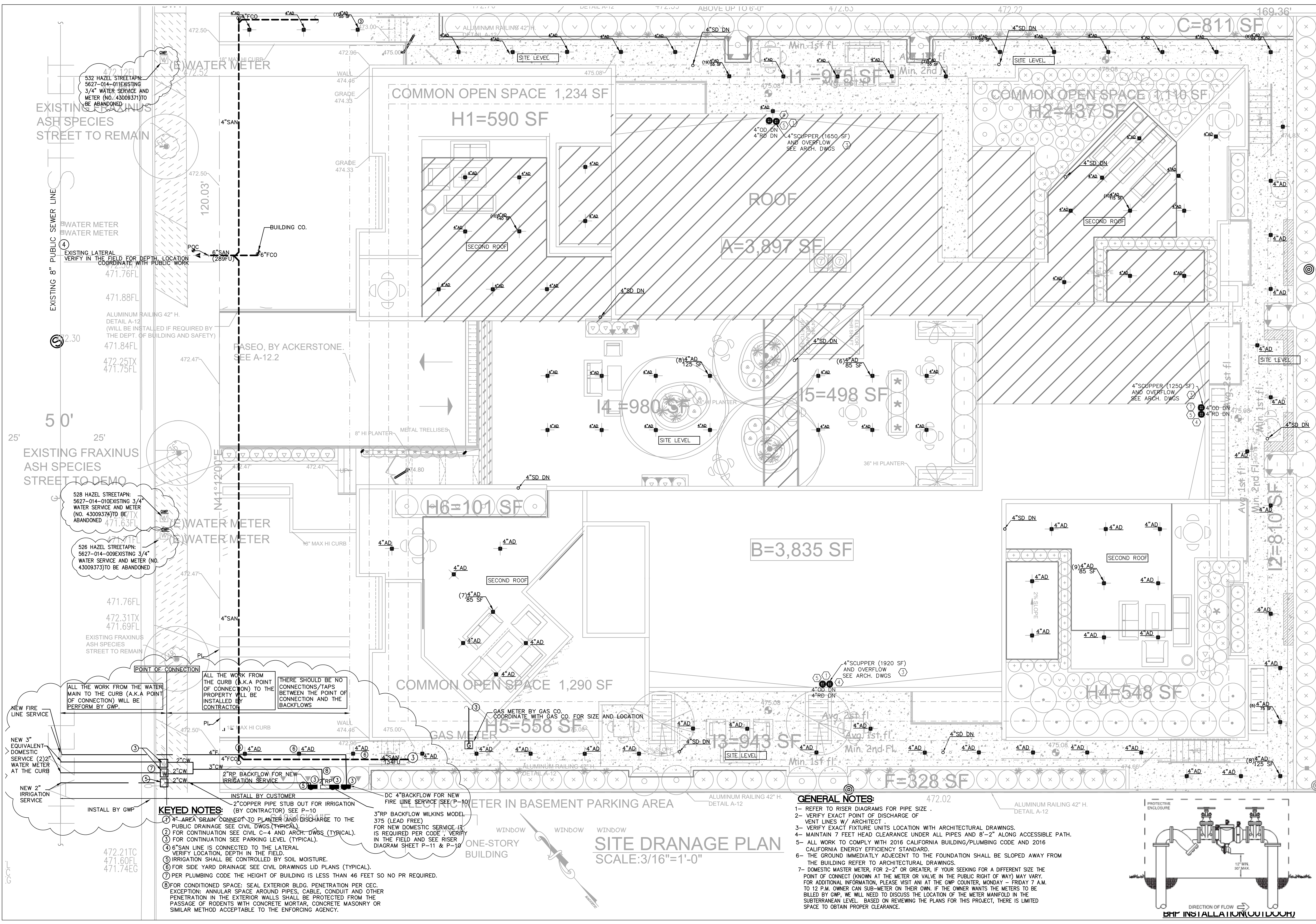




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REGISTERED PROFESSIONAL ENGINEER

NO. M30478

EXP. 12/31/23

MECHANICAL

STATE OF CALIFORNIA

17 UNITS APARTMENT

528 HAZEL ST.,

GLENDALE, CA 91201

Date

Scale

Drawn

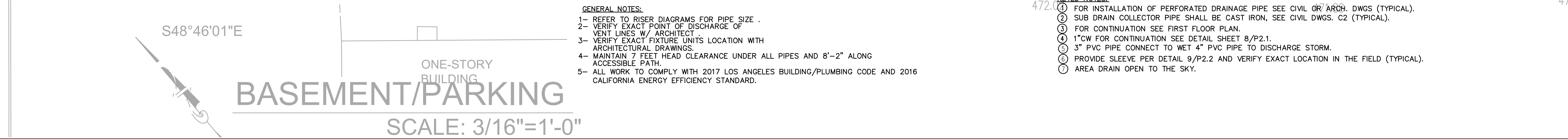
Job

Sheet

Of

P-2

Sheets



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PROFESSIONAL ENGINEER ALI A.F. DANESH No. M30478 Exp. 12/31/2018		
		
BASEMENT FLOOR PLAN		
17 UNITS APARTMENT 528 HAZEL ST., GLENDALE, CA 91201		
Date		
Scale		
Drawn		
Job		
Sheet		
P-3		
Of	Sheets	

STREET

HAZEL

472.12FL
472.68TX
472.07FL

472.30TX
471.76FL

471.88FL

471.84FL

472.25TX
471.75FL

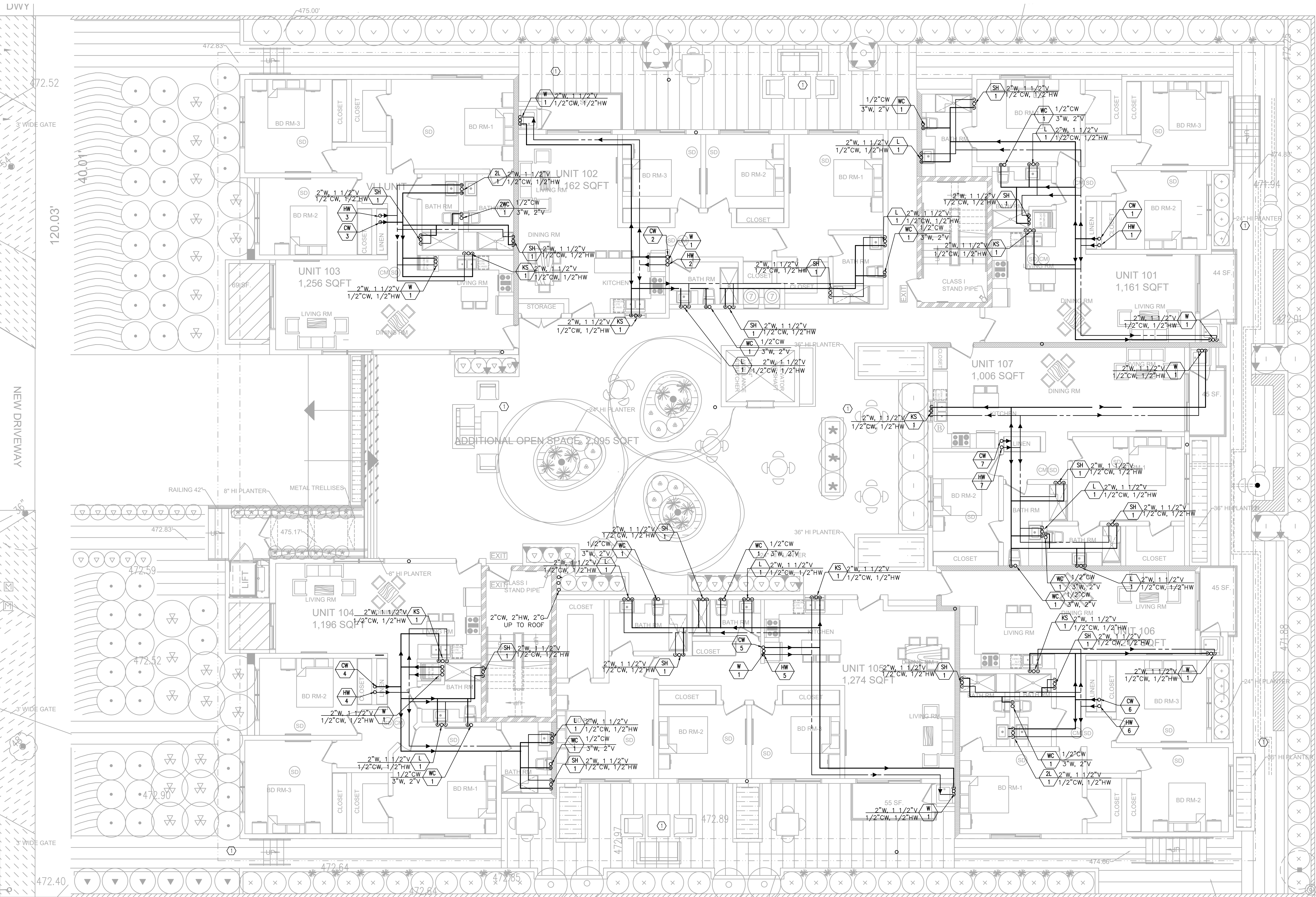
472.27TX
471.63FL

471.71FL

471.76FL

472.31TX
471.69FL

472.21TC
471.60FL
471.74EG



FIRST FLOOR

SCALE: 3/16"=1'-0"

ONE-STORY
BUILDING

GENERAL NOTES:

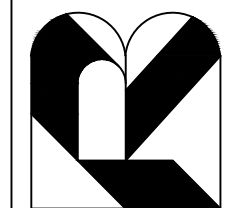
- 1- REFER TO RISER DIAGRAMS FOR PIPE SIZE AND VALVES.
- 2- VERIFY EXACT POINT OF DISCHARGE OF VENT LINES W/ ARCHITECT .
- 3- VERIFY EXACT FIXTURE UNITS LOCATION WITH ARCHITECTURAL DRAWINGS.
- 4- ALL WATER CLOSET TO BE INSTALLED REQUIRE TO BE SINGLE FLUSH TOILET NOT TO EXCEED 1.28 GALLONS PER FLUSH.
- 5- ALL SHOWER HRAD TO BE INSTALLED SHALL BE NOT TO EXCEED A WATER SUPPLY RATE OF 1.8 GALLONS PER MINUTE.

KEYED NOTES:

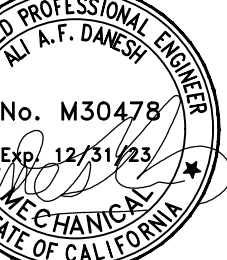
- ① FOR RAIN DRAIN AND CONTINUATION SEE LID AND CIVIL SITE PLAN (TYPICAL).
- ② 2"CW FOR CONTINUATION SEE SITE PLAN.
- ③ 1"CW WATER METER FOR EACH UNIT (TYPICAL).
- ④ 4"SD DISCHARGE TO STREET CURB (TYPICAL).

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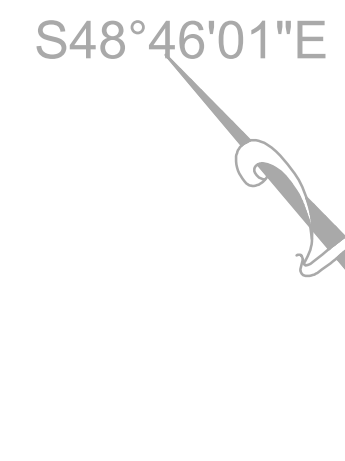
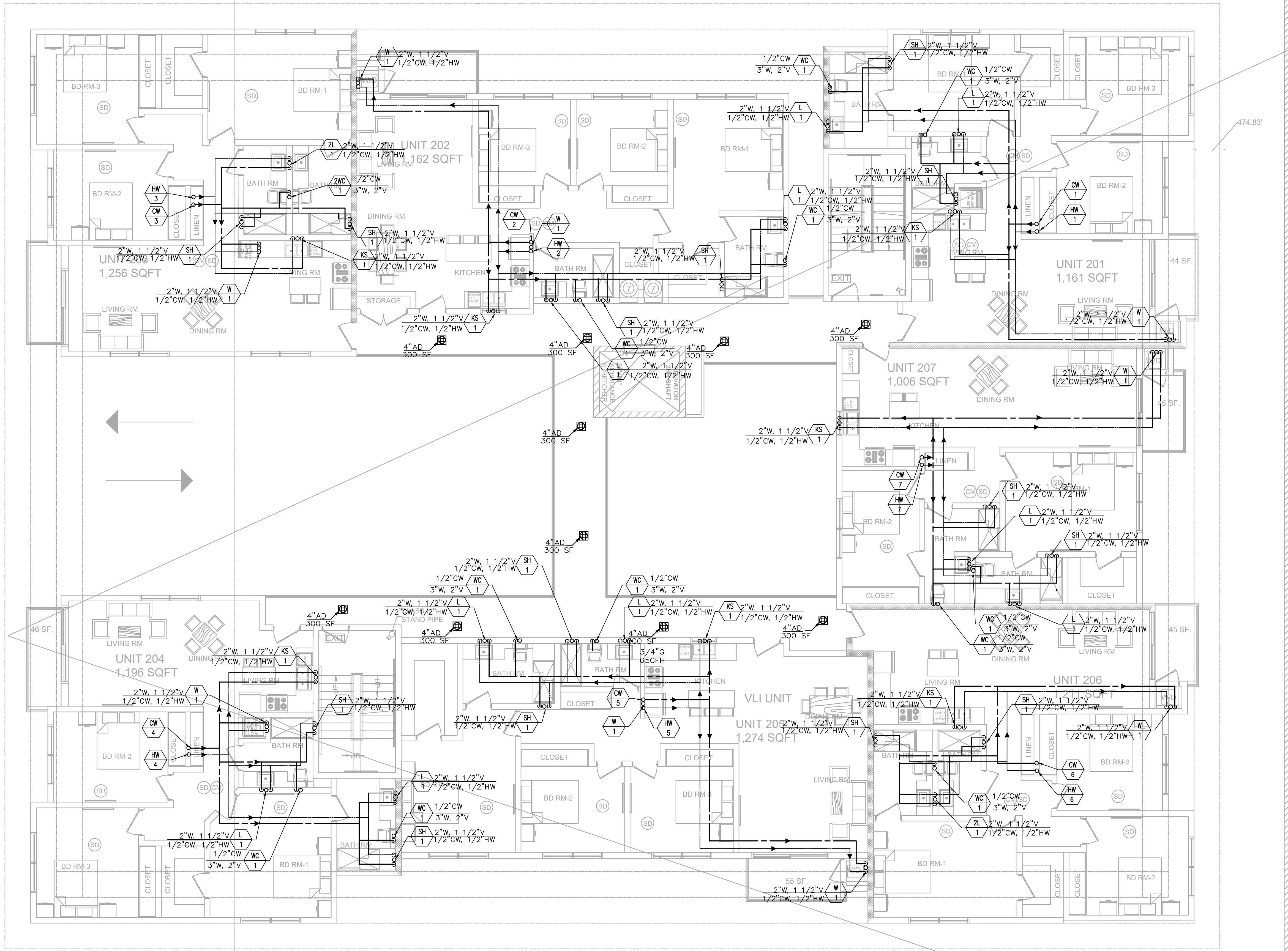
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FIRST FLOOR PLAN

17 UNITS APARTMENT
528 HAZEL ST.,
GLENDALE, CA 91201

Date
Scale
Drawn
Job
Sheet
P-4
Of Sheets



ONE-STORY BUILDING

SECOND FLOOR

SCALE: 3/16"=1'-0"

KEYED NOTES:

- 1 WATER HEATER PRESSURE, TEMPERATURE RELIEF DRAIN TERMINATE TO OUTSIDE THE BUILDING.
- 2 VENT PIPE OF FIXTURE UP TO ROOF (TYPICAL).
- 3 PROVIDE 3/4" BACKFLOW PREVENTER FOR HOSE BIBB. SEE SHEET P-6 DETAIL 8.

GENERAL NOTES:

- 1- REFER TO RISER DIAGRAMS FOR PIPE SIZE .
- 2- VERIFY EXACT POINT OF DISCHARGE OF VENT LINES W/ ARCHITECT .
- 3- VERIFY EXACT FIXTURE UNITS LOCATION WITH ARCHITECTURAL DRAWINGS.
- 4- ALL WATER CLOSET TO BE INSTALLED REQUIRE TO BE SINGLE FLUSH TOILET NOT TO EXCEED 1.28 GALLONS PER FLUSH.
- 5- ALL SHOWER HRAD TO BE INSTALLED SHALL BE NOT TO EXCEED A WATER SUPPLY RATE OF 1.8 GALLONS PER MINUTE.

REVISIONS		BY

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REGISTERED PROFESSIONAL ENGINEER
ALI A.T. DARES
No. M30478
Exp. 12/31/23
MECHANICAL
STATE OF CALIFORNIA

2ND FLOOR PLAN

17 UNITS APARTMENT
528 HAZEL ST.,
GLENDALE, CA 91201

Date	Scale	Drawn	Job	Sheet
				P-5

Of Sheets

N48°46'01"W

169.36'

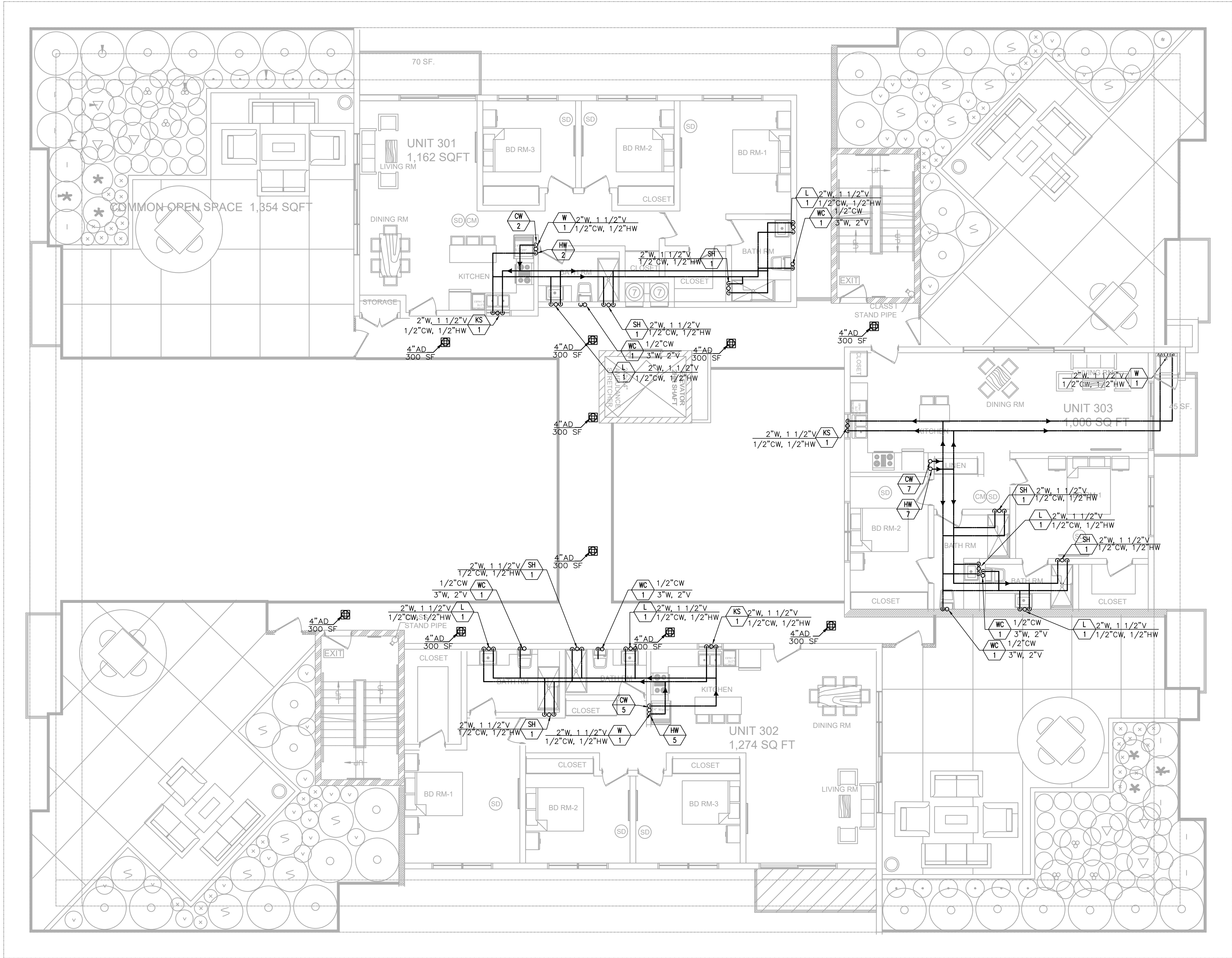
120.03'

40.01'

120.03'

N41°12'00"E

GARAGE



THIRD FLOOR

SCALE: 3/16"=1'-0"

GENERAL NOTES:

- 1- REFER TO RISER DIAGRAMS FOR PIPE SIZE .
- 2- VERIFY EXACT POINT OF DISCHARGE OF VENT LINES W/ ARCHITECT .
- 3- VERIFY EXACT FIXTURE UNITS LOCATION WITH ARCHITECTURAL DRAWINGS.
- 4- MAINTAIN 7 FEET HEAD CLEARANCE UNDER ALL PIPES AND 8'-2" ALONG ACCESSIBLE PATH.
- 5- ALL WORK TO COMPLY WITH 2017 LOS ANGELES BUILDING/PLUMBING CODE AND 2016 CALIFORNIA ENERGY EFFICIENCY STANDARD.

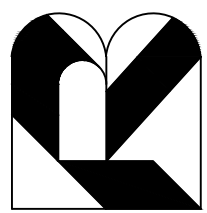
KEYED NOTES:

- ① FOR CONTINUATION SEE LID AND CIVIL SITE PLAN (TYPICAL).

REVISIONS BY

PLEASE PROVIDE: REVISIONS, NOTIFICATIONS, AND COMMENTS TO THE ARCHITECT AND ENGINEER. ALL REVISIONS MUST BE APPROVED BY THE ARCHITECT AND ENGINEER. NO REVISIONS WILL BE ACCEPTED FOR REVISIONS AFTER THE PROJECT HAS BEEN SUBMITTED TO THE CITY OF LOS ANGELES FOR PERMITTING.

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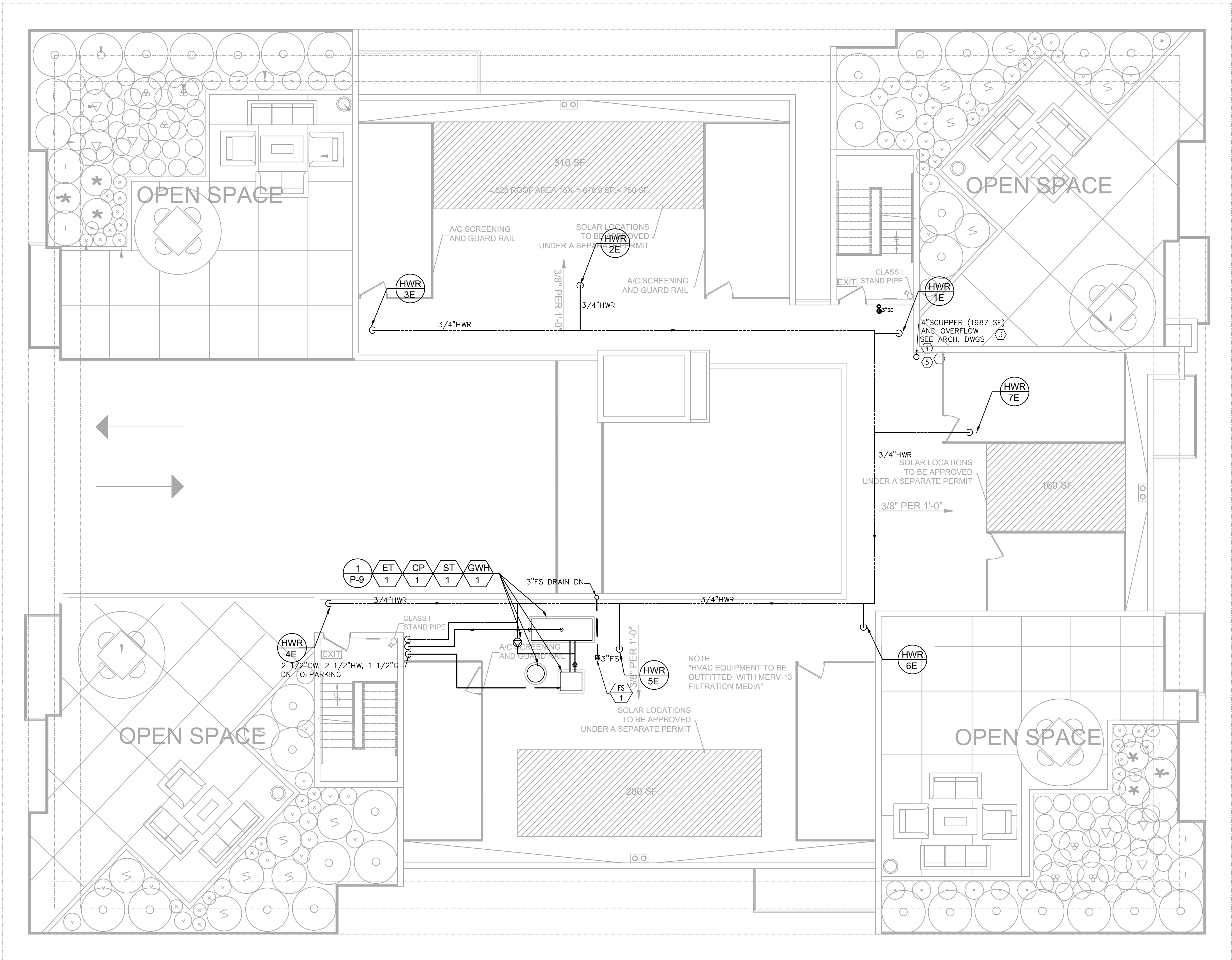
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3RD, 4TH FLOOR PLAN

17 UNITS APARTMENT
528 HAZEL ST.,
GLENDALE, CA 91201

Date: _____
Scale: _____
Drawn: _____
Job: _____
Sheet: _____
P-6
Of: _____ Sheets



NOTES:

- 1- REFER TO RISER DIAGRAMS FOR PIPE SIZE
- 2- VERIFY EXACT ROOF DRAIN , DOWN SPOUT AND SCUPPER LOCATION WITH ARCH. DWGS.
- 3- VERIFY EXACT POINT OF DISCHARGE OF VENT LINES W/ ARCHITECT.
- 5- ALL WORK TO COMPLY WITH 2017 LOS ANGELES BUILDING/PLUMBING CODE AND 2016 CALIFORNIA ENERGY EFFICIENCY STANDARD.

KEY NOTES:

- ① RAIN LEADER CONNECT TO DRAINAGE PIPE SYSTEM COORDINATE WITH CIVIL AND ARCH. DRAWINGS
- ② STAIR ACCESS TO THE ROOF.
- ③ ROOF DRAINAGE SYSTEM SHALL COMPLY WITH CHAPTER 11 OF THE CALIFORNIA PLUMBING CODE. SYSTEM SHALL BE SIZED FOR RAIN INTENSITY OF THREE (3) INCHES PER HOUR.
- ④ 4" OVER FLOW RAIN PIPE 12" ABOVE PLANTER COORDINATE WITH ARCH. FOR OBSERVATION AND SEE CIVIL DRAWINGS.
- ⑤ ROOF, SD PIPE DRAIN TO PLANTER VERIFY LOCATION WITH ARCH. DWGS.

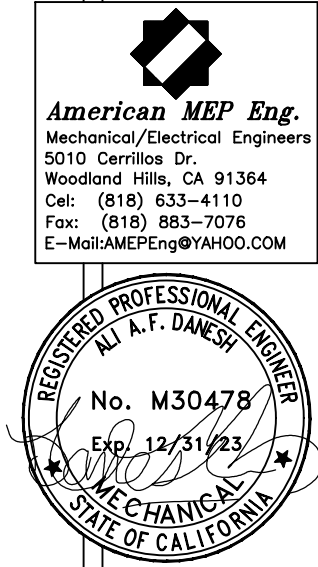
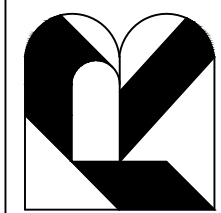
ROOF PLAN

SCALE: 3/16"=1'-0"

REVISIONS BY

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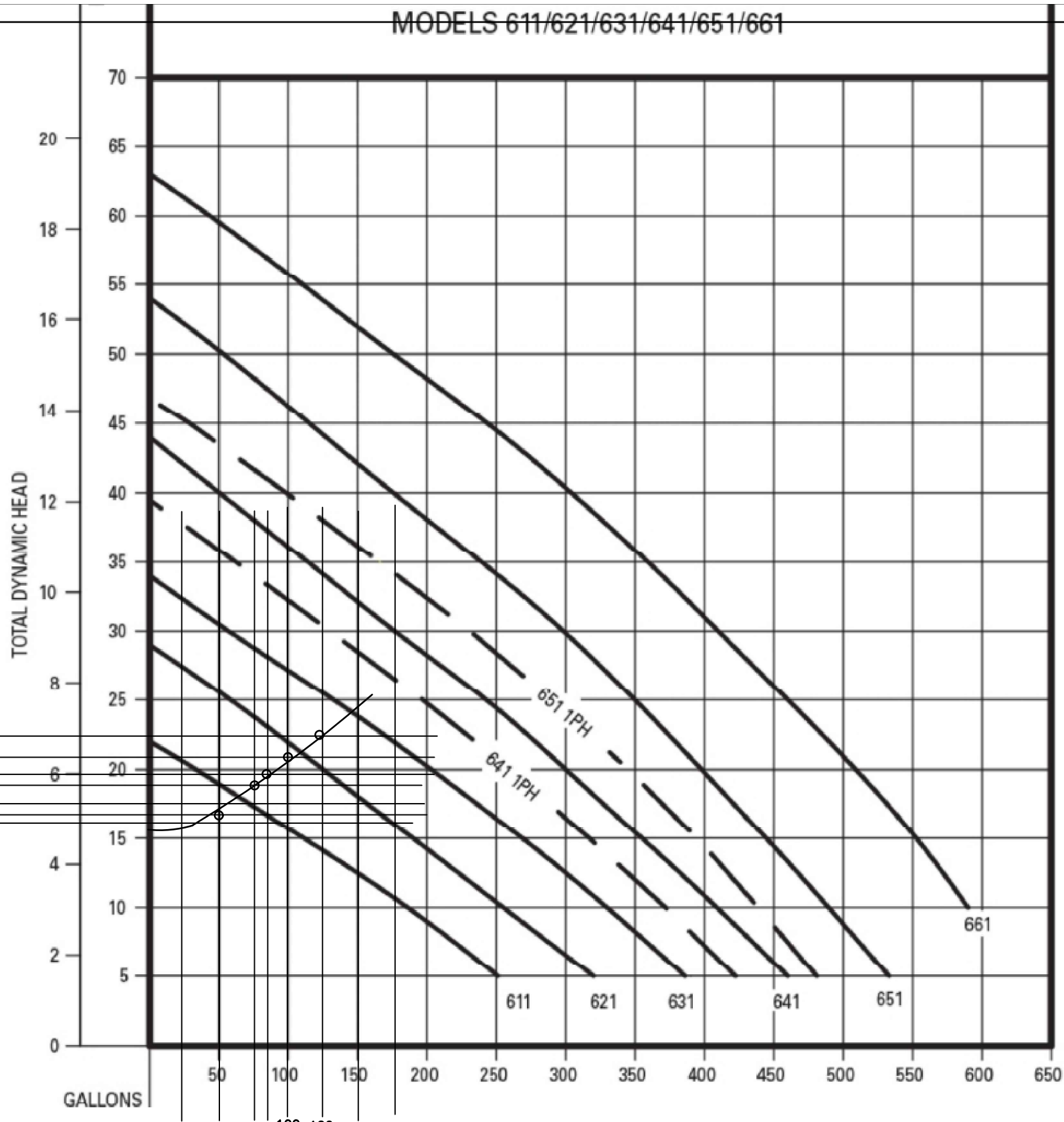


ROOF FLOOR PLAN

17 UNITS APARTMENT
528 HAZEL ST.,
GLENDALE, CA 91201

Date
Scale
Drawn
Job
Sheet
P-7

Of Sheets



Step 2. Calculate the System Curve:

$$h_n = \frac{10.51 Q^{1.85}}{C^{1.85} d^{4.87}} l$$

(feet of water)

Q = Flow in g.p.m.
d = Pipe diameter in inches
l = Total Equivalent Length in feet
C = Hazen-Williams Coefficient

Use: C=100 for cast iron pipes
C=120 for black iron pipes
C=140 for cement lined and copper pipes
C=150 for plastic pipes

h = difference in elevation between the bottom of the sump basin and the gravity sewer line

$h_{tot} = h_n + h$ (feet of water) System Curve

& SP1, 2

Flow Rate (GPM)	h _n	h _{tot}
120	1.2	1.2
150	1.7	1.7
200	2.5	2.5
250	3.8	3.8
300	5.7	5.7
350	8.2	8.2
400	11.5	11.5
450	15.8	15.8
500	21.0	21.0
550	27.5	27.5
600	35.5	35.5

SUMP PUMP CALCULATION (#1,2)

A) FLOW :
A- ASSOCIATE COVERAGE AREA = 500 SF + 300 SF.
SAY: 800 SF
BASED ON 3" RAIN FALL, 2 GPM/100 SF.
0.021X800 =16.8 GPM SAY, 20 GPM
B - EMERGENCY DRAIN MIN. =25 GPM
C - SUB SOIL DRAIN MIN. =15 GPM
D -PER CIVIL ENGINEER DWGS RAIN DISCHARGE TO FILTER AND SUMP PUMP 60 GPM (0.1156 cfs)
TOTAL REQUIRED FLOW = 15 + 20 +25 + 60 = 120 GPM
2) STATIC HEAD :
REQUIRED HEAD
A- FRICTION DROP THRU SYSTEM: 6-90"BEND3"x10'+1-45" BEND3"x6'+1-3"GATE 2'+1-BACK FLOW VALVE3"x16'=84 FT
DEVELOPED L=90', 3"PIPE TOTAL EQUIVALENT "L" 90'+84=174' DROP 2FT/100FT DROP PD=5'
PLUS STATIC HEAD 12' TOTAL HEAD 17' SAY 20'

B- ACTUAL FLOW FROM PUMP CURVE 120 GPM AT 20 FT OF HEAD
3) DISCHARGE PIPE SIZING VELOCITY
4" PIPE DIAMETER AREA .049 SF

120
.087 X 60 X 7.48 = 3.0 FT/SEC.
WET PIPE SIZE
120 GPM X 2 FU./GPM = 240 FU. THEREFORE 4" WET PIPE

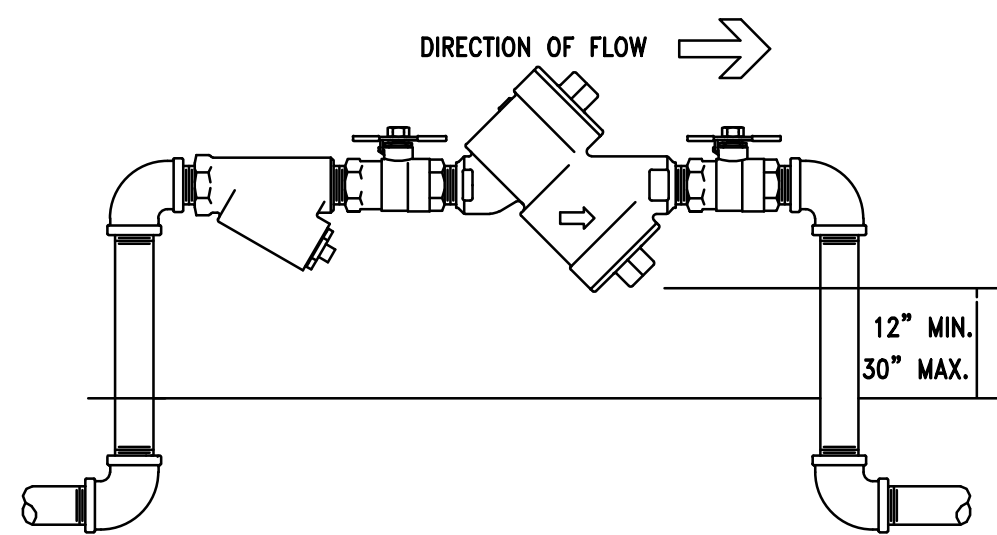
SUMP SIZING
BASED ON 6 MINUETS RETENTION
RETENTION =120X 4 =480 GALLON
FOR A ON 4.0' X 4.0' SUMP THE AREA 16.0 SF
16.0 X 7.48 = 119.68 GALLON/FT
480 GALLON/119.68 GALLON/FT = 4.01 FT SAY 4.5 FT
TOTAL SUMP DEPTH = INVERT OF INLET
RETENTION CAP = 4'-0"
TO SUMP BOTTOM = 1'
THEREFORE 5.0' BELOW INVERT OF INLET

NOTES:
1. PLUMBING CONTRACTOR TO PROVIDE AND INSTALL PANEL AND ALL WIRING ON THE LOAD SIDE OF PANEL. REFER TO MANUFACTURER'S RECOMMENDATIONS.
2. ALL SWITCHES, CONDUITS AND MOTORS TO BE INTRINSICALLY SAFE. FOR SUMP CONDUIT SIZE, INSTALLATION, AND SEAL, COORDINATE WITH ELECTRICAL DRAWINGS.

SPECIFIC NOTES:

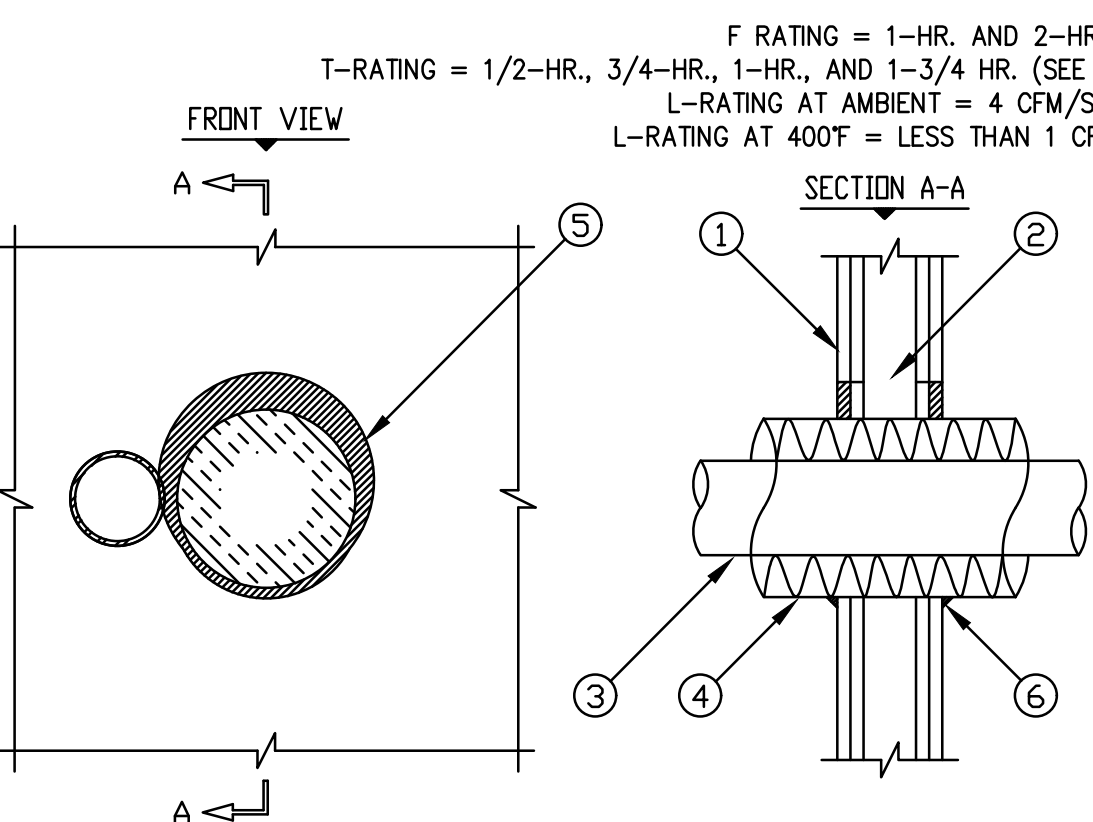
- CONNECT TO SUMP PUMP CONTROLLER. CONTROLLER PROVIDED BY PLUMBING CONTRACTOR. PROVIDE CONTROL CONDUIT TO SUMP PIT AS REQUIRED.
- 1"CO. TERMINATE CONDUIT IN PIT AS DIRECTED BY SUMP PUMP SUPPLIER, CABLES BY SUMP PUMP SUPPLIER, VERIFY EXACT LOCATION W/PLUMBING DRAWINGS.

SUMP PUMP AND LID SUMP



DOUBLE CHECK VALVE ASSEMBLY 7

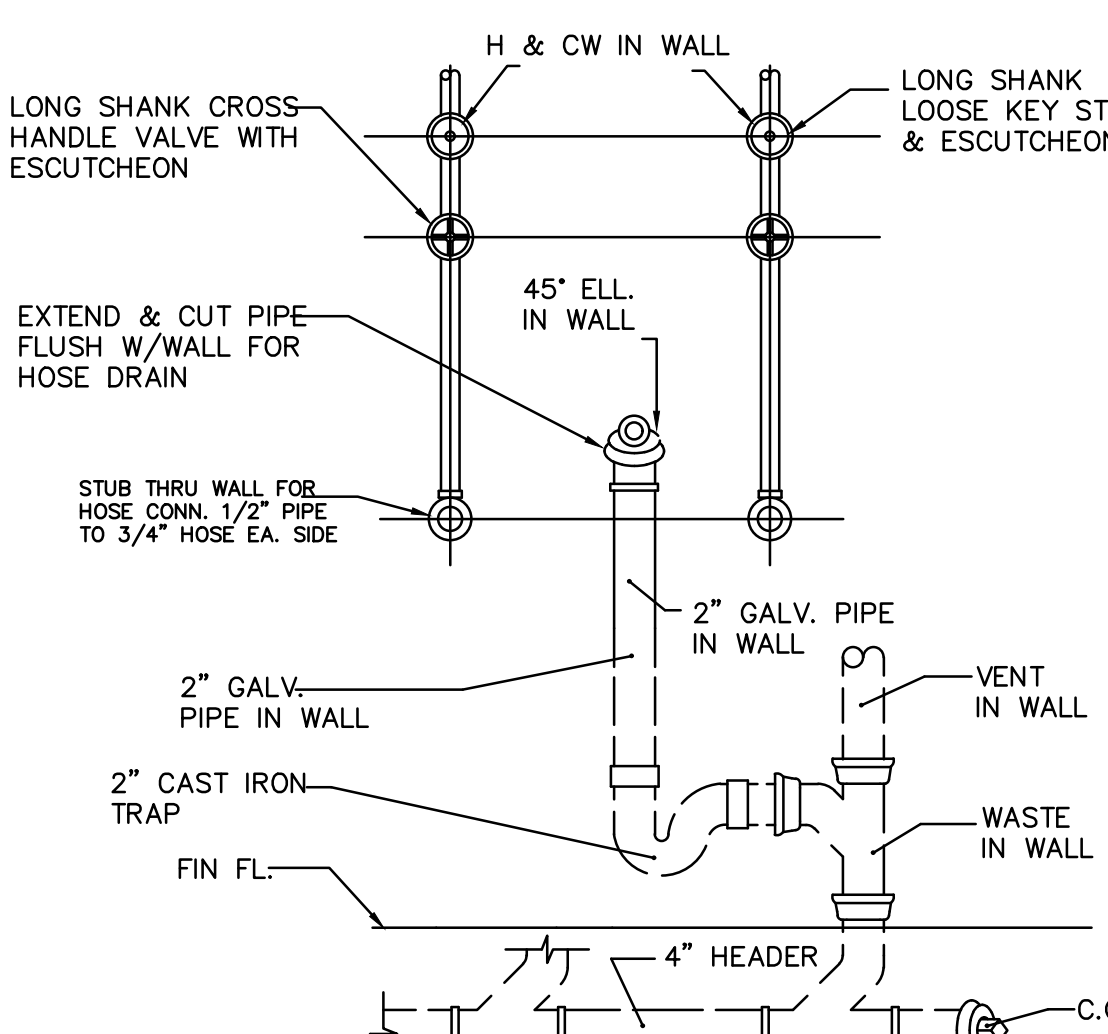
UL/CUL SYSTEM NO. W-L-5029
INSULATED METAL PIPE THROUGH 1-HR. OR 2-HR. GYPSUM WALL ASSEMBLY



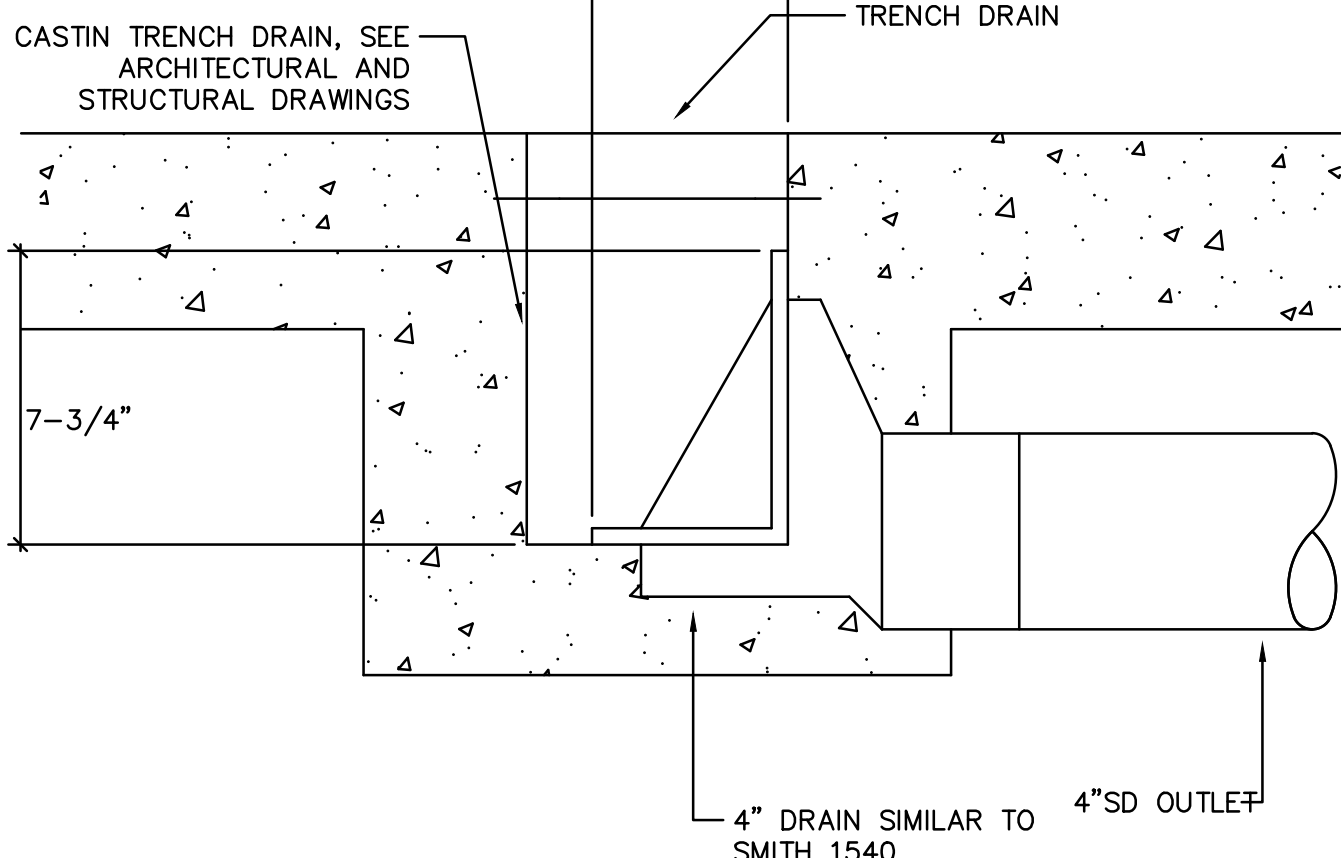
- GYPSUM WALL ASSEMBLY (UL/ULC CLASSIFIED U300 OR U400 SERIES) (1-HR. OR 2-HR. FIRE-RATING) (2-HR. SHOWN).
- (NOT SHOWN). WOOD STUDS TO CONSIST OF NOMINAL 2" x 4" LUMBER. STEEL STUDS TO BE MINIMUM 2-1/2" WIDE.
- PENETRATING ITEM TO BE ONE OF THE FOLLOWING :
A. MAXIMUM 12" NOMINAL DIAMETER STEEL PIPE (SCHEDULE 20 OR HEAVIER).
B. MAXIMUM 6" NOMINAL DIAMETER COPPER PIPE.
C. MAXIMUM 4" NOMINAL DIAMETER STEEL CONDUIT.
D. MAXIMUM 4" NOMINAL DIAMETER EMT.
- MAXIMUM 2" THICK GLASS-FIBER PIPE INSULATION.
- MINIMUM 5/8" DEPTH HILTI FS-ONE HIGH PERFORMANCE INTUMESCENT FIRESTOP SEALANT.
- MINIMUM 1/2" BEAD HILTI FS-ONE HIGH PERFORMANCE INTUMESCENT FIRESTOP SEALANT AT POINT OF CONTACT.

NOTES : 1. MAXIMUM DIAMETER OF OPENING = 18".
2. ANNULAR SPACE = MINIMUM 0", MAXIMUM 1-7/8".

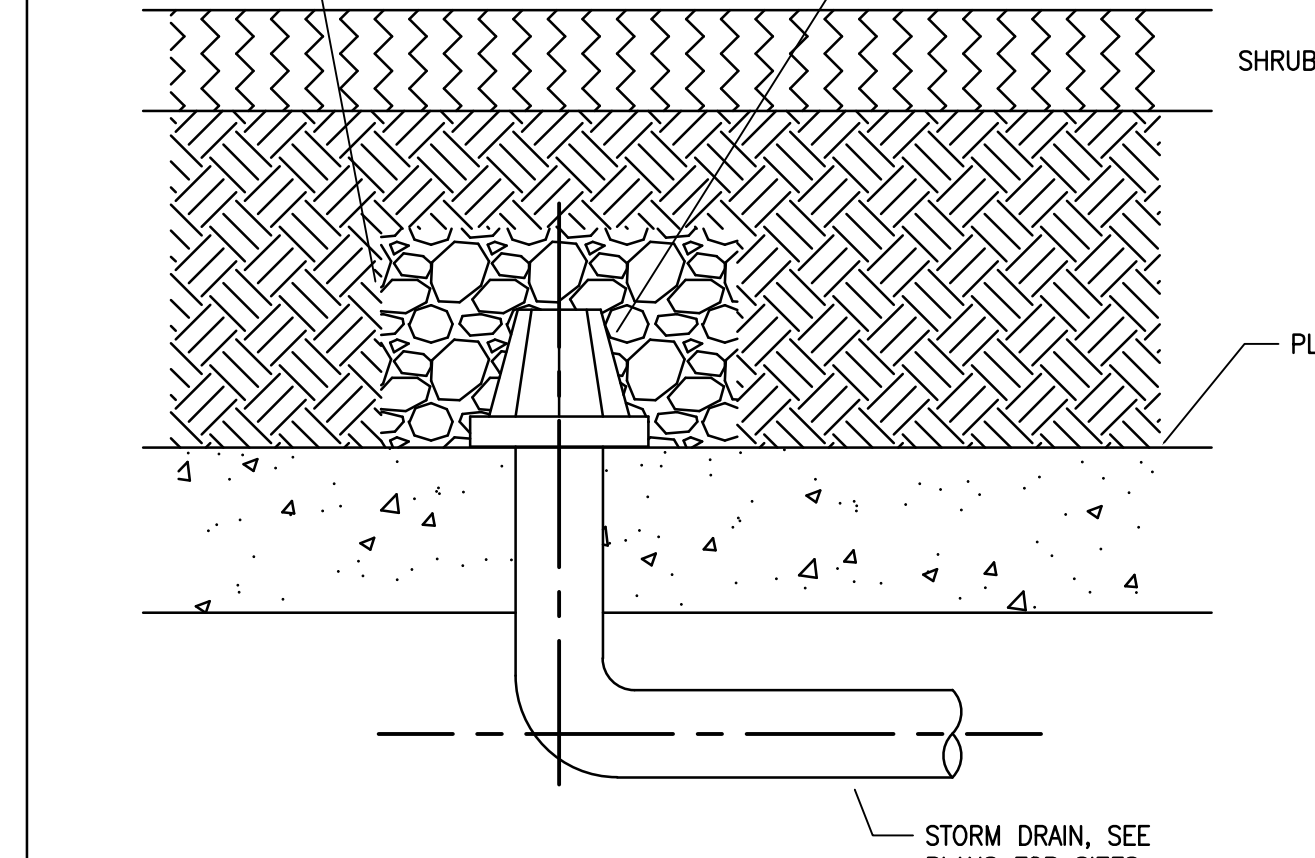
SINGLE PIPE PENETRATION W/ INSULATION 5



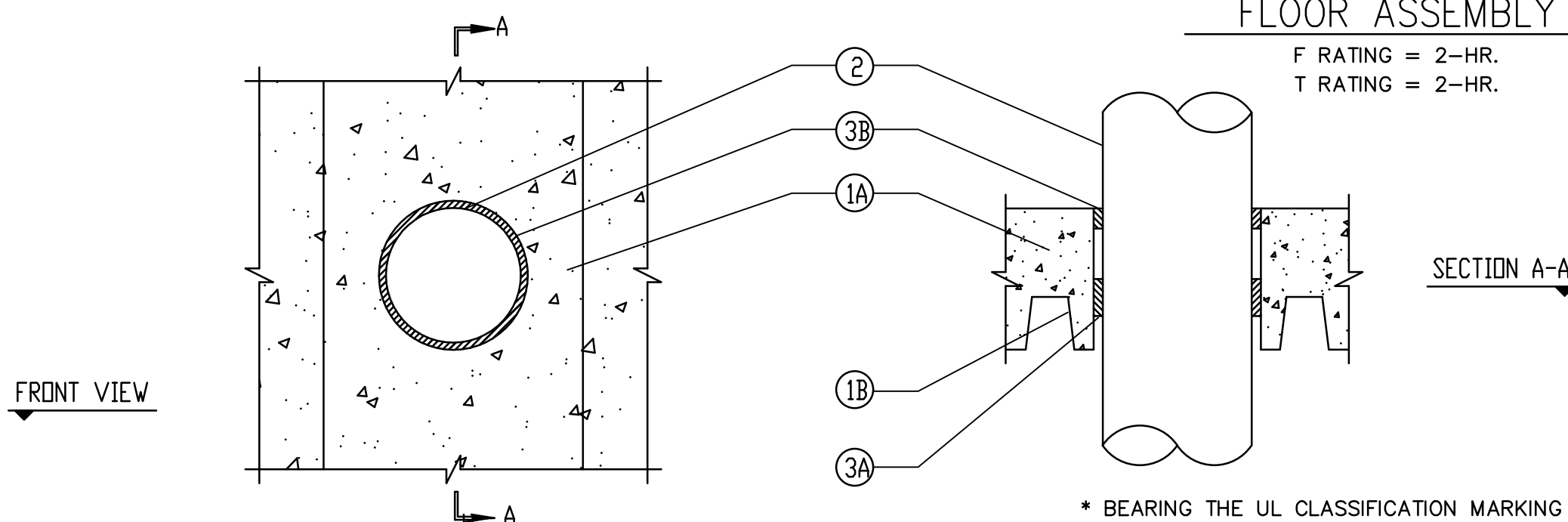
WASHING MACHINE HOOK UP DETAIL 6



TRENCH DRAIN DETAIL 4

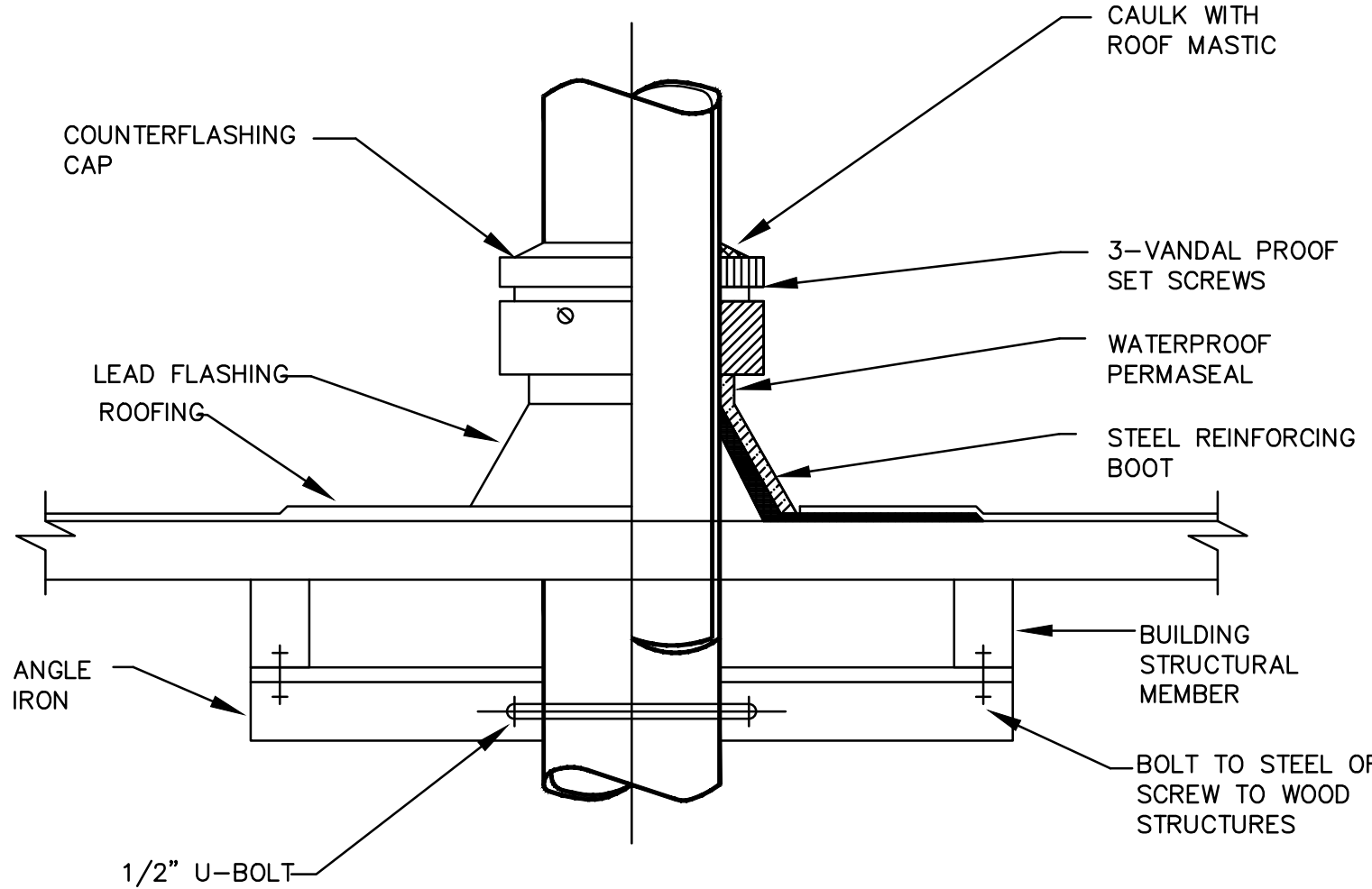


PLANTER DRAIN DETAIL 1

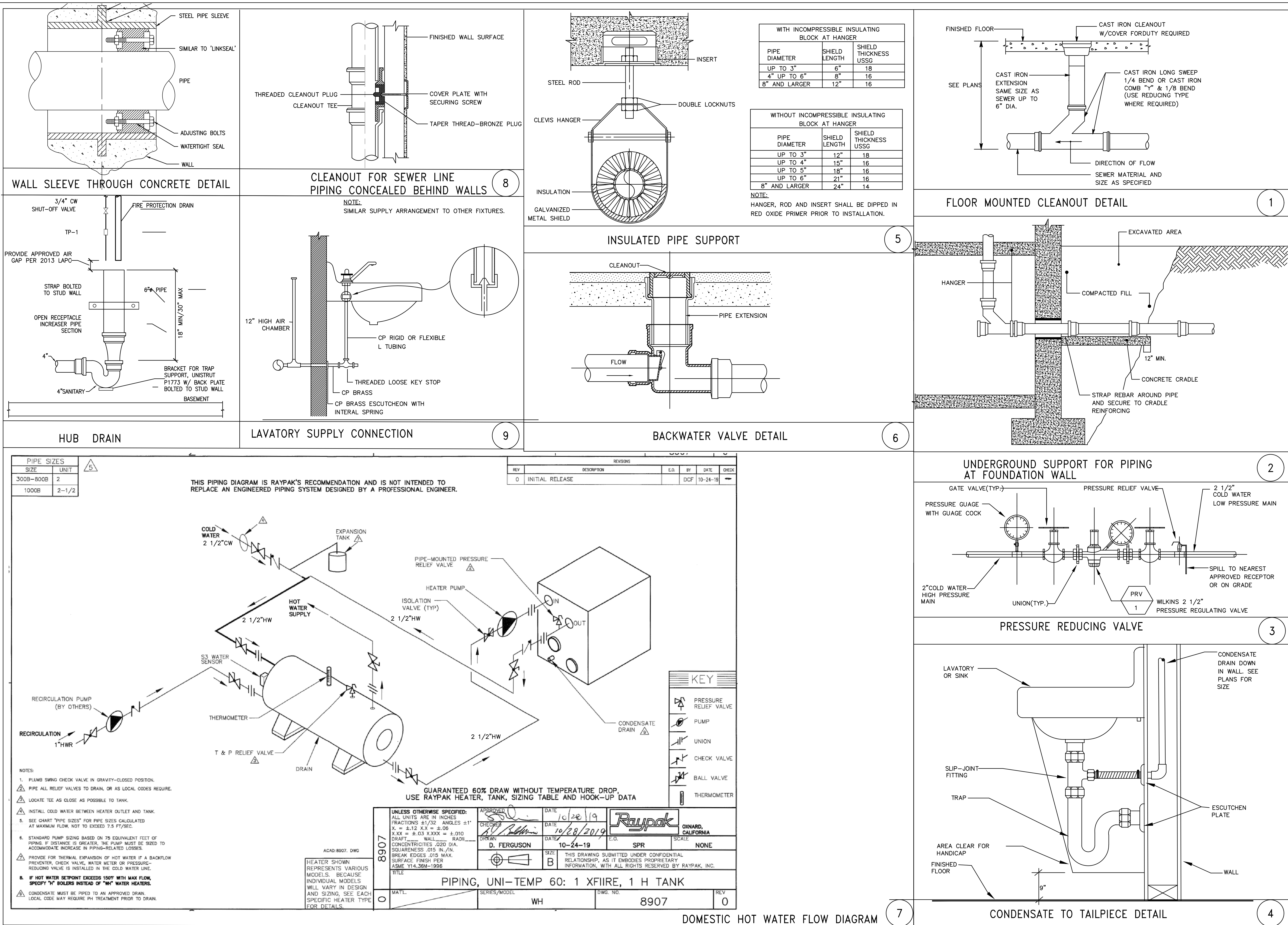


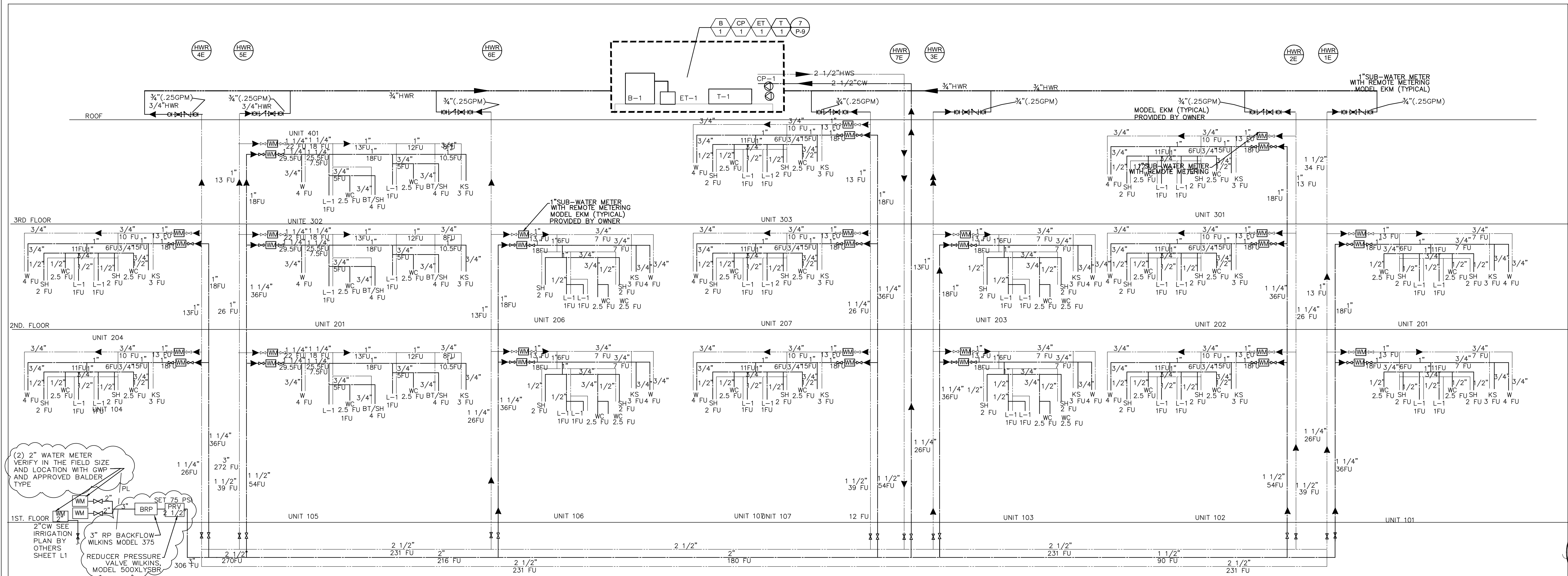
- FLOOR ASSEMBLY - THE FIRE-RATED UNPROTECTED CONCRETE AND STEEL FLOOR ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER DESCRIBED IN THE INDIVIDUAL D900 FLOOR - CEILING DESIGN IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:
A. CONCRETE - MIN 2-1/2 IN. THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT (100-150 PCF) CONCRETE
B. STEEL FLOOR AND FORM UNITS* - COMPOSITE OR NON-COMPOSITE MAX. 3 IN. DEEP FLUTED GALV UNITS AS SPECIFIED IN THE INDIVIDUAL FLOOR-CEILING DESIGN. MAX DIAM OF OPENING IS 4 IN.
- THROUGH PENETRATIONS - ONE NON-METALLIC PIPE OR CONDUIT TO BE CENTERED WITHIN THE FIRESTOP SYSTEM. THE ANNULAR SPACE BETWEEN THE PENETRANT AND THE PERIPHERY OF THE OPENING SHALL BE 1/4 IN. PIPE OR CONDUIT TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF THE FLOOR. THE FOLLOWING TYPES AND SIZES OF NON METALLIC PIPES OR CONDUITS MAY BE USED:
A. POLYVINYL CHLORIDE (PVC) PIPE - NOT USED
B. CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE - NOT USED
C. RIGID NON METALLIC CONDUIT* - NOT USED
D. ACRYLONITRILE BUTADIENE STYRENE (ABS)PIPE - NOT USED
- FIRESTOP SYSTEM - THE FIRESTOP SYSTEM SHALL CONSIST OF THE FOLLOWING:
A. FILL, VOID OR CAVITY MATERIAL*-WRAP STRIP- NOM 1/8 IN. THICK INTUMESCENT MATERIAL SUPPLIED IN 2 IN. WIDE STRIPS. TWO LAYERS OF WRAP STRIPS ARE INDIVIDUALLY WRAPPED TIGHTLY AROUND PENETRANT WITH THE ENDS BUTTED AND HELD IN PLACE WITH ALUMINIUM FOIL TAPE. BUTTED ENDS OF SUCCESSIVE LAYERS MAY BE STAGGERED OR ALIGNED. LAYERS OF WRAP STRIP TO BE RECESSED INTO OPENING WITH THE BOTTOM SURFACE OF WRAP STRIPS FLUSH WITH CREST OF STEEL DECK FLUTES.
B. FILL, VOID OR CAVITY MATERIAL* - SEALANT - MIN 1/2 IN. THICKNESS OF SEALANT APPLIED WITHIN THE ANNULUS, FLUSH WITH TOP SURFACE OF FLOOR. PASSIVE FIRE PROTECTION PARTNERS** - 4800DW

FLOOR PIPE PENETRATION 2



PIPE THRU ROOF DETAIL 3





COLD AND HOT WATER RISER DIAGRAM

Friction Loss psi 100 ft	Nominal Pipe Diameter (inches)									
	0.5	0.75	1	1.25	1.5	2	2.5	3	3.5	4
8.8	0.545	0.785	1.025	1.265	1.505	1.985	2.465	2.945	3.425	3.905
	Cold Water - Flush Tank									
	3	10	24	54	103	254	455	719	1091	1668
	Hot Water - 5 f/s max									
	3	8	16	28	46	119	245	406	585	840

INSTALLATION REQUIREMENTS

- ALL INSTALLATIONS MUST BE COORDINATED WITH GLENDALE WATER & POWER (GWP). ANY UNAUTHORIZED CONNECTION TO, OR OPERATION OF, A GWP FACILITY MAY BE GROUNDS FOR DENIAL OF WATER SERVICE.
- BACKFLOW PREVENTION ASSEMBLY (BFP) MUST BE APPROVED BY THE FOUNDATION FOR CROSS-CONNECTION CONTROL AND HYDRAULIC RESEARCH AT THE UNIVERSITY OF SOUTHERN CALIFORNIA AND MUST BE INSTALLED IN THEIR ORIGINAL (UNALTERED) MANUFACTURED FORM.
- THE ASSEMBLY SHALL BE INSTALLED AS CLOSE TO THE METER OR TO THE RIGHT-OF-WAY LINE AS PRACTICAL (SEE STANDARD DRAWING No. 6528-A & 6561-A).
- THE BFP MUST BE TESTED BY A GWP-AUTHORIZED TESTER PRIOR TO ACTUAL SERVICE (SEE GWP'S APPROVED TESTER LIST).
- ANY UNAUTHORIZED CONNECTION TO A BFP WILL RESULT IN DISCONNECTION OF SAID CONNECTIONS AND POSSIBLE SHUT OFF OF WATER SERVICE.
- PLEASE CONTACT (818) 937-8948 FOR APPROVAL OF BFP INSTALLATION LOCATION PER CA CODE OF REGULATIONS, TITLE 17 & CITY OF GLENDALE ORD. No. 5678.
- FOR A LIST OF APPROVED BFP, PLEASE CONTACT (818) 937-8948. NEW DEVICES MUST BE INSPECTED BY GWP AND TESTED BY LOS ANGELES COUNTY DEPARTMENT OF PUBLIC HEALTH CERTIFIED BACKFLOW TESTER IMMEDIATELY UPON INSTALLATION BEFORE WATER SERVICE IS APPROVED.
- ACCORDING TO CALIFORNIA AND GLENDALE CITY CODE AND REGULATIONS, ALL COMMERCIAL FIRE SERVICES AND IRRIGATION SERVICES WILL REQUIRE SOME FORM OF BACKFLOW PREVENTION SYSTEM TO PROTECT THE POTABLE WATER SYSTEM. PLEASE BE SURE TO THOROUGHLY REVIEW GWP STANDARD DRAWINGS. (SEE STANDARD DRAWINGS 6528-A & 6561-A)
- ALL BFP SHALL BE LOCATED AS CLOSE AS PRACTICAL TO THE USER'S CONNECTION. THEY WILL BE INSTALLED A MINIMUM OF TWELVE INCHES (12") AND NOT MORE THAN THIRTY SIX INCHES (36") ABOVE FINISHED STREET GRADE MEASURED FROM THE BOTTOM OF THE DEVICE. A MINIMUM OF TWELVE INCHES (12") SIDE CLEARANCE, AND TWENTY-FOUR INCHES (24") FRONT CLEARANCE, LOCATED WHERE IT IS READILY ACCESSIBLE FOR INSPECTION, TESTING AND MAINTENANCE.

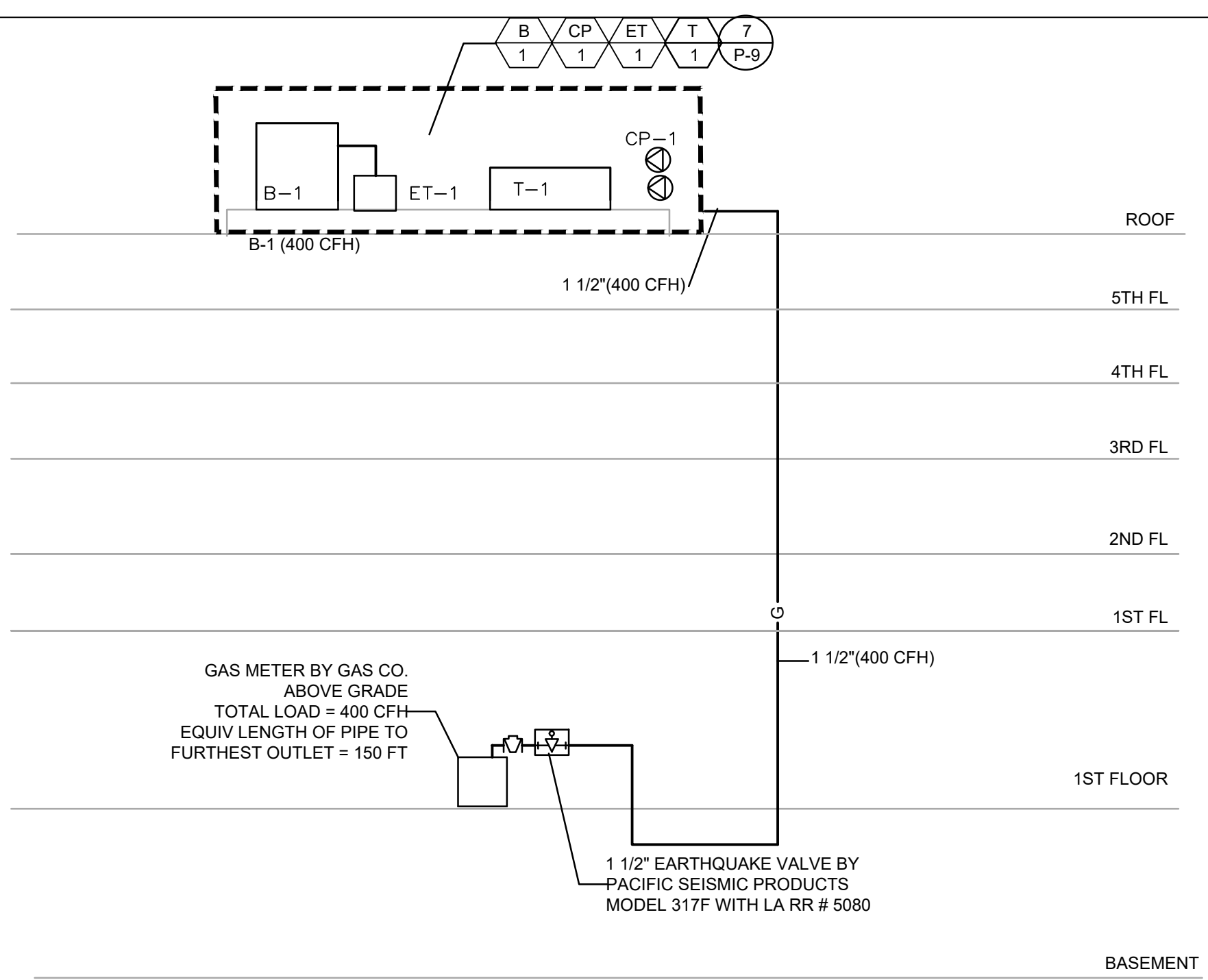
GLENDALE WATER & POWER
CITY OF GLENDALE
CALIFORNIA
INSTALLATION REQUIREMENTS FOR
BACKFLOW PREVENTION
ASSEMBLY DEVICE (BFP)

APPROVED: *[Signature]* 07/14/2015
GERALD TOM, SENIOR CIVIL ENGINEER, R.C.E. No. 051209 DATE
GLENDALE WATER AND POWER - WATER DEPARTMENT

DES: LB SCALE: NONE SHEET No. 1 OF 1
C: DATE: 07/14/15
6762-A

TABLE 1216.2(1)
SCHEDULE 40 METALLIC PIPE (NFPA 54: TABLE 6.2(b))^{1, 2}

PIPE SIZE (inch)												
NOMINAL:	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4	5	6	8
ACTUAL ID:	0.622	0.824	1.049	1.380	1.610	2.067	2.469	3.068	4.026	5.047	6.065	7.981
LENGTH (feet)	CAPACITY IN CUBIC FEET OF GAS PER HOUR											
10	172	360	678	1390	2090	4020	6400	11300	23100	41800	67600	139000
20	118	247	466	957	1430	2760	4400	7780	15900	28700	46500	95000
30	95	199	374	768	1150	2220	3530	6250	12700	23000	37300	76700
40	81	170	320	657	985	1900	3020	5350	10900	19700	31900	65600
50	72	151	284	583	873	1680	2680	4740	9660	17500	28300	58200
60	65	137	257	528	791	1520	2430	4290	8760	15800	25600	52700
70	60	126	237	486	728	1400	2230	3950	8050	14600	23600	48500
80	56	117	220	452	677	1300	2080	3670	7490	13600	22000	45100
90	52	110	207	424	635	1220	1950	3450	7030	12700	20600	42300
100	50	104	195	400	600	1160	1840	3260	6640	12000	19500	40000
125	44	92	173	355	532	1020	1630	2890	5890	10600	17200	35400
150	40	83	157	322	482	928	1480	2610	5330	9650	15600	32100
175	37	77	144	296	443	854	1360	2410	4910	8880	14400	29500
200	34	71	134	275	412	794	1270	2240	4560	8260	13400	27500
250	30	63	119	244	366	704	1120	1980	4050	7320	11900	24300
300	27	57	108	221	331	638	1020	1800	3670	6630	10700	22100
350	25	53	99	203	305	587	935	1650	3370	6100	9880	20300
400	23	49	92	189	283	546	870	1540	3140	5680	9190	18900
450	22	46	86	177	266	512	816	1440	2940	5330	8620	17700
500	21	43	82	168	251	484	771	1360	2780	5030	8150	16700



GAS PIPE RISER DIAGRAM
NOT PART OF THIS PERMIT

REVISIONS BY

BAHRAM RAEEN
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17 UNITS APARTMENT
528 HAZEL ST.,
RISER DIAGRAM
GLENDALE, CA 91201

DATE: 07/14/2015
SCALE: NONE
DRAWN: LB
JOB: 6762-A
SHEET: P-II

