WQ XX-XXXX

City of Yorba Linda/Santa Ana Region Priority Project Water Quality Management Plan (WQMP)

Project Name:

YORBA LINDA BOULEVARD IMPROVEMENTS

FROM IMPERIAL HIGHWAY TO LAKEVIEW AVENUE

CIP No. SI1201001

Prepared for:

City of Yorba Linda, Public Works Department

4845 Casa Loma Avenue

Yorba Linda, California 92886

(714) 961-7170

Prepared by:

BKF Engineers

4675 MacArthur Court, Suite 400

Newport Beach, California 92660

(949)633-6524, pjones@bkf.com



April 2024 (Revised June 2024)

Project Owner's Certification			
Planning Application No. (If applicable)	N/A	Grading Permit No.	N/A
Tract/Parcel Map and Lot(s) No.	N/A	Building Permit No.	N/A
Address of Project Site and APN (If no address, specify Tract/Parcel Map and Lot Numbers)			Yorba Linda Blvd. from Imperial Hwy. to Lakeview Ave.

This Water Quality Management Plan (WQMP) has been prepared for the City of Yorba Linda, Public Works Department by BKF Engineers. The WQMP is intended to comply with the requirements of the County of Orange NPDES Stormwater Program requiring the preparation of the plan.

The undersigned, while it owns the subject property, is responsible for the implementation of the provisions of this plan , including the ongoing operation and maintenance of all best management practices (BMPs), and will ensure that this plan is amended as appropriate to reflect up-to-date conditions on the site consistent with the current Orange County Drainage Area Management Plan (DAMP) and the intent of the non-point source NPDES Permit for Waste Discharge Requirements for the County of Orange, Orange County Flood Control District and the incorporated Cities of Orange County within the Santa Ana Region. Once the undersigned transfers its interest in the property, its successors-in-interest shall bear the aforementioned responsibility to implement and amend the WQMP. An appropriate number of approved and signed copies of this document shall be available on the subject site in perpetuity.

Owner:			
Title	Jamie Lai, Public Works Director/City Engineer		
Company	City of Yorba Linda, Public Works Department		
Address	4845 Casa Loma Avenue, Yorba Linda, CA 92886		
Email	jlai@yorbalindaca.gov		
Telephone #	714-961-7170		
I understand my responsibility to implement the provisions of this WQMP including the ongoing operation and maintenance of the best management practices (BMPs) described herein.			
Owner Signature		Date	

Preparer (Engineer):			
Title	Phillip M. Jones	PE Registration #	C44010
Company	BKF Engineers		
Address	4675 MacArthur Court, Suite 400, Newport Beach, CA 92660		
Email	pjones@bkf.com		
Telephone #	949-633-6524		
I hereby certify that this Water Quality Management Plan is in compliance with, and meets the requirements set forth in, Order No. R8-2009-0030/NPDES No. CAS618030, of the Santa Ana Regional Water Quality Control Board.			
Preparer Signature	See signature on stamp below.	Date	June 25, 2024
Place Stamp Here			

Notice of Transfer of Responsibility
Water Quality Management Plan (WQMP)

WQMP Number – As assigned by the City:_____

Submission of this Notice of Transfer of Responsibility constitutes notice to the City that responsibility for the Water Quality Management Plan (WQMP) for the subject property identified below, and implementation of that plan, is being transferred from the Previous Owner (and his/her agent) of the site (or portion thereof) to the New Owner, as further described below.

I. Owner/ Responsible Party Information

Company/ Individual:_____ Contact Person:_____

Street Address:_____ Title:_____

City _____State____ Zip_____ Phone:_____

II. Information about Site Relevant to WQMP

Name of Project: _____

Title of WQMP applicable to site: _____

Street Address of the site: _____

Date of Transfer of Responsibility: _____

III. New Owner (Upon Transfer)/ Responsible Party Information

Company/ Individual:_____ Contact Person:_____

Street Address:_____ Title:_____

City _____State____ Zip_____ Phone:_____

REVISIONS

No.	*Date*	*By*	*Description*	*Accepted*	*Date*
1	6/27/24	P. Jones	Place WQMP on City template & minor revisions		

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Attachments

Attachment A . ..... Educational Materials

Section I Permit(s) and Water Quality Conditions of Approval or Issuance

Provide discretionary or grading/building permit information and water quality conditions of approval, or permit issuance, applied to the project. If conditions are unknown, please request applicable conditions from staff. *Refer to Section 2.1 in the Technical Guidance Document (TGD) available on the OC Planning website (ocplanning.net).*

Project Infomation			
Permit/Application No. (If applicable)	N/A	Grading or Building Permit No. (If applicable)	N/A
Address of Project Site (or Tract Map and Lot Number if no address) and APN	Yorba Linda Blvd. from 400-ft West of Imperial Hwy. to 400-ft East of Lakeview Ave.		
Water Quality Conditions of Approval or Issuance			
Water Quality Conditions of Approval or Issuance applied to this project. (Please list verbatim.)	No water quality conditions of approval were issued for this project; however, the project is considered a priority project under the following guidance: Per Table 7.II-2: Priority Projects Categories for North County Permit Area: Priority Project Category 7: Streets, roads, highways, and freeways. This category includes any paved surface that is 5,000 square feet or greater used for the transportation of automobiles, trucks, motorcycles, and other vehicles.		
Conceptual WQMP			
Was a Conceptual Water Quality Management Plan previously approved for this project?	No conceptual WQMP was prepared for the subject project.		

Watershed-Based Plan Conditions	
Provide applicable conditions from watershed - based plans including WIHMPs and TMDLS.	The Federal Clean Water Act Section 303(d) requires that States identify waters that do not or are not expected to meet water quality standards with implementation of technology-based controls. Once a waterbody has been placed on Category 5 of the 303(d) list of impaired waters, states are required to develop a Total Maximum Daily Load (TMDL) to address each pollutant causing impairment. All TMDLs that have been adopted by the Santa Ana Regional Water Quality Control Board and approved by the Environmental Protection Agency are found in Chapter 6 of the Santa Ana Regional Water Quality Control Board's Water Quality Basin Plan. The 2019 update to the Basin Plan indicates that there are TMDLs for the Middle Santa Ana River Watershed (located north-easterly of the reach of the Santa Ana River watershed impacted by the subject project, Reach 3 and upstream). The 2019 updated Basin Plan does not identify any current TMDL requirements for the portion of the Santa Ana River impacted by the subject project (Pacific Ocean to Prado Dam – Reach 1 – Tidal Prism to 17th Street and Reach 2 – 17th Street to Prado Dam). Watershed Infiltration and Hydromodification Management Plan (WIHMP) data are useful for implementation of low impact development (LID), identification of hydromodification conditions of concern (HCOCs), and watershed planning. WIHMPs were developed for the Santa Ana River Watershed in 2012. The WIHMP was developed to address the HCOCs on a watershed and sub-watershed basis; include maps to identify areas and structures that are susceptible to hydromodification impacts; and including downstream erosion, impacts on physical structures, and impacts on riparian and aquatic habitats; include maps to identify areas where stormwater and urban runoff infiltration is possible and appropriate given sub-surface conditions and other factors such as down gradient habitats; and may specify hydromodification management standards for each sub-watershed. The OC Public Works WIHMP data map indicates two constraints for the area in and around the subject project site which may be the potential for type D soils and some very small reaches of unstable earthen channels within the region to the east of the project site.

Section II Project Description

II.1 Project Description

Provide a detailed project description including:

- Project areas;
- Land uses;
- Land cover;
- Design elements;
- A general description not broken down by drainage management areas (DMAs).

Include attributes relevant to determining applicable source controls. *Refer to Section 2.2 in the Technical Guidance Document (TGD) for information that must be included in the project description.*

Description of Proposed Project				
Development Category (From Model WQMP, Table 7.11-2; or -3):	Per Table 7.II-2: Priority Projects Categories for North County Permit Area: Priority Project Category 7: Streets, roads, highways, and freeways. This category includes any paved surface that is 5,000 square feet or greater used for the transportation of automobiles, trucks, motorcycles, and other vehicles.			
Project Area (ft^2): 192,430.62 SF	Number of Dwelling Units: N/A		SIC Code: N/A	
Project Area	Pervious		Impervious	
	Area (acres or sq ft)	Percentage	Area (acres or sq ft)	Percentage
Pre-Project Conditions	0.21 acres	4.65%	4.21 acres	95.35%
Post-Project Conditions	0.08 acres	1.89%	4.34	98.11%
Drainage Patterns/Connections	Yorba Linda Boulevard drains from east to west from the beginning of the project to approximately 150-feet east of the Lakeview Avenue intersection. The project drains from west to east from approximately 150-feet east of Yorba Linda/Lakeview intersection to the easterly end of the project. The County of Orange 2-foot interval contours were overlaid across the project area, and in general, both Imperial Highway and Lakeview tend to drain from north to south. Existing drainage infrastructure: There are existing catch basin inlets located (see Figure No. 2):			

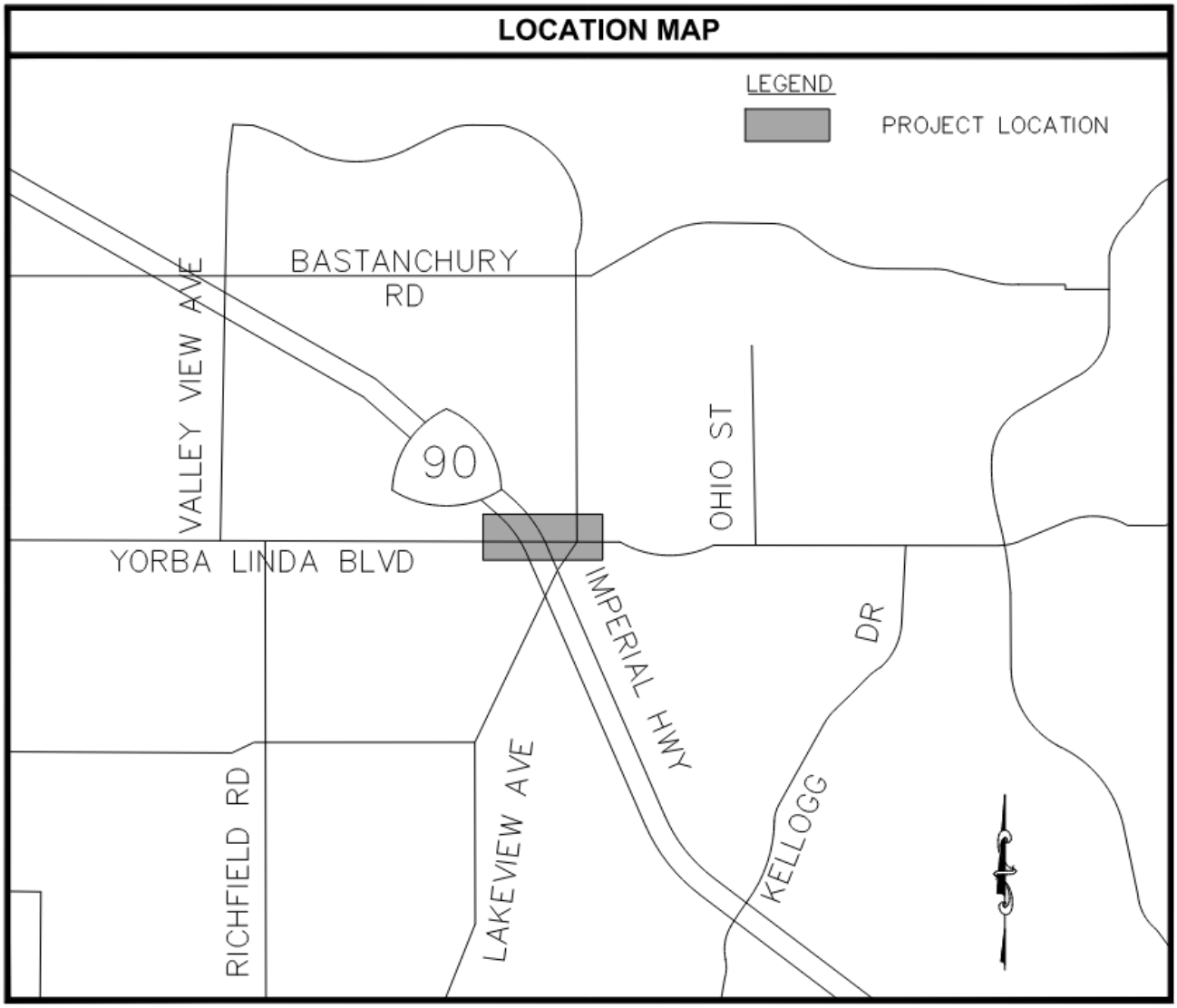
	• Along Yorba Linda Blvd. approximately 80-ft west from the Imperial Hwy. intersection (north side of the Blvd.) • Along Imperial Hwy. approximately 75-ft north from the Yorba Linda Blvd. intersection (both sides of the Hwy.) • Along Imperial Hwy. approximately 200-ft south from the Yorba Linda Blvd. intersection (east side of the Hwy.) • Along Lakeview Ave. approximately 15-ft north of the Yorba Linda intersection (east side of the Ave.) • Along Lakeview Ave. approximately 200-ft south of of the Yorba Linda intersection (east side of the Ave.) Along Yorba Linda Ave. approximately 550-ft east of the Lakeview Ave. intersection (both side of the Blvd.)

Narrative Project Description: (Use as much space as necessary.)	The Yorba Linda Boulevard Improvements – from Imperial Highway to Lakeview Avenue Project is located from the intersection of Yorba Linda Boulevard and Imperial Highway to the intersection of Yorba Linda Boulevard and Lakeview Avenue in the City of Yorba Linda, Orange County, California. The project limits measure approximately 0.28 mile (mi) along Yorba Linda Boulevard east of Park Avenue and west of Avocado Avenue. See Location Map (Figure No. 1) **Yorba Linda Boulevard and Imperial Highway Intersection** The project improvements for the intersection widening at the intersections of Yorba Linda Boulevard and Imperial Highway include the following: • Convert the eastbound single left turn lane on Yorba Linda Boulevard at the intersection with Imperial Highway to dual left turn lanes. • Add an eastbound right turn lane on Yorba Linda Boulevard at the intersection with Imperial Highway. • Convert the westbound single left turn lane on Yorba Linda Boulevard at the intersection with Imperial Highway to dual left turn lanes. • Modify the northerly and southerly curb lines and curb returns and the raised median on the west leg of Yorba Linda Boulevard at the intersection with Imperial Highway to accommodate an additional eastbound left turn lane and eastbound right turn lane. • Modify the southerly curb line and curb return on the east leg of Yorba Linda Boulevard at the intersection with Imperial Highway to accommodate an additional westbound left turn lane. • Modify the raised median on the east leg of Yorba Linda Boulevard to extend to Lakeview Avenue. • Modify the traffic signals; and • Restripe Yorba Linda Boulevard to modify lane designations **Yorba Linda Boulevard and Lakeview Avenue Intersection** The project improvements for the intersection widening at the intersections of Yorba Linda Boulevard and Lakewiew Avenue include the following: • Convert the eastbound single left turn lane on Yorba Linda Boulevard at the intersection with Lakeview Avenue to dual left turn lanes. • Convert the westbound single left turn lane on Yorba Linda Boulevard at the intersection with Lakeview Avenue to dual left turn lanes. • Modify the southerly curb line and curb return on the east leg of Yorba Linda Boulevard at the intersection with Lakeview Avenue to accommodate an additional left turn lane. • Modify the southerly curb line and curb return and the median on the west leg of Yorba Linda Boulevard at the intersection with Lakeview Avenue to accommodate an additional left turn lane. • Modify the raised median on the west leg of Yorba Linda Boulevard to extend to Imperial Highway.

- Modify the raised median on the east leg of Yorba Linda Boulevard. Remove the gap in the median which was used to enter the Firestone Village shopping center. Remove the left turn pocket which allowed eastbound vehicles to turn left into the driveway west of the Wells Fargo.
- Modify the traffic signals; and
- Restripe Yorba Linda Boulevard to modify lane designations**.**

Land Cover:
The existing land cover is predominately asphalt concrete (AC) paving and concrete sidewalks with minimal decorative landscped areas adjacent to the sidewalks and in the center meadian.

Land Uses:
The project itself is a roadway improvement project; however, existing adjacent land use is 100% commercial within the project limits.


LOCATION MAP
LEGEND
PROJECT LOCATION
BASTANCHURY RD
VALLEY VIEW AVE
90
OHIO ST
YORBA LINDA BLVD
IMPERIAL HWY
DR
KELLOGG
LAKEVIEW AVE
RICHFIELD RD

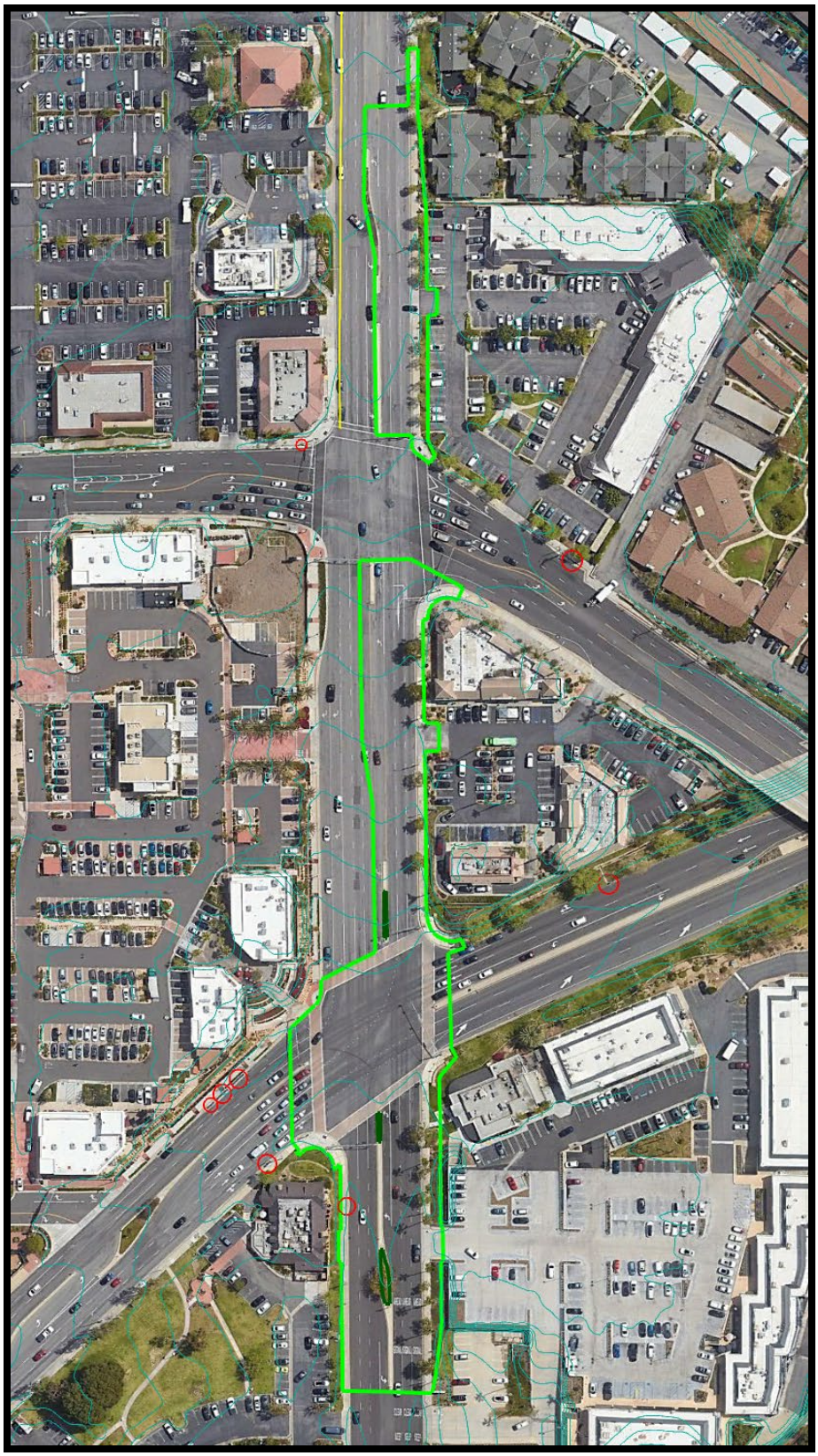


Figure No. 2 – Location of Project Area Catch Basin Inlets

II.2 Potential Stormwater Pollutants

Determine and list expected stormwater pollutants based on land uses and site activities. *Refer to Section 2.2.2 and Table 2.1 in the Technical Guidance Document (TGD) for guidance.*

Pollutants of Concern			
Pollutant	Check One for each: E=Expected to be of concern N=Not Expected to be of concern		Additional Information and Comments
Suspended-Solid/ Sediment	E ☒	N ☐	Typical with Roadway Projects – Table 2.1 OCTGD
Nutrients	E ☒	N ☐	Typical with Roadway Projects – Table 2.1 OCTGD, Note 1
Heavy Metals	E ☒	N ☐	Typical with Roadway Projects – Table 2.1 OCTGD
Pathogens (Bacteria/Virus)	E ☒	N ☐	Typical with Roadway Projects – Table 2.1 OCTGD, Note 4
Pesticides	E ☒	N ☐	Landscaped Areas – Table 2.1 OCTGD, Note 1
Oil and Grease	E ☒	N ☐	Typical with Roadway Projects – Table 2.1 OCTGD
Toxic Organic Compounds	E ☒	N ☐	Typical with Roadway Projects – Table 2.1 OCTGD
Trash and Debris	E ☒	N ☐	Typical with Roadway Projects & Commercial Areas – Table 2.1 OCTGD

II.3 Hydrologic Conditions of Concern

Determine if streams located downstream from the project area are potentially susceptible to hydromodification impacts. *Refer to Section 2.2.3.1 in the Technical Guidance Document (TGD) for North Orange County or Section 2.2.3.2 for South Orange County.*

☒ No – Show map

☐ Yes – Describe applicable hydrologic conditions of concern below. *Refer to Section 2.2.3 in the Technical Guidance Document (TGD).*

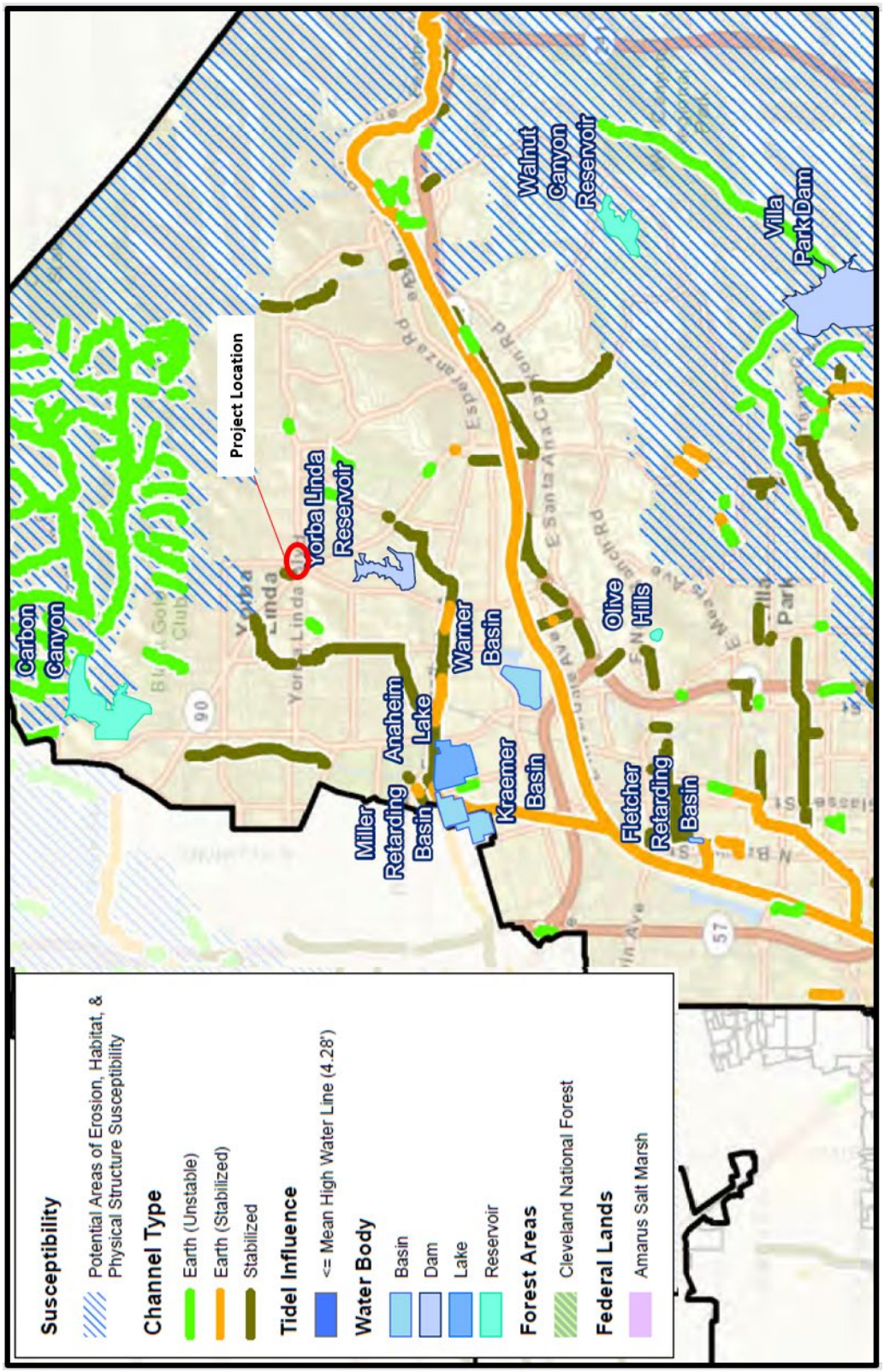


Figure No. 3 – HCOC Susceptibility Map

No Hydrologic Conditions of Concern

II.4 Post Development Drainage Characteristics

Describe post development drainage characteristics. *Refer to Section 2.2.4 in the Technical Guidance Document (TGD).*

The proposed project (Yorba Linda Boulevard Improvements from Imperial Highway to Lakeview Avenue) is an intersection improvements project (AC Paving Replacement, New Street Pavers, and New Concrete Sidewalk) with approximately 1.31 acres in impacts (4.42 acres of project area when including AC overlay area). As such, the project falls under applicable USEPA Green Streets guidance criteria. Due to the extremely confined right of way and area soil conditions, site LID BMPs utilizing infiltration type BMPs is infeasible. Per OCTGD Table 2.8, USEPA Green Streets guidance indicates that proprietary biotreatment is an option for projects with confined space issues. Therefore, Contech Filterra Biotreatment BMPs have been selected to treat the project impact area of 1.32 acres. The project proposes to preserve the boulevard's existing street pavers by replacing 6,518.6 SF of decorative street pavers at the Yorba Linda Boulevard/Imperial Highway intersection to match the existing pavers. In addition, the project proposes to install 10,466 SF of pervious landscaping.

1.32 acres of full depth AC paving, new concrete sidewalk, and street pavers replacement needs to be mitigated. To mitigate the 1.32 acres of impact, two Filterra Biotreatment Units will be installed to treat an equivalent area. Two DMAs were formed matching the tributary area to each Filterra Unit.

DMA 1 has a tributary area of 1.01 acres (43,813 SF) and is 100% impervious.
DMA 2 has a tributary area of 0.31 acres (13,324 SF) and is 88.4 % impervious.

Filterra Quick Sizing Guide for Western Zones, Commercial:

Based on the manufacturer's suggested 0.0023148 cfs/SF design flow

DMA 1:

DCV = D x A x C x 43,560/12 = (0.9 x 1.01 x 0.900 x 43,560/12) = 2,969.7 cu-ft

C = (0.75 x %imp) + 0.15 = (0.75 x 1.00) + 0.15 = 0.900

Q_{wq} = CiA = 0.9 x 0.20 x 1.01 = 0.0.182 cfs

Filterra Area = 0.182/0.0023148 = 78.6 SF (one – 13 x 7 Unit = 91 SF)

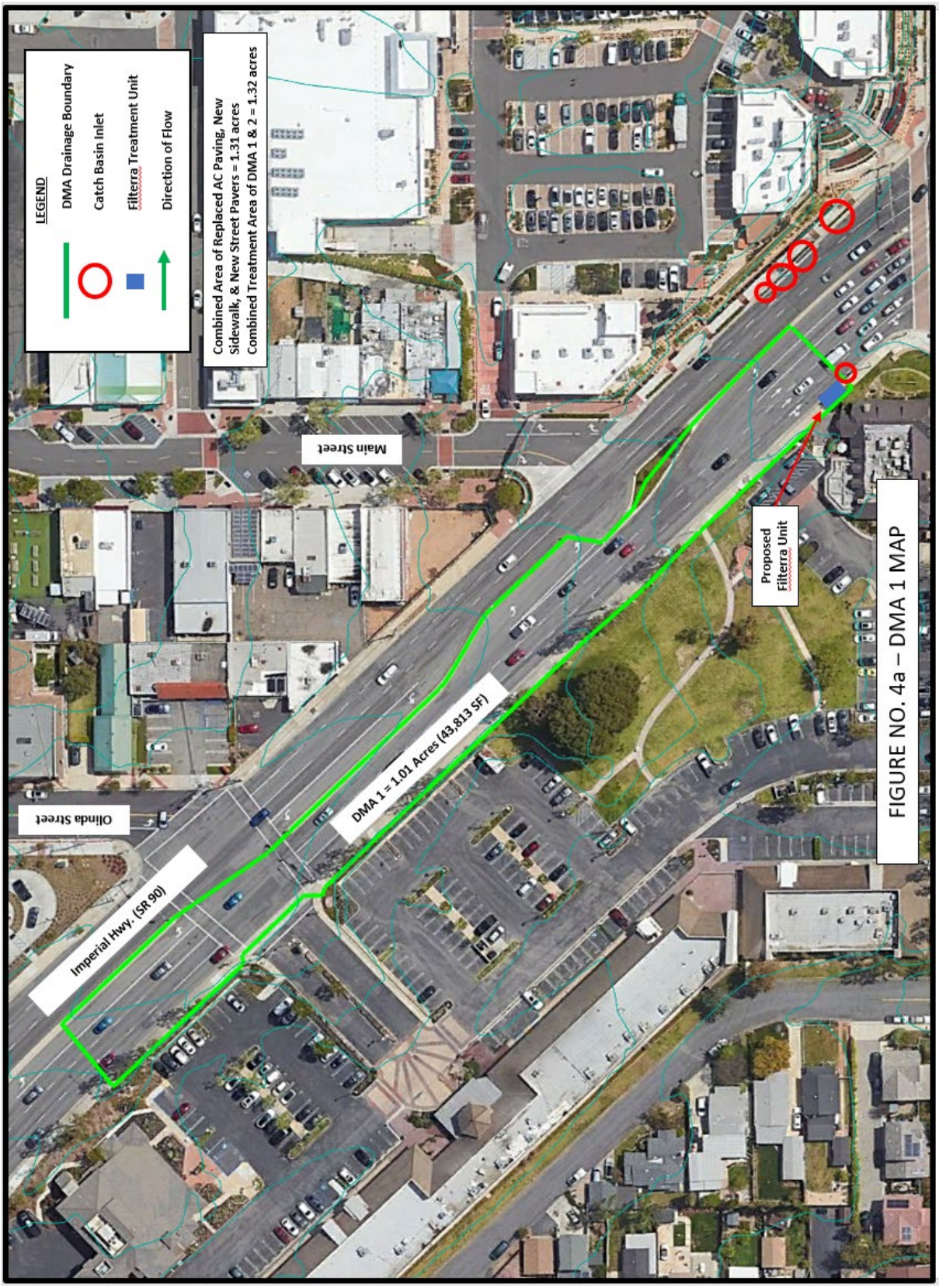
DMA 2:

DCV = D x A x C x 43560/12 = 0.90 x 0.31 x 0.813 x 43560/12 = 823.4 cu-ft

C = (0.75 x %imp) + 0.15 = (0.75 x 0.884) + 0.15 = 0.813

Q_{wq} = CiA = 0.813 x 0.2 x 0.31 = 0.050 cfs

Filterra Area = 0.062/0.0023148 = 21.8 SF (one – 6x4 Unit = 24 SF)


LEGEND
DMA Drainage Boundary
Catch Basin Inlet
Filterra Treatment Unit
Direction of Flow
Combined Area of Replaced AC Paving, New Sidewalk, & New Street Pavers = 1.31 acres
Combined Treatment Area of DMA 1 & 2 = 1.32 acres
Main Street
Proposed Filterra Unit
DMA 1 = 1.01 Acres (43,813 SF)
Olinda Street
Imperial Hwy. (SR 90)
FIGURE NO. 4a – DMA 1 MAP

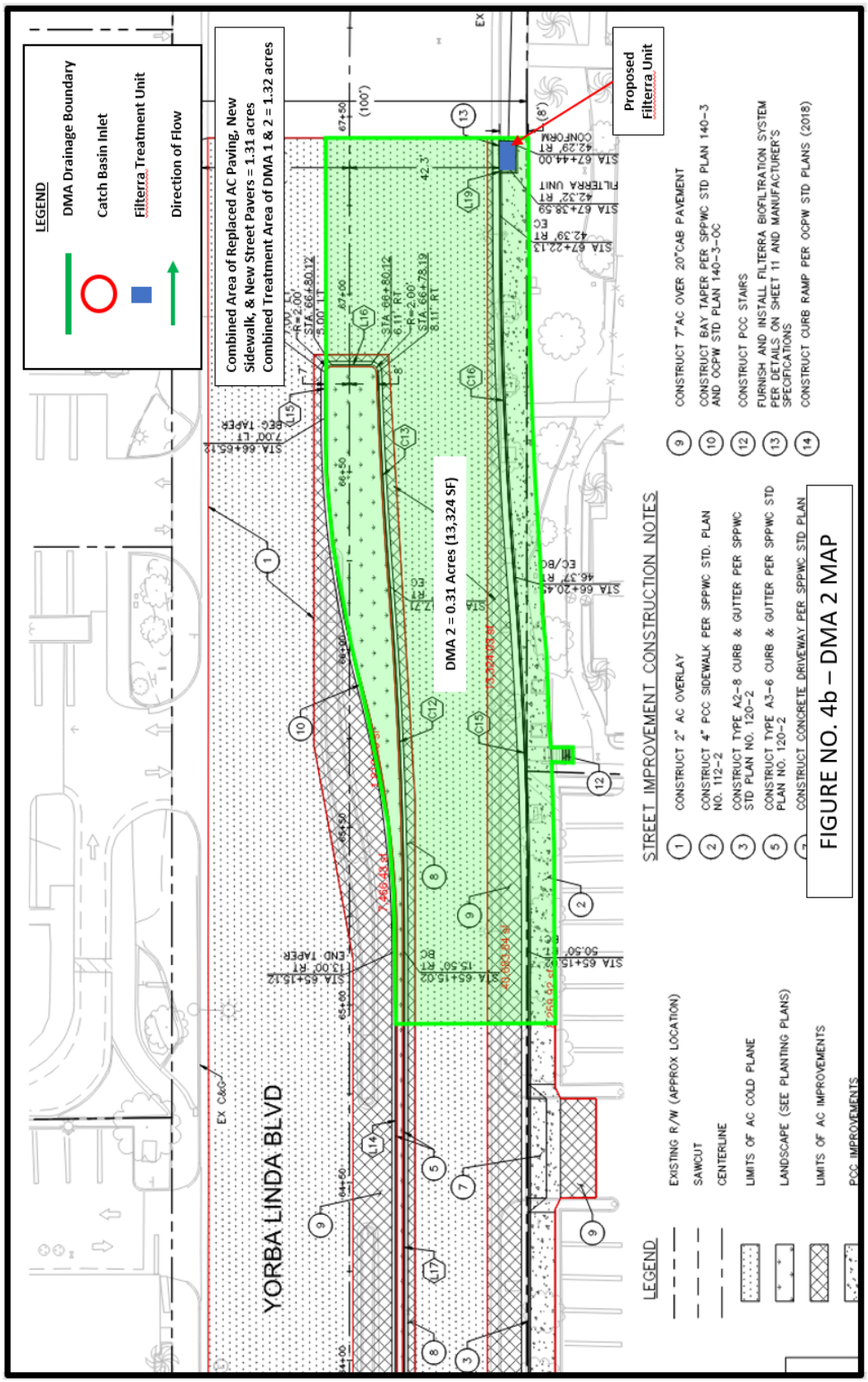


FIGURE NO. 4b – DMA 2 MAP

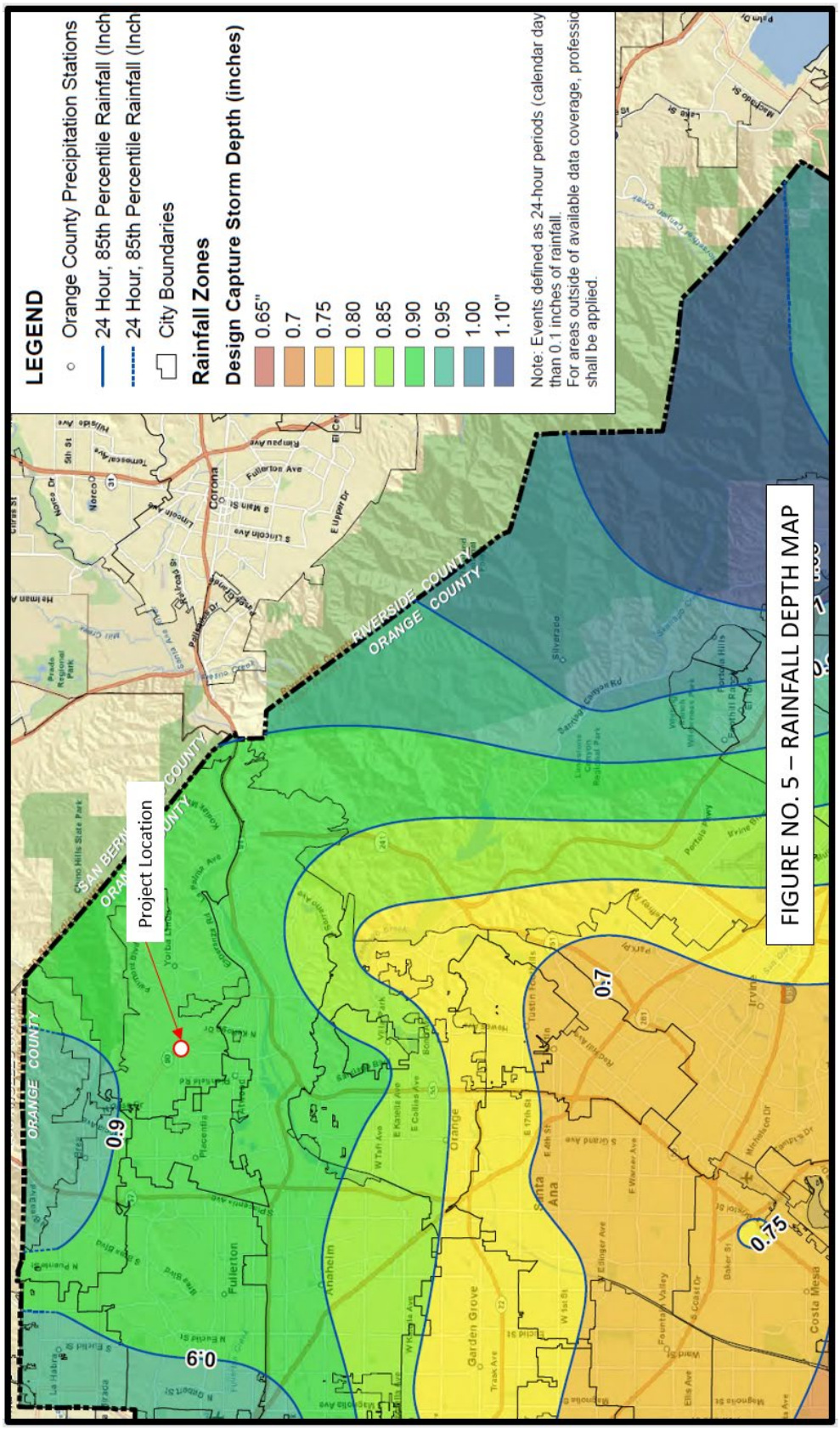


FIGURE NO. 5 – RAINFALL DEPTH MAP

II.5 Property Ownership/Management

Describe property ownership/management. *Refer to Section 2.2.5 in the Technical Guidance Document (TGD).*

The subject project right of way is owned, operated, and maintained by the City of Yorba Linda, Public Works Department.

Section III Site Description

III.1 Physical Setting

Fill out table with relevant information. *Refer to Section 2.3.1 in the Technical Guidance Document (TGD).*

Name of Planned Community/Planning Area (if applicable)	City of Yorba Linda
Location/Address	Yorba Linda Boulevard
	Between Imperial Highway and Lakeview Avenue
General Plan Land Use Designation	Project is a road improvement; however, adjacent land uses are commercial
Zoning	Project is a road improvement; however, adjacent zoning is commercial
Acreage of Project Site	4.42 acres
Predominant Soil Type	Soil Type D

III.2 Site Characteristics

Fill out table with relevant information and include information regarding BMP sizing, suitability, and feasibility, as applicable. *Refer to Section 2.3.2 in the Technical Guidance Document (TGD).*

Site Characteristics	
Precipitation Zone	0.9
Topography	Slopes vary from 0.5% to 4.1% (see attached plan and profile sheets)

Drainage Patterns/Connections	Yorba Linda Boulevard drains from east to west from the beginning of the project to approximately 150-feet east of the Lakeview Avenue intersection. The project drains from west to east from approximately 150-feet east of Yorba Linda/Lakeview intersection to the easterly end of the project. The County of Orange 2-foot interval contours were overlaid across the project area, and in general, both Imperial Highway and Lakeview tend to drain from north to south. Existing drainage infrastructure: There are existing catch basin inlets located (see Figure No. 2): • Along Yorba Linda Blvd. approximately 80-ft west from the Imperial Hwy. intersection (north side of the Blvd.) • Along Imperial Hwy. approximately 75-ft north from the Yorba Linda Blvd. intersection (both sides of the Hwy.) • Along Imperial Hwy. approximately 200-ft south from the Yorba Linda Blvd. intersection (east side of the Hwy.) • Along Lakeview Ave. approximately 15-ft north of the Yorba Linda intersection (east side of the Ave.) • Along Lakeview Ave. approximately 200-ft south of of the Yorba Linda intersection (east side of the Ave.) Along Yorba Linda Ave. approximately 550-ft east of the Lakeview Ave. intersection (both side of the Blvd.)
Soil Type, Geology, and Infiltration Properties	Type D soils (Infiltration is not a viable option)
Hydrogeologic (Groundwater) Conditions	Per the September 22, 2023 Ninyo and Moore Geotechnical Report for the project, no groundwater was encountered in the exploratory borings to a depth of 41.5 feet BGS.
Geotechnical Conditions (relevant to infiltration)	Infiltration was not a viable option for the project site due to severe right of way constraints.
Off-Site Drainage	The main drainage system in the area is the Nixon Storm Drain (E05P02) located westerly of the project which flows westerly to the Richfield Channel (E05). E05 flows to Atwood Channel (E04) which flows to the Carbon Creek Diversion Channel (E02). E02 then flows southerly to the Santa Ana River (E01) which flows southerly to the Pacific Ocean.
Utility and Infrastructure Information	There are several utilities within Yorba Linda Boulevard. Refer to the utility plan of the attached plan set.

III.3 Watershed Description

Fill out table with relevant information and include information regarding BMP sizing, suitability, and feasibility, as applicable. *Refer to Section 2.3.3 in the Technical Guidance Document (TGD).*

Receiving Waters	Nixon Storm Drain (OCFCD Facility No. E05P02) which eventually flows to the lower reach of the Santa Ana River (between the Pacific Ocean and Prado Dam)
303(d) Listed Impairments	N/A – There are no listed 303(d) Category 5 impairments for the lower reach of the Santa Ana River (Pacific Ocean to Prado Dam).
Applicable TMDLs	N/A – There are no listed TMDLs for the receiving waters.
Pollutants of Concern for the Project	Pollutants of concern consist of pollutants consistent with most urban roadway projects: Suspended solids, nutrients, heavy metals, pathogens, pesticides, oil and grease, toxic organic compounds, and trash & debris.
Environmentally Sensitive and Special Biological Significant Areas	There are no environmentally sensitive areas or special biological significant areas within, adjacent, or near the project site.

Section IV Best Management Practices (BMPs)

IV. 1 Project Performance Criteria

Describe project performance criteria. Several steps must be followed in order to determine what performance criteria will apply to a project. These steps include:

- If the project has an approved WIHMP or equivalent, then any watershed specific criteria must be used and the project can evaluate participation in the approved regional or sub-regional opportunities. (Please ask your assigned planner or plan checker regarding whether your project is part of an approved WIHMP or equivalent.)
- Determine applicable hydromodification control performance criteria. *Refer to Section 7.II-2.4.2.2 of the Model WQMP.*
- Determine applicable LID performance criteria. *Refer to Section 7.II-2.4.3 of the Model WQMP.*
- Determine applicable treatment control BMP performance criteria. *Refer to Section 7.II-*3.2.2 *of the Model WQMP.*
- Calculate the LID design storm capture volume for the project. *Refer to Section 7.II-2.4.3 of the Model WQMP.*

(NOC Permit Area only) Is there an approved WIHMP or equivalent for the project area that includes more stringent LID feasibility criteria or if there are opportunities identified for implementing LID on regional or sub-regional basis?	YES ☐	NO ☒
If yes, describe WIHMP feasibility criteria or regional/sub-regional LID opportunities.		

Project Performance Criteria	
If HCOC exists, list applicable hydromodification control performance criteria (Section 7.II-2.4.2.2 in MWQMP)	N/A - In the North Orange County permit area, HCOCs are considered to exist if any streams located downstream from the project are determined to be potentially susceptible to hydromodification impacts. The downstream drainage system has been determined to "not" be susceptible to hydromodification impacts per the North OCTGD, Susceptibility Analysis for the Santa Ana River Watershed, Figure 3.
List applicable LID performance criteria (Section 7.II-2.4.3 from MWQMP)	Per the MWQMP: • Priority Projects must infiltrate, harvest and use, evapotranspire, or biotreat/biofilter, the 85th percentile, 24-hour storm event (Design Capture Volume). • A properly designed biotreatment system may only be considered if infiltration, harvest and use, and evapotranspiration (ET) cannot be feasibly implemented for the full design capture volume. In this case, infiltration, harvest and use, and ET practices must be implemented to the greatest extent feasible and biotreatment may be provided for the remaining design capture volume. The proposed project (Yorba Linda Boulevard Improvements from Imperial Highway to Lakeview Avenue) is an intersection improvements project. As such, the project falls under applicable USEPA Green Streets guidance criteria. Due to the extremely confined right of way and area soil conditions, site LID BMPs utilizing infiltration type BMPs is infeasible. Per OCTGD Table 2.8, USEPA Green Streets guidance indicates that proprietary biotreatment is an option for projects with confined space issues.
List applicable treatment control BMP performance criteria (Section 7.II-3.2.2 from MWQMP)	The proposed proprietary biotreatment BMPs (Contech Filterra Bioretention Systems) will be sized to treat the runoff/discharge from the 24-hour, 85^{th} percentile storm event.

Calculate LID design storm capture volume for Project.	1.32 acres of full depth AC paving, new concrete sidewalk, and street pavers replacement needs to be mitigated. To mitigate the 1.32 acres of impact, two Filterra Biotreatment Units will be installed to treat an equivalent area. Two DMAs were formed matching the tributary area to each Filterra Unit. DMA 1 has a tributary area of 1.01 acres (43,813 SF) and is 100% impervious. DMA 2 has a tributary area of 0.31 acres (13,324 SF) and is 88.4 % impervious. Filterra Quick Sizing Guide for Western Zones, Commercial: Based on the manufacturer's suggested 0.0023148 cfs/SF design flow DMA 1: DCV = D x A x C x 43,560/12 = (0.9 x 1.01 x 0.900 x 43,560/12) = 2,969.7 cu-ft C = (0.75 x %imp) + 0.15 = (0.75 x 1.00) + 0.15 = 0.900 Q_{wq} = CiA = 0.9 x 0.20 x 1.01 = 0.0.182 cfs Filterra Area = 0.182/0.0023148 = 78.6 SF (one – 13 x 7 Unit = 91 SF) DMA 2: DCV = D x A x C x 43560/12 = 0.90 x 0.31 x 0.813 x 43560/12 = 823.4 cu-ft C = (0.75 x %imp) + 0.15 = (0.75 x 0.884) + 0.15 = 0.813 Q_{wq} = CiA = 0.813 x 0.2 x 0.31 = 0.050 cfs Filterra Area = 0.062/0.0023148 = 21.8 SF (one – 6x4 Unit = 24 SF)

IV.2. Site Design and Drainage

Describe site design and drainage including

- A narrative of site design practices utilized or rationale for not using practices;
- A narrative of how site is designed to allow BMPs to be incorporated to the MEP
- A table of DMA characteristics and list of LID BMPs proposed in each DMA.
- Reference to the WQMP "BMP Exhibit."
- Calculation of Design Capture Volume (DCV) for each drainage area.
- A listing of GIS coordinates for LID and Treatment Control BMPs.

Refer to Section 2.4.2 in the Technical Guidance Document (TGD).

The proposed project (Yorba Linda Boulevard Improvements from Imperial Highway to Lakeview Avenue) is an intersection improvements project (AC Paving Replacement, New Street Pavers, and New Concrete Sidewalk) with approximately 1.31 acres in impacts (4.42 acres of project area when including AC overlay area). As such, the project falls under applicable USEPA Green Streets guidance criteria. Due to the extremely confined right of way and area soil conditions, site LID BMPs utilizing infiltration type BMPs is infeasible. Per OCTGD Table 2.8, USEPA Green Streets guidance indicates that proprietary biotreatment is an option for projects with confined space issues. Therefore, Contech Filterra Biotreatment BMPs have been selected to treat the project impact area of 1.32 acres. The project proposes to preserve the boulevards existing street pavers by replacing 6,518.6 SF of decorative street pavers at the Yorba Linda Boulevard/Imperial Highway intersection to match the existing pavers. In addition, the project proposes to install 10,466 SF of pervious landscaping.

1.32 acres of full depth AC paving, new concrete sidewalk, and street pavers replacement needs to be mitigated. To mitigate the 1.32 acres of impact, two Filterra Biotreatment Units will be installed to treat an equivalent or greater tributary area. Two DMAs were formed matching the tributary area to each Filterra Unit.

DMA 1 has a tributary area of 1.92 acres (83,440 SF) and is 95.5% impervious.
Proposed GIS Coordinates for DMA 1 Filterra Unit: 33° 53' 19.27" N 117° 48' 50.03" W

DMA 2 has a tributary area of 0.38 acres (16,686 SF) and is 88.4 % impervious.
Proposed GIS Coordinates for DMA 2 Filterra Unit: 33° 53' 18.54" N 117° 48' 35.23" W

See Figure No. 4 and attached plan set.

IV.3 LID BMP Selection and Project Conformance Analysis

Each sub-section below documents that the proposed design features conform to the applicable project performance criteria via check boxes, tables, calculations, narratives, and/or references to worksheets. *Refer to Section 2.4.2.3 in the Technical Guidance Document (TGD) for selecting LID BMPs and Section 2.4.3 in the Technical Guidance Document (TGD) for conducting conformance analysis with project performance criteria.*

IV.3.1 Hydrologic Source Controls (HSCs)

If required HSCs are included, fill out applicable check box forms. If the retention criteria are otherwise met with other LID BMPs, include a statement indicating HSCs not required.

Name	Included?
Localized on-lot infiltration	☐
Impervious area dispersion (e.g. roof top disconnection)	☐
Street trees (canopy interception)	☐
Residential rain barrels (not actively managed)	☐
Green roofs/Brown roofs	☐
Blue roofs	☐
Impervious area reduction (e.g. permeable pavers, site design)	☐
Other:	☐
Other:	☐
Other:	☐
Other:	☐
Other:	☐
Other:	☐
Other:	☐
Other:	☐

IV.3.2 Infiltration BMPs

Identify infiltration BMPs to be used in project. If design volume cannot be met, state why.

Name	Included?
Bioretention without underdrains	☐
Rain gardens	☐
Porous landscaping	☐
Infiltration planters	☐
Retention swales	☐
Infiltration trenches	☐
Infiltration basins	☐
Drywells	☐
Subsurface infiltration galleries	☐
French drains	☐
Permeable asphalt	☐
Permeable concrete	☐
Permeable concrete pavers	☐
Other:	☐
Other:	☐

Show calculations below to demonstrate if the LID Design Strom Capture Volume can be met with infiltration BMPs. If not, document how much can be met with infiltration and document why it is not feasible to meet the full volume with infiltration BMPs.

IV.3.3 Evapotranspiration, Rainwater Harvesting BMPs

If the full Design Storm Capture Volume cannot be met with infiltration BMPs, describe any evapotranspiration and/or rainwater harvesting BMPs included.

Name	Included?
All HSCs; *See Section IV.3.1*	☐
Surface-based infiltration BMPs	☐
Biotreatment BMPs	☐
Above-ground cisterns and basins	☐
Underground detention	☐
Other:	☐
Other:	☐
Other:	☐

Show calculations below to demonstrate if the LID Design Storm Capture Volume can be met with evapotranspiration and/or rainwater harvesting BMPs in combination with infiltration BMPs. If not, document below how much can be met with either infiltration BMPs, evapotranspiration, rainwater harvesting BMPs, or a combination, and document why it is not feasible to meet the full volume with these BMP categories.

IV.3.4 Biotreatment BMPs

If the full Design Storm Capture Volume cannot be met with infiltration BMPs, and/or evapotranspiration and rainwater harvesting BMPs, describe biotreatment BMPs included. Include sections for selection, suitability, sizing, and infeasibility, as applicable.

Name	Included?
Bioretention with underdrains	☐
Stormwater planter boxes with underdrains	☐
Rain gardens with underdrains	☐
Constructed wetlands	☐
Vegetated swales	☐
Vegetated filter strips	☐
Proprietary vegetated biotreatment systems	☒
Wet extended detention basin	☐
Dry extended detention basins	☐
Other:	☐
Other:	☐

Show calculations below to demonstrate if the LID Design Storm Capture Volume can be met with infiltration, evapotranspiration, rainwater harvesting and/or biotreatment BMPs. If not, document how much can be met with either infiltration BMPs, evapotranspiration, rainwater harvesting BMPs, or a combination, and document why it is not feasible to meet the full volume with these BMP categories.

1.32 acres of full depth AC paving, new concrete sidewalk, and street pavers replacement needs to be mitigated. To mitigate the 1.32 acres of impact, two Filterra Biotreatment Units will be installed to treat an equivalent area. Two DMAs were formed matching the tributary area to each Filterra Unit.

DMA 1 has a tributary area of 1.01 acres (43,813 SF) and is 100% impervious.
DMA 2 has a tributary area of 0.31 acres (13,324 SF) and is 88.4 % impervious.

Filterra Quick Sizing Guide for Western Zones, Commercial:

Based on the manufacturer's suggested 0.0023148 cfs/SF design flow

DMA 1:

DCV = D x A x C x 43,560/12 = (0.9 x 1.01 x 0.900 x 43,560/12) = 2,969.7 cu-ft

C = (0.75 x %imp) + 0.15 = (0.75 x 1.00) + 0.15 = 0.900

Q_{wq} = CiA = 0.9 x 0.20 x 1.01 = 0.0.182 cfs

Filterra Area = 0.182/0.0023148 = 78.6 SF (one – 13 x 7 Unit = 91 SF)

DMA 2:

DCV = D x A x C x 43560/12 = 0.90 x 0.31 x 0.813 x 43560/12 = 823.4 cu-ft

C = (0.75 x %imp) + 0.15 = (0.75 x 0.884) + 0.15 = 0.813

Q_{wq} = CiA = 0.813 x 0.2 x 0.31 = 0.050 cfs

Filterra Area = 0.062/0.0023148 = 21.8 SF (one – 6x4 Unit = 24 SF)

IV.3.5 Hydromodification Control BMPs

Describe hydromodification control BMPs. *See Section 5 of the Technical Guidance Document (TGD).* Include sections for selection, suitability, sizing, and infeasibility, as applicable. Detail compliance with Prior Conditions of Approval (if applicable).

Hydromodification Control BMPs	
BMP Name	**BMP Description**
N/A	N/A

IV.3.6 Regional/Sub-Regional LID BMPs

Describe regional/sub-regional LID BMPs in which the project will participate. *Refer to Section 7.II-2.4.3.2 of the Model WQMP.*

Regional/Sub-Regional LID BMPs

IV.3.7 Treatment Control BMPs

Treatment control BMPs can only be considered if the project conformance analysis indicates that it is not feasible to retain the full design capture volume with LID BMPs. Describe treatment control BMPs including sections for selection, sizing, and infeasibility, as applicable.

Treatment Control BMPs	
BMP Name	**BMP Description**
N/A	N/A

IV.3.8 Non-structural Source Control BMPs

Fill out non-structural source control check box forms or provide a brief narrative explaining if non-structural source controls were not used.

Non-Structural Source Control BMPs				
Identifier	**Name**	**Check One**		**If not applicable, state brief reason**
		Included	**Not Applicable**	
N1	Education for Property Owners, Tenants and Occupants	☐	☒	Project is a public works street improvement project and not a residential or commercial development.
N2	Activity Restrictions	☐	☒	Project is a public works street improvement project and not a residential or commercial development.
N3	Area Landscape Management	☒	☐	
N4	BMP Maintenance	☒	☐	
N5	Title 22 CCR Compliance (How development will comply)	☐	☒	Project is a public works street improvement project and not a residential or commercial development.
N6	Local Industrial Permit Compliance	☐	☒	Project is a public works street improvement project and not a residential or commercial development.
N7	Spill Contingency Plan	☐	☒	Project is a public works street improvement project and not a residential or commercial development.
N8	Underground Storage Tank Compliance	☐	☒	Project is a public works street improvement project and not a residential or commercial development.
N9	Hazardous Materials Disclosure Compliance	☐	☒	Project is a public works street improvement project and not a residential or commercial development.
N10	Uniform Fire Code Implementation	☐	☒	Project is a public works street improvement project and not a

				residential or commercial development.
N11	Right of Way Area Litter Control	☒	☐	
N12	Employee Training	☒	☐	
N13	Housekeeping of Loading Docks	☐	☒	Project is a public works street improvement project and not a residential or commercial development.
N14	Right of Way Catch Basin Inspection	☒	☐	
N15	Street Sweeping	☒	☐	
N16	Retail Gasoline Outlets	☐	☒	Project is a public works street improvement project and not a private or commercial retail gasoline outlet development.

N3 (SC-73) Right of Way Area Landscape Management
Identify on-going landscape maintenance requirements that are consistent with those in the County Water Conservation Resolution (or city equivalent) that include fertilizer and/or pesticide usage consistent with Management Guidelines for Use of Fertilizers (DAMP Section 5.5). Statements regarding the specific applicable guidelines must be included in the Project WQMP.

N4 BMP Maintenance
The Project WQMP shall identify responsibility for implementation of each non-structural BMP and scheduled cleaning and/or maintenance of all structural BMP facilities

N11 (SC-60) Right of Way Area Litter Control
For highway or roadway developments the project should be required to implement trash management and litter control procedures along the roadway aimed at reducing pollution of drainage water. The owner/POA may contract with their landscape maintenance firms to provide this service during regularly scheduled maintenance, which should consist of litter patrol, emptying of trash receptacles in public areas, and noting trash disposal violations by adjacent homeowners or businesses and reporting the violations to the City/POA for investigation.

N12 Employee Training
Education program (see N1) as it would apply to future employees of individual businesses. Developer either prepares manual(s) for initial purchasers of business site or for development that is constructed for an unspecified use makes commitment on behalf of POA or future business owner to prepare. An example would be training on the proper storage and use of fertilizers and pesticides, or training on the implementation of hazardous spill contingency plans.

N14 (SC-74) Catch Basin Inspection
For public priority developments and for developments with privately maintained drainage systems, the owner is required to have at least 80 percent of drainage facilities inspected, cleaned and maintained on an annual basis with 100 percent of the facilities included in a two-year period. Cleaning should take place in the late summer/early fall prior to the start of the rainy season. Drainage facilities include catch basins (storm drain

inlets) detention basins, retention basins, sediment basins, open drainage channels and lift stations. Records should be kept to document the annual maintenance.

N15 (SC-43, SC-70) Street Sweeping Streets and Parking Lots
Streets and parking lots are required to be swept prior to the storm season, in late summer or early fall, prior to the start of the rainy season or equivalent as required by the governing jurisdiction.

IV.3.9 Structural Source Control BMPs

Fill out structural source control check box forms or provide a brief narrative explaining if structural source controls were not used.

Structural Source Control BMPs				
Identifier	**Name**	**Check One**		**If not applicable, state brief reason**
		Included	**Not Applicable**	
S1	Provide storm drain system stenciling and signage	☒	☐	
S2	Design and construct outdoor material storage areas to reduce pollution introduction	☐	☒	Project is a public works street improvement project and not a residential or commercial development.
S3	Design and construct trash and waste storage areas to reduce pollution introduction	☐	☒	Project is a public works street improvement project and not a residential or commercial development.
S4	Use efficient irrigation systems & landscape design, water conservation, smart controllers, and source control	☒	☐	
S5	Protect slopes and channels and provide energy dissipation	☐	☒	Project does not take place near or adjacent to slopes and/or channels.
	Incorporate requirements applicable to individual priority project categories (from SDRWQCB NPDES Permit)	☐	☒	Project is located within the North Orange County watershed area – Region 8.
S6	Dock areas	☐	☒	Project is a public works street improvement project and not a residential or commercial development.
S7	Maintenance bays	☐	☒	Project is a public works street improvement project and not a residential or commercial development.
S8	Vehicle wash areas	☐	☒	Project is a public works street improvement project and not a residential or commercial development.
S9	Outdoor processing areas	☐	☒	Project is a public works street improvement project and not a residential or commercial

				development.
S10	Equipment wash areas	☐	☒	Project is a public works street improvement project and not a residential or commercial development.
S11	Fueling areas	☐	☒	Project is a public works street improvement project and not a private or commercial retail gasoline outlet development
S12	Hillside landscaping	☐	☒	Project is not located near or adjacent to a hillside.
S13	Wash water control for food preparation areas	☐	☒	Project is a public works street improvement project and not a residential or commercial development.
S14	Community car wash racks	☐	☒	Project is a public works street improvement project and not a residential or commercial development.

S1 (SD-13) Provide Storm Drain System Stenciling and Signage
Storm drain stencils are highly visible source control messages, typically placed directly adjacent to storm drain inlets. The stencils contain a brief statement that prohibits the dumping of improper materials into the municipal storm drain system. Graphical icons, either illustrating anti-dumping symbols or images of receiving water fauna, are effective supplements to the antidumping message. Stencils and signs alert the public to the destination of pollutants discharged into stormwater. The following requirements should be included in the project design and shown on the project plans:

1. Provide stenciling or labeling of all storm drain inlets and catch basins, constructed or modified, within the project area with prohibitive language (such as: "NO DUMPINGDRAINS TO OCEAN") and/or graphical icons to discourage illegal dumping.

2. Post signs and prohibitive language and/or graphical icons, which prohibit illegal dumping at public access points along channels and creeks within the project area.

3. Maintain legibility of stencils and signs.

S4 (SD-12) Use Efficient Irrigation Systems and Landscape Design
Projects shall design the timing and application methods of irrigation water to minimize the runoff of excess irrigation water into the municipal storm drain system. (Limited exclusion: detached residential homes.) The following methods to reduce excessive irrigation runoff shall be considered, and incorporated on common areas of development and other areas where determined applicable and feasible by the Permittee:

1. Employing rain shutoff devices to prevent irrigation after precipitation.

2. Designing irrigation systems to each landscape area's specific water requirements.

3. Using flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines.

4. Implementing landscape plan consistent with County Water Conservation Resolution or city equivalent, which may include provision of water sensors, programmable irrigation times (for short cycles), etc.

5. The timing and application methods of irrigation water shall be designed to minimize the runoff of excess irrigation water into the municipal storm drain system.

6. Employing other comparable, equally effective, methods to reduce irrigation water runoff.

7. 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 other design features, such as:

• Use mulches (such as wood chips or shredded wood products) in planter areas without ground cover to minimize sediment in runoff.

• Install appropriate plant materials for the location, in accordance with amount of sunlight and climate, and use native plant material where possible and/or as recommended by the landscape architect.

• Leave a vegetative barrier along the property boundary and interior watercourses, to act as a pollutant filter, where appropriate and feasible.

• Choose plants that minimize or eliminate the use of fertilizer or pesticides to sustain growth.

Irrigation practices shall comply with local and statewide ordinances related to irrigation efficiency.

IV.4 Alternative Compliance Plan (If Applicable)

Describe an alternative compliance plan (if applicable). Include alternative compliance obligations (i.e., gallons, pounds) and describe proposed alternative compliance measures. *Refer to Section 7.II 3.0 in the WQMP.*

IV.4.1 Water Quality Credits

Determine if water quality credits are applicable for the project. *Refer to Section 3.1 of the Model WQMP for description of credits and Appendix VI of the Technical Guidance Document (TGD) for calculation methods for applying water quality credits.*

<table>
<tr><th colspan="5">Description of Proposed Project</th></tr>
<tr><td colspan="5">Project Types that Qualify for Water Quality Credits (Select all that apply):</td></tr>
<tr><td>☐Redevelopment projects that reduce the overall impervious footprint of the project site.</td><td colspan="2">☐Brownfield redevelopment, meaning redevelopment, expansion, or reuse of real property which may be complicated by the presence or potential presence of hazardous substances, pollutants or contaminants, and which have the potential to contribute to adverse ground or surface WQ if not redeveloped.</td><td colspan="2">☐ Higher density development projects which include two distinct categories (credits can only be taken for one category): those with more than seven units per acre of development (lower credit allowance); vertical density developments, for example, those with a Floor to Area Ratio (FAR) of 2 or those having more than 18 units per acre (greater credit allowance).</td></tr>
<tr><td colspan="2">☐ Mixed use development, such as a combination of residential, commercial, industrial, office, institutional, or other land uses which incorporate design principles that can demonstrate environmental benefits that would not be realized through single use projects (e.g. reduced vehicle trip traffic with the potential to reduce sources of water or air pollution).</td><td colspan="2">☐ Transit-oriented developments, such as a mixed use residential or commercial area designed to maximize access to public transportation; similar to above criterion, but where the development center is within one half mile of a mass transit center (e.g. bus, rail, light rail or commuter train station). Such projects would not be able to take credit for both categories, but may have greater credit assigned</td><td>☐ Redevelopment projects in an established historic district, historic preservation area, or similar significant city area including core City Center areas (to be defined through mapping).</td></tr>
<tr><td>☐Developments with dedication of undeveloped portions to parks, preservation areas and other pervious uses.</td><td>☐ Developments in a city center area.</td><td>☐ Developments in historic districts or historic preservation areas.</td><td>☐ Live-work developments, a variety of developments designed to support residential and vocational needs together – similar to criteria to mixed use development; would not be able to take credit for both categories.</td><td>☐In-fill projects, the conversion of empty lots and other underused spaces into more beneficially used spaces, such as residential or commercial areas.</td></tr>
</table>

Calculation of Water Quality Credits (if applicable)	N/A

IV.4.2 Alternative Compliance Plan Information

Describe an alternative compliance plan (if applicable). Include alternative compliance obligations (i.e., gallons, pounds) and describe proposed alternative compliance measures. *Refer to Section 7.II 3.0 in the Model WQMP.*

N/A

Section V Inspection/Maintenance Responsibility for BMPs

Fill out information in table below. Prepare and attach an Operation and Maintenance Plan. Identify the funding mechanism through which BMPs will be maintained. Inspection and maintenance records must be kept for a minimum of five years for inspection by the regulatory agencies. *Refer to Section 7.II 4.0 in the Model WQMP.*

BMP Inspection/Maintenance			
BMP	**Reponsible Party(s)**	**Inspection/ Maintenance Activities Required**	**Minimum Frequency of Activities**
Right of Way Landscape Management	City of Yorba Linda 4845 Casa Loma Ave. Yorba Linda, CA 92886 (714)961-7170	Inspection street right of way landscaping. Replace dead and/or dying plants. Replace mulch	As-needed
BMP Maintenance	City of Yorba Linda 4845 Casa Loma Ave. Yorba Linda, CA 92886 (714)961-7170	See BMP O&M in appendices	See BMP O&M in appendices
Right of Way Litter Control	City of Yorba Linda 4845 Casa Loma Ave. Yorba Linda, CA 92886 (714)961-7170	Inspect street right of way on a continuous basis. Remove litter and debris as needed	Continuous
Employee Training	City of Yorba Linda 4845 Casa Loma Ave. Yorba Linda, CA 92886 (714)961-7170	Train employees regarding their respective duties. Review training annually and initially for all new employees	Initially for new employees and annually

Common Area Catch Basin Inspection	City of Yorba Linda 4845 Casa Loma Ave. Yorba Linda, CA 92886 (714)961-7170	Clear sediment, trash, and debris.	Min. once/year or as-needed
Street Sweeping Streets	City of Yorba Linda 4845 Casa Loma Ave. Yorba Linda, CA 92886 (714)961-7170	Sweep streets and intersection.	As-needed
Provide Storm Drain System Stenciling and Signage	City of Yorba Linda 4845 Casa Loma Ave. Yorba Linda, CA 92886 (714)961-7170	Inspect stencilling and touch up paint as needed.	As-needed
Use Efficient Irrigation Systems and Landscape Design	City of Yorba Linda 4845 Casa Loma Ave. Yorba Linda, CA 92886 (714)961-7170	Inspect irrigation system and repair system as needed	As-needed
Filterra Bioretention Unit	City of Yorba Linda 4845 Casa Loma Ave. Yorba Linda, CA 92886 (714)961-7170	See O&M Plan in appendices	See O&M Plan in appendices

Section VI BMP Exhibit (Site Plan)

VI.1 BMP Exhibit (Site Plan)

Include a BMP Exhibit (Site Plan), at a size no less than 24" by 36," which includes the following minimum information:

- Insert in the title block (lower right-hand corner) of BMP Exhibit: the WQMP Number (assigned by staff) and the grading/building or Planning Application permit numbers
- Project location (address, tract/lot number(s), etc.)
- Site boundary
- Land uses and land covers, as applicable
- Suitability/feasibility constraints
- Structural BMP locations
- Drainage delineations and flow information
- Delineate the area being treated by each structural BMP
- GIS coordinates for LID and Treatment Control BMPs
- Drainage connections
- BMP details
- Preparer name and stamp

Please do not include any areas outside of the project area or any information not related to drainage or water quality. The approved BMP Exhibit (Site Plan) shall be submitted as a plan sheet on all grading and building plan sets submitted for plan check review and approval. The BMP Exhibit shall be at the same size as the rest of the plan sheets in the submittal and shall have an approval stamp and signature prior to plan check submittal.

VI.2 Submittal and Recordation of Water Quality Management Plan

Following approval of the Final Project-Specific WQMP, three copies of the approved WQMP (including BMP Exhibit, Operations and Maintenance (O&M) Plan, and Appendices) shall be submitted. In addition, these documents shall be submitted in a PDF format.

Each approved WQMP (including BMP Exhibit, Operations and Maintenance (O&M) Plan, and Appendices) shall be recorded in the Orange County Clerk-Recorder's Office, prior to close-out of grading and/or building permit. Educational Materials are not required to be included.

WQMP Appendices:

Appendix A.....Educational Materials

Appendix B.....Project Plan Set with Area Measurements

Appendix C.....Filterra Bioretention System Details & Installation Manual

Appendix D.....Owner's Maintenance Manual

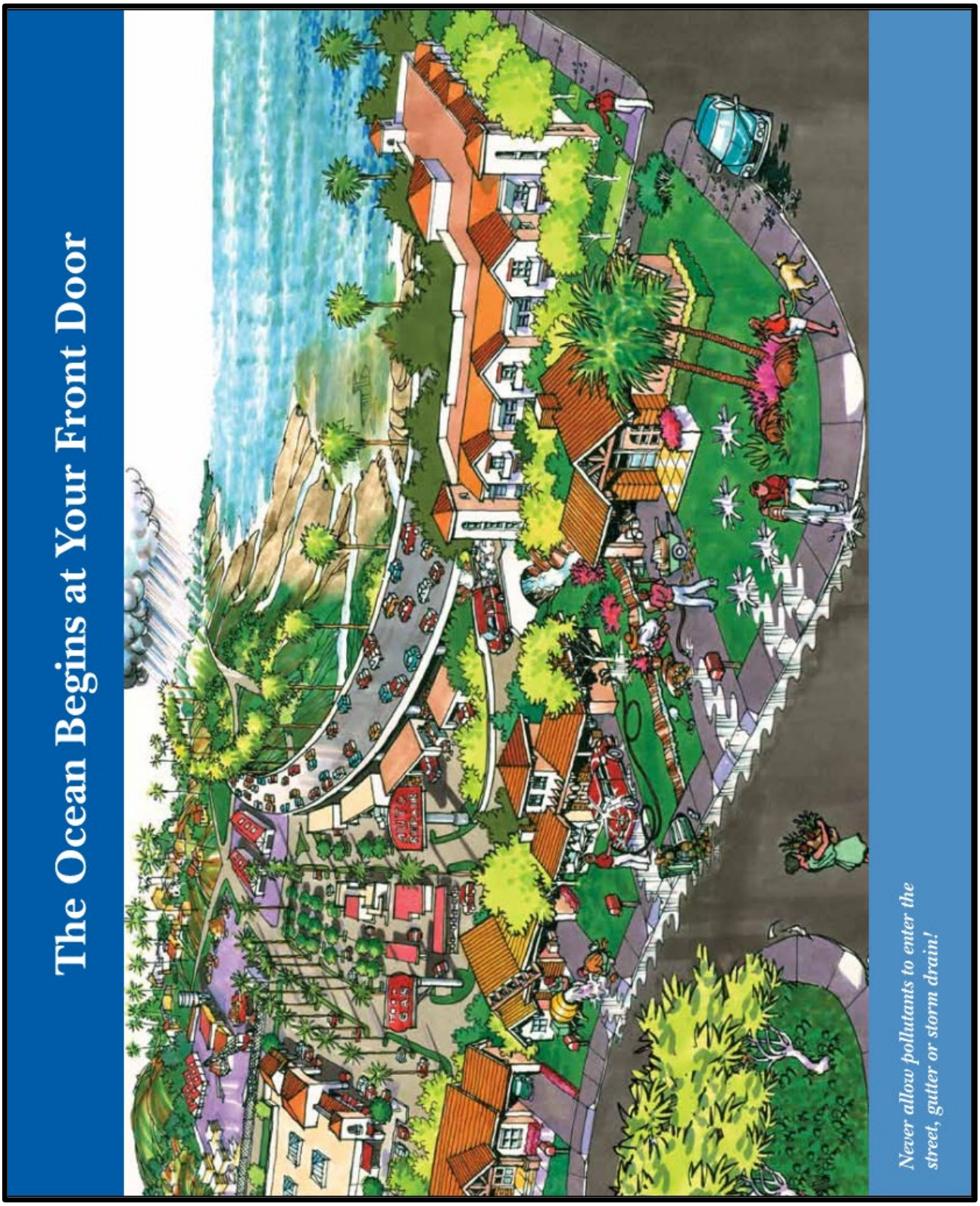
Appendix E.....Bioscape List for Southern California

Appendix A: Educational Materials

Section 7 Educational Materials Index

Educational Materials			
Residential Material (http://www.ocwatersheds.com)	**Check If Applicable**	**Business Material (http://www.ocwatersheds.com)**	**Check If Applicable**
The Ocean Begins at Your Front Door	☒	Tips for the Automotive Industry	☐
Tips for Car Wash Fund-raisers	☐	Tips for Using Concrete and Mortar	☐
Tips for the Home Mechanic	☐	Tips for the Food Service Industry	☐
Homeowners Guide for Sustainable Water Use	☐	Proper Maintenance Practices for Your Business	☐
Household Tips	☐	Compliance BMPs for Mobile Businesses	☐
Proper Disposal of Household Hazardous Waste	☐	**Other Material**	**Check If Attached**
Recycle at Your Local Used Oil Collection Center (North County)	☐		
Recycle at Your Local Used Oil Collection Center (Central County)	☐		☐
Recycle at Your Local Used Oil Collection Center (South County)	☐		☐
Tips for Maintaining a Septic Tank System	☐		☐
Responsible Pest Control	☐		☐
Sewer Spill	☒		☐
Tips for the Home Improvement Projects	☐		☐
Tips for Horse Care	☐		☐
Tips for Landscaping and Gardening	☒		☐
Tips for Pet Care	☐		☐
Tips for Projects Using Paint	☐		☐

Attachment A: Educational Materials



Did You Know?

- Most people believe that the largest source of water pollution in urban areas comes from specific sources such as factories and sewage treatment plants. In fact, the largest source of water pollution comes from city streets, neighborhoods, construction sites and parking lots. This type of pollution is sometimes called "non-point source" pollution.
- There are two types of non-point source pollution: stormwater and urban runoff pollution.
- Stormwater runoff results from rainfall. When rainstorms cause large volumes of water to rinse the urban landscape, picking up pollutants along the way.
- Urban runoff can happen any time of the year when excessive water use from irrigation, vehicle washing and other sources carries trash, lawn clippings and other urban pollutants into storm drains.

Sources of Non-Point Source Pollution

- Automotive leaks and spills.
- Improper disposal of used oil and other engine fluids.
- Metals found in vehicle exhaust, weathered paint, rust, metal plating and tires.
- Pesticides and fertilizers from lawns, gardens and farms.
- Improper disposal of cleaners, paint and paint removers.
- Soil erosion and dust debris from landscape and construction activities.
- Litter, lawn clippings, animal waste, and other organic matter.
- Oil stains on parking lots and paved surfaces.

The Effect on the Ocean

Non-point source pollution can have a serious impact on water quality in Orange County. Pollutants from the storm drain system can harm marine life as well as coastal and wetland habitats. They can also degrade recreation areas such as beaches, harbors and bays.

Stormwater quality management programs have been developed throughout Orange County to educate and encourage the public to protect water quality, monitor runoff in the storm drain system, investigate illegal dumping and maintain storm drains.

Support from Orange County residents and businesses is needed to improve water quality and reduce urban runoff pollution. Proper use and disposal of materials will help stop pollution before it reaches the storm drain and the ocean.

Where Does It Go?

- Anything we use outside homes, vehicles and businesses – like motor oil, paint, pesticides, fertilizers and cleaners – can be blown or washed into storm drains.
- A little water from a garden hose or rain can also send materials into storm drains.
- Storm drains are separate from our sanitary sewer systems; unlike water in sanitary sewers (from sinks or toilets), water in storm drains is not treated before entering our waterways.

Follow these simple steps to help reduce water pollution:

Household Activities

- Do not rinse spills with water. Use dry cleanup methods such as applying cat litter or another absorbent material, sweep and dispose of in the trash. Take items such as used or excess batteries, oven cleaners, automotive fluids, painting products and cathode ray tubes, like TVs and computer monitors, to a Household Hazardous Waste Collection Center (HHWCC).
- For a HHWCC near you call (714) 834-6752 or visit www.oclandfills.com.
- Do not hose down your driveway, sidewalk or patio to the street, gutter or storm drain. Sweep up debris and dispose of it in the trash.

Automotive

- Take your vehicle to a commercial car wash whenever possible. If you wash your vehicle at home, choose soaps, cleaners, or detergents labeled non-toxic, phosphate- free or biodegradable. Vegetable and citrus-based products are typically safest for the environment.
- Do not allow washwater from vehicle washing to drain into the street, gutter or storm drain. Excess washwater should be disposed of in the sanitary sewer (through a sink or toilet) or onto an absorbent surface like your lawn.
- Monitor your vehicles for leaks and place a pan under leaks. Keep your vehicles well maintained to stop and prevent leaks.
- Never pour oil or antifreeze in the street, gutter or storm drain. Recycle these substances at a service station, a waste oil collection center or used oil recycling center. For the nearest Used Oil Collection Center call 1-800-CLEANUP or visit www.1800cleanup.org.

Pool Maintenance

- Pool and spa water must be dechlorinated and free of excess acid, alkali or color to be allowed in the street, gutter or storm drain.
- When it is not raining, drain dechlorinated pool and spa water directly into the sanitary sewer.
- Some cities may have ordinances that do not allow pool water to be disposed of in the storm drain. Check with your city.

Landscape and Gardening

- Do not over-water. Water your lawn and garden by hand to control the amount of water you use or set irrigation systems to reflect seasonal water needs. If water flows off your yard onto your driveway or sidewalk, your system is over-watering. Periodically inspect and fix leaks and misdirected sprinklers.
- Do not rake or blow leaves, clippings or pruning waste into the street, gutter or storm drain. Instead, dispose of waste by composting, hauling it to a permitted landfill, or as green waste through your city's recycling program.
- Follow directions on pesticides and fertilizer, (measure, do not estimate amounts) and do not use if rain is predicted within 48 hours.
- Take unwanted pesticides to a HHWCC to be recycled. For locations and hours of HHWCC, call (714) 834-6752 or visit www.oclandfills.com.

Trash

- Place trash and litter that cannot be recycled in securely covered trash cans.
- Whenever possible, buy recycled products.
- Remember: Reduce, Reuse, Recycle.

Pet Care

- Always pick up after your pet. Flush waste down the toilet or dispose of it in the trash. Pet waste, if left outdoors, can wash into the street, gutter or storm drain.
- If possible, bathe your pets indoors. If you must bathe your pet outside, wash it on your lawn or another absorbent/permeable surface to keep the washwater from entering the street, gutter or storm drain.
- Follow directions for use of pet care products and dispose of any unused products at a HHWCC.

Common Pollutants

Home Maintenance
- Detergents, cleaners and solvents
- Oil and latex paint
- Swimming pool chemicals
- Outdoor trash and litter

Lawn and Garden
- Pet and animal waste
- Pesticides
- Clippings, leaves and soil
- Fertilizer

Automobile
- Oil and grease
- Radiator fluids and antifreeze
- Cleaning chemicals
- Brake pad dust

For More Information

Orange County Stormwater Program

California Environmental Protection Agency
www.calepa.ca.gov

- **Air Resources Board**
  www.arb.ca.gov
- **Department of Pesticide Regulation**
  www.cdpr.ca.gov
- **Department of Toxic Substances Control**
  www.dtsc.ca.gov
- **Integrated Waste Management Board**
  www.ciwmb.ca.gov
- **Office of Environmental Health Hazard Assessment**
  www.oehha.ca.gov
- **State Water Resources Control Board**
  www.waterboards.ca.gov

Earth 911 - Community-Specific Environmental Information 1-800-cleanup or visit www.1800cleanup.org

Health Care Agency's Ocean and Bay Water Closure and Posting Hotline
(714) 433-6400 or visit www.ocbeachinfo.com

Integrated Waste Management Dept. of Orange County (714) 834-6752 or visit www.oclandfills.com for information on household hazardous waste collection centers, recycling centers and solid waste collection

O.C. Agriculture Commissioner
(714) 447-7100 or visit www.ocagcomm.com

Stormwater Best Management Practice Handbook
Visit www.cabmphandbooks.com

UC Master Gardener Hotline
(714) 708-1646 or visit www.uccemg.com

The Orange County Stormwater Program has created and moderates an electronic mailing list to facilitate communications, take questions and exchange ideas among its users about issues and topics related to stormwater and urban runoff and the implementation of program elements. To join the list, please send an email to ocstormwaterinfo-join@list.ocwatersheds.com

Aliso Viejo	(949)	425-2535
Anaheim Public Works Operations	(714)	765-6860
Brea Engineering	(714)	990-7666
Buena Park Public Works	(714)	562-3655
Costa Mesa Public Services	(714)	754-5323
Cypress Public Works	(714)	229-6740
Dana Point Public Works	(949)	248-3584
Fountain Valley Public Works	(714)	593-4441
Fullerton Engineering Dept.	(714)	738-6853
Garden Grove Public Works	(714)	741-5956
Huntington Beach Public Works	(714)	536-5431
Irvine Public Works	(949)	724-6315
La Habra Public Services	(562)	905-9792
La Palma Public Works	(714)	690-3310
Laguna Beach Water Quality	(949)	497-0378
Laguna Hills Public Services	(949)	707-2650
Laguna Niguel Public Works	(949)	362-4337
Laguna Woods Public Works	(949)	639-0500
Lake Forest Public Works	(949)	461-3480
Los Alamitos Community Dev.	(562)	431-3538
Mission Viejo Public Works	(949)	470-3056
Newport Beach, Code & Water Quality Enforcement	(949)	644-3215
Orange Public Works	(714)	532-6480
Placentia Public Works	(714)	993-8245
Rancho Santa Margarita	(949)	635-1800
San Clemente Environmental Programs	(949)	361-6143
San Juan Capistrano Engineering	(949)	234-4413
Santa Ana Public Works	(714)	647-3380
Seal Beach Engineering	(562)	431-2527 x317
Stanton Public Works	(714)	379-9222 x204
Tustin Public Works/Engineering	(714)	573-3150
Villa Park Engineering	(714)	998-1500
Westminster Public Works/Engineering	(714)	898-3311 x446
Yorba Linda Engineering	(714)	961-7138
Orange County Stormwater Program	(877)	897-7455

Orange County 24-Hour
Water Pollution Problem Reporting Hotline
1-877-89-SPILL (1-877-897-7455)

On-line Water Pollution Problem Reporting Form
www.ocwatersheds.com

Printed on Recycled Paper

Sewage Spill Regulatory Requirements

Allowing sewage to discharge to a gutter or storm drain may subject you to penalties and/or out-of-pocket costs to reimburse cities or public agencies for clean-up efforts.

Here are the pertinent codes, fines, and agency contact information that apply.

Orange County Stormwater Program
24 Hour Water Pollution Reporting Hotline
1-877-89-SPILL (1-877-897-7455)

- County and city water quality ordinances prohibit discharges containing pollutants.

Orange County Health Care Agency
Environmental Health
(714) 433-6419

California Health and Safety Code, Sections 5410-5416

- No person shall discharge raw or treated sewage or other waste in a manner that results in contamination, pollution or a nuisance.
- Any person who causes or permits a sewage discharge to any state waters:
  - must immediately notify the local health agency of the discharge.
  - shall reimburse the local health agency for services that protect the public's health and safety (water-contact receiving waters).
  - who fails to provide the required notice to the local health agency is guilty of a misdemeanor and shall be punished by a fine (between $500–$1,000) and/or imprisonment for less than one year.

Regional Water Quality Control Board
Santa Ana Region (951) 782-4130
San Diego Region (858) 467-2952

- Requires the prevention, mitigation, response to and reporting of sewage spills.

California Office of Emergency Services
(800) 852-7550

California Water Code, Article 4, Chapter 4, Sections 13268-13271
California Code of Regulations, Title 23, Division 3, Chapter 9.2, Article 2, Sections 2250-2260

- Any person who causes or permits sewage in excess of 1,000 gallons to be discharged to state waters **shall immediately notify the Office of Emergency Services.**
- Any person who fails to provide the notice required by this section is **guilty of a misdemeanor** and shall be punished by a fine (less than $20,000) and/or imprisonment for not more than one year.

07713 Rev 6/09
printed on recycled paper

Sewage Spill

Reference Guide

Your Responsibilities as a Private Property Owner

Residences
Businesses
Homeowner/Condominium Associations
Federal and State Complexes
Military Facilities

Orange County Sanitation District

Health Care Agency
Environmental Health

PROJECT Pollution PREVENTION

www.ocwatersheds.com

This brochure was designed courtesy of the Orange County Sanitation District (OCSD). For additional information, call (714) 962-2411, or visit their website at www.ocsd.com

What is a Sewage Spill?

Sewage spills occur when the wastewater being transported via underground pipes overflows through a manhole, cleanout or broken pipe. Sewage spills can cause health hazards, damage to homes and businesses, and threaten the environment, local waterways and beaches.

Overflowing cleanout pipe located on private property

Common Causes of Sewage Spills

Grease builds up inside and eventually blocks sewer pipes. Grease gets into the sewer from food establishments, household drains, as well as from poorly maintained commercial grease traps and interceptors.

Structure problems caused by tree roots in the lines, broken/cracked pipes, missing or broken cleanout caps or undersized sewers can cause blockages.

Infiltration and inflow (I/I) impacts pipe capacity and is caused when groundwater or rainwater enters the sewer system through pipe defects and illegal connections.

You Are Responsible for a Sewage Spill Caused by a Blockage or Break in Your Sewer Lines!

Time is of the essence in dealing with sewage spills. You are required to **immediately**:

Control and minimize the spill. Keep spills contained on private property and out of gutters, storm drains and public waterways by shutting off or not using the water.

Use sandbags, dirt and/or plastic sheeting to prevent sewage from entering the storm drain system.

Clear the sewer blockage. Always wear gloves and wash your hands. It is recommended that a plumbing professional be called for clearing blockages and making necessary repairs.

Always notify your city sewer/public works department or public sewer district of sewage spills. If the spill enters the storm drains also notify the Health Care Agency. In addition, if it exceeds 1,000 gallons notify the Office of Emergency Services. Refer to the numbers listed in this brochure.

You Could Be Liable

Allowing sewage from your home, business or property to discharge to a gutter or storm drain may subject you to penalties and/or out-of-pocket costs to reimburse cities or public agencies for clean-up and enforcement efforts. See Regulatory Codes & Fines section for pertinent codes and fines that apply.

What to Look For

Sewage spills can be a very noticeable gushing of water from a manhole or a slow water leak that may take time to be noticed. Don't dismiss unaccounted-for wet areas.

Look for:

- Drain backups inside the building.
- Wet ground and water leaking around manhole lids onto your street.
- Leaking water from cleanouts or outside drains.
- Unusual odorous wet areas: sidewalks, external walls or ground/landscape around a building.

Caution

Keep people and pets away from the affected area. Untreated sewage has high levels of disease-causing viruses and bacteria. Call your local health care agency listed on the back for more information.

If You See a Sewage Spill Occurring, Notify Your City Sewer/Public Works Department or Public Sewer District IMMEDIATELY!

How a Sewer System Works

A property owner's sewer pipes are called service laterals and are connected to larger local main and regional trunk lines. Service laterals run from the connection at the home to the connection with the public sewer (including the area under the street). These laterals are the responsibility of the property owner and must be maintained by the property owner. Many city agencies have adopted ordinances requiring maintenance of service laterals. Check with your city sewer/local public works department for more information.

Operation and maintenance of **local and regional sewer lines** are the responsibility of the city sewer/public works departments and public sewer districts.

How You Can Prevent Sewage Spills

1. **Never put grease down garbage disposals, drains or toilets.**
2. **Perform periodic cleaning to eliminate grease, debris and roots in your service laterals.**
3. **Repair any structural problems in your sewer system and eliminate any rainwater infiltration/inflow leaks into your service laterals.**

Preventing Grease Blockages

The drain is not a dump! Recycle or dispose of grease properly and never pour grease down the drain.

Homeowners should mix fats, oils and grease with absorbent waste materials such as paper, coffee grounds, or kitty litter and place it in the trash. Wipe food scraps from plates and pans and dump them in the trash.

Restaurants and commercial food service establishments should always use "Kitchen Best Management Practices." These include:

- Collecting all cooking grease and liquid oil from pots, pans and fryers in covered grease containers for recycling.
- Scraping or dry-wiping excess food and grease from dishes, pots, pans and fryers into the trash.
- Installing drain screens on all kitchen drains.
- Having spill kits readily available for cleaning up spills.
- Properly maintaining grease traps or interceptors by having them serviced regularly. Check your local city codes.

Orange County Agency Responsibilites

- **City Sewer/Public Works Departments**—Responsible for protecting city property and streets, the local storm drain system, sewage collection system and other public areas.
- **Public Sewer/Sanitation District**—Responsible for collecting, treating and disposing of wastewater.
- **County of Orange Health Care Agency**—Responsible for protecting public health by closing ocean/bay waters and may close food-service businesses if a spill poses a threat to public health.
- **Regional Water Quality Control Boards**—Responsible for protecting State waters.
- **Orange County Stormwater Program**—Responsible for preventing harmful pollutants from being discharged or washed by stormwater runoff into the municipal storm drain system, creeks, bays and the ocean.

You Could Be Liable for Not Protecting the Environment

Local and state agencies have legal jurisdiction and enforcement authority to ensure that sewage spills are remedied.

They may respond and assist with containment, relieving pipe blockages, and/or clean-up of the sewage spill, especially if the spill is flowing into storm drains or onto public property.

A property owner may be charged for costs incurred by these agencies responding to spills from private properties.

Report Sewage Spills!

City Sewer/Public Works Departments

Aliso Viejo	(949) 425-2500
Anaheim	(714) 765-4860
Brea	(714) 990-7691
Buena Park	(714) 562-3655
Costa Mesa	(949) 645-8400
Cypress	(714) 229-6760
Dana Point	(949) 248-3562
Fountain Valley	(714) 593-4600
Fullerton	(714) 738-6897
Garden Grove	(714) 741-5375
Huntington Beach	(714) 536-5921
Irvine	(949) 453-5300
Laguna Beach	(949) 497-0765
Laguna Hills	(949) 707-2650
Laguna Niguel	(949) 362-4337
Laguna Woods	(949) 639-0500
La Habra	(562) 905-9782
Lake Forest	(949) 461-3480
La Palma	(714) 690-3310
Los Alamitos	(562) 431-3538
Mission Viejo	(949) 831-2500
Newport Beach	(949) 644-3011
Orange	(714) 532-6480
Orange County	(714) 567-6363
Placentia	(714) 993-8245
Rancho Santa Margarita	(949) 635-1800
San Clemente	(949) 366-1553
San Juan Capistrano	(949) 443-6363
Santa Ana	(714) 647-3380
Seal Beach	(562) 431-2527
Stanton	(714) 379-9222
Tustin	(714) 962-2411
Villa Park	(714) 998-1500
Westminster	(714) 893-3553
Yorba Linda	(714) 961-7170

Public Sewer/Water Districts

Costa Mesa Sanitary District	(714) 393-4433/ (949) 645-8400
El Toro Water District	(949) 837-0660
Emerald Bay Service District	(949) 494-8571
Garden Grove Sanitary District	(714) 741-5375
Irvine Ranch Water District	(949) 453-5300
Los Alamitos/Rossmoor Sewer District	(562) 431-2223
Midway City Sanitary District (Westminster)	(714) 893-3553
Moulton Niguel Water District	(949) 831-2500
Orange County Sanitation District	(714) 962-2411
Santa Margarita Water District	(949) 459-6420
South Coast Water District	(949) 499-4555
South Orange County Wastewater Authority	(949) 234-5400
Sunset Beach Sanitary District	(562) 493-9932
Trabuco Canyon Sanitary District	(949) 858-0277
Yorba Linda Water District	(714) 777-3018

Other Agencies

Orange County Health Care Agency	(714) 433-6419
Office of Emergency Services	(800) 852-7550

Help Prevent Ocean Pollution:

Tips for Landscape & Gardening

Clean beaches and healthy creeks, rivers, bays and ocean are important to Orange County. However, many common activities can lead to water pollution if you're not careful. Fertilizers, pesticides and other chemicals that are left on yards or driveways can be blown or washed into storm drains that flow to the ocean. Overwatering lawns can also send materials into storm drains. Unlike water in sanitary sewers (from sinks and toilets), water in storm drains is not treated before entering our waterways.

You would never pour gardening products into the ocean, so don't let them enter the storm drains. Follow these easy tips to help prevent water pollution.

For more information, please call the **Orange County Stormwater Program** at **1-877-89-SPILL** (1-877-897-7455) or visit **www.ocwatersheds.com**

UCCE Master Gardener Hotline: (714) 708-1646

To report a spill, call the **Orange County 24-Hour Water Pollution Problem Reporting Hotline 1-877-89-SPILL** (1-877-897-7455).

For emergencies, dial 911.

The tips contained in this brochure provide useful information to help prevent water pollution while landscaping or gardening. If you have other suggestions, please contact your city's stormwater representatives or call the Orange County Stormwater Program.

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Tips for Landscape & Gardening

Never allow gardening products or polluted water to enter the street, gutter or storm drain.

General Landscaping Tips

- Protect stockpiles and materials from wind and rain by storing them under tarps or secured plastic sheeting.
- Prevent erosion of slopes by planting fast-growing, dense ground covering plants. These will shield and bind the soil.

- Plant native vegetation to reduce the amount of water, fertilizers, and pesticide applied to the landscape.
- Never apply pesticides or fertilizers when rain is predicted within the next 48 hours.

Garden & Lawn Maintenance

- Do not overwater. Use irrigation practices such as drip irrigation, soaker hoses or micro spray systems. Periodically inspect and fix leaks and misdirected sprinklers.

- Do not rake or blow leaves, clippings or pruning waste into the street, gutter or storm drain. Instead, dispose of green waste by composting, hauling it to a permitted landfill, or recycling it through your city's program.
- Use slow-release fertilizers to minimize leaching, and use organic fertilizers.
- Read labels and use only as directed. Do not over-apply pesticides or fertilizers. Apply to spots as needed, rather than blanketing an entire area.
- Store pesticides, fertilizers and other chemicals in a dry covered area to prevent exposure that may result in the deterioration of containers and packaging.
- Rinse empty pesticide containers and re-use rinse water as you would use the product. Do not dump rinse water down storm drains. Dispose of empty containers in the trash.

- When available, use non-toxic alternatives to traditional pesticides, and use pesticides specifically designed to control the pest you are targeting. For more information, visit **www.ipm.ucdavis.edu**.
- If fertilizer is spilled, sweep up the spill before irrigating. If the spill is liquid, apply an absorbent material such as cat litter, and then sweep it up and dispose of it in the trash.
- Take unwanted pesticides to a Household Hazardous Waste Collection Center to be recycled. Locations are provided below.

Household Hazardous Waste Collection Centers

Anaheim: 1071 N. Blue Gum St.
Huntington Beach: 17121 Nichols St.
Irvine: 6411 Oak Canyon
San Juan Capistrano: 32250 La Pata Ave.

For more information, call (714) 834-6752 or visit www.ocLandfills.com

Appendix B: Project Plan Set with Area Measurements

CITY OF YORBA LINDA
YORBA LINDA BLVD IMPROVEMENTS

FROM IMPERIAL HWY TO LAKEVIEW AVE
STA 52+70 TO STA 67+44

SI1201001

CIP NO. XXX.X.XXX.XXXX

GENERAL NOTES:

1. ALL WORK SHALL CONFORM TO THE FOLLOWING DESIGN GUIDELINES (IN ORDER OF PRECEDENCE): ORANGE COUNTY PUBLIC WORKS DEPARTMENT (OCPWD) STANDARD PLANS (2018); OC HIGHWAY DESIGN MANUAL (OCHDM)(2005); CALTRANS HIGHWAY DESIGN (HDM)(2022); AASHTO GEOMETRIC DESIGN OF HIGHWAY AND STREETS (2018).
2. TRAFFIC STRIPES, PAVEMENT MARKINGS AND RAISED PAVEMENT MARKERS SHALL BE MANUFACTURED AND INSTALLED PER CALTRANS PUBLICATION CA-MUTCD LATEST REVISION, CALTRANS STANDARD PLANS AND CALTRANS STANDARD SPECIFICATIONS, LATEST EDITIONS ADOPTED BY THE ORANGE COUNTY BOARD OF SUPERVISORS.
3. ALL EXISTING IMPROVEMENTS INCLUDING CURB AND GUTTERS, SIDEWALK, ASPHALT CONCRETE OF P.C.C. PAVING, WHICH ARE BEING JOINED OR MATCHED IN CONNECTION WITH THIS PROJECT, SHALL BE JOINED OR MATCHED IN A MANNER SATISFACTORY TO THE CITY ENGINEER, INCLUDING NECESSARY SAWCUTTING, REMOVAL REPLACEMENT AND CAPPING.
4. ANY EXISTING TRAVEL WAYS IN WHICH EXCAVATION IS MADE SHALL BE IN CONFORMANCE WITH THE "CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" AND "1996 TRAFFIC MANUAL" IN ORDER TO ELIMINATE ANY HAZARDS. STREETS SHALL BE SURFACED WITH A MINIMUM OF 4" OF ASPHALT OR STEEL PLATED AS APPROVED BY ENGINEER AT THE END OF EACH WORKING DAY.
5. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS AND SHALL NOTIFY THE CITY ENGINEER (714) 961-7170 48 HOURS PRIOR TO STARTING EACH PHASE OF CONSTRUCTION AND PRIOR TO REQUIRING INSPECTION
6. ALL UTILITIES SHALL BE INSTALLED PRIOR TO PAVING OF STREETS; ALL TRENCHES SHALL BE FULLY COMPACTED TO THE SATISFACTION OF THE CITY ENGINEER. MANHOLE AND VALVE BOX FRAMES SHALL BE ADJUSTED TO FINISHED GRADES AFTER COMPLETION OF FINAL PAVING.
7. THE CONTRACTOR SHALL DETERMINE THE LINE LOCATION OF ANY UNDERGROUND UTILITY PRIOR TO LAYING ANY LINES, WHICH ARE TO CONNECT TO EXISTING SEWERS OR STORM DRAINS. THESE LINES SHALL BE EXPOSED AND JOINT ELEVATIONS VERIFIED. ANY CHANGE IN GRADE OR DEVIATION FROM THE PLANS MUST BE ACCEPTED BY THE CITY ENGINEER.
8. STREET NAME SIGNS AND TRAFFIC CONTROL SIGNS, TYPE AND LOCATIONS SHALL BE REVIEWED AND ACCEPTED BY THE CITY ENGINEER.
9. STAKES FOR CURB CONSTRUCTION ARE TO BE OFFSET FROM FACE OF CURBS.
10. ADVERTISING SIGNS WILL NOT BE PERMITTED WITHIN STREET RIGHT-OF-WAY.
11. TREES THAT ARE PLANTED WITHIN THE STREET RIGHT-OF-WAY SHALL BE IN ACCORDANCE WITH CITY OF YORBA LINDA REQUIREMENTS.
12. STREET LIGHTS ARE TO BE INSTALLED BY SOUTHERN CALIFORNIA EDISON COMPANY PER PLAN ACCEPTED BY THE CITY OF YORBA LINDA.

GENERAL NOTES: (CONT.)

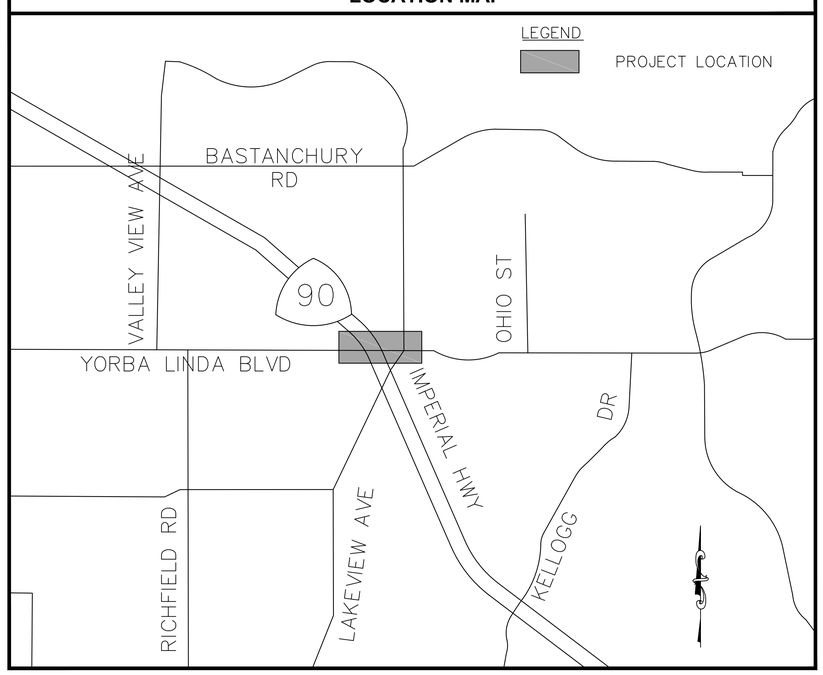
13. PRIME COAT SHALL CONSIST OF GRADE SC-250 LIQUID ASPHALT APPLIED AT THE RATE OF BETWEEN 0.10 AND 0.25 GALLONS PER SQ. YD. AT LEAST 12 HOURS PRIOR TO ASPHALT PAVING OPERATIONS.
14. COMPACTION TESTING SHALL BE PERFORMED BY A GEOTECHNICAL ENGINEER AND ACCEPTED BY THE CITY ENGINEER.
15. SEWER/STORM DRAIN MAINS AND LATERALS SHALL BE CONSTRUCTED, BACKFILL COMPATED AND TESTED PRIOR TO CONSTRUCTION OF THE CURB AND GUTTER.
16. THE CURB AND GUTTER SHALL BE "ETCHED" SHOWING LATERAL LOCATION: "S" FOR SEWER, "G" FOR GAS, AND "E" FOR ELECTRICAL.
17. DRIVEWAYS SHALL BE LOCATED PER ACCEPTED PLOT PLAN BY DEVELOPER'S ENGINEERS. STAKES SHALL BE SET ON CENTERLINE OF APPROACH WITH OVERALL MARKED ON WITNESS STAKE. W=BOTTOM OF "X" WIDTH.
18. TRAFFIC CONTROL AND SAFETY DEVICES SHALL BE PLACED AND MAINTAINED PER THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION, CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR USE IN PERFORMANCE OF WORK UPON ROADWAYS AND TO THE SATISFACTION OF THE CITY ENGINEER.
19. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL ASCERTAIN THE CORRECTNESS OF WATER SERVICES AND SEWER LATERAL LOCATIONS. ANY DEVIATION FROM LOCATIONS SHOWN ON THESE PLANS SHALL BE REPORTED TO THE ENGINEER FOR ADJUSTMENT PRIOR TO CALLING FOR ANY CONSTRUCTION STAKING REQUIRED. THE FINAL OR SURFACE LAYER OF ASPHALT CONCRETE SHALL NOT BE PLACED UNTIL ALL ON-SITE IMPROVEMENTS ARE COMPLETE, INCLUDING ALL GRADING AND UNTIL ALL UNACCEPTABLE CONCRETE WORK IS REMOVED AND REPLACED UNLESS ACCEPTED OTHERWISE BY THE ENGINEER, PER OCPW STD. 1805.
20. STREET LIGHTS SHALL BE A MINIMUM OF FIVE FEET (5') AWAY FROM UTILITIES (I.E., FIRE HYDRANTS).
21. ALL CATCH BASIN SIGNAGE SHALL BE PER CASQA BMP HANDBOOK SD-13.
22. CONTRACTOR IS RESPONSIBLE FOR SURVEY TIES AND RESTORING ALL DESTROYED SURVEY MONUMENTS TO THE SATISFACTION OF THE CITY ENGINEER AND FILED WITH THE COUNTY SURVEY DEPARTMENT.
23. CONTRACTOR IS RESPONSIBLE FOR NOTIFYING THE ENGINEER OF ANY DEVIATIONS FROM THE PLAN AND SHALL BE AS-BUILT PRIOR TO FINAL ACCEPTANCE.
24. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL DEVELOP AND SUBMIT STORM WATER POLLUTION PREVENTION PLAN (SWPPP) THAT ADDRESSES OF ALL OF THE REQUIRED CONSTRUCTION BMP ELEMENTS AS STATED IN THE GENERAL CONSTRUCTION PERMIT AND OUTLINED THE PROJECT SPECIFICATIONS.
25. RIGHT OF WAY SHOWN IS APPROXIMATE. FOR ACCURATE RIGHT OF WAY DATA, CONTACT COUNTY OF ORANGE PUBLIC WORKS.

NOTICE TO CONTRACTOR

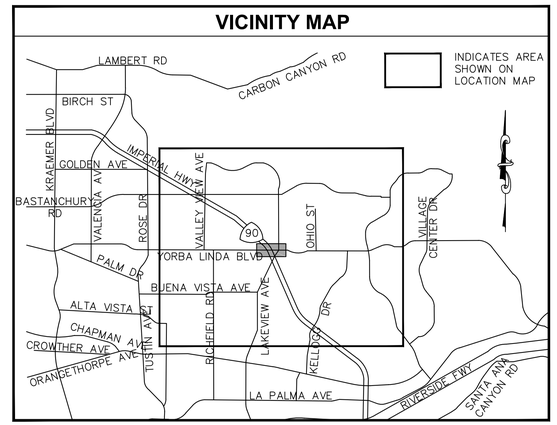
CONTRACTOR AGREES THAT THEY SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING THE SAFETY OF ALL PERSONS ON THE PROPERTY; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT TO BE LIMITED TO NORMAL WORKING HOURS; AND THAT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

ATTENTION IS DIRECTED TO THE POSSIBLE EXISTENCE OF UNDERGROUND FACILITIES NOT KNOWN OR IN A LOCATION DIFFERENT FROM THAT WHICH IS SHOWN ON THE PLANS OR IN THE SPECIAL PROVISIONS. THE CONTRACTOR SHALL TAKE STEPS TO ASCERTAIN THE EXACT LOCATION OF ALL UNDERGROUND FACILITIES PRIOR TO DOING WORK THAT MAY DAMAGE SUCH FACILITIES OR INTERFERE WITH THEIR SERVICE.

LOCATION MAP



VICINITY MAP



INDEX OF DRAWINGS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	CONSTRUCTION NOTES, LEGENDS, AND ABBREVIATIONS
3	TYPICAL CROSS-SECTIONS
4-5	DEMOLITION PLAN
6-8	STREET IMPROVEMENT PLAN AND PROFILE
9-10	INTERSECTION DETAILS
11-12	CONSTRUCTION DETAILS
13-14	FILTERRA DETAILS
15	UTILITY PLAN
16-17	SIGNING AND STRIPING PLAN
18	GENERAL NOTES
19	KEYPLAN + PARKING LEVEL PLAN
20	SECTIONS + PLAN AT PODIUM SLAB LVL
21-22	DETAILS
23-24	TRAFFIC SIGNAL MODIFICATION + VIDEO DETECTION INSTALLATION PLAN
25-27	PLANTING PLAN
28-31	IRRIGATION PLAN

UTILITY COMPANIES

UTILITY/OWNER	PHONE NO.
AT&T CALIFORNIA – MANUEL MACIAS JR.	(909) 697-0853
CHARTER COMMUNICATION – ERNEST CHANG	(562) 383-9989
SOUTHERN CALIFORNIA EDISON (DISTRIBUTION) – MICHAEL A. SARAGOSA	(310) 997-7913
SOUTHERN CALIFORNIA GAS COMPANY – EDDIE CORTES	(213) 231-5427
YORBA LINDA WATER DISTRICT – AMMAR TOHMEH	(714) 701-3109

811 DIAL TOLL FREE 811 AT LEAST TWO DAYS BEFORE YOU DIG

UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

60% SUBMITTAL NOT FOR CONSTRUCTION 11/10/2023

WDID NO:

CITY OF YORBA LINDA
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED BY: _____ DATE _____

ACCEPTED BY: _____ DATE _____

XXXXXX X. XXXXX RCE XXXXX
DIRECTOR OF PUBLIC WORKS / CITY ENGINEER

REVISIONS

NUMBER	DATE	INITIALS	DESCRIPTION	DATE	INITIALS

BASIS OF BEARINGS

THE BASIS OF HORIZONTAL CONTROL FOR THIS PROJECT IS THE CALIFORNIA COORDINATE SYSTEM NAD83 ZONE 6 (2017.50 EPOCH) DETERMINED LOCALLY BY THE FOLLOWING O.C.S. POINTS: 5201, 5190R1, AND 5212, ORANGE COUNTY PUBLIC WORKS, OC SURVEY.

BENCHMARK

VERTICAL DATUM: NAVD88, BENCH MARK: OCS 2A-49-87
ELEVATION: 378.082' (2006), DESCRIPTION: FOUND 3 3\4" OCS ALUMINUM BENCHMARK DISK STAMPED "2A-49-87", SET IN THE SOUTHWESTERLY CORNER OF A 4 FT. BY 8 FT. CONCRETE CATCH BASIN. MONUMENT IS LOCATED IN THE NORTHWESTERLY CORNER OF THE INTERSECTION OF YORBA LINDA BOULEVARD AND IMPERIAL HIGHWAY, 47 FT. NORTHERLY OF THE CENTERLINE OF YORBA LINDA AND 116 FT. WESTERLY OF THE WESTERLY CURB ALONG IMPERIAL HIGHWAY. MONUMENT IS SET LEVEL WITH THE SIDEWALK.

PREPARED BY:
BKF ENGINEERS
4675 MACARTHUR CT.
SUITE 400
NEWPORT BEACH, CA 92660
(949) 526-8460
www.bkf.com

		DATE
DRAWN BY	KW	
CHECKED BY	SA	

PREPARED UNDER THE SUPERVISION OF

CIVIL ENGINEER INFO

REGISTERED PROFESSIONAL ENGINEER BOBBY LIN 85563 Exp 09-30-24 CIVIL STATE OF CALIFORNIA

YORBA LINDA BOULEVARD IMPROVEMENTS
FROM IMPERIAL HIGHWAY TO LAKEVIEW AVENUE
TITLE SHEET

CITY OF YORBA LINDA

SHEET No. 1 OF 31

EXTERNAL REFERENCES: 0444-11_TitleBlock
FILENAME: \\BKF-NBV\vol4\2021\210444_YorbaLinda_On-Call\210444-11_YorbaLindaBlvd_Improvements\ENG-TV\Sheets\1_TITLE SHEET\YorbaLindaBlvd_Title Sheet.dwg, LAST SAVED ON: Nov 09 2023 7:39pm PLOTTED BY: WAKA, ON: Nov 10 2023 3:07pm, CFG:

ABBREVIATIONS:

AC	ASPHALT CONCRETE
APPROX	APPROXIMATE
AVE	AVENUE
BCR	BEGIN OF CURB RETURN
BFP	BACKFLOW PREVENTER
BLVD	BOULEVARD
CAB	CRUSHED AGGREGATE BASE
CB	CATCH BASIN
C&G	CURB AND GUTTER
CL,℄	CENTER LINE
CMU	CONCRETE MASONRY WALL
CO	CLEANOUT
COM	COMMUNICATION
DR	DRIVE
DWY	DRIVEWAY
E	ELECTRICAL
ECR	END OF CURB RETURN
EX	EXISTING
FG	FINISHED GRADE
FL	FLOWLINE
FS	FINISHED SURFACE
FT	FEET
G	GAS
GRD	GRADE
HMA	HOT MIXED ASPHALT
HWY	HIGHWAY
IMP	IMPROVEMENTS
L	LENGTH
LT	LEFT
LVL	LEVEL
M	METER
MAX	MAXIMUM
MH	MANHOLE
MOD	MODIFIED
MUTCD	MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES
NE	NORTHEAST
N'LY	NORTHERLY
NO	NUMBER
N.T.S	NOT TO SCALE
NW	NORTHWEST
O.C.	ON CENTER
PCC	PORTLAND CEMENT CONCRETE
PP	PLAN AND PROFILE
PROP	PROPOSED
R	RADIUS
RD	ROAD
RET	RETAINING
RSP	REVISED STANDARD PLAN
RT	RIGHT
R/W	RIGHT OF WAY
SCE	SOUTHERN CALIFORNIA EDISON
SCG	SOUTHERN CALIFORNIA GAS COMPANY
SD	STORM DRAIN
S'LY	SOUTHERLY
SPPWC	STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION
SS	SANITARY SEWER
ST	STREET
STA	STATION
STD	STANDARD
SW	SOUTHWEST
SWK	SIDEWALK
TC	TOP OF CURB
UG	UNDERGROUND
V	VALVE
VAR	VARIES
W	WATER
WD	WIDTH
WM	WATER METER
WV	WATER VALVE
YL	YORBA LINDA
YLWD	YORBA LINDA WATER DISTRICT

LEGEND

- CENTERLINE
- DRAIN INLET
- EXISTING R/W (APPROX LOCATION)
- FENCE
- FIRE HYDRANT
- MANHOLE
- PEDESTRIAN LIGHT
- POWER POLE
- PULLBOX OR METER
- RETAINING WALL
- SAWCUT
- SIGN POST
- STREET LIGHT
- TRAFFIC SIGNAL
- TRAFFIC SIGNAL W/ STREET LIGHT
- VALVE

UTILITIES LEGEND

- SS — EXISTING SANITARY SEWER LINE (SIZE PER PLAN)
- G — EXISTING GAS LINE (SIZE PER PLAN)
- GAS
- COM(UG) — EXISTING UNDERGROUND COMMUNICATION LINE (SIZE PER PLAN)
- W — EXISTING WATER LINE (SIZE PER PLAN)
- SD — EXISTING STORM DRAIN LINE (SIZE PER PLAN)

STREET IMPROVEMENT CONSTRUCTION NOTES

1. CONSTRUCT 2" AC OVERLAY
2. CONSTRUCT 4" PCC SIDEWALK PER SPPWC STD. PLAN NO. 112-2
3. CONSTRUCT TYPE A2-8 CURB & GUTTER PER SPPWC STD PLAN NO. 120-2
4. CONSTRUCT DECORATIVE PAVERS (MATCH EXISTING)
5. CONSTRUCT TYPE A3-6 CURB & GUTTER PER SPPWC STD PLAN NO. 120-2
6. CONSTRUCT CMU WALL PER CITY OF YORBA LINDA DETAIL (DWG NO. 12). WALL HEIGHT = 2'
7. CONSTRUCT CONCRETE DRIVEWAY PER SPPWC STD PLAN NO. 110-2. DRIVEWAY WIDTH TO MATCH EXISTING
8. CONSTRUCT 12" FULL DEPTH HMA
9. CONSTRUCT 7"AC OVER 20"CAB PAVEMENT
10. CONSTRUCT BAY TAPER PER SPPWC STD PLAN 140-3 AND OCPW STD PLAN 140-3-OC
11. CONSTRUCT DECORATIVE WALL
12. CONSTRUCT PCC STAIRS
13. FURNISH AND INSTALL FILTERRA BIOFILTRATION SYSTEM PER DETAILS ON SHEET 11 AND MANUFACTURER'S SPECIFICATIONS
14. CONSTRUCT CURB RAMP PER OCPW STD PLANS (2018)
15. CONSTRUCT CATCH BASIN AND LOCAL DEPRESSION CASE E PER SPPWC STD PLAN 300-4 AND 313-4

SIGNING AND STRIPING CONSTRUCTION NOTES

40. PAINT PAVEMENT MARKING PER CALTRANS STD PLAN A24A TO A24E.
41. PAINT 6" BROKEN WHITE LANE LINE PER CALTRANS STD PLAN A20A, DETAIL 9 WITH SOLID END SECTIONS.
42. PAINT 8" SOLID WHITE CHANNELIZING LINE PER CALTRANS STD PLAN A20D, DETAIL 38.
43. PAINT 8" BROKEN WHITE LANE DROP AT INTERSECTIONS PER CALTRANS STD PLAN A20C, DETAIL 37B.
44. PAINT 6" SOLID/BROKEN DOUBLE YELLOW TWO-WAY LEFT TURN LANES PER CALTRANS STD PLAN A20B, DETAIL 32.
45. PAINT SOLID WHITE BASIC CROSSWALK PER CALTRANS STD PLAN A24F.
46. PAINT 12" SOLID WHITE LIMIT LINE PER CALTRANS STD PLAN A24G.
47. PAINT 8" SOLID WHITE CHEVRON BUFFER AT 45-DEGREES, SPACED 10' O.C.
48. PAINT 6" SOLID WHITE RIGHT EDGELINE PER CALTRANS STD PLAN A20B, DETAIL 27B.
49. PAINT 6" BROKEN WHITE INTERSECTION BIKE LANE LINE PER CALTRANS STD PLAN A20D, DETAIL 39A.
50. PAINT 6" BROKEN WHITE LANE LINE EXTENSIONS THROUGH INTERSECTION PER CALTRANS STD PLAN A20D, DETAIL 40.
51. PAINT 6" SOLID WHITE BIKE LANE LINE PER CALTRANS STD PLAN STD PLAN A20D, DETAIL 39.
52. PAINT SOLID DOUBLE YELLOW CENTERLINE PER CALTRANS STD PLAN A20A, DETAIL 22.
53. PAINT 6" SOLID YELLOW LEFT EDGE LINE PER CALTRANS STD PLAN A20B, DETAIL 25B.
54. RELOCATE SIGNS AND POST
55. RELOCATE SIGNS TO PROPOSED STREET LIGHT
56. RELOCATE SIGNS TO PROPOSED TRAFFIC SIGNAL POLE/MAST ARM
57. REMOVE SIGNS/SIGNS AND POST
58. RELOCATE SIGNS AND RAILING
59. INSTALL SIGNS ON NEW POST OR TRAFFIC SIGNAL POLE

UTILITY CONSTRUCTION NOTES

70. ADJUST UTILITY FRAME AND/OR COVER TO FG
71. RELOCATE ELECTRICAL UTILITY STRUCTURE
72. RELOCATE WATER UTILITY STRUCTURE
73. RELOCATE DRAINAGE STRUCTURE
74. RELOCATE EXISTING FIRE HYDRANT ASSEMBLY PER YLWD STD W-21
75. RELOCATE IRRIGATION STRUCTURE
76. RELOCATE YLWD AIR VACUUM AND AIR RELEASE VALVE
77. RELOCATE STREET LIGHT (SEE LIGHTING PLAN)

DEMOLITION NOTES

- S — SAWCUT
- 1 — PROTECT IN PLACE
- 2 — REMOVE PCC
- 3 — REMOVE AC
- 4 — 2" AC COLD PLANE
- 5 — REMOVE MEDIAN PAVERS
- 6 — REMOVE LANDSCAPE/IRRIGATION
- 7 — REMOVE TREE (SEE PLANTING PLAN)
- 8 — REMOVE DECORATIVE WALL
- 9 — REMOVE LANDSCAPE BLOCK WALL
- 10 — RELOCATE BANNER POLE
- 11 — RELOCATE MONUMENT SIGN
- 12 — REMOVE DECORATIVE PAVERS
- 13 — ADJUST UTILITY FRAME AND OR COVER TO FG (SEE UTILITY PLAN)
- 14 — RELOCATE ELECTRICAL UTILITY STRUCTURE (SEE UTILITY PLAY)
- 15 — RELOCATE WATER UTILITY STRUCTURE (SEE UTILITY PLAN)
- 16 — REMOVE CATCH BASIN AND LOCAL DEPRESSION
- 17 — RELCATE EXISTING FIRE HYDRANT ASSEMBLY (SEE UTILITY PLAN)
- 18 — RELOCATE IRRIGATION STRUCTURE
- 19 — RELOCATE YLWD AIR VACUUM AND AIR RELEASE VALVE (SEE UTILITY PLAN)
- 20 — STREET LIGHT TO BE RELOCATED BY OTHERS
- 21 — RELOCATE SIGN (SEE SIGNING PLANS)
- 22 — RELOCATE TRAFFIC SIGNAL UTILITY (SEE TRAFFIC PLAN)

NO.	UTILITY	OWNER
1	8" SS	YLWD
2	6" SS	YLWD
3	6" G	SCG
4	4" G	SCG
5	3" G	SCG
6	2" G	SCG
7	1" G	SCG
8	3/4" G	SCG
9	1/2" G	SCG
10	COM (UG)	AT&T
11	6" W	YLWD
12	8" W	YLWD
13	10" W	YLWD
14	12" W	YLWD
15	16" W	YLWD
16	SD	CITY OF YORBA LINDA
17	12" SD	CITY OF YORBA LINDA
18	18" SD	CITY OF YORBA LINDA
19	48" SD	CITY OF YORBA LINDA
20	54" SD	CITY OF YORBA LINDA
21	E (UG)	SCE

811 DIAL TOLL FREE 811 AT LEAST TWO DAYS BEFORE YOU DIG

UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

60% SUBMITTAL NOT FOR CONSTRUCTION 11/10/2023

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DRAWN BY	KW	
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CIVIL ENGINEER INFO

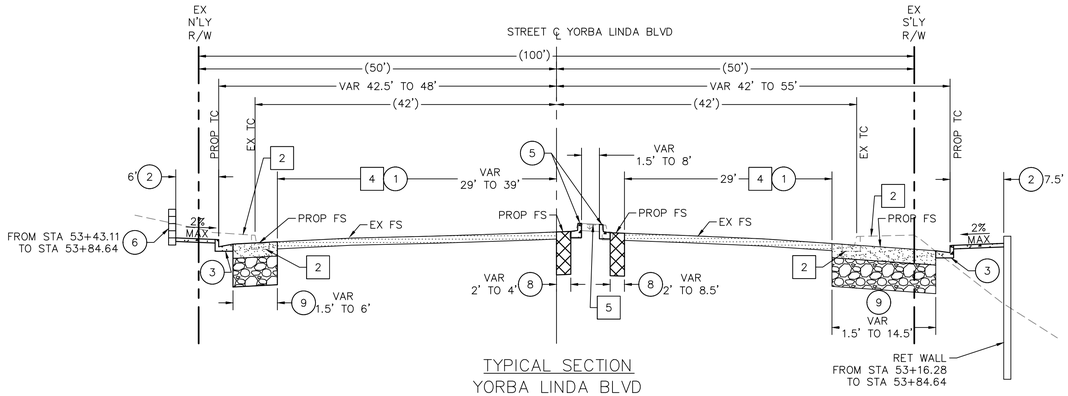
REGISTERED PROFESSIONAL ENGINEER — BOBBY LIN — 85563 Exp 09-30-24 — CIVIL — STATE OF CALIFORNIA

YORBA LINDA BOULEVARD IMPROVEMENTS FROM IMPERIAL HIGHWAY TO LAKEVIEW AVENUE CONSTRUCTION NOTES, LEGENDS AND ABBREVIATIONS

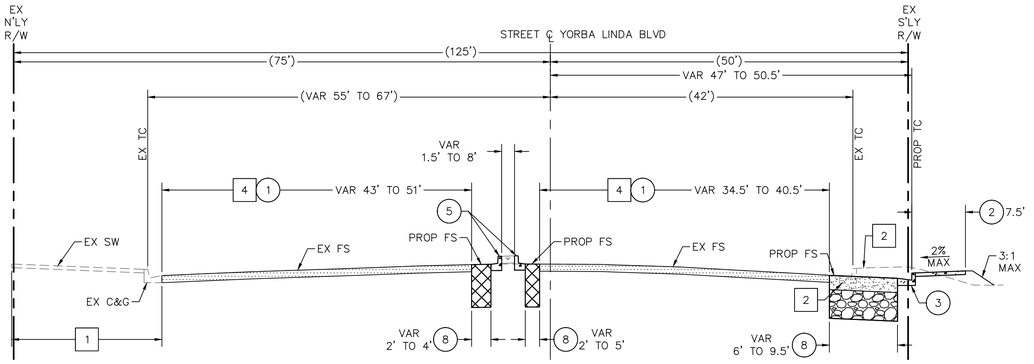
CITY OF YORBA LINDA

SHEET No. 2 OF 31

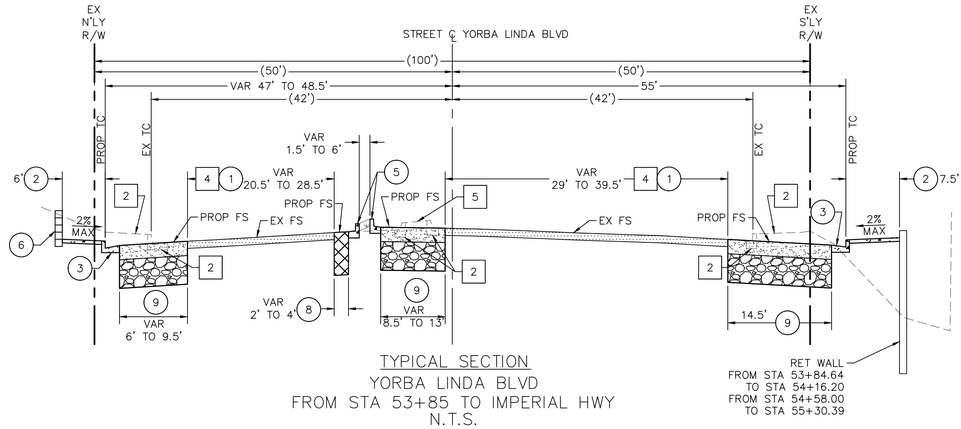
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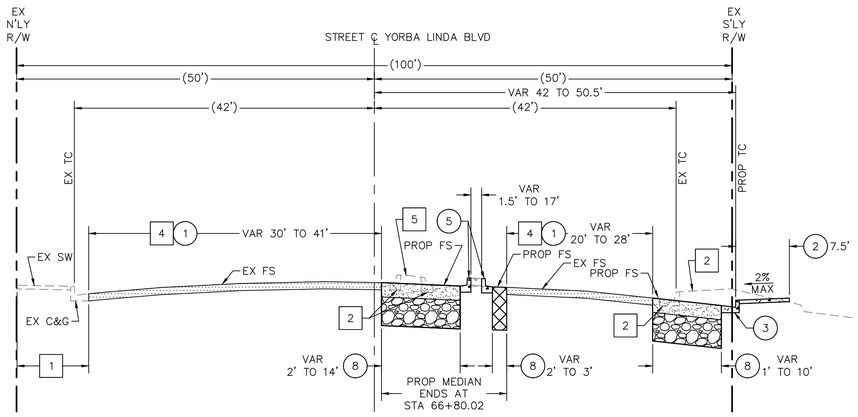
TYPICAL SECTION
YORBA LINDA BLVD
FROM STA 52+70 TO STA 53+85
N.T.S.



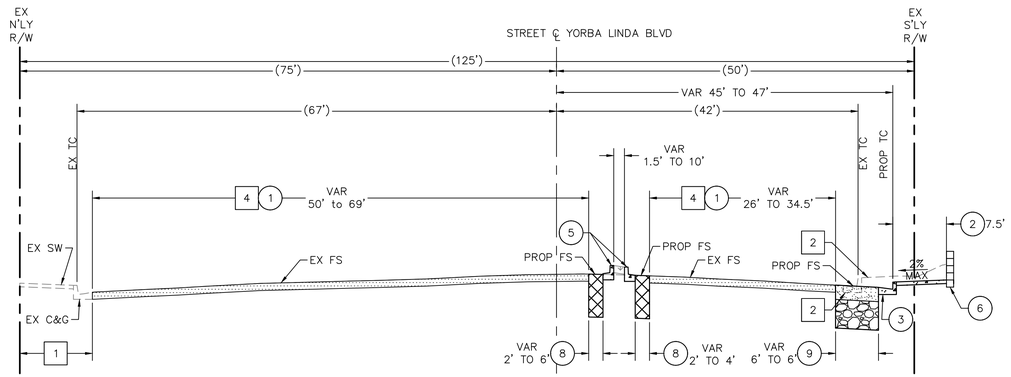
TYPICAL SECTION
YORBA LINDA BLVD
FROM STA 60+05 TO LAKEVIEW AVE
N.T.S.



TYPICAL SECTION
YORBA LINDA BLVD
FROM IMPERIAL HWY TO STA 53+85
N.T.S.



TYPICAL SECTION
YORBA LINDA BLVD
FROM LAKEVIEW AVE TO STA 67+44
N.T.S.



TYPICAL SECTION
YORBA LINDA BLVD
FROM IMPERIAL HWY TO STA 60+05
N.T.S.

STREET IMPROVEMENT CONSTRUCTION NOTES

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2. CONSTRUCT 4" PCC SIDEWALK PER SPPWC STD. PLAN NO. 112-2
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9. CONSTRUCT 7"AC OVER 20"CAB PAVEMENT

DEMOLITION NOTES

1. PROTECT IN PLACE
2. REMOVE PCC
4. 2" AC COLD PLANE
5. REMOVE MEDIAN PAVERS

811 DIAL TOLL FREE 811 AT LEAST TWO DAYS BEFORE YOU DIG
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60% SUBMITTAL
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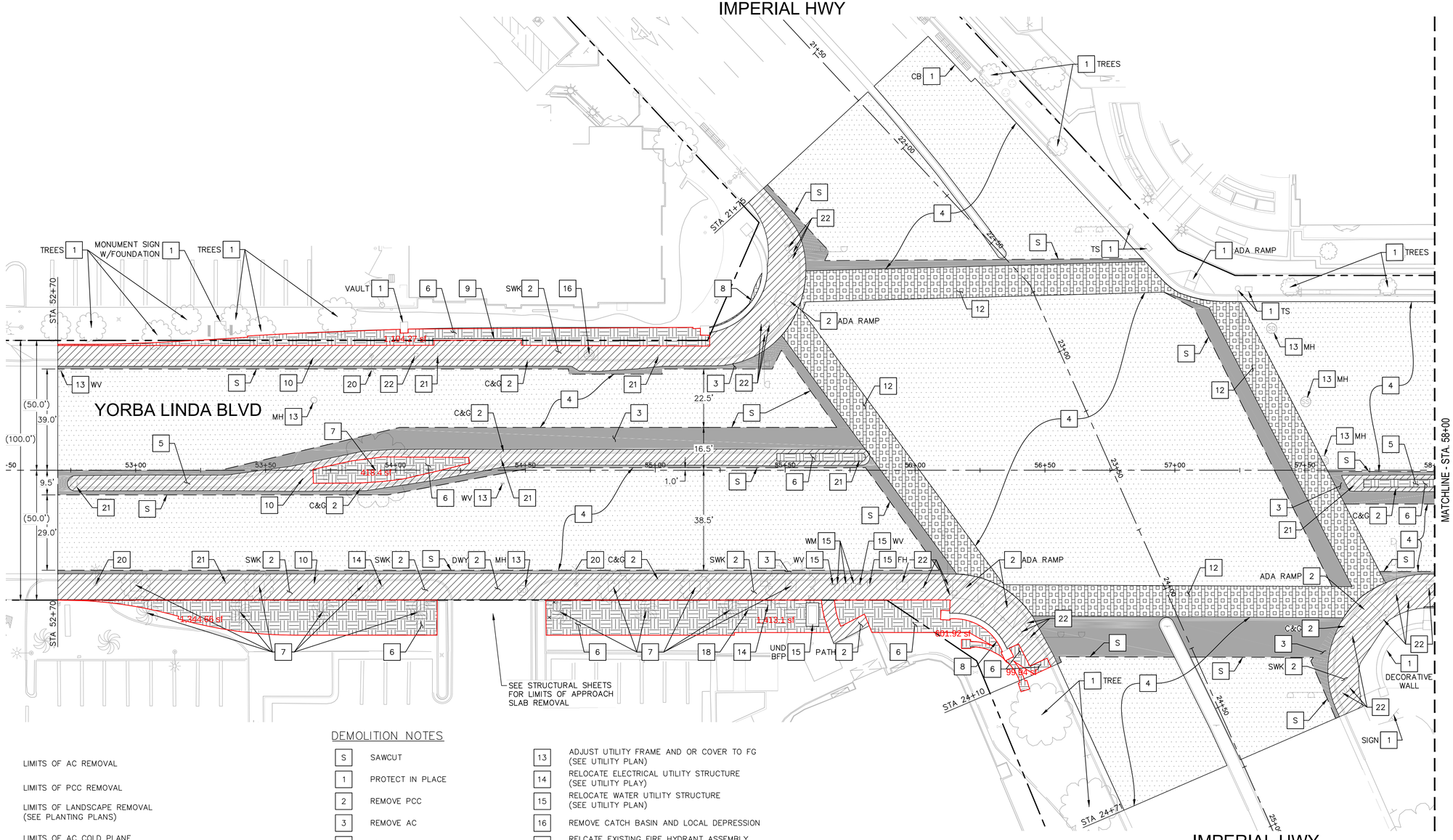
CIVIL ENGINEER INFO

REGISTERED PROFESSIONAL ENGINEER BOBBY LIN 85563 Exp 09-30-24 CIVIL STATE OF CALIFORNIA

YORBA LINDA BOULEVARD IMPROVEMENTS FROM IMPERIAL HIGHWAY TO LAKEVIEW AVENUE
TYPICAL SECTIONS
CITY OF YORBA LINDA

SHEET No. 3 OF 31

EXTERNAL REFERENCES: 0444-11_Topo 22-3589_Topo 0444-11_TitleBlock 0444-11_Pr Plan 0444-11_ROW 21044_YORBA_LINDA_BLVD_PAPER BOUNDARY 0444-11_X Section 21044_YorbaLindaBlvd_Topo 0444-11_Pr Plan_KW 0444-11_Notes
FILENAME: \\BKF-NBV04\2021\21044_YorbaLinda_On-Call\21044-11_YorbaLindaBlvd_Improvements\ENG-T\Sheets\3_TYPICAL CROSS-SECTIONS\YorbaLindaBlvd_X-Sections.dwg, LAST SAVED ON: Nov 03 2023 10:19am PLOTTED BY: WAKA ON: Nov 10 2023 4:08pm, CFG:



LEGEND

- LIMITS OF AC REMOVAL
- LIMITS OF PCC REMOVAL
- LIMITS OF LANDSCAPE REMOVAL (SEE PLANTING PLANS)
- LIMITS OF AC COLD PLANE
- LIMITS OF DECORATIVE PAVERS REMOVAL
- SAWCUT

DEMOLITION NOTES

S	SAWCUT
1	PROTECT IN PLACE
2	REMOVE PCC
3	REMOVE AC
4	2" AC COLD PLANE
5	REMOVE MEDIAN PAVERS
6	REMOVE LANDSCAPE/IRRIGATION
7	REMOVE TREE (SEE PLANTING PLAN)
8	REMOVE DECORATIVE WALL
9	REMOVE LANDSCAPE BLOCK WALL
10	RELOCATE BANNER POLE
11	RELOCATE MONUMENT SIGN
12	REMOVE DECORATIVE PAVERS
13	ADJUST UTILITY FRAME AND OR COVER TO FG (SEE UTILITY PLAN)
14	RELOCATE ELECTRICAL UTILITY STRUCTURE (SEE UTILITY PLAY)
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16	REMOVE CATCH BASIN AND LOCAL DEPRESSION
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811 DIAL TOLL FREE 811 AT LEAST TWO DAYS BEFORE YOU DIG

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60% SUBMITTAL NOT FOR CONSTRUCTION 11/10/2023

GRAPHIC SCALE
0 10 20 40 60
(IN FEET)
1 INCH = 20 FT.

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CHECKED BY	SA	

PREPARED UNDER THE SUPERVISION OF

CML ENGINEER INFO

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YORBA LINDA BOULEVARD IMPROVEMENTS FROM IMPERIAL HIGHWAY TO LAKEVIEW AVENUE
DEMOLITION PLAN

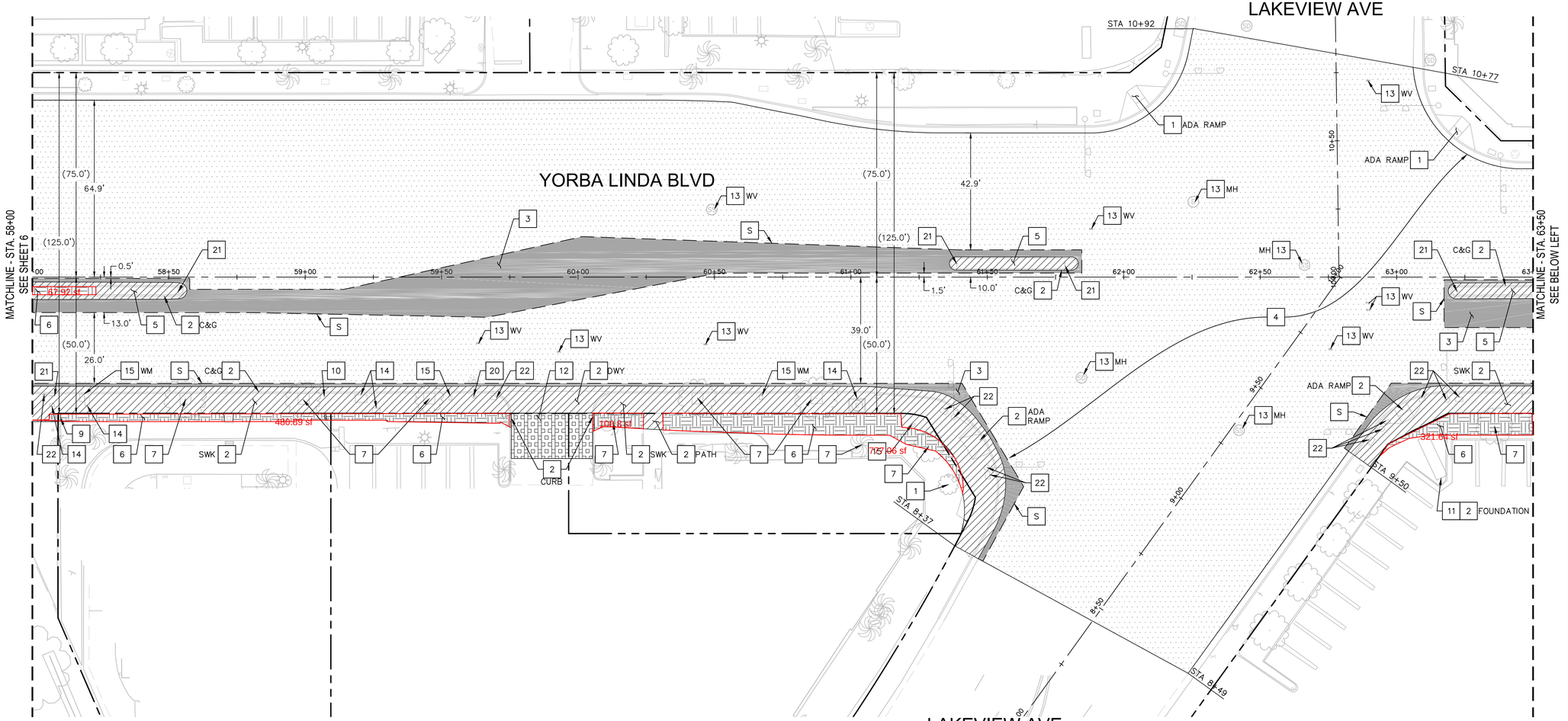
CITY OF YORBA LINDA

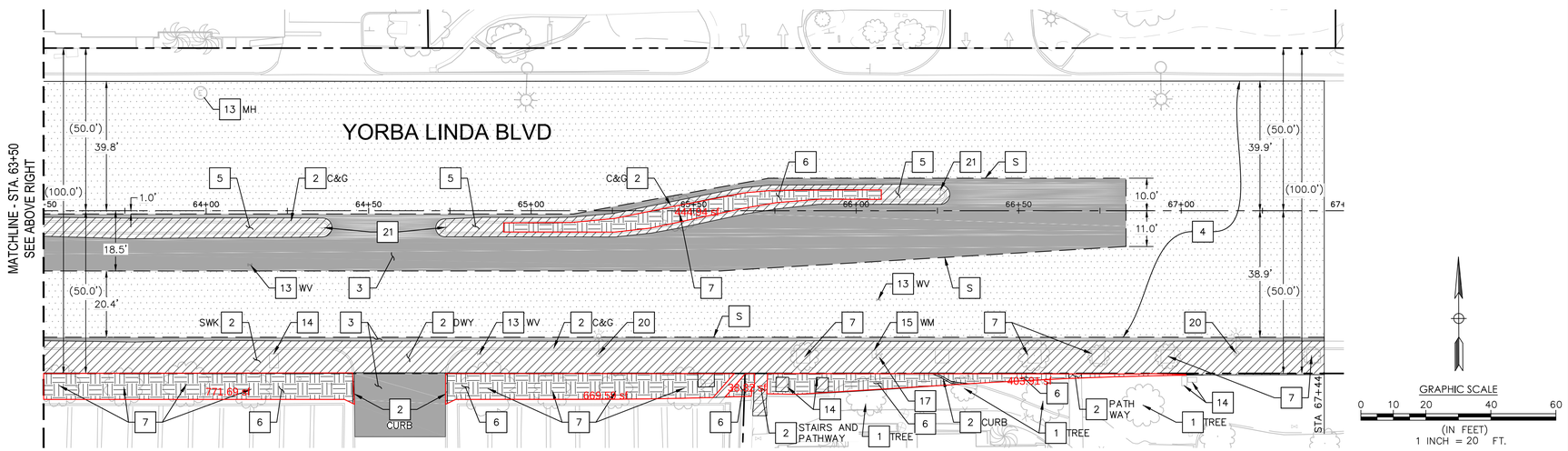
SHEET No. 4 OF 31

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FILENAME: \\BKF-NB\vol4\2021\210444_YorbaLinda_On-Call\210444-11_YorbaLindaBlvd_Improvements\ENG-TS\Sheets\4_DEMOLITION PLAN\YorbaLindaBlvd_Demo.dwg, LAST SAVED ON: Nov 07 2023 5:19pm PLOTTED BY: WAKA, ON: Nov 10 2023 4:09pm, CFG:

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THE BASIS OF HORIZONTAL CONTROL FOR THIS PROJECT IS THE CALIFORNIA COORDINATE SYSTEM NAD83 ZONE 6 (2017.50 EPOCH) DETERMINED LOCALLY BY THE FOLLOWING O.C.S. POINTS: 5201, 5190R1, AND 5212, ORANGE COUNTY PUBLIC WORKS, OC SURVEY.

BENCHMARK

VERTICAL DATUM: NAVD88, BENCH MARK: OCS 2A-49-87
ELEVATION: 378.082' (2006), DESCRIPTION: FOUND 3 3\4" OCS ALUMINUM BENCHMARK DISK STAMPED "2A-49-87", SET IN THE SOUTHWESTERLY CORNER OF A 4 FT. BY 8 FT. CONCRETE CATCH BASIN. MONUMENT IS LOCATED IN THE NORTHWESTERLY CORNER OF THE INTERSECTION OF YORBA LINDA BOULEVARD AND IMPERIAL HIGHWAY, 47 FT. NORTHERLY OF THE CENTERLINE OF YORBA LINDA AND 116 FT. WESTERLY OF THE WESTERLY CURB ALONG IMPERIAL HIGHWAY. MONUMENT IS SET LEVEL WITH THE SIDEWALK.

PREPARED BY:
BKF ENGINEERS
4675 MACARTHUR CT.
SUITE 400
NEWPORT BEACH, CA 92660
(949) 526-8460
www.bkf.com

		DATE
DRAWN BY	KW	
CHECKED BY	SA	

PREPARED UNDER THE SUPERVISION OF

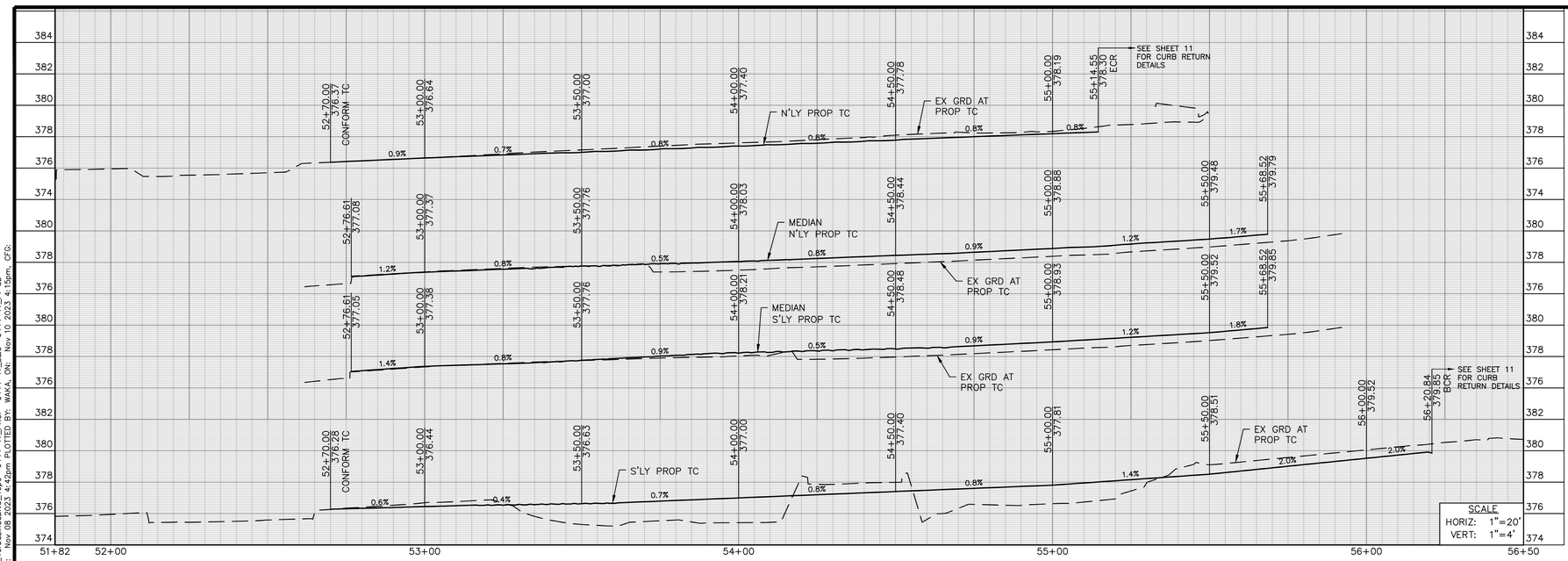
CIVIL ENGINEER INFO

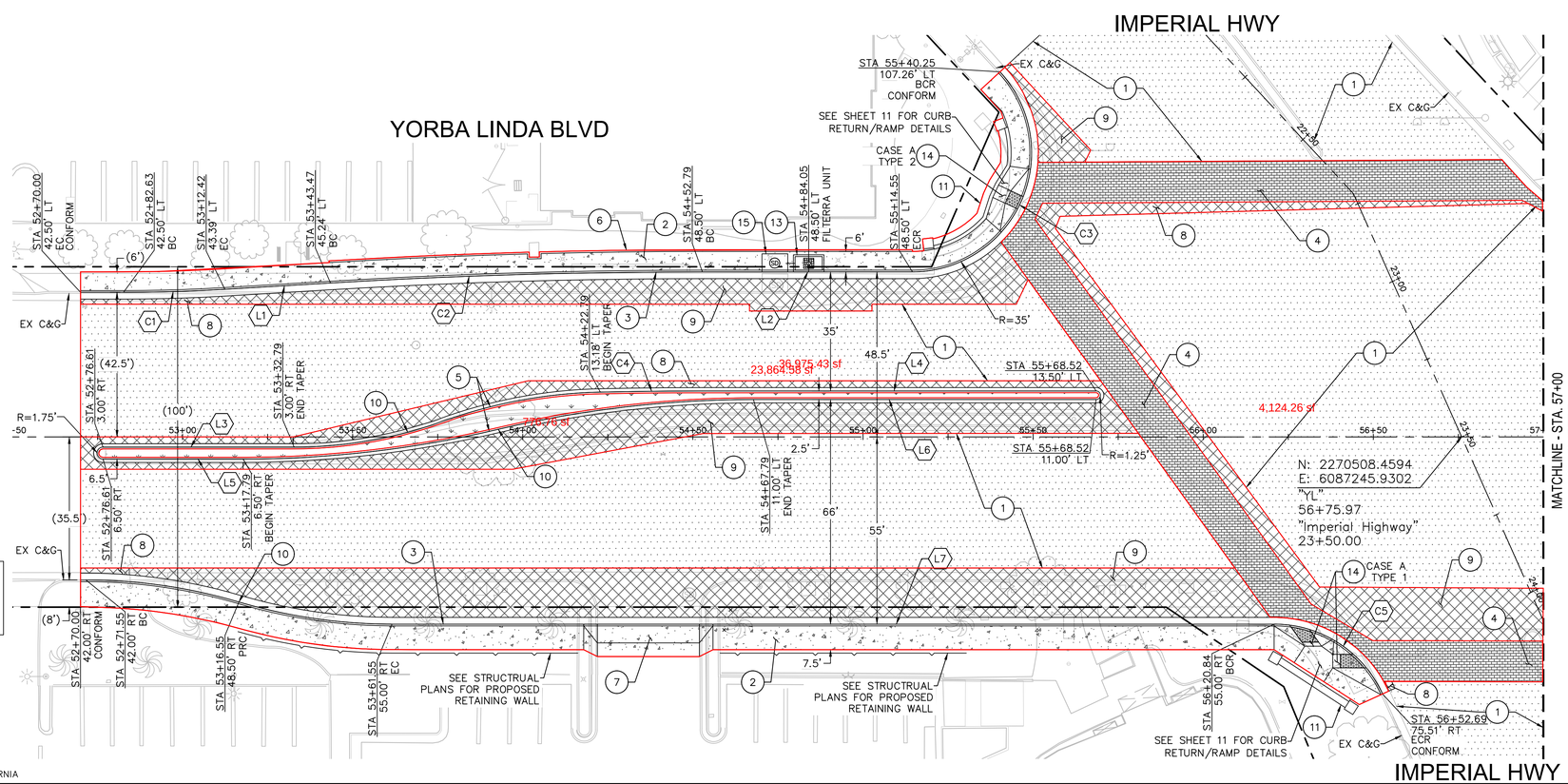
REGISTERED PROFESSIONAL ENGINEER BOBBY LIN 85563 Exp 09-30-24 CIVIL STATE OF CALIFORNIA

YORBA LINDA BOULEVARD IMPROVEMENTS FROM IMPERIAL HIGHWAY TO LAKEVIEW AVENUE
DEMOLITION PLAN
CITY OF YORBA LINDA

SHEET No. 5 OF 31

EXTERNAL REFERENCES: 0444-11_Topo 22-3589_Topo 0444-11_TitleBlock 0444-11_Pr Plan 0444-11_Utility Basemap 0444-11_ROW 21044_YORBA_LINDA_BLVD_PAPER BOUNDARY 210444_YorbaLindaBlvd_Topo 0444-11_Demo 0444-11_Notes
FILENAME: \\BKF-NB\vol4\2021\210444_YorbaLinda_On-Call\210444-11_YorbaLindaBlvd_Improvements\ENG-T\Sheets\4_DEMOLITION PLAN\YorbaLindaBlvd_Demo.dwg, LAST SAVED ON: Nov 07 2023 5:19pm PLOTTED BY: WAKA, ON: Nov 10 2023 4:11pm, CFG:





LEGEND

- EXISTING R/W (APPROX LOCATION)
- CENTERLINE
- RETAINING WALL (SEE STRUCTURAL PLANS)
- LANDSCAPE (SEE PLANTING PLANS)
- LIMITS OF AC IMPROVEMENTS
- PCC IMPROVEMENTS
- LIMITS OF AC OVERLAY
- PROPOSED DECORATE PAVERS

STREET IMPROVEMENT CONSTRUCTION NOTES

1. CONSTRUCT 2" AC OVERLAY
2. CONSTRUCT 4" PCC SIDEWALK PER SPPWC STD. PLAN NO. 112-2
3. CONSTRUCT TYPE A2-8 CURB & GUTTER PER SPPWC STD PLAN NO. 120-2
4. CONSTRUCT DECORATIVE PAVERS (MATCH EXISTING)
5. CONSTRUCT TYPE A3-6 CURB & GUTTER PER SPPWC STD PLAN NO. 120-2
6. CONSTRUCT CMU WALL PER CITY OF YORBA LINDA DETAIL (DWG NO. 12). WALL HEIGHT = 2'
7. CONSTRUCT CONCRETE DRIVEWAY PER SPPWC STD PLAN NO. 110-2. DRIVEWAY WIDTH TO MATCH EXISTING
8. CONSTRUCT 12" FULL DEPTH HMA
9. CONSTRUCT 7"AC OVER 20"CAB PAVEMENT
10. CONSTRUCT BAY TAPER PER SPPWC STD PLAN 140-3 AND OCPW STD PLAN 140-3-OC
11. CONSTRUCT DECORATIVE WALL
13. FURNISH AND INSTALL FILTERRA BIOFILTRATION SYSTEM PER DETAILS ON SHEET 11 AND MANUFACTURER'S SPECIFICATIONS
14. CONSTRUCT CURB RAMP PER OCPW STD PLANS (2018)
15. CONSTRUCT CATCH BASIN AND LOCAL DEPRESSION CASE E PER SPPWC STD PLAN 300-4 AND 313-4

LINE AND CURVE TABLE				
Line #/Curve #	Length	Direction/Delta	Radius	
C1	29.80	3°24'55"	500.00	14.91
C2	109.38	3°24'55"	1835.00	54.71
C3	81.09	132°45'00"	35.00	80.02
C4	30.00	1°13'40"	1400.00	15.00
C5	40.04	65°32'20"	35.00	22.53
L1	31.10	S86°51'11"W		
L2	61.76	S89°43'53"E		
L3	56.17	S89°43'53"E		
L4	115.73	S89°43'53"E		
L5	41.17	S89°43'53"E		
L6	100.73	S89°43'53"E		
L7	259.28	S89°43'53"E		

GRAPHIC SCALE
0 10 20 40 60
(IN FEET)
1 INCH = 20 FT.

60% SUBMITTAL
NOT FOR CONSTRUCTION
11/10/2023

811 DIAL TOLL FREE 811
AT LEAST TWO DAYS BEFORE YOU DIG
UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

REVISIONS

NUMBER	DATE	INITIALS	DESCRIPTION	DATE	INITIALS

BASIS OF BEARINGS

THE BASIS OF HORIZONTAL CONTROL FOR THIS PROJECT IS THE CALIFORNIA COORDINATE SYSTEM NAD83 ZONE 6 (2017.50 EPOCH) DETERMINED LOCALLY BY THE FOLLOWING O.C.S. POINTS: 5201, 5190R1, AND 5212, ORANGE COUNTY PUBLIC WORKS, OC SURVEY.

BENCHMARK

VERTICAL DATUM: NAVD88, BENCH MARK: OCS 2A-49-87
ELEVATION: 378.082' (2006), DESCRIPTION: FOUND 3 3\4" OCS ALUMINUM BENCHMARK DISK STAMPED "2A-49-87", SET IN THE SOUTHWESTERLY CORNER OF A 4 FT. BY 8 FT. CONCRETE CATCH BASIN. MONUMENT IS LOCATED IN THE NORTHWESTERLY CORNER OF THE INTERSECTION OF YORBA LINDA BOULEVARD AND IMPERIAL HIGHWAY, 47 FT. NORTHERLY OF THE CENTERLINE OF YORBA LINDA AND 116 FT. WESTERLY OF THE WESTERLY CURB ALONG IMPERIAL HIGHWAY. MONUMENT IS SET LEVEL WITH THE SIDEWALK.

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		DATE
DRAWN BY	KW	
CHECKED BY	SA	

PREPARED UNDER THE SUPERVISION OF

CIVIL ENGINEER INFO

REGISTERED PROFESSIONAL ENGINEER BOBBY LIN 85563 Exp 09-30-24 CIVIL STATE OF CALIFORNIA

YORBA LINDA BOULEVARD IMPROVEMENTS FROM IMPERIAL HIGHWAY TO LAKEVIEW AVENUE
STREET IMPROVEMENT PLAN AND PROFILE
CITY OF YORBA LINDA

SHEET No. 6 OF 31

EXTERNAL REFERENCES: 0444-11_Topo 22-3589_Topo 0444-11_TitleBlock 0444-11_Pr Plan 0444-11_Utility Basemap 0444-11_ROW 21044_YORBA_LINDA_BLVD_PAPER BOUNDARY 0444-11_BOUNDARY 0444-11_Notes 210444_YorbaLindaBlvd_Topo 0444-11_PROF 0444-11_L&C 0444-11_Pr SD
FILENAME: \\BKF-NB\vol4\2021\21044_YorbaLinda_On-Call\21044-11_YorbaLindaBlvd_Improvements\ENG-TYSheets\5_STREET IMPROVEMENT PLAN AND PROFILE\YorbaLindaBlvd_PlonanoProfile.dwg, LAST SAVED ON: Nov 08 2023 4:42pm PLOTTED BY: WAKA, ON: Nov 10 2023 4:15pm, CFG:

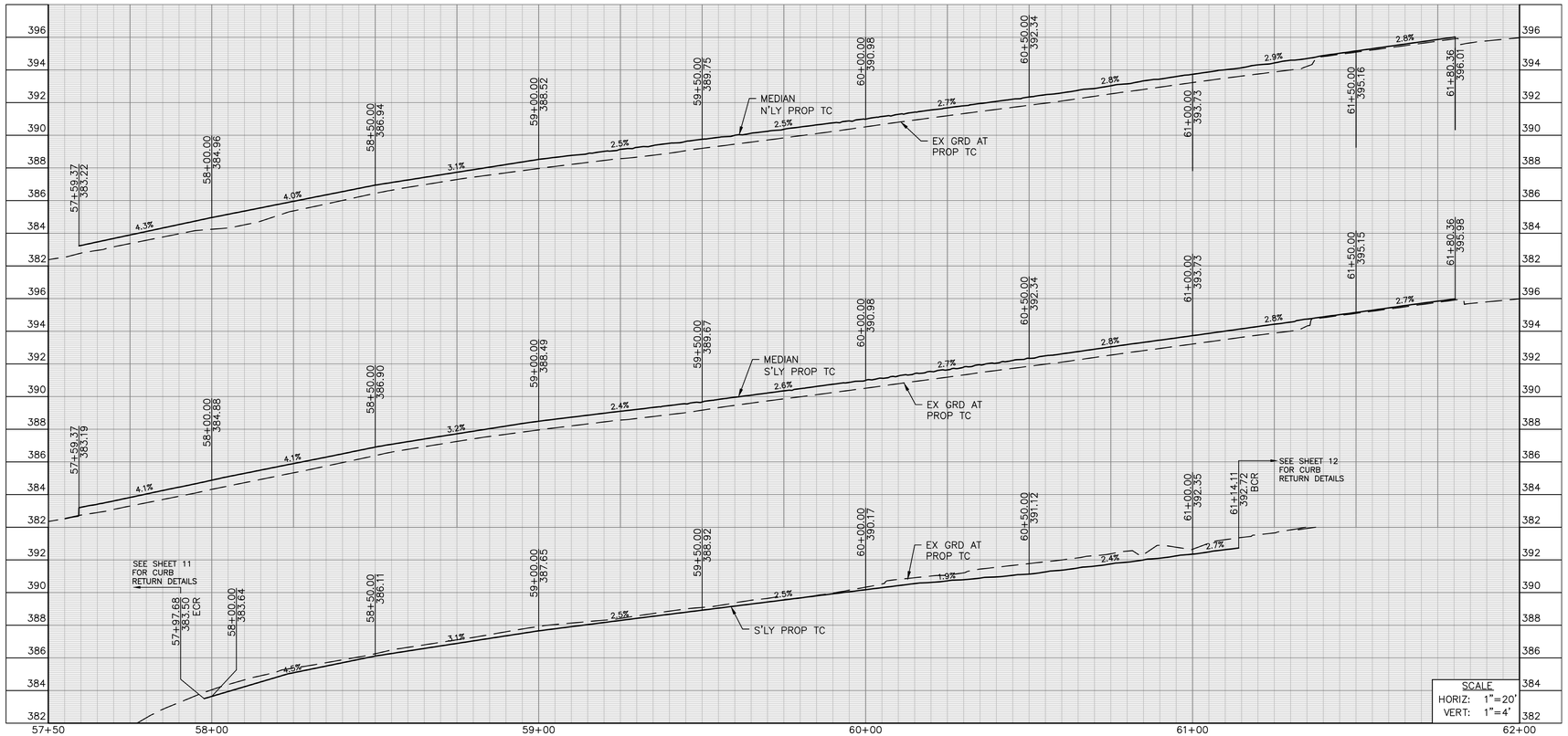
LEGEND

- EXISTING R/W (APPROX LOCATION)
- SAWCUT
- CENTERLINE
- LIMITS OF AC COLD PLANE
- LANDSCAPE (SEE PLANTING PLANS)
- LIMITS OF AC IMPROVEMENTS
- PCC IMPROVEMENTS

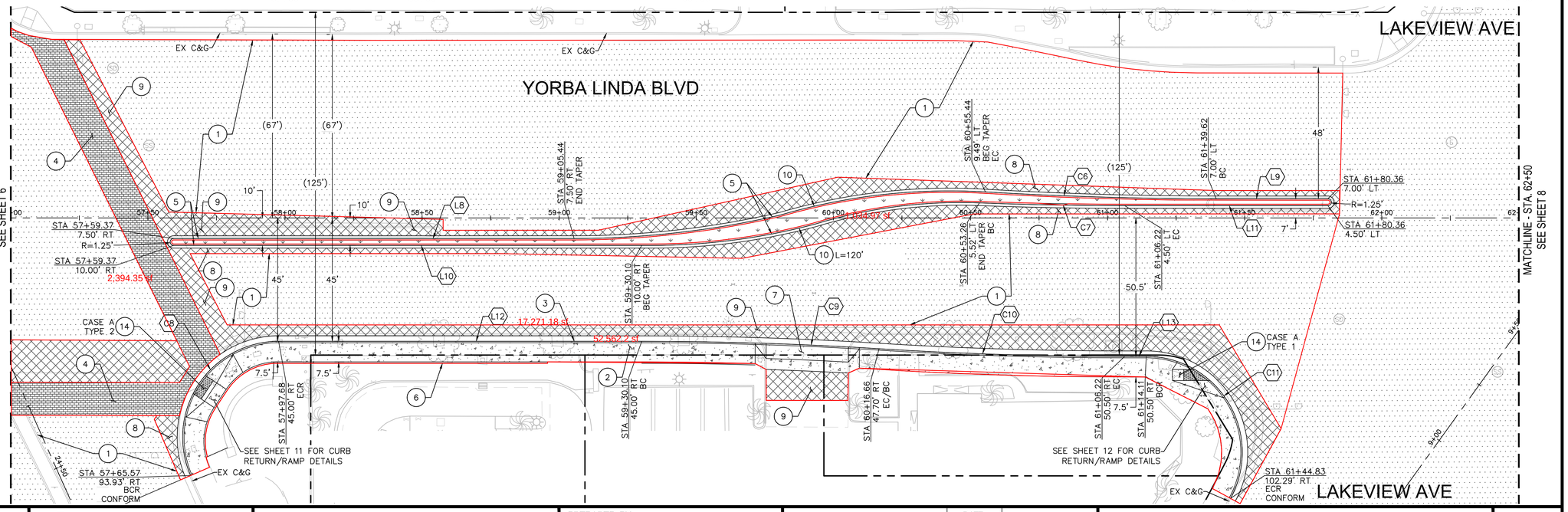
STREET IMPROVEMENT CONSTRUCTION NOTES

1. CONSTRUCT 2" AC OVERLAY
2. CONSTRUCT 4" PCC SIDEWALK PER SPPWC STD. PLAN NO. 112-2
3. CONSTRUCT TYPE A2-8 CURB & GUTTER PER SPPWC STD PLAN NO. 120-2
4. CONSTRUCT DECORATIVE PAVERS (MATCH EXISTING)
5. CONSTRUCT TYPE A3-6 CURB & GUTTER PER SPPWC STD PLAN NO. 120-2
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8. CONSTRUCT 12" FULL DEPTH HMA
9. CONSTRUCT 7"AC OVER 20"CAB PAVEMENT
10. CONSTRUCT BAY TAPER PER SPPWC STD PLAN 140-3 AND OCPW STD PLAN 140-3-OC
14. CONSTRUCT CURB RAMP PER OCPW STD PLANS (2018)

LINE AND CURVE TABLE				
Line #/Curve #	Length	Direction/Delta	Radius	
C6	84.23	3°23'38"	1422.00	42.13
C7	52.97	2°11'57"	1380.00	26.49
C8	69.31	113°27'22"	35.00	53.34
C9	86.62	3°34'41"	1387.00	43.32
C10	89.61	3°34'41"	1435.00	44.82
C11	72.48	118°39'25"	35.00	59.01
L8	146.07	N89°43'53"W		
L9	40.74	N89°43'53"W		
L10	170.73	S89°43'53"E		
L11	74.14	S89°43'53"E		
L12	132.42	N89°43'53"W		
L13	7.90	N89°43'53"W		



60% SUBMITTAL
NOT FOR CONSTRUCTION
11/10/2023



GRAPHIC SCALE
0 10 20 40 60
(IN FEET)
1 INCH = 20 FT.

811
DIAL TOLL FREE
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REVISIONS

NUMBER	DATE	INITIALS	DESCRIPTION	DATE	INITIALS

BASIS OF BEARINGS

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BENCHMARK

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4675 MACARTHUR CT.
SUITE 400
NEWPORT BEACH, CA 92660
(949) 526-8460
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		DATE
DRAWN BY	KW	
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CIVIL ENGINEER INFO

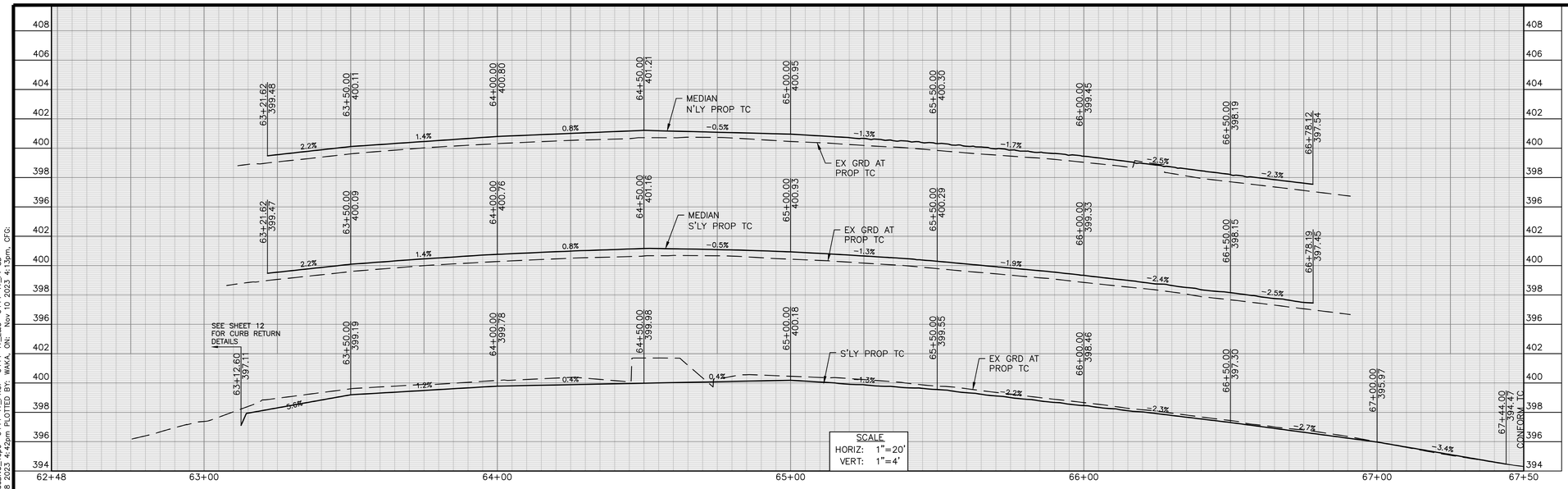
REGISTERED PROFESSIONAL ENGINEER
BOBBY LIN
85563
Exp 09-30-24
CIVIL
STATE OF CALIFORNIA

YORBA LINDA BOULEVARD IMPROVEMENTS FROM IMPERIAL HIGHWAY TO LAKEVIEW AVENUE
STREET IMPROVEMENT PLAN AND PROFILE

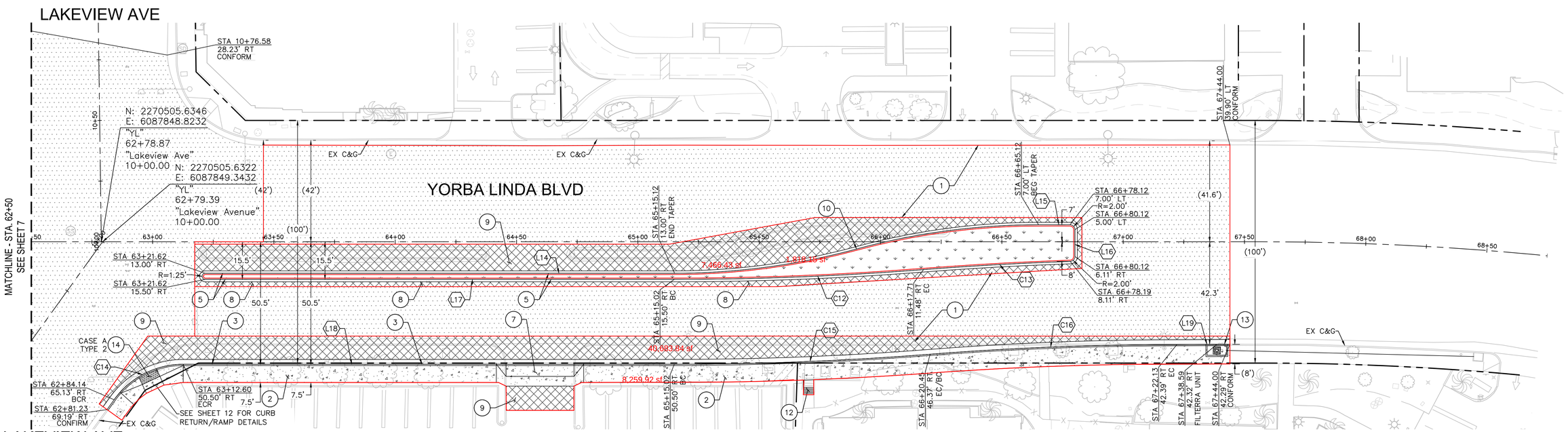
CITY OF YORBA LINDA

SHEET No. 7 OF 31

EXTERNAL REFERENCES: 0444-11_Topo 22-3589_Topo 0444-11_TitleBlock 0444-11_Pr Plan 0444-11_Utility Basemap 0444-11_ROW 21044_YORBA_LINDA_BLVD_PAPER BOUNDARY 0444-11_Notes 210444_YorbaLindaBlvd_Topo 0444-11_PROF 0444-11_L&C 0444-11_Pr SD
FILENAME: \\BKF-NB\vol4\2021\210444_YorbaLinda_On-Call\210444-11_YorbaLindaBlvd_Improvements\ENG-TYSheets\5_STREET IMPROVEMENT PLAN AND PROFILE\YorbaLindaBlvd_PlanandProfile.dwg, LAST SAVED ON: Nov 08 2023 4:42pm PLOTTED BY: WAKA, ON: Nov 10 2023 4:15pm, CFG:



LINE AND CURVE TABLE				
Line #/Curve #	Length	Direction/Delta	Radius	
C12	102.80	4°29'06"	1313.25	51.43
C13	60.57	2°35'57"	1335.25	30.29
C14	33.23	54°23'52"	35.00	17.99
C15	105.54	4°29'06"	1348.25	52.80
C16	101.78	4°29'06"	1300.25	50.92
L14	193.50	S89°43'53"E		
L15	13.00	S89°43'53"E		
L16	11.11	N00°16'07"E		
L17	193.39	S89°43'53"E		
L18	202.42	S89°43'53"E		
L19	21.96	S89°59'30"E		



LEGEND

- EXISTING R/W (APPROX LOCATION)
- SAWCUT
- CENTERLINE
- LIMITS OF AC COLD PLANE
- LANDSCAPE (SEE PLANTING PLANS)
- LIMITS OF AC IMPROVEMENTS
- PCC IMPROVEMENTS

STREET IMPROVEMENT CONSTRUCTION NOTES

1. CONSTRUCT 2" AC OVERLAY
2. CONSTRUCT 4" PCC SIDEWALK PER SPPWC STD. PLAN NO. 112-2
3. CONSTRUCT TYPE A2-8 CURB & GUTTER PER SPPWC STD PLAN NO. 120-2
5. CONSTRUCT TYPE A3-6 CURB & GUTTER PER SPPWC STD PLAN NO. 120-2
7. CONSTRUCT CONCRETE DRIVEWAY PER SPPWC STD PLAN NO. 110-2. DRIVEWAY WIDTH TO MATCH EXISTING
8. CONSTRUCT 12" FULL DEPTH HMA
9. CONSTRUCT 7"AC OVER 20"CAB PAVEMENT
10. CONSTRUCT BAY TAPER PER SPPWC STD PLAN 140-3 AND OCPW STD PLAN 140-3-OC
12. CONSTRUCT PCC STAIRS
13. FURNISH AND INSTALL FILTERRA BIOFILTRATION SYSTEM PER DETAILS ON SHEET 11 AND MANUFACTURER'S SPECIFICATIONS
14. CONSTRUCT CURB RAMP PER OCPW STD PLANS (2018)

GRAPHIC SCALE
0 10 20 40 60
(IN FEET)
1 INCH = 20 FT.

811 DIAL TOLL FREE 811
AT LEAST TWO DAYS BEFORE YOU DIG
UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

60% SUBMITTAL NOT FOR CONSTRUCTION 11/10/2023

REVISIONS

NUMBER	DATE	INITIALS	DESCRIPTION	DATE	INITIALS

BASIS OF BEARINGS

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CML ENGINEER INFO

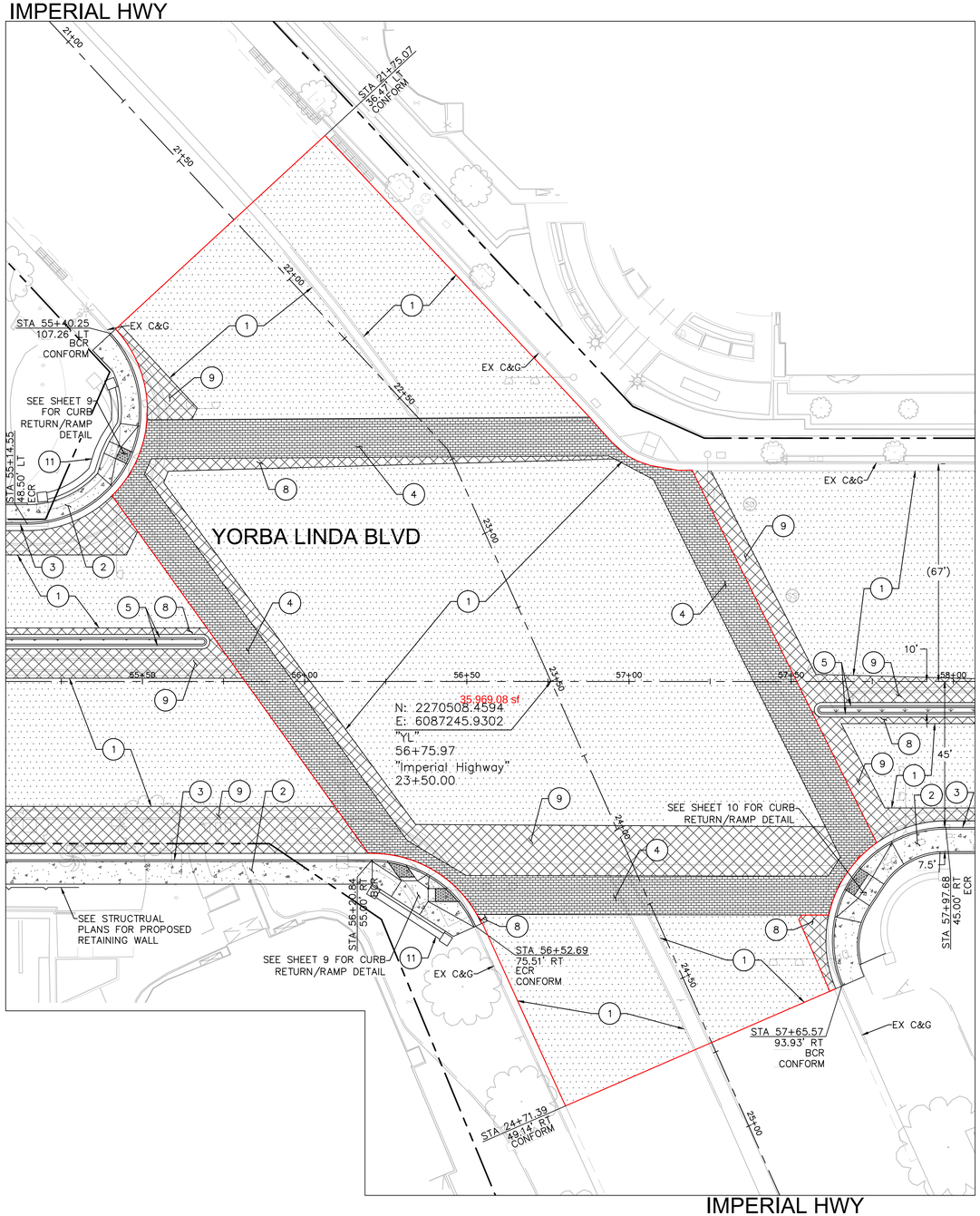
REGISTERED PROFESSIONAL ENGINEER BOBBY LIN 85563 Exp 09-30-24 CIVIL STATE OF CALIFORNIA

YORBA LINDA BOULEVARD IMPROVEMENTS FROM IMPERIAL HIGHWAY TO LAKEVIEW AVENUE
STREET IMPROVEMENT PLAN AND PROFILE

CITY OF YORBA LINDA

SHEET No. 8 OF 31

EXTERNAL REFERENCES: 0444-11_Topo 22-3589_Topo 0444-11_TitleBlock 0444-11_Pr Plan 0444-11_Utility Basemap 0444-11_ROW 21044_YORBA_LINDA_BLVD_PAPER BOUNDARY
FILENAME: \\BKF-NB\vol4\2021\21044_YorbaLinda_On-Call\21044-11_YorbaLindaBlvd_Improvements\ENG-T\Sheets\S_STREET IMPROVEMENT PLAN AND PROFILE\YorbaLindaBlvd_PlanandProfile.dwg, LAST SAVED ON: Nov 08 2023 4:42pm PLOTTED BY: WAKA, ON: Nov 10 2023 4:13pm, CFG: 0444-11_L&C 0444-11_PROF 0444-11_Pr SD



LEGEND

- EXISTING R/W (APPROX LOCATION)
- CENTERLINE
- RETAINING WALL (SEE STRUCTURAL PLANS)
- LANDSCAPE (SEE PLANTING PLANS)
- LIMITS OF AC IMPROVEMENTS
- PCC IMPROVEMENTS
- LIMITS OF AC OVERLAY
- PROPOSED DECORATE PAVERS

STREET IMPROVEMENT CONSTRUCTION NOTES

1. CONSTRUCT 2" AC OVERLAY
2. CONSTRUCT 4" PCC SIDEWALK PER SPPWC STD. PLAN NO. 112-2
3. CONSTRUCT TYPE A2-8 CURB & GUTTER PER SPPWC STD PLAN NO. 120-2
4. CONSTRUCT DECORATIVE PAVERS (MATCH EXISTING)
5. CONSTRUCT TYPE A3-6 CURB & GUTTER PER SPPWC STD PLAN NO. 120-2
8. CONSTRUCT 12" FULL DEPTH HMA
9. CONSTRUCT 7"AC OVER 20"CAB PAVEMENT
11. CONSTRUCT DECORATIVE WALL

SUBMITTED AT 90% DESIGN LEVEL

GRAPHIC SCALE
0 10 20 40 60
(IN FEET)
1 INCH = 20 FT.

811
DIAL TOLL FREE
811
AT LEAST TWO DAYS BEFORE YOU DIG
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60% SUBMITTAL
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11/10/2023

REVISIONS

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		DATE
DRAWN BY	KW	
CHECKED BY	SA	

PREPARED UNDER THE SUPERVISION OF

CIVIL ENGINEER INFO

REGISTERED PROFESSIONAL ENGINEER
BOBBY LIN
85563
Exp 09-30-24
CIVIL
STATE OF CALIFORNIA

YORBA LINDA BOULEVARD IMPROVEMENTS FROM IMPERIAL HIGHWAY TO LAKEVIEW AVENUE
INTERSECTION DETAILS
CITY OF YORBA LINDA

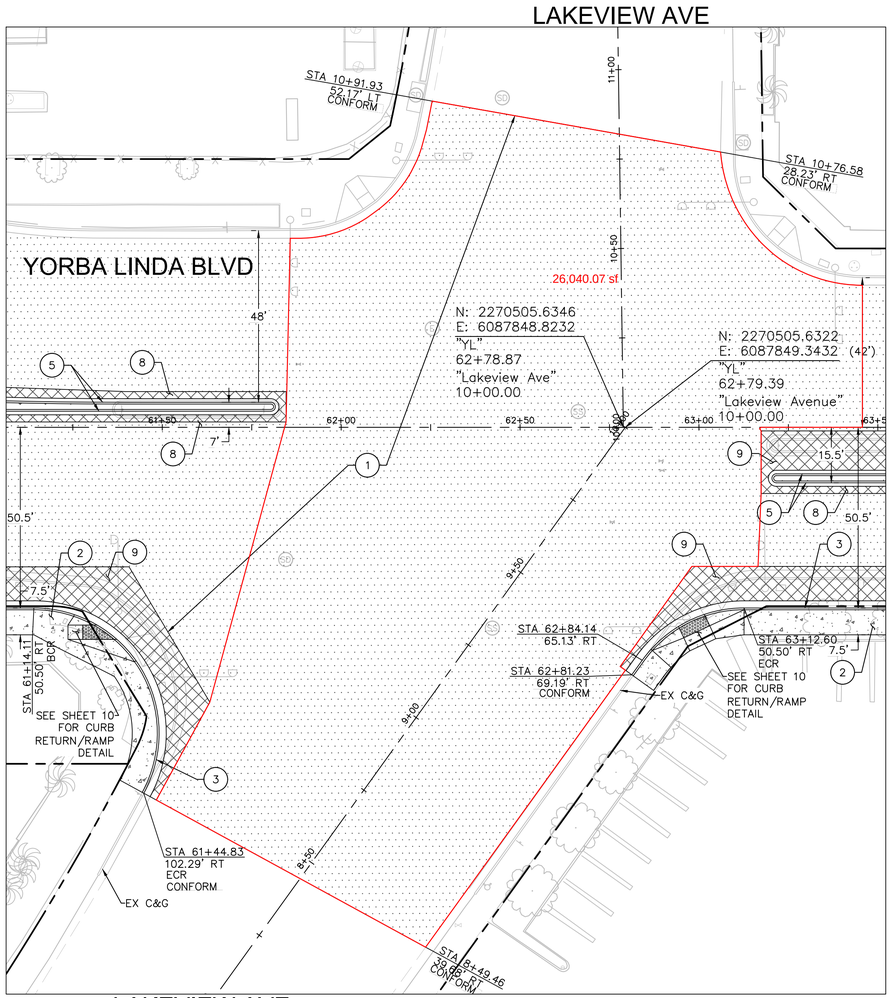
SHEET No. 9 OF 31

EXTERNAL REFERENCES: 0444-11_Topo 22-3589_Topo 0444-11_TitleBlock 0444-11_Pr Plan 0444-11_ROW 21044_YORBA_LINDA_BLVD_PAPER BOUNDARY 0444-11_Notes 210444_YorbaLindaBlvd_Topo 0444-11_Pr SD
FILENAME: \\BKF-NB\vol4\2021\21044_YorbaLinda_On-Call\21044-11_YorbaLindaBlvd_Improvements\ENG-T\Sheets\6_CONSTRUCTION DETAILS\YorbaLindaBlvd_Intersection Details.dwg, LAST SAVED ON: Nov 08 2023 4:57pm PLOTTED BY: WAKA, ON: Nov 10 2023 4:17pm, CFG:

EXTERNAL REFERENCES: 0444-11_Topo 22-3589_Topo 0444-11_TitleBlock 0444-11_Pr Plan 0444-11_ROW 21044_YORBA_LINDA_BLVD_PAPER BOUNDARY 0444-11_Notes
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LEGEND

- EXISTING R/W (APPROX LOCATION)
- CENTERLINE
- RETAINING WALL (SEE STRUCTURAL PLANS)
- LANDSCAPE (SEE PLANTING PLANS)
- LIMITS OF AC IMPROVEMENTS
- PCC IMPROVEMENTS
- LIMITS OF AC OVERLAY



STREET IMPROVEMENT CONSTRUCTION NOTES

1. CONSTRUCT 2" AC OVERLAY
2. CONSTRUCT 4" PCC SIDEWALK PER SPPWC STD. PLAN NO. 112-2
3. CONSTRUCT TYPE A2-8 CURB & GUTTER PER SPPWC STD PLAN NO. 120-2
4. CONSTRUCT DECORATIVE PAVERS (MATCH EXISTING)
5. CONSTRUCT TYPE A3-6 CURB & GUTTER PER SPPWC STD PLAN NO. 120-2
8. CONSTRUCT 12" FULL DEPTH HMA
9. CONSTRUCT 7"AC OVER 20"CAB PAVEMENT
11. CONSTRUCT DECORATIVE WALL

SUBMITTED AT 90% DESIGN LEVEL

GRAPHIC SCALE
0 10 20 40 60
(IN FEET)
1 INCH = 20 FT.

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REVISIONS

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BENCHMARK

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ELEVATION: 378.082' (2006), DESCRIPTION: FOUND 3 3\4" OCS ALUMINUM BENCHMARK DISK STAMPED "2A-49-87", SET IN THE SOUTHWESTERLY CORNER OF A 4 FT. BY 8 FT. CONCRETE CATCH BASIN. MONUMENT IS LOCATED IN THE NORTHWESTERLY CORNER OF THE INTERSECTION OF YORBA LINDA BOULEVARD AND IMPERIAL HIGHWAY, 47 FT. NORTHERLY OF THE CENTERLINE OF YORBA LINDA AND 116 FT. WESTERLY OF THE WESTERLY CURB ALONG IMPERIAL HIGHWAY. MONUMENT IS SET LEVEL WITH THE SIDEWALK.

PREPARED BY:
BKF ENGINEERS
4675 MACARTHUR CT.
SUITE 400
NEWPORT BEACH, CA 92660
(949) 526-8460
www.bkf.com

		DATE
DRAWN BY	KW	
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PREPARED UNDER THE SUPERVISION OF

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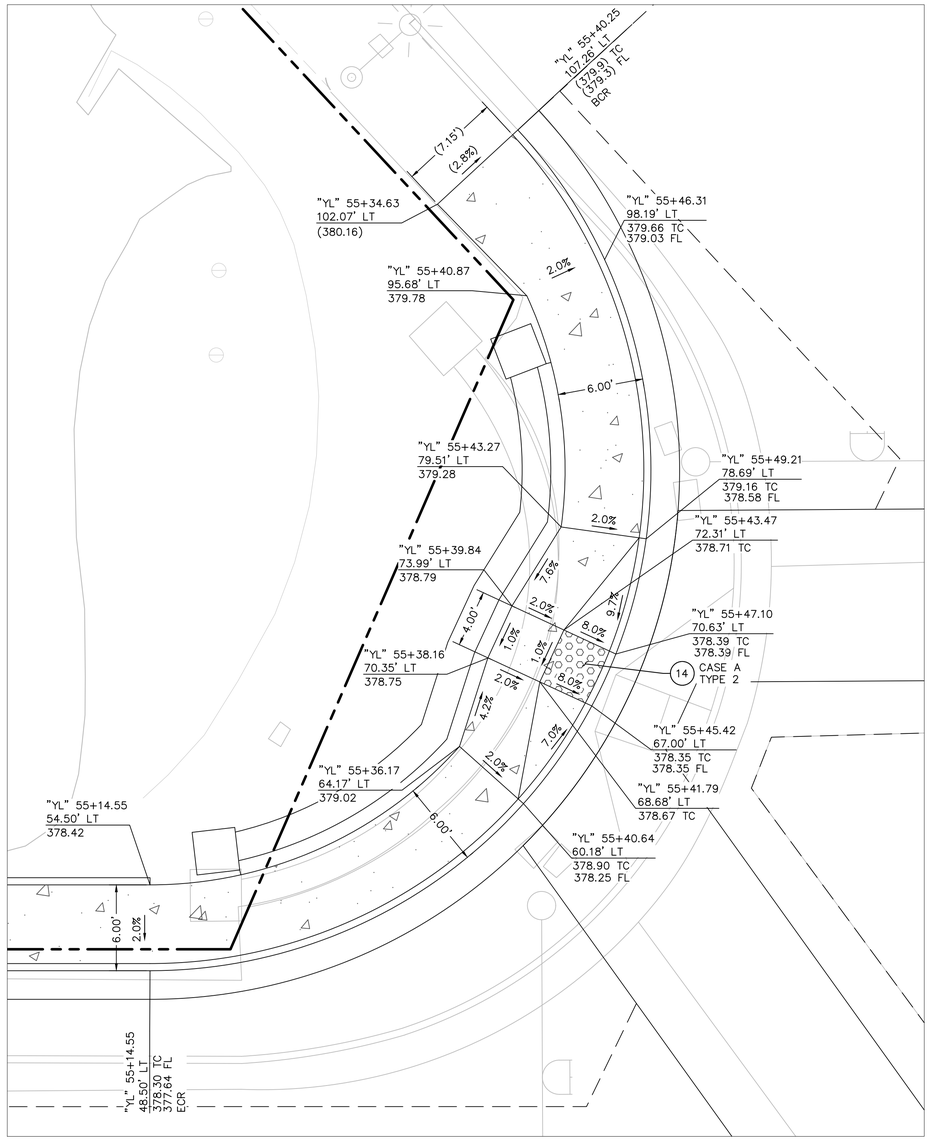
REGISTERED PROFESSIONAL ENGINEER
BOBBY LIN
85563
Exp 09-30-24
CIVIL
STATE OF CALIFORNIA

YORBA LINDA BOULEVARD IMPROVEMENTS FROM IMPERIAL HIGHWAY TO LAKEVIEW AVENUE
INTERSECTION DETAILS

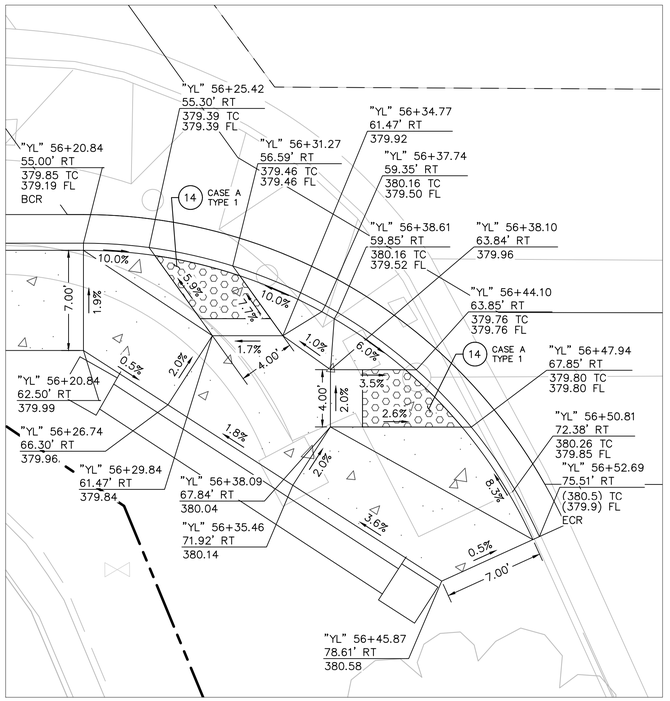
CITY OF YORBA LINDA

SHEET No. 10 OF 31

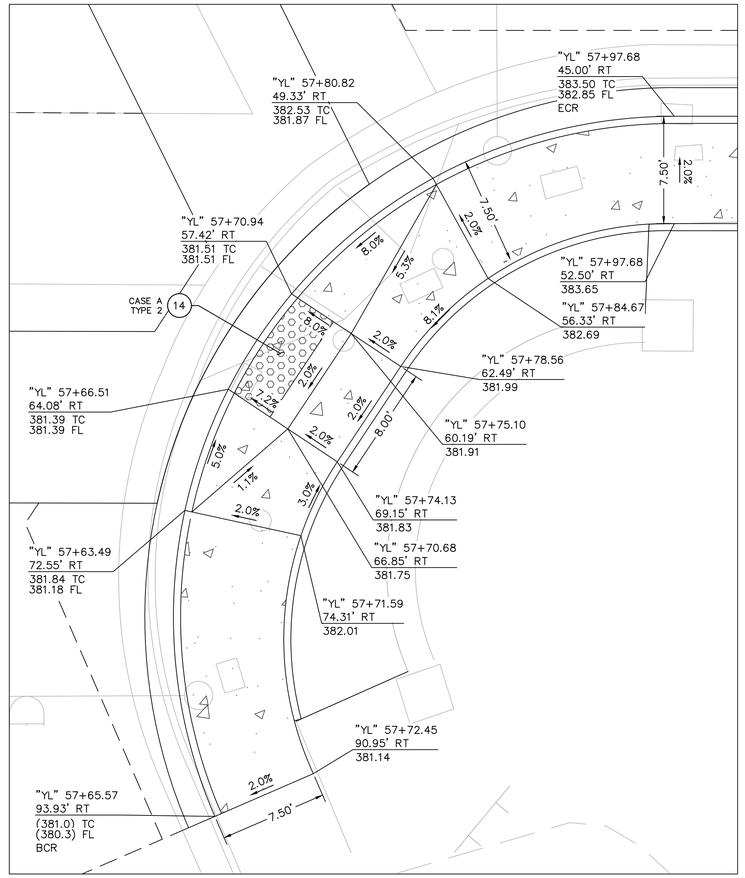
(14) CONSTRUCT CURB RAMP PER OCPW STD PLANS (2018)



NW CORNER OF YORBA LINDA BLVD & IMPERIAL HWY



SW CORNER OF YORBA LINDA BLVD & IMPERIAL HWY



SE CORNER OF YORBA LINDA BLVD & IMPERIAL HWY

811 DIAL TOLL FREE 811 AT LEAST TWO DAYS BEFORE YOU DIG

UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

60% SUBMITTAL
NOT FOR CONSTRUCTION
11/10/2023

GRAPHIC SCALE
0 2.5 5 10 15
(IN FEET)
1 INCH = 5 FT.

REVISIONS

NUMBER	DATE	INITIALS	DESCRIPTION	DATE	INITIALS

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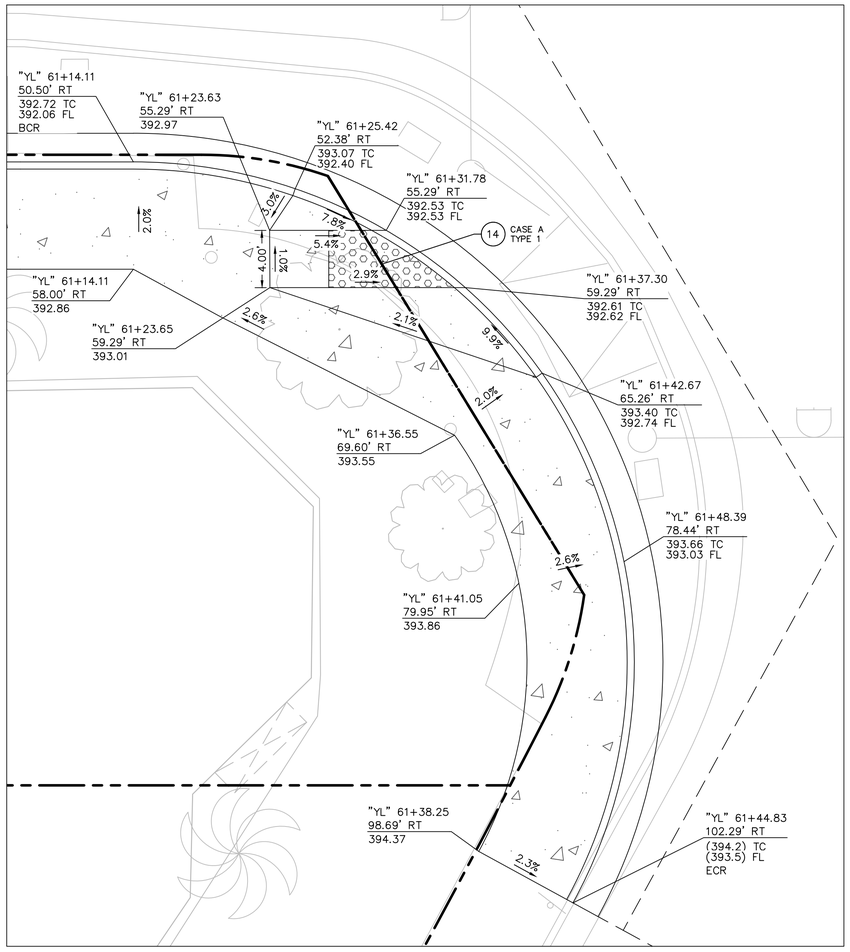
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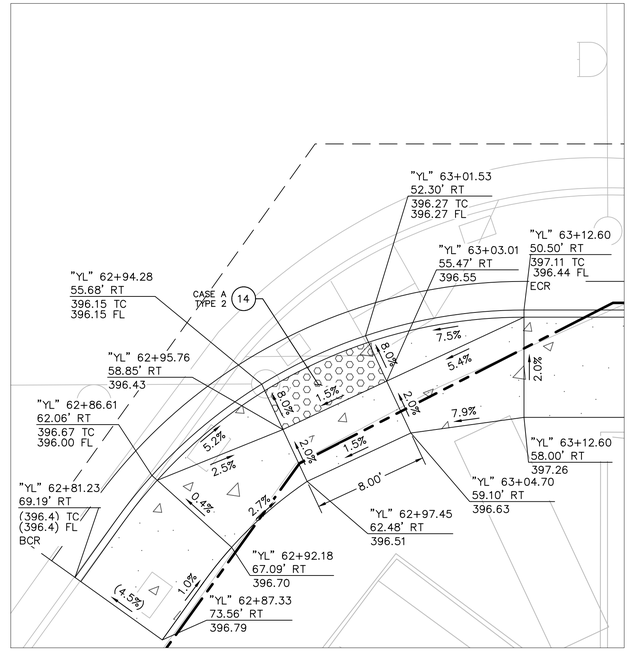
SHEET No. 11 OF 31

EXTERNAL REFERENCES: 0444-11_Topo 22-3589_Topo 0444-11_TitleBlock 0444-11_Pr Plan 0444-11_Utility Basemap 0444-11_ROW 21044_YORBA_LINDA_BLVD_PAPER BOUNDARY
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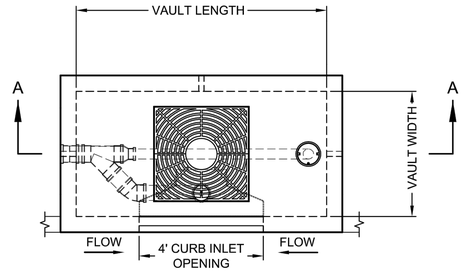
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CONSTRUCTION DETAILS

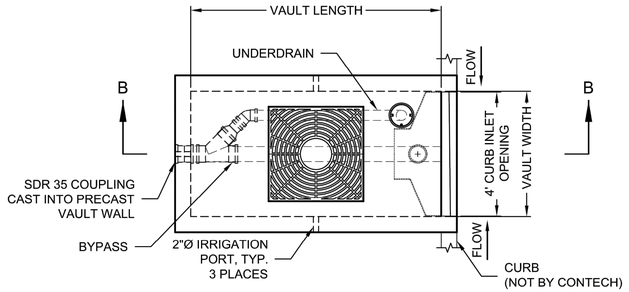
CITY OF YORBA LINDA

SHEET No. 12 OF 31

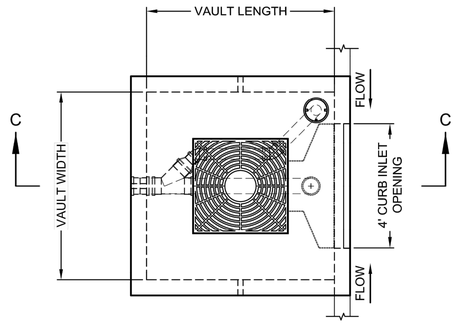
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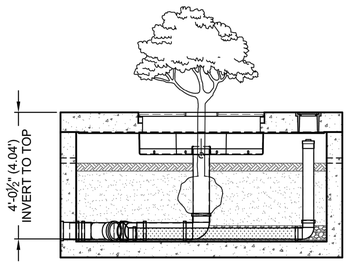
PLAN VIEW



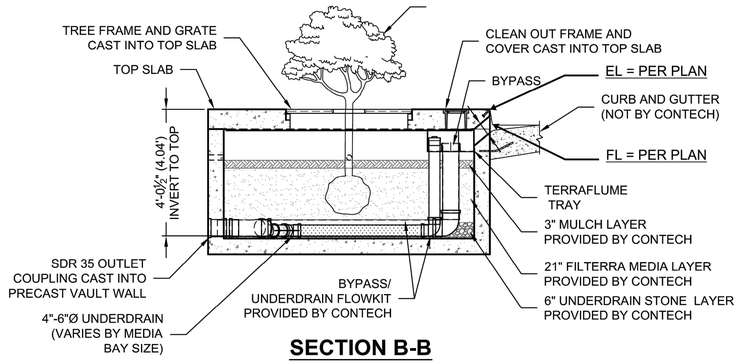
PLAN VIEW



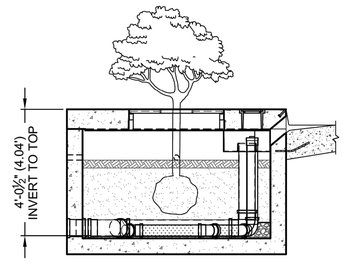
PLAN VIEW



SECTION A-A



SECTION B-B



SECTION C-C

Filterra Unit Recommended for DMA 2

FTIBC LONG SIDE CURB INLET

DESIGNATION	AVAIL-ABILITY	MEDIA BAY SIZE	VAULT SIZE (L x W)	MAX. OUTLET/ BYPASS PIPE DIA.	MAX. BYPASS FLOW (CFS)	UNDER-DRAIN PIPE DIA. (PERF)	TREE GRATE QTY. & SIZE
FTIBC0604	N/A CA	6 x 4	6 x 4	8" SDR 35	1.89	4" SDR 35	(1) 3' x 3'
FTIBC06504	CA ONLY	6.5 x 4	6.5 x 4	8" SDR 35	1.89	4" SDR 35	(1) 3' x 3'
FTIBC078045	MID-ATL ONLY	7.83 x 4.5	7.83 x 4.5	8" SDR 35	1.89	4" SDR 35	(1) 3' x 3'
FTIBC0804	N/A MID-ATL	8 x 4	8 x 4	8" SDR 35	1.89	4" SDR 35	(1) 3' x 3'
FTIBC0806	ALL	8 x 6	8 x 6	10" SDR 35	2.37	4" SDR 35	(1) 4' x 4'
FTIBC1006	ALL	10 x 6	10 x 6	10" SDR 35	2.37	6" SDR 35	(1) 4' x 4'
FTIBC1206	ALL	12 x 6	12 x 6	10" SDR 35	2.37	6" SDR 35	(2) 4' x 4'
FTIBC1307	ALL	13 x 7	13 x 7	10" SDR 35	2.37	6" SDR 35	(2) 4' x 4'

N/A = NOT AVAILABLE

Filterra Unit Recommended for DMA 1

FTIBC SHORT SIDE CURB INLET

DESIGNATION	AVAIL-ABILITY	MEDIA BAY SIZE	VAULT SIZE (W x L)	MAX. OUTLET/ BYPASS PIPE DIA.	MAX. BYPASS FLOW (CFS)	UNDER-DRAIN PIPE DIA. (PERF)	TREE GRATE QTY. & SIZE
FTIBC0406	N/A CA	4 x 6	4 x 6	8" SDR 35	1.89	4" SDR 35	(1) 3' x 3'
FTIBC04065	CA ONLY	4 x 6.5	4 x 6.5	8" SDR 35	1.89	4" SDR 35	(1) 3' x 3'
FTIBC0408	N/A MID-ATL	4 x 8	4 x 8	8" SDR 35	1.89	4" SDR 35	(1) 3' x 3'
FTIBC045078	MID-ATL ONLY	4.5 x 7.83	4.5 x 7.83	8" SDR 35	1.89	4" SDR 35	(1) 3' x 3'
FTIBC0608	ALL	6 x 8	6 x 8	10" SDR 35	2.37	4" SDR 35	(1) 4' x 4'
FTIBC0610	ALL	6 x 10	6 x 10	10" SDR 35	2.37	6" SDR 35	(1) 4' x 4'
FTIBC0612	ALL	6 x 12	6 x 12	10" SDR 35	2.37	6" SDR 35	(2) 4' x 4'
FTIBC0713	ALL	7 x 13	7 x 13	10" SDR 35	2.37	6" SDR 35	(2) 4' x 4'

N/A = NOT AVAILABLE

FTIBC SQUARE CURB INLET

DESIGNATION	AVAIL-ABILITY	MEDIA BAY SIZE	VAULT SIZE (L x W)	MAX. OUTLET/ BYPASS PIPE DIA.	MAX. BYPASS FLOW (CFS)	UNDER-DRAIN PIPE DIA. (PERF)	TREE GRATE QTY. & SIZE
FTIBC0404	ALL	4 x 4	4'-0"	6" SDR 35	1.42	4" SDR 35	(1) 3' x 3'
FTIBC0606	ALL	6 x 6	6'-0"	8" SDR 35	1.89	4" SDR 35	(1) 3' x 3'

N/A = NOT AVAILABLE

Recommended Filterra Units are indicated to the right as FTIBC Long Side Curb Inlet; however, site specific field conditions may cause a need for adjustments requiring the Filterra Units to be switched to FTIBC Short Side Curb Inlet or the specified Unit to be broken into two units. Under no circumstance should the Filterra square footage of the Media Bay Size be less than what is currently specified.

INTERNAL PIPE CONFIGURATION MAY VARY DEPENDING ON VAULT SIZE.

filterra
THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS: 6,277,274; 6,569,321; 7,625,485; 7,425,261; 7,833,412; RELATED FOREIGN PATENTS.

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

FILTERRA INTERNAL BYPASS CURB (FTIBC) CONFIGURATION DETAIL

811 DIAL TOLL FREE 811 AT LEAST TWO DAYS BEFORE YOU DIG
UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

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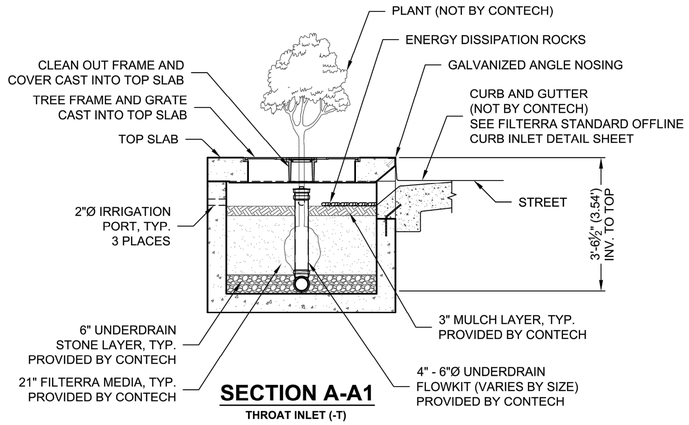
REGISTERED PROFESSIONAL ENGINEER BOBBY LIN 85563 Exp 09-30-24 CIVIL STATE OF CALIFORNIA

YORBA LINDA BOULEVARD IMPROVEMENTS
FROM IMPERIAL HIGHWAY TO LAKEVIEW AVENUE
FILTERRA DETAILS

CITY OF YORBA LINDA

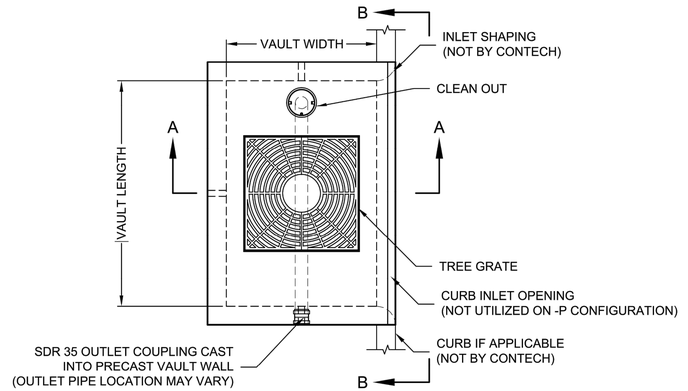
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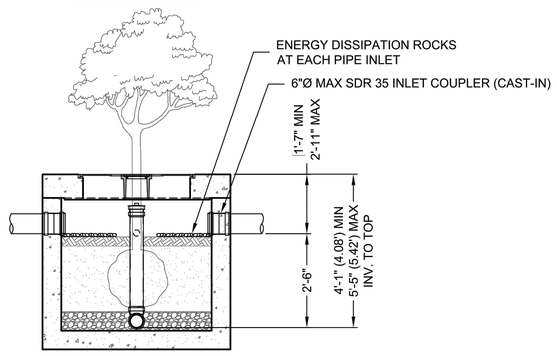


SECTION A-A1

THROAT INLET (-T)

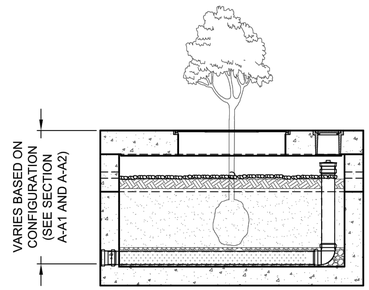


PLAN VIEW

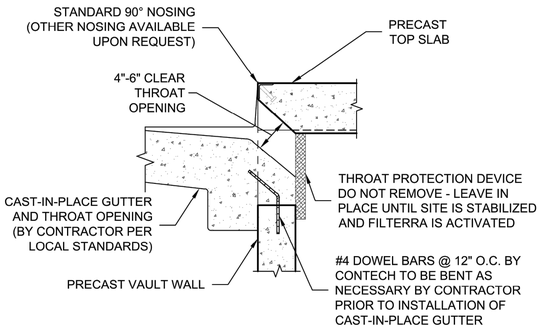


SECTION A-A2

PIPE INLET (-P)



SECTION B-B



STANDARD CURB INLET DETAIL

FT CONFIGURATION

(OPTIONS: THROAT INLET "-T", PIPE INLET "-P")

VAULT SIZE (L x W)	MEDIA AREA (SF)	LONG SIDE INLET DESIG. / PART NO.	SHORT SIDE INLET DESIG. / PART NO.	AVAILABILITY	OUTLET PIPE DIA	MIN. NO. OF INLET PIPES (-P ONLY)
4 x 4	16	FT0404	FT0404	ALL	4" SDR 35	1
6 x 4	24	FT0604	FT0406	ALL	4" SDR 35	1
8 x 4	32	FT0804	FT0408	ALL (EXCEPT DE,MD,NJ,PA,VA,WV)	4" SDR 35	1
7.83 x 4.5	35	FT078045	FT045078	DE,MD,NJ,PA,VA.WV ONLY	4" SDR 35	1
6 x 6	36	FT0606	FT0606	ALL (EXCEPT CA, TX)	4" SDR 35	1
8 x 6	48	FT0806	FT0608	ALL	4" SDR 35	1
10 x 6	60	FT1006	FT0610	ALL (EXCEPT CA, TX)	6" SDR 35	2
8 x 8	64	FT0808	FT0808	CA, TX ONLY	6" SDR 35	2
12 x 6	72	FT1206	FT0612	ALL (EXCEPT TX)	6" SDR 35	2
10 x 8	80	FT1008	FT0810	CA, TX ONLY	6" SDR 35	2
13 x 7	91	FT1307	FT0713	ALL (EXCEPT CA, TX)	6" SDR 35	2
12 x 8	96	FT1208	FT0812	CA, TX ONLY	6" SDR 35	2
14 x 8	112	FT1408†	N/A	ALL	6" SDR 35	3
16 x 8	128	FT1608†	N/A	ALL (EXCEPT OR,WA)	6" SDR 35	3
15 x 9	135	FT1509†	N/A	OR,WA ONLY	6" SDR 35	3
18 x 8	144	FT1808†	N/A	CALL CONTECH	6" SDR 35	3
20 x 8	160	FT2008†	N/A	CALL CONTECH	6" SDR 35	4
22 x 8	176	FT2208†	N/A	CALL CONTECH	6" SDR 35	4

†UTILIZES (2) CURB OPENINGS WITH MIN 6" SPACING

INTERNAL PIPE CONFIGURATION MAY VARY DEPENDING ON VAULT SIZE

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FILTERRA OFFLINE (FT) CONFIGURATION DETAIL

filterra®
FOR PATENT INFORMATION, GO TO www.ContechES.com/IP

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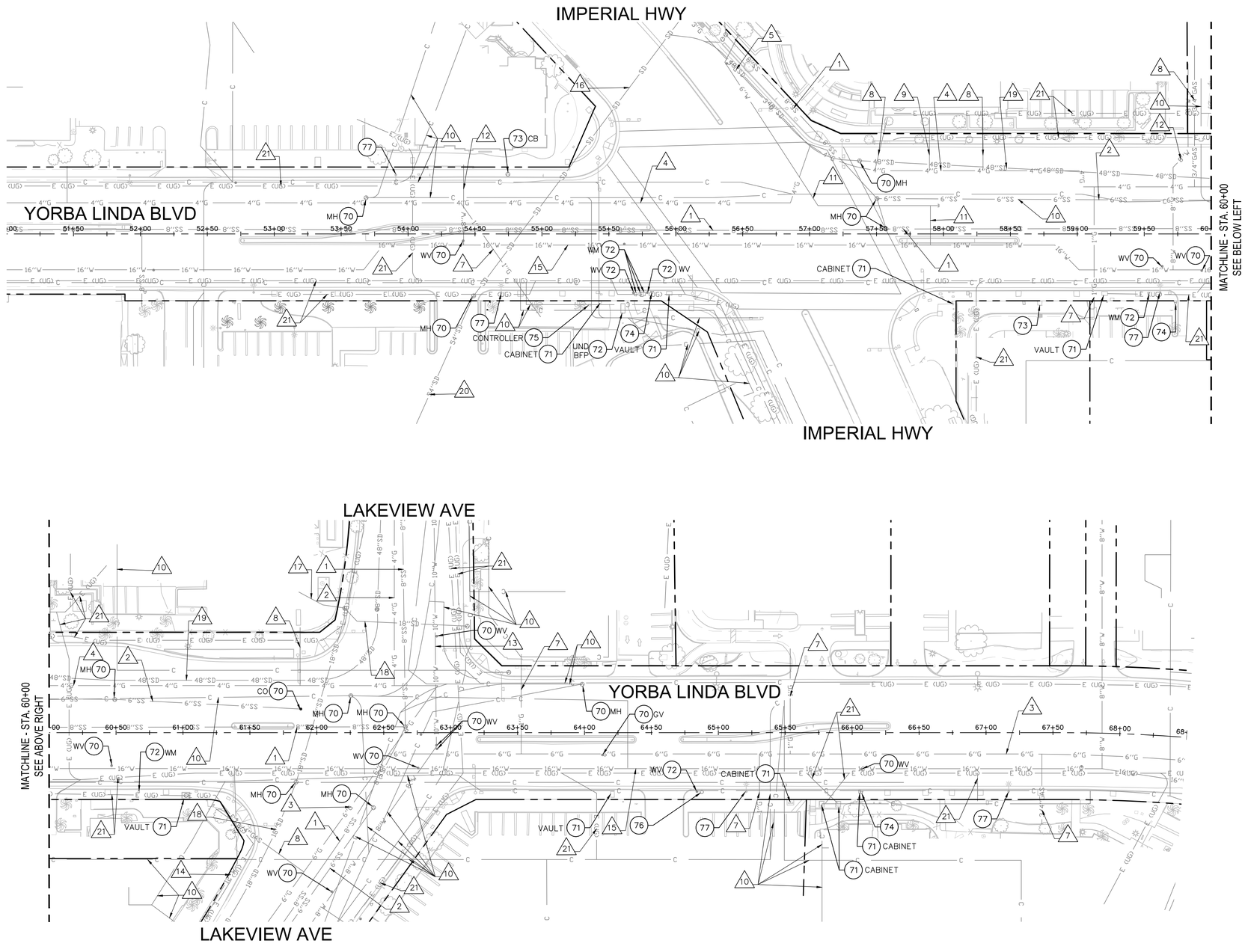
REGISTERED PROFESSIONAL ENGINEER BOBBY LIN 85563 Exp 09-30-24 CIVIL STATE OF CALIFORNIA

YORBA LINDA BOULEVARD IMPROVEMENTS
FROM IMPERIAL HIGHWAY TO LAKEVIEW AVENUE
FILTERRA DETAILS

CITY OF YORBA LINDA

SHEET No. 14 OF 31

EXTERNAL REFERENCES: 0444-11_TitleBlock
FILENAME: \\BKF-NB\vol4\2021\210444-YorbaLinda_On-Call\210444-11_YorbaLindaBlvd_Improvements\ENG-T\Sheets\6_CONSTRUCTION DETAILS\YorbaLindaBlvd_Filterra Details.dwg, LAST SAVED ON: Nov 03, 2023 11:02am PLOTTED BY: WAKA, ON: Nov 10, 2023 4:20pm, CFG: I:\COMMON\CAD\TREATMENT\54 FILTERRA\40 STANDARD DRAWINGS\IN PROCESS\STD DETAILS\FT - FILTERRA OFFLINE CONFIG DTL.DWG 3/14/2023 3:11 PM



NO.	UTILITY	OWNER
1	8" SS	YLWD
2	6" SS	YLWD
3	6" G	SCG
4	4" G	SCG
5	3" G	SCG
6	2" G	SCG
7	1" G	SCG
8	3/4" G	SCG
9	1/2" G	SCG
10	COM (UG)	AT&T
11	6" W	YLWD
12	8" W	YLWD
13	10" W	YLWD
14	12" W	YLWD
15	16" W	YLWD
16	SD	CITY OF YORBA LINDA
17	12" SD	CITY OF YORBA LINDA
18	18" SD	CITY OF YORBA LINDA
19	48" SD	CITY OF YORBA LINDA
20	54" SD	CITY OF YORBA LINDA
21	E (UG)	SCE

UTILITY GENERAL NOTES

1. SEE PP SHEETS FOR DETAILS ON CONCRETE AND PAVEMENT IMPROVEMENTS

UTILITY CONSTRUCTION NOTES

70	ADJUST UTILITY FRAME AND/OR COVER TO FG
71	RELOCATE ELECTRICAL UTILITY STRUCTURE
72	RELOCATE WATER UTILITY STRUCTURE
73	RELOCATE DRAINAGE STRUCTURE
74	RELOCATE EXISTING FIRE HYDRANT ASSEMBLY PER YLWD STD W-21
75	RELOCATE IRRIGATION STRUCTURE
76	RELOCATE YLWD AIR VACUUM AND AIR RELEASE VALVE
77	RELOCATE STREET LIGHT (SEE LIGHTING PLAN)

GRAPHIC SCALE
0 20 40 80 120
(IN FEET)
1 INCH = 40 FT.

811 DIAL TOLL FREE 811
AT LEAST TWO DAYS BEFORE YOU DIG
UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

60% SUBMITTAL
NOT FOR CONSTRUCTION
11/10/2023

REVISIONS

NUMBER	DATE	INITIALS	DESCRIPTION	DATE	INITIALS

BASIS OF BEARINGS

THE BASIS OF HORIZONTAL CONTROL FOR THIS PROJECT IS THE CALIFORNIA COORDINATE SYSTEM NAD83 ZONE 6 (2017.50 EPOCH) DETERMINED LOCALLY BY THE FOLLOWING O.C.S. POINTS: 5201, 5190R1, AND 5212, ORANGE COUNTY PUBLIC WORKS, OC SURVEY.

BENCHMARK

VERTICAL DATUM: NAVD88, BENCH MARK: OCS 2A-49-87
ELEVATION: 378.082' (2006), DESCRIPTION: FOUND 3 3\4" OCS ALUMINUM BENCHMARK DISK STAMPED "2A-49-87", SET IN THE SOUTHWESTERLY CORNER OF A 4 FT. BY 8 FT. CONCRETE CATCH BASIN. MONUMENT IS LOCATED IN THE NORTHWESTERLY CORNER OF THE INTERSECTION OF YORBA LINDA BOULEVARD AND IMPERIAL HIGHWAY, 47 FT. NORTHERLY OF THE CENTERLINE OF YORBA LINDA AND 116 FT. WESTERLY OF THE WESTERLY CURB ALONG IMPERIAL HIGHWAY. MONUMENT IS SET LEVEL WITH THE SIDEWALK.

PREPARED BY:
BKF ENGINEERS
4675 MACARTHUR CT.
SUITE 400
NEWPORT BEACH, CA 92660
(949) 526-8460
www.bkf.com

		DATE
DRAWN BY	KW	
CHECKED BY	SA	

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CIVIL ENGINEER INFO

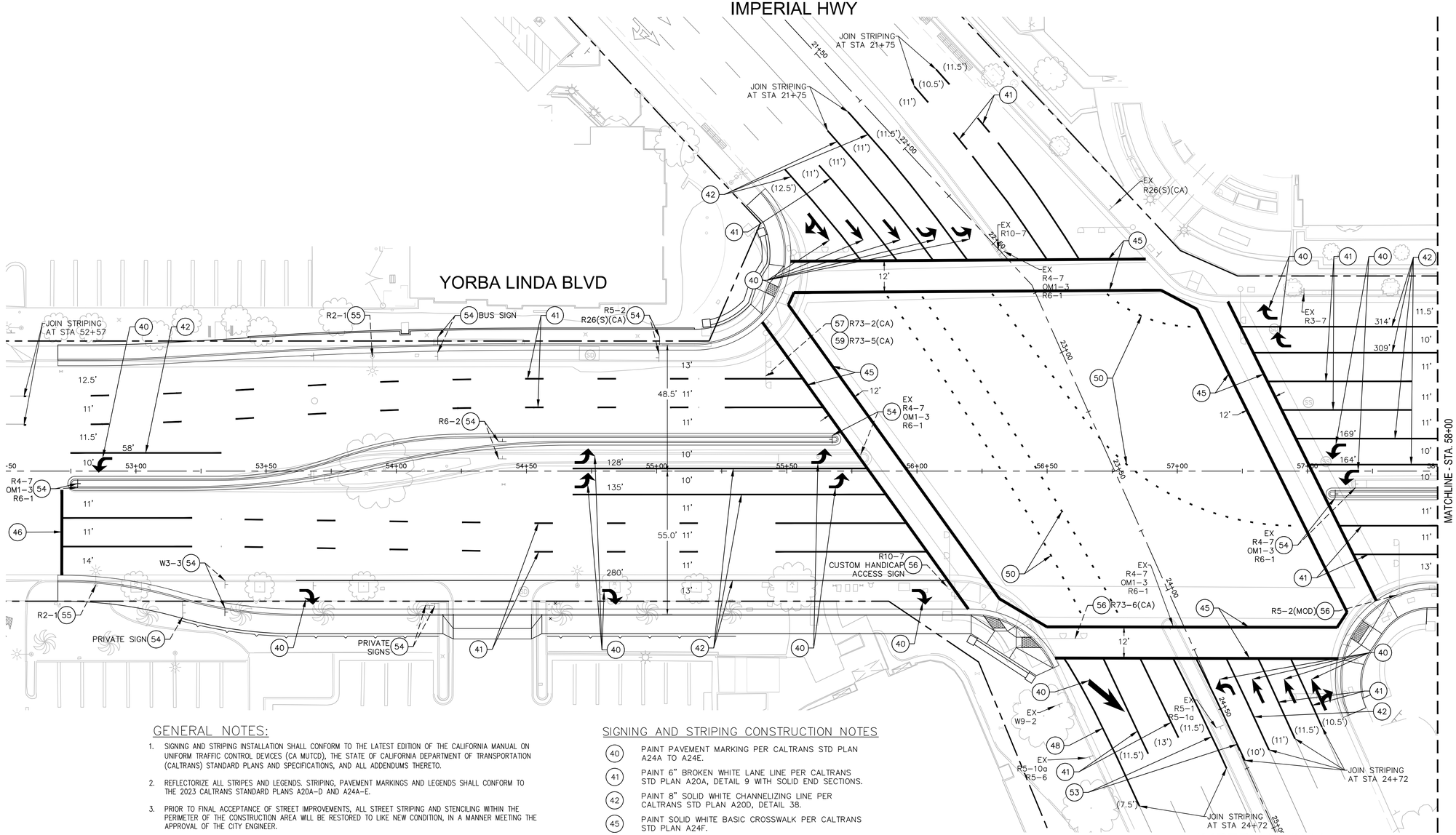
REGISTERED PROFESSIONAL ENGINEER
BOBBY LIN
85563
Exp 09-30-24
CIVIL
STATE OF CALIFORNIA

YORBA LINDA BOULEVARD IMPROVEMENTS FROM IMPERIAL HIGHWAY TO LAKEVIEW AVENUE
UTILITY PLAN

CITY OF YORBA LINDA

SHEET No. 15 OF 31

EXTERNAL REFERENCES: 0444-11_Topo 22-3589_Topo 0444-11_TitleBlock 0444-11_Pr Plan 0444-11_Utility Basemap 0444-11_ROW 21044_YORBA LINDA BLVD_PAPER BOUNDARY
FILENAME: \\BKF-NB\vol4\2021\21044_YorbaLinda_On-Call\21044-11_YorbaLindaBlvd_Improvements\ENG-IT\Sheets\Y_UTILITY PLAN\YorbaLindaBlvd_Utility Plan.dwg, LAST SAVED ON: Nov 03 2023 10:39am PLOTTED BY: WAKA, ON: Nov 10 2023 4:22pm, CFG:



GENERAL NOTES:

1. SIGNING AND STRIPING INSTALLATION SHALL CONFORM TO THE LATEST EDITION OF THE CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (CA MUTCD), THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION (CALTRANS) STANDARD PLANS AND SPECIFICATIONS, AND ALL ADDENDUMS THERETO.
2. REFLECTORIZE ALL STRIPES AND LEGENDS. STRIPING, PAVEMENT MARKINGS AND LEGENDS SHALL CONFORM TO THE 2023 CALTRANS STANDARD PLANS A20A-D AND A24A-E.
3. PRIOR TO FINAL ACCEPTANCE OF STREET IMPROVEMENTS, ALL STREET STRIPING AND STENCILING WITHIN THE PERIMETER OF THE CONSTRUCTION AREA WILL BE RESTORED TO LIKE NEW CONDITION, IN A MANNER MEETING THE APPROVAL OF THE CITY ENGINEER.
4. THE CONTRACTOR SHALL RESTRIPE EXISTING STRIPING AND CURB MARKINGS OBLITERATED BY NEW CONSTRUCTION, WHETHER OR NOT SHOWN ON THE PLANS FOR REPLACEMENT.
5. AT LOCATIONS WHERE EXISTING PAINTED CURB IS TO BE RECONSTRUCTED, THE CONTRACTOR SHALL PAINT THE NEW CURB AS SHOWN ON THE PLANS WITHIN 10 WORKING DAYS OF CURB CONSTRUCTION OR AS DIRECTED BY THE CITY ENGINEER. THE PAINT SHALL BE WATER-BASED WITH 2-YEAR GUARANTEE AGAINST COLOR FADING. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT THE CITY WRITTEN PROOF OF THE MANUFACTURER'S 2-YEAR GUARANTEE.
6. ALL NEW STRIPING SHALL BE CAT TRACKED AND APPROVED BY THE CITY ENGINEER PRIOR TO FINAL INSTALLATION.
7. SIGNS SHALL BE STANDARD SIZE UNLESS NOTED OTHERWISE. PRIOR TO INSTALLATION, NEW SIGNS SHALL BE APPROVED BY THE CITY ENGINEER. EXACT LOCATIONS OF SIGNS SHALL BE DETERMINED BY THE CITY ENGINEER.
8. TRAFFIC SIGN FACE REFLECTIVE SHEETING SHALL BE 3M DIAMOND GRADE WITH PROTECTIVE OVERLAY FILM OR AS OTHERWISE SHOWN OR NOTED.
9. NEW SIGN POSTS SHALL BE GALVANIZED STEEL, EASY ERECT BREAKAWAY OR SQUARE STEEL TUBING WITH BREAK-AWAY BASE, "UNISTRUT TELESPAR" OR APPROVED EQUAL, UNLESS OTHERWISE NOTED.
10. ALL SIGNS, NEW AND EXISTING, SHALL NOT BE LESS THAN 7' BETWEEN THE BOTTOM OF SIGN AND THE FINISHED SURFACE PER CALTRANS STANDARD PLAN RS1.

SIGNING AND STRIPING CONSTRUCTION NOTES

(40) PAINT PAVEMENT MARKING PER CALTRANS STD PLAN A24A TO A24E.

(41) PAINT 6" BROKEN WHITE LANE LINE PER CALTRANS STD PLAN A20A, DETAIL 9 WITH SOLID END SECTIONS.

(42) PAINT 8" SOLID WHITE CHANNELIZING LINE PER CALTRANS STD PLAN A20D, DETAIL 38.

(45) PAINT SOLID WHITE BASIC CROSSWALK PER CALTRANS STD PLAN A24F.

(46) PAINT 12" SOLID WHITE LIMIT LINE PER CALTRANS STD PLAN A24G.

(48) PAINT 6" SOLID WHITE RIGHT EDGELINE PER CALTRANS STD PLAN A20B, DETAIL 27B.

(50) PAINT 6" BROKEN WHITE LANE LINE EXTENSIONS THROUGH INTERSECTION PER CALTRANS STD PLAN A20D, DETAIL 40.

(53) PAINT 6" SOLID YELLOW LEFT EDGE LINE PER CALTRANS STD PLAN A20B, DETAIL 25B.

(54) RELOCATE SIGNS AND POST

(55) RELOCATE SIGNS TO PROPOSED STREET LIGHT

(56) RELOCATE SIGNS TO PROPOSED TRAFFIC SIGNAL POLE/MAST ARM

LEGEND

WHITE TYPE IV ARROW PER CALTRANS STD PLAN A24A

WHITE TYPE I 10'-0 ARROW PER CALTRANS STD PLAN A24A

WHITE TYPE VII ARROW PER CALTRANS STD PLAN A24A

WHITE TYPE VI ARROW PER CALTRANS STD PLAN A24A

GRAPHIC SCALE
0 10 20 40 60
(IN FEET)
1 INCH = 20 FT.

60% SUBMITTAL
NOT FOR CONSTRUCTION
11/10/2023

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AT LEAST TWO DAYS BEFORE YOU DIG
UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

REVISIONS

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BASIS OF BEARINGS

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		DATE
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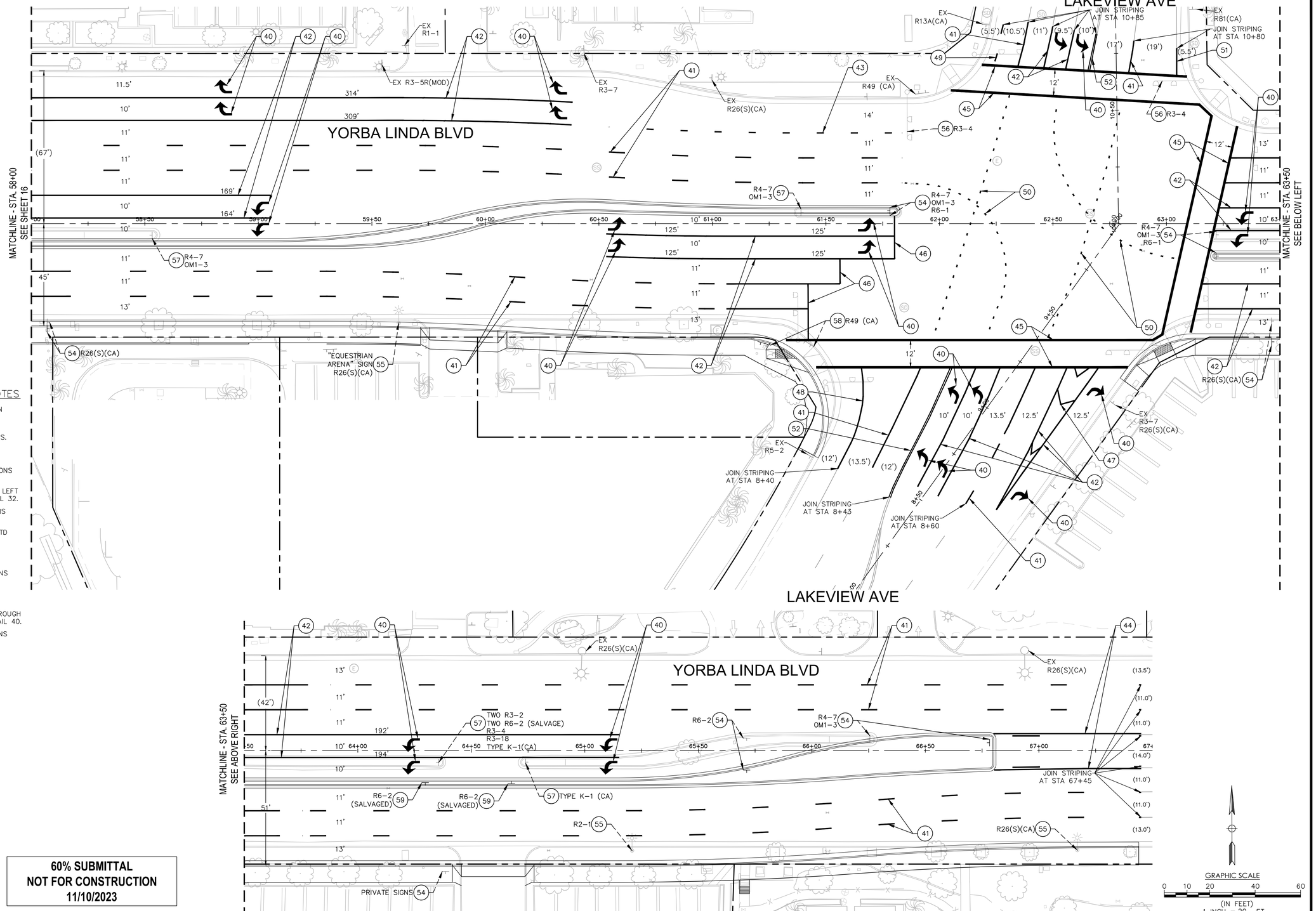
REGISTERED PROFESSIONAL ENGINEER
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85563
Exp 09-30-24
CIVIL
STATE OF CALIFORNIA

YORBA LINDA BOULEVARD IMPROVEMENTS FROM IMPERIAL HIGHWAY TO LAKEVIEW AVENUE
SIGNING AND STRIPING PLAN

CITY OF YORBA LINDA

SHEET No. 16 OF 31

EXTERNAL REFERENCES: 0444-11_Topo 22-3589_Topo 0444-11_TitleBlock 0444-11_Pr Plan 0444-11_Utility Basemap 0444-11_ROW 21044_YORBA_LINDA_BLVD_PAPER BOUNDARY 0444-11_Notes 210444_YorbaLindaBlvd_Topo 0444-11_ExSS
FILENAME: \\BKF-NB\vol4\2021\21044_YorbaLinda_On-Call\21044-11_YorbaLindaBlvd_Improvements\ENG-TYSheets\8_STRIPING AND SIGNING PLANS\YorbaLindaBlvd_SS.dwg, LAST SAVED ON: Nov 09 2023 7:37pm PLOTTED BY: WAKA, ON: Nov 10 2023 4:29pm, CFG:



LEGEND

WHITE TYPE IV ARROW PER CALTRANS STD PLAN A24A

SIGNING AND STRIPING CONSTRUCTION NOTES

(40) PAINT PAVEMENT MARKING PER CALTRANS STD PLAN A24A TO A24E.

(41) PAINT 6" BROKEN WHITE LANE LINE PER CALTRANS STD PLAN A20A, DETAIL 9 WITH SOLID END SECTIONS.

(42) PAINT 8" SOLID WHITE CHANNELIZING LINE PER CALTRANS STD PLAN A20D, DETAIL 38.

(43) PAINT 8" BROKEN WHITE LANE DROP AT INTERSECTIONS PER CALTRANS STD PLAN A20C, DETAIL 37B.

(44) PAINT 6" SOLID/BROKEN DOUBLE YELLOW TWO-WAY LEFT TURN LANES PER CALTRANS STD PLAN A20B, DETAIL 32.

(45) PAINT SOLID WHITE BASIC CROSSWALK PER CALTRANS STD PLAN A24F.

(46) PAINT 12" SOLID WHITE LIMIT LINE PER CALTRANS STD PLAN A24G.

(47) PAINT 8" SOLID WHITE CHEVRON BUFFER AT 45-DEGREES, SPACED 10' O.C.

(48) PAINT 6" SOLID WHITE RIGHT EDGELINE PER CALTRANS STD PLAN A20B, DETAIL 27B.

(49) PAINT 6" BROKEN WHITE INTERSECTION BIKE LANE LINE PER CALTRANS STD PLAN A20D, DETAIL 39A.

(50) PAINT 6" BROKEN WHITE LANE LINE EXTENSIONS THROUGH INTERSECTION PER CALTRANS STD PLAN A20D, DETAIL 40.

(51) PAINT 6" SOLID WHITE BIKE LANE LINE PER CALTRANS STD PLAN STD PLAN A20D, DETAIL 39.

(52) PAINT SOLID DOUBLE YELLOW CENTERLINE PER CALTRANS STD PLAN A20A, DETAIL 22.

(54) RELOCATE SIGNS AND POST

(55) RELOCATE SIGNS TO PROPOSED STREET LIGHT

(56) RELOCATE SIGNS TO PROPOSED TRAFFIC SIGNAL POLE/MAST ARM

(57) REMOVE SIGNS/SIGNS AND POST

(58) RELOCATE SIGNS AND RAILING

(59) INSTALL SIGNS ON NEW POST OR TRAFFIC SIGNAL POLE

811 DIAL TOLL FREE 811 AT LEAST TWO DAYS BEFORE YOU DIG

UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

60% SUBMITTAL NOT FOR CONSTRUCTION 11/10/2023

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		DATE
DRAWN BY	KW	
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PREPARED UNDER THE SUPERVISION OF

CIVIL ENGINEER INFO

REGISTERED PROFESSIONAL ENGINEER BOBBY LIN 85563 Exp 09-30-24 CIVIL STATE OF CALIFORNIA

YORBA LINDA BOULEVARD IMPROVEMENTS FROM IMPERIAL HIGHWAY TO LAKEVIEW AVENUE
SIGNING AND STRIPING PLAN

CITY OF YORBA LINDA

SHEET No. 17 OF 31

EXTERNAL REFERENCES: 0444-11_Topo 22-3589_Topo 0444-11_TitleBlock 0444-11_Pr Plan 0444-11_Utility Basemap 0444-11_ROW 21044_YORBA_LINDA_BLVD_PAPER BOUNDARY 0444-11_Notes 210444_YorbaLindaBlvd_Topo 0444-11_ExSS
FILENAME: \\BKF-NBV04\2021\210444_YorbaLinda_On-Call\210444-11_YorbaLindaBlvd_Improvements\ENG-TYSheets\8_STRIPING AND SIGNING PLANS\YorbaLindaBlvd_SS.dwg, LAST SAVED ON: Nov 09 2023 7:37pm PLOTTED BY: WAKA, ON: Nov 10 2023 4:30pm, CFG:

GENERAL CONSTRUCTION NOTES

1. ALL MATERIAL & WORKMANSHIP SHALL CONFORM TO THE REQUIREMENTS OF BOTH LOCAL & 2022 CALIFORNIA BUILDING CODE (C.B.C.) STANDARDS.

2. CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS ON THE JOB SITE AND REPORT ANY ERRORS, OMISSIONS, OR POSSIBLE DISCREPANCIES TO THE ENGINEER PRIOR TO COMMENCING ANY WORK. SPECIAL CARE SHALL BE GIVEN TO THE SITE AND TO THE BUILDING LAYOUT THEREON.

3. THE CONTRACTOR SHALL PROVIDE SAFE AND ADEQUATE BRACES AND CONNECTIONS TO SUPPORT THE COMPONENT PARTS OF THE STRUCTURE UNTIL THE STRUCTURE ITSELF (INCLUDING THE FLOOR AND ROOF DIAPHRAGMS) IS COMPLETE ENOUGH TO ADEQUATELY SUPPORT ITSELF.

4. OPTIONS, IF PROVIDED HEREIN, ARE FOR CONTRACTOR'S CONVENIENCE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CHANGES NECESSARY, SHALL COORDINATE ALL DETAILS, & SHALL OBTAIN ALL REQUIRED APPROVALS.

5. COSTS OF ADDITIONAL DESIGN WORK NECESSITATED BY SELECTION OF AN OPTION OR DUE TO ERRORS OR OMISSIONS IN CONSTRUCTION, SHALL BE BORNE BY THE CONTRACTOR.

6. WHERE DESIGN AND DETAILS OF PLATE GIRDERS, TRUSSES, ETC., ARE TO BE PROVIDED BY FABRICATOR, CONTRACTOR SHALL SUBMIT CALCULATIONS PREPARED BY A CIVIL OR STRUCTURAL ENGINEER, TO THE ENGINEER AND TO THE BUILDING DEPARTMENT FOR REVIEW PRIOR TO FABRICATION.

7. ANY DISCREPANCIES BETWEEN BKF ENGINEERS & ANY OTHER SUB-CONSULTANTS; DRAWINGS AND STRUCTURAL DRAWINGS AND/OR FIELD CONDITIONS MUST BE BROUGHT TO THE ATTENTION OF ENGINEER OF RECORD PRIOR TO SUBMITTAL OF BID AND CONSTRUCTION. ANY DISCREPANCIES BETWEEN DRAWINGS THAT RESULT IN ADDITIONAL COST AFTER THE BID SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO REVIEW DRAWINGS CAREFULLY DURING THE BID PROCESS. DO NOT PROCEED WITH ANY WORK UNTIL DISCREPANCIES OR ANY OUTSTANDING ITEMS AND/OR QUESTIONS HAVE BEEN RESOLVED.

8. WHERE "SPECIAL INSPECTION" IS REQUIRED ON THE PLANS, A REGISTERED SPECIAL INSPECTOR, APPROVED BY, AND RESPONSIBLE TO THE ENGINEER AND BUILDING DEPARTMENT, SHALL BE EMPLOYED BY THE OWNER. SPECIAL INSPECTION IS REQUIRED FOR:

   A. PLACING OF ALL CONCRETE WITH AN F'c IN EXCESS OF 2500 PSI.
   B. STRUCTURAL STEEL AND TAPERED STEEL GIRDERS, INCLUDING ERECTION BRACING.
   C. ALL FIELD WELDING.
   D. WELDING PERFORMED IN AN UNLICENSED FABRICATION SHOP.
   E. ALL CERTIFIED COMPACTED FILL.
   F. INSTALLATION OF EPOXY ANCHOR.
   G. INSTALLATION OF HIGH STRENGTH BOLTS.
   H. SUCH OTHER ITEMS AS MAY BE REQUIRED ON PLANS.

9. CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND APPROVAL FOR THE FOLLOWING DRAWINGS:

   A. STRUCTURAL STEEL AND TAPERED STEEL GIRDERS, INCLUDING ERECTION BRACING.
   B. REINFORCEMENT SHOP DRAWINGS & STEEL QUALITY CHECK.
   C. CONCRETE MIX DESIGN

   CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND COMPLIANCE CERTIFICATES TO THE BUILDING DEPARTMENT WHEN REQUIRED. SHOP DRAWINGS SHALL NOT BE REPRODUCTIONS OF CONTRACT DOCUMENTS.

10. WHERE SOIL REPORT IS CITED, ITS REQUIREMENTS SHALL BE ADOPTED HEREIN.

11. ALL MANUFACTURED PRODUCTS MUST BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

FOUNDATION NOTES (SKIN FRICTION CAISSONS)

1. ALLOW PILE CAPACITY T = 60K
   C = 90K

   SEE SOILS REPORT FOR ALL REQUIREMENTS.

2. REFER TO SOILS REPORT:

   BY: NINYO & MOORE PROJECT # 212354001
   DATED: SEPT.22, 2023 - PENDING FINAL REPORT.

3. THE SOILS REPORT SHALL BECOME PART OF THESE PLANS AND SHALL BE KEPT AT THE JOB SITE AT ALL TIMES.

4. PILES SHALL BE TESTED PER GEOTECHNICAL REPORT.

CONCRETE AND EMBEDDED ITEMS

1. ALL CONCRETE SHALL BE MIXED, FORMED AND PLACED ACCORDING TO A.C.I. CODE.

2. CONCRETE SHALL BE MACHINE-MIXED USING A MAXIMUM OF 7 GALLONS OF WATER PER SACK OF CEMENT. READYMIX CONCRETE SHALL BE MIXED AND DELIVERED IN ACCORDANCE WITH ASTM C-94. MIXED AT A RATE OF 5 SACKS OF CEMENT PER CUBIC YARD. MAXIMUM SLUMP SHALL BE 5" AS A MEASURED BY THE ASTM "STANDARD METHOD OF TESTING FOR SLUMP OF PORTLAND CEMENT CONCRETE.

3. CONCRETE SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS, EXCEPTION AS NOTED.

4. WATER TO CEMENT RATIO NOT TO EXCEED 0.5.

5. CEMENT FOR CONCRETE OR MASONRY MORTAR SHALL BE A STANDARD BRAND "PORTLAND CEMENT", MEETING THE REQUIREMENT OF ASTM C-150. CEMENT SHALL BE 'TYPE II' OR 'TYPE II/V. (USE TYPE V CEMENT IF REQUIRED BY SOILS REPORT)

6. AGGREGATES FOR CONCRETE SHALL MEET THE REQUIREMENTS OF ASTM C-33.

7. CONTRACTOR MAY USE AN APPROVED WATER REDUCING ADMIXTURE CONFORMING TO ASTM C-494.

8. SLAB ON GRADE SHALL BE POURED ON FIRM, MOISTENED, COMPACT EARTH. CONSTRUCTION OR CRACK-CONTROL JOINTS SHALL BE SPACED A MAXIMUM OF 12' APART.

9. ALL REINFORCING STEEL, ANCHOR BOLTS AND OTHER INSERTS SHALL BE SECURELY FASTENED IN THE FORMS PRIOR TO POURING CONCRETE.

10. ALL BOLTS SHALL HAVE A STANDARD HEAD AT EMBEDDED END. ANCHOR BOLTS SHALL BE SPACED 12 BOLT DIAMETERS MINIMUM. MINIMUM EMBEDMENT OF ANCHOR BOLTS SHALL BE 7" IN FOOTINGS, 5 1/2" IN MASONRY WALLS, AND 4 1/2" INTO VERTICAL CONCRETE SURFACES.

11. EXPANSION BOLTS AND / OR EPOXY ANCHORS MAY BE USED IN LIEU OF ANCHOR BOLTS WHERE SPECIAL CONDITIONS WARRANT THEIR USE, PROVIDED THAT WRITTEN APPROVAL OF THE ENGINEER IS OBTAINED.

12. GROUT SHALL CONSIST OF 1 PART CEMENT, TO NOT MORE THAN 3 PARTS SAND AND NOT LESS THAN 1 PART NOR MORE THAN 2 PARTS PEA GRAVEL BASED ON DRY LOOSE VOLUMES. GROUT SHALL BE OF FLUID CONSISTENCY. APPROVED ADMIXTURES MAY BE ADDED TO GROUT MIX. GROUT SHALL ATTAIN A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS.

13. DRYPACK SHALL CONSIST OF 1 PART CEMENT, 4 PARTS SAND. BASED ON DRY LOOSE VOLUMES AND NOT LESS THAN 1/4 PART NOR MORE THAN 1/2 PART LIME PUTTY OR DRY HYDRATED LIME. DRYPACK SHALL OBTAIN A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 2000 PSI AT 28 DAYS. ALTERNATIVELY USE SIKAGROUT-212 OR APPROVED EQUIVALENT PRODUCT.

14. ALL CONCRETE EMBEDMENTS, INCLUDING FOUNDATION BOLTS, SHALL BE TIED IN PLACE PRIOR TO FOUNDATION EXCAVATION INSPECTION.

15. FLY ASH SHALL NOT BE PERMITTED IN CONCRETE MIX.

CONCRETE BEAMS, GIRDERS, SLABS, ETC.

1. FORMS AND SHORING SHALL REMAIN IN PLACE UNTIL CONCRETE HAS ATTAINED (BY TEST) A STRENGTH OF 3000 PSI, OR UNTIL 10 DAYS AFTER PLACEMENT OF CONCRETE, WHICHEVER IS LATER.

2. CONCRETE SHALL BE MAINTAINED AT 50 F MINIMUM AND SHALL BE CURED IN A MOIST CONDITION FOR AT LEAST 7 DAYS AFTER PLACEMENT. CONTRACTOR SHALL TAKE SPECIAL PRECAUTIONS FOR CURING IN HOT OR COLD WEATHER PER A.C.I. REQUIREMENTS.

3. LENGTHY SPANS SHALL BE CAMBERED. UNLESS PROVIDED ON PLANS, CONTRACTOR SHALL CONTACT ENGINEER FOR SPECIAL REQUIREMENTS PRIOR TO FORMING.

4. SLABS EXPOSED TO RAINFALL SHALL BE SLOPED 1/4" (MIN.) PER FOOT TO DRAINS.

5. WOOD STUDS WALLS SHALL NOT BE ATTACHED TO SLABS UNTIL 48 HOUR AFTER FORMS ARE REMOVED UNLESS PROVISION IS MADE TO RE-LEVEL WALLS AFTER DEFLECTION HAS TAKEN PLACE.

REINFORCING STEEL

1. REINFORCING STEEL SHALL BE INTERMEDIATE GRADE DEFORMED BARS CONFORMING TO ASTM A-615, GRADE 60 TYPICALLY. LAP BARS A MINIMUM OF 36 DIAMETERS. WHERE GRADE 40 IS REQUIRED ON PLANS, LAP 30 DIAMETERS. STAGGER LAPS WHERE PERMISSIBLE. LAP BARS A MINIMUM OF 48 DIAMETERS IN MASONRY. USE GRADE 60 TYPICALLY, USE GRADE 40 FOR TIES & DOWELS.

2. WIRE MESH SHALL CONFORM TO ASTM A-185. LAP 8" MINIMUM.

3. FOOTING DOWELS SHALL MATCH VERTICAL WALL OR COLUMN STEEL. LAP 36 DIAMETERS.

4. AT ALL OPENINGS IN CONCRETE, CONCRETE BLOCK AND BRICK MASONRY, PROVIDE AT LEAST (2) #5 BARS AT JAMBS, HEAD AND SILL, EXTENDING 2'-0" BEYOND EDGES OF OPENING.

5. MINIMUM CONCRETE COVER SHALL BE PER ACI STANDARDS:

   3"..... CONCRETE POURED AGAINST EARTH.
   2"..... FORMED CONCRETE WHICH WILL REMAIN IN CONTACT WITH EARTH OR WEATHER.
   1 1/2"..... BEAMS, MEASURED TO MAIN STEEL; COLUMNS MEASURED TO TIES OR SPIRALS; NOT EXPOSED TO EARTH OR WEATHER.
   3/4" ..... SLABS; INSIDE FACES OF WALLS.

6. ALL WELDED REINFORCING BARS SHALL BE A706 REINFORCING BARS.

ABBREVIATIONS

A.B.	-	ANCHOR BOLT			
ADD'L	-	ADDITIONAL	LG.	-	LONG
AGG.	-	AGGREGATE	LHE	-	LOW HYD. ELECT.
ALT.	-	ALTERNATE	LTWT.	-	LIGHTWEIGHT
ALUM.	-	ALUMINUM	M.B.	-	MACHINE BOLT
ARCHL.	-	ARCHITECTURAL	MANUF.	-	MANUFACTURER
B.D.	-	BLDG. DEPT.	MAX.	-	MAXIMUM
B.N.	-	BOUNDARY NAILING	MIN.	-	MINIMUM
BM.	-	BEAM	MISC.	-	MISCELLANEOUS
BTW.	-	BETWEEN	(N)	-	NEW
BLK.	-	BLOCK	N.I.C.	-	NOT IN CONTRACT
BLKG.	-	BLOCKING	N.T.S.	-	NOT TO SCALE
BOT.	-	BOTTOM	O.C.	-	ON CENTER
C.I.	-	CAST IRON	OSB	-	ORIENTED STRAND BOARD
C.J.	-	CEILING JOIST	PARTN.	-	PARTITION
C.I.P.	-	CAST IN PLACE	P.L.	-	PROPERTY LINE
CLG.	-	CEILING	PL.	-	PLATE
CLR.	-	CLEAR	PLY.	-	PLYWOOD
CNT'D	-	CENTERED	P.S.I.	-	LBS / SQ. IN.
C.M.U.	-	CONCRETE MASONRY UNITS	P.T.	-	PRESSURE TREATED
COL.	-	COLUMN	RAD.	-	RADIUS
CONC.	-	CONCRETE	RFTR.	-	RAFTER
CONT.	-	CONTINUOUS	REINF.	-	REINFORCE(D)
CONST.	-	CONSTRUCTION	REQ'D	-	REQUIRED
CTSK.	-	COUNTERSUNK	RO.	-	ROUGH OPENING
DIAM.	-	DIAMETER	S.S.	-	SELECT STRUCTURAL
DIM.	-	DIMENSION	SHT.	-	SHEET
DO.	-	DITTO	SIM.	-	SIMILAR
DP.	-	DEEP	SMS	-	SHEET METAL SCREWS
DR.	-	DOOR	SPECS.	-	SPECIFICATIONS
D.F.	-	DOUGLAS FIR	STAG.	-	STAGGERED
D.S.	-	DOWNSPOUT	STD.	-	STANDARD
DWG.	-	DRAWING	STL	-	STEEL
EA.	-	EACH	STR.	-	STRUCTURAL
E.F.	-	EACH FACE	S.W.	-	SHEAR WALL
E.S.	-	EACH SIDE	T.	-	TOP
E.W.	-	EACH WAY	THK.	-	THICK
EL.	-	ELEVATION	T & B	-	TOP & BOTTOM
E.N.	-	EDGE NAILING	T & G	-	TONGUE & GROOVE
EQ.	-	EQUAL	T.O.B.	-	TOP OF BEAM
EQUIP.	-	EQUIPMENT	T.O.C.	-	TOP OF CURB
(E)	-	EXISTING	T.O.F	-	TOP OF FRAMING
EXTR.	-	EXTERIOR	T.O.L.	-	TOP OF LEDGE
F.O.M.	-	FACE OF MASONRY	T.O.P.	-	TOP OF PAVING
F.O.S.	-	FACE OF STUD	T.O.S.	-	TOP OF SHEATHING
FIN.	-	FINISH	T.O.W.	-	TOP OF WALL
F.F.	-	FINISH FLOOR	TSG	-	TAPERED STEEL GIRDER
F.G	-	FINISH GRADE	TYP.	-	TYPICAL
FLR.	-	FLOOR	U.N.O.	-	UNLESS NOTED OTHERWISE
F.L.	-	FLOW LINE	VERT.	-	VERTICAL
FTG.	-	FOOTING	V.I.F.	-	VERIFY IN FIELD
GALV.	-	GALVANIZED	W/	-	WITH
GA.	-	GAUGE	W/O	-	WITH/OUT
GLB	-	GLU-LAM BEAM	WD.	-	WOOD
GYP.	-	GYPSUM	W.W.M.	-	WIRE MESH
HGR.	-	HANGER			
HT.	-	HEIGHT			
HORIZ.	-	HORIZONTAL			
INTR.	-	INTERIOR			

STRUCTURAL SYMBOLS

& - AND	Ø - DIAMETER
∠ - ANGLE	d - PENNY (NAIL GRADE)
@ - AT	℄ - PLATE
℄ - CENTERLINE	# - POUND(LBS) OR NUMBER

DESIGN CRITERIA

WIND

DESIGN WIND SPEED, V		=	100 MPH
RISK CATEGORY		=	II
WIND EXPOSURE		=	C
INTERNAL PRESSURE COEFFICIENT		=	± 0.18

EARTHQUAKE

RISK CATEGORY		=	II
SEISMIC IMPORTANCE FACTOR, I_e		=	1.00
	S_S	=	1.816
	S_1	=	0.639
	S_{DS}	=	1.453
	S_{D1}	=	0.597
SITE CLASS		=	C
SEISMIC DESIGN CATEGORY		=	D

811 DIAL TOLL FREE 811 AT LEAST TWO DAYS BEFORE YOU DIG

UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

REVISIONS

NUMBER	DATE	INITIALS	DESCRIPTION	DATE	INITIALS

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BENCHMARK

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PREPARED BY:

JMC² CIVIL + STRUCTURAL ENGINEERING

LA (Corporate): 411 N. Harbor Blvd., Ste. 201, San Pedro, CA 90731
OC: 2700 N. Main St., Ste. 300, Santa Ana, CA 92705
Office: (310) 241-6550 ext. 228
Cell: (424) 772-8648

		DATE
DRAWN BY	AA	
CHECKED BY	VA	

PREPARED UNDER THE SUPERVISION OF

CIVIL ENGINEER INFO

REGISTERED PROFESSIONAL ENGINEER — ANDREW J. ABRAMS — No. 2908 — CIVIL — STATE OF CALIFORNIA

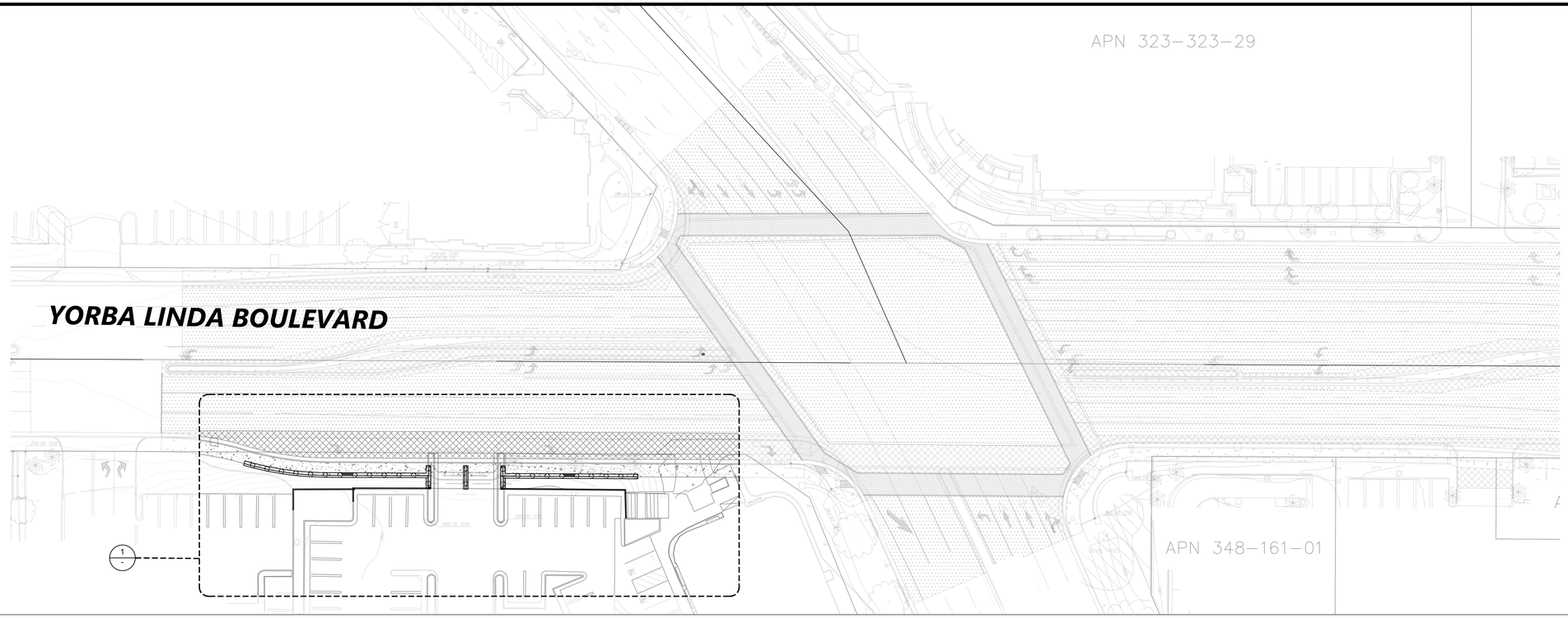
JMC PROJECT #: 230062.00

YORBA LINDA BOULEVARD IMPROVEMENTS FROM IMPERIAL HIGHWAY TO LAKEVIEW AVENUE
GENERAL NOTES

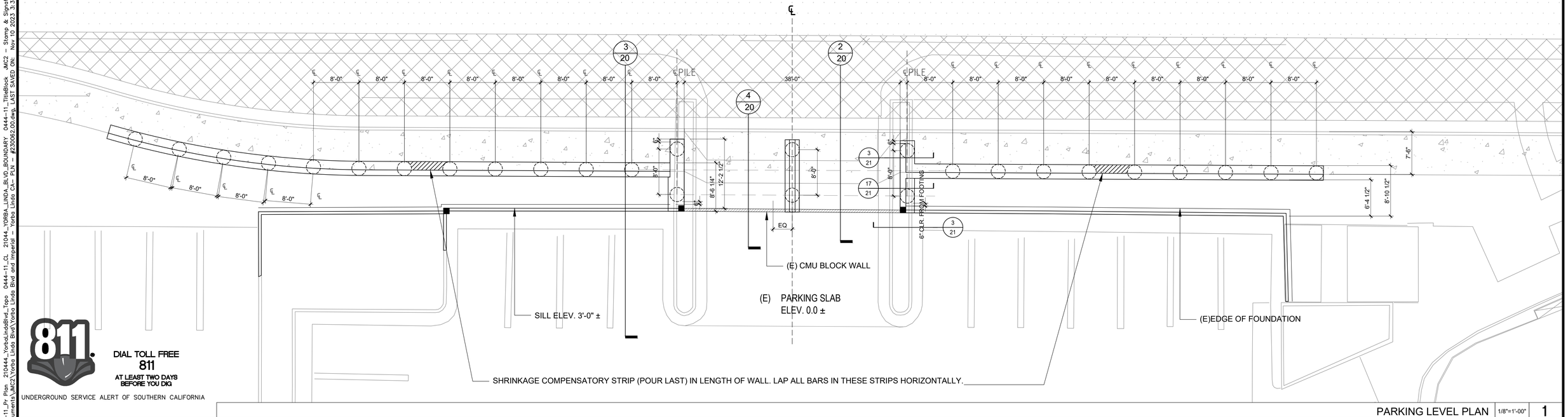
CITY OF YORBA LINDA

SHEET No. 18 OF 31

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KEYPLAN | 1/32"=1'-00" | 2



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UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

PARKING LEVEL PLAN | 1/8"=1'-00" | 1

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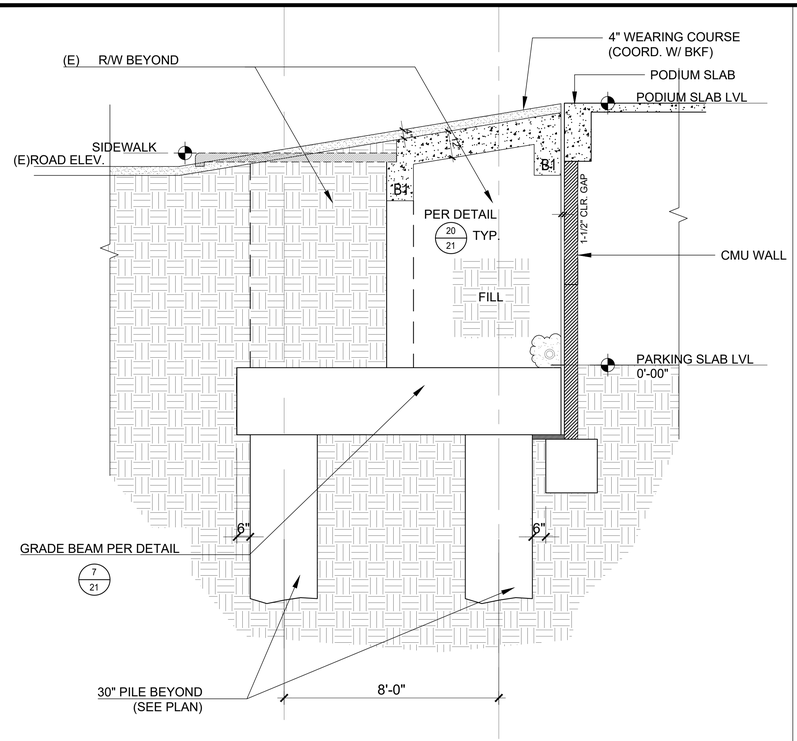
JMC PROJECT #: 230062.00

YORBA LINDA BOULEVARD IMPROVEMENTS FROM IMPERIAL HIGHWAY TO LAKEVIEW AVENUE
KEYPLAN + PARKING LEVEL PLAN

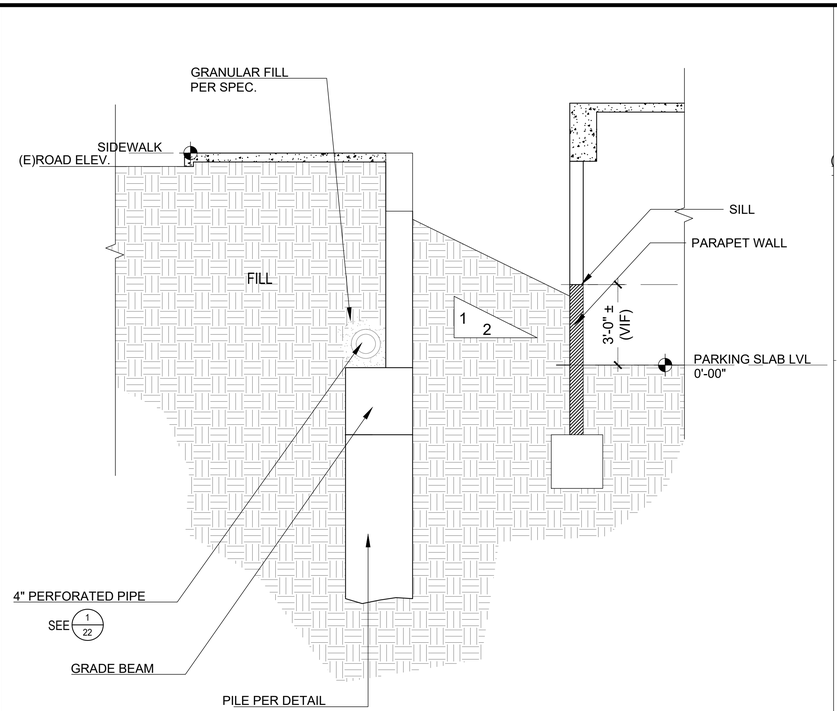
CITY OF YORBA LINDA

SHEET No. 19 OF 31

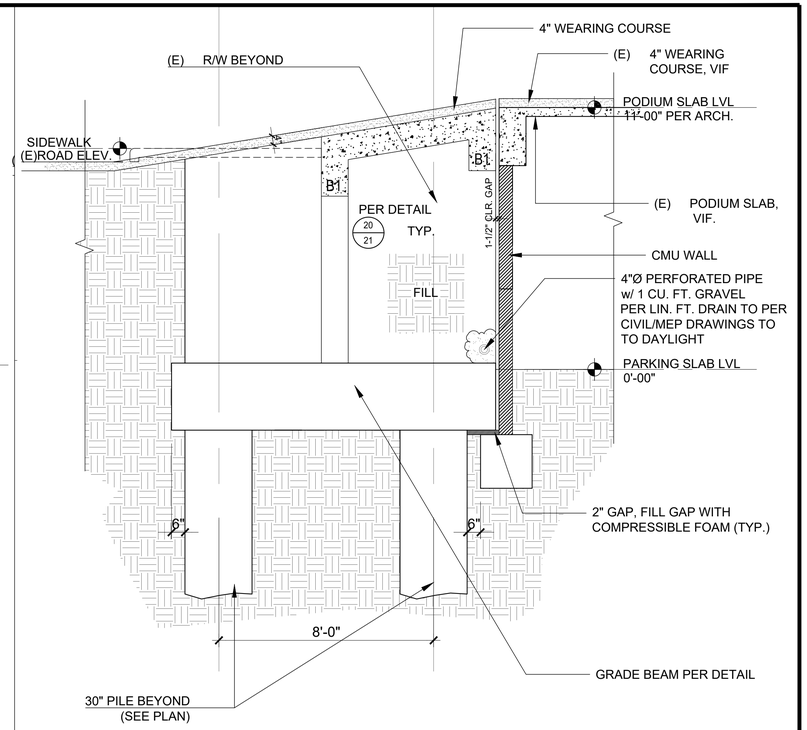
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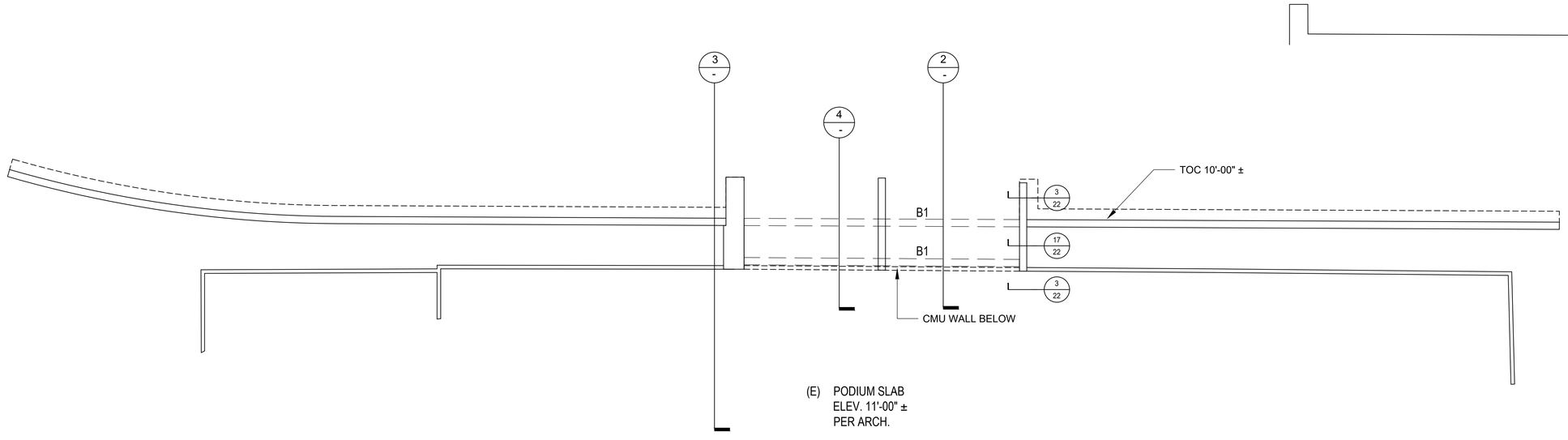
SECTION 3/8"=1'-00" 2



SECTION 3/8"=1'-00" 3



SECTION 3/8"=1'-00" 4



PLAN AT PODIUM SLAB LEVEL 1/8"=1'-00" 1

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REVISIONS

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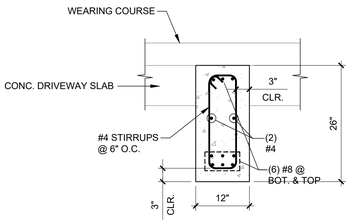
JMC PROJECT #: 230062.00

YORBA LINDA BOULEVARD IMPROVEMENTS FROM IMPERIAL HIGHWAY TO LAKEVIEW AVENUE
SECTIONS + PLAN AT PODIUM SLAB LVL

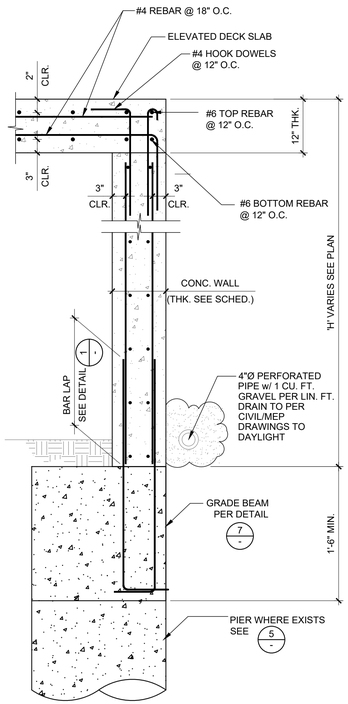
CITY OF YORBA LINDA

SHEET No. 20 OF 31

EXTERNAL REFERENCES: 0444-11_TitleBlock_JMC2 – Stamp & Signature – CA BG 0444-11_Pr Plan Yorba Linda Blvd Close-up Site Plan.xref
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B1 DETAIL | N.T.S. | 20

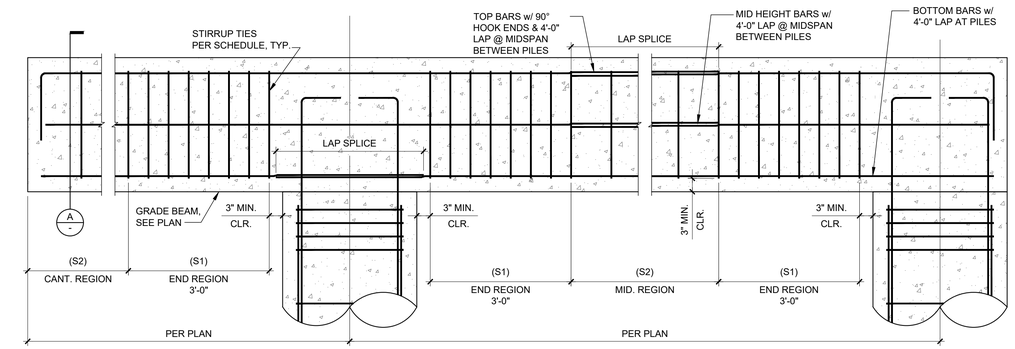


RETAINING WALL SCHEDULE			
'H' MAX.	CONC. THK.	VERT. REBAR	HORIZ. REBAR
9'-0"	14"	#8 @ 6" O.C. EA. FACE	#5 @ 12" O.C. EA. FACE

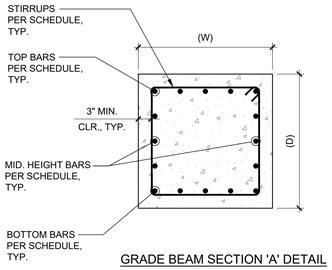
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DETAIL | N.T.S. | 17



GRADE BEAM FOUNDATION DESIGN & SECTION DETAIL



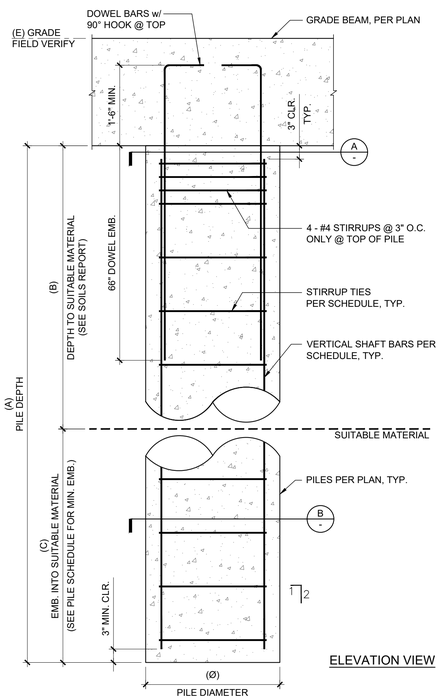
GRADE BEAM SECTION 'A' DETAIL

GRADE BEAM DESIGN SCHEDULE

GB #'s	(W)	(D)	CORNER BARS	OTHER BARS	STIRRUP TIES (S1)	STIRRUP TIES (S2)	REMARK
1	30"	30"	4- #10	12- #7	#5 @ 4" O.C.	#5 @ 8" O.C.	

GRADE BEAM NOTES:
1. ALL EXISTING FOUNDATIONS & FOOTINGS SHALL BE CLEANED OFF PRIOR TO POURING OF GRADE BEAM IN ORDER TO ACHIEVE PROPER BONDING BETWEEN (N) & (E) CONCRETE.
2. ALL STEEL REINFORCEMENT HOOKS SHALL BE PER ACI318 STANDARD HOOKS
3. CONCRETE GRADE BEAMS SHALL BE DESIGN & BUILT WITH A MINIMUM f'c = 3000 PSI.

DETAIL | N.T.S. | 7



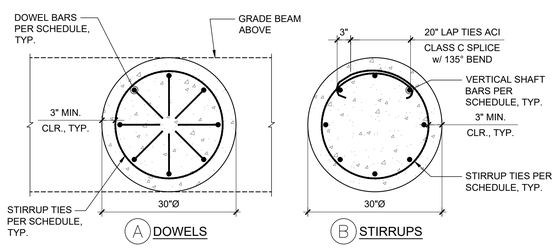
ELEVATION VIEW

PILE DESIGN SCHEDULE

PILES	(A)[1]	(B)[2]	(C)[3]	(Ø)	DOWEL BARS	VERTICAL SHAFT BARS	STIRRUP TIES	NOTES
1	20'-0"	8'-0"	12'-0"	30"	12 - #7	12 - #9	#4 @ 12" O.C.	

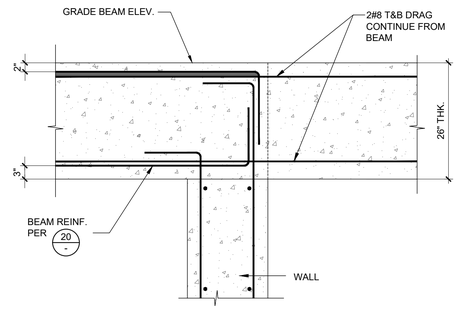
PILE/CAISSON NOTES:

1. PILE EMBEDMENT DEPTH INTO SUITABLE MATERIAL IS BASED ON INFORMATION PROVIDED BY APPROVED GEOTECHNICAL REPORT, STRUCTURAL CALCULATIONS AND/OR CURRENT FOUNDATION SETBACK SET FORWARD BY CURRENT BUILDING CODES. PILE DEPTH IS SUBJECTED TO CHANGE UPON VERIFICATION OF CORRECT DEPTH TO SUITABLE MATERIAL BY A REPRESENTATIVE OF THE CONSULTING GEOTECHNICAL ENGINEERING FIRM HANDLING THIS PROJECT.
2. CORRECT DEPTH OF PILE FOUNDATION TO SUITABLE MATERIAL SHALL BE VERIFIED BY A REPRESENTATIVE OF THE CONSULTING GEOTECHNICAL ENGINEER PRIOR TO INSTALLATION OF STEEL REINFORCEMENT.
3. CONCRETE PILES, CAISSONS AND/OR PIERS SHALL BE DESIGN & BUILT WITH A MINIMUM fc = 3000 PSI.

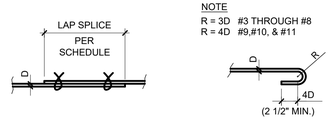


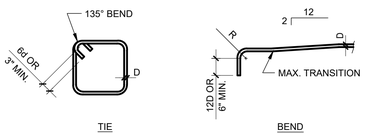
SECTION VIEW

DETAIL | N.T.S. | 5



DRAG CONNECTION | N.T.S. | 3





REBAR DEVELOPMENT LENGTHS & SPLICE LENGTH SCHEDULE

BAR SIZE	d_b(in.)	DEVELOPMENT LENGTHS		CLASS 'B' SPLICE LENGTHS	
		BOTTOM (in.)	TOP (in.)	BOTTOM (in.)	TOP (in.)
#3	0.375	17	22	22	29
#4	0.5	22	29	29	38
#5	0.625	28	36	37	47
#6	0.75	33	43	43	56
#7	0.875	48	63	63	82
#8	1	55	72	72	94
#9	1.128	62	81	81	105
#10	1.27	70	91	91	118
#11	1.410	78	101	101	131

NOTES:
1. TABULATED VALUES ARE FOR NORMAL WEIGHT CONCRETE (f'c = 3000 psi).
2. TOP BARS ARE HORIZONTAL BARS WITH MORE THAN 12" OF CONCRETE CAST BELOW THE BARS.
3. BOTTOM BARS ARE ALL VERTICAL AND HORIZONTAL BARS WITH LESS THAN 12" OF CONCRETE CAST BELOW THE BARS.
4. FOR LIGHT WEIGHT CONCRETE, MULTIPLY TABULATED VALUES BY 1.33.
5. TABULATED VALUES ARE FOR REBARS WITH A MINIMUM CLEAR COVER OF d_b AND A MINIMUM CLEAR SPACING OF $2d_b$. FOR CASES NOT MEETING EITHER OF THESE CRITERIA, MULTIPLY TABULATED VALUES BY 1.5.

TYPICAL BAR LAP | N.T.S. | 1

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JMC PROJECT #: 230062.00

YORBA LINDA BOULEVARD IMPROVEMENTS FROM IMPERIAL HIGHWAY TO LAKEVIEW AVENUE
DETAILS

CITY OF YORBA LINDA

SHEET No. 21 OF 31

EXTERNAL REFERENCES: 0444-11_TitleBlock_JMC2 - Stamp & Signature - CA BG 0444-11_Pr Plan_Yorba Linda Blvd Close-up Site Plan.xref
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NOT USED N.T.S. 19

NOT USED N.T.S. 18

NOT USED N.T.S. 17

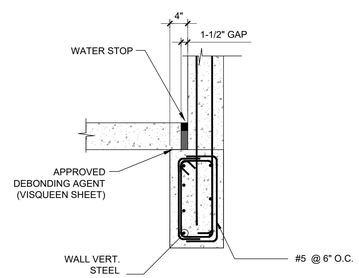
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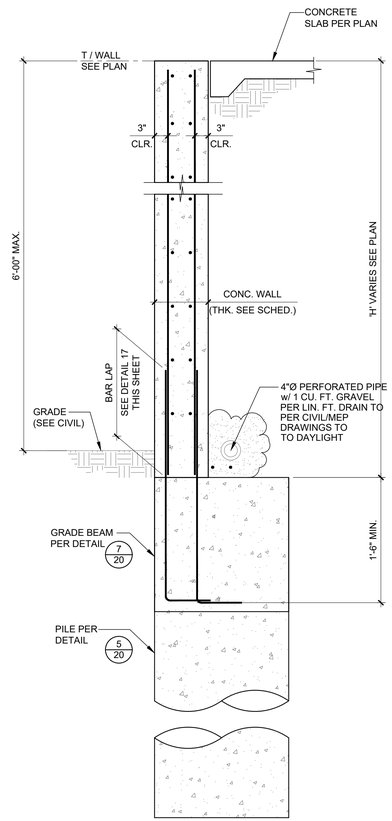
N.T.S. 7

DETAIL N.T.S. 6



THICKENED WALL DETAIL N.T.S. 5

NOT USED N.T.S. 4



RETAINING WALL SCHEDULE			
'H' MAX.	CONC. THK.	VERT. REBAR	HORIZ. REBAR
9'-0"	14"	#8 @ 6" O.C. EA. FACE	#5 @ 12" O.C. EA. FACE

DETAIL N.T.S. 1

811 DIAL TOLL FREE 811 AT LEAST TWO DAYS BEFORE YOU DIG

UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

REVISIONS

NUMBER	DATE	INITIALS	DESCRIPTION	DATE	INITIALS

BASIS OF BEARINGS

THE BASIS OF HORIZONTAL CONTROL FOR THIS PROJECT IS THE CALIFORNIA COORDINATE SYSTEM NAD83 ZONE 6 (2017.50 EPOCH) DETERMINED LOCALLY BY THE FOLLOWING O.C.S. POINTS: 5201, 5190R1, AND 5212, ORANGE COUNTY PUBLIC WORKS, OC SURVEY.

BENCHMARK

VERTICAL DATUM: NAVD88, BENCH MARK: OCS 2A-49-87
ELEVATION: 378.082' (2006), DESCRIPTION: FOUND 3 3\4" OCS ALUMINUM BENCHMARK DISK STAMPED "2A-49-87", SET IN THE SOUTHWESTERLY CORNER OF A 4 FT. BY 8 FT. CONCRETE CATCH BASIN. MONUMENT IS LOCATED IN THE NORTHWESTERLY CORNER OF THE INTERSECTION OF YORBA LINDA BOULEVARD AND IMPERIAL HIGHWAY, 47 FT. NORTHERLY OF THE CENTERLINE OF YORBA LINDA AND 116 FT. WESTERLY OF THE WESTERLY CURB ALONG IMPERIAL HIGHWAY. MONUMENT IS SET LEVEL WITH THE SIDEWALK.

PREPARED BY:

JMC² CIVIL + STRUCTURAL ENGINEERING

LA (Corporate): 411 N. Harbor Blvd., Ste. 201, San Pedro, CA 90731
OC: 2700 N. Main St., Ste. 300, Santa Ana, CA 92705
Office: (310) 241-6550 ext. 228
Cell: (424) 772-8648

		DATE
DRAWN BY	AA	
CHECKED BY	VA	

PREPARED UNDER THE SUPERVISION OF

CIVIL ENGINEER INFO

No. 2908 — REGISTERED PROFESSIONAL ENGINEER — STRUCTURAL — STATE OF CALIFORNIA

JMC PROJECT #: 230062.00

YORBA LINDA BOULEVARD IMPROVEMENTS FROM IMPERIAL HIGHWAY TO LAKEVIEW AVENUE
DETAILS

CITY OF YORBA LINDA

SHEET No. 22 OF 31

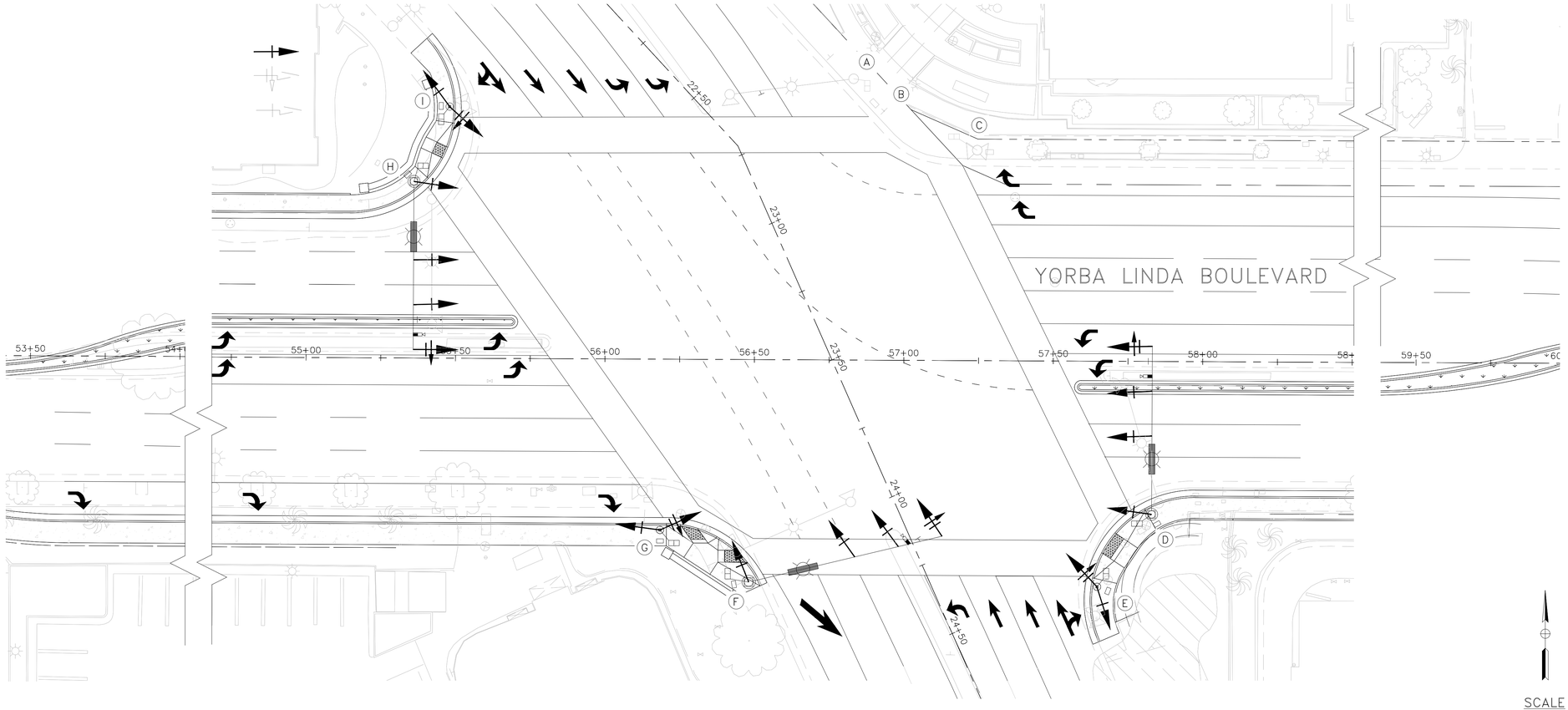
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POLE SCHEDULE

No.	POLE DATA TYPE	HEIGHT	SIGNAL M.A.	LED LUMINAIRE M.A.	WATTS	SIGNAL MOUNTING VEH	M.A.	PED	PED PUSH BUTTON PHASE	ARM	POLE LOCATION A	B	IISNS
(A)	29A-5-100(E)	–	–	–	–	SV-1-T(E)	–	SP-1-T(E)	–	–	–	–	Yorba Linda Bl(E)
(B)	PPB POST(E)	–	–	–	–	–	–	–	–	–	–	–	–
(C)	1-A(E)	10'	–	–	–	TV-2-T(E)	–	SP-1-T(E)	–	–	–	–	–
(D)	29-5-100	30'	55'	15'	113	SV-1-T	3-MAS	SP-1-T	–	–	–	–	Imperial Hwy(R)
(E)	1-A	12'	–	–	–	TV-2-T	–	SP-1-T	–	–	–	–	–
(F)	61-5-100	30'	65'	15'	113	SV-1-T	3-MAS	SP-1-T	–	–	–	–	Yorba Linda(R)
(G)	1-A	12'	–	–	–	TV-2-T	–	SP-1-T	–	–	–	–	–
(H)	29-5-100	30'	55'	15'	113	SV-1-T	3-MAS	SP-1-T	–	–	–	–	Imperial Hwy(R)
(I)	1-A	12'	–	–	–	TV-2-T	–	SP-1-T	–	–	–	–	–

ALL EQUIPMENT IS NEW UNLESS OTHERWISE NOTED.
(E)=EXISTING

IMPERIAL HIGHWAY



SCALE
1"=20'

811
DIAL TOLL FREE
811
AT LEAST TWO DAYS
BEFORE YOU DIG
UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

65% SUBMITTAL
NOT FOR CONSTRUCTION

REVISIONS

NUMBER	DATE	INITIALS	DESCRIPTION	DATE	INITIALS

BASIS OF BEARINGS

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BENCHMARK

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PREPARED BY:
WGZE
W.G. ZIMMERMAN ENGINEERING, INC.
7812 EDINGER AVENUE, SUITE 302
HUNTINGTON BEACH, CA 92647
PHONE: 714-799-1700
FAX: 714-333-4712

		DATE
DRAWN BY	AM	10-23-23
CHECKED BY	BZ	10-24-23

PREPARED UNDER THE SUPERVISION OF

CIVIL ENGINEER INFO

REGISTERED PROFESSIONAL ENGINEER
WILLIAM G. ZIMMERMAN
RCE 48667
Exp 06-30-2024
CIVIL
STATE OF CALIFORNIA

YORBA LINDA BOULEVARD IMPROVEMENTS FROM IMPERIAL HIGHWAY TO LAKEVIEW AVENUE
TRAFFIC SIGNAL PLAN

CITY OF YORBA LINDA

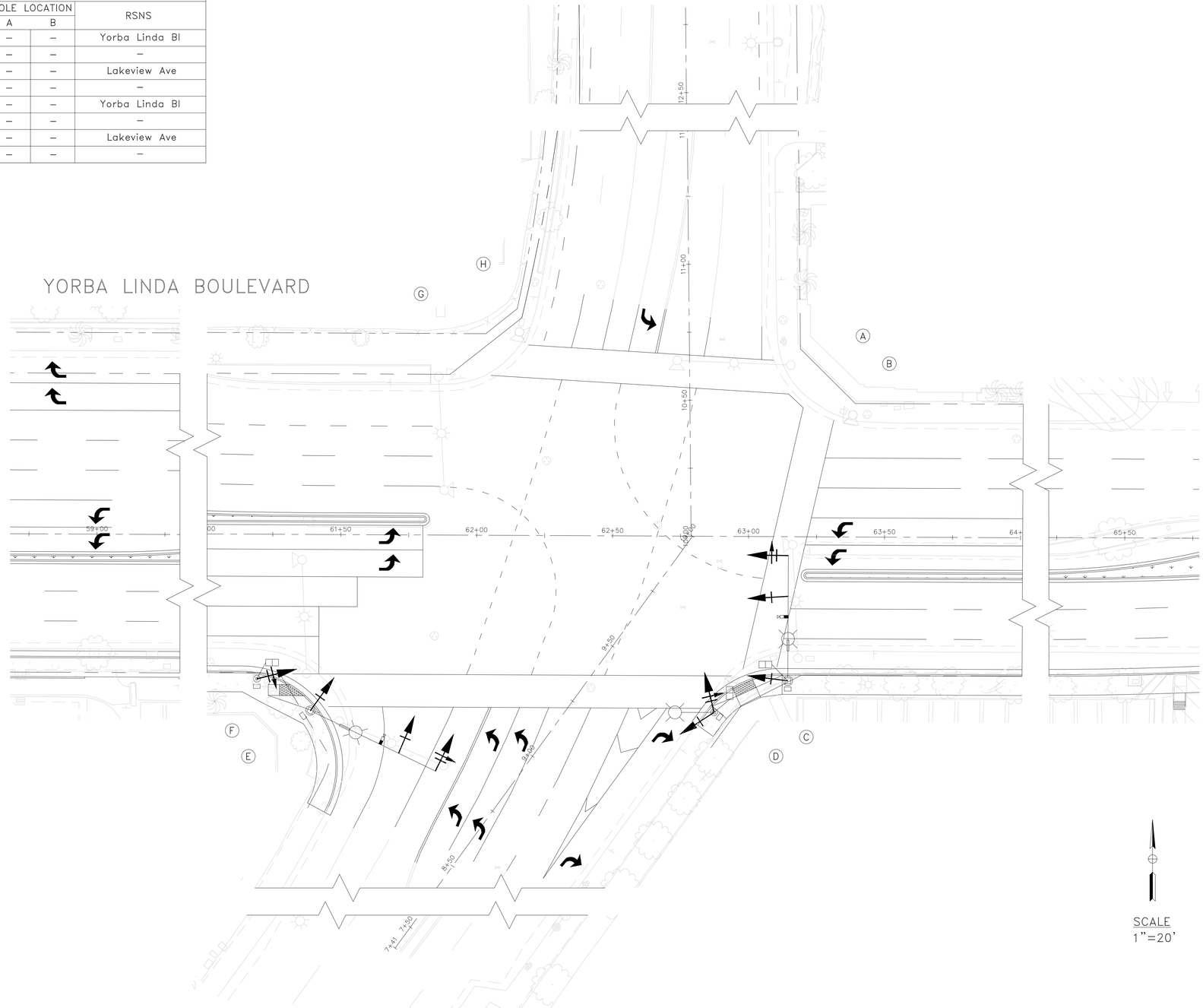
SHEET No.
23
OF
31

EXTERNAL REFERENCES: BORDER Harris_CL&RW 22-3589_Topo 0444-11_Pr Plan 0444-11_Topo DESIGN - YBB_IMPERIAL_TS 0444-11_CL 0444-11_Pr Plan - Alt2 LWFL_BORDER 24x36 WGZE_2
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POLE SCHEDULE

POLE DATA			SIGNAL	LED LUMINAIRE		SIGNAL MOUNTING			PED PUSH BUTTON		POLE LOCATION		RSNS
No.	TYPE	HEIGHT	M.A.	M.A.	WATTS	VEH	M.A.	PED	PHASE	ARM	A	B	
Ⓐ	29-5-100(E)	–	–	–	–	SV-1-T	2-MAS	SP-1-T	–	–	–	–	Yorba Linda Bl
Ⓑ	1A(E)	12'	–	–	–	TV-2-T	–	SP-1-T	–	–	–	–	–
Ⓒ	26-4-100	30'	45'	15'	113	SV-1-T	2-MAS	SP-1-T	–	–	–	–	Lakeview Ave
Ⓓ	15TS	30'	–	12'	113	SV-2-TA	–	SP-1-T	–	–	–	–	–
Ⓔ	29-5-100	30'	50'	15'	113	SV-1-T	2-MAS	–	–	–	–	–	Yorba Linda Bl
Ⓕ	1A	12'	–	–	–	SV-1-T	–	SP-1-T	–	–	–	–	–
Ⓖ	29-5-100(E)	–	–	–	–	SV-1-T	3-MAS	SP-1-T	–	–	–	–	Lakeview Ave
Ⓗ	1A(E)	12	–	–	–	TV-1-T	–	SP-1-T	–	–	–	–	–

ALL EQUIPMENT IS NEW UNLESS OTHERWISE NOTED.
(E) = EXISTING



SCALE
1"=20'

811
DIAL TOLL FREE
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AT LEAST TWO DAYS
BEFORE YOU DIG
UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

65% SUBMITTAL
NOT FOR CONSTRUCTION

REVISIONS

NUMBER	DATE	INITIALS	DESCRIPTION	DATE	INITIALS

BASIS OF BEARINGS

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PHONE: 714-799-1700
FAX: 714-333-4712

		DATE
DRAWN BY	CC	10-23-23
CHECKED BY	BZ	10-24-23

PREPARED UNDER THE SUPERVISION OF

CIVIL ENGINEER INFO

REGISTERED PROFESSIONAL ENGINEER
WILLIAM G. ZIMMERMAN
RCE 48667
Exp 06-30-2024
CIVIL
STATE OF CALIFORNIA

YORBA LINDA BOULEVARD IMPROVEMENTS FROM IMPERIAL HIGHWAY TO LAKEVIEW AVENUE
TRAFFIC SIGNAL PLAN

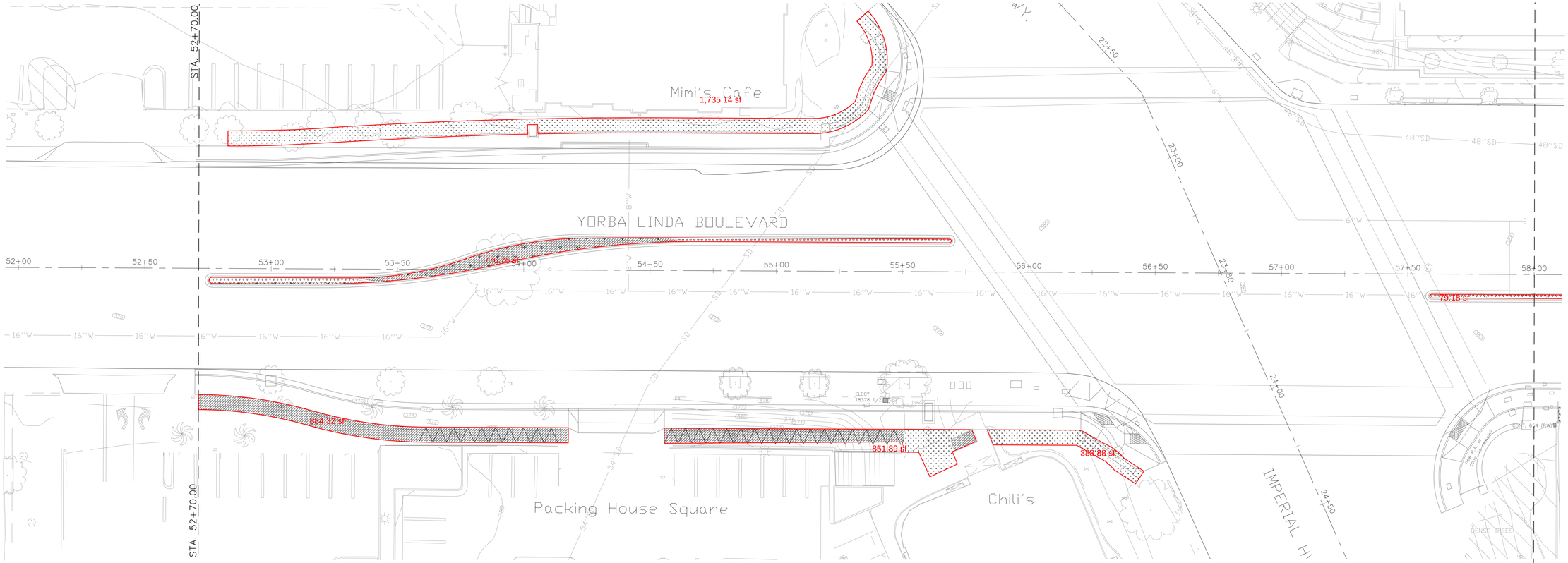
CITY OF YORBA LINDA

SHEET No.
24
OF
31

EXTERNAL REFERENCES: DESIGN - YBB_LAKEVIEW_TS 0444-11_Topo 0444-11_Pr Plan 0444-11_CL 22-3589_Topo Harris_CL&RW
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PLANTING NOTES

1. THE PLANTING PLANS INDICATE PLANTING LOCATION AND QUANTITIES. THE CONTRACTOR SHALL VERIFY ALL QUANTITIES. THE AREAS OF GROUNDCOVER AND PERENNIAL PLANTINGS ARE APPROXIMATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING THE REQUIRED NUMBER OF PLANTS TO COVER THE AREAS SHOWN ON THESE PLANS.
2. REFER TO THE PLANT LIST FOR PLANT SIZES. REFER TO THE SPECIFICATIONS FOR SOIL PREPARATION, SOIL AMENDMENTS, FERTILIZER AND ADDITIONAL PLANTING REQUIREMENTS.



PLANTING SCHEDULE

CODE	BOTANICAL NAME / COMMON NAME	SPACING	HEIGHT x WIDTH	WATER / REFERENCE	EVGRN/ DECID	SUN / SHADE
TREES						
	Existing Tree, To Be Protected	As Shown				
LOP CON	Lophostemon confertus/Brisbane Box	As Shown	20-30'h x 15-30'w	M - WUCOLS	E	Full sun to part shade
SHRUBS, PERENNIALS, GRASSES						
WES GRE	Westringina 'Grey Box'/Grey Box Westringia	3' o.c.	3'h x 3'w	L - WUCOLS	E	Full sun to part shade
LOM BRE	Lomandra longifolia 'Breeze'/Dwarf Mat Rush 'Breeze'	3' o.c.	3'h x 3'w	L - WUCOLS	E	Full sun to part shade
CAL LIT	Callistemon 'Little John'/Dwarf Bottlebrush	4' o.c.	3-4'h x 3-4'w	L - WUCOLS	E	Full sun to part shade
LAN NEW	Lantana 'New Gold'/New Gold Lantana	6' o.c.	18"h x 6'w	L - WUCOLS	E	Full sun
GROUNDCOVER (Spreading or used in mass plantings)						
CAR DIV	Carex divulsa/Berkeley Sedge	2' o.c.	18"h	L - WUCOLS	E	Full sun to part shade
ROS PRO	Dianella caerulea 'Casa Blue'/Blue Flax Lily	2' o.c.	2'h	L - WUCOLS	E	Full sun to part shade
TURF	Replace in kind.			H - WUCOLS		

PLANTING LEGEND

RELATIVE SLOPE

LIMIT OF WORK

0 10' 20' 40'

NORTH

811 DIAL TOLL FREE 811 AT LEAST TWO DAYS BEFORE YOU DIG

UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

REVISIONS

NUMBER	DATE	INITIALS	DESCRIPTION	DATE	INITIALS

BASIS OF BEARINGS

THE BASIS OF HORIZONTAL CONTROL FOR THIS PROJECT IS THE CALIFORNIA COORDINATE SYSTEM NAD83 ZONE 6 (2017.50 EPOCH) DETERMINED LOCALLY BY THE FOLLOWING O.C.S. POINTS: 5201, 5190R1, AND 5212, ORANGE COUNTY PUBLIC WORKS, OC SURVEY.

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PREPARED BY:
MIG
109 WEST UNION AVENUE
FULLERTON, CA 92832
TEL 714/871-3638
FAX 714/871-1188
www.migcom.com

		DATE
DRAWN BY	MB	
CHECKED BY	OJ	

PREPARED UNDER THE SUPERVISION OF

CIVIL ENGINEER INFO

REGISTERED PROFESSIONAL LANDSCAPE ARCHITECT — STATE OF CALIFORNIA

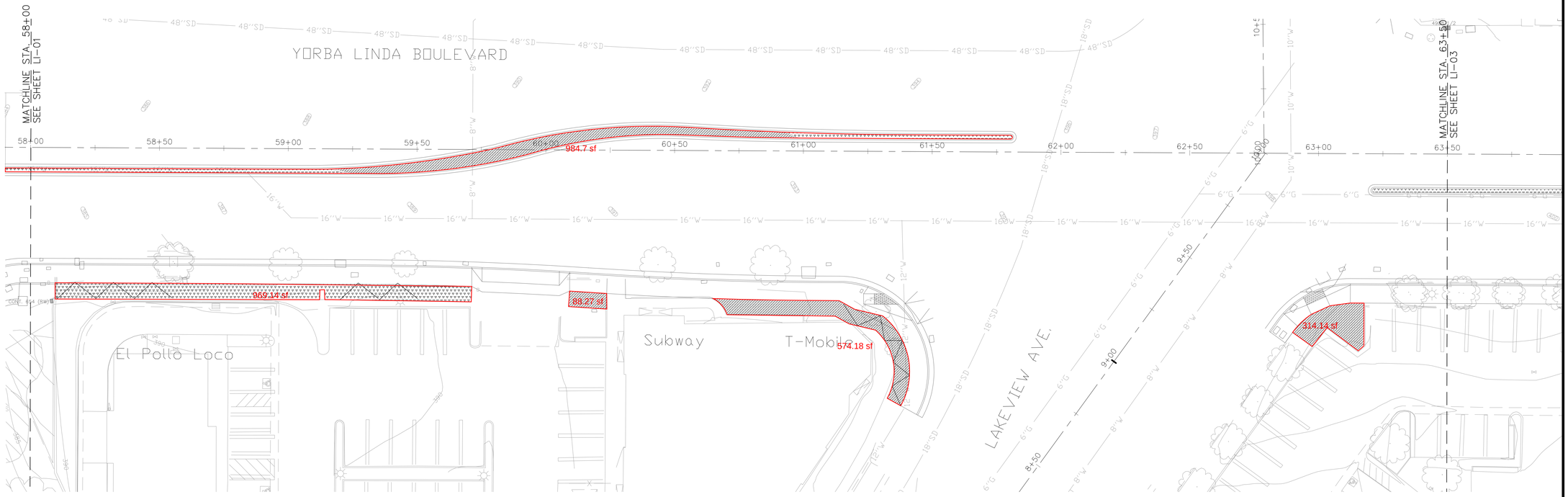
YORBA LINDA BOULEVARD IMPROVEMENTS FROM IMPERIAL HIGHWAY TO LAKEVIEW AVENUE
PLANTING PLAN
CITY OF YORBA LINDA

SHEET No. LP-01 OF 31

EXTERNAL REFERENCES: 5611_BKF-YL BLVD 0444-11_Pr Plan 22-3589_Topo 0444-11_Utility Basemap 0444-11_OL 5611_TitleBlock 210444_YorbaLindaBlvd_Topo_Deliverable_2023-09-29 0444-11_Topo
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PLANTING NOTES

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PLANTING SCHEDULE

CODE	BOTANICAL NAME / COMMON NAME	SPACING	HEIGHT x WIDTH	WATER / REFERENCE	EVGRN/ DECID	SUN / SHADE
TREES						
	Existing Tree, To Be Protected	As Shown				
LOP CON	Lophostemon confertus/Brisbane Box	As Shown	20-30'h x 15-30'w	M - WUCOLS	E	Full sun to part shade
SHRUBS, PERENNIALS, GRASSES						
WES GRE	Westringina 'Grey Box'/Grey Box Westringia	3' o.c.	3'h x 3'w	L - WUCOLS	E	Full sun to part shade
LOM BRE	Lomandra longifolia 'Breeze'/Dwarf Mat Rush 'Breeze'	3' o.c.	3'h x 3'w	L - WUCOLS	E	Full sun to part shade
CAL LIT	Callistemon 'Little John'/Dwarf Bottlebrush	4' o.c.	3-4'h x 3-4'w	L - WUCOLS	E	Full sun to part shade
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GROUNDCOVER (Spreading or used in mass plantings)						
CAR DIV	Carex divulsa/Berkeley Sedge	2' o.c.	18"h	L - WUCOLS	E	Full sun to part shade
ROS PRO	Dianella caerulea 'Casa Blue'/Blue Flax Lily	2' o.c.	2'h	L - WUCOLS	E	Full sun to part shade
TURF	Replace in kind.			H - WUCOLS		

PLANTING LEGEND

RELATIVE SLOPE

LIMIT OF WORK

0 10' 20' 40'

NORTH

811 DIAL TOLL FREE 811 AT LEAST TWO DAYS BEFORE YOU DIG

UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

REVISIONS					
NUMBER	DATE	INITIALS	DESCRIPTION	DATE	INITIALS

BASIS OF BEARINGS

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FULLERTON, CA 92832
TEL 714/871-3638
FAX 714/871-1188
www.migcom.com

		DATE
DRAWN BY	MB	
CHECKED BY	OJ	

PREPARED UNDER THE SUPERVISION OF

CIVIL ENGINEER INFO

REGISTERED PROFESSIONAL ENGINEER STATE OF CALIFORNIA

YORBA LINDA BOULEVARD IMPROVEMENTS FROM IMPERIAL HIGHWAY TO LAKEVIEW AVENUE
PLANTING PLAN

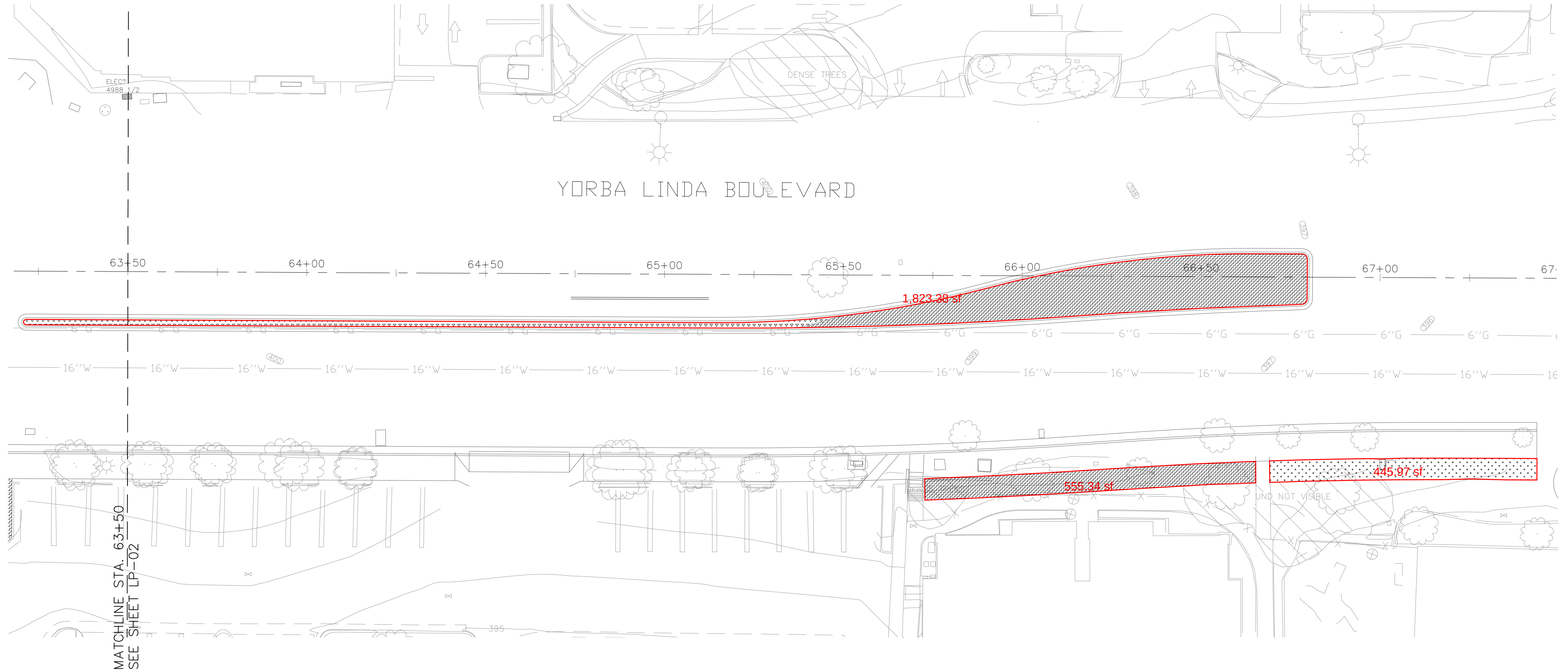
CITY OF YORBA LINDA

SHEET No. LP-02 OF 31

EXTERNAL REFERENCES: 5611_Bkf-YL BLVD 0444-11_Pr Plan 22-3589_Topo 0444-11_Utility Basemap 0444-11_CL 5611_TitleBlock 210444_YorbaLindaBlvd_Topo_Deliverable_2023-09-29 0444-11_Topo
FILENAME: Z:\Shared\Fullerton\Projects\0000_CDS\0561101 - BKF Yorba Linda Streetscape\03 Design\4 Schematic Design\4.2 Sheetfiles\561101_Planting.dwg LAST SAVED ON: Nov 09 2023 6:31pm PLOTTED BY: MBUTLER ON: Nov 09 2023 6:40pm CFG:

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TURF	Replace in kind.			H - WUCOLS		

PLANTING LEGEND

RELATIVE SLOPE

LIMIT OF WORK

0 10' 20' 40'

NORTH

811 DIAL TOLL FREE 811 AT LEAST TWO DAYS BEFORE YOU DIG

UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

REVISIONS					
NUMBER	DATE	INITIALS	DESCRIPTION	DATE	INITIALS

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PREPARED BY:

MIG

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FULLERTON, CA 92832

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FAX 714/871-1188
www.migcom.com

		DATE
DRAWN BY	MB	
CHECKED BY	OJ	

PREPARED UNDER THE SUPERVISION OF

CIVIL ENGINEER INFO

REGISTERED PROFESSIONAL LANDSCAPER ★ STATE OF CALIFORNIA ★

YORBA LINDA BOULEVARD IMPROVEMENTS FROM IMPERIAL HIGHWAY TO LAKEVIEW AVENUE

PLANTING PLAN

CITY OF YORBA LINDA

SHEET No. LP-03 OF 31

EXTERNAL REFERENCES: 5611_BKF-YL BLVD 0444-11_Pr Plan 22-3589_Topo 0444-11_Utility Basemap 0444-11_CL 5611_TitleBlock 210444_YorbaLindaBlvd_Topo_DeliverableBlvd_Topo_Deliverable_2023-09-29 0444-11_Topo
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LANDSCAPE IRRIGATION EQUIPMENT LEGEND (CONT.)

SUBSURFACE DRIP IRRIGATION EQUIPMENT

SYMBOL	MFG'R (OR APPROVED EQUAL)	MODEL # (OR APPROVED EQUAL)	DESCRIPTION	OP. PSI	EMITTER FLOW (GPH)	EMITTER SPACING	MAX. ALLOWED HORIZONTAL SPACING	BURIAL DEPTH	DETAIL
	RAIN BIRD	XFS-CV-06-12	INLINE EMITTER DRIPLINE W/ COPPER SHIELD PROTECTION, ANTI-SIPHON, PRESSURE COMP., SELF-FLUSHING EMITTERS W/ CHECK VALVE. USE TWIST LOCK 600 SERIES FITTINGS. STAKE 36" O.C.	30	0.60	12-INCHES	12-INCHES	6-INCHES	---

SYMBOL	MFG'R (OR APPROVED EQUAL)	MODEL # (OR APPROVED EQUAL)	DESCRIPTION	REMARKS	DETAIL
Ⓕ	NIBCO	4660-S	MANUAL FLUSH BALL VALVE	1/2" SIZE. PLUMB TO PVC EXHAUST HEADER. HEADER SIZE TO MATCH SUPPLY HEADER SIZE. REFER TO PLAN. REFER TO GENERAL IRRIGATION NOTES FOR ADDITIONAL INFORMATION.	---
ⓘ	RAIN BIRD	OPERIND	OPERATION/PRESSURE INDICATOR STAKE	PLUMB TO DRIP TUBING, ONE PER DRIP ZONE.	---

TREE ROOT WATERING SYSTEMS

SYMBOL	MFG'R (OR APPROVED EQUAL)	MODEL # (OR APPROVED EQUAL)	NOZZLE	OPERATING PRESSURE	RADIUS	FLOW	FLOW	DETAIL
●	RAIN BIRD	RWS-B-C-1401	AS SUPPLIED	30 PSI	N/A	0.25	CONTRACTOR TO INSTALL (2) RWS PER TREE.	---

NON-PRESSURE LATERAL PIPE SIZING CHART
SCHEDULE 40 IPS U.S. PVC PLASTIC PIPE
(FOR REFERENCE USE ONLY)

PIPE SIZE	MAXIMUM GALLONS PER MINUTE
3/4 -INCH	0 - 6
1 - INCH	7 - 12
1-1/4 - INCHES	13 - 20
1-1/2 - INCHES	21 - 30
2 - INCHES	31 - 50

PRESSURE MAINLINE PIPE SIZING CHART
CLASS 315 & SCH. 40 IPS U.S. PVC PLASTIC PIPE
(FOR REFERENCE USE ONLY)

PIPE SIZE	MAXIMUM GALLONS PER MINUTE
3/4 -INCH	0 - 6
1 - INCH	7 - 12
1-1/4 - INCHES	13 - 20
1-1/2 - INCHES	21 - 30
2 - INCHES	31 - 50
2-1/2 - INCHES	51 - 70

CLASS 200 PVC PIPE SLEEVE/ SCHEDULE 80 PVC PIPE CONDUIT SIZING CHART
(FOR REFERENCE USE ONLY)

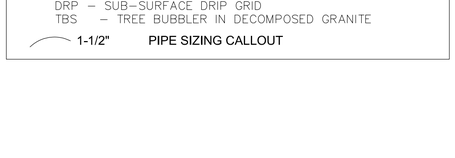
PIPE SLEEVE/ CONDUIT SIZE	MAXIMUM IRRIGATION PIPE/CONDUIT SIZE
2 - INCHES	1 - INCH
2-1/2 - INCHES	1-1/4 - INCH
3 - INCHES	1-1/2 - INCH
4 - INCHES	2 - INCHES
6 - INCHES	3 - INCHES
SPARE SLEEVE SIZE TO MATCH LARGEST SLEEVE AT SAME CROSSING LOCATION.	

GENERAL IRRIGATION LEGEND

SLEEVING: REFER TO IRRIGATION LEGEND AND CHART ON THIS SHEET FOR TYPE AND SIZE.

(#)M MAINLINE PIPE SLEEVE QUANTITY
(#)L LATERAL PIPE SLEEVE QUANTITY
(#)W WIRE/CONDUIT SLEEVE QUANTITY
(#)S SPARE (EMPTY) SLEEVE QUANTITY

VALVE CALLOUT



*REFER TO HYDROZONE CHART

IRRIGATION METHOD:
RWS - TREE ROOT WATERING SYSTEM
DRP - SUB-SURFACE DRIP GRID
TBS - TREE BUBBLER IN DECOMPOSED GRANITE

1-1/2" PIPE SIZING CALLOUT

LANDSCAPE IRRIGATION EQUIPMENT LEGEND

SYMBOL	MFG'R (OR APPROVED EQUAL)	MODEL # (OR APPROVED EQUAL)	DESCRIPTION	REMARKS	DETAIL
-----W	N/A	N/A	PROPOSED DEDICATED IRRIGATION WATER METER AND SERVICE LINE PER CIVIL DRAWINGS	SIZE PER PLAN. REFER TO CIVIL DRAWINGS. 50 PSI MINIMUM PRESSURE REQUIRED AT METER. FIELD VERY PRIOR TO CONSTRUCTION.	N/A
-----	EXISTING	EXISTING	PROPOSED DEDICATED IRRIGATION WATER METER AND SERVICE LINE PER CIVIL DRAWINGS	SIZE PER PLAN. REFER TO CIVIL DRAWINGS. 50 PSI MINIMUM PRESSURE REQUIRED AT METER. FIELD VERY PRIOR TO CONSTRUCTION.	N/A
⋈	FEBCO	LF825YA	REDUCED PRESSURE ZONE ASSEMBLY	REDUCED PRESSURE ZONE ASSEMBLY WITH "Y" PATTERN CHECK VALVES AND ONE HYDRAULICALLY DEPENDENT DIFFERENTIAL RELIEF VALVE. SIZE PER PLAN. INSTALL PER DETAIL AND AS REQUIRED BY LOCAL CODES AND WITHIN STRONG BOX SBBC-22SS SMOOTH TOUCH SECURITY ENCLOSURE. CONNECT TO DISCHARGE SIDE OF WATER METER WHERE SHOWN ON PLANS.	---
⋈	EXISTING	EXISTING	EXISTING REDUCED PRESSURE ZONE ASSEMBLY	EXISTING REDUCED PRESSURE ZONE ASSEMBLY WITHIN EXISTING SECURITY ENCLOSURE. PROTECT IN PLACE. REFER TO PLAN FOR LOCATION. CONNECT TO DISCHARGE SIDE OF EXISTING RPZA WHERE SHOWN ON PLANS.	N/A
⋈	NIBCO	T-113-BHW	MAINLINE ISOLATION GATE VALVE (2-1/2-INCH AND SMALLER)	MAINLINE SIZE.	---
NOT SHOWN	SUPERIOR	BSBV	MANIFOLD ISOLATION BALL VALVE (SUB-MAINS)	2" AND SMALLER, BRONZE, 1/4 TURN, THREADED. INSTALL WITHIN VALVE BOX AS DETAILED. MATCH LARGEST REMOTE CONTROL VALVE SIZE WITHIN MANIFOLD.	---
	RAIN BIRD	44-LRC	QUICK-COUPLING VALVE	1-INCH SIZE (NPT); SINGLE SLOT WITH YELLOW TOP. SUPPLY WITH (2) 1-INCH NPT MALE x 3/4-INCH FEMALE KEYS AND MATCHING 1-INCH MALE HOSE X 1" FEMALE PIPE HOSE SWIVELS.	---
	EXISTING	EXISTING	CONTROLLER TO BE REMOVED AND REPLACED	REMOVE, SALVAGE AND RETURN EXISTING CONTROLLER / ENCLOSURE TO CITY.	-
	CALSENSE	CS3-8-S1/CS3-FL/CS3-GR-BUNDLE-2	AUTOMATIC IRRIGATION CONTROLLER ASSEMBLY - 120 VOLT POWERED	8 STATION CONVENTIONALLY WIRED CONTROLLER MOUNTED WITHIN HEAVY-DUTY STAINLESS-STEEL TOP ENTRY PEDESTAL ENCLOSURE. ASSEMBLY INCLUDES: FLOW SENSING CONTROLLER WITH CELLULAR COMMUNICATION. INSTALL AS DETAILED AND PER MANUFACTURER'S RECOMMENDATIONS.	---
	CALSENSE	CS3-16-S1/CS3-FL/CS3-GR-BUNDLE-2	AUTOMATIC IRRIGATION CONTROLLER ASSEMBLY - 120 VOLT POWERED	16 STATION CONVENTIONALLY WIRED CONTROLLER MOUNTED WITHIN HEAVY-DUTY STAINLESS-STEEL TOP ENTRY PEDESTAL ENCLOSURE. ASSEMBLY INCLUDES: FLOW SENSING CONTROLLER WITH CELLULAR COMMUNICATION. INSTALL AS DETAILED AND PER MANUFACTURER'S RECOMMENDATIONS.	---
	CALSENSE	CS3-8-SL/CS3-FL/CS3-GR-BUNDLE-2/CS3- SL-POLE	AUTOMATIC IRRIGATION CONTROLLER ASSEMBLY - SOLAR POWERED	8 STATION CONVENTIONALLY WIRED SOLAR CONTROLLER MOUNTED WITHIN HEAVY-DUTY STAINLESS-STEEL TOP ENTRY PEDESTAL ENCLOSURE. ASSEMBLY INCLUDES: FLOW SENSING CONTROLLER, CELLULAR COMMUNICATION, SOLAR INVERTER, BATTERIES, SOLAR PANEL AND POLE. INSTALL AS DETAILED AND PER MANUFACTURER'S RECOMMENDATIONS.	---
Ⓜ Ⓕ	CALSENSE	CS3-16-SL/CS3-FL/CS3-GR-BUNDLE-2/CS3- SL-POLE	AUTOMATIC IRRIGATION CONTROLLER ASSEMBLY - SOLAR POWERED	16 STATION CONVENTIONALLY WIRED SOLAR CONTROLLER MOUNTED WITHIN HEAVY-DUTY STAINLESS-STEEL TOP ENTRY PEDESTAL ENCLOSURE. ASSEMBLY INCLUDES: FLOW SENSING CONTROLLER, CELLULAR COMMUNICATION, SOLAR INVERTER, BATTERIES, SOLAR PANEL AND POLE. INSTALL AS DETAILED AND PER MANUFACTURER'S RECOMMENDATIONS.	---
AT EACH CONTROLLER	HUNTER	RFC W/ WS-GAURD	WIRED RAIN FREEZE SENSOR IN VANDAL-RESISTANT WIRELESS SENSOR GUARD	WIRED RAIN FREEZE SENSING DEVICE. MOUNT SENSOR AND GUARD ON CONTROLLER SIDEWALL. LOCATE TO PROVIDE OPTIMAL EXPOSURE TO WEATHER ELEMENTS AS PER MANUFACTURER'S RECOMMENDATIONS.	PER MANUFACTURER
◒	SUPERIOR	3200-100 OR -150	MASTER CONTROL VALVE- NORMALLY CLOSED	SIZE PER PLAN. BRASS GLOBE VALVE. WIRE TO ASSOCIATED CONTROLLER.	---
◒	CALSENSE	FM-1U FM-1.5U	TEE MOUNTED ULTRASONIC FLOW SENSOR	SIZE PER PLAN. PVC SCH. 80 MOUNTED. WIRE DIRECTLY TO CONTROLLER. FLOW RANGE BY SIZE; 1" = 0.25 - 20 GPM. 1.5" = 0.55 - 40 GPM. INSTALL FLOW SENSOR CABLE WITHIN 1-INCH SIZE, GRAY (ELECTRICAL) SCHEDULE 40 PVC CONDUIT. LOCATE PULL BOXES EVERY 250-FEET AND AT ALL SLEEVE CROSSINGS.	---
NOT SHOWN	-	-	PULL/ SPLICE BOXES	LOCATE PULL BOXES AT ENDS OF ALL SLEEVES, AND AS DIRECTED BY OWNER REPRESENTATIVE. COMMUNICATION CABLE, MASTER VALVE AND FLOW SENSOR WIRING SHALL BE INSTALLED IN GRAY SCH. 80 PVC CONDUIT W/ SWEEPS.	---
- - - -	RAIN BIRD	100-PESB 150-PESB	REMOTE CONTROL VALVE- TREE BUBBLER ZONES	SIZE PER PLAN. PLASTIC AUTOMATIC GLOBE VALVE. INSTALL WITHIN MANIFOLD WHEN GROUPED WITH OTHER VALVES. SIZE MANIFOLD TO MATCH LARGEST LATERAL LINE SIZE. FLOW RANGE: 1"= 0.25 - 20 GPM, 1.5"= 21 - 40 GPM.	---
—— - - - - - - - - - - - -	RAIN BIRD	100-PESB 150-PESB	DRIP REMOTE CONTROL VALVE WITH INLINE FILTER AND INLINE PRESSURE REGULATOR	SIZE PER PLAN. PLASTIC AUTOMATIC GLOBE VALVE. INSTALL WITH RAIN BIRD PRESSURE REGULATOR MODEL PSI-H-40-100. FOR DRIP ZONES WITH FLOW RATES LESS THAN 20 GPM INSTALL WITH RAIN BIRD FILTER MODEL LCRBY-100-S; INSTALL WITH RAIN BIRD FILTER MODEL LCRBY-150-S FOR VALVES WITH FLOW RATES GREATER THAN 20 GPM AND UP TO 40 GPM. OMIT THE REGULATOR WHEN PRESSURE UPSTREAM OF THE REMOTE CONTROL VALVE IS LESS THAN 50 PSI. INSTALL WITHIN MANIFOLD WHEN GROUPED WITH OTHER VALVES. SIZE MANIFOLD TO MATCH LARGEST LATERAL LINE SIZE. USE WITH DRIP ZONES ONLY. FLOW RANGE: 1"= 0.25 - 20 GPM, 1.5"= 21 - 40 GPM.	---
	PW PIPE	-	PRESSURE MAINLINE PIPE	2-INCH SIZE UNLESS NOTED DIFFERENTLY ON PLANS. USE CLASS 315 PVC SOLVENT WELD MAINLINE PIPE FOR 2-INCH. USE SCHEDULE 40 PVC SOLVENT WELD PIPE FOR MAINLINE PIPE 1-1/2-INCHES OR SMALLER. INSTALL WITH TRACE WIRE PER SPECIFICATIONS. USE SCHEDULE 40 PVC SOLVENT WELD FITTINGS.	---
	PW PIPE	-	NON-PRESSURE LATERAL PIPE	SIZE PER PLAN; SCHEDULE 40 PVC SOLVENT WELD PIPE WITH SCHEDULE 40 PVC SOLVENT WELD FITTINGS.	
	PW PIPE	-	IRRIGATION PIPE/ CONTROL WIRES/ SENSOR WIRE SLEEVE	CLASS 200 PVC OR CLASS 315 PVC. QUANTITIES SHOWN ON PLANS ARE FOR BIDDING PURPOSES ONLY. CONTRACTOR SHALL PROVIDE SIZE AND QUANTITY AS REQUIRED. REFER TO PIPE/WIRE SLEEVING CHART FOR SIZE (SHEET LI.XX).	---

811 DIAL TOLL FREE 811 AT LEAST TWO DAYS BEFORE YOU DIG
UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

REVISIONS

NUMBER	DATE	INITIALS	DESCRIPTION	DATE	INITIALS

BASIS OF BEARINGS

THE BASIS OF HORIZONTAL CONTROL FOR THIS PROJECT IS THE CALIFORNIA COORDINATE SYSTEM NAD83 ZONE 6 (2017.50 EPOCH) DETERMINED LOCALLY BY THE FOLLOWING O.C.S. POINTS: 5201, 5190R1, AND 5212, ORANGE COUNTY PUBLIC WORKS, OC SURVEY.

BENCHMARK

VERTICAL DATUM: NAVD88, BENCH MARK: OCS 2A-49-87
ELEVATION: 378.082' (2006), DESCRIPTION: FOUND 3 3\4" OCS ALUMINUM BENCHMARK DISK STAMPED "2A-49-87", SET IN THE SOUTHWESTERLY CORNER OF A 4 FT. BY 8 FT. CONCRETE CATCH BASIN. MONUMENT IS LOCATED IN THE NORTHWESTERLY CORNER OF THE INTERSECTION OF YORBA LINDA BOULEVARD AND IMPERIAL HIGHWAY, 47 FT. NORTHERLY OF THE CENTERLINE OF YORBA LINDA AND 116 FT. WESTERLY OF THE WESTERLY CURB ALONG IMPERIAL HIGHWAY. MONUMENT IS SET LEVEL WITH THE SIDEWALK.

PREPARED BY:
MIG
109 WEST UNION AVENUE
FULLERTON, CA 92832
TEL 714/871-3638
FAX 714/871-1188
www.migcom.com

		DATE
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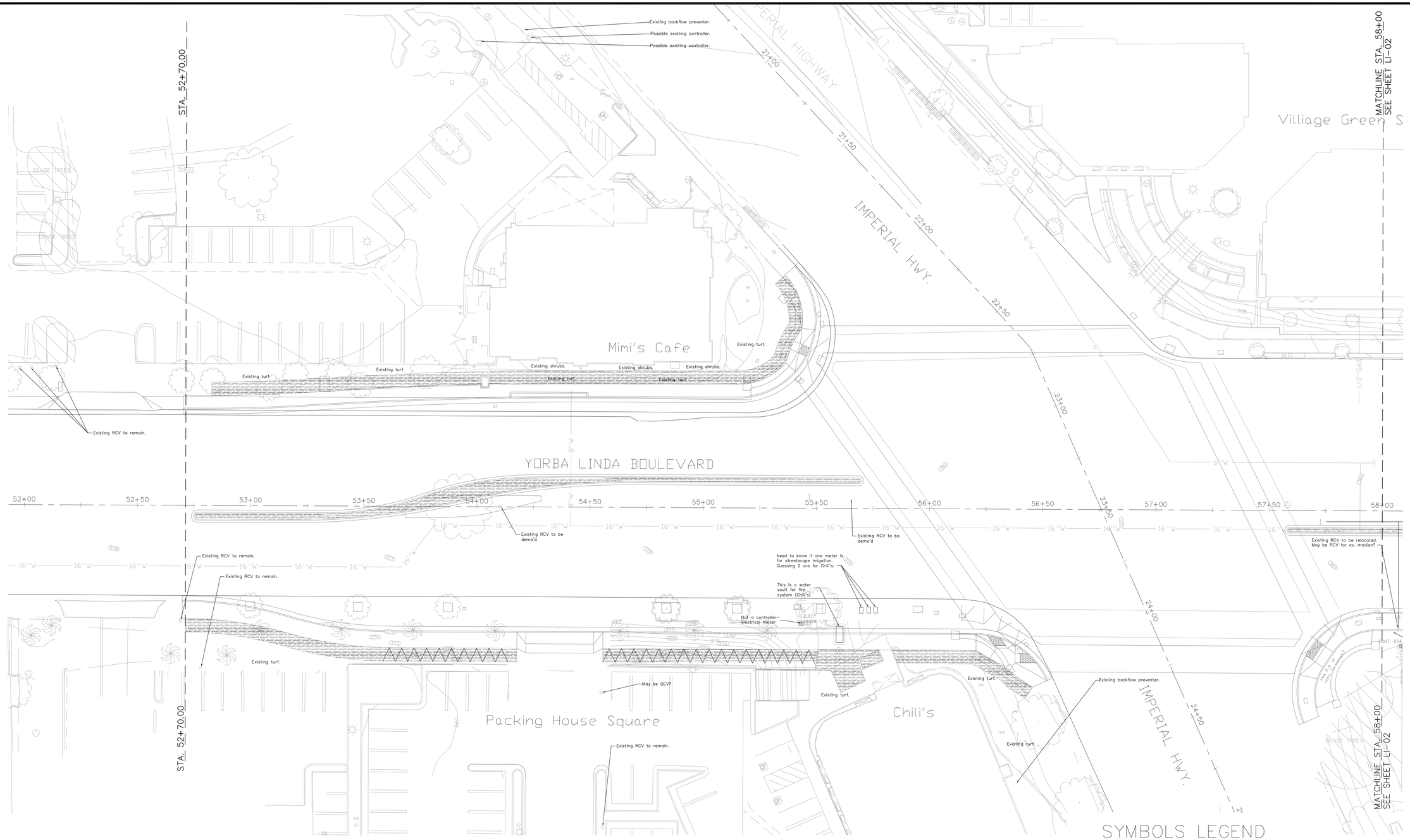
REGISTERED PROFESSIONAL LANDSCAPE ARCHITECT STATE OF CALIFORNIA

YORBA LINDA BOULEVARD IMPROVEMENTS
FROM IMPERIAL HIGHWAY TO LAKEVIEW AVENUE
IRRIGATION LEGEND + NOTES

CITY OF YORBA LINDA

SHEET No. LI-00 OF 31

EXTERNAL REFERENCES:
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811 DIAL TOLL FREE 811 AT LEAST TWO DAYS BEFORE YOU DIG

UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

SYMBOLS LEGEND

SLOPED AREA, RELATIVE %

LIMIT OF WORK

IRRIGATION IMPROVEMENTS (APPROX. EXTENTS)

0 10' 20' 40'

NORTH

REVISIONS

NUMBER	DATE	INITIALS	DESCRIPTION	DATE	INITIALS

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PREPARED BY:
MIG
109 WEST UNION AVENUE
FULLERTON, CA 92832
TEL 714/871-3638
FAX 714/871-1188
www.migcom.com

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REGISTERED PROFESSIONAL LANDSCAPER ★ STATE OF CALIFORNIA ★

YORBA LINDA BOULEVARD IMPROVEMENTS FROM IMPERIAL HIGHWAY TO LAKEVIEW AVENUE
IRRIGATION PLAN
CITY OF YORBA LINDA

SHEET No. LI-01 OF 31

EXTERNAL REFERENCES: 5611_BKF-YL BLVD 0444-11_Pr Plan 22-3589_Topo 0444-11_Utility Basemap 0444-11_QL 5611_TitleBlock 0444-11_Topo 210444_YorbaLindaBlvd_Topo_Deliverable_2023-09-29
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EXTERNAL REFERENCES: 5611_BKF-YL BLVD 0444-11_Pr Plan 22-3589_Topo 0444-11_Utility Basemap 0444-11_CL 5611_TitleBlock 0444-11_Topo 210444_YorbaLindaBlvd_Topo_Deliverable_2023-03-29
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MATCHLINE STA. 58+00
SEE SHEET LI-01

MATCHLINE STA. 63+50
SEE SHEET LI-03

YORBA LINDA BOULEVARD

LAKEVIEW AVE.

Yorba Linda Town Ctr.

Starbucks

Not a controller-electrical meter

El Pollo Loco

Subway

T-Mobile

Existing RCV to be relocated. May be RCV for ex. median?

This appears to be a water meter for irrigation.

This appears to be a domstic water meter (El Pollo Loco)- not for irrigation (no visible backflow).

This appears to be a domstic water meter (strip mall)- not for irrigation (no visible backflow).

Existing RCV to be relocated.

Existing backflow preventer.

Existing irrigation controller #654 (relocate?).

Existing RCV to remain.

This appears to be a domstic water meter (Subway)- not for irrigation (no visible backflow).

Might be existing RCV to be demo'd

Existing RCV to be relocated.

This appears to be a domstic water meter (T-Mobile)- not for irrigation (no visible backflow).

Existing backflow preventer.

Existing RCV to remain.

This appears to be a water meter (T-Mobile) for irrigation.

DENSE TREES

CONT. 654

58+00 58+50 59+00 59+50 60+00 60+50 61+00 61+50 62+00 62+50 63+00 63+50

10+00 10+50 11+00

9+00 9+50 8+50

SYMBOLS LEGEND

SLOPED AREA, RELATIVE %

LIMIT OF WORK

IRRIGATION IMPROVEMENTS (APPROX. EXTENTS)

0 10' 20' 40'

NORTH

811 DIAL TOLL FREE 811 AT LEAST TWO DAYS BEFORE YOU DIG

UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

REVISIONS

NUMBER	DATE	INITIALS	DESCRIPTION	DATE	INITIALS

BASIS OF BEARINGS

THE BASIS OF HORIZONTAL CONTROL FOR THIS PROJECT IS THE CALIFORNIA COORDINATE SYSTEM NAD83 ZONE 6 (2017.50 EPOCH) DETERMINED LOCALLY BY THE FOLLOWING O.C.S. POINTS: 5201, 5190R1, AND 5212, ORANGE COUNTY PUBLIC WORKS, OC SURVEY.

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PREPARED BY:
MIG
109 WEST UNION AVENUE
FULLERTON, CA 92832
TEL 714/871-3638
FAX 714/871-1188
www.migcom.com

		DATE
DRAWN BY	text MB	
CHECKED BY	text OJ	

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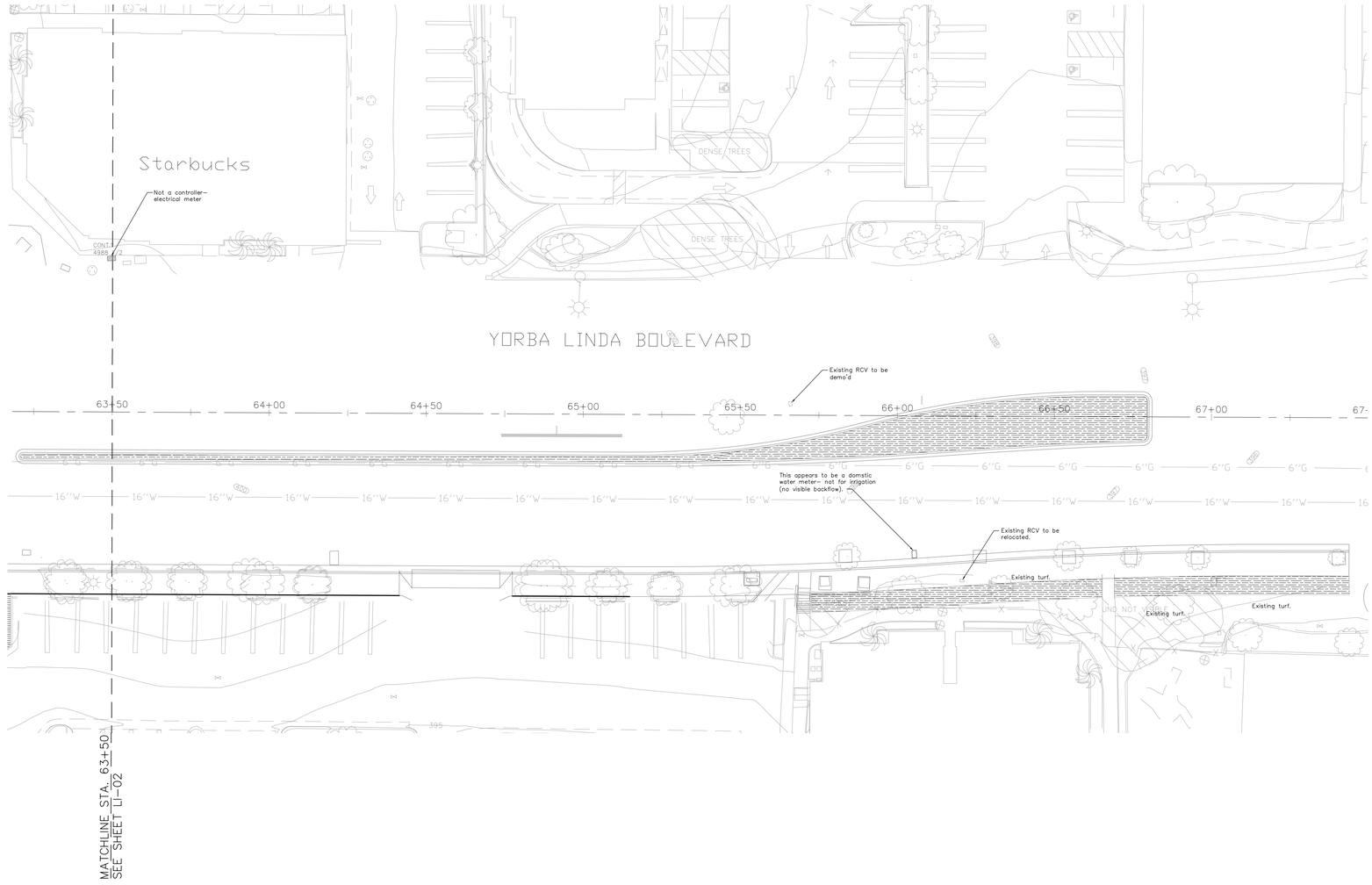
CIVIL ENGINEER INFO

REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

YORBA LINDA BOULEVARD IMPROVEMENTS FROM IMPERIAL HIGHWAY TO LAKEVIEW AVENUE
IRRIGATION PLAN

CITY OF YORBA LINDA

SHEET No. LI-02 OF 31



811 DIAL TOLL FREE 811 AT LEAST TWO DAYS BEFORE YOU DIG

UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

SYMBOLS LEGEND

SLOPED AREA, RELATIVE %

LIMIT OF WORK

IRRIGATION IMPROVEMENTS (APPROX. EXTENTS)

0 10' 20' 40'

NORTH

REVISIONS

NUMBER	DATE	INITIALS	DESCRIPTION	DATE	INITIALS

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PREPARED BY:

MIG
109 WEST UNION AVENUE
FULLERTON, CA 92832
TEL 714/871-3638
FAX 714/871-1188
www.migcom.com

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CHECKED BY	QJ	

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CIVIL ENGINEER INFO

REGISTERED PROFESSIONAL ENGINEER STATE OF CALIFORNIA

YORBA LINDA BOULEVARD IMPROVEMENTS FROM IMPERIAL HIGHWAY TO LAKEVIEW AVENUE

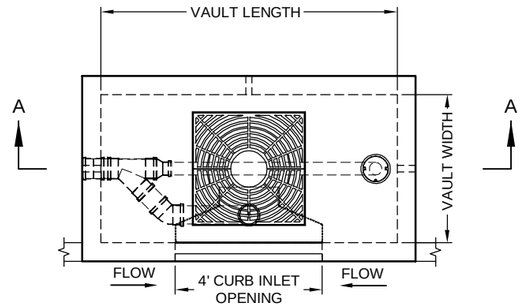
IRRIGATION PLAN

CITY OF YORBA LINDA

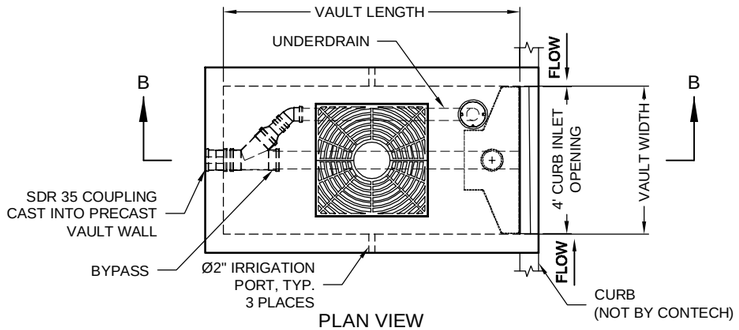
SHEET No. LI-03 OF 31

EXTERNAL REFERENCES:
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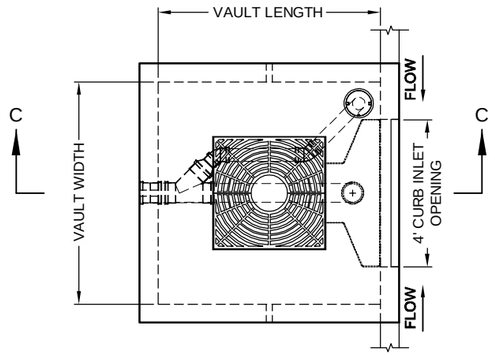
Appendix C: Filterra Bioretention System Details & Installation Manual



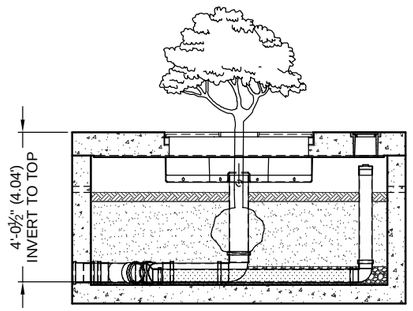
PLAN VIEW



PLAN VIEW

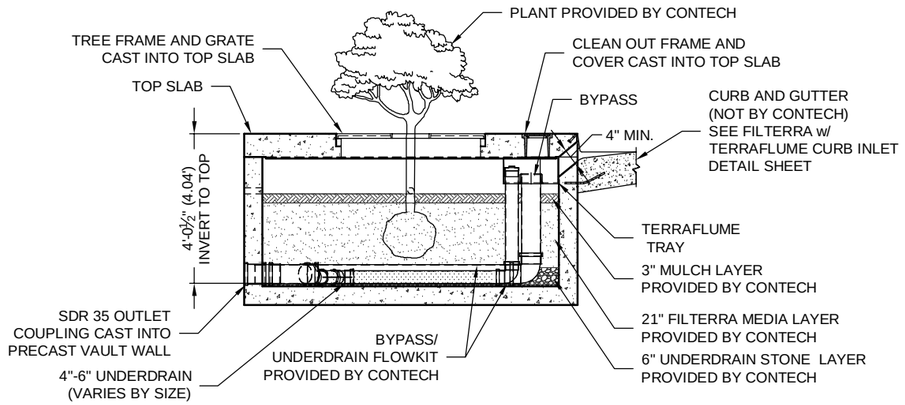


PLAN VIEW



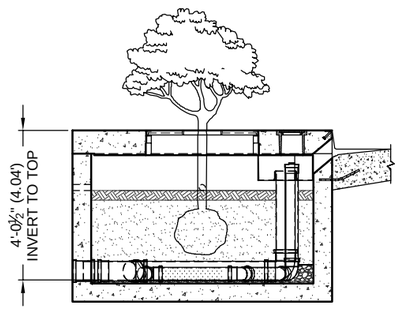
SECTION A-A

LONG SIDE INLET CONFIGURATION



SECTION B-B

SHORT SIDE INLET CONFIGURATION



SECTION C-C

SQUARE INLET CONFIGURATION

LONG SIDE CURB INLET

DESIGNATION	AVAIL-ABILITY	MEDIA BAY SIZE	VAULT SIZE (L x W)	MAX. OUTLET/ BYPASS PIPE DIA.	MAX. BYPASS FLOW (CFS)	UNDER-DRAIN PIPE DIA. (PERF)	TREE GRATE QTY. & SIZE
FTIBC0604	ALL	6 x 4	6 x 4	8" SDR 35	1.89	4" SDR 35	(1) 3' x 3'
FTIBC078045	DE, MD, NJ, PA, VA, WV ONLY	7.83 x 4.5	7.83 x 4.5	8" SDR 35	1.89	4" SDR 35	(1) 3' x 3'
FTIBC0804	N/A DE, MD, NJ, PA, VA, WV	8 x 4	8 x 4	8" SDR 35	1.89	4" SDR 35	(1) 3' x 3'
FTIBC0806	ALL	8 x 6	8 x 6	10" SDR 35	2.37	4" SDR 35	(1) 4' x 4'
FTIBC1006	ALL	10 x 6	10 x 6	10" SDR 35	2.37	6" SDR 35	(1) 4' x 4'
FTIBC1206	ALL	12 x 6	12 x 6	10" SDR 35	2.37	6" SDR 35	(2) 4' x 4'
FTIBC1307	ALL	13 x 7	13 x 7	10" SDR 35	2.37	6" SDR 35	(2) 4' x 4'
FTIBC1408	ALL	14 x 8	14 x 8	10" SDR 35	2.37	6" SDR 35	(2) 4' x 4'
FTIBC1509	OR,WA ONLY	15 x 9	15 x 9	10" SDR 35	2.37	6" SDR 35	(2) 4' x 4'

N/A = NOT AVAILABLE

SHORT SIDE CURB INLET

DESIGNATION	AVAIL-ABILITY	MEDIA BAY SIZE	VAULT SIZE (W x L)	MAX. OUTLET/ BYPASS PIPE DIA.	MAX. BYPASS FLOW (CFS)	UNDER-DRAIN PIPE DIA. (PERF)	TREE GRATE QTY. & SIZE
FTIBC0406	ALL	4 x 6	4 x 6	8" SDR 35	1.89	4" SDR 35	(1) 3' x 3'
FTIBC0408	N/A DE, MD, NJ, PA, VA, WV	4 x 8	4 x 8	8" SDR 35	1.89	4" SDR 35	(1) 3' x 3'
FTIBC045078	DE, MD, NJ, PA, VA, WVONLY	4.5 x 7.83	4.5 x 7.83	8" SDR 35	1.89	4" SDR 35	(1) 3' x 3'
FTIBC0608	ALL	6 x 8	6 x 8	10" SDR 35	2.37	4" SDR 35	(1) 4' x 4'
FTIBC0610	ALL	6 x 10	6 x 10	10" SDR 35	2.37	6" SDR 35	(1) 4' x 4'
FTIBC0612	ALL	6 x 12	6 x 12	10" SDR 35	2.37	6" SDR 35	(2) 4' x 4'
FTIBC0713	ALL	7 x 13	7 x 13	10" SDR 35	2.37	6" SDR 35	(2) 4' x 4'

N/A = NOT AVAILABLE

SQUARE CURB INLET

DESIGNATION	AVAIL-ABILITY	MEDIA BAY SIZE	VAULT SIZE (L x W)	MAX. OUTLET/ BYPASS PIPE DIA.	MAX. BYPASS FLOW (CFS)	UNDER-DRAIN PIPE DIA. (PERF)	TREE GRATE QTY. & SIZE
FTIBC0404	ALL	4 x 4	4'-0"	6" SDR 35	1.42	4" SDR 35	(1) 3' x 3'
FTIBC0606	ALL	6 x 6	6'-0"	8" SDR 35	1.89	4" SDR 35	(1) 3' x 3'

N/A = NOT AVAILABLE

INTERNAL PIPE CONFIGURATION MAY VARY DEPENDING ON VAULT SIZE.

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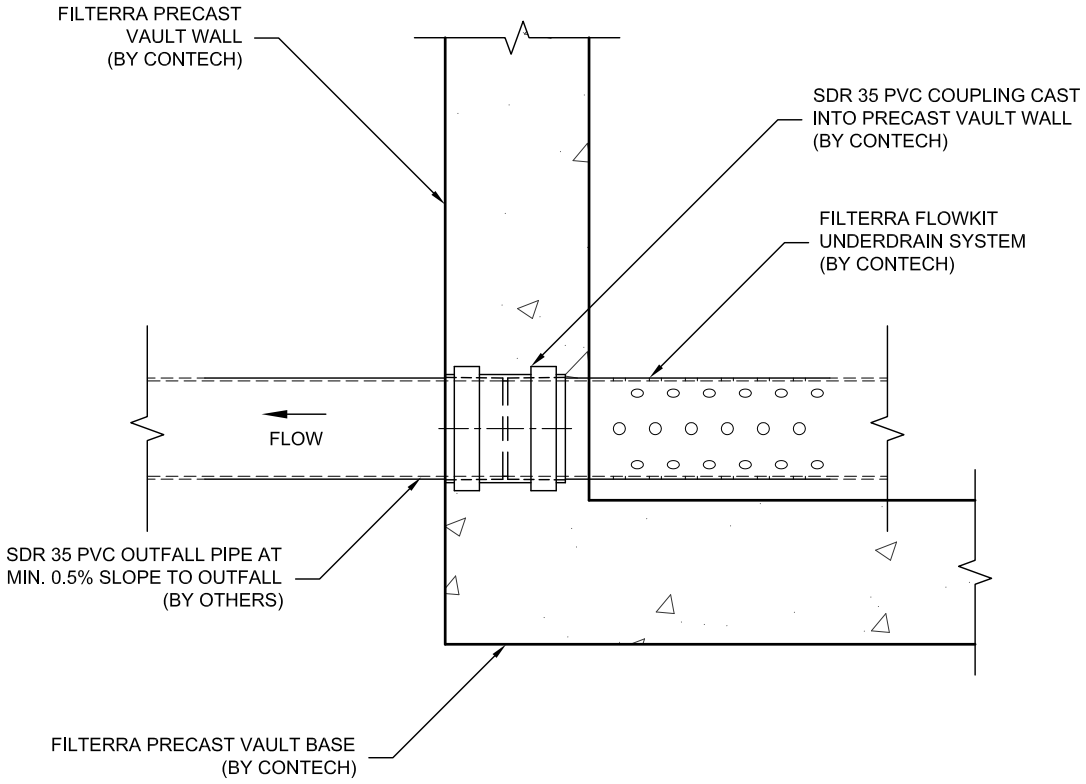
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FILTERRA
INTERNAL BYPASS CURB (FTIBC)
CONFIGURATION DETAIL

I:\STORMWATER\COMMOPS\54 FILTERRA\40 STANDARD DRAWINGS\FTIBC - FILTERRA INTERNAL BYPASS CURB\FTIBC - FILTERRA INTERNAL BYPASS CURB INLET CONFIG DTL 1.DWG 9/8/2022 10:53 AM



SECTION VIEW

SCALE 1 ½" = 1'-0"

(THROUGH PRECAST VAULT WALL
AT OUTFALL PIPE CONNECTION)

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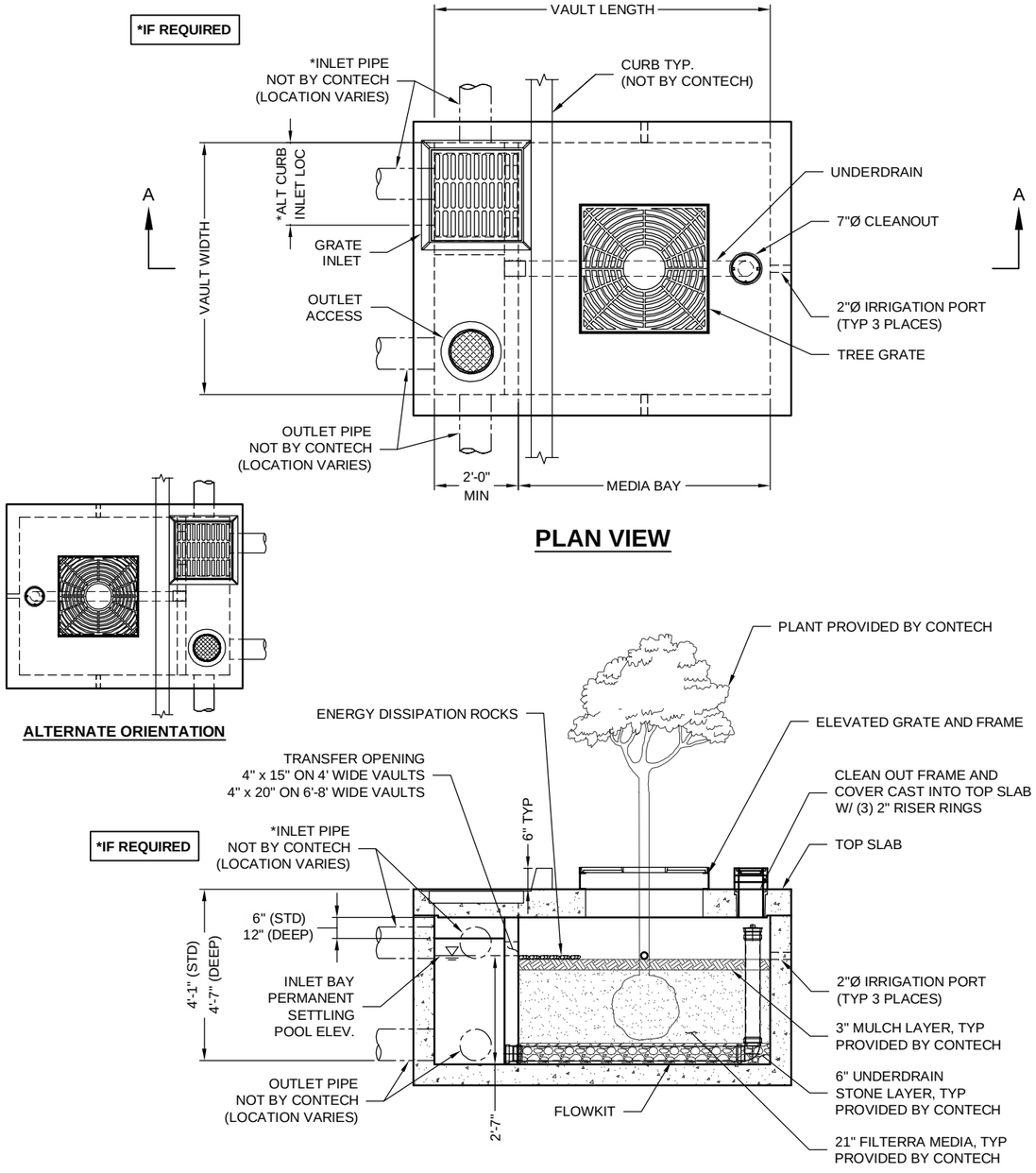
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FILTERRA OUTFALL PIPE CONNECTION TO PRECAST VAULT WALL DETAIL

DATE:03-23-15	FILE NAME: FILTERRA OUTFALL PIPE CONNECTION DTL	DRAWN: SCK	CHECKED: XXX

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PLAN VIEW

ALTERNATE ORIENTATION

SECTION A-A
(STANDARD DEPTH SHOWN)

INTERNAL PIPE CONFIGURATION MAY VARY
DEPENDING UPON OUTLET LOCATION.

FTPD-G STANDARD HEIGHT CONFIGURATION

DESIGNATION (OPTIONS: -P)	AVAILABILITY	MEDIA BAY SIZE	VAULT SIZE (W x L)	WEIR LENGTH/ MAX CURB OPENING	*MAX BYPASS FLOW (CFS)	GRATE INLET/ OUTLET ACCESS SIZE	TREE GRATE QTY & SIZE
FTPD0404-G	ALL	4 x 4	4 x 6	1'-8"	1.4	12"SQ/12"Ø	(1) 3' x 3' **
FTPD0406-G	N/A MID-ATL	4 x 6	4 x 8	1'-8"	1.4	12"SQ/12"Ø	(1) 3' x 3'
FTPD045058-G	MID-ATL ONLY	4.5 x 5.83	4.5 x 7.83	1'-8"	1.4	12"SQ/12"Ø	(1) 3' x 3'
FTPD0604-G	ALL	6 x 4	6 x 6	1'-8"	1.4	24"SQ/12"Ø	(1) 2.5' x 2.5'
FTPD0606-G	ALL	6 x 6	6 x 8	1'-8"	1.4	24"SQ/12"Ø	(1) 3' x 3'
FTPD0608-G	ALL	6 x 8	6 x 10	1'-8"	1.4	24"SQ/12"Ø	(1) 4' x 4'
FTPD0610-G	ALL	6 x 10	6 x 12	1'-8"	1.4	24"SQ/12"Ø	(1) 4' x 4'
FTPD0710-G	ALL	7 x 10	7 x 13	2'-6"	2.1	24"SQ/24"Ø	(1) 4' x 4'
FTPD08105-G	ALL	8 x 10.5	8 x 14	3'-0"	2.5	24"SQ/24"Ø	(1) 4' x 4'
FTPD08125-G	ALL	8 x 12.5	8 x 16	3'-0"	2.5	24"SQ/24"Ø	(2) 4' x 4'

N/A = NOT AVAILABLE

FTPD-GD DEEP OPTION CONFIGURATION

DESIGNATION (OPTIONS: -P)	AVAILABILITY	MEDIA BAY SIZE	VAULT SIZE (W x L)	WEIR LENGTH/ MAX CURB OPENING	*MAX BYPASS FLOW (CFS)	GRATE INLET/ OUTLET ACCESS SIZE	TREE GRATE QTY & SIZE
FTPD0404-GD	ALL	4 x 4	4 x 6	1'-8"	4.6	12"SQ/12"Ø	(1)3' x 3' **
FTPD0406-GD	N/A MID-ATL	4 x 6	4 x 8	1'-8"	4.6	12"SQ/12"Ø	(1) 3' x 3'
FTPD045058-GD	MID-ATL ONLY	4.5 x 5.83	4.5 x 7.83	1'-8"	4.6	12"SQ/12"Ø	(1) 3' x 3'
FTPD0604-GD	ALL	6 x 4	6 x 6	1'-8"	4.6	24"SQ/12"Ø	(1) 2.5' x 2.5'
FTPD0606-GD	ALL	6 x 6	6 x 8	1'-8"	4.6	24"SQ/12"Ø	(1) 3' x 3'
FTPD0608-GD	ALL	6 x 8	6 x 10	1'-8"	4.6	24"SQ/12"Ø	(1) 4' x 4'
FTPD0610-GD	ALL	6 x 10	6 x 12	1'-8"	4.6	24"SQ/12"Ø	(1) 4' x 4'
FTPD0710-GD	ALL	7 x 10	7 x 13	2'-6"	6.8	24"SQ/24"Ø	(1) 4' x 4'
FTPD08105-GD	ALL	8 x 10.5	8 x 14	3'-0"	8.2	24"SQ/24"Ø	(1) 4' x 4'
FTPD08125-GD	ALL	8 x 12.5	8 x 16	3'-0"	8.2	24"SQ/24"Ø	(2) 4' x 4'

N/A = NOT AVAILABLE

* MAX BYPASS FLOW IS INTERNAL WEIR FLOW . SITE SPECIFIC ANALYSIS IS REQUIRED TO DETERMINE GRATE INLET FLOW CAPACITY
** 3' x 3' TREE GRATE ON FTPD0404-G UNITS IS INSTALLED OVER A SMALLER 30" x 30" MAX OPENING FOR STRUCTURAL REASONS

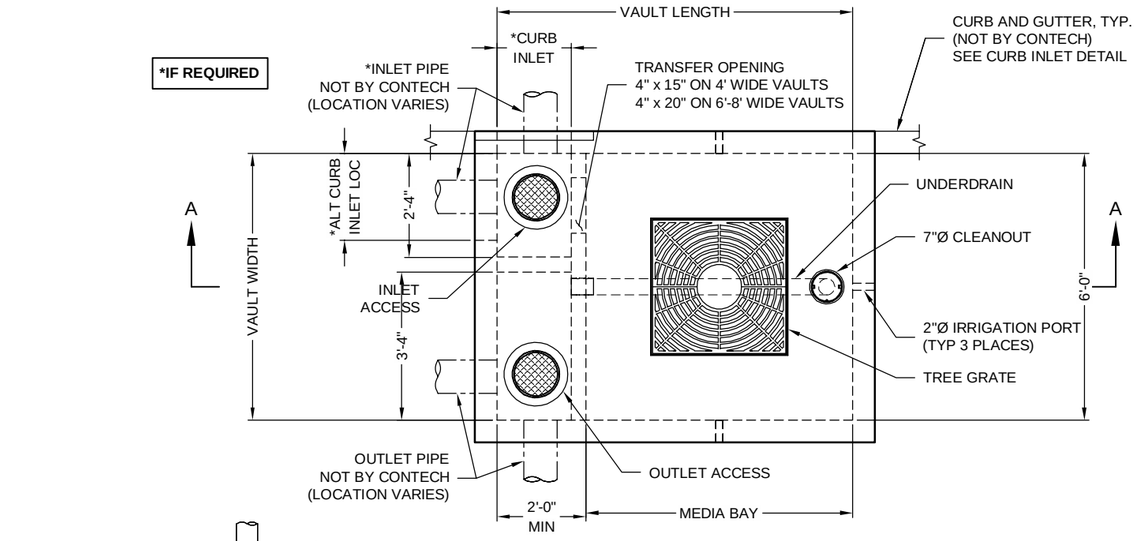
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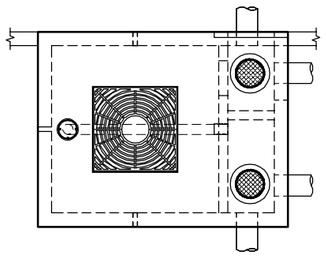
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FILTERRA PEAK DIVERSION - GRATE (FTPD-G) CONFIGURATION DETAIL

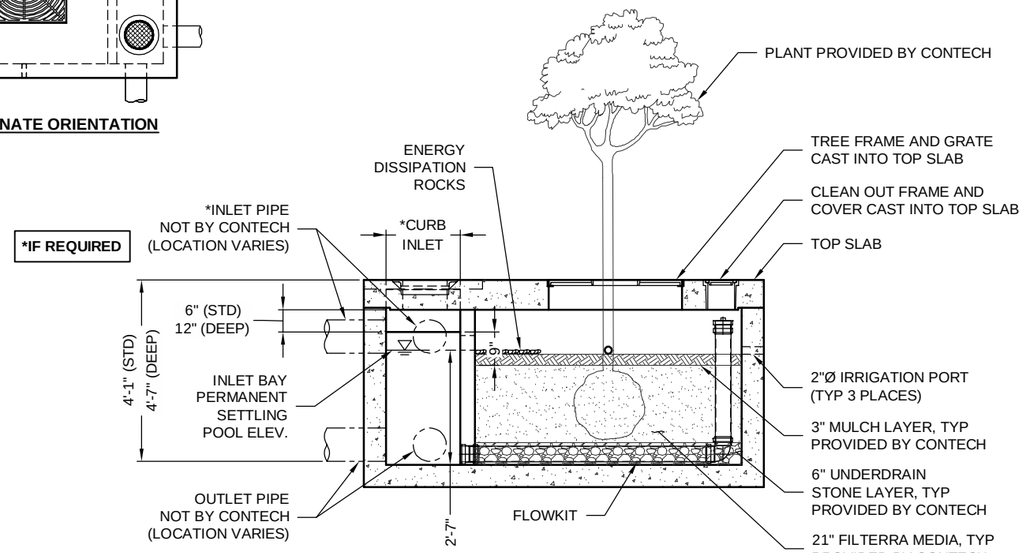
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PLAN VIEW



ALTERNATE ORIENTATION



SECTION A-A
(STANDARD DEPTH SHOWN)

INTERNAL PIPE CONFIGURATION MAY VARY DEPENDING UPON OUTLET LOCATION.

FTPD STANDARD HEIGHT CONFIGURATION

DESIGNATION (OPTIONS: -P, -T, -PT)	AVAILABILITY	MEDIA BAY SIZE	VAULT SIZE (W x L)	WEIR LENGTH/ MAX CURB OPENING	*MAX BYPASS FLOW (CFS)	INLET/ OUTLET ACCESS DIA	TREE GRATE QTY & SIZE
FTPD0404	ALL	4 x 4	4 x 6	1'-8"	1.4	12"/12"	(1) 3' x 3'
FTPD0406	N/A DE, MD, NJ, PA, VA, WV	4 x 6	4 x 8	1'-8"	1.4	12"/12"	(1) 3' x 3'
FTPD045058	DE, MD, NJ, PA, VA, WV ONLY	4.5 x 5.83	4.5 x 7.83	1'-8"	1.4	12"/12"	(1) 3' x 3'
FTPD0604	ALL	6 x 4	6 x 6	1'-8"	1.4	12"/12"	(1) 3' x 3'
FTPD0606	ALL	6 x 6	6 x 8	1'-8"	1.4	12"/12"	(1) 3' x 3'
FTPD0608	ALL	6 x 8	6 x 10	1'-8"	1.4	12"/12"	(1) 4' x 4'
FTPD0610	ALL	6 x 10	6 x 12	1'-8"	1.4	12"/12"	(1) 4' x 4'
FTPD0710	ALL	7 x 10	7 x 13	2'-6"	2.1	24"/24"	(1) 4' x 4'
FTPD08105	ALL	8 x 10.5	8 x 14	3'-0"	2.5	24"/24"	(1) 4' x 4'
FTPD08125	N/A OR, WA	8 x 12.5	8 x 16	3'-0"	2.5	24"/24"	(2) 4' x 4'
FTPD09115	OR, WA ONLY	9 x 11.5	9 x 15	3'-0"	2.5	24"/24"	(2) 4' x 4'

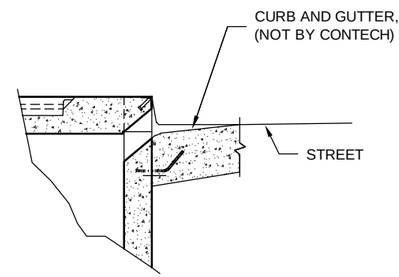
N/A = NOT AVAILABLE

FTPD-D DEEP OPTION CONFIGURATION

DESIGNATION (OPTIONS: -P, -T, -PT)	AVAILABILITY	MEDIA BAY SIZE	VAULT SIZE (W x L)	WEIR LENGTH/ MAX CURB OPENING	*MAX BYPASS FLOW (CFS)	INLET/ OUTLET ACCESS DIA	TREE GRATE QTY & SIZE
FTPD0404-D	ALL	4 x 4	4 x 6	1'-8"	4.6	12"/12"	(1) 3' x 3'
FTPD0406-D	N/A DE, MD, NJ, PA, VA, WV	4 x 6	4 x 8	1'-8"	4.6	12"/12"	(1) 3' x 3'
FTPD045058-D	DE, MD, NJ, PA, VA, WV ONLY	4.5 x 5.83	4.5 x 7.83	1'-8"	4.6	12"/12"	(1) 3' x 3'
FTPD0604-D	ALL	6 x 4	6 x 6	1'-8"	4.6	12"/12"	(1) 3' x 3'
FTPD0606-D	ALL	6 x 6	6 x 8	1'-8"	4.6	12"/12"	(1) 3' x 3'
FTPD0608-D	ALL	6 x 8	6 x 10	1'-8"	4.6	12"/12"	(1) 4' x 4'
FTPD0610-D	ALL	6 x 10	6 x 12	1'-8"	4.6	12"/12"	(1) 4' x 4'
FTPD0710-D	ALL	7 x 10	7 x 13	2'-6"	6.8	24"/24"	(1) 4' x 4'
FTPD08105-D	ALL	8 x 10.5	8 x 14	3'-0"	8.2	24"/24"	(1) 4' x 4'
FTPD08125-D	N/A OR, WA	8 x 12.5	8 x 16	3'-0"	8.2	24"/24"	(2) 4' x 4'
FTPD09115-D	OR, WA ONLY	9 x 11.5	9 x 15	3'-0"	8.2	24"/24"	(2) 4' x 4'

N/A = NOT AVAILABLE

*MAX BYPASS FLOW IS INTERNAL WEIR FLOW . SITE SPECIFIC ANALYSIS IS REQUIRED TO DETERMINE CURB INLET FLOW CAPACITY



CURB INLET DETAIL

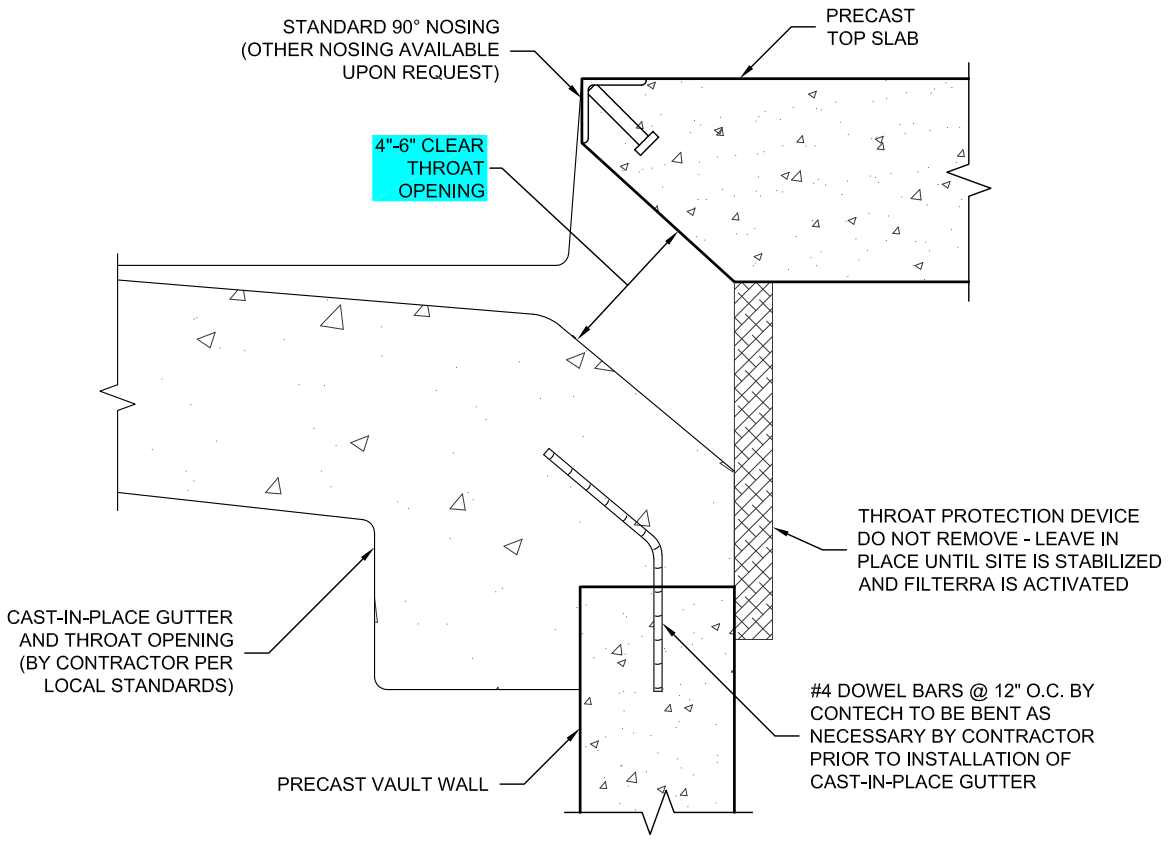
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FILTERRA PEAK DIVERSION (FTPD)
CONFIGURATION DETAIL

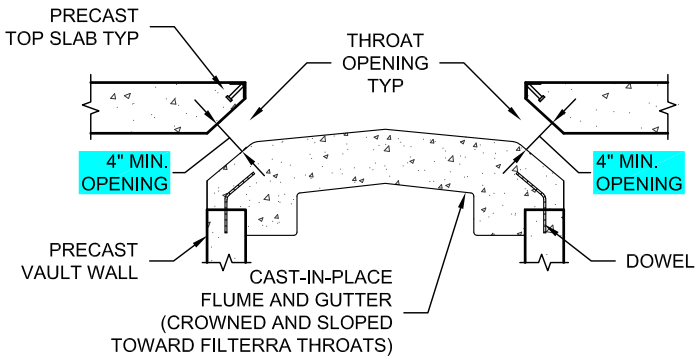
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I:\STORMWATER\COMMOPS\54 FILTERRA\40 STANDARD DRAWINGS\FTPD - FILTERRA PEAK DIVERSION\FTPD\LAYOUT DETAILS\DWG\FTPD - FILTERRA PEAK DIVERSION CONFIG DTL 1.DWG 9/8/2022 10:57 AM

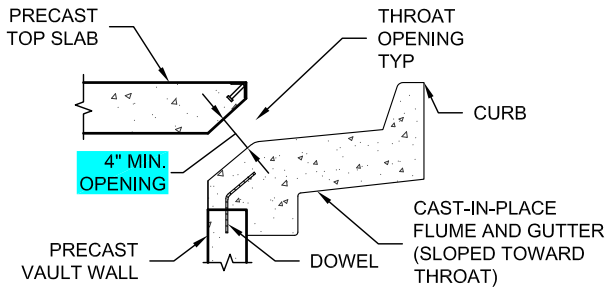


SECTION VIEW

STANDARD THROAT OPENING



CROWNED FLUME



REVERSE FLUME - SLOPED
TOWARDS FILTERRA THROAT

SECTION VIEWS OF TYPICAL FLUME APPLICATIONS

SEE ABOVE FOR DETAILS NOT SHOWN

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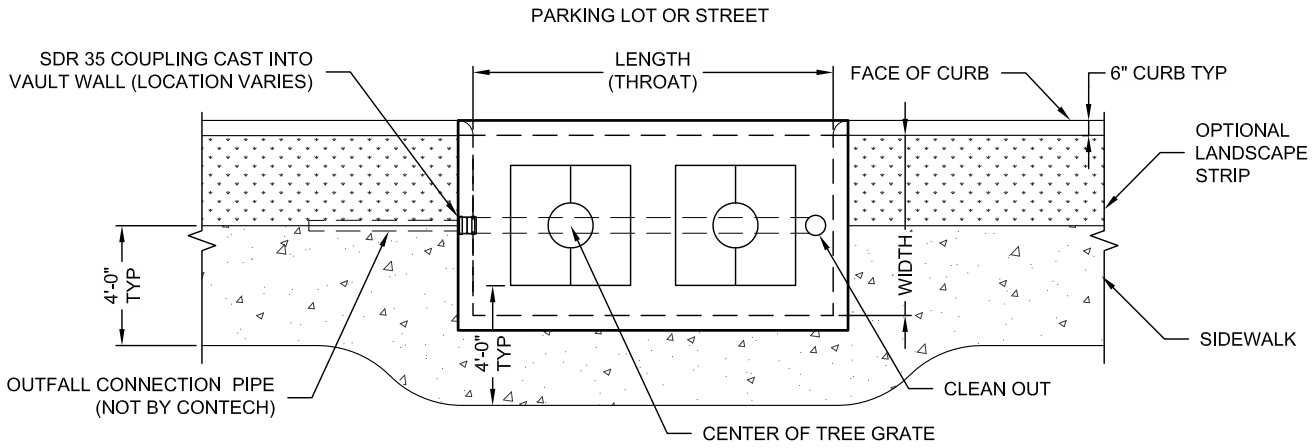
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FILTERRA THROAT OPENING DETAILS

DATE:03/04/15	FILENAME: FILTERRA THROAT OPENING DTL	DRAWN: SCK	CHECKED:

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DESIGNATION	SIZE	LENGTH (THROAT)	WIDTH	(QTY) TREE GRATE
FT0404	4 x 4	4'-0"	4'-0"	(1) 3' x 3'
FT0604	6 x 4	6'-0"	4'-0"	(1) 3' x 3'
FT0606	6 x 6	6'-0"	6'-0"	(1) 3' x 3'
FT0804	8 x 4	8'-0"	4'-0"	(1) 3' x 3'
FT0806	8 x 6	8'-0"	6'-0"	(1) 3' x 3'
FT1006	10 x 6	10'-0"	6'-0"	(1) 4' x 4' *
FT1204	12 x 4	12'-0"	4'-0"	(2) 3' x 3'
FT1206	12 x 6	12'-0"	6'-0"	(2) 4' x 4' *
FT1307	13 x 7	13'-0"	7'-0"	(2) 4' x 4' *

* 3' x 3' TREE GRATE OPTIONAL

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800-338-1122 513-645-7000 513-645-7993 FAX

FILTERRA TYPICAL SIDEWALK CONFIGURATION

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Filterra Bioretention Systems

Installation Manual









CONTECH®
ENGINEERED SOLUTIONS

filterra®
Bioretention Systems

INSTALLATION MANUAL

V02

Support: 800-338-1122 | Fax: 513-645-7993

info@conteches.com | www.ContechES.com/filterra

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FILTERRA® OVERVIEW

STORMWATER BIORETENTION FILTRATION SYSTEM



- Save valuable space with small footprint for urban sites.
- Improve BMP aesthetics with attractive trees or shrubs.
- Reduce lifetime cost with safer and less expensive maintenance.

Remove Pollutants and Comply with NPDES

The Filterra® Bioretention System is well-suited for the urban environment with high removal efficiencies for many pollutants such as petroleum, heavy metals, phosphorus, nitrogen, and TSS. Filterra is similar in concept to bioretention in its function and applications, with the major distinction that Filterra has been optimized for high volume/flow treatment and high pollutant removal. Filterra takes up little space (often 0.2% Filter Surface Area/Drainage Area) and may be used on highly developed sites such a landscaped areas, green spaces, parking lots and streetscapes; it is exceedingly adaptable and is the urban solution for Low Impact Development.

Stormwater runoff flows through a specially designed filter media mixture contained in a landscaped concrete container The filter media captures and immobilizes pollutants; those pollutants are then decomposed, volatilized and incorporated into the biomass of the filterra system's micro-macro fauna and flora. Once the stormwater runoff flows through the media it continues into an underdrain system at the bottom of the container, where the treated water is discharged. higher flows bypass the Filterra via a downstream inlet structure, curb cut or other appropriate relief.

Section A

Installation

Installation Guidelines

Installations Procedure

Filterra Standard Offline Curb Inlet Detail

Filterra with Terraflume Curb Inlet Detail

Toll Free: (800) 338-1122 | Fax: (513) 645-7993

info@conteches.com

Installation Guidelines for Filterra®

Delivery & Unloading/Lifting

1. Contech shall deliver the Filterra units to the site in coordination with the Contractor.
2. The Contractor will require spreader bars and chains/cables/straps, as well as lifting hooks to safely and securely lift box sections and top slabs. In some cases, lifting hooks may be available for rental or purchase. Contact your Contech Project Coordinator for more information.
3. The unit and top must be lifted separately.

Inspection

1. Inspection of the Filterra unit and all parts contained in or shipped outside of the unit shall be inspected at time of delivery by the site Engineer/Inspector and the Contractor. Any nonconformance to approved drawings or damage to ay part of the system shall be documented on the Filterra shipping ticket. Damage to the unit during and after unloading shall be corrected at the expense of the Contractor. Any necessary repairs to the Filterra unit shall be made to the acceptance of the Engineer/Inspector.

Site Preparation

1. The contractor is responsible for providing adequate and complete site/inlet protection when the Filterra unit is installed prior to final site stabilization (full landscaping, grass cover, final paving, and street sweeping completed).
2. The contractor shall adhere to all jurisdictional and/or OSHA safety rules in providing temporary shoring of the excavation.
3. The Contractor or Owner is responsible for appropriately barricading the Filterra from traffic (in accordance with local codes).

Installation Guidelines for Filterra®

Installation

1. Installation Procedure for Sump Condition.

    a. Filterra Standard Offline System: The Standard Offline system cannot be used as a standalone inlet. It will need effective bypass during higher intensity rainfall events. To test a proposed location, imagine the Filterra throat is completely blocked (so it would act like a typical curb and gutter). If this results in any ponding or pooling drainage, the placement is inappropriate.

    b. Filterra Internal Bypass - Curb (FTIBC): FTIBC systems incorporating the Terraflume tray can be utilized as a stand-alone inlet and are typically installed in a sump condition.

2. Each unit shall be constructed at the locations and elevations according to the sizes shown on the approved drawings. Any modifications to the elevation or location shall be at the direction of and approved by the Engineer.

3. The unit shall be placed on the compacted sub-grade with a minimum 6-inch gravel base matching the final grade of the curb line in the area of the unit. The unit is to be placed such that the unit and top slab match the grade of the curb in the area of the unit. Compact undisturbed sub-grade materials to 95% of maximum density at +1% to 2% of the optimum moisture. Unsuitable material below sub-grade shall be replaced to site engineer's approval. Contact Contech for guidance where slope exceeds 5%.

4. Once the unit is set, the internal wooden forms and protective silt fabric cover must be left intact. The top lid should be sealed onto the box before backfilling, using a non-shrink grout, butyl rubber or similar waterproof seal. The boards on the top of the lid and boards sealed in the unit's throat must NOT be removed. The Supplier will remove these sections at the time of activation.

5. Outlet connections shall be aligned and sealed to meet the approved drawings with modifications necessary to meet site conditions and local regulations. The correct outlet will be marked on the Filterra box. Do NOT use plugged couplings marked "USE OTHER CONNECTION".

6. Backfilling should be performed in a careful manner, bringing the appropriate fill material up in 6" lifts on all sides. Precast sections shall be set in a manner that will result in a watertight joint. In all instances, installation of the Filterra unit shall conform to ASTM specification C891 "Standard Practice for Installation of Underground Precast Utility Structures" unless specified otherwise in contract documents.

7. It is the responsibility of the Contractor to provide curb and gutter and transition to the Filterra unit for proper stormwater flow into the system through the throat opening. A standard drawing of the throat and gutter detail is available on page 12. However, the plans and contract documents superseded all standard drawings. Flume variations are detailed in Section B of this manual. Effective bypass for the Filterra system is essential for correct operation (i.e. bypass to an overflow at lower elevation).

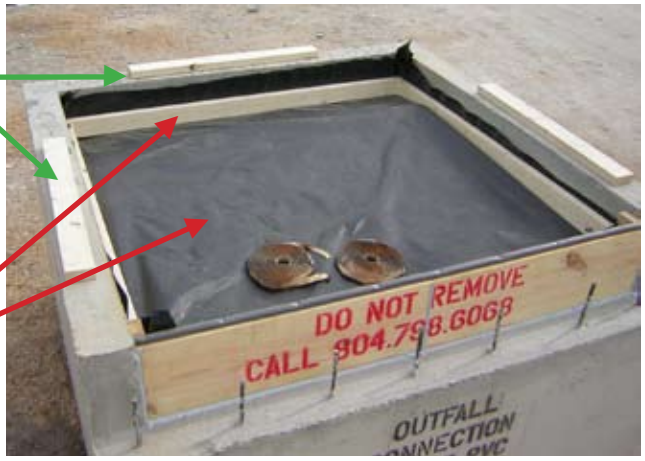
Installation Procedure

DO NOT remove protective boards or tree grates from the top slab.



Remove the shipping dunnage along the top of the box wall.

DO NOT remove wooden internal bracing or protective silt fabric.



DO NOT remove the protective throat board.

Curb and gutter details are provided on the protective throat board. On Filterra systems incorporating a Terraflume tray, the protective board is installed at the back of the Terraflume to allow runoff to bypass via the internal riser.





The contractor MUST provide all rigging and lifting apparatus, such as cables, chains, straps, and hooks. In some cases, lifting hooks may be available for rental or purchase. Contact your Contech Project Coordinator for more information.



The unit and top slab MUST be lifted separately. At this time you can remove the boards between the box and top.

It is the contractor's responsibility to provide suitable lifting equipment to off load the Filterra unit. Filterra units are designed to be off loaded using the contractor's spreader bar.



1. Unload or Remove Top from Unit

Unload the top slab and set it on the ground.



2. Unload and Set Box

Unload the Filterra box and set into the pre-prepared hole with appropriate sub-grade.*

* Compacted sub-grade with a minimum of six inches of gravel bas which must match the final grade of curb line the area of the unit.



3. Apply Butyl Tape Seal

Apply butyl tape seal along the top of the box section. Butyl tape seal is provided with every unit.

Filterra installed protective throat board and installed silt fabric must be left in place to protect the unit from construction sediment.



4. Set Top on Box

Set the top slab on the box.



5. Connect Outfall Pipe

The correct outlet will be marked on the Filterra box.

DO NOT use plugged couplings marked "USE OTHER CONNECTION".



6. Install Curb and Gutter

It is the responsibility of the Contractor to provide curb and gutter and transition to the Filterra unit for proper flow into the system through a 4" - 6" throat opening. Details for the throat opening on the Filterra Standard Offline system as well as Filterra systems incorporating the Terraflume are included on pages 12 and 13.



7. Provide Inlet Protection

It is the responsibility of the Contractor to provide inlet protection/sediment control and cleaning around each Filterra unit.

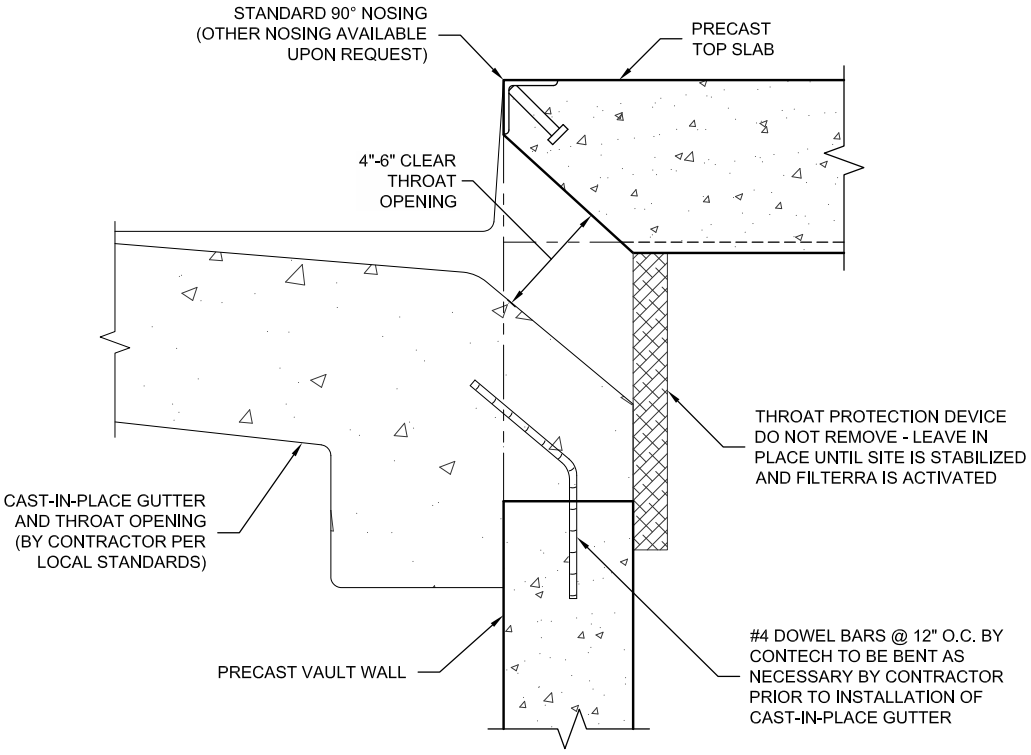


8. Activation

Activation is performed ONLY by Contech authorized personnel.

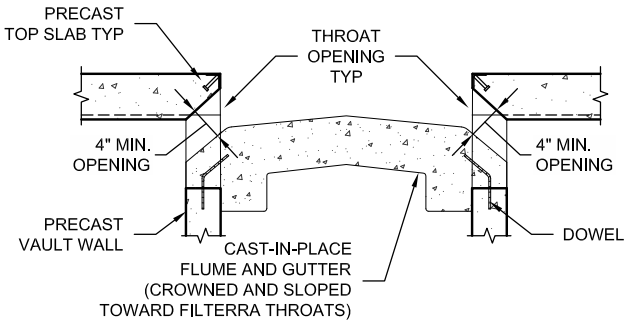
Activation can occur once the project site is fully stabilized (full landscaping, grass cover, final paving and street sweeping completed) and there is 4" - 6" throat opening.

Call 800-338-1122 to schedule your activation.

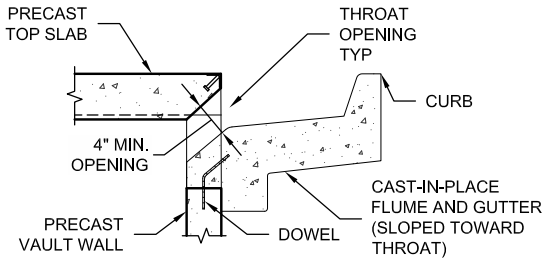


SECTION VIEW

STANDARD OFFLINE CURB INLET



CROWNED FLUME



REVERSE FLUME - SLOPED
TOWARDS FILTERRA THROAT

SECTION VIEWS OF TYPICAL FLUME APPLICATIONS

SEE ABOVE FOR DETAILS NOT SHOWN

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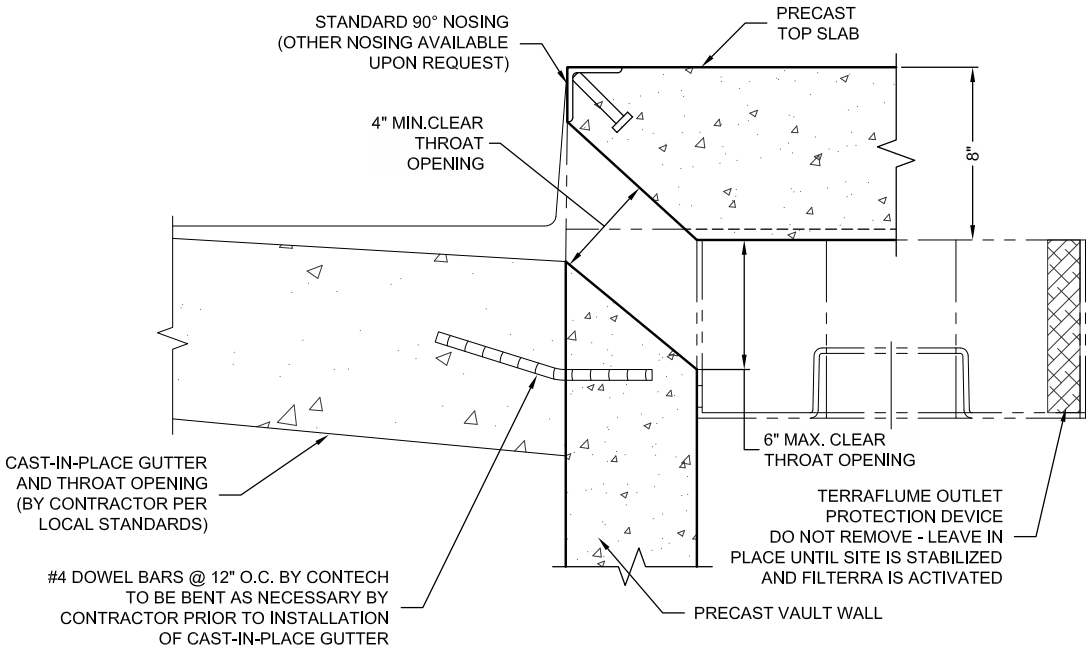
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FILTERRA STANDARD OFFLINE
CURB INLET DETAILS

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SECTION VIEW

STANDARD CURB INLET WITH TERRAFLUME

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FILTERRA WITH TERRAFLUME
CURB INLET DETAIL

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Section B

Curb and Gutter

Standard Curb and Gutter with Inlet Bypass

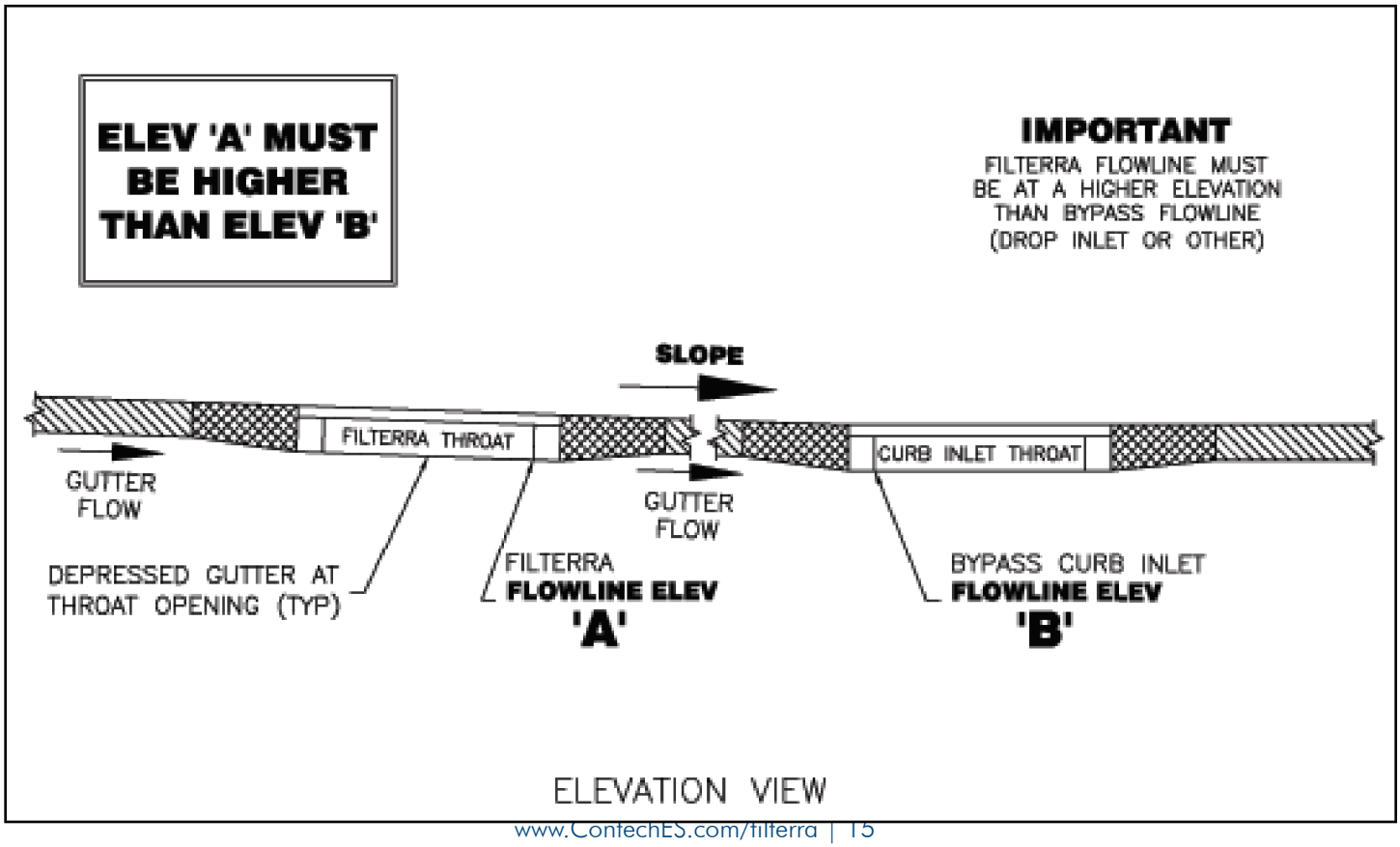
Curb Cut or Grate Inlet Bypass

Single Sided Flume

Double Sided Flume

Standard Curb and Gutter with Inlet Bypass





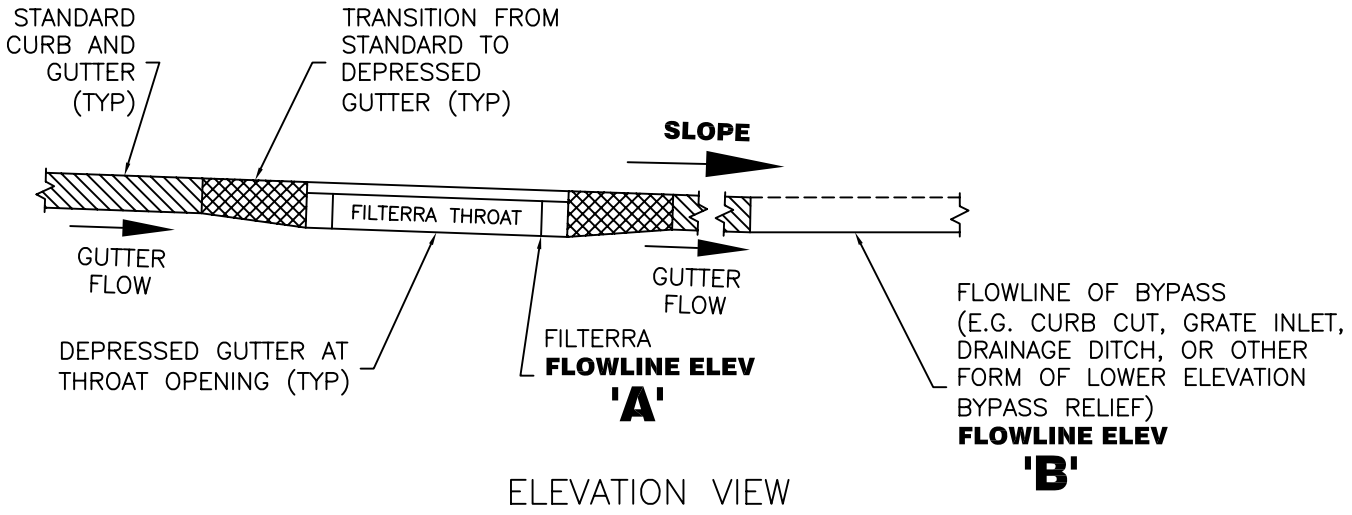
Curb Cut or Grate Inlet Bypass



ELEV 'A' MUST BE HIGHER THAN ELEV 'B'

IMPORTANT

FILTERRA FLOWLINE MUST BE AT A HIGHER ELEVATION THAN BYPASS FLOWLINE (DROP INLET OR OTHER)



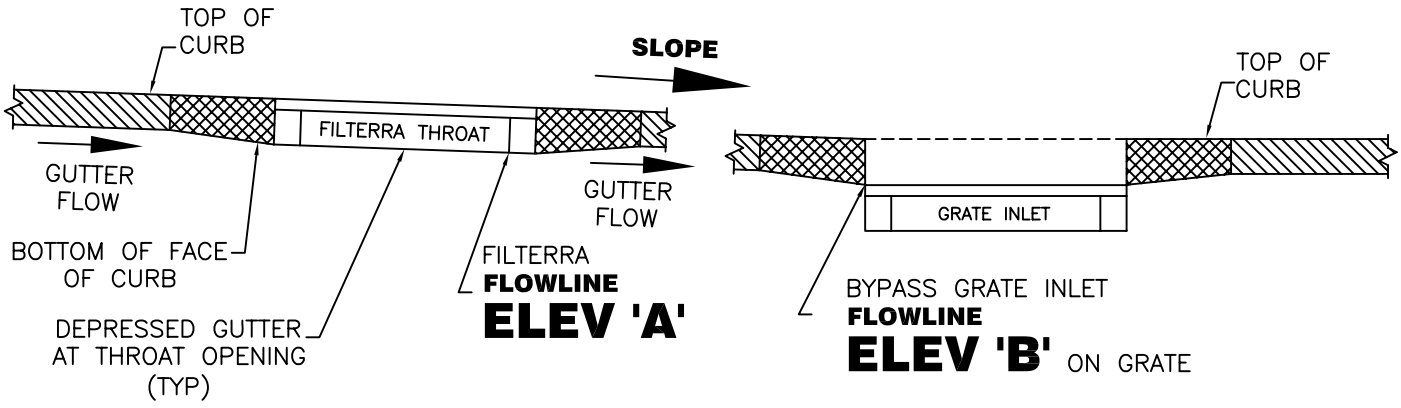
ELEVATION VIEW

Single Side Flume



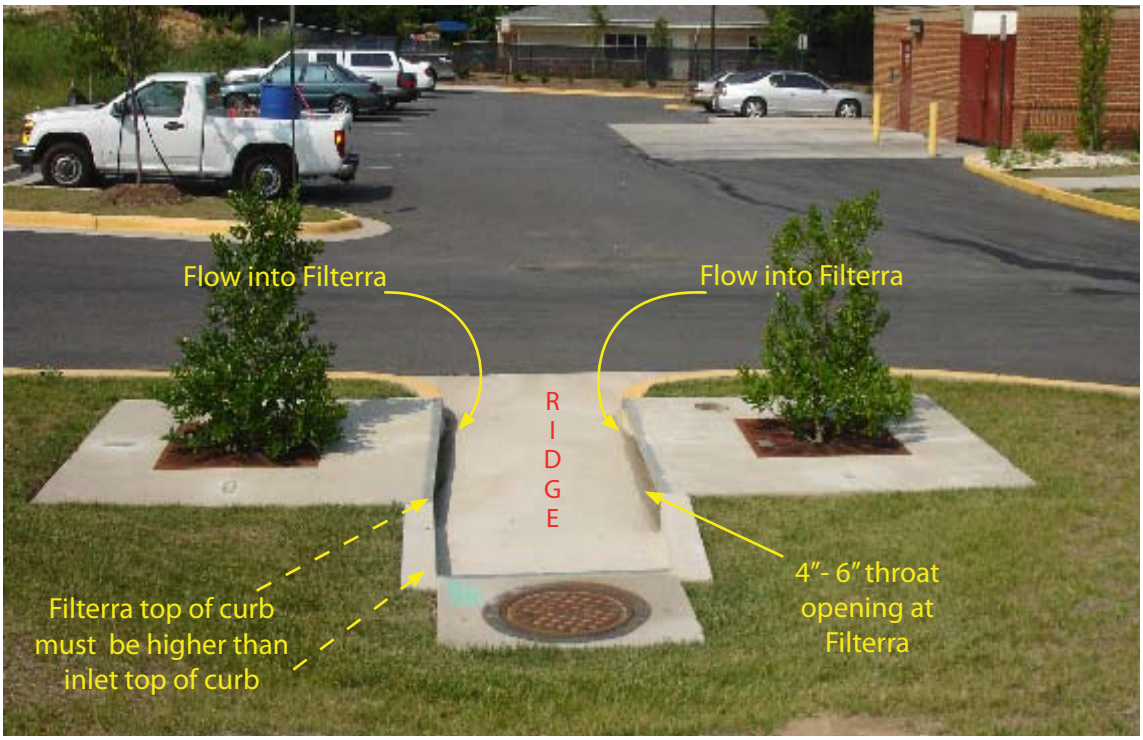
ELEV 'A' MUST BE HIGHER THAN ELEV 'B'

IMPORTANT
FILTERRA FLOWLINE MUST BE AT A HIGHER ELEVATION THAN BYPASS FLOWLINE (DROP INLET OR OTHER)



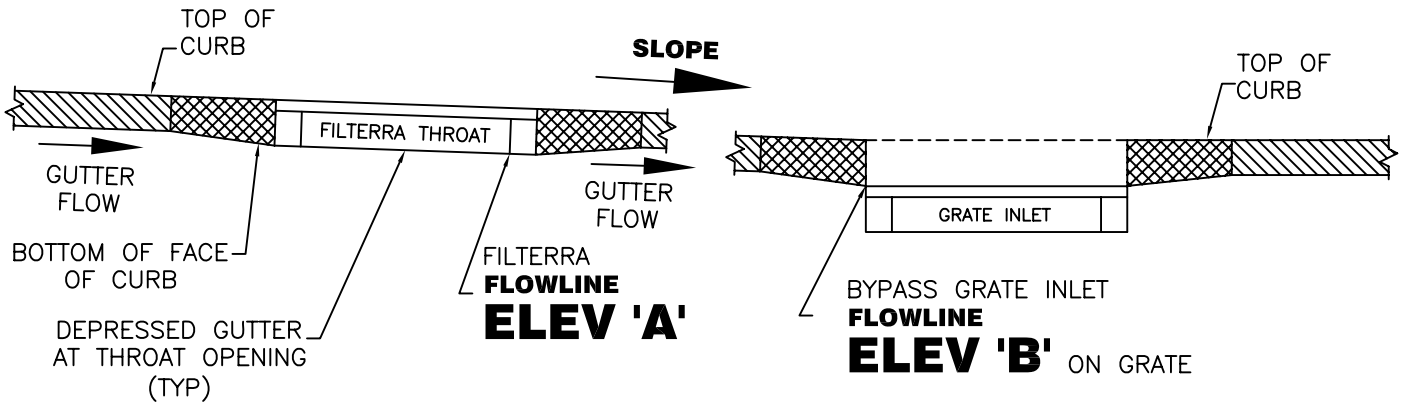
ELEVATION VIEW

Double Side Flume

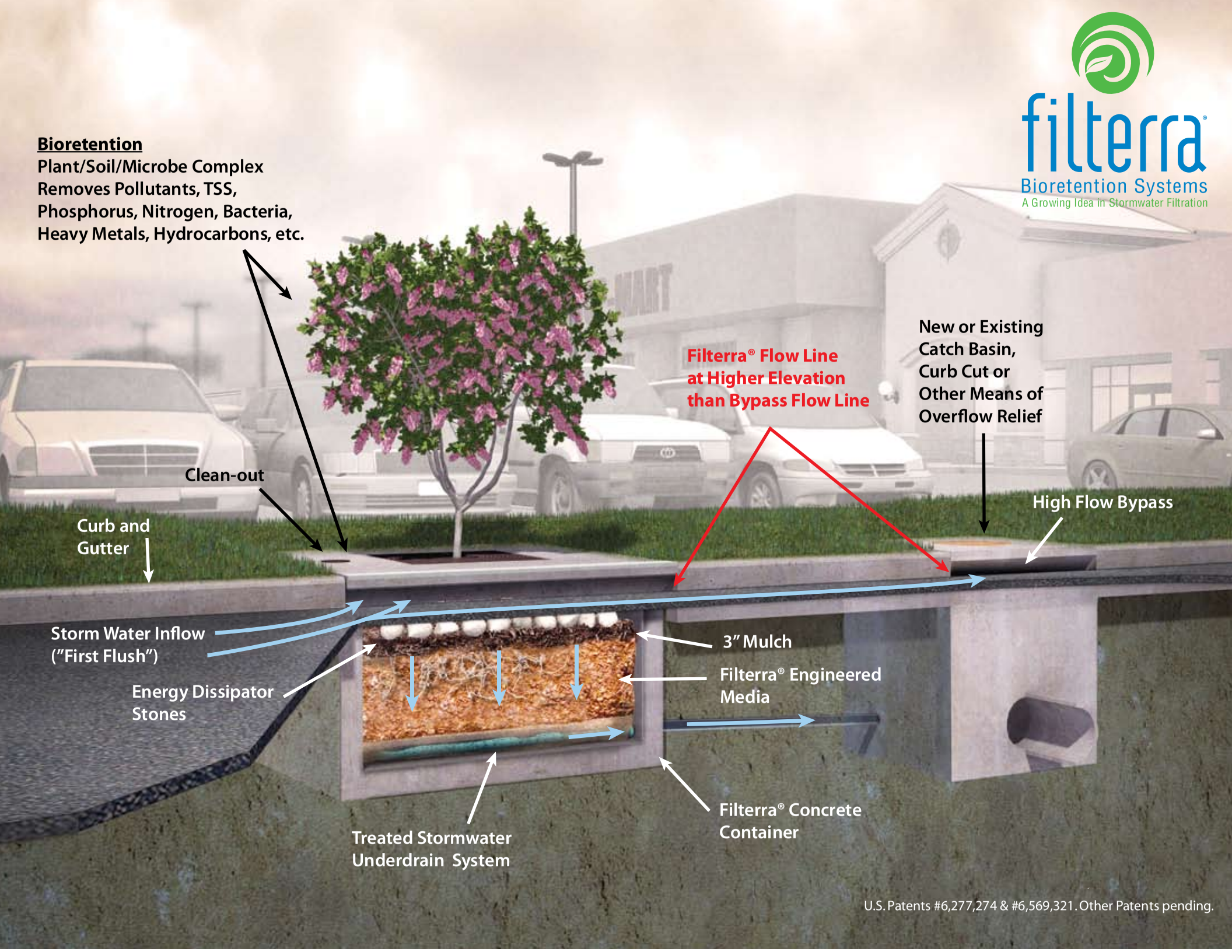


ELEV 'A' MUST BE HIGHER THAN ELEV 'B'

IMPORTANT
FILTERRA FLOWLINE MUST BE AT A HIGHER ELEVATION THAN BYPASS FLOWLINE (DROP INLET OR OTHER)



ELEVATION VIEW


filterra
Bioretention Systems
A Growing Idea in Stormwater Filtration
Bioretention
Plant/Soil/Microbe Complex
Removes Pollutants, TSS,
Phosphorus, Nitrogen, Bacteria,
Heavy Metals, Hydrocarbons, etc.
Filterra® Flow Line
at Higher Elevation
than Bypass Flow Line
New or Existing
Catch Basin,
Curb Cut or
Other Means of
Overflow Relief
Clean-out
High Flow Bypass
Curb and
Gutter
Storm Water Inflow
("First Flush")
3" Mulch
Filterra® Engineered
Media
Energy Dissipator
Stones
Treated Stormwater
Underdrain System
Filterra® Concrete
Container
U.S. Patents #6,277,274 & #6,569,321. Other Patents pending.

Appendix D: Owner's Maintenance Manual

Filterra Bioretention Systems

Owner's (Maintenance) Manual

Filterra Owner's Manual



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Bioretention Systems

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Bioretention Systems

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Appendix 2 – Planting Requirements for Filterra Systems 13

Enclosed

Local Area Filterra Plant List

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Introduction

Thank you for your purchase of the Filterra® Bioretention System. Filterra is a specially engineered stormwater treatment system incorporating high performance biofiltration media to remove pollutants from stormwater runoff. The system's biota (vegetation and soil microorganisms) then further breakdown and absorb captured pollutants. All components of the system work together to provide a sustainable long-term solution for treating stormwater runoff.

The Filterra system has been delivered to you with protection in place to resist intrusion of construction related sediment which can contaminate the biofiltration media and result in inadequate system performance. These protection devices are intended as a best practice and cannot fully prevent contamination. It is the purchaser's responsibility to provide adequate measures to prevent construction related runoff from entering the Filterra system.

Included with your purchase is Activation of the Filterra system by the manufacturer as well as a 1-year warranty from delivery of the system and 1-year of routine maintenance (mulch replacement, debris removal, and pruning of vegetation) up to twice during the first year after activation.

Design and Installation

Each project presents different scopes for the use of Filterra systems. Information and help may be provided to the design engineer during the planning process. Correct Filterra box sizing (by rainfall region) is essential to predict pollutant removal rates for a given area. The engineer shall submit calculations for approval by the local jurisdiction. The contractor is responsible for the correct installation of Filterra units as shown in approved plans. A comprehensive installation manual is available at www.ContechES.com.

Activation Overview

Activation of the Filterra system is a procedure completed by the manufacturer to place the system into working condition. This involves the following items:

- Removal of construction runoff protection devices
- Planting of the system's vegetation
- Placement of pretreatment mulch layer using mulch certified for use in Filterra systems.

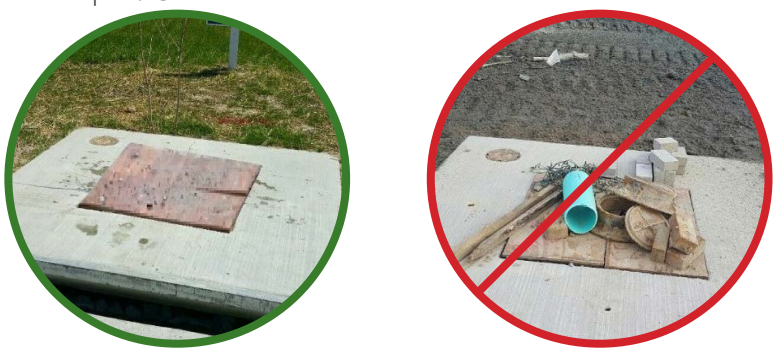
Activation MUST be provided by the manufacturer to ensure proper site conditions are met for Activation, proper installation of the vegetation, and use of pretreatment mulch certified for use in Filterra systems.



Minimum Requirements

The minimum requirements for Filterra Activation are as follows:

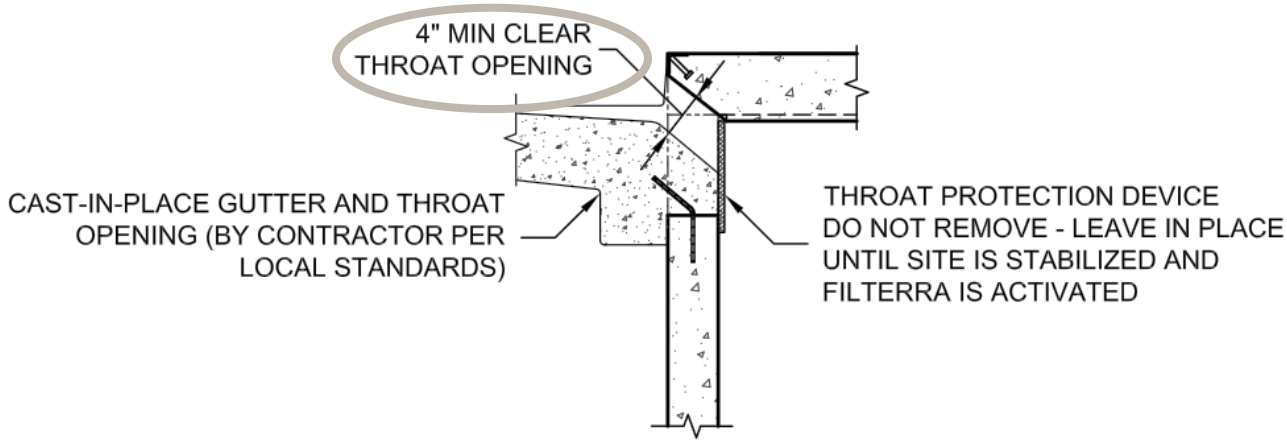
1. The site landscaping must be fully stabilized, i.e. full landscaping installed and some grass cover (not just straw and seed) is required to reduce sediment transport. Construction debris and materials should be removed from surrounding area.



2. Final paving must be completed. Final paving ensures that paving materials will not enter and contaminate the Filterra system during the paving process, and that the plant will receive runoff from the drainage area, assisting with plant survival for the Filterra system.



3. Filterra throat opening should be at least 4" in order to ensure adequate capacity for inflow and debris.



An Activation Checklist is included on page 12 to ensure proper conditions are met for Contech to perform the Activation services. A charge of $500.00 will be invoiced for each Activation visit requested by Customer where Contech determines that the site does not meet the conditions required for Activation.

Filterra Plant Selection Overview

A Plant List has been enclosed with this packet highlighting recommended plants for Filterra systems in your area. Keep in mind that plants are subject to availability due to seasonality and required minimum size for the Filterra system. Plants installed in the Filterra system are container plants (max 15 gallon) from nursery stock and will be immature in height and spread at Activation.

It is the responsibility of the owner to provide adequate irrigation when necessary to the plant of the Filterra system.

The "Planting Requirements for Filterra Systems" document is included as an appendix and discusses proper selection and care of the plants within Filterra systems.

Warranty Overview

Refer to the Contech Engineered Solutions LLC Stormwater Treatment System LIMITED WARRANTY for further information. The following conditions may void the Filterra system's warranty and waive the manufacturer provided Activation and Maintenance services:

- Unauthorized activation or performance of any of the items listed in the activation overview
- Any tampering, modifications or damage to the Filterra system or runoff protection devices
- Removal of any Filterra system components
- Failure to prevent construction related runoff from entering the Filterra system
- Failure to properly store and protect any Filterra components (including media and underdrain stone) that may be shipped separately from the vault

Routine Maintenance Guidelines

With proper routine maintenance, the biofiltration media within the Filterra system should last as long as traditional bioretention media. Routine maintenance is included by the manufacturer on all Filterra systems for the first year after activation. This includes a maximum of 2 visits to remove debris, replace pretreatment mulch, and prune the vegetation. More information is provided in the Operations and Maintenance Guidelines. Some Filterra systems also contain pretreatment or outlet bays. Depending on site pollutant loading, these bays may require periodic removal of debris, however this is not included in the first year of maintenance, and would likely not be required within the first year of operation.

These services, as well as routine maintenance outside of the included first year, can be provided by certified maintenance providers listed on the Contech website. Training can also be provided to other stormwater maintenance or landscape providers.



Why Maintain?

All stormwater treatment systems require maintenance for effective operation. This necessity is often incorporated in your property's permitting process as a legally binding BMP maintenance agreement. Other reasons to maintain are:

- Avoiding legal challenges from your jurisdiction's maintenance enforcement program.
- Prolonging the expected lifespan of your Filterra media.
- Avoiding more costly media replacement.
- Helping reduce pollutant loads leaving your property.

Simple maintenance of the Filterra is required to continue effective pollutant removal from stormwater runoff before discharge into downstream waters. This procedure will also extend the longevity of the living biofilter system. The unit will recycle and accumulate pollutants within the biomass, but is also subjected to other materials entering the inlet. This may include trash, silt and leaves etc. which will be contained above the mulch layer. Too much silt may inhibit the Filterra's flow rate, which is the reason for site stabilization before activation. Regular replacement of the mulch stops accumulation of such sediment.

When to Maintain?

Contech includes a 1-year maintenance plan with each system purchase. Annual included maintenance consists of a maximum of two (2) scheduled visits. Additional maintenance may be necessary depending on sediment and trash loading (by Owner or at additional cost). The start of the maintenance plan begins when the system is activated.

Maintenance visits are scheduled seasonally; the spring visit aims to clean up after winter loads including salts and sands while the fall visit helps the system by removing excessive leaf litter.

It has been found that in regions which receive between 30-50 inches of annual rainfall, (2) two visits are generally required; regions with less rainfall often only require (1) one visit per annum. Varying land uses can affect maintenance frequency; e.g. some fast food restaurants require more frequent trash removal. Contributing drainage areas which are subject to new development wherein the recommended erosion and sediment control measures have not been implemented may require additional maintenance visits.

Some sites may be subjected to extreme sediment or trash loads, requiring more frequent maintenance visits. This is the reason for detailed notes of maintenance actions per unit, helping the Supplier and Owner predict future maintenance frequencies, reflecting individual site conditions.

Owners must promptly notify the (maintenance) Supplier of any damage to the plant(s), which constitute(s) an integral part of the bioretention technology. Owners should also advise other landscape or maintenance contractors to leave all maintenance to the Supplier (i.e. no pruning or fertilizing) during the first year.



Exclusion of Services

Clean up due to major contamination such as oils, chemicals, toxic spills, etc. will result in additional costs and are not covered under the Supplier maintenance contract. Should a major contamination event occur the Owner must block off the outlet pipe of the Filterra (where the cleaned runoff drains to, such as drop inlet) and block off the throat of the Filterra. The Supplier should be informed immediately.

Maintenance Visit Summary

Each maintenance visit consists of the following simple tasks (detailed instructions below).

1. Inspection of Filterra and surrounding area
2. Removal of tree grate and erosion control stones
3. Removal of debris, trash and mulch
4. Mulch replacement
5. Plant health evaluation and pruning or replacement as necessary
6. Clean area around Filterra
7. Complete paperwork

Maintenance Tools, Safety Equipment and Supplies

Ideal tools include: camera, bucket, shovel, broom, pruners, hoe/rake, and tape measure. Appropriate Personal Protective Equipment (PPE) should be used in accordance with local or company procedures. This may include impervious gloves where the type of trash is unknown, high visibility clothing and barricades when working in close proximity to traffic and also safety hats and shoes. A T-Bar or crowbar should be used for moving the tree grates (up to 170 lbs ea.). Most visits require minor trash removal and a full replacement of mulch. See below for actual number of bagged mulch that is required in each media bay size. Mulch should be a double shredded, hardwood variety. Some visits may require additional Filterra engineered soil media available from the Supplier.

Box Length	Box Width	Filter Surface Area (ft^2)	Volume at 3" (ft^3)	# of 2 ft^3 Mulch Bags
4	4	4	4	2
6	4	6	6	3
8	4	8	8	4
6	6	9	9	5
8	6	12	12	6
10	6	15	15	8
12	6	18	18	9
13	7	23	23	12

Maintenance Visit Procedure

Keep sufficient documentation of maintenance actions to predict location specific maintenance frequencies and needs. An example Maintenance Report is included in this manual.



1. Inspection of Filterra and surrounding area

- Record individual unit before maintenance with photograph (numbered). Record on Maintenance Report (see example in this document) the following:

Record on Maintenance Report the following:

Standing Water	yes | no
Damage to Box Structure	yes | no
Damage to Grate	yes | no
Is Bypass Clear	yes | no

If yes answered to any of these observations, record with close-up photograph (numbered).



2. Removal of tree grate and erosion control stones

- Remove cast iron grates for access into Filterra box.
- Dig out silt (if any) and mulch and remove trash & foreign items.

3. Removal of debris, trash and mulch

Record on Maintenance Report the following:

Silt/Clay	yes | no
Cups/ Bags	yes | no
Leaves	yes | no
Buckets Removed	_____



- After removal of mulch and debris, measure distance from the top of the Filterra engineered media soil to the top of the top slab. Compare the measured distance to the distance shown on the approved Contract Drawings for the system. Add Filterra media (not top soil or other) to bring media up as needed to distance indicated on drawings.

Record on Maintenance Report the following:

Distance to Top of Top Slab (inches)	_____
Inches of Media Added	_____



4. Mulch replacement

- Add double shredded mulch evenly across the entire unit to a depth of 3".
- Refer to Filterra Mulch Specifications for information on acceptable sources.
- Ensure correct repositioning of erosion control stones by the Filterra inlet to allow for entry of trash during a storm event.
- Replace Filterra grates correctly using appropriate lifting or moving tools, taking care not to damage the plant.



5. Plant health evaluation and pruning or replacement as necessary

- Examine the plant's health and replace if necessary.
- Prune as necessary to encourage growth in the correct directions

Record on Maintenance Report the following:

Height above Grate	_____ (ft)
Width at Widest Point	_____ (ft)
Health	healthy | unhealthy
Damage to Plant	yes | no
Plant Replaced	yes | no



6. Clean area around Filterra

- Clean area around unit and remove all refuse to be disposed of appropriately.



7. Complete paperwork

- Deliver Maintenance Report and photographs to appropriate location (normally Contech during maintenance contract period).
- Some jurisdictions may require submission of maintenance reports in accordance with approvals. It is the responsibility of the Owner to comply with local regulations.

Maintenance Checklist

Drainage System Failure	Problem	Conditions to Check	Condition that Should Exist	Actions
Inlet	Excessive sediment or trash accumulation.	Accumulated sediments or trash impair free flow of water into Filterra.	Inlet should be free of obstructions allowing free distributed flow of water into Filterra.	Sediments and/or trash should be removed.
Mulch Cover	Trash and floatable debris accumulation.	Excessive trash and/or debris accumulation.	Minimal trash or other debris on mulch cover.	Trash and debris should be removed and mulch cover raked level. Ensure bark nugget mulch is not used.
Mulch Cover	"Ponding" of water on mulch cover.	"Ponding" in unit could be indicative of clogging due to excessive fine sediment accumulation or spill of petroleum oils.	Stormwater should drain freely and evenly through mulch cover.	Recommend contact manufacturer and replace mulch as a minimum.
Vegetation	Plants not growing or in poor condition.	Soil/mulch too wet, evidence of spill. Incorrect plant selection. Pest infestation. Vandalism to plants.	Plants should be healthy and pest free.	Contact manufacturer for advice.
Vegetation	Plant growth excessive.	Plants should be appropriate to the species and location of Filterra.		Trim/prune plants in accordance with typical landscaping and safety needs.
Structure	Structure has visible cracks.	Cracks wider than 1/2 inch or evidence of soil particles entering the structure through the cracks.		Vault should be repaired.
Maintenance is ideally to be performed twice annually.				

Filterra Inspection & Maintenance Log

Filterra System Size/Model:_____ **Location:** _____

Date	Mulch & Debris Removed	Depth of Mulch Added	Mulch Brand	Height of Vegetation Above Grate	Vegetation Species	Issues with System	Comments
1/1/17	*5 – 5 gal Buckets*	*3″*	*Lowe's Premium Brown Mulch*	*4′*	*Galaxy Magnolia*	*- Standing water in downstream structure*	*- Removed blockage in downstream structure*

Appendix 1 – Filterra® Activation Checklist

Project Name: _____ Company: _____

Site Contact Name: _____ Site Contact Phone/Email: _____

Site Owner/End User Name: _____ Site Owner/End User Phone/Email: _____

Preferred Activation Date: _____ (provide 2 weeks minimum from date this form is submitted)

Site Designation	System Size	Final Pavement / Top Coat Complete	Landscaping Complete / Grass Emerging	Construction materials / Piles / Debris Removed	Throat Opening Measures 4" Min. Height	Plant Species Requested
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	

Attach additional sheets as necessary.

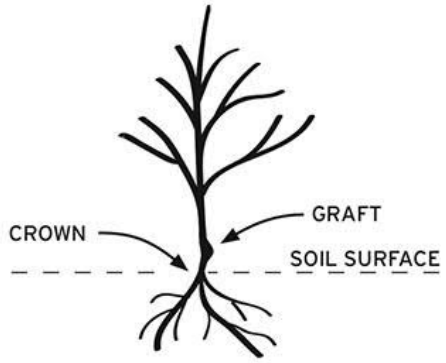
NOTE: A charge of $500.00 will be invoiced for each Activation visit requested by Customer where Contech determines that the site does not meet the conditions required for Activation. ONLY Contech authorized representatives can perform Activation of Filterra systems; unauthorized Activations will void the system warranty and waive manufacturer supplied Activation and 1st Year Maintenance.

_____ _____

Signature Date

Appendix 2 – Planting Requirements for Filterra® Systems

Plant Material Selection



- Select plant(s) as specified in the engineering plans and specifications.
- Select plant(s) with full root development but not to the point where root bound.
- Use local nursery container plants only. Ball and burlapped plants are not permitted.
- For precast Filterra systems with a tree grate, plant(s) must not have scaffold limbs at least 14 inches from the crown due to spacing between the top of the mulch and the tree grate. Lower branches can be pruned away provided there are sufficient scaffold branches for tree or shrub development.
- For precast Filterra systems with a tree grate, at the time of installation, it is required that plant(s) must be at least 6" above the tree grate opening at installation for all Filterra configurations. This DOES NOT apply to Full Grate Cover designs.
- Plant(s) shall not have a mature height greater than 25 feet.
- For standard 21" media depth, a 7 – 15 gallon container size shall be used. Media less than 21" (Filterra boxes only) will require smaller container plants.
- For precast Filterra systems, plant(s) should have a single trunk at installation, and pruning may be necessary at activation and maintenance for some of the faster growing species, or species known to produce basal sprouts.

Plant Installation

- During transport protect the plant leaves from wind and excessive jostling.
- Prior to removing the plant(s) from the container, ensure the soil moisture is sufficient to maintain the integrity of the root ball. If needed, pre-wet the container plant.
- Cut away any roots which are growing out of the container drain holes. Plants with excessive root growth from the drain holes should be rejected.
- Plant(s) should be carefully removed from the pot by gently pounding on the sides of the container with the fist to loosen root ball. Then carefully slide out. Do not lift plant(s) by trunk as this can break roots and cause soil to fall off. Extract the root ball in a horizontal position and support it to prevent it from breaking apart. Alternatively the pot can be cut away to minimize root ball disturbance.
- Remove any excess soil from above the root flare after removing plant(s) from container.
- Excavate a hole with a diameter 4" greater than the root ball, gently place the plant(s).
- If plant(s) have any circling roots from being pot bound, gently tease them loose without breaking them.
- If root ball has a root mat on the bottom, it should be shaved off with a knife just above the mat line.
- Plant the tree/shrub/grass with the top of the root ball 1" above surrounding media to allow for settling.
- All plants should have the main stem centered in the tree grate (where applicable) upon completion of installation.
- With all trees/shrubs, remove dead, diseased, crossed/rubbing, sharply crotched branches or branches growing excessively long or in wrong direction compared to majority of branches.
- To prevent transplant shock (especially if planting takes place in the hot season), it may be necessary to prune some of the foliage to compensate for reduced root uptake capacity. This is accomplished by pruning away some of the smaller secondary branches or a main scaffold branch if there are too many. Too much foliage relative to the root ball can dehydrate and damage the plant.
- Plant staking may be required.

Mulch Installation

- Only mulch that has been meeting Contech Engineered Solutions' mulch specifications can be used in the Filterra system.
- Mulch must be applied to a depth of 3" evenly over the surface of the media.

Irrigation Requirements

- Each Filterra system must receive adequate irrigation to ensure survival of the living system during periods of drier weather.
- Irrigation sources include rainfall runoff from downspouts and/or gutter flow, applied water through the tree grate or in some cases from an irrigation system with emitters installed during construction.
- At Activation: Apply about one (cool climates) to two (warm climates) gallons of water per inch of trunk diameter over the root ball.
- During Establishment: In common with all plants, each Filterra plant will require more frequent watering during the establishment period. One inch of applied water per week for the first three months is recommended for cooler climates (2 to 3 inches for warmer climates). If the system is receiving rainfall runoff from the drainage area, then irrigation may not be needed. Inspection of the soil moisture content can be evaluated by gently brushing aside the mulch layer and feeling the soil. Be sure to replace the mulch when the assessment is complete. Irrigate as needed**.
- Established Plants: Established plants have fully developed root systems and can access the entire water column in the media. Therefore irrigation is less frequent but requires more applied water when performed. For a mature system assume 3.5 inches of available water within the media matrix. Irrigation demand can be estimated as 1" of irrigation demand per week. Therefore if dry periods exceed 3 weeks, irrigation may be required. It is also important to recognize that plants which are exposed to windy areas and reflected heat from paved surfaces may need more frequent irrigation. Long term care should develop a history which is more site specific.

** Five gallons per square yard approximates 1 inch of water Therefore for a 6' by 6' Filterra approximately 20-60 gallons of water is needed. To ensure even distribution of water it needs to be evenly sprinkled over the entire surface of the filter bed, with special attention to make sure the root ball is completely wetted. NOTE: if needed, measure the time it takes to fill a five gallon bucket to estimate the applied water flow rate then calculate the time needed to irrigate the Filterra. For example, if the flow rate of the sprinkler is 5 gallons/minute then it would take 12 minutes to irrigate a 6' by 6' filter.



Notes

filterra®
Bioretention Systems

CONTECH®
ENGINEERED SOLUTIONS

9025 Centre Pointe Drive, Suite 400
West Chester, OH 45069
info@conteches.com | 800-338-1122
www.ContechES.com

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Filterra Bioretention Systems

Activation Checklist

Filterra® Activation Checklist

Project Name: _____ Company: _____

Site Contact Name: _____ Site Contact Phone/Email: _____

Site Owner/End User Name: _____ Site Owner/End User Phone/Email: _____

Preferred Activation Date: _____ (provide 2 weeks minimum from date this form is submitted)

Site Designation	System Size	Final Pavement / Top Coat Complete	Landscaping Complete / Grass Emerging	Construction materials / Piles / Debris Removed	Throat Opening Measures 4" Min. Height	Plant Species Requested
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	

Attach additional sheets as necessary.

NOTE: A charge of $500.00 will be invoiced for each Activation visit requested by Customer where Contech determines that the site does not meet the conditions required for Activation. ONLY Contech authorized representatives can perform Activation of Filterra systems; unauthorized Activations will void the system warranty and waive manufacturer supplied Activation and 1st Year Maintenance.

_____ _____

Signature Date

Appendix E: Bioscape List for Southern California

Filterra Bioretention Systems

Bioscape Plant List for Southern California

Filterra Bioscape Plant List - Southern California

Common Name[1,2,8]	Latin Name	Plant Type	Sun	Hardiness Range	Mature Height[5]	Mature Spread[5]	Sizing[7]	Availability[9]	Nativity
Acacia, Sweet	*Acacia smallii*	Deciduous	Full Sun	9A - 11	15' - 25'	15' - 25'	Tree	SoCA	W-US, Central America
Beautyberry	*Callicarpa Americana*	Deciduous	Partial Shade to Full Sun	7A - 10B	4' - 8'	6' - 7'	L	MA, NW, SE, SC, NoCA, SoCA	SE-US, S-US
Blue Palo Verde	*Parkinsonia floridum*	Deciduous	Full Sun	8A - 11	10' - 20'	15'	XL	NW, SC, NoCA, SoCA	US-CA
Ceanothus, Big-pod	*Ceanothus megacarpus*	Deciduous	Partial Shade to Full Sun	7A - 10B	4' - 8'	6' - 7'	L	SoCA	US-CA
Chokeberry, Black	*Aronia melanocarpa*	Deciduous	Full Shade to Full Sun	3B – 8B	3' – 6'	4' – 6'	M	Gl, MA, NE, NW, SE, NoCA, SoCA, E-Can	E-Can, E-US
Chokeberry, Red	*Aronia arbutifolia*	Deciduous	Partial Shade to Full Sun	4B – 9A	6' – 10'	4' – 6'	M	GL, MA, NE, NW, SE, NoCA, SoCA	E-US
Coyote Brush	*Baccharis pilularis ssp. Consanguinea*	Deciduous	Partial Shade to Full Sun	5A - 10A	4' - 6'	6' - 8'	L	NoCA, SoCA	US-HI
Crabapple, American	*Malus coronaria*	Deciduous	Full Sun	3B - 8A	15' - 25'	10' - 25'	Tree	GL, MA, NE, NW, SE, NoCA, SoCA	Midwest-US
Crape Myrtle	*Lagerstoemia indica*	Deciduous	Full Sun	7A - 9A	15' - 25'	15' - 25'	Tree	MA, SE, NoCA, SoCA	Asia
Elderberry, American	*Sambucus canadensis*	Deciduous	Partial Shade to Full Sun	4A – 9B	10' – 15'	6' – 10'	L	GL, GP, MA, NW, SC, SE, NoCA, SoCA	E-US
Elderberry, Mexican	*Sambucus mexican 'Blue Elderberry'*	Deciduous	Partial Shade to Full Sun	7B - 10A	8' - 15'	15'	XL	NoCA, SoCA	W-US
Four-wing Saltbush	*Atriplex canescens*	Deciduous	Partial Shade to Full Sun	8A - 11	4' - 6'	10'	L	SC, SoCA	W-US, Midwest-US
Fringe Tree, Chinese	*Chionanthus retusus*	Deciduous	Full Shade to Full Sun	5B - 9A	15' - 25'	10' - 15'	Tree	GL, MA, NW, NE, SC, SE, NoCA, SoCA	Asia
Holly, Winterberry	*Ilex verticillata*	Deciduous	Partial Shade to Full Sun	3B – 9A	6' – 10'	8' – 15'	L	GL, MA, NW, SC, SE, NoCA, SoCA, E-Can	E-US, E-Can
Lilac, Dwarf	*Syringa meyeri*	Deciduous	Full Sun	3B – 8A	5' – 8'	8' – 10'	L	GL, MA, NE, NW, SC, SE, NoCA, SoCA	Asia
Magnolia, Galaxy	*Magnolia x 'Galaxy'*	Deciduous	Partial Shade to Full Sun	5A - 8B	15' - 20'	15' - 25'	Tree	GL, MA, NE, NW, SC, SE, NoCA, SoCA	Asia
Magnolia, Saucer	*Magnolia x soulangiana*	Deciduous	Partial Shade to Full Sun	5A - 9A	15' - 25'	15' - 25'	Tree	MA, NE, NW, SC, SE, NoCA, SoCA	Asia
Plum, Mexican	*Prunus mexicana*	Deciduous	Partial Shade to Full Sun	6B - 8A	15' - 25'	15' - 25'	Tree	SoCA	S-US
Plum, Purpleleaf	*Prunus cerasifera*	Deciduous	Full Sun	5B - 8A	15' - 25'	15' - 25'	Tree	GL, MA, NE, NW, SE, NoCA, SoCA	Europe, Asia
Plum, Purpleleaf 'Krauter Vesuvius'	*Prunus cerasifera 'Krauter Vesuvius'*	Deciduous	Full Sun	5B - 8A	15' - 25'	15' - 25'	Tree	NW, SoCA	Europe, Asia
Redbud, Eastern	*Cercis canadensis*	Deciduous	Partial Shade to Full Sun	4B - 9A	15' - 25'	15' - 25'	Tree	GL, GP, MA, NE, NW, SE, NoCA, SoCA	E-US, S-US, Mexico
Redbud, Mexican	*Cercis canadensis*	Deciduous	Partial Shade to Full Sun	6B - 8A	15' - 20'	10' - 15'	XL	SC, SoCA	E-US, S-US, Mexico
Sugar Bush, Sugar Sumac	*Rhus ovata*	Deciduous	Partial Shade to Full Sun	8A - 11	8' - 15'	10'	L	NW, NoCA, SoCA	SW-US
Sweetshrub	*Calycanthus floridus*	Deciduous	Full Shade to Full Sun	5B – 10A	6' – 10'	6' – 12'	L	GL, MA, NW, SC, SE, NoCA, SoCA	E-US
Willow, Desert	*Chilopsis linearis*	Deciduous	Full Sun	7A - 11	15' - 25'	15' - 25'	Tree	NoCA, SoCA	SW-US, Mexico

Common Name[1,2,8]	Latin Name	Plant Type	Sun	Hardiness Range	Mature Height[5]	Mature Spread[5]	Sizing[7]	Availability[9]	Nativity
Acacia, Bailey's Purple	*Acacia baileyana 'Purpurea'*	Evergreen	Full Sun	10B - 11	15' - 20'	20' - 30'	Tree	NoCA, SoCA	Australia
Acacia, Catclaw	*Acacia greggi*	Evergreen	Full Sun	9A - 11	15' - 25'	15' - 20'	Tree	SoCA	SW-US
After Dark Peppermint	*Agonis flexuosa "Jervis Bay Afterdark'*	Evergreen	Full Sun	10 - 11	15' - 18'	10' - 15'	XL	SoCA	Australia
Bottlebrush, Lemon	*Callistemon citrinus*	Evergreen	Full Sun	9A - 11	10' - 15'	10' - 15'	XL	SE, SoCA	Australia
Camellia, Japanese	*Camellia japonica*	Evergreen	Partial Shade to Full Sun	7A - 9A	10' - 15'	6' - 10'	L	MA, NW, SC, SE, NoCA, SoCA	Asia
Gold Medallion Shrub Form	*Cassia leptophylla*	Evergreen	Partial Shade	7A - 9A	10' - 15'	6' - 10'	L	SoCA	South America
Hawthorn, Indian	*Raphiolepsis indica*	Evergreen	Partial Shade to Full Sun	8A - 11	4' - 10'	3' - 10'	L	NW, SC, SE, NoCA, SoCA	Asia
Hawthorn, Yedda	*Raphiolepsis umbellata 'Majestic Beauty'*	Evergreen	Partial Shade to Full Sun	8A - 10A	8' - 10'	8' - 10'	L	SC, SE, NoCA, SoCA	Asia
Holly, Chinese	*Ilex cornuta*	Evergreen	Partial Shade to Full Sun	7A - 9A	15' - 25'	15' - 25'	Tree	MA, NE, NW, SE, NoCA, SoCA	Asia
Holly, Foster's	*Ilex x attenuata 'Fosteri'*	Evergreen	Partial Shade to Full Sun	6A - 9A	20' - 25'	6' - 10'	L	MA, NE, NW, SC, SE, NoCA, SoCA	SE-US
Holly, Inkberry	*Ilex glabra*	Evergreen	Partial Shade to Full Sun	6A – 9A	4' – 8'	2' – 4'	S	MA, NE, SC, SE, NoCA, SoCA, E-Can	E-US, E-Can
Holly, Nellie Stevens	*Ilex x*	Evergreen	Partial Shade to Full Sun	6A - 9A	15' - 25'	6' - 10'	L	MA, NE, NW, SC, SE, NoCA, SoCA	Europe/Asia-Developed
Holly, San Jose	*Ilex x aquipernyi*	Evergreen	Full Shade to Full Sun	5B - 9A	15' - 20'	10' - 15'	XL	NW, SC, NoCA, SoCA	Europe/Asia-Developed
Holly, Yaupon	*Ilex vomitoria*	Evergreen	Full Shade to Full Sun	7A - 10A	15' - 18'	10' - 15'	XL	MA, NW, SC, SE, NoCA, SoCA	SE-US
Juniper, California	*Juniperus californica*	Evergreen	Partial Shade to Full Sun	8A - 10A	8' - 12'	6'	L	SC, NoCA, SoCA	US-CA
Lemon Scented Tea	*Leptospermum petersonii*	Evergreen	Full Sun	9B - 10	12 - 20'	8' - 12'	XL	SoCA	Australia
Manzanita, Bigberry	*Arctostaphylos glauca*	Evergreen	Partial Shade to Full Sun	7A - 11	6' - 15'	8' - 10'	L	NoCA, SoCA	US-CA
Manzanita, Del Mar	*Grandulosa ssp. Crassifolia*	Evergreen	Partial Shade to Full Sun	8A - 11	6' - 15'	8' - 10'	L	SC, NoCA, SoCA	US-CA
Manzanita, Eastwood	*Arctostaphylos glandulosa*	Evergreen	Partial Shade to Full Sun	8A - 11	3' - 6'	5' - 6'	M	SC, NoCA, SoCA	US-CA
Manzanita, Howard McMinn	*Arctostaphylos densiflora*	Evergreen	Partial Shade to Full Sun	8A - 11	4' - 6'	6'	M	SC, NoCA, SoCA	US-CA
Mock Orange	*Pittosporum tobira*	Evergreen	Partial Shade to Full Sun	8A - 11	6' - 10'	10' - 15'	XL	NW, SC, NoCA, SoCA	Asia
Narrowleaf Pittosporum	*Pittosporum Phillyreoides*	Evergreen	Partial Shade to Full Sun	9A - 11	20' - 30'	15' - 20'	Tree	NoCA, SoCA	US-CA
Olive, Fruitless	*Olea europaea 'Fruitless'*	Evergreen	Full Sun	8A - 11	15' - 25'	15' - 20'	Tree	SoCA	Europe, Asia
Osmanthus, Sweet	*Osmanthus , fragrams*	Evergreen	Partial Shade to Full Sun	7B - 9A	15' - 25'	15' - 25'	Tree	SoCA	Asia
Palm, Miraguama	*Coccothrinax miraguama*	Evergreen	Partial Shade to Full Sun	9B-11	15' - 20'	6' - 8'	L	SoCA	Caribbean

Common Name[1,2,8]	Latin Name	Plant Type	Sun	Hardiness Range	Mature Height[5]	Mature Spread[5]	Sizing[7]	Availability[9]	Nativity
Palm, Pacific/Fiji Fan	*Pritchardia pacifica*	Evergreen	Partial Sun	10B-11	10' - 20'	5' -10'	L	SoCA	Oceania
Palm, Peaberry	*Thrinax morrisii*	Evergreen	Partial Sun to Full Sun	10B-11	15' - 20'	6' - 8'	L	SoCA	US-FL, Caribbean
Palm, Sea Thatch	*Thrinax radiate*	Evergreen	Partial Sun to Full Sun	10B-11	15' - 20'	8' - 10'	L	SoCA	US-FL, Caribbean
Palm, Thurston	*Pritchardia thurstonii*	Evergreen	Full Sun	10B-11	15' - 25'	8'	L	SoCA	Oceania
Palm, Windmill	*Trachycarpus fortunei*	Evergreen	Partial Sun to Shade	8 - 10	10' - 20'	6' - 10'	L	SoCA	Asia
Palmetto, Dwarf	*Sabal minor*	Evergreen	Partial Sun to Full Sun	8B - 11	4' - 6'	3' - 6'	M	NoCA, SoCA	SE-US
Pittosporum Kohuhu	*Pittosporum tenuifolium*	Evergreen	Partial Shade to Full Sun	9A-10B	12' - 20'	6' - 15'	XL	NoCA, SoCA	Oceania
Powderpuff	*Calliandra haematocephala*	Evergreen	Partial Shade to Full Sun	9B-11	10' - 15'	10' - 15'	XL	SoCA	South America
Powderpuff, Pink	*Calliandra surinamensis*	Evergreen	Partial Shade to Full Sun	10A-11	12' - 15'	12' - 15'	XL	SoCA	South America
Strawberry Tree	*Arbutus unedo*	Evergreen	Partial Shade to Full Sun	7B - 11	15' - 25'	15' - 25'	Tree	SC, SE, NoCA, SoCA	Europe
Sumac, Lemonade Berry	*Rhus, integrifolia*	Evergreen	Partial Shade to Full Sun	9B-11	6' - 10'	10' - 15'	XL	SoCA	US-CA
Toyon	*Heteromeles arbutifolia*	Evergreen	Partial Shade to Full Sun	8B-10B	8' - 15'	15'	XL	SC, NoCA, SoCA	W-US
Trumpet Tree	*Tabebuia impetiginosa*	Evergreen	Full Sun	9B-11	15' - 20'	15' - 20'	Tree	SoCA	Central America, South America
Wax Myrtle, Pacific	*Myrica californica*	Evergreen	Partial Shade to Full Sun	7B - 11	15' - 25'	15' - 25'	Tree	NW, SC, NoCA, SoCA	W-US
Yellow-wood, Long Leafed	*Podocarpus henkelii*	Evergreen	Partial Shade to Full Sun	9A-11	15' - 25'	8' - 15'	XL	SoCA	Africa
Berkeley Sedge	*Carex divulsa*	Grass/Sedge	Partial Shade to Full Sun	5 - 9	12" - 18"	12" - 18"	XS	NW, NoCA, SoCA	Europe
Blue Grama Grass	*Bouteloua gracilis*	Grass/Sedge	Partial Sun to Full Sun	4 - 9	12" - 36"	24" - 36"	S	GP, SC, GL, NoCA, SoCA	W-US
Blue Moor Grass	*Sesleria caerulea*	Grass/Sedge	Partial Sun to Full Sun	5 - 9	12"	12" - 24"	XS	NoCA, SoCA	Europe
Blue Oat Grass	*Helictotrichon sempervirens*	Grass/Sedge	Full sun	4 – 8	20" – 24"	20" – 40"	XS	GL, MA, NW, NoCA, SoCA	Europe
Deer Grass	*Muhlenbergia rigens*	Grass/Sedge	Partial Sun to Full Sun	5 - 11	48" - 60"	48" - 72"	M	NoCA, SoCA	US-CA
Flax Lily	*Dianella caerulea*	Grass/Sedge	Partial Sun to Full Sun	7 - 11	12"- 24"	12" - 24"	XS	NoCA, SoCA, SE	Australia
Foothill Needlegrass	*Nasella lepida*	Grass/Sedge	Partial Sun to Full Sun	6 - 9	12" - 36"	12" - 60"	S	NoCA, SoCA	US-CA
Nyalla Mat Rush	*Lomandra longifolia Nyalla*	Grass/Sedge	Partial Shade to Full Sun	7 - 11	36" - 48"	36" - 48"	S	NoCA, SoCA	Australia
San Diego Sedge	*Carex spissa*	Grass/Sedge	Partial Shade to Partial Sun	6 - 10	36" - 72"	24" - 60"	S	NoCA, SoCA	SW-US
Tropic Belle Mat Rush	*Lomandra hystrix Tropicbelle*	Grass/Sedge	Partial Shade to Full Sun	8 - 11	24" - 36"	24" - 48"	S	SoCA	Australia

Common Name[1,2,8]	Latin Name	Plant Type	Sun	Hardiness Range	Mature Height[5]	Mature Spread[5]	Sizing[7]	Availability[9]	Nativity
Wire Grass	*Juncus patens*	Grass/Sedge	Partial Shade to Full Sun	6 - 10	12" - 24"	12" - 24"	XS	NW, NoCA, SoCA	US-CA

Notes:

1. The species listed are drought tolerant and have applicability to bioretention due to shallow root zones.
2. The species highlighted in green are typically more readily available in the noted regions as the listed species or another similar cultivar.
3. This list is subject to availability and Contech reserves the right to make appropriate substitutions when necessary.
4. For species not listed, please contact Contech for suitability.
5. Mature height and spread do not reflect plant size at planting / system activation. Contact Contech for information on available sizes at activation.
6. Contech promotes the use of non-invasive species in Filterra systems, and has made efforts to maintain a plant list free of invasives. However, always check with local sources, as some species listed (even natives) may be invasive in some regions and not others.
7. All Filterra vault systems incorporate a ponding depth ranging from 12"-36" between finished grade and media surface. For systems with more than 18" from finshed grade to media (FTIBC, FTIBP, FTPD, etc), Contech recommends choosing a species with "Sizing" noted as "XL" or "Tree".
8. The species highlighted in orange are available for an additional charge of $250 per plant required.
9. Availability Key: GL=Great Lakes; GP=Great Plains; MA=Mid-Atlantic; NE=Northeast; NW=Northwest; SW=Southwest; SE=Southeast; SC=South Central; NoCA=Northern CA; SoCA=Southern CA; E-Can=Eastern Canada; W-Can=Western Canada