





## KEYED NOTES

1	SEE CIVIL UTILITY PLAN CS100 FOR CONTINUATION.
2	TERMINATE 3/4" CONDENSATE DRAIN DOWN TO DRYWELL WITH AN APPROVED AIR GAP.
3	2" VENT PIPING UP THRU ROOF.
4	1-1/2" COLD WATER DROP.
5	WATER TREATMENT SYSTEM SUPPLIED SUMP PUMP AND PIT.
6	TERMINATE 2" DISCHARGE DRAIN PIPING DOWN TO WATER TREATMENT SYSTEM SUPPLIED WATERFALL FILTER.
7	HOSE-BIB WITH VACUUM BREAKER FOR WATER TREATMENT SYSTEM MAKE-UP WATER REQUIREMENT.
8	CONNECT TO WATER TREATMENT SYSTEM OVERFLOW. FIELD VERIFY.
9	WATER TREATMENT SUPPLIED PRESSURE WASHER AND PIPING.





three inches = one foot  
one and one half inches = one foot  
one inch = one foot  
three quarters inch = one foot  
one half inch = one foot  
three eighths inch = one foot  
one quarter inch = one foot  
one eighth inch = one foot

PL7W90747 - VA Fort Rosecrans  
WORKING DOCUMENTS\740\_SHEETS\740.08\_PLUMBING\PL601.dwg 7-17-18 10:23:12 AM maglinr

PLUMBING ENGINEERING

Domestic Cold Water Calculation - Ft Rosecrans - Maintenance Yard Bldg

Main Pressure:	Min: 50 psig	Max: 60 psig					
Median Available Pressure	53 psi						
PRESSURE SYSTEM DESIGN:							
2" Meter @ 31 GPM.....	1.0 psi						
Pressure Reducing Valve (set outlet pressure at).....	40.0 psi						
	Pressure inside building 40.0 psi						
PRESSURE LOSSES:							
Static Ht: ( 15 ft x 0.433 ) .....	6.5 psi						
Residual Required @ Water Closet.....	28.0 psi						
	Sub-total Pressure Losses 34.5 psi						
PRESSURE AVAILABLE FOR PRESSURE LOSS:							
System Design - Sub Total Pressure Losses =	5.5 psi						
System Develop Length ( 100 ft + 25% ) =	125 ft						
	( 100 x 5.5 ) = 4.4 psi/100ft						
Cold Water Max Velocity..... 8.0 ft/s							
Hot Water Max Velocity..... 5.0 ft/s							
PIPE SIZE (IN.)	FLOW (GPM)	F-TANK (FU)	F-VALVE (FU)	VELOC. (FT/S)	FLOW (GPM)	F-TANK (FU)	VELOC. (FT/S)
1/2	2	2	-	8.0	2	2	5.0
3/4	6	7	-	8.0	7	7	5.0
1	13	18	-	8.0	13	16	5.0
1-1/4	23	36	6	8.0	20	28	5.0
1-1/2	38	74	23	8.0	28	46	5.0
2	78	254	132	8.0	49	119	5.0
2-1/2	120	455	329	8.0	76	245	5.0
3	180	719	666	8.0	110	406	5.0

PLUMBING ENGINEERING

Fixture Unit Load Calculations - Fort Rosecrans Cemetery

MAINTENANCE YARD BUILDING								
FIXTURE TYPE	QTY	DOMESTIC WATER <sup>1</sup>					DRAINAGE <sup>2</sup>	
		COLD	HOT	TOTAL COLD	TOTAL HOT	TOTAL COLD & HOT	DFU	TOTAL
WATER CLOSET (FLUSH VALVE, PRIVATE)	1	6	-	6	-	6	3	3
LAVATORY (PRIVATE)	1	0.5	0.5	0.5	0.5	0.7	1	1
SINK (BREAK ROOM)	1	1	1	1	1	1.4	2	2
SERVICE SINK	1	2.25	2.25	2.25	2.25	3	2	2
DRINKING FOUNTAIN	2	0.25	-	0.5	-	0.5	0.5	1
HOSE BIB	1	2.5	-	2.5	-	2.5	-	-
HOSE BIB (ADDITIONAL)	2	1.5	-	3	-	3	-	-
TOTAL FIXTURE UNITS		15.75	3.75	17.10				9.0
EQUIVALENT WATER DEMAND IN GPM3				30	8	31		31
MECHANICAL EQUIPMENT MAKE-UP WATER IN GPM						25		
TOTAL DEMAND/FLOW IN GPM						56		56
REQUIRED MINIMUM PIPE SIZE <sup>4</sup>				2"	3/4"	2"		4"
NOTES:								
1. WATER FIXTURE UNITS ARE BASED ON 2015 INTERNATIONAL PLUMBING CODE APPENDIX E, TABLE E103.3(2).								
2. DRAINAGE FIXTURE UNITS ARE BASED ON 2015 INTERNATIONAL PLUMBING CODE CHAPTER 7, TABLE 709.1.								
3. GPM EQUIVALENTS ARE BASED ON 2015 INTERNATIONAL PLUMBING CODE APPENDIX E, TABLE E103.3(3).								
4. PIPE SIZES ARE BASED ON 2015 INTERNATIONAL PLUMBING CODE, CHART FIGURE E103.3(3) (8 FPS MAX VELOCITY FOR COLD WATER AND 5 FPS MAXIMUM VELOCITY FOR HOT WATER) AND TABLE 710.1(1) FOR BUILDING DRAIN.								

PLUMBING FIXTURE SCHEDULE

ITEM	DESCRIPTION	MINIMUM ROUGH-IN CONNECTION (INCH)					ELECTRICAL DATA	REMARKS
		W	TRAP	V	CW	HW		
P104	WATER CLOSET (ABA)	3"	INT	2"	½"	-	120VAC	ZURN Z5615, WALL MOUNT, TOP SPUD, ABA COMPLIANT, ELONGATED BOWL. PROVIDE W/ ZURN Z5955SS-EL OPEN FRONT SEAT, SLOAN ROYAL 111-1.2BES 1.28 GPF SENSORY FLUSH VALVE, SLOAN EL-154 TRANSFORMER, JR SMITH 0417 CARRIER.
P301	LAVATORY (ABA)	2"	1½"	1½"	½"	½"	120VAC	ZURN Z5351, WALL MOUNTED, 19"x17", WHITE VITREOUS CHINA. PROVIDE W/ SLOAN OPTIMA SYSTEM FAUCET MODEL ETF-80 HARDWIRED SENSOR ACTIVATED, ZURN Z8743-1-PC GRID STRAINER DRAIN, Z8700-PC CHROME PLATED P-TRAP AND TRUEBRO LAV GUARD 2 E-Z MODEL #102E-Z, BRASSCRAFT REGULAR PART NUMBER SCR39 C REGULAR PATTERN COMPRESSION JOINT ANGLE VALVE WITH LOOSE KEY, POLYMER BRAID CONNECTORS, AND ESCUTCHEON PLATES
P402	BREAKROOM SINK	2"	1½"	1½"	½"	½"	-	JUST MFG SLN-ADA-2122, LEDGE MOUNT, STAINLESS STEEL, 21"Lx22"Wx6"D. PROVIDE W/ CHICAGO FAUCET AGN8AE2805-5CP 0.5 GPM AERATOR GOOSENECK, DUAL WRIST BLADE HANDLE; JUST #J-ADA-35-FS PUNCH DRAIN AND REMOVABLE STRAINER; CHROME PLATED P-TRAP (HOT WATER SUPPLY AND P-TRAP SHALL BE TRUEBRO WRAPPED FOR ACCESSIBILITY PROTECTION; BRASSCRAFT COMPRESSION JOINT ANGLE VALVE, POLYMER BRAID CONNECTORS, AND ESCUTCHEON PLATES
P404	SERVICE SINK	2"	2"	1½"	½"	½"	-	KOHLER K-6714, FLOOR MOUNTED SUPPORT, CAST IRON CONSTRUCTION W/ WHITE ENAMEL FINISH, 22-1/4"x18-1/4". PROVIDE W/ K-8905 FAUCET, HOSE CONNECTION SPOUT, PAIL HOOK, DUAL WRIST BLADE HANDLE; REMOVABLE STRAINER AND K-6672 P-TRAP (P-TRAP SHALL BE TRUEBRO WRAPPED FOR ACCESSIBILITY PROTECTION)
P501	ELECTRIC WATER COOLER	2	2"	1½"	½"	-	115V, 60HZ, 370W, 5FLA	HAWS 1119.8, DUAL HIGH-LOW, WALL MOUNTED, 304 STAINLESS STEEL CONSTRUCTION. PROVIDE W/ HAWS SK1 CANE SKIRT, HCR8 CHILLER, MTGFR.LG CARRIER AND 6426 WATER FILTER.
P901	INSTANTANEOUS WATER HEATER	-	-	-	½"	½"	208V, 6.2W, 30A	CHRONOMITE M-30L/208, INSTANT FLOW ELEC WATER HEATER, 10"Lx3"Wx7"H, 5LBS, 53 DEG F TEMP RISE AT 0.8 GPM, SET OUTLET TEMP TO 110 DEG F MAX.
P902	INSTANTANEOUS WATER HEATER	-	-	-	½"	½"	208V, 8.3KW, 40A	CHRONOMITE SR-40/208, INSTANT FLOW ELEC WATER HEATER, 10"Lx3"Wx7"H, 5LBS, 66 DEG F TEMP RISE AT 1.0 GPM. SET OUTLET TEMP TO 120 DEG F MAX.
P903	FLOOR DRAIN	2"	2"	1½"	½"	-	-	J.R. SMITH FIGURE 2005Y-A05-B-P050-CP, ROUND ADJUSTABLE STRAINER WITH SEDIMENT BUCKET, CHROME PLATED STRAINER AND TRAP PRIMER CONNECTION.
P904	EMERGENCY WATER HEATER	-	-	-	1¼"	1¼"	480V, 54KW, 65A	HAWS 9327-4600001, INSTANT FLOW ELEC WATER HEATER, 30"Lx13.5"Wx24"H, 116LBS, 16 DEG F RISE AT 23 GPM, SET OUTLET TEMP TO 70 DEG F. PROVIDE W/ 1¼" DIELECTRIC UNION, LOCKABLE BALL VALVE AND Y-STRAINER ON INLET AND 1¼" DIELECTRIC UNION AND LOCKABLE BALL VALVE ON OUTLET CONNECTION PER MANUFACTURER'S RECOMMENDATION.
P905	WATER HAMMER ARRESTER	-	-	-	½"	-	-	WATTS #LF15M2, LEAD-FREE, 60 PSI AIR PRE-LOAD, PER PDI WH201. PROVIDE W/ ACCESS PANEL.
P906	TRAP PRIMER	-	-	-	½"	-	-	WATTS #WPIPE-1, COMPLETE W/ QUARTER-TURN BRASS VALVE AND ENCLOSURE
P907	GARBAGE DISPOSAL	1½"	-	-	-	-	120V, 60HZ, 6.9A, 0.5HP	INSINKERATOR BADGER 5, GALVANIZED STEEL CONSTRUCTION, 14LBS
P908	HOSE-BIB	-	-	-	¾"	-	-	WATTS #SC8-6, HEX SHOULDER W/ TEE HANDLE AND VACUUM BREAKER
P909	BIO WATER TREATMENT SYSTEM	2"	-	-	¾"	-	230V, 25 FLA, 2.0 HP, 30A FUSED DISCONNECT	MI-T-M #BIO-25R-1M10, 12'x6'x4', 1680 LBS. PROVIDE COMPLETE W/ BIO TANK, BIO MEDIA, AIR DISTRIBUTION PUMP, NEMA 4 CONTROL PANEL, TRANSFER PUMP, OZONE GENERATOR, OVERFLOW SYSTEM, MAKEUP WATER SYSTEM, SUMP PIT W/ HEAVY DUTY TRAFFIC RATED GRATING, SUBMERSIBLE PUMP AND PRESSURIZED SYSTEM FOR COMPLETE OPERATION OF WATER TREATMENT AND PRESSURE WASH SYSTEM.
P910	EMERGENCY EYEWASH SHOWER	1½"	-	-	-	1¼"	-	HAWS 8336, SCHED 80 PVC GREEN EPOXY FINISH, 316 STAINLESS STEEL BALL VALVE, ANTI-CORROSIVE, AXION MSR SHOWERHEAD AND FACE BOWL W/ INTEGRAL FLOW CONTROL. PROVIDE W/ SP170 TEST CARD AND SP178LG FIXTURE SIGNAGE.
P911	EMERGENCY ALARM	-	-	-	-	1¼"	120VAC, 60HZ	HAWS 9001TYPE4X, AUDIBLE 60dB, VISUAL FLASHING AMBER LIGHT, DOUBLE POLE FLOW SWITCH ACTIVATED.

PIPE MATERIAL SCHEDULE

SERVICE	PIPE	FITTINGS	REMARKS
DOMESTIC WATER SYSTEM	HARD DRAWN COPPER TUBING, ASTM B88	WROUGHT COPPER FITTINGS ASTM B16.22 OR CAST COPPER ASTM B16.18 WITH 95-5 SOLDER JOINTS	TYPE L FOR ABOVE FLOOR AND ABOVE GROUND USE (PROVIDE W/ INSULATION); TYPE K FOR UNDERGROUND USE (PROVIDE W/ PE FILM WRAPPING FOR ANTI-CORROSION)
WASTE	SCHED 40 ABS	SOLVENT CEMENT JOINTS AND ABS DWV FITTINGS	UNDERGROUND
WASTE, AND VENT	NO HUB CAST IRON SOIL PIPE	CAST IRON NO-HUB TYPE PIPE FITTINGS WITH HUSKY SERIES 4000 COUPLING JOINTS	ABOVE FLOOR
TRAP PRIMING	SEAMLESS COPPER TUBING, TYPE K, SOFT ANNEALED, ASTM B88	TRAP PRIMER PIPING SHALL BE SOFT DRAWN TYPE K WATER TUBING WITHOUT FITTINGS	UNDERGROUND (PROVIDE W/ PE FILM WRAPPING FOR ANTI-CORROSION)
CONDENSATE DRAIN	COPPER DRAINAGE TUBING, TYPE M, ASTM B 306	WROUGHT COPPER OR CAST COPPER DWV FITTINGS WITH SOLDER JOINTS	ABOVE FLOOR (PROVIDE W/ INSULATION)
DISCHARGE DRAIN	DUCTILE IRON	RESTRAINED JOINTS AND FITTINGS	ABOVE FLOOR

CONSULTANTS:

ENVIRONMENTAL	HAZMAT
PAR ENVIRONMENTAL SERVICES, INC.	RGA ENVIRONMENTAL
1906 21ST STREET	2817 McGAW AVENUE
SACRAMENTO, CA 95811	IRVINE, CA 92614
(916) 739-8356	(949)864-2025
MLMANIERI@YAHOO.COM	DAVID.SILVERI@TERRACON.COM
JGMANIERI@YAHOO.COM	



ARCHITECT/ENGINEERS:

**JACOBS**  
Jacobs Engineering Group Inc.  
Consultants in Architecture, Engineering, Planning, and the Environment  
Irvine Office  
2600 Michelson Drive, Suite 500  
Irvine, California 92612  
(949) 224-7500 Fax (949) 224-7501

Drawing Title  
PLUMBING SCHEDULES AND CALCULATIONS

Approved: Project Director  
-  
-  
-

Project Title  
FORT ROSECRANS NATIONAL CEMETERY  
REPLACE MAINTENANCE BUILDINGS

Location  
FORT ROSECRANS NATIONAL CEMETERY  
CABRILLO MEMORIAL DR, SAN DIEGO, CA 92106

Date  
07/18/2018

Checked  
CK

Drawn  
MS

Project Number  
892-CM3-035

Building Number  
-

Drawing Number  
PL601

Dwg. 40 of 48

NATIONAL CEMETERY  
ADMINISTRATION  
DESIGN AND  
CONSTRUCTION  
SERVICE

