2.1

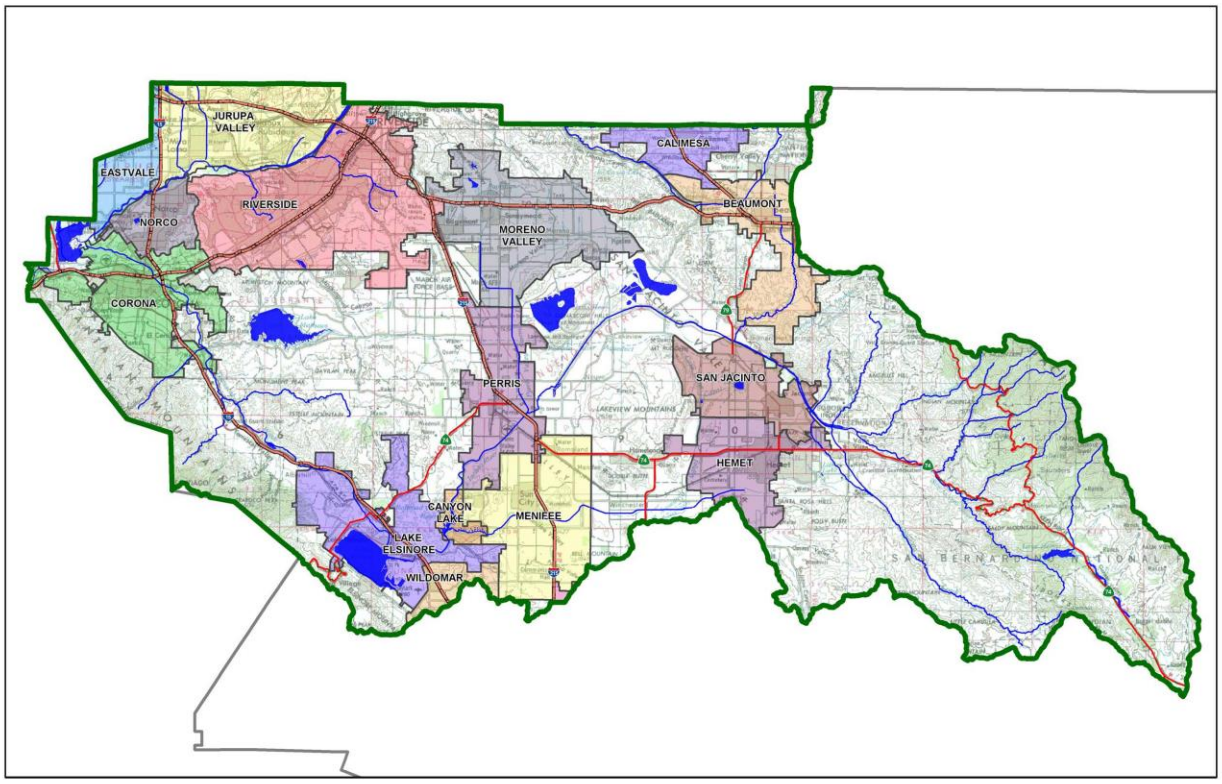
Project Specific Water Quality Management Plan

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

Project Title: Mission Village Shopping Center

Development No: Insert text here

Design Review/Case No: Insert text here



☒ **Preliminary**
☐ **Final**

Original Date Prepared: 07-09-21

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

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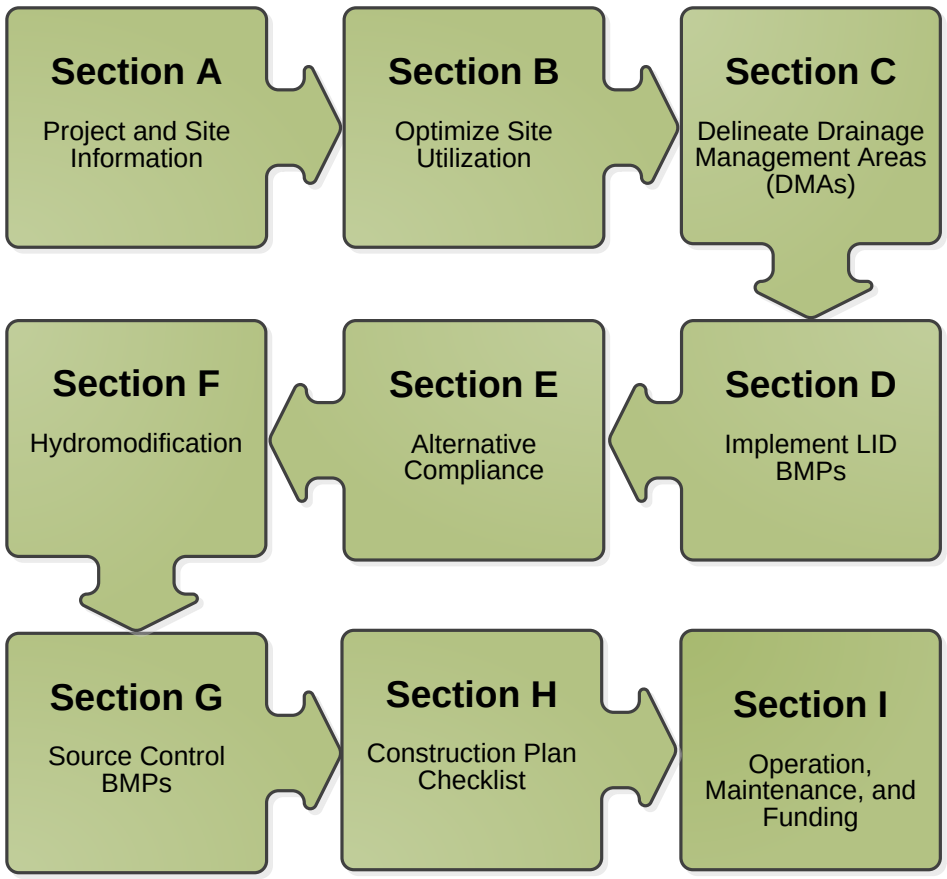
Contact Information:

Prepared for: Mission BLVD Properties, LLC

Prepared by: Randy Decker, PE
Vice President
Joseph C. Truxaw & Associates, Inc.
1915 W. Orangewood Ave. Suite 101
Orange, CA 92868
(714) 935-0265

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 Mission BLVD Properties, LLC by Joseph C. Truxaw & Associates, Inc. for the Mission Village Shopping Center project.

This WQMP is intended to comply with the requirements of The City of Jurupa Valley for Ordinance No. 2012-07 and Resolution 2012-32 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 The City of Jurupa Valley Water Quality Ordinance (Municipal Code Section6.05).

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

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

PREPARER'S CERTIFICATION

"The selection, sizing and design of stormwater treatment and other stormwater quality and quantity control 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
Preparer's Printed Name	Preparer's Title/Position

Preparer's Licensure:

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Section A: Project and Site Information

PROJECT INFORMATION	
Type of Project:	Commercial Shopping Center
Planning Area:	C-1 / C-P
Community Name:	Rubidoux
Development Name:	Mission Village Shopping Center
PROJECT LOCATION	
Latitude & Longitude (DMS): 34.005906, -117.427473	
Project Watershed and Sub-Watershed: Santa Ana River Watershed	
Gross Acres: 8.41 APN(s): 182-031-002, 182-031-001, and 182-022-002 Map Book and Page No.: Book 9, Page 34	
PROJECT CHARACTERISTICS	
Proposed or Potential Land Use(s)	Shopping Center
Proposed or Potential SIC Code(s)	6512
Area of Impervious Project Footprint (SF)	322,340 SF
Total Area of proposed Impervious Surfaces within the Project Footprint (SF)/or Replacement	322,340 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 Footprint (SF)	119,380 SF
Is the project located within any MSHCP Criteria Cell?	☐ Y ☒ N
If so, identify the Cell number:	
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)	B
What is the Water Quality Design Storm Depth for the project?	0.68

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
- BMP Locations (Lat/Long)

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

A.2 Identify Receiving Waters

Using Table A.1 below, list in order of upstream to downstream, the receiving waters that the project site is tributary to. Continue to fill each row with the Receiving Water's 303(d) listed impairments (if any), designated beneficial uses, and proximity, if any, to a RARE beneficial use. Include a map of the receiving waters in Appendix 1.

Table A.1 Identification of Receiving Waters

Receiving Waters	EPA Approved 303(d) List Impairments	Designated Beneficial Uses	Proximity to RARE Beneficial Use
Santa Ana River, Reach 3	Copper, Indicator Bacteria, Lead		
prado flood control basin	PH	REC1,REC2,WARM,WILD,RARE	13.3 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)* City of Jurupa Valley Grading and Building Permits	☒ 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.

Consideration of "highest and best use" of the discharge should also be considered. For example, Lake Elsinore is evaporating faster than runoff from natural precipitation can recharge it. Requiring infiltration of 85% of runoff events for projects tributary to Lake Elsinore would only exacerbate current water quality problems associated with Pollutant concentration due to lake water evaporation. In cases where rainfall events have low potential to recharge Lake Elsinore (i.e. no hydraulic connection between groundwater to Lake Elsinore, or other factors), requiring infiltration of Urban Runoff from projects is counterproductive to the overall watershed goals. Project proponents, in these cases, would be allowed to discharge Urban Runoff, provided they used equally effective filtration-based BMPs.

Site Optimization

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

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

Yes. Existing site drains southeasterly to corner of site. Proposed condition maintains the same pattern.

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

No. Existing site does not have any vegetaion that will be protected. Site has been vacant and only has weeds and brush. Proposed landscaping will utilize appropriate vegetation for the area and efficient water use.

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

To be determined after completion of Soils Report.

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

Impervious area is minimized and new landscape area is proposed

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

Site runoff will sheet flow to proposed private curb and gutter and then conveyed to an underground infiltration 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][2]	Area (Sq. Ft.)	DMA Type
DMA-1	Roof / Pavement	322,340	Type "D"
DMA-1	Landscape	43,854	Type "D"

[1]*Reference Table 2-1 in the WQMP Guidance Document to populate this column*
[2]*If multi-surface provide back-up*

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

DMA Name or ID	Area (Sq. Ft.)	Stabilization Type	Irrigation Type (if any)
N/A			

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

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

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

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

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

DMA Name or ID	BMP Name or ID
DMA-1	Underground Infiltration (Cultec)

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; proceed to section D.3

If no, continue working through this section to implement your LID BMPs. It is recommended that you contact your Co-Permittee to verify whether or not your project discharges to an approved downstream 'Highest and Best Use' feature.

Geotechnical Report

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

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

Infiltration Feasibility

Table D.1 below is meant to provide a simple means of assessing which DMAs on your site support Infiltration BMPs and is discussed in the WQMP Guidance Document in Chapter 2.4.5. Check the appropriate box for each question and then list affected DMAs as applicable. If additional space is needed, add a row below the corresponding answer.

Table D.1 Infiltration Feasibility

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

If you answered "Yes" to any of the questions above for any DMA, Infiltration BMPs should not be used for those DMAs and you should proceed to the assessment for Harvest and Use below.

D.2 Harvest and Use Assessment

Please check what applies*:*

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

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

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

If any of the above boxes have been checked, Harvest and Use BMPs need not be assessed for the site. If none of the above criteria applies, follow the steps below to assess the feasibility of irrigation use, toilet use and other non-potable uses (e.g., industrial use).

Irrigation Use Feasibility

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

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

Total Area of Irrigated Landscape: Insert Area (Acres)

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

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

Total Area of Impervious Surfaces: Insert Area (Acres)

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

Enter your EIATIA factor: EIATIA Factor

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

Minimum required irrigated area: Insert Area (Acres)

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

Minimum required irrigated area (Step 4)	Available Irrigated Landscape (Step 1)
Insert Area (Acres)	Insert Area (Acres)

Toilet Use Feasibility

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

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

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

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

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

Total Area of Impervious Surfaces: Insert Area (Acres)

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

Enter your TUTIA factor: TUTIA Factor

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

Minimum number of toilet users: Required number of toilet users

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

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

Other Non-Potable Use Feasibility

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

Insert narrative description here.

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

Average Daily Demand: Projected Average Daily Use (gpd)

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

Total Area of Impervious Surfaces: Insert Area (Acres)

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-4 in Chapter 2 to determine the minimum demand for non-potable uses per tributary impervious acre.

Enter the factor from Table 2-4: Enter Value

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 gallons per day of non-potable use that would be required.

Minimum required use: Minimum use required (gpd)

Step 5: Determine if harvesting stormwater runoff for other non-potable use is feasible for the project by comparing the projected average daily use (Step 1) to the minimum required non-potable use (Step 4).

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

If Irrigation, Toilet and Other Use feasibility anticipated demands are less than the applicable minimum values, Harvest and Use BMPs are not required and you should proceed to utilize LID Bioretention and Biotreatment per Section 3.4.2 of the WQMP Guidance Document.

D.3 Bioretention and Biotreatment Assessment

Other LID Bioretention and Biotreatment BMPs as described in Chapter 2.4.7 of the WQMP Guidance Document are feasible on nearly all development sites with sufficient advance planning.

Select one of the following:

☐ LID Bioretention/Biotreatment BMPs will be used for some or all DMAs of the project as noted below in Section D.4 (note the requirements of Section 3.4.2 in the WQMP Guidance Document).

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

☒The Design Capture Volume will be addressed using Infiltration Only BMPs.

D.4 Feasibility Assessment Summaries

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

Table D.2 LID Prioritization Summary Matrix

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

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

N/A

D.5 LID BMP Sizing

Each LID BMP must be designed to ensure that the Design Capture Volume will be addressed by the selected BMPs. First**,** calculate the Design Capture Volume for each LID BMP using the V_{BMP} worksheet in Appendix F of the LID BMP Design Handbook. Second**,** design the LID BMP to meet the required V_{BMP} using a method approved by the Copermittee. Utilize the worksheets found in the LID BMP Design Handbook or consult with your Copermittee to assist you in correctly sizing your LID BMPs. Complete Table D.3 below to document the Design Capture Volume and the Proposed Volume for each LID BMP. Provide the completed design procedure sheets for each LID BMP in Appendix 6. You may add additional rows to the table below as needed.

Table D.3 DCV Calculations for LID BMPs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperviousness Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Enter BMP Name / Identifier Here*		
	[A]		[B]	[C]	[A] x [C]			
DMA-1	*322,340*	*Roof/Pavement*	*1.00*	*0.892*	*287,528*			
DMA-1	*43,854*	*Landscape*	*0.10*	*0..892*	*39,118*			
	A_T = 366,194				Σ= [D] 326,646	[E]=0.68	$[F] = \frac{[D]x[E]}{12}$ =18,510 CF	***18,528***

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

[E] is obtained from Exhibit A in the WQMP Guidance Document

[G] is obtained from a design procedure sheet, such as in LID BMP Design Handbook and placed in Appendix 6

Section E: Alternative Compliance (LID Waiver Program)

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

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

- *Or* -

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

N/A

E.1 Identify Pollutants of Concern

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

Table E.1 Potential Pollutants by Land Use Type

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

P = Potential

N = Not Potential

(1) A potential Pollutant if non-native landscaping exists or is proposed onsite; otherwise not expected

(2) A potential Pollutant if the project includes uncovered parking areas; otherwise not expected

(3) A potential Pollutant is land use involving animal waste

(4) Specifically petroleum hydrocarbons

(5) Specifically solvents

(6) Bacterial indicators are routinely detected in pavement runoff

E.2 Stormwater Credits

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

Table E.2 Water Quality Credits

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

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

E.3 Sizing Criteria

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

Table E.3 Treatment Control BMP Sizing

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

[B], [C] is obtained as described in Section 2.3.1 from the WQMP Guidance Document
[E] is for Flow-Based Treatment Control BMPs [E] = .2, for Volume-Based Control Treatment BMPs, [E] 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		

[1] Treatment Control BMPs must not be constructed within Receiving Waters. In addition, a proposed Treatment Control BMP may be listed more than once if they possess more than one qualifying pollutant removal efficiency.

[2] Cross Reference Table E.1 above to populate this column.

[3] As documented in a Co-Permittee Approved Study and provided in Appendix 6.

Section F: Hydromodification

F.1 Hydrologic Conditions of Concern (HCOC) Analysis

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

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

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

If Yes, HCOC criteria do not apply.

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

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

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

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

Table F.1 Hydrologic Conditions of Concern Summary

	2 year – 24 hour		
	Pre-condition	**Post-condition**	**% Difference**
Time of Concentration	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 Susceptibility 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:

SITE DRAINS TO PRADO DAM

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 as long as the anticipated activities continue at the site. Copermittee stormwater ordinances require that applicable Source Control BMPs be implemented; the same BMPs may also be required as a condition of a use permit or other revocable Discretionary Approval for use of the site.

Table G.1 Permanent and Operational Source Control Measures

Potential Sources of Runoff pollutants	Permanent Structural Source Control BMPs	Operational Source Control BMPs
A.- On-site storm drain inlets	Mark all the inlets with the words "Only Rain Down the Storm Drain"	Maintain and periodically repaint or replace inlet markings. Provide stormwater pollution prevention information to new site owners, lessees, or operators. See Fact Sheet SC-44 in Appendix 10. Educational Materials

B. – Interior floor drains	interior floor drains and elevator shaft sump pumps will be plumbed to sanitary sewer. See Plumbing Plans.	Inspect and maintain drains to prevent blockages and overflows.
SC-D2.- Landscape/Outdoor Pesticide Use	Preserve existing native trees 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. See Landscape and Irrigation Plans.	Maintain Landscaping using minimum or no pesticides. See Fact Sheet SC-73 "Landscape Maintenance" in Appendix 10. Educational Materials. Provide IPM information to new owners, lessees and operators.
G.- Refuse Areas	State how site refuse will be handled and provide supporting detail to what is shown on plans. Signs will be posted on or near the trash enclosure with the words "Do not dump hazardous materials here".	Provide adequate number of receptacles. Inspect receptacles regularly and repair or replace leaky receptacles. See Fact Sheet SC-34 "Waste Handling and Disposal" in Appendix 10. Educational Materials.
N. – Fire Sprinkler Test Water	Provide a means to drain fire sprinkler test water to the sanitary sewer. See Plumbing Plans	See the note in Fact Sheet SC-41, "Building and Grounds Maintenance", in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com
P.- Plazas, sidewalks and parking lots.		Sweep plazas, sidewalks, and parking lots regularly to prevent accumulation of litter and debris. See Fact Sheet "Plaza and Sidewalk Cleaning" in Appendix 10. Educational Materials.

Section H: Construction Plan Checklist

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

Table H.1 Construction Plan Cross-reference

BMP No. or ID	BMP Identifier and Description	Corresponding Plan Sheet(s)	BMP Location (Lat/Long)
1	Infiltration System (Cultec)	C-2, C-3, C-4, & C-6	34.005886°, -117.427260°

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

Section I: Operation, Maintenance and Funding

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

1. A means to finance and implement facility maintenance in perpetuity, including replacement cost.
2. Acceptance of responsibility for maintenance from the time the BMPs are constructed until responsibility for operation and maintenance is legally transferred. A warranty covering a period following construction may also be required.
3. An outline of general maintenance requirements for the Stormwater BMPs you have selected.
4. Figures delineating and designating pervious and impervious areas, location, and type of Stormwater BMP, and tables of pervious and impervious areas served by each facility. Geo-locating the BMPs using a coordinate system of latitude and longitude is recommended to help facilitate a future statewide database system.
5. A separate list and location of self-retaining areas or areas addressed by LID Principles that do not require specialized O&M or inspections but will require typical landscape maintenance as noted in Chapter 5, pages 85-86, in the WQMP Guidance. Include a brief description of typical landscape maintenance for these areas.

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

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

Maintenance Mechanism: Recorded WQMP covenant and Agreement, the funding for the treatment and structural BMPs will be provided by the owner through the current budget for Landscape Operation and Maintenance.

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

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

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

Santa Ana River Watershed
Santa Margarita Watershed

EASTVALE | JURUPA VALLEY | CORONA | NORCO | RIVERSIDE | MORENO VALLEY | CALIMESA | BEAUMONT | SAN JACINTO | PERRIS | CANYON LAKE | HEMET | LAKE ELSINORE | MENIFEE | WILDOMAR | MURRIETA | TEMECULA

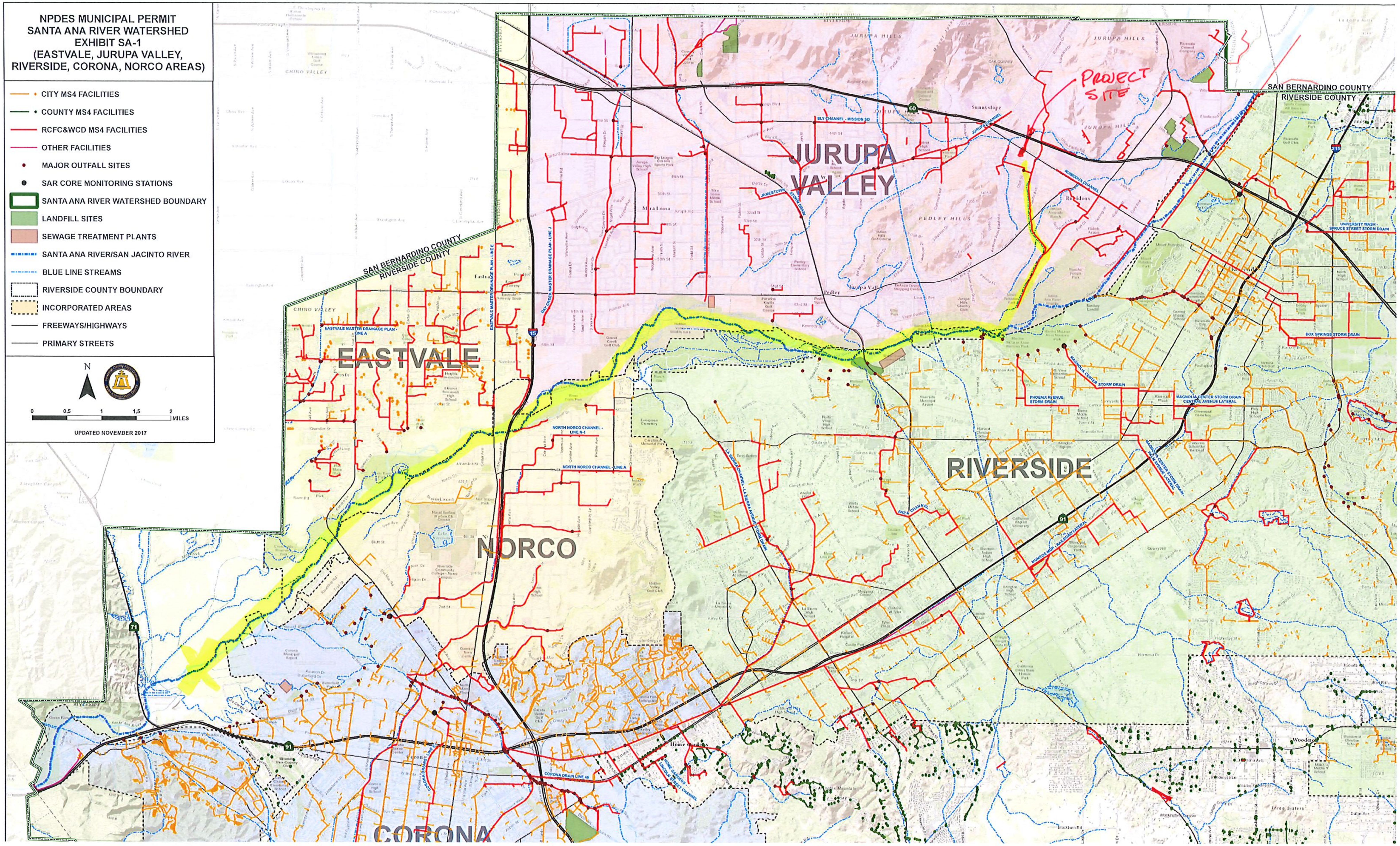
06	05	04	03	02	01
07	08	09	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

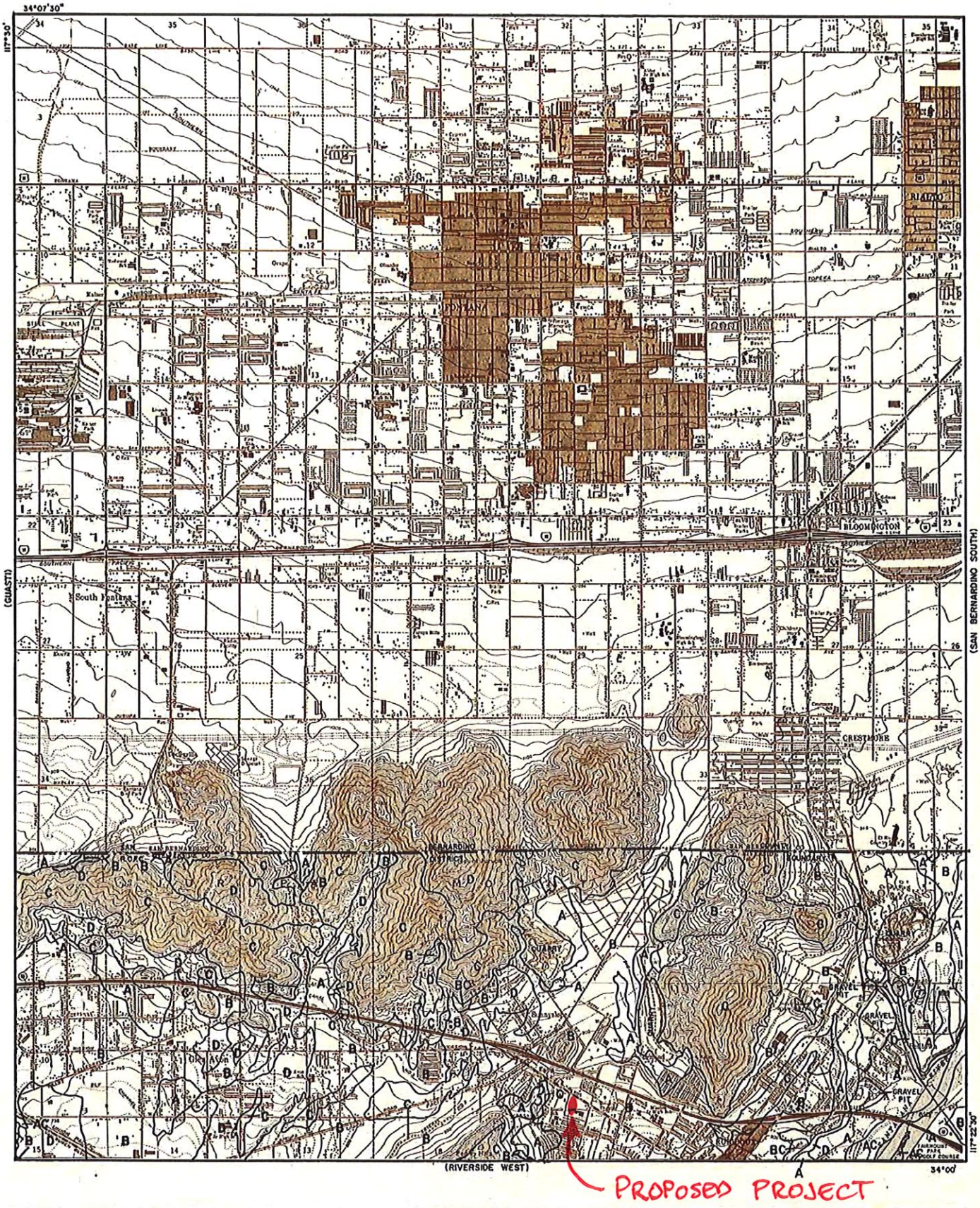
Rain Gage Locations

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

Isohyetal Map for the 85th Percentile 24 hour Storm Event

July 2011


NPDES MUNICIPAL PERMIT
SANTA ANA RIVER WATERSHED
EXHIBIT SA-1
(EASTVALE, JURUPA VALLEY, RIVERSIDE, CORONA, NORCO AREAS)
CITY MS4 FACILITIES
COUNTY MS4 FACILITIES
RCFC&WCD MS4 FACILITIES
OTHER FACILITIES
MAJOR OUTFALL SITES
SAR CORE MONITORING STATIONS
SANTA ANA RIVER WATERSHED BOUNDARY
LANDFILL SITES
SEWAGE TREATMENT PLANTS
SANTA ANA RIVER/SAN JACINTO RIVER
BLUE LINE STREAMS
RIVERSIDE COUNTY BOUNDARY
INCORPORATED AREAS
FREEWAYS/HIGHWAYS
PRIMARY STREETS
N
0 0.5 1 1.5 2 MILES
UPDATED NOVEMBER 2017
PROJECT SITE
SAN BERNARDINO COUNTY
RIVERSIDE COUNTY
JURUPA VALLEY
EASTVALE
NORCO
RIVERSIDE
CORONA



LEGEND

—— SOILS GROUP BOUNDARY

A · SOILS GROUP DESIGNATION

RCFC&WCD

HYDROLOGY MANUAL

N

0 FEET 5000

HYDROLOGIC SOILS GROUP MAP FOR FONTANA

PLATE C-1.03

Appendix 2: Construction Plans

Grading and Drainage Plans

CONCEPTUAL GRADING, SEWER & LID PLAN
FOR
MISSION VILLAGE SHOPPING CENTER
SEC OF MISSION BOULEVARD & STOBBS WAY
JURUPA VALLEY, CA.

TITLE REPORT

THIS SURVEY AND EASEMENTS SHOWN HEREON ARE BASED ON INFORMATION CONTAINED IN THE PRELIMINARY TITLE REPORT PREPARED BY:

FIDELITY NATIONAL TITLE COMPNAY
4210 RIVERWALK PARKWAY, SUITE 100
RIVERSIDE, CA 92505
(951) 710-5900

ORDER NUMBER: 012-23085364-F-BAM
COMMITMENT DATE: JUNE 29, 2020
AMENDED: JULY 8, 2020, AMENDMENT NO. F
TITLE OFFICER: ANDREW MARGO

LEGAL DESCRIPTION

THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN THE CITY OF JURUPA VALLEY, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AND IS DESCRIBED AS FOLLOWS:

THAT PORTION OF LOTS 1, 2, 9, AND 10 IN BLOCK "B" OF ADDITION OF WEST RIVERSIDE, IN THE CITY OF JURUPA VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS PER MAP RECORDED IN MAP BOOK 9, PAGE 34, IN THE OFFICE OF THE COUNTY RECORDER OF SAN BERNARDINO COUNTY, DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT IN THE SOUTHWESTERLY LINE OF COUNTY ROAD, NOW KNOWN AS MISSION BOULEVARD, DISTANT THEREON SOUTH 58° 50' 30" EAST, 50.55 FEET FROM ITS INTERSECTION WITH THE WESTERLY LINE OF THE EASTERLY 310.00 FEET OF SAID LOTS 1 AND 2, SAID POINT ALSO BEING THE BEGINNING OF A TANGENT CURVE SOUTHEASTERLY HAVING A RADIUS OF 15.00 FEET; THENCE NORTHWESTERLY AND SOUTHWESTERLY ALONG SAID CURVE, 27.46 FEET TO A POINT OF TANGENCY WITH A LINE PARALLEL WITH AND DISTANT EASTERLY 30.00 FEET, MEASURED AT RIGHT ANGLES FROM SAID WESTERLY LINE OF THE EASTERLY 310.00 FEET OF LOTS 1 AND 2; THENCE ALONG SAID PARALLEL LINE SOUTH 16° 16' 00" WEST, 441.81 FEET TO THE BEGINNING OF A TANGENT CURVE CONCAVE EASTERLY HAVING A RADIUS OF 300.00 FEET; THENCE SOUTHWESTERLY ALONG SAID CURVE, 77.88 FEET TO A POINT OF REVERSE CURVATURE WITH A CURVE CONCAVE WESTERLY, HAVING A RADIUS OF 300.00 FEET; THENCE SOUTHWESTERLY ALONG SAID CURVE 77.68 FEET TO A POINT OF TANGENCY WITH A LINE PARALLEL WITH AND DISTANT EASTERLY, 50.00 FEET MEASURED AT RIGHT ANGLES FROM A 3/4" IRON PIPE ON SAID WESTERLY LINE OF THE EASTERLY 310.00 FEET OF LOTS 1 AND 2, DISTANT THEREON SOUTH 16° 16' 00" WEST, 622.92 FEET FROM SAID SOUTHWESTERLY LINE OF MISSION BOULEVARD; THENCE ALONG SAID PARALLEL LINE, SOUTH 16° 16' 00" WEST, 166.90 FEET TO THE BEGINNING OF A TANGENT CURVE CONCAVE NORTHEASTERLY, HAVING A RADIUS OF 30.00 FEET; THENCE SOUTHEASTERLY ALONG SAID CURVE, 47.18 FEET TO A POINT OF TANGENCY WITH A LINE PARALLEL WITH AND DISTANT NORTHERLY 30.00 FEET, MEASURED AT RIGHT ANGLES FROM THE NORTH LINE OF THE SOUTH 533.00 FEET OF SAID LOTS 9 AND 2; THENCE ALONG SAID PARALLEL LINE SOUTH 73° 50' 00" EAST, 845.00 FEET TO A TANGENT CURVE CONCAVE A NORTHWESTERLY HAVING A RADIUS OF 15.00 FEET; THENCE NORTHEASTERLY ALONG SAID CURVE, 23.54 FEET TO A POINT OF TANGENCY WITH THE WESTERLY LINE OF OPAL STREET, 60.00 FEET WIDE, AS SHOWN ON SAID MAP; THENCE ALONG SAID WESTERLY LINE, NORTH 18° 16' 00" EAST, 423.37 FEET TO A POINT WHICH IS SOUTH 16° 13' 00" WEST, 130.00 FEET THEREON FROM ITS INTERSECTION WITH THE SOUTHWESTERLY LINE OF SAID MISSION BOULEVARD; THENCE PARALLEL WITH THE SAID SOUTHWESTERLY LINE OF MISSION BOULEVARD, NORTH 58° 50' 30" WEST, 150.00 FEET; THENCE PARALLEL WITH SAID WESTERLY LINE OF OPAL STREET, SOUTH 16° 16' 00" WEST, 20.00 FEET; THENCE PARALLEL WITH SAID SOUTHWESTERLY LINE OF MISSION BOULEVARD, NORTH 58° 50' 00", 30" WEST, 150.00 FEET; THENCE PARALLEL WITH SAID WESTERLY LINE OF OPAL STREET, NORTH 16° 16' 00" EAST, 150.00 FEET TO A POINT IN SAID SOUTHWESTERLY LINE OF MISSION BOULEVARD DISTANT THEREON, NORTH 58° 50' 30" WEST, 300.00 FEET FROM ITS INTERSECTION WITH SAID WESTERLY LINE OF OPAL STREET; THENCE ALONG SAID SOUTHWESTERLY LINE, NORTH 58° 50' 30" WEST, 622.14 FEET TO THE POINT OF BEGINNING.

EXCEPT THAT PORTION DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE WESTERLY LINE OF OPAL STREET, 60.00 FEET WIDE, AS SHOWN ON SAID MAP DISTANT THEREON NORTH 16° 16' 00" EAST, 114.68 FEET FROM ITS

INTERSECTION WITH THE NORTH LINE OF THE SOUTH 533.00 FEET OF SAID LOT 9; THENCE AT RIGHT ANGLES NORTH 73° 44' 00" WEST, 341.94 FEET; THENCE NORTH 16° 12' 57" EAST, 574.74 FEET TO A POINT ON THE SOUTHERLY LINE OF THE COUNTY ROAD, KNOWN AS MISSION BOULEVARD; THENCE SOUTH 58° 50' 30" EAST, 53.88 FEET ON SAID SOUTHERLY LINE TO THE NORTHWEST CORNER OF THAT CERTAIN PARCEL DESCRIBED IN DEED TO ROBERT J. DROLET, A SINGLE MAN, RECORDED JANUARY 20, 1959 AS INSTRUMENT NO. 4869 OF OFFICIAL RECORDS; THENCE SOUTHWESTERLY 150.00 FEET ON THE WESTERLY LINE OF SAID PARCEL TO THE SOUTHWEST CORNER THEREOF; THENCE SOUTHEASTERLY, 150.00 FEET ON THE SOUTHERLY LINE THEREOF TO THE SOUTHEAST CORNER THEREOF; THENCE NORTHEASTERLY, 20.00 FEET ON THE EASTERLY LINE TO THE SOUTHWEST CORNER OF THE CERTAIN PARCEL DESCRIBED IN DEED TO GEORGE C. POOLEY, ET UX, RECORD JANUARY 14, 1960 AS 1960-3350 OF OFFICIAL RECORDS; THENCE SOUTHEASTERLY 150.00 FEET ON THE SOUTHERLY LINE OF SAID PARCEL TO THE SOUTHEASTERLY CORNER THEREOF, BEING A POINT ON THE WESTERLY LINE OF OPAL STREET, 60.00 FEET WIDE; THENCE SOUTHWESTERLY ON THE NORTHWESTERLY LINE OF SAID OPAL STREET, TO THE POINT OF BEGINNING.

ALSO EXCEPT THAT PORTION DESCRIBED IN DEED TO THE COUNTY OF RIVERSIDE, RECORDED OCTOBER 7, 1963 AS 1963-105745, OF OFFICIAL RECORDS.

ALSO EXCEPT THAT PORTION DESCRIBED AS FOLLOWS:

COMMENCING AT A POINT ON THE WESTERLY LINE OF OPAL STREET, 60.00 FEET WIDE, AS SHOWN ON SAID MAP, DISTANT THEREON, NORTH 16° 16' 00" EAST, 114.66 FEET FROM ITS INTERSECTION WITH THE NORTH LINE OF THE SOUTH 533.00 FEET OF SAID LOT 9; THENCE AT RIGHT ANGLES, NORTH 73° 44' 00" WEST, 341.94 FEET; THENCE NORTH 16° 12' 57" EAST, 27.68 FEET TO THE TRUE POINT OF BEGINNING; THENCE CONTINUING NORTH 16° 12' 57" EAST, 30.00 FEET; THENCE NORTH 73° 44' 00" WEST, 30.00 FEET; THENCE SOUTH 16° 12' 57" WEST, 30.00 FEET; THENCE SOUTH 73° 44' 00" EAST, 30.00 FEET TO THE TRUE POINT OF BEGINNING.

APN: 182-031-002, 182-031-001 AND, 182-022-002

NOTICE TO CONTRACTOR

THE CONTRACTOR SHALL ASCERTAIN THE TRUE VERTICAL AND HORIZONTAL LOCATION AND SIZE OF ALL UTILITIES, PIPES, AND/OR STRUCTURES AND SHALL BE RESPONSIBLE FOR DAMAGE TO ANY PUBLIC OR PRIVATE UTILITIES, SHOWN OR NOT SHOWN HEREON.

IMPORTANT NOTICE
Section 4216 of the Government Code requires a Dig Alert Identification Number be issued before a "Permit to Excavate" will be valid. For your Dig Alert I.D. Number call Underground Service Alert CALL 811 Two working days before you dig.

EASEMENT NOTES:

REFER TO TITLE REPORT FOR ADDITIONAL INFORMATION AND DETAILS:

1 WATER RIGHTS, CLAIMS OR TITLE TO WATER, WHETHER OR NOT DISCLOSED BY THE PUBLIC RECORDS.

2 EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS RESERVED IN A DOCUMENT;

RESERVED BY:	JURUPA LAND AND WATER COMPANY
PURPOSE:	PIPE LINES, DITCHES
RECORDING DATE:	AUGUST 13, 1889
RECORDING NO:	BOOK 101 PAGE 229 DEEDS OF SAN BERNARDINO COUNTY
AFFECTS:	A PORTION OF SAID LAND AS MORE PARTICULARLY DESCRIBED IN SAID DOCUMENT.

THE EXACT LOCATION AND EXTENT OF SAID EASEMENT IS NOT DISCLOSED OF RECORD.

3 EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO, AS GRANTED IN A DOCUMENT:

GRANTED TO:	SUNNY SLOPE MUTUAL WATER COMPANY, A CORPORATION
PURPOSE:	PIPELINES
RECORDING DATE:	NOVEMBER 21, 1955
RECORDING NO:	1955-73946, IN BOOK 1823 PAGE 102 OF OFFICIAL RECORDS
AFFECTS:	A PORTION OF SAID LAND AS MORE PARTICULARLY DESCRIBED IN SAID DOCUMENT.

THE EXACT LOCATION AND EXTENT OF SAID EASEMENT IS NOT DISCLOSED OF RECORD. SAID EASEMENT IS INDETERMINATE IN NATURE AND NOT PLOTTED HEREON.

4 EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO, AS GRANTED IN A DOCUMENT:

GRANTED TO:	RUDIDOUX COMMUNITY SERVICES DISTRICT WATER DEPARTMENT, A MUNICIPAL CORPORATION
PURPOSE:	PIPES, CONDUITS
RECORDING DATE:	OCTOBER 19, 1962
RECORDING NO:	1962-97388 OF OFFICIAL RECORDS
AFFECTS:	A PORTION OF SAID LAND AS MORE PARTICULARLY DESCRIBED IN SAID DOCUMENT.

THE EXACT LOCATION AND EXTENT OF SAID EASEMENT IS NOT DISCLOSED OF RECORD. SAID EASEMENT IS NOT READABLE AND NOT PLOTTED HEREON.

5 INTENTIONALLY DELETED..

6 MATTERS CONTAINED IN THAT CERTAIN DOCUMENT

ENTITLED:	NOTICE OF INTENT TO PRESERVE INTEREST
RECORDING DATE:	NOVEMBER 08, 1994
RECORDING NO:	1994-426654 OF OFFICIAL RECORDS

REFERENCE IS HEREBY MADE TO SAID DOCUMENT FOR FULL PARTICULARS.

7 MATTERS CONTAINED IN THAT CERTAIN DOCUMENT

ENTITLED:	NOTICE OF INTENT TO PRESERVE INTEREST
RECORDING DATE:	NOVEMBER 08, 1994
RECORDING NO:	1994-426655 OF OFFICIAL RECORDS

REFERENCE IS HEREBY MADE TO SAID DOCUMENT FOR FULL PARTICULARS.

(8) EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO, AS GRANTED IN A DOCUMENT:

GRANTED TO:	PACIFIC BELL TELEPHONE COMPANY, A CALIFORNIA CORPORATION
PURPOSE:	PUBLIC UTILITIES AND COMMUNICATIONS
RECORDING DATE:	AUGUST 02, 2000
RECORDING NO:	2000-297493 OF OFFICIAL RECORDS
AFFECTS:	A PORTION OF SAID LAND AS MORE PARTICULARLY DESCRIBED IN SAID DOCUMENT.

9 INTENTIONALLY DELETED.

10 INTENTIONALLY DELETED.

11 INTENTIONALLY DELETED.

(12) EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO, AS GRANTED IN A DOCUMENT:

GRANTED TO:	COUNTY OF RIVERSIDE, A POLITICAL SUBDIVISION
PURPOSE:	PUBLIC ROAD AND DRAINAGE PURPOSES
RECORDING DATE:	MAY 05, 2009
RECORDING NO:	2009-0222700 OF OFFICIAL RECORDS
AFFECTS:	A PORTION OF SAID LAND AS MORE PARTICULARLY DESCRIBED IN SAID DOCUMENT.

13 A DOCUMENT ENTITLED ?STIPULATION REGARDING PARTIAL SETTLEMENT, RESERVATION OF JURISDICTION OVER REMAINING ISSUES AND ORDER THEREON

RECORDING DATE:	JUNE 18, 2015
RECORDING NO.:	2015-260586 OF OFFICIAL RECORDS

REFERENCE IS HEREBY MADE TO SAID DOCUMENT FOR FULL PARTICULARS.

14 INTENTIONALLY DELETED.

15 ANY RIGHT, INTEREST OR CLAIM THAT MAY EXIST, ARISE OR BE ASSERTED AGAINST THE TITLE UNDER OR PURSUANT TO THE PERISHABLE AGRICULTURAL COMMODITIES ACT OF 1930, AS AMENDED, 7 USC 499A ET SEQ., THE PACKERS AND STOCKYARD ACT OF 1921, AS AMENDED, 7 USC 181 ET SEQ., OR ANY SIMILAR STATE LAWS.

EASEMENT NOTES – CONT.:

16 ANY INVALIDITY OR DEFECT IN THE TITLE OF THE VESTEES IN THE EVENT THAT THE TRUST REFERRED TO HEREIN IS INVALID OR FAILS TO GRANT SUFFICIENT POWERS TO THE TRUSTEE(S) OR IN THE EVENT THERE IS A LACK OF COMPLIANCE WITH THE TERMS AND PROVISIONS OF THE TRUST INSTRUMENT.

IF TITLE IS TO BE INSURED IN THE TRUSTEE(S) OF A TRUST, (OR IF THEIR ACT IS TO BE INSURED), THIS COMPANY WILL REQUIRE A TRUST CERTIFICATION PURSUANT TO CALIFORNIA PROBATE CODE SECTION 18100.5.

THE COMPANY RESERVES THE RIGHT TO ADD ADDITIONAL ITEMS OR MAKE FURTHER REQUIREMENTS AFTER REVIEW OF THE REQUESTED DOCUMENTATION.

17 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.

EASEMENT NOTES; (continued)

18 MATTERS WHICH MAY BE DISCLOSED BY AN INSPECTION AND/OR BY A CORRECT ALTA/NSPS LAND TITLE SURVEY OF SAID LAND THAT IS SATISFACTORY TO THE COMPANY, AND/OR BY INQUIRY OF THE PARTIES IN POSSESSION THEREOF.

19 A DEED OF TRUST TO SECURE AN INDEBTEDNESS IN THE AMOUNT SHOWN BELOW,

AMOUNT:	$1,000,000.00
DATED:	MAY 1, 2017
TRUSTOR/GRANTOR	HERBERT GORDON RUDH, AN INDIVIDUAL, AND CYNTHIA CAROL THOMPSON, TRUSTEE OF THE CYNTHIA THOMPSON TRUST
TRUSTEE:	FIDELITY NATIONAL TITLE INSURANCE COMPANY
BENEFICIARY:	STARPOINT COMMERCIAL PROPERTIES, LLC, A CALIFORNIA LIMITED LIABILITY COMPANY
RECORDING DATE:	MAY 1, 2017
RECORDING NO:	2017-0173500 OF OFFICIAL RECORDS

RECORD OWNERS:

HERBERT GORDON RUDH, TRUSTEE OR HIS SUCCESSORS IN INTEREST, OF THE HERBERT GORDON RUDH FAMILY TRUST DATED FEBRUARY 22, 2019, ANY AMENDMENTS THERETO, AS TO AN UNDIVIDED 50% INTEREST; AND CYNTHIA CAROL THOMPSON, TRUSTEE OF THE CYNTHIA THOMPSON TRUST DATED 1/15/2014, AS TO AN UNDIVIDED 50% INTEREST.

BASIS OF BEARINGS

THE BEARINGS SHOWN HEREON ARE BASED ON THE BEARING N16°16'00"E OF THE CENTERLINE OF OPAL STREET PER RECORD OF SURVEY FILED IN BOOK 140, PAGE 50 OF RECORD OF SURVEYS, RECORDS OF RIVERSIDE COUNTY.

SITE AREA

THE SUBJECT SITE CONTAINS APPROXIMATELY: 440,150 SQUARE FEET/10.105 ACRES (GROSS)
THE SUBJECT SITE CONTAINS APPROXIMATELY: 399,968 SQUARE FEET/9.176 ACRES (NET)

LOT 1 – 259,252 SQUARE FEET/5.952 ACRES
LOT 2 – 40,643 SQUARE FEET/0.933 ACRES (GROSS)
LOT 2 – 40,474 SQUARE FEET/0.929 ACRES (NET)
LOT 3 – 35,205 SQUARE FEET/0.808 ACRES
LOT 4 – 31,100 SQUARE FEET/0.714 ACRES
LOT 5 – 73,950 SQUARE FEET/1.698 ACRES

FLOOD ZONE

COMMUNITY NUMBER: 060286 0043G, EFFECTIVE DATE: 8/25/2008

ZONE X
PROPERTY NOT IN A SPECIAL FLOOD HAZARD AREA,
AREA DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN.
INFORMATION OBTAINED FROM CERTIFIED FLOOD SYSTEMS, INC. ON 6/29/2021

BUILDING SETBACK LINES

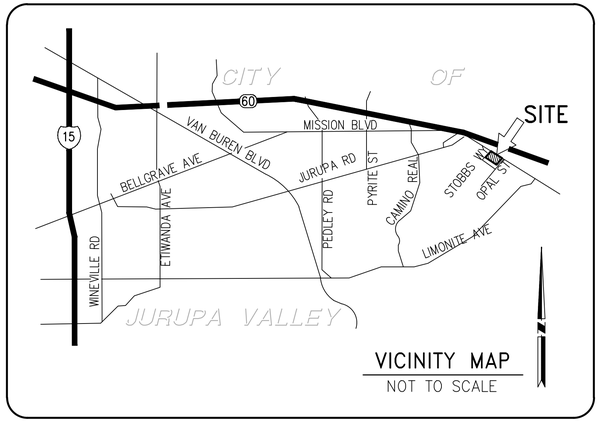
MISSION BOULEVARD = 10 FEET
STOBBS WAY = 10 FEET
AS PROVIDED BY ARCHITECTS ORANGE, SITE PLAN

ZONING

SUBJECT PROPERTY: C-1 ZONE / C-P ZONE (GENERAL COMMERCIAL)

UTILITY PROVIDERS

GAS.....SOUTHERN CALIFORNIA GAS CO., (800) 427-2200
WATER.....SANTA ANA RIVER WATER COMPANY (818) 658-6503
WATER.....WESTERN MUNICIPAL WATER DISTRICT (951) 571-7100
SEWER.....JURUPA COMMUNITY SERVICES DISTRICT (951) 685-7434
SEWER.....RUBIDOUX COMMUNITY SERVICES DISTRICT (951) 684-7580
ELECTRICITY.....SOUTHERN CALIFORNIA EDISON, (800) 655-4555
TELEPHONE.....AT&T CALIFORNIA, (714) 507-3526
CABLE.....CHARTER COMMUNICATIONS, (951-406-1666



VICINITY MAP
NOT TO SCALE

SHEET #	TITLE
C-1	TITLE SHEET
C-2	CONSTRUCTION NOTES
C-3	CONCEPTUAL GRADING PLAN
C-4	CONCEPTUAL GRADING PLAN
C-5	CONCEPTUAL UTILITY PLAN
C-6	LID EXHIBIT

REGISTERED PROFESSIONAL ENGINEER
RANDY J. DECKER
No. 81077
CIVIL
STATE OF CALIFORNIA

THIS PLAN IS:
PRELIMINARY
(NOT FOR CONSTRUCTION)

LEGEND

AB = AGGREGATE BASE	TC = TOP OF CURB	210.00' PRO. = PRORATED DATA	
AC = ASPHALT CONCRETE	TE = TRASH ENCLOSURE	210.00' C. = CALCULATED DATA	
BFP = BACKFLOW PREVENTOR	TP = TELEPHONE POLE	(427.00) TC = EXISTING ELEVATION	
BLK = CONCRETE BLOCK	TRAN = TRANSITION	427.00 TC = DESIGN ELEVATION	
BS = BACK OF SIDEWALK	TRANS= TRANSFORMER	CATV = CABLE TV LINE	
CB = CATCH BASIN		E = ELECTRICAL LINE	
CF = CURB FACE	TW = TOP OF WALL	G = GAS LINE	
CL = CENTERLINE	UG = UNDERGROUND	GB GB = GRADE BREAK LINE	
CLF = CHAIN LINK FENCE	UP = UTILITY POLE	R R = RIDGE LINE	
CO = CLEANOUT	VAR = VARIABLE	S = SEWER LINE	
DS = ROOF DOWNSPOUT	W = WASHER	SD = STORM DRAIN LINE	
EG = EDGE OF GUTTER	WIF = WROUGHT IRON FENCE	T = TELEPHONE LINE	
EP = EDGE OF PAVEMENT	WM = WATER METER	W = WATER LINE	
FD = FOUND	WV = WATER VALVE		
FDC = FIRE DEPT. CONNECTION	TRW = TOP OF RETAINING WALL		
FF = FINISHED FLOOR	N. = NORTH		
FG = FINISHED GRADE	S. = SOUTH		
FH = FIRE HYDRANT	E. = EAST		
FL = FLOW LINE	W. = WEST		
FS = FINISHED SURFACE			
GB = GRADE BREAK	N'LY = NORTHERLY		
GM = GAS METER	S'LY = SOUTHERLY		
GR = TOP OF GRATE	E'LY = EASTERLY		
GV = GAS VALVE	W'LY = WESTERLY		
HP = HIGH POINT	N/O = NORTH OF		
HT = HEIGHT	S/O = SOUTH OF		
ICV = IRRIGATION CONTROL VALVE	E/O = EAST OF		
IP = IRON PIPE	W/O = WEST OF		
LS = LIGHT STANDARD	℄ = PROPERTY LINE		
L&T = LEAD & TAG	℄ = CENTERLINE		
MH = MANHOLE	R/W = RIGHT OF WAY		
NG = NATURAL GROUND	Δ = DELTA		
N&T = NAIL & TAG	R = RADIUS		
OHW = OVERHEAD WIRE	L = LENGTH		
PB = PULL BOX	T = TANGENT		
PCC = CONCRETE	M = MEASURED DATA		
PIV = POST INDICATOR VALVE	C = CALCULATED DATA		
PL = PROPERTY LINE	(RAD)= RADIAL BEARING		
RD = ROOF DRAIN	PRO =PROPORTIONATE MEASUREMENT		
RWH = REDWOOD HEADER	(210.00' R) = RECORD DATA		
SCB = SIGNAL CONTROL BOX	210.00' M. = MEASURED DATA		
SMH = SEWER MANHOLE			
SPK = SPIKE			
SW = SIDEWALK			

SYMBOLS

- FIRE HYDRANT
- STREET LIGHT
- TRAFFIC SIGNAL
- TRAFFIC SIGNAL ARM & POLE
- LIGHT STANDARD
- UTILITY POLE
- GUY WIRE & ANCHOR
- 29 CAR COUNT
- WM WATER METER
- GM GAS METER
- WV WATER VALVE
- GAS VALVE
- PB PULL BOX
- GRATE INLET
- SIGN
- VENT
- S SEWER MANHOLE
- D STORM DRAIN MANHOLE
- T TELEPHONE MANHOLE
- MH MANHOLE
- SEWER CLEANOUT
- W MONUMENT WELL
- HANDICAP PARKING STALL
- L LANDSCAPED AREA
- P PROTECT IN PLACE
- R REMOVE AND DISPOSE OFFSITE
- 9 PARKING ROW COUNT
- 3 PLOTABLE EASEMENT ITEM NO. PER TITLE REPORT
- (427.0) EXIST. CONTOUR
- 8" PALM TREE, TRUNK DIAMETER SHOWN
- 8" TREE, SPECIES VARIES, TRUNK DIAMETER SHOWN

EARTHWORK QUANTITY ESTIMATES

RAW CUT:	18,500	CU. YD.
RAW FILL:	5,400	CU. YD.
EXPORT:	13,100	CU. YD.

THE ABOVE QUANTITIES DO NOT REFLECT ANY SHRINKAGE, SWELLING, SUBSIDENCE, STRIPPING LOSS, OVER-EXCAVATION, DEMOLITION LOSSES, FOOTING SPOILS, OR ANY SPECIAL CONDITIONS THAT MAY BE SPECIFIED IN THE APPLICABLE GEOTECHNICAL REPORT(S) AND ARE FOR REFERENCE AND FEE PURPOSES ONLY. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING HIS OWN QUANTITIES FOR CONSTRUCTION AND CONTRACT PURPOSES.

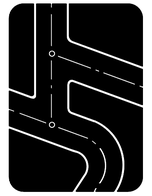
THESE QUANTITIES ARE APPROXIMATE ONLY AND DO NOT INCLUDE OVEREXCAVATION QUANTITIES, IMPORT OR EXPORT QUANTITIES.

ARCHITECT
ARCHITECTS ORANGE
144 N. ORANGE STREET
ORANGE, CA 92866
(714) 639-9860

PLAN PREPARED FOR
MISSION BLVD. PROPERTIES, LLC.
433 NORTH CAMDEN DR.
SUITE #1000
BEVERLY HILLS, CA. 90210

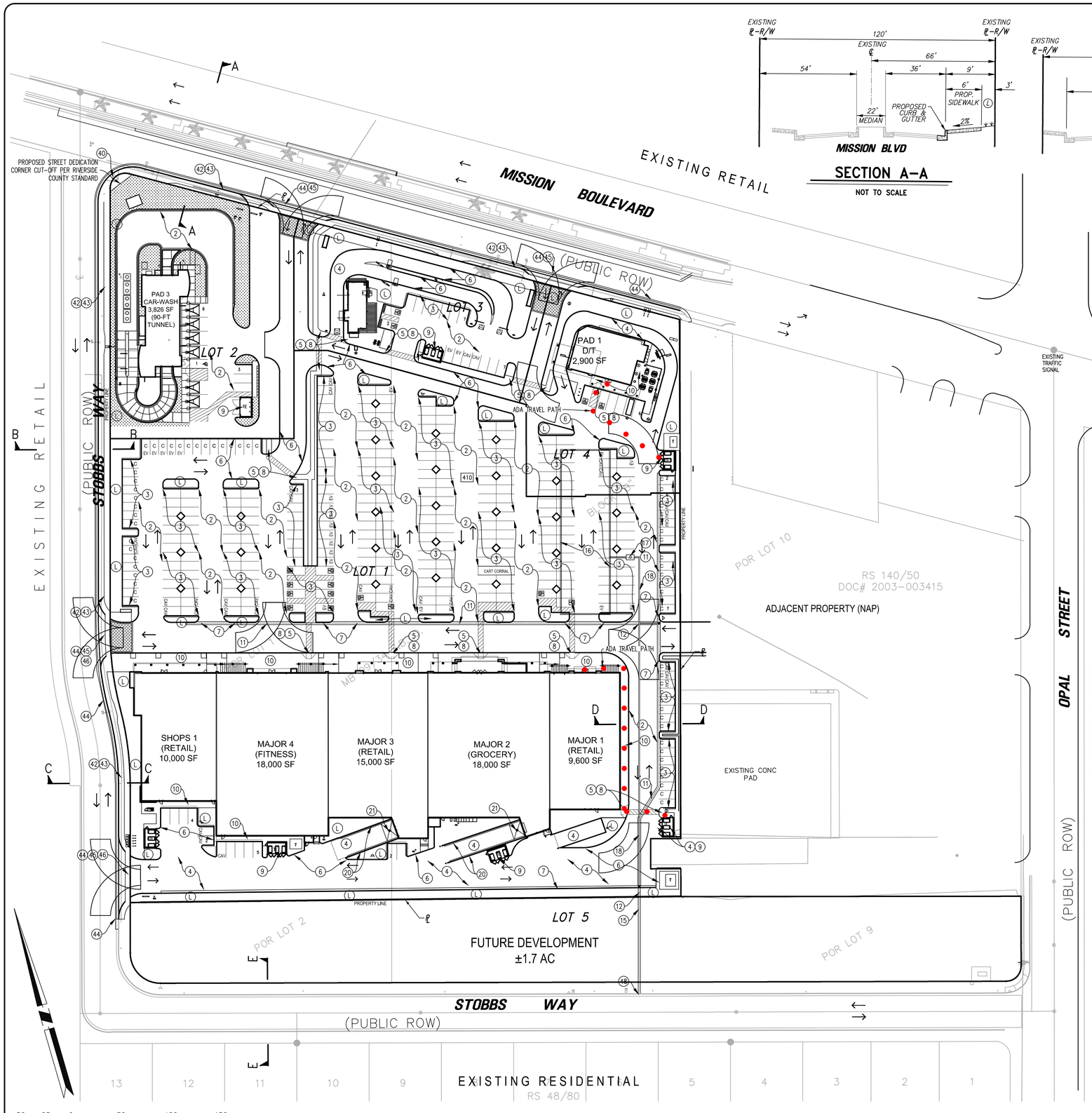
NO.	REVISIONS	DATE

Prepared by:
Joseph C. Truxaw and Associates, Inc.
Civil Engineers and Land Surveyors
1915 W. Orangewood Ave., Suite 101, Orange, CA 92868 (714) 935-0265 Truxaw.com



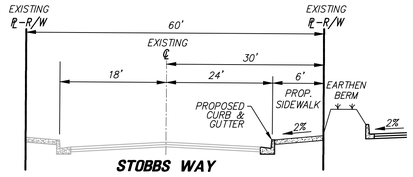
TITLE SHEET
MISSION VILLAGE SHOPPING CENTER
SEC MISSION BOULEVARD AND STOBBS WAY
IN THE CITY OF JURUPA VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA

DATE	07-26-22
DRAWN BY	TM
CHECKED BY	SMH
JOB NO.	MBP21038
SHEET NO.	C-1
OF 5 SHEETS	



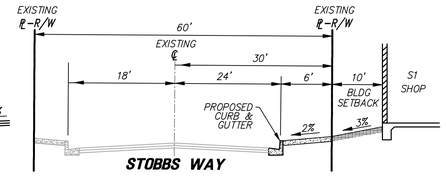
SECTION A–A

NOT TO SCALE

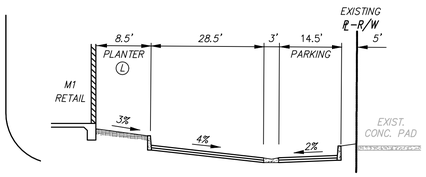


SECTION B–B

NOT TO SCALE

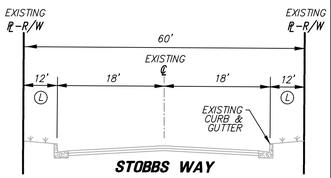


SECTION C–C



SECTION D–D

NOT TO SCALE



SECTION E–E

NOT TO SCALE

CONSTRUCTION NOTES

1. SAWCUT & REMOVE EXIST. AC PAVING, CONCRETE CURB, ETC.
***2. PAVE WITH 3-INCHES AC OVER 5-INCHES AB OVER COMPACTED SUBGRADE (DRIVE LANES).
***3. PAVE WITH 3-INCHES AC OVER 4-INCHES AB OVER COMPACTED SUBGRADE (PARKING STALLS).
***4. CONCRETE PAVING @ DRIVE THRU LANE, TRUCK LOAD BAYS AND TRASH ENCLOSURE APRON
5. CONSTRUCT CONCRETE ACCESSIBLE RAMP IN ACCORDANCE WITH CA TITLE 24
6. CONSTRUCT CONCRETE CURB. (6-INCH CURB HEIGHT UNLESS SHOWN OTHERWISE.)
7. CONSTRUCT 6-INCH CURB & 18-INCH GUTTER.
8. PLACE TRUNCATED DOMES PER ADA REQUIREMENTS.
9. TRASH ENCLOSURE & CONCRETE APRON PER ARCHITECTURAL DETAILS
10. CONSTRUCT CONCRETE SIDEWALK.
11. CONSTRUCT 36-INCH CONCRETE GUTTER.
12. PLACE 24" X 24" GRATED INLET.
13. NOT USED.
14. NOT USED
15. CONSTRUCT DOUBLE CONCRETE CURB & GUTTER
16. INSTALL UNDERGROUND INFILTRATION BMP.
17. INSTALL INFILTRATION CHAMBER.
18. INSTALL STORM DRAIN PIPE.
19. NOT USED.
20. RETAINING WALL PER ARCHITECTURAL DETAILS.
21. TRUCK WELL INLET AND SUMP PUMP.
L. LANDSCAPE

***PAVEMENT DESIGN SECTIONS PER THE RECOMMENDATIONS OF THE SOILS ENGINEER.

OFFSITE **

40. CURB RAMP PER RIVERSIDE COUNTY STANDARDS.
41. NOT USED.
42. CONSTRUCT CONCRETE SIDEWALK (MATCH EXISTING IN KIND) PER RIVERSIDE COUNTY STANDARDS.
43. CONSTRUCT CURB AND GUTTER PER RIVERSIDE COUNTY STANDARDS, (MATCH EXISTING IN KIND).
44. SAWCUT AND REMOVE CONCRETE SIDEWALK, CURB, PAVEMENT, ETC.
45. CONSTRUCT DRIVEWAY PER RIVERSIDE COUNTY STANDARDS, RELOCATE ABOVE GROUND UTILITIES AS NEEDED.
46. PATCH FULL-DEPTH AC PAVEMENT (MINIMUM, 8-INCH THICKNESS).
47. NOT USED.
48. CURB FACE OUTLET PER RIVERSIDE COUNTY STANDARDS.

** CONTRACTOR TO APPLY FOR AND OBTAIN ENCROACHMENT PERMIT FOR IMPROVEMENTS WITHIN PUBLIC R/W

NOTE:
IMPROVEMENTS PER RIVERSIDE COUNTY STANDARDS WHERE APPLICABLE

NOTICE TO CONTRACTOR

THE CONTRACTOR SHALL ASCERTAIN THE TRUE VERTICAL AND HORIZONTAL LOCATION AND SIZE OF ALL UTILITIES, PIPES, AND/OR STRUCTURES AND SHALL BE RESPONSIBLE FOR DAMAGE TO ANY PUBLIC OR PRIVATE UTILITIES, SHOWN OR NOT SHOWN HEREON.

REGISTERED PROFESSIONAL ENGINEER
RANDY J. BECKER
No. 81077
CIVIL
STATE OF CALIFORNIA

THIS PLAN IS:
PRELIMINARY
(NOT FOR CONSTRUCTION)

IMPORTANT NOTICE
Section 4216 of the Government Code requires a Dig Alert Identification Number be issued before a "Permit to Excavate" will be valid. For your Dig Alert I.D. Number call Underground Service Alert CALL 811 Two working days before you dig.

NO.	REVISIONS	DATE

Prepared by:
Joseph C. Truxaw and Associates, Inc.
Civil Engineers and Land Surveyors
1915 W. Orangewood Ave., Suite 101, Orange, CA 92868 (714) 935-0265 Truxaw.com

CONSTRUCTION NOTES PLAN

MISSION VILLAGE SHOPPING CENTER
SEC MISSION BOULEVARD AND STOBBS WAY
IN THE CITY OF JURUPA VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA

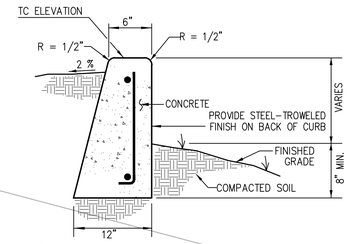
DATE	07-26-22
DRAWN BY	TM
CHECKED BY	SMH
JOB NO.	MBP21038
SHEET NO.	C-2

OF 5 SHEETS

NOTE

SEE SHEET C-1 FOR LEGEND OF ABBREVIATIONS AND SYMBOLS.

SCALE: 1"=20'



6" RETAINING CURB (A)

NOT TO SCALE

NOTICE TO CONTRACTOR

THE CONTRACTOR SHALL ASCERTAIN THE TRUE VERTICAL AND HORIZONTAL LOCATION AND SIZE OF ALL UTILITIES, PIPES, AND/OR STRUCTURES AND SHALL BE RESPONSIBLE FOR DAMAGE TO ANY PUBLIC OR PRIVATE UTILITIES, SHOWN OR NOT SHOWN HEREON.

IMPORTANT NOTICE

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EXISTIN

REGISTERED PROFESSIONAL ENGINEER RANDY J. DECKER No. 81077 CIVIL STATE OF CALIFORNIA

THIS PLAN IS:

PRELIMINARY

(NOT FOR CONSTRUCTION)

NO.	REVISIONS	DATE

Prepared by:

Joseph C. Truxaw and Associates, Inc.

Civil Engineers and Land Surveyors

1915 W. Orangewood Ave., Suite 101, Orange, CA 92868 (714) 935-0265 Truxaw.com

GRADING PLAN

MISSION VILLAGE SHOPPING CENTER
SEC MISSION BOULEVARD AND STOBBS WAY
IN THE CITY OF JURUPA VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA

DATE	07-26-22
DRAWN BY	TM
CHECKED BY	SMH
JOB NO.	MBP21038
SHEET NO.	C-3

OF 5 SHEETS

MISSION BLVD (PUBLIC ROW)

STOBBS WAY (PUBLIC ROW)

PROPERTY LINE

LOT 2

LOT 3

LOT 4

PAD 1
D/T
2,900 SF * FF=856.25

* FF=856.50

* FF=856.00

LIMITS OF GRADING

CONC SIDEWALK

ASPHALT

GRASS/DIRT FIELD

EXISTING DRIVEWAY

N58°51'12"W 1003.56'

N58°51'12"W 922.04'

N16°18'36"E 537.39'

MATCH LINE - SEE SHEET C-4

MATCH LINE – SEE SHEET C-3

LOT 1

*FF=848.50
SHOPS 1
(RETAIL)
10,000 SF

*FF=847.83
MAJOR 4
(FITNESS)
18,000 SF

*FF=847.16
MAJOR 3
(RETAIL)
15,000 SF

*FF=846.49
MAJOR 2
(GROCERY)
18,000 SF

*FF=845.82
MAJOR 1
(RETAIL)
9,600 SF

EXSIT BLDG
(TO BE DEMO'D)
15,992 S.F.±

CART CORRAL

BMP
834.00 ± BOTTOM

* NOTE:
PRIOR TO GRADING, CONTRACTOR SHALL VERIFY THICKNESS OF BUILDING SLAB AND SAND SECTION WITH APPROVED FOUNDATION PLAN, AND SOILS ENGINEER.

STOBBS WAY
PUBLIC ROW

PROPERTY LINE

LOT 5

LIMITS OF GRADING

CULVERT
(838.70) TC
(838.20) FL

NOTICE TO CONTRACTOR

THE CONTRACTOR SHALL ASCERTAIN THE TRUE VERTICAL AND HORIZONTAL LOCATION AND SIZE OF ALL UTILITIES, PIPES, AND/OR STRUCTURES AND SHALL BE RESPONSIBLE FOR DAMAGE TO ANY PUBLIC OR PRIVATE UTILITIES, SHOWN OR NOT SHOWN HEREON.

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REGISTERED PROFESSIONAL ENGINEER
RANDY J. DECKER
No. 81077
CIVIL
STATE OF CALIFORNIA

THIS PLAN IS:
PRELIMINARY
(NOT FOR CONSTRUCTION)

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

NO.	REVISIONS	DATE

Prepared by:
Joseph C. Truxaw and Associates, Inc.
Civil Engineers and Land Surveyors
1915 W. Orangewood Ave., Suite 101, Orange, CA 92868 (714) 935-0265 Truxaw.com

GRADING PLAN

MISSION VILLAGE SHOPPING CENTER
SEC MISSION BOULEVARD AND STOBBS WAY
IN THE CITY OF JURUPA VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA

DATE	07-26-22
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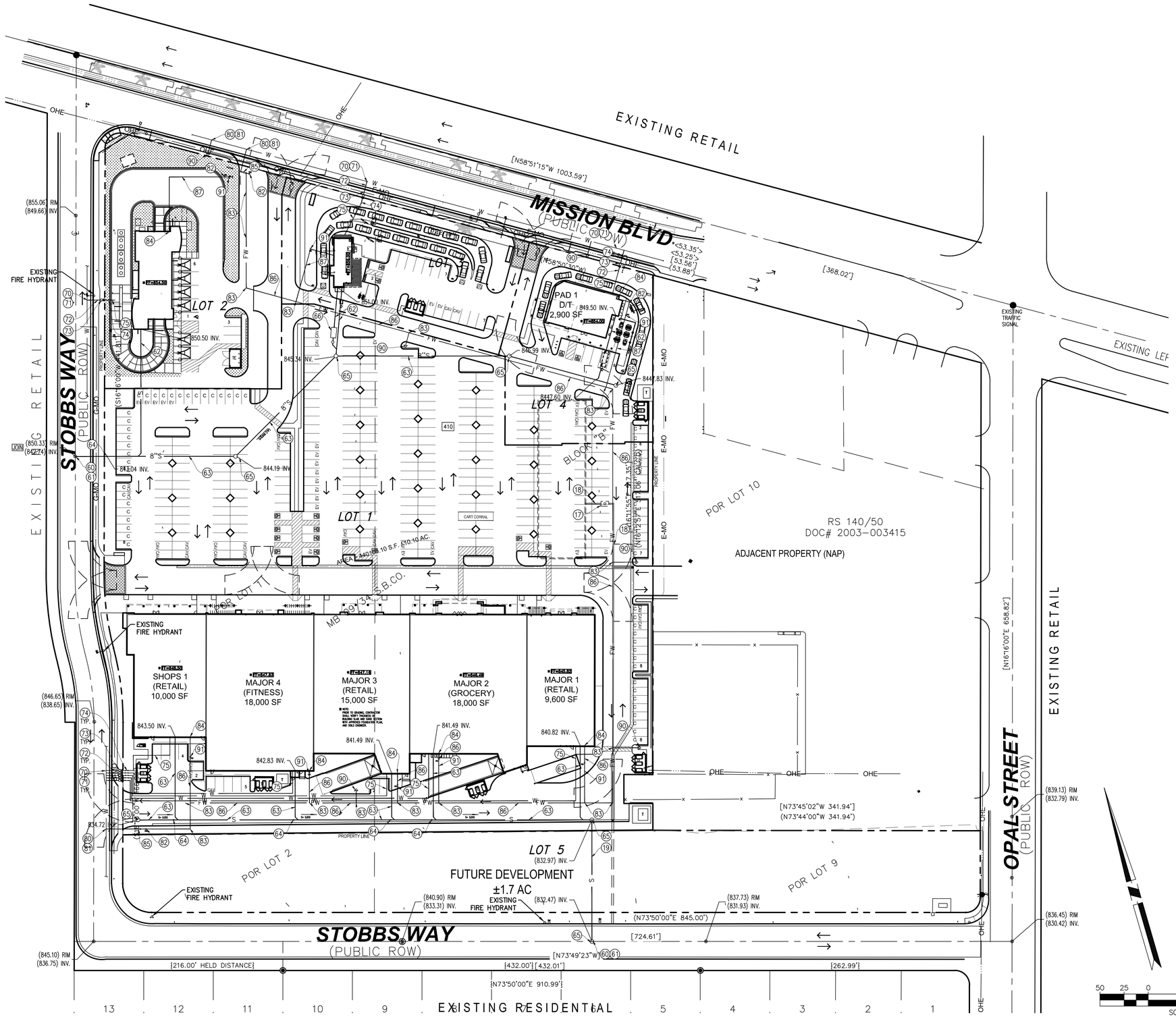
SHEET NO.	C-4
	OF 5 SHEETS



CONSTRUCTION NOTES–STORM DRAIN (PRIVATE)

16 INSTALL UNDERGROUND INFILTRATION BMP.
17 INSTALL STORM WATER FILTER.
18 INSTALL STORM DRAIN PIPE.
19 INSTALL STORM DRAIN CULVERT.
L LANDSCAPE AREA PER SEPARATE LANDSCAPE PLANS.

CONSTRUCTION NOTES–SEWER (PRIVATE)

60 POTHOLE AND VERIFY THE EXISTENCE, LOCATION, DEPTH, MATERIAL, SIZE, AND CONDITION OF EXISTING 8–INCH SEWER MAIN. REPORT FINDINGS TO TRUXAW & ASSOCIATES PRIOR TO CONSTRUCTION.
61 CONNECT TO EXISTING 8–INCH SEWER MAIN WITH 6–INCH LATERAL
62 PLACE 4–INCH SDR–35 PVC SEWER PIPE PER CPC REQUIREMENTS PIPE BEDDING AND BACKFILL.
63 PLACE 6–INCH SDR–35 PVC SEWER PIPE PER CPC REQUIREMENTS PIPE BEDDING AND BACKFILL.
64 INSTALL CLEANOUT @ ALL BUILDINGS.
65 INSTALL A SEWER MANHOLE.
66 GREASE INTERCEPTOR.

CONSTRUCTION NOTES–DOMESTIC WATER (PRIVATE)

70 POTHOLE AND VERIFY THE EXISTENCE, LOCATION, DEPTH, MATERIAL, SIZE, AND CONDITION OF EXISTING 8–INCH WATER MAIN. REPORT FINDINGS TRUXAW & ASSOCIATES PRIOR TO CONSTRUCTION.
71 CONNECT TO EXISTING 8–INCH WATER MAIN.
72 PLACE 2–INCH LATERAL. PIPE BEDDING AND BACKFILL.
73 INSTALL WATER METER.
74 INSTALL REDUCED PRESSURE BACKFLOW PREVENTOR
75 PLACE 2–INCH TYPE K COPPER WATER PIPE. PIPE BEDDING AND BACKFILL.

CONSTRUCTION NOTES – FIRE WATER

80 POTHOLE AND VERIFY THE EXISTENCE, LOCATION, SIZE, DEPTH, MATERIAL AND CONDITION OF EXISTING 12–INCH WATER MAIN. REPORT FINDINGS TO TRUXAW & ASSOCIATES PRIOR TO CONSTRUCTION.
81 CONNECT TO EXISTING 12–INCH WATER MAIN PER LOCAL CODE STANDARDS.
82 INSTALL FDC PER LOCAL CODE STANDARDS.
83 CONSTRUCT CONCRETE THRUST BLOCK AT ALL ANGLE POINTS & TEES, TYPICAL.
84 CONNECT TO FIRE RISER.
** 85 INSTALL DOUBLE DETECTOR CHECK PER LOCAL CODE STANDARDS.
** 86 PLACE 6–INCH C–900, CL–200 PVC WATER LINE. (USE 1–PIECE STAINLESS STEEL RISER WITHIN 5 FEET OF BUILDING FOOTPRINT). PIPE BEDDING AND BACKFILL TO CONFORM TO THE RECOMMENDATIONS OF THE SOILS ENGINEER AND THE LOCAL CODE STANDARDS.
** 87 PLACE 4–INCH C–900, CL–200 PVC WATER LINE. PIPE BEDDING AND BACKFILL TO CONFORM TO THE RECOMMENDATIONS OF THE SOILS ENGINEER AND THE LOCAL CODE STANDARDS.
** 88 NOT USED
** 89 NOTE USED
90 INSTALL FIRE HYDRANT PER CITY STANDARDS.
91 INSTALL PIV PER LOCAL CODE STANDARDS.

** FIRE PROTECTION PIPE LINE AND SPRINKLERS IN THE BUILDING TO BE DESIGNED AND PERMITTED BY SEPARATE PLANS. PRIOR TO CONSTRUCTION OF FIRE WATER SYSTEM SHOWN ON THIS PLAN, CONTRACTOR SHALL VERIFY VIA HYDRAULIC CALCULATIONS ACCEPTABLE TO THE FIRE DEPARTMENT THAT SIZE OF FIRE SERVICE & DETECTOR CHECK ARE OF SUFFICIENT SIZE TO SERVE BUILDING. (SIZE SHOWN FOR PLAN CHECK & BID PURPOSES ONLY).

UTILITY PROVIDERS

GAS.....SOUTHERN CALIFORNIA GAS CO., (800) 427–2200
WATER.....SANTA ANA RIVER WATER COMPANY (818) 658–6503
WATER.....WESTERN MUNICIPAL WATER DISTRICT (951) 571–7100
SEWER.....JURUPA COMMUNITY SERVICES DISTRICT (951) 685–7434
SEWER.....RUBIDOUX COMMUNITY SERVICES DISTRICT (951) 684–7580
ELECTRICITY.....SOUTHERN CALIFORNIA EDISON, (800) 655–4555
TELEPHONE.....AT&T CALIFORNIA, (714) 507–3526
CABLE.....CHARTER COMMUNICATIONS, (951) 406–1666

THIS PLAN IS:

PRELIMINARY

(NOT FOR CONSTRUCTION)

REGISTERED PROFESSIONAL ENGINEER
RANDY J. BECKER
No. 81077
CIVIL
STATE OF CALIFORNIA

NOTICE TO CONTRACTOR

THE CONTRACTOR SHALL ASCERTAIN THE TRUE VERTICAL AND HORIZONTAL LOCATION AND SIZE OF ALL UTILITIES, PIPES, AND/OR STRUCTURES AND SHALL BE RESPONSIBLE FOR DAMAGE TO ANY PUBLIC OR PRIVATE UTILITIES, SHOWN OR NOT SHOWN HEREON.

IMPORTANT NOTICE
Section 4216 of the Government Code requires a Dig Alert Identification Number be issued before a "Permit to Excavate" will be valid. For your Dig Alert I.D. Number call Underground Service Alert CALL 811 Two working days before you dig.

NO.	REVISIONS	DATE

Prepared by:
Joseph C. Truxaw and Associates, Inc.
Civil Engineers and Land Surveyors
1915 W. Orangewood Ave., Suite 101, Orange, CA 92868 (714) 935-0265 Truxaw.com

UTILITY PLAN

MISSION VILLAGE SHOPPING CENTER
SEC MISSION BOULEVARD AND STOBBS WAY
IN THE CITY OF JURUPA VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA

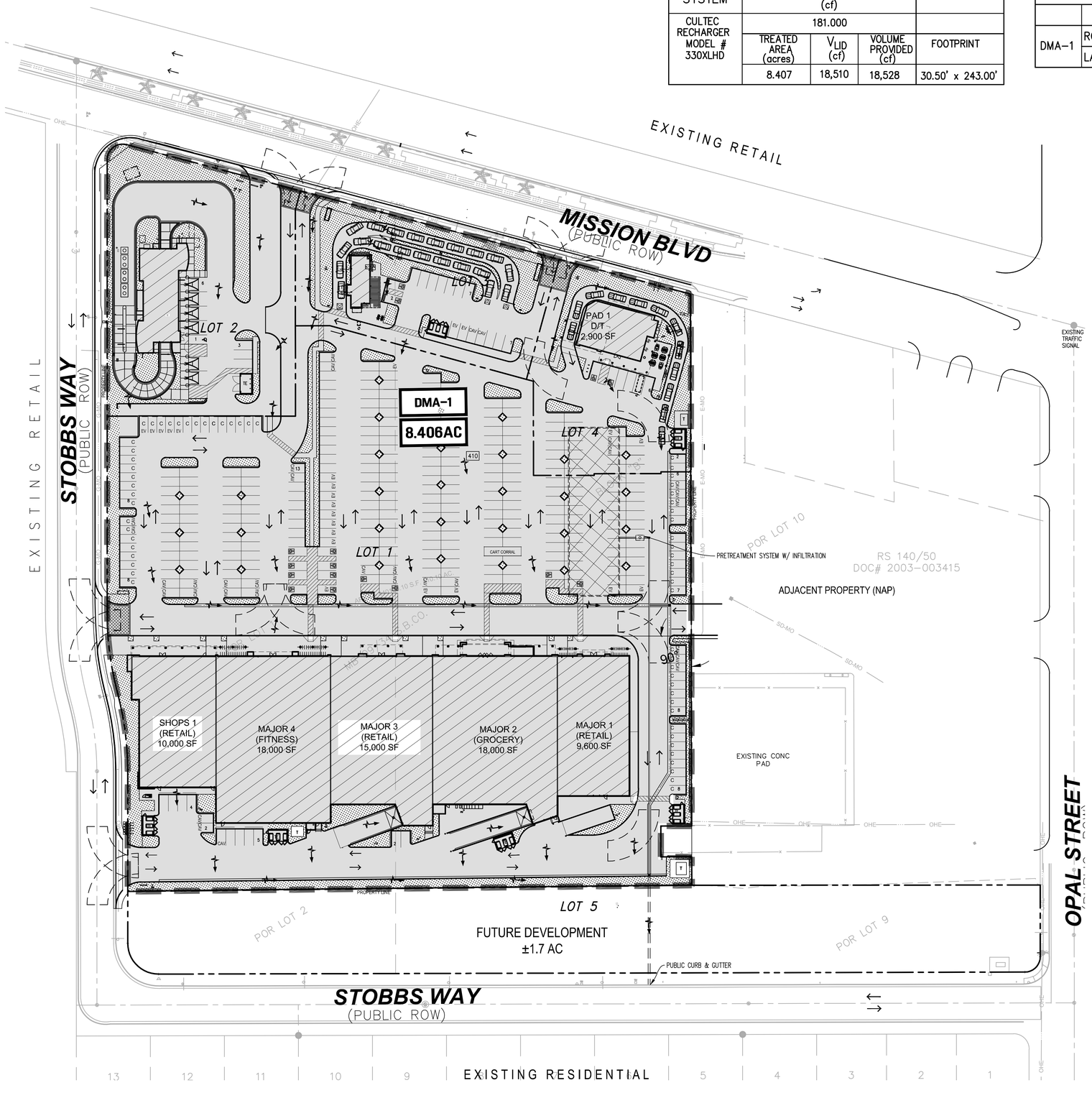
DATE	07-26-22
DRAWN BY	TM
CHECKED BY	SMH
JOB NO.	MBP21038
SHEET NO.	C-5

OF 5 *SHEETS*

DMA-1

SYSTEM	V_{LID} (cf)			
CULTEC RECHARGER MODEL # 330XLHD	181.000			
	TREATED AREA (acres)	V_{LID} (cf)	VOLUME PROVIDED (cf)	FOOTPRINT
	8.407	18,510	18,528	30.50' x 243.00'

DRAINAGE MANAGEMENT AREAS (DMA)							
	SURFACE TYPE	AREA	PERVIOUS		IMPERVIOUS		PROPOSED LID BMP
DMA-1	ROOF / PAVEMENT	366,194sf	43,854sf	11.98%	322,340sf	88.02%	UNDERGROUND INFILTRATION SYSTEM
	LANDSCAPE	8.406ac	1.006ac		7.400ac		



LEGEND

- N_ — DENOTES NON-STRUCTURAL MEASURES
- N1 — EDUCATION FOR PROPERTY OWNERS, TENANTS AND OCCUPANTS
- N2 — ACTIVITY RESTRICTIONS
- N3 — COMMON AREA LANDSCAPE MANAGEMENT
- N4 — BMP MAINTENANCE
- N11 — COMMON AREA LITTER CONTROL
- N12 — EMPLOYEE TRAINING
- N14 — COMMON AREA CATCH BASIN INSPECTION
- N15 — PARKING AND DRIVE AISLE SWEEPING
- A — ON-SITE STORM DRAIN INLETS
- D2 — LANDSCAPE/ OUTDOOR PESTICIDE USE
- P — PLAZAS, SIDEWALKS, AND PARKING LOTS
- T_ — DENOTES TREATMENT BMPs
- T1 — INFILTRATION SYSTEM (INF-7) (CULTEC RECHARGER 330XLHD)
- T2 — PRETREATMENT SYSTEM (CULTEC STORMFILTER 330)
- T3 — CATCH BASIN INSERT (FLOGARD FOSSIL FILTER INSERT)
- S_ — DENOTES ROUTINE STRUCTURAL SOURCE CONTROL BMPs
- S1 — STORM DRAIN SYSTEM STENCILING AND SIGNAGE (NO DUMPING – DRAINS TO OCEAN)
- S3 — DESIGN AND CONSTRUCT TRASH AND WASTE STORAGE AREAS
- S4 — EFFICIENT IRRIGATION SYSTEMS AND LANDSCAPE DESIGN

- PATTERN OF FLOW
- INFILTRATION SYSTEM
- PERVIOUS AREA
- PROPOSED BUILDING
- IMPERVIOUS AREA
- DRAINAGE BOUNDARY
- A-1 / 0.497 — SUB-AREA / AREA IN ACRES

50 25 0 50 100 150
SCALE: 1"=50'

REGISTERED PROFESSIONAL ENGINEER
RANDY J. DECKER
No. 81077
CIVIL
STATE OF CALIFORNIA

THIS PLAN IS:
PRELIMINARY
(NOT FOR CONSTRUCTION)

NOTICE TO CONTRACTOR

THE CONTRACTOR SHALL ASCERTAIN THE TRUE VERTICAL AND HORIZONTAL LOCATION AND SIZE OF ALL UTILITIES, PIPES, AND/OR STRUCTURES AND SHALL BE RESPONSIBLE FOR DAMAGE TO ANY PUBLIC OR PRIVATE UTILITIES, SHOWN OR NOT SHOWN HEREON.

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NO.	REVISIONS	DATE

Prepared by:
Joseph C. Truxaw and Associates, Inc.
Civil Engineers and Land Surveyors
1915 W. Orangewood Ave., Suite 101, Orange, CA 92868 (714) 935-0265 Truxaw.com

WATER QUALITY MANAGEMENT PLAN

MISSION VILLAGE SHOPPING CENTER
SEC MISSION BOULEVARD AND STOBBS WAY
IN THE CITY OF JURUPA VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA

DATE	07-26-22
DRAWN BY	TM
CHECKED BY	RD
JOB NO.	MBP21038
SHEET NO.	C-6
	OF 1 SHEETS

Appendix 3: Soils Information

Geotechnical Study and Other Infiltration Testing Data

In Progress

Appendix 4: Historical Site Conditions

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

LEGAL DESCRIPTION

THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN THE CITY OF JURUPA VALLEY, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AND IS DESCRIBED AS FOLLOWS:

THAT PORTION OF LOTS 1, 2, 9, AND 10 IN BLOCK "B" OF ADDITION OF WEST RIVERSIDE, IN THE CITY OF JURUPA VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS PER MAP RECORDED IN MAP BOOK 9, PAGE 34, IN THE OFFICE OF THE COUNTY RECORDER OF SAN BERNARDINO COUNTY, DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT IN THE SOUTHWESTERLY LINE OF COUNTY ROAD, NOW KNOWN AS MISSION BOULEVARD, DISTANT THEREON SOUTH 58°50'30" EAST, 50.55 FEET FROM ITS INTERSECTION WITH THE WESTERLY LINE OF THE EASTERLY 310.00 FEET OF SAID LOTS 1 AND 2, SAID POINT ALSO BEING THE BEGINNING OF A TANGENT CURVE SOUTHEASTERLY HAVING A RADIUS OF 15.00 FEET; THENCE NORTHWESTERLY AND SOUTHWESTERLY ALONG SAID CURVE, 27.46 FEET TO A POINT OF TANGENCY WITH A LINE PARALLEL WITH AND DISTANT EASTERLY 30.00 FEET, MEASURED AT RIGHT ANGLES FROM SAID WESTERLY LINE OF THE EASTERLY 310.00 FEET OF LOTS 1 AND 2; THENCE ALONG SAID PARALLEL LINE SOUTH 16°16'00" WEST, 441.81 FEET TO THE BEGINNING OF A TANGENT CURVE CONCAVE EASTERLY HAVING A RADIUS OF 300.00 FEET; THENCE SOUTHWESTERLY ALONG SAID CURVE, 77.68 FEET (77.88) TO A POINT OF REVERSE CURVATURE WITH A CURVE CONCAVE WESTERLY, HAVING A RADIUS OF 300.00 FEET; THENCE SOUTHWESTERLY ALONG SAID CURVE 77.68 FEET TO A POINT OF TANGENCY WITH A LINE PARALLEL WITH AND DISTANT EASTERLY, 50.00 FEET MEASURED AT RIGHT ANGLES FROM A 3/4" IRON PIPE ON SAID WESTERLY LINE OF THE EASTERLY 310.00 FEET OF LOTS 1 AND 2, DISTANT THEREON SOUTH 16°16'00" WEST, 622.92 FEET FROM SAID SOUTHWESTERLY LINE OF MISSION BOULEVARD; THENCE ALONG SAID PARALLEL LINE, SOUTH 16°16'00" WEST, 166.90 FEET TO THE BEGINNING OF A TANGENT CURVE CONCAVE NORTHEASTERLY, HAVING A RADIUS OF 30.00 FEET; THENCE SOUTHEASTERLY ALONG SAID CURVE, 47.18 FEET TO A POINT OF TANGENCY WITH A LINE PARALLEL WITH AND DISTANT NORTHERLY 30.00 FEET, MEASURED AT RIGHT ANGLES FROM THE NORTH LINE OF THE SOUTH 533.00 FEET OF SAID LOTS 9 AND 2; THENCE ALONG SAID PARALLEL LINE SOUTH 73°50'00" EAST, 845.00 FEET TO A TANGENT CURVE CONCAVE A NORTHWESTERLY HAVING A RADIUS OF 15.00 FEET; THENCE NORTHEASTERLY ALONG SAID CURVE, 23.54 FEET TO A POINT OF TANGENCY WITH THE WESTERLY LINE OF OPAL STREET, 60.00 FEET WIDE, AS SHOWN ON SAID MAP; THENCE ALONG SAID WESTERLY LINE, NORTH 16°16'00" EAST (NORTH 18°16'00" EAST), 423.37 FEET TO A POINT WHICH IS SOUTH 16°16'00" WEST (SOUTH 16°13'00" WEST), 130.00 FEET THEREON FROM ITS INTERSECTION WITH THE SOUTHWESTERLY LINE OF SAID MISSION BOULEVARD; THENCE PARALLEL WITH THE SAID SOUTHWESTERLY LINE OF MISSION BOULEVARD, NORTH 58°50'30" WEST, 150.00 FEET; THENCE PARALLEL WITH SAID WESTERLY LINE OF OPAL STREET, SOUTH 16°16'00" WEST, 20.00 FEET; THENCE PARALLEL WITH SAID SOUTHWESTERLY LINE OF MISSION BOULEVARD, NORTH 58°50'30" WEST (NORTH 58° 50' 00", 30" WEST), 150.00 FEET; THENCE PARALLEL WITH SAID WESTERLY LINE OF OPAL STREET, NORTH 16°16'00" EAST, 150.00 FEET TO A POINT IN SAID SOUTHWESTERLY LINE OF MISSION BOULEVARD DISTANT THEREON, NORTH 58°50'30" WEST, 300.00 FEET FROM ITS INTERSECTION WITH SAID WESTERLY LINE OF OPAL STREET; THENCE ALONG SAID SOUTHWESTERLY LINE, NORTH 58°50'30" WEST, 622.14 FEET TO THE POINT OF BEGINNING.

EXCEPT THAT PORTION DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE WESTERLY LINE OF OPAL STREET, 60.00 FEET WIDE, AS SHOWN ON SAID MAP DISTANT THEREON NORTH 16°16'00" EAST, 114.66 FEET (114.68 FEET) FROM ITS INTERSECTION WITH THE NORTH LINE OF THE SOUTH 533.00 FEET OF SAID LOT 9; THENCE AT RIGHT ANGLES NORTH 73°44'00" WEST, 341.94 FEET; THENCE NORTH 16°12'57" EAST, 574.74 FEET TO A POINT ON THE SOUTHERLY LINE OF THE COUNTY ROAD, KNOWN AS MISSION BOULEVARD; THENCE SOUTH 58°50'30" EAST, 53.88 FEET ON SAID SOUTHERLY LINE TO THE NORTHWEST CORNER OF THAT CERTAIN PARCEL DESCRIBED IN DEED TO ROBERT J. DROLET, A SINGLE MAN, RECORDED JANUARY 20, 1959 AS INSTRUMENT NO. 4869 OF OFFICIAL RECORDS; THENCE SOUTHWESTERLY 150.00 FEET ON THE WESTERLY LINE OF SAID PARCEL TO THE SOUTHWEST CORNER THEREOF; THENCE SOUTHEASTERLY, 150.00 FEET ON THE SOUTHERLY LINE THEREOF TO THE SOUTHEAST CORNER THEREOF; THENCE NORTHEASTERLY, 20.00 FEET ON THE EASTERLY LINE TO THE SOUTHWEST CORNER OF THE CERTAIN PARCEL DESCRIBED IN DEED TO GEORGE C. POOLEY, ET UX, RECORD JANUARY 14, 1960 AS 1960-3350 OF OFFICIAL RECORDS; THENCE SOUTHEASTERLY 150.00 FEET ON THE SOUTHERLY LINE OF SAID PARCEL TO THE SOUTHEASTERLY CORNER THEREOF, BEING A POINT ON THE WESTERLY LINE OF OPAL STREET, 60.00 FEET WIDE; THENCE SOUTHWESTERLY ON THE NORTHWESTERLY LINE OF SAID OPAL STREET, TO THE POINT OF BEGINNING.

ALSO EXCEPT THAT PORTION DESCRIBED IN DEED TO THE COUNTY OF RIVERSIDE, RECORDED OCTOBER 7, 1963 AS 1963-105745, OF OFFICIAL RECORDS.

ALSO EXCEPT THAT PORTION DESCRIBED AS FOLLOWS: COMMENCING AT A POINT ON THE WESTERLY LINE OF OPAL STREET, 60.00 FEET WIDE, AS SHOWN ON SAID MAP, DISTANT THEREON, NORTH 16°16'00" EAST, 114.66 FEET FROM ITS INTERSECTION WITH THE NORTH LINE OF THE SOUTH 533.00 FEET OF SAID LOT 9; THENCE AT RIGHT ANGLES, NORTH 73°44'00" WEST, 341.94 FEET; THENCE NORTH 16°12'57" EAST, 27.68 FEET TO THE TRUE POINT OF BEGINNING; THENCE CONTINUING NORTH 16°12'57" EAST, 30.00 FEET; THENCE NORTH 73°44'00" WEST, 30.00 FEET; THENCE SOUTH 16°12'57" WEST, 30.00 FEET; THENCE SOUTH 73°44'00"EAST, 30.00 FEET TO THE TRUE POINT OF BEGINNING.

APN: 182-031-002, 182-031-001 and, 182-022-002

TITLE EXCEPTIONS/EXCLUSIONS

2. EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS RESERVED IN A DOCUMENT;
   RESERVED BY: JURUPA LAND AND WATER COMPANY
   PURPOSE: PIPE LINES, DITCHES
   RECORDING DATE: AUGUST 13, 1889
   RECORDING NO: BOOK 101 PAGE 229 DEEDS OF SAN BERNARDINO COUNTY
   THE EXACT LOCATION AND EXTENT OF SAID EASEMENT IS NOT DISCLOSED OF RECORD.

3. EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO, AS GRANTED IN A DOCUMENT:
   GRANTED TO: SUNNY SLOPE MUTUAL WATER COMPANY, A CORPORATION
   PURPOSE: PIPELINES
   RECORDING DATE: NOVEMBER 21, 1955
   RECORDING NO: 1955-73946, IN BOOK 1823 PAGE 102 OF OFFICIAL RECORDS
   DOCUMENT NOT PROVIDED.

4. EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO, AS GRANTED IN A DOCUMENT:
   GRANTED TO: RUBIDOUX COMMUNITY SERVICES DISTRICT WATER DEPARTMENT, A MUNICIPAL CORPORATION
   PURPOSE: PIPES, CONDUITS
   RECORDING DATE: OCTOBER 19, 1962
   RECORDING NO: 1962-97388 OF OFFICIAL RECORDS
   DOCUMENT NOT PROVIDED.

6. MATTERS CONTAINED IN THAT CERTAIN DOCUMENT
   ENTITLED: NOTICE OF INTENT TO PRESERVE INTEREST
   RECORDING DATE: NOVEMBER 08, 1994
   RECORDING NO: 1994-426654 OF OFFICIAL RECORDS
   REFERENCE IS HEREBY MADE TO SAID DOCUMENT FOR FULL PARTICULARS.
   DOCUMENT NOT PROVIDED.

7. MATTERS CONTAINED IN THAT CERTAIN DOCUMENT
   ENTITLED: NOTICE OF INTENT TO PRESERVE INTEREST
   RECORDING DATE: NOVEMBER 08, 1994
   RECORDING NO: 1994-426655 OF OFFICIAL RECORDS
   REFERENCE IS HEREBY MADE TO SAID DOCUMENT FOR FULL PARTICULARS.
   DOCUMENT NOT PROVIDED.

8. EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO, AS GRANTED IN A DOCUMENT:
   GRANTED TO: PACIFIC BELL TELEPHONE COMPANY, A CALIFORNIA CORPORATION
   PURPOSE: PUBLIC UTILITIES AND COMMUNICATIONS
   RECORDING DATE: AUGUST 02, 2000
   RECORDING NO: 2000-297493 OF OFFICIAL RECORDS
   PLOTTED HEREON (SEE SHEET 2).

12. EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO, AS GRANTED IN A DOCUMENT:
   GRANTED TO: COUNTY OF RIVERSIDE, A POLITICAL SUBDIVISION
   PURPOSE: PUBLIC ROAD AND DRAINAGE PURPOSES
   RECORDING DATE: MAY 05, 2009
   RECORDING NO: 2009-0222700 OF OFFICIAL RECORDS
   PLOTTED HEREON (SEE SHEET 2).

LEGAL DESCRIPTION NOTE:

THE BEARINGS OR DISTANCES SHOWN IN PARENTHESES ( ) IN THE LEGAL DESCRIPTION SHOWN HEREON ARE PER THE TITLE REPORT AND PER DEED 2015-0108758. THESE APPEAR TO BE IN ERROR AND ARE CORRECTED IN THE DESCRIPTION SHOWN. THESE SHOULD BE CORRECTED IN ANY FUTURE TRANSFER DEED(S) AND THE MOST CURRENT TITLE REPORT.

CERTIFICATION

TO NINE OAK INVESTMENTS AND/OR ITS ASSIGNS AND SUCCESSORS AND FIDELITY NATIONAL TITLE INSURANCE COMPANY:

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2016 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 2, 3, 4, 6a, 6b, 7a, 7b1, 8, 10, 11, 13, 14, 16, 17, & 18 OF TABLE A THEREOF. THE FIELD WORK WAS COMPLETED ON 11/23/2020.

DATE OF PLAT OR MAP: 11/29/2020.

JOHN P. GERVAIS
PLS 8674

PROFESSIONAL LAND SURVEYOR
JOHN P. GERVAIS
No.8674
STATE OF CALIFORNIA

SURVEYOR'S NOTES

THIS SURVEY WAS MADE ON THE GROUND UNDER MY SUPERVISION.

INFORMATION SHOWN HEREON IS BASED ON FIDELITY NATIONAL TITLE INSURANCE COMPANY ORDER NO.: 012-23085364-E-BAM EFFECTIVE DATE: MAY 28, 2020 AT 7:30 A.M., AMENDED: JUNE 4, 2020, AS WELL AS A COPY OF EACH INSTRUMENT LISTED THEREIN, AND THE SUBJECT LAND AND EACH PARCEL THEREOF DESCRIBED IN THIS SURVEY IS THE SAME LAND AS DESCRIBED IN THE TITLE COMMENT INDICATED THEREIN.

THE SUBJECT PROPERTY HAS DIRECT PHYSICAL ACCESS TO MISSION BOULEVARD, OPAL STREET AND STOBBS WAY, ALL PUBLICLY DEDICATED AND MAINTAINED ROADS.

A PARCEL MAP, FINAL MAP OR RECORD OF SURVEY WILL BE REQUIRED TO BE FILED IN CONNECTION WITH THIS SURVEY.

TABLE "A" ITEMS

2. PROPERTY ADDRESS: 6322-6328 MISSION BOULEVARD, JURUPA VALLEY, CA PER TITLE REPORT.

3. PROPERTY IS IN ZONE X: AREA OF MINIMAL FLOOD HAZARD, PER FEMA MAP 06065C0043G, EFFECTIVE ON 08/28/2008.

4. GROSS AREA = 44,0150 S.F. / 10.10 AC. ±

6(A)(B). ZONING: C-1/C-P (GENERAL COMMERCIAL)

SEC. 9.115.040. – DEVELOPMENT STANDARDS.

BUILDING HEIGHT;

NO BUILDING OR STRUCTURE SHALL EXCEED FIFTY (50) FEET IN HEIGHT, UNLESS A GREATER HEIGHT IS APPROVED PURSUANT TO SECTION 9.240.370. IN NO EVENT, HOWEVER, SHALL A BUILDING OR STRUCTURE EXCEED SEVENTY-FIVE (75) FEET IN HEIGHT, UNLESS A VARIANCE IS APPROVED PURSUANT TO SECTION 9.240.270.

SETBACKS:

THERE ARE NO YARD REQUIREMENTS FOR BUILDINGS WHICH DO NOT EXCEED THIRTY-FIVE (35) FEET IN HEIGHT EXCEPT AS REQUIRED FOR SPECIFIC PLANS.

SEC. 9.240.120. – OFF-STREET VEHICLE PARKING.

PARKING:

GENERAL RETAIL; INCLUDING, BUT NOT LIMITED TO, FREESTANDING CONVENIENCE MARKETS, LIQUOR STORES AND SUPERMARKETS: 1 SPACE / 200 SQ. FT. OF GROSS FLOOR AREA.

GENERAL RETAIL; INCLUDING BUT NOT LIMITED TO, NEIGHBORHOOD, COMMUNITY AND REGIONAL SHOPPING CENTERS, INCLUDING THOSE WITH RESTAURANTS: 5½ SPACES / 1,000 SQ. FT. OF NET LEASABLE FLOOR AREA.

ZONING INFORMATION PER CITY OF JURUPA WEBSITE AS OF 11/29/2020. INFORMATION IS DEEMED RELIABLE BUT NOT GUARANTEED. A ZONING REPORT OR LETTER WAS NOT PROVIDED BY THE CLIENT. IT IS THE RESPONSIBILITY OF THE INSURED TO VERIFY THE ZONING INFORMATION.

7(A)(B1) EXTERIOR DIMENSIONS OF ALL BUILDINGS & SQUARE FOOTAGE OF EXTERIOR BUILDING AT GROUND LEVEL SHOWN HEREON.

8. SUBSTANTIAL FEATURES OBSERVED IN THE PROCESS OF CONDUCTING THE SURVEY ARE SHOWN HEREON.

10. THE BUILDING WALL SHOWN HEREON AS BEING 0.5' & 0.8' EAST OF THE PL, APPEARS TO BE AN OLD PARTY (COMMON) WALL WITH THE ADJOINING BUILDING, NOW DEMOLISHED.

11. LOCATION OF UTILITIES EXISTING ON OR SERVING THE SURVEYED PROPERTY AS DETERMINED BY OBSERVED EVIDENCE & UTILITY MARK OUTS FROM PRIOR SURVEY IN AREA OF DEVELOPMENT ONLY.

13. ADJACENT OWNERS SHOWN HEREON.

14. DISTANCE TO NEAREST INTERSECTION SHOWN HEREON. (SUBJECT PROPERTY IS ADJACENT TO THE NEAREST INTERSECTIONS).

16. THERE IS NO OBSERVABLE EVIDENCE OF EARTH MOVING WORK, BUILDING CONSTRUCTION OR BUILDING ADDITIONS WITHIN RECENT MONTHS.

17. SURVEYOR IS NOT AWARE OF ANY PROPOSED CHANGES IN STREET RIGHT OF WAY LINES. THERE IS NO EVIDENCE OF RECENT STREET OR SIDEWALK CONSTRUCTION OR REPAIRS OBSERVED IN THE PROCESS OF CONDUCTING THE FIELDWORK.

18. THERE WERE NO FIELD DELINEATIONS OF WETLANDS OBSERVED DURING THE COURSE OF THE SURVEY.

Revisions			
No.	Description	By	Date

BASIS OF BEARINGS:

THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CENTERLINE OF OPAL STREET PER RS 140/50, I.E. N16°16'00"E

ALTA/NSPS LAND TITLE SURVEY

PORTIONS OF LOT 1, 2, 9 &10, BLOCK "B"
MB 09/34 (ADDITION OF WEST RIVERSIDE)
JURUPA VALLEY, RIVERSIDE COUNTY, CA

Drawn By: JPG	Project No. 18-131	Date: 11/29/2020
Checked By:		Sheet 1 of 2

PROJECT NAME:
Jurupa Valley Development

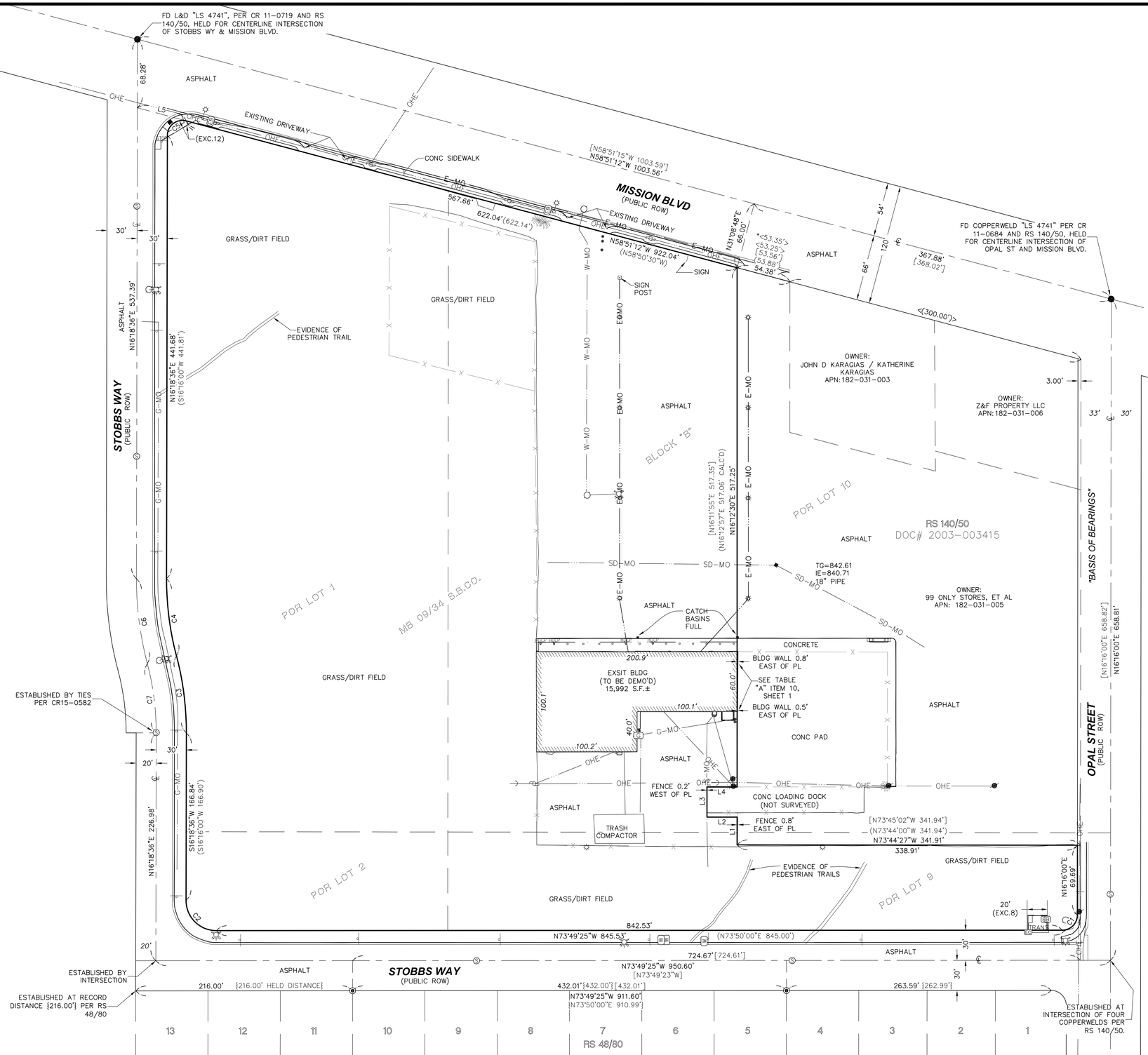
LG LAND SURVEYING, INC.
"Quality Service You Can Count On"
30355 CALLEJO FELIZ TER
VALLEY CENTER, CA 92082
p: 619-535-1172
f: 619-618-1972
www.lglsinc.com

Line Table		
Line #	Bearing	Length
L1	N16°12'30"E	27.68'
L3	N16°12'30"E	30.00'
L2	N73°44'27"W	30.00'
L4	N73°44'27"W	30.00'
L5	N58°51'12"W	50.53'

Line Table – Record ( ), [ ]		
Line #	Bearing	Length
(L1	N16°12'57"E	27.68')
(L3	N16°12'57"E	30.00')
(L2	N73°44'00"W	30.00')
(L4	N73°44'00"W	30.00')
(L5	N58°50'30"W	50.55')
[L1	N16°11'55"E	27.68']
[L3	N16°11'55"E	30.00']
[L2	N73°45'02"W	30.00']
[L4	N73°45'02"W	30.00']

Curve Table			
Curve #	Radius	Delta	Length
C1	15.00'	89°54'35"	23.54'
C2	30.00'	90°08'02"	47.19'
C3	300.00'	14°50'09"	77.68'
C4	300.00'	14°50'09"	77.68'
C5	15.00'	104°50'12"	27.45'
C6	330.00'	14°50'09"	85.45'
C7	270.00'	14°50'09"	69.91'

Curve Table – Record ( )			
Curve #	Radius	Delta	Length
(C1	15.00'		23.54')
(C2	30.00'		47.18')
(C3	300.00'		77.68')
(C4	300.00'		77.68')
(C5	15.00'		27.46')



LEGEND:

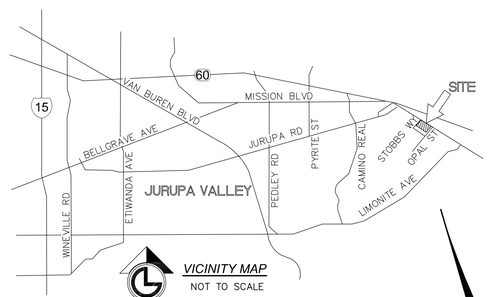
	Backflow Assembly
	Bollard
EB	Electric Box
EC	Electric Cabinet
E	Electric Meter
TRANS	Electric Transformer
	Fire Hydrant
G	Gas Meter
	Guy Pole/Wire
IR	Irrigation Box
	Light Pole
	Power Pole
	Roof Drain
HDCP	Sign HDCP
	Sign Misc
STOP	Sign Stop
	Sewer Cleanout
S	Sewer Manhole
	Storm Catch Basin
	Street Light
TVLT	Telephone Vault
TS	Traffic Signal Box
	Tree-palm
	Utility Pole
W	Water Meter
	Water Valve

X — X — X — Chain Link Fence
E-MO — Electric Mark Out
G-MO — Gas Mark Out
S-MO — Sewer Mark Out
SD-MO — Storm Drain Mark Out
T-MO — Telephone Mark Out
W-MO — Water Mark Out
OHE — Overhead Electric
Block Wall

MONUMENT LEGEND / ESTABLISHMENT NOTES / RECORD DATA:

- ● FD MONUMENT AS NOTED HEREON.
- ◉ FD NAIL HOLE IN CONCRETE PER RS 140/50, USED TO ESTABLISH CENTERLINE OF STOBBS WAY.
- ( ) RECORD DATA (ACTUAL OR CALC'D) PER DOC# 2015-0108758.
- [ ] RECORD DATA (ACTUAL OR CALC'D) PER RS 140/50.
- { } RECORD DATA (ACTUAL OR CALC'D) PER RS 48/80.
- < > RECORD DATA (ACTUAL OR CALC'D) PER DOC# 2003-003415.
- * RECORD DEED DISTANCE 54.25' PER < >, THE ACTUAL DISTANCE IS 54.35' PER THE CALCULATED DESCRIPTION.

NONE OF THE MONUMENTS PURPORTEDLY SET BY RS 140/50 WERE FOUND.



VICINITY MAP
NOT TO SCALE

50 25 0 50 100 150
SCALE: 1"=50'

N

Revisions			
No.	Description	By	Date

BASIS OF BEARINGS:
THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CENTERLINE OF OPAL STREET PER RS 140/50, I.E. N16°16'00"E

ALTA/NSPS LAND TITLE SURVEY

PORTIONS OF LOTS 1, 2, 9 &10, BLOCK "B"
MB 09/34 (ADDITION OF WEST RIVERSIDE)
JURUPA VALLEY, RIVERSIDE COUNTY, CA

Drawn By: JPG	Project No. 18-131	Date: 11/29/2020
Checked By:		Sheet 2 of 2

PROJECT NAME:
Jurupa Valley Development

LG LAND SURVEYING, INC.
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30355 CALLEJO FELIZ TER
VALLEY CENTER, CA 92082
p: 619-535-1172
f: 619-618-1972
www.lglsinc.com

Appendix 5: LID Infeasibility

N/A

Appendix 6: BMP Design Details

BMP Sizing, Design Details, and other Supporting Documentation

D.5 LID BMP Sizing

Each LID BMP must be designed to ensure that the Design Capture Volume will be addressed by the selected BMPs. First**,** calculate the Design Capture Volume for each LID BMP using the V_{BMP} worksheet in Appendix F of the LID BMP Design Handbook. Second**,** design the LID BMP to meet the required V_{BMP} using a method approved by the Copermittee. Utilize the worksheets found in the LID BMP Design Handbook or consult with your Copermittee to assist you in correctly sizing your LID BMPs. Complete Table D.3 below to document the Design Capture Volume and the Proposed Volume for each LID BMP. Provide the completed design procedure sheets for each LID BMP in Appendix 6. You may add additional rows to the table below as needed.

Table D.3 DCV Calculations for LID BMPs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperviousness Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Enter BMP Name / Identifier Here*		
	[A]		[B]	[C]	[A] x [C]			
DMA-1	*322,340*	*Roof/Pavement*	*1.00*	*0.892*	*287,528*			
DMA-1	*43,854*	*Landscape*	*0.10*	*0..892*	*39,118*			
	A_T = 366,194				Σ= [D] 326,646	[E]=0.68	$[F] = \frac{[D]x[E]}{12}$ =18,510 CF	***18,528***

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

[E] is obtained from Exhibit A in the WQMP Guidance Document

[G] is obtained from a design procedure sheet, such as in LID BMP Design Handbook and placed in Appendix 6

Appendix 7: Hydromodification

Supporting Detail Relating to Hydrologic Conditions of Concern

Appendix 8: Source Control

Pollutant Sources/Source Control Checklist

Appendix 9: O&M

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

To be completed during Permit phase of project

Appendix 10: Educational Materials

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

Contactor® & Recharger®
Stormwater Chambers

Installation Instructions
for CULTEC Stormwater Management Systems

Contactor® Models Field Drain™ C-4HD™, 100HD™
Recharger® Models 150XLHD™, 180HD™, 280HD™, & 330XLHD™

The Founder of Plastic Chamber Technology

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CULTEC, Inc.
P.O. Box 280
878 Federal Road
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Visit www.cultec.com/downloads.html for Product Downloads and CAD details.

Doc ID: CULG012 12-17
December 2017
You are using version CULG012 12-17of our CULTEC Stormwater Installation Instructions for Contactor® Models Field Drain™ C-4HD™, 100HD™, Recharger® Models 150XLHD™, 280HD™, & 330XLHD™

These instructions are for single-layer traffic applications only. For multi-layer applications, contact CULTEC.
All illustrations and photos shown herein are examples of typical situations. Be sure to follow the engineer's drawings.
Actual designs may vary.

Required Materials and Equipment

- Proper geotechnical soil evaluation by a qualified engineer or soil scientist to determine suitability of structural installation
- OSHA compliance
- CULTEC warning tape, or equivalent
- Assurances from local utilities that no underground gas, electrical or other potentially dangerous pipelines or conduits are already buried at the site
- Acceptable 1 – 2 inch (25 - 51 mm) washed, crushed stone as shown in Table 4, page 19. Cleanliness of stone to be verified by engineer.
- Acceptable fill material as shown in Table 5, page 20.
- CULTEC No. 410™ non-woven geotextile or equivalent (See Table 3, page 19).
- All CULTEC chambers and accessories as specified in the engineer's plans including CULTEC No. 410™ non-woven geotextile, CULTEC StormFilter® and CULTEC No. 66™ woven geotextile, where applicable. Check CULTEC chambers for damage prior to installation. Do not use damaged CULTEC chambers. Contact your supplier immediately to report damage or packing-list discrepancies.
- Reciprocating saw or router
- Stone bucket
- Stone conveyor and/or tracked excavator
- Transit or laser level measuring device
- Compaction equipment with maximum gross vehicle weight of 12,000 lbs (5,440 kgs).
- Vibratory rollers may only be used on the stone base prior to the installation of chambers.

Requirements for CULTEC Chamber System Installations

- CULTEC systems must be designed and installed in accordance with CULTEC's minimum requirements. Failure to do so will void the limited warranty. To request a copy of the CULTEC limited warranty, call CULTEC at 203-775-4416 or visit www.cultec.com.
- Installing contractors are expected to comprehend and use the most current installation instructions prior to beginning a system installation. If there is any question as to whether these are the most current instructions, contact CULTEC at (203) 775-4416 or visit www.cultec.com.
- Contact CULTEC at least thirty days prior to system installation to arrange for a pre-construction meeting.
- All CULTEC system designs must be certified by a registered professional engineer.
- Use these installation instructions as a guideline only. Actual design may vary. Refer to approved construction drawings for job-specific details. Be sure to follow the engineer's drawings as your primary guide.
- System cover/backfill requirements will vary based on CULTEC chamber model. Please refer to Table 6 on page 20 and engineer's drawings.
- Any discrepancies with the system sub-grade soil's bearing capacity must be reported to the design engineer.
- CULTEC No. 410 non-woven geotextile must be used as specified in the engineer's drawings.
- CULTEC requires the contractor to refer to CULTEC's Installation Instructions Tables 1 - 6 shown on pages 18-20, concerning vehicular traffic. Responsibility for preventing vehicles that exceed CULTEC's requirements from traveling across or parking over the chamber system lies solely with the contractor throughout the entire site construction process. The placement of warning tape, temporary fencing, and/or appropriately located signs is highly recommended. Imprinted warning tape is available from CULTEC. For Acceptable Vehicle Load information, refer to Tables 1 and 2 on page 18.
- Erosion and sediment-control measures must meet local codes and the design engineer's specifications throughout the entire site construction process.

CULTEC Chamber Specification Information

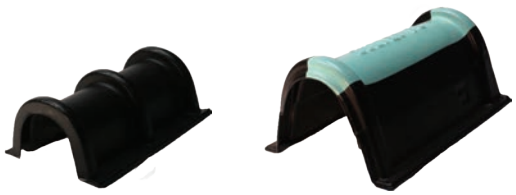
	Size (LxWxH)	Installed Length	Length Adjust-ment	Max. Inlet in End Wall	Max. O.D. in Side Portal	Compatible Feed Connector
Contactor® Field Drain C-4HD	8.5' x 48" x 8.5" 2.59 m x 1219 mm x 216 mm	8' 2.44 m	0.5' 0.15 m	4.5" 114 mm	n/a	n/a
Contactor® 100HD	8′ x 36″ x 12.5″ 2.44 m x 914 mm x 318 mm	7.5' 2.29 m	0.5' 0.15 m	10" 250 mm	6.9″ 175 mm	HVLV® SFCx2 Feed Connector
Recharger® 150XLHD	11' x 33" x 18.5" 3.13 m x 838 mm x 470 mm	10.25' 2.87 m	0.75' 0.28 m	12" 300 mm	10.25" 260 mm	HVLV® FC-24 Feed Connector
Recharger® 180HD	7.33′ x 36″ x 20.5″ 2.33 m x 914 mm x 521 mm	6.33′ 1.93 m	1' 0.30 m	15" 375 mm	12.25" 311 mm	HVLV® FC-24 Feed Connector
Recharger® 280HD	8′ x 47″ x 26.5″ 2.44 m x 1194 mm x 673 mm	7' 2.13 m	1' 0.30 m	18" 450 mm	12.25" 311 mm	HVLV® FC-24 Feed Connector
Recharger® 330XLHD	8.5' x 52" x 30.5" 2.59 m x 1321 mm x 775 mm	7' 2.13 m	1.50' 0.46 m	24" 600 mm	11.75" 298 mm	HVLV® FC-24 Feed Connector

CULTEC Heavy Duty (HD) chambers must be used for any traffic applications. CULTEC Heavy Duty chambers have a colored stripe permanently affixed along the full length of the chamber. These models listed that do not have a stripe must not be used for traffic applications.
All dimensions are nominal. Actual dimensions may vary on-site due to shipping and temperature.

Shown left-to-right: Contactor Field Drain C-4HD. Contactor 100HD, Recharger 150XLHD, Recharger 280HD, and Recharger 330XLHD.

CULTEC HVLV Feed Connector Specification Information

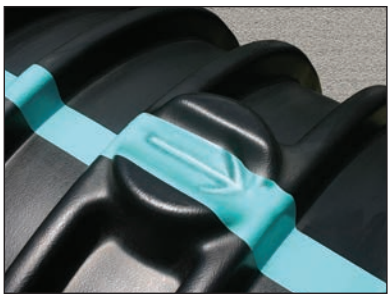
Model	Size (LxWxH)	Compatible Models	Installed Length (exposed)
HVLV® SFCx2 Feed Connector	19.7″ x 12″ x 7.6″ 500 mm x 305 mm x 194 mm	Contactor® 100HD	For Contactor 100HD: 4″ (102 mm) typ.
HVLV® FC-24 Feed Connector	12″ x 16″ x 24.2″ 305 mm x 406 mm x 614 mm	Recharger® 150XLHD Recharger® 180HD Recharger® 280HD Recharger® 330XLHD	For Recharger 150XLHD: 6″ (152 mm) typ. For Recharger 180HD: 3″ (76 mm) typ. For Recharger 280HD: 5″ (127 mm) typ. For Recharger 330XLHD: 6″ (152 mm) typ.



Shown left-to-right: HVLV SFCx2 Feed Connector and HVLV FC-24 Feed Connector

Site Preparation and Excavation

- Excavate and level the area per engineer's drawings. Refer to plan view and cross-section details and excavate bed to accommodate chambers and manifold system. Be sure to allow for a minimum 12 inch (305 mm) stone border around the perimeter of the system and unforeseen overages in your excavation calculations.
- Remove any standing water and maintain positive drainage of the site throughout the installation. Dewatering procedures must be used if necessary.
- Prepare the sub-grade soil for the chamber bed as specified by the engineer's drawings.
- Place CULTEC No. 410™ non-woven geotextile (or equivalent — see Table 3, page 19) on the excavated bed bottom and perimeter sidewalls as specified by the engineer's drawings. CULTEC No. 410 non-woven geotextile is required on the sides and over the top of the system. It is also recommended on the system bottom. Overlap the geotextile by at least 24 inches (610 mm) where the fabric edges meet.
- Disperse a level base of 1 to 2 inch (25 - 51 mm) diameter washed, crushed stone over the entire area of the bed bottom (see Table 4, page 19 for stone requirements). Refer to the engineer's drawings for sub-grade soil preparation and required stone foundation thickness.
- Compact the stone base to achieve a flat, level surface. Vibratory rollers may only be used on the stone base prior to the installation of chambers. Use of vibratory rollers is strictly prohibited on all other backfill layers.



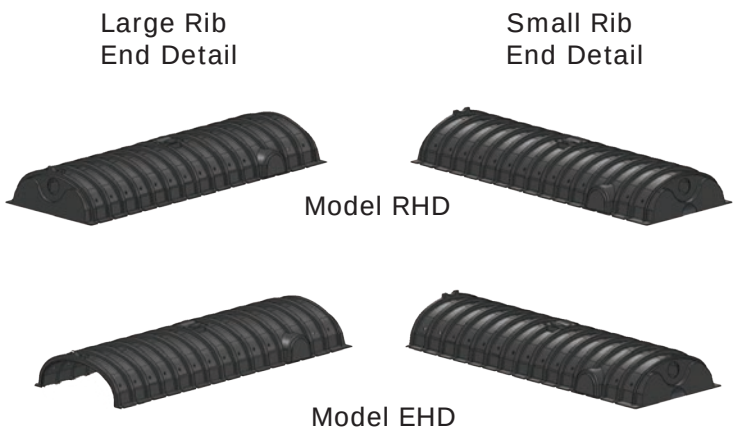
Directional arrows located on the top of the chamber point towards the Small Rib End. The open end of the next chamber overlaps the small rib end of the preceding chamber.

End Detail Information for CULTEC Contactor® Models Field Drain C-4HD and 100HD

Directional arrows located on the top of the chamber point towards the Small Rib End.

Model RHD is a **starter / stand alone** unit with two full end walls. They are used to start lines or can be used singularly. They may also be trimmed into model type EHD.

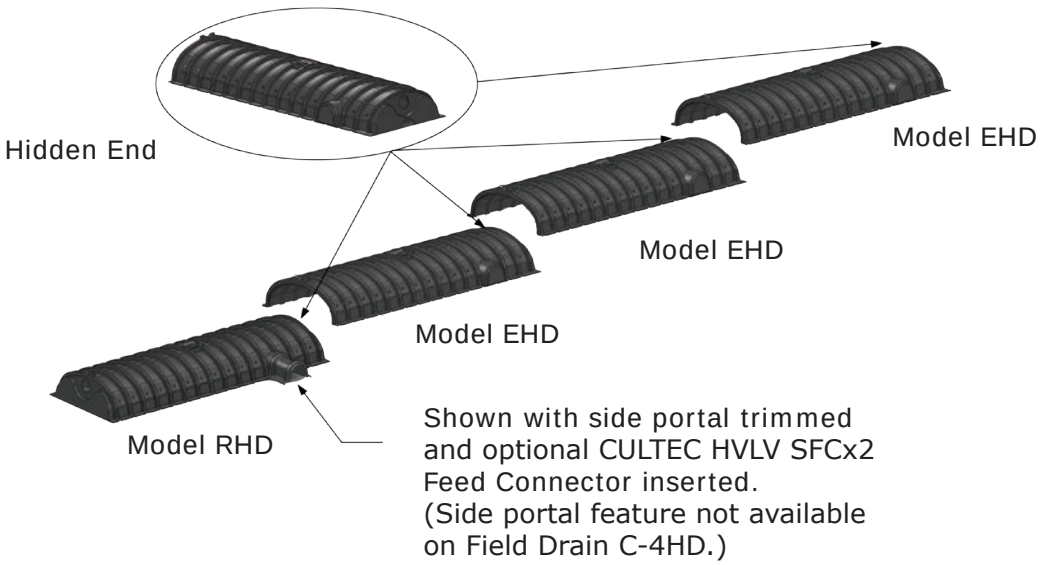
Model EHD is a **middle / end unit** with one closed end wall and one open end. They are used to continue lines and also used to end a line.



Typical Installation Method for CULTEC Contactor® Models Field Drain C-4HD and 100HD

Interlock Model RHD to EHD using the patented overlapping rib connection.

- Start each row with a Model RHD.
- Use Model EHD to continue the length of your row.
- End your row by using a Model EHD.



End Detail Information for CULTEC Recharger® Models 150XLHD, 180HD, 280HD, and 330XLHD

Directional arrows located on the top of the chamber point towards the Small Rib End.

Large Rib End Detail | Small Rib End Detail

Model RHD is a **stand alone** unit with two fully closed end walls. They are used when a single unit is required. They may also be trimmed into model types SHD, IHD, or EHD.

Model RHD

Model SHD is a **starter** unit with one closed end wall and one partially open end wall. They are used to start a chamber row.

Model SHD

Model IHD is an **intermediate** unit with one fully open end and one partially open end wall. They are used to continue the length of a line of chambers.

Model IHD

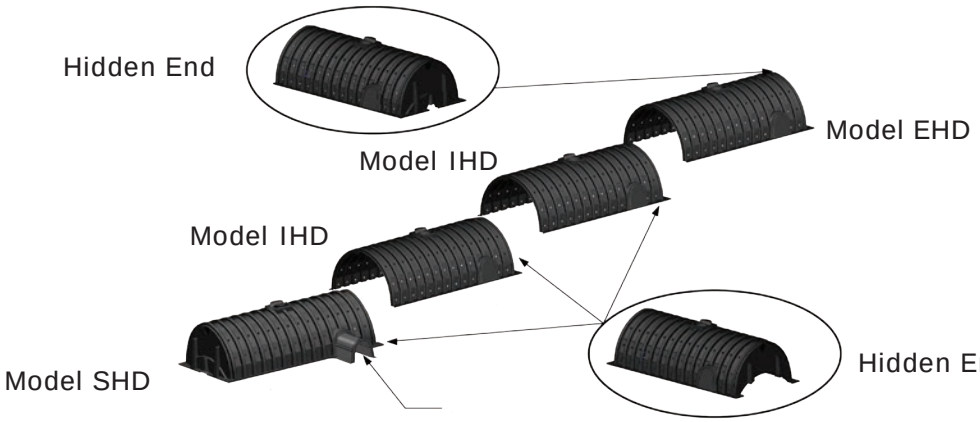
Model EHD is an **end unit** with one fully open end and one fully closed end wall. They are used to end a chamber run.

Model EHD

Typical Installation Method for CULTEC Recharger® Models 150XLHD, 180HD, 280HD, and 330XLHD

Interlock Model SHD to IHD using the patented overlapping rib connection. Finish the row with Model EHD.

- Start each row with a Model SHD.
- Use Model IHD to continue the length of your row.
- End your row by using a Model EHD.



Shown with side portal trimmed and optional CULTEC HVLV Feed Connector inserted.

Chamber Preparation and Installation

CULTEC Contactor® and Recharger® chambers have the distinctive features of a fully formed end wall and over-lapping rib connection. CULTEC chamber ribs are dimensionally sized with an open large rib and a closed smaller rib to allow for an easy interlocking rib connection.

- Identify and group the different chamber types to ensure proper placement and usage as outlined on pages 6 - 7.
- Place one Starter Unit (Model S for Recharger® series, Model R for Contactor® series) as designed for each row of units to be installed. Directional arrows point towards the small rib end of the chamber.
- If using the side portal internal manifold feature, trim the side portal(s) according to guidelines located on the sidewall of the chamber, as required - see page 11. Insert one end of the HVLV Feed Connector into the trimmed portal to create the internal manifold. Refer to Manifold Installation section on page 11.

- Place middle chamber (Model I for Recharger® series, Model E for Contactor® series) so the directional arrow located in the center of the unit points downstream towards the end of the line. Overlap the large open end rib over the small rib of the preceding chamber's end wall, interlocking the chambers together - see page 6 - 7. When placing chambers, take care to maintain center-to-center separation requirements, measuring from the base of the chamber.
- To ease backfilling requirements, only install as many middle chambers as the stone-laying bucket or conveyor can reach.
- Place stone as outlined on page 15 taking care not to drop stone over the last rib to be overlapped.

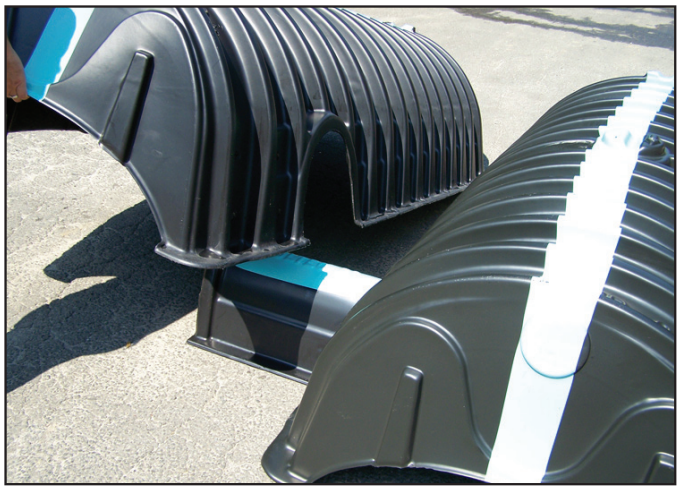
- Continue chamber and stone placement using middle chambers (Model I for Recharger® series, Model E for Contactor® series) to extend the length of the row.
- Model E chamber is used to end the line.
- Prior to the placement of the next line of chambers, the level and alignment of the chamber units shall be checked and corrected, where needed.

Installation of Manifold

Utilize the side portals located on the chamber as an internal manifold in locations where indicated on the engineer's drawings. HVLV® Feed Connectors are inserted into the portals to promote flow. An additional external manifold is not required unless specified by the engineer's design.

- CULTEC No. 66 woven geotextile is to be placed under all chambers utilizing the internal manifold feature and under all chambers accepting inlet/outlet pipe connections per engineer's drawings. If inserting a pipe 18" (450 mm)* diameter or larger into the CULTEC chamber, the use of CULTEC No. 66 woven geotextile is recommended to prevent washout. See detail on page 13.

- Most installations are designed with the internal manifold located at the ends of the chamber bed. However, the side portal internal manifold feature allows for the manifold to be located at any point within the chamber run. Refer to system design for manifold location(s). Install chambers according to directional arrows located in the top center of the unit.



- Using a reciprocating saw or router, trim the sidewall portals of the units that are to receive the HVLV Feed Connectors. Feed connectors may be placed on any chamber requiring a manifold, as indicated by the engineer's drawings. See page 11.

- Place the HVLV Feed Connectors into the side portal of the chambers per engineer's drawings.

- Check for correct center-to-center spacing of chamber runs according to engineer's drawings before proceeding to next row.

- Insert inflow/outflow pipe(s) into end wall or side portal as detailed on engineer's drawings. See page 4 for maximum inlet sizes for end wall and side portals. There is no need to feed every row if utilizing the internal manifold feature.

The side portal feature is not available on the Contactor Field Drain C-4HD. If manifold installation does not include CULTEC's side portal internal manifold, proceed according to the engineer's drawings for pipe manifold installation.

*Different chamber sizes accept varying maximum pipe connections. See page 4 for details.

How to Trim the CULTEC Chamber to Accommodate Pipe on End Wall

When using a conventional pipe manifold or inlet / outlet pipes, the contractor is required to trim the CULTEC Chamber on site.

Here are some quick steps to ensure a successful outcome:

- Lay out chambers according to engineered plans.
- Directional arrows located at the top of the chamber point towards the small rib end.
- Line up the pipe on the chamber end wall to the designated pipe elevation as detailed on the engineer's drawing.
- Using a grease pen, outline the pipe on the end wall of the CULTEC chamber.
- Drill a hole on the chamber end wall large enough to accommodate a saw bit.
- Following the grease pen outline, use a reciprocating saw to trim out the opening to accommodate the pipe. Trimming should be within 1/4" (6 mm) tolerance of pipe O.D.
- Insert the pipe or fitting a minimum of 8" (203 mm) into the chamber. This is not required to be a watertight connection.
- Backfill as noted in the installation instructions and engineering details.

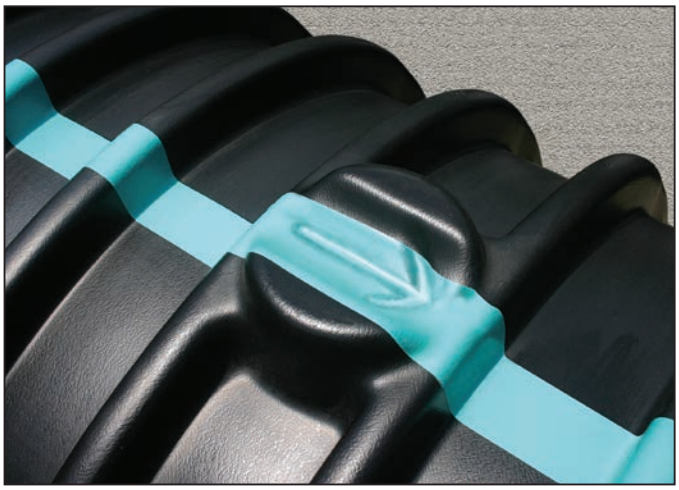
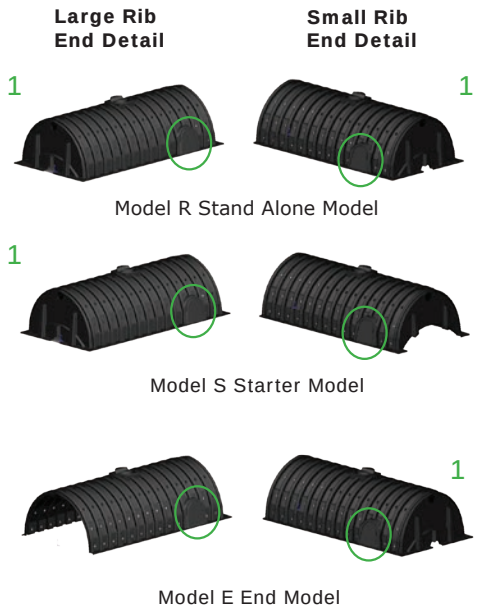


Fig. 1

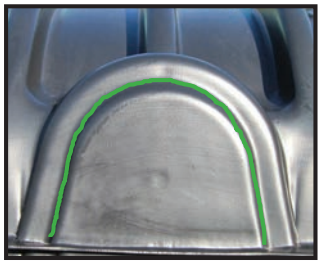


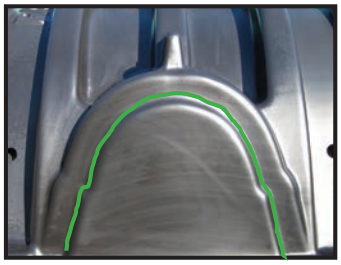
Trimming may only be performed on fully closed end walls (indicated by Number 1 in Fig. 1) or side portal areas (See green circles in Fig. 1 for side portal locations). Pipe may not be inserted into the sidewall of the chamber unless it is within the side portal trim lines. See page 11-12 for more information on trimming side portals.

How to Trim the Side Portal to Accommodate HVLV Feed Connector for Internal Manifold

When using the side portal internal manifold feature, the contractor is required to trim the side portal of the CULTEC Chamber on site.

- Following the guides on the side portal, use a reciprocating saw to trim out the opening to accommodate the HVLV Feed Connector. Trimming should be within 1/4" (6 mm) tolerance of the HVLV Feed Connector.
- Insert the HVLV Feed Connector a minimum of 8" (203 mm) into the chamber. This is not required to be a watertight connection.





Shown left-to-right: Guidelines to follow for correct trimming for SFCx2 and FC-24 portals. Do not cut outside of the side portal area guides.

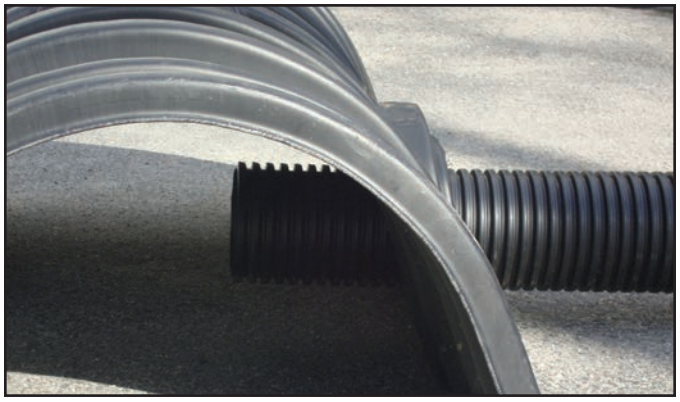
Trimming may only be performed on the side portal area. Side entry in any other location is unacceptable.

Model	Compatible Feed Connector
Contactor 100HD	HVLV SFCx2 Feed Connector
Recharger 150XLHD	HVLV FC-24 Feed Connector
Recharger 180HD	HVLV FC-24 Feed Connector
Recharger 280HD	HVLV FC-24 Feed Connector
Recharger 330XLHD	HVLV FC-24 Feed Connector

How to Trim the Side Portal to Accommodate Pipe for Side Entry

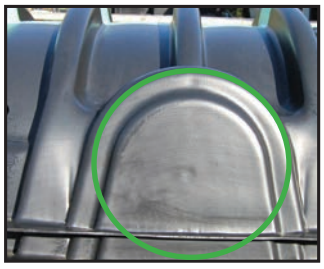
When using the side portal feature as an inlet /outlet location, the contractor is required to trim the side portal of the CULTEC Chamber on site.

- Line up the pipe on the chamber side portal to the designated pipe elevation as detailed on the engineer's drawing. Pipe outside diameter (O.D.) may not exceed those listed in Table 1.
- Using a grease pen, outline the pipe on the side portal of the CULTEC chamber. See Fig. 1 for acceptable trim area.
- Drill a hole on the chamber side portal large enough to accommodate a saw bit.
- Following the grease pen outline, use a reciprocating saw to trim out the opening to accommodate the pipe. Trimming should be within 1/4" (6 mm) tolerance of pipe O.D.



- Insert the pipe or fitting a minimum of 8" (203 mm) into the chamber. This is not required to be a watertight connection.

Fig. 1



Shown left-to-right: Guidelines to follow for correct trimming for SFCx2 and FC-24 portals when using pipe. Do not cut outside of the side portal area guides.

Trimming may only be performed on the side portal area. Side entry in any other location is unacceptable.

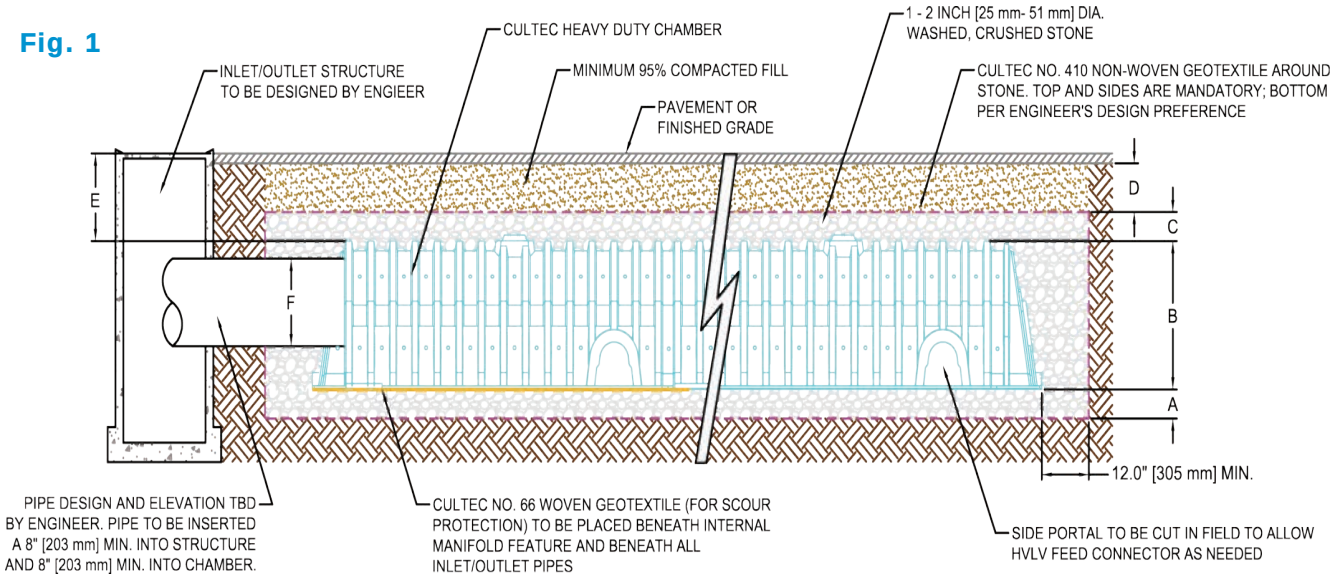
Table 1

Model	Max. Allowable O.D. in Side Portal	
Contactor 100HD	6.9"	175 mm
Recharger 150XLHD	10.25"	260 mm
Recharger 180HD	12.25"	311 mm
Recharger 280HD	12.25"	311 mm
Recharger 330XLHD	11.75"	298 mm

Typical Cross Section for Hi-Flow Pipes

18" (450 mm) diameter or larger

Fig. 1



See Fig. 1	Description	Contactor 100HD	Recharger 150XLHD	Recharger 180HD	Recharger 280HD	Recharger 330XLHD
A	Min. depth of stone base	6″ 152 mm	6″ 152 mm	6″ 152 mm	6″ 152 mm	6″ 152 mm
B	Chamber Height	12.5" 318 mm	18.5" 470 mm	20.5" 521 mm	26.5″ 673 mm	30.5" 775 mm
C	Min. depth of stone required above units for traffic applications	6″ 152 mm	6″ 152 mm	6″ 152 mm	6″ 152 mm	6″ 152 mm
D	Min. depth of required 95% compacted fill:					
	For paved applications	8" 203 mm	8" 203 mm	8" 203 mm	8" 203 mm	10" 254 mm
	For unpaved applications	10" 254 mm	10" 254 mm	10" 254 mm	10" 254 mm	12" 305 mm
E	Max. depth of cover allowed above crown of chamber	12' 3.66 m	12' 3.66 m	12' 3.66 m	12' 3.66 m	12' 3.66 m
F	Max. inlet/outlet pipe size into the end wall of the chamber	10" 250 mm	12" 300 mm	15" 375 mm	18"[1] 450 mm[1]	24"[1] 600 mm[1]

[1] For Recharger Models 280HD, and 330XLHD, CULTEC No. 66 woven geotextile to be placed beneath all chambers accepting inlet piping connections greater than 18" (450 mm) diameter (see Fig. 1).

Inspection Port Detail for Paved Traffic Applications

Does not apply for Contactor C-4HD

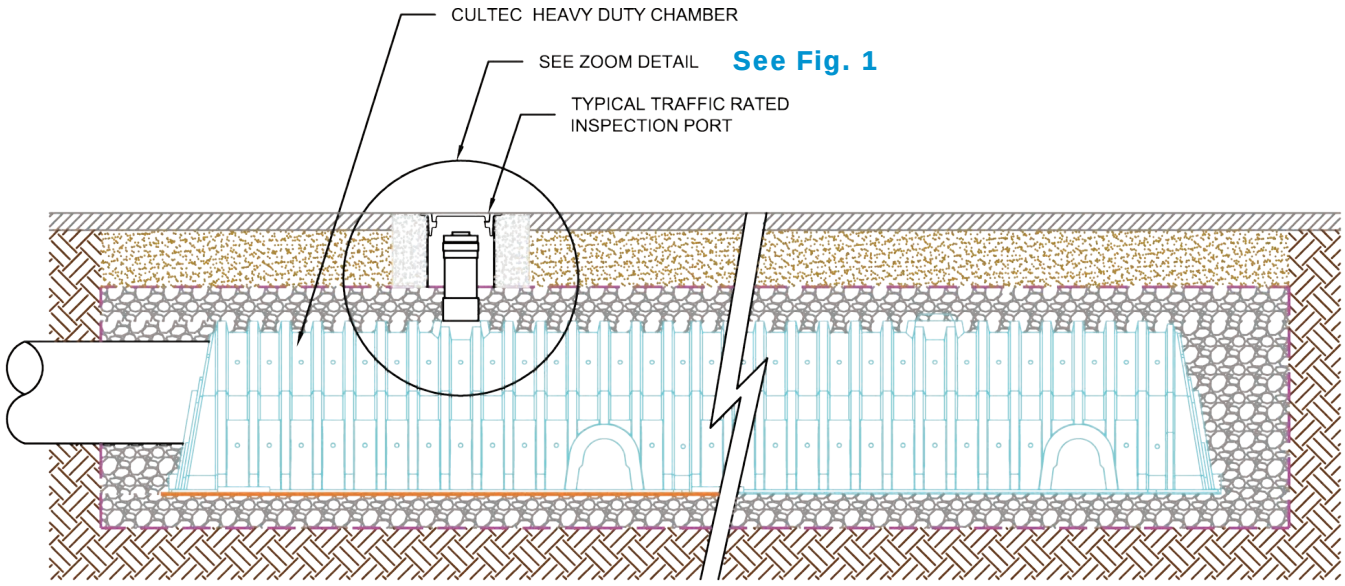
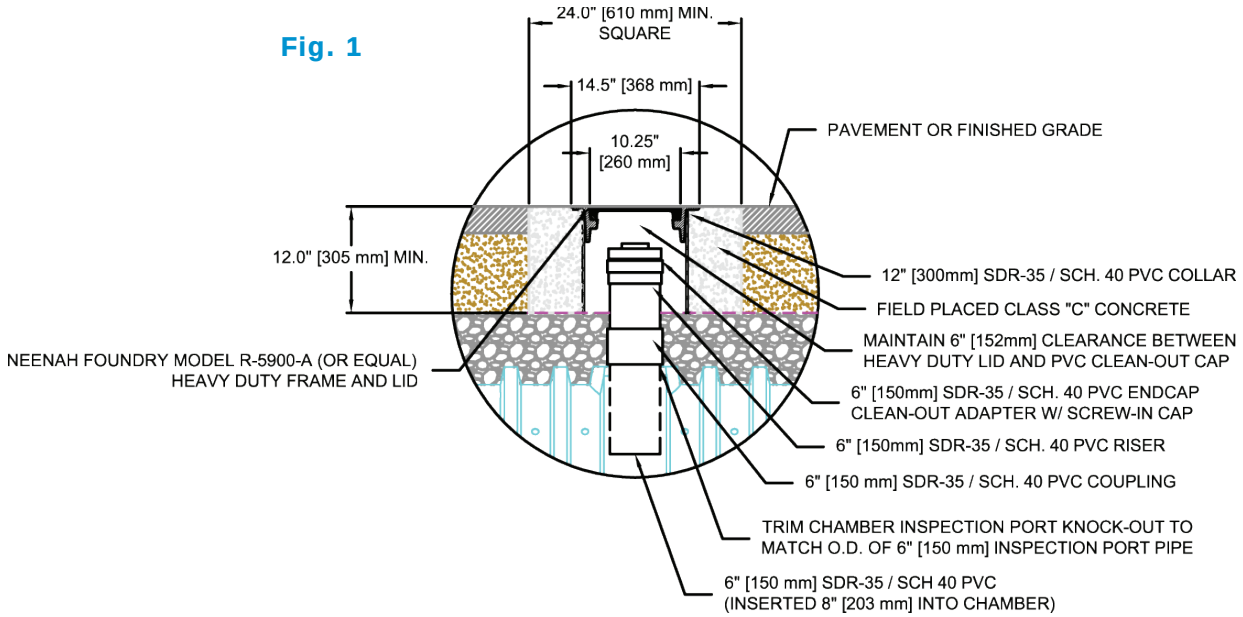


Fig. 1



Trim inspection port knock-out with reciprocating saw or hole-saw.
Corrugated pipe is not suitable for inspection port.
A belled end pipe may be used as replacement to configuration depicted. Belled-end may rest on outside of chamber.

Embedment Stone Backfill

Backfill using washed, crushed stone as specified in Table 4, page 19 and Table 5, page 20. To maintain row separation distance and prevent chamber displacement, slowly distribute stone on top of the center of the chamber crown so that stone trickles down and builds between chamber rows as required. Stone column differential should not exceed 12" (300 mm) between adjacent chamber rows or between chamber rows and perimeter.

Place the stone carefully over the centerline of the chamber crown. Embedment stone must only be placed by an excavator or telescoping conveyor boom. Placement of embedment stone with a bulldozer is not an acceptable method of installation and may cause damage to the chambers. Any chambers damaged using an unacceptable method of backfill are not covered under the CULTEC limited warranty.

Excavator-Placed Stone

Typically the most common method, excavator-placed stone is limited by the reach of the arm. To accommodate this issue with larger beds, it is common to prepare a bed by joining just a few chamber units at a time, then placing the stone and fabric before installing the next few units.

The excavator is usually operated within the excavation area. The excavator may work at grade level over recently placed chambers, provided coverage between the chambers and the excavator tracks meets the minimum requirements as shown in Table 2, page 18 and Table 6, page 20.

Telescoping Conveyor Boom Placement

With booms as much as 120-140 feet (36.6 - 42.7 meters) long, telescoping aggregate conveyors can greatly aid the process of stone placement.

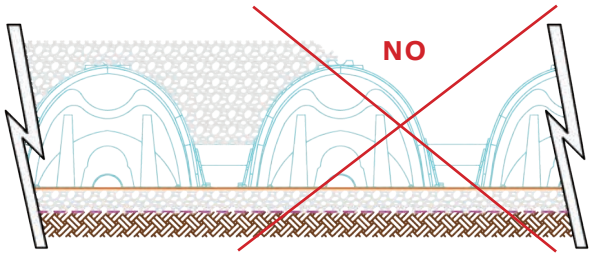
Once secured, stone may be placed to surround the chambers and fill the perimeter areas. System cover/backfill requirements will vary based on CULTEC chamber model and engineer's design. Refer to Table 6 on page 20 and engineer's drawings.

Do not allow equipment to drive over the chambers unless the minimum cover as shown in Table 6, page 20 is in place. Use a warning tape (available from CULTEC) to restrict access.

Repeat steps until the last chamber is in place. Be certain to use the Model E to end the line of chambers as specified by the drawings.

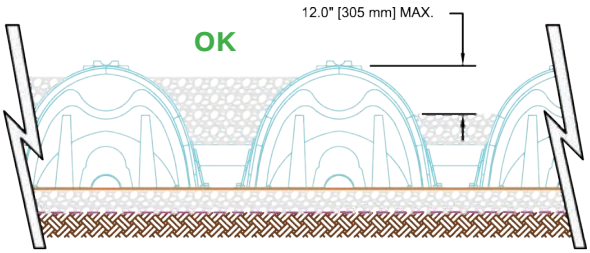
If a manifold system is designed on the back end of the chamber bed, follow manifold installation instructions as described previously.

Stone column height differential should never exceed 12 inches (300 mm) with adjacent chambers or between chamber rows and perimeter. Minimum depth of cover of properly compacted material must be met before allowing vehicles to drive over the bed. Avoid using large rocks and/or organic matter as backfill material. See Table 5, page 20 for acceptable cover materials, or contact the design engineer for approved fill types.



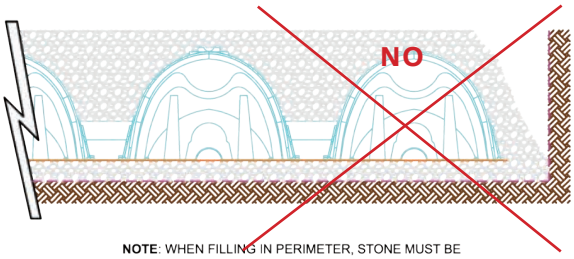
NOTE: CHAMBERS MUST BE BACKFILLED EVENLY.

UNEVEN BACKFILL - INCORRECT INSTALLATION



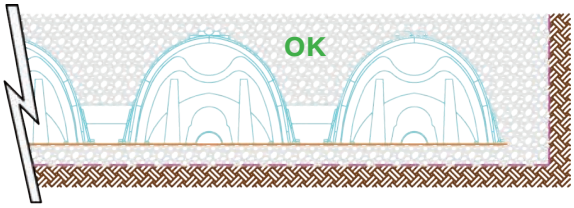
NOTE: STONE HEIGHT IN BETWEEN ROWS AND PERIMETER SHOULD NOT DIFFER BY MORE THAN 12" (300 mm).

EVEN BACKFILL - CORRECT INSTALLATION



NOTE: WHEN FILLING IN PERIMETER, STONE MUST BE FILLED IN EVENLY WITH CHAMBER ROWS.

PERIMETER NOT FULLY BACKFILLED
INCORRECT INSTALLATION



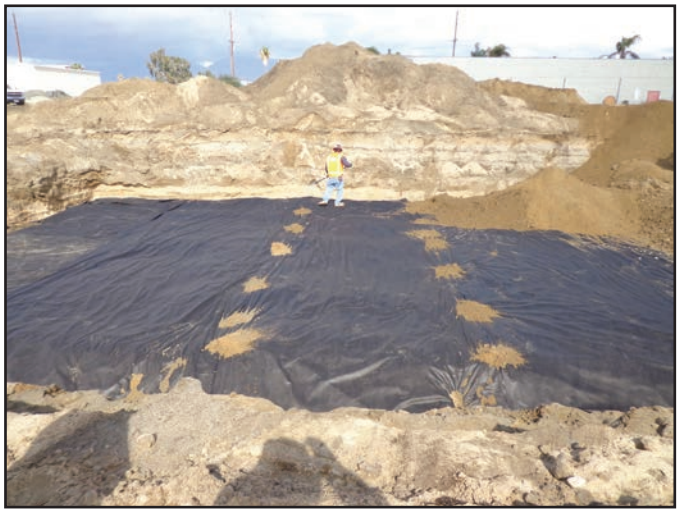
NOTE: PERIMETER MUST BE FULLY BACKFILLED WITH STONE AND EXTEND TO THE EXCAVATION WALL.

PERIMETER FULLY BACKFILLED
CORRECT INSTALLATION

For more information, contact CULTEC at (203) 775-4416 or visit www.cultec.com.

Placement of Top Fabric Layer & System Backfill Process

- Place the stone over the entire bed area as described in previous section (See Item 2 in Fig. 1, page 21) per engineer's depth specifications.
- Cover the entire installation area with CULTEC No. 410 non-woven geotextile, starting from the perimeter and laying it atop the stone. The geotextile must overlap at least 24 inches (610 mm) at the edges.
- Fill the first 12 inches (305 mm) with enough material (See 3 in Fig. 1, page 21) to meet the requirements as shown in Table 5, page 20.
- Backfill over the top of the geotextile (See 3 in Fig. 1, page 21) in lifts that do not exceed 6 inches (152 mm), and disperse the fill with a vehicle that meets the maximum wheel loads or ground pressure limits as specified in Tables 1 & 2 on page 18.
- Compact each lift of backfill as specified in the engineer's drawings. CULTEC specifies compacting to a minimum of 95% of the standard proctor density using compaction equipment with a gross vehicle weight of less than of 12,000 lbs (5,400 kg). The use of vibratory equipment is strictly prohibited and will void any warranties.
- Backfill over the chamber bed (See 4 in Fig. 1, page 21) in 6-inch (152 mm) maximum lifts until the specified grade is achieved. CULTEC's cover requirements vary by model. See Table 3, page 19 for minimum and maximum coverage. For pavement sub-base or special fill requirements, see engineer's drawings.



NOTE:
Excavation alongside already installed chamber rows backfilled with stone is not acceptable. No chambers may be added or subtracted from previously installed systems.

Table 1: Maximum allowable axle loads for wheeled vehicles at various cover depths

	Fill Depth Over Chamber		Max. Axle Load	
	inches	mm	lbs	kN
All Models	6	152	8,000	35.6
All Models	9	305	16,000	71.2
Contactor® Field Drain C-4HD	14" with pavement 18" without pavement	356 mm with pavement 457 mm without pavement	40,000	177.9
Contactor® 100HD Recharger® 150XLHD Recharger® 180HD Recharger® 280HD	14" with pavement 16" without pavement	356 mm with pavement 406 mm without pavement	40,000	177.9
Recharger® 330XLHD	16" with pavement 18" without pavement	406 mm with pavement 457 mm without pavement	40,000	177.9

Any load which travels over the system that exceeds the maximum load allowed is strictly prohibited and will void the warranty.
All depths listed above are based on compacted fill and include min. 6" (152 mm) of stone above the crown of the unit as listed as 3 of Fig. 1, page 21.

Table 2: Maximum allowable ground pressures for various vehicle track widths and fill depths

Fill Depth Over Chamber		Track Width		Max. Ground Pressure[2]	
inches	mm	inches	mm	PSF	kPa
6	152	12	305	1070	51
		18	457	900	43
		24	610	800	38
		30	762	760	36
		36	914	720	34
12	305	12	305	1540	74
		18	457	1190	57
		24	610	1010	48
		30	762	910	43
		36	914	840	40
18	457	12	305	2010	96
		18	457	1480	71
		24	610	1220	58
		30	762	1060	51
		36	914	950	45

[2] *Ground pressure is vehicle operating weight divided by total truck contact area for both tracks. Turning should be kept to a minimum.*

The use of wheeled equipment without proper cover is strictly prohibited.

Table 3: CULTEC No. 410™ Non-Woven Geotextile Specification Information

Properties	Test Method	Test Results
Appearance		Black
Grab Tensile	D 4632	90 lbs 400 N
Elongation	D 4632	50%
Trapezoid Tear	D 4533	35 lbs 155 N
Puncture	D 4833	55 lbs 245 N
Mullen Burst	D 3786	175 psi 1205 kPa
AOS	D 4751	70 U.S. sieve .21 mm
Permittivity	D 4491	2.0 sec^{-1}
Permeability	D 4491	.2 cm/sec
Water Flow	D 4491	145 gal/min/sf 5908 l/min/sq.m
UV Stability	D 4355	70%

Substitutions must meet or exceed these minimums.
Geotextile placement is mandatory over top and sides of system. Coverage of system bottom is recommended. However, follow engineer's design preference.

Table 4: Criteria for acceptable 1 - 2 inch (25 - 51 mm) washed, crushed, angular stone

Washed Crushed Stone	Description	Criteria
Acceptable	Angular	Stones have sharp edges and relatively plane sides with unpolished surfaces
	Subangular	Stones are similar to angular description but may have slightly rounded edges
Unacceptable	Subrounded	Stones have nearly plane sides but have well-rounded corners and edges
	Rounded	Stones have smoothly curved sides and no edges

See 1 and 2 of Table 5 on page 20 for additional stone requirements.

Table 5: Acceptable Fill Materials

	Material Location	Description	AASHTO M43 Classification	Compaction / Density Requirement
1	Foundation Stone below chambers per engineer's drawing 6" (152 mm) min. required for most models.	Washed, crushed stone with the majority of particles between 1" - 2" (25 - 51 mm)	3, 4	Plate compact or roll to achieve a 95% Standard Proctor density
2	Embedment Stone surrounding chambers and to a min. 6" (152 mm) elevation above chamber crown for most models.	Washed, crushed stone with the majority of particles between 1" - 2" (25 - 51 mm)	3, 4	No compaction required
3	Fill Material for Layer 3 starts from top of embedment stone (Layer 2) to minimum required depth above top of chamber. Refer to Table 6 page 20 for proper minimum fill requirements.	Granular well-graded soil/aggregate mixtures, <35% fines	3, 4, 5, 6, 7, 8, 9, 10, 56, 57, 67, 68, 78, 89, 467	Compact in 6" (152 mm) lifts to a minimum 95% Standard Proctor density. Roller gross vehicle weight not to exceed 12,000 lbs. (53 kN) Dynamic force not to exceed 20,000 lbs. (89 kN)
4	Fill Material for Layer 4 starts from the top of Layer 3 to the bottom of pavement or unpaved finished grade above. Refer to Table 6 page 20 for proper chamber model minimum fill requirements.	Any soil/rock materials, native soils or per engineer's plans. Check plans for pavement subgrade requirements.	Per engineer's drawings	Prepare per engineer's drawing. Paved installations may have strict material and preparation requirements

The listed AASHTO classifications are for gradations. The stone must be washed, crushed and angular. See Table 6, page 20.
For example, the stone must be specified as washed, crushed No. 4 stone. Fill materials shall be free of debris, trash, frozen lumps and other deleterious matter.
Contact CULTEC for gradation requirements for specific projects that do not fall within the above specifications.

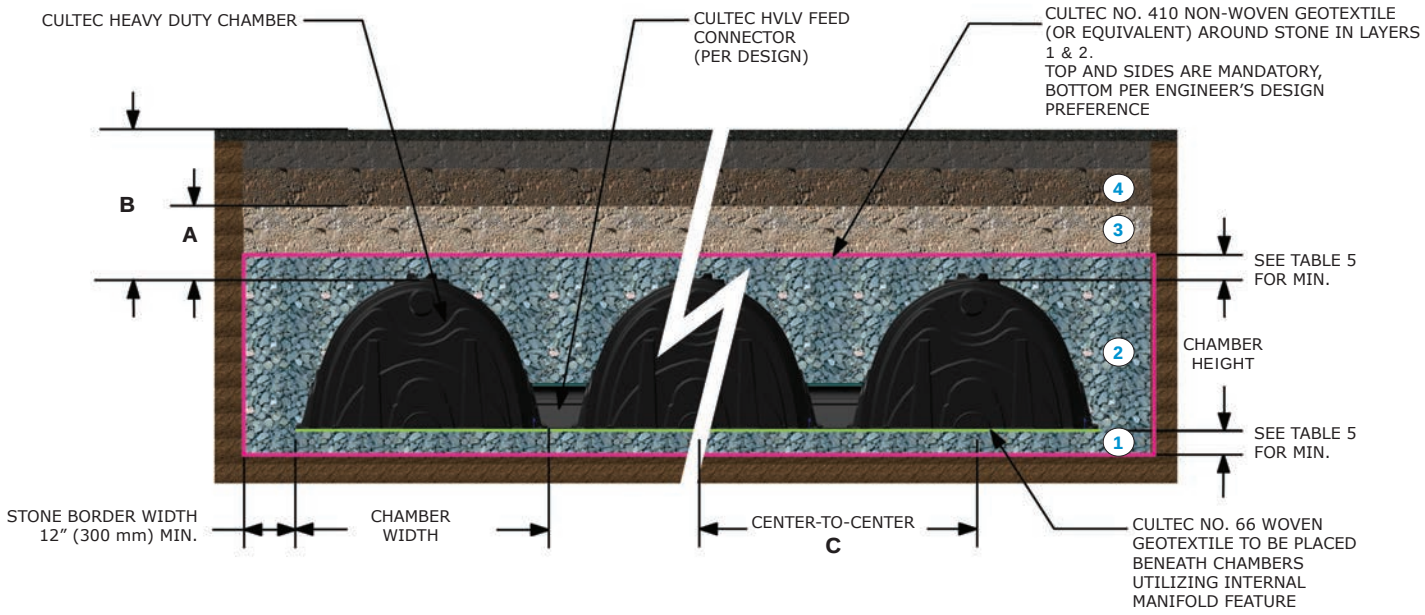
Table 6: Minimum and Maximum Fill and Separation Requirements for Traffic Installations

(See Fig. 1 on page 21)

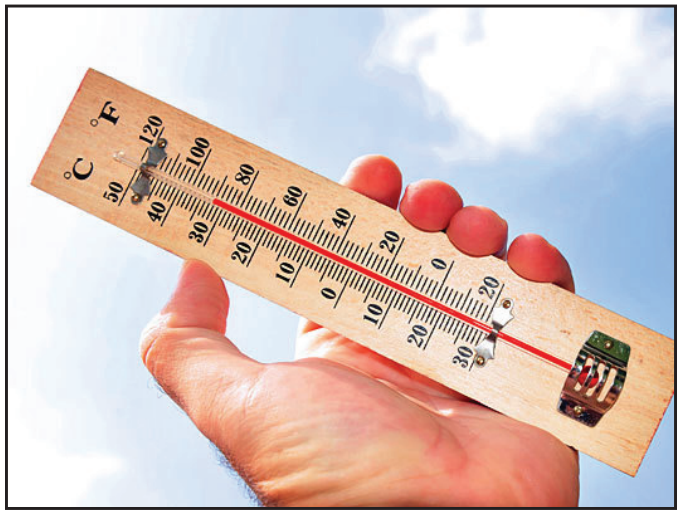
Model	A Minimum Fill Requirements				B Maximum Fill Requirements		C Center-to-Center Separation Requirement	
	For Paved inches	For Paved mm	For Unpaved inches	For Unpaved mm	feet	m	inches	mm
Contactor® Field Drain C-4HD	14	356	16	406	12	3.66	48	1219
Contactor® 100HD	14	356	16	406	12	3.66	40	1016
Recharger® 150XLHD	14	356	16	406	12	3.66	39	991
Recharger® 180HD	14	356	16	406	12	3.66	39	991
Recharger® 280HD	14	356	16	406	12	3.66	52	1321
Recharger® 330XLHD	16	406	18	457	12	3.66	58	1473

Refer to Table 4 on page 19, Table 5, page 20 and Fig. 1 on page 21 for acceptable fill requirements.
Table refers to Heavy Duty version only, requirements differ for Standard Duty version.
When fill requirements will exceed Maximum Fill Requirements listed above, contact CULTEC at 203-775-4416.
All depths listed above are based on compacted fill and include the required stone above the crown of the unit.

Fig. 1. Fill Material Locations – *refer to Tables 4, 5, and 6.*



Special Handling Instructions for Polyethylene Chambers in Warmer Temperatures



CULTEC chambers are manufactured of high molecular weight polyethylene, which is inherently resistant to cold temperatures, corrosion and chemical breakdown. Additional UV inhibitors increase the chambers' resistance to sunlight and warm temperature degradation. However, CULTEC recommends that, when installed in warm temperatures above 85°F (29°C), the installer separate the units the day before installation and lay them on a flat surface (preferably not asphalt). This allows the chambers to cool and maintain their original shape as when formed. It is best practice to separate starters, intermediates and ends and lay them out individually and use those separated units rather than removing each off the stack individually. When possible, CULTEC recommends that the stone backfill be placed in temperatures less than 85°F (29°C) to minimize depressions or deflections. Also note that in sunny, warm temperatures, the chambers may be hot to the touch.

CULTEC®

The Founder of Plastic Chamber Technology

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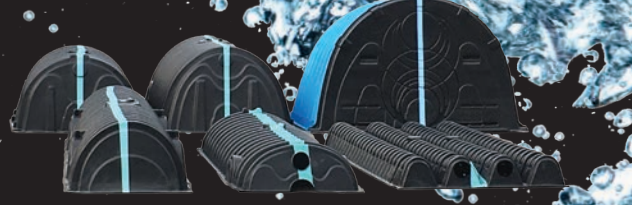


CULTEC Recharger® 330XLHD Stormwater Chamber

The Recharger® 330XLHD is a 30.5" (775 mm) tall, high capacity chamber. Typically when using this model, fewer chambers are required resulting in less labor and a smaller installation area. The Recharger® 330XLHD has the side portal internal manifold feature. HVLV® FC-24 Feed Connectors are inserted into the side portals to create the internal manifold.

Size (L x W x H)	8.5' x 52" x 30.5" 2.59 m x 1321 mm x 775 mm
Installed Length	7' 2.13 m
Length Adjustment per Run	1.50' 0.46 m
Chamber Storage	7.46 ft³/ft 0.69 m³/m 52.21 ft³/unit 1.48 m³/unit
Min. Installed Storage	11.32 ft³/ft 1.05 m³/m 79.26 ft³/unit 2.24 m³/unit
Min. Area Required	33.83 ft² 3.14 m²
Chamber Weight	73.0 lbs 33.11 kg
Shipping	30 chambers/skid 2,335 lbs/skid 10 skids/48' flatbed
Min. Center-to-Center Spacing	4.83' 1.47 m
Max. Allowable Cover	12' 3.66 m
Max. Inlet Opening in End Wall	24" HDPE, PVC 600 mm HDPE, PVC
Max. Allowable O.D. in Side Portal	10" HDPE, 12" PVC 250 mm HDPE, 300 mm PVC
Compatible Feed Connector	HVLV FC-24 Feed Connector

Calculations are based on installed chamber length.
All above values are nominal.
Min. installed storage includes 6" (152 mm) stone base, 6" (152 mm) stone above crown of chamber and typical stone surround at 58" (1473 mm) center-to-center spacing.

	Stone Foundation Depth		
	6" 152 mm	12" 305 mm	18" 457 mm
Chamber and Stone Storage Per Chamber	79.26 ft³ 2.24 m³	86.03 ft³ 2.44 m³	92.79 ft³ 2.63 m³
Min. Effective Depth	3.54' 1.08 m	4.04' 1.23 m	4.54' 1.38 m
Stone Required Per Chamber	2.50 yd³ 1.91 m³	3.13 yd³ 2.39 m³	3.76 yd³ 2.87 m³

Calculations are based on installed chamber length.
Includes 6" (305 mm) stone above crown of chamber and typical stone surround at 58"(1473 mm) center-to-center spacing and stone foundation as listed in table.
Stone void calculated at 40%.

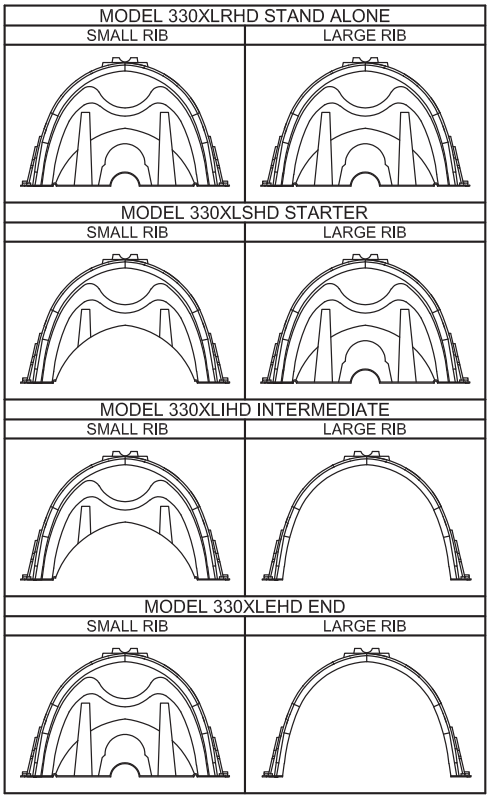
Recharger® 330XLHD Bare Chamber Storage Volumes

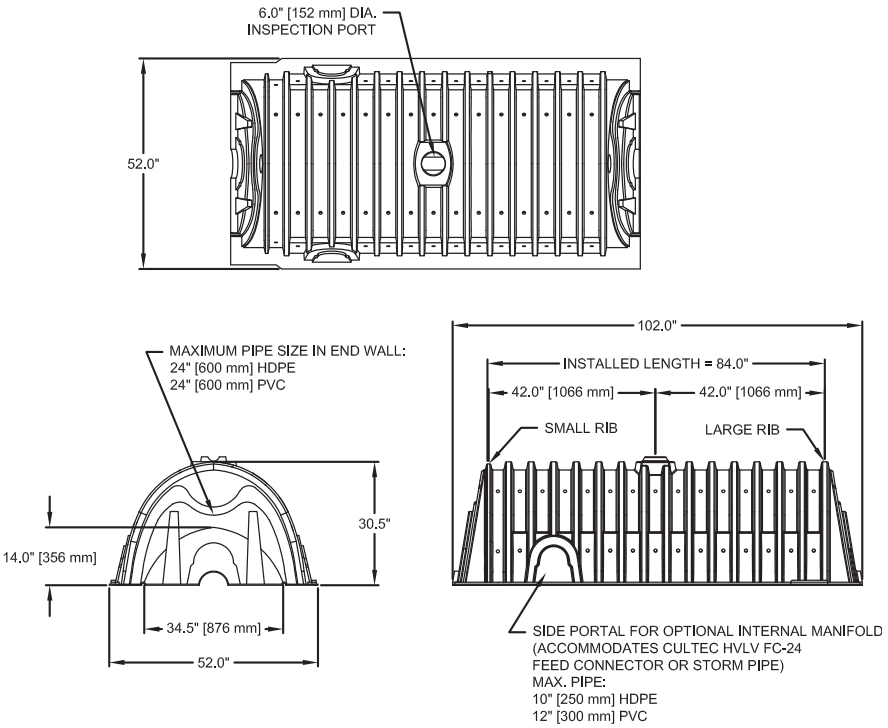
Elevation		Incremental Storage Volume				Cumulative Storage	
in.	mm	ft³/ft	m³/m	ft³	m³	ft³	m³
30.5	775	0.000	0.000	0.000	0.000	52.213	1.479
30	762	0.019	0.002	0.133	0.004	52.213	1.479
29	737	0.051	0.005	0.357	0.010	52.080	1.475
28	711	0.084	0.008	0.588	0.017	51.723	1.465
27	686	0.124	0.012	0.868	0.025	51.135	1.448
26	660	0.150	0.014	1.05	0.030	50.267	1.424
25	635	0.173	0.016	1.211	0.034	49.217	1.394
24	609	0.191	0.018	1.337	0.038	48.006	1.360
23	584	0.207	0.019	1.449	0.041	46.669	1.322
22	559	0.221	0.021	1.547	0.044	45.220	1.281
21	533	0.233	0.022	1.631	0.046	43.673	1.237
20	508	0.244	0.023	1.708	0.048	42.042	1.191
19	483	0.254	0.024	1.778	0.050	40.334	1.142
18	457	0.264	0.025	1.848	0.052	38.556	1.092
17	432	0.271	0.025	1.897	0.054	36.708	1.040
16	406	0.283	0.026	1.981	0.056	34.811	0.986
15	381	0.294	0.027	2.058	0.058	32.830	0.930
14	356	0.296	0.027	2.072	0.059	30.772	0.871
13	330	0.299	0.028	2.093	0.059	28.700	0.813
12	305	0.301	0.028	2.107	0.060	26.607	0.754
11	279	0.303	0.028	2.121	0.060	24.500	0.694
10	254	0.304	0.028	2.128	0.060	22.379	0.634
9	229	0.306	0.028	2.142	0.061	20.251	0.574
8	203	0.313	0.029	2.191	0.062	18.109	0.513
7	178	0.321	0.030	2.247	0.064	15.918	0.451
6	152	0.322	0.030	2.254	0.064	13.671	0.387
5	127	0.323	0.030	2.261	0.064	11.417	0.323
4	102	0.324	0.030	2.268	0.064	9.156	0.259
3	76	0.325	0.030	2.275	0.064	6.888	0.195
2	51	0.327	0.030	2.289	0.065	4.613	0.131
1	25	0.332	0.031	2.324	0.066	2.324	0.066
Total		**7.459**	**0.693**	**52.213**	**1.479**	**52.213**	**1.479**

Calculations are based on installed chamber length.

Visit http://cultec.com/downloads/
for Product Downloads and CAD details.

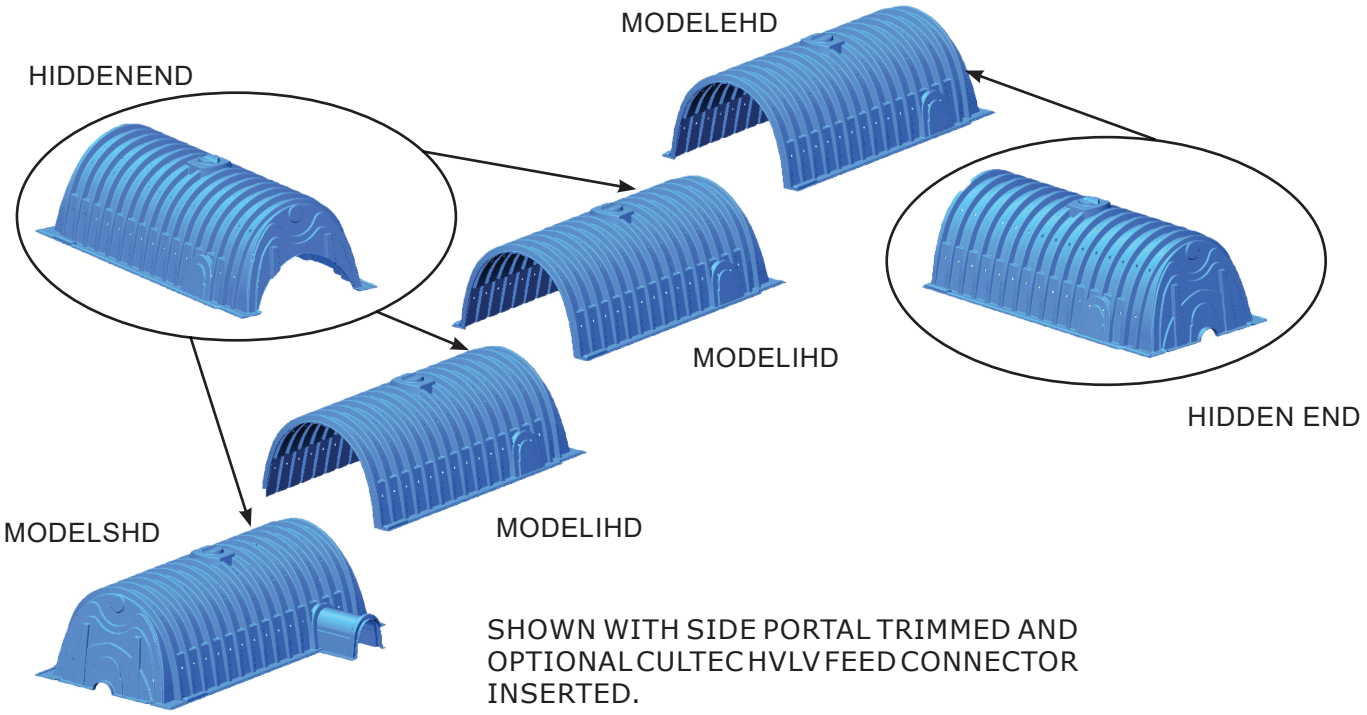
Three View Drawing





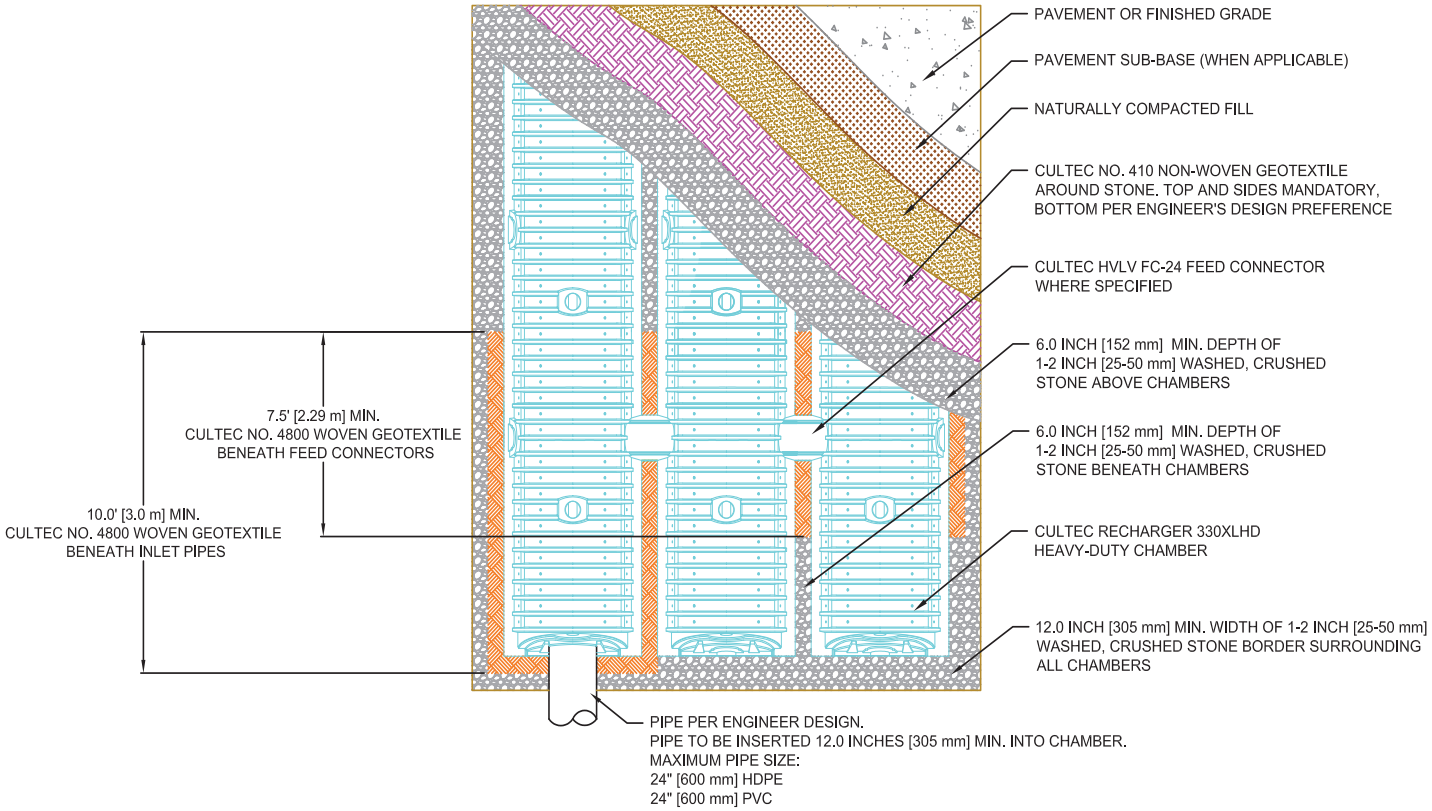
CULTEC RECHARGER 330XLHD CHAMBER STORAGE = 7.459 CF/FT [0.693 m³/m]
INSTALLED LENGTH ADJUSTMENT = 1.5' [0.46 m]
SIDE PORTAL ACCEPTS CULTEC HVLV FC-24 FEED CONNECTOR

Typical Interlock Installation

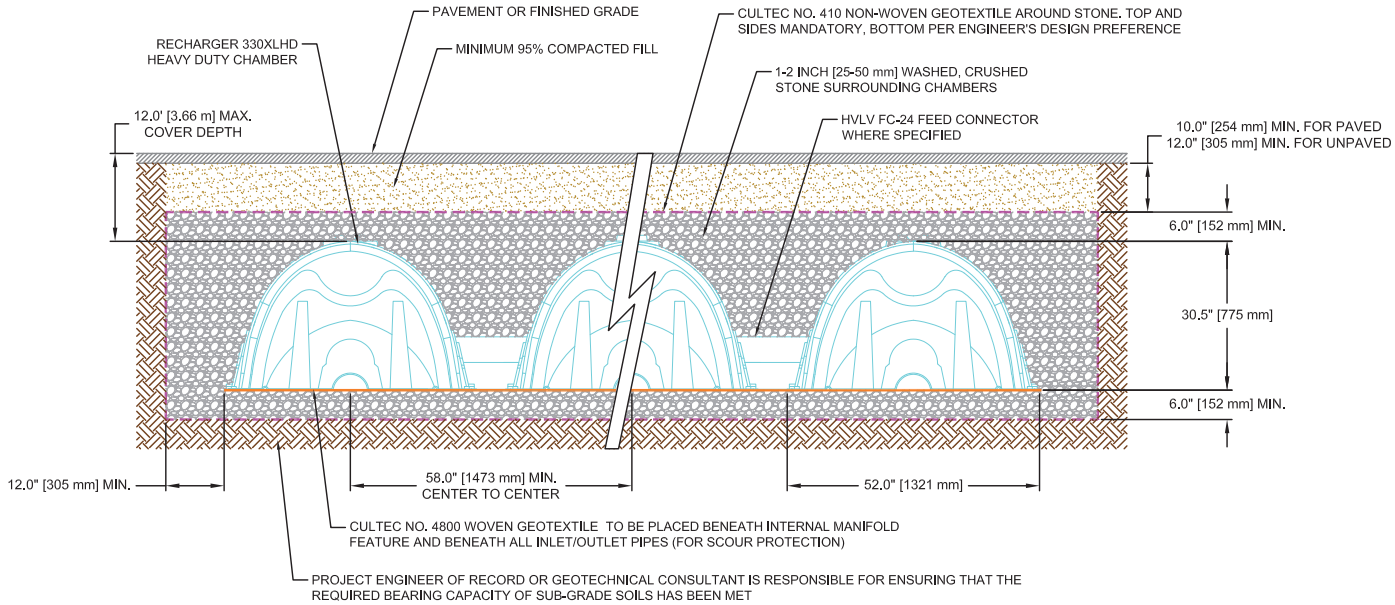


SHOWN WITH SIDE PORTAL TRIMMED AND OPTIONAL CULTEC HVLV FEED CONNECTOR INSERTED.

Plan View Drawing



Typical Cross Section for Traffic Application



CULTEC Recharger® 330XLHD Specifications

GENERAL

CULTEC Recharger® 330XLHD chambers are designed for underground stormwater management. The chambers may be used for retention, recharging, detention or controlling the flow of on-site stormwater runoff.

CHAMBER PARAMETERS

1. The chambers shall be manufactured in the U.S.A. by CULTEC, Inc. of Brookfield, CT (cultec.com, 203-775-4416).
2. The chamber shall be vacuum thermoformed of polyethylene with a black interior and blue exterior.
3. The chamber shall be arched in shape.
4. The chamber shall be open-bottomed.
5. The chamber shall be joined using an interlocking overlapping rib method. Connections must be fully shouldered overlapping ribs, having no separate couplings or separate end walls.
6. The nominal chamber dimensions of the CULTEC Recharger® 330XLHD shall be 30.5 inches (775 mm) tall, 52 inches (1321 mm) wide and 8.5 feet (2.59 m) long. The installed length of a joined Recharger® 330XLHD shall be 7 feet (2.13 m).
7. Maximum inlet opening on the chamber end wall is 24 inches (600 mm) HDPE, PVC.
8. The chamber shall have two side portals to accept CULTEC HVLV® FC-24 Feed Connectors to create an internal manifold. Maximum allowable O.D. in the side portal is 10 inches (250 mm) HDPE and 12 inches (300 mm) PVC.
9. The nominal chamber dimensions of the CULTEC HVLV® FC-24 Feed Connector shall be 12 inches (305 mm) tall, 16 inches (406 mm) wide and 24.2 inches (614 mm) long.
10. The nominal storage volume of the Recharger® 330XLHD chamber shall be 7.459 ft^3 / ft (0.693 m^3 / m) - without stone. The nominal storage volume of a single Recharger® 330XLRHD Stand Alone unit shall be 63.40 ft^3 (1.80 m^3) - without stone. The nominal storage volume of a joined Recharger® 330XLIHD Intermediate unit shall be 52.213 ft^3 (1.478 m^3) - without stone. The nominal storage volume of the length adjustment amount per run shall be 11.19 ft^3 (1.04 m^3) - without stone.
11. The nominal storage volume of the HVLV® FC-24 Feed Connector shall be 0.913 ft^3 / ft (0.026 m^3 / m) - without stone.
12. The Recharger® 330XLHD chamber shall have fifty-six discharge holes bored into the sidewalls of the unit's core to promote lateral conveyance of water.
13. The Recharger® 330XLHD chamber shall have 16 corrugations.
14. The end wall of the chamber, when present, shall be an integral part of the continuously formed unit. Separate end plates cannot be used with this unit.
15. The Recharger® 330XLRHD Stand Alone unit must be formed as a whole chamber having two fully formed integral end walls and having no separate end plates or separate end walls.
16. The Recharger® 330XLSHD Starter unit must be formed as a whole chamber having one fully formed integral end wall and one partially formed integral end wall with a lower transfer opening of 14 inches (356 mm) high x 34.5 inches (876 mm) wide.
17. The Recharger® 330XLIHD Intermediate unit must be formed as a whole chamber having one fully open end wall and one partially formed integral end wall with a lower transfer opening of 14 inches (356 mm) high x 34.5 inches (876 mm) wide.
18. The Recharger® 330XLEHD End unit must be formed as a whole chamber having one fully formed integral end wall and one fully open end wall and having no separate end plates or end walls.
19. The HVLV® FC-24 Feed Connector must be formed as a whole chamber having two open end walls and having no separate end plates or separate end walls. The unit shall fit into the side portals of the Recharger® 330XLHD and act as cross feed connections.
20. Chambers must have horizontal stiffening flex reduction steps between the ribs.
21. The chamber shall have a raised integral cap at the top of the arch in the center of each unit to be used as an optional inspection port or clean-out.
22. The units may be trimmed to custom lengths by cutting back to any corrugation on the large rib end.
23. The chamber shall be manufactured in an ISO 9001:2015 certified facility.
24. The chamber shall be designed and manufactured to meet the material and structural requirements of IAPMO PS 63-2019, including resistance to AASHTO H-10 and H-20 highway live loads, when installed in accordance with CULTEC's installation instructions.
25. The chamber shall be designed and manufactured in accordance with the specifications of NSAI Irish Agrement Board Certificate for Cultec Attenuation and Infiltration.
26. Maximum allowable cover over the top of the chamber shall be 12' (3.66 m).
27. The chamber shall be designed to withstand traffic loads when installed according to CULTEC's recommended installation instructions.

STORMWATER Pollution Prevention

Important Phone Numbers

San Bernardino County Flood Control
(909) 387-8112

County of San Bernardino
(909) 387-8109

City of Big Bear Lake
(909) 866-5831

City of Chino (909) 591-9850

City of Chino Hills (909) 364-2722

City of Colton (909) 370-6128

City of Fontana (909) 350-6772

City of Grand Terrace
(909) 824-6671 x 226

City of Highland (909) 864-8732 x 230

City of Loma Linda (909) 799-4405

City of Montclair (909) 625-9470

City of Ontario (909) 395-2025

City of Rancho Cucamonga
(909) 477-2740 x 4063

City of Redlands (909) 798-7655

City of Rialto (909) 421-4921

City of San Bernardino (909) 384-5154

City of Upland (909) 931-4370

City of Yucaipa (909) 797-2489 x 243

San Bernardino County
Stormwater Program
825 East Third Street • Room 201
San Bernardino, CA 94215-0835

STORMWATER

Pollution Prevention

INDUSTRIAL AND COMMERCIAL FACILITIES

San Bernardino County Stormwater Program
825 East Third Street · Room 127
San Bernardino, CA 94215-0835

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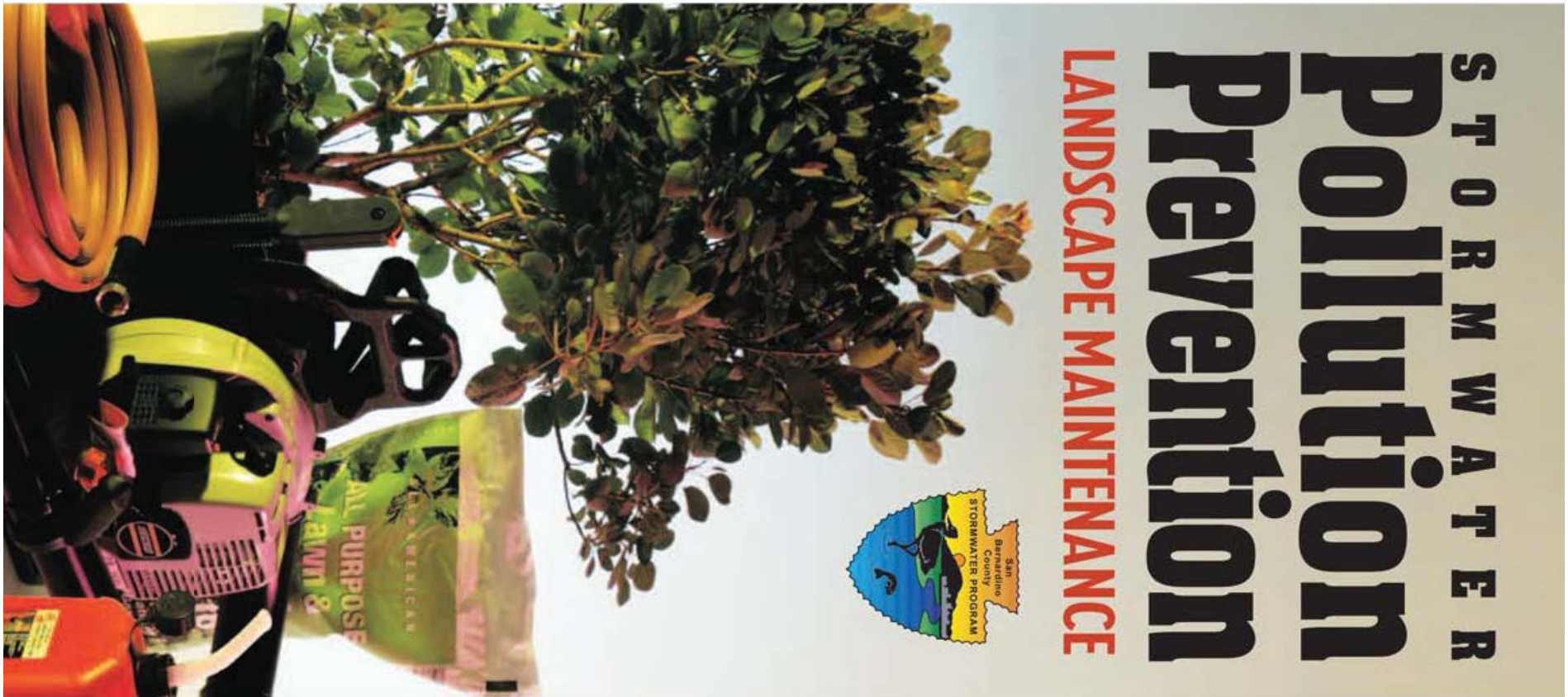

LANDSCAPE MAINTENANCE

DISCHARGE TO THE STORM DRAIN, **ACCIDENTAL OR NOT**, COULD LEAD TO ENFORCEMENT ACTIONS, WHICH COULD INCLUDE FINES.

Follow the best practices below to **prevent water pollution from landscaping activities.**

RECYCLE YARD WASTE

- Recycle leaves, grass clippings and other yard waste.
- Do not blow, sweep, rake or hose yard waste into the street or catch basin.
- **Try grasscycling:** the natural recycling of grass by leaving clippings on the lawn when mowing.

  For more information, please visit: **www.calrecycle.ca.gov/organics/grasscycling**

USE FERTILIZERS, HERBICIDES AND PESTICIDES SAFELY

- Fertilizers, herbicides and pesticides are often carried into the storm drain system by sprinkler runoff. Use natural and non-toxic alternatives as often as possible.
- If you must use chemical fertilizers, herbicides or pesticides:
  - Spot apply, rather than blanketing entire areas.
  - Avoid applying near curbs and driveways, and **never** before a rain.
  - Apply fertilizers as needed: when plants could best use it and when the potential runoff would be low.
  - Follow the manufacturer's instructions carefully—this will not only give the best results, but will save money.

USE WATER WISELY

- Control the amount of water and direction of sprinklers. Sprinklers should only be on long enough to allow water to soak into the ground, but not so long as to cause runoff.
- Periodically inspect, fix leaks and realign sprinkler heads.
- Plant native vegetation to reduce the need of water, fertilizers, herbicides and pesticides.

HOMEOWNERS

KEEP THESE TIPS IN MIND WHEN HIRING PROFESSIONAL LANDSCAPERS AND REMIND AS NECESSARY.

Leftover pesticides, fertilizers, and herbicides contaminate landfills and should be disposed of through a Hazardous Waste Facility.

For more information on proper disposal call,

(909) 382-5401 or 1-800-OILY CAT.

*FREE for San Bernardino County residents only. Businesses can call for cost inquiries and to schedule an appointment.

To report illegal dumping, call (877) WASTE18 or visit sbcountystormwater.org
To report toxic spills, call 1(800) 33 TOXIC
To dispose of hazardous waste, call 1(800) OILY CAT

sbcountystormwater.org

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Redlands • Rialto • San Bernardino • San Bernardino County • San Bernardino County Flood Control District • Upland • Yucaipa

SAN BERNARDINO COUNTY
STORMWATER POLLUTION PREVENTION

Commercial landscape maintenance:

Yard waste, sediments and toxic lawn and garden chemicals used in commercial landscape maintenance often make their way into the San Bernardino County storm drain system and do not get treated before reaching the Santa Ana River. This pollutes our drinking water and contaminates local waterways, making them unsafe for people and wildlife. Follow these best management practices to prevent pollution, protect public health and avoid fines or legal action.

- **Recycle Yard Waste:** Recycle leaves, grass clippings and other yard waste. Do not blow, sweep, rake or hose yard waste into the street. Let your customers know about grass cycling --the natural recycling of grass by leaving clippings on the lawn when mowing instead of using a grass catcher. Grass clippings will quickly decompose, returning valuable nutrients to the soil. You can get more information at www.ciwmb.ca.gov/Organics.
- **Use Fertilizers, Herbicides & Pesticides Safely:** Fertilizers, herbicides and pesticides are often carried into the storm drain system by sprinkler runoff. Use natural, non-toxic alternatives to traditional garden chemicals. If you must use chemical fertilizers, herbicides, or pesticides spot apply rather than blanketing entire areas, avoid applying near curbs and driveways and never apply before a rain.
- **Recycle Hazardous Waste:** Pesticides, fertilizers, herbicides and motor oil contaminate landfills and should be disposed of through a Hazardous Waste Facility. For information on proper disposal, call (909) 386-8401.
- **Use Water Wisely:** Conserve water and prevent runoff by controlling the amount of water and direction of sprinklers. Sprinklers should be on long enough to allow water to soak into the ground but not so long as to cause runoff. Periodically inspect, fix leaks and realign sprinkler heads.

- **Planting:** Plant native vegetation to reduce the need of water, fertilizers, herbicides and pesticides.
- **Prevent Erosion:** Erosion washes sediments, debris and toxic runoff into the storm drain system, polluting waterways. Prevent erosion and sediment runoff by using ground cover, berms and vegetation down-slope to capture runoff. Avoid excavation or grading during wet weather.

- **Store Materials Safely:** Keep landscaping materials and debris away from the street, gutter and storm drains. On-site stockpiles of materials should be covered with plastic sheeting to protect from rain, wind and runoff.

For more information about how you can prevent stormwater pollution:

www.sbcountystormwater.org

SAN BERNARDINO COUNTY STORMWATER PROGRAM

WHERE WATER MEETS COMMUNITY

Regulatory Information

The Federal Water Pollution Control Act prohibits the discharge of any pollutant to navigable waters from a point source unless the discharge is authorized by a National Pollutant Discharge Elimination System (NPDES) permit. The 1987 passage of the Water Quality Act established NPDES permit requirements for discharges of storm water. The NPDES permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States.

Industrial facilities and construction sites are regulated by the Regional Water Quality Control Board and State Water Resources Control Board, through general storm water permits. Most industrial, manufacturing or transportation businesses that store materials, products or equipment outdoors, or conduct vehicle washing or process operations outdoors are required to obtain coverage under the State Water Resources Control Board's General Industrial Activities Stormwater Permit. For more information about this permit, visit *http://www.waterboards.ca.gov/centralcoast/water_issues/programs/stormwater/industrial.shtml* or contact your local storm water coordinator.

If your business conducts construction activities, including clearing, grading, stockpiling or excavation that results in soil disturbances of at least one acre, you are subject to the State Water Resources Control Board's General Construction Activities Stormwater Permit. To find out more about this storm water permit for construction, visit *https://www.waterboards.ca.gov/centralcoast/water_issues/programs/stormwater/construction_new.shtml.*
Cities and counties are regulated through permits issued by the Regional Boards. Since 1990 operators of large storm drain systems such as San Bernardino County's have been required to:

- Develop a storm water management program designed to prevent harmful pollutants from being dumped or washed by storm water runoff, into the storm water system, then discharged into local water bodies; and
- Obtain a National Pollutant Discharge Elimination System (NPDES) permit.

The NPDES permit programs in California are administered by the State Water Resources Control Board and by nine regional boards that issue NPDES permits and enforce regulations within their respective region.

San Bernardino County lies within the jurisdiction of the Santa Ana Region. This regional board issues a permit to the San Bernardino County Permittees, which includes the County of San Bernardino, San Bernardino County Flood Control District and incorporated cities of San Bernardino County. Since the program's inception, the County of San Bernardino has served as the principal permittee.

SAN BERNARDINO COUNTY STORMWATER PROGRAM

WHERE WATER MEETS COMMUNITY

Documents & Reports:

The following documents describe the regulations and programs for water quality in San Bernardino County. You can review the latest Basin Plan. National Pollutant Discharge Elimination System (NPDES) Permit and Drainage Area Management Plan (DAMP).

- **Basin Plans:** The document for each region of the State Water Quality Board's jurisdiction, including Santa Ana, is the Water Quality Control Plan, commonly referred to as the Basin Plan. It is the foundation for the regulatory programs of each regional board. The Basin Plan documents the beneficial uses of the region's ground and surface waters, existing water quality conditions, problems, and goals, and actions by the regional board and others that are necessary to achieve and maintain water quality standards.

Water Control Plan for the Santa Ana River Basin

- **Municipal National Pollutant Discharge Elimination System (NPDES) Permits:** The permits of each region outline additional steps for a storm water management program and specify requirements to help protect the beneficial uses of the receiving waters. They require permittees to develop and implement Best Management Practices (BMPs) to control/reduce the discharge of pollutants to waters of the United States to the maximum extent practicable (MEP).

Santa Ana Regional Water Quality Control Board Municipal NPDES Permit Order No. R8-2002-0Q12

- **Report of Waste Discharge:** The Report of Waste Discharge (ROWD) describes the San Bernardino Stormwater Program, implemented by the County and cities to comply with their jointly held stormwater permit. It is the principle policy and guidance document for the NPDES Stormwater Program.

Report of Waste Discharge 2000

- **San Bernardino County Storm Water Program Annual Status Report:** The Annual Status Report is a requirement of the NPDES permit for submittal to the Regional Boards and United States Environmental Protection Agency. The report presents an analysis and assessment of permit compliance activities.

Annual Report - will be posted soon

For more information about how you can prevent stormwater pollution:

www.sbcountystormwater.org

COMMERCIAL TRASH ENCLOSURES

FOLLOW THESE **REQUIREMENTS** TO **KEEP OUR WATERWAYS CLEAN**

Trash enclosures, such as those found in commercial and apartment complexes, typically contain materials that are intended to find their way to a landfill or a recycling facility. **These materials are NOT meant to go into our local lakes and rivers.**

PROTECT WATER QUALITY BY FOLLOWING THESE SIMPLE STEPS

PUT TRASH INSIDE

Place trash inside the bin (preferably in sealed bags)

CLOSE THE LID

Prevent rain from entering the bin in order to avoid leakage of polluted water runoff

KEEP TOXICS OUT

- Paint
- Grease, fats and used oils
- Batteries, electronics and fluorescent lights

SOME ADDITIONAL GUIDELINES, INCLUDE

✓ **SWEEP FREQUENTLY**
Sweep trash enclosure areas frequently, instead of hosing them down, to prevent polluted water from flowing into the streets and storm drains.

✓ **FIX LEAKS**
Address trash bin leaks immediately by using dry clean up methods and report to your waste hauler to receive a replacement.

✓ **CONSTRUCT ROOF**
Construct a solid cover roof over the existing trash enclosure structure to prevent rainwater from coming into contact with trash and garbage. Check with your local City/County for Building Codes.

In San Bernardino County, stormwater pollution is caused by food waste, landscape waste, chemicals and other debris that are washed into storm drains and end up in our waterways - untreated! You can be part of the solution by maintaining a water-friendly trash enclosure.

THANK YOU FOR HELPING TO KEEP SAN BERNARDINO COUNTY CLEAN AND HEALTHY!

San Bernardino County STORMWATER PROGRAM

To report illegal dumping **(877-WASTE18)** or
to find a household hazardous waste facility (800-OILY CAT): **sbcountystormwater.org**
To dispose of hazardous waste call the San Bernardino County Fire Dept. - CUPA Program **(909) 386-8401**

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Building & Grounds Maintenance SC-41

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	✓
Nutrients	✓
Trash	
Metals	✓
Bacteria	✓
Oil and Grease	
Organics	

Description

Stormwater runoff from building and grounds maintenance activities can be contaminated with toxic hydrocarbons in solvents, fertilizers and pesticides, suspended solids, heavy metals, abnormal pH, and oils and greases. Utilizing the protocols in this fact sheet will prevent or reduce the discharge of pollutants to stormwater from building and grounds maintenance activities by washing and cleaning up with as little water as possible, following good landscape management practices, preventing and cleaning up spills immediately, keeping debris from entering the storm drains, and maintaining the stormwater collection system.

Approach

Reduce potential for pollutant discharge through source control pollution prevention and BMP implementation. Successful implementation depends on effective training of employees on applicable BMPs and general pollution prevention strategies and objectives.

Pollution Prevention

- Switch to non-toxic chemicals for maintenance when possible.
- Choose cleaning agents that can be recycled.
- Encourage proper lawn management and landscaping, including use of native vegetation.

CASQA
California Stormwater Quality Association

- Encourage use of Integrated Pest Management techniques for pest control.
- Encourage proper onsite recycling of yard trimmings.
- Recycle residual paints, solvents, lumber, and other material as much as possible.

Suggested Protocols

Pressure Washing of Buildings, Rooftops, and Other Large Objects

- In situations where soaps or detergents are used and the surrounding area is paved, pressure washers must use a water collection device that enables collection of wash water and associated solids. A sump pump, wet vacuum or similarly effective device must be used to collect the runoff and loose materials. The collected runoff and solids must be disposed of properly.
- If soaps or detergents are not used, and the surrounding area is paved, wash runoff does not have to be collected but must be screened. Pressure washers must use filter fabric or some other type of screen on the ground and/or in the catch basin to trap the particles in wash water runoff.
- If you are pressure washing on a grassed area (with or without soap), runoff must be dispersed as sheet flow as much as possible, rather than as a concentrated stream. The wash runoff must remain on the grass and not drain to pavement.

Landscaping Activities

- Dispose of grass clippings, leaves, sticks, or other collected vegetation as garbage, or by composting. Do not dispose of collected vegetation into waterways or storm drainage systems.
- Use mulch or other erosion control measures on exposed soils.

Building Repair, Remodeling, and Construction

- Do not dump any toxic substance or liquid waste on the pavement, the ground, or toward a storm drain.
- Use ground or drop cloths underneath outdoor painting, scraping, and sandblasting work, and properly dispose of collected material daily.
- Use a ground cloth or oversized tub for activities such as paint mixing and tool cleaning.
- Clean paintbrushes and tools covered with water-based paints in sinks connected to sanitary sewers or in portable containers that can be dumped into a sanitary sewer drain. Brushes and tools covered with non-water-based paints, finishes, or other materials must be cleaned in a manner that enables collection of used solvents (e.g., paint thinner, turpentine, etc.) for recycling or proper disposal.
- Use a storm drain cover, filter fabric, or similarly effective runoff control mechanism if dust, grit, wash water, or other pollutants may escape the work area and enter a catch basin. This is particularly necessary on rainy days. The containment device(s) must be in place at the beginning of the work day, and accumulated dirty runoff and solids must be collected and disposed of before removing the containment device(s) at the end of the work day.

- If you need to de-water an excavation site, you may need to filter the water before discharging to a catch basin or off-site. If directed off-site, you should direct the water through hay bales and filter fabric or use other sediment filters or traps.
- Store toxic material under cover during precipitation events and when not in use. A cover would include tarps or other temporary cover material.

Mowing, Trimming, and Planting

- Dispose of leaves, sticks, or other collected vegetation as garbage, by composting or at a permitted landfill. Do not dispose of collected vegetation into waterways or storm drainage systems.
- Use mulch or other erosion control measures when soils are exposed.
- Place temporarily stockpiled material away from watercourses and drain inlets, and berm or cover stockpiles to prevent material releases to the storm drain system.
- Consider an alternative approach when bailing out muddy water: do not put it in the storm drain; pour over landscaped areas.
- Use hand weeding where practical.

Fertilizer and Pesticide Management

- Follow all federal, state, and local laws and regulations governing the use, storage, and disposal of fertilizers and pesticides and training of applicators and pest control advisors.
- Use less toxic pesticides that will do the job when applicable. Avoid use of copper-based pesticides if possible.
- Do not use pesticides if rain is expected.
- Do not mix or prepare pesticides for application near storm drains.
- Use the minimum amount needed for the job.
- Calibrate fertilizer distributors to avoid excessive application.
- Employ techniques to minimize off-target application (e.g., spray drift) of pesticides, including consideration of alternative application techniques.
- Apply pesticides only when wind speeds are low.
- Fertilizers should be worked into the soil rather than dumped or broadcast onto the surface.
- Irrigate slowly to prevent runoff and then only as much as is needed.
- Clean pavement and sidewalk if fertilizer is spilled on these surfaces before applying irrigation water.
- Dispose of empty pesticide containers according to the instructions on the container label.

- Use up the pesticides. Rinse containers, and use rinse water as product. Dispose of unused pesticide as hazardous waste.
- Implement storage requirements for pesticide products with guidance from the local fire department and County Agricultural Commissioner. Provide secondary containment for pesticides.

Inspection

- Inspect irrigation system periodically to ensure that the right amount of water is being applied and that excessive runoff is not occurring. Minimize excess watering and repair leaks in the irrigation system as soon as they are observed.

Training

- Educate and train employees on pesticide use and in pesticide application techniques to prevent pollution.
- Train employees and contractors in proper techniques for spill containment and cleanup.
- Be sure the frequency of training takes into account the complexity of the operations and the nature of the staff.

Spill Response and Prevention

- Keep your Spill Prevention Control and Countermeasure (SPCC) Plan up-to-date.
- Place a stockpile of spill cleanup materials, such as brooms, dustpans, and vacuum sweepers (if desired) near the storage area where it will be readily accessible.
- Have employees trained in spill containment and cleanup present during the loading/unloading of dangerous wastes, liquid chemicals, or other materials.
- Familiarize employees with the Spill Prevention Control and Countermeasure Plan.
- Clean up spills immediately.

Other Considerations

Alternative pest/weed controls may not be available, suitable, or effective in many cases.

Requirements

Costs

- Cost will vary depending on the type and size of facility.
- Overall costs should be low in comparison to other BMPs.

Maintenance

Sweep paved areas regularly to collect loose particles. Wipe up spills with rags and other absorbent material immediately, do not hose down the area to a storm drain.

Supplemental Information

Further Detail of the BMP

Fire Sprinkler Line Flushing

Building fire sprinkler line flushing may be a source of non-stormwater runoff pollution. The water entering the system is usually potable water, though in some areas it may be non-potable reclaimed wastewater. There are subsequent factors that may drastically reduce the quality of the water in such systems. Black iron pipe is usually used since it is cheaper than potable piping, but it is subject to rusting and results in lower quality water. Initially, the black iron pipe has an oil coating to protect it from rusting between manufacture and installation; this will contaminate the water from the first flush but not from subsequent flushes. Nitrates, poly-phosphates and other corrosion inhibitors, as well as fire suppressants and antifreeze may be added to the sprinkler water system. Water generally remains in the sprinkler system a long time (typically a year) and between flushes may accumulate iron, manganese, lead, copper, nickel, and zinc. The water generally becomes anoxic and contains living and dead bacteria and breakdown products from chlorination. This may result in a significant BOD problem and the water often smells. Consequently dispose fire sprinkler line flush water into the sanitary sewer. Do not allow discharge to storm drain or infiltration due to potential high levels of pollutants in fire sprinkler line water.

References and Resources

California's Nonpoint Source Program Plan http://www.swrcb.ca.gov/nps/index.html

Clark County Storm Water Pollution Control Manual
http://www.co.clark.wa.us/pubworks/bmpman.pdf

King County Storm Water Pollution Control Manual http://dnr.metrokc.gov/wlr/dss/spcm.htm

Mobile Cleaners Pilot Program: Final Report. 1997. Bay Area Stormwater Management Agencies Association (BASMAA). http://www.basmaa.org/

Pollution from Surface Cleaning Folder. 1996. Bay Area Stormwater Management Agencies Association (BASMAA). http://www.basmaa.org/

Santa Clara Valley Urban Runoff Pollution Prevention Program http://www.scvurppp.org

The Storm Water Managers Resource Center http://www.stormwatercenter.net/

Efficient Irrigation SD-12

Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Irrigation water provided to landscaped areas may result in excess irrigation water being conveyed into stormwater drainage systems.

Approach

Project plan designs for development and redevelopment should include application methods of irrigation water that minimize runoff of excess irrigation water into the stormwater conveyance system.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment. (Detached residential single-family homes are typically excluded from this requirement.)

Design Considerations

Designing New Installations

The following methods to reduce excessive irrigation runoff should be considered, and incorporated and implemented where determined applicable and feasible by the Permittee:

- Employ rain-triggered shutoff devices to prevent irrigation after precipitation.
- Design irrigation systems to each landscape area's specific water requirements.
- Include design featuring flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines.
- Implement landscape plans consistent with County or City water conservation resolutions, which may include provision of water sensors, programmable irrigation times (for short cycles), etc.

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CALIFORNIA STORMWATER QUALITY ASSOCIATION

- Design timing and application methods of irrigation water to minimize the runoff of excess irrigation water into the storm water drainage system.
- Group plants with similar water requirements in order to reduce excess irrigation runoff and promote surface filtration. Choose plants with low irrigation requirements (for example, native or drought tolerant species). Consider design features such as:
  - Using mulches (such as wood chips or bar) in planter areas without ground cover to minimize sediment in runoff
  - Installing appropriate plant materials for the location, in accordance with amount of sunlight and climate, and use native plant materials where possible and/or as recommended by the landscape architect
  - Leaving a vegetative barrier along the property boundary and interior watercourses, to act as a pollutant filter, where appropriate and feasible
  - Choosing plants that minimize or eliminate the use of fertilizer or pesticides to sustain growth
- Employ other comparable, equally effective methods to reduce irrigation water runoff.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Maintenance Bays & Docks SD-31

Design Objectives

- Maximize Infiltration
- Provide Retention
- Slow Runoff
- Minimize Impervious Land Coverage
- ☑ Prohibit Dumping of Improper Materials
- ☑ Contain Pollutants
- Collect and Convey

Description

Several measures can be taken to prevent operations at maintenance bays and loading docks from contributing a variety of toxic compounds, oil and grease, heavy metals, nutrients, suspended solids, and other pollutants to the stormwater conveyance system.

Approach

In designs for maintenance bays and loading docks, containment is encouraged. Preventative measures include overflow containment structures and dead-end sumps. However, in the case of loading docks from grocery stores and warehouse/distribution centers, engineered infiltration systems may be considered.

Suitable Applications

Appropriate applications include commercial and industrial areas planned for development or redevelopment.

Design Considerations

Design requirements for vehicle maintenance and repair are governed by Building and Fire Codes, and by current local agency ordinances, and zoning requirements. The design criteria described in this fact sheet are meant to enhance and be consistent with these code requirements.

Designing New Installations

Designs of maintenance bays should consider the following:

- Repair/maintenance bays and vehicle parts with fluids should be indoors; or designed to preclude urban run-on and runoff.
- Repair/maintenance floor areas should be paved with Portland cement concrete (or equivalent smooth impervious surface).

CASQA
CALIFORNIA STORMWATER QUALITY ASSOCIATION

- Repair/maintenance bays should be designed to capture all wash water leaks and spills. Provide impermeable berms, drop inlets, trench catch basins, or overflow containment structures around repair bays to prevent spilled materials and wash-down waters form entering the storm drain system. Connect drains to a sump for collection and disposal. Direct connection of the repair/maintenance bays to the storm drain system is prohibited. If required by local jurisdiction, obtain an Industrial Waste Discharge Permit.
- Other features may be comparable and equally effective.

The following designs of loading/unloading dock areas should be considered:

- Loading dock areas should be covered, or drainage should be designed to preclude urban run-on and runoff.
- Direct connections into storm drains from depressed loading docks (truck wells) are prohibited.
- Below-grade loading docks from grocery stores and warehouse/distribution centers of fresh food items should drain through water quality inlets, or to an engineered infiltration system, or an equally effective alternative. Pre-treatment may also be required.
- Other features may be comparable and equally effective.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Additional Information

Stormwater and non-stormwater will accumulate in containment areas and sumps with impervious surfaces. Contaminated accumulated water must be disposed of in accordance with applicable laws and cannot be discharged directly to the storm drain or sanitary sewer system without the appropriate permit.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Trash Storage Areas SD-32

Description

Trash storage areas are areas where a trash receptacle (s) are located for use as a repository for solid wastes. Stormwater runoff from areas where trash is stored or disposed of can be polluted. In addition, loose trash and debris can be easily transported by water or wind into nearby storm drain inlets, channels, and/or creeks. Waste handling operations that may be sources of stormwater pollution include dumpsters, litter control, and waste piles.

Approach

This fact sheet contains details on the specific measures required to prevent or reduce pollutants in stormwater runoff associated with trash storage and handling. Preventative measures including enclosures, containment structures, and impervious pavements to mitigate spills, should be used to reduce the likelihood of contamination.

Design Objectives

- Maximize Infiltration
- Provide Retention
- Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- ☑ Contain Pollutants
- Collect and Convey

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment. (Detached residential single-family homes are typically excluded from this requirement.)

Design Considerations

Design requirements for waste handling areas are governed by Building and Fire Codes, and by current local agency ordinances and zoning requirements. The design criteria described in this fact sheet are meant to enhance and be consistent with these code and ordinance requirements. Hazardous waste should be handled in accordance with legal requirements established in Title 22, California Code of Regulation.

Wastes from commercial and industrial sites are typically hauled by either public or commercial carriers that may have design or access requirements for waste storage areas. The design criteria in this fact sheet are recommendations and are not intended to be in conflict with requirements established by the waste hauler. The waste hauler should be contacted prior to the design of your site trash collection areas. Conflicts or issues should be discussed with the local agency.

Designing New Installations

Trash storage areas should be designed to consider the following structural or treatment control BMPs:

- Design trash container areas so that drainage from adjoining roofs and pavement is diverted around the area(s) to avoid run-on. This might include berming or grading the waste handling area to prevent run-on of stormwater.
- Make sure trash container areas are screened or walled to prevent off-site transport of trash.

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CALIFORNIA STORMWATER QUALITY ASSOCIATION

- Use lined bins or dumpsters to reduce leaking of liquid waste.
- Provide roofs, awnings, or attached lids on all trash containers to minimize direct precipitation and prevent rainfall from entering containers.
- Pave trash storage areas with an impervious surface to mitigate spills.
- Do not locate storm drains in immediate vicinity of the trash storage area.
- Post signs on all dumpsters informing users that hazardous materials are not to be disposed of therein.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Additional Information

Maintenance Considerations

The integrity of structural elements that are subject to damage (i.e., screens, covers, and signs) must be maintained by the owner/operator. Maintenance agreements between the local agency and the owner/operator may be required. Some agencies will require maintenance deed restrictions to be recorded of the property title. If required by the local agency, maintenance agreements or deed restrictions must be executed by the owner/operator before improvement plans are approved.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.