

CITY OF SPARKS
PUBLIC WORKS DEPARTMENT

TMWRF MCC6 REPLACEMENT

PROJECT NO. BID 17/18-010
PWP NO. WA-2018-016

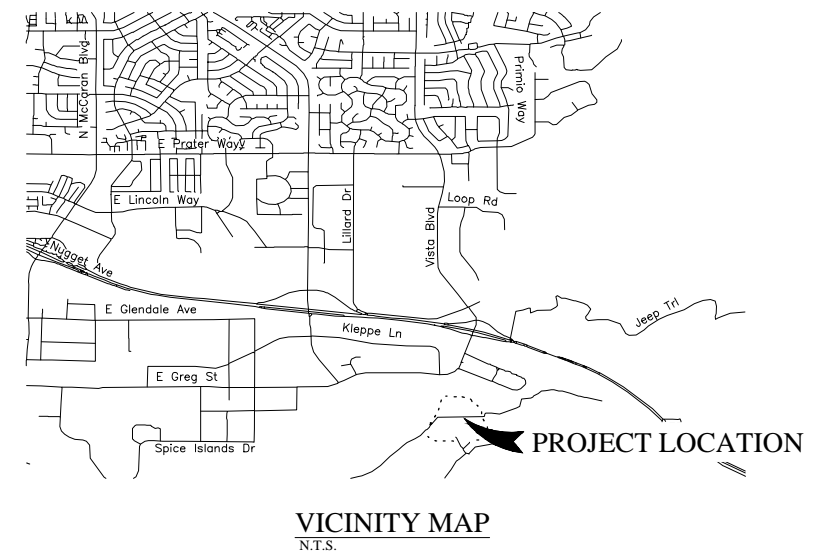
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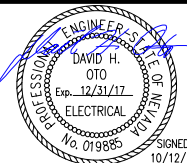
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MCC 6 REPLACEMENT
ELECTRICAL
COVER SHEET

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

JOB NO. 1326
DRAWING NO. G1
SHEET NO. 1 OF 13

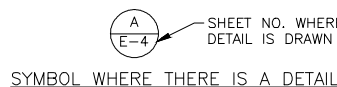
NOTES:

- IN GENERAL, ROUTING FOR EQUIPMENT AND DEVICES IS NOT SHOWN ON THE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ROUTING ALL CONDUITS WHICH SHALL INCLUDE CONDUITS SHOWN ON THE ONE-LINE, AND RISER DIAGRAMS AND HOME RUNS SHOWN ON PLAN DRAWINGS. REFER TO SPECIFICATIONS FOR MATERIALS AND INSTALLATION REQUIREMENTS.
- FURNISH ALL LABOR, MATERIAL, EQUIPMENT, TOOLS, ACCESSORIES, ETC. REQUIRED FOR A COMPLETE ELECTRICAL SYSTEM.
- ALL WORK SHALL CONFORM WITH THE REQUIREMENTS OF THE LATEST EDITION OF THE NATIONAL ELECTRIC CODE, NATIONAL BOARD OF FIRE UNDERWRITERS, APPLICABLE LOCAL CODES, AND POWER COMPANY STANDARDS. ALL WORK SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, LATEST EDITION.
- ALL MATERIAL SHALL BE NEW AND CONFORM WITH THE REQUIREMENT OF THE UNDERWRITER'S LABORATORIES, INC. (UL).
- WORKMANSHIP AND NEAT APPEARANCE SHALL BE OF THE SAME LEVEL OF IMPORTANCE AS ITS ELECTRICAL AND MECHANICAL EFFICIENCY.
- COORDINATE ALL WORK WITH THAT OF OTHER CONTRACTORS ON THE JOB AND WITH THAT OF THE OWNER. ANY COST FOR EXTRA WORK OR MATERIALS RESULTING FROM LACK OF COORDINATION SHALL BE BORNE BY THIS CONTRACTOR.
- POWER CONDUCTORS SHALL BE COPPER #12 AWG AS A MINIMUM. WIRE SIZE #8 AND LARGER SHALL BE STRANDED. ALL OTHER CONDUCTORS TO BE TYPE XHHW-2. ALL WIRING SHALL BE INSTALLED IN CONDUIT. CONTROL CONDUCTORS TO BE #14 XHHW-2 STRANDED.
- ALL CONDUIT WITHIN 18" (ABOVE AND BELOW) OF GRADE OR FINISHED FLOOR TO BE GALVANIZED RIGID STEEL (GRS). ALL CONDUIT BELOW 18" OF GRADE TO BE PVC-TYPE SCHEDULE 40. ALL UNDERGROUND ELBOWS TO BE GRS. ALL METALLIC CONDUITS IN CONTACT WITH EARTH TO EITHER PVC-GRSC OR HALF-LAP WRAPPED IN SCOTCH-50 ELECTRICAL TAPE. CONDUITS INSTALLED IN ROOMS SUBJECT TO CORROSIVE (CHEMICAL) ATMOSPHERES TO BE PVC SCHEDULE-80. FOR CONDUITS INSTALLED OUTDOORS, PROVIDE A WATER-TIGHT CONDUIT SYSTEM (IMC OR GRS ONLY) INCLUDING THREADED HUBS AT EQUIPMENT PENETRATIONS, LIQUID-TIGHT CONNECTORS, AND SEALS.
- WIRING DEVICES SHALL BE HUBBELL, OR APPROVED EQUAL. ALL DEVICES SHALL BE EQUAL TO THE FOLLOWING AND SHALL HAVE WHITE DEVICE PLATES:
 - ENCLOSURE SWITCHES - SPST HUBBELL NO. 1221-1 OR EQUAL.
 - ENCLOSURE RECEPTACLES - GFCI DUPLEX 20A, 125V, HUBBELL NO. GF5262-1 OR EQUAL.
- THIS CONTRACTOR SHALL GUARANTEE TO THE OWNER ALL WORK PERFORMED UNDER THIS CONTRACT TO BE FREE FROM DEFECTS IN WORKMANSHIP AND MATERIALS FOR PERIOD OF ONE (1) YEAR FROM DATE OF FINAL ACCEPTANCE.
- ALL CONDUCTOR CRIMPING ON CONDUCTORS #6 AWG OR GREATER TO BE HYDRAULICALLY CRIMPED, USING FULLY ANNULAR DIE-TYPE CRIMPER (MATCH COLOR TO EQUIPMENT RATING).
- PROVIDE NEW TYPED PANEL DIRECTORIES FOR ALL NEW AND MODIFIED 120/208/240V LOAD CENTERS AND PANEL BOARDS. PROVIDE BLACK PHENOLIC NAMEPLATES FOR BREAKERS INSTALLED IN THE 277/480V PANELS AND 480V MOTOR CONTROL CENTERS, AS SPECIFIED IN SECTION 01672. ASSET IDENTIFICATION AND LABELING.
- SUBMIT SIX (6) COPIES OF SHOP DRAWINGS AND/OR MANUFACTURERS DESCRIPTIVE DATA OF ALL PROPOSED ELECTRICAL EQUIPMENT FOR APPROVAL WITHIN 30 DAYS AFTER AWARD OF CONTRACT. THE CONTRACTOR SHALL REVIEW ALL SHOP DRAWINGS PREPARED BY HIS SUPPLIERS AND SHALL MARK ALL COPIES AS ACCEPTABLE TO HIM. THE CONTRACTOR'S ACCEPTANCE SHALL INCLUDE CERTIFICATION THAT THE REQUIRED ELECTRICAL CONNECTIONS HAVE BEEN NOTED AND THAT EQUIPMENT CAN BE INSTALLED IN THE SPACE AVAILABLE.
- ELECTRIC EQUIPMENT SHALL BE MANUFACTURED BY EATON, SIEMENS, GENERAL ELECTRIC, SQUARE D, OR APPROVED EQUAL. PANELBOARDS SHALL BE OF THE BOLT-ON CIRCUIT BREAKER TYPE.
- PROVIDE THE SERVICES OF A FULLY TRAINED AND EQUIPPED TESTING COMPANY AND NETA CERTIFIED (TEST PERFORMED BY CONTRACTOR WILL NOT BE ACCEPTED) TO TEST, CALIBRATE, AND WHERE NECESSARY, PLACE IN OPERATION THE ELECTRICAL SYSTEM:
 - PHASE OVER-CURRENT DEVICES ON FEEDERS, 200-A AND ABOVE.
 - GROUND FAULT PROTECTIVE DEVICES.
 - GROUND RESISTANCE TEST FOR GROUNDING ELECTRODE SYSTEMS USING FALL OF POTENTIAL METHOD.
 - CONDUCTOR INSULATION TESTING BY WAY OF 1000VDC MEGGAR FOR FEEDERS 100-A AND ABOVE.
 - MOTOR STARTERS AND VARIABLE FREQUENCY DRIVES.
 - ACTIVE HARMONIC FILTER SYSTEM.

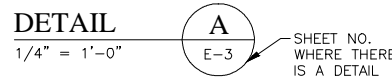
TESTS SHALL BE COMPLETE ENOUGH TO BE CONCLUSIVE AND TO INSURE PROPER OPERATION. THIS SHALL BE CERTIFIED IN TEST REPORTS TO THE ENGINEER. ALL FAULTY EQUIPMENT SHALL BE REPLACED AND TESTED UNTIL SATISFACTORY RESULTS ARE OBTAINED. TESTS SHALL BE NON-DESTRUCTIVE AND PROCEDURES USED SHALL BE APPROVED BY THE ENGINEERING SERVICE STANDARD SCOPES OF WORK ("SSW") AND "EARTH RESISTANCE TESTING" PUBLISHED BY THE JOHN BIDDLE COMPANY.
- ALL CONCRETE WORK TO BE PER CIVIL AND/OR STRUCTURAL DRAWINGS, SPECIFICATIONS, REQUIREMENTS, AND DIAGRAMS.
- FINAL CONDUIT ROUTING FOR NEW CONDUIT SYSTEMS TO BE DETERMINED BY THE ELECTRICAL CONTRACTOR, HOWEVER, SEPARATE DEDICATED CONDUITS SHALL BE PROVIDED FOR ANALOG SIGNAL, DISCRETE SIGNAL, AND POWER. EQUIPMENT ENCLOSURES ARE NOT TO BE USED AS PASS-THROUGH WIRE WAYS.
- INSTALL ALL EMPTY CONDUITS WITH PULL STRING.
- PROVIDE CORD GRIP CONNECTORS FOR INSTRUMENT CABLES WHICH DO NOT HAVE INTEGRAL CONDUIT THREADING/PORT.
- ALL EQUIPMENT SUPPLIED AND INSTALLED SHALL BE TESTED AND LABELED AS LISTED FOR USE BY A NATIONALLY RECOGNIZED TESTING LABORATORY SUCH AS UL OR INTERTEK-ETL (OTHERS ON PRE-APPROVAL ONLY).

ABBREVIATIONS	
A	AMPS
AC	ALTERNATING CURRENT
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHF	ACTIVE HARMONIC FILTER
AL	ALUMINIUM
AIC	AMPERE INTERRUPTING CAPACITY
AMP	AMPERE
ATS	AUTOMATIC TRANSFER SWITCH
AUTO	AUTOMATIC
AUX	AUXILIARY
AWG	AMERICAN WIRE GAUGE
BKR	BREAKER
BLDG	BUILDING
C	CONDUIT
CB	CIRCUIT BREAKER
CGD	COMBUSTIBLE GAS DETECTOR
CKT	CIRCUIT
CLB	CURRENT LIMITING BREAKER
CLF	CURRENT LIMITING FUSE
CP	CONTROL PANEL
CPT	CONTROL POWER TRANSFORMER
CR	CONTROL RELAY
CS	CONTROL SWITCH/CONTROL STATION
CT	CURRENT TRANSFORMER
CU	COPPER
CWS	CONDUIT WALL SEAL
DC	DIRECT CURRENT
DCS	DISTRIBUTED CONTROL SYSTEM (PCU006)
DIA	DIAMETER
DMU	DIGITAL METERING UNIT
DN	DOWN
EC	EMPTY CONDUIT
ELEC	ELECTRICAL

ABBREVIATIONS (CONTINUED)	
ELEV	ELEVATION
EM	EMERGENCY
ENCL	ENCLOSURE OR ENCLOSED
EQUIP	EQUIPMENT
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
EX	EXISTING
FO	FIBER OPTIC
FU	FUSE
GCP	GENERATOR CONTROL PANEL
GEN	GENERATOR
G, GND	GROUND
GFI	GROUND FAULT INTERRUPTER
GRS	GALVANIZED RIGID STEEL
HACR	HEATING & AIR CONDITIONING RATED
HH	HANDHOLE
HT	HEIGHT
HID	HIGH INTENSITY DISCHARGE
HP	HORSEPOWER
HZ	HERTZ
ID	IDENTIFICATION
INSTR	INSTRUMENT
K	KILO (PREFIX)
kcMil	1000 CIRCULAR MILS
KVA	KILOVOLT AMPERES
KW	KILOWATTS
LA	LIGHTING ARRESTER
LTG	LIGHTING
LP	LIGHTING PANEL
LV	LOW VOLTAGE
MAX	MAXIMUM
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MDP	MAIN DISTRIBUTION PANEL
MFR	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MLO	MAIN LUGS ONLY
MTD	MOUNTED
MTS	MANUAL TRANSFER SWITCH
MV	MEDIUM VOLTAGE
N	NEUTRAL
NC	NORMALLY CLOSED
NO	NORMALLY OPEN OR NUMBER
NTS	NOT TO SCALE
OH	OVERHEAD
OL	OVERLOAD
PB	PULL BOX
PCP	PUMP CONTROL PANEL
PH	PHASE
PMH	POWER MANHOLE
PNL	PANEL OR PANELBOARD
PR	PAIR
PRI	PRIMARY
PT	POTENTIAL TRANSFORMER
PVC	POLYVINYL CHLORIDE
RECPT	RECEPTACLE
REQD	REQUIRED
RVSS	REDUCED VOLTAGE SOFT START
QTY	QUANTITY
SA	SURGE ARRESTER
SEC	SECONDS OR SECONDARY
SH	SHIELDED OR SPACE HEATER
SHH	SIGNAL HANDHOLE
SPD	SURGE PROTECTIVE DEVICE
SS	STAINLESS STEEL
SV	SOLENOID VALVE
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
TC	TIME TO CLOSE OR TRAY CABLE
TEL	TELEPHONE
TO	TIME TO OPEN
TS	TWISTED SHIELDED OR THERMAL SWITCH
TYP	TYPICAL
UG	UNDERGROUND
UPS	UNINTERRUPTIBLE POWER SUPPLY
V	VOLTS
VA	VOLT AMPS
VFD	VARIABLE FREQUENCY DRIVE
W	WATTS, WIDTH, WITH, WIRE
WP	WEATHERPROOF
XP	EXPLOSION PROOF
XFMR	TRANSFORMER

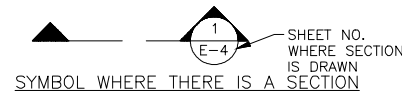


SYMBOL WHERE THERE IS A DETAIL

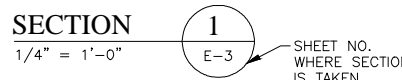


SYMBOL WHERE DETAIL IS DRAWN

DETAIL SYMBOL



SYMBOL WHERE THERE IS A SECTION



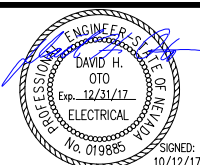
SYMBOL WHERE SECTION IS DRAWN

SECTION SYMBOL

GENERAL NOTE
THIS IS A STANDARD LEGEND.
SOME SYMBOLS MAY NOT
APPEAR ON THE DRAWINGS.

SHEET INDEX	
SHEET NO.	SHEET TITLE
GENERAL	
G1	COVER SHEET
ELECTRICAL	
E1	ELECTRICAL NOTES, ABBREVIATIONS, AND SHEET INDEX
E2	ELECTRICAL LEGENDS
E3	OVERALL SITE PLAN
E4	MCC NO. 6 EXISTING ONE LINE DIAGRAM
E5	MCC NO. 6 NEW ONE LINE DIAGRAM
E6	MCC NO. 6 DEMOLITION PLAN
E7	MCC NO. 6 DEMOLITION FIGURES
E8	MCC NO. 6 NEW POWER PLAN
E9	MCC NO. 6 CONTROL SCHEMATICS I
E10	MCC NO. 6 CONTROL SCHEMATICS II
E11	ELECTRICAL STANDARD DETAILS
E12	ECP-5 CONTROL PANEL LAYOUT

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MCC 6 REPLACEMENT
ELECTRICAL
ELECTRICAL NOTES, ABBREVIATIONS, AND
SHEET INDEX

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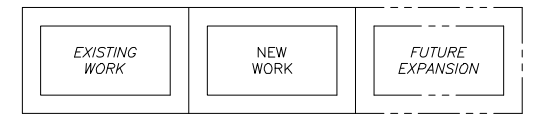
JOB NO. 1326
DRAWING NO. E1
SHEET NO. 2 OF 13

ONE LINE OR CONTROL DIAGRAM	PLAN	DESCRIPTION
	—	MEDIUM VOLTAGE DRAWOUT TYPE POWER CIRCUIT BREAKER CS=CONTROL SWITCH
	CB	LOW VOLTAGE AIR OR MOLDED CASE CIRCUIT BREAKER, 3 POLE UNLESS OTHERWISE NOTED.
		COMBINATION MOTOR CIRCUIT PROTECTOR AND MAGNETIC MOTOR STARTER, FULL VOLTAGE NON-REVERSING UNLESS OTHERWISE NOTED: * FVR - FULL VOLTAGE REVERSING RVNR - REDUCED VOLTAGE NON-REVERSING RVAT - REDUCED VOLTAGE AUTOTRANSFORMER RVSS - REDUCED VOLTAGE SOLID STATE 2S1W - TWO SPEED, ONE WINDING RS2W - TWO SPEED, TWO WINDING (DIAGRAMMATICALLY SHOWN, CONTRACTOR SHALL FIELD LOCATE)
		NON-FUSIBLE DISCONNECT SWITCH, 600 VOLT, 3 POLE * AMPERE RATING NOTED IF OTHER THAN 30A (DIAGRAMMATICALLY SHOWN, CONTRACTOR SHALL FIELD LOCATE)
		FUSIBLE DISCONNECT SWITCH, 600 VOLT, 3 POLE, * AMPERE RATING AND FUSE SIZE AS NOTED * AMPERE RATING NOTED IF OTHER THAN 30A FUSE RATING (DIAGRAMMATICALLY SHOWN, CONTRACTOR SHALL FIELD LOCATE)
		MANUAL MOTOR STARTER WITH THERMAL OVERLOAD HEATER, 1 POLE UNLESS OTHERWISE NOTED "P" INDICATES WITH PILOT LIGHT "2" INDICATES TWO POLE (DIAGRAMMATICALLY SHOWN, CONTRACTOR SHALL FIELD LOCATE)
	—	DRAWOUT TYPE EQUIPMENT OR DEVICE
	—	MEDIUM VOLTAGE CABLE TERMINATION
	—	MEDIUM VOLTAGE AIR INTERRUPTER SWITCH
	—	MEDIUM VOLTAGE FUSED AIR INTERRUPTER SWITCH * FUSE RATING
	—	MEDIUM VOLTAGE FUSED MOTOR CONTROLLER
	T	TRANSFORMER, RATINGS AND CONNECTIONS AS NOTED. UNLESS OTHERWISE NOTED ON THE SINGLE LINE DIAGRAMS, ALL DRY TYPE TRANSFORMERS SERVICING ADMINISTRATIVE AND LABORATORY SPACES SHALL HAVE A K FACTOR OF 4. ISOLATION TRANSFORMERS SHALL HAVE A K-20 RATING
	—	CURRENT TRANSFORMER * QUANTITY A = PRIMARY AMPERES
	—	POTENTIAL TRANSFORMER * QUANTITY V = PRIMARY VOLTAGE
	G	GENERATOR, RATINGS AND CONNECTIONS AS NOTED
	—	AUTOMATIC OR MANUAL TRANSFER SWITCH NO.1 (ATS-1), (MTS-1) "N" INDICATES NORMAL OR PREFERRED SOURCE "S" INDICATES STANDBY OR ALTERNATE SOURCE 100A INDICATES CONTINUOUS CURRENT RATING

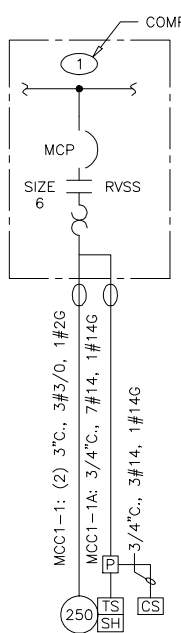
ONE LINE OR CONTROL DIAGRAM	PLAN	DESCRIPTION
	*	VARIABLE SPEED DRIVE CONTROLLER * D.C. = D.C. DRIVE CONTROLLER SCR = SILICON CONTROLLED RECTIFIER VFD = VARIABLE FREQUENCY DRIVE
	#KW	UNIT HEATER - ELECTRIC HEATING COIL AND FAN # - RATING
		UNIT HEATER - GAS FIRED, STEAM OR WATER HEATING COIL AND FAN
	M	MOTOR, NUMERAL INDICATES HORSEPOWER
	VS-VM	VOLTMETER WITH SWITCH, 3 PHASE
	AS-AM	AMMETER WITH SWITCH, 3 PHASE
	*	SPECIAL CAPACITOR * SC - SURGE CAPACITOR PF - POWER FACTOR CORRECTION CAPACITOR
	*	TUNED POWER FACTOR CORRECTION CAPACITOR
	—	PUSHBUTTON, MOMENTARY CONTACT, SPRING RETURN, NORMALLY CLOSED
	—	PUSHBUTTON, MOMENTARY CONTACT, SPRING RETURN, NORMALLY OPEN
	ES	EMERGENCY STOP PUSHBUTTON WITH RED MUSHROOM HEAD OPERATOR (MAINTAINED CONTACT)
	PBL	START-STOP PUSHBUTTON CONTROL STATION (MOMENTARY CONTACT) WITH LOCKOUT DEVICE ON STOP
	PBM	START-STOP PUSHBUTTON CONTROL STATION, MAINTAINED CONTACT WITH LOCKOUT DEVICE ON STOP
	S/S	OFF/ON SELECTOR SWITCH
	LR	LOCAL/REMOTE SELECTOR SWITCH
	*	3 POSITION SELECTOR SWITCH, MAINTAINED CONTACT O-OPEN X-CLOSED
	*	NAMEPLATE (A/B/C) HOA - HAND/OFF/AUTO HOR - HAND/OFF/REMOTE LOR - LOCAL/OFF/REMOTE RSL - RAISE/STOP/LOWER TOA - TEST/OFF/AUTO
	42 #	MOTOR STARTER COIL, NUMBER AS INDICATED TO DENOTE INTERLOCKING ONLY
	CR #	CONTROL RELAY COIL, NUMBER AS INDICATED
	*	PILOT LIGHT, COLOR AS NOTED * R - RED G - GREEN B - BLUE W - WHITE A - AMBER

ONE LINE OR CONTROL DIAGRAM	PLAN	DESCRIPTION
	—	PILOT LIGHT, PUSH-TO-TEST TYPE, COLOR AS NOTED ABOVE.
	* - ##	FIELD INSTRUMENT, TAG NO. AS INDICATED * INDICATES INSTRUMENT TYPE DEFINED ON LOOP SHEETS OR P & ID ## INDICATES LOOP NO.
	—	LIGHTNING ARRESTER
	—	GROUND OR GROUND ROD
	30A	FUSE, AMPERE RATING AS NOTED
	HTR	STRIP HEATER OR HEATING ELEMENT
	—	INDUCTOR
	—	CONTACT, NORMALLY OPEN (NO)
	—	CONTACT, NORMALLY CLOSED (NC)
	—	OVERLOAD RELAY HEATER
	K	KEY INTERLOCK
	TB	TERMINAL OR TEST BLOCK
	RTD	RESISTANCE TEMPERATURE DETECTOR
	VE OR V	VIBRATION DETECTOR
	M	MOTOR OPERATED VALVE OR GATE
	—	INDICATES LIMITS OF ELECTRICAL EQUIPMENT OR WIRING ENCLOSURE
	—	480V RECEPTACLE
	—	HOMERUN TO EQUIPMENT OR CIRCUIT
	AHF	ACTIVE HARMONIC FILTER

GENERAL NOTE
THIS IS A STANDARD LEGEND.
SOME SYMBOLS MAY NOT
APPEAR ON THE DRAWINGS.



EXISTING, NEW OR FUTURE CONDITION DESIGNATION



INDICATES CONDUIT IS ALL OR PARTIALLY LOCATED UNDERGROUND. CONDUIT SIZE SHOWN INDICATES THE SIZE WITHIN STRUCTURE. UNDERGROUND CONDUIT SIZE IS SHOWN ON DUCT BANK SECTIONS.

MCC1-1: (2) 3" C., 3#3/0, 1#2G DENOTES A QUANTITY OF TWO (2) 3-INCH CONDUITS EACH CONTAINING THREE NO. 3/0 AWG CONDUCTORS AND 1 NO. 2 AWG GROUND CONDUCTOR, FROM NEMA SIZE 6 STARTER IN MCC-1 TO 250HP MOTOR LOAD.

MCC1-1A: 3/4" C., 7#14, 1#14G DENOTES ONE 3/4-INCH CONDUIT CONTAINING SEVEN NO. 14 AWG CONTROL CONDUCTORS AND 1 NO. 14 AWG GROUND CONDUCTOR.

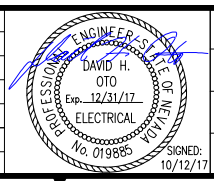
MCC1-1 AND MCC1-1A: DENOTES CONDUIT IDENTIFICATION (ID) (TYPICAL)

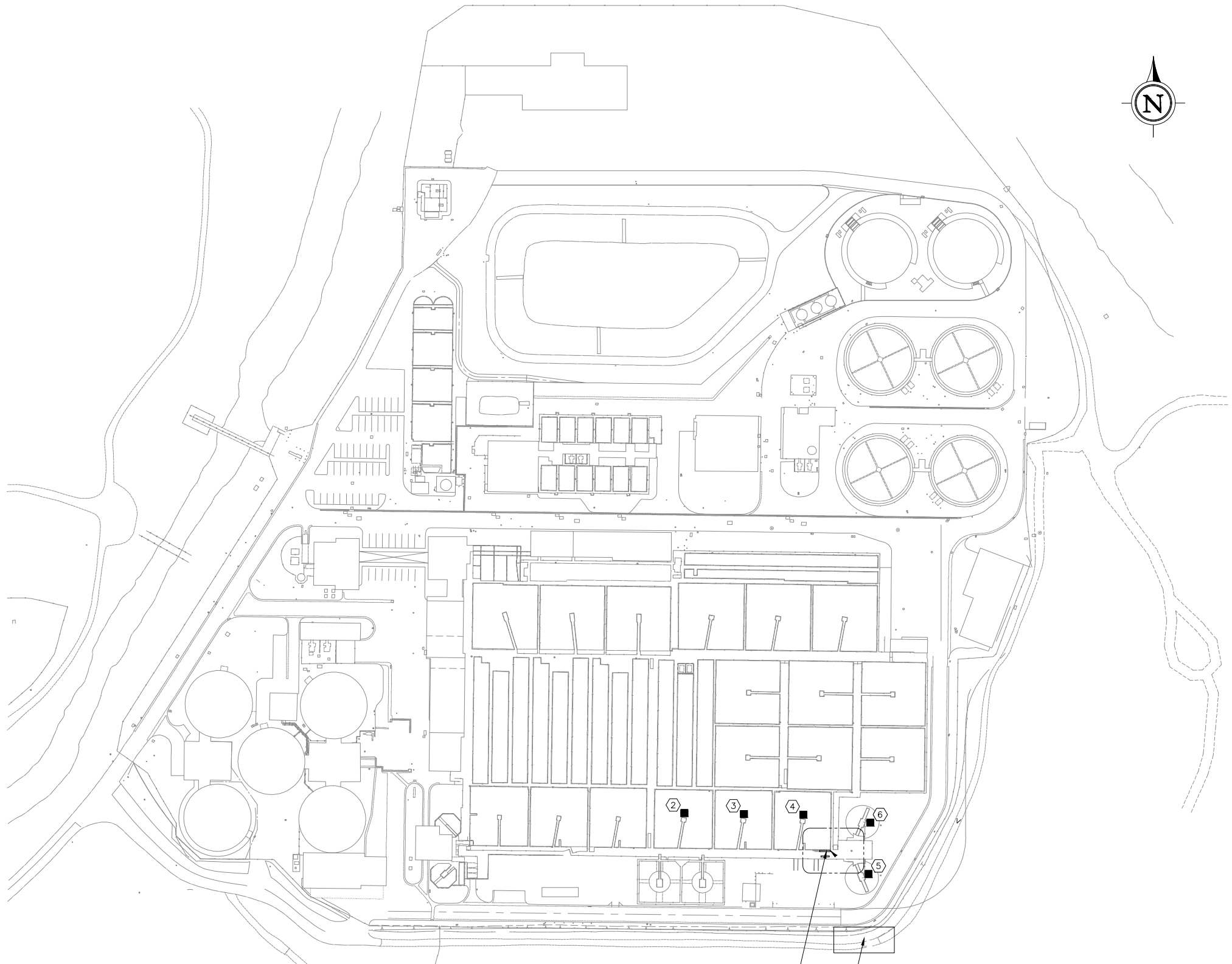
- NOTES:**
- PROTECTIVE/CONTROL DEVICE AS SHOWN.
 - CONTROL/AUXILIARY DEVICES AT OR NEAR EQUIPMENT. EQUIPMENT SHALL BE INSTALLED AND WIRED AS REQUIRED BY EQUIPMENT FURNISHED AND/OR CONTROL DIAGRAM.

TYPICAL ONE LINE DIAGRAM SHOWING POWER AND CONTROL TO EQUIPMENT

<p>DESIGNED DO</p> <p>DRAWN PUB</p> <p>CHECKED GL</p> <p>DATE</p> <p>OCTOBER 2017</p>	<p>FARR WEST ENGINEERING</p> <p>5510 LONGLEY LANE RENO, NEVADA 89511 PHONE: (775) 851-4788 FAX: (775) 851-0766 FARRWESTENGINEERING.COM</p>	<p>TRUCKEE MEADOWS WATER RECLAMATION FACILITY</p>	<p>MCC 6 REPLACEMENT ELECTRICAL</p> <p>ELECTRICAL LEGENDS</p>	<p>VERIFY SCALES</p> <p>BAR IS ONE INCH ON ORIGINAL DRAWING</p> <p>0 1" 1"</p> <p>IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY</p>	<p>JOB NO. 1326</p> <p>DRAWING NO. E2</p> <p>SHEET NO. 3 OF 13</p>
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GENERAL NOTES:

1. CONTRACTOR SHALL COORDINATE NEW ELECTRICAL WORK WITH ALL OTHER ASSOCIATED DISCIPLINES.
2. CONTRACTOR SHALL FIELD VERIFY ALL NEW UNDERGROUND CONDUIT ROUTING AND CROSSINGS WITH ALL OTHER NEW AND EXISTING UTILITIES INCLUDING UNDERGROUND EXISTING ELECTRICAL UTILITIES.
3. CONTRACTOR SHALL FIELD VERIFY AND CONFIRM SPACE PROVIDED IS SUFFICIENT FOR EQUIPMENT SHOWN ON SINGLE LINE DIAGRAM.
4. MAINTAIN AT LEAST 3'-6" IN FRONT OF ELECTRICAL EQUIPMENT PER NEC ARTICLE 110 FOR 600VAC OR LESS BETWEEN LIVE AND GROUNDED PARTS.
5. OVERCURRENT PROTECTIVE DEVICE (OCP) SIZE/RATING SHALL NOT EXCEED THE MANUFACTURERS RECOMMENDED VALUE MARKED ON THE EQUIPMENT.
6. REFER TO SINGLE-LINE DIAGRAMS AND CONDUIT SCHEDULE FOR CONDUIT AND WIRE SIZES.
7. ALL EQUIPMENT SHALL BE GROUNDED IN ACCORDANCE WITH ARTICLE 250 OF THE NATIONAL ELECTRICAL CODE.
8. CONDUIT ROUTING AND WALL PENETRATIONS ARE SHOWN DIAGRAMMATICALLY. EXACT ROUTING SHALL BE COORDINATED IN THE FIELD.
9. NO CONDUIT SHALL HAVE MORE THAN THE EQUIVALENT OF THREE 90 DEGREE BENDS IN ANY ONE RUN. PULL BOXES SHALL BE PROVIDED AS REQUIRED BY THE NEC AFTER EVERY 270 DEGREES OF BENDS.
10. MAINTAIN ELECTRICAL AREA (NEC ARTICLE 500) CLASSIFICATIONS FOR EXISTING EQUIPMENT AND COMPONENTS.
11. DRAWINGS ARE GENERATED FROM EXISTING RECORDS. SOME EQUIPMENT LOCATIONS MAY BE APPROXIMATE. CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING DISTANCES AND DIMENSIONS DURING BID TAKEOFF.

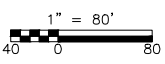
KEYED NOTES:

- ① STAGING AREA FOR THE CONTRACTOR.
- ② LOCATION OF LCP FOR PRIMARY SLUDGE COLLECTOR 2A.
- ③ LOCATION OF LCP FOR PRIMARY SLUDGE COLLECTOR 2B.
- ④ LOCATION OF LCP FOR PRIMARY SLUDGE COLLECTOR 2C.
- ⑤ LOCATION OF LCP FOR TWAS COLLECTOR NO.2.
- ⑥ LOCATION OF LCP FOR TWAS COLLECTOR NO.1.

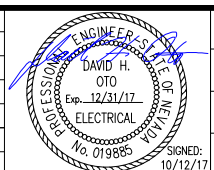
INTERRUPTION OF POWER:

1. SEE SPECIFICATION SECTION 01014 CONSTRUCTION SEQUENCE.

MCC NO. 6. REFER TO SHEET E-6 FOR ENLARGED DEMOLITION PLAN AND E-8 FOR ENLARGED NEW POWER PLAN.



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PHONE: (775) 851-4788
FAX: (775) 851-0766
FARRWESTENGINEERING.COM



MCC 6 REPLACEMENT ELECTRICAL OVERALL SITE PLAN

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

JOB NO. 1326
DRAWING NO. **E3**
SHEET NO. 4 OF 13

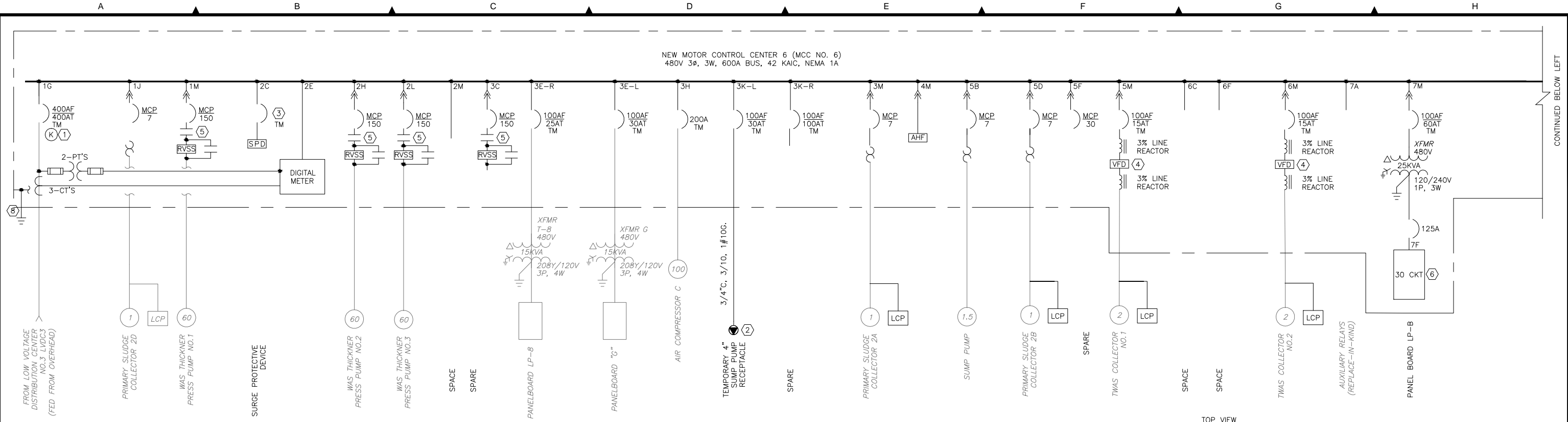
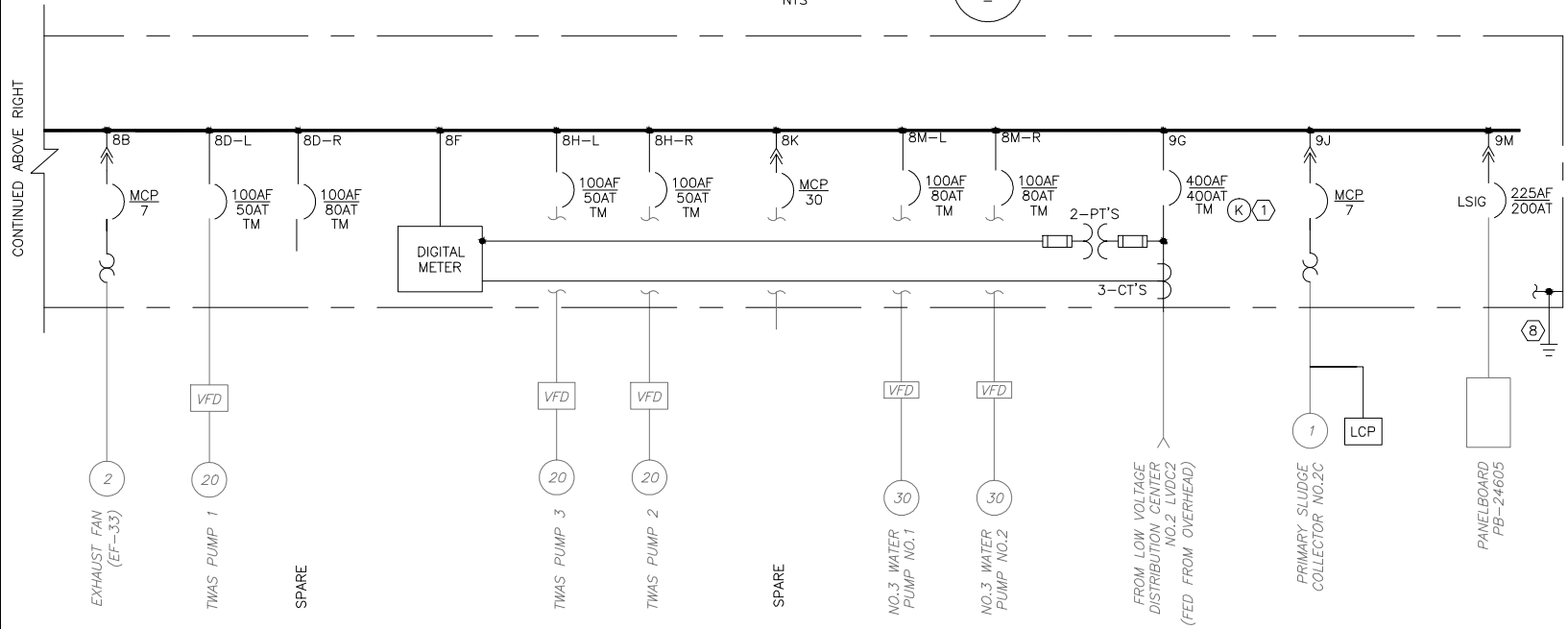
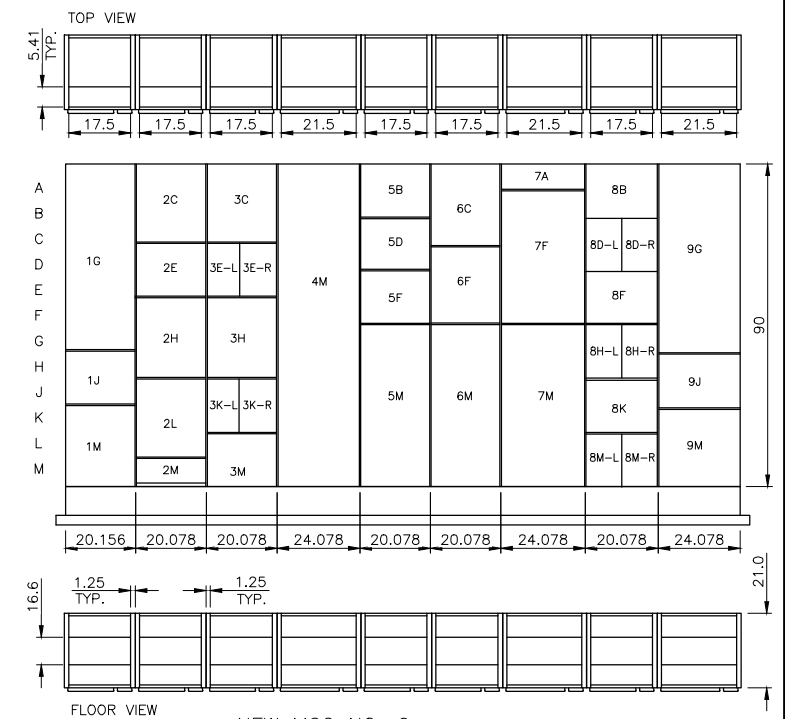


DIAGRAM 1
NTS



Bucket	CB	Type	Load	Description	Asset Code
1G	400F/400T	TM	Fed OH From LVDC3	Kirk Key	-
1J	7	HMCP	1HP	Primary Sludge Collector 2D	COL23007
1M	150	HMCP	60HP	WAS Thickener Pump #1	PMP25551
2C	*	TM	SPD	Surge Protector	-
2E	-	-	-	Meter	-
2H	150	HMCP	60HP	WAS Thickener Pump #2	PMP25552
2L	150	HMCP	60HP	WAS Thickener Pump #3	PMP25553
2M	-	-	SPACE	SPACE	-
3C	150	HMCP	SPARE	SPARE	-
3E-L	100F/30T	TM	Panelboard 'G'	Panelboard 'G'	LPB24603
3E-R	100F/25T	TM	Panelboard LP-8	Panelboard LP-8	LPB24111
3H	200F/200T	TM	100HP	Air Compressor C	CMP25109
3K-L	100F/30T	TM	Sump Pump Recept	Relocate Receptacle to Wall	-
3K-R	100F/100T	TM	SPARE	SPARE	-
3M	7	HMCP	1HP	Primary Sludge Collector 2A	COL23004
4M	-	-	50-A Active Harmonic Correction Unit	-	-
5B	7	HMCP	1.5HP	Sump Pump	-
5D	7	HMCP	1HP	Primary Sludge Collector 2B	COL23005
5F	30	HMCP	SPARE	SPARE	-
5M	100F/15T	TM	2HP	TWAS Collector #1	COL25026
6C	-	-	SPACE	SPACE	-
6F	-	-	SPACE	SPACE	-
6M	100F/15T	TM	2HP	TWAS Collector #2	COL25032
7A	-	-	-	AUX RELAYS	-
7F	125	TM	Panelboard	Panelboard LP-B	-
7M	100F/60T	TM	XFMR	XFMR	-
8B	7	HMCP	2HP	Exhaust Fan #33	EAF24101
8D-L	100F/50T	TM	20HP	VFD - TWAS Pump 1	PMP25551
8D-R	100F/50T	TM	SPARE	SPARE	-
8F	-	-	-	Meter	-
8H-L	100F/50T	TM	20HP	VFD - TWAS Pump 2	PMP25552
8H-R	100F/50T	TM	20HP	VFD - TWAS Pump 3	PMP25553
8K	30	HMCP	SPARE	SPARE	-
8M-L	100F/60T	TM	30HP	VFD - No. 3 Water Pump #1	PMP24051
8M-R	100F/60T	TM	30HP	VFD - No. 3 Water Pump #2	PMP24051
9G	400F/400T	TM	Fed OH From LVDC #2	Kirk Key	-
9J	7	HMCP	1HP	Primary Sludge Collector 2C	COL23007
9M	225F/200T	LSIG	Panelboard	Panelboard 24605	LPB24605

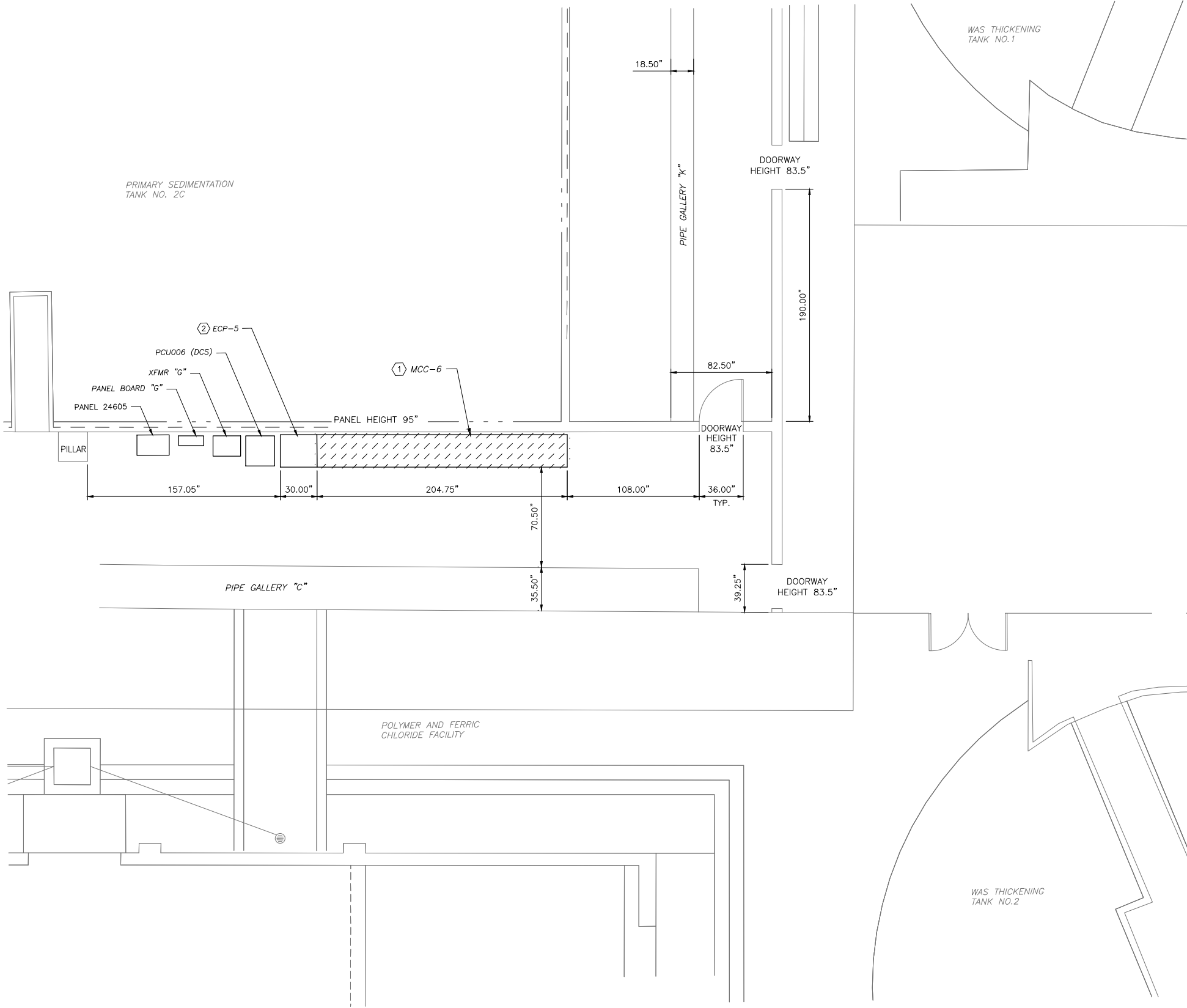
* Breaker Trip Amperage to be selected by Manufacturer



- GENERAL NOTES:
- CONTRACTOR TO TEST EXISTING 600V POWER CABLES WITH INSULATION RESISTANCE METER (MEGGER) AND REPORT RESULTS TO ENGINEER. CONTRACTOR SHALL REPLACE ALL CABLES THAT FAIL THE TEST.
 - CONTRACTOR TO PROTECT IN PLACE EXISTING EQUIPMENT.
 - DESIGN BASIS FOR ABOVE ELEVATION IS FROM EATON. OTHER LAYOUTS ARE ACCEPTABLE UPON APPROVAL OF THE ENGINEER

- KEYED NOTES:
- KIRK KEY INTERLOCK
 - RELOCATE EXISTING RECEPTACLE FROM THE BUCKET OF MCC NO. 6 TO THE WALL AS SHOWN ON SHEET EB.
 - BREAKER TRIP AMPERAGE SHALL BE DETERMINED BY THE MANUFACTURER.
 - VFD SHALL BE CONSTANT TORQUE, 6 PULSE, WITH 3% LINE REACTOR.
 - PROVIDE 75HP RVSS STARTER IEC CONTRACTORS CAN BE SUBSTITUTED FOR NEMA TO ALLOW STARTER TO FIT INTO 36" BUCKET.
 - PROVIDE 15-20A, SINGLE POLE CIRCUIT BREAKERS LABELED SPARE, PROVIDE BUSSED SPACES. THESE ARE FOR FUTURE CIRCUITS.
 - FOR ANY EXISTING WIRES THAT ARE TOO SHORT TO REACH THEIR FINAL DESTINATION IN NEW MCC-6, ROUTE THE WIRES TO AN MCC SPARE AND LAND AT TERMINAL LUGS/STRIPS. EXTENT WIRES TO FINAL TERMINATION POINT.
 - 3/4" #2/0, CONNECT MCC GROUND BUSS PIGTAIL TO EXISTING GROUND GRID.

DESIGNED DO		DRAWN PJB		CHECKED GL		DATE	
DAVID H. OTO		Exp. 12/31/17		ELECTRICAL		10/12/17	
FARR WEST ENGINEERING		5510 LONGLEY LANE		RENO, NEVADA 89511		PHONE: (775) 851-4788	
TRUCKEE MEADOWS WATER RECLAMATION FACILITY		FAX: (775) 851-0766		FARRWESTENGINEERING.COM			
MCC 6 REPLACEMENT ELECTRICAL				VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING			
MCC NO. 6 NEW ONE LINE DIAGRAM				0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY			
REV		DATE		BY		DESCRIPTION	
APVD		DATE					
JOB NO. 1326		DRAWING NO. E5		SHEET NO. 6 OF 13			



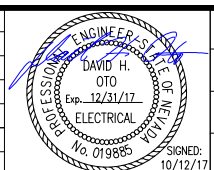
KEYED NOTES:

- ① EXISTING MCC NO. 6 AND CAPACITOR BANKS SHALL BE REMOVED
- ② CONTRACTOR TO PROTECT IN PLACE THE EXISTING ELECTRICAL CONTROL PANEL NO. 5 (ECP-5), CONTRACTOR TO DEMOLISH THE INSIDE COMPARTMENTS ONLY AND REPLACE WITH NEW BACK PANEL. SEE DRAWING E-12 FOR DETAILS.

DEMOLITION GENERAL NOTE:

1. CONTRACTOR SHALL COORDINATE THIS DRAWING WITH THE OWNER AND ALL OTHER DISCIPLINES THAT IMPACT THIS AREA.
2. CONTRACTOR SHALL DISCONNECT AND SECURE ALL ELECTRICAL POWER CONNECTIONS IN ORDER TO ALLOW SAFE AND COMPLETE REMOVAL OF ALL ASSOCIATED EQUIPMENT IN THIS AREA.
3. ITEMS SHOWN HATCHED ARE IDENTIFIED FOR DEMOLITION UNLESS OTHERWISE STATED IN THE DRAWING.
4. SURVEY THE EXISTING ELECTRICAL SYSTEMS AND EQUIPMENT IDENTIFIED FOR REMOVAL WITH OWNER AND REPRESENTATIVES FROM OTHER TRADES PRIOR TO PERFORMING ANY DEMOLITION WORK.
5. REMOVE EXPOSED CONDUITS, OUTLET BOXES, PULLBOXES AND HANGERS MADE OBSOLETE BY THE ALTERATIONS, UNLESS DESIGNATED TO REMAIN. PATCH SURFACES AND PROVIDE BLANK COVERS FOR ABANDONED OUTLETS.
6. ABANDONED CONDUITS CONCEALED IN FLOOR OR CEILING SLABS OR IN WALLS, SHALL BE CUT FLUSH WITH THE SLAB OR WALL AT THE POINT OF ENTRANCE. THE CONDUITS SHALL BE SUITABLY PLUGGED AND THE AREA REPAIRED IN A FLUSH, SMOOTH AND APPROVED MANNER.
7. DUCTS WHICH ARE NOT TO BE REUSED SHALL BE PLUGGED WHERE THEY ENTER BUILDINGS AND MADE WATER TIGHT.
8. REFER TO SHEET E3 FOR STAGING AREA AND OVERALL SITE PLAN.

REV	DATE	BY	DESCRIPTION	APVD	DATE



DESIGNED DO
DRAWN PJB
CHECKED GL
DATE OCTOBER 2017

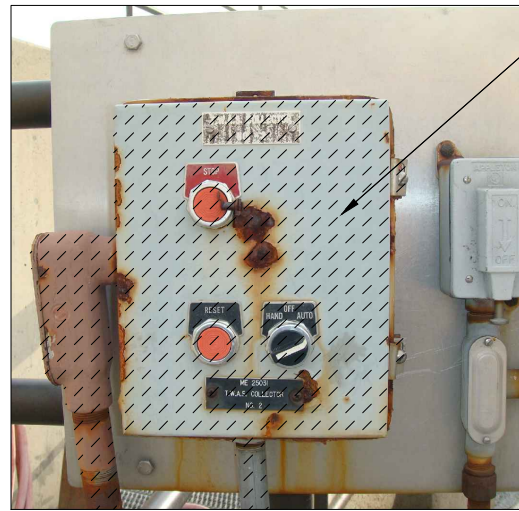
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5510 LONGLEY LANE
RENO, NEVADA 89511
PHONE: (775) 851-4788
FAX: (775) 851-0766
FARRWESTENGINEERING.COM



**MCC 6 REPLACEMENT
ELECTRICAL
MCC NO. 6 DEMOLITION PLAN**

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

JOB NO. 1326
DRAWING NO. **E6**
SHEET NO. 7 OF 13



TWAS COLLECTOR NO.2
DETAIL A
 N.T.S.



PRIMARY SLUDGE COLLECTOR 2A
DETAIL B
 N.T.S.

KEYED NOTES:

- ① CONTRACTOR TO DEMOLISH AND REPLACE LOCAL CONTROL PANEL AND EXPOSED CONDUIT AND FITTINGS FOR TWAS COLLECTOR NO. 1 AND NO. 2. PROTECT IN PLACE CABLE DURING DEMOLITION.
- ② CONTRACTOR TO DEMOLISH AND REPLACE LOCAL CONTROL PANEL AND EXPOSED CONDUIT AND FITTINGS FOR PRIMARY SLUDGE COLLECTOR 2A. PROTECT IN PLACE CABLE DURING DEMOLITION.
- ③ CONTRACTOR TO DEMOLISH AND REPLACE LOCAL CONTROL PANEL AND EXPOSED CONDUIT AND FITTINGS FOR PRIMARY SLUDGE COLLECTOR 2B. PROTECT IN PLACE CABLE DURING DEMOLITION.
- ④ CONTRACTOR TO DEMOLISH AND REPLACE LOCAL CONTROL PANEL AND EXPOSED CONDUIT AND FITTINGS FOR PRIMARY SLUDGE COLLECTOR 2C. PROTECT IN PLACE CABLE DURING DEMOLITION.

GENERAL NOTES:

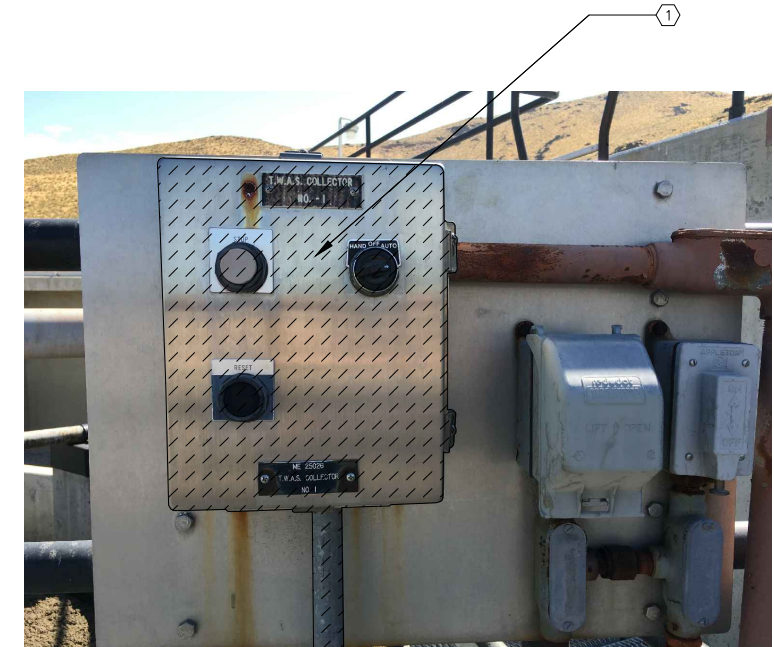
- 1. SEE DEMOLITION GENERAL NOTES SHEET E6.
- 2. THE TOP DECK WHERE THE LOCAL CONTROL PANELS ARE LOCATED IS CONSIDERED TO BE A "WET AND CORROSIVE ENVIRONMENT."
- 3. SEE DETAIL H / SHEET E11 FOR REFERENCES.
- 4. ALL CONDUIT AND CONDUIT FITTINGS USED ON THE TOP DECK AREA SHALL BE PVC COATED RIGID CONDUIT, UL LISTED.
- 5. ALL CONTROL BOXES USED TO REPLACE THE LOCAL CONTROL PANELS SHALL BE RATED NEMA 4X.



PRIMARY SLUDGE COLLECTOR 2B
DETAIL C
 N.T.S.

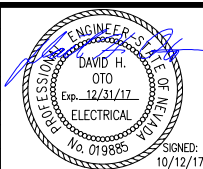


PRIMARY SLUDGE COLLECTOR 2C
DETAIL D
 N.T.S.

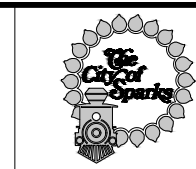


TWAS COLLECTOR NO. 1
DETAIL E
 N.T.S.

REV	DATE	BY	DESCRIPTION	APVD	DATE



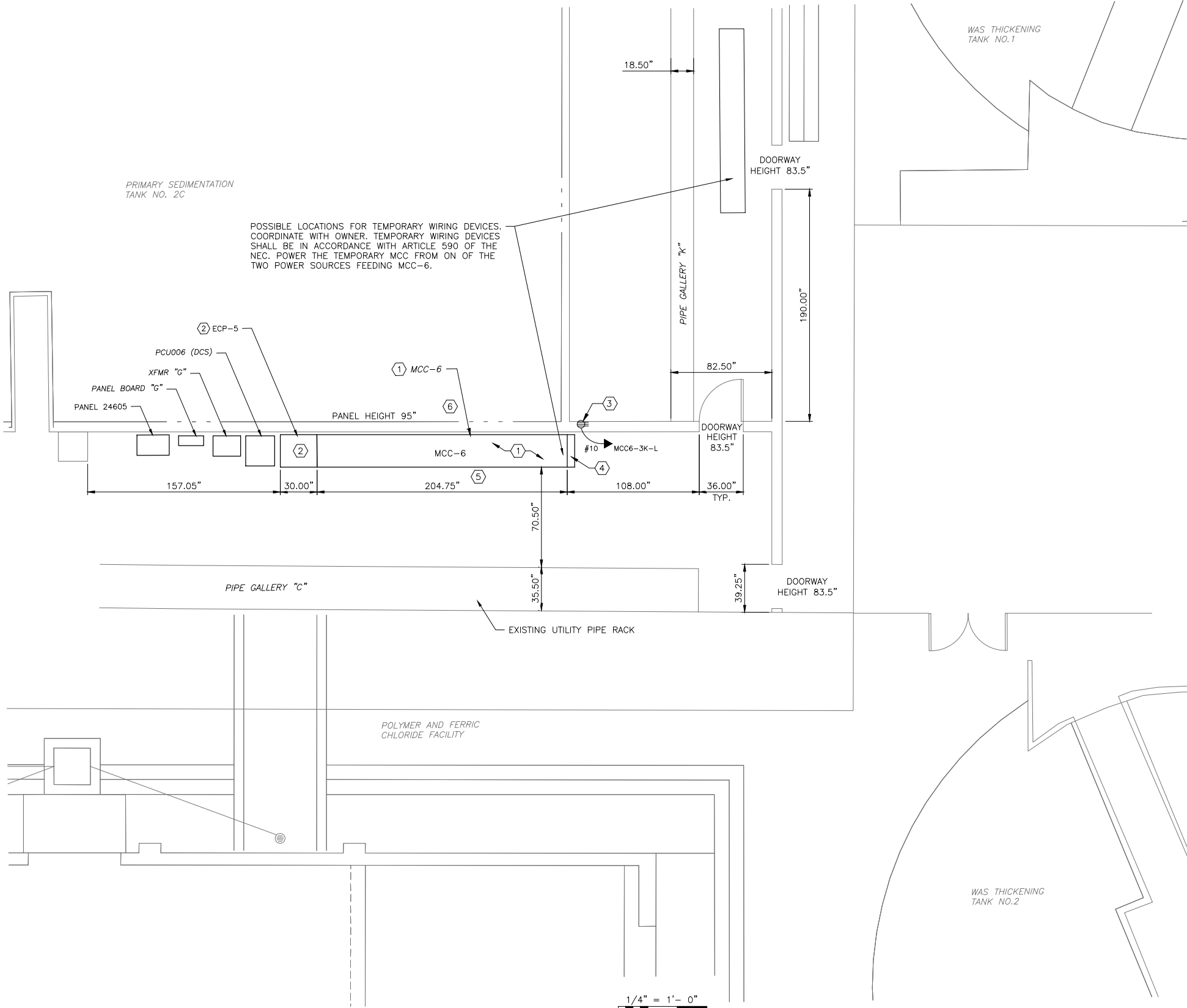
DESIGNED DO
 DRAWN PJB
 CHECKED GL
 DATE OCTOBER 2017



MCC 6 REPLACEMENT
 ELECTRICAL
 MCC NO. 6 DEMOLITION FIGURES

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

JOB NO. 1326
 DRAWING NO. E7
 SHEET NO. 8 OF 13



PRIMARY SEDIMENTATION TANK NO. 2C

POSSIBLE LOCATIONS FOR TEMPORARY WIRING DEVICES. COORDINATE WITH OWNER. TEMPORARY WIRING DEVICES SHALL BE IN ACCORDANCE WITH ARTICLE 590 OF THE NEC. POWER THE TEMPORARY MCC FROM ON OF THE TWO POWER SOURCES FEEDING MCC-6.

WAS THICKENING TANK NO.1

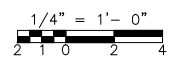
WAS THICKENING TANK NO.2

KEYED NOTES:

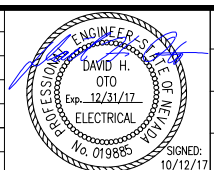
- ① CONTRACTOR SHALL REUSE EXISTING CONCRETE HOUSEKEEPING PAD AND REPAIR EXISTING EQUIPMENT PAD CRACKS PER DIV 3 SPECIFICATIONS. EXISTING PAD DIMENSIONS ARE APPROXIMATELY 18'-6"W x 22'-1/2" D.
- ② CONTRACTOR TO PROTECT IN PLACE ELECTRICAL CONTROL PANEL NO. 5 (ECP-5) CABINET ONLY. CONTRACTOR TO DEMOLISH INSIDE OF CABINET AND REPLACE WITH NEW BACK PANEL. SEE SHEET E-12 FOR DETAILS.
- ③ SUMP PUMP RECEPTACLE. RELOCATED FROM EXISTING MCC NO. 6 BUCKET. COORDINATE EXACT LOCATION WITH OWNER.
- ④ EXTEND HOUSEKEEPING PAD 6" WITH EPOXY CONCRETE PER DIV-3 SPECS. DOWEL EVERY 8".
- ⑤ PROVIDE NEW RUBBER FLOOR MAT IN FRONT OF THE NEW MCC6.
- ⑥ USE CAST-IN PLACE ANCHORS WHEREVER PRACTICAL FOR RESISTING SEISMIC FORCES ON COMPONENTS. POST-INSTALLED ANCHORS, WHERE USED, SHALL HAVE CURRENT ICC EVALUATION SERVICE REPORTS. FOR CAST-IN-PLACE ANCHORS, THE MINIMUM ANCHOR SIZE SHALL BE 5/8-INCH WITH MINIMUM 5-INCH EMBEDMENT AND AS REQUIRED BY SUBMITTED SEISMIC CALCULATIONS. FOR POST-INSTALLED ANCHORS, THE MINIMUM ANCHOR SIZE SHALL BE AS REQUIRED BY SUBMITTED SEISMIC ANCHORAGE CALCULATIONS. ALL ANCHORS SECURING COMPONENTS TO BE GROUTED SHALL BE FURNISHED WITH LEVELING NUTS, THE FACES OF WHICH SHALL BE TIGHTENED AGAINST FLAT SURFACES TO NOT LESS THAN 10 PERCENT OF THE BOLT'S SAFE TENSILE STRESS.

GENERAL NOTES:

1. ALL EQUIPMENT SHALL REMAIN 'ON-LINE' AND ENERGIZED. FOUR HOUR WINDOWS OF TIME ARE AVAILABLE FOR TRANSFERRING POWER, BUT MUST BE COORDINATED WITH THE OWNER. THE CONTRACTOR SHALL NOT TAKE ANY ACTION TO TRANSFER POWER FROM THE OLD TO THE NEW MCC WITHOUT AUTHORIZATION OF THE OWNER.
2. ARC-FLASH STUDY AND LABELS SHALL BE DONE BY OTHERS. THE SUPPLIER OF THE MCC SHALL PROVIDE ALL DATA NEEDED FOR THE STUDY.
3. THE DCS SHALL REMAIN CONNECTED. ANY SCHEDULED DISRUPTION SHALL BE COORDINATED WITH THE OWNER.
4. SEE SHEET E3 FOR LOCATION OF THE STAGING AREA.
5. UPON COMPLETION OF THIS PROJECT, ECP-5 WILL BE PART OF PCU006.



REV	DATE	BY	DESCRIPTION	APVD	DATE



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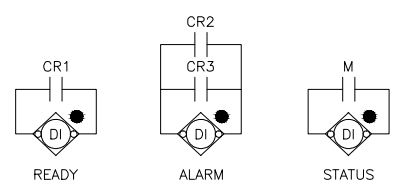
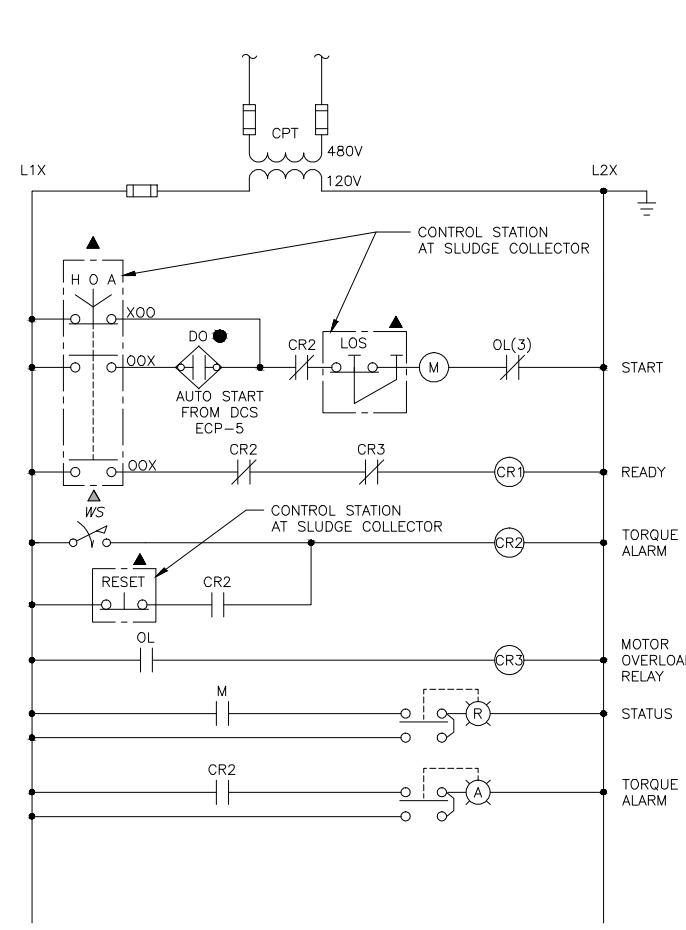
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FARRWESTENGINEERING.COM



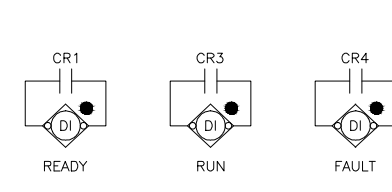
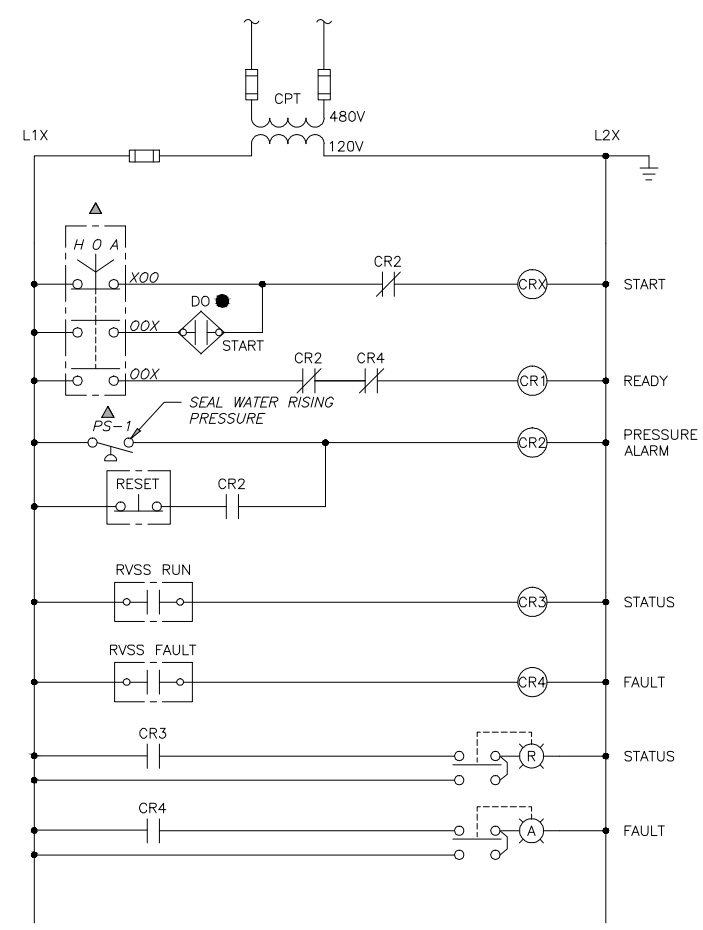
MCC 6 REPLACEMENT
ELECTRICAL
MCC NO. 6 NEW POWER PLAN

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

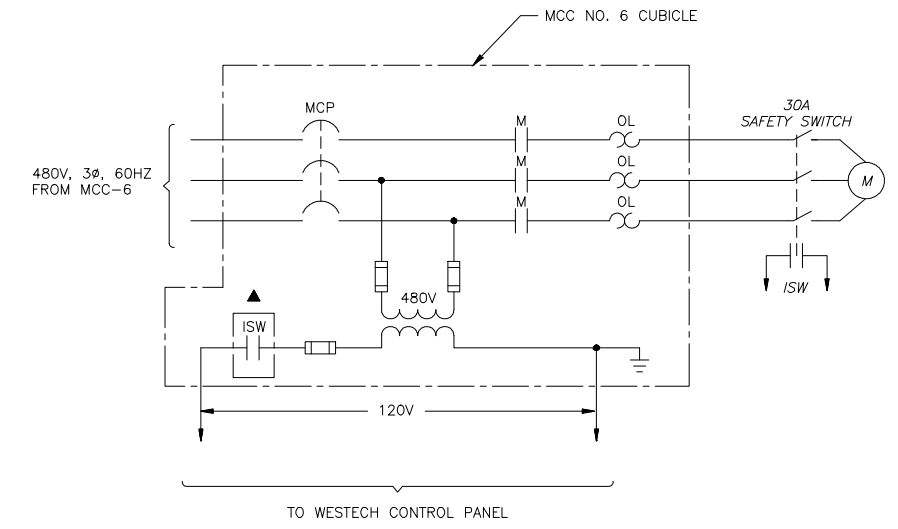
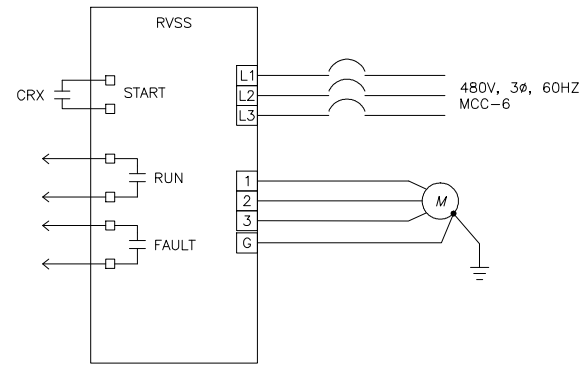
JOB NO. 1326
DRAWING NO. **E8**
SHEET NO. 9 OF 13



PRIMARY SLUDGE COLLECTOR NO. 2A, 2B & 2C CONTROL
SCHEMATIC 1
 NTS



WAS THICKENER PRESSURE PUMPS NO. 1, 2, & 3 CONTROL
SCHEMATIC 2
 NTS



PRIMARY SLUDGE COLLECTOR NO. 2D CONTROL
SCHEMATIC 3
 NTS

LEGEND

- AI ANALOG INPUT
- AO ANALOG OUTPUT
- DI DIGITAL INPUT
- DO DIGITAL OUTPUT
- ▲ DEVICE LOCATED IN FIELD/LCP
- DEVICE LOCATED IN ECP-5
- DEVICES WITHOUT A SYMBOL ARE LOCATED IN THE MCC BUCKET UNLESS CALLED OUT OTHERWISE.
- LOS LOCKOUT STOP

DCS SIGNAL DEFINITIONS:

STATUS "ON" WHEN UNIT IS RUNNING

READY "ON" WHEN UNIT IS READY TO RUN. ALL IT NEEDS IS THE START SIGNAL. NOTE: READY IS NOT JUST THE POSITION OF THE HOA SWITCH. ALL SAFETIES, LOCKOUTS, AND POWER AVAILABLE MUST BE IN A RUN CONDITION. THERE SHOULD BE NO CONDITION THAT THE CALL TO RUN IS ON, THE READY IS ON, AND THE EQUIPMENT IS NOT RUNNING.

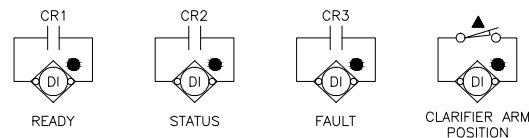
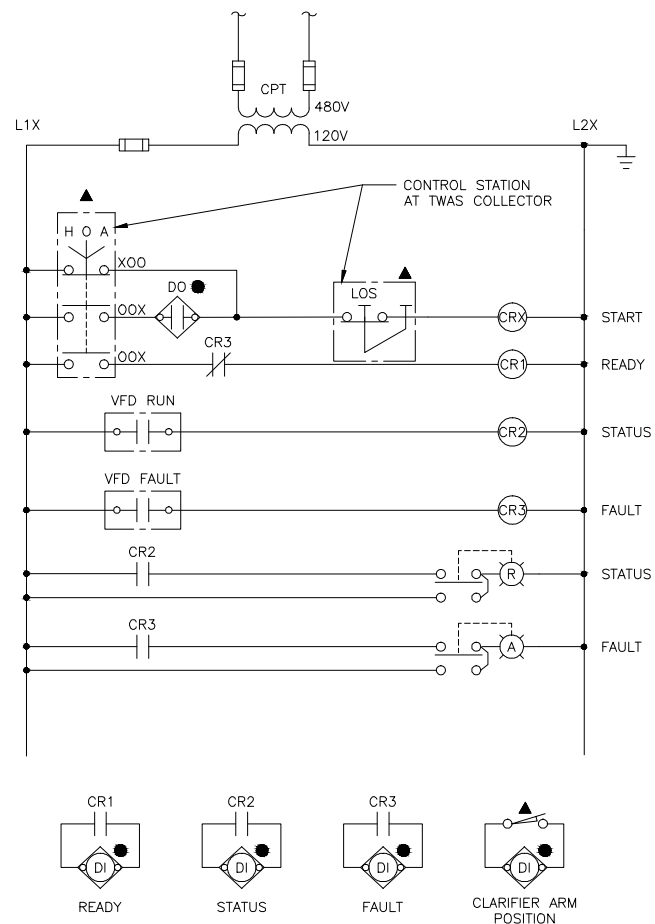
FAIL "ON" WHEN UNIT IS IN AN ALARM CONDITION. FAILSAFE ON WHEN NOT IN ALARM IS ACCEPTABLE.

START DCS WILL TURN ON WHEN UNIT SHOULD RUN.

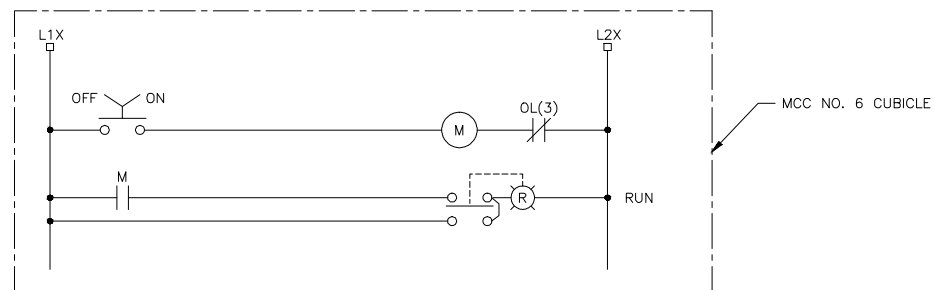
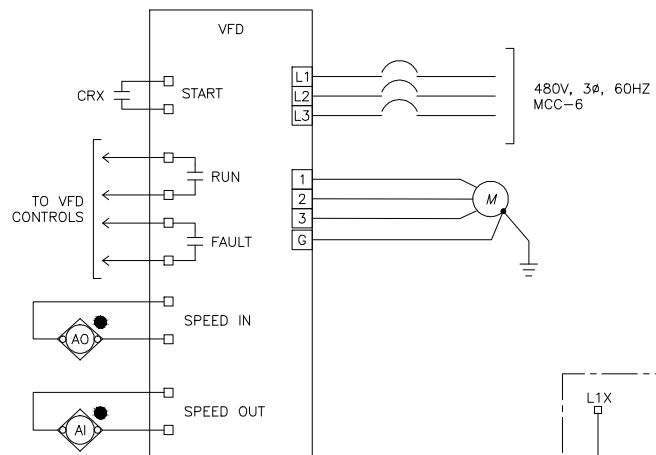
SPEED 4-20 mA SIGNAL THAT REQUESTS THE SPEED THE UNIT SHOULD RUN.

- NOTES:**
- VA OF CPT SHALL BE EQUAL TO OR GREATER THAN EXISTING CPT.
 - CONTRACTOR SHALL ADJUST SETTINGS OF NEW MCP'S AND OVERLOADS TO MATCH EXISTING SETTINGS.

FILE SPEC-P:\Marketing\Proposals\Client Proposals\TMR\F\031_MCC 6 Replacement\E9 Truckee Meadows MCC 6 ELEC.dwg PLOT DATE: Oct 12, 2017 - 11:44am	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>REV</td><td>DATE</td><td>BY</td><td>DESCRIPTION</td><td>APVD</td><td>DATE</td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </table>	REV	DATE	BY	DESCRIPTION	APVD	DATE								DESIGNED: DO DRAWN: PJB CHECKED: GL DATE: OCTOBER 2017	<p>FARR WEST ENGINEERING</p> <p>5510 LONGLEY LANE RENO, NEVADA 89511 PHONE: (775) 851-4788 FAX: (775) 851-0766 FARRWESTENGINEERING.COM</p>	<p>TRUCKEE MEADOWS WATER RECLAMATION FACILITY</p>	<p style="text-align: center;">MCC 6 REPLACEMENT ELECTRICAL</p> <p style="text-align: center;">MCC NO. 6 CONTROL SCHEMATICS I</p>	<p>VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING</p> <p>IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY</p>	JOB NO. 1326 DRAWING NO. E9 SHEET NO. 10 OF 13
REV	DATE	BY	DESCRIPTION	APVD	DATE															



TWAS COLLECTOR NO. 1 & 2 CONTROL
SCHEMATIC 4
 NTS



EXHAUST FAN EF-33 CONTROL
SCHEMATIC 5
 NTS

LEGEND

- AI ANALOG INPUT
- AO ANALOG OUTPUT
- DI DIGITAL INPUT
- DO DIGITAL OUTPUT
- ▲ DEVICE LOCATED IN FIELD/LCP
- DEVICE LOCATED IN ECP-5

DEVICES WITHOUT A SYMBOL ARE LOCATED IN THE MCC BUCKET UNLESS CALLED OUT OTHERWISE

LOS LOCKOUT STOP

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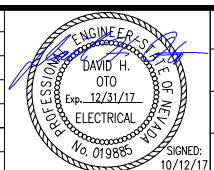
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START DCS WILL TURN ON WHEN UNIT SHOULD RUN.

SPEED 4-20 mA SIGNAL THAT REQUESTS THE SPEED THE UNIT SHOULD RUN.

- NOTES:**
- VA OF CPT SHALL BE EQUAL TO OR GREATER THAN EXISTING CPT.
 - CONTRACTOR SHALL ADJUST SETTINGS OF NEW MCP'S AND OVERLOADS TO MATCH EXISTING SETTINGS.

REV	DATE	BY	DESCRIPTION	APVD	DATE



DESIGNED DO
 DRAWN PJB
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FARR WEST ENGINEERING
 5510 LONGLEY LANE
 RENO, NEVADA 89511
 PHONE: (775) 851-4788
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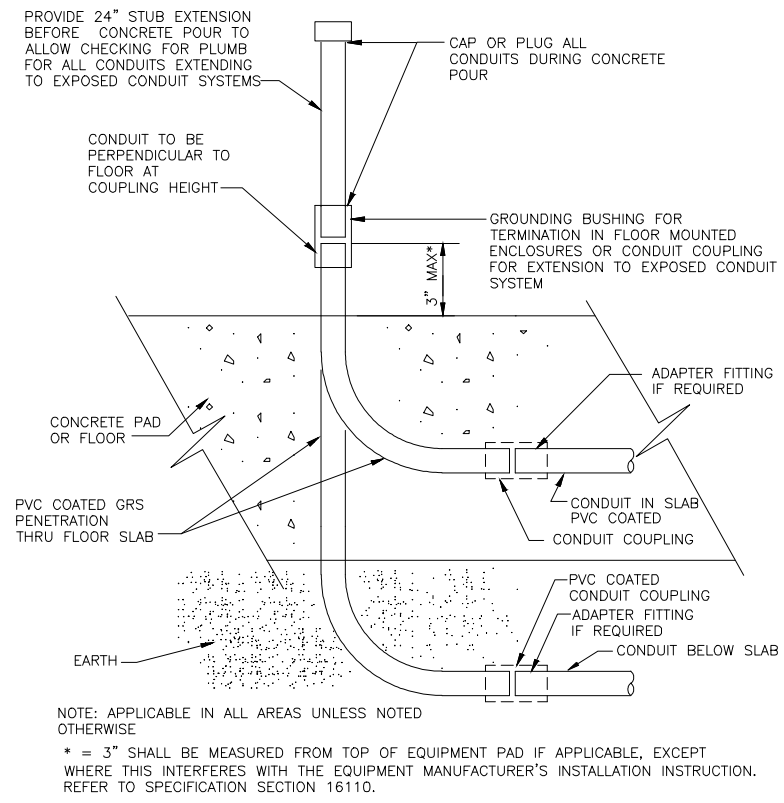


MCC 6 REPLACEMENT ELECTRICAL

MCC NO. 6 CONTROL SCHEMATICS II

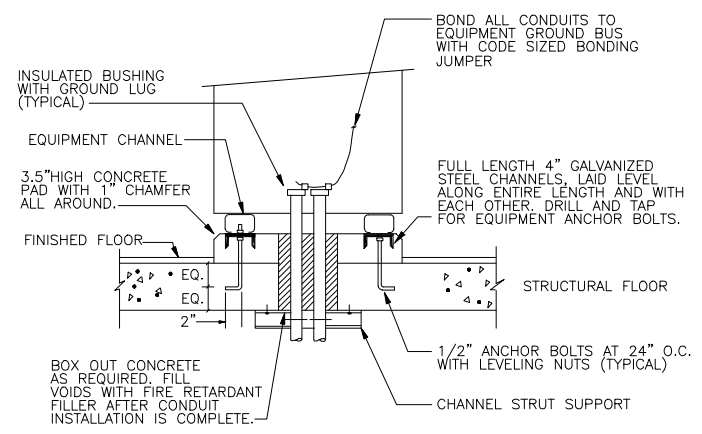
VERIFY SCALES
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JOB NO. 1326
 DRAWING NO. **E10**
 SHEET NO. 11 OF 13



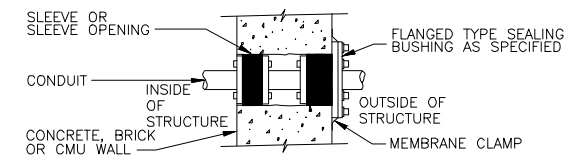
TYPICAL CONDUIT STUB-UP FROM BELOW FLOOR SLAB

DETAIL A
N.T.S.



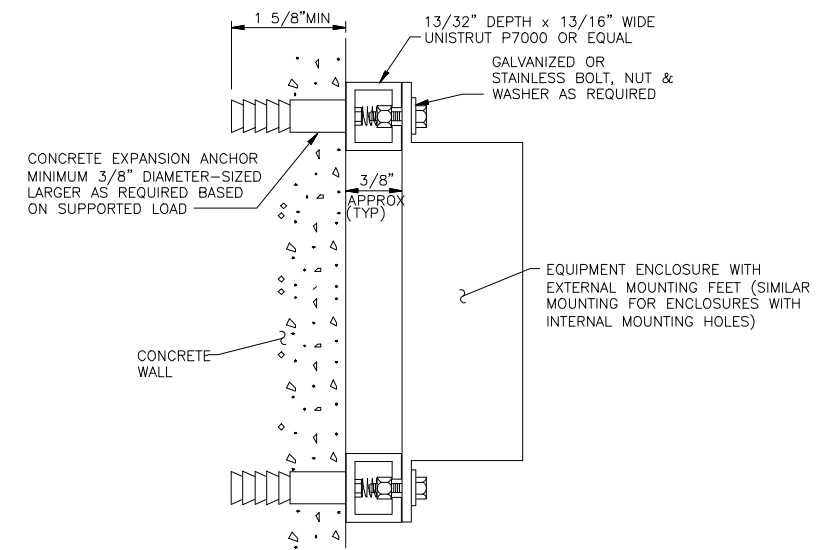
MCC EQUIPMENT PAD

DETAIL B
N.T.S.



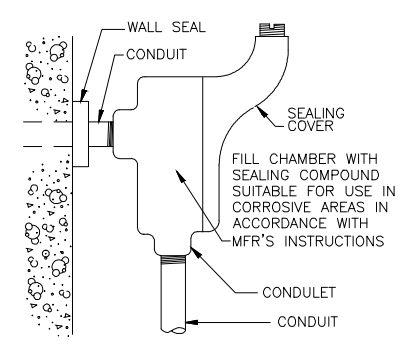
CONDUIT PENETRATION THROUGH EXISTING WALL

DETAIL C
N.T.S.



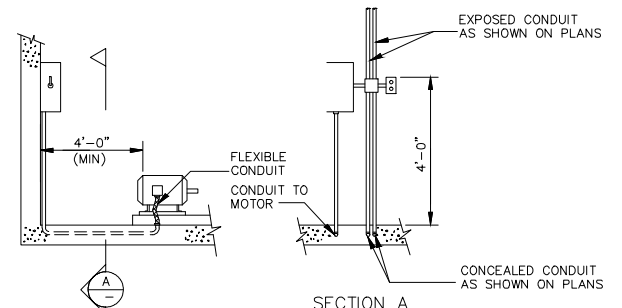
EQUIPMENT ENCLOSURE MOUNTING ON CONCRETE WALL

DETAIL D
N.T.S.



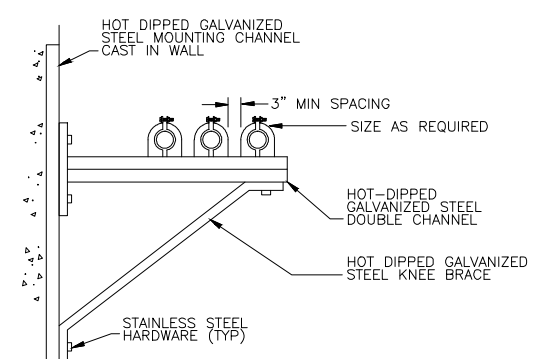
CONDUIT SEALOFF FITTING

DETAIL E
N.T.S.



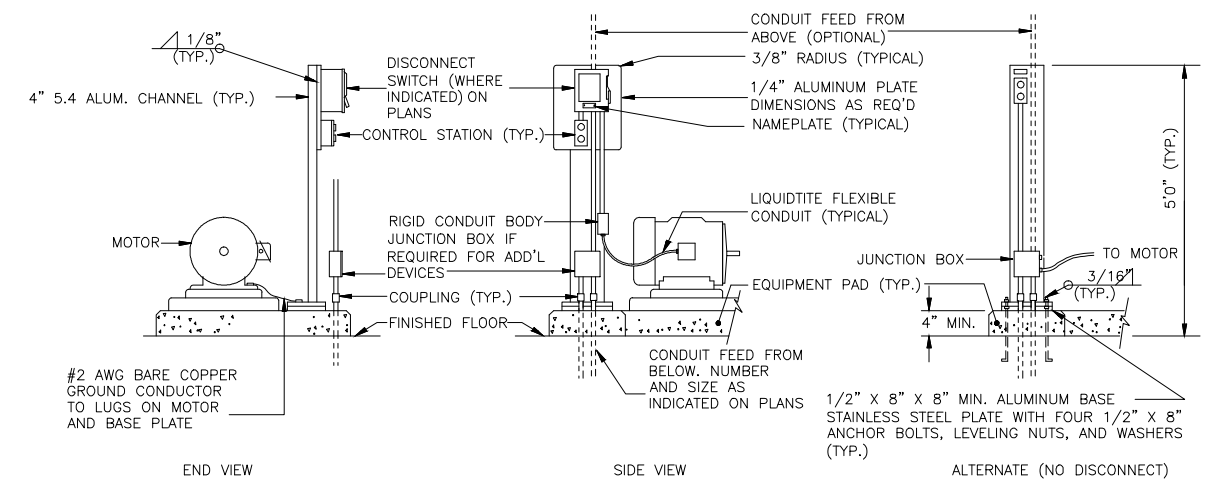
INSTALLATION OF EQUIPMENT ON WALL

DETAIL F
N.T.S.



CONDUIT RACK

DETAIL G
N.T.S.

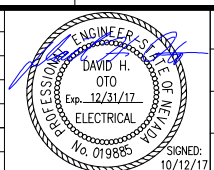


TYPICAL MOTOR INSTALLATION

DETAIL H
N.T.S.

THIS SHEET IS FOR INFORMATION ONLY

REV	DATE	BY	DESCRIPTION	APVD	DATE



DESIGNED DO
DRAWN PUB
CHECKED GL
DATE OCTOBER 2017

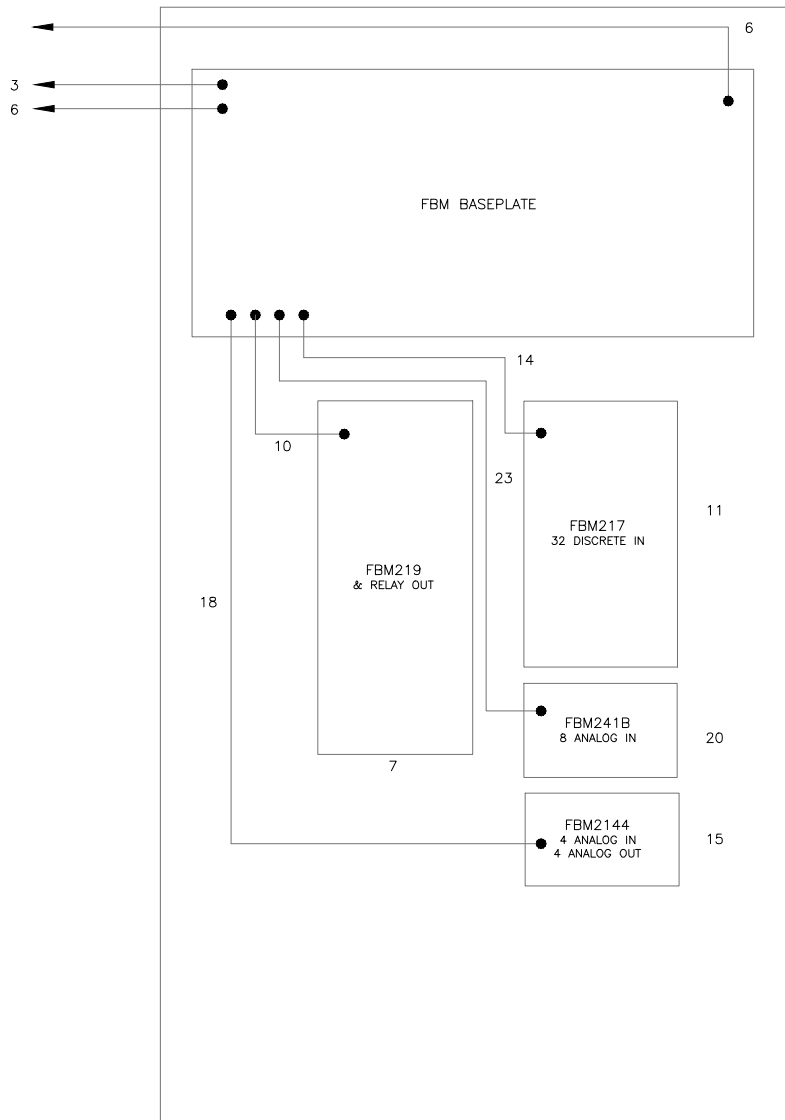
FARR WEST ENGINEERING
5510 LONGLEY LANE
RENO, NEVADA 89511
PHONE: (775) 851-4788
FAX: (775) 851-0766
FARRWESTENGINEERING.COM



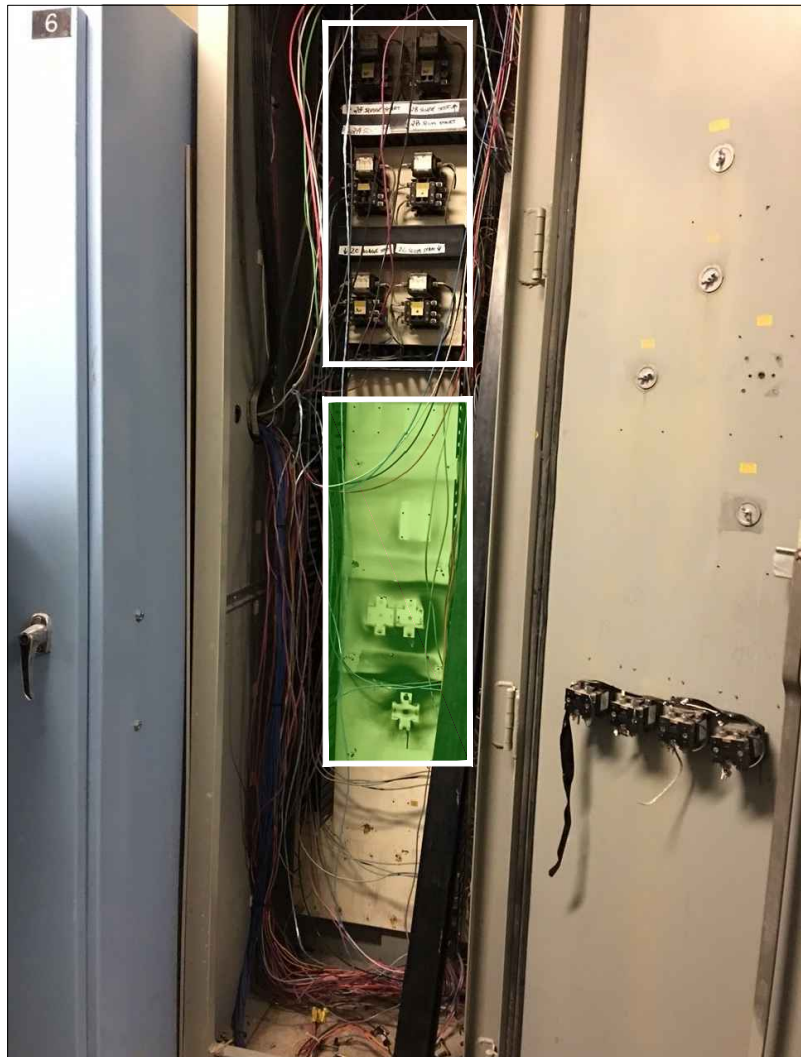
MCC 6 REPLACEMENT ELECTRICAL
ELECTRICAL STANDARD DETAILS

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

JOB NO. 1326
DRAWING NO. **E11**
SHEET NO. 12 OF 13



ITEMS SHOWN ABOVE ARE REFERENCED TO THE ITEM NUMBERS SHOWN ON THE BOM. THESE ITEMS WERE INSTALLED IN THE CENTER OF THE BACK PANEL IN A PREVIOUS PROJECT AND ARE SHOWN IN THE GREEN AREA IN THE PHOTO TO THE RIGHT.



CONTRACTOR TO REMOVE (DEMOLISH) I/O COMPONENTS SHOWN AT TOP OF BACK PANEL (ABOVE). THE GREEN AREA WILL HAVE NEW I/O COMPONENTS INSTALLED IN A TEMPORARY ARRANGEMENT FROM A PREVIOUS PROJECT. CONTRACTOR TO REARRANGE THE I/O COMPONENTS IN THE GREEN AREA AS NEEDED TO PROVIDE A PERMANENT INSTALLATION. COORDINATE WITH THE OWNER'S IT GROUP.

BOM for ECP-5			
Baseplate and Cables			
Item	Quan	Description	Part number
1	1	8 Slots Hor. Baseplate, Time Strobe, 8FBM	P0926HT
2	0	2 Mbps Base To Base Cable, 1m	P0928BP
3	1	2 Mbps Base To Base Cable, 3m	P0928BQ
4	0	Power Supply Output Cable - 152 cm (60 in)	P0926KN
5	0	Power Supply Output Cable - 152 cm (72 in)	P0926KP
6	2	Power Supply Output Cable - 152 cm (84 in)	P0926KQ
8 Discrete Outputs (This TA provides a Form C Relay output)			
	Quan	Description	Part number
7	1	FBM219, Discrete I/O, 32 Channels, 24 DIN+8 DOUT	P0916RH
8	2	Comp TA FBM219 125V Switch DI + 5A Relay Out	P0917LS
9	0	FBM2xx Type 4 Term Cable, 1 Meter	P0916FH
10	1	FBM2xx Type 4 Term Cable, .5 Meter	P0916FG
16 Discrete Inputs (32 DIN)			
	Quan	Description	Part number
11	1	FBM217 Discrete Input 32 DIN	P0914TR
12	1	Compression Term Assy, FBM217, Contact Sense	P0916PW
13	0	FBM2xx Type 4 Term Cable, 1 Meter	P0916FH
14	1	FBM2xx Type 4 Term Cable, .5 Meter	P0916FG
4 Analog Inputs and 4 Analog Outputs (Hart Capable)			
	Quan	Description	Part number
15	1	FBM244 HART interface module 4 0-20 In + 4 0-20 Out	P0927AK
16	1	Compression Term Assembly, FBM244	P0924QU
17	0	FBM2xx Type 1 Term Cable, .5 Meter	P0916DA
18	1	FBM2xx Type 1 Term Cable, 1 Meter	P0916DB
19	0	FBM2xx Type 1 Term Cable, 2 Meter	P0931RM
8 Analog Inputs (Hart Capable arrangement)			
	Quan	Description	Part number
20	1	FBM214b HART Comm input interface 8 Input 0-20 mA	P0927AH
21	1	Compression Term Assembly, FBM214b	P0924JH
22	0	FBM2xx Type 1 Term Cable, .5 Meter	P0916DA
23	1	FBM2xx Type 1 Term Cable, 1 Meter	P0916DB

NOTES:

- CONTRACTOR TO DEMOLISH THE TOP PORTION OF ECP-5 AND REARRANGE THE COMPONENTS IN THE CENTER AS SHOWN IN THE PHOTO. COORDINATE THIS WORK WITH THE OWNER'S IT GROUP.
- LAYOUT PROVIDED IS FOR REFERENCE ONLY. CONTRACTOR IS RESPONSIBLE FOR CONFIGURING COMPONENTS AS NECESSARY. FINAL APPROVAL OF LAYOUT BY OWNER.
- NUMEROUS MORE COMPONENTS SHALL BE INSTALLED ON THIS NEW BACK PANEL. REFER TO SPECIFICATIONS:
 - SECTION 13300 - INSTRUMENTATION AND CONTROLS - GENERAL PROVISIONS
 - SECTION 13330 - CONTROL PANEL ENCLOSURES AND PANEL EQUIPMENT
- ITEMS WITH 0 (ZERO) QUANTITIES ARE FOR REFERENCE ONLY AND SHOULD BE PROVIDED IF NECESSARY.
- BACK PANEL CAN BE REQUIRED. COORDINATE WITH OWNER IF IT CANNOT BE RE-USED.

DESIGNED: DO DRAWN: PUB CHECKED: GL DATE: OCTOBER 2017					<p>5510 LONGLEY LANE RENO, NEVADA 89511 PHONE: (775) 851-4788 FAX: (775) 851-0766 FARRWESTENGINEERING.COM</p>						MCC 6 REPLACEMENT ELECTRICAL ECP-5 CONTROL PANEL LAYOUT		VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY		JOB NO. 1326 DRAWING NO. E12 SHEET NO. 13 OF 13	
REV	DATE	BY	DESCRIPTION	APVD	DATE											