Technical Memorandum

To: City of Perris

From: Jennifer Gillen, P.E., Senior Engineer

Date: February 28, 2025

Re: Rider Distribution Center II - WQMP Update

Introduction

This technical memorandum is prepared to complement the Water Quality report titled "Rider Distribution Center II" prepared for IDI Logistics. Relevant excerpts are provided in Appendix C. This technical memo will provide updated calculations and exhibits based on the updated final site plan. 'Rider II' is bounded by Rider St to the south, Redlands Ave to the west, Perris Valley Storm Channel to the east, and MWD property to the north. Rider II project site consists of an industrial warehouse, parking and landscape on approximately 39.4 acres and currently drains to a basin in the southeast corner of the project. Water quality storm events are directed to an onsite storage basin in the southeast corner via a Stormgate Vault structure before being pumped into and treated by a Contech Filterra unit (See FWQMP in Appendix C for more information). Flows higher than the water quality event will bypass the Stormgate Vault and continue to the existing Line A-B in Rider Street and continue into the Perris Valley Storm Drain.

The redevelopment proposed in this memo would remove and replace approximately 2.2 acres of the existing improvements for additional truck parking and a revised landscaped area. Since under 50% of the site is proposed to be redeveloped, the full Rider II site is not required to be treated for water quality. However, the total site was included in the original analysis and continues to drain to the existing pump and Filterra Bioscape, along with the proposed improvements per this memo. Appendix B includes calculations for the new water quality volume requirements based on the revised pervious/impervious areas.

Due to an increase of 0.4% in impervious area when compared to the original site plan, an additional 400 cubic yards of water quality volume will also require treatment. To avoid any changes to existing treatment facilities, a drawdown calculation was performed to show that the pump is still capable of conveying the additional water quality volume to the Bioscape unit under the required 48 hours, per ALUC requirements. This will allow the pump to maintain its current flow rate and avoid damaging the system from an increase in load. The additional volume will be held back via the existing basin & Stormgate vault overflow.

The proposed development will make use of the existing underground storm drain pipe and inlets. Flows from portions of the existing site, including roof, drive aisles, and parking, flows are still conveyed via curb & gutter, ribbon gutters, and u-channels. The proposed truck parking will follow the existing drainage pattern and drain to the existing 10' wide catch basin.

Appendices

APPENDIX A – Vicinity Map

APPENDIX B – Updated Water Quality Exhibit and Calculations

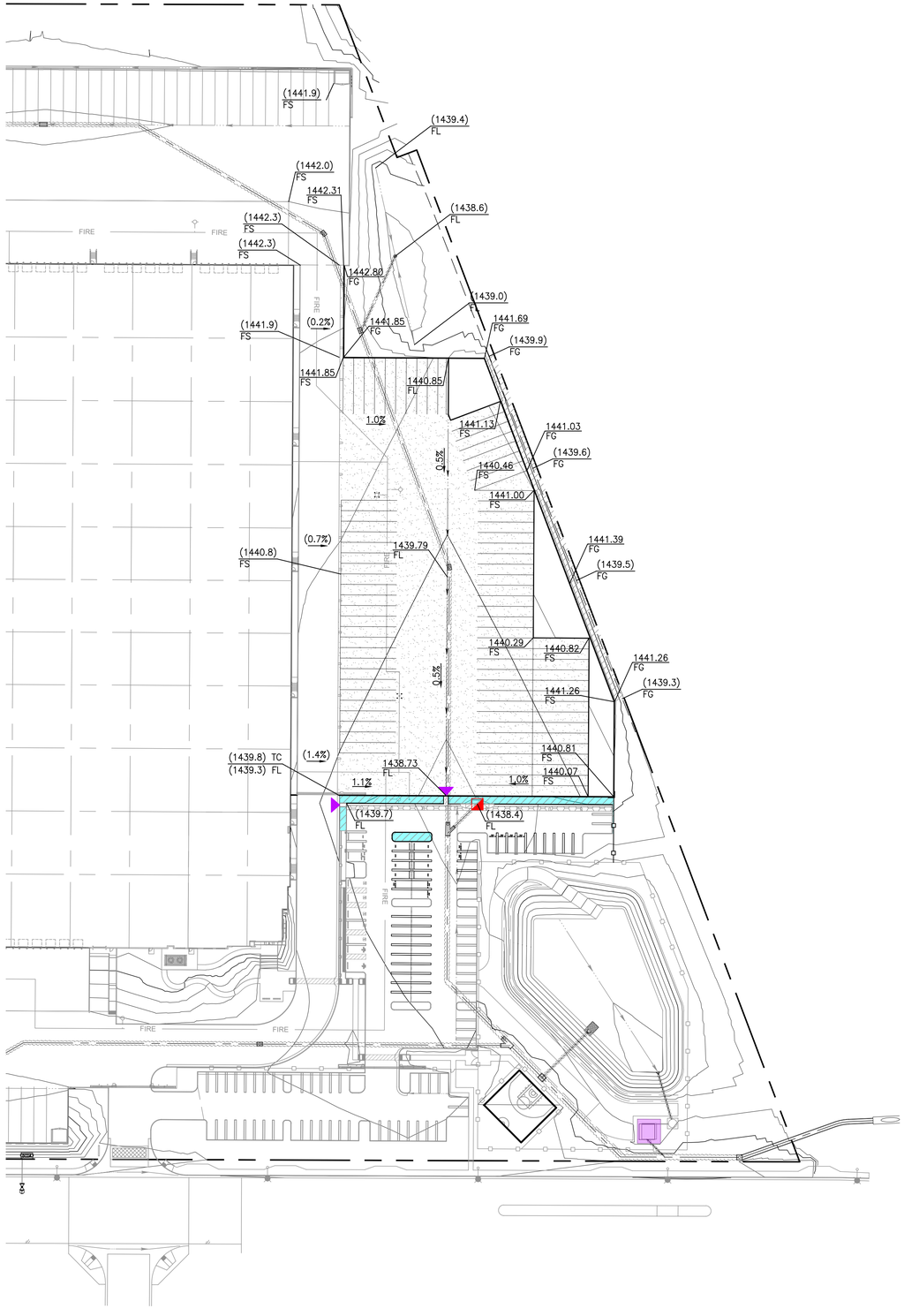
APPENDIX C – Relevant Excerpts from Backbone WQMP

APPENDIX A

G:\2017\17-0194\Drainage\WQMP\RIDER 2\Appendix 1-Maps and Site Plans\GIS\vicinity.mxd

FIGURE 1: VICINITY MAP

APPENDIX B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1.1%
1.0%
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FIRE

Santa Ana Watershed - BMP Design Volume, V_{BMP}

(Rev. 10-2011)

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name: Albert A Webb Associates — Date: 2/25/2025

Designed by: EA — Case No:

Company Project Number/Name: Rider Distribution Center II - Truck Drop Lot

BMP Identification

BMP NAME / ID: Existing Filterra Bioscape (BMP-A)

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

D_{85}= 0.63 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	Design Storm Depth (in)	Design Capture Volume, V_{BMP} (cubic feet)	Proposed Volume on Plans (cubic feet)
L-A	194558	Ornamental Landscaping	0.1	0.11	21490.5			
R-A	805500	Roofs	1	0.89	718506			
H-A	660603	Concrete or Asphalt	1	0.89	589257.9			
BMP-A	200	Ornamental Landscaping	0.1	0.11	22.1			
OS-A	131930	Natural (C Soil)	0.3	0.23	29706.2			
SR-A	42449	Ornamental Landscaping						
	1835240	Total			1358982.7	0.63	71346.6	71400

Notes:

Original Pump Rate Calculation

$$\frac{V_{BMP}}{t_{drain}} = Area * i = Q_{pump}$$

$$\frac{V_{BMP}}{t_{drain}} = Q_{pump}$$

$$Q_{pump} = \frac{ft^3}{hr} * \frac{1\ hr}{3600\ sec} * \frac{449\ gpm}{1\ \frac{ft^3}{sec}}$$

$$Q_{pump} = \frac{71{,}060\ ft^3}{24\ hr} * \frac{449}{3600}\ \frac{gpm}{\frac{ft^3}{hr}} = 350\ gpm$$

Drop Lot Pump Rate Calculation

$$t_{drain} = \frac{V_{BMP}}{Q_{pump}}$$

$$t_{drain} = \frac{71{,}400\ ft^3}{350\ gpm * \frac{3600}{449}\ \frac{\frac{ft^3}{hr}}{gpm}} = 25.6\ hrs$$

$$\boldsymbol{t_{drain} = 350\ gpm\ @\ 25.6\ hrs}$$

APPENDIX C

CITY OF PERRIS

PUBLIC WORKS DEPARTMENT
Engineering Administration/
Special Districts Division
101 North D Street
Perris, California 92570
951-956-2120

April 5, 2021

Mr. Steve Hollis
IDI Logistics
840 Apollo Street, Ste 343
El Segundo, California 90245

Subject: **Rider II Distribution Center**
Approval of Addendum Water Quality Management Plan (WQMP #P19-00004)

Dear Mr. Hollis:

The City of Perris Engineering Department approved the above referenced Water Quality Management Plan, subject to the enclosed Conditions of Approval. Water Quality Management Plan (WQMP) #P19-00004 is the final WQMP for the proposed 39.4-acre warehouse distribution center development (APN 303-170-005, -004, -011, -014). The project site is located at the northeast corner of Redlands Avenue and Riders Street in the City of Perris. The project proposes the development of the new construction of one, 805,500 square feet industrial building, newly paved roadways throughout the site and landscaped buffer areas. The selected structural treatment control BMPs consist of LID practices including the Filterra Bioscape and basin, self-retaining landscape and a covered trash enclosure. The WQMP addresses the long-term water quality management for the proposed project.

Prior to the issuance of grading, building or occupancy permits, certain Conditions of Approval need to be complied with. Anyone dissatisfied with this decision or the Conditions of Approval may appeal within 10 working days from the date of this letter. Caution should be exercised in making any expenditures or commitments based upon this approval until the expiration of the appeal period and disposition of any appeals which may be filed.

If you have any questions concerning this matter, please do not hesitate to contact me at (951) 956-2120 ext. 226.

Sincerely,

Cynthia Gabaldon

Cynthia Gabaldon, PE, CPSWQ, CPESC, QSD/P, ToR
CG Resource Management and Engineering, Inc.

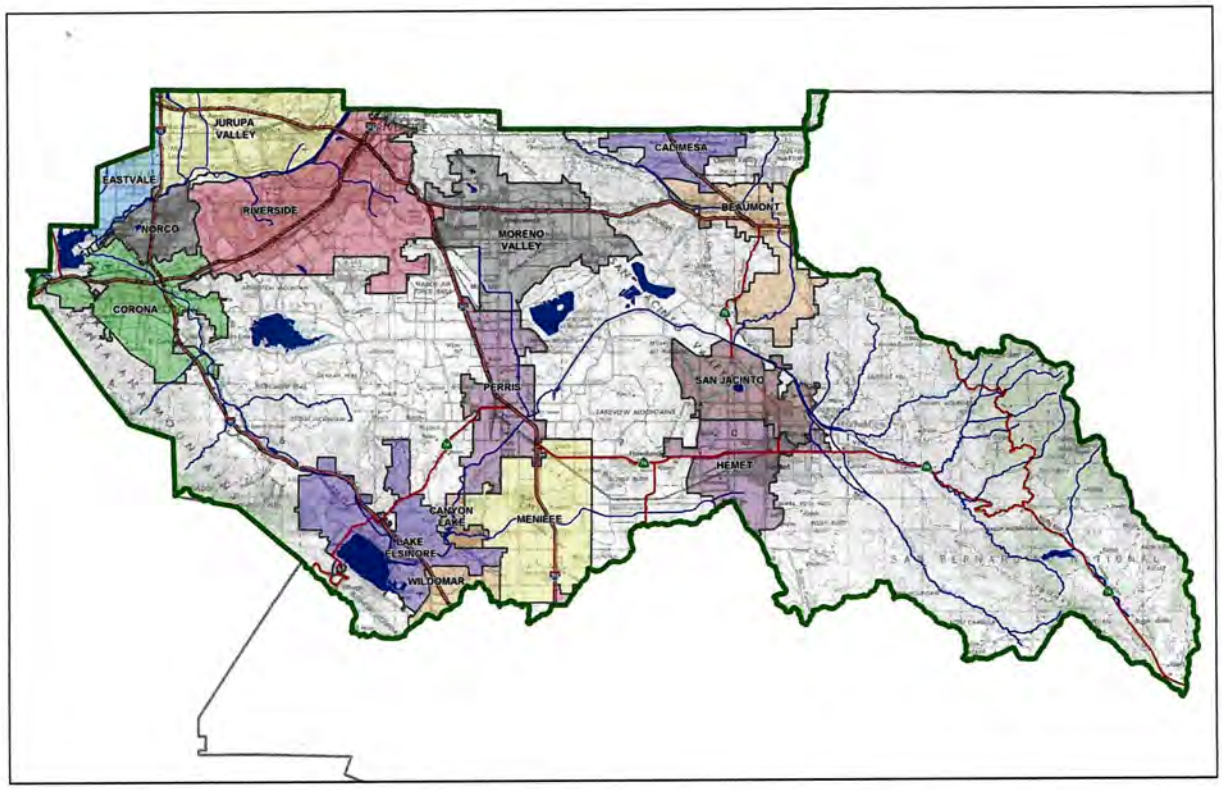
Attachments: Approved WQMP dated March 2021; COAs dated April 5, 2021
cc: Stuart McKibbin, City Engineer, Engineering Department w/COAs
Public Works Engineering Administration/Special Districts w/attachments

Project Specific Water Quality Management Plan

*A Template for Projects located within the **Santa Ana Watershed** Region of Riverside County*

Project Title: Rider Distribution Center II

Design Review/Case No: 19-00004



☐ **Preliminary**
☒ **Final**

Original Date Prepared: October 2020

Revision Date(s): March 2021

Prepared for Compliance with
Regional Board Order No. **R8-2010-0033**

Contact Information:

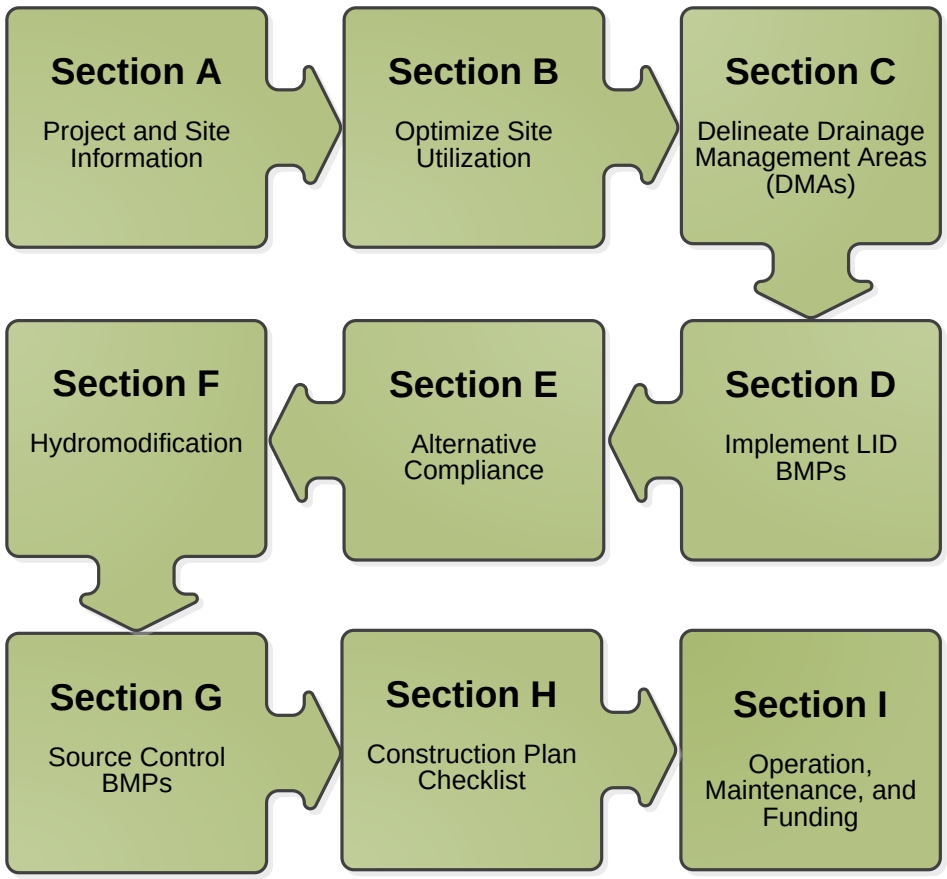
Prepared for:
IDI Logistics
Attn: Steve Hollis
840 Apollo Street, Suite 343
El Segundo, CA 90245
(949) 351 – 7243

Prepared by:
Albert A. Webb Associates
Attn: DJ Arellano, P.E.
3788 McCray St
Riverside, CA 92506
(951) 686 – 1070

APPROVED
CITY OF PERRIS
PUBLIC WORKS DEPT.
ENGINEERING ADMINISTRATION DIV.
WQMP# PIG-00004
BY Cynthia Galaviz
WTCOAS 4/13/21

A Brief Introduction

This Project-Specific WQMP Template for the **Santa Ana Region** has been prepared to help guide you in documenting compliance for your project. Because this document has been designed to specifically document compliance, you will need to utilize the WQMP Guidance Document as your "how-to" manual to help guide you through this process. Both the Template and Guidance Document go hand-in-hand, and will help facilitate a well prepared Project-Specific WQMP. Below is a flowchart for the layout of this Template that will provide the steps required to document compliance.



OWNER'S CERTIFICATION

This Project-Specific Water Quality Management Plan (WQMP) has been prepared for IDI Logistics by Albert A. Webb Associates for the Rider Distribution Center II project (19-00004).

This WQMP is intended to comply with the requirements of City of Perris for Water Quality Ordinance 1194 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 BMPs 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 City of Perris Water Quality Ordinance (Municipal Code Section1194).

"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

3/30/21
Date

STEPHEN HOLLIS
Owner's Printed Name

V.P. CONSTRUCTION
Owner's Title/Position

PREPARER'S CERTIFICATION

"The selection, sizing and design of stormwater treatment and other stormwater quality and quantity control measures in this plan meet the requirements of Regional Water Quality Control Board Order No. **R8-2010-0033** and any subsequent amendments thereto."

Preparer's Signature

3/16/2021
Date

DJ Arellano, P.E.
Preparer's Printed Name

Senior Engineer
Preparer's Title/Position

Preparer's Licensure:

ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California
County of Riverside)

On March 30, 2021 before me, Zona L Lee, Notary Public
(insert name and title of the officer)

personally appeared Stephen S Hollis,
who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

ZONA L. LEE
Notary Public – California
Riverside County
Commission # 2205355
My Comm. Expires Jul 15, 2021

Signature _____ **(Seal)**

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Section A: Project and Site Information

PROJECT INFORMATION	
Type of Project:	Industrial
Planning Area:	Mead Valley Area Plan (RCIP)
Community Name:	Mead Vally Area Plan (RCIP)
Development Name:	Rider Distribution Center II
PROJECT LOCATION	
Latitude & Longitude (DMS): 38°49'53.76", 117°12"51.28"	
Project Watershed and Sub-Watershed: Santa Ana River, San Jacinto River	
APN(s): 303-170-005, 303-170-004, 303-170-014, 303-170-011	
Map Book and Page No.: Thomas Bros. Map Page 77, Grid H3 & Grid J3	
PROJECT CHARACTERISTICS	
Proposed or Potential Land Use(s)	Light Industrial/Commercial
Proposed or Potential SIC Code(s): **1541** (General Contractors-Industrial Buildings & Warehouses)	1541
Area of Impervious Project Footprint (SF)	1,420,500
Total Area of proposed Impervious Surfaces within the Project Limits (SF)/or Replacement	1,420,450
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
EXISTING SITE CHARACTERISTICS	
Total area of existing Impervious Surfaces within the project limits (SF)	0
Is the project located within any 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 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?	0.63

Project Description

The project is proposing a commercial warehouse facility (approximately 805,500 square feet) on approximately 39.4 acres of vacant land in the City of Perris. The site is bound by Redlands Avenue to the west, Rider Street to the south, Perris Valley Storm Drain Channel to the east, and MWD Colorado River Aqueduct to the north. The existing elevations across the site vary from 1436 at the southeast corner to 1445 at the northwest corner (NAVD88 datum). The site currently slopes at approximately 0.2% to the southeast corner. The existing drainage pattern for the site and the general area is characterized by sheet flows that follow the slope. Currently, the runoff sheet flows towards Rider Street and drains into Perris Valley Storm Drain.

The project site is encompassed by existing streets on the west and south side of the property which will intercept any runoff trying to encroach on the project site. On the east side of the property, where the

Perris Valley Strom Drain (PVSD) is located, there is an access road that serves as a ridge line/berm; it prevents any normal runoff in the PVSD from encroaching on the project site. However, there is a natural ridgeline within the MWD right-of-way to the north side of the project boundary that splits half of its discharge to the north and the other half to the south. The site is projected to receive approximately 3.0 acres of off-site sheet flows. The project proposes to use concrete flow lines and wall openings to convey the offsite runoff onsite. Offsite flows are proposed to be conveyed using the onsite storm drain system.

The project is proposing to treat the onsite and offsite runoff with a Contech Bioscape, BMP-A. Before treatment, all water quality runoff will be directed to a storage basin in the southeast corner; the storage basin is sized to hold the entire Vbmp with 1' of freeboard. From the storage basin, water is pumped at approximately 350 gpm via a low flow pump and wetwell, and discharges into the proposed Contech Bioscape. The storage basin and bioscape are designed to dewater in 24 hours.

A.1 Maps and Site Plans

When completing your Project-Specific WQMP, include a map of the local 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
- Proposed Structural 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 Co-Permittee 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.

Table A.1 Identification of Receiving Waters

Receiving Waters	EPA Approved 303(d) List Impairments	Designated Beneficial Uses	Proximity to RARE Beneficial Use
Perris Valley Storm Drain	None	None	Not a water body classified as RARE
San Jacinto River (Reach 3)(HU#802.11)	None	MUN,AGR, GWR, REC1, REC2, WARM, WILD	Not a water body classified as RARE
San Jacinto River (Reach 2)(HU#802.11)	None	MUN,AGR, GWR, REC1, REC2, WARM, WILD	Not a water body classified as RARE
Canyon Lake (HU#802.11, 802.12)	Nutrients, Pathogens	MUN,AGR, GWR, REC1, REC2, WARM, WILD	Not a water body classified as RARE
San Jacinto River (Reach 1)(HU#802.32)	None	MUN,AGR, GWR, REC1, REC2, WARM, WILD	Not a water body classified as RARE
Lake Elsinore (HU#802.31)	PCBs, (Organic Compounds), Nutrients, Organic Enrichment (Low DO) , Sediment Toxicity, Unknown Toxicity	REC1, REC2, WARM, WILD	Not a water body classified as RARE

A.3 Additional Permits/Approvals required for the Project:

Table A.2 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 (CWA) Section 401 Water Quality Cert.	☐ Y	☒ N
US Army Corps of Engineers, CWA 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 (**dependent on tenant)**	☒ Y	☐ N
Western Riverside MSHCP Consistency Approval (e.g., JPR, DBESP)	☐ Y	☒ N
Other *(please list in the space below as required)* City of Perris Grading Permit	☒ Y	☐ N

If yes is answered to any of the questions above, the Co-Permittee 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)

Review of the information collected in Section 'A' will aid in identifying 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. For example, constraints might include impermeable soils, high groundwater, groundwater pollution or contaminated soils, steep slopes, geotechnical instability, high-intensity land use, heavy pedestrian or vehicular traffic, utility locations or safety concerns. Opportunities might include existing natural areas, low areas, oddly configured or otherwise unbuildable parcels, easements and landscape amenities including open space and buffers (which can double as locations for bioretention BMPs), and differences in elevation (which can provide hydraulic head). Prepare a brief narrative for each of the site optimization strategies described below. This narrative will help you as you proceed with your LID design and explain your design decisions to others.

The 2010 Santa Ana 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. Therefore, it is important that your narrative identify and justify if there are any constraints that would prevent the use of those categories of LID BMPs. Similarly, you should also note opportunities that exist which will be utilized during project design. Upon completion of identifying Constraints and Opportunities, include these on your WQMP Site plan in Appendix 1.

Site Optimization

The following questions are based upon Section 3.2 of the WQMP Guidance Document. Review of the WQMP Guidance Document will help you determine how best to optimize your site and subsequently identify opportunities and/or constraints, and document compliance.

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

Yes, the project site currently sheet flows from the northwest corner to the southeast corner. The project proposes to continue with the existing drainage pattern by conveying runoff to the southeast corner where the storage basin will retain the water quality volume before discharging into BMP-A.

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

No, the site is currently vacant and there is not a significant amount of vegetation.

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

Infiltration testing was performed in the proposed basin location. The infiltration rate does not meet the minimum required infiltration rate of 1.6 inch per hour as stated in the Riverside County LID Manual.

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

The project proposes to minimize impervious areas given the proposed site usage and required parameters.

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

Runoff will be conveyed towards the proposed storage basin. Also, there are some landscaped areas that can be categorized as self-retaining.

Section C: Delineate Drainage Management Areas (DMAs)

Utilizing the procedure in Section 3.3 of the WQMP Guidance Document which discusses the methods of delineating and mapping your project site into individual DMAs, complete Table C.1 below to appropriately categorize the types of classification (e.g., Type A, Type B, etc.) per DMA for your project site. Upon completion of this table, this information will then be used to populate and tabulate the corresponding tables for their respective DMA classifications.

Table C.1 DMA Classifications

	DMA Name or ID	Surface Type(s)[1]	Area (Sq. Ft.)	DMA Type
DMA-A	L-A	LANDSCAPE	197,200	D
	R-A	ROOF	805,500	D
	H-A	HARDSCAPE	654,150	D
	BMP-A	LANDSCAPE	200	D
	OS-A	NATURAL (C SOIL)	131,930	D
	SR-A	LANDSCAPE	46,260	B

[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 ID	Area (Sq. Ft.)	Stabilization Type	Irrigation Type (if any)
N/A			

Table C.3 Type 'B', Self-Retaining Areas

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]
SR-A	LANDSCAPE	46,260	0.63			0.63

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

Table C.4 Type 'C', Areas that Drain to Self-Retaining Areas

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]
N/A							

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

DMA Name or ID	BMP Name or ID
DMA-A	BMP-A

Note: More than one drainage management area can drain to a single LID BMP, however, one drainage management area may not drain to more than one BMP.

Section D: Implement LID BMPs

D.1 Infiltration Applicability

Is there an approved downstream 'Highest and Best Use' for stormwater runoff (see discussion in Chapter 2.4.4 of the WQMP Guidance Document for further details)? ☐ Y ☒ N

If yes has been checked, Infiltration BMPs shall not be used for the site. If no, continue working through this section to implement your LID BMPs. It is recommended that you contact your Co-Permittee to verify whether or not your project discharges to an approved downstream 'Highest and Best Use' feature.

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 Co-Permittee, 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

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 2.4.5. 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**		
…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:		
…geotechnical report identify 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 should not be used for those DMAs and you should proceed to the assessment for Harvest and Use below.

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 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 Design Capture Volume will be infiltrated or evapotranspired.

If any of the above boxes have been checked, Harvest and Use BMPs need not be assessed for the site. If neither of the above criteria applies, follow the steps below 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: Insert Area (Acres)

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

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: Insert Area (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 2-3 in Chapter 2 to determine the minimum area of Effective Irrigated Area per Tributary Impervious Area (EIATIA).

Enter your EIATIA factor: EIATIA Factor

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: Insert Area (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)
Insert Area (Acres)	Insert Area (Acres)

Toilet Use Feasibility

Complete the following steps to determine the feasibility of harvesting stormwater runoff for toilet flushing uses on your site:

Step 1: Identify the projected total number of daily toilet users during the wet season, and account for any periodic shut downs or other lapses in occupancy:

Projected Number of Daily Toilet Users: Number of daily Toilet Users

Project Type: Enter 'Residential', 'Commercial', 'Industrial' or 'Schools'

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for toilet 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: Insert Area (Acres)

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-1 in Chapter 2 to determine the minimum number or toilet users per tributary impervious acre (TUTIA).

Enter your TUTIA factor: TUTIA Factor

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

Minimum number of toilet users: Required number of toilet users

Step 5: Determine if harvesting stormwater runoff for toilet flushing use is feasible for the project by comparing the Number of Daily Toilet Users (Step 1) to the minimum required number of toilet users (Step 4).

Minimum required Toilet Users (Step 4)	**Projected number of toilet users (Step 1)**
Insert Area (Acres)	Insert Area (Acres)

Other Non-Potable Use Feasibility

Are there other non-potable uses for stormwater runoff on the site (e.g. industrial use)? See Chapter 2 of the Guidance for further information. If yes, describe below. If no, write N/A.

Insert narrative description here.

Step 1: Identify the projected average daily non-potable demand, in gallons per day, during the wet season and accounting for any periodic shut downs or other lapses in occupancy or operation.

Average Daily Demand: Projected Average Daily Use (gpd)

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for the identified non-potable 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: Insert Area (Acres)

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-3 in Chapter 2 to determine the minimum demand for non-potable uses per tributary impervious acre.

Enter the factor from Table 2-3: Enter Value

Step 4: Multiply the unit value obtained from Step 4 by the total of impervious areas from Step 3 to develop the minimum number of gallons per day of non-potable use that would be required.

Minimum required use: Minimum use required (gpd)

Step 5: Determine if harvesting stormwater runoff for other non-potable use is feasible for the project by comparing the Number of Daily Toilet Users (Step 1) to the minimum required number of toilet users (Step 4).

Minimum required non-potable use (Step 4)	**Projected average daily use (Step 1)**
Minimum use required (gpd)	Projected Average Daily Use (gpd)

If Irrigation, Toilet and Other Use feasibility anticipated demands are less than the applicable minimum values, Harvest and Use BMPs are not required and you should proceed to utilize LID Bioretention and Biotreatment, unless a site-specific analysis has been completed that demonstrates technical infeasibility as noted in D.3 below.

D.3 Bioretention and Biotreatment Assessment

Other LID Bioretention and Biotreatment BMPs as described in Chapter 2.4.7 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 (note the requirements of Section 3.4.2 in the WQMP Guidance Document).

☐ 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 to discuss this option. Proceed to Section E to document your alternative compliance measures.

D.4 Feasibility Assessment Summaries

From the Infiltration, Harvest and Use, Bioretention and Biotreatment Sections above, complete Table D.2 below to summarize which LID BMPs are technically feasible, and which are not, based upon the established hierarchy.

Table D.2 LID Prioritization Summary Matrix

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

For those DMAs where LID BMPs are not feasible, provide a brief narrative below summarizing why they are not feasible, include your technical infeasibility criteria in Appendix 5, and proceed to Section E below to document Alternative Compliance measures for those DMAs. Recall that each proposed DMA must pass through the LID BMP hierarchy before alternative compliance measures may be considered.

N/A

D.5 LID BMP Sizing

Each LID BMP must be designed to ensure that the Design Capture Volume will be addressed by the selected BMPs. First**,** calculate the Design Capture Volume 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. Utilize the worksheets found in the LID BMP Design Handbook or consult with your Copermittee to assist you in correctly sizing your LID BMPs. Complete Table D.3 below to document the Design Capture Volume 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.3 DCV Calculations for LID BMPs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Basin-A*		
	[A]		[B]	[C]	[A] x [C]			
L-A	*247,330*	*LANDSCAPE*	*0.1*	*0.11*	*27,319.6*	*Design Storm Depth (in)*	*Design Capture Volume,* $\mathbf{V_{BMP}}$ *(cubic feet)*	*Proposed Volume on Plans (cubic feet)*
R-A	*805,500*	*ROOF*	*1*	*0.89*	*718,506*			
H-A	*614,950*	*HARDSCAPE*	*1*	*0.89*	*548,535.4*			
BMP- A	*200*	*LANDSCAPE*	*0.1*	*0.11*	*22.1*			
OS-A	*131,930*	*NATURAL (C-SOIL)*	*0.3*	*0.23*	*29,706.2*			
SR-A	*35,330*	*LANDSCAPE*						
	1,835,240				1,324,089.3	0.63	69,514.7	***69,520***

[B], [C] is obtained as described in Section 2.3.1 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

Section E: Alternative Compliance (LID Waiver Program)

LID BMPs are expected to be feasible on virtually all projects. Where LID BMPs have been demonstrated to be infeasible as documented in Section D, other Treatment Control BMPs must be used (subject to LID waiver approval by the Copermittee). Check one of the following Boxes:

☒ LID Principles and LID 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.

- *Or* -

☐ The following Drainage Management Areas are unable to be addressed using LID BMPs. A site-specific analysis demonstrating technical infeasibility of LID BMPs has been approved by the Co-Permittee and included in Appendix 5. Additionally, no downstream regional and/or sub-regional LID BMPs exist or are available for use by the project. The following alternative compliance measures on the following pages are being implemented to ensure that any pollutant loads expected to be discharged by not incorporating LID BMPs, are fully mitigated.

All DMAs will be treated using a bio-retention basin.

E.1 Identify Pollutants of Concern

Utilizing Table A.1 from Section A above which noted your project's receiving waters and their associated EPA approved 303(d) listed impairments, cross reference this information with that of your selected Priority Development Project Category in Table E.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 E.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

E.2 Stormwater Credits

Projects that cannot implement LID BMPs but nevertheless implement smart growth principles are potentially eligible for Stormwater Credits. Utilize Table 3-8 within the WQMP Guidance Document to identify your Project Category and its associated Water Quality Credit. If not applicable, write N/A.

Table E.2 Water Quality Credits

Qualifying Project Categories	Credit Percentage[2]
N/A	
Total Credit Percentage[1]	

[1]*Cannot Exceed 50%*
[2]*Obtain corresponding data from Table 3-8 in the WQMP Guidance Document*

E.3 Sizing Criteria

After you appropriately considered Stormwater Credits for your project, utilize Table E.3 below to appropriately size them to the DCV, or Design Flow Rate, as applicable. Please reference Chapter 3.5.2 of the WQMP Guidance Document for further information.

Table E.3 Treatment Control BMP Sizing

DMA Type/ID	**DMA Area (square feet)**	**Post-Project Surface Type**	**Effective Impervious Fraction, I_f**	**DMA Runoff Factor**	**DMA Area x Runoff Factor**		***Enter BMP Name / Identifier Here***		
	[A]		[B]	[C]	[A] x [C]				
N/A						*Design Storm Depth (in)*	*Minimum Design Capture Volume or Design Flow Rate (cubic feet or cfs)*	*Total Storm Water Credit % Reduction*	*Proposed Volume or Flow on Plans (cubic feet or cfs)*
	A_T = Σ[A]				Σ= [D]	[E]	$[F] = \frac{[D]x[E]}{[G]}$	[F] X (1-[H])	[I]

[B], [C] is obtained as described in Section 2.3.1 from the WQMP Guidance Document
[E] is obtained from Exhibit A in the WQMP Guidance Document
[G] is for Flow-Based Treatment Control BMPs [G] = 43,560, for Volume-Based Control Treatment BMPs, [G] = 12
[H] is from the Total Credit Percentage as Calculated from Table E.2 above
[I] as obtained from a design procedure sheet from the BMP manufacturer and should be included in Appendix 6

E.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 E.4 Treatment Control BMP Selection

Selected Treatment Control BMP Name or ID[1]	Priority Pollutant(s) of Concern to Mitigate[2]	Removal Efficiency Percentage[3]
Contech Filterra Bioscape (BMP-A)	TSS/TOC	66%-85%
	Nutrients	73%

[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 Co-Permittee Approved Study and provided in Appendix 6.

Section F: Hydromodification

F.1 Hydrologic Conditions of Concern (HCOC) Analysis

Once you have determined that the LID design is adequate to address water quality requirements, you will need to assess if the proposed LID Design may still create a HCOC. Review Chapters 2 and 3 (including Figure 3-7) of the WQMP Guidance Document to determine if your project must mitigate for Hydromodification impacts. If your project meets one of the following criteria which will be indicated by the check boxes below, you do not need to address Hydromodification at this time. However, if the project does not qualify for Exemptions 1, 2 or 3, then additional measures must be added to the design to comply with HCOC criteria. This is discussed in further detail below in Section F.2.

HCOC EXEMPTION 1: The Priority Development Project disturbs less than one acre. The Copermittee has the discretion to require a Project-Specific WQMP to address HCOCs on projects less than one acre on a case by case basis. The disturbed area calculation should include all disturbances associated with larger common plans of development.

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, HCOC criteria do not apply.

HCOC EXEMPTION 2: The volume and time of concentration[1] of storm water runoff for the post-development condition is not significantly different from the pre-development condition for a 2-year return frequency storm (a difference of 5% or less is considered insignificant) using one of the following methods to calculate:

- Riverside County Hydrology Manual
- Technical Release 55 (TR-55): Urban Hydrology for Small Watersheds (NRCS 1986), or derivatives thereof, such as the Santa Barbara Urban Hydrograph Method
- Other methods acceptable to the Co-Permittee

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, report results in Table F.1 below and provide your substantiated hydrologic analysis in Appendix 7.

Table F.1 Hydrologic Conditions of Concern Summary

	2 year – 24 hour		
	Pre-condition	**Post-condition**	**% Difference**
Time of Concentration			
Volume (Cubic Feet)			

[1] Time of concentration is defined as the time after the beginning of the rainfall when all portions of the drainage basin are contributing to flow at the outlet.

HCOC EXEMPTION 3: All downstream conveyance channels to an adequate sump (for example, Prado Dam, Lake Elsinore, Canyon Lake, Santa Ana River, or other lake, reservoir or naturally erosion resistant feature) that will receive runoff from the project are engineered and regularly maintained to ensure design flow capacity; no sensitive stream habitat areas will be adversely affected; or are not identified on the Co-Permittees Hydromodification Sensitivity Maps.

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, HCOC criteria do not apply and note below which adequate sump applies to this HCOC qualifier:

F.2 HCOC Mitigation

If none of the above HCOC Exemption Criteria are applicable, HCOC criteria is considered mitigated if they meet one of the following conditions:

a. Additional LID BMPS are implemented onsite or offsite to mitigate potential erosion or habitat impacts as a result of HCOCs. This can be conducted by an evaluation of site-specific conditions utilizing accepted professional methodologies published by entities such as the California Stormwater Quality Association (CASQA), the Southern California Coastal Water Research Project (SCCRWP), or other Co-Permittee approved methodologies for site-specific HCOC analysis.

b. The project is developed consistent with an approved Watershed Action Plan that addresses HCOC in Receiving Waters.

c. Mimicking the pre-development hydrograph with the post-development hydrograph, for a 2-year return frequency storm. Generally, the hydrologic conditions of concern are not significant, if the post-development hydrograph is no more than 10% greater than pre-development hydrograph. In cases where excess volume cannot be infiltrated or captured and reused, discharge from the site must be limited to a flow rate no greater than 110% of the pre-development 2-year peak flow.

Be sure to include all pertinent documentation used in your analysis of the items a, b or c in Appendix 7.

***The project is located within the approved Hydromodification exempt area based on the approved HCOC Applicability Map (approved April 20, 2017) Furnished by the Santa Ana Region Co-Permittees.**

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 MEP standard typically requires both types of BMPs. In general, Operational BMPs cannot be substituted for a feasible and effective permanent BMP. Using the Pollutant Sources/Source Control Checklist in Appendix 8, review the following procedure to specify Source Control BMPs for your site:

1. ***Identify Pollutant Sources*:** Review Column 1 in the Pollutant Sources/Source Control Checklist. Check off the potential sources of Pollutants that apply to your site.

2. ***Note Locations on Project-Specific WQMP Exhibit*:** Note the corresponding requirements listed in Column 2 of the Pollutant Sources/Source Control Checklist. Show the location of each Pollutant source and each permanent Source Control BMP in your Project-Specific WQMP Exhibit located in Appendix 1.

3. ***Prepare a Table and Narrative*:** Check off the corresponding requirements listed in Column 3 in the Pollutant Sources/Source Control Checklist. In the left column of Table G.1 below, list each potential source of runoff Pollutants on your site (from those that you checked in the Pollutant Sources/Source Control Checklist). In the middle column, list the corresponding permanent, Structural Source Control BMPs (from Columns 2 and 3 of the Pollutant Sources/Source Control Checklist) used to prevent Pollutants from entering runoff. **Add additional narrative** in this column that explains any special features, materials or methods of construction that will be used to implement these permanent, Structural Source Control BMPs.

4. ***Identify Operational Source Control BMPs:*** To complete your table, refer once again to the Pollutant Sources/Source Control Checklist. List in the right column of your table the Operational BMPs that should be implemented as long as the anticipated activities continue at the site. Copermittee stormwater ordinances require that applicable Source Control BMPs be implemented; the same BMPs may also be required as a condition of a use permit or other revocable Discretionary Approval for use of the site.

Table G.1 Permanent and Operational Source Control Measures

Potential Sources of Runoff pollutants	Permanent Structural Source Control BMPs	Operational Source Control BMPs
A. On-site storm drain inlets	*Mark all inlets with the works "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.* *On-site drainage structures, including all storm drain clean outs, area drains, inlets, catch basins, inlet & outlet*	*Maintain and periodically repaint or replace inlet markings as needed; at least every 5 years. Inspect annually every summer.* *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 Appendix 10 (CASQA Stormwater Quality Handbook at www.cabmphandbooks.com*

	structures, lift stations, forebays, & water treatment control basins shall be inspected and maintained on a regular basis to ensure their operational adequacy. Inspect and maintain before each rainy season and after the first heavy rain.	*Include the following in lessee agreements: "Tenants 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"* *Maintenance should include removal of trash, debris, & sediment and the repair of any deficiencies or damage that may impact water quality. Maintain at least once in September prior to the rainy season and after storm as needed.*
B. Interior floor drains and elevator shaft sump	*The interior floor drains and elevator shaft sump pumps will be plumbed to* *sanitary sewer*	*Inspect and maintain drains at least once annually to prevent blockages and overflow.*
C. Landscape/Outdoor Pesticide Use	*The final landscape shall be designed to accomplish all of the following:* *Preserve existing native trees, shrubs and ground cover to the maximum extent possible.* *Design landscape 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 establishments, select plants appropriate to site, soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency and plant interactions.* *Pesticide usage should be at a necessary minimum and be consistent with the instructions contained on product labels and with the regulations administered by the State Department of Pesticide*	*Maintain landscaping using minimum or no pesticides.* *See applicable operational BMPs in "What you should know for…. Landscape and Gardening" at http://rcflood.org/stormwater and Appendix 10.* *Provide IPM information to new owners, lessees and operators.* *Landscape maintenance should include mowing, weeding, trimming, removal of trash & debris, repair of erosion, re-vegetation, and removal of cut & dead vegetation. It should be completed before rainy season and as needed.* *Irrigation maintenance should include the repair of leaky or broken sprinkler heads, the maintaining of timing apparatus accuracy, and the maintaining of shut off valves in good working order.*

	Regulation. Pesticides should be used at an absolute minimum or not at all in the retention/infiltration basin. If used, it should not be applied in close proximity to the rainy season.	
D. Refuse Trash Storage areas	*Trash container storage areas shall be paved with an impervious surface, designed not to allow run-on from adjoining areas, designed to divert drainage from adjoining roofs and pavements from the surrounding area, and screened or walled to prevent off-site transport of trash.* *Trash dumpsters (containers) shall be leak proof and have attached covers or lids.* *Trash enclosures shall be roofed per City standards and the details on the FWQMP Exhibit in Appendix 1.* *Trash compactors shall be roofed and set on a concrete pad per City standards. The pad shall be a minimum of one foot larger all around than the trash compactor and sloped to drain to a sanitary sewer line. Connection of trash area drains to the MS4 is prohibited.* *See CASQA SD-32 BMP Fact Sheets in Appendix 10 for additional information.* *Signs shall be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.*	*Adequate number of receptacles shall be provided. Inspect receptacles monthly; repair or replace leaky receptacles as needed. 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, in Appendix 10, "Waste Handling and Disposal" in the CASQA Stormwater Quality Handbook* *at www.cabmphandbooks.com*
E. Loading Docks	*Loading docks will not be covered and are 4 feet above finished pavement surface.* *Spill kits are to be kept on-site at all times per SC-11*	*Move loaded and unloaded items indoors as soon as possible.* *Inspect for accumulated trash and debris. Implement good housekeeping procedures on a regular basis. Sweep areas clean instead of using wash water.* *Loading docks will be kept in a clean and orderly condition, through a regular program of sweeping and litter control, and immediate clean up of any spills or broken containers. Property owner will ensure that loading docks will be swept as needed. Cleanup procedures will not include the use of wash-down water. Property owner will be responsible for*

		implementation of loading dock housekeeping procedures *See the Fact Sheet SC-30, in Appendix 10, "Outdoor Loading and Unloading" in the CASQA Stormwater Quality Handbooks a* *www.cabmphandbooks.com*
F. Fire Sprinkler Test Water	*Provide a means to drain fire sprinkler test water to the sanitary sewer.*	*See the note in the Fact Sheet SC-41,* *in Appendix 10, "Building and Grounds Maintenance", in the CASQA Stormwater Quality Handbooks at* *www.cabmphandbooks.com*
G. 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 of other unprotected metals that may leach into runoff.* *Include controls for other sources as specified by local reviewer.*	
H. Plazas, sidewalks, and parking lots	*Spill kits are to be kept on-site at all times per SC-11*	*Sweep plazas, sidewalks, and parking lots regularly and before the rainy season 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.*

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.

Table H.1 Construction Plan Cross-reference

BMP No. or ID	BMP Identifier and Description	Corresponding Plan Sheet(s)
BMP-A	Contech Bioscape	Precise Grading Plan Sheets 6, 9, and 11

Note that the updated table — or Construction Plan WQMP Checklist — is **only a reference tool** to facilitate an easy comparison of the construction plans to your Project-Specific WQMP. Co-Permittee staff can advise you regarding the process required to propose changes to the approved Project-Specific WQMP.

Section I: Operation, Maintenance and Funding

The Copermittee will periodically verify that Stormwater BMPs on your site are maintained and continue to operate as designed. To make this possible, your Copermittee will require that you include in Appendix 9 of this Project-Specific WQMP:

1. A means to finance and implement facility maintenance 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 O&M or inspections but will require typical landscape maintenance as noted in Chapter 5, pages 85-86, in the WQMP Guidance. Include a brief description of typical landscape maintenance for these areas.

Your local Co-Permittee will also require that you prepare and submit a detailed Stormwater BMP Operation and Maintenance Plan that sets forth a maintenance schedule for each of the Stormwater 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 Stormwater BMP Operation and Maintenance Plan are in Chapter 5 of the WQMP Guidance Document.

Maintenance Mechanism: WQMP Covenant and Agreement

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

☐ Y ☒ N

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

Maintenance of East Basin, Lift Station, and Bioscape

Normal maintenance of East Basin, Lift Station, and Bioscape includes the maintenance of landscaping, debris, and trash removal from the surface of the basin and tending to problems associated with standing water (vectors, odors, etc.). Significant ponding, especially more than 48 hours after an event, may indicate the possibility of obstructions in the outlet structure or the bottom stage (see Maintenance Plan, and Checklist in Appendix 9).

- Ongoing regular inspections, including just before the annual storm season (October 1 to May 1) and following rainfall events, should include removal of debris and litter, and removal of clippings from landscape maintenance.
- Inspect for sediment build-up and erosion. Remove sediment and re-vegetate eroded areas.
- Inspect for standing water within 48 hours after a significant rainfall event. In addition, check for the presence of odors, insects, and overgrowth. Remove any obstructions within the outlet structure of the detention basin and the lift station pump wetwell.

Use of pesticides, herbicides, and insecticides within the basin and on the slopes should be avoided, especially before the rainy season.

Table I.2 Funding

All water quality facility funding will be provided by Duke Realty Corporation. If at any time it sells the property, then the operation and maintenance responsibilities will be recorded against the property and will be the responsibility of the new property owner.

IDI Logistics
Attn: Steve Hollis
840 Apollo Street, Suite 343
El Segundo, CA 90245
(949)351-7243

			Maintenance Responsibility				Funding Mechanism for Maintenance			Maintenance Costs	
BMP	Used	Not Used	Owner **	City	County	Flood District	Owner	Developer	Public *	1-year $	2-year $
Hydro-seeding & Mulching Private	☒	☐	☒	☐	☐	☐	☒	☐	☐	200	400
Landscape Public	☒	☐	☐	☒	☐	☐	☐	☐	☒	1,000	2,000
Landscape Private	☒	☐	☒	☐	☐	☐	☒	☐	☐	1,000	2,000
Lawns	☐	☒	☐	☐	☐	☐	☐	☐	☐	N/A	N/A
Impervious permanent cover (concrete/ asphalt) Public	☒	☐	☐	☒	☐	☐	☐	☐	☒	500	1,000

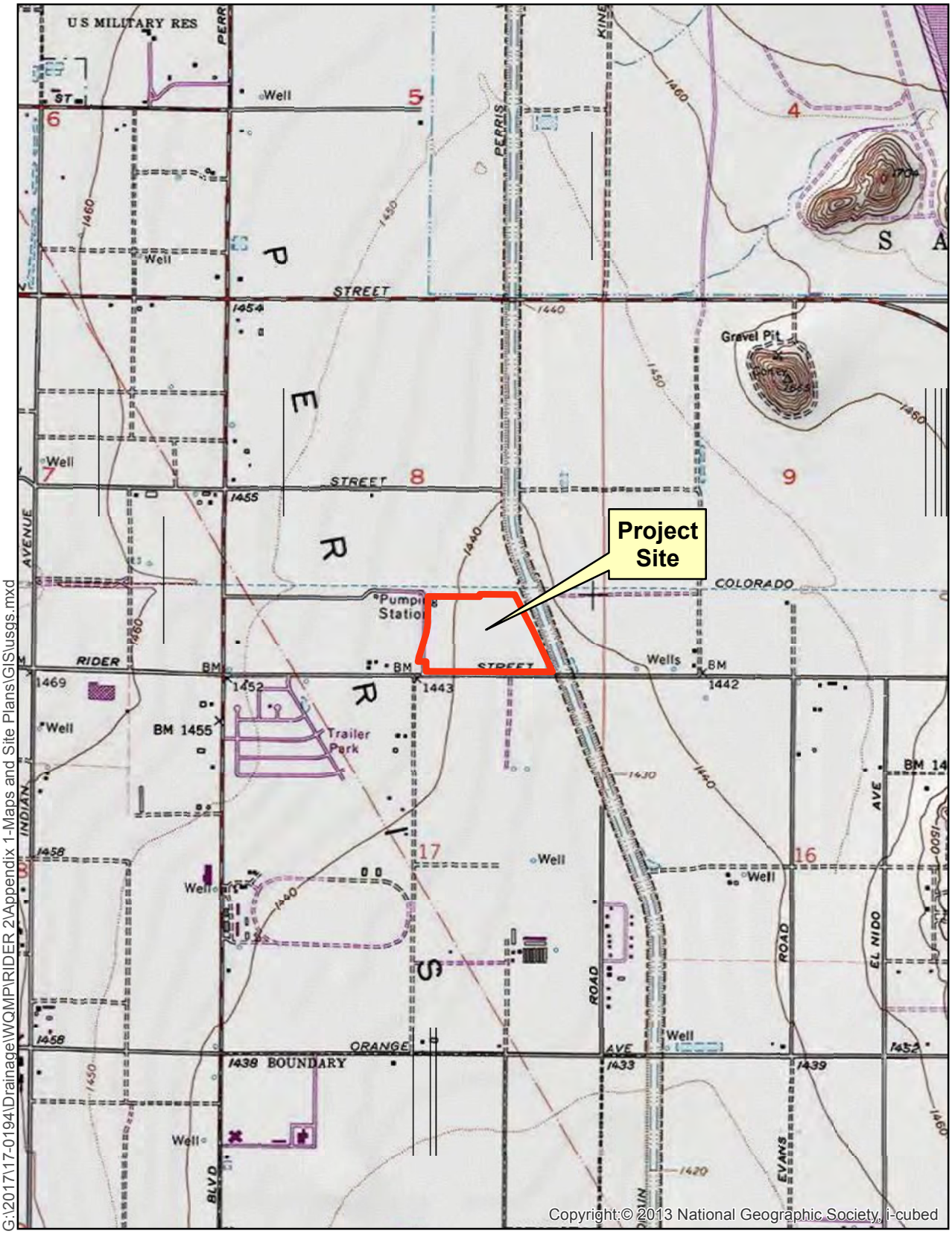
Impervious permanent cover (concrete/ asphalt) Private	☒	☐	☒	☐	☐	☐	☒	☐	☐	500	1,000
Pervious Permanent Cover (decomposed granite)	☐	☒	☐	☐	☐	☐	☐	☐	☐	N/A	N/A
Down Drains	☒	☐	☒	☐	☐	☐	☒	☐	☐	100	200
Ribbon Gutter Public	☐	☒	☐	☒	☐	☐	☐	☐	☒	500	1000
Ribbon Gutter Private	☒	☐	☒	☐	☐	☐	☒	☐	☐	500	1,000
Curb & gutter Public	☒	☐	☐	☒	☐	☐	☐	☐	☒	250	500
Curb & gutter Private	☒	☐	☒	☐	☐	☐	☒	☐	☐	250	500
Storm Drain Public	☒	☐	☐	☒	☐	☐	☐	☐	☒	1,000	2,000
Storm Drain Private	☒	☐	☒	☐	☐	☐	☒	☐	☐	500	1,000
East Basin	☒	☐	☒	☐	☐	☐	☒	☐	☐	2,000	4,000
Bioscape	☒	☐	☒	☐	☐	☐	☒	☐	☐	2,000	4,000
Onsite Lift Station	☒	☐	☒	☐	☐	☐	☒	☐	☐	2,000	4,000
Education Materials	☒	☐	☒	☐	☐	☐	☒	☐	☐	Free	Free
C.B. Stenciling "No Dumping- Only Rain in the Drain"	☒	☐	☒	☐	☐	☐	☒	☐	☐	100	200

Appendix 1: Maps and Site Plans

Location Map, WQMP Site Plan and Receiving Waters Map

G:\2017\17-0194\Drainage\WQMP\RIDER 2\Appendix 1-Maps and Site Plans\GIS\vicinity.mxd

FIGURE 1: VICINITY MAP



G:\2017\17-0194\Drainage\WQMP\RIDER 2\Appendix 1-Maps and Site Plans\GIS\usgs.mxd

Sources: ESRI / USGS 7.5min Quad
DRGs: PERRIS

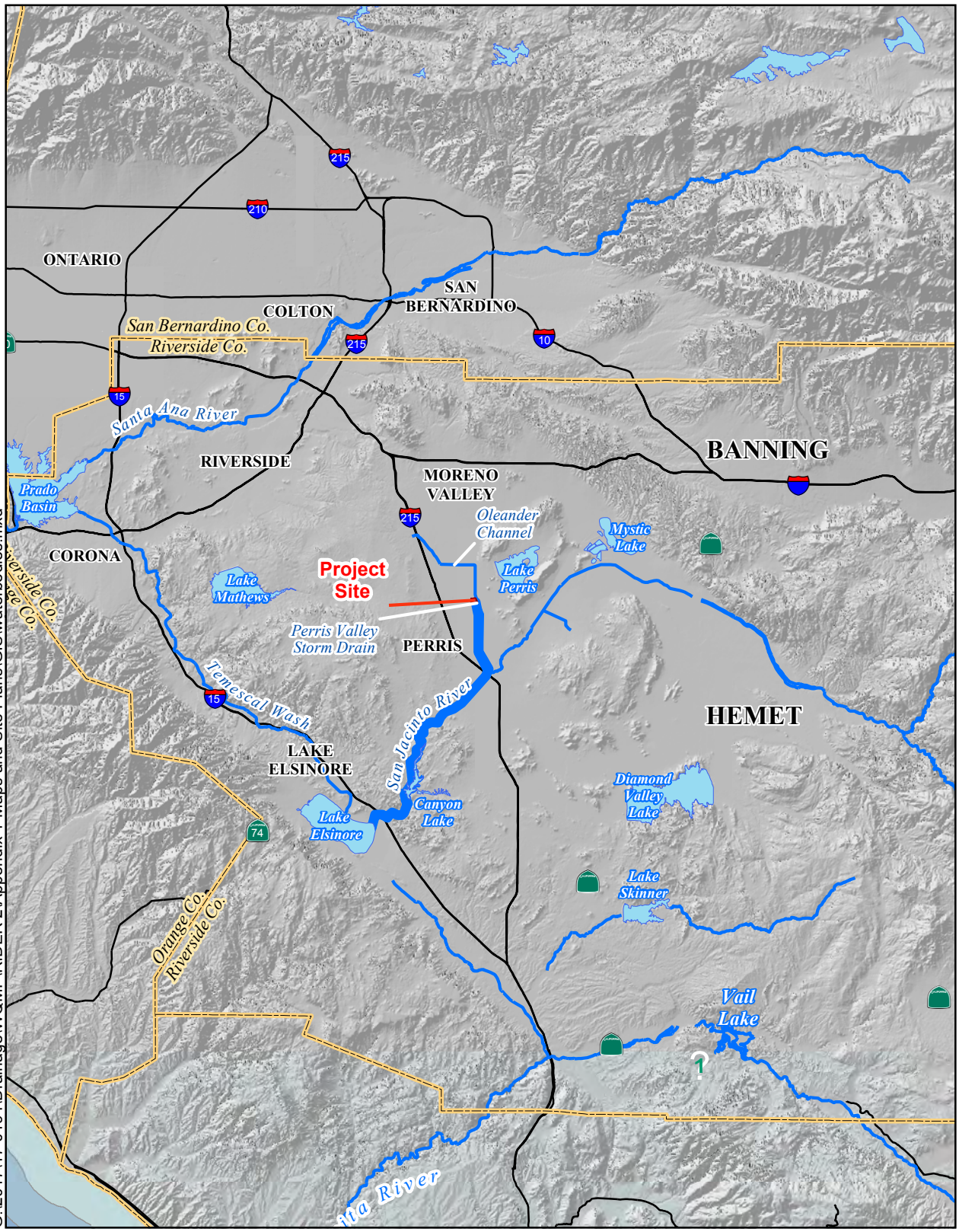
Figure 2. USGS Topography Map

0 1,000 2,000
Feet

Sources: County of Riverside GIS, 2013; Eagle Aerial, April 2012.

Figure 3. Aerial Photograph

0 400 800 Feet



G:\2017\17-0194\Drainage\WQMP\RIDER 2\Appendix 1-Maps and Site Plans\GIS\waterbodies.mxd

Sources: USGS 30 Meter DEM;
USGS Digital Line Graph

Figure 4. Receiving Waterbodies

0 2 4 6
Miles

Flowpath

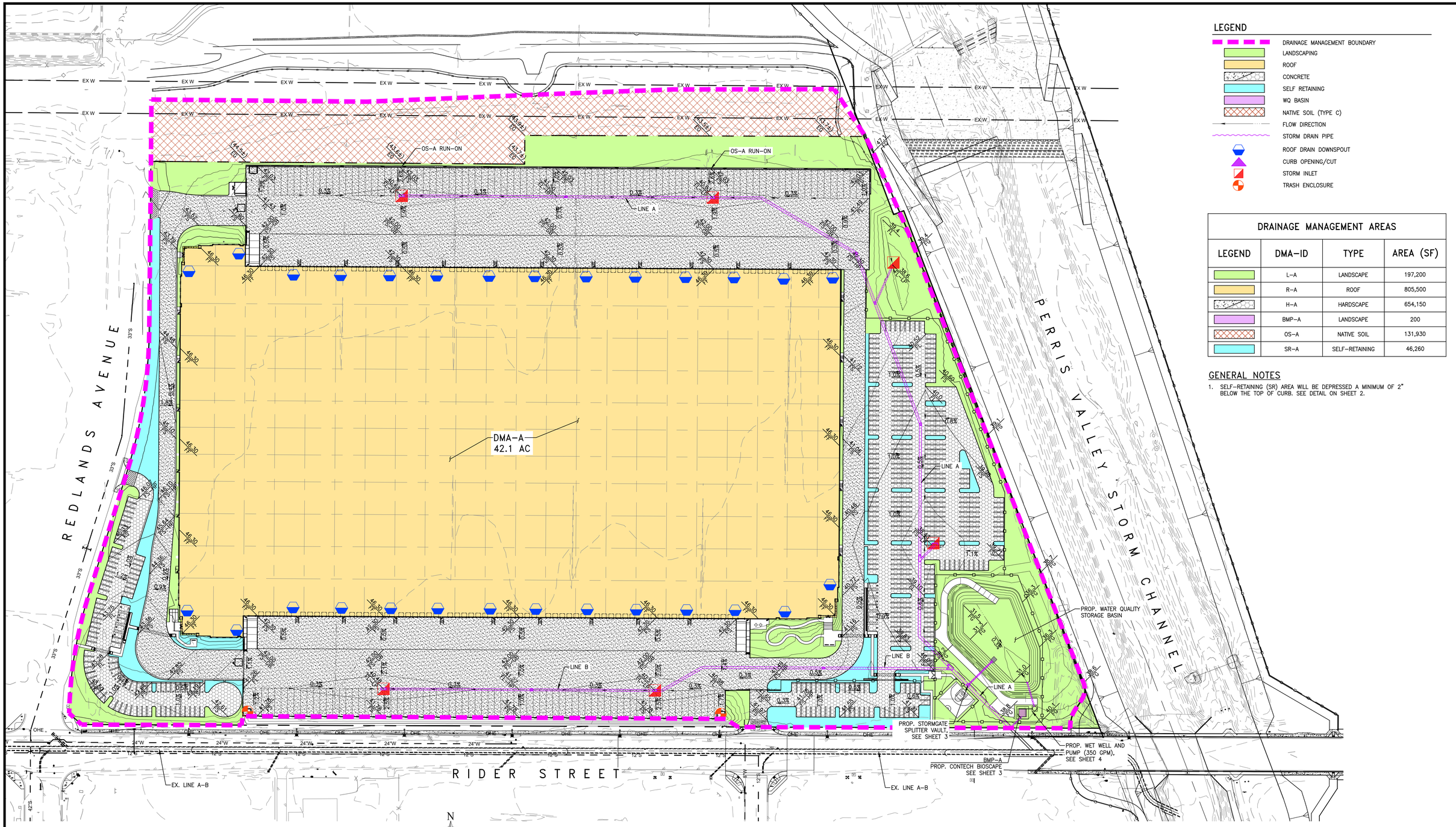
G:\2017\17-0194\Drainage\WQMP\RIDER 2\Appendix 1-Maps and Site Plans\GIS\SOILS MAP.mxd

Eagle Aerial, April 2010;
Riverside County GIS, 2012
RCFC&WCD Hydology Manual Plate C-1.30

N
W E
S

0 500 1,000
Feet

Soils Map



LEGEND

- DRAINAGE MANAGEMENT BOUNDARY
- LANDSCAPING
- ROOF
- CONCRETE
- SELF RETAINING
- WQ BASIN
- NATIVE SOIL (TYPE C)
- FLOW DIRECTION
- STORM DRAIN PIPE
- ROOF DRAIN DOWNSPOUT
- CURB OPENING/CUT
- STORM INLET
- TRASH ENCLOSURE

DRAINAGE MANAGEMENT AREAS

LEGEND	DMA-ID	TYPE	AREA (SF)
	L-A	LANDSCAPE	197,200
	R-A	ROOF	805,500
	H-A	HARDSCAPE	654,150
	BMP-A	LANDSCAPE	200
	OS-A	NATIVE SOIL	131,930
	SR-A	SELF-RETAINING	46,260

GENERAL NOTES

1. SELF-RETAINING (SR) AREA WILL BE DEPRESSED A MINIMUM OF 2" BELOW THE TOP OF CURB. SEE DETAIL ON SHEET 2.

CITY OF PERRIS

POST CONSTRUCTION BMP SITE MAP
RIDER DISTRIBUTION CENTER II (19-00004)
PLAN SHEET

SCALE: 1"=80'	ALBERT A. WEBB ASSOCIATES	ENGINEERING CONSULTANTS 3788 McCRAY STREET RIVERSIDE, CA. 92506 PH. (951) 686-1070 FAX (951) 788-1256	W.O. 17-0357
DATE: 03/03/2021			SHEET 1
DESIGNED: TSW			OF 5 SHEETS
CHECKED: CV			
PLN CK REF:			DWG. NO.
F.B.			

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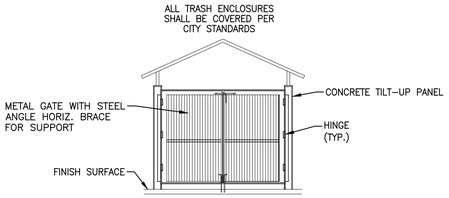
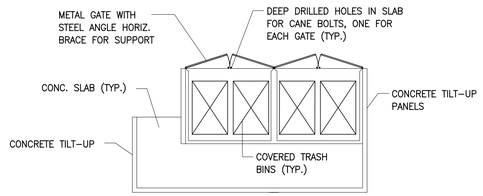
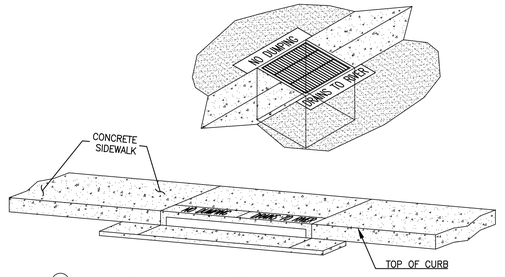


TRASH ENCLOSURE GATE ELEVATION
N.T.S.

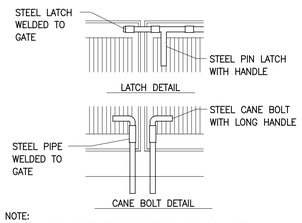


TRASH ENCLOSURE PLAN DETAIL
N.T.S.



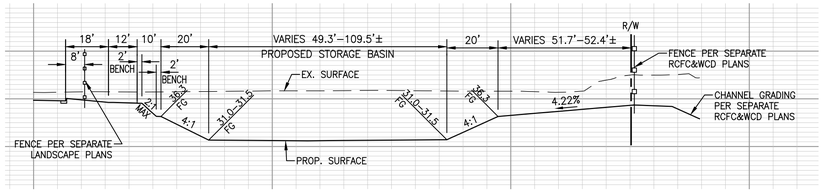
1. STENCILS TO HAVE 2" LETTERS AS FOLLOWS: "NO DUMPING – DRAINS TO RIVER"
2. PLACE BOTH STENCILS CENTERED WITHIN THE CATCHBASIN OPENINGS AND WITHIN THE TOP OF THE CURB.
3. SPRAY BOTH STENCILS WITH WHITE PAINT.
4. REMOVE STENCILS WHEN PAINT IS DRY.

CATCH BASIN STENCILING DETAIL
N.T.S.

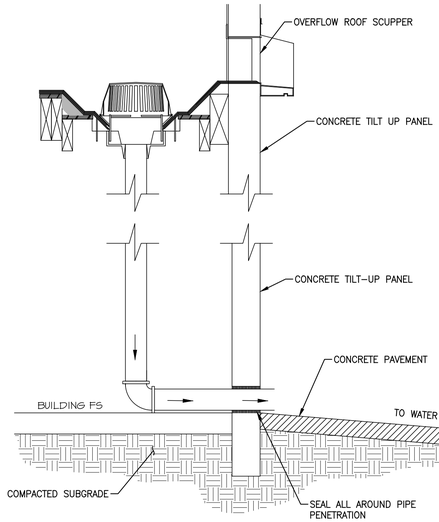


NOTE:
LATCH AND CANE TO BE AT EXTERIOR SIDE OF GATES

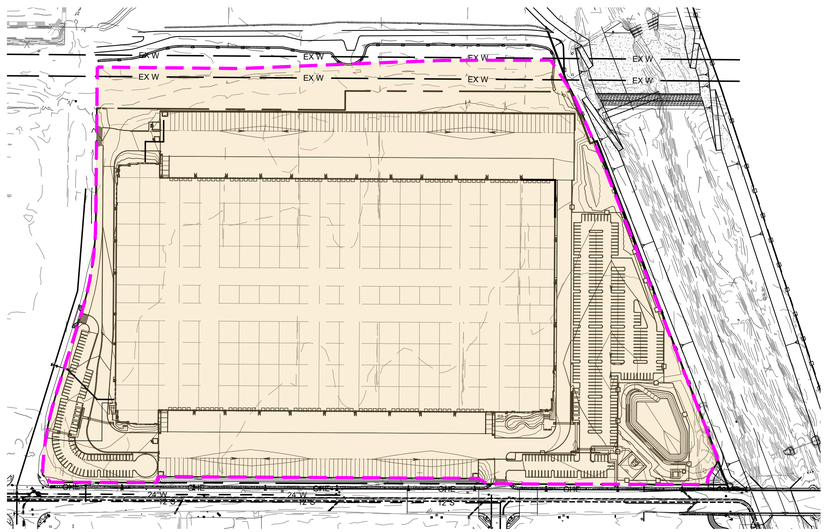
TRASH ENCLOSURE GATE LATCHES DETAIL
N.T.S.



STORAGE BASIN TYPICAL SECTION
NOT TO SCALE



ROOF DRAIN DETAIL
N.T.S.

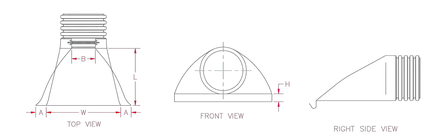


DMA MAP

LEGEND
- DRAINAGE MANAGEMENT BOUNDARY
- DMA–A

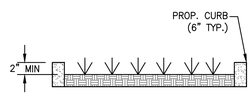
1" = 200'
200 0 200

PIPE DIAMETER, in (mm)						
Diameter in (mm)	12 (300)	15 (375)	18 (450)	24 (600)	30 (750)	36 (900)
A in (mm)	6.5 (165)	6.5 (165)	7.5 (191)	7.5 (191)	7.5 (191)	7.5 (191)
B (max) in (mm)	10.0 (254)	10.0 (254)	15.0 (381)	18.0 (475)	22.0 (559)	25.0 (635)
H in (mm)	6.5 (165)	6.5 (165)	6.5 (165)	6.5 (165)	8.6 (218)	8.6 (218)
L in (mm)	25.0 (635)	25.0 (635)	32.0 (813)	36.0 (914)	58.0 (1473)	58.0 (1473)
W in (mm)	29.0 (737)	29.0 (737)	35.0 (889)	45.0 (1143)	63.0 (1600)	63.0 (1600)



Product detail may differ slightly from actual product appearance.

ADS FLARED END
NOT TO SCALE



SELF–RETAINING FINGER ISLAND
N.T.S.
ALL SELF–RETAINING AREAS WILL BE DEPRESSED A MINIMUM OF 2–INCHES

CITY OF PERRIS

POST CONSTRUCTION BMP SITE MAP
RIDER DISTRIBUTION CENTER II (19-00004)
DETAIL SHEET

SCALE: SEE ABOVE	ALBERT A. WEBB ASSOCIATES	ENGINEERING CONSULTANTS 3788 McCRAY STREET RIVERSIDE CA. 92506 PH. (951) 686-1070 FAX (951) 788-1256	W.O. 17-0357
DATE: 03/03/2021			SHEET 2
DESIGNED: TSW			OF 5 SHEETS
CHECKED: CV			
PLN CK REF:			DWG. NO.
F.B.			

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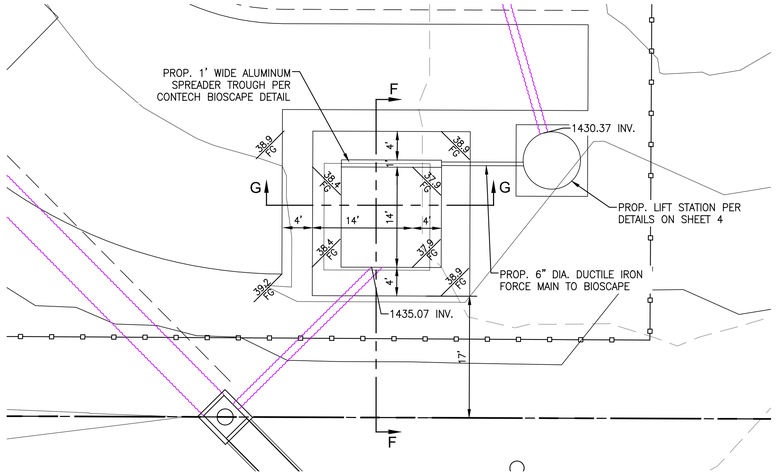
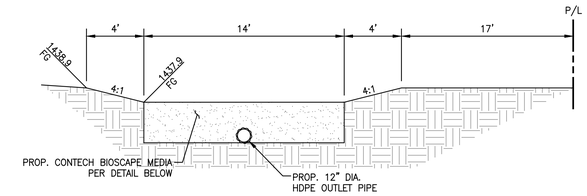


PLAN VIEW

1" = 10'

10 0 10



SECTION F-F

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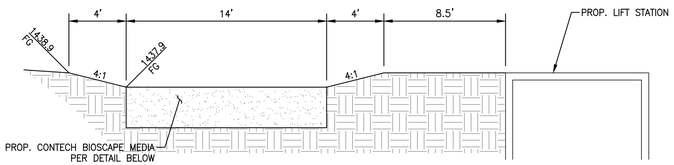
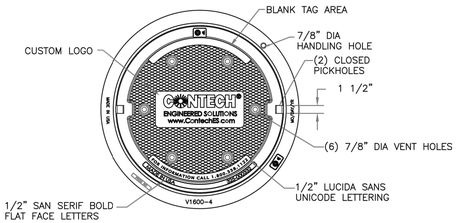
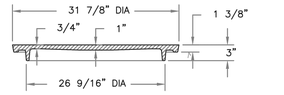


SECTION G-G

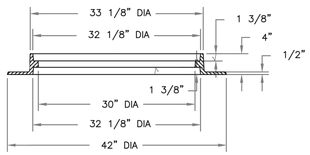
NOT TO SCALE

1810B4 V1600-4 Assembly





COVER SECTION



FRAME SECTION

Product Number
41600484

Design Features
-Materials
Cover
Gray Iron (CL35B)
Frame
Gray Iron (CL35B)

-Design Load
Heavy Duty
-Open Area
n/a
-Coating
Undipped
- √ Designates Machined Surface

Certification
-
- ASTM A48
-
-Country of Origin: USA

Major Components
00180783
41600419

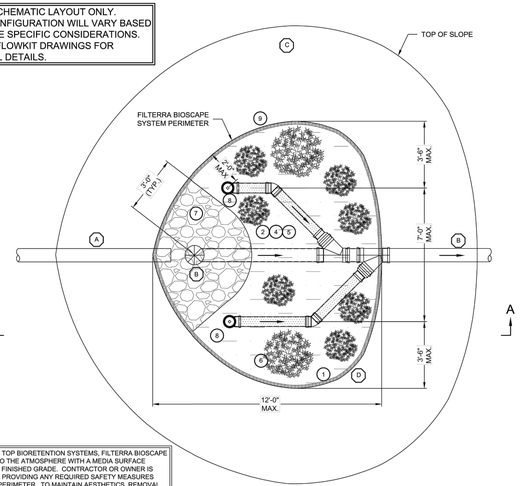
Drawing Revision
11/18/2007 Designer: DEW
6/20/2017 Revised By: DAE

Disclaimer
Weights (lbs./kg) dimensions (inches/mm) and drawings provided for your guidance. We reserve the right to modify specifications without prior notice.

CONFIDENTIAL: This drawing is the property of EJ GROUP, Inc., and embodies confidential information, registered marks, patents, trade secret information, and/or know how that is the property of EJ GROUP, Inc. Copyright © 2012 EJ GROUP, Inc. All rights reserved.

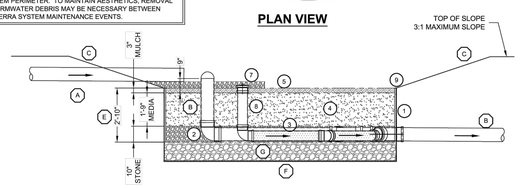
Contact
800 626 4653
ejco.com

THIS IS A SCHEMATIC LAYOUT ONLY. ACTUAL CONFIGURATION WILL VARY BASED ON THE SITE SPECIFIC CONSIDERATIONS. REFER TO FLOWKIT DRAWINGS FOR ADDITIONAL DETAILS.



PLAN VIEW

AS WITH ALL OPEN TOP BIORETENTION SYSTEMS, FILTERRA BIOSCAPE SYSTEM IS OPEN TO THE ATMOSPHERE WITH A MEDIA SURFACE RECESSED BELOW FINISHED GRADE. CONTRACTOR OR OWNER IS RESPONSIBLE FOR PROVIDING ANY REQUIRED SAFETY MEASURES AROUND SYSTEM PERIMETER. TO MAINTAIN AESTHETICS, REMOVAL OF HEAVY STORMWATER DEBRIS MAY BE NECESSARY BETWEEN REGULAR FILTERRA SYSTEM MAINTENANCE EVENTS.



SECTION A-A VIEW

BILL OF MATERIALS		
COUNT	DESCRIPTION	INSTALLED BY
X	FILTERRA SURFACE AREA (SF)	CONTRACTOR
X	MULCH VOLUME (CY)	CONTRACTOR
XX	FILTERRA MEDIA VOLUME (CY)	CONTRACTOR
X	1/2" #4 ROUND AGGREGATE UNDERDRAIN STONE (CY)	CONTRACTOR
X	ENERGY DISSIPATION ROCK (CY)	CONTRACTOR
X	EROSION CONTROL (LF)	CONTRACTOR
X	FILTERRA FLOWKIT	CONTRACTOR

PLANTING SCHEDULE *NOTE: PLANTS PROVIDED BY OTHERS	
QUANTITY	FILTERRA BIOSCAPE SYSTEM PLANT PALETTE

GENERAL NOTES
1. CONTRACTOR SHALL CONTACT CONTECH TO COORDINATE DELIVERY AND SUPERVISION OF PLACEMENT OF FILTERRA BIOSCAPE SYSTEM COMPONENTS (ACTIVATION). CONTRACTOR SHALL COMPLETE ITEMS IN THE LIST OF CONTRACTOR INSTALLATION RESPONSIBILITIES LISTED ON THIS DETAIL BEFORE CONTECH'S REPRESENTATIVE ATTENDS AND SUPERVISES THE ACTIVATION OF THE BIOSCAPE SYSTEM.
2. PERFORM FILTERRA BIOSCAPE SYSTEM EXCAVATION ONLY AFTER ALL THE CONTRIBUTING DRAINAGE AREAS ARE PERMANENTLY STABILIZED. DO NOT CONSTRUCT FILTERRA BIOSCAPE SYSTEM IN AN AREA USED AS EROSION AND SEDIMENT CONTROL FACILITIES. DO NOT STOCKPILE MATERIALS NOR STORE EQUIPMENT IN THIS AREA.
3. USE METHODS OF EXCAVATION THAT MINIMIZE COMPACTION OF THE UNDERLYING SOIL UNLESS THE SYSTEM IS TO BE LINED.
4. CONTRACTOR SHALL COORDINATE WITH CONTECH BEFORE THE FILTERRA BIOSCAPE SYSTEM AREA IS EXCAVATED TO MINIMIZE TIME BETWEEN EXCAVATION AND DELIVERY AND ACTIVATION OF THE FILTERRA BIOSCAPE SYSTEM. ANY STANDING WATER THAT ACCUMULATES IN THE EXCAVATED AREA MUST BE REMOVED BY THE CONTRACTOR BEFORE CONTECH CAN PROVIDE ACTIVATION OF THE FILTERRA BIOSCAPE SYSTEM. ANY ADDITIONAL EXCAVATION WILL BE THE RESPONSIBILITY OF THE CONTRACTOR. EXCAVATION DIMENSIONS SHOULD BE PROVIDED TO CONTECH IN THE ACTIVATION REQUEST CHECKLIST.
5. CONTRACTOR SHALL PROVIDE ACCESS TO THE EXCAVATED AREA(S) FOR USE DURING THE ACTIVATION OF THE FILTERRA BIOSCAPE SYSTEM(S). ACCESS SHALL NOT PROHIBIT LIGHT DUTY EQUIPMENT THAT MAY BE USED TO INSTALL THE COMPONENTS (STONE, MEDIA, ETC). THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY RE-STABILIZATION THAT MAY BE REQUIRED AFTER THE FILTERRA BIOSCAPE SYSTEM ACTIVATION.
6. CONTECH AND/OR ITS REPRESENTATIVES MUST BE SCHEDULED TO BE ON SITE FOR THE LIST ENTITLED CONTRACTOR ACTIVATION RESPONSIBILITIES.

CONTRACTOR SITE PREPARATION RESPONSIBILITIES AS DENOTED BY (X) ON THIS DETAIL:
- (A) CONTRACTOR SHALL INSTALL PIPE OR SWALE THAT CONVEYS INFLUENT FLOWS AS WELL AS ANY REQUIRED INLET AND OUTLET STRUCTURES.
- (B) CONTRACTOR SHALL PROVIDE BYPASS PIPE AND RISER OR OTHER STRUCTURE AS SHOWN ON PLANS. THE BYPASS PIPE SHALL BE INSTALLED WITH WYE(S), OR OTHER PIPE FITTINGS, AND WITH REDUCER COUPLING(S) FOR CONNECTION OF UNDERDRAIN PIPE, PER PLANS. PIPES SHALL BE INSTALLED TO PROMOTE POSITIVE FLOW FROM THE FILTERRA BIOSCAPE SYSTEM.
- (C) IF REQUIRED, CONTRACTOR TO PROVIDE SHOULDER ACCORDING TO DIMENSION AND SLOPE SHOWN ON PLANS OR AS DESIGNED BY ENGINEER OF RECORD. SLOPE FROM SHOULDER TO FILTERRA BIOSCAPE SYSTEM SURFACE AREA SHALL NOT EXCEED 3:1. SOD IS REQUIRED TO STABILIZE SIDE SLOPES OR ADJACENT GRADE.
- (D) CONTRACTOR TO EXCAVATE MEDIA AREA CORRESPONDING TO THE SIZE OF THE FILTERRA BIOSCAPE SYSTEM SURFACE AREA AS SHOWN ON DETAIL AND ON PLAN SHEETS.
- (E) CONTRACTOR SHALL EXCAVATE VERTICALLY FROM BOTTOM OF UNDERDRAIN STONE, OR DRAINAGE STONE, IF REQUIRED, TO ELEVATION OF MULCH AS SHOWN ON THIS DETAIL.
- (F) CONTRACTOR TO PROVIDE AND INSTALL ANY GEOTEXTILE OR IMPERMEABLE LINER FOR BOTTOM OF THE FILTERRA BIOSCAPE SYSTEM IF REQUIRED PER THE PLANS.
- (G) CONTRACTOR TO PROVIDE AND INSTALL ANY ADDITIONAL DRAINAGE STONE BELOW THE FILTERRA BIOSCAPE SYSTEM AS CALLED OUT ON THE PLANS.

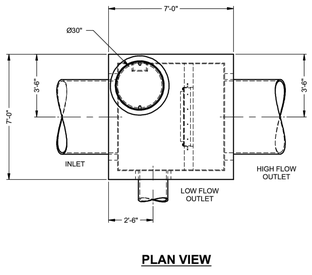
CONTRACTOR ACTIVATION RESPONSIBILITIES AS DENOTED BY (#) ON THIS DETAIL:
- (1) PLACE GEOTEXTILE FABRIC ALONG THE PERIMETER OF THE FILTERRA BIOSCAPE SYSTEM EXCAVATION.
- (2) PLACE 10" OF UNDERDRAIN STONE - 2" UNDER THE PIPING, 6" AROUND THE PIPING AND 2" ABOVE THE PIPING USING LIGHT DUTY EQUIPMENT ONLY.
- (3) PLACE 6" UNDERDRAIN PIPING UNLESS OTHERWISE APPROVED BY CONTECH. ASSOCIATED PIPING AND FITTINGS/ELBOWS TO CONNECT TO THE PIPING/FITTING(S) THAT IS PROVIDED BY CONTRACTOR (SEE CONTRACTOR INSTALLATION RESPONSIBILITIES THIS DETAIL).
- (4) PLACE 3" FILTERRA MEDIA USING LIGHT DUTY EQUIPMENT ONLY. DO NOT COMPACT MEDIA.
- (5) PLACE 3" DOUBLE SHREDDED HARDWOOD MULCH OVER ENTIRE FILTERRA BIOSCAPE SYSTEM SURFACE AREA USING LIGHT DUTY EQUIPMENT ONLY. DO NOT COMPACT MULCH.
- (6) PROVIDE AND PLANT VEGETATION AS INDICATED IN TABLE ON THIS DETAIL OR ON SITE PLANS.
- (7) PLACE ENERGY DISSIPATION ROCK APRON AS DESIGNED AND INDICATED ON THIS DETAIL OR PER ENGINEER OF RECORD PLANS.
- (8) PLACE CLEANOUT ADAPTER, PLUG AND PIPING.
- (9) PLACE ADDITIONAL EROSION CONTROL AROUND FILTERRA BIOSCAPE SYSTEM (IF REQUIRED).

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

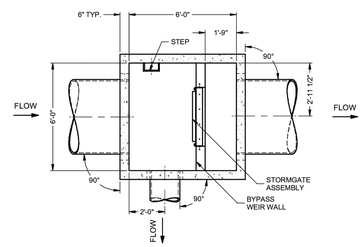
FILTERRA BIOSCAPE™ SYSTEM STANDARD DETAIL

CONTECH BIOSCAPE DETAIL

NOT TO SCALE



PLAN VIEW



SECTION A-A

MATERIALS LIST - PROVIDED BY CONTECH

COUNT	DESCRIPTION	INSTALLED BY
1	JOINT SEALANT	CONTRACTOR
1	30"Ø x 4" FRAME AND COVER, EJ #41600484	CONTRACTOR
1	STORMGATE WEIR ASSEMBLY	CONTECH
6	STEPS, P10CTS, BY LANE LADDER, OR EQUIV.	CONTECH

SITE DESIGN DATA

WATER QUALITY FLOW RATE	6 CFS
PEAK FLOW RATE	80 CFS
RETURN PERIOD OF PEAK FLOW	2 YRS
*GROUNDWATER ELEV. (ASSUMED)	1431.52'

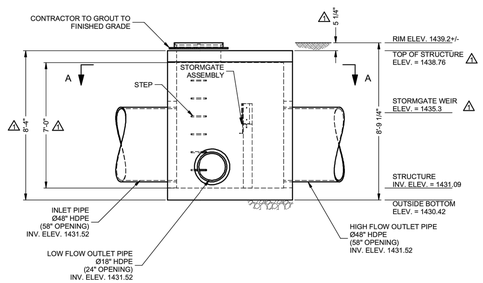
* SEE NOTE 4

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS REPRESENTATIVE. www.ContechES.com
3. STORMGATE STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL MEET AASHTO HS-20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 5', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 LOAD RATING AND BE CAST WITH THE CONTECH LOGO.
5. STORMGATE STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-857 AND AASHTO LOAD FACTOR DESIGN METHOD.
6. WEIR FRAME AND ADJUSTABLE WEIR PLATE SHALL BE FABRICATED OF ALUMINUM ALLOY ASTM B209, T-5052M T-6061, PROVIDED AND INSTALLED BY CONTECH.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STORMGATE STRUCTURE (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPE(S).
E. CONTRACTOR TO PROVIDE AND INSTALL GRADE RINGS/RISERS OR BLOCK REQUIRED BETWEEN THE TOP OF THE STRUCTURE AND THE BASE OF THE MANHOLE FRAMES.
F. ADJUST STORMGATE WEIR TO DESIGN ELEVATION SPECIFIED IN DRAWING. DO NOT EXCEED 5.0 FT-LBS TORQUE WHEN TIGHTENING SCREWS ON WEIR FRAME. SEAL WEIR TO FRAME WITH SIKAFLEX 1A SEALANT AFTER FINAL ADJUSTMENT.

STRUCTURE WEIGHT
⚠ APPROXIMATE HEAVIEST PICK = 18500 LBS OF 2 PIECES

MAX FOOTPRINT - 7' X 7'



ELEVATION VIEW

CONTECH PROPOSAL DRAWING

PRECS 5850/PR80127

STORMGATE VAULT

NOT TO SCALE

NO	DATE	REVISION DESCRIPTION	BY
1	10/22/20	REVISE INSIDE HEIGHT	MLC

STORMGATE SC90606 - 660302-030
CITY OF PERRIS - BIOSCAPE
PERRIS, CA

CONTECH ENGINEERED SOLUTIONS LLC
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX
www.ContechES.com

StormGate

DATE:	10/12/20
SCALE:	
DESIGNED:	RLH
DRAWN:	MLC
CHECKED:	RLH
APPROVED:	N/A
PROJECT NUMBER:	660302
SHEET:	1 OF 1

CITY OF PERRIS

POST CONSTRUCTION BMP SITE MAP
RIDER DISTRIBUTION CENTER II (19-00004)
DETAIL SHEET

SCALE:	SEE ABOVE
DATE:	03/03/2021
DESIGNED:	TSW
CHECKED:	CV
PLN CK REF:	
F.B.	

ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS
3788 McCRAY STREET
RIVERSIDE, CA. 92506
PH. (951) 686-1070
FAX (951) 788-1256

W.O.	17-0357
SHEET	3
OF	5 SHEETS
DWG. NO.	

The ideas and designs shown on this drawing, as an instrument of service, is property of and shall remain the property of Albert A. Webb Associates and shall not be used in any way without the written consent of Albert A. Webb Associates. The engineer/surveyor will not be responsible for any modifications made to these plans without the written approval of the engineer/surveyor. Any changes or modifications made to these plans without the written approval of the engineer/surveyor will relieve the engineer/surveyor of all responsibility for such changes and will indemnify and hold harmless the engineer/surveyor from any liability arising out of such changes.

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I:\COMMON\CAD\TREATMENT\54 FILTERRA\40 STANDARD DRAWINGS\FTBS - BIOSCAPE SYSTEM (BOX,ESS)\SWGP\FILTERRA BIOSCAPE SUPERVISED SYSTEM - STD DETAIL.DWG 5/21/2020 8:57 AM

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DUKE RIDER 2 - PERRIS CA
PACKAGED STORM WATER LIFT STATIONS

SCOPE OF SUPPLY:

Furnish and install complete pre-packaged duplex sewage Lift Station model #PSI-WEB100920-A as manufactured by Pacific Southwest Industries (national phone # 800-358-9095)
NOTE: Due to the specific nature of this pump station/ equipment and its operational sequence, any contractor not intending to purchase and supply as specified, by model number, must provide full submittals for review and approval prior to ordering, no exceptions. send full submittals to, www.submittalapproval.com, allow one week for a response.

The pre-packaged Lift Station shall incorporate a quick removal system manufactured by the pump manufacturer. The pump(s) shall be guided to the discharge base elbow by stainless steel guide rails. The rails shall extend from the discharge base elbow to the upper guide bracket mounted on fiberglass channel just below the basin cover. Stainless steel lifting chain or cable shall be supplied and properly installed to remove the pump from the wet well. The internal discharge piping shall be completely pre-plumbed in PVC pipe and extend 12" beyond the wet well side wall for contractor connection to the force main piping. The pump(s) discharge pipe shall have a check and ball valve installed on each discharge line. The Lift Station shall include three liquid level controls on a removable float tree and a control panel suitable for surface mounting. The pump(s), quick removal system and the level sensors shall be housed in a fiberglass wet well (basin) and shall be of sufficient length to maintain the rim of the wet well at grade.

PUMP(S):
The pump furnished for this application shall be model 3LE05 as manufactured by Liberty Pumps. Each submersible pump shall be rated at 5 hp, 460 Volts, 3 phase, 60 Hz, 1725 RPM. The unit shall produce 350 GPM at 17.28 feet of total dynamic head. The submersible pump shall be capable of handling residential and commercial sewage with 2.5" solid handling capability.

CONSTRUCTION:
Each centrifugal sewage pump shall be equal to the Certified 2LE01-Series pumps as manufactured by Liberty Pumps, Bergen NY. The casting enclosing the motor shall be constructed of class 25 cast iron. The motor housing shall be oil-filled to dissipate heat. Air-filled motors shall not be considered equal since they do not properly dissipate heat from the motor. Mating parts shall be machined and sealed with a Buna-N O-ring. All fasteners exposed to the process fluid shall be stainless steel. The motor shall be protected on the top side with a sealed cast iron cord entry plate. The motor shall be protected on the lower side with a single mechanical seal. The seal shall be a two-piece mechanical seal with silicon carbide faces. The upper and lower bearings shall be sized to properly withstand radial and thrust loads produced throughout the full operating range of the pump.

POWER CABLE:
The submersible pump shall be supplied with 35, 50, or 100 feet of a multi-conductor cord of type SOOW. These type SOOW power cords carry a voltage rating of 600 V, a temperature rating of 90°C, have oil-resistant insulation, are water- and weather-resistant, UL listed, and CSA approved. The power cord shall be sized for the rated full load amps of the pump for continuous duty in accordance with the NEC®. Standard Quick-connect cord shall offer quick cord replacement without the need to send the entire pump to an authorized repair facility. This shall also allow for pump maintenance without disturbing electrical boxes or control panels.

MOTOR:
The motor shall be oil-filled, Class F insulated, and rated for continuous duty. Since air-filled motors are not capable of dissipating heat efficiently, they shall not be considered equal. This motor design shall provide significantly reduced operating temperatures. Pumps requiring an auxiliary cooling means shall not be considered equal. The copper stator windings shall be insulated with moisture-resistant Class F insulation materials, rated for 155°C. The maximum continuous temperature of pumped liquids shall be 40°C. The winding operating temperature at rated horsepower and service factor shall be a maximum of 140°C @ 40°C ambient. Motor shall have thermal protector on 1-phase model 2LE012 to cut power to motor in thermal overheat conditions.

BEARINGS AND SHAFT:
The shaft shall be supported by two radial ball bearings. Both bearings shall be permanently lubricated by the oil that fills the motor housing. Pump designs requiring scheduled bearing maintenance shall not be considered equal. The motor shaft extension shall be made of 303 stainless steel. The shaft shall be designed to withstand the maximum torque and radial loads present during start-up and normal operation.

SEALS:
The pump shall have two shaft seals separated by an oil chamber. Pumps utilizing single seal technology shall not be considered equal. A leak detection probe shall be positioned in the oil chamber and shall allow for continuous monitoring for lower seal failure. The lower seal shall be a two-piece design that is easily serviceable. Shaft seals shall not require scheduled maintenance. The upper seal shall be a unitized design. The upper and lower seals shall be silicon carbide on silicon carbide. Both seals shall include stainless steel housings and HNBR or Viton elastomers.

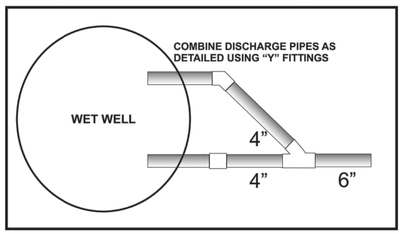
IMPELLER:
The impeller shall be ASTM class 25 cast iron, with optional silicon bronze material available. The open 2 vane impeller design provides an efficient path through the impeller for solids to pass without getting caught or snagged. The impeller shall be keyed and bolted onto the motor shaft.

QUICK REMOVAL SYSTEM:
The pumping unit(s) shall be equipped with quick removal system (QRS). The construction shall be such that the pump(s) will automatically connect to the discharge piping when lowered into place on the discharge connector. There shall be no need for personnel to enter the wet well to accomplish installation or removal of the pump(s). The pumping unit(s) shall be fitted with stainless steel lifting chain(s) of sufficient length and strength to permit the raising and lowering of the unit(s). The chain(s) shall be fastened at the top of the structure near the access opening. All parts of the QRS system including base elbow, sliding guide bracket, and guide support shall be manufactured from recyclable, application appropriate resins. The need for a protective coating shall not be required.
A sliding guide bracket shall be an integral part of the pumping unit and the pump casing shall have a machined connection with a bracket to connect with the discharge connection. Sealing of the pumping unit to the discharge connection shall be accomplished by a single linear downward motion of the pump with the entire weight of the pumping unit guided by a pawl, thereby wedging the pumping unit tightly against the discharge connector. No portion of the pump shall bear directly on the floor of the sump nor shall a rotary motion of the pump be required for sealing. All fasteners coming into contact with the pumpage shall be stainless steel.
Two corrosion resistant guide pipes shall be furnished and installed for each pump to permit raising and lowering of the pump. Guide pipes shall be 1.25" inch (33 mm) in diameter and shall be of adequate length to extend from the lower guide holder to the upper guide bar bracket(s) mounted on the access frame.

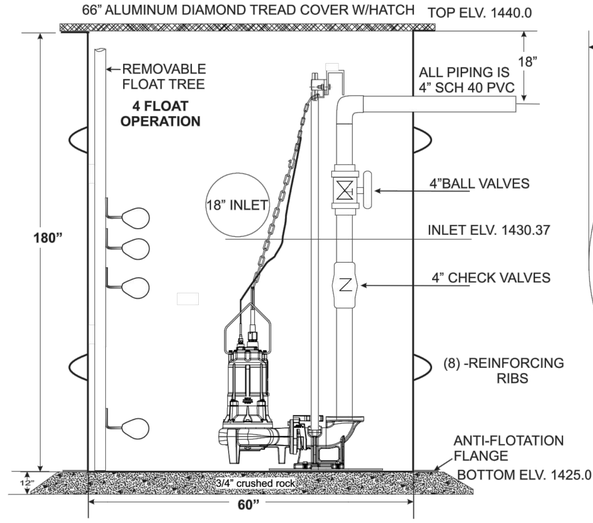
CONTROL PANEL:
The control panel shall have a NEMA 4X semi dead front enclosure suitable for wall mounting. The outer face of the door shall have only the following: 1 high water alarm light with silence switch, 1 buzzer. The inner workings of the control panel shall have no less than motor circuit protectors (overloads) that shall be adjustable, motor contractors, HOA selector switches, circuit breakers, alternating relay with load selector, dry contacts, numbered terminal switch, and shall be listed by U.L. 508. The control panel will have an alternating sequence of operation. An alarm will sound if there should be a failure of a pump in the lead position. Total connected amps will be 32 Amps on a 230 volt circuit.

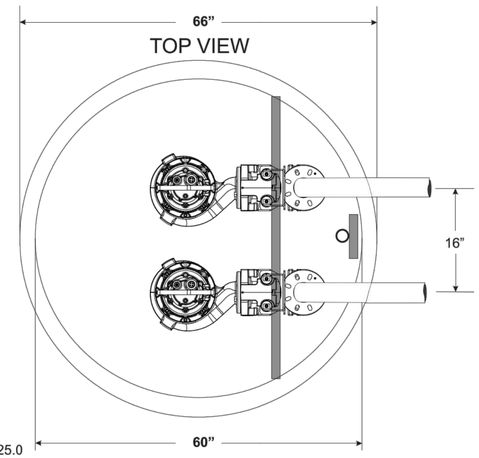
FIBERGLASS WET WELL:
The fiberglass wet well with an anti-flotation flange shall have a minimum inside diameter of 60 inches and shall be 180 inches and offer 730 gallons below the lowest inlet. The fiberglass wet well shall be manufactured using a process that insures that the bottom of the basin will be fabricated at the same time as the sidewalls, eliminating the possibility of any joints or seams in the wet well in the area of greatest stress concentration. The laminate shall have a barcol hardness of at least 90% of the resin manufactures minimum specified hardness for cured resin on both the interior and exterior surfaces. The minimum wall thickness of the wet well shall not be less than 3/16". Stainless steel studs will be bonded into the bottom of the tank for attachment of the quick removal systems. The top rim flange will be no less than 3" wider than the I.D. of the wet well (66" O.D.). The wet well shall be provided with "uniseal" fittings that can be installed in the field to insure proper elevation of the inlet, vent, and electrical on the side of the wet well.

ALUMINUM DIAMOND TREAD FRAME AND COVER W/HATCH:
The lid will be a solid cover with a large 'frogmouth style' opening hatch. The cover will be a ¼" thickness or more with a diamond tread pattern. All hardware will be stainless steel 7/16" hex head bolts.



STORM WATER DUPLEX PUMP SYSTEM





PUMP MODEL:3LE05
5 HP 460V 3 PH FLA XX AMP
PERFORMANCE:
350 GPM AT 17.28 TDH

PSI pacific southwest industries
ENGINEERED- PUMPS/FLUID HANDLING & DISPOSAL SYSTEMS
DUPLEX
PACKAGED LIFT STATION
(800)-358-9095

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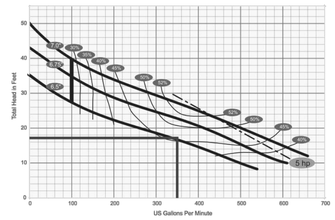
Liberty Pumps
EngineeredProducts

Performance Curve

3LE05-Series - 60 Hz



Stated efficiency values are hydraulic efficiency. Wire-to-Water (total) efficiency information is available upon request.

Pumps must operate within the proper range shown on the performance chart - between minimum flow of 100 gpm and min head requirements. It is the responsibility of the end user to ensure this requirement is met. Pumps operating outside the recommended range are prone to damage, excessive vibration, cavitation, poor eff ciency, and will exceed nameplate amperage.

Specifications are subject to change without notice.

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7000 Apple Tree Avenue - Bergen, NY 14416
Phone 800-543-2550 - Fax 585-494-1839 - www.LibertyPumps.com/LEP

PC-1

STORM LIFT STATION PROFILE & CALCULATIONS

EQUIVALENT PIPE RUN CALCULATION

6" SCH 40 PVC PIPE	35.0 FT
6" PVC SCH 40 90 ELBOW (0) X 16 FT	0.0 FT
6" PVC SCH 40 45 BEND (1) X 7.7 FT	7.7 FT
TOTAL EQUIVALENT LENGTH	127.7 FT
FRICTION LOSS PER 100 FT 6" PVC @ 350 GPM	0.79 FT PER 100 FT
FRICTION LOSS 6"	127.7/100 X 0.79 FT = 1.01 FT
4" PVC SCH 40 PIPE	15.0 FT
4" PVC SCH 40 90 ELBOW (1) X 10 FT	10.0 FT
4" CHECK VALVE (1) X 26 FT	26.0 FT
4" BALL VALVE (1) X 2.3 FT	2.3 FT
TOTAL EQUIVALENT LENGTH	48.3 FT
FRICTION LOSS PER 100 FT 4" PVC @ 350 GPM	5.74 FT PER 100 FT
FRICTION LOSS 4"	48.3/100X 5.74 FT = 2.77 FT
FRICTION LOSS 1.1 + 2.77	3.78 FT
STATIC HEAD	13.50 FT
TOTAL DEVELOPED HEAD	17.28 FT
PERFORMANCE 350 GPM @ 17.28 FT TDH THRU 6" PVC LINE	

STORM WATER PUMP SYSTEMS DETAILS

PSI pacific southwest industries
ENGINEERED- PUMPS/FLUID HANDLING & DISPOSAL SYSTEMS
30520 COPLASA ST. , LAKE ELSINORE, CA 92530 PH: 800 358-9095

No.	Date	Description

LIFT STATION DETAILS
DUKE RIDER 2
PERRIS CA

Scale: NTS
Sheet No. 1 OF 1
Date: 10/09/20
Drawn by: OR
Checked by: SR

SD-1

CITY OF PERRIS

POST CONSTRUCTION BMP SITE MAP
RIDER DISTRIBUTION CENTER II (19-00004)
DETAIL SHEET

SCALE: SEE ABOVE	ALBERT A. WEBB ASSOCIATES	ENGINEERING CONSULTANTS 3788 McCRAY STREET RIVERSIDE, CA. 92506 PH. (951) 686-1070 FAX (951) 788-1256	W.O. 17-0357
DATE: 03/03/2021			SHEET 4
DESIGNED: TSW			OF 5 SHEETS
CHECKED: CV			
PLN CK REF:			DWG. NO.
F.B.			

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CITY OF PERRIS
PUBLIC WORKS DEPARTMENT
CONDITIONS OF APPROVAL

Water Quality Management Plan Number #P19-00004 April 5, 2021

Water Quality Management Plan (WQMP) #P19-00004 is a Final WQMP for the proposed 39.4-acre warehouse distribution center development (APN 303-170-005, -004, -011, and -014). The project site is located at the northeast corner of Redlands Avenue and Rider Street in the City of Perris. The project proposes the development of the new construction of one, 508,500 square feet industrial building, newly paved roadways throughout the site and landscaped buffer areas. The selected structural treatment control BMPs consist of LID practices including the Filterra Bioscape and basin, self-retaining landscape and a covered trash enclosure. The project met the 4th Term NPDES Permit requirements. The project proponent is IDI Logistics.

General Requirements

1. The development shall be subject to all provisions of City of Perris Ordinance Number 1194, which establishes stormwater/urban runoff management and discharge controls to improve water quality and comply with federal regulations, and any subsequent amendments, revisions, or ordinances pertaining thereto.

2. During normal and reasonable hours of operation, the on-site facilities manager shall permit City Enforcement Officials, and other designated City, State, or Federal personnel access to all facilities and records to conduct inspections and ascertain whether all site design, source control, and treatment control best management practices (BMP's), approved under WQMP #P19-00004, are being implemented effectively.

3. Development of the premises and buildings, and implementation of on-site operations and procedures including all site design, source control, and treatment control BMP's shall conform substantially to the approved Water Quality Management Plan (March 2021) and signed (March 30, 2021) and the associated Conditions of Approval dated April 5, 2021 (WQMP #19-00004). Any deviation shall require the appropriate Department of Development Services, City Engineering, and Public Works review and approval.

4. No expansion of the site or the use shall occur without subsequent WQMP reviews and approvals from the Departments of Development Services, City Engineering and Public Works.

5. This WQMP #19-00004 shall exist in perpetuity with the use, scope of operations and development of the premises for which it was approved, and the obligation to implement approved project-specific WQMP #19-00004 shall be vested with the current and any future owners and property owners' association of the developed site.

6. In accordance with the design for the specific flow-based BMP's approved with this WQMP #19-00004, the owner shall insure that the BMP is maintained for maximum design flow velocities. The bioretention trench will also be maintained on a regular basis to manage pollutant loading. The Filterra BioScape system will be designed, constructed and maintained for maximum efficiencies.

7. In accordance with the design for the specific volume-based BMP's approved with this WQMP #19-00004, the owner shall insure that no ponding or concentration of water exceeds the maximum drawdown time. Standing water exceeding the drawdown time shall be pumped from all volume-based BMP's and disposed of in a manner permitted by law.

8. Any landscaping required in volume based and/or flow-based treatment control BMP's shall be maintained in a viable growth condition.

9. This WQMP #19-00004 shall adhere to all applicable building and development codes, including the Uniform Building Code and any applicable city codes and ordinances, and State mandated requirements.

10. This WQMP #19-00004 shall conform to the requirements of the Engineering Conditions of Approval as indicated in the approved conditions for DPR #P19-00004.

11. This WQMP shall conform to the requirements of the Planning Conditions of Approval as indicated in the approved conditions for DPR #P19-00004.

12. This approval shall be used within two (2) years of the approval date; otherwise, it shall become null and void and of no effect whatsoever. By use is meant the beginning of substantial construction contemplated by this approval within the two (2) year period which is thereafter diligently pursued to completion, or the beginning of substantial utilization contemplated by this approval.

13. Failure to adhere to the conditions of approval set forth and referred to herein, shall be grounds for enforcement action by City Officials, and notification to the State Water Resources Control Board.

14. The owner shall pay any outstanding development processing fees and WQMP plan check review fees.

15. The owner shall be aware and inform the on-site project or construction manager and all the prime and lower tier contractors of their responsibility to call for WQMP (Water Quality Management Plan) inspections. A minimum of two (2) WQMP inspections are required in the following order:

    a. At the time of precise grade and construction of flow-based/volume-based BMP's, and/or installation of storm drain and WQMP equipment, when the trenches are still open; and

    b. At final inspection, when all plant materials, structural treatment control BMP's, stenciling, employee source control handbooks, and WQMP equipment have been installed and are fully operational.
    c. A written clearance letter shall be signed by the City's Engineering Department to signify approval of WQMP site design, source control and treatment control BMP's (Best Management Practices). This letter will need to be presented to Building and Safety Department as part of the final approvals.

Prior to the Issuance of Grading Permits

16. The owner shall submit the Owner's Certification Form, signed by the Owner, or Owner's duly authorized representative.

17. The owner shall demonstrate that coverage has been obtained under California's General Permit for Storm Water Discharges Associated with Construction Activity by providing a copy of the Notice of Intent (NOI) submitted to the State Water Resources Control Board and a copy of the subsequent notification of issuance of a Waste Discharge Identification (WDID) Number or other proof of filing.

18. The cross section and details for the proposed Filterra Bio-Scape system and bio-filtration basin BMPs, are hereby approved for design concept minimum treatment design flow, and minimum treatment volume sizing requirements only. The Owner shall submit final storm drain plans and details, per the City Engineer's Conditions of Approval. The Plans shall demonstrate that flood control peak discharge rates and velocity reduction are accommodated within the proposed storm drain system; and that the proposed design is functional and can accommodate the minimum drawdown time required in the Riverside County BMP Design Manual. The owner shall submit final calculations and drawings that verify that the swale design has sufficient capacity to percolate the estimated volumes required for meeting and or exceeding the water quality objectives and can accommodate flood control peak discharge rates; and that the structural paving cross-sections meet the City Engineer's minimum design requirements and. Calculations and drawings shall be prepared, stamped and signed by a registered Civil Engineer.

19. The owner shall submit final storm drain drawings and details, per the Engineer's Conditions of Approval, demonstrating that peak flood discharge rates from the site are accommodated, within the storm drain system, and through the proposed unit and by-pass structure. Drawings shall be prepared, stamped and signed by a registered civil engineer. The City Engineer's Office shall review and approve these final plans and details.

Prior to the Issuance of Building Permits

20. The owner shall submit four (4) copies of Landscape and Irrigation Plans to the Planning Division accompanied by the appropriate filing fee, for review and approval. The plans shall be prepared by a registered landscape architect and include the location, number, species, and container size of the plants. The plans shall contain irrigation and planting details for turf and shrubs to be installed with the extended detention basin located at the west site of the property.

21. The owner shall submit revised elevations and colors and materials board to the Development Services Department-Planning Division, for the following required structural source control BMP: canopy cover for trash enclosure areas. The Planning Division shall review and approve the canopy cover for the trash enclosure areas.

Prior to the Issuance of Occupancy Permits

22. The owner shall demonstrate that all structural BMPs described in the approved project-specific WQMP #19-00004 have been constructed and installed in conformance with approved plans and specifications.

23. The owner shall demonstrate that the applicant is prepared to implement all non-structural BMPs described in the approved project specific WQMP #19-00004.
24. The owner shall demonstrate that an adequate number of copies of the approved project-specific WQMP are available on the project site for use by on-site staff, and for any future property owners or management team.

25. The owner shall submit a "Covenant and Agreement" to the City of Perris Storm Water Pollution Prevention Coordinator for review and approval. The Covenant and Agreement shall substantially comply with the form, language and content provided in Exhibit F of the Riverside County Water Quality Management Plan for Urban Run-off, dated September 17, 2004.

26. The owner shall record the submitted and signed "Covenant and Agreement," acceptable to the City of Perris, with the Riverside County Recorder's Office, to inform future property owners of the requirement to implement the approved project-specific WQMP #19-00004. The owner shall submit proof of recording, in the form of a certified copy of the recorded instrument, to the City of Perris Storm Water Pollution Prevention Coordinator.

27. If the business use is subject to California's General Permit for Storm Water Discharges Associated with Industrial Activity as defined by the Standard Industrial Classification (SIC) Code, the owner shall demonstrate that coverage has been obtained by providing a copy of the Notice of Intent (NOI) submitted to the State Water Resources Control Board and a copy of the notification of issuance of a Waste Discharge Identification (WDID) Number or other proof of filing.

28. The owner shall first obtain clearance from the Storm Water Pollution Prevention Coordinator verifying that all pertinent conditions of approval, including but not limited to non-structural source control BMP's, have been met.

29. The owner shall obtain a clearance letter from the City Engineer's Office, indicating that all structural source control BMP's have been constructed in substantial conformance with the plans, specifications, and approved WQMP #19-00004.

APPROVAL DATE **STORM WATER PROGRAM COORDINATOR**

The Undersigned is authorized to certify and to approve implementation of this WQMP #19-00004, including all Conditions of Approval included herein. The undersigned is aware that implementation of WQMP #19-00004 and all Conditions of Approval are enforceable under City of Perris Ordinance Number 1194, which establishes stormwater/urban runoff management and discharge controls to improve water quality and comply with federal regulations, and any subsequent amendments, revisions, or ordinances pertaining thereto.

If the undersigned transfers its interest in the subject property/project, its successors in interest the undersigned shall notify the successor in interest of its obligation to implement this WQMP #19-00004, and all Conditions of Approval included herein.

OWNER'S SIGNATURE 4/12/21 **DATE**

STEPHEN HOLLIS
OWNER'S PRINTED NAME

V.P. CONSTRUCTION
OWNER'S TITLE/POSITION

Attachments: Final WQMP March 2021
cc: Building Division
City Engineer

CITY OF PERRIS

POST CONSTRUCTION BMP SITE MAP
RIDER DISTRIBUTION CENTER II (19-00004)
CONDITIONS OF APPROVAL

SCALE: N/A	ALBERT A. WEBB ASSOCIATES	ENGINEERING CONSULTANTS 3788 McCRAY STREET RIVERSIDE CA. 92506 PH. (951) 686-1070 FAX (951) 788-1256	W.O. 17-0357
DATE: 04/12/2021			SHEET 5
DESIGNED: TSW			OF 5 SHEETS
CHECKED: CV			
PLN CK REF:			DWG. NO.
F.B.			

C:\2017\17-0357\DRAINAGE\WQMP\FINAL\DWG DRAWINGS\17-0357-FWQMP.DWG 4/12/2021 4:10:49 PM

Appendix 2: Construction Plans

Grading and Drainage Plans

PRECISE GRADING PLANS FOR
RIDER DISTRIBUTION CENTER II
CITY OF PERRIS–PLN NO. 19–00004

GENERAL NOTES

1. ALL WORK TO BE PERFORMED PER CITY OF PERRIS, RIVERSIDE COUNTY TRANSPORTATION DEPARTMENT (R.C.T.D.), EASTERN MUNICIPAL WATER DISTRICT (E.M.W.D.), CALTRANS AND THE 2014 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.) STANDARDS WITH CALIFORNIA SUPPLEMENT.
2. NOTIFY CITY ENGINEER, CITY OF PERRIS, AT (951) 943–6504, AT LEAST 24 HOURS PRIOR TO START OF CONSTRUCTION.
3. CONTRACTOR IS REQUIRED TO LOCATE AND ADJUST TO GRADE ALL EXISTING MANHOLES, METERS, AND VALVE COVERS FOR WATER, SEWER, TELEPHONE, ELECTRIC, CABLE TV AND OTHER FACILITIES AS REQUIRED (WHETHER CALLED–OUT OR NOT ON PLANS).
4. ALL STRIPING & LEGENDS SHALL BE REPLACED IN ACCORDANCE WITH THE STRIPING PLANS HEREIN. ALL STRIPING TO BE PAINT (TWO COATS) AND ALL MARKINGS (INCLUDING CROSSWALKS) TO BE THERMOPLASTIC. ALL STRIPING AND PAVEMENT MARKINGS TO BE PER 2014 M.U.T.C.D. STANDARDS WITH CALIFORNIA SUPPLEMENT.
5. ALL EXISTING A.C. AND CONCRETE TO BE SAW–CUT WHERE WIDENING IS TO TAKE PLACE OR ADJACENT TO WHERE CONCRETE IS TO BE CONSTRUCTED (1' MINIMUM).
6. ANY STOCKPILE OR STORAGE YARD ON PRIVATE PROPERTY MUST HAVE CITY'S AND OWNERS APPROVAL.
7. THE CITY INSPECTOR WILL MARK ALL CONCRETE REMOVALS PRIOR TO CONSTRUCTION. ALL CONCRETE WILL BE SAW–CUT WHERE REQUIRED PRIOR TO BEING REMOVED.
8. CONTRACTOR SHALL VERIFY THE EXISTENCE OF EXISTING SURVEY MONUMENTS AND PROTECT THEM IN PLACE. ANY SURVEY MONUMENTS MISSING AND/OR DAMAGED DURING CONSTRUCTION WILL HAVE TO BE RESET PRIOR TO PROJECT COMPLETION BY A QUALIFIED REGISTERED SURVEYOR.
9. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROTECT THE NEW WORK FROM VANDALISM UNTIL THE IMPROVEMENTS HAVE BEEN ACCEPTED BY THE CITY AND A NOTICE OF COMPLETION HAS BEEN FILED.
10. ALL ASPHALT REMOVALS TO BE MARKED BY THE CITY INSPECTOR PRIOR TO CONTRACTOR BEGINNING WORK ON THAT PARTICULAR STREET SEGMENT.
11. CONTRACTOR SHALL CONTACT UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA AND OTHER UTILITY COMPANIES AS NEEDED TO COORDINATE FOR PROTECTION AND/OR ADJUSTMENTS OF UTILITIES, AS REQUIRED.
12. CONTRACTOR TO VISIT THE SITE AND FAMILIARIZE HIMSELF WITH THE WORK AND AREA PRIOR TO BIDDING AND NOTIFY THE ENGINEER Of RECORD OF DISCREPANCIES.
13. ALL DIMENSIONS ARE APPROXIMATE. CONTRACTOR TO VERIFY IN FIELD.
14. CONTRACTOR IS RESPONSIBLE TO PROVIDE ALL TRAFFIC CONTROL DEVICES AS NEEDED AND PROVIDE TWO WAY ACCESS AT ALL TIMES THROUGH THE SITE. THE CONTRACTOR SHALL MAINTAIN THESE DEVICES AT ALL TIMES INCLUDING HOLIDAYS AND WEEKENDS. FLAGMAN SHALL BE UTILIZED AS REQUIRED TO PROVIDE TWO WAY TRAFFIC DURING CONSTRUCTION.
15. CONTRACTOR SHALL PROVIDE TRAFFIC CONTROL IN COMPLIANCE WITH WATCH MANUAL, 2006 M.U.T.C.D., AND THE TRAFFIC PLANS PROVIDED PER SEPARATE PLANS.
16. THE CONTRACTOR SHALL APPLY TO, AND BE ISSUED AN ENCROACHMENT PERMIT BY THE CITY OF PERRIS BEFORE BEGINNING ANY WORK WITHIN AN EXISTING, CITY MAINTAINED PUBLIC STREET AND FOR UTILITY WORK WITHIN OFFERS OF DEDICATION FOR PUBLIC USE.
17. EXISTING PUBLIC STREETS, SHALL REMAIN OPEN TO THE PUBLIC DURING CONSTRUCTION AND SHALL BE MAINTAINED BY THE CONTRACTOR, UNLESS OTHERWISE PROVIDED IN THE PLANS AND SPECIFICATIONS. PUBLIC INCONVENIENCE WILL BE MINIMIZED AT ALL TIMES AND SUCH STREETS SHALL BE LEFT FREE OF DIRT AND DEBRIS AT THE END OF EACH WORKING DAY UNLESS PERMISSION IS OTHERWISE GRANTED BY THE CITY ENGINEER.
18. THE CONTRACTOR IS RESPONSIBLE FOR CLEARING AND GRUBBING THE PROPOSED WORK AREA AND DISPOSAL OF EXCESS OR UNDESIRABLE MATERIAL. CONTRACTOR SHALL RELOCATE OR CAUSE TO BE RELOCATED EXISTING CONFLICTING UTILITIES IF REQUIRED BY CONTRACT.
19. ANY PROPOSED DEVIATION FROM THESE PLANS BY THE CONTRACTOR MUST MEET CITY'S APPROVAL. THE CONTRACTOR IS RESPONSIBLE TO REIMBURSE THE CITY FOR ANY RELATED COST TO THE CITY ASSOCIATED WITH SUCH CHANGE. IN THIS EVENT, NO INCREASE IN CONTRACTOR'S COST WILL BE APPROVED.
20. CONTRACTOR IS REQUIRED TO INSTALL BLUE REFLECTIVE PAVEMENT MARKERS AT ALL FIRE HYDRANT LOCATIONS WITHIN THE PROJECT.
21. THE CONTRACTOR IS REQUIRED TO REMOVE ALL CONFLICTING STRIPING AND LEGENDS BY WET SANDBLASTING OR OTHER APPROVED METHODS.
22. APPLY WEED KILL TO ALL EXISTING WEEDS BETWEEN 1–3 WEEKS PRIOR TO CONSTRUCTION AND REMOVE WEEDS. WEEDS SHALL BE REMOVED FROM ALL EXISTING PAVEMENT, MEDIANS, CURB AND GUTTER, SIDEWALK (BETWEEN CURB AND SIDEWALK) AND WHEREVER IMPROVEMENTS ARE PROPOSED, AND UP TO 4.0' BEHIND E.P. OR CURB WHEN NO SIDEWALK EXISTS.
23. CONTRACTOR SHALL REPLACE ALL STRIPING, LEGENDS, AND SIGNS IF THEY ARE DAMAGED DURING CONSTRUCTION AT NO EXTRA COST TO THE CITY. EXISTING STRIPING WITHIN PROJECT VICINITY THAT BECOME DULL, SHALL BE REFRESHED AS DIRECTED BY THE CITY ENGINEER.
24. EXISTING TO PROPOSED CONCRETE PAVEMENT JOINTS SHALL BE CONSTRUCTED PER CALTRANS REVISED STANDARD PLAN RSP P10. ONE INCH MINIMUM DIAMETER DOWEL BARS SHALL BE USED AND AS APPROVED BY THE CITY ENGINEER. ANY CONFLICTING STRIPING SHALL BE REMOVED BY SANDBLASTING OR OTHER APPROVED METHOD.
25. ALL GRADING AND CONSTRUCTION ACTIVITIES SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECTS SWPPP AND NOI. REFER TO NPDES NOTES ON EROSION CONTROL PLANS. CONSTRUCTION ACTIVITIES SHALL BE LIMITED FROM 7:00 AM TO 6:00 PM MONDAY TO FRIDAY.
26. ALL STREET SECTIONS ARE MINIMUM REQUIREMENTS, ADDITIONAL SOILS TESTS SHALL BE TAKEN AFTER ROUGH GRADING TO DETERMINE THE RECOMMENDED STREET SECTIONS REQUIREMENTS. USE RIVERSIDE COUNTY STD 401 IF EXPANSIVE SOILS ARE ENCOUNTERED.
27. ON–SITE LIGHTING, LANDSCAPE AND ADA LAYOUT TO BE APPROVED BY THE CITY OF PERRIS PLANNING DEPARTMENT.
28. WALLS/FENCE REQUIRE A SEPARATE PERMIT.
29. CONTRACTOR SHALL SUBMIT HAULING ROUTE FOR APPROVAL BY THE CITY ENGINEER PRIOR TO STARTING IMPORTATION/EXPORTATION OF DIRT.
30. VIDEO OF STORM DRAINAGE PIPES SHALL BE SUBMITTED FOR REVIEW BY THE CITY ENGINEER PRIOR TO PAVEMENT CAPPING AND CONCRETING.

GRADING NOTES

GRADING

1. ALL GRADING SHALL CONFORM TO THE 2019 CALIFORNIA BUILDING CODE CHAPTERS 17, 18 & APPENDIX CHAPTER J AS AMENDED BY ORD. 457.
2. ALL PROPERTY CORNERS SHALL BE CLEARLY DELINEATED IN THE FIELD PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION/GRADING.
3. ALL WORK UNDER THIS GRADING PERMIT SHALL BE LIMITED TO WORK WITHIN THE PROPERTY LINES. ALL WORK WITHIN THE ROAD RIGHT–OF–WAY WILL REQUIRE SEPARATE PLANS AND SEPARATE REVIEW. APPROVAL (PERMIT) FROM THE TRANSPORTATION DEPARTMENT.
4. GRADING SHALL BE DONE UNDER THE SUPERVISION OF A SOILS ENGINEER IN CONFORMANCE WITH RECOMMENDATIONS OF THE PRELIMINARY SOILS INVESTIGATION BY SOUTHERN CALIFORNIA GEOTECHNICAL DATED SEPTEMBER 9, 2019.
5. COMPACTED FILL TO SUPPORT ANY STRUCTURES SHALL COMPLY WITH CBC SECTION 1803.5. PROJECTS WITHOUT PRELIMINARY SOILS REPORTS SHALL HAVE DETAILED SPECIFICATIONS SATISFYING THE REQUIREMENTS IN CBC SECTION 1803.5 PREPARED BY THE ENGINEER ON RECORD.
6. 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.
7. THE CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT, TWO DAYS BEFORE DIGGING AT 1–800–422–4133.
8. THE ENGINEER OF RECORD HAS DETERMINED THAT CONSIDERING THE SITE CONDITIONS INCLUDING THE SOILS AND THE CLIMATE, THE PROPOSED SITE DRAINAGE SLOPES SHALL BE SATISFACTORY AND DO NOT WARRANT THE MORE CONSERVATIVE REQUIREMENTS SPECIFIED BY THE BUILDING CODE.

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 PROGRESSES 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 HAVE BEEN 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 SOILS 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 1704.7 OF 2007 CBC.
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.

MISC NOTES

1. FOR ANY GRADING >5000 CY, PRE–GRADING MEETING SHALL BE HELD WITH ATTENDANCE OF PLAN CHECK ENGINEER, CONTRACTOR, SOIL ENGINEER, AND CIVIL ENGINEER AT OWNER'S EXPENSE. ALSO, GRADING CONTRACTOR SHALL SUBMIT PRELIMINARY CONSTRUCTION SCHEDULE PRIOR TO STARTING GRADING WORK AND SUBMIT REVISED CONSTRUCTION SCHEDULE WHENEVER MAJOR CHANGES OCCURS.
2. ALL COLLUVIUM AND ANY UNDOCUMENTED FILL SHOULD BE REMOVED TO A DEPTH WHERE BEDROCK IS EXPOSED. ESTIMATED DEPTHS OF REMOVAL ARE ANTICIPATED TO RANGE FROM APPROXIMATELY 1 TO 7 FEET.

OWNER/APPLICANT

IDI LOGISTICS
8 CORPORATE PARK, SUITE 300
IRVINE, CA 92606
(949) 351–7243
ATTN: STEVE HOLLIS

CIVIL ENGINEER

ALBERT A. WEBB ASSOCIATES
3788 MCCRAY STREET
RIVERSIDE, CA 92506
(951) 686–1070
ATTN: DJ ARELLANO

S.W.P.P.P. CONTACT

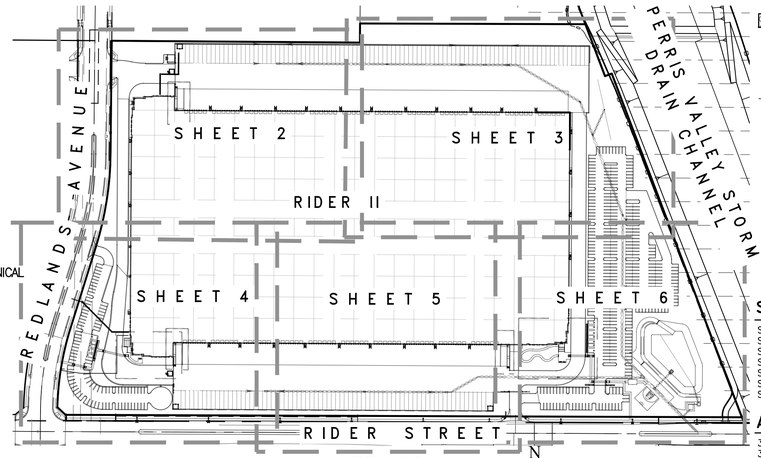
IDI LOGISTICS
8 CORPORATE PARK, SUITE 300
IRVINE, CA 92606
(949) 351–7243
ATTN: STEVE HOLLIS

SOILS ENGINEER:

SOUTHERN CALIFORNIA GEOTECHNICAL
22885 SAVI RANCH PARKWAY, SUITE E
YORBA LINDA, CA 92887
(714) 685–1118
ATTN: ROBERT TRAZO
PROJ. NO. 17G199–1R, DATED 9–9–2019

TOPOGRAPHY

INLAND AERIAL SURVEYS, INC.
7117 ARLINGTON AVENUE, SUITE A
RIVERSIDE, CA 92503
(951) 687–4252
DATED: 7–21–2017



INDEX MAP

1" = 200'
200 0 200

N W WEBB E S

EARTHWORK:

	CUT	FILL
RAW CUT/FILL	60,790 C.Y.	103,805 C.Y.
SHRINKAGE (8%)	(4,559) C.Y.	
SUBSIDENCE	(3,627) C.Y.	
OVER–EXCAVATION OF FILL AREA	6,467 C.Y.	6,467 C.Y.
SHRINKAGE OF OVER–EXCAVATION (8%)	(485) C.Y.	
OVER–EXCAVATION OF BLDG PAD	119,224 C.Y.	119,224 C.Y.
SHRINKAGE OF OVER–EXCAVATION (8%)	(8,942) C.Y.	
UTILITY/FOOTING SPOILS	3,000 C.Y.	
TOTALS	174,867 C.Y.	229,496 C.Y.

54,628 C.Y. IMPORT

NOTE:
THE ABOVE LISTED QUANTITIES REFLECT THE ENGINEER'S ESTIMATE OF THE ACTUAL VOLUMES OF MATERIAL CUT AND FILLED. THESE QUANTITIES ARE FOR ESTIMATING AND BONDING PURPOSES ONLY. THE CONTRACTOR IS RESPONSIBLE FOR COMPUTING HIS OWN QUANTITIES FOR CONTRACT PURPOSES. SHRINKAGE, SUBSIDENCE, AND ANY REMOVALS ARE BASED ON FIELD DATA OBTAINED FROM THE SOILS ENGINEER AND ACTUAL FIELD CONDITIONS DURING CONSTRUCTION MAY VARY.

ENGINEER OF RECORD NOTE:

WEBB ASSOCIATES WAS RETAINED AS THE ENGINEER OF RECORD FOR THE DEVELOPMENT AND PROCESSING OF THESE PLANS FOR CONSTRUCTION PURPOSES. SAID PLANS HAVE BEEN REVIEWED AND APPROVED BY THE LOCAL GOVERNING AGENCY TO BE CONSTRUCTIBLE BASED ON LOCAL INDUSTRY STANDARDS. THIS DOES NOT MEAN, HOWEVER, THAT EVERY HORIZONTAL DIMENSION OR VERTICAL ELEVATION NECESSARY FOR CONSTRUCTION IS DELINEATED ON SAID DRAWINGS. ANY PART OF THESE DRAWINGS THAT IS TO BE USED IN STAKING THE PROPERTY HAS BEEN PREPARED BY WEBB WITH THE EXPECTATION AND ASSUMPTION THAT ANY STAKING, WHETHER BY WEBB, OWNER OR A THIRD PARTY, WILL BE PERFORMED UNDER THE SUPERVISION AND CONTROL OF A LICENSED LAND SURVEYOR AND WILL INCLUDE ON–SITE INTERPRETATION, VERIFICATION, CROSS–CHECKING AND FIELD CORRECTIONS OF PLANS, DRAWINGS, SURVEY INFORMATION AND ELECTRONIC DATA AT THE TIME OF ACTUAL STAKING OF THE PROPERTY PRIOR TO CONSTRUCTION.

NOTICE TO CONTRACTOR

CONTRACTOR AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNER AND THE ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR THE ENGINEER.

THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITIES OR STRUCTURES SHOWN ON THESE PLANS ARE OBTAINED BY A SEARCH OF AVAILABLE RECORDS. TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO EXISTING UTILITIES EXCEPT THOSE SHOWN ON THESE PLANS. THE CONTRACTOR IS REQUIRED TO TAKE ALL PRECAUTIONARY MEASURES TO PROTECT THE UTILITIES SHOWN, AND ANY OTHER LINES OR STRUCTURES NOT SHOWN ON THESE PLANS AND IS RESPONSIBLE FOR THE PROTECTION OF OR ANY DAMAGE TO THESE LINES OR STRUCTURES.

CONTRACTOR SHALL VERIFY ALL CONDITIONS AND DIMENSIONS AND SHALL REPORT ALL DISCREPANCIES TO THE ENGINEER PRIOR TO COMMENCEMENT OF WORK.

INCORPORATE PERTINENT SOILS REPORT RECOMMENDATIONS ONTO THE GRADING PLANS AS FOLLOWS:

A) FOLLOW SOILS ENGINEERS RECOMMENDATIONS IF LANDSCAPE PLANTERS ARE TO BE INSTALLED ADJACENT TO THE BUILDING.

B) SOILS SEVERELY CORROSIVE TO DUCTILE IRON PIPE AND FERROUS METALS BUILDING CONSTRUCTION SHALL INCORPORATE MITIGATING MEASURES AS REQUIRED BY THE SOILS REPORT.

C) SEPTIC/PRIVATE SEWAGE PROPOSALS SHALL BE ACCOMPANIED WITH A PERCOLATION TEST AND RESULT TO ENSURE THAT SOILS IS COMPETENT FOR SUCH USE.

FEMA FLOOD DESIGNATION

FEMA FLOOD MAP 06065C1430H, ZONE AE,
BASE FLOOD ELEVATION 1445.0

FWQMP APPROVAL DATE:

LEGAL DESCRIPTION

PARCEL 3:
LOTS "A" THROUGH "E", INCLUSIVE, IN BLOCK 6; LOTS "A" THROUGH "E", INCLUSIVE, IN BLOCK 7; LOTS "A" THROUGH "D", INCLUSIVE, IN BLOCK 8; THE SOUTH HALF OF LOT "B" IN BLOCK 5; AND LOTS "C" AND "D" IN BLOCK 5, ALL IN TRACT 12 OF FAIRVIEW FARMS NO. 5, AS SHOWN BY MAP ON FILE IN BOOK 16, PAGE 20 OF MAPS, RIVERSIDE COUNTY RECORDS.

PARCEL 4:
LOTS "A" THROUGH "D", INCLUSIVE, IN BLOCK 5; LOTS "A" THROUGH "D", INCLUSIVE, IN BLOCK 6; LOTS "B", "C" AND "D" IN BLOCK 4, ALL IN TRACT 11 OF FAIRVIEW FARMS NO. 5, AS SHOWN BY MAP ON FILE IN BOOK 16, PAGE 20 OF MAPS, RIVERSIDE COUNTY RECORDS.

SEE TITLE REPORT FOR ADDITIONAL INFORMATION

UTILITY COMPANIES

WATER: EASTERN MUNICIPAL WATER DISTRICT, (800) 426–3693
SEWER: EASTERN MUNICIPAL WATER DISTRICT, (800) 426–3693
ELECTRIC: SOUTHERN CALIFORNIA EDISON COMPANY, (800) 684–8123
TELEPHONE: CHARTER COMMUNICATIONS, (833) 694–9259
GAS: SOUTHERN CALIFORNIA GAS COMPANY, (800) 427–2200

NOTICE TO CONTRACTOR

ALL WALLS SHOWN ON CIVIL PLANS ARE FOR LOCATION REFERENCE ONLY. REFER TO SEPARATE STRUCTURAL PLANS FOR RETAINING WALL AND SCREEN WALL DETAILS INCLUDING BACKFILL AND WATERPROOFING REQUIREMENTS.

BASIS OF BEARINGS

"THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CALIFORNIA STATE PLANE COORDINATE SYSTEM, OCS83, ZONE 6, BASED LOCALLY ON CONTROL STATIONS "MLFP", "PPBB", NAD 83(NSRS2011) AS SHOWN HEREON. ALL BEARINGS SHOWN ON THIS MAP ARE GRID. QUOTED BEARINGS AND DISTANCES FROM REFERENCE MAPS OR DEEDS ARE AS SHOWN PER THAT RECORD REFERENCE. ALL DISTANCES SHOWN ARE GROUND DISTANCES UNLESS SPECIFIED OTHERWISE. GRID DISTANCES, MAY BE OBTAINED BY MULTIPLYING THE GROUND DISTANCE BY A COMBINATION FACTOR OF 0.999928329. CALCULATIONS MADE AT BASE STATION POINT 1 USING ELEVATION OF 1445.421, CONVERGENCE ANGLE IS –00°31'59".

BENCHMARK

USC & GS BENCHMARKS AND FROM W.O.# 2013–0159 & 16–160.

40Y (PID #DX2103) – 3" BRASS DISK, SET IN BOULDER.

STATION IS ABOUT 4–1/2 MILES W OF LAKEVIEW, ABOUT ONE MILE W OF THE PASS THROUGH THE BERNASCONI MOUNTAINS, ABOUT 200 FEET SW OF THE INTERSECTION OF BRADLEY ROAD AND WALNUT AVENUE, 70 FEET S OF CENTER LINE OF WALNUT AVENUE, IN A LARGE BOULDER, AND MARKED WITH A TEE. MARK IS A METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA STANDARD DISK STAMPED 40 Y 1931.

ELEV. = 1494.66', NAVD 88

LEGEND

	CONSTRUCT MIN. 5" PCC OVER 12" MIN. 95% COMPACTED SUBGRADE, PER SOILS REPORT
	CONSTRUCT MIN. 7" PCC OVER 12" MIN. 95% COMPACTED SUBGRADE, PER SOILS REPORT
	TRUNCATED DOMES
(XX.XX)	EXISTING ELEVATION
[XX.XX]	PROPOSED ELEVATION PER SEPARATE PLANS
(XXXX)—	EXISTING CONTOURS
XXXX—	PROPOSED CONTOURS
— — —	GRADE BREAK/ RIDGE LINE
FG	FINISHED GRADE
FL	FLOW LINE
FS	FINISH SURFACE
GB	GRADE BREAK
HP	HIGH POINT
INV	INVERT
LS	LANDSCAPE AREA
LP	LOW POINT
MAX	MAXIMUM
MIN	MINIMUM
PL	PROPERTY LINE
RL	RIDGELINE
R/W	RIGHT OF WAY
STA	STATION
TC	TOP OF CURB
TG	TOP OF GRATE
TYP	TYPICAL

SHEET INDEX

SHEET 1	TITLE SHEET
SHEET 2–6	GRADING PLAN SHEETS
SHEET 7–8	SECTIONS AND DETAILS
SHEET 9–10	ON–SITE DRAINAGE PLAN
SHEET 11	DRAINAGE DETAILS
SHEET 12	LIFT STATION DESIGN
SHEET 13–14	COORDINATE CONTROL PLAN

APN(s):

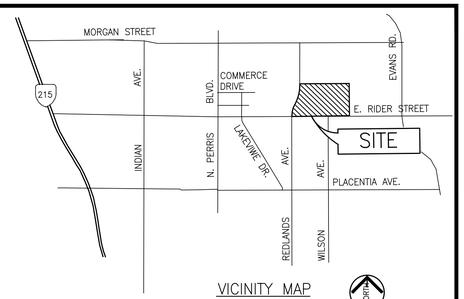
303–170–004, 303–170–005
303–170–011, 303–170–014
303–130–022

ACREAGE:

NET AREA: 39.4 ACRES
DISTURBED AREA: 39.4 ACRES

DRAINAGE NOTE

CONTRACTOR/DEVELOPER SHALL SUBMIT VIDEO OF STORM DRAIN TO THE CITY ENGINEER FOR REVIEW AND APPROVAL PRIOR TO PAVEMENT CAPPING OR CONCRETING.



VICINITY MAP
NOT TO SCALE

CONSTRUCTION NOTES AND QUANTITY ESTIMATE:

ITEM	DESCRIPTION	AMOUNT	UNIT
1	CONSTRUCT MIN. 5" PCC OVER 12" MIN. 95% COMPACTED SUBGRADE, PER SOILS REPORT	107,910	SF
2	CONSTRUCT MIN. 7" PCC OVER 12" MIN. 95% COMPACTED SUBGRADE, PER SOILS REPORT	467,150	SF
3	CONSTRUCT TYPE "A–6" CURB AND GUTTER PER RIV. CO. STD. NO. 200	3,515	LF
4	CONSTRUCT 6" TYPE "D" CURB ONLY PER RI. CO. STD. NO. 204	8,320	LF
5	CONSTRUCT 4" THICK PCC SIDEWALK PER RIV. CO. STD. 401, W=PER PLAN	8,375	SF
6	CONSTRUCT CONCRETE U–CHANNEL PER DETAIL ON SHEET 7	130	LF
7	CONSTRUCT COMMERCIAL DRIVEWAY APPROACH PER RIV. CO. STD. NO. 207A	1,640	SF
8	CONSTRUCT ENHACED PAVEMENT PER SEPARATE ARCHITECTURAL PLAN	–	–
9	CONSTRUCT 2'(W)X0.5(D) CONCRETE V–DITCH PER DETAIL ON SHEET 7	1,200	LF
10	CONSTRUCT CURB RAMP PER SPPWC STD. NO. 111–5, TYPE 1 CASE D	4	EA
11	CONSTRUCT CURB RAMP PER SPPWC STD. NO. 111–5, TYPE 1 CASE B	2	EA
12	CONSTRUCT TYPE 'C' CURB PER RIV. CO .STD. NO.202	12	LF
13	CONSTRUCT CURB TRANSITION PER RIV. CO. STD. NO. 211	10	LF
14	INSTALL 12' WIDE, 3" CLASS II AGGREGATE BASE ACCESS ROAD	6,940	SF
20	INSTALL 18" DIA. HDPE STORM DRAIN PIPE ("ADS" OR APPROVED EQUAL)	64	LF
21	INSTALL 24" DIA. HDPE STORM DRAIN PIPE ("ADS" OR APPROVED EQUAL)	10	LF
22	INSTALL 30" DIA. HDPE STORM DRAIN PIPE ("ADS" OR APPROVED EQUAL)	480	LF
23	INSTALL 36" DIA. HDPE STORM DRAIN PIPE ("ADS" OR APPROVED EQUAL)	1,985	LF
24	INSTALL 42" DIA. HDPE STORM DRAIN PIPE ("ADS" OR APPROVED EQUAL)	250	LF
25	INSTALL 48" DIA. HDPE STORM DRAIN PIPE ("ADS" OR APPROVED EQUAL)	130	LF
26	INSTALL HDPE PIPE FITTING	4	EA
27	INSTALL ADS FLARED END SECTION PER DETAILS ON SHEET 10	2	EA
28	CONSTRUCT GRATING CATCH BASIN PER SPPWC STD. NO. 305–3 (GRATES PER PLAN)	4	EA
29	CONSTRUCT MANHOLE NO. 1 PER RCFC&WCD STD. NO. MH251	2	EA
30	CONSTRUCT MANHOLE NO. 2 PER RCFC&WCD STD. NO. MH252	4	EA
31	CONSTRUCT MANHOLE NO. 4 PER RCFC&WCD STD. NO. MH254	2	EA
32	INSTALL 1' THICK (NO. 2 BACKING) RIP RAP OVER 6" CLASS II BASE, CALTRANS METHOD B PLACEMENT	5	TON
33	CONSTRUCT CURB INLET CATCH BASIN PER RIV. CO. STD. NO. 300	1	EA
34	CONSTRUCT GUTTER DEPRESSION AT CATCH BASIN PER RIV. CO. STD. NO. 311, CASE C	1	EA
35	INSTALL 12" DIA. HDPE STORM DRAIN PIPE ("ADS" OR APPROVED EQUAL)	120	LF
36	INSTALL 24" DIA. INLINE DRAIN WITH DOME GRATE ("NYLOPLAST" OR APPROVED EQUAL)	1	EA
37	INSTALL STORMGATE VAULT ("CONTECH" OR APPROVED EQUAL) PER DETAILS ON SHEET 10	1	EA

* THE QUANTITIES SHOWN ARE FOR BONDING PURPOSES ONLY. THE CONTRACTOR IS TO CONSTRUCT THE PROJECT PER THESE PLANS AND SUBMIT CONSTRUCTION BID BASED UPON THEIR OWN QUANTITY "TAKE–OFF".

DECLARATION OF ENGINEER OF RECORD

I HEREBY DECLARE THAT THE DESIGN OF THE IMPROVEMENTS SHOWN ON THESE PLANS COMPLIES WITH ALL PROFESSIONAL ENGINEERING STANDARDS AND PRACTICES. AS THE ENGINEER OF RECORD FOR THE PLANS, I ASSUME FULL RESPONSIBILITY FOR THE DESIGN OF THE IMPROVEMENTS. WITH RESPECTS TO THE PLAN CHECK PERFORMED BY THE CITY OF PERRIS, I UNDERSTAND AND ACKN

CONSTRUCTION NOTES

(2) CONSTRUCT MIN. 7" PCC OVER 12" MIN. 95% COMPACTED SUBGRADE, PER SOILS REPORT

(3) CONSTRUCT TYPE "A-6" CURB AND GUTTER PER RIV. CO. STD. NO. 200

(4) CONSTRUCT 6" TYPE "D" CURB ONLY PER RI. CO. STD. NO. 204

(5) CONSTRUCT 4" THICK PCC SIDEWALK PER RIV. CO. STD. 401, W=PER PLAN

(9) CONSTRUCT 2'(W)X0.5(D) CONCRETE V-DITCH PER DETAIL ON SHEET 5

LEGEND

CONSTRUCT MIN. 7" PCC OVER 12" MIN. 95% COMPACTED SUBGRADE, PER SOILS REPORT

TRUNCATED DOMES

NOTE:
ALL TC ELEVATIONS ARE FOR 6" CURBS, UNLESS NOTED OTHERWISE

NOTE: ADD 1400' TO ALL PROPOSED ELEVATIONS FOR ACTUAL ELEVATION

NOTE:
REFER TO SHEETS 13 - 14 FOR COORDINATE CONTROL AND CURVE DATA

EXISTING POWER POLE PROTECT IN PLACE

EX. 36" WATER LINE PROTECT IN PLACE

EX. 36" WATER LINE TO BE REMOVED/ABANDONED PER SEPARATE EMWD PLANS

N89°34'15"W 693.76'

N0°20'48"E 53.40'

PROPOSED SCREEN WALL PER SEPARATE STRUCTURAL PLAN PER SEPARATE PERMIT

PUMP HOUSE

3'W X 0.5' HIGH WALL OPENING FOR DRAINAGE INTO TRUCK PARKING

GATE PER SEPARATE ARCHITECTURAL PLAN

REFER TO STORM DRAIN PLAN ON SHEET 10

EX. DRIVEWAY & CURB RETURNS PROTECT IN PLACE

GRADE BREAK

C/L 6' DOOR
46.30 FF
45.6 PAD

C/L 3' DOOR
46.30 FF
45.6 PAD

REFER TO FORKLIFT & ACCESSIBLE RAMP DETAIL "A" HEREON

SEE SHEET 7

EXISTING STREET IMPROVEMENTS PER P8-1292

N0°34'39"E 316.86'

EX. CURB & GUTTER

EX. R/W

PROPOSED BUILDING
FF=1446.30
PAD=1445.6

PROPOSED PAD = FF - 7"
(7" CONCRETE OVER COMPACTED NATIVE)
(REFER TO STRUCTURAL PLAN FOR FINAL FF TO PAD DISTANCE

SEE SHEET 4

SEE SHEET 3

FORKLIFT & ACCESSIBLE RAMP DETAIL "A"

1" = 10'

RAMP & HANDRAILS PER SEPARATE ARCHITECTURAL PLAN

1" = 30'

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MARK	BY	DATE	REVISIONS	APPR.	DATE
	ENGINEER				COUNTY

CITY OF PERRIS
APPROVED BY:
CONTRACT CITY ENGINEER
DATE

SEAL - ENGINEER
REGISTERED PROFESSIONAL ENGINEER D.J. ARELLANO NO. 81988 CIVIL STATE OF CALIFORNIA

ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS
3788 McCRAY STREET
RIVERSIDE CA. 92506
PH. (951) 686-1070
FAX (951) 788-1256

PREPARED UNDER THE SUPERVISION OF:
D.J. ARELLANO

DESIGNED BY: CV CHECKED BY: DJA
R.C.E. NO.: 81988
DATE

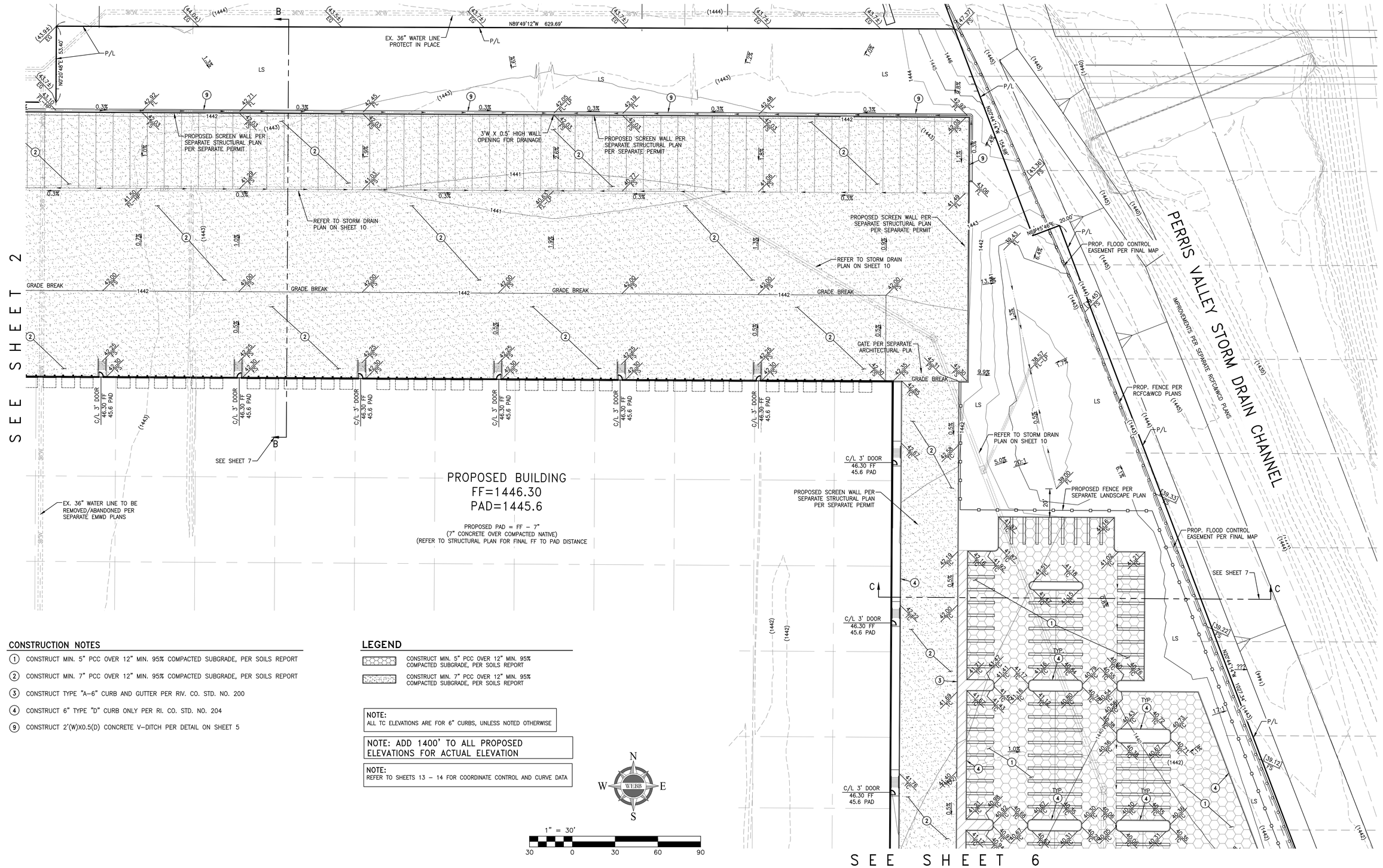
BENCHMARK:
NGS DESIGNATION 40Y
NGS PID: DX2103
ELEVATION = 1494.66 (NAVD88)
(NAVD88) - 2.58' = (NVGD29)
SEE SHEET 1 FOR BENCHMARK DESCRIPTION

SCALE:
H: AS SHOWN V: N/A

CITY OF PERRIS
DEVELOPMENT PLAN NO 19-00004
RIDER DISTRIBUTION CENTER II
PRECISE GRADING PLAN
PLAN SHEET

FOR: IDI LOGISTICS
W.O. 17-0357
CITY FILE NO. P8-1080

SHEET NO. 2
OF 14 SHEETS



CONSTRUCTION NOTES

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LEGEND

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NOTE: ADD 1400' TO ALL PROPOSED ELEVATIONS FOR ACTUAL ELEVATION

NOTE:
REFER TO SHEETS 13 - 14 FOR COORDINATE CONTROL AND CURVE DATA

N W WEBB E S

1" = 30'
30 0 30 60 90

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NGS PID: DX2103
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(NAVD88) - 2.58' = (NVGD29)
SEE SHEET 1 FOR BENCHMARK DESCRIPTION

SCALE:
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CITY OF PERRIS
DEVELOPMENT PLAN NO 19-00004
RIDER DISTRIBUTION CENTER II
PRECISE GRADING PLAN
PLAN SHEET

SHEET NO. 3 OF 14 SHEETS

FOR: IDI LOGISTICS
W.O. 17-0357
CITY FILE NO. P8-1080

SEE SHEET 2

REDLANDS AVENUE

EXISTING STREET IMPROVEMENTS PER PB-7292

EX. CURB & GUTTER

EX. R/W

STA 144+36.57 C/L OF 26' DWY

PROPOSED BUILDING
FF=1446.30
PAD=1445.6

PROPOSED PAD = FF – 7"
(7" CONCRETE OVER COMPACTED NATIVE)
(REFER TO STRUCTURAL PLAN FOR FINAL FF TO PAD DISTANCE

C/L 3' DOOR
46.30 FF
45.6 PAD

C/L 6' DOOR
46.30 FF
45.6 PAD

SEE SHEET 7

REFER TO SOUTH-WEST ACCESSIBLE ENTRY DETAIL ON SHEET 7

REFER TO FORKLIFT & ACCESSIBLE RAMP DETAIL "B" HEREON

RIDGE LINE

GRADE BREAK

GATE PER SEPARATE ARCHITECTURAL PLAN

REFER TO STORM DRAIN PLAN ON SHEET 9

TRASH ENCLOSURE

PROPOSED SCREEN WALL PER SEPARATE STRUCTURAL PLAN PER SEPARATE PERMIT

SEE SHEET 5

N89°47'24"W 1890.06'

PROP. R/W

PROP. CURB & GUTTER

RIDER STREET

40' IMPROVEMENTS PER SEPARATE STREET PLANS

1" = 30'

CONSTRUCTION NOTES

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6. CONSTRUCT CONCRETE U–CHANNEL PER DETAIL ON SHEET 5
7. CONSTRUCT COMMERCIAL DRIVEWAY APPROACH PER RIV. CO. STD. NO. 207A
8. CONSTRUCT ENHACED PAVEMENT PER SEPARATE ARCHITECTURAL PLAN
10. CONSTRUCT CURB RAMP PER SPPWC STD. NO. 111–5, TYPE 1 CASE D

LEGEND

CONSTRUCT MIN. 5" PCC OVER 12" MIN. 95% COMPACTED SUBGRADE, PER SOILS REPORT

CONSTRUCT MIN. 7" PCC OVER 12" MIN. 95% COMPACTED SUBGRADE, PER SOILS REPORT

TRUNCATED DOMES

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NOTE:
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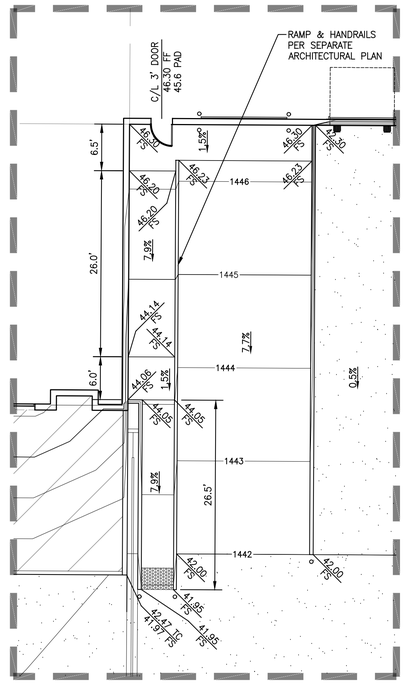

FORKLIFT & ACCESSIBLE RAMP DETAIL "B"

1" = 10'

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APPROVED BY:

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DESIGNED BY: XX CHECKED BY: DJA
R.C.E. NO.: 81988
DATE

BENCHMARK:
NGS DESIGNATION 40Y
NGS PID: DX2103
ELEVATION = 1494.66 (NAVD88)
(NAVD88) – 2.58' = (NVGD29)

SEE SHEET 1 FOR BENCHMARK DESCRIPTION

SCALE:
H: AS SHOWN V: N/A

FOR:
IDI LOGISTICS

CITY OF PERRIS

DEVELOPMENT PLAN NO 19–00004
RIDER DISTRIBUTION CENTER II
PRECISE GRADING PLAN
PLAN SHEET

SHEET NO. 4
OF 14 SHEETS

W.O.
17–0357

CITY FILE NO.
P8–1080

SHEET 4

SHEET 6

EX. 36" WATER LINE TO BE REMOVED/ABANDONED PER SEPARATE EMWD PLANS

PROPOSED BUILDING
FF=1446.30
PAD=1445.6

PROPOSED PAD = FF – 7"
(7" CONCRETE OVER COMPACTED NATIVE)
(REFER TO STRUCTURAL PLAN FOR FINAL FF TO PAD DISTANCE

SEE SHEET 7

C/L 3' DOOR 46.30 FF 45.6 PAD

GRADE BREAK

REFER TO STORM DRAIN PLAN ON SHEET 9

GATE PER SEPARATE ARCHITECTURAL PLAN

PROPOSED SCREEN WALL PER SEPARATE STRUCTURAL PLAN PER SEPARATE PERMIT

TRASH ENCLOSURE

N89°47'24"W 1890.08'

PROP. CURB & GUTTER

EX. R/W

PROP. R/W

RIDER STREET

IMPROVEMENTS PER SEPARATE STREET PLANS

CONSTRUCTION NOTES

(2) CONSTRUCT MIN. 7" PCC OVER 12" MIN. 95% COMPACTED SUBGRADE, PER SOILS REPORT

(6) CONSTRUCT CONCRETE U–CHANNEL PER DETAIL ON SHEET 5

(9) CONSTRUCT 2'(W)X0.5(D) CONCRETE V–DITCH PER DETAIL ON SHEET 5

LEGEND

CONSTRUCT MIN. 7" PCC OVER 12" MIN. 95% COMPACTED SUBGRADE, PER SOILS REPORT

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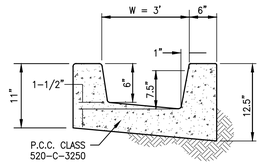
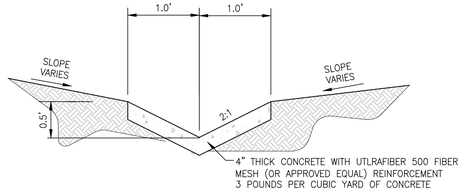


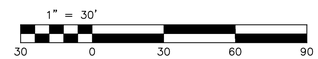
(6) U–CHANNEL
NOT TO SCALE



NOTES:

1. CONCRETE SHALL BE 560–C–3250. CONCRETE MAY BE PNEUMATICALLY PLACED AND SHALL CONFORM TO SECTION 2621 OF THE UNIFORM BUILDING CODE.
2. REINFORCING SHALL BE ULTAFIBER 500 FIBER MESH (OR APPROVED EQUAL), 3 POUNDS PER CUBIC YARD OF CONCRETE
3. GROUND SHALL BE PRE–WETTED TO THE SATISFACTION OF THE CITY ENGINEER PRIOR TO PLACEMENT OF CONCRETE. CURING COMPOUND/MOISTURE LOSS RETARDANT SHALL\ BE USED WHEN REQUIRED BY THE CITY ENGINEER.

(9) 2' WIDE V–DITCH
NOT TO SCALE



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D.J. ARELLANO

DESIGNED BY: XX CHECKED BY: DJA
R.C.E. NO.: 81988
DATE

BENCHMARK:
NGS DESIGNATION 40Y
NGS PID: DX2103
ELEVATION = 1494.66 (NAVD88)
(NAVD88) – 2.58' = (NVGD29)

SEE SHEET 1 FOR BENCHMARK DESCRIPTION

SCALE:
H: AS SHOWN V: N/A

CITY OF PERRIS

DEVELOPMENT PLAN NO 19–00004
RIDER DISTRIBUTION CENTER II
PRECISE GRADING PLAN
PLAN SHEET

SHEET NO. 5 OF 14 SHEETS

FOR: IDI LOGISTICS
W.O. 17–0357
CITY FILE NO. P8–1080

SEE SHEET 3

SEE SHEET 5

PROPOSED BUILDING
FF=1446.30
PAD=1445.6

PROPOSED PAD = FF – 7"
(7" CONCRETE OVER COMPACTED NATIVE)
(REFER TO STRUCTURAL PLAN FOR FINAL FF TO PAD DISTANCE

C/L 3' DOOR
46.30 FF
45.6 PAD

C/L 6' DOOR
46.30 FF
45.6 PAD

C/L 3' DOOR
46.30 FF
45.6 PAD

C/L 3' DOOR
46.30 FF
45.6 PAD

REFER TO SOUTH–EAST ACCESSIBLE ENTRY DETAIL ON SHEET 8

REFER TO FORKLIFT & ACCESSIBLE RAMP DETAIL "C" HEREON

REFER TO STORM DRAIN PLAN ON SHEET 10

REFER TO STORM DRAIN PLAN ON SHEET 9

REFER TO STORM DRAIN PLAN ON SHEET 9

GRADE BREAK

GATE PER SEPARATE ARCHITECTURAL PLAN

TRASH ENCLOSURE

PROPOSED FENCE PER SEPARATE LANDSCAPE PLAN

PROPOSED FENCE PER SEPARATE LANDSCAPE PLAN

PROP. FLOOD CONTROL EASEMENT PER FINAL MAP

PROP. FENCE PER RCFC&WCD PLANS

PERRIS VALLEY STORM DRAIN CHANNEL
IMPROVEMENTS PER SEPARATE RCFC&WCD PLANS

PROPOSED STORAGE BASIN
TOP OF BASIN 1436.3
BOT OF BASIN: 1430.8–1431.5

PROP. CONTECH BIOSCAPE PER DETAILS ON SHEET 11

PROP. FLOOD CONTROL EASEMENT PER FINAL MAP

PROP. R/W PER RCFC&WCD PLANS

EX. R/W

PROP. LIFT STATION SEE SHEET 12

SEE SHEET 7

PROP. R/W

PROP. CURB & GUTTER

EX. R/W

RIDER STREET
IMPROVEMENTS PER SEPARATE STREET PLANS

N89°47'24"W 1890.06'

N89°47'24"W

STA. 49+71.52
C/L OF 40' DWY

CONSTRUCTION NOTES

1. CONSTRUCT MIN. 5" PCC OVER 12" MIN. 95% COMPACTED SUBGRADE, PER SOILS REPORT
2. CONSTRUCT MIN. 7" PCC OVER 12" MIN. 95% COMPACTED SUBGRADE, PER SOILS REPORT
3. CONSTRUCT TYPE "A–6" CURB AND GUTTER PER RIV. CO. STD. NO. 200
4. CONSTRUCT 6" TYPE "D" CURB ONLY PER RI. CO. STD. NO. 204
5. CONSTRUCT 4" THICK PCC SIDEWALK PER RIV. CO. STD. 401, W=PER PLAN
6. CONSTRUCT CONCRETE U–CHANNEL PER DETAIL ON SHEET 5
7. CONSTRUCT COMMERCIAL DRIVEWAY APPROACH PER RIV. CO. STD. NO. 207A
8. CONSTRUCT ENHACED PAVEMENT PER SEPARATE ARCHITECTURAL PLAN
10. CONSTRUCT CURB RAMP PER SPPWC STD. NO. 111–5, TYPE 1 CASE D
11. CONSTRUCT CURB RAMP PER SPPWC STD. NO. 111–5, TYPE 1 CASE B
12. CONSTRUCT TYPE "C' CURB PER RIV. CO .STD. NO.202
13. CONSTRUCT CURB TRANSITION PER RIV. CO. STD. NO. 211
14. INSTALL 12' WIDE, 3" CLASS II AGGREGATE BASE ACCESS ROAD

LEGEND

CONSTRUCT MIN. 5" PCC OVER 12" MIN. 95% COMPACTED SUBGRADE, PER SOILS REPORT

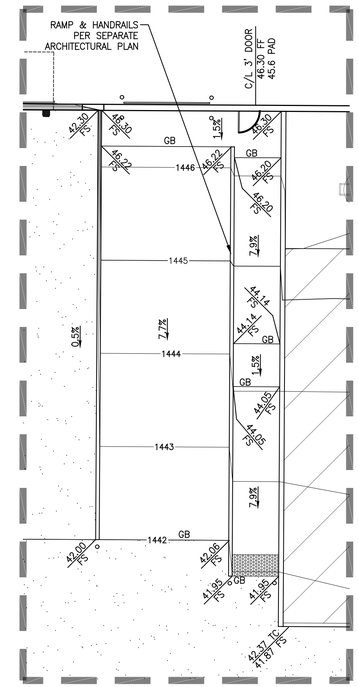
CONSTRUCT MIN. 7" PCC OVER 12" MIN. 95% COMPACTED SUBGRADE, PER SOILS REPORT

TRUNCATED DOMES

NOTE:
ALL TC ELEVATIONS ARE FOR 6" CURBS, UNLESS NOTED OTHERWISE

NOTE: ADD 1400' TO ALL PROPOSED ELEVATIONS FOR ACTUAL ELEVATION

NOTE:
REFER TO SHEETS 13 – 14 FOR COORDINATE CONTROL AND CURVE DATA



FORKLIFT & ACCESSIBLE RAMP DETAIL "C"

1" = 10'
10 0 10

1" = 30'
30 0 30 60 90

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MARK	BY	DATE	REVISIONS	APPR.	DATE
	ENGINEER				COUNTY

CITY OF PERRIS
APPROVED BY:

CONTRACT CITY ENGINEER

DATE

SEAL – ENGINEER
ALBERT A. WEBB ASSOCIATES
REGISTERED PROFESSIONAL ENGINEER
D.J. ARELLANO
NO. 81988
CIVIL
STATE OF CALIFORNIA

ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS
3788 McCRAY STREET
RIVERSIDE CA. 92506
PH. (951) 686–1070
FAX (951) 788–1256

PREPARED UNDER THE SUPERVISION OF:
D.J. ARELLANO

DESIGNED BY: XX CHECKED BY: DJA
R.C.E. NO.: 81988
DATE

BENCHMARK:
NGS DESIGNATION 40Y
NGS PID: DX2103
ELEVATION = 1494.66 (NAVD88)
(NAVD88) – 2.58' = (NVGD29)

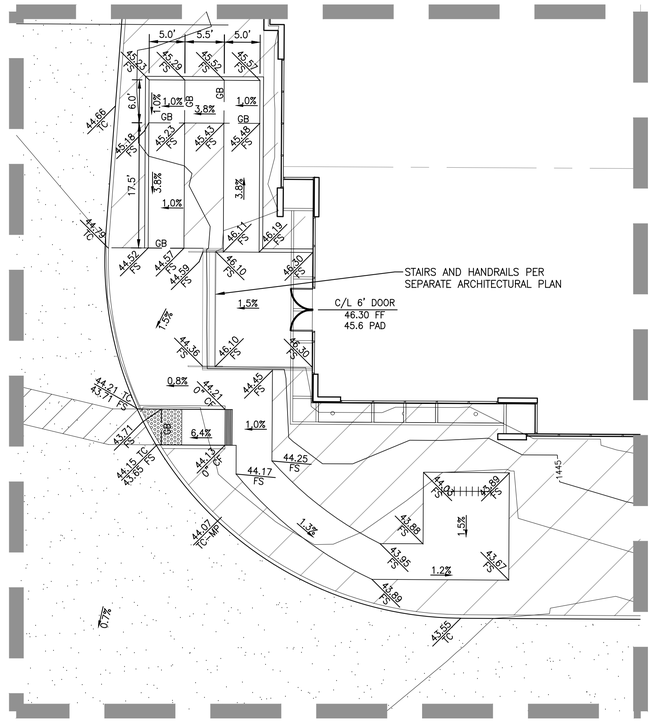
SEE SHEET 1 FOR BENCHMARK DESCRIPTION

SCALE:
H: AS SHOWN V: N/A

CITY OF PERRIS
DEVELOPMENT PLAN NO 19–00004
RIDER DISTRIBUTION CENTER II
PRECISE GRADING PLAN
PLAN SHEET

SHEET NO. 6 OF 14 SHEETS

FOR: IDI LOGISTICS
W.O. 17–0357
CITY FILE NO. P8–1080



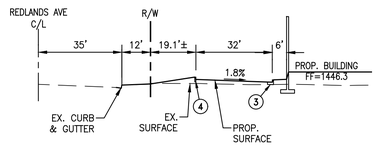
SOUTH-WEST ACCESSIBLE ENTRY DETAIL

SEE SHEET 4

1" = 10'

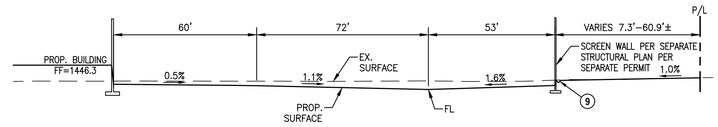
10 0 10 20 30

N W WEBB E S



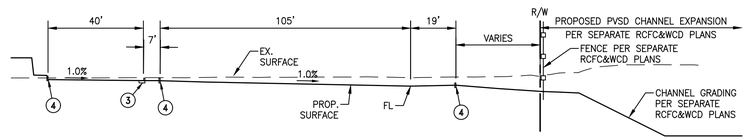
SECTION A-A

NOT TO SCALE
SEE SHEET 2



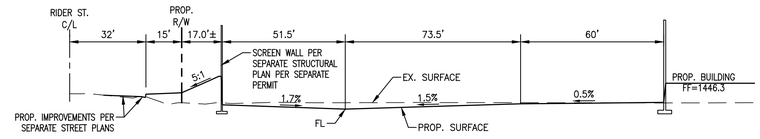
SECTION B-B

NOT TO SCALE
SEE SHEETS 2 & 3



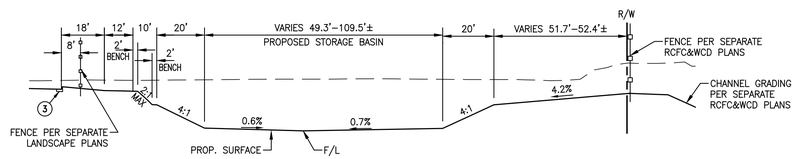
SECTION C-C

NOT TO SCALE
SEE SHEET 3



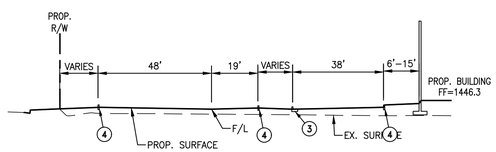
SECTION D-D

NOT TO SCALE
SEE SHEETS 4 & 5



SECTION E-E

NOT TO SCALE
SEE SHEET 6



SECTION F-F

NOT TO SCALE
SEE SHEET 6

CONSTRUCTION NOTES

(3) CONSTRUCT TYPE "A-6" CURB AND GUTTER PER RIV. CO. STD. NO. 200

(4) CONSTRUCT 6" TYPE "D" CURB ONLY PER RI. CO. STD. NO. 204

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ENGINEER				COUNTY	

CITY OF PERRIS
APPROVED BY:
CONTRACT CITY ENGINEER
DATE

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PREPARED UNDER THE SUPERVISION OF:
D.J. ARELLANO
DESIGNED BY: XX CHECKED BY: DJA
R.C.E. NO.: 81988
DATE

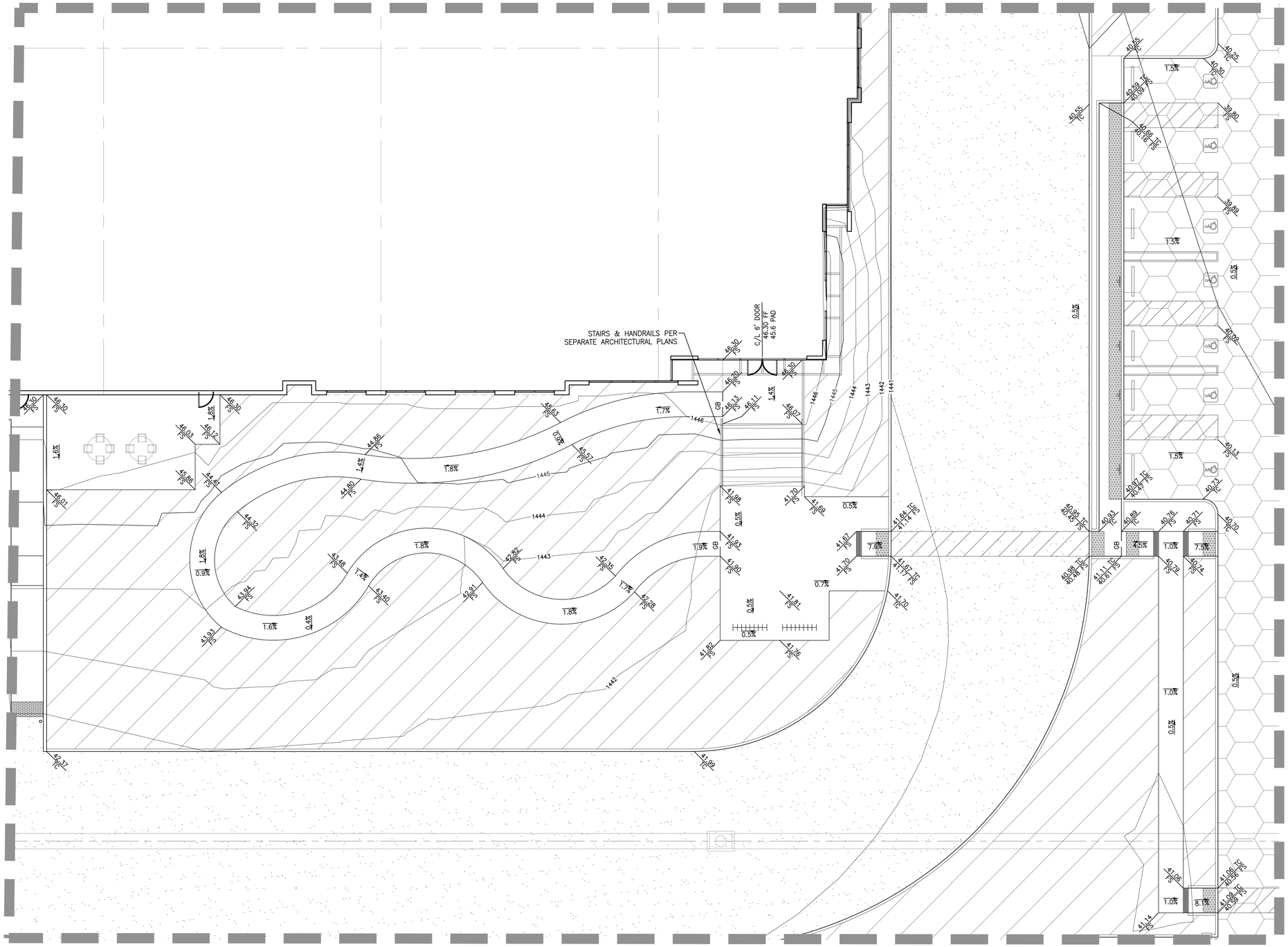
BENCHMARK:
NGS DESIGNATION 40Y
NGS PID: DX2103
ELEVATION = 1494.66 (NAVD88)
(NAVD88) - 2.58' = (NVGD29)
SEE SHEET 1 FOR BENCHMARK DESCRIPTION

SCALE:
H: AS SHOWN V: N/A

CITY OF PERRIS
DEVELOPMENT PLAN NO 19-00004
RIDER DISTRIBUTION CENTER II
PRECISE GRADING PLAN
SECTIONS AND DETAILS

SHEET NO. 7 OF 14 SHEETS

FOR: IDI LOGISTICS
W.O. 17-0357
CITY FILE NO. P8-1080



1" = 10'

10 0 10 20 30

SOUTH-EAST ACCESSIBLE ENTRY DETAIL

SEE SHEET 6

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NGS PID: DX2103
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(NAVD88) – 2.58' = (NVGD29)

SEE SHEET 1 FOR BENCHMARK DESCRIPTION

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CITY OF PERRIS

DEVELOPMENT PLAN NO 19-00004
RIDER DISTRIBUTION CENTER II
PRECISE GRADING PLAN
SECTIONS AND DETAILS

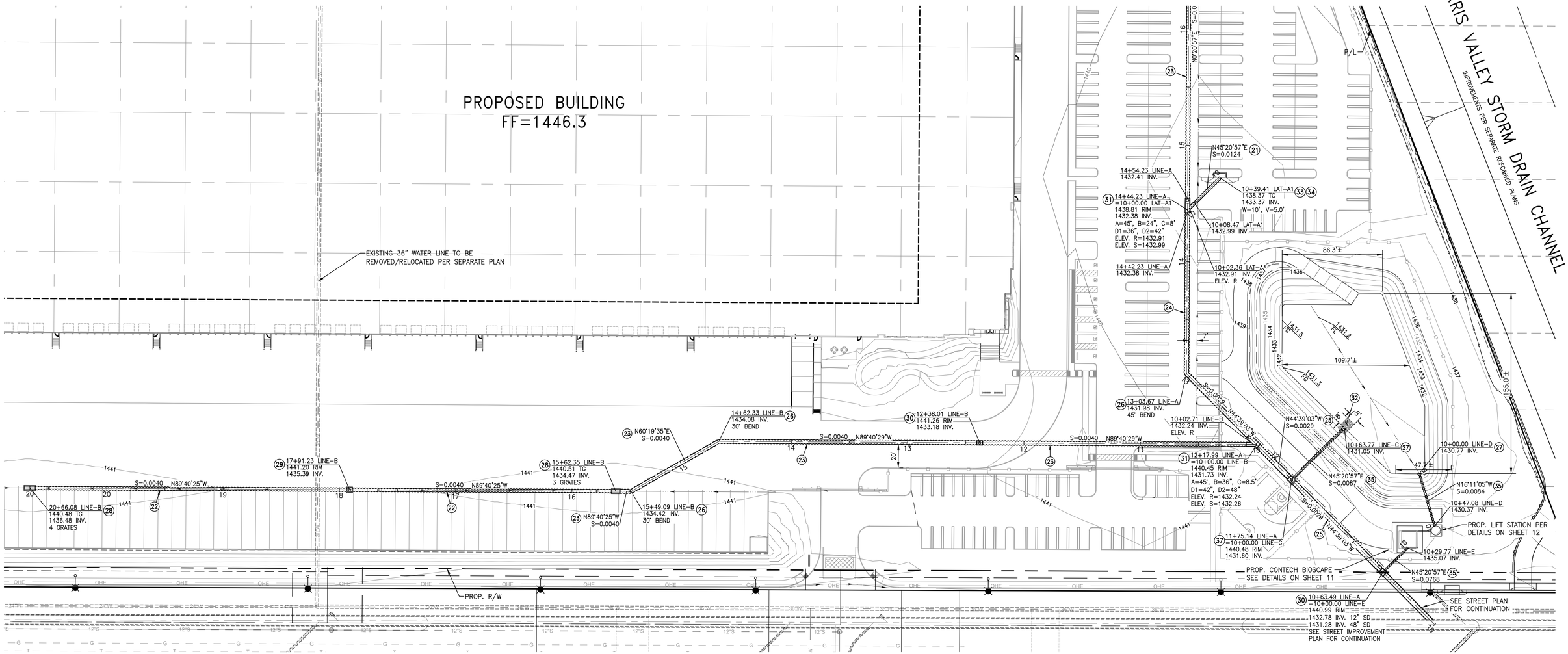
SHEET NO. 8 OF 14 SHEETS

FOR: IDI LOGISTICS

W.O. 17-0357

CITY FILE NO. P8-1080

SEE SHEET 10



CONSTRUCTION NOTES

(21) INSTALL 24" DIA. HDPE STORM DRAIN PIPE ("ADS" OR APPROVED EQUAL)
(22) INSTALL 30" DIA. HDPE STORM DRAIN PIPE ("ADS" OR APPROVED EQUAL)
(23) INSTALL 36" DIA. HDPE STORM DRAIN PIPE ("ADS" OR APPROVED EQUAL)
(24) INSTALL 42" DIA. HDPE STORM DRAIN PIPE ("ADS" OR APPROVED EQUAL)
(25) INSTALL 48" DIA. HDPE STORM DRAIN PIPE ("ADS" OR APPROVED EQUAL)
(26) INSTALL HDPE PIPE FITTING
(27) INSTALL ADS FLARED END SECTION PER DETAILS ON SHEET 9
(28) CONSTRUCT GRATING CATCH BASIN PER SPPWC STD. NO. 305-3 (GRATES PER PLAN)
(29) CONSTRUCT MANHOLE NO. 1 PER RCFC&WCD STD. NO. MH251
(30) CONSTRUCT MANHOLE NO. 2 PER RCFC&WCD STD. NO. MH252
(31) CONSTRUCT MANHOLE NO. 4 PER RCFC&WCD STD. NO. MH254
(32) INSTALL 1' THICK (NO. 2 BACKING) RIP RAP OVER 6" CLASS II BASE, CALTRANS METHOD B PLACEMENT
(33) CONSTRUCT CURB INLET CATCH BASIN PER RIV. CO. STD. NO. 300
(34) CONSTRUCT GUTTER DEPRESSION AT CATCH BASIN PER RIV. CO. STD. NO. 311, CASE C
(35) INSTALL 12" DIA. HDPE STORM DRAIN PIPE ("ADS" OR APPROVED EQUAL)
(36) INSTALL 24" DIA. INLINE DRAIN WITH DOME GRATE ("NYLOPLAST" OR APPROVED EQUAL)
(37) INSTALL STORMGATE VAULT ("CONTECH" OR APPROVED EQUAL) PER DETAILS ON SHEET 10

N
W WEBB E
S

1" = 40'
40 0 40 80 120

DRAINAGE NOTE:
CONTRACTOR/DEVELOPER SHALL SUBMIT VIDEO OF STORM DRAIN TO THE CITY ENGINEER FOR REVIEW AND APPROVAL PRIOR TO PAVEMENT CAPPING OR CONCRETING.

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DESIGNED BY: CV CHECKED BY: DJA
R.C.E. NO.: 81988
DATE

BENCHMARK:
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NGS PID: DX2103
ELEVATION = 1494.66 (NAVD88)
(NAVD88) – 2.58' = (NVGD29)
SEE ABOVE FOR BENCHMARK DESCRIPTION

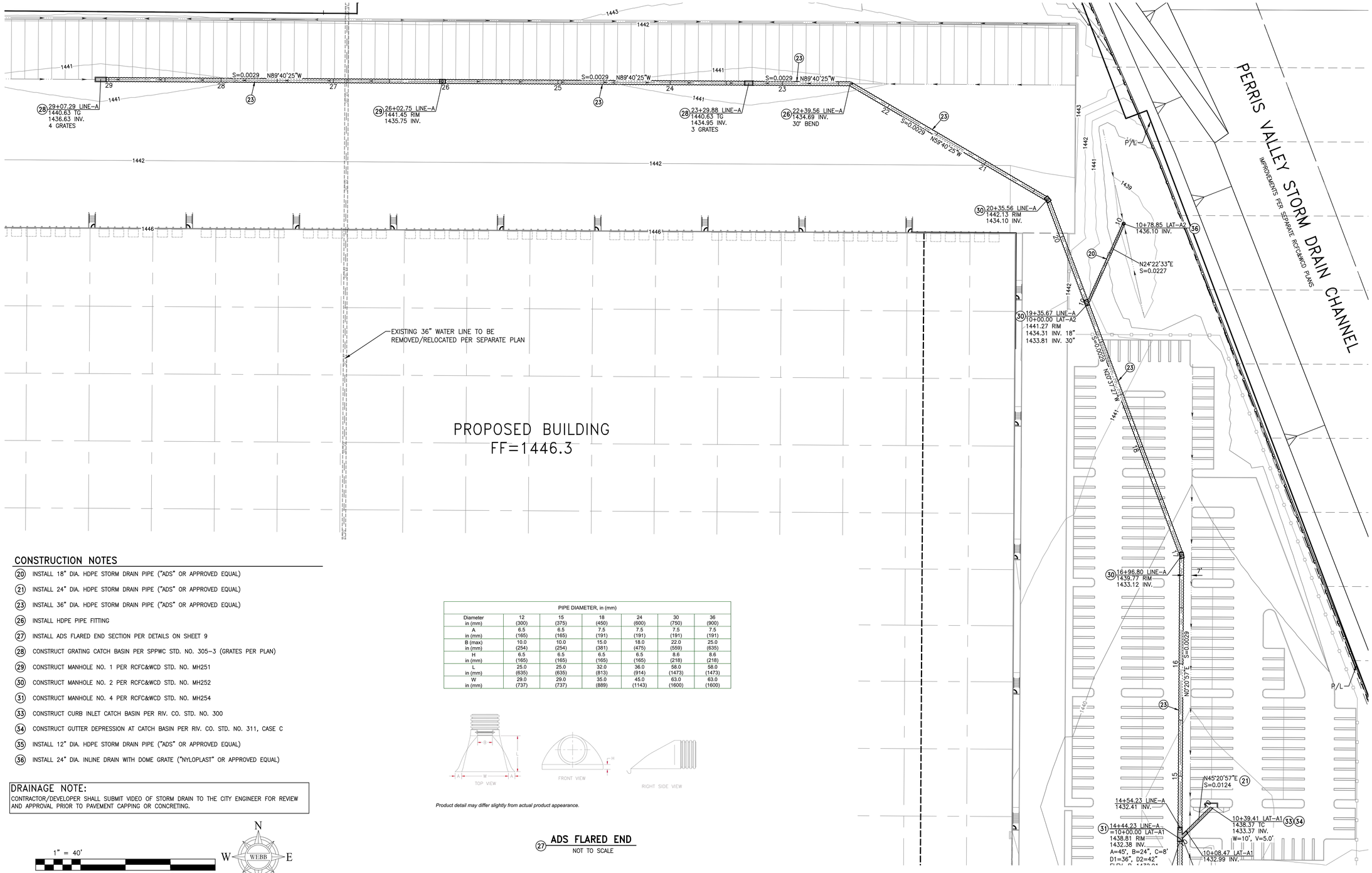
SCALE: H: AS SHOWN V: N/A

CITY OF PERRIS

DEVELOPMENT PLAN NO 19-00004
RIDER DISTRIBUTION CENTER II
PRECISE GRADING PLAN
ONSITE DRAINAGE PLAN

FOR: IDI LOGISTICS
W.O. 17-0357
CITY FILE NO. P8-1080

SHEET NO. 9 OF 14 SHEETS



CONSTRUCTION NOTES

(20) INSTALL 18" DIA. HDPE STORM DRAIN PIPE ("ADS" OR APPROVED EQUAL)

(21) INSTALL 24" DIA. HDPE STORM DRAIN PIPE ("ADS" OR APPROVED EQUAL)

(23) INSTALL 36" DIA. HDPE STORM DRAIN PIPE ("ADS" OR APPROVED EQUAL)

(26) INSTALL HDPE PIPE FITTING

(27) INSTALL ADS FLARED END SECTION PER DETAILS ON SHEET 9

(28) CONSTRUCT GRATING CATCH BASIN PER SPPWC STD. NO. 305–3 (GRATES PER PLAN)

(29) CONSTRUCT MANHOLE NO. 1 PER RCFC&WCD STD. NO. MH251

(30) CONSTRUCT MANHOLE NO. 2 PER RCFC&WCD STD. NO. MH252

(31) CONSTRUCT MANHOLE NO. 4 PER RCFC&WCD STD. NO. MH254

(33) CONSTRUCT CURB INLET CATCH BASIN PER RIV. CO. STD. NO. 300

(34) CONSTRUCT GUTTER DEPRESSION AT CATCH BASIN PER RIV. CO. STD. NO. 311, CASE C

(35) INSTALL 12" DIA. HDPE STORM DRAIN PIPE ("ADS" OR APPROVED EQUAL)

(36) INSTALL 24" DIA. INLINE DRAIN WITH DOME GRATE ("NYLOPLAST" OR APPROVED EQUAL)

DRAINAGE NOTE:
CONTRACTOR/DEVELOPER SHALL SUBMIT VIDEO OF STORM DRAIN TO THE CITY ENGINEER FOR REVIEW AND APPROVAL PRIOR TO PAVEMENT CAPPING OR CONCRETING.

1" = 40'
40 0 40 80 120
N W E S WEBB

PIPE DIAMETER, in (mm)						
Diameter in (mm)	12 (300)	15 (375)	18 (450)	24 (600)	30 (750)	36 (900)
A in (mm)	6.5 (165)	6.5 (165)	7.5 (191)	7.5 (191)	7.5 (191)	7.5 (191)
B (max) in (mm)	10.0 (254)	10.0 (254)	15.0 (381)	18.0 (475)	22.0 (559)	25.0 (635)
H in (mm)	6.5 (165)	6.5 (165)	6.5 (165)	6.5 (165)	8.6 (218)	8.6 (218)
L in (mm)	25.0 (635)	25.0 (635)	32.0 (813)	36.0 (914)	58.0 (1473)	58.0 (1473)
W in (mm)	29.0 (737)	29.0 (737)	35.0 (889)	45.0 (1143)	63.0 (1600)	63.0 (1600)

Product detail may differ slightly from actual product appearance.

(27) ADS FLARED END
NOT TO SCALE

FOR REVIEW ONLY

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	ENGINEER				COUNTY

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DATE

BENCHMARK:
NGS DESIGNATION 40Y
NGS PID: DX2103
ELEVATION = 1494.66 (NAVD88)
(NAVD88) – 2.58' = (NVGD29)
SEE ABOVE FOR BENCHMARK DESCRIPTION

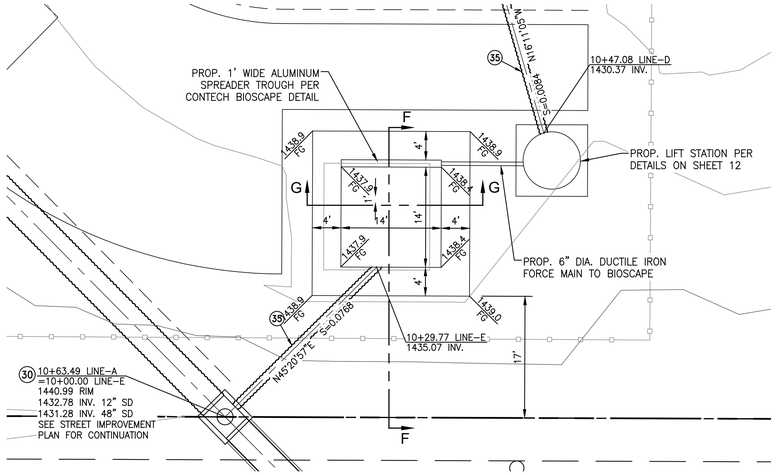
SCALE: H: AS SHOWN V: N/A

CITY OF PERRIS

DEVELOPMENT PLAN NO 19-00004
RIDER DISTRIBUTION CENTER II
PRECISE GRADING PLAN
ONSITE DRAINAGE PLAN

SHEET NO. 10 OF 14 SHEETS

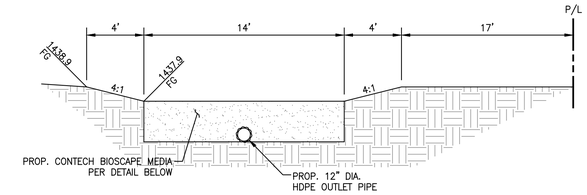
FOR: IDI LOGISTICS
W.O. 17-0357
CITY FILE NO. P8-1080



PLAN VIEW

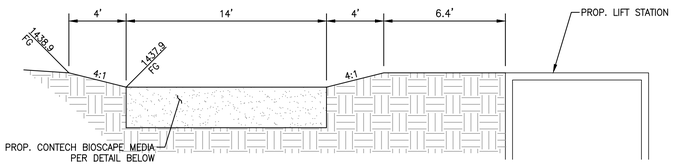
1" = 10'

10 0 10



SECTION F–F

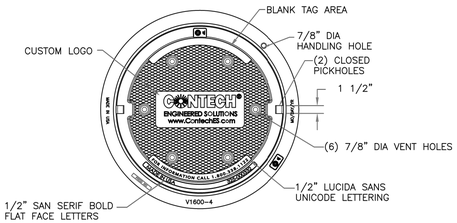
NOT TO SCALE

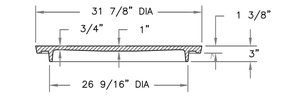


SECTION G–G

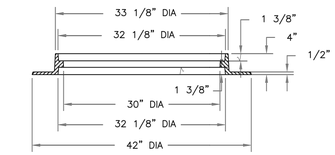
NOT TO SCALE

1810B4 V1600-4 Assembly





COVER SECTION



FRAME SECTION

ej

Product Number
41600484

Design Features
-Materials
Cover
Gray Iron (CL35B)
Frame
Gray Iron (CL35B)

-Design Load
Heavy Duty
-Open Area
n/a
-Coating
Undipped
- √ Designates Machined Surface

Certification
-
- ASTM A48
-
-Country of Origin: USA

Major Components
00180783
41600419

Drawing Revision
11/18/2007 Designer: DEW
6/20/2017 Revised By: DAE

Disclaimer
Weights (lbs./kg) dimensions (inches/mm) and drawings provided for your guidance. We reserve the right to modify specifications without prior notice.

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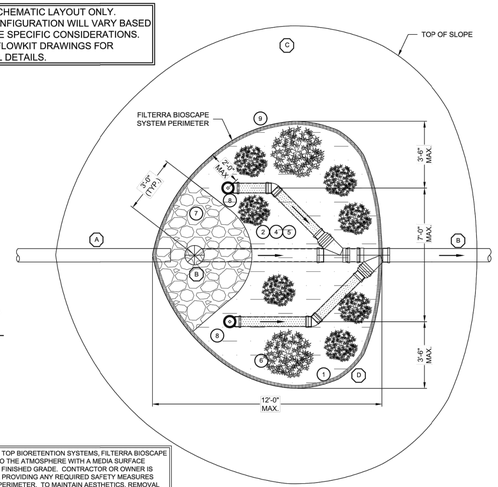
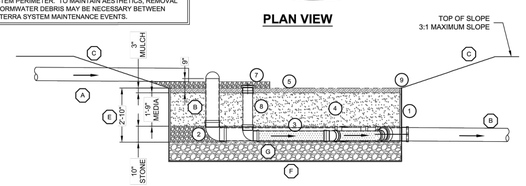
Contact
800 626 4653
ejco.com

THIS IS A SCHEMATIC LAYOUT ONLY. ACTUAL CONFIGURATION WILL VARY BASED ON THE SITE SPECIFIC CONSIDERATIONS. REFER TO FLOWKIT DRAWINGS FOR ADDITIONAL DETAILS.



PLAN VIEW

AS WITH ALL OPEN TOP BIORETENTION SYSTEMS, FILTERRA BIOSCAPE SYSTEM IS OPEN TO THE ATMOSPHERE WITH A MEDIA SURFACE RECESSED BELOW FINISHED GRADE. CONTRACTOR OR OWNER IS RESPONSIBLE FOR PROVIDING ANY REQUIRED SAFETY MEASURES AROUND SYSTEM PERIMETER. TO MAINTAIN AESTHETICS, REMOVAL OF HEAVY STORMWATER DEBRIS MAY BE NECESSARY BETWEEN REGULAR FILTERRA SYSTEM MAINTENANCE EVENTS.



SECTION A-A VIEW

BILL OF MATERIALS

COUNT	DESCRIPTION	INSTALLED BY
X	FILTERRA SURFACE AREA (SF)	CONTRACTOR
X	MULCH VOLUME (CY)	CONTRACTOR
XX	FILTERRA MEDIA VOLUME (CY)	CONTRACTOR
X	1/2" #4 ROUND AGGREGATE UNDERDRAIN STONE (CY)	CONTRACTOR
X	ENERGY DISSIPATION ROCK (CY)	CONTRACTOR
X	EROSION CONTROL (LF)	CONTRACTOR
X	FILTERRA FLOWKIT	CONTRACTOR

PLANTING SCHEDULE

*NOTE: PLANTS PROVIDED BY OTHERS

QUANTITY	FILTERRA BIOSCAPE SYSTEM PLANT PALETTE

GENERAL NOTES
1. CONTRACTOR SHALL CONTACT CONTECH TO COORDINATE DELIVERY AND SUPERVISION OF PLACEMENT OF FILTERRA BIOSCAPE SYSTEM COMPONENTS (ACTIVATION). CONTRACTOR SHALL COMPLETE ITEMS IN THE LIST OF CONTRACTOR INSTALLATION RESPONSIBILITIES LISTED ON THIS DETAIL BEFORE CONTECH'S REPRESENTATIVE ATTENDS AND SUPERVISES THE ACTIVATION OF THE BIOSCAPE SYSTEM.
2. PERFORM FILTERRA BIOSCAPE SYSTEM EXCAVATION ONLY AFTER ALL THE CONTRIBUTING DRAINAGE AREAS ARE PERMANENTLY STABILIZED. DO NOT CONSTRUCT FILTERRA BIOSCAPE SYSTEM IN AN AREA USED AS EROSION AND SEDIMENT CONTROL FACILITIES. DO NOT STOCKPILE MATERIALS NOR STORE EQUIPMENT IN THIS AREA.
3. USE METHODS OF EXCAVATION THAT MINIMIZE COMPACTION OF THE UNDERLYING SOIL UNLESS THE SYSTEM IS TO BE LINED.
4. CONTRACTOR SHALL COORDINATE WITH CONTECH BEFORE THE FILTERRA BIOSCAPE SYSTEM AREA IS EXCAVATED TO MINIMIZE TIME BETWEEN EXCAVATION AND DELIVERY AND ACTIVATION OF THE FILTERRA BIOSCAPE SYSTEM. ANY STANDING WATER THAT ACCUMULATES IN THE EXCAVATED AREA MUST BE REMOVED BY THE CONTRACTOR BEFORE CONTECH CAN PROVIDE ACTIVATION OF THE FILTERRA BIOSCAPE SYSTEM. ANY ADDITIONAL EXCAVATION WILL BE THE RESPONSIBILITY OF THE CONTRACTOR. EXCAVATION DIMENSIONS SHOULD BE PROVIDED TO CONTECH IN THE ACTIVATION REQUEST CHECKLIST.
5. CONTRACTOR SHALL PROVIDE ACCESS TO THE EXCAVATED AREA(S) FOR USE DURING THE ACTIVATION OF THE FILTERRA BIOSCAPE SYSTEM(S). ACCESS SHALL NOT PROHIBIT LIGHT DUTY EQUIPMENT THAT MAY BE USED TO INSTALL THE COMPONENTS (STONE, MEDIA, ETC). THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY RE-STABILIZATION THAT MAY BE REQUIRED AFTER THE FILTERRA BIOSCAPE SYSTEM ACTIVATION.
6. CONTECH AND/OR ITS REPRESENTATIVES MUST BE SCHEDULED TO BE ON SITE FOR THE LIST ENTITLED CONTRACTOR ACTIVATION RESPONSIBILITIES.

CONTRACTOR SITE PREPARATION RESPONSIBILITIES AS DENOTED BY (X) ON THIS DETAIL:
- (A) CONTRACTOR SHALL INSTALL PIPE OR SWALE THAT CONVEYS INFLUENT FLOWS AS WELL AS ANY REQUIRED INLET AND OUTLET STRUCTURES.
- (B) CONTRACTOR SHALL PROVIDE BYPASS PIPE AND RISER OR OTHER STRUCTURE AS SHOWN ON PLANS. THE BYPASS PIPE SHALL BE INSTALLED WITH WYE(S), OR OTHER PIPE FITTINGS, AND WITH REDUCER COUPLING(S) FOR CONNECTION OF UNDERDRAIN PIPE, PER PLANS. PIPES SHALL BE INSTALLED TO PROMOTE POSITIVE FLOW FROM THE FILTERRA BIOSCAPE SYSTEM.
- (C) IF REQUIRED, CONTRACTOR TO PROVIDE SHOULDER ACCORDING TO DIMENSION AND SLOPE SHOWN ON PLANS OR AS DESIGNED BY ENGINEER OF RECORD. SLOPE FROM SHOULDER TO FILTERRA BIOSCAPE SYSTEM SURFACE AREA SHALL NOT EXCEED 3:1. SOD IS REQUIRED TO STABILIZE SIDE SLOPES OR ADJACENT GRADE.
- (D) CONTRACTOR TO EXCAVATE MEDIA AREA CORRESPONDING TO THE SIZE OF THE FILTERRA BIOSCAPE SYSTEM SURFACE AREA AS SHOWN ON DETAIL AND ON PLAN SHEETS.
- (E) CONTRACTOR SHALL EXCAVATE VERTICALLY FROM BOTTOM OF UNDERDRAIN STONE, OR DRAINAGE STONE, IF REQUIRED, TO ELEVATION OF MULCH AS SHOWN ON THIS DETAIL.
- (F) CONNECT TO THE PIPING/FITTING(S) THAT IS PROVIDED BY CONTRACTOR (SEE CONTRACTOR INSTALLATION RESPONSIBILITIES THIS DETAIL).
- (G) CONTRACTOR TO PROVIDE AND INSTALL ANY ADDITIONAL DRAINAGE STONE BELOW THE FILTERRA BIOSCAPE SYSTEM AS CALLED OUT ON THE PLANS.

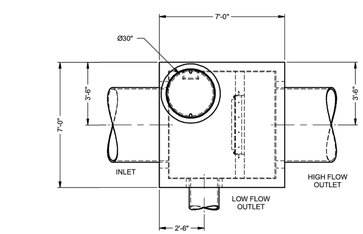
CONTRACTOR ACTIVATION RESPONSIBILITIES AS DENOTED BY (#) ON THIS DETAIL:
- (1) PLACE GEOTEXTILE FABRIC ALONG THE PERIMETER OF THE FILTERRA BIOSCAPE SYSTEM EXCAVATION.
- (2) PLACE 10" OF UNDERDRAIN STONE - 2" UNDER THE PIPING, 6" AROUND THE PIPING AND 2" ABOVE THE PIPING USING LIGHT DUTY EQUIPMENT ONLY.
- (3) PLACE 6" UNDERDRAIN PIPING UNLESS OTHERWISE APPROVED BY CONTECH, ASSOCIATED PIPING AND FITTINGS/ELBOWS TO CONNECT TO THE PIPING/FITTING(S) THAT IS PROVIDED BY CONTRACTOR (SEE CONTRACTOR INSTALLATION RESPONSIBILITIES THIS DETAIL).
- (4) PLACE 3" FILTERRA MEDIA USING LIGHT DUTY EQUIPMENT ONLY. DO NOT COMPACT MEDIA.
- (5) PLACE 2" DOUBLE SHREDDED HARDWOOD MULCH OVER ENTIRE FILTERRA BIOSCAPE SYSTEM SURFACE AREA USING LIGHT DUTY EQUIPMENT ONLY. DO NOT COMPACT MULCH.
- (6) PROVIDE AND PLANT VEGETATION AS INDICATED IN TABLE ON THIS DETAIL OR ON SITE PLANS.
- (7) PLACE ENERGY DISSIPATION ROCK APRON AS DESIGNED AND INDICATED ON THIS DETAIL OR PER ENGINEER OF RECORD PLANS.
- (8) PLACE CLEANOUT ADAPTER, PLUG AND PIPING.
- (9) PLACE ADDITIONAL EROSION CONTROL AROUND FILTERRA BIOSCAPE SYSTEM (IF REQUIRED).

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

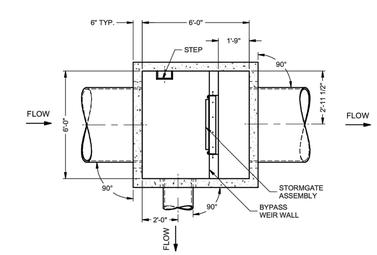
FILTERRA BIOSCAPE™ SYSTEM
STANDARD DETAIL

CONTECH BIOSCAPE DETAIL

NOT TO SCALE



PLAN VIEW



SECTION A-A

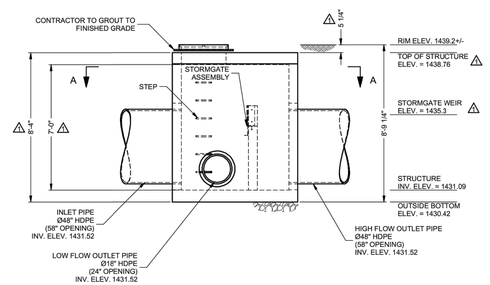
MATERIALS LIST - PROVIDED BY CONTECH

COUNT	DESCRIPTION	INSTALLED BY
1	JOINT SEALANT	CONTRACTOR
1	30"Ø x 4" FRAME AND COVER, EJ #41600484	CONTRACTOR
1	STORMGATE WEIR ASSEMBLY	CONTECH
6	STEPS, P1CTS, BY LANE LADDER, OR EQUIV.	CONTECH

SITE DESIGN DATA

WATER QUALITY FLOW RATE	6 CFS
PEAK FLOW RATE	80 CFS
RETURN PERIOD OF PEAK FLOW	2 YRS
*GROUNDWATER ELEV. (ASSUMED)	1431.52'

* SEE NOTE 4



ELEVATION VIEW

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS REPRESENTATIVE. www.ContechES.com
3. STORMGATE STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL MEET AASHTO HS-20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 5', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 LOAD RATING AND BE CAST WITH THE CONTECH LOGO.
5. STORMGATE STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-857 AND AASHTO LOAD FACTOR DESIGN METHOD.
6. WEIR FRAME AND ADJUSTABLE WEIR PLATE SHALL BE FABRICATED OF ALUMINUM ALLOY ASTM B209, T-5052M T-6061, PROVIDED AND INSTALLED BY CONTECH.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STORMGATE STRUCTURE (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPE(S).
E. CONTRACTOR TO PROVIDE AND INSTALL GRADE RINGS/RISERS OR BLOCK REQUIRED BETWEEN THE TOP OF THE STRUCTURE AND THE BASE OF THE MANHOLE FRAMES.
F. ADJUST STORMGATE WEIR TO DESIGN ELEVATION SPECIFIED IN DRAWING. DO NOT EXCEED 5.0 FT-LBS TORQUE WHEN TIGHTENING SCREWS ON WEIR FRAME. SEAL WEIR TO FRAME WITH SIKAFLEX 1A SEALANT AFTER FINAL ADJUSTMENT.

STRUCTURE WEIGHT
⚠ APPROXIMATE HEAVIEST PICK = 18500 LBS OF 2 PIECES

MAX FOOTPRINT - 7' X 7'

CONTECH
PROPOSAL
DRAWING

PRECS 5850/PR80127

STORMGATE VAULT

NOT TO SCALE

NO.	DATE	REVISION DESCRIPTION	BY
1	10/22/20	REVISE INSIDE HEIGHT	MLC

STORMGATE SC06606 - 660302-030
CITY OF PERRIS - DISCOVERY
PERRIS, CA

CONTECH ENGINEERED SOLUTIONS LLC
2071 E. Hatch Drive, Suite 200, Tempe, AZ 85281
StormGate

DATE: 10/12/20 SCALE:
DESIGNED: RLH DRAWN: MLC
CHECKED: RLH APPROVED: N/A
PROJECT NUMBER: 660302
SHEET: 1 OF 1

FOR REVIEW ONLY

Underground Service Alert
Call: TOLL FREE 811
WWW.call811.com
TWO WORKING DAYS BEFORE YOU DIG

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 APPROVAL OR DURING CONSTRUCTION, THE PRIVATE ENGINEER SHALL BE RESPONSIBLE FOR DETERMINING AN ACCEPTABLE SOLUTION AND REVISING THE PLANS FOR APPROVAL BY THE CITY.

MARK	BY	DATE	REVISIONS	APPR.	DATE
ENGINEER				COUNTY	

CITY OF PERRIS
APPROVED BY:

CONTRACT CITY ENGINEER

DATE

SEAL – ENGINEER
REGISTERED PROFESSIONAL ENGINEER D.J. ARELLANO NO. 81988 CIVIL STATE OF CALIFORNIA

ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS
3788 McCRAY STREET
RIVERSIDE CA. 92506
PH. (951) 686-1070
FAX (951) 788-1256

PREPARED UNDER THE SUPERVISION OF: D.J. ARELLANO
DESIGNED BY: CV CHECKED BY: DJA
R.C.E. NO.: 81988
DATE

BENCHMARK:
NGS DESIGNATION 40Y
NGS PID: DX2103
ELEVATION = 1494.66 (NAVD88)
(NAVD88) – 2.58' = (NVGD29)
SEE ABOVE FOR BENCHMARK DESCRIPTION

SCALE: H: AS SHOWN V: N/A

CITY OF PERRIS
DEVELOPMENT PLAN NO 19-00004
RIDER DISTRIBUTION CENTER II
PRECISE GRADING PLAN
DRAINAGE DETAILS AND SECTIONS

SHEET NO. 11
OF 14 SHEETS

FOR: IDI LOGISTICS
W.O. 17-0357
CITY FILE NO. P8-1080

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DUKE RIDER 2 - PERRIS CA
PACKAGED STORM WATER LIFT STATIONS

SCOPE OF SUPPLY:

Furnish and install complete pre-packaged duplex sewage Lift Station model #PSI-WEB100920-A as manufactured by Pacific Southwest Industries (national phone # 800-358-9095)
NOTE: Due to the specific nature of this pump station/ equipment and its operational sequence, any contractor not intending to purchase and supply as specified, by model number, must provide full submittals for review and approval prior to ordering, no exceptions. send full submittals to, www.submittalapproval.com, allow one week for a response.

The pre-packaged Lift Station shall incorporate a quick removal system manufactured by the pump manufacturer. The pump(s) shall be guided to the discharge base elbow by stainless steel guide rails. The rails shall extend from the discharge base elbow to the upper guide bracket mounted on fiberglass channel just below the basin cover. Stainless steel lifting chain or cable shall be supplied and properly installed to remove the pump from the wet well. The internal discharge piping shall be completely pre-plumbed in PVC pipe and extend 12" beyond the wet well side wall for contractor connection to the force main piping. The pump(s) discharge pipe shall have a check and ball valve installed on each discharge line. The Lift Station shall include three liquid level controls on a removable float tree and a control panel suitable for surface mounting. The pump(s), quick removal system and the level sensors shall be housed in a fiberglass wet well (basin) and shall be of sufficient length to maintain the rim of the wet well at grade.

PUMP(S):
The pump furnished for this application shall be model 3LE05 as manufactured by Liberty Pumps. Each submersible pump shall be rated at 5 hp, 460 Volts, 3 phase, 60 Hz, 1725 RPM. The unit shall produce 350 GPM at 17.28 feet of total dynamic head. The submersible pump shall be capable of handling residential and commercial sewage with 2.5" solid handling capability.

CONSTRUCTION:
Each centrifugal sewage pump shall be equal to the Certified 2LE01-Series pumps as manufactured by Liberty Pumps, Bergen NY. The casting enclosing the motor shall be constructed of class 25 cast iron. The motor housing shall be oil-filled to dissipate heat. Air-filled motors shall not be considered equal since they do not properly dissipate heat from the motor. Mating parts shall be machined and sealed with a Buna-N O-ring. All fasteners exposed to the process fluid shall be stainless steel. The motor shall be protected on the top side with a sealed cast iron cord entry plate. The motor shall be protected on the lower side with a single mechanical seal. The seal shall be a two-piece mechanical seal with silicon carbide faces. The upper and lower bearings shall be sized to properly withstand radial and thrust loads produced throughout the full operating range of the pump.

POWER CABLE:
The submersible pump shall be supplied with 35, 50, or 100 feet of a multi-conductor cord of type SOOW. These type SOOW power cords carry a voltage rating of 600 V, a temperature rating of 90°C, have oil-resistant insulation, are water- and weather-resistant, UL listed, and CSA approved. The power cord shall be sized for the rated full load amps of the pump for continuous duty in accordance with the NEC®. Standard Quick-connect cord shall offer quick cord replacement without the need to send the entire pump to an authorized repair facility. This shall also allow for pump maintenance without disturbing electrical boxes or control panels.

MOTOR:
The motor shall be oil-filled, Class F insulated, and rated for continuous duty. Since air-filled motors are not capable of dissipating heat efficiently, they shall not be considered equal. This motor design shall provide significantly reduced operating temperatures. Pumps requiring an auxiliary cooling means shall not be considered equal. The copper stator windings shall be insulated with moisture-resistant Class F insulation materials, rated for 155°C. The maximum continuous temperature of pumped liquids shall be 40°C. The winding operating temperature at rated horsepower and service factor shall be a maximum of 140°C @ 40°C ambient. Motor shall have thermal protector on 1-phase model 2LE012 to cut power to motor in thermal overheat conditions.

BEARINGS AND SHAFT:
The shaft shall be supported by two radial ball bearings. Both bearings shall be permanently lubricated by the oil that fills the motor housing. Pump designs requiring scheduled bearing maintenance shall not be considered equal. The motor shaft extension shall be made of 303 stainless steel. The shaft shall be designed to withstand the maximum torque and radial loads present during start-up and normal operation.

SEALS:
The pump shall have two shaft seals separated by an oil chamber. Pumps utilizing single seal technology shall not be considered equal. A leak detection probe shall be positioned in the oil chamber and shall allow for continuous monitoring for lower seal failure. The lower seal shall be a two-piece design that is easily serviceable. Shaft seals shall not require scheduled maintenance. The upper seal shall be a unitized design. The upper and lower seals shall be silicon carbide on silicon carbide. Both seals shall include stainless steel housings and HNBR or Viton elastomers.

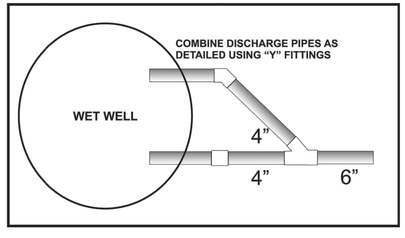
IMPELLER:
The impeller shall be ASTM class 25 cast iron, with optional silicon bronze material available. The open 2 vane impeller design provides an efficient path through the impeller for solids to pass without getting caught or snagged. The impeller shall be keyed and bolted onto the motor shaft.

QUICK REMOVAL SYSTEM:
The pumping unit(s) shall be equipped with quick removal system (QRS). The construction shall be such that the pump(s) will automatically connect to the discharge piping when lowered into place on the discharge connector. There shall be no need for personnel to enter the wet well to accomplish installation or removal of the pump(s). The pumping unit(s) shall be fitted with stainless steel lifting chain(s) of sufficient length and strength to permit the raising and lowering of the unit(s). The chain(s) shall be fastened at the top of the structure near the access opening. All parts of the QRS system including base elbow, sliding guide bracket, and guide support shall be manufactured from recyclable, application appropriate resins. The need for a protective coating shall not be required.
A sliding guide bracket shall be an integral part of the pumping unit and the pump casing shall have a machined connection with a bracket to connect with the discharge connection. Sealing of the pumping unit to the discharge connection shall be accomplished by a single linear downward motion of the pump with the entire weight of the pumping unit guided by a pawl, thereby wedging the pumping unit tightly against the discharge connector. No portion of the pump shall bear directly on the floor of the sump nor shall a rotary motion of the pump be required for sealing. All fasteners coming into contact with the pumpage shall be stainless steel.
Two corrosion resistant guide pipes shall be furnished and installed for each pump to permit raising and lowering of the pump. Guide pipes shall be 1.25" inch (33 mm) in diameter and shall be of adequate length to extend from the lower guide holder to the upper guide bar bracket(s) mounted on the access frame.

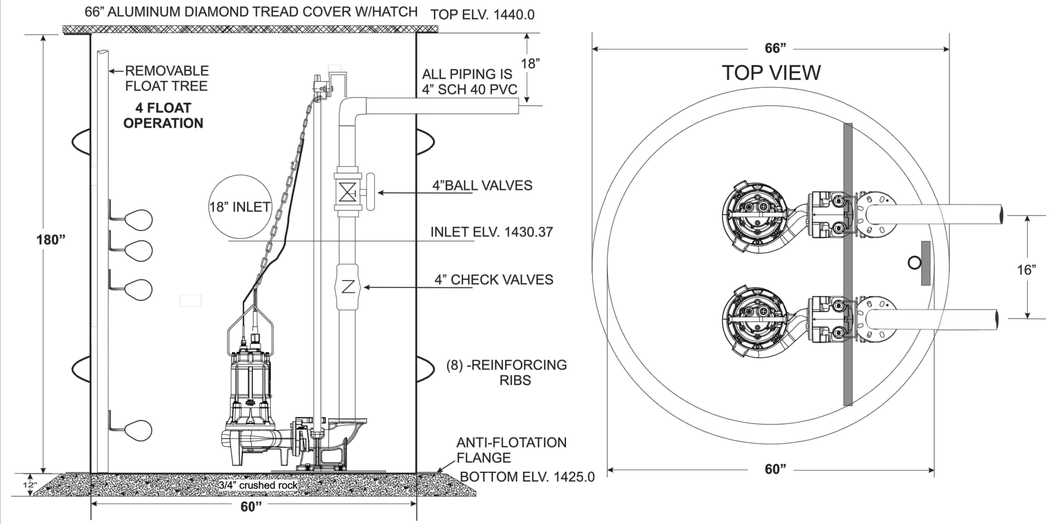
CONTROL PANEL:
The control panel shall have a NEMA 4X semi dead front enclosure suitable for wall mounting. The outer face of the door shall have only the following: 1 high water alarm light with silence switch, 1 buzzer. The inner workings of the control panel shall have no less than motor circuit protectors (overloads) that shall be adjustable, motor contractors, HOA selector switches, circuit breakers, alternating relay with load selector, dry contacts, numbered terminal switch, and shall be listed by U.L. 508. The control panel will have an alternating sequence of operation. An alarm will sound if there should be a failure of a pump in the lead position. Total connected amps will be 32 Amps on a 230 volt circuit.

FIBERGLASS WET WELL:
The fiberglass wet well with an anti-flotation flange shall have a minimum inside diameter of 60 inches and shall be 180 inches and offer 730 gallons below the lowest inlet. The fiberglass wet well shall be manufactured using a process that insures that the bottom of the basin will be fabricated at the same time as the sidewalls, eliminating the possibility of any joints or seams in the wet well in the area of greatest stress concentration. The laminate shall have a barcol hardness of at least 90% of the resin manufactures minimum specified hardness for cured resin on both the interior and exterior surfaces. The minimum wall thickness of the wet well shall not be less than 3/16". Stainless steel studs will be bonded into the bottom of the tank for attachment of the quick removal systems. The top rim flange will be no less than 3" wider than the I.D. of the wet well (66" O.D.). The wet well shall be provided with "uniseal" fittings that can be installed in the field to insure proper elevation of the inlet, vent, and electrical on the side of the wet well.

ALUMINUM DIAMOND TREAD FRAME AND COVER W/HATCH:
The lid will be a solid cover with a large 'frogmouth style' opening hatch. The cover will be a ¼" thickness or more with a diamond tread pattern. All hardware will be stainless steel 7/16" hex head bolts.



STORM WATER DUPLEX PUMP SYSTEM



PUMP MODEL:3LE05
5 HP 460V 3 PH FLA XX AMP
PERFORMANCE:
350 GPM AT 17.28 TDH

PSI pacific southwest industries
ENGINEERED- PUMPS/FLUID HANDLING & DISPOSAL SYSTEMS
DUPLEX
PACKAGED LIFT STATION
(800)-358-9095

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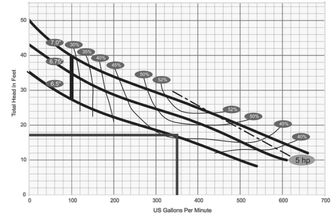
Liberty Pumps
Engineered Products

Performance Curve

3LE05-Series - 60 Hz



Stated efficiency values are hydraulic efficiency. Wire-to-Water (total) efficiency information is available upon request.

Pumps must operate within the proper range shown on the performance chart - between minimum flow of 100 gpm and min head requirements. It is the responsibility of the end user to ensure this requirement is met. Pumps operating outside the recommended range are prone to damage, excessive vibration, cavitation, poor effi ciency, and will exceed nameplate amperage.

Specifications are subject to change without notice.

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7000 Apple Tree Avenue - Bergen, NY 14416
Phone 800-543-2550 - Fax 585-494-1839 - www.LibertyPumps.com/LEP

PC-1

STORM LIFT STATION PROFILE & CALCULATIONS

EQUIVALENT PIPE RUN CALCULATION

6" SCH 40 PVC PIPE	35.0 FT
6" PVC SCH 40 90 ELBOW (0) X 16 FT	0.0 FT
6" PVC SCH 40 45 BEND (1) X 7.7 FT	7.7 FT
TOTAL EQUIVALENT LENGTH	127.7 FT
FRICTION LOSS PER 100 FT 6" PVC @ 350 GPM	0.79 FT PER 100 FT
FRICTION LOSS 6"	127.7/100 X 0.79 FT = 1.01 FT
4" PVC SCH 40 PIPE	15.0 FT
4" PVC SCH 40 90 ELBOW (1) X 10 FT	10.0 FT
4" CHECK VALVE (1) X 26 FT	26.0 FT
4" BALL VALVE (1) X 2.3 FT	2.3 FT
TOTAL EQUIVALENT LENGTH	48.3 FT
FRICTION LOSS PER 100 FT 4" PVC @ 350 GPM	5.74 FT PER 100 FT
FRICTION LOSS 4"	48.3/100X 5.74 FT = 2.77 FT
FRICTION LOSS 1.1 + 2.77	3.78 FT
STATIC HEAD	13.50 FT
TOTAL DEVELOPED HEAD	17.28 FT
PERFORMANCE 350 GPM @ 17.28 FT TDH THRU 6" PVC LINE	

STORM WATER PUMP SYSTEMS DETAILS

PSI pacific southwest industries
ENGINEERED- PUMPS/FLUID HANDLING & DISPOSAL SYSTEMS
30520 COPLASA ST. . LAKE ELSINORE, CA 92530 PH: 800 358-9095

No.	Date	Description

LIFT STATION DETAILS
DUKE RIDER 2
PERRIS CA

Date: 10/09/20 | Scale: NTS
Drawn by: OR | Sheet No. 1 OF 1
Checked by: SR

LSD-1

FOR REVIEW ONLY

G:\2017\17-0357\DRAWINGS\PLAN SHEETS\17-0357 OD- SHEETS.DWG 3/2/2021 8:25:56 AM

Underground Service Alert
Call: TOLL FREE 811
www.call811.com
TWO WORKING DAYS BEFORE YOU DIG

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 APPROVAL OR DURING CONSTRUCTION, THE PRIVATE ENGINEER SHALL BE RESPONSIBLE FOR DETERMINING AN ACCEPTABLE SOLUTION AND REVISING THE PLANS FOR APPROVAL BY THE CITY.

MARK	BY	DATE	REVISIONS	APPR.	DATE
	ENGINEER				COUNTY

CITY OF PERRIS
APPROVED BY:

CONTRACT CITY ENGINEER

DATE

SEAL – ENGINEER
REGISTERED PROFESSIONAL ENGINEER D.J. ARELLANO NO. 81988 CIVIL STATE OF CALIFORNIA

ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS
3788 McCRAY STREET
RIVERSIDE CA. 92506
PH. (951) 686-1070
FAX (951) 788-1256

PREPARED UNDER THE SUPERVISION OF: D.J. ARELLANO
DESIGNED BY: CV CHECKED BY: DJA
R.C.E. NO.: 81988
DATE

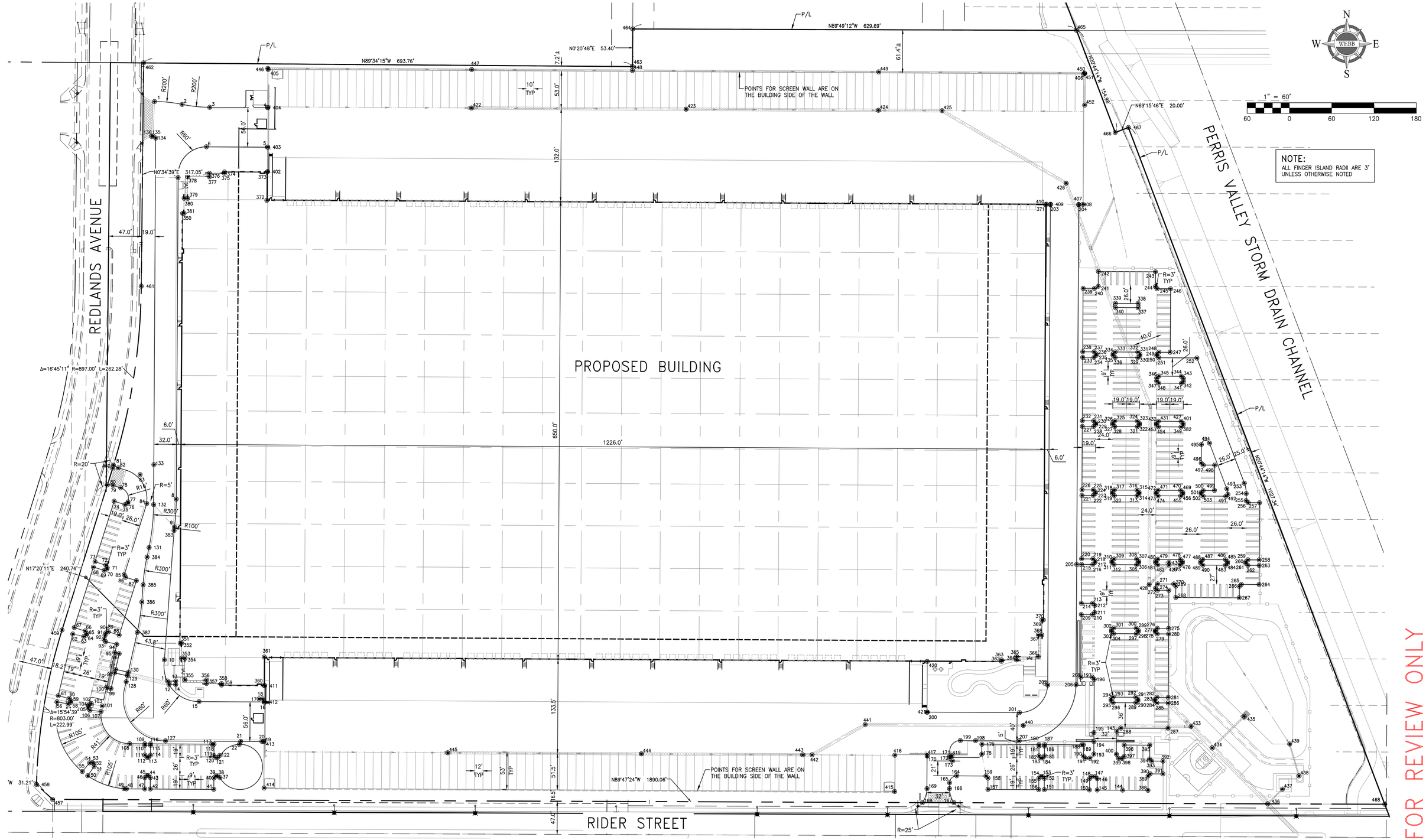
BENCHMARK:
NGS DESIGNATION 40Y
NGS PID: DX2103
ELEVATION = 1494.66 (NAVD88)
(NAVD88) – 2.58' = (NVGD29)
SEE ABOVE FOR BENCHMARK DESCRIPTION

SCALE:
H: AS SHOWN V: N/A

CITY OF PERRIS
DEVELOPMENT PLAN NO 19-00004
RIDER DISTRIBUTION CENTER II
PRECISE GRADING PLAN
LIFT STATION DESIGN

FOR: IDI LOGISTICS
W.O. 17-0357
CITY FILE NO. P8-1080

SHEET NO. 12
OF 14 SHEETS



NOTE:
ALL FINGER ISLAND RADII ARE 3' UNLESS OTHERWISE NOTED

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Underground Service Alert
Call: TOLL FREE
811
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MARK	BY	DATE	REVISIONS	APPR.	DATE
	ENGINEER				COUNTY

CITY OF PERRIS
APPROVED BY:

CONTRACT CITY ENGINEER

DATE

SEAL – ENGINEER
REGISTERED PROFESSIONAL ENGINEER
D.J. ARELLANO
NO. 81988
CIVIL
STATE OF CALIFORNIA

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FAX (951) 788-1256

PREPARED UNDER THE SUPERVISION OF:
D.J. ARELLANO

DESIGNED BY: CV CHECKED BY: DJA
R.C.E. NO.: 81988
DATE

BENCHMARK:
NGS DESIGNATION 40Y
NGS PID: DX2103
ELEVATION = 1494.66 (NAVD88)
(NAVD88) – 2.58' = (NVGD29)
SEE ABOVE FOR BENCHMARK DESCRIPTION

SCALE:
H: AS SHOWN V: N/A

CITY OF PERRIS

DEVELOPMENT PLAN NO 19-00004
RIDER DISTRIBUTION CENTER II
PRECISE GRADING PLAN
COORDINATE CONTROL PLAN

SHEET NO. 13 OF 14 SHEETS

FOR: IDI LOGISTICS
W.O. 17-0357
CITY FILE NO. P8-1080

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CURB FACE

Point #	Northing	Easting
1	2248091.85	6268097.11
2	2248087.75	6268136.30
3	2248083.65	6268175.48
4	2248083.19	6268257.62
5	2248027.19	6268257.31
6	2248027.68	6268170.81
7	2247983.90	6268130.56
8	2247527.50	6268127.97
9	2247487.62	6268125.39
10	2247299.23	6268111.13
11	2247269.17	6268115.62
12	2247264.16	6268117.59
13	2247269.10	6268127.20
14	2247264.10	6268127.17
15	2247239.92	6268160.28
16	2247239.39	6268252.66
17	2247243.81	6268245.45
18	2247243.78	6268250.45
19	2247183.40	6268251.84
20	2247183.41	6268249.45
21	2247183.58	6268219.43
22	2247179.27	6268217.40
37	2247132.09	6268190.17
38	2247134.46	6268186.33
39	2247134.47	6268184.33
40	2247131.49	6268181.31
41	2247115.49	6268181.22
42	2247116.00	6268091.23
43	2247132.00	6268091.32
44	2247135.02	6268088.33
45	2247135.03	6268086.33
46	2247132.05	6268083.32
47	2247116.05	6268083.23
48	2247116.19	6268057.38
49	2247116.51	6268053.73
50	2247134.77	6268002.47
51	2247147.98	6268011.59
52	2247152.09	6268010.91
53	2247153.43	6268009.15
54	2247153.00	6268005.00
55	2247140.70	6267994.69
56	2247239.47	6267958.75
57	2247236.67	6267974.55
58	2247239.01	6267978.01
59	2247241.05	6267978.47
60	2247244.66	6267976.23
61	2247248.31	6267960.65
62	2247335.94	6267981.17
63	2247332.29	6267996.75
64	2247334.53	6268000.35
65	2247336.72	6268000.86
66	2247340.26	6267998.85
67	2247345.18	6267983.29
68	2247430.99	6268010.42
69	2247426.17	6268025.68
70	2247428.12	6268029.44

CURB FACE

Point #	Northing	Easting
71	2247430.03	6268030.05
72	2247433.79	6268028.09
73	2247438.62	6268012.84
74	2247524.43	6268039.98
75	2247519.61	6268055.23
76	2247521.56	6268059.00
77	2247523.48	6268059.60
78	2247543.58	6268049.12
79	2247546.93	6268038.41
80	2247547.72	6268030.26
81	2247575.62	6268038.96
82	2247571.84	6268045.86
83	2247562.17	6268076.77
84	2247521.22	6268086.16
85	2247420.28	6268054.23
86	2247416.52	6268056.19
87	2247411.69	6268071.45
88	2247334.46	6268047.02
89	2247339.29	6268031.77
90	2247337.33	6268028.00
91	2247333.80	6268026.88
92	2247328.60	6268025.67
93	2247325.00	6268027.90
94	2247321.35	6268043.48
95	2247309.67	6268040.75
96	2247308.18	6268047.08
97	2247285.79	6268041.84
98	2247280.92	6268040.70
99	2247258.53	6268035.46
100	2247260.01	6268029.12
101	2247233.72	6268022.97
102	2247237.37	6268007.39
103	2247235.13	6268003.78
104	2247234.85	6268003.72
105	2247231.18	6268002.98
106	2247227.69	6268005.59
107	2247225.87	6268021.41
108	2247180.17	6268061.91
109	2247180.05	6268083.59
110	2247178.05	6268083.58
111	2247164.05	6268083.50
112	2247161.03	6268086.48
113	2247161.02	6268088.48
114	2247164.00	6268091.50
115	2247178.00	6268091.58
116	2247180.00	6268091.59
117	2247179.51	6268178.59
118	2247179.49	6268181.59
119	2247163.48	6268181.52
120	2247160.47	6268184.50
121	2247160.46	6268186.50
122	2247163.45	6268189.52
127	2247184.19	6268112.78
128	2247268.19	6268057.02
129	2247276.66	6268058.92
130	2247281.54	6268060.02

CURB FACE

Point #	Northing	Easting
131	2247458.86	6268089.51
132	2247519.70	6268095.93
133	2247576.40	6268096.25
134	2248039.99	6268098.88
135	2248042.93	6268095.20
136	2248042.35	6268093.05
143	2247198.10	6269462.35
144	2247114.34	6269470.67
145	2247114.54	6269434.67
146	2247130.54	6269434.76
147	2247133.56	6269431.77
148	2247133.59	6269426.75
149	2247130.60	6269423.74
150	2247114.60	6269423.65
151	2247114.97	6269359.65
152	2247130.97	6269359.74
153	2247133.98	6269356.76
154	2247133.99	6269354.76
155	2247131.01	6269351.74
156	2247115.01	6269351.65
157	2247115.42	6269279.65
158	2247131.42	6269279.74
159	2247134.44	6269276.76
164	2247134.68	6269235.24
165	2247124.73	6269225.19
166	2247116.46	6269225.08
167	2247096.50	6269231.32
168	2247096.57	6269186.76
169	2247116.49	6269193.12
170	2247162.80	6269193.38
171	2247162.85	6269225.40
172	2247159.73	6269225.39
173	2247155.71	6269229.36
178	2247165.47	6269270.93
179	2247179.47	6269271.01
180	2247179.01	6269352.01
181	2247177.01	6269352.00
182	2247163.01	6269351.92
183	2247160.00	6269354.90
184	2247159.99	6269356.90
185	2247162.97	6269359.92
186	2247176.97	6269360.00
187	2247178.97	6269360.01
188	2247178.66	6269413.01
189	2247178.65	6269415.01
190	2247162.65	6269414.92
191	2247159.64	6269417.90
192	2247159.61	6269424.17
193	2247165.57	6269429.92
194	2247183.18	6269430.02
195	2247196.10	6269430.09
196	2247271.60	6269430.52
197	2247274.60	6269427.84
198	2247184.53	6269262.04
199	2247184.76	6269240.52
200	2247225.03	6269193.75

CURB FACE

Point #	Northing	Easting
201	2247224.28	6269324.48
202	2247263.47	6269364.47
203	2247945.38	6269368.36
204	2247945.15	6269408.36
205	2247434.74	6269405.45
206	2247263.83	6269404.48
207	2247184.28	6269324.02
208	2247274.71	6269411.54
209	2247363.70	6269412.05
210	2247363.61	6269428.05
211	2247366.60	6269431.06
212	2247376.61	6269431.12
213	2247379.61	6269428.14
214	2247379.71	6269412.14
215	2247434.70	6269412.45
216	2247434.61	6269428.47
217	2247437.57	6269431.47
218	2247439.59	6269431.48
219	2247442.59	6269428.50
220	2247442.69	6269412.50
221	2247532.70	6269413.01
222	2247532.61	6269429.03
223	2247535.56	6269432.03
224	2247537.59	6269432.04
225	2247540.59	6269429.06
226	2247540.68	6269413.06
227	2247630.70	6269413.57
228	2247630.61	6269429.59
229	2247633.56	6269432.59
230	2247635.59	6269432.60
231	2247638.59	6269429.62
232	2247638.68	6269413.62
233	2247728.70	6269414.13
234	2247728.61	6269430.15
235	2247731.56	6269433.15
236	2247733.59	6269433.16
237	2247736.59	6269430.17
238	2247736.68	6269414.17
239	2247826.70	6269414.69
240	2247826.61	6269430.70
241	2247829.57	6269436.20
242	2247850.57	6269436.32
243	2247850.11	6269517.32
244	2247829.10	6269517.20
245	2247826.10	6269519.69
246	2247825.99	6269538.68
247	2247735.99	6269538.17
248	2247736.08	6269522.17
249	2247733.12	6269519.15
250	2247731.08	6269519.14
251	2247728.08	6269522.13
252	2247727.78	6269576.08
253	2247550.04	6269643.37
254	2247535.29	6269646.03
255	2247525.37	6269645.97
256	2247522.36	6269648.96

CURB FACE

Point #	Northing	Easting
257	2247522.26	6269664.96
258	2247441.27	6269664.49
259	2247441.36	6269648.49
260	2247438.39	6269645.48
261	2247436.36	6269645.47
262	2247433.36	6269648.45
263	2247433.27	6269664.45
264	2247406.27	6269664.29
265	2247406.41	6269639.29
266	2247403.44	6269636.28
267	2247387.43	6269636.19
268	2247387.94	6269546.19
269	2247403.96	6269546.28
270	2247406.96	6269543.30
271	2247407.09	6269520.30
272	2247400.77	6269517.28
273	2247398.09	6269520.24
274	2247398.00	6269536.24
275	2247344.00	6269535.94
276	2247344.09	6269519.94
277	2247341.12	6269516.92
278	2247339.09	6269516.91
279	2247336.09	6269519.89
280	2247336.00	6269535.89
281	2247246.00	6269535.38
282	2247246.09	6269519.38
283	2247243.12	6269516.36
284	2247241.09	6269516.35
285	2247238.09	6269519.33
286	2247238.00	6269535.33
287	2247202.37	6269535.13
288	2247202.38	6269468.13
289	2247238.26	6269489.35
290	2247240.95	6269492.33
291	2247243.24	6269492.36
292	2247246.26	6269489.38
293	2247246.44	6269457.38
294	2247243.70	6269454.37
295	2247241.44	6269454.35
296	2247238.44	6269457.33
297	2247336.26	6269489.91
298	2247338.94	6269492.89
299	2247341.24	6269492.92
300	2247344.26	6269489.94
301	2247344.44	6269457.94
302	2247341.70	6269454.93
303	2247339.44	6269454.91
304	2247336.44	6269457.89
305	2247434.26	6269490.47
306	2247436.94	6269493.45
307	2247439.24	6269493.48
308	2247442.26	6269490.50
309	2247442.44	6269458.50
310	2247439.70	6269455.49
311	2247437.44	6269455.47
312	2247434.44	6269458.45

CURB FACE

Point #	Northing	Easting
313	2247532.26	6269491.03
314	2247534.94	6269494.01
315	2247537.24	6269494.04
316	2247540.26	6269491.05
317	2247540.44	6269459.06
318	2247537.70	6269456.05
319	2247535.44	6269456.03
320	2247532.44	6269459.01
321	2247630.25	6269491.59
322	2247632.94	6269494.57
323	2247635.24	6269494.60
324	2247638.25	6269491.61
325	2247638.44	6269459.61
326	2247635.70	6269456.61
327	2247633.44	6269456.59
328	2247630.44	6269459.57
329	2247728.25	6269492.14
330	2247730.94	6269495.13
331	2247733.24	6269495.16
332	2247736.25	6269492.17
333	2247736.44	6269460.17
334	2247733.69	6269457.17
335	2247731.44	6269457.14
336	2247728.44	6269460.13
337	2247799.25	6269492.66
338	2247805.25	6269492.57
339	2247805.43	6269460.57
340	2247799.43	6269460.53
341	2247691.89	6269553.94
342	2247694.57	6269556.92
343	2247698.87	6269556.96
344	2247701.89	6269553.98
345	2247702.07	6269521.98
346	2247699.33	6269518.97
347	2247695.07	6269518.94
348	2247692.07	6269521.92
349	2247629.90	6269553.58
382	2247632.59	6269556.57
383	2247482.81	6268124.91
384	2247444.99	6268086.59
385	2247405.73	6268081.02
386	2247381.43	6268079.19
387	2247338.12	6268072.74
388	2247114.13	6269506.67
389	2247134.50	6269506.78
390	2247137.48	6269509.80
391	2247137.38	6269527.80
392	2247155.38	6269527.90
393	2247155.47	6269511.90
394	2247158.49	6269508.92
395	2247178.06	6269509.03
396	2247178.22	6269473.03
397	2247162.27	6269472.94
398	2247159.29	6269469.92
399	2247159.32	6269464.92
400	2247165.39	6269461.92

CURB FACE

Point #	Northing	Easting
401	2247634.88	6269556.60
453	2247633.08	6269518.58
454	2247630.08	6269521.57
455	2247531.90	6269553.03
456	2247534.59	6269556.01
457	2247101.19	6267952.62
458	2247122.38	6267929.72
459	2247341.69	6267965.95
460	2247571.49	6268037.68
461	2247829.65	6268078.38
462	2248146.68	6268081.58
463	2248141.49	6268775.32
464	2248194.89	6268775.64
465	2248192.91	6269405.32
466	2248047.97	6269460.20
467	2248055.05	6269478.90
468	2247094.26	6269842.66
469	2247536.89	6269556.04
470	2247539.90	6269553.05
471	2247540.09	6269521.05
472	2247537.34	6269518.05
473	2247535.09	6269518.03
474	2247532.09	6269521.01
475	2247433.90	6269552.48
476	2247436.59	6269555.47
477	2247438.89	6269555.50
478	2247441.90	6269552.51
479	2247442.09	6269520.51
480	2247439.35	6269517.51
481	2247437.09	6269517.48
482	2247434.09	6269520.47
483	2247433.54	6269616.48
484	2247436.22	6269619.47
485	2247438.52	6269619.49
486	2247441.54	6269616.51
487	2247441.72	6269584.51
488	2247438.98	6269581.51
489	2247436.72	6269581.48
490	2247433.72	6269584.47
491	2247531.54	6269617.04
492	2247534.22	6269620.02
493	2247542.07	6269618.59
494	2247606.93	6269594.04
495	2247604.84	6269582.42
496	2247578.74	6269582.28
497	2247575.72	6269585.28
498	2247575.63	6269601.26
499	2247539.90	6269601.05
500	2247539.72	6269585.04
501	2247537.02	6269582.05
502	2247534.72	6269582.02
503	2247531.72	6269585.01

PROPERTY BOUNDARY

Point #	Northing	Easting
457	2247101.19	6267952.62
458	2247122.38	6267929.72
459	2247341.69	6267965.95
460	2247571.49	6268037.68
461	2247829.65	6268078.38
462	2248146.68	6268081.58
463	2248141.49	6268775.32
464	2248194.89	6268775.64
465	2248192.91	6269405.32
466	2248047.97	6269460.20
467	2248055.05	6269478.90
468	2247094.26	6269842.66

DRAINAGE STRUCTURES

Point #	Northing	Easting
430	2247437.66	6269536.47
422	2248082.73	6268546.83
423	2248080.99	6268851.37
424	2248079.44	6269124.23
425	2248078.92	6269214.54
426	2247975.92	6269390.63
427	2247637.90	6269553.61
428	2247406.30	6269508.41
429	2247434.00	6269536.45
431	2247638.08	6269521.61
432	2247635.34	6269518.61
433	2247204.79	6269567.78
434	2247174.31	6269597.89
435	2247219.12	6269643.25
436	2247094.87	6269676.36
437	2247115.80	6269697.54
438	2247134.55	6269720.90
439	2247179.76	6269707.78
440	2247206.14	6269329.77
441	2247207.41	6269105.46
442	2247164.46	6269030.07
443	2247164.53	6269016.82
444	2247165.84	6268787.94
445	2247167.40	6268513.08
446	2248138.87	6268257.94
447	2248137.23	6268547.14
448	2248135.93	6268775.27
449	2248133.94	6269124.54
450	2248132.27	6269416.51
451	2248131.68	6269417.09
452	2248086.77	6269416.84

SCREEN WALL

Point #	Northing	Easting
402	2247992.37	6268257.61
403	2248027.19	6268257.81
404	2248083.19	6268258.12
405	2248137.37	6268258.43
406	2248130.78	6269415.42
407	2247945.78	6269414.37
408	2247945.82	6269408.37
409	2247946.04	6269368.37
410	2247946.08	6269362.37
411	2247262.38	6268253.46
412	2247239.39	6268253.33
413	2247183.39	6268252.34
414	2247117.39	6268252.63
415	2247112.29	6269147.26
416	2247163.80	6269147.55
417	2247163.47	6269193.39
419	2247162.84	6269228.40
420	2247297.03	6269193.50
421	2247224.92	6269193.09

BUILDING

Point #	Northing	Easting
350	2247933.23	6268137.11
351	2247322.90	6268133.63
352	2247322.89	6268135.63
353	2247301.56	6268135.51
354	2247301.53	6268140.51
355	2247270.86	6268140.33
356	2247270.69	6268171.00
357	2247265.69	6268170.97
358	2247265.57	6268192.30
359	2247263.57	6268192.29
360	2247263.22	6268252.63
361	2247303.22	6268252.85
362	2247297.26	6269298.84
363	2247299.26	6269298.85
364	2247299.14	6269320.18
365	2247304.14	6269320.21
366	2247303.97	6269350.88
367	2247334.63	6269351.05
368	2247334.60	6269356.05
369	2247355.94	6269356.17
370	2247355.93	6269358.17
371	2247945.25	6269361.53
372	2247951.54	6268256.55
373	2247991.54	6268256.78
374	2247991.89	6268196.44
375	2247989.89	6268196.43
376	2247990.01	6268175.10
377	2247985.01	6268175.07
378	2247985.18	6268144.40
379	2247954.52	6268144.23
380	2247954.55	6268139.23
381	2247933.21	6268139.11

FOR REVIEW ONLY

G:\2017\17-0357\DRAWINGS\PLAN SHEETS\17-0357 DC SHEETS.DWG 3/2/2021 12:14:25 PM

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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 APPROVAL OR DURING CONSTRUCTION, THE PRIVATE ENGINEER SHALL BE RESPONSIBLE FOR DETERMINING AN ACCEPTABLE SOLUTION AND REVISING THE PLANS FOR APPROVAL BY THE CITY.

MARK	BY	DATE	REVISIONS	APPR.	DATE
	ENGINEER			COUNTY	

CITY OF PERRIS
APPROVED BY:

CONTRACT CITY ENGINEER

DATE

SEAL – ENGINEER

REGISTERED PROFESSIONAL ENGINEER D.J. ARELLANO NO. 81988 CIVIL STATE OF CALIFORNIA

ALBERT A. WEBB ASSOCIATES

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PREPARED UNDER THE SUPERVISION OF:

DESIGNED BY: CV CHECKED BY: DJA

R.C.E. NO.: 81988

D.J. ARELLANO — DATE

BENCHMARK:
NGS DESIGNATION 40Y
NGS PID: DX2103
ELEVATION = 1494.66 (NAVD88)
(NAVD88) – 2.58' = (NVGD29)

SEE ABOVE FOR BENCHMARK DESCRIPTION

SCALE:
H: AS SHOWN V: N/A

FOR: IDI LOGISTICS

W.O. 17-0357

CITY FILE NO. P8-1080

CITY OF PERRIS

DEVELOPMENT PLAN NO 19-00004
RIDER DISTRIBUTION CENTER II
PRECISE GRADING PLAN
COORDINATE CONTROL PLAN

SHEET NO. 14

OF 14 SHEETS

Appendix 3: Soils Information

Geotechnical Study and Other Infiltration Testing Data

GEOTECHNICAL INVESTIGATION
RIDER 2 – PROPOSED
COMMERCIAL / INDUSTRIAL BUILDING

NEC Redlands Avenue at Rider Street
Perris, California
for
IDI Gazeley

SoCalGeo
SOUTHERN
CALIFORNIA
GEOTECHNICAL
A California Corporation

November 22, 2017

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

IDI Gazeley
8 Corporate Park, Suite 300-34
Irvine, California 92606

Attention: Mr. Stephen Hollis

Project No.: **17G199-1**

Subject: **Geotechnical Investigation**
Rider 2 – Proposed Commercial/Industrial Building
NEC Redlands Avenue at Rider Street
Perris, California

Dear Mr. Hollis:

In accordance with your request, we have conducted a geotechnical investigation at the subject site. We are pleased to present this report summarizing the conclusions and recommendations developed from our investigation.

We sincerely appreciate the opportunity to be of service on this project. We look forward to providing additional consulting services during the course of the project. If we may be of further assistance in any manner, please contact our office.

Respectfully Submitted,

SOUTHERN CALIFORNIA GEOTECHNICAL, INC.

Gregory K. Mitchell, GE 2364
Principal Engineer

REGISTERED PROFESSIONAL ENGINEER
GREGORY K. MITCHELL
No. 2364
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ROBERT TRAZO
No. 2655
GEOTECHNICAL
STATE OF CALIFORNIA

Distribution: (1) Addressee

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Plate 2: Boring Location Plan
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D Grading Guide Specifications
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1.0 EXECUTIVE SUMMARY

Presented below is a brief summary of the conclusions and recommendations of this investigation. Since this summary is not all inclusive, it should be read in complete context with the entire report.

Geotechnical Design Considerations

- The subject site is located within an area of moderate liquefaction susceptibility.
- Our site-specific liquefaction evaluation included two borings extended to depths of 50± feet. Liquefiable soils were encountered within one 5-foot stratum at one of these boring locations.
- The potential liquefaction induced settlement is approximately 1.6± inches.
- Based on the estimated magnitude of the differential settlements, the proposed structure may be supported on shallow foundations. Additional design considerations related to the potentially liquefiable soils are presented within the text of this report.

Site Preparation

- Initial site preparation should include stripping of the existing crop stubble as well as any existing native grass and weed growth.
- The near-surface soils generally consist of low to medium expansive native alluvium which possesses a moderate potential for consolidation/collapse. Therefore, remedial grading is recommended to remove the upper portion of the near-surface native alluvium and replace these soils as compacted structural fill. The recommended remedial grading will reduce potential differential settlements by replacing collapsible/compressible soils as compacted structural fill.
- The proposed building area should be overexcavated to a depth of at least 4 feet below existing grade and to a depth of 4 feet below proposed building pad subgrade elevation. Within the foundation influence zones, the overexcavation should extend to a depth of at least 3 feet below proposed foundation bearing grade. The overexcavation should extend horizontally at least 5 feet beyond the building and foundation perimeters.
- After the overexcavation has been completed, the resulting subgrade soils should be evaluated by the geotechnical engineer to identify any additional soils that should be removed. Resulting subgrade should then be scarified to a depth of 12 inches and moisture conditioned to 2 to 4 percent above optimum. The previously excavated soils may then be replaced as compacted structural fill. All structural fill soils should be compacted to at least 90 percent of the ASTM D-1557 maximum dry density.
- The new pavement and flatwork subgrade soils are recommended to be scarified to a depth of 12± inches, thoroughly moisture conditioned and recompacted to at least 90 percent of the ASTM D-1557 maximum dry density.

Building Foundations

- Conventional shallow foundations, supported in newly placed compacted fill.
- 2,500 lbs/ft^2 maximum allowable soil bearing pressure.
- Reinforcement consisting of at least six (6) No. 5 rebars (3 top and 3 bottom) in strip footings, due to the presence of medium expansive soils and minor amounts of liquefaction-induced settlement. Additional reinforcement may be necessary for structural considerations.

Building Floor Slab

- Conventional Slab-on-Grade, 6 inches thick.
- Modulus of Subgrade Reaction: k = 100 psi/in.
- Minimum slab reinforcement: Reinforcement of the floor slab should consist of No. 3 bars at 18-inches on center in both directions due to the presence of medium expansive soils and minor amounts of liquefaction-induced settlement. The actual floor slab reinforcement should be determined by the structural engineer, based upon the imposed loading.

Pavements

ASPHALT PAVEMENTS (R=25)					
Materials	**Thickness (inches)**				
	Auto Parking and Auto Drive Lanes (TI = 4.0 to 5.0)	Truck Traffic			
		TI = 6.0	TI = 7.0	TI = 8.0	TI = 9.0
Asphalt Concrete	3	4	4½	5	6
Aggregate Base	7	8	11	12	14
Compacted Subgrade	12	12	12	12	12

PORTLAND CEMENT CONCRETE PAVEMENTS (R=30)				
Materials	**Thickness (inches)**			
	Autos and Light Truck Traffic (TI = 6.0)	Truck Traffic		
		TI = 7.0	TI = 8.0	TI = 9.0
PCC	5	5½	7	8
Compacted Subgrade (95% minimum compaction)	12	12	12	12

2.0 SCOPE OF SERVICES

The scope of services performed for this project was in accordance with our Proposal No. 17P381, dated October 10, 2017. The scope of services included a visual site reconnaissance, subsurface exploration, field and laboratory testing, and geotechnical engineering analysis to provide criteria for preparing the design of the building foundations, building floor slab, and parking lot pavements along with site preparation recommendations and construction considerations for the proposed development. Based on the location of this site, this investigation also included a site-specific liquefaction evaluation. The evaluation of the environmental aspects of this site was beyond the scope of services for this geotechnical investigation.

3.0 SITE AND PROJECT DESCRIPTION

3.1 Site Conditions

The site is located at the northeast corner of Redlands Avenue and Rider Street in Perris, California. The site is bounded to the north by an agricultural field, to the west by Redlands Avenue, to the south by Rider Street and to the east by a flood control channel. The general location of the site is illustrated on the Site Location Map, enclosed as Plate 1 in Appendix A of this report.

The subject site consists of a trapezoidal-shaped parcel that is approximately 37.93± acres in size. The site was most recently utilized as an agricultural field. Current groundcover consists of crop stubble and some small native shrubs.

Detailed topographic information was obtained from a conceptual site plan prepared by Albert A. Webb Associates (Webb), the project civil engineer. This plan indicates that the overall site topography generally slopes downward to the east-southeast at an estimated gradient of less than 1 percent. The maximum site elevation is 1445± feet mean sea level (msl) located in the northwestern corner of the subject site, and the minimum site elevation is 1441± feet msl in the southeastern corner of the subject site.

3.2 Proposed Development

The site plan provided to our office by the client indicates that the new development be developed with one (1) new commercial/industrial building. The building will be located in the center of the site and will be 822,520± ft² in size. The building will be constructed in a cross-dock configuration with loading docks along both the north and south sides of the building. It is expected that the building will be surrounded by asphaltic concrete pavements for parking and drive lanes and Portland cement concrete pavements in the loading dock areas. Landscape planters and concrete flatwork are expected to be included throughout the site. A detention basin will be located in the southeastern corner of the site.

Detailed structural information has not been provided. It is assumed that the building will be a single-story structure of tilt-up concrete construction, typically supported on conventional shallow foundations with a concrete slab-on-grade floor. Based on the assumed construction, maximum column and wall loads are expected to be on the order of 100 kips and 4 to 7 kips per linear foot, respectively.

Based on the conceptual site plan prepared by Webb, fills of 2 to 4± feet will be necessary to achieve the proposed pad grade. No significant amounts of below grade construction, such as basements or crawl spaces, are expected to be included in the proposed development.

4.0 SUBSURFACE EXPLORATION

4.1 Scope of Exploration/Sampling Methods

The subsurface exploration conducted for this project consisted of twelve (12) borings, advanced to depths of 5 to 50± feet below currently existing site grades. All of the borings were logged during drilling by a member of our staff.

All borings were advanced with hollow-stem augers, by a conventional truck-mounted drilling rig. Representative bulk and in-situ soil samples were taken during drilling. Relatively undisturbed in-situ samples were taken with a split barrel "California Sampler" containing a series of one inch long, 2.416± inch diameter brass rings. This sampling method is described in ASTM Test Method D-3550. In-situ samples were also taken using a 1.4± inch inside diameter split spoon sampler, in general accordance with ASTM D-1586. Both of these samplers are driven into the ground with successive blows of a 140-pound weight falling 30 inches. The blow counts obtained during driving are recorded for further analysis. Bulk samples were collected in plastic bags to retain their original moisture content. The relatively undisturbed ring samples were placed in molded plastic sleeves that were then sealed and transported to our laboratory.

The approximate locations of the borings are indicated on the Boring Location Plan, included as Plate 2 in Appendix A of this report. The Boring Logs, which illustrate the conditions encountered at the boring locations, as well as the results of some of the laboratory testing, are included in Appendix B.

4.2 Geotechnical Conditions

Alluvium

Native alluvial soils were encountered at the ground surface at all twelve (12) of the boring locations. The alluvium varies widely in composition and strength, generally consisting of stiff to very stiff silty clays and clayey silts as well as loose to dense silty sands and fine sandy silts. These interbedded layers of sands, silts and clays, generally extend to at least the maximum depth explored of 50± feet.

The alluvial soils generally become more dense and more stiff with depth. Boring Nos. B-1 and B-8, both of which were drilled to depths of 50± feet, encountered medium dense to very dense clayey sands and silty sands as well as very stiff to hard silty clays and clayey silts below depths of 15 to 20± feet.

Most of the alluvial soils possess elevated moisture contents. However, the elevated moisture contents appear to be primarily due to the minerology of the soils, as many of these soils possessed damp to moist apparent moisture contents.

Groundwater

Free water was encountered during drilling of Boring Nos. B-1 and B-8 at a depth of 33± feet. Based on the water level measurements and the moisture contents of the recovered soil samples, the static groundwater table is considered to have existed at a depth of 33± feet below existing site grades at the time of the subsurface investigation.

As part of our research, we reviewed available groundwater data in order to determine the historic high groundwater level for the site. The primary reference used to determine the groundwater depths in this area is the California Department of Water Resources website, http://www.water.ca.gov/waterdatalibrary/. Several monitoring wells are located within a mile radius of the subject site with high groundwater level readings ranging from 26 to 108± feet from the ground surface. Therefore, the high groundwater depth of 26± feet (February 2012) reported in a monitoring well located 0.75 miles east of the subject site is considered to be conservative with respect to the recent site conditions.

5.0 LABORATORY TESTING

The soil samples recovered from the subsurface exploration were returned to our laboratory for further testing to determine selected physical and engineering properties of the soils. The tests are briefly discussed below. It should be noted that the test results are specific to the actual samples tested, and variations could be expected at other locations and depths.

Classification

All recovered soil samples were classified using the Unified Soil Classification System (USCS), in accordance with ASTM D-2488. Field identifications were then supplemented with additional visual classifications and/or by laboratory testing. The USCS classifications are shown on the Boring Logs and are periodically referenced throughout this report.

In-situ Density and Moisture Content

The density has been determined for selected relatively undisturbed ring samples. These densities were determined in general accordance with the method presented in ASTM D-2937. The results are recorded as dry unit weight in pounds per cubic foot. The moisture contents are determined in accordance with ASTM D-2216, and are expressed as a percentage of the dry weight. These test results are presented on the Boring Logs.

Consolidation

Selected soil samples have been tested to determine their consolidation potential, in accordance with ASTM D-2435. The testing apparatus is designed to accept either natural or remolded samples in a one-inch high ring, approximately 2.416 inches in diameter. Each sample is then loaded incrementally in a geometric progression and the resulting deflection is recorded at selected time intervals. Porous stones are in contact with the top and bottom of the sample to permit the addition or release of pore water. The samples are typically inundated with water at an intermediate load to determine their potential for collapse or heave. The results of the consolidation testing are plotted on Plates C-1 through C-8 in Appendix C of this report.

Maximum Dry Density and Optimum Moisture Content

A representative bulk sample has been tested for its maximum dry density and optimum moisture content. The results have been obtained using the Modified Proctor procedure, per ASTM D-1557, and are presented on Plate C-9 in Appendix C of this report. These tests are generally used to compare the in-situ densities of undisturbed field samples, and for later compaction testing. Additional testing of other soil types or soil mixes may be necessary at a later date.

Expansion Index

The expansion potential of the on-site soils was determined in general accordance with ASTM D-4829. The testing apparatus is designed to accept a 4-inch diameter, 1-in high, remolded sample. The sample is initially remolded to 50± 1 percent saturation and then loaded with a surcharge equivalent to 144 pounds per square foot. The sample is then inundated with water, and allowed

to swell against the surcharge. The resultant swell or consolidation is recorded after a 24-hour period. The results of the EI testing are as follows:

Sample Identification	Expansion Index	Expansive Potential
B-3 @ 0 to 5 feet	68	Medium
B-6 @ 0 to 5 feet	34	Low

Soluble Sulfates

Representative samples of the near-surface soils have been submitted to a subcontracted analytical laboratory for determination of soluble sulfate content. Soluble sulfates are naturally present in soils, and if the concentration is high enough, can result in degradation of concrete which comes into contact with these soils. The results of the soluble sulfate testing are presented below, and are discussed further in a subsequent section of this report.

Sample Identification	Soluble Sulfates (%)	Sulfate Classification
B-3 @ 0 to 5 feet	0.006	Negligible
B-6 @ 0 to 5 feet	0.006	Negligible

Grain Size Analysis

Limited grain size analyses have been performed on several selected samples, in accordance with ASTM D-1140. These samples were washed over a #200 sieve to determine the percentage of fine-grained material in each sample, which is defined as the material which passes the #200 sieve. The weight of the portion of the sample retained on each screen is recorded and the percentage finer or coarser of the total weight is calculated. The results of these laboratory tests are shown on the attached boring logs.

Atterberg Limits

Atterberg Limits testing (ASTM D-4318) was performed on selected samples of various soil strata encountered at the site. This test is used to determine the Liquid Limit and Plastic Limit of the soil. The Plasticity Index is the difference between the two limits. Plasticity Index is a general indicator of the expansive potential of the soil, with higher numbers indicating higher expansive potential. Soils with a PI greater than 25 are considered to have a high plasticity, and a high expansion potential. Soils with a PI greater than 18 are not considered to be susceptible to liquefaction when the moisture content of the soil is less than 80 percent of the liquid limit. The results of the Atterberg Limits testing are presented on the boring logs.

6.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of our review, field exploration, laboratory testing and geotechnical analysis, the proposed development is considered feasible from a geotechnical standpoint. The recommendations contained in this report should be taken into the design, construction, and grading considerations.

The recommendations are contingent upon all grading and foundation construction activities being monitored by the geotechnical engineer of record. The recommendations are provided with the assumption that an adequate program of client consultation, construction monitoring, and testing will be performed during the final design and construction phases to verify compliance with these recommendations. Maintaining Southern California Geotechnical, Inc., (SCG) as the geotechnical consultant from the beginning to the end of the project will provide continuity of services. The geotechnical engineering firm providing testing and observation services shall assume the responsibility of Geotechnical Engineer of Record.

The Grading Guide Specifications, included as Appendix D, should be considered part of this report, and should be incorporated into the project specifications. The contractor and/or owner of the development should bring to the attention of the geotechnical engineer any conditions that differ from those stated in this report, or which may be detrimental for the development.

6.1 Seismic Design Considerations

The subject site is located in an area which is subject to strong ground motions due to earthquakes. The performance of a site specific seismic hazards analysis was beyond the scope of this investigation. However, numerous faults capable of producing significant ground motions are located near the subject site. Due to economic considerations, it is not generally considered reasonable to design a structure that is not susceptible to earthquake damage. Therefore, significant damage to structures may be unavoidable during large earthquakes. The proposed structures should, however, be designed to resist structural collapse and thereby provide reasonable protection from serious injury, catastrophic property damage and loss of life.

Faulting and Seismicity

Research of available maps indicates that the subject site is not located within an Alquist-Priolo Earthquake Fault Zone. Furthermore, SCG did not identify any evidence of faulting during the geotechnical investigation. Therefore, the possibility of significant fault rupture on the site is considered to be low.

Seismic Design Parameters

Based on standards in place at the time of this report, the proposed development is expected to be designed in accordance with the requirements of the 2016 edition of the California Building Code (CBC). The CBC provides procedures for earthquake resistant structural design that include considerations for on-site soil conditions, occupancy, and the configuration of the structure

including the structural system and height. The seismic design parameters presented below are based on the soil profile and the proximity of known faults with respect to the subject site.

The 2016 CBC Seismic Design Parameters have been generated using U.S. Seismic Design Maps, a web-based software application developed by the United States Geological Survey. This software application, available at the USGS web site, calculates seismic design parameters in accordance with the 2016 CBC, utilizing a database of deterministic site accelerations at 0.01 degree intervals. The table below is a compilation of the data provided by the USGS application. A copy of the output generated from this program is included in Appendix E of this report. A copy of the Design Response Spectrum, as generated by the USGS application is also included in Appendix E. Based on this output, the following parameters may be utilized for the subject site:

2016 CBC SEISMIC DESIGN PARAMETERS

Parameter		Value
Mapped Spectral Acceleration at 0.2 sec Period	S_S	1.500
Mapped Spectral Acceleration at 1.0 sec Period	S_1	0.600
Site Class	---	D
Site Modified Spectral Acceleration at 0.2 sec Period	S_{MS}	1.500
Site Modified Spectral Acceleration at 1.0 sec Period	S_{M1}	0.900
Design Spectral Acceleration at 0.2 sec Period	S_{DS}	1.000
Design Spectral Acceleration at 1.0 sec Period	S_{D1}	0.600

*The 2016 CBC requires that Site Class F be assigned to any profile containing soils vulnerable to potential failure or collapse under seismic loading, such as liquefiable soils. For Site Class F, the site coefficients are to be determined in accordance with Section 11.4.7 of ASCE 7-10. However, Section 20.3.1 of ASCE 7-10 indicates that for sites with structures having a fundamental period of vibration equal to or less than 0.5 seconds, the site coefficient factors (F_a and F_v) may be determined using the standard procedures. The seismic design parameters tabulated above were calculated using the site coefficient factors for Site Class D, assuming that the fundamental period of the structure is less than 0.5 seconds. However, the results of the liquefaction evaluation indicate that the subject site is underlain by potentially liquefiable soils. Therefore, if the proposed structure has a fundamental period greater than 0.5 seconds, a site specific seismic hazards analysis would be required and additional subsurface exploration would be necessary.

Ground Motion Parameters

For the liquefaction evaluation, we utilized a site acceleration consistent with maximum considered earthquake ground motions, as required by the 2016 CBC. The peak ground acceleration (PGA) was determined in accordance with Section 11.8.3 of ASCE 7-10. The parameter PGA_M is the maximum considered earthquake geometric mean (MCE_G) PGA, multiplied by the appropriate site coefficient from Table 11.8-1 of ASCE 7-10. The web-based software application U.S. Seismic Design Maps (described in the previous section) was used to determine PGA_M, which is 0.5g. A portion of the program output is included as Plate E-2 of this report. An associated earthquake magnitude was obtained from the USGS Unified Hazard Tool, Interactive Deaggregation application available on the USGS website. The deaggregated modal magnitude is 7.09, based on the peak ground acceleration and soil classification D.

Liquefaction

The Riverside County GIS website indicates that the subject site is located within a zone of high liquefaction susceptibility. Based on this mapping, the scope of this investigation included additional subsurface exploration, laboratory testing, and engineering analysis in order to determine the site-specific liquefaction potential.

Liquefaction is the loss of strength in generally cohesionless, saturated soils when the pore-water pressure induced in the soil by a seismic event becomes equal to or exceeds the overburden pressure. The primary factors which influence the potential for liquefaction include groundwater table elevation, soil type and plasticity characteristics, relative density of the soil, initial confining pressure, and intensity and duration of ground shaking. The depth within which the occurrence of liquefaction may impact surface improvements is generally identified as the upper 50 feet below the existing ground surface. Liquefaction potential is greater in saturated, loose, poorly graded fine sands with a mean (d_{50}) grain size in the range of 0.075 to 0.2 mm (Seed and Idriss, 1971). Non-sensitive clayey (cohesive) soils which possess a plasticity index of at least 18 (Bray and Sancio, 2006) are generally not considered to be susceptible to liquefaction, nor are those soils which are above the historic static groundwater table.

The liquefaction analysis was conducted in accordance with the requirements of Special Publication 117A (CDMG, 2008), and currently accepted practice (SCEC, 1997). The liquefaction potential of the subject site was evaluated using the empirical method developed by Boulanger and Idriss (Boulanger and Idriss, 2008). This method predicts the earthquake-induced liquefaction potential of the site based on a given design earthquake magnitude and peak ground acceleration at the subject site. This procedure essentially compares the cyclic resistance ratio (CRR) [the cyclic stress ratio required to induce liquefaction for a cohesionless soil stratum at a given depth] with the earthquake-induced cyclic stress ratio (CSR) at that depth from a specified design earthquake (defined by a peak ground surface acceleration and an associated earthquake moment magnitude). CRR is determined as a function of the corrected SPT N-value $(N_1)_{60\text{-}cs}$, adjusted for fines content. The factor of safety against liquefaction is defined as CRR/CSR. Based on Special Publication 117A, a factor of safety of at least 1.3 is required in order to demonstrate that a given soil stratum is non-liquefiable. Additionally, in accordance with Special Publication 117A, clayey soils which do not meet the criteria for liquefiable soils defined by Bray and Sancio (2006), loose soils with a plasticity index (PI) less than 12 and moisture content greater than 85% of the liquid limit, are considered to be insusceptible to liquefaction. Non-sensitive soils with a PI greater than 18 are also considered non-liquefiable.

As part of the liquefaction evaluation, Boring Nos. B-1 and B-8 were extended to depths of 50± feet. The liquefaction analysis procedure is tabulated on the spreadsheet forms included in Appendix F of this report, using the data obtained from these borings. The liquefaction potential of the site was analyzed utilizing a PGA_M of 0.50g for a magnitude 7.09 seismic event.

The historic high groundwater depth was obtained from the California Department of Water Resources website, http://www.water.ca.gov/waterdatalibrary/, which indicates a historic high groundwater depth in the vicinity of the subject site of approximately 26 feet. Free water was encountered during the drilling of Boring No. B-1 and B-8 at a depth of 33 feet. Therefore, the historic high groundwater table was conservatively assumed to exist at a depth of 26± feet.

If liquefiable soils are identified, the potential settlements that could occur as a result of liquefaction are determined using the equation for volumetric strain due to post-cyclic reconsolidation (Yoshimine et. al, 2006). This procedure uses an empirical relationship between the induced cyclic shear strain and the corrected N-value to determine the expected volumetric strain of saturated sands subjected to earthquake shaking. This analysis is also documented on the spreadsheets included in Appendix F.

Conclusions and Recommendations

Potentially liquefiable soils were encountered one of the 50-foot deep boring locations. None of the soil strata encountered at Boring No. B-1 are subject to liquefaction during the design seismic event. One (1) stratum of soils encountered at Boring No. B-8 was identified to be potentially liquefiable. This stratum exists at a depth of 32 to 37± feet. The remaining soil strata encountered below the historic high groundwater table either possess adequate factors of safety, or are considered non-liquefiable due to their cohesive characteristics and the results of the Atterberg limits testing with respect to the requirements of Special Publication 117A. Settlement analyses were conducted for the potentially liquefiable strata. The results of the settlement analyses indicate the following total deformations:

- Boring No. B-1: 0 inches
- Boring No. B-8: 1.59 inches

Based on the results of the settlement analyses, differential settlements are expected to be on the order of 1.5± inches or less. The estimated differential settlement can be assumed to occur across a distance of 100 feet, indicating a maximum angular distortion of approximately 0.001 inches per inch.

Based on our understanding of the proposed development, it is considered feasible to support the proposed structure on shallow foundations. Such a foundation system can be designed to resist the effects of the anticipated differential settlements, to the extent that the structures would not catastrophically fail. Designing the proposed structure to remain completely undamaged during a seismic event that could occur once every 2475 years (the code-specified return period used in the liquefaction analysis) is not considered to be economically feasible. Based on this understanding, the use of shallow foundation systems is considered to be the most economical means of supporting the proposed structure.

In order to support the proposed structure on shallow foundations (such as spread footings) the structural engineer should verify that the structure would not catastrophically fail due to the predicted dynamic differential settlements. Any utility connections to the structure should be designed to withstand the estimated differential settlements. It should also be noted that minor to moderate repairs, including re-leveling, restoration of utility connections, repair of damaged drywall and stucco, etc., would likely be required after occurrence of the liquefaction-induced settlements.

The use of a shallow foundation system, as described in this report, is typical for buildings of this type, where they are underlain the extent of liquefiable soils encountered at this site. The post-liquefaction damage that could occur within the building proposed for this site will also be typical of similar buildings in the vicinity of this project. However, if the owner determines that this level

of potential damage is not acceptable, other geotechnical and structural options are available, including the use of ground improvement or mat foundations.

6.2 Geotechnical Design Considerations

General

The subsurface conditions encountered at the boring locations generally consist of variable strength native alluvium. The results of laboratory testing indicate that the near surface alluvium (within the upper 5± feet) possesses a potential for moderate collapse when exposed to moisture infiltration as well as excessive consolidation when exposed to load increases in the range of those that will be exerted by the new foundations. By visual examination, the majority of the near surface samples also possess calcareous nodules and veining throughout, and appear to be weakly cemented. Cemented soils with low relative densities are generally prone to settlement due to collapse when inundated with water. Based on these conditions, remedial grading will be necessary within the proposed building area to provide a subgrade suitable for support of the new foundations and floor slab. The remedial grading will also serve to create more uniform support characteristics across any cut/fill transitions.

Settlement

The recommended remedial grading will remove the compressible/collapsible near-surface native alluvium, and replace these materials as compacted structural fill. The native soils that will remain in place below the recommended depth of overexcavation will not be subject to significant load increases from the foundations of the new structure. Provided that the recommended remedial grading is completed, the post-construction static settlements of the proposed structure are expected to be within tolerable limits.

Expansion

Laboratory testing performed on representative samples of the near surface soils indicates that these materials possess a low to medium expansion potential (EI = 34 and 68). Based on the presence of expansive soils at this site, care should be given to proper moisture conditioning of all building pad subgrade soils to a moisture content of 2 to 4 percent above the ASTM D-1557 optimum during site grading. In addition to adequately moisture conditioning the subgrade soils and fill soils during grading, special care must be taken to maintaining moisture content of these soils at 2 to 4 percent above the optimum moisture content. This will require the contractor to frequently moisture condition these soils throughout the grading process, unless grading occurs during a period of relatively wet weather.

Shrinkage/Subsidence

Removal and recompaction of the near-surface native fill soils is estimated to result in an average shrinkage of 5 to 10 percent. It should be noted that the potential shrinkage estimate is based on dry density testing performed on small-diameter samples taken at the boring locations. If a more accurate and precise shrinkage estimate is desired, SCG can perform a shrinkage study involving several excavated test-pits where in-place densities are determined using in-situ testing

methods instead of laboratory density testing on small-diameter samples. Please contact SCG for details and a cost estimate regarding a shrinkage study, if desired.

Minor ground subsidence is expected to occur in the soils below the zone of removal, due to settlement and machinery working. The subsidence is estimated to be 0.10 feet.

These estimates are based on previous experience and the subsurface conditions encountered at the boring locations. The actual amount of subsidence is expected to be variable and will be dependent on the type of machinery used, repetitions of use, and dynamic effects, all of which are difficult to assess precisely.

Grading and Foundation Plan Review

It is recommended that we be provided with copies of the grading and foundation plans, when they become available, for review with regard to the conclusions, recommendations, and assumptions contained within this report.

6.3 Site Grading Recommendations

The grading recommendations presented below are based on the subsurface conditions encountered at the boring locations and our understanding of the proposed development. We recommend that all grading activities be completed in accordance with the Grading Guide Specifications included as Appendix D of this report, unless superseded by site-specific recommendations presented below.

Site Stripping

Initial site preparation should include stripping of any surficial vegetation and organic soils. Based on conditions encountered at the time of the subsurface exploration, minor stripping of the crop stubble and native grass and weed growth is expected to be necessary. These materials should be disposed of offsite. The actual extent of site stripping should be determined in the field by the geotechnical engineer, based on the organic content and stability of the encountered materials.

Treatment of Existing Soils: Building Pad

Remedial grading should be performed within the proposed building pad area in order to remove the existing potentially compressible/collapsible native alluvium. It is recommended that the overexcavation extend to a depth of at least 4 feet below existing grade and to a depth of at least 4 feet below proposed grade, whichever is greater. Within the influence zones of the new foundations, the overexcavation should extend to a depth of at least 3 feet below proposed foundation bearing grade.

The overexcavation areas should extend at least 5 feet beyond the building perimeter, and to an extent equal to the depth of fill below the new foundations. If the proposed structure incorporates any exterior columns (such as for a canopy or overhang) the area of overexcavation should also encompass these areas.

Following completion of the overexcavation, the subgrade soils within the overexcavation areas should be evaluated by the geotechnical engineer to verify their suitability to serve as the structural fill subgrade, as well as to support the foundation loads of the new structure. This evaluation should include proofrolling and probing to identify any soft, loose or otherwise unstable soils that must be removed. Some localized areas of deeper excavation may be required if additional fill materials or loose, porous, overly moist, or low density native soils are encountered at the base of the overexcavation.

Based on conditions encountered at the exploratory boring locations, moist to very moist soils may be encountered at or near the base of the recommended overexcavation. Scarification and air drying of these materials may be sufficient to obtain a stable subgrade. However, if highly unstable soils are identified, and if the construction schedule does not allow for delays associated with drying, mechanical stabilization, usually consisting of coarse crushed stone and/or geotextile, may be necessary. Concrete and asphalt debris that is crushed to a 3 to 6-inch particle size may also be feasible to use as a subgrade stabilization material. If unstable subgrade conditions are encountered, the geotechnical engineer should be contacted for supplementary recommendations.

After a suitable overexcavation subgrade has been achieved, the exposed soils should be scarified to a depth of at least 12 inches and moisture conditioned or air dried to achieve a moisture content of 0 to 4 percent above the optimum moisture content. The subgrade soils should then be recompacted to at least 90 percent of the ASTM D-1557 maximum dry density. The building pad area may then be raised to grade, using the previous excavated on-site soils.

After a suitable overexcavation subgrade has been achieved, the exposed soils should be scarified to a depth of at least 12 inches and moisture conditioned or air dried to achieve a moisture content of 2 to 4 percent above optimum moisture content. The subgrade soils should then be recompacted to at least 90 percent of the ASTM D-1557 maximum dry density. The building pad areas may then be raised to grade with previously excavated soils or imported, structural fill. All structural fill soils present within the proposed building area should be compacted to at least 90 percent of the ASTM D-1557 maximum dry density.

Treatment of Existing Soils: Retaining Walls and Site Walls

The existing soils within the areas of proposed retaining and non-retaining site walls should be overexcavated to a depth of at least 3 feet below foundation bearing grade and replaced as compacted structural fill. Any undocumented fill soils should also be removed from the retaining wall areas. In both cases, the overexcavation subgrade soils should be evaluated by the geotechnical engineer prior to scarifying, moisture conditioning and recompacting the upper 12 inches of exposed subgrade soils. The previously excavated soils may then be replaced as compacted structural fill.

Treatment of Existing Soils: Parking Areas

Based on economic considerations, overexcavation of the surficial alluvial soils in the new parking areas is not considered warranted, with the exception of areas where lower strength or unstable soils are identified by the geotechnical engineer during grading.

Subgrade preparation in the new parking areas should initially consist of removal of all soils disturbed during stripping operations. The geotechnical engineer should then evaluate the subgrade to identify any areas of additional unsuitable soils. The subgrade soils should then be scarified to a depth of 12± inches, moisture conditioned to 2 to 4 percent above optimum, and recompacted to at least 90 percent of the ASTM D-1557 maximum dry density. Based on the presence of variable strength alluvial soils throughout the site, it is expected that some isolated areas of additional overexcavation may be required to remove zones of lower strength, unsuitable soils.

The grading recommendations presented above for the proposed parking and drive areas assume that the owner and/or developer can tolerate minor amounts of settlement within the proposed parking areas. The grading recommendations presented above do not completely mitigate the extent of existing collapsible and compressible alluvium in the parking areas. As such, settlement and associated pavement distress could occur. Typically, repair of such distressed areas involves significantly lower costs than completely mitigating these soils at the time of construction. If the owner cannot tolerate the risk of such settlements, the parking and drive areas should be overexcavated to a depth of 2 feet below proposed pavement subgrade elevation, with the resulting soils replaced as compacted structural fill.

Treatment of Existing Soils: Flatwork Areas

Subgrade preparation in the new flatwork areas should initially consist of removal of all soils disturbed during stripping and demolition operations. The geotechnical engineer should then evaluate the subgrade to identify any areas of additional unsuitable soils. The subgrade soils should then be scarified to a depth of 12± inches, moisture conditioned to 2 to 4 percent above optimum, and recompacted to at least 90 percent of the ASTM D-1557 maximum dry density. Based on the presence of variable strength alluvial soils throughout the site, it is expected that some isolated areas of additional overexcavation may be required to remove zones of lower strength, unsuitable soils.

Fill Placement

- Fill soils should be placed in thin (6± inches), near-horizontal lifts, moisture conditioned to 2 to 4 percent above the optimum moisture content, and compacted.
- On-site soils may be used for fill provided they are cleaned of any debris to the satisfaction of the geotechnical engineer. All grading and fill placement activities should be completed in accordance with the requirements of the CBC and the grading code of the city of Perris.
- All fill soils should be compacted to at least 90 percent of the ASTM D-1557 maximum dry density. Fill soils should be well mixed.
- Compaction tests should be performed periodically by the geotechnical engineer as random verification of compaction and moisture content. These tests are intended to aid the contractor. Since the tests are taken at discrete locations and depths, they may not be indicative of the entire fill and therefore should not relieve the contractor of his responsibility to meet the job specifications.

Imported Structural Fill

All imported structural fill should consist of low expansive (EI < 50), well graded soils possessing at least 10 percent fines (that portion of the sample passing the No. 200 sieve). Additional

specifications for structural fill are presented in the Grading Guide Specifications, included as Appendix D.

Utility Trench Backfill

In general, all utility trench backfill soils should be compacted to at least 90 percent of the ASTM D-1557 maximum dry density. As an alternative, a clean sand (minimum Sand Equivalent of 30) may be placed within trenches and compacted in place (jetting or flooding is not recommended). Compacted trench backfill should conform to the requirements of the local grading code, and more restrictive requirements may be indicated by the city of Perris. All utility trench backfills should be witnessed by the geotechnical engineer. The trench backfill soils should be compaction tested where possible; probed and visually evaluated elsewhere.

Utility trenches which parallel a footing, and extending below a 1h:1v plane projected from the outside edge of the footing should be backfilled with structural fill soils, compacted to at least 90 percent of the ASTM D-1557 standard. Pea gravel backfill should not be used for these trenches.

6.4 Construction Considerations

Excavation Considerations

The near surface soils generally consist of low to moderate strength clayey silts and sandy clays. These materials may be subject to minor caving within shallow excavations. Where caving occurs within shallow excavations, flattened excavation slopes may be sufficient to provide excavation stability. On a preliminary basis, the inclination of temporary slopes should not exceed 1.5h:1v. Deeper excavations may require some form of external stabilization such as shoring or bracing. Maintaining adequate moisture content within the near-surface soils will improve excavation stability. All excavation activities on this site should be conducted in accordance with Cal-OSHA regulations.

Expansive Soils

Based on the results of laboratory testing, some of the near surface soils have been determined to be medium expansive. Therefore, care should be given to proper moisture conditioning of all building pad subgrade soils to a moisture content of 2 to 4 percent above the Modified Proctor optimum during site grading. All imported fill soils should have very low expansive characteristics. In addition to adequately moisture conditioning the subgrade soils and fill soils during grading, special care must be taken to maintain moisture content of these soils at 2 to 4 percent above the Modified Proctor optimum. This will require the contractor to frequently moisture condition these soils throughout the grading process, unless grading occurs during a period of relatively wet weather.

Due to the presence of expansive soils at this site, provisions should be made to limit the potential for surface water to penetrate the soils immediately adjacent to the structure. These provisions should include directing surface runoff into rain gutters and area drains, reducing the extent of landscaped areas around the structure, and sloping the ground surface away from the building. Where possible, it is recommended that landscaped planters not be located immediately adjacent

to the building. If landscaped planters around the buildings are necessary, it is recommended that drought tolerant plants or a drip irrigation system be utilized, to minimize the potential for deep moisture penetration around the structures. Presented below is a list of additional soil moisture control recommendations that should be considered by the owner, developer, and civil engineer:

- Ponding and areas of low flow gradients in unpaved walkways, grass and planter areas should be avoided. In general, minimum drainage gradients of 2 percent should be maintained in unpaved areas.
- Bare soil within five feet of proposed structures should be sloped at a minimum five percent gradient away from the structure (about three inches of fall in five feet), or the same area could be paved with a minimum surface gradient of one percent. Pavement is preferable.
- Decorative gravel ground cover tends to provide a reservoir for surface water and may hide areas of ponding or poor drainage. Decorative gravel is, therefore, not recommended and should not be utilized for landscaping unless equipped with a subsurface drainage system designed by a licensed landscape architect.
- Positive drainage devices, such as graded swales, paved ditches, and catch basins should be installed at appropriate locations within the area of proposed development.
- Concrete walks and flatwork should not obstruct the free flow of surface water to the appropriate drainage devices.
- Area drains should be recessed below grade to allow free flow of water into the drain. Concrete or brick flatwork joints should be sealed with mortar or flexible mastic.
- Gutter and downspout systems should be installed to capture all discharge from roof areas. Downspouts should discharge directly into a pipe or paved surface system to be conveyed offsite.
- Enclosed planters adjoining, or in close proximity to proposed structures, should be sealed at the bottom and provided with subsurface collection systems and outlet pipes.
- Depressed planters should be raised with soil to promote runoff (minimum drainage gradient two percent or five percent, see above), and/or equipped with area drains to eliminate ponding.
- Drainage outfall locations should be selected to avoid erosion of slopes and/or properly armored to prevent erosion of graded surfaces. No drainage should be directed over or towards adjoining slopes.
- All drainage devices should be maintained on a regular basis, including frequent observations during the rainy season to keep the drains free of leaves, soil and other debris.
- Landscape irrigation should conform to the recommendations of the landscape architect and should be performed judiciously to preclude either soaking or excessive drying of the foundation soils. This should entail regular watering during the drier portions of the year and little or no irrigation during the rainy season. Automatic sprinkler systems should, therefore, be switched to manual operation during the rainy season. Good irrigation practice typically requires frequent application of limited quantities of water that are sufficient to sustain plant growth, but do not excessively wet the soils. Ponding and/or run-off of irrigation water are indications of excessive watering.

Other provisions, as determined by the landscape architect or civil engineer, may also be appropriate.

Groundwater

The static groundwater table is considered to exist at a depth of 33± feet below existing grade. Therefore, groundwater is not expected to impact the grading or foundation construction activities.

6.5 Foundation Design and Construction

Based on the preceding grading recommendations, it is assumed that the new building pad will be underlain by structural fill soils extending to depths of at least 3 feet below foundation bearing grade. Based on this subsurface profile, and based on the design considerations presented in Section 6.1 of this report, the proposed structure may be supported on conventional shallow foundations.

Foundation Design Parameters

New square and rectangular footings may be designed as follows:

- Maximum, net allowable soil bearing pressure: 2,500 lbs/ft^2.
- Minimum wall/column footing width: 14 inches/24 inches.
- Minimum longitudinal steel reinforcement within strip footings: Six (6) No. 5 rebars (3 top and 3 bottom), due to the presence of expansive soils and minor amounts of liquefaction-induced settlement.
- Minimum foundation embedment: 12 inches into suitable structural fill soils, and at least 18 inches below adjacent exterior grade. Interior column footings may be placed immediately beneath the floor slab.
- It is recommended that the perimeter building foundations be continuous across all exterior doorways. Any flatwork adjacent to the exterior doors should be doweled into the perimeter foundations in a manner determined by the structural engineer.

The allowable bearing pressures presented above may be increased by 1/3 when considering short duration wind or seismic loads. The minimum steel reinforcement recommended above is based on standard geotechnical practice. Additional rigidity may be necessary for structural considerations, or to resist the effects of the liquefaction-induced differential settlements, as discussed in Section 6.1. The actual design of the foundations should be determined by the structural engineer.

Foundation Construction

The foundation subgrade soils should be evaluated at the time of overexcavation, as discussed in Section 6.3 of this report. It is further recommended that the foundation subgrade soils be evaluated by the geotechnical engineer immediately prior to steel or concrete placement. Soils suitable for direct foundation support should consist of newly placed structural fill compacted at least 90 percent of the ASTM D-1557 maximum dry density. Any unsuitable materials should be removed to a depth of suitable bearing compacted structural fill, with the resulting excavations backfilled with compacted fill soils. As an alternative, lean concrete slurry (500 to 1,500 psi) may be used to backfill such isolated overexcavations.

The foundation subgrade soils should also be properly moisture conditioned to 2 to 4 percent above the Modified Proctor optimum, to a depth of at least 12 inches below bearing grade. Since

it is typically not feasible to increase the moisture content of the floor slab and foundation subgrade soils once rough grading has been completed, care should be taken to maintain the moisture content of the building pad subgrade soils throughout the construction process.

Estimated Foundation Settlements

Post-construction total and differential static settlements of shallow foundations designed and constructed in accordance with the previously presented recommendations are estimated to be less than 1.0 and 0.5 inches, respectively, under static conditions. Differential movements are expected to occur over a 30-foot span, thereby resulting in an angular distortion of less than 0.002 inches per inch. These settlements are in addition to the liquefaction-induced settlements previously discussed in Section 6.1 of this report.

Lateral Load Resistance

Lateral load resistance will be developed by a combination of friction acting at the base of foundations and slabs and the passive earth pressure developed by footings below grade. The following friction and passive pressure may be used to resist lateral forces:

- Passive Earth Pressure: 275 lbs/ft^3
- Friction Coefficient: 0.28

These are allowable values, and include a factor of safety. When combining friction and passive resistance, the passive pressure component should be reduced by one-third. These values assume that footings will be poured directly against compacted structural fill soils. The maximum allowable passive pressure is 2,500 lbs/ft^2.

6.6 Floor Slab Design and Construction

Subgrades which will support new floor slabs should be prepared in accordance with the recommendations contained in the ***Site Grading Recommendations*** section of this report. Based on the anticipated grading which will occur at this site, and based on the design considerations presented in Section 6.1 of this report, the floor of the proposed structure may be constructed as a conventional slab-on-grade supported on newly placed structural fill, extending to a depth of at least 4 feet below finished pad grade. Based on geotechnical considerations, the floor slab may be designed as follows:

- Minimum slab thickness: 6 inches.

- Modulus of Subgrade Reaction: 100 lbs/in^3.

- Minimum slab reinforcement: No. 3 bars at 18-inches on-center, in both directions, due to presence of medium expansive soils and potentially liquefiable soils, at this site. The actual floor slab reinforcement should be determined by the structural engineer, based upon the imposed loading, and the potential liquefaction induced settlements.

- Slab underlayment: If moisture sensitive floor coverings will be used then minimum slab underlayment should consist of a moisture vapor barrier constructed below the entire slab

area where such moisture sensitive floor coverings are expected. The moisture vapor barrier should meet or exceed the Class A rating as defined by ASTM E 1745-97 and have a permeance rating less than 0.01 perms as described in ASTM E 96-95 and ASTM E 154-88. A polyolefin material such as Stego® Wrap Vapor Barrier or equivalent will meet these specifications. The moisture vapor barrier should be properly constructed in accordance with all applicable manufacturer specifications. Given that a rock free subgrade is anticipated and that a capillary break is not required, sand below the barrier is not required. The need for sand and/or the amount of sand above the moisture vapor barrier should be specified by the structural engineer or concrete contractor. The selection of sand above the barrier is not a geotechnical engineering issue and hence outside our purview. Where moisture sensitive floor coverings are not anticipated, the vapor barrier may be eliminated.

- Moisture condition the floor slab subgrade soils to 2 to 4 percent above the Modified Proctor optimum moisture content, to a depth of 12 inches. The moisture content of the floor slab subgrade soils should be verified by the geotechnical engineer within 24 hours prior to concrete placement.

- Proper concrete curing techniques should be utilized to reduce the potential for slab curling or the formation of excessive shrinkage cracks.

The actual design of the floor slab should be completed by the structural engineer to verify adequate thickness and reinforcement.

6.7 Exterior Flatwork Design and Construction

Subgrades which will support new exterior slabs-on-grade for sidewalks, patios, and other concrete flatwork, should be prepared in accordance with the recommendations contained in the ***Grading Recommendations*** section of this report. Based on geotechnical considerations, exterior slabs on grade may be designed as follows:

- Minimum slab thickness: 4½ inches.

- Minimum slab reinforcement: No. 3 bars at 18 inches on center, in both directions.

- The flatwork at building entry areas should be structurally connected to the perimeter foundation that is recommended to span across the door opening. This recommendation is designed to reduce the potential for differential movement at this joint.

- Moisture condition the slab subgrade soils to at least 2 to 4 percent of optimum moisture content, to a depth of at least 12 inches. Adequate moisture conditioning should be verified by the geotechnical engineer 24 hours prior to concrete placement.

- Proper concrete curing techniques should be utilized to reduce the potential for slab curling or the formation of excessive shrinkage cracks.

- Control joints should be provided at a maximum spacing of 8 feet on center in two directions for slabs and at 6 feet on center for sidewalks. Control joints are intended to direct cracking. Minor cracking of exterior concrete slabs on grade should be expected.

Expansion or felt joints should be used at the interface of exterior slabs on grade and any fixed structures to permit relative movement.

6.8 Retaining Wall Design and Construction

Although not indicated on the site plan, some small (less than 6 feet in height) retaining walls may be required to facilitate the new site grades. The parameters recommended for use in the design of these walls are presented below.

Retaining Wall Design Parameters

Based on the soil conditions encountered at the boring locations, the following parameters may be used in the design of new retaining walls for this site. The following parameters assume that only the on-site soils will be utilized for retaining wall backfill. The near surface soils generally consist of clayey silts and sandy clays. Based on their composition, the on-site soils have been assigned a friction angle of 28 degrees. It is recommended that the medium expansive soils be excluded from use as retaining wall backfill, where possible.

If desired, SCG could provide design parameters for an alternative select backfill material behind the retaining walls. The use of select backfill material could result in lower lateral earth pressures. In order to use the design parameters for the imported select fill, this material must be placed within the entire active failure wedge. This wedge is defined as extending from the heel of the retaining wall upwards at an angle of approximately 60° from horizontal. If select backfill material behind the retaining wall is desired, SCG should be contacted for supplementary recommendations.

RETAINING WALL DESIGN PARAMETERS

Design Parameter		**Soil Type**
		On-site Clayey Sands and Sandy Clays
Internal Friction Angle (ϕ)		28°
Unit Weight		115 lbs/ft^3
Equivalent Fluid Pressure:	Active Condition (level backfill)	42 lbs/ft^3
	Active Condition (2h:1v backfill)	73 lbs/ft^3
	At-Rest Condition (level backfill)	61 lbs/ft^3

The walls should be designed using a soil-footing coefficient of friction of 0.28 and an equivalent passive pressure of 275 lbs/ft^3. The structural engineer should incorporate appropriate factors of safety in the design of the retaining walls.

The active earth pressure may be used for the design of retaining walls that do not directly support structures or support soils that in turn support structures and which will be allowed to deflect. The at-rest earth pressure should be used for walls that will not be allowed to deflect such as those which will support foundation bearing soils, or which will support foundation loads directly.

Where the soils on the toe side of the retaining wall are not covered by a "hard" surface such as a structure or pavement, the upper 1 foot of soil should be neglected when calculating passive resistance due to the potential for the material to become disturbed or degraded during the life of the structure.

Seismic Lateral Earth Pressures

In accordance with the 2016 CBC, any retaining walls more than 6 feet in height must be designed for seismic lateral earth pressures. If walls 6 feet or more are required for this site, the geotechnical engineer should be contacted for supplementary seismic lateral earth pressure recommendations.

Retaining Wall Foundation Design

The retaining wall foundations should be supported within newly placed compacted structural fill, extending to a depth of at least 3 feet below proposed foundation bearing grade. Foundations to support new retaining walls should be designed in accordance with the general Foundation Design Parameters presented in a previous section of this report.

Backfill Material

On-site soils may be used to backfill the retaining walls, provided that they are low expansive (EI < 50). All backfill material placed within 3 feet of the back wall face should have a particle size no greater than 3 inches. The retaining wall backfill materials should be well graded.

It is recommended that a minimum 1 foot thick layer of free-draining granular material (less than 5 percent passing the No. 200 sieve) be placed against the face of the retaining walls. This material should extend from the top of the retaining wall footing to within 1 foot of the ground surface on the back side of the retaining wall. This material should be approved by the geotechnical engineer. In lieu of the 1 foot thick layer of free-draining material, a properly installed prefabricated drainage composite such as the MiraDRAIN 6000XL (or approved equivalent), which is specifically designed for use behind retaining walls, may be used. If the layer of free-draining material is not covered by an impermeable surface, such as a structure or pavement, a 12-inch thick layer of a low permeability soil should be placed over the backfill to reduce surface water migration to the underlying soils. The layer of free draining granular material should be separated from the backfill soils by a suitable geotextile, approved by the geotechnical engineer.

All retaining wall backfill should be placed and compacted under engineering controlled conditions in the necessary layer thicknesses to ensure an in-place density between 90 and 93 percent of the maximum dry density as determined by the Modified Proctor test (ASTM D1557). Care should be taken to avoid over-compaction of the soils behind the retaining walls, and the use of heavy compaction equipment should be avoided.

Subsurface Drainage

As previously indicated, the retaining wall design parameters are based upon drained backfill conditions. Consequently, some form of permanent drainage system will be necessary in conjunction with the appropriate backfill material. Subsurface drainage may consist of either:

- A weep hole drainage system typically consisting of a series of 4-inch diameter holes in the wall situated slightly above the ground surface elevation on the exposed side of the wall and at an approximate 8-foot on-center spacing. The weep holes should include a 2 cubic foot pocket of open graded gravel, surrounded by an approved geotextile fabric, at each weep hole location.

- A 4-inch diameter perforated pipe surrounded by 2 cubic feet of gravel per linear foot of drain placed behind the wall, above the retaining wall footing. The gravel layer should be wrapped in a suitable geotextile fabric to reduce the potential for migration of fines. The footing drain should be extended to daylight or tied into a storm drainage system.

6.9 Pavement Design Parameters

Site preparation in the pavement area should be completed as previously recommended in the ***Site Grading Recommendations*** section of this report. The subsequent pavement recommendations assume proper drainage and construction monitoring, and are based on either PCA or CALTRANS design parameters for a twenty (20) year design period. However, these designs also assume a routine pavement maintenance program to obtain the anticipated 20-year pavement service life.

Pavement Subgrades

It is anticipated that the new pavements will be primarily supported on a layer of compacted structural fill, consisting of scarified, thoroughly moisture conditioned and recompacted existing soils. The near surface soils generally consist of clayey silts and silty clays. These soils are generally considered to possess poor to fair pavement support characteristics with an estimated R-values of 25 to 35. The subsequent pavement design is therefore based upon an assumed R-value of 25. Any fill material imported to the site should have support characteristics equal to or greater than that of the on-site soils and be placed and compacted under engineering controlled conditions. It is recommended that R-value testing be performed after completion of rough grading. Depending upon the results of the R-value testing, it may be feasible to use thinner pavement sections in some areas of the site.

Asphaltic Concrete

Presented below are the recommended thicknesses for new flexible pavement structures consisting of asphaltic concrete over a granular base. The pavement designs are based on the traffic indices (TI's) indicated. The client and/or civil engineer should verify that these TI's are representative of the anticipated traffic volumes. If the client and/or civil engineer determine that the expected traffic volume will exceed the applicable traffic index, we should be contacted for supplementary recommendations. The design traffic indices equate to the following approximate daily traffic volumes over a 20-year design life, assuming six operational traffic days per week.

Traffic Index	No. of Heavy Trucks per Day
4.0	0
5.0	1
6.0	3
7.0	11
8.0	35
9.0	93

For the purpose of the traffic volumes indicated above, a truck is defined as a 5-axle tractor trailer unit with one 8-kip axle and two 32-kip tandem axles. All of the traffic indices allow for 1,000 automobiles per day.

ASPHALT PAVEMENTS (R=25)					
Materials	Thickness (inches)				
	Auto Parking and Auto Drive Lanes (TI = 4.0 to 5.0)	Truck Traffic			
		TI = 6.0	TI = 7.0	TI = 8.0	TI = 9.0
Asphalt Concrete	3	4	4½	5	6
Aggregate Base	7	8	11	12	14
Compacted Subgrade	12	12	12	12	12

The aggregate base course should be compacted to at least 95 percent of the ASTM D-1557 maximum dry density. The asphaltic concrete should be compacted to at least 95 percent of the Marshall maximum density, as determined by ASTM D-2726. The aggregate base course may consist of crushed aggregate base (CAB) or crushed miscellaneous base (CMB), which is a recycled gravel, asphalt and concrete material. The gradation, R-Value, Sand Equivalent, and Percentage Wear of the CAB or CMB should comply with appropriate specifications contained in the current edition of the "Greenbook" Standard Specifications for Public Works Construction.

Portland Cement Concrete

The preparation of the subgrade soils within concrete pavement areas should be performed as previously described for proposed asphalt pavement areas. The minimum recommended thicknesses for the Portland Cement Concrete pavement sections are as follows:

PORTLAND CEMENT CONCRETE PAVEMENTS (R=25)				
Materials	**Thickness (inches)**			
	Autos and Light Truck Traffic (TI = 6.0)	Truck Traffic		
		TI = 7.0	TI = 8.0	TI = 9.0
PCC	5	5½	7	8
Compacted Subgrade (95% minimum compaction)	12	12	12	12

The concrete should have a 28-day compressive strength of at least 3,000 psi. Any reinforcement within the PCC pavements should be determined by the project structural engineer. The maximum joint spacing within all of the PCC pavements is recommended to be equal to or less than 30 times the pavement thickness.

7.0 GENERAL COMMENTS

This report has been prepared as an instrument of service for use by the client, in order to aid in the evaluation of this property and to assist the architects and engineers in the design and preparation of the project plans and specifications. This report may be provided to the contractor(s) and other design consultants to disclose information relative to the project. However, this report is not intended to be utilized as a specification in and of itself, without appropriate interpretation by the project architect, civil engineer, and/or structural engineer. The reproduction and distribution of this report must be authorized by the client and Southern California Geotechnical, Inc. Furthermore, any reliance on this report by an unauthorized third party is at such party's sole risk, and we accept no responsibility for damage or loss which may occur. The client(s)' reliance upon this report is subject to the Engineering Services Agreement, incorporated into our proposal for this project.

The analysis of this site was based on a subsurface profile interpolated from limited discrete soil samples. While the materials encountered in the project area are considered to be representative of the total area, some variations should be expected between boring locations and sample depths. If the conditions encountered during construction vary significantly from those detailed herein, we should be contacted immediately to determine if the conditions alter the recommendations contained herein.

This report has been based on assumed or provided characteristics of the proposed development. It is recommended that the owner, client, architect, structural engineer, and civil engineer carefully review these assumptions to ensure that they are consistent with the characteristics of the proposed development. If discrepancies exist, they should be brought to our attention to verify that they do not affect the conclusions and recommendations contained herein. We also recommend that the project plans and specifications be submitted to our office for review to verify that our recommendations have been correctly interpreted.

The analysis, conclusions, and recommendations contained within this report have been promulgated in accordance with generally accepted professional geotechnical engineering practice. No other warranty is implied or expressed.

8.0 REFERENCES

California Division of Mines and Geology (CDMG), "Guidelines for Evaluating and Mitigating Seismic Hazards in California," State of California, Department of Conservation, Division of Mines and Geology, Special Publication 117A, 2008.

Idriss, I. M. and Boulanger, R. W., "Soil Liquefaction During Earthquakes", Earthquake Engineering Research Institute, 2008.

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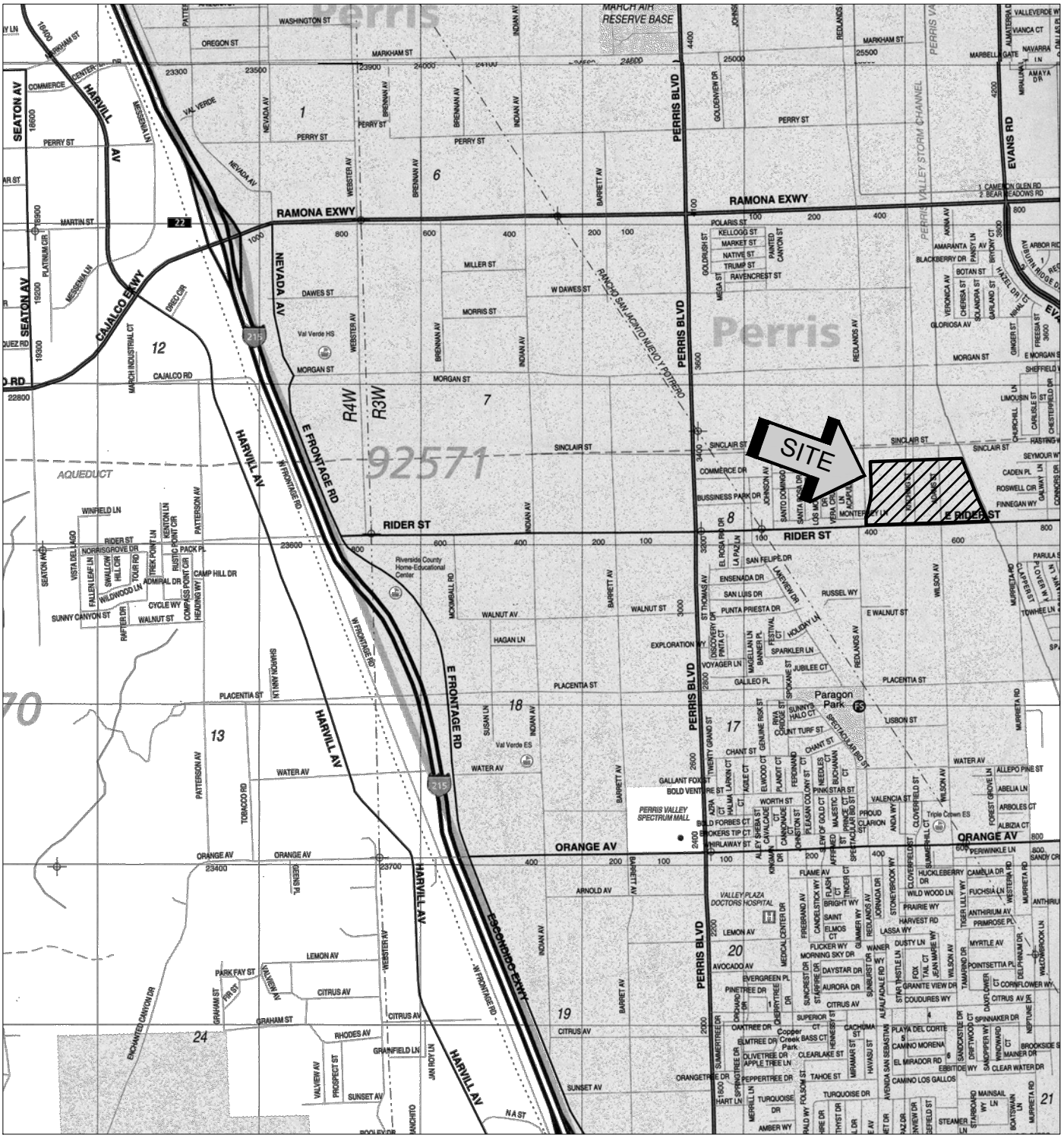
Tokimatsu K., and Seed, H. B., "Evaluation of Settlements in Sands Due to Earthquake Shaking," Journal of the Geotechnical Engineering Division, American society of Civil Engineers, Volume 113, No. 8, August 1987, pp. 861-878.

Tokimatsu, K. and Yoshimi, Y., "*Empirical Correlations of Soil Liquefaction Based on SPT N-value and Fines Content,"* Seismological Research Letters, Eastern Section Seismological Society Of America, Volume 63, Number 1, p. 73.

Youd, T. L. and Idriss, I. M. (Editors), "Proceedings of the NCEER Workshop on Evaluation of Liquefaction Resistance of Soils," Salt Lake City, UT, January 5-6 1996, NCEER Technical Report NCEER-97-0022, Buffalo, NY.

APPENDIX A



SOURCE: RIVERSIDE COUNTY
THOMAS GUIDE, 2013

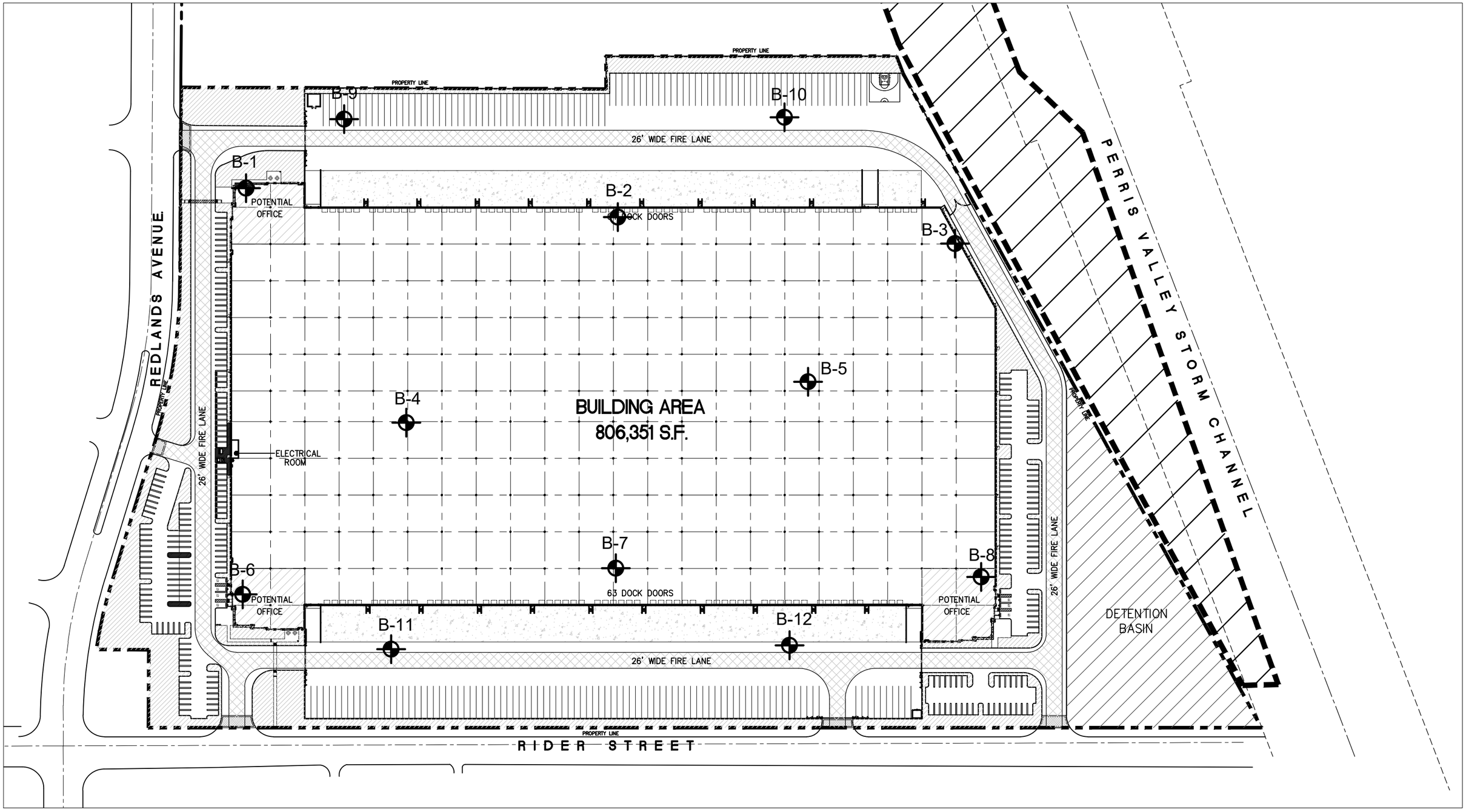
SITE LOCATION MAP

RIDER 2 - PROPOSED COMMERCIAL/INDUSTRIAL BUILDING

PERRIS, CALIFORNIA

SCALE: 1" = 2400'	
DRAWN: SAM CHKD: GKM	
SCG PROJECT 17G199-1	
PLATE 1	

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL



GEOTECHNICAL LEGEND

APPROXIMATE BORING LOCATION

NOTE: BASE MAP PREPARED BY HPA ARCHITECTS, INC.

NORTH

BORING LOCATION PLAN

RIDER 2 - PROPOSED COMMERCIAL/INDUSTRIAL BUILDING

PERRIS, CALIFORNIA

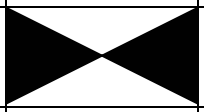
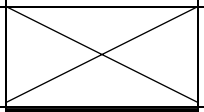
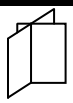
SCALE: 1" = 150'	
DRAWN: DRK CHKD: GKM	
SCG PROJECT 17G199-1	
PLATE 2	

SoCalGeo

SOUTHERN CALIFORNIA GEOTECHNICAL

APPENDIX B

BORING LOG LEGEND

SAMPLE TYPE	GRAPHICAL SYMBOL	SAMPLE DESCRIPTION
AUGER		SAMPLE COLLECTED FROM AUGER CUTTINGS, NO FIELD MEASUREMENT OF SOIL STRENGTH. (DISTURBED)
CORE		ROCK CORE SAMPLE: TYPICALLY TAKEN WITH A DIAMOND-TIPPED CORE BARREL. TYPICALLY USED ONLY IN HIGHLY CONSOLIDATED BEDROCK.
GRAB		SOIL SAMPLE TAKEN WITH NO SPECIALIZED EQUIPMENT, SUCH AS FROM A STOCKPILE OR THE GROUND SURFACE. (DISTURBED)
CS		CALIFORNIA SAMPLER: 2-1/2 INCH I.D. SPLIT BARREL SAMPLER, LINED WITH 1-INCH HIGH BRASS RINGS. DRIVEN WITH SPT HAMMER. (RELATIVELY UNDISTURBED)
NSR		NO RECOVERY: THE SAMPLING ATTEMPT DID NOT RESULT IN RECOVERY OF ANY SIGNIFICANT SOIL OR ROCK MATERIAL.
SPT		STANDARD PENETRATION TEST: SAMPLER IS A 1.4 INCH INSIDE DIAMETER SPLIT BARREL, DRIVEN 18 INCHES WITH THE SPT HAMMER. (DISTURBED)
SH		SHELBY TUBE: TAKEN WITH A THIN WALL SAMPLE TUBE, PUSHED INTO THE SOIL AND THEN EXTRACTED. (UNDISTURBED)
VANE		VANE SHEAR TEST: SOIL STRENGTH OBTAINED USING A 4 BLADED SHEAR DEVICE. TYPICALLY USED IN SOFT CLAYS-NO SAMPLE RECOVERED.

COLUMN DESCRIPTIONS

DEPTH: Distance in feet below the ground surface.

SAMPLE: Sample Type as depicted above.

BLOW COUNT: Number of blows required to advance the sampler 12 inches using a 140 lb hammer with a 30-inch drop. 50/3" indicates penetration refusal (>50 blows) at 3 inches. WH indicates that the weight of the hammer was sufficient to push the sampler 6 inches or more.

POCKET PEN.: Approximate shear strength of a cohesive soil sample as measured by pocket penetrometer.

GRAPHIC LOG: Graphic Soil Symbol as depicted on the following page.

DRY DENSITY: Dry density of an undisturbed or relatively undisturbed sample in lbs/ft^3.

MOISTURE CONTENT: Moisture content of a soil sample, expressed as a percentage of the dry weight.

LIQUID LIMIT: The moisture content above which a soil behaves as a liquid.

PLASTIC LIMIT: The moisture content above which a soil behaves as a plastic.

PASSING #200 SIEVE: The percentage of the sample finer than the #200 standard sieve.

UNCONFINED SHEAR: The shear strength of a cohesive soil sample, as measured in the unconfined state.