

CITY OF OWOSSO, MICHIGAN

OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES

SCADA SYSTEM UPGRADES

3497 COOLIDGE RD.
 EAST LANSING, MI. 48823
 PHONE: (517) 316-3930 FAX: (517) 484-8140



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PROJECT LOCATION:

OWOSSO, MICHIGAN

CLIENT INFORMATION:

CITY OF OWOSSO, MICHIGAN

Tt PROJECT No.:

200-280565-21002

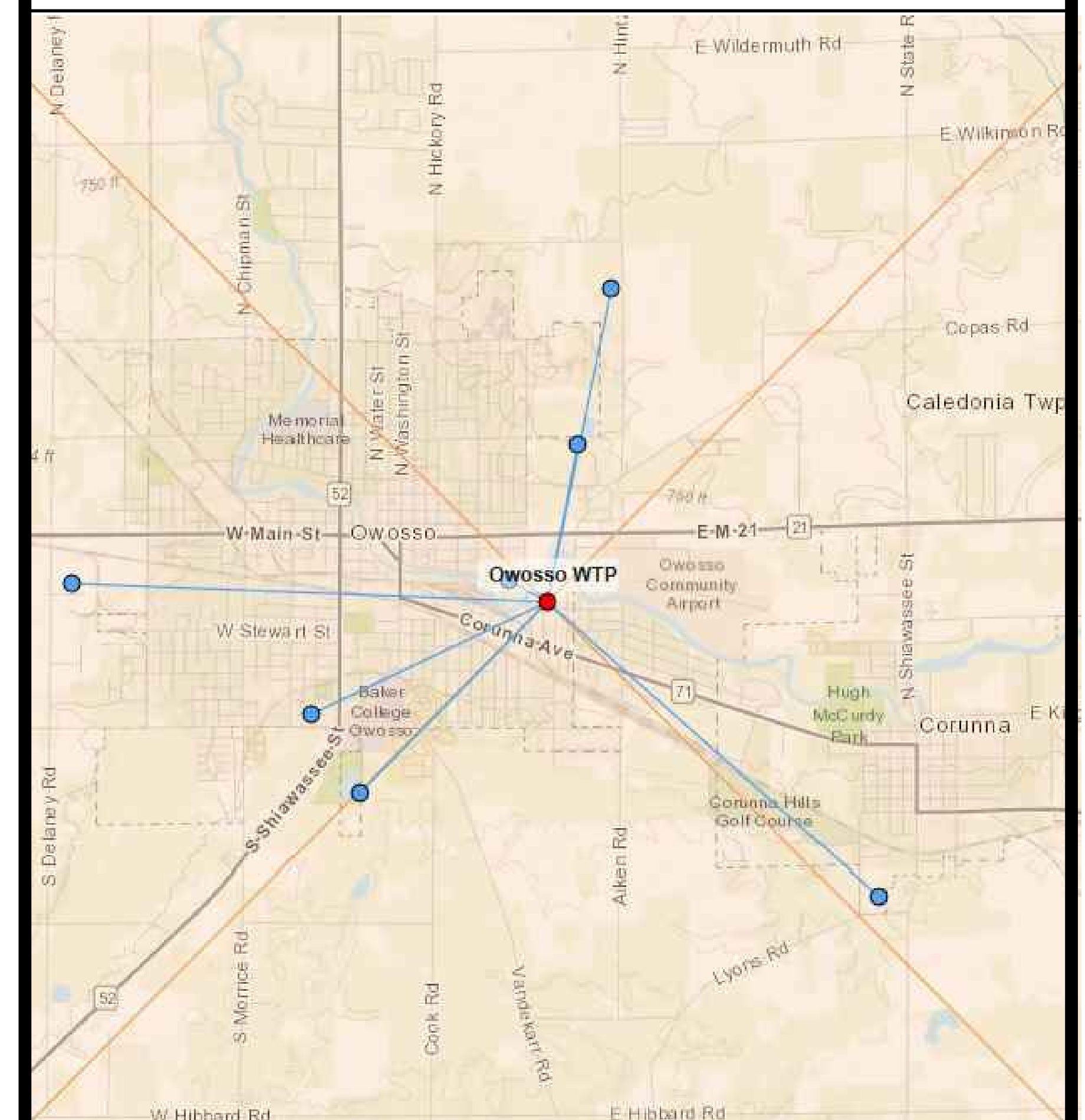
CLIENT PROJECT No.:

PROJECT DESCRIPTION / NOTES:

ISSUED:

CONCEPTUAL DRAWINGS - OWNER REVIEW MAY 28, 2021
 OWNER REVIEW, PRELIMINARY DRAWINGS - OCTOBER 21, 2021
 OWNER REVIEW - FINAL REVIEW NOVEMBER 9, 2021
 FINAL REVIEW JANUARY 12, 2022
 UPDATES JANUARY 14, 2022
 UPDATES MARCH 30, 2022
 FINAL OWNER REVIEW APRIL 1, 2022
 UPDATES NOVEMBER 10, 2022
 UPDATES NOVEMBER 22, 2022
 UPDATES NOVEMBER 30, 2022
 ISSUED FOR BIDS DECEMBER 2022

VICINITY MAP:



NOTES:

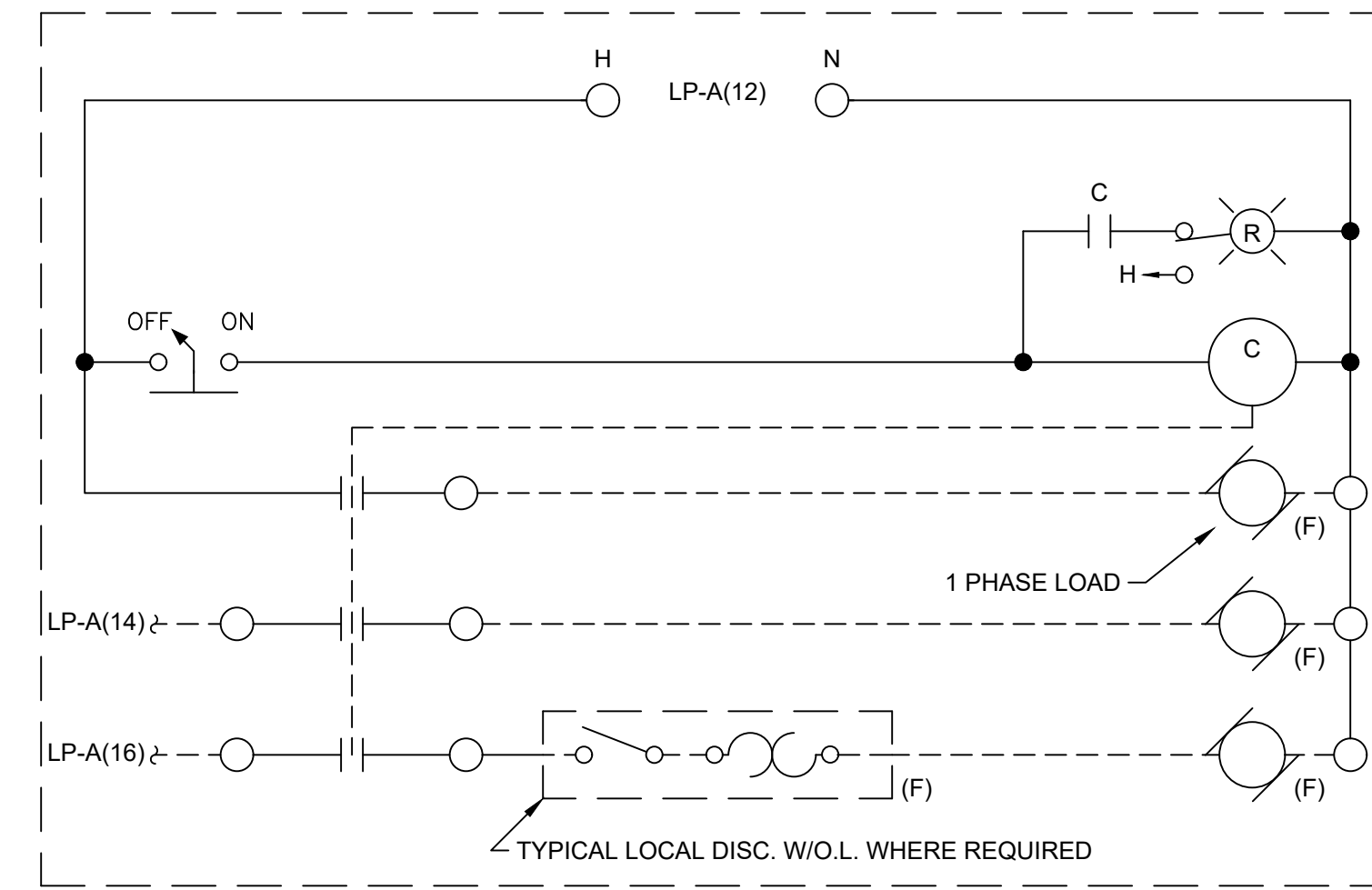
- FIELD VERIFY CONDUIT ROUTING AT THE PLANT WITH OWNER. CORE HOLES AS REQUIRED TO SUIT INSTALLATION OF THE CONDUITS SHOWN. PATCH WITH NON-SHRINK GROUT.
- TURN OVER TO OWNER AT PROJECT COMPLETION OPERATION AND MAINTENANCE MANUALS (QUANTITY AS SPECIFIED) TO OWNER.
- IN ADDITION TO PATCH CABLES SUPPLIED FOR THE PROJECT, FURNISH 30-10FT LONG SINGLEMODE DUPLEX FIBER OPTIC PATCH CABLES (ST-ST) CONNECTORS, AND 30-10FT CAT-5E PATCH CABLES FOR OWNERS USE. TURN OVER CABLES TO OWNER.
- MULTIMODE FIBER OPTIC PATCH CABLES, AND ETHERNET PATCH CABLES SUPPLIED IN THE PROJECT SHALL BE COLORED PURPLE.
- FIBER OPTIC PATCH PANELS SHALL BE THE PRODUCT OF CORNING CABLE SYSTEMS. (RACK OR SURFACE MOUNTED AS SHOWN, ST AND/OR LC STYLE CONNECTORS AS SHOWN, WITH QUANTITY OF BULKHEADS AS SHOWN.

GENERAL CONSTRUCTION NOTES:

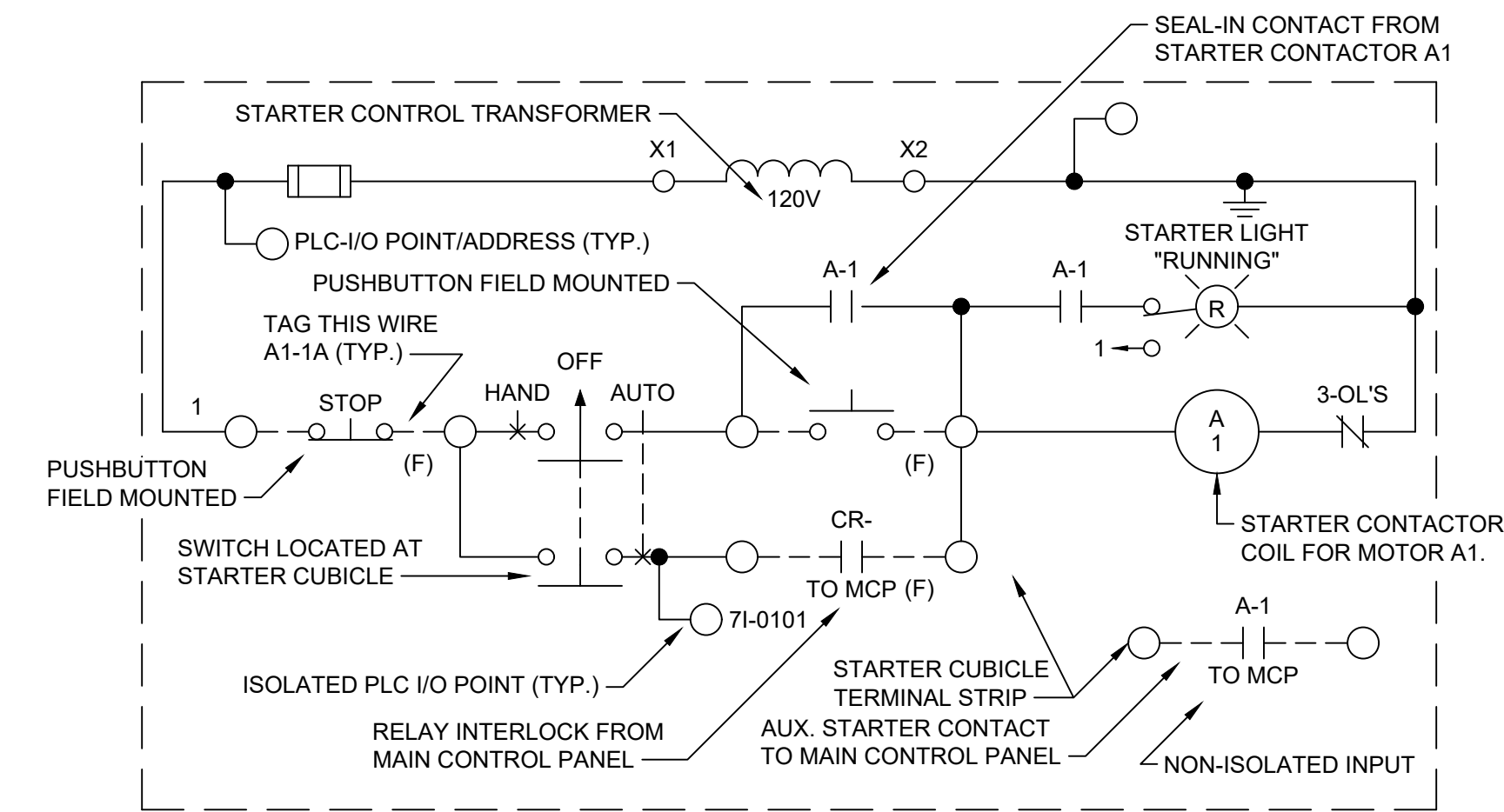
- ELECTRICAL MATERIALS AND EQUIPMENT ITEMS SHOWN IN LIGHT LINE WEIGHTS ON THE DRAWINGS ARE EXISTING ITEMS TO REMAIN. ELECTRICAL MATERIALS AND EQUIPMENT ITEMS SHOWN IN HEAVY LINE WEIGHTS ARE NEW THIS CONTRACT.
- ITEMS SHOWN OR NOTED TO BE DEMOLISHED ON THE DRAWINGS ARE EXISTING ITEMS TO BE REMOVED FROM SITE BY CONTRACTOR UNLESS NOTED TO BE TURNED OVER TO OWNER.
- FOR ITEMS INDICATED AS "FIELD LOCATE", THE CONTRACTOR SHALL FIELD VERIFY FOR INTERFERENCE AND FOR LOCATIONS OF MOUNTING FLANGES, CONNECTION POINTS, ETC.
- CONDUIT ROUTINGS SHOWN ON BACKGROUND PLANS ARE INTENDED ROUTINGS ONLY. EXACT CONDUIT ROUTINGS FOR CONDUITS, AND LENGTH SHALL BE FIELD LOCATED AND VERIFIED BY THE CONTRACTOR. COORDINATE CONDUIT ROUTING IN FINISHED AREAS WITH OWNER. CONDUIT TO BE CONCEALED IN THESE AREAS.
- REFER TO THE CABLE MANUFACTURER'S RECOMMENDATIONS FOR MINIMUM BEND RADIUS FOR FIBER OPTIC CABLES. INSTALL NEW PULL BOXES (PB) AS REQUIRED FOR CONDUITS. SIZE PULL BOXES AS REQUIRED PER FIBER OPTIC CABLE MANUFACTURERS RECOMMENDATIONS.
- CONDUITS/RACEWAYS, PULL BOXES AND JUNCTION BOXES TO BE INSTALLED WITH 316 STAINLESS STEEL CHANNEL STRUT. MINIMUM STRUT LENGTH TO BE 12 INCHES, WHERE POSSIBLE.
- PANELS SHALL BE MOUNTED OFF WALLS WITH STRUT. CONDUITS SHALL BE MOUNTED ON STRUT INCLUDING SINGLE RUNS.
- CONDUIT ENTERING CONTROL PANELS AND ELECTRICAL EQUIPMENT ENCLOSURES SHALL BE FILLED WITH DUCT SEAL, INCLUDING OPENINGS IN BOTTOM OF PANELS, AND EQUIPMENT.
- REPAIR SIDEWALKS AND ROADWAYS DUE TO SITE WORK ADDITIONS. THE EXTENT OF THE REPAIR REQUIRED SHALL BE FIELD VERIFIED PRIOR TO BIDS IN CONJUNCTION WITH THE WORK SHOWN IN THE CONTRACT DOCUMENTS. PRIOR TO TRENCHING, FIELD LOCATE EXISTING GAS LINES, TELEPHONE LINES, SPRINKLER LINES, ETC. COORDINATE WITH OWNER.
- PULL CORDS SHALL BE INSTALLED IN CONDUITS CONTAINING NETWORK CABLES, AND FIBER OPTIC CABLES.
- CORE HOLES AS REQUIRED TO SUIT INSTALLATION OF CONDUIT AND WIRING/CABLING AS SHOWN. FIELD VERIFY EXACT EXTENT OF WORK REQUIRED.
- FURNISH PULL BOXES FOR FIBER OPTIC CABLE. COORDINATE EXACT BENDING RADIUS WITH MANUFACTURER.
- NEW CONDUITS INSTALLED THIS CONTRACT WITH FIBER OPTIC CABLES ARE TO BE LABELED WITH PHENOLIC TAGS (AT BEGINNING TO END) TO INDICATE THE NUMBER OF STRANDS, ORIGIN AND DESTINATION. TAGS TO BE COLOR CODED ORANGE FOR MULTIMODE.
- WHERE NEW CONDUITS SHOWN TO BE INSTALLED PASS UNDER ROADWAYS, CONDUITS SHALL BE CONCRETE ENCASED.
- PRIOR TO EXCAVATION, FIELD LOCATE EXISTING UTILITIES. COORDINATE WITH OWNER.
- AREAS WHERE CAMERAS ARE SHOWN TO BE INSTALLED SHALL BE CLASSIFIED AS NEMA 4, UNLESS CALLED OUT OTHERWISE.
- THE ASSOCIATED INSTRUMENTATION DRAWINGS SHOW EXISTING WIRES AND TERMINAL NUMBERS REQUIRED TO PROPERLY INTERFACE WITH NEW EQUIPMENT. THIS INFORMATION WAS COLLECTED FROM AS-BUILT DRAWINGS AND EXTENSIVE FIELD VERIFICATION. THE INFORMATION SHALL BE USED AS A GUIDE IN RE-TERMINATION. IT SHALL REMAIN THE CONTRACTOR'S RESPONSIBILITY TO EXAMINE THE WIRING AND TO REVISE TO SUIT AS REQUIRED. CHANGES IN THE CONTRACT OR COST WILL NOT BE GRANTED FOR THIS COORDINATION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO EXAMINE PROPOSED WORK SHOWN.
- CONDUIT ROUTINGS SHOWN ON BACKGROUND PLANS ARE PROPOSED ROUTINGS ONLY. EXACT CONDUIT ROUTINGS AND LENGTH SHALL BE FIELD LOCATED AND VERIFIED BY THE CONTRACTOR. COORDINATE CONDUIT ROUTING IN FINISHED AREAS WITH OWNER. CONDUIT TO BE CONCEALED IN THESE AREAS.
- RACEWAYS, PULL BOXES AND JUNCTION BOXES TO BE INSTALLED WITH 316 STAINLESS STEEL FASTENERS SUPPORTS, AND THREADED ROD, ETC. (CHANNEL STRUT TO ALSO BE STAINLESS STEEL). MINIMUM STRUT LENGTH TO BE 12 INCHES, WHERE POSSIBLE. TYPICAL FOR NEMA 12, 4, AND 7 AREAS.
- WIRING FOR STARTERS SHALL BE IN ACCORDANCE WITH NEMA CLASS II B STANDARDS. SUBMIT ENGINEERED SHOP DRAWINGS FOR ALL STARTERS SHOWN TO BE WIRED.
- WIRE NUMBERS (1, 3, 5, ETC.) SHALL BE PREFIXED WITH STARTER TAG NUMBERS. THE WIRE NUMBER AFTER THE PREFIX SHALL BE THE MANUFACTURER'S WIRE NUMBERING SYSTEM. WIRE MARKERS SHALL BE USED AT EACH WIRE TERMINATION POINT.
- IN AREAS WHERE EQUIPMENT AND CONDUIT IS REMOVED, REPAIR WALL AND FLOOR SURFACES AS REQUIRED TO MATCH SURROUNDING AREA. WHERE DEVICES ARE REMOVED FROM CONCEALED BOXES, FURNISH AND INSTALL A BLANK COVER ON THE BOX.
- FIBER OPTIC CABLE SHALL BE AS CALLED OUT ON SYSTEM CONFIGURATION DRAWINGS. MULTIMODE, ALL DIELECTRIC, SUITABLE FOR INSTALLATION UNDERGROUND IN WET CONDUIT.

GENERAL NOTES:

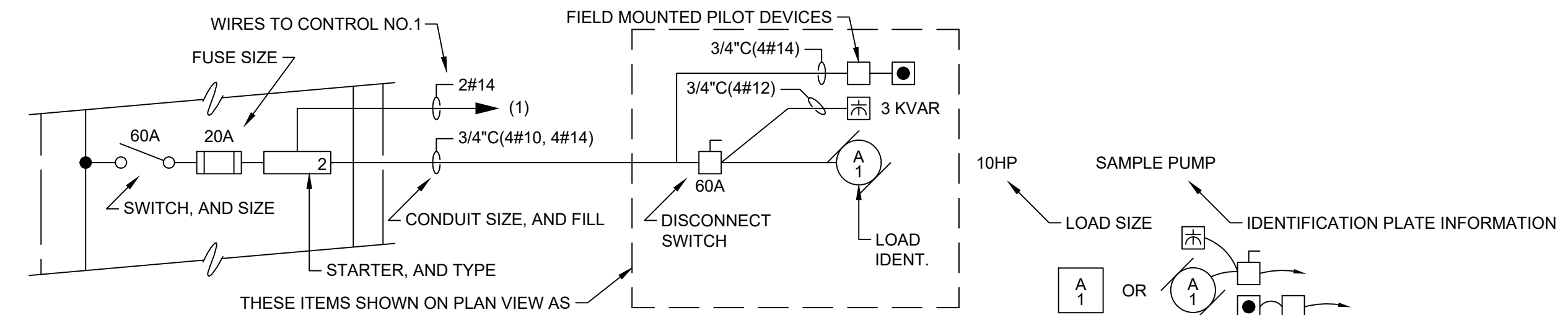
- PRIOR TO SUBMITTING A BID FOR THE WORK DETAILED UNDER THIS CONTRACT, BIDDER SHALL VISIT THE WATER TREATMENT PLANT, AND REMOTE WATER SITES. THE BIDDER SHALL FULLY ACQUAINT ONESELF WITH EXISTING FIELD CONDITIONS AT EACH SITE. NO BULLETINS WILL BE WRITTEN FOR WORK DUE TO LACK OF VERIFICATION OF EXISTING SITE CONDITIONS AND WIRING.
- NO WIRES SHALL BE TERMINATED TO TERMINAL STRIPS, OR OTHER EQUIPMENT WITHOUT FIRST VERIFYING SIGNAL TYPE. DAMAGES RESULTING FROM LACK OF VERIFICATION SHALL BE BORNE BY THE CONTRACTOR. CONTRACTOR SHALL COORDINATE SIGNAL TYPE AND VOLTAGE WITH I/O CARDS SHOWN.
- WITHIN CONTROL PANELS, NAMEPLATES SHALL BE PROVIDED TO INDICATE DIFFERENT VOLTAGE LEVELS WITHIN PANELS. ALSO, A NAME TAG (YELLOW BACKGROUND, RED LETTERING) SHALL BE LOCATED ON THE FRONT OF EVERY PANEL INDICATING THAT WHEN MAIN PANEL IS DISCONNECTED 120V IS STILL PRESENT FROM FIELD DEVICES (YELLOW WIRING/ISOLATED INPUT CARDS.)
- PHENOLIC TAGS ON FACE OF CONTROL PANELS TO HAVE WHITE BACKGROUND AND BLACK LETTERING (EXCEPT WARNING TAGS; YELLOW BACKGROUND RED LETTERING).
- PROVIDE SAFETY COVERS ON ALL 480V MOLDED CASE MAIN CIRCUIT BREAKERS TO INSULATE THE INCOMING CABLES AND SIDE CONDUCTORS FROM CONTACT. (TYP. FOR CONTROL PANELS.) PROVIDE BREAKER LOCKS FOR PUMP CIRCUIT BREAKERS (MCP) AND MAIN PANEL BREAKERS.
- REFER TO WIRING DIAGRAMS FOR ADDITIONAL INFORMATION ON ISOLATED I/O. A COMMON NEUTRAL MAY BE USED FOR SEVERAL ISOLATED INPUTS FROM THE SAME STARTER. PROVIDE NEUTRAL JUMPERS WIRES WITHIN THE PANEL AS REQUIRED.
- ELECTRICAL MATERIALS AND EQUIPMENT ITEMS SHOWN IN LIGHT LINE WEIGHTS ON THE DRAWINGS ARE EXISTING ITEMS TO REMAIN. ELECTRICAL MATERIALS AND EQUIPMENT ITEMS SHOWN IN HEAVY LINE WEIGHTS ARE NEW THIS CONTRACT.
- ITEMS SHOWN CROSSHATCHED (OR NOTED TO BE DEMOLISHED) ON THE DRAWINGS ARE EXISTING ITEMS TO BE REMOVED, FROM SITE BY CONTRACTOR.
- INSTALL A SINGLE CONDUCTOR INSULATED (RHW, THWN, OR XHHW) COPPER GROUND WIRE IN EACH CONDUIT, SIZE AS SHOWN ON DRAWINGS, OR AS A MINIMUM PER THE NATIONAL ELECTRICAL CODE. THIS GROUND WIRE SHALL BE CONNECTED AT EACH END TO THE EQUIPMENT GROUND. THIS ALSO INCLUDES INSTRUMENTATION DEVICES SUCH AS LEVEL, PRESSURE, FLOW TRANSMITTERS, LIMIT SWITCHES, CONDUITS, NETWORK AND I/O CABLES.
- THE FOLLOWING EXAMPLE COMPONENT IDENTIFICATION SHALL BE USED AS APPROPRIATE:
 (F) FIELD MOUNTED, NOT AT STARTER OR OTHER CONTROL PANELS
 (S) STARTER PANEL MOUNTED (MCP) AT MAIN CONTROL PANEL
 (1) AT CONTROL PANEL NO.1
 (2) AT CONTROL PANEL NO.2
 (TCP) AT TEMPERATURE CONTROL PANEL
- REFER TO DETAIL SHEETS. CONTRACTOR SHALL FURNISH AND INSTALL HARDWARE AND APPURTENANCES (I.E. PIPE TAPS, WETWELL BUBBLER TUBES, VALVES, COPPER TUBING, BALL VALVES, PNEUMATIC PIPING, SPOOL PIECES, ETC.) FOR FIELD DEVICES SHOWN (FLOWMETERS, PRESSURE TRANSMITTERS, LEVEL TRANSMITTERS, ETC.). WORK SHALL BE COORDINATED WITH OTHER TRADES (MECHANICAL INSTRUMENTATION, ETC.) CONTRACTOR SHALL BE RESPONSIBLE FOR SYSTEM COORDINATION AND INSTALLATION.
- ETHERNET AND FIBER OPTIC TERMINATIONS SHALL BE PERFORMED BY A QUALIFIED REPRESENTATIVE OF CABLE MANUFACTURER. THE CABLES SHALL BE TESTED. NO SPLICING SHALL BE PERMITTED OF FIBER OPTIC CABLES, BETWEEN PANELS. FIBERS SHALL BE TERMINATED AT PATCH PANELS, INCLUDING SPARES.
- REFER TO THE CABLE MANUFACTURER'S RECOMMENDATIONS FOR MINIMUM BEND RADIUS FOR FIBER OPTIC CABLES. INSTALL NEW PULL BOXES (PB) AS REQUIRED FOR CONDUITS. SIZE PULLBOXES AS REQUIRED PER FIBER OPTIC CABLE MANUFACTURERS RECOMMENDATIONS.
- CONDUIT ENTERING CONTROL PANELS AND ELECTRICAL EQUIPMENT ENCLOSURES SHALL BE FILLED WITH DUCT SEAL, INCLUDING OPENINGS IN BOTTOM OF PANEL.
- CABLES (INCLUDING FIBER, ETHERNET, CONTROL WIRE, ETC.) WHERE PASSING THROUGH A PULLBOX SHALL BE LABELED AND COMPLETELY IDENTIFIED WITH IDENTIFICATION NUMBERS AND ORIGIN/DESTINATION. THIS ALSO INCLUDES ALL CABLE BUNDLES ENTERING CONTROL PANELS, PULLBOXES, ETC.
- CONTROL WIRES SHALL BE TAGGED WITH THE PLC I/O ADDRESS IN THE FIELD AND AT THE PANEL.
- THE FIELD DEVICES SHOWN ON THE P&ID'S, ELECTRICAL BACKGROUNDS, AND DETAILS SHEETS MAKEUP THE FIELD DEVICE EQUIPMENT REQUIREMENTS. NOT ALL FIELD DEVICES REQUIRED ARE SHOWN ON THE P&ID'S.
- UPS SELECTED SHALL BE COMPATIBLE WITH ISOLATION TRANSFORMERS. (TYP.)
- REFER TO I/O DRAWING LAYOUT FOR ADDITIONAL SIGNALS NOT SHOWN ON P&ID FLOW DIAGRAMS.



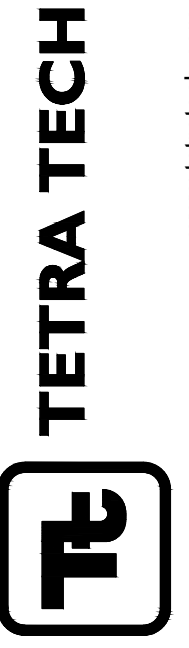
TYPICAL 120V 3 POLE CONTACTOR
(EXAMPLE CIRCUIT)



EXAMPLE PUMP
(TAG A1)
(EXAMPLE CIRCUIT)



MCC LEGEND EXAMPLE



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BY	DATE	DESCRIPTION

CITY OF OWOSSO, MICHIGAN
OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES
SCADA SYSTEM UPGRADES
ELECTRICAL NOTES

Project No.: 200-280565-21002
Designed By: GCJ
Drawn By: JLS
Checked By:

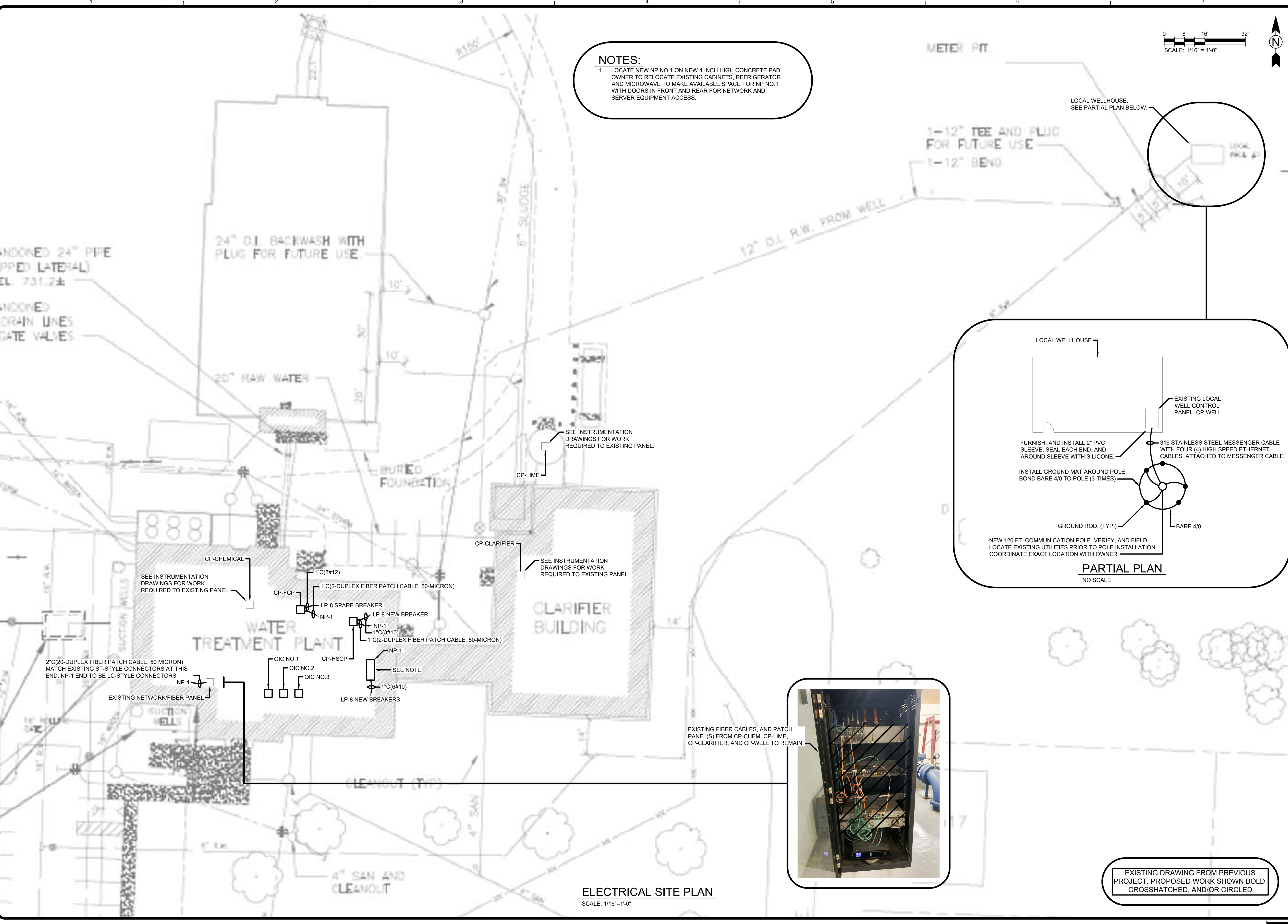
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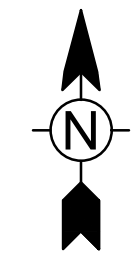
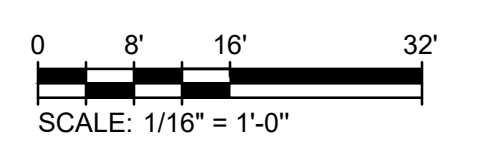
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Bar Measures 1 inch

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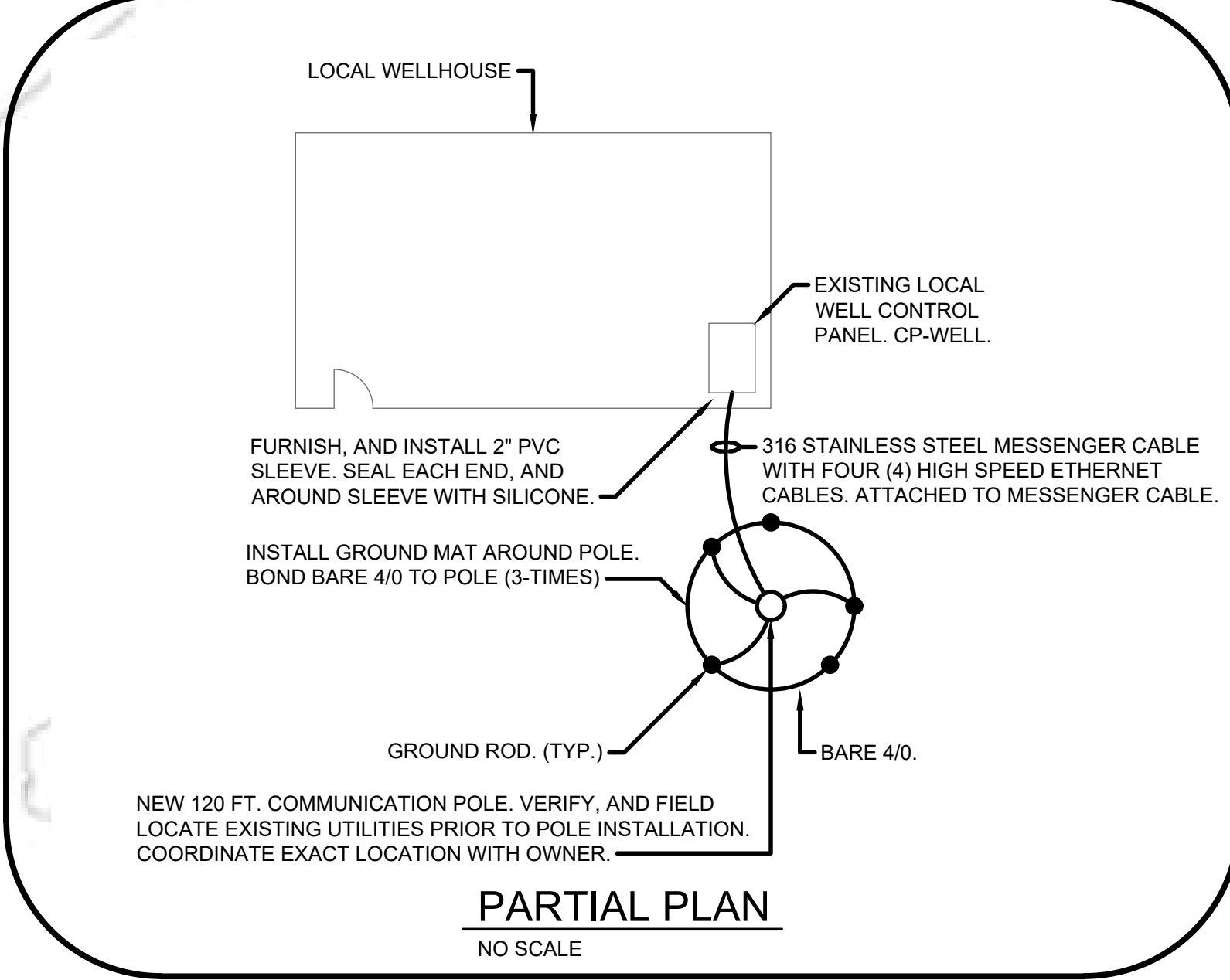
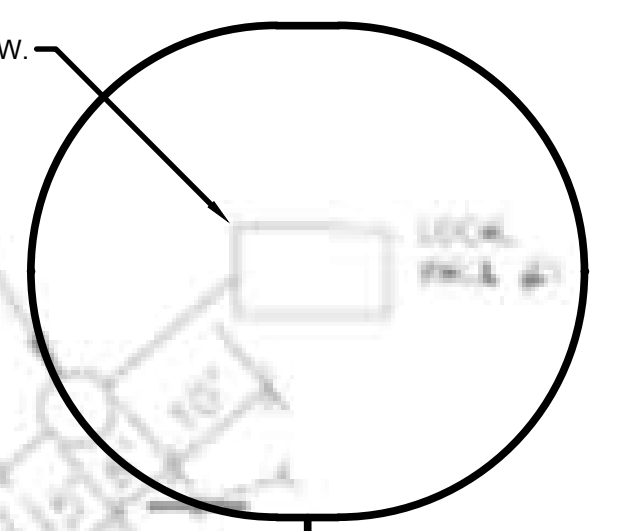
NOTES:
1. LOCATE NEW NP NO.1 ON NEW 4 INCH HIGH CONCRETE PAD. OWNER TO RELOCATE EXISTING CABINETS, REFRIGERATOR AND MICROWAVE TO MAKE AVAILABLE SPACE FOR NP NO.1 WITH DOORS IN FRONT AND REAR FOR NETWORK AND SERVER EQUIPMENT ACCESS.



METER PIT.

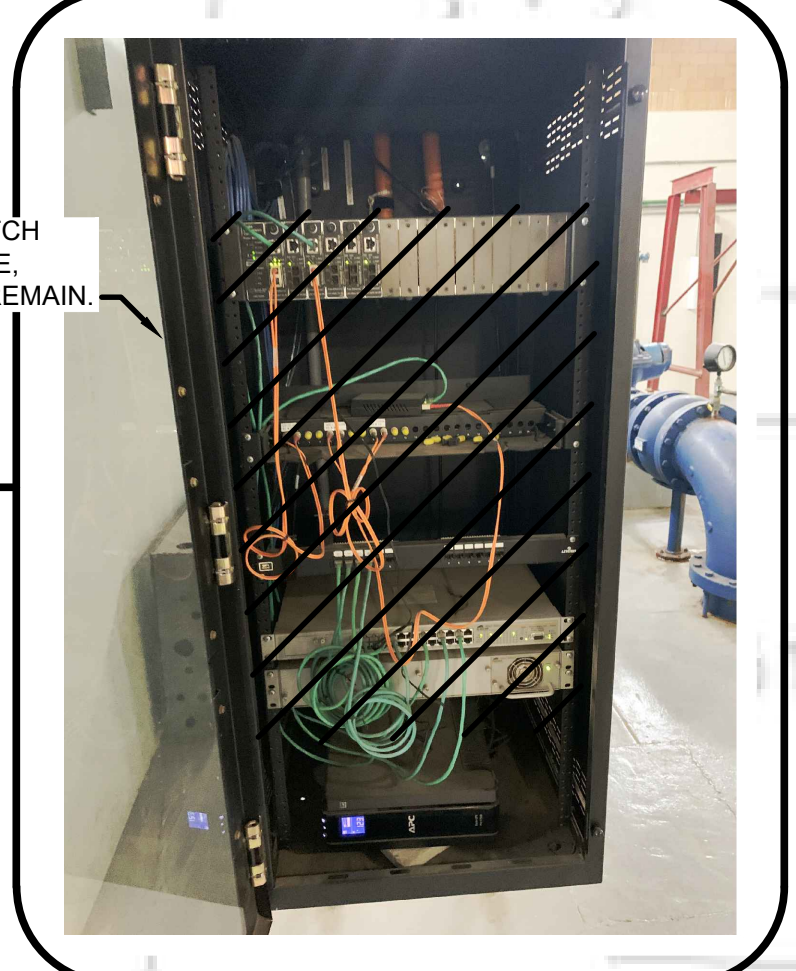
1-12\"/>

LOCAL WELLHOUSE. SEE PARTIAL PLAN BELOW.



ELECTRICAL SITE PLAN

SCALE: 1/16"=1'-0"



EXISTING FIBER CABLES, AND PATCH PANEL(S) FROM CP-CHEM, CP-LIME, CP-CLARIFIER, AND CP-WELL TO REMAIN.

EXISTING DRAWING FROM PREVIOUS PROJECT. PROPOSED WORK SHOWN BOLD, CROSSHATCHED, AND/OR CIRCLED

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MARK	DATE	DESCRIPTION

CITY OF OWOSSO, MICHIGAN
OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES
SCADA SYSTEM UPGRADES
ELECTRICAL SITE PLAN

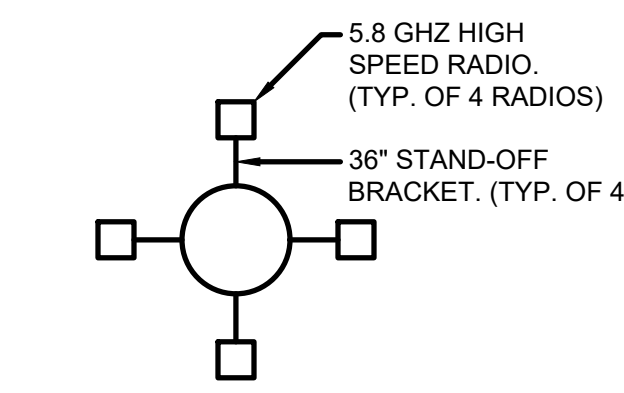
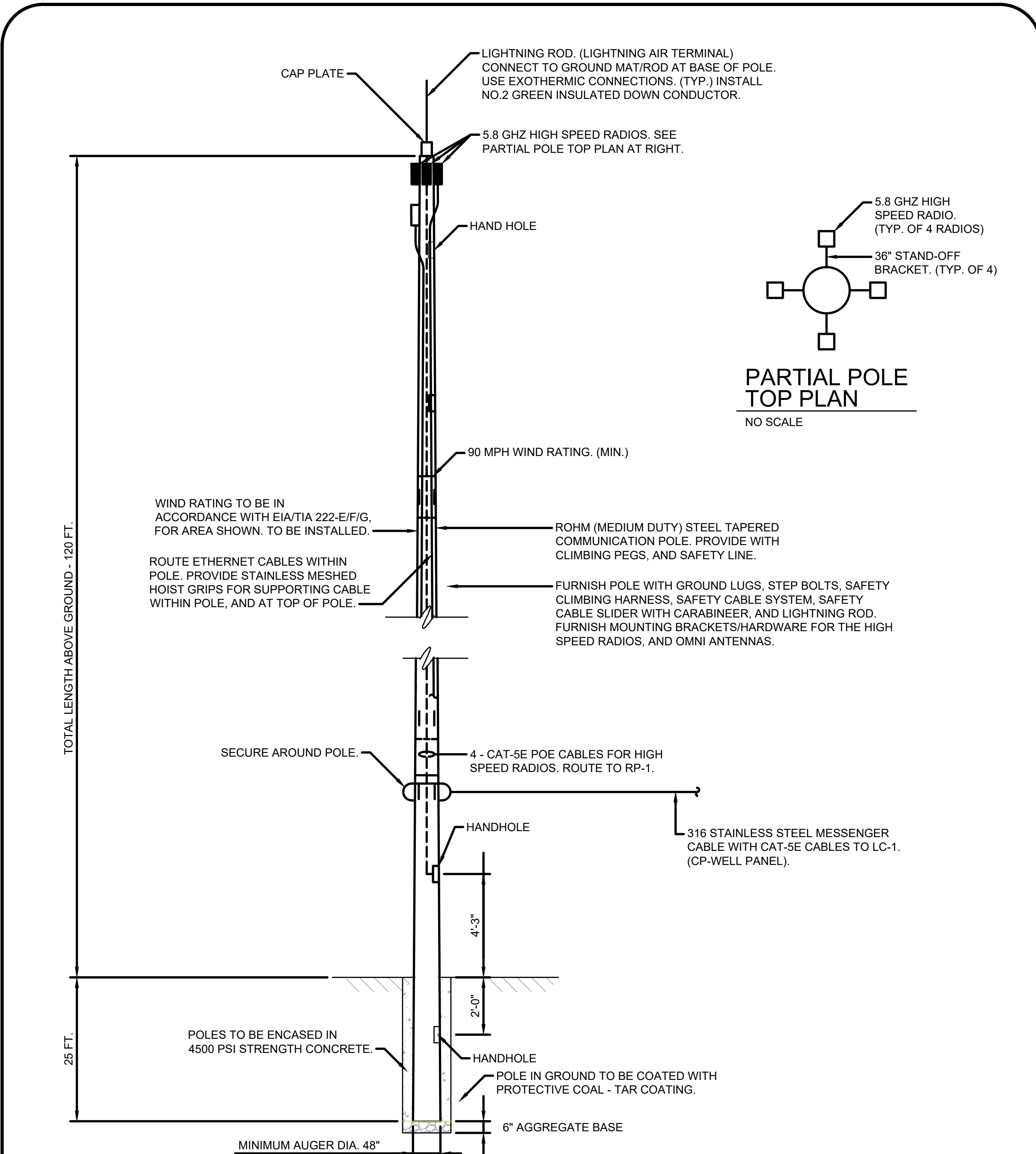
Project No.: 200-280565-21002
Designed By: G.C.J.
Drawn By: J.L.S.
Checked By:

E-003
OF 11

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Bar Measures 1 inch

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NEW ROHN MEDIUM DUTY TAPERED STEEL COMMUNICATION POLE DETAIL - 120 FT. ABOVE GRADE
NO SCALE

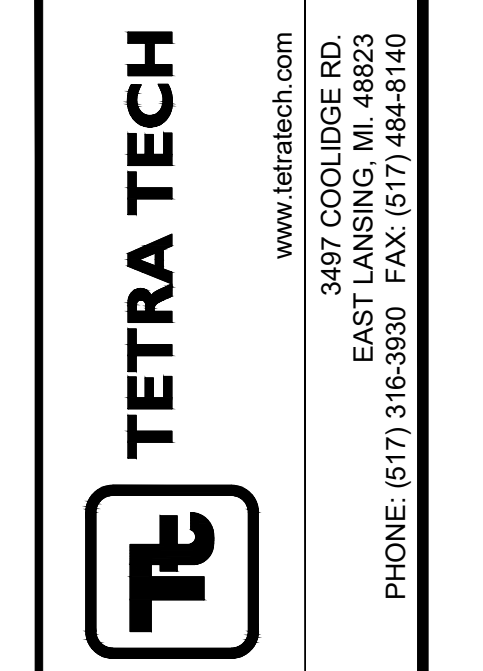
- POLE DESIGN SHALL CONFORM TO ANSI/TIA/EIA-222-E/F/G FOR THE AREA INSTALLED.
- WORK SHALL BE IN ACCORDANCE WITH ANSI/TIA/EIA-222-F, STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES AND WITH LOCAL CODES AND SAFETY REGULATIONS, PROCEDURES FOR THE PROTECTION OF EXCAVATIONS, EXISTING CONSTRUCTION, AND UTILITIES SHALL BE ESTABLISHED PRIOR TO INSTALLATION.
- EMBEDMENT DEPTH IS BASED ON ANSI/TIA/EIA-222-F *NORMAL SOIL CONDITIONS.
- STRUCTURAL STEEL SHALL CONFORM TO ASTM A572 GRADE 65, HOT DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ANSI/TIA/EIA-222-F.
- NON-STAINING LUBRICANT SHALL BE APPLIED TO THE SLIP JOINT SURFACES. JACKING FORCES SHALL BE APPLIED UNTIL THE MINIMUM SPLICE LENGTH IS OBTAINED AND THE JOINT IS TIGHT WITH NO GAPS GREATER THAN 1/4 INCH. COORDINATE WITH POLE MANUFACTURER.
- CONCRETE BACKFILL SHALL DEVELOPE A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI IN 28 DAYS USING 1 1/2 INCH MAXIMUM COARSE AGGREGATE SIZE AND SHALL CONFORM TO THE APPROPRIATE STATE REQUIREMENTS FOR EXPOSED STRUCTURAL CONCRETE.
- COORDINATE EXACT INSTALLATION METHODS WITH POLE MANUFACTURER ROHN.
- THE CONTRACTOR SHALL INCLUDE IN THEIR BID PROCURING PERMITS, AND LICENSES (STATE, LOCAL, COUNTY, AND FAA) AS REQUIRED FOR THE CONSTRUCTION, AND INSTALLATION OF THE POLES SHOWN.
- CONTRACTOR SHALL INCLUDE IN BID FOR A GEO-TECHNICAL ANALYSIS TO BE PERFORMED AT SITE PRIOR TO POLE INSTALLATION TO ENSURE THAT THERE ARE NO SOIL CONDITIONS THAT WOULD PREVENT POLE INSTALLATION.
- CONTRACTOR SHALL INCLUDE TO FURNISH, AND INSTALL A 25 FT. LONG STEEL CAISSON FOR INSTALLATION DURING THE AUGURING OF THE POLE HOLE. CONTRACTOR SHALL ASSUME THAT AREA IS A HIGH WATER TABLE, AND THAT DEWATERING WILL BE REQUIRED FOR POLE INSTALLATION.

FURNISH, AND INSTALL 1 - 20A CIRCUIT BREAKERS, AND 2 - 30A CIRCUIT BREAKERS TO EXISTING PANELBOARD. (30A, 30A - NP-1) (20A - CP-HSCP)

IDENTIFICATION	A	B	WIRE	POLE	AMP	CIRCUIT						IDENTIFICATION
AIR COMP. 1 AND 3	19.2					3	50	15	13			PUMP 4
		19.2			EX.			17	17			
VACUUM PUMP	5.8					3	15	21	19			WELDER
		5.8			EX.			23	23			
INACTIVE								25	25			PANEL 2 XFMR
						3	100	27	29			
INACTIVE								31	31			AIR COMP. 2
						3	100	33	35			
INACTIVE								37	37			SUMP PUMP
						2	70	39	41			
LP-S	26.9					EX.	2	70	43			INACTIVE
		26.9						45	45			
AUTO CLAVE	7.7					EX.	3	20	47			INACTIVE
		7.7						49	51			
MCC	96					EX.	3	250	53			SPACE
		96						55	57			
LP-B		26.9				EX.	3	70	59			SPACE
		26.9						61	63			
WWP-2		36.96				#3	3	100	63			SPACE
		36.96						65	67			
CONNECTED LOAD	328	326	315									CONNECTED LOAD

LP-8		DESCRIPTION: EXISTING PANEL SURFACE MOUNT, 120/240V, 1φ, 100A, MLO, 42 CIRCUIT										
IDENTIFICATION	KVA LOAD	CIRCUIT		CIRCUIT		CIRCUIT		CIRCUIT		CIRCUIT		IDENTIFICATION
		A	B	WIRE	POLE	AMP	CIRCUIT	WIRE	POLE	AMP	CIRCUIT	
EF #1		EX.		1	20	1		2	20	1	EX.	BATH EXHAUST FAN
EF #2		EX.		1	20	3		4	20	1	EX.	LIGHTS ROOM 107 & 108
LIGHTING CONTACTOR		EX.		1	20	5		6	20	1	EX.	VACUUM PUMP
ETHERNET		EX.		1	20	7		8	20	1	EX.	GFI MAU-1
CP-CHEM		EX.		1	20	9		10	20	1	EX.	FLOW METER SENSOR
CIRCULATING PUMP		EX.		1	20	11		12	20	1	EX.	UH-1
FILTRORITE PUMP		EX.		1	20	13		14	20	1	EX.	FUME HOOD
POLYPHOSPHATE PUMP		EX.		1	20	15		16	20	1	EX.	HYPOCHLORITE PUMP
HYPOCHLORITE PUMP		EX.		1	20	17		18	20	1	EX.	TRANSFER PUMP
WATER SOFTENER		EX.		1	20	19		20	20	1	EX.	REDEPT EAST WALL SHOP
FLOW METER			#12	1	20	21		22	20	1	EX.	REDEPT SOUTH WALL SHOP
WASH WATER CONTROL PANEL				1	20	23		24	20	1	EX.	SPARE
CP-HSCP		EX.		1	20	25		26	20	1	EX.	SPARE
NP-1		EX.		1	20	27		28	20	1	EX.	SPARE
NP-1		EX.		1	20	29		30	20	1	EX.	SPARE
SPARE		EX.		1	20	31		32	20	1	EX.	SPARE
SPARE		EX.		1	20	33		34	20	1	EX.	SPARE
SPARE		EX.		1	20	35		36	20	1	EX.	SPARE
SPARE		EX.		1	20	37		38	20	1	EX.	SPARE
SPARE		EX.		1	20	39		40	20	1	EX.	SPARE
SPARE		EX.		1	20	41		42	20	1	EX.	SPARE
CONNECTED LOAD												CONNECTED LOAD

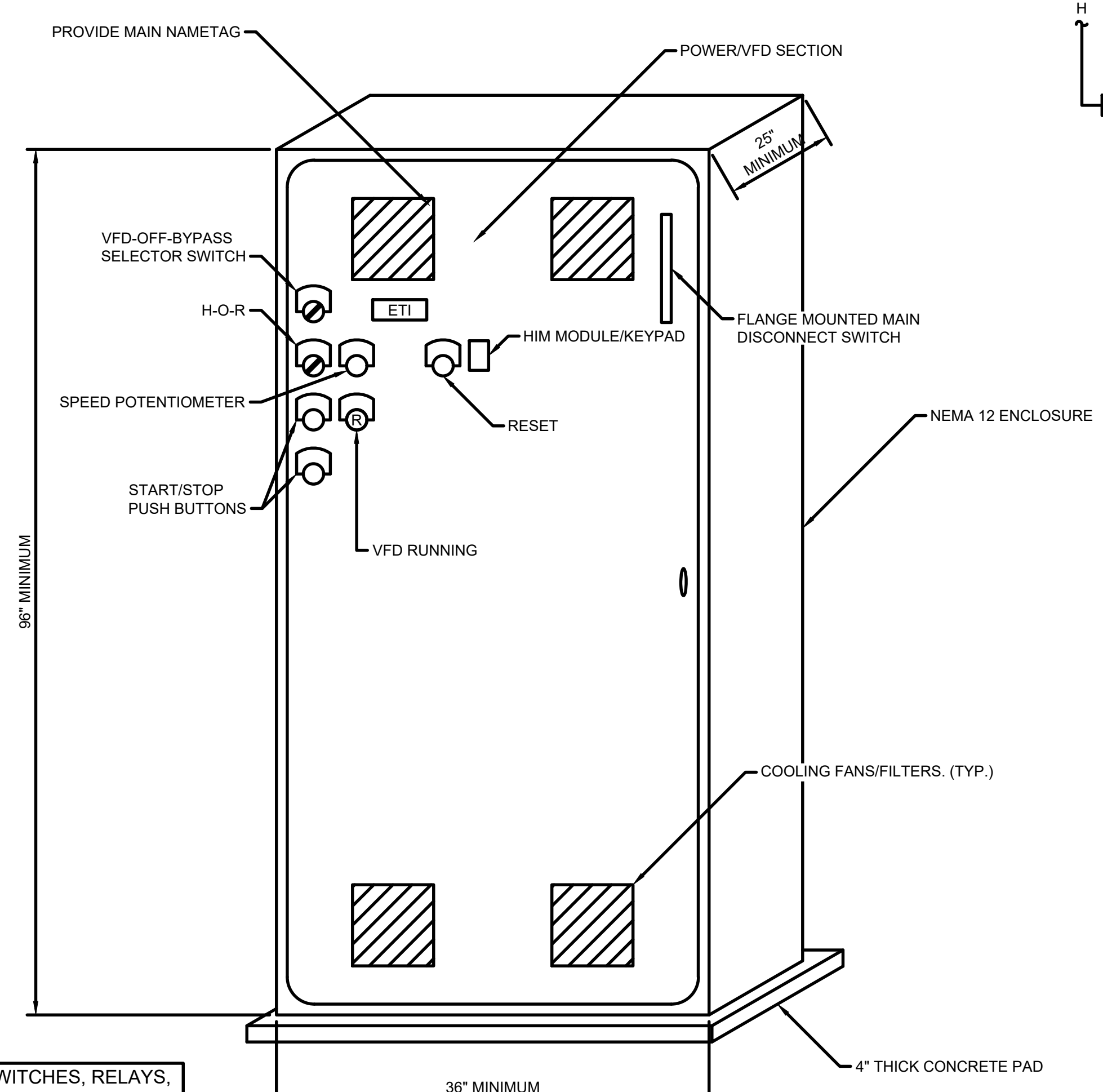
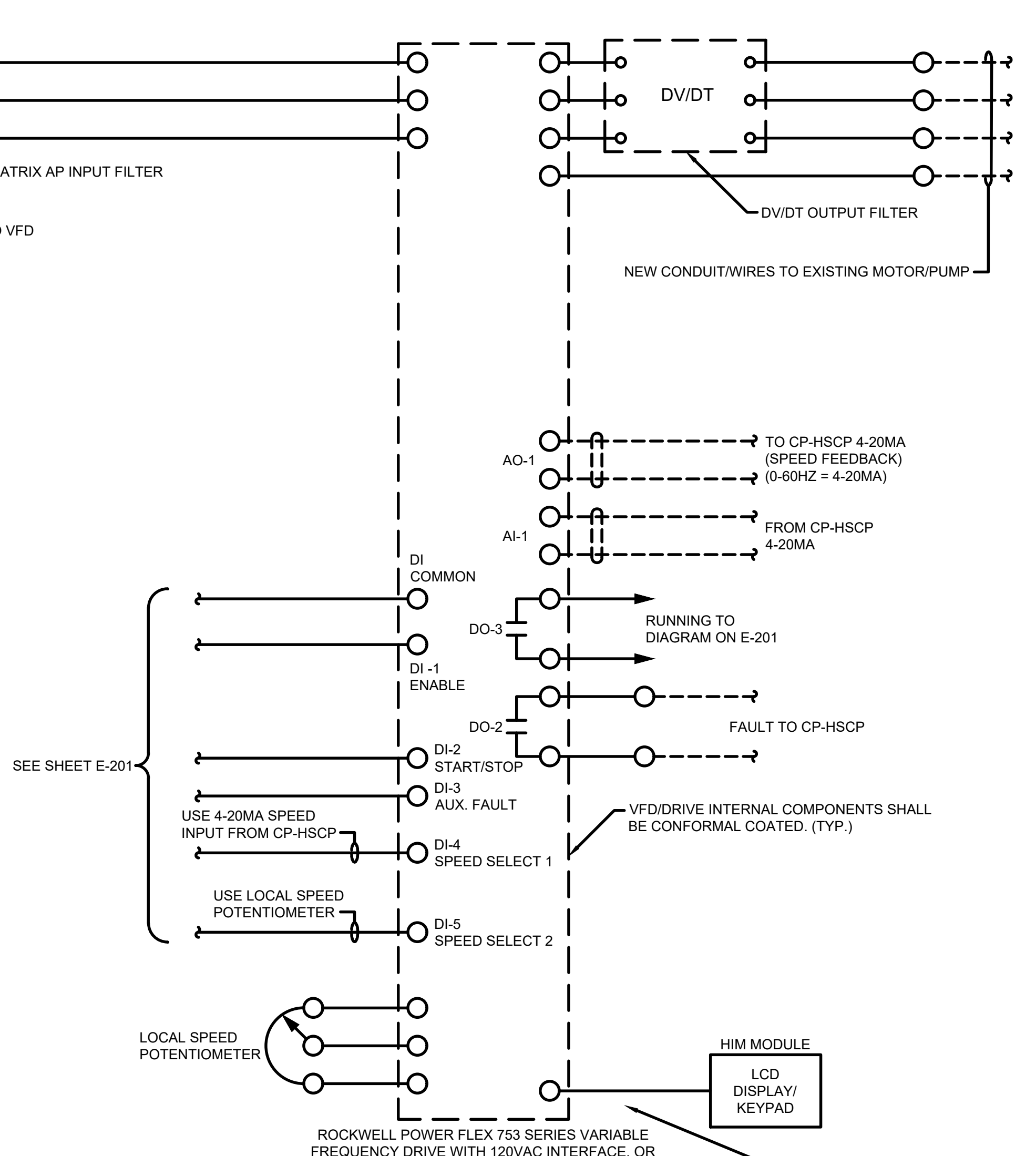
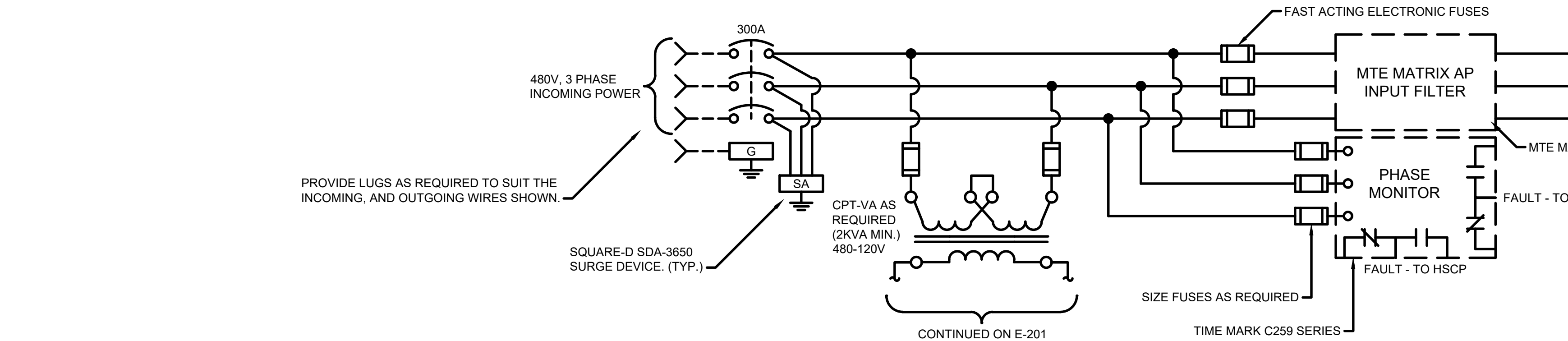
EXISTING DRAWING FROM PREVIOUS PROJECT. PROPOSED WORK SHOWN BOLD, CROSSHATCHED, AND/OR CIRCLED



CITY OF OWOSSO, MICHIGAN
OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES
SCADA SYSTEM UPGRADES
ELECTRICAL
DETAILS, AND SCHEDULE

Project No.: 200-280565-21002
Designed By: GCJ
Drawn By: JLS
Checked By:
E-004
OF 11
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Bar Measures 1 inch

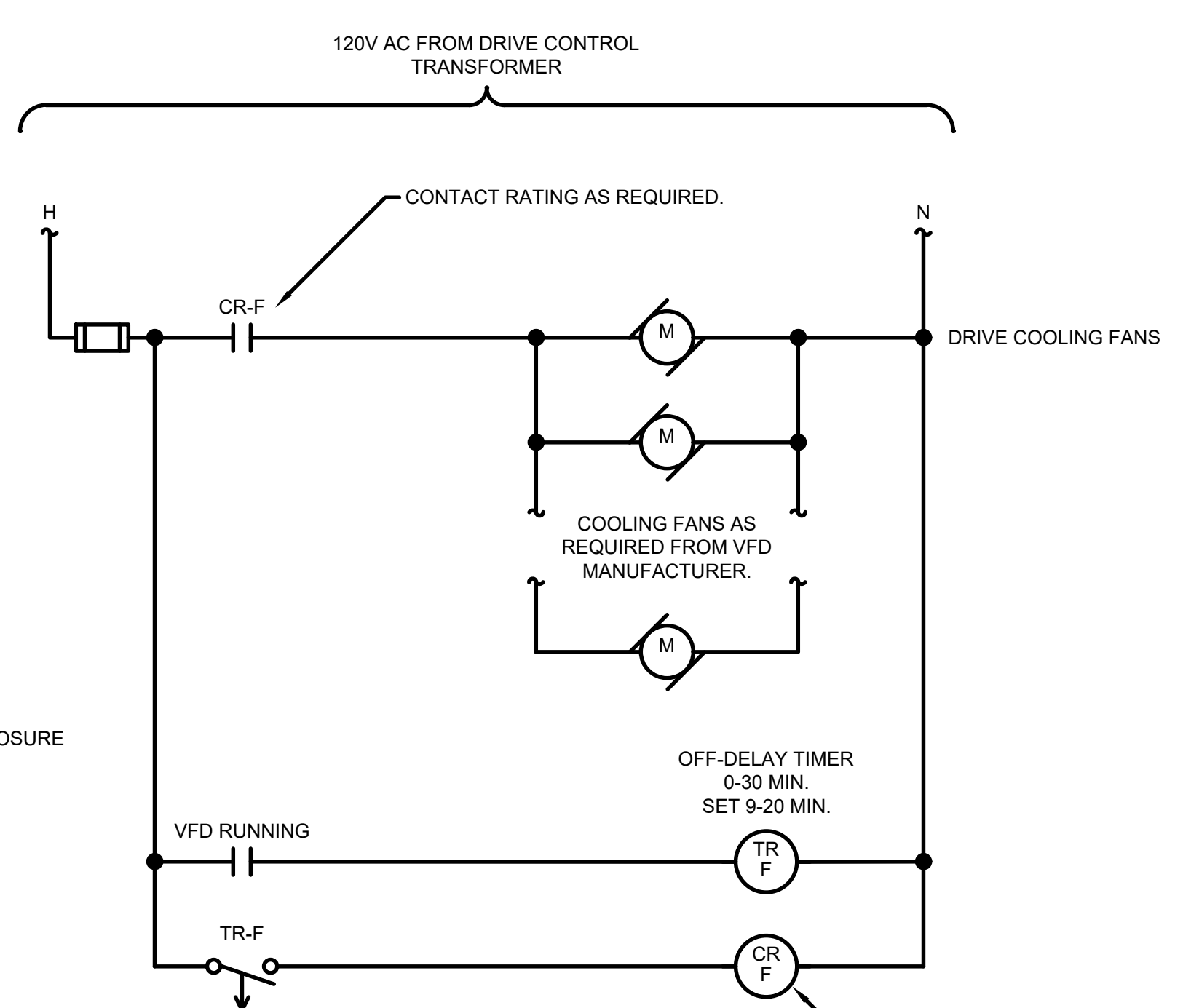
11/22/2022 11:49:55 AM - \\T:\LOCAL\PROJECTS\ANN ARBOR\IER\200565-21002\CAD\SHSHEETFILES\E-200_ELECTRICAL WIRING DIAGRAMS.DWG - SHANK, JASON



HIGH SERVICE PUMP NO.2 VARIABLE FREQUENCY DRIVE LAYOUT

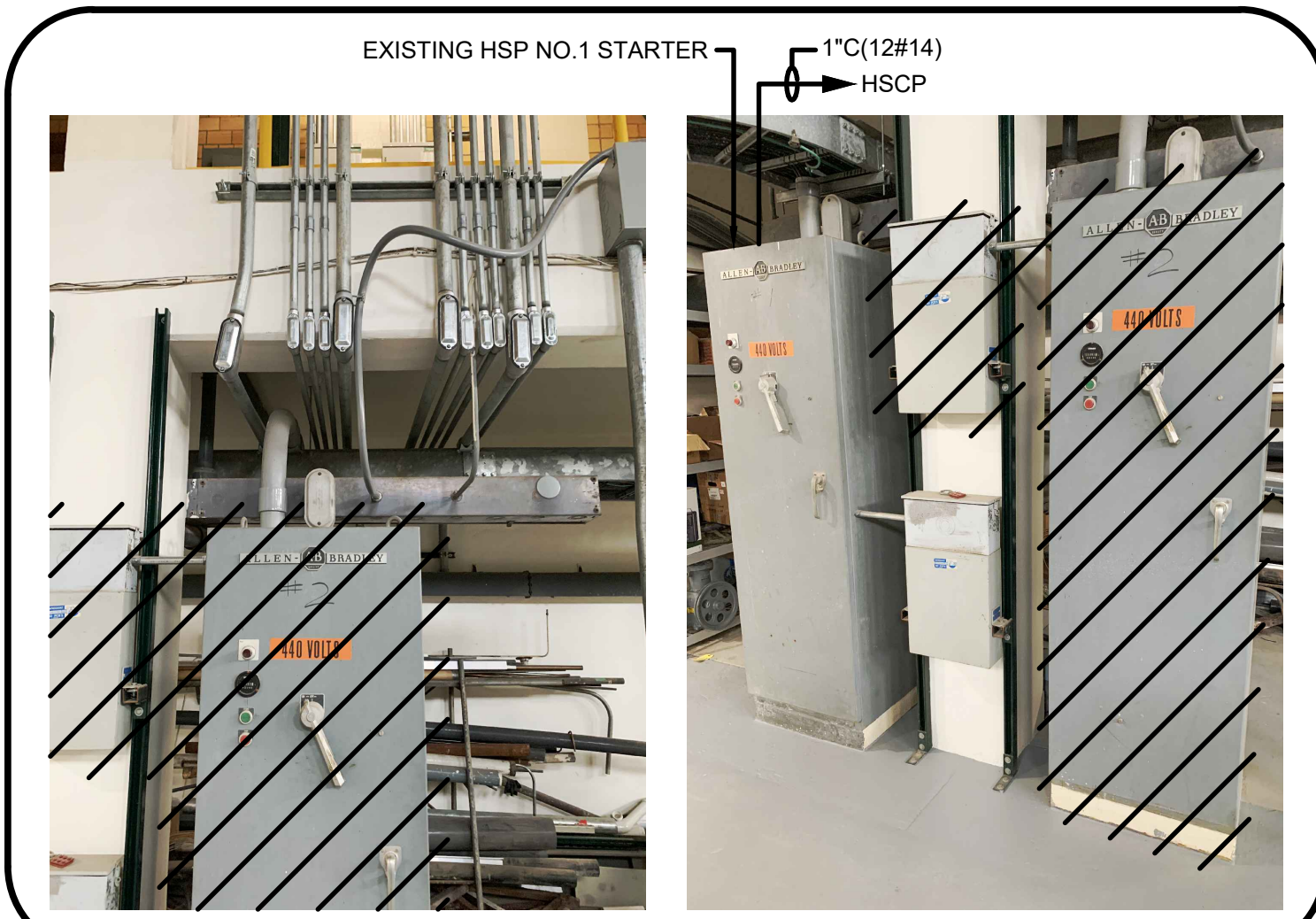
NO SCALE
NEMA 12 ENCLOSURE

MANUFACTURER SHALL INSTALL RELAYS, TIMERS, CIRCUIT BREAKERS, FUSES, AND ASSOCIATED CONTROLS SO THAT THEY ARE SERVICEABLE WITHOUT HAVING TO REMOVE ANY MAJOR DRIVE COMPONENTS.

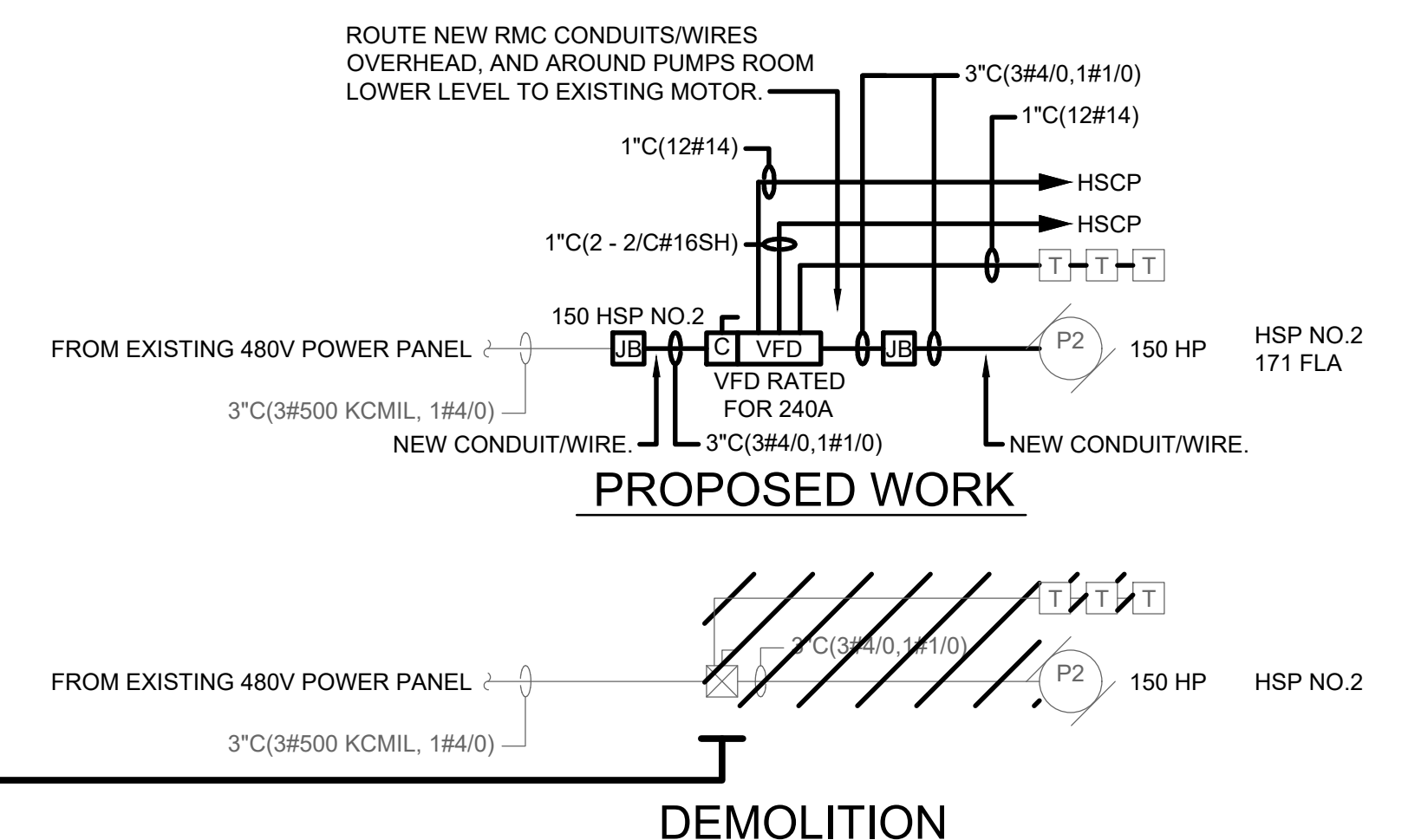


VFD - PARTIAL WIRING DIAGRAM COOLING FANS

(TYP. FOR VFD'S FANS)
NOTE: DRIVE MANUFACTURER TO INTERLOCK COOLING/VENTILATION FANS WITH RUN STATUS. FURNISH OFF-DELAY-TIMER ADJUSTABLE (0-30 MIN.) TO SHUT OFF FANS (WITH OFF DELAY) AFTER DRIVE IS STOPPED. (TYP.)

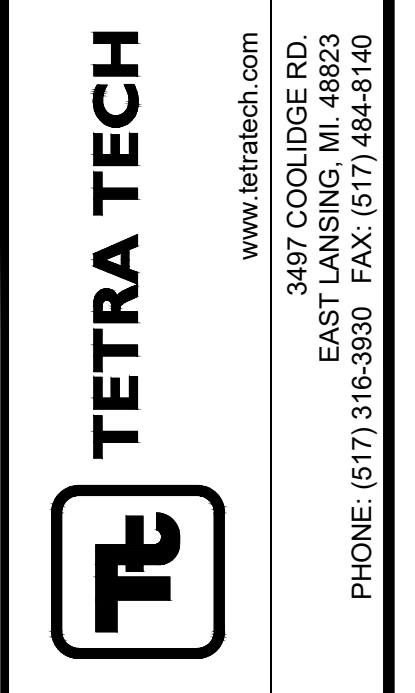


DEDUCTIBLE ALTERNATE NO.1



PARTIAL ONE-LINE DIAGRAM - PROPOSED WORK - HIGH SERVICE PUMP NO.2

- #### NOTES:
- 1. DEMOLISH EXISTING STARTER, CAPACITOR AND ASSOCIATED EQUIPMENT FOR HIGH SERVICE PUMP NO.2.
 - 2. INTERCEPT EXISTING INCOMING CONDUIT AND POWER WIRE REWORK TO NEW NEMA 4 JUNCTION BOX. SIZE BOX AS REQUIRED. INSTALL NEW CONDUIT AND WIRE FROM NEW JUNCTION BOX TO NEW VFD INPUT CIRCUIT BREAKER. INSTALL NEW CONDUIT AND WIRE FROM VFD TO EXISTING MOTOR. ROUTE CONDUIT AROUND PUMP ROOM AND CONNECT OVERHEAD/EXPOSED TO EXISTING MOTOR.
 - 3. DEMOLISH EXISTING CONDUIT AND WIRE FROM EXISTING STARTER TO EXISTING HIGH SERVICE PUMP NO.2 MOTOR.



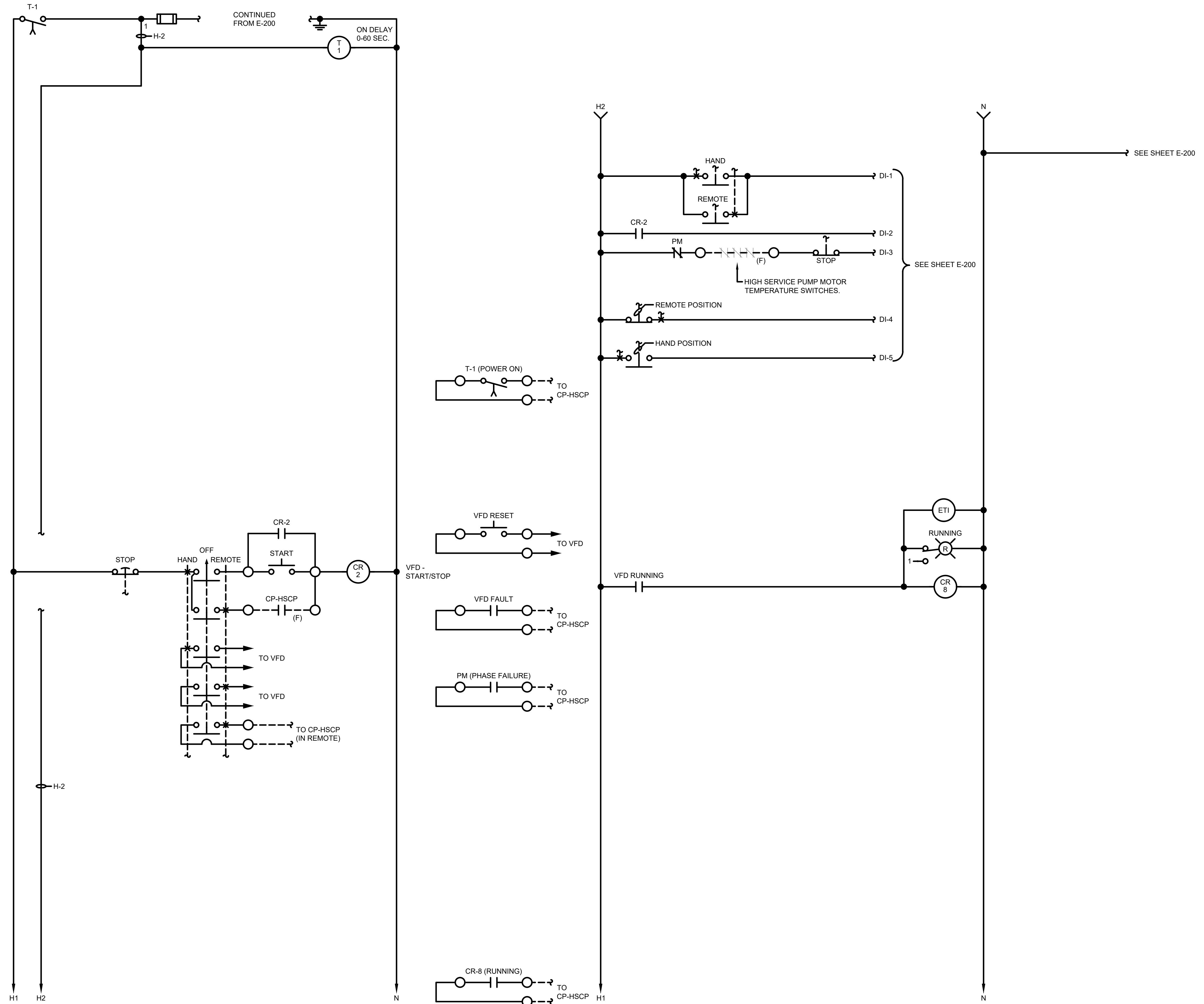
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PHONE: (517) 316-3930 FAX: (517) 484-8140

BY	DATE	DESCRIPTION

CITY OF OWOSSO, MICHIGAN
OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES
SCADA SYSTEM UPGRADES
**ELECTRICAL
PARTIAL ONE-LINES,
WIRING DIAGRAMS**

Project No.: 200-280565-21002
Designed By: GCJ
Drawn By: JLS
Checked By:

4/17/2022 10:47:03 AM - \\TT.LOCAL\IERPROJECTS\ANN ARBOR\IER280565-2100\CAD\SHEETFILES\IE-201_ELECTRICAL WIRING DIAGRAMS\I.DWG - SHANK, JASON



HIGH SERVICE PUMP NO.2 WIRING DIAGRAM



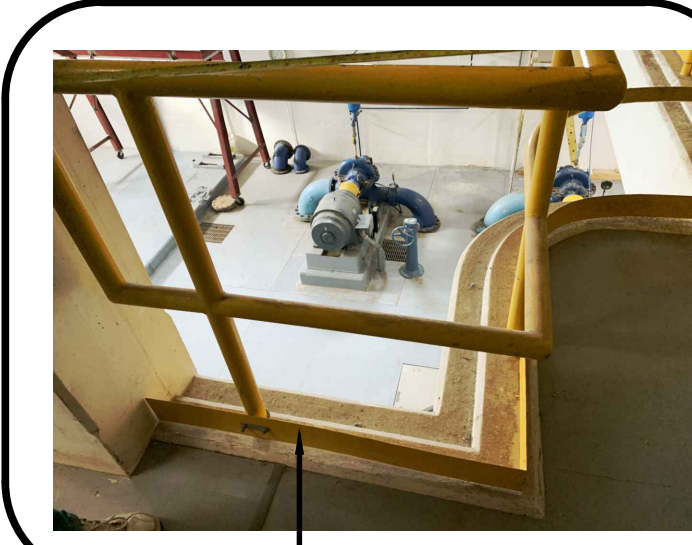
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MARK	DATE	DESCRIPTION

CITY OF OWOSSO, MICHIGAN
 OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES
 SCADA SYSTEM UPGRADES
**ELECTRICAL
 WIRING DIAGRAMS**

Project No.: 200-280565-21002
 Designed By: GCJ
 Drawn By: JLS
 Checked By:

4/14/2022 11:04:20 AM - \\TTT.LOCAL\IER\PROJECTS\ANN ARBOR\IER\280565\200-280565-21002\CAD\SHEETFILES\IE-300_ELECTRICAL UPPER LEVEL POWER PLAN_P.DWG - SHANK, JASON

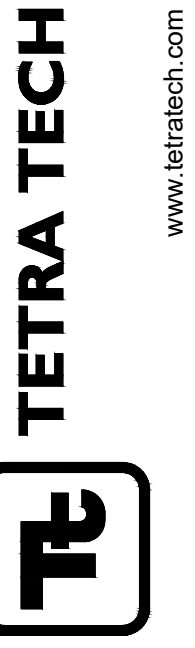


SEE NOTE NO.1

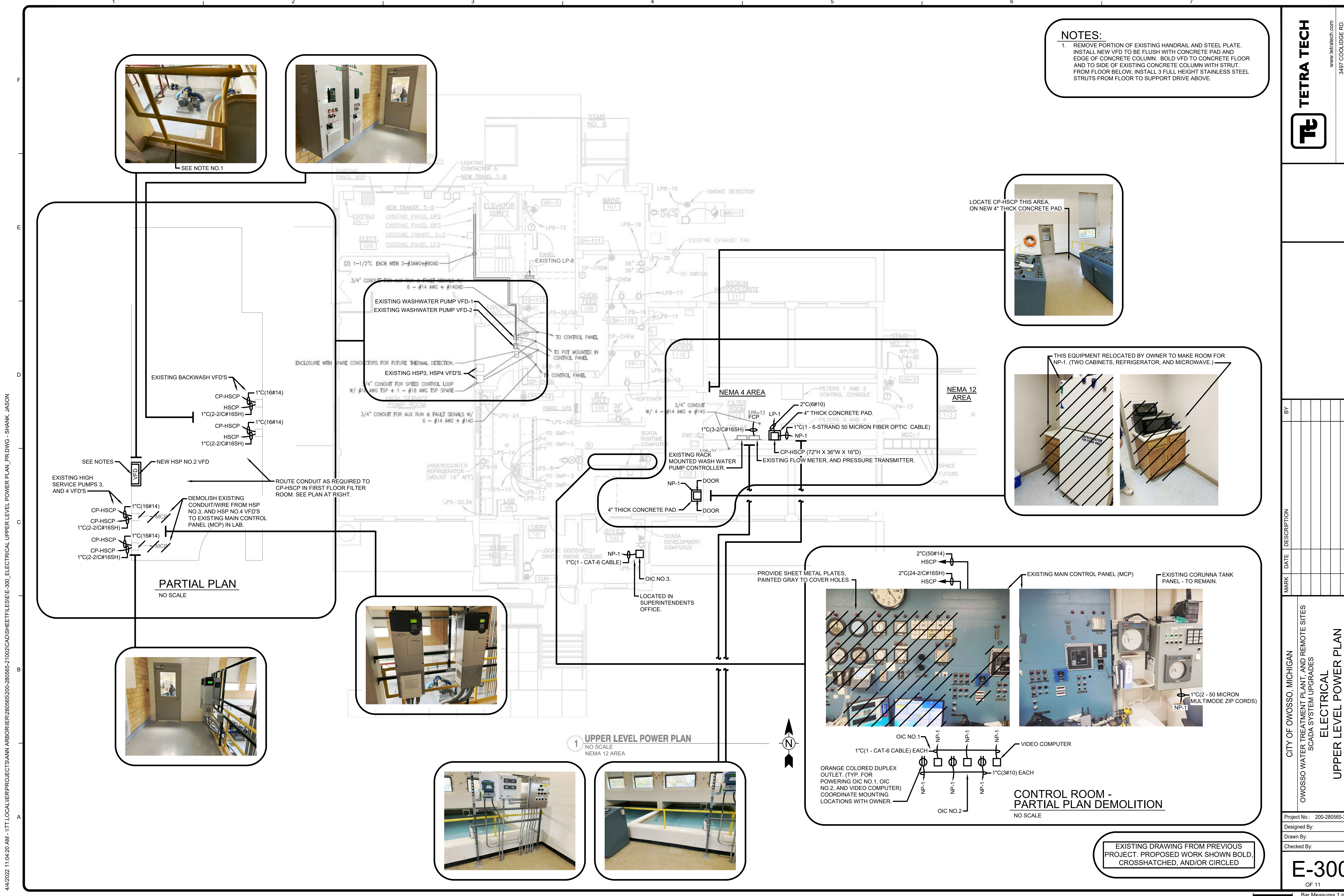


NOTES:

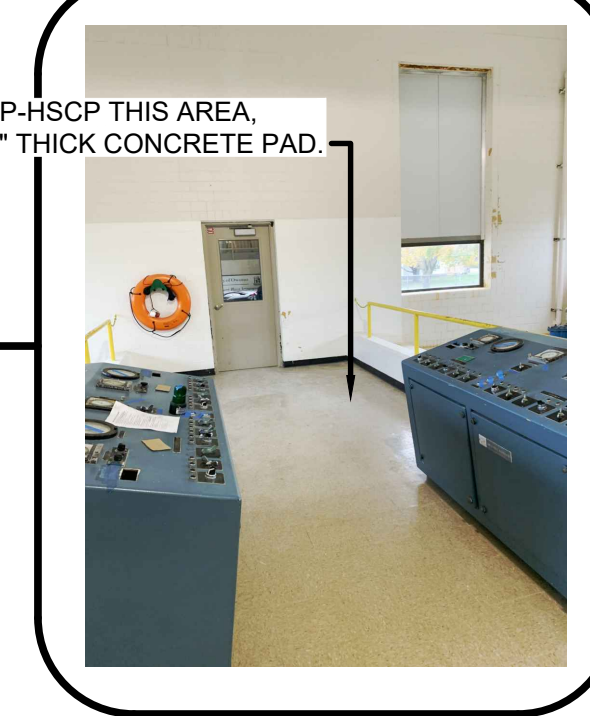
1. REMOVE PORTION OF EXISTING HANDRAIL AND STEEL PLATE. INSTALL NEW VFD TO BE FLUSH WITH CONCRETE PAD AND EDGE OF CONCRETE COLUMN. BOLD VFD TO CONCRETE FLOOR AND TO SIDE OF EXISTING CONCRETE COLUMN WITH STRUT FROM FLOOR BELOW. INSTALL 3 FULL HEIGHT STAINLESS STEEL STRUTS FROM FLOOR TO SUPPORT DRIVE ABOVE.



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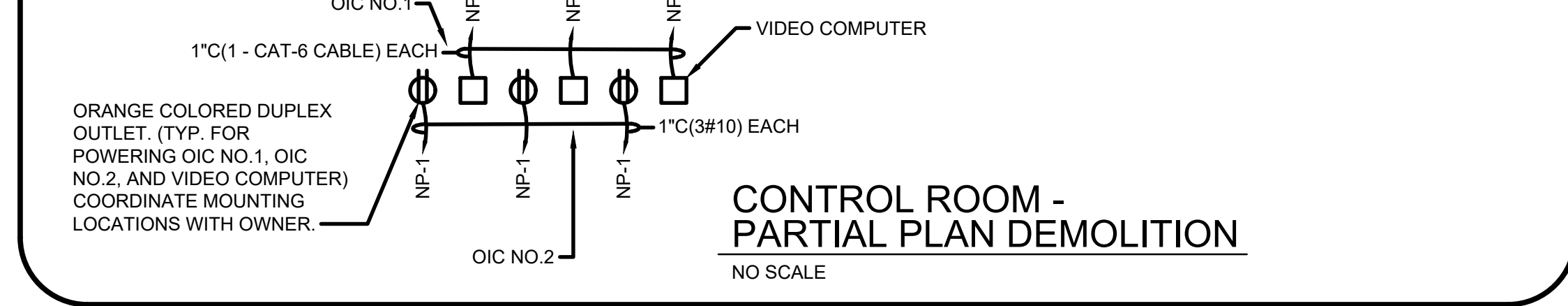
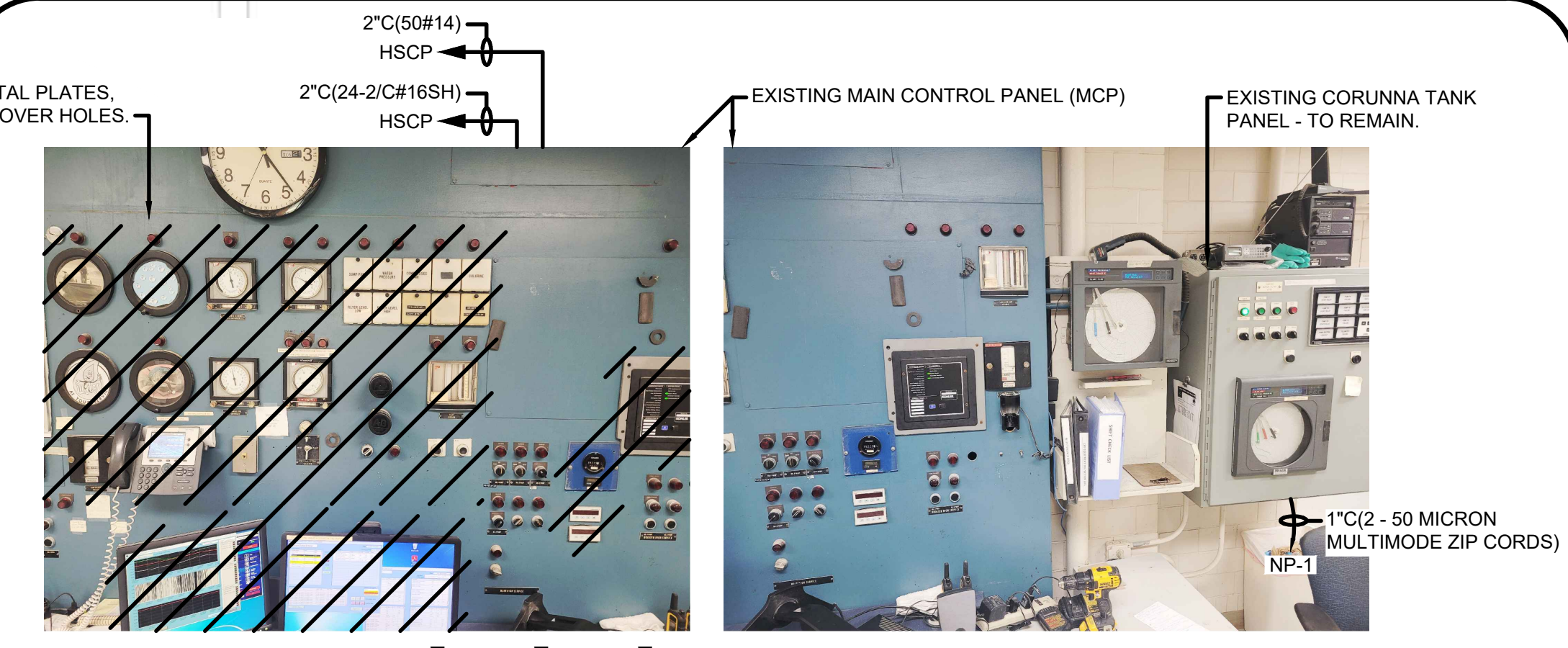
LOCATE CP-HSCP THIS AREA, ON NEW 4" THICK CONCRETE PAD.



THIS EQUIPMENT RELOCATED BY OWNER TO MAKE ROOM FOR NP-1. (TWO CABINETS, REFRIGERATOR, AND MICROWAVE.)

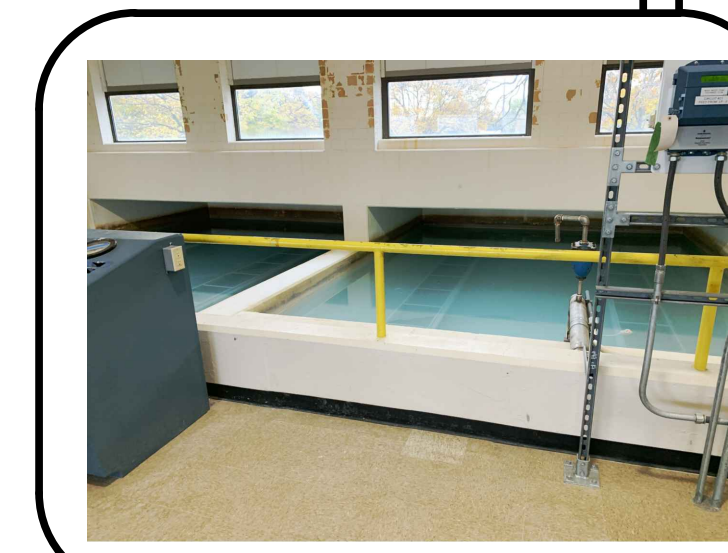
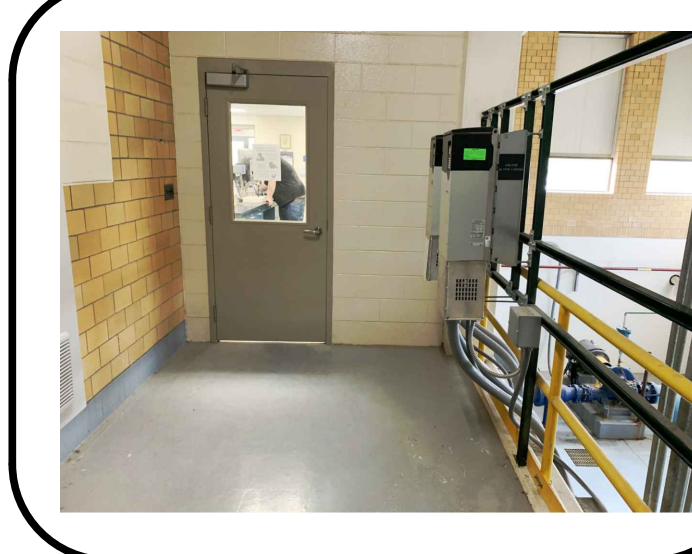


EXISTING MAIN CONTROL PANEL (MCP)
EXISTING CORUNNA TANK PANEL - TO REMAIN.



1 UPPER LEVEL POWER PLAN
NO SCALE
NEMA 12 AREA

PARTIAL PLAN
NO SCALE



EXISTING DRAWING FROM PREVIOUS PROJECT. PROPOSED WORK SHOWN BOLD, CROSSHATCHED, AND/OR CIRCLED

MARK	DATE	DESCRIPTION

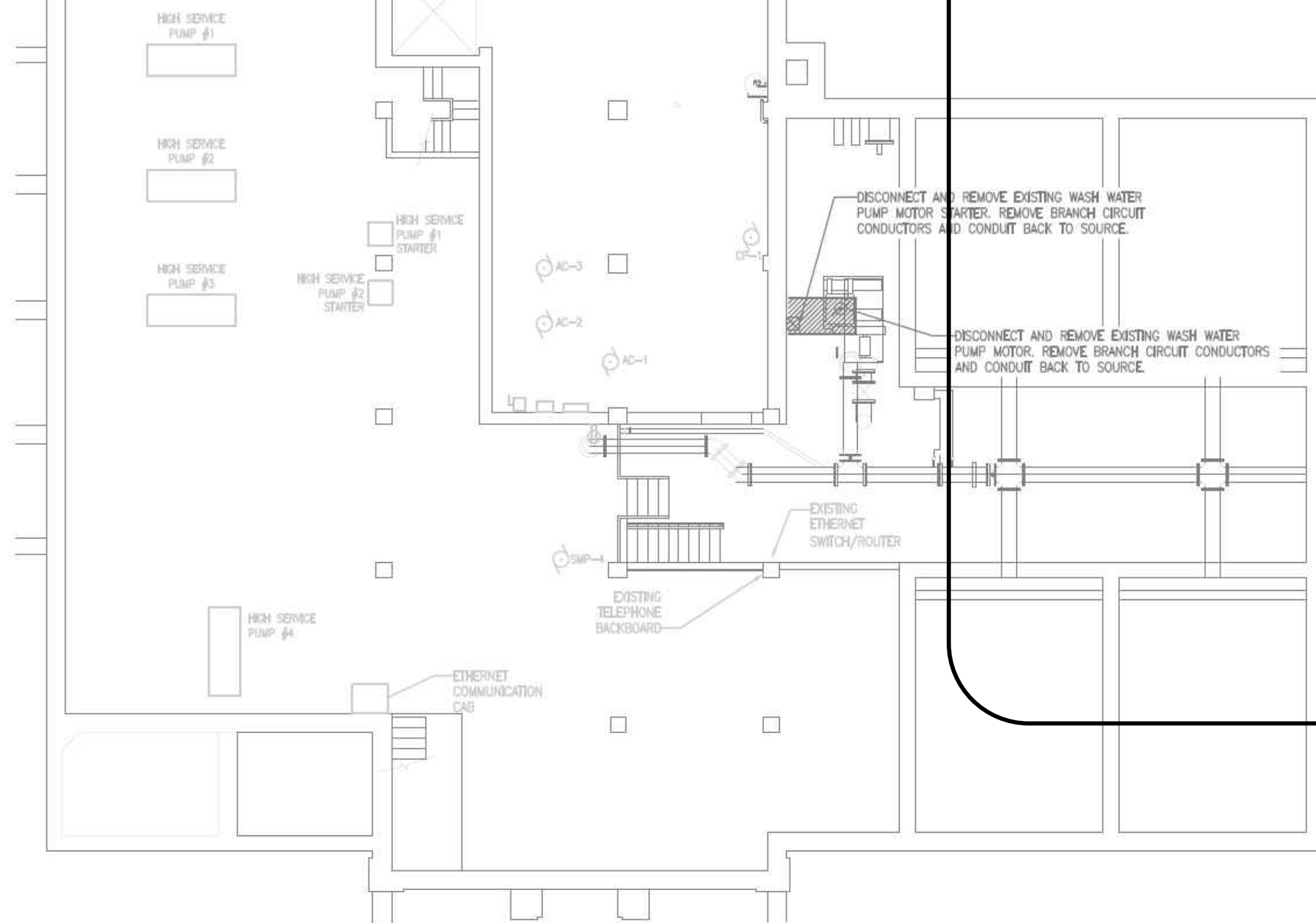
CITY OF OWOSSO, MICHIGAN
OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES
SCADA SYSTEM UPGRADES
ELECTRICAL
UPPER LEVEL POWER PLAN
PROPOSED WORK

Project No.: 200-280565-21002
Designed By: G.C.J.
Drawn By: J.L.S.
Checked By: J.L.S.

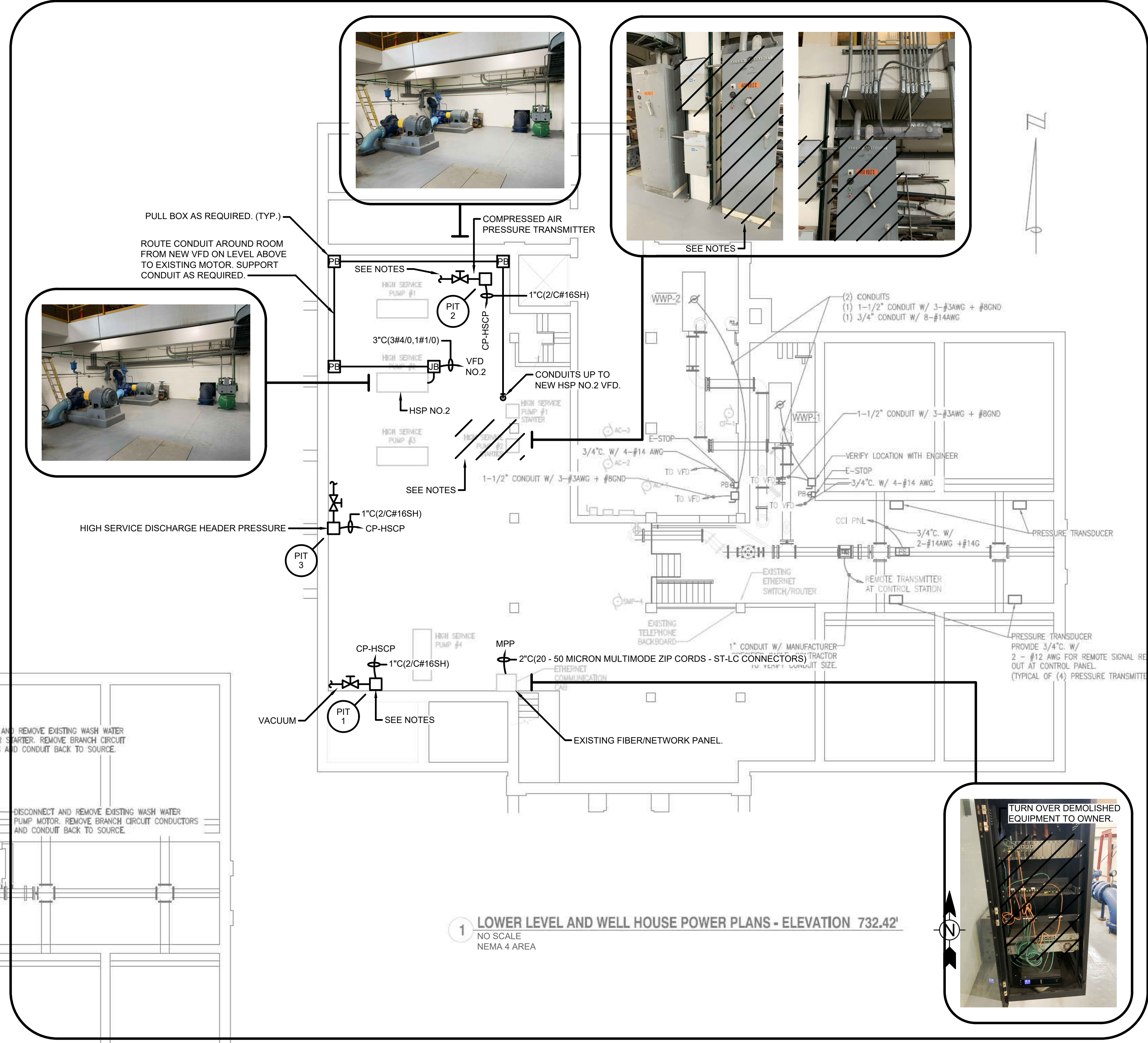
E-300
OF 11

Bar Measures 1 inch

1/3/2022 4:43:42 PM - I:\LOCAL\PROJECTS\ANN ARBOR\IER\280565\200-280565-2\1002\CAD\SHEETFILES\E-301_ELECTRICAL LOWER LEVEL WELLHOUSE PP.DWG - SHANK, JASON



1 LOWER LEVEL AND WELL HOUSE DEMOLITION POWER PLANS - ELEVATION 732.42'
NO SCALE
NEMA 4 AREA



1 LOWER LEVEL AND WELL HOUSE POWER PLANS - ELEVATION 732.42'
NO SCALE
NEMA 4 AREA

NOTES:
1. FURNISH AND INSTALL NEW COMPRESSED AIR PRESSURE TRANSMITTER (PIT-2), NEW VACUUM TRANSMITTER (PIT-1) AND NEW HIGH SERVICE PUMP DISCHARGE PRESSURE TRANSMITTER (PIT-3). CONNECT TO EXISTING PROCESS LINES. TAP EXISTING LINES AS REQUIRED. FURNISH AND INSTALL NEW COPPER TUBING AND BRASS BALL SHUT OFF VALVES AT EACH NEW TRANSMITTER.

EXISTING DRAWING FROM PREVIOUS PROJECT. PROPOSED WORK SHOWN BOLD, CROSSHATCHED, AND/OR CIRCLED

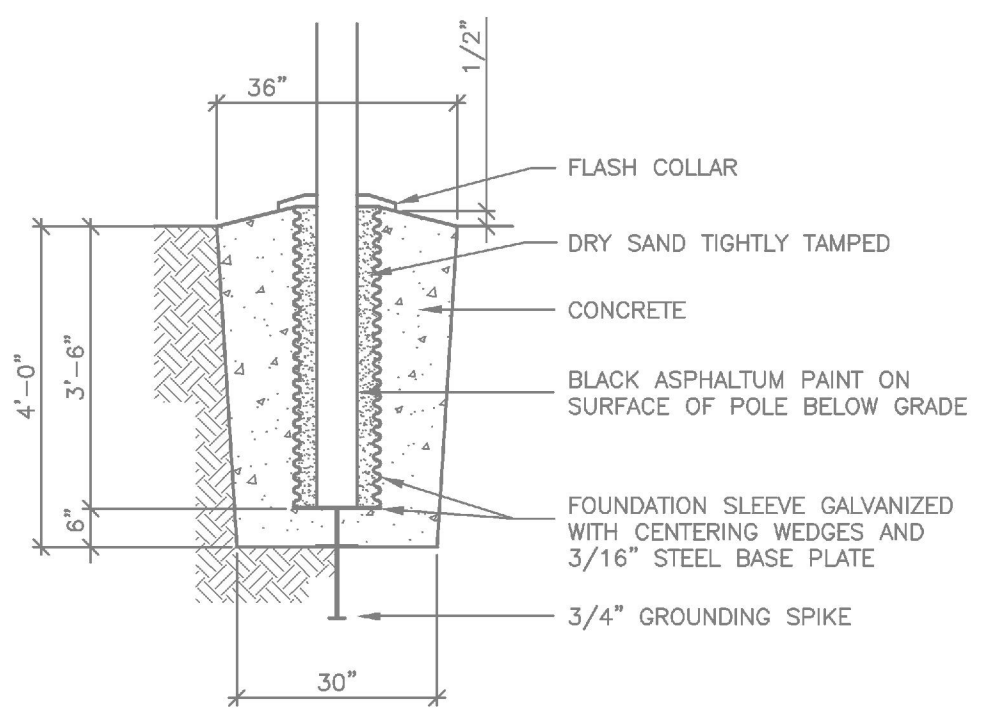


MARK	DATE	DESCRIPTION

CITY OF OWOSSO, MICHIGAN
OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES
SCADA SYSTEM UPGRADES
**ELECTRICAL
LOWER LEVEL, AND WELLHOUSE
POWER PLANS PROPOSED WORK**

Project No.: 200-280565-21002
Designed By: GCJ
Drawn By: JLS
Checked By:

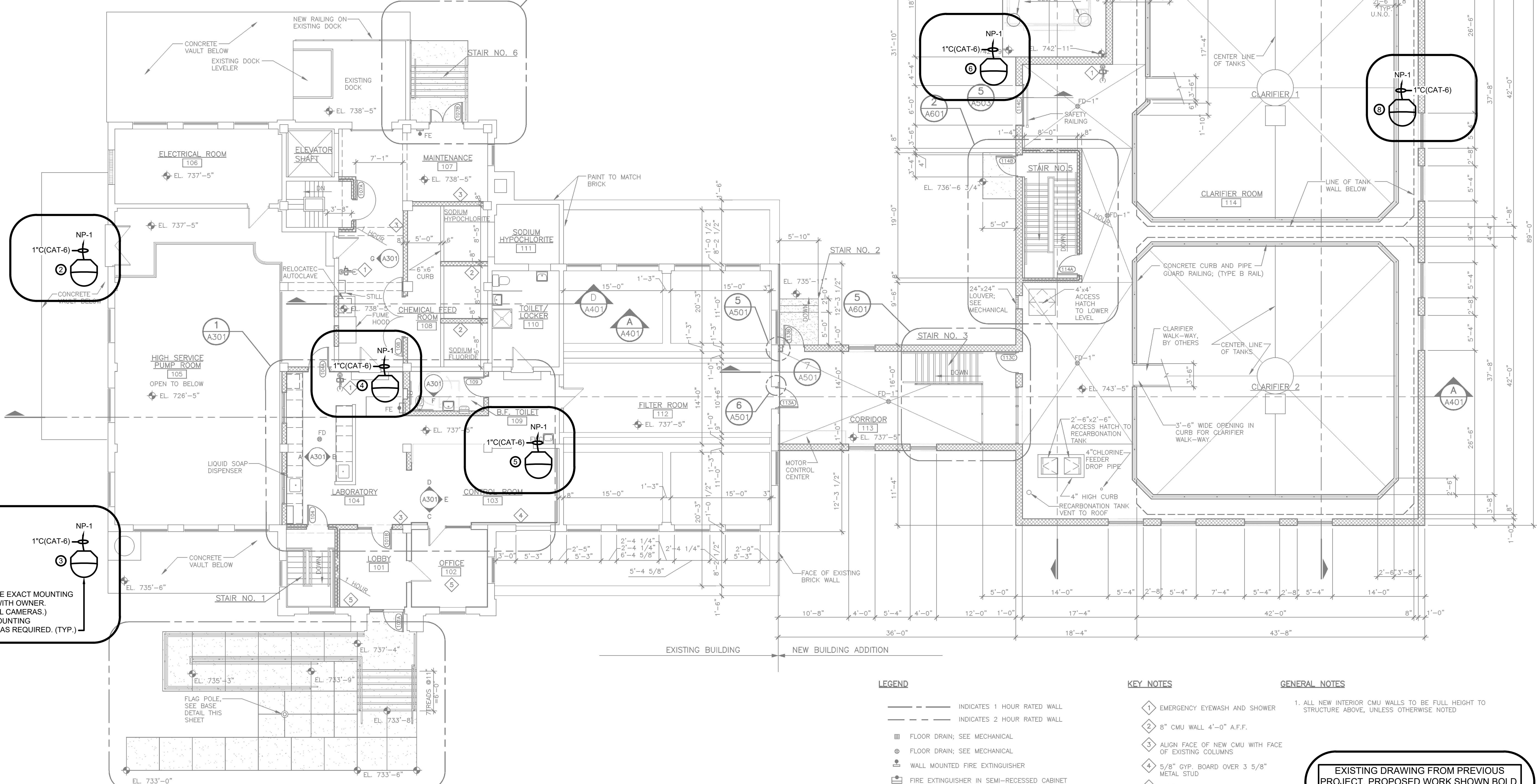
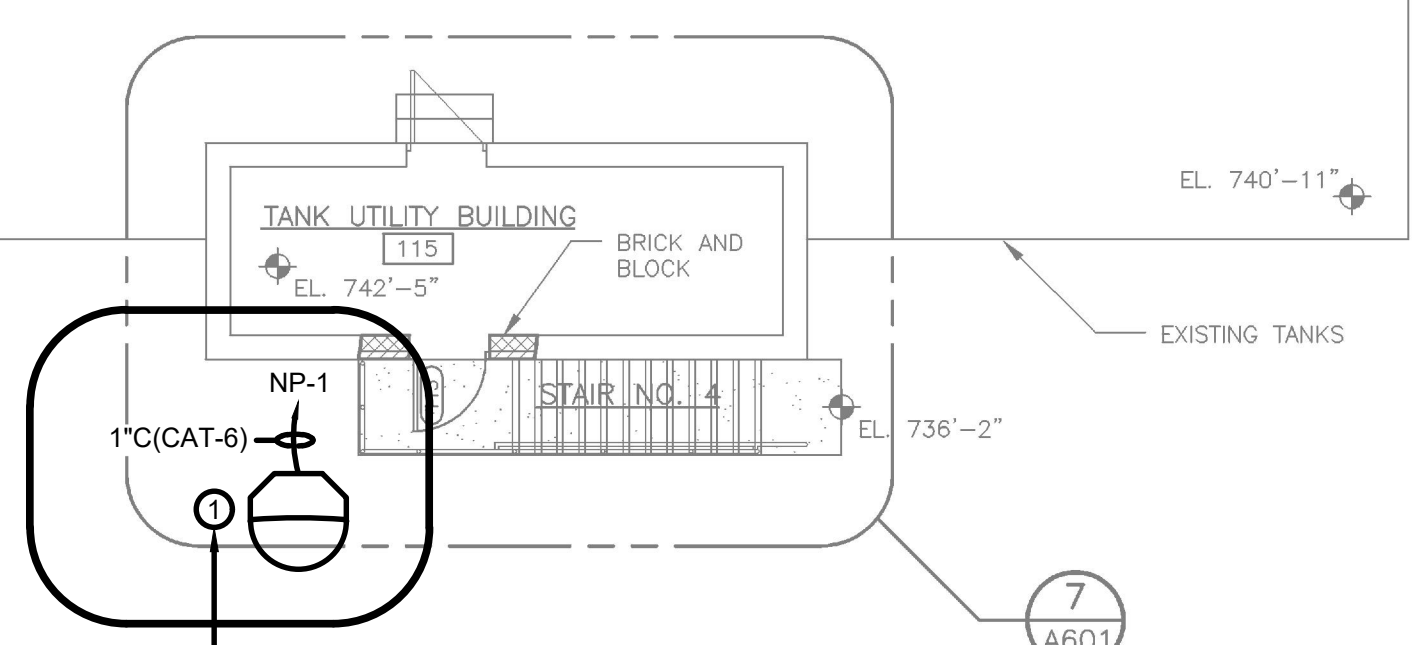
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FLAG POLE BASE DETAIL
NO SCALE

LOCATION *1D*. SEE SHEET I-106 FOR
ADDITIONAL INFORMATION. (TYP.)

COORDINATE EXACT MOUNTING
LOCATION WITH OWNER.
(TYPICAL ALL CAMERAS.)
PROVIDE MOUNTING
HARDWARE AS REQUIRED. (TYP.)



- LEGEND**
- INDICATES 1 HOUR RATED WALL
 - INDICATES 2 HOUR RATED WALL
 - FLOOR DRAIN; SEE MECHANICAL
 - ⊕ FLOOR DRAIN; SEE MECHANICAL
 - ⊕ WALL MOUNTED FIRE EXTINGUISHER
 - ⊕ FIRE EXTINGUISHER IN SEMI-RECESSED CABINET
 - ⊕ TOWEL DISPENSER AND WASTE RECEPTACLE, SEMI-RECESSED
 - ⊕ FEMININE NAPKIN DISPENSER, SEMI-RECESSED
 - ⊕ DOWNSPOUT AND CONCRETE SPLASH BLOCK
 - ♿ ACCESSIBLE
 - PIPE BUMPER
 - ▨ CONCRETE WALK; SEE CIVIL
 - ▨ STEEL LADDER AND FRAME

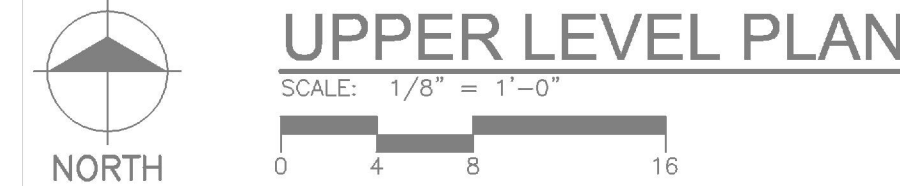
- KEY NOTES**
- 1 EMERGENCY EYEWASH AND SHOWER
 - 2 8" CMU WALL 4'-0" A.F.F.
 - 3 ALIGN FACE OF NEW CMU WITH FACE OF EXISTING COLUMNS
 - 4 5/8" GYP. BOARD OVER 3 5/8" METAL STUD
 - 5 5/8" GYP. BOARD DIRECTLY APPLIED TO BLOCK

GENERAL NOTES

1. ALL NEW INTERIOR CMU WALLS TO BE FULL HEIGHT TO STRUCTURE ABOVE, UNLESS OTHERWISE NOTED

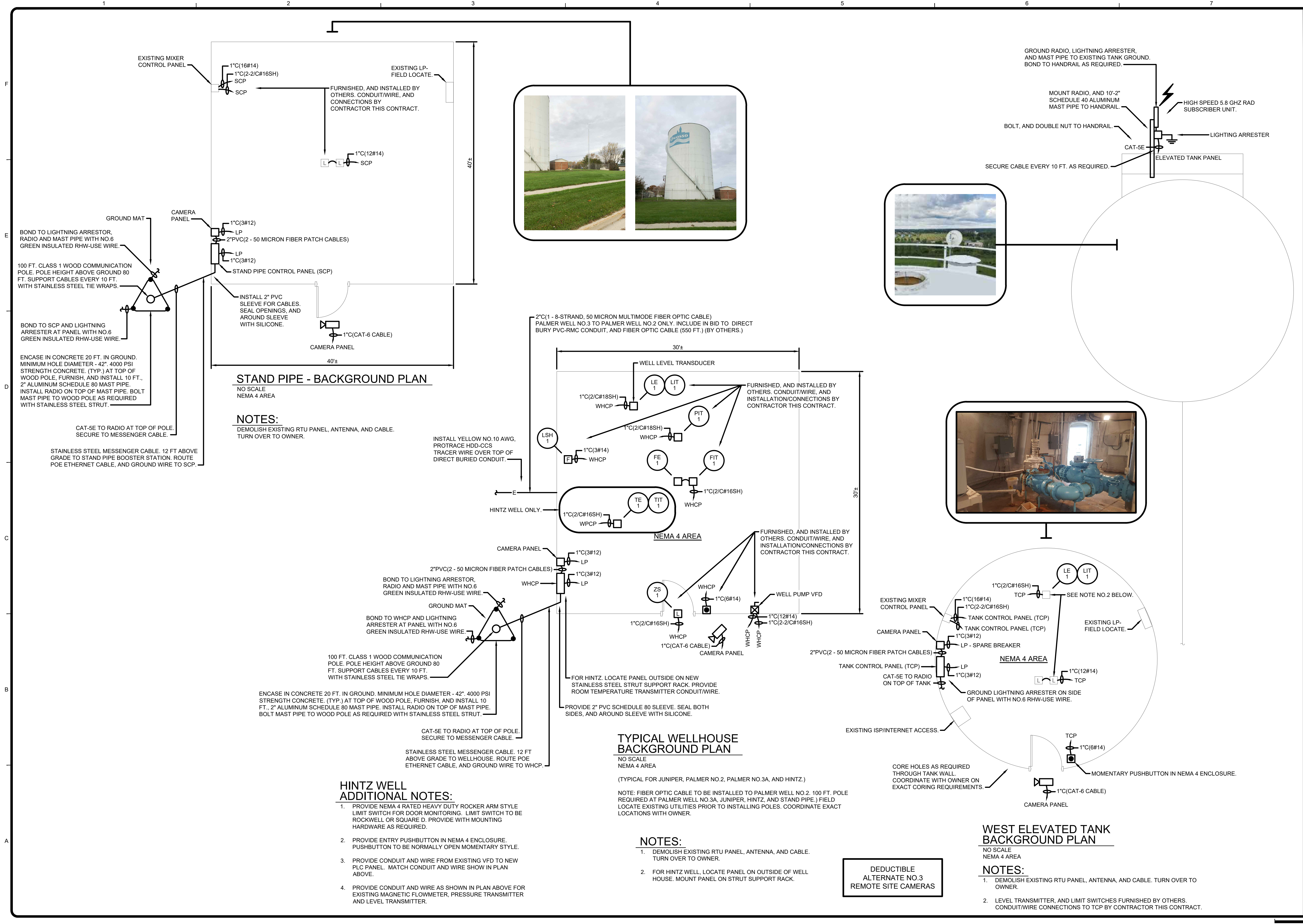
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DEDUCTIBLE
ALTERNATE NO.2
PLANT CAMERAS



MARK	DATE	DESCRIPTION

11/22/2022 11:27:58 AM - I:\LOCAL\PROJECTS\ANN ARBOR\IER\280565\200-280565-21002\CADD\SHEETFILES\IE-303_ELECTRICAL_OWOSSEO WTP WH BACKGROUND PLAN.DWG - SHANK, JASON

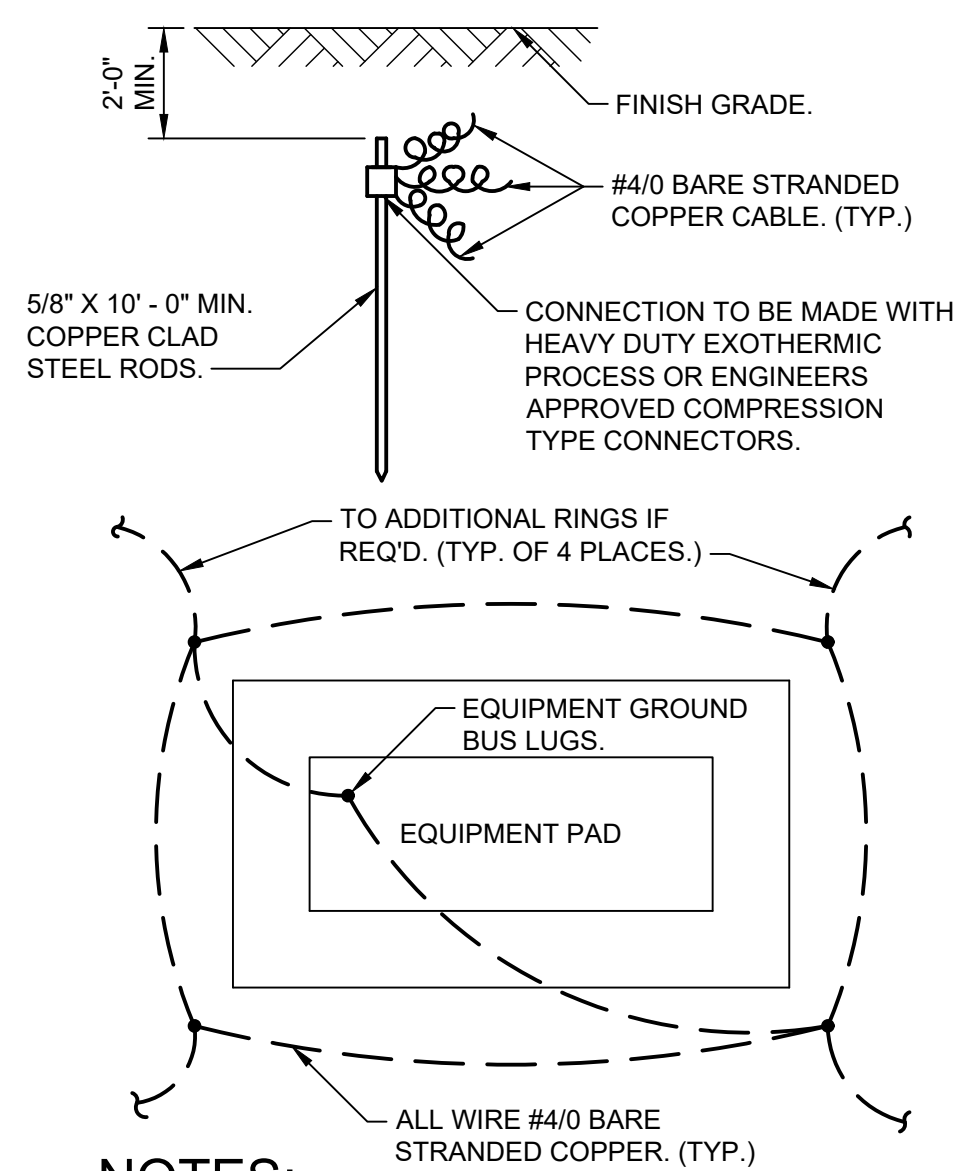


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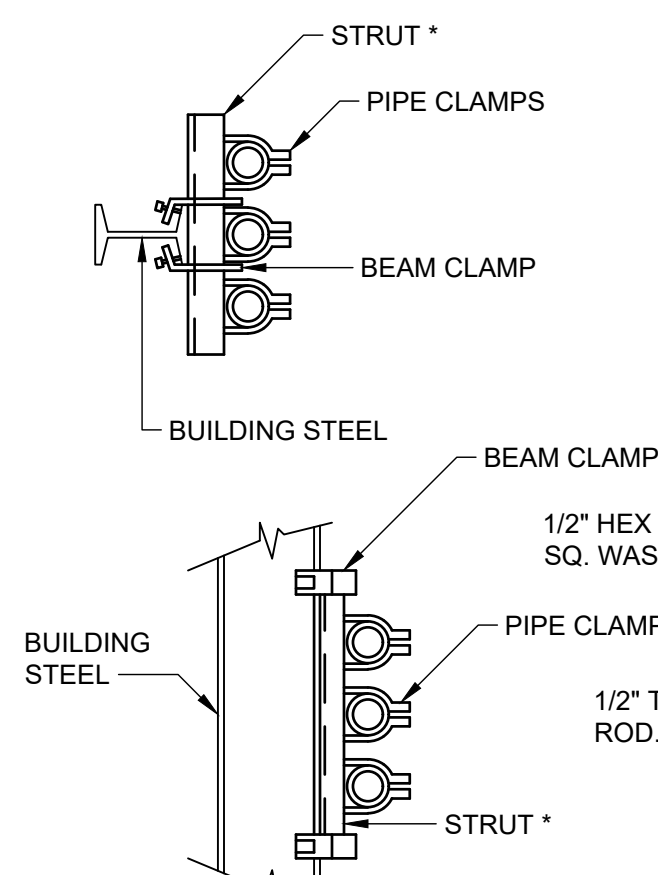
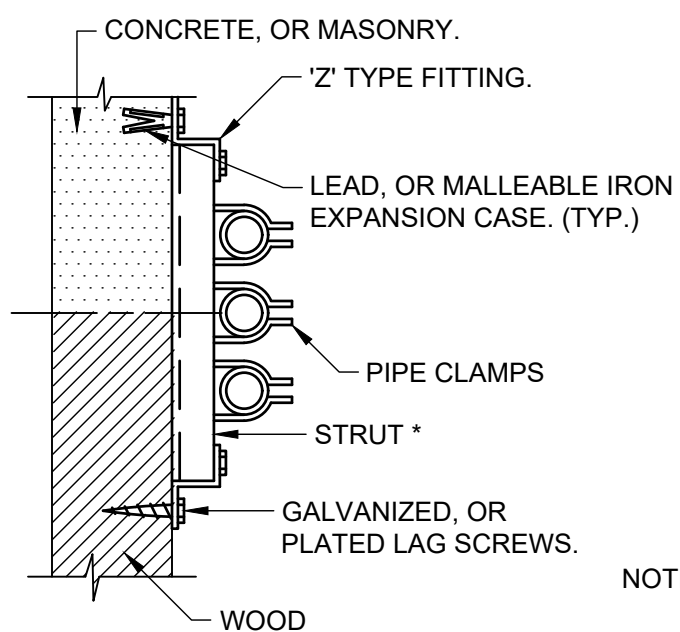
CITY OF OWOSSO, MICHIGAN
OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES
SCADA SYSTEM UPGRADES
ELECTRICAL
WELLHOUSE BACKGROUND PLAN
PROPOSED WORK

Project No.:	200-280565-21002
Designed By:	G.C.J.
Drawn By:	J.L.S.
Checked By:	

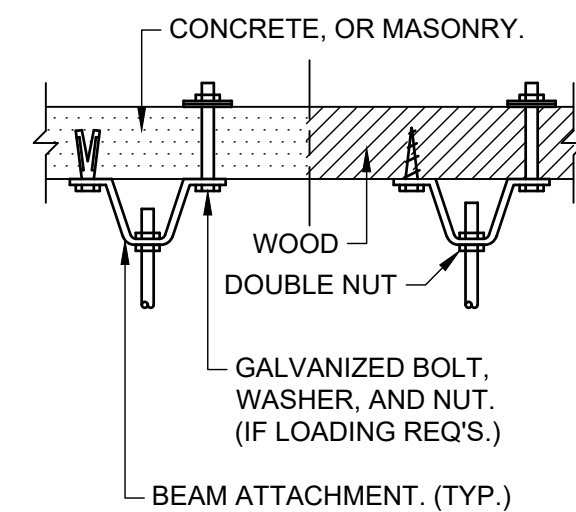


NOTES:
ADDITIONAL CONCENTRIC RINGS SHALL BE ADDED AS REQ'D. TO MEET THE (5) OHM SPECIFIED RESISTANCE. EACH RING TO HAVE 4 GROUND RODS, AND SPACE 10 FEET FROM THE INNER RING.

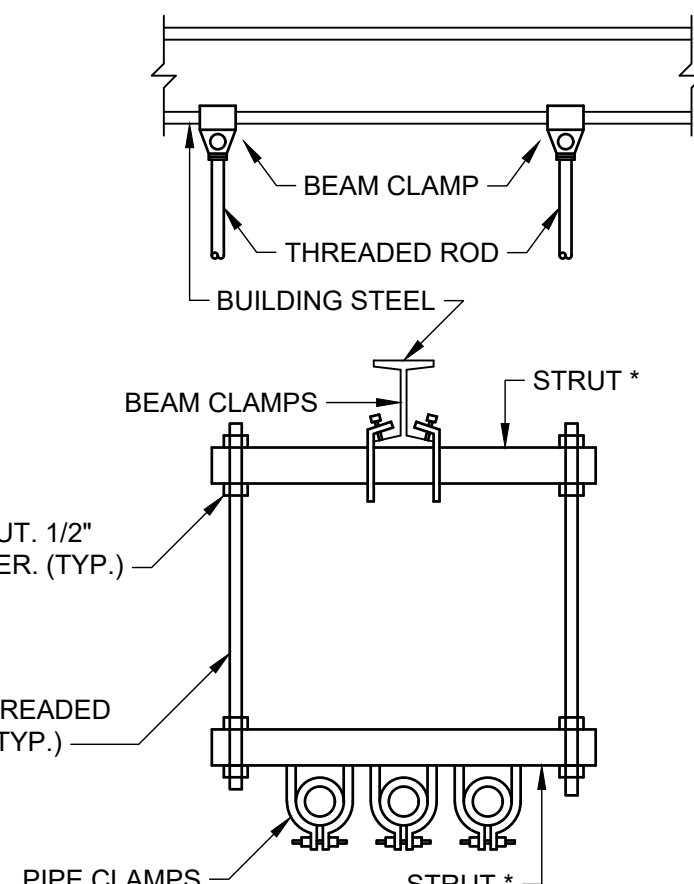
GROUND MAT
NO SCALE



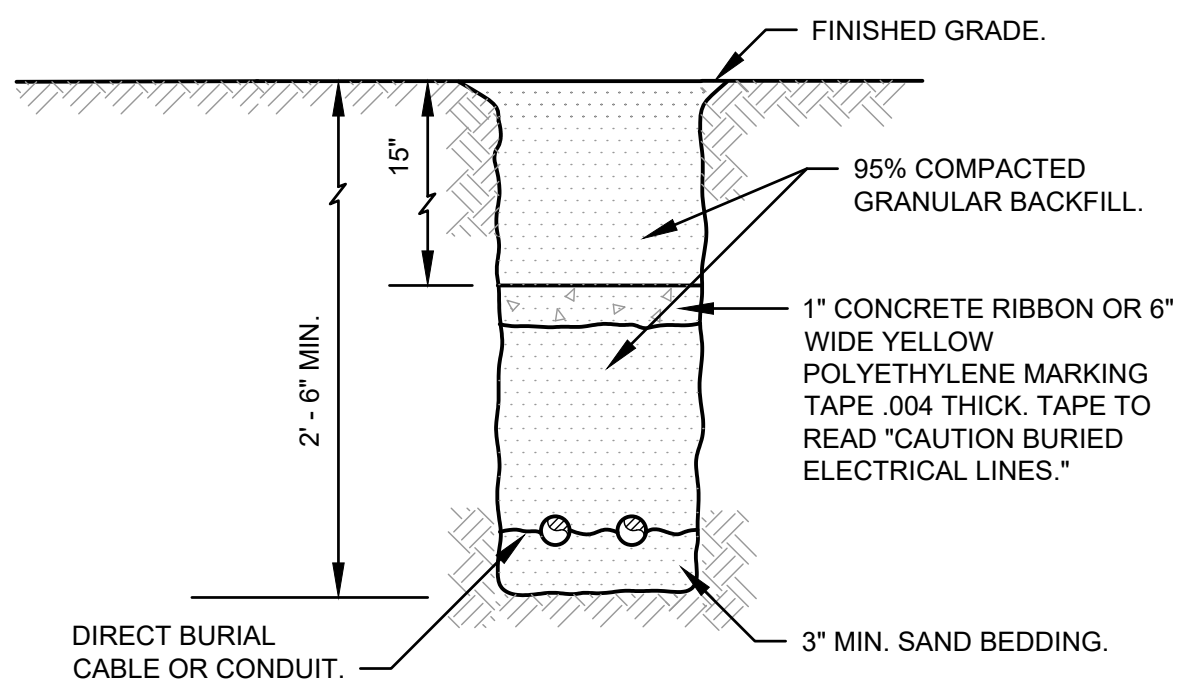
VERTICALLY RACKED AND VERTICAL RUNS
NO SCALE



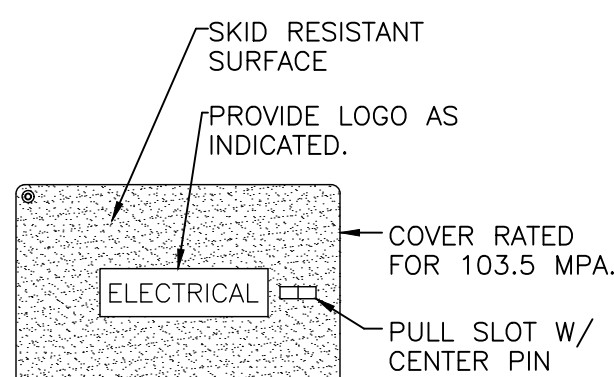
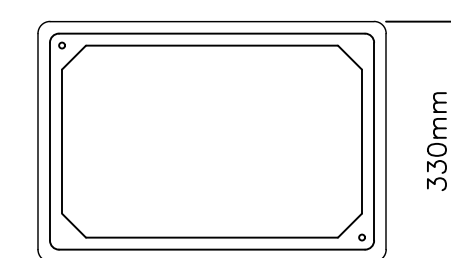
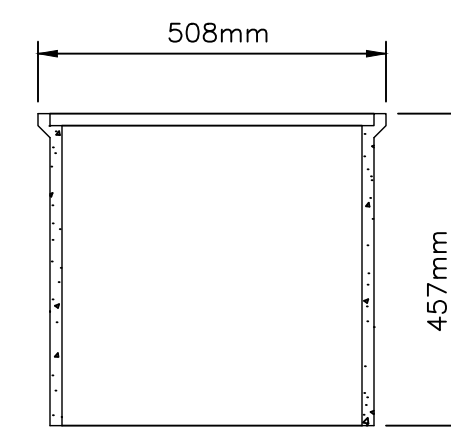
NOTE: * = STRUT SHALL HAVE A MIN. THICKNESS OF .105 INCH, OR 12 GA.



HORIZONTAL RACKED SUSPENDED RUN
NO SCALE



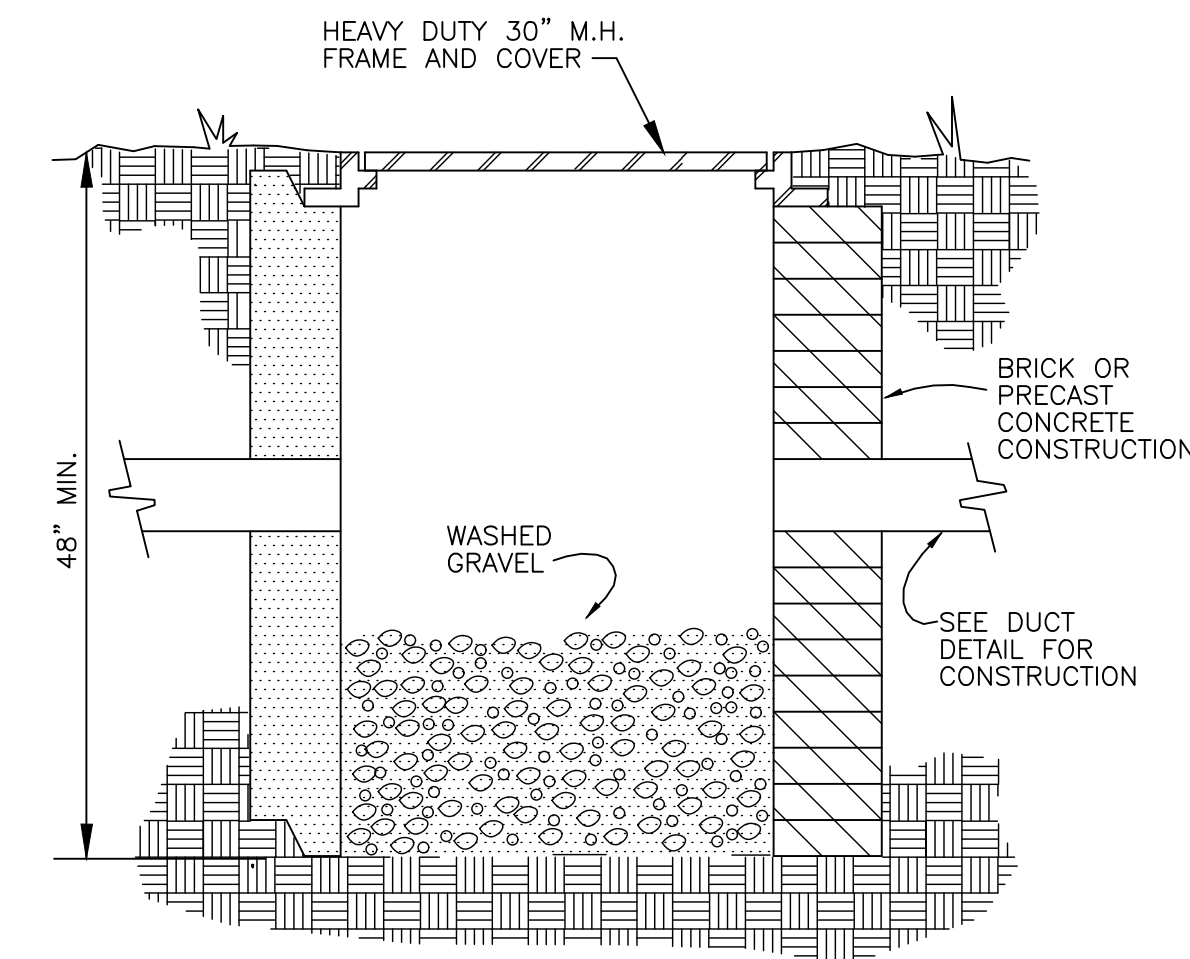
TRENCHING DETAIL
NO SCALE



HANDHOLE DETAIL
NO SCALE
QUAZITE COMPOSOLITE OR EQUAL

HANDHOLES FOR LOW VOLTAGE CABLES INSTALLED IN PARKING LOTS, SIDEWALKS, AND TURFED AREAS SHALL BE FABRICATED FROM AN AGGREGATE CONSISTING OF SAND AND WITH CONTINUOUS WOVEN GLASS STRANDS HAVING AN OVERALL COMPRESSIVE STRENGTH OF AT LEAST 69 MPA AND A FLEXURAL STRENGTH OF AT LEAST 34.5 MPA. PULLBOX AND HANDHOLE COVERS IN SIDEWALKS, AND TURFED AREAS SHALL BE OF THE SAME MATERIAL AS THE BOX. CONCRETE PULLBOXES SHALL CONSIST OF PRECAST REINFORCED CONCRETE BOXES, EXTENSIONS, BASES, AND COVERS.

IN PAVED AREAS, FRAMES AND COVERS FOR HANDHOLE ENTRANCES IN VEHICULAR TRAFFIC AREAS SHALL BE FLUSH WITH THE FINISHED SURFACE OF THE PAVING. IN UNPAVED AREAS, THE TOP OF MANHOLE COVERS SHALL BE APPROXIMATELY 15 MM ABOVE THE FINISHED GRADE.



HANDHOLE DETAIL
NO SCALE

MARK	DATE	DESCRIPTION

CITY OF OWOSSO, MICHIGAN
OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES
SCADA SYSTEM UPGRADES
ELECTRICAL DETAILS

Project No.: 200-280565-21002
Designed By: GCJ
Drawn By: JLS
Checked By:

1/3/2022 4:44:20 PM - I:\LOCAL\PROJECTS\ANN ARBOR\RIER\280565\200-280565-2\1002\CAD\SHETS\ELECTRICAL DETAILS.DWG - SHANK, JASON

NOTES:

- FIELD VERIFY CONDUIT ROUTING AT THE PLANT WITH OWNER. CORE HOLES AS REQUIRED TO SUIT INSTALLATION OF THE CONDUITS SHOWN. PATCH WITH NON-SHRINK GROUT.
- TURN OVER TO OWNER AT PROJECT COMPLETION OPERATION AND MAINTENANCE MANUALS (QUANTITY AS SPECIFIED) TO OWNER.
- IN ADDITION TO PATCH CABLES SUPPLIED FOR THE PROJECT, FURNISH 30-10FT LONG SINGLEMODE DUPLEX FIBER OPTIC PATCH CABLES (ST-ST) CONNECTORS, AND 30-10FT CAT-5E PATCH CABLES FOR OWNERS USE. TURN OVER CABLES TO OWNER.
- MULTIMODE FIBER OPTIC PATCH CABLES, AND ETHERNET PATCH CABLES SUPPLIED IN THE PROJECT SHALL BE COLORED PURPLE.
- FIBER OPTIC PATCH PANELS SHALL BE THE PRODUCT OF CORNING CABLE SYSTEMS. (RACK OR SURFACE MOUNTED AS SHOWN*, ST STYLE CONNECTORS, WITH QUANTITY OF BULKHEADS AS SHOWN).
- OBTAIN THE SERVICES OF GENETEC OMNICAST REPRESENTATIVE SYSTEM TECHNOLOGIES-715-539-2877 TO PROVIDE THE NEW VIDEO SERVER, SOFTWARE, CONFIGURATION, AXIS CAMERAS, POE'S, MOUNTING BRACKETS AND CONFIGURE THE CAMERA ADDRESSES. INCLUDE IN BID FOR 7 DAYS AT THE JOB SITE FOR SYSTEM TECHNOLOGIES FOR SERVER INSTALLATION, NEW CAMERA CONFIGURATION, SET UP AND VERIFICATION. SERVER TO INCLUDE 20 TOTAL LICENSES/CAMERA CONNECTIONS INCLUDING FUTURE CAMERAS.
- TURN OVER TO OWNER AT PROJECT COMPLETION OPERATION AND MAINTENANCE MANUALS (QUANTITY AS SPECIFIED) TO OWNER.
- IN ADDITION TO PATCH CABLES SUPPLIED FOR THE PROJECT, FURNISH EACH 10-10FT LONG MULTIMODE DUPLEX FIBER OPTIC PATCH CABLES (SC-SC, SC-ST, SC-LC, ST-LC, LC-LC) CONNECTORS, (TOTAL OF 50 FIBER PATCH CABLES) AND 30-10FT CAT-6 PATCH CABLES FOR OWNERS USE. TURN OVER CABLES TO OWNER.
- MULTIMODE FIBER OPTIC PATCH CABLES, AND ETHERNET PATCH CABLES SUPPLIED IN THE PROJECT SHALL BE COLORED GREEN.
- MEDIA CONVERTERS FOR CONVERTING ETHERNET TO FIBER SHALL BE THE PRODUCT OF TRANSITION NETWORKS. PROVIDE POWER SUPPLIES AS REQUIRED FOR THE CONVERTERS. SPEED, AND TYPE SHALL BE AS SHOWN ON THE CONTRACT DRAWINGS.
- FIBER OPTIC PATCH PANELS SHALL BE THE PRODUCT OF CORNING CABLE SYSTEMS. (RACK OR SURFACE MOUNTED AS SHOWN.) PROVIDE CONNECTOR TYPES AS SHOWN WITH QUANTITY OF BULKHEADS AS SHOWN.

GENERAL CONSTRUCTION NOTES:

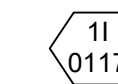
- ELECTRICAL MATERIALS AND EQUIPMENT ITEMS SHOWN IN LIGHT LINE WEIGHTS ON THE DRAWINGS ARE EXISTING ITEMS TO REMAIN. ELECTRICAL MATERIALS AND EQUIPMENT ITEMS SHOWN IN HEAVY LINE WEIGHTS ARE NEW THIS CONTRACT.
- ITEMS SHOWN OR NOTED TO BE DEMOLISHED ON THE DRAWINGS ARE EXISTING ITEMS TO BE REMOVED FROM SITE BY CONTRACTOR UNLESS NOTED TO BE TURNED OVER TO OWNER.
- FOR ITEMS INDICATED AS "FIELD LOCATE", THE CONTRACTOR SHALL FIELD VERIFY FOR INTERFERENCE AND FOR LOCATIONS OF MOUNTING FLANGES, CONNECTION POINTS, ETC.
- CONDUIT ROUTINGS SHOWN ON BACKGROUND PLANS ARE INTENDED ROUTINGS ONLY. EXACT CONDUIT ROUTINGS FOR CONDUITS, AND LENGTH SHALL BE FIELD LOCATED AND VERIFIED BY THE CONTRACTOR. COORDINATE CONDUIT ROUTING IN FINISHED AREAS WITH OWNER. CONDUIT TO BE CONCEALED IN THESE AREAS.
- REFER TO THE CABLE MANUFACTURER'S RECOMMENDATIONS FOR MINIMUM BEND RADIUS FOR FIBER OPTIC CABLES. INSTALL NEW PULL BOXES (PB) AS REQUIRED FOR CONDUITS. SIZE PULL BOXES AS REQUIRED PER FIBER OPTIC CABLE MANUFACTURERS RECOMMENDATIONS.
- CONDUITS/RACEWAYS, PULL BOXES AND JUNCTION BOXES TO BE INSTALLED WITH 316 STAINLESS STEEL CHANNEL STRUT. MINIMUM STRUT LENGTH TO BE 12 INCHES, WHERE POSSIBLE.
- PANELS SHALL BE MOUNTED OFF WALLS WITH STRUT, CONDUITS SHALL BE MOUNTED ON STRUT INCLUDING SINGLE RUNS.
- CONDUIT ENTERING CONTROL PANELS AND ELECTRICAL EQUIPMENT ENCLOSURES SHALL BE FILLED WITH DUCT SEAL, INCLUDING OPENINGS IN BOTTOM OF PANELS, AND EQUIPMENT.
- REPAIR SIDEWALKS AND ROADWAYS DUE TO SITE WORK ADDITIONS, THE EXTENT OF THE REPAIR REQUIRED SHALL BE FIELD VERIFIED PRIOR TO BIDS IN CONJUNCTION WITH THE WORK SHOWN IN THE CONTRACT DOCUMENTS. PRIOR TO TRENCHING, FIELD LOCATE EXISTING GAS LINES, TELEPHONE LINES, SPRINKLER LINES, ETC. COORDINATE WITH OWNER
- PULL CORDS SHALL BE INSTALLED IN CONDUITS CONTAINING NETWORK CABLES, AND FIBER OPTIC CABLES.
- CORE HOLES AS REQUIRED TO SUIT INSTALLATION OF CONDUIT AND WIRING/CABLING AS SHOWN. FIELD VERIFY EXACT EXTENT OF WORK REQUIRED.
- FURNISH PULL BOXES FOR FIBER OPTIC CABLE. COORDINATE EXACT BENDING RADIUS WITH MANUFACTURER.
- NEW CONDUITS INSTALLED THIS CONTRACT WITH FIBER OPTIC CABLES ARE TO BE LABELED WITH PHENOLIC TAGS (AT BEGINNING TO END) TO INDICATE THE NUMBER OF STRANDS, ORIGINATION AND DESTINATION. TAGS TO BE COLOR CODED ORANGE FOR MULTIMODE.
- WHERE NEW CONDUITS SHOWN TO BE INSTALLED PASS UNDER ROADWAYS, CONDUITS SHALL BE CONCRETE ENCASED.
- PRIOR TO EXCAVATION, FIELD LOCATE EXISTING UTILITIES. COORDINATE WITH OWNER.
- AREAS WHERE CAMERAS ARE SHOWN TO BE INSTALLED SHALL BE CLASSIFIED AS NEMA 4, UNLESS CALLED OUT OTHERWISE.
- THE ASSOCIATED INSTRUMENTATION DRAWINGS SHOW EXISTING WIRES AND TERMINAL NUMBERS REQUIRED TO PROPERLY INTERFACE WITH NEW EQUIPMENT. THIS INFORMATION WAS COLLECTED FROM AS-BUILT DRAWINGS AND EXTENSIVE FIELD VERIFICATION. THE INFORMATION SHALL BE USED AS A GUIDE IN RE-TERMINATION. IT SHALL REMAIN THE CONTRACTOR'S RESPONSIBILITY TO EXAMINE THE WIRING AND TO REVISE TO SUIT AS REQUIRED. CHANGES IN THE CONTRACT OR COST WILL NOT BE GRANTED FOR THIS COORDINATION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO EXAMINE PROPOSED WORK SHOWN.
- CONDUIT ROUTINGS SHOWN ON BACKGROUND PLANS ARE PROPOSED ROUTINGS ONLY. EXACT CONDUIT ROUTINGS AND LENGTH SHALL BE FIELD LOCATED AND VERIFIED BY THE CONTRACTOR. COORDINATE CONDUIT ROUTING IN FINISHED AREAS WITH OWNER. CONDUIT TO BE CONCEALED IN THESE AREAS.
- RACEWAYS, PULL BOXES AND JUNCTION BOXES TO BE INSTALLED WITH 316 STAINLESS STEEL FASTENERS SUPPORTS, AND THREADED ROD, ETC. (CHANNEL STRUT TO ALSO BE STAINLESS STEEL). MINIMUM STRUT LENGTH TO BE 12 INCHES, WHERE POSSIBLE. TYPICAL FOR NEMA 12, 4, AND 7 AREAS.
- WIRING FOR STARTERS SHALL BE IN ACCORDANCE WITH NEMA CLASS II B STANDARDS. SUBMIT ENGINEERED SHOP DRAWINGS FOR ALL STARTERS SHOWN TO BE WIRED.
- WIRE NUMBERS (1, 3, 5, ETC.) SHALL BE PREFIXED WITH STARTER TAG NUMBERS. THE WIRE NUMBER AFTER THE PREFIX SHALL BE THE MANUFACTURER'S WIRE NUMBERING SYSTEM. WIRE MARKERS SHALL BE USED AT EACH WIRE TERMINATION POINT.
- IN AREAS WHERE EQUIPMENT AND CONDUIT IS REMOVED, REPAIR WALL AND FLOOR SURFACES AS REQUIRED TO MATCH SURROUNDING AREA, WHERE DEVICES ARE REMOVED FROM CONCEALED BOXES, FURNISH AND INSTALL A BLANK COVER ON THE BOX.
- FIBER OPTIC CABLE SHALL BE AS CALLED OUT ON SYSTEM CONFIGURATION DRAWINGS, MULTIMODE, ALL DIELECTRIC, SUITABLE FOR INSTALLATION UNDERGROUND IN WET CONDUIT.

GENERAL NOTES:

- PRIOR TO SUBMITTING A BID FOR THE WORK DETAILED UNDER THIS CONTRACT, BIDDER SHALL VISIT THE WATER TREATMENT PLANT, AND REMOTE SITES. THE BIDDER SHALL FULLY ACQUAINT ONESELF WITH EXISTING FIELD CONDITIONS AT EACH SITE. NO BULLETINS WILL BE WRITTEN FOR WORK DUE TO LACK OF VERIFICATION OF EXISTING SITE CONDITIONS AND WIRING.
- NO WIRES SHALL BE TERMINATED TO TERMINAL STRIPS, OR OTHER EQUIPMENT WITHOUT FIRST VERIFYING SIGNAL TYPE. DAMAGES RESULTING IN LACK OF VERIFICATION SHALL BE BORNE BY THE CONTRACTOR. CONTRACTOR SHALL COORDINATE SIGNAL TYPE AND VOLTAGE WITH I/O CARDS SHOWN.
- WITHIN CONTROL PANELS, NAMEPLATES SHALL BE PROVIDED TO INDICATE DIFFERENT VOLTAGE LEVELS WITHIN PANELS. ALSO, A NAME TAG (YELLOW BACKGROUND, RED LETTERING) SHALL BE LOCATED ON THE FRONT OF EVERY PANEL INDICATING THAT WHEN MAIN PANEL DISCONNECTED 120V IS STILL PRESENT FROM FIELD DEVICES (YELLOW WIRING/ISOLATED INPUT CARDS.)
- PHENOLIC TAGS ON FACE OF CONTROL PANELS TO HAVE WHITE BACKGROUND AND BLACK LETTERING (EXCEPT WARNING TAGS, YELLOW BACKGROUND RED LETTERING).
- PROVIDE SAFETY COVERS ON ALL 480V MOLDED CASE MAIN CIRCUIT BREAKERS TO INSULATE THE INCOMING CABLES AND SIDE CONDUCTORS FROM CONTACT. (TYP. FOR CONTROL PANELS.) PROVIDE BREAKER LOCKS FOR PUMP CIRCUIT BREAKERS (MCP)AND MAIN PANEL BREAKERS.
- REFER TO WIRING DIAGRAMS FOR ADDITIONAL INFORMATION ON ISOLATED I/O. A COMMON NEUTRAL MAY BE USED FOR SEVERAL ISOLATED INPUTS FROM THE SAME STARTER. PROVIDE NEUTRAL JUMPERS WIRES WITHIN THE PANEL AS REQUIRED.
- ELECTRICAL MATERIALS AND EQUIPMENT ITEMS SHOWN IN LIGHT LINE WEIGHTS ON THE DRAWINGS ARE EXISTING ITEMS TO REMAIN. ELECTRICAL MATERIALS AND EQUIPMENT ITEMS SHOWN IN HEAVY LINE WEIGHTS ARE NEW THIS CONTRACT.
- ITEMS SHOWN CROSSHATCHED (OR NOTED TO BE DEMOLISHED) ON THE DRAWINGS ARE EXISTING ITEMS TO BE REMOVED, FROM SITE BY CONTRACTOR.
- INSTALL A SINGLE CONDUCTOR INSULATED (RHW, THHN, OR XHHW) COPPER GROUND WIRE IN EACH CONDUIT. SIZE AS SHOWN ON DRAWINGS, OR AS A MINIMUM PER THE NATIONAL ELECTRICAL CODE. THIS GROUND WIRE SHALL BE CONNECTED AT EACH END TO THE EQUIPMENT GROUND. THIS ALSO INCLUDES INSTRUMENTATION DEVICES SUCH AS LEVEL, PRESSURE, FLOW TRANSMITTERS, LIMIT SWITCHES, CONDUITS, NETWORK AND I/O CABLES.
- THE FOLLOWING EXAMPLE COMPONENT IDENTIFICATION SHALL BE USED AS APPROPRIATE:
(F) FIELD MOUNTED, NOT AT STARTER OR OTHER CONTROL PANELS
(S) STARTER PANEL MOUNTED
(MCP)AT MAIN CONTROL PANEL
(1) AT CONTROL PANEL NO.1
(2) AT CONTROL PANEL NO.2
(TCP) AT TEMPERATURE CONTROL PANEL
- REFER TO DETAIL SHEETS. CONTRACTOR SHALL FURNISH AND INSTALL HARDWARE AND APPURTENANCES (I.E. PIPE TAPS, WETWELL BUBBLER TUBES, VALVES, COPPER TUBING, BALL VALVES, PNEUMATIC PIPING, SPOOL PIECES, ETC.) FOR FIELD DEVICES SHOWN (FLOWMETERS, PRESSURE TRANSMITTERS, LEVEL TRANSMITTERS, ETC.). WORK SHALL BE COORDINATED WITH OTHER TRADES (MECHANICAL INSTRUMENTATION, ETC.) CONTRACTOR SHALL BE RESPONSIBLE FOR SYSTEM COORDINATION AND INSTALLATION.
- ETHERNET AND FIBER OPTIC TERMINATIONS SHALL BE PERFORMED BY A QUALIFIED REPRESENTATIVE OF CABLE MANUFACTURER, THE CABLES SHALL BE TESTED. NO SPLICING SHALL BE PERMITTED OF FIBER OPTIC CABLES, BETWEEN PANELS. FIBERS SHALL BE TERMINATED AT PATCH PANELS, INCLUDING SPARES.
- REFER TO THE CABLE MANUFACTURER'S RECOMMENDATIONS FOR MINIMUM BEND RADIUS FOR FIBER OPTIC CABLES. INSTALL NEW PULL BOXES (PB) AS REQUIRED FOR CONDUITS. SIZE PULLBOXES AS REQUIRED PER FIBER OPTIC CABLE MANUFACTURERS RECOMMENDATIONS.
- CONDUIT ENTERING CONTROL PANELS AND ELECTRICAL EQUIPMENT ENCLOSURES SHALL BE FILLED WITH DUCT SEAL, INCLUDING OPENINGS IN BOTTOM OF PANEL.
- CABLES (INCLUDING FIBER, ETHERNET, CONTROL WIRE, ETC.) WHERE PASSING THROUGH A PULLBOX SHALL BE LABELED AND COMPLETELY IDENTIFIED WITH IDENTIFICATION NUMBERS AND ORIGINATION/DESTINATION. THIS ALSO INCLUDES ALL CABLE BUNDLES ENTERING CONTROL PANELS, PULLBOXES, ETC.
- CONTROL WIRES SHALL BE TAGGED WITH THE PLC I/O ADDRESS IN THE FIELD AND AT THE PANEL.
- THE FIELD DEVICES SHOWN ON THE P&ID'S, ELECTRICAL BACKGROUNDS, AND DETAILS SHEETS MAKEUP THE FIELD DEVICE EQUIPMENT REQUIREMENTS. NOT ALL FIELD DEVICES REQUIRED ARE SHOWN ON THE P&ID'S.
- UPS SELECTED SHALL BE COMPATIBLE WITH ISOLATION TRANSFORMERS. (TYP.)
- REFER TO I/O DRAWING LAYOUT FOR ADDITIONAL SIGNALS NOT SHOWN ON P&ID FLOW DIAGRAMS.

NOTE: FIBER, AND ETHERNET PATCH CABLES SHALL BE THE FOLLOWING COLORS

- PINK - SCADA/LAN NETWORK
- YELLOW - VIDEO NETWORK
- BLUE - BUSINESS NETWORK
- ORANGE - PLC-I/O NETWORK
- GREEN - AUDIO NETWORK (IP PHONES)
- (7 FT. IN LENGTH MINIMUM, EACH)



PROCESSOR NO.1, INPUT RACK 0, SLOT (OR GROUP) 1, BIT 17

EXAMPLE OF P&ID I/O SYMBOL

NOTE: THE PLC I/O ADDRESS SHALL BE USED AS THE WIRING TAG SCHEME FOR ALL PANEL AND FIELD CONTROL WIRING. COORDINATE WITH ELECTRICAL CONTRACTOR.

I/O TAGS FOR WIRES FOR CONTROL WIRING INSIDE ALL CONTROL PANELS, AND IN FIELD TO BE POLYPROPYLENE.

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BY	DESCRIPTION	MARK	DATE

CITY OF OWOSSO, MICHIGAN
OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES
SCADA SYSTEM UPGRADES
INSTRUMENTATION NOTES

Project No.: 200-280565-21002
Designed By: GCJ
Drawn By: JLS
Checked By:

I-002
OF 62

Copyright: Tetra Tech
Bar Measures 1 inch

SERVER PROVIDE WITH 24" MONITOR (1)	STREAMVAULT 2011E SERIES 40TB APPLIANCE WITH SERVER 2019
WORK STATION (1)	STREAMVAULT 303E WORK STATION WINDOWS 10 WITH 55" 4K MONITOR
CAMERA CONNECTIONS (20)	OMNICAST STANDARD PACKAGE (20 TOTAL CAMERA CONNECTIONS. QUANTITY INCLUDES FUTURE CAMERAS)
GENETEC VERSION UPGRADE MONITOR (1)	5.6 TO LATEST VERSION (1) W/ADV 55", 4K MONITOR

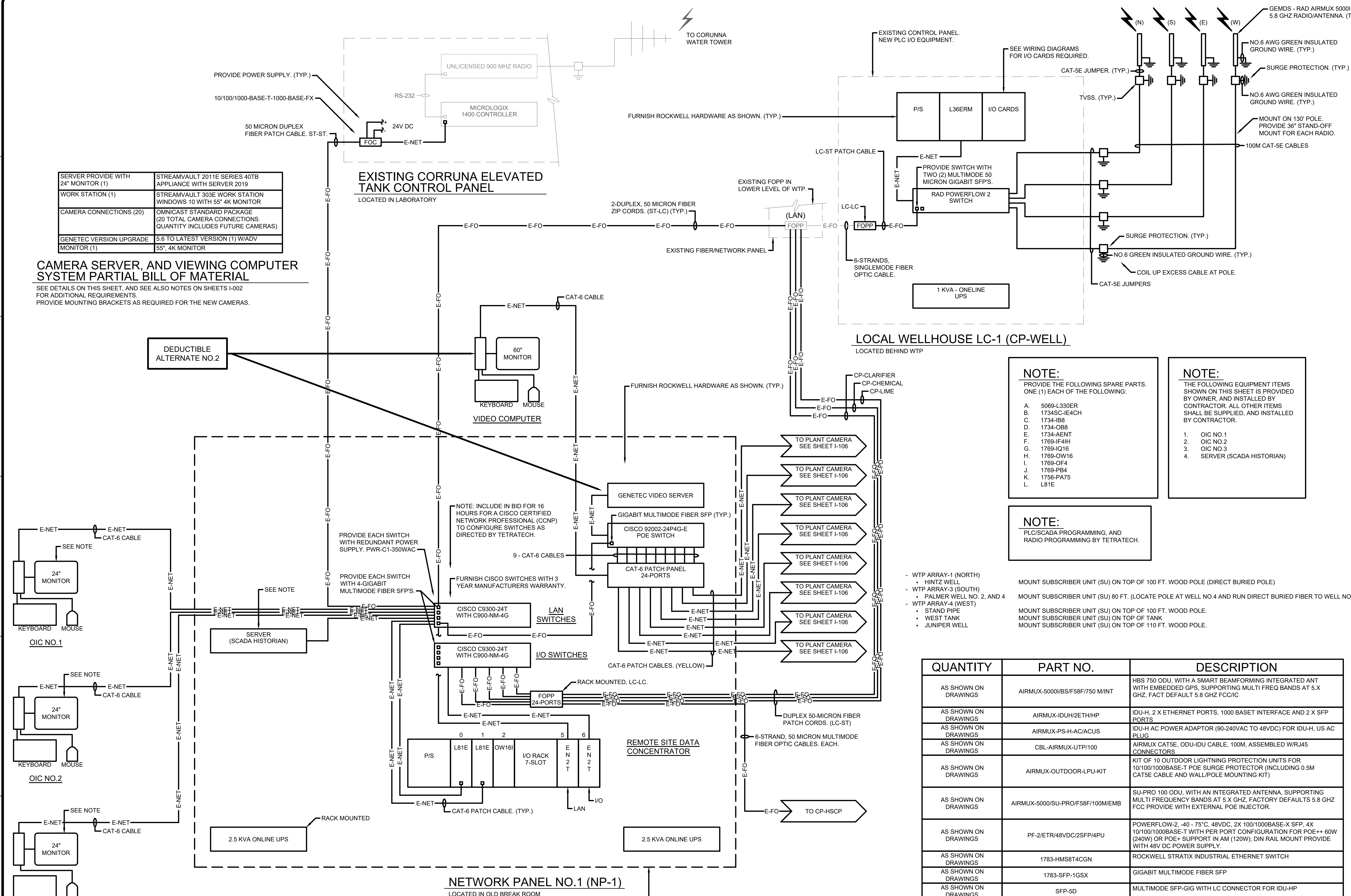
CAMERA SERVER, AND VIEWING COMPUTER SYSTEM PARTIAL BILL OF MATERIAL
SEE DETAILS ON THIS SHEET, AND SEE ALSO NOTES ON SHEETS I-002 FOR ADDITIONAL REQUIREMENTS. PROVIDE MOUNTING BRACKETS AS REQUIRED FOR THE NEW CAMERAS.

DEDUCTIBLE ALTERNATE NO.2

EXISTING CORRUNA ELEVATED TANK CONTROL PANEL
LOCATED IN LABORATORY

LOCAL WELLHOUSE LC-1 (CP-WELL)
LOCATED BEHIND WTP

NETWORK PANEL NO.1 (NP-1)
LOCATED IN OLD BREAK ROOM



NOTE:
PROVIDE THE FOLLOWING SPARE PARTS. ONE (1) EACH OF THE FOLLOWING:

- 5069-L330ER
- 1734SC-IE4CH
- 1734-IB9
- 1734-OB8
- 1734-AENT
- 1769-IF4IH
- 1769-IQ16
- 1769-OW16
- 1769-OF4
- 1769-PB4
- 1756-PA75
- L81E

NOTE:
THE FOLLOWING EQUIPMENT ITEMS SHOWN ON THIS SHEET IS PROVIDED BY OWNER, AND INSTALLED BY CONTRACTOR. ALL OTHER ITEMS SHALL BE SUPPLIED, AND INSTALLED BY CONTRACTOR.

- OIC NO.1
- OIC NO.2
- OIC NO.3
- SERVER (SCADA HISTORIAN)

NOTE:
PLCS/SCADA PROGRAMMING, AND RADIO PROGRAMMING BY TETRATECH.

- WTP ARRAY-1 (NORTH)
 - HINTZ WELL
- WTP ARRAY-3 (SOUTH)
 - PALMER WELL NO. 2, AND 4
- WTP ARRAY-4 (WEST)
 - STAND PIPE
 - WEST TANK
 - JUNIPER WELL

MOUNT SUBSCRIBER UNIT (SU) ON TOP OF 100 FT. WOOD POLE (DIRECT BURIED POLE)
MOUNT SUBSCRIBER UNIT (SU) 80 FT. (LOCATE POLE AT WELL NO.4 AND RUN DIRECT BURIED FIBER TO WELL NO.2)
MOUNT SUBSCRIBER UNIT (SU) ON TOP OF 100 FT. WOOD POLE.
MOUNT SUBSCRIBER UNIT (SU) ON TOP OF TANK
MOUNT SUBSCRIBER UNIT (SU) ON TOP OF 110 FT. WOOD POLE.

QUANTITY	PART NO.	DESCRIPTION
AS SHOWN ON DRAWINGS	AIRMUX-5000/BS/F58F/750 M/INT	HBS 750 ODU, WITH A SMART BEAMFORMING INTEGRATED ANT WITH EMBEDDED GPS. SUPPORTING MULTI FREQ BANDS AT 5.X GHZ, FACT DEFAULT 5.8 GHZ FCC/IC
AS SHOWN ON DRAWINGS	AIRMUX-IDUH/2ETH/HP	IDU-H, 2 X ETHERNET PORTS, 1000 BASE-T INTERFACE AND 2 X SFP PORTS
AS SHOWN ON DRAWINGS	AIRMUX-PS-H-AC/ACUS	IDU-H AC POWER ADAPTOR (90-240VAC TO 48VDC) FOR IDU-H, US AC PLUG
AS SHOWN ON DRAWINGS	CBL-AIRMUX-UTP/100	AIRMUX CAT5E, ODU-IDU CABLE, 100M, ASSEMBLED W/RJ45 CONNECTORS
AS SHOWN ON DRAWINGS	AIRMUX-OUTDOOR-LPU-KIT	KIT OF 10 OUTDOOR LIGHTNING PROTECTION UNITS FOR 10/100/1000BASE-T POE SURGE PROTECTOR (INCLUDING 0.5M CAT5E CABLE AND WALL/POLE MOUNTING KIT)
AS SHOWN ON DRAWINGS	AIRMUX-5000/SU-PRO/F58F/100M/EMB	SU-PRO 100 ODU, WITH AN INTEGRATED ANTENNA, SUPPORTING MULTI FREQUENCY BANDS AT 5.X GHZ, FACTORY DEFAULTS 5.8 GHZ FCC PROVIDE WITH EXTERNAL POE INJECTOR.
AS SHOWN ON DRAWINGS	PF-2/ETR/48VDC/2SFP/4PU	POWERFLOW-2, -40 - 75°C, 48VDC, 2X 100/1000BASE-X SFP, 4X 10/100/1000BASE-T WITH PER PORT CONFIGURATION FOR POE++ 60W (240W) OR POE+ SUPPORT IN AM (120W); DIN RAIL MOUNT PROVIDE WITH 48V DC POWER SUPPLY.
AS SHOWN ON DRAWINGS	1783-HMS8T4CGN	ROCKWELL STRATIX INDUSTRIAL ETHERNET SWITCH
AS SHOWN ON DRAWINGS	1783-SFP-1GSX	GIGABIT MULTIMODE FIBER SFP
AS SHOWN ON DRAWINGS	SFP-5D	MULTIMODE SFP-GIG WITH LC CONNECTOR FOR IDU-HP

5.8 GHZ HIGH SPEED RADIO LINK - PARTIAL BILL OF MATERIAL
SEE DRAWINGS FOR OTHER PARTS/EQUIPMENT TO BE PROVIDED

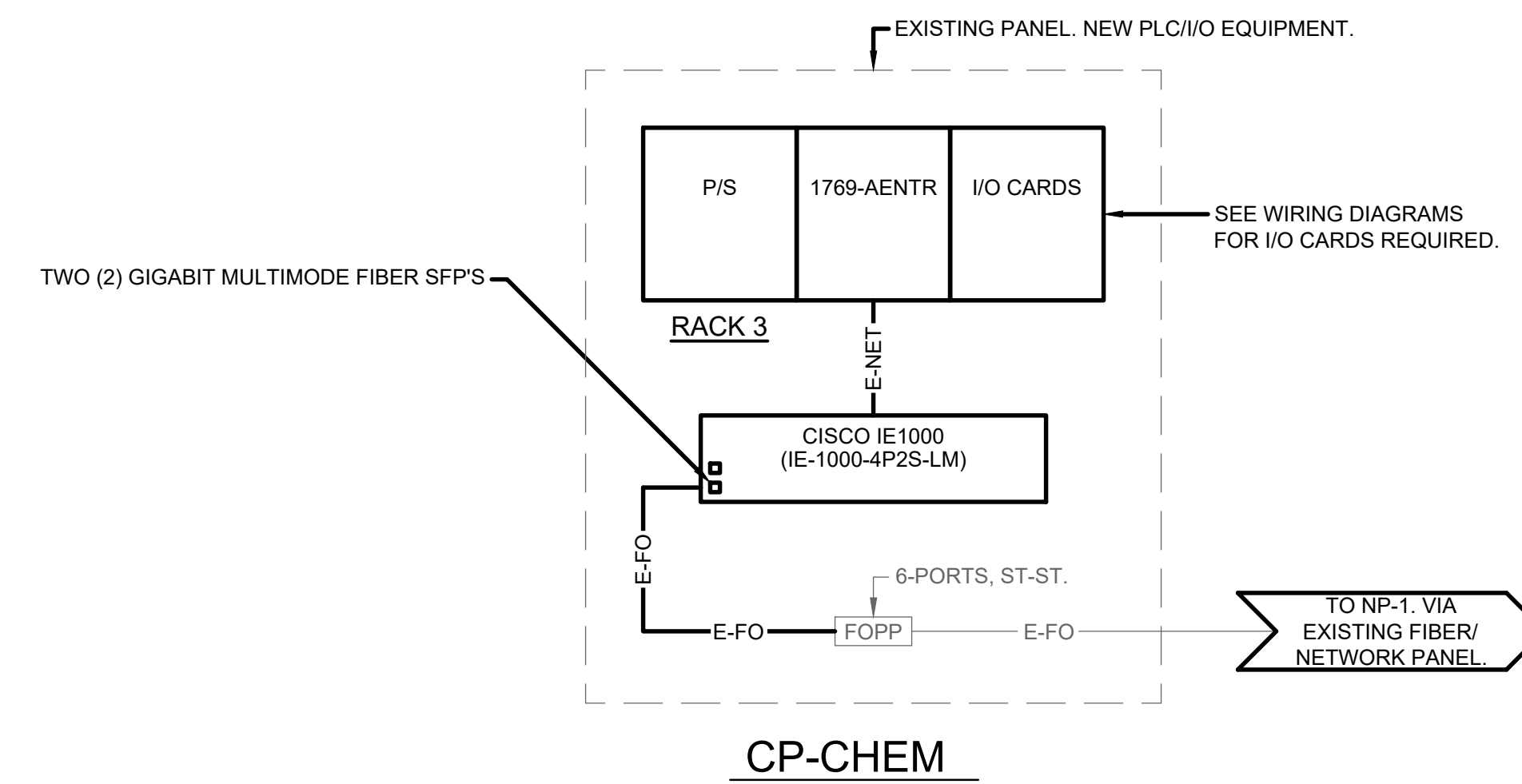
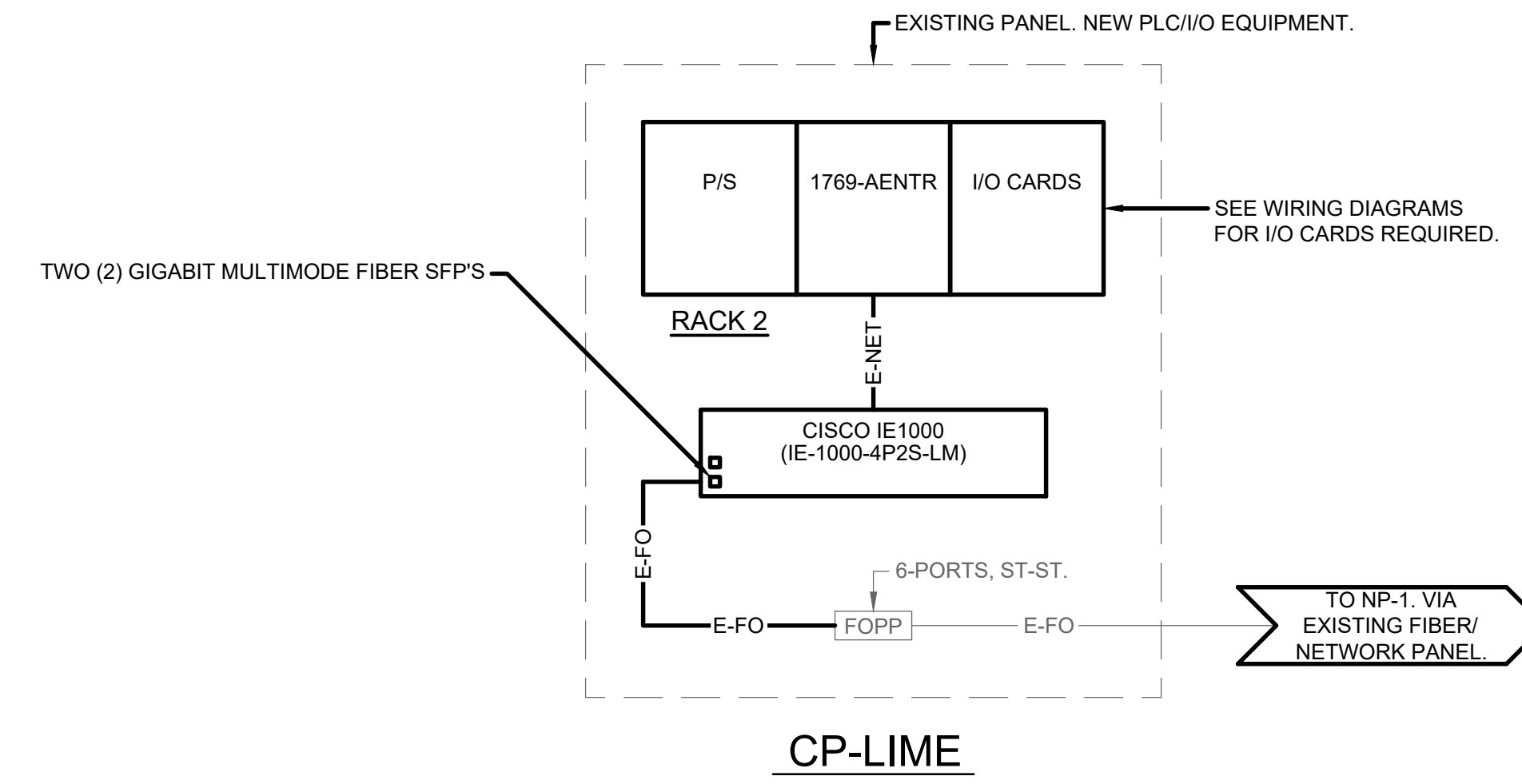
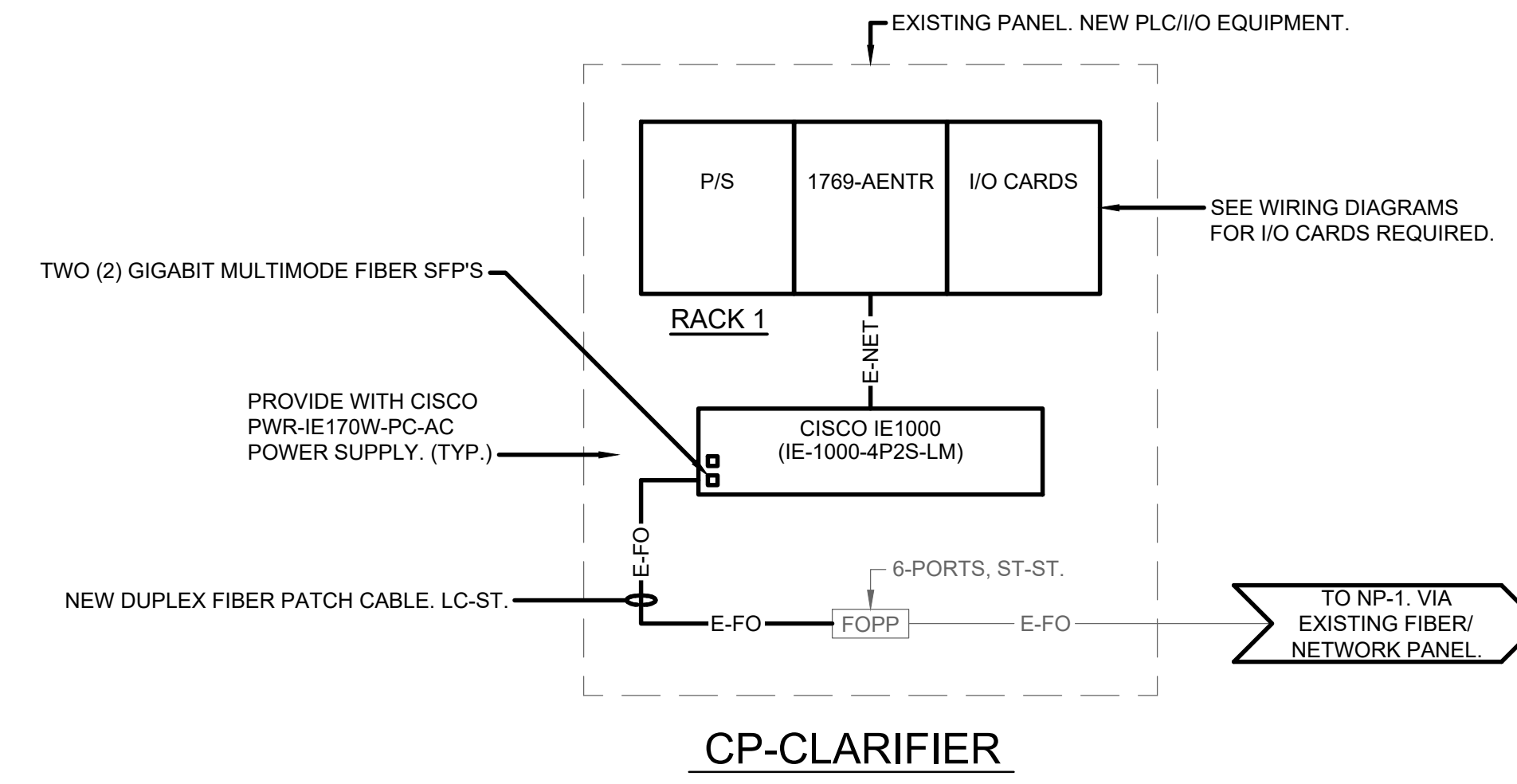
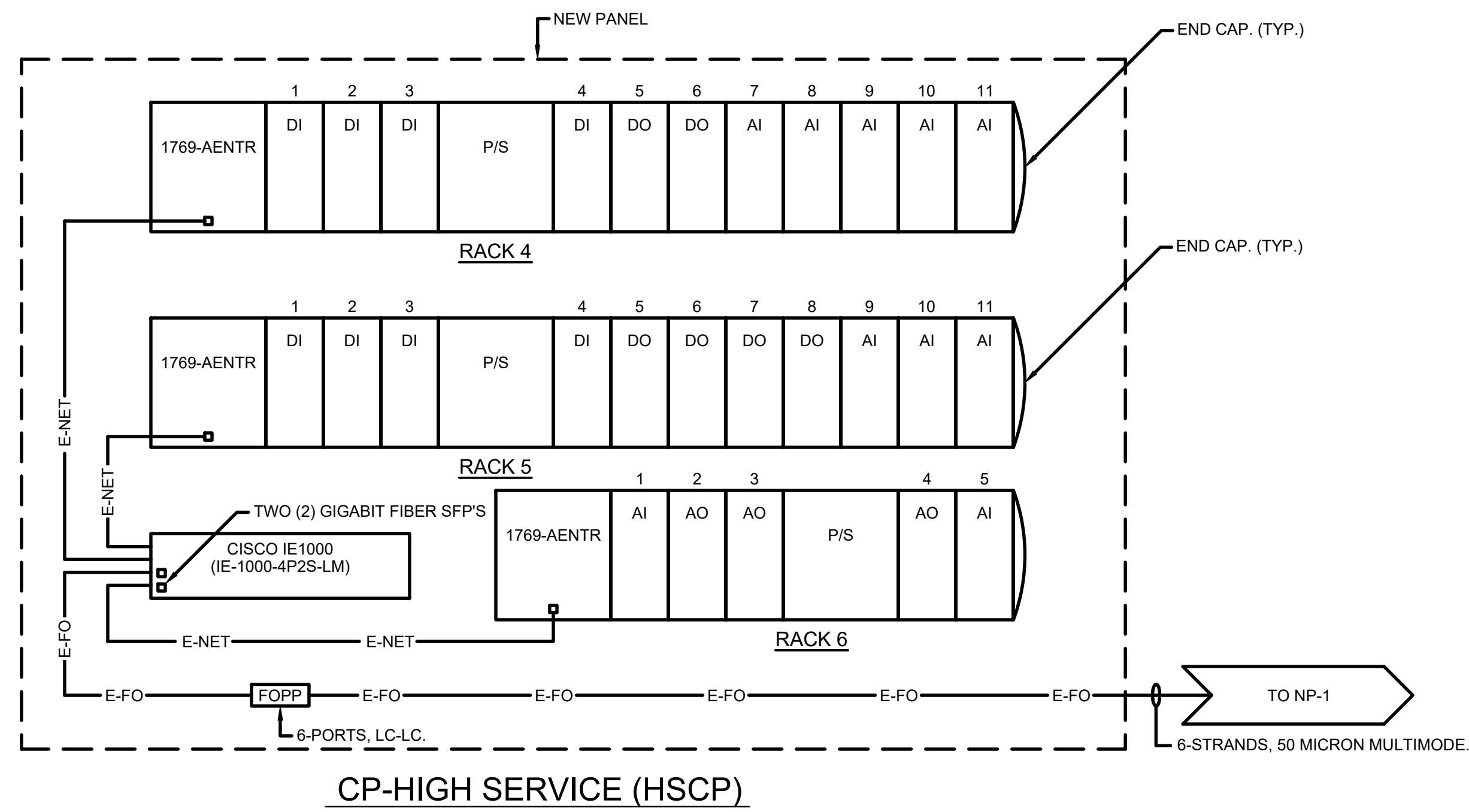
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MARK	DATE	DESCRIPTION

CITY OF OWOSSO, MICHIGAN
OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES SCADA SYSTEM UPGRADES
INSTRUMENTATION WATER TREATMENT PLANT SYSTEM CONFIGURATION DRAWING
Project No.: 200-280565-21002
Designed By: GCJ
Drawn By: JLS
Checked By: JLS

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NOTE:
PLC/SCADA PROGRAMMING, AND RADIO PROGRAMMING BY TETRATECH.



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CITY OF OWOSSO, MICHIGAN
OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES
SCADA SYSTEM UPGRADES
**INSTRUMENTATION
WATER TREATMENT PLANT
SYSTEM CONFIGURATION DRAWING**

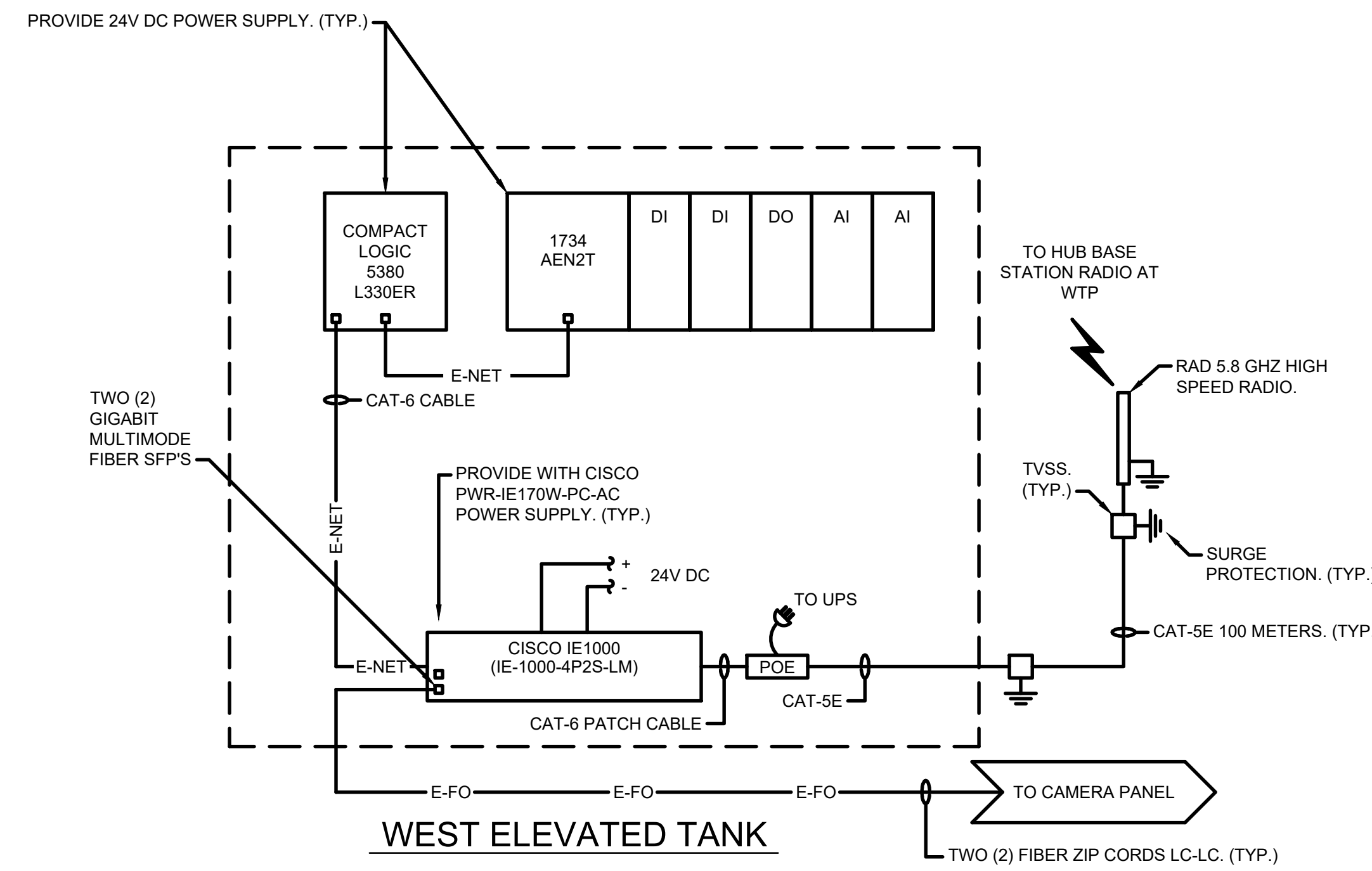
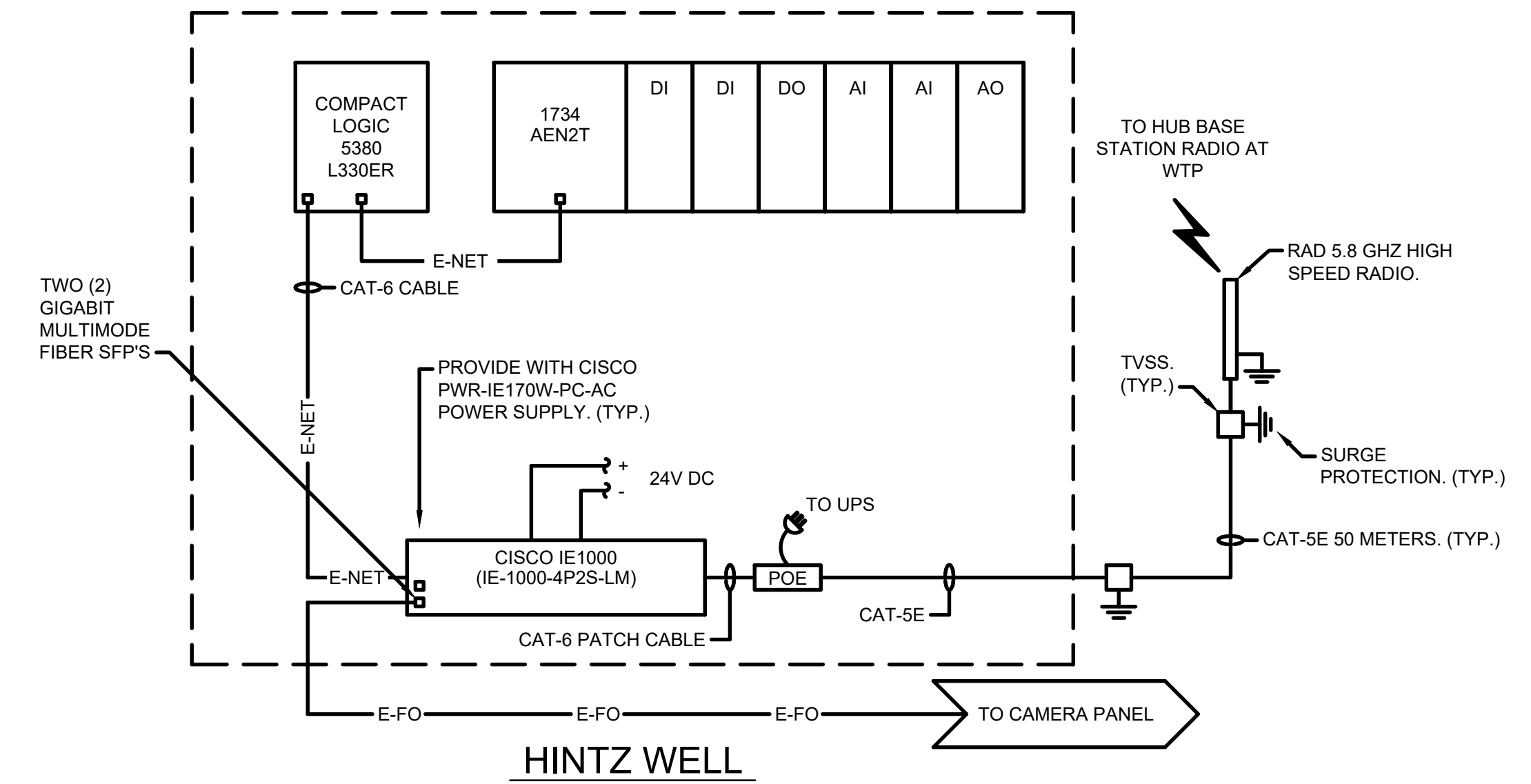
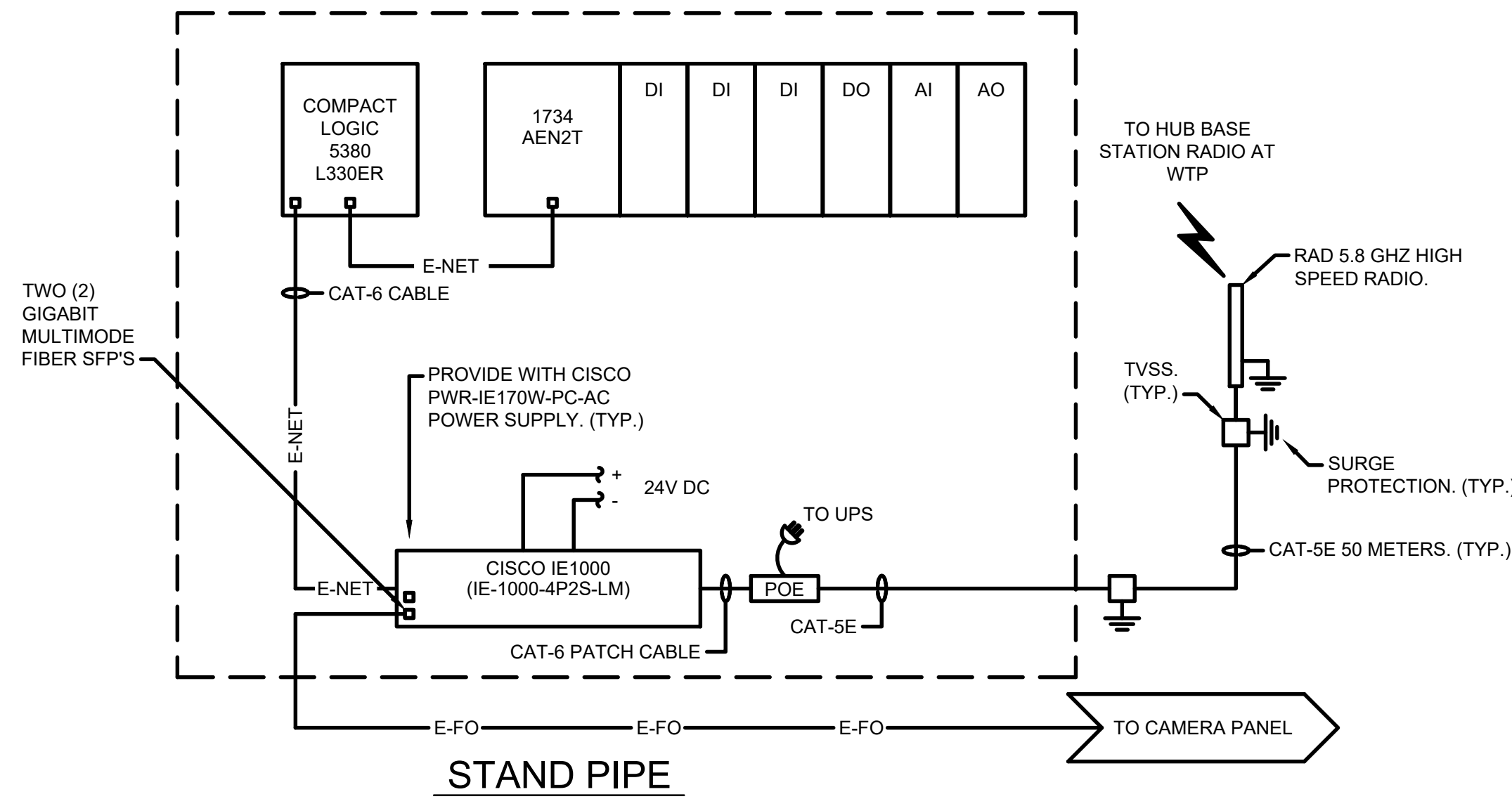
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OF 62

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Bar Measures 1 inch

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NOTE:
PLC/SCADA PROGRAMMING, AND
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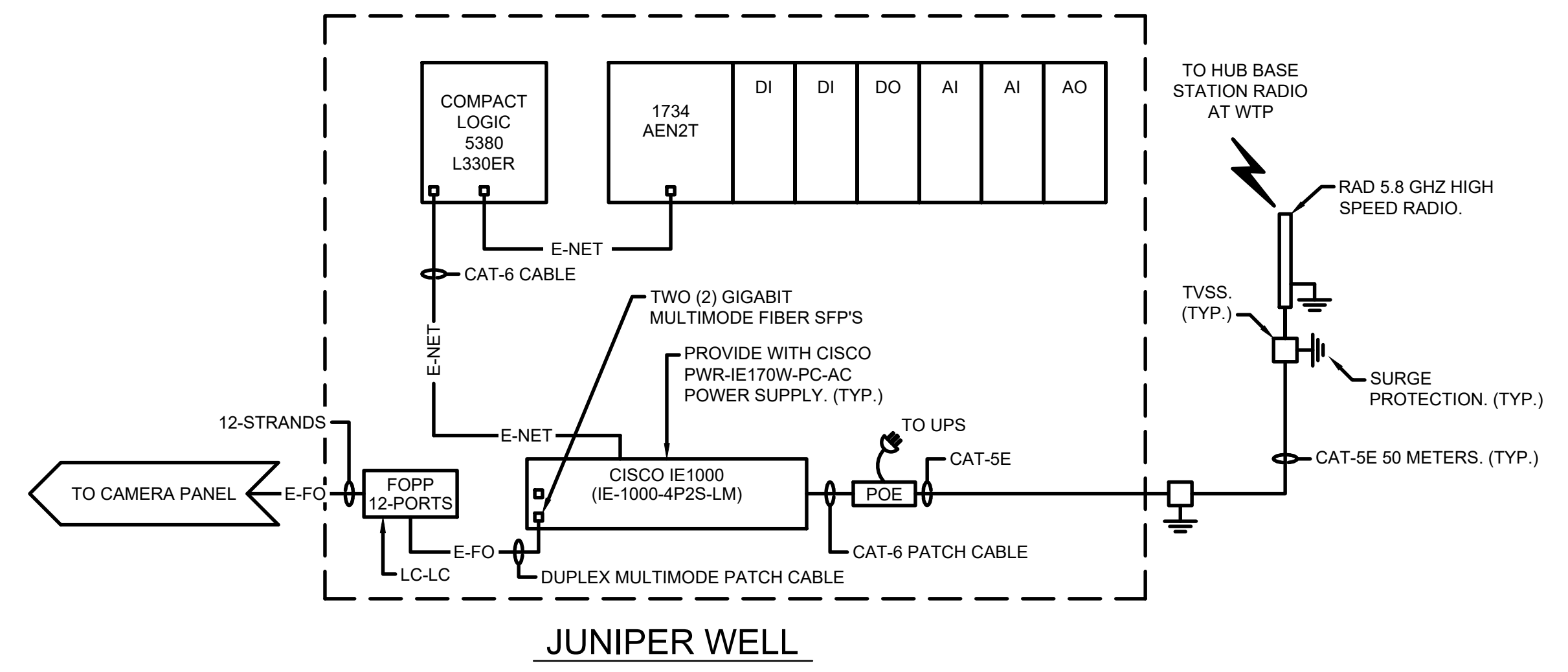
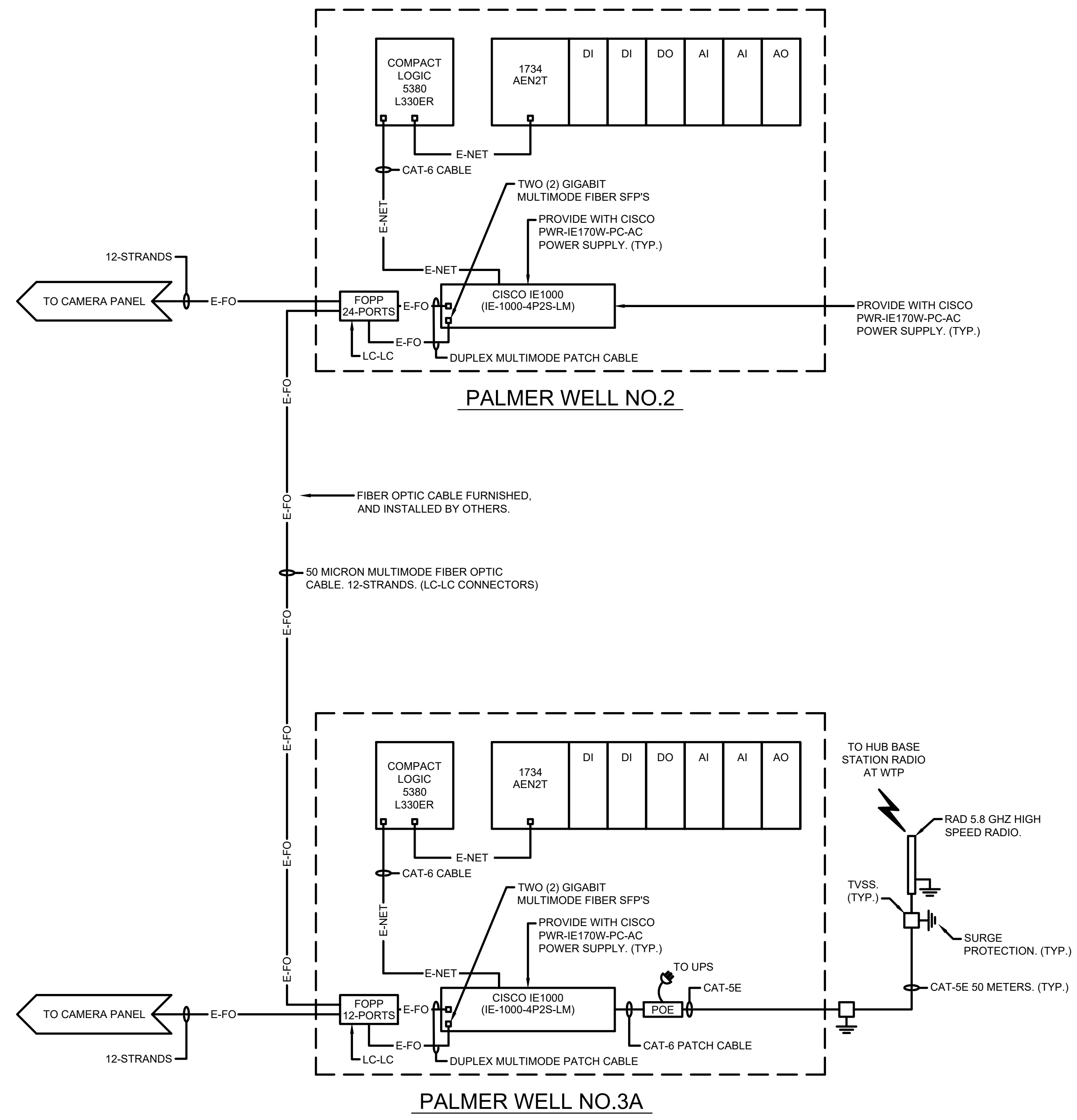
MARK	DATE	DESCRIPTION

CITY OF OWOSSO, MICHIGAN
OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES
SCADA SYSTEM UPGRADES
**INSTRUMENTATION
REMOTE SITES
SYSTEM CONFIGURATION DRAWING**

Project No.:	200-280565-21002
Designed By:	G.C.J.
Drawn By:	J.L.S.
Checked By:	

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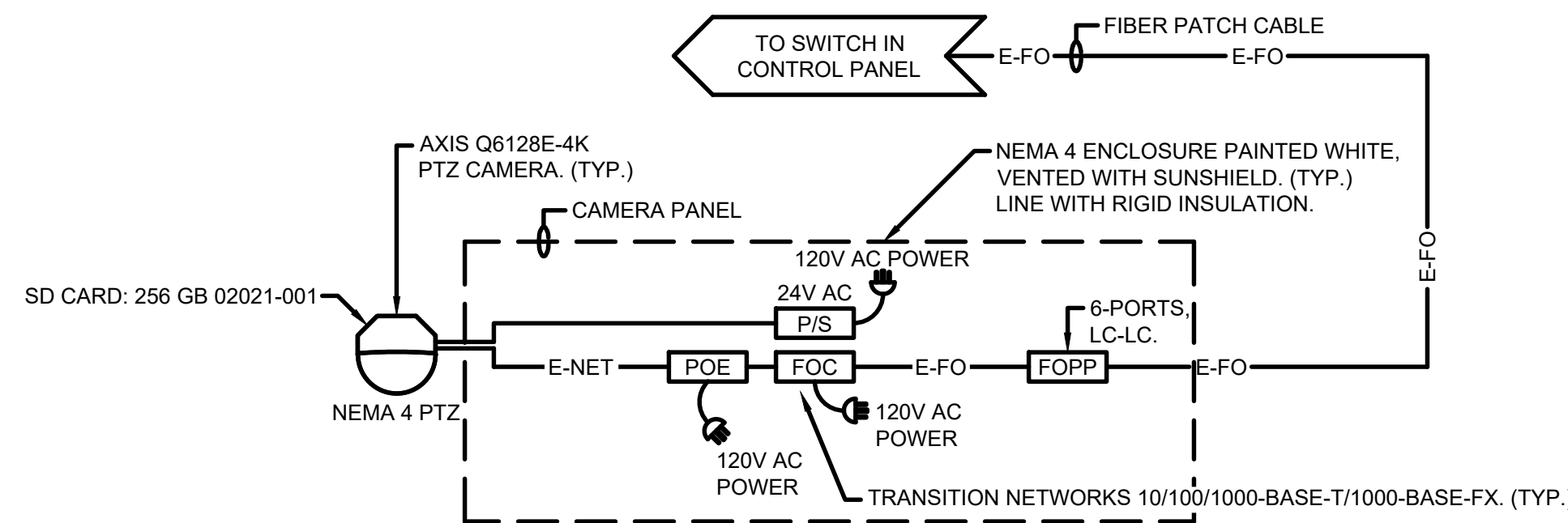
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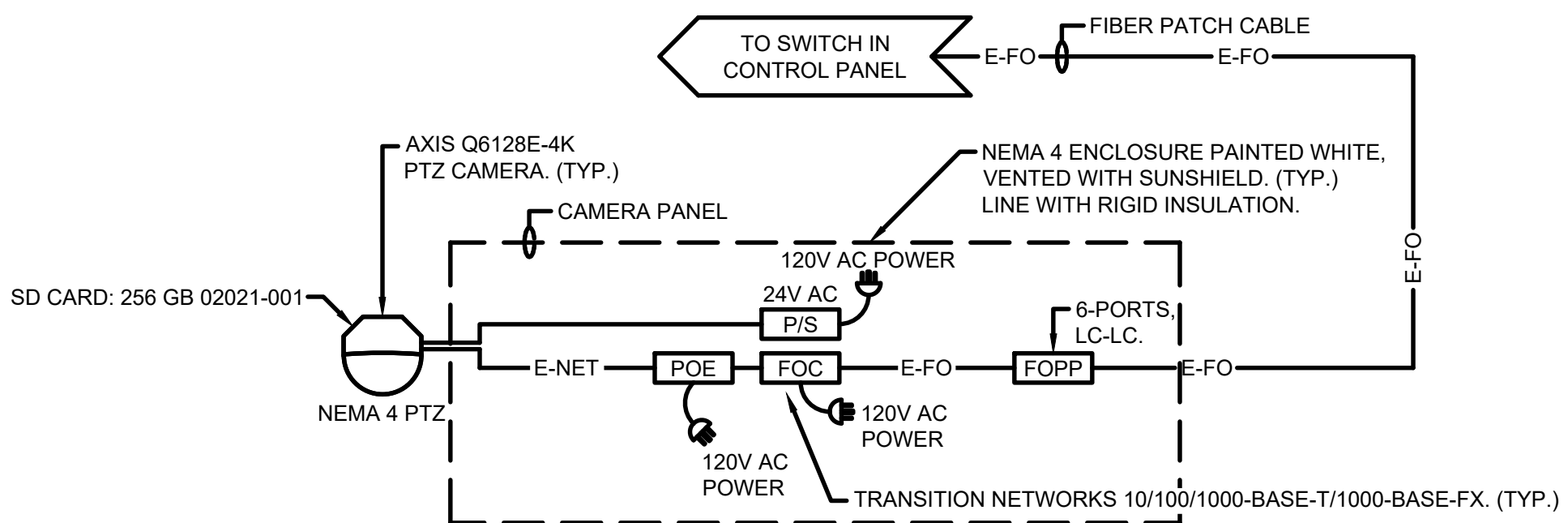
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<p>TETRA TECH www.tetratech.com 3497 COOLIDGE RD. EAST LANSING, MI 48823 PHONE: (517) 316-3930 FAX: (517) 484-8140</p>	
BY	
DATE	
DESCRIPTION	
MARK	
<p>CITY OF OWOSSO, MICHIGAN OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES SCADA SYSTEM UPGRADES INSTRUMENTATION SYSTEM CONFIGURATION DRAWING</p>	
Project No.:	200-280565-21002
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<p>I-103 OF 62 Bar Measures 1 inch</p>	

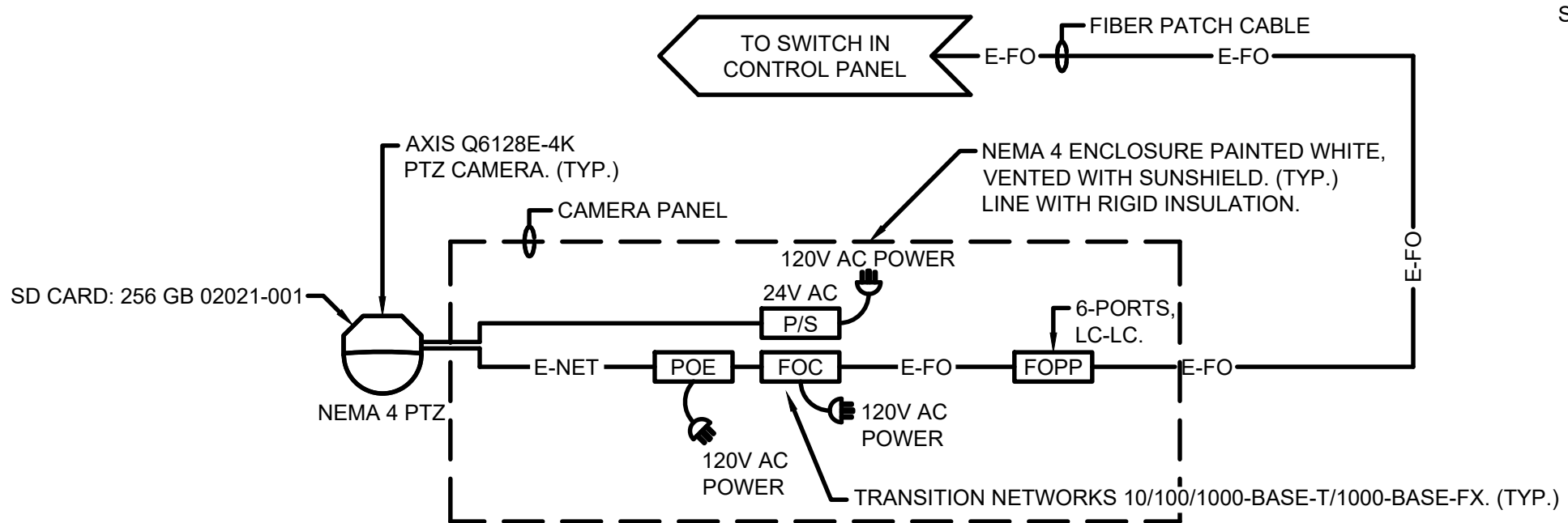
DEDUCTIBLE
ALTERNATE NO.3
REMOTE SITE CAMERAS



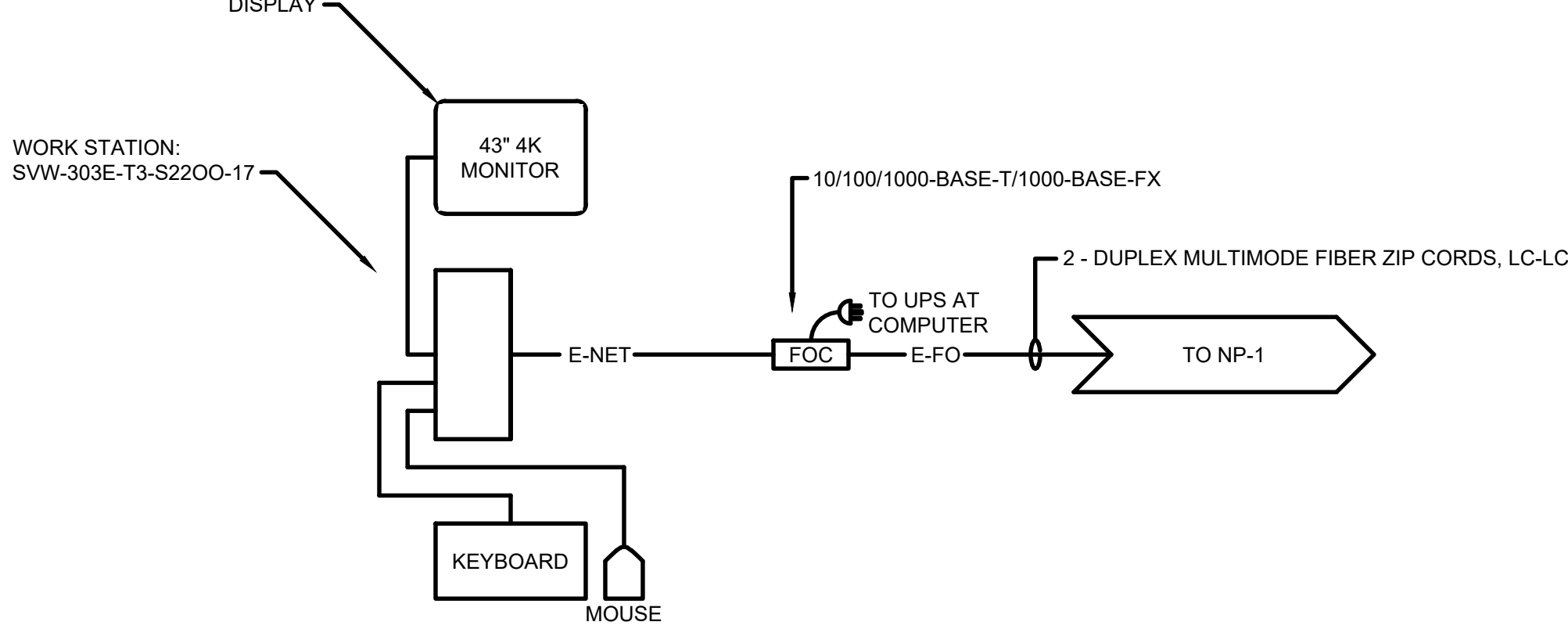
STAND PIPE



HINTZ WELL

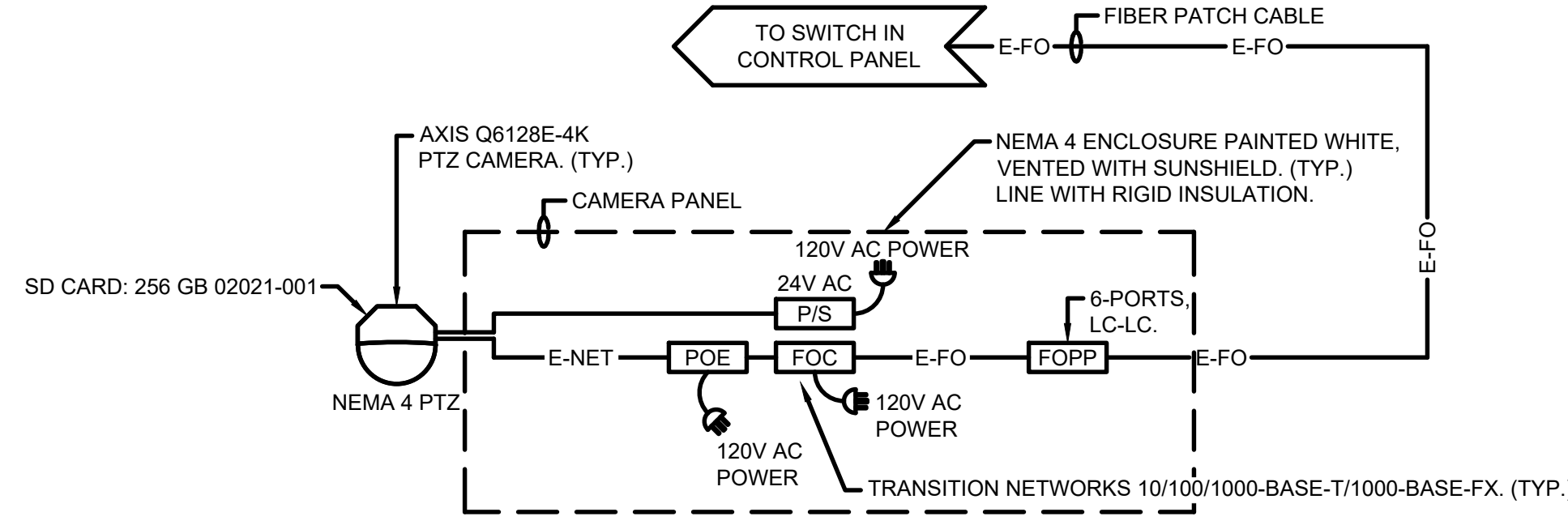


PALMER WELL NO.2

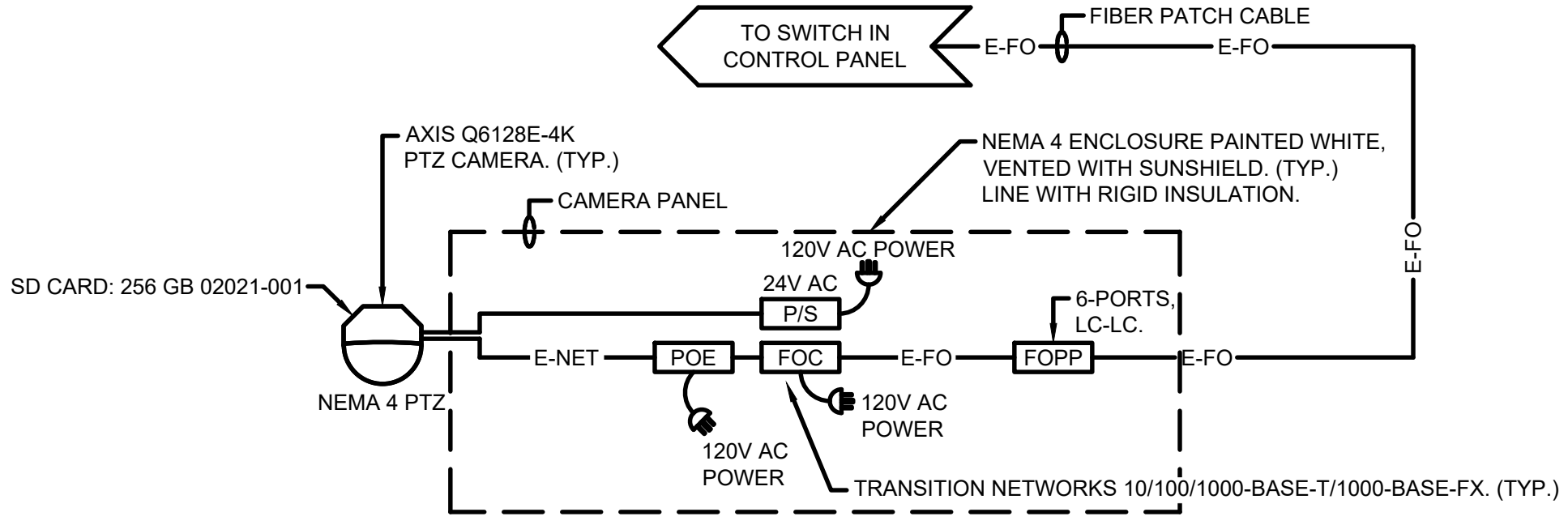


VIDEO COMPUTER

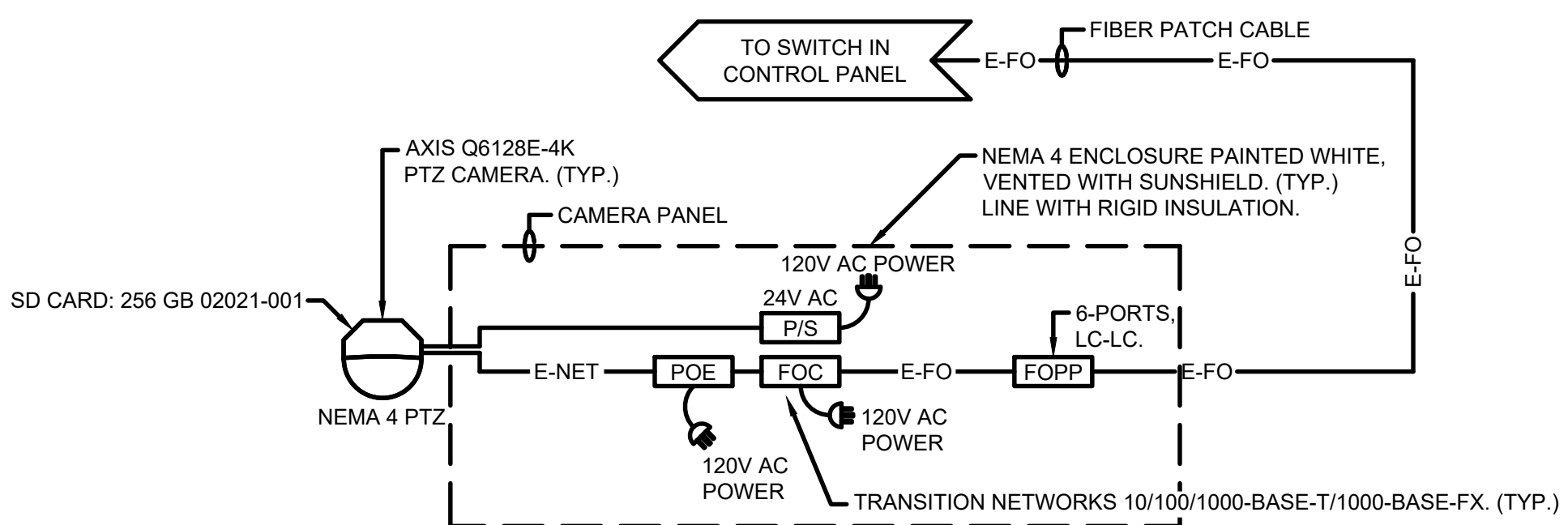
LOCATED IN WATER TREATMENT PLANT CONTROL ROOM



WEST ELEVATED TANK



PALMER WELL NO.3A



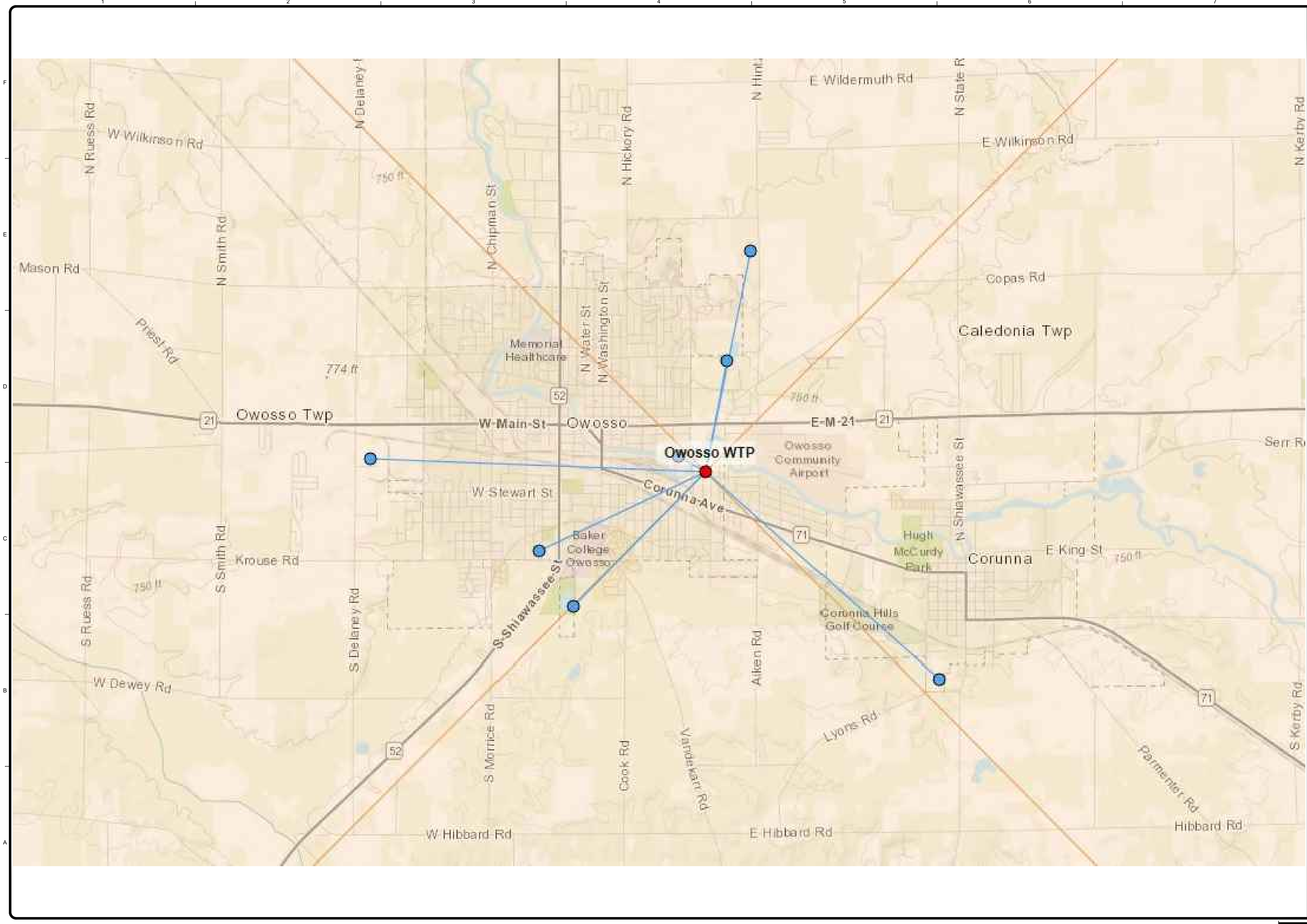
JUNIPER WELL

MARK	DATE	DESCRIPTION

Project No.: 200-280565-21002
Designed By: GCJ
Drawn By: JLS
Checked By:

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1/3/2022 5:08:53 PM - \\T:\LOCAL\PROJECTS\ANN ARBOR\IER280565\200-280565-2\1002\CAD\SHEETFILES\I-105_SYSTEM_CONFIGURATION_V1.DWG - SHANK, JASON



BY	

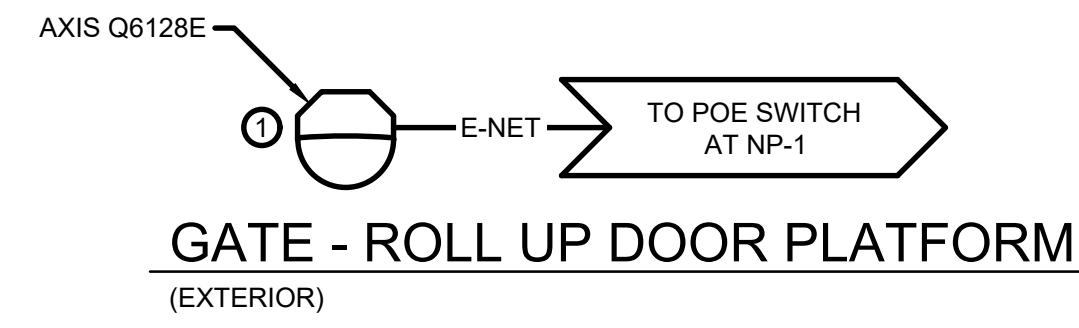
MARK	DATE	DESCRIPTION

CITY OF OWOSSO, MICHIGAN
OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES
SCADA SYSTEM UPGRADES
**INSTRUMENTATION
COMMUNICATIONS MAP
SYSTEM CONFIGURATION DRAWING**

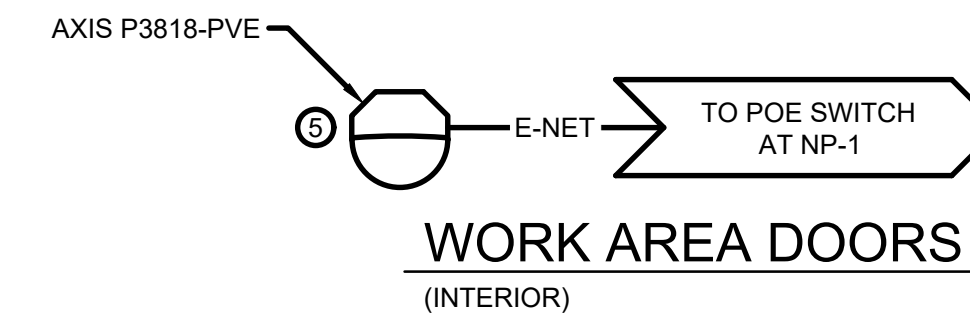
Project No.: 200-280565-21002
Designed By: GCJ
Drawn By: JLS
Checked By:

I-105
OF 62
Bar Measures 1 inch

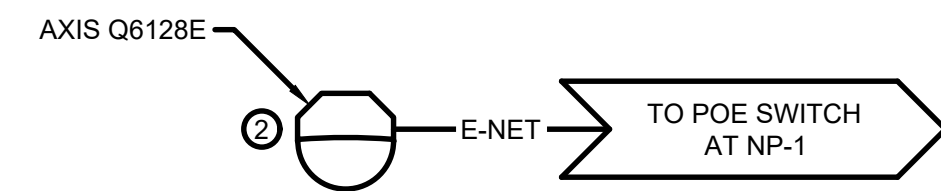
11/10/2022 1:10:11 PM - \\TT.LOCAL\PROJECTS\ANN ARBOR\RIER\200565-21002\CAD\SHEETFILES\I-106_SYSTEM_CONFIGURATION_V\LDWG - SHANK, JASON



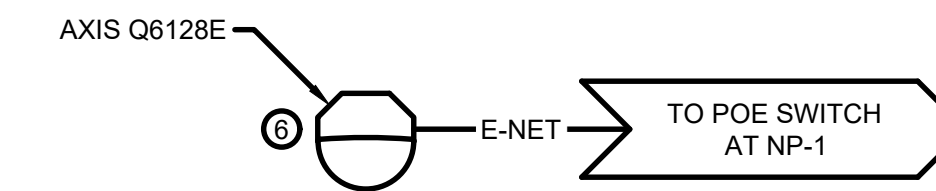
GATE - ROLL UP DOOR PLATFORM
(EXTERIOR)



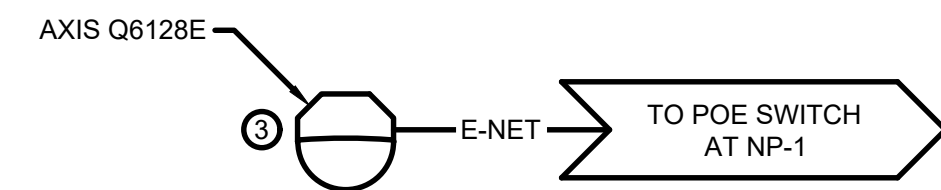
WORK AREA DOORS
(INTERIOR)



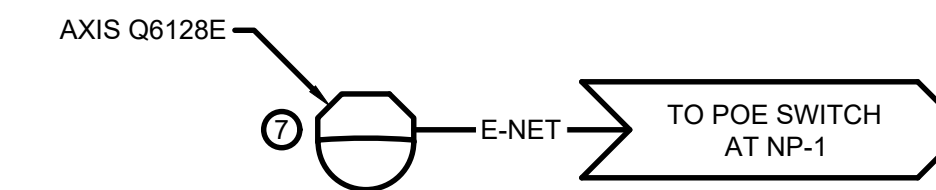
GATE - DRIVEWAY, AND RESERVOIR (2-DOORS)
(EXTERIOR)



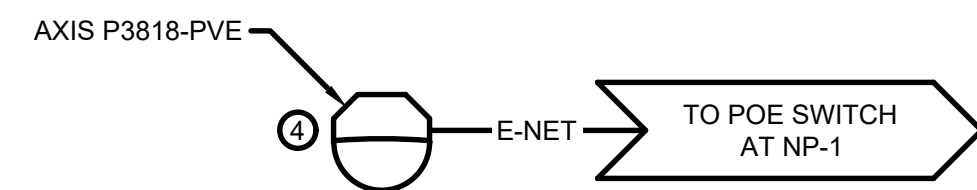
OLD TREATMENT BUILDING, AND TWO OUTSIDE DOORS
(EXTERIOR)



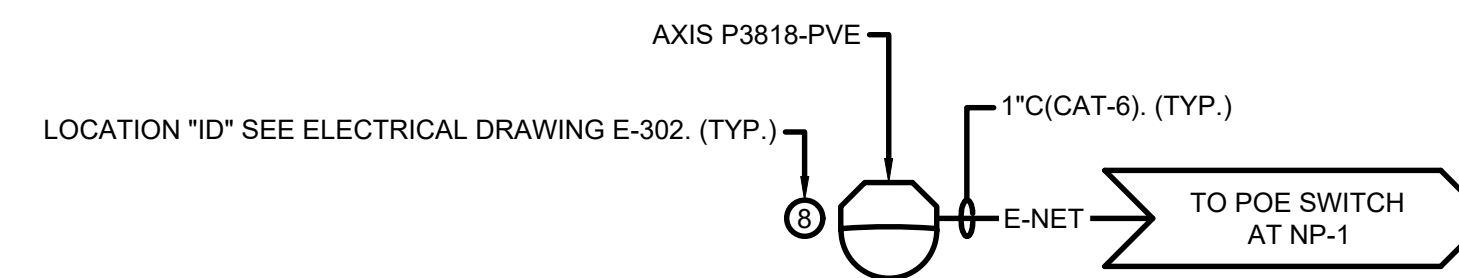
GATE, AND FRONT DOOR, AND PARKING LOT
(EXTERIOR)



CLARIFIER NORTHEAST WALL
(EXTERIOR)



THREE DOORS, AND WORK AREA
(INTERIOR)



CLARIFIER, AND THREE DOORS
(INTERIOR)

WATER TREATMENT PLANT CAMERAS

DEDUCTIBLE
ALTERNATE NO.2
PLANT CAMERAS



www.tetrattech.com
3497 COQUILDFE RD.
EAST LANSING, MI 48823
PHONE: (517) 316-3930 FAX: (517) 484-8140

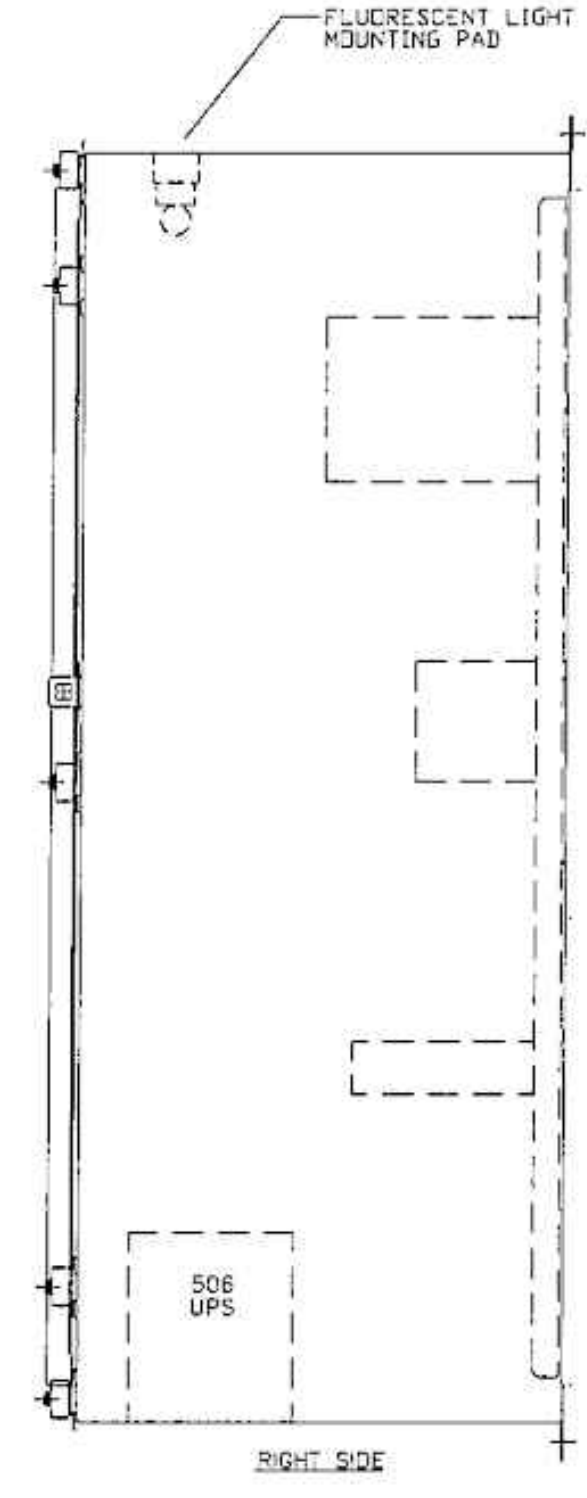
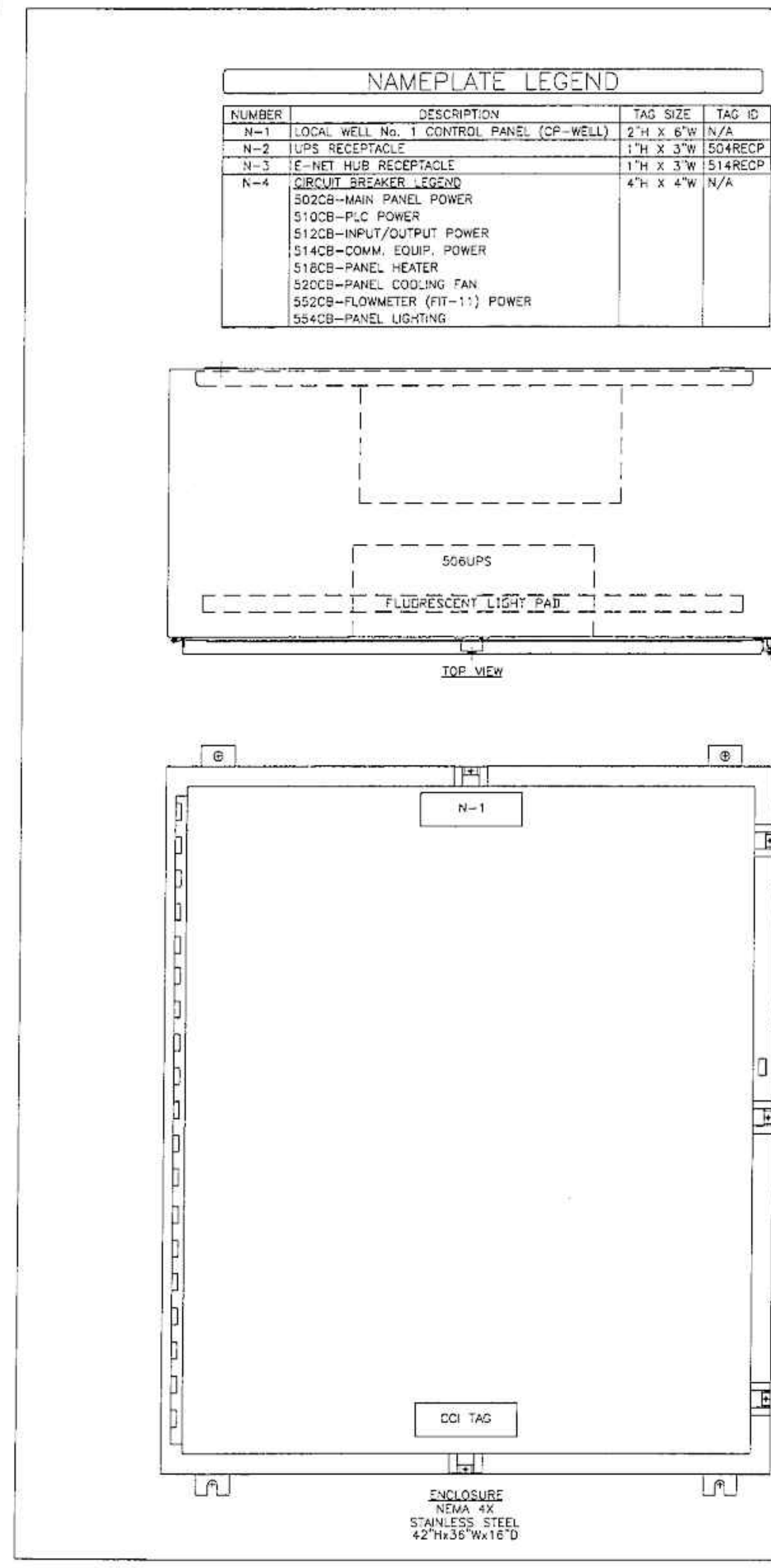
MARK	DATE	DESCRIPTION	BY

CITY OF OWOSSO, MICHIGAN
OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES
SCADA SYSTEM UPGRADES
INSTRUMENTATION
VIDEO - WATER TREATMENT PLANT
SYSTEM CONFIGURATION DRAWING

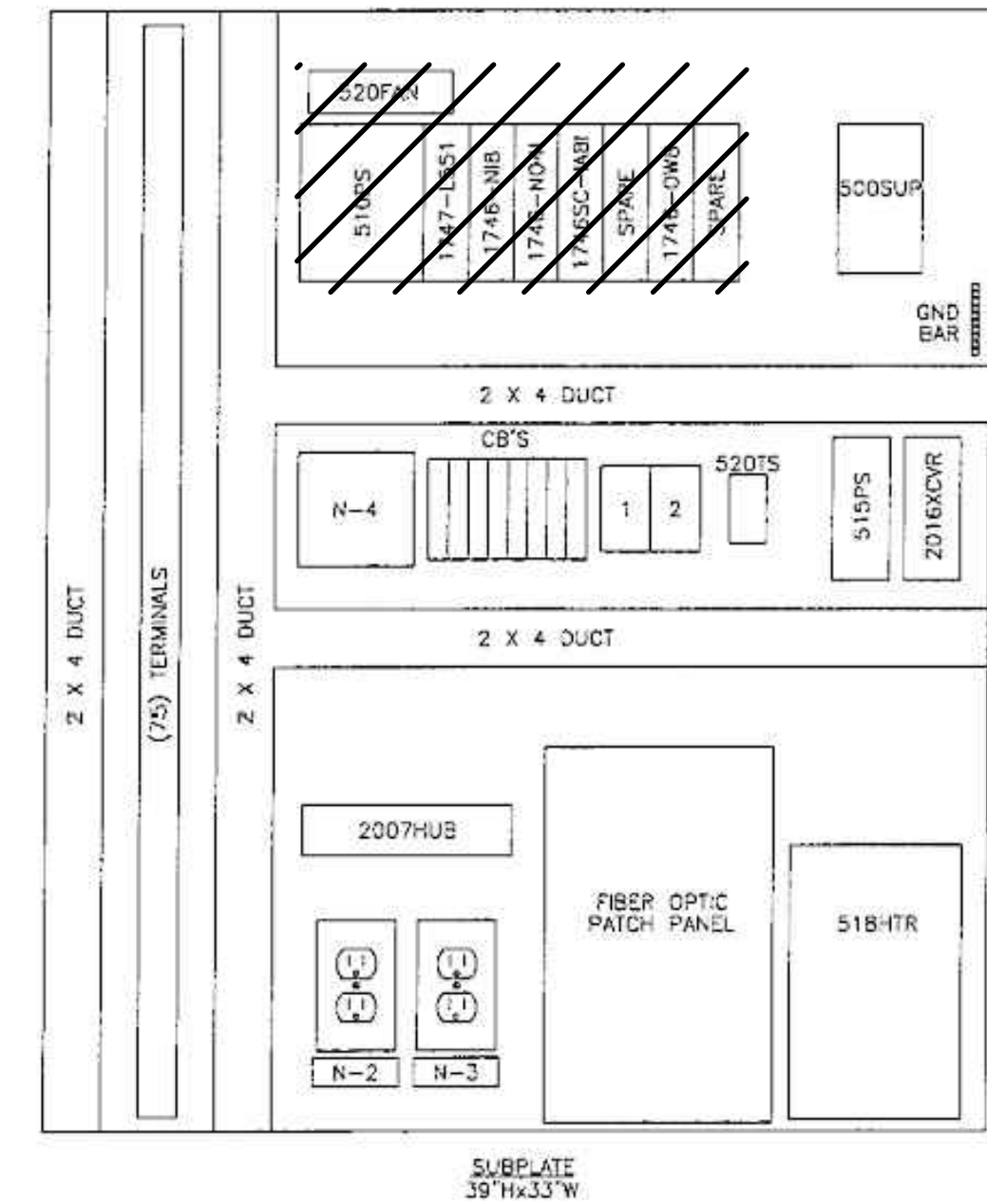
Project No.: 200-280565-21002
Designed By: GCJ
Drawn By: JLS
Checked By:

I-106
OF 62

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BILL OF MATERIALS			
QTY	MANUFACTURER	NUMBER	DESCRIPTION
PANEL:			
1	CUSTOM FABRICATION	N/A	NEMA 4X, STAINLESS STEEL ENCLOSURE, 42 1/2x36 1/2x16 1/2 PANEL
1	CUSTOM FABRICATION	N/A	SUBPLATE (PAINTED WHITE), 39 1/4 X 33 1/4
1	CUSTOM FABRICATION	N/A	ETHERNET HUB SHELF
SUBPLATE EQUIPMENT:			
75	ALLEN BRADLEY	1492-CAJ	TERMINAL, 600V, 55A
5	ALLEN BRADLEY	1492-CB100D	15AMP, SUBPLATE-MOUNTED CIRCUIT BREAKER
2	ALLEN BRADLEY	1492-CB100C	25AMP, SUBPLATE-MOUNTED CIRCUIT BREAKER
1	ALLEN BRADLEY	1492-CG150C	15AMP, SUBPLATE-MOUNTED CIRCUIT BREAKER
1	ALLEN BRADLEY	1746-A7	7-SLOT 1/2 CHASSIS
1	ALLEN BRADLEY	1746-N18	BPT, ANALOG INPUT MODULE
1	ALLEN BRADLEY	1746-N04	4PT, ANALOG OUTPUT MODULE
1	ALLEN BRADLEY	1746-DWB	BPT, RELAY OUTPUT MODULE, 120VAC
1	ALLEN BRADLEY	1746-P4	SLC POWER SUPPLY
1	ALLEN BRADLEY	1747-L551	SLC-5/05 PROCESSOR
1	BLACK BDX	EFN4010-001M	ST-SC FIBER OPTIC PATCH CABLE
2	BLACK BDX	EVNSL25-0006	1.8 METER, ETHERNET PATCH CABLE (STRAIGHT-PINNED)
2	CCI	N/A	DUPLEX RECEPTACLE
1	CCI	N/A	POWER CORD FOR UPS
1	CCI	N/A	PANEL LIGHT
1	EDCO	HSP12BT-1RU	120VAC SURGE SUPPRESSOR
1	HOFFMAN	D-AH2001A	HEATER
1	HOFFMAN	A-4AXFN	COOLING FAN
1	HOFFMAN	A-TEHND	THERMOSTAT
1	HOFFMAN	BRK74	FAN BRACKET
1	HIRSCHMANN	S43-658-001	FIBER OPTIC TO CAT-5 TRANSCEIVER
1	HIRSCHMANN	S42-662-001	RPS 60 POWER SUPPLY, 24VDC @ 2.5AMP
2	LEVITON	5100-1ST	ST ADAPTER PLATE
1	LEVITON	5V120-00N	FIBER OPTIC PATCH PANEL, 24-PORT
1	LINK-SYS	EF4H05V	ETHERFAST 10/100 AUTO-SENSING HUB
1	MICRO SWITCH	2AC6	DOOR SWITCH
2	DMRON	LY141N-AC120	4-POLE, 120VAC, ICE-CUBE RELAY
2	DMRON	PTF14A-E	ICE-CUBE RELAY SOCKET
1	POWERWARE	PWS125 1500	1.4KVA, UNINTERRUPTIBLE POWER SUPPLY
1	POWERWARE	PWS125 48V EEM	EXTENDED BATTERY MODULE
1	SPECTRUM CONTROLS	1746sc-1AB1	BPT, ISOLATED DISCRETE INPUT MODULE, 120VAC



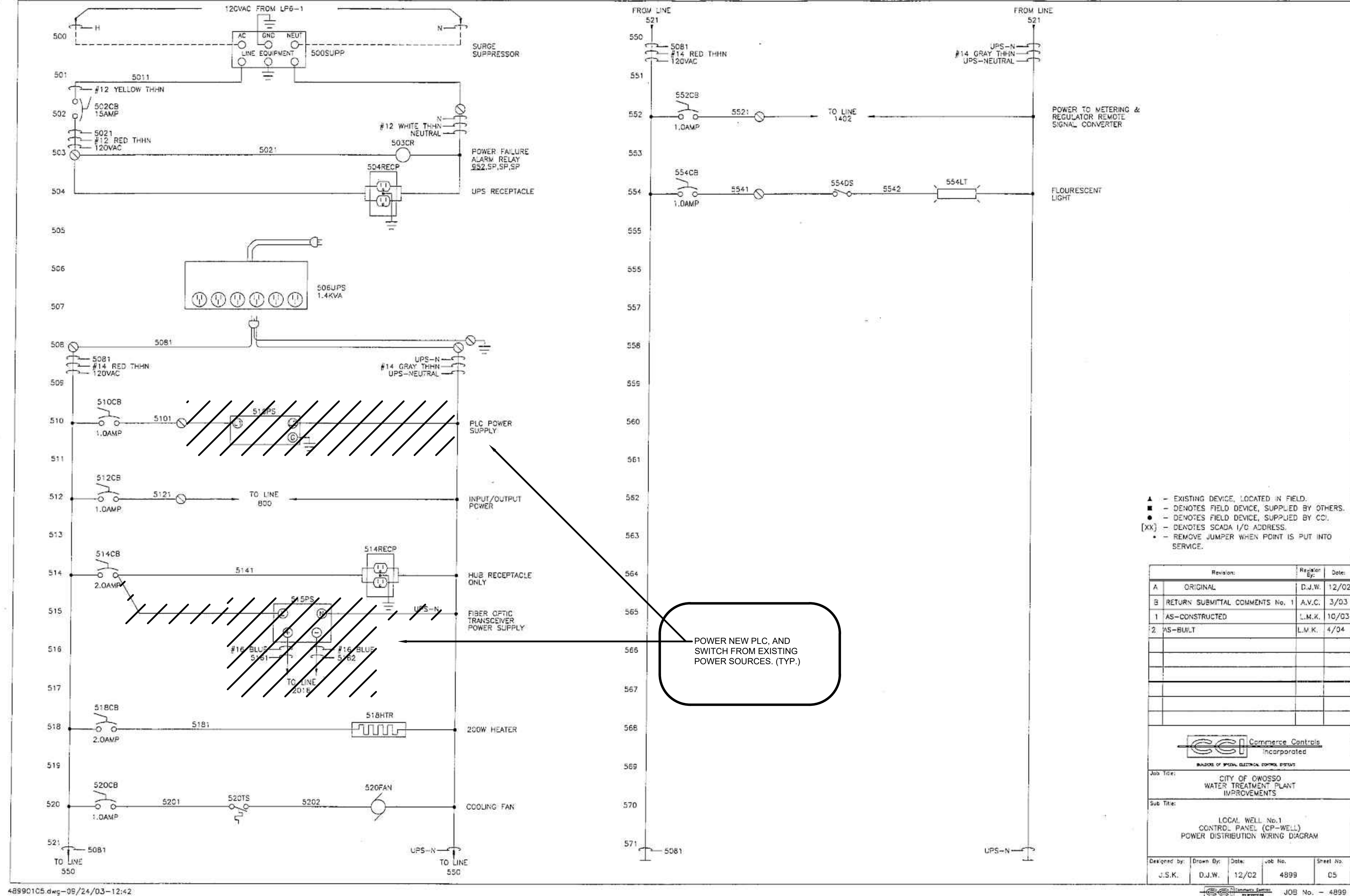
Revision	Revised By	Date
A	ORIGINAL	D.J.W. 12/02
B	RETURN SUBMITTAL COMMENTS No. 1	A.V.C. 3/03
1	AS-CONSTRUCTED	L.M.K. 10/03
2	AS-BUILT	L.M.K. 4/04

Design By	Drawn By	Date	Job No.	Sheet No.
J.S.K.	A.V.C.	12/02	4899	03

MARK	DATE	DESCRIPTION	BY

EXISTING DRAWING FROM PREVIOUS PROJECT. PROPOSED WORK SHOWN BOLD, CROSSHATCHED, AND/OR CIRCLED

3/31/2022 11:47:17 AM - I:\TT\LOCAL\PROJECTS\ANN ARBOR\IER\280565\21002\CAD\SHHEETFILES\I-301_LOCAL WELL NO.1 CONTROL PANEL WIRING DIAGRAM - DEMOLITION.DWG - SHANK, JASON



- ▲ - EXISTING DEVICE, LOCATED IN FIELD.
- - DENOTES FIELD DEVICE, SUPPLIED BY OTHERS.
- - DENOTES FIELD DEVICE, SUPPLIED BY CCI.
- [XX] - DENOTES SCADA I/O ADDRESS.
- - REMOVE JUMPER WHEN POINT IS PUT INTO SERVICE.

Revision:	Revised By:	Date:
A	ORIGINAL	D.J.W. 12/02
B	RETURN SUBMITTAL COMMENTS No. 1	A.V.C. 3/03
1	AS-CONSTRUCTED	L.M.K. 10/03
2	AS-BUILT	L.M.K. 4/04

<small>MAKERS OF SPECIAL ELECTRICAL CONTROL SYSTEMS</small>				
Job Title: CITY OF OWOSSO WATER TREATMENT PLANT IMPROVEMENTS				
Sub Title: LOCAL WELL No.1 CONTROL PANEL (CP-WELL) POWER DISTRIBUTION WIRING DIAGRAM				
Designed by:	Drawn By:	Date:	Job No.:	Sheet No.:
J.S.K.	D.J.W.	12/02	4899	05
<small>COMMERCE CONTROLS INCORPORATED</small> JOB No. - 4899				

489901C5.dwg-08/24/03-12:42

MARK	DATE	DESCRIPTION	BY

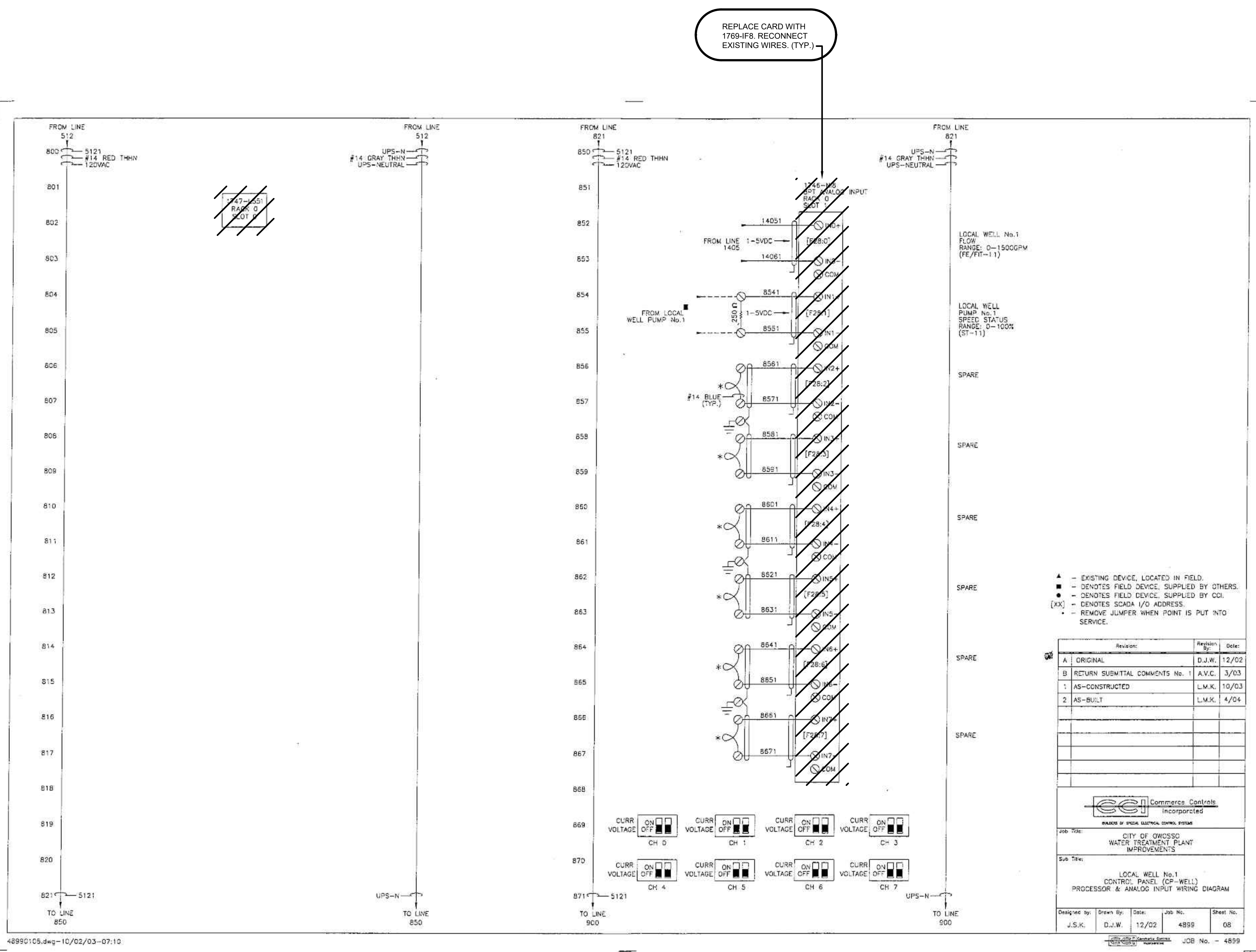
CITY OF OWOSSO, MICHIGAN
 OWOSSO WATER TREATMENT PLANT AND REMOTE SITES
 SCADA SYSTEM UPGRADES
INSTRUMENTATION
LOCAL WELL NO.1 (CP-WELL) CONTROL
PANEL WIRING DIAGRAM - DEMOLITION

Project No.: 200-280565-21002
 Designed By: G.C.J.
 Drawn By: J.L.S.
 Checked By:

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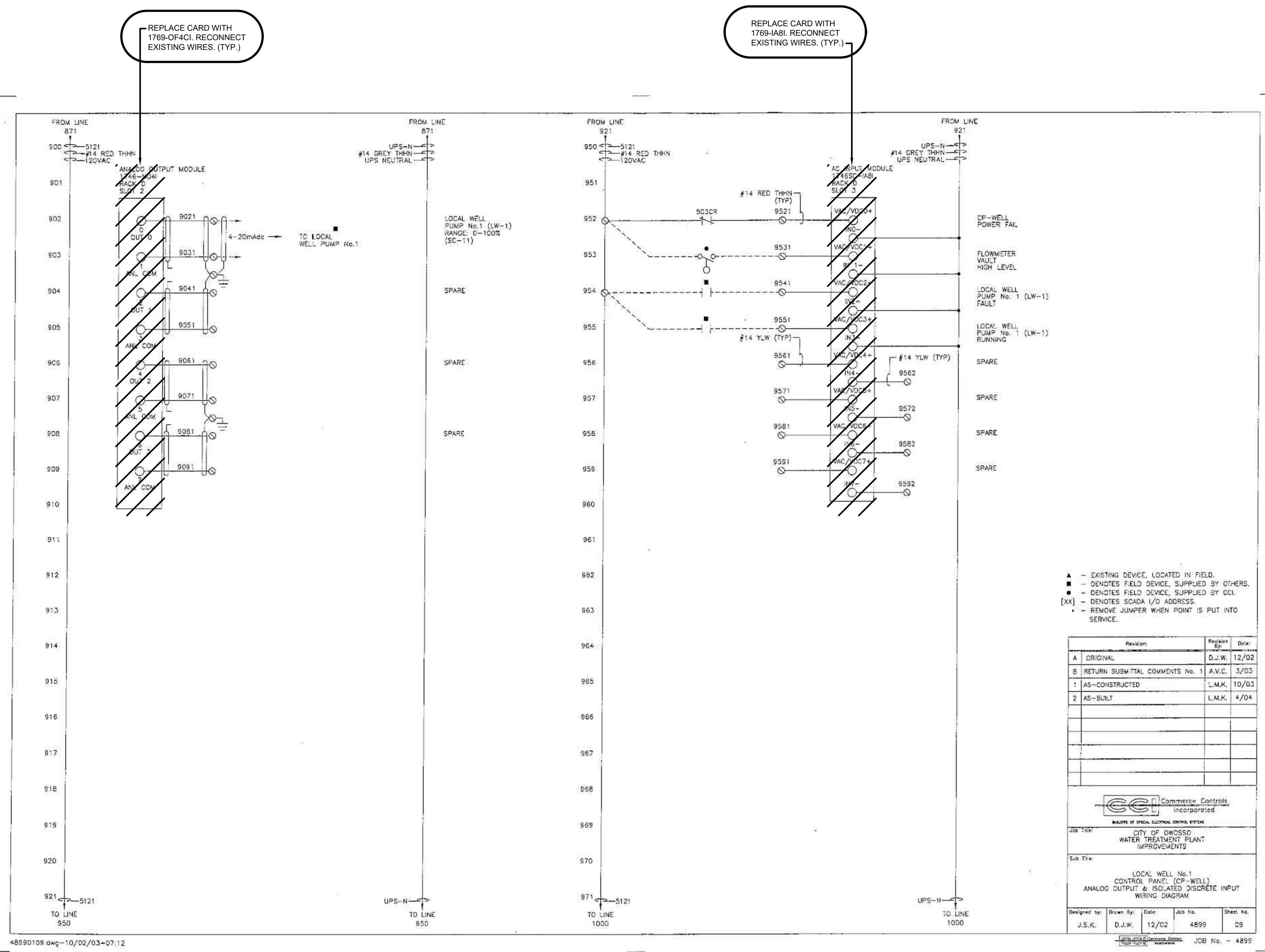
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MARK	DATE	DESCRIPTION	BY

CITY OF OWOSSO, MICHIGAN
OWOSSO WATER TREATMENT PLANT AND REMOTE SITES SCADA SYSTEM UPGRADES
INSTRUMENTATION
LOCAL WELL NO.1 (CP-WELL) CONTROL PANEL
WIRING DIAGRAM - DEMOLITION, PROPOSED WORK

Project No.: 200-280565-21002
Designed By: G.C.J.
Drawn By: J.L.S.
Checked By:

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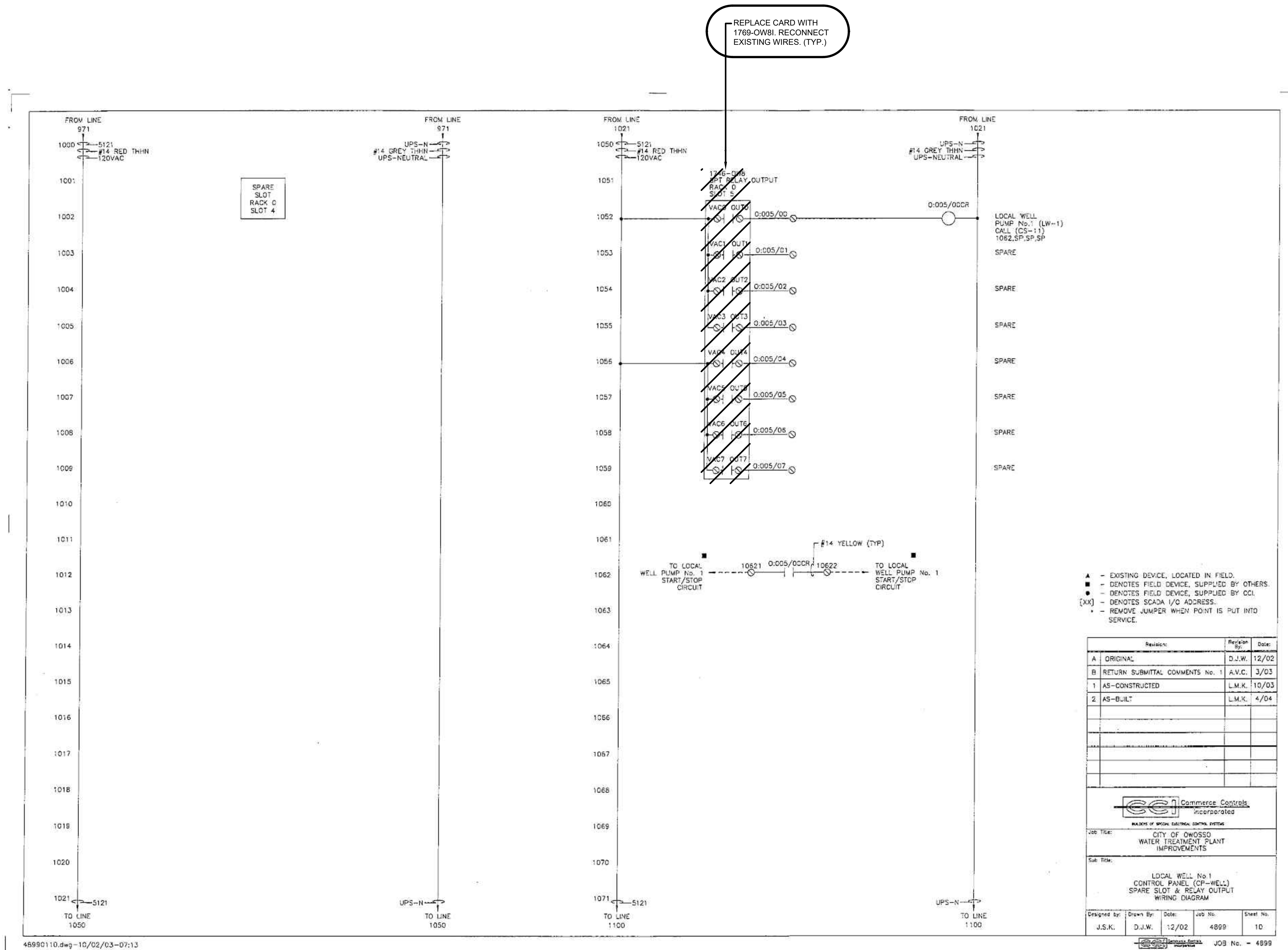
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MARK	DATE	DESCRIPTION
BY		

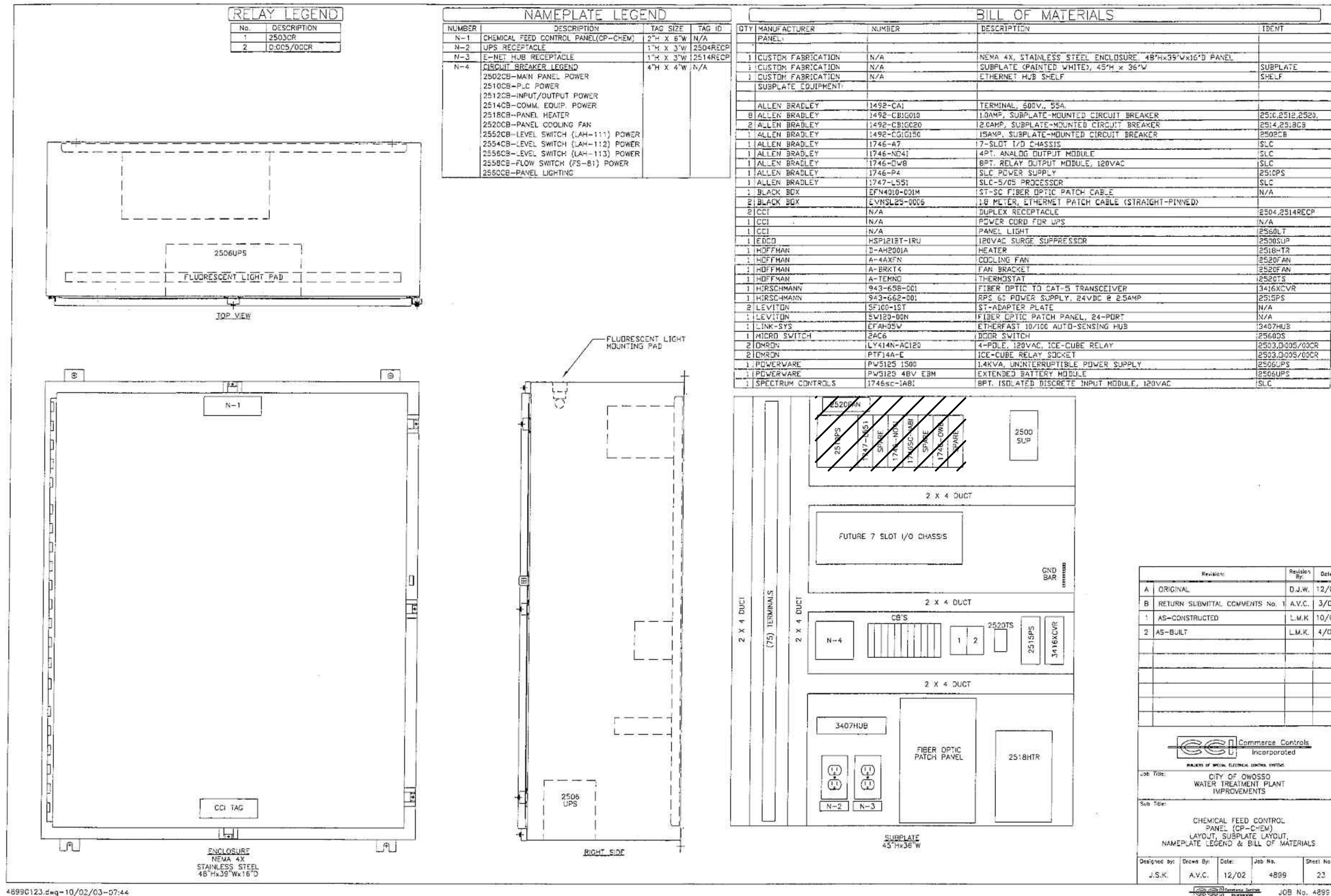
CITY OF OWOSSO, MICHIGAN
OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES
SCADA SYSTEM UPGRADES
INSTRUMENTATION
LOCAL WELL NO. 1 (CP-WELL) CONTROL PANEL
WIRING DIAGRAM - DEMOLITION, PROPOSED WORK

Project No.: 200-280565-21002
Designed By: G.C.J.
Drawn By: J.L.S.
Checked By:

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Revision	Revised By	Date
A ORIGINAL	D.J.W.	12/02
B RETURN SUBMITAL COMMENTS No. 1	A.V.C.	3/03
1 AS-CONSTRUCTED	L.M.K.	10/03
2 AS-BUILT	L.M.K.	4/04

Designed By	Drawn By	Date	Job No.	Sheet No.
J.S.K.	A.V.C.	12/02	4899	23

CCI Commercial Controls Incorporated
CITY OF OWOSSO
WATER TREATMENT PLANT IMPROVEMENTS
CHEMICAL FEED CONTROL PANEL (CP-CHEM) LAYOUT - DEMOLITION
JOB No. 4899



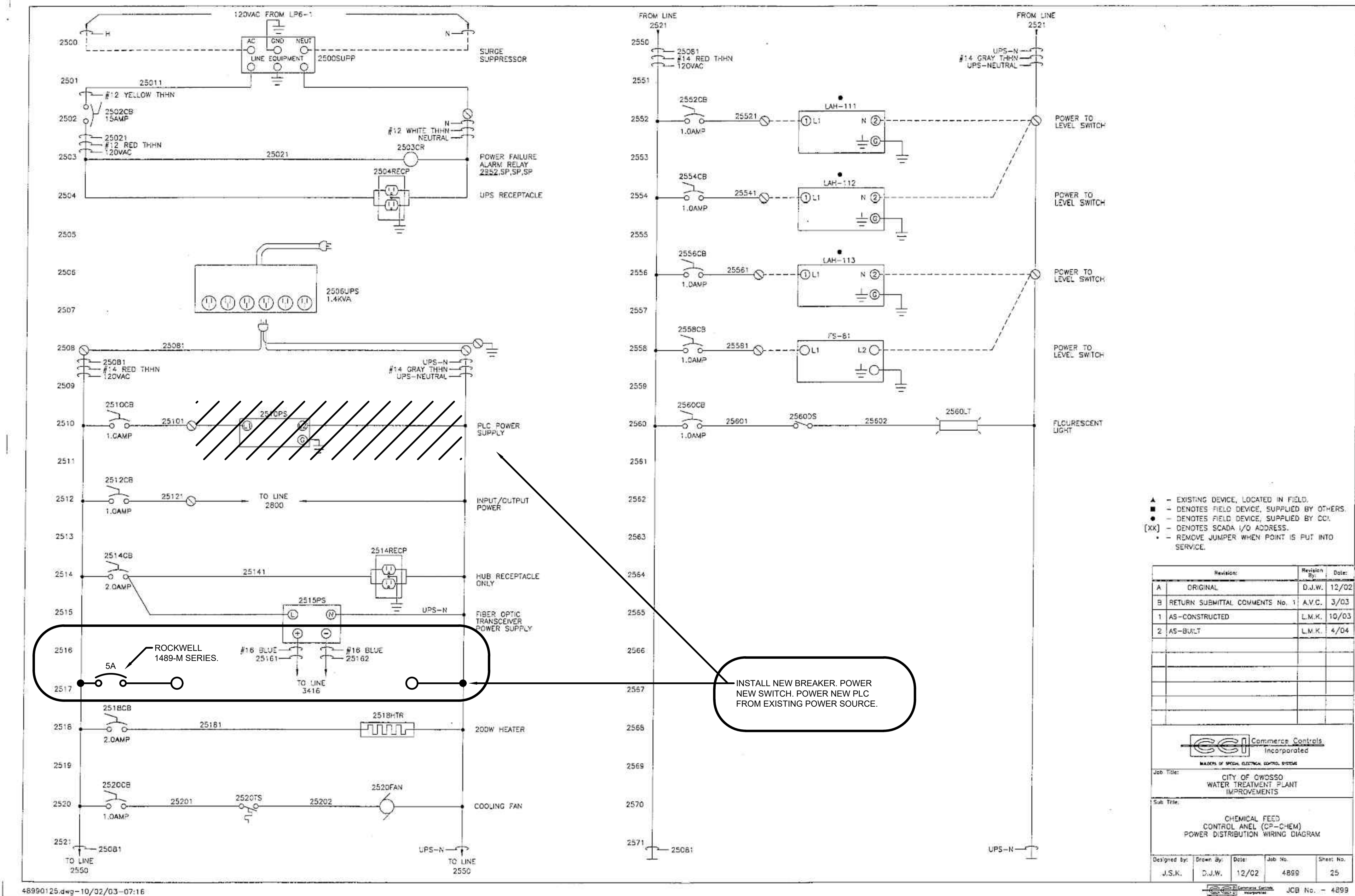
MARK	DATE	DESCRIPTION
BY		

CITY OF OWOSSO, MICHIGAN
OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES
SCADA SYSTEM UPGRADES
**INSTRUMENTATION
CHEMICAL FEED CONTROL PANEL
(CP-CHEM) LAYOUT - DEMOLITION**

Project No.: 200-280565-21002
Designed By: G.C.J.
Drawn By: J.L.S.
Checked By:

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- ▲ - EXISTING DEVICE, LOCATED IN FIELD.
- - DENOTES FIELD DEVICE, SUPPLIED BY OTHERS.
- - DENOTES FIELD DEVICE, SUPPLIED BY COI.
- [xx] - DENOTES SCADA I/O ADDRESS.
- * - REMOVE JUMPER WHEN POINT IS PUT INTO SERVICE.

Revision	Revised By	Date
A	ORIGINAL	D.J.W. 12/02
B	RETURN SUBMITTAL COMMENTS No. 1	A.V.C. 3/03
1	AS-CONSTRUCTED	L.M.K. 10/03
2	AS-BUILT	L.M.K. 4/04

Commerce Controls Incorporated
 MAKERS OF SPECIAL ELECTRICAL CONTROL SYSTEMS

Job Title: CITY OF OWOSSO WATER TREATMENT PLANT IMPROVEMENTS
 Sub Title: CHEMICAL FEED CONTROL PANEL (CP-CHEM) POWER DISTRIBUTION WIRING DIAGRAM

Designed by: J.S.K. Drawn By: D.J.W. Date: 12/02 Job No.: 4899 Sheet No.: 25
 JCB No.: 4899

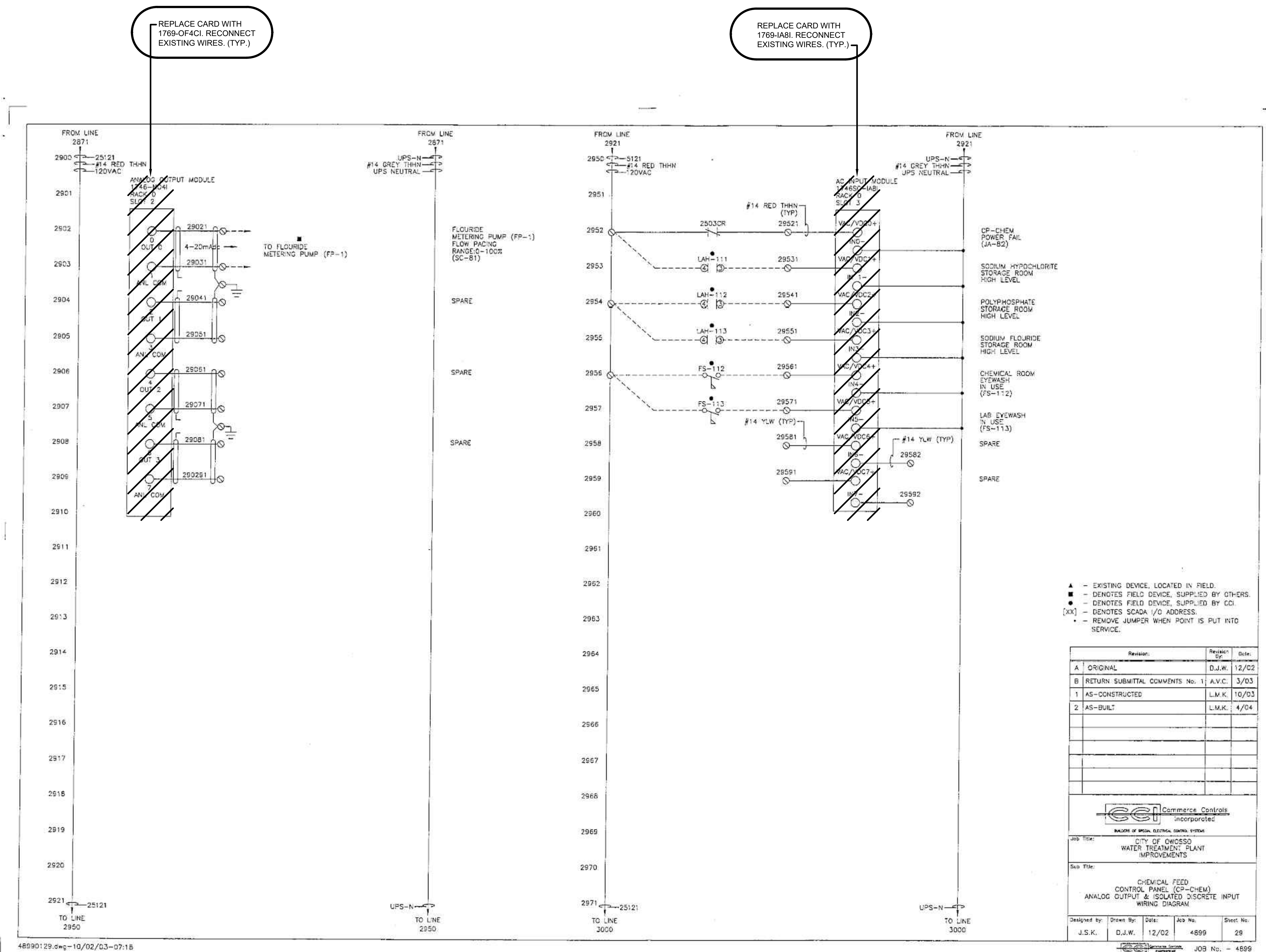
MARK	DATE	DESCRIPTION

CITY OF OWOSSO, MICHIGAN
 OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES
 SCADA SYSTEM UPGRADES
INSTRUMENTATION
CHEMICAL FEED CONTROL PANEL
(CP-CHEM) WIRING DIAGRAM - DEMOLITION

Project No.: 200-280565-21002
 Designed By: G.C.J.
 Drawn By: J.L.S.
 Checked By:

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- ▲ - EXISTING DEVICE, LOCATED IN FIELD.
- - DENOTES FIELD DEVICE, SUPPLIED BY OTHERS.
- - DENOTES FIELD DEVICE, SUPPLIED BY CCI.
- [XX] - DENOTES SCADA I/O ADDRESS.
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Revision	Revised By	Date
A	D.J.W.	12/02
B	A.V.C.	3/03
1	L.M.K.	10/03
2	L.M.K.	4/04

Commerce Controls
INCORPORATED
DIVISION OF SPECIAL ELECTRICAL CONTROL SYSTEMS

Job Title:
CITY OF OWOSSO
WATER TREATMENT PLANT
IMPROVEMENTS

Sub Title:
CHEMICAL FEED
CONTROL PANEL (CP-CHEM)
ANALOG OUTPUT & ISOLATED DISCRETE INPUT
WIRING DIAGRAM

Designed By: J.S.K. Drawn By: D.J.W. Date: 12/02 Job No.: 4899 Sheet No.: 28

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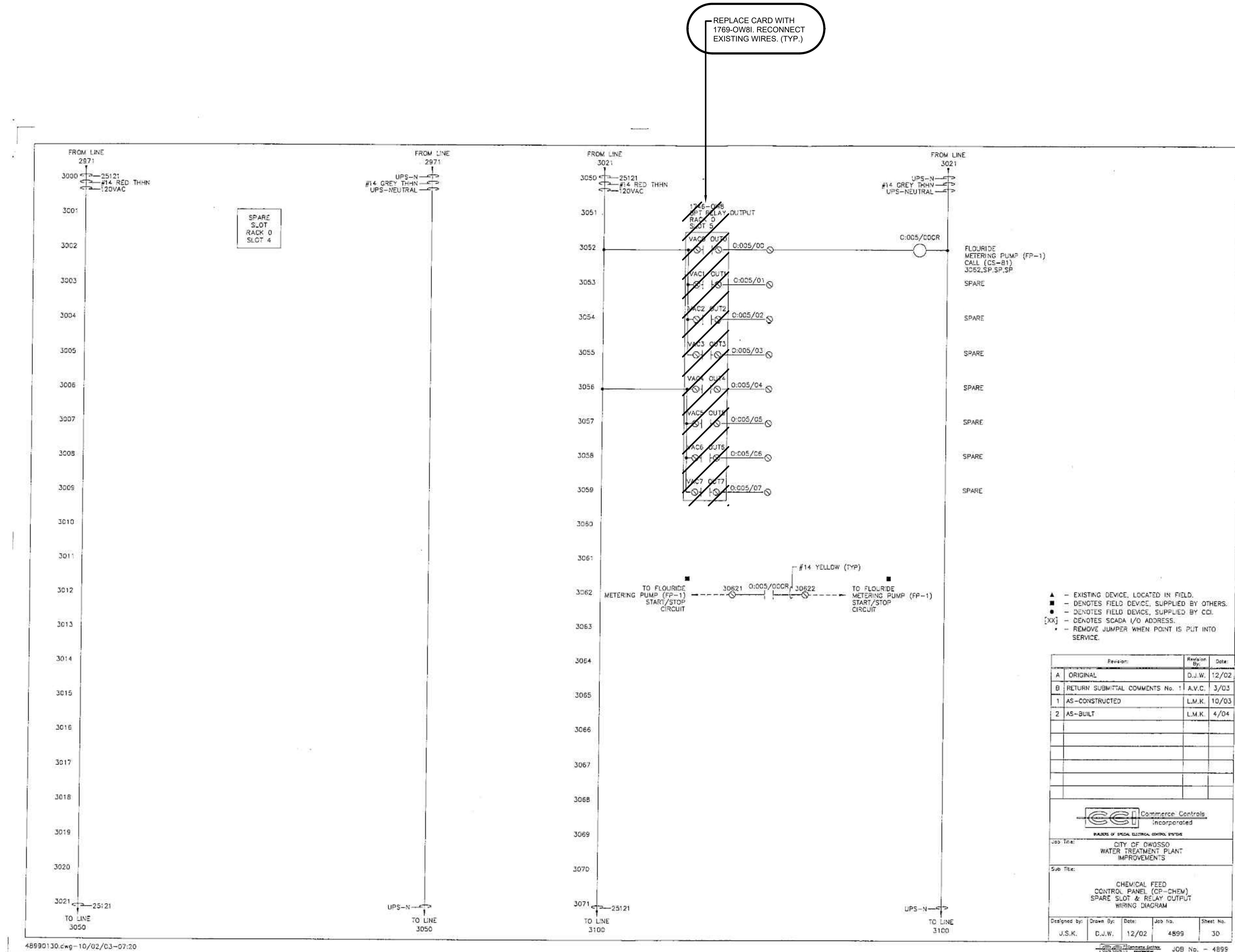
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MARK	DATE	DESCRIPTION

CITY OF OWOSSO, MICHIGAN
OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES
SCADA SYSTEM UPGRADES
INSTRUMENTATION
CHEMICAL FEED CONTROL PANEL (CP-CHEM)
WIRING DIAGRAM - DEMOLITION, PROPOSED WORK

Project No.: 200-280565-21002
Designed By: GCJ
Drawn By: JLS
Checked By:

1/3/2022 5:10:17 PM - I:\LOCAL\PROJECTS\ANN ARBOR\IER\280565\200-280565-2\1002\CAD\SHEETFILES\1-309_CHEMICAL FEED CONTROL PANEL WIRING DIAGRAM - DEMOLITION_IV.DWG - SHANK, JASON



TETRA TECH
 www.tetratech.com
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 EAST LANSING, MI 48823
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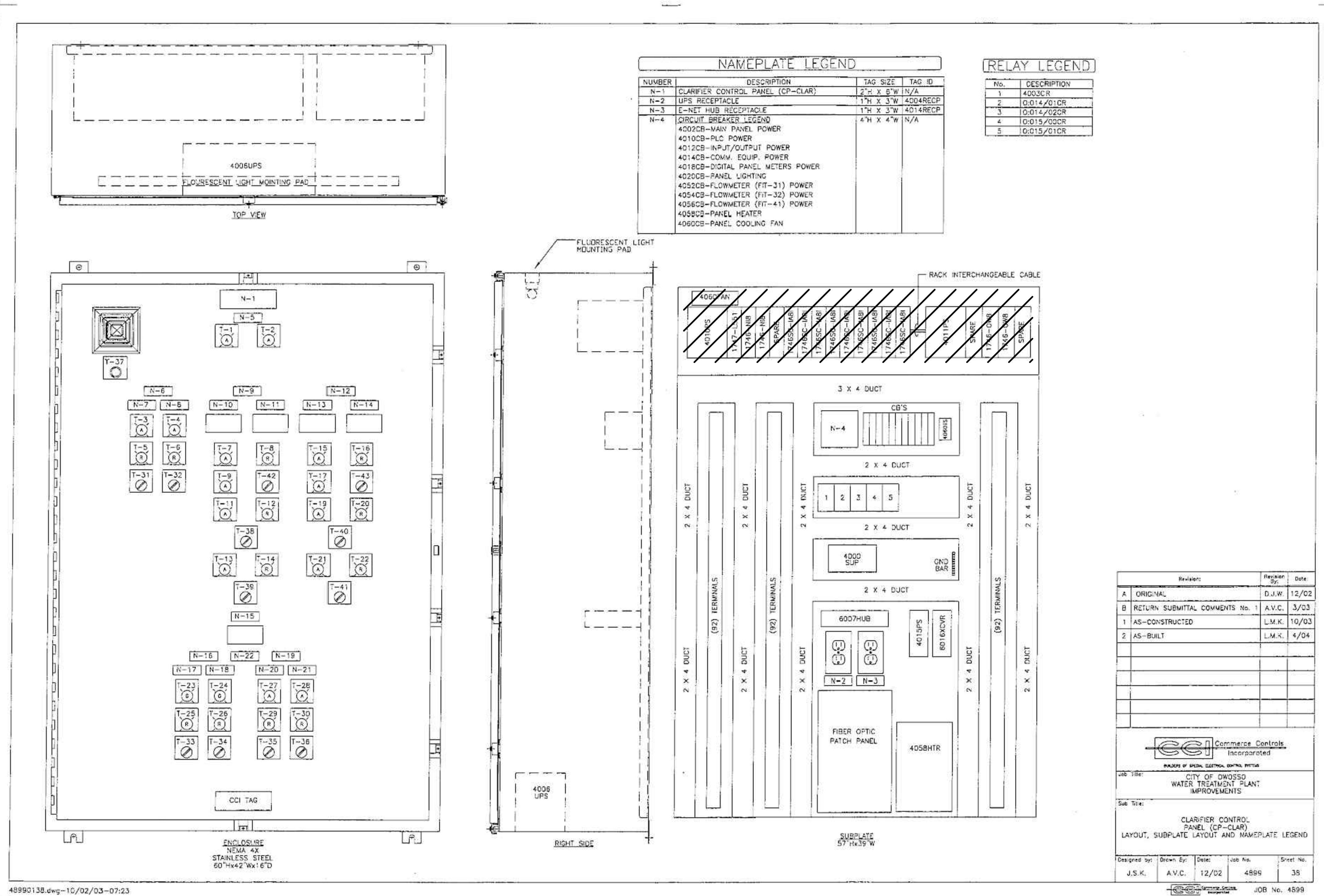
MARK	DATE	DESCRIPTION

CITY OF OWOSSO, MICHIGAN
 OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES
 SCADA SYSTEM UPGRADES
INSTRUMENTATION
 CHEMICAL FEED CONTROL PANEL (CP-CHEM)
 WIRING DIAGRAM - DEMOLITION, PROPOSED WORK

Project No.: 200-280565-21002
 Designed By: G.C.J.
 Drawn By: J.L.S.
 Checked By:

EXISTING DRAWING FROM PREVIOUS PROJECT. PROPOSED WORK SHOWN BOLD, CROSSHATCHED, AND/OR CIRCLED

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NAMEPLATE LEGEND			
NUMBER	DESCRIPTION	TAG SIZE	TAG ID
N-1	CLARIFIER CONTROL PANEL (CP-CLAR)	2'-0" X 8'-0"	N/A
N-2	UPS RECEPTACLE	1'-0" X 3'-0"	4004RECP
N-3	E-NET HUB RECEPTACLE	1'-0" X 3'-0"	4014RECP
N-4	CIRCUIT BREAKER LEGEND	4'-0" X 4'-0"	N/A
CIRCUIT BREAKER LEGEND 4002CB-MAIN PANEL POWER 4010CB-PLC POWER 4012CB-INP/UT/OUTPUT POWER 4014CB-COMM. EQUIP. POWER 4018CB-DIGITAL PANEL METERS POWER 4020CB-PANEL LIGHTING 4052CB-FLOWMETER (FIT-31) POWER 4054CB-FLOWMETER (FIT-32) POWER 4056CB-FLOWMETER (FIT-41) POWER 4058CB-PANEL HEATER 4060CB-PANEL COOLING FAN			

RELAY LEGEND	
No.	DESCRIPTION
1	4003CR
2	0:014/G01CR
3	0:014/G02CR
4	0:015/G03CR
5	0:015/G1CR

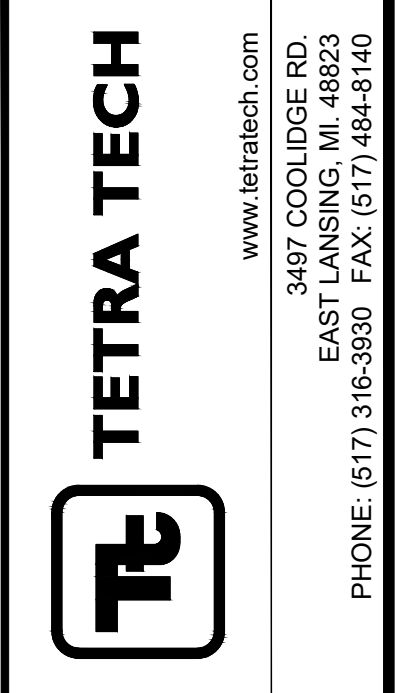
Revision	Revision By	Date
A	ORIGINAL	D.J.W. 12/02
B	RETURN SUBMITAL COMMENTS No. 1	A.V.C. 3/03
1	AS-CONSTRUCTED	L.M.K. 10/03
2	AS-BUILT	L.M.K. 4/04

CCI Commerce Controls, Incorporated
 BRIDGE OF SPECIAL ELECTRICAL CONTROL SYSTEMS
 CITY OF OWOSSO WATER TREATMENT PLANT IMPROVEMENTS
 CLARIFIER CONTROL PANEL (CP-CLAR) LAYOUT, SUBPLATE LAYOUT AND NAMEPLATE LEGEND
 Designed By: J.S.K. Drawn By: A.V.C. Date: 12/02 Job No: 4899 Sheet No: 35
 JOB No. 4899

48990138.dwg--10/02/03--07:23

ENCLOSURE
NEMA 4X
STAINLESS STEEL
60" H X 42" W X 16" D

SUBPLATE
57" H X 39" W



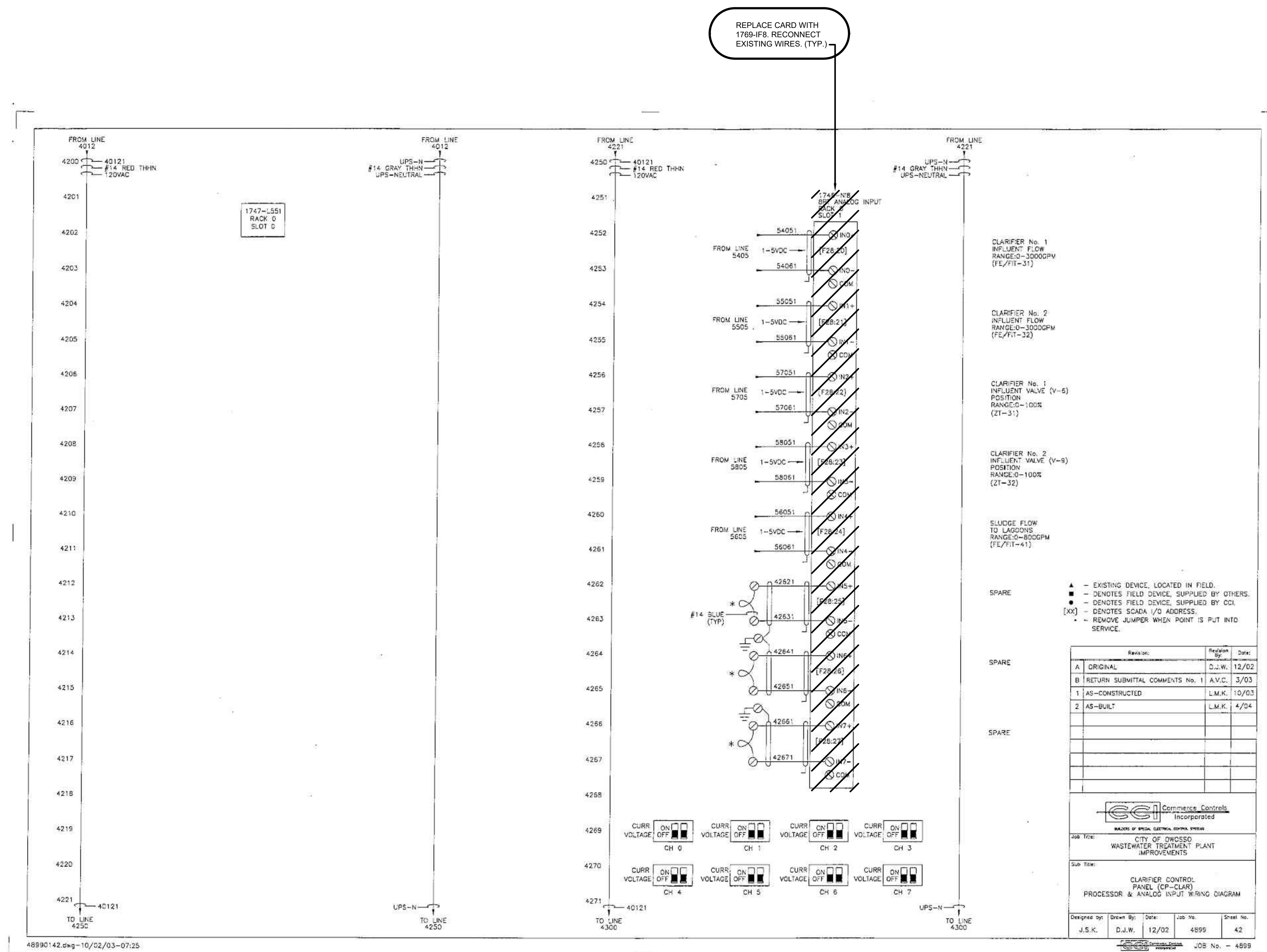
MARK	DATE	DESCRIPTION

CITY OF OWOSSO, MICHIGAN
 OWOSSO WATER TREATMENT PLANT AND REMOTE SITES
 SCADA SYSTEM UPGRADES
**INSTRUMENTATION
 CLARIFIER CONTROL PANEL
 (CP-CLAR) LAYOUT - DEMOLITION**

Project No.: 200-280565-21002
 Designed By: G.C.J.
 Drawn By: J.L.S.
 Checked By:

EXISTING DRAWING FROM PREVIOUS PROJECT. PROPOSED WORK SHOWN BOLD, CROSSHATCHED, AND/OR CIRCLED

1/3/2022 5:10:50 PM - I:\LOCAL\PROJECTS\ANN ARBOR\IER\280565\200-280565-2\1002\CAD\SH\1313_CLARIFIER CONTROL PANEL WIRING DIAGRAM - DEMOLITION_I.DWG - SHANK, JASON



EXISTING DRAWING FROM PREVIOUS PROJECT. PROPOSED WORK SHOWN BOLD, CROSSHATCHED, AND/OR CIRCLED



MARK	DATE	DESCRIPTION
BY		

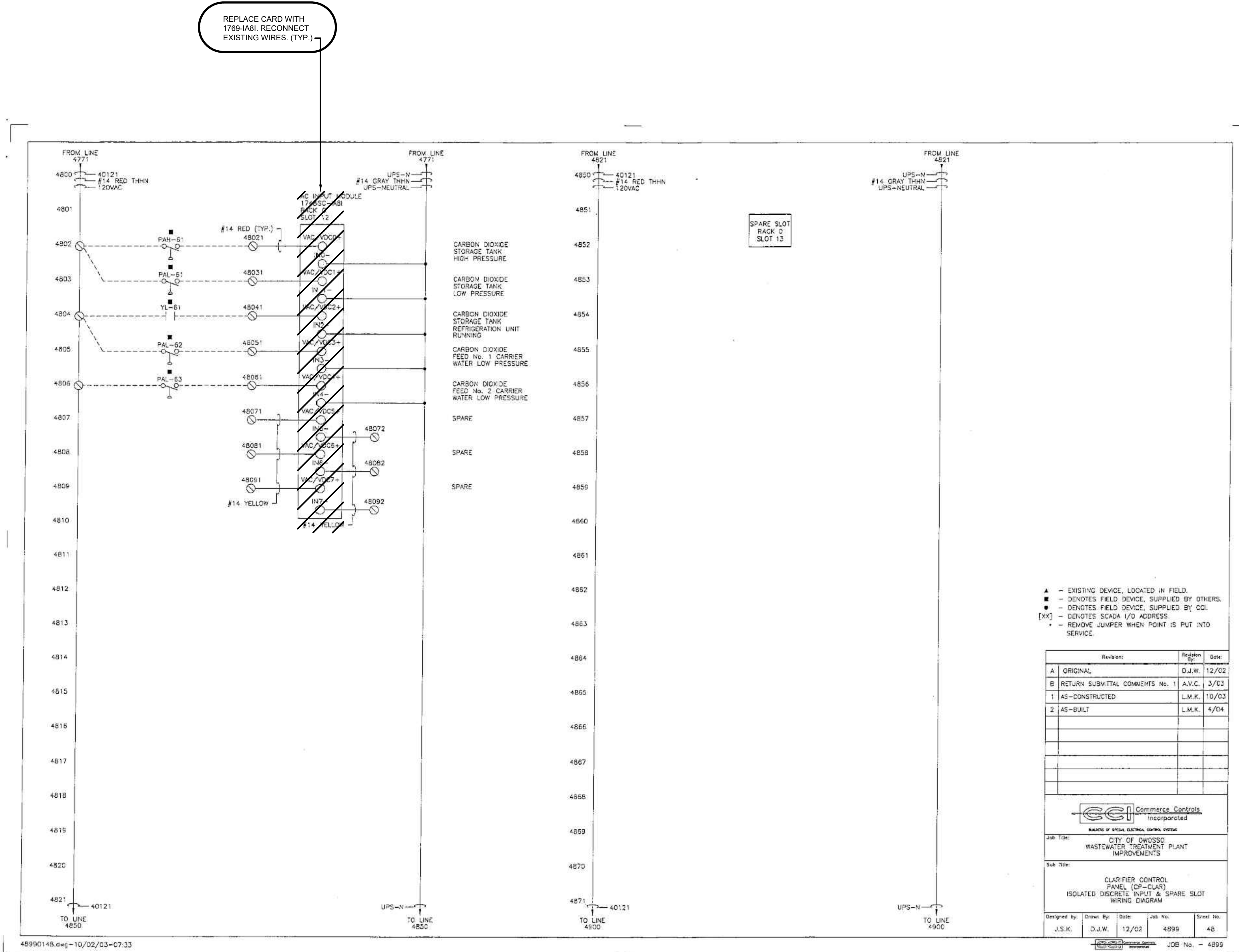
CITY OF OWOSSO, MICHIGAN
OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES
SCADA SYSTEM UPGRADES
INSTRUMENTATION
CLARIFIER CONTROL PANEL (CP-CLAR)
WIRING DIAGRAM - DEMOLITION, PROPOSED WORK

Project No.: 200-280565-21002
Designed By: GCJ
Drawn By: JLS
Checked By:

I-313
OF 62
Bar Measures 1 inch

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1/3/2022 5:11:44 PM - I:\T\LOCALIER\PROJECTS\ANN ARBOR\IER\280565\200-280565-2\1002\CAD\I\DIAGRAMS\DEMOLITION_VIII.DWG - SHANK, JASON



- ▲ - EXISTING DEVICE, LOCKED IN FIELD.
- - DENOTES FIELD DEVICE, SUPPLIED BY OTHERS.
- - DENOTES FIELD DEVICE, SUPPLIED BY CCI.
- [XX] - DENOTES SCADA I/O ADDRESS.
- * - REMOVE JUMPER WHEN POINT IS PUT INTO SERVICE.

Revision	Revision No.	Date
A	ORIGINAL	D.J.W. 12/02
B	RETURN SUBMITTAL COMMENTS NO. 1	A.V.G. 3/03
1	AS-CONSTRUCTED	L.M.K. 10/03
2	AS-BUILT	L.M.K. 4/04

CCI Commerce Controls
INCORPORATED

WARRANTY OF SPECIAL ELECTRICAL CONTROL SYSTEMS

Job Title: CITY OF OWOSSO WASTEWATER TREATMENT PLANT IMPROVEMENTS

Sub Title: CLARIFIER CONTROL PANEL (CP-CLARIF) ISOLATED DISCRETE INPUT & SPARE SLOT WIRING DIAGRAM

Designed By:	J.S.K.	Drawn By:	D.J.W.	Date:	12/02	Job No.:	4899	Sheet No.:	48
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Project No.: 200-280565-21002

REPLACE CARD WITH 1769-IA81. RECONNECT EXISTING WIRES. (TYP.)

EXISTING DRAWING FROM PREVIOUS PROJECT. PROPOSED WORK SHOWN BOLD, CROSSHATCHED, AND/OR CIRCLED

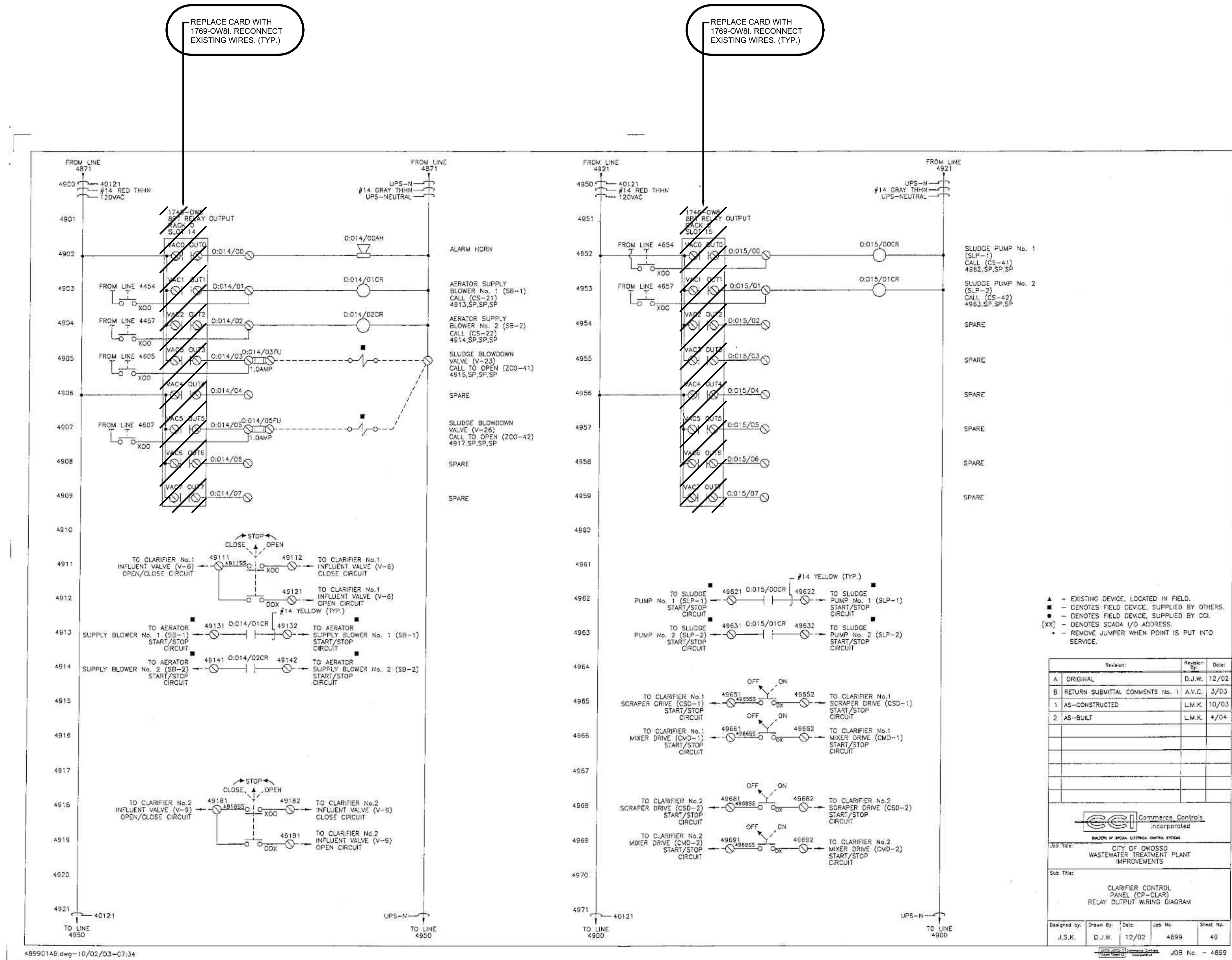


MARK	DATE	DESCRIPTION
BY		

CITY OF OWOSSO, MICHIGAN
OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES
SCADA SYSTEM UPGRADES
INSTRUMENTATION
CLARIFIER CONTROL PANEL (CP-CLARIFIER)
WIRING DIAGRAM - DEMOLITION, PROPOSED WORK

Project No.: 200-280565-21002
Designed By: GCJ
Drawn By: JLS
Checked By:

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4899C148.dwg - 10/02/03-07-34

- ▲ - EXISTING DEVICE, LOCATED IN FIELD.
- - DENOTES FIELD DEVICE, SUPPLIED BY OTHERS.
- - DENOTES FIELD DEVICE, SUPPLIED BY CCL.
- [XX] - DENOTES SCADA I/O ADDRESS.
- * - REMOVE JUMPER WHEN POINT IS PUT INTO SERVICE.

Revision	Revised By	Date
A	ORIGINAL	D.J.W. 12/02
B	RETURN SUBMITTAL COMMENTS No. 1	A.V.C. 3/03
1	AS-CONSTRUCTED	L.M.K. 10/03
2	AS-BUILT	L.M.K. 4/04

CGI Commerce Controls INCORPORATED				
<small>BUSINESS OF SPECIAL ELECTRICAL CONTROL SYSTEMS</small>				
JOB Title: CITY OF OWOSSO WASTEWATER TREATMENT PLANT IMPROVEMENTS				
Sub Title: CLARIFIER CONTROL PANEL (CP-CLAR) RELAY OUTPUT WIRING DIAGRAM				
Designed by:	Drawn By:	Date:	Job No.:	Sheet No.:
J.S.K.	D.J.W.	12/02	4899	49

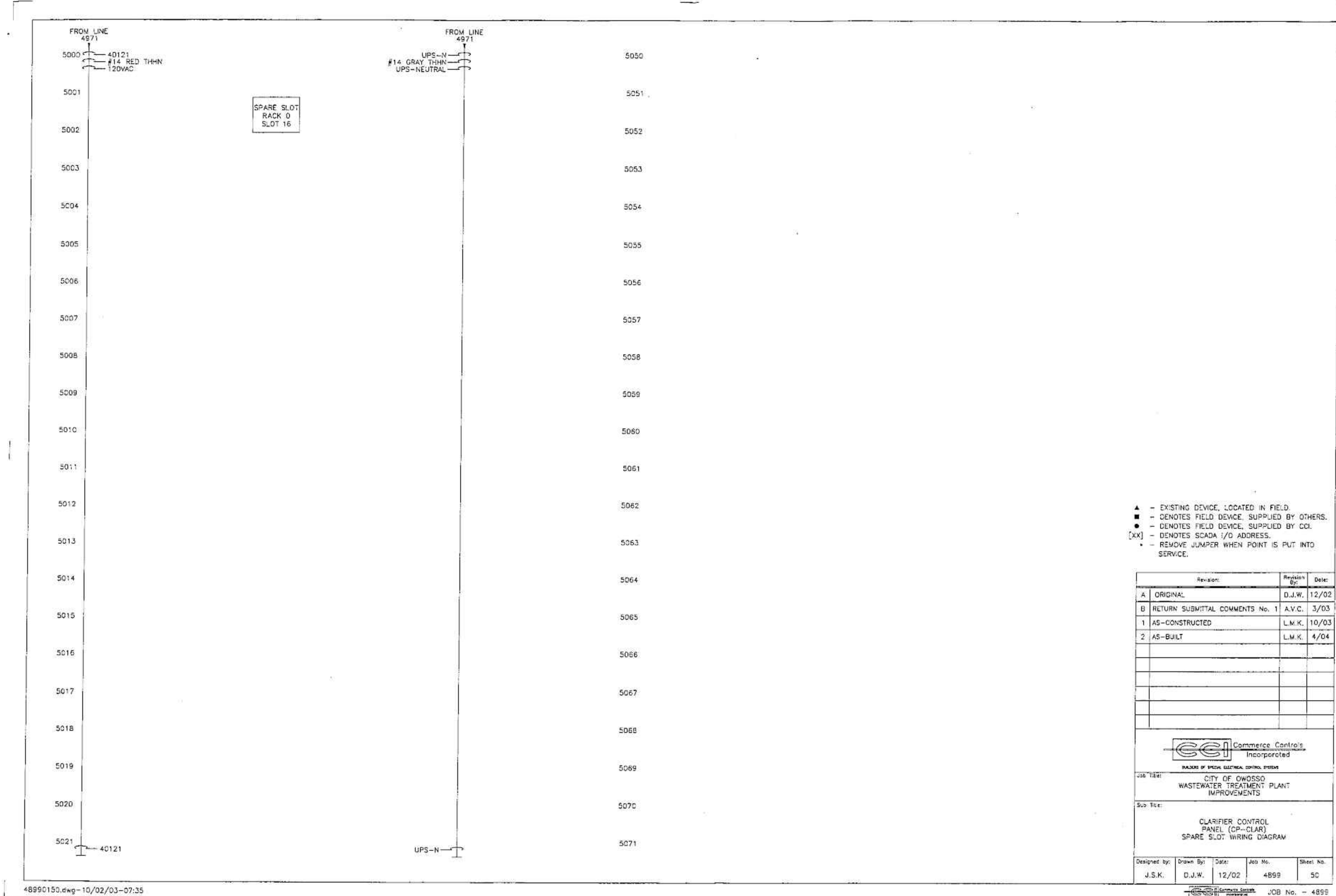
MARK	DATE	DESCRIPTION

CITY OF OWOSSO, MICHIGAN
OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES
SCADA SYSTEM UPGRADES
INSTRUMENTATION
CLARIFIER CONTROL PANEL (CP-CLAR)
WIRING DIAGRAM - DEMOLITION, PROPOSED WORK

Project No.: 200-280565-21002
Designed By: G.C.J.
Drawn By: J.L.S.
Checked By:

EXISTING DRAWING FROM PREVIOUS PROJECT. PROPOSED WORK SHOWN BOLD, CROSSHATCHED, AND/OR CIRCLED

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- ▲ - EXISTING DEVICE, LOCATED IN FIELD.
- - DENOTES FIELD DEVICE, SUPPLIED BY OTHERS.
- - DENOTES FIELD DEVICE, SUPPLIED BY CDI.
- [xx] - DENOTES SCADA I/O ADDRESS.
- - REMOVE JUMPER WHEN POINT IS PUT INTO SERVICE.

CCI Commerce Controls Incorporated
MAKERS OF SPECIAL ELECTRICAL CONTROL SYSTEMS

Job Title: CITY OF OWOSSO WASTEWATER TREATMENT PLANT IMPROVEMENTS
 Sub Title: CLARIFIER CONTROL PANEL (CP-CLAR) SPARE SLOT WIRING DIAGRAM

Designed by: J.S.K. Drawn By: D.J.W. Date: 12/02 Job No. 4899 Sheet No. 50
 JOB No. - 4899

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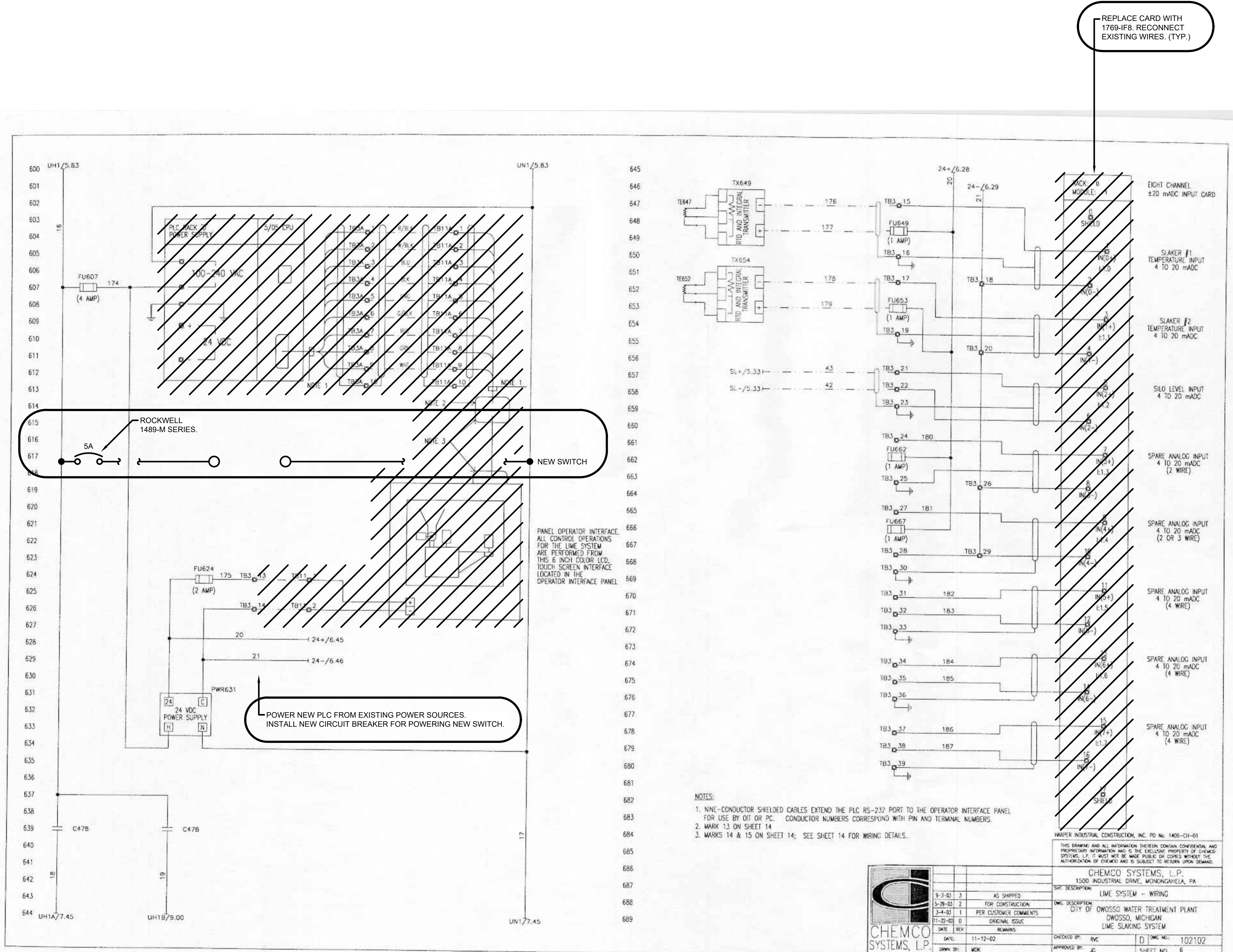
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CITY OF OWOSSO, MICHIGAN
 OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES
 SCADA SYSTEM UPGRADES
INSTRUMENTATION
CLARIFIER CONTROL PANEL (CP-CLAR)
 WIRING DIAGRAM - DEMOLITION

EXISTING DRAWING FROM PREVIOUS PROJECT. PROPOSED WORK SHOWN BOLD, CROSSHATCHED, AND/OR CIRCLED

Project No.: 200-280565-21002
 Designed By: GCJ
 Drawn By: JLS
 Checked By:
I-321
 OF 62

3/31/2022 12:26:51 PM - \\T:\LOCAL\PROJECTS\ANN ARBOR\IER\280565\200-280565-2\1002\CAD\SHHEET\FILES\1-322_OWosso WTP WIRING DIAGRAM - DEMOLITION.DWG - SHANK, JASON



- NOTES:**
- NINE-CONDUCTOR SHIELDED CABLES EXTEND THE PLC RS-232 PORT TO THE OPERATOR INTERFACE PANEL FOR USE BY OI OR PC. CONDUCTOR NUMBERS CORRESPOND WITH PIN AND TERMINAL NUMBERS.
 - MARK 13 ON SHEET 14
 - MARKS 14 & 15 ON SHEET 14; SEE SHEET 14 FOR WIRING DETAILS.

	DATE	REV	REMARKS	CHECKED BY	DATE	DWG NO.	SHEET NO.
	11-22-02	0	ORIGINAL ISSUE	RVC	11-12-02	102102	6
REVISIONS			DESCRIPTION LIME SYSTEM - WIRING				
3-4-01 1 PER CUSTOMER COMMENTS			CITY OF OWOSSO WATER TREATMENT PLANT OWOSSO, MICHIGAN LIME SLAKING SYSTEM				
3-28-01 2 FOR CONSTRUCTION			1300 INDUSTRIAL DRIVE, MONDANGHELA, PA				
9-3-01 3 AS SHIPPED			CHEMCO SYSTEMS, L.P.				

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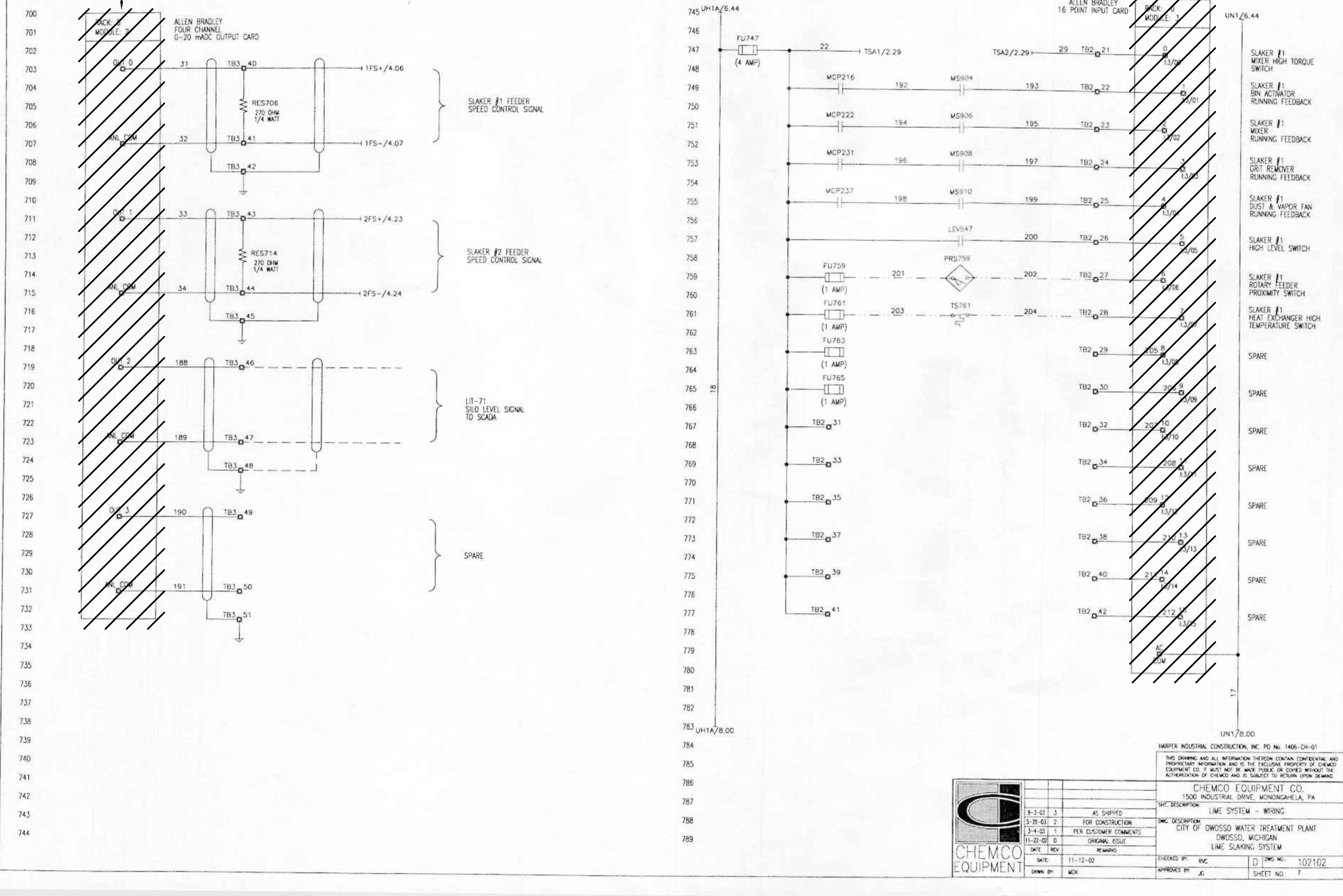
CITY OF OWOSSO, MICHIGAN
OWOSSO WATER TREATMENT PLANT AND REMOTE SITES
SCADA SYSTEM UPGRADES
**INSTRUMENTATION
CONTROL PANEL (CP-LIME) WIRING
DIAGRAM - DEMOLITION, PROPOSED WORK**

Project No.:	200-280565-21002
Designed By:	G.C.J.
Drawn By:	J.L.S.
Checked By:	

I-322
OF 62

EXISTING DRAWING FROM PREVIOUS PROJECT. PROPOSED WORK SHOWN BOLD, CROSSHATCHED, AND/OR CIRCLED

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9-3-01	3	AS SHIPPED
3-21-03	2	FOR CONSTRUCTION
3-4-03	1	PER CUSTOMER COMMENTS
11-22-02	0	ORIGINAL ISSUE

DATE	REV	REMARKS
11-12-02		
11-22-02	0	ORIGINAL ISSUE

DESIGNED BY:	BYC	DWG NO:	102102
APPROVED BY:	JG	SHEET NO:	7

CHEMCO EQUIPMENT CO.	
1500 INDUSTRIAL DRIVE, MONONGAHELA, PA	
SHT. DESCRIPTION:	LIME SYSTEM - WIRING
OWC. DESCRIPTION:	LIME SYSTEM - WIRING
CITY OF OWOSSO WATER TREATMENT PLANT	
OWOSSO, MICHIGAN	
LIME SLAKING SYSTEM	

EXISTING DRAWING FROM PREVIOUS PROJECT. PROPOSED WORK SHOWN BOLD, CROSSHATCHED, AND/OR CIRCLED

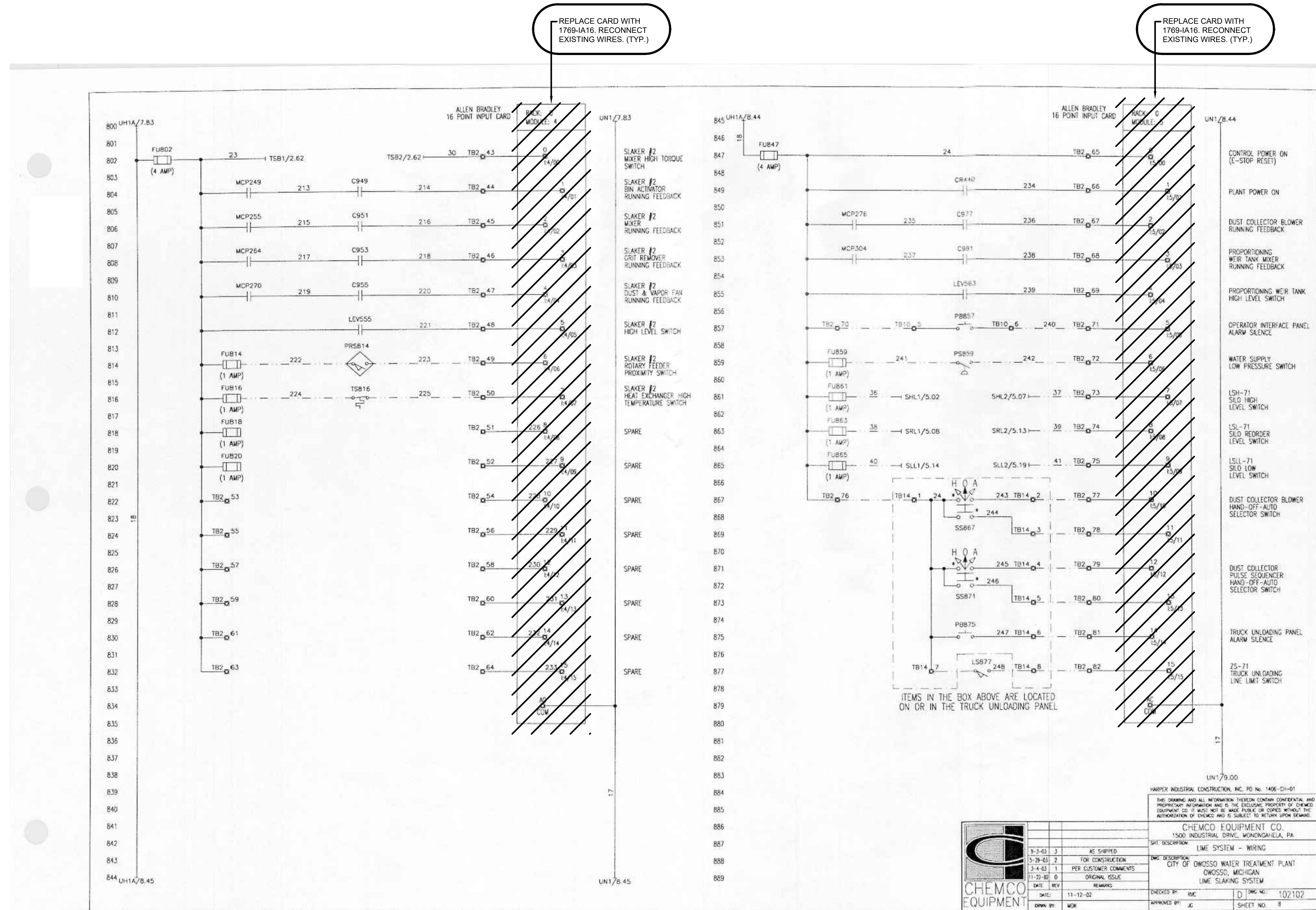
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EAST LANSING, MI 48823
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MARK	DATE	DESCRIPTION	BY

CITY OF OWOSSO, MICHIGAN
OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES
SCADA SYSTEM UPGRADES
INSTRUMENTATION CONTROL PANEL (CP-LIME) WIRING DIAGRAM - DEMOLITION; PROPOSED WORK

Project No.: 200-280565-21002
Designed By: GCJ
Drawn By: JLS
Checked By:

I-323
OF 62
Bar Measures 1 inch



EXISTING DRAWING FROM PREVIOUS PROJECT. PROPOSED WORK SHOWN BOLD, CROSSHATCHED, AND/OR CIRCLED



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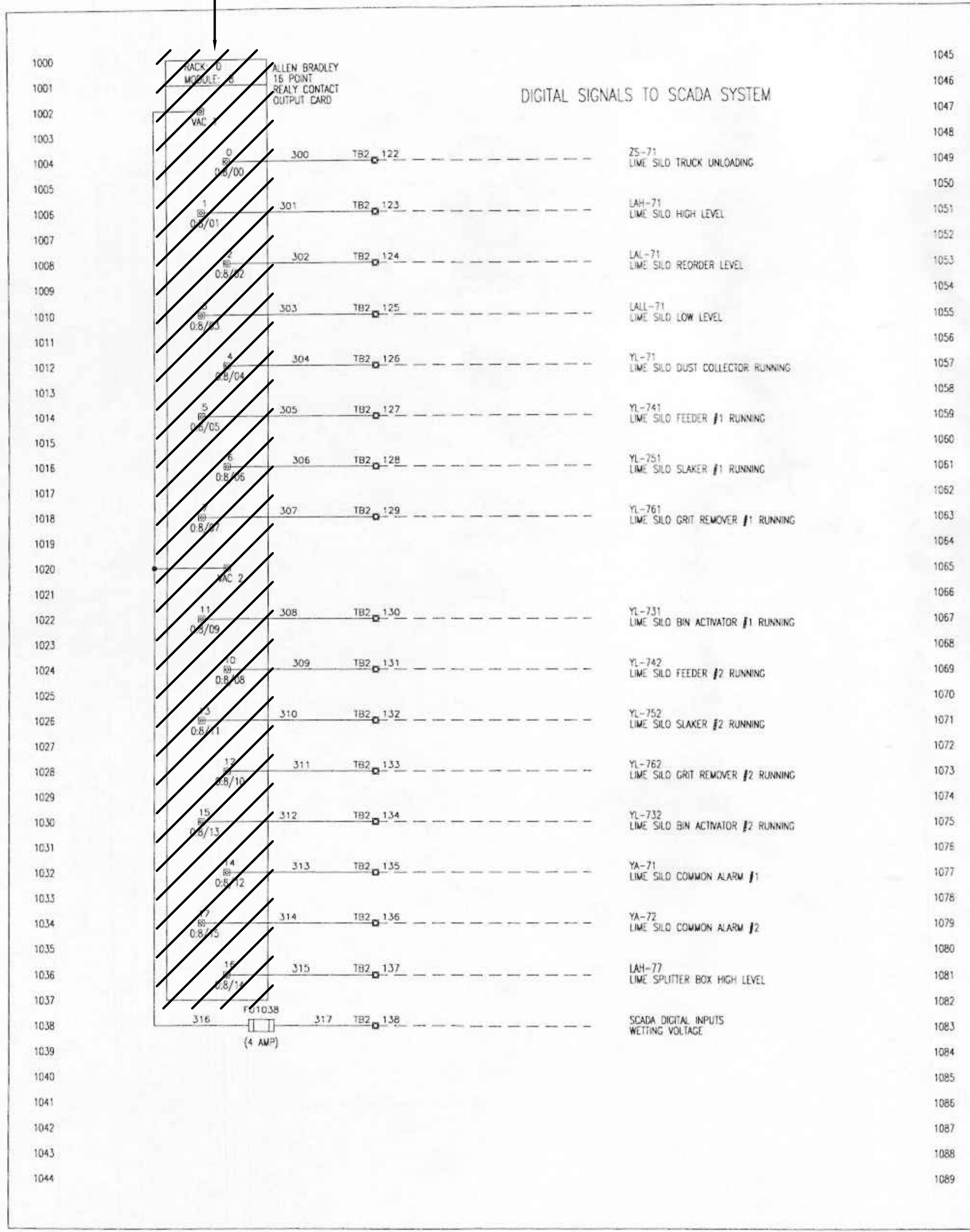
MARK	DATE	DESCRIPTION	BY

**CITY OF OWOSCO, MICHIGAN
OWOSCO WATER TREATMENT PLANT, AND REMOTE SITES
SCADA SYSTEM UPGRADES
INSTRUMENTATION
CONTROL PANEL (CP-LIME) WIRING
DIAGRAM - DEMOLITION; PROPOSED WORK**

Project No.: 200-280565-21002
Designed By: GCJ
Drawn By: JLS
Checked By:
SHEET NO. 8
OF 62
Bar Measures 1 inch

1/3/2022 6:13:21 PM - \\T:\LOCALIER\PROJECTS\ANN ARBOR\IER\280565\200-280565-2\1002\CAD\SHETS\FILE\1-326_OWOSKO WTP WIRING DIAGRAM - DEMOLITION_V.DWG - SHANK, JASON

REPLACE CARD WITH 1789-OW16. RECONNECT EXISTING WIRES. (TYP.)



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DATE	REV	REMARKS
8-3-03	3	AS SHIPPED
3-26-03	2	FOR CONSTRUCTION
3-4-03	1	PER CUSTOMER COMMENTS
11-27-02	0	ORIGINAL ISSUE

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CHEMCO SYSTEMS, L.P.
1500 INDUSTRIAL DRIVE, MONONGAHELA, PA

SHT. DESCRIPTION: LIME SYSTEM - WIRING

PROJECT: CITY OF OWOSSO WATER TREATMENT PLANT SCADA SYSTEM UPGRADES

DATE: 11-12-02

CHECKED BY: JWC

DWG. NO.: 102102

APPROVED BY: JC

SHEET NO.: 10

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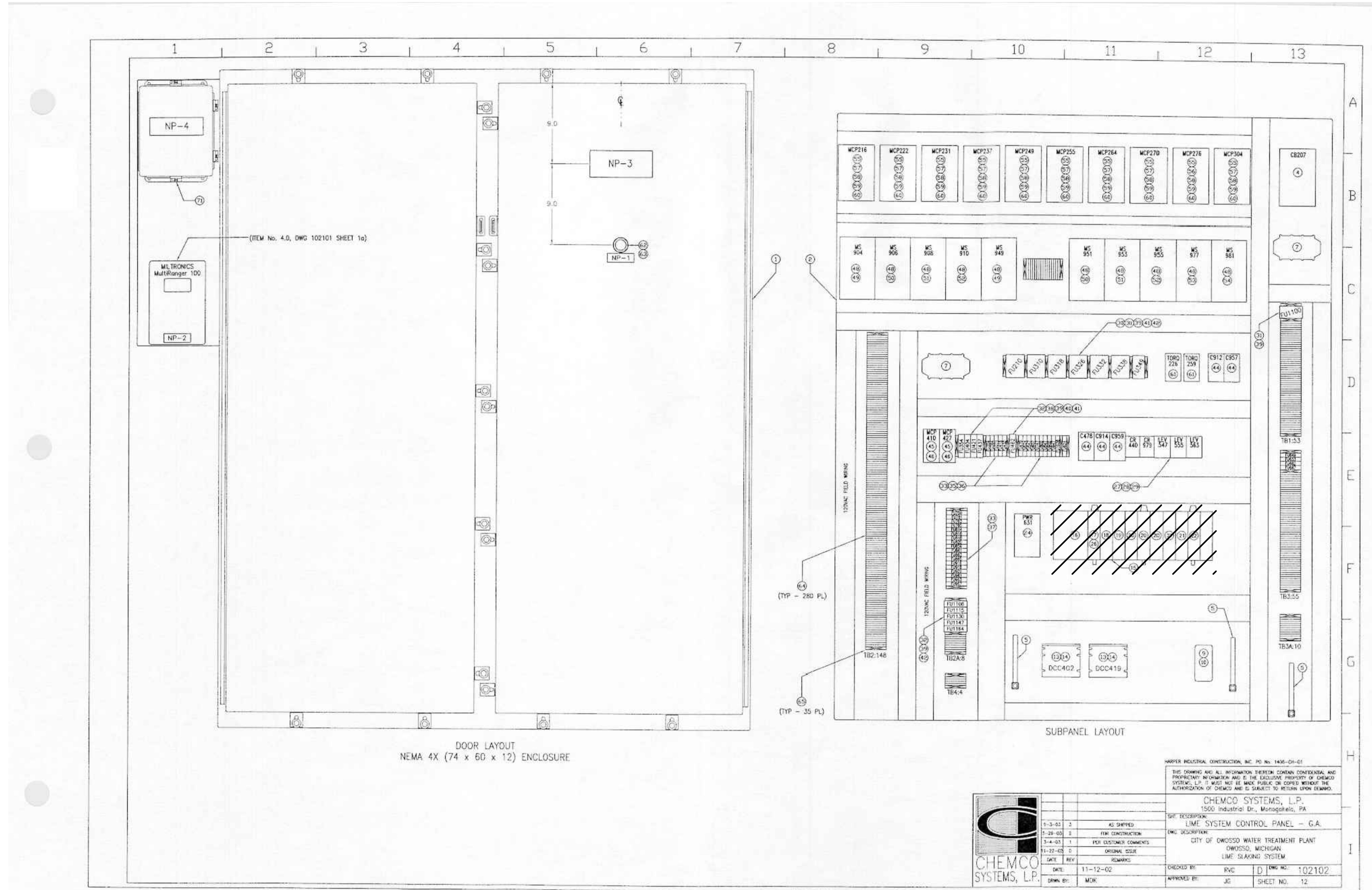
MARK	DATE	DESCRIPTION

CITY OF OWOSSO, MICHIGAN
OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES
SCADA SYSTEM UPGRADES
INSTRUMENTATION
OWOSSO WATER TREATMENT PLANT PANEL (CP-LIME)
WIRING DIAGRAM - DEMOLITION, PROPOSED WORK

Project No.: 200-280565-21002
Designed By: GCJ
Drawn By: JLS
Checked By:

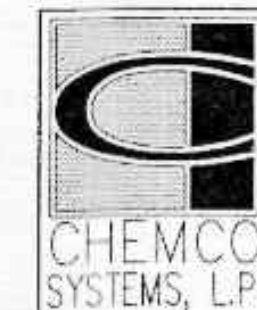
I-326
OF 62
Bar Measures 1 inch

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DOOR LAYOUT
NEMA 4X (74 x 60 x 12) ENCLOSURE

SUBPANEL LAYOUT



DATE	REV	REMARKS	DRAWN BY	CHECKED BY	DATE	REV	REMARKS
1-3-03	3	AS SHIPPED					
1-29-03	2	FOR CONSTRUCTION					
3-4-03	1	FOR CUSTOMER COMMENTS					
11-22-02	0	ORIGINAL ISSUE					

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 1500 Industrial Dr., Monroeville, PA
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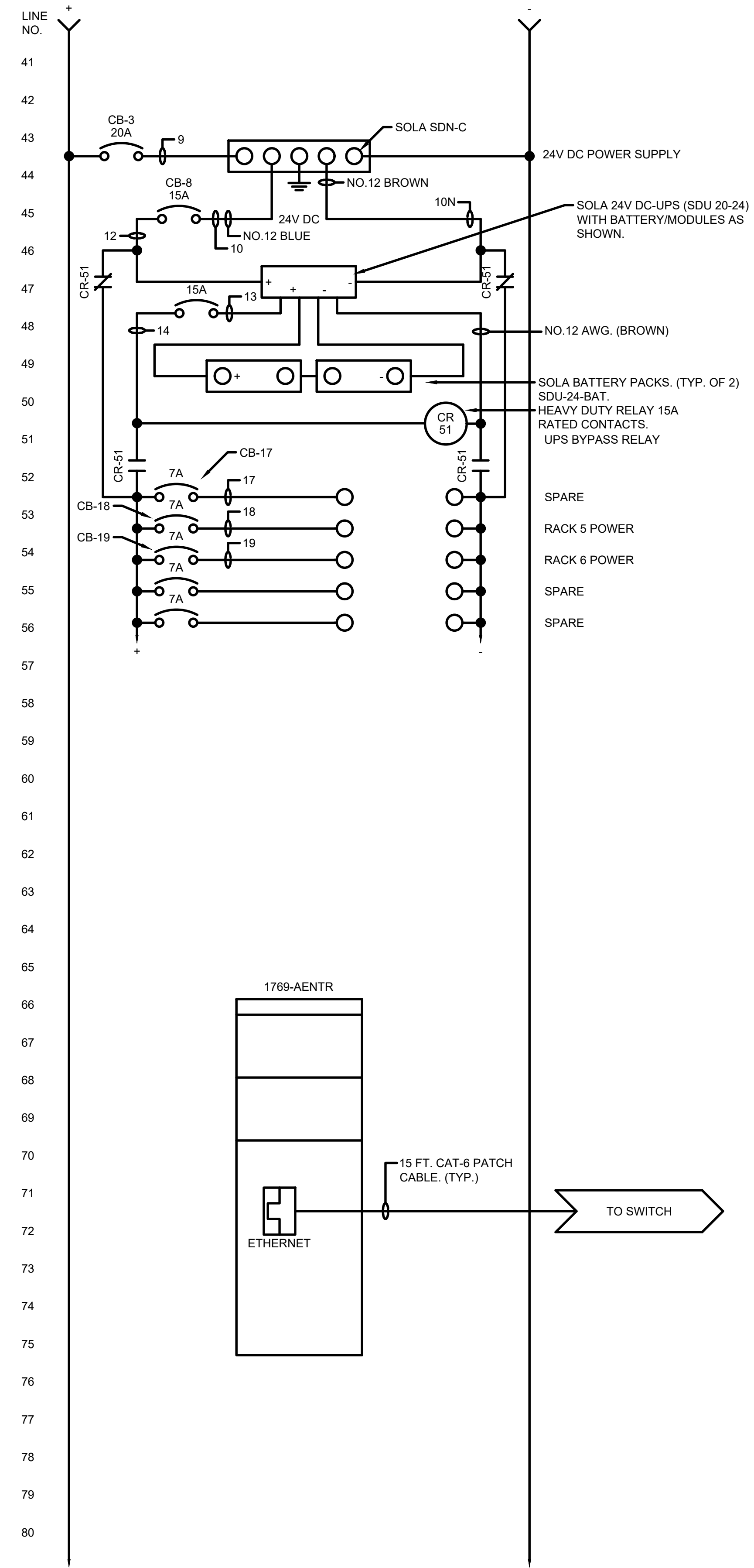
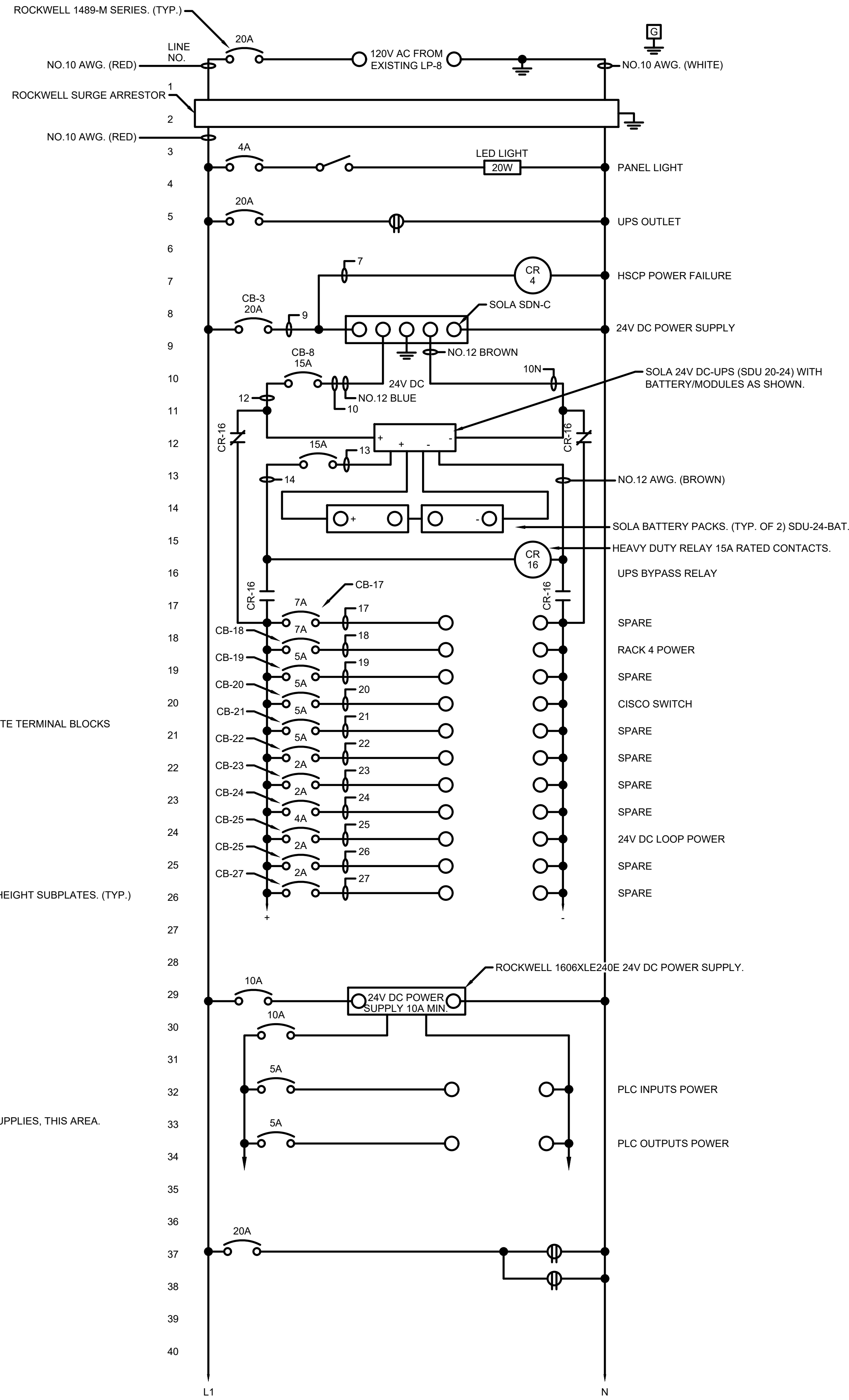
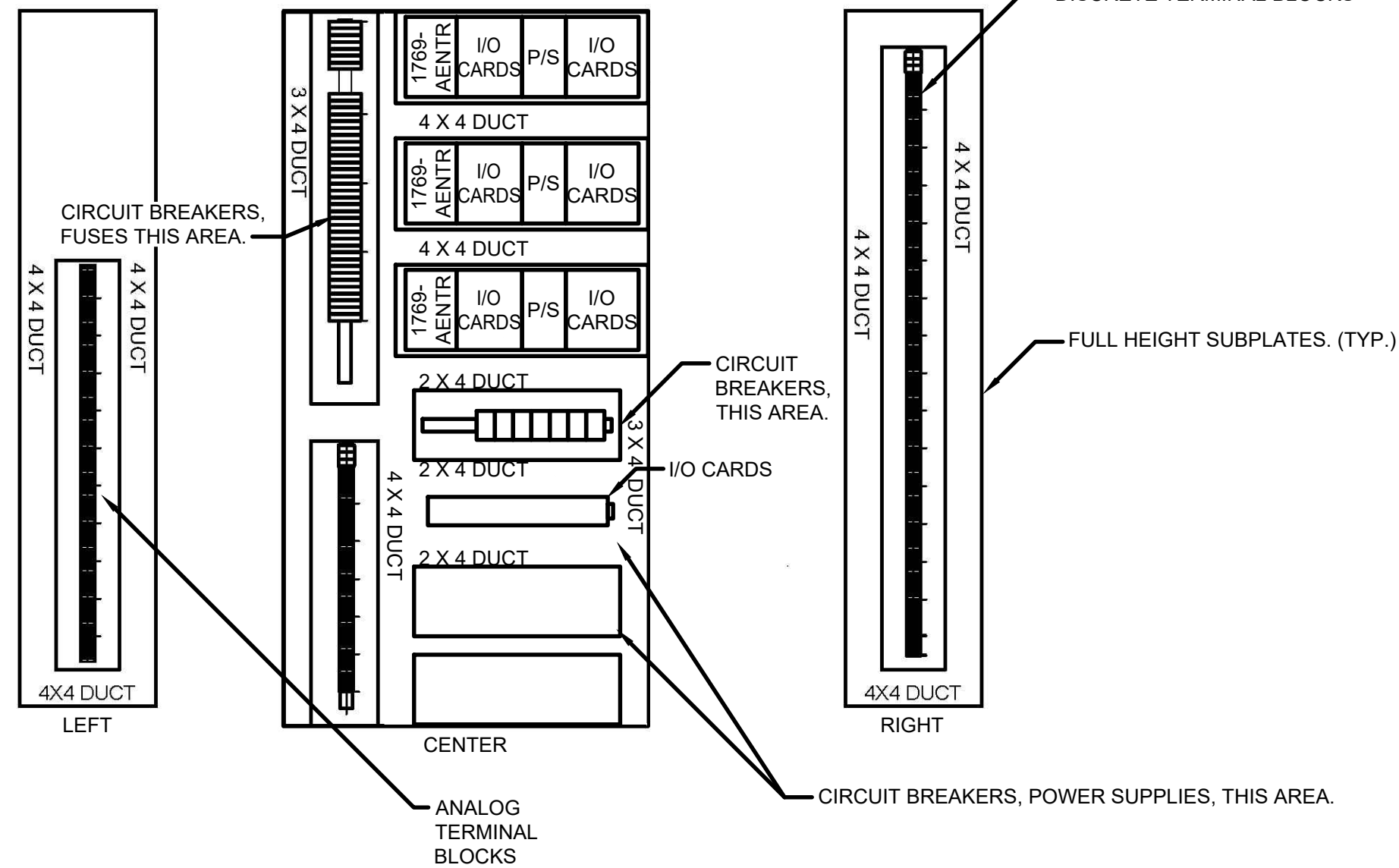
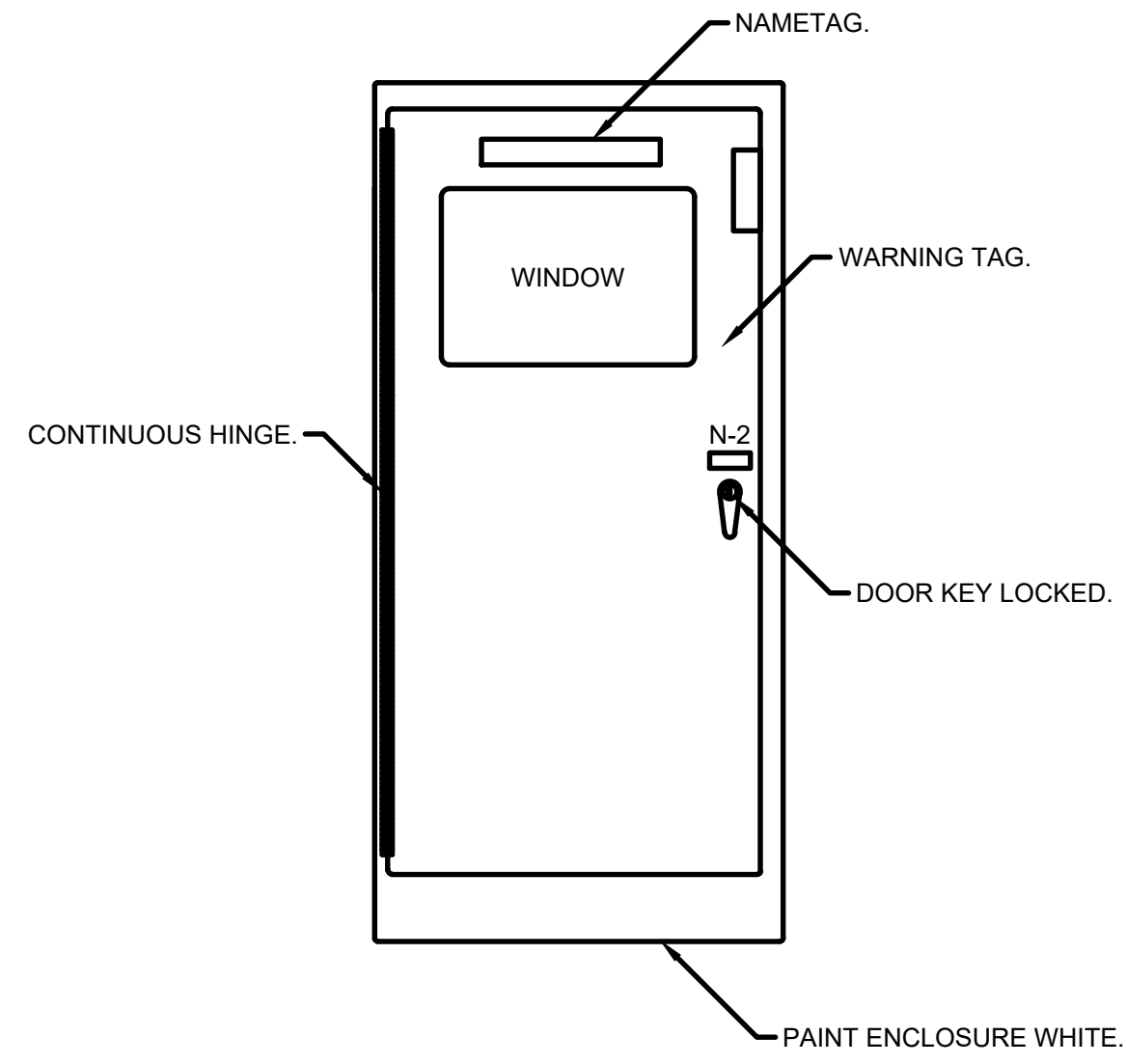
PROJECT NO.: 200-280565-21002
 SHEET NO.: 12

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CITY OF OWOSSO, MICHIGAN
OWOSSO WATER TREATMENT PLANT AND REMOTE SITES
SCADA SYSTEM UPGRADES
INSTRUMENTATION
OWOSSO WATER TREATMENT PLANT
PANEL (CP-LIME) LAYOUT - DEMOLITION

Project No.: 200-280565-21002
Designed By: GCJ
Drawn By: JLS
Checked By:



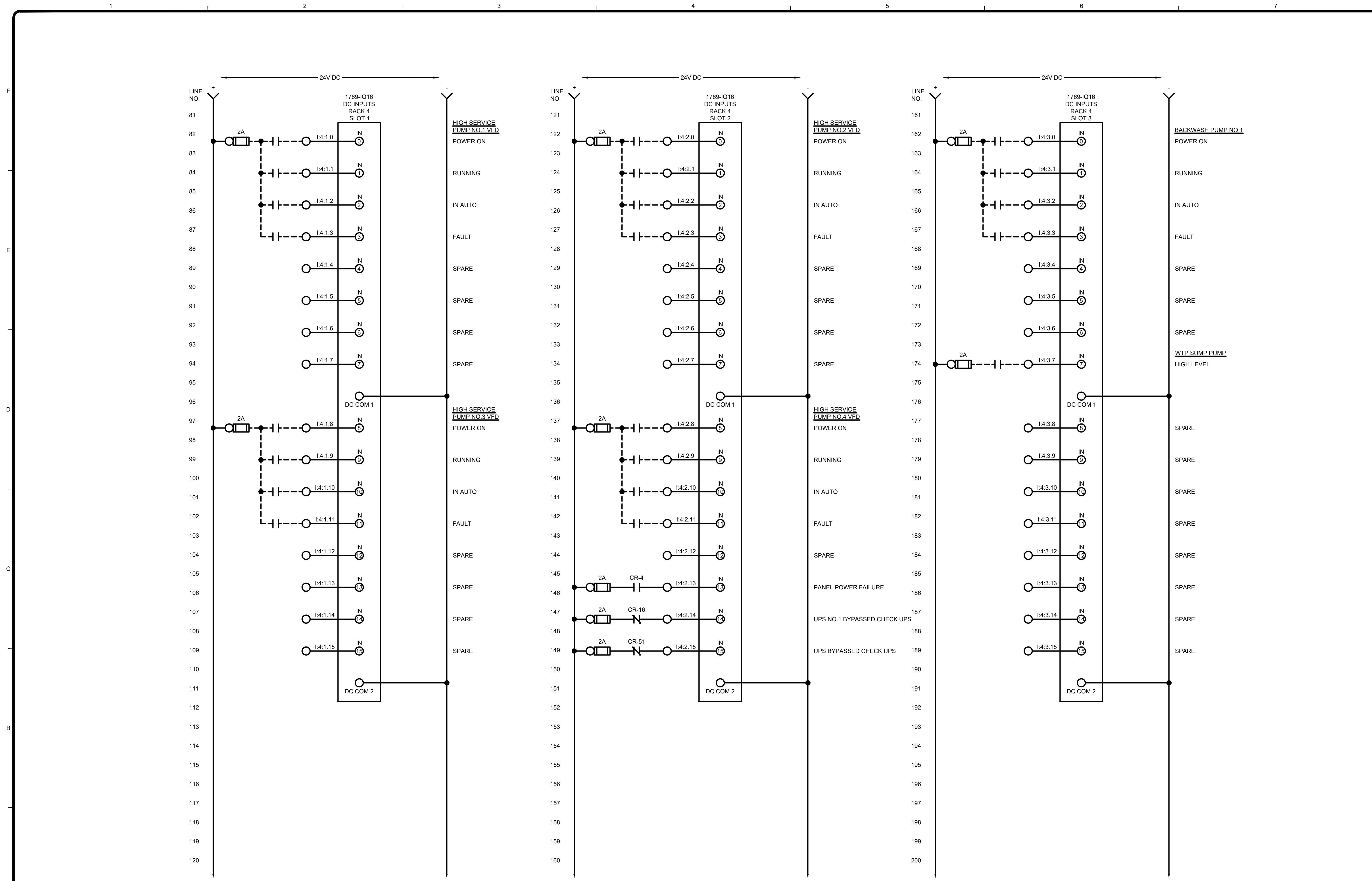
MARK	DATE	DESCRIPTION

Project No.:	200-280565-21002
Designed By:	GCJ
Drawn By:	JLS
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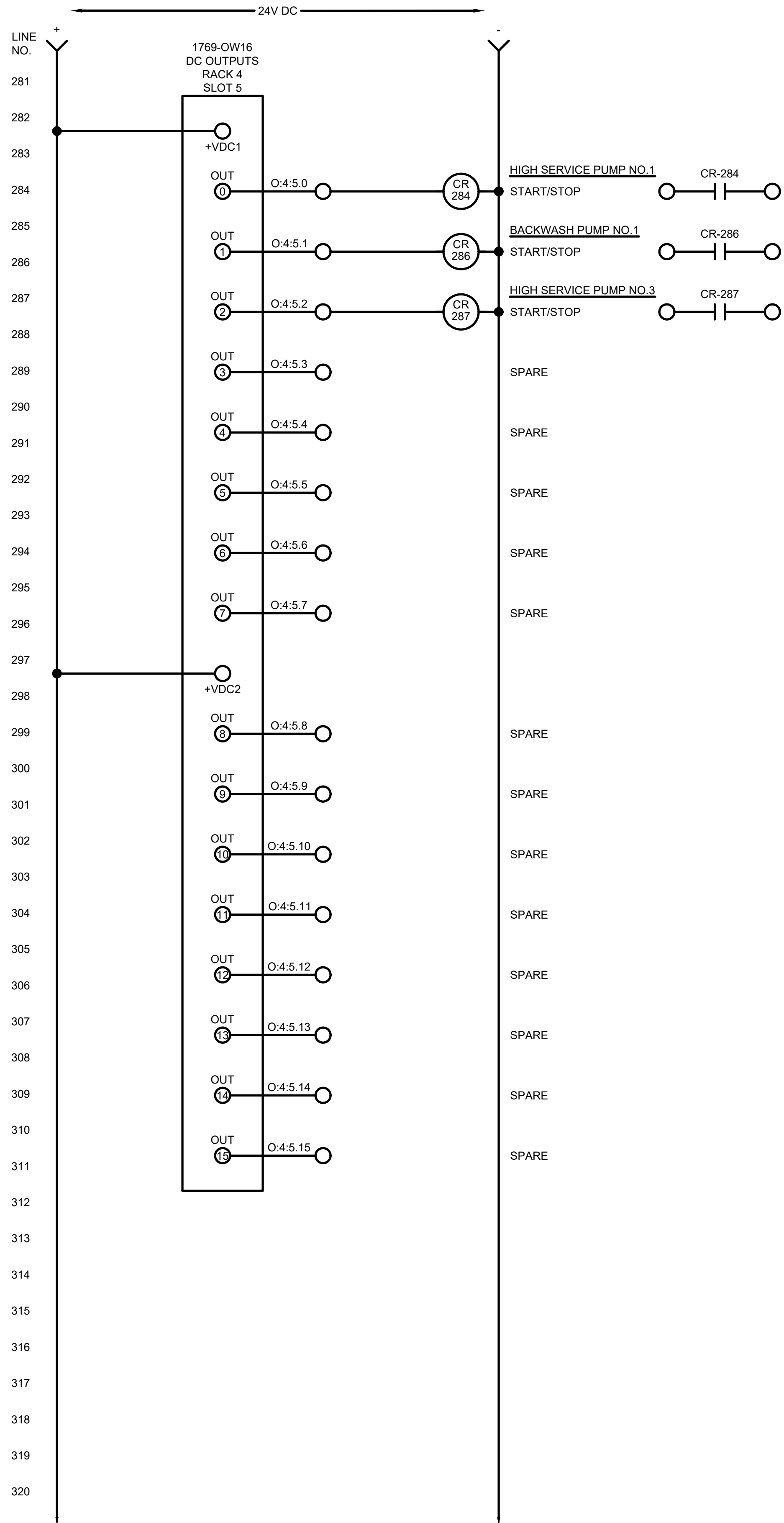
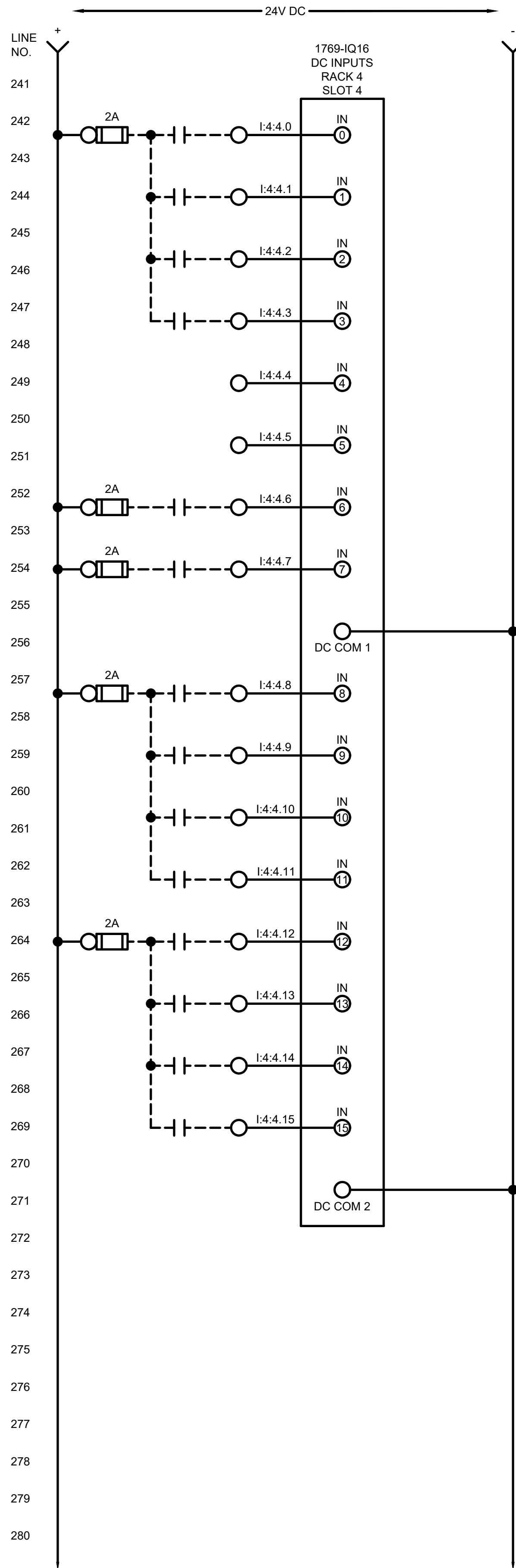
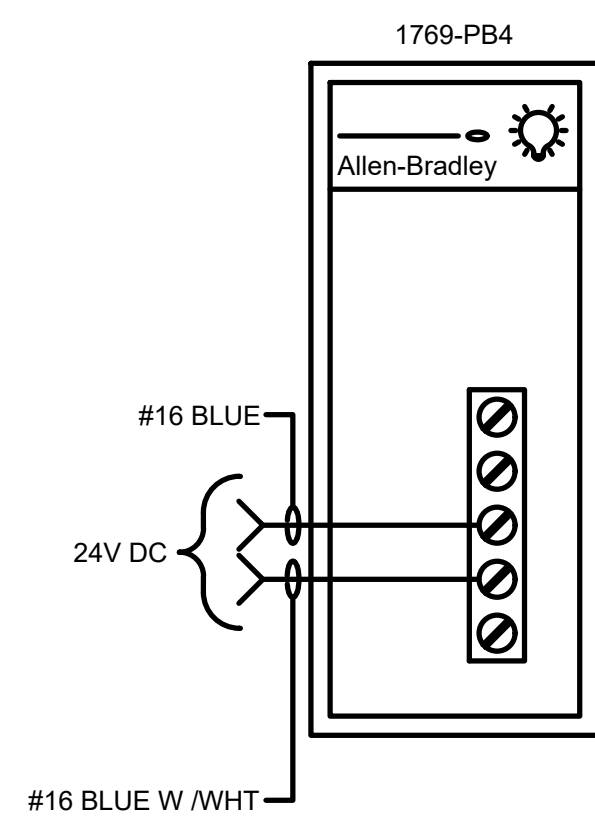


MARK	DATE	DESCRIPTION

CITY OF OWOSSO, MICHIGAN
OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES
SCADA SYSTEM UPGRADES
INSTRUMENTATION
HIGH SERVICE CONTROL PANEL (CP-HSCP)
CONTROL PANEL WIRING DIAGRAM

Project No.: 200-280565-21002
Designed By: GCJ
Drawn By: JLS
Checked By:

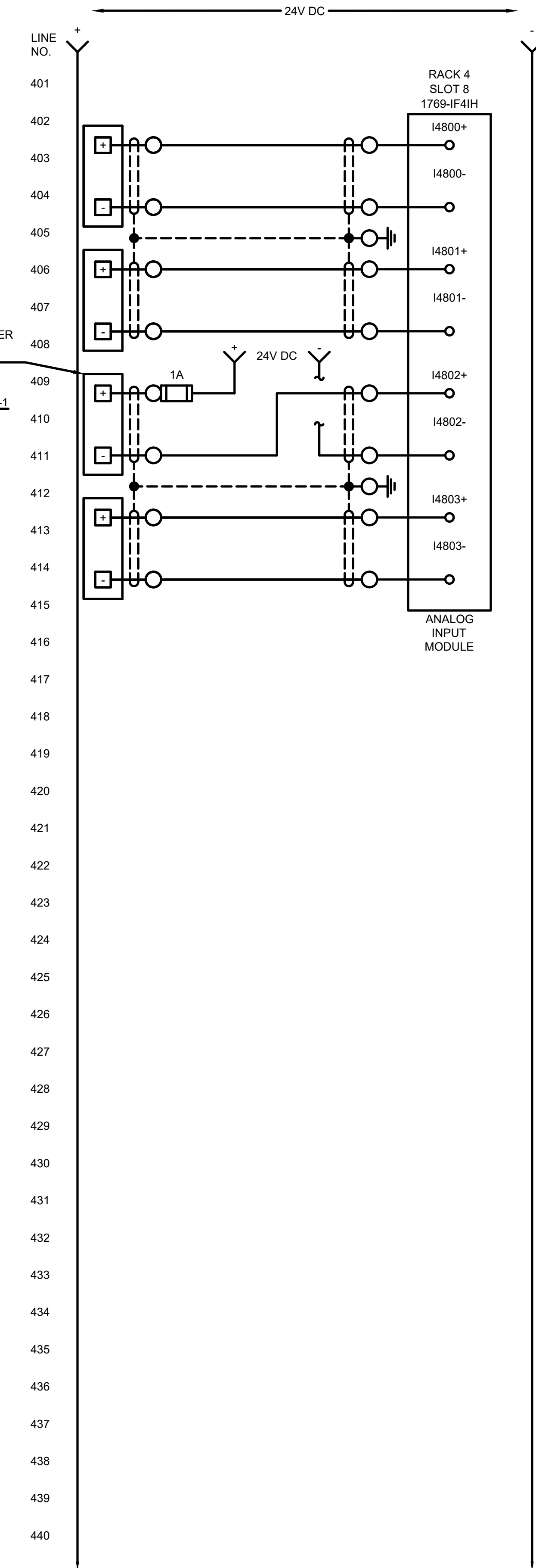
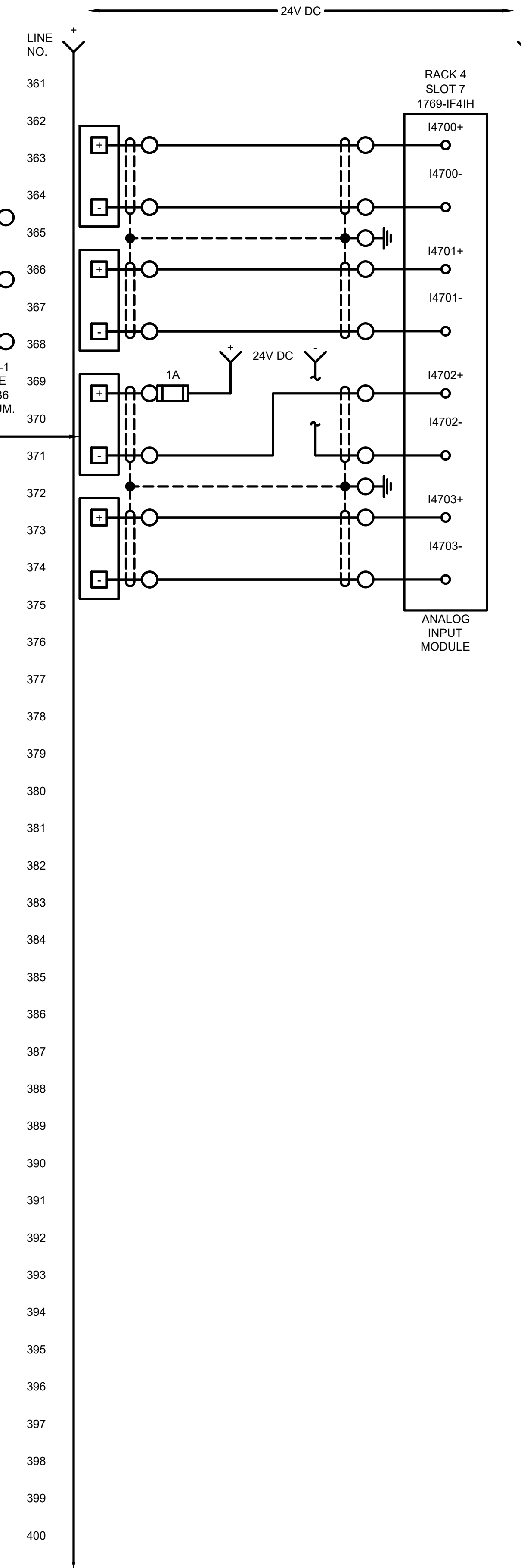
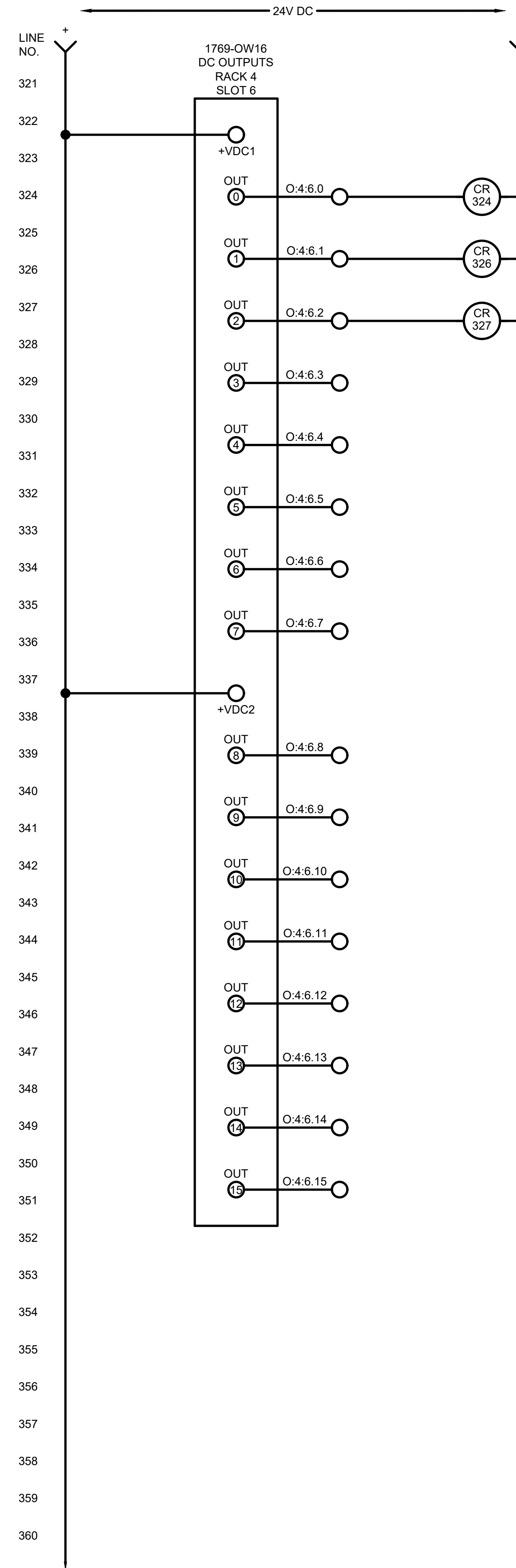
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MARK	DATE	DESCRIPTION	BY

CITY OF OWOSSO, MICHIGAN
OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES
SCADA SYSTEM UPGRADES
**INSTRUMENTATION
HIGH SERVICE CONTROL PANEL (CP-HSCP)
CONTROL PANEL WIRING DIAGRAM**

Project No.: 200-280565-21002
Designed By: GCJ
Drawn By: JLS
Checked By:

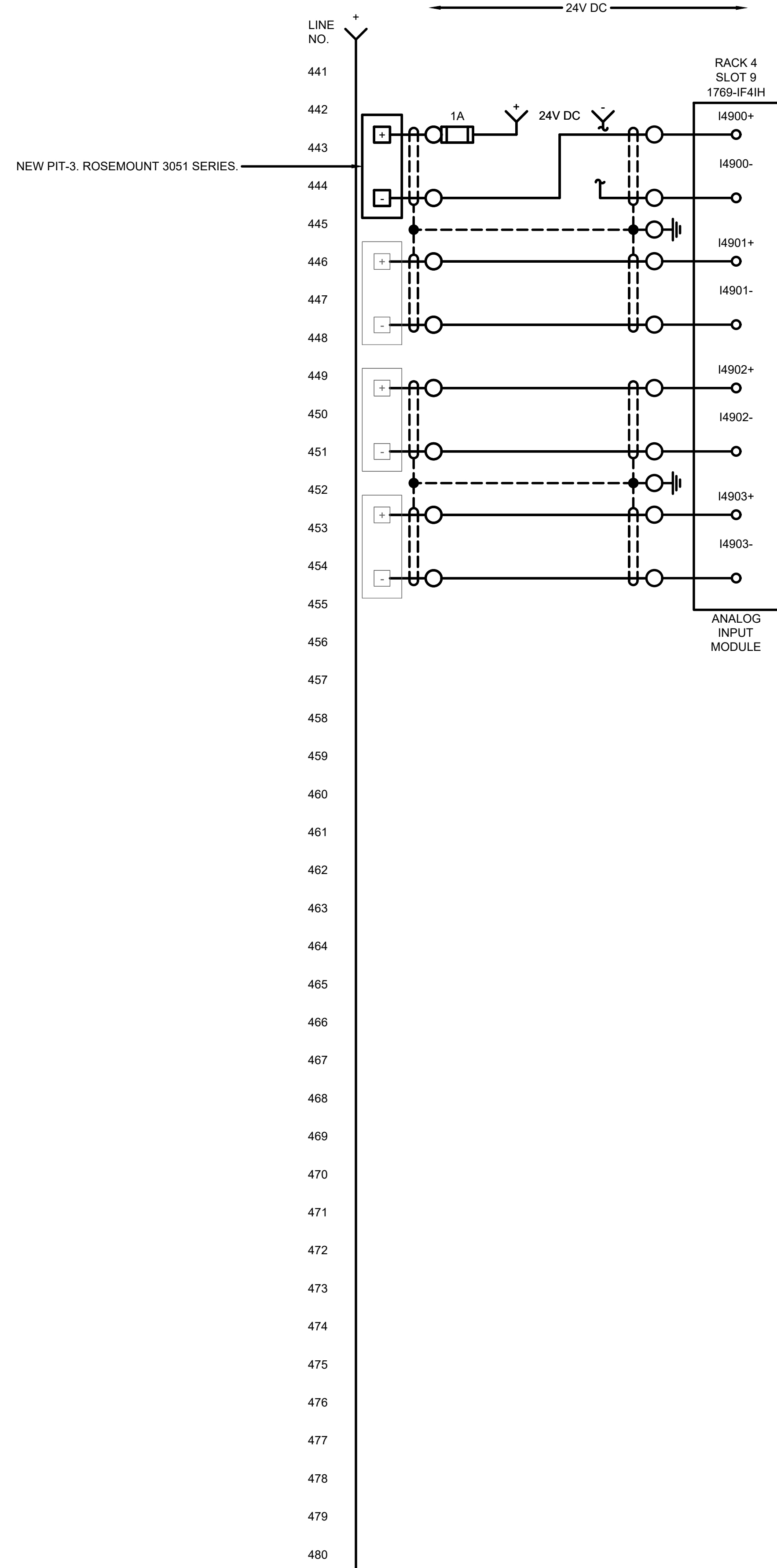


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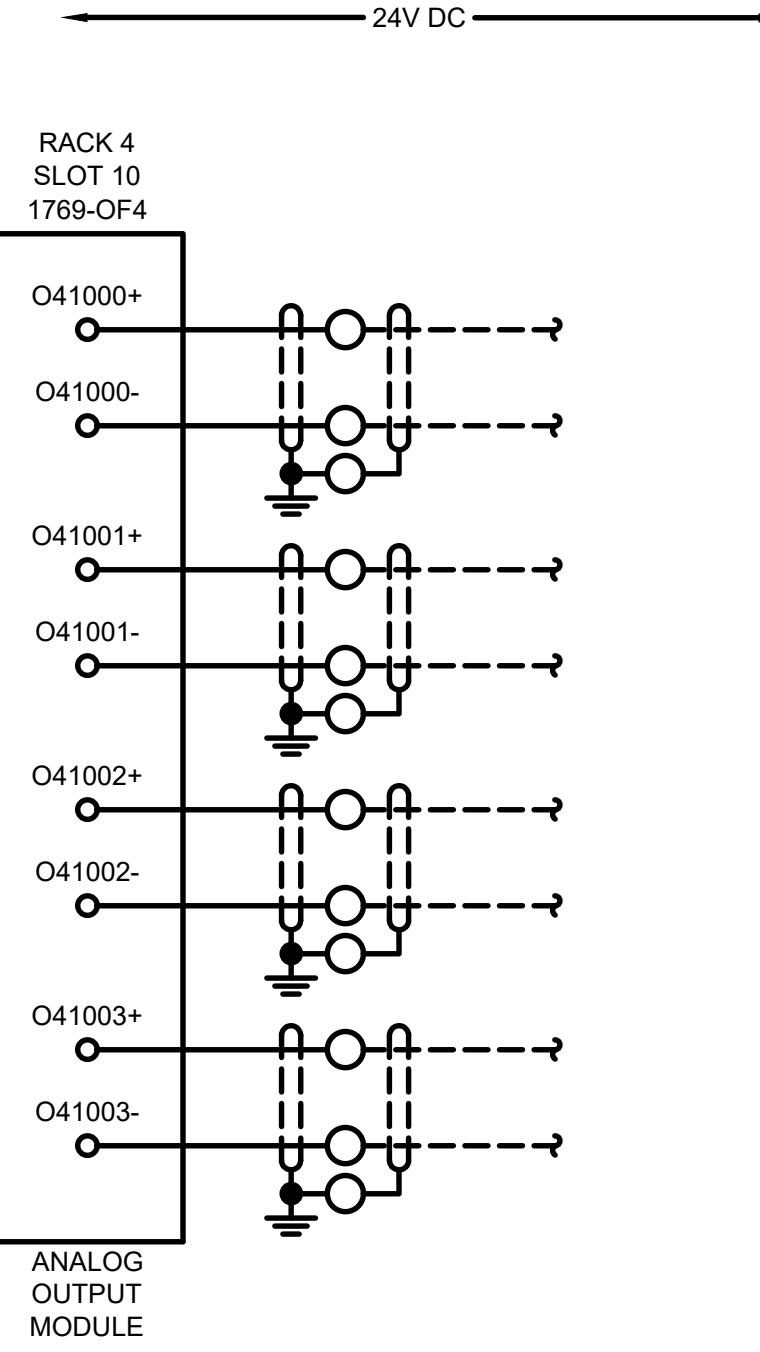
CITY OF OWOSSO, MICHIGAN
OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES
SCADA SYSTEM UPGRADES
INSTRUMENTATION
HIGH SERVICE CONTROL PANEL (CP-HSCP)
CONTROL PANEL WIRING DIAGRAM

Project No.: 200-280565-21002
Designed By: GCJ
Drawn By: JLS
Checked By:

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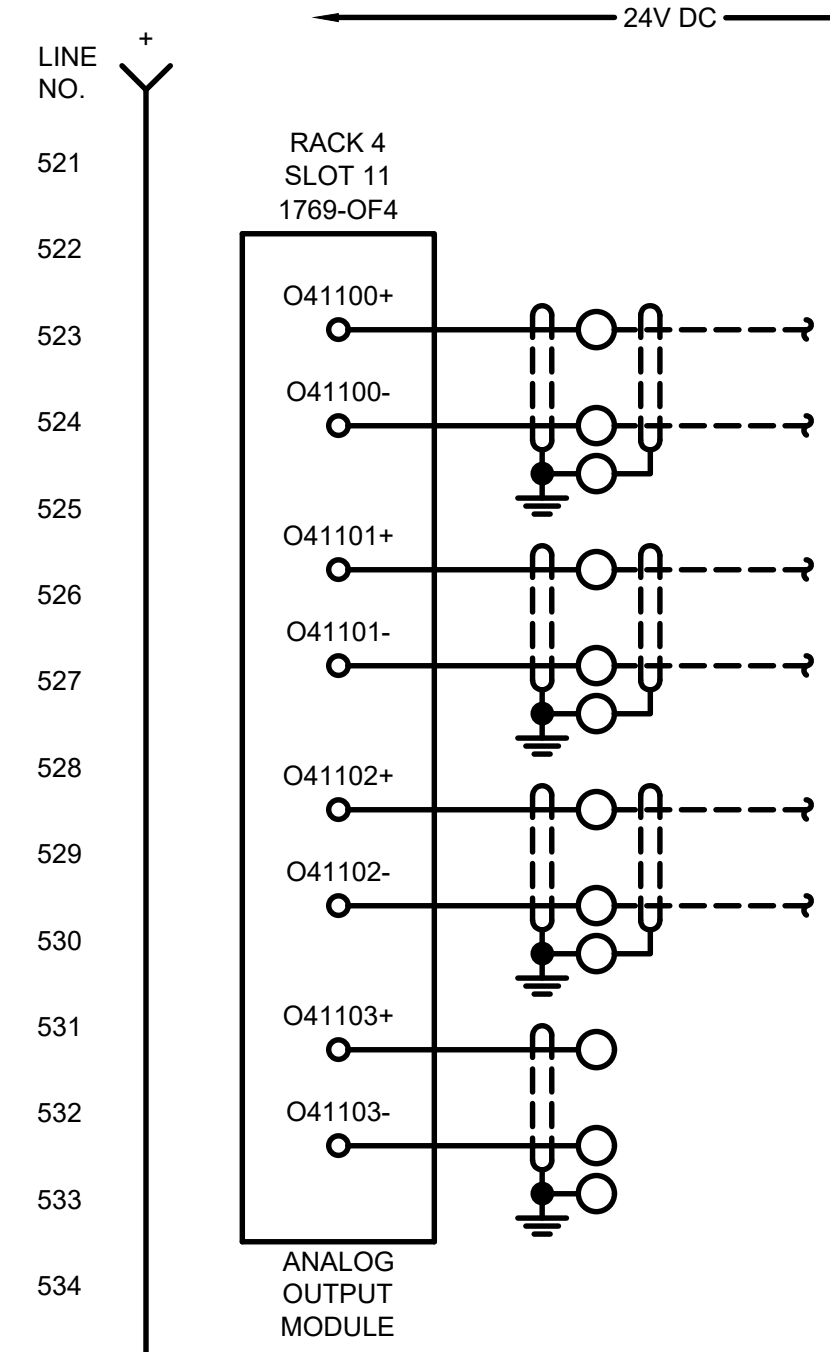
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HIGH SERVICE PUMP NO. 1
SPEED CONTROL

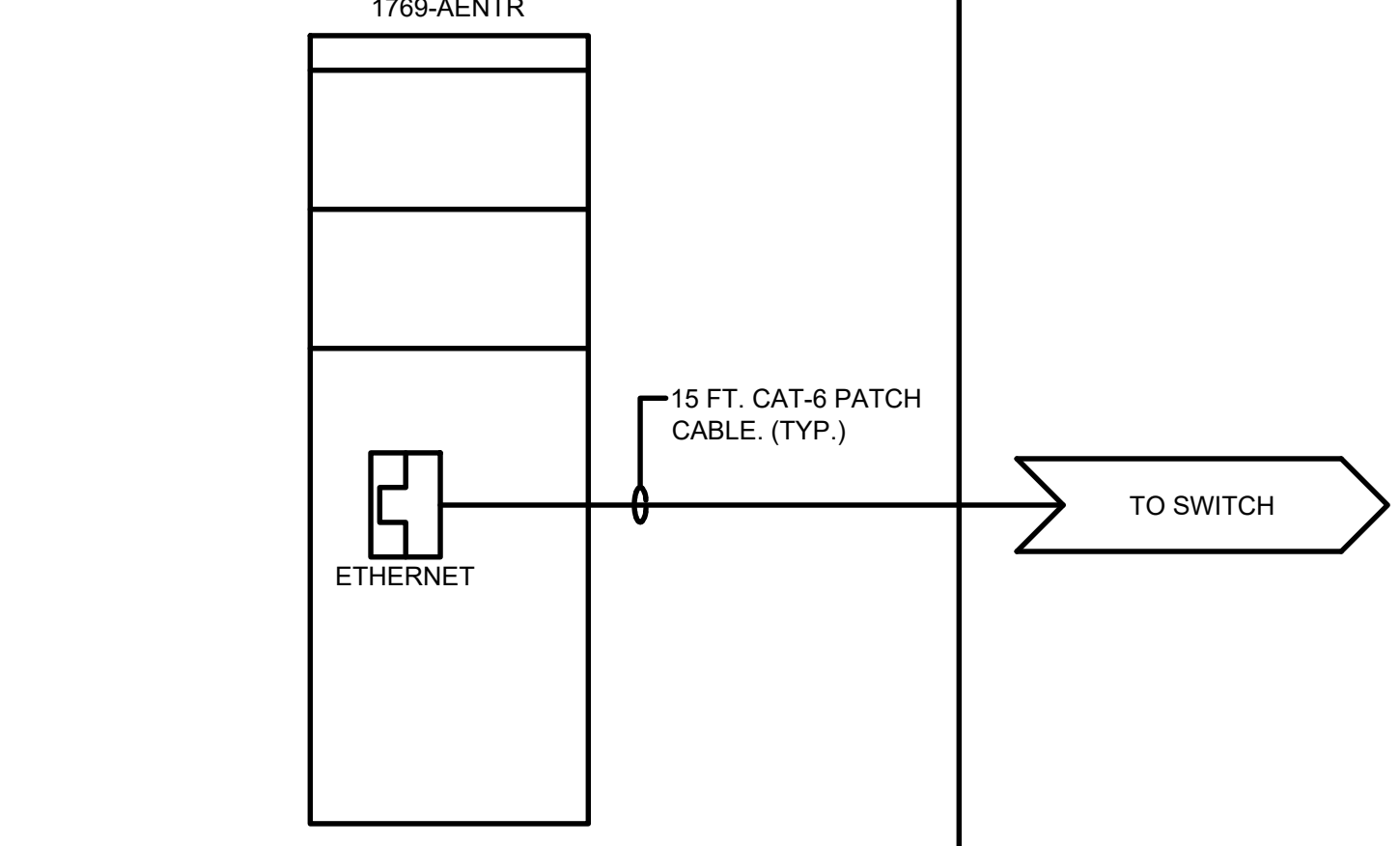
BACKWASH PUMP NO. 1
SPEED CONTROL

HIGH SERVICE PUMP NO. 3
SPEED CONTROL

EXISTING HIGH SERVICE
PUMP CONTROL VALVE



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MARK	DATE	DESCRIPTION

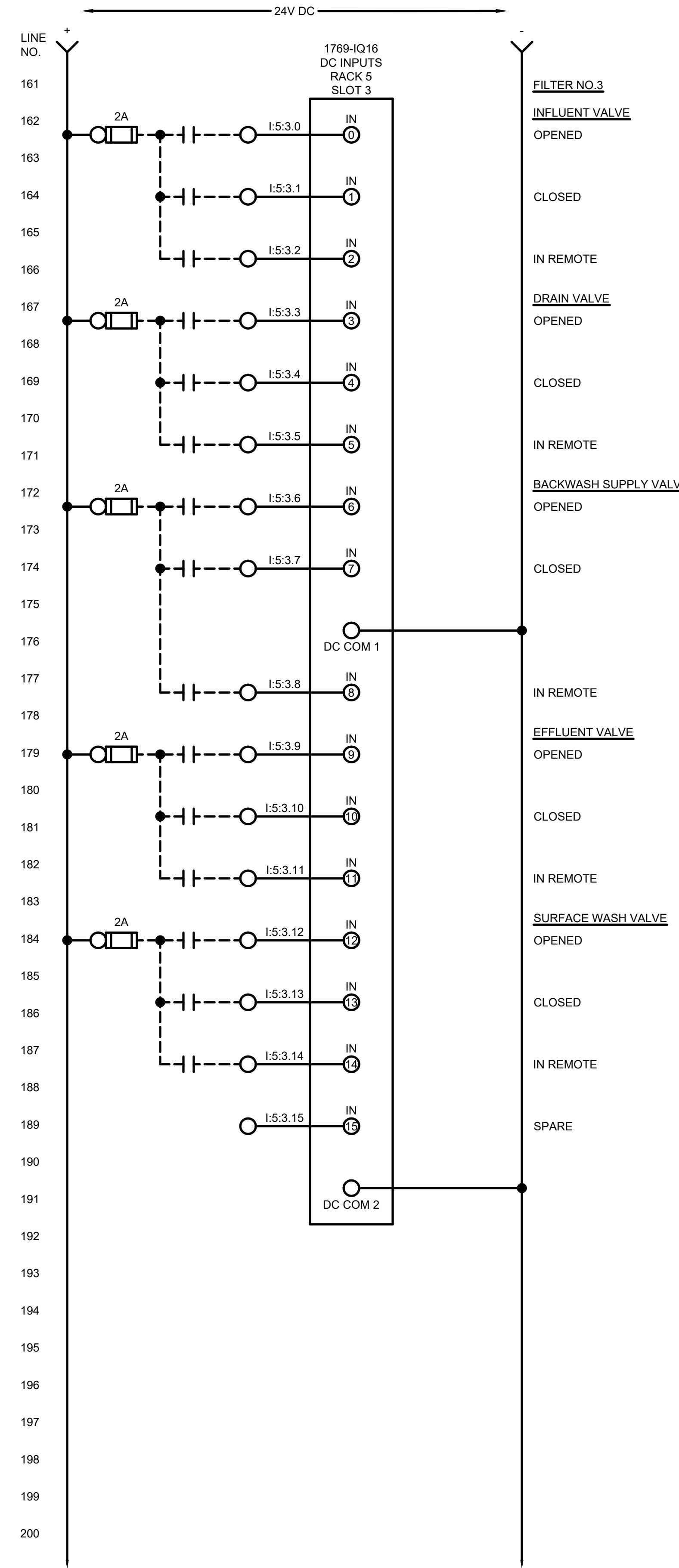
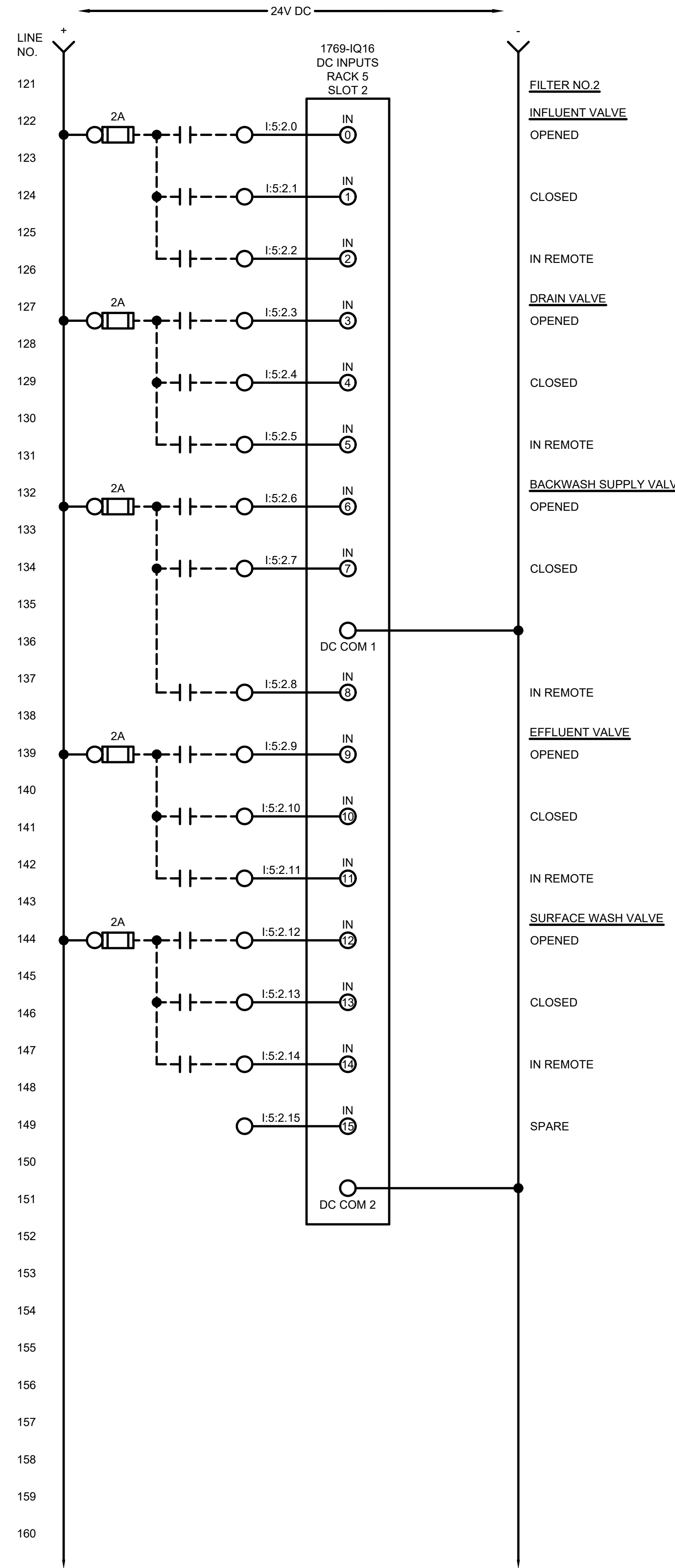
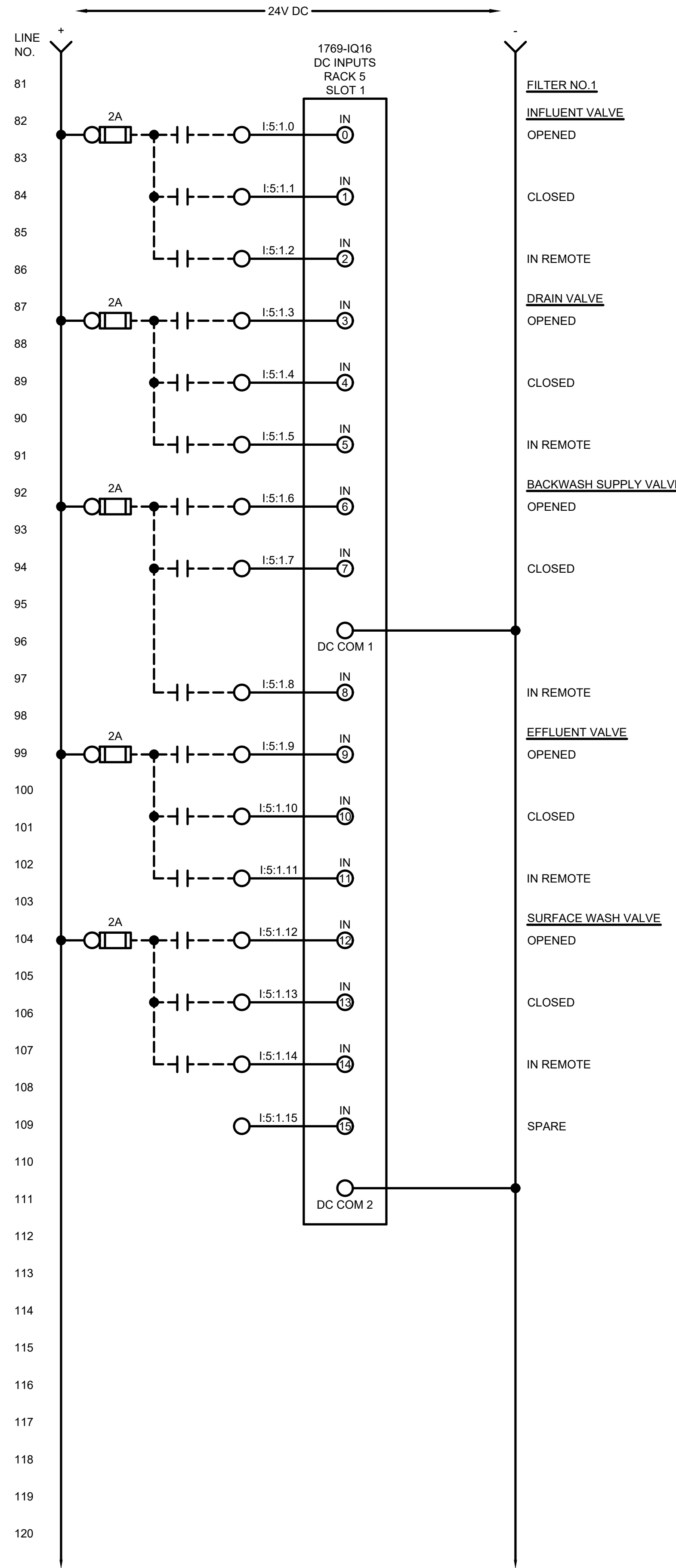
CITY OF OWOSSO, MICHIGAN
OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES
SCADA SYSTEM UPGRADES
**INSTRUMENTATION
HIGH SERVICE CONTROL PANEL (CP-HSCP)
CONTROL PANEL WIRING DIAGRAM**

Project No.: 200-280565-21002
Designed By: GCJ
Drawn By: JLS
Checked By:

I-332
OF 62

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EAST LANSING, MI 48823
PHONE: (517) 316-3930 FAX: (517) 484-8140

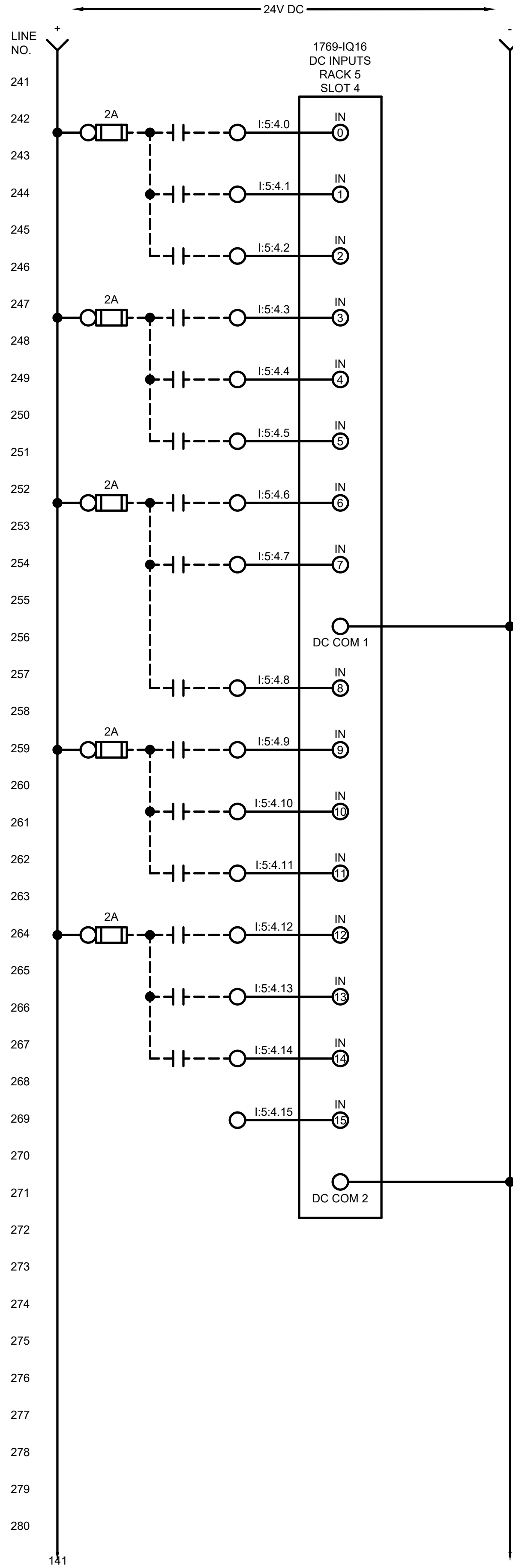
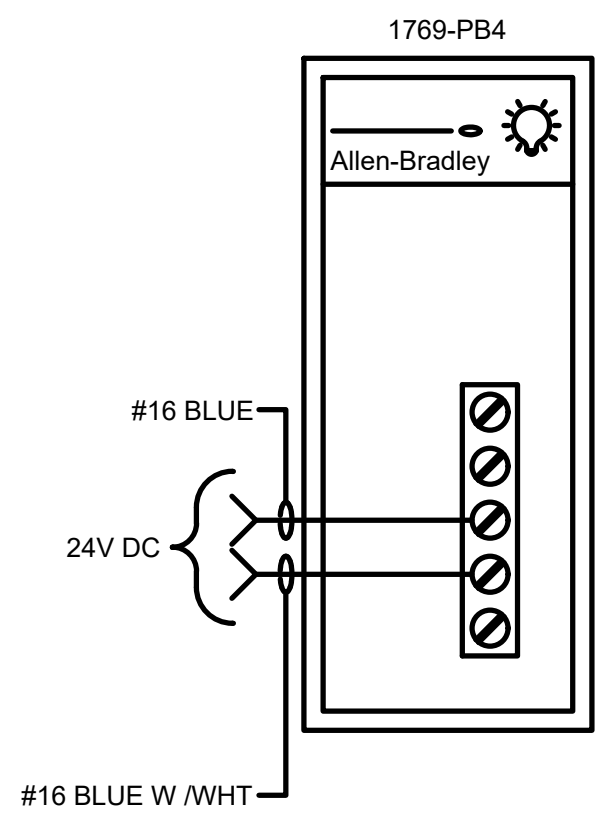
MARK	DATE	DESCRIPTION	BY

CITY OF OWOSSO, MICHIGAN
OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES
SCADA SYSTEM UPGRADES
INSTRUMENTATION
HIGH SERVICE CONTROL PANEL (CP-HSCP)
CONTROL PANEL WIRING DIAGRAM

Project No.: 200-280565-21002
Designed By: GCJ
Drawn By: JLS
Checked By:

1/3/2022 5:13:57 PM - \\T:\LOCAL\PROJECTS\ANN ARBOR\PROJECTS\ANN ARBOR\IER\280565\200-280565-2\1002\CAD\SCHEMATIC\HSCF-CP-WIR.DWG - SHANK, JASON

LINE NO.
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LINE NO.
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1769-IQ16
DC INPUTS
RACK 5
SLOT 4

IN 0
IN 1
IN 2
IN 3
IN 4
IN 5
IN 6
IN 7
IN 8
IN 9
IN 10
IN 11
IN 12
IN 13
IN 14
IN 15

DC COM 1
DC COM 2

2A
2A
2A

I:5.4.0
I:5.4.1
I:5.4.2
I:5.4.3
I:5.4.4
I:5.4.5
I:5.4.6
I:5.4.7
I:5.4.8
I:5.4.9
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I:5.4.12
I:5.4.13
I:5.4.14
I:5.4.15

24V DC

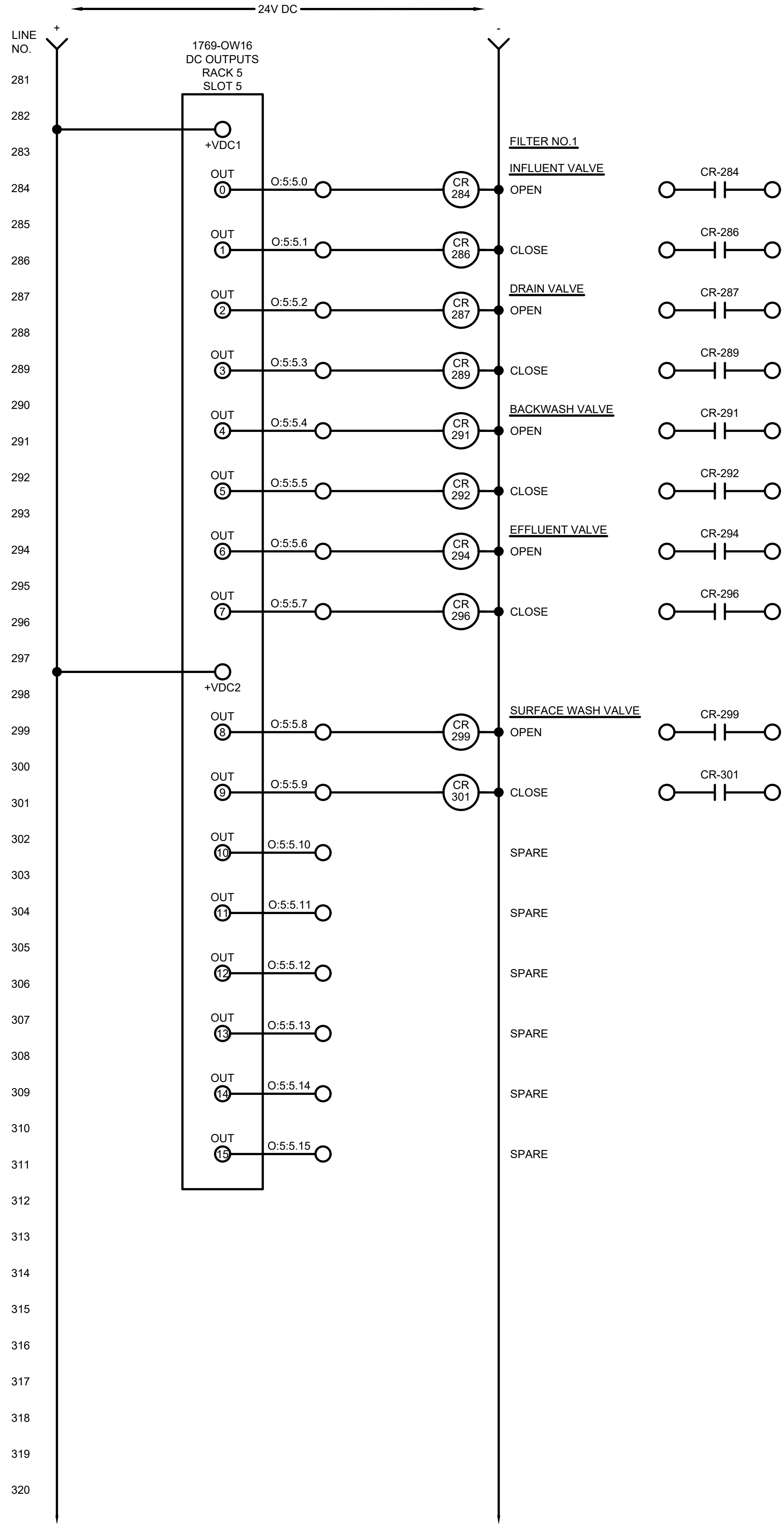
24V DC

1769-OW16
DC OUTPUTS
RACK 5
SLOT 5

OUT 0
OUT 1
OUT 2
OUT 3
OUT 4
OUT 5
OUT 6
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OUT 8
OUT 9
OUT 10
OUT 11
OUT 12
OUT 13
OUT 14
OUT 15

CR-284
CR-286
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CR-299
CR-301

SPARE



TETRA TECH

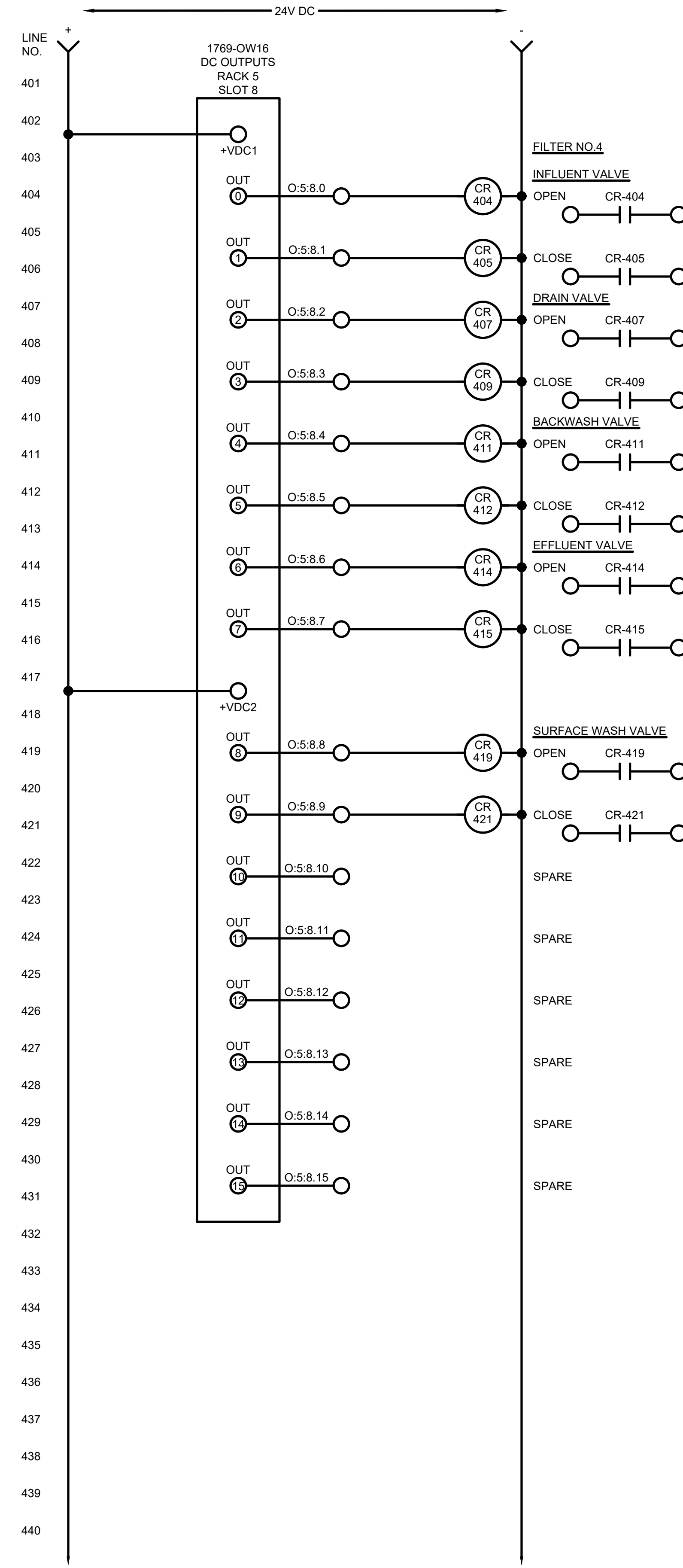
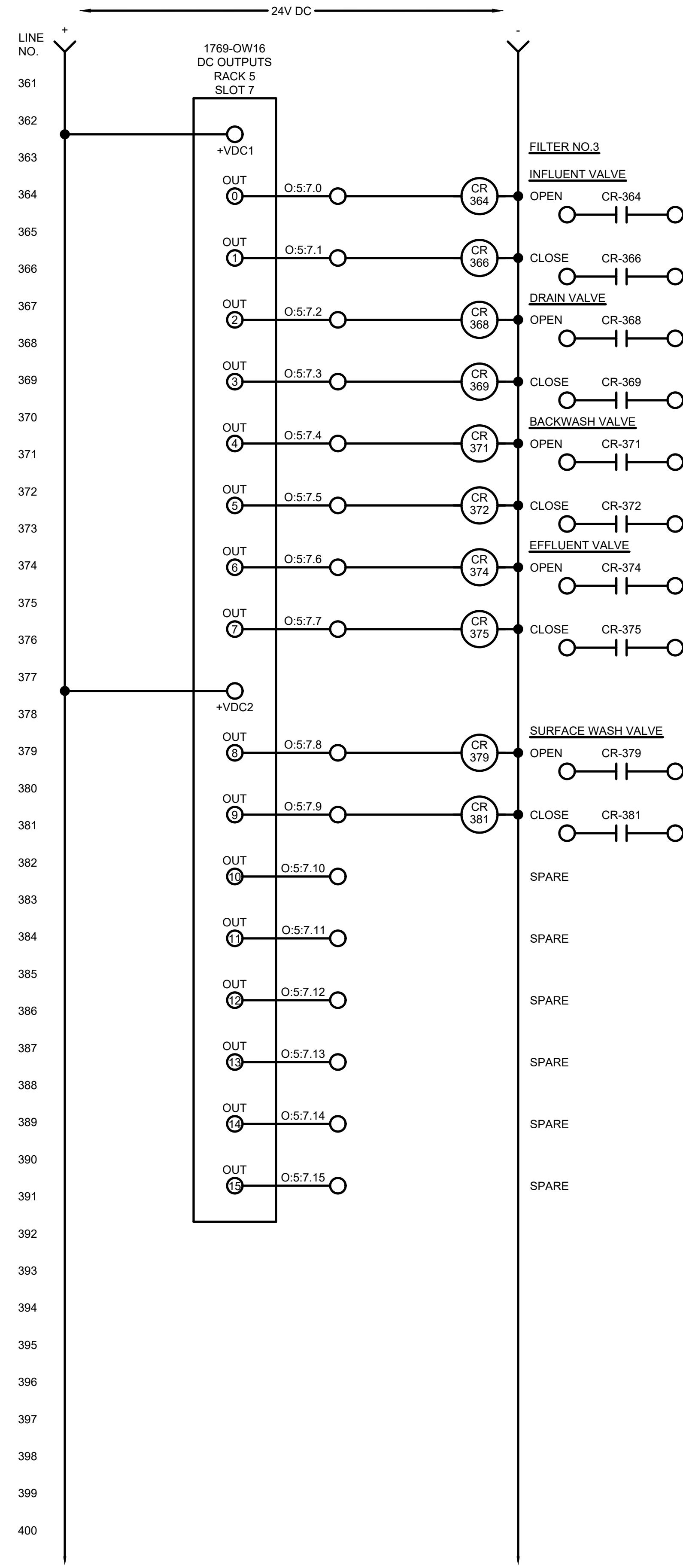
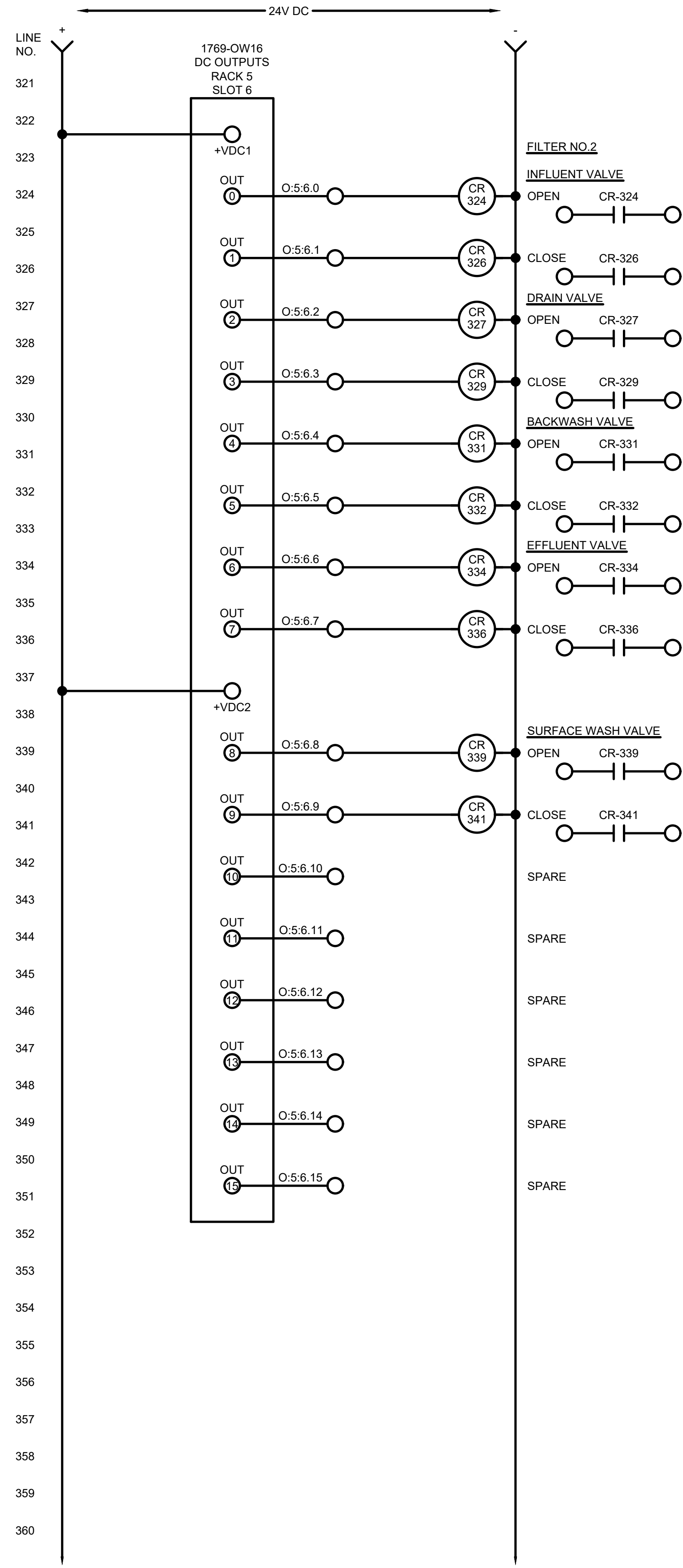
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PHONE: (517) 316-3930 FAX: (517) 484-8140

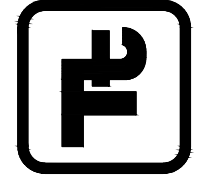
MARK	DATE	DESCRIPTION	BY

CITY OF OWOSSO, MICHIGAN
OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES
SCADA SYSTEM UPGRADES
INSTRUMENTATION
HIGH SERVICE CONTROL PANEL (CP-HSCP)
CONTROL PANEL WIRING DIAGRAM

Project No.: 200-280565-21002
Designed By: GCJ
Drawn By: JLS
Checked By:

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BY	DATE	DESCRIPTION

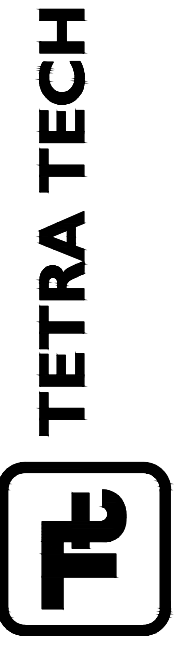
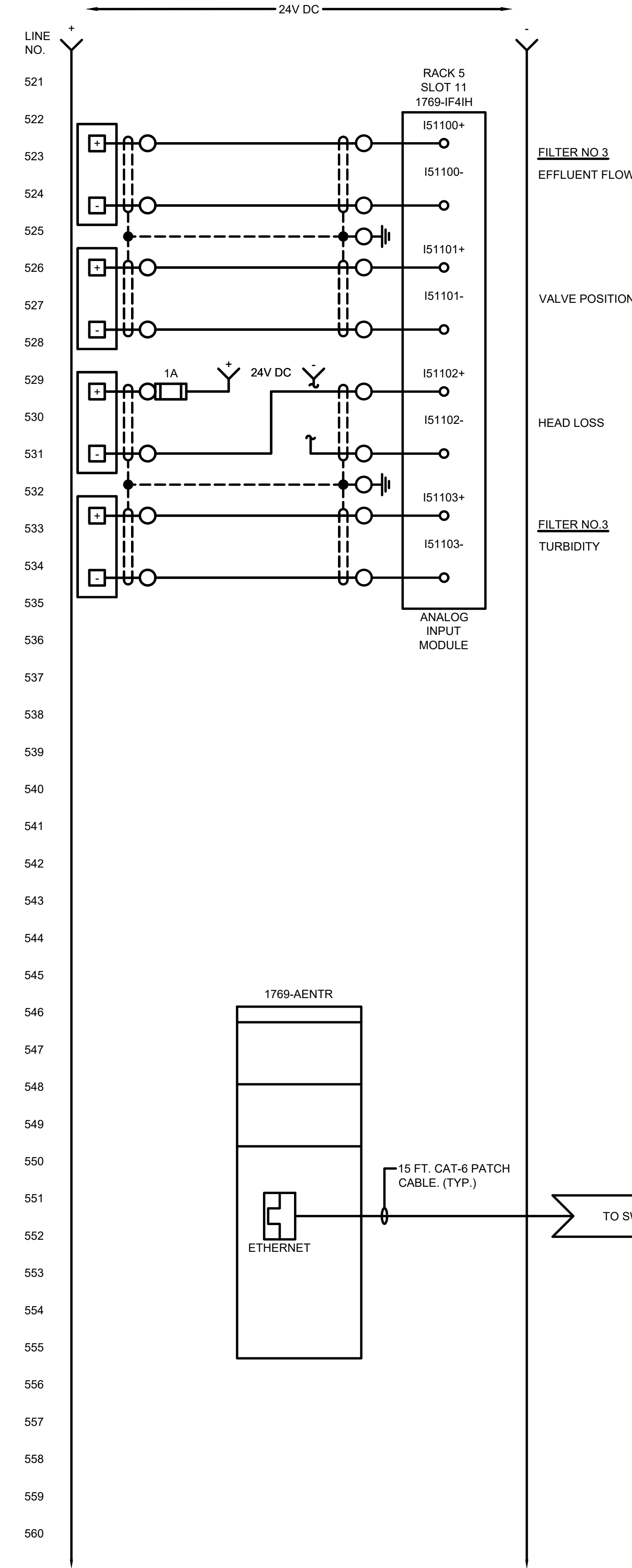
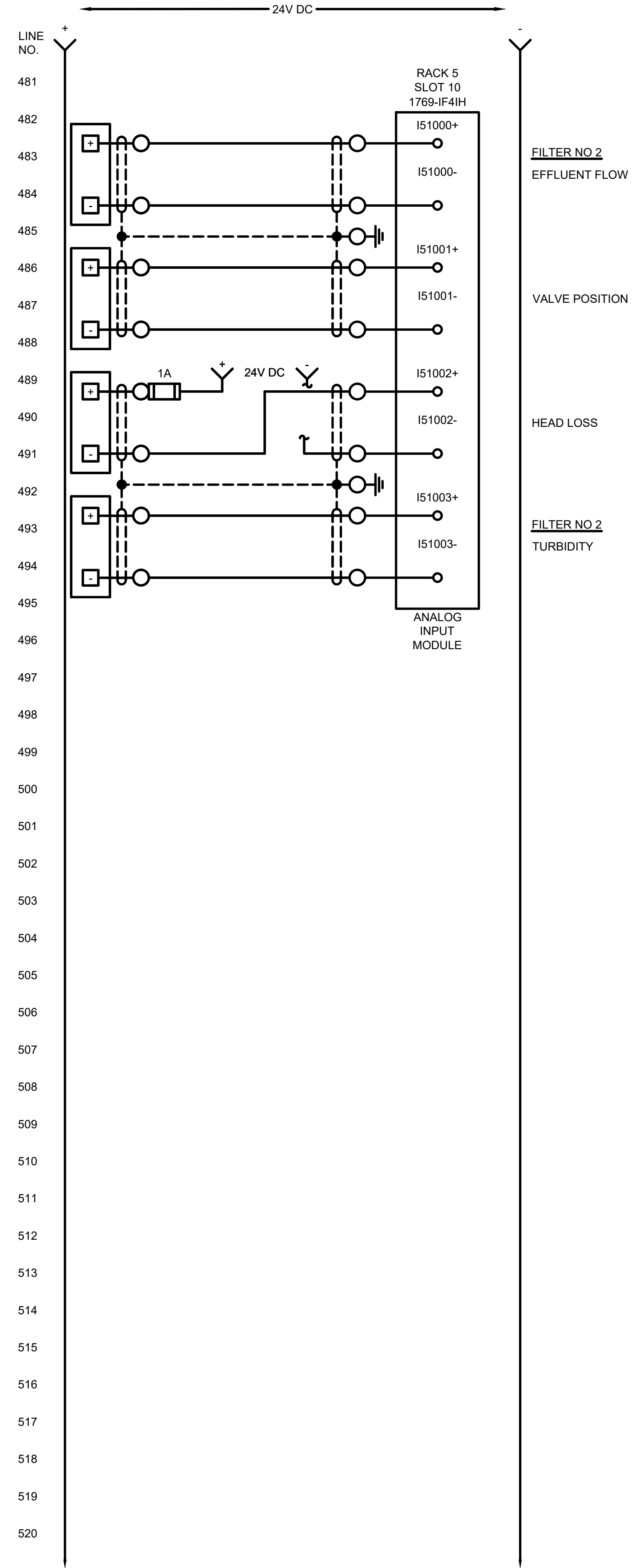
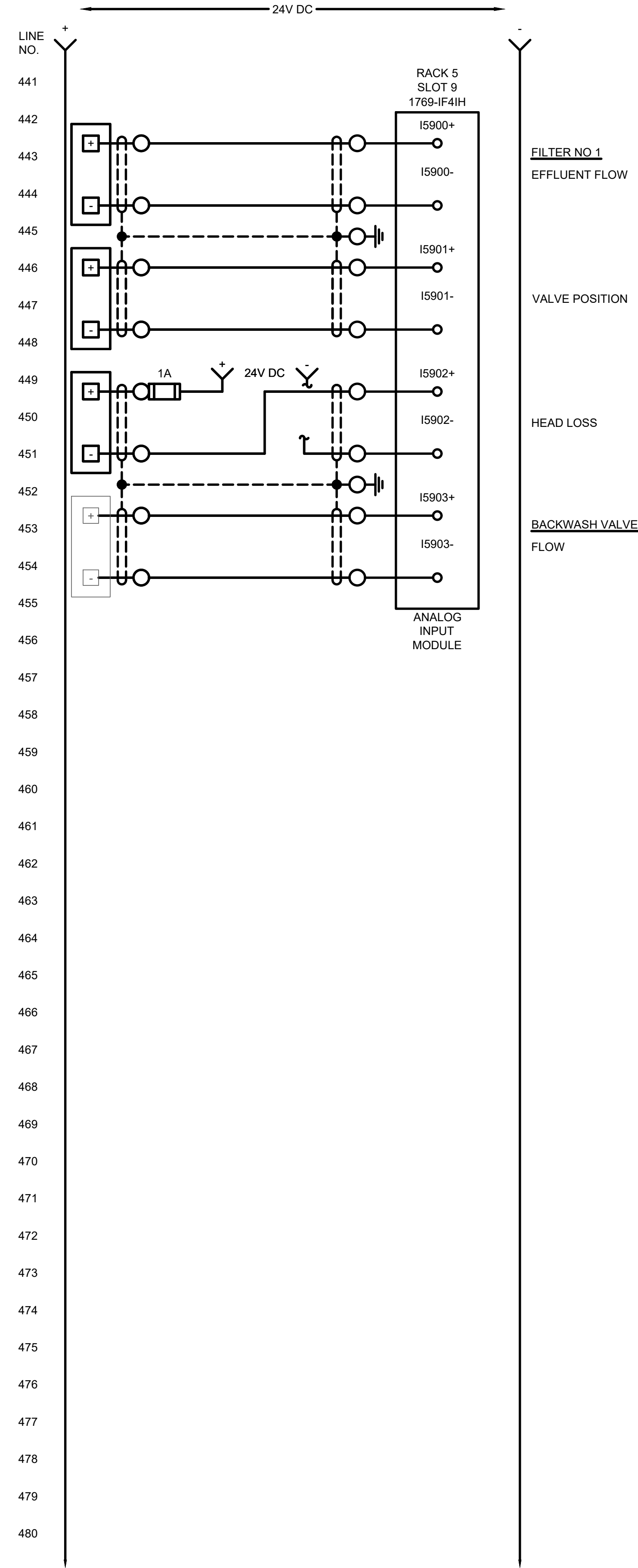
CITY OF OWOSSO, MICHIGAN
OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES
SCADA SYSTEM UPGRADES
INSTRUMENTATION
HIGH SERVICE CONTROL PANEL (CP-HSCP)
CONTROL PANEL WIRING DIAGRAM

Project No.: 200-280565-21002
Designed By: GCJ
Drawn By: JLS
Checked By: _____

I-335
OF 62

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Bar Measures 1 inch

4/17/2022 12:38:32 PM - \\TT.LOC\ALI\PROJECTS\ANN ARBOR\ER\200565-21002\CAD\SHEETFILES\EI-338_HSCP-CP_WIR_DIA_VIII.DWG - SHANK, JASON

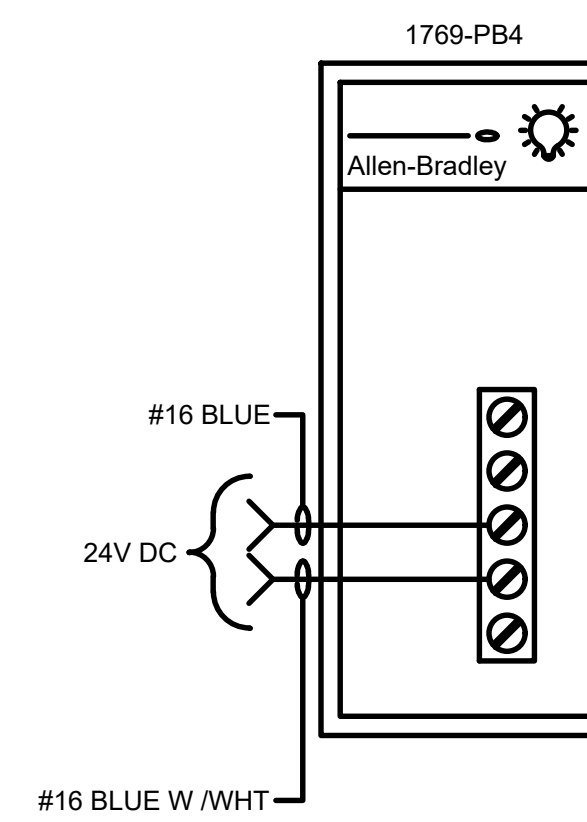
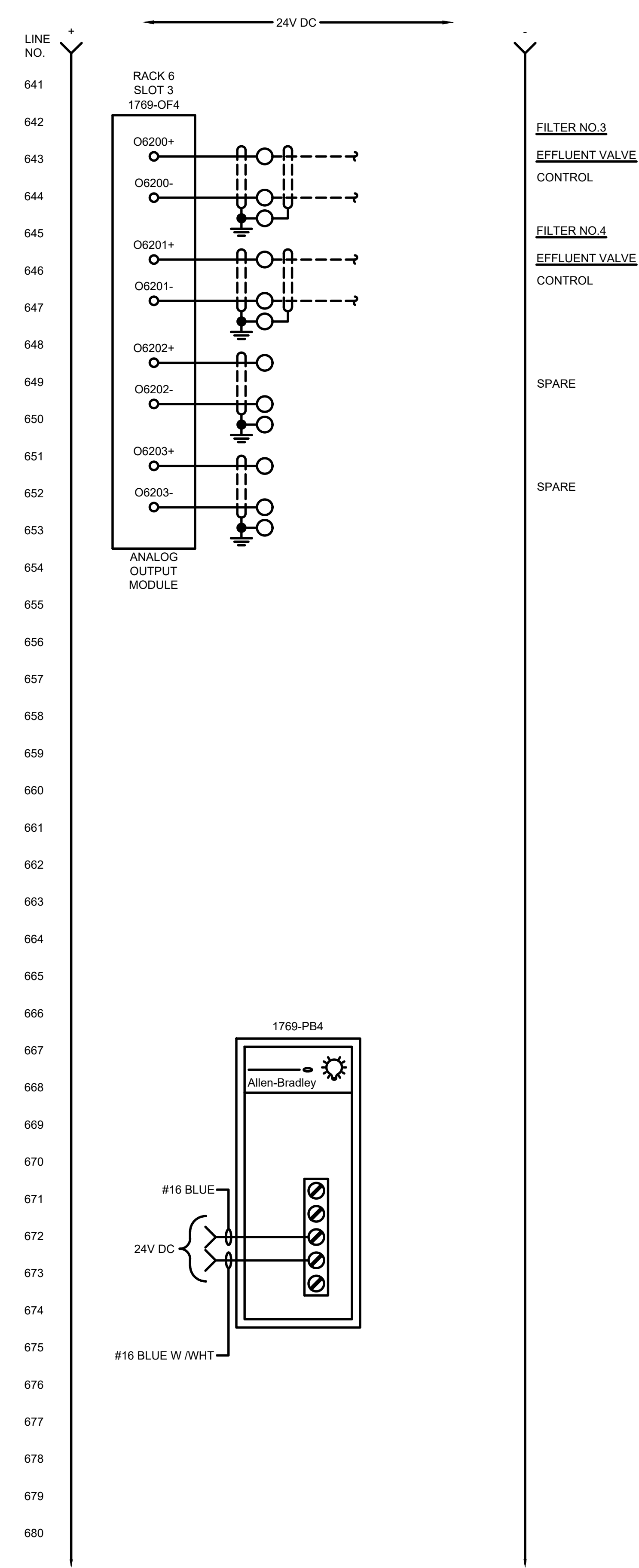
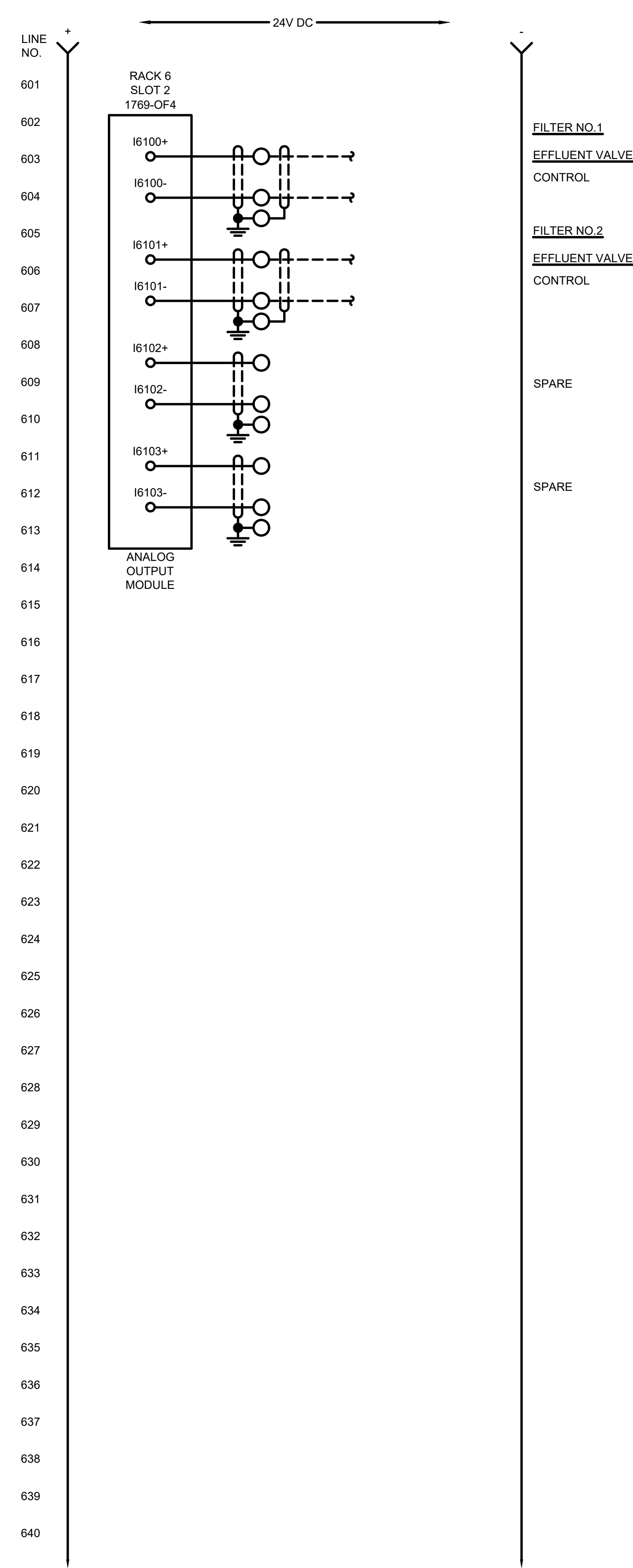
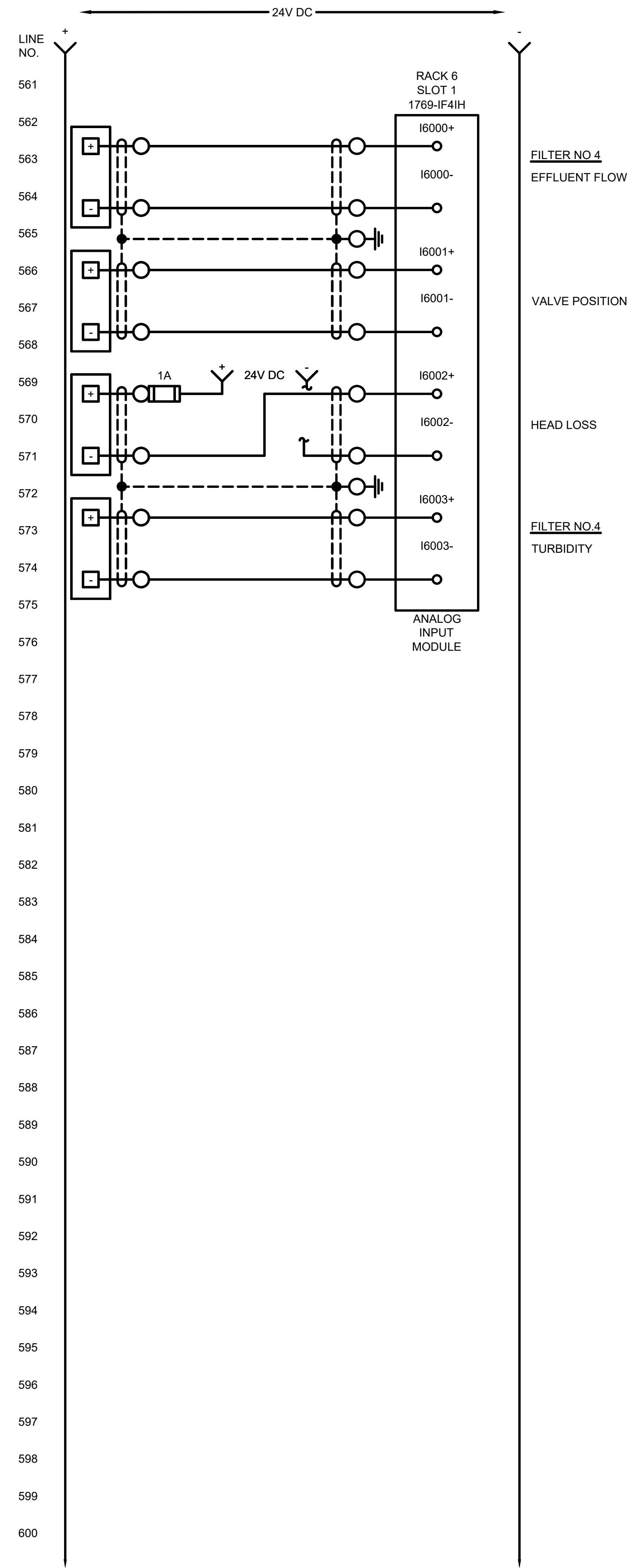


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CITY OF OWOSSO, MICHIGAN
OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES
SCADA SYSTEM UPGRADES
INSTRUMENTATION
HIGH SERVICE CONTROL PANEL (CP-HSCP)
CONTROL PANEL WIRING DIAGRAM

Project No.: 200-280565-21002
Designed By: GCJ
Drawn By: JLS
Checked By:

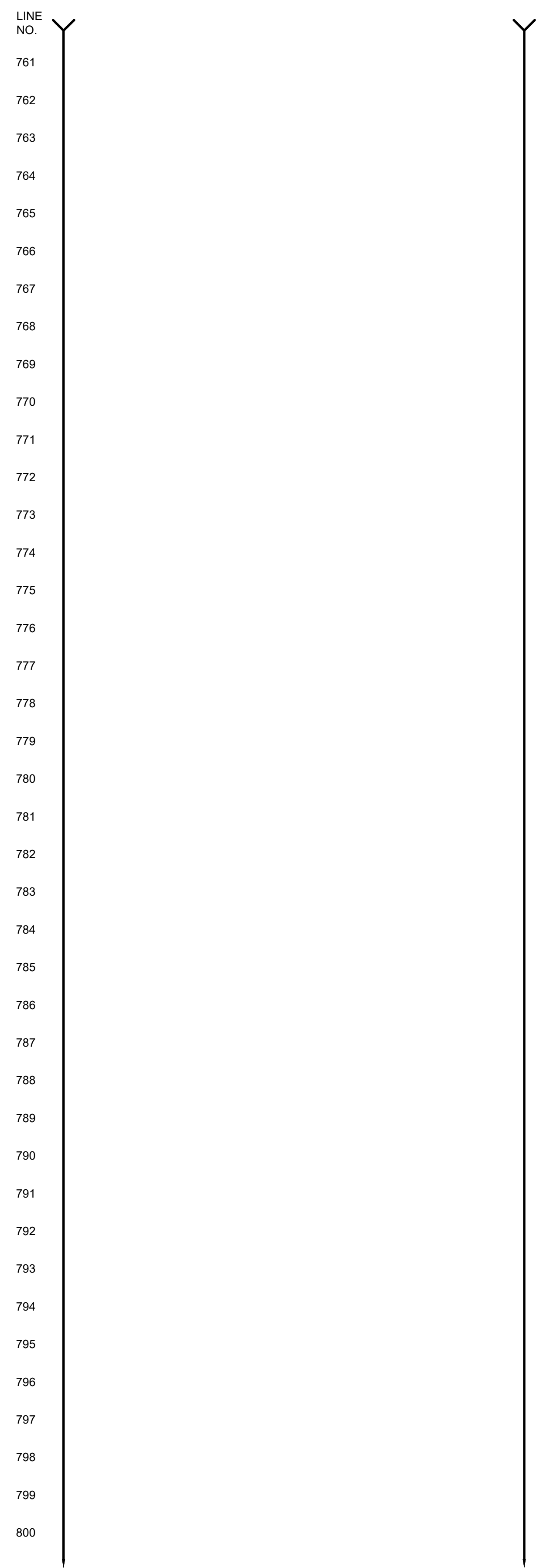
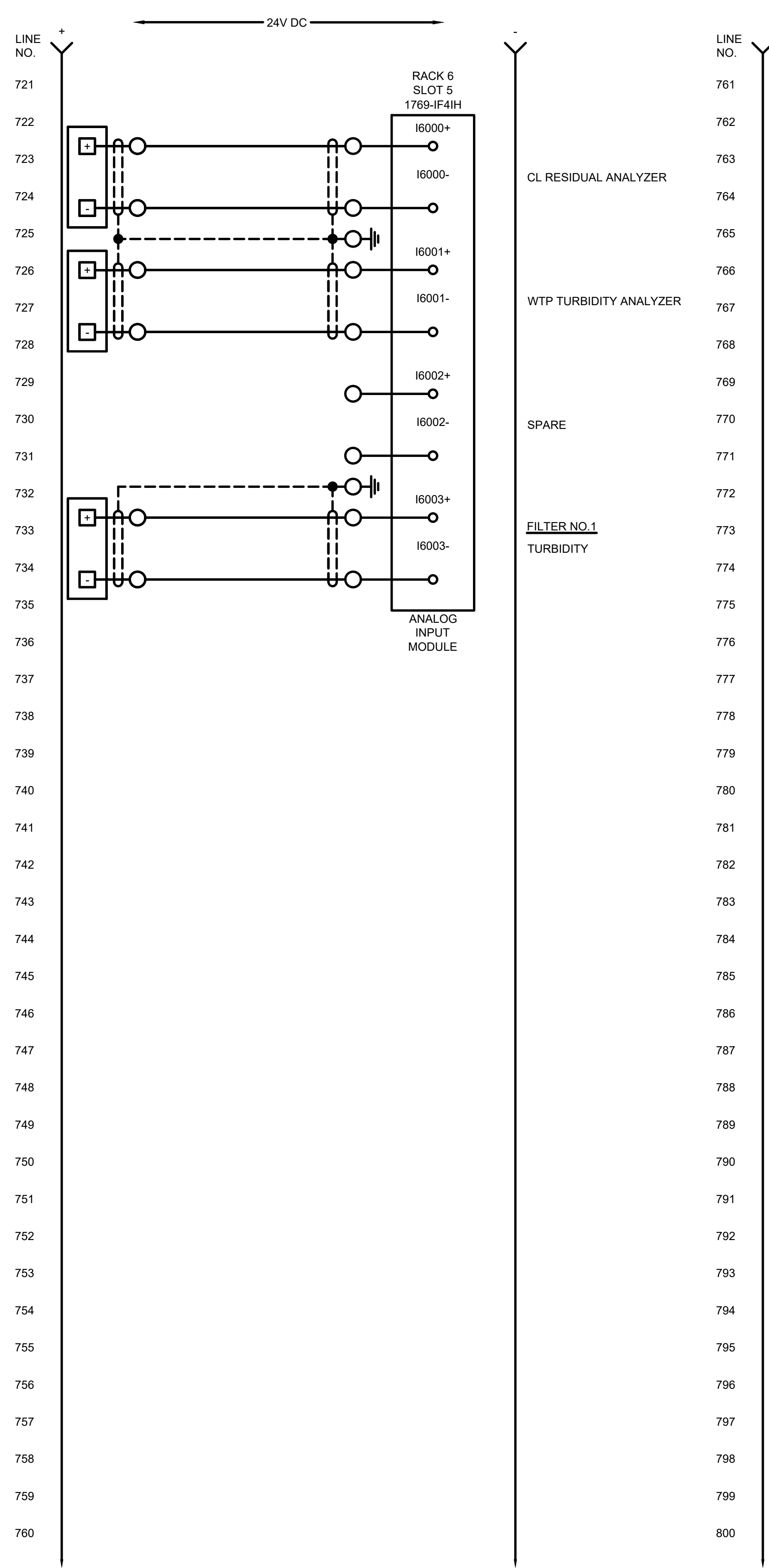
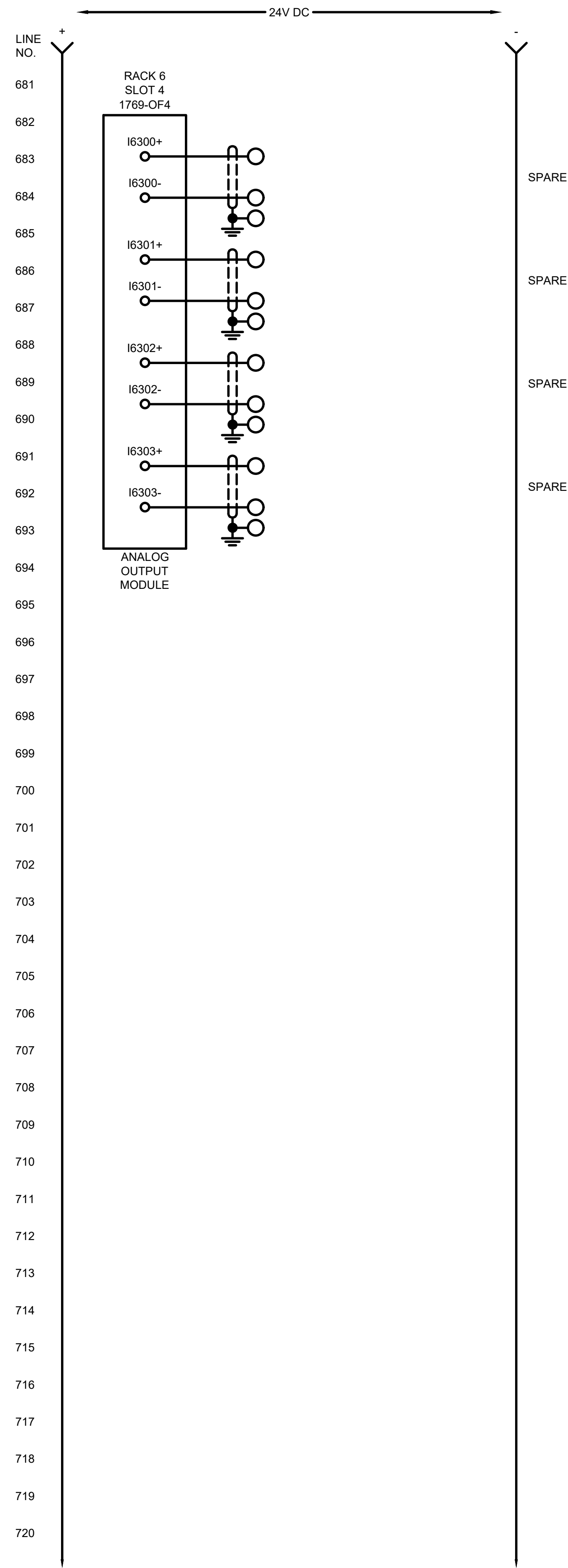


MARK	DATE	DESCRIPTION	BY

CITY OF OWOSSO, MICHIGAN
OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES
SCADA SYSTEM UPGRADES
INSTRUMENTATION
HIGH SERVICE CONTROL PANEL (CP-HSCP)
CONTROL PANEL WIRING DIAGRAM

Project No.: 200-280565-21002
Designed By: GCJ
Drawn By: JLS
Checked By:

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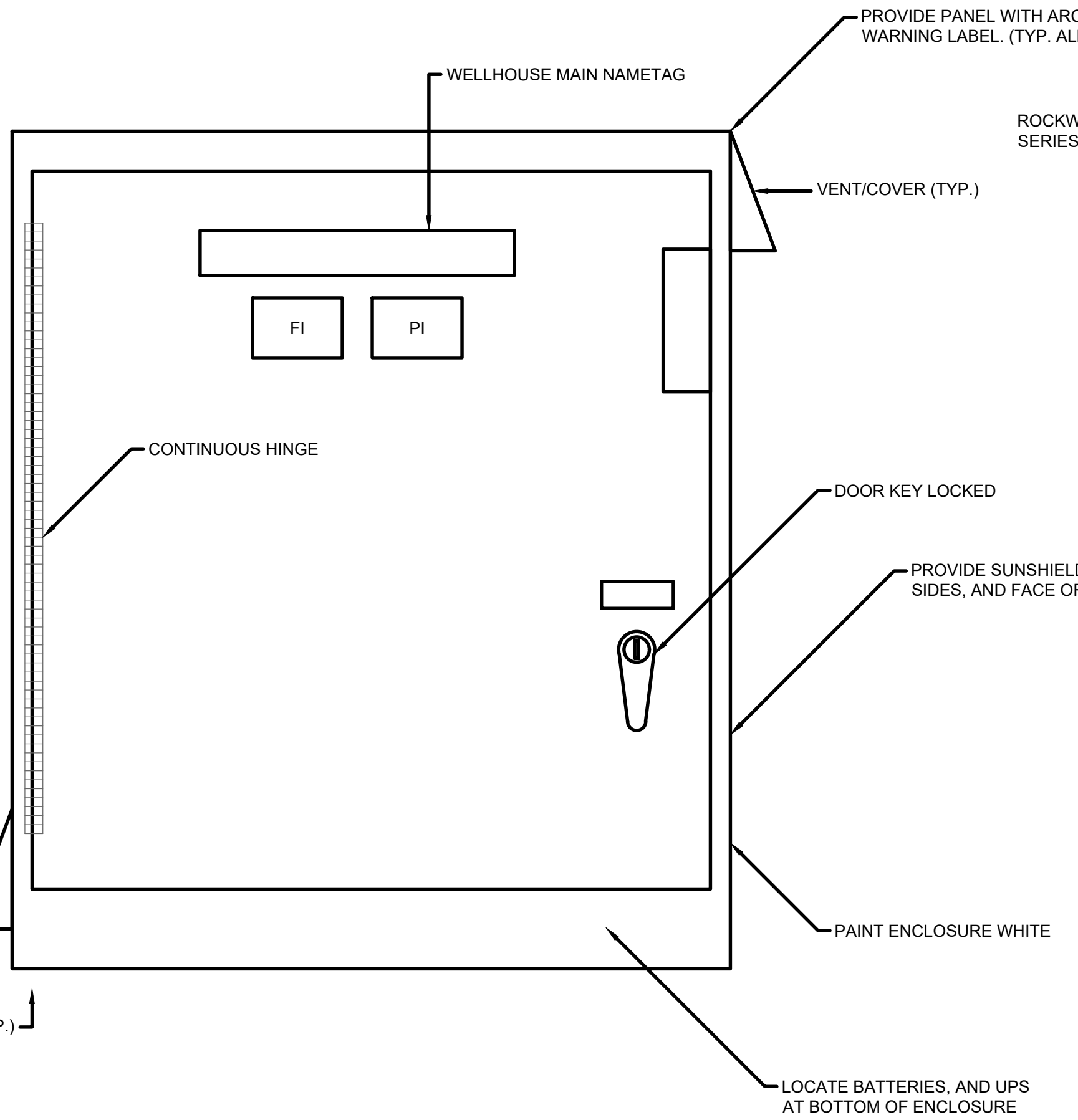
MARK	DATE	DESCRIPTION	BY

CITY OF OWOSSO, MICHIGAN
OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES
SCADA SYSTEM UPGRADES
**INSTRUMENTATION
HIGH SERVICE CONTROL PANEL (CP-HSCP)
CONTROL PANEL WIRING DIAGRAM**

Project No.: 200-280565-21002
Designed By: G.C.J.
Drawn By: J.L.S.
Checked By:

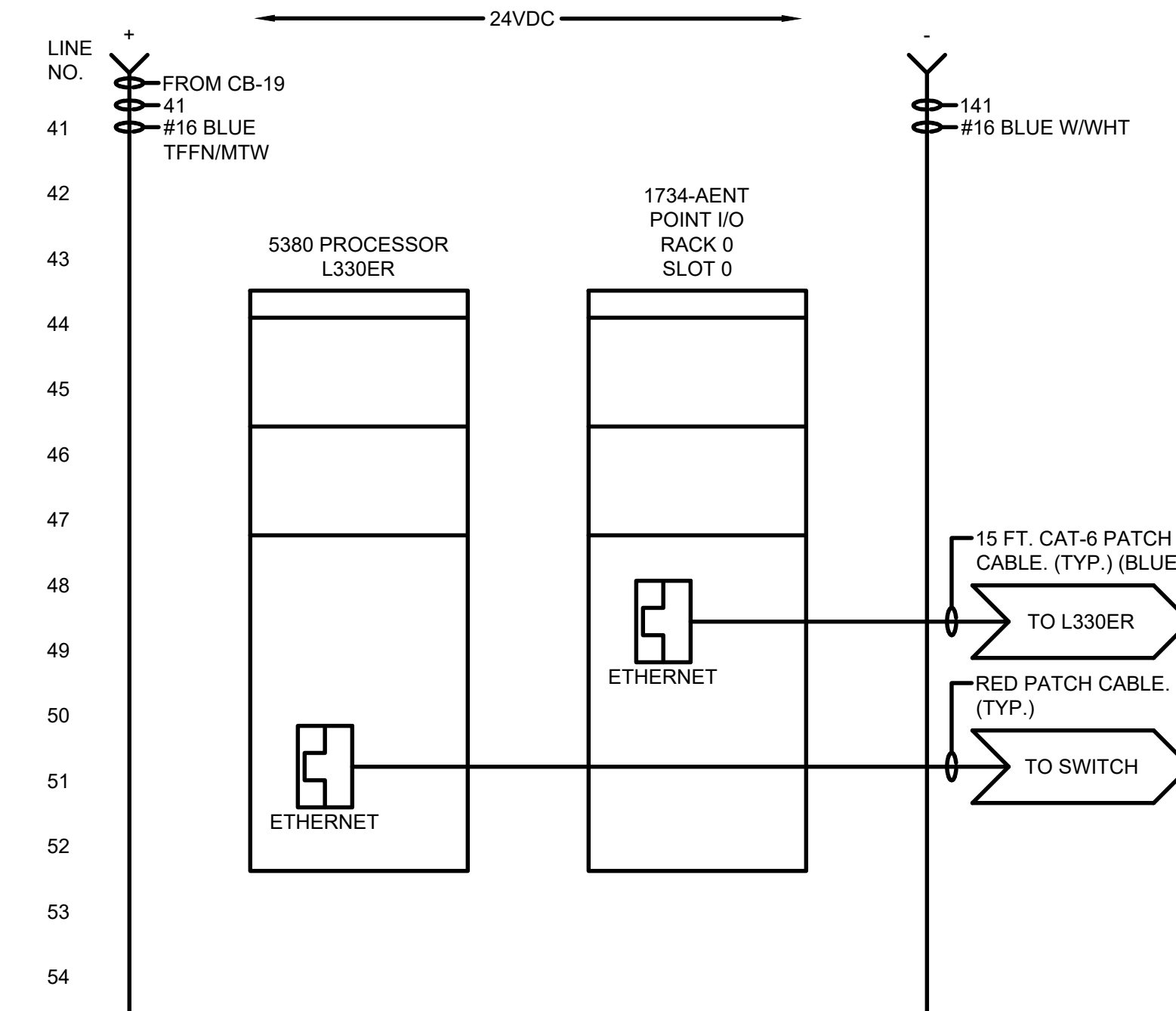
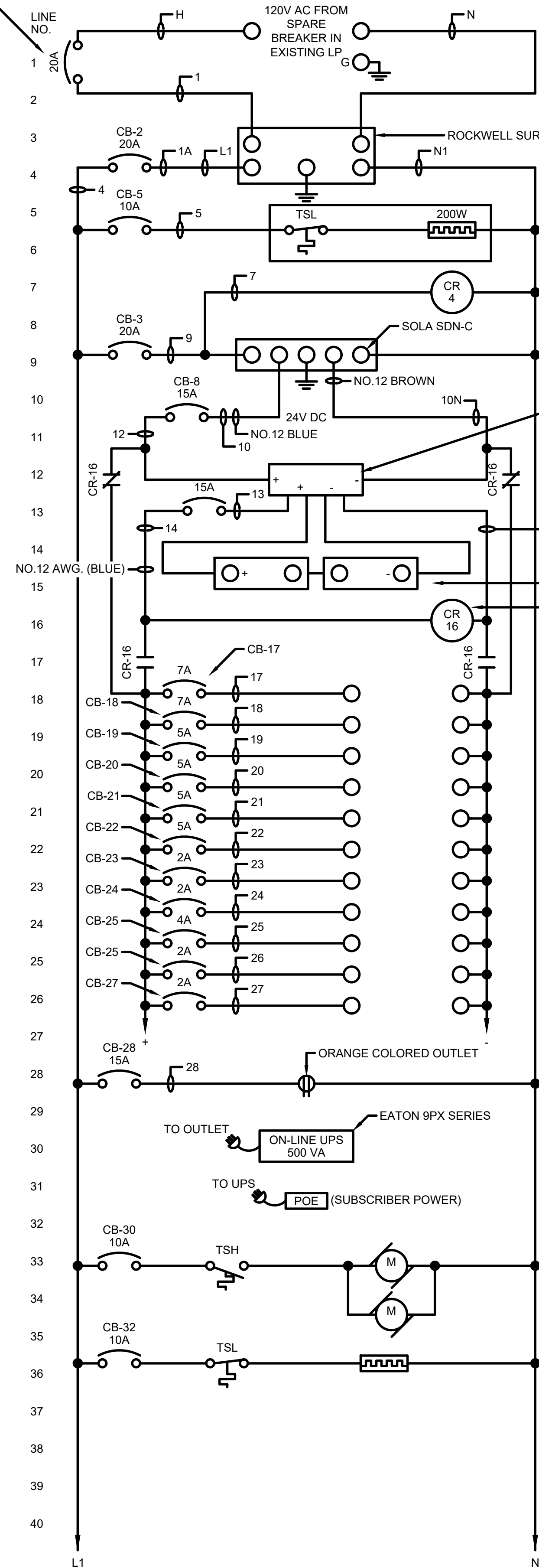
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1 2 3 4 5 6 7



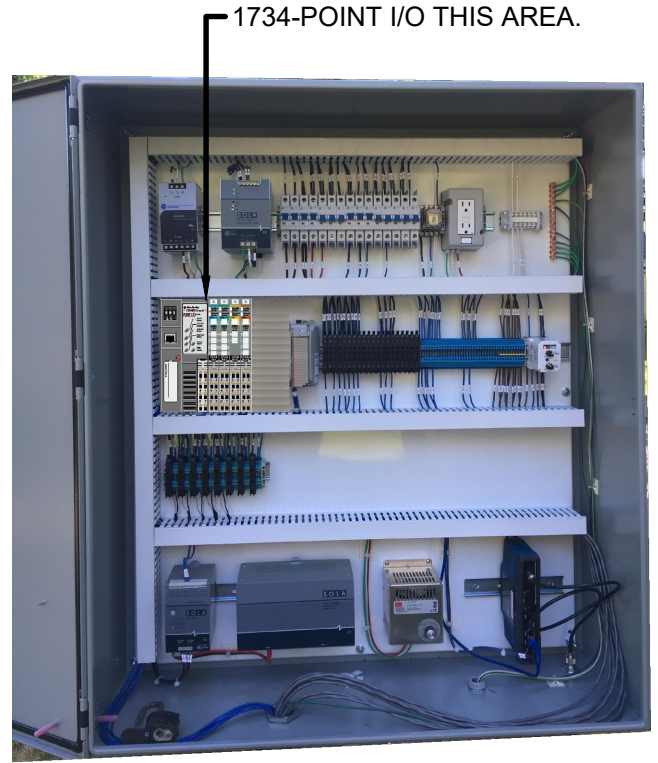
PROVIDE PANEL WITH ARC FLASH WARNING LABEL. (TYP. ALL PANELS)

ROCKWELL 1489-M SERIES. (TYP.)

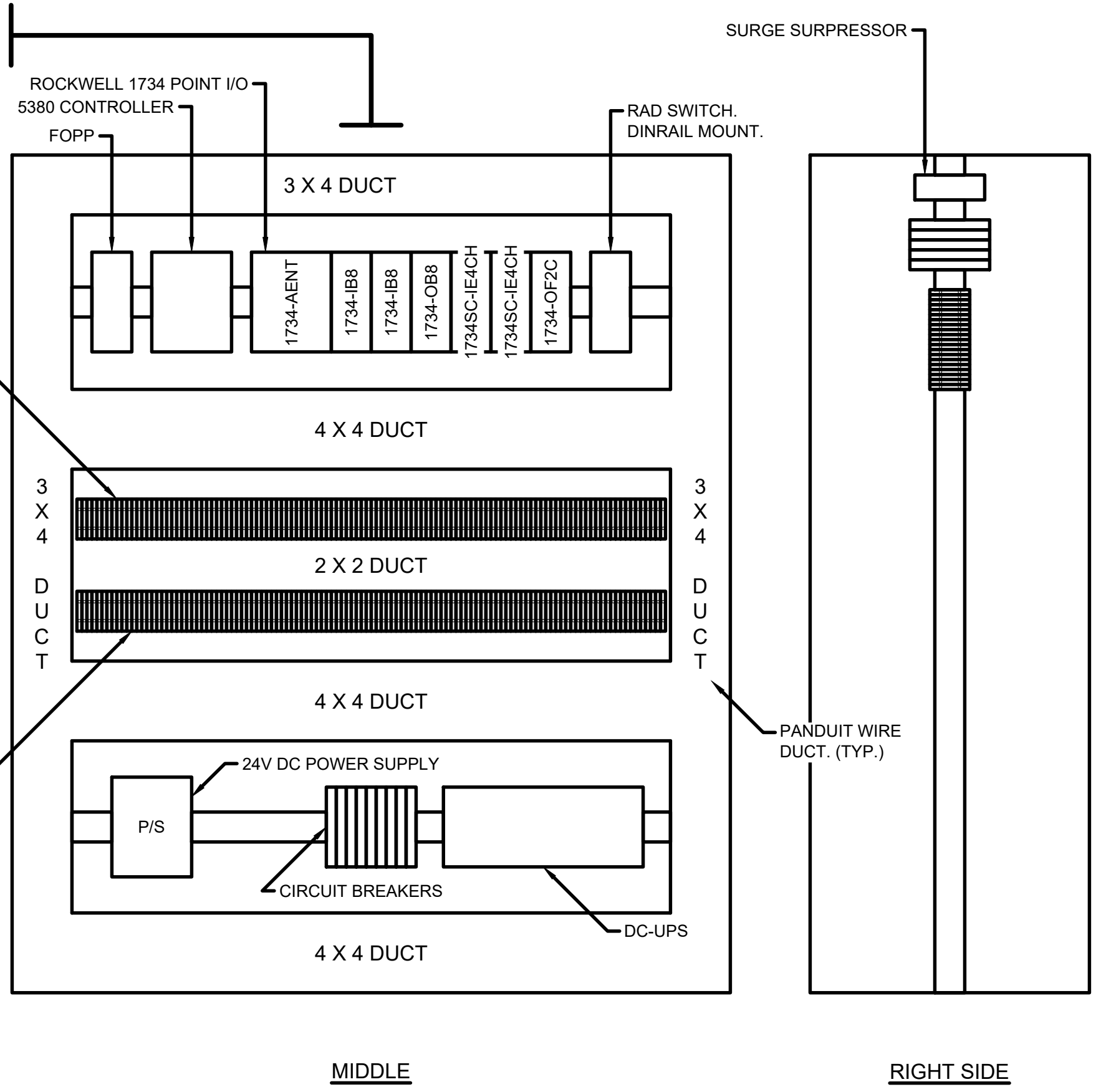


HINTZ WELL CONTROL PANEL LAYOUT

NEMA 4 ENCLOSURE
SIZE: 42"H X 36"W X 12"D (MIN.)



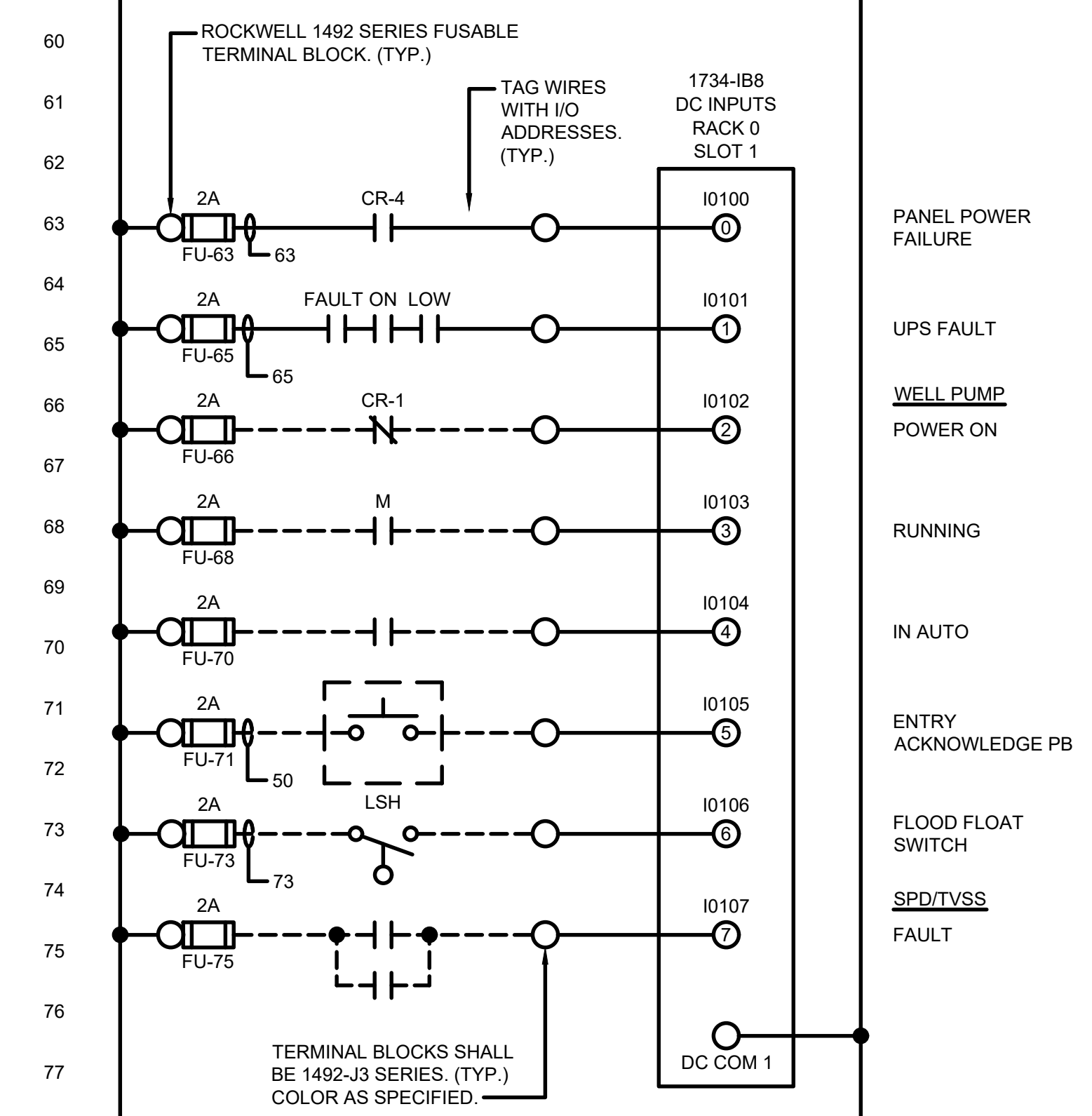
SAMPLE LAYOUT



GENERAL SUBPLATE LAYOUT

PAINT INSIDE, GLOSS WHITE.

NOT ALL SUBPLATE DEVICES ARE SHOWN. SEE WIRING DIAGRAMS FOR EQUIPMENT REQUIRED.

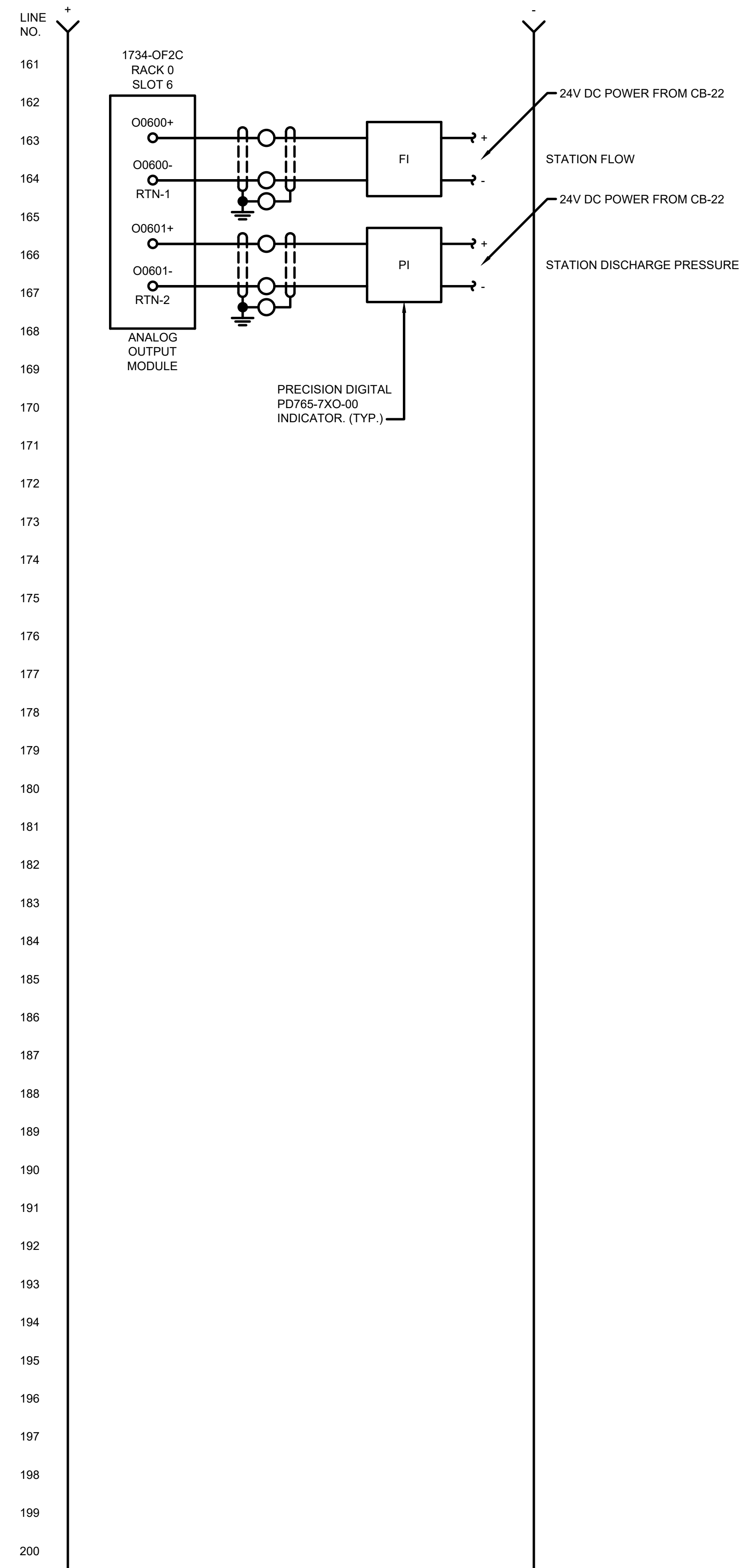
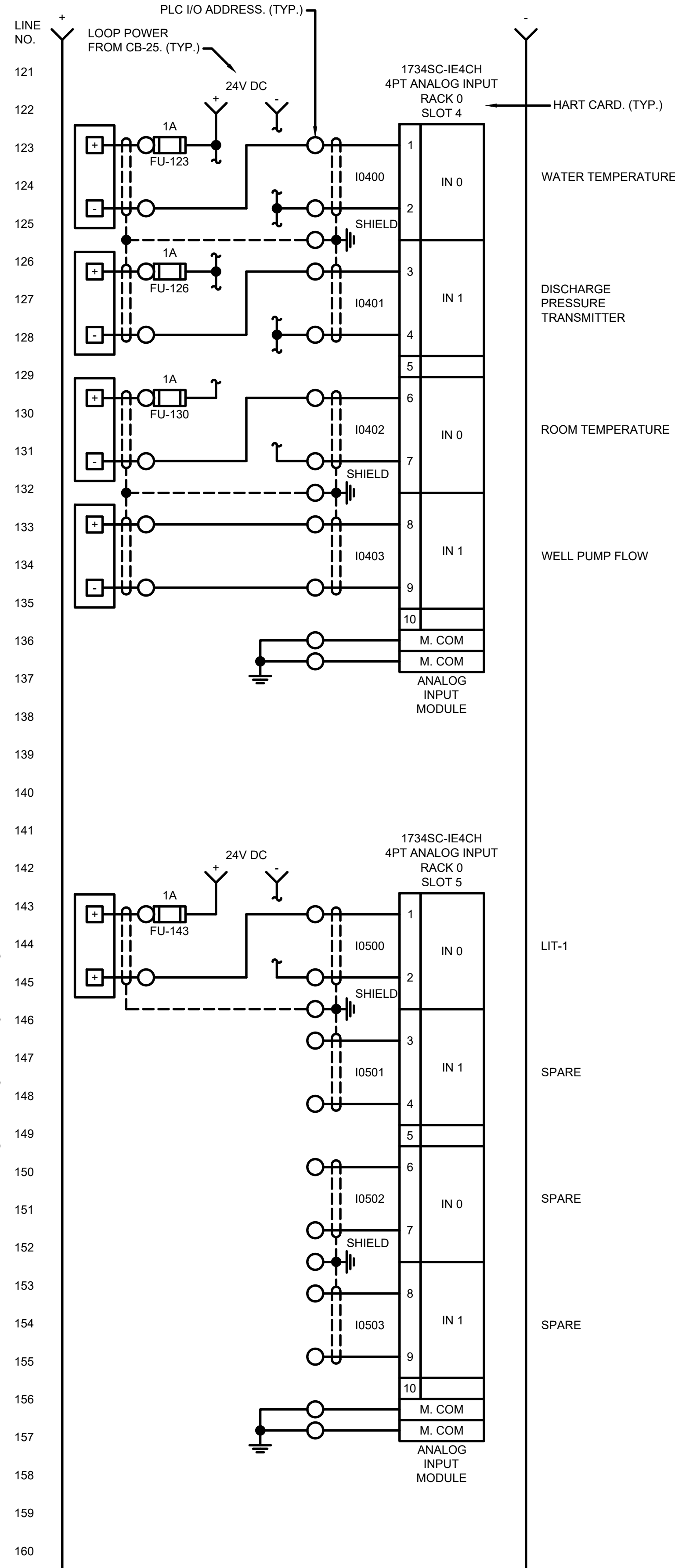
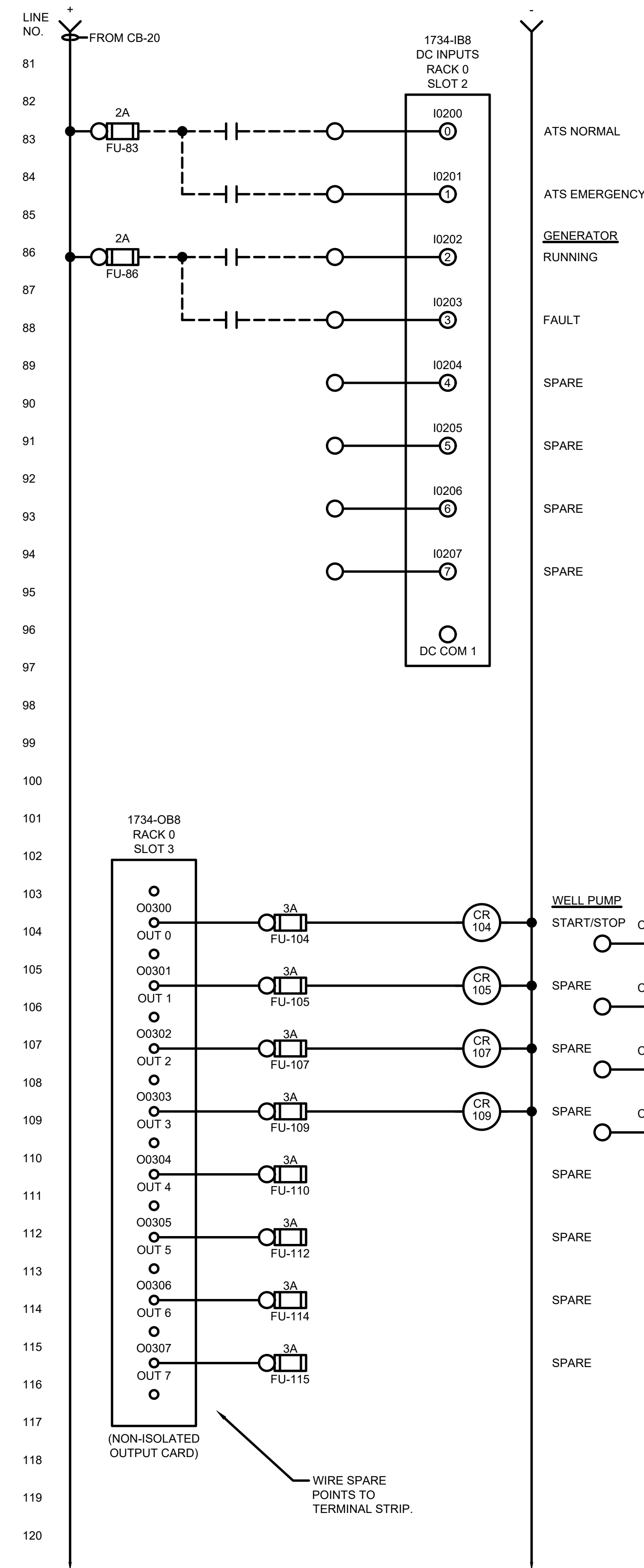


MARK	DATE	DESCRIPTION	BY

CITY OF OWOSSO, MICHIGAN
OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES
SCADA SYSTEM UPGRADES
HINTZ WELL CONTROL PANEL LAYOUT, WIRING DIAGRAM

Project No.: 200-280565-21002
Designed By: GCJ
Drawn By: JLS
Checked By:

11/21/2022 1:49:51 PM - I:\TT\LOCAL\PROJECTS\MANN ARBOR\IER\280565\200-280565-2\1002\CAD\SHSHEETFILES\I-340_HINTZ_WELL_CP_WIR DIA.DWG - SHANK, JASON



MARK	DATE	DESCRIPTION

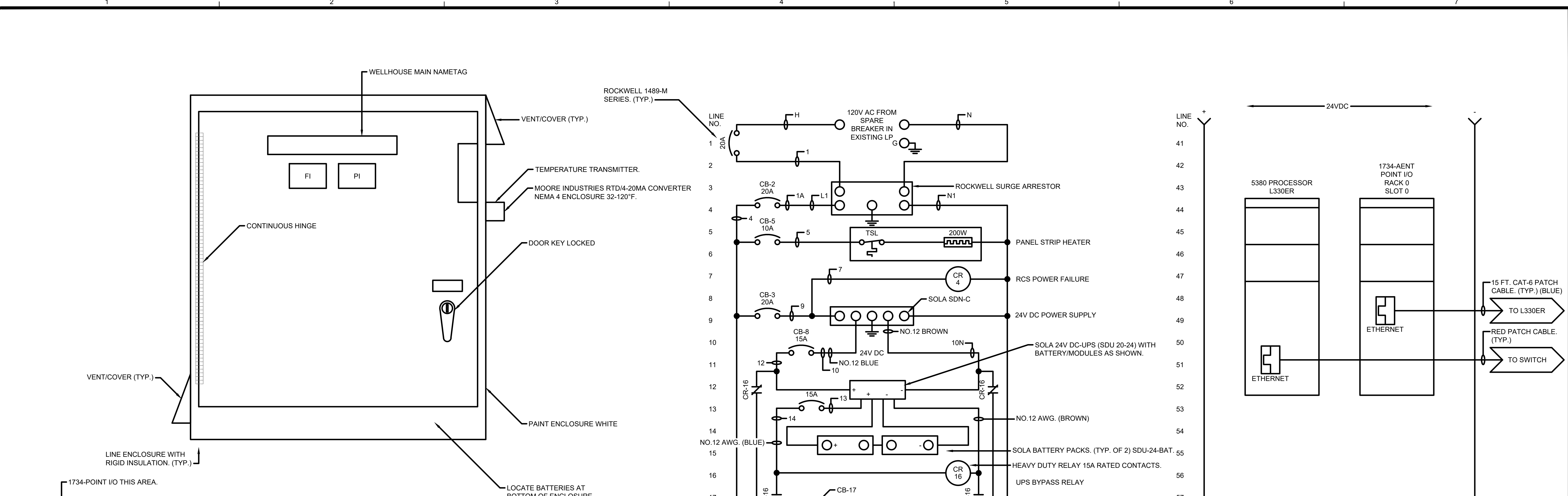
CITY OF OWOSSO, MICHIGAN
OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES
SCADA SYSTEM UPGRADES
**INSTUMENTATION
HINTZ WELL CONTROL PANEL
WIRING DIAGRAM**

Project No.: 200-280565-21002
Designed By: GCJ
Drawn By: JLS
Checked By:

I-340
OF 62
Bar Measures 1 inch

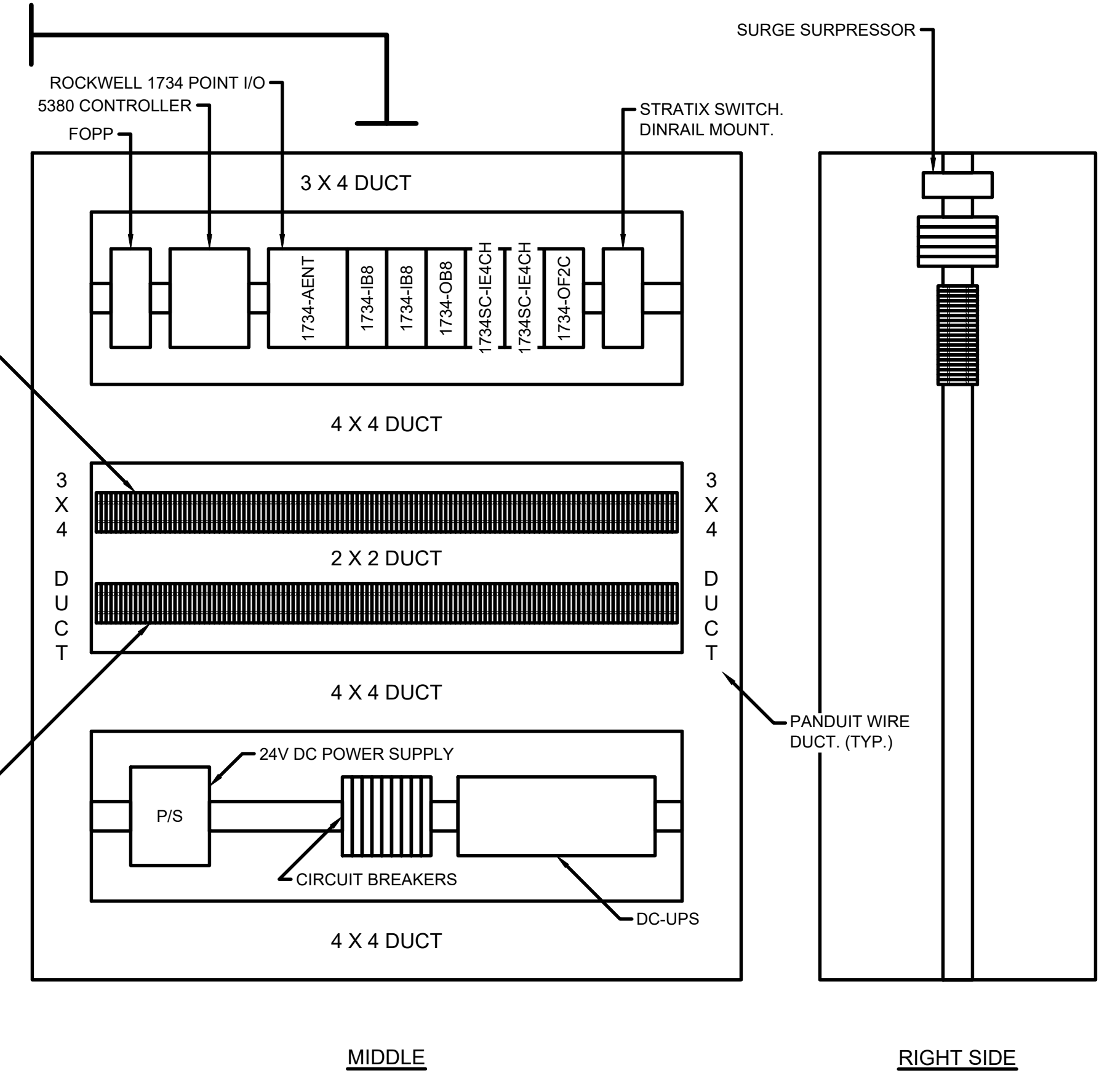
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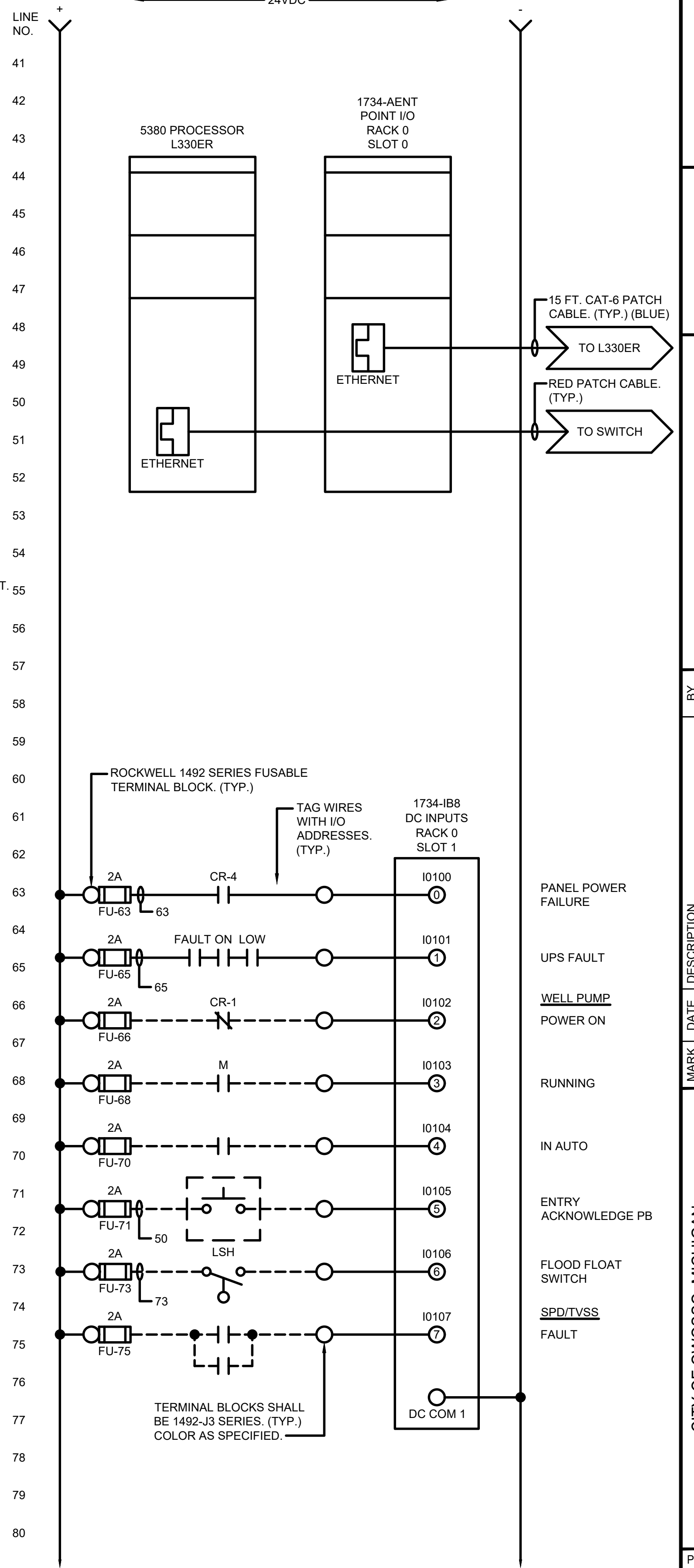
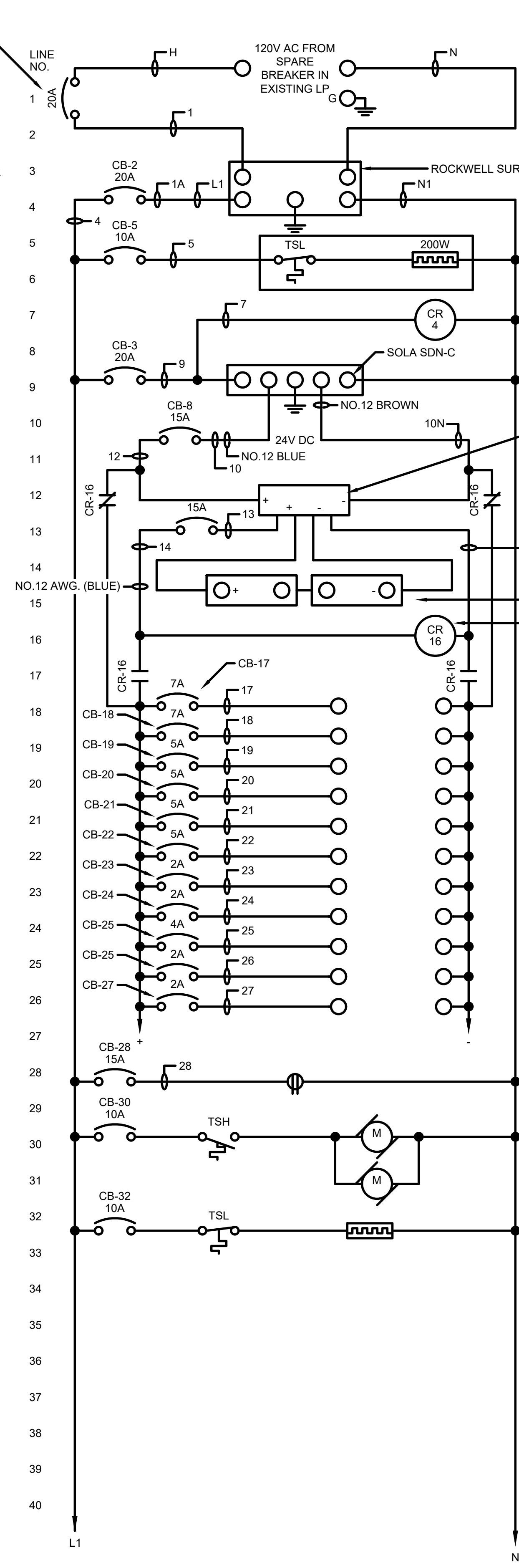
PALMER WELL NO.2 CONTROL PANEL LAYOUT
 NEMA 4 ENCLOSURE
 SIZE: 42"H X 36"W X 12"D (MIN.)

SAMPLE LAYOUT



GENERAL SUBPLATE LAYOUT
 PAINT INSIDE: GLOSS WHITE.

NOT ALL SUBPLATE DEVICES ARE SHOWN. SEE WIRING DIAGRAMS FOR EQUIPMENT REQUIRED.

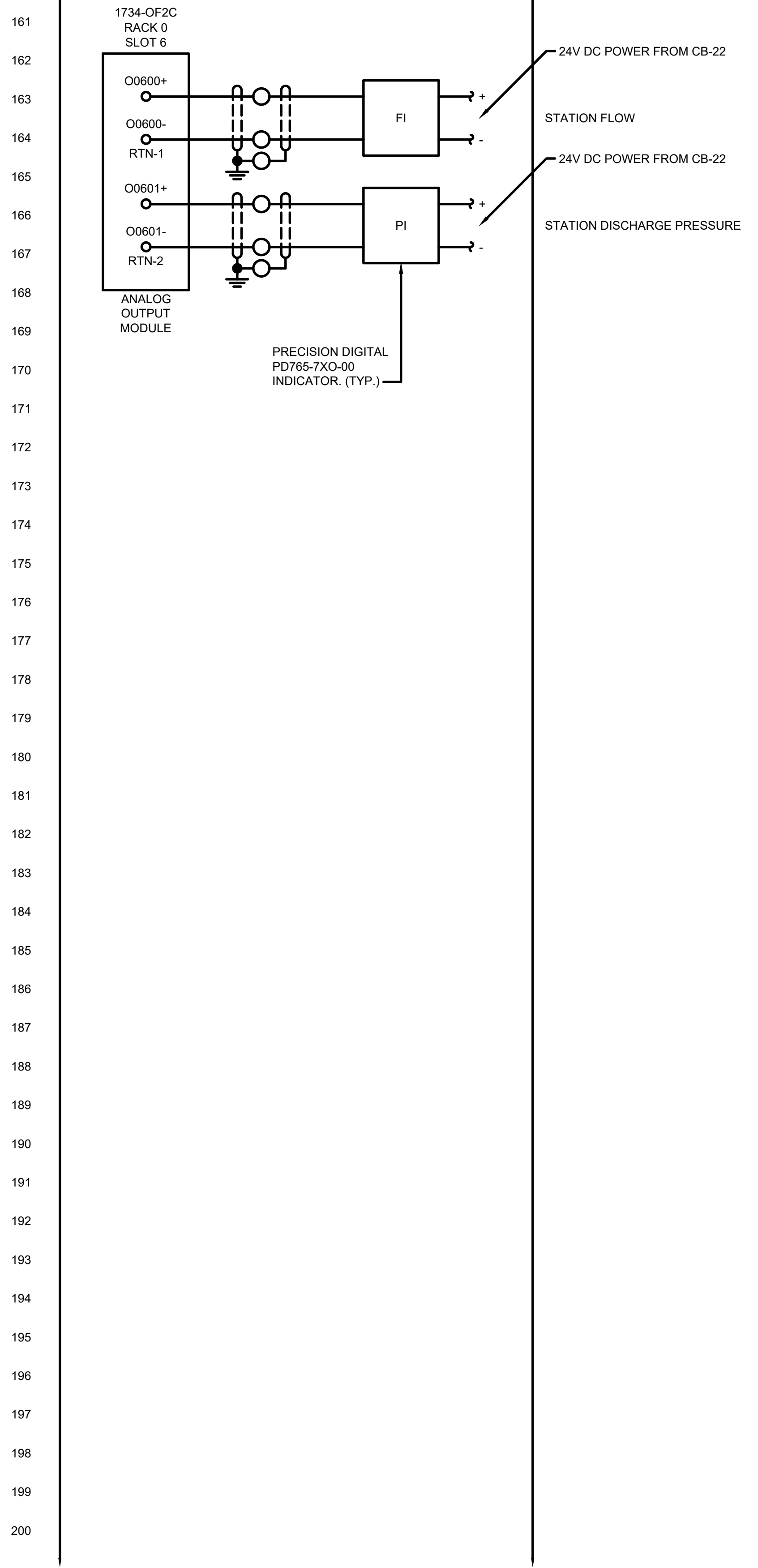
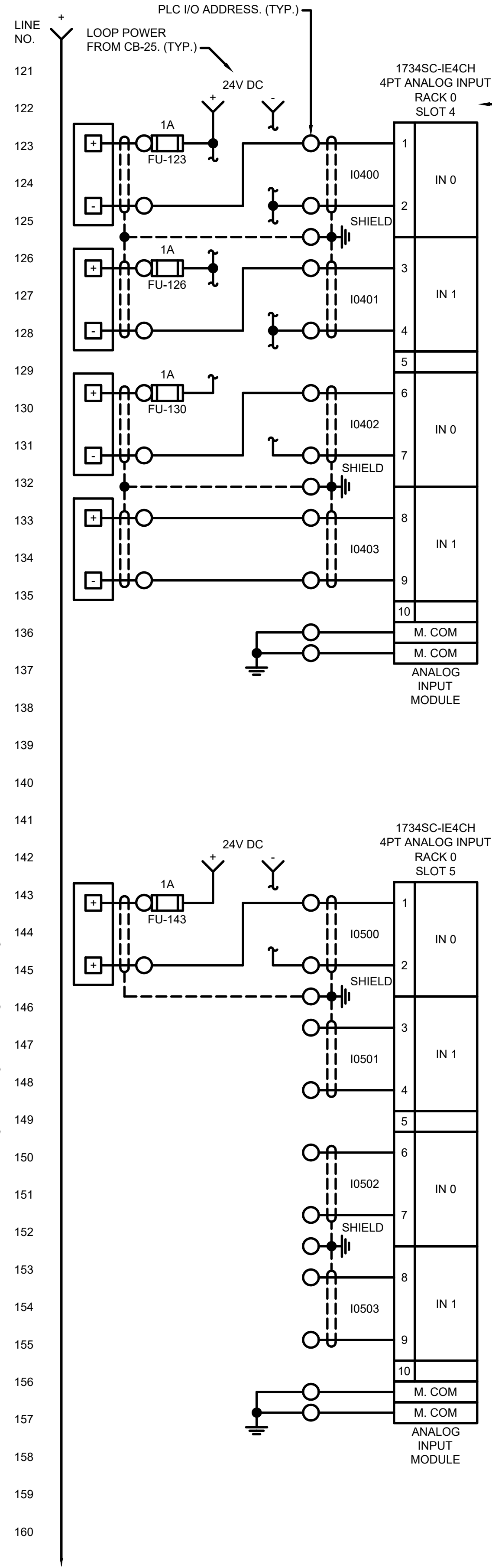
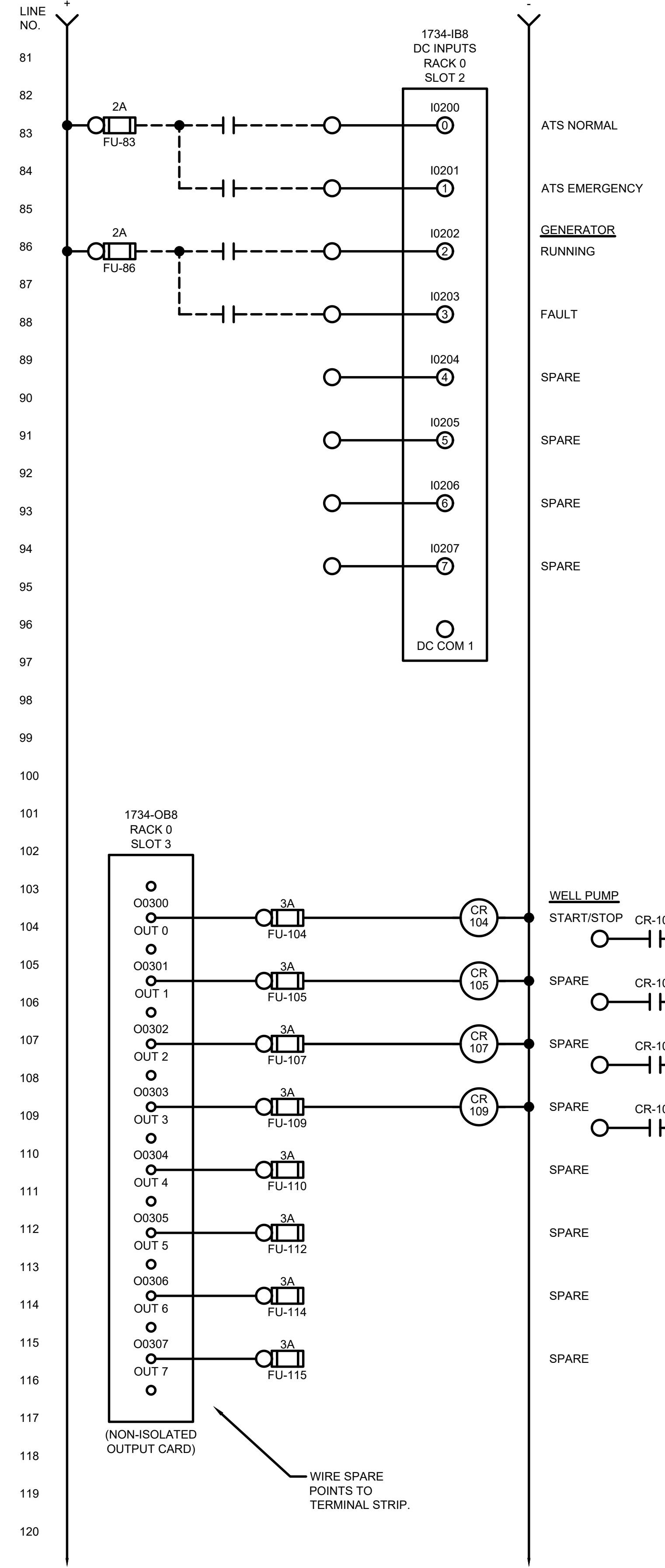


TERMINAL BLOCKS SHALL BE 1492-J3 SERIES, (TYP.) COLOR AS SPECIFIED.

MARK	DATE	DESCRIPTION

CITY OF OWOSSO, MICHIGAN
 OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES
 SCADA SYSTEM UPGRADES
PALMER WELL NO.2 CONTROL PANEL
 LAYOUT, WIRING DIAGRAM

Project No.: 200-280565-21002
 Designed By: GCJ
 Drawn By: JLS
 Checked By:



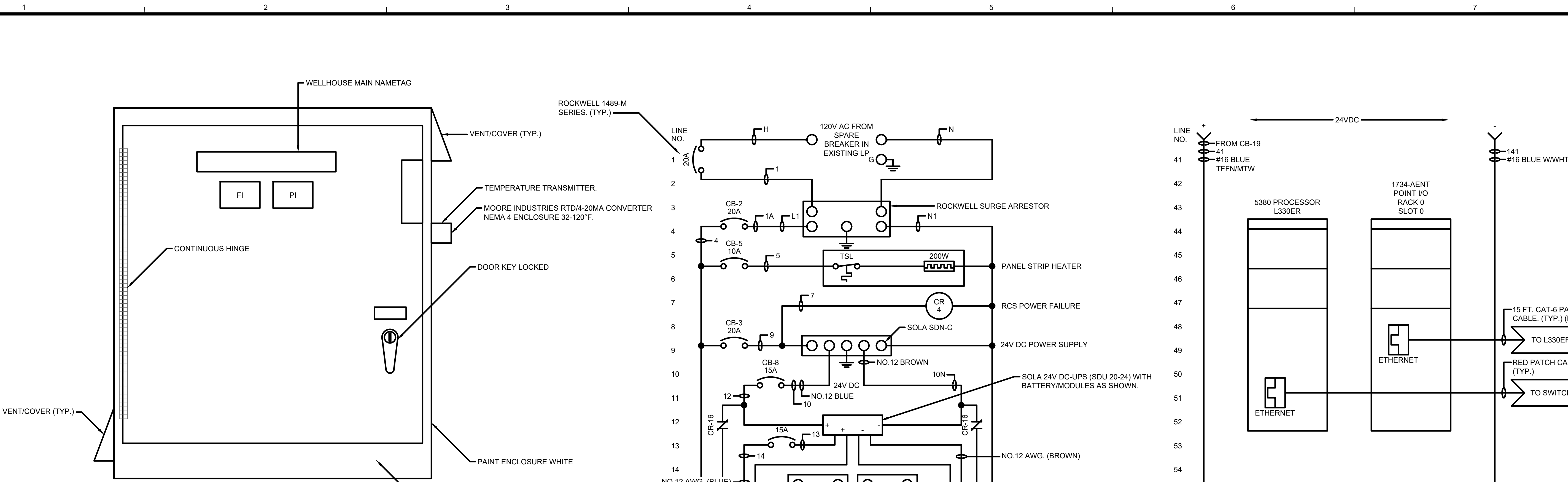
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MARK	DATE	DESCRIPTION

CITY OF OWOSSO, MICHIGAN
OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES
SCADA SYSTEM UPGRADES
**INSTRUMENTATION
PALMER WELL NO.2 CONTROL PANEL
WIRING DIAGRAM**

Project No.: 200-280565-21002
Designed By: GCJ
Drawn By: JLS
Checked By:

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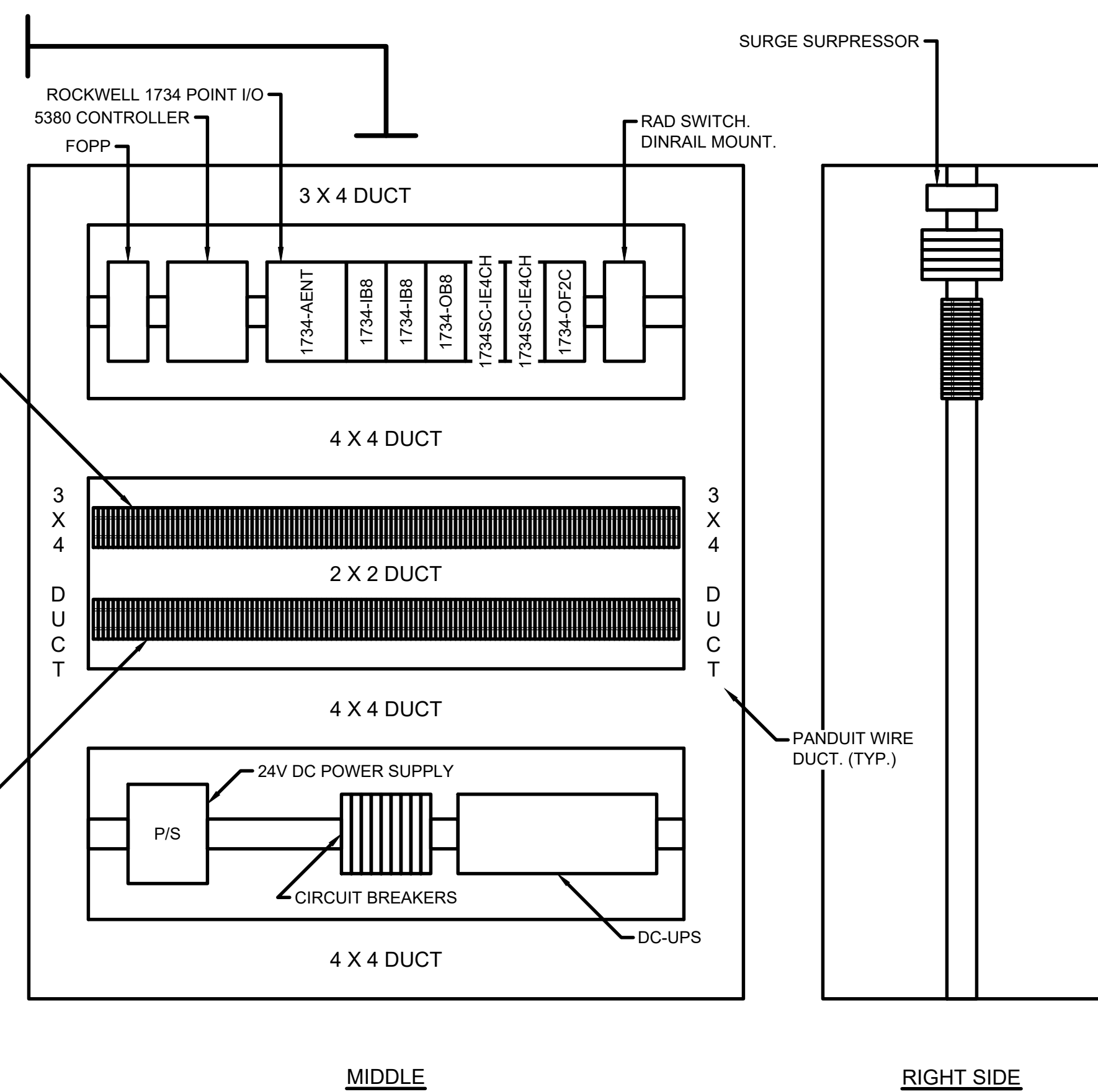
PALMER WELL NO.3A CONTROL PANEL LAYOUT
 NEMA 4 ENCLOSURE
 SIZE: 42"H X 36"W X 12"D (MIN.)



SAMPLE LAYOUT

DISCRETE TERMINAL BLOCKS/FUSES

ANALOG TERMINAL BLOCKS

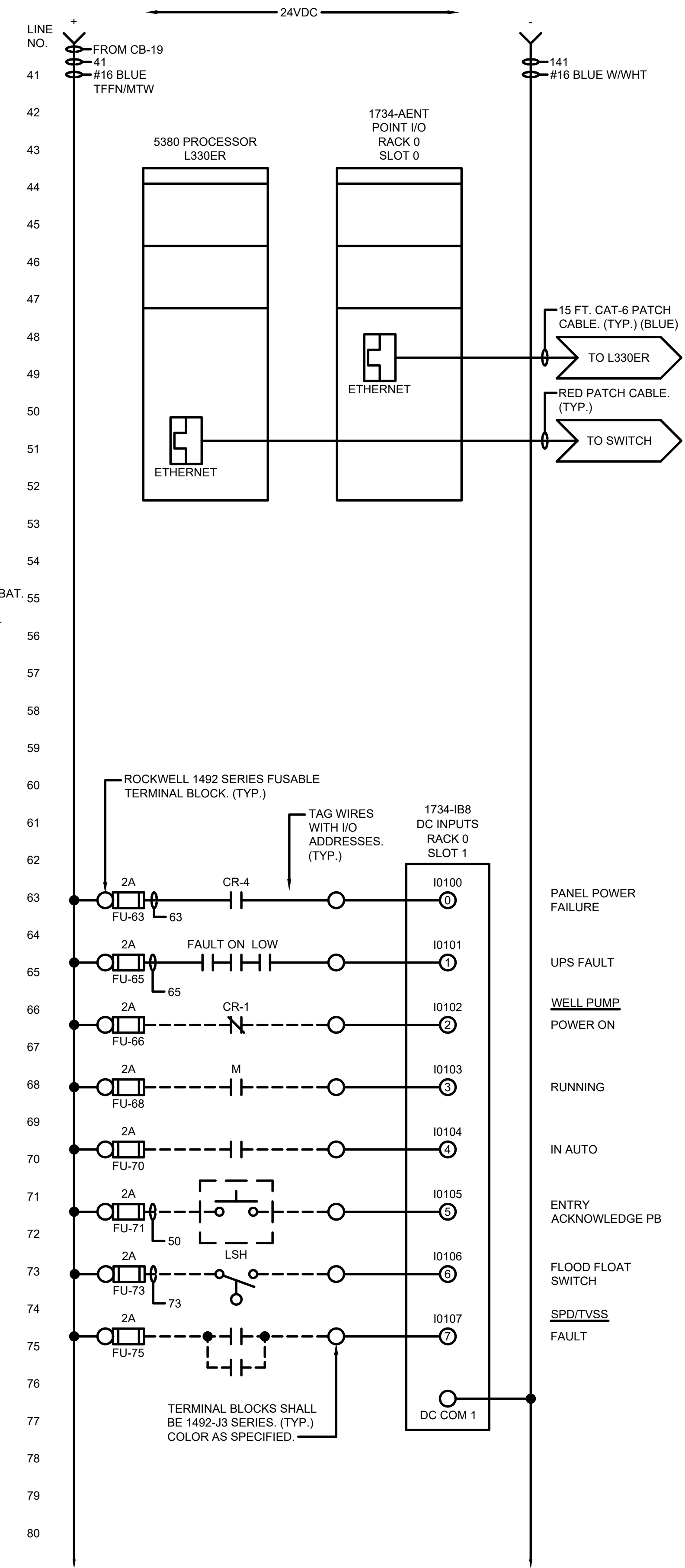
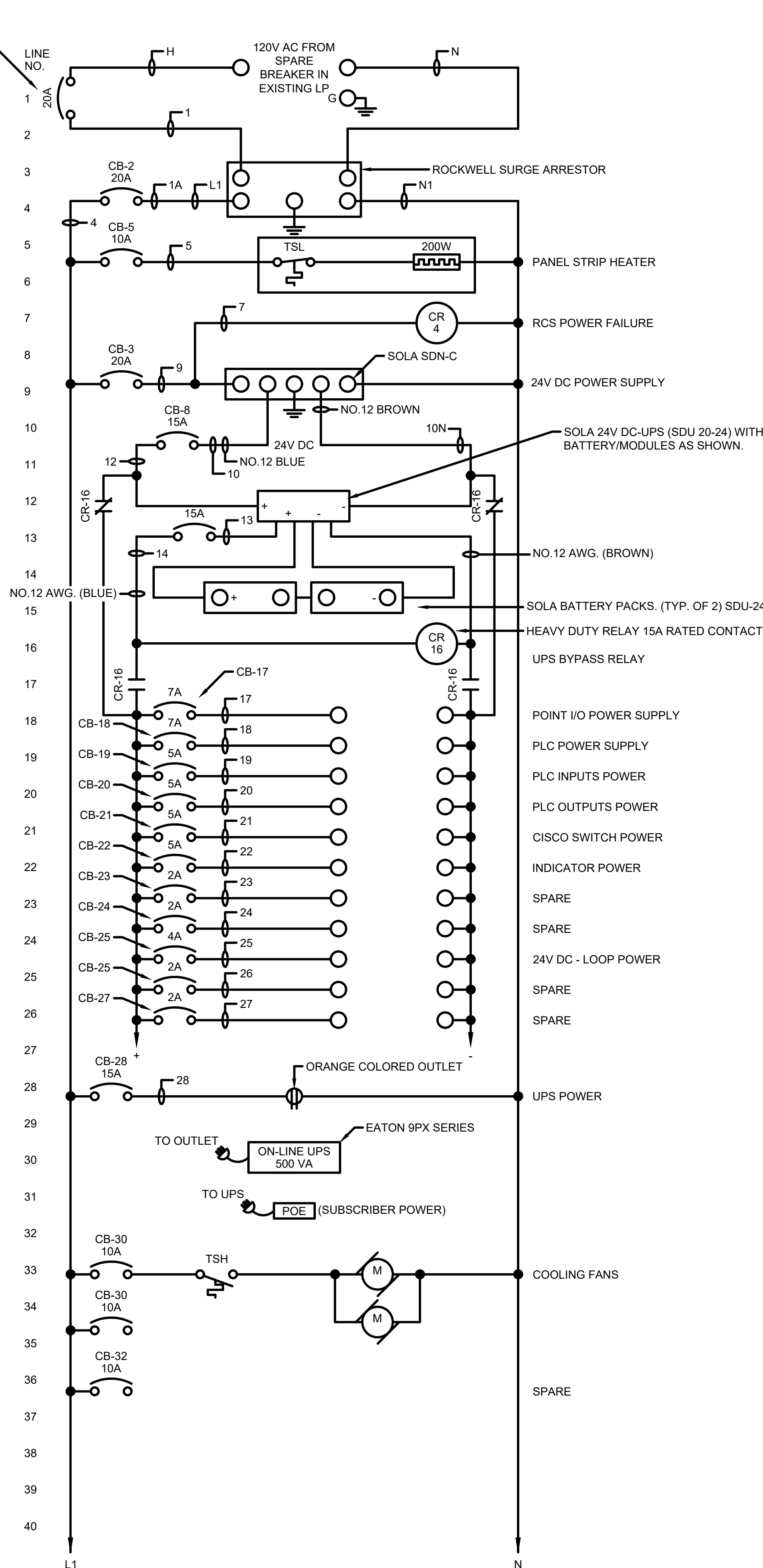


MIDDLE

RIGHT SIDE

GENERAL SUBPLATE LAYOUT
 PAINT INSIDE, GLOSS WHITE.

NOT ALL SUBPLATE DEVICES ARE SHOWN. SEE WIRING DIAGRAMS FOR EQUIPMENT REQUIRED.

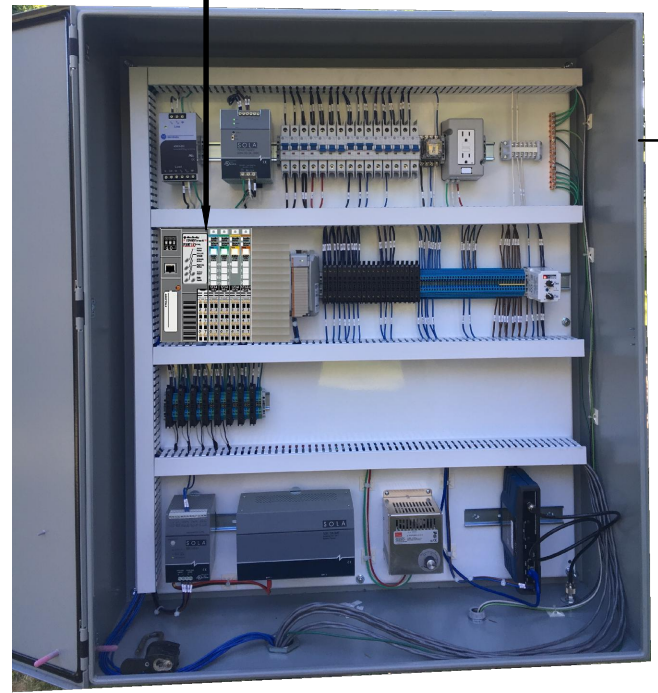
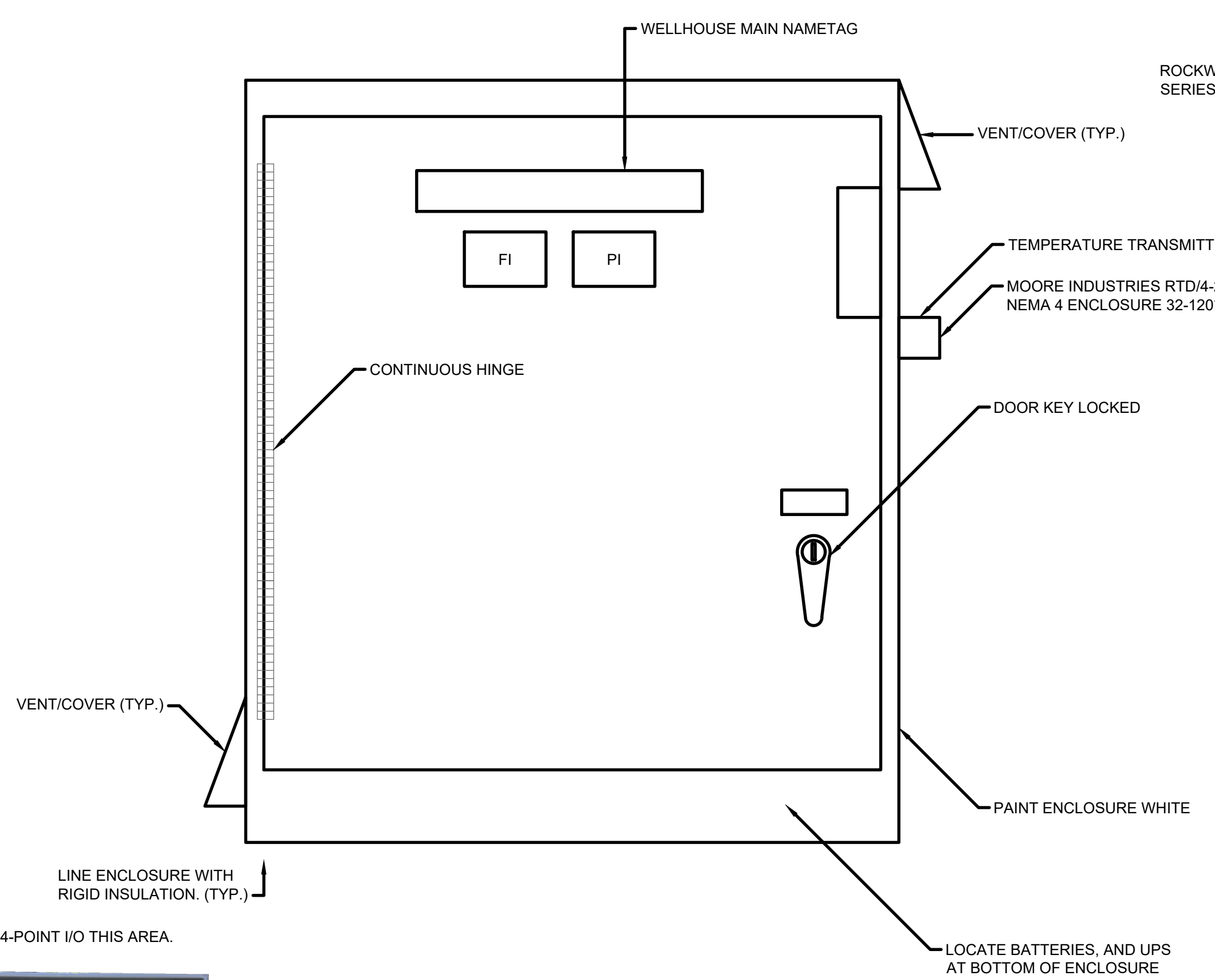


MARK	DATE	DESCRIPTION

CITY OF OWOSSO, MICHIGAN
 OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES
 SCADA SYSTEM UPGRADES
**PALMER WELL NO.3A CONTROL PANEL
 LAYOUT, WIRING DIAGRAM**

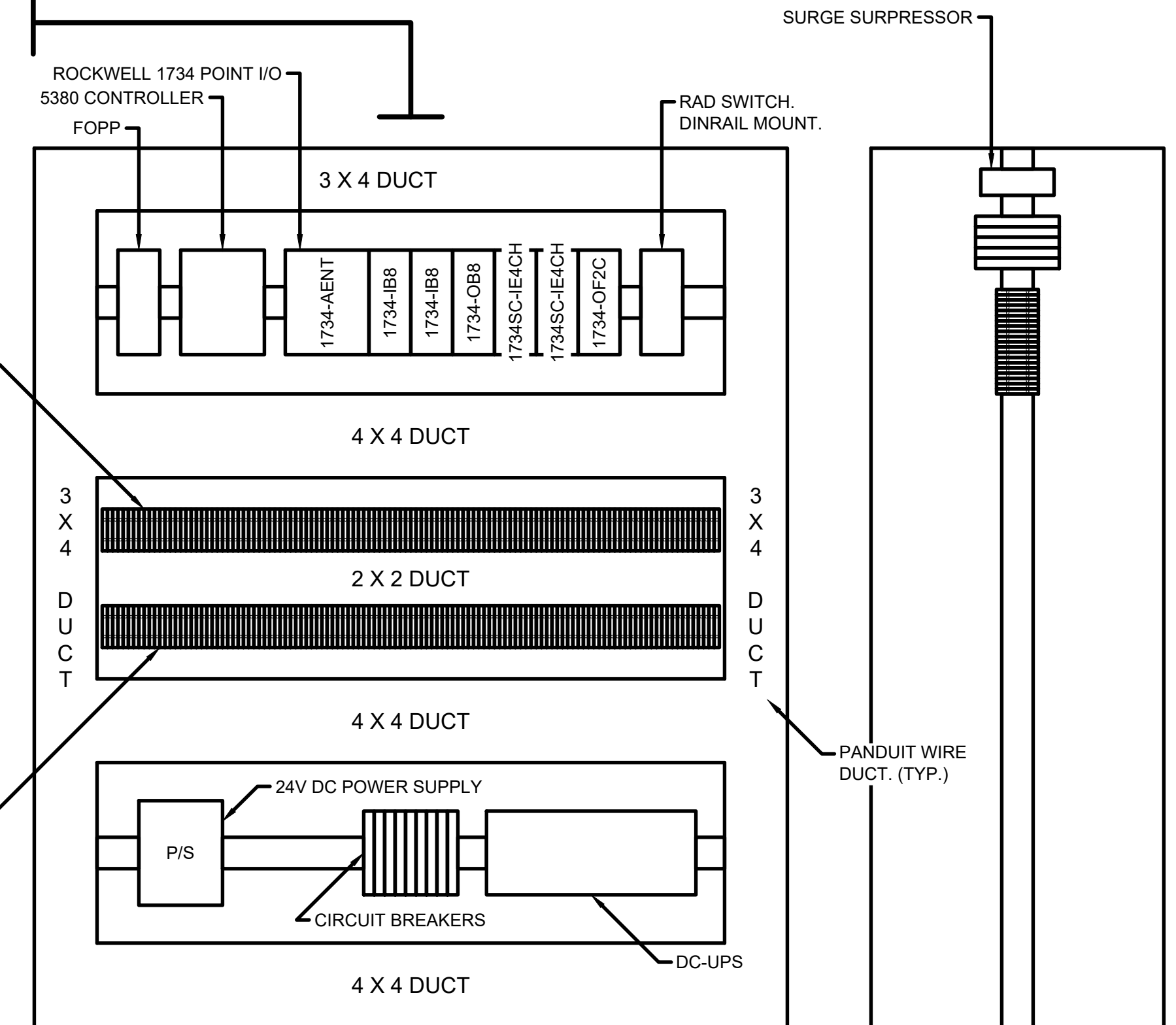
Project No.: 200-280565-21002
 Designed By: G.C.J.
 Drawn By: J.L.S.
 Checked By:

11/22/2022 11:36:54 AM - \\TT.LOCAL\IER\PROJECTS\ANN ARBOR\IER\280565\200-280565-21002\CAD\SHEETFILES\EI-345_JUNIPER_WELL_1-CP_PANEL_LAYOUT.DWG - SHANK_JASON



JUNIPER WELL NO.1 CONTROL PANEL LAYOUT

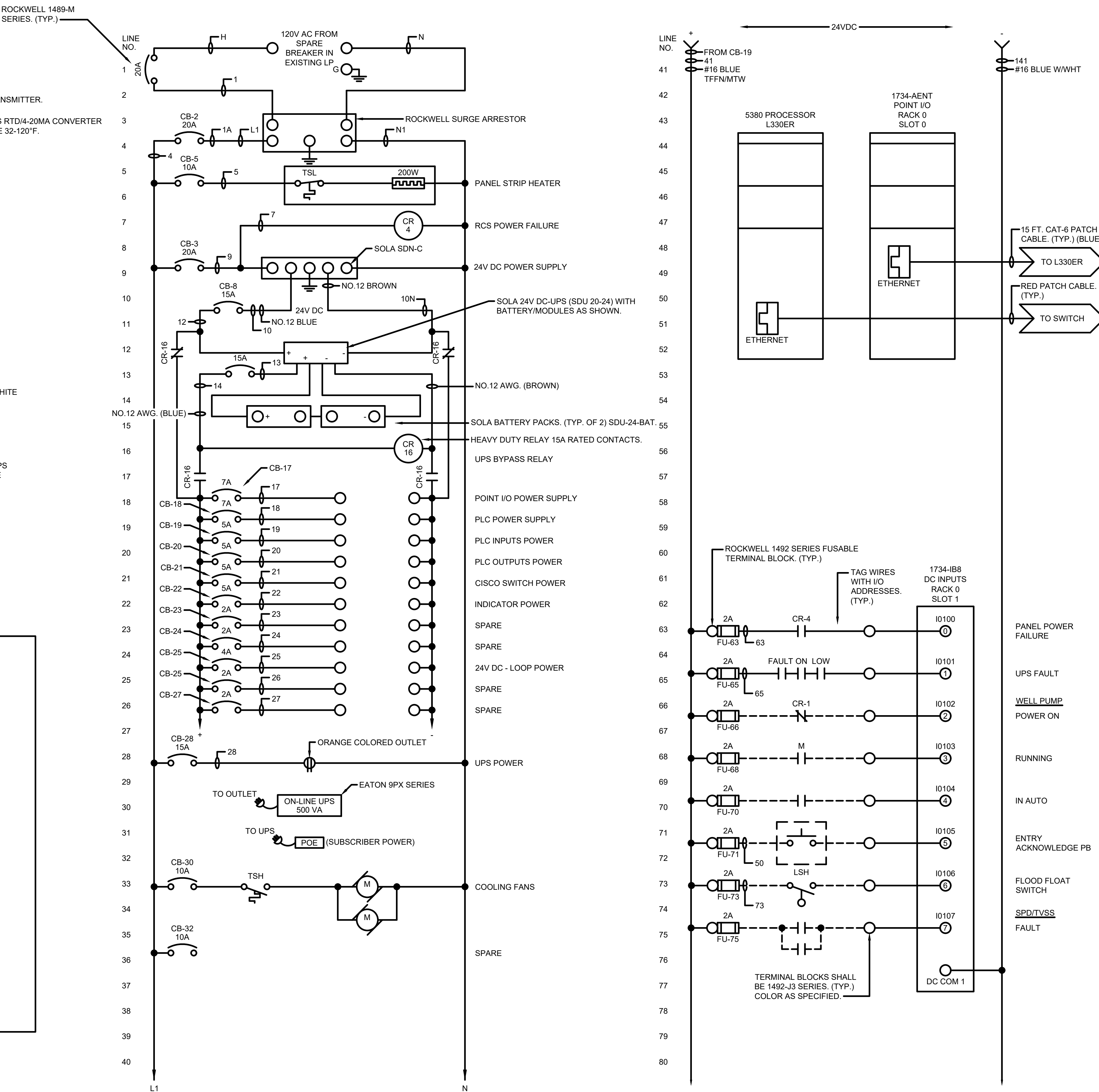
NEMA 4 ENCLOSURE
SIZE: 42"H X 36"W X 12"D (MIN.)



GENERAL SUBPLATE LAYOUT

PAINT INSIDE, GLOSS WHITE.

NOT ALL SUBPLATE DEVICES ARE SHOWN. SEE WIRING DIAGRAMS FOR EQUIPMENT REQUIRED.

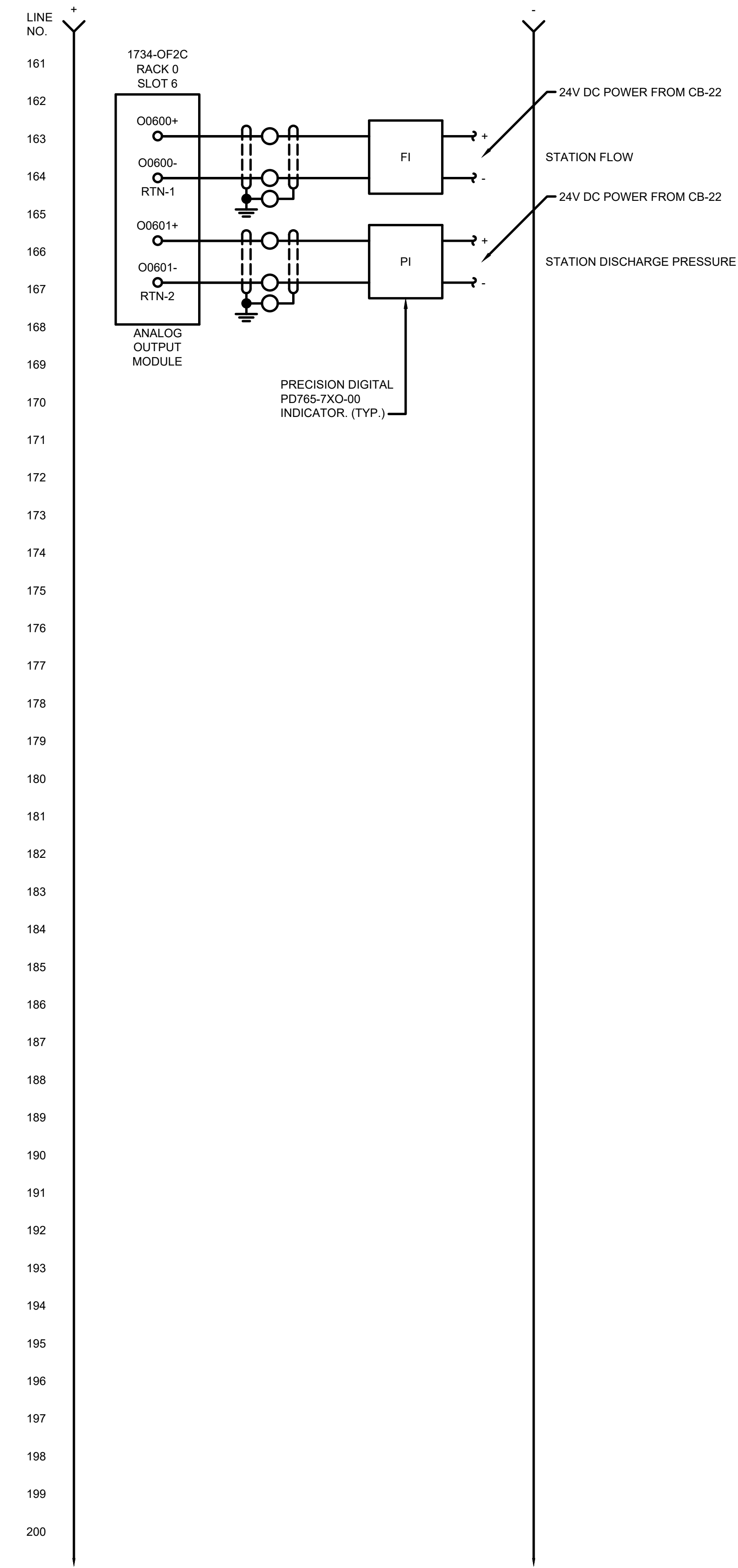
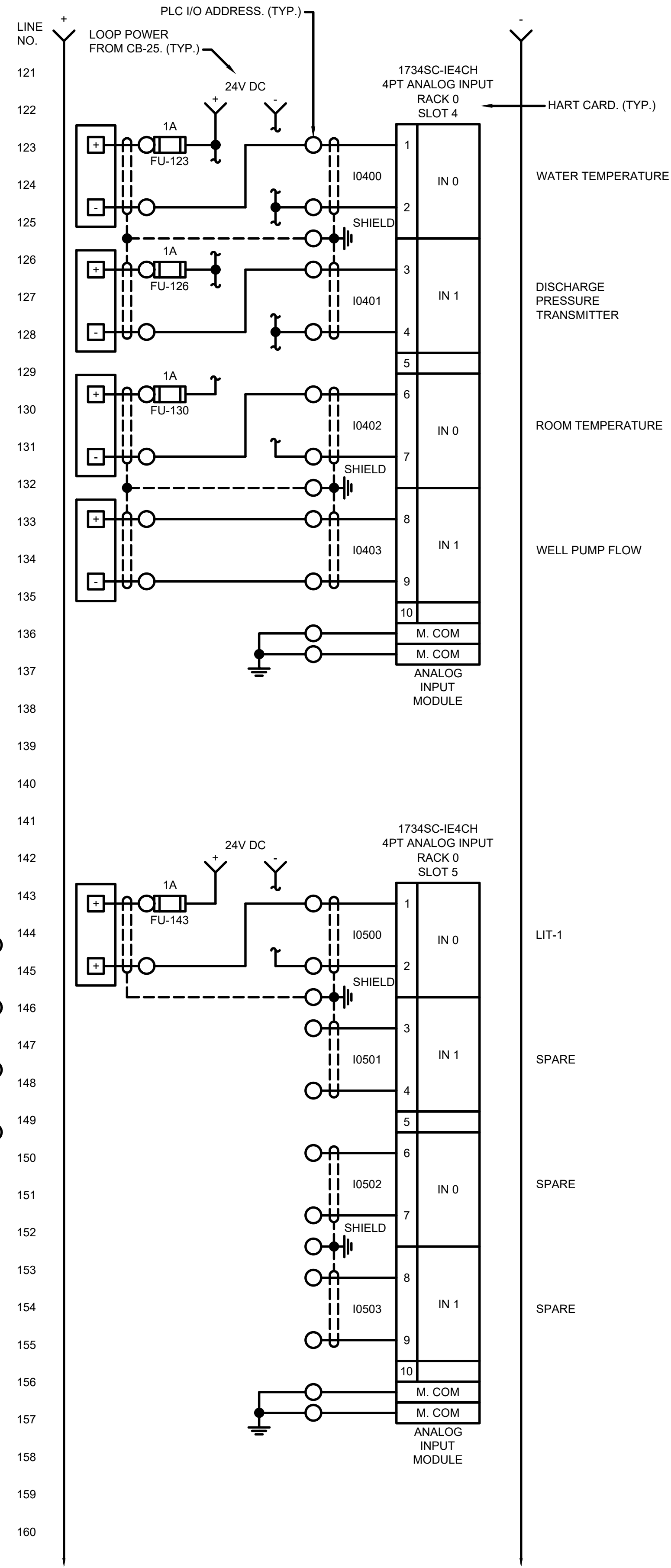
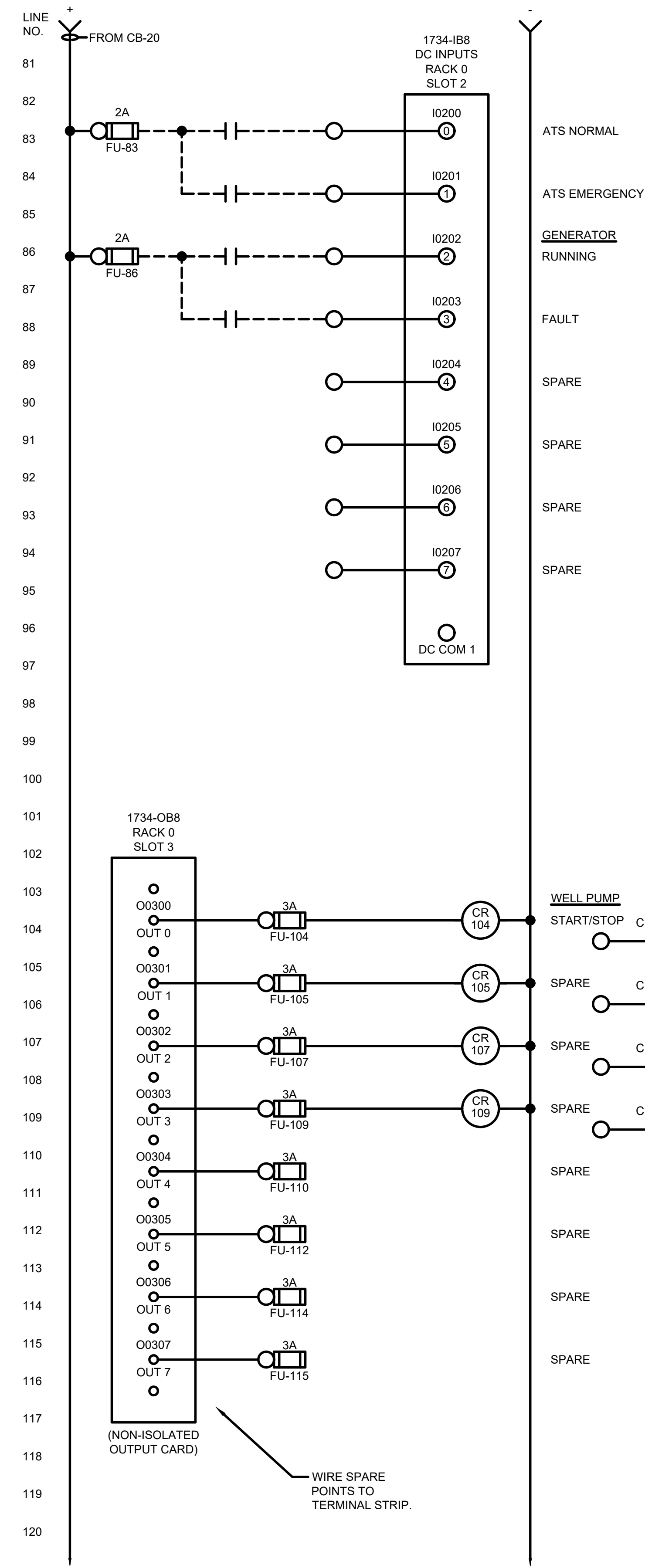


MARK	DATE	DESCRIPTION	BY

CITY OF OWOSSO, MICHIGAN
OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES
SCADA SYSTEM UPGRADES
JUNIPER WELL NO.1 CONTROL PANEL LAYOUT, WIRING DIAGRAM

Project No.: 200-280565-21002
Designed By: GCJ
Drawn By: JLS
Checked By:

11/22/2022 12:23:08 PM - \\TT.LOCAL\IER\PROJECTS\ANN ARBOR\IER\280565\200-280565-21002\CAD\SCHEMATIC\JUNIPER WELL 1-CP-DIA.DWG - SHANK, JASON



MARK	DATE	DESCRIPTION

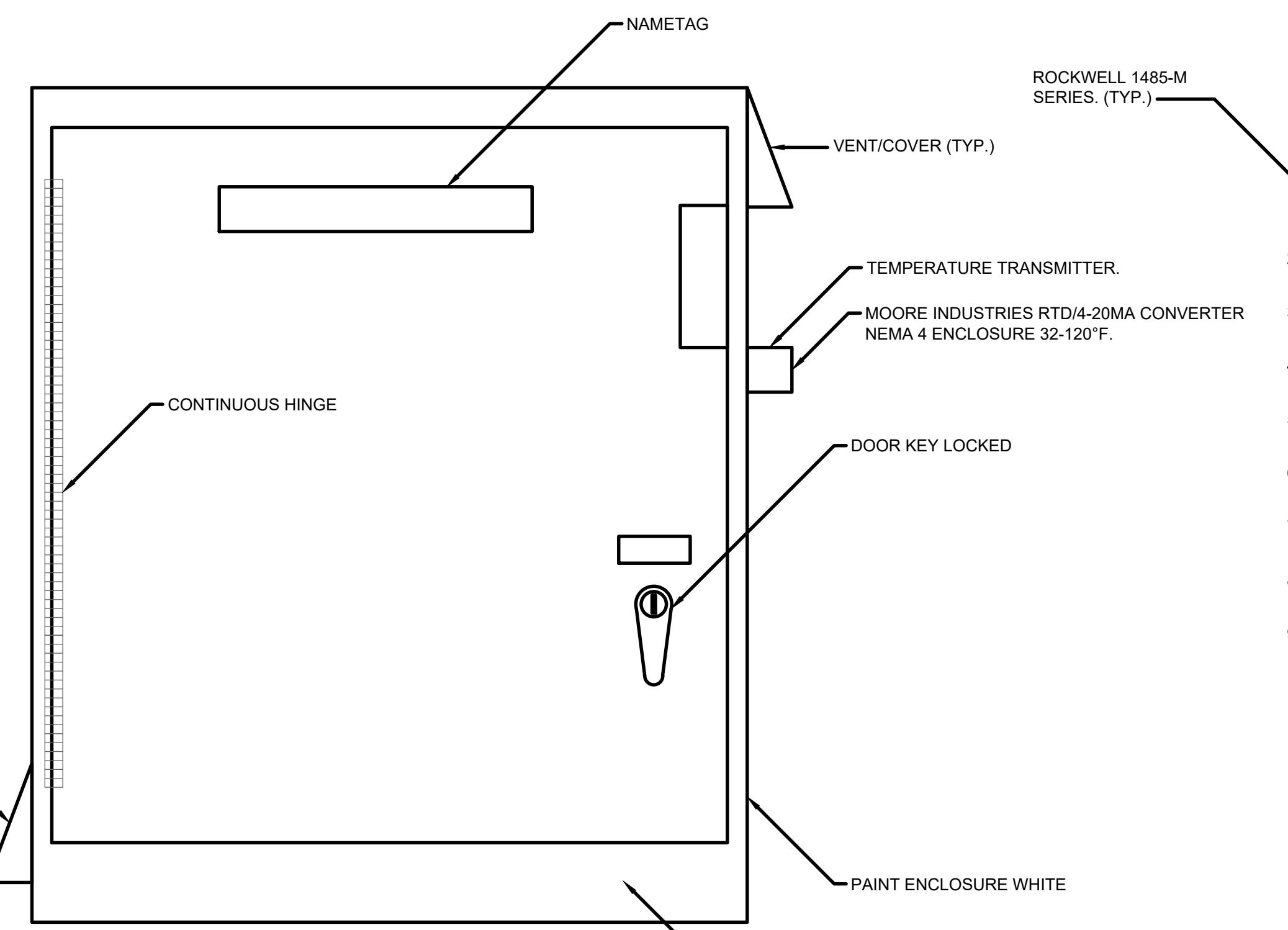
CITY OF OWOSSO, MICHIGAN
OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES
SCADA SYSTEM UPGRADES
**JUNIPER WELL NO.1 CONTROL PANEL
INSTRUMENTATION
WIRING DIAGRAM**

Project No.: 200-280565-21002
Designed By: GCJ
Drawn By: JLS
Checked By:

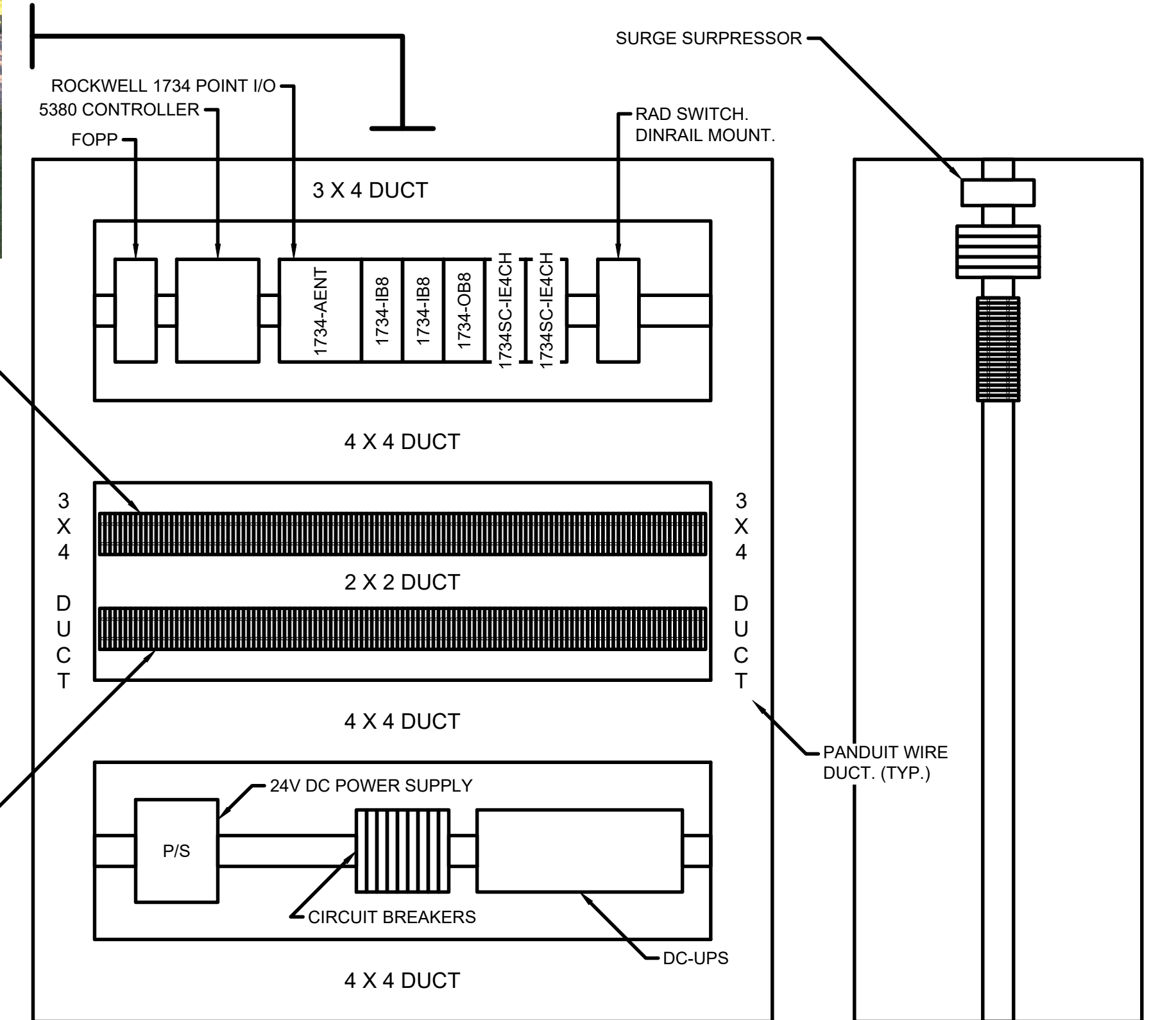
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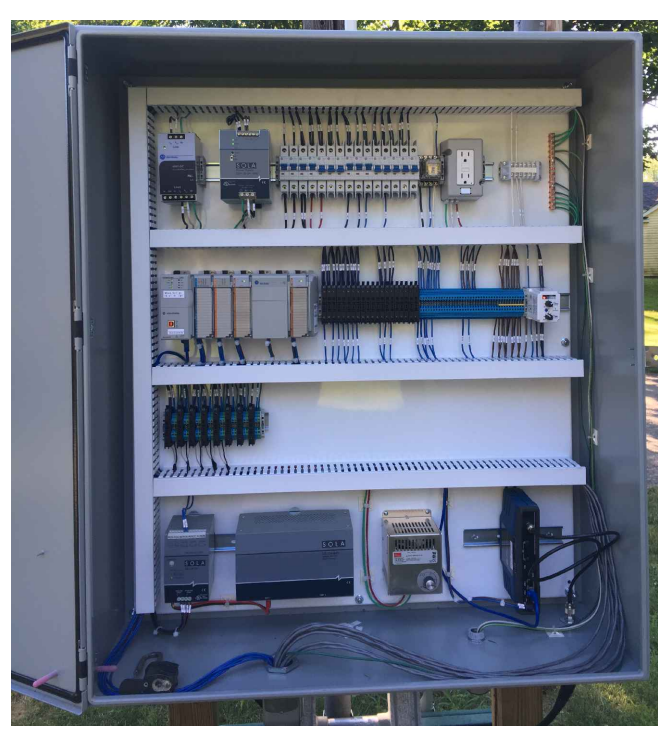
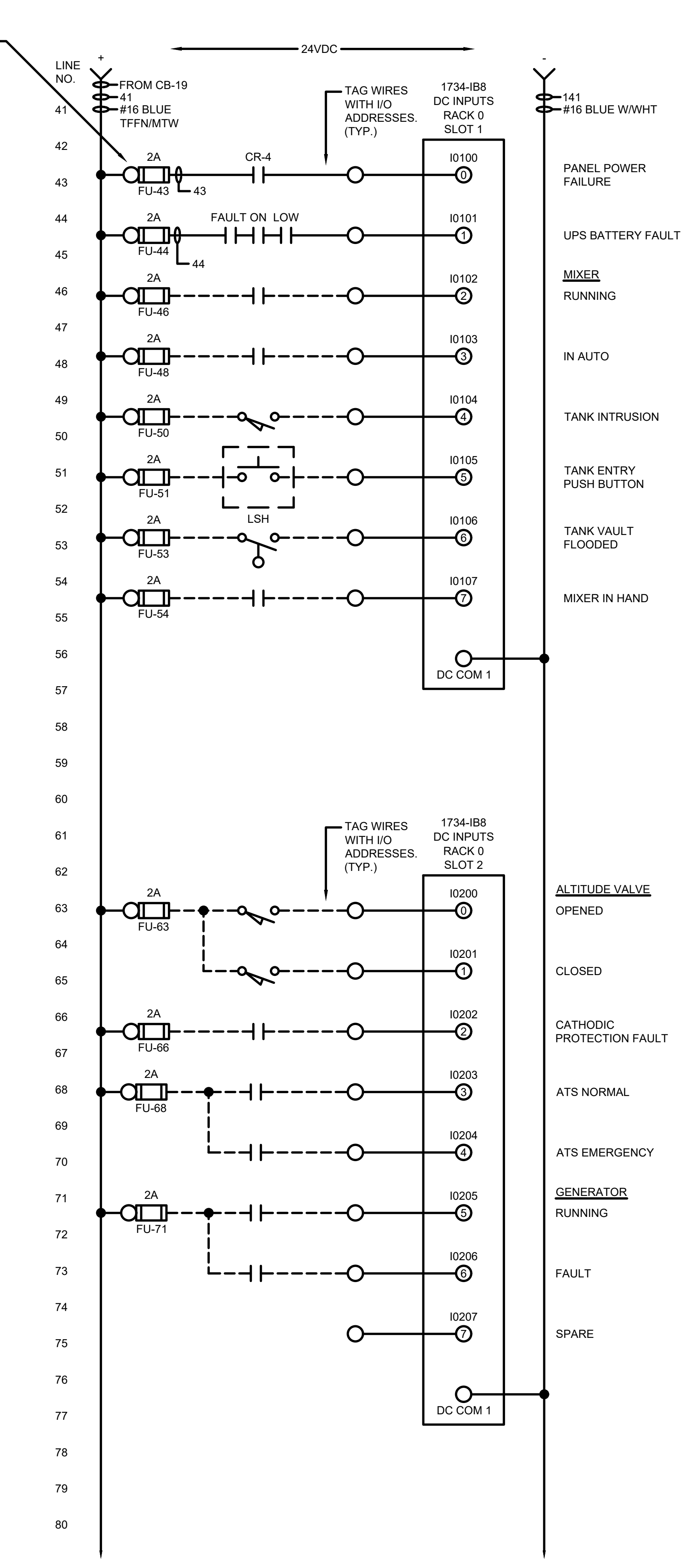
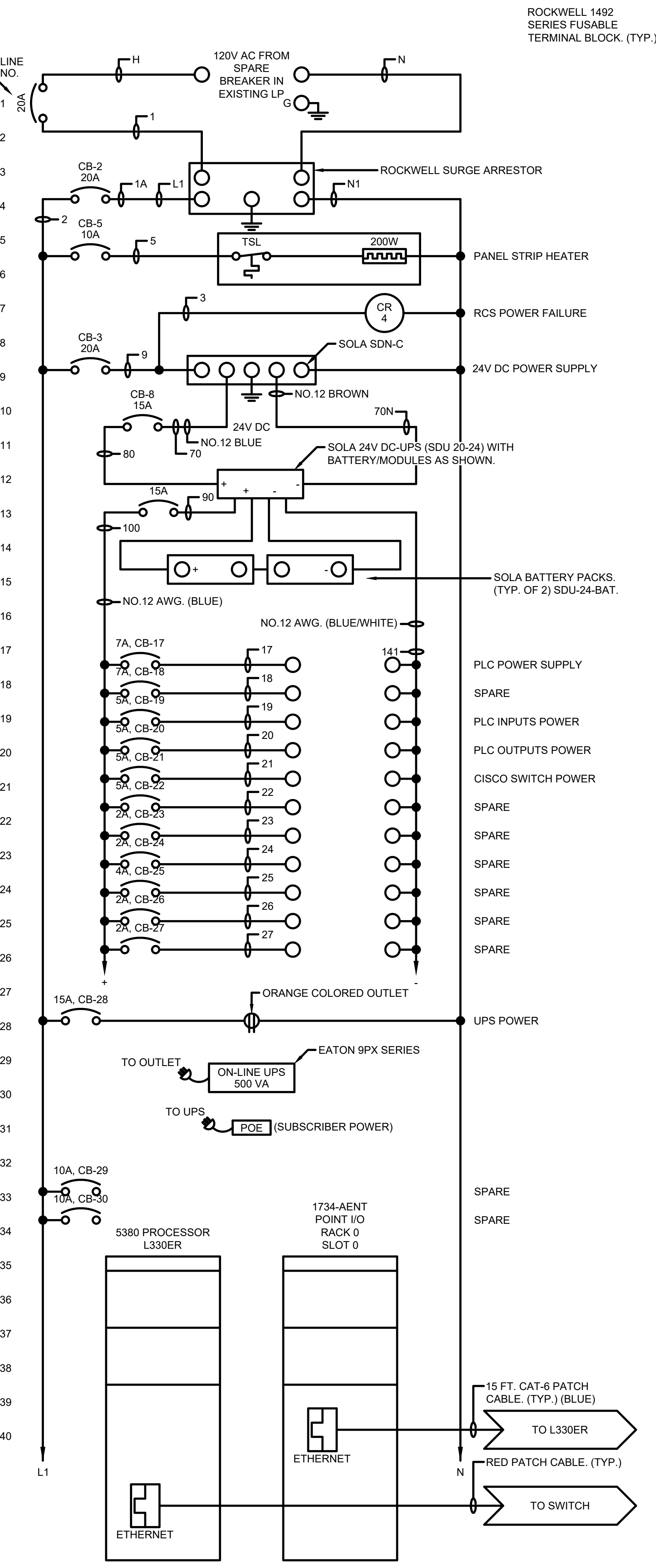
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EAST LANSING, MI, 48823
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ELEVATED TANK CONTROL PANEL LAYOUT
NEMA 4 ENCLOSURE
SIZE: 42"H X 36"W X 12"D (MIN.)



GENERAL SUBPLATE LAYOUT
PAINT INSIDE: GLOSS WHITE.



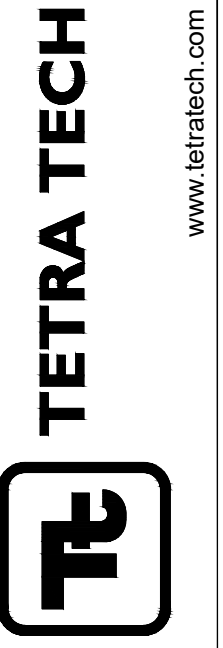
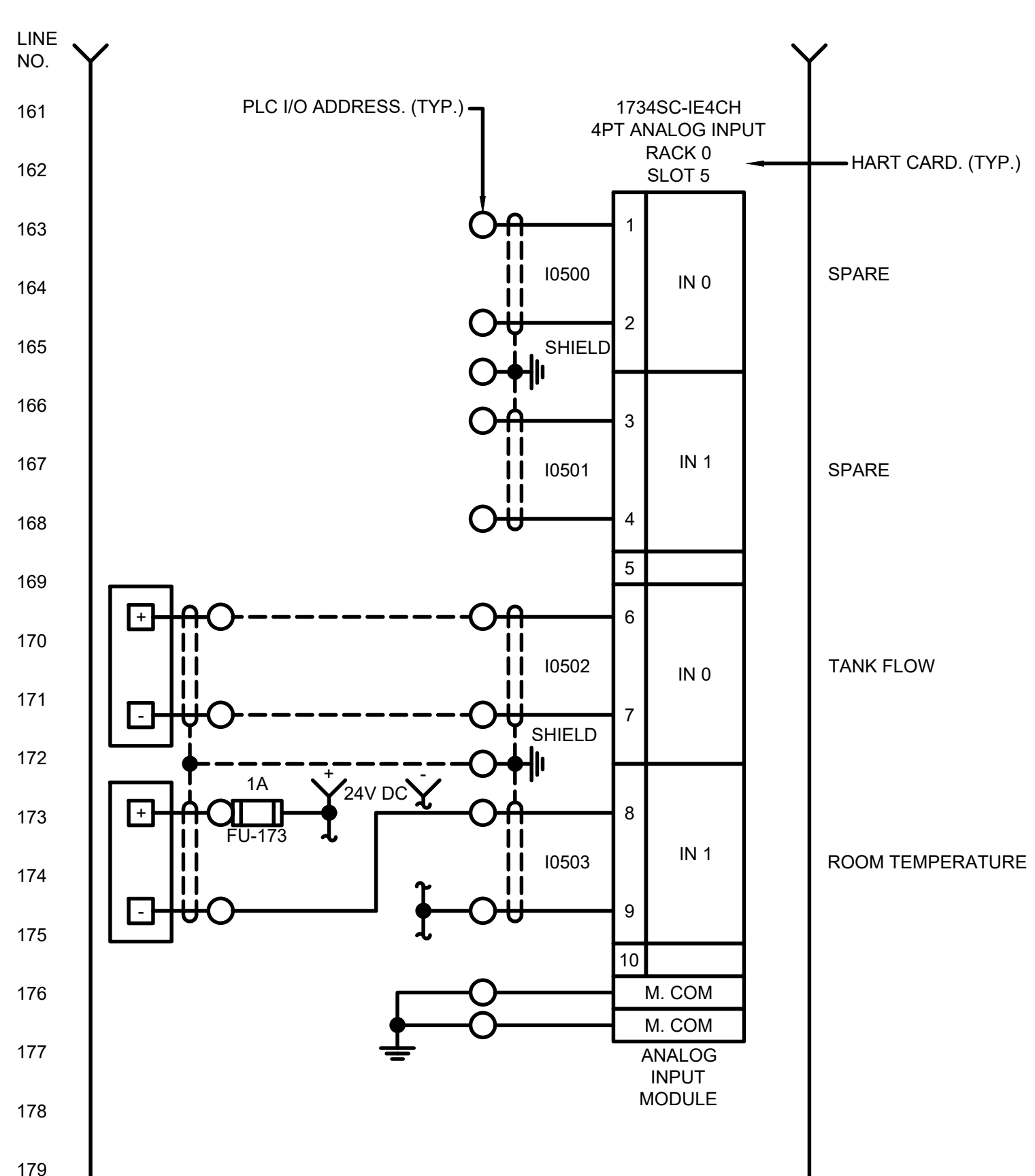
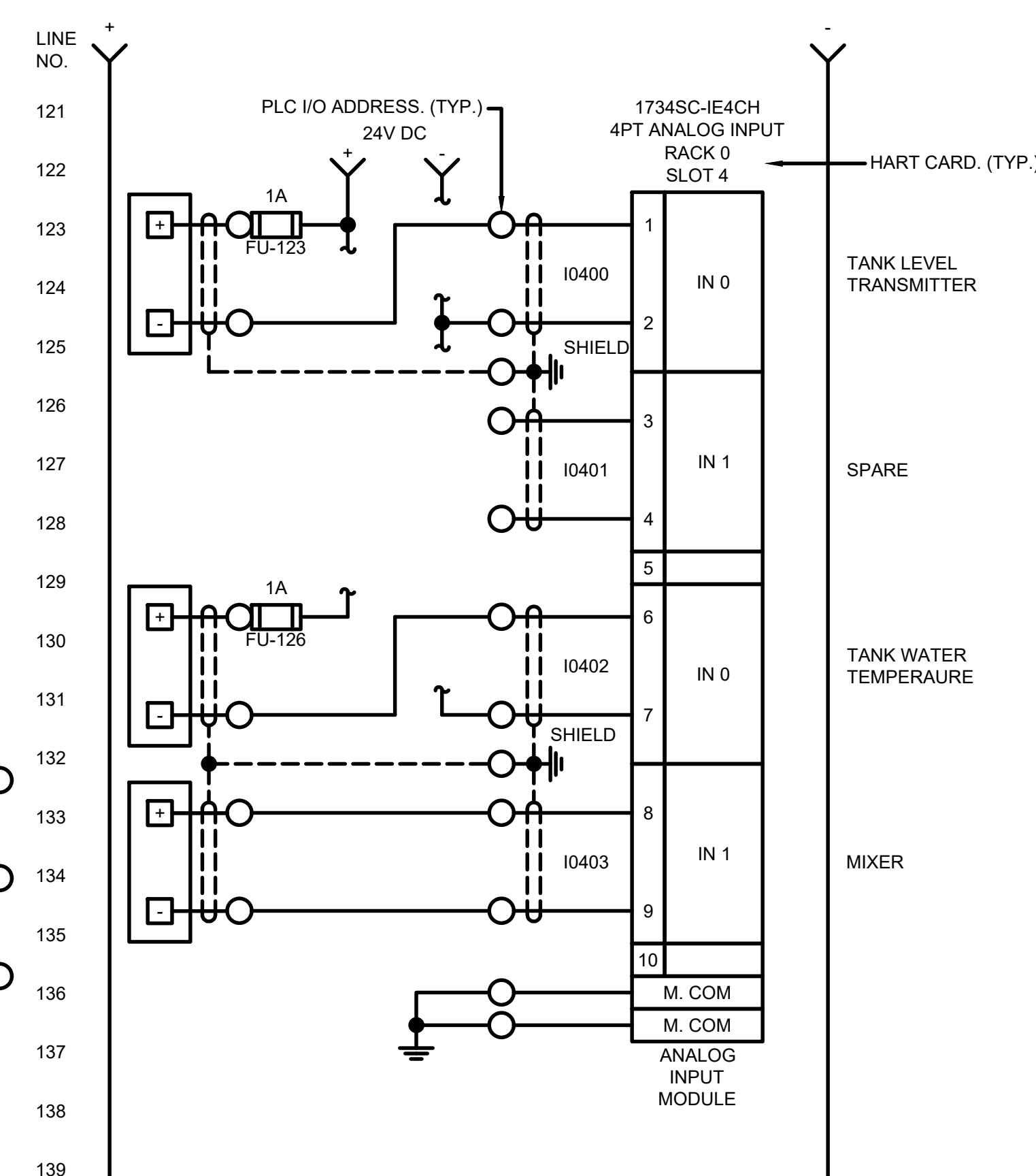
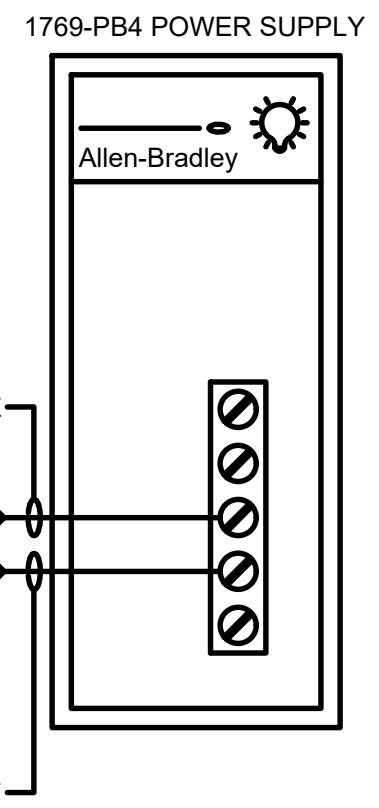
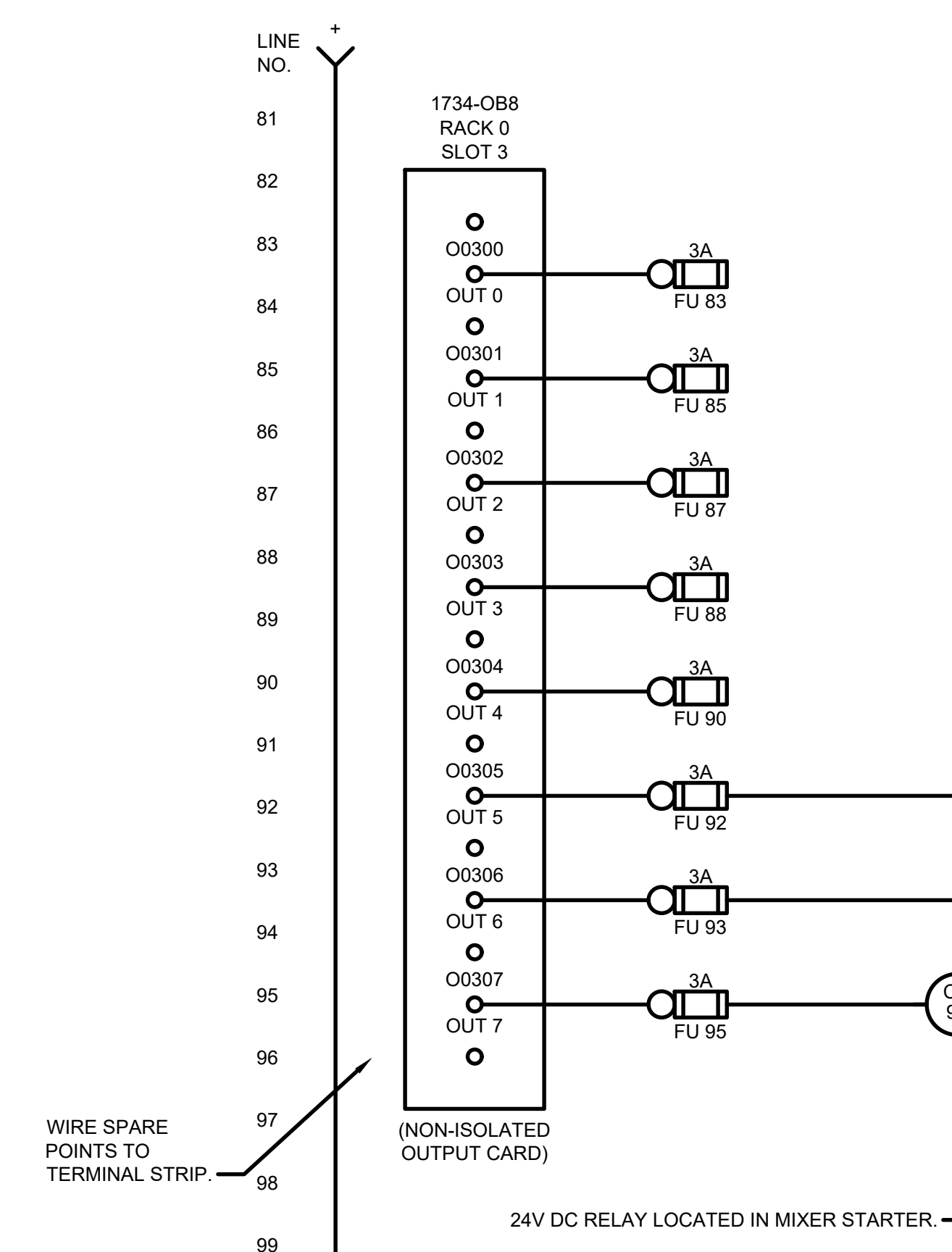
SAMPLE LAYOUT

MARK	DATE	DESCRIPTION

CITY OF OWOSSO, MICHIGAN
OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES
SCADA SYSTEM UPGRADES
**INSTRUMENTATION
ELEVATED TANK CONTROL PANEL
(WEST TOWER) LAYOUT, WIRING DIAGRAM**

Project No.: 200-280565-21002
Designed By: G.C.J.
Drawn By: J.L.S.
Checked By: _____

11/22/2022 11:45:53 AM - \\TT.LOCAL\IER\PROJECTS\ANN ARBOR\IER\200565\200-280565-21002\CAD\SHETSHEETFILES\EI-348_ELEVATED TANK PANEL_II.DWG - SHANK, JASON

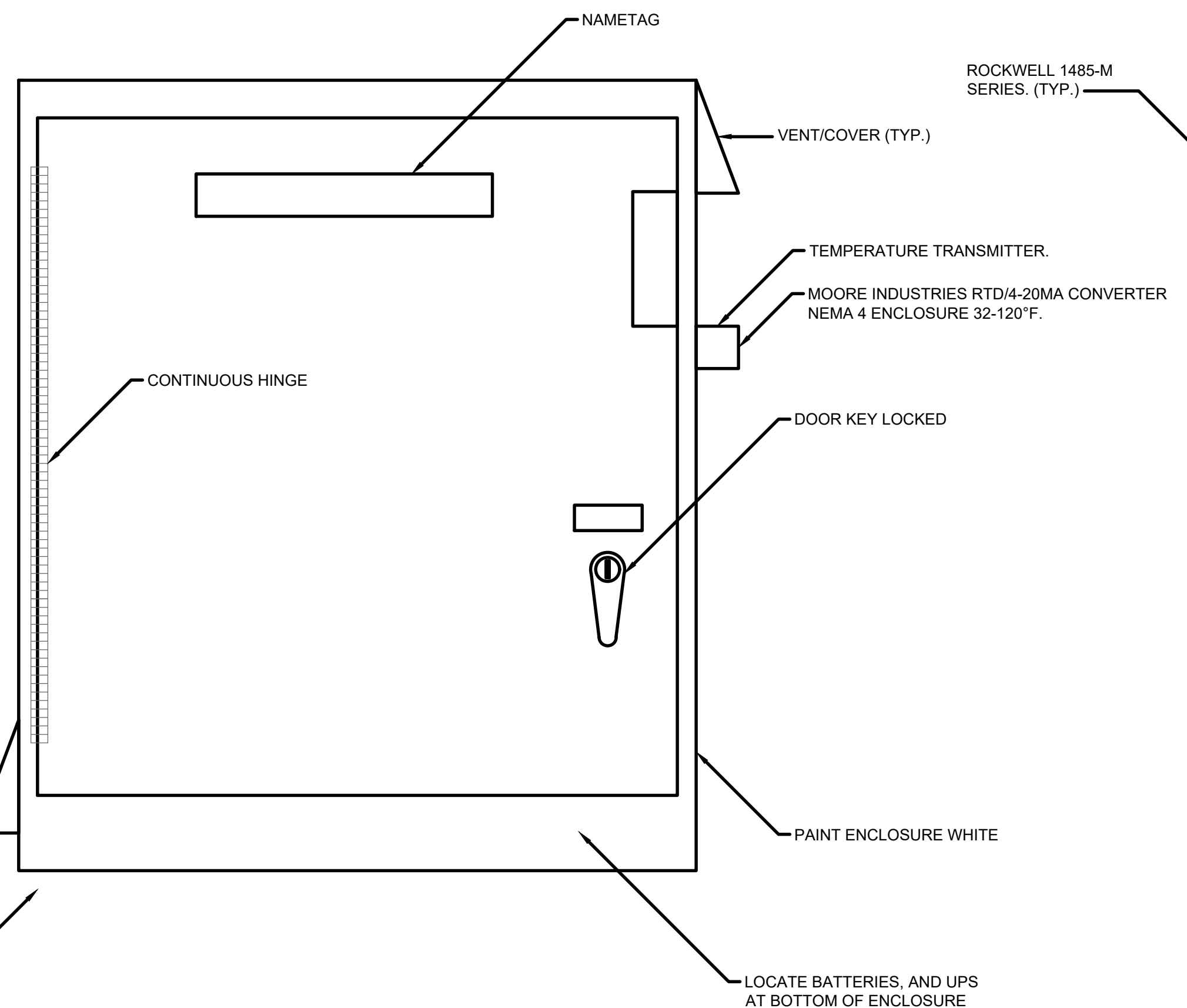


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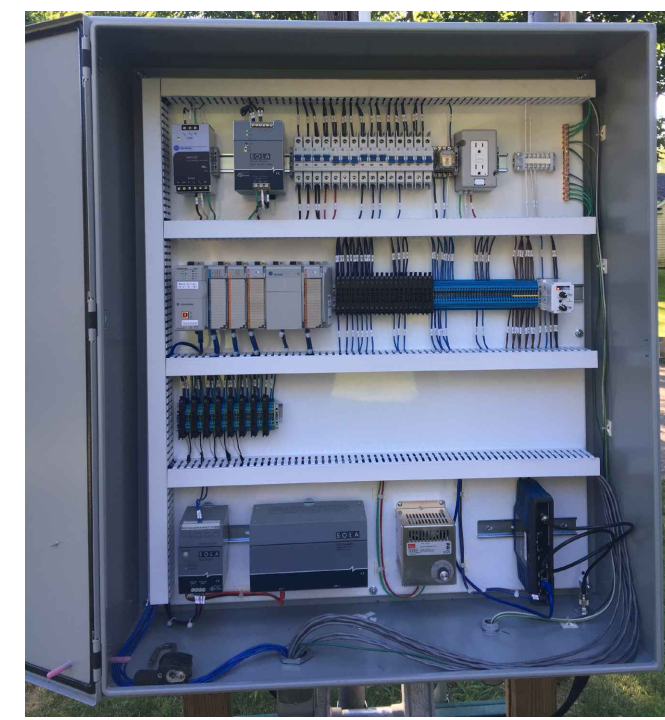
MARK	DATE	DESCRIPTION

CITY OF OWOSSO, MICHIGAN
OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES
SCADA SYSTEM UPGRADES
**INSTRUMENTATION
ELEVATED TANK CONTROL PANEL
(WEST TOWER) WIRING DIAGRAM**

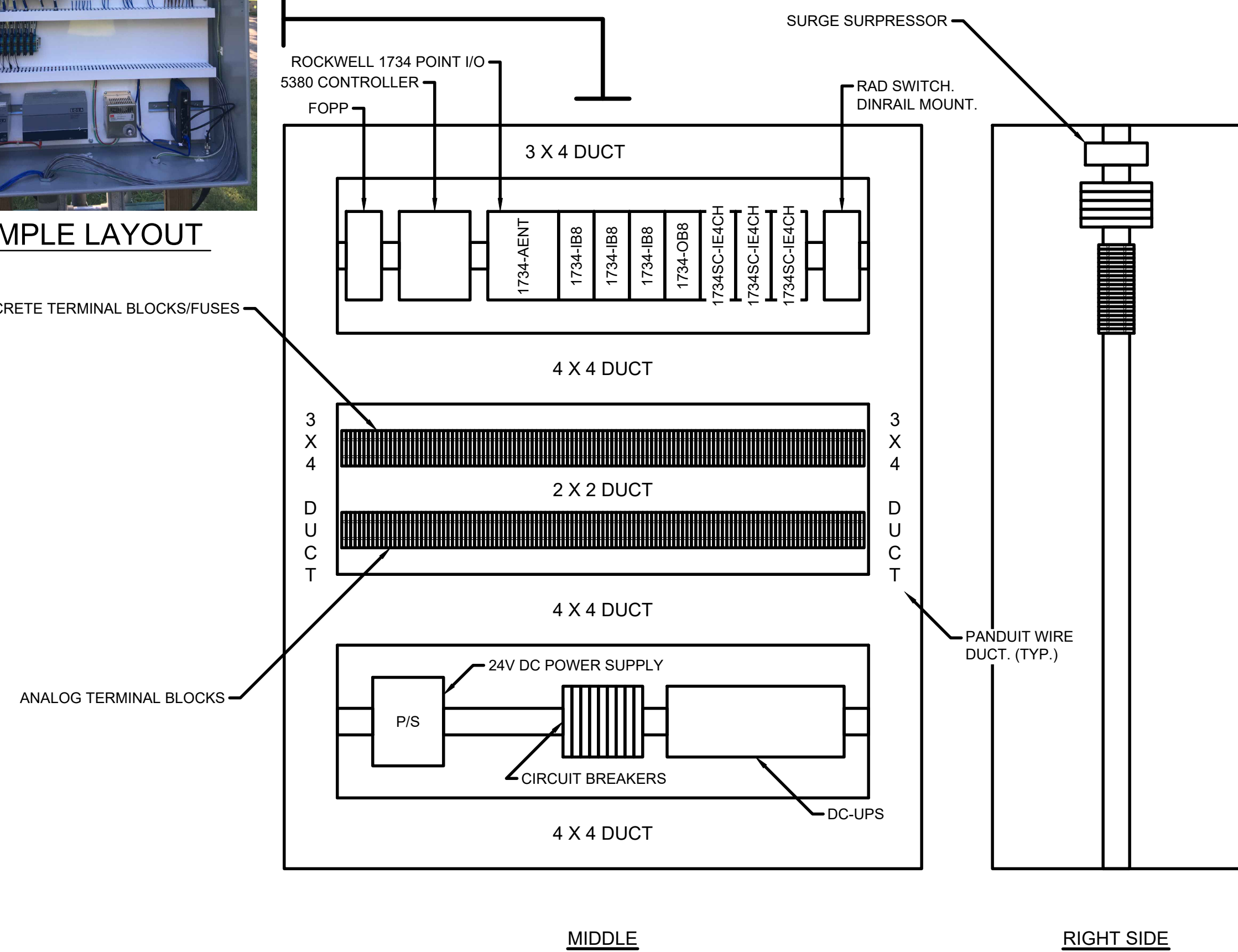
Project No.: 200-280565-21002
Designed By: GCJ
Drawn By: JLS
Checked By:



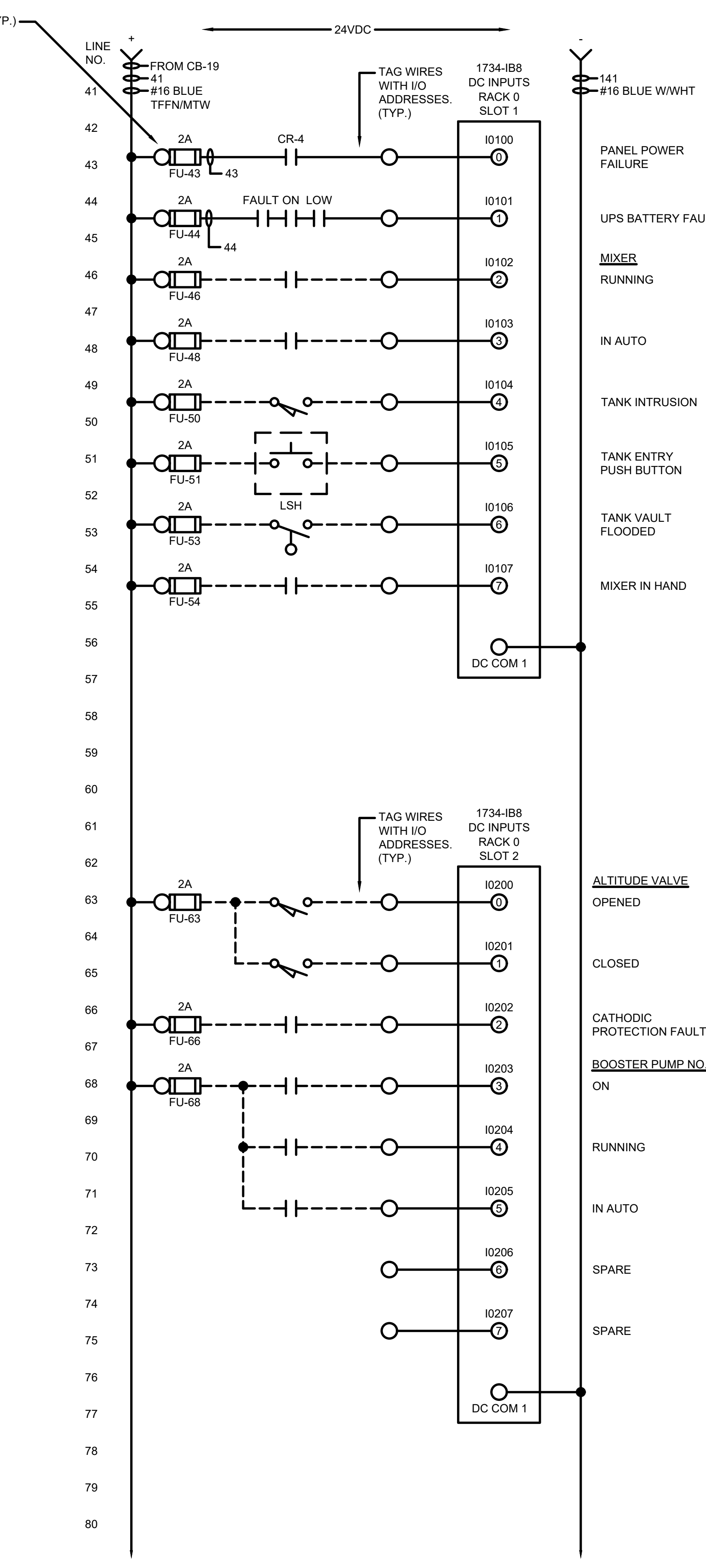
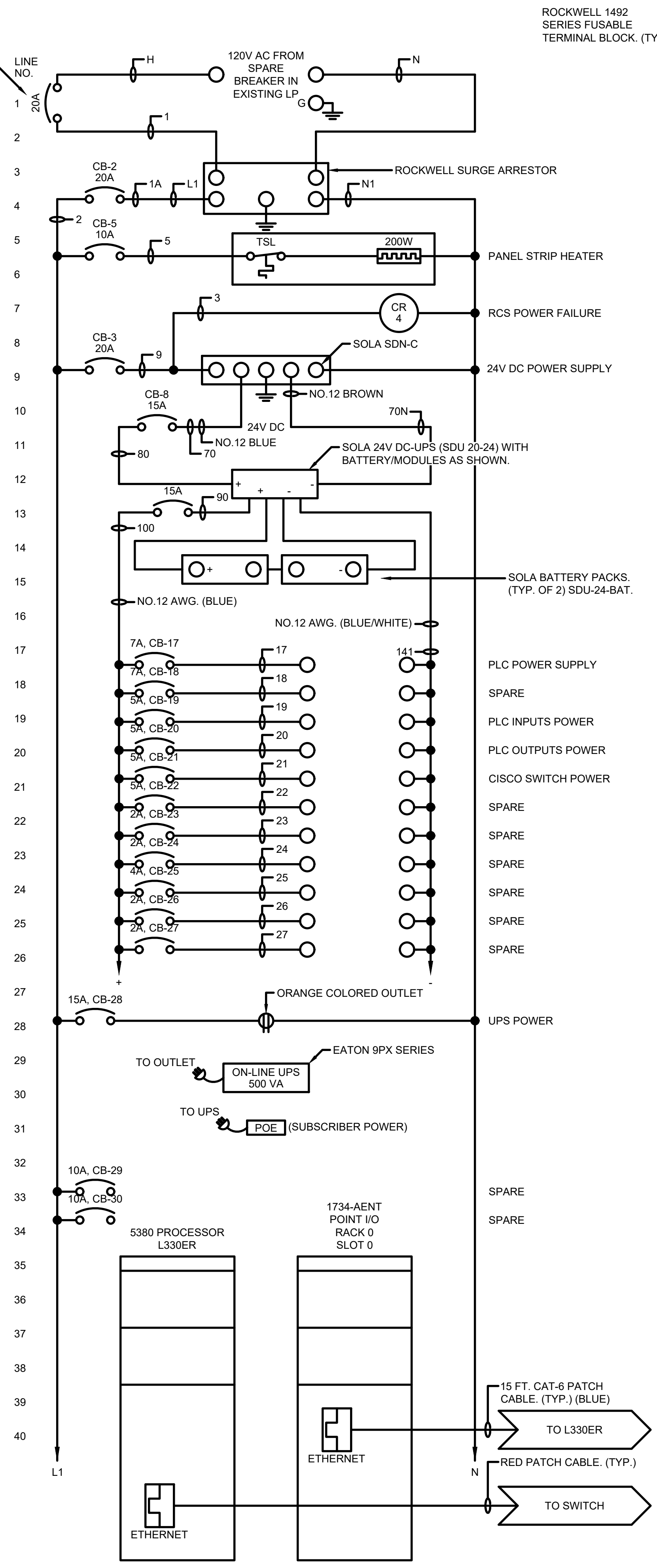
STAND PIPE CONTROL PANEL LAYOUT
NEMA 4 ENCLOSURE
SIZE: 42"H X 36"W X 12"D (MIN.)



SAMPLE LAYOUT



GENERAL SUBPLATE LAYOUT
PAINT INSIDE: GLOSS WHITE.



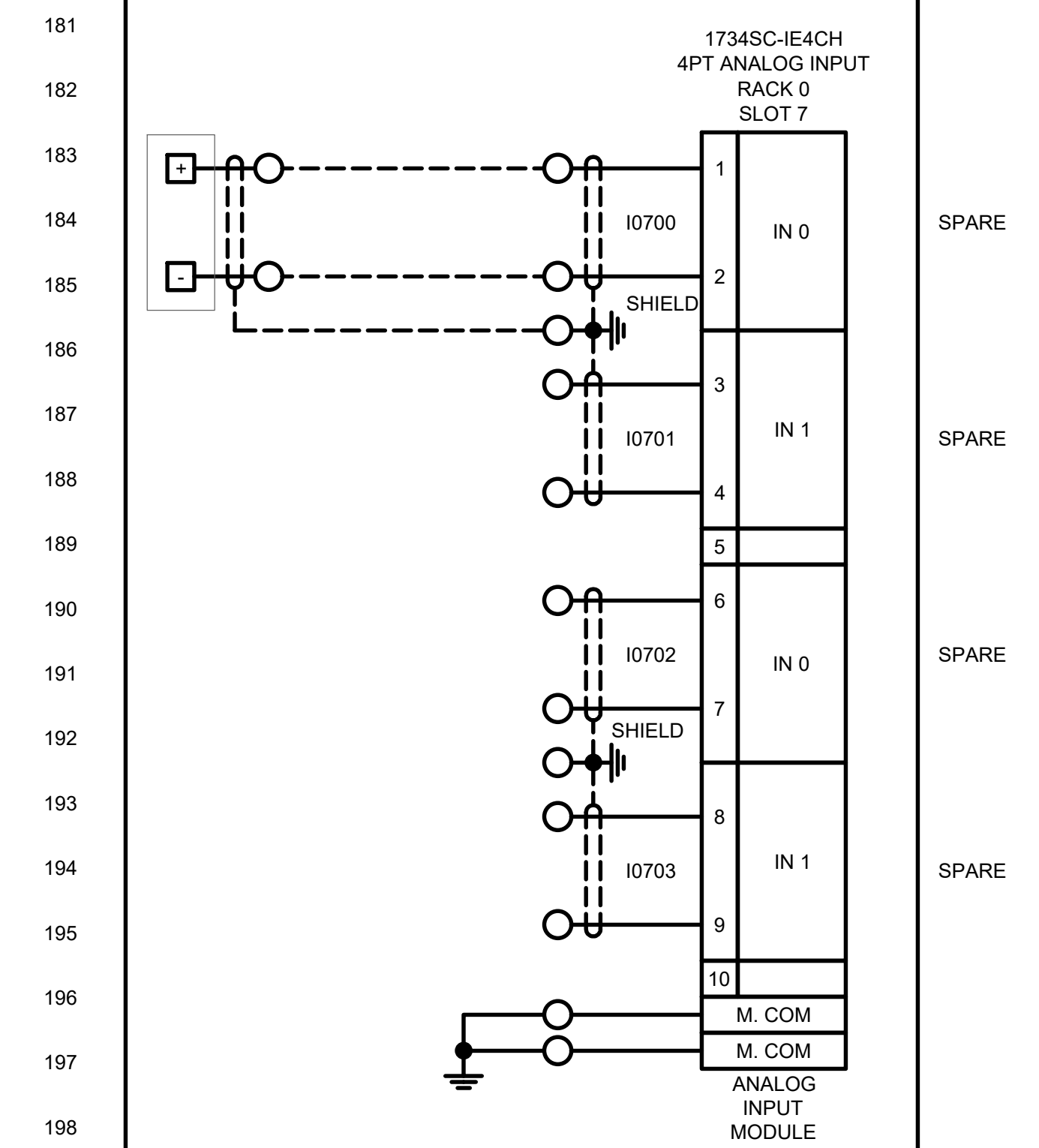
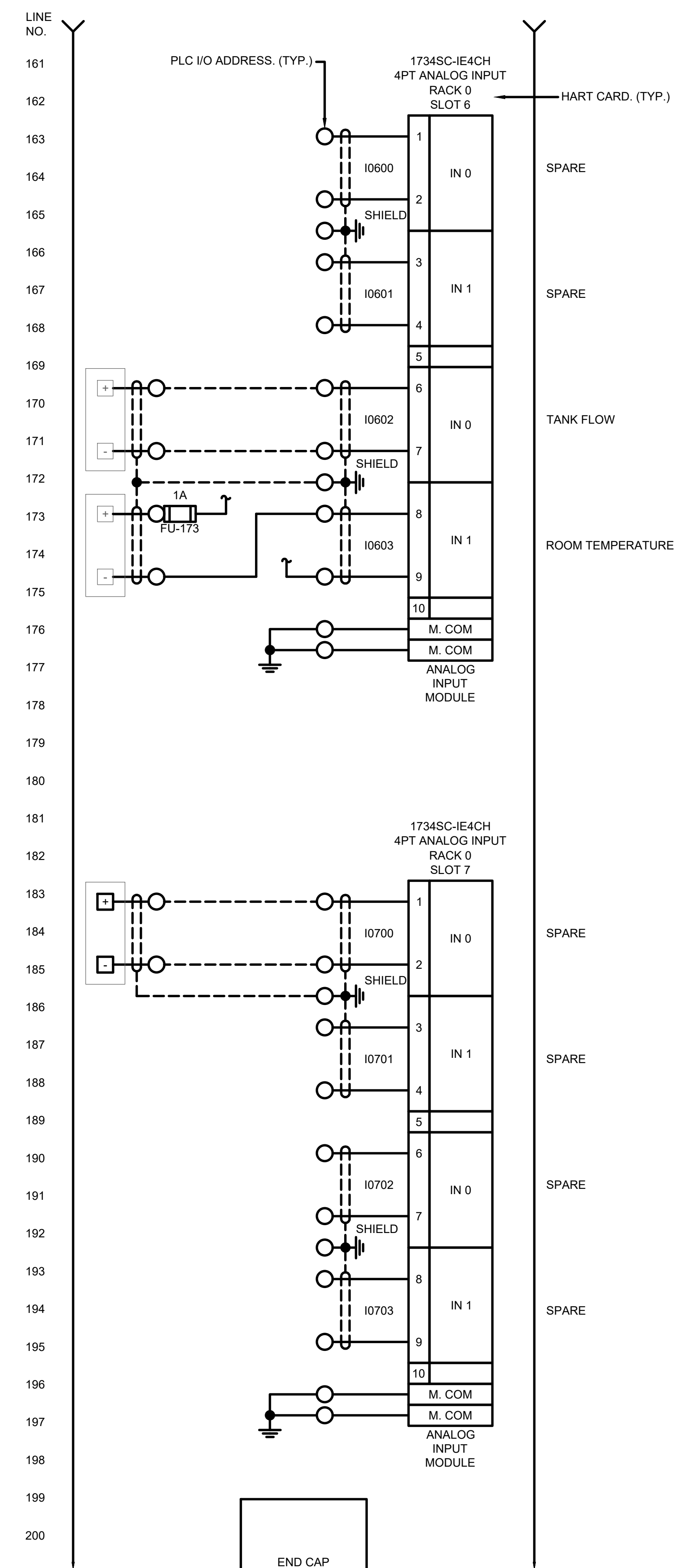
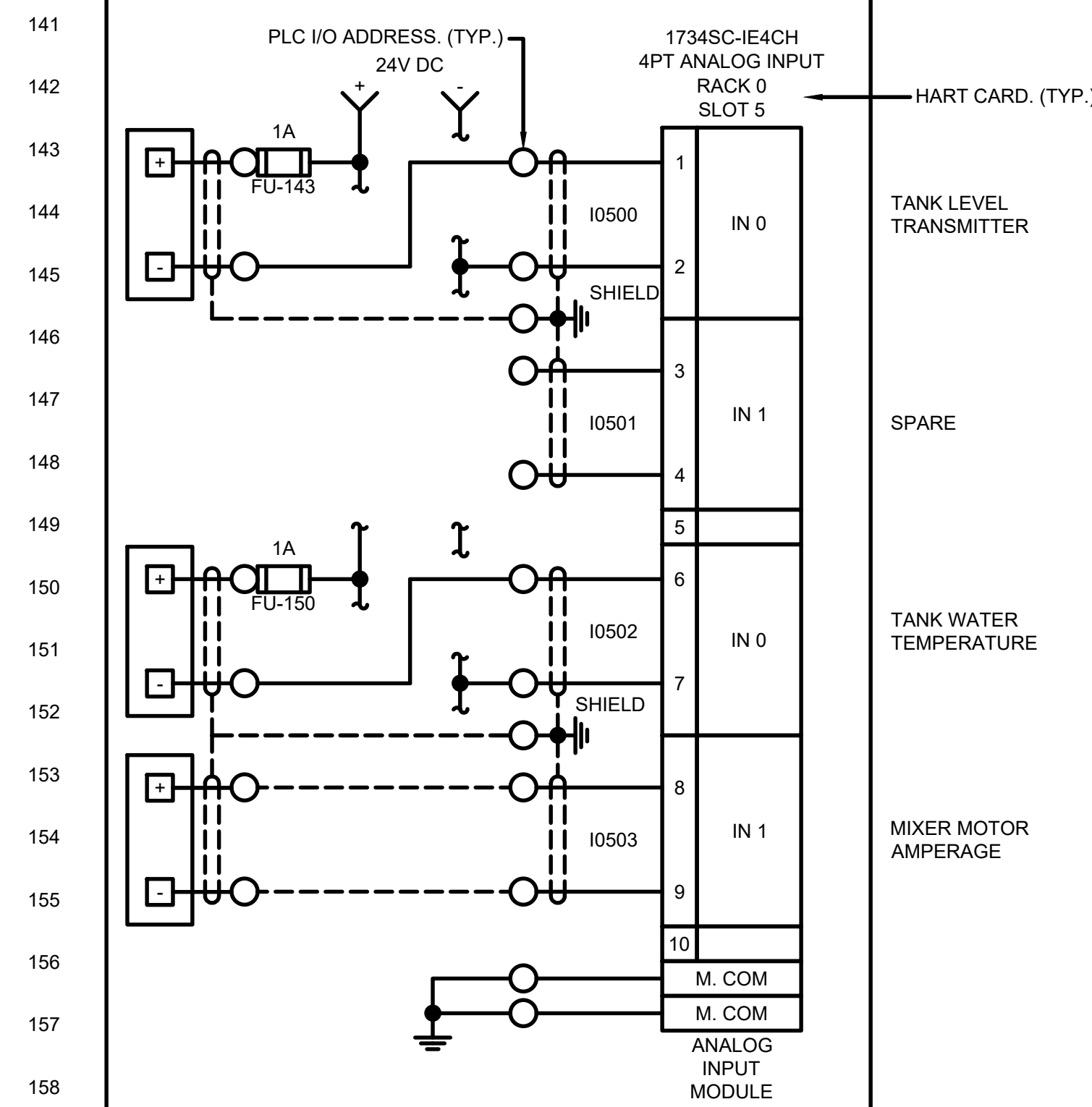
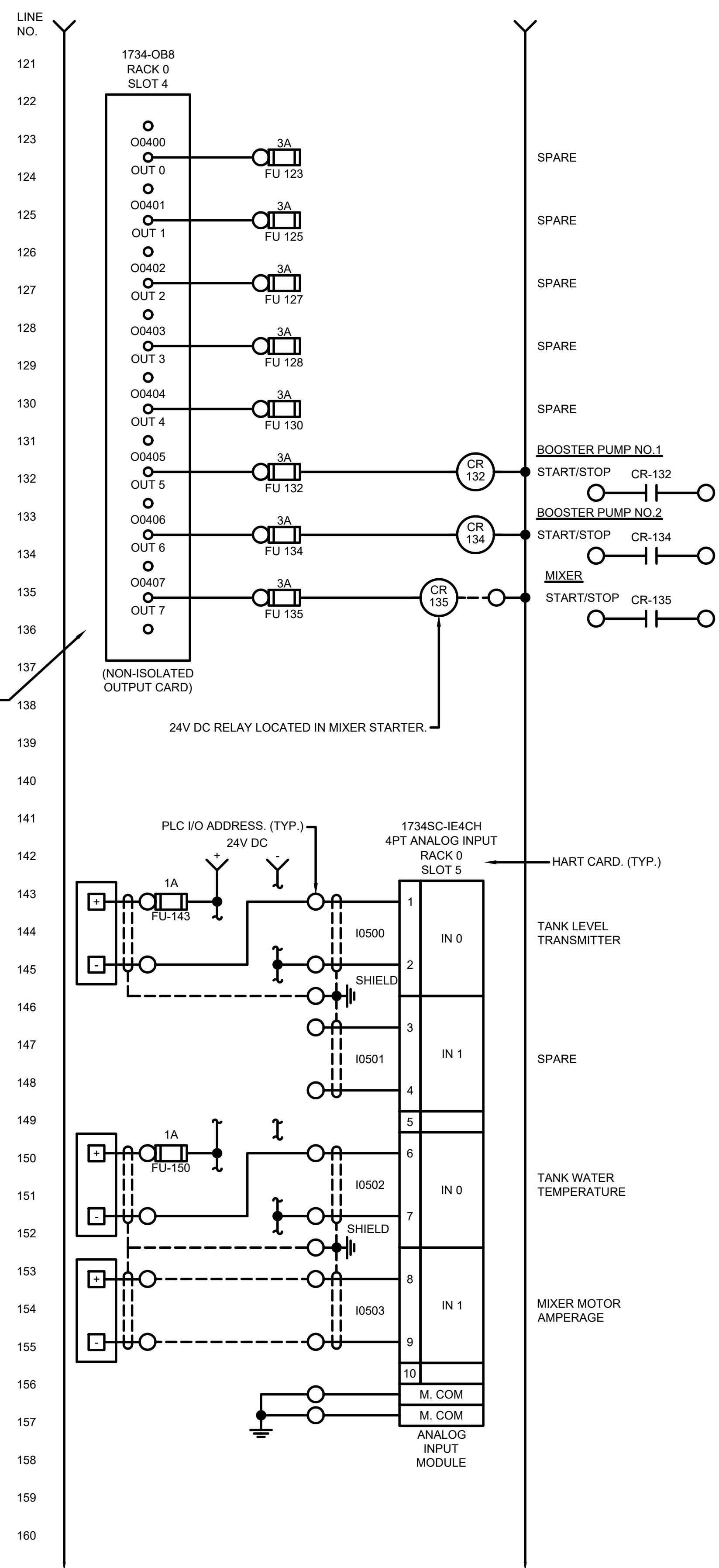
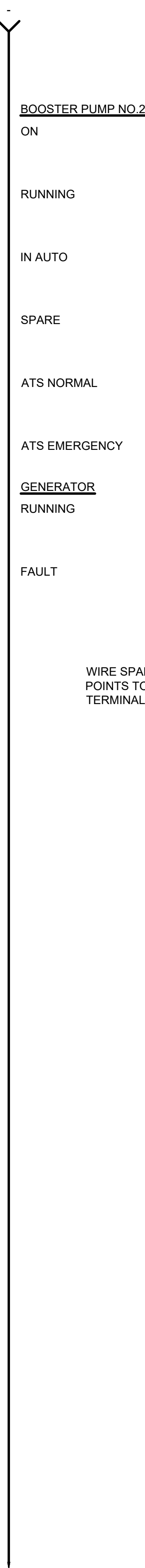
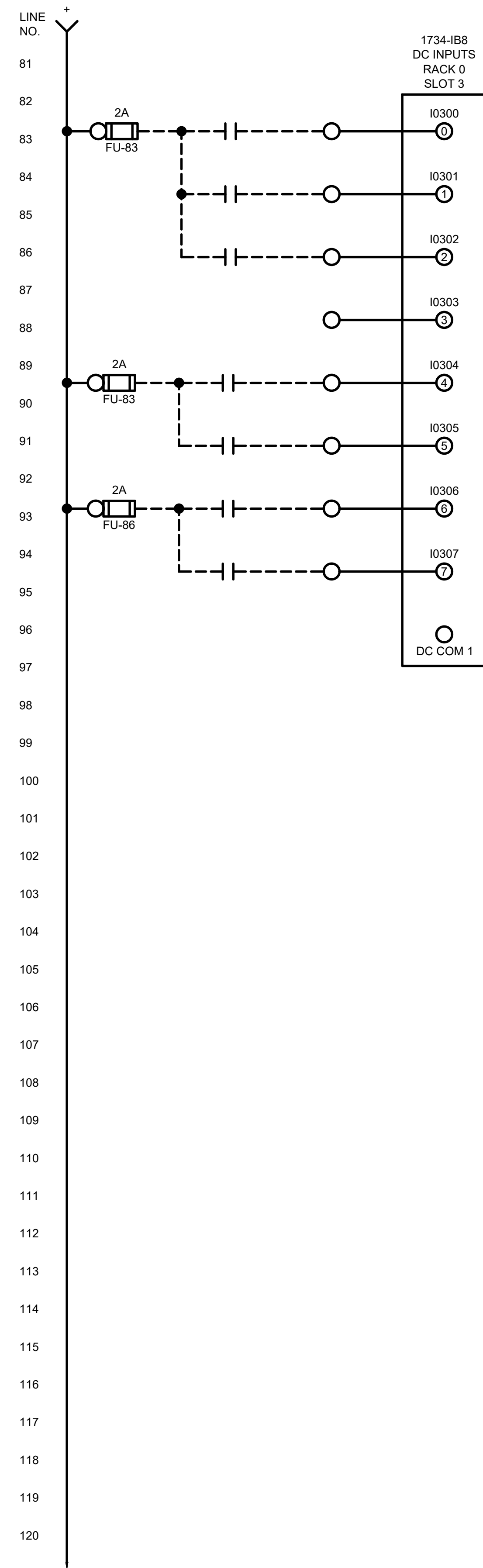
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MARK	DATE	DESCRIPTION

CITY OF OWOSSO, MICHIGAN
OWOSSO WATER TREATMENT PLANT AND REMOTE SITES
SCADA SYSTEM UPGRADES
**INSTRUMENTATION
STAND PIPE CONTROL PANEL
LAYOUT, WIRING DIAGRAM**

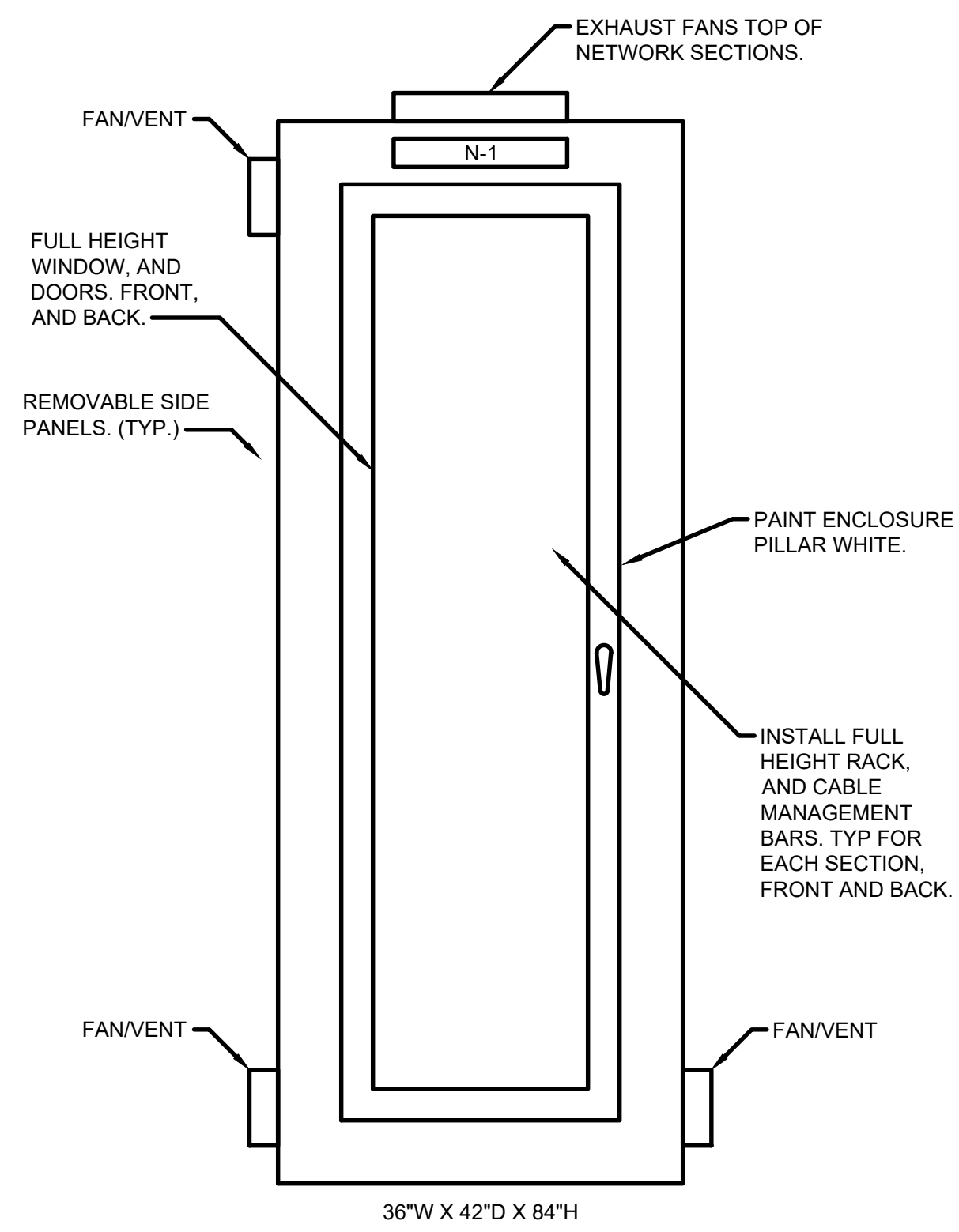
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11/22/2022 12:00:07 PM - \\T:\LOCAL\PROJECTS\ANN ARBOR\IER\200565\200-280565-21002\CAD\SHEETFILES\I-350_STAND PIPE PANEL_IIDWG - SHANK, JASON

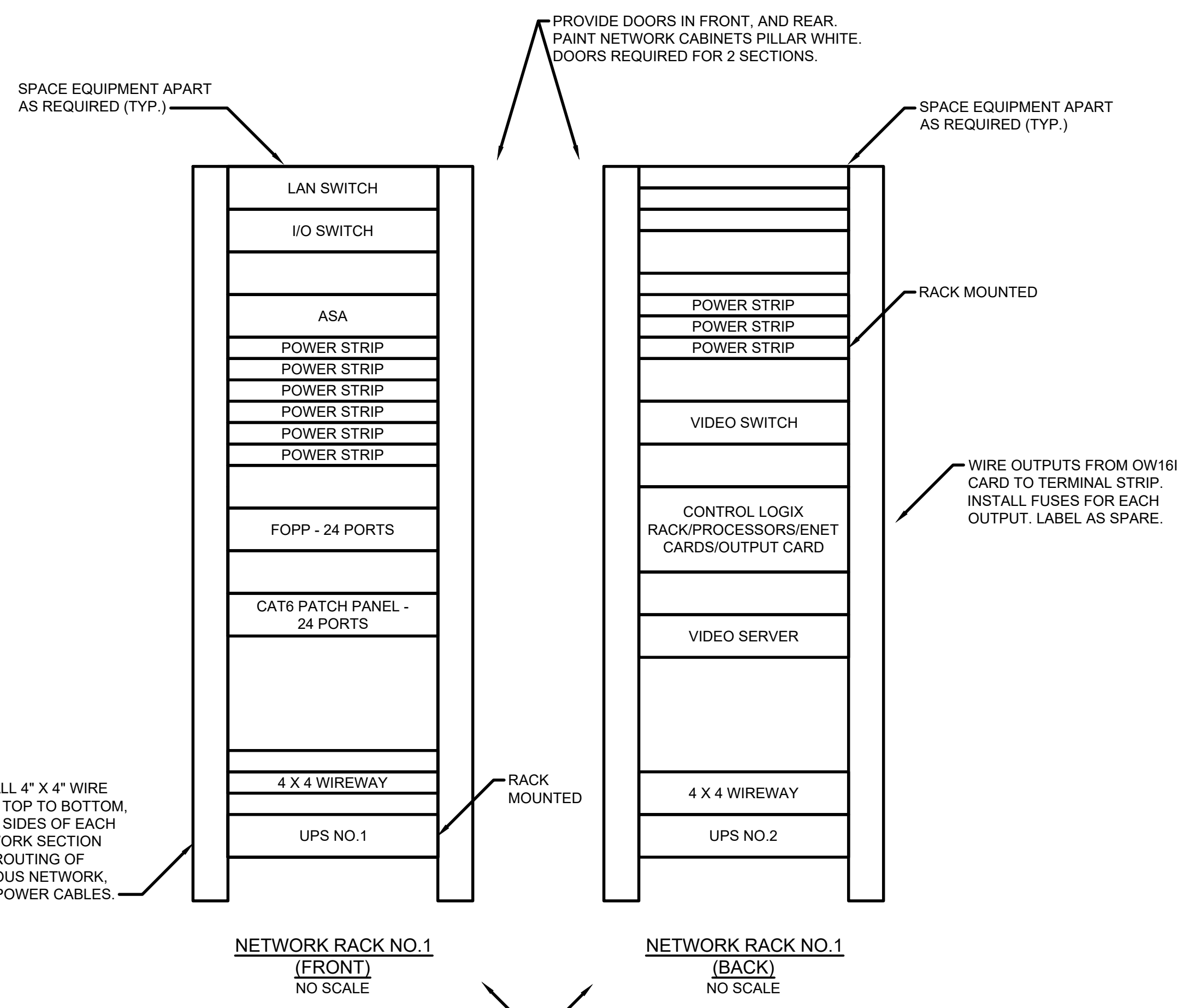


END CAP

MARK	DATE	DESCRIPTION	BY

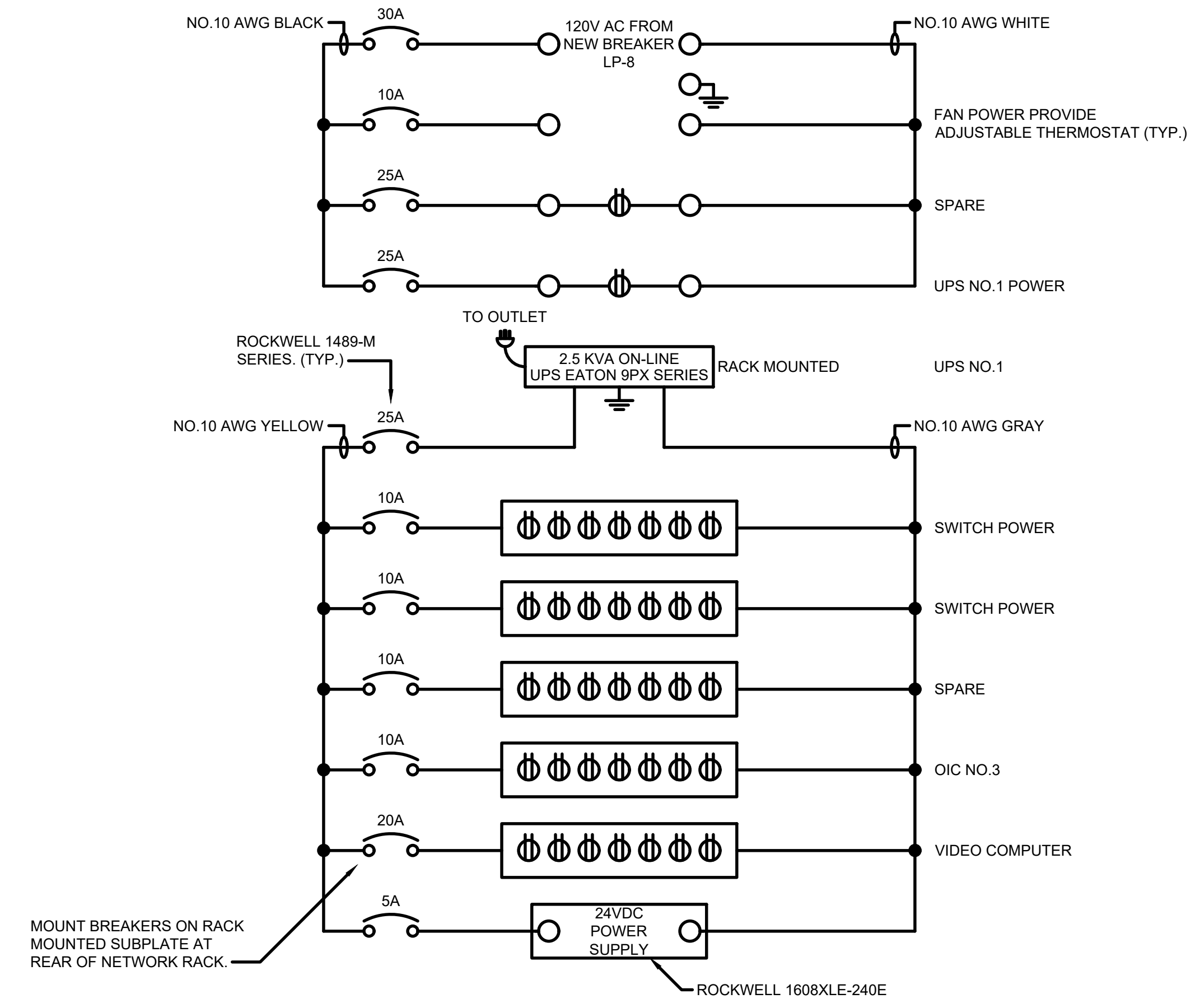


NETWORK PANEL NO.1 (NP-1)

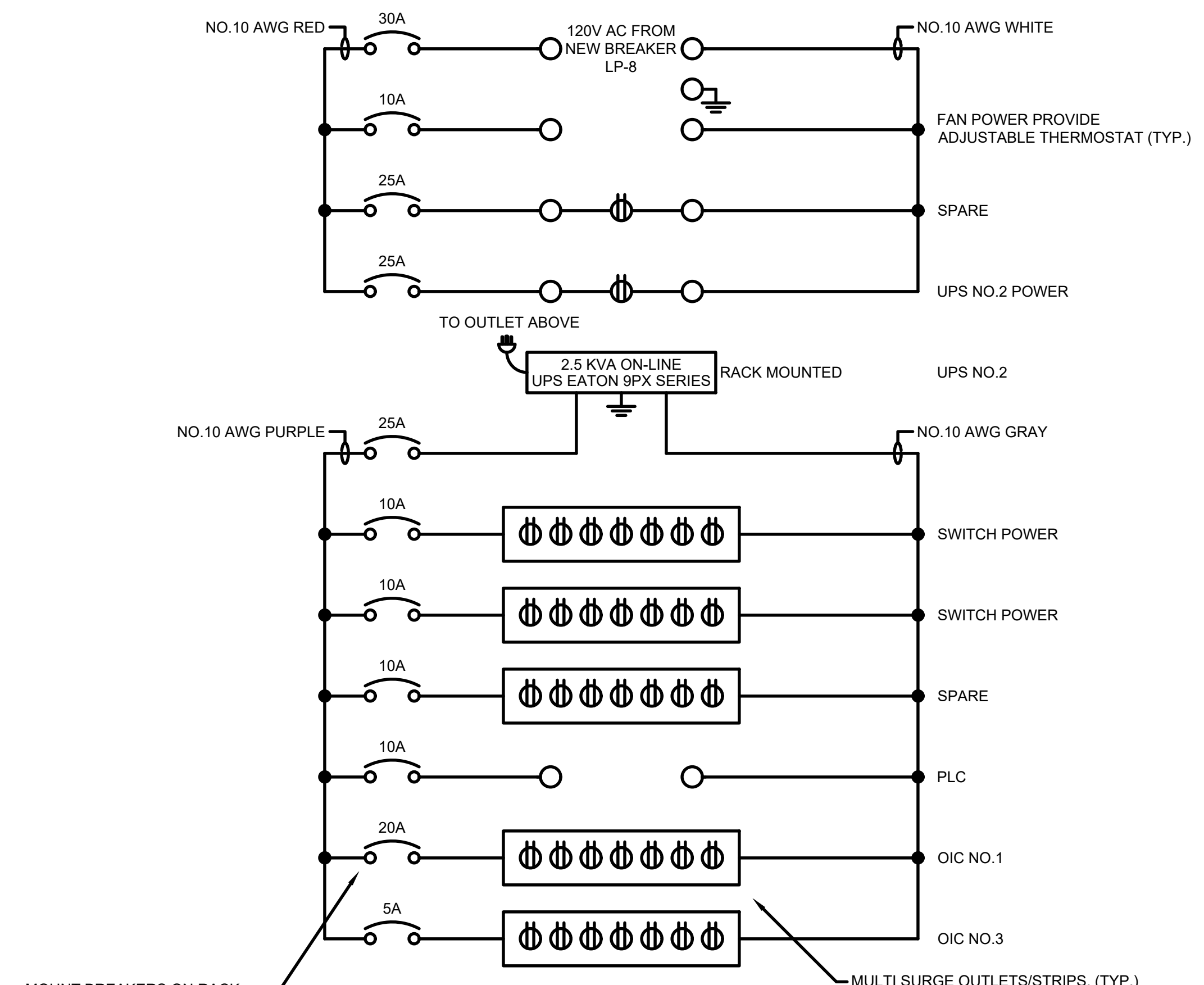


NETWORK RACK NO.1 (FRONT) NO SCALE
NETWORK RACK NO.1 (BACK) NO SCALE

LAYOUTS SHOWN WITH DOOR REMOVED. SEE SYSTEM CONFIGURATION DRAWINGS FOR ADDITIONAL HARDWARE/EQUIPMENT TO BE FURNISHED AND INSTALLED NOT SHOWN ABOVE.



NETWORK PANEL NO.1 - WIRING DIAGRAM



NETWORK PANEL NO.1 - WIRING DIAGRAM

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MARK	DATE	DESCRIPTION

CITY OF OWOSSO, MICHIGAN
OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES
SCADA SYSTEM UPGRADES
**INSTRUMENTATION
NETWORK PANEL NO.1 (NP-1)
LAYOUT, WIRING DIAGRAM**

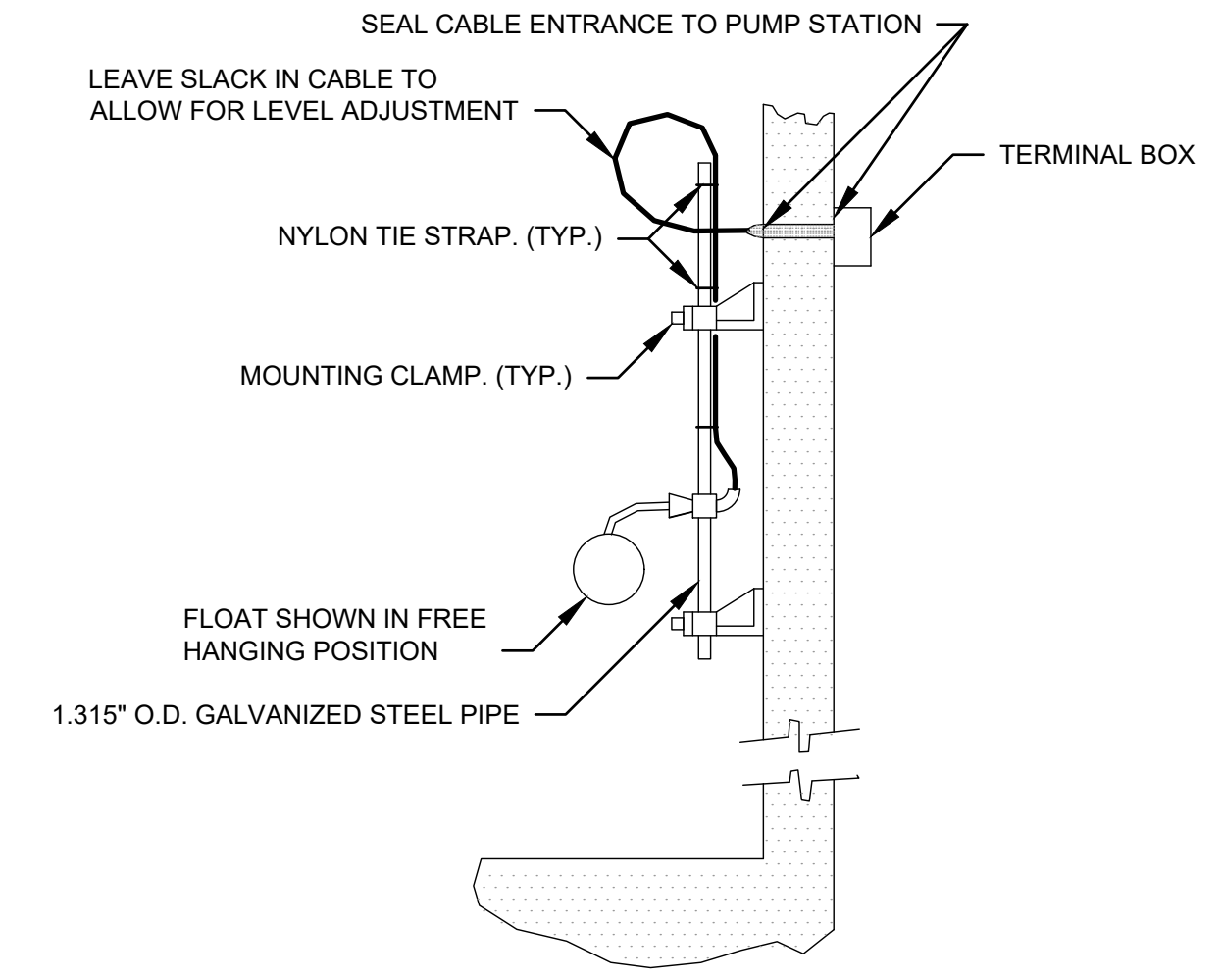
Project No.:	200-280565-21002
Designed By:	GCJ
Drawn By:	JLS
Checked By:	

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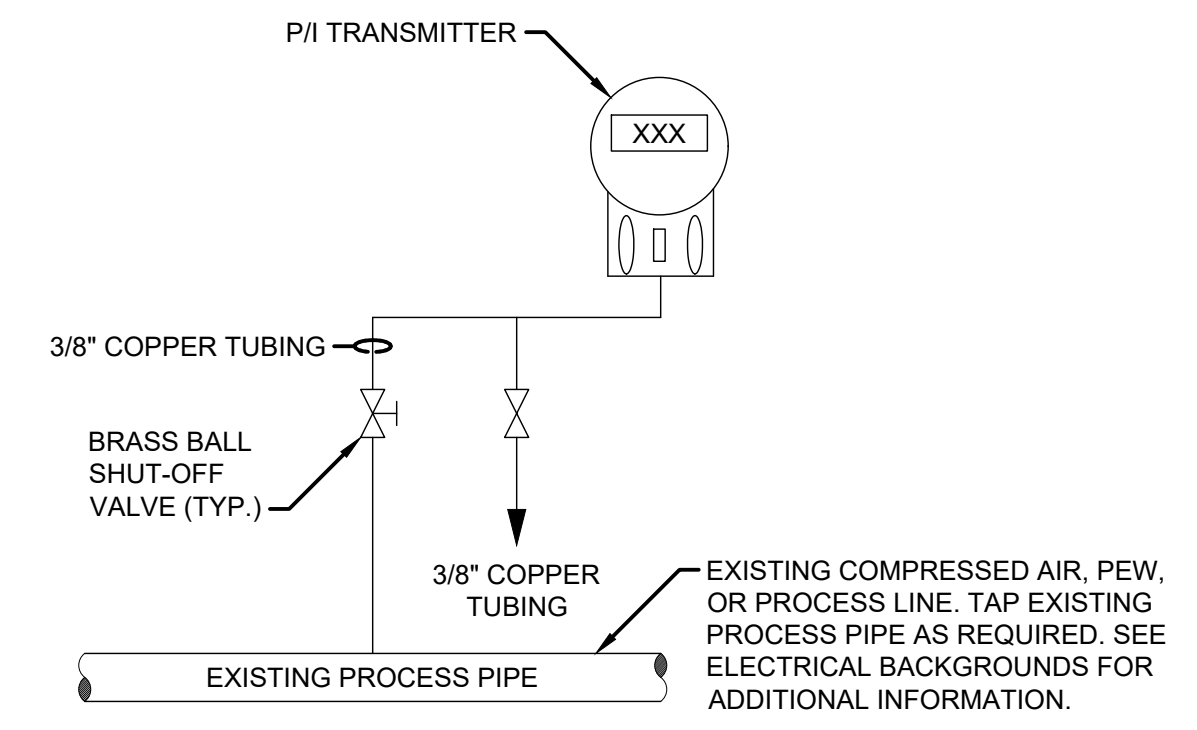
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Bar Measures 1 inch

1/3/2022 5:16:22 PM - \\T:\LOCAL\PROJECTS\ANN ARBOR\IER\280565\200-280565-2\1002\CAD\ISHEETFILES\I-400_INSTRUMENTATION DETAILS.DWG - SHANK, JASON



CORD TYPE - SINGLE FLOAT SWITCH
NO SCALE



TYPICAL PRESSURE TRANSMITTER DETAIL
NO SCALE



MARK	DATE	DESCRIPTION	BY

CITY OF OWOSSO, MICHIGAN
OWOSSO WATER TREATMENT PLANT, AND REMOTE SITES
SCADA SYSTEM UPGRADES
**INSTRUMENTATION
DETAILS**

Project No.:	200-280565-21002
Designed By:	G.C.J.
Drawn By:	J.L.S.
Checked By:	

I-400
OF 62

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