

PLUMBING SYMBOLS, ABBREVIATIONS AND SCHEDULES

PLUMBING SYMBOLS & ABBREVIATIONS

SYMBOL	ABBREV	DESCRIPTION	ABBREV	DESCRIPTION
		TYPICAL PIPELINE WITH PIPE SIZE, FLOW DIRECTION AND NATURAL GAS CALL-OUT SHOWN	ABV	ABOVE
	SS	SANITARY DRAINAGE PIPING BELOW FLOOR OR GRADE	A	COMPRESSED AIR
	SS	SANITARY DRAINAGE PIPING ABOVE FLOOR	AP	ACCESS PANEL
	V	VENT	AV	ACID VENT
	CW	COLD WATER (POTABLE)	AC	ACETYLENE
	HW	HOT WATER	ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS
	HWR	HOT WATER RETURN	ARCH	ARCHITECTURAL
	GV	GATE VALVE	AT	AT
	BV	BUTTERFLY VALVE	AW	ACID WASTE
	BFP	REDUCED PRESSURE TYPE BACKFLOW PREVENTER	BEL	BELOW
	CV	CHECK VALVE	BOP	BOTTOM OF PIPE
	GLV	GLOBE VALVE	BTUH	BRITISH THERMAL UNITS PER HOUR
	BLV	BALL VALVE	CLG	CEILING
	PV OR GC	PLUG VALVE OR GAS COCK	CONN	CONNECT/CONNECTION
	HB	HOSE BIBB	CONT	CONTINUE/CONTINUATION
	UN	UNION	CWV	COMBINATION WASTE AND VENT
	WHA	WATER HAMMER ARRESTOR	CFH	CUBIC FEET PER HOUR
	FD	FLOOR DRAIN	CFM	CUBIC FEET PER MINUTE
	FS	FLOOR SINK	DE	DEIONIZED WATER
	RD	ROOF DRAIN	DIA	DIAMETER
	ORD	OVERFLOW ROOF DRAIN	DI	DISTILLED WATER
		REDUCER/INCREASER	DN	DOWN
	ESEW	EMERGENCY SHOWER AND EYEWASH	D	DRAIN-INDIRECT DRAWING
	CP	IN-LINE CIRCULATING PUMP	DWG	DRAWING
	PRV	PRESSURE REGULATING VALVE	ELEC	ELECTRIC/ELECTRICAL
	BLV	BALANCING VALVE (FLOW CONTROL)	EL	ELEVATION
	PG	PRESSURE GAGE W/ GAGE COCK	EMG	EMERGENCY
	TH	THERMOMETER	FIN	FINISHED
	RV	PRESS RELIEF/PRESS & TEMP RELIEF VALVE	FF	FINISHED FLOOR
	STR	STRAINER	FL	FLOOR
		SLOPE DOWN IN DIRECTION OF ARROW	FR	FROM
	FCO OR COTG	FLOOR CLEANOUT OR CLEANOUT TO GRADE	FT	FOOT/FEET
	CO	CLEANOUT	FV	FLUSH VALVE
	WCO	WALL CLEANOUT	GPM	GALLONS PER MINUTE
		PIPE UP OR PIPE UP & DOWN	GPH	GALLONS PER HOUR
		PIPE DOWN OR PIPE FROM BELOW	HCP	HANDICAPPED
		DIRECTION OF FLOW	HD	HEAD
	FW	FIRE WATER	HZ	HERTZ
		OS & Y GATE VALVE (OUTSIDE SCREW AND YOKE WITH TAMPER SWITCH)	HP	HORSEPOWER
	FHC	FIRE HOSE CABINET	HYAC	HEATING, VENTILATING & AIR CONDITIONING
	M	MANUAL FIRE ALARM STATION	HDR	HEADER
	FACP	FIRE ALARM CONTROL PANEL	ICW	INDUSTRIAL COLD WATER
	S _p	PHOTOELECTRIC SMOKE DETECTOR	IN	INCH/INCHES
			IE	INVERT ELEVATION
			INT	INTEGRAL
			KW	KILOWATT
			MH	MANHOLE
			MAX	MAXIMUM
			MG	MEDIUM PRESSURE GAS
			MIN	MINIMUM
			MTD	MOUNTED
			NTS	NOT TO SCALE
			NO	NORMALLY OPEN
			NC	NORMALLY CLOSED
			OW	OILY WATER
			PSI	POUNDS PER SQUARE INCH
			PD	PUMP DISCHARGE
			POC	POINT OF CONNECTION
			PH	PHASE
			RO	REVERSE OSMOSIS WATER
			RPM	REVOLUTION PER MINUTE
			RI & C	ROUGH-IN AND CONNECT
			RM	ROOM
			SHT	SHEET
			SCW	SOFT COLD WATER
			SCFM	STANDARD CUBIC FEET PER MINUTE
			SD	STORM DRAIN
			TEMP	TEMPERATURE
			TW	TEMPERED WATER
			TPV	TRAP PRIMER VALVE
			TYP	TYPICAL
			TPL	TRAP PRIMER LINE
			TOC	TOP OF CONCRETE
			VAC	VACUUM
			VC	VACUUM CLEANING
			VTR	VENT THROUGH ROOF
			V	VENT
			VTW	VENT THRU WALL
			W/	WITH
			WC	WATER COLUMN

GENERAL NOTES

- REFER TO ARCHITECTURAL DRAWINGS FOR EXACT FIXTURE LOCATIONS AND MOUNTING HEIGHTS.
- UTILITIES TERMINATE 5'-0" FROM BUILDING, FOR CONTINUATION SEE CIVIL DRAWINGS.
- PROVIDE TRAP PRIMERS FOR ALL FLOOR DRAINS AND FLOOR SINKS.
- FURNISH AND INSTALL ALL AUXILIARY STEEL REQUIRED TO PROVIDE FOR THE PROPER SUPPORT OF ALL INTERIOR AND EXTERIOR PIPING.
- ANY PIPE PENETRATING FIRE RATED WALLS OR FLOORS SHALL HAVE THE ANNULAR SPACE BETWEEN PIPE AND SLEEVE OR CORE DRILLED HOLE FILLED WITH AN APPROVED MATERIAL THAT WILL RETURN THE PENETRATION TO THE ORIGINAL RATING.
- ALL FIXTURES AND HOSE BIBBS SHALL BE PROVIDED WITH WATER HAMMER ARRESTORS. AIR CHAMBERS WILL NOT BE PERMITTED.
- FIRE HOSE CABINETS SHALL BE PROVIDED WITH 1/2" NST FIRE DEPARTMENT CONNECTIONS.

PLUMBING FIXTURE SCHEDULE

ITEM NO.	DESCRIPTION	DRAIN	TRAP	VENT	HW	CW	REMARKS
WC-1	WATER CLOSET	4"	INT	2"	—	1/4"	FL MTD-FV
WC-2	WATER CLOSET	4"	INT	2"	—	1/4"	FL MTD-FV-HCP
WC-3	WATER CLOSET	—	—	6"	—	—	PROPANE INCINERATION TYPE (FOR END STATIONS ONLY)
UR-2	URINAL	2"	INT	1 1/2"	—	1"	WALL MTD-FV-HCP
L-1	LAVATORY	2"	1/4"X1/2"	1 1/2"	1/2"	1/2"	WALL MTD-HCP
SS-1	SERVICE SINK	3"	3"	2"	1/2"	1/2"	WALL MTD
MS-1	MOP SINK	3"	3"	2"	1/2"	1/2"	FLOOR MTD
SH-1	SHOWER	2"	2"	1 1/2"	1/2"	1/2"	W/PRESSURE-BALANCE MIXING VALVE-HCP
ESEW-1	EMG SH & EYEWASH UNIT	—	—	—	—	1/4"	COMBINATION UNIT
EW-1	ELECTRIC WATER COOLER	2"	1/4"X1/2"	1 1/2"	—	1/2"	WALL MTD-HCP
KS-1	KITCHEN SINK	2"	1 1/2"	1 1/2"	1/2"	1/2"	COUNTER TOP MTD, TWO COMPARTMENT, W/ WASTE DISPOSER
CS-1	CUP SINK	2"	1 1/2"	1 1/2"	—	1/2"	RI & C
HB-1	HOSE BIBB	—	—	—	—	3/4"	W/VACUUM BREAKER
HB-2	HOSE BIBB	—	—	—	—	3/4"	NON-FREEZE W/VACUUM BREAKER
FD-1	FLOOR DRAIN	2"x3"	2"x3"	2"x1 1/2"	—	—	BRONZE STRAINER W/TRAP PRIMER
FD-2	FLOOR DRAIN	3"	3"	2"	—	—	
FD-3	FLOOR DRAIN	2"	2"	2"x1 1/2"	—	—	
FS-1	FLOOR SINK	2"x3"	2"x3"	2"x1 1/2"	—	—	ENAMELED CAST IRON W/TRAP PRIMER
S-1	SINK	3"	3"	2"	1/2"	1/2"	SINGLE COMPARTMENT, COUNTER TOP MTD, STAINLESS STEEL
UR-1	URINAL	2"	INT	1 1/2"	—	1"	WALL MTD - FV

ELECTRIC WATER HEATER SCHEDULE

UNIT NO.	LOCATION	KW INPUT	VOLTS/PH/Hz	STORAGE CAP (GAL)	RECOVERY GPH @ 80°F ΔT	INLET TEMP (°F)	OPER WT (LB)	MANUFACTURER/ MODEL NO.	REMARKS
L-CS-149-WH-01	STORAGE ROOM	3	480/3/60	20	20	40		A. O. SMITH MODEL NO. DEL 15	
L-CS-136-WH-02	JANITOR'S ROOM	8	480/3/60	50	41	40		A. O. SMITH MODEL NO. DEN-52	
L-CS-136-WH-03	LVEA	1.5	208/1/60	10	8	40		A. O. SMITH MODEL NO. ELSF-10	
L-CS-136-WH-04	LVEA	1.5	208/1/60	10	8	40		A. O. SMITH MODEL NO. ELSF-10	
L-CS-136-WH-05	LVEA	1.5	208/1/60	10	8	40		A. O. SMITH MODEL NO. ELSF-10	
L-CS-136-WH-06	LVEA	1.5	208/1/60	10	8	40		A. O. SMITH MODEL NO. ELSF-10	

PUMP SCHEDULE

UNIT NO.	LOCATION	SERVICE	TYPE	FLUID PUMPED	MAX FLUID TEMP (°F)	GPM	TOTAL HEAD (FT)	NPSH (FT)	MOTOR			OPER WT (LB)	MANUFACTURER/ MODEL NO.	REMARKS
									HP	VOLTS/ PH/Hz	RPM			
L-CS-195-FP-01	MAINTENANCE BLDG	FIRE WATER	HORIZONTAL	WATER	100	1000	175	75	480/3/60	1800	326TS		PATERSON PUMP/6XSM	
L-CS-195-FP-02	MAINTENANCE BLDG	FIRE WATER	HORIZONTAL	WATER	100	1000	175	75	480/3/60	1800	326TS		PATERSON PUMP/6XSM	
L-CS-195-JP-03	MAINTENANCE BLDG	FIRE WATER	CENTRIFUGAL	WATER	100	10	186	1 1/2	480/3/60				PATERSON PUMP/CR2-50J	
L-CS-196-DP-04	MAINTENANCE BLDG	DOMESTIC WATER	CENTRIFUGAL	WATER	100	60	190	5	480/3/60	3500			PACO PUMP/VMB112Y SERIES 9000	
L-CS-196-DP-05	MAINTENANCE BLDG	DOMESTIC WATER	CENTRIFUGAL	WATER	100	60	190	5	480/3/60	3500			PACO PUMP/VMB112Y SERIES 9000	

WATER STORAGE TANK

UNIT NO.	LOCATION	SERVICE	STORAGE CAP (GAL)	CONSTRUCTION PRESSURE (PSIG)	OPERATING PRESSURE (PSIG)	RELIEF VALVE SETTING (PSIG)	CONSTRUCTION	SIZE			MANUFACTURER/ MODEL NO.	REMARKS
								DIA (IN)	H (IN)	OPER. WT. (LB)		
L-MA-203-WT-01	MID STN A	HUMIDIFIERS/ DOMESTIC	1,000	125	30	45	CARBON STEEL GLASS LINED	42	168	11,000		ASME STAMPED
L-MB-203-WT-01	MID STN B											
L-EA-203-WT-01	END STN A											
L-EB-203-WT-01	END STN B											

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NO.	DATE	BY	CHKD	ENGR	PROJ	DESCRIPTION
1	8-7-98	DJB	MM	MM	MM	ISSUED FOR AS-BUILT

ISSUED FOR CONSTRUCTION
 DRAWN DG 11-15-96
 CHECKED ME 10-25-96
 ENGINEER AA 10-25-96
 PROJ TDM 11-15-96

AS-BUILT DRAWINGS

100 WEST WALNUT STREET
 PASADENA, CALIFORNIA

CALIFORNIA INSTITUTE OF TECHNOLOGY
 MASSACHUSETTS INSTITUTE OF TECHNOLOGY

LASER INTERFEROMETER
 GRAVITATIONAL-WAVE OBSERVATORY
 SITE NO. 2 - LIVINGSTON, LOUISIANA

TITLE	SCALE	CONTRACT NUMBER	PROJECT NUMBER
PLUMBING SYMBOLS & ABBREVIATIONS, FIXTURES SCHEDULES & GENERAL NOTES	NONE	PP150969	8094
SHEET NUMBER	LA-P-001		REVISIONS