GENERAL PIPE SIZING TABLES

PLUMBING FIXTURES

SYMBOL	REMARKS	SYMBOL	REMARKS
	FLOOR DRAIN, SQUARE		P-TRAP
	FLOOR SINK, KITCHEN		VENT
	FLOOR DRAIN		WALL CLEANOUT
	GAS COCK VALVE		SANITARY TEE
TAG #	RISER ID TAG		WYE
TAG #	EQUIPMENT ID TAG		WYE W/CLEANOUT PLUG
	CONNECT TO EXISTING		GROUND CLEANOUT

PIPING FIXTURES

SYMBOL	REMARKS	SYMBOL	REMARKS
	90 DEG ELBOW DOWN		BUILDING SUPPLY
	90 DEG ELBOW UP		PIPE POINT OF CONNECTION
	TEE, SIDE		BACKFLOW PREVENTOR
	TEE, DOWN		GAS STEP-DOWN REGULATOR
	TEE, UP		WATER SUB-METER
	PIPE CAP		TWH TERMINATION
	UNION		
	WATER HAMMER ARRESTER		
	HOSE BIBB		
	PIPE STUB		

PLUMBING LEGEND

SYMBOL	REMARKS	SYMBOL	REMARKS
CD	CONDENSATE DRAIN		WASTE_BELOW
G	GAS_LP		WASTE_ABOVE
MPG	GAS_MP	GW	GRAY_BELOW
	SYMBOLS	GW GW	GRAY_ABOVE
	TEXT	GSW	GREASE_BELOW
CW	CW	GSW GSW	GREASE_ABOVE
HW	HW		VENT
HWR	HW_RETURN	RD	ROOF DRAIN
RW	RECYCLED WATER		SUBSURFACE
	EQUIP		SD_ABOVE
	GAS_VENT	OFD	OVERFLOW STORM DRAIN

ABBREVIATIONS

SYMBOL	REMARKS	SYMBOL	REMARKS
ABV	ABOVE	GCO	GROUND CLEANOUT
BLW	BELOW	IE	INVERT ELEVATION
BTUH	BRITISH THERMAL UNITS PER HOUR	LPG	LOW PRESSURE GAS
CD	CONDENSATE DRAIN	MPG	MEDIUM PRESSURE GAS
CLG	CEILING	(N)	NEW
CPC	CA PLUMBING CODE	OFD	OVERFLOW DRAIN
CEC	CA ENERGY CODE	POC	POINT OF CONNECTION
CW	DOMESTIC COLD WATER	PSI	POUND PER SQUARE INCH
HW	DOMESTIC HOT WATER	RW	RECYCLED WATER
HWR	DOMESTIC HW RETURN	SD	STORM DRAIN
DN	DOWN	SSD	SUBSURFACE DRAIN
(E)	EXISTING	SOV	SHUTOFF VALVE
FAU	FORCED AIR UNIT	SQ FT	SQUARE FEET
FLR	FLOOR	TBD	TO BE DETERMINED
FPS	FEET PER SECOND	V	VENT
GPM	GALLONS PER MINUTE	VTR	VENT TO ROOF
GSW	GREASE WASTE	W	WASTE
GW	GREYWATER	WCO	WALL CLEANOUT

VALVE SYMBOL

SYMBOL	REMARKS	SYMBOL	REMARKS
	GATE		ANGLE GATE
	BALL		ANGLE GLOBE
	GLOBE		CHECK
	GAS SHUTOFF VALVE		PRESSURE REDUCING VALVE (PRV)
	DIAPHRAGM		RELIEF OR SAFETY (NORMALLY CLOSED)
	BUTTERFLY		TRIPLE DUTY VALVE
	3-WAY	S	SOLENOID
	4-WAY		DIAPHRAGM VALVE W/PURGE PORTS
	NATURAL GAS SEISMIC SHUTOFF VALVE		

PLUMBING SHEET INDEX

NO.	SHEET	DESCRIPTION
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3	P-3.1A	PLAN - BASEMENT PLAN - COLD / HOT WATER AND NATURAL GAS
4	P-3.1B	PLAN - BASEMENT PLAN - WASTE & VENT PIPING AND FAU CONDENSATE
5	P-3.2A	PLAN - MAIN LEVEL FLOOR PLAN - COLD / HOT WATER AND NATURAL GAS
6	P-3.2B	PLAN - MAIN LEVEL FLOOR PLAN - WASTE & VENT PIPING AND FAU CONDENSATE
7	P-3.3A	PLAN - UPPER LEVEL FLOOR PLAN - COLD / HOT WATER AND NATURAL GAS
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7	P-3.4A	PLAN - ROOF PLAN - COLD / HOT WATER AND NATURAL GAS
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9	P-D.1	DETAILS
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ISSUED DATE: 8/24/2020

DRAINAGE AND VENT PIPE SIZING TABLE

CPC TABLE 703.2

NOMINAL PIPE DIAMETER	DRAINAGE PIPING MAXIMUM UNITS (DFU) (1)			DRAINAGE PIPING MAX VERTICAL LENGTH (FT)	VENT PIPING HORIZONTAL AND VERTICAL (SEE NOTE)	
	VERTICAL	2% SLOPE	1% SLOPE		MAXIMUM UNITS (DFU)	MAXIMUM LENGTH (FT)
1-1/4"	1	1	[redacted]	45	1	45
1-1/2"	2 (2)	1		65	8 (3)	60
2"	16 (3)	8 (3)		85	24	120
3"	48 (4)	35 (4)		212	84	212
4"	256	216 (5)	172 (6)	300	256	300
5"	600	428 (5)	342 (6)	390	600	390
6"	1380	720 (5)	576 (6)	510	1380	510
8"	3600	2640 (5)	2112 (6)	750	3600	750

(1) EXCLUDING TRAP ARM.
(2) EXCEPT SINKS, URINALS AND DISHWASHERS - EXCEEDING 1 FIXTURE UNIT.
(3) EXCEPT SIX-UNIT TRAPS OR WATER CLOSETS.
(4) ONLY FOUR (4) WATER CLOSETS OR SIX-UNIT TRAPS ALLOWED ON ANY VERTICAL PIPE OR STACK, AND NOT TO EXCEED THREE (3) WATER CLOSETS OR SIX-UNIT TRAPS ON ANY HORIZONTAL BRANCH OR DRAIN.
(5) BASED ON ONE-FOURTH (1/4) INCH PER FOOT (2%) SLOPE. FOR ONE-EIGHTH (1/8) INCH PER FOOT (1%) SLOPE, MULTIPLY HORIZONTAL FIXTURE UNITS BY A FACTOR OF 0.8.
(6) WHERE IMPRACTICAL TO MAINTAIN 1/4 INCH PER FOOT UNIFORM SLOPE, DRAINAGE PIPE FOUR (4) INCHES OR LARGER MAY HAVE A SLOPE NOT LESS THAN 1/8 INCH PER FOOT, WHEN FIRST APPROVED BY AUTHORITY HAVING JURISDICTION.

NOTES:
THE DIAMETER OF AN INDIVIDUAL VENT SHALL NOT BE LESS THAN ONE AND ONE-FOURTH (1-1/4) INCHES NOR LESS THAN ONE-HALF (1/2) THE DIAMETER OF THE DRAIN TO WHICH IT IS CONNECTED. FIXTURE UNIT LOAD VALUES FOR DRAINAGE AND VENT PIPING SHALL BE COMPUTED FROM CALIFORNIA PLUMBING CODE TABLES 702.1 AND 702.2(b). NOT TO EXCEED ONE-THIRD (1/3) OF THE TOTAL PERMITTED LENGTH OF ANY VENT MAY BE INSTALLED IN A HORIZONTAL POSITION. WHEN VENTS ARE INCREASED ONE (1) PIPE SIZE FOR THEIR ENTIRE LENGTH, THE MAXIMUM LENGTH LIMITATIONS SPECIFIED IN THIS TABLE DO NOT APPLY.

PIPE INSULATION THICKNESS

WATER HEATING SYTEMS (105°-140° OPERATING RANGE)	NOMINAL PIPE DIAMETER (INCHES)					
	LESS THAN 1"	1" TO 1.5"	1.75"	2 TO <4"	4" TO <8"	8" & LARGER
INSULATION WALL THICKNESS	1"	1.5"	1.75"	2"	2"	2"
R-VALUE	R 7.7	R 12.5	R 11	R 11	R 9	R 8

1. THE INSULATION FOR HOT WATER PIPES SHALL MEET THE MINIMUM THICKNESS PER CPC 609.11 AND CEC TABLE 120.3-A OR THE MINIMUM R-VALUE PER CEC TABLE 120.3.-A.
2. INSULATION THICKNESSES SHOWN REPRESENT THE LARGER REQUIREMENT FOR DESIGNATED PIPE SIZES PER CPC SECTION 609.11 AND CEC TABLE 120.3-A.
3. THE R-VALUES FOR ALL PIPE DIAMETERS ARE BASED ON TABLE 120.3-A OF THE CALIFORNIA ENERGY CODE.

FIXTURE UNITS VS. GPM CONVERSION TABLE

FLOW IN GPM		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
FIXTURE UNITS	FLUSH TANK	0	1	3	4	6	7	8	10	12	13	15	16	18	20	21
	FLUSH VALVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FLOW IN GPM		16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
FIXTURE UNITS	FLUSH TANK	23	24	26	28	30	32	34	36	39	42	44	46	49	51	54
	FLUSH VALVE	-	-	-	-	-	-	5	6	7	8	9	10	11	12	13
FLOW IN GPM		31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
FIXTURE UNITS	FLUSH TANK	56	58	60	63	66	69	74	78	83	86	90	95	99	103	107
	FLUSH VALVE	14	15	16	18	20	21	23	25	26	28	30	31	33	35	37
FLOW IN GPM		46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
FIXTURE UNITS	FLUSH TANK	111	115	119	123	127	130	135	141	146	151	155	160	165	170	175
	FLUSH VALVE	39	42	44	46	48	50	52	54	57	60	63	66	69	73	76
FLOW IN GPM		62	64	66	68	70	72	74	76	78	80	82	84	86	88	90
FIXTURE UNITS	FLUSH TANK	185	195	205	215	225	236	245	254	264	275	284	294	305	315	326
	FLUSH VALVE	82	88	95	102	108	116	124	132	140	148	158	168	176	186	195
FLOW IN GPM		92	94	96	98	100	105	110	115	120	125	130	135	140	145	150
FIXTURE UNITS	FLUSH TANK	337	348	359	370	380	406	431	455	479	506	533	559	585	611	638
	FLUSH VALVE	205	214	223	234	245	270	295	329	365	396	430	460	490	521	559
FLOW IN GPM		155	160	165	170	175	180	185	190	200	210	220	230	240	250	260
FIXTURE UNITS	FLUSH TANK	665	692	719	748	778	809	840	879	945	1018	1091	1173	1254	1335	1418
	FLUSH VALVE	596	631	666	700	739	775	811	850	931	1009	1091	1173	1254	1335	1418
FLOW IN GPM		270	280	290	300	310	320	330	340	350	360	370	380	390	400	410
FIXTURE UNITS	FLUSH TANK FLUSH VALVE	1500	1583	1668	1755	1845	1926	2018	2110	2204	2298	2388	2480	2575	2670	2765
FLOW IN GPM		420	430	440	450	500	550	600	650	700	750	800	850	900	950	1000
FIXTURE UNITS	FLUSH TANK FLUSH VALVE	2862	2960	3060	3150	3620	4070	4480	4930	5380	5830	6280	6780	7280	7790	8300

GPM EQUIVALENTS ARE BASED ON CPC CHARTS A-103.1(1) AND A-103.1(2).

LOW PRESSURE NATURAL GAS PIPE SIZING TABLE

MAXIMUM DELIVERY CAPACITY OF SCHEDULE 40 METALLIC PIPE CARRYING NATURAL GAS OF 0.60 SPECIFIC GRAVITY BASED ON A PRESSURE DROP OF 0.5" WATER COLUMN

	PIPE SIZE IN INCHES										
NOMINAL ID	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	4	5	6
LENGTH (FT)	CAPACITY IN CUBIC FEET OF GAS PER HOUR										
10	172	360	678	1,390	2,090	4,020	6,400	11,300	23,100	41,800	67,600
20	118	247	466	957	1,430	2,760	4,400	7,780	15,900	28,700	46,500
30	95	199	374	768	1,150	2,220	3,530	6,250	12,700	23,000	37,300
40	81	170	320	657	985	1,900	3,020	5,350	10,900	19,700	31,900
50	72	151	284	583	873	1,680	2,680	4,740	9,660	17,500	28,300
60	65	137	257	528	791	1,520	2,430	4,290	8,760	15,800	25,600
70	60	126	237	486	728	1,400	2,230	3,950	8,050	14,600	23,600
80	56	117	220	452	677	1,300	2,080	3,670	7,490	13,600	22,000
90	52	110	207	424	635	1,220	1,950	3,450	7,030	12,700	20,600
100	50	104	195	400	600	1,160	1,840	3,260	6,640	12,000	19,500
125	44	92	173	355	532	1,020	1,630	2,890	5,890	10,600	17,200
150	40	83	157	322	482	928	1,480	2,610	5,330	9,650	15,600
175	37	77	144	296	443	854	1,360	2,410	4,910	8,880	14,400
200	34	71	134	275	412	794	1,270	2,240	4,560	8,260	13,400
250	30	63	119	244	366	704	1,120	1,980	4,050	7,320	11,900
300	27	57	108	221	331	638	1,020	1,800	3,670	6,630	10,700
350	25	53	99	203	305	587	935	1,650	3,370	6,100	9,880
400	23	49	92	189	283	546	870	1,540	3,140	5,680	9,190
450	22	46	86	177	266	512	816	1,440	2,940	5,330	8,620
500	21	43	82	168	251	484	771	1,360	2,780	5,030	8,150
550	20	41	78	159	239	459	732	1,290	2,640	4,780	7,740
600	19	39	74	152	228	438	699	1,240	2,520	4,560	7,380

BASED ON CPC 2019 TABLE 1215.2(1)

PLUMBING GENERAL NOTES

1. ALL WORK SHALL COMPLY WITH 2019 CALIFORNIA PLUMBING CODE, 2019 CALIFORNIA ENERGY CODE, 2019 CALIFORNIA GREEN BUILDING CODE AND APPLICABLE LOCAL, STATE CODES AND REGULATIONS WITH AMENDMENTS (LATEST EDITION).
2. BEFORE SUBMITTING THE BID, CONTRACTOR SHALL SURVEY THE ENTIRE PROJECT SITE AND BECOME THOROUGHLY FAMILIAR WITH ACTUAL EXISTING CONDITIONS. THE INTENT OF WORK IS SHOWN ON THE DRAWINGS AND DESCRIBED HEREIN. BY THE ACT OF SUBMITTING A BID PROPOSAL FOR WORK, THE CONTRACTOR SHALL BE DEEMED TO HAVE MADE SUCH A STUDY AND EXAMINATION AND TO ACCEPT ALL CONDITIONS PRESENT AT SITE. NO REQUEST FOR ADDITIONAL PAYMENT SHALL BE CONSIDERED VALID, DUE TO CONTRACTOR FAILURE TO ALLOW COST ESTIMATES FOR CONDITIONS WHICH MAY EXIST.
3. CONTRACTOR BID SHALL NOT BE LIMITED TO THE WORK SHOWN ON THE PLANS AND SPECIFICATIONS. ALL PREMIUM OVERTIME COSTS, UTILITY CHARGES, COST FOR TEMPORARY UTILITIES, ALL ALTERATIONS, ALL DEMOLITION AND EXTENSION WORKS, PERMITS, INSPECTION FEES, MISCELLANEOUS CONTINGENCY COSTS, ETC., SHALL BE INCLUDED IN BID.
4. WHEN SUPPLIED, DESIGN ENGINEER SHALL REVIEW AND APPROVE SUBMITTALS FOR ALL EQUIPMENT. IN THE CASE WHERE A SUGGESTED SUBSTITUTE IS NOT ADEQUATE, SUBMITTAL SHALL BE RETURNED TO CONTRACTOR AND STAMPED AS "REVIEW AND RESUBMIT". SUBMITTAL APPROVAL CONFIRMS ONLY THAT THE SUGGESTED SUBSTITUTE HAS EQUIVALENT TECHNICAL PARAMETERS AND DESIGN CONSULTANT IS NOT RESPONSIBLE FOR ANY FINANCIAL IMPACT THAT THE SUBSTITUTE CAUSES.
5. THIS LEGEND DRAWING IS GENERAL COMPILATION OF NOTES AND SYMBOLS THAT ARE REGULARLY REQUIRED ON PLUMBING DRAWINGS. SOME INFORMATION SHOWN ON THIS DRAWING MAY NOT NECESSARILY BE APPLICABLE TO THIS SPECIFIC PROJECT. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING INFORMATION ON PLANS WITH PERTINENT DATA ON THIS DRAWING.
6. PLUMBING DRAWINGS SHOW ONLY PERTINENT INFORMATION FOR LOCATION, SIZE AND CLASS OF PIPING, EQUIPMENT AND FIXTURES TO BE INSTALLED. SPECIFICATIONS WHICH FORM A PART OF THE DRAWINGS, SPECIFY MATERIAL TO BE USED FOR VARIOUS SIZES AND CLASSES OF PIPING, EQUIPMENT AND FIXTURES.
7. CONTRACTOR SHALL COORDINATE HIS WORK HARMONIOUSLY WITH ALL OTHER TRADES.
8. IF THE CONTRACTOR REQUIRES A SOFFIT OR PLUMBING WALL THAT IS NOT SPECIFIED ON THE ARCHITECTURAL PLANS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT AND DESIGN ENGINEER PRIOR TO THE INSTALLATION OF THE RELATED PIPING.
9. POTABLE WATER SYSTEM MUST BE DISINFECTED PRIOR TO USE AS REQUIRED AND OUTLINED IN THE PLUMBING CODE.
10. ELEVATIONS BELOW GROUND LEVEL ARE NOTED IN FEET AND DECIMALS OF FEET AND SHALL DENOTE INVERT ELEVATION OF PIPE. ELEVATIONS ABOVE GROUND LEVEL ARE NOTED IN FEET & INCHES AND SHALL DENOTE WORK POINT ELEVATION OF PIPE, UNLESS NOTED OTHERWISE. BOTTOM OF PIPE ELEVATIONS REFER TO BOTTOM OF PIPE ON UNINSULATED LINES AND TO BOTTOM OF SADDLE ON INSULATED LINES.
11. PIPING SHOWN ON DRAWINGS WITHOUT DIMENSIONAL LOCATION SHALL BE FIELD ROUTED BY CONTRACTOR. CONTRACTOR SHALL VERIFY PROPOSED PIPE ROUTINGS AND CHECK OTHER TRADES WORK PRIOR TO INSTALLATION, INCLUDING INTERFERENCE WITH BUILDING STRUCTURES, EQUIPMENT AND WORK OF OTHER TRADES WHETHER NEW OR EXISTING. PROPOSED ROUTINGS SHALL BE REVIEWED WITH THE CONSTRUCTION MANAGER.
12. EXACT LOCATION OF PLUMBING EQUIPMENT, DEVICES AND FIXTURES SHALL BE CONFIRMED BY CONTRACTOR PRIOR TO INSTALLATION. CONTRACTOR SHALL REFER TO ARCHITECTURAL DRAWINGS FOR FIXTURE LOCATIONS AND MOUNTING HEIGHTS.
13. DRAINAGE PIPING SHALL SLOPE 1/4" PER FOOT UNLESS OTHERWISE APPROVED BY THE BUILDING OFFICIAL. DRAINAGE PIPING 4" & LARGER SHALL SLOPE 1/8" PER FOOT WHERE IT IS IMPRACTICAL DUE TO STREET SEWER ELEVATION OR STRUCTURAL FEATURES TO OBTAIN 1/4" PER FOOT.
14. REDUCERS, REDUCING INSERTS, UNIONS & APPURTENANCES NOT SHOWN ON DRAWINGS BUT REQUIRED FOR PROPER INSTALLATION SHALL BE PROVIDED BY CONTRACTOR.
15. PLUMBING LINE SIZE REDUCTIONS NOT SHOWN WITH REDUCERS SHALL BE MADE WITH REDUCING FITTINGS.
16. PIPE SLEEVES FOR PLUMBING LINES SHALL BE FURNISHED AND INSTALLED BY CONTRACTOR. PROVIDE LOCATION AND SIZE TO CONCRETE CONTRACTOR AND STRUCTURAL ENGINEER PRIOR TO INSTALLATION.
17. VALVE HANDLE ORIENTATION SHALL BE BY CONTRACTOR UNLESS SPECIFICALLY SHOWN ON DRAWINGS OR DIRECTED BY CONSTRUCTION MANAGER. VALVE HANDLE SHALL CLEAR VEHICLE AND/OR PERSONNEL TRAFFIC AND SHALL BE EASILY ACCESSIBLE.
18. FLOOR DRAIN & HUB DRAIN P-TRAPS SHALL BE DEEP SEAL TYPE UNLESS NOTED OTHERWISE. FLOOR DRAIN AND HUB DRAIN P-TRAPS WITH TRAP PRIMER SHALL BE STANDARD SEAL TYPE UNLESS NOTED OTHERWISE.
19. TOP OF FLOOR CLEANOUTS SHALL BE FLUSH WITH FINISHED FLOOR UNLESS NOTED OTHERWISE.
20. VENT PIPE EXTENSIONS THRU ROOF SHALL TERMINATE 1'-0" (MINIMUM) ABOVE FINISHED ROOF.
21. ELEVATIONS SHOWN ON PLUMBING DRAWINGS ARE REFERENCED FROM NOMINAL FINISHED FLOOR ELEVATION.
22. CONTRACTOR SHALL SEAL PENETRATIONS THROUGH FIRE WALLS AND FLOORS WITH APPROVED FIRE SEALANT. REFER TO SPECIFICATION. INSTALL PER MANUFACTURERS INSTRUCTIONS FOR APPLICABLE PIPE MATERIAL AND SIZE.
23. PIPE PENETRATION THROUGH NON-RATED WALLS AND FLOORS SHALL BE SEALED AIR TIGHT.
24. ALL SANITARY SYSTEM MATERIALS SHALL BE LISTED BY AN APPROVED LISTING AGENCY.
25. BATHTUB, SHOWER, AND TUB-SHOWER COMBINATIONS REQUIRE INDIVIDUAL CONTROL VALVES OF THE PRESSURE BALANCE OR THERMOSTATIC MIXING VALVE TYPE. HANDLE POSITION STOPS SHOULD BE PROVIDED ON THE VALVES AND SHOULD BE ADJUSTED PER MANUFACTURER'S INSTRUCTIONS TO DELIVER A MAXIMUM 120°F.
26. WATER HEATERS, SHOWERHEADS, FAUCETS AND ALL OTHER REGULATED APPLIANCES ARE CERTIFIED BY THE ENERGY COMMISSION. SECTION §110-§113:
27. WATER HEATING RECIRCULATION LOOPS SERVING MULTIPLE DWELLING UNITS AND HIGH-RISE RESIDENTIAL OCCUPANCIES MEET THE AIR RELEASE VALVE, BACKFLOW PREVENTION, PUMP ISOLATION VALVE, AND RECIRCULATION LOOP CONNECTION REQUIREMENTS OF SECTION §110.3(c)4.
28. CONTINUOUSLY BURNING PILOT LIGHTS ARE PROHIBITED FOR NATURAL GAS: FAN-TYPE CENTRAL FURNACES, HOUSEHOLD COOKING APPLIANCES (APPLIANCES WITH AN ELECTRICAL SUPPLY VOLTAGE CONNECTION WITH PILOT LIGHTS THAT CONSUME LESS THAN 150 BTU/HR ARE EXEMPT), AND POOL AND SPA HEATERS. SECTION §110.5.
29. STORAGE GAS WATER HEATERS RATED WITH AN ENERGY FACTOR NO GREATER THAN THE FEDERAL MINIMAL STANDARD ARE EXTERNALLY WRAPPED WITH INSULATION HAVING AN INSTALLED THERMAL RESISTANCE OF R-12 OR GREATER. SECTION §150(J)1A.
30. UNFIRED STORAGE TANKS, SUCH AS STORAGE TANKS OR BACKUP TANKS FOR SOLAR WATER-HEATING SYSTEM, OR OTHER INDIRECT HOT WATER TANKS HAVE R-12 EXTERNAL INSULATION OR R-16 INTERNAL INSULATION WHERE THE INTERNAL INSULATION R-VALUE IS INDICATED ON THE EXTERIOR OF THE TANK. SECTION §150(J)1B.
31. COOLING SYSTEM PIPING (SUCTION, CHILLED WATER, OR BRINE LINES),AND PIPING INSULATED BETWEEN HEATING SOURCE AND INDIRECT HOT WATER TANK SHALL BE INSULATED TO TABLE 120.3-A AND EQUATION 120.3-A. SECTION §120.3(a).
32. PIPE INSULATION FOR STEAM HYDRONIC HEATING SYSTEMS OR HOT WATER SYSTEMS >15 PSI, MEETS THE REQUIREMENTS OF STANDARDS TABLE 120.3-A. SECTION §120.3(a).
33. SOLAR WATER-HEATING SYSTEMS AND/OR COLLECTORS ARE CERTIFIED BY THE SOLAR RATING AND CERTIFICATION CORPORATION. SECTION §150(n)4.
34. INSULATION SHALL BE PROTECTED FROM DAMAGE, INCLUDING THAT DUE TO SUNLIGHT, MOISTURE, EQUIPMENT MAINTENANCE, AND WIND. CELLULAR FOAM INSULATION SHALL BE PROTECTED AS ABOVE OR PAINTED WITH A COATING THAT IS WATER RETARDANT AND PROVIDES SHIELDING FROM SOLAR RADIATION THAT CAN CAUSE DEGRADATION OF THE MATERIAL. SECTION §120.3(b).
35. ALL PLUMBING FIXTURES SHALL BE CERTIFIED BY THE CALIFORNIA ENERGY COMMISSION AND MEET THE CALIFORNIA GREEN BUILDING STANDARDS CODE WATER CONSUMPTION RATES.
36. DOMESTIC HOT WATER DELIVERED TO PUBLIC-USE LAVATORIES SHALL BE LIMITED TO A MAXIMUM TEMPERATURE OF 120°F BY A DEVICE THAT COMPLIES WITH ASSE 1070, AMSE A112.1070 AND/OR CSA B125.70. THE WATER HEATER SHALL NOT BE CONSIDERED A CONTROL FOR MEETING THIS PROVISION. CPC SECTION 407.3.
37. CIRCULATING SERVICE WATER-HEATING SYSTEMS SHALL HAVE A CONTROL CAPABLE OF AUTOMATICALLY TURNING OFF THE CIRCULATING PUMP WHEN HOT WATER IS NOT REQUIRED. SECTION §110.3(c)2.
38. ANNULAR SPACES AROUND PIPES, ELECTRIC CABLES, OR OTHER OPENINGS IN PLATES AT EXTERIOR WALLS SHALL BE PROTECTED AGAINST THE PASSAGE OF RODENTS BY CLOSING SUCH OPENINGS WITH CEMENT MORTAR, CONCRETE MASONRY OR A SIMILAR METHOD ACCEPTABLE TO THE ENFORCING AGENCY.
39. PROVIDE WATER HAMMER ARRESTORS FOR ALL QUICK-ACTING VALVES.
40. ALL PLUMBING FIXTURES SHALL BE CONNECTED TO A SANITARY SEWER SYSTEM. CRBC R3.063
41. ALL PLUMBING FIXTURES SHALL BE CONNECTED TO AN APPROVED WATER SUPPLY. LAVATORIES, BATHTUBS, SHOWERS, AND OTHER SHALL BE PROVIDED WITH HOT AND COLD WATER. CRBC R306.4
42. ALL DOMESTIC HOT WATER SYSTEM PIPING CONDITIONS LISTED BELOW, WHETHER BURIED OR UNBURIED, MUST BE INSULATED AND THE INSULATION THICKNESS SHALL BE SELECTED BASED ON THE CONDUCTIVITY RANGE IN TABLE 120.3-A AND THE INSULATION LEVEL SHALL BE SELECTED FROM THE FLUID TEMPERATURE RANGE BASED ON THE THICKNESS REQUIREMENTS IN TABLE 120.3-A. SECTION §150(J)2
    i. THE FIRST 5 FEET (1.5 METERS) OF HOT AND COLD WATER PIPES FROM THE STORAGE TANK.
    ii. ALL PIPING WITH A NOMINAL DIAMETER OF 3/4 IN (19 MILLIMETER) OR LARGER.
    iii. ALL PIPING ASSOCIATED WITH A DOMESTIC HOT WATER RECIRCULATION SYSTEM REGARDLESS OF PIPE DIAMETER.
    iv. PIPING FROM THE HEATING SOURCE TO STORAGE TANK OR BETWEEN TANKS.
    v. PIPING BURIED BELOW GRADE.
    vi. ALL HOT WATER PIPE FROM THE HEATING SOURCE TO THE KITCHEN FIXTURES.
43. PVC PIPING EXPOSED TO SUNLIGHT MUST BE PROTECTED BY WATER BASED SYNTHETIC LATEX PAINT OR WRAPPED WITH NOT LESS THAN 0.04 INCH(1.02 MM) THICK TAPE OR OTHERWISE PROTECTED FROM UV DEGRADATION. CPC SECTION §312.14
44. WATER SUPPLY AND DRAIN PIPES UNDER ACCESSIBLE LAVATORIES AND SINKS SHALL BE INSULATED OR OTHERWISE BE CONFIGURED TO PROTECT AGAINST CONTACT. PROTECTORS, INSULATORS, OR BOTH SHALL COMPLY WITH ASME A112.18.9. CPC SECTION §403.3
45. TRENCHES DEEPER THAT THE FOOTING OF A BUILDING OR STRUCTURE, AND PARALLELING THE SAME, SHALL BE LOCATED NOT LESS THAN 45 DEGREES FROM THE BOTTOM EXTERIOR OF FOOTING, OR AS APPROVED IN ACCORDANCE WITH SECTION 301.2. CPC SECTION §314.1
46. COPPER ALLOY OR CAST-IRON DRAINAGE BODY CLEANOUTS SHALL NOT BE USED AS A REDUCER OR ADAPTER FROM CAST-IRON DRAINAGE PIPE TO IRON PIPE SIZE (IPS) PIPE. CPC SECTION §316.1
47. FLEXIBLE PVC HOSES AND TUBING INTENDED TO BE USED ON WHIRLPOOL BATH-TUB WATER CIRCULATION SYSTEMS OR PNEUMATIC SYSTEMS SHALL BE IN ACCORDANCE WITH IAPMO Z1033. CPC SECTION §409.6.1
48. PIPES, PIPE FITTING, VALVES, AND FAUCETS UTILIZED IN THE WATER SUPPLY SYSTEM FOR NON-DRINKING WATER APPLICATIONS SHALL HAVE A MAXIMUM OF 8 PERCENT LEAD CONTENT. CPC SECTION §604.2.1
49. PLASTIC PIPE AND FITTINGS JOINED WITH SOLVENT CEMENT SHALL UTILIZE LOW VOC PRIMER(S), IF A PRIMER IS REQUIRED, AND LOW VOC CEMENT(S) AS DEFINED IN SECTION 214.0. CPC SECTION §705.1.2
50. EACH CLEANOUT IN PIPING 2 INCHES OR LESS IN SIZE SHALL BE INSTALLED SO THAT THERE IS A CLEARANCE OF NOT LESS THAN 18 INCHES IN FRONT OF THE CLEANOUT. CLEANOUTS IN PIPING EXCEEDING 2 INCHES SHALL HAVE A CLEARANCE OF NOT LESS THAN 24 INCHES IN FRONT OF THE CLEANOUT. CPC SECTION §707.9
51. WATER HEATER SHALL BE ANCHORED OR STRAPPED TO RESIST HORIZONTAL DISPLACEMENT DUE TO EARTHQUAKE MOTION PER SECTION 507.2 CPC.
52. ROUTING AND TERMINATION OF FLUE AND COMBUSTION AIR INTAKE FOR WATER HEATER SHALL COMPLY WITH CH.5 CPC 2019 AND MANUFACTURERS SPECIFICATIONS.
53. FLOOR DRAINS OR SIMILAR TRAPS DIRECTLY CONNECTED TO THE DRAINAGE SYSTEM AND SUBJECT TO INFREQUENT USE SHALL BE PROVIDED WITH AN APPROVED AUTOMATIC MEANS OF MAINTAINING THEIR WATER SEALS.
54. BUILDING DRAIN AND VENT PIPING MATERIALS SHALL COMPLY WITH SECTIONS 701.0 AND 903.0 OF THE CPC.
55. EACH VENT SHALL RISE VERTICALLY TO A POINT NOT LESS THAN SIX(6) INCHES ABOVE THE FLOOD-LEVEL RIM OF THE FIXTURE SERVED BEFORE OFFSETTING HORIZONTALLY OR BEFORE BEING CONNECTED TO ANY OTHER VENT.
56. INSTANTANEOUS WATER HEATERS WITH AN INPUT RATING GREATER THAN 6.8 kBTU/HR (2kW) SHALL HAVE ISOLATION VALVES ON BOTH THE COLD WATER SUPPLY AND THE HOT WATER PIPE LEAVING THE WATER HEATER, AND HOSE BIBBS OR OTHER FITTINGS ON EACH VALVE FOR FLUSHING THE WATER HEATER WHEN THE VALVES ARE CLOSED. CBEES 110.3(C)6.
57. DRAINAGE CONNECTIONS SHALL NOT BE MADE INTO A DRAINAGE PIPING SYSTEM WITHIN EIGHT (8) FEET OF A VERTICAL TO HORIZONTAL CHANGE OF DIRECTION OF A STACK CONTAINING SUDS PRODUCING FIXTURES. BATHTUBS, LAUNDRIES, WASHING MACHINE STANDPIPES, KITCHEN SINKS, AND DISHWASHERS SHALL BE CONSIDERED SUDS-PRODUCING FIXTURES. WHERE PARALLEL VENT STACKS ARE REQUIRED, THEY SHALL CONNECT TO THE DRAINAGE STACK AT A POINT EIGHT (8) FEET ABOVE THE LOWEST POINT OF THE DRAINAGE STACK. CPC SECTION 711.0
    57.1. EXCEPTIONS: (1) SINGLE FAMILY RESIDENCES. (2) STACKS RECEIVING THE DISCHARGE FROM LESS THAN THREE STORIES OF PLUMBING FIXTURES.
58. ANY CLEANOUTS SHOWN ON PLANS THAT DO NOT SPECIFY A SIZE SHALL BE SIZED PER CPC TABLE 707.1. ANY ADDITIONAL CLEAN-OUTS INSTALLED BY CONTRACTOR SHALL BE SIZED PER CPC TABLE 707.1.
59. ALL DIMENSIONS SHOWN ON THESE DRAWINGS ARE APPROXIMATE, AND MUST BE CONFIRMED AT THE SITE BY THE CONTRACTOR PRIOR TO CONSTRUCTION. ARCHITECT AND ENGINEER SHALL BE NOTIFIED IN WRITING IMMEDIATELY FOR CLARIFICATION.

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BORSTEIN RESIDENCE

NOT FOR BID OR CONSTRUCTION

DEVELOPER:

ARCHITECT:
Architeyk

LOCATION:
188 Homewood Road
Los Angeles
CA, 90049

REVISIONS

NO.	DATE	DESCRIPTION

SHEET NAME:
GENERAL NOTES & SHEET INDEX

PROJECT NUMBER:
65671

ENGINEER:
DRAFTER:

SHEET NUMBER:
P-0.1

MATERIAL AND FIXTURE SCHEDULES

PIPING MATERIAL SCHEDULE

DOMESTIC WATER PIPING INSIDE BUILDING ABOVE FLOOR SIZES 1/2" TO 2" INSIDE UNIT	UPONOR 'AQUAPEX' PEX TUBING WITH PROPEX (EP) FITTINGS, OR ALTERNATE BRANDS CONFORMING TO ASTM F876 AND ASTM F877 STANDARDS AND SDR9 DIMENSIONAL STANDARD. OR CPVC SCH 40 PIPE FOR 1-1/4" TO 2".
DOMESTIC WATER PIPING INSIDE BUILDING ABOVE FLOOR SIZES 1/2" TO 2" OUTSIDE UNIT	FLOWGUARD GOLD CPVC SDR11 CTS PIPE AND FITTINGS PER ASTM D2846, MANUFACTURED BY CHARLOTTE PIPE AND FOUNDRY CO. WITH SOCKET TYPE JOINTS ASSEMBLED WITH SOLVENT CEMENTS PER ASTM F493.
DOMESTIC WATER PIPING INSIDE BUILDING ABOVE FLOOR SIZES LARGER THAN 2"	CPVC SCH 80
NATURAL GAS PIPING BELOW GRADE	POLYETHYLENE, IAPMO APPROVED FOR GAS PIPE, OR SCHEDULE 40 BLACK STEEL WITH APPROPRIATE FITTINGS AND WITH WELDED JOINTS.
NATURAL GAS PIPING ABOVE GRADE	SCHEDULE 40 BLACK STEEL (ASTM A53, GRADE B). PIPING 2" & SMALLER SHALL HAVE BLACK MALLEABLE IRON 150# BANDED PATTERN THREADED FITTINGS. PIPING 2 1/2" & LARGER SHALL HAVE FORGED STEEL BUTT-WELDING TYPE FITTINGS.
SEWER, WASTE AND VENT PIPING INSIDE BUILDING ABOVE FLOOR	FIRST FLOOR: HUBLESS CAST IRON PIPE & FITTINGS WITH NEOPRENE SLEEVES & STAINLESS STEEL COUPLINGS. SECOND FLOOR & ABOVE: SCHEDULE 40 PVC OR ABS PLASTIC PIPE WITH DWV TYPE FITTINGS.
STORM DRAIN PIPING INSIDE BUILDING ABOVE FLOOR	HUBLESS CAST IRON PIPE & FITTINGS WITH NEOPRENE SLEEVES & STAINLESS STEEL COUPLINGS.
SEWER, WASTE AND VENT PIPING INSIDE BUILDING BELOW GRADE	SCHEDULE 40 PVC OR ABS PLASTIC PIPE WITH DWV TYPE FITTINGS.
STORM DRAIN PIPING INSIDE BUILDING BELOW GRADE	SCHEDULE 40 PVC OR ABS PLASTIC PIPE WITH DWV TYPE FITTINGS.

1. BUILDING DRAIN AND VENT PIPING MATERIALS SHALL COMPLY WITH CPC SECTIONS 701.0 AND 903.0.
2. ALL SANITARY SYSTEM MATERIALS SHALL BE LISTED BY AN APPROVED LISTING AGENCY.
3. ANY COPPER PIPING JOINTS UNDER CONCRETE SLAB SHALL BE BRAZED INSTEAD OF SOLDERED.
4. TYPE M COPPER TUBING MAY BE USED FOR ABOVE GROUND WATER PIPING INSIDE OR ON THE BUILDING.
5. CPVC TUBING MAY BE USED FOR CONDENSATE DRAIN PIPING WHEN DISCHARGE FROM FLUE-BURNING APPLIANCES IS ACIDIC OR CORROSIVE.
6. BLACK STEEL GAS PIPING BELOW GRADE SHALL BE COATED AS REQUIRED FOR SUCH INSTALLATION PER SECTION 1208.5.6 CPC.
7. ALL COPPER PIPING INSTALLED BELOW GRADE SHALL BE COATED.

FIXTURE SCHEDULE

ITEM	FIXTURE	COLD WATER	HOT WATER	WASTE	VENT	STORM DRAIN	DESCRIPTION
WC 1	WATER CLOSET	3/4"	-	3"	2"	-	1.28 GPF, FLUSHTANK TYPE SELECTION TBD BY OWNER.
L 1	LAVATORY	1/2"	1/2"	2"	1-1/2"	-	1.2 GPM FAUCET. SELECTION TBD BY OWNER.
SH 1	SHOWER	1/2"	1/2"	2"	1-1/2"	-	1.8 GPM SHOWER HEAD. PROVIDE A THERMOSTATIC OR PRESSURE BALANCE TYPE MIXING VALVE FOR THERMAL SHOCK AND SCALD PROTECTION.
SH 2	SHOWER	1/2"	1/2"	2"	1-1/2"	-	1.8 GPM SHOWER HEAD. PROVIDE A THERMOSTATIC OR PRESSURE BALANCE TYPE MIXING VALVE FOR THERMAL SHOCK AND SCALD PROTECTION.
WSB 1	CLOTHES WASHER BOX	1"	1"	2"	1-1/2"	-	SELECTION TBD BY OWNER. PROVIDE WATER HAMMER ARRESTOR
KS 1	KITCHEN SINK	1/2"	1/2"	2"	1-1/2"	-	1.8 GPM FAUCET. SELECTION TBD BY OWNER.
HB 1	HOSE BIBB	3/4"	-	-	-	-	WALL MOUNTED WITH ATMOSPHERIC VACUUM BREAKER. ARROWHEAD ARROWBREAKER MODEL OR EQUIVALENT.
DW 1	DISHWASHER	-	3/4"	-	-	-	DRAIN TO KITCHEN SINK. SELECTION TBD BY OWNER. PROVIDE WATER HAMMER ARRESTOR.
DW 2	DISHWASHER	-	3/4"	-	-	-	SELECTION TBD BY OWNER. PROVIDE WATER HAMMER ARRESTOR.
BT 1	TUB/SHOWER COMBO	3/4"	3/4"	2"	1-1/2"	-	SELECTION TBD BY OWNER.1.8 GPM SHOWER HEAD. PROVIDE A THERMOSTATIC OR PRESSURE BALANCE TYPE MIXING VALVE FOR THERMAL SHOCK AND SCALD PROTECTION.
PR 1	PREP. SINK	1/2"	1/2"	2"	1-1/2"	-	1.2 GPM FAUCET. SELECTION TBD BY OWNER.
IMB 1	ICE MAKER BOX	1/2"	-	-	-	-	SELECTION TBD BY OWNER. PROVIDE WATER HAMMER ARRESTOR.
HD 1	HUB DRAIN	-	-	2"	1-1/2"	-	STAND PIPE WITH HUB DRAIN. PROVIDE TRAP PRIMER.
BS 1	BAR SINK	1/2"	1/2"	2"	1-1/2"	-	1.2 GPM FAUCET. SELECTION TBD BY OWNER.
FD 1	FLOOR DRAIN	-	-	2"	1-1/2"	-	SELECTION TBD BY OWNER. PROVIDE TRAP PRIMER.
TP 1	TRAP PRIMER	1/2"	-	-	-	-	SELECTION TBD BY OWNER.
RD 1 ORD 1	COMBINATION ROOF DRAIN & OVERFLOW ROOF DRAIN	-	-	-	-	3"	WADE 300-198, CAST IRON, COMPLETE WITH COMBINED FLASHING COLLAR AND GRAVEL STOP. INTERNAL STANDPIPE FOR OVERFLOW, AND C.I. DOMES (OR EQUAL)
CP 1	CIRCULATION PUMP	-	-	-	-	-	3/4" PIPE. MANUFACTURER: METLUND OR EQUAL.
AD 1	AREA DRAIN	-	-	2"	1-1/2"	-	SELECTION TBD BY OWNER. PROVIDE TRAP PRIMER.

FIXTURE FLOW RATES (2019 CAL GREEN MANDATORY MEASURES)

FIXTURE TYPE	MAXIMUM FLOW RATE	
SHOWERHEADS, RESIDENTIAL	1.8 GPM @ 80 PSI	WHEN A SHOWER IS SERVED BY MORE THAN ONE SHOWERHEAD, THE COMBINED FLOW RATE OF ALL SHOWERHEADS AND/OR OTHER SHOWER OUTLETS CONTROLLED BY A SINGLE VALVE SHALL NOT EXCEED 1.8 GPM AT 80 PSI, OR THE SHOWER SHALL BE DESIGNED TO ALLOW ONLY ONE SHOWER OUTLET TO BE IN OPERATION AT A TIME
LAVATORY FAUCETS, RESIDENTIAL	1.2 GPM @ 60 PSI	THE MINIMUM FLOW RATE OF RESIDENTIAL LAVATORY FAUCETS SHALL NOT BE LESS THAN 0.8 GPM AT 20 PSI.
LAVATORY FAUCETS, PUBLIC AREAS	0.5 GPM @ 60 PSI	
KITCHEN FAUCETS	1.8 GPM @ 60 PSI	KITCHEN FAUCETS MAY TEMPORARILY INCREASE THE FLOW ABOVE THE MAXIMUM RATE, BUT NOT TO EXCEED 2.2 GPM AT 60 PSI, AND MUST DEFAULT TO A MAXIMUM FLOW RATE OF 1.8 GPM AT 60 PSI.
WATER CLOSETS	1.28 GALLONS/FLUSH	THE EFFECTIVE FLUSH VOLUME OF DUAL FLUSH TOILETS IS DEFINED AS THE COMPOSITE, AVERAGE FLUSH VOLUME OF TWO REDUCED FLUSHES AND ONE FULL FLUSH.
URINALS	0.125 GALLON/FLUSH	
METERING FAUCETS	0.2 GALLON/CYCLE	1.8 GPM FAUCET. SELECTION TBD BY OWNER.

1. FLOW RATES ARE BASED ON THE 2019 CALIFORNIA GREEN BUILDING CODE STANDARDS SECTION 4.303 & 5.303.

WATER AND SEWER DEMAND CALCULATIONS

FIXTURE UNIT CALCULATION - PLAN

FIXTURE TYPE	QTY	DEMAND WEIGHT IN WSFU[1]						DRAINAGE[1]	
		FIXTURE DEMAND	HOT OR 75%[2]	COLD OR 75%[2]	TOTAL SUPPLY DEMAND	TOTAL HOT WATER DEMAND	TOTAL COLD BRANCH DEMAND	DFU	TOTAL
WATER CLOSET, FLUSH TANK	7	2.5	0	2.5	17.5	0	17.5	3	21
BATHTUB OR TUB-SHOWER COMBO	2	4	3	3	8.0	6.0	6.0	2	4
SHOWER, PER HEAD	5	2	1.5	1.5	10.0	7.5	7.5	2	10.0
LAVATORY	8	1	0.8	0.8	8.0	6.4	6.4	1	8.0
KITCHEN SINK	1	1.5	1.2	1.2	1.5	1.2	1.2	2	2
DISHWASHER (DRAIN TO KITCHEN SINK)	2	1.5	1.5	0	3.0	3.0	0.0	N/A	
DISHWASHER	1	1.5	1.5	0	1.5	1.5	0.0	2	2
CLOTHES WASHER	1	4	3	3	4.0	3.0	3.0	3	3
LAUNDRY SINK	1	1.5	1.2	1.2	1.5	1.2	1.2	2	2
PREP. SINK	1	1.5	1.2	1.2	1.5	1.2	1.2	2	2
BAR SINK	4	1	0.8	0.8	4.0	3.2	3.2	1	4.0
FLOOR SINK	2	0	0.0	0.0	0.0	0.0	0.0	2	4.0
PRIMARY HOSE BIBB	1	2.5	0	2.5	2.5	0.0	2.5	0	0.0
ADDITIONAL HOSE BIBB	7	1	0	1	7.0	0.0	7.0	0	0.0
TOTAL FIXTURE UNITS					70.0	34.2	56.7		62.0
EQUIVALENT WATER DEMAND IN GPM[3]					37	23	32		

1. FIXTURE UNITS ARE BASED ON CPC TABLE A 103.1 FOR WATER SUPPLY AND TABLE 702.1 FOR DRAINAGE.
2. SEPERATE HOT AND COLD WATER FIXTURE UNITS ARE TAKEN AS AT LEAST THREE-QUARTERS (3/4) OF TOTAL FIXTURE DEMAND, PER CPC TABLE A 103.1, NOTE 3.
3. GPM EQUIVALENTS ARE BASED ON CPC CHARTS A 103.1(1) AND A 103.1(2).

GAS DEMAND CALCULATIONS

TYPICAL NATURAL GAS CALCULATIONS

APPLIANCE	QTY	GAS USAGE[1] (CFH)	TOTAL GAS USAGE (CFH)
RANGE (OVEN/COOKTOP COMBO)	1	125	125
DRYER	1	35	35
WATER HEATER	1	200	200
FAU	3	100	300
FIREPLACE	3	90	270
GAS STUB	1	90	90
TOTAL GAS DEMAND			1020

1 CFH = 1000 BTU of Natural Gas

WATER PRESSURE CALCULATIONS

EQUIPMENT SCHEDULES

GAS-FIRED TANKLESS WATER HEATER SCHEDULE

EQUIPMENT NUMBER		TWH 1
LOCATION		GARAGE
MANUFACTURER		RINNAI
MODEL		RU199i
VENTING TYPE		CONCENTRIC OR PVC/CPVC
CAPACITY RANGE		0.26 - 9.8 GPM
CAPACITY @ 45° RISE		8.6 GPM
BTU/HR INPUT		15,000 - 199,000
ENERGY FACTOR		.93
THERMAL EFFICIENCY		93%
SETPOINT TEMPERATURE		120°F
PHYS DATA	DIMENSIONS	11.4" D x 18.5" W x 26.4" H
	OPERATING WEIGHT	64 LBS
CONNECTION SIZES	WATER CONN.	3/4" NPT
	GAS CONN.	3/4" NPT
	COMBUSTION AIR	UBBINK CONCENTRIC INTAKE/EXHAUST SYSTEM
	EXHAUST AIR	
ELEC DATA	SUPPLY	120V / 1φ / 60HZ
	POWER	148 W

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NOT FOR BID OR CONSTRUCTION

DEVELOPER:

ARCHITECT:

Architeyk

LOCATION:

188 Homewood Road
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CA, 90049

REVISIONS

NO.	DATE	DESCRIPTION

SHEET NAME:

MATERIAL AND FIXTURE SCHEDULES CALCULATIONS

PROJECT NUMBER:

65671

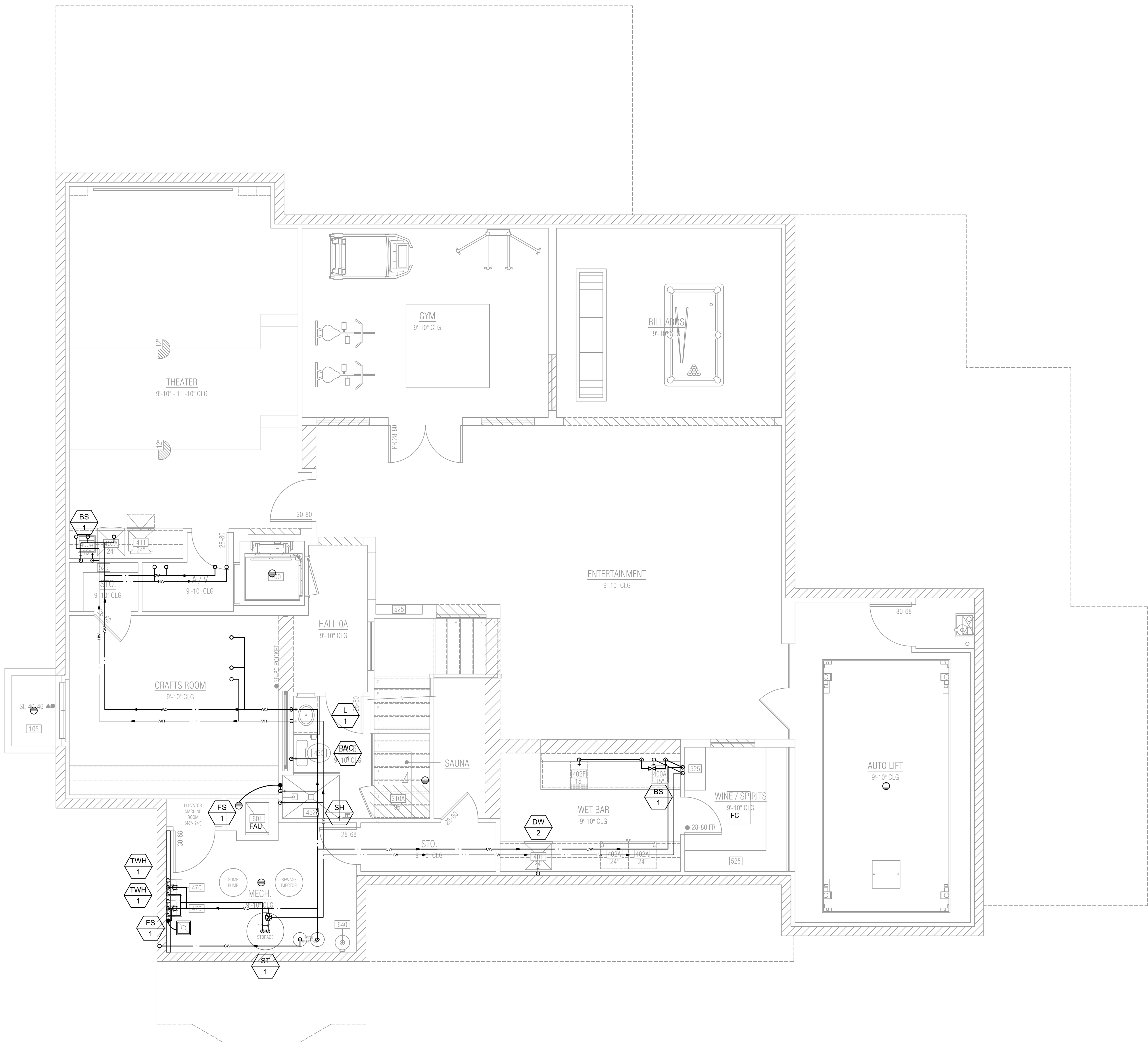
ENGINEER:

DRAFTER:

SHEET NUMBER:

P-0.2

ISSUED DATE: 8/24/2020



0 2' 4' 8' 12'

1/4" = 1'-0"

BASEMENT PLAN 1

SYMBOLS LEGEND

- 90 DEG ELBOW DOWN
- 90 DEG ELBOW UP
- TEE, DOWN
- TEE, UP
- PIPE CAP
- RISER ID TAG (TAG #)
- EQUIPMENT ID TAG (TAG #)
- CW
- HW
- HW_RETURN
- GAS_LPG
- GAS_MPG

KEY NOTES - WATER

- 1/2 — 1/2" NOMINAL I.D. DOMESTIC WATER PIPE
- 3/4 — 3/4" NOMINAL I.D. DOMESTIC WATER PIPE
- 1 — 1" NOMINAL I.D. DOMESTIC WATER PIPE
- 1 1/4 — 1-1/4" NOMINAL I.D. DOMESTIC WATER PIPE
- 1 1/2 — 1-1/2" NOMINAL I.D. DOMESTIC WATER PIPE
- 2 — 2" NOMINAL I.D. DOMESTIC WATER PIPE
- 2 1/2 — 2-1/2" NOMINAL I.D. DOMESTIC WATER PIPE
- 3 — 3" NOMINAL I.D. DOMESTIC WATER PIPE
- 4 — 4" NOMINAL I.D. DOMESTIC WATER PIPE
- 5 — 5" NOMINAL I.D. DOMESTIC WATER PIPE
- 6 — 6" NOMINAL I.D. DOMESTIC WATER PIPE

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DATE SIGNED: 3/24/21

RESTRICTIVE NOTICE

PROJECT:

BORSTEIN RESIDENCE

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DEVELOPER:

ARCHITECT:

Architeyk

LOCATION:

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REVISIONS

NO.	DATE	DESCRIPTION

SHEET NAME:

PLAN
BASEMENT PLAN
COLD / HOT WATER
AND NATURAL GAS

PROJECT NUMBER:

65671

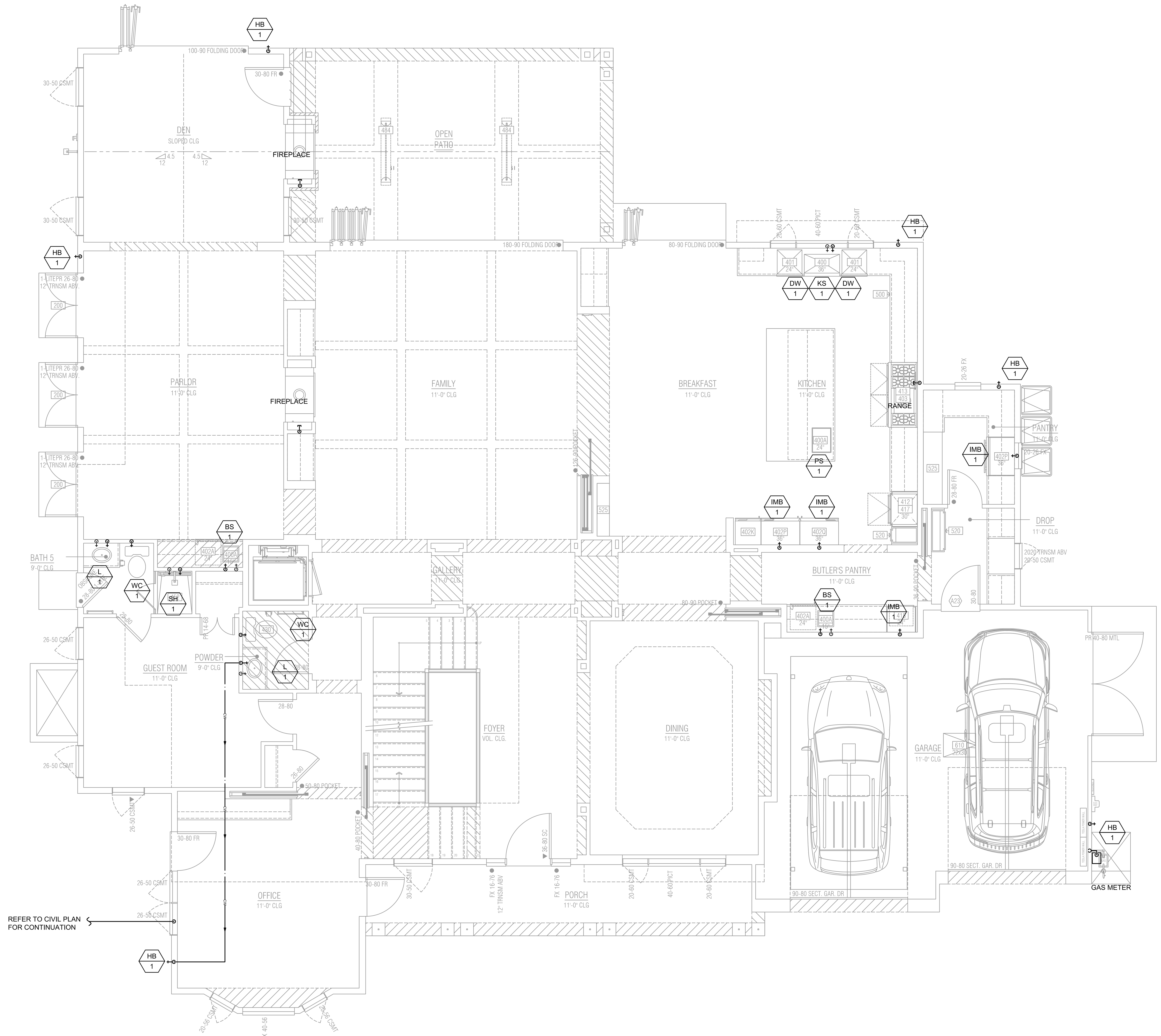
ENGINEER:

DRAFTER:

SHEET NUMBER:

P-3.1A

ISSUED DATE: 8/24/2020



MAIN LEVEL PLAN 1

SYMBOLS LEGEND

- 90 DEG ELBOW DOWN
- 90 DEG ELBOW UP
- TEE, DOWN
- TEE, UP
- PIPE CAP
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- 2" NOMINAL I.D. DOMESTIC WATER PIPE
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- 3" NOMINAL I.D. DOMESTIC WATER PIPE
- 4" NOMINAL I.D. DOMESTIC WATER PIPE
- 5" NOMINAL I.D. DOMESTIC WATER PIPE
- 6" NOMINAL I.D. DOMESTIC WATER PIPE

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DATE SIGNED: 3/24/21

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PROJECT:

BORSTEIN RESIDENCE

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DEVELOPER:

ARCHITECT:

Architeyk

LOCATION:

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CA, 90049

REVISIONS

NO.	DATE	DESCRIPTION

SHEET NAME:

PLAN
MAIN LEVEL
FLOOR PLAN
COLD / HOT WATER
AND NATURAL GAS

PROJECT NUMBER:

65671

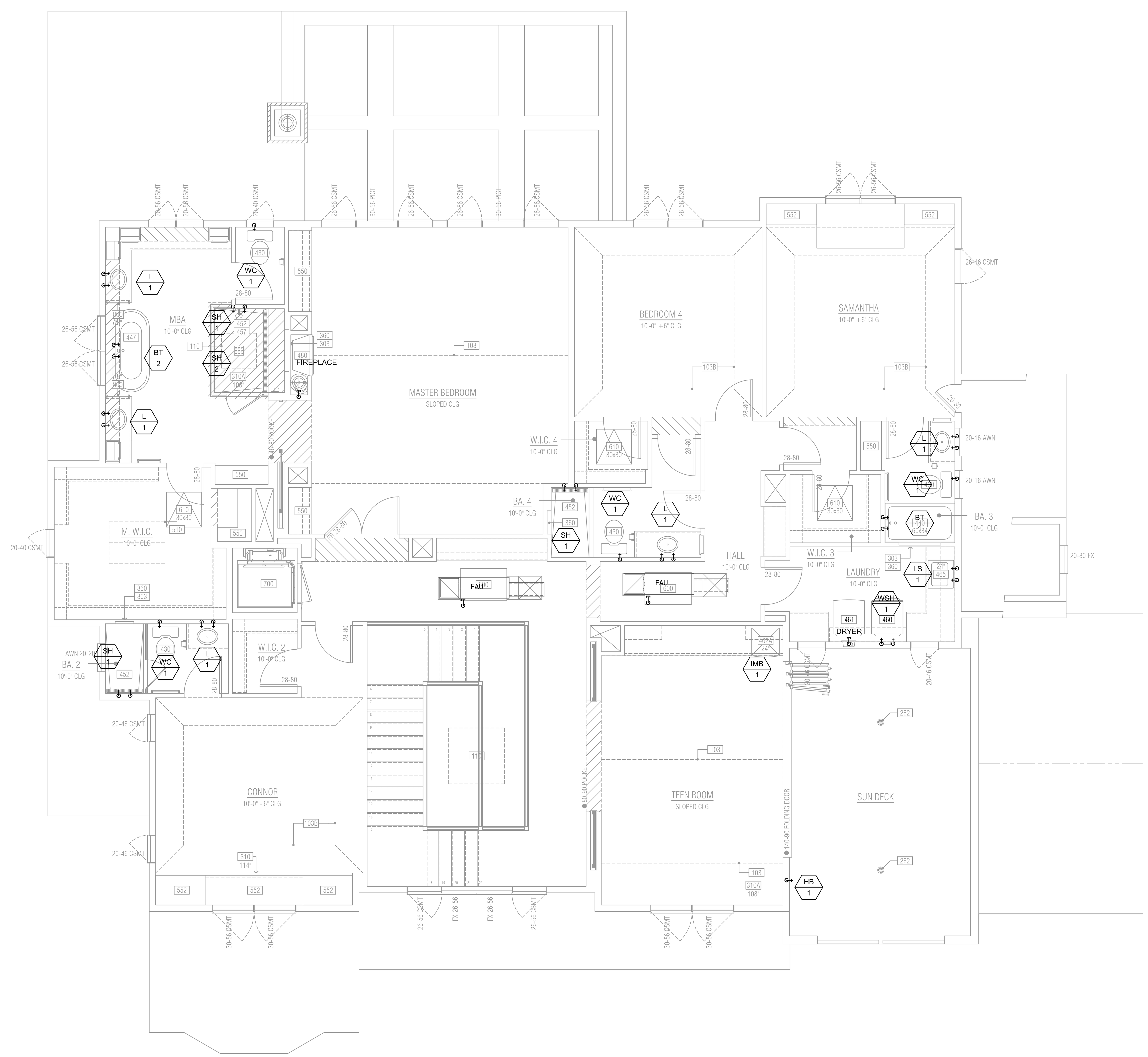
ENGINEER:

DRAFTER:

SHEET NUMBER:

P-3.2A

ISSUED DATE 8/24/2020



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NO.	DATE	DESCRIPTION

SHEET NAME:

PLAN
UPPER LEVEL
FLOOR PLAN
COLD / HOT WATER
AND NATURAL GAS

PROJECT NUMBER:

65671

ENGINEER:

DRAFTER:

SHEET NUMBER:

P-3.3A

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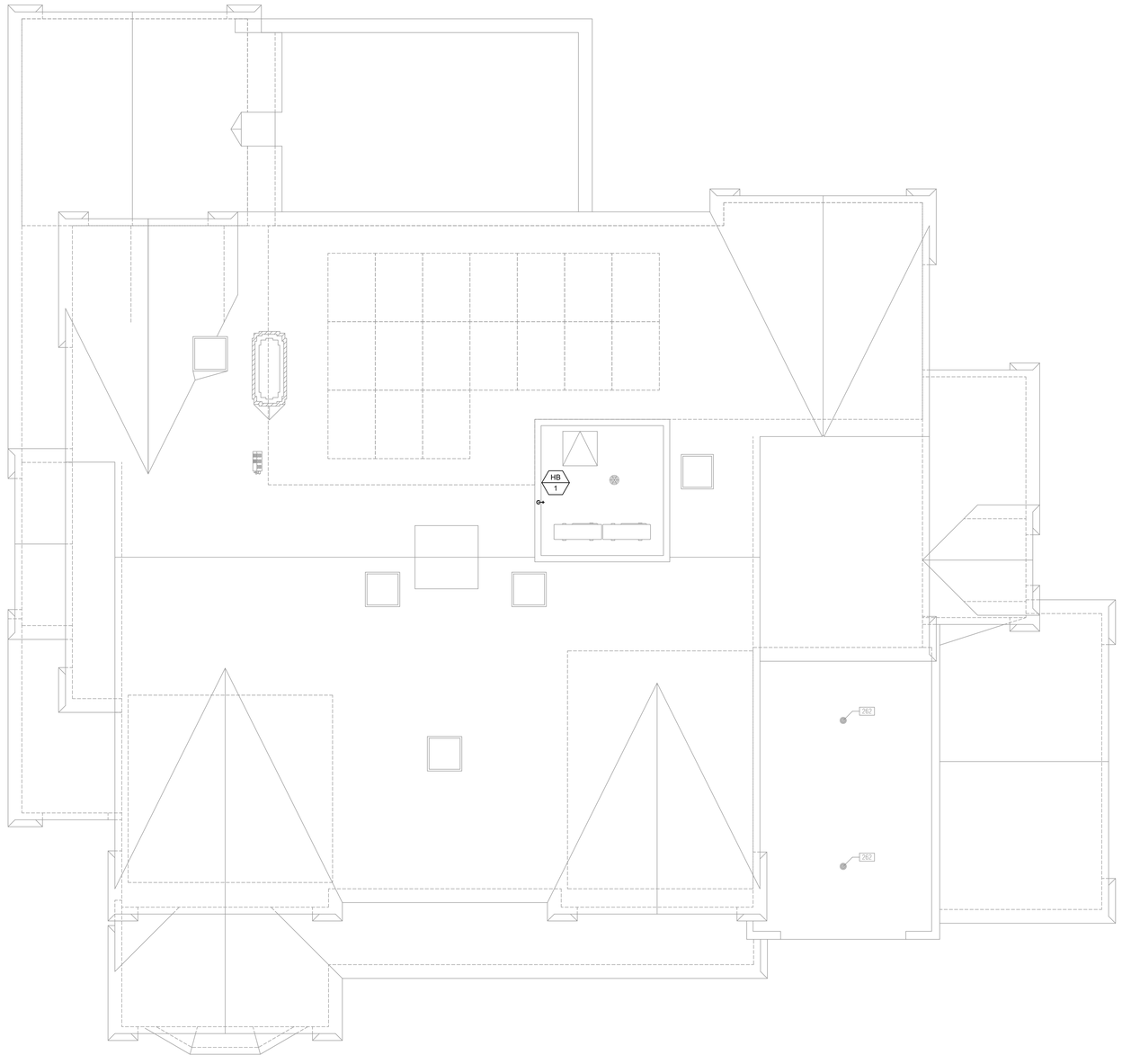
1/4" = 1'-0"

UPPER LEVEL PLAN 1

ISSUED DATE: 8/24/2020



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- MPG GAS_MPG

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- 2" NOMINAL I.D. DOMESTIC WATER PIPE
- 2-1/2" NOMINAL I.D. DOMESTIC WATER PIPE
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- 4" NOMINAL I.D. DOMESTIC WATER PIPE
- 5" NOMINAL I.D. DOMESTIC WATER PIPE
- 6" NOMINAL I.D. DOMESTIC WATER PIPE

0 2' 4' 8' 12'
1/4" = 1'-0"

ROOF PLAN 1

ISSUED DATE: 8/24/2020

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DATE SIGNED: 3/24/21

PROJECT:

BORSTEIN RESIDENCE

NOT FOR BID OR CONSTRUCTION

DEVELOPER:

ARCHITECT:

Architeyk

LOCATION:

188 Homewood Road
Los Angeles
CA, 90049

REVISIONS

NO.	DATE	DESCRIPTION

SHEET NAME:

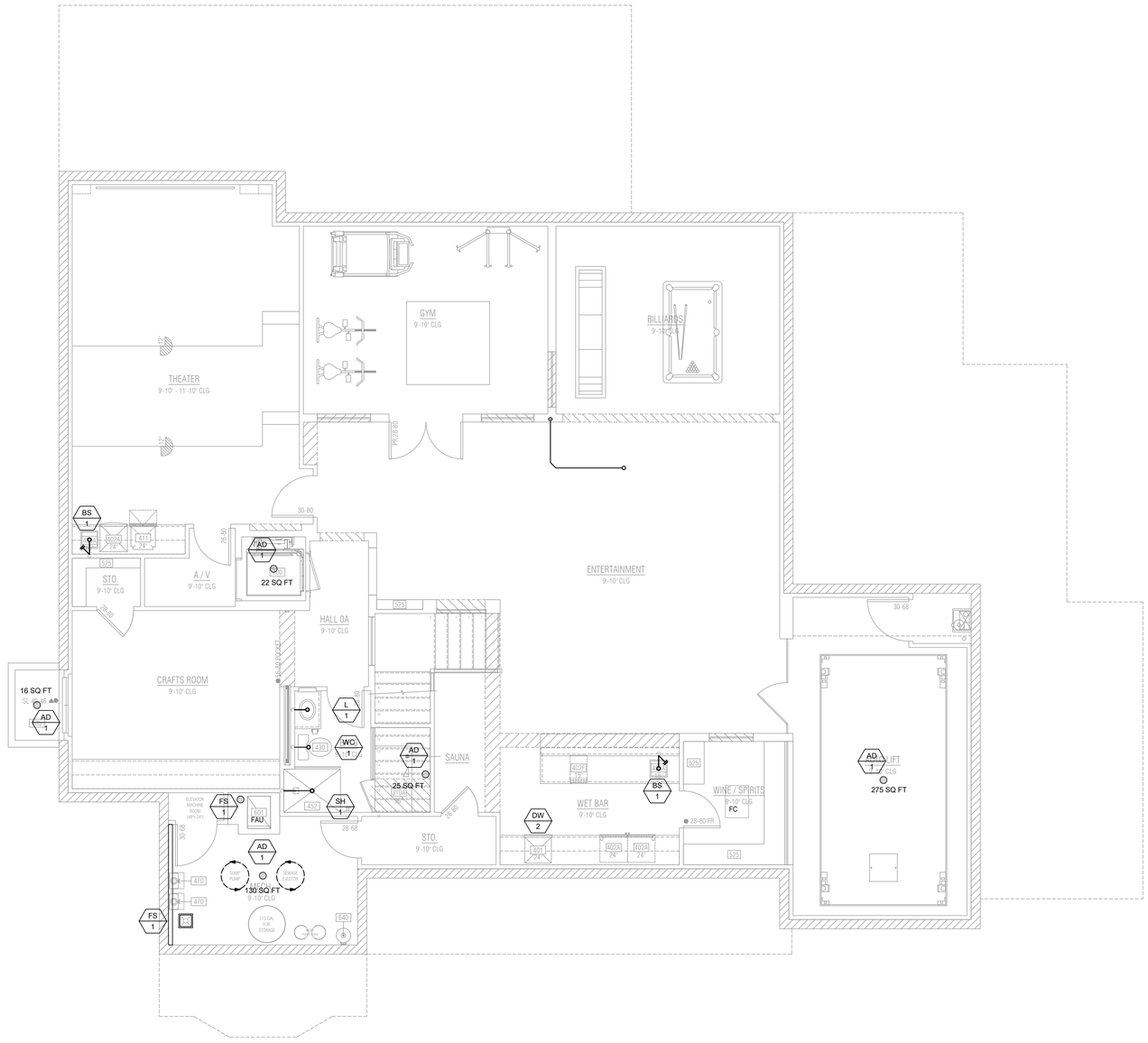
PLAN
ROOF PLAN
COLD / HOT WATER
AND NATURAL GAS

PROJECT NUMBER:
65671

ENGINEER:

DRAFTER:

SHEET NUMBER:
P-3.4A



SYMBOLS LEGEND

- 90 DEG ELBOW DOWN
- 90 DEG ELBOW UP
- TEE, DOWN
- TEE, UP
- PIPE CAP
- WALL CLEANOUT
- WYE
- GROUND CLEANOUT
- RISER ID TAG
- EQUIPMENT ID TAG
- WASTE_BELOW
- WASTE_ABOVE
- VENT
- COND. DRAIN

KEY NOTES - WASTE

2 2" WASTE PIPE WITH DWV FITTINGS
3 3" WASTE PIPE WITH DWV FITTINGS
4 4" WASTE PIPE WITH DWV FITTINGS
6 6" WASTE PIPE WITH DWV FITTINGS
8 8" WASTE PIPE WITH DWV FITTINGS

KEY NOTES - VENT

1½ 1-1/2" VENT PIPE WITH DWV FITTINGS
2 2" VENT PIPE WITH DWV FITTINGS
3 3" VENT PIPE WITH DWV FITTINGS
4 4" VENT PIPE WITH DWV FITTINGS

0 2' 4' 8' 12'
1/4" = 1'-0"

BASEMENT PLAN 1

ISSUED DATE: 8/24/2020

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DATE SIGNED: 3/24/21

PROJECT:

BORSTEIN RESIDENCE

NOT FOR BID OR CONSTRUCTION

DEVELOPER:

ARCHITECT:

Architeyk

LOCATION:

188 Homewood Road
Los Angeles
CA, 90049

REVISIONS

NO.	DATE	DESCRIPTION

SHEET NAME:

PLAN
BASEMENT PLAN
WASTE & VENT PIPING
AND FAU CONDENSATE

PROJECT NUMBER:

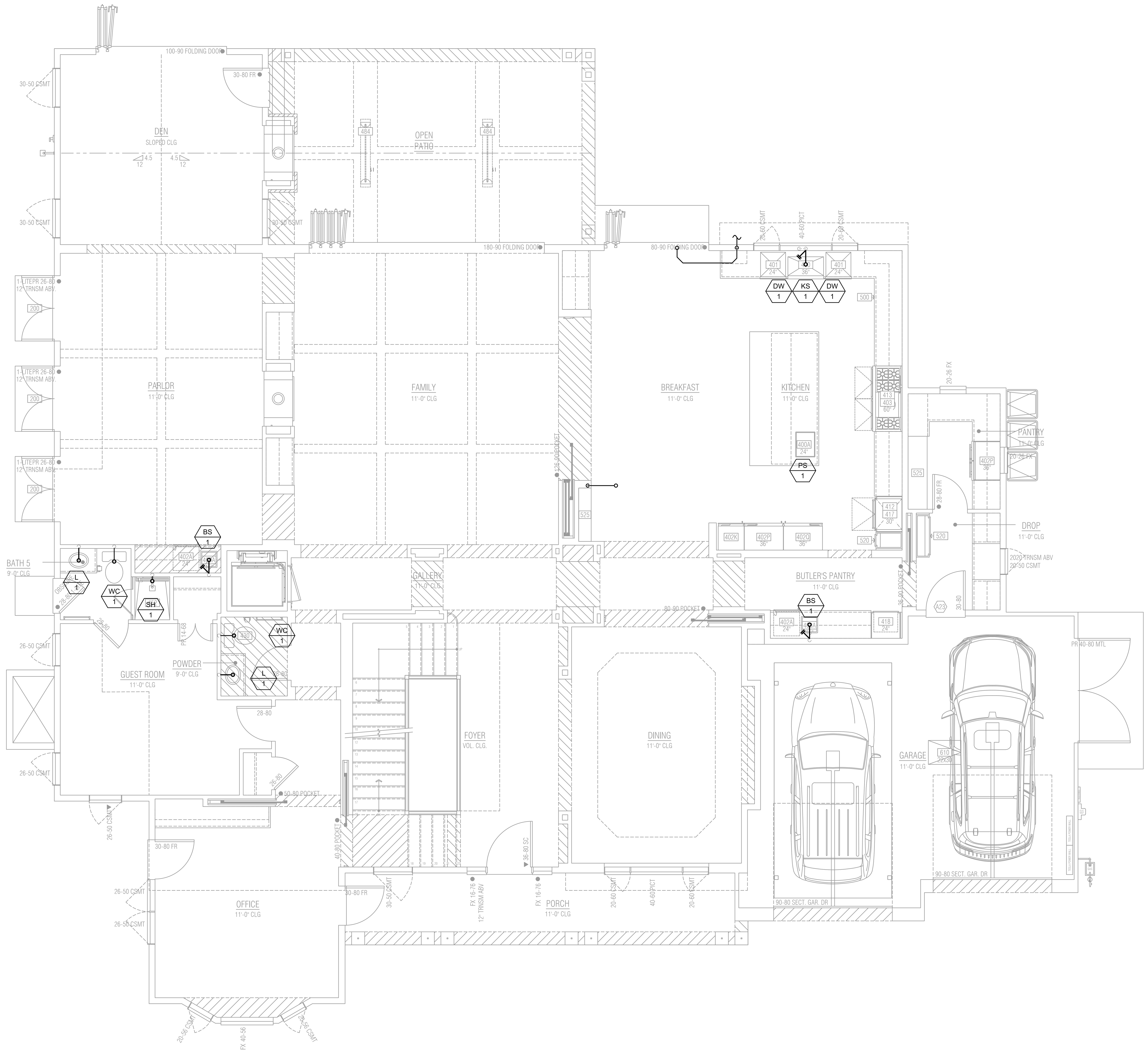
65671

ENGINEER:

DRAFTER:

SHEET NUMBER:

P-3.1B



0 2' 4' 8' 12'
1/4" = 1'-0"

MAIN LEVEL PLAN 1

ISSUED DATE 8/24/2020

SYMBOLS LEGEND

- 90 DEG ELBOW DOWN
- 90 DEG ELBOW UP
- TEE, DOWN
- TEE, UP
- PIPE CAP
- WALL CLEANOUT
- WYE
- GROUND CLEANOUT
- RISER ID TAG (TAG #)
- EQUIPMENT ID TAG (TAG #)
- WASTE_BELOW
- WASTE_ABOVE
- VENT
- COND. DRAIN (CD)

KEY NOTES - WASTE

2	2" WASTE PIPE WITH DWV FITTINGS
3	3" WASTE PIPE WITH DWV FITTINGS
4	4" WASTE PIPE WITH DWV FITTINGS
6	6" WASTE PIPE WITH DWV FITTINGS
8	8" WASTE PIPE WITH DWV FITTINGS

KEY NOTES - VENT

$1\frac{1}{2}$	1-1/2" VENT PIPE WITH DWV FITTINGS
2	2" VENT PIPE WITH DWV FITTINGS
3	3" VENT PIPE WITH DWV FITTINGS
4	4" VENT PIPE WITH DWV FITTINGS

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DATE SIGNED: 3/24/21

PROJECT:

BORSTEIN RESIDENCE

NOT FOR BID OR CONSTRUCTION

DEVELOPER:

ARCHITECT:

Architeyk

LOCATION:

188 Homewood Road
Los Angeles
CA, 90049

REVISIONS

NO.	DATE	DESCRIPTION

SHEET NAME:

PLAN
MAIN LEVEL
FLOOR PLAN
WASTE & VENT PIPING
AND FAU CONDENSATE

PROJECT NUMBER:

65671

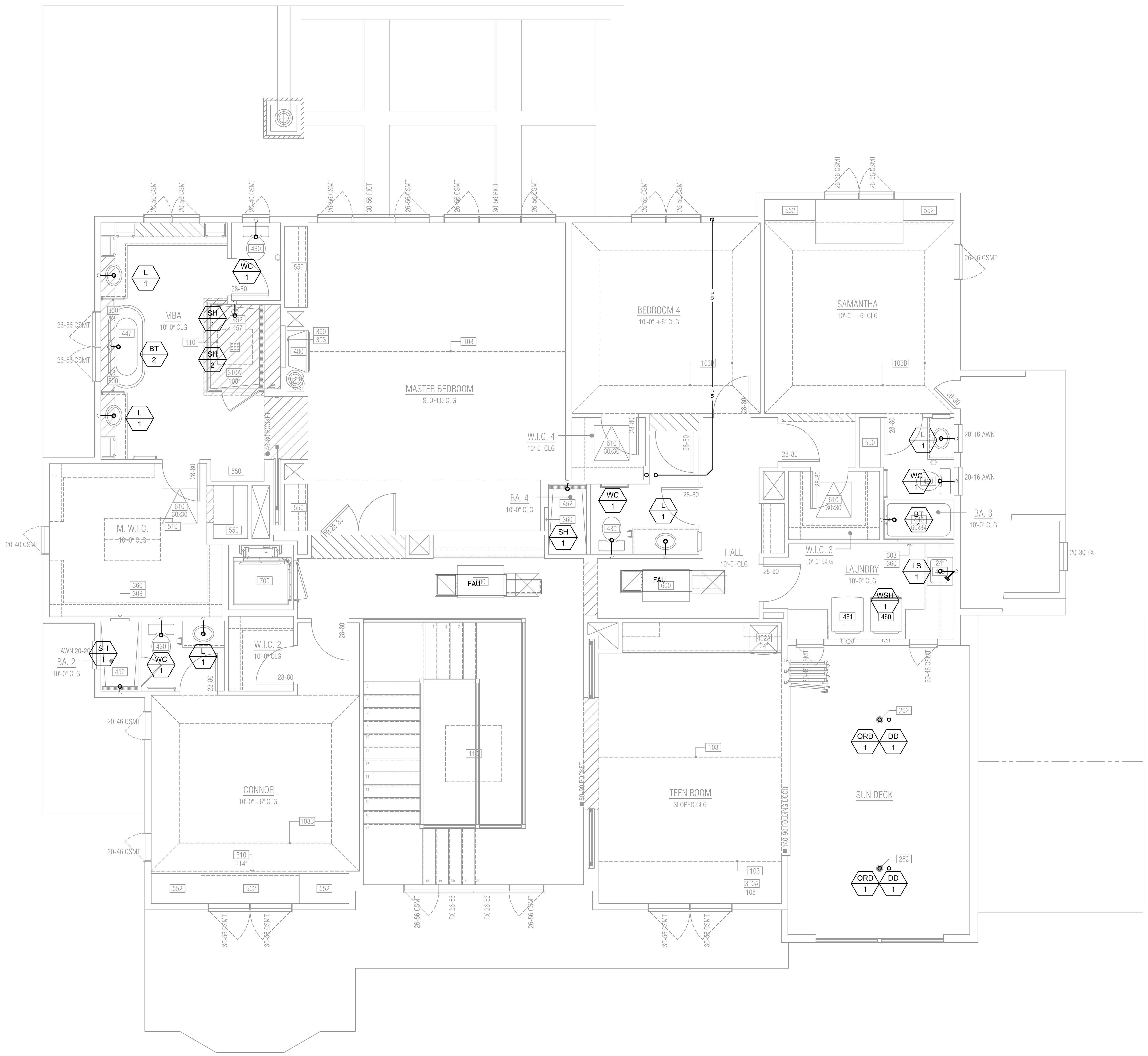
ENGINEER:

DRAFTER:

SHEET NUMBER:

P-3.2B

ISSUED DATE 8/24/2020



0 2' 4' 8' 12'
1/4" = 1'-0"

UPPER LEVEL PLAN 1

SYMBOLS LEGEND

- 90 DEG ELBOW DOWN
- 90 DEG ELBOW UP
- TEE, DOWN
- TEE, UP
- PIPE CAP
- WALL CLEANOUT
- WYE
- GROUND CLEANOUT
- RISER ID TAG
- EQUIPMENT ID TAG
- WASTE_BELOW
- WASTE_ABOVE
- VENT
- CD — COND. DRAIN

KEY NOTES - WASTE

- 2 — 2" WASTE PIPE WITH DWV FITTINGS
- 3 — 3" WASTE PIPE WITH DWV FITTINGS
- 4 — 4" WASTE PIPE WITH DWV FITTINGS
- 6 — 6" WASTE PIPE WITH DWV FITTINGS
- 8 — 8" WASTE PIPE WITH DWV FITTINGS

KEY NOTES - VENT

- 1½ — 1-1/2" VENT PIPE WITH DWV FITTINGS
- 2 — 2" VENT PIPE WITH DWV FITTINGS
- 3 — 3" VENT PIPE WITH DWV FITTINGS
- 4 — 4" VENT PIPE WITH DWV FITTINGS

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DATE SIGNED: 3/24/21

RESTRICTIVE NOTICE

PROJECT:

BORSTEIN RESIDENCE

NOT FOR BID OR CONSTRUCTION

DEVELOPER:

ARCHITECT:
Architeyk

LOCATION:
188 Homewood Road
Los Angeles
CA, 90049

REVISIONS

NO.	DATE	DESCRIPTION

SHEET NAME:
PLAN
UPPER LEVEL
FLOOR PLAN
WASTE & VENT PIPING
AND FAU CONDENSATE

PROJECT NUMBER:
65671

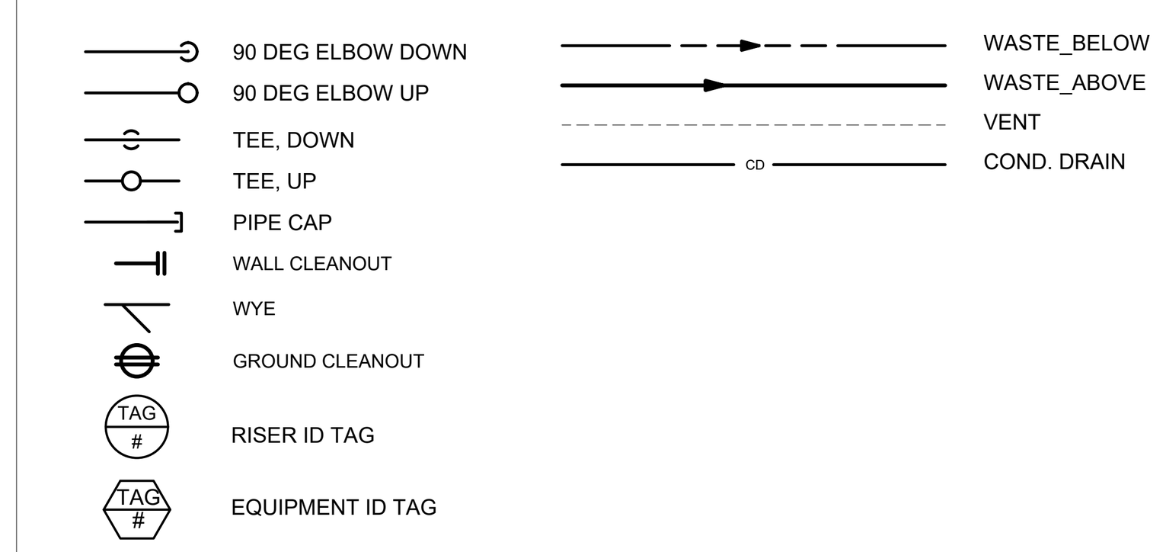
ENGINEER:

DRAFTER:

SHEET NUMBER:

P-3.3B

SYMBOLS LEGEND

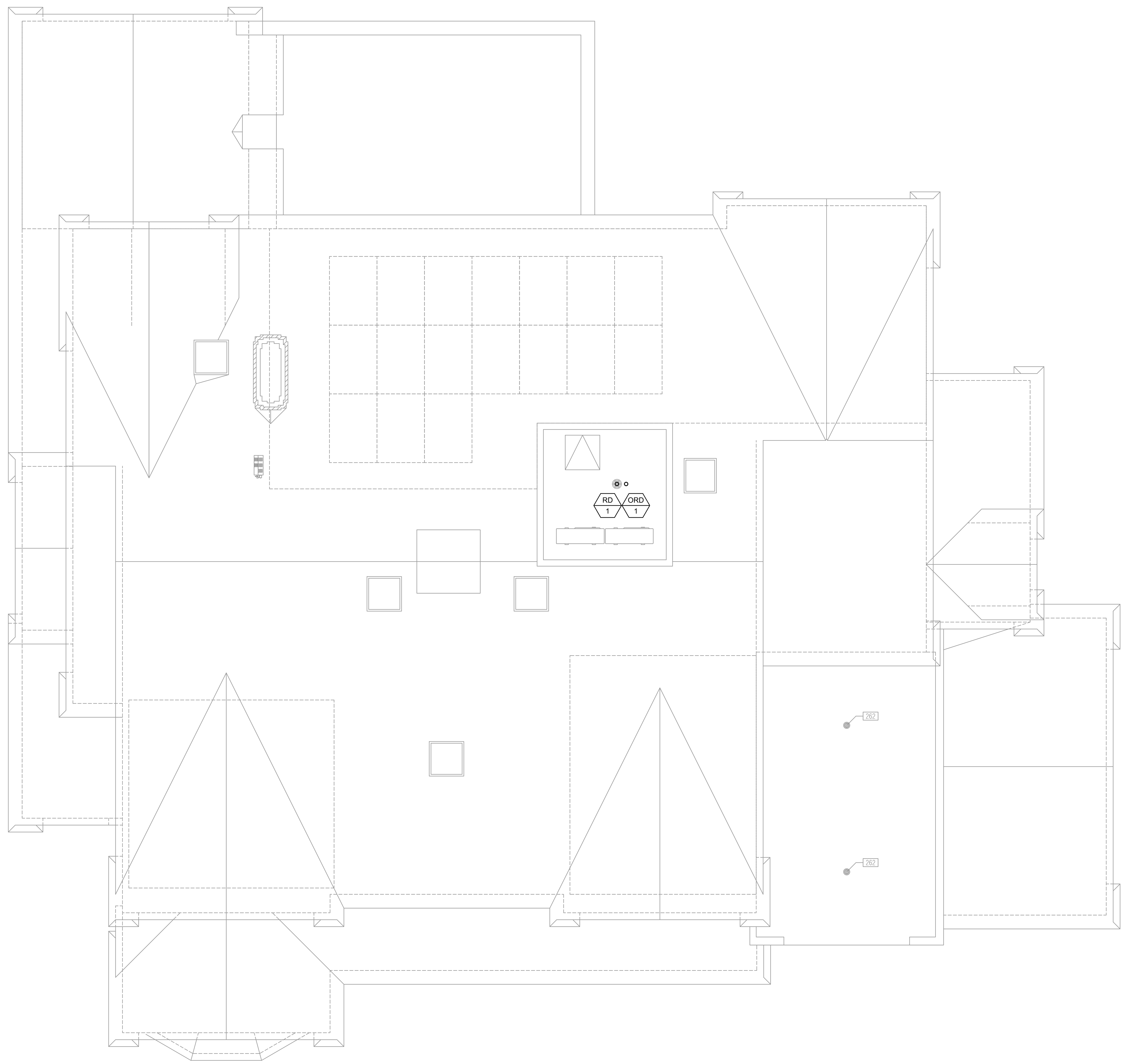


KEY NOTES - WASTE

- 2 — 2" WASTE PIPE WITH DWV FITTINGS
- 3 — 3" WASTE PIPE WITH DWV FITTINGS
- 4 — 4" WASTE PIPE WITH DWV FITTINGS
- 6 — 6" WASTE PIPE WITH DWV FITTINGS
- 8 — 8" WASTE PIPE WITH DWV FITTINGS

KEY NOTES - VENT

- 1½ — 1-1/2" VENT PIPE WITH DWV FITTINGS
- 2 — 2" VENT PIPE WITH DWV FITTINGS
- 3 — 3" VENT PIPE WITH DWV FITTINGS
- 4 — 4" VENT PIPE WITH DWV FITTINGS



ROOF PLAN 1

ISSUED DATE 8/24/2020

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DATE SIGNED: 3/24/21

RESTRICTIVE NOTICE

PROJECT:

BORSTEIN RESIDENCE

NOT FOR BID OR CONSTRUCTION

DEVELOPER:

ARCHITECT:

Architeyk

LOCATION:

188 Homewood Road
Los Angeles
CA, 90049

REVISIONS

NO.	DATE	DESCRIPTION

SHEET NAME:

PLAN
ROOF PLAN
WASTE & VENT PIPING
AND FAU CONDENSATE

PROJECT NUMBER:

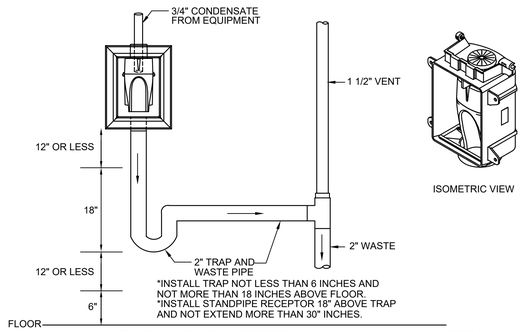
65671

ENGINEER:

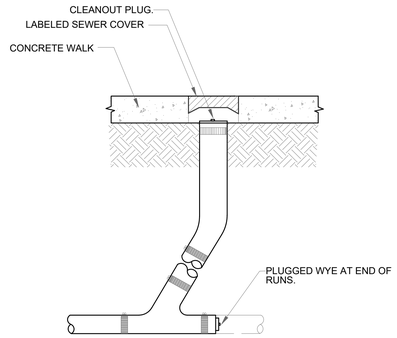
DRAFTER:

SHEET NUMBER:

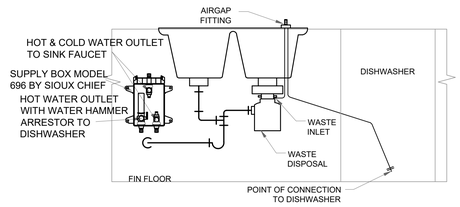
P-3.4B



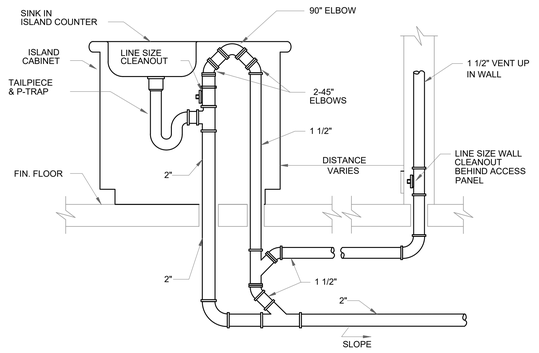
INDIRECT WASTE RECEPTOR | 12



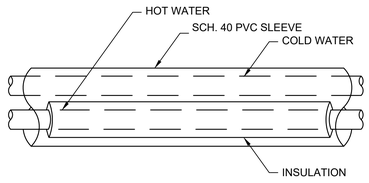
GROUND CLEAN OUT (GCO) | 8



KITCHEN SINK & DISHWASHER | 5

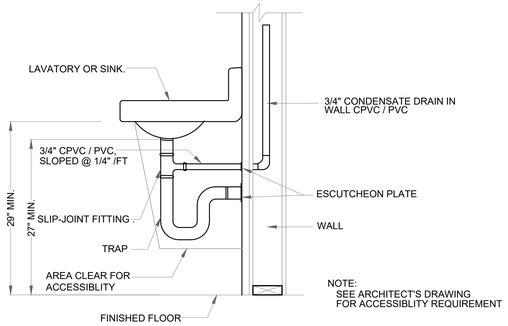


ISLAND SINK WASTE & VENT CONNECTIONS | 1

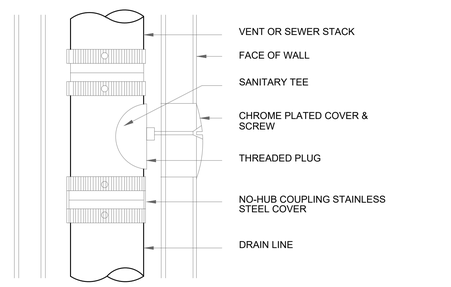


NOTE:*WHEN PEX TUBING IS PLACED IN SOIL AND IS USED IN POTABLE WATER SYSTEM INTENDED TO SUPPLY DRINKING WATER TO FIXTURES OR APPLIANCES, AND TUBING OR PIPING SHALL BE SLEEVED WITH MATERIAL APPROVED FOR POTABLE WATER USE IN SOIL OR OTHER MATERIAL THAT IS IMPERMEABLE TO SOLVENTS OR PETROLEUM PRODUCTS. CPC TABLE 604.1 NOTE 2.

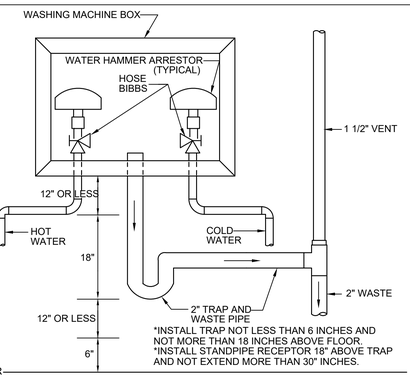
TYPICAL BELOW GRADE PIPE PROTECTION | 13



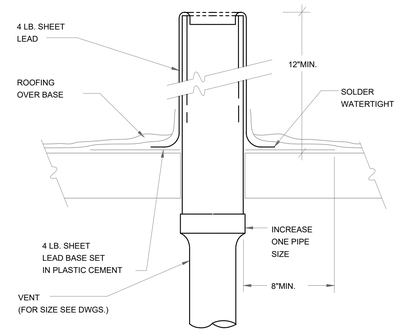
CONDENSATE DRAIN TO LAVATORY TAILPIECE | 9



WALL CLEAN OUT (WCO) | 6



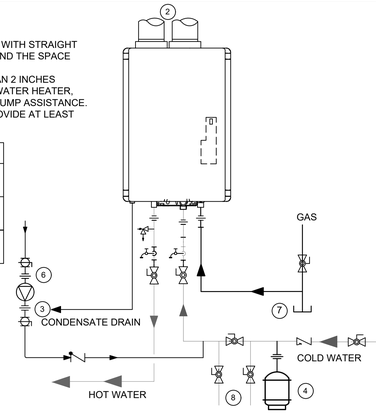
CLOTHES WASHING MACHINE OUTLET BOX | 2



VENT THRU ROOF | 10

1. A CATEGORY III OR IV VENT, OR TYPE B VENT WITH STRAIGHT PIPE BETWEEN THE OUTSIDE TERMINATION AND THE SPACE WHERE THE WATER HEATER IS INSTALLED.
2. A CONDENSATE DRAIN THAT IS NO MORE THAN 2 INCHES HIGHER THAN THE BASE OF THE INSTALLED WATER HEATER, AND ALLOWS NATURAL DRAINING WITHOUT PUMP ASSISTANCE.
3. A GAS SUPPLY LINE WITH A CAPACITY TO PROVIDE AT LEAST 200,000 BTU/HR TO THE WATER HEATER.

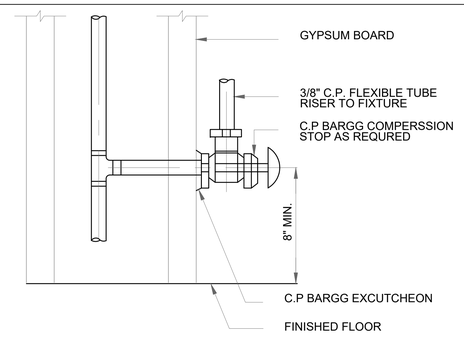
LEGEND			
SHUT OFF VALVE		UNION	
CHECK VALVE		PRESSURE RELIEF VALVE	
SEDIMENT TRAP		DRAIN VALVE	



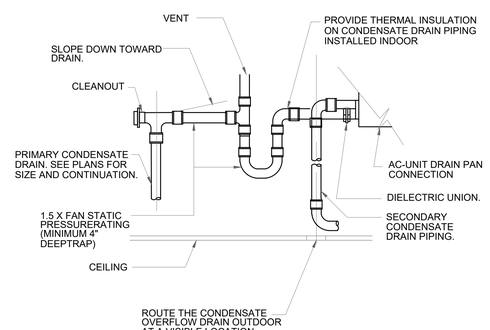
NOTES:

1. PROVIDE TEMPERATURE AND PRESSURE RELIEF VALVES DISCHARGED TO DAYLIGHT AT 6" ABOVE FINISHED GRADE WITH AN UNTHREADED ELBOW TURNED DOWN PER CPC SECTION 608.5.
2. 2 PIPE SEALED COMBUSTION DIRECT VENT SYSTEM. INSTALL 3" PVC PIPES PER MANUFACTURER RECOMMENDATIONS.
3. PROVIDE CONDENSATE DRAIN WITH NEUTRALIZER PER MANUFACTURER'S RECOMMENDATIONS. DISCHARGE TO STANDPIPE.
4. IF CLOSED SYSTEM PROVIDE EXPANSION TANK PER CPC ANDMANUFACTURER'S RECOMMENDATIONS.
5. INSTALL ISOLATION VALVES ON BOTH THE COLD WATER SUPPLY, THE HOT WATER PIPE LEAVING THE WATER HEATER AND HOSE BIBBS OR OTHER FITTINGS ON EACH VALVE FOR FLUSHING THE WATER HEATER WHEN VALVES ARE CLOSED.
   CBEES 110.3(c)7
6. THE CIRCULATION PUMP SHALL BE INSTALLED ON A VERTICAL SECTION OF THE RETURN LINE OR AN AIR RELEASE VALVE SHALL BE INSTALLED ON THE INLET SIDE OF THE RECIRCULATION PUMP (NO MORE THAN 4 FT FROM THE PUMP). THIS AIR RELEASE VALVE SHALL BE MOUNTED ON TOP OF A VERTICAL RISER AT LEAST 12" IN LENGTH AND SHALL BE ACCESSIBLE FOR REPLACEMENT AND REPAIR.
   THE RECIRCULATION PUMP IS TO BE CONTROLLED BY A DUAL-SET AQUASTAT W/ TIMER.
7. PROVIDE SEDIMENT TRAP
8. PROVIDEBYPASS ASSEMBLY FOR FUTURE SOLAR THERMAL POINT OF CONNECTION OR LOOP FOR SCALE SHIELD.

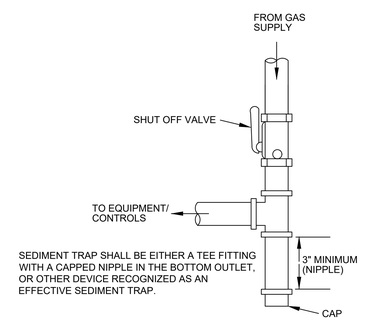
WATER HEATER DETAIL | 3



FIXTURE STOP | 11



CONDENSATE DRAIN | 7



GAS TEE FITTING SEDIMENT TRAP | 4

ISSUED DATE: 8/24/2020

GOUVIS engineering consulting group, inc.®
15 Studebaker
Irvine
CA 92618

Irvine
tel 949.752.1612
fax 949.752.5321

Palm Springs
tel 760.323.5090

DATE SIGNED: 3/24/21

PROJECT:

BORSTEIN RESIDENCE

NOT FOR BID OR CONSTRUCTION

DEVELOPER:

ARCHITECT:

Architeyk

LOCATION:

188 Homewood Road
Los Angeles
CA, 90049

REVISIONS

NO.	DATE	DESCRIPTION

SHEET NAME:

DETAILS

PROJECT NUMBER:

65671

ENGINEER:

DRAFTER:

SHEET NUMBER:

P-D.1

WASTE DIAGRAMS 3

WATER DIAGRAM 2

GAS DIAGRAM 1

ISSUED DATE: 6/24/2020

GOUVIS engineering consulting group, inc.®

15 Studebaker
Irvine
CA 92618

Irvine
tel 949.752.1612
fax 949.752.5321

Palm Springs
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REVISIONS

NO.	DATE	DESCRIPTION

SHEET NAME:

DIAGRAMS

PROJECT NUMBER:

65671

ENGINEER:

DRAFTER:

SHEET NUMBER:

P-D.2