

SPECIFICATIONS

1.1 SCOPE

- A.

THE WORK COVERED BY THIS SECTION CONSISTS OF FURNISHING ALL LABOR, MATERIALS EQUIPMENT, AND FIXTURES AS REQUIRED TO PROPERLY INSTALL THE PLUMBING SYSTEM COMPLETE AS SHOWN.
- B.

THE PLUMBING SYSTEM SHALL INCLUDE THE FOLLOWING:

1.

DOMESTIC COLD AND HOT WATER SYSTEM.

2.

SANITARY, WASTE AND VENT SYSTEM.

3.

TEST AND DISINFECTION OF PLUMBING PIPING.

4.

TRENCH AND BACK FILL FOR UNDERGROUND PLUMBING PIPING.

5.

SUPPORT OF PLUMBING PIPING

6.

PIPING ACCESSORIES AND APPURTENANCES

7.

PLUMBING FIXTURES

8.

CONDENSATE DRAINAGE

1.2 PERMITS AND INSPECTIONS

- A.

UNLESS OTHERWISE NOTED, THIS CONTRACTOR SHALL APPLY AND PAY FOR ALL NECESSARY PERMITS, FEES AND INSPECTIONS REQUIRED BY ANY AUTHORITY HAVING JURISDICTION.
- B.

WORKMANSHIP SHALL BE OF THE BEST QUALITY AND NONE BUT COMPETENT MECHANICS SKILLED IN THEIR TRADES SHALL BE EMPLOYED.
- C.

ALL MATERIAL UNDER THIS DIVISION OF THE SPECIFICATIONS SHALL BE NEW, AND LISTED IN PRINTED CATALOGS OF THE MANUFACTURER EACH ARTICLE OF ITS KIND SHALL BE THE STANDARD PRODUCT OF A SINGLE MANUFACTURER
- D.

THE ARCHITECT SHALL HAVE THE RIGHT TO ACCEPT OR REJECT MATERIAL AND/OR WORKMANSHIP AND DETERMINE WHEN THE CONTRACTOR HAS COMPLIED WITH THE REQUIREMENTS HEREIN SPECIFIED.
- E.

ALL MANUFACTURED MATERIALS SHALL BE CLEARLY MARKED OR STAMPED WITH THE MANUFACTURER'S NAME AND RATING.
- F.

REFERENCE TO STANDARDS ARE INTENDED TO BE THE LATEST REVISION OF THE STANDARD SPECIFIED.

1.3 GUARANTEE

- A.

ALL MATERIALS PROVIDED AND INSTALLED UNDER THIS SECTIONS SHALL BE GUARANTEED IN ACCORDANCE WITH THE GENERAL CONDITIONS . SHOULD ANY TROUBLE OR MALFUNCTIONS DEVELOP DURING THIS PERIOD DUE TO DEFECTIVE MATERIALS OR FAULTY WORKMANSHIP, THE CONTRACTOR WILL BE HELD LIABLE & SHALL FURNISH LABOR, MATERIALS AND EQUIPMENT NECESSARY TO CORRECT THE TROUBLE OR MALFUNCTION AT NO COST. ALL DEFECTIVE MATERIALS OR INFERIOR WORKMANSHIP NOTICED DURING THE TIME OF INSTALLATION SHALL BE CORRECTED IMMEDIATELY TO THE ENTIRE SATISFACTION OF THE ARCHITECT AND OWNER.

1.4 SUBMITTALS

- A.

SUBMITTALS ARE REQUIRED ON EVERY ITEM TO BE FURNISHED.
- B.

SIX BOND COPIES OF EACH SHOP DRAWING, INDICATING PROPOSED LAYOUT, MATERIAL LISTS AND/OR BROCHURES OF MATERIALS SPECIFIED HEREIN SHALL BE PREPARED AND SUBMITTED TO THE ENGINEER FOR REVIEW WITHIN 15 DAYS AFTER AWARD OF CONTRACT.
- C.

RECORD DRAWINGS: TWO COMPLETE SETS OF "AS BUILTS" DUE TO OWNER UPON COMPLETION OF PROJECT IN AUTO CAD FILES.

2.0 MATERIALS

- A.

SANITARY WASTE (BELOW GRADE & ABOVE GROUND) ABS SERVICE WEIGHT NO-HUB PIPE AND FITTINGS
- B.

DOMESTIC WATER (INSIDE BUILDING ABOVE GRADE) ASTM B88, TYPE L, HARD DRAWN COPPER TUBING, FITTINGS ANSI/ASME B1622, WROUGHT COPPER
- C.

DOMESTIC WATER (INSIDE BUIDING BELOW GRADE) ASTM B88, TYPE 'K', HARD DRAWN COPPER TUBING, FITTINGS ANSI/ASME B16.22, WROUGHT COPPER
- D.

CONDENSATE DRAIN, TYPE "M", COPPER TUBING, SWEATED CONNECTIONS CONFORMING TO ASTM B 88.
- E.

DOMESTIC WATER (MAIN OUTSIDE BUIDING BELOW GRADE) PVC SCHEDULE 40. TUBING AND FITTINGS

2.1 VALVES

- A.

BALL TYPE VALVE. WATTS VALVE SOLDERED THREE – PIECE BRONZE BODY STAINLESS STEEL FULL PORT BALL AND STEM. 600 PSI W.O.G.

3.0 INSTALLATION

- A.

PROVIDE A COMPLETE DWV, SANITARY & DOMESTIC WATER SYSTEM INSTALLATION AS INDICATED ON THE DRAWINGS.
- B.

DO ALL NECESSARY TRENCHING, EXCAVATION, SHORING AND BACK FILLING REQUIRED FOR THE PROPER LAYING OF THE PIPE LINES. BOTTOMS OF TRENCHES TO BE CUT TO GRADE. MAKE TRENCHES 12 INCHES WIDER THAN THE GREATER DIAMETER OF THE PIPE. ALL UNDERGROUND PIPING, OUTSIDE OF THE BUILDING, SHALL BE SET ON A 6 INCH BED OF DAMP SAND AND BACK FILLED TO WITHIN 12 INCHES OF FINISH GRADE WITH DAMP SAND. REMAINDER OF BACK FILL TO BE NATIVE SOIL REMOVE EXCESS EARTH FROM THE PREMISES. DO NOT BACK FILL UNTIL INSTALLATION HAS BEEN APPROVED AND RECORD DRAWINGS ARE UP TO DATE. PROMPTLY INSTALL ALL PIPING AFTER EXCAVATION OR CUTTING FOR SAME HAS BEEN DONE, SO AS TO KEEP THE EXCAVATIONS OPEN AS SHORT A TIME AS POSSIBLE.

- C.

INSTALL AN APPROVED TYPE WATER PRESSURE REGULATOR WHERE THE WATER PRESSURE IS IN EXCESS OF 80 PSI IN THE BUILDING WATER SUPPLY.
- D.

INSTALL CLEAN OUTS AS REQUIRED BY CODE REGULATIONS. INSTALL IN ACCESSIBLE LOCATIONS.
- E.

MAKE UP JOINTS WITH INSIDE SMOOTH AND UNOBSTRUCTED THOROUGHLY REAM CUT PIPE ENDS TO REMOVE ALL BURRS. INSPECT PIPE AND FITTINGS AND REMOVE OBSTRUCTIONS, PRIOR TO FABRICATIONS, REMAKE LEAKY CONNECTIONS WITH NEW MATERIALS. THE USE OF THREAD CEMENT OR CAULKING TO MAKE JOINTS TO MAKE JOINTS TIGHT IS PROHIBITED.
- F.

INSTALL HORIZONTAL SANITARY AND DRAINAGE PIPING TO A UNIFORM GRADE OF 2% AND CONDENSATE DRAIN TO 1% OR AS INDICATED IN DWGS.
- G.

HORIZONTAL VENTING NOT APPROVED LESS THAN SIX(6) INCHES ABOVE THE FLOOD LEVEL RIM OF THE FIXTURE SERVED UNLESS REQUIRED BY STRUCTURE CONDITIONS. 2001 CPC SEC.905.3

3.1 STERILIZATION

- A.

STERILIZE DISTRIBUTION SYSTEM WITH CHLORINE BEFORE ACCEPTANCE FOR OPERATION CONTRACTOR SHALL FURNISH SHUT-OFF VALVE AND CORPORATION STOP OR OTHER MEANS OF INJECTING CHLORINE.
- B.

THE MINIMUM DOSAGE OF CHLORINE TO BE 50 PARTS PER MILLION.
- C.

THE PROCEDURE TO BE FOLLOWED: ALLOW A CONTACT PERIOD OF NOT LESS THAN 8 HOURS, AND THEN FLUSH SYSTEM WITH CLEAN WATER UNTIL THE RESIDUAL CONTENT IS NOT GREATER THAN 05 PARTS PER MILLION. FLUSH ENTIRE SYSTEM INCLUDING ALL OUTLETS, DEAD ENDS, AND OTHER POINTS WHERE DEAD WATER TENDS TO COLLECT OPEN AND CLOSE ALL VALVES SEVERAL TIMES DURING CONTACT PERIOD.
- D.

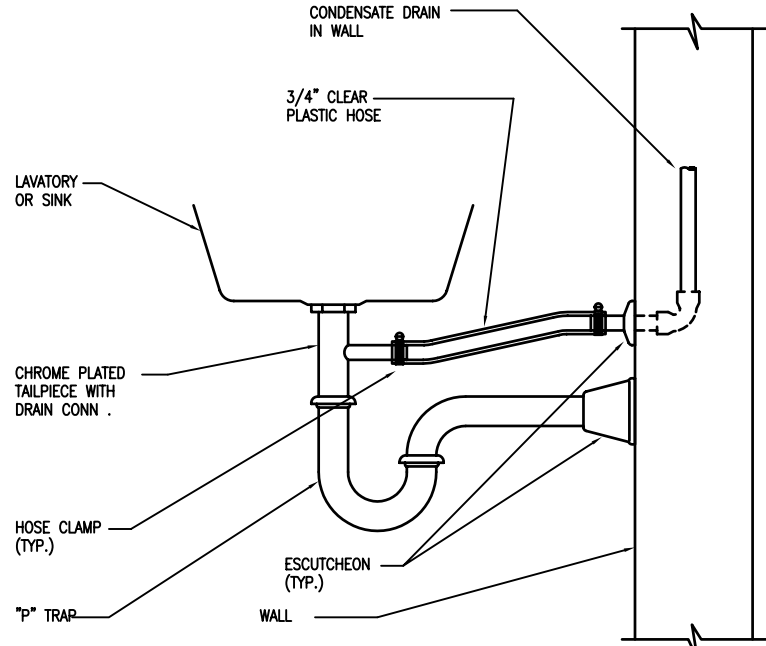
FURNISH TWO COPIES OF A CERTIFICATE OF PERFORMANCE OF COMPLETE STERILIZATION TO THE ARCHITECT BEFORE FINAL INSPECTION OF THE WORK THIS SHALL BE PERFORMED UNDER THE SUPERVISION OF AND CERTIFIED BY A CHEM. ENGINEER REGISTERED IN THE STATE OF CALIFORNIA

3.2 TESTS

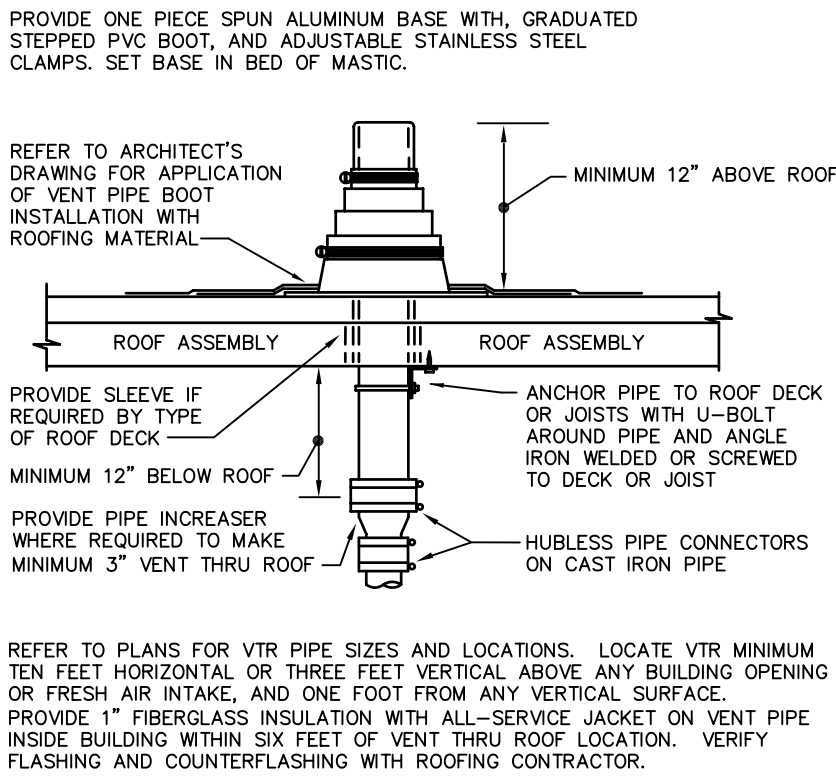
- A.

DOMESTIC WATER SYSTEM : 125 PSI, OR SYSTEM WORKING PRESSURE
- B.

SANITARY, WASTE AND VENT SYSTEM : MINIMUM OF 10 FEET HEAD OF WATER



CONDENSATE DRAIN TO LAVATORY TAILPIECE
SCALE: NOT TO SCALE



VENT THRU ROOF
SCALE: NOT TO SCALE

APPLICABLE CODES

- 2013 CALIFORNIA BUILDING CODE
- PART 2– 2013 CALIFORNIA ELECTRICAL CODE
- 2010 CALIFORNIA FIRE CODE
- 2013 CALIFORNIA ENERGY CODE (TITLE 24)
- 2013 CALIFORNIA PLUMBING CODE WITH ALL APPLICABLE AMENDMENTS

GENERAL NOTES

1.

EXISTING CONDITIONS ARE BASED ON " AS BUILT" DRAWINGS PROVIDED BY OWNER. CONTRACTOR SHALL ADJUST TO ACTUAL CONDITIONS AT NO ADDITIONAL EXPENSE TO OWNER.
2.

ALL OMISSIONS AND OR CONFLICTS BETWEEN THE VARIOUS ELEMENTS OF THE CONSTRUCTION DOCUMENTS SHALL BE BROUGHT TO THE ATTENTION OF AND RESOLVED WITH THE ARCHITECT PRIOR TO PROCEEDING WITH ANY OF THE AFFECTED WORK.
3.

ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE REQUIREMENTS OF THE LATEST EDITION OF CBC AND CPC.
4.

THE PLUMBING CONSTRUCTION DOCUMENTS REPRESENT THE PLUMBING AND PIPING SYSTEMS, NOT THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL LABOR MATERIALS, EQUIPMENT AND ACCESSORIES NECESSARY TO ACHIEVE THE FINISHED SYSTEMS.
5.

NO PIPES, SLEEVES, ETC SHALL BE PLACED IN SLABS, BEAMS OR WALLS UNLESS SPECIFICALLY SHOWN OR NOTED, NOR SHALL ANY STRUCTURAL MEMBER BE CUT FOR PIPES.
6.

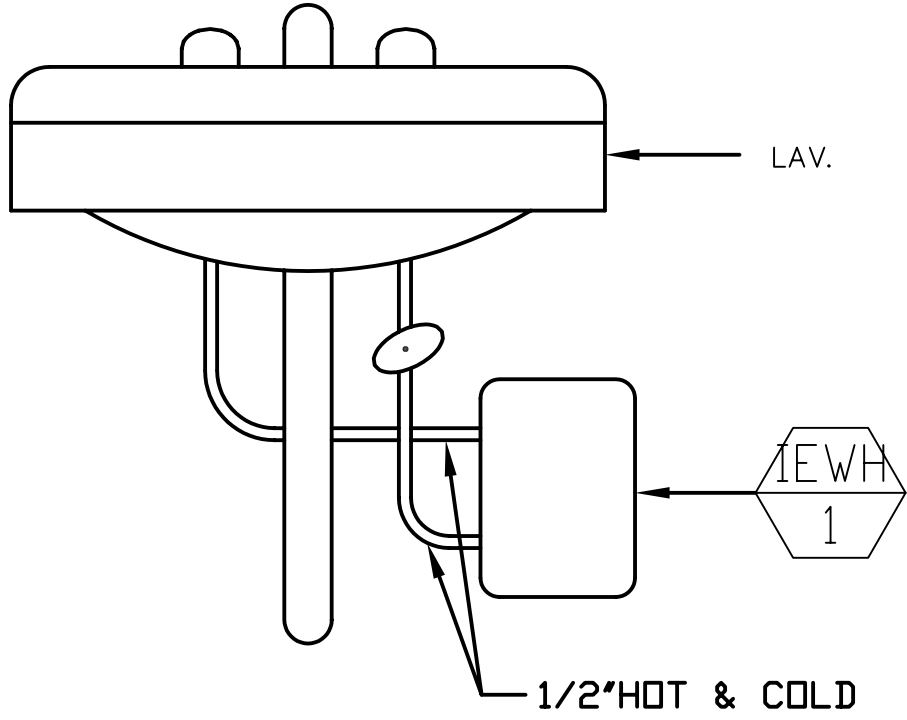
FOR UNDERGROUND PIPING ROUTED AT OR NEAR FOOTINGS OR GRADE BEAMS. SEE STRUCTURAL DRAWINGS FOR DETAILS.
7.

CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFICATION OF AN EXISTING CONDITION PRIOR TO SUBMITTING HIS BID, NO ADDITIONAL COMPENSATION WILL BE MADE FOR ANY EXTRAS DUE TO CONTRACTOR'S FAILURE TO VISIT JOB SITE AND/OR PREDETERMINE ALL EXISTING CONDITIONS BEFORE SUBMITTING HIS BID. ANY DISCREPANCY SHALL BE IMMEDIATELY REPORTED TO THE ENGINEER FOR RESOLUTION.
8.

PLUMBING CONTRACTOR TO COMPLY WITH THE CITY STANDARD AND REGULATIONS FOR UNDERGROUND UTILITY CONNECTIONS.
9.

THE PLUMBING CONTRACTOR SHALL ALSO VERIFY & FAMILIARIZE HIMSELF WITH ALL SITE UTILITIES PRIOR TO BASE BID & CONSTRUCTION.
10.

RIM COPPER END TUBING & USE PROPER FLUX.



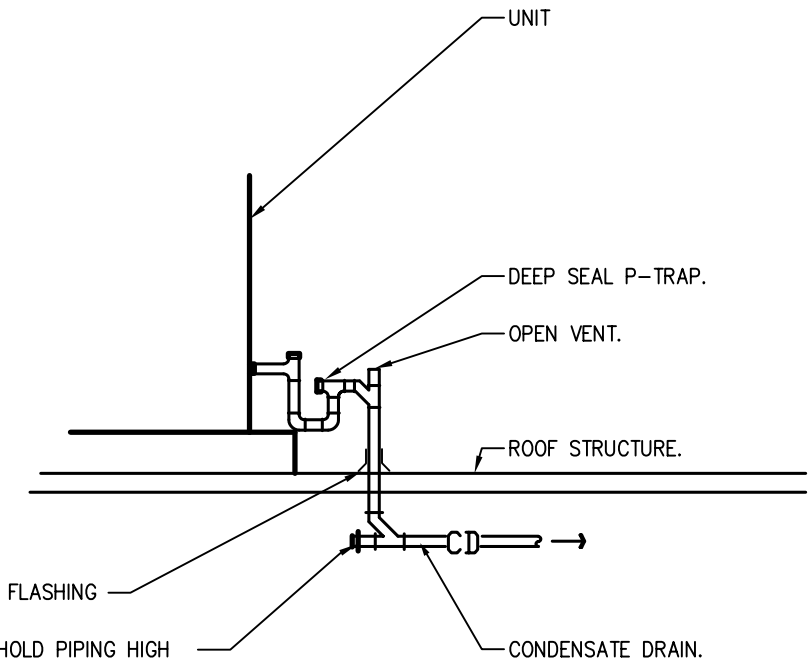
INSTANT ELECTRIC WATER HEATER DETAIL
SCALE: NOT TO SCALE

FIXTURE SCHEDULE

NO.	DESCRIPTION	ROUGH-IN				REMARKS
		W	Y	CW	HW	
WC 1	WATER CLOSET	4"	2"	3/4"	–	KOHLER CIMARRON K–3609 WITH KOHLER LUSTRA #K4650, ELONGATED WHITE FRONT SEAT, 1.28 GPF, WHITE, HANDICAPPED TYPE,
L 1	LAVATORY	2"	2"	1/2"	1/2"	KOHLER K–2005, WALL HUNG, FRONT OVERFLOW, 4" CENTERS, 0.5 GPM FLOW, WITH SYMMONS SCOTT # S–60–H SLOW CLOSING.
EIWH 1	WATER HEATER	–	–	1/2"	1/2"	Eemax INSTANT ELECTRIC WATER HEATER MODEL NO. SP–35 3.5KW @ 208V SINGLE PHASE , 0.5 GPM@ 50 °F RISE.
HB 1	HOSE BIBB	–		3/4"	–	ACCRON NO. 8121. WITH VACUME BREAKER.

NOTE: ALL THE PLUMBING FIXTURE TO BE APPROVED BY OWNER.

SYMBOL	ABBREVIATIONS	DESCRIPTION
_____	W	WASTE (BELOW GRADE)
_____	CW	COLD WATER
_____	HW	HOT WATER
_____	V	VENT
_____	(E)W	EXISTING WASTE
_____	(E)CW	EXISTING COLD WATER LINE
_____	(E)HW	EXISTING HOT WATER
_____	(E)V	EXISTING VENT
_____	SOV	SHUT-OFF VALVE IN YARD BOX
_____	CD	CONDENSATE DRAIN
_____	G	GAS
_____	(E)	EXISTING
_____	DN	DOWN
_____	HDR.	HEADER
_____	(N)	NEW



A/C GAS AND PIPING DETAIL
SCALE: NOT TO SCALE

REVISIONS

DATE	
	△

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CHECKED BY: S.M.

SCALE: NOTED

DATE : 04–01–12

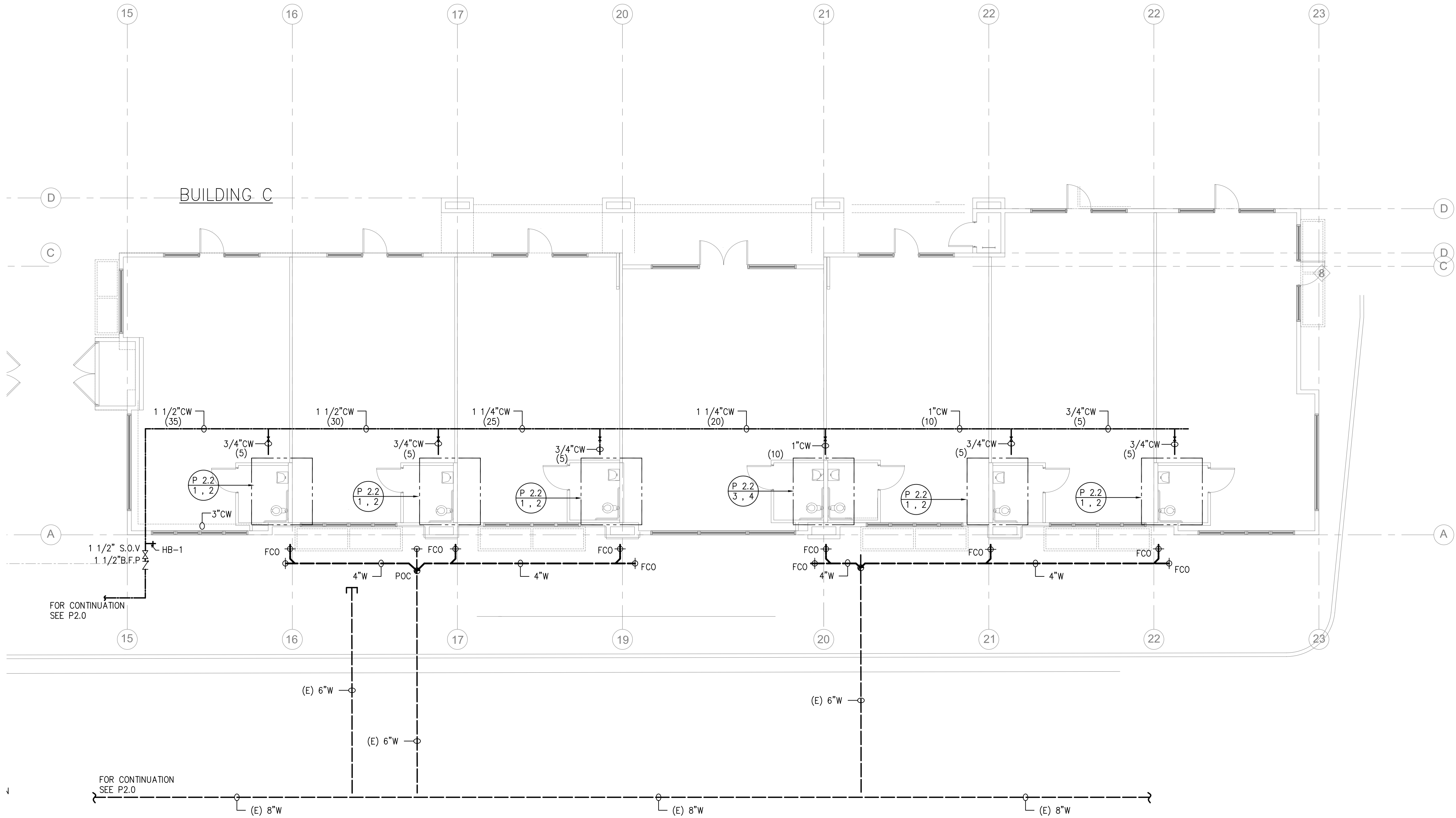
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SPECIFICATION
SCHEDULE
DETAILS
AND LEGEND

SHEET

P-1

1 OF 4



BUILDING "C" PLUMBING PLAN

SCALE
1/8" = 1'-0"

1

PROJECT NO: GII-120102
CAD DWG FILE:
DRAWN BY : M.B.
CHECKED BY: S.M.
SCALE: NOTED
DATE: 04-01-12
SHEET TITLE:

BUILDING "C"
FLOOR
PLUMBING
PLAN

SHEET
P-2.1
3 OF 4

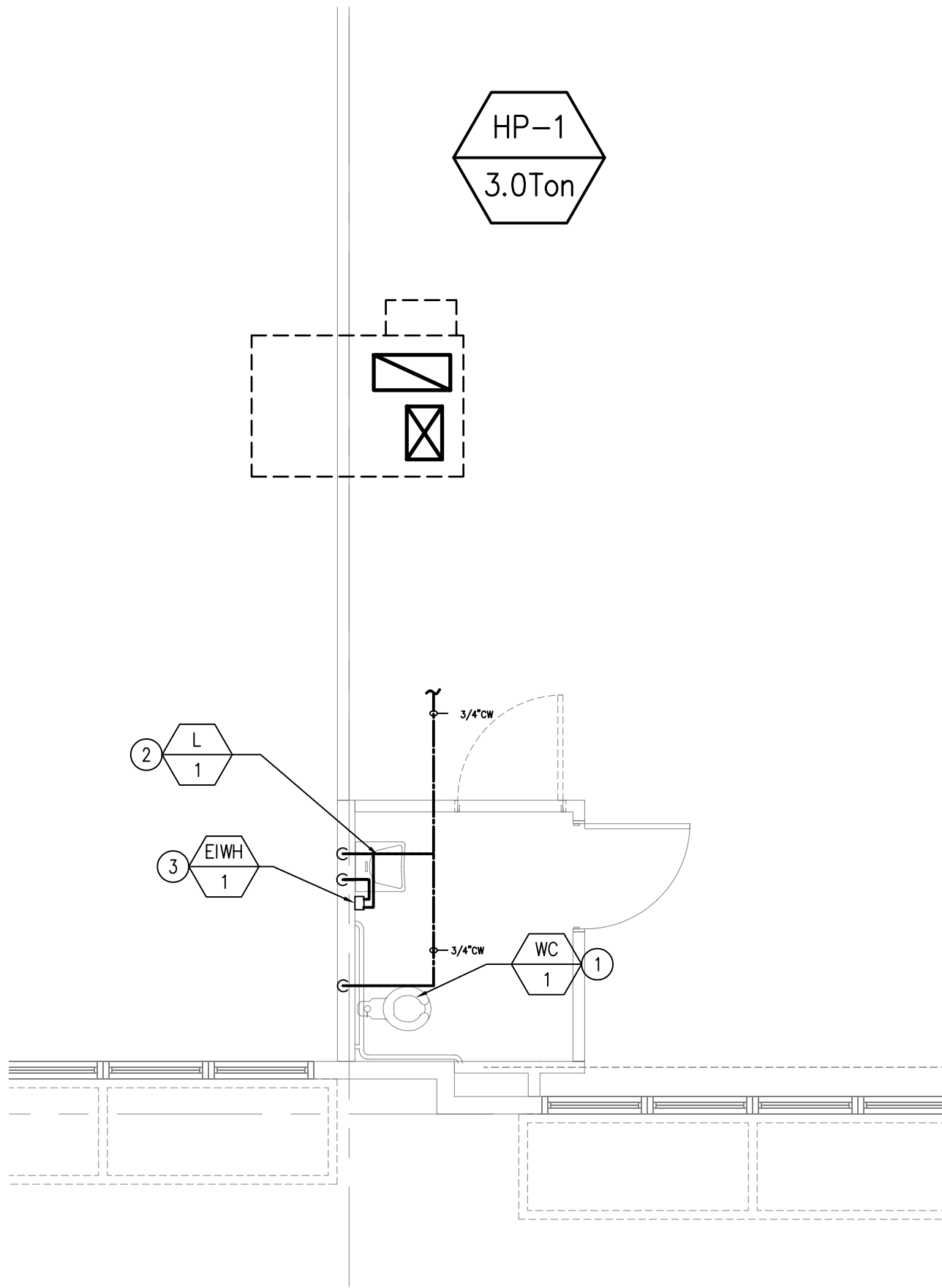
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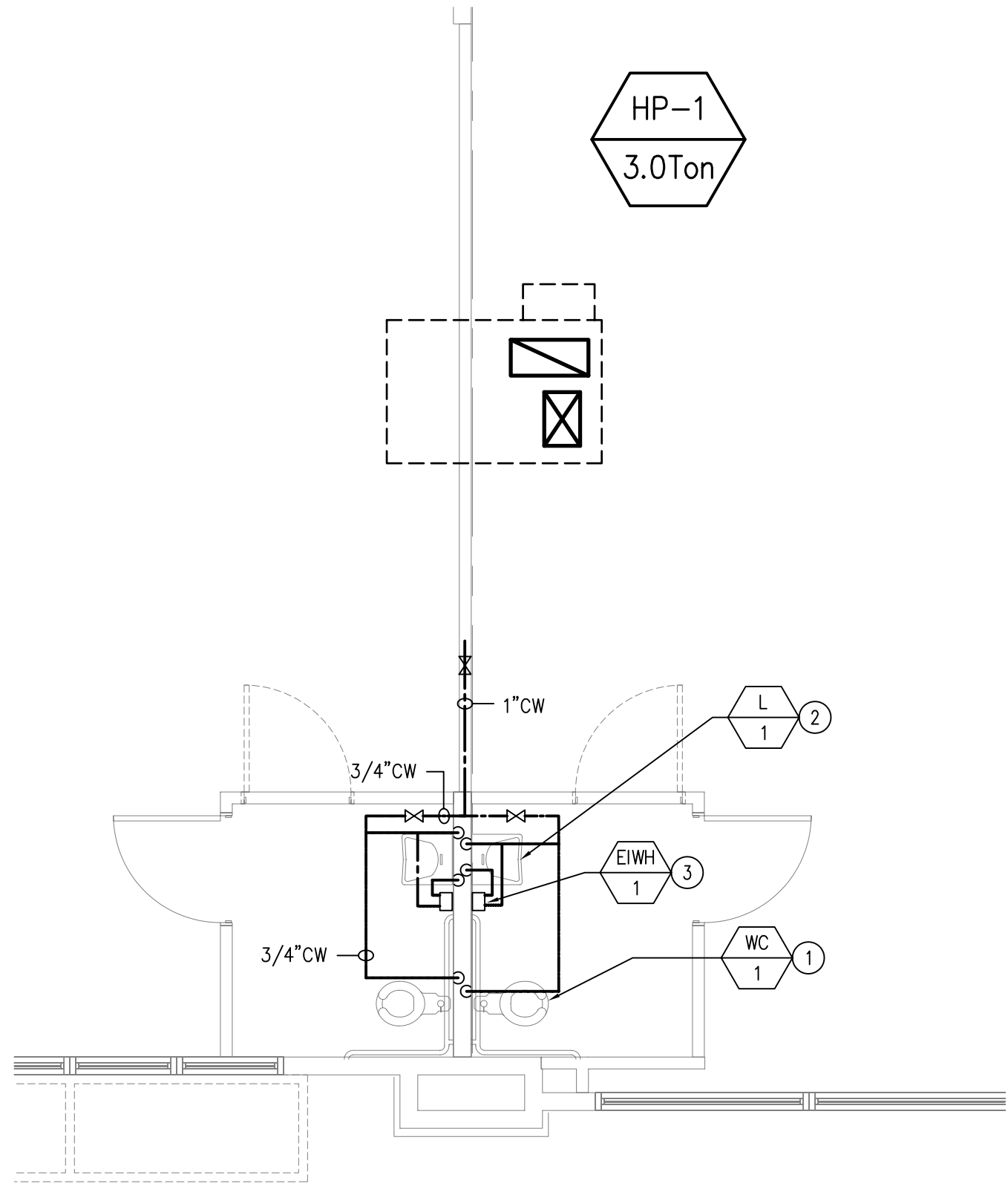
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HOT & COLD PLUMBING PLAN

SCALE
1/8" = 1'-0"

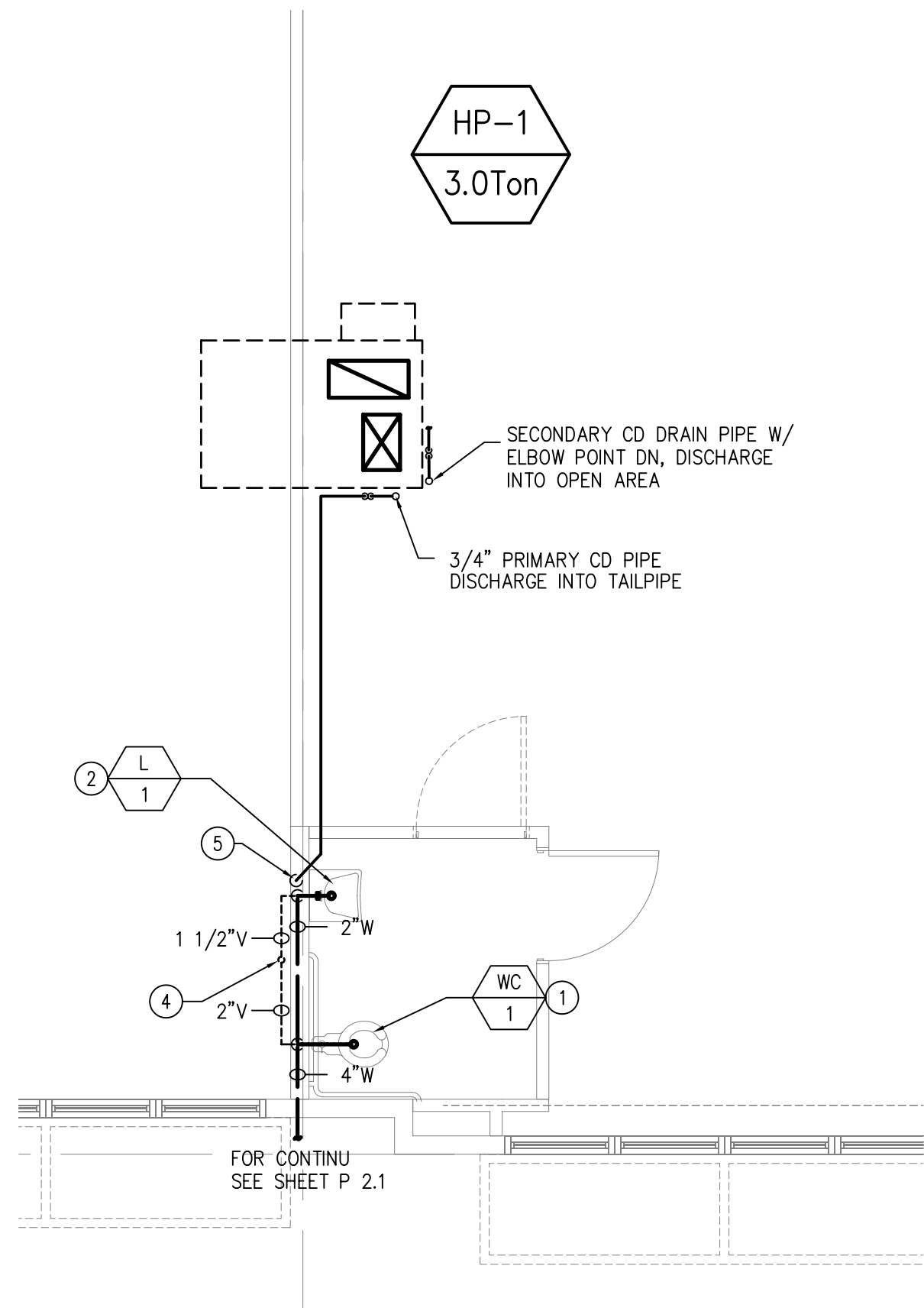
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HOT & COLD PLUMBING PLAN (BACK TO BACK)

SCALE
1/8" = 1'-0"

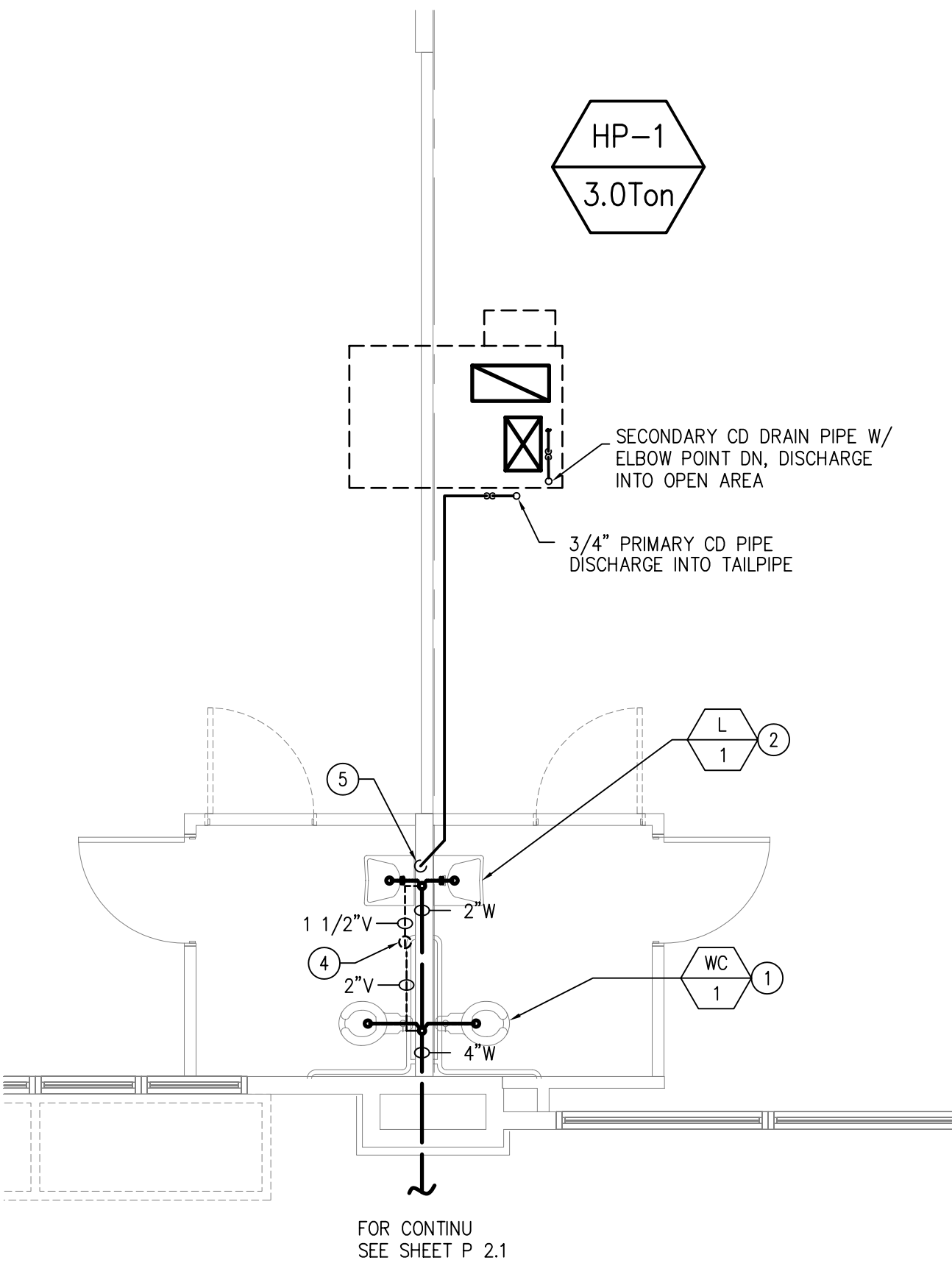
3



WAST AND VENT PLUMBING PLAN

SCALE
1/8" = 1'-0"

2



WASTE AND VENT PLUMBING PLAN (BACK TO BACK)

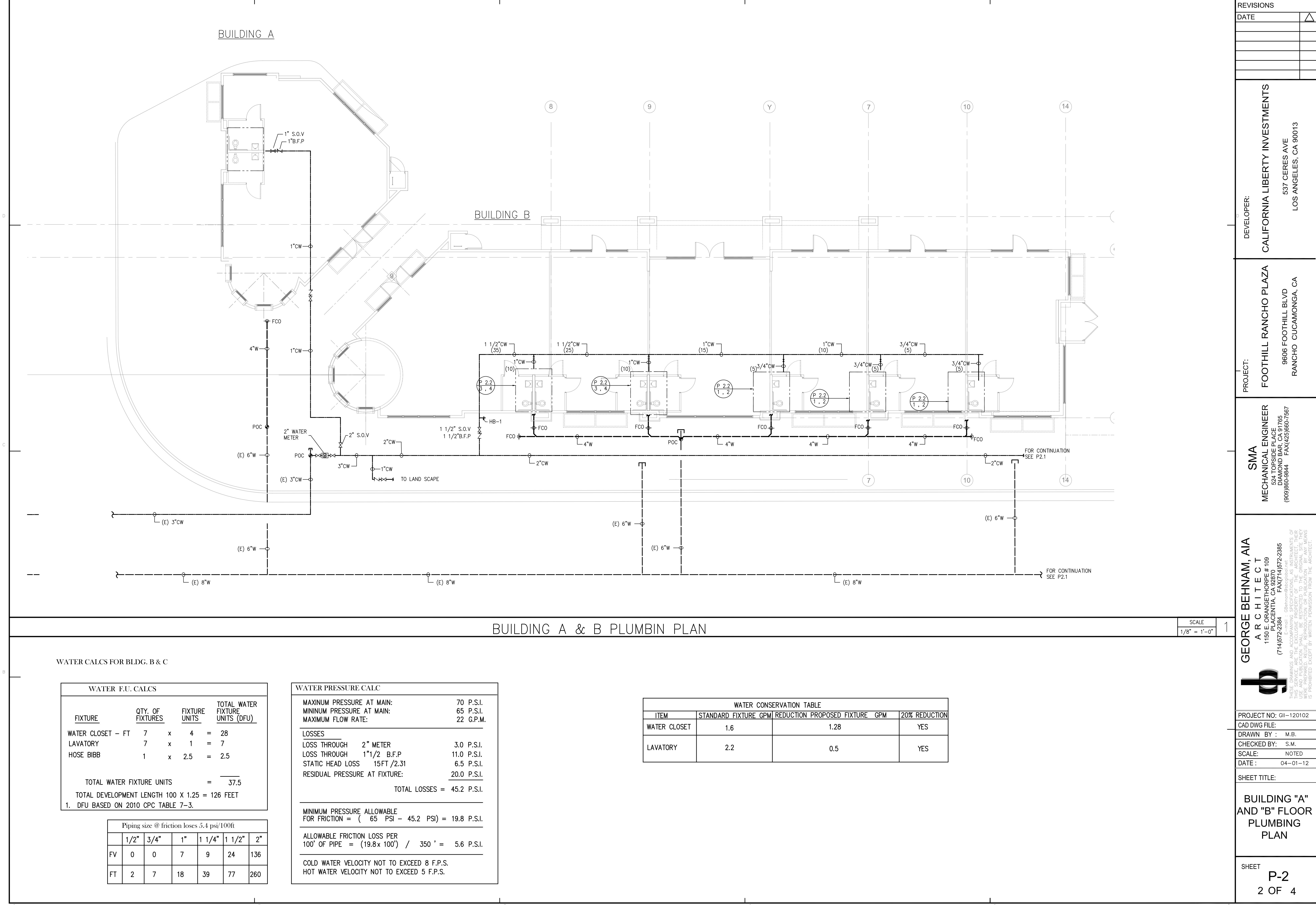
SCALE
1/8" = 1'-0"

4

PLAN KEYNOTES

- 1 3/4" CW, 4" WASTE & 2" VENT TO WATER CLOSET.
- 2 1/2" HOT & COLD WATER, 2" WASTE & 1 1/2" VENT TO LAVATORY.
- 3 1/2" HOT & COLD WATER TO EIWH UNDER SINK.
- 4 2" VEN UP TO ROOF.
- 5 3/4" CD DISCHARGE TO LAVE TAIL PIECE.

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DATE: 04-01-12	
SHEET TITLE: ENLARGED PLUMBING PLAN	
SHEET P-2.2 4 OF 4	



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M.B.

CHECKED BY:

S.M.

SCALE:

NOTED

DATE :

04-01-12

SHEET TITLE:

BUILDING "A" AND "B" FLOOR PLUMBING PLAN

SHEET

P-2
2 OF 4

WATER CALCS FOR BLDG. B & C

WATER F.U. CALCS				
FIXTURE	QTY. OF FIXTURES	FIXTURE UNITS	TOTAL WATER FIXTURE UNITS (DFU)	
WATER CLOSET – FT	7	x 4	=	28
LAVATORY	7	x 1	=	7
HOSE BIBB	1	x 2.5	=	2.5
TOTAL WATER FIXTURE UNITS			=	37.5
TOTAL DEVELOPMENT LENGTH 100 X 1.25 = 126 FEET				
1. DFU BASED ON 2010 CPC TABLE 7-3.				

Piping size @ friction losses 5.4 psi/100ft						
	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
FV	0	0	7	9	24	136
FT	2	7	18	39	77	260

WATER PRESSURE CALC	
MAXIMUM PRESSURE AT MAIN:	70 P.S.I.
MINIMUM PRESSURE AT MAIN:	65 P.S.I.
MAXIMUM FLOW RATE:	22 G.P.M.
LOSSES	
LOSS THROUGH 2" METER	3.0 P.S.I.
LOSS THROUGH 1"1/2 B.F.P	11.0 P.S.I.
STATIC HEAD LOSS 15FT /2.31	6.5 P.S.I.
RESIDUAL PRESSURE AT FIXTURE:	20.0 P.S.I.
TOTAL LOSSES = 45.2 P.S.I.	

MINIMUM PRESSURE ALLOWABLE	
FOR FRICTION = (65 PSI – 45.2 PSI) = 19.8 P.S.I.	
ALLOWABLE FRICTION LOSS PER 100' OF PIPE = (19.8x 100') / 350 ' = 5.6 P.S.I.	
COLD WATER VELOCITY NOT TO EXCEED 8 F.P.S.	
HOT WATER VELOCITY NOT TO EXCEED 5 F.P.S.	

WATER CONSERVATION TABLE			
ITEM	STANDARD FIXTURE GPM	REDUCTION PROPOSED FIXTURE GPM	20% REDUCTION
WATER CLOSET	1.6	1.28	YES
LAVATORY	2.2	0.5	YES