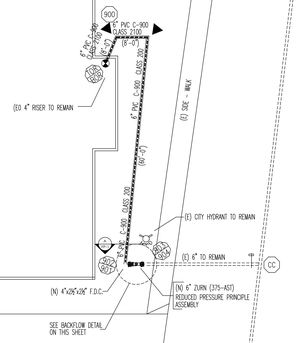
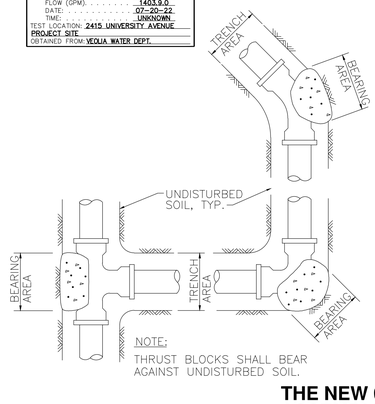
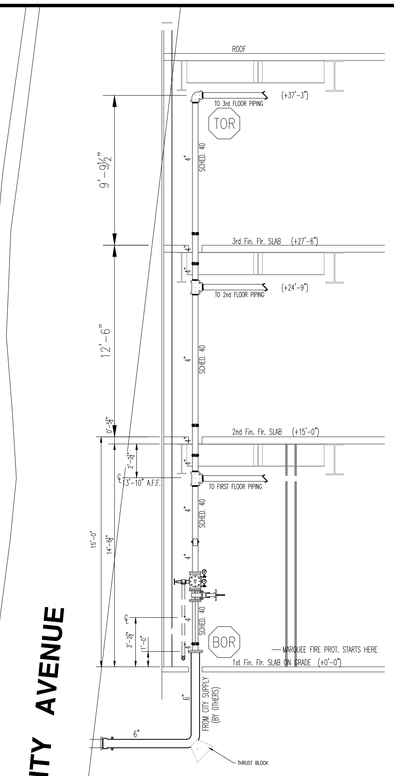
EXISTING FULLY SPRINKLERED STRUCTURE WITH LIGHT HAZARD PIPE SCHEDULED SYSTEM THAT HAS BEEN CALCULATED PER N.F.P.A. #13 2016 EDITION SECTION #11.2.2.1



WATER FLOW TEST INFORMATION	
STATIC (PSI)	55.0
RESIDUAL (PSI)	20.0
FLOW (GPM)	1403.9.0
DATE:	07-20-22
TIME:	UNKNOWN
TEST LOCATION:	2415 UNIVERSITY AVENUE
PROJECT SITE	
OBTAINED FROM:	VEOLIA WATER DEPT.



(E) McDONALDS NOT IN CONTRACT



"B" EXISTING RISER DETAIL "B"
SCALE: 1/4" = 1'-0"

UNIVERSITY AVENUE

THE NEW 6" ZURN "375-AST" REDUCED PRESSURE ZONE ASSEMBLY WITH TAMPER SWITCHES TO BE SET BACK FROM CURB BY 30" OR PROTECTED BY CONCRETE POSTS, TO BE SUPERVISED AND SHALL NOT BE OBSTRUCTED OR COVERED BY VEGETATION.

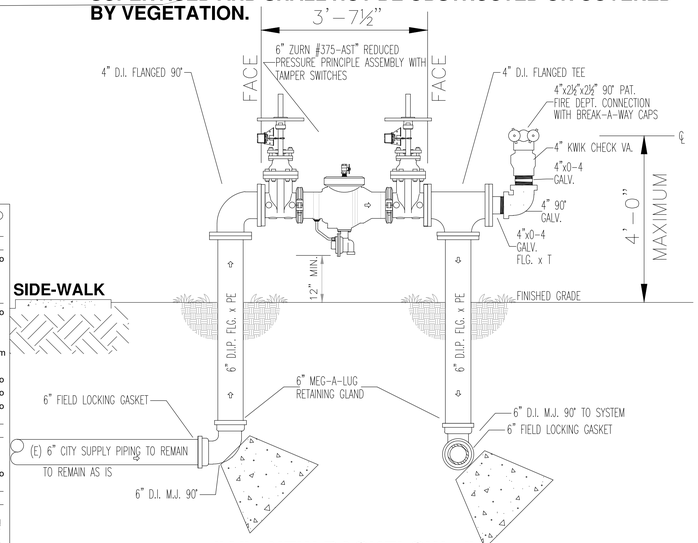
(E) SIDE - WALK

(E) SIDE - WALK

BAY ROAD

BAY ROAD

SIDE-WALK



"A" - NEW BACKFLOW - "A"
SCALE: 3/4" = 1'-0"

PIPING PLAN, DETAILS

HYDRAULIC SYSTEM
This building is protected by an Automatic Sprinkler System Hydraulically Designed per the requirements of NFPA 13 2016 edition
LOCATION, SYSTEM AND/OR AREA NO.: EAST PALO ALTO GOVERNMENT CENTER
BASIS OF DESIGN: PIPE SCHED. SYSTEM TYPE: WET
DENSITY/AREA: sq.ft. OCCUPANCY: LIGHT HAZ.
MAX. STORAGE HEIGHT: N/A ft. COMMODITY: N/A
SYSTEM DEMAND REQUIRED:
@ BASE OF RISER PRESSURE: 15.0 PSI FLOW: 750.0 GPM
@ WATER SUPPLY PRESSURE: 43.16 PSI FLOW: 750.97 GPM
@ PUMP OUTLET PRESSURE: N/A PSI FLOW: N/A GPM
@ HYD. MOST DEMANDING SPRINKLER/NOZZLE PRESSURE: 15.0 PSI FLOW: @ TOR GPM
HOSE ALLOWANCE: INSIDE: N/A GPM OUTSIDE: N/A GPM
FIRE SPRINKLERS QUICK RESPONSE? N/A MAX AREA OF COVERAGE: N/A sq.ft.
ORIFICE SIZE: N/A K-FACTOR N/A
MANUFACTURER: VIKING TEMP RATING: N/A
SIN: N/A ORIENTATION: PENDENT
PRV SETTING: N/A PSI
FIRE PUMP RATING: N/A GPM @ N/A PSI
MARQUEE FIRE PROTECTION
Sacramento (916) 641-7997 Bay Area (925) 691-0744

SPRINKLER SYSTEM GENERAL INFO	
Name: EAST PALO ALTO GOVERNMENT CENTER	
Location: 2415 UNIVERSITY AVENUE	
High-piled storage ☐Yes ☒No	Rack storage: ☐Yes ☒No
Maximum Storage Height: N/A ft.	
Minimum Aisle Width: N/A ft.	
Commodity class: N/A	
Encapsulation: ☐Yes ☒No	Solid shelving: ☐Yes ☒No
Flow Test Data	Static: 55.0 psi
Date: 07-20-22	Resid: 20.0 psi
Location: PROJECT SITE	Flow: 1,403.9 gpm
	Pitot: UNKNOWN psi
Presence of Flammable/Combustible Liquids: ☐Yes ☒No	
Presence of Hazardous Materials: ☐Yes ☒No	
Presence of Other Special Storage: ☐Yes ☒No	
Auxiliary/Low Point Drain Locations: 2" MAIN DRAIN ON SYSTEM RISER	
Original Main Drain Test: Static: psi Resid: psi	
Antifreeze or Auxiliary Systems Present: ☐Yes ☒No	
Location:	
MARQUEE FIRE PROTECTION	
Sacramento (916) 641-7997 Bay Area (925) 691-0744	

Table 10.10.2.1.3 Flow Required to Produce a Velocity of 10 ft/sec (3 m/sec) in Pipes

Pipe Size		Flow Rate	
in.	mm	gpm	L/min
2	50	100	379
2½	65	150	568
3	75	220	833
4	100	390	1,500
5	125	610	2,300
6	150	880	3,350
8	200	1,560	5,900
10	250	2,440	9,250
12	300	3,520	13,300

[**24:** Table 10.10.2.1.3]

Table A.10.6.1(a) Thrust at Fittings at 100 psi (6.9 bar) Water Pressure for Ductile Iron and PVC Pipe

Nominal Pipe Diameter (in.)	Total Pounds					
	Dead End	90 Degree Bend	45 Degree Bend	22½ Degree Bend	11¼ Degree Bend	5⅛ Degree Bend
4	1,810	2,559	1,385	706	355	162
6	3,739	5,288	2,862	1,459	733	334
8	6,433	9,097	4,923	2,510	1,261	575
10	9,677	13,685	7,406	3,776	1,897	865
12	13,685	19,353	10,474	5,340	2,683	1,224
14	18,385	26,001	14,072	7,174	3,604	1,644
16	23,779	33,628	18,199	9,278	4,661	2,126
18	29,865	42,235	22,858	11,653	5,855	2,670
20	36,644	51,822	28,046	14,298	7,185	3,277
24	52,279	73,954	40,013	20,398	10,249	4,675
30	80,425	113,738	61,554	31,380	15,766	7,191
36	115,209	162,931	88,177	44,952	22,585	10,302
42	155,528	219,950	119,036	60,684	30,489	13,907
48	202,683	286,637	155,127	79,083	39,733	18,124

Notes:
(1) For SI units, 1 lb = 0.454 kg; 1 in. = 25.4 mm.
(2) To determine thrust at pressure other than 100 psi (6.9 bar), multiply the thrust obtained in the table by the ratio of the pressure to 100 psi (6.9 bar). For example, the thrust on a 12 in., 90 degree bend at 125 psi (8.6 bar) is 19,353 × 125/100 = 24,191 lb (10,973 kg).
[**24:** Table A.10.6.1(a)]

Table A.10.6.1(b) Required Horizontal Bearing Block Area

Nominal Pipe Diameter (in.)	Bearing Block Area (ft^2)	Nominal Pipe Diameter (in.)	Bearing Block Area (ft^2)	Nominal Pipe Diameter (in.)	Bearing Block Area (ft^2)
3	2.6	12	29.0	24	110.9
4	3.8	14	39.0	30	170.6
6	7.9	16	50.4	36	244.4
8	13.6	18	63.3	42	329.9
10	20.5	20	77.7	48	430.0

FIRE HYDRANT FLOW INFORMATION

VEOLIA WATER

1475 E Bayshore Blvd, East Palo Alto, CA. 94303

Date Flowed: 7/20/22

Flowed By: MS,HS,ET

Flow Hydrant No.: 63
Location: 1600 Bay Road

Static Pressure 55
Pito Pressure 10 psi
Outlet Size 2.5 inches

Qob = 530.6 **gpm**

$Qob = (29.83 \times .9) \times (\text{Outlet Diameter}^2) \times (\sqrt{\text{Pito}})$

Test Hydrant No.: 212
Location: 2415 University Ave

DIRECTION OF FLOW
DOWNSTREAM
UPSTREAM
x UNIDIRECTIONAL

☑ Q @ X
☑ Q @ 20

Static Pressure 55 psi
Residual Pressure 50 psi

Q20 = 1403.9 **gpm**

$Q20 = Qob \sqrt{\frac{Sta - 20}{Sta - Res}}$

Richard Perez Project Manager 7/21/2022

Calculated Flow @ 20 psi 1403.9

*The calculated results of this flow test are based on the data collected at the time and date tested and under the exhibited system operational conditions. Hydrant flow tests are known to fluctuate

*The calculated results of this flow test are based on the data collected at the time and date tested and under the exhibited system operational conditions. Hydrant flow tests are known to fluctuate with operational conditions, routine maintenance, and system demands; which are influenced by time of day, season, temperature, and day of the week.

Note: All numbers are approximate.

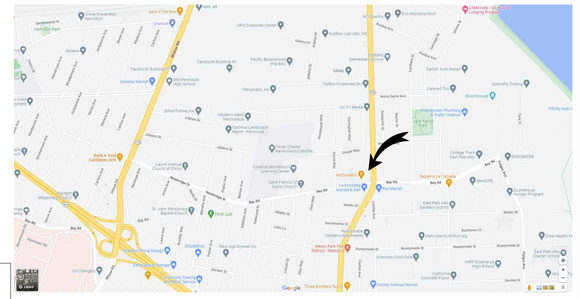
CALL BEFORE YOU DIG
CALL BEFORE YOU DIG 48 HOURS CALL "USA" TOLL FREE 811

FOREMAN'S NOTES

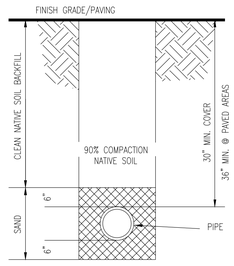
1. MASTIC AND WRAP ALL DUCTILE IRON AND FERROUS MATERIAL.
2. PRIOR TO UNDERGROUND INSTALLATION COORDINATE W/ NEW & EXISTING UTILITIES AND VERIFY EXACT LOCATIONS W/ OWNER OR G.C.
3. THE PIV, FDC AND FIRE HYDRANTS SHALL BE LOCATED 3 FEET FROM NEARBY OBJECTS INCLUDING HIGH GROWTH OR DENSE VEGETATION, TO MAINTAIN VISIBILITY AND ACCESSIBILITY AT ALL TIMES. (5.9.5.2) NFPA 24.
4. THE CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT AND THE ALAMEDA COUNTY PUBLIC WORKS DEPARTMENT AT LEAST 48 HOURS (2 WORKING DAYS) PRIOR TO BEGINNING ANY EXCAVATION IN THE VICINITY OF UNDERGROUND FACILITIES.

UNDERGROUND GENERAL NOTES:

1. Design and installation, materials, concrete, thrust blocks and or restraints to conform to N.F.P.A. pamphlet #13 2016 edition, N.F.P.A. #24 and Menlo Park Fire Department requirements.
2. Underground pipe shall have a minimum depth of bury of 30" inches from top of pipe to finished grade and 36" inches below Roads and Drive-ways.
3. Automatic Fire Sprinkler riser pipe to be installed minimum 12" below concrete footings.
4. Initial Backfill and bedding surrounding the pipe shall be 3/4" aggregate base, or sand with a minimum of 6" inches on all sides. Backfill shall be clean and free of rock and all foreign materials.
5. All Underground Tees, 90° AND 45° Deg Bends shall be restrained against movement by utilizing Thrust Blocks and or Meg-a-Lug connections as required. See Manufacturer data sheets in Material Submittal package.
6. Underground Fire Main Piping to be PVC C-900 DR-14, Class 200. Fittings to be Mechanical Joint and/or Flanged as listed for Underground Fire Main use UL Listed and / or FM approved.
7. Concrete Thrust Blocks to meet or excede N.F.P.A. #13 2016 edition table A-10.6.1 (b) shown on this sheet at left.
8. Prior to the Automatic Fire Sprinkler Tie-In to the riser pipe, the Underground Fire Main piping is to be hydrostatically tested at 200 PSI for a period of not less than 2 hours and flushed at not less than 5 minutes at a flow rate pursuant to N.F.P.A. pamphlet #13 2016 edtion per table#10.10.2.1.3 shown at left for a flow velocity of 10Ft. per second.
9. Pipe Joints, Valves, Hydrants and fittings shall not be covered until inspected by the Menlo Park Fire Department.
10. All inspections, testing and flushing to be witnessed by Menlo Park Fire Department. (510) .
11. Corrosion Protection shall be in accordance and installed persuant to N.F.P.A. #13 2016 edition chapter 10, paragraph 10.8.3.5. All buried Ferrous material to have coatings provided by factory and / or field coated with a bitumastic compound and / or plastic wrap.
12. All new underground valving to have a factory applied epoxy coating per Menlo Park Fire Dept.
13. Tracer Wire shall be Installed on all non-metallic water lines. Wire shall be type AWG#10 minimum solid.
14. Signs shall be provided on all above ground control valves, and F.D.C. (with address of building it services).
15. Conduit for alarm devices to be supplied and installed by others.



VICINITY MAP



TYP. TRENCH DETAIL
NOT TO SCALE

SCOPE OF WORK:

1. **REPLACE EXISTING 6" TRANSITE FIRE SERVICE PIPING AND ADD A NEW 6" REDUCED PRESSURE PRINCIPLE ASSEMBLY.**
2. **PROVIDE A PROOF CALCULATION PER N.F.P.A. #13 2016 EDITION THAT THE SYSTEM RISER CAN PROVIDE 15 PSI AT THE TOP FLOOR LEVEL WITH 750 GPM AVAILABLE AT THE BASE OF THE SYSTEM RISER PER SECTION # 11.2.2.1.**

LEGEND

2-WAY EARTHQUAKE BRACE	[X Brs]	= ELEVATION BELOW DECK	
4-WAY EARTHQUAKE BRACE	[X-X]	= ELEVATION A.F.F.	
= BRANCHLINE RESTRAINT	UNO	= UNLESS NOTED OTHERWISE	
= FLEXIBLE GROOVED COUPLING	COJ	= CUT ON JOB	
= RIGID GROOVED COUPLING	TOE	= THREAD ONE END	
= GROOVED CAP	GOE	= GROOVE ONE END	
= HANGER No.	GBE	= GROOVE BOTH ENDS	
= APPROX. HANGER LOCATION	T&G	= THREAD AND GROOVE	
= SYSTEM RISER	F&G	= FLANGE AND GROOVE	
	TOR	= TOP OF RISER	
= HYDRAULIC REFERENCE NODE	BOR	= BOTTOM OF RISER	
	UG	= UNDERGROUND	
	RN	= RISER NIPPLE	
	SU	= SPRIG-UP	

SPRINKLERS

SYM.	CNT.	ORIF., K-FACTOR	NPT	MFG.	TEMP	FINISH	RESPONSE-STYLE	S.I.N.	MODEL#	ESCUTCHEON

OO = TOTAL SPRINKLERS

EAST PALO ALTO GOVERNMENT CENTER - BACKFLOW REPLACEMENT

2415 UNIVERSITY AVENUE

EAST PALO ALTO, CALIF. 94303

REV.	DATE	REVISION	BY

Date: 08-17-22
Contract With: STAPLES CONST.
Scale: 1/8" =1'-0"
Drawn: DARRYL ROBERTS
Job No: 1222-368
Sheet: FP-1
Of 1 Sheets

MARQUEE FIRE PROTECTION
A Pye Barker Company
710 W. Stadium Lane
Sacramento, CA. 95834-1130
TEL. 916. 641-7997 FAX. 916. 641-0775
CA. LIC. 1077494 C-16