

PLANS PREPARED BY:
 FTA
 ARCHITECTURE
 31501 Palos Verdes Drive West
 Rancho Palos Verdes, CA

POINT VICENTE INTERPRETIVE CENTER EXPANSION
 31501 Palos Verdes Drive West
 Rancho Palos Verdes, CA

Plumbing Schedules, Notes and Legend

REVISION DATE: 10-09-04

APPROVALS
 ARCHITECT

REVISION PERMIT #

11/10/03

WATER PIPE SIZING CALCULATION

JOB NAME : POINT VICENTE INTERPRETIVE CENTER
 JOB NO. : 97123
 DATE : 2-12-98

PRESSURE AVAILABLE:
 MINIMUM = 100 P.S.I. METER SIZE = 4 INCHES
 MAXIMUM = 137 P.S.I. PRV SETTING = 60 P.S.I.
 MAXIMUM VELOCITY 8 F.P.S.

1. PRESSURE LOSS FROM WATER METER TO PRV			
1. METER LOSS	5	P.S.I.	
2. STATIC LOSS	XX FT. X 0.43	NA	P.S.I.
3. PIPE FRICTION LOSS	720 FT. X 2 P.S.I./100 FT.	14.4	P.S.I.
4. BACKFLOW PREVENTER LOSS	15	P.S.I.	
5.	XX	P.S.I.	
6. TOTAL LOSSES	34.4	P.S.I.	
7. AVAILABLE PRESSURE AT PRV			
MIN. STREET PRESSURE - TOTAL LOSSES =	65.6	P.S.I.	

II. UNIFORM FRICTION HEAD LOSS CALCULATION			
1. STATIC LOSS	15	FT. X 0.43	6.5 P.S.I.
2. RESIDUAL PRESSURE REQUIRED			30 P.S.I.
3. PRESSURE REGULATING STATION			5 P.S.I.
4.			
5.			
6. TOTAL LOSSES			41.5 P.S.I.
7. WATER PRESSURE IN BUILDING (L7 OR PRV SETTING)			60 P.S.I.
8. PRESSURE AVAILABLE FOR FRICTION (II.7 - II.6)			28.5 P.S.I.
9. EQUIVALENT LENGTH OF SYSTEM			160 FT.
10. DEVELOPED LENGTH OF SYSTEM, 130% OF II.9			210 FT.
11. AVERAGE PRESSURE DROP = $\frac{II.8 \times 100}{II.10}$ (P.S.I./100 FT.)			8.8 USE 5 PSI/100FT

PIPE SIZE	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"
GPM	2.5	6.5	13.1	23	36	75	119	170
FT (FU)	2	7	18	35	69	247	474	748
FV (FU)	-	-	-	-	21	126	357	700
VELOCITY	3.6	4.3	5.1	5.8	6.5	7.7	8	8

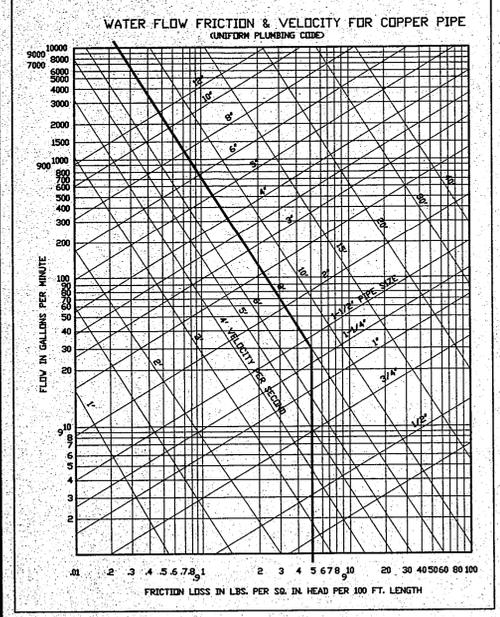


TABLE 9-6 CONVERSIONS - GALLONS PER MINUTE TO FIXTURE UNITS

PIPE SIZE	FIXTURE UNITS		PIPE SIZE	FIXTURE UNITS		PIPE SIZE	FIXTURE UNITS	
	FLUSH	FLUSH		FLUSH	FLUSH		FLUSH	FLUSH
1/2"	1	0	1"	45	137	1 1/2"	145	411
	2	0		90	274		290	822
	3	1		135	411		435	1233
	4	1		180	548		570	1644
3/4"	5	1	1 1/4"	135	386	2"	270	756
	6	1		180	515		360	1008
	7	1		225	644		450	1260
	8	1		270	773		540	1512
1"	9	1	1 1/2"	225	644	2 1/2"	405	1134
	10	1		270	773		540	1512
	11	1		315	902		630	1764
	12	1		360	1031		720	2016
1 1/4"	13	1	2"	405	1134	2 1/2"	540	1512
	14	1		450	1263		630	1764
	15	1		495	1392		720	2016
	16	1		540	1521		810	2268
1 1/2"	17	1	2 1/2"	540	1521	3"	630	1764
	18	1		585	1650		720	2016
	19	1		630	1779		810	2268
	20	1		675	1908		900	2520
2"	21	1	2 1/2"	810	2268	3"	900	2520
	22	1		855	2397		990	2772
	23	1		900	2526		1080	3024
	24	1		945	2655		1170	3276
2 1/2"	25	1	3"	990	2772	3"	1080	3024
	26	1		1035	2901		1170	3276
	27	1		1080	3030		1260	3528
	28	1		1125	3159		1350	3780
3"	29	1	3"	1260	3528	3"	1350	3780
	30	1		1305	3657		1440	4032
	31	1		1350	3786		1530	4284
	32	1		1395	3915		1620	4536
3 1/2"	33	1	3"	1440	4032	3"	1530	4284
	34	1		1485	4161		1620	4536
	35	1		1530	4290		1710	4788
	36	1		1575	4419		1800	5040
4"	37	1	3"	1575	4419	3"	1800	5040
	38	1		1620	4548		1890	5292
	39	1		1665	4677		1980	5544
	40	1		1710	4806		2070	5796
4 1/2"	41	1	3"	1710	4806	3"	2070	5796
	42	1		1755	4935		2160	6048
	43	1		1800	5064		2250	6300
	44	1		1845	5193		2340	6552
5"	45	1	3"	1845	5193	3"	2340	6552
	46	1		1890	5322		2430	6804
	47	1		1935	5451		2520	7056
	48	1		1980	5580		2610	7308
5 1/2"	49	1	3"	1980	5580	3"	2610	7308
	50	1		2025	5709		2700	7560
	51	1		2070	5838		2790	7812
	52	1		2115	5967		2880	8064
6"	53	1	3"	2115	5967	3"	2880	8064
	54	1		2160	6096		2970	8316
	55	1		2205	6225		3060	8568
	56	1		2250	6354		3150	8820
6 1/2"	57	1	3"	2250	6354	3"	3150	8820
	58	1		2295	6483		3240	9072
	59	1		2340	6612		3330	9324
	60	1		2385	6741		3420	9576
7"	61	1	3"	2385	6741	3"	3420	9576
	62	1		2430	6870		3510	9828
	63	1		2475	6999		3600	10080
	64	1		2520	7128		3690	10332
7 1/2"	65	1	3"	2520	7128	3"	3690	10332
	66	1		2565	7257		3780	10584
	67	1		2610	7386		3870	10836
	68	1		2655	7515		3960	11088
8"	69	1	3"	2655	7515	3"	3960	11088
	70	1		2700	7644		4050	11340
	71	1		2745	7773		4140	11592
	72	1		2790	7902		4230	11844
8 1/2"	73	1	3"	2790	7902	3"	4230	11844
	74	1		2835	8031		4320	12096
	75	1		2880	8160		4410	12348
	76	1		2925	8289		4500	12600
9"	77	1	3"	2925	8289	3"	4500	12600
	78	1		2970	8418		4590	12852
	79	1		3015	8547		4680	13104
	80	1		3060	8676		4770	13356
9 1/2"	81	1	3"	3060	8676	3"	4770	13356
	82	1		3105	8805		4860	13608
	83	1		3150	8934		4950	13860
	84	1		3195	9063		5040	14112
10"	85	1	3"	3195	9063	3"	5040	14112
	86	1		3240	9192		5130	14364
	87	1		3285	9321		5220	14616
	88	1		3330	9450		5310	14868
10 1/2"	89	1	3"	3330	9450	3"	5310	14868
	90	1		3375	9579		5400	15120
	91	1		3420	9708		5490	15372
	92	1		3465	9837		5580	15624
11"	93	1	3"	3465	9837	3"	5580	15624
	94	1		3510	9966		5670	15876
	95	1		3555	10095		5760	16128
	96	1		3600	10224		5850	16380
11 1/2"	97	1	3"	3600	10224	3"	5850	16380
	98	1		3645	10353		5940	16632
	99	1		3690	10482		6030	16884
	100	1		3735	10611		6120	17136

GENERAL NOTES

- BEFORE COMMENCEMENT OF WORK, THE CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS, ELEVATIONS AND CHARACTERISTICS OF ALL UTILITIES AND PIPING, AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT OF ANY DISCREPANCIES OR PROBLEMS.
- EXACT LOCATIONS AND MOUNTING HEIGHTS OF ALL PLUMBING FIXTURES SHALL BE OBTAINED FROM THE ARCHITECTURAL DRAWINGS.
- SEE ARCHITECTURAL DRAWINGS FOR ADA FIXTURE LOCATIONS AND MOUNTING HEIGHTS. FURNISH ALL EXPOSED HOT WATER AND DRAIN PIPING BELOW HANDICAP LAVATORIES AND SINKS WITH MCGUIRE PROWRAP PRE-WRAPPED OFFSET TAILPIECES AND P-TRAPS. ALL WATER CLOSET FLUSHING LEVERS SHALL BE TO THE WIDE SIDE OF THE WALL.
- TRAPS FOR ALL LAVATORIES AND SINKS SHALL TRAP STRAIGHT BACK TO WALL WITH ALL REQUIRED OFFSETS HAPPENING WITHIN THE WALL.
- ALL PLUMBING WORK SHALL BE INSTALLED TO AVOID INTERFERENCE WITH ELECTRICAL AND MECHANICAL EQUIPMENT AND STRUCTURAL FRAMING.
- ALL CLEANOUTS SHALL BE INSTALLED WHERE EASILY ACCESSIBLE. THE CONTRACTOR SHALL COORDINATE ALL CLEANOUT LOCATIONS WITH ALL EQUIPMENT, CABINETS, ETC., AND THE ARCHITECT PRIOR TO ANY INSTALLATION.
- ALL PLUMBING FIXTURE VENTS SHALL TERMINATE A MINIMUM OF 12 INCHES FROM ANY VERTICAL SURFACE AND 10 FEET FROM ANY OUTSIDE AIR INTAKES.
- ALL VALVES, UNIONS, ETC. TO BE SAME SIZE AS PIPE UNLESS OTHERWISE INDICATED ON DRAWINGS.
- UNIONS SHALL BE PROVIDED AND INSTALLED AFTER EACH VALVE AND PRIOR TO ALL EQUIPMENT CONNECTIONS.
- ALL WORK AND MATERIAL SHALL BE PERFORMED AND INSTALLED IN COMPLIANCE WITH THE FOLLOWING CODES AS ADOPTED AND AMENDED BY THE INSPECTING AUTHORITY. NOTHING IN THESE DRAWINGS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES OR OTHERS APPLICABLE TO THIS PROJECT:
 1997 UNIFORM BUILDING CODE WITH 2001 CALIFORNIA AMENDMENTS
 2000 UNIFORM MECHANICAL CODE WITH 2001 CALIFORNIA AMENDMENTS
 2000 UNIFORM PLUMBING CODE WITH 2001 CALIFORNIA AMENDMENTS
 1999 NATIONAL ELECTRICAL CODE WITH 2001 CALIFORNIA AMENDMENTS
 CALIFORNIA CODE OF REGULATIONS TITLE 24
- BEFORE FABRICATION OR INSTALLATION THE CONTRACTOR SHALL VERIFY EXACT LOCATIONS OF ALL MECHANICAL EQUIPMENT AND EQUIPMENT PROVIDED UNDER ANOTHER SECTION OF SPECIFICATIONS. ROUGH-IN LOCATIONS AND REQUIREMENTS SHALL BE COORDINATED IN THE FIELD.
- ALL WASTE, VENT AND STORM DRAIN PIPING SHALL SLOPE AT 2% UNLESS OTHERWISE INDICATED ON PLANS.
- ALL VALVES, TRAP PRIMERS, WATER HAMMER ARRESTERS OR OTHER EQUIPMENT SHOWN IN WALLS OR ABOVE NON-ACCESSIBLE CEILINGS SHALL BE INSTALLED BEHIND AN ACCESS PANEL.
- ALL PLUMBING FIXTURES AND EQUIPMENT SHALL BE CERTIFIED BY THE CALIFORNIA STATE ENERGY COMMISSION TO COMPLY WITH EFFICIENCY STANDARDS PER SECTION 2-5314(A) OF THE TITLE-24 REGULATIONS.
- ALL HOT WATER PIPING SHALL BE INSULATED. SEE SPECIFICATIONS FOR ALL REQUIREMENTS.
- PIPING THROUGH FIRE RATED WALLS SHALL BE PER U.L. FIRE RESISTANCE SYSTEM NO. WL1001. SEE ARCHITECTURAL PLANS FOR ALL WALL LOCATIONS.
- ALL EXISTING PIPING DAMAGED DURING EXCAVATION SHALL BE REPAIRED WITH MATERIALS TO MATCH EXISTING BY THE CONTRACTOR.
- ALL PIPING INTO STEM WALLS AND FOOTINGS SHALL BE DOUBLE HALF LAP WRAPPED WITH 1/8" THICK "ARMOFLEX" INSULATION. THE CONTRACTOR SHALL ALSO PROVIDE BLOCKED OUT AREAS IN STEM WALL AND FOOTING. ALL PIPING SHALL AVOID THE LOWER 2' OF THE FOOTING.
- ALL PIPING ON ROOF SHALL BE ANCHORED TO 4" X 4" FIRE PRESSURE TREATED REDWOOD BLOCKING WITH PIPE STRAPS. BLOCKING SHALL BE SET IN MASTIC AT 5'-0" ON CENTER.
- DRAIN SYSTEMS TO A POINT OF CONNECTION 5'-0" OUTSIDE OF THE BUILDING. PIPING BEYOND THIS POINT IS SPECIFIED UNDER ANOTHER SECTION OF THE SPECIFICATIONS AND SHALL BE AS SHOWN ON THE CIVIL DRAWINGS.
- THE EXISTING AND NEW BUILDING SHALL BE PROVIDED WITH AN AUTOMATIC SPRINKLER SYSTEM PER UNIFORM FIRE CODE WITH CALIFORNIA AMENDMENTS. LATEST REQUIREMENT OF NFPA 13. ALL LOCAL CODES, INSURANCE UNDERWRITERS' PLUMBING PLANS AND SPECIFICATIONS. THE FIRE SPRINKLER CONTRACTOR SHALL SUBMIT AN APPROVED AND STAMPED SET OF DRAWINGS SHOWING ALL SIZES AND LOCATIONS OF PIPING, HEAD LOCATIONS, POST INDICATOR VALVE, FIRE DEPARTMENT CONNECTION, DETECTOR CHECK, FIRE RISER, ALARM, SYSTEM DRAINS, TEST LINE AND ANY OTHER EQUIPMENT REQUIRED. IN ADDITION, SUBMITTAL SHALL BE MADE FOR ALL MATERIAL AND EQUIPMENT. SEE SPECIFICATIONS.

UTILITY SCHEDULE

WATER	DOMESTIC F.U.		INTERMITTENT CW DEMAND	TOTAL GPM	WATER METER SIZE	WATER PRESS. (PSI)	
	PRESENT	FUTURE				MIN.	MAX.
REMARKS	207	-	-	93	(E)4"	100	137
SEWER	SANITARY F.U.		BUILDING SEWER SIZE	STREET SEWER SIZE	INDUST.	TOTAL GPM	
	PRESENT	FUTURE					
REMARKS	119	-	(E)4"	-	-	-	
GAS	SPACE HEATING	COOKING	EXISTING	TOTAL CFH	TOTAL DEVELOPED LENGTH		
	447 CFH	208 CFH	140 CFH	795	250 FT.		
REMARKS	LOCAL GAS CO. TO UPSIZE (E) GAS METER AND PRESSURE REGULATOR ASSEMBLY AS REQUIRED.						

LEGEND

SYMBOL	ABBREVIATION	DESCRIPTION
---	W	WASTE ABOVE GRADE
---	W	WASTE BELOW FLOOR OR GRADE
---	GW	GREASE WASTE
---	V	VENT
---	CW	COLD WATER
---	HW	HOT WATER
---	G	GAS
---	IW	INDIRECT WASTE
---	CD	CONDENSATE DRAIN
---	ECW	EXISTING COLD WATER
---	FCO	FLOOR CLEANOUT
---	WCO	WALL CLEANOUT
