Recording requested by and mail to:

City Clerk
City of Beaumont
550 E. Sixth Street
Beaumont, CA 92223

SPACE ABOVE THIS LINE FOR RECORDER'S USE
EXEMPT FROM RECORDER'S FEES PURSUANT TO GOVERNMENT CODE SECTION 6103 AND 27383

APN:

STORM WATER MANAGEMENT WQMP/BMP FACILITIES

COVENANT AND AGREEMENT NO.

City of Beaumont, Riverside County, California

THIS COVENANT AND AGREEMENT is made and entered into this May 9th of 2024, by and between NCRC Beaumont LP ("Owner"), and the City of Beaumont, California, ("City").

The Owner hereby certifies I am (we are) the sole owner of certain real property located at 1343 & 1347 E. 8th Street (Site Address) in the City of Beaumont, County of Riverside, State of California, more specifically described in **Exhibit "A"** and depicted in **Exhibit "B"** ("Property").

The Owner covenants and agrees to comply with the Project Water Quality Management Plan ("WQMP"), attached hereto as **Exhibit "C"**, providing for storm water quality treatment within the confines of the Property.

The Owner covenants and agrees that the health, safety and welfare of the residents of the City of Beaumont, require that the Best Management Practice ("BMP") facilities, more specifically described in the WQMP (for example bio- swales, catch basins, roof drains and appurtenances) be constructed and maintained to minimize pollutants in urban runoff by the Owner.

The Owner further covenants and agrees as follows:

1. The on-site storm water management/BMP facilities mentioned above shall be constructed by the Owner at its sole cost and expense, in accordance with the plans and specifications identified in the WQMP approved by City.

2. The Owner shall adequately maintain the storm water management/BMP facilities in a manner assuring peak performance at all times, including source control BMPs at all times as its sole responsibility, at its sole cost and expense. This includes all pipes and channels built to convey storm water on the Property, including catch basin inserts, underground detention ponds, swales and vegetation provided to control the quantity and quality of the

storm water. Adequate maintenance is herein defined as good working condition so that these facilities are performing in accordance with their design functions continuously at all times.

3. The Owner shall annually inspect the storm water management/BMP facilities mentioned above and submit an inspection report annually to the Public Works Department by the anniversary of the date of this Agreement of each year. The purpose of the inspection is to assure safe and proper functioning of the facilities. The inspection shall cover the storm water management BMPs listed in the WQMP such as bioswales, catch basins and related filter units, etc. Deficiencies shall be noted in the inspection report and corrected by Owner promptly.

4. The Owner hereby grants permission to City, its authorized agents and employees, to enter upon the Property and to inspect the storm water management/BMP facilities, take samples and perform testing whenever the City deems necessary and as required by the City's most current National Pollutant Discharge Elimination System (NPDES) Permit. The purpose of the inspection, testing and sampling is to follow up on apparent and reported deficiencies and/or to respond to citizen complaints and meet the requirements of the City's NPDES Permit issued by the State Water Resources Control Board – Santa Ana River Region. The City shall provide the Owner with advanced notice of entering upon the Property, except in the event of an emergency, as determined by the City. The City shall provide the Owner copies of the inspection findings and a directive to commence with the repairs if necessary. Owner or Owner's successors or assigns shall pay City for all costs incurred by City in the inspection, sampling, testing of the BMPs within thirty (30) calendar days of City invoice.

5. In the event the Owner fails to maintain the storm water management/BMP facilities in good working condition acceptable to the City, upon five (5) days advanced written notice, the City may enter upon the Property and take whatever steps necessary to correct deficiencies identified in any inspection report and to charge the costs of such repairs to the Owner the cost of which shall constitute a lien against the Property. In the event of an emergency, as determined by City, advanced notice as aforesaid, shall not be required. Notwithstanding the forgoing, it is expressly understood and agreed that the City is under no obligation to maintain or repair said facilities, and in no event shall this Agreement be construed to impose any such obligation to the City.

6. The Owner will perform the work necessary to keep these facilities in good working order as appropriate. The maintenance schedule for the storm water management BMP facilities (including sediment removal) is outlined in the approved WQMP and the schedule must be followed at all times. In the future, City of Beaumont may adopt an annual Stormwater Inspection Fee that would be assessed to the Owner.

7. In the event the City, pursuant to this Agreement, performs work of any nature, or expends any funds in performance of said work for labor, use of equipment, supplies, materials and the like, the Owner, its successors and assigns shall reimburse the City upon demand, within thirty (30) days of receipt thereof for all actual costs incurred by the City hereunder.
8. This Agreement imposes no liability of any kind whatsoever on the City. Owner agrees to indemnify, defend (with counsel reasonably approved by the City) and hold harmless the City and its authorized officers,
9. employees, agents and volunteers from any and all claims, actions, losses, damages, and/or liability arising out of this Agreement from any cause whatsoever, including the acts, errors or omissions of any person and for any costs or expenses incurred by the City on account of any claim except where such indemnification is prohibited by law. This indemnification provision shall apply regardless of the existence or degree of fault of indemnitees. The Owner's indemnification obligation applies to the City's "active" as well as "passive" negligence but does not apply to the City's "sole negligence" or "willful misconduct" within the meaning of Civil Code Section

2782, or to any claims, actions, losses, damages, and/or liabilities, to the extent caused by the acts or omissions of any third party contractors undertaking any work (other than field inspections) or other maintenance on the Property on behalf of the City under this Agreement.

10. This Agreement shall be recorded with the County Recorder for the County of Riverside and shall constitute a covenant running with the land, equitable servitude and lien against the Property, and shall be binding on the Owner, its successors, assigns, transferees, administrators, executors, heirs, encumbrancers and any other successors in interests, including any homeowner's association.

11. In addition to any remedy available to City under this Agreement, if Owner violates any term of this Agreement and does not cure the violation within the time already provided in this Agreement, or, if not provided, within thirty (30) calendar days, or within such time authorized by the City if said cure reasonably requires more than the subject time, the City may bring an action at law or in equity in a court of competent jurisdiction to enforce compliance by the Owner with the terms of this Agreement. In such action, the City may recover any damages to which the City may be entitled for the violation, enjoin the violation by temporary or permanent injunction without the necessity of proving actual damages or the inadequacy of otherwise available legal remedies, or obtain other equitable relief, including, but not limited to, the restoration of the Property and/or the BMPs identified in the WQMP to the condition in which it/they existed prior to any such violation or injury.

12. Owner shall provide printed educational materials with any sale of the Property which provide information on what storm water management facilities are present, the types and locations of maintenance signs that are required and how the necessary maintenance can be maintained.

13. Owner shall provide actual notice of this Agreement and its terms to any respective buyers or successor(s) in interest.

14. In order to be valid, amendment or change to this Agreement including the WQMP and BMPs requires an amendment executed by the City and Owner which is recorded with the Riverside County Recorder.

WITNESS the following signatures:

OWNER:

By: _____ By: _____

Name: Michael Finn Name: _____

Title: Chief Financial Officer Title: _____

Organization: NCRC Beaumont LP Organization: _____

All signatures on this Agreement on behalf of the Owner must be acknowledged before a Notary Public. In the event that the owner is a corporation, the President/Vice President and the corporate secretary of the corporation must sign.

California All-Purpose 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 San Bernardino } s.s.

On May 9, 2024 before me, Monica Rodriguez, Notary Public,
Name of Notary Public, Title

personally appeared Michael Finn
Name of Signer (1)

Name of Signer (2)

who proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his authorized capacity, and that by his signature on the instrument the person, or the entity upon behalf of which the person 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.

Signature of Notary Public

MONICA RODRIGUEZ
Notary Public - California
San Bernardino County
Commission # 2356168
My Comm. Expires May 26, 2025

Seal

OPTIONAL INFORMATION

Although the information in this section is not required by law, it could prevent fraudulent removal and reattachment of this acknowledgment to an unauthorized document and may prove useful to persons relying on the attached document.

Description of Attached Document

The preceding Certificate of Acknowledgment is attached to a document titled/for the purpose of _____,

containing ____ pages, and dated _____.

The signer(s) capacity or authority is/are as:

- ☐ Individual(s)
- ☐ Attorney-in-fact
- ☐ Corporate Officer(s) _____
  Title(s)
- ☐ Guardian/Conservator
- ☐ Partner - Limited/General
- ☐ Trustee(s)
- ☐ Other: _____

representing: _____
Name(s) of Person(s) or Entity(ies) Signer is Representing

_____

Additional Information

Method of Signer Identification

Proved to me on the basis of satisfactory evidence:

☐ form(s) of identification ☐ credible witness(es)

Notarial event is detailed in notary journal on:

Page # ____ Entry # ____

Notary contact: _____

Other

☐ Additional Signer ☐ Signer(s) Thumbprints(s)

☐ _____

City:

CITY OF BEAUMONT
a Municipal Corporation

Signature: _____
City Manager

ATTEST:

Signature: _____
City Clerk

APPROVED AS TO FORM:

Signature: _____
John Pinkney, City Attorney

APPROVED AS TO CONTENT:

Signature: _____
Robert Vestal, Director of Engineering/Public Works

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 _____, 20___, before me, _____, notary public, personally appeared _____ 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.

Signature: _____ (Seal)

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)

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WITNESS my hand and official seal.

Signature: _____ (Seal)

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County of Riverside)

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State of California)
County of Riverside)

On _____, 20___, before me, _____, notary public, personally appeared _____ 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.

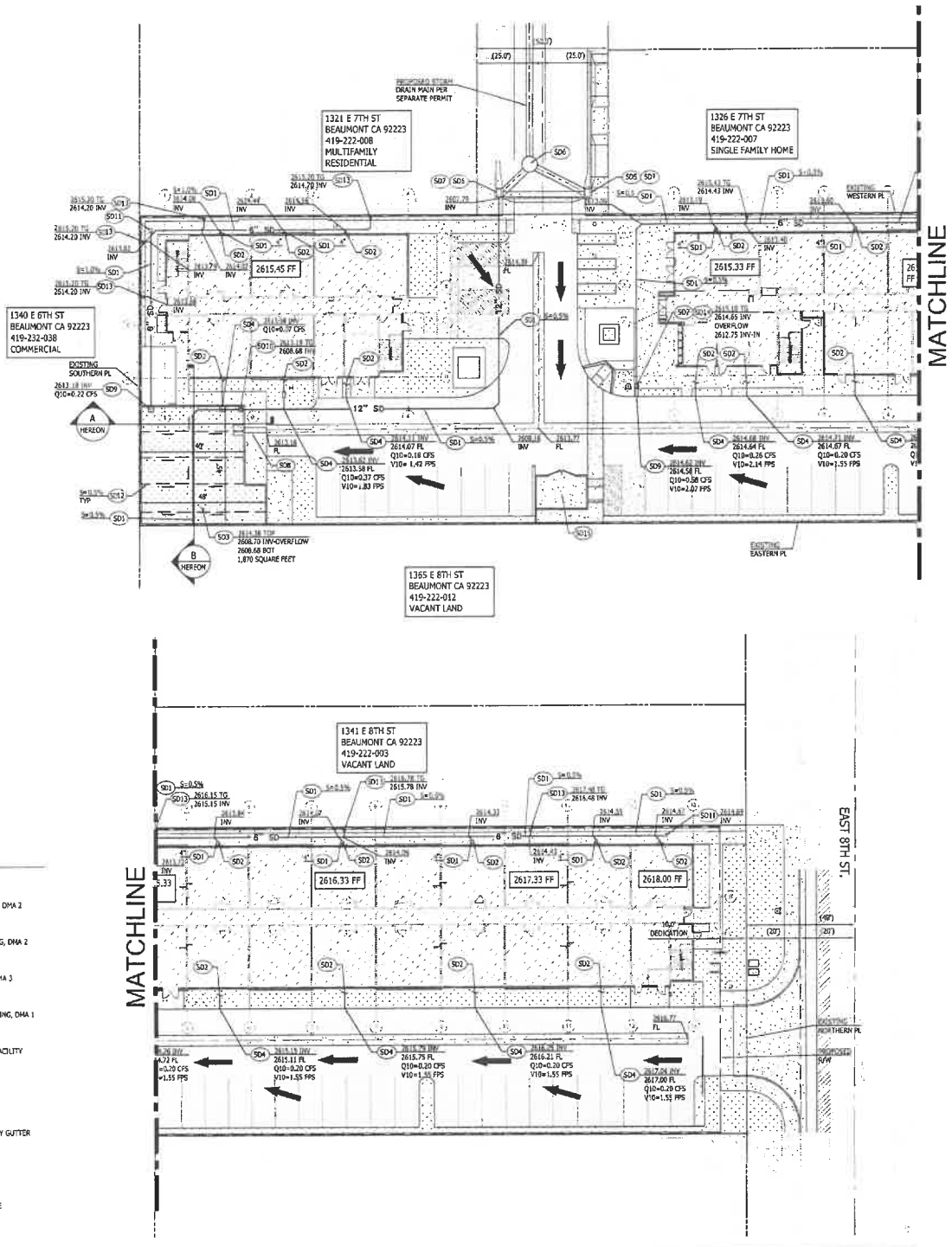
I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.
WITNESS my hand and official seal.

Signature: _____ (Seal)

EXHIBIT "A"
LEGAL DESCRIPTION

THE WESTERLY RECTANGULAR 116.50 FEET OF THE EASTERLY RECTANGULAR 361.84 FEET OF LOT 3 IN BLOCK 3, AS SHOWN BY MAP OF THE SUBDIVISION OF SECTION 11, TOWNSHIP 3 SOUTH, RANGE 1 WEST, SAN BERNARDINO BASE AND MERIDIAN, IN THE CITY OF BEAUMONT, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, RECORDED IN BOOK 9, PAGE 10 OF MAPS, SAN BERNARDINO COUNTY RECORDS. THE WESTERLY LINE THEREOF BEING PARALLEL WITH THE EASTERLY LINE OF SAID LOT.

EXHIBIT "B"
DIAGRAM OF PROPERTY



LEGEND:

- PROPERTY LINE
- ASPHALT PAVING, DMA 2
- CONCRETE PAVING, DMA 2
- LANDSCAPING, DMA 3
- PROPOSED BUILDING, DMA 1
- BIORETENTION FACILITY
- FIRE HYDRANT
- SD STORM DRAIN
- CONCRETE VALLEY GUTTER
- FLOW ARROW
- FLOW LINE
- PERFORATED PIPE

BMP SUMMARY

DMA NAME	SURFACE TYPE	AREA (SQ. FT)	DMA TYPE	EFFECTIVE IMPERVIOUS FRACTION	DMA RUNOFF FACTOR	DMA AREA X RUNOFF FACTOR	DESIGN STORM DEPTH (IN)	DESIGN CAPTURE VOLUME, VBPM, (CF)	PROPOSED VOLUME ON PLANS (CF)
1	ROOFS	20,440	TYPE D	1	0.89	18,197			
2	CONCRETE AND ASPHALT	29,673	TYPE D	1	0.89	26,468			
3	NATURAL SOIL (C)	9,378	TYPE D	0.30	0.23	2,112			
		99,451				46,777	0.85	3,313	3,329

N

0 30' 60'

SCALE: 1"=60'

DK ENGINEER, CORP
LOS ANGELES, CA 90048
310.926.0248

PROJECT NAME/ ADDRESS:

8TH STREET APARTMENTS

1343 EAST 8TH ST,
BEAUMONT, CA 92223

DATE: 03/04/2024

WQMP-SITE PLAN

EXHIBIT "C"
WQMP

Project Specific Water Quality Management Plan

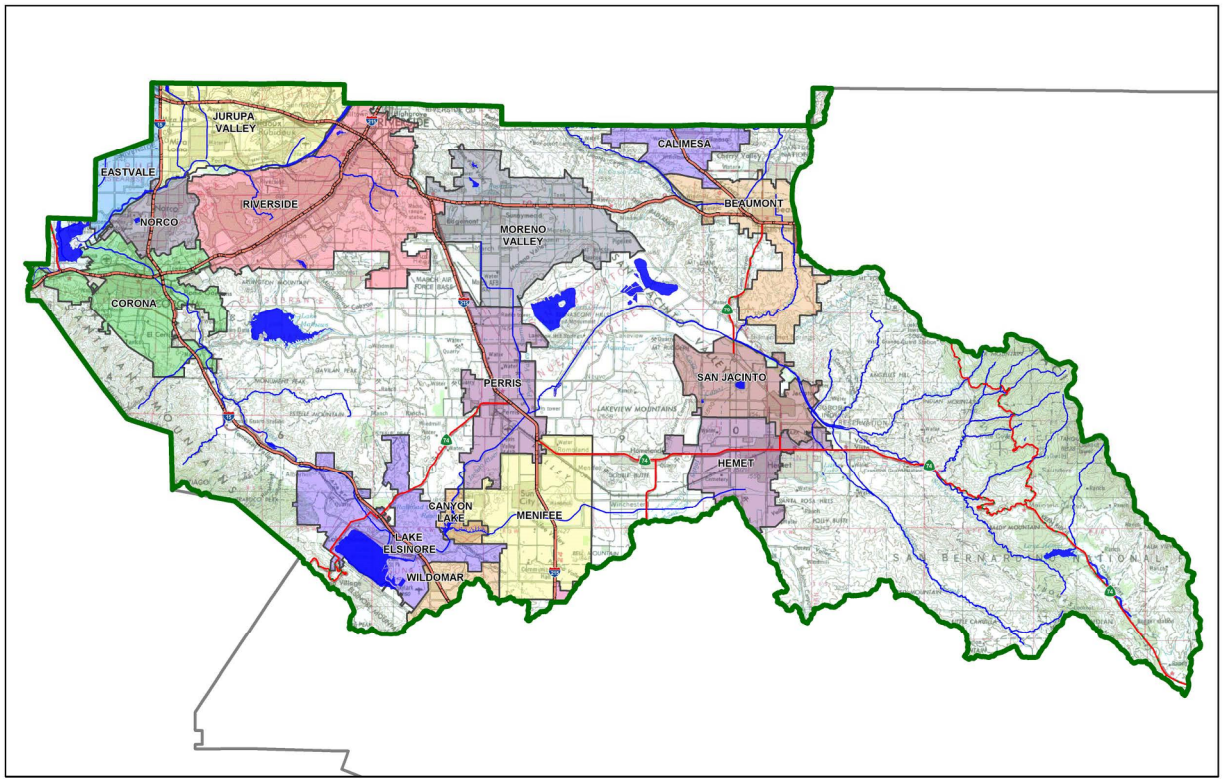
*A Template for Projects located within the **Santa Ana Watershed** Region of Riverside County*

Project Title: 8th Street Apartments

Development No: PP2023-0557

Design Review/Case No: PW2024-1102

No further comments
NV5
04/01/2024



☐ **Preliminary**
☒ **Final**

Original Date Prepared: February 15, 2023

Revision Date(s): March 3, 2024

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

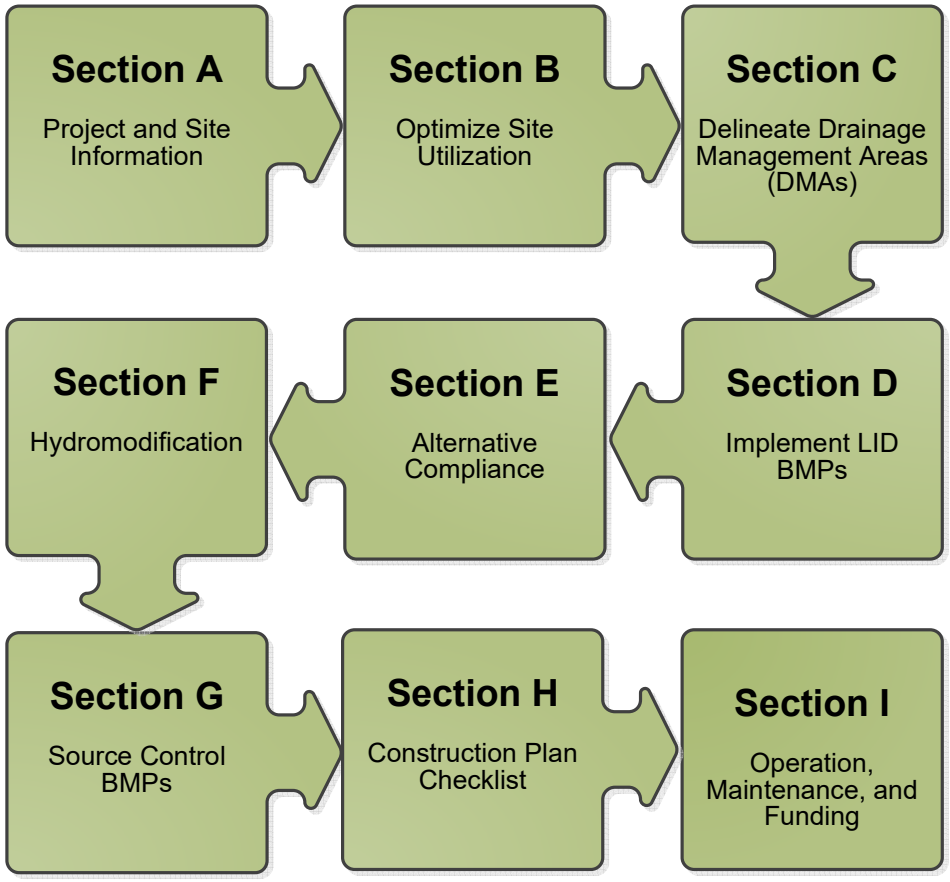
Contact Information:

Prepared for: National Core Housing
9421 Haven Avenue, Rancho Cucamonga, CA 91730
909.639.1875

Prepared by: DK Engineer Corp.
6420 Wilshire Blvd.
Los Angeles, CA 90048
Mplourde@dkengineercorp.com
909.559.7361

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 National Core by DK Engineer Corp. for the 8th Street Apartments project.

This WQMP is intended to comply with the requirements of City of Beaumont for Plot Plan PP2023-0557 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 Water Quality Ordinance (Municipal Code Section 13.24).

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

Owner's Signature	Date
Owner's Printed Name	Director of Housing Development 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	Date
Matt Plourde, PE Preparer's Printed Name	Civil Engineer Preparer's Title/Position

Preparer's Licensure: C76041

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Section A: Project and Site Information

PROJECT INFORMATION	
Type of Project:	Multi-Family Residential
Planning Area:	Multi-Family Residential (From General Plan)
Community Name:	Beaumont
Development Name:	8th Street Apartments
PROJECT LOCATION	
Latitude & Longitude (DMS): 33.931610, -116.962890	
Project Watershed and Sub-Watershed: Santa Ana	
APN(s): 419-222-011	
Map Book and Page No.: Book 9, Page 10	
PROJECT CHARACTERISTICS	
Proposed or Potential Land Use(s)	(2) 2 story bldgs. and parking lot
Proposed or Potential SIC Code(s)	XXXX
Area of Impervious Project Footprint (SF)	59,450 SF
Total Area of proposed Impervious Surfaces within the Project Limits (SF)/or Replacement	50,073 SF
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)	3,648 SF
Is the project located within any MSHCP Criteria Cell?	☐ Y ☒ N
If so, identify the Cell number:	Insert text here.
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)	Insert text here.
What is the Water Quality Design Storm Depth for the project?	0.85"

The existing site consists of an empty dirt lot that is bound by 8th St to the north, residential developments to the east and west, and a storage facility to the south. The existing site slopes from north to south and drains onto the neighboring property. The proposed project includes the construction of two (2) 2-story residential buildings on a 1.36 AC lot. Building A will contain 11 residential units and Building B will contain 37 residential units. 51 parking spaces will be provided onsite, 3 of which are designated as ADA spaces.

The geotechnical report provides multiple infiltration rates onsite. The infiltration rate yielded 0.33 in/hr. If a factor of 3 is utilized, the design infiltration rate would be 0.11 in/hr. This is below the minimum design infiltration rate of 0.3 in/hr. Therefore, infiltration has been ruled out as a LID BMP for the project. The BMP that was selected is a bioretention facility. The BMP will be placed at the south of the site in a landscaped area.

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 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
Potrero Creek	None	None	37.95 MILES
San Jacinto River	None	AGR, GWR, REC1, REC2, WARM, WILD	25.06 MILES
Canyon Lake	Pathogens and Nutrients	MUN, AGR, GWR, REC1, REC2, WARM, WILD	4.89 MILES
Lake Elsinore	PCBs, Organic Enrichment, Low Dissolved Oxygen, Nutrients, Toxicity, DDT	REC1, REC2, COMM, WARM, WILD, RARE	0 MILES
Temescal Creek	pH	MUN, AGR, IND, PROC, REC1, REC2, WARM, COLD, WILD	27.08 MILES
Santa Ana River	Copper, Indicator Bacteria, Lead	AGR, GWR, MUN, RARE, REC1, REC2, SPWN, WARM, WILD	38.23 MILES
Pacific Ocean	Bacteria	IND, NAV, REC1, REC2, COMM, BIOL, WILD, RARE, MAR, AQUA, MIGR, SPWN, SHELL	0 MILES

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	☐ Y	☒ N
Western Riverside MSHCP Consistency Approval (e.g., JPR, DBESP)	☐ Y	☒ N
Other *(please list in the space below as required)* Grading Permit, Construction 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?

The existing site slopes from north to south and drains onto the neighboring property. Because it is not acceptable to drain onto a neighboring property, and runoff should be directed to public right of way or storm drain infrastructure, the drainage pattern was changed. The proposed site will still drain from the north to the south. However, runoff will now be directed to a bioretention facility located at the south of the site. The overflow for the facility will drain into a newly constructed side opening catch basin along the curb of E. 7th St.

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

The only existing vegetation onsite are trees which interfere with the proposed building and parking lot. These trees will be removed, and new trees will be planted in various areas around the site.

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

This has not been preserved. The existing site is currently 93% pervious and the proposed development will yield a site area of 19% perviousness. Despite this, the LID BMP is a bioretention facility which will infiltrate captured runoff into engineered soil media and perforated pipe.

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

To the extent possible impervious areas have been minimized. All areas that are not needed for the building, parking lot, or site walkways will be pervious.

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

Where possible, runoff has been directed to landscaped areas. Where this is not possible, runoff is conveyed into the LID BMP which connects to the underground storm drain pipe overflow system.

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
1	Roofs	20,440	Type D
2	Concrete and Asphalt	29,673	Type D
3	Natural Soil (C)	9,378	Type D

[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)

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]

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

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		Area (square feet)	Ratio
	[A]		[B]	[C] = [A] x [B]	DMA name /ID	[D]	[C]/[D]

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

DMA Name or ID	BMP Name or ID
1, 2, 3	Bioretention Facility

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 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 Co-Permittee 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:		
…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. (Required by Water Department)

☐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: 10,377 SF

Type of Landscaping (Conservation Design or Active Turf): 372 SF (Turf)

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: 44,509 SF

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: 2.12

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: 94,359 SF

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)
94,359 SF	10,377 SF

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 shutdowns or other lapses in occupancy:

Projected Number of Daily Toilet Users: 48

Project Type: Residential

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: 44,509 SF

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: 138

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: 141

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)
141	48

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.

N/A

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

Average Daily Demand: N/A

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: N/A

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: N/A

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: N/A

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)**
N/A	N/A

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 Co-Permittee 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	
1	☐	☐	☒	☐	☐
2	☐	☐	☒	☐	☐
3	☐	☐	☒	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐

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 Co-Permittee. Utilize the worksheets found in the LID BMP Design Handbook or consult with your Co-Permittee 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	*Infiltration Trench*		
	[A]		[B]	[C]	[A] x [C]			
1	*20,440*	*Roofs*	*1*	*0.89*	*18,192*	*Design Storm Depth (in)*	*Design Capture Volume,* V_{BMP} *(cubic feet)*	*Proposed Volume on Plans (cubic feet)*
2	*29,673*	*Concrete/ Asphalt*	*1*	*0.89*	*26,409*			
3	*9,378*	*Natural Soil (C)*	*0.30*	*0.23*	*2,157*			
	59,491				(D) 46,758	(E) 0.85	(F) 3,312	(G) 3,329

[B], [C] is obtained as described in Section 2.3.1 of the WQMP Guidance Document DMA

[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 Co-Permittee). 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.

DMAs 1, 2, and 3 will all be collect via non erosive means and conveyed to an infiltration trench.

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	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**			***Infiltration Trench***	
	[A]		[B]	[C]	[A] x [C]				
N/A	*N/A*	*N/A*	*N/A*	*N/A*	*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)*
						(E)	(F)	(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]
N/A	N/A	N/A

[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 Co-Permittee 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	INSERT VALUE	INSERT VALUE	INSERT VALUE
Volume (Cubic Feet)	INSERT VALUE	INSERT VALUE	INSERT VALUE

[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:

The project will discharge to 7th Street via an overflow drain, at which point runoff will drain south to local storm drain infrastructure. The storm drain infrastructure will carry runoff south via underground pipes, culverts, and stream paths and eventually discharge into Potrero Creek. Potrero Creek connects with the San Jacinto River which connects with Canyon Lake. Canyon Lake is one of the adequate sumps listed above.

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.

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 if the anticipated activities continue at the site. Co-Permittee 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
Onsite Storm Drain Inlets	Mark drains with "No Dumping" stencil	Maintain stencils as needed. Regularly sweep parking lot.
Landscape	Maintain trees where possible. Design landscape areas to self-retain.	Do not use pesticides.
Fire Water Test	Connect Fire Sprinkler Drain to sewer.	Maintain fire sprinklers per building department regulations.
Refuse Areas	Post signage stating "Do not dump hazardous materials here" or similar.	Remove trash on a regular basis and observe leakages.
Roofing/Gutters	Avoid roofing made of metals.	Regularly clean roof gutters.
Plazas/Sidewalks		Sweep plazas and sidewalks regularly.

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)
Bioretention Facility	The bioretention facility will capture and retain the 85th percentile of runoff from the site. Overflow will be directed offsite into a newly constructed catch basin along E. 7th Street.	Appendix 2, Sheets C1.31, C5.01, C5.04.

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 Co-Permittee will periodically verify that Stormwater BMPs on your site are maintained and continue to operate as designed. To make this possible, your Co-Permittee 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: To be maintained by Property Management Group

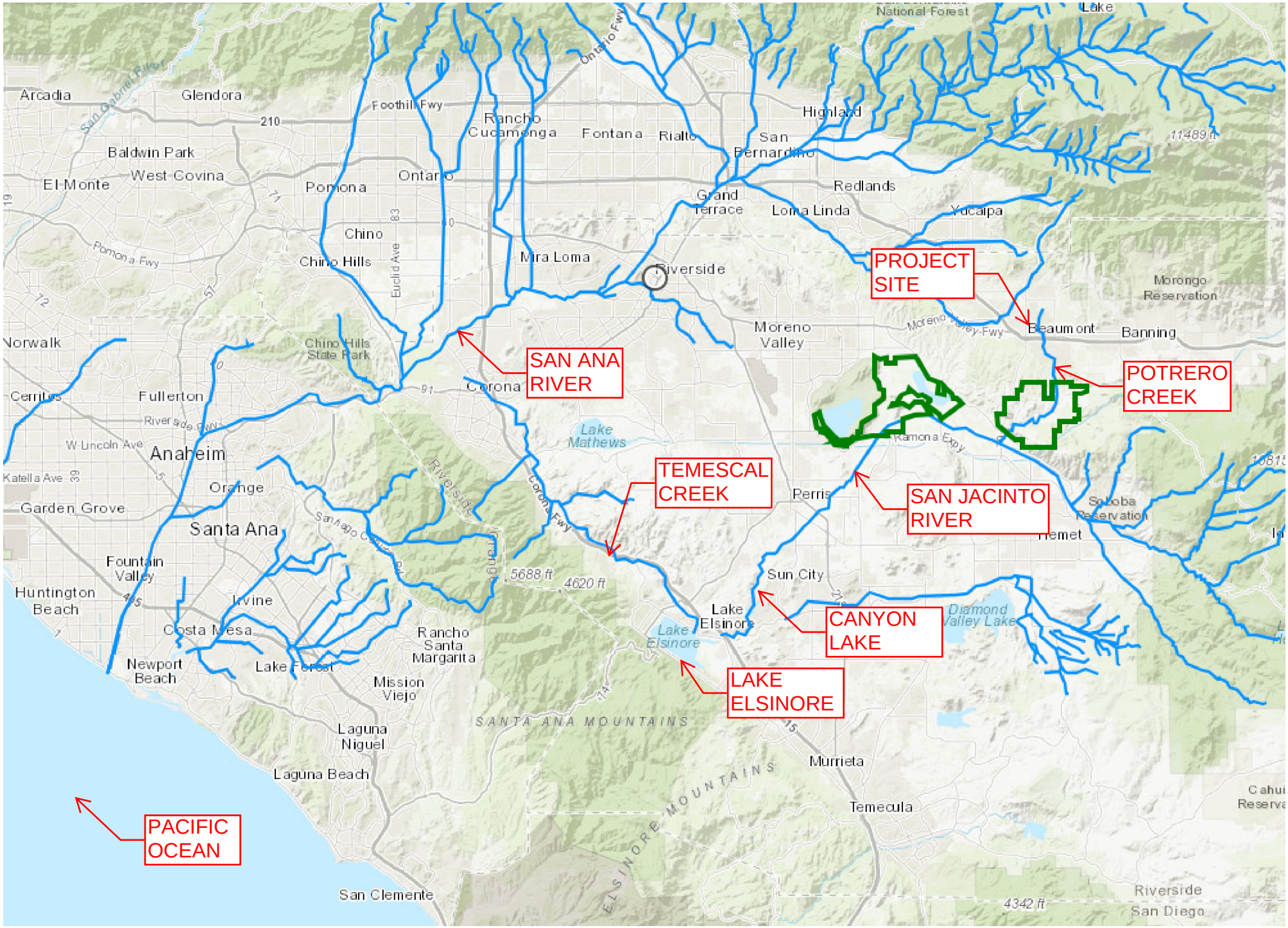
Will the proposed BMPs be maintained by a Home Owners' Association (HOA) or Property Owners Association (POA)?

☐ 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.

Appendix 1: Maps and Site Plans

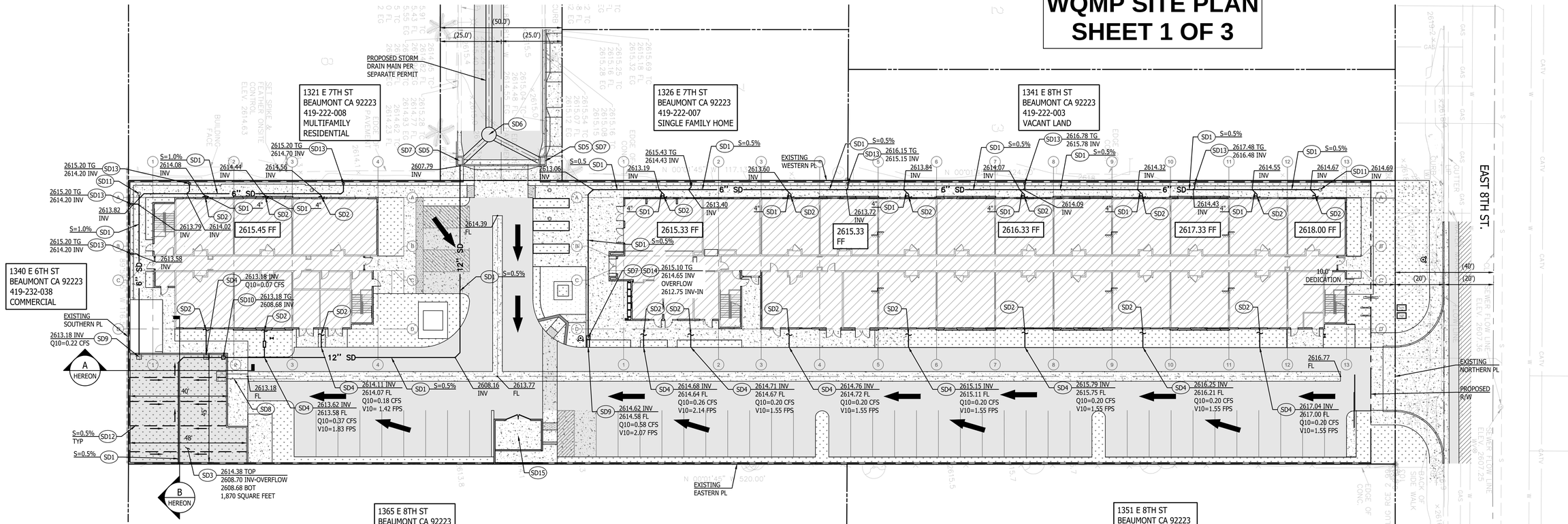
Location Map, WQMP Site Plan and Receiving Waters Map


PROJECT SITE
SAN ANA RIVER
POTRERO CREEK
TEMESCAL CREEK
SAN JACINTO RIVER
CANYON LAKE
LAKE ELSINORE
PACIFIC OCEAN
Arcadia
Glendora
Baldwin Park
West Covina
El Monte
Pomona
Ontario
Rancho Cucamonga
Fontana
Rialto
San Bernardino
Highland
Redlands
Grand Terrace
Loma Linda
Yucaipa
Chino
Chino Hills
Mira Loma
Riverside
Moreno Valley
Beaumont
Banning
Morongo Reservation
Norwalk
Chino Hills State Park
Corona
Lake Mathews
Cerritos
Fullerton
Anaheim
Orange
Garden Grove
Santa Ana
Fountain Valley
Huntington Beach
Irvine
Costa Mesa
Newport Beach
Lake Forest
Rancho Santa Margarita
Mission Viejo
Laguna Niguel
Laguna Beach
San Clemente
SANTA ANA MOUNTAINS
ELSINORE MOUNTAINS
Perris
Sun City
Lake Elsinore
Diamond Valley Lake
Murrieta
Temecula
Hemet
Soboba Reservation
Ramona Expy
Foothill Fwy
Ontario Fwy
Pomona Fwy
Riverside Fwy
Corona Fwy
Moreno Valley Fwy
Euclid Ave
5688 ft
4620 ft
4342 ft
11489 ft

LOCATION MAP

N

WQMP SITE PLAN
SHEET 1 OF 3



Engineered Soil Media Requirements

The engineered soil media shall be comprised of 85 percent mineral component and 15 percent organic component, by volume, drum mixed prior to placement. The mineral component shall be a Class A sandy loam topsoil that meets the range specified in Table 1 below. The organic component shall be nitrogen stabilized compost[1], such that nitrogen does not leach from the media.

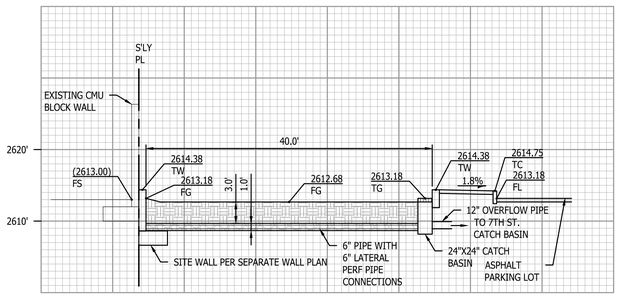
Table 1: Mineral Component Range Requirements

Percent Range	Component
70-80	Sand
15-20	Silt
5-10	Clay

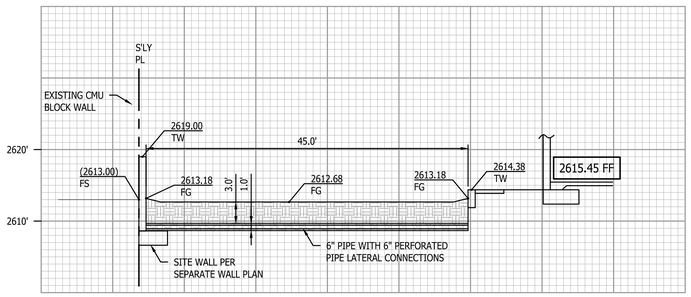
The trip ticket, or certificate of compliance, shall be made available to the inspector to prove the engineered mix meets this specification.

BMP SUMMARY

DMA NAME	SURFACE TYPE	AREA (SQ. FT)	DMA TYPE	EFFECTIVE IMPERVIOUS FRACTION	DMA RUNOFF FACTOR	DMA AREA X RUNOFF FACTOR			
1	ROOFS	20,440	TYPE D	1	0.89	18,197			
2	CONCRETE AND ASPHALT	29,673	TYPE D	1	0.89	26,468	DESIGN STORM DEPTH (IN)	DESIGN CAPTURE VOLUME, VBPM, (CF)	PROPOSED VOLUME ON PLANS (CF)
3	NATURAL SOIL (C)	9,378	TYPE D	0.30	0.23	2,112			
		59,451				46,777	0.85	3,313	3,329



SECTION A
SCALE: 1"=10'



SECTION B
SCALE: 1"=10'

STORM DRAIN CONSTRUCTION NOTES:

- SD1 INSTALL SDR 35 PVC STORM DRAIN PIPE. PER DETAIL 2, SHEET 5.
- SD2 ROOF DOWNSPOUT PER ARCHITECTURAL PLANS. PER DETAIL 7, SHEET 5.
- SD3 INSTALL 1,870 SQUARE FEET BIORETENTION FACILITY PER DETAIL 1, SHEET 5.
- SD4 4" ROUND EQUIVALENT CURB-O-LET CURB FACE DISCHARGE. PER DETAIL 5 & 6, SHEET 5.
- SD5 INSTALL CATCH BASIN PER RIVERSIDE COUNTY STD. 300 UNDER SEPARATE PERMIT.
- SD6 INSTALL STORMDRAIN MANHOLE STRUCTURE PER SPPWC STD PLAN 321-2 UNDER SEPARATE PERMIT.
- SD7 NO DUMPING STENCIL PER DETAIL 4, SHEET 5.
- SD8 INSTALL 4"X28" CURB O LET FLUSH WITH VALLEY GUTTER PER DETAIL 1, SHEET 6.
- SD9 3" X 8" CURBOLET CURB FACE DISCHARGE PER DETAIL 6 & 8, SHEET 5.
- SD10 INSTALL 18"X18" OVERFLOW CATCH BASIN BY JENSEN PRECAST OR APPROVED EQUAL.
- SD11 INSTALL CLEANOUT PER DETAIL 3, SHEET 5.
- SD12 INSTALL 6" PERFORATED PIPE AT BASE OF BIORETENTION PLANTER. MIN 0.5% SLOPE.
- SD13 INSTALL 4" ATRIUM DRAIN BY NDS OR APPROVED EQUAL.
- SD14 INSTALLL 12"X12" TRANSITION BUBBLE UP CATCH BASIN BY JENSEN PRECAST OR APPROVED EQUAL.
- SD15 TRASH ENCLOSURE.

LEGEND:

- PROPERTY LINE
- ASPHALT PAVING, DMA 2
- CONCRETE PAVING, DMA 2
- LANDSCAPING, DMA 3
- PROPOSED BUILDING, DMA 1
- BIORETENTION FACILITY
- FIRE HYDRANT
- SD STORM DRAIN
- CONCRETE VALLEY GUTTER
- FLOW ARROW
- FLOW LINE
- PERFORATED PIPE

Potential Sources of Runoff pollutants	Permanent Structural Source Control BMPs	Operational Source Control BMPs
Onsite Storm Drain Inlets	Mark drains with "No Dumping" stencil	Maintain stencils as needed. Regularly sweep parking lot.
Landscape	Maintain trees where possible. Design landscape areas to self-retain.	Do not use pesticides.
Fire Water Test	Connect Fire Sprinkler Drain to sewer.	Maintain fire sprinklers per building department regulations.
Refuse Areas	Post signage stating "Do not dump hazardous materials here" or similar.	Remove trash on a regular basis and observe leakages.
Roofing/Gutters	Avoid roofing made of metals.	Regularly clean roof gutters.
Plazas/Sidewalks		Sweep plazas and sidewalks regularly.

20 10 0 20 40 60
SCALE: 1"= 20'

DIGALERT Call 2 Working Days Before You Dig! 811

BENCHMARK:
THE TOP OF CURB AT THE POINT OF CURVATURE AT THE NORTHEAST CORNER OF THE NORTHWEST CURB RETURN AT THE INTERSECTION OF HIGHLAND SPRINGS AVENUE AND 2ND STREET.

ELEV. 2559.03, TBM

BY	MARK	DESCRIPTION	APPR.	DATE
ENGINEER		REVISIONS	CITY	

DK ENGINEER CORP.
6420 WILSHIRE BLVD. #1000
LOS ANGELES, CA 90048
310.926.0248

DK ENGINEER, CORP

MATT PLOURDE, PE
R.C.E. C84893
02/08/2024
DATE

SEAL: REGISTERED PROFESSIONAL ENGINEER · MATT PLOURDE · No. C84893 · CIVIL · STATE OF CALIFORNIA

DESIGN BY: MG
DRAWN BY: PN, SS
CHECKED BY: MP
SCALE: AS NOTED
DATE:
JOB NUMBER:

BEAUMONT CALIFORNIA
PUBLIC WORKS DEPARTMENT
550 E. 6TH ST, BEAUMONT, CA 92223

REVIEWED BY: _____ DATE: _____
STAFF ENGINEER

RECOMMENDED BY: _____ DATE: _____
PRINCIPAL ENGINEER

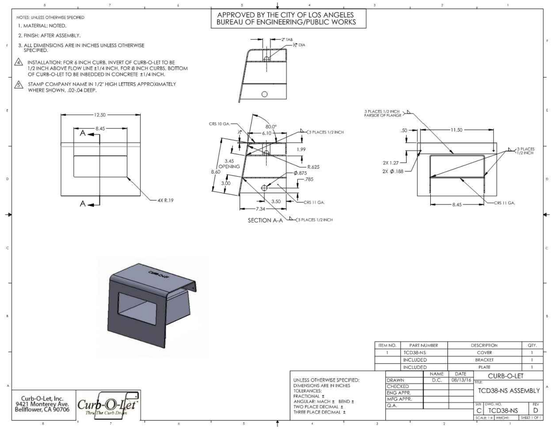
APPROVED BY: _____ DATE: _____
CITY ENGINEER

CITY OF BEAUMONT, CALIFORNIA
IMPROVEMENT PLANS FOR:
8TH STREET APARTMENT
ONSITE STORM DRAIN
ONSITE STORM DRAIN PLAN

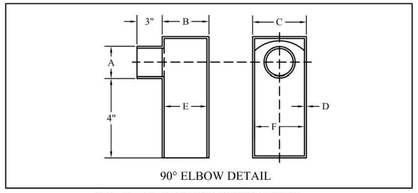
SHEET 2 OF 6 SHEETS
FILE NO: PW2024-1100

WQMP SITE PLAN
SHEET 2 OF 3

8 | 3"x8" CURB–O–LET CURB DRAIN — N.T.S.



6 | CURB–O–LET DOWNSPOUT ADAPTOR — N.T.S.



90° ELBOW DETAIL

NOTE: BRACES ARE 3-INCHES LONG WELDED INSIDE RECTANGULAR END FOR ADDITIONAL STRENGTH

PRODUCT SPECIFICATION - 90° ELBOW

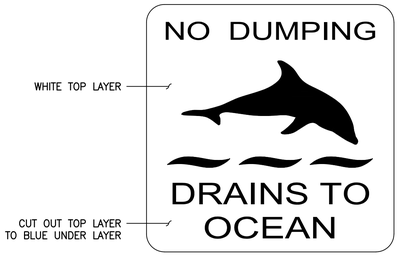
PRODUCT LIST				PRODUCT DIMENSIONS							
ROUND EQUIV.	DIMENSIONS	MODEL	ROUND AREA (SQ. IN.)	A	B	C	D	E	F		NUMBER OF BRACES
4"	3"x5"x9"	CP-SP905	12.730	4.5"	3.269"	5.269"	10 GA.	3"	5"		
5"	3"x8"x10"	CP-SP908	20.005	5.563"	3.269"	8.269"	10 GA.	3"	8"		
6"	3"x12"x11"	CP-SP912	28.890	6.625"	3.269"	12.269"	10 GA.	3"	12"		
8"	3"x17"x13"	CP-SP917	50.027	8.625"	4.269"	17.269"	10 GA.	3"	17"		1
8"	4"x14"x13"	CP-SP914	50.027	8.625"	3.269"	14.269"	10 GA.	4"	14"		
10"	3"x27"x13"	CP-SP927	78.854	10.75"	3.269"	27.269"	10 GA.	3"	27"		2
10"	4"x22"x13"	CP-SP922	78.854	10.75"	4.269"	22.269"	10 GA.	4"	22"		1
12"	3"x38"x17"	CP-SP938	111.931	12.75"	3.269"	38.269"	10 GA.	3"	38"		2
12"	4"x28"x17"	CP-SP928	111.931	12.75"	4.269"	28.269"	10 GA.	4"	28"		2
15"	3"x60"x20"	CP-SP960	179.315	15.83"	3.269"	60.269"	10 GA.	3"	60"		3
15"	4"x45"x20"	CP-SP945	179.315	15.83"	4.269"	45.269"	10 GA.	4"	45"		2

MATERIAL: 10 GAUGE GALVANIZED A653 G90 MEETS ASTM A-653. TENSILE STRENGTH 50,000.0 YIELD 36,000. ALL WELDS WILL BE SPRAYED, ROLLED OR BRUSHED WITH GALVANIZED /90 COATING. RECTANGULAR CONNECTION: MASTIC, CAULKING, EPOXY BINDING OR OTHER APPROVED METHOD. ROUND CONNECTION: CAST IRON/PLASTIC PIPE CONNECTION USE CAST IRON OR PLASTIC TO STEEL COUPLINGS.

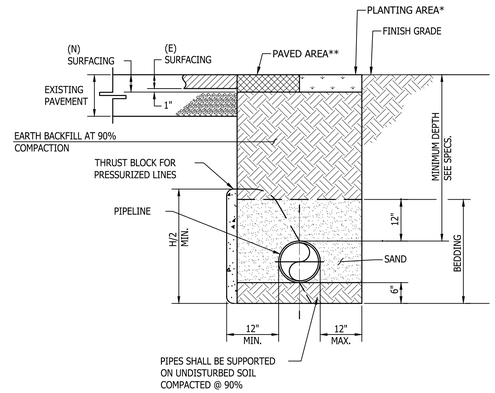
Curb-O-Let™
Thru The Curb Drain
9421 Monterey Ave. Bellflower, CA. 90706 - Office (714)903-2468

4 | STENCIL DETAIL — N.T.S.

NOTES:
1. STENCIL MATERIAL SHALL BE TWO–LAYER RESILIENT THERMOPLASTIC WITH 30% GRADED GLASS BEADS, 3.15 MM (125 MILS) TOTAL THICKNESS WITH BEVELED EDGES. MATERIAL SHALL BE AASHTO DESIGNATED M249–79(86), EXCEPT THAT MATERIAL SHALL BE PRE–FORMED.
2. BEFORE APPLICATION, PREPARE P.C.C. SURFACES WITH A PRIMER SEALER. APPLY STENCILS WITH PROPANE TORCH HEATING, PER MANUFACTURER'S RECOMMENDATIONS.
3. OTHER GRAPHIC DESIGNS THAN THAT SHOWN BELOW ARE SUBJECT TO APPROVAL. SUBMIT FULL–SIZE DRAWINGS AND MATERIAL SAMPLES TO THE CITY ENGINEER BEFORE APPLICATION.



2 | FLEXIBLE PIPE BEDDING DETAIL — N.T.S.



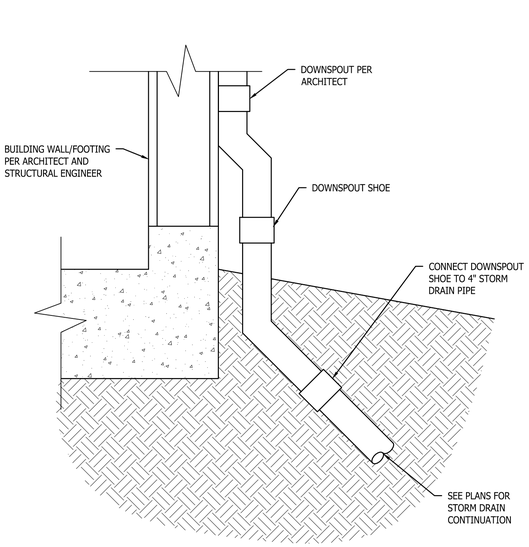
NOTE:

1. PAVEMENT FINISH SURFACE SHALL BE A SMOOTH CONTINUATION OF ADJOINING PAVED SURFACE.
2. ALL DUCTILE IRON PIPE INSTALLED UNDERGROUND SHALL BE WRAPPED WITH A 6 MIL POLYSLEEVE TO PREVENT CORROSION FROM SURROUNDING SOIL.
3. UTILITY TRENCH SECTION BASED ON RECOMMENDATIONS FROM THE PROJECT GEOTECHNICAL REPORTS.

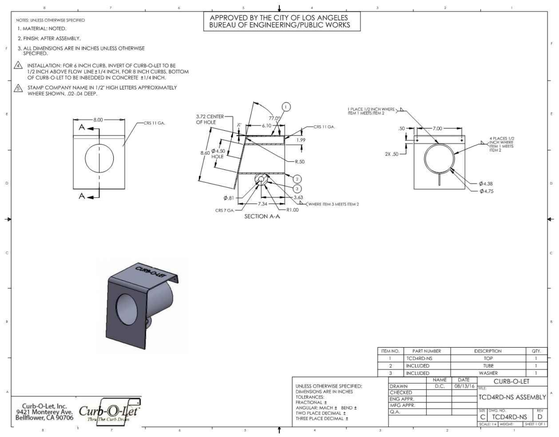
NARROW UNSUPPORTED VERTICAL WALLED TRENCH WIDTH

NOMINALPIPE DIAMETER (INCHES)	NARROW TRENCH WIDTH MIN. (INCHES)
4	18
6	18
8	24
12	30

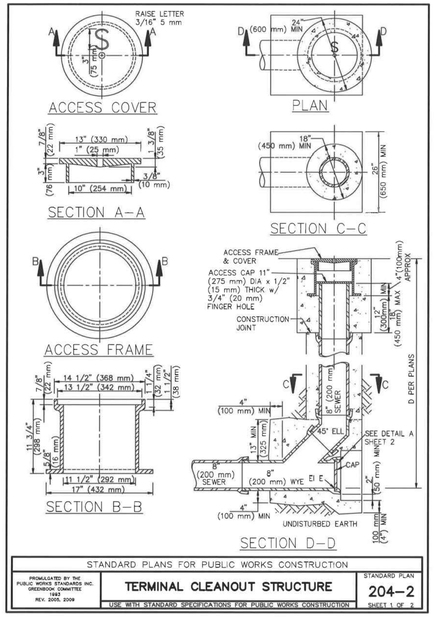
7 | DOWNSPOUT CONNECTION — N.T.S.



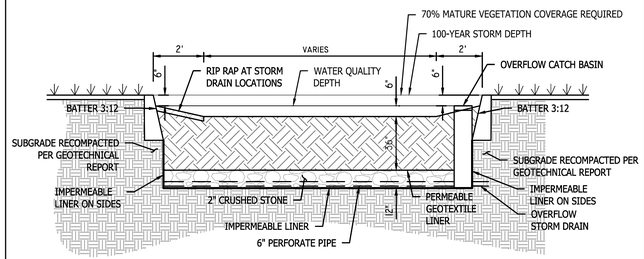
5 | 4" ROUND EQUIVALENT CURB–O–LET CURB DRAIN — N.T.S.



3 | CLEANOUT — N.T.S.



1 | BIORETENTION FACILITY — N.T.S.



Engineered Soil Media Requirements

The engineered soil media shall be comprised of 85 percent mineral component and 15 percent organic component, by volume, drum mixed prior to placement. The mineral component shall be a Class A sandy loam topsoil that meets the range specified in Table 1 below. The organic component shall be nitrogen stabilized compost[1], such that nitrogen does not leach from the media.

Table 1: Mineral Component Range Requirements

Percent Range	Component
70-80	Sand
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THE TOP OF CURB AT THE POINT OF CURVATURE AT THE NORTHEAST CORNER OF THE NORTHWEST CURB RETURN AT THE INTERSECTION OF HIGHLAND SPRINGS AVENUE AND 2ND STREET.

ELEV. 2559.03, TBM

BY	MARK	DESCRIPTION	APPR.	DATE
ENGINEER		REVISIONS	CITY	

DK ENGINEER, CORP
DK ENGINEER CORP.
6420 WILSHIRE BLVD. #1000
LOS ANGELES, CA 90048
310.926.0248
MATT PLOURDE, PE
R.C.E. C84893
02/08/2024
DATE

SEAL: REGISTERED PROFESSIONAL ENGINEER — MATT PLOURDE — No. C84893 — CIVIL — STATE OF CALIFORNIA

DESIGN BY: MG
DRAWN BY: PN, SS
CHECKED BY: MP
SCALE: AS NOTED
DATE:
JOB NUMBER:

BEAUMONT — CALIFORNIA
PUBLIC WORKS DEPARTMENT
550 E. 6TH ST, BEAUMONT, CA 92223

REVIEWED BY: _____ DATE: _____
STAFF ENGINEER

RECOMMENDED BY: _____ DATE: _____
PRINCIPAL ENGINEER

APPROVED BY: _____ DATE: _____
CITY ENGINEER

CITY OF BEAUMONT, CALIFORNIA
IMPROVEMENT PLANS FOR:
8TH STREET APARTMENT
ONSITE STORM DRAIN
DETAILS

SHEET 5 OF 6 SHEETS
FILE NO: PW2024–1100

WQMP SITE PLAN
SHEET 3 OF 3

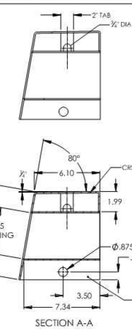
APPROVED BY THE CITY OF LOS ANGELES
BUREAU OF ENGINEERING/PUBLIC WORKS

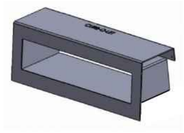
NOTES: UNLESS OTHERWISE SPECIFIED

1. MATERIAL: NOTED.
2. FINISH: AFTER ASSEMBLY.
3. ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.

⚠ INSTALLATION: FOR 8 INCH CURB, BOTTOM OF CURB-O-LET TO BE INBEDDED IN CONCRETE ±1/4 INCH.

⚠ STAMP COMPANY NAME IN 1/2" HIGH LETTERS APPROXIMATELY WHERE SHOWN, .02-.04 DEEP.





ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	TCD428-NS	COVER	1
	INCLUDED	BRACKET	1
	INCLUDED	PLATE	1

	NAME	DATE
DRAWN	D.C.	08/13/16
CHECKED		
ENG APPR.		
MFG APPR.		
Q.A.		

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±
ANGULAR: MACH ± BEND ±
TWO PLACE DECIMAL ±
THREE PLACE DECIMAL ±

TITLE: CURB-O-LET
TCD428-NS ASSEMBLY
SIZE: C | DWG. NO.: TCD428-NS | REV: E
SCALE: 1:4 | WEIGHT: | SHEET 1 OF 1

Curb-O-Let, Inc.
9421 Monterey Ave.
Bellflower, CA 90706

Curb-O-Let
Thru The Curb Drain

1 | 4"x28" CURB-O-LET DRAIN

N.T.S.

DIGALERT
Call 2 Working Days Before You Dig!
811

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ELEV. 2559.03, TBM

BY	MARK	DESCRIPTION	APPR.	DATE
ENGINEER		REVISIONS	CITY	

DK ENGINEER, CORP

DK ENGINEER CORP.
6420 WILSHIRE BLVD. #1000
LOS ANGELES, CA 90048
310.926.0248

MATT PLOURDE, PE
R.C.E. C84893

02/08/2024
DATE

SEAL
REGISTERED PROFESSIONAL ENGINEER
MATT PLOURDE
No. C84893
CIVIL
STATE OF CALIFORNIA

DESIGN BY: MG
DRAWN BY: PN, SS
CHECKED BY: MP
SCALE: AS NOTED
DATE:
JOB NUMBER:

BEAUMONT
CALIFORNIA
PUBLIC WORKS DEPARTMENT
550 E. 6TH ST, BEAUMONT, CA 92223

REVIEWED BY: _____ STAFF ENGINEER DATE: _____
RECOMMENDED BY: _____ PRINCIPAL ENGINEER DATE: _____
APPROVED BY: _____ CITY ENGINEER DATE: _____

CITY OF BEAUMONT, CALIFORNIA
IMPROVEMENT PLANS FOR:
8TH STREET APARTMENT
ONSITE STORM DRAIN
DETAILS

SHEET 6 OF 6 SHEETS
FILE NO: PW2024-1100

Appendix 2: Construction Plans

Grading and Drainage Plans

CITY OF BEAUMONT, CALIFORNIA
GRADING PLAN FOR
8TH STREET APTS.
1343 E. 8TH ST,
BEAUMONT, CA 92223
PP2023-0557

ABBREVIATIONS:

ADA	AMERICANS WITH DISABILITIES ACT	[N]	NEW
AC	ASPHALTIC CONCRETE	N	NORTH
BW	BACK OF WALK	NTS	NOT TO SCALE
BCR	BEGIN CURVE RETURN	O.C.	ON CENTER
BF	BOTTOM OF FOOTING	OH	OVERHEAD WIRES
BGS	BELOW GROUND SURFACE	PCC	PORTLAND CEMENT CONCRETE
BLDG	BUILDING	PP	POWER POLE
BM	BENCHMARK	PL	PROPERTY LINE
BMP(S)	BEST MANAGEMENT PRACTICE(S)	PROP.	PROPOSED
BOS	BOTTOM OF STEP	R&R	REMOVAL & RECOMPACTION
BX	BOX	R/W	RIGHT-OF-WAY LINE
CL	CENTER LINE	RG	ROUGH GRADE
CF	CURB FACE	S	SOUTH
CONC	CONCRETE	S/	SOUTH OF
DS	DOWNSPOUT	SF	SQUARE FEET
DW	DOMESTIC WATER	STD	STANDARD
DWY	DRIVEWAY	SPPWC	STANDARD PLAN FOR PUBLIC WORKS
E	EAST		CONSTRUCTION
E'LY	EASTERLY	STA	STATION
EG	EDGE OF GUTTER	ST	STREET
EP	EDGE OF PAVEMENT	SD	STORM DRAIN
EL OR ELEV.	ELEVATION	SDMH	STORM MANHOLE
ECR	END CURVE RETURN	TC	TOP OF CURB
(E) OR EX.	EXISTING	TF	TOP OF FOOTING
FF	FINISHED FLOOR	TG	TOP OF GRATE
FG	FINISHED GRADE (LANDSCAPE)	TOS	TOP OF STEP
FS	FINISHED SURFACE (HARDSCAPE)	TW	TOP OF WALL
FL	FLOW LINE	TYP	TYPICAL
GB	GRADE BREAK	W	WEST
HP	HIGH POINT	W'LY	WESTERLY
HT	HEIGHT	HC, ADA RMP	WHEELCHAIR RAMP
NG	NATURAL GRADE		

LEGEND

DESCRIPTION	DWG. NO.	SYMBOL	QUANTITY
RIGHT-OF-WAY, R/W	N/A		N/A
PROPOSED CONTOUR	N/A		N/A
EXISTING CONTOUR	N/A		
PROPOSED WALL	N/A		
EXISTING WALL	N/A		
CURB & GUTTER	COUNTY OF RIVERSIDE STD. PLAN 200		
CENTERLINE, CL	N/A		
CONCRETE PAVING	DETAIL 4, SHEET 10		
ADA RAMP	SPPWC STD. PLAN 111-5		
NEW FIRE HYDRANT	BCVWD PLATE 1		
AC PAVING	DETAIL 3, SHEET 10		
ADA PATH STRIPING	N/A		
PLANTING AREA	LANDSCAPE DWGS		
VEHICLE CONCRETE PAVING	DETAIL 1, SHEET 10		
INFILTRATION TRENCH	DETAIL 1, SHEET 5		
ADA PARKING STALL	N/A		
AREA DRAIN	N/A		

GRADING NOTES

1. ALL GRADING SHALL CONFORM TO THE CITY OF BEAUMONT ORDINANCES, CURRENT ADOPTED CALIFORNIA BUILDING CODE, APPENDIX J, STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, "LATEST EDITION" AND RECOMMENDATIONS OF THE SOILS ENGINEER.
2. NO WORK SHALL COMMENCED UNTIL ALL PERMITS HAVE BEEN OBTAINED FROM THE CITY AND OTHER APPROPRIATE AGENCIES.
3. ALL PROPERTY CORNERS SHALL BE CLEARLY DELINEATED IN THE FIELD PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION /GRADING.
4. DURING ROUGH GRADING OPERATIONS AND PRIOR TO CONSTRUCTION OF PERMANENT DRAINAGE STRUCTURES, TEMPORARY DRAINAGE AND EROSION CONTROL SHOULD BE PROVIDED TO PREVENT PONDING WATER, SEDIMENT TRANSPORTATION, AND DAMAGE TO ADJACENT PROPERTIES.
5. DUST SHALL BE CONTROLLED BY WATERING OR OTHER APPROVED METHODS.
6. NO FILL SHALL BE PLACED ON EXITING GROUND THAT HAS NOT BEEN CLEARED OF WEEDS. DEBRIS, TOPSOIL AND OTHER DELETERIOUS MATERIAL.
7. MAXIMUM CUT AND FILL SLOPE = 2: 1 EXCEPT WHERE SPECIFICALLY APPROVED OTHERWISE.
8. PROVIDE A 5' WIDE BY 1' HIGH BERM OR EQUIVALENT ALONG THE TOP OF ALL FILL SLOPES OVER 5' HIGH.
9. PROVIDE A BROW DITCH DESIGNED TO HANDLE 100 YR STORM FLOWS ALONG THE TOP OF CUT SLOPES.
10. NO OBSTRUCTION OF FLOODPLAIN OR NATURAL WATER COURSES SHALL BE PERMITTED.
11. ALL EXISTING DRAINAGE COURSES ON THE PROJECT SITE SHALL CONTINUE TO FUNCTION, ESPECIALLY DURING STORM CONDITIONS, PROTECTIVE MEASURES AND TEMPORARY DRAINAGE PROVISIONS MUST BE USED TO PROTECT ADJOINING PROPERTIES DURING GRADING OPERATIONS.
12. CUT AND FILL SLOPES EQUAL TO OR GREATER THAN 3' IN VERTICAL HEIGHT SHALL BE PLANTED WITH GRASS OR GROUND COVER TO PROTECT THE SLOPE FROM EROSION AND INSTABILITY IN ACCORDANCE WITH CITY OF BEAUMONT REQUIREMENTS PRIOR TO FINAL GRADING INSPECTION
13. ALL SLOPES REQUIRED TO BE PLANTED SHALL BE PLANTED WITH APPROVED GROUND COVER AT 12" ON CENTER. SLOPES EXCEEDING 15' IN VERTICAL HEIGHT SHALL BE PLANTED WITH APPROVED 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 A GRASS MIX GROUND COVER. SLOPES EQUAL TO OR GREATER THAN 4' IN VERTICAL HEIGHT SHALL BE PROVIDED WITH AN IN-GROUND IRRIGATION SYSTEM COMPLETE WITH AN APPROPRIATE BACKFLOW PREVENTION DEVICE PER CITY REQUIREMENTS.
14. IF STEEP SLOPING TERRAIN OCCURS UPON WHICH FILL IS TO BE PLACED. IT MUST BE CLEARED, KEYED, AND BENCHED INTO FIRM NATURAL SOIL FOR FULL SUPPORT. PREPARATION SHALL BF APPROVED BY A SUITABLY QUALIFIED AND REGISTERED GEOTECHNICAL ENGINEER OR GEOLOGIST PRIOR TO PLACEMENT OF FILL MATERIAL.
15. THE GROUND IMMEDIATELY ADJACENT TO A FOUNDATION SHALL BE SLOPED AWAY FROM THE BUILDING AT A SLOPE OF NOT LESS THAN ONE UNIT VERTICAL IN 20 UNITS HORIZONTAL (5-PERCENT SLOPE) FOR A MINIMUM DISTANCE OF 10 FEET MEASURED PERPENDICULAR TO THE FACE OF THE WALL. IF PHYSICAL OBSTRUCTIONS OR LOT LINES PROHIBIT 10 FEET (3048 MM) OF HORIZONTAL DISTANCE, A 5-PERCENT SLOPE SHALL BE PROVIDED TO AN APPROVED ALTERNATIVE METHOD OF DIVERTING WATER AWAY FROM THE FOUNDATION. SWALES USED FOR THIS PURPOSE SHALL BE SLOPED A MINIMUM OF 2 PERCENT WHERE LOCATED WITHIN 10 FEET OF THE BUILDING FOUNDATION. IMPERVIOUS SURFACES WITHIN 10 FEET OF THE BUILDING FOUNDATION SHALL BE SLOPED A MINIMUM OF 2 PERCENT AWAY FROM THE BUILDING.
16. ALL GRADING SHALL BE CONTINUOUSLY OBSERVED BY A COMPETENT SOILS ENGINEER WHO SHALL VERIFY THAT ALL FILL HAS BEEN PROPERLY PLACED AND WHO SHALL SUBMIT A FINAL COMPACTION REPORT FOR ALL FILLS OVER 1' DEEP.
17. A FINAL GEOTECHNICAL REPORT OF COMPLETION OF THE ROUGH GRADING, STATING SUBSTANTIAL CONFORMANCE WITH THE APPROVED GRADING PLAN, SHALL BE SUBMITTED TO THE BUILDING AND SAFETY DEPARTMENT PRIOR TO REQUESTING INSPECTION AND ISSUANCE OF BUILDING PERMITS. CERTIFICATIONS SHALL INCLUDE LINE GRADES, ELEVATIONS, AND LOCATION OF CUT/FILL SLOPES.
18. A LAND SURVEYOR OR ENGINEER AUTHORIZED TO PRACTICE LAND SURVEYING SHALL SUBMIT A PAD CERTIFICATION FOR ALL PADS. THE ELEVATION WITH RESPECT TO MEAN SEA LEVEL SHALL BE GIVEN. IF AN ELEVATION WITH RESPECT TO ADJACENT GROUND SURFACE IS REQUIRED, THE ACTUAL DISTANCE ABOVE THE ADJACENT GROUND SHALL BE GIVEN.
19. A GEOTECHNICAL ENGINEER OR GEOLOGIST SHALL SUBMIT TO THE BUILDING AND SAFETY DEPARTMENT AND THE PUBLIC WORKS DEPARTMENT A FINAL GEOTECHNICAL REPORT OF COMPLETION OF FINAL GRADING STATING SUBSTANTIAL CONFORMANCE WITH THE APPROVED PLANS FOR ALL GRADING DESIGNATED AS "ENGINEERED GRADING".
20. THE CONTRACTOR SHALL NOTIFY THE PUBLIC WORKS DEPARTMENT AT LEAST 24 HOURS IN ADVANCE REQUESTING FINISH LOT GRADE AND DRAINAGE INSPECTION. THIS INSPECTION MUST BE APPROVED PRIOR TO BUILDING PERMIT FINAL INSPECTION FOR EACH LOT.
21. ALL STORM DRAINS, CATCH BASINS, AND STORM WATER RUNOFF STRUCTURES WILL BE PROVIDED WITH ADEQUATE CAPABILITIES TO FILTER AND RETAIN SEDIMENT, GRIT, OIL, AND GREASE TO PREVENT POLLUTION IN STORM WATER RUNOFF IN COMPLIANCE WITH THE CITY OF BEAUMONT'S BEST MANAGEMENT PRACTICES AND BEAUMONT'S DRAINAGE MASTER PLAN FOR STORMWATER AS WELL AS BEST MANAGEMENT PRACTICES IDENTIFIED IN THE CURRENT REPORT OF WASTE DISCHARGE FOR RIVERSIDE COUNTY PERMITTEES.
22. CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT TWO DAYS BEFORE DIGGING AT 8-1-1 AND THE FOLLOWING UTILITY OR AGENCIES A MINIMUM OF TWO WORKING DAYS PRIOR TO COMMENCING ANY CONSTRUCTION OR GRADING:

    A. CITY OF BEAUMONT 951.769.8520
    B. VERIZON 800.483.4000
    C. SOUTHERN CALIFORNIA GAS COMPANY 909.335.7926
    D. BEAUMONT CHERRY VALLEY WATER DISTRICT 951.845.9581
    E. EDISON 800.655.4555

23. TRENCHING FOR UTILITIES AND STRUCTURES IS NOT ALLOWED UNTIL A SOIL COMPACTION REPORT IS SUBMITTED TO AND APPROVED BY THE PUBLIC WORKS DEPARTMENT.
24. THE CONTRACTOR SHALL MAINTAIN ADJACENT STREETS IN A NEAT, SAFE, CLEAN AND SANITARY CONDITION AT ALL TIMES AND TO THE SATISFACTION OF THE CITY'S INSPECTOR. THE ADJACENT STREETS SHALL BE KEPT CLEAN OF SEDIMENT, DEBRIS AND OTHER NUISANCES AT ALL TIMES. THE DEVELOPER SHALL BE RESPONSIBLE FOR ANY CLEAN UP ON ADJACENT STREETS AFFECTED BY THE CONSTRUCTION.
25. ALL OPERATIONS CONDUCTED ON THE SITE OR ADJACENT THERETO SHALL ADHERE TO THE NOISE ORDINANCE SET FORTH BY THE CITY MUNICIPAL CODE. ALL OPERATIONS SHALL BE LIMITED BY THE NOISE ORDINANCE TO THE LIMIT OF DECIBELS SPECIFIED FOR THE AREA AND TIME PERIOD. CONSTRUCTION ACTIVITIES WILL BE LIMITED TO THE PERIOD BETWEEN 7:00 A.M. AND 6:00 P.M. MONDAY THROUGH FRIDAY.
26. ALL OFF-SITE HAUL ROUTES SHALL BE SUBMITTED BY THE CONTRACTOR TO THE CITY ENGINEER FOR APPROVAL TWO FULL WORKING DAYS PRIOR TO BEGINNING OF WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DEBRIS OR DAMAGE OCCURRING ALONG THE HAUL ROUTE OR ADJACENT STREETS AS A RESULT OF THE GRADING OPERATION.

EROSION CONTROL NOTES

1. IN CASE OF EMERGENCY, CALL: VICKY RODRIGUEZ, CONSTRUCTION MANAGER, LINC HOUSING CORP., AT 562-684-1131.
2. EQUIPMENT AND WORKERS FOR EMERGENCY WORK SHALL BE MADE AVAILABLE AT ALL TIMES. NECESSARY MATERIALS SHALL BE AVAILABLE ON SITE AND STOCKPILED AT CONVENIENT LOCATIONS TO FACILITATE RAPID CONSTRUCTION OF TEMPORARY DEVICES WHEN RAIN IS IMMINENT.
3. EROSION CONTROL DEVICES SHALL NOT BE MOVED OR MODIFIED WITHOUT THE APPROVAL OF THE QSP.
4. ALL REMOVABLE EROSION PROTECTIVE DEVICES SHALL BE IN PLACE AT THE END OF EACH WORKING DAY WHEN THE 72-HOUR RAIN PROBABILITY FORECAST EXCEEDS 50%.
5. AFTER A RAINSTORM, ALL SILT AND DEBRIS SHALL BE REMOVED FROM STREET. SURGE BERMS, SILT FENCES, AND DESILTING BASINS WITH THE BASINS PUMPED AND WATER TO BE DISPERSED ON SITE.
6. GRADED AREAS ON THE PERMITTED AREA PERIMETER MUST DRAIN AWAY FROM THE FACE OF SLOPES AT THE CONCLUSION OF EACH WORKING DAY. DRAINAGE IS TO BE DIRECTED TOWARD DESILTING FACILITIES.
7. THE PERMITTEE AND CONTRACTOR SHALL BE RESPONSIBLE AND SHALL TAKE NECESSARY PRECAUTIONS TO PREVENT PUBLIC TRESPASS ONTO AREAS WHERE IMPOUNDED WATER CREATES A HAZARDOUS CONDITION.
8. ALL TEMPORARY GRADING HAUL ROADS WITHIN AREAS WHICH ARE TO REMAIN UNDEVELOPED AND NATURAL SHALL BE RESTORED TO NATURAL CONDITIONS AND REVEGETATED WITH NATIVE GRASSES UPON COMPLETION OF GRADING OPERATIONS.
9. STOCKPILING AND/OR VEHICLE STAGING AREAS SHALL BE LOCATED AS FAR AS PRACTICABLE FROM DWELLINGS.
10. EROSION CONTROL DEVICES WILL BE MODIFIED AS NEEDED AS THE PROJECT PROGRESSES.
11. THE PLACEMENT OF ADDITIONAL DEVICES TO REDUCE EROSION DAMAGE WITHIN THE SITE IS LEFT TO THE DISCRETION OF THE QSP.
12. THE QSP SHALL OBSERVE EROSION CONTROL WORK AND MUST INFORM THE CITY AND THE DEVELOPER IF THE WORK IS NOT IN ACCORDANCE WITH THE APPROVED PLAN.

PRE-CONSTRUCTION MEETING

1. A PRE-CONSTRUCTION MEETING SHALL BE HELD AT A LOCATION TO BE DETERMINED BY THE CITY ENGINEER PRIOR TO THE BEGINNING OF WORK AND SHALL BE ATTENDED BY ALL REPRESENTATIVES RESPONSIBLE FOR CONSTRUCTION, INSPECTION, SUPERVISION, TESTING AND ALL OTHER ASPECTS OF THE WORK. THE CONTRACTOR SHALL SCHEDULE THE MEETING BY CALLING THE INSPECTION LINE AT (951) 572-3224 AT LEAST FIVE (5) WORKING DAYS PRIOR TO STARTING CONSTRUCTION. APPROVED DRAWINGS MUST BE AVAILABLE PRIOR TO SCHEDULING.

WORK TO BE DONE

THE GRADING WORK SHALL CONSIST OF THE CONSTRUCTION OF ALL CUTS AND FILLS, REMEDIAL GRADING, DRAINAGE FACILITIES, EROSION CONTROL FACILITIES, AND PLANTING OF PERMANENT LANDSCAPING AND PREPARATION OF AS-BUILT GRADING PLANS, AS-BUILT GEOLOGIC MAPS AND REPORTS, ALL AS SHOWN OR REQUIRED ON THIS SET OF PLANS AND THE CITY STANDARDS, SPECIFICATIONS, REQUIREMENTS, RESOLUTIONS AND ORDINANCES CITED ON THESE PLANS. THE GRADING WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE FOLLOWING DOCUMENTS, CURRENT AT THE TIME OF CONSTRUCTION, AS DIRECTED BY THE CITY ENGINEER.

1. BEAUMONT MUNICIPAL CODE
2. FOR STREETS: RIVERSIDE COUNTY ORDINANCE NO. 461
   FLOOD CONTROL FACILITIES: THE RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT'S STANDARDS FOR FLOOD CONTROL FACILITIES.
   SANITARY SEWER FACILITIES: THE EASTERN MUNICIPAL WATER DISTRICT'S STANDARDS FOR SANITARY SEWER FACILITIES.
   ALL OTHER PUBLIC WORKS: THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (GREEN BOOK).
3. THIS SET OF PLANS.
4. RESOLUTION NO. PLOT PLAN XXXX-XXXX, DATED XXXX.
5. SOILS REPORT AND RECOMMENDATIONS BY TERRACON, DATED JANUARY 13, 2023.
6. STORM WATER POLLUTION PREVENTION PLAN PREPARED BY DK ENGINEER CORP., DATED XXXX WDID NO. XXXX .
7. STORM WATER MANAGEMENT PLAN PREPARED BY DK ENGINEER CORP DATED JUNE 2023.
8. CALIFORNIA STORM WATER QUALITY ASSOCIATION BMP CONSTRUCTION HANDBOOK AND CALTRANS CONSTRUCTION SITE BMP MANUAL.

UTILITY PROVIDERS

BEAUMONT CHERRY VALLEY WATER DISTRICT
CITY OF BEAUMONT
EASTERN MUNICIPAL WATER DISTRICT
SOCAL GAS

PROJECT INFORMATION:

LEGAL DESCRIPTION:
THE WESTERLY RECTANGULAR 116.50 FEET OF THE EASTERLY RECTANGULAR 361.84 FEET OF LOT 3 IN BLOCK 3, AS SHOWN BY MAP OF THE SUBDIVISION OF SECTION 11, TOWNSHIP 3 SOUTH, RANGE 1 WEST, SAN BERNARDINO BASE AND MERIDIAN, IN THE CITY OF BEAUMONT, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, RECORDED IN BOOK 9, PAGE 10 OF MAPS, SAN BERNARDINO COUNTY RECORDS. THE WESTERLY LINE THEREOF BEING PARALLEL WITH THE EASTERLY LINE OF SAID LOT.

PROPERTY ZONING DESIGNATION:
DOWNTOWN RESIDENTIAL MULTIFAMILY ZONE

ASSESSOR'S PARCEL NO.
419-222-011

OWNER:
NCRC BEAUMONT LP
9692 HAVEN AVENUE, SUITE 100
RANCHO CUCAMONGA, CA 91730

CIVIL ENGINEER:
DK ENGINEER CORP.
6420 WILSHIRE BLVD. #1000
LOS ANGELES, CA 90048
310.926.0248

GEOTECHNICAL ENGINEER:
TERRACON
1355 E. COOLEY DRIVE
COLTON, CA 92324

CIVIL SHEET INDEX:

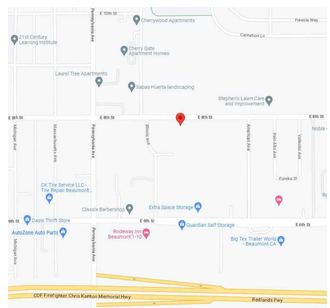
SHEET 1	TITLE SHEET
SHEET 2	SURVEY (FOR REFERENCE ONLY)
SHEET 3	EROSION CONTROL AND DEMOLITION PLAN
SHEET 4	ROUGH GRADING PLAN
SHEET 5	OVERALL GRADING PLAN
SHEET 6	GRADING PLAN
SHEET 7	GRADING PLAN
SHEET 8	GRADING SECTIONS
SHEET 9	PAVING PLAN
SHEET 10	DETAILS
SHEET 11	DETAILS

"DECLARATION OF RESPONSIBLE CHARGE"

I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT, THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN SECTION 6703 OF THE BUSINESS AND PROFESSIONS CODE, AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS. I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS BY THE CITY OF BEAUMONT DOES NOT RELIEVE ME AS ENGINEER OF WORK, RESPONSIBILITIES FOR PROJECT DESIGN.

FIRM: DK ENGINEER CORP.
ADDRESS: 6420 WILSHIRE BLVD. #1000
CITY, ST.: LOS ANGELES, CA 90048
TELEPHONE: 909.559.7361
BY: MATT PLOURDE, PE C84893 DATE: _____
(NAME OF ENGINEER & RCE)

ALL STANDARD DRAWINGS ARE COUNTY OF RIVERSIDE ROAD IMPROVEMENT STANDARDS & SPECIFICATIONS UNLESS NOTED OTHERWISE:
* RCFC&WCD STANDARD MANUAL
** EMWD SEWER STANDARD DRAWINGS
*** STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION



VICINITY MAP
NOT TO SCALE

DIGALERT Call 2 Working Days Before You Dig! 811

BENCHMARK:
THE TOP OF CURB AT THE POINT OF CURVATURE AT THE NORTHEAST CORNER OF THE NORTHWEST CURB RETURN AT THE INTERSECTION OF HIGHLAND SPRINGS AVENUE AND 2ND STREET.

ELEV. 2559.03, TBM

BY	MARK	DESCRIPTION	APPR.	DATE
ENGINEER		REVISIONS	CITY	

DK ENGINEER CORP.
6420 WILSHIRE BLVD. #1000
LOS ANGELES, CA 90048
310.926.0248

MATT PLOURDE, PE R.C.E. C84893 — 02/08/2024 DATE

SEAL: REGISTERED PROFESSIONAL ENGINEER — MATT PLOURDE — No. C84893 — CIVIL — STATE OF CALIFORNIA

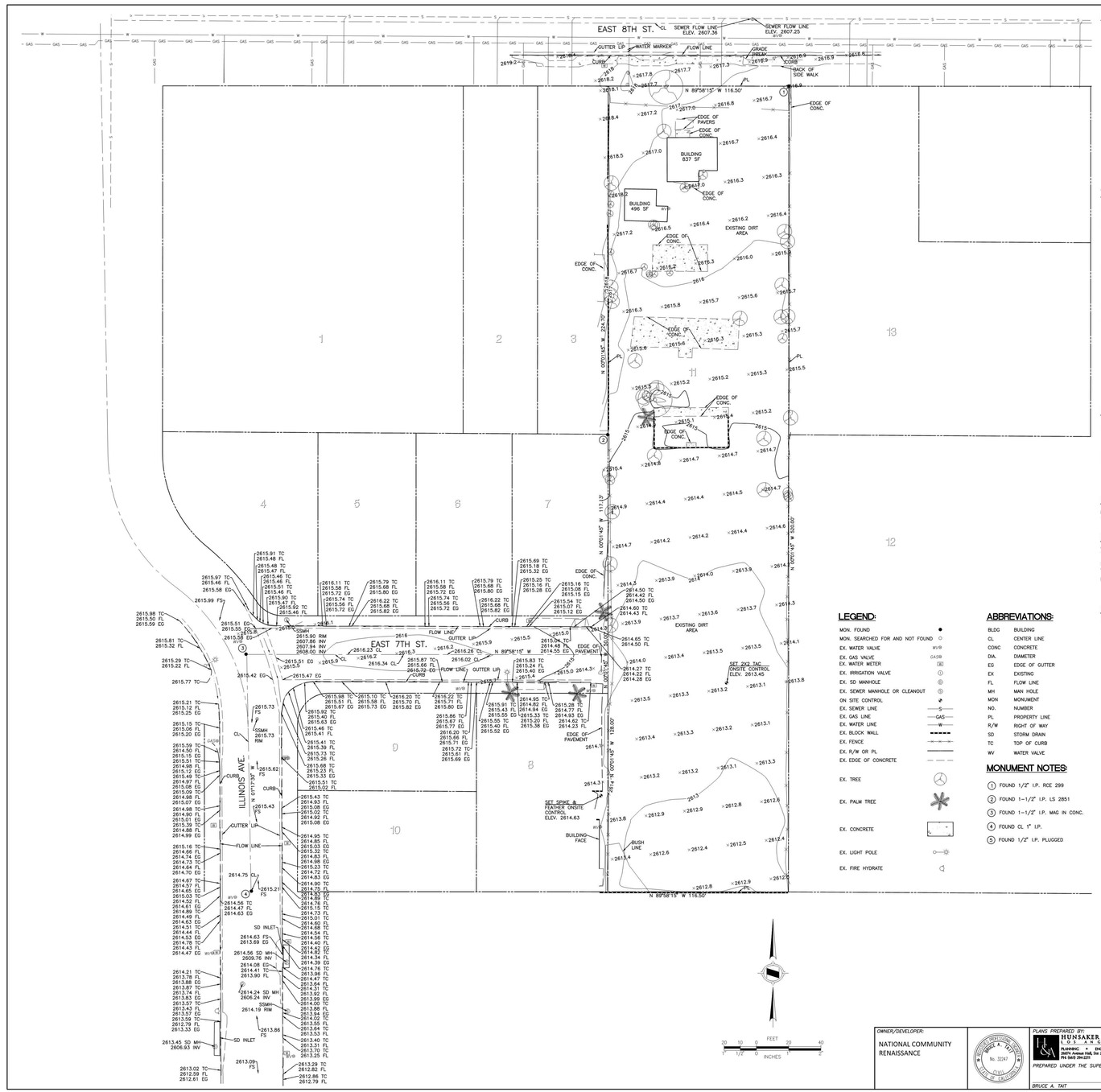
DESIGN BY: MG
DRAWN BY: PN, SS
CHECKED BY: MP
SCALE: AS NOTED
DATE:
JOB NUMBER:

BEAUMONT CALIFORNIA
PUBLIC WORKS DEPARTMENT
550 E. 6TH ST, BEAUMONT, CA 92223

REVIEWED BY: _____ DATE: _____ STAFF ENGINEER
RECOMMENDED BY: _____ DATE: _____ PRINCIPAL ENGINEER
APPROVED BY: _____ DATE: _____ CITY ENGINEER

CITY OF BEAUMONT, CALIFORNIA
IMPROVEMENT PLANS FOR:
TITLE SHEET

SHEET 1 OF 11 SHEETS
FILE NO: PW2024-1098



SURVEYOR'S/ENGINEER'S CERTIFICATE

THE FIELD WORK WAS COMPLETED ON 11/29/2022

BY: HUNSAKER AND ASSOCIATES

NAME: BRUCE A. TAIT

TITLE: DIRECTOR OF SURVEY

DATE: 12/27/2022

TITLE REPORT ITEMS:

Based on Commonwealth Land Title Company preliminary report order no. 09175286-CG dated APRIL 23, 2022 at 7:30 a.m.

At the date hereof Exceptions to coverage in addition to the printed exceptions and exclusions in said policy form would be as follows:

1. Property taxes, which are a lien not yet due and payable, including any assessments collected with taxes to be levied for the fiscal year 2022-2023.
2. Any liens or other assessments, bonds, or special district liens including without limitation, Community Facility Districts, that arise by reason of any local, City, Municipal or County Project or Special District.
3. The lien of supplemental or escaped assessments of property taxes, if any, made pursuant to the provisions of Chapter 3.5 (commencing with Section 75) or Part 2, Chapter 3, Articles 3 and 4, respectively, of the Revenue and Taxation Code of the State of California as a result of the transfer of title to the vestee named in Schedule A or as a result of changes in ownership or new construction occurring prior to Date of Policy.
4. Water rights, claims or title to water, whether or not disclosed by the public records.
5. Any easements not disclosed by the public records as to matters affecting title to real property, whether or not said easements are visible and apparent.
6. Please be advised that our search did not disclose any open Deeds of Trust of record. If you should have knowledge of any outstanding obligation, please contact the Title Department immediately for further review prior to closing.
7. Any rights of the parties in possession of a portion of, or all of, said Land, which rights are not disclosed by the public records.

   The Company will require, for review, a full and complete copy of any unrecorded agreement, contract, license and/or lease, together with all supplements, assignments and amendments thereto, before issuing any policy of title insurance without excepting this item from coverage.

   The Company reserves the right to except additional items and/or make additional requirements after reviewing said documents.

LEGAL DESCRIPTION:

ALL THAT CERTAIN REAL PROPERTY SITUATED IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, DESCRIBED AS FOLLOWS:

THE WESTERLY RECTANGULAR 116.50 FEET OF THE EASTERLY RECTANGULAR 361.84 FEET OF LOT 3 IN BLOCK 3, AS SHOWN BY MAP OF THE SUBDIVISION OF SECTION 11, TOWNSHIP 3 SOUTH, RANGE 1 WEST, SAN BERNARDINO BASE AND MERIDIAN, IN THE CITY OF BEAUMONT, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, RECORDED IN BOOK 9, PAGE 10 OF MAPS, SAN BERNARDINO COUNTY RECORDS; THE WESTERLY LINE THEREOF BEING PARALLEL WITH THE EASTERLY LINE OF SAID LOT.

Assessor's Parcel Number: 419-222-011

BASIS OF BEARING:

N 01°17'30" W THE CENTER LINE OF ILLINOIS AVE. BETWEEN FOUND MONUMENTS 3 AND 4 WAS USED AS THE BASIS OF BEARINGS.

BENCH MARK:

CITY OF BEAUMONT BENCH MARK NO. 10.A.82
1-3/8" DIA. BRASS CAP MONUMENT MARKED "CITY B.M. 10"

SOUTHWEST CORNER OF PENNSYLVANIA AVENUE AND 8TH STREET 22' W'LY AND 49' S'LY OF CENTERLINE INTERSECTION 2' S'LY OF B.C.R.

ELEVATION: 2615.99

NOTES:

NAME: BEAUMONT

Property Address: 1343 EAST 8TH ST., BEAUMONT, CALIFORNIA

GROSS AREA: 54,886 SF (1.3 AC)

LEGEND:

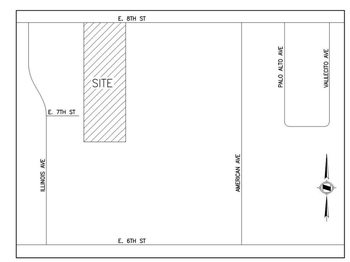
MON. FOUND	●
MON. SEARCHED FOR AND NOT FOUND	○
EX. WATER VALVE	WV
EX. GAS VALVE	GAS
EX. WATER METER	W
EX. IRRIGATION VALVE	I
EX. SD MANHOLE	SD
EX. SEWER MANHOLE OR CLEANOUT	S
ON SITE CONTROL	⊕
EX. SEWER LINE	S
EX. GAS LINE	GAS
EX. WATER LINE	W
EX. BLOCK WALL	
EX. FENCE	
EX. R/W OR PL	
EX. EDGE OF CONCRETE	
EX. TREE	
EX. PALM TREE	
EX. CONCRETE	
EX. LIGHT POLE	
EX. FIRE HYDRATE	

ABBREVIATIONS:

BLDG	BUILDING
CL	CENTER LINE
CONC	CONCRETE
DIA.	DIAMETER
EG	EDGE OF GUTTER
EX	EXISTING
FL	FLOW LINE
MH	MAN HOLE
MON	MONUMENT
NO.	NUMBER
PL	PROPERTY LINE
R/W	RIGHT OF WAY
SD	STORM DRAIN
TC	TOP OF CURB
WV	WATER VALVE

MONUMENT NOTES:

1. FOUND 1/2" I.P. RCE 299
2. FOUND 1-1/2" I.P. LS 2851
3. FOUND 1-1/2" I.P. MAG IN CONC.
4. FOUND CL 1" I.P.
5. FOUND 1/2" I.P. PLUGGED



VICINITY MAP
NOT TO SCALE

FEET 20 10 0 20 40
INCHES 1/2 0

OWNER/DEVELOPER:
NATIONAL COMMUNITY RENAISSANCE

PLANS PREPARED BY:
HUNSAKER & ASSOCIATES
PLANNING • ENGINEERING • SURVEYING
26070 Avenue Hall, Ste 23 • Valencia, CA 91355
PH 949 254-2211 • FX 949 254-9890
PREPARED UNDER THE SUPERVISION OF:
BRUCE A. TAIT DATE

BEAUMONT
DESIGN TOPO
IN THE CITY OF BEAUMONT, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA

DATE 12/16/2022
SCALE AS NOTED
PROJECT NO. 0566-010-0010
SHEET 1 OF 1 SHEETS

FOR PLAN CHECK ONLY

FOR REFERENCE ONLY

DIGALERT Call 2 Working Days Before You Dig! 811

BENCHMARK:
THE TOP OF CURB AT THE POINT OF CURVATURE AT THE NORTHEAST CORNER OF THE NORTHWEST CURB RETURN AT THE INTERSECTION OF HIGHLAND SPRINGS AVENUE AND 2ND STREET.

ELEV. 2559.03, TBM

BY	MARK	DESCRIPTION	APPR.	DATE
ENGINEER	1	REVISIONS	CITY	

DK ENGINEER CORP.
6420 WILSHIRE BLVD. #1000
LOS ANGELES, CA 90048
310.926.0248

MATT PLOURDE, PE
R.C.E. C84893
02/08/2024
DATE

SEAL

DESIGN BY: MG
DRAWN BY: PN, SS
CHECKED BY: MP
SCALE: AS NOTED
DATE:
JOB NUMBER:

BEAUMONT CALIFORNIA
PUBLIC WORKS DEPARTMENT
550 E. 6TH ST, BEAUMONT, CA 92223

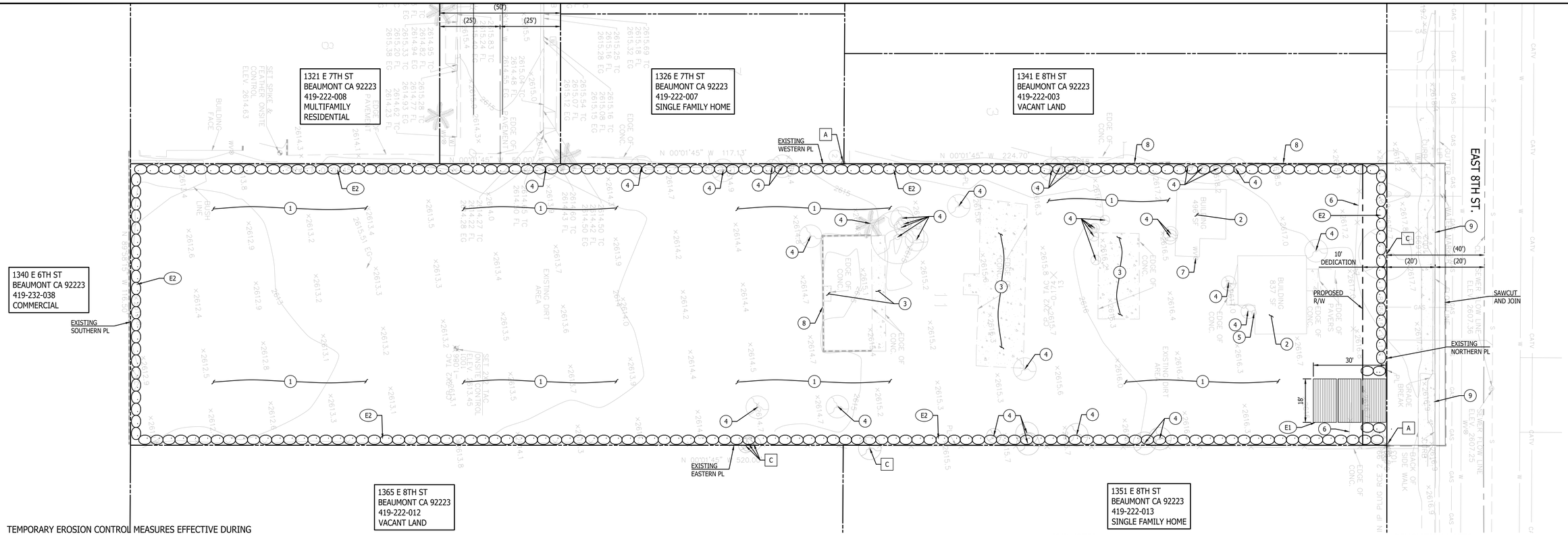
REVIEWED BY: _____ DATE: _____
STAFF ENGINEER

RECOMMENDED BY: _____ DATE: _____
PRINCIPAL ENGINEER

APPROVED BY: _____ DATE: _____
CITY ENGINEER

CITY OF BEAUMONT, CALIFORNIA
IMPROVEMENT PLANS FOR:
SURVEY (FOR REFERENCE ONLY)

SHEET 2 OF 11 SHEETS
FILE NO: PW2024-1098



TEMPORARY EROSION CONTROL MEASURES EFFECTIVE DURING RAINY SEASON (OCTOBER-APRIL):

1. TEMPORARY EROSION CONTROL DEVICES SHOWN ON THE WWECP WHICH INTERFERE WITH THE WORK SHALL BE RELOCATED OR MODIFIED AS AND WHEN THE INSPECTOR SO DIRECTS AS THE WORK PROGRESSES TO MEET "AS GRADED" CONDITIONS.
2. ALL LOOSE SOIL AND DEBRIS SHALL BE REMOVED FROM THE STREET AREAS UPON STARTING OPERATIONS AND PERIODICALLY THEREAFTER AS DIRECTED BY THE INSPECTOR.
3. WHEN DIRECTED BY THE INSPECTOR, A 12-INCH BERM SHALL BE MAINTAINED ALONG THE TOP OF THE SLOPE OF THOSE FILLS ON WHICH GRADING IS NOT IN PROGRESS.
4. PROVIDE VELOCITY CHECK DAMS ACROSS THE OUTLET OF ALL LOTS DRAINING INTO THE STREET.
5. ALL FILLS SHALL BE GRADED TO PROMOTE DRAINAGE AWAY FROM THE EDGES OF THE FILL.
6. ALL UTILITY TRENCHES SHALL BE BLOCKED AT THE PRESCRIBED INTERVALS FROM THE BOTTOM TO TOP WITH A DOUBLE ROW OF SANDBAGS PRIOR TO BACKFILL. STORM AND SEWER TRENCHES SHALL BE BLOCKED AT THE PRESCRIBED INTERVALS WITH A DOUBLE ROW OF SANDBAGS EXTENDING UPWARD, TO WITHIN TWO SANDBAGS FROM THE GRADED SURFACE OF THE STREET. SANDBAGS ARE TO BE PLACED WITH ALTERNATE HEADER AND STRETCHER COURSES. THE INTERVALS PRESCRIBED BETWEEN SANDBAG BLOCKING SHALL DEPEND ON THE SLOPE OF THE GROUND SURFACE, BUT NOT TO EXCEED THE FOLLOWING:

GRADE OF STREET	INTERVAL
LESS THAN 2%	AS REQUIRED
2% TO 4%	100 FEET
4% TO 10%	50 FEET
OVER 10%	25 FEET

7. PROVIDE STANDARD "VELOCITY CHECK DAMS" AT ALL UNPAVED STREET AREAS AT THE INTERVALS INDICATED IN PARAGRAPH 6 ABOVE. VELOCITY CHECK DAMS MAY BE CONSTRUCTED OF SANDBAGS, TIMBER, OR OTHER EROSION RESISTANT MATERIAL APPROVED BY THE INSPECTOR AND SHALL EXTEND COMPLETELY ACROSS THE STREET OR CHANNEL AT RIGHT ANGLES TO THE CENTERLINE. EARTH DAMS MAY NOT BE USED AS "VELOCITY CHECK DAMS".
8. PROVIDE STANDARD "VELOCITY CHECK DAMS" IN ALL UNPAVED GRADED CHANNELS AT THE INTERVALS INDICATED BELOW.

GRADE OF CHANNEL	INTERVALS BETWEEN CHECK DAMS
LESS THAN 3%	100 FEET
3% TO 6%	50 FEET
OVER 6%	25 FEET

9. THE STANDARD "VELOCITY CHECK DAM" SHALL HAVE A MINIMUM HEIGHT OF 12-INCHES. VELOCITY CHECK DAMS ACROSS OUTLETS OF ALL LOTS SHALL HAVE A MINIMUM HEIGHT OF 18-INCHES. VELOCITY CHECK DAMS CONSTRUCTED WITH SANDBAGS THAT ARE 18-INCHES HIGH SHALL BE BUILT WITH A DOUBLE ROW.
10. AFTER SEWER AND UTILITY TRENCHES ARE BACKFILLED AND COMPACTED, THE SURFACES OVER SUCH TRENCHES SHALL BE MOUNDED SLIGHTLY TO PREVENT CHANNELING OF WATER IN THE TRENCH AREA. CARE SHOULD BE EXERCISED TO PROVIDE FOR CROSS FLOW AT FREQUENT INTERVALS WHEN TRENCHES ARE NOT ON THE CENTERLINE OF A CROWNED STREET.
11. EXCEPT AS OTHERWISE DIRECTED BY THE INSPECTOR, ALL DEVICES SHOWN SHALL BE IN PLACE AT THE END OF EACH WORKING DAY WHEN THE FORECAST OF RAIN PROBABILITY EXCEED 40% AND MAINTAINED DURING THE RAINY SEASON (OCTOBER 1 TO APRIL 15).
12. AFTER EACH STORM, ALL "DESILTING BASINS " AND "VELOCITY CHECK DAMS" SHALL BE PUMPED DRY AND REMOVED OF ALL DEBRIS AND SILT WITH IN 24 HOURS AND RESTORED TO THEIR ORIGINAL CAPACITY.
13. EROSION CONTROL DEVICES SHALL BE STOCKPILED IN PARKWAYS AT INTERVALS SHOWN ON THE WWECP, READY TO BE PLACED IN POSITION WHEN RAIN IS FORECASTED OR WHEN DIRECTED BY THE INSPECTOR.
14. ALL CUT AND FILL SLOPES GREATER THAN 1 VERTICAL TO 3 HORIZONTAL SHALL BE COVERED WITH 10 MIL PLASTIC SHEETING HELD IN PLACE WITH SANDBAGS (UNLESS PLANTED OR HYDRO-SEEDED).
15. BRUSH AND VEGETATIVE GROUND COVER MAY NOT BE REMOVED MORE THAN 10-FEET ABOVE FILLS DURING THE RAINY SEASON WHICH OCCURS BETWEEN OCTOBER 1 AND APRIL 15.

JOB ADDRESS: 1343 EAST 8TH ST. BEAUMONT, CALIFORNIA 92223

OWNER: NATIONAL COMMUNITY RENAISSANCE 9421 HAVEN AVENUE RANCHO CUCAMONGA, CALIFORNIA, 91730

24 HR. EMERGENCY CONTACT:

PROJECT INFORMATION

JOB ADDRESS	1343 EAST 8TH ST. BEAUMONT, CALIFORNIA 92223
APN	419-222-011
OWNER	NCRC BEAUMONT LP 9692 HAVEN AVENUE, SUITE 100 RANCHO CUCAMONGA, CA 91730
24-HR EMERGENCY CONTACT	
TOTAL DISTURBANCE	54,886 SF (1.3 AC)

FOR DESILTING BASINS:

1. ALL "DESILTING BASINS" BUILT ON LOTS ADJACENT TO DWELLINGS MUST BE COMPLETELY LINED WITH AC-2 OR GUNITE.
2. SIZES OF "DESILTING BASINS" AND "WEIRS" SHALL BE SHOWN ON THE PLANS AND HAVE THE CAPACITY TO SERVICE THE AFFECTED WATERSHED.
3. ALL SPILLWAYS FROM BASINS SHALL BE PAVED TO EXISTING PAVED STREETS, EXISTING STORM DRAIN CATCH BASINS OR OTHER APPROVED WATERCOURSES.
4. RETENTION OR DESILTING BASINS MAY NOT BE REMOVED OR MADE INOPERATIVE WITHOUT PRIOR APPROVAL OF THE PUBLIC WORKS ENGINEER UNTIL ALL SURFACE IMPROVEMENTS HAVE BEEN COMPLETED.
5. SEWER OR STORM DRAIN TRENCHES THAT ARE CUT THROUGH BASIN DIKES OR BASIN INLET DIKES SHALL BE PLUGGED WITH SANDBAGS FROM TOP OF PIPE TO TOP OF DIKE. SEWER LINES SHALL FIRST BE ENCASED IN CONCRETE BEFORE SANDBAGS ARE PLACED.
6. "DESILTING" AND "RETENTION" BASINS SHALL BE CONSTRUCTED AS FOLLOWS:

(A.) OUTLET AND APRON – (AS DESCRIBED ON BMP ESC56, "TEMPORARY SEDIMENT BASIN").
(B.) DIKES:
1.SHALL BE COMPACTED TO 95% COMPACTION AND SHALL BE CONSTRUCTED UNDER THE DIRECT SUPERVISION OF THE PUBLIC WORKS EROSION CONTROL INSPECTOR
2.THE PLACEMENT OF SPILLWAYS AND OUTLET PIPES SHALL BE AS FAR AS PRACTICABLE FROM INLETS.
3.BASIN WALLS SHALL NOT EXCEED 2:1 SLOPE.

(C)INLET TO BASINS:

1.WALLS SHALL BE PAVED WITH AC-3 OR CONSTRUCTED SANDBAG BERMS WHEN APPROVED BY THE PUBLIC WORKS EROSION CONTROL INSPECTOR.

2.SLOPE OF INLETS SHALL BE EQUAL TO OR MORE THAN THE SLOPE OF THE CARRYING SURFACE IMMEDIATELY ABOVE THE INLET TO AVOID "SILTING UP" OF THE INLETS.
(D)IF A GRAVITY PIPE IS IMPRACTICABLE, A STAND-BY PUMP SHALL BE PROVIDED FOR EACH DESILTING BASIN. A GUARD IS TO BE ON CONTINUOUS DUTY WHILE THE BASIN CONTAINS WATER.
(E)DESILTING BASINS REQUIRED FOR TEMPORARY EROSION CONTROL SHALL NOT BE PERMITTED IN THE STREET AREAS UNLESS SPECIFICALLY AUTHORIZED BY THE PUBLIC WORKS ENGINEER.

7. A "STANDBY EMERGENCY CREW" SHALL BE ALERTED BY THE DEVELOPER OR CONTRACTOR TO PERFORM EMERGENCY WORK DURING RAINSTORMS. THE PARTY TO BE CONTACTED IS:

NAME:
TELEPHONE:

1. WATER AND SEWER LATERALS NOT BEING RE-USED NEED TO BE REMOVED UP TO R/W AND CAPPED.
2. NO DEMOLITION ON ADJACENT PROPERTY.
3. NO DEMOLITION OF TREES ON PROPERTY LINE WITHOUT ADJACENT PROPERTY OWNER APPROVAL.

BMP NOTES:

EROSION CONTROL

EC1-SCHEDULING
EC2-PRESERVATION OF EXISTING VEGETATION

TEMPORARY SEDIMENT CONTROL

SE7-STREET SWEEPING AND VACUUMING
SE8-SANDBAG BARRIER

EQUIPMENT TRACKING CONTROL

TC1-STABILIZED CONSTRUCTION ENTRANCE/EXIT
TC3-ENTRANCE/OUTLET TIRE WASH

WIND EROSION CONTROL

WE1-WIND EROSION CONTROL

NON-STORMWATER MANAGEMENT

NS1-WATER CONSERVATION PRACTICES
NS3-PAVING AND GRINDING OPERATIONS
NS12-CONCRETE CURING
NS13-CONCRETE FINISHING

WASTE MANAGEMENT & MATERIALS POLLUTION CONTROL

WM1-MATERIAL DELIVERY AND STORAGE
WM2-MATERIAL USE
WM3-STOCKPILE MANAGEMENT
WM4-SPILL PREVENTION AND CONTROL
WM5-SOLID WASTE MANAGEMENT
WM6-HAZARDOUS WASTE MANAGEMENT
WM7-CONTAMINATED SOIL MANAGEMENT
WM8-CONCRETE WASTE MANAGEMENT
WM9-SANITARY/SEPTIC WASTE MANAGEMENT
WM10-LIQUID WASTE MANAGEMENT

DUST CONTROL NOTES:

1. DUST SHALL BE CONTROLLED BY WATERING AND/OR APPLYING A DUST PALLIATIVE. THE DUST PALLIATIVE SHALL BE APPLIED IN THE AMOUNT AT THE LOCATIONS AS DIRECTED BY THE ENGINEER.
2. WATER FOR DUST CONTROL SHALL BE APPLIED BY MEANS OF PRESSURE TYPE DISTRIBUTORS OR PIPE LINES EQUIPPED WITH A SPAY SYSTEM OR HOSES WITH NOZZLES THAT WILL INSURE A UNIFORM APPLICATION OF WATER.
3. UNLESS WATER IS APPLIED BY MEANS OF PIPE LINES, AT LEAST ONE MOBILE UNIT WITH A MINIMUM CAPACITY OF 100 GALLONS SHALL BE AVAILABLE FOR APPLYING WATER.
4. ALL SOIL MATERIALS OR DEBRIS TRUCKED FROM THE SITE SHALL BE COVERED AND SPRINKLED PRIOR TO ENTERING PUBLIC STREETS.
5. PROVIDE FOR WET SUPPRESSION OR CHEMICAL STABILIZING OF EXPOSED SOILS.
6. PROVIDE FOR RAPID CLEAN-UP OF SEDIMENTS DEPOSITED ON THE PAVED ROADS.
7. LIMIT THE AMOUNT OF AREAS DISTURBED BY CLEARING & EARTH MOVING OPERATIONS BY SCHEDULING THESE ACTIVITIES IN PHASES.

DEMOLITION NOTES:

1. REMOVE AND DEMOLISH EXISTING DIRT LOT.
2. REMOVE AND DEMOLISH EXISTING STRUCTURE AND APPURTENANCES.
3. REMOVE AND DEMOLISH EXISTING CONCRETE.
4. REMOVE AND DEMOLISH EXISTING TREE.
5. REMOVE AND DEMOLISH EXISTING SEWER CLEANOUT.
6. REMOVE AND DEMOLISH EXISTING FENCE.
7. REMOVE AND DEMOLISH EXISTING WATER VALVE.
8. REMOVE AND DEMOLISH EXISTING BLOCK WALL.
9. REMOVE AND DEMOLISH EXISTING DRIVEWAY.

PROTECTION NOTES:

- A PROTECT IN PLACE EXISTING SURVEY MONUMENT.
- B PROTECT IN PLACE EXISTING CMU WALL.
- C PROTECT IN PLACE EXISTING TREE.

EROSION CONTROL NOTES:

- E1 STABILIZED CONSTRUCTION ENTRANCE PER DETAIL 7, SHEET C2.00. CONSTRUCTION ENTRANCE TO BE RELOCATED AS NEEDED BY CONTRACTOR.
- E2 FIBER ROLLS PER DETAIL 8, SHEET C2.00. FIBER ROLLS TO BE RELOCATED AS NEEDED BY CONTRACTOR.

LEGEND:

PROPERTY LINE

FIBER ROLLS

20 10 0 20 40 60
SCALE: 1"= 20'

DIGALERT Call 2 Working Days Before You Dig! 811

BENCHMARK:
THE TOP OF CURB AT THE POINT OF CURVATURE AT THE NORTHEAST CORNER OF THE NORTHWEST CURB RETURN AT THE INTERSECTION OF HIGHLAND SPRINGS AVENUE AND 2ND STREET.

ELEV. 2559.03, TBM

BY	MARK	DESCRIPTION	APPR.	DATE
	1			

ENGINEER — REVISIONS — CITY

DK ENGINEER CORP.
6420 WILSHIRE BLVD. #1000
LOS ANGELES, CA 90048
310.926.0248

MATT PLOURDE, PE
R.C.E. C84893
02/08/2024
DATE

SEAL: REGISTERED PROFESSIONAL ENGINEER — MATT PLOURDE — No. C84893 — CIVIL — STATE OF CALIFORNIA

DESIGN BY: MG
DRAWN BY: PN, SS
CHECKED BY: MP
SCALE: AS NOTED
DATE:
JOB NUMBER:

BEAUMONT CALIFORNIA
PUBLIC WORKS DEPARTMENT
550 E. 6TH ST, BEAUMONT, CA 92223

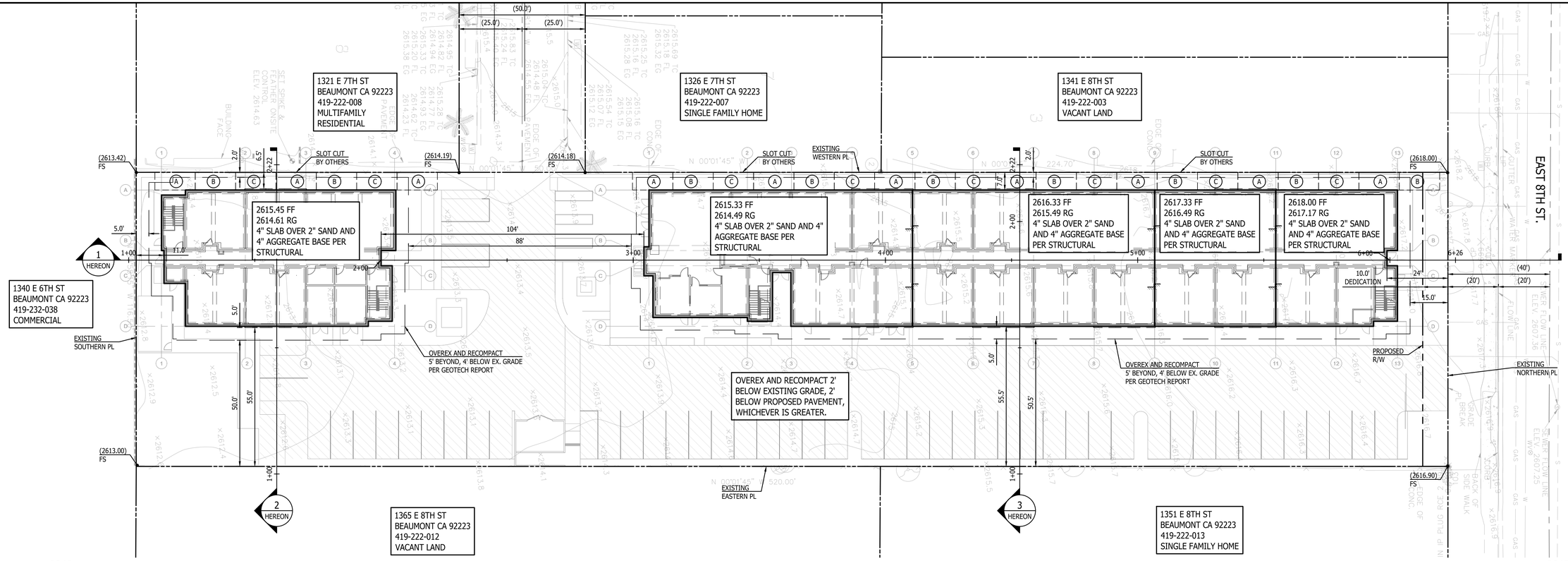
REVIEWED BY: _____ STAFF ENGINEER DATE: _____
RECOMMENDED BY: _____ PRINCIPAL ENGINEER DATE: _____
APPROVED BY: _____ CITY ENGINEER DATE: _____

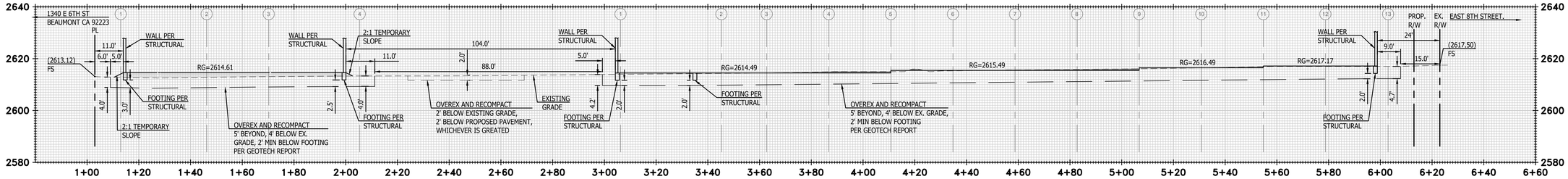
CITY OF BEAUMONT, CALIFORNIA

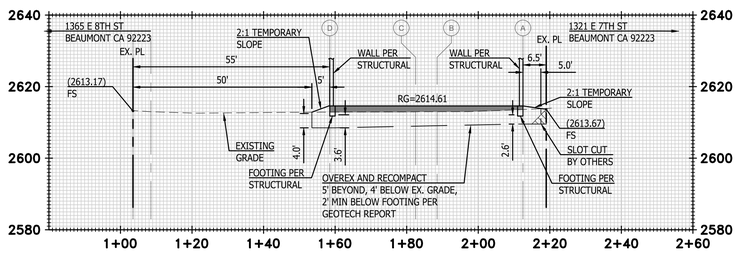
IMPROVEMENT PLANS FOR:

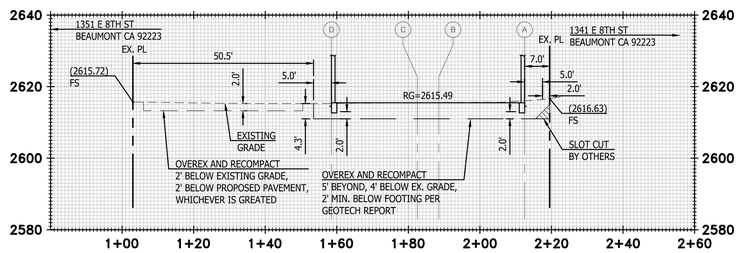
EROSION CONTROL AND DEMOLITION PLAN

SHEET 3 OF 11 SHEETS
FILE NO: PW2024-1098









SECTION 1
HORIZONTAL SCALE: 1"=20'
VERTICAL SCALE: 1"=20'

SECTION 2
HORIZONTAL SCALE: 1"=20'
VERTICAL SCALE: 1"=20'

SECTION 3
HORIZONTAL SCALE: 1"=20'
VERTICAL SCALE: 1"=20'

LEGEND:

- BUILDING WALL PER STRUCTURAL
- REMOVAL AND RECOMPACTION
- TOE/TOP OF SLOPE
- PAVEMENT OVEREXCAVATION PER GEOTECH
- (A) (B) (C) SLOT CUT BY OTHERS SEE DETAIL 1, SHEET 11

ESTIMATED EARTHWORK QUANTITIES

CUT:	105 CUBIC YARDS
FILL:	340 CUBIC YARDS
BUILDING SLAB REMOVAL AND RECOMPACTION:	3,820 CUBIC YARDS
PAVEMENT REMOVAL AND RECOMPACTION:	1,700 CUBIC YARDS
NET (IMPORT):	235 CUBIC YARDS

NOTES:
1. QUANTITIES SHOWN ON HERE ARE FOR PLAN CHECK PURPOSES ONLY. CONTRACTOR TO GENERATE OWN QUANTITIES FOR BIDDING PURPOSES.

20 10 0 20 40 60
SCALE: 1"= 20'

DIGALERT
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811

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ENGINEER		REVISIONS	CITY	

DK ENGINEER CORP.
6420 WILSHIRE BLVD. #1000
LOS ANGELES, CA 90048
310.926.0248

MATT PLOURDE, PE
R.C.E. C84893
02/08/2024
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BEAUMONT CALIFORNIA
PUBLIC WORKS DEPARTMENT
550 E. 6TH ST, BEAUMONT, CA 92223

REVIEWED BY: _____ DATE: _____
STAFF ENGINEER

RECOMMENDED BY: _____ DATE: _____
PRINCIPAL ENGINEER

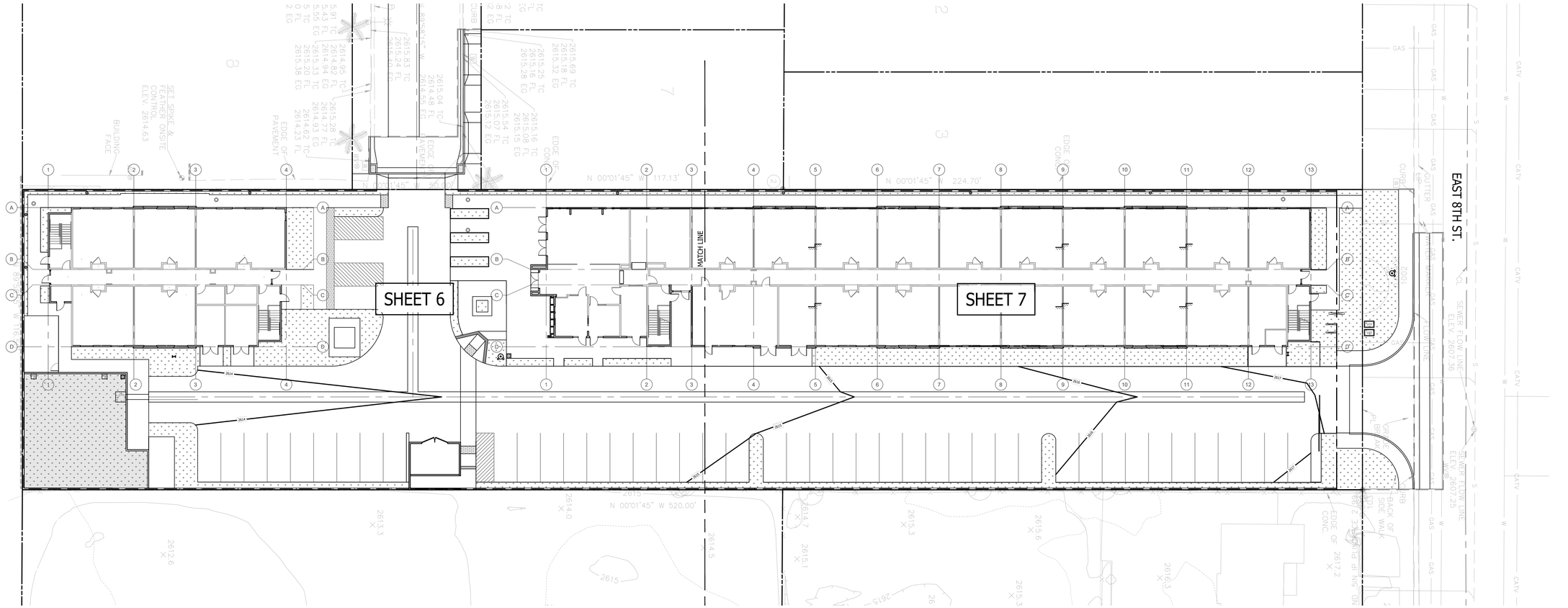
APPROVED BY: _____ DATE: _____
CITY ENGINEER

CITY OF BEAUMONT, CALIFORNIA

IMPROVEMENT PLANS FOR:

ROUGH GRADING PLAN AND SECTIONS

SHEET 4 OF 11 SHEETS
FILE NO: PW2024-1098



20 10 0 20 40 60

SCALE: 1"= 20'

DIGALERT — Call 2 Working Days Before You Dig! 811

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PUBLIC WORKS DEPARTMENT
550 E. 6TH ST, BEAUMONT, CA 92223

REVIEWED BY: _____ DATE: _____
STAFF ENGINEER

RECOMMENDED BY: _____ DATE: _____
PRINCIPAL ENGINEER

APPROVED BY: _____ DATE: _____
CITY ENGINEER

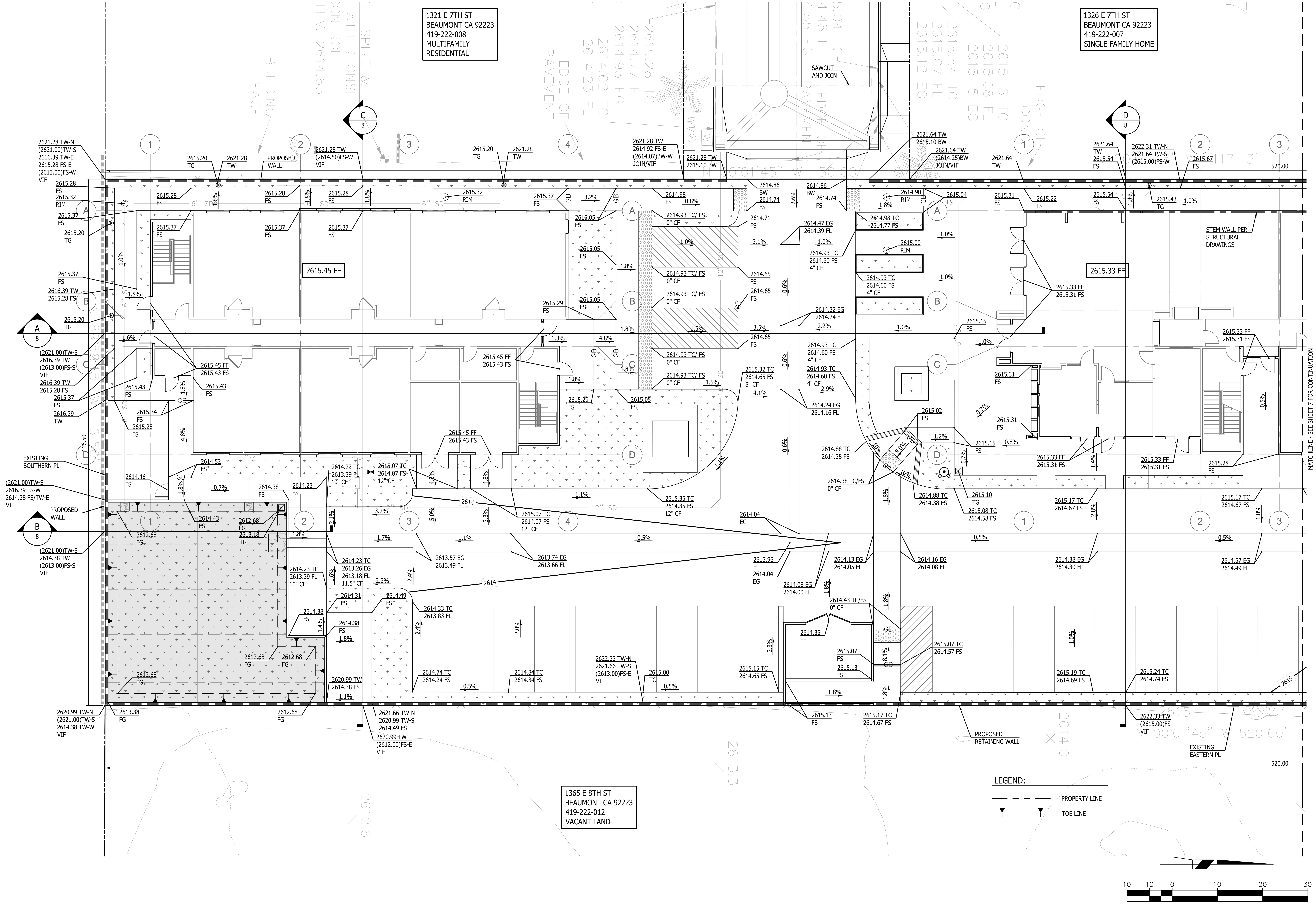
CITY OF BEAUMONT, CALIFORNIA

IMPROVEMENT PLANS FOR:

OVERALL GRADING PLAN

SHEET 5 OF 11 SHEETS

FILE NO: PW2024-1098



DIGALERT Call 2 Working Days Before You Dig! 811	BENCHMARK: THE TOP OF CURB AT THE POINT OF CURVATURE AT THE NORTHEAST CORNER OF THE NORTHWEST CURB RETURN AT THE INTERSECTION OF HIGHLAND SPRINGS AVENUE AND 2ND STREET. ELEV. 2559.03, TBM

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APPROVED BY: ______ CITY ENGINEER DATE: ______

CITY OF BEAUMONT, CALIFORNIA
IMPROVEMENT PLANS FOR:

GRADING PLAN

SHEET 6 OF 11 SHEETS
FILE NO: PW2024-1098

EAST 8TH ST.

EXISTING WESTERN PL

520.00'

2622.98 TW-N
2622.31 TW-S
(2617.00)FS-W
VIF

2616.26 FS

2622.31 TW
(2617.00)FS-W
VIF

2623.65 TW-N
2622.98 TW-S
(2617.00)FS-W
VIF

PROPOSED WALL

2624.32 TW-N
2623.65 TW-S
(2617.50)FS-W
VIF

2617.22 FS

2617.70 FS

2618.15 RIM

2624.32 TW
(2618.00)FS-W
VIF

SAWCUT AND JOIN
(2618.13)FS JOIN/VIF
(2618.00)FS JOIN/VIF

(2618.13)TC
(2617.47)FL
JOIN/VIF

(2618.09)TC
(2617.43)FL
JOIN/VIF

(2617.93)TC
(2617.16)FL
JOIN/VIF

2616.15 TG
2616.22 FS
2616.34 FS
2616.62 FS
2616.54 FS
2616.78 TG
2616.89 FS
2617.30 FS
2617.33 FS
2617.48 TG
2617.57 FS
2617.78 FS
2618.00 FS
2618.26 FS
2618.32 FS
2618.13 FS
2618.03 FS
2618.30 FS

STEM WALL PER STRUCTURAL DRAWINGS

2615.33 FF
2616.33 FF
2617.33 FF
2618.00 FF

10.0' DEDICATION

(20')
(40')

2617.94 FS
2617.88 FS
2617.98 FS
2617.79 FS
2617.64 FS

2615.33 FF 2615.31 FS
2616.15 FG
2616.93 FG
2616.58 TC 2616.08 FS
2617.46 FG
2618.00 FF 2617.98 FS

PROPOSED R/W

2618.04 TC 2617.54 FS
2617.62 TC 2617.12 FS
2617.47 FS 0" CF

2615.16 TC 2614.66 FS
2615.23 TC 2614.90 FS 4" CF
2615.80 TC 2615.30 FS
2617.11 TC 2616.61 FS
2616.85 EG
2616.77 FL

EXISTING NORTHERN PL

2614.74 EG 2614.66 FL
2614.80 EG 2614.72 FL
2615.20 EG 2615.12 FL
2615.80 EG 2615.72 FL
2616.33 EG 2616.25 FL
2616.72 EG 2616.64 FL

2615.52 TC 2615.02 FS
2616.34 TC 2615.84 FS
2617.42 TC 2616.92 FS

2616.66 TC
(2616.58)FL
1" CF
JOIN/VIF

2616.00 FS
2616.11 TC 2615.61 FS
2616.53 TC 2616.03 FS
2617.04 TC 2616.64 FS
2617.50 TC 2617.00 FS
2617.58 TC 2617.08 FS

2623.00 TW
(2617.00)FS
JOIN/VIF

2616.67 TC
(2616.28)FL
8" CF
JOIN/VIF

(2616.85)TC
(2616.26)FL
JOIN/VIF

2615.71 TC 2615.21 FS
2623.00 TW-N
2622.33 TW-S
(2615.00)FS-E
VIF
2623.00 TW

(2617.00)BW
JOIN/VIF

SAWCUT AND JOIN

MATCHLINE - SEE SHEET 6 CONTINUATION

1351 E 8TH ST
BEAUMONT CA 92223
419-222-013
SINGLE FAMILY HOME

LEGEND:
PROPERTY LINE
TOE LINE

SCALE: 1"= 10'

DIGALERT
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ELEV. 2559.03, TBM

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310.926.0248

MATT PLOURDE, PE
R.C.E. C84893
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DATE

SEAL
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MATT PLOURDE
No. C84893
CIVIL
STATE OF CALIFORNIA

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BEAUMONT
CALIFORNIA
PUBLIC WORKS DEPARTMENT
550 E. 6TH ST, BEAUMONT, CA 92223

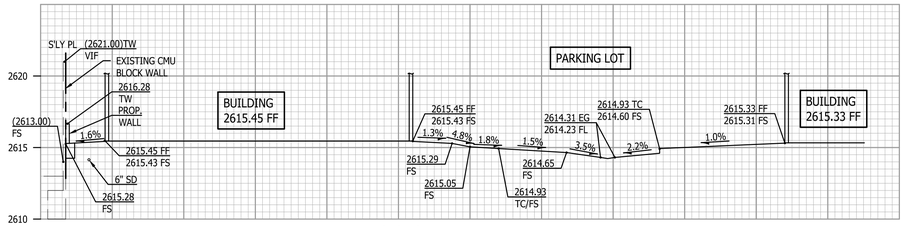
REVIEWED BY: _____ DATE: _____
STAFF ENGINEER

RECOMMENDED BY: _____ DATE: _____
PRINCIPAL ENGINEER

APPROVED BY: _____ DATE: _____
CITY ENGINEER

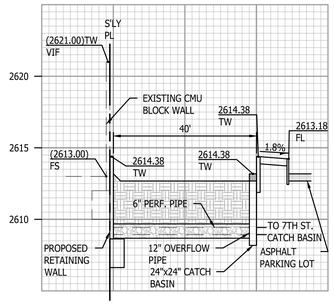
CITY OF BEAUMONT, CALIFORNIA
IMPROVEMENT PLANS FOR:
GRADING PLAN

SHEET 7 OF 11 SHEETS
FILE NO: PW2024-1098



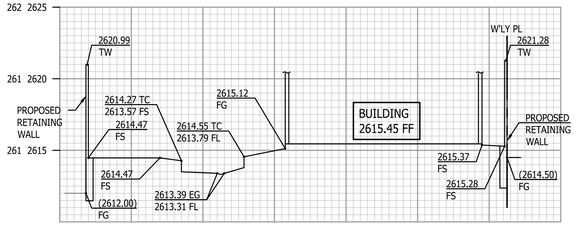
SECTION A

SCALE:
H: 1"=20', V: 1"=5'



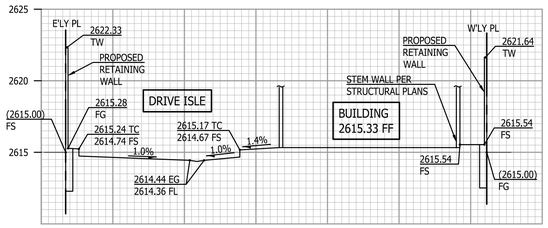
SECTION B

SCALE:
H: 1"=20', V: 1"=5'



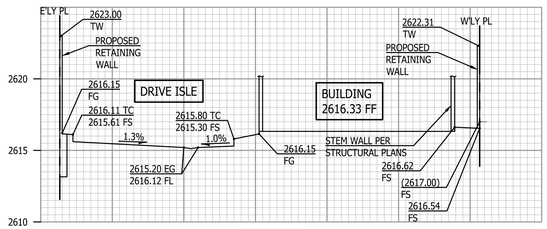
SECTION C

SCALE:
H: 1"=20', V: 1"=5'



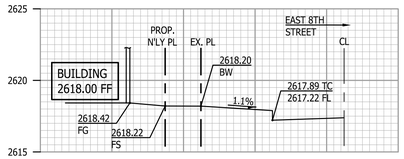
SECTION D

SCALE:
H: 1"=20', V: 1"=5'



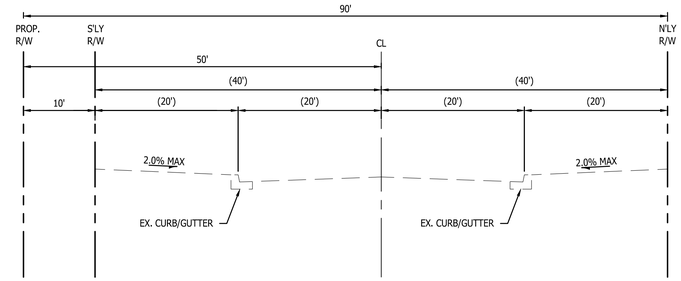
SECTION E

SCALE:
H: 1"=20', V: 1"=5'



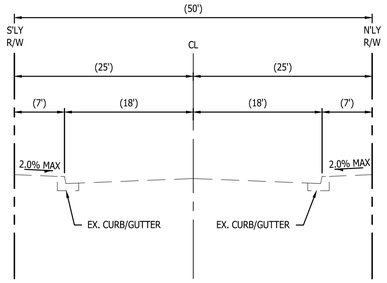
SECTION F

SCALE:
H: 1"=20', V: 1"=5'



8TH STREET EXISTING SECTION

SCALE: 1"=10'



7TH STREET EXISITNG SECTION

SCALE: 1"=10'

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BENCHMARK:
THE TOP OF CURB AT THE POINT OF CURVATURE AT THE NORTHEAST CORNER OF THE NORTHWEST CURB RETURN AT THE INTERSECTION OF HIGHLAND SPRINGS AVENUE AND 2ND STREET.

ELEV. 2559.03, TBM

BY	MARK	DESCRIPTION	APPR.	DATE
	1			

ENGINEER — REVISIONS — CITY

DK ENGINEER CORP.
6420 WILSHIRE BLVD. #1000
LOS ANGELES, CA 90048
310.926.0248

MATT PLOURDE, PE
R.C.E. C84893
02/08/2024
DATE

SEAL: REGISTERED PROFESSIONAL ENGINEER — MATT PLOURDE — No. C84893 — CIVIL — STATE OF CALIFORNIA

DESIGN BY: MG
DRAWN BY: PN, SS
CHECKED BY: MP
SCALE: AS NOTED
DATE:
JOB NUMBER:

BEAUMONT — CALIFORNIA
PUBLIC WORKS DEPARTMENT
550 E. 6TH ST, BEAUMONT, CA 92223

REVIEWED BY: _____ DATE: _____
STAFF ENGINEER

RECOMMENDED BY: _____ DATE: _____
PRINCIPAL ENGINEER

APPROVED BY: _____ DATE: _____
CITY ENGINEER

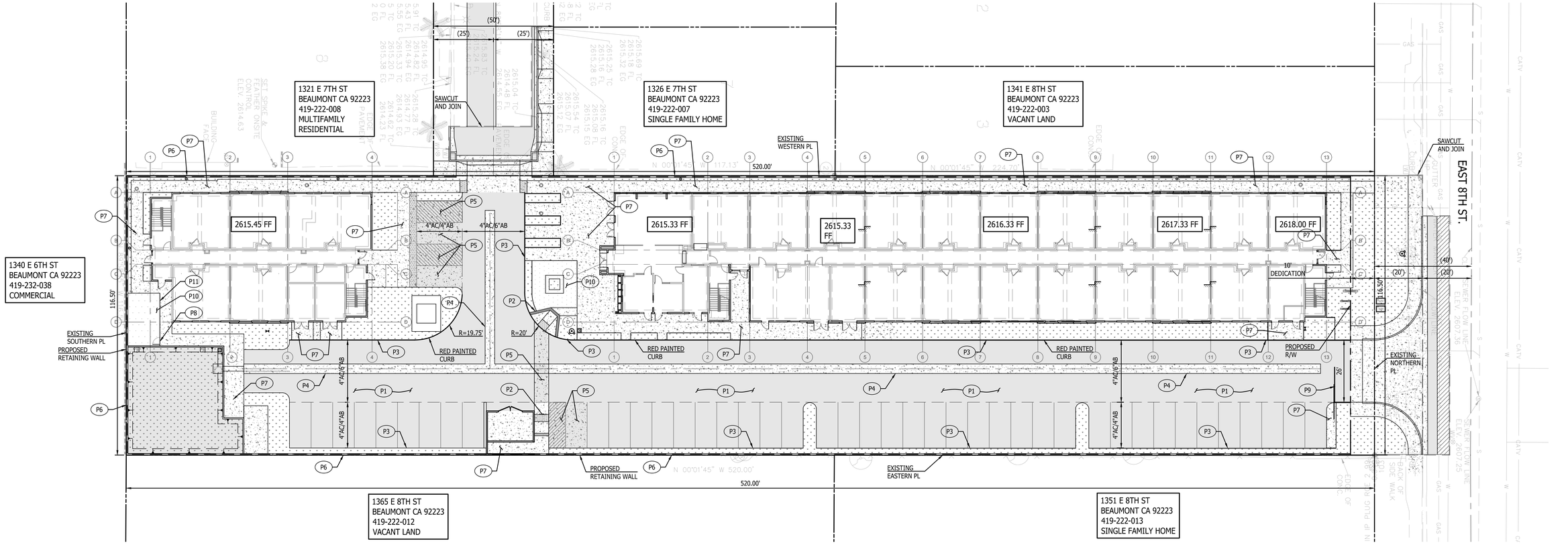
CITY OF BEAUMONT, CALIFORNIA

IMPROVEMENT PLANS FOR:

GRADING SECTIONS

SHEET 8 OF 11 SHEETS

FILE NO: PW2024-1098



PAVING CONSTRUCTION NOTES:

- P1 ASPHALT CONCRETE PAVING PER DETAIL 3, SHEET 10.
- P2 CURB RAMP PER SPPWC STD. PLAN 111-5. SEE DETAIL 6, SHEET 10.
- P3 CONCRETE CURB PER DETAIL 5, SHEET 10.
- P4 CONCRETE VALLEY GUTTER PER DETAIL 2, SHEET 10.
- P5 VEHICLE RATED CONCRETE PAVING PER DETAIL 1, SHEET 10.
- P6 RETAINING WALL PER STRUCTURAL PLANS. RETAINING WALL UNDER SEPARATE PERMIT.
- P7 PEDESTRIAN RATED CONCRETE PAVING PER DETAIL 4, SHEET 10.
- P8 GATE PER LANDSCAPE PLANS.
- P9 VEHICULAR GATE AND FENCE PER LANDSCAPE PLANS.
- P10 TURF PER LANDSCAPE PLANS.
- P11 FENCE PER LANDSCAPE PLANS.

LEGEND:

- ASPHALT PAVING
- CONCRETE PAVING
- VEHICLE RATED CONCRETE PAVING
- LANDSCAPING
- BIORETENTION FACILITY
- ARTIFICIAL TURF PER LANDSCAPE PLANS

N

0 10' 20'

SCALE: 1"=20'

DIGALERT Call 2 Working Days Before You Dig! 811

BENCHMARK:
THE TOP OF CURB AT THE POINT OF CURVATURE AT THE NORTHEAST CORNER OF THE NORTHWEST CURB RETURN AT THE INTERSECTION OF HIGHLAND SPRINGS AVENUE AND 2ND STREET.

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	1			

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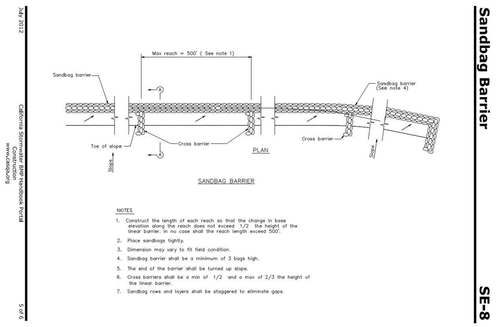
CITY ENGINEER

CITY OF BEAUMONT, CALIFORNIA
IMPROVEMENT PLANS FOR:

PAVING PLAN

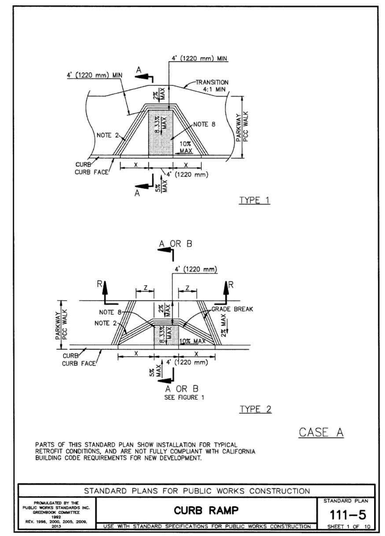
SHEET 9 OF 11 SHEETS
FILE NO: PW2024-1098



Sandbag Barrier **SE-8**

July 2012 California Stormwater BMP Handbook Construction www.cabmphandbooks.com 5 of 6

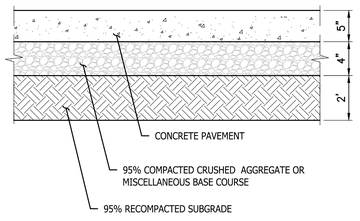
8 FIBER ROLLS N.T.S.



PARTS OF THIS STANDARD PLAN SHOW INSTALLATION FOR TYPICAL RETROFIT CONDITIONS, AND ARE NOT FULLY COMPLIANT WITH CALIFORNIA BUILDING CODE REQUIREMENTS FOR NEW DEVELOPMENT.

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION		
PROMULGATED BY THE PUBLIC WORKS STANDARDS INC. GREENBOOK COMMITTEE 2015 REV. 1999, 2000, 2002, 2003, 2006, 2015	**CURB RAMP** USE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION	STANDARD PLAN **111-5** SHEET 1 OF 10

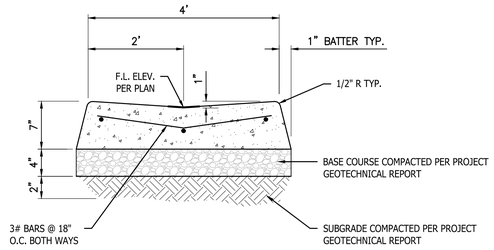
6 CURB RAMP N.T.S.



NOTES:

1. PAVEMENT SECTIONS ARE BASED ON RECOMMENDATIONS FROM THE PROJECT GEOTECHNICAL REPORT.
2. REFER TO ARCHITECTURAL PLANS FOR CONCRETE COLOR, PATTERN, TEXTURE, AND FINISH.
3. SEE SHEET 9 FOR LOCATION OF CONTROL JOINTS.

4 PEDESTRIAN RATED CONCRETE PAVEMENT N.T.S.

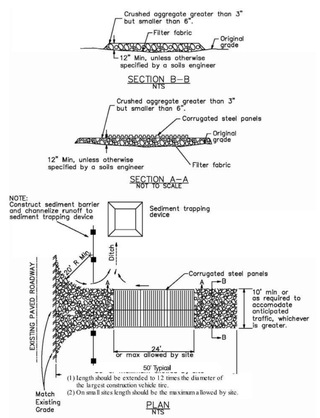


NOTES:

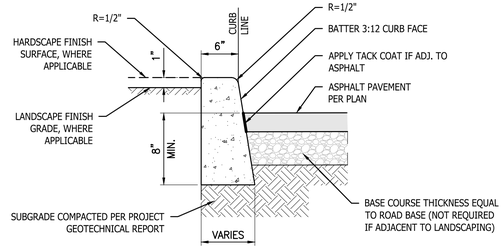
1. ISOLATION JOINTS SHALL BE PLACED ONLY AS SPECIFIED.
2. CONTROL JOINTS CONSISTING OF 1" DEEP SCORES SHALL BE PLACED AT 10' INTERVALS O.C.

2 CONCRETE VALLEY GUTTER N.T.S.

Stabilized Construction Entrance/Exit TC-1



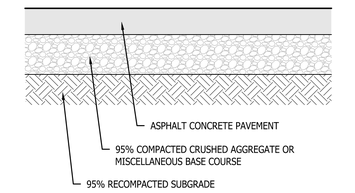
7 STABILIZED CONSTRUCTION ENTRANCE N.T.S.



NOTES:

1. ISOLATION JOINTS SHALL BE PLACED ONLY AS SPECIFIED.
2. CONTROL JOINTS CONSISTING OF 1" DEEP SCORES SHALL BE PLACED AT 10' INTERVALS O.C.
3. WHERE A WALK IS ADJACENT TO THE CURB, THE JOINTS SHALL ALIGN WITH JOINTS IN THE WALK.

5 CONCRETE CURB N.T.S.

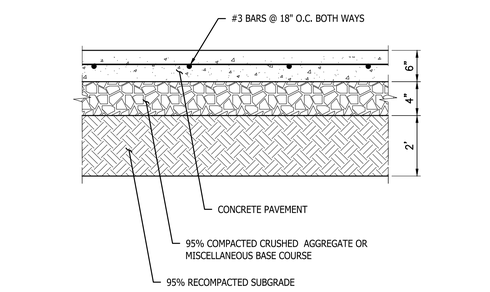


TRAFFIC INDEX	ASPHALT CONCRETE (INCHES)	BASE COURSE (INCHES)	RECOMPACTED SUBGRADE (INCHES)
4.5	4"	4"	2'
5.5	4"	6"	2'

NOTE:

1. PAVEMENT SECTIONS ARE BASED ON RECOMMENDATIONS FROM THE PROJECT GEOTECHNICAL REPORT.

3 ASPHALT PAVEMENT SECTION N.T.S.



NOTES:

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2. REFER TO ARCHITECTURAL PLANS FOR CONCRETE COLOR, PATTERN, TEXTURE, AND FINISH.
3. SEE SHEET 9 FOR LOCATION OF CONTROL JOINTS.

1 VEHICLE RATED CONCRETE PAVEMENT N.T.S.

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BENCHMARK:
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ELEV. 2559.03, TBM

BY	MARK	DESCRIPTION	APPR.	DATE
ENGINEER		REVISIONS	CITY	

DK ENGINEER CORP.
6420 WILSHIRE BLVD. #1000
LOS ANGELES, CA 90048
310.926.0248

MATT PLOURDE, PE
R.C.E. C84893
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DATE

SEAL: REGISTERED PROFESSIONAL ENGINEER — MATT PLOURDE — No. C84893 — CIVIL — STATE OF CALIFORNIA

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CHECKED BY: MP
SCALE: AS NOTED
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JOB NUMBER:

BEAUMONT — CALIFORNIA
PUBLIC WORKS DEPARTMENT
550 E. 6TH ST, BEAUMONT, CA 92223

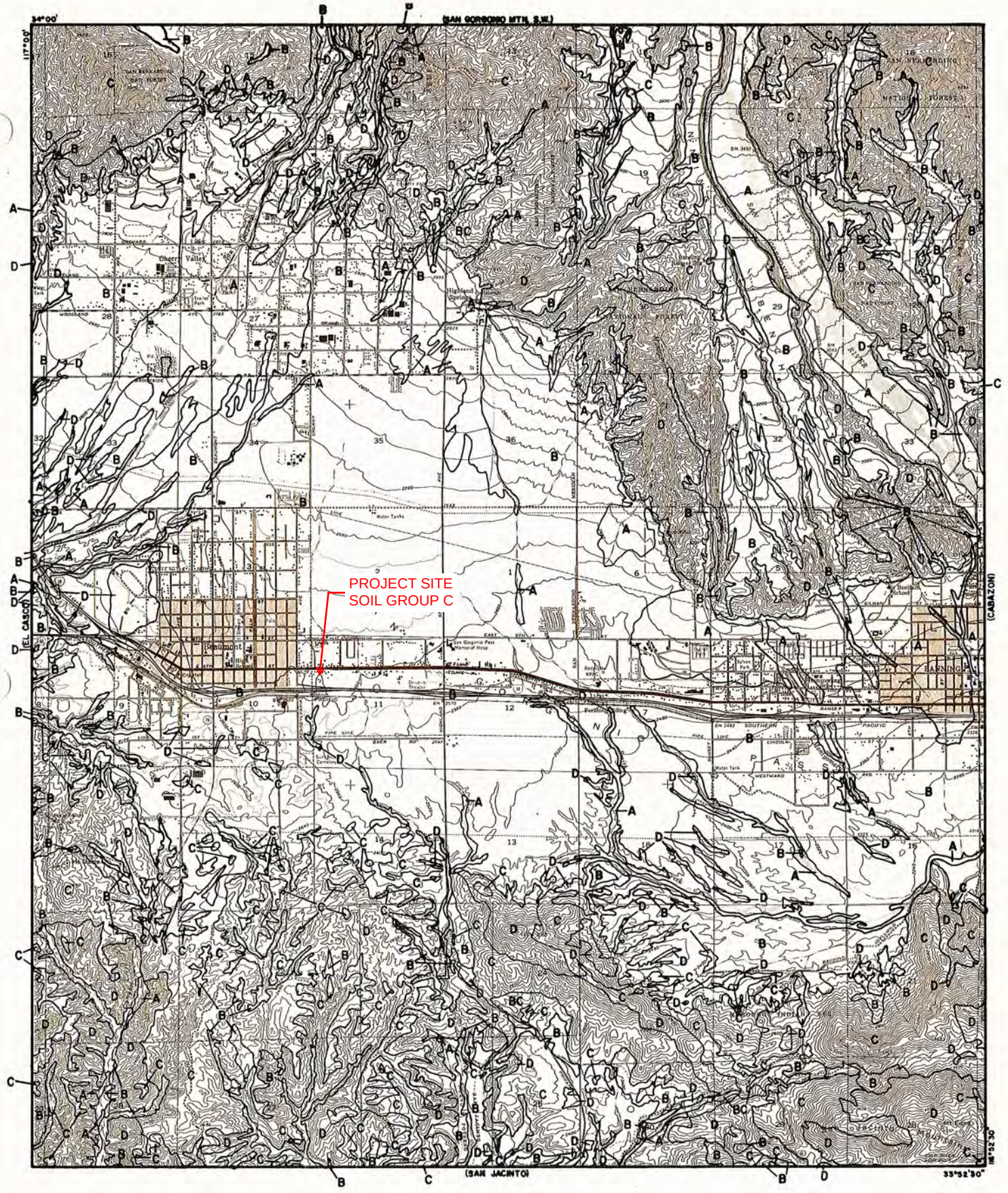
REVIEWED BY: _____ DATE: _____ STAFF ENGINEER
RECOMMENDED BY: _____ DATE: _____ PRINCIPAL ENGINEER
APPROVED BY: _____ DATE: _____ CITY ENGINEER

CITY OF BEAUMONT, CALIFORNIA
IMPROVEMENT PLANS FOR:
DETAILS

SHEET 10 OF 11 SHEETS
FILE NO: PW2024-1098

Appendix 3: Soils Information

Geotechnical Study and Other Infiltration Testing Data



LEGEND

—— SOILS GROUP BOUNDARY

A SOILS GROUP DESIGNATION

RCFC&WCD

HYDROLOGY MANUAL

N

0 FEET 5000

HYDROLOGIC SOILS GROUP MAP FOR BEAUMONT

PLATE C-1.19

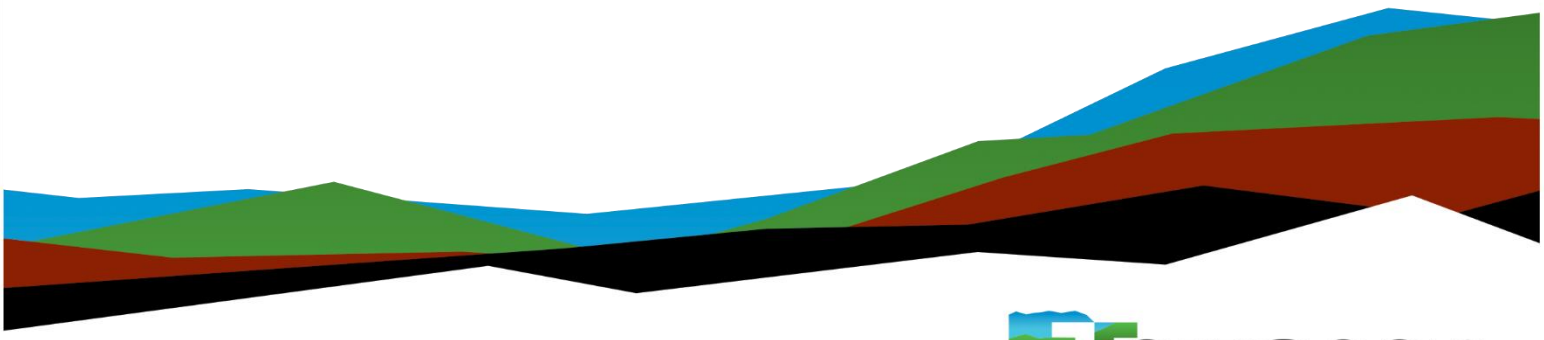
8th Street Apartments

Geotechnical Engineering Report

January 13, 2023 | Terracon Project No. 60225161

Prepared for:

National Community Renaissance
9421 Haven Avenue
Rancho Cucamonga, California, 91730



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January 13, 2023

National Community Renaissance
9421 Haven Avenue
Rancho Cucamonga, California, 91730

Attn: Ms. Tracey Williams
P: (909) 204-3508
E: twilliams@nationalcore.org

Re: Geotechnical Engineering Report
8th Street Apartments
1343 E. 8th Street
Beaumont, Riverside County, California
Terracon Project No. 60225161

Dear Ms. Williams:

We have completed the scope of Geotechnical Engineering services for the above referenced project in general accordance with Terracon Proposal No. P60225161 revised November 1, 2022. This report presents the findings of the subsurface exploration and provides geotechnical recommendations concerning earthwork and the design and construction of foundations, floor slabs, pavements, and infiltration systems for the proposed project.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report or if we may be of further service, please contact us.

Sincerely,

T

Octavio Flores, G.I.T
Staff Geologist

Keith P. Askew, P.E., G.E.
Department Manager

Smriti Dhital, P.E.*
Senior Staff Engineer
Registered in North Carolina

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Attachments

Exploration and Testing Procedures
Site Location and Exploration Plans
Exploration and Laboratory Results
Supporting Information

Note: This report was originally delivered in a web-based format. **Blue Bold** text in the report indicates a referenced section heading. The PDF version also includes hyperlinks which direct the reader to that section and clicking on the Terracon logo will bring you back to this page. For more interactive features, please view your project online at **client.terracon.com**.

Refer to each individual Attachment for a listing of contents.

Introduction

This report presents the results of our subsurface exploration and Geotechnical Engineering services performed for the proposed construction of two separate two-story apartment buildings along with associated parking spaces to be located at 1343 E. 8th Street in Beaumont, Riverside County, California. The purpose of these services was to provide information and geotechnical engineering recommendations relative to:

- Subsurface soil conditions
- Groundwater conditions
- Seismic site classification per IBC
- Site preparation and earthwork
- Foundation design and construction
- Floor slab design and construction
- Pavement design and construction
- Infiltration

The geotechnical engineering Scope of Services for this project included the advancement of test borings, percolation testing, laboratory testing, engineering analysis, and preparation of this report.

Drawings showing the site and boring locations are shown on the **Site Location** and **Exploration Plan**, respectively. The results of the laboratory testing performed on soil samples obtained from the site during our field exploration are included on the boring logs in the **Exploration Results** section.

Project Description

Our initial understanding of the project was provided in our proposal and was discussed during project planning. A period of collaboration has transpired since the project was initiated, and our final understanding of the project conditions is as follows:

Item	Description
Information Provided	The pdf files listed below were provided by National Community Renaissance via email on October 25, 2022. ■ Plat map: Assessor's Map ■ 2022.04.26 – 8th Ave: Conceptual Site Plan ■ Beaumont – Infiltration Locations ■ PRELIM-LINKED: Commonwealth Land Title Report

Item	Description
Project Description	The project consists of the construction of 48 units of apartments within two buildings in Beaumont, California. Appurtenant infrastructure and resident/guest parking are included. We assume the units will remain as rentals, with no plans to convert them to condominiums.
Proposed Structure	The project includes the construction of two separate two story apartment buildings (approximately 32-feet tall) with a footprint encompassing an estimated gross area of 19,000 square feet. There will be a total of 48 units, 51 parking spaces, open space (TOT LOT), dumpster storage, and a transformer.
Building Construction	Wood- or steel-framed building supported on reinforced concrete foundation system with a concrete slab-on-grades.
Finished Floor Elevation	Finished floor elevations were not provided but are assumed to be within 3 feet of existing grade.
Maximum Loads	▪ Columns: 80-200 kips ▪ Walls: 2 to 4 kips per linear foot (klf) ▪ Slabs: 150 pounds per square foot (psf)
Grading/Slopes	Proposed finished grade elevation for the building pad is expected to be at or near existing grades. We anticipate cut and fill on the order of 3 feet will be required to achieve grades. Slopes are anticipated to be less than 5 feet and with an inclination of 2:1 (horizontal:vertical) or flatter.
Below-Grade Structures	None anticipated
Free-Standing Retaining Walls	None anticipated
Pavements	Paved driveway and parking will be constructed on site. We assume flexible (asphalt) pavement sections should be considered. Anticipated traffic indices (TIs) are as follows for pavement: ▪ Auto Parking Areas: TI=4.5 ▪ Auto Driveways: TI=5.5 ▪ The pavement design period: 20 years
Building Code	2022 CBC

Terracon should be notified if any of the above information is inconsistent with the planned construction, especially the grading limits, as modifications to our recommendations may be necessary.

Site Conditions

The following description of site conditions is derived from our site visit in association with the field exploration and our review of publicly available geologic and topographic maps.

Item	Description
Parcel Information	The project is located at 1343 E. 8th Street in Beaumont, Riverside County, California. Latitude/Longitude (approximate) 33.9318°N, 116.9629°W (See Exhibit D)
Existing Improvements	The area of the project site is partially developed, with a residential building and concrete pad on the northern half of the site along with some mature trees. The southern half of the site consists of exposed soils, and light vegetation.
Current Ground Cover	The majority of the project site is bare earthen with light vegetation and concrete slabs.
Existing Topography	The site slopes downward towards the south and has an approximate elevation ranging between 2620 feet and 2614 feet.
Site Geology	The site is located on the Beaumont Plain, between the San Bernardino Mountains and the San Timoteo Badlands. The Beaumont Plain and the site consist of Pleistocene-age, older alluvium that is generally in a dense condition.
Seismic Conditions	Based on the County of Riverside and California Geologic Survey's seismic hazard maps: ▪ Not in Alquist-Priolo Earthquake Fault zone (AP) or within a Riverside County-designated fault zone ▪ Low liquefaction potential

Geotechnical Characterization

We have developed a general characterization of the subsurface conditions based upon our review of the subsurface exploration, laboratory data, geologic setting and our understanding of the project. The individual logs can be found in the **Exploration Results** and the **Figures** attachment of this report.

Stratum Layer	Layer Name	Approximate Depth to Bottom (feet)	General Description	Relative Density / Consistency
1	**Silty Sand, Sandy Silt/Clay**	0 to 26.5	Silty sand with trace clay and trace gravel, sandy silt, and sandy lean clay.	Medium dense to very dense/ very stiff to hard

Groundwater

Groundwater was not observed in the borings while drilling, or for the short duration the borings remained open, to the maximum depth explored of 26½ feet bgs. These observations represent groundwater conditions at the time of the field exploration and may not be indicative of other times, or at other locations.

According to data collected from the Water Data Library for the State of California from a nearby well, located approximately 0.67-miles northwest of the site in State Well number 339397N1169691W001[1], the highest groundwater level, between December 12, 2005 and November 27, 2018, was recorded at greater than 100 feet below a ground surface elevation of 2644 feet at the well location. Based on the elevation of the apartment site, groundwater depth at the site is assumed to be greater than 50 feet bgs.

Seismic Site Class

Seismic Design Parameters

Based on the soil properties encountered at the site and as described on the exploration logs and results, it is our opinion that the Seismic Site Classification is D. The 2022 California Building Code (CBC) Seismic Design Parameters have been generated using the SEAOC/OSHPD Seismic Design Maps Tool. This web-based software application calculates seismic design parameters in accordance with ASCE 7-16 and 2022 CBC. The 2022 CBC requires that a site-specific ground motion study be performed in accordance

[1] California Department of Water Resources, **https://wdl.water.ca.gov/waterdatalibrary/Map.aspx**.

with Section 11.4.8 of ASCE 7-16 for Site Class D sites with a mapped S_1 value greater than or equal 0.2.

However, Section 11.4.8 of ASCE 7-16 includes an exception from such analysis for specific structures on Site Class D sites. The commentary for Section 11 of ASCE 7-16 (Page 534 of Section C11 of ASCE 7-16) states that "In general, this exception effectively limits the requirements for site-specific hazard analysis to very tall and or flexible structures at Site Class D sites." Based on our understanding of the proposed structures, it is our assumption that the exception in Section 11.4.8 may be applied to the proposed structure. However, the structural engineer should verify the applicability of this exception.

Based on this exception, the spectral response accelerations presented below were determined using the site coefficients (F_a and F_v) from Tables 1613.2.3(1) and 1613.2.3(2) presented in Section 16.4.4 of the 2022 CBC.

Description	Value
2022 California Building Code Site Classification (CBC)[1]	D[2]
Site Latitude (°N)	33.9318
Site Longitude (°W)	116.9629
S_s Spectral Acceleration for a 0.2-Second Period	1.932
S_1 Spectral Acceleration for a 1-Second Period	0.66
F_a Site Coefficient for a 0.2-Second Period	1
F_v Site Coefficient for a 1-Second Period	1.7
PGA_M Site Modified Peak Ground Acceleration	0.865g
De-aggregated Modal Magnitude[3]	8.1

1. Seismic site classification in general accordance with the *2022 California Building Code*.
2. The 2022 California Building Code (CBC) requires a site soil profile determination extending to a depth of 100 feet for seismic site classification. The current scope does not include the 100-foot soil profile determination. Borings were extended to a maximum depth of 26½ feet, and this seismic site class definition considers that similar or denser soils continue below the maximum depth of the subsurface exploration. Additional exploration to deeper depths would be required to confirm the conditions below the current depth of exploration.
3. These values were obtained using the online Unified Hazard Tool by the USGS (**https://earthquake.usgs.gov/hazards/interactive/**) for a return period of 2% in 50 years.

A site-specific ground motion study may generate less conservative coefficients and acceleration values which may reduce construction costs. We recommend consulting with a structural engineer to evaluate the need for such study and its potential impact on construction costs. Terracon should be contacted if a site-specific ground motion study is desired.

The site is not located within an Alquist-Priolo Earthquake Fault Zone for fault rupture hazard based on our review of the State Fault Hazard Maps.[2]

Liquefaction

Liquefaction is a mode of ground failure that results from the generation of high pore-water pressures during earthquake ground shaking, causing loss of shear strength, and is typically a hazard where loose sandy soils exist below groundwater. The California Geological Survey (CGS) has designated certain areas as potential liquefaction hazard zones. These are areas considered at a risk of liquefaction-related ground failure during a seismic event, based upon mapped surficial deposits and the presence of a relatively shallow water table.

According to the County of Riverside, the site is located within an area having low liquefaction potential. Groundwater or seepage was not encountered during the course of drilling and has historically been greater than 50 feet bgs. Based on the subsurface conditions encountered the potential for liquefaction is considered low. To evaluate the potential risk for dry seismic settlement, we performed a "dry sand" seismic settlement evaluation using the data from borings B-4.

To determine the amount of "dry sand" seismic settlement, we utilized the software "LiquefyPro" by CivilTech Software, seismic settlement was estimated using the soil profile from exploratory borings B-4. A groundwater depth of 50 feet bgs, a peak ground acceleration (PGA) of 0.865g, and the de-aggregated modal magnitude of 8.1 were utilized as input into the liquefaction analysis program. Settlement analysis used the Ishihara / Yoshimine method and the fines percentage were corrected for liquefaction using the Modify Stark/Olson method.

Based on calculation results, seismically induced settlement of saturated and unsaturated sands is estimated to be less than 1 inch. Differential seismic settlement is anticipated to be less than 2/3 of total settlement across 40 feet.

Corrosivity

The table below lists the results of laboratory soluble sulfate, soluble chloride, electrical resistivity, and pH testing. The values may be used to estimate potential corrosive

[2] California Geological Survey. https://maps.conservation.ca.gov/cgs/informationwarehouse.

characteristics of the on-site soils with respect to contact with the various underground materials which will be used for project construction.

Corrosivity Test Results Summary

Boring	Sample Depth (feet)	Soil Description	Soluble Sulfate (%)	Chlorides (ppm)	Electrical Resistivity (Ω-cm)	pH
B-2	0-5	Silty Sand	0.01	95	3,492	6.8

Results of soluble sulfate testing indicate samples of the on-site soils tested possess concentrations within a Class S0 when classified in accordance with Table 19.3.1.1 of the ACI Design Manual. Concrete should be designed in accordance with the exposure class S0 provisions of the ACI Design Manual, Section 318, Chapter 19.

Stormwater Management

Four in-situ percolation tests were performed to approximate depths of 5 and 10 feet bgs. A 2-inch thick layer of gravel was placed in the bottom of each boring after the borings were drilled to investigate the soil profile. A 3-inch diameter perforated pipe was installed on top of the gravel layer in each boring. Gravel was used to backfill between the perforated pipes and the boring sidewall. The borings were then filled with water for a pre-soak period of 24 hours. Testing began after a pre-soak period. At the beginning of the test, the pipes were refilled with water and readings were taken at standardized time intervals. Percolation rates are provided in the following table:

Test Results

Test Locations (depth, feet bgs)	Soil Classification	Measured Percolation Rate (in/hr.)	Correlated Infiltration Rate (in/hr)
B-6 (0 to 4.9 ft)	Silty Sand	27.5	1.0
B-7 (0 to 10 ft)	Silty Sand	60	2.1
B-8 (0 to 5 ft)	Silty sand	19	0.7
B-9 (0 to 10 ft)	Silty Sand	12	7.2

[1]If proposed infiltration system will mainly rely on vertical downward seepage, the correlated infiltration rates should be used. The infiltration rates were correlated using the Porchet method.

With time, the bottoms of infiltration systems tend to plug with organics, sediments, and other debris. Long term maintenance will likely be required to remove these deleterious materials to help reduce decreases in actual percolation rates.

The percolation tests were performed with clear water, whereas the storm water will likely not be clear, but may contain organics, fines, and grease/oil. The presence of these deleterious materials will tend to decrease the rate that water percolates from the infiltration systems. Design of the stormwater infiltration systems should account for the presence of these materials and should incorporate structures/devices to remove these deleterious materials. A safety factor should be applied to these measured rates.

Based on the soils encountered in our borings, we expect the percolation rates of the soils could be different than measured in the field due to variations in fines and gravel content. The design elevation and size of the proposed infiltration system should account for this expected variability in infiltration rates.

Infiltration testing should be performed after construction of the infiltration system to verify the design infiltration rates. It should be noted that siltation and vegetation growth along with other factors may affect the infiltration rates of the infiltration areas. The actual infiltration rate may vary from the values reported here. Infiltration systems should be located a minimum of 10 feet from any existing or proposed foundation system.

Geotechnical Overview

The site appears suitable for the proposed construction based upon geotechnical conditions encountered in the test borings, provided that the recommendations provided in this report are implemented in the design and construction phases of this project.

Undocumented fill soils are likely present on the site that were likely placed for support of the existing improvements. The thickness of the undocumented fill is not noted on the logs of the borings as the contact between fill soils and the underlying native can be difficult to ascertain. We recommend that all fill soils be removed, and the excavation thoroughly cleaned prior to backfill placement and/or construction.

Due to the loose condition and potential low bearing capacity of near surface soils, the foundations should be supported on structural fill. Grading for the proposed foundations should incorporate the limits of the foundations plus a lateral distance beyond the outside edge of footings, where space is available. On-site soils are considered suitable to be used as engineered fill materials. Groundwater is not anticipated to be encountered during construction.

The recommendations contained in this report are based upon the results of field and laboratory testing (presented in the **Exploration Results**), engineering analyses, and our current understanding of the proposed project. The **General Comments** section provides an understanding of the report limitations.

Earthwork

The following recommendations include site preparation, excavation, subgrade preparation and placement of engineered fills on the project. The recommendations presented for design and construction of earth supported elements including foundations, slabs, and pavements are contingent upon following the recommendations outlined in this section.

Earthwork on the project should be observed and evaluated by Terracon. The evaluation of earthwork should include observation and testing of engineered fill, subgrade preparation, foundation bearing soils, and other geotechnical conditions exposed during the construction of the project.

Demolition

Demolition of the existing building and associated structures should include complete removal of all foundation systems and remaining underground utilities within the proposed construction area. This should include removal of any loose backfill found adjacent to existing foundations. All materials derived from the demolition of existing structures and pavements should be removed from the site and not be allowed for use as on-site fill, unless processed in accordance with the fill requirements included in this report.

Site Preparation

Strip and remove existing vegetation, building, pads, debris, pavements, and other deleterious materials from proposed building and pavement areas. Exposed surfaces should be free of mounds and depressions which could prevent uniform compaction. The site should be initially graded to create a relatively level surface to receive fill and provide for a relatively uniform thickness of fill beneath proposed building structures.

We anticipate that the upper materials were disturbed and may be considered as fill materials that were placed for support of the previous development; the thickness of the disturbed layer or any previously placed fill soil was not easily discernable from our exploration points and therefore not delineated on the boring logs. Terracon does not

have any documentation to show if any previous grading operations were monitored or the fill materials have been compacted and tested. We recommend that all fill soils be removed within the proposed building area and the excavation thoroughly cleaned prior to backfill placement and/or construction. If such documentation exists, Terracon should be notified and the recommendations in this report may be appropriately modified.

Evidence of utilities such as manhole covers and utility markings was observed onsite. Although no evidence underground facilities such as septic tanks, cesspools, or basements was observed during the site reconnaissance, such features could be encountered during construction. If unexpected fills, utilities, or underground facilities are encountered, such features should be removed, and the excavation thoroughly cleaned prior to backfill placement and/or construction.

Subgrade Preparation

Within the areas of proposed building we recommend that all fill soils be removed, and that the existing soils be removed to a depth of 4 feet below the existing site grade, or 2 feet below the bottom of planned foundations, whichever is greater. Proposed structures may be supported by a shallow foundation system bearing on engineered fill extending to a minimum depth of 2 feet below the bottom of foundations. Structural fill placed beneath the entire footprint of the foundations should extend horizontally a minimum distance of 5 feet beyond the outside edge of footings. On-site soils are considered suitable to be used as structural fill materials. In areas of proposed pavements, we recommend the existing soils be removed to a depth of 2 feet below existing grades, or 2 feet below proposed pavement section, whichever is deeper.

All exposed areas which will receive fill, once properly cleared and benched where necessary, should be scarified to a minimum depth of 10 inches, moisture conditioned as necessary, and compacted per the compaction requirements in this report. Compacted structural fill soils should then be placed to the proposed design grade and the moisture content and compaction of subgrade soils should be maintained until foundation or pavement construction.

Based upon the subsurface conditions determined from the geotechnical exploration, subgrade soils exposed during construction are anticipated to be relatively workable; however, the workability of the subgrade may be affected by precipitation, repetitive construction traffic or other factors. If unworkable conditions develop, workability may be improved by scarifying and drying.

As noted above in **Groundwater**, shallow groundwater could either exist at the time of grading, or subsurface soils may have a very high moisture content with near saturated conditions. Some moisture conditioning will likely be needed for the project if such conditions prevail. The soils may need to be dried by aeration during dry weather

conditions, or using an additive, such as lime or cement, may be needed to stabilize the soil.

Excavation

It is anticipated that excavations for the proposed construction can be accomplished with conventional earthmoving equipment. The bottom of excavations should be thoroughly cleaned of loose soils and disturbed materials prior to backfill placement and/or construction.

Individual contractors are responsible for designing and constructing stable, temporary excavations. Excavations should be sloped or shored in the interest of safety following local, and federal regulations, including current OSHA excavation and trench safety standards.

Fill Material Types

All fill materials should be inorganic soils free of vegetation, debris, and fragments larger than 6 inches in size. Pea gravel or other similar non-cementatious, poorly-graded materials should not be used as fill or backfill without the prior approval of the geotechnical engineer.

Clean on-site soils or approved imported materials may be used as fill material for the following:

- general site grading
- foundation areas
- interior floor slab areas
- foundation backfill
- pavement areas
- exterior slab areas

Imported Fill Materials: Imported fill materials should meet the following material property requirements. Regardless of its source, compacted fill should consist of approved materials that are free of organic matter and debris.

Gradation	**Percent Finer by Weight (ASTM C 136)**
3”	100
No. 4 Sieve	50-100
No. 200 Sieve	10-40

- Liquid Limit ..... 30 (max)
- Plasticity Index ..... 15 (max)
- Maximum expansion index* ..... 20 (max)

*ASTM D 4829

The contractor shall notify the Geotechnical Engineer of import sources sufficiently ahead of their use so that the sources can be observed and approved as to the physical characteristic of the import material. For all import material, the contractor shall also submit current verified reports from a recognized analytical laboratory indicating that the import has a "not applicable" (Class S0) potential for sulfate attack based upon current ACI criteria and is "mildly corrosive" to ferrous metal and copper. The reports shall be accompanied by a written statement from the contractor that the laboratory test results are representative of all import material that will be brought to the job.

Engineered fill should be placed and compacted in horizontal lifts, using equipment and procedures that will produce recommended moisture contents and densities throughout the lift. Fill lifts should not exceed 10 inches loose thickness.

Fill Placement and Compaction Requirements

Structural fill should meet the following compaction requirements.

Material Type and Location	Per the Modified Proctor Test (ASTM D 1557) [1]		
	Minimum Compaction Requirement (%)	Range of Moisture Contents for Compaction Above Optimum	
		Minimum	Maximum
On-site soils and low volume change imported fill:			
Beneath foundations:	90	0%	+3%
Beneath interior slabs:	90	0%	+3%
Miscellaneous backfill:	90	0%	+3%
Beneath pavements:	95	0%	+3%
Utility Trenches[2]:	90	0%	+3%
Bottom of excavation receiving fill:	90	0%	+3%
Aggregate base (beneath pavements):	95	0%	+3%

Material Type and Location	Per the Modified Proctor Test (ASTM D 1557) [1]		
	Minimum Compaction Requirement (%)	Range of Moisture Contents for Compaction Above Optimum	
		Minimum	Maximum

1. Maximum density and optimum water content as determined by the modified Proctor test (ASTM D 1557).
2. Upper 12 inches should be compacted to 95% within pavement and structural areas. Low-volume change imported soils should be used in structural areas.

Utility Trench Backfill

Any soft or unsuitable materials encountered at the bottom of utility trench excavations should be removed and replaced with structural fill or bedding material in accordance with public works specifications for the utility be supported. This recommendation is particularly applicable to utility work requiring grade control and/or in areas where subsequent grade raising could cause settlement in the subgrade supporting the utility. Trench excavation should not be conducted below a downward 1:1 projection from existing foundations without engineering review of shoring requirements and geotechnical observation during construction.

On-site materials are considered suitable for backfill of utility and pipe trenches from one foot above the top of the pipe to the final ground surface, provided the material is free of organic matter and deleterious substances. Imported low volume change soils should be used for trench backfill in structural areas.

Trench backfill should be mechanically placed and compacted as discussed earlier in this report. Compaction of initial lifts should be accomplished with hand-operated tampers or other lightweight compactors. Where trenches are placed beneath slabs or footings, the backfill should satisfy the gradation and expansion index requirements of engineered fill discussed in this report. Flooding or jetting for placement and compaction of backfill is not recommended.

Grading and Drainage

Positive drainage should be provided during construction and maintained throughout the life of the development. Infiltration of water into utility trenches or foundation excavations should be prevented during construction. Planters and other surface features which could retain water in areas adjacent to the building or pavements should be sealed or eliminated. In areas where sidewalks or paving do not immediately adjoin the structure, we recommend that protective slopes be provided with a minimum grade

of approximately 5 percent for at least 10 feet from perimeter walls. Backfill against footings, exterior walls, and in utility and sprinkler line trenches should be well compacted and free of all construction debris to reduce the possibility of moisture infiltration.

We recommend a minimum horizontal setback distance of 10 feet from the perimeter of any building and the high-water elevation of the nearest storm-water retention basin.

Roof drainage should discharge into splash blocks or extensions when the ground surface beneath such features is not protected by exterior slabs or paving. Sprinkler systems and landscaped irrigation should not be installed within 5 feet of foundation walls.

Trees or other vegetation whose root systems have the ability to remove excessive moisture from the subgrade and foundation soils should not be planted next to the structure. Trees and shrubbery should be kept away from the exterior of the structure a distance at least equal to their expected mature height.

We recommend construction activities minimize soil compaction at the bottom of infiltration systems. Soil compaction damages soil structure, reduces infiltration rates, limits root growth and plant survivability, and destroys soil organisms. For these reasons site planning, design, and execution, where appropriate, should restrict compaction to infiltration areas.

Exterior Slab Design and Construction

Compacted subgrade composed of on-site clayey soils will expand with increasing moisture content; therefore, exterior concrete slabs may heave, resulting in cracking or vertical offsets. The potential for damage would be greatest where exterior slabs are constructed adjacent to the building or other structural elements. To reduce the potential for damage caused by movement, we recommend:

- exterior slabs should be supported directly on subgrade fill (not ABC) with no, or very low expansion potential;
- strict moisture-density control during placement of subgrade fills;
- maintain proper subgrade moisture until placement of slabs;
- placement of effective control joints on relatively close centers and isolation joints between slabs and other structural elements;
- provision for adequate drainage in areas adjoining the slabs;
- use of designs which allow vertical movement between the exterior slabs and adjoining structural elements.

Earthwork Construction Considerations

Upon completion of filling and grading, care should be taken to maintain the subgrade moisture content prior to construction of floor slabs and pavements. Construction traffic over the completed subgrade should be avoided to the extent practical. The site should also be graded to prevent ponding of surface water on the prepared subgrades or in excavations. If the subgrade should become desiccated, saturated, or disturbed, the affected material should be removed or these materials should be scarified, moisture conditioned, and recompacted prior to floor slab and pavement construction.

On-site clay, and silt soils may pump and unstable subgrade conditions could develop during general construction operations, particularly if the soils are wetted and/or subjected to repetitive construction traffic. The use of light construction equipment would aid in reducing subgrade disturbance. The use of remotely operated equipment, such as a backhoe, would be beneficial to perform cuts and reduce subgrade disturbance.

Should unstable subgrade conditions develop stabilization measures will need to be employed. Stabilization measures may include placement of aggregate base and multi-axial geogrid. Use of lime, fly ash, kiln dust or cement could also be considered as a stabilization technique. Laboratory evaluation is recommended to determine the effect of chemical stabilization on subgrade soils prior to construction.

We recommend that the earthwork portion of this project be completed during extended periods of dry weather if possible. If earthwork is completed during the wet season (typically November through April) it may be necessary to take extra precautionary measures to protect subgrade soils. Wet season earthwork operations may require additional mitigative measures beyond that which would be expected during the drier summer and fall months. This could include diversion of surface runoff around exposed soils and draining of ponded water on the site. Once subgrades are established, it may be necessary to protect the exposed subgrade soils from construction traffic.

Construction site safety is the sole responsibility of the contractor who controls the means, methods, and sequencing of construction operations. Under no circumstances shall the information provided herein be interpreted to mean Terracon is assuming responsibility for construction site safety, or the contractor's activities; such responsibility shall neither be implied nor inferred.

As a minimum, excavations should be performed in accordance with OSHA 29 CFR, Part 1926, Subpart P, "Excavations" and its appendices, and in accordance with any applicable local and/or state regulations.

Excavations or other activities resulting in ground disturbance have the potential to affect adjoining properties and structures. Our scope of services does not include review

of available final grading information or consider potential temporary grading performed by the contractor for potential effects such as ground movement beyond the project limits. A preconstruction/ precondition survey should be conducted to document nearby property/infrastructure prior to any site development activity. Excavation or ground disturbance activities adjacent or near property lines should be monitored or instrumented for potential ground movements that could negatively affect adjoining property and/or structures.

Construction Observation and Testing

The geotechnical engineer should be retained during the construction phase of the project to observe earthwork and to perform necessary tests and observations during subgrade preparation, proof-rolling, placement and compaction of controlled compacted fills, backfilling of excavations to the completed subgrade.

The exposed subgrade and each lift of compacted fill should be tested, evaluated, and reworked as necessary until approved by the Geotechnical Engineer prior to placement of additional lifts. Each lift of fill should be tested for density and water content at a frequency of at least one test for every 2,500 square feet of compacted fill in the building areas and 5,000 square feet in pavement areas. One density and water content test for every 50 linear feet of compacted utility trench backfill. This testing frequency criteria may be adjusted during construction as specified by the geotechnical engineer of record.

In areas of foundation excavations, the bearing subgrade should be evaluated under the direction of the Geotechnical Engineer. In the event that unanticipated conditions are encountered, the Geotechnical Engineer should prescribe mitigation options.

In addition to the documentation of the essential parameters necessary for construction, the continuation of the Geotechnical Engineer into the construction phase of the project provides the continuity to maintain the Geotechnical Engineer's evaluation of subsurface conditions, including assessing variations and associated design changes.

Shallow Foundations

If the site has been prepared in accordance with the requirements noted in **Earthwork**, the following design parameters are applicable for shallow foundations. Based on our understanding of the project and the subsurface profile of the site, the proposed structures may be supported on a conventional shallow foundation system.

Design Parameters – Compressive Loads

Item	Description
Foundation Support	Engineered fill extending to a minimum depth of 2 feet below the bottom of foundations, 4 feet below existing grades, or the depth of removed undocumented fill, whichever is greater.
Net Allowable Bearing pressure [1, 2] (On-site soils structural fill)	3,000 psf
Minimum Foundation Width	18 inches
Minimum Embedment Depth	24 inches
Modulus of Subgrade Reaction, k_b	150 pci
Ultimate Passive Resistance [4]	380 pcf
Ultimate Coefficient of Sliding Friction [5]	0.35
Estimated Total Static Settlement from Structural Loads [2]	about 1 inch
Estimated Differential Settlement [2, 6]	About 1/2 of total settlement

1. The maximum net allowable bearing pressure is the pressure in excess of the minimum surrounding overburden pressure at the footing base elevation. An appropriate factor of safety has been applied.
2. Values provided are for maximum loads noted in **Project Description**. The foundation settlement will depend upon the variations within the subsurface soil profile, the structural loading conditions, the embedment depth of the footings, the thickness of compacted fill, and the quality of the earthwork operations.
3. Unsuitable or soft soils should be over-excavated and replaced per the recommendations presented in the **Earthwork**.
4. Use of passive earth pressures requires the footing forms be removed and compacted structural fill be placed against the vertical footing face. A factor of safety of 2.0 is recommended.
5. Can be used to compute sliding resistance where foundations are placed on suitable soil/materials. Should be neglected for foundations subject to net uplift conditions. A factor of safety of 1.5 is recommended.
6. Differential settlements are as measured over a span of 40 feet.

Finished grade is defined as the lowest adjacent grade within five feet of the foundation. The allowable foundation bearing pressure applies to dead loads plus design live load conditions. The design bearing pressure may be increased by one-third when considering total loads that include wind or seismic conditions. The weight of the foundation concrete below grade may be neglected in dead load computations.

Foundations should be reinforced as necessary to reduce the potential for distress caused by differential foundation movement. Foundation excavations should be observed by the geotechnical engineer. If the soil conditions encountered differ significantly from those presented in this report, supplemental recommendations will be required.

Floor Slabs

Design parameters for floor slabs assume the requirements for **Earthwork** have been followed. Specific attention should be given to positive drainage away from the structure and positive drainage of the aggregate base beneath the floor slab.

Floor Slab Design Parameters

Item	Description
Interior floor system	Slab-on-grade concrete
Floor Slab Support[1]	Engineered fill extending to a minimum depth of 2 feet below the bottom of corresponding footings, or below undocumented fill, whichever is greater.
Subbase	Minimum 4-inches of Aggregate Base
Estimated Modulus of Subgrade Reaction [2]	150 pounds per square inch per inch (psi/in) for point loads. (The modulus was obtained based on estimates obtained from NAVFAC 7.1 design charts). This value is for a small loaded area (1 Sq. ft or less) such as for forklift wheel loads or point loads and should be adjusted for larger loaded areas.

The use of a vapor retarder should be considered beneath concrete slabs on grade covered with wood, tile, carpet, or other moisture sensitive or impervious coverings, when the project includes humidity-controlled areas, or when the slab will support equipment sensitive to moisture. When conditions warrant the use of a vapor retarder, the slab designer should refer to ACI 302 and/or ACI 360 for procedures and cautions regarding the use and placement of a vapor retarder.

Saw-cut control joints should be placed in the slab to help control the location and extent of cracking. For additional recommendations refer to the ACI Design Manual.

Joints or cracks should be sealed with a water-proof, non-extruding compressible compound specifically recommended for heavy duty concrete pavement and wet environments.

Where floor slabs are tied to perimeter walls or turn-down slabs to meet structural or other construction objectives, our experience indicates differential movement between the walls and slabs will likely be observed in adjacent slab expansion joints or floor slab cracks beyond the length of the structural dowels. The Structural Engineer should account for potential differential settlement through use of sufficient control joints, appropriate reinforcing or other means.

Design parameters for floor slabs assume the requirements for **Earthwork** have been followed. Specific attention should be given to positive drainage away from the structure and positive drainage of the aggregate base beneath the floor slab.

Floor Slab Construction Considerations

Finished subgrade, within and for at least 10 feet beyond the floor slab, should be protected from traffic, rutting, or other disturbance and maintained in a relatively moist condition until floor slabs are constructed. If the subgrade should become damaged or desiccated prior to construction of floor slabs, the affected material should be removed, and structural fill should be added to replace the resulting excavation. Final conditioning of the finished subgrade should be performed immediately prior to placement of the floor slab support course.

The Geotechnical Engineer should observe the condition of the floor slab subgrades immediately prior to placement of the floor slab support course, reinforcing steel, and concrete. Attention should be paid to high traffic areas that were rutted and disturbed earlier, and to areas where backfilled trenches are located.

Pavements

General Pavement Comments

Pavement designs are provided for the traffic conditions and pavement life conditions as noted in **Project Description** and in the following sections of this report. A critical aspect of pavement performance is site preparation. Pavement designs noted in this section must be applied to the site which has been prepared as recommended in the **Earthwork** section.

Pavement Design Parameters

An estimated design R-Value of 30 was used for the subgrade for the asphalt concrete (AC) pavement designs. A modulus of subgrade reaction of 150 pci was used for the Portland cement concrete (PCC) pavement designs. The value was empirically derived based upon our experience with the subgrade soils and our expectation of the quality of the subgrade as prescribed by the **Site Preparation** conditions as outlined in **Earthwork**. A modulus of rupture of 600 psi was used in design for the concrete (based on correlations with a minimum 28-day compressive strength of 4,000 psi).

The recommended sections are based on an assumed R-value and TIs. R-value testing should be performed on actual subgrade conditions of the paved area once grading operations are complete and grades are achieved to verify the assumed value. The project civil engineer or design architect should confirm the assumed TIs and additional sections should be determined if additional loading conditions are needed.

The structural sections are predicated upon proper compaction of the utility trench backfills and the subgrade soils as prescribed by in **Earthwork**, with the upper 12 inches of subgrade soils and all aggregate base material brought to a minimum relative compaction of 95 percent in accordance with ASTM D 1557 prior to paving. The aggregate base should meet Caltrans requirements for Class 2 base.

Assuming the pavement subgrades will be prepared as recommended within this report, the following pavement sections should be considered minimums for this project for the traffic indices assumed in the table below. As more specific traffic information becomes available, we should be contacted to reevaluate the pavement calculations.

Pavement Section Thicknesses

The following table provides our opinion of minimum thickness for AC sections:

Asphaltic Concrete Design

Layer	Thickness (inches) [1]	
	TI = 4.5 [2]	TI = 5.5
AC [3]	4	4
Aggregate Base	4	6

1. All materials should meet the CALTRANS Standard Specifications for Highway Construction.
2. Traffic Index = TI
3. Flexible pavement structural sections were calculated utilizing the Gravel Equivalent Method in accordance with Caltrans Highway Design Manual Ch. 630

The following table provides our estimated minimum thickness of PCC pavements.

Portland Cement Concrete Design

Layer	Thickness (inches) [1,2]	
	ADTT = 10	ADTT = 25
PCC	5	6
Aggregate Base	4	4

1. All materials should meet the CALTRANS Standard Specifications for Highway Construction.
2. Traffic Index = TI

Areas for parking of heavy vehicles, concentrated turn areas, and start/stop maneuvers could require thicker pavement sections. Edge restraints (i.e. concrete curbs or aggregate shoulders) should be planned along curves and areas of maneuvering vehicles.

Although not required for structural support, a minimum 4-inch thick base course layer is recommended to help reduce potential for slab curl, shrinkage cracking, and subgrade pumping through joints. Proper joint spacing will also be required to prevent excessive slab curling and shrinkage cracking. Joints should be sealed to prevent entry of foreign material and doweled where necessary for load transfer. PCC pavement details for joint spacing, joint reinforcement, and joint sealing should be prepared in accordance with ACI 330 and ACI 325.

Where practical, we recommend early-entry cutting of crack-control joints in PCC pavements. Cutting of the concrete in its "green" state typically reduces the potential for micro-cracking of the pavements prior to the crack control joints being formed, compared to cutting the joints after the concrete has fully set. Micro-cracking of pavements may lead to crack formation in locations other than the sawed joints, and/or reduction of fatigue life of the pavement.

Openings in pavements, such as decorative landscaped areas, are sources for water infiltration into surrounding pavement systems. Water can collect in the islands and migrate into the surrounding subgrade soils thereby degrading support of the pavement. Islands with raised concrete curbs, irrigated foliage, and low permeability near-surface soils are particular areas of concern. The civil design for the pavements with these conditions should include features to restrict or collect and discharge excess water from the islands. Examples of features are edge drains connected to the stormwater collection system, longitudinal subdrains, or other suitable outlets and impermeable barriers preventing lateral migration of water such as a cutoff wall installed to a depth below the pavement structure.

Pavement Drainage

Pavements should be sloped to provide rapid drainage of surface water. Water allowed to pond on or adjacent to the pavements could saturate the subgrade and contribute to premature pavement deterioration. In addition, the pavement subgrade should be graded to provide positive drainage within the granular base section. Appropriate sub-drainage or connection to a suitable daylight outlet should be provided to remove water from the granular subbase.

Pavement Maintenance

The pavement sections represent minimum recommended thicknesses and, as such, periodic upkeep should be anticipated. Preventive maintenance should be planned and provided for through an on-going pavement management program. Maintenance activities are intended to slow the rate of pavement deterioration and to preserve the pavement investment. Pavement care consists of both localized (e.g., crack and joint sealing and patching) and global maintenance (e.g., surface sealing). Additional engineering consultation is recommended to determine the type and extent of a cost-effective program. Even with periodic maintenance, some movements and related cracking may still occur, and repairs may be required.

Pavement performance is affected by its surroundings. In addition to providing preventive maintenance, the civil engineer should consider the following recommendations in the design and layout of pavements:

- Final grade adjacent to paved areas should slope down from the edges at a minimum 2%.
- Subgrade and pavement surfaces should have a minimum 2% slope to promote proper surface drainage.
- Install pavement drainage systems surrounding areas anticipated for frequent wetting.
- Install joint sealant and seal cracks immediately.
- Seal all landscaped areas in or adjacent to pavements to reduce moisture migration to subgrade soils.
- Place compacted, low permeability backfill against the exterior side of curb and gutter.
- Place curb, gutter and/or sidewalk directly on clay subgrade soils rather than on unbound granular base course materials.

General Comments

Our analysis and opinions are based upon our understanding of the project, the geotechnical conditions in the area, and the data obtained from our site exploration. Variations will occur between exploration point locations or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. Terracon should be retained as the Geotechnical Engineer, where noted in this report, to provide observation and testing services during pertinent construction phases. If variations appear, we can provide further evaluation and supplemental recommendations. If variations are noted in the absence of our observation and testing services on-site, we should be immediately notified so that we can provide evaluation and supplemental recommendations.

Our Scope of Services does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

Our services and any correspondence are intended for the sole benefit and exclusive use of our client for specific application to the project discussed and are accomplished in accordance with generally accepted geotechnical engineering practices with no third-party beneficiaries intended. Any third-party access to services or correspondence is solely for information purposes to support the services provided by Terracon to our client. Reliance upon the services and any work product is limited to our client and is not intended for third parties. Any use or reliance of the provided information by third parties is done solely at their own risk. No warranties, either express or implied, are intended or made.

Site characteristics as provided are for design purposes and not to estimate excavation cost. Any use of our report in that regard is done at the sole risk of the excavating cost estimator as there may be variations on the site that are not apparent in the data that could significantly effect excavation cost. Any parties charged with estimating excavation costs should seek their own site characterization for specific purposes to obtain the specific level of detail necessary for costing. Site safety and cost estimating including excavation support and dewatering requirements/design are the responsibility of others. Construction and site development have the potential to affect adjacent properties. Such impacts can include damages due to vibration, modification of groundwater/surface water flow during construction, foundation movement due to undermining or subsidence from excavation, as well as noise or air quality concerns. Evaluation of these items on nearby properties are commonly associated with contractor means and methods and are not addressed in this report. The owner and contractor should consider a preconstruction/precondition survey of surrounding development. If changes in the nature, design, or location of the project are planned, our conclusions and

recommendations shall not be considered valid unless we review the changes and either verify or modify our conclusions in writing.

Attachments

Exploration and Testing Procedures

Field Exploration

Boring Designation	Approximate Boring Depth or Refusal (feet)	Location
B-1 to B-5	21½ to 26½	Proposed building area
B-6 to B-9	5 to 10	Pavement/infiltration areas

Boring Layout and Elevations: Terracon personnel provided the boring layout using handheld GPS equipment (estimated horizontal accuracy of about ±10 feet) and referencing existing site features. Approximate ground surface elevations were estimated using Google Earth. If elevations and a more precise boring layout are desired, we recommend borings be surveyed.

Subsurface Exploration Procedures: We advanced the borings with a track-mounted drill rig using continuous flight hollow stem augers. Four samples were generally obtained in the upper 10 feet of each boring and at intervals of 5 feet thereafter. In the split-barrel sampling procedure, a standard 2-inch outer diameter split-barrel sampling spoon was driven into the ground by a 140-pound automatic hammer falling a distance of 30 inches. The number of blows required to advance the sampling spoon the last 12 inches of a normal 18-inch penetration is recorded as the Standard Penetration Test (SPT) resistance value. The SPT resistance values, also referred to as N-values, are indicated on the boring logs at the test depths. A 3-inch O.D. split-barrel sampling spoon with 2.5-inch I.D. ring lined sampler was also used for sampling soils at the project site. Ring-lined, split-barrel sampling procedures are similar to standard split spoon sampling procedure. We observed and recorded groundwater levels during drilling and sampling. For safety purposes, all borings were backfilled with auger cuttings after their completion.

The sampling depths, penetration distances, and other sampling information was recorded on the field boring logs. The samples were placed in appropriate containers and taken to our soil laboratory for testing and classification by a Geotechnical Engineer. Our exploration team prepared field boring logs as part of the drilling operations. These field logs included visual classifications of the materials encountered during drilling and our interpretation of the subsurface conditions between samples. Final boring logs were prepared from the field logs. The final boring logs represent the Geotechnical Engineer's interpretation of the field logs and include modifications based on observations and tests of the samples in our laboratory.

Laboratory Testing

The project engineer reviewed the field data and assigned laboratory tests. The laboratory testing program included the following types of tests:

- ASTM D2216 Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
- ASTM D7263 Standard Test Methods for Laboratory Determination of Dry Density (Unit Weight) of Soil Specimens
- ASTM D4318 Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
- ASTM D1140 Standard Test Methods for Determining the Amount of Material Finer than 75-µm (No. 200) Sieve in Soils by Washing
- ASTM D422 Standard Test Method for Particle-Size Analysis of Soils
- ASTM D4546 Standard Test Methods for One-Dimensional Consolidation Properties of Soils Using Incremental Loading
- ASTM D1557 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort
- Corrosivity Testing included pH, chlorides, sulfates, sulfides, Redox potential, and electrical lab resistivity

The laboratory testing program often included examination of soil samples by an engineer. Based on the results of our field and laboratory programs, we described and classified the soil samples in accordance with the Unified Soil Classification System.

Site Location and Exploration Plans

Contents:

Site Location Plan
Exploration Plan

Note: All attachments are one page unless noted above.

Site Location

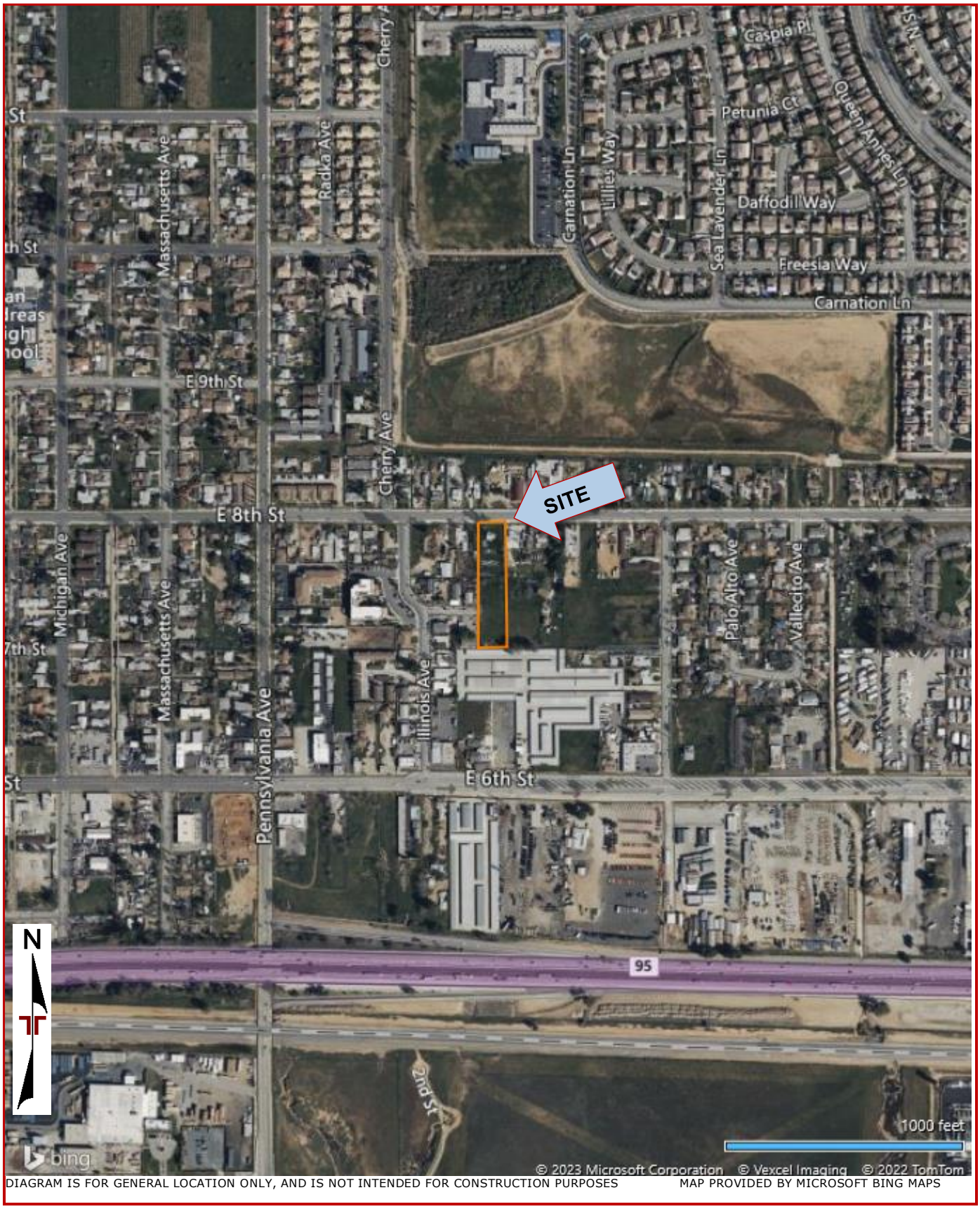

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES MAP PROVIDED BY MICROSOFT BING MAPS

Exploration Plan

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

Exploration and Laboratory Results

Contents:

Boring Logs (B-1 through B-09)
Atterberg Limits
Grain Size Analysis
Consolidation Testing
Modified Proctor
Corrosion Testing
Percolation Testing

8th Street Apartments
1343 E. 8th Street | Beaumont, CA
Terracon Project No. 60225161

Terracon
23041 Avenida De La Carlota
Ste 350
Laguna Hills, CA

Boring Log No. B-1

Location: See Exploration Plan

Latitude: 33.9321° Longitude: -116.9630°

Graphic Log	Depth (Ft.)	Material Description	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI	Percent Fines
		SILTY SAND (SM), trace clay, brown								
		very dense				18-38-50/4"	10.8	117	27-18-9	
		dark brown, medium dense	5			15-24-34	9.9	108		42
		dense				12-24-35	8.6	117		
		brown, medium dense	10			10-12-13	5.2	112		21
		dense	15			18-19-19 N=38				
	20.0		20							
		SANDY SILT (ML), light brown, hard				12-15-20 N=35				
	21.5	***Boring Terminated at 21.5 Feet***								

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Water Level Observations
Groundwater not encountered

Notes

Advancement Method
8" Hollow Stem Auger

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Drill Rig
CPD-50

Hammer Type
Automatic

Driller
CalPac Drilling

Logged by
JB

Boring Started
11-28-2022

Boring Completed
11-28-2022

8th Street Apartments
1343 E. 8th Street | Beaumont, CA
Terracon Project No. 60225161

Terracon
23041 Avenida De La Carlota
Ste 350
Laguna Hills, CA

Boring Log No. B-2

Location: See Exploration Plan

Latitude: 33.9319° Longitude: -116.9630°

Graphic Log	Depth (Ft.)		Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI	Percent Fines
	0	**SILTY SAND (SM)**, trace clay, dark brown							
		medium dense			16-21-30	20.8	95		
	5	dense			16-27-38	9.1	113		
		medium dense			8-14-14 N=28				
	10	light brown			8-12-19	6.0	106		41
	15				8-10-16 N=26				20
	20	dark brown, very dense			21-50/5"	7.3	118		
	25	brown, dense			11-16-22 N=38				
	26.5	***Boring Terminated at 26.5 Feet***							

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes

Water Level Observations
Groundwater not encountered

Advancement Method
8" Hollow Stem Auger

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Drill Rig
CPD-50

Hammer Type
Automatic

Driller
CalPac Drilling

Logged by
JB

Boring Started
11-28-2022

Boring Completed
11-28-2022

8th Street Apartments
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Terracon Project No. 60225161

Terracon
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Ste 350
Laguna Hills, CA

Boring Log No. B-3

Location: See Exploration Plan

Latitude: 33.9316° Longitude: -116.9630°

Graphic Log	Depth (Ft.)	Material Description	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI	Percent Fines
	0	**SILTY SAND (SM)**, trace clay, brown							
		medium dense			21-25-27	8.7	107		
	5	very dense			24-50/6"	10.1	104		
		medium dense			13-15-19	4.5	107		
	10	light brown to tan			10-14-19	4.0	110		17
	15				9-10-12 N=22				
	20	light brown, very dense			17-22-30 N=52				
	21.5	***Boring Terminated at 21.5 Feet***							

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Water Level Observations
Groundwater not encountered

Notes

Advancement Method
8" Hollow Stem Auger

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Drill Rig
CPD-50

Hammer Type
Automatic

Driller
CalPac Drilling

Logged by
JB

Boring Started
11-28-2022

Boring Completed
11-28-2022

8th Street Apartments
1343 E. 8th Street | Beaumont, CA
Terracon Project No. 60225161

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Laguna Hills, CA

Boring Log No. B-4

Location: See Exploration Plan

Latitude: 33.9312° Longitude: -116.9630°

Depth (Ft.)	Graphic Log	Material Description	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI	Percent Fines
0		**SANDY LEAN CLAY (CL)**, brown						27-16-11	51
2.5		**SILTY SAND (SM)**, trace clay, medium dense			14-18-19	9.8	105		
5					13-22-34	11.4	120		
		light brown			9-9-8 N=17				
10					8-12-15	13.7	108		
15		trace gravel, brown			7-9-7 N=16				36
20		dark brown			7-11-20	10.4	115		
25					6-8-11 N=19				46
26.5		***Boring Terminated at 26.5 Feet***							

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Water Level Observations
Groundwater not encountered

Notes

Advancement Method
8" Hollow Stem Auger

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Drill Rig
CPD-50

Hammer Type
Automatic

Driller
CalPac Drilling

Logged by
JB

Boring Started
11-28-2022

Boring Completed
11-28-2022

8th Street Apartments
1343 E. 8th Street | Beaumont, CA
Terracon Project No. 60225161

Terracon
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Ste 350
Laguna Hills, CA

Boring Log No. B-5

Location: See Exploration Plan

Latitude: 33.9310° Longitude: -116.9630°

Graphic Log	Depth (Ft.)	Material Description	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI	Percent Fines
		SILTY SAND (SM), trace clay, dark brown								
		brown, medium dense				12-16-17	9.6	97		
			5			3-18-25	10.2	119		
						12-14-21	6.4	114		
		light brown	10			10-13-22	5.5	110		
			15			5-6-4 N=10				37
			20			12-10-14 N=24				
	21.5	***Boring Terminated at 21.5 Feet***								

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes

Water Level Observations
Groundwater not encountered

Advancement Method
8" Hollow Stem Auger

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Drill Rig
CPD-50

Hammer Type
Automatic

Driller
CalPac Drilling

Logged by
JB

Boring Started
11-28-2022

Boring Completed
11-28-2022

8th Street Apartments
1343 E. 8th Street | Beaumont, CA
Terracon Project No. 60225161

Terracon
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Ste 350
Laguna Hills, CA

Boring Log No. B-6

Graphic Log	Location: See Exploration Plan Latitude: 33.9324° Longitude: -116.9628° Depth (Ft.)	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI	Percent Fines
	SILTY SAND (SM), trace gravel, trace clay, brown								
	dense				25-34-50/5"	8.4	116		44
	5.0	5							
	Boring Terminated at 5 Feet								

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Water Level Observations
Groundwater not encountered

Notes

Advancement Method
8" Hollow Stem Auger

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Drill Rig
CPD-50

Hammer Type
Automatic

Driller
CalPac Drilling

Logged by
JB

Boring Started
11-28-2022

Boring Completed
11-29-2022

8th Street Apartments
1343 E. 8th Street | Beaumont, CA
Terracon Project No. 60225161

Terracon
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Ste 350
Laguna Hills, CA

Boring Log No. B-7

Graphic Log	Location: See Exploration Plan Latitude: 33.9323° Longitude: -116.9628° Depth (Ft.)	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI	Percent Fines
	SILTY SAND (SM), trace clay, brown	5							
	trace gravel, light brown, very dense				17-34-44 N=78				38
	10.0 ***Boring Terminated at 10 Feet***	10							

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Water Level Observations
Groundwater not encountered

Notes

Advancement Method
8" Hollow Stem Auger

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Drill Rig
CPD-50

Hammer Type
Automatic

Driller
CalPac Drilling

Logged by
JB

Boring Started
11-28-2022

Boring Completed
11-29-2022

8th Street Apartments
1343 E. 8th Street | Beaumont, CA
Terracon Project No. 60225161

Terracon
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Ste 350
Laguna Hills, CA

Boring Log No. B-8

Graphic Log	Location: See Exploration Plan Latitude: 33.9314° Longitude: -116.9630° Depth (Ft.)	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI	Percent Fines
	SILTY SAND (SM), trace clay, dark brown medium dense								
	5.0	5			11-12-14	11.3	111		50
	Boring Terminated at 5 Feet								

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Water Level Observations
Groundwater not encountered

Notes

Advancement Method
8" Hollow Stem Auger

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Drill Rig
CPD-50

Hammer Type
Automatic

Driller
CalPac Drilling

Logged by
JB

Boring Started
11-28-2022

Boring Completed
11-29-2022

8th Street Apartments
1343 E. 8th Street | Beaumont, CA
Terracon Project No. 60225161

Terracon
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Ste 350
Laguna Hills, CA

Boring Log No. B-9

Graphic Log	Location: See Exploration Plan Latitude: 33.9314° Longitude: -116.9629° Depth (Ft.)	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI	Percent Fines
	SILTY SAND (SM), trace clay, brown	5							
	medium dense				9-11-15	8.7	110		23
	10.0 ***Boring Terminated at 10 Feet***	10							

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes

Water Level Observations
Groundwater not encountered

Advancement Method
8" Hollow Stem Auger

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Drill Rig
CPD-50

Hammer Type
Automatic

Driller
CalPac Drilling

Logged by
JB

Boring Started
11-28-2022

Boring Completed
11-29-2022

8th Street Apartments
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Terracon Project No. 60225161

Terracon
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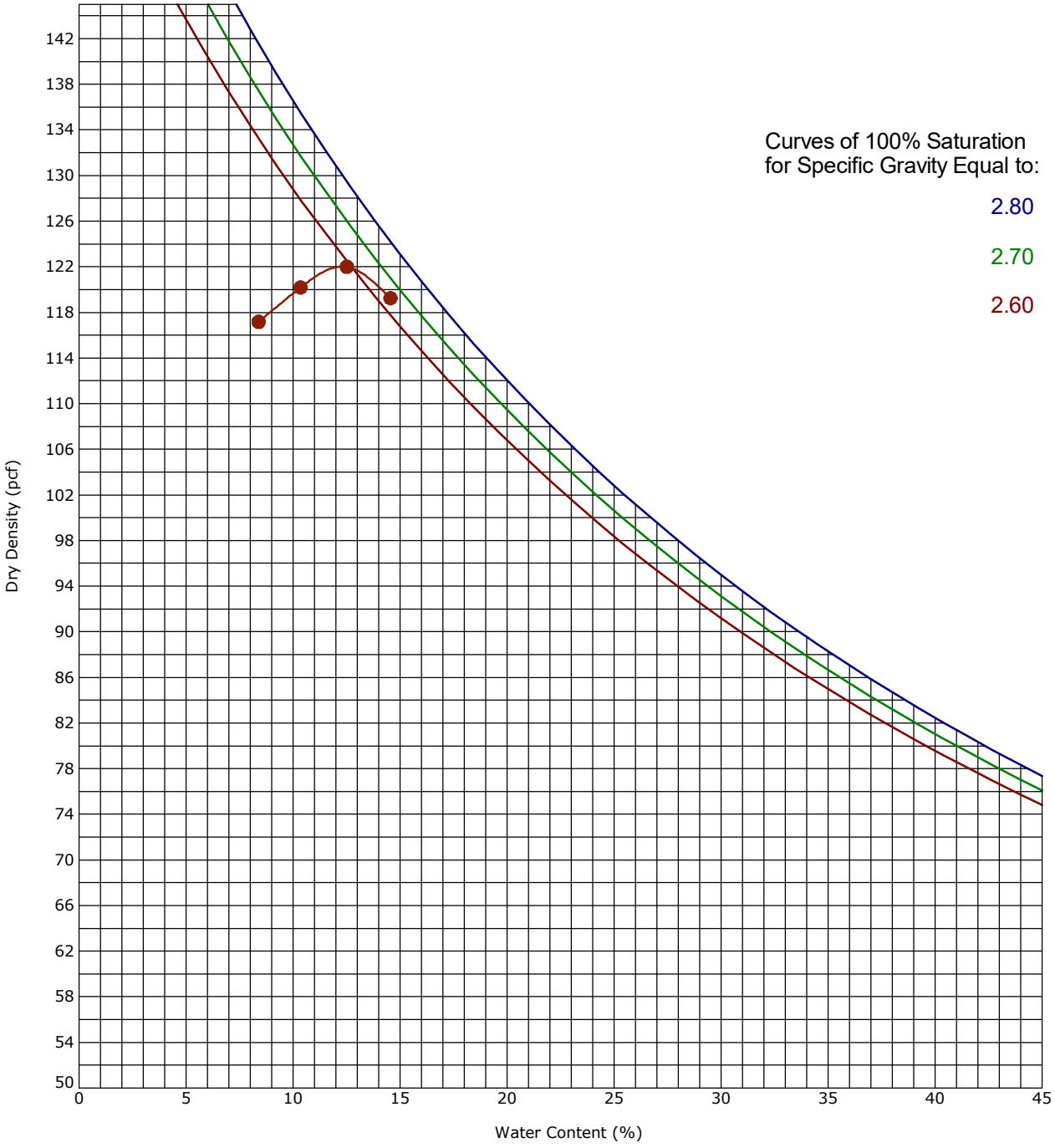
Ste 350
Laguna Hills, CA

Moisture-Density Relationship

ASTM D698/D1557



Boring ID	Depth (Ft)	Description of Materials
B-3	0 - 5	SILTY SAND

Fines (%)	Fraction >19mm size (%)	LL	PL	PI	Test Method	Maximum Dry Density (pcf)	Optimum Water Content (%)
					ASTM D1557 Method B	122.0	12.3

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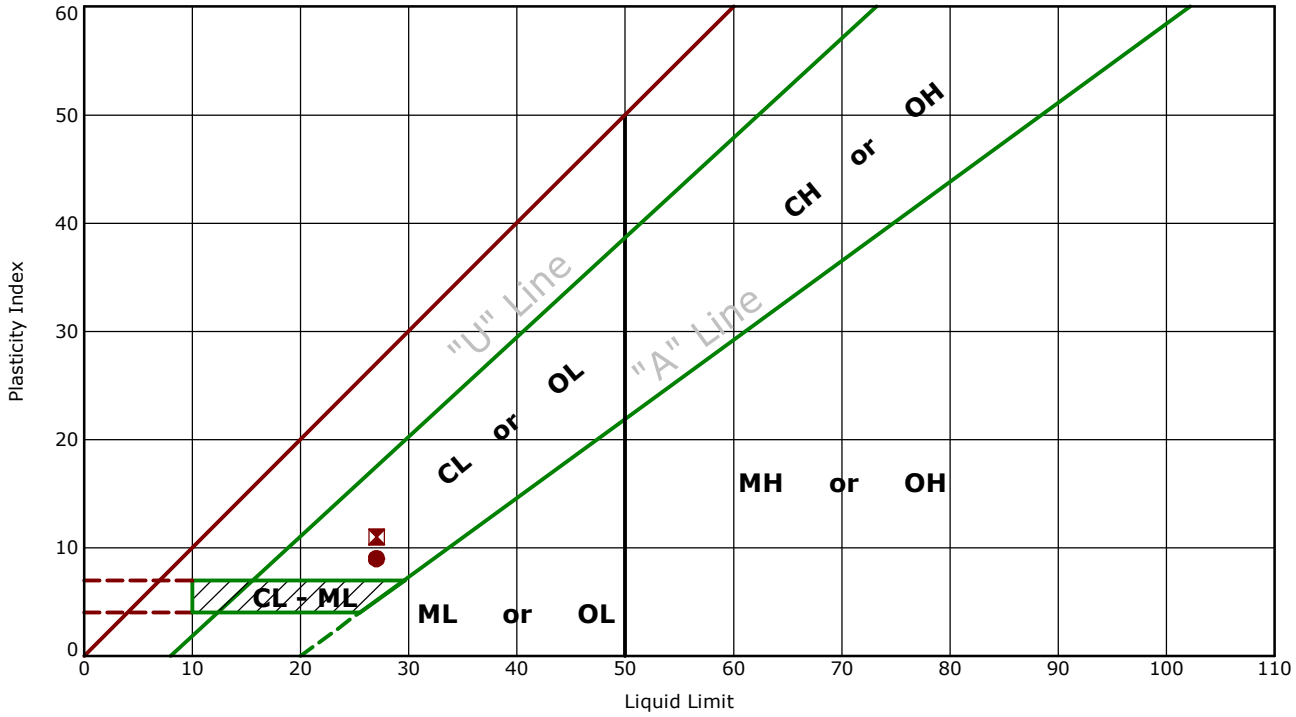
Atterberg Limit Results

ASTM D4318



	Boring ID	Depth (Ft)	LL	PL	PI	Fines	USCS	Description
●	B-1	0 - 5	27	18	9		SM	SILTY SAND
⊠	B-4	0 - 2.5	27	16	11	50.7	CL	SANDY LEAN CLAY

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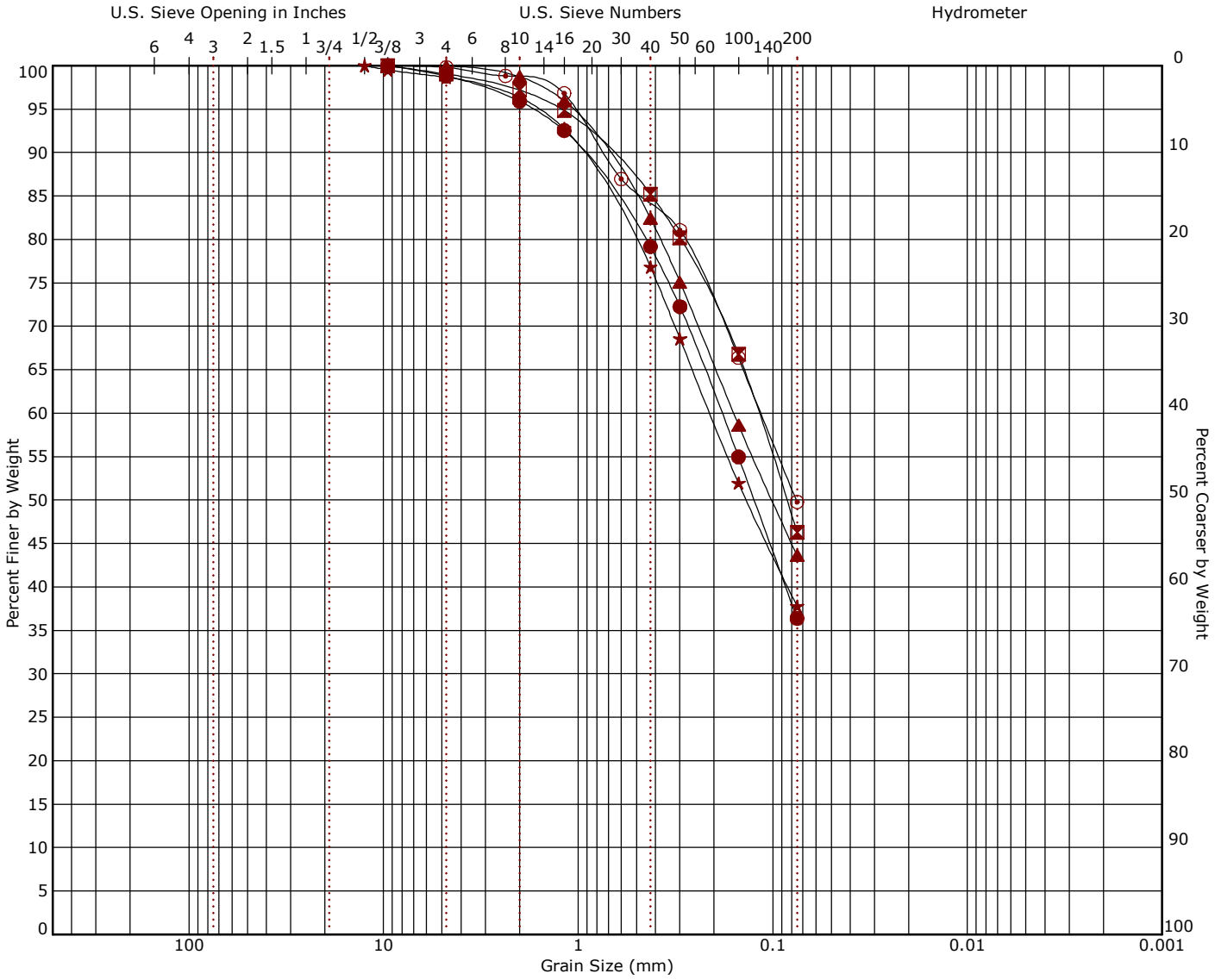
Laguna Hills, CA

Grain Size Distribution

ASTM D422 / ASTM C136



Cobbles	Gravel		Sand			Silt or Clay
	coarse	fine	coarse	medium	fine	

Boring ID		Depth (Ft)	Description	USCS	LL	PL	PI	Cc	Cu
●	B-4	15 - 16.5	SILTY SAND	SM					
⊠	B-4	25 - 26.5	SILTY SAND	SM					
▲	B-6	3.5 - 4.9	SILTY SAND	SM					
★	B-7	8.5 - 10	SILTY SAND	SM					
⊙	B-8	3.5 - 5	SILTY SAND	SM					

Boring ID		Depth (Ft)	D_{100}	D_{60}	D_{30}	D_{10}	%Cobbles	%Gravel	%Sand	%Fines	%Silt	%Clay
●	B-4	15 - 16.5	9.5	0.184			0.0	1.2	62.4	36.4		
⊠	B-4	25 - 26.5	9.5	0.119			0.0	1.0	52.7	46.3		
▲	B-6	3.5 - 4.9	9.5	0.159			0.0	0.1	56.3	43.6		
★	B-7	8.5 - 10	12.5	0.21			0.0	1.3	60.9	37.8		
⊙	B-8	3.5 - 5	9.5	0.115			0.0	0.2	50.0	49.8		

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Terracon
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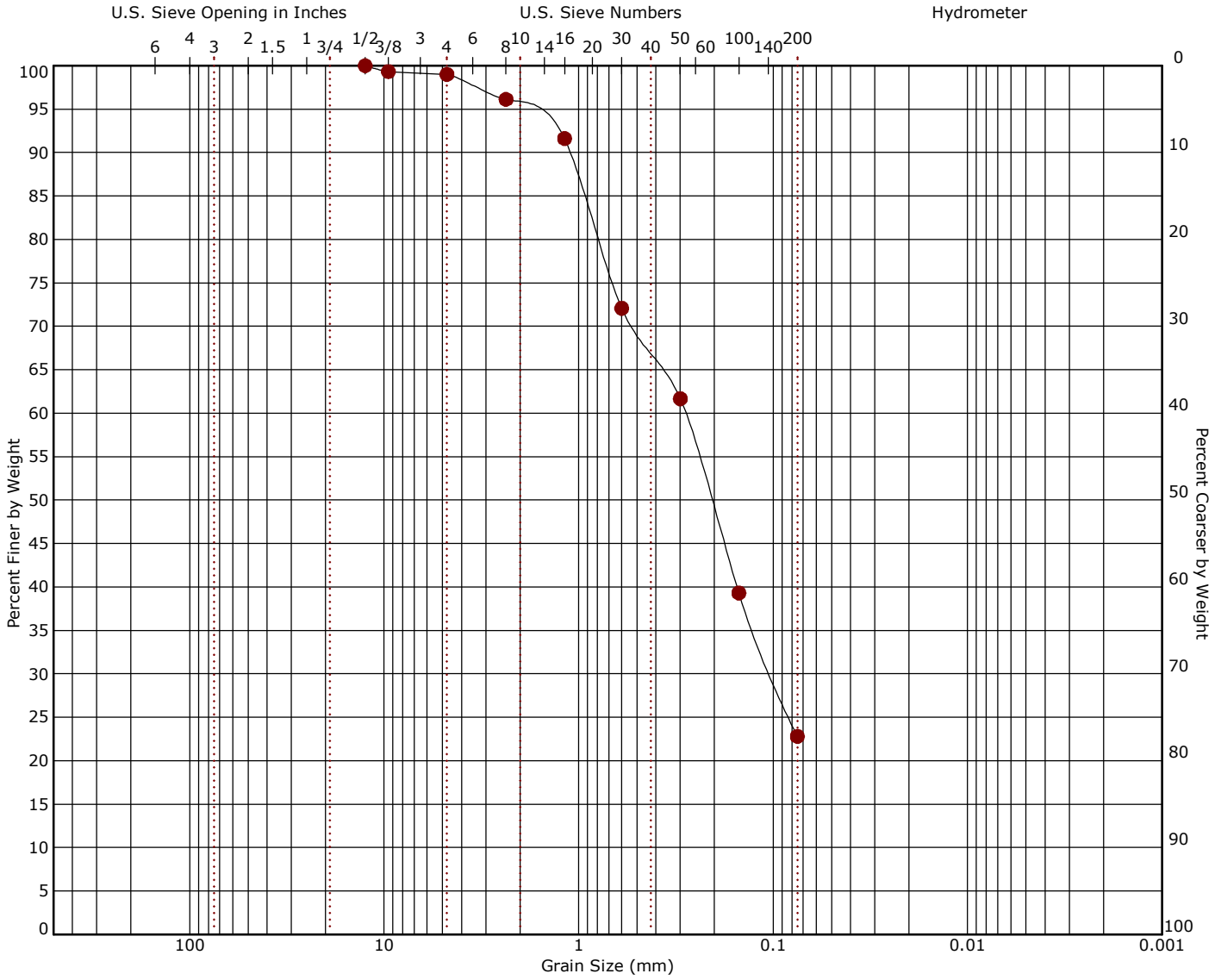
Laguna Hills, CA

Grain Size Distribution

ASTM D422 / ASTM C136



Cobbles	Gravel		Sand			Silt or Clay
	coarse	fine	coarse	medium	fine	

Boring ID	Depth (Ft)	Description	USCS	LL	PL	PI	Cc	Cu
B-9	8.5 - 10	SILTY SAND	SM					

Boring ID	Depth (Ft)	D_{100}	D_{60}	D_{30}	D_{10}	%Cobbles	%Gravel	%Sand	%Fines	%Silt	%Clay
B-9	8.5 - 10	12.5	0.285	0.101		0.0	1.0	76.2	22.8		

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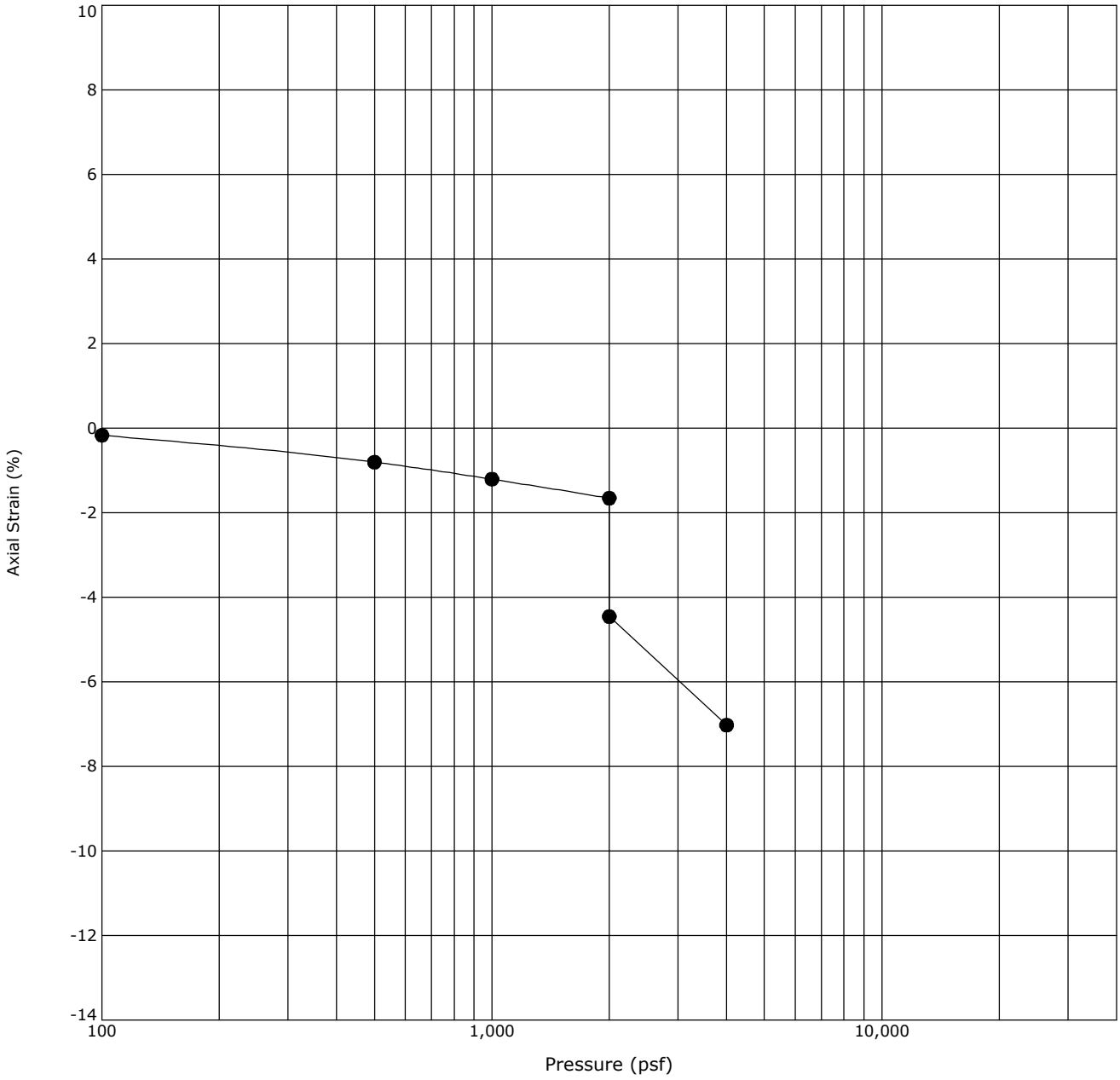
Swell Consolidation Test

ASTM D2435



Boring ID		Depth (Ft)	Description	USCS	γ_d(pcf)	WC (%)
●	B-2	2.5 - 4	SILTY SAND	SM	95	20.8

Notes: water added at 2,000 psf.

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Terracon
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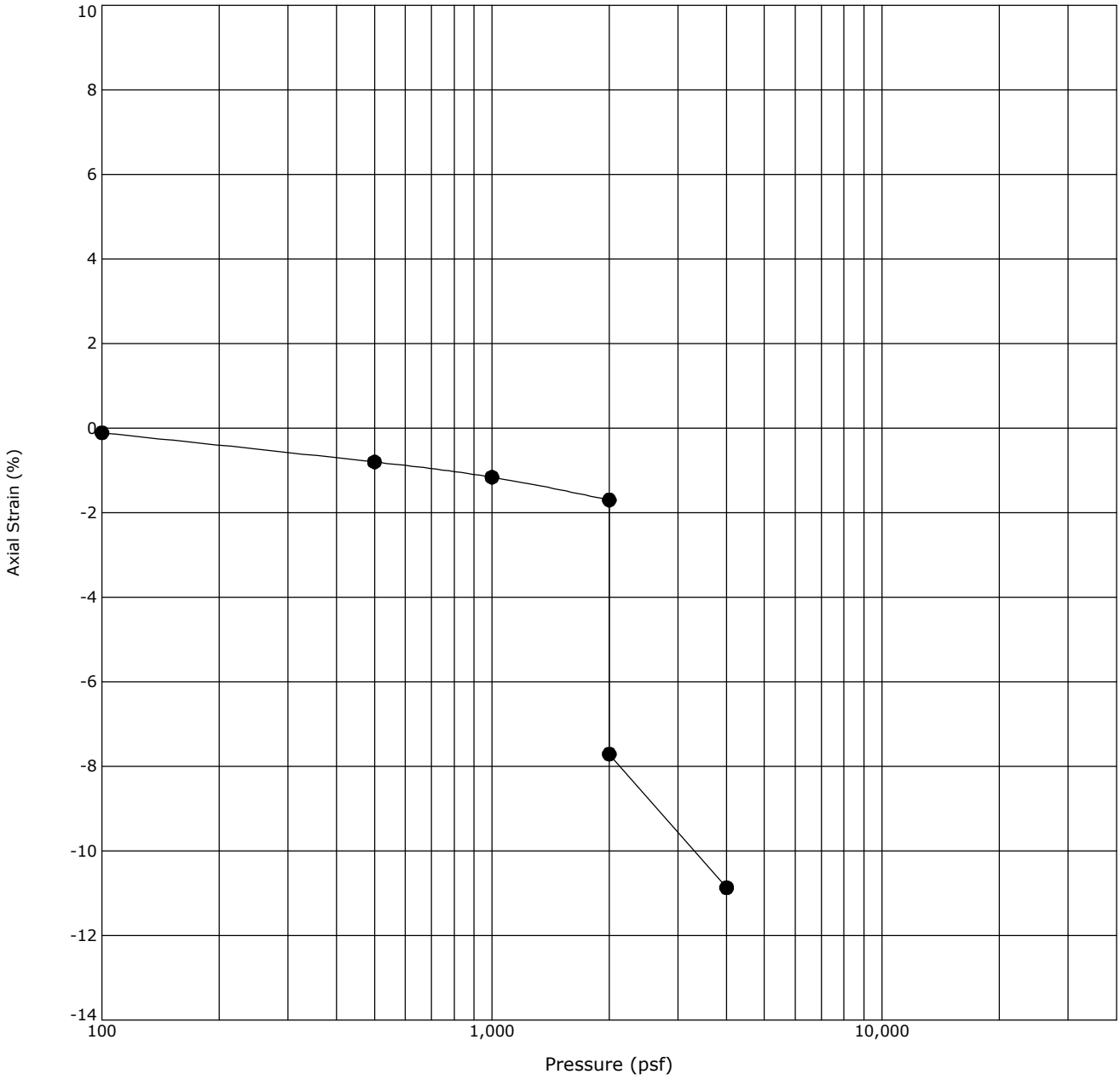
Swell Consolidation Test

ASTM D2435



Boring ID		Depth (Ft)	Description	USCS	γ_d(pcf)	WC (%)
●	B-5	2.5 - 4	SILTY SAND	SM	97	9.6

Notes: water added at 2,000 psf.

750 Pilot Road, Suite F
Las Vegas, Nevada 89119
(702) 597-9393

Client
National Community Renaissance of California

Project
8th Street Apartments

Sample Submitted By: Terracon (60) **Date Received:** 12/12/2022 **Lab No.: 22-0817**

Results of Corrosion Analysis

Sample Number	B2-A
Sample Location	B-2
Sample Depth (ft.)	0.0-5.0
pH Analysis, ASTM G 51	6.80
Water Soluble Sulfate (SO4), ASTM C 1580 (percent %)	0.01
Sulfides, AWWA 4500-S D, (mg/kg)	Nil
Chlorides, ASTM D 512, (mg/kg)	95
Red-Ox, ASTM G 200, (mV)	+729
Total Salts, AWWA 2540, (mg/kg)	441
Saturated Minimum Resistivity, ASTM G 57, (ohm-cm)	3492

Analyzed By
Nathan Campo
Engineering Technician II

Job No.: CB225161

PERCOLATION TEST DATA

BORING NUMBER: B-6
LOT No: N/A
TRACT No: N/A

CLIENT: 8th St. Apts.
PROJECT: National Community Renaissance of California

DATE OF DRILLING: November 28, 2022
DATE OF PRESOAK: November 28, 2022
DATE OF TEST: November 29, 2022
TESTED BY: JB

DEPTH BEFORE (ft.): 5.2
DEPTH AFTER (ft.): 5.0
PVC PIPE DIA. (in.): 3.0
PERC HOLE DIA. (in.): 8.0

Time Interval (min.)	Total Elapsed Time (min.)	Initial Water Level (in.)	Final Water Level (in.)	Change in Water Level (in.)	Initial Hole Depth (in.)	Final Hole Depth (in.)	Percolation Rate (in/hr)	Infiltration rate (Porchet Method) (in/hr)
1440	1440	0.0	57.5	57.5	60.2	60.0	2.4	0.14
25	1465	2.8	14.5	11.8	60.2	60.0	28.2	1.05
25	1490	2.8	13.0	10.3	60.2	60.0	24.6	0.91
10	1500	2.8	7.0	4.3	60.2	60.0	25.5	0.89
10	1510	2.8	8.3	5.5	60.2	60.0	33.0	1.16
10	1520	2.8	7.5	4.8	60.2	60.0	28.5	1.00
10	1530	2.8	7.5	4.8	60.2	60.0	28.5	1.00
10	1540	2.8	7.3	4.5	60.2	60.0	27.0	0.94
10	1550	2.8	7.3	4.5	60.2	60.0	27.0	0.94
				Average of last 3 readings:			27.50	1.0

Job No.: CB225161

PERCOLATION TEST DATA

BORING NUMBER: B-7
LOT No: N/A
TRACT No: N/A

CLIENT: 8th St. Apts.
PROJECT: National Community Renaissance of California

DATE OF DRILLING: November 28, 2022
DATE OF PRESOAK: November 28, 2022
DATE OF TEST: November 29, 2022
TESTED BY: JB

DEPTH BEFORE (ft.): 10.2
DEPTH AFTER (ft.): 10.0
PVC PIPE DIA. (in.): 3.0
PERC HOLE DIA. (in.): 8.0

Time Interval (min.)	Total Elapsed Time (min.)	Initial Water Level (in.)	Final Water Level (in.)	Change in Water Level (in.)	Initial Hole Depth (in.)	Final Hole Depth (in.)	Percolation Rate (in/hr)	Infiltration rate (Porchet Method) (in/hr)
1440	1440	60.0	120.0	60.0	120.2	120.0	2.5	0.16
26	1466	59.0	85.4	26.4	120.2	120.0	60.9	2.44
25	1491	59.0	84.2	25.2	120.2	120.0	60.5	2.39
10	1501	59.0	68.6	9.6	120.2	120.0	57.6	1.97
10	1511	59.0	69.2	10.2	120.2	120.0	61.2	2.11
10	1521	59.0	69.2	10.2	120.2	120.0	61.2	2.11
10	1531	59.0	68.6	9.6	120.2	120.0	57.6	1.97
10	1541	59.0	69.8	10.8	120.2	120.0	64.8	2.24
10	1551	59.0	68.6	9.6	120.2	120.0	57.6	1.97

Average of last 3 readings: 60.00 2.1

Job No.: CB225161

PERCOLATION TEST DATA

BORING NUMBER: B-8
LOT No: N/A
TRACT No: N/A

CLIENT: 8th St. Apts.
PROJECT: National Community Renaissance of California

DATE OF DRILLING: November 28, 2022
DATE OF PRESOAK: November 28, 2022
DATE OF TEST: November 29, 2022
TESTED BY: JB

DEPTH BEFORE (ft.): 5.2
DEPTH AFTER (ft.): 5.0
PVC PIPE DIA. (in.): 3.0
PERC HOLE DIA. (in.): 8.0

Time Interval (min.)	Total Elapsed Time (min.)	Initial Water Level (in.)	Final Water Level (in.)	Change in Water Level (in.)	Initial Hole Depth (in.)	Final Hole Depth (in.)	Percolation Rate (in/hr)	Infiltration rate (Porchet Method) (in/hr)
1440	1440	0.0	60.0	60.0	60.2	60.0	2.5	0.16
25	1465	3.3	14.0	10.8	60.2	60.0	25.8	0.96
25	1490	3.3	11.0	7.8	60.2	60.0	18.6	0.68
10	1500	3.3	7.0	3.8	60.2	60.0	22.5	0.79
10	1510	3.3	6.3	3.0	60.2	60.0	18.0	0.63
10	1520	3.3	6.8	3.5	60.2	60.0	21.0	0.73
10	1530	3.3	6.5	3.3	60.2	60.0	19.5	0.68
10	1540	3.3	6.5	3.3	60.2	60.0	19.5	0.68
10	1550	3.3	6.3	3.0	60.2	60.0	18.0	0.63
				Average of last 3 readings:			19.00	0.7

Job No.: CB225161

PERCOLATION TEST DATA

BORING NUMBER: B-9
LOT No: N/A
TRACT No: N/A

CLIENT: 8th St. Apts.
PROJECT: National Community Renaissance of California

DATE OF DRILLING: November 28, 2022
DATE OF PRESOAK: November 28, 2022
DATE OF TEST: November 29, 2022
TESTED BY: JB

DEPTH BEFORE (ft.): 10.2
DEPTH AFTER (ft.): 10.0
PVC PIPE DIA. (in.): 3.0
PERC HOLE DIA. (in.): 6.0

Time Interval (min.)	Total Elapsed Time (min.)	Initial Water Level (in.)	Final Water Level (in.)	Change in Water Level (in.)	Initial Hole Depth (in.)	Final Hole Depth (in.)	Percolation Rate (in/hr)	Infiltration rate (Porchet Method) (in/hr)
1440	1440	0.0	120.0	120.0	62.0	60.0	5.0	2.14
25	1465	58.0	63.0	5.0	62.0	60.0	12.0	6.00
25	1490	58.0	63.0	5.0	62.0	60.0	12.0	6.00
30	1520	58.0	64.0	6.0	62.0	60.0	12.0	7.20
30	1550	58.0	64.0	6.0	62.0	60.0	12.0	7.20
30	1580	58.0	64.0	6.0	62.0	60.0	12.0	7.20
30	1610	58.0	64.0	6.0	62.0	60.0	12.0	7.20
30	1640	58.0	64.0	6.0	62.0	60.0	12.0	7.20
30	1670	58.0	64.0	6.0	62.0	60.0	12.0	7.20
30	1700	58.0	64.0	6.0	62.0	60.0	12.0	7.20
30	1730	58.0	64.0	6.0	62.0	60.0	12.0	7.20
30	1760	58.0	64.0	6.0	62.0	60.0	12.0	7.20
30	1790	58.0	64.0	6.0	62.0	60.0	12.0	7.20
30	1820	58.0	64.0	6.0	62.0	60.0	12.0	7.20
30	1850	58.0	64.0	6.0	62.0	60.0	12.0	7.20

Average of last 3 readings: 12.00 7.20

Supporting Information

Contents:

General Notes
Unified Soil Classification System

GENERAL NOTES

Terracon GeoReport

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

SAMPLING


Auger


Shelby Tube


Split Spoon


Rock Core


Macro Core


Modified Dames & Moore Ring Sampler


Grab Sample


No Recovery


Modified California Ring Sampler

WATER LEVEL


Water Initially Encountered


Water Level After a Specified Period of Time


Water Level After a Specified Period of Time

Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.

FIELD TESTS

(HP)	Hand Penetrometer
(T)	Torvane
(b/f)	Standard Penetration Test (blows per foot)
N	N value
(PID)	Photo-Ionization Detector
(OVA)	Organic Vapor Analyzer
(WOH)	Weight of Hammer

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification is based on the Unified Soil Classification System. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; their principal descriptors are: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are principally described as clays if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

LOCATION AND ELEVATION NOTES

Unless otherwise noted, Latitude and Longitude are approximately determined using a hand-held GPS device. The accuracy of such devices is variable. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS

RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance Includes gravels, sands and silts.			CONSISTENCY OF FINE-GRAINED SOILS (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance			
Descriptive Term (Density)	**Standard Penetration or N-Value Blows/Ft.**	**Ring Sampler Blows/Ft.**	**Descriptive Term (Consistency)**	**Unconfined Compressive Strength, Qu, psf**	**Standard Penetration or N-Value Blows/Ft.**	**Ring Sampler Blows/Ft.**
Very Loose	0 - 3	0 - 6	Very Soft	less than 500	0 - 1	< 3
Loose	4 - 9	7 - 18	Soft	500 to 1,000	2 - 4	3 - 4
Medium Dense	10 - 29	19 - 58	Medium-Stiff	1,000 to 2,000	4 - 8	5 - 9
Dense	30 - 50	59 - 98	Stiff	2,000 to 4,000	8 - 15	10 - 18
Very Dense	> 50	≥ 99	Very Stiff	4,000 to 8,000	15 - 30	19 - 42
			Hard	> 8,000	> 30	> 42

RELATIVE PROPORTIONS OF SAND AND GRAVEL

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 15
With	15 - 29
Modifier	> 30

GRAIN SIZE TERMINOLOGY

Major Component of Sample	Particle Size
Boulders	Over 12 in. (300 mm)
Cobbles	12 in. to 3 in. (300mm to 75mm)
Gravel	3 in. to #4 sieve (75mm to 4.75 mm)
Sand	#4 to #200 sieve (4.75mm to 0.075mm
Silt or Clay	Passing #200 sieve (0.075mm)

RELATIVE PROPORTIONS OF FINES

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 5
With	5 - 12
Modifier	> 12

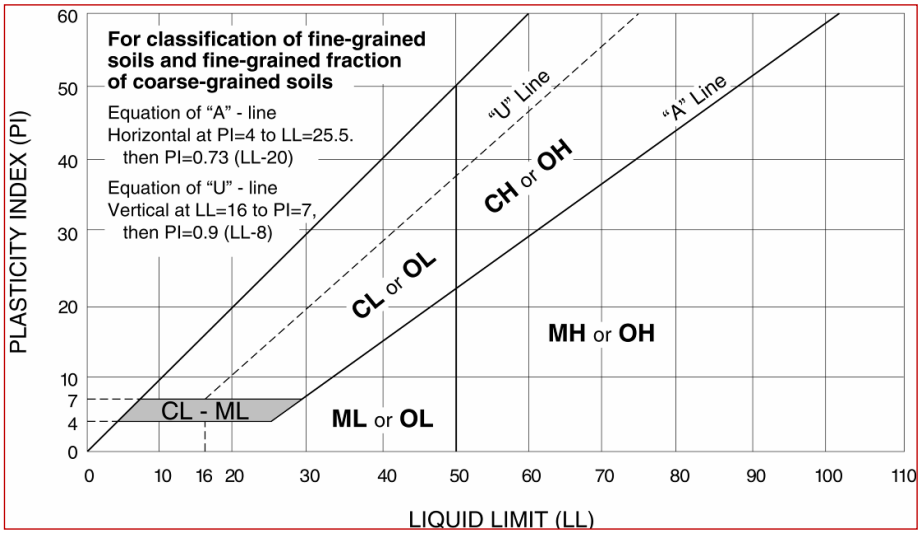
PLASTICITY DESCRIPTION

Term	Plasticity Index
Non-plastic	0
Low	1 - 10
Medium	11 - 30
High	> 30

Unified Soil Classification System

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]				Soil Classification	
				Group Symbol	Group Name [B]
Coarse-Grained Soils: More than 50% retained on No. 4 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	Cu≥4 and 1≤Cc≤3 [E]	GW	Well-graded gravel [F]
			Cu<4 and/or [Cc<1 or Cc>3.0] [E]	GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH	GM	Silty gravel [F, G, H]
			Fines classify as CL or CH	GC	Clayey gravel [F, G, H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	Cu≥6 and 1≤Cc≤3 [E]	SW	Well-graded sand [I]
			Cu<6 and/or [Cc<1 or Cc>3.0] [E]	SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH	SM	Silty sand [G, H, I]
			Fines classify as CL or CH	SC	Clayey sand [G, H, I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots above "A" line [J]	CL	Lean clay [K, L, M]
			PI < 4 or plots below "A" line [J]	ML	Silt [K, L, M]
		Organic:	$\frac{LL\ oven\ dried}{LL\ not\ dried} < 0.75$	OL	Organic clay [K, L, M, N]
					Organic silt [K, L, M, O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line	CH	Fat clay [K, L, M]
			PI plots below "A" line	MH	Elastic silt [K, L, M]
		Organic:	$\frac{LL\ oven\ dried}{LL\ not\ dried} < 0.75$	OH	Organic clay [K, L, M, P]
					Organic silt [K, L, M, Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor			PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve.
[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.
[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.
[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay.
[E] $Cu = D_{60}/D_{10}$ $Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$
[F] If soil contains ≥ 15% sand, add "with sand" to group name.
[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.
[H] If fines are organic, add "with organic fines" to group name.
[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.
[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.
[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.
[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.
[N] PI ≥ 4 and plots on or above "A" line.
[O] PI < 4 or plots below "A" line.
[P] PI plots on or above "A" line.
[Q] PI plots below "A" line.



1355 E. Cooley Dr. Suite C
Colton, CA 92324
P (909) 824-7311

Terracon.com

August 07, 2023

National Community Renaissance
9421 Haven Avenue
Rancho Cucamonga, California

Attn: Ms. Tracey Williams
P: (909) 204-3508
E: twilliams@nationalcore.org

Re: Percolation Testing Report
8th Street Apartments – Additional Percolation Tests
1343 E. 8th Street
Beaumont, California
Terracon Project No. 60225161

Dear Ms. Williams:

We have completed the additional Percolation Testing services for the above referenced project in general accordance with Terracon Supplement to Agreement for Services dated July 17, 2023. This letter presents the results of our percolation testing for considerations related to stormwater infiltration.

A previous geotechnical study was conducted for the project by Terracon (dated January 13, 2023), which included percolation testing. However, the proposed infiltration trench location was relocated subsequent to that study. Based on city comments received, additional percolation testing was required to be conducted consistent with the Riverside County Flood Control Water Conservation District Design Handbook for Low Impact Development Best Management Practices, dated 09/11.

Stormwater Management

Two in-situ infiltration tests (falling head borehole permeability) were performed at an approximate depth of 9 feet below ground surface (bgs) within boreholes drilled with an 8-inch diameter auger. The test borings are numbered B10 and B11 to maintain consistent numbering with the referenced geotechnical report. The referenced geotechnical report included nine borings, with four of the borings used for percolation testing. The objective of this additional testing was to provide infiltration rates to the civil engineer for designing the proposed infiltration system at the relocated area. Borings B4 and B5 from the project geotechnical report are suitable to use as profile borings as they confirm relatively consistent subsurface conditions to depths greater than 10 feet beyond the depth of the percolation tests.

A 2-inch thick, 3/4-inch gravel layer was placed in the bottom of each boring after the borings were drilled to investigate the soil profile. A three-inch diameter perforated pipe was installed on top of the gravel layer and gravel was used to backfill between the perforated pipes and the boring sidewall. The borings were then filled with water for a pre-soak period.

At the beginning of each test, the pipes were refilled with water and readings were taken at periodic time intervals as the water level dropped. The soil at the percolation test locations was classified in the field using a visual/manual procedure. The infiltration velocity is presented as the infiltration rate and is summarized in the following table. The infiltration rates provided do not include safety factors.

Test Location	Boring Depth (ft.)[1]	Test Depth Range (ft.)[1]	Soil Type	Percolation Rate (in./hr.)	Infiltration Rate (in.hr.)[2]
B-10	9	4 to 9	SM	7.5	0.33
B-11	9	4 to 9	SM	1.0	0.02

1. Below existing ground surface.
2. If proposed infiltration system will mainly rely on vertical downward seepage, the correlated infiltration rates should be used. The infiltration rates were correlated using the Porchet method.

With time, the bottoms of infiltration systems tend to plug with organics, sediments, and other debris. Long term maintenance will likely be required to remove these deleterious materials to help reduce decreases in actual percolation rates.

The percolation tests were performed with clear water, whereas the storm water will likely not be clear, but may contain organics, fines, and grease/oil. The presence of these deleterious materials will tend to decrease the rate that water percolates from the infiltration systems. Design of the storm water infiltration systems should account for the presence of these materials and should incorporate structures/devices to remove these deleterious materials.

Based on the soils encountered in our borings, we expect the percolation rates of the soils could be different than measured in the field due to variations in fines and gravel content. The design elevation and size of the proposed infiltration system should account for this expected variability in infiltration rates.

Infiltration testing should be performed after construction of the infiltration system to verify the design infiltration rates. It should be noted that siltation and vegetation growth along with other factors may affect the infiltration rates of the infiltration areas. The actual infiltration rate may vary from the values reported here. Infiltration systems should be located a minimum of 10 feet from any existing or proposed foundation system.

Closure

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this addendum, or if we may be of further service, please contact us.

Sincerely,
Terracon Consultants, Inc.

Octavio Flores, G.I.T.
Staff Geologist

Keith P. Askew, P.E., G.E.
Geotechnical Manager

Attachments:
Site Location Plan
Boring Logs (B-10 and B-11)
Percolation Test Data
General Notes
Unified Soil Classification System

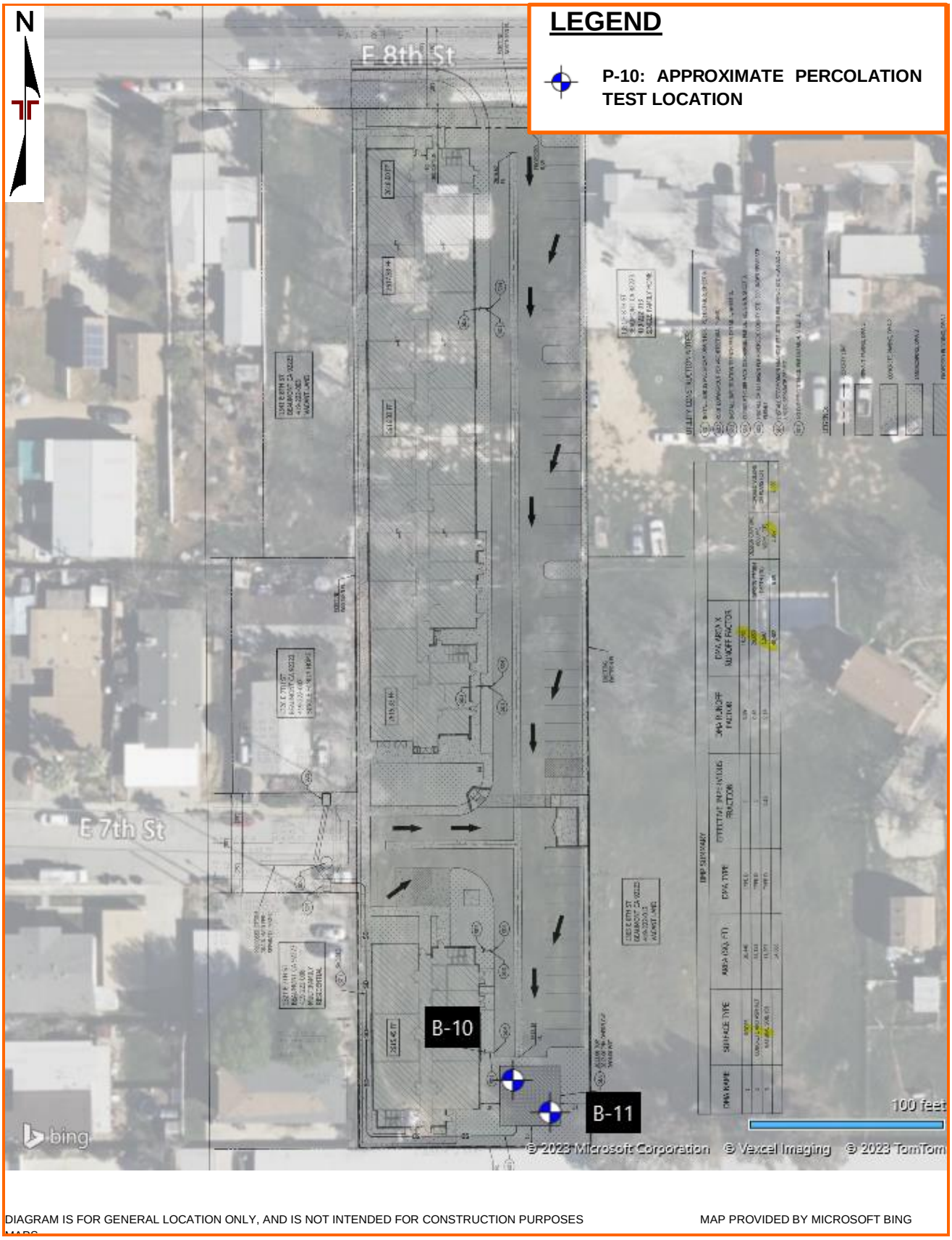


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING

8th Street Apartments
1343 E. 8th Street | Beaumont, CA
Terracon Project No. 60225161

Terracon
23041 Avenida De La Carlota
Ste 350
Laguna Hills, CA

Boring Log No. B-10

Graphic Log	Location: See Exploration Plan Latitude: 33.9311° Longitude: -116.9628° Depth (Ft.)	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI	Percent Fines
	SILTY SAND (SM), reddish brown								
		5							
	brown, medium dense				9-11-15				
	9.0								
	Boring Terminated at 9 Feet								

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Water Level Observations
Groundwater not encountered

Notes

Advancement Method
Hollow Stem Auger

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Drill Rig
B-61

Hammer Type
Automatic

Driller
CalPac Drilling

Logged by
JB

Boring Started
07-24-2023

Boring Completed
07-24-2023

8th Street Apartments
1343 E. 8th Street | Beaumont, CA
Terracon Project No. 60225161

Terracon
23041 Avenida De La Carlota
Ste 350
Laguna Hills, CA

Boring Log No. B-11

Graphic Log	Location: See Exploration Plan Latitude: 33.9310° Longitude: -116.9628° Depth (Ft.)	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI	Percent Fines
	SILTY SAND (SM), reddish brown								
		5							
	brown, medium dense				10-11-15				
	9.0								
	Boring Terminated at 9 Feet								

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Water Level Observations
Groundwater not encountered

Notes

Advancement Method
Hollow Stem Auger

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Drill Rig
B-61

Hammer Type
Automatic

Driller
CalPac Drilling

Logged by
JB

Boring Started
07-24-2023

Boring Completed
07-24-2023

Job No.: 60225161

PERCOLATION TEST DATA

BORING NUMBER: B-10
LOT No: N/A
TRACT No: N/A

CLIENT: National Community Renaissance of California
PROJECT: 8th Street Apartments

DATE OF DRILLING: July 23, 2023
DATE OF PRESOAK: July 23, 2023
DATE OF TEST: July 24, 2023
TESTED BY: JB

DEPTH BEFORE (ft.): 9.0
DEPTH AFTER (ft.): 9.0
PVC PIPE DIA. (in.): 3.0
PERC HOLE DIA. (in.): 8.0

Time Interval (min.)	Total Elapsed Time (min.)	Initial Water Level (in.)	Final Water Level (in.)	Change in Water Level (in.)	Initial Hole Depth (in.)	Final Hole Depth (in.)	Percolation Rate (in/hr)	Infiltration rate (Porchet Method) (in/hr)
30	30	50.5	56.8	6.3	108.0	108.0	12.5	0.44
30	60	50.8	57.8	7.0	108.0	108.0	14.0	0.50
30	90	54.8	61.0	6.3	108.0	108.0	12.5	0.48
30	120	57.0	62.0	5.0	108.0	108.0	10.0	0.40
30	150	50.5	54.8	4.3	108.0	108.0	8.5	0.30
30	180	51.0	55.0	4.0	108.0	108.0	8.0	0.28
30	210	54.0	58.0	4.0	108.0	108.0	8.0	0.30
30	240	56.3	60.8	4.5	108.0	108.0	9.0	0.35
30	270	58.8	62.8	4.0	108.0	108.0	8.0	0.32
30	300	59.0	63.3	4.3	108.0	108.0	8.5	0.35
30	330	62.5	66.3	3.8	108.0	108.0	7.5	0.33
30	360	62.5	66.3	3.8	108.0	108.0	7.5	0.33

Final reading: 7.50 0.33

Job No.: 60225161

PERCOLATION TEST DATA

BORING NUMBER: B-11
LOT No: N/A
TRACT No: N/A

CLIENT: National Community Renaissance of California
PROJECT: 8th Street Apartments

DATE OF DRILLING: July 23, 2023
DATE OF PRESOAK: July 23, 2023
DATE OF TEST: July 24, 2023
TESTED BY: JB

DEPTH BEFORE (ft.): 9.0
DEPTH AFTER (ft.): 9.0
PVC PIPE DIA. (in.): 3.0
PERC HOLE DIA. (in.): 8.0

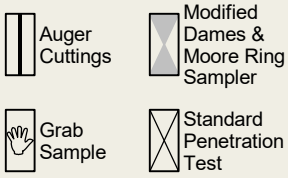
Time Interval (min.)	Total Elapsed Time (min.)	Initial Water Level (in.)	Final Water Level (in.)	Change in Water Level (in.)	Initial Hole Depth (in.)	Final Hole Depth (in.)	Percolation Rate (in/hr)	Infiltration rate (Porchet Method) (in/hr)
30	30	36.8	38.3	1.5	108.0	108.0	3.0	0.08
30	60	34.5	37.0	2.5	108.0	108.0	5.0	0.13
30	90	34.5	37.0	2.5	108.0	108.0	5.0	0.13
30	120	30.8	32.5	1.8	108.0	108.0	3.5	0.09
30	150	30.5	31.0	0.5	108.0	108.0	1.0	0.03
30	180	30.0	30.8	0.8	108.0	108.0	1.5	0.04
30	210	29.8	30.3	0.5	108.0	108.0	1.0	0.03
30	240	29.3	30.0	0.8	108.0	108.0	1.5	0.04
30	270	29.8	30.3	0.5	108.0	108.0	1.0	0.03
30	300	29.8	30.3	0.5	108.0	108.0	1.0	0.03
30	330	28.8	29.3	0.5	108.0	108.0	1.0	0.02
30	360	28.8	29.3	0.5	108.0	108.0	1.0	0.02

Final reading: 1.00 0.02

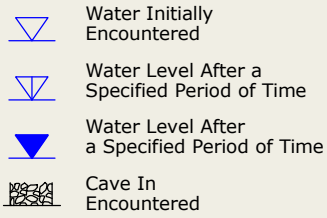
Terracon
23041 Avenida De La Carlota
Ste 350
Laguna Hills, CA

General Notes

Sampling



Water Level



Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.

Field Tests

N	Standard Penetration Test Resistance (Blows/Ft.)
(HP)	Hand Penetrometer
(T)	Torvane
(DCP)	Dynamic Cone Penetrometer
UC	Unconfined Compressive Strength
(PID)	Photo-Ionization Detector
(OVA)	Organic Vapor Analyzer

Descriptive Soil Classification

Soil classification as noted on the soil boring logs is based Unified Soil Classification System. Where sufficient laboratory data exist to classify the soils consistent with ASTM D2487 "Classification of Soils for Engineering Purposes" this procedure is used. ASTM D2488 "Description and Identification of Soils (Visual-Manual Procedure)" is also used to classify the soils, particularly where insufficient laboratory data exist to classify the soils in accordance with ASTM D2487. In addition to USCS classification, coarse grained soils are classified on the basis of their in-place relative density, and fine-grained soils are classified on the basis of their consistency. See "Strength Terms" table below for details. The ASTM standards noted above are for reference to methodology in general. In some cases, variations to methods are applied as a result of local practice or professional judgment.

Location And Elevation Notes

Exploration point locations as shown on the Exploration Plan and as noted on the soil boring logs in the form of Latitude and Longitude are approximate. See Exploration and Testing Procedures in the report for the methods used to locate the exploration points for this project. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

Strength Terms

Relative Density of Coarse-Grained Soils
(More than 50% retained on No. 200 sieve.)
Density determined by Standard Penetration Resistance

Relative Density	Standard Penetration or N-Value (Blows/Ft.)
Very Loose	0 - 3
Loose	4 - 9
Medium Dense	10 - 29
Dense	30 - 50
Very Dense	> 50

Consistency of Fine-Grained Soils
(50% or more passing the No. 200 sieve.)
Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance

Consistency	Unconfined Compressive Strength Qu (tsf)	Standard Penetration or N-Value (Blows/Ft.)
Very Soft	less than 0.25	0 - 1
Soft	0.25 to 0.50	2 - 4
Medium Stiff	0.50 to 1.00	4 - 8
Stiff	1.00 to 2.00	8 - 15
Very Stiff	2.00 to 4.00	15 - 30
Hard	> 4.00	> 30

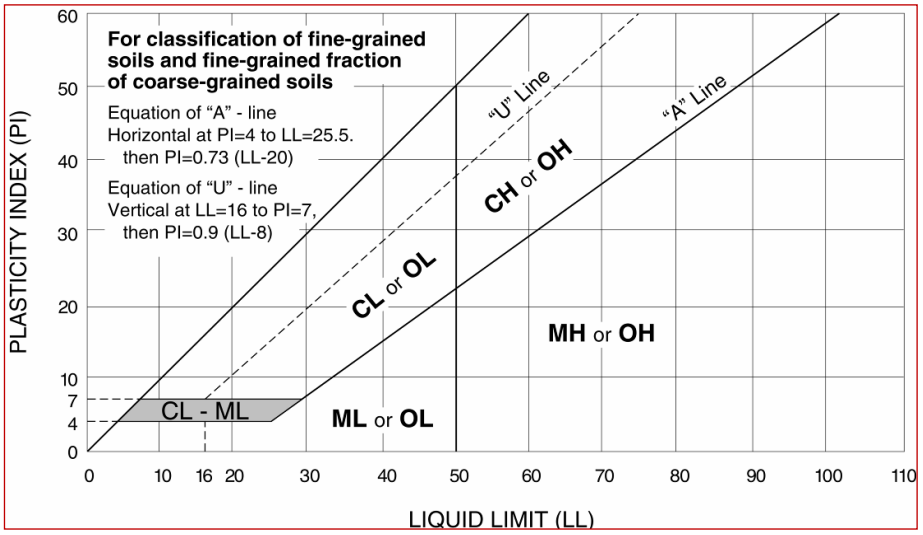
Relevance of Exploration and Laboratory Test Results

Exploration/field results and/or laboratory test data contained within this document are intended for application to the project as described in this document. Use of such exploration/field results and/or laboratory test data should not be used independently of this document.

Unified Soil Classification System

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]				Soil Classification	
				Group Symbol	Group Name [B]
Coarse-Grained Soils: More than 50% retained on No. 4 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	Cu≥4 and 1≤Cc≤3 [E]	GW	Well-graded gravel [F]
			Cu<4 and/or [Cc<1 or Cc>3.0] [E]	GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH	GM	Silty gravel [F, G, H]
			Fines classify as CL or CH	GC	Clayey gravel [F, G, H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	Cu≥6 and 1≤Cc≤3 [E]	SW	Well-graded sand [I]
			Cu<6 and/or [Cc<1 or Cc>3.0] [E]	SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH	SM	Silty sand [G, H, I]
			Fines classify as CL or CH	SC	Clayey sand [G, H, I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots above "A" line [J]	CL	Lean clay [K, L, M]
			PI < 4 or plots below "A" line [J]	ML	Silt [K, L, M]
		Organic:	$\frac{LL\ oven\ dried}{LL\ not\ dried} < 0.75$	OL	Organic clay [K, L, M, N]
					Organic silt [K, L, M, O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line	CH	Fat clay [K, L, M]
			PI plots below "A" line	MH	Elastic silt [K, L, M]
		Organic:	$\frac{LL\ oven\ dried}{LL\ not\ dried} < 0.75$	OH	Organic clay [K, L, M, P]
					Organic silt [K, L, M, Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor			PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve.
[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.
[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.
[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay.
[E] $Cu = D_{60}/D_{10}$ $Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$
[F] If soil contains ≥ 15% sand, add "with sand" to group name.
[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.
[H] If fines are organic, add "with organic fines" to group name.
[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.
[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.
[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.
[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.
[N] PI ≥ 4 and plots on or above "A" line.
[O] PI < 4 or plots below "A" line.
[P] PI plots on or above "A" line.
[Q] PI plots below "A" line.



Appendix 4: Historical Site Conditions

Phase I Environmental Site Assessment or Other Information on Past Site Use

NOT APPLICABLE

Appendix 5: LID Infeasibility

LID Technical Infeasibility Analysis

NOT APPLICABLE

Appendix 6: BMP Design Details

BMP Sizing, Design Details and other Supporting Documentation

Bioretention Facility - Design Procedure	BMP ID	Legend:	Required Entries	
			Calculated Cells	

Company Name:	DK Engineer Corp.	Date:	2/2/2024
Designed by:	Matthew Gooden	County/City Case No.:	

Design Volume

Enter the area tributary to this feature	A_T=	1.36	acres
Enter V_{BMP} determined from Section 2.1 of this Handbook	V_{BMP}=	3,313	ft^3

Type of Bioretention Facility Design

(●) Side slopes required (parallel to parking spaces or adjacent to walkways)

( ) No side slopes required (perpendicular to parking space or Planter Boxes)

Bioretention Facility Surface Area

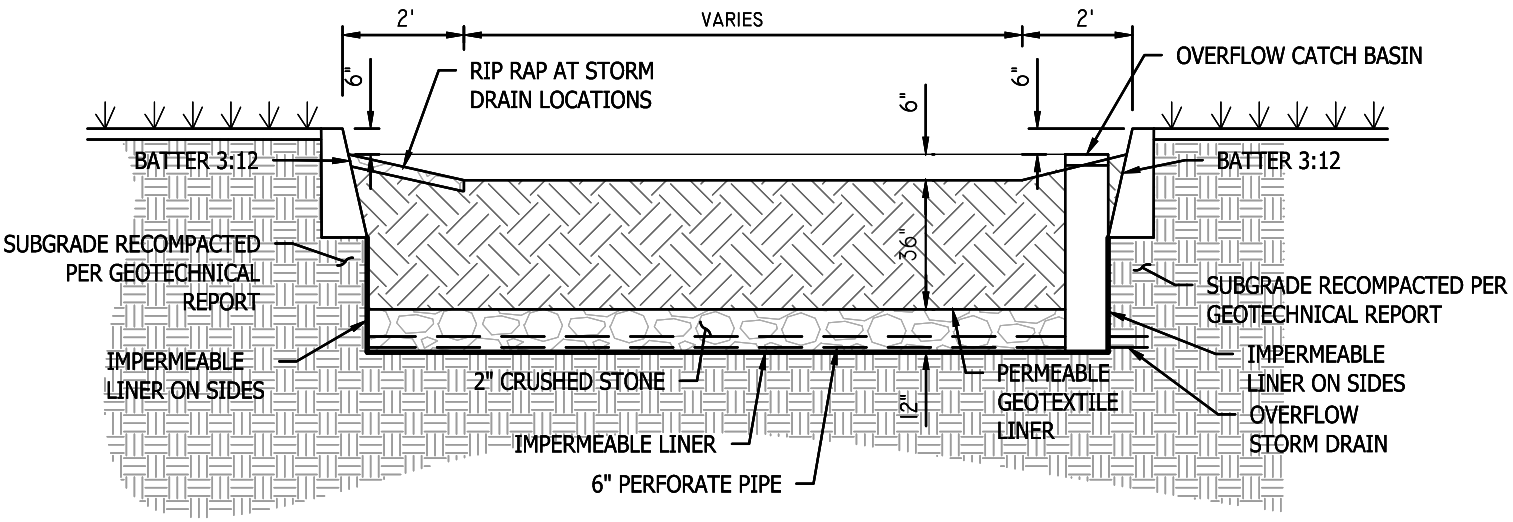
Depth of Soil Filter Media Layer	d_S =	3.0	ft
Top Width of Bioretention Facility, excluding curb	w_T =	40.0	ft
Total Effective Depth, d_E $d_E = (0.3) \times d_S + (0.4) \times 1 - (0.7/w_T) + 0.5$	d_E =	1.78	ft
Minimum Surface Area, A_m $A_M\ (ft^2) = \frac{V_{BMP}\ (ft^3)}{d_E\ (ft)}$	A_M =	1,859	ft^2
Proposed Surface Area	A=	1,870	ft^2

Bioretention Facility Properties

Side Slopes in Bioretention Facility	z =	4	:1
Diameter of Underdrain		6	inches
Longitudinal Slope of Site (3% maximum)			%
6" Check Dam Spacing			feet

Describe Vegetation: Natural Grasses

Notes:



Engineered Soil Media Requirements

The engineered soil media shall be comprised of 85 percent mineral component and 15 percent organic component, by volume, drum mixed prior to placement. The mineral component shall be a Class A sandy loam topsoil that meets the range specified in Table 1 below. The organic component shall be nitrogen stabilized compost[1], such that nitrogen does not leach from the media.

Table 1: Mineral Component Range Requirements

Percent Range	Component
70-80	Sand
15-20	Silt
5-10	Clay

The trip ticket, or certificate of compliance, shall be made available to the inspector to prove the engineered mix meets this specification.

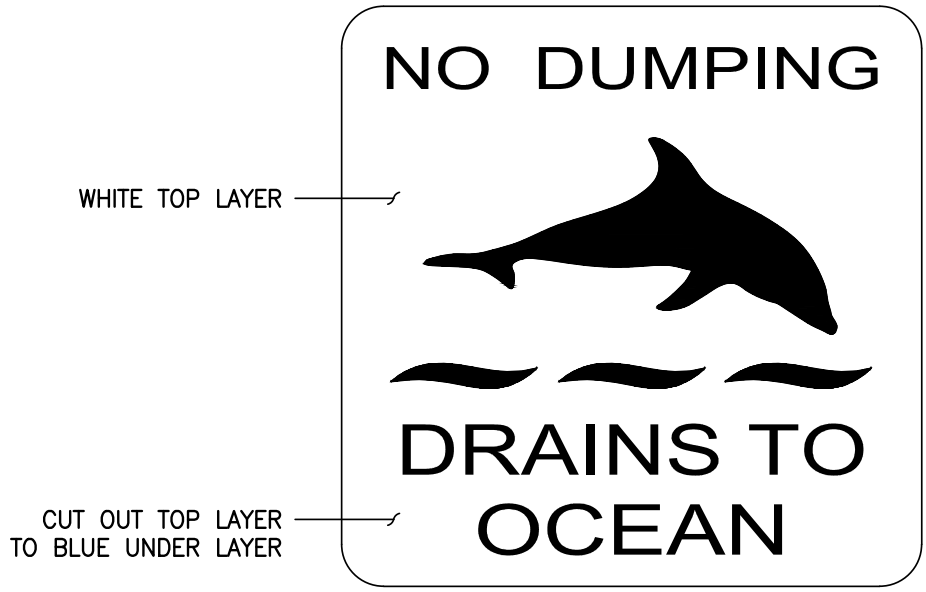
1	BIORETENTION FACILITY	N.T.S.

NOTES:

1. STENCIL MATERIAL SHALL BE TWO-LAYER RESILIENT THERMOPLASTIC WITH 30% GRADED GLASS BEADS, 3.15 MM (125 MILS) TOTAL THICKNESS WITH BEVELED EDGES. MATERIAL SHALL BE AASHTO DESIGNATED M249-79(86), EXCEPT THAT MATERIAL SHALL BE PRE-FORMED.

2. BEFORE APPLICATION, PREPARE P.C.C. SURFACES WITH A PRIMER SEALER. APPLY STENCILS WITH PROPANE TORCH HEATING, PER MANUFACTURER'S RECOMMENDATIONS.

3. OTHER GRAPHIC DESIGNS THAN THAT SHOWN BELOW ARE SUBJECT TO APPROVAL. SUBMIT FULL-SIZE DRAWINGS AND MATERIAL SAMPLES TO THE CITY ENGINEER BEFORE APPLICATION.



4	STENCIL DETAIL	N.T.S.

DRAWDOWN TIME CALCS

Infiltration Rate (IN/HR)	BMP Surface Area (SF)	TREATMENT VOLUME (CF)	Drawdown Time (HR)	Max Drawdown (HR)	Check
5	1870	3329	4.27	72	Drawdown Time is under 72 Hours

Infiltration Rate (FT/HR)
0.42

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: DK Engineer Corp — Date: 2/2/2024
Designed by: Matthew Gooden, EIT — Case No:
Company Project Number/Name: National Core Beaumont Apartments

BMP Identification

BMP NAME / ID: Bioretention Facility

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}= 0.85 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)*
1	*20400*	*Roofs*	*1*	*0.89*	*18196.8*			
2	*29673*	*Concrete or Asphalt*	*1*	*0.89*	*26468.3*			
3	*9378*	*Natural (C Soil)*	*0.3*	*0.23*	*2111.6*			
	59451	***Total***			**46776.7**	**0.85**	***3313.3***	***3329***

Notes:

Appendix 7: Hydromodification

Supporting Detail Relating to Hydrologic Conditions of Concern

NOT APPLICABLE

R 07 W | R 06 W | R 05 W | R 04 W | R 03 W | R 02 W | R 01 W | R 01 E | R 02 E | R 03 E | R 04 E | R 05 E

T 01 S | T 02 S | T 03 S | T 04 S | T 05 S | T 06 S | T 07 S | T 08 S

06	05	04	03	02	01
07	08	09	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

0.85 MiraLoma
0.61 RiversideNorth
0.54 RiversideSouth
0.68 PigeonPass
0.66 MorenoEast
0.85 Beaumont
Project Site
85th Percentile = 0.85"
0.88 PradoDam
0.51 Woodcrest
0.50 LakeMathews
0.68 PerrisReservoir
0.87 VistaGrandeGS
0.70 SanJacintoNWS
1.18 Idyllwild
0.58 SunCity
0.68 Winchester
0.70 ElsinoreNWS
1.11 ElCarisoStation
0.90 HurkeyCreek
0.77 WildomarLaCresta
0.52 SkinnerLake
0.65 Anza
0.77 SantaRosaPlateau
1.00 TemeculaNWS
0.64 AguangaValley

Santa Ana River Watershed

Santa Margarita Watershed

N

Rain Gage Locations

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

Isohyetal Map for the 85th Percentile 24 hour Storm Event

July 2011

Appendix 8: Source Control

Pollutant Sources/Source Control Checklist

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

How to use this worksheet (also see instructions in Section G of the WQMP Template):

1. Review Column 1 and identify which of these potential sources of stormwater pollutants apply to your site. Check each box that applies.
2. Review Column 2 and incorporate all of the corresponding applicable BMPs in your WQMP Exhibit.
3. Review Columns 3 and 4 and incorporate all of the corresponding applicable permanent controls and operational BMPs in your WQMP. Use the format shown in Table G.1on page 23 of this WQMP Template. Describe your specific BMPs in an accompanying narrative, and explain any special conditions or situations that required omitting BMPs or substituting alternative BMPs for those shown here.

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
☒ A. **On-site storm drain inlets**	☒ **Locations of inlets.**	☒ **Mark all inlets with the words "Only Rain Down the Storm Drain" or similar. Catch Basin Markers may be available from the Riverside County Flood Control and Water Conservation District, call 951.955.1200 to verify.**	☒ **Maintain and periodically repaint or replace inlet markings.** ☒ **Provide stormwater pollution prevention information to new site owners, lessees, or operators.** ☒ **See applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com** ☒ **Include the following in lease agreements: "Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains."**
☐ B. **Interior floor drains and elevator shaft sump pumps**		☐ **State that interior floor drains and elevator shaft sump pumps will be plumbed to sanitary sewer.**	☐ **Inspect and maintain drains to prevent blockages and overflow.**
☐ C. **Interior parking garages**		☐ **State that parking garage floor drains will be plumbed to the sanitary sewer.**	☐ **Inspect and maintain drains to prevent blockages and overflow.**

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
☐ D1. **Need for future indoor & structural pest control**		☐ **Note building design features that discourage entry of pests.**	☐ **Provide Integrated Pest Management information to owners, lessees, and operators.**
☒ D2. **Landscape/ Outdoor Pesticide Use**	☒ **Show locations of native trees or areas of shrubs and ground cover to be undisturbed and retained.** ☒ **Show self-retaining landscape areas, if any.** ☐ **Show stormwater treatment and hydrograph modification management BMPs. (See instructions in Chapter 3, Step 5 and guidance in Chapter 5.)**	**State that final landscape plans will accomplish all of the following.** ☒ **Preserve existing native trees, shrubs, and ground cover to the maximum extent possible.** ☒ **Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution.** ☒ **Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions.** ☒ **Consider using pest-resistant plants, especially adjacent to hardscape.** **To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.**	☒ **Maintain landscaping using minimum or no pesticides.** ☒ **See applicable operational BMPs in "What you should know for…..Landscape and Gardening"** at http://rcflood.org/stormwater/**Error! Hyperlink reference not valid.** ☒ **Provide IPM information to new owners, lessees and operators.**

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
☐ E. **Pools, spas, ponds, decorative fountains, and other water features.**	☐ **Show location of water feature and a sanitary sewer cleanout in an accessible area within 10 feet. (Exception: Public pools must be plumbed according to County Department of Environmental Health Guidelines.)**	**If the Co-Permittee requires pools to be plumbed to the sanitary sewer, place a note on the plans and state in the narrative that this connection will be made according to local requirements.**	☐ **See applicable operational BMPs in** "Guidelines for Maintaining Your Swimming Pool, Jacuzzi and Garden Fountain" at http://rcflood.org/stormwater/
☐ F. **Food service**	☐ **For restaurants, grocery stores, and other food service operations, show location (indoors or in a covered area outdoors) of a floor sink or other area for cleaning floor mats, containers, and equipment.** ☐ **On the drawing, show a note that this drain will be connected to a grease interceptor before discharging to the sanitary sewer.**	☐ **Describe the location and features of the designated cleaning area.** ☐ **Describe the items to be cleaned in this facility and how it has been sized to insure that the largest items can be accommodated.**	☐ **See the brochure, "**The Food Service Industry Best Management Practices for: Restaurants, Grocery Stores, Delicatessens and Bakeries" at http://rcflood.org/stormwater/ **Provide this brochure to new site owners, lessees, and operators.**
☒ G. **Refuse areas**	☒ **Show where site refuse and recycled materials will be handled and stored for pickup. See local municipal requirements for sizes and other details of refuse areas.** ☒ **If dumpsters or other receptacles are outdoors, show how the designated area will be covered, graded, and paved to prevent run-on and show locations of berms to prevent runoff from the area.** ☒ **Any drains from dumpsters, compactors, and tallow bin areas shall be connected to a grease removal device before discharge to sanitary sewer.**	☒ **State how site refuse will be handled and provide supporting detail to what is shown on plans.** ☒ **State that signs will be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.**	☒ **State how the following will be implemented:** **Provide adequate number of receptacles. Inspect receptacles regularly; repair or replace leaky receptacles. Keep receptacles covered. Prohibit/prevent dumping of liquid or hazardous wastes. Post "no hazardous materials" signs. Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available on-site. See Fact Sheet SC-34, "Waste Handling and Disposal" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
❑ H. **Industrial processes.**	❑ **Show process area.**	❑ **If industrial processes are to be located on site, state: "All process activities to be performed indoors. No processes to drain to exterior or to storm drain system."**	❑ **See Fact Sheet SC-10, "Non-Stormwater Discharges" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com** See the brochure "Industrial & Commercial Facilities Best Management Practices for: Industrial, Commercial Facilities" at http://rcflood.org/stormwater/

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
❑ I. **Outdoor storage of equipment or materials. (See rows J and K for source control measures for vehicle cleaning, repair, and maintenance.)**	❑ **Show any outdoor storage areas, including how materials will be covered. Show how areas will be graded and bermed to prevent run-on or run-off from area.** ❑ **Storage of non-hazardous liquids shall be covered by a roof and/or drain to the sanitary sewer system, and be contained by berms, dikes, liners, or vaults.** ❑ **Storage of hazardous materials and wastes must be in compliance with the local hazardous materials ordinance and a Hazardous Materials Management Plan for the site.**	**Include a detailed description of materials to be stored, storage areas, and structural features to prevent pollutants from entering storm drains.** **Where appropriate, reference documentation of compliance with the requirements of Hazardous Materials Programs for:** ▪ **Hazardous Waste Generation** ▪ **Hazardous Materials Release Response and Inventory** ▪ **California Accidental Release (CalARP)** ▪ **Aboveground Storage Tank** ▪ **Uniform Fire Code Article 80 Section 103(b) & (c) 1991** ▪ **Underground Storage Tank** **www.cchealth.org/groups/hazmat/**	❑ **See the Fact Sheets SC-31, "Outdoor Liquid Container Storage" and SC-33, "Outdoor Storage of Raw Materials " in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
❑ J. **Vehicle and Equipment Cleaning**	❑ **Show on drawings as appropriate:** **(1) Commercial/industrial facilities having vehicle/equipment cleaning needs shall either provide a covered, bermed area for washing activities or discourage vehicle/equipment washing by removing hose bibs and installing signs prohibiting such uses.** **(2) Multi-dwelling complexes shall have a paved, bermed, and covered car wash area (unless car washing is prohibited on-site and hoses are provided with an automatic shut-off to discourage such use).** **(3) Washing areas for cars, vehicles, and equipment shall be paved, designed to prevent run-on to or runoff from the area, and plumbed to drain to the sanitary sewer.** **(4) Commercial car wash facilities shall be designed such that no runoff from the facility is discharged to the storm drain system. Wastewater from the facility shall discharge to the sanitary sewer, or a wastewater reclamation system shall be installed.**	❑ **If a car wash area is not provided, describe any measures taken to discourage on-site car washing and explain how these will be enforced.**	**Describe operational measures to implement the following (if applicable):** ❑ **Washwater from vehicle and equipment washing operations shall not be discharged to the storm drain system.** Refer to "Outdoor Cleaning Activities and Professional Mobile Service Providers" for many of the Potential Sources of Runoff Pollutants categories below. Brochure can be found at http://rcflood.org/stormwater/ ❑ **Car dealerships and similar may rinse cars with water only.**

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
❑ K. **Vehicle/Equipment Repair and Maintenance**	❑ **Accommodate all vehicle equipment repair and maintenance indoors. Or designate an outdoor work area and design the area to prevent run-on and runoff of stormwater.** ❑ **Show secondary containment for exterior work areas where motor oil, brake fluid, gasoline, diesel fuel, radiator fluid, acid-containing batteries or other hazardous materials or hazardous wastes are used or stored. Drains shall not be installed within the secondary containment areas.** ❑ **Add a note on the plans that states either (1) there are no floor drains, or (2) floor drains are connected to wastewater pretreatment systems prior to discharge to the sanitary sewer and an industrial waste discharge permit will be obtained.**	❑ **State that no vehicle repair or maintenance will be done outdoors, or else describe the required features of the outdoor work area.** ❑ **State that there are no floor drains or if there are floor drains, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.** ❑ **State that there are no tanks, containers or sinks to be used for parts cleaning or rinsing or, if there are, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.**	**In the Stormwater Control Plan, note that all of the following restrictions apply to use the site:** ❑ **No person shall dispose of, nor permit the disposal, directly or indirectly of vehicle fluids, hazardous materials, or rinsewater from parts cleaning into storm drains.** ❑ **No vehicle fluid removal shall be performed outside a building, nor on asphalt or ground surfaces, whether inside or outside a building, except in such a manner as to ensure that any spilled fluid will be in an area of secondary containment. Leaking vehicle fluids shall be contained or drained from the vehicle immediately.** ❑ **No person shall leave unattended drip parts or other open containers containing vehicle fluid, unless such containers are in use or in an area of secondary containment.** Refer to "Automotive Maintenance & Car Care Best Management Practices for Auto Body Shops, Auto Repair Shops, Car Dealerships, Gas Stations and Fleet Service Operations". Brochure can be found at http://rcflood.org/stormwater/ Refer to Outdoor Cleaning Activities and Professional Mobile Service Providers for many of the Potential Sources of Runoff Pollutants categories below. Brochure can be found at http://rcflood.org/stormwater/

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
❑ L. **Fuel Dispensing Areas**	❑ **Fueling areas[6] shall have impermeable floors (i.e., portland cement concrete or equivalent smooth impervious surface) that are: a) graded at the minimum slope necessary to prevent ponding; and b) separated from the rest of the site by a grade break that prevents run-on of stormwater to the maximum extent practicable.** ❑ **Fueling areas shall be covered by a canopy that extends a minimum of ten feet in each direction from each pump. [Alternative: The fueling area must be covered and the cover's minimum dimensions must be equal to or greater than the area within the grade break or fuel dispensing area[1].] The canopy [or cover] shall not drain onto the fueling area.**		❑ **The property owner shall dry sweep the fueling area routinely.** ❑ **See the Fact Sheet SD-30 , "Fueling Areas" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

[6] **The fueling area shall be defined as the area extending a minimum of 6.5 feet from the corner of each fuel dispenser or the length at which the hose and nozzle assembly may be operated plus a minimum of one foot, whichever is greater.**

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
❑ M. **Loading Docks**	❑ **Show a preliminary design for the loading dock area, including roofing and drainage. Loading docks shall be covered and/or graded to minimize run-on to and runoff from the loading area. Roof downspouts shall be positioned to direct stormwater away from the loading area. Water from loading dock areas shall be drained to the sanitary sewer, or diverted and collected for ultimate discharge to the sanitary sewer.** ❑ **Loading dock areas draining directly to the sanitary sewer shall be equipped with a spill control valve or equivalent device, which shall be kept closed during periods of operation.** ❑ **Provide a roof overhang over the loading area or install door skirts (cowling) at each bay that enclose the end of the trailer.**		❑ **Move loaded and unloaded items indoors as soon as possible.** ❑ **See Fact Sheet SC-30, "Outdoor Loading and Unloading," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
☒ N. **Fire Sprinkler Test Water**		☒ **Provide a means to drain fire sprinkler test water to the sanitary sewer.**	☒ **See the note in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**
O. **Miscellaneous Drain or Wash Water or Other Sources** ❑ **Boiler drain lines** ❑ **Condensate drain lines** ❑ **Rooftop equipment** ❑ **Drainage sumps** ☒ **Roofing, gutters, and trim.** ❑ **Other sources**		❑ **Boiler drain lines shall be directly or indirectly connected to the sanitary sewer system and may not discharge to the storm drain system.** ❑ **Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur. Condensate drain lines may not discharge to the storm drain system.** ❑ **Rooftop equipment with potential to produce pollutants shall be roofed and/or have secondary containment.** ❑ **Any drainage sumps on-site shall feature a sediment sump to reduce the quantity of sediment in pumped water.** ☒ **Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff.** **Include controls for other sources as specified by local reviewer.**	

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
☒ P. **Plazas, sidewalks, and parking lots.**			☒ **Sweep plazas, sidewalks, and parking lots regularly to prevent accumulation of litter and debris. Collect debris from pressure washing to prevent entry into the storm drain system. Collect washwater containing any cleaning agent or degreaser and discharge to the sanitary sewer not to a storm drain.**

Appendix 9: O&M

Operation and Maintenance Plan and Documentation of Finance, Maintenance and Recording Mechanisms

Recording requested by and mail to:

City Clerk
City of Beaumont
550 E. Sixth Street
Beaumont, CA 92223

SPACE ABOVE THIS LINE FOR RECORDER'S USE
EXEMPT FROM RECORDER'S FEES PURSUANT TO GOVERNMENT CODE SECTION 6103 AND 27383

APN:

STORM WATER MANAGEMENT WQMP/BMP FACILITIES

COVENANT AND AGREEMENT NO. _

City of Beaumont, Riverside County, California

THIS COVENANT AND AGREEMENT is made and entered into this of 2019, by and between NCRC Beaumont LP, ("Owner"), and the City of Beaumont, California, ("City").

The Owner hereby certifies I am (we are) the sole owner of certain real property located at 1343 E 8th St, Beaumont, CA 92223 (Site Address) in the City of Beaumont, County of Riverside, State of California, more specifically described in **Exhibit "A"** and depicted in **Exhibit "B" (**"Property").

The Owner covenants and agrees to comply with the Project Water Quality Management Plan ("WQMP"), attached hereto as **Exhibit "C"**, providing for storm water quality treatment within the confines of the Property.

The Owner covenants and agrees that the health, safety and welfare of the residents of the City of Beaumont, require that the Best Management Practice ("BMP") facilities, more specifically described in the WQMP (for example bio- swales, catch basins, roof drains and appurtenances) be constructed and maintained to minimize pollutants in urban runoff by the Owner.

The Owner further covenants and agrees as follows:

1. The on-site storm water management/BMP facilities mentioned above shall be constructed by the Owner at its sole cost and expense, in accordance with the plans and specifications identified in the WQMP approved by City.

2. The Owner shall adequately maintain the storm water management/BMP facilities in a manner assuring peak performance at all times, including source control BMPs at all times as its sole responsibility, at its sole cost and expense. This includes all pipes and channels built to convey storm water on the Property, including

catch basin inserts, underground detention ponds, swales and vegetation provided to control the quantity and quality of the storm water. Adequate maintenance is herein defined as good working condition so that these facilities are performing in accordance with their design functions continuously at all times.

3. The Owner shall annually inspect the storm water management/BMP facilities mentioned above and submit an inspection report annually to the Public Works Department by the anniversary of the date of this Agreement of each year. The purpose of the inspection is to assure safe and proper functioning of the facilities. The inspection shall cover the storm water management BMPs listed in the WQMP such as bio-swales, catch basins and related filter units, etc. Deficiencies shall be noted in the inspection report and corrected by Owner promptly.

4. The Owner hereby grants permission to City, its authorized agents and employees, to enter upon the Property and to inspect the storm water management/BMP facilities, take samples and perform testing whenever the City deems necessary and as required by the City's most current National Pollutant Discharge Elimination System (NPDES) Permit. The purpose of the inspection, testing and sampling is to follow up on apparent and reported deficiencies and/or to respond to citizen complaints and meet the requirements of the City's NPDES Permit issued by the State Water Resources Control Board – Santa Ana River Region. The City shall provide the Owner with advanced notice of entering upon the Property, except in the event of an emergency, as determined by the City. The City shall provide the Owner copies of the inspection findings and a directive to commence with the repairs if necessary. Owner or Owner's successors or assigns shall pay City for all costs incurred by City in the inspection, sampling, testing of the BMPs within thirty (30) calendar days of City invoice.

5. In the event the Owner fails to maintain the storm water management/BMP facilities in good working condition acceptable to the City, upon five (5) days advanced written notice, the City may enter upon the Property and take whatever steps necessary to correct deficiencies identified in any inspection report and to charge the costs of such repairs to the Owner the cost of which shall constitute a lien against the Property. In the event of an emergency, as determined by City, advanced notice as aforesaid, shall not be required. Notwithstanding the forgoing, it is expressly understood and agreed that the City is under no obligation to maintain or repair said facilities, and in no event shall this Agreement be construed to impose any such obligation to the City.

6. The Owner will perform the work necessary to keep these facilities in good working order as appropriate. The maintenance schedule for the storm water management BMP facilities (including sediment removal) is outlined in the approved WQMP and the schedule must be followed at all times. In the future, City of Beaumont may adopt an annual Stormwater Inspection Fee that would be assessed to the Owner.

7. In the event the City, pursuant to this Agreement, performs work of any nature, or expends any funds in performance of said work for labor, use of equipment, supplies, materials and the like, the Owner, its successors and assigns shall reimburse the City upon demand, within thirty (30) days of receipt thereof for all actual costs incurred by the City hereunder.

8. This Agreement imposes no liability of any kind whatsoever on the City. Owner agrees to indemnify, defend (with counsel reasonably approved by the City) and hold harmless the City and its authorized officers, employees, agents and volunteers from any and all claims, actions, losses, damages, and/or liability arising out of this Agreement from any cause whatsoever, including the acts, errors or omissions of any person and

for any costs or expenses incurred by the City on account of any claim except where such indemnification is prohibited by law. This indemnification provision shall apply regardless of the existence or degree of fault of indemnitees. The Owner's indemnification obligation applies to the City's "active" as well as "passive" negligence but does not apply to the City's "sole negligence" or "willful misconduct" within the meaning of Civil Code Section 2782, or to any claims, actions, losses, damages, and/or liabilities, to the extent caused by the acts or omissions of any third party contractors undertaking any work (other than field inspections) or other maintenance on the Property on behalf of the City under this Agreement.

9. This Agreement shall be recorded with the County Recorder for the County of Riverside and shall constitute a covenant running with the land, equitable servitude and lien against the Property, and shall be binding on the Owner, its successors, assigns, transferees, administrators, executors, heirs, encumbrancers and any other successors in interests, including any homeowner's association.

10. In addition to any remedy available to City under this Agreement, if Owner violates any term of this Agreement and does not cure the violation within the time already provided in this Agreement, or, if not provided, within thirty (30) calendar days, or within such time authorized by the City if said cure reasonably requires more than the subject time, the City may bring an action at law or in equity in a court of competent jurisdiction to enforce compliance by the Owner with the terms of this Agreement. In such action, the City may recover any damages to which the City may be entitled for the violation, enjoin the violation by temporary or permanent injunction without the necessity of proving actual damages or the inadequacy of otherwise available legal remedies, or obtain other equitable relief, including, but not limited to, the restoration of the Property and/or the BMPs identified in the WQMP to the condition in which it/they existed prior to any such violation or injury.

11. Owner shall provide printed educational materials with any sale of the Property which provide information on what storm water management facilities are present, the types and locations of maintenance signs that are required and how the necessary maintenance can be maintained.

12. Owner shall provide actual notice of this Agreement and its terms to any respective buyers or successor(s) in interest.

13. In order to be valid, amendment or change to this Agreement including the WQMP and BMPs requires an amendment executed by the City and Owner which is recorded with the Riverside County Recorder.

WITNESS the following signatures:

OWNER:

By: _____ By: _____

Name: _____ Name: _____

Title: _____ Title: _____

CITY OF BEAUMONT

By: _____
Director of Public Works, Beaumont

ATTEST:

_____
City Clerk, City of Beaumont

All signatures on this Agreement on behalf of the Owner must be acknowledged before a Notary Public. In the event that the owner is a corporation, the President/Vice President and the corporate secretary of the corporation must sign.

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 _____, 2019, before me, _____, notary public, personally appeared _____ 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.

Signature: _____ (Seal)

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 _____, 2019, before me, _____, notary public, personally appeared _____ 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.

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WITNESS my hand and official seal.

Signature: (Seal)

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WITNESS my hand and official seal.

Signature: _____ (Seal)

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State of California)
County of Riverside)

On _____, 2019, before me, _____, notary public, personally appeared _____ 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.

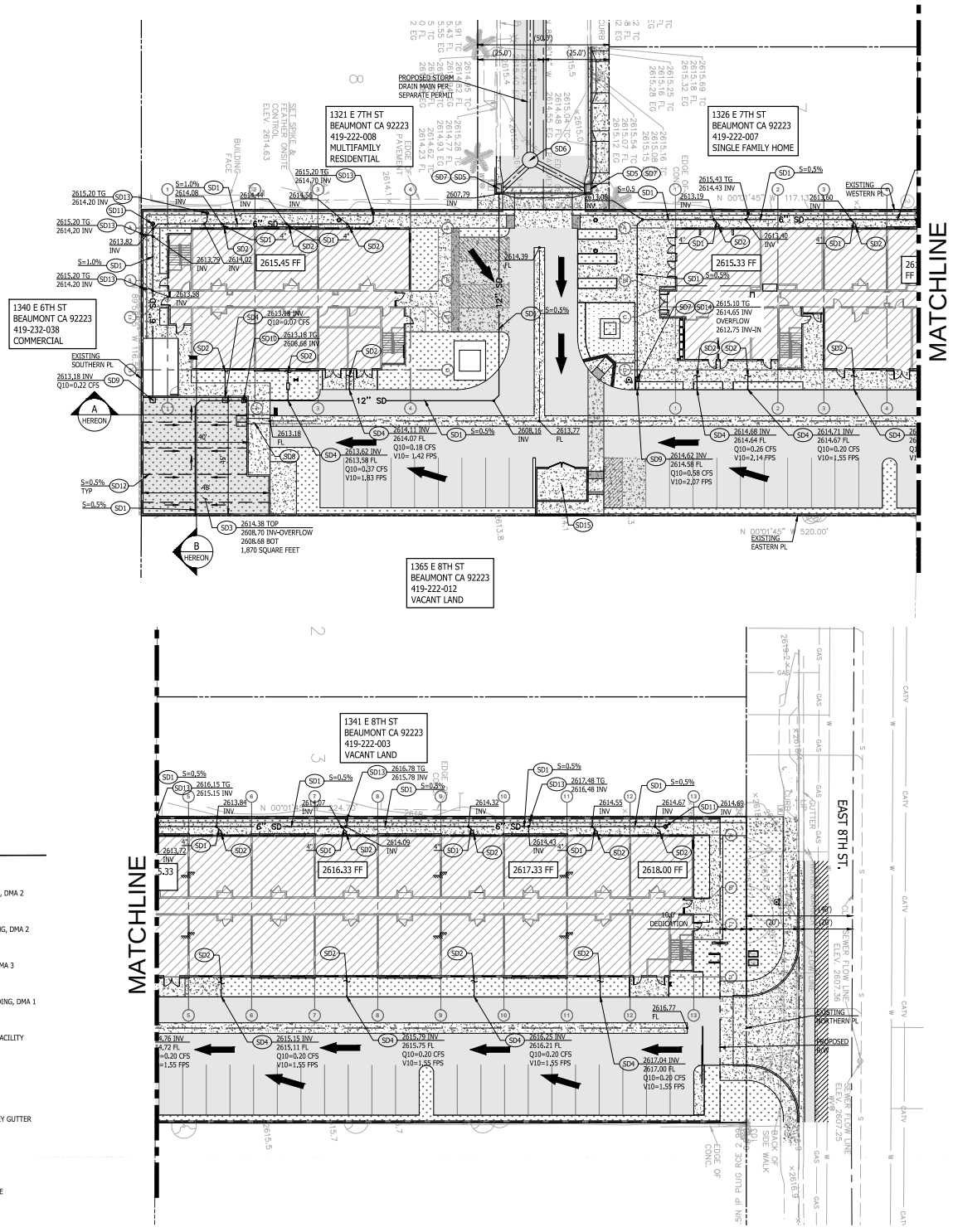
I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.
WITNESS my hand and official seal.

Signature: (Seal)

EXHIBIT "A"
LEGAL DESCRIPTION

THE WESTERLY RECTANGULAR 116.50 FEET OF THE EASTERLY RECTANGULAR 361.84 FEET OF LOT 3 IN BLOCK 3, AS SHOWN BY MAP OF THE SUBDIVISION OF SECTION 11, TOWNSHIP 3 SOUTH, RANGE 1 WEST, SAN BERNARDINO BASE AND MERIDIAN, IN THE CITY OF BEAUMONT, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, RECORDED IN BOOK 9, PAGE 10 OF MAPS, SAN BERNARDINO COUNTY RECORDS. THE WESTERLY LINE THEREOF BEING PARALLEL WITH THE EASTERLY LINE OF SAID LOT.

EXHIBIT “B”
DIAGRAM OF PROPERTY



LEGEND:

- PROPERTY LINE
- ASPHALT PAVING, DMA 2
- CONCRETE PAVING, DMA 2
- LANDSCAPING, DMA 3
- PROPOSED BUILDING, DMA 1
- BIORETENTION FACILITY
- FIRE HYDRANT
- SD — STORM DRAIN
- CONCRETE VALLEY GUTTER
- FLOW ARROW
- FLOW LINE
- PERFORATED PIPE

BMP SUMMARY									
DMA NAME	SURFACE TYPE	AREA (SQ. FT)	DMA TYPE	EFFECTIVE IMPERVIOUS FRACTION	DMA RUNOFF FACTOR	DMA AREA X RUNOFF FACTOR			
1	ROOFS	20,440	TYPE D	1	0.89	18,197			
2	CONCRETE AND ASPHALT	29,673	TYPE D	1	0.89	26,468	DESIGN STORM DEPTH (IN)	DESIGN CAPTURE VOLUME, VBPM, (CF)	PROPOSED VOLUME ON PLANS (CF)
3	NATURAL SOIL (C)	9,378	TYPE D	0.30	0.23	2,112			
		59,451				46,777	0.85	3,313	3,329

N

0 30' 60'

SCALE: 1"=60'

DK ENGINEER, CORP

LOS ANGELES, CA 90048
310.926.0248

PROJECT NAME/ ADDRESS:

8TH STREET APARTMENTS

1343 EAST 8TH ST,
BEAUMONT, CA 92223

DATE: 03/04/2024

WQMP-SITE PLAN

OPERATIONS AND MAINTENANCE FOR THE FLOW THROUGH PLANTER OR DEPRESSED FILTRATION PLANTER AREAS

The maintenance program will include the following key components:

Filtration planters remove stormwater pollutants through a combination of overland flow through vegetation, surface detention, and filtration through soil. Frequent inspection and maintenance is required until vegetation becomes established. Thereafter, routine maintenance requirements are considered minimal.

Typical routine maintenance consists of the following:

a. Inspect soil and plantings. Remove weeds, prune vegetation and replenish mulch as needed. Clear any obstructions and remove any accumulation of sediment.

b. Inspect side slopes for evidence of instability or erosion and correct as necessary.

c. Observe soil at the bottom of the ponding area for uniform percolation throughout. If portions of the area do not drain within 48 hours after the end of a storm, the soil should be tilled and replanted. Remove any debris or accumulated sediment.

d. Examine the vegetation to insure that it is healthy and dense enough to provide filtering and to protect soils from erosion. Confirm that irrigation is adequate and not excessive. Replace dead plants and remove invasive vegetation.

e. Abate any potential vectors by filling holes in the surface and around the ponding area. If mosquito larvae are present and persistent, contact the County Vector Control District for information and advice. Mosquito larvicides should be applied only when absolutely necessary and then only by a licensed individual or contractor.

MAINTENANCE LOG:

Keep a log of all inspection and maintenance performed on the catch basins, trench drains, filters and planter box filtration system. Keep this log on-site.

STENCILING

Legibility of stencils and/ or signs at all storm drain inlets and catch basins within the project area must be maintained at all time.

EXHIBIT "C"
WQMP

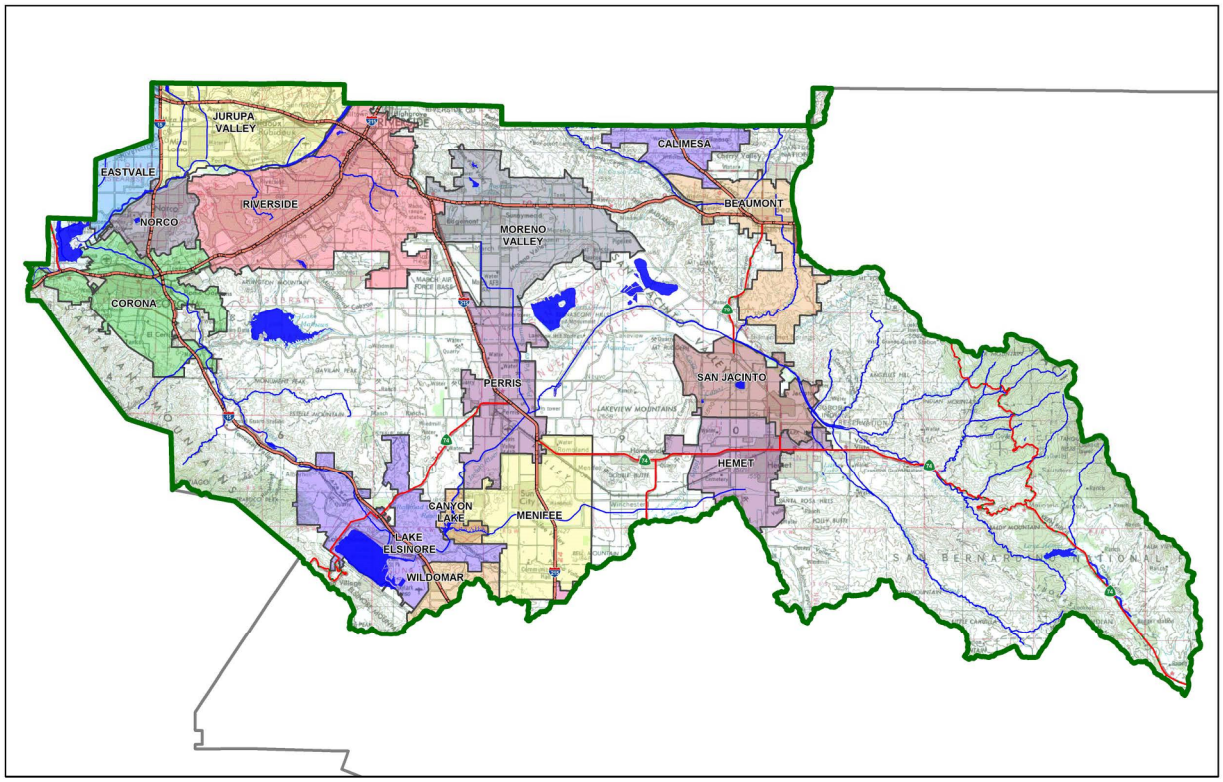
Project Specific Water Quality Management Plan

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

Project Title: 8th Street Apartments

Development No: PP2023-0557

Design Review/Case No: PW2024-1102



☐ **Preliminary**
☒ **Final**

Original Date Prepared: February 15, 2023

Revision Date(s): March 3, 2024

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

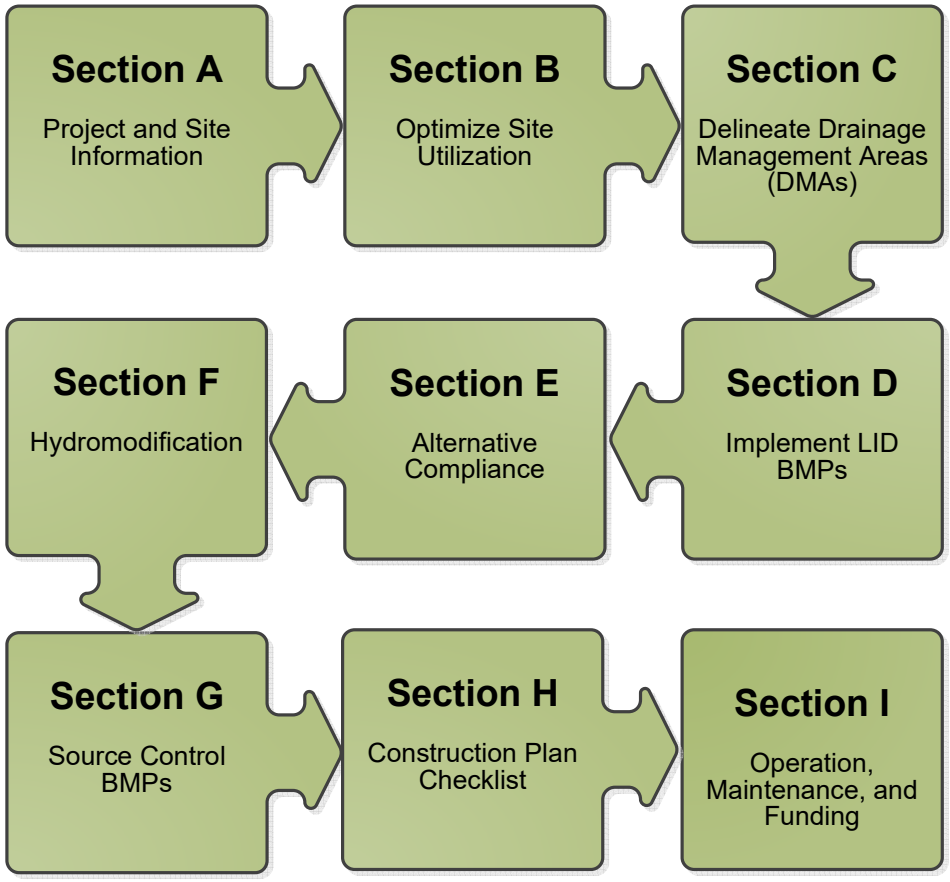
Contact Information:

Prepared for: National Core Housing
9421 Haven Avenue, Rancho Cucamonga, CA 91730
909.639.1875

Prepared by: DK Engineer Corp.
6420 Wilshire Blvd.
Los Angeles, CA 90048
Mplourde@dkengineercorp.com
909.559.7361

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 National Core by DK Engineer Corp. for the 8th Street Apartments project.

This WQMP is intended to comply with the requirements of City of Beaumont for Plot Plan PP2023-0557 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 Water Quality Ordinance (Municipal Code Section 13.24).

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

Owner's Signature	Date
Owner's Printed Name	Director of Housing Development 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	Date
Matt Plourde, PE Preparer's Printed Name	Civil Engineer Preparer's Title/Position

Preparer's Licensure: C76041

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Section A: Project and Site Information

PROJECT INFORMATION	
Type of Project:	Multi-Family Residential
Planning Area:	Multi-Family Residential (From General Plan)
Community Name:	Beaumont
Development Name:	8th Street Apartments
PROJECT LOCATION	
Latitude & Longitude (DMS): 33.931610, -116.962890	
Project Watershed and Sub-Watershed: Santa Ana	
APN(s): 419-222-011	
Map Book and Page No.: Book 9, Page 10	
PROJECT CHARACTERISTICS	
Proposed or Potential Land Use(s)	(2) 2 story bldgs. and parking lot
Proposed or Potential SIC Code(s)	XXXX
Area of Impervious Project Footprint (SF)	59,450 SF
Total Area of proposed Impervious Surfaces within the Project Limits (SF)/or Replacement	50,073 SF
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)	3,648 SF
Is the project located within any MSHCP Criteria Cell?	☐ Y ☒ N
If so, identify the Cell number:	Insert text here.
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)	Insert text here.
What is the Water Quality Design Storm Depth for the project?	0.85"

The existing site consists of an empty dirt lot that is bound by 8th St to the north, residential developments to the east and west, and a storage facility to the south. The existing site slopes from north to south and drains onto the neighboring property. The proposed project includes the construction of two (2) 2-story residential buildings on a 1.36 AC lot. Building A will contain 11 residential units and Building B will contain 37 residential units. 51 parking spaces will be provided onsite, 3 of which are designated as ADA spaces.

The geotechnical report provides multiple infiltration rates onsite. The infiltration rate yielded 0.33 in/hr. If a factor of 3 is utilized, the design infiltration rate would be 0.11 in/hr. This is below the minimum design infiltration rate of 0.3 in/hr. Therefore, infiltration has been ruled out as a LID BMP for the project. The BMP that was selected is a bioretention facility. The BMP will be placed at the south of the site in a landscaped area.

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 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
Potrero Creek	None	None	37.95 MILES
San Jacinto River	None	AGR, GWR, REC1, REC2, WARM, WILD	25.06 MILES
Canyon Lake	Pathogens and Nutrients	MUN, AGR, GWR, REC1, REC2, WARM, WILD	4.89 MILES
Lake Elsinore	PCBs, Organic Enrichment, Low Dissolved Oxygen, Nutrients, Toxicity, DDT	REC1, REC2, COMM, WARM, WILD, RARE	0 MILES
Temescal Creek	pH	MUN, AGR, IND, PROC, REC1, REC2, WARM, COLD, WILD	27.08 MILES
Santa Ana River	Copper, Indicator Bacteria, Lead	AGR, GWR, MUN, RARE, REC1, REC2, SPWN, WARM, WILD	38.23 MILES
Pacific Ocean	Bacteria	IND, NAV, REC1, REC2, COMM, BIOL, WILD, RARE, MAR, AQUA, MIGR, SPWN, SHELL	0 MILES

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	☐ Y	☒ N
Western Riverside MSHCP Consistency Approval (e.g., JPR, DBESP)	☐ Y	☒ N
Other *(please list in the space below as required)* Grading Permit, Construction 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?

The existing site slopes from north to south and drains onto the neighboring property. Because it is not acceptable to drain onto a neighboring property, and runoff should be directed to public right of way or storm drain infrastructure, the drainage pattern was changed. The proposed site will still drain from the north to the south. However, runoff will now be directed to a bioretention facility located at the south of the site. The overflow for the facility will drain into a newly constructed side opening catch basin along the curb of E. 7th St.

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

The only existing vegetation onsite are trees which interfere with the proposed building and parking lot. These trees will be removed, and new trees will be planted in various areas around the site.

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

This has not been preserved. The existing site is currently 93% pervious and the proposed development will yield a site area of 19% perviousness. Despite this, the LID BMP is a bioretention facility which will infiltrate captured runoff into engineered soil media and perforated pipe.

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

To the extent possible impervious areas have been minimized. All areas that are not needed for the building, parking lot, or site walkways will be pervious.

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

Where possible, runoff has been directed to landscaped areas. Where this is not possible, runoff is conveyed into the LID BMP which connects to the underground storm drain pipe overflow system.

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
1	Roofs	20,440	Type D
2	Concrete and Asphalt	29,673	Type D
3	Natural Soil (C)	9,378	Type D

[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)

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]

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

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		Area (square feet)	Ratio
	[A]		[B]	[C] = [A] x [B]	DMA name /ID	[D]	[C]/[D]

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

DMA Name or ID	BMP Name or ID
1, 2, 3	Bioretention Facility

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 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 Co-Permittee 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:		
…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. (Required by Water Department)

☐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: 10,377 SF

Type of Landscaping (Conservation Design or Active Turf): 372 SF (Turf)

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: 44,509 SF

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: 2.12

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: 94,359 SF

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)
94,359 SF	10,377 SF

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 shutdowns or other lapses in occupancy:

Projected Number of Daily Toilet Users: 48

Project Type: Residential

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: 44,509 SF

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: 138

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: 141

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)
141	48

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.

N/A

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

Average Daily Demand: N/A

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: N/A

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: N/A

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: N/A

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)**
N/A	N/A

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 Co-Permittee 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	
1	☐	☐	☒	☐	☐
2	☐	☐	☒	☐	☐
3	☐	☐	☒	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐

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 Co-Permittee. Utilize the worksheets found in the LID BMP Design Handbook or consult with your Co-Permittee 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	*Infiltration Trench*		
	[A]		[B]	[C]	[A] x [C]			
1	*20,440*	*Roofs*	*1*	*0.89*	*18,192*	*Design Storm Depth (in)*	*Design Capture Volume,* V_{BMP} *(cubic feet)*	*Proposed Volume on Plans (cubic feet)*
2	*29,673*	*Concrete/ Asphalt*	*1*	*0.89*	*26,409*			
3	*9,378*	*Natural Soil (C)*	*0.30*	*0.23*	*2,157*			
	59,491				(D) 46,758	(E) 0.85	(F) 3,312	(G) 3,329

[B], [C] is obtained as described in Section 2.3.1 of the WQMP Guidance Document DMA

[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 Co-Permittee). 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.

DMAs 1, 2, and 3 will all be collect via non erosive means and conveyed to an infiltration trench.

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	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**			***Infiltration Trench***	
	[A]		[B]	[C]	[A] x [C]				
N/A	*N/A*	*N/A*	*N/A*	*N/A*	*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)*
						(E)	(F)	(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]
N/A	N/A	N/A

[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 Co-Permittee 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	INSERT VALUE	INSERT VALUE	INSERT VALUE
Volume (Cubic Feet)	INSERT VALUE	INSERT VALUE	INSERT VALUE

[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:

The project will discharge to 7th Street via an overflow drain, at which point runoff will drain south to local storm drain infrastructure. The storm drain infrastructure will carry runoff south via underground pipes, culverts, and stream paths and eventually discharge into Potrero Creek. Potrero Creek connects with the San Jacinto River which connects with Canyon Lake. Canyon Lake is one of the adequate sumps listed above.

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.

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 if the anticipated activities continue at the site. Co-Permittee 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
Onsite Storm Drain Inlets	Mark drains with "No Dumping" stencil	Maintain stencils as needed. Regularly sweep parking lot.
Landscape	Maintain trees where possible. Design landscape areas to self-retain.	Do not use pesticides.
Fire Water Test	Connect Fire Sprinkler Drain to sewer.	Maintain fire sprinklers per building department regulations.
Refuse Areas	Post signage stating "Do not dump hazardous materials here" or similar.	Remove trash on a regular basis and observe leakages.
Roofing/Gutters	Avoid roofing made of metals.	Regularly clean roof gutters.
Plazas/Sidewalks		Sweep plazas and sidewalks regularly.

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)
Bioretention Facility	The bioretention facility will capture and retain the 85th percentile of runoff from the site. Overflow will be directed offsite into a newly constructed catch basin along E. 7th Street.	Appendix 2, Sheets C1.31, C5.01, C5.04.

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 Co-Permittee will periodically verify that Stormwater BMPs on your site are maintained and continue to operate as designed. To make this possible, your Co-Permittee 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: To be maintained by Property Management Group

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.

Appendix 10: Educational Materials

BMP Fact Sheets, Maintenance Guidelines and Other End-User BMP Information

3.5 Bioretention Facility

Type of BMP	LID – Bioretention
Treatment Mechanisms	Infiltration, Evapotranspiration, Evaporation, Biofiltration
Maximum Drainage Area	This BMP is intended to be integrated into a project's landscaped area in a distributed manner. Typically, contributing drainage areas to Bioretention Facilities range from less than 1 acre to a maximum of around 10 acres.
Other Names	Rain Garden, Bioretention Cell, Bioretention Basin, Biofiltration Basin, Landscaped Filter Basin, Porous Landscape Detention

Description

Bioretention Facilities are shallow, vegetated basins underlain by an engineered soil media. Healthy plant and biological activity in the root zone maintain and renew the macro-pore space in the soil and maximize plant uptake of pollutants and runoff. This keeps the Best Management Practice (BMP) from becoming clogged and allows more of the soil column to function as both a sponge (retaining water) and a highly effective and self-maintaining biofilter. In most cases, the bottom of a Bioretention Facility is unlined, which also provides an opportunity for infiltration to the extent the underlying onsite soil can accommodate. When the infiltration rate of the underlying soil is exceeded, fully biotreated flows are discharged via underdrains. Bioretention Facilities therefore will inherently achieve the maximum feasible level of infiltration and evapotranspiration and achieve the minimum feasible (but highly biotreated) discharge to the storm drain system.

Siting Considerations

These facilities work best when they are designed in a relatively level area. Unlike other BMPs, Bioretention Facilities can be used in smaller landscaped spaces on the site, such as:

- ✓ Parking islands
- ✓ Medians
- ✓ Site entrances

Landscaped areas on the site (such as may otherwise be required through minimum landscaping ordinances), can often be designed as Bioretention Facilities. This can be accomplished by:

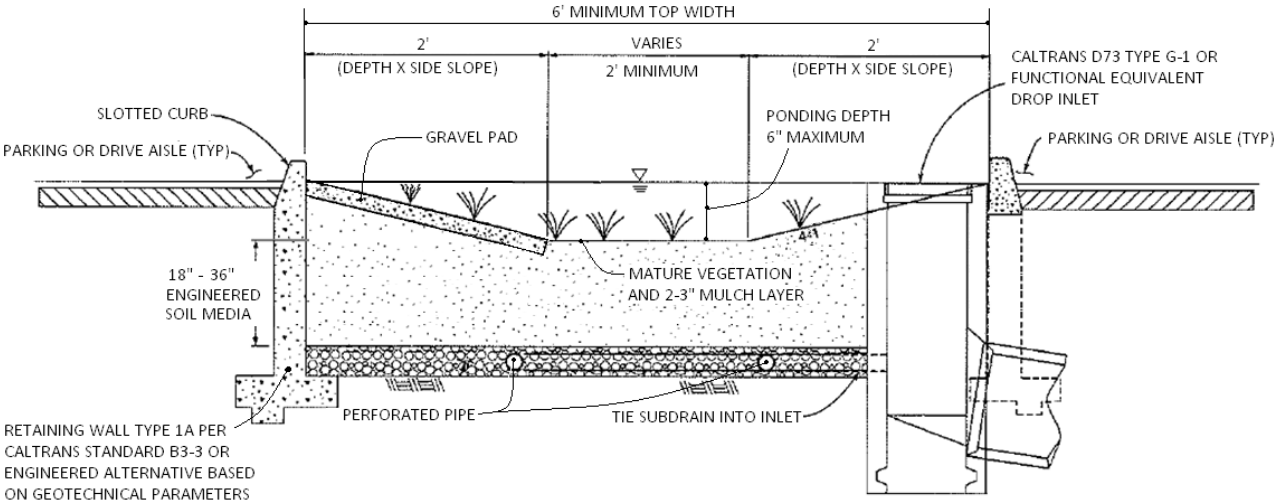
- *Depressing* landscaped areas below adjacent impervious surfaces, rather than elevating those areas
- Grading the site to direct runoff from those impervious surfaces *into* the Bioretention Facility, rather than away from the landscaping
- Sizing and designing the depressed landscaped area as a Bioretention Facility as described in this Fact Sheet

Bioretention Facilities should however not be used downstream of areas where large amounts of sediment can clog the system. Placing a Bioretention Facility at the toe of a steep slope should also be avoided due to the potential for clogging the engineered soil media with erosion from the slope, as well as the potential for damaging the vegetation.

Design and Sizing Criteria

The recommended cross section necessary for a Bioretention Facility includes:

- Vegetated area
- 18' minimum depth of engineered soil media
- 12' minimum gravel layer depth with 6' perforated pipes (added flow control features such as orifice plates may be required to mitigate for HCOC conditions)



While the 18-inch minimum engineered soil media depth can be used in some cases, it is recommended to use 24 inches or a preferred 36 inches to provide an adequate root zone for the chosen plant palate. Such a design also provides for improved removal effectiveness for nutrients. The recommended ponding depth inside of a Bioretention Facility is 6 inches; measured from the flat bottom surface to the top of the water surface as shown in Figure 1.

Because this BMP is filled with an engineered soil media, pore space in the soil and gravel layer is assumed to provide storage volume. However, several considerations must be noted:

- Surcharge storage above the soil surface (6 inches) is important to assure that design flows do not bypass the BMP when runoff exceeds the soil's absorption rate.
- In cases where the Bioretention Facility contains engineered soil media deeper than 36 inches, the pore space within the engineered soil media can only be counted to the 36-inch depth.
- A maximum of 30 percent pore space can be used for the soil media whereas a maximum of 40 percent pore space can be use for the gravel layer.

Figure 1: Standard Layout for a Bioretention Facility

Engineered Soil Media Requirements

The engineered soil media shall be comprised of 85 percent mineral component and 15 percent organic component, by volume, drum mixed prior to placement. The mineral component shall be a Class A sandy loam topsoil that meets the range specified in Table 1 below. The organic component shall be nitrogen stabilized compost[1], such that nitrogen does not leach from the media.

Table 1: Mineral Component Range Requirements

Percent Range	Component
70-80	Sand
15-20	Silt
5-10	Clay

The trip ticket, or certificate of compliance, shall be made available to the inspector to prove the engineered mix meets this specification.

Vegetation Requirements

Vegetative cover is important to minimize erosion and ensure that treatment occurs in the Bioretention Facility. The area should be designed for at least 70 percent mature coverage throughout the Bioretention Facility. To prevent the BMP from being used as walkways, Bioretention Facilities shall be planted with a combination of small trees, densely planted shrubs, and natural grasses. Grasses shall be native or ornamental; preferably ones that do not need to be mowed. The application of fertilizers and pesticides should be minimal. To maintain oxygen levels for the vegetation and promote biodegradation, it is important that vegetation not be completely submerged for any extended period of time. Therefore, a maximum of 6 inches of ponded water shall be used in the design to ensure that plants within the Bioretention Facility remain healthy.

A 2 to 3-inch layer of standard shredded aged hardwood mulch shall be placed as the top layer inside the Bioretention Facility. The 6-inch ponding depth shown in Figure 1 above shall be measured from the top surface of the 2 to 3-inch mulch layer.

Curb Cuts

To allow water to flow into the Bioretention Facility, 1-foot-wide (minimum) curb cuts should be placed approximately every 10 feet around the perimeter of the Bioretention Facility. Figure 2 shows a curb cut in a Bioretention Facility. Curb cut flow lines must be at or above the V_{BMP} water surface level.

[1] For more information on compost, visit the US Composting Council website at: http://compostingcouncil.org/

Figure 2: Curb Cut located in a Bioretention Facility

To reduce erosion, a gravel pad shall be placed at each inlet point to the Bioretention Facility. The gravel should be 1- to 1.5-inch diameter in size. The gravel should overlap the curb cut opening a minimum of 6 inches. The gravel pad inside the Bioretention Facility should be flush with the finished surface at the curb cut and extend to the bottom of the slope.

In addition, place an apron of stone or concrete, a foot square or larger, inside each inlet to prevent vegetation from growing up and blocking the inlet. See Figure 3.

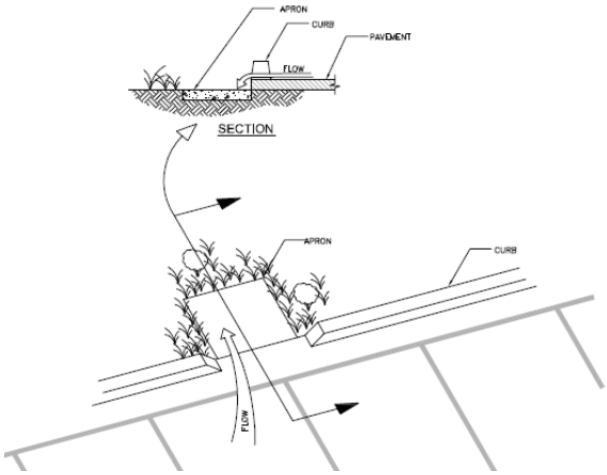


Figure 3: Apron located in a Bioretention Facility

Terracing the Landscaped Filter Basin

It is recommended that Bioretention Facilities be level. In the event the facility site slopes and lacks proper design, water would fill the lowest point of the BMP and then discharge from the basin without being treated. To ensure that the water will be held within the Bioretention Facility on sloped sites, the BMP must be terraced with nonporous check dams to provide the required storage and treatment capacity.

The terraced version of this BMP shall be used on non-flat sites with no more than a 3 percent slope. The surcharge depth cannot exceed 0.5 feet, and side slopes shall not exceed 4:1. Table 2 below shows the spacing of the check dams, and slopes shall be rounded up (i.e., 2.5 percent slope shall use 10' spacing for check dams).

Table 2: Check Dam Spacing

6" Check Dam Spacing	
Slope	**Spacing**
1%	*25'*
2%	*15'*
3%	*10'*

Roof Runoff

Roof downspouts may be directed towards Bioretention Facilities. However, the downspouts must discharge onto a concrete splash block to protect the Bioretention Facility from erosion.

Retaining Walls

It is recommended that Retaining Wall Type 1A, per Caltrans Standard B3-3 or equivalent, be constructed around the entire perimeter of the Bioretention Facility. This practice will protect the sides of the Bioretention Facility from collapsing during construction and maintenance or from high service loads adjacent to the BMP. Where such service loads would not exist adjacent to the BMP, an engineered alternative may be used if signed by a licensed civil engineer.

Side Slope Requirements

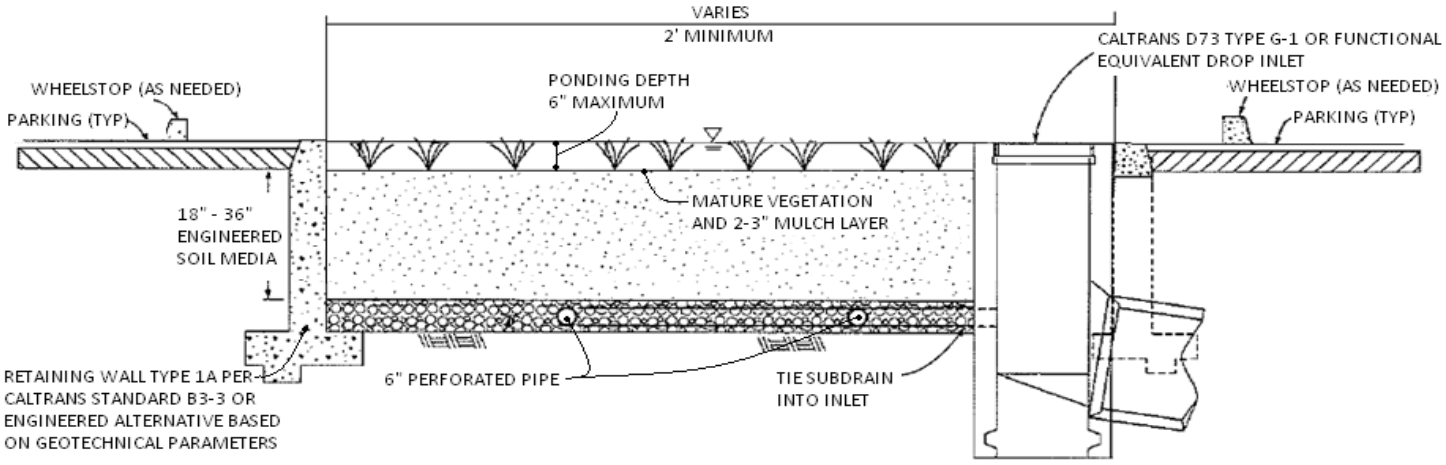
Bioretention Facilities Requiring Side Slopes

The design should assure that the Bioretention Facility does not present a tripping hazard. Bioretention Facilities proposed near pedestrian areas, such as areas parallel to parking spaces or along a walkway, must have a gentle slope to the bottom of the facility. Side slopes inside of a Bioretention Facility shall be 4:1. A typical cross section for the Bioretention Facility is shown in Figure 1.

Bioretention Facilities Not Requiring Side Slopes

Where cars park perpendicular to the Bioretention Facility, side slopes are not required. A 6-inch maximum drop may be used, and the Bioretention Facility must be planted with trees and shrubs to prevent pedestrian access. In this case, a curb is not placed around the Bioretention Facility,

but wheel stops shall be used to prevent vehicles from entering the Bioretention Facility, as shown in Figure 4.



Planter Boxes

Bioretention Facilities can also be placed above ground as planter boxes. Planter boxes must have a minimum width of 2 feet, a maximum surcharge depth of 6 inches, and no side slopes are necessary. Planter boxes must be constructed so as to ensure that the top surface of the engineered soil media will remain level. This option may be constructed of concrete, brick, stone or other stable materials that will not warp or bend. Chemically treated wood or galvanized steel, which has the ability to contaminate stormwater, should not be used. Planter boxes must be lined with an impermeable liner on all sides, including the bottom. Due to the impermeable liner, the inside bottom of the planter box shall be designed and constructed with a cross fall, directing treated flows within the subdrain layer toward the point where subdrain exits the planter box, and subdrains shall be oriented with drain holes oriented down. These provisions will help avoid excessive stagnant water within the gravel underdrain layer. Similar to the in-ground Bioretention Facility versions, this BMP benefits from healthy plants and biological activity in the root zone. Planter boxes should be planted with appropriately selected vegetation.

Figure 5: Planter Box
Source: LA Team Effort

Overflow

An overflow route is needed in the Bioretention Facility design to bypass stored runoff from storm events larger than V_{BMP} or in the event of facility or subdrain clogging. Overflow systems must connect to an acceptable discharge point, such as a downstream conveyance system as shown in Figure 1 and Figure 4. The inlet to the overflow structure shall be elevated inside the Bioretention Facility to be flush with the ponding surface for the design capture volume (V_{BMP}) as shown in Figure 4. This will allow the design capture volume to be fully treated by the Bioretention Facility, and for larger events to safely be conveyed to downstream systems. The overflow inlet shall **not** be located in the entrance of a Bioretention Facility, as shown in Figure 6.

Underdrain Gravel and Pipes

An underdrain gravel layer and pipes shall be provided in accordance with Appendix B – Underdrains.

Figure 6: Incorrect Placement of an Overflow Inlet.

Inspection and Maintenance Schedule

The Bioretention Facility area shall be inspected for erosion, dead vegetation, soggy soils, or standing water. The use of fertilizers and pesticides on the plants inside the Bioretention Facility should be minimized.

Schedule	Activity
Ongoing	• Keep adjacent landscape areas maintained. Remove clippings from landscape maintenance activities. • Remove trash and debris • Replace damaged grass and/or plants • Replace surface mulch layer as needed to maintain a 2-3 inch soil cover.
After storm events	• Inspect areas for ponding
Annually	• Inspect/clean inlets and outlets

Bioretention Facility Design Procedure

1) Enter the area tributary, A_T, to the Bioretention Facility.

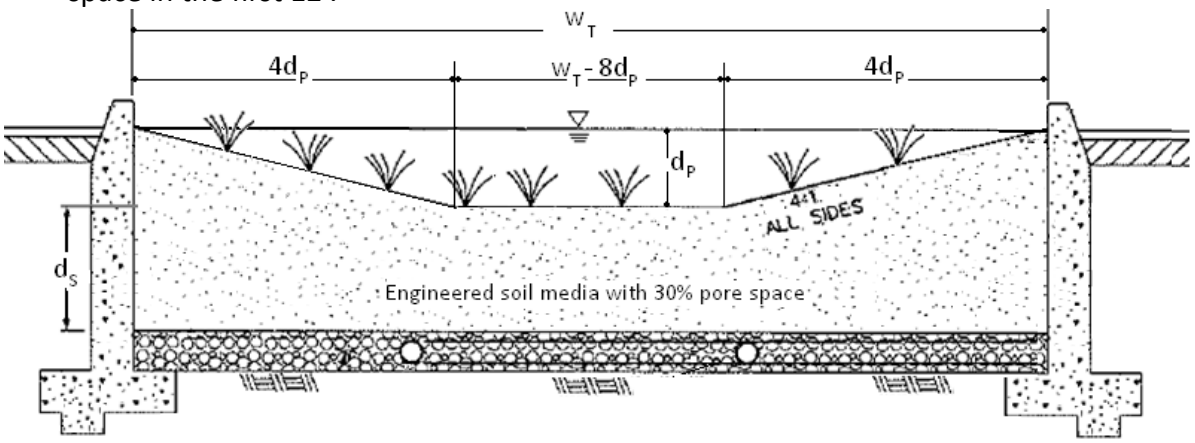
2) Enter the Design Volume, $V_{BMP,}$ determined from Section 2.1 of this Handbook.

3) Select the type of design used. There are two types of Bioretention Facility designs: the standard design used for most project sites that include side slopes, and the modified design used when the BMP is located perpendicular to the parking spaces or with planter boxes that do not use side slopes.

4) Enter the depth of the engineered soil media, d_S. The minimum depth for the engineered soil media can be 18' in limited cases, but it is recommended to use 24' or a preferred 36' to provide an adequate root zone for the chosen plant palette. Engineered soil media deeper than 36' will only get credit for the pore space in the first 36'.

5) Enter the top width of the Bioretention Facility.

6) Calculate the total effective depth, d_E, within the Bioretention Facility. The maximum allowable pore space of the soil media is 30% while the maximum allowable pore space for the gravel layer is 40%. Gravel layer deeper than 12' will only get credit for the pore space in the first 12'.



a. For the design with side slopes the following equation shall be used to determine the total effective depth. Where, d_P is the depth of ponding within the basin.

$$d_E(\text{ft}) = \frac{0.3 \times \left[\left(w_T(\text{ft}) \times d_S(\text{ft})\right) + 4\left(d_P(\text{ft})\right)^2\right] + 0.4 \times 1(\text{ft}) + d_P(\text{ft})\left[4d_P(\text{ft}) + \left(w_T(\text{ft}) - 8d_P(\text{ft})\right)\right]}{w_T(\text{ft})}$$

This above equation can be simplified if the maximum ponding depth of 0.5' is used. The equation below is used on the worksheet to find the minimum area required for the Bioretention Facility:

$$d_E(\text{ft}) = (0.3 \times d_S(\text{ft}) + 0.4 \text{ x } 1(\text{ft})) - \left(\frac{0.7\ (\text{ft}^2)}{w_T(\text{ft})}\right) + 0.5(\text{ft})$$

b. For the design without side slopes the following equation shall be used to determine the total effective depth:

$$d_E(\text{ft}) = d_P(\text{ft}) + [(0.3) \times d_S(\text{ft}) + (0.4) \times 1(\text{ft})]$$

The equation below, using the maximum ponding depth of 0.5', is used on the worksheet to find the minimum area required for the Bioretention Facility:

$$d_E(\text{ft}) = 0.5\ (\text{ft}) + [(0.3) \times d_S(\text{ft}) + (0.4) \times 1(\text{ft})]$$

7) Calculate the minimum surface area, A_M, required for the Bioretention Facility. This does not include the curb surrounding the Bioretention Facility or side slopes.

$$A_M(\text{ft}^2) = \frac{V_{BMP}(\text{ft}^3)}{d_E\ (\text{ft})}$$

8) Enter the proposed surface area. This area shall not be less than the minimum required surface area.

9) Verify that side slopes are no steeper than 4:1 in the standard design, and are not required in the modified design.

10) Provide the diameter, minimum 6 inches, of the perforated underdrain used in the Bioretention Facility. See Appendix B for specific information regarding perforated pipes.

11) Provide the slope of the site around the Bioretention Facility, if used. The maximum slope is 3 percent for a standard design.

12) Provide the check dam spacing, if the site around the Bioretention Facility is sloped.

13) Describe the vegetation used within the Bioretention Facility.