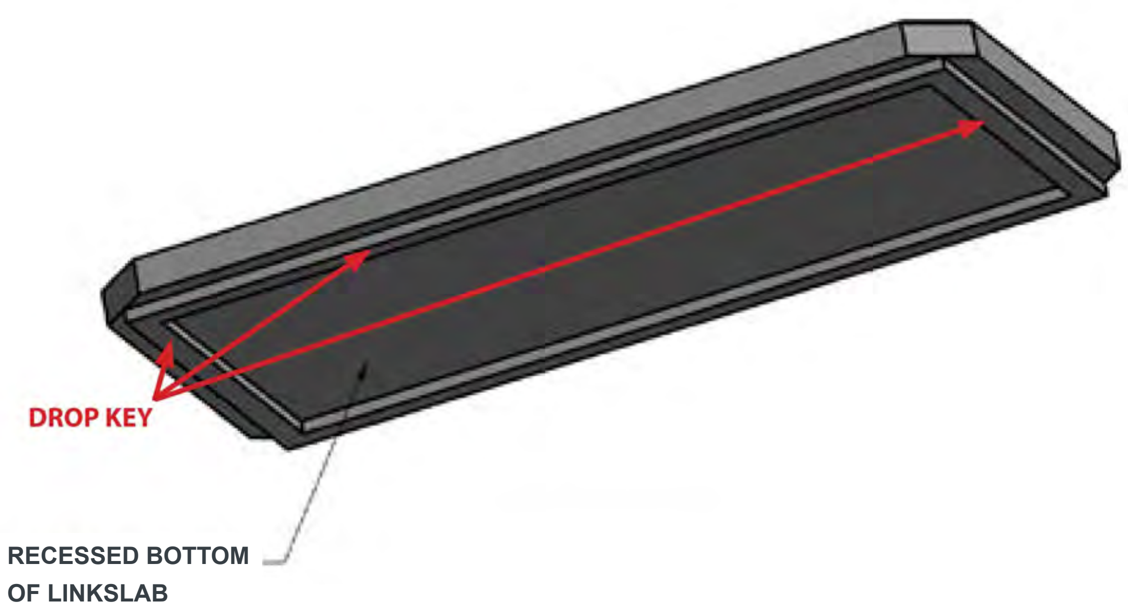
9 Continue placing adjacent modules and LinkSlabs.

| Oldcastle Precast recommends placing each LinkSlab as soon as the supporting modules are in place to ensure proper fit.

10 Continue installation procedure as recommended in the StormCapture Installation Manual.

FIGURE 13

| LinkSlab Isometric View



BACKFILL

Once all modules are in place with joints sealed and geotextile fabric wrapped, the StormCapture system shall be inspected by the engineer of record or an accepted representative. Upon approval, backfilling can begin.

- Do not compact within 6" of module to avoid damaging the system. Care shall be taken during placement of backfill not to displace modules, joint wrap, containment membrane liner or geotextile fabric.
- Backfilling shall be in 1' lifts with proper compaction between lifts. Typical backfill shall be compacted to 95% standard proctor density or as specified.
- Expansive soil material shall not be used as backfill around the structure.
- Compaction shall be adequate to support expected loads on top of the system and surrounding area. Consult with geotechnical engineer for the project.
- Once installed, StormCapture modules are ready for paving or overburden material (**Figure 14**).
- Finished grading, paving and landscaping shall be per construction documents.
- Construction equipment exceeding design loading shall not be allowed on structure. Consult Oldcastle Infrastructure if unsure.
- Contact Oldcastle Infrastructure and the engineer of record if the live loads are greater than HS-20.
- Track vehicles including D-4 type dozers or lighter are permitted.

INSTALLATION IS NOW COMPLETE

Project specific conditions may apply. Please refer to design documents for any special circumstances regarding installation or infiltration. ***Oldcastle Infrastructure is not liable for installation.***

FIGURE 14

- Backfill

PRECONSTRUCTION MEETING CHECKLIST

Project Name: ______________________ Date: __________ Time: __________

Installer Name: ______________________ Address: ______________________

Oldcastle Rep: ______________________ ______________________

- ☐ Cover the installation manual
- ☐ Installer has the **approved** drawings
- ☐ Crane sizing and proper rigging
- ☐ Coordinate with installer to borrow lifting clutches for installation
  - ☐ Recommend $1,600 deposit (paid to plant from contractor), with money to be repaid upon return of undamaged clutches.
- ☐ Hole sizing
  - ☐ Extra space for liner weld if needed
- ☐ Hole prep (base prep)
- ☐ Liner (if applicable)
  - ☐ Extra hands for unrolling liner needed
- ☐ Project date of install: __________
- ☐ Delivery truck access to the site
  - ☐ Will a truck with a sleeper cab fit?
  - ☐ Do construction site items need to be moved for access?
- ☐ Timing of trucks
  - ☐ Splash pads first
  - ☐ Order of modules to install with ease
  - ☐ Assume 10-15 minutes per piece
- ☐ Installing of modules
- ☐ Joint Wrap
- ☐ Other: __________________

SIGNATURES:

Project Superintendent: ______________________ Other: ______________

Project Foreman: ______________________ Other: ______________

OUR MARKETS

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Oldcastle Infrastructure™
A CRH COMPANY

Appendix 7: Hydromodification

Supporting Detail Relating to compliance with the HMP Performance Standards

SMRHM

PROJECT REPORT

General Model Information

Project Name:	IV_25
Site Name:	Inland Valley Medical Center
Site Address:	36485 Inland Valley Drive
City:	Wildomar, CA
Report Date:	7/14/2021
Gage:	Wildomar / North Murrieta
Data Start:	1949/10/01
Data End:	2011/09/30
Timestep:	15 Minute
Precip Scale:	1.000
Version Date:	2021/06/14

POC Thresholds

Low Flow Threshold for POC2:	10 Percent of the 2 Year
High Flow Threshold for POC2:	10 Year
Low Flow Threshold for POC3:	10 Percent of the 2 Year
High Flow Threshold for POC3:	10 Year
Low Flow Threshold for POC4:	10 Percent of the 2 Year
High Flow Threshold for POC4:	10 Year

Landuse Basin Data
Predeveloped Land Use

B-2

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
C D,Shrub,Mod(5-10%)	7.54
Pervious Total	7.54
Impervious Land Use	acre
Roof Area	0.25
Impervious Total	0.25
Basin Total	7.79

Element Flows To:

Surface	Interflow	Groundwater

B-3

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
C D,Shrub,Mod(5-10%)	3.74
Pervious Total	3.74
Impervious Land Use	acre
Roof Area	0.15
Impervious Total	0.15
Basin Total	3.89

Element Flows To:

Surface	Interflow	Groundwater

A-3

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
C D,Shrub,Mod(5-10%)	1.11
Pervious Total	1.11
Impervious Land Use	acre
Impervious Total	0
Basin Total	1.11

Element Flows To:

Surface	Interflow	Groundwater

Mitigated Land Use

B-2

Bypass:	No	
GroundWater:	No	
Pervious Land Use	acre	
C D,Shrub,Flat(0-5%)	1.07	
C D,Shrub,Mod(5-10%)	0.05	
C D,Shrub,Very(>20%)	1.19	
Pervious Total	2.31	
Impervious Land Use	acre	
Roof Area	0.33	
Driveways,Flat(0-5%)	5.01	
Driveways,Mod(5-10%)	0.14	
Impervious Total	5.48	
Basin Total	7.79	

Element Flows To:

Surface	Interflow	Groundwater
South Pond (B-2)	South Pond (B-2)	

B-3

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
C D,Shrub,Flat(0-5%)	0.7
Pervious Total	0.7
Impervious Land Use	acre
Driveways,Flat(0-5%)	3.19
Impervious Total	3.19
Basin Total	3.89

Element Flows To:

Surface	Interflow	Groundwater
East Underground Det (B-3)	East Underground Det (B-3)	

dgt

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
C D,Shrub,Flat(0-5%)	0.21
C D,Shrub,Mod(5-10%)	0.06
Pervious Total	0.27
Impervious Land Use	acre
Parking,Flat(0-5%)	0.84
Impervious Total	0.84
Basin Total	1.11

Element Flows To:

Surface	Interflow	Groundwater
CUP Underground Det (A-1)	CUP Underground Det (A-1)	

Mitigated Routing

South Pond (B-2)

Depth:	6 ft.	
Discharge Structure: 1		
Riser Height:	5 ft.	
Riser Diameter:	54 in.	
Notch Type :	V-notch	
Notch Angle:	0.000	
Notch Height:	1.000 ft.	
Discharge Structure: 2		
Riser Height:	0 ft.	
Riser Diameter:	0 in.	
Orifice 1 Diameter:	1 in.	Elevation:0.5 ft.
Element Flows To:		
Outlet 1	Outlet 2	

SSD Table Hydraulic Table

Stage (feet)	Area (ac.)	Volume (ac-ft.)	Outlet Struct	Outlet Struct	NotUsed	NotUsed	NotUsed
0.000	0.309	0.000	0.000	0.000	0.000	0.000	0.000
1.000	0.378	0.342	0.019	44.93	0.000	0.000	0.000
2.000	0.450	0.756	0.033	89.70	0.000	0.000	0.000
3.000	0.525	1.243	0.043	132.1	0.000	0.000	0.000
4.000	0.604	1.807	0.051	628.4	0.000	0.000	0.000
5.000	0.686	2.451	0.058	3116.996	0.000	0.000	0.000
6.000	0.774	3.181	45.00	11009.03	0.000	0.000	0.000

CUP Underground Det (A-1)

Width: 431.25 ft.
Length: 7 ft.
Depth: 4 ft.
Infiltration On
Infiltration rate: 0.01
Infiltration safety factor: 1
Total Volume Infiltrated (ac-ft.): 5.143
Total Volume Through Riser (ac-ft.): 37.352
Total Volume Through Facility (ac-ft.): 42.496
Percent Infiltrated: 12.1
Total Precip Applied to Facility: 0
Total Evap From Facility: 0
Discharge Structure
Riser Height: 3.5 ft.
Riser Diameter: 54 in.
Notch Type : V-notch
Notch Angle: 90.000
Notch Height: 0.300 ft.
Orifice 1 Diameter: 0.5 in. Elevation:0 ft.
Element Flows To:
Outlet 1 Outlet 2

Vault Hydraulic Table

Stage(feet)	**Area(ac.)**	**Volume(ac-ft.)**	**Discharge(cfs)**	**Infilt(cfs)**
0.0000	0.069	0.000	0.000	0.000
0.0444	0.069	0.003	0.001	0.000
0.0889	0.069	0.006	0.002	0.000
0.1333	0.069	0.009	0.002	0.000
0.1778	0.069	0.012	0.002	0.000
0.2222	0.069	0.015	0.003	0.000
0.2667	0.069	0.018	0.003	0.000
0.3111	0.069	0.021	0.003	0.000
0.3556	0.069	0.024	0.004	0.000
0.4000	0.069	0.027	0.004	0.000
0.4444	0.069	0.030	0.004	0.000
0.4889	0.069	0.033	0.004	0.000
0.5333	0.069	0.037	0.005	0.000
0.5778	0.069	0.040	0.005	0.000
0.6222	0.069	0.043	0.005	0.000
0.6667	0.069	0.046	0.005	0.000
0.7111	0.069	0.049	0.005	0.000
0.7556	0.069	0.052	0.005	0.000
0.8000	0.069	0.055	0.006	0.000
0.8444	0.069	0.058	0.006	0.000
0.8889	0.069	0.061	0.006	0.000
0.9333	0.069	0.064	0.006	0.000
0.9778	0.069	0.067	0.006	0.000
1.0222	0.069	0.070	0.006	0.000
1.0667	0.069	0.073	0.007	0.000
1.1111	0.069	0.077	0.007	0.000
1.1556	0.069	0.080	0.007	0.000
1.2000	0.069	0.083	0.007	0.000
1.2444	0.069	0.086	0.007	0.000
1.2889	0.069	0.089	0.007	0.000

1.3333	0.069	0.092	0.007	0.000
1.3778	0.069	0.095	0.008	0.000
1.4222	0.069	0.098	0.008	0.000
1.4667	0.069	0.101	0.008	0.000
1.5111	0.069	0.104	0.008	0.000
1.5556	0.069	0.107	0.008	0.000
1.6000	0.069	0.110	0.008	0.000
1.6444	0.069	0.114	0.008	0.000
1.6889	0.069	0.117	0.008	0.000
1.7333	0.069	0.120	0.008	0.000
1.7778	0.069	0.123	0.009	0.000
1.8222	0.069	0.126	0.009	0.000
1.8667	0.069	0.129	0.009	0.000
1.9111	0.069	0.132	0.009	0.000
1.9556	0.069	0.135	0.009	0.000
2.0000	0.069	0.138	0.009	0.000
2.0444	0.069	0.141	0.009	0.000
2.0889	0.069	0.144	0.009	0.000
2.1333	0.069	0.147	0.009	0.000
2.1778	0.069	0.150	0.010	0.000
2.2222	0.069	0.154	0.010	0.000
2.2667	0.069	0.157	0.010	0.000
2.3111	0.069	0.160	0.010	0.000
2.3556	0.069	0.163	0.010	0.000
2.4000	0.069	0.166	0.010	0.000
2.4444	0.069	0.169	0.010	0.000
2.4889	0.069	0.172	0.010	0.000
2.5333	0.069	0.175	0.010	0.000
2.5778	0.069	0.178	0.010	0.000
2.6222	0.069	0.181	0.011	0.000
2.6667	0.069	0.184	0.011	0.000
2.7111	0.069	0.187	0.011	0.000
2.7556	0.069	0.191	0.011	0.000
2.8000	0.069	0.194	0.011	0.000
2.8444	0.069	0.197	0.011	0.000
2.8889	0.069	0.200	0.011	0.000
2.9333	0.069	0.203	0.011	0.000
2.9778	0.069	0.206	0.011	0.000
3.0222	0.069	0.209	0.011	0.000
3.0667	0.069	0.212	0.011	0.000
3.1111	0.069	0.215	0.012	0.000
3.1556	0.069	0.218	0.012	0.000
3.2000	0.069	0.221	0.012	0.000
3.2444	0.069	0.224	0.013	0.000
3.2889	0.069	0.227	0.018	0.000
3.3333	0.069	0.231	0.029	0.000
3.3778	0.069	0.234	0.047	0.000
3.4222	0.069	0.237	0.073	0.000
3.4667	0.069	0.240	0.109	0.000
3.5111	0.069	0.243	0.198	0.000
3.5556	0.069	0.246	0.767	0.000
3.6000	0.069	0.249	1.651	0.000
3.6444	0.069	0.252	2.762	0.000
3.6889	0.069	0.255	4.058	0.000
3.7333	0.069	0.258	5.516	0.000
3.7778	0.069	0.261	7.119	0.000
3.8222	0.069	0.264	8.853	0.000
3.8667	0.069	0.268	10.70	0.000

3.9111	0.069	0.271	12.66	0.000
3.9556	0.069	0.274	14.73	0.000
4.0000	0.069	0.277	16.88	0.000
4.0444	0.069	0.280	19.12	0.000
4.0889	0.000	0.000	21.44	0.000

East Underground Det (B-3)

Width:	1237.5 ft.	
Length:	7 ft.	
Depth:	7 ft.	
Infiltration On		
Infiltration rate:	0.01	
Infiltration safety factor:	1	
Total Volume Infiltrated (ac-ft.):		13.461
Total Volume Through Riser (ac-ft.):		145.851
Total Volume Through Facility (ac-ft.):		159.312
Percent Infiltrated:		8.45
Total Precip Applied to Facility:		0
Total Evap From Facility:		0
Discharge Structure		
Riser Height:	6 ft.	
Riser Diameter:	54 in.	
Notch Type:	Rectangular	
Notch Width:	1.710 ft.	
Notch Height:	1.470 ft.	
Orifice 1 Diameter:	0.987 in. Elevation:0 ft.	
Element Flows To:		
Outlet 1	Outlet 2	

Vault Hydraulic Table

Stage(feet)	**Area(ac.)**	**Volume(ac-ft.)**	**Discharge(cfs)**	**Infilt(cfs)**
0.0000	0.198	0.000	0.000	0.000
0.0778	0.198	0.015	0.007	0.002
0.1556	0.198	0.030	0.010	0.002
0.2333	0.198	0.046	0.012	0.002
0.3111	0.198	0.061	0.014	0.002
0.3889	0.198	0.077	0.016	0.002
0.4667	0.198	0.092	0.018	0.002
0.5444	0.198	0.108	0.019	0.002
0.6222	0.198	0.123	0.020	0.002
0.7000	0.198	0.139	0.022	0.002
0.7778	0.198	0.154	0.023	0.002
0.8556	0.198	0.170	0.024	0.002
0.9333	0.198	0.185	0.025	0.002
1.0111	0.198	0.201	0.026	0.002
1.0889	0.198	0.216	0.027	0.002
1.1667	0.198	0.232	0.028	0.002
1.2444	0.198	0.247	0.029	0.002
1.3222	0.198	0.262	0.030	0.002
1.4000	0.198	0.278	0.031	0.002
1.4778	0.198	0.293	0.032	0.002
1.5556	0.198	0.309	0.033	0.002
1.6333	0.198	0.324	0.033	0.002
1.7111	0.198	0.340	0.034	0.002
1.7889	0.198	0.355	0.035	0.002
1.8667	0.198	0.371	0.036	0.002
1.9444	0.198	0.386	0.036	0.002
2.0222	0.198	0.402	0.037	0.002
2.1000	0.198	0.417	0.038	0.002
2.1778	0.198	0.433	0.039	0.002
2.2556	0.198	0.448	0.039	0.002

2.3333	0.198	0.464	0.040	0.002
2.4111	0.198	0.479	0.041	0.002
2.4889	0.198	0.494	0.041	0.002
2.5667	0.198	0.510	0.042	0.002
2.6444	0.198	0.525	0.043	0.002
2.7222	0.198	0.541	0.043	0.002
2.8000	0.198	0.556	0.044	0.002
2.8778	0.198	0.572	0.044	0.002
2.9556	0.198	0.587	0.045	0.002
3.0333	0.198	0.603	0.046	0.002
3.1111	0.198	0.618	0.046	0.002
3.1889	0.198	0.634	0.047	0.002
3.2667	0.198	0.649	0.047	0.002
3.3444	0.198	0.665	0.048	0.002
3.4222	0.198	0.680	0.048	0.002
3.5000	0.198	0.696	0.049	0.002
3.5778	0.198	0.711	0.050	0.002
3.6556	0.198	0.727	0.050	0.002
3.7333	0.198	0.742	0.051	0.002
3.8111	0.198	0.757	0.051	0.002
3.8889	0.198	0.773	0.052	0.002
3.9667	0.198	0.788	0.052	0.002
4.0444	0.198	0.804	0.053	0.002
4.1222	0.198	0.819	0.053	0.002
4.2000	0.198	0.835	0.054	0.002
4.2778	0.198	0.850	0.054	0.002
4.3556	0.198	0.866	0.055	0.002
4.4333	0.198	0.881	0.055	0.002
4.5111	0.198	0.897	0.056	0.002
4.5889	0.198	0.912	0.138	0.002
4.6667	0.198	0.928	0.344	0.002
4.7444	0.198	0.943	0.623	0.002
4.8222	0.198	0.959	0.957	0.002
4.9000	0.198	0.974	1.340	0.002
4.9778	0.198	0.989	1.765	0.002
5.0556	0.198	1.005	2.229	0.002
5.1333	0.198	1.020	2.728	0.002
5.2111	0.198	1.036	3.261	0.002
5.2889	0.198	1.051	3.825	0.002
5.3667	0.198	1.067	4.419	0.002
5.4444	0.198	1.082	5.041	0.002
5.5222	0.198	1.098	5.690	0.002
5.6000	0.198	1.113	6.365	0.002
5.6778	0.198	1.129	7.065	0.002
5.7556	0.198	1.144	7.789	0.002
5.8333	0.198	1.160	8.536	0.002
5.9111	0.198	1.175	9.306	0.002
5.9889	0.198	1.191	10.09	0.002
6.0667	0.198	1.206	11.03	0.002
6.1444	0.198	1.221	12.83	0.002
6.2222	0.198	1.237	15.21	0.002
6.3000	0.198	1.252	18.04	0.002
6.3778	0.198	1.268	21.26	0.002
6.4556	0.198	1.283	24.80	0.002
6.5333	0.198	1.299	28.63	0.002
6.6111	0.198	1.314	32.70	0.002
6.6889	0.198	1.330	36.97	0.002
6.7667	0.198	1.345	41.39	0.002

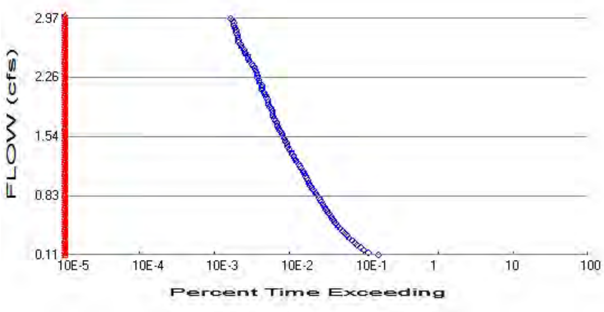
6.8444	0.198	1.361	45.92	0.002
6.9222	0.198	1.376	50.52	0.002
7.0000	0.198	1.392	55.15	0.002
7.0778	0.198	1.407	59.75	0.002
7.1556	0.000	0.000	64.29	0.000

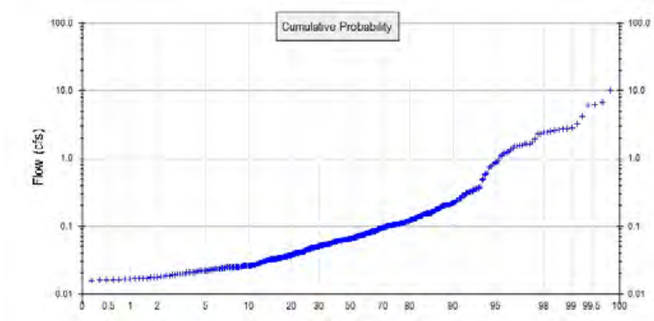
Analysis Results

POC 1

POC #1 was not reported because POC must exist in both scenarios and both scenarios must have been run.

POC 2





+ Predeveloped x Mitigated

Predeveloped Landuse Totals for POC #2
Total Pervious Area: 7.54
Total Impervious Area: 0.25

Mitigated Landuse Totals for POC #2
Total Pervious Area: 2.31
Total Impervious Area: 5.48

Flow Frequency Method: Cunnane

Flow Frequency Return Periods for Predeveloped. POC #2

Return Period	**Flow(cfs)**
2 year	1.135377
5 year	2.455206
10 year	2.970738
25 year	6.223223

Flow Frequency Return Periods for Mitigated. POC #2

Return Period	**Flow(cfs)**
2 year	0
5 year	0
10 year	0
25 year	0

Duration Flows

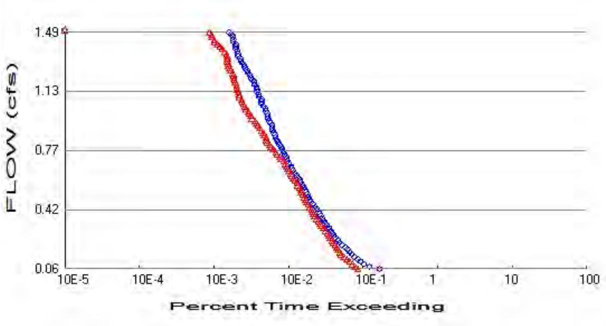
The Facility PASSED

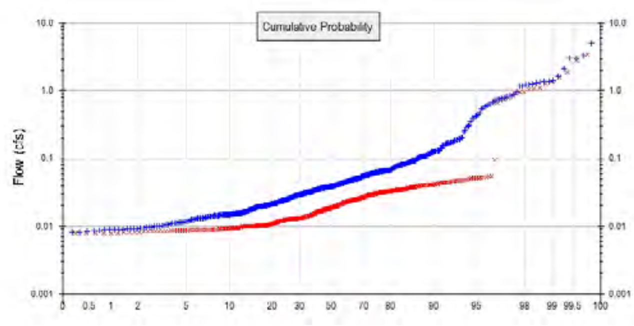
Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.1135	3413	0	0	Pass
0.1424	2530	0	0	Pass
0.1713	2167	0	0	Pass
0.2001	1954	0	0	Pass
0.2290	1791	0	0	Pass
0.2578	1642	0	0	Pass
0.2867	1522	0	0	Pass
0.3156	1410	0	0	Pass
0.3444	1310	0	0	Pass
0.3733	1224	0	0	Pass
0.4021	1127	0	0	Pass
0.4310	1059	0	0	Pass
0.4599	995	0	0	Pass
0.4887	925	0	0	Pass
0.5176	875	0	0	Pass
0.5464	822	0	0	Pass
0.5753	796	0	0	Pass
0.6042	753	0	0	Pass
0.6330	708	0	0	Pass
0.6619	680	0	0	Pass
0.6907	656	0	0	Pass
0.7196	617	0	0	Pass
0.7485	587	0	0	Pass
0.7773	568	0	0	Pass
0.8062	549	0	0	Pass
0.8351	514	0	0	Pass
0.8639	493	0	0	Pass
0.8928	457	0	0	Pass
0.9216	437	0	0	Pass
0.9505	418	0	0	Pass
0.9794	404	0	0	Pass
1.0082	389	0	0	Pass
1.0371	375	0	0	Pass
1.0659	363	0	0	Pass
1.0948	348	0	0	Pass
1.1237	337	0	0	Pass
1.1525	318	0	0	Pass
1.1814	308	0	0	Pass
1.2102	298	0	0	Pass
1.2391	277	0	0	Pass
1.2680	263	0	0	Pass
1.2968	252	0	0	Pass
1.3257	237	0	0	Pass
1.3545	235	0	0	Pass
1.3834	220	0	0	Pass
1.4123	211	0	0	Pass
1.4411	206	0	0	Pass
1.4700	202	0	0	Pass
1.4988	192	0	0	Pass
1.5277	184	0	0	Pass
1.5566	178	0	0	Pass
1.5854	172	0	0	Pass
1.6143	164	0	0	Pass

1.6431	159	0	0	Pass
1.6720	153	0	0	Pass
1.7009	150	0	0	Pass
1.7297	144	0	0	Pass
1.7586	139	0	0	Pass
1.7875	133	0	0	Pass
1.8163	131	0	0	Pass
1.8452	131	0	0	Pass
1.8740	127	0	0	Pass
1.9029	120	0	0	Pass
1.9318	117	0	0	Pass
1.9606	114	0	0	Pass
1.9895	112	0	0	Pass
2.0183	109	0	0	Pass
2.0472	105	0	0	Pass
2.0761	101	0	0	Pass
2.1049	95	0	0	Pass
2.1338	95	0	0	Pass
2.1626	94	0	0	Pass
2.1915	88	0	0	Pass
2.2204	87	0	0	Pass
2.2492	83	0	0	Pass
2.2781	82	0	0	Pass
2.3069	81	0	0	Pass
2.3358	78	0	0	Pass
2.3647	75	0	0	Pass
2.3935	72	0	0	Pass
2.4224	69	0	0	Pass
2.4512	65	0	0	Pass
2.4801	63	0	0	Pass
2.5090	61	0	0	Pass
2.5378	57	0	0	Pass
2.5667	55	0	0	Pass
2.5956	54	0	0	Pass
2.6244	51	0	0	Pass
2.6533	49	0	0	Pass
2.6821	46	0	0	Pass
2.7110	46	0	0	Pass
2.7399	45	0	0	Pass
2.7687	44	0	0	Pass
2.7976	43	0	0	Pass
2.8264	43	0	0	Pass
2.8553	41	0	0	Pass
2.8842	40	0	0	Pass
2.9130	40	0	0	Pass
2.9419	38	0	0	Pass
2.9707	36	0	0	Pass

Water Quality

POC 3





+ Predeveloped   x Mitigated

Predeveloped Landuse Totals for POC #3
Total Pervious Area: 3.74
Total Impervious Area: 0.15

Mitigated Landuse Totals for POC #3
Total Pervious Area: 0.7
Total Impervious Area: 3.19

Flow Frequency Method: Cunnane

Flow Frequency Return Periods for Predeveloped. POC #3

Return Period	**Flow(cfs)**
2 year	0.572185
5 year	1.230021
10 year	1.492547
25 year	3.109948

Flow Frequency Return Periods for Mitigated. POC #3

Return Period	**Flow(cfs)**
2 year	0.047575
5 year	0.875416
10 year	1.155343
25 year	1.960801

Duration Flows
The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0572	3602	1849	51	Pass
0.0717	2630	1686	64	Pass
0.0862	2215	1560	70	Pass
0.1007	2008	1439	71	Pass
0.1152	1829	1303	71	Pass
0.1297	1668	1200	71	Pass
0.1442	1538	1103	71	Pass
0.1587	1433	1051	73	Pass
0.1732	1335	1001	74	Pass
0.1877	1245	957	76	Pass
0.2022	1141	912	79	Pass
0.2167	1070	875	81	Pass
0.2312	1005	828	82	Pass
0.2457	931	793	85	Pass
0.2602	879	761	86	Pass
0.2747	833	718	86	Pass
0.2892	801	679	84	Pass
0.3037	760	643	84	Pass
0.3182	711	598	84	Pass
0.3327	681	571	83	Pass
0.3472	656	550	83	Pass
0.3617	619	514	83	Pass
0.3762	591	487	82	Pass
0.3907	574	471	82	Pass
0.4052	550	454	82	Pass
0.4197	519	442	85	Pass
0.4342	490	420	85	Pass
0.4487	459	402	87	Pass
0.4632	436	379	86	Pass
0.4777	418	370	88	Pass
0.4922	402	351	87	Pass
0.5067	387	338	87	Pass
0.5212	375	320	85	Pass
0.5357	362	319	88	Pass
0.5502	348	307	88	Pass
0.5647	335	291	86	Pass
0.5792	319	282	88	Pass
0.5937	309	264	85	Pass
0.6082	296	249	84	Pass
0.6227	279	241	86	Pass
0.6371	264	234	88	Pass
0.6516	249	220	88	Pass
0.6661	238	211	88	Pass
0.6806	236	204	86	Pass
0.6951	221	196	88	Pass
0.7096	211	187	88	Pass
0.7241	205	172	83	Pass
0.7386	200	164	82	Pass
0.7531	192	153	79	Pass
0.7676	184	147	79	Pass
0.7821	178	136	76	Pass
0.7966	173	126	72	Pass
0.8111	164	121	73	Pass

0.8256	158	114	72	Pass
0.8401	153	109	71	Pass
0.8546	146	109	74	Pass
0.8691	144	102	70	Pass
0.8836	139	99	71	Pass
0.8981	132	94	71	Pass
0.9126	131	89	67	Pass
0.9271	131	85	64	Pass
0.9416	125	81	64	Pass
0.9561	120	77	64	Pass
0.9706	117	70	59	Pass
0.9851	114	68	59	Pass
0.9996	112	64	57	Pass
1.0141	108	63	58	Pass
1.0286	106	59	55	Pass
1.0431	101	56	55	Pass
1.0576	95	54	56	Pass
1.0721	95	52	54	Pass
1.0866	94	51	54	Pass
1.1011	88	48	54	Pass
1.1156	87	47	54	Pass
1.1301	83	46	55	Pass
1.1446	82	45	54	Pass
1.1591	81	44	54	Pass
1.1736	77	44	57	Pass
1.1881	75	42	56	Pass
1.2026	72	41	56	Pass
1.2171	68	40	58	Pass
1.2316	66	40	60	Pass
1.2461	63	39	61	Pass
1.2606	60	36	60	Pass
1.2751	57	35	61	Pass
1.2896	55	34	61	Pass
1.3041	53	34	64	Pass
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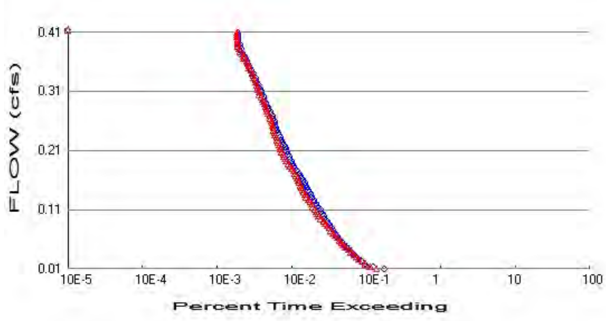
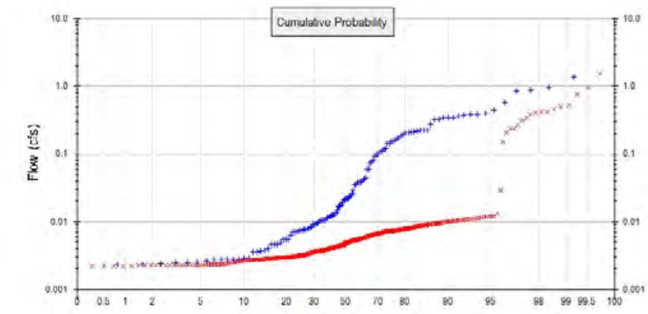
1.3621	46	32	69	Pass
1.3766	45	30	66	Pass
1.3911	43	28	65	Pass
1.4056	43	26	60	Pass
1.4201	43	24	55	Pass
1.4346	40	22	55	Pass
1.4491	40	22	55	Pass
1.4636	39	20	51	Pass
1.4780	37	20	54	Pass
1.4925	35	19	54	Pass

POC 4





+ Predeveloped x Mitigated

Predeveloped Landuse Totals for POC #4
Total Pervious Area: 1.11
Total Impervious Area: 0

Mitigated Landuse Totals for POC #4
Total Pervious Area: 0.27
Total Impervious Area: 0.84

Flow Frequency Method: Cunnane

Flow Frequency Return Periods for Predeveloped. POC #4

Return Period	**Flow(cfs)**
2 year	0.148519
5 year	0.347651
10 year	0.410439
25 year	0.883449

Flow Frequency Return Periods for Mitigated. POC #4

Return Period	**Flow(cfs)**
2 year	0.01073
5 year	0.27139
10 year	0.437958
25 year	0.780847

Duration Flows

The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0149	3822	3017	78	Pass
0.0188	2663	2463	92	Pass
0.0228	2104	2159	102	Pass
0.0268	1890	1934	102	Pass
0.0308	1738	1736	99	Pass
0.0348	1599	1605	100	Pass
0.0388	1468	1481	100	Pass
0.0428	1373	1367	99	Pass
0.0468	1274	1259	98	Pass
0.0508	1191	1160	97	Pass
0.0548	1109	1081	97	Pass
0.0588	1041	1018	97	Pass
0.0628	973	953	97	Pass
0.0668	910	897	98	Pass
0.0708	870	838	96	Pass
0.0748	824	786	95	Pass
0.0788	790	736	93	Pass
0.0828	748	693	92	Pass
0.0868	712	660	92	Pass
0.0908	680	619	91	Pass
0.0948	649	582	89	Pass
0.0988	616	540	87	Pass
0.1028	591	503	85	Pass
0.1068	570	482	84	Pass
0.1108	542	465	85	Pass
0.1147	525	449	85	Pass
0.1187	494	423	85	Pass
0.1227	471	405	85	Pass
0.1267	438	387	88	Pass
0.1307	427	368	86	Pass
0.1347	411	344	83	Pass
0.1387	396	331	83	Pass
0.1427	375	316	84	Pass
0.1467	362	305	84	Pass
0.1507	353	295	83	Pass
0.1547	338	287	84	Pass
0.1587	327	275	84	Pass
0.1627	309	266	86	Pass
0.1667	297	260	87	Pass
0.1707	283	252	89	Pass
0.1747	273	244	89	Pass
0.1787	258	232	89	Pass
0.1827	241	219	90	Pass
0.1867	233	205	87	Pass
0.1907	224	198	88	Pass
0.1947	214	186	86	Pass
0.1987	206	179	86	Pass
0.2027	201	173	86	Pass
0.2067	195	169	86	Pass
0.2106	190	162	85	Pass
0.2146	186	155	83	Pass
0.2186	178	154	86	Pass
0.2226	169	148	87	Pass

0.2266	165	143	86	Pass
0.2306	158	139	87	Pass
0.2346	152	137	90	Pass
0.2386	148	130	87	Pass
0.2426	143	128	89	Pass
0.2466	138	124	89	Pass
0.2506	133	123	92	Pass
0.2546	131	121	92	Pass
0.2586	131	119	90	Pass
0.2626	128	118	92	Pass
0.2666	122	113	92	Pass
0.2706	120	112	93	Pass
0.2746	113	106	93	Pass
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0.2946	94	93	98	Pass
0.2986	93	89	95	Pass
0.3026	93	86	92	Pass
0.3065	88	81	92	Pass
0.3105	87	81	93	Pass
0.3145	84	77	91	Pass
0.3185	80	76	95	Pass
0.3225	79	75	94	Pass
0.3265	74	73	98	Pass
0.3305	73	71	97	Pass
0.3345	71	68	95	Pass
0.3385	67	67	100	Pass
0.3425	67	64	95	Pass
0.3465	63	62	98	Pass
0.3505	60	59	98	Pass
0.3545	58	58	100	Pass
0.3585	56	57	101	Pass
0.3625	55	55	100	Pass
0.3665	52	50	96	Pass
0.3705	51	50	98	Pass
0.3745	48	48	100	Pass
0.3785	46	45	97	Pass
0.3825	46	43	93	Pass
0.3865	44	41	93	Pass
0.3905	44	41	93	Pass
0.3945	42	41	97	Pass
0.3985	42	41	97	Pass
0.4024	41	40	97	Pass
0.4064	41	40	97	Pass
0.4104	41	40	97	Pass

Rational Method

Data for Rational Method is not available.

Model Default Modifications

Total of 0 changes have been made.

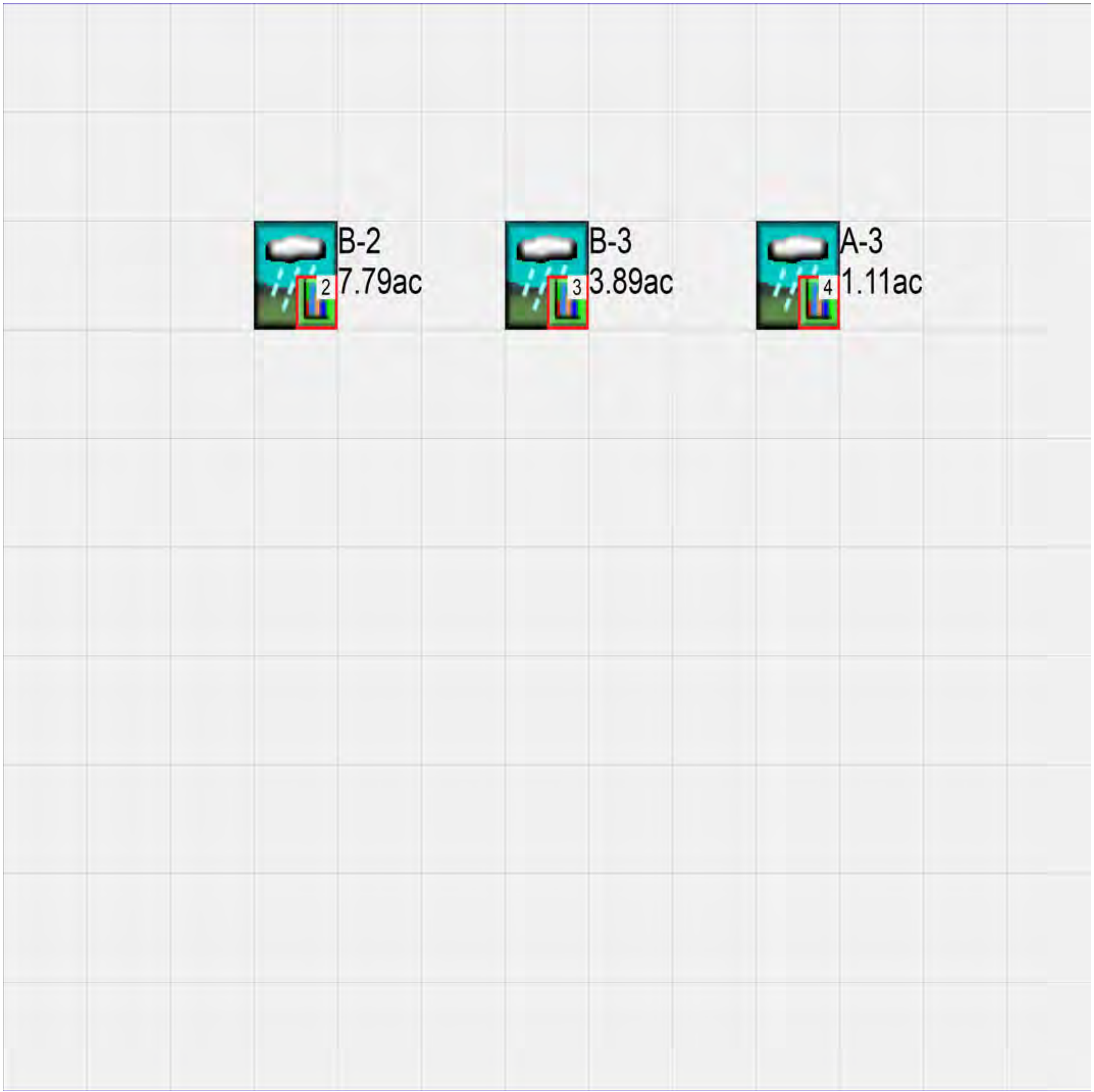
PERLND Changes

No PERLND changes have been made.

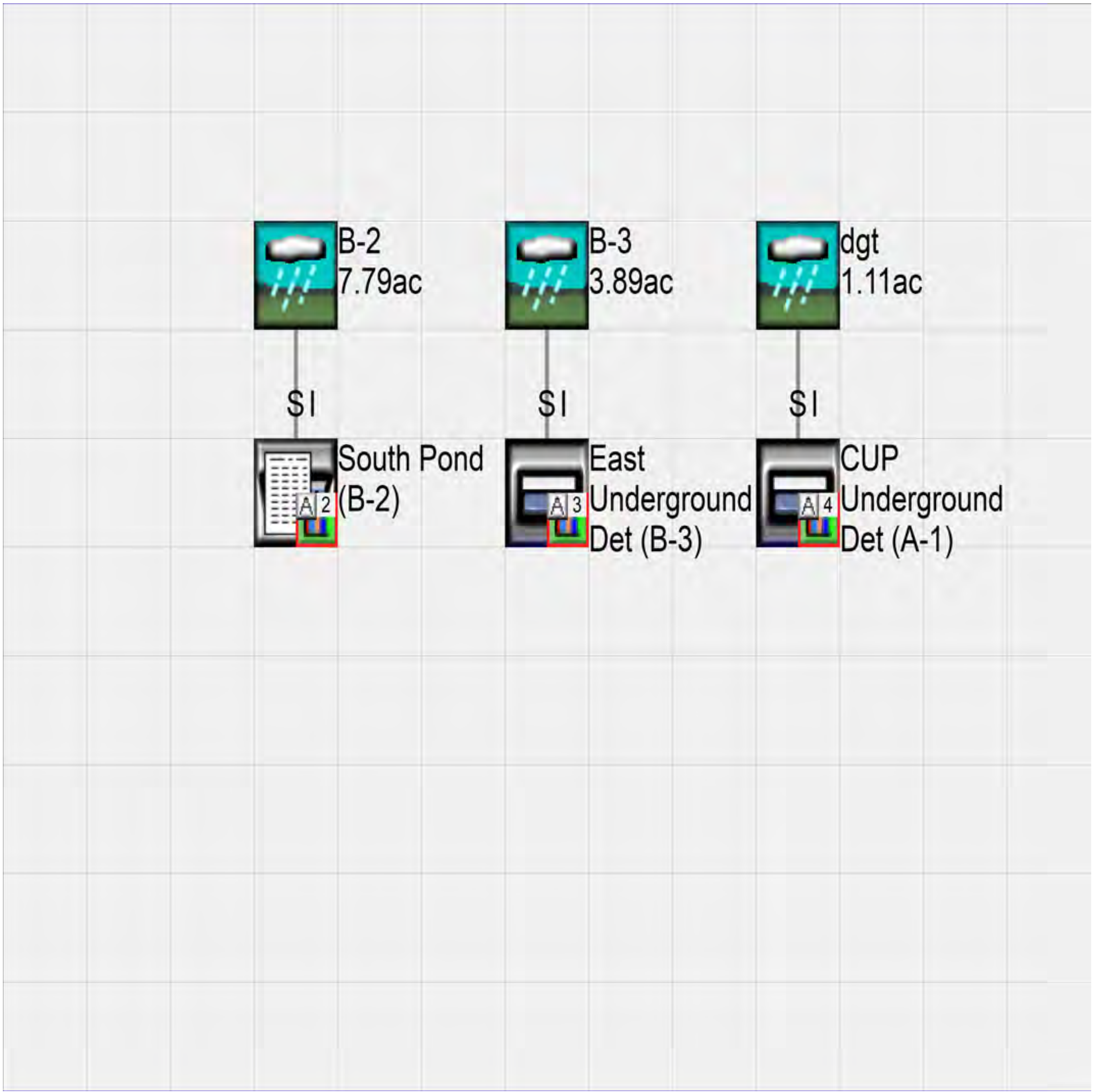
IMPLND Changes

No IMPLND changes have been made.

Appendix
Predeveloped Schematic



Mitigated Schematic



Predeveloped UCI File

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RUN

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  RUN INTERP OUTPUT LEVEL    3    0
  RESUME     0 RUN     1                   UNIT SYSTEM     1
END GLOBAL

FILES
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<-ID->                                                             ***
WDM        26   IV_25.wdm
MESSU      25   PreIV_25.MES
           27   PreIV_25.L61
           28   PreIV_25.L62
           31   POCIV_252.dat
           32   POCIV_253.dat
           33   POCIV_254.dat
END FILES

OPN SEQUENCE
    INGRP              INDELT 00:15
      PERLND      38
      IMPLND       5
      COPY       502
      COPY       503
      COPY       504
      DISPLY       2
      DISPLY       3
      DISPLY       4
    END INGRP
END OPN SEQUENCE
DISPLY
  DISPLY-INFO1
    # -  #<----------Title----------->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
    2        B-2                         MAX                    1    2   31    9
    3        B-3                         MAX                    1    2   32    9
    4        A-3                         MAX                    1    2   33    9
  END DISPLY-INFO1
END DISPLY
COPY
  TIMESERIES
    # -  #  NPT  NMN ***
    1        1    1
  502        1    1
  503        1    1
  504        1    1
  END TIMESERIES
END COPY
GENER
  OPCODE
    #    # OPCD ***
  END OPCODE
  PARM
    #    #         K ***
  END PARM
END GENER
PERLND
  GEN-INFO
    <PLS ><-------Name------->NBLKS   Unit-systems   Printer ***
    # -  #                          User  t-series Engl Metr ***
                                          in  out           ***
   38      C/D,Shrub,Mod(5-10%)    1    1    1    1   27    0
  END GEN-INFO
  *** Section PWATER***

  ACTIVITY
```

```
    <PLS > ************* Active Sections *****************************
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC ***
   38         0    0    1    0    0    0    0    0    0    0    0    0
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ***************************** PIVL  PYR
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC  *********
   38         0    0    4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO

  PWAT-PARM1
    <PLS >  PWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP UZFG  VCS  VUZ  VNN VIFW VIRC  VLE INFC  HWT ***
   38         0    0    0    1    0    0    0    0    1    0    0
  END PWAT-PARM1

  PWAT-PARM2
    <PLS >      PWATER input info: Part 2         ***
    # -  # ***FOREST      LZSN    INFILT      LSUR     SLSUR     KVARY     AGWRC
   38              0       4.5      0.04       350       0.1         2      0.95
  END PWAT-PARM2

  PWAT-PARM3
    <PLS >      PWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN    INFEXP    INFILD    DEEPFR    BASETP    AGWETP
   38             40        35         3         2      0.15      0.15         0
  END PWAT-PARM3
  PWAT-PARM4
    <PLS >     PWATER input info: Part 4                               ***
    # -  #     CEPSC      UZSN      NSUR     INTFW       IRC     LZETP ***
   38              0       0.7       0.3       1.2      0.45         0
  END PWAT-PARM4
  MON-LZETPARM
    <PLS >      PWATER input info: Part 3         ***
    # -  #  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC  ***
   38       0.5  0.5  0.5  0.6 0.65 0.65 0.65 0.65 0.65 0.65 0.55  0.5
  END MON-LZETPARM
  MON-INTERCEP
    <PLS >      PWATER input info: Part 3         ***
    # -  #  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC  ***
   38      0.13 0.13 0.13 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.14    0
  END MON-INTERCEP

  PWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
              ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
    # -  # ***  CEPS      SURS       UZS      IFWS       LZS      AGWS      GWVS
   38              0         0      0.01         0       0.5       0.3      0.01
  END PWAT-STATE1

END PERLND

IMPLND
  GEN-INFO
    <PLS ><-------Name------->   Unit-systems   Printer ***
    # -  #                     User  t-series Engl Metr ***
                                       in  out           ***
    5     Roof Area               1    1    1   27    0
  END GEN-INFO
  *** Section IWATER***

  ACTIVITY
    <PLS > ************* Active Sections *****************************
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL   ***
    5         0    0    1    0    0    0
  END ACTIVITY

  PRINT-INFO
    <ILS > ******** Print-flags ******** PIVL  PYR
```

```
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL    *********
    5         0    0    4    0    0    0    1    9
  END PRINT-INFO

  IWAT-PARM1
    <PLS >  IWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP  VRS  VNN RTLI     ***
    5         0    0    0    0    0
  END IWAT-PARM1

  IWAT-PARM2
    <PLS >      IWATER input info: Part 2         ***
    # -  # ***  LSUR     SLSUR      NSUR     RETSC
    5            100      0.05       0.1       0.1
  END IWAT-PARM2

  IWAT-PARM3
    <PLS >      IWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN
    5              0         0
  END IWAT-PARM3

  IWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
    # -  # ***  RETS      SURS
    5              0         0
  END IWAT-STATE1

END IMPLND

SCHEMATIC
<-Source->                  <--Area-->     <-Target->   MBLK   ***
<Name>   #                  <-factor->     <Name>   #   Tbl#   ***
B-2***
PERLND  38                        7.54     COPY   502     12
PERLND  38                        7.54     COPY   502     13
IMPLND   5                        0.25     COPY   502     15
B-3***
PERLND  38                        3.74     COPY   503     12
PERLND  38                        3.74     COPY   503     13
IMPLND   5                        0.15     COPY   503     15
A-3***
PERLND  38                        1.11     COPY   504     12
PERLND  38                        1.11     COPY   504     13

******Routing******
END SCHEMATIC

NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
COPY   502 OUTPUT MEAN   1 1   48.4        DISPLY   2     INPUT  TIMSER 1
COPY   503 OUTPUT MEAN   1 1   48.4        DISPLY   3     INPUT  TIMSER 1
COPY   504 OUTPUT MEAN   1 1   48.4        DISPLY   4     INPUT  TIMSER 1



<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
END NETWORK

RCHRES
  GEN-INFO
    RCHRES       Name        Nexits   Unit Systems   Printer                 ***
    # -  #<------------------><---> User T-series  Engl Metr LKFG            ***
                                             in  out                         ***
  END GEN-INFO
  *** Section RCHRES***

  ACTIVITY
```

```
    <PLS > ************* Active Sections *****************************
    # -  # HYFG ADFG CNFG HTFG SDFG GQFG OXFG NUFG PKFG PHFG ***
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ******************* PIVL  PYR
    # -  # HYDR ADCA CONS HEAT  SED  GQL OXRX NUTR PLNK PHCB PIVL  PYR  *********
  END PRINT-INFO

  HYDR-PARM1
    RCHRES  Flags for each HYDR Section                                      ***
    # -  #  VC A1 A2 A3  ODFVFG for each *** ODGTFG for each     FUNCT  for each
            FG FG FG FG  possible  exit  *** possible  exit      possible  exit
             *  *  *  *    *  *  *  *  *        *  *  *  *  *        ***
  END HYDR-PARM1

  HYDR-PARM2
    # -  #    FTABNO       LEN     DELTH     STCOR        KS      DB50       ***
  <------><--------><--------><--------><--------><--------><-------->       ***
  END HYDR-PARM2
  HYDR-INIT
    RCHRES  Initial conditions for each HYDR section                         ***
    # -  # ***   VOL     Initial  value  of COLIND     Initial  value  of OUTDGT
          *** ac-ft     for each possible exit        for each possible exit
  <------><-------->     <---><---><---><---><---> *** <---><---><---><---><--->
  END HYDR-INIT
END RCHRES

SPEC-ACTIONS
END SPEC-ACTIONS
FTABLES
END FTABLES

EXT SOURCES
<-Volume-> <Member> SsysSgap<--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   # <Name> # tem strg<-factor->strg <Name>   #   #        <Name> # #  ***
WDM      2 PREC     ENGL    1              PERLND   1 999 EXTNL  PREC
WDM      2 PREC     ENGL    1              IMPLND   1 999 EXTNL  PREC
WDM      1 EVAP     ENGL    1              PERLND   1 999 EXTNL  PETINP
WDM      1 EVAP     ENGL    1              IMPLND   1 999 EXTNL  PETINP

END EXT SOURCES

EXT TARGETS
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Volume-> <Member> Tsys Tgap Amd ***
<Name>   #        <Name> # #<-factor->strg <Name>   # <Name>    tem strg strg***
COPY   502 OUTPUT MEAN   1 1     48.4      WDM    502 FLOW     ENGL      REPL
COPY   503 OUTPUT MEAN   1 1     48.4      WDM    503 FLOW     ENGL      REPL
COPY   504 OUTPUT MEAN   1 1     48.4      WDM    504 FLOW     ENGL      REPL
END EXT TARGETS

MASS-LINK
<Volume>   <-Grp> <-Member-><--Mult-->     <Target>       <-Grp> <-Member->***
<Name>            <Name> # #<-factor->     <Name>                <Name> # #***
  MASS-LINK       12
PERLND     PWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   12

  MASS-LINK       13
PERLND     PWATER IFWO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   13

  MASS-LINK       15
IMPLND     IWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   15


END MASS-LINK

END RUN
```

Mitigated UCI File

```
RUN

GLOBAL
  WWHM4 model simulation
  START       1949 10 01        END    2011 09 30
  RUN INTERP OUTPUT LEVEL    3    0
  RESUME     0 RUN     1                   UNIT SYSTEM     1
END GLOBAL

FILES
<File>  <Un#>   <-----------File Name------------------------------>***
<-ID->                                                              ***
WDM        26   IV_25.wdm
MESSU      25   MitIV_25.MES
           27   MitIV_25.L61
           28   MitIV_25.L62
           31   POCIV_252.dat
           33   POCIV_254.dat
           32   POCIV_253.dat
END FILES

OPN SEQUENCE
    INGRP              INDELT 00:15
      PERLND      37
      PERLND      38
      PERLND      40
      IMPLND       5
      IMPLND       6
      IMPLND       7
      IMPLND      14
      RCHRES       1
      RCHRES       2
      RCHRES       3
      COPY         2
      COPY       502
      COPY         4
      COPY       504
      COPY         3
      COPY       503
      DISPLY       2
      DISPLY       4
      DISPLY       3
    END INGRP
END OPN SEQUENCE
DISPLY
  DISPLY-INFO1
    # -  #<----------Title----------->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
    2        South Pond (B-2)            MAX                        1    2   31    9
    4        CUP Underground Det (A-1)   MAX                        1    2   33    9
    3        East Underground Det (B-3   MAX                        1    2   32    9
  END DISPLY-INFO1
END DISPLY
COPY
  TIMESERIES
    # -  #  NPT  NMN ***
    1         1    1
    2         1    1
  502         1    1
    4         1    1
  504         1    1
    3         1    1
  503         1    1
  END TIMESERIES
END COPY
GENER
  OPCODE
    #    # OPCD ***
  END OPCODE
```

```
  PARM
    #    #          K ***
  END PARM
END GENER
PERLND
  GEN-INFO
    <PLS ><-------Name------->NBLKS   Unit-systems   Printer ***
    # -  #                          User  t-series Engl Metr ***
                                          in  out           ***
   37     C/D,Shrub,Flat(0-5%)    1    1    1    1   27    0
   38     C/D,Shrub,Mod(5-10%)    1    1    1    1   27    0
   40     C/D,Shrub,Very(>20%)    1    1    1    1   27    0
  END GEN-INFO
  *** Section PWATER***

  ACTIVITY
    <PLS > ************* Active Sections *****************************
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC ***
   37         0    0    1    0    0    0    0    0    0    0    0    0
   38         0    0    1    0    0    0    0    0    0    0    0    0
   40         0    0    1    0    0    0    0    0    0    0    0    0
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ***************************** PIVL  PYR
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC  *********
   37         0    0    4    0    0    0    0    0    0    0    0    0    1    9
   38         0    0    4    0    0    0    0    0    0    0    0    0    1    9
   40         0    0    4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO

  PWAT-PARM1
    <PLS >  PWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP UZFG  VCS  VUZ  VNN VIFW VIRC  VLE INFC  HWT ***
   37         0    0    0    1    0    0    0    0    1    0    0
   38         0    0    0    1    0    0    0    0    1    0    0
   40         0    0    0    1    0    0    0    0    1    0    0
  END PWAT-PARM1

  PWAT-PARM2
    <PLS >      PWATER input info: Part 2         ***
    # -  # ***FOREST      LZSN    INFILT      LSUR     SLSUR     KVARY     AGWRC
   37              0       4.8     0.045       400      0.05         2      0.95
   38              0       4.5      0.04       350       0.1         2      0.95
   40              0         4     0.025       200      0.25         2      0.95
  END PWAT-PARM2

  PWAT-PARM3
    <PLS >      PWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN    INFEXP    INFILD    DEEPFR    BASETP    AGWETP
   37             40        35         3         2      0.15      0.15         0
   38             40        35         3         2      0.15      0.15         0
   40             40        35         3         2      0.15      0.15         0
  END PWAT-PARM3
  PWAT-PARM4
    <PLS >     PWATER input info: Part 4                               ***
    # -  #     CEPSC      UZSN      NSUR     INTFW       IRC     LZETP ***
   37              0       0.9       0.3         2       0.7         0
   38              0       0.7       0.3       1.2      0.45         0
   40              0       0.4       0.3       0.4      0.35         0
  END PWAT-PARM4
  MON-LZETPARM
    <PLS >      PWATER input info: Part 3         ***
    # -  #  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC  ***
   37       0.5  0.5  0.5  0.6 0.65 0.65 0.65 0.65 0.65 0.65 0.55  0.5
   38       0.5  0.5  0.5  0.6 0.65 0.65 0.65 0.65 0.65 0.65 0.55  0.5
   40       0.5  0.5  0.5  0.6 0.65 0.65 0.65 0.65 0.65 0.65 0.55  0.5
  END MON-LZETPARM
  MON-INTERCEP
    <PLS >      PWATER input info: Part 3         ***
```

```
    # -  #  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC  ***
   37      0.13 0.13 0.13 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.14    0
   38      0.13 0.13 0.13 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.14    0
   40      0.13 0.13 0.13 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.14    0
  END MON-INTERCEP

  PWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
              ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
    # -  # ***  CEPS      SURS       UZS      IFWS       LZS      AGWS      GWVS
   37             0         0      0.01         0       0.5       0.3      0.01
   38             0         0      0.01         0       0.5       0.3      0.01
   40             0         0      0.01         0       0.5       0.3      0.01
  END PWAT-STATE1

END PERLND

IMPLND
  GEN-INFO
    <PLS ><-------Name------->   Unit-systems   Printer ***
    # -  #                     User  t-series Engl Metr ***
                                      in  out           ***
    5     Roof Area               1    1    1   27    0
    6     Driveways,Flat(0-5%)    1    1    1   27    0
    7     Driveways,Mod(5-10%)    1    1    1   27    0
   14     Parking,Flat(0-5%)      1    1    1   27    0
  END GEN-INFO
  *** Section IWATER***

  ACTIVITY
    <PLS > ************* Active Sections *****************************
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL   ***
    5         0    0    1    0    0    0
    6         0    0    1    0    0    0
    7         0    0    1    0    0    0
   14         0    0    1    0    0    0
  END ACTIVITY

  PRINT-INFO
    <ILS > ******** Print-flags ******** PIVL  PYR
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL    *********
    5         0    0    4    0    0    0    1    9
    6         0    0    4    0    0    0    1    9
    7         0    0    4    0    0    0    1    9
   14         0    0    4    0    0    0    1    9
  END PRINT-INFO

  IWAT-PARM1
    <PLS >  IWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP  VRS  VNN RTLI     ***
    5         0    0    0    0    0
    6         0    0    0    0    0
    7         0    0    0    0    0
   14         0    0    0    0    0
  END IWAT-PARM1

  IWAT-PARM2
    <PLS >      IWATER input info: Part 2         ***
    # -  # ***  LSUR     SLSUR      NSUR     RETSC
    5            100      0.05       0.1       0.1
    6            100      0.05       0.1       0.1
    7            100       0.1       0.1      0.09
   14            100      0.05       0.1       0.1
  END IWAT-PARM2

  IWAT-PARM3
    <PLS >      IWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN
    5             0         0
    6             0         0
```

```
    7              0         0
   14              0         0
  END IWAT-PARM3

  IWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
    # -  # ***  RETS      SURS
    5              0         0
    6              0         0
    7              0         0
   14              0         0
  END IWAT-STATE1

END IMPLND

SCHEMATIC
<-Source->                  <--Area-->     <-Target->   MBLK   ***
<Name>   #                  <-factor->     <Name>   #   Tbl#   ***
B-2***
PERLND  37                        1.07     RCHRES   1      2
PERLND  37                        1.07     RCHRES   1      3
PERLND  38                        0.05     RCHRES   1      2
PERLND  38                        0.05     RCHRES   1      3
PERLND  40                        1.19     RCHRES   1      2
PERLND  40                        1.19     RCHRES   1      3
IMPLND   5                        0.33     RCHRES   1      5
IMPLND   6                        5.01     RCHRES   1      5
IMPLND   7                        0.14     RCHRES   1      5
B-3***
PERLND  37                         0.7     RCHRES   3      2
PERLND  37                         0.7     RCHRES   3      3
IMPLND   6                        3.19     RCHRES   3      5
dgt     ***
PERLND  37                        0.21     RCHRES   2      2
PERLND  37                        0.21     RCHRES   2      3
PERLND  38                        0.06     RCHRES   2      2
PERLND  38                        0.06     RCHRES   2      3
IMPLND  14                        0.84     RCHRES   2      5

******Routing******
PERLND  37                        1.07     COPY     2     12
PERLND  38                        0.05     COPY     2     12
PERLND  40                        1.19     COPY     2     12
IMPLND   5                        0.33     COPY     2     15
IMPLND   6                        5.01     COPY     2     15
IMPLND   7                        0.14     COPY     2     15
PERLND  37                        1.07     COPY     2     13
PERLND  38                        0.05     COPY     2     13
PERLND  40                        1.19     COPY     2     13
PERLND  37                         0.7     COPY     3     12
IMPLND   6                        3.19     COPY     3     15
PERLND  37                         0.7     COPY     3     13
PERLND  37                        0.21     COPY     4     12
PERLND  38                        0.06     COPY     4     12
IMPLND  14                        0.84     COPY     4     15
PERLND  37                        0.21     COPY     4     13
PERLND  38                        0.06     COPY     4     13
RCHRES   1                           1     COPY   502     17
RCHRES   2                           1     COPY   504     17
RCHRES   3                           1     COPY   503     17
END SCHEMATIC

NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
COPY   502 OUTPUT MEAN   1 1   48.4        DISPLY   2     INPUT  TIMSER 1
COPY   504 OUTPUT MEAN   1 1   48.4        DISPLY   4     INPUT  TIMSER 1
COPY   503 OUTPUT MEAN   1 1   48.4        DISPLY   3     INPUT  TIMSER 1
```

```
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
END NETWORK

RCHRES
  GEN-INFO
    RCHRES       Name        Nexits   Unit Systems   Printer                 ***
    # -  #<------------------><---> User T-series  Engl Metr LKFG            ***
                                         in  out                             ***
    1     South Pond (B-2)-022    2    1    1    1   28    0    1
    2     CUP Underground -045    2    1    1    1   28    0    1
    3     East Underground-046    2    1    1    1   28    0    1
  END GEN-INFO
  *** Section RCHRES***

  ACTIVITY
    <PLS > ************* Active Sections ****************************
    # -  # HYFG ADFG CNFG HTFG SDFG GQFG OXFG NUFG PKFG PHFG ***
    1         1    0    0    0    0    0    0    0    0    0
    2         1    0    0    0    0    0    0    0    0    0
    3         1    0    0    0    0    0    0    0    0    0
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ****************** PIVL  PYR
    # -  # HYDR ADCA CONS HEAT  SED  GQL OXRX NUTR PLNK PHCB PIVL  PYR  *********
    1         4    0    0    0    0    0    0    0    0    0    1    9
    2         4    0    0    0    0    0    0    0    0    0    1    9
    3         4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO

  HYDR-PARM1
    RCHRES  Flags for each HYDR Section                                      ***
    # -  #  VC A1 A2 A3  ODFVFG for each *** ODGTFG for each     FUNCT  for each
            FG FG FG FG  possible  exit  *** possible  exit      possible  exit
             *  *  *  *    *  *  *  *  *       *  *  *  *  *        ***
    1        0  1  0  0    4  5  0  0  0       0  0  0  0  0       2  2  2  2  2
    2        0  1  0  0    4  5  0  0  0       0  0  0  0  0       2  2  2  2  2
    3        0  1  0  0    4  5  0  0  0       0  0  0  0  0       2  2  2  2  2
  END HYDR-PARM1

  HYDR-PARM2
    # -  #    FTABNO       LEN     DELTH     STCOR        KS      DB50       ***
  <------><--------><--------><--------><--------><--------><-------->       ***
    1             1      0.01       0.0       0.0       0.5       0.0
    2             2      0.01       0.0       0.0       0.5       0.0
    3             3      0.01       0.0       0.0       0.5       0.0
  END HYDR-PARM2
  HYDR-INIT
    RCHRES  Initial conditions for each HYDR section                         ***
    # -  # ***   VOL     Initial  value  of COLIND     Initial  value  of OUTDGT
         *** ac-ft     for each possible exit       for each possible exit
  <------><-------->     <---><---><---><---><---> *** <---><---><---><---><--->
    1           0          4.0  5.0  0.0  0.0  0.0       0.0  0.0  0.0  0.0  0.0
    2           0          4.0  5.0  0.0  0.0  0.0       0.0  0.0  0.0  0.0  0.0
    3           0          4.0  5.0  0.0  0.0  0.0       0.0  0.0  0.0  0.0  0.0
  END HYDR-INIT
END RCHRES

SPEC-ACTIONS
END SPEC-ACTIONS
FTABLES
  FTABLE      1
    7    5
     Depth      Area    Volume  Outflow1  Outflow2  Velocity  Travel Time***
      (ft)   (acres) (acre-ft)   (cfs)      (cfs)   (ft/sec)    (Minutes)***
  0.000000  0.308563  0.000000  0.000000  0.000000
  1.000000  0.377594  0.342493  0.019189  44.93403
  2.000000  0.449908  0.755716  0.033236  89.70369
```

```
  3.000000  0.525045  1.242722  0.042907  132.0995
  4.000000  0.603742  1.806657  0.050768  628.3823
  5.000000  0.686363  2.451262  0.057566  3116.997
  6.000000  0.773944  3.180968  44.99767  11009.04
  END FTABLE  1
  FTABLE      2
   92    5
     Depth      Area    Volume  Outflow1  Outflow2  Velocity  Travel Time***
      (ft)   (acres) (acre-ft)    (cfs)     (cfs)   (ft/sec)    (Minutes)***
  0.000000  0.069301  0.000000  0.000000  0.000000
  0.044444  0.069301  0.003080  0.001430  0.000699
  0.088889  0.069301  0.006160  0.002023  0.000699
  0.133333  0.069301  0.009240  0.002477  0.000699
  0.177778  0.069301  0.012320  0.002860  0.000699
  0.222222  0.069301  0.015400  0.003198  0.000699
  0.266667  0.069301  0.018480  0.003503  0.000699
  0.311111  0.069301  0.021560  0.003784  0.000699
  0.355556  0.069301  0.024640  0.004045  0.000699
  0.400000  0.069301  0.027720  0.004291  0.000699
  0.444444  0.069301  0.030800  0.004523  0.000699
  0.488889  0.069301  0.033880  0.004744  0.000699
  0.533333  0.069301  0.036961  0.004954  0.000699
  0.577778  0.069301  0.040041  0.005157  0.000699
  0.622222  0.069301  0.043121  0.005351  0.000699
  0.666667  0.069301  0.046201  0.005539  0.000699
  0.711111  0.069301  0.049281  0.005721  0.000699
  0.755556  0.069301  0.052361  0.005897  0.000699
  0.800000  0.069301  0.055441  0.006068  0.000699
  0.844444  0.069301  0.058521  0.006234  0.000699
  0.888889  0.069301  0.061601  0.006396  0.000699
  0.933333  0.069301  0.064681  0.006554  0.000699
  0.977778  0.069301  0.067761  0.006708  0.000699
  1.022222  0.069301  0.070841  0.006859  0.000699
  1.066667  0.069301  0.073921  0.007007  0.000699
  1.111111  0.069301  0.077001  0.007151  0.000699
  1.155556  0.069301  0.080081  0.007293  0.000699
  1.200000  0.069301  0.083161  0.007432  0.000699
  1.244444  0.069301  0.086241  0.007568  0.000699
  1.288889  0.069301  0.089321  0.007702  0.000699
  1.333333  0.069301  0.092401  0.007834  0.000699
  1.377778  0.069301  0.095481  0.007963  0.000699
  1.422222  0.069301  0.098561  0.008091  0.000699
  1.466667  0.069301  0.101641  0.008216  0.000699
  1.511111  0.069301  0.104721  0.008340  0.000699
  1.555556  0.069301  0.107801  0.008461  0.000699
  1.600000  0.069301  0.110882  0.008581  0.000699
  1.644444  0.069301  0.113962  0.008700  0.000699
  1.688889  0.069301  0.117042  0.008817  0.000699
  1.733333  0.069301  0.120122  0.008932  0.000699
  1.777778  0.069301  0.123202  0.009046  0.000699
  1.822222  0.069301  0.126282  0.009158  0.000699
  1.866667  0.069301  0.129362  0.009269  0.000699
  1.911111  0.069301  0.132442  0.009379  0.000699
  1.955556  0.069301  0.135522  0.009487  0.000699
  2.000000  0.069301  0.138602  0.009594  0.000699
  2.044444  0.069301  0.141682  0.009700  0.000699
  2.088889  0.069301  0.144762  0.009805  0.000699
  2.133333  0.069301  0.147842  0.009909  0.000699
  2.177778  0.069301  0.150922  0.010012  0.000699
  2.222222  0.069301  0.154002  0.010113  0.000699
  2.266667  0.069301  0.157082  0.010214  0.000699
  2.311111  0.069301  0.160162  0.010314  0.000699
  2.355556  0.069301  0.163242  0.010412  0.000699
  2.400000  0.069301  0.166322  0.010510  0.000699
  2.444444  0.069301  0.169402  0.010607  0.000699
  2.488889  0.069301  0.172482  0.010703  0.000699
  2.533333  0.069301  0.175562  0.010798  0.000699
  2.577778  0.069301  0.178642  0.010892  0.000699
  2.622222  0.069301  0.181723  0.010986  0.000699
  2.666667  0.069301  0.184803  0.011079  0.000699
```

2.711111	0.069301	0.187883	0.011170	0.000699
2.755556	0.069301	0.190963	0.011262	0.000699
2.800000	0.069301	0.194043	0.011352	0.000699
2.844444	0.069301	0.197123	0.011442	0.000699
2.888889	0.069301	0.200203	0.011531	0.000699
2.933333	0.069301	0.203283	0.011619	0.000699
2.977778	0.069301	0.206363	0.011707	0.000699
3.022222	0.069301	0.209443	0.011794	0.000699
3.066667	0.069301	0.212523	0.011880	0.000699
3.111111	0.069301	0.215603	0.011966	0.000699
3.155556	0.069301	0.218683	0.012051	0.000699
3.200000	0.069301	0.221763	0.012136	0.000699
3.244444	0.069301	0.224843	0.013326	0.000699
3.288889	0.069301	0.227923	0.018543	0.000699
3.333333	0.069301	0.231003	0.029541	0.000699
3.377778	0.069301	0.234083	0.047608	0.000699
3.422222	0.069301	0.237163	0.073810	0.000699
3.466667	0.069301	0.240243	0.109074	0.000699
3.511111	0.069301	0.243323	0.197964	0.000699
3.555556	0.069301	0.246403	0.767529	0.000699
3.600000	0.069301	0.249483	1.651932	0.000699
3.644444	0.069301	0.252564	2.762194	0.000699
3.688889	0.069301	0.255644	4.058658	0.000699
3.733333	0.069301	0.258724	5.516897	0.000699
3.777778	0.069301	0.261804	7.119539	0.000699
3.822222	0.069301	0.264884	8.853061	0.000699
3.866667	0.069301	0.267964	10.70621	0.000699
3.911111	0.069301	0.271044	12.66915	0.000699
3.955556	0.069301	0.274124	14.73290	0.000699
4.000000	0.069301	0.277204	16.88905	0.000699
4.044444	0.069301	0.280284	19.12948	0.000699

END FTABLE 2
FTABLE 3
92 5

Depth (ft)	Area (acres)	Volume (acre-ft)	Outflow1 (cfs)	Outflow2 (cfs)	Velocity (ft/sec)	Travel Time*** (Minutes)***
0.000000	0.198864	0.000000	0.000000	0.000000		
0.077778	0.198864	0.015467	0.007373	0.002005		
0.155556	0.198864	0.030934	0.010426	0.002005		
0.233333	0.198864	0.046402	0.012770	0.002005		
0.311111	0.198864	0.061869	0.014745	0.002005		
0.388889	0.198864	0.077336	0.016486	0.002005		
0.466667	0.198864	0.092803	0.018059	0.002005		
0.544444	0.198864	0.108270	0.019506	0.002005		
0.622222	0.198864	0.123737	0.020853	0.002005		
0.700000	0.198864	0.139205	0.022118	0.002005		
0.777778	0.198864	0.154672	0.023314	0.002005		
0.855556	0.198864	0.170139	0.024452	0.002005		
0.933333	0.198864	0.185606	0.025539	0.002005		
1.011111	0.198864	0.201073	0.026582	0.002005		
1.088889	0.198864	0.216540	0.027586	0.002005		
1.166667	0.198864	0.232008	0.028554	0.002005		
1.244444	0.198864	0.247475	0.029490	0.002005		
1.322222	0.198864	0.262942	0.030398	0.002005		
1.400000	0.198864	0.278409	0.031279	0.002005		
1.477778	0.198864	0.293876	0.032136	0.002005		
1.555556	0.198864	0.309343	0.032971	0.002005		
1.633333	0.198864	0.324811	0.033786	0.002005		
1.711111	0.198864	0.340278	0.034581	0.002005		
1.788889	0.198864	0.355745	0.035358	0.002005		
1.866667	0.198864	0.371212	0.036118	0.002005		
1.944444	0.198864	0.386679	0.036863	0.002005		
2.022222	0.198864	0.402146	0.037593	0.002005		
2.100000	0.198864	0.417614	0.038309	0.002005		
2.177778	0.198864	0.433081	0.039012	0.002005		
2.255556	0.198864	0.448548	0.039703	0.002005		
2.333333	0.198864	0.464015	0.040381	0.002005		
2.411111	0.198864	0.479482	0.041049	0.002005		
2.488889	0.198864	0.494949	0.041706	0.002005		
2.566667	0.198864	0.510417	0.042352	0.002005		

```
  2.644444  0.198864  0.525884  0.042989  0.002005
  2.722222  0.198864  0.541351  0.043617  0.002005
  2.800000  0.198864  0.556818  0.044236  0.002005
  2.877778  0.198864  0.572285  0.044846  0.002005
  2.955556  0.198864  0.587753  0.045448  0.002005
  3.033333  0.198864  0.603220  0.046042  0.002005
  3.111111  0.198864  0.618687  0.046628  0.002005
  3.188889  0.198864  0.634154  0.047208  0.002005
  3.266667  0.198864  0.649621  0.047780  0.002005
  3.344444  0.198864  0.665088  0.048345  0.002005
  3.422222  0.198864  0.680556  0.048904  0.002005
  3.500000  0.198864  0.696023  0.049457  0.002005
  3.577778  0.198864  0.711490  0.050003  0.002005
  3.655556  0.198864  0.726957  0.050544  0.002005
  3.733333  0.198864  0.742424  0.051079  0.002005
  3.811111  0.198864  0.757891  0.051608  0.002005
  3.888889  0.198864  0.773359  0.052132  0.002005
  3.966667  0.198864  0.788826  0.052651  0.002005
  4.044444  0.198864  0.804293  0.053165  0.002005
  4.122222  0.198864  0.819760  0.053673  0.002005
  4.200000  0.198864  0.835227  0.054177  0.002005
  4.277778  0.198864  0.850694  0.054677  0.002005
  4.355556  0.198864  0.866162  0.055172  0.002005
  4.433333  0.198864  0.881629  0.055662  0.002005
  4.511111  0.198864  0.897096  0.056148  0.002005
  4.588889  0.198864  0.912563  0.138005  0.002005
  4.666667  0.198864  0.928030  0.344804  0.002005
  4.744444  0.198864  0.943497  0.623056  0.002005
  4.822222  0.198864  0.958965  0.957571  0.002005
  4.900000  0.198864  0.974432  1.340090  0.002005
  4.977778  0.198864  0.989899  1.765197  0.002005
  5.055556  0.198864  1.005366  2.228983  0.002005
  5.133333  0.198864  1.020833  2.728451  0.002005
  5.211111  0.198864  1.036301  3.261212  0.002005
  5.288889  0.198864  1.051768  3.825299  0.002005
  5.366667  0.198864  1.067235  4.419059  0.002005
  5.444444  0.198864  1.082702  5.041076  0.002005
  5.522222  0.198864  1.098169  5.690118  0.002005
  5.600000  0.198864  1.113636  6.365104  0.002005
  5.677778  0.198864  1.129104  7.065071  0.002005
  5.755556  0.198864  1.144571  7.789157  0.002005
  5.833333  0.198864  1.160038  8.536583  0.002005
  5.911111  0.198864  1.175505  9.306641  0.002005
  5.988889  0.198864  1.190972  10.09868  0.002005
  6.066667  0.198864  1.206439  11.03604  0.002005
  6.144444  0.198864  1.221907  12.83433  0.002005
  6.222222  0.198864  1.237374  15.21062  0.002005
  6.300000  0.198864  1.252841  18.04337  0.002005
  6.377778  0.198864  1.268308  21.25998  0.002005
  6.455556  0.198864  1.283775  24.80614  0.002005
  6.533333  0.198864  1.299242  28.63541  0.002005
  6.611111  0.198864  1.314710  32.70457  0.002005
  6.688889  0.198864  1.330177  36.97130  0.002005
  6.766667  0.198864  1.345644  41.39308  0.002005
  6.844444  0.198864  1.361111  45.92668  0.002005
  6.922222  0.198864  1.376578  50.52811  0.002005
  7.000000  0.198864  1.392045  55.15281  0.002005
  7.077778  0.198864  1.407513  59.75606  0.002005
  END FTABLE  3
END FTABLES

EXT SOURCES
<-Volume-> <Member> SsysSgap<--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   # <Name> # tem strg<-factor->strg <Name>   #   #        <Name> # #  ***
WDM      2 PREC     ENGL    1              PERLND   1 999 EXTNL  PREC
WDM      2 PREC     ENGL    1              IMPLND   1 999 EXTNL  PREC
WDM      1 EVAP     ENGL    1              PERLND   1 999 EXTNL  PETINP
WDM      1 EVAP     ENGL    1              IMPLND   1 999 EXTNL  PETINP
WDM      1 EVAP     ENGL    1              RCHRES   1     EXTNL  POTEV
```

```
END EXT SOURCES

EXT TARGETS
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Volume-> <Member> Tsys Tgap Amd ***
<Name>   #        <Name> # #<-factor->strg <Name>   # <Name>    tem strg strg***
RCHRES   1 HYDR   RO     1 1         1      WDM   1000 FLOW     ENGL      REPL
RCHRES   1 HYDR   O      1 1         1      WDM   1001 FLOW     ENGL      REPL
RCHRES   1 HYDR   O      2 1         1      WDM   1002 FLOW     ENGL      REPL
RCHRES   1 HYDR   STAGE  1 1         1      WDM   1003 STAG     ENGL      REPL
COPY     2 OUTPUT MEAN   1 1      48.4      WDM    702 FLOW     ENGL      REPL
COPY   502 OUTPUT MEAN   1 1      48.4      WDM    802 FLOW     ENGL      REPL
RCHRES   2 HYDR   RO     1 1         1      WDM   1004 FLOW     ENGL      REPL
RCHRES   2 HYDR   O      1 1         1      WDM   1005 FLOW     ENGL      REPL
RCHRES   2 HYDR   O      2 1         1      WDM   1006 FLOW     ENGL      REPL
RCHRES   2 HYDR   STAGE  1 1         1      WDM   1007 STAG     ENGL      REPL
COPY     4 OUTPUT MEAN   1 1      48.4      WDM    704 FLOW     ENGL      REPL
COPY   504 OUTPUT MEAN   1 1      48.4      WDM    804 FLOW     ENGL      REPL
RCHRES   3 HYDR   RO     1 1         1      WDM   1008 FLOW     ENGL      REPL
RCHRES   3 HYDR   O      1 1         1      WDM   1009 FLOW     ENGL      REPL
RCHRES   3 HYDR   O      2 1         1      WDM   1010 FLOW     ENGL      REPL
RCHRES   3 HYDR   STAGE  1 1         1      WDM   1011 STAG     ENGL      REPL
COPY     3 OUTPUT MEAN   1 1      48.4      WDM    703 FLOW     ENGL      REPL
COPY   503 OUTPUT MEAN   1 1      48.4      WDM    803 FLOW     ENGL      REPL
END EXT TARGETS

MASS-LINK
<Volume>   <-Grp> <-Member-><--Mult-->     <Target>       <-Grp> <-Member->***
<Name>            <Name> # #<-factor->     <Name>                <Name> # #***
  MASS-LINK        2
PERLND     PWATER SURO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK    2

  MASS-LINK        3
PERLND     PWATER IFWO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK    3

  MASS-LINK        5
IMPLND     IWATER SURO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK    5

  MASS-LINK       12
PERLND     PWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   12

  MASS-LINK       13
PERLND     PWATER IFWO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   13

  MASS-LINK       15
IMPLND     IWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   15

  MASS-LINK       17
RCHRES     OFLOW  OVOL   1                 COPY           INPUT  MEAN
  END MASS-LINK   17


END MASS-LINK

END RUN
```

Predeveloped HSPF Message File

ERROR/WARNING ID: 238 1

The continuity error reported below is greater than 1 part in 1000 and is therefore considered high.

Did you specify any "special actions"? If so, they could account for it.

Relevant data are:
DATE/TIME: 1953/12/31 24: 0

RCHRES : 2

RELERR	STORS	STOR	MATIN	MATDIF
-1.127E-01	0.00000	0.0000E+00	0.00000	4.8038E-12

Where:

RELERR is the relative error (ERROR/REFVAL).
ERROR is (STOR-STORS) - MATDIF.
REFVAL is the reference value (STORS+MATIN).
STOR is the storage of material in the processing unit (land-segment or reach/reservior) at the end of the present interval.
STORS is the storage of material in the pu at the start of the present printout reporting period.
MATIN is the total inflow of material to the pu during the present printout reporting period.
MATDIF is the net inflow (inflow-outflow) of material to the pu during the present printout reporting period.

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Local (360)943-0304

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Appendix 8: Source Control

Pollutant Sources/Source Control Checklist

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

How to use this worksheet (also see instructions in Section **H** of the 20**18** SMR WQMP Template):

1. Review Column 1 and identify which of these potential sources of stormwater pollutants apply to your site. Check each box that applies.
2. Review Column 2 and incorporate all of the corresponding applicable BMPs in your WQMP Exhibit.
3. Review Columns 3 and 4 and incorporate all of the corresponding applicable permanent controls and operational BMPs in your WQMP. Use the format shown in Table H.1 of this WQMP Template. Describe your specific BMPs in an accompanying narrative, and explain any special conditions or situations that required omitting BMPs or substituting alternative BMPs for those shown here.

IF THESE SOURCES WILL BE ON THE PROJECT SITE …	… THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
☑ A. **On-site storm drain inlets**	☑ **Locations of inlets.**	☑ **Mark all inlets with the words "Only Rain Down the Storm Drain" or similar. Catch Basin Markers may be available from the Riverside County Flood Control and Water Conservation District, call 951.955.1200 to verify.**	☑ **Maintain and periodically repaint or replace inlet markings.** ☑ **Provide stormwater pollution prevention information to new site owners, lessees, or operators.** ☑ **See applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com** ☑ **Include the following in lease agreements: "Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains."**
☐ B. **Interior floor drains and elevator shaft sump pumps**		☐ **State that interior floor drains and elevator shaft sump pumps will be plumbed to sanitary sewer.**	☐ **Inspect and maintain drains to prevent blockages and overflow.**
☐ C. **Interior parking garages**		☐ **State that parking garage floor drains will be plumbed to the sanitary sewer.**	☐ **Inspect and maintain drains to prevent blockages and overflow.**

IF THESE SOURCES WILL BE ON THE PROJECT SITE …	… THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
☑ D1. **Need for future indoor & structural pest control**		☑ **Note building design features that discourage entry of pests.**	☑ **Provide Integrated Pest Management information to owners, lessees, and operators.**
☑ D2. **Landscape/ Outdoor Pesticide Use**	❑ **Show locations of native trees or areas of shrubs and ground cover to be undisturbed and retained.** ❑ **Show self-retaining landscape areas, if any.** ☑ **Show stormwater treatment and hydrograph modification management BMPs.**	**State that final landscape plans will accomplish all of the following.** ❑ **Preserve existing native trees, shrubs, and ground cover to the maximum extent possible.** ☑ **Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution.** ❑ **Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions.** ☑ **Consider using pest-resistant plants, especially adjacent to hardscape. To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.**	☑ **Maintain landscaping using minimum or no pesticides.** ☑ **See applicable operational BMPs in "What you should know for…..Landscape and Gardening"** at: http://www.rcwatershed.org/about/materials-library/#1450469138395-bb76dd39-d810 ☑ **Provide IPM information to new owners, lessees and operators.**

IF THESE SOURCES WILL BE ON THE PROJECT SITE …	… THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
❑ E. **Pools, spas, ponds, decorative fountains, and other water features.**	❑ **Show location of water feature and a sanitary sewer cleanout in an accessible area within 10 feet. (Exception: Public pools must be plumbed according to County Department of Environmental Health Guidelines.)**	**If the Co-Permittee requires pools to be plumbed to the sanitary sewer, place a note on the plans and state in the narrative that this connection will be made according to local requirements.**	❑ **See applicable operational BMPs in "Guidelines for Maintaining Your Swimming Pool, Jacuzzi and Garden Fountain" at:** http://www.rcwatershed.org/about/materials-library/#1450469201433-f5f358c9-6008
❑ F. **Food service**	❑ **For restaurants, grocery stores, and other food service operations, show location (indoors or in a covered area outdoors) of a floor sink or other area for cleaning floor mats, containers, and equipment.** ❑ **On the drawing, show a note that this drain will be connected to a grease interceptor before discharging to the sanitary sewer.**	❑ **Describe the location and features of the designated cleaning area.** ❑ **Describe the items to be cleaned in this facility and how it has been sized to insure that the largest items can be accommodated.**	❑ **See the brochure, "The Food Service Industry Best Management Practices for: Restaurants, Grocery Stores, Delicatessens and Bakeries" at** http://www.rcwatershed.org/about/materials-library/#1450389926766-61e8af0b-53a9 **Provide this brochure to new site owners, lessees, and operators.**
❑ G. **Refuse areas**	❑ **Show where site refuse and recycled materials will be handled and stored for pickup. See local municipal requirements for sizes and other details of refuse areas.** ❑ **If dumpsters or other receptacles are outdoors, show how the designated area will be covered, graded, and paved to prevent run-on and show locations of berms to prevent runoff from the area.** ❑ **Any drains from dumpsters, compactors, and tallow bin areas shall be connected to a grease removal device before discharge to sanitary sewer.**	❑ **State how site refuse will be handled and provide supporting detail to what is shown on plans.** ❑ **State that signs will be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.**	❑ **State how the following will be implemented:** **Provide adequate number of receptacles. Inspect receptacles regularly; repair or replace leaky receptacles. Keep receptacles covered. Prohibit/prevent dumping of liquid or hazardous wastes. Post "no hazardous materials" signs. Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available on-site. See Fact Sheet SC-34, "Waste Handling and Disposal" in the CASQA Stormwater Quality Handbooks at** www.cabmphandbooks.com

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1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
❑ H. **Industrial processes.**	❑ **Show process area.**	❑ **If industrial processes are to be located on site, state: "All process activities to be performed indoors. No processes to drain to exterior or to storm drain system."**	❑ **See Fact Sheet SC-10, "Non-Stormwater Discharges" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com** See the brochure "Industrial & Commercial Facilities Best Management Practices for: Industrial, Commercial Facilities" at: **http://www.rcwatershed.org/about/materials-library/#1450389926766-61e8af0b-53a9**
❑ I. **Outdoor storage of equipment or materials. (See rows J and K for source control measures for vehicle cleaning, repair, and maintenance.)**	❑ **Show any outdoor storage areas, including how materials will be covered. Show how areas will be graded and bermed to prevent run-on or run-off from area.** ❑ **Storage of non-hazardous liquids shall be covered by a roof and/or drain to the sanitary sewer system, and be contained by berms, dikes, liners, or vaults.** ❑ **Storage of hazardous materials and wastes must be in compliance with the local hazardous materials ordinance and a Hazardous Materials Management Plan for the site.**	❑ **Include a detailed description of materials to be stored, storage areas, and structural features to prevent pollutants from entering storm drains.** **Where appropriate, reference documentation of compliance with the requirements of Hazardous Materials Programs for:** ▪ **Hazardous Waste Generation** ▪ **Hazardous Materials Release Response and Inventory** ▪ **California Accidental Release (CalARP)** ▪ **Aboveground Storage Tank** ▪ **Uniform Fire Code Article 80 Section 103(b) & (c) 1991** ▪ **Underground Storage Tank** **www.cchealth.org/groups/hazmat/**	❑ **See the Fact Sheets SC-31, "Outdoor Liquid Container Storage" and SC-33, "Outdoor Storage of Raw Materials " in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

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❑ J. **Vehicle and Equipment Cleaning**	❑ **Show on drawings as appropriate:** **(1) Commercial/industrial facilities having vehicle/equipment cleaning needs shall either provide a covered, bermed area for washing activities or discourage vehicle/equipment washing by removing hose bibs and installing signs prohibiting such uses.** **(2) Multi-dwelling complexes shall have a paved, bermed, and covered car wash area (unless car washing is prohibited on-site and hoses are provided with an automatic shut-off to discourage such use).** **(3) Washing areas for cars, vehicles, and equipment shall be paved, designed to prevent run-on to or runoff from the area, and plumbed to drain to the sanitary sewer.** **(4) Commercial car wash facilities shall be designed such that no runoff from the facility is discharged to the storm drain system. Wastewater from the facility shall discharge to the sanitary sewer, or a wastewater reclamation system shall be installed.**	❑ **If a car wash area is not provided, describe any measures taken to discourage on-site car washing and explain how these will be enforced.**	**Describe operational measures to implement the following (if applicable):** ❑ **Washwater from vehicle and equipment washing operations shall not be discharged to the storm drain system. Refer to "Outdoor Cleaning Activities and Professional Mobile Service Providers" for many of the Potential Sources of Runoff Pollutants categories below. Brochure can be found at:** http://www.rcwatershed.org/about/materials-library/#1450389926766-61e8af0b-53a9 ❑ **Car dealerships and similar may rinse cars with water only.**

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❑ K. **Vehicle/Equipment Repair and Maintenance**	❑ **Accommodate all vehicle equipment repair and maintenance indoors. Or designate an outdoor work area and design the area to prevent run-on and runoff of stormwater.** ❑ **Show secondary containment for exterior work areas where motor oil, brake fluid, gasoline, diesel fuel, radiator fluid, acid-containing batteries or other hazardous materials or hazardous wastes are used or stored. Drains shall not be installed within the secondary containment areas.** ❑ **Add a note on the plans that states either (1) there are no floor drains, or (2) floor drains are connected to wastewater pretreatment systems prior to discharge to the sanitary sewer and an industrial waste discharge permit will be obtained.**	❑ **State that no vehicle repair or maintenance will be done outdoors, or else describe the required features of the outdoor work area.** ❑ **State that there are no floor drains or if there are floor drains, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.** ❑ **State that there are no tanks, containers or sinks to be used for parts cleaning or rinsing or, if there are, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.**	**In the Stormwater Control Plan, note that all of the following restrictions apply to use the site:** ❑ **No person shall dispose of, nor permit the disposal, directly or indirectly of vehicle fluids, hazardous materials, or rinsewater from parts cleaning into storm drains.** ❑ **No vehicle fluid removal shall be performed outside a building, nor on asphalt or ground surfaces, whether inside or outside a building, except in such a manner as to ensure that any spilled fluid will be in an area of secondary containment. Leaking vehicle fluids shall be contained or drained from the vehicle immediately.** ❑ **No person shall leave unattended drip parts or other open containers containing vehicle fluid, unless such containers are in use or in an area of secondary containment.** **Refer to "Automotive Maintenance & Car Care Best Management Practices for Auto Body Shops, Auto Repair Shops, Car Dealerships, Gas Stations and Fleet Service Operations; "Outdoor Cleaning Activities;" and "Professional Mobile Service Providers" for many of the Potential Sources of Runoff Pollutants. Brochures can be found at: http://www.rcwatershed.org/about/materials-library/#1450389926766-61e8af0b-53a9**

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
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❑ L. **Fuel Dispensing Areas**	❑ **Fueling areas[6] shall have impermeable floors (i.e., portland cement concrete or equivalent smooth impervious surface) that are: a) graded at the minimum slope necessary to prevent ponding; and b) separated from the rest of the site by a grade break that prevents run-on of stormwater to the maximum extent practicable.** ❑ **Fueling areas shall be covered by a canopy that extends a minimum of ten feet in each direction from each pump. [Alternative: The fueling area must be covered and the cover's minimum dimensions must be equal to or greater than the area within the grade break or fuel dispensing area[1].] The canopy [or cover] shall not drain onto the fueling area.**		❑ **The property owner shall dry sweep the fueling area routinely.** ❑ **See the Fact Sheet SD-30 , "Fueling Areas" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

[6] **The fueling area shall be defined as the area extending a minimum of 6.5 feet from the corner of each fuel dispenser or the length at which the hose and nozzle assembly may be operated plus a minimum of one foot, whichever is greater.**

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❑ M. **Loading Docks**	❑ **Show a preliminary design for the loading dock area, including roofing and drainage. Loading docks shall be covered and/or graded to minimize run-on to and runoff from the loading area. Roof downspouts shall be positioned to direct stormwater away from the loading area. Water from loading dock areas shall be drained to the sanitary sewer, or diverted and collected for ultimate discharge to the sanitary sewer.** ❑ **Loading dock areas draining directly to the sanitary sewer shall be equipped with a spill control valve or equivalent device, which shall be kept closed during periods of operation.** ❑ **Provide a roof overhang over the loading area or install door skirts (cowling) at each bay that enclose the end of the trailer.**		❑ **Move loaded and unloaded items indoors as soon as possible.** ❑ **See Fact Sheet SC-30, "Outdoor Loading and Unloading," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

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☑ N. **Fire Sprinkler Test Water**		☑ **Provide a means to drain fire sprinkler test water to the sanitary sewer.**	☑ **See the note in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**
O. **Miscellaneous Drain or Wash Water or Other Sources** ❑ **Boiler drain lines** ❑ **Condensate drain lines** ❑ **Rooftop equipment** ❑ **Drainage sumps** ❑ **Roofing, gutters, and trim.** ❑ **Other sources**		❑ **Boiler drain lines shall be directly or indirectly connected to the sanitary sewer system and may not discharge to the storm drain system.** ❑ **Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur. Condensate drain lines may not discharge to the storm drain system.** ❑ **Rooftop equipment with potential to produce pollutants shall be roofed and/or have secondary containment.** ❑ **Any drainage sumps on-site shall feature a sediment sump to reduce the quantity of sediment in pumped water.** ❑ **Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff.** ❑ **Include controls for other sources as specified by local reviewer.**	

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☑ P. **Plazas, sidewalks, and parking lots.**			❑ **Sweep plazas, sidewalks, and parking lots regularly to prevent accumulation of litter and debris. Collect debris from pressure washing to prevent entry into the storm drain system. Collect washwater containing any cleaning agent or degreaser and discharge to the sanitary sewer not to a storm drain.**

Appendix 9: O&M

Operation and Maintenance Plan and Documentation of Finance, Maintenance, and Recording Mechanisms

Example Covenant and Agreement

Water Quality Management Plan and Urban Runoff BMP Transfer, Access and Maintenance Agreement (adapted from documents from the Ventura County Stormwater Management Program)

Recorded at the request of:

City of ____

After recording, return to:

City of ____

City Clerk ____

<u>Water Quality Management Plan and Urban Runoff BMP Transfer, Access and Maintenance Agreement</u>

OWNER: ____

PROPERTY ADDRESS: ______________________________

____

APN: ____

THIS AGREEMENT is made and entered into in

____________________________, California, this _______ day of

___________________ , by and between

____, herein after referred to as “Owner” and the CITY OF ______________________________, a municipal corporation, located in the County of Riverside, State of California hereinafter referred to as “CITY”;

WHEREAS, the Owner owns real property (“Property”) in the City of

_________________________, County of Riverside, State of California, more specifically described in Exhibit “A” and depicted in Exhibit “B”, each of which exhibits is attached hereto and incorporated herein by this reference;

WHEREAS, at the time of initial approval of development project known as

____ within the Property described herein, the City required the project to employ Best Management Practices, hereinafter referred to as “BMPs,” to minimize pollutants in urban runoff;

WHEREAS, the Owner has chosen to install and/or implement BMPs as described in the Water Quality Management Plan, on file with the City, hereinafter referred to as “WQMP”, to minimize pollutants in urban runoff and to minimize other adverse impacts of urban runoff;

WHEREAS, said WQMP has been certified by the Owner and reviewed and approved by the City;

WHEREAS, said BMPs, with installation and/or implementation on private property and draining only private property, are part of a private facility with all maintenance or replacement, therefore, the sole responsibility of the Owner in accordance with the terms of this Agreement;

WHEREAS, the Owner is aware that periodic and continuous maintenance, including, but not necessarily limited to, filter material replacement and sediment removal, is required to assure peak performance of all BMPs in the WQMP and that, furthermore, such maintenance activity will require compliance with all Local, State, or Federal laws and regulations, including those pertaining to confined space and waste disposal methods, in effect at the time such maintenance occurs;

NOW THEREFORE, it is mutually stipulated and agreed as follows:

1. Owner hereby provides the City of City’s designee complete access, of any duration, to the BMPs and their immediate vicinity at any time, upon reasonable notice, or in the event of emergency, as determined by City’s Director of Public Works no advance notice, for the purpose of inspection, sampling, testing of the Device, and in case of emergency, to undertake all necessary repairs or other preventative measures at owner’s expense as provided in paragraph 3 below. City shall make every effort at all times to minimize or avoid interference with Owner’s use of the Property.

2. Owner shall use its best efforts diligently to maintain all BMPs in a manner assuring peak performance at all times. All reasonable precautions shall be exercised by Owner and Owner’s representative or contractor in the removal and extraction of any material(s) from the BMPs and the ultimate disposal of the material(s) in a manner consistent with all relevant laws and regulations in effect at the time. As may be requested from time to time by the City, the Owner shall provide the City with documentation identifying the material(s) removed, the quantity, and disposal destination.

3. In the event Owner, or its successors or assigns, fails to accomplish the necessary maintenance contemplated by this Agreement, within five (5) days of being given written notice by the City, the City is hereby authorized to cause any maintenance necessary to be done and charge the entire cost and expense to the Owner or Owner's successors or assigns, including administrative costs, attorneys fees and interest thereon at the maximum rate authorized by the Civil Code from the date of the notice of expense until paid in full.

4. The City may require the owner to post security in form and for a time period satisfactory to the city to guarantee the performance of the obligations state herein. Should the Owner fail to perform the obligations under the Agreement, the City may, in the case of a cash bond, act for the Owner using the proceeds from it, or in the case of a surety bond, require the sureties to perform the obligations of the Agreement. As an additional remedy, the Director may withdraw any previous Urban Runoff-related approval with respect to the property on which BMPs have been installed and/or implemented until such time as Owner repays to City its reasonable costs incurred in accordance with paragraph 3 above.

5. This agreement shall be recorded in the Office of the Recorder of Riverside County, California, at the expense of the Owner and shall constitute notice to all successors and assigns of the title to said Property of the obligation herein set forth, and also a lien in such amount as will fully reimburse the City, including interest as herein above set forth, subject to foreclosure in event of default in payment.

6. In event of legal action occasioned by any default or action of the Owner, or its successors or assigns, then the Owner and its successors or assigns agree(s) to pay all costs incurred by the City in enforcing the terms of this Agreement, including reasonable attorney's fees and costs, and that the same shall become a part of the lien against said Property.

7. It is the intent of the parties hereto that burdens and benefits herein undertaken shall constitute covenants that run with said Property and constitute a lien there against.

8. The obligations herein undertaken shall be binding upon the heirs, successors, executors, administrators and assigns of the parties hereto. The term "Owner" shall include not only the present Owner, but also its heirs, successors, executors, administrators, and assigns. Owner shall notify any successor to title of all or part of the Property about the existence of this Agreement. Owner shall provide such notice prior to such successor obtaining an interest in all or part of the Property. Owner shall provide a copy of such notice to the City at the same time such notice is provided to the successor.

9. Time is of the essence in the performance of this Agreement.

10. Any notice to a party required or called for in this Agreement shall be served in person, or by deposit in the U.S. Mail, first class postage prepaid, to the address set forth below. Notice(s) shall be deemed effective upon receipt, or seventy-two (72) hours after deposit in the U.S. Mail, whichever is earlier. A party may change a notice address only by providing written notice thereof to the other party.

IF TO CITY:

____

____

____

____

IF TO OWNER:

____

____

____

____

IN WITNESS THEREOF, the parties hereto have affixed their signatures as of the date first written above.

APPROVED AS TO FORM:

____
City Attorney

____
CITY OF

____
Name

____
Title

ATTEST:

____
City Clerk Date

OWNER:

____
Name

____
Title

OWNER:

____
Name

____
Title

NOTARIES ON FOLLOWING PAGE

Inspection Activities	Suggested Frequency
▪ Inspect soil and repair eroded areas.	Monthly
▪ Inspect for erosion or damage to vegetation, preferably at the end of the wet season to schedule summer maintenance and before major fall runoff to be sure the strips are ready for winter. However, additional inspection after periods of heavy runoff is desirable.	Semi-annual inspection
▪ Inspect to ensure grass is well established. If not, either prepare soil and reseed or replace with alternative species. Install erosion control blanket. ▪ Check for debris and litter, and areas of sediment accumulation. ▪ Inspect health of trees and shrubs.	

Maintenance Activities	Suggested Frequency
▪ Water plants daily for 2 weeks.	At project completion
▪ Remove litter and debris.	Monthly
▪ Remove sediment. ▪ Remulch void areas. ▪ Treat diseased trees and shrubs. ▪ Mow turf areas. ▪ Repair erosion at inflow points. ▪ Repair outflow structures. ▪ Unclog underdrain. ▪ Regulate soil pH regulation.	As needed
▪ Remove and replace dead and diseased vegetation.	Semi-annual
▪ Add mulch. ▪ Replace tree stakes and wires.	Annual
▪ Mulch should be replaced every 2 to 3 years or when bare spots appear. Remulch prior to the wet season.	Every 2-3 years, or as needed

Additional Information

Landscaping is critical to the function and aesthetic value of bioretention areas. It is preferable to plant the area with native vegetation, or plants that provide habitat value, where possible. Another important design feature is to select species that can withstand the hydrologic regime they will experience. At the bottom of the bioretention facility, plants that tolerate both wet and dry conditions are preferable. At the edges, which will remain primarily dry, upland species will be the most resilient. It is best to select a combination of trees, shrubs, and herbaceous materials.

References

Metropolitan Council, Urban Small Sites Best Management Practices Manual. Available at: http://www.metrocouncil.org/environment/Watershed/BMP/manual.htm

Model Urban Runoff Program: A How-To Guide for Developing Urban Runoff Programs for Small Municipalities. Prepared by City of Monterey, City of Santa Cruz, California Coastal Commission, Monterey Bay National Marine Sanctuary, Association of Monterey Bay Area Governments, Woodward-Clyde, Central Coast Regional Water Quality Control Board. July, 1998, revised February, 2002.

U.S. Environmental Protection Agency, Post-Construction Stormwater Management in New Development & Redevelopment BMP Factsheets. Available at: cfpub.epa.gov/npdes/stormwater/menuofbmps/bmp_files.cfm

Ventura Countywide Stormwater Quality Management Program, Technical Guidance Manual for Stormwater Quality Control Measures. July, 2002.

Oldcastle Infrastructure™
A CRH COMPANY

BIOPOD™ SYSTEM

WITH STORMMIX™ MEDIA

Inspection and Maintenance Guide

Water

BioPod™ Biofilter with StormMix™ Biofiltration Media

Description

The BioPod™ Biofilter System (BioPod) is a stormwater biofiltration treatment system used to remove pollutants from stormwater runoff. Impervious surfaces and other urban and suburban landscapes generate a variety of contaminants that can enter stormwater and pollute downstream receiving waters unless treatment is provided. The BioPod system uses proprietary StormMix™ biofiltration media to capture and retain pollutants including total suspended solids (TSS), metals, nutrients, gross solids, trash and debris as well as petroleum hydrocarbons.

Function

The BioPod system uses engineered, high-flow rate filter media to remove stormwater pollutants, allowing for a smaller footprint than conventional bioretention systems. Contained within a compact precast concrete vault, the BioPod system consists of a biofiltration chamber and an optional integrated high-flow bypass with a contoured inlet rack to minimize scour. The biofiltration chamber is filled with horizontal layers of aggregate (which may or may not include an underdrain), biofiltration media and mulch. Stormwater passes vertically down through the mulch and biofiltration media for treatment. The mulch provides pretreatment by retaining most of the solids or sediment. The biofiltration media provides further treatment by retaining finer sediment and dissolved pollutants. The aggregate allows the media bed to drain evenly for discharge through an underdrain pipe or by infiltration.

Configuration

The BioPod system can be configured with either an internal or external bypass. The internal bypass allows both water quality and bypass flows to enter the treatment vault. The water quality flows are directed to the biofiltration chamber while the excess flows are diverted over the bypass weir without entering the biofiltration chamber. Both the treatment and bypass flows are combined in the outlet area prior to discharge from the structure. BioPod units without an internal bypass are designed such that only treatment flows enter the treatment structure. When the system has exceeded its treatment capacity, ponding will force bypass flows to continue down the gutter to the nearest standard catch basin or other external bypass structure.

The BioPod system can be configured as a tree box filter with tree and grated inlet, as a planter box filter with shrubs, grasses and an open top, or as an underground filter with access risers, doors and a subsurface inlet pipe. The optional internal bypass may be incorporated with any of these configurations. In addition, an open bottom configuration may be used to promote infiltration and groundwater recharge. The configuration and size of the BioPod system is designed to meet the requirements of a specific project.

Inspection & Maintenance Overview

State and local regulations require all stormwater management systems to be inspected on a regular basis and maintained as necessary to ensure performance and protect downstream receiving waters. Without maintenance, excessive pollutant buildup can limit system performance by reducing the operating capacity of the system and increasing the potential for scouring of pollutants during periods of high flow.

Some configurations of the BioPod may require periodic irrigation to establish and maintain vegetation. Vegetation will typically become established about two years after planting. Irrigation requirements are ultimately dependent on climate, rainfall and the type of vegetation selected.

Maintenance Frequency

Periodic inspection is essential for consistent system performance and is easily completed. Inspection is typically conducted a minimum of twice per year, but since pollutant transport and deposition varies from site to site, a site-specific maintenance frequency should be established during the first two or three years of operation.

Inspection Equipment

The following equipment is helpful when conducting BioPod inspections:

- Recording device (pen and paper form, voice recorder, iPad, etc.)
- Suitable clothing (appropriate footwear, gloves, hardhat, safety glasses, etc.)
- Traffic control equipment (cones, barricades, signage, flagging, etc.)
- Manhole hook or pry bar
- Flashlight
- Tape measure

Inspection Procedures

BioPod inspections are visual and are conducted without entering the unit. To complete an inspection, safety measures including traffic control should be deployed before the access covers or tree grates are removed. Once the covers have been removed, the following items should be checked and recorded (see form provided on page 6) to determine whether maintenance is required:

- If the BioPod unit is equipped with an internal bypass, inspect the contoured inlet rack and outlet chamber and note whether there are any broken or missing parts. In the unlikely event that internal parts are broken or missing, contact Oldcastle Stormwater at (800) 579-8819 to determine appropriate corrective action.
- Note whether the curb inlet, inlet pipe, or – if the unit is equipped with an internal bypass – the inlet rack is blocked or obstructed.
- If the unit is equipped with an internal bypass, observe, quantify and record the accumulation of trash and debris in the inlet rack. The significance of accumulated trash and debris is a matter of judgment. Often, much of the trash and debris may be removed manually at the time of inspection if a separate maintenance visit is not yet warranted.
- If it has not rained within the past 24 hours, note whether standing water is observed in the biofiltration chamber.
- Finally, observe, quantify and record presence of invasive vegetation and the amount of trash and debris and sediment load in the biofiltration chamber. Erosion of the mulch and biofiltration media bed should also be recorded. Sediment load may be rated light, medium or heavy depending on the conditions. Loading characteristics may be determined as follows:
  - o Light sediment load – sediment is difficult to distinguish among the mulch fibers at the top of the mulch layer; the mulch appears almost new.
  - o Medium sediment load – sediment accumulation is apparent and may be concentrated in some areas; probing the mulch layer reveals lighter sediment loads under the top 1” of mulch.
  - o Heavy sediment load – sediment is readily apparent across the entire top of the mulch layer; individual mulch fibers are difficult to distinguish; probing the mulch layer reveals heavy sediment load under the top 1” of mulch.

Often, much of the invasive vegetation and trash and debris may be removed manually at the time of inspection if a separate maintenance visit is not yet warranted.

Maintenance Indicators

Maintenance should be scheduled if any of the following conditions are identified during inspection:

- The concrete structure is damaged or the tree grate or access cover is damaged or missing.
- The curb inlet or inlet rack is obstructed.
- Standing water is observed in the biofiltration chamber more than 24 hours after a rainfall event (use discretion if the BioPod is located downstream of a storage system that attenuates flow).
- Trash and debris in the inlet rack cannot be easily removed at the time of inspection.
- Trash and debris, invasive vegetation or sediment load in the biofiltration chamber is heavy or excessive erosion has occurred.

Maintenance Equipment

The following equipment is helpful when conducting BioPod maintenance:

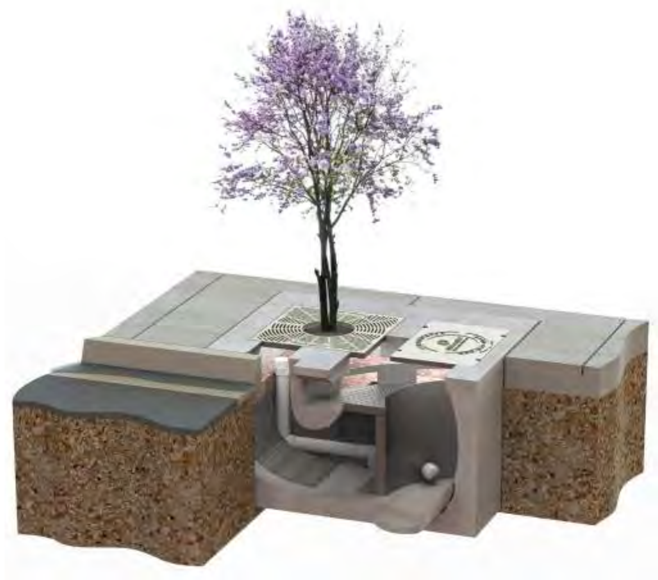
- Suitable clothing (appropriate footwear, gloves, hardhat, safety glasses, etc.)
- Traffic control equipment (cones, barricades, signage, flagging, etc.)
- Manhole hook or pry bar
- Flashlight
- Tape measure
- Rake, hoe, shovel and broom
- Bucket
- Pruners
- Vacuum truck (optional)

Maintenance Procedures

Maintenance should be conducted during dry weather when no flows are entering the system. All maintenance may be conducted without entering the BioPod structure. Once safety measures such as traffic control are deployed, the access covers may be removed and the following activities may be conducted to complete maintenance:

- Remove all trash and debris from the curb inlet and inlet rack manually or by using a vacuum truck as required.
- Remove all trash and debris and invasive vegetation from the biofiltration chamber manually or by using a vacuum truck as required.
- If the sediment load is medium or light but erosion of the biofiltration media bed is evident, redistribute the mulch with a rake or replace missing mulch as appropriate. If erosion persists, rocks may be placed in the eroded area to help dissipate energy and prevent recurring erosion.
- If the sediment load is heavy, remove the mulch layer using a hoe, rake, shovel and bucket, or by using a vacuum truck as required. If the sediment load is particularly heavy, inspect the surface of the biofiltration media once the mulch has been removed. If the media appears clogged with sediment, remove and replace one or two inches of biofiltration media prior to replacing the mulch layer.
- Prune vegetation as appropriate and replace damaged or dead plants as required.
- Replace the tree grate and/or access covers and sweep the area around the BioPod to leave the site clean.
- All material removed from the BioPod during maintenance must be disposed of in accordance with local environmental regulations. In most cases, the material may be handled in the same manner as disposal of material removed from sumped catch basins or manholes.

Natural, shredded hardwood mulch should be used in the BioPod. Timely replacement of the mulch layer according to the maintenance indicators described above should protect the biofiltration media below the mulch layer from clogging due to sediment accumulation. However, whenever the mulch is replaced, the BioPod should be visited 24 hours after the next major storm event to ensure that there is no standing water in the biofiltration chamber. Standing water indicates that the biofiltration media below the mulch layer is clogged and must be replaced. Please contact Oldcastle Infrastructure at (800) 579-8819 to purchase the proprietary StormMix™ biofiltration media.



BioPod Tree Module

BioPod Media Module

BioPod Planter Module

BioPod Media Vault

BioPod Inspection & Maintenance Log

BioPod Model________________________ Inspection Date____________________

Location____

Condition of Internal Components Notes:

☐ Good ☐ Damaged ☐ Missing

Curb Inlet or Inlet Rack Blocked Notes:

☐ Yes ☐ No

Standing Water in Biofiltration Chamber Notes:

☐ Yes ☐ No

Trash and Debris in Inlet Rack Notes:

☐ Yes ☐ No

Trash and Debris in Biofiltration Chamber Notes:

☐ Yes ☐ No

Invasive Vegetation in Biofiltration Chamber Notes:

☐ Yes ☐ No

Sediment in Biofiltration Chamber Notes:

☐ Light ☐ Medium ☐ Heavy

Erosion in Biofiltration Chamber Notes:

☐ Yes ☐ No

Maintenance Requirements

☐ **Yes - Schedule Maintenance** ☐ **No - Schedule Re-Inspection**

BIOPOD™ SYSTEM

WITH STORMMIX™ MEDIA

OUR MARKETS

BUILDING STRUCTURES

COMMUNICATIONS

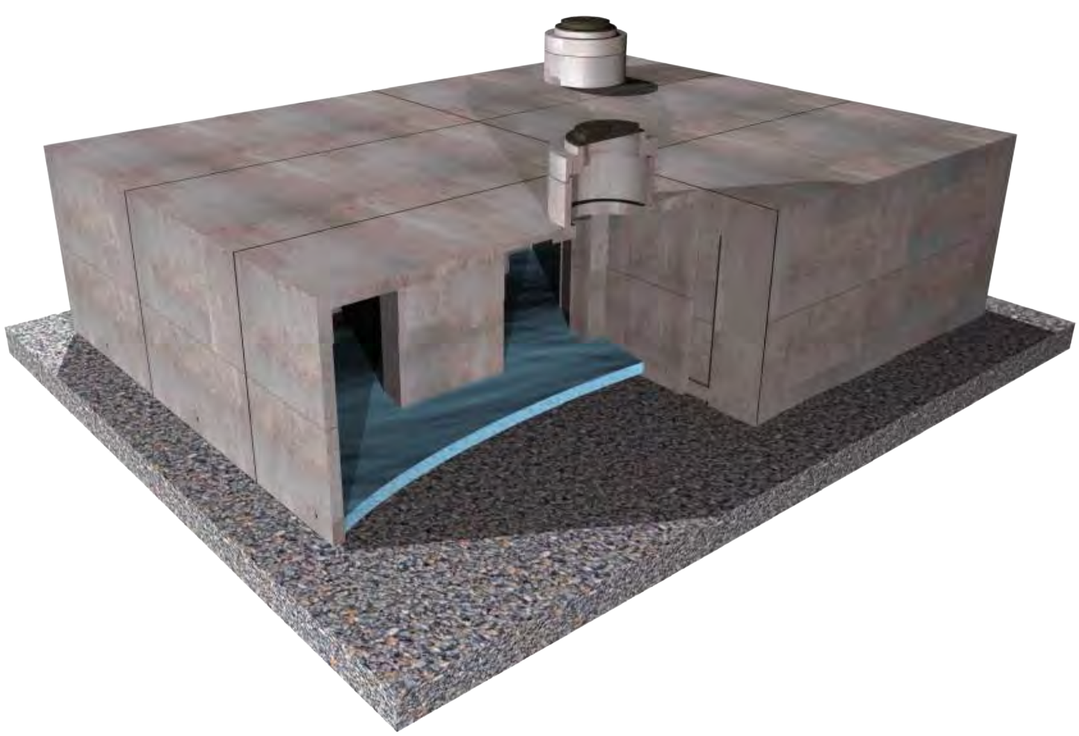
WATER

ENERGY

TRANSPORTATION

STORMCAPTURE®

Inspection and Maintenance Guide



Water

Description

The StormCapture® system is an underground, modular, structural precast concrete storage system for stormwater detention, retention, infiltration, harvesting and reuse, and water quality volume storage. The system's modular design utilizes multiple standard precast concrete units with inside dimensions of 7 feet by 15 feet (outside dimensions of 8 feet by 16 feet) to form an underground storage system. The inside height of the StormCapture system can range from 2 feet to 14 feet. This modular design provides limitless configuration options for site-specific layouts.

StormCapture components can be provided as either open-bottom modules to promote infiltration or closed-bottom modules for detention. In some cases, StormCapture modules can be placed in a checkerboard configuration for an even more efficient design. A Link Slab, with a footprint of 9 feet by 17 feet, is then used to bridge each space without a module.

The standard StormCapture design incorporates lateral and longitudinal passageways between modules to accommodate internal stormwater conveyance throughout the system. These passageways may be classified as either a "window configuration" with standard 12-inch tall sediment baffles extending up from the floor of the module to the bottom of the window, or a "doorway configuration" without the sediment baffles. The function and drainage rate of a StormCapture system depends on site-specific conditions and requirements.

Stormwater typically enters the StormCapture system through an inlet pipe. Grated inlets can also be used for direct discharge into the system. The StormCapture system is rated for H-20 traffic loading with limited cover. Higher load requirements can also be accommodated. In addition, StormCapture systems are typically equipped with a limited number of maintenance modules that provide access to the system for ongoing inspection and maintenance.

Function

The StormCapture system is primarily used to manage water quantity by temporarily storing stormwater runoff from impervious surfaces to prevent flooding, slow down the rate at which stormwater leaves the site, and reduce receiving stream erosion. In addition, the StormCapture system can be used to capture stormwater runoff for water quality treatment. Regardless of how the StormCapture system is used, some sedimentation may occur in the modules during the time water is stored.

Configurations

The configuration of the StormCapture systems may vary, depending on the water quality and/or quantity requirements of the site. StormCapture configurations for detention, retention/infiltration, and retention/harvesting are described below.

Detention

StormCapture Detention systems are designed with a closed bottom to detain stormwater runoff for controlled discharge from the site. This design may incorporate a dead storage sump and a permanent pool of water if the outlet pipe is higher than the floor elevation. Discharge from the system is typically controlled by an outlet orifice and/or outlet weir to regulate the rate of stormwater leaving the system. StormCapture Detention systems are typically designed with silt-tight joints, however when conditions exist that require a StormCapture system to be watertight, the system may be wrapped in a continuous, impermeable geomembrane liner. If the StormCapture Detention system includes Link Slabs, a liner must be used to detain water since the chambers under each Link Slab have no floor slab. In this case, care must be taken by maintenance personnel not to damage the exposed liner beneath each Link Slab.

Retention/Infiltration

StormCapture Retention/Infiltration systems are designed with an open bottom to allow for the retention of stormwater onsite through infiltration into the base rock and surrounding soils. For infiltration systems, the configuration of the base of the StormCapture system may vary, depending on the needs of the site and the height of the system. Some systems may use modules that have fully open bottoms with no concrete floor, while other systems may use modules that incorporate floor openings in the base of each module. These are typically 24-inch by 24-inch openings. For open-bottom systems, concrete splash pads may be installed below inlet grate openings and pipe inlets to prevent erosion of base rock. A StormCapture Infiltration system may have an elevated discharge pipe for peak overflow.

Retention/Harvesting

StormCapture Retention/Harvesting systems are similar to detention systems using closed-bottom modules, but stormwater is typically retained onsite for an extended period of time and later reused for non-potable applications or irrigation. For rainwater harvesting systems, an impermeable geomembrane liner is typically installed around the modules to provide a water-tight system.

Inspection and Maintenance Overview

State and local regulations typically require all stormwater management systems to be inspected on a regular basis and maintained as necessary to ensure performance and protect downstream receiving waters. Inspections should be used to evaluate the conditions of the system. Based on these inspections, maintenance needs can be determined. Maintenance needs vary by site and system. Using this Inspection & Maintenance Guide, qualified maintenance personnel should be able to provide a recommendation for maintenance needs. Requirements may range from minor activities such as removing trash, debris or pipe blockages to more substantial activities such as vacuuming and removal of sediment and/or non-draining water. Long-term maintenance is important to the operation of the system since it prevents excessive pollutant buildup that may limit system performance by reducing the operating capacity and increasing the potential for scouring of pollutants during periods of high flow.

Only authorized personnel shall inspect and/or enter a StormCapture system. Personnel must be properly trained and equipped before entering any underground or confined space structure. Training includes familiarity with and adherence to any and all local, state and federal regulations governing confined space access and the operation, inspection, and maintenance of underground structures.

Inspection and Maintenance Frequency

The StormCapture system should be inspected on a regular basis, typically twice per year, and maintained as required. The maintenance frequency will be driven by the amount of runoff and pollutant loading encountered by a given system. Local jurisdictions may also dictate inspection and maintenance frequencies.

Inspection Equipment

The following equipment is helpful when conducting StormCapture inspections:

- Recording device (pen and paper form, voice recorder, iPad, etc.)
- Suitable clothing (appropriate footwear, gloves, hardhat, safety glasses, etc.)
- Traffic control equipment (cones, barricades, signage, flagging, etc.)
- Manhole hook or pry bar
- Confined space entry equipment, if needed
- Flashlight
- Tape measure
- Measuring stick or sludge sampler
- Long-handled net (optional)

Inspection Procedures

A typical StormCapture system provides strategically placed access points that may be used for inspection. StormCapture inspections are usually conducted visually from the ground surface, without entering the unit. This typically limits inspection to the assessment of sediment depth, water drain down, and general condition of the modules and components, but a more detailed assessment of structural condition may be conducted during a maintenance event.

To complete an inspection, safety measures including traffic control should be deployed before the access covers are removed. Once the covers have been removed, the following items should be inspected and recorded (see form provided at the end of this document) to determine whether maintenance is required:

- Observe inlet and outlet pipe penetrations for blockage or obstruction.
- If possible, observe internal components like baffles, flow control weirs or orifices, and steps or ladders to determine whether they are broken, missing, or possibly obstructed.
- Observe, quantify, and record the sediment depths within the modules.
- Retrieve as much floating trash as possible with a long-handled net. If a significant amount of trash remains, make a note in the Inspection & Maintenance Log.
- For infiltration systems, local regulations may require monitoring of the system to ensure drain down is occurring within the required permit time period (typically 24 to 72 hours). If this is the case, refer to local regulations for proper inspection procedure.

Maintenance Indicators

Maintenance should be scheduled if any of the following conditions are identified during the inspection:

- Inlet or outlet piping is blocked or obstructed.
- Internal components are broken, missing, or obstructed.
- Accumulation of more than six inches of sediment on the system floor or in the sump, if applicable.
- Significant accumulation of floating trash and debris that cannot be retrieved with a net.
- The system has not drained completely after it hasn't rained for one to three days, or the drain down does not meet permit requirements.
- Any hazardous material is observed or reported.

Maintenance Equipment

The following equipment is helpful when conducting StormCapture maintenance:

- Suitable clothing (appropriate footwear, gloves, hardhat, safety glasses, etc.)
- Traffic control equipment (cones, barricades, signage, flagging, etc.)
- Manhole hook or pry bar
- Confined space entry equipment, if needed
- Flashlight
- Tape measure
- Vacuum truck

Maintenance Procedures

Maintenance should be conducted during dry weather when no flow is entering the system. Confined space entry is usually required to maintain the StormCapture. Only personnel that are OSHA Confined Space Entry trained and certified may enter underground structures. Once safety measures such as traffic control have been deployed, the access covers may be removed and the following activities may be conducted to complete maintenance:

- Remove trash and debris using an extension on the end of the boom hose of the vacuum truck. Continue using the vacuum truck to completely remove accumulated sediment. Some jetting may be necessary to fully evacuate sediment from the system floor or sump. Jetting is acceptable in systems with solid concrete floors or base slabs (referred to as closed-bottom systems). However, jetting is not recommended for open-bottom systems with a gravel foundation since it may cause bedding displacement, undermining of the foundation, or internal disturbance.
- All material removed from the system during maintenance must be disposed of in accordance with local regulations. In most cases, the material may be handled in the same manner as disposal of material removed from sumped catch basins or manholes.
- Inspect inlet and outlet pipe penetrations for cracking and other signs of movement that may cause leakage.
- Inspect the concrete splash pads (applicable for open-bottom systems only) for proper function and placement.
- Inspect the system for movement of modules. There should be less than 3/4-inch spacing between modules.
- Inspect the general interior condition of modules for concrete cracking or deterioration. If the system consists of horizontal joints as part of the modules, inspect those joints for leakage, displacement or deterioration.

Be sure to securely replace all access covers, as appropriate, following inspection and/or maintenance. If the StormCapture modules or any of the system components show significant signs of cracking, spalling, or deterioration or if there is evidence of excessive differential settlement between modules, contact Oldcastle Infrastructure at **800-579-8819.**

StormCapture
Inspection & Maintenance Log

Refer to as-built records for details about system size and location onsite

Location ______________________________

System Configuration: Inspection Date ______________

☐ Detention ☐ Infiltration ☐ Retention/Harvesting

Inlet or Outlet Blockage or Obstruction **Notes:**

☐ Yes ☐ No

Condition of Internal Components **Notes:**

☐ Good ☐ Damaged ☐ Missing

Sediment Depth Observed **Notes:**

☐ Inches of Sediment: ________

Trash and Debris Accumulation **Notes:**

☐ Significant ☐ Not Significant

Drain Down Observations **Notes:**

☐ Appropriate Time Frame ☐ Inappropriate Time Frame

Maintenance Requirements

☐ **Yes - Schedule Maintenance** ☐ **No - Inspect Again in ______ Months**

STORMCAPTURE®

OUR MARKETS

BUILDING STRUCTURES

COMMUNICATIONS

WATER

ENERGY

TRANSPORTATION

Appendix 10: Educational Materials

BMP Fact Sheets, Maintenance Guidelines, and Other End-User BMP Information

After the Storm

A Citizen's Guide to Understanding Stormwater

For more information contact:

or visit
www.epa.gov/npdes/stormwater
www.epa.gov/nps

United States Environmental Protection Agency

EPA 833-B-03-002
January 2003

Internet Address (URL) • HTTP://www.epa.gov
Recycled/Recyclable • Printed With Vegetable
Oil Based Inks on 100% Postconsumer,
Process Chlorine Free Recycled Paper

What is stormwater runoff?

Stormwater runoff occurs when precipitation from rain or snowmelt flows over the ground. Impervious surfaces like driveways, sidewalks, and streets prevent stormwater from naturally soaking into the ground.

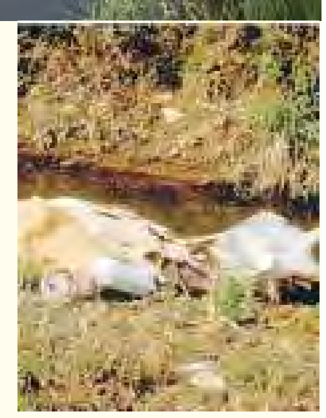
Why is stormwater runoff a problem?

Stormwater can pick up debris, chemicals, dirt, and other pollutants and flow into a storm sewer system or directly to a lake, stream, river, wetland, or coastal water. Anything that enters a storm sewer system is discharged untreated into the waterbodies we use for swimming, fishing, and providing drinking water.

The effects of pollution

Polluted stormwater runoff can have many adverse effects on plants, fish, animals, and people.

- Sediment can cloud the water and make it difficult or impossible for aquatic plants to grow. Sediment also can destroy aquatic habitats.
- Excess nutrients can cause algae blooms. When algae die, they sink to the bottom and decompose in a process that removes oxygen from the water. Fish and other aquatic organisms can't exist in water with low dissolved oxygen levels.



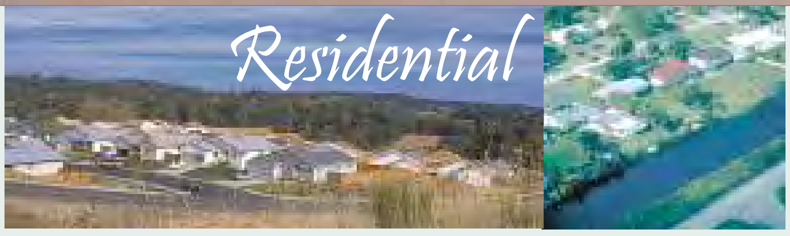
- Bacteria and other pathogens can wash into swimming areas and create health hazards, often making beach closures necessary.
- Debris—plastic bags, six-pack rings, bottles, and cigarette butts—washed into waterbodies can choke, suffocate, or disable aquatic life like ducks, fish, turtles, and birds.
- Household hazardous wastes like insecticides, pesticides, paint, solvents, used motor oil, and other auto fluids can poison aquatic life. Land animals and people can become sick or die from eating diseased fish and shellfish or ingesting polluted water.

- Polluted stormwater often affects drinking water sources. This, in turn, can affect human health and increase drinking water treatment costs.

Stormwater Pollution Solutions

Education is essential to changing people's behavior. Signs and markers near storm drains warn residents that pollutants entering the drains will be carried untreated into a local waterbody.

Residential



Recycle or properly dispose of household products that contain chemicals, such as insecticides, pesticides, paint, solvents, and used motor oil and other auto fluids. Don't pour them onto the ground or into storm drains.

Lawn care

Excess fertilizers and pesticides applied to lawns and gardens wash off and pollute streams. In addition, yard clippings and leaves can wash into storm drains and contribute nutrients and organic matter to streams.

- Don't overwater your lawn. Consider using a soaker hose instead of a sprinkler.
- Use pesticides and fertilizers sparingly. When use is necessary, use these chemicals in the recommended amounts. Use organic mulch or safer pest control methods whenever possible.
- Compost or mulch yard waste. Don't leave it in the street or sweep it into storm drains or streams.
- Cover piles of dirt or mulch being used in landscaping projects.

Auto care

Washing your car and degreasing auto parts at home can send detergents and other contaminants through the storm sewer system. Dumping automotive fluids into storm drains has the same result as dumping the materials directly into a waterbody.

- Use a commercial car wash that treats or recycles its wastewater, or wash your car on your yard so the water infiltrates into the ground.
- Repair leaks and dispose of used auto fluids and batteries at designated drop-off or recycling locations.

Septic systems

Leaking and poorly maintained septic systems release nutrients and pathogens (bacteria and viruses) that can be picked up by stormwater and discharged into nearby waterbodies. Pathogens can cause public health problems and environmental concerns.

- Inspect your system every 3 years and pump your tank as necessary (every 3 to 5 years).
- Don't dispose of household hazardous waste in sinks or toilets.

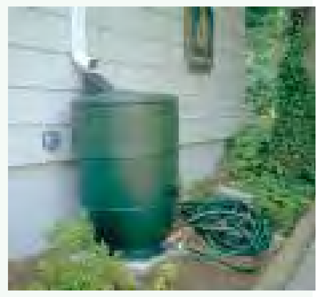
Pet waste

Pet waste can be a major source of bacteria and excess nutrients in local waters.

- When walking your pet, remember to pick up the waste and dispose of it properly. Flushing pet waste is the best disposal method. Leaving pet waste on the ground increases public health risks by allowing harmful bacteria and nutrients to wash into the storm drain and eventually into local waterbodies.

Residential landscaping

Permeable Pavement—Traditional concrete and asphalt don't allow water to soak into the ground. Instead these surfaces rely on storm drains to divert unwanted water. Permeable pavement systems allow rain and snowmelt to soak through, decreasing stormwater runoff.



Rain Barrels—You can collect rainwater from rooftops in mosquito-proof containers. The water can be used later on lawn or garden areas.

Rain Gardens and Grassy Swales—Specially designed areas planted with native plants can provide natural places for rainwater to collect and soak into the ground. Rain from rooftop areas or paved areas can be diverted into these areas rather than into storm drains.

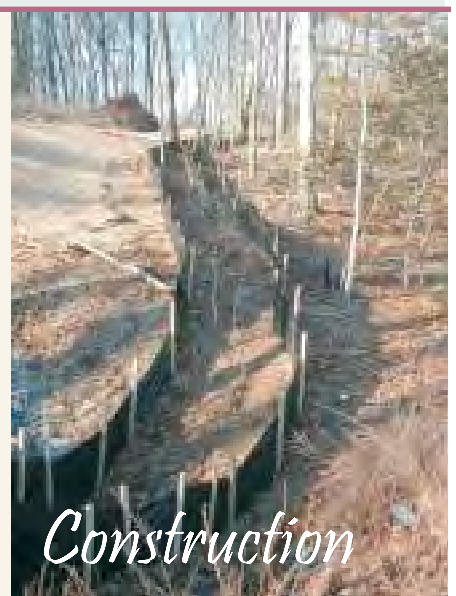
Vegetated Filter Strips—Filter strips are areas of native grass or plants created along roadways or streams. They trap the pollutants stormwater picks up as it flows across driveways and streets.

Commercial

Dirt, oil, and debris that collect in parking lots and paved areas can be washed into the storm sewer system and eventually enter local waterbodies.

- Sweep up litter and debris from sidewalks, driveways and parking lots, especially around storm drains.
- Cover grease storage and dumpsters and keep them clean to avoid leaks.
- Report any chemical spill to the local hazardous waste cleanup team. They'll know the best way to keep spills from harming the environment.

Construction

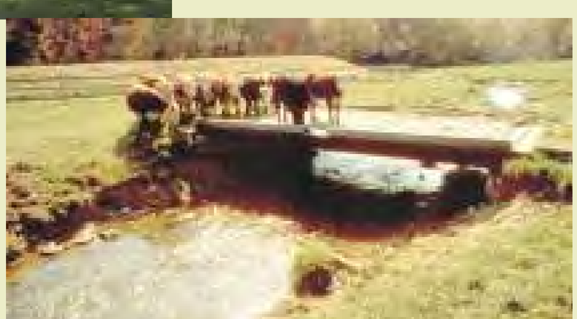


Erosion controls that aren't maintained can cause excessive amounts of sediment and debris to be carried into the stormwater system. Construction vehicles can leak fuel, oil, and other harmful fluids that can be picked up by stormwater and deposited into local waterbodies.

- Divert stormwater away from disturbed or exposed areas of the construction site.
- Install silt fences, vehicle mud removal areas, vegetative cover, and other sediment and erosion controls and properly maintain them, especially after rainstorms.
- Prevent soil erosion by minimizing disturbed areas during construction projects, and seed and mulch bare areas as soon as possible.

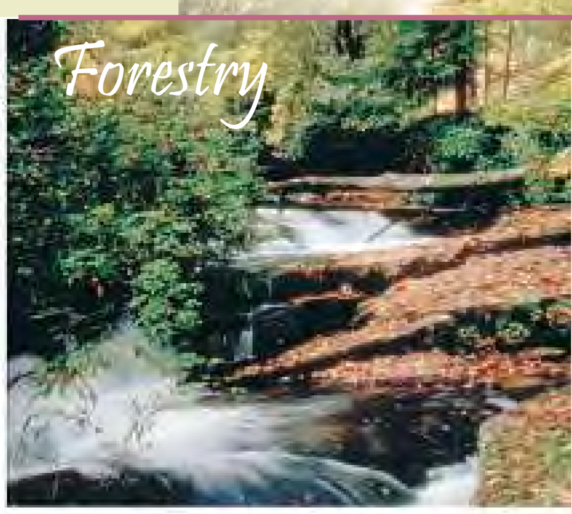
Agriculture

Lack of vegetation on streambanks can lead to erosion. Overgrazed pastures can also contribute excessive amounts of sediment to local waterbodies. Excess fertilizers and pesticides can poison aquatic animals and lead to destructive algae blooms. Livestock in streams can contaminate waterways with bacteria, making them unsafe for human contact.



- Keep livestock away from streambanks and provide them a water source away from waterbodies.
- Store and apply manure away from waterbodies and in accordance with a nutrient management plan.
- Vegetate riparian areas along waterways.
- Rotate animal grazing to prevent soil erosion in fields.
- Apply fertilizers and pesticides according to label instructions to save money and minimize pollution.

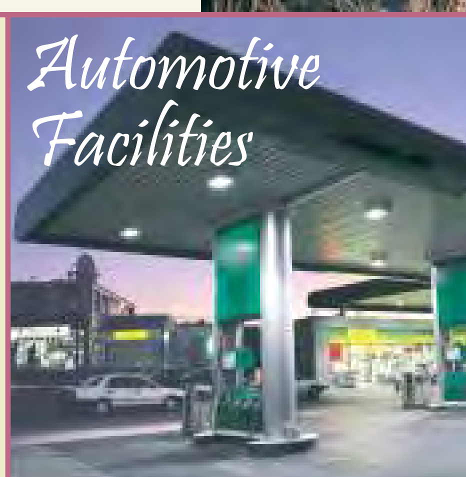
Forestry



Improperly managed logging operations can result in erosion and sedimentation.

- Conduct preharvest planning to prevent erosion and lower costs.
- Use logging methods and equipment that minimize soil disturbance.
- Plan and design skid trails, yard areas, and truck access roads to minimize stream crossings and avoid disturbing the forest floor.
- Construct stream crossings so that they minimize erosion and physical changes to streams.
- Expedite revegetation of cleared areas.

Automotive Facilities



Uncovered fueling stations allow spills to be washed into storm drains. Cars waiting to be repaired can leak fuel, oil, and other harmful fluids that can be picked up by stormwater.

- Clean up spills immediately and properly dispose of cleanup materials.
- Provide cover over fueling stations and design or retrofit facilities for spill containment.
- Properly maintain fleet vehicles to prevent oil, gas, and other discharges from being washed into local waterbodies.
- Install and maintain oil/water separators.

Landscaping and garden maintenance activities can be major contributors to water pollution. Soils, yard wastes, over-watering and garden chemicals become part of the urban runoff mix that winds its way through streets, gutters and storm drains before entering lakes, rivers, streams, etc. Urban runoff pollution contaminates water and harms aquatic life!

In Riverside County, report illegal discharges into the storm drain, call
1-800-506-2555
"Only Rain Down the Storm Drain"

Important Links:

Riverside County Household Hazardous Waste Collection Information
1-800-304-2226 or www.rivcowm.org

Riverside County Backyard Composting Program
1-800-366-SAVE

Integrated Pest Management (IPM) Solutions
www.ipm.ucdavis.edu

California Master Gardener Programs
www.mastergardeners.org
www.camastergardeners.ucdavis.edu

California Native Plant Society
www.cnps.org

The Riverside County "Only Rain Down the Storm Drain" Pollution Prevention Program gratefully acknowledges Orange County's Storm Water Program for their contribution to this brochure.

...Only Rain Down ...the Storm Drain

What you should know for... Landscape and Gardening

Best Management tips for:

- Professionals
- Novices
- Landscapers
- Gardeners
- Cultivators

Tips for Landscape & Gardening

This brochure will help you to get the most of your lawn and gardening efforts and keep our waterways clean. Clean waterways provide recreation, establish thriving fish habitats, secure safe sanctuaries for wildlife, and add beauty to our communities. NEVER allow gardening products or waste water to enter the street, gutter or storm drain.

General Landscaping Tips

- Protect stockpiles and materials from wind and rain by storing them under tarps or secured plastic sheeting.
- Prevent erosion of slopes by planting fast-growing, dense ground covering plants. These will shield and bind the soil.
- Plant native vegetation to reduce the amount of water, fertilizers and pesticides applied to the landscape.

- Never apply pesticides or fertilizers when rain is predicted within the next 48 hours.

Garden & Lawn Maintenance

- Do not overwater. Use irrigation practices such as drip irrigation, soaker hoses or micro-spray systems. Periodically inspect and fix leaks and misdirected sprinklers.
- Do not rake or blow leaves, clippings or pruning waste into the street, gutter or storm drain. Instead, dispose of green waste by composting, hauling it to a permitted landfill, or recycling it through your city's program.

- Consider recycling your green waste and adding "nature's own fertilizer" to your lawn or garden.
- Read labels and use only as directed. Do not over-apply pesticides or fertilizers. Apply to spots as needed, rather than blanketing an entire area.
- Store pesticides, fertilizers and other chemicals in a dry covered area to prevent exposure that may result in the deterioration of containers and packaging.
- Rinse empty pesticide containers and re-use rinse water as you would use the product. Do not dump rinse water down storm drains or sewers. Dispose of empty containers in the trash.
- When available, use non-toxic alternatives to traditional pesticides, and use pesticides specifically designed to control the pest you are targeting.
- Try natural long-term common sense solutions first. Integrated Pest Management (IPM) can provide landscaping guidance and solutions, such as:
  - **Physical Controls** - Try hand picking, barriers, traps or caulking holes to control weeds and pests.
  - **Biological Controls** - Use predatory insects to control harmful pests.
  - **Chemical Controls** - Check out www.ipm.ucdavis.edu before using chemicals. Remember, all chemicals should be used cautiously and in moderation.
- If fertilizer is spilled, sweep up the spill before irrigating. If the spill is liquid, apply an absorbent material such as cat litter, and then sweep it up and dispose of it in the trash.
- Take unwanted pesticides to a Household Waste Collection Center to be recycled.
- *Dumping toxics into the street, gutter or storm drain is illegal!*

www.bewaterwise.com Great water conservation tips and drought tolerant garden designs.

www.ourwaterourworld.com Learn how to safely manage home and garden pests.

Additional information can also be found on the back of this brochure.

Efficient Irrigation SD-12

Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Irrigation water provided to landscaped areas may result in excess irrigation water being conveyed into stormwater drainage systems.

Approach

Project plan designs for development and redevelopment should include application methods of irrigation water that minimize runoff of excess irrigation water into the stormwater conveyance system.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment. (Detached residential single-family homes are typically excluded from this requirement.)

Design Considerations

Designing New Installations

The following methods to reduce excessive irrigation runoff should be considered, and incorporated and implemented where determined applicable and feasible by the Permittee:

- Employ rain-triggered shutoff devices to prevent irrigation after precipitation.
- Design irrigation systems to each landscape area's specific water requirements.
- Include design featuring flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines.
- Implement landscape plans consistent with County or City water conservation resolutions, which may include provision of water sensors, programmable irrigation times (for short cycles), etc.

- Design timing and application methods of irrigation water to minimize the runoff of excess irrigation water into the storm water drainage system.

- Group plants with similar water requirements in order to reduce excess irrigation runoff and promote surface filtration. Choose plants with low irrigation requirements (for example, native or drought tolerant species). Consider design features such as:

  - Using mulches (such as wood chips or bar) in planter areas without ground cover to minimize sediment in runoff

  - Installing appropriate plant materials for the location, in accordance with amount of sunlight and climate, and use native plant materials where possible and/or as recommended by the landscape architect

  - Leaving a vegetative barrier along the property boundary and interior watercourses, to act as a pollutant filter, where appropriate and feasible

  - Choosing plants that minimize or eliminate the use of fertilizer or pesticides to sustain growth

- Employ other comparable, equally effective methods to reduce irrigation water runoff.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Design Objectives

- Maximize Infiltration
- Provide Retention
- Slow Runoff
- Minimize Impervious Land Coverage
- ☑ Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Waste materials dumped into storm drain inlets can have severe impacts on receiving and ground waters. Posting notices regarding discharge prohibitions at storm drain inlets can prevent waste dumping. Storm drain signs and stencils are highly visible source controls that are typically placed directly adjacent to storm drain inlets.

Approach

The stencil or affixed sign contains a brief statement that prohibits dumping of improper materials into the urban runoff conveyance system. Storm drain messages have become a popular method of alerting the public about the effects of and the prohibitions against waste disposal.

Suitable Applications

Stencils and signs alert the public to the destination of pollutants discharged to the storm drain. Signs are appropriate in residential, commercial, and industrial areas, as well as any other area where contributions or dumping to storm drains is likely.

Design Considerations

Storm drain message markers or placards are recommended at all storm drain inlets within the boundary of a development project. The marker should be placed in clear sight facing toward anyone approaching the inlet from either side. All storm drain inlet locations should be identified on the development site map.

Designing New Installations

The following methods should be considered for inclusion in the project design and show on project plans:

- Provide stenciling or labeling of all storm drain inlets and catch basins, constructed or modified, within the project area with prohibitive language. Examples include “NO DUMPING

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– DRAINS TO OCEAN" and/or other graphical icons to discourage illegal dumping.

- Post signs with prohibitive language and/or graphical icons, which prohibit illegal dumping at public access points along channels and creeks within the project area.

Note - Some local agencies have approved specific signage and/or storm drain message placards for use. Consult local agency stormwater staff to determine specific requirements for placard types and methods of application.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. If the project meets the definition of "redevelopment", then the requirements stated under " designing new installations" above should be included in all project design plans.

Additional Information

Maintenance Considerations

- Legibility of markers and signs should be maintained. If required by the agency with jurisdiction over the project, the owner/operator or homeowner's association should enter into a maintenance agreement with the agency or record a deed restriction upon the property title to maintain the legibility of placards or signs.

Placement

- Signage on top of curbs tends to weather and fade.

- Signage on face of curbs tends to be worn by contact with vehicle tires and sweeper brooms.

Supplemental Information

Examples

- Most MS4 programs have storm drain signage programs. Some MS4 programs will provide stencils, or arrange for volunteers to stencil storm drains as part of their outreach program.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Trash Storage Areas SD-32

Design Objectives

- Maximize Infiltration
- Provide Retention
- Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- ☑ Contain Pollutants
- Collect and Convey

Description

Trash storage areas are areas where a trash receptacle (s) are located for use as a repository for solid wastes. Stormwater runoff from areas where trash is stored or disposed of can be polluted. In addition, loose trash and debris can be easily transported by water or wind into nearby storm drain inlets, channels, and/or creeks. Waste handling operations that may be sources of stormwater pollution include dumpsters, litter control, and waste piles.

Approach

This fact sheet contains details on the specific measures required to prevent or reduce pollutants in stormwater runoff associated with trash storage and handling. Preventative measures including enclosures, containment structures, and impervious pavements to mitigate spills, should be used to reduce the likelihood of contamination.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment. (Detached residential single-family homes are typically excluded from this requirement.)

Design Considerations

Design requirements for waste handling areas are governed by Building and Fire Codes, and by current local agency ordinances and zoning requirements. The design criteria described in this fact sheet are meant to enhance and be consistent with these code and ordinance requirements. Hazardous waste should be handled in accordance with legal requirements established in Title 22, California Code of Regulation.

Wastes from commercial and industrial sites are typically hauled by either public or commercial carriers that may have design or access requirements for waste storage areas. The design criteria in this fact sheet are recommendations and are not intended to be in conflict with requirements established by the waste hauler. The waste hauler should be contacted prior to the design of your site trash collection areas. Conflicts or issues should be discussed with the local agency.

Designing New Installations

Trash storage areas should be designed to consider the following structural or treatment control BMPs:

- Design trash container areas so that drainage from adjoining roofs and pavement is diverted around the area(s) to avoid run-on. This might include berming or grading the waste handling area to prevent run-on of stormwater.

- Make sure trash container areas are screened or walled to prevent off-site transport of trash.

- Use lined bins or dumpsters to reduce leaking of liquid waste.
- Provide roofs, awnings, or attached lids on all trash containers to minimize direct precipitation and prevent rainfall from entering containers.
- Pave trash storage areas with an impervious surface to mitigate spills.
- Do not locate storm drains in immediate vicinity of the trash storage area.
- Post signs on all dumpsters informing users that hazardous materials are not to be disposed of therein.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Additional Information

Maintenance Considerations

The integrity of structural elements that are subject to damage (i.e., screens, covers, and signs) must be maintained by the owner/operator. Maintenance agreements between the local agency and the owner/operator may be required. Some agencies will require maintenance deed restrictions to be recorded of the property title. If required by the local agency, maintenance agreements or deed restrictions must be executed by the owner/operator before improvement plans are approved.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

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