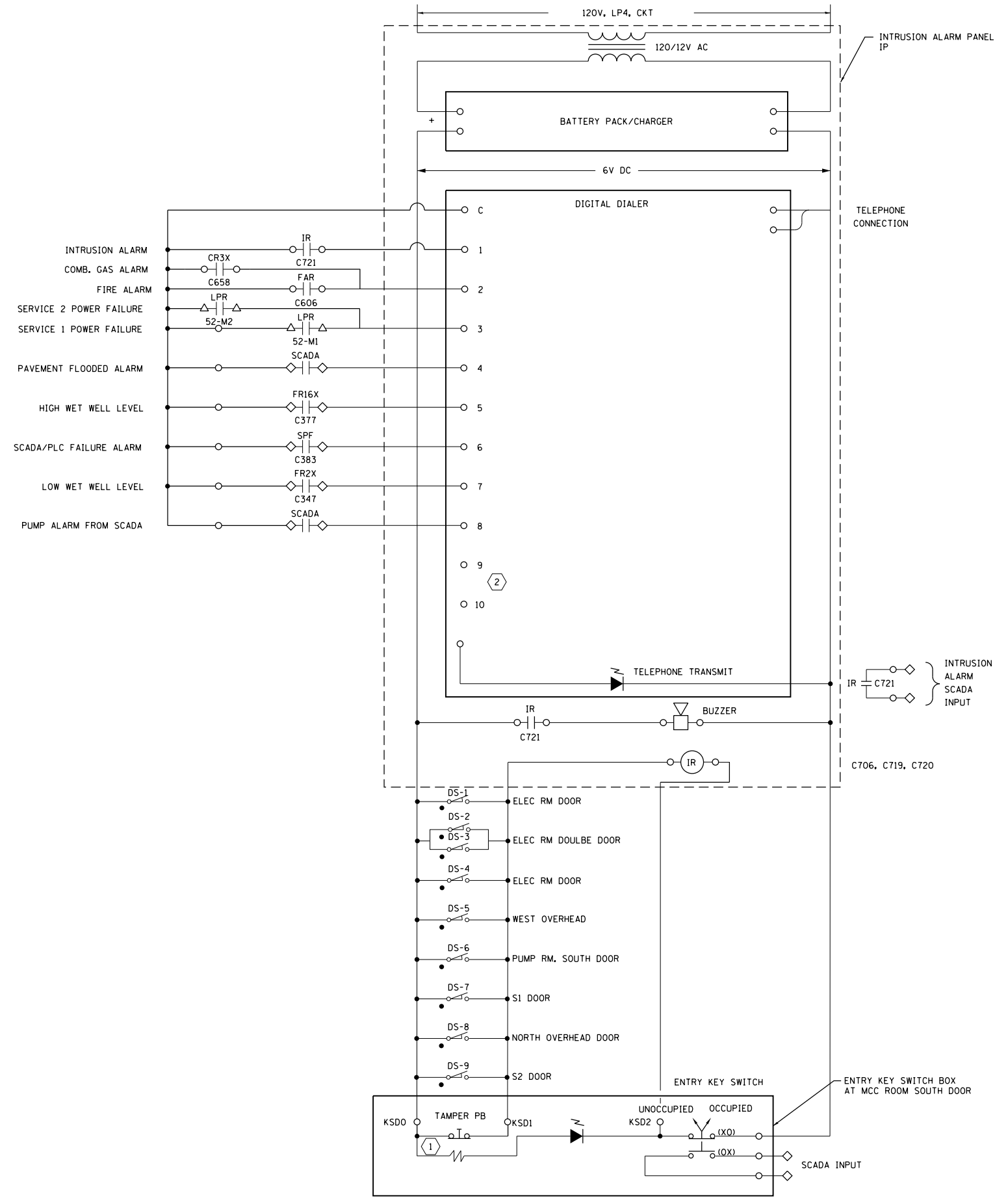






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**KEY NOTES:**

① NORMALLY CLOSED EXTENDED HEAD SWITCH HELD OPEN BY KEY SWITCH ENCLOSURE COVER.

② AEGIS ALARMS 9 AND 10 ARE AEGIS BATTERY LOW AND AEGIS HEARTBEAT RESPECTIVELY AND ARE INTERNAL TO AEGIS PANEL.

**LEGEND:**

◇ TERMINAL IN SCADA PANEL

△ TERMINAL IN MOTOR STARTER

○ TERMINAL IN GAS MONITORING PANEL, FIRE ALARM PANEL OR AEGIS.

● FIELD MOUNTED DEVICE

**GENERAL NOTE:**

1. SEE SHEETS E112 FOR DEVICE LOCATIONS.

**AEGIS/INTRUSION ALARM CIRCUIT**

SHEET E649



FILE NAME = D191454-E649.DGN	USER NAME = bgreen	DESIGNED - MEC - R. VAITLA	REVISED -
		DRAWN - MEC - A. FREEMAN	REVISED -
PLOT SCALE = 0:1' = 1" = 1/16"		CHECKED - MEC - J. ZURAD	REVISED -
PLOT DATE = 5/29/2019		DATE - 03/15/2019	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

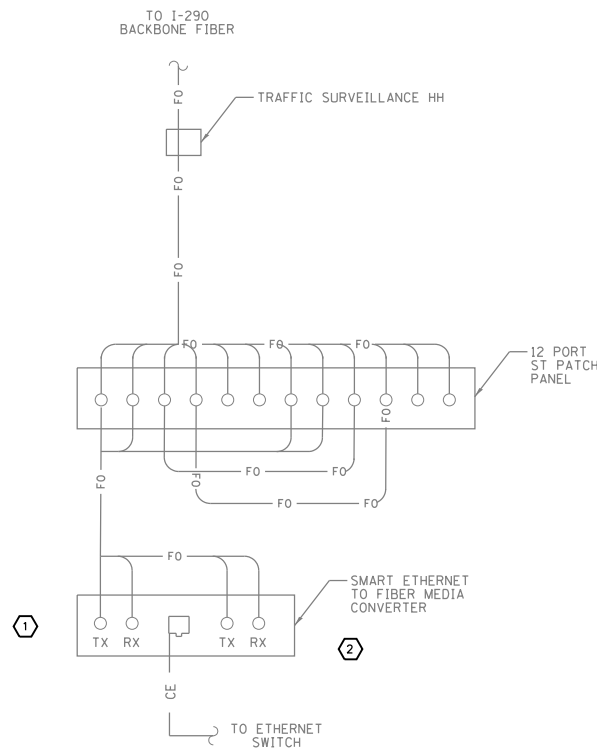
**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
AEGIS/INTRUSION PANEL SCHEMATIC**

SCALE: NONE SHEET OF SHEETS STA. TO STA.

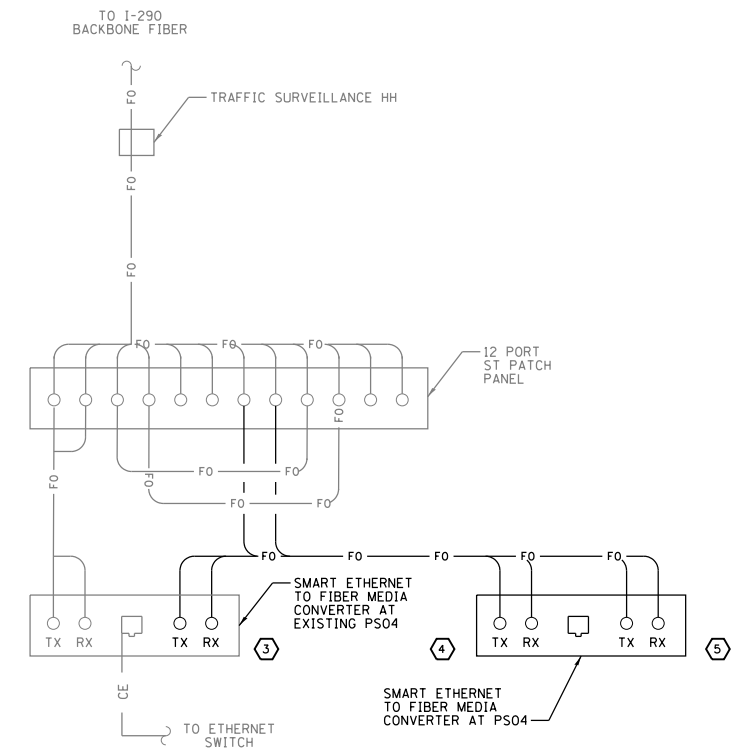
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	203
CONTRACT NO. 62B78				

ILLINOIS FED. AID PROJECT

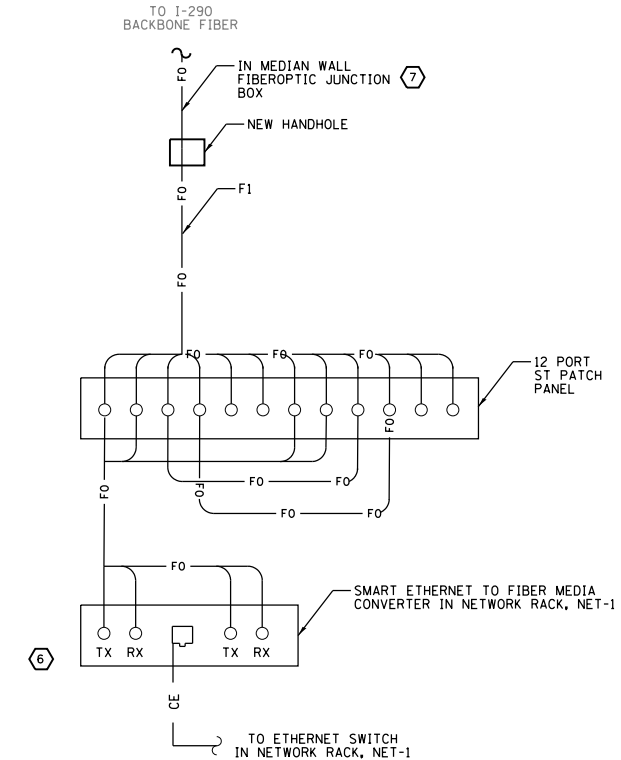
P:\1\Projects\I-290\Drawings\Network\I-290\_Pump\_Station\_No\_4\_Reconstruction\Network\I-290\_Pump\_Station\_No\_4\_Reconstruction\_Sheets\I-290\_Pump\_Station\_No\_4\_Reconstruction\_Sheet\_E650.dgn



**1**  
**FIBEROPTIC COMMUNICATION LINK AT EXISTING PS04**  
 SCALE: NOT TO SCALE



**2**  
**INTERIM FIBEROPTIC COMMUNICATION LINKS TO EXISTING PS04 AND PS04**  
 SCALE: NOT TO SCALE



**3**  
**FINAL FIBEROPTIC COMMUNICATION LINK AT PS04**  
 SCALE: NOT TO SCALE

**KEY NOTES:**

- ① EXISTING HIRSCHMAN FIBER MODULE IS PAIRED WITH A FIBER MODULE AT PS05 IN I-290 AND KENNEDY INTERCHANGE. APPROXIMATE DISTANCE: 12 MILES. COORDINATE WITH IDOT'S EMC FOR ACCESS TO EXISTING PUMP STATIONS, PS05 AND PS20.
- ② EXISTING HIRSCHMAN FIBER MODULE IS PAIRED WITH A FIBER MODULE AT IDOT PS20, DARNSTEAD AND I-290, HILLSIDE, IL. APPROXIMATE DISTANCE: 4.4 MILES.
- ③ REPLACE FIBER MODULE WITH NEW FIBER MODULE TO BE PAIRED WITH NEW MODULE IN NEW PS04. COORDINATE AND PROVIDE ATTENUATION AS NEEDED FOR SHORT FIBER RUN.
- ④ PROVIDE FIBER MODULE TO BE PAIRED WITH MODULE IN OLD PS04. COORDINATE WITH EMC FOR IP ADDRESSES.
- ⑤ PROVIDE FIBER MODULE TO BE PAIRED WITH MODULE AT PS20.
- ⑥ PROVIDE FIBER MODULE TO BE PAIRED WITH MODULE AT PS05.
- ⑦ FOR FINAL FIBEROPTIC LINK TO PS04, SPLICE TO EXISTING TRUNK CABLE IN MEDIAN WALL JUNCTION BOX. SEE SHEET E100 FOR DETAILS AND C103 FOR LOCATION OF FIBEROPTIC JB. TEST WITH OTDR, END TO END, OF EACH FIBER STRAND SPLICED IN JB.

	USER NAME = bgreen	DESIGNED - MEC - R. VAITLA	REVISED -	<b>STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION</b>	<b>I-290 PUMP STATION NO. 4 RECONSTRUCTION FIBEROPTIC COMMUNICATION LINK</b>	F.A.I. RTE. 290	SECTION 3434-2321-R	COUNTY COOK	TOTAL SHEETS 232	SHEET NO. 204
	PLOT SCALE = 0:1' = 1/4" IN.	CHECKED - MEC - J. ZURAD	REVISIED -			SCALE: NONE	SHEET OF SHEETS STA. TO STA.	CONTRACT NO. 62B78		ILLINOIS FED. AID PROJECT
	PLOT DATE = 5/29/2019	DATE - 03/15/2019	REVISIED -							SHEET E650

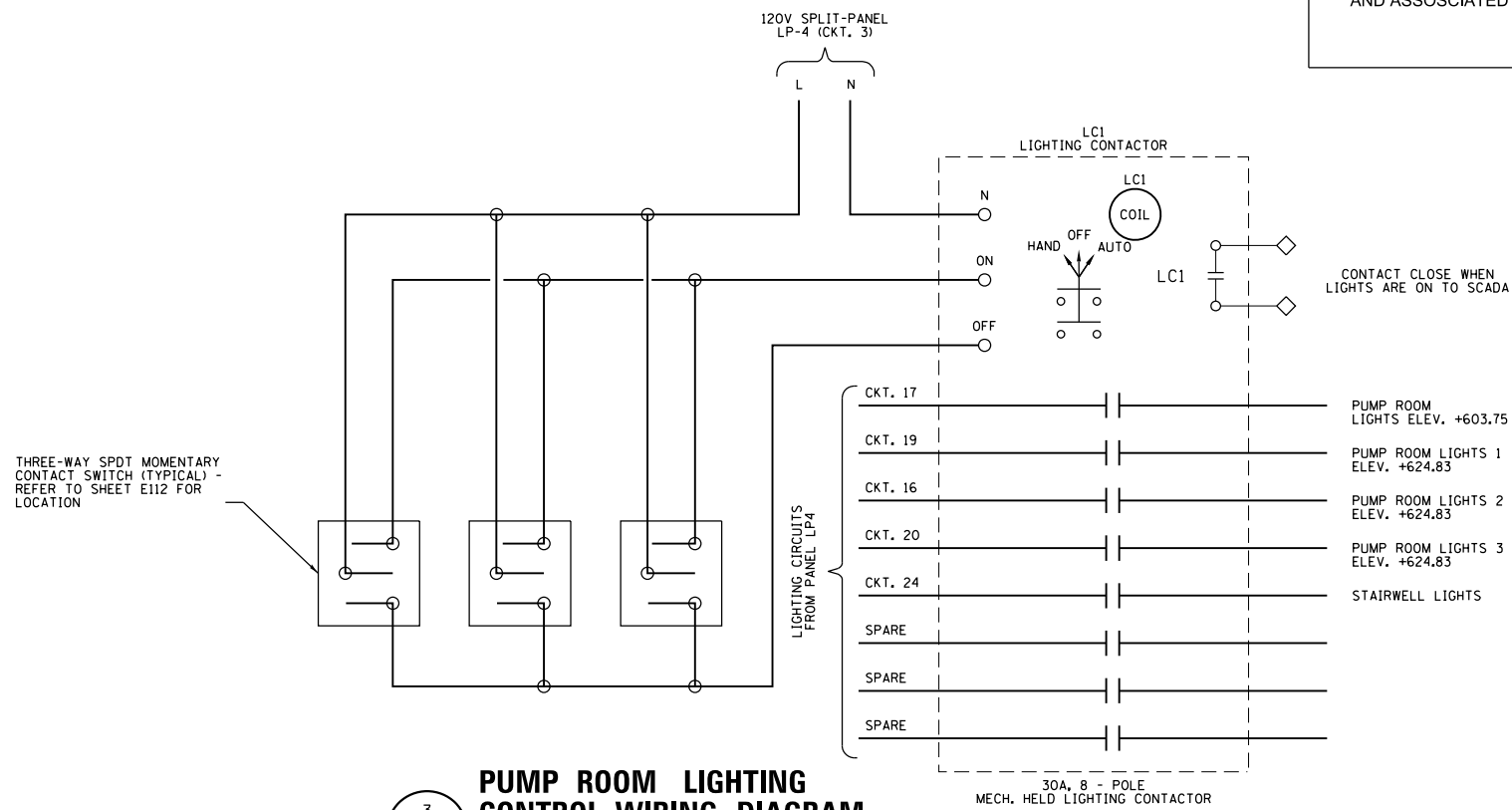


PANEL SCHEDULE		DESIGNATION: LP4			MAINS: 150A						
		LOCATION: ELECTRICAL VAULT			BUS SIZE: 225A						
		VOLTAGE: 208/120 VOLT			PANEL MOUNTING: SURFACE						
		PHASE: 3 PHASE, 4 WIRE			ALL BREAKERS: 25KAIC						
CKT. NO.	LOAD DESCRIPTION	VA	BREAKER			VA	BREAKER			LOAD DESCRIPTION	CKT. NO.
			AMPS	POLE	A		AMPS	POLE	A		
1	EXTERIOR LIGHTING CONTROLS	20	20	1	170		20	1	150	TRAFFIC SURV CABINET	2
3	PUMP ROOM LIGHTING CONTROLS	20	20	1		220	20	1	200	COMBUSTIBLE GAS PANEL	4
5	AEGIS PANEL	50	20	1			20	1	10	ELECTRICAL ROOM CLOCK	6
7	FIRE ALARM CONTROL PANEL	300	20	1	1,200		20	1	900	RECP ELEC ROOM	8
9	ELECTRICAL ROOM LIGHTS	378	20	1		1,158	20	1	780	WET WELL EAST LIGHTS	10
11	EM LIGHTS AND EXITS	550	20	1			20	1	832	NIGHT LIGHTS	12
13	EXTERIOR BUILDING LIGHTS	832	20	1	1,782		20	1	950	RECP PUMP ROOM EL 624.83	14
15	GRIT CHAMBER LIGHTS	500	20	1		1,865	20	1	1365	PUMP ROOM LIGHTS 2 ELEV. +624.83	16
17	PUMP ROOM LIGHTS ELEV. +603.75	900	20	1			20	1	1190	WET WELL WEST LIGHTS	18
19	PUMP ROOM LIGHTS 1 ELEV. +624.83	1170	20	1	2,340		20	1	1170	PUMP ROOM LIGHTS 3 ELEV. +624.83	20
21	SCADA PANEL 1	2880	30	1		3,480	20	1	600	AHU RECP	22
23	SCADA PANEL 2	2880	30	1			20	1	400	STAIRWELL LIGHTS	24
25	RECP PUMP ROOM EL 603.75	600	20	1	600		20	1	0	SPARE	32
27	GRIT CHAMBER RECP	600	20	1		600	20	1	0	SPARE	34
29	SPARE	0	20	1			20	1	0	SPARE	36
31	SPARE	0	20	1	200		20	1	200	GEN TERM CABINET HEATER	32
33	SPACE	0	20	1		0	0	1	0	SPACE	34
35	SPACE	0	0	1			0	1	0	SPACE	36
37	SPACE	0	0	1	0		0	1	0	SPACE	38
39	SPACE	0	0	1		0	0	1	0	SPACE	40
41	SPACE	0	0	1		0	0	1	0	SPACE	42
<b>TOTAL CONNECTED LOAD:</b>					<b>6,292</b>	<b>7,323</b>	<b>6,812</b>	<b>TOTAL =</b>	<b>20.43</b>	<b>KVA</b>	
			<b>AMPERE</b>					<b>TOTAL =</b>	<b>57</b>	<b>AMP</b>	

**KEY NOTES:**

- 1 PROVIDE HANDLE CLIPS TO SECURE THEM IN ON POSITION AND TO PREVENT CASUAL OPERATION.

1 LIGHTING PANEL SCHEDULE  
E651



3 PUMP ROOM LIGHTING CONTROL WIRING DIAGRAM  
E651

**LIGHTING FIXTURE SCHEDULE**

NOTE: PROVIDE OPTIONS AND ACCESSORIES AS NEEDED. MANUFACTURERS LISTED AS ACCEPTABLE SHALL MEET ALL REQUIREMENTS AND FEATURES INDICATED. ACCEPTABLE MANUFACTURERS MUST MEET PHOTOMETRIC PERFORMANCE OF THE LISTED UNIT.

TAG	DESCRIPTION/USAGE	LAMP		TOTAL WATTS	VOLT	MOUNTING	LUMINAIRE		OPTIONS/ACCESSORIES	SEE NOTES
		QTY.	TYPE				MANUFACTURER	CATALOG SERIES		
A	ROUND, CLASS I, DIVISION II PENDANT/WALL MOUNTED FIXTURE	NA	LED	50	120	WALL & PENDANT MOUNT	HOLOPHANE OR EQUAL	HPLD 42 350 4K AS UN/US G L5 40C	1, 2, 6	1, 2, 4, 7
B	1'X4' LINEAR FIXTURE	NA	LED	42	120	PENDANT	HOLOPHANE OR EQUAL	HZL1D L48 5000LM FST MVOLT 40K 80CRI WH	1, 6	1, 2, 4, 7
C	ROUND, CLASS I, DIVISION II PENDANT FIXTURE	NA	LED	150	120	PENDANT	HOLOPHANE OR EQUAL	HPLD 56 700 4K AS UN/US G L5 40C	1, 2, 7	1, 2, 4, 7
D	CLASS I, DIVISION II BATTERY OPERATED EMERGENCY LIGHT	NA	HALOGEN W/ LED FOR SIGN	50	120	WALL	LITHONIA OR EQUAL	Z121225N - H1212 SD TD	2, 3, 4	1, 7
E	EXTERIOR WALL MOUNTED FIXTURE	NA	LED	67	120	WALL	LITHONIA OR EQUAL	TWP LED-20C-700-40K-T3M-MVOLT-PE-DBLXD	2, 8	1, 4, 5
F	INTERIOR CLASS I, DIVISION II FLOOD LIGHT	NA	LED	105	120	WALL	HOLOPHANE OR EQUAL	HPFM 4 4K 07A AS 44 3 GP 0423	2, 9	1, 4
G	EXTERIOR WALL MOUNTED EGRESS FIXTURE W/ BATTERY PACK	NA	LED	19	120	WALL	VISIONAIRE LIGHTING OR EQUAL	VSC-1 T2 16LC 3 4K UNV WM BK EBPL	2, 3, 4	1, 4, 5
X1	EXIT COMBO UNIT	NA	LED	36	120	WALL	LITHONIA OR EQUAL	LHZ636-S-1-H1206-SD-TD	2, 3, 4, 6	5, 6
X2	EXIT/EMERGENCY COMBO UNITS WITH BATTERY OPERATE EMERGENCY	NA	HALOGEN W/ LED FOR SIGN	19.1	120	WALL	COOPER OR EQUAL	CHX-DH SERIES	5, 7	1, 3

**LIGHTING OPTIONS/REMARKS:**

- PROVIDE WITH RIGID STEMS FOR PENDANT MOUNT FIXTURES. MOUNT TO RAFTERS WITH BEAM CLAMPS.
- WET LOCATION APPROVED.
- PROVIDE WITH 120MIN. BATTERY TEST SWITCH AND PILOT LIGHT
- FIXTURES TO BE MOUNTED AT 8' AFF. VIF.
- EXIT UNIT COMBO SHALL BE MOUNTED AT 7'6" AFF. VIF.
- FIXTURES TO BE MOUNTED AT APPROXIMATELY 9' AFF. VIF.
- FIXTURES TO BE MOUNTED AT APPROXIMATELY 32' AFF. VIF.
- FIXTURES TO BE MOUNTED AT APPROXIMATELY 16' AFF. COORDINATE EXACT LOCATIONS WITH ARCHITECTURAL PLANS.
- FLOOD LIGHT TO BE MOUNTED ON THE EDGE OF THE FLOOR AND ANGLED AS TO ILLUMINATE THE PUMPS IN THE WET WELL BELOW.
- PROVIDE WITH EBPL OPTION AND PROVIDE FULHAM FIRE FORSE MODEL FHS2-UNV-36L WITH BATTERY MODEL FHSBATL6-3. THESE PRODUCT NUMBERS ARE TO BE CONFIRMED WITH THE MANUFACTURER AND PROVIDED WITH ALL WIRING HARNESSSES AND ASSOCIATED APPURTENANCES.

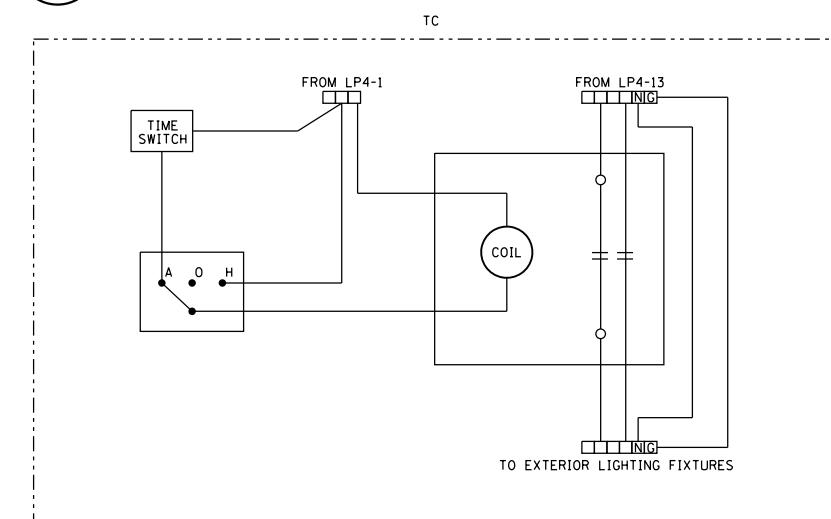
**NOTES:**

- PROVIDE WITH LAMPS.
- REFER TO DRAWING FOR CEILING TYPE, PROVIDE MOUNTING ACCORDINGLY
- PROVIDE WITH SINGLE FACE, DOUBLE FACE AND ARROW AS SPECIFIED ON DRAWINGS.
- ALL SPECIFIED LED LIGHTING SHALL BE 4000K COLOR TEMPERATURE.
- PROVIDE WITH TIME SWITCH.
- FIXTURE WITH PREMIUM FINISH. SUBMIT FINISH FOR ENGINEER'S REVIEW.
- COORDINATE LOCATION TO AVOID OBSTRUCTION TO HVAC EQUIPMENT, HOIST BEAM, PUMP REMOVAL AND ELECTRICAL EQUIPMENT.

**PHOTOMETRIC COMPLIANCE NOTES:**

DESIGN LIGHTING PHOTOMETRIC BASED ON ABOVE LISTED FIRST MANUFACTURE MODEL NUMBER. EC SHALL PROVIDE PHOTOMETRIC, IF OTHER ABOVE LISTED LIGHT FIXTURE USED.

2 LIGHTING FIXTURE SCHEDULE  
E651



**NOTE:**

- NEMA 1 2 POLE 30A, CONTACTOR WITH H-O-A SWITCH ON OUTER ENCLOSURE, PROVIDE ASTRONOMICAL TIME SWITCH.
- CIRCUITS SHOWN FOR BUILDING LIGHTING. REFER TO PANEL SCHEDULE FOR STREET LIGHTING CIRCUIT REQUIREMENTS.

4 EXTERIOR LIGHTING CONTACTOR AND TIMER WIRING DIAGRAM  
E651





MISCELLANEOUS INSTRUMENTATION ABBREVIATIONS			
ACT	ACTUATOR	MCC	MOTOR CONTROL CENTER
AI	ANALOG INPUT	MCP	MASTER CONTROL PANEL
AO	ANALOG OUTPUT	MOV	METAL-OXIDE VARISTOR
AP	AEGIS PANEL	MP	MAIN PUMP
BDR	BUS DIFFERENTIAL RELAY	MS	MOTOR STARTER
CAM	CAMERA	MOR	MOTOR OVERLOAD RELAY
CB	CIRCUIT BREAKER	MPR	MOTOR PROTECTION RELAY
CGM	COMBUSTIBLE GAS MONITOR	NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
CL2	CHLORINE (ANALYZER MODIFIER)	NOX	NITROGEN OXIDE (ANALYZER MODIFIER)
CO	CARBON MONOXIDE (ANALYZER MODIFIER)	OI	OPERATOR INTERFACE
CO2	CARBON DIOXIDE (ANALYZER MODIFIER)	O2	OXYGEN (ANALYZER MODIFIER)
COMB	COMBUSTIBLES (ANALYZER MODIFIER)	OL	OVERLOAD
COND	CONDUCTIVITY (ANALYZER MODIFIER)	PB	PUSH BUTTON
CP	CONTROL PANEL	P&ID	PROCESS AND INSTRUMENTATION DIAGRAM
CS	CONTROL STATION	PI	PRESSURE INDICATOR
DEN	DENSITY (ANALYZER MODIFIER)	PIT	PRESSURE INDICATING TRANSMITTER
DG	DISCHARGE GATE	PLC	PROGRAMMABLE LOGIC CONTROLLER
D1	DIGITAL INPUT	PMT	POWER MONITORING TRANSMITTER
DM	DAMPER	PS	PUMPING STATION
DO	DIGITAL OUTPUT, DISSOLVED OXYGEN (ANALYZER MODIFIER)	PTT	PUSH TO TEST
DS	DOOR SWITCH	RG	RECIRCULATION GATE
EF	EXHAUST FAN	SCADA	SUPERVISORY CONTROL AND DATA ACQUISITION
ELEVATION	ELEVATION	SD	SMOKE DETECTOR
E/P	VOLTAGE TO PNEUMATIC	SEL	SCHWEITZER ENGINEERING LABORATORIES
ETM	ELAPSED TIME METER	SF	SUPPLY FAN
FACP	FIRE ALARM CONTROL PANEL	SP	SPARE, SCADA PANEL
FDR	FEEDER PROTECTION RELAY	SPD	SURGE PROTECTION DEVICE
FP	FIRE PUMP	SRN	MECHANICAL SCREEN
GFR	GROUND FAULT RELAY	SS	SELECTOR SWITCH, SUSPENDED SOLIDS (ANALYZER MODIFIER)
GFCI	GROUND FAULT CIRCUIT INTERRUPTER	SV	SOLENOID VALVE
GPS	GLOBAL POSITIONING SYSTEM	SW	SWITCH
GPR	GENERATOR PROTECTION RELAY	TB	TERMINAL BLOCK
GS	GAS SENSOR	TCP	TRANSMISSION CONTROL PROTOCOL
H2S	HYDROGEN SULFIDE (ANALYZER MODIFIER)	T-STAT	THERMOSTAT
HCL	HYDROGEN CHLORIDE (ANALYZER MODIFIER)	TDR	TIME DELAY RELAY
HD	HEAT DETECTOR	TPR	TIE PROTECTION RELAY
HMI	HUMAN MACHINE INTERFACE	TURB	TURBIDITY (ANALYZER MODIFIER)
HR	HORN RELAY	UPS	UNINTERRUPTIBLE POWER SUPPLY
IG	INFLUENT GATE	USS	UNIT SUBSTATION
I/O	INPUT/OUTPUT	WAN	WIDE AREA NETWORK
I/P	CURRENT TO PNEUMATIC		
ISBR	INTRINSICALLY SAFE BARRIER RELAY		
JB	JUNCTION BOX		
LCP	LOCAL CONTROL PANEL		
LCS	LOCAL CONTROL STATION		
LF	LEVEL ELEMENT		
LFP	LOW FLOW PUMP		
LI	LEVEL INDICATOR		
LIT	LEVEL INDICATING TRANSMITTER		
LPR	LINE PROTECTION RELAY		
LTG	LIGHTING		
NDX	INDEX		

INSTRUMENT IDENTIFICATION LETTERS					
	FIRST LETTER		SUCCEEDING LETTERS		
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM	ANNUNCIATE	AMBER OR AUTO
B	BURNER, COMBUSTION		USER'S CHOICE	BUTTON	BLUE
C	SYSTEM			CONTROL	CLOSED
D	USERS CHOICE	DIFFERENTIAL			DOWN
E	VOLTAGE		SENSOR (PRIMARY ELEMENT)		
F	FLOW RATE	RATIO (FRACTION)	FAIL		FLOOR, OR FORWARD OR OFF
G	GAS		GLASS, VIEWING DEVICE		GREEN OR GROUND
H	HAND (MANUAL)				HIGH
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER	SCAN	RATE OF CHANGE		
K	TIME, TIME SCHEDULE	TIME; RATE OF CHANGE	KEYPAD (DATA ENTRY)	CONTROL STATION	
L	LEVEL		LIGHT (PILOT)		LOW OR CONTROL
M	MOTOR	MOMENTARY			MONITORING
N	TORQUE		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
O	USER'S CHOICE		ORIFICE, RESTRICTION		OPEN, OFF
P	PRESSURE, VACUUM		POINT (TEST) CONNECTION		STOP
Q	QUANTITY	INTEGRATE, TOTALIZE			
R	RADIATION		RECORD TREND LOG		RUNNING
S	SPEED, FREQUENCY	SAFETY		SWITCH	START
T	TEMPERATURE	TORQUE		TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	UP
V	VIBRATION, MECH, ANALYSIS			VALVE, DAMPER, LOUVER	VALVE
W	WEIGHT, FORCE		WELL		
X	UNCLASSIFIED	X AXIS	UNCLASSIFIED	UNCLASSIFIED	COUNT
Y	EVENT, STATE OR PRESENCE	Y AXIS		RELAY, COMPUTE, CONVERT	
Z	POSITION, DIMENSION	Z AXIS		DRIVER, ACTUATOR, UNCLASSIFIED FINAL CONTROL ELEMENT	

TYPICAL EXAMPLES OF INSTRUMENT IDENTIFICATION	
YA	DEVICE ALARM
YL	DEVICE CONTROL
YS	DEVICE START
YP	DEVICE STOP
YR	DEVICE RUN
YO	DEVICE OPEN
YC	DEVICE CLOSE
ZSO	POSITION SWITCH OPEN
ZSC	POSITION SWITCH CLOSE
ZI	POSITION INDICATION
ZIC	POSITION INDICATION CONTROL
HSR	HAND SWITCH REMOTE
PSH	PRESSURE SWITCH HIGH
LSH	LEVEL SWITCH HIGH
LSL	LEVEL SWITCH LOW
FIT	FLOW INDICATING TRANSMITTER
JT	POWER TRANSMITTER
LIT	LEVEL INICATING TRANSMITER

TAG NUMBER DESIGNATIONS	
04101	EAST WET WELL FLOATS
04102	WEST WET WELL FLOATS
042XX	SLUICE GATE ACTUATORS
04311	SCREEN #1
04312	SCREEN #2
04411	EAST INFLUENT CHANNEL & EAST WET WELL LEVELS
04412	WEST INFLUENT CHANNEL & WEST WET WELL LEVELS
04421	DISCHARGE COMBINATION BOX CHANNEL
0450X	LOW FLOW PUMPS 1-2
0460X	MAIN PUMPS 1-10
04700	STATION LIGHTING
0471X	UNIT SUBSTATION #1 ELECTRICAL
0472X	MOTOR CONTROL CENTER ELECTRICAL
04740	BRIDGE CRANE
04800	COMBUSTIBLE GAS MONITOR
04810	FIRE ALARM CONTROL PANEL
04820	AEGIS PANEL
0485X	HVAC SYSTEM
0490X	SCADA PANEL
0495X	NETWORK RACK

(NOTE 1)

CONTROL SWITCH NOTATION ABBREVIATIONS			
XXX	XXX	LS	LEAD-STANDBY
XXXX	XXXX	MA	MANUAL-AUTO (MAINTAINED CONTACT)
ACK	ACKNOWLEDGE	MOA	MANUAL-OFF-AUTO (MAINTAINED CONTACT)
ALRT	ALERT	O	OPEN
ALT	ALTERNATE	O/C	OVER CURRENT
C	CLOSE	OA	OFF-AUTOMATIC
COMM	COMMUNICATIONS	OAC	OPEN-AUTO-CLOSE
CM	COMPUTER -MANUAL	OC	OPEN-CLOSE
DIFF	DIFFERENCE OR DIFFERENTIAL	OCA	OPEN-CLOSE-AUTO (MAINTAINED CONTACT)
DN	DEVICENET	OO	ON-OFF(MAINTAINED CONTACT)
DO	DISSOLVED OXYGEN	OOA	ON-OFF-AUTO(MAINTAINED CONTACT)
ETM	ELAPSED TIME METER	OOR	ON-OFF-REMOTE(MAINTAINED CONTACT)
ESTOP	EMERGENCY STOP	OSC	OPEN-STOP-CLOSE (MAINTAINED CONTACT)
FIX)	CHARACTERIZED	R	RUN
FAIL	FAILURE	REV	REVERSE
FOR	FORWARD-OFF-REVERSE (MAINTAINED CONTACT)	RSET	RESET
FSR	FORWARD-STOP-REVERSE (MOMENTARY CONTACT)	RJ	RUN-JOG
FR	FORWARD-REVERSE	RJR	RUN-JOG-REVERSE
FS	FAST-SLOW	SBL	SLUDGE BLANKET INTERFACE LEVEL
FWD	FORWARD	SP	SPEED POT
F/W	FORWARD/REVERSE (MOTOR STARTER COILS)	SPD	SPEED
HA	HAND-AUTO	SQRT	SQUARE ROOT
HOA	HAND-OFF-AUTOMATIC (MAINTAINED CONTACT)	SS	START-STOP (MOMENTARY CONTACT)
HOR	HAND-OFF-REMOTE(MAINTAINED CONTACT)	SSA	START-STOP-AUTO (MOMENTARY CONTACT)
II	CURRENT-TO-CURRENT	SSL	START-STOP-LOCK (LOCKABLE IN "STOP" POSITION MOMENTARY CONTACT)
LL	LEAD-LAG	STRT	START
LOE	LOSS OF ECHO (ULTRASONIC SENSOR FAILURE)	SUM	SUMMATION
LLS	LEAD-LAG-STANDBY	SUSP	SUSPEND
LOR	LOCAL-OFF-REMOTE(MAINTAINED CONTACT)	VIB	VIBRATION
LOS	LOCKOUT STOP (LOCKABLE IN "STOP" POSITION MOMENTARY CONTACT)	X	MULTIPLY
LR	LOCAL-REMOTE	XFRM	TRANSFORMER

**GENERAL NOTES:**














































































- 1. PUMP STATION PREFIX 04 TO TAG NUMBERS IS OMITTED IN P&ID DRAWINGS FOR CLARITY, SHOP DRAWINGS SHALL INCLUDE PREFIX 04 TO ALL TAG AND LOOP NUMBERS.







**GENERAL NOTES:**

- 1. THIS IS A STANDARD INSTRUMENTATION SYMBOLOGY AND ABBREVIATIONS SHEET, LISTING OF SYMBOLS AND ABBREVIATIONS DOES NOT IMPLY ALL SYMBOLS AND ABBREVIATIONS HAVE BEEN USED ON THIS PROJECT.
- 2. ABBREVIATIONS LISTED ARE SUPPLEMENTAL TO THE GENERAL ABBREVIATIONS LEGEND SHEET AND TAKE PRECEDENCE ON THE INSTRUMENTATION AND CONTROLS SHEETS.

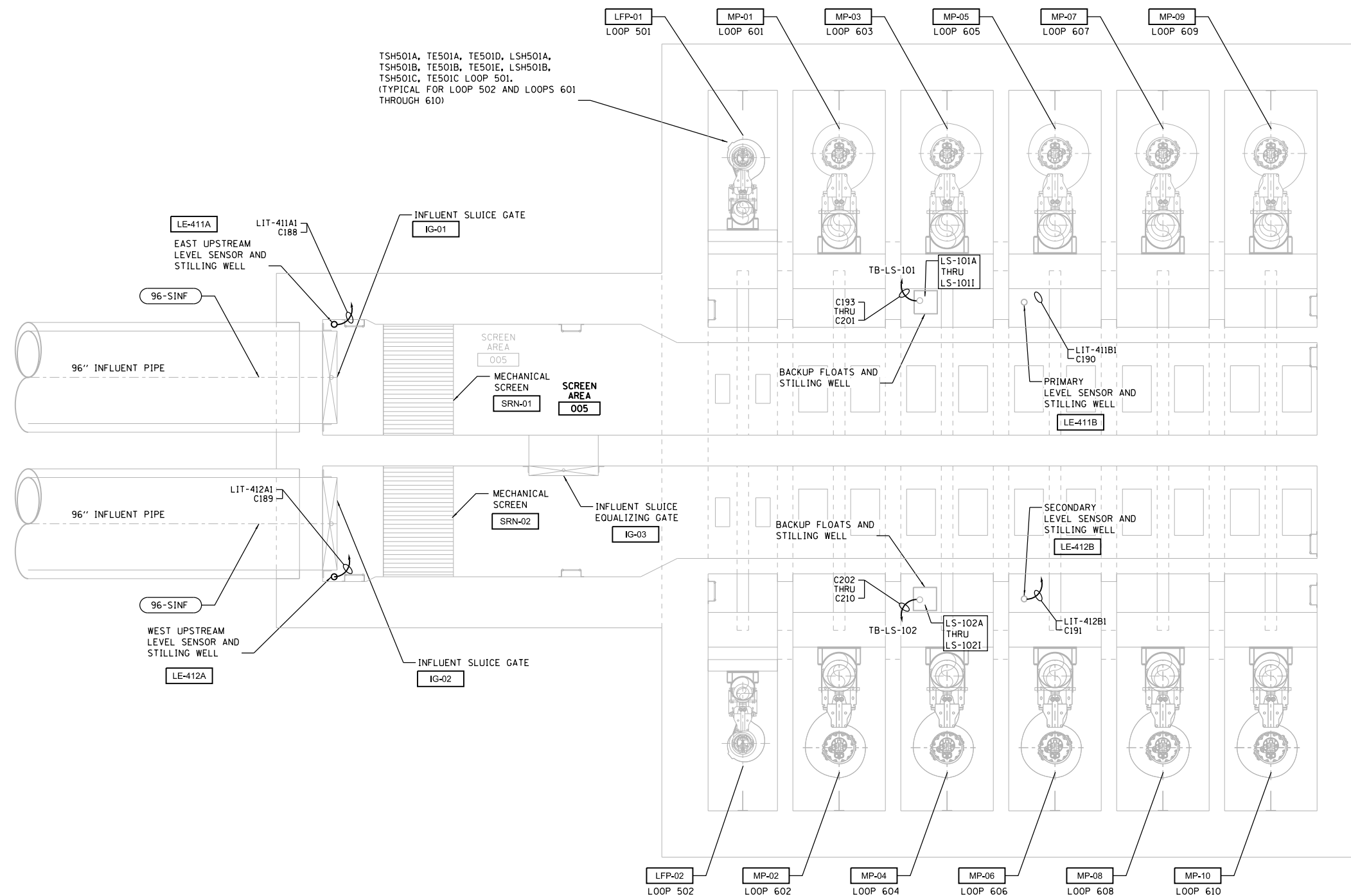
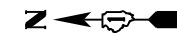
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PRIMARY ELEMENT SYMBOLOGY	INSTRUMENT SYMBOLOGY	VALVES
 ORIFICE PLATE  PITOT TUBE OR ANNUBAR  ROTOMETER  SONIC OR ULTRASONIC FLOWMETER  MAGNETIC FLOWMETER  MASS DISPERSION FLOWMETER  FLUME  WEIR  PROPELLER OR TURBINE METER  VENTURI TUBE  FLOAT SWITCH  LEVEL ELEMENT, ULTRASONIC, SUSPENDED, NON-INTURSIVE  LEVEL ELEMENT, HYDROSTATIC, SUSPENDED, SUBMERSIBLE	 LOCALLY MOUNTED FIELD INSTRUMENTATION  MOUNTED ON PANEL FRONT  MOUNTED INSIDE PANEL  FRONT PANEL MOUNTED ON AUXILIARY PANEL (SUBSCRIPT INDICATES PANEL)  MOUNTED INSIDE AUXILIARY PANEL  PROGRAMMABLE CONTROL, BASED FUNCTIONS LOCATION - NORMALLY NONACCESSIBLE TO OPERATOR  PROGRAMMABLE LOGIC CONTROL, FIELD MOUNTED  PANEL MOUNTED O/U FUNCTIONS MOUNTED FIELD INSTRUMENTATION  PANEL MOUNTED O/U FUNCTIONS ON PANEL FRONT  PANEL MOUNTED O/U FUNCTIONS INSIDE PANEL  PANEL MOUNTED O/U FUNCTIONS ON AUXILIARY PANEL (SUBSCRIPT INDICATES PANEL)  PANEL MOUNTED O/U FUNCTIONS AUXILIARY PANEL  PLC OUTPUT (AO OR DO) WITH VALUE OR STATUS OF CONTROL DISPLAYED ON LOCAL SCADA PANEL HMI (VIEWABLE ON HMI BY OPERATOR) (CONTROL POINT OR VALUE NOT ACCESSIBLE TO OPERATOR)  PLC INPUT (AI OR DI) WITH VALVE OR STATUS DISPLAYED ON LOCAL SCADA PANEL HMI (VIEWABLE ON HMI BY OPERATOR)  PROGRAMMABLE LOGIC CONTROL, PRIMARY LOCATION - NORMALLY ACCESSIBLE TO OPERATOR  PROGRAMMABLE LOGIC CONTROL, PRIMARY LOCATION - NORMALLY NONACCESSIBLE TO OPERATOR  PROGRAMMABLE LOGIC CONTROL, FIELD MOUNTED  PILOT LIGHT  INSTRUMENT FUNCTIONS SHARING COMMON HOUSING  COMPLEX INTERLOCK AS DEFINED IN CONTROL DIAGRAM OR IN SPECIFICATIONS	 BALL VALVE  BUTTERFLY VALVE  CONE VALVE  CHECK VALVE  DOUBLE-DISK CHECK VALVE  BALL CHECK VALVE  DIAPHRAGM VALVE  GATE VALVE  GLOBE VALVE  KNIFE GATE VALVE  NEEDLE VALVE  PINCH VALVE  PLUG VALVE  THREE-WAY BALL VALVE  THREE-WAY PLUG VALVE  PRESSURE-REDUCING VALVE  PRESSURE-REGULATING VALVE  THREE-WAY CONTROL VALVE  PRESSURE-RELIEF VALVE  AIR-RELEASE VACUUM VALVE <p style="font-size: small;">A = AIR RELEASE VAC = VACUUM</p>
LINE TYPES AND SIGNALS		
 MAIN PROCESS LINE  SECONDARY PROCESS LINE  AUXILIARY PROCESS LINE  DIRECTION OF FLOW  HYDRAULIC SIGNAL  SOFTWARE OR DATA LINK  SIGNAL CONNECTION  CROSSOVER - NO CONNECTION  FIBEROPTIC CABLE  ANALOG SIGNAL (4 TO 20 mADC ETC)  DATA HIGHWAY  SERIAL LINK (RS-232-RS-485)  ELECTROMAGNETIC OR SONIC (GUIDED)  TIME SIGNAL IRIG-B (COAXIAL)  ETHERNET COMMUNICATION (CAT6 COPPER)  X DENOTES SIGNAL QUANTITIES  MECHANICAL LINK		
	GATE SYMBOLS	
	 SLUICE  SLIDE  WFR GATE  STOP PLANK  FLAP GATE	
	TYPES OF POWER SUPPLY	
	<p style="font-size: small;">             A PLANT COMPRESSED AIR              IA INSTRUMENTATION AIR              ES ELECTRIC SUPPLY              HYD HYDRAULIC           </p>	
CROSS REFERENCE SYMBOLOGY		
 CONTINUATION ON SHEET Y-3  CONTINUATION ON SHEET Y-3		

ACTUATOR SYMBOLOGY	
 OPERATOR ABBREVIATIONS: <p style="font-size: x-small;">M = MOTOR P = PNEUMATIC S = SOLENOID</p>	
 FLOAT OPERATOR  SPRING-OPOSED SINGLE-ACTING PNEUMATIC CYLINDER  DOUBLE-ACTING PNEUMATIC CYLINDER  PNEUMATIC DIAPHRAGM  PNEUMATIC DIAPHRAGM WITH POSITIONER	

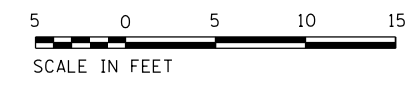
- GENERAL NOTES:**
- SEE PROCESS, MECHANICAL AND PLUMBING LEGEND SHEET FOR MISCELLANEOUS PIPING SYMBOLS.
  - SCREENING OR SHADING OF WORK IS USED TO INDICATE EXISTING COMPONENTS OR TO DE-EMPHASIZE PROPOSED IMPROVEMENTS FOR SELECTED TRADE WORK. REFER TO CONTEXT OF EACH SHEET FOR USAGE.
  - VALVE SYMBOLS SHOWN HERE ARE APPLICABLE ONLY TO INSTRUMENTATION DIAGRAMS. SEE PROCESS, MECHANICAL AND PLUMBING LEGEND SHEET FOR VALVE SYMBOLS USED ELSEWHERE ON THE SHEETS.



**I&C PLAN AT ELEVATION 566.75**

**GENERAL NOTES:**

1. IN ORDER TO KEEP CLARITY, NOT ALL CONDUITS ARE SHOWN. THE CONTRACTOR IS RESPONSIBLE FOR ALL WIRING AND CONDUIT, WHETHER SHOWN OR NOT, NECESSARY FOR A COMPLETE AND OPERABLE SYSTEM.



P:\\_P\48P\048P\NorthCentral\Omaha\Documents\001915\CON\07431\00000000271972\6.0\_CAD\_BIM\6.2\_Work\In\_Progress\6.2.2\_CAD\_Sheets\0191454-IC101



FILE NAME = 0191454-IC101.DGN	USER NAME = bgreen	DESIGNED - MEC - P. DE SILVA	REVISED -
		DRAWN - MEC - A. FREEMAN	REVISED -
		CHECKED - MEC - J. ZURAD	REVISED -
		DATE - 03/15/2019	REVISED -

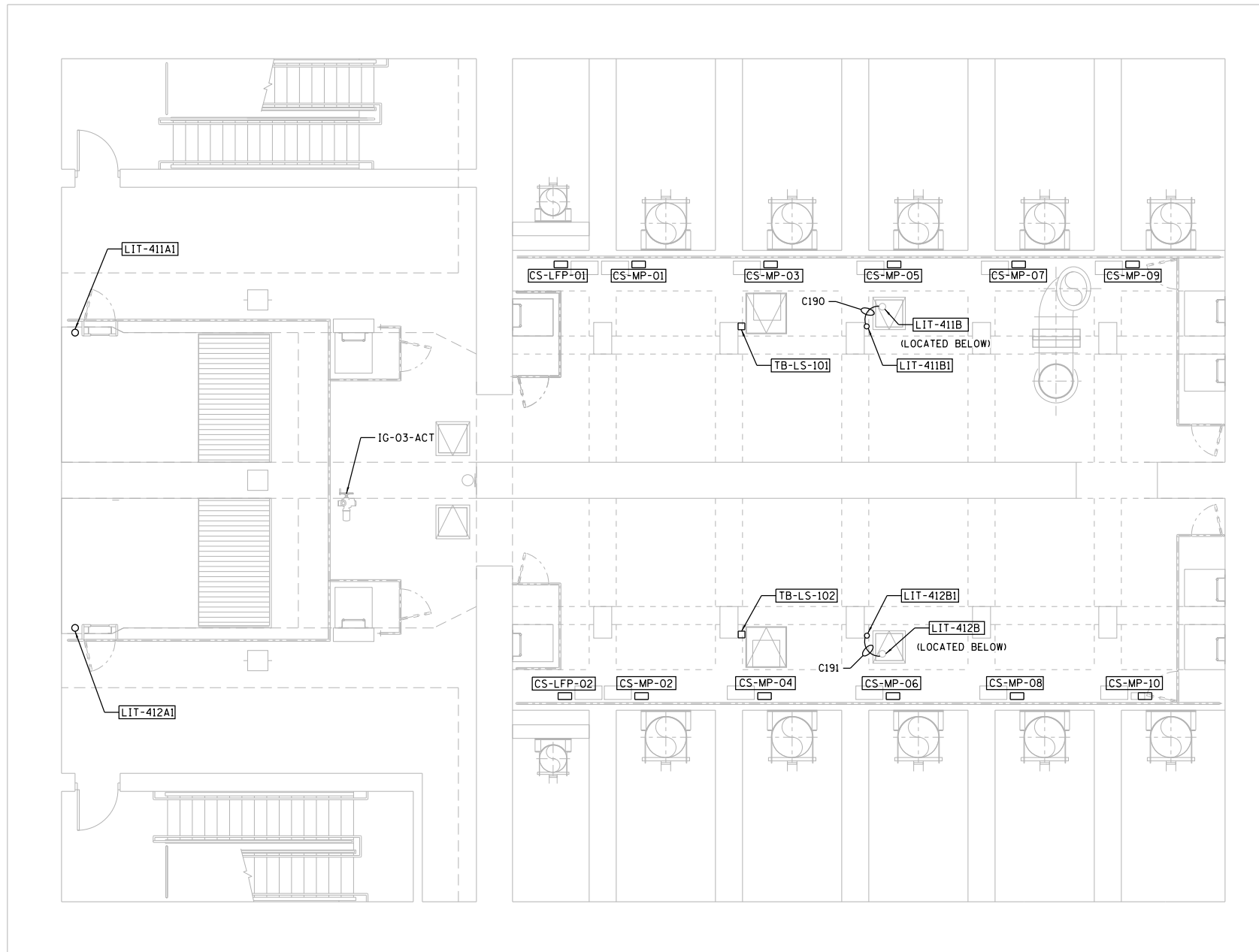
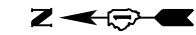
**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
INFLUENT CHANNEL LEVEL I&C PLAN AT ELEV 566.75**

SCALE: 3/16"=1'-0" SHEET OF SHEETS STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	210
CONTRACT NO. 62B78				
ILLINOIS FED. AID PROJECT				

SHEET  
IC101



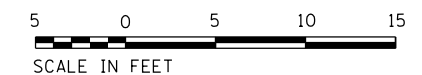
**INTERMEDIATE LEVEL I&C PLAN AT ELEVATION 603.75**

**GENERAL NOTES:**

- IN ORDER TO KEEP CLARITY, NOT ALL CONDUITS ARE SHOWN. THE CONTRACTOR IS RESPONSIBLE FOR ALL WIRING AND CONDUIT, WHETHER SHOWN OR NOT, NECESSARY FOR A COMPLETE AND OPERABLE SYSTEM.

**PLAN NOTES:**

- SEE DRAWING E101 FOR CONDUIT ROUTING FOR INSTRUMENT DEVICES. THIS INCLUDES, BUT IS NOT LIMITED TO: C173, C176, C177, C178, C179, C180, C181, C182, C183, C184, C185.



D:\Projects\2019\IC102\IC102.dgn

FILE NAME = D191454-IC102.DGN



USER NAME = bgreen

DESIGNED - MEC - P. DE SILVA

DRAWN - MEC - A. FREEMAN

PLOT SCALE = 0:1' = 1/4" / 1/8"

PLOT DATE = 5/29/2019

DESIGNED - MEC - P. DE SILVA

DRAWN - MEC - A. FREEMAN

CHECKED - MEC - J. ZURAD

DATE - 03/15/2019

REVISED -

REVISED -

REVISED -

REVISED -

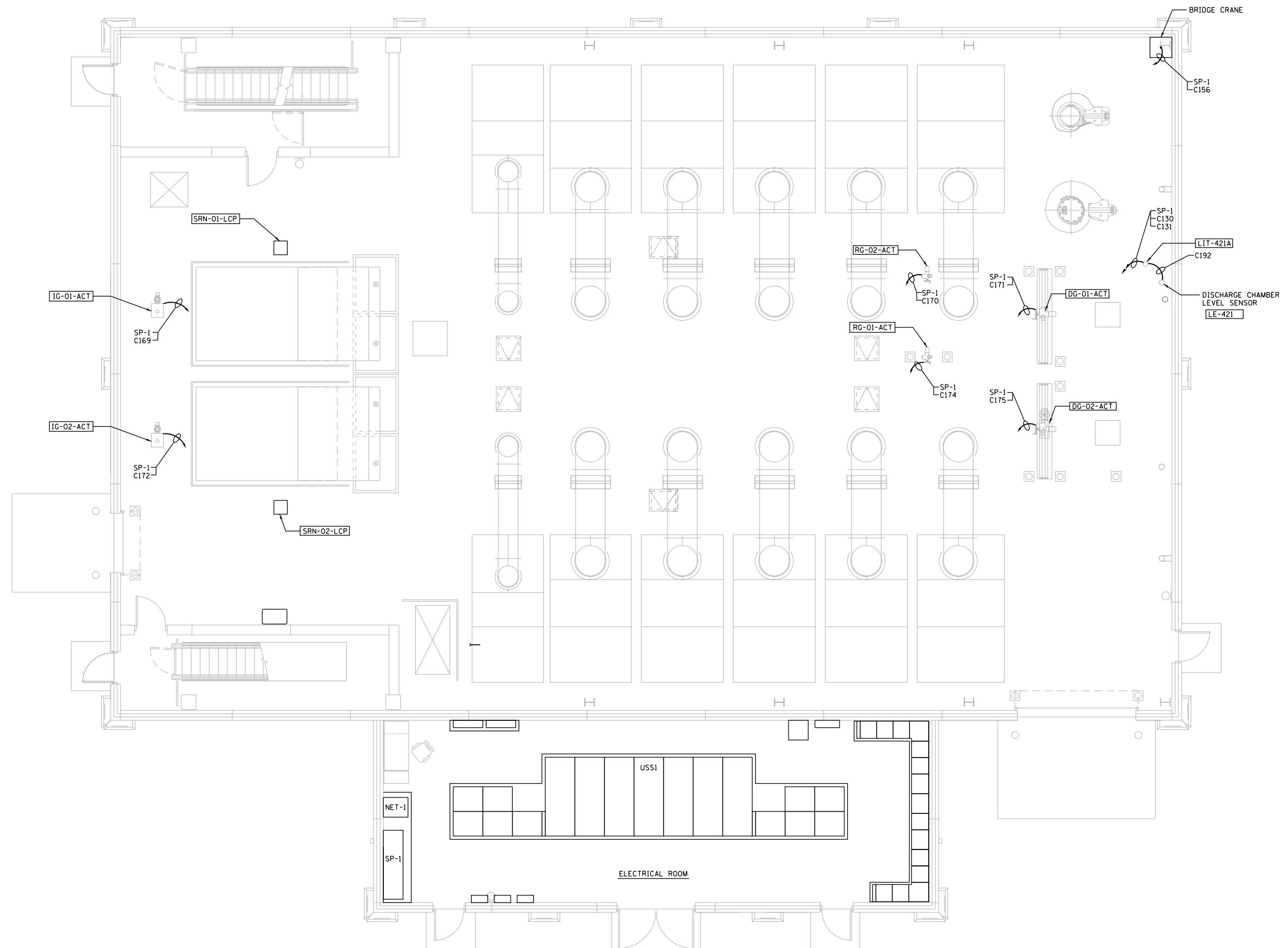
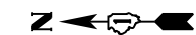
**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
INTERMEDIATE LEVEL I&C PLAN AT ELEVATION 603.75**

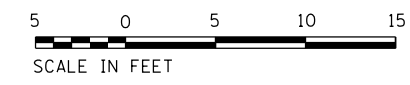
SCALE: 3/16"=1'-0" SHEET OF SHEETS STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	211
ILLINOIS FED. AID PROJECT				CONTRACT NO. 62B78

SHEET  
IC102



- PLAN NOTES:**
1. SEE DRAWING IC104 FOR WORK TO BE PERFORMED IN ELECTRICAL ROOM.
  2. SEE DRAWING IC611 FOR CABLE AND CONDUIT SCHEDULES.



**I&C PLAN AT ELEVATION 624.83**

P:\1\PROJECTS\2019\I-290\Drawings\IC\IC103.dgn



FILE NAME = D191454-IC103.DGN  
 USER NAME = bgreen  
 PLOT SCALE = 0:1' = 1/8" / 1"  
 PLOT DATE = 5/29/2019

DESIGNED - MEC - P. DE SILVA  
 DRAWN - MEC - A. FREEMAN  
 CHECKED - MEC - J. ZURAD  
 DATE - 03/15/2019

REVISED -  
 REVISED -  
 REVISED -  
 REVISED -

**STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION**

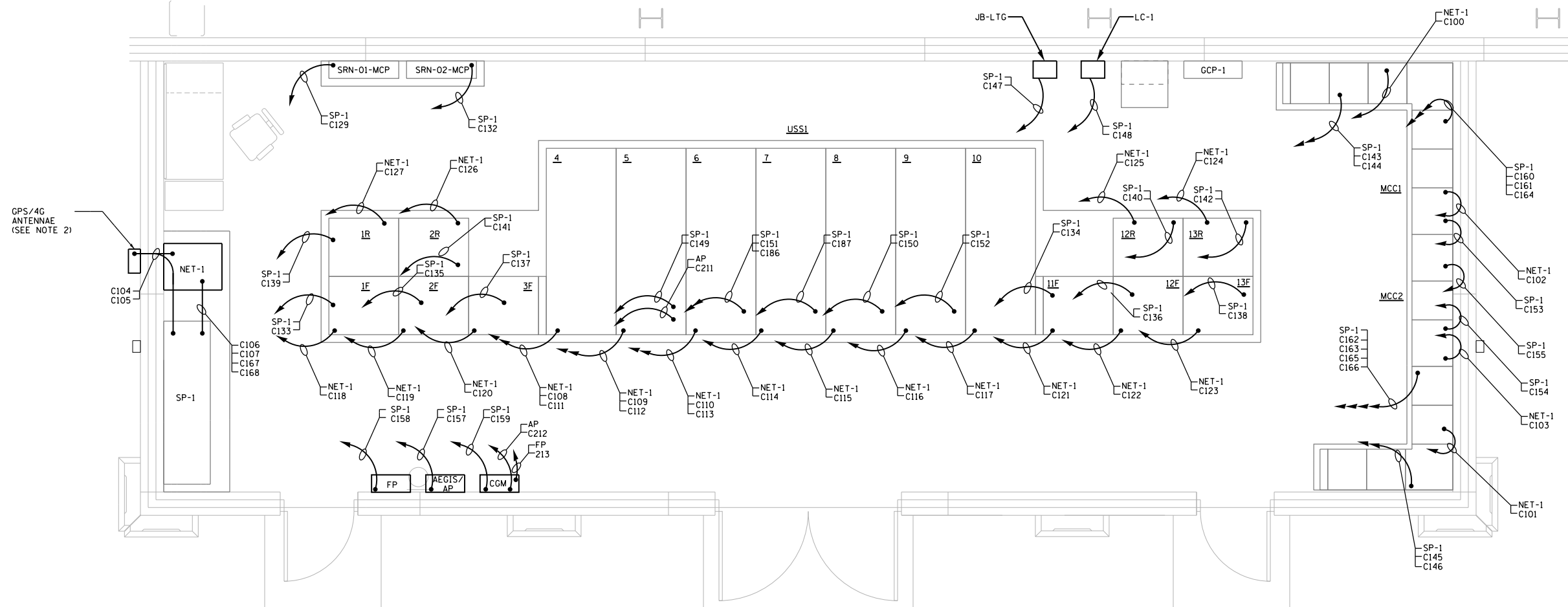
**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
 GROUND LEVEL I&C PLAN AT ELEVATION 624.83**

SCALE: 3/8" = 1'-0" SHEET OF SHEETS STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	212
CONTRACT NO. 62B78				
ILLINOIS FED. AID PROJECT				

SHEET  
 IC103

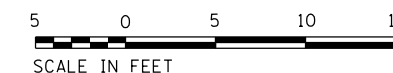




**ELECTRICAL ROOM I&C PLAN AT ELEVATION 624.83**

**PLAN NOTES:**

1. ALL CONDUITS TO SP-1 THAT ORIGINATE FROM ELECTRICAL ROOM SHALL BE TOP ENTRY TO SP-1.
2. ANTENNAE TO BE MOUNTED AT AN ELEVATION OF 8FT ABOVE FINISHED GRADE.
3. SEE DRAWINGS IC611 AND IC612 FOR CABLE AND CONDUIT SCHEDULES.



SHEET  
IC104

FILE NAME = D191454-1C104.DGN



USER NAME = bgreen

DESIGNED - MEC - P. DE SILVA

REVISED -

DRAWN - MEC - A. FREEMAN

REVISED -

PLOT SCALE = 0:1' = 1/8"

CHECKED - MEC - J. ZURAD

REVISED -

PLOT DATE = 5/29/2019

DATE - 03/15/2019

REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
ENLARGED ELECTRICAL ROOM I&C PLAN AT ELEV 624.83**

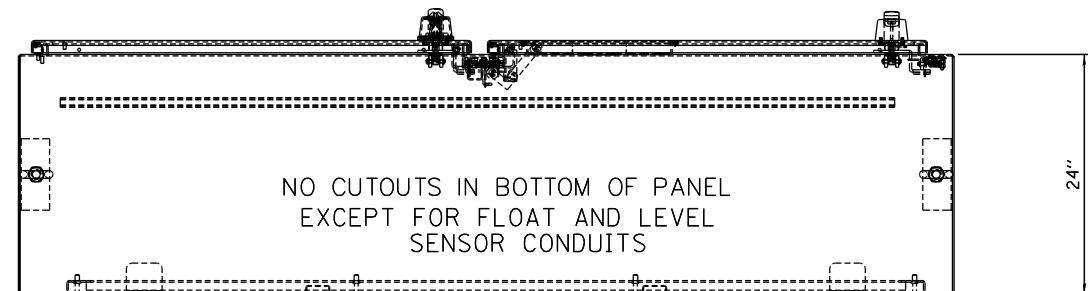
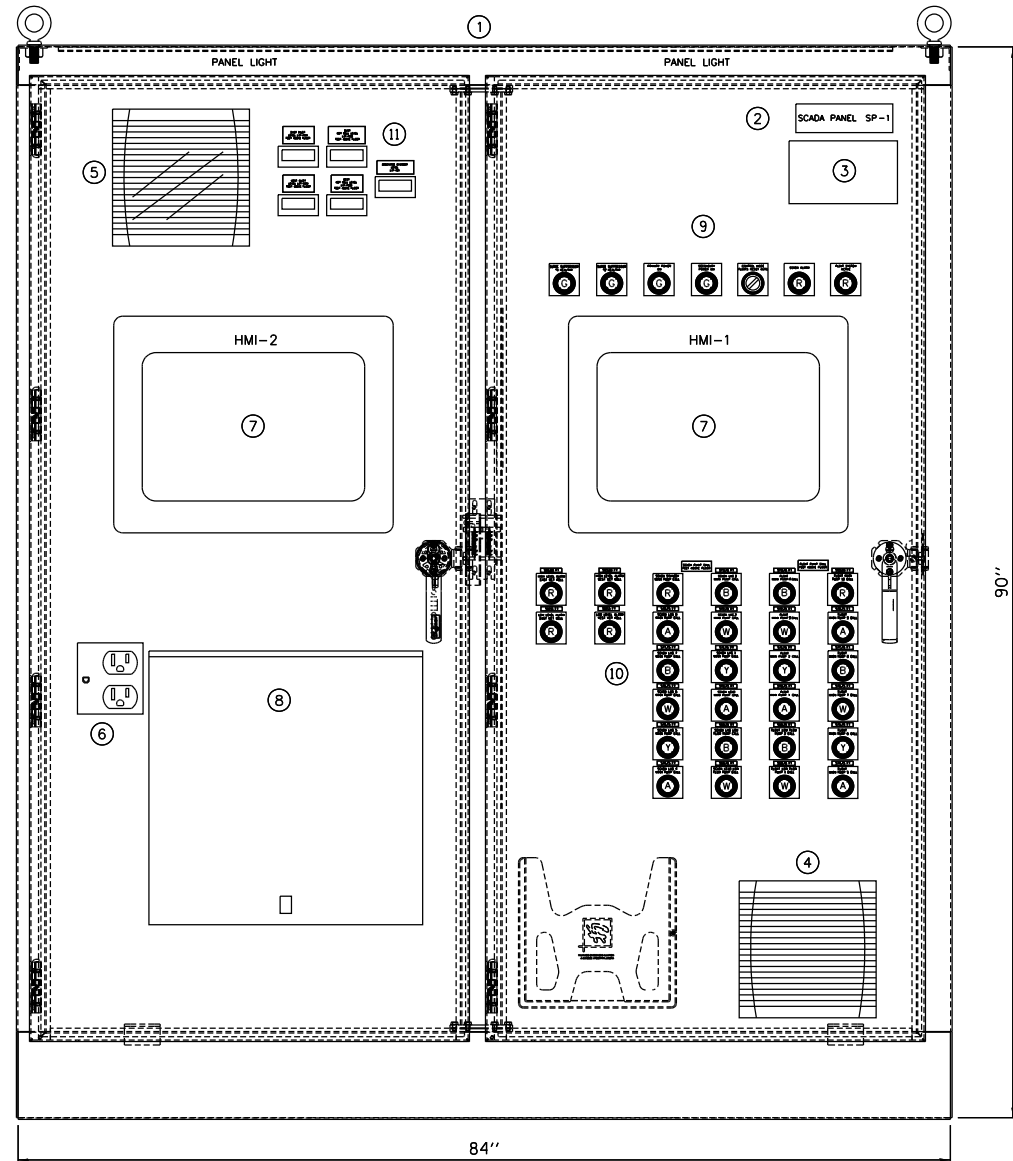
SCALE: NONE SHEET OF SHEETS STA. TO STA.

F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	213
CONTRACT NO. 62B78				

ILLINOIS FED. AID PROJECT

P:\1\191454\191454-1C104.dgn

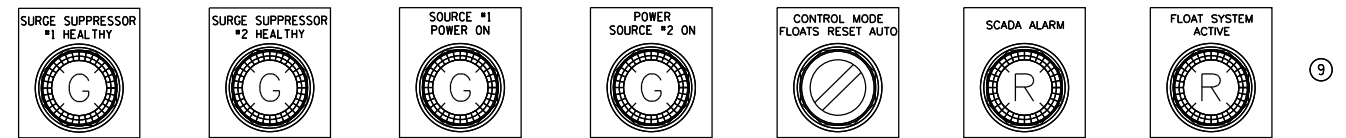
**SCADA PANEL  
SP-1**



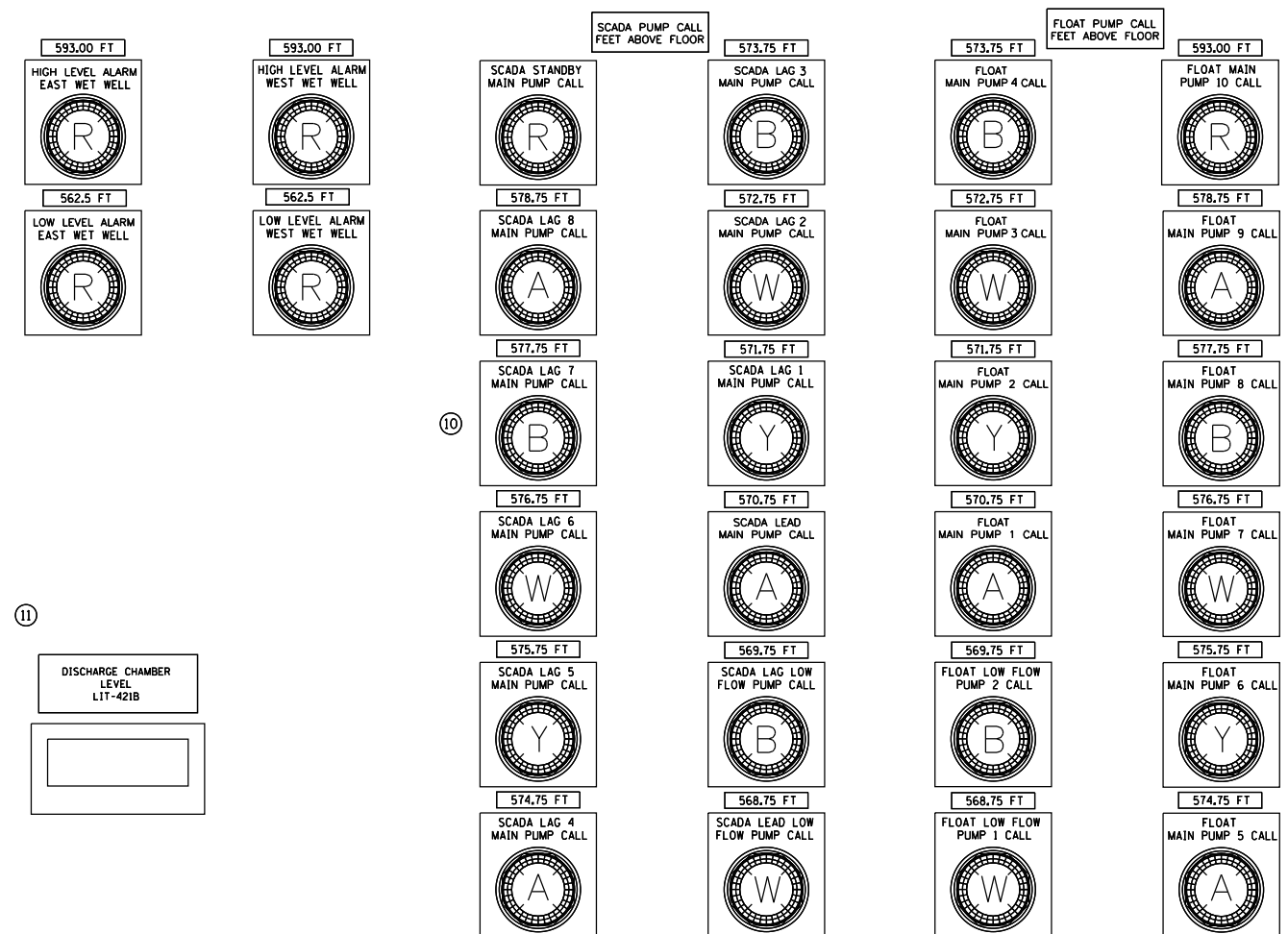
ITEM	QTY	DESCRIPTION	DETAIL
①	1	NEMA 12 ENCLOSURE, 2-DOOR	N/A
②	1	PANEL NAMEPLATE "SCADA PANEL SP-1"	N/A
③	1	ELECTRICAL NAMEPLATE FOR TECHNICAL DATA	N/A
④	1	FAN AND FILTER ASSEMBLY	N/A
⑤	1	LOUVER KIT ASSEMBLY	N/A
⑥	1	GFCI 120VAC OUTLET AND ETHERNET PORT	N/A
⑦	2	SCADA HMI-1 AND HMI-2	N/A
⑧	1	24X24 FOLDING SHELF	N/A
⑨	4	PILOT LIGHT, LED, GREEN, PTT	A
	1	SELECTOR SWITCH, 3-POSITION	
	2	PILOT LIGHT, LED, RED, PTT	
⑩	6	PILOT LIGHT, LED, RED, PTT	B
	6	PILOT LIGHT, LED, AMBER, PTT	
	6	PILOT LIGHT, LED, BLUE, PTT	
	6	PILOT LIGHT, LED, WHITE, PTT	
	4	PILOT LIGHT, LED, YELLOW, PTT	
⑪	5	DIGITAL LEVEL INDICATORS	C

**PLAN NOTES:**

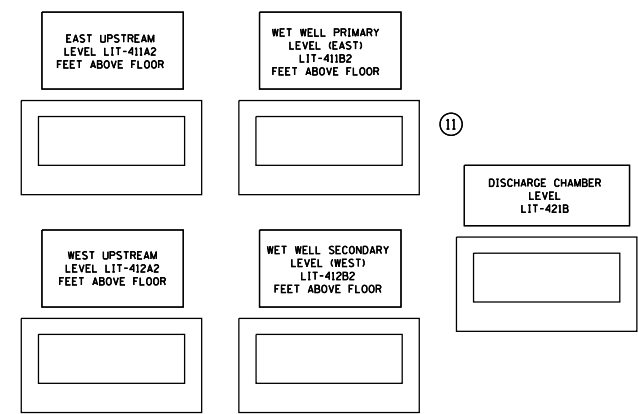
- THIS DRAWING DEPICTS A RECOMMENDED LAYOUT OF PANEL COMPONENTS. FINAL LOCATIONS OF DEVICES SHALL BE DEVELOPED BY THE CONTRACTOR'S SYSTEM INTEGRATOR AND APPROVED DURING SHOP DRAWING SUBMITTAL PHASE OF PROJECT.
- CONTRACTOR SHALL PROVIDE CONTROL SCHEMATIC SHOP DRAWINGS DEPICTING AND IDENTIFYING TERMINALS AND WIRE NUMBERS ASSOCIATED WITH SCADA PANEL AND TERMINAL NUMBERS AS THEY ARE DEPICTED ON MANUFACTURERS EQUIPMENT TERMINAL BLOCKS. COORDINATE PRIOR TO SUBMITTING SHOP DRAWINGS. ALL WIRED DEVICES SHALL BE COORDINATED, DEPICTED, AND IDENTIFIED.
- SEE DRAWINGS E641 THRU E646 FOR SCHEMATIC WIRING DIAGRAMS.



**DETAIL "A"**



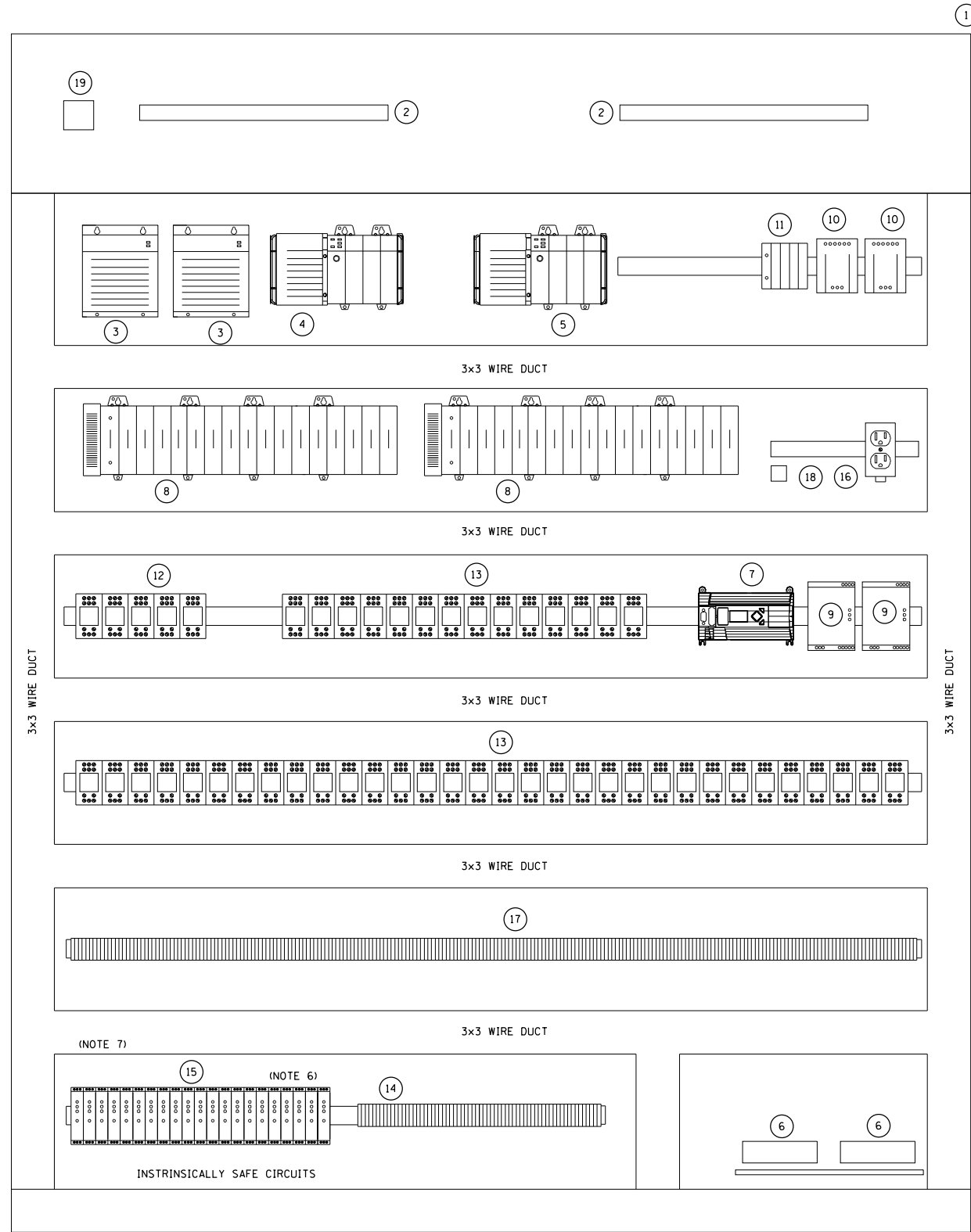
**DETAIL "B"**



**DETAIL "C"**

P:\15\1515\CON\08\78431\080808080272972\6.0\_CAD\_BIM\6.2\_Work\In\_Progress\6.2.2\_CAD\_Sheets\0191454-1C501.dgn

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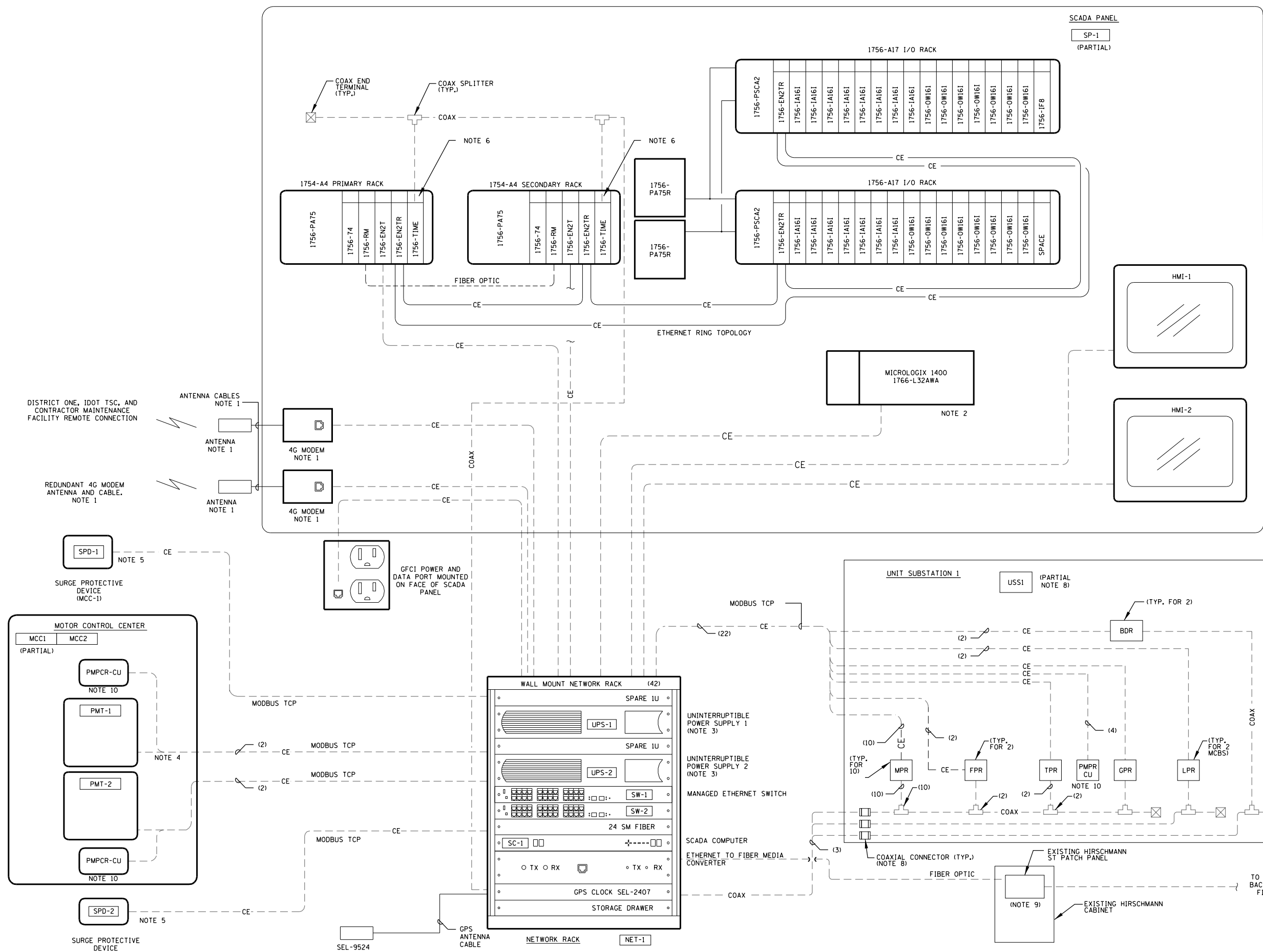
**SCADA PANEL-INTERIOR ELEVATION**

NAMEPLATE SCHEDULE			
15	13	12	11
FR18	CP1R	TDFM	CB1
FR17	CP2R	GAR	CB2
FR16	FMR	SPARE 1	
FR15	PLC-FR	SPARE 2	
FR14	PS1R	SPARE 3	
FR13	PS2R		
FR12	ACR1		
FR11	ACR2		
FR10	FMP1		
FR9	FMP2		
FR8	FMP3		
FR7	FMP4		
FR6	FMP5		
FR5	FMP6		
FR4	FMP7		SPARE 1
FR3	FMP8		SPARE 2
FR2	FMP9		SPARE 3
FR1	FMP10		
SPARE 1	FLFP1		
SPARE 2	FLFP2		
SPARE 3	FR1X		
	FR2X		
	FR3X		
	FR4X		
	FR5X		
	FR6X		
	FR7X		
	FR8X		
	FR9X		
	FR10X		
	FR11X		
	FR12X		
	FR13X		
	FR14X		
	FR15X		
	FR16X		
	FR17X		
	FR18X		
	SPF		
	GARX		
	LAR		
	SPARE 1		
	SPARE 2		
	SPARE 3		
	SPARE 4		
	SPARE 5		
	SPARE 6		

ITEM	QTY	DESCRIPTION
1	1	PANEL ENCLOSURE WITH SUB-PANEL
2	2	LED LIGHT & DOOR SWITCH
3	2	PLC POWER SUPPLY
4	1	PRIMARY CONTROLLOGIX PROCESSOR AND RACK
5	1	SECONDARY CONTROLLOGIX PROCESSOR AND RACK
6	2	4G MODEM (PROVIDED BY IDOT MAINTENANCE)
7	1	MICROLOGIX 1766-L32AWA
8	2	PLC I/O RACK WITH MODULES
9	2	24VDC POWER SUPPLY (PS1, PS2)
10	2	120VAC LINE FILTER (LF1, LF2)
11	AS REQ'D	CIRCUIT BREAKERS AND FUSES
12	AS REQ'D	TIME DELAY RELAYS
13	AS REQ'D	RELAYS
14	AS REQ'D	TERMINAL BLOCK FOR FLOAT SYSTEM CONTROLS
15	AS REQ'D	INTRINSICALLY SAFE RELAYS
16	1	GFCI, 120VAC, 20A
17	AS REQ'D	TERMINAL BLOCK FOR SCADA COMPONENTS
18	1	FAN THERMOSTAT
19	1	COOLING FAN

- PLAN NOTES:**
- THIS DRAWING DEPICTS A RECOMMENDED LAYOUT OF PANEL COMPONENTS AND DOES NOT REPRESENT EVERY COMPONENT. FINAL LOCATIONS OF DEVICES AND WIRE BENDING SPACE SHALL BE DEVELOPED BY THE CONTRACTOR'S SYSTEM INTEGRATOR AND APPROVED DURING SHOP DRAWING SUBMITTAL PHASE OF PROJECT.
  - ALL FIELD TERMINATIONS SHALL BE MADE AT TERMINAL BLOCKS, AND DESIGNATED AS SUCH.
  - SEGREGATE INTRINSICALLY SAFE (ISBR) CIRCUITS WITH NO. 20 GAUGE (OR THICKER) SHEET METAL PARTITION. ISBR CIRCUITS SHALL BE ROUTED IN SEPARATE CONDUIT FROM ALL OTHER CONDUCTORS. INSTALL IN ACCORDANCE WITH ARTICLE 504 OF NEC (LATEST EDITION).
  - CONTRACTOR SHALL PROVIDE CONTROL SCHEMATIC SHOP DRAWINGS DEPICTING AND IDENTIFYING TERMINALS AND WIRE NUMBERS ASSOCIATED WITH SCADA PANEL AND TERMINAL NUMBERS AS THEY ARE DEPICTED ON MANUFACTURERS EQUIPMENT TERMINAL BLOCKS. COORDINATE PRIOR TO SUBMITTING SHOP DRAWINGS. ALL WIRE DEVICES SHALL BE COORDINATED, DEPICTED, AND IDENTIFIED.
  - SEE DRAWINGS E641 THRU E646 FOR SCHEMATIC WIRING DIAGRAMS.
  - CONDUITS CARRYING INTRINSICALLY SAFE CIRCUITS SHALL ENTER ENCLOSURE AT LOCATION ON INTRINSICALLY SAFE BARRIER RELAYS. CONDUITS SHALL BE IN ACCORDANCE WITH ALL APPLICABLE NEC REQUIREMENTS.
  - PROVIDE EFFECTIVE BARRIER BETWEEN INTRINSICALLY SAFE BARRIER RELAYS AND OTHER DEVICES. PROVIDE NAMEPLATE ABOVE INTRINSICALLY SAFE BARRIER RELAYS INDICATING: "INTRINSICALLY SAFE CIRCUITS AND DEVICES".

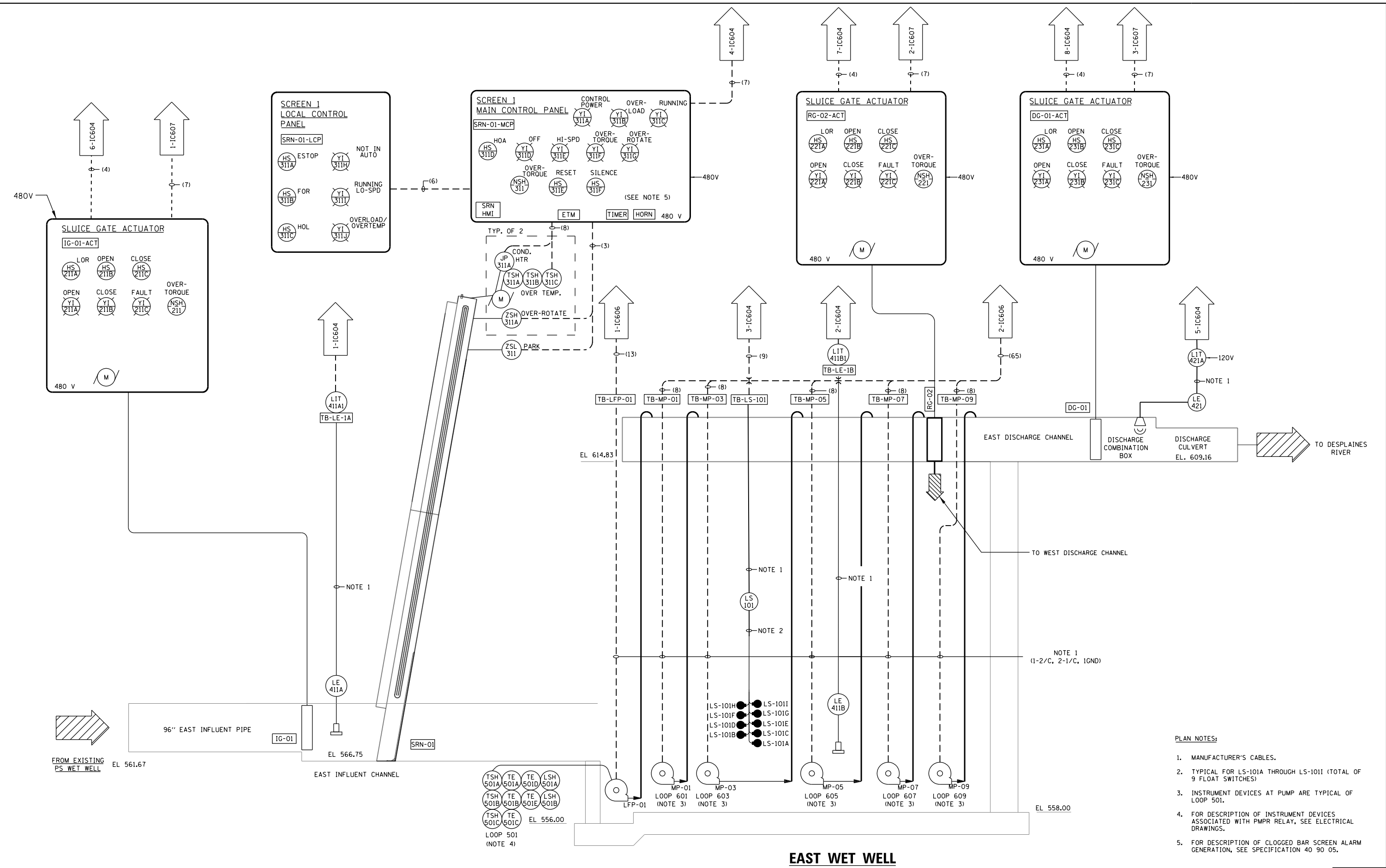
D:\Projects\191454-1C601\Drawings\191454-1C601.dwg



- GENERAL NOTES:**
1. THE INTENT OF THIS DRAWING IS TO SHOW GENERAL SYSTEM ARCHITECTURE.
  2. IT IS NOT THE INTENT OF THIS DRAWING TO SHOW EVERY PLC MODULE AND/OR PART NUMBER FOR THE PROJECT, I/O MODULES AND MODULE POSITION DETERMINED BY ACTUAL NUMBER OF I/O (INCLUDING SPARES). SEE SPECIFICATIONS FOR DETAILS.
  3. ALL CE (COPPER ETHERNET) SHALL BE CAT-6. SEE SPECIFICATIONS FOR DETAILS.
  4. I/O MODULES, RACKS, AND HARDWARE SHALL BE INCLUDED AND SUFFICIENT FOR REQUIRED I/O MODULES PLUS MINIMUM 15 % SPARE I/O.

- PLAN NOTES:**
1. 4G MODEM, ANTENNA AND ANTENNA CABLE FURNISHED BY IDOT, INSTALLED BY CONTRACTOR. COORDINATE FINAL MOUNTING AND ORIENTATION OF ANTENNA WITH IDOT. PROVIDE SEAL TIGHT CABLE BUSHING FOR PANEL PENETRATION TO PROTECT ANTENNA CABLE.
  2. MODBUS TCP TO ETHERNET/IP CONVERSION SHALL BE DONE BY LADDER LOGIC. SEE ALLEN BRADLEY KNOWLEDGE BASE 470365 FOR SAMPLE CODE.
  3. TWIN UPS, EACH UPS SHALL BE SIZED TO PROVIDE POWER FOR ALL COMPONENTS IN NETWORK RACK AND RESPECTIVE SCADA PANEL.
  4. SEE SPECIFICATIONS FOR POWER MONITORING DATA TO SCADA.
  5. SEE SPECIFICATIONS FOR SURGE PROTECTIVE DEVICE MONITORING DATA TO SCADA.
  6. GPS CLOCK INTERFACE CARD FOR ALLEN BRADLEY 1756 PROCESSOR COMPATIBLE WITH SCHWEITZER SEL-2407 UNIT. DEVICE SHALL BE CONFIGURED AS A SLAVE DEVICE TO RECEIVE EXTERNAL COAXIAL IRIG-B SIGNAL.
  7. COORDINATE MOUNTING LOCATION AND ORIENTATION OF GPS ANTENNA TO SUIT SATELLITE VISIBILITY. PROVIDE SEAL TIGHT CABLE BUSHING FOR PANEL PENETRATION TO PROTECT ANTENNA CABLE.
  8. COAXIAL CABLE CONNECTOR PROVIDED BY USS1 MANUFACTURER WITH USS1. ALL COAXIAL CABLES, CABLE CONNECTORS, TEES, END TERMINALS AND CONNECTIONS TO USS1 COMPONENTS SHALL BE PROVIDED BY USS1 MANUFACTURER. CONNECTIONS TO FIELD CABLING SHALL BE MADE AT ETHERNET SWITCH AND COAXIAL CABLE CONNECTOR.
  9. DEPICTED CONFIGURATION IS FOR INTERIM ARRANGEMENT. FIBER OPTIC CONNECTIVITY SHALL BE ACCOMPLISHED VIA PHASED SEQUENCING AS DESCRIBED IN DRAWING E650. SEE DETAIL 3/E650 FOR FINAL FIBER OPTIC COMMUNICATION LINK.
  10. COORDINATE WITH PUMP MANUFACTURER FOR MODBUS TCP TO ETHERNET IP CONVERSION.

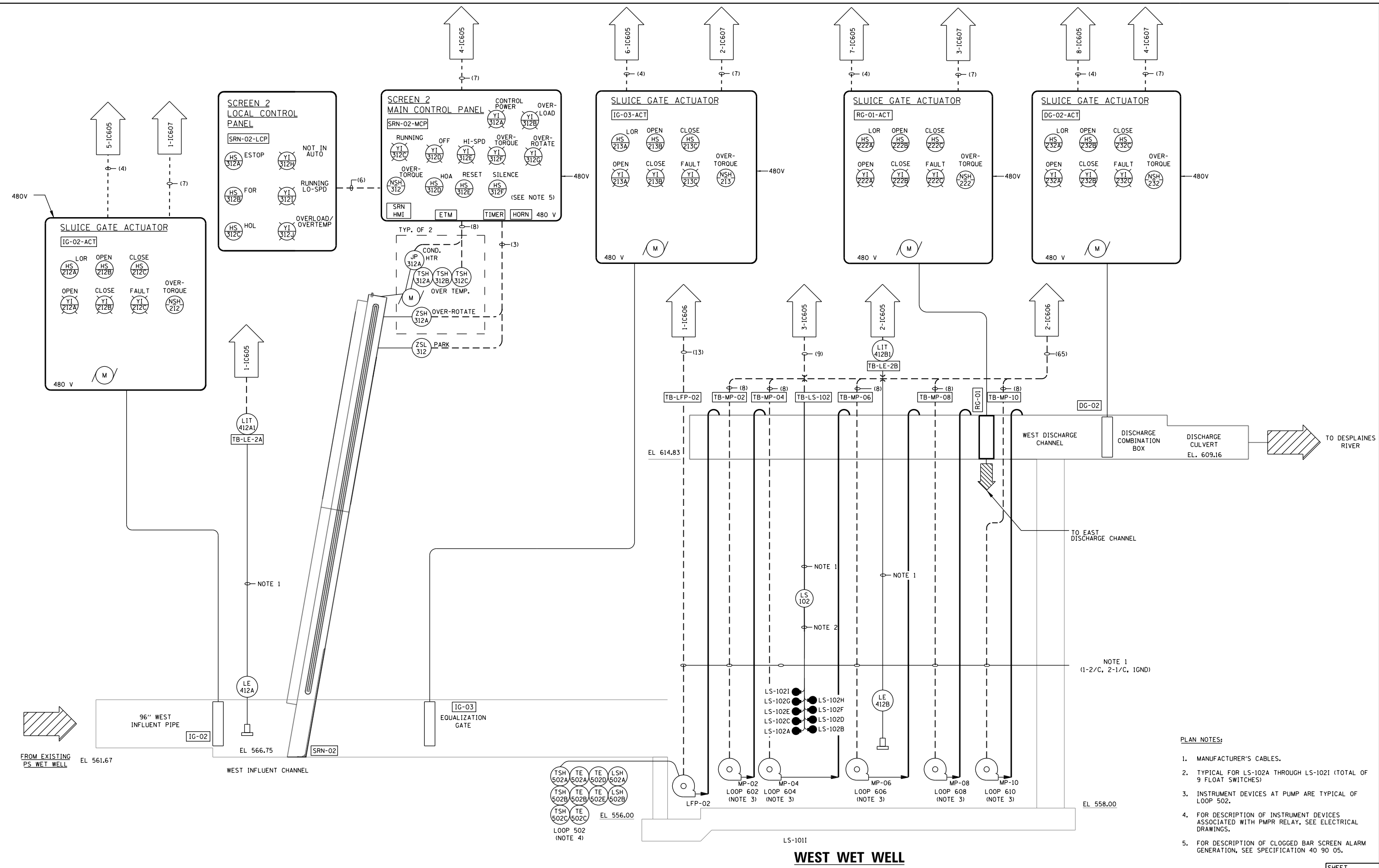
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- PLAN NOTES:**
1. MANUFACTURER'S CABLES.
  2. TYPICAL FOR LS-101A THROUGH LS-101I (TOTAL OF 9 FLOAT SWITCHES)
  3. INSTRUMENT DEVICES AT PUMP ARE TYPICAL OF LOOP 501.
  4. FOR DESCRIPTION OF INSTRUMENT DEVICES ASSOCIATED WITH PMPR RELAY, SEE ELECTRICAL DRAWINGS.
  5. FOR DESCRIPTION OF CLOGGED BAR SCREEN ALARM GENERATION, SEE SPECIFICATION 40 90 05.

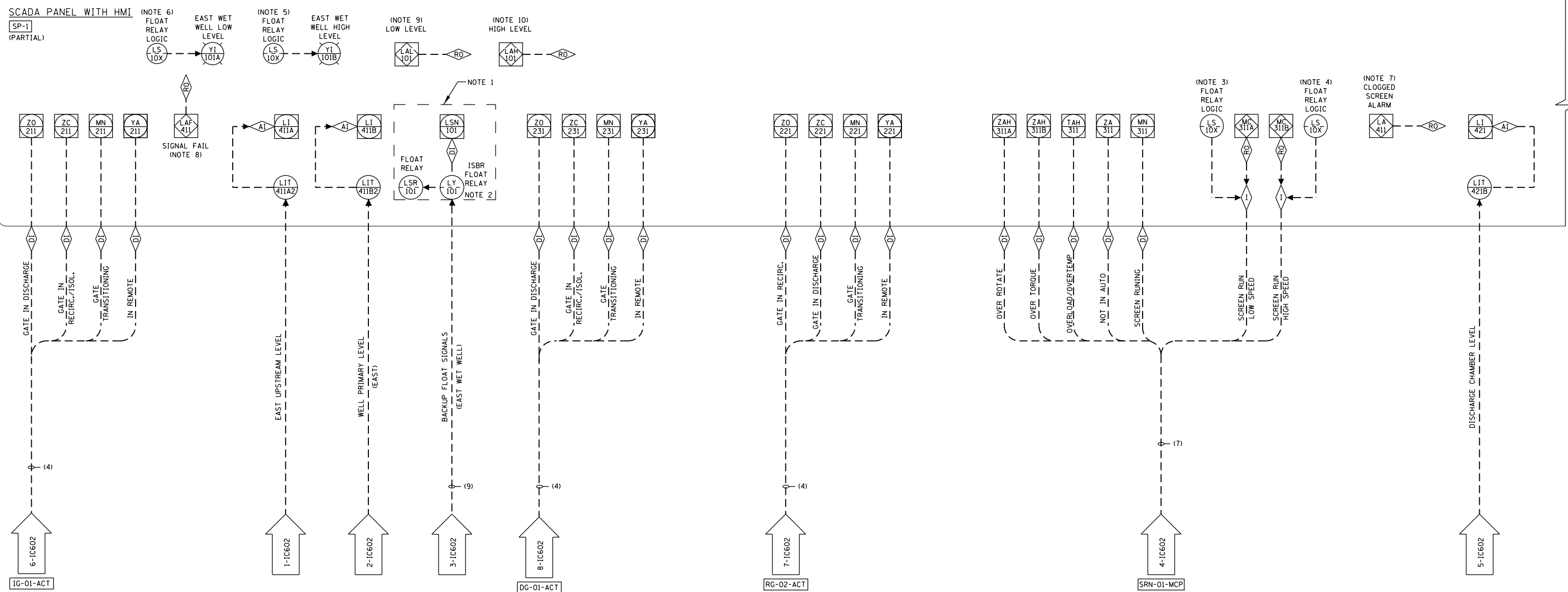
<b>MILHOUSE</b> ENGINEERING & CONSTRUCTION		FILE NAME = D191454-1C602.DGN USER NAME = bgreen PLOT SCALE = 0:1" = 1'-0" PLOT DATE = 5/29/2019	DESIGNED - MEC - P. DE SILVA DRAWN - MEC - A. FREEMAN CHECKED - MEC - J. ZURAD DATE - 03/15/2019	REVISED - REVISED - REVISED - REVISED -	<b>STATE OF ILLINOIS</b> <b>DEPARTMENT OF TRANSPORTATION</b>	<b>I-290 PUMP STATION NO. 4 RECONSTRUCTION</b> <b>P&amp;ID EAST WET WELL</b>	SCALE: NONE SHEET OF SHEETS STA. TO STA.	SHEET 1C602 TOTAL SHEETS 232 SHEET NO. 217 CONTRACT NO. 62B78	F.A.I. RTE. 290 SECTION 3434-2321-R COUNTY COOK ILLINOIS FED. AID PROJECT
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- PLAN NOTES:**
1. MANUFACTURER'S CABLES.
  2. TYPICAL FOR LS-102A THROUGH LS-102I (TOTAL OF 9 FLOAT SWITCHES)
  3. INSTRUMENT DEVICES AT PUMP ARE TYPICAL OF LOOP 502.
  4. FOR DESCRIPTION OF INSTRUMENT DEVICES ASSOCIATED WITH PMPR RELAY, SEE ELECTRICAL DRAWINGS.
  5. FOR DESCRIPTION OF CLOGGED BAR SCREEN ALARM GENERATION, SEE SPECIFICATION 40 90 05.

<b>MILHOUSE</b> ENGINEERING & CONSTRUCTION		USER NAME = bgreen DESIGNED - MEC - P. DE SILVA DRAWN - MEC - A. FREEMAN CHECKED - MEC - J. ZURAD DATE - 03/15/2019 PLOT SCALE = 0:1" = 1'-0" PLOT DATE = 5/29/2019		REVISED - REVISED - REVISED - REVISED -		<b>STATE OF ILLINOIS</b> <b>DEPARTMENT OF TRANSPORTATION</b>				<b>I-290 PUMP STATION NO. 4 RECONSTRUCTION</b> <b>P&amp;ID II WEST WET WELL</b>				SHEET IC603		TOTAL SHEETS 232 218		CONTRACT NO. 62B78	
FILE NAME = D191454-1C603.DGN		DATE - 03/15/2019				SCALE: NONE SHEET OF SHEETS STA. TO STA.				SECTION 3434-2321-R		COUNTY COOK		ILLINOIS FED. AID PROJECT					



- PLAN NOTES:**
1. TYPICAL FLOAT RELAY IS SHOWN, ARRANGEMENT IS TYPICAL FOR 9 CORRESPONDING FLOATS LS-101A THROUGH LS-101I.
  2. FLOAT RELAYS PART OF FLOAT SWITCH RELAY LOGIC FOR PUMP CONTROL AND LEVEL TRANSMITTER SIGNAL VERIFICATION.
  3. FLOAT RELAY LOGIC BASED ON OPERATION OF MAIN FLOW PUMP 2.
  4. FLOAT RELAY LOGIC BASED ON OPERATION OF MAIN FLOW PUMP 6.
  5. FLOAT RELAY LOGIC BASED ON LS-101I.
  6. FLOAT RELAY LOGIC BASED ON LS-101A.
  7. EAST BAR SCREEN CLOGGED ALARM GENERATED BY PLC SOFTWARE LOGIC IN THE EVENT THAT WEST WET WELL LEVEL EXCEEDS EAST WET WELL LEVEL BY A SET VALUE.
  8. ALARM GENERATED BY PLC SOFTWARE LOGIC IN THE EVENT THAT HYDROSTATIC LEVEL SIGNAL IS NOT VALIDATED BY BACKUP FLOAT SIGNALS.
  9. EAST WET WELL LOW LEVEL ALARM GENERATED BY PLC SOFTWARE LOGIC BASED ON LS-101A AND LI-411B.
  10. EAST WET WELL HIGH LEVEL ALARM GENERATED BY PLC SOFTWARE LOGIC BASED ON LS-101I AND LI-411B.

FILE NAME = D:\191454-1C604.DGN  
 USER NAME = bgreen  
 DESIGNED - MEC - P. DE SILVA  
 DRAWN - MEC - A. FREEMAN  
 CHECKED - MEC - J. ZURAD  
 DATE - 03/15/2019  
 PLOT SCALE = 0:1' = 1" / 1" / 1" / 1"  
 PLOT DATE = 5/29/2019



FILE NAME = D:\191454-1C604.DGN	USER NAME = bgreen	DESIGNED - MEC - P. DE SILVA	REVISED -
		DRAWN - MEC - A. FREEMAN	REVISED -
		CHECKED - MEC - J. ZURAD	REVISED -
		DATE - 03/15/2019	REVISED -

**STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION**

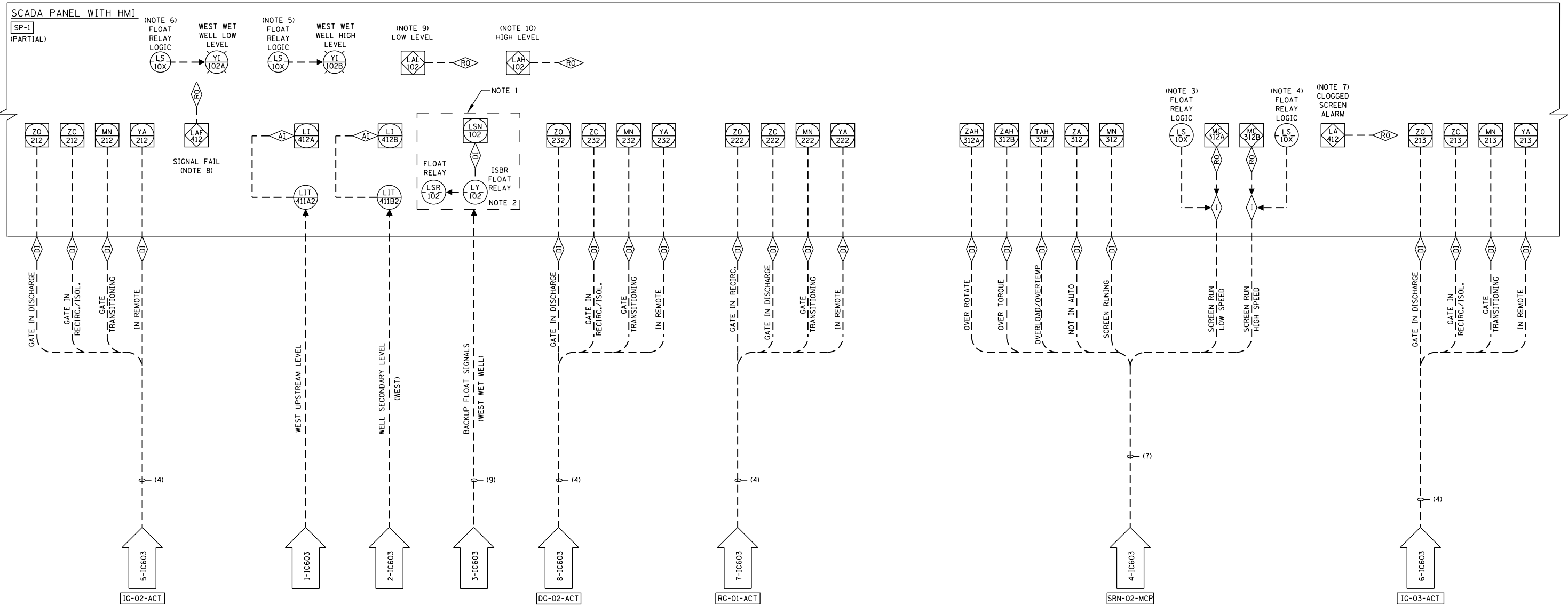
**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
 P&ID III EAST WET WELL**

SCALE: NONE SHEET OF SHEETS STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	219
CONTRACT NO. 62B78				
ILLINOIS FED. AID PROJECT				

SHEET  
IC604

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- PLAN NOTES:**
1. TYPICAL FLOAT RELAY IS SHOWN. ARRANGMENT IS TYPICAL FOR 9 CORRESPONDING FLOATS LS-102A THROUGH LS-102I.
  2. FLOAT RELAYS PART OF FLOAT SWITCH RELAY LOGIC FOR PUMP CONTROL AND LEVEL TRANSMITTER SIGNAL VERIFICATION.
  3. FLOAT RELAY LOGIC BASED ON OPERATION OF MAIN FLOW PUMP 2.
  4. FLOAT RELAY LOGIC BASED ON OPERATION OF MAIN FLOW PUMP 6.
  5. FLOAT RELAY LOGIC BASED ON LS-102H.
  6. FLOAT RELAY LOGIC BASED ON LS-102A.
  7. WEST BAR SCREEN CLOGGED ALARM GENERATED BY PLC SOFTWARE LOGIC IN THE EVENT THAT EAST WET WELL LEVEL EXCEEDS WEST WET WELL LEVEL BY A SET VALUE.
  8. ALARM GENERATED BY PLC SOFTWARE LOGIC IN THE EVENT THAT HYDROSTATIC LEVEL SIGNAL IS NOT VALIDATED BY BACKUP FLOAT SIGNALS.
  9. WEST WET WELL LOW LEVEL ALARM GENERATED BY PLC SOFTWARE LOGIC BASED ON LS-102A AND L1-412B.
  10. WEST WET WELL HIGH LEVEL ALARM GENERATED BY PLC SOFTWARE LOGIC BASED ON LS-102H AND L1-412B.

FILE NAME = D191454-1C605.DGN  
**MILHOUSE**  
 ENGINEERING & CONSTRUCTION

USER NAME = bgreen  
 PLOT SCALE = 0:1' = 1" / 1"  
 PLOT DATE = 5/29/2019

DESIGNED - MEC - P. DE SILVA  
 DRAWN - MEC - A. FREEMAN  
 CHECKED - MEC - J. ZURAD  
 DATE - 03/15/2019

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 REVISED -

**STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION**

**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
 P&ID IV WEST WET WELL**

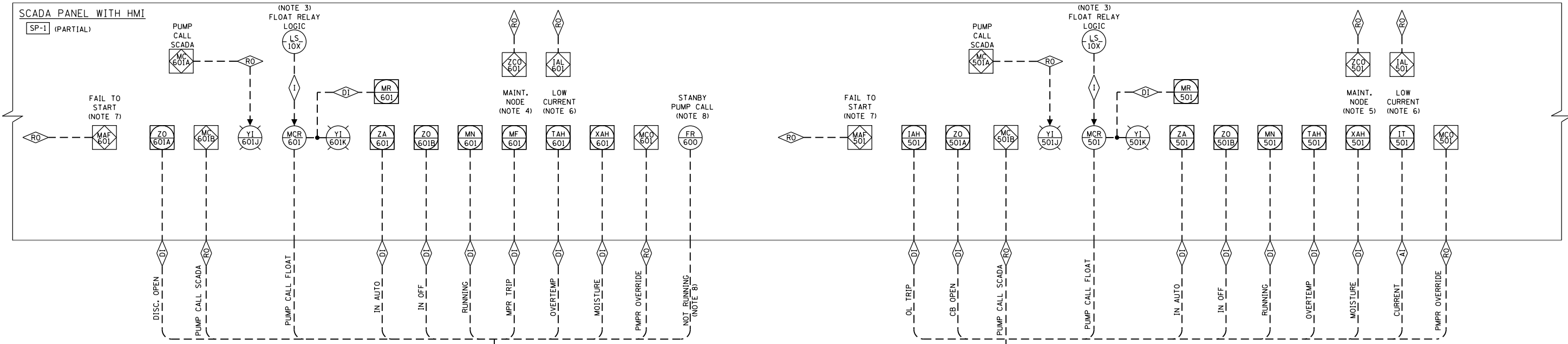
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F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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CONTRACT NO. 62B78				
ILLINOIS FED. AID PROJECT				

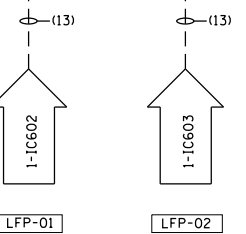
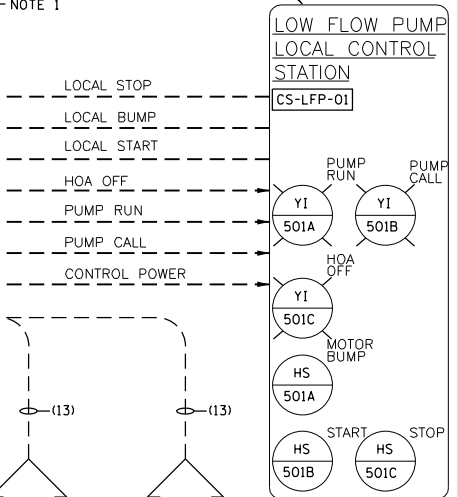
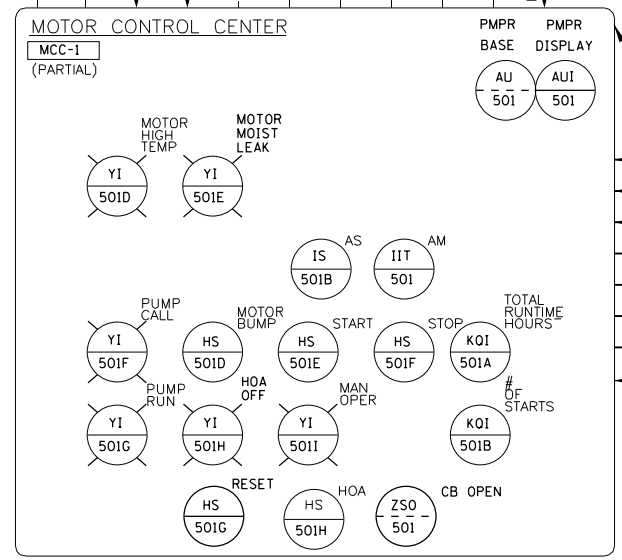
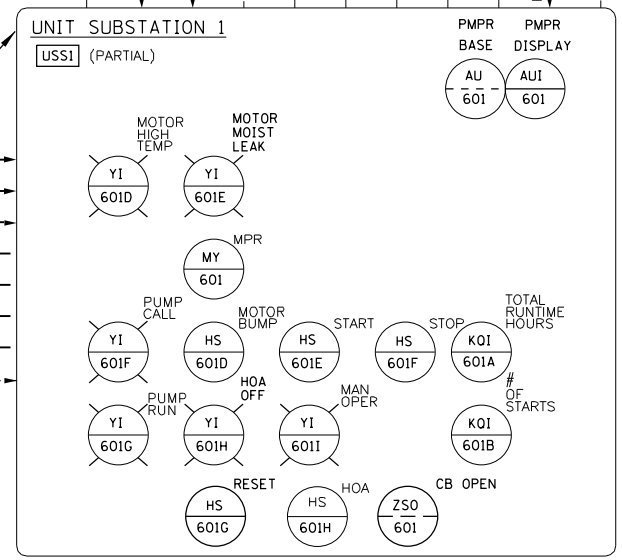
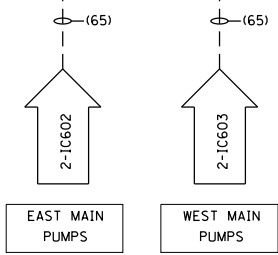
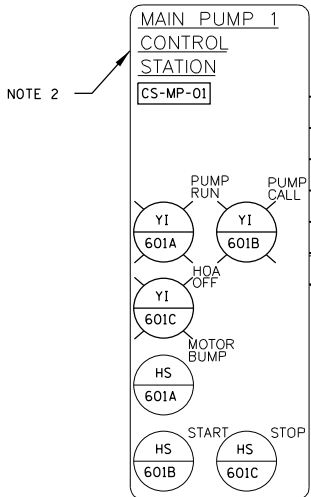
SHEET  
 IC605



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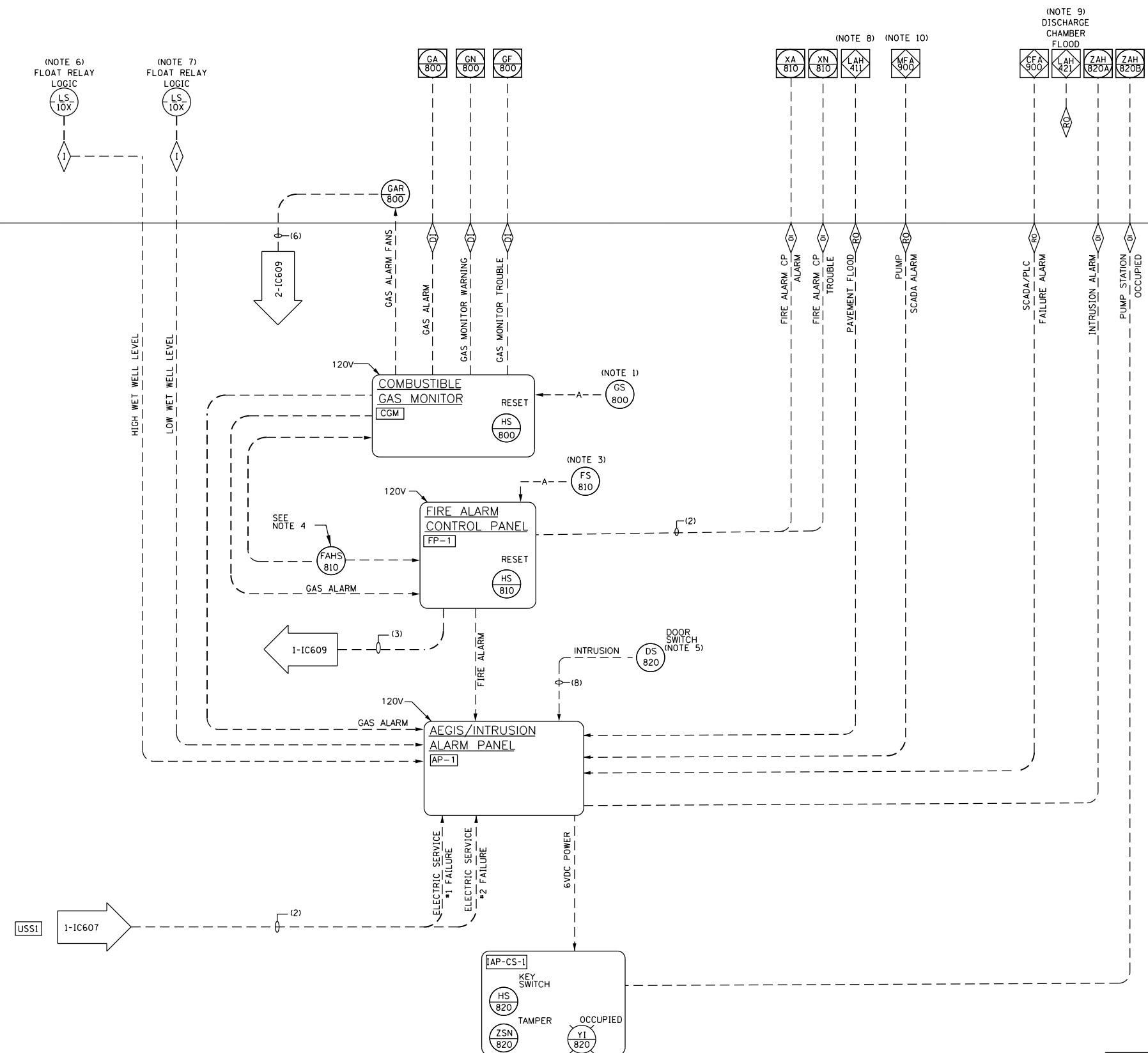
- PLAN NOTES:**
1. TYPICAL LOW FLOW PUMP ARRANGEMENT SHOWN FOR LOOP-501 (LFP-01). ARRANGEMENT IS SIMILAR FOR LOOP-502.
  2. TYPICAL MAIN PUMP ARRANGEMENT SHOWN FOR LOOP-601 (MP-01). ARRANGEMENT IS SIMILAR FOR LOOPS 602 THRU 610.
  3. FLOAT RELAY LOGIC BASED ON WET WELL LEVEL AS DETERMINED BY FLOAT SWITCHES.
  4. MAINTENANCE MODE ALARM TO BE GENERATED BY PLC SOFTWARE LOGIC BASED ON: Z0-601A AND Z0-601B.
  5. MAINTENANCE MODE ALARM TO BE GENERATED BY PLC SOFTWARE LOGIC BASED ON: Z0-501A AND Z0-501B.
  6. ALARM TO BE GENERATED BY PLC SOFTWARE LOGIC IN THE EVENT OF AN UNDER-CURRENT CONDITION.
  7. ALARM TO BE GENERATED BY PLC SOFTWARE LOGIC BASED ON A MOTOR FAILING TO SUCCESSFULLY START UPON RECEIVING EITHER: A PUMP SCADA CALL OR A PUMP FLOAT CALL.
  8. PUMP "NOT RUNNING" STATUS FROM STARTER COIL USED FOR HARDWARE LOGIC FOR OPERATION OF STANDBY PUMP. SEE DRAWING E642 FOR DETAILS.
  9. PMPR CU AND PMPR DISPLAY ARE LOCATED IN MP-03 SECTION FOR MP-01, MP-03 AND MP-05. IN MP-07 FOR MP-07, MP-09. IN MP-04 FOR MP-02, MP-04 AND MP-06, AND MP-08 FOR MP-08 AND MP-10.





SCADA PANEL WITH HMI

SP-1  
(PARTIAL)



PLAN NOTES:

1. GAS SENSORS SHALL BE LOCATED AT THE PUMP ROOM LEVELS. SEE PLAN DRAWINGS FOR PRECISE LOCATIONS.
2. TAMPER PUSHBUTTON SHALL BE N/C EXTENDED HEAD, AND HELD OPEN BY THE COVER OF THE KEY SWITCH ENCLOSURE. WIRING OF ENCLOSURE SHALL BE THRU-WALL WITHOUT EXTERNAL EXPOSURE FOR PHYSICAL PROTECTION.
3. REMOTE FIRE ALARM SENSOR DEVICE. SEE PLAN DRAWINGS FOR PRECISE LOCATIONS.
4. HORN AND STROBE LIGHTS ACTIVATED BY BOTH FIRE ALARM CONTROL PANEL AND COMBUSTIBLE GAS MONITOR. HORN AND STROBE LIGHTS SHALL BE ACKNOWLEDGED AND SILENCED EITHER FROM FIRE PANEL OR COMBUSTIBLE GAS MONITOR
5. REMOTE DOOR SWITCH SENSOR DEVICES. SEE PLAN DRAWINGS FOR PRECISE LOCATIONS.
6. FLOAT RELAY LOGIC BASED ON LS-101I OR LS-102H.
7. FLOAT RELAY LOGIC BASED ON LS-101A OR LS-102A.
8. PAVEMENT FLOODED ALARM TO BE GENERATED BY PLC SOFTWARE LOGIC. ALARM TO BE TRIGGERED AT ELEVATION 589.00.
9. DISCHARGE CHAMBER FLOODED ALARM TO BE GENERATED BY PLC SOFTWARE LOGIC.
10. PUMP ALARM GENERATED IN SCADA WHEN ANY ONE OF THE MAIN PUMPS OR LOW FLOW PUMPS: (i) FAILS TO START; (ii) TRIPS DUE TO OVERLOAD OR FAULT OR OVER-TEMPERATURE OR MOISTURE LEAK; (iii) FAILS TO STOP AT THE RESPECTIVE STOP ELEVATION.

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FILE NAME = D191454-1C608.DGN	USER NAME = bgreen	DESIGNED - MEC - P. DE SILVA	REVISED -
		DRAWN - MEC - A. FREEMAN	REVISED -
		CHECKED - MEC - J. ZURAD	REVISED -
		DATE - 03/15/2019	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

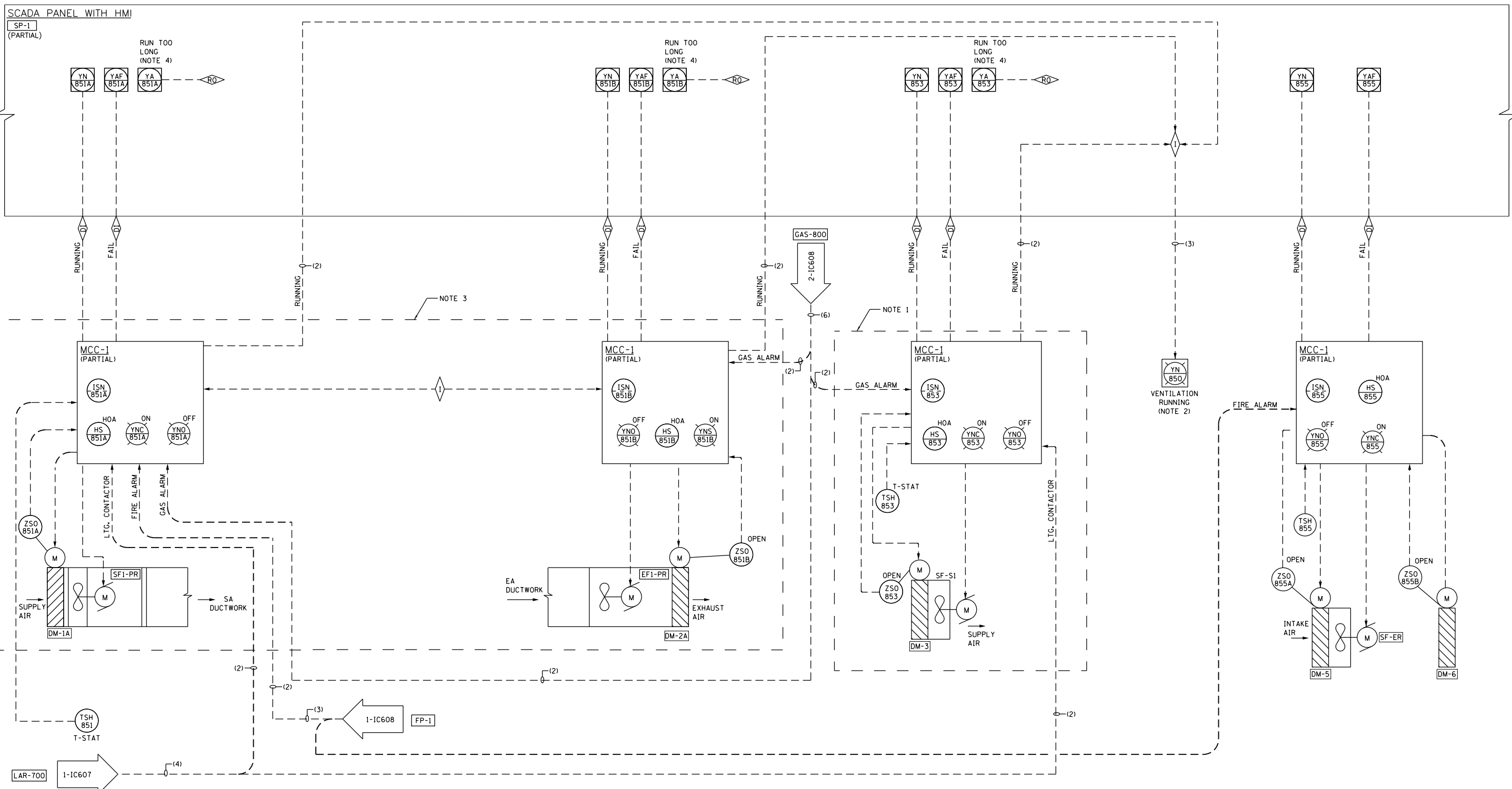
**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
P&ID VII CGM/FACP/AEGIS SYSTEM**

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	223
CONTRACT NO. 62B78				
ILLINOIS FED. AID PROJECT				

SHEET  
IC608

SCALE: NONE SHEET OF SHEETS STA. TO STA.

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**PLAN NOTES:**

- LOOP 853 SHOWN FOR SF-S1. LOOP 854 ARRANGEMENT FOR SF-S2 IS SIMILAR.
- LOCATED AT ENTRANCES TO PUMP ROOM. SEE ELECTRICAL PLANS FOR LOCATIONS.
- LOOP-851 SHOWN FOR SF1-PR AND EF1-PR. LOOP 852 ARRANGEMENT FOR SF2-PR AND EF2-PR IS SIMILAR.
- ALARM TO BE GENERATED BY PLC SOFTWARE LOGIC IN THE EVENT OF A FAN OPERATION FOR A DURATION GREATER THAN A SET VALUE DURING A GAS ALARM CONDITION.

FILE NAME = D191454-1C609.DGN	USER NAME = bgreen	DESIGNED - MEC - P. DE SILVA	REVISED -
<b>MILHOUSE</b> ENGINEERING & CONSTRUCTION		DRAWN - MEC - A. FREEMAN	REVISED -
	PLOT SCALE = 0:1" = 1'-0"	CHECKED - MEC - J. ZURAD	REVISED -
	PLOT DATE = 5/29/2019	DATE - 03/15/2019	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
P&ID VIII HVAC SYSTEM**

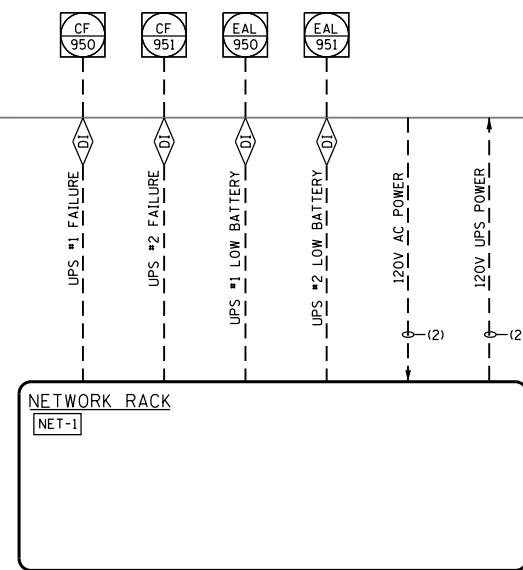
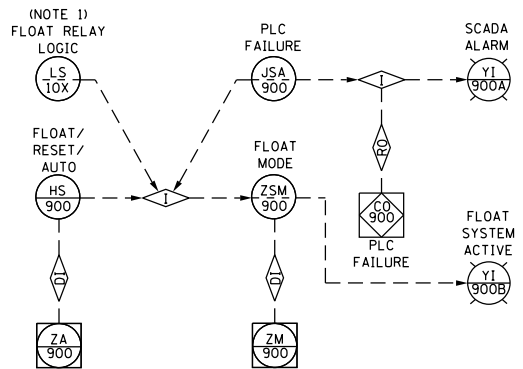
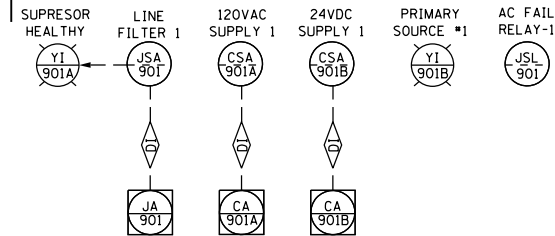
F.A.I. RTE. 290		SECTION 3434-2321-R		COUNTY COOK	TOTAL SHEETS 232		SHEET NO. 224	
					CONTRACT NO. 62B78		ILLINOIS FED. AID PROJECT	

SCADA PANEL WITH HMI

SP-1  
(PARTIAL)



POWER SUPPLY X 2



PLAN NOTES:

- FLOAT RELAY LOGIC BASED ON LS-101A, LS-102A, LS-1011, OR LS-102H.

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FILE NAME = D191454-1C610.DGN	USER NAME = bgreen	DESIGNED - MEC - P. DE SILVA	REVISED -
		DRAWN - MEC - A. FREEMAN	REVISED -
		CHECKED - MEC - J. ZURAD	REVISED -
		DATE - 03/15/2019	REVISED -

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

I-290 PUMP STATION NO. 4 RECONSTRUCTION  
P&ID IX SCADA CABINET & NETWORK RACK

SCALE: NONE SHEET OF SHEETS STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	225
ILLINOIS FED. AID PROJECT			CONTRACT NO. 62B78	

SHEET  
IC610

GENERAL NOTES:

- IN ORDER TO KEEP CLARITY, NOT ALL CONDUITS ARE SHOWN. THE CONTRACTOR IS RESPONSIBLE FOR ALL WIRING AND CONDUIT, WHETHER SHOWN OR NOT, NECESSARY FOR A COMPLETE AND OPERABLE SYSTEM.

COMMUNICATION CONDUIT						
NUMBER	MIN SIZE (IN.)	TYPE	CONDUCTOR QUANTITY AND SIZE (AWG-KCMIL)	COND./CABLE INSULATION	FROM	TO
C100	3/4"	GRS	2 - CAT6 CABLES	FEP/LS-PVC	NET-1	MCC1-3A
C101	3/4"	GRS	2 - CAT6 CABLES	FEP/LS-PVC	NET-1	MCC1-11A
C102	3/4"	GRS	1 - CAT6 CABLE	FEP/LS-PVC	NET-1	MCC1-6-SPD1
C103	3/4"	GRS	1 - CAT6 CABLE	FEP/LS-PVC	NET-1	MCC2-9-SPD2
C104	1"	PVC-GRS	1 - RG8X COAXIAL CABLE	GIFPE/PVC	GPS ANTENNA	NET-1
C105	1"	PVC-GRS	2 - ANTENNA CABLES (4G)	GIFPE/PVC	4G ANTENNAE	SP-1
C106	1"	GRS	1 - COAXIAL CABLE	GIFPE/PVC	NET-1	SP-1
C107	2"	GRS	10 - CAT6 CABLES	FEP/LS-PVC	NET-1	SP-1
C108	1"	GRS	1 - COAXIAL CABLE	GIFPE/PVC	NET-1	USS1-4U
C109	1"	GRS	1 - COAXIAL CABLE	GIFPE/PVC	NET-1	USS1-5L
C110	1"	GRS	1 - COAXIAL CABLE	GIFPE/PVC	NET-1	USS1-6U
C111	3/4"	GRS	1 - CAT6 CABLE	FEP/LS-PVC	NET-1	USS1-4U
C112	3/4"	GRS	1 - CAT6 CABLE	FEP/LS-PVC	NET-1	USS1-5L
C113	3/4"	GRS	2 - CAT6 CABLES	FEP/LS-PVC	NET-1	USS1-6U/6L
C114	3/4"	GRS	1 - CAT6 CABLE	FEP/LS-PVC	NET-1	USS1-7L
C115	3/4"	GRS	1 - CAT6 CABLE	FEP/LS-PVC	NET-1	USS1-8L
C116	3/4"	GRS	1 - CAT6 CABLE	FEP/LS-PVC	NET-1	USS1-9L
C117	3/4"	GRS	1 - CAT6 CABLE	FEP/LS-PVC	NET-1	USS1-10U
C118	3/4"	GRS	1 - CAT6 CABLE	FEP/LS-PVC	NET-1	USS1-1F
C119	3/4"	GRS	2 - CAT6 CABLES	FEP/LS-PVC	NET-1	USS1-2F
C120	3/4"	GRS	1 - CAT6 CABLE	FEP/LS-PVC	NET-1	USS1-3F
C121	3/4"	GRS	1 - CAT6 CABLE	FEP/LS-PVC	NET-1	USS1-11F
C122	3/4"	GRS	2 - CAT6 CABLES	FEP/LS-PVC	NET-1	USS1-12F
C123	3/4"	GRS	1 - CAT6 CABLE	FEP/LS-PVC	NET-1	USS1-13F
C124	3/4"	GRS	2 - CAT6 CABLE	FEP/LS-PVC	NET-1	USS1-13R
C125	3/4"	GRS	1 - CAT6 CABLE	FEP/LS-PVC	NET-1	USS1-12R
C126	3/4"	GRS	1 - CAT6 CABLE	FEP/LS-PVC	NET-1	USS1-2R
C127	3/4"	GRS	2 - CAT6 CABLE	FEP/LS-PVC	NET-1	USS1-1R
C128						
C129	3/4"	GRS	20-1/C #14; 1-1/C #14 GND	THHN	SP-1	SRN-01-MCP
C130	3/4"	PVC-GRS	1 - #16 TWISTED SHIELDED PAIR	PE/PVC	SP-1	LIT-421A
C131	3/4"	PVC-GRS	4-1/C #14; 1-1/C #14 GND	THHN	SP-1	LIT-421A
C132	3/4"	GRS	20-1/C #14; 1-1/C #14 GND	THHN	SP-1	SRN-02-MCP
C133	1"	GRS	26-1/C #14; 1-1/C #14 GND	THHN	SP-1	USS1-1F
C134	1"	GRS	26-1/C #14; 1-1/C #14 GND	THHN	SP-1	USS1-11F
C135	1"	GRS	26-1/C #14; 1-1/C #14 GND	THHN	SP-1	USS1-2F
C136	1"	GRS	26-1/C #14; 1-1/C #14 GND	THHN	SP-1	USS1-12F
C137	1"	GRS	26-1/C #14; 1-1/C #14 GND	THHN	SP-1	USS1-3F
C138	1"	GRS	26-1/C #14; 1-1/C #14 GND	THHN	SP-1	USS1-13F
C139	1"	GRS	26-1/C #14; 1-1/C #14 GND	THHN	SP-1	USS1-1R
C140	1"	GRS	26-1/C #14; 1-1/C #14 GND	THHN	SP-1	USS1-12R
C141	1"	GRS	26-1/C #14; 1-1/C #14 GND	THHN	SP-1	USS1-2R
C142	1"	GRS	26-1/C #14; 1-1/C #14 GND	THHN	SP-1	USS1-13R
C143	1"	GRS	26-1/C #14; 1-1/C #14 GND	THHN	SP-1	MCC1-2B
C144	3/4"	GRS	1 - #16 TWISTED SHIELDED PAIR	PE/PVC	SP-1	MCC1-2B
C145	1"	GRS	26-1/C #14; 1-1/C #14 GND	THHN	SP-1	MCC1-12B
C146	3/4"	GRS	1 - #16 TWISTED SHIELDED PAIR	PE/PVC	SP-1	MCC1-12B
C147	3/4"	GRS	6-1/C #14; 1-1/C #14 GND	THHN	SP-1	JB-LTG
C148	3/4"	GRS	6-1/C #14; 1-1/C #14 GND	THHN	SP-1	LC-1
C149	3/4"	GRS	12-1/C #14; 1-1/C #14 GND	THHN	SP-1	USS1-5L
C150	3/4"	GRS	12-1/C #14; 1-1/C #14 GND	THHN	SP-1	USS1-8L
C151	3/4"	GRS	10-1/C #14; 1-1/C #14 GND	THHN	SP-1	USS1-6U
C152	3/4"	GRS	6-1/C #14; 1-1/C #14 GND	THHN	SP-1	USS1-9L
C153	3/4"	GRS	8-1/C #14; 1-1/C #14 GND	THHN	SP-1	MCC1-6A
C154	3/4"	GRS	8-1/C #14; 1-1/C #14 GND	THHN	SP-1	MCC1-9A
C155	3/4"	GRS	6-1/C #14; 1-1/C #14 GND	THHN	SP-1	MCC1-7A
C156	3/4"	PVC-GRS	6-1/C #14; 1-1/C #14 GND	THHN	SP-1	BRIDGE CRANE

COMMUNICATION CONDUIT						
NUMBER	MIN SIZE (IN.)	TYPE	CONDUCTOR QUANTITY AND SIZE (AWG-KCMIL)	COND./CABLE INSULATION	FROM	TO
C157	3/4"	GRS	20-1/C #14; 1-1/C #14 GND	THHN	SP-1	AP
C158	3/4"	GRS	8-1/C #14; 1-1/C #14 GND	THHN	SP-1	FP
C159	3/4"	GRS	12-1/C #14; 1-1/C #14 GND	THHN	SP-1	CGM
C160	3/4"	GRS	12-1/C #14; 1-1/C #14 GND	THHN	SP-1	MCC1-4A
C161	3/4"	GRS	12-1/C #14; 1-1/C #14 GND	THHN	SP-1	MCC1-4B
C162	3/4"	GRS	12-1/C #14; 1-1/C #14 GND	THHN	SP-1	MCC2-10A
C163	3/4"	GRS	12-1/C #14; 1-1/C #14 GND	THHN	SP-1	MCC2-10B
C164	3/4"	GRS	12-1/C #14; 1-1/C #14 GND	THHN	SP-1	MCC1-4C
C165	3/4"	GRS	12-1/C #14; 1-1/C #14 GND	THHN	SP-1	MCC2-10C
C166	3/4"	GRS	8-1/C #14; 1-1/C #14 GND	THHN	SP-1	MCC2-10D
C167	3/4"	GRS	18-1/C #14; 1-1/C #14 GND	THHN	SP-1	NET-1
C168	1"	GRS	12-1/C #10; 1-1/C #10 GND	THHN	SP-1	NET-1
C169	1"	PVC-GRS	12-1/C #14; 1-1/C #14 GND	THHN	SP-1	IG-01-ACT
C170	1"	PVC-GRS	12-1/C #14; 1-1/C #14 GND	THHN	SP-1	RG-02-ACT
C171	1"	PVC-GRS	12-1/C #14; 1-1/C #14 GND	THHN	SP-1	DG-01-ACT
C172	1"	PVC-GRS	12-1/C #14; 1-1/C #14 GND	THHN	SP-1	IG-02-ACT
C173	1"	PVC-GRS	12-1/C #14; 1-1/C #14 GND	THHN	SP-1	IG-03-ACT
C174	1"	PVC-GRS	12-1/C #14; 1-1/C #14 GND	THHN	SP-1	RG-01-ACT
C175	1"	PVC-GRS	12-1/C #14; 1-1/C #14 GND	THHN	SP-1	DG-02-ACT
C176	1 1/4"	PVC-GRS	24-1/C #14; 1-1/C #14 GND	THHN	SP-1	TB-LS-101
C177	1 1/4"	PVC-GRS	24-1/C #14; 1-1/C #14 GND	THHN	SP-1	TB-LS-102
C178	3/4"	PVC-GRS	1 - #16 TWISTED SHIELDED PAIR	PE/PVC	SP-1	LIT-411B1
C179	3/4"	PVC-GRS	4-1/C #14; 1-1/C #14 GND	THHN	SP-1	LIT-411B1
C180	3/4"	PVC-GRS	1 - #16 TWISTED SHIELDED PAIR	PE/PVC	SP-1	LIT-412B1
C181	3/4"	PVC-GRS	4-1/C #14; 1-1/C #14 GND	THHN	SP-1	LIT-412B1
C182	3/4"	PVC-GRS	1 - #16 TWISTED SHIELDED PAIR	PE/PVC	SP-1	LIT-411A1
C183	3/4"	PVC-GRS	4-1/C #14; 1-1/C #14 GND	THHN	SP-1	LIT-411A1
C184	3/4"	PVC-GRS	1 - #16 TWISTED SHIELDED PAIR	PE/PVC	SP-1	LIT-412A1
C185	3/4"	PVC-GRS	4-1/C #14; 1-1/C #14 GND	THHN	SP-1	LIT-412A1
C186	3/4"	GRS	8-1/C #14; 1-1/C #14 GND	THHN	SP-1	USS1-6L
C187	3/4"	GRS	8-1/C #14; 1-1/C #14 GND	THHN	SP-1	USS1-7L
C188	-	-	VENDOR FURNISHED CABLE	-	LIT-411A1	LE-411A
C189	-	-	VENDOR FURNISHED CABLE	-	LIT-412A1	LE-412A
C190	-	-	VENDOR FURNISHED CABLE	-	LIT-411B1	LE-411B
C191	-	-	VENDOR FURNISHED CABLE	-	LIT-412B1	LE-412B
C192	-	-	VENDOR FURNISHED CABLE	-	LIT-421A1	LE-421
C193	-	-	VENDOR FURNISHED CABLE	-	TB-LS-101	LS-101A
C194	-	-	VENDOR FURNISHED CABLE	-	TB-LS-101	LS-101B
C195	-	-	VENDOR FURNISHED CABLE	-	TB-LS-101	LS-101C
C196	-	-	VENDOR FURNISHED CABLE	-	TB-LS-101	LS-101D
C197	-	-	VENDOR FURNISHED CABLE	-	TB-LS-101	LS-101E
C198	-	-	VENDOR FURNISHED CABLE	-	TB-LS-101	LS-101F
C199	-	-	VENDOR FURNISHED CABLE	-	TB-LS-101	LS-101G
C200	-	-	VENDOR FURNISHED CABLE	-	TB-LS-101	LS-101H
C201	-	-	VENDOR FURNISHED CABLE	-	TB-LS-101	LS-101I
C202	-	-	VENDOR FURNISHED CABLE	-	TB-LS-102	LS-102A
C203	-	-	VENDOR FURNISHED CABLE	-	TB-LS-102	LS-102B
C204	-	-	VENDOR FURNISHED CABLE	-	TB-LS-102	LS-102C
C205	-	-	VENDOR FURNISHED CABLE	-	TB-LS-102	LS-102D
C206	-	-	VENDOR FURNISHED CABLE	-	TB-LS-102	LS-102E
C207	-	-	VENDOR FURNISHED CABLE	-	TB-LS-102	LS-102F
C208	-	-	VENDOR FURNISHED CABLE	-	TB-LS-102	LS-102G
C209	-	-	VENDOR FURNISHED CABLE	-	TB-LS-102	LS-102H
C210	-	-	VENDOR FURNISHED CABLE	-	TB-LS-102	LS-102I
C211	3/4"	GRS	6-1/C #14; 1-1/C #14 GND	THHN	USS1-5	AP
C212	3/4"	GRS	4-1/C #14; 1-1/C #14 GND	THHN	CGM	AP
C213	3/4"	GRS	6-1/C #14; 1-1/C #14 GND	THHN	CGM	FP

FILE NAME = D:\191454-1C611.DGN  
 USER NAME = bgreen  
 DESIGNED - MEC - P. DE SILVA  
 DRAWN - MEC - A. FREEMAN  
 CHECKED - MEC - J. ZURAD  
 DATE - 03/15/2019  
 PLOT SCALE = 0.1" = 1'-0"  
 PLOT DATE = 5/29/2019  
 SHEETS: D:\191454-1C611.DGN



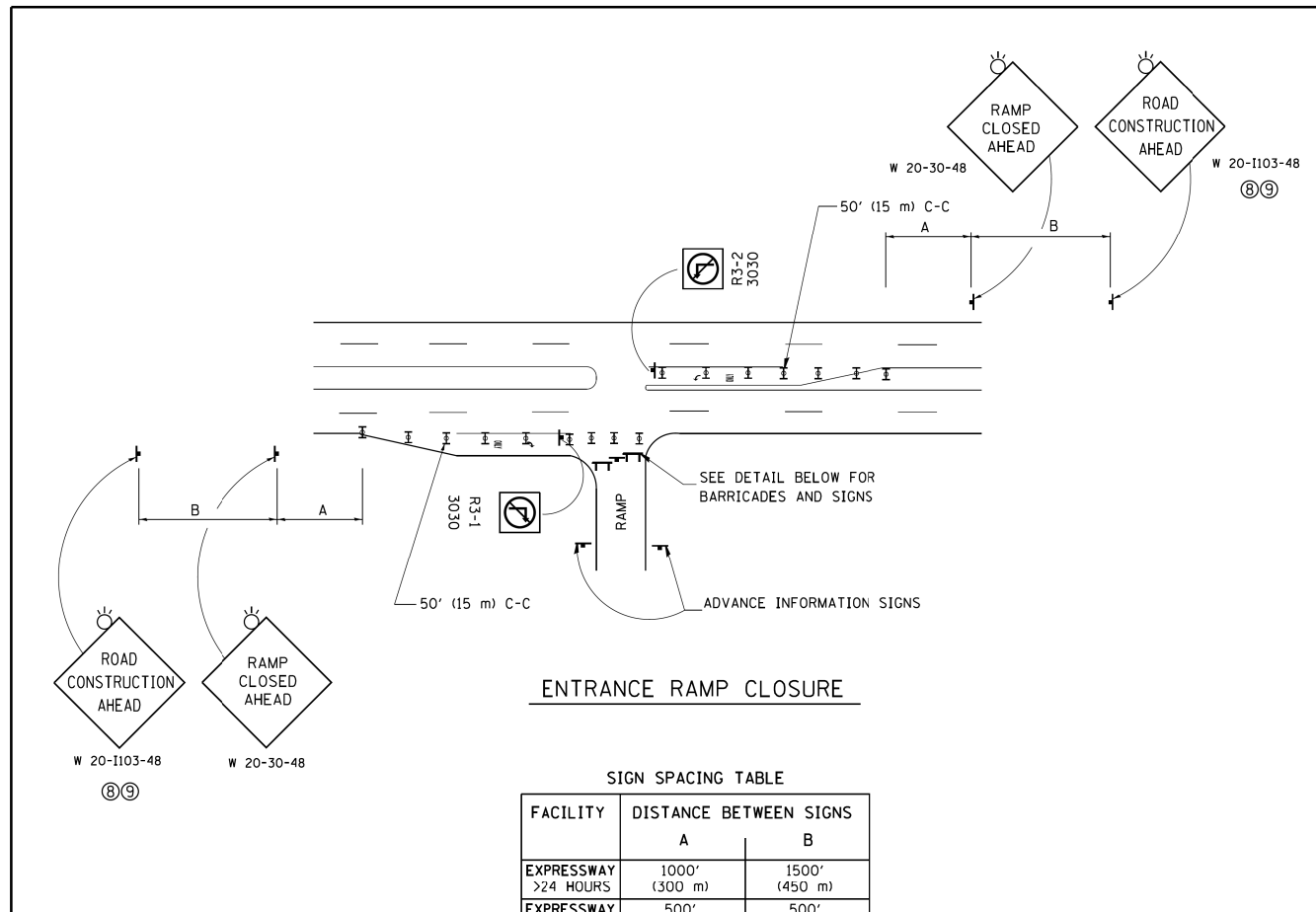
DESIGNED - MEC - P. DE SILVA	REVISED -
DRAWN - MEC - A. FREEMAN	REVISED -
CHECKED - MEC - J. ZURAD	REVISED -
DATE - 03/15/2019	REVISED -

**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

<b>I-290 PUMP STATION NO. 4 RECONSTRUCTION</b>			
<b>I&amp;C CABLE AND CONDUIT SCHEDULES I</b>			
SCALE: NONE	SHEET	OF	SHEETS
STA.	TO	STA.	

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	226
CONTRACT NO. 62B78				
ILLINOIS FED. AID PROJECT				

SHEET  
IC611

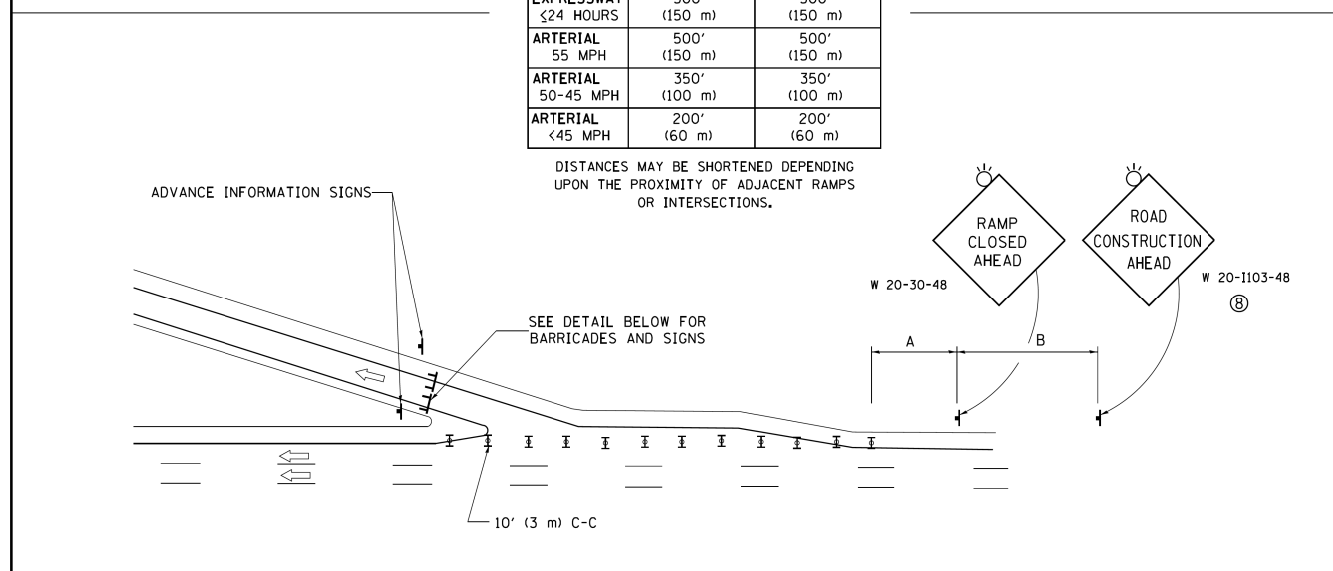


**ENTRANCE RAMP CLOSURE**

**SIGN SPACING TABLE**

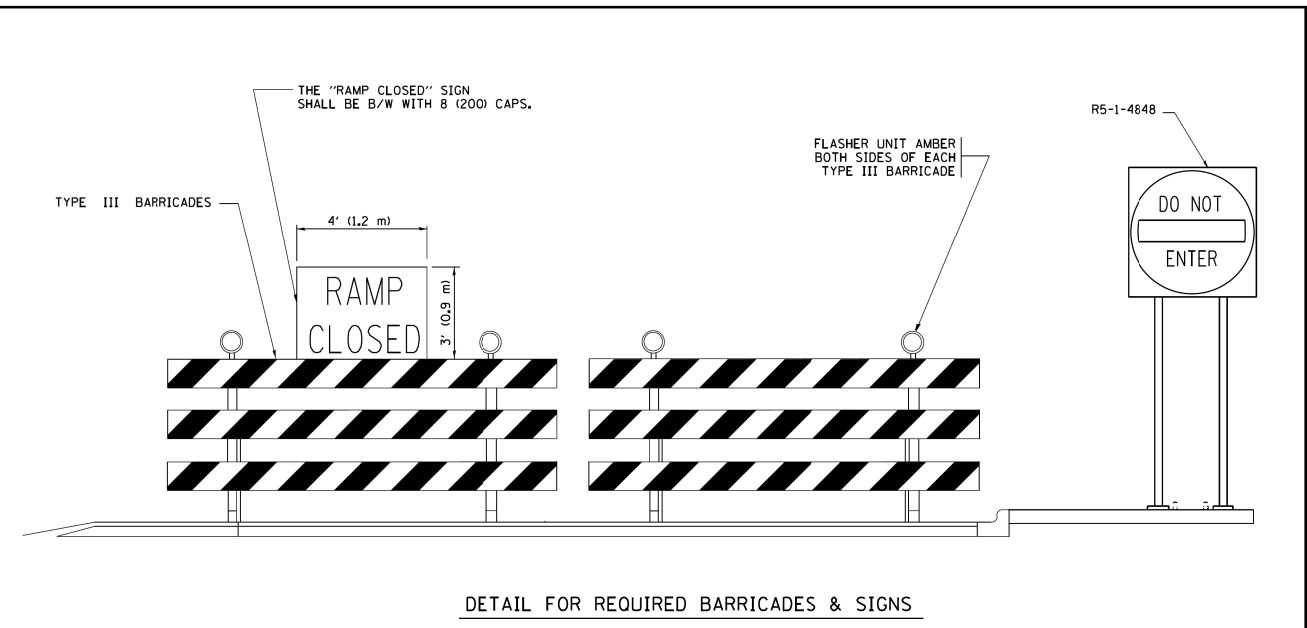
FACILITY	DISTANCE BETWEEN SIGNS	
	A	B
EXPRESSWAY >24 HOURS	1000' (300 m)	1500' (450 m)
EXPRESSWAY ≤24 HOURS	500' (150 m)	500' (150 m)
ARTERIAL 55 MPH	500' (150 m)	500' (150 m)
ARTERIAL 50-45 MPH	350' (100 m)	350' (100 m)
ARTERIAL <45 MPH	200' (60 m)	200' (60 m)

DISTANCES MAY BE SHORTENED DEPENDING UPON THE PROXIMITY OF ADJACENT RAMPS OR INTERSECTIONS.

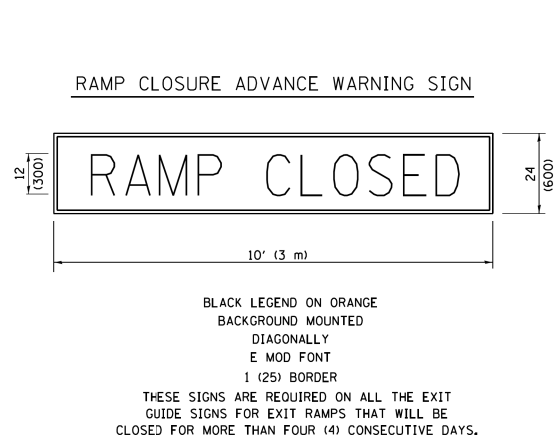


**EXIT RAMP CLOSURE**

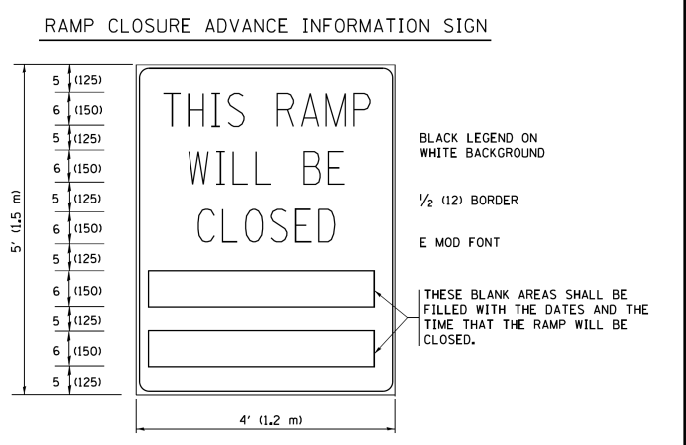
- SYMBOLS**
- ▬ TYPE II BARRICADE OR DRUM
  - ▬ TYPE III BARRICADE WITH 2 FLASHING LIGHTS



**DETAIL FOR REQUIRED BARRICADES & SIGNS**



**RAMP CLOSURE ADVANCE WARNING SIGN**



**RAMP CLOSURE ADVANCE INFORMATION SIGN**

THESE SIGNS ARE REQUIRED ON BOTH SIDES OF THE RAMP, MINIMUM OF 1 WEEK IN ADVANCE OF THE CLOSURE.  
THESE SIGNS SHALL BE FABRICATED AND PAID FOR ACCORDING TO THE TEMPORARY INFORMATION SIGNING SPECIAL PROVISION

**GENERAL NOTES:**

- ① CONES MAY BE SUBSTITUTED FOR DRUMS OR TYPE II BARRICADES DURING DAY OPERATIONS. CONES SHALL BE A MINIMUM OF 28 (700) HIGH.
- ② VERTICAL BARRICADES SHALL NOT BE USED FOR RAMP CLOSURES.
- ③ A FLAGGER SHALL BE POSITIONED AT EACH CLOSED RAMP THAT IS OPEN TO CONSTRUCTION VEHICLES, PRECEDED BY A W20-7 FLAGGER WARNING SIGN.
- ④ ALL ROUTE MARKERS AND TRAILBLAZER ASSEMBLIES WHICH DIRECT MOTORISTS TO A CLOSED ENTRANCE RAMP SHALL BE COVERED WHEN THE RAMP IS CLOSED FOR MORE THAN FOUR (4) DAYS.
- ⑤ THE SIGNING AND BARRICADING WHICH IS REQUIRED BY THIS DETAIL SHALL BE INCLUDED IN THE COST OF TRAFFIC CONTROL AND PROTECTION (EXPRESSWAYS).
- ⑥ AUTHORIZATION FROM THE DISTRICT'S BUREAU OF TRAFFIC IS REQUIRED FOR ALL RAMP CLOSURES.
- ⑦ THE RAMP CLOSURE ADVANCE INFORMATION SIGNS SHALL BE ERECTED IF THE CLOSURE TIME EXCEEDS TWENTY-FOUR (24) HOURS. ADDITIONAL ADVANCE WARNING SIGNS ON EXIT GUIDE SIGNING WILL BE REQUIRED FOR EXIT RAMP CLOSURES THAT EXCEED FOUR (4) DAYS IN LENGTH.
- ⑧ ROAD CONSTRUCTION AHEAD SIGNS MAY BE OMITTED WHEN THIS DETAIL IS USED IN CONJUNCTION WITH OTHER TRAFFIC CONTROL THAT ALREADY INCLUDES A ROAD CONSTRUCTION AHEAD SIGN.
- ⑨ ARTERIAL ROAD CONSTRUCTION AHEAD SIGNS SHALL BE INSTALLED ON THE LEFT SIDE OF TRAFFIC IF THE MEDIAN IS MORE THAN 10 FT WIDE.

ALL DIMENSIONS ARE IN INCHES (MILLIMETERS) UNLESS OTHERWISE SHOWN.

FILE NAME =	USER NAME =	DESIGNED -	REVISED -
Default	fgreen	D.W.S.	S.P.B. 01-07
		CHECKED -	REVISED -
		02-83	M.D. 01-18

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

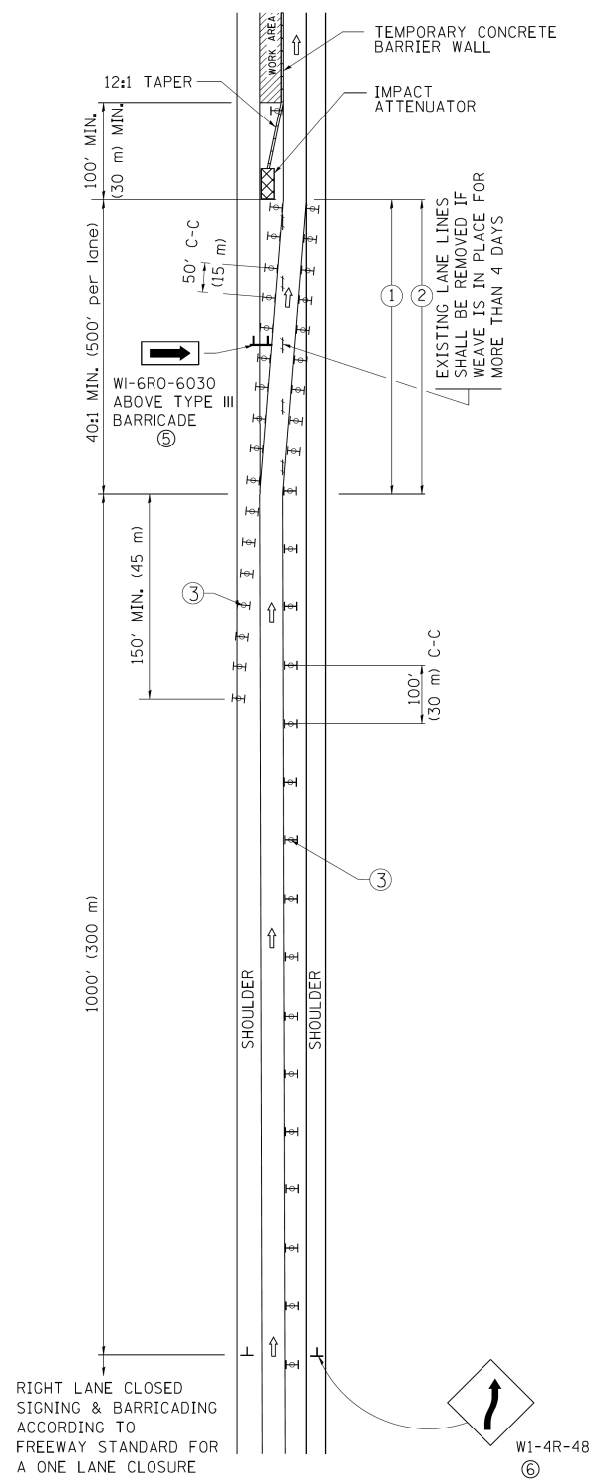
**ENTRANCE AND EXIT RAMP  
CLOSURE DETAILS**

SCALE: NONE SHEET 1 OF 1 SHEETS STA. TO STA.

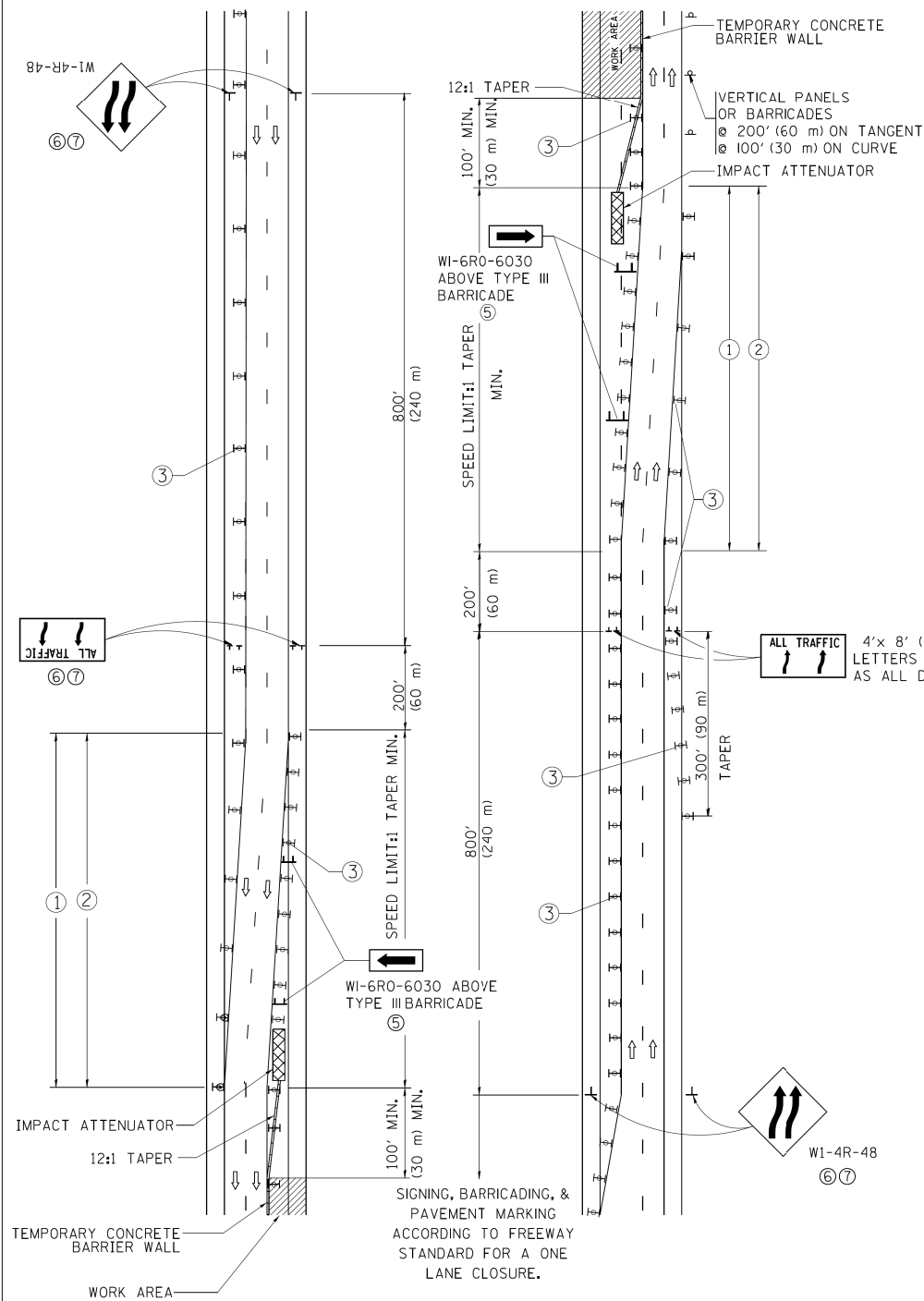
F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	TC-08			
ILLINOIS FED. AID PROJECT				

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### SINGLE LANE WEAVE



### MULTI-LANE WEAVE



- #### GENERAL NOTES
- EXISTING CONFLICTING PAVEMENT MARKING LINES SHALL BE REMOVED. PAVEMENT MARKING REMOVAL SHALL NOT BE REQUIRED FOR SINGLE LANE WEAVES UNDER 4 DAYS IN DURATION.
  - CONTINUOUS REFLECTIVE TEMPORARY PAVEMENT MARKING TAPE SHALL BE PLACED THROUGHOUT THE TAPER AND FOR 300' (90 m) ALONG SIDE THE WORK AREA WHERE THE CLOSURE TIME IS GREATER THAN FOURTEEN DAYS. THE LEFT EDGE LINE SHALL BE YELLOW AND THE RIGHT EDGE LINE SHALL BE WHITE. FOR MULTI-LANE WEAVES LANE LINES SHALL BE 5 INCH, 10'-30' (3 m-9 m) SKIP DASH, WHITE.
  - PLASTIC DRUMS WITH STEADY BURN LIGHTS AT 50' (15 m) C-C SPACING IN TAPERS AND 100' (30 m) C-C SPACING IN TANGENTS.
  - ALL SIGNS SHALL BE POST MOUNTED IF THE CLOSURE TIME EXCEEDS FOUR DAYS.
  - TYPE III BARRICADES MAY BE OMITTED FOR SINGLE-LANE WEAVES UNDER 24-HOURS IN DURATION. W1-6 SIGNS WILL STILL BE REQUIRED. IF THE WIDTH OF OFFSET IS LESS THAN 6' THEN THE TYPE III BARRICADE WITH ATTACHED ARROW SIGN PANEL CAN BE ELIMINATED IN THE TAPER AREAS.
  - WHEN THE LENGTH OF THE SHIFTED SEGMENT (DISTANCE BETWEEN WEAVE POINTS) IS LESS THAN 1500', DOUBLE REVERSE CURVE SIGNS (W24-1) SHOULD BE USED INSTEAD OF THE REVERSE CURVE (W1-4) SIGNS. ARROWS ON THE 4'X8' "ALL TRAFFIC" SIGNS SHALL BE THE SAME SHAPE.
  - THE NUMBER OF ARROWS ON THESE SIGNS SHALL MATCH THE NUMBER OF LANES OPEN TO TRAFFIC.

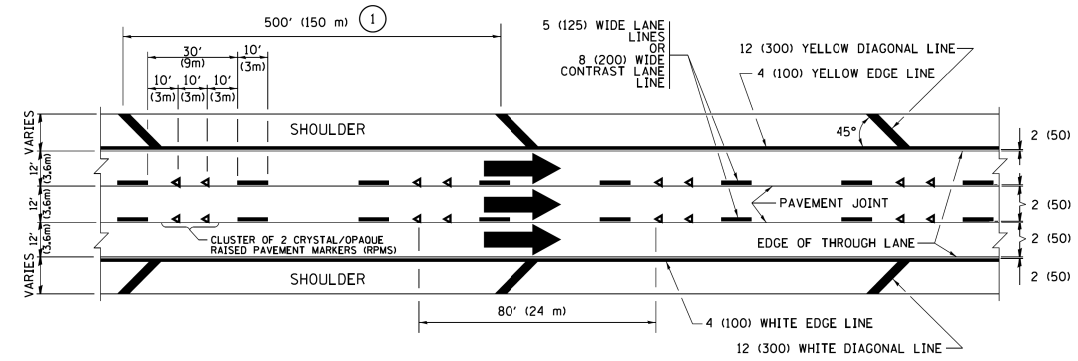
4'x 8' (1.2 m x 2.4 m); 1 (25) BORDER; 10 (250) CAPITAL LETTERS BACKGROUND SHEETING SHALL BE THE SAME AS ALL DIAMOND SHAPED CONSTRUCTION SIGNS.

- #### SYMBOLS
- DIRECTION OF TRAFFIC
  - WORK AREA
  - SIGN ON PORTABLE OR PERMANENT SUPPORT
  - TYPE II BARRICADE OR DRUM WITH MONO-DIRECTIONAL STEADY BURNING LIGHT
  - TEMPORARY CONCRETE BARRIER WALL
  - IMPACT ATTENUATOR
  - W1-4R-48
  - W24-1-48

ALL DIMENSIONS ARE IN INCHES (MILLIMETERS) UNLESS OTHERWISE SHOWN

FILE NAME = c:\pwork\pwork\footemj\d0108315\td09.dgn	USER NAME = footemj	DESIGNED - DWS	REVISED - JAF 02-06	<b>STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION</b>	<b>TRAFFIC CONTROL DETAILS FOR FREEWAY SINGLE &amp; MULTI-LANE WEAVE</b>			F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
PLOT SCALE = 50:000 ' / in.	CHECKED -	REVISED - SPB 01-07	REVISED - SPB 12-09		SCALE: NONE	SHEET NO. 1 OF 1 SHEETS	STA.	TO STA.	<b>TC-09</b>		CONTRACT NO.	
PLOT DATE = 7/1/2013	DATE - 02-87	REVISED - MD 06-13						FED. ROAD DIST. NO. 1		ILLINOIS	FED. AID PROJECT	

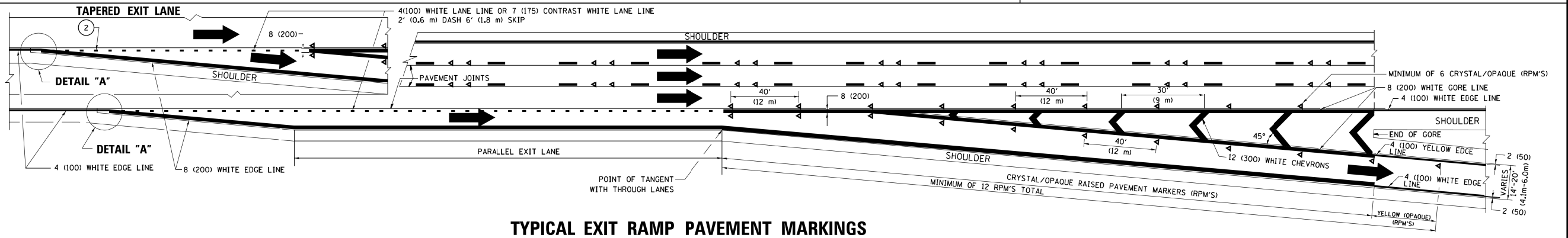




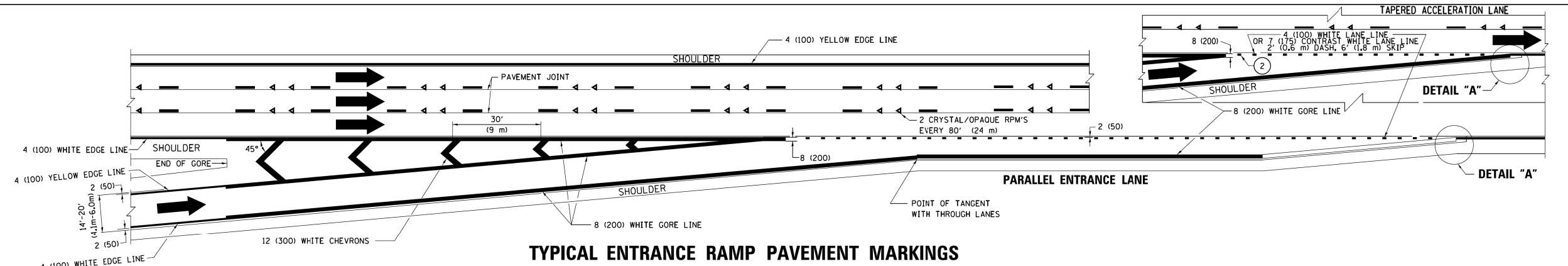
**TYPICAL EDGE LINES & LANE LINES**

**PAVEMENT MARKING MATERIALS**

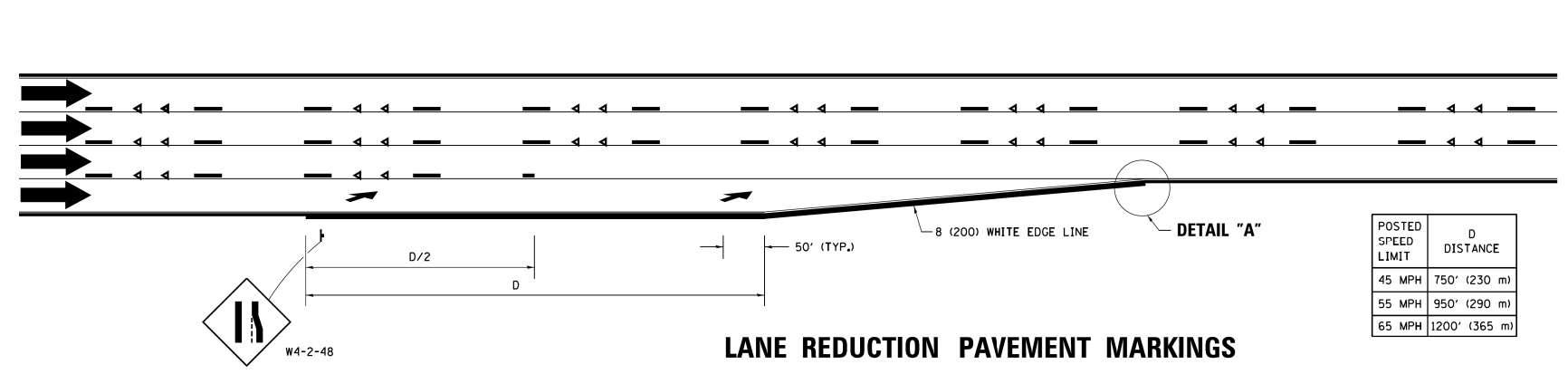
1. THERMOPLASTIC PAVEMENT MARKING LINE SHALL BE USED FOR ALL EDGE LINES, GORE LINES, AND DIAGONAL LINES ON HMA PAVEMENTS.
2. POLYUREA OR MODIFIED URETHANE PAVEMENT MARKING LINE SHALL BE USED FOR ALL EDGE LINES, GORE LINES, AND DIAGONAL LINES ON PCC PAVEMENTS.
3. PREFORMED PLASTIC PAVEMENT MARKING LINE TYPE B, INLAID OR GROOVE IN, SHALL BE USED FOR ALL LANE LINES ON HMA PAVEMENTS.
4. CONTRAST PREFORMED PLASTIC PAVEMENT MARKING LINE TYPE B, GROOVE IN, SHALL BE USED FOR ALL LANE LINES ON PCC PAVEMENT.



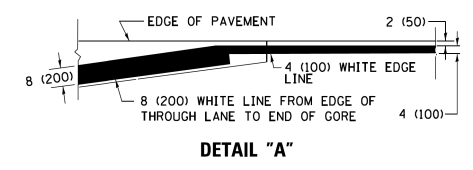
**TYPICAL EXIT RAMP PAVEMENT MARKINGS**



**TYPICAL ENTRANCE RAMP PAVEMENT MARKINGS**



**LANE REDUCTION PAVEMENT MARKINGS**



**NOTES:**

1. THE DIAGONAL LINES SHALL BE SPACED AT 40' (12 m) C-C ACROSS ALL STRUCTURES WHICH ARE 500' (150 m) OR LESS IN LENGTH. THE DIAGONAL LINES ARE NOT REQUIRED ON SHOULDERS WHICH ARE 6' (1.8 m) OR LESS IN WIDTH.
2. 4" (2' DASH, 6' SKIP) MARKING ON TAPERED ENTRANCE AND EXIT RAMP SHALL BE OMITTED ON TANGENT SECTIONS.

POSTED SPEED LIMIT	D DISTANCE
45 MPH	750' (230 m)
55 MPH	950' (290 m)
65 MPH	1200' (365 m)

FILE NAME =	USER NAME =	DESIGNED -	REVISED -	<b>STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION</b>	<b>MULTI-LANE FREEWAY PAVEMENT MARKING DETAILS</b>			F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.			
pu\1\IL084EBID\INTEG\11\inois.gov\PIW00T\Documents\DOT_Offices\District 1\Projects\Dist	Footemj	D.W.S.	S.P.B. 01-07					TC-12							
Default	PLOT SCALE = 50.000' / in.	CHECKED -	REVISED -					SCALE: NONE	SHEET 1	OF 2	SHEETS	STA.	TO STA.	ILLINOIS FED. AID PROJECT	CONTRACT NO.
	PLOT DATE = 9/6/2017	DATE -	REVISED -												

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 k:\Users\m2017\102752\AM User\...

**HDR**  
 HDR, Inc.  
 8550 W. Bryn Mawr Ave.,  
 Suite 900  
 Chicago, IL 60631

FILE NAME =	USER NAME =	DESIGNED -	REVISED -
D191454-TC-12-1.DGN	bgreen	D.W.S.	S.P.B. 01-07
		DRAWN -	REVISED -
		M.D. 05-13	M.D. 09-17
		CHECKED -	REVISED -
		DATE -	REVISED -
		01-90	09-17

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

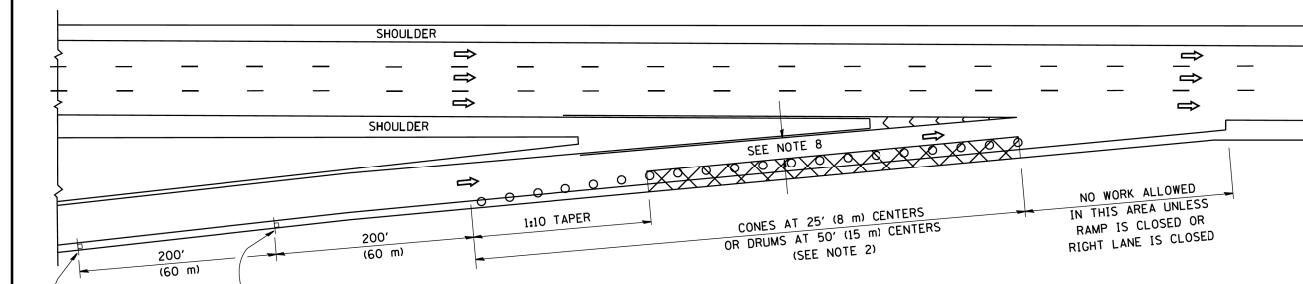
**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
IDOT STANDARD DETAIL TC-12 SHEET 1 OF 2**

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	229
CONTRACT NO. 62B78				
ILLINOIS FED. AID PROJECT				

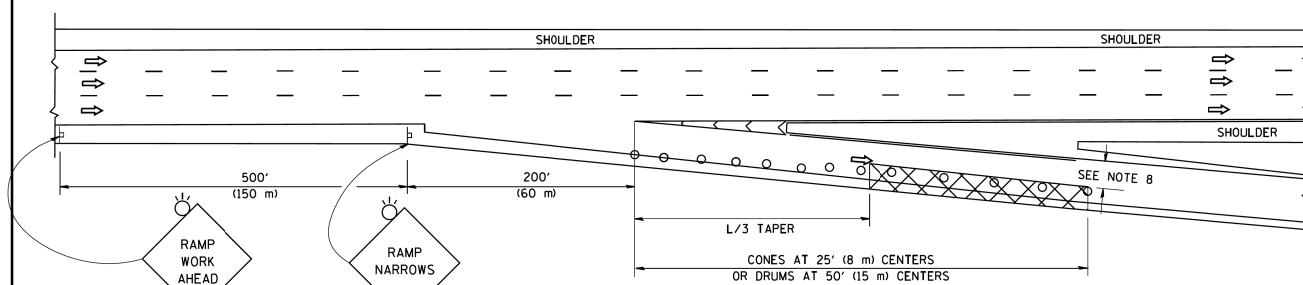
SHEET  
TC-12-1



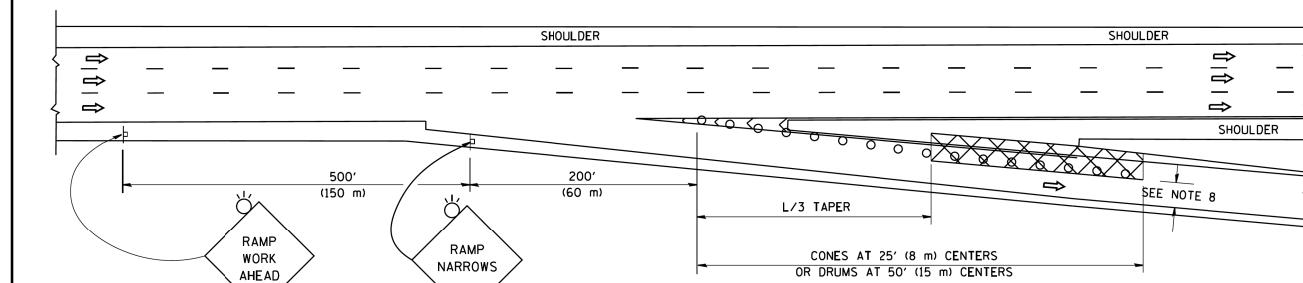
PARTIAL RAMP CLOSURE DETAILS



TYPICAL ENTRANCE RAMP



TYPICAL EXIT RAMP



TYPICAL EXIT RAMP

SYMBOLS

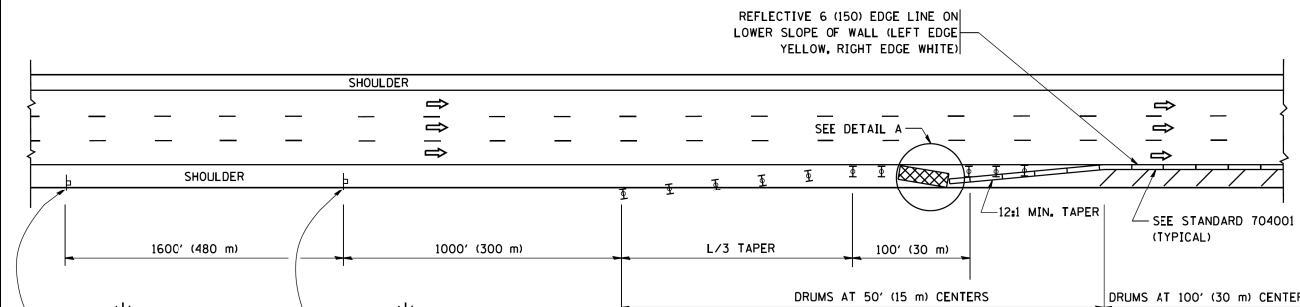
- ACTIVE WORK AREA
- SIGN ON PORTABLE OR PERMANENT SUPPORT
- FLAGGER WITH CONTROL SIGN
- TYPE II BARRICADE OR DRUM
- CONE, DRUM OR BARRICADE
- IMPACT ATTENUATOR OF TYPE AND TEST LEVEL SPECIFIED

GENERAL NOTES

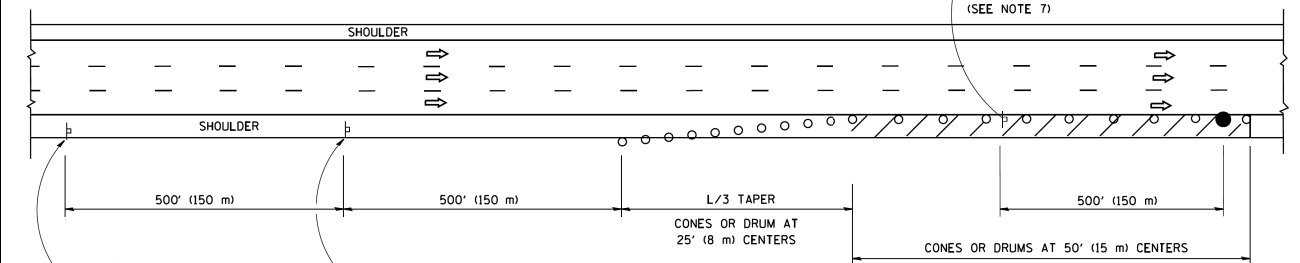
1. THE "L" DISTANCE EQUALS:
 

SPEED LIMIT	FORMULAS
45 mph (80 km/h) OR GREATER	METRIC ENGLISH L=0.65(W)(S) L=W(S)
W = WIDTH OF OFFSET IN FEET (METERS)	
S = NORMAL POSTED SPEED MPH (KM/H)	
2. TYPE II BARRICADES OR DRUMS ARE REQUIRED FOR ALL NIGHTTIME CLOSURES, TYPE II BARRICADES OR DRUMS WITH MONODIRECTIONAL STEADY BURN LIGHTS ARE REQUIRED FOR DELINEATING OBSTACLES, EXCAVATIONS, OR HAZARDS EXCEEDING 100 FT (30m) IN LENGTH AT NIGHT.
3. ALL SIGNS SHALL BE POST MOUNTED IF THE CLOSURE TIME EXCEEDS FOUR DAYS.
4. FLASHING LIGHTS SHALL BE USED DURING THE HOURS OF DARKNESS AND SHALL BE INSTALLED ABOVE THE FIRST TWO SETS OF SIGNS.
5. THE IMPACT ATTENUATOR, TEMPORARY IS NOT REQUIRED WHEN THE TEMPORARY CONCRETE BARRIER WALL IS PROTECTED BY OR IS TIED INTO THE EXISTING GUARDRAIL. IF OFFSET IS LESS THAN 5 FEET USE NARROW USE TYPE DEVICE TO MEET NCHRP350/MASH.
6. AUTHORIZATION FROM THE DISTRICT'S BUREAU OF TRAFFIC IS REQUIRED FOR ALL FREEWAY CLOSURES.
7. THE FLAGGER AND FLAGGER SIGN ARE REQUIRED AT THE ABOVE WORK SITES WHEN:
  - a. FOUR OR MORE WORK VEHICLES ENTER THE TRAFFIC LANES IN A ONE HOUR PERIOD.
  - b. THE WORK ACTIVITY REQUIRES FREQUENT ENCROACHMENT INTO THE LANE OPEN TO TRAFFIC.
 THE FLAGGER SHALL BE STATIONED APPROXIMATELY 100' (30 m) TO 200' (60 m) IN ADVANCE OF THE WORKERS.
8. 12' MIN. WIDTH TANGENT SECTION  
16' MIN. WIDTH CURVE SECTION.

SHOULDER CLOSURE DETAILS



PERMANENT SHOULDER CLOSURE



DAYTIME SHOULDER CLOSURE

- THIS DETAIL IS USED WHERE:
1. VEHICLES, EQUIPMENT, WORKERS OR THEIR ACTIVITIES ENCROACH IN AN AREA CLOSER THAN 15' (4.5 m) TO THE EDGE OF PAVEMENT FOR A PERIOD IN EXCESS OF 15 MINUTES.

ARRAY DESIGN PER MANUFACTURER TO BE NCHRP 350/MASH COMPLIANT.

DETAIL "A"  
IMPACT ATTENUATOR, TEMPORARY  
(SEE NOTE 5)

ALL DIMENSIONS ARE IN INCHES (MILLIMETERS) UNLESS OTHERWISE SHOWN.

FILE NAME =	USER NAME =	DESIGNED -	REVISED -
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Default	PLOT SCALE = 50.0000' / in.	CHECKED -	REVISED -
	PLOT DATE = 11/27/2017	DATE - 11-96	REVISED - M.D. 01-18

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DETAILS FOR FREEWAY  
SHOULDER CLOSURES AND PARTIAL RAMP CLOSURES

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TC-17		CONTRACT NO.		
ILLINOIS FED. AID PROJECT				

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FILE NAME = D191454-TC-17.DGN  
HDR, Inc.  
8550 W. Bryn Mawr Ave.,  
Suite 900  
Chicago, IL 60631

USER NAME =	DESIGNED -	REVISED -
bgreen		
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PLOT DATE = 5/29/2019	DATE - 05/30/2019	REVISED -

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

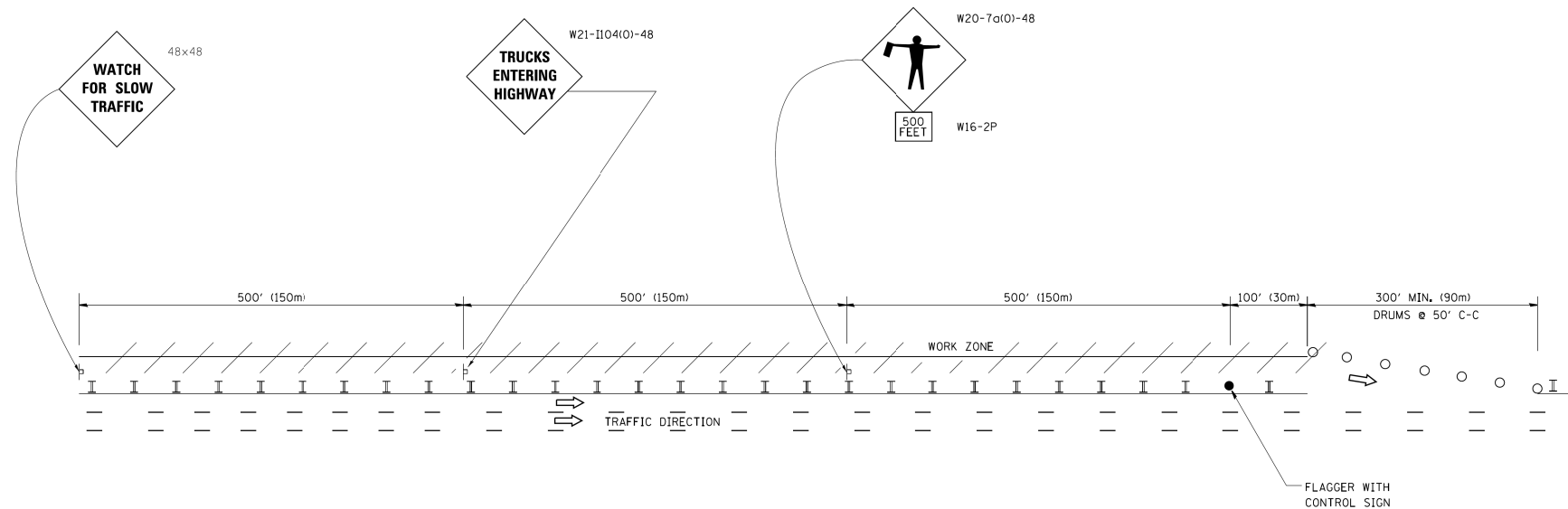
I-290 PUMP STATION NO. 4 RECONSTRUCTION  
IDOT STANDARD DETAIL TC-17

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	231
		CONTRACT NO. 62B78		
ILLINOIS FED. AID PROJECT				

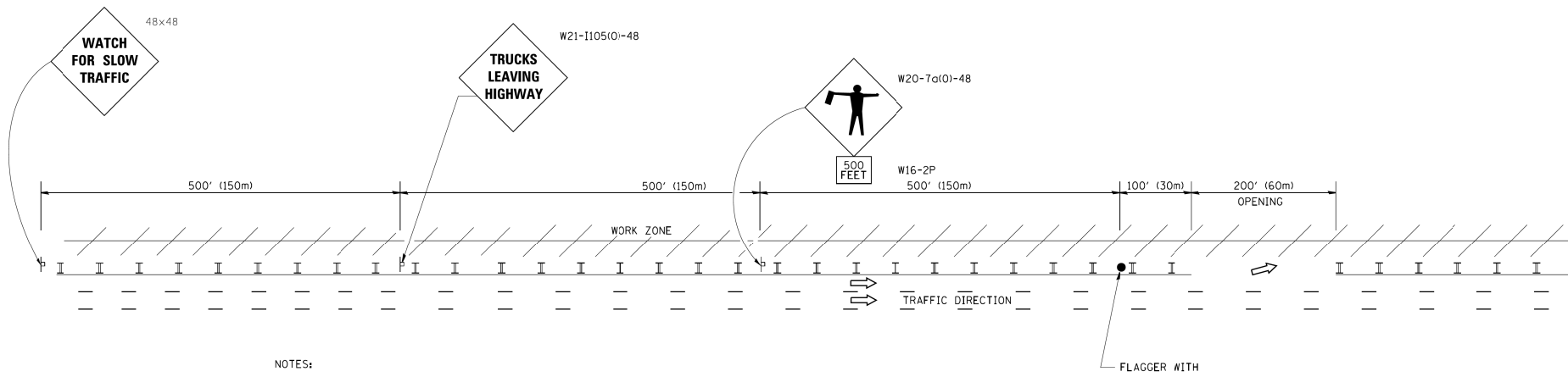
SHEET  
TC-17

SIGNING FOR FLAGGING OPERATIONS AT WORK ZONE OPENINGS

WORK ZONE EXIT OPENING



WORK ZONE ENTRY OPENING



NOTES:

1. ALL SIGNS SHALL BE REMOVED OR TURNED AWAY FROM TRAFFIC AND THE EXIT AND ENTRY OPENINGS SHALL BE CLOSED WHEN THE FLAGGING OPERATION CEASES. NON OPERATING EQUIPMENT SHALL COMPLY WITH ARTICLE 701.11
2. WORK ZONE OPENINGS SHALL BE A MINIMUM OF ONE HALF MILE APART AND A MINIMUM OF ONE QUARTER MILE FROM ALL ENTRANCE AND EXIT RAMP.
3. EXITING THE WORK ZONE AT ANY PLACE OTHER THAN AT A WORK ZONE EXIT OPENING WILL BE PROHIBITED.
4. ALL VEHICLES SHALL ENTER THE WORK ZONE AT ENTRY OPENINGS, USING THEIR TURN SIGNALS TO WARN MOTORISTS
5. FLAGGERS SHALL NOT STOP TRAFFIC OR DIRECT TRAFFIC INTO AN ADJACENT LANE.

ALL DIMENSIONS ARE IN INCHES (MILLIMETERS) UNLESS OTHERWISE SHOWN

FILE NAME = c:\pwork\pwork\footemj\d0108315\tc18.dgn	USER NAME = footemj	DESIGNED - -	REVISED - J.A.F. 02-06	<b>STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION</b>	<b>FREEWAY/EXPRESSWAY SIGNING FOR FLAGGING OPERATIONS AT WORK ZONE OPENINGS ON FREEWAYS/EXPRESSWAYS</b>	F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.		
PLOT SCALE = 50.000' / 1" =	CHECKED - -	REVISED - S.P.B. 01-07	SCALE: NONE			SHEET NO. 1	OF 1	SHEETS	STA.	TO STA.	FED. ROAD DIST. NO. 1	ILLINOIS FED. AID PROJECT
PLOT DATE = 7/8/2013	DATE - -	REVISED - S.P.B. 12-09	<b>TC-18</b>			<b>CONTRACT NO.</b>						
		REVISED - M.D. 06-13										

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