

M E M O R A N D U M

Date: February 16, 2017
To: Vitruvian Culver City LLC
From: Kimley-Horn and Associates, Inc.
CC: Mike Harden, PCR Services Corp.
Subject: Washington 8777 - Utility Memorandum

Introduction

Kimley-Horn and Associates, Inc. is providing this utility investigation technical memorandum based on our review of the project's Comprehensive Plan document provided by the Client and our understanding of the existing utilities surrounding the site. Summary of our utility analysis for the proposed development is below.

Sanitary Sewer:

- a. Existing Improvements:** Existing sewer lines within Culver City are maintained by the City's Public Works Department. Existing sewer system for each street frontage are described further below:
- National Blvd: There is an existing 8" sewer line flowing southeasterly to connect to the 8" sewer system on Washington Boulevard via an existing manhole at the National Boulevard and Washington Boulevard intersection. The existing 8" on National Boulevard is located on the project side of the street center line under the northbound lanes.
 - Washington Blvd: There is an existing 8" sewer line along the project frontage adjacent to the westbound curb and gutter. The existing sewer system was proposed to be lined based on City record plans from 1996 (Plan No. 5049-125). The record documents also show two existing laterals west of Wesley Street intersection.
- b. Proposed Improvements:** The following are based on the Concept Design by Gensler received from the Client:

Proposed Project Development Programming: The project will develop or include the following:

- Office – 128,000 sf
- Retail – 4,500 sf

Proposed Sewer Demand:

Based on the above summary, the proposed project will generate 0.101 cfs (65,125 gpd) of additional sewer discharge to the existing 8" sewer line within Washington Boulevard. This does not include potential credit for the existing use and sewer demand on the site, which would help further reduce the proposed sewer demand. Our detailed analysis based on the County of Los Angeles Sanitation District's sewer loading per unit or usage is summarized in tabulation below.

PROPOSED FLOW - 8777 WASHINGTON BLVD.

UNIT TYPE	SIZE	AREA (SF)	NUMBER	Unit of Measure	FLOW GPD	TOTAL FLOW (GPD)
COMMERCIAL	Office	128000	1	1000 sf	200	25600
COMMERCIAL	Retail	4500	1	1000 sf	100	450

TOTAL GPD= 26050

*GPD TAKEN FROM COUNTY OF LA SANITATION DIST. ORDINANCE

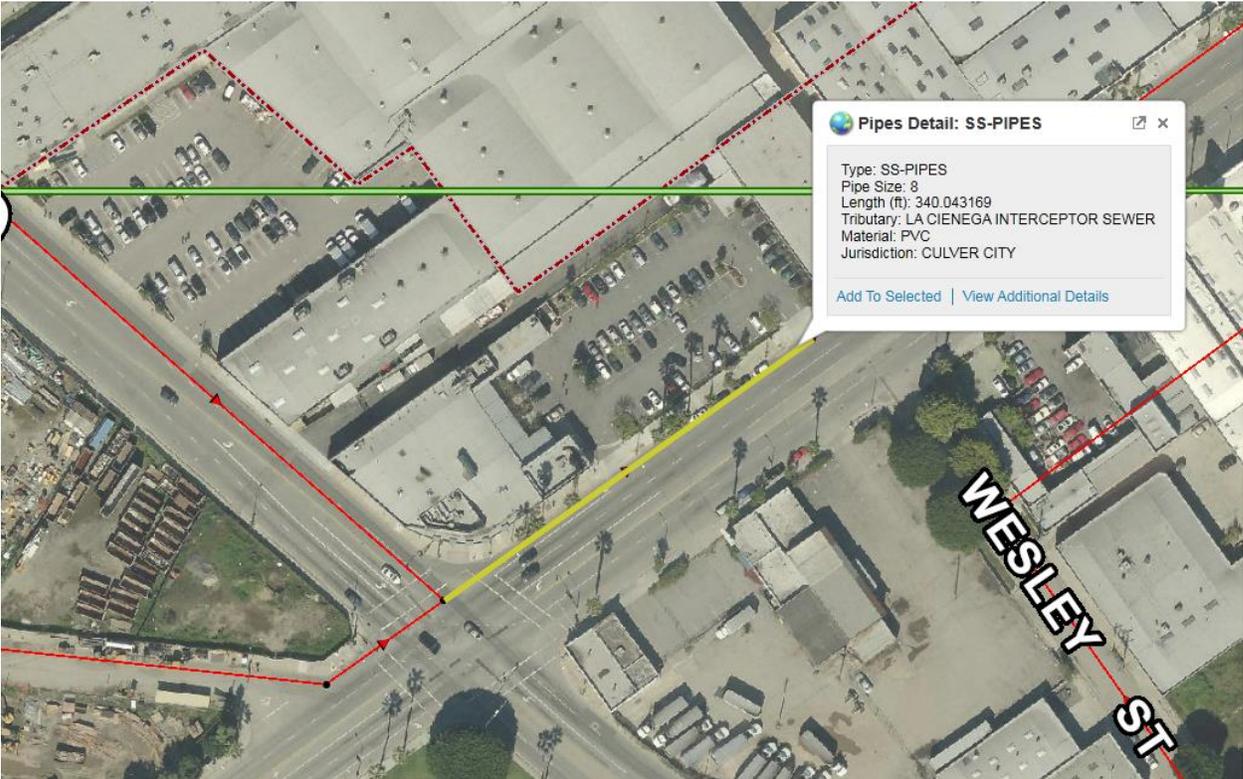
TOTAL CFS = 0.040

TOTAL PEAK CFS= 0.101

PEAK FACTOR =2.5

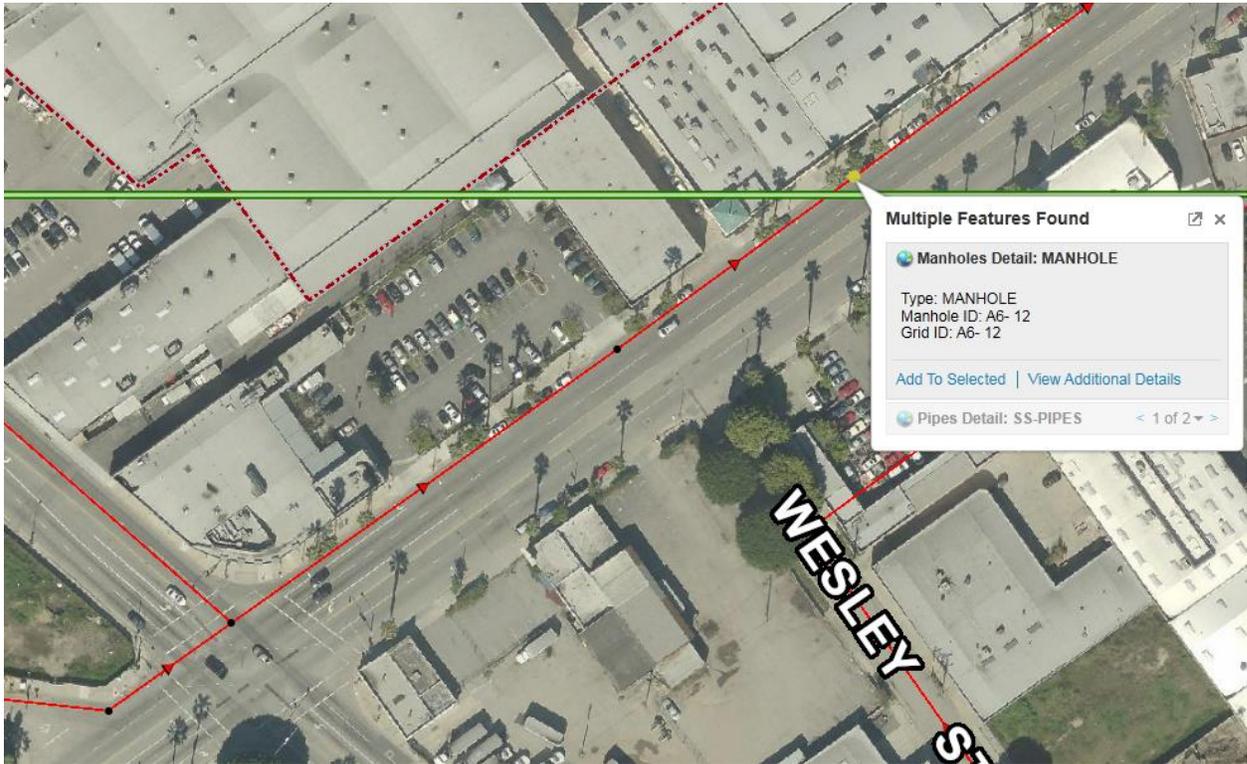
TOTAL PEAK GPD= 65125

The Conceptual Street Utility Plan shows a new 6” sewer lateral connection to the existing 8” sewer line on Washington Boulevard. See below for sewer mapping from City’s GIS site.



Sewer Capacity Analysis:

Based on our sewer metering and analysis for the adjacent Ivy Station project, we have determined that the existing 8" sewer line would have adequate capacity for the Washington 8777 project. The closest metering for the site was performed at MH ID A6-12 northeast of the project site per image below.



Supplementing the previous analysis completed for the Ivy Station project and adding the proposed sewer discharge or flow from the Washington 8777 project would also improve the cleansing velocity for the system. Below tabulation summarizes the impact of the proposed developments on the existing sewer system from both Ivy Station site and Washington 8777 site.

WASHINGTON BLVD SEWER MAIN CAPACITY REVERIFICATION - PROPOSED CONDITION

LOCATION	SEWAGE FLOW (GPM)	SEWAGE FLOW (CFS)	CUMULATIVE, Q _{DEMAND} (CFS)	PIPE MATERIAL	UPSTREAM SLOPE (ft/ft)	DIAMETER, D (FT)	NORMAL DEPTH, d (FT)	d/D	CAPACITY VERIFICATION
Ivy Station	83.09	0.185	-	-	-	-	-		-
Washington 8777	46	0.101	0.286						
MH - A612 8711 Washington Blvd	62.64	0.140	0.426	PVC (Insituform Lining)	0.0059	0.67	0.32	0.4776	OK
MH - 3 3229 S. Sherbourne Dr	41.04	0.091	0.517	PVC (Partial Insituform Lining)	0.0065	0.83	0.31	0.3735	OK
MH - 5 3310 Fay Ave	33.82	0.075	0.592	PVC (Partial Insituform Lining)	0.0021	1	0.42	0.42	OK

n = 0.013
d/D ≤ 0.5 for d/D ≤ 15"

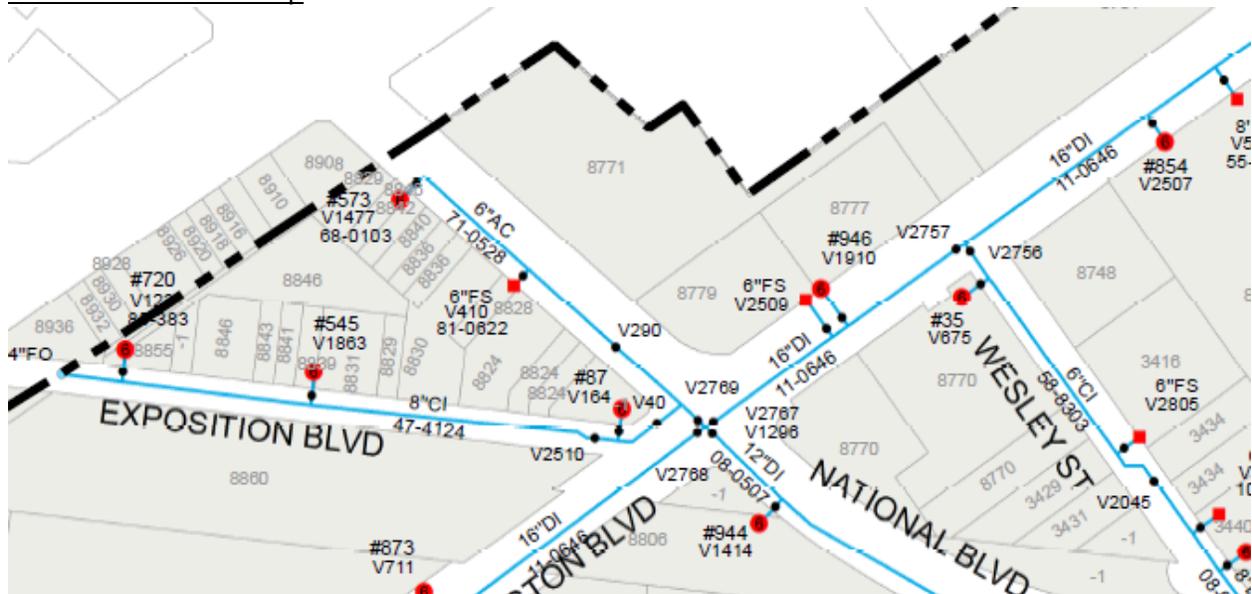
Domestic/Fire Water

a. **Existing Improvements:** Existing water lines within the City of Culver City are operated by the water purveyor Golden State Water Company (GSW). The information summarized below are based on the Topographic Survey and Conceptual Street Utility Plan provided by the Client.

1) **Water Line:**

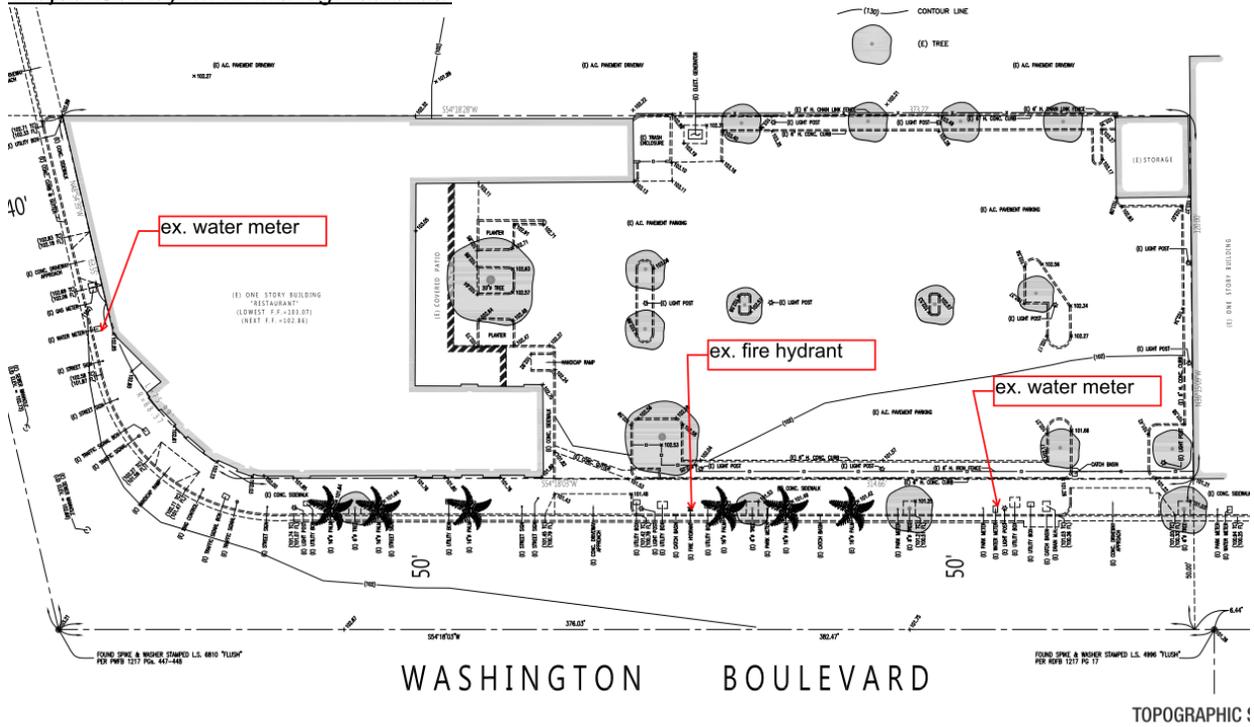
- **National Blvd:** There's a 6" water line along National Boulevard on the western half of the street with 87" storm drain along the center line of the street. The 6" water line gets combined into a single 12" water line near the intersection of Washington and National Boulevard.
- **Washington Blvd:** There's a single 16" water line on Washington Blvd., but the location of the line is across the street under the east bound lanes. The 90" County storm drain line will need to be crossed in order to connect to the 16" water line.

GSW Record Water Map



- 2) **Fire Hydrants:** The existing site has one fire hydrant at mid-point of Washington Boulevard frontage based on the topographic survey provided.
- 3) **Water Meters:** There are two existing water meters shown around the project site based on the topographic survey; one on each street frontage. Sizing of these meters are not shown on the Street Utility Plan, but the project should consider reusing the meters and laterals to an extent feasible based on 6" fire service on Washington Blvd. noted on GSW's record document. The presence of these meters also confirms that the large County storm drain lines (87"-90" RCP) can be crossed over from the project site for the proposed water and fire services.

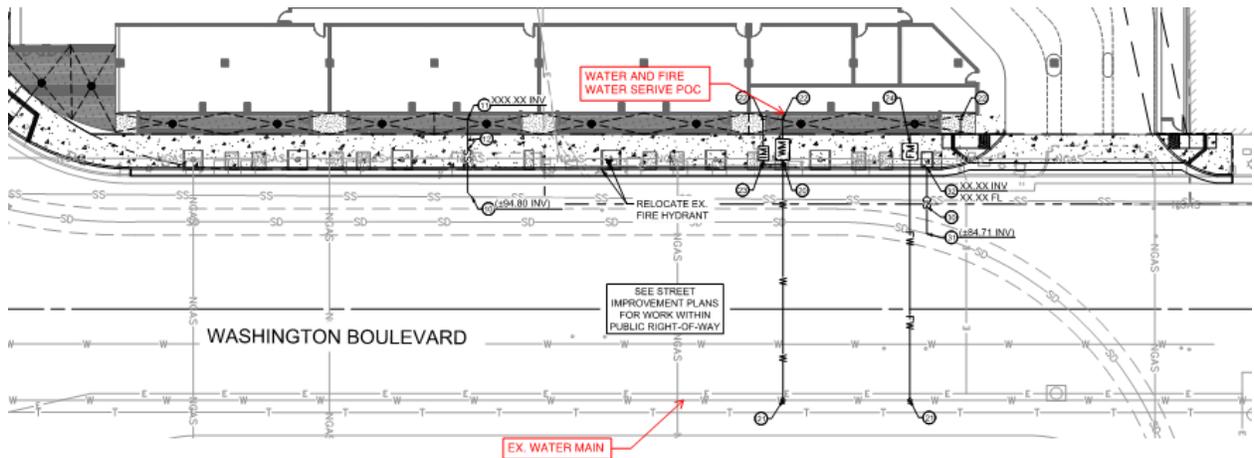
Project Survey with Existing Features:



ER CITY, CA 90232

Proposed Improvements: The following are based on the Conceptual Street Utility Plan prepared by others included in the Comprehensive Plan package received from the Client:

Proposed Water and Fire Service Connection: The Conceptual Street Utility Plan shows the proposed water/fire service connections for the project at the western end of the site on Washington Boulevard. The proposed connection will need to cross Washington Boulevard to the east bound lanes to tie into the existing 16" main. A consideration should be given to utilizing the existing meter and lateral if feasible for the sizing and location.



We've obtained a preliminary fire flow availability from the City of Culver City in coordination with GSW. The initial fire flow of **65 psi (static)** provided by the City's fire department was based on the flow rate from the existing hydrant (#946) at 200 feet east of National Boulevard. The test was completed on June 3, 2016.

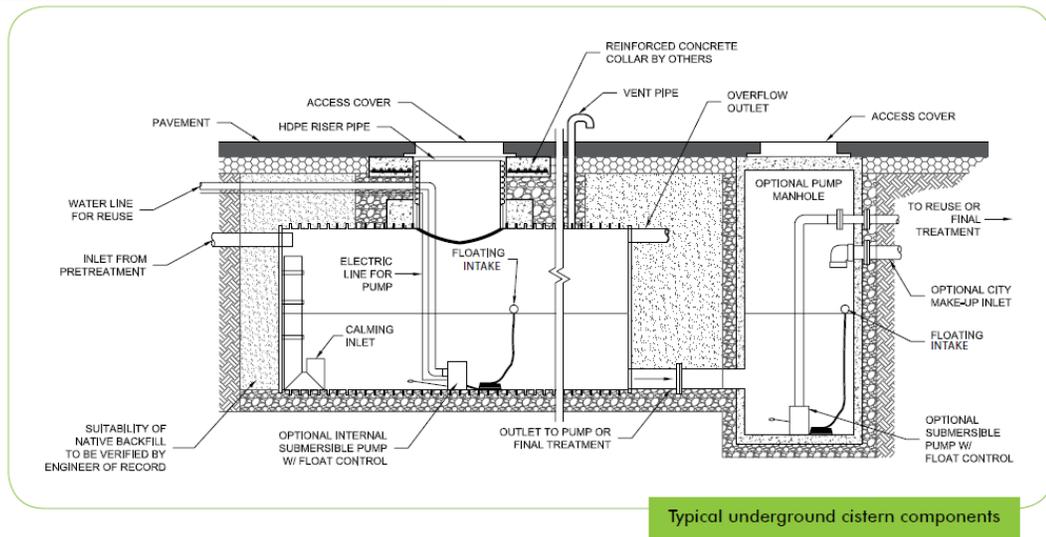
Proposed Water and Fire Service Pressure Requirement: The project's plumbing engineer and/or fire service consultant will need to assess the project water/fire service design requirements based on the preliminary pressure information provided by GSW. The plumbing engineer will also need to assess the need for any booster pump for the project in coordination with GSW and Culver City Fire Department.

Water Conservation Features: The project will need to comply with the City's Low Impact Development (LID) guidelines and City's Streetscape Master Plan. Both requires implementation of stormwater treatment system that captures the required volume of runoff for treatment. The LID for the project will need to consider infiltration, rainwater capture and reuse and combination of treatment systems approved by the City. If the project site is not feasible for infiltration due to soil conditions or other limiting factors, the project would look at capture and reuse, such as a cistern/underground detention tank, that would reuse rainwater for irrigation purpose to conserve potable water.

It is our understanding that the project Landscape Architect will incorporate drought tolerant vegetation irrigated via a low flow drip irrigation system. In order to conserve potable water, the irrigation system will make use of captured rainwater contained within a detention tank located in the subterranean levels of the project. The irrigation system will include weather and/or soil moisture based controllers that automatically adjust irrigation in response to changes in plant watering needs as weather or soil conditions change.

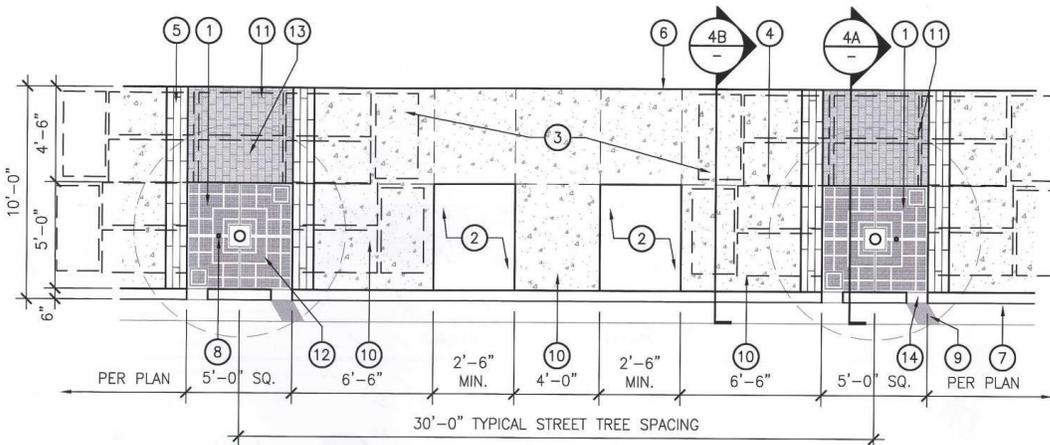
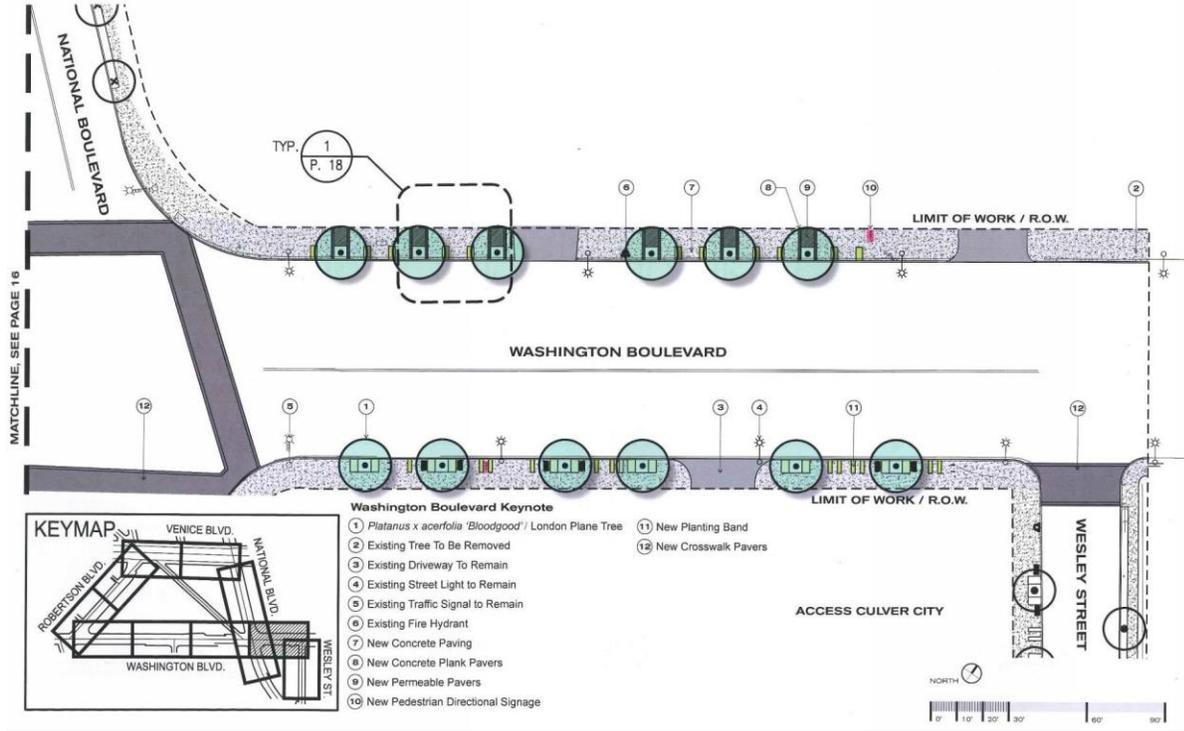
The Plumbing Engineer will also limit indoor water use by requiring plumbing fixtures to meet or exceed the water use limits as prescribed by the 2013 California Green Building Standards Code (CALGreen). 2013 CALGreen sets a 20% reduction of water use as compared to previous editions of CALGreen and sets a nationwide standard in green building and water conservation.

Sample Rainwater Harvesting System



In addition, the Washington National Transit Oriented Development District Master Plan, dated February 2015, details the required streetscape and LID Tree Wells that are to be implemented along Washington Boulevard. A combination of permeable pavers and filtration planters are to be installed within the right-of-way. It is possible that the filtration planters can be utilized to decrease the required cistern size for the on-site stormwater treatment.

Washington National Transit Oriented Development District Master Plan



LEGEND

1. TREE WELL.
2. PLANTING AREA: MATERIAL PER MASTER PLAN.
3. CONCRETE: NATURAL GRAY, TOP-CAST #5.
4. CONCRETE JOINT TYP.

5. PLANK PAVERS.
6. RIGHT OF WAY.
7. FACE OF CURB.
8. "GRATE STAKE" BY J.R. PARTNERS.
9. GUTTER GROOVES ON UPHILL SIDE ONLY.
10. PEDESTRIAN ACCESS WHERE PARKING OCCURS.

11. SILVA CELLS BELOW.
12. TREE GRATES: 5'-0" SQUARE "MARKET STREET" BY IRONSMITH.
13. PERMEABLE PAVERS.
14. CURB IN/OUTLET; LOCATION AND QUANTITY PER PROJECT CIVIL ENGINEER.

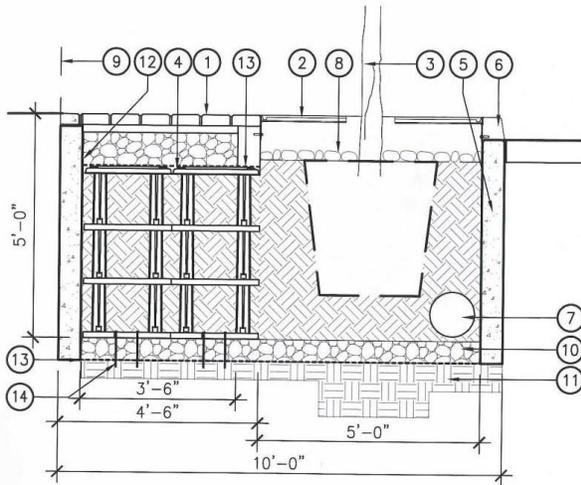
NOTES

- A. PROVIDE 4' O.C. SIDEWALK CONCRETE JOINTS BOTH WAYS UNLESS OTHERWISE NOTED.

1 WASHINGTON BOULEVARD STREETScape / LID TREE WELL WITH GRATE

SCALE: 1/4" = 1'-0"

114022_Washington + perm pavers.dwg

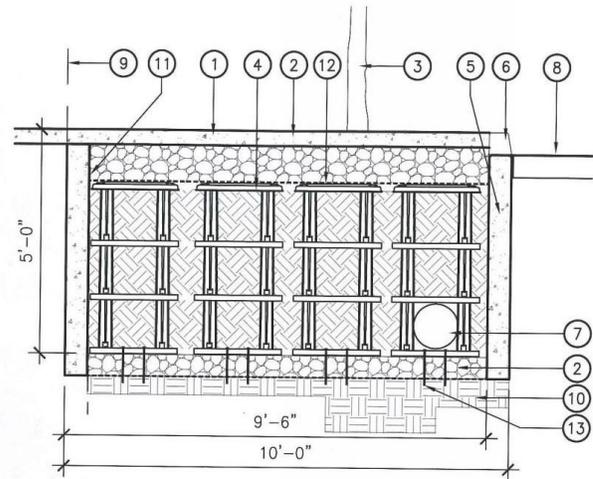


LEGEND

- | | |
|---|--|
| 1. PERMEABLE PAVERS. | 8. WASHED RIVER COBBLE. |
| 2. TREE GRATE. | 9. LIMIT OF WORK/RIGHT OF WAY. |
| 3. 36" BOX STREET TREE. | 10. COMPACTED CRUSHED ROCK. |
| 4. "SILVA CELLS" BY DEEP ROOT. | 11. SUBGRADE COMPACTED PER GEOTECHNICAL REPORT. |
| 5. FILTRATION PLANTER. | 12. MOISTURE BARRIER, DEPTH PER PROJECT GEOTECHNICAL ENGINEER RECOMMENDATIONS. |
| 6. ROADWAY CURB. | 13. GEOTEXTILE FABRIC |
| 7. 12" Ø DETENTION PIPE, CONNECT TO STORM DRAIN, CONFIRM W/ PROJECT CIVIL ENGINEER. | 14. 10" SPIKES |

4A WASHINGTON + FILTRATION PLANTER

SCALE: 1/2" = 1'-0" 114022_Washington+Filtration Planter section.dwg



LEGEND

- | | |
|---|--|
| 1. CONCRETE: NATURAL GRAY, TOP-CAST #5. | 8. ROADWAY. |
| 2. COMPACTED CRUSHED ROCK. | 9. LIMIT OF WORK/RIGHT OF WAY. |
| 3. STREE TREE (BEYOND). | 10. SUBGRADE COMPACTED PER GEOTECHNICAL REPORT. |
| 4. "SILVA CELLS" BY DEEP ROOT. | 11. MOISTURE BARRIER, DEPTH PER PROJECT GEOTECHNICAL ENGINEER RECOMMENDATIONS. |
| 5. FILTRATION PLANTER. | 12. GEOTEXTILE FABRIC |
| 6. ROADWAY CURB. | 13. 10" SPIKES |
| 7. 12" DETENTION PIPE, CONNECT TO STORM DRAIN, CONFIRM WITH PROJECT CIVIL ENGINEER. | |

4B WASHINGTON + FILTRATION PLANTER

SCALE: 1/2" = 1'-0" 114022_Washington+Filtration Planter section.dwg