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# Water Memorandum

## Goodman Logistics Center Fullerton

### Water Infrastructure Summary

July 17, 2020

*Prepared for:*

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*Prepared by:*

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TAIT JOB # **SP8454**

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## Purpose and Scope

The proposed project is a redevelopment of the existing Kimberly Clark manufacturing facility located at 2001 East Orangethorpe Avenue in the city of Fullerton. The site is serviced by the city of Fullerton Water Department. The Site is located south of Kimberly Avenue, East of Acacia Avenue and west of State College Boulevard. The project net area is approximately 65.42 acres.

The existing facility is occupied by existing buildings totaling 1,210,720 square foot (sf). The existing site has an 18" SCCP water main in Acacia, 12" CI in Orangethorpe, 10" CI in State College and 12" and 14" lines in Kimberly. City of Fullerton has a well in a city easement on the project site. The well has a 60,000 gallon tank with three booster pumps that service the 14" line in Kimberly. A flow test was performed on a hydrant located on Kimberly Avenue. The result was 6,600 GPM with a residual pressure of 20 psi. See attachment A for the City flow test results.

### Domestic Water

The proposed project has office space at the corners of each building. Each office will have its own address and separate water meter. Each meter will be a 1.5" city meter with backflow preventer. These will provide for typical office demand. Domestic water demand calculations prepared by Psomas indicate that the proposed project domestic water demand will be significantly less than the existing. The water demand technical memorandum is included on Attachment B for reference.

### Fire Water

The building construction type will be Type III-B construction and the largest building will be 545,300 square foot. The fire demand for a building of this size and construction type with a 50 percent reduction will be 4,000 GPM with fire sprinklers (2019 CFC Table BB105.1). The proposed four (4) buildings will be fully sprinkled and therefore the total fire demand for each building will be 1,000 GPM per fire hydrant equaling 4 fire hydrants in total. Maximum spacing shall be 350 feet between fire hydrants. Minimum distance between fire hydrants will need to be maintained. With the fire flow test data on Kimberly Avenue, 6,600 GPM with a residual pressure of 20 psi, this demand can be met without the need for a site fire pump. However, with the high pile storage at the warehouse each building will most likely require a fire pump to maintain the residual pressure along with the required flow rate. A fire flow analysis will be completed at the final stages of the project design.

Based on the Fire and Domestic demands as outlined above the existing water mains that service the site are adequate for the proposed project and it is anticipated upgrades will not be required. A copy of the conceptual wet utility plan and the existing water facilities is included in Attachment C.

## **Attachment A - Fire Hydrant Flow Test**

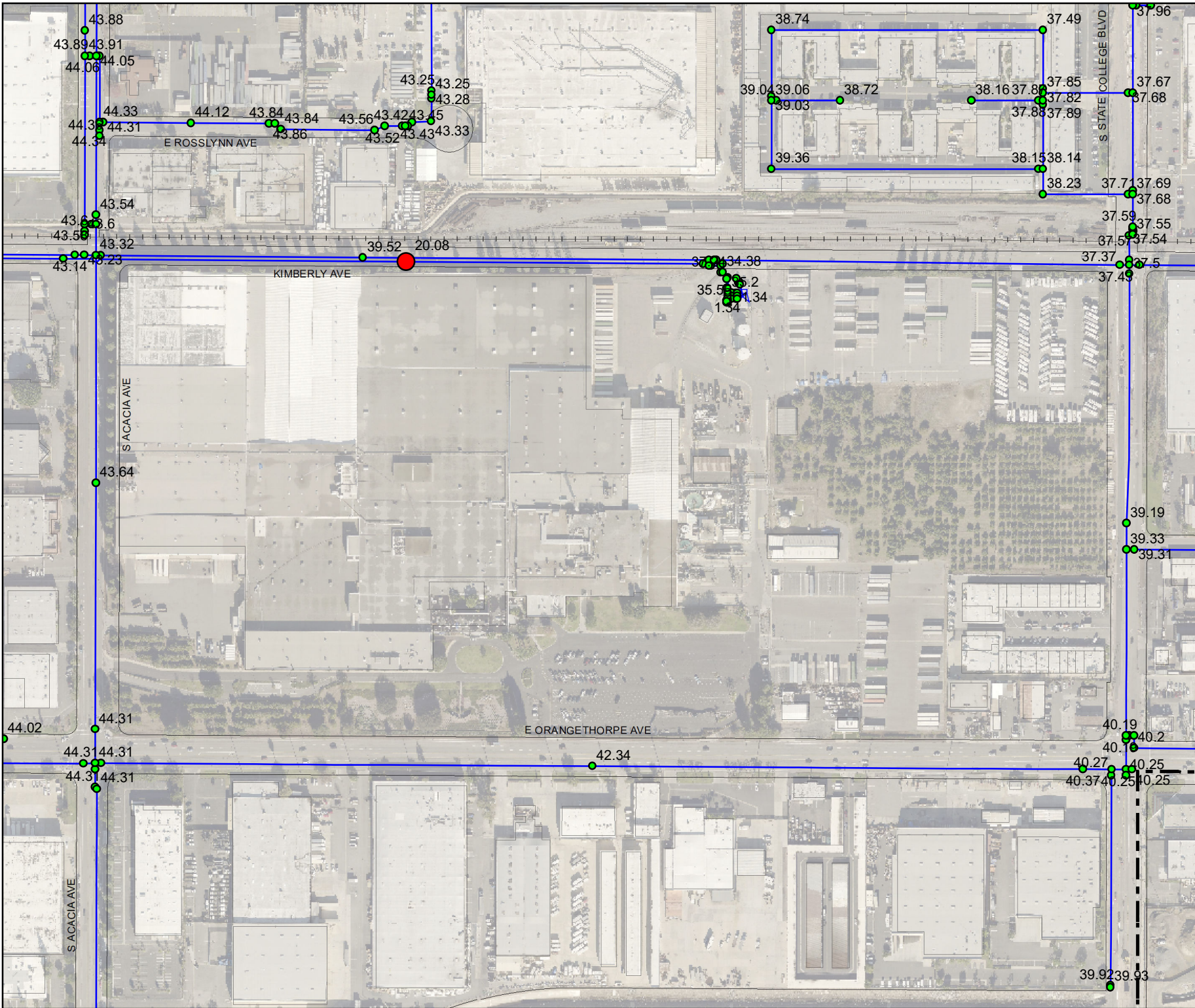




Pressure Zone: 1A  
 Atlas Sheet: 32  
 Hydrant #: H28

**Fullerton Fireflow Data**  
**Pressure: 20 psi    Flow: 6600 gpm**

**THESE MAPS MUST BE INCLUDED IN YOUR SUBMITTAL FOR YOUR BUILDING/FIRE PLAN CHECK. FIRE FLOW MAPS AND CALCULATIONS MUST BE STAMPED AND SIGNED BY A LICENSED C-16 FIRE PROTECTION CONTRACTOR.**



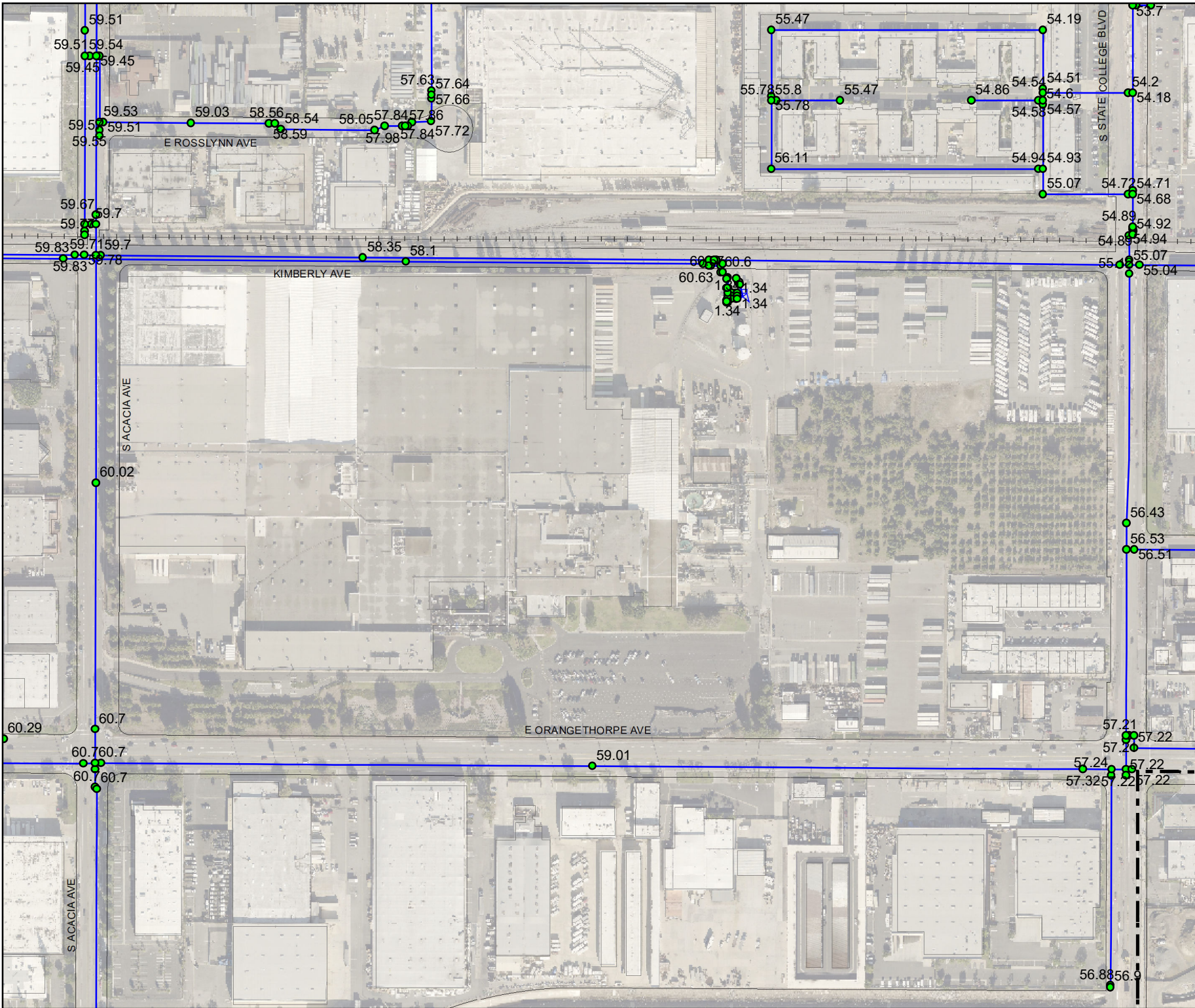




Pressure Zone: 1A  
Atlas Sheet: 32  
Hydrant #: H28

Fullerton Fireflow Data  
Pressure: 58 psi    Flow: 0 gpm

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**Attachment B – Water Demand Technical Memorandum by Psomas**



To: Tiffany Foo  
From: Mike Swan  
Date: March 24, 2020  
Subject: Goodman Logistics Center – Fullerton Water Demand Estimate

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***Proposed Project Location***

The Proposed Project, the Goodman Logistics Center - Fullerton is a warehouse development including corresponding offices located in the City of Fullerton (the City) on a 66.12-net acre site at 2001 East Orangethorpe Avenue. The Project site is bounded by Acacia Avenue on the west, Kimberly Avenue on the north, State College Boulevard on the east and Orangethorpe Avenue on the south. The Proposed Project site vicinity and location maps are shown on Figure 1 and 2, respectively.

***Existing Site Use***

The Project site is currently occupied by a manufacturing facility, with existing buildings totaling 1,210,720 square feet (sf). These existing buildings consist of 418,720 sf of manufacturing and 792,000 sf of warehouse uses. The current operations and associated use of the site will terminate by June 2020. The City of Fullerton Water Department maintains a water well facility in the north-central portion of the site west of the Kimberly Avenue access driveway, and there is a Southern California Edison (SCE) substation generally in the center of the Project site. A storage lot for recreational vehicles is located in the northeast corner of the Project site, which operates under a lease agreement with the current owner.

***Proposed Project Characteristics***

The Proposed Project encompasses the demolition of all existing structures on the site, with the exception of the City’s existing water well facility, and construction of four new buildings with a mix of primarily warehouse and associated office space uses. The Project site statistics as well as the water demand-related characteristics are shown in Table 1.

The proposed development plan includes approximately 1,456,522 sf of warehouse space and approximately 105,000 sf of office space (ground floor and mezzanine). It should be noted that the Project Applicant has engaged in negotiations for acquisition of an off-site, approximately 0.7-acre property, located south of proposed Building 3 and north of Orangethorpe Avenue (Duncan parcel). In the event the Project Applicant is able to acquire this property, Building 3 could be expanded to include approximately 47,862 sf of additional floor area, which would bring Building 3’s total floor area to 543,152 sf and the Proposed Project’s total floor area to 1,609,384 sf, including 1,504,384 sf of warehouse space and 105,000 sf of office space. Therefore, these higher Project Characteristics are shown in Table 1 will be utilized to generate a conservative estimate of



indoor water demands for the Water Supply Assessment (WSA). The landscape demands, also served by potable water, will be estimated based on the landscape area provided by the Project’s landscape architect and include the Duncan parcel as well. The Project is proposed to be completed, by individual building in phases with all demands on-line by 2022.

**Table 1. Project Characteristics**

	Building 1	Building 2	Building 3	Building 4	Total
<b>Site Area</b>					
<b>Net Area in square feet (sf)</b>	609,261	984,881	969,832	316,115	2,880,089
<b>Net Area in acres (ac)</b>	13.99	22.61	22.26	7.26	66.12
<b>Building Area (sf)</b>					
<b>Office - 1st floor</b>	10,000	10,000	10,000	5,000	35,000
<b>Office - 2nd floor</b>	20,000	20,000	20,000	10,000	70,000
<b>Warehouse Area</b>	312,695	515,255	513,152	163,282	1,504,384
<b>Total</b>	342,695	545,255	543,152	178,282	1,609,384
<b>Landscape Area (sf)</b>					
<b>Landscape</b>	59,080	50,006	54,039	34,667	197,792

### **Water Demand for Project Area**

Indoor water demand for the Proposed Project was estimated by multiplying estimated unit water demand factors for office and warehouse use in gallons per day per thousand square feet (gpd/ksf) by the appropriate building square footage. The Project will be designed to be water-efficient and meet or exceed all current water efficiency standards and regulations. An office use of 60 gpd/ksf was estimated using the Irvine Ranch Water District’s (IRWD) factor from their Water Resources Master Plan<sup>1</sup>. IRWD’s Master Plan utilized water meter records collected over an 8-year period as the basis for determining interior water use factors for non-residential land uses. The vast majority of irrigated non-residential lots in the IRWD service area are served through separate recycled water irrigation meters. As a result, the IRWD Master Plan provides empirical data for indoor water use separate from outdoor use.

Since IRWD did not develop or report a factor for warehouse use, that use is estimated based on the County Sanitation Districts of Los Angeles County (CSDLAC) sewer loading criteria for warehousing land use and adjusted for current water efficiency standards<sup>2</sup>. The LACSD loading for warehouse use is 25 gpd/ksf, which value has not been updated to reflect current building code water fixture standards. As such, an adjusted value of 20 gpd/ksf was utilized assuming a 20%

<sup>1</sup> Irvine Ranch Water District, Water Resources Master Plan, 2002 Table 3-1 Land Use and Water Use Factors, Updated July 2003.

<sup>2</sup> County Sanitation Districts of Los Angeles County, “Revenue Program Report”, Table 3, November 2007, Updated March 2017.

savings achieved by low flow fixtures required by current building and plumbing codes. The estimated indoor water use factors and indoor water demand, which would also be the estimated sewer flow, by building use type are summarized in Table 2.

**Table 2. Estimated Indoor Water Use**

<b>Building Use</b>	<b>Area (sf)</b>	<b>Unit Water Use (gpd/ksf)</b>	<b>Water Use (gpd)</b>	<b>Water Use (AFY)</b>
<b>Warehouse</b>	1,504,384	20	30,088	33.7
<b>Office</b>	105,000	60	6,300	7.1
<b>Total Indoor Water Use</b>			<b>36,388</b>	<b>40.8</b>

The State Department of Water Resources Model Water Efficient Landscape Ordinance (MWELO) limits potable landscape water irrigation to a Maximum Applied Water Allowance (MAWA) which is calculated in gallons per year as follows based on an Evapotranspiration Adjustment Factor (ETAF) of 0.55 for residential and 0.45 for non-residential use, the total landscaped area (LA) in square-feet, and the local reference evapotranspiration (ETo) rate in inches per year, where 0.62 is a conversion factor.

$$MAWA = (ETAF)(ETo)(0.62)(LA)$$

As the Proposed Project is a non-residential use, an ETAF of 0.45 applies. The total landscape area of the Proposed Project area will be 197,792 sf as shown in Table 1 per preliminary landscape plan area takeoffs prepared by Hunter Landscape, Inc., the Project Landscape Architect.

The ETo for the Project area is approximately 49.7 inches derived from the California Irrigation Management Information System (CIMIS) Spatial CIMIS data by zip code for zip codes in the City of Fullerton as reported in Ordinance No. 3226 “An Ordinance of the City Council of the City of Fullerton, California, Amending Title 15 of the Fullerton Municipal Code Pertaining to Landscaping and Irrigation Requirements”. Using the formula above, the Maximum Applied Water Allowance (MAWA) for the Project area is calculated as 2,742,643 gallons per year or 7,514 gallons per day (8.4 AFY) using the maximum allowable ETAF of 0.45. The irrigation demand is conservatively estimated using the MAWA for the WSA and will likely come in lower based on actual plant materials selected and irrigation system efficiencies.

The estimated water demand for each use and total water demand for the Proposed Project are summarized in Table 3, with the total estimated use being 43,902 gpd (36,388+7,514) or 49.2 AFY.

**Table 3. Estimated Project Water Use**

	Area (sf)	Water Use (gpd)	Water Use (AFY)
<b>Building Area (Indoor Use)</b>			
Warehouse	1,195,340	30,088	33.7
Office	40,000	6,300	7.1
<b>Building Subtotal</b>	<b>1,235,340</b>	<b>36,388</b>	<b>40.8</b>
<b>Landscape Area (Outdoor Use)</b>			
<b>Total Landscape Area &amp; Use</b>	<b>197,792</b>	<b>7,514</b>	<b>8.4</b>
<b>Total Water Use</b>		<b>43,902</b>	<b>49.2</b>

As a check, the resulting total water use equates to approximately 22 gpd per employee, based on the maximum of 2,000 employees. The Environmental Protection Agency documented an average daily water demand in commercial/industrial settings between 20 and 35 gpd per employee<sup>3</sup>. The Federal Energy Management Program documented an estimated range of between 8 and 20 gpd/employee for office use.<sup>4</sup> This demonstrates the wide range of estimated use per employee depending on area of the country and building type. The demand estimate calculated using the above per sf methodology correlates with this range. The 2,000 employees was provided as the maximum for the Project and with a less conservative number, the equivalent use per employee would increase.

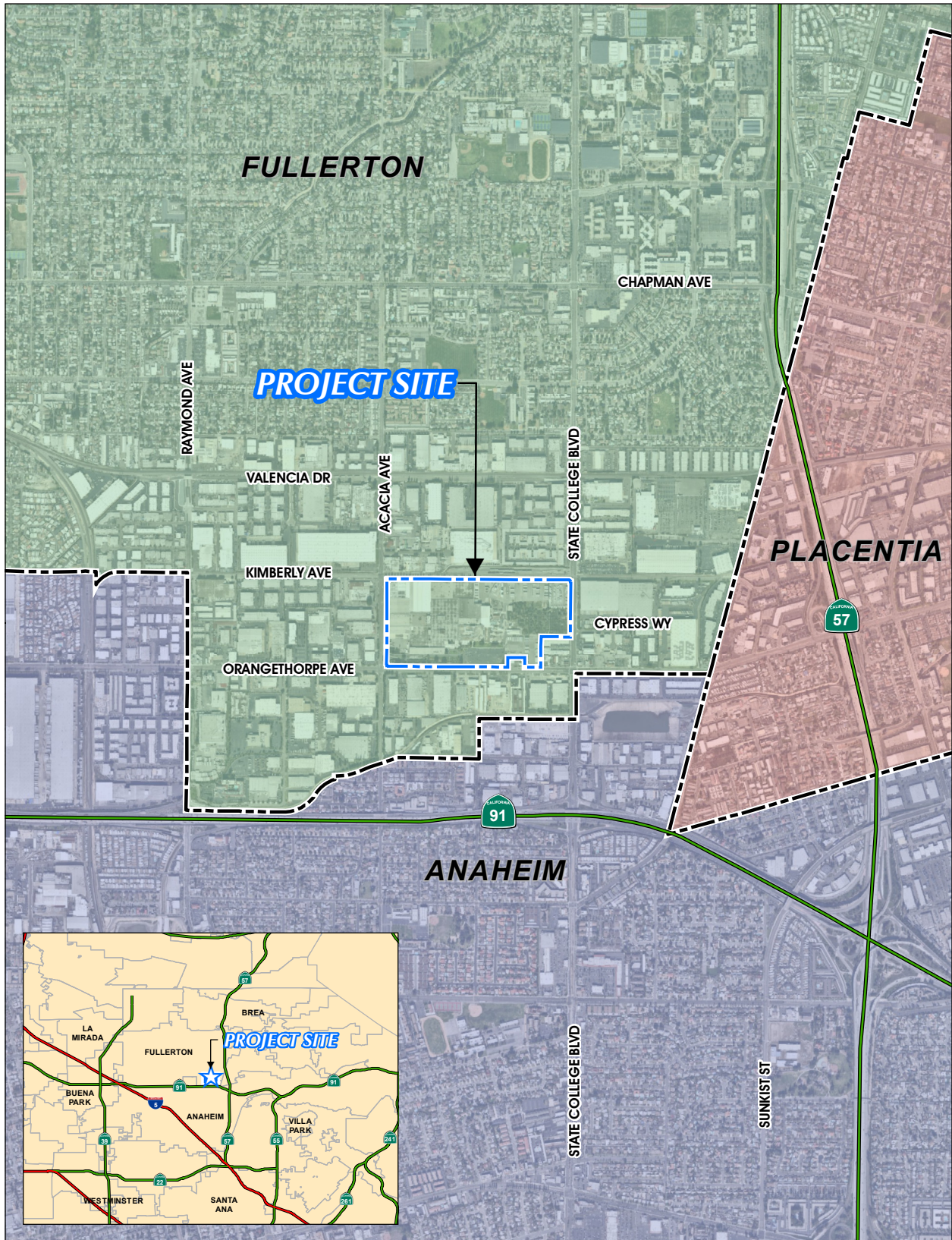
The WSA will utilize the net new water demand for the Project site to evaluate if there is sufficient supply to meet the demands of the Project as well as all other existing and planned future water demand for the City over the next 20 years. The net new demand for the Project area would be the difference between the existing water use and the estimated new water demand for the site and would typically be a positive number. However, since the previous manufacturing use on this site generated in a substantially higher water use, the net new demand will be negative or a reduction in demand for the Project site with implementation of the Project. As discussed above, all existing buildings in the Project area will be demolished to make room for the new uses on the Project site, i.e. Buildings 1 through 4 shown in Table 1. Based on previous water use on the Project site over the past five years and the estimated water use documented above, the Proposed Project's buildout demand will result in an approximate four to six percent reduction of the total City-wide water use.

Attachments: Figures 1 and 2

<sup>3</sup> <http://www.dartmouth.edu/~cushman/courses/engs44/water.pdf>

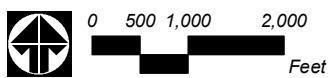
<sup>4</sup> <https://www.energy.gov/eere/femp/federal-water-use-indices>





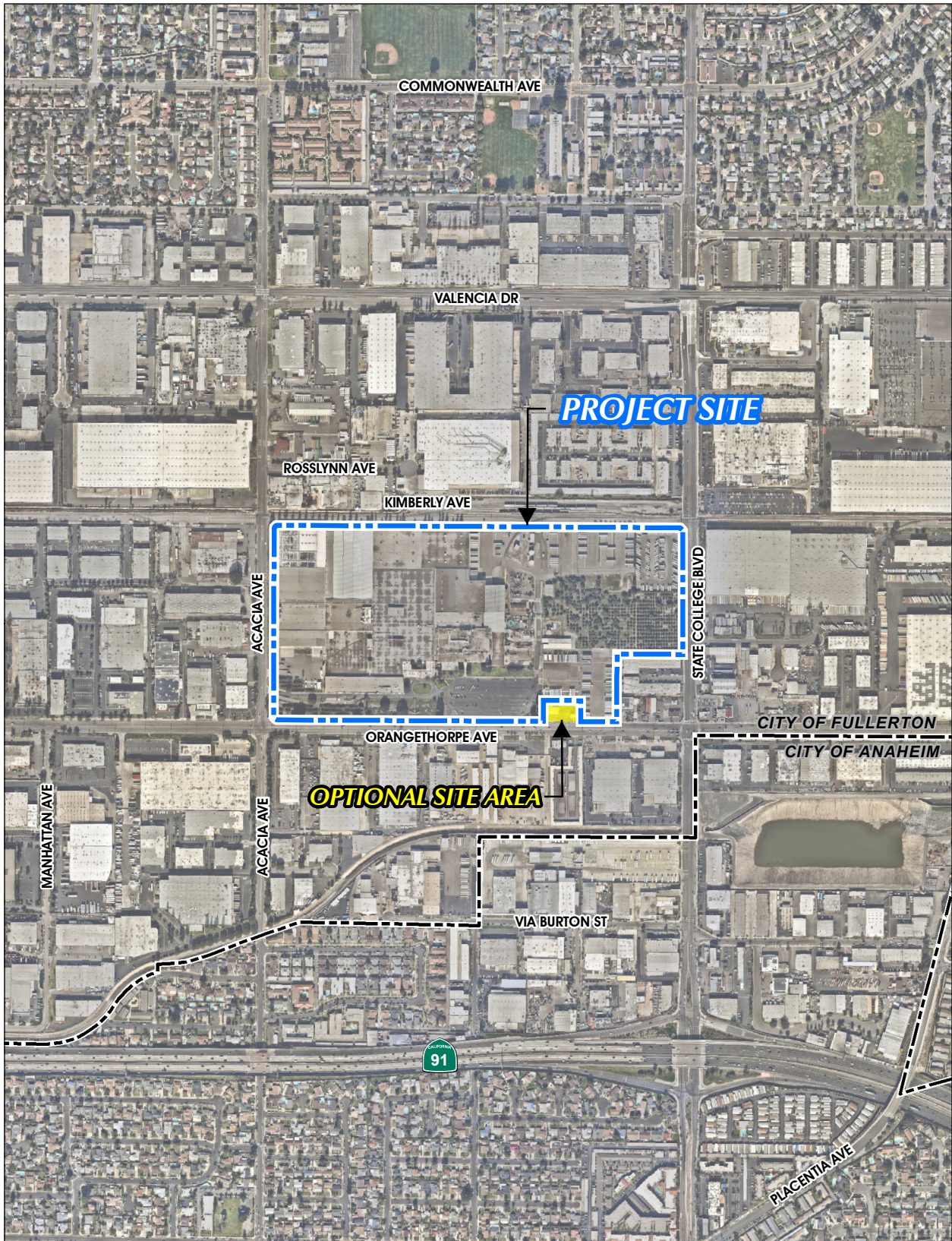
Source(s): ESRI, Nearmap Imagery (2019), OC Landbase (2019)

Figure 1



VICINITY MAP





Source(s): ESRI, Nearmap Imagery (2019), OC Landbase (2019)

Figure 2



LOCATION MAP

## **Attachment C – Existing Water ATLAS Plan & Conceptual Wet Utility Plan**



# CITY OF FULLERTON WATER SYSTEM



### LEGEND

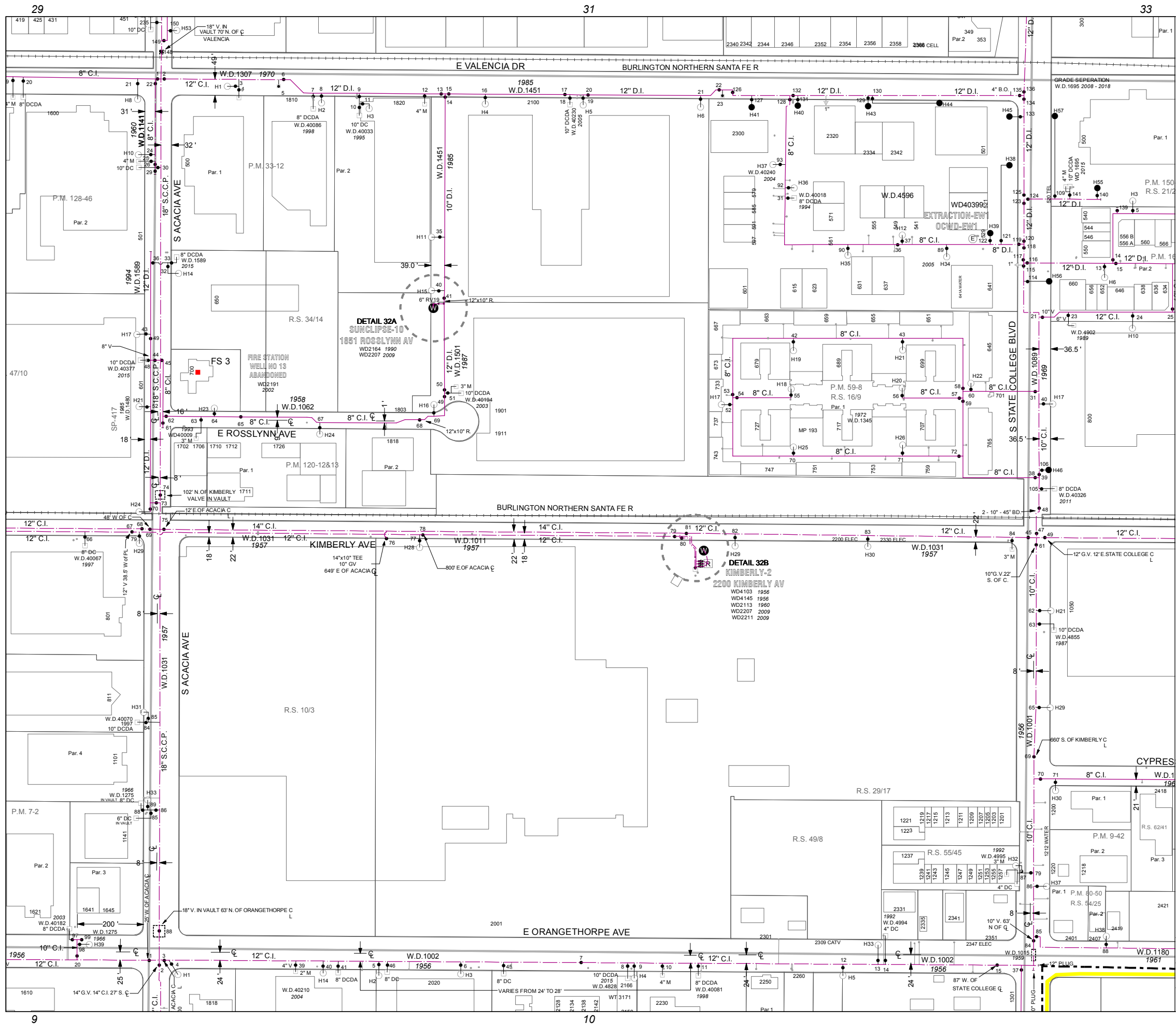
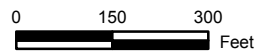
WATER MAIN ZONES		WATER MAIN TYPES	
	ZONE 1		CITY INSTALLED FRONTAGE FEE
	ZONE 1A		PRIVATE OR OWNED BY OTHER CITIES
	ZONE 1B		MWD
	ZONE 1C		LATERAL LINE 2" & SMALLER
	ZONE 2		LATERAL LINE 3" & LARGER
	ZONE 2A		VALVES
	ZONE 3		SURROUNDED BY BOX INDICATES CLOSED VALVE
	ZONE 3A		GATE
	ZONE 4		AIR RELEASE
	ZONE 4A		ALTITUDE
	ZONE 4B		BUTTERFLY
	ZONE 4C		CHECK
			PLUG
			REGULATING

	RESERVOIR		DEAD-END
	WELL		METER 2" & SMALLER
	EXTRACTION INJECTION		METER 3" & LARGER
	PUMP		INTERCONNECT
	FIRE HYDRANT		SAMPLE STATION
	FIRE HYDRANT CHECK VALVE		PRESSURE ZONE
	MWD TURNOUT		PRIVATE STREET
	SCHOOL		CITY BOUNDARY
	PARK		RAILROAD
	ATLAS GRID		CRITICAL CARE FACILITY
	EASEMENT		
	POINT OF INTEREST		

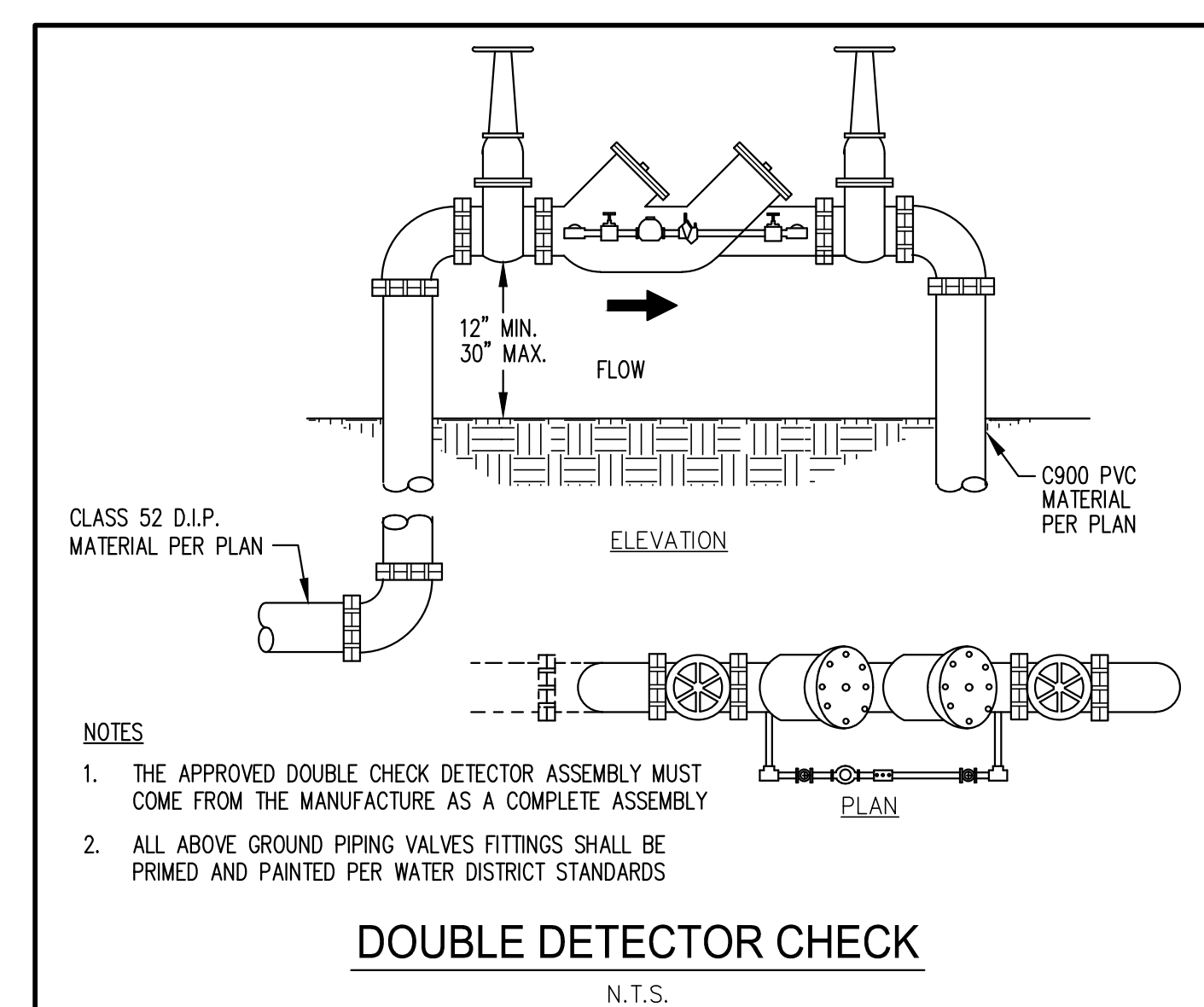
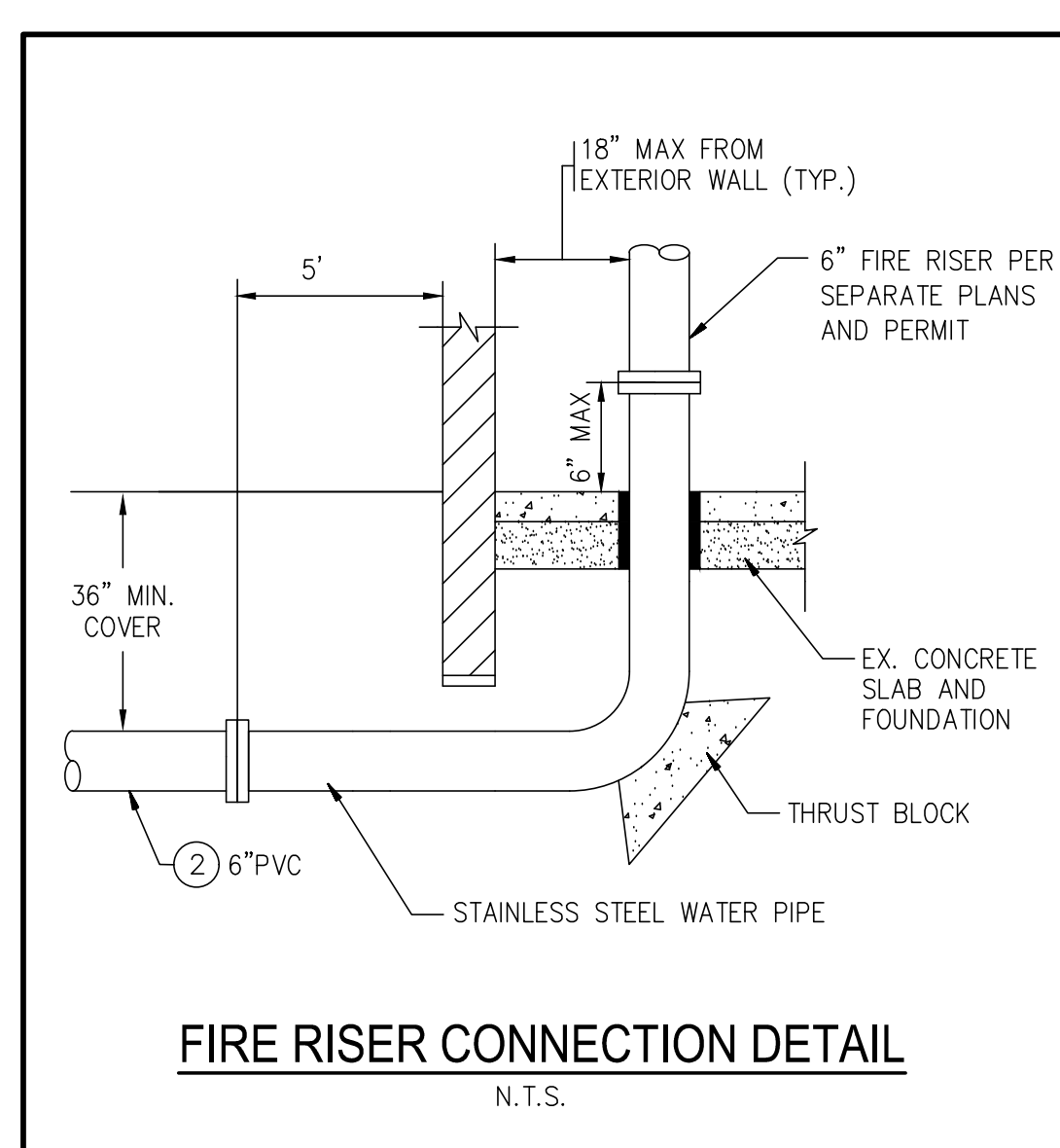
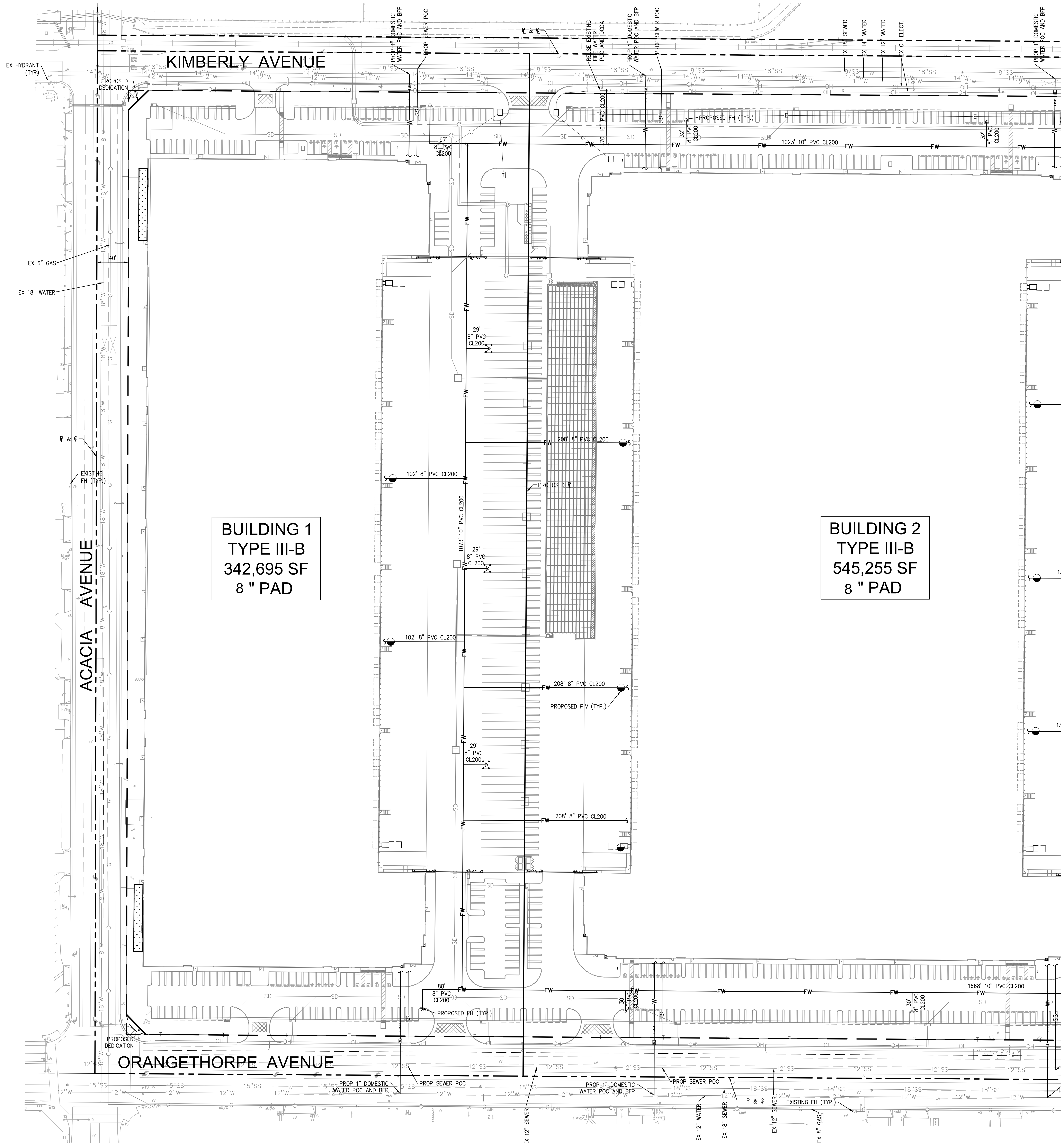
ABBREVIATIONS	
<b>PIPE MATERIAL</b>	<b>FITTING</b>
CI CAST IRON	BD BEND
DI DUCTILE IRON	C CROSS
GI GALVANIZED IRON	R REDUCER
PVC POLYVINYL CHLORIDE	TS TAPPING SLEEVE
SCCP STEEL CYLINDER CONCRETE PIPE	T TEE
STL STEEL	
<b>METER TYPE</b>	<b>MISC</b>
DOM DOMESTIC	FLG FLANGE
FL FIRE LINE	HP HIGH PRESSURE
DC DOUBLE CHECK	LP LOW PRESSURE
DCDA DOUBLE CHECK DETECTOR ASSEMBLY	MJ MECHANICAL JOINT
RPPDA REDUCE PRESSURE PRINCIPLE ASSEMBLY	PE PLAIN END
RR IRRIGATION	RP REDUCED PRESSURE VALVE
<b>WATER AGENCY</b>	<b>SURVEY</b>
AUW ANAHEIM UNION WATER	CL CENTERLINE
OCFCD ORANGE COUNTY FLOOD CONTROL DISTRICT	PL PROPERTY LINE
MWD METROPOLITAN WATER DISTRICT	TR TRACT
	WD WATER DRAWING

THIS MAP IS NOT AN OFFICIAL RECORD OF THE CITY BUT IS COMPILED FROM DATA FURNISHED BY PRIVATE CONTRACTORS AND OTHER SOURCES. LOCATIONS AND SIZE OF WATER MAIN, LATERALS, VALVES, AND OTHER RELATED FACILITIES ARE SHOWN BASED ON THESE SOURCES. THIS INFORMATION IS FURNISHED TO ANY PERSON STRICTLY AS A CONVENIENCE AND THE CITY DOES NOT ASSUME ANY RESPONSIBILITY FOR THE ACCURACY AND COMPLETENESS.

OVERLAY REVISED  
APR 2019  
BASE UPDATES  
COUNTY - 2016 ADDRESS - 2019  
GRID 12 - C







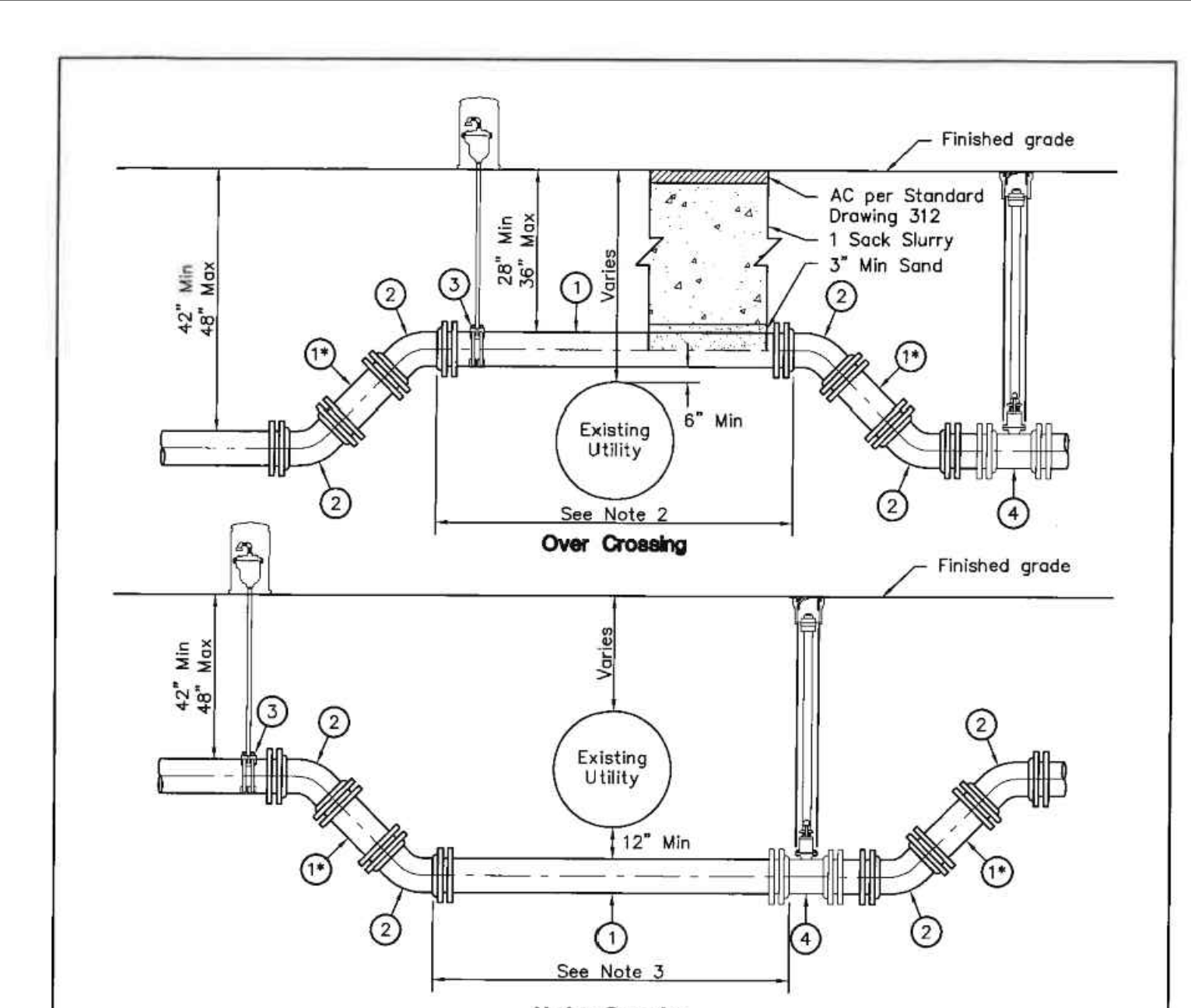
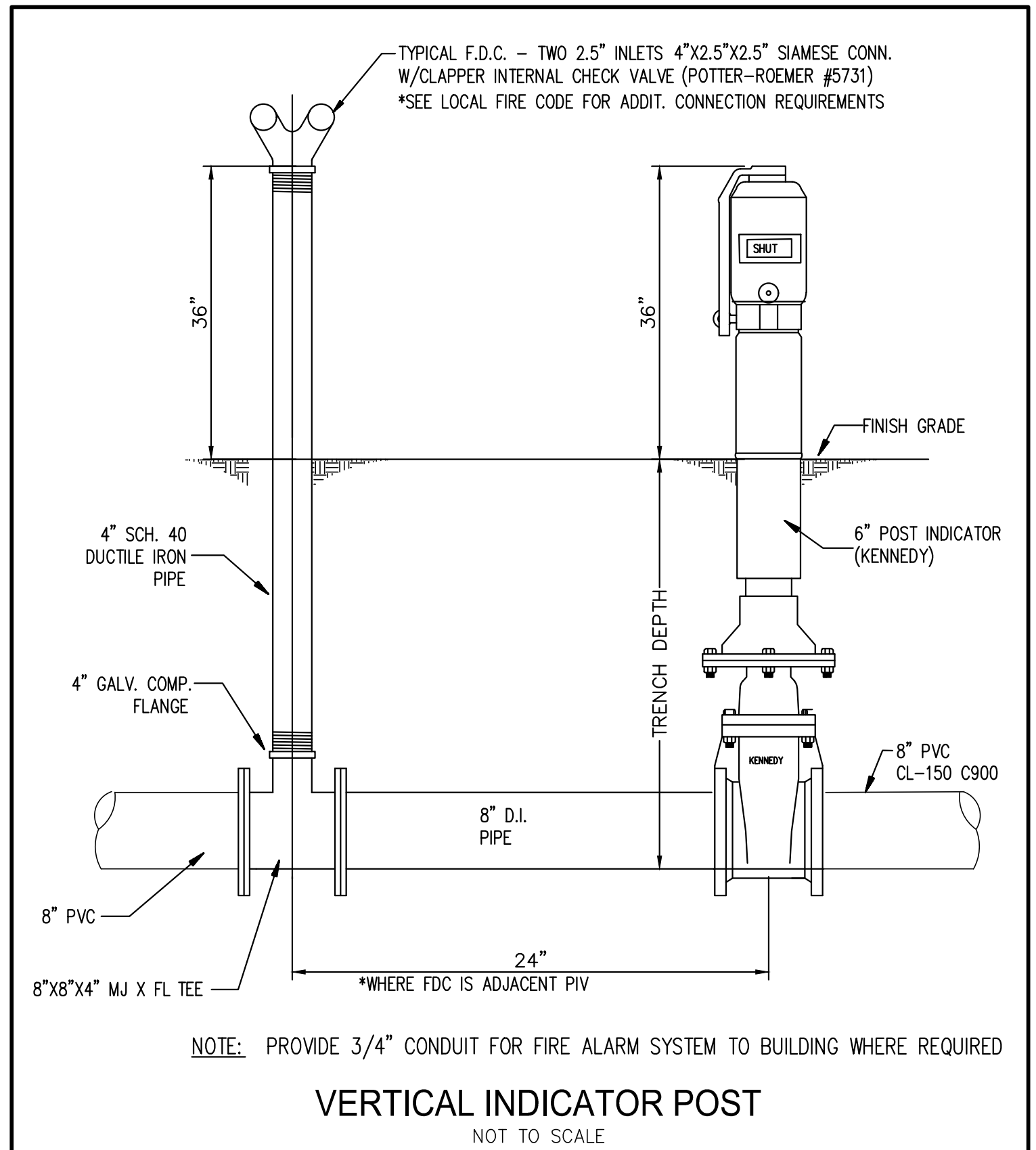
**LEGEND**

---	EXISTING PROPERTY LINE
- - - -	PROPOSED PROPERTY LINE
---	EXISTING RIGHT-OF-WAY WITH ROADWAY EASEMENT
---	CENTERLINE
- - - -	PROPOSED EASEMENT
- - - -	EXISTING EASEMENT
W	PROPOSED DOMESTIC WATER
SS	PROPOSED SANITARY SEWER
FW	PROPOSED FIRE WATER
SD	PROPOSED STORM DRAIN
E	PROPOSED ELECTRIC
T	PROPOSED TELECOM
G	PROPOSED GAS
---	PROPOSED BACK-FLOW PREVENTOR
---	PROPOSED DOUBLE CHECK DETECTOR ASSEMBLY
---	PROPOSED POST INDICATOR VALVE
---	PROPOSED WATER VALVE
---	PROPOSED FIRE HYDRANT
---	EXISTING FIRE HYDRANT
---	PROPOSED TRANSFORMER
---	PROPOSED CAPACITOR
---	PROPOSED PAD MOUNTED SWITCHES
---	POC AT BUILDING. CONTINUATION PER BUILDING MEP PLANS.

**ABBREVIATIONS**

EX	EXISTING
FW	FIRE WATER
NAP	NOT A PART
PROP	PROPOSED
SS	SANITARY SEWER
W	DOMESTIC WATER
POC	POINT OF CONNECTION

- NOTES**
1. ALL PROPOSED SEWER LATERALS SHALL BE 6" VCP PER CITY STD. PLAN 209A AND 209B.
  2. ALL PROPOSED DOMESTIC WATER SERVICES TO BE 1" WITH 1.5" METER PER CITY STD. PLAN 601.
  3. ALL DOMESTIC WATER BACKFLOW DEVICES PER CITY STD. 604.
  4. ALL FIRE DOUBLE DETECTOR CHECK ASSEMBLY TO BE PER CITY STD. 721.
  5. ALL EASEMENTS SHOWN HEREON INTERFERING WITH PROPOSED IMPROVEMENTS SHALL BE ABANDONED, OUTCLAIMED OR RELOCATED IN CONJUNCTION WITH THE FLING OF THE FINAL PARCEL MAP.



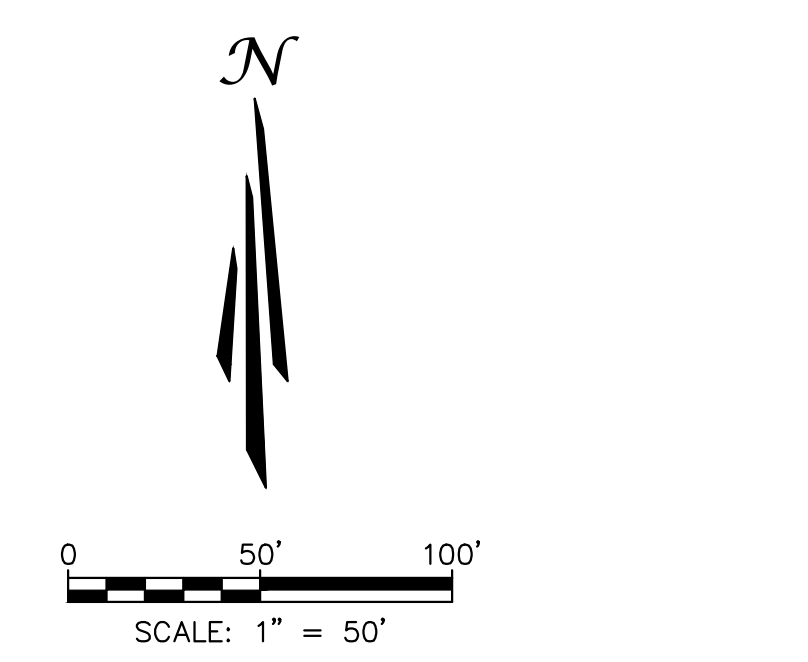
**LIST OF MATERIALS**

①	DI Class 53 or PVC DR14 pipe
②	DI or PVC pipe, 18 inch min
③	45 inch DI Elbow, M.J
④	Air Release Valve Assembly per Standard Drawing 627 as required by the Engineer
⑤	4 inch Sand Blow-Off Assembly per Standard Drawing 624 as required by the Engineer

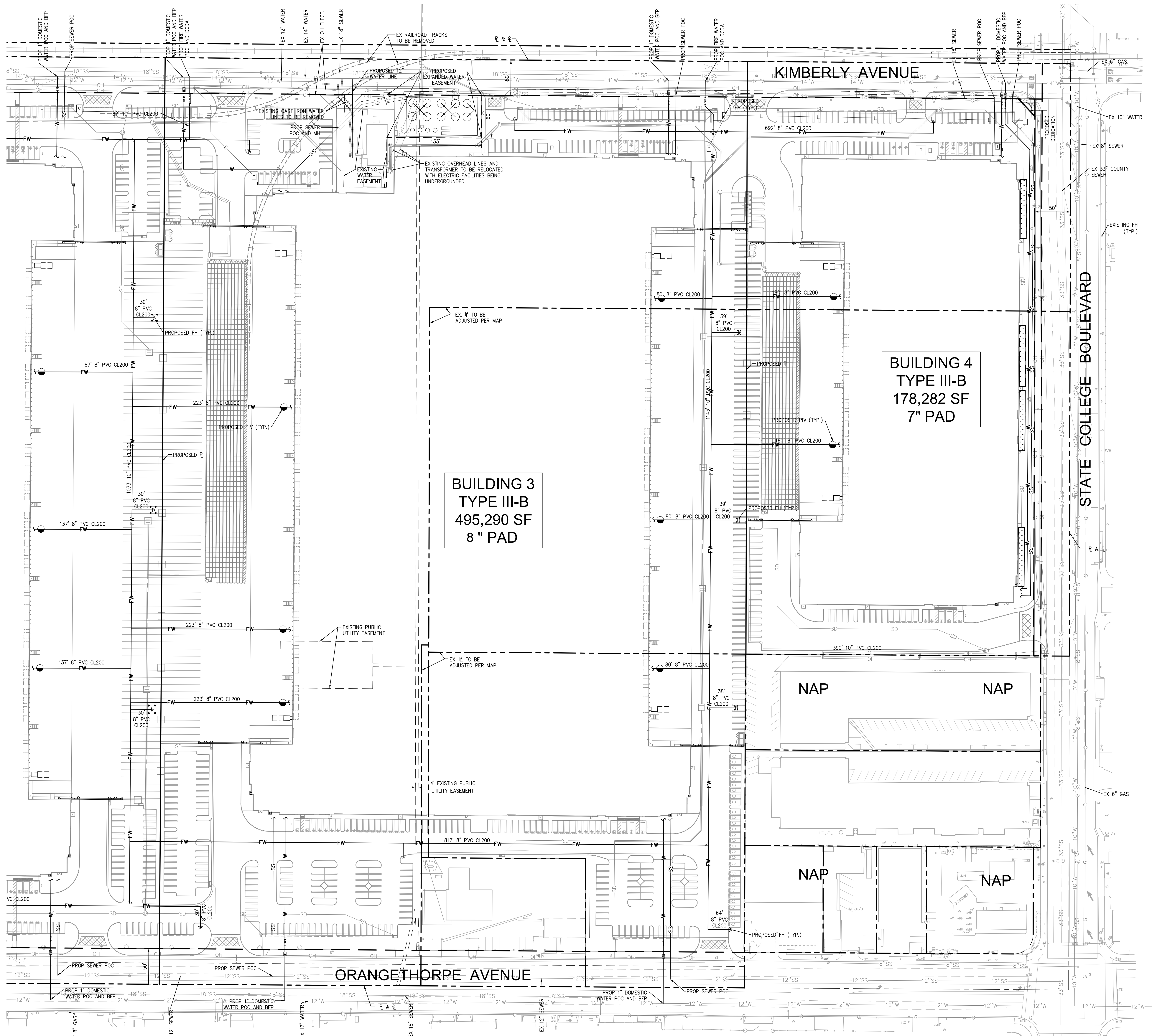
**NOTES**

1. Use of over crossing must be approved by the City of Fullerton.
2. For over crossing sewer and storm drains, minimum pipe length is 6 feet centered on the utility. For all other utilities, minimum pipe length is 4 feet centered on the utility. No joints in pipe.
3. For under crossing sewer and storm drains, minimum pipe length is one full stick of pipe (18 feet for DI, 20 feet for PVC) centered on the utility. For all other utilities, minimum pipe length is 4 feet centered on the utility. No joints in pipe.
4. See Section 5-03.04 of these Specifications for polyethylene protective wrapping requirements and Section 5-03.05 of these Specifications for protection of metal surfaces requirements.

REVISED	CITY OF FULLERTON	DATE	DATE
	PUBLIC WORKS DEPARTMENT - ENGINEERING DIVISION		2-28-17
	<b>UTILITY CROSSING</b>	STD. NO.	631
APPROVED	<i>[Signature]</i>	DATE	3-3-17
	DIRECTOR OF PUBLIC WORKS		







**LEGEND**

- EXISTING PROPERTY LINE
- PROPOSED PROPERTY LINE
- - - EXISTING RIGHT-OF-WAY WITH ROADWAY EASEMENT
- CENTERLINE
- - - PROPOSED EASEMENT
- - - EXISTING EASEMENT
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- POC AT BUILDING, CONTINUATION PER BUILDING MEP PLANS.

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