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REV	DATE	BY	DESCRIPTION		DESIGNED TLM						SOUTH VALLEY WATER RECLAMATION		VERIFY SCALES	JOB NO. 201238
				DRAWN TLM				2022 VFD REPLACEMENT			BAR IS ONE INCH ON ORIGINAL DRAWING	DRAWING NO.		
				CHECKED CLL				GENERAL			0  1"	G01		
				DATE OCTOBER 2022				COVER SHEET		IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	SHEET NO. SHT OF			
	1	2	3	4	5	6	7	8	9	10	11	12	13	

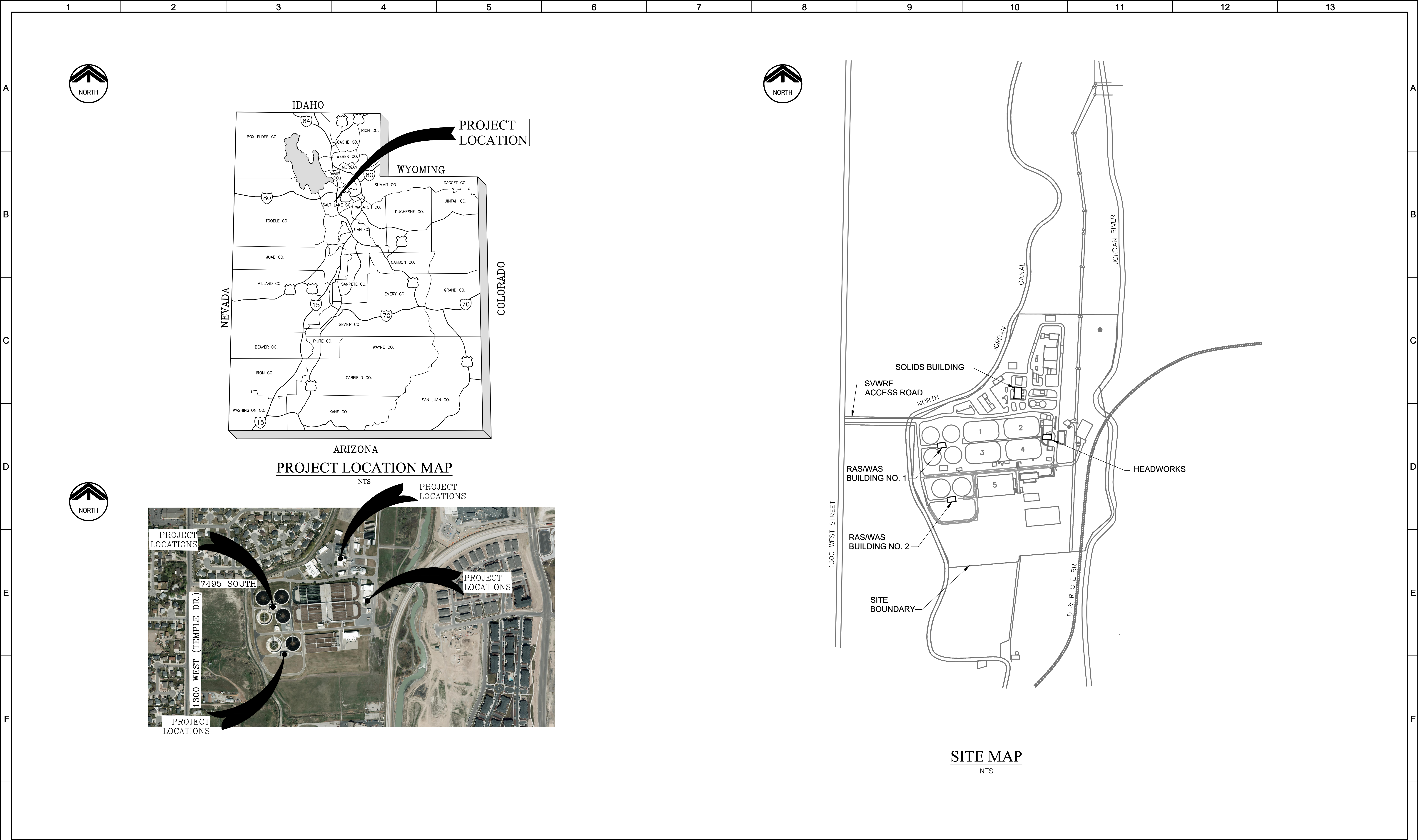
South Valley Water Reclamation Facility

Drawings for the Construction of

2022 VFD REPLACEMENT PROJECT

May 2023

CONTROL SYSTEM INTEGRATION
SERVICES PROCUREMENT PACKAGE



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PROJECT NO. 201238-100000 FILE NAME: 201238GN01.dwg

Plot Date: 10/15/2021 9:56:14 AM

201238.GN02.dwg

201238-10000

sshepard

INSTRUMENT TAG IDENTIFICATION LETTERS

INSTRUMENT FUNCTION MEASURED VARIABLE		ELEMENT	TRANSMITTER	INDICATING TRANSMITTER	CONVERTER TRANSDUCER, RELAY SPECIAL DEVICES	INDICATOR	RECORDER	CONTROLLER	INDICATING CONTROLLER	RECORDING CONTROLLER	SWITCH	SWITCH LOW LOW	SWITCH LOW	SWITCH HIGH	SWITCH HIGH HIGH	SWITCH COMBINATION HIGH LOW	ACTION	ALARM LOW LOW	ALARM LOW	ALARM HIGH	ALARM HIGH HIGH	TOTALIZE INDICATOR TRANSMITTER	VALVE	GAUGE	LIGHT	SPEED SETTING
A	ANALYSIS	AE	AT	AIT	AY	AI	AR	AC	AIC	ARC	AS	ASLL	ASL	ASH	ASHH	ASHL		AALL	AAL	AAH	AAHH				AL	
B	BURNER FLAME	BE	BT	BIT	BY	BI	BR	BC	BIC	BRC	BS	BSLL	BSL	BSH	BSHH			BALL	BAL	BAH	BAHH				BL	
C	CONDUCTIVITY	CE	CT	CIT	CY	CI	CR	CC	CIC	CRC	CS	CSLL	CSL	CSH	CSHH	CSHL		CALL	CAL	CAH	CAHH				CL	
D	DENSITY	DE	DT	DIT	DY	DI	DR	DC	DIC	DRC	DS	DSLL	DSL	DSH	DSHH	DSHL		DALL	DAL	DAH	DAHH				DL	
E																										
F	FLOW	FE	FT	FIT	FY	FI	FR	FC	FIC	FRC	FS	FSL	FSL	FSH	FSHH	FSHL		FALL	FAL	FAH	FAHH	FQI	FCV	FG	FL	
FF	FLOW RATIO				FFY	FFI		FFC	FFIC		FFS														FFL	
G	GAUGING (DIMENSION)																									
H	HAND (MANUAL)*							HC			HS*						HA*						HV		HL	HSS
I	CURRENT		IT	IIT	IY	II	IR	IC	IIC	IRC	IS	ISLL	ISL	ISH	ISHH			IALL	IAL	IAH	IAHH				IL	
J	POWER																									
K	TIME				KY	KI	KR	KC	KIC	KRC	KS	KSLL	KSL	KSH	KSHH			KALL	KAL	KAH	KAHH		KV		KL	
L	LEVEL	LE	LT	LIT	LY	LI	LR	LC	LIC	LRC	LS	LSLL	LSL	LSH	LSHH	LSHL		LALL	LAL	LAH	LAHH		LCV	LG	LL	
M	MOISTURE OR HUMIDITY	ME	MT	MIT	MY	MI	MR	MC	MIC	MRC	MS	MSLL	MSL	MSH	MSHH			MALL	MAL	MAH	MAHH				ML	
N	EMERGENCY SHUTDOWN																									
O																										
P	PRESSURE OR VACUUM	PE	PT	PIT	PY	PI***	PR	PC	PIC	PRC	PS****	PSLL	PSL	PSH	PSHH	PSHL		PALL	PAL	PAH	PAHH		PCV		PL	
PD	DIFFERENTIAL PRESSURE		PDT	PDIT	PDY	PDI	PDR	PDC	PDIC	PDRC	PDS	PDSLL	PDSL	PDSH	PDSHH			PDALL	PDAL	PDAH	PDAHH		PDCV		PDL	
Q	QUANTITY	QE	QT	QIT	QY	QI	QR				QS	QSLL	QSL	QSH	QSHH			QALL	QAL	QAH	QAAH					
R	RADIOACTIVITY																									
S	SPEED	SE	ST	SIT	SY	SI	SR	SC	SIC	SRC	SS	SSLL	SSL	SSH	SSHH			SALL	SAL	SAH	SAHH					
T	TEMPERATURE	TE	TT	TIT	TY	TI	TR	TC	TIC	TRC	TS	TSLL	TSL	TSH	TSHH	TSHL		TALL	TAL	TAH	TAHH		TCV		TL	
TD	DIFFERENTIAL TEMPERATURE		TDI	TDIT	TDY	TDI	TDR	TDC	TDIC	TDRC	TDS	TDSLL	TDSL	TDSH	TDSHH			TDALL	TDAL	TDAH	TDAHH		TDCV		TDL	
U	MULTIVARIABLE					UI	UR	UC	UIC	URC	US														UL	
V	VISCOSITY	VE	VT	VIT	VY	VI	VR	VC	VIC	VRC	VS	VSLL	VSL	VSH	VSHH			VALL	VAL	VAH	VAHH				VL	
W	WEIGHT	WE	WT	WIT	WY	WI	WR				WS	WSLL	WSL	WSH	WSHH			WALL	WAL	WAH	WAHH					
X	UNCLASSIFIED	XE	XT	XIT	XY	XI	XR	XC	XIC	XRC	XS	XSLL	XSL	XSH	XSHH			XALL	XAL	XAH	XAAH		XCV	XG	XL	
XV	VIBRATION	XVE	XVT		XVY	XVI	XVR				XVS			XVSH	XVSHH					XVAH	XVAHH				XVL	
Y	STATUS***					YI***																			YL	
Z	POSITION	ZE	ZT	ZIT	ZY	ZI					ZS**											ZV			ZL**	

* REFER TO OPERATOR PILOT DEVICE LEGEND
** LETTER INDICATES POSITION (O=OPEN, C=CLOSED, R=RAISE, L=LOWER, ETC)
*** PI# # = 1,2,3 ETC. AND REPRESENTS A UNIQUE IDENTIFIER AND IS APPLICABLE TO ALL ITEMS IN THE TABLE ABOVE

**** COULD ALSO BE PIS - FOR PRESSURE INDICATING SWITCH

OPERATOR PILOT DEVICE LEGEND

PILOT DEVICE FUNCTION DEVICE TYPE	LOCAL-OFF-REMOTE (LOR) OR LOCAL-STOP-REMOTE (LSR)	STOP (SP)	START (ST)	HAND-OFF-AUTO (HOA)	OFF-ON (OO)	SELECT (SEL)	OPEN-STOP-CLOSE (OSC)	JOG OPEN-HOLD-CLOSE (JOHC)	SEMI-AUTO-AUTO-MANUAL (SAAM)	LEAD-LAG-STANDBY (LLGS)	JOG OPEN-JOG CLOSE (JOJC)	ONLINE-OFFLINE (OLOF)	AUTO-MANUAL (AM)	FIXED RATE-LEVEL RATE (FRLR)	OPEN-CLOSE (OC)	NO OFFLINE- OFFLINE TRANSITION (NOOT)	LOW-HIGH (LH)	RESET (RST)	SPEED (SPD)	START-STOP (STSP)	E-STOP (E-SP)	BYPASS (BYP)	ON-OFF-REMOTE	SILENCE	POSITION (POS)	
	PILOT DEVICE TAG (HAND SWITCHES)	HSA*	HSB	HSC	HSD*	HSE	HSF	HSG*	HSH*	HSI	HSJ*	HSK*	HSL*	HSM*	HSN	HSO*	HSP	HSQ*	HSR	HSS	HST*	HSU	HSV	HSW	HSX	HSY
SCADA/HMI TAG (HAND ACTION)	HAA	HAB	HAC	HAD	HAE	HAF	HAG	HAH	HAI	HAJ	HAK	HAL	HAM	HAN	HAO	HAP	HAQ	HAR	HAS	HAT	HAU	HAV	HAW	HAX	HAY	HAZ

HSA* SELECTOR SWITCH POSITION EG: HSA(R) R = REMOTE, HSD(A) A = AUTO, ETC

I/O TYPE DESIGNATIONS

AUX1	RUNNING	MSL	MOTOR START LOW
AUX2	FAILED/FAULT	MSM	VALVE MODULATE
AUXF1	RUNNING FORWARD	MSP	MOTOR STOP
AUXH1	RUNNING HIGH	MSR	MOTOR START REVERSE
AUXL1	RUNNING LOW	MST	MOTOR START
AUXR1	RUNNING REVERSE	SS	SPEED SIGNAL
SVC	SOLENOID VALVE CLOSE	ZC	POSITION COMMAND
SVO	SOLENOID VALVE OPEN	ZCC	POSITION COMMAND CLOSE
MS	RUN	ZCO	POSITION COMMAND OPEN
MSF	MOTOR START FORWARD		
MSH	MOTOR START HIGH		

INSTRUMENT TYPE DESIGNATIONS

AM	AMMONIA	O3	OZONE	SH	SODIUM HYPOCHLORITE
CAP	CAPACITANCE	ORP	OXIDATION REDUCTION POTENTIAL	TDR	TIME DOMAIN REFLECTOMETRY
CGD	COMBUSTIBLE GAS DETECTOR	P	PRESSURE	TH	THERMAL
CL	CHLORINE	P-SUB	PRESSURE SUBMERSIBLE	TSS	TOTAL SUSPENDED SOLIDS
COND	CONDUCTIVITY	PC	PARTICLE COUNTER	TURB	TURBIDITY
DO	DISSOLVED OXYGEN	PO	PHOSPHOROUS	US	ULTRASONIC
FMCW	FREQ. MODULATED CONT. WAVE	PTOF	PULSE TIME OF FLIGHT	UVI	UV INTENSITY
HSF	FLUORIDE	RI	RESISTANCE TO CURRENT	UVT	UV TRANSMITTANCE
IS	INTRINSIC SAFETY BARRIER	ROT	ROTAMETER	VAC	VACUUM
LEL	LOWER EXPLOSIVE LIMIT	RTD	RESISTANCE TEMP DETECTOR		
MAG	MAGNETIC	SC	STREAMING CURRENT		

SPECIFIC ABBREVIATIONS

APH	A PHASE	MWH	MOTOR WINDING HEATER
BPH	B PHASE	SSG	SECONDARY SWITCHGEAR
BRB	BEARING BOTTOM	SV*	SOLENOID VALVE
BRT	BEARING TOP	SPD	SURGE PROTECTIVE DEVICE
BTFLY	BUTTERFLY	UPS	UNINTERRUPTIBLE POWER SUPPLY
CPH	C PHASE	YA	STATUS AUTO
CC*	CALIBRATION COLUMN	YR	STATUS REMOTE
HTR	HEATER	Y1	STATUS RUNNING
HTU	HEAT TRACE UNIT	Y2	ALARM FAILED/FAULT

* CC# AND SV# # = 1, 2, 3 ETC. AND REPRESENTS A UNIQUE IDENTIFIER

INSTRUMENT LINE SYMBOLS

INSTRUMENT OR CONNECTION TO PROCESS	_____
PNEUMATIC SIGNAL	— // — // — // — // — // — //
ELECTRIC SIGNAL	_____
HYDRAULIC SIGNAL	— L — L — L — L — L —
CAPILLARY TUBE	— X — X — X — X — X — X —
ELECTROMAGNETIC OR SONIC SIGNAL (GUIDED)	_____
ELECTROMAGNETIC OR SONIC SIGNAL (NOT GUIDED)	_____
INTERNAL SYSTEM LINK (SOFTWARE OR DATA LINK)	— o — o — o — o — o — o —
COPPER ETHERNET	— C — C — C — C — C —
FIBER OPTIC ETHERNET	— F — F — F — F — F —
WIRELESS ETHERNET	— W — W — W — W — W —
PROFIBUS DP	— PBD — PBD — PBD — PBD — PBD —
PROFIBUS PA	— PBA — PBA — PBA — PBA — PBA —
DEVICENET	— DN — DN — DN — DN — DN —
FOUNDATION FIELDBUS	— FF — FF — FF — FF — FF —

PROCESS LINE SYMBOLS

PRIMARY PROCESS FLOW IN PIPE	=====
SECONDARY PROCESS FLOW IN PIPE	=====
PRIMARY PROCESS FLOW IN CHANNEL	-----
SECONDARY PROCESS FLOW IN CHANNEL	-----

DESIGNATIONS

EQUIPMENT ENCLOSURE	-----
EXISTING	_____
FUTURE	_____ FUTURE

MISCELLANEOUS P&ID SYMBOLS

CONTINUATION TAG	
PIPE CALLOUT	
SIGNAL CONTINUATION	

SOUTH VALLEY WATER RECLAMATION

2022 VFD REPLACEMENT

INSTRUMENTATION

SYMBOLS AND ABBREVIATIONS 2

VERIFY SCALES

BAR IS ONE INCH ON ORIGINAL DRAWING

0 1"

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 201238

DRAWING NO.

GN02

SHEET NO.

OF

Plot Date: 10/15/2021 9:56:55 AM

201238.GN03.dwg

201238-100000

sshepard

1		2		3		4		5		6		7		8		9		10		11		12		13																																																																															
ACTUATORS																										PIPING																										PUMPS																										BLOWERS/COMPRESSORS																									
DIAPHRAGM ELECTRIC DISCRETE ELECTRIC MODULATING ELECTRIC HYDRAULIC HAND HYDRAULIC PNEUMATIC SOLENOID HYDRAULIC MODULATING PNEUMATIC SINGLE SOLENOID OPEN/CLOSE PNEUMATIC SINGLE SOLENOID w/ SPEED CONTROL PNEUMATIC DUAL SOLENOID OPEN/CLOSE PNEUMATIC DUAL SOLENOID OPEN/HOLD/CLOSE PNEUMATIC DUAL SOLENOID OPEN/CLOSE w/ SPEED CONTROL PNEUMATIC MODULATING PNEUMATIC MODULATING OPEN/CLOSE w/ SPEED CONTROL <td colspan="13"> AIR GAP BLIND FLANGE CAPPED OR PLUGGED CONCENTRIC INCREASER CONCENTRIC REDUCER DRAIN ECCENTRIC INCREASER TEE UNION ECCENTRIC REDUCER EXPANSION COUPLING EXPANSION JOINT VIBRATION CENTER FLEXIBLE CONNECTION QUICK DISCONNECT <td colspan="13"> AIR DRIVEN CENTRIFUGAL CHEMICAL FEED DIAPHRAGM DIAPHRAGM GEAR PERISTALTIC OR HOSE PISTON PROGRESSIVE CAVITY SUBMERSIBLE VERTICAL TURBINE VERTICAL CHOPPER WATER CHAMP <td colspan="13"> CENTRIFUGAL SINGLE STAGE BLOWER CENTRIFUGAL MULTI STAGE BLOWER RECIPROCATING COMPRESSOR SCREW COMPRESSOR FAN LIQUID RING COMPRESSOR ROTARY LOBE BLOWER </td></td></td>													AIR GAP BLIND FLANGE CAPPED OR PLUGGED CONCENTRIC INCREASER CONCENTRIC REDUCER DRAIN ECCENTRIC INCREASER TEE UNION ECCENTRIC REDUCER EXPANSION COUPLING EXPANSION JOINT VIBRATION CENTER FLEXIBLE CONNECTION QUICK DISCONNECT <td colspan="13"> AIR DRIVEN CENTRIFUGAL CHEMICAL FEED DIAPHRAGM DIAPHRAGM GEAR PERISTALTIC OR HOSE PISTON PROGRESSIVE CAVITY SUBMERSIBLE VERTICAL TURBINE VERTICAL CHOPPER WATER CHAMP <td colspan="13"> CENTRIFUGAL SINGLE STAGE BLOWER CENTRIFUGAL MULTI STAGE BLOWER RECIPROCATING COMPRESSOR SCREW COMPRESSOR FAN LIQUID RING COMPRESSOR ROTARY LOBE BLOWER </td></td>													AIR DRIVEN CENTRIFUGAL CHEMICAL FEED DIAPHRAGM DIAPHRAGM GEAR PERISTALTIC OR HOSE PISTON PROGRESSIVE CAVITY SUBMERSIBLE VERTICAL TURBINE VERTICAL CHOPPER WATER CHAMP <td colspan="13"> CENTRIFUGAL SINGLE STAGE BLOWER CENTRIFUGAL MULTI STAGE BLOWER RECIPROCATING COMPRESSOR SCREW COMPRESSOR FAN LIQUID RING COMPRESSOR ROTARY LOBE BLOWER </td>													CENTRIFUGAL SINGLE STAGE BLOWER CENTRIFUGAL MULTI STAGE BLOWER RECIPROCATING COMPRESSOR SCREW COMPRESSOR FAN LIQUID RING COMPRESSOR ROTARY LOBE BLOWER																																																																
CHECK VALVES													PRESSURE VALVES													VALVES													MISC																																																																
BACK FLOW PREVENTER BALL DIAPHRAGM CHECK DOUBLE FLAP FLAPPER SPRING LOADED GENERAL SPRING LOADED SWING SWING <td colspan="13"> BACKPRESSURE REGULATING SELF CONTAINED BACKPRESSURE REGULATING EXTERNAL TAP PRESSURE REDUCING SELF CONTAINED PRESSURE REDUCING EXTERNAL PRESSURE TAP REGULATING PRESSURE RELIEF VACUUM RELIEF <td colspan="13"> 3-WAY 3-WAY PLUG 4-WAY AIR-RELIEF ANGLE BALL BALL V-NOTCH BUTTERFLY BUTTERFLY-BURIED VALVE BOX CONE DIAPHRAGM GATE GATE-BURIED VALVE BOX GLOBE HOSE MUD NEEDLE PINCH PLUG ECCENTRIC PLUG ECCENTRIC w-VALVE BOX PLUG ECCENTRIC LUBRICATED PLUG ECCENTRIC LUBRICATED BURIED VALVE BOX PLUG CONCENTRIC PLUG CONCENTRIC -BURIED VALVE BOX PLUG CONCENTRIC LUBRICATED PLUG CONCENTRIC LUBRICATED BURIED VALVE BOX PUMP DISCHARGE TELESCOPING VALVE DESIGNATIONS NO NC FO FC FLP NORMALLY OPEN NORMALLY CLOSED FAIL OPEN FAIL CLOSE FAIL LAST POSITION <td colspan="26"> AIR DAMPER AIR / CHEMICAL DIFFUSER BASKET STRAINER BLOW-OFF SILENCER CALIBRATION COLUMN COALESCER DESICCANT DRYER EDUCTOR/EJECTOR EQUIPMENT/INSTRUMENT LOCATOR EXHAUST FAN EYEWASH FILTER FILTER SEPARATOR FINE FILTER FIRE ALARM/SENSOR FLAME ARRESTER FLAME ARRESTER w/THERMALLY OPERATED VALVE FLOW CONDITIONER GAS CANNON GRINDER HEAT EXCHANGER HOIST HORIZONTAL MIXER HOSE CONNECTION INLET STRAINER INLINE STATIC MIXER MATERIAL CHANGE MIXER MOTOR NOZZLE ORIFICE RESTRICTION PERISTALTIC COMPOSITE SAMPLER PULSATION DAMPENER REFRIGERATED DRYER RUPTURE DISK SAMPLE PORT SIGHT TUBE SMOKE DETECTOR STRAINER - MECHANICALLY CLEANED STRAINER WITH BLOW OFF STRAINER WYE TYPE VAPOR HEATER VAPORIZER VENT VENT TO ATMOSPHERE </td></td></td>													BACKPRESSURE REGULATING SELF CONTAINED BACKPRESSURE REGULATING EXTERNAL TAP PRESSURE REDUCING SELF CONTAINED PRESSURE REDUCING EXTERNAL PRESSURE TAP REGULATING PRESSURE RELIEF VACUUM RELIEF <td colspan="13"> 3-WAY 3-WAY PLUG 4-WAY AIR-RELIEF ANGLE BALL BALL V-NOTCH BUTTERFLY BUTTERFLY-BURIED VALVE BOX CONE DIAPHRAGM GATE GATE-BURIED VALVE BOX GLOBE HOSE MUD NEEDLE PINCH PLUG ECCENTRIC PLUG ECCENTRIC w-VALVE BOX PLUG ECCENTRIC LUBRICATED PLUG ECCENTRIC LUBRICATED BURIED VALVE BOX PLUG CONCENTRIC PLUG CONCENTRIC -BURIED VALVE BOX PLUG CONCENTRIC LUBRICATED PLUG CONCENTRIC LUBRICATED BURIED VALVE BOX PUMP DISCHARGE TELESCOPING VALVE DESIGNATIONS NO NC FO FC FLP NORMALLY OPEN NORMALLY CLOSED FAIL OPEN FAIL CLOSE FAIL LAST POSITION <td colspan="26"> AIR DAMPER AIR / CHEMICAL DIFFUSER BASKET STRAINER BLOW-OFF SILENCER CALIBRATION COLUMN COALESCER DESICCANT DRYER EDUCTOR/EJECTOR EQUIPMENT/INSTRUMENT LOCATOR EXHAUST FAN EYEWASH FILTER FILTER SEPARATOR FINE FILTER FIRE ALARM/SENSOR FLAME ARRESTER FLAME ARRESTER w/THERMALLY OPERATED VALVE FLOW CONDITIONER GAS CANNON GRINDER HEAT EXCHANGER HOIST HORIZONTAL MIXER HOSE CONNECTION INLET STRAINER INLINE STATIC MIXER MATERIAL CHANGE MIXER MOTOR NOZZLE ORIFICE RESTRICTION PERISTALTIC COMPOSITE SAMPLER PULSATION DAMPENER REFRIGERATED DRYER RUPTURE DISK SAMPLE PORT SIGHT TUBE SMOKE DETECTOR STRAINER - 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REV				DATE				BY				DESCRIPTION				DESIGNED CE				DRAWN CE				CHECKED BL				DATE OCTOBER 2022																SOUTH VALLEY WATER RECLAMATION				2022 VFD REPLACEMENT				INSTRUMENTATION				SYMBOLS AND ABBREVIATIONS 3				VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 1"				JOB NO. 201238				DRAWING NO. GN03				SHEET NO. OF																															
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A		FLOW				FLUMES		GATES		LEVEL																			
		BATCH CORIOLIS MAGNETIC ORIFICE PADDLE WHEEL PISTON ANNUBAR PITOT TUBE POSITIVE-DISPLACEMENT PROPELLER-TURBINE ROTAMETER THERMAL ULTRASONIC ULTRASONIC BIOGAS		V-CONE VENTURI TUBE OR FLOW NOZZLE VORTEX		LEOPOLD-LAGCO PALMER-BOWLUS PARSHALL REGULAR CUTTHROAT TRAPEZOIDAL		SIDE VIEW SLIDE SLUICE STOP PLAN VIEW FLAP KNIFE SLIDE SLUICE STOP WEIR BUTTERFLY		BUBBLER CAPACITANCE DIFFERENTIAL PRESSURE ELECTRODE FLOAT INVERTED COLUMN PROBE RADAR PTOF RADAR (FREQUENCY MODULATED CONTINUOUS WAVE) RADAR TDR		SUSPENDED/SUBMERSIBLE TUNING FORK ULTRASONIC																	
B																													
C																													
D																													
E		PRESSURE/VACUUM				TEMPERATURE		WEIRS																					
		PRESSURE		DIFFERENTIAL PRESSURE		PRESSURE SEALS		TEMPERATURE w/THERMOWELL TEMPERATURE GAUGE THERMOMETER		SIDE VIEW RECTANGULAR w/o END CONTRACTIONS RECTANGULAR w/ END CONTRACTIONS V-NOTCH (TRIANGULAR) TRAPEZOIDAL (CIPOLLETTI) PLAN VIEW RECTANGULAR w/o END CONTRACTIONS RECTANGULAR w/ END CONTRACTIONS V-NOTCH (TRIANGULAR) TRAPEZOIDAL (CIPOLLETTI)																			
F		PRESSURE		DIFFERENTIAL PRESSURE		PRESSURE SEALS		WEIGHT																					
		GAUGE MANOMETER PRESSURE SWITCH PRESSURE TRANSMITTER		GAUGE DIFFERENTIAL INDICATOR DIFFERENTIAL PRESSURE SWITCH DIFFERENTIAL PRESSURE TRANSMITTER		SEAL ANNULAR SEAL DIAPHRAGM SEAL SANITARY EXAMPLE PRESSURE SWITCH		HYDRAULIC STRAIN GAUGE																					
G		REV		DATE		BY		DESCRIPTION		DESIGNED CE				5		6						SOUTH VALLEY WATER RECLAMATION		VERIFY SCALES		JOB NO. 201238		G	
										DRAWN CE												2022 VFD REPLACEMENT		BAR IS ONE INCH ON ORIGINAL DRAWING		DRAWING NO. GN04			
										CHECKED BL												SYMBOLS AND ABBREVIATIONS 4		0  1"		SHEET NO. OF			
										DATE OCTOBER 2022														IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY					
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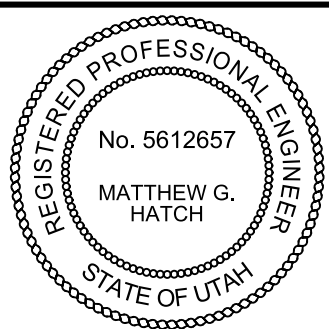
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1	9-28-22	CAC	BL	ADDENDUM NO. 1

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CHECKED
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DATE
OCTOBER 2022



SV South Valley
WATER RECLAMATION FACILITY
7495 South 1300 West
West Jordan, Utah 84084

SOUTH VALLEY WATER RECLAMATION
2022 VFD REPLACEMENT
INSTRUMENTATION
SCHEMATIC SYMBOLS

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO.
201238
DRAWING NO.
GN05
SHEET NO.
OF

1	2	3	4	5	6	7	8	9	10	11	12	13
PROCESS SWITCHES			HAND SWITCHES		RELAYS		TERMINAL BLOCKS		I/O		MISC	
	FLOAT SWITCH CLOSE ON RISING LEVEL		NORMALLY OPEN MOMENTARY PUSHBUTTON		RELAY COIL a = TYPE CR - CONTROL RELAY TD- TIME DELAY RELAY M - MOTOR STARTER COIL L - MOTOR STARTER COIL - LOW SPEED H - MOTOR STARTER COIL - HIGH SPEED F - MOTOR STARTER COIL - FORWARD R - MOTOR STARTER COIL - REVERSE b = TDON - TIME DELAY ON ENERGIZATION TDOFF - TIME DELAY ON DEENERGIZATION c = TIMING RANGE/SETTING d = DESCRIPTION		TERMINAL IN PLC/PCM PANEL		PLC DISCRETE a = INPUT OR OUTPUT AS INDICATED		SOLENOID	
	FLOAT SWITCH OPEN ON RISING LEVEL		NORMALLY CLOSED MOMENTARY PUSHBUTTON			TERMINAL IN MOTOR CONTROL CENTER		PLC ANALOG a = INPUT OR OUTPUT AS INDICATED		METER UNIT M = TYPE		
	PRESSURE SWITCH CLOSE ON RISING PRESSURE		THREE POSITION SELECTOR SWITCH x - DENOTES POSITION CONTACTS CLOSED IN			TERMINAL IN LOCAL STARTER CONTROL PANEL OR VARIABLE FREQUENCY DRIVE		DIGITAL BUS		MOTOR		
	PRESSURE SWITCH OPEN ON RISING PRESSURE		TWO POSITION SELECTOR SWITCH x - DENOTES POSITION CONTACTS CLOSED IN			TERMINAL AT FIELD DEVICE		DIGITAL BUS CONNECTOR * = D - DEVICENET * = PA - PROFIBUS PA * = DP - PROFIBUS DP * = H1 - FOUNDATION FIELDBUS H1 * = H2 - FOUNDATION FIELDBUS H2 * = E - ETHERNET		CIRCUIT BREAKER		
	TEMPERATURE SWITCH CLOSE ON RISING TEMPERATURE		MUSHROOM HEAD PUSHBUTTON			TERMINAL IN RTU				DISCONNECT		
	TEMPERATURE SWITCH OPEN ON RISING TEMPERATURE		PUSH-PULL PUSHBUTTON MAINTAINED CONTACT			TERMINAL IN FIELD PANEL				FUSE		
	FLOW SWITCH CLOSE ON INCREASE IN FLOW		PADLOCK SWITCH x - DENOTES POSITION CONTACTS CLOSED IN			TIME DELAY CONTACT NORMALLY OPEN TIMED CLOSING		DIGITAL BUS CONNECTOR * = D - DEVICENET * = PA - PROFIBUS PA * = DP - PROFIBUS DP * = H1 - FOUNDATION FIELDBUS H1 * = H2 - FOUNDATION FIELDBUS H2 * = E - ETHERNET		TRANSIENT SURGE PROTECTION		
	FLOW SWITCH OPEN ON INCREASE IN FLOW		PULL CORD SWITCH			TIME DELAY CONTACT NORMALLY CLOSED TIMED OPENING				MOTOR WINDING HEATER * - MOTOR TAG I.D.		
	VIBRATION SWITCH OPEN ON RISING VIBRATION		STOP-LOCKOUT PUSHBUTTON			TIME DELAY CONTACT NORMALLY OPEN TIMED OPENING				SPACE HEATER		
	VIBRATION SWITCH CLOSE ON RISING VIBRATION		SPRING-RETURN x - DENOTES POSITION CONTACTS CLOSED IN			TIME DELAY CONTACT NORMALLY CLOSED TIMED CLOSING				VARISTOR		
	TORQUE SWITCH OPEN ON HIGH TORQUE	INDICATORS			PILOT LIGHT a = LENS COLOR R = RED G = GREEN W = WHITE A = AMBER B = BLUE Y = YELLOW C = CLEAR		CAPACITOR					
	TORQUE SWITCH CLOSE ON HIGH TORQUE		BEACON a = LENS COLOR R = RED G = GREEN W = WHITE A = AMBER B = BLUE Y = YELLOW C = CLEAR			HORN		RESISTOR				
	NORMALLY CLOSED LIMIT SWITCH							BATTERY				
	NORMALLY CLOSED HELD OPEN LIMIT SWITCH		DIODE									
	NORMALLY OPEN LIMIT SWITCH		MOTOR OVERLOAD HEATERS									
	NORMALLY OPEN HELD CLOSED LIMIT SWITCH		OVERLOAD CONTACT									
			DRAWOUT CONNECTION									
			GROUND									
			LIGHTNING ARRESTOR									
			CONTROL POWER TRANSFORMER									
			ELAPSED TIME METER									

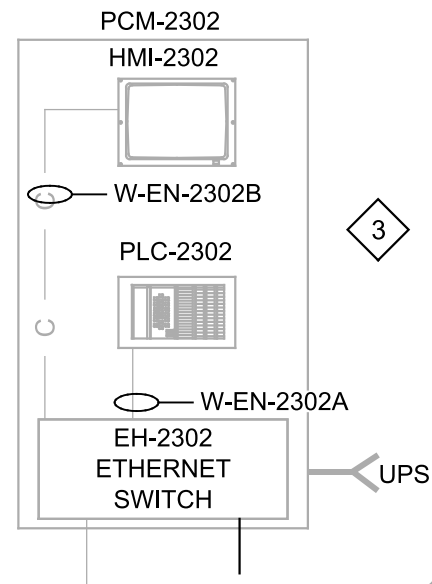
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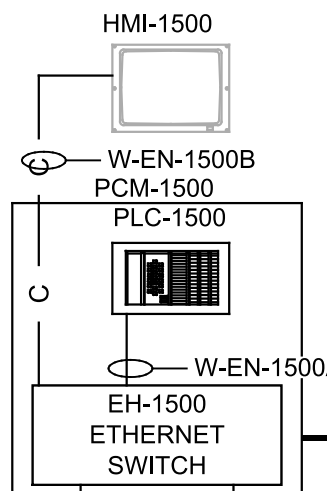
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FINAL CLARIFIER CHEMICAL BLDG



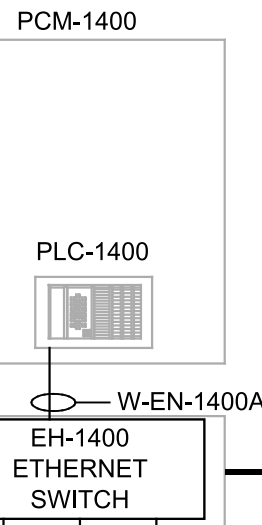
RAS-2

SEE DRAWING GI-03 FOR
ADDITIONAL DETAIL

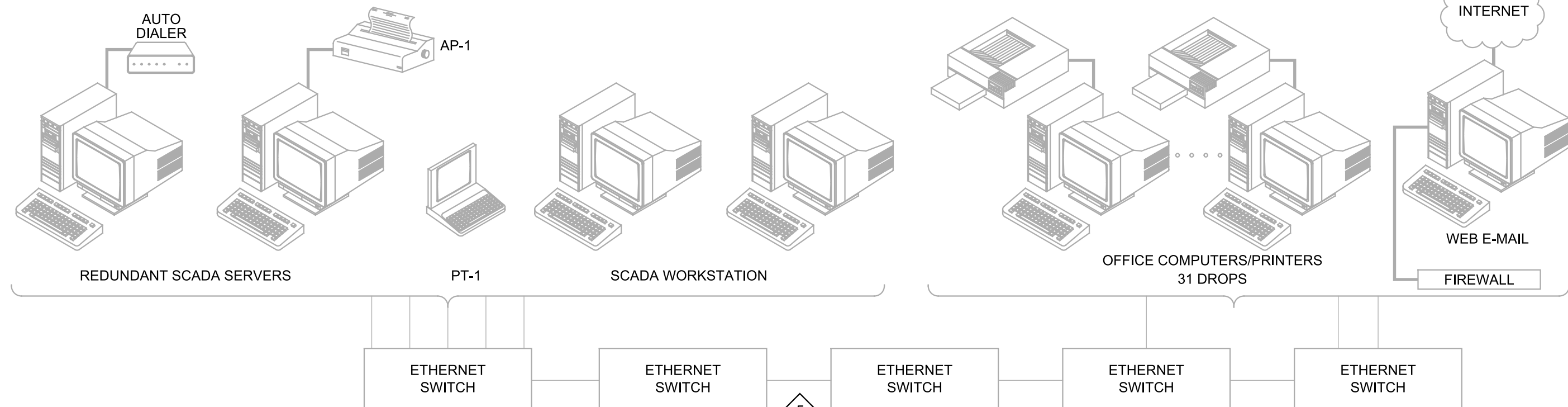


RAS-1

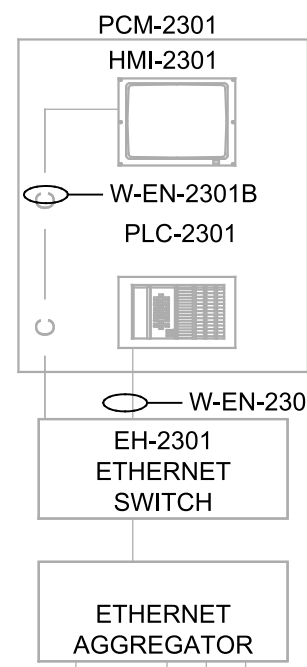
SEE DRAWING GI-03 FOR
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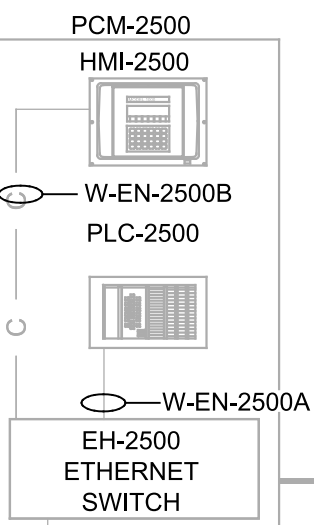
ADMINISTRATION BLDG



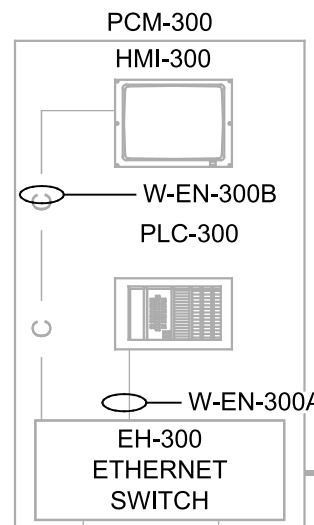
CHEMICAL BLDG



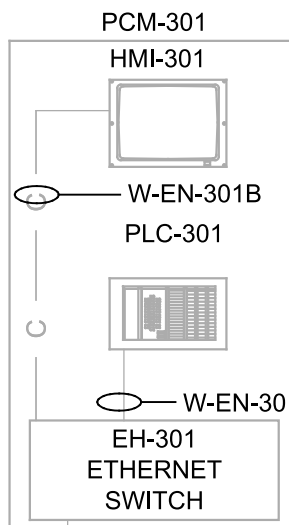
U.V. BUILDING



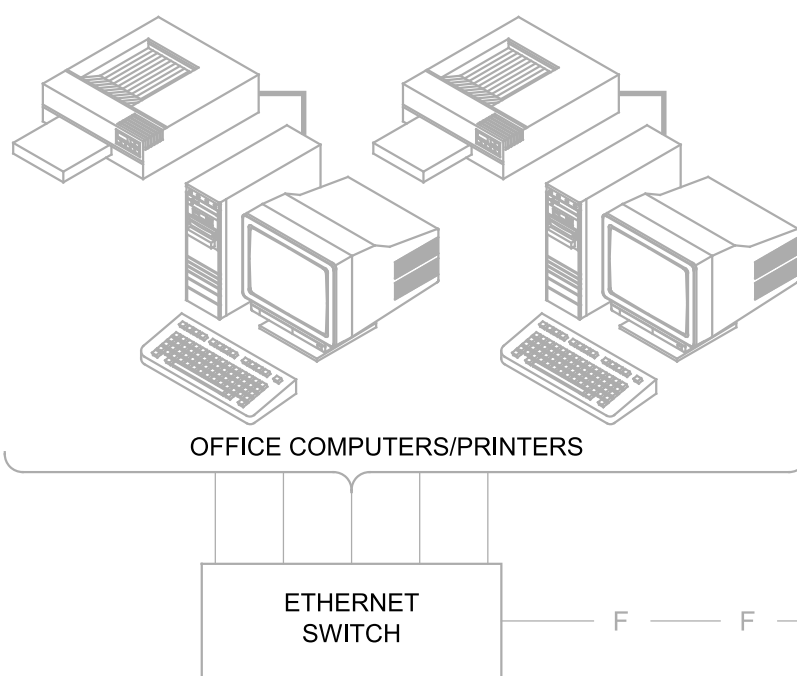
THICKENER CONTROL BLDG.



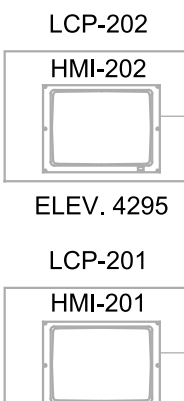
DAF BLDG.



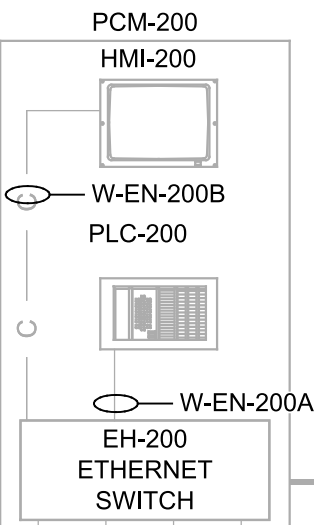
MAINTENANCE BLDG



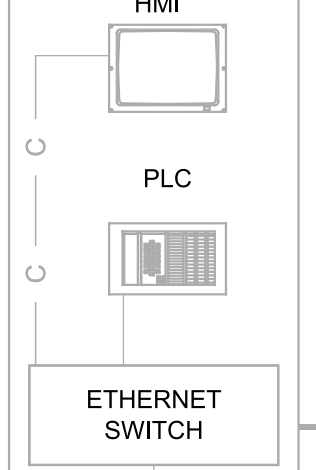
HEADWORKS SCREENING



BLOWER BLDG. BLDG. NO. 1



UTILITY WATER PUMP STATION

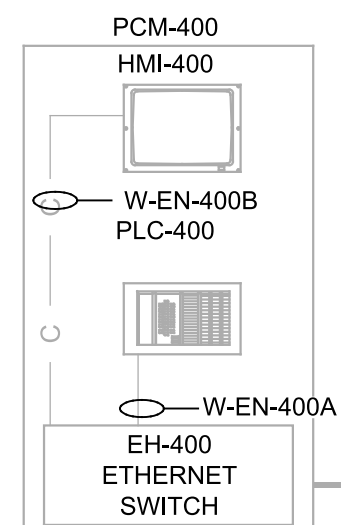


SOLIDS HANDLING BUILDING

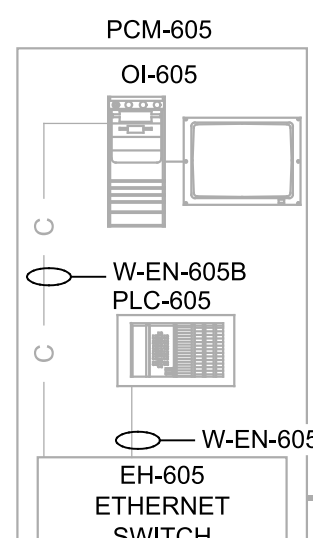
SEE DRAWING GI-04 FOR
ADDITIONAL DETAIL

THERMAL DRYING FACILITY

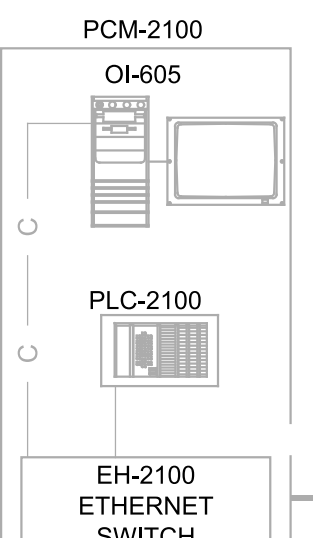
SUPPLEMENTAL AIR BLOWER BUILDING NO. 2



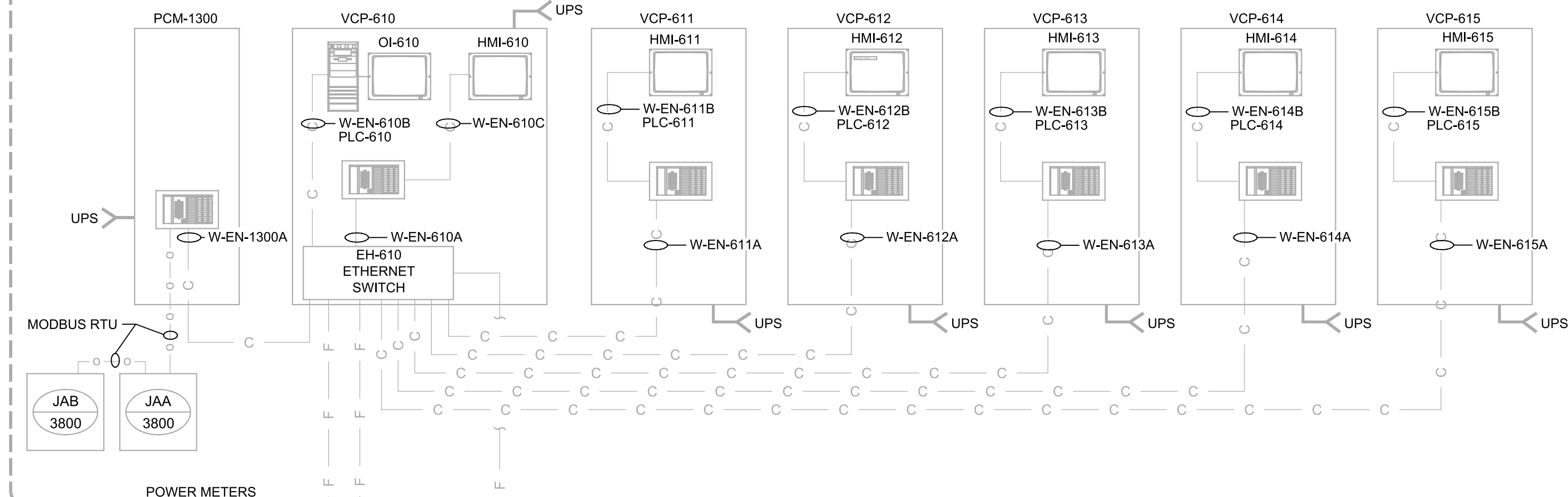
BIOREACTOR NO. 5 ELECTRICAL ROOM



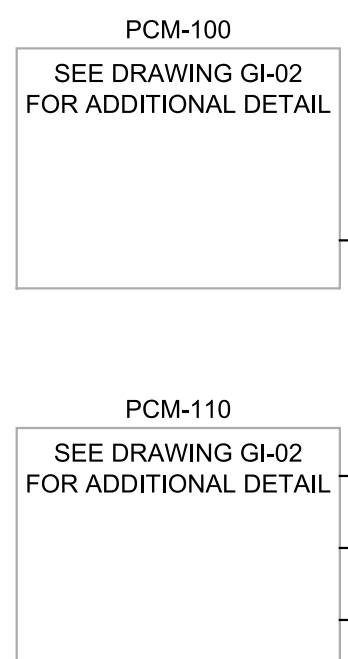
GRIT BUILDING



BLOWER BUILDING NO. 3



HEADWORKS PUMP ROOM

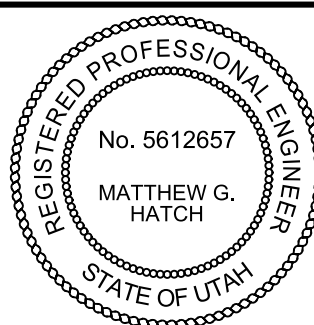


KEY NOTES:

- FURNISH AND INSTALL 12-STRAND SINGLE MODE FIBER OPTIC CABLE.
- FURNISH AND INSTALL TWO 12-STRAND SINGLE MODE FIBER OPTIC CABLES. ONE CABLE TERMINATES 12 STRANDS AT RAS-1 AT ITS OWN FIBER PATCH PANEL. THE OTHER CABLE TERMINATES 12 STRANDS ON ANOTHER FIBER PATCH PANEL. TWO OF THOSE STRANDS ARE DEDICATED FOR RAS-2. TWO ARE DEDICATED FOR THE CLARIFIER BUILDING. THE REMAINING 8 ARE SPARE. TERMINATE ALL FIBER OPTIC STRANDS ON PATCH PANEL.
- PROVIDE ALL NECESSARY HARDWARE FOR TERMINATION AND CONNECTION OF SINGLE MODE FIBER OPTIC CABLE, INCLUDING PATCH PANEL CONNECTOR PLATES AND ETHERNET SWITCH TRANSCEIVER MODULES. TERMINATE ALL FIBER OPTIC STRANDS ON PATCH PANEL.
- FURNISH AND INSTALL TWO 12-STRAND SINGLE-MODE FIBER OPTIC CABLES.
- PROVIDE NEW RACK-MOUNTED FIBER OPTIC PATCH PANEL SIZED FOR 24 STRANDS SINGLE MODE FIBER. TERMINATE ALL FIBER OPTIC STRANDS ON PATCH PANEL. COORDINATE LOCATION OF PATCH PANEL WITH OWNER.

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OCTOBER 2022



carollo

SV South Valley
WATER RECLAMATION FACILITY
7495 South 1300 West
West Jordan, Utah 84084

SOUTH VALLEY WATER RECLAMATION
2022 VFD REPLACEMENT
INSTRUMENTATION
CONTROL SYSTEM BLOCK DIAGRAM 1

VERIFY SCALES
BAR IS ONE INCH ON
ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON
THIS SHEET, ADJUST
SCALES ACCORDINGLY

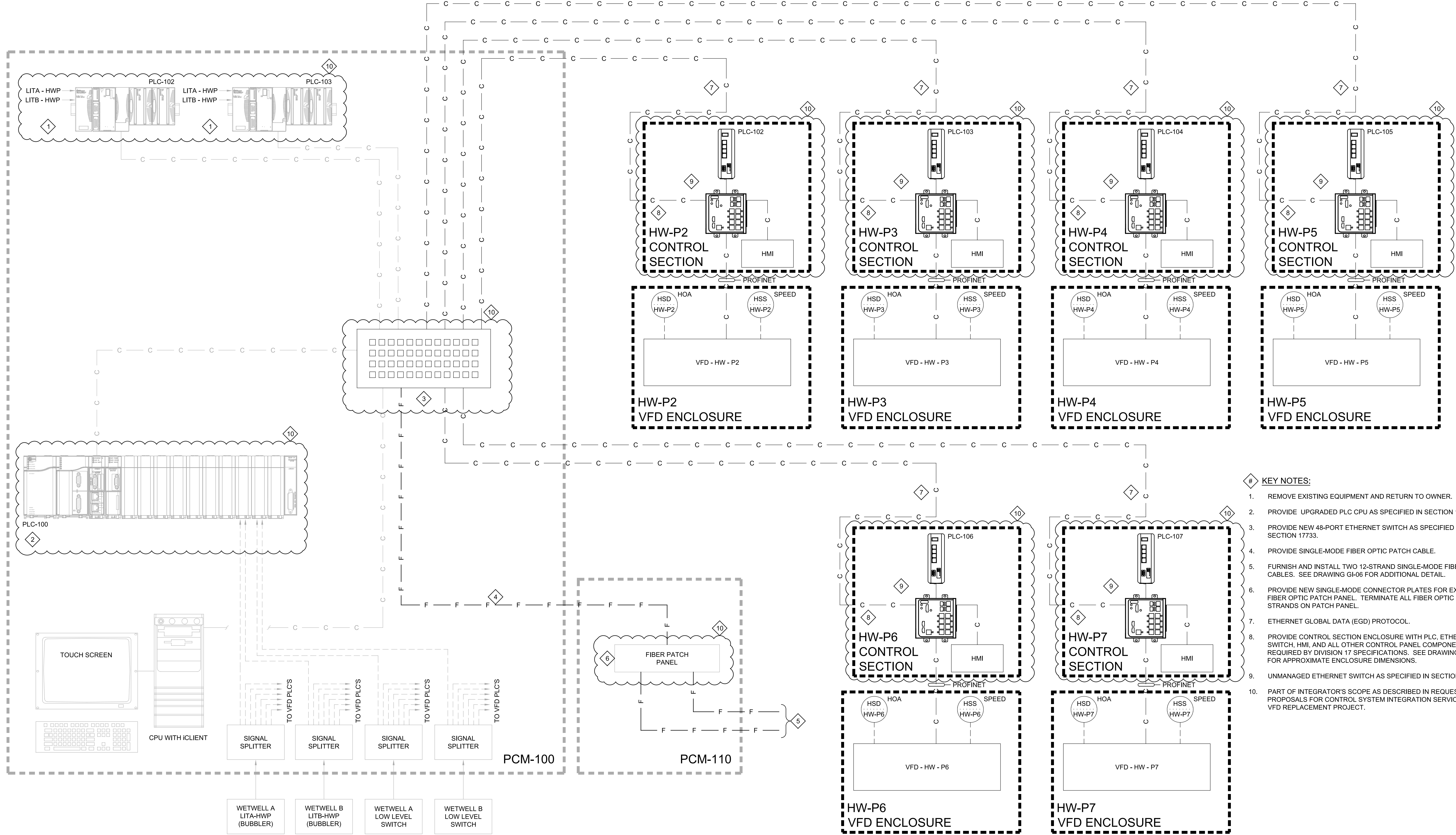
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- # KEY NOTES:
1. REMOVE EXISTING EQUIPMENT AND RETURN TO OWNER.
 2. PROVIDE UPGRADED PLC CPU AS SPECIFIED IN SECTION 17720.
 3. PROVIDE NEW 48-PORT ETHERNET SWITCH AS SPECIFIED IN SECTION 17733.
 4. PROVIDE SINGLE-MODE FIBER OPTIC PATCH CABLE.
 5. FURNISH AND INSTALL TWO 12-STRAND SINGLE-MODE FIBER OPTIC CABLES. SEE DRAWING GI-06 FOR ADDITIONAL DETAIL.
 6. PROVIDE NEW SINGLE-MODE CONNECTOR PLATES FOR EXISTING FIBER OPTIC PATCH PANEL. TERMINATE ALL FIBER OPTIC STRANDS ON PATCH PANEL.
 7. ETHERNET GLOBAL DATA (EGD) PROTOCOL.
 8. PROVIDE CONTROL SECTION ENCLOSURE WITH PLC, ETHERNET SWITCH, HMI, AND ALL OTHER CONTROL PANEL COMPONENTS REQUIRED BY DIVISION 17 SPECIFICATIONS. SEE DRAWING 1E-01 FOR APPROXIMATE ENCLOSURE DIMENSIONS.
 9. UNMANAGED ETHERNET SWITCH AS SPECIFIED IN SECTION 17733.
 10. PART OF INTEGRATOR'S SCOPE AS DESCRIBED IN REQUEST FOR PROPOSALS FOR CONTROL SYSTEM INTEGRATION SERVICES FOR VFD REPLACEMENT PROJECT.

REV	DATE	BY	DESCRIPTION
1			
2			
3			
4			

DESIGNED
NS
DRAWN
TCD
CHECKED
BL
DATE
OCTOBER 2022



carollo

SV South Valley
WATER RECLAMATION FACILITY
7495 South 1300 West
West Jordan, Utah 84084

SOUTH VALLEY WATER RECLAMATION
2022 VFD REPLACEMENT
INSTRUMENTATION
CONTROL SYSTEM BLOCK DIAGRAM 2

VERIFY SCALES
BAR IS ONE INCH ON
ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON
THIS SHEET, ADJUST
SCALES ACCORDINGLY

JOB NO.
201238
DRAWING NO.
GI-02
SHEET NO.
OF

Plot Date: 10/15/2021 9:56:31 AM

201238.GI03.dwg

201238-100000

clmada

RAS-1 PUMP STATION

RAS-2 PUMP STATION

KEY NOTES:

1. PROVIDE NEW PROFINET COMMUNICATIONS MODULE AND UPGRADED PLC CPU AS SPECIFIED IN SECTION 17720.
2. FURNISH AND INSTALL TWO 12-STRAND SINGLE MODE FIBER OPTIC CABLES.
3. FURNISH AND INSTALL 12-STRAND SINGLE MODE FIBER OPTIC CABLE.
4. PROVIDE NEW SINGLE MODE CONNECTOR PLATES FOR EXISTING FIBER OPTIC PATCH PANEL. TERMINATE ALL FIBER OPTIC STRANDS ON PATCH PANEL.
5. FURNISH AND INSTALL NEW PLC ENCLOSURE WITH ALL INTERNAL COMPONENTS. PROVIDE I/O MODULES FOR 32 DISCRETE INPUT (DI), 16 DISCRETE OUTPUT (DO), AND 4 ANALOG INPUT (AI) SIGNALS WITH SPARE POINTS AND MODULES AS SPECIFIED IN SECTION 17720. COORDINATE I/O SIGNAL TAGS AND DESCRIPTIONS WITH THE OWNER.
6. PROVIDE NEW 48-PORT ETHERNET SWITCH AS SPECIFIED IN SECTION 17733.
7. CONTROL AND MONITORING OF NEW VFDs WILL BE VIA PROFINET DATA NETWORK, AS SHOWN ON THE P&ID DRAWINGS. FOR PUMPS WITH NEW VFD, REMOVE EXISTING HARDWIRED I/O FIELD WIRING AND RELABEL THOSE I/O POINTS AS SPARE.
8. TERMINATE ALL FIBER OPTIC STRANDS ON PATCH PANEL.
9. PART OF INTEGRATOR'S SCOPE AS DESCRIBED IN REQUEST FOR PROPOSALS FOR CONTROL SYSTEM INTEGRATION SERVICES FOR VFD REPLACEMENT PROJECT.

ADMINISTRATION BLDG
ETHERNET SWITCH
GI-06

1

F-EN-1400A/B

PCM-1400

PLC-1400

FIBER PATCH PANEL

EH-1400
ETHERNET
SWITCH

PROFINET

UPS

F-EN-1500

PCM-1500

PLC-1500

FIBER PATCH PANEL

EH-1500
ETHERNET
SWITCH

PROFINET

UPS

FINAL CLARIFIER
CHEMICAL BLDG
EH2302
GI-06

3

F-EN-2302

VFD-1401

VFD-1402

VFD-1403

VFD-1404

VFD-1405

VFD-1406

VFD-1601

VFD-1602

VFD-1603

VFD-1501

VFD-1502

VFD-1503

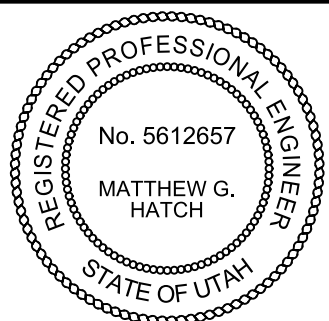
VFD-1622

VFD-1623

HMI-1500

REV	DATE	BY	DESCRIPTION

DESIGNED
NS
DRAWN
TCD
CHECKED
BL
DATE
OCTOBER 2022



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West Jordan, Utah 84084

SOUTH VALLEY WATER RECLAMATION

2022 VFD REPLACEMENT

INSTRUMENTATION

CONTROL SYSTEM BLOCK DIAGRAM 3

VERIFY SCALES

BAR IS ONE INCH ON
ORIGINAL DRAWING

0 1"

IF NOT ONE INCH ON
THIS SHEET, ADJUST
SCALES ACCORDINGLY

JOB NO.
201238

DRAWING NO.
GI-03

SHEET NO.
OF

Plot Date: 10/15/2021 9:56:31 AM

B

C

D

E

F

201238-GI04.dwg

201238-100000

clmada

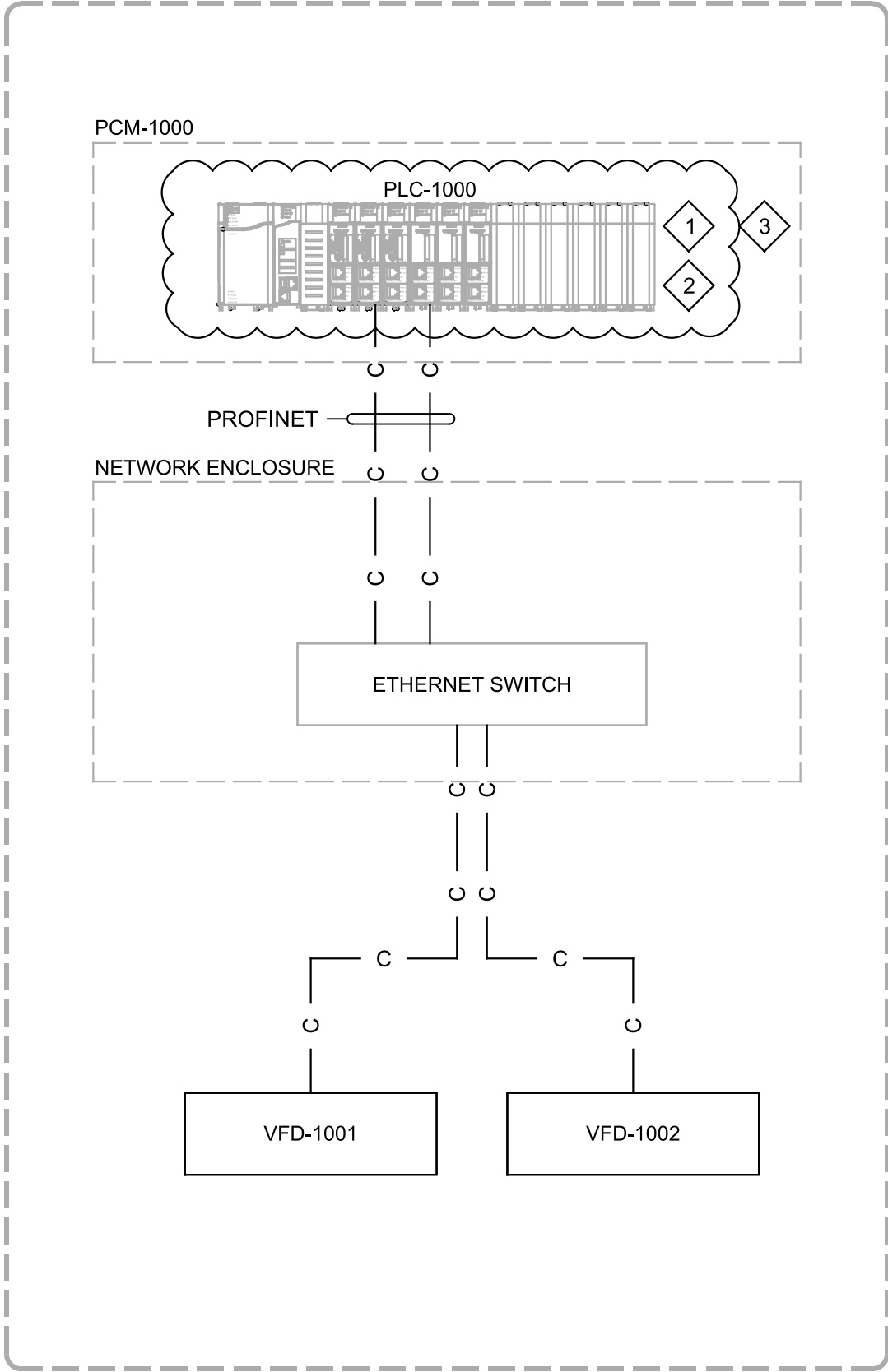
G

G

KEY NOTES:

1. PROVIDE NEW PROFINET COMMUNICATIONS MODULE AND UPGRADED PLC CPU AS SPECIFIED IN SECTION 17720.
2. CONTROL AND MONITORING OF NEW VFDS WILL BE VIA DATA NETWORK, AS SHOWN ON THE P&ID DRAWINGS.
3. PART OF INTEGRATOR'S SCOPE AS DESCRIBED IN REQUEST FOR PROPOSALS FOR CONTROL SYSTEM INTEGRATION SERVICES FOR VFD REPLACEMENT PROJECT.

SOLIDS HANDLING BUILDING



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SOUTH VALLEY WATER RECLAMATION

2022 VFD REPLACEMENT

INSTRUMENTATION

CONTROL SYSTEM BLOCK DIAGRAM 4

VERIFY SCALES

BAR IS ONE INCH ON ORIGINAL DRAWING

0 1"

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 201238

DRAWING NO. GI-04

SHEET NO. OF