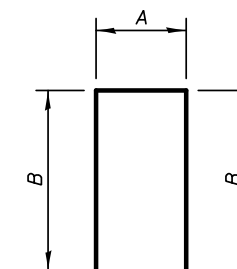


BILL OF MATERIAL

BAR	NO.	SIZE	LENGTH	SHAPE
h700(E)	42	#6	10'-6"	
h701(E)	42	#6	29'-0"	
h702(E)	8	#4	9'-7"	
h703(E)	16	#4	29'-0"	
h704(E)	10	#4	11'-7"	
h705(E)	84	#6	5'-6"	
h706(E)	5	#4	4'-10"	
h707(E)	24	#4	4'-2"	
h708(E)	5	#4	3'-6"	
h709(E)	48	#4	4'-3"	
h710(E)	16	#4	2'-10"	
h711(E)	8	#4	7'-9"	
v700(E)	52	#6	9'-8"	
v701(E)	60	#4	11'-2"	
v702(E)	6	#4	3'-10"	
Reinforcement Bars, Epoxy Coated			LB	5150

Work this sheet with sheet SA-32.

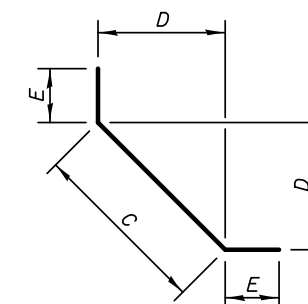
A & B DIMENSIONS



BAR	A	B
h700(E)	1'-6"	4'-6"
h702(E)	7"	4'-6"
h704(E)	1'-1"	5'-3"

BARS h700(E), h702(E) & h704(E)

C, D & E DIMENSIONS

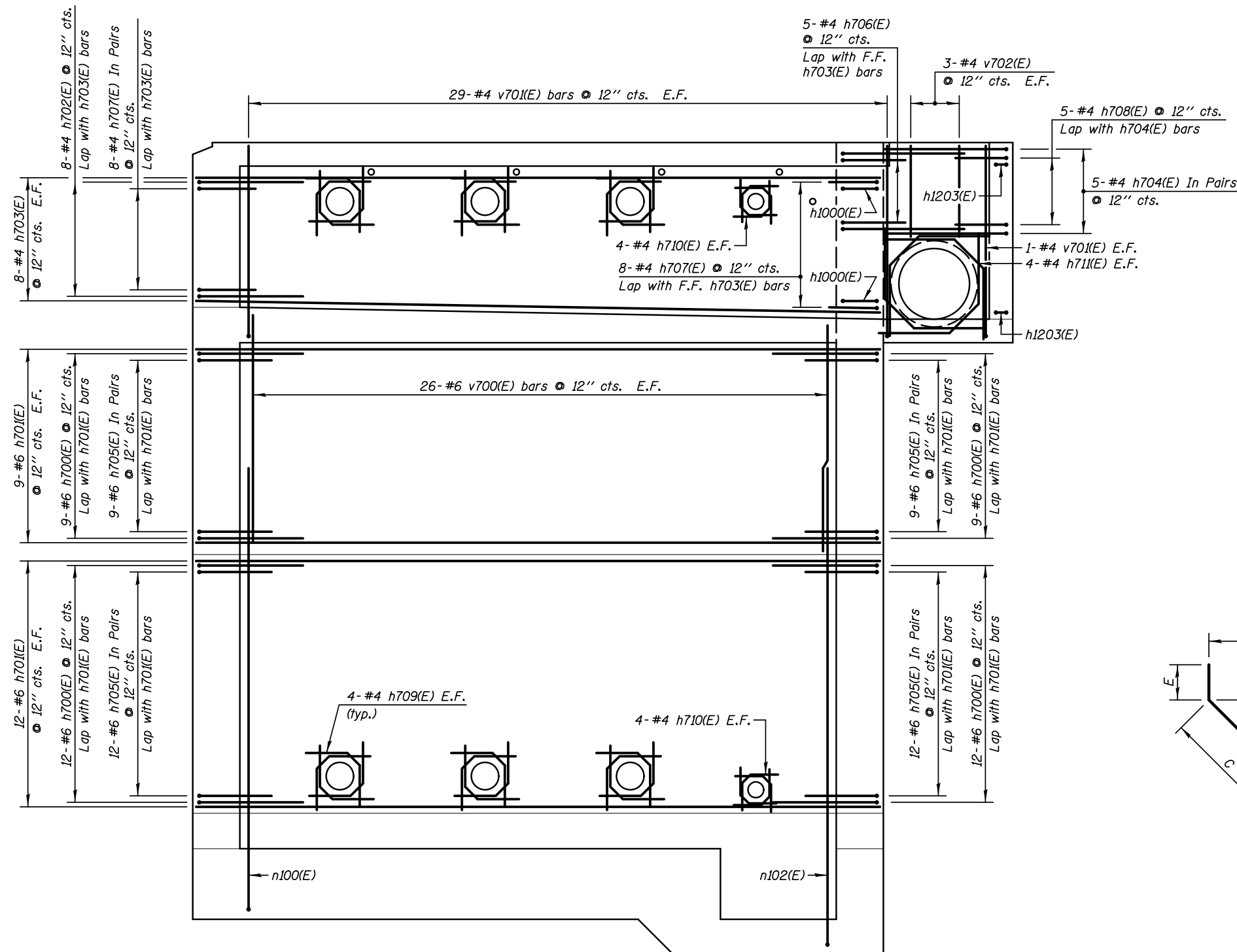


BAR	C	D	E
h705(E)	4'-6"	3'-2"	6"
h706(E)	3'-10"	2'-8 1/2"	6"
h707(E)	3'-2"	2'-2"	6"
h708(E)	2'-6"	1'-9"	6"
h709(E)	9"	6 1/2"	1'-9"
h710(E)	6"	4"	1'-2"
h711(E)	1'-9"	1'-3"	3'-0"

BARS h705(E), h706(E), h707(E), h708(E), h709(E), h710(E) & h711(E)



BAR v701(E)



Note
Cut n101(E) & v700(E), as required, to clear pipe.

ELEVATION 2

KNIGHT
Engineers & Architects

DESIGNED - WPM	REVISIONS
CHECKED - TB	REVISIONS
DRAWN - TB	REVISIONS
CHECKED - WPM	REVISIONS

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

REINFORCEMENT DETAILS - ELEVATIONS
PUMP STATION 47

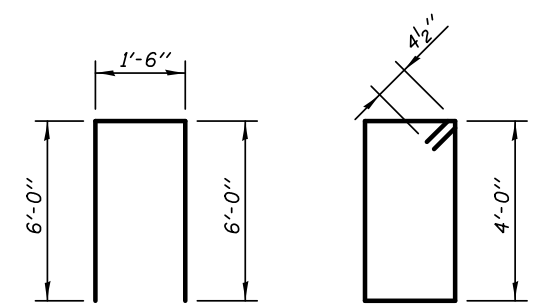
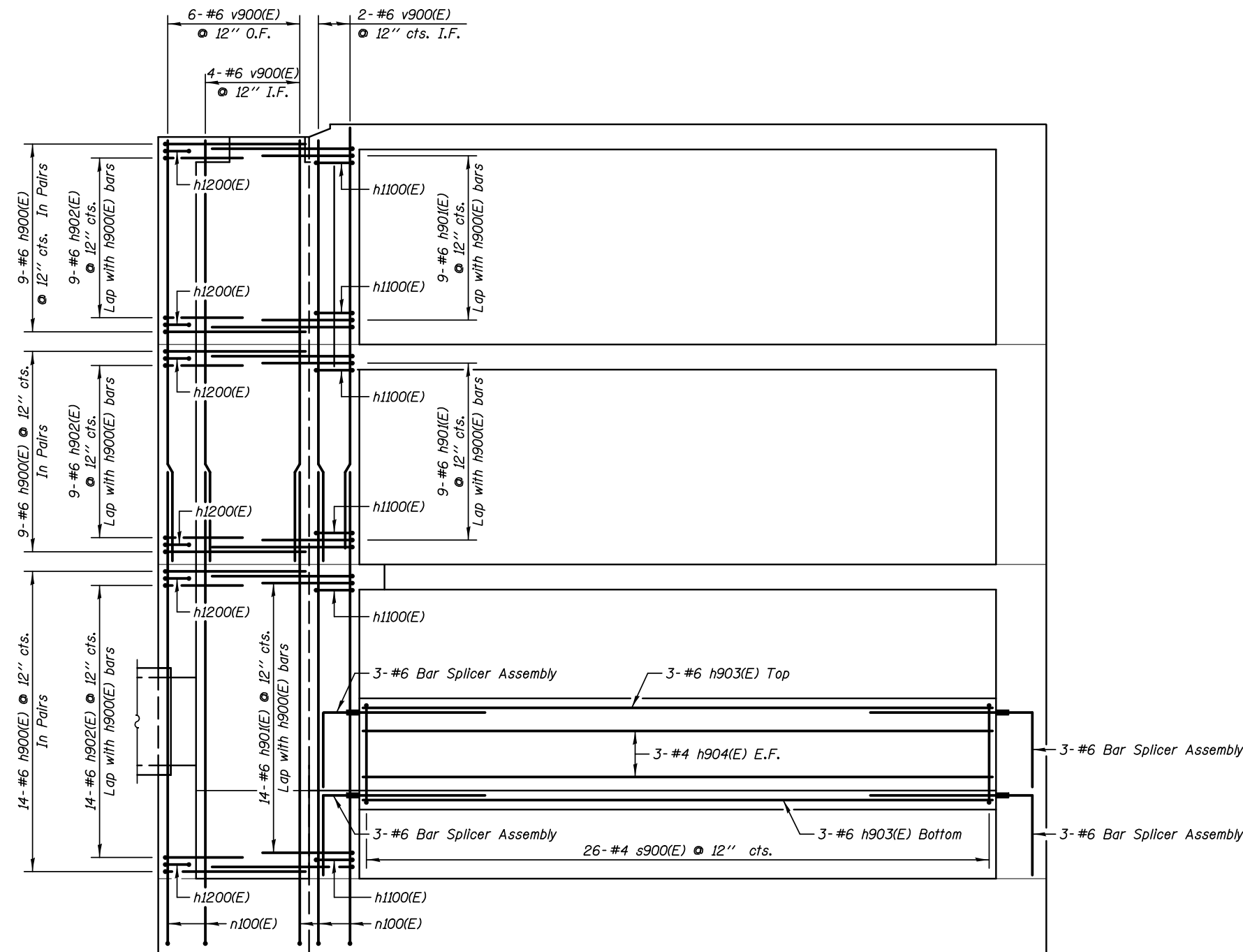
SHEET NO. SA-26 OF 34 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035-I	DUPAGE	181	101
CONTRACT NO. 60P41			ILLINOIS FED. AID PROJECT	

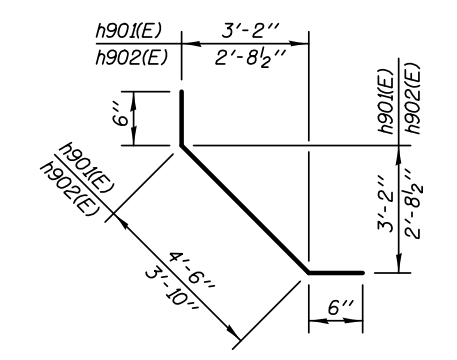
BILL OF MATERIAL

BAR	NO.	SIZE	LENGTH	SHAPE	
h900(E)	64	#6	13'-6"	U	
h901(E)	32	#6	5'-6"	U	
h902(E)	32	#6	4'-10"	U	
h903(E)	6	#6	25'-0"	—	
h904(E)	6	#4	25'-0"	—	
s900(E)	26	#4	10'-1"	□	
v900(E)	12	#6	16'-9"	—	
Reinforcement Bars, Epoxy Coated				LB	2600
Bar Splicers				Each	12

Work this sheet with sheet SA-32.



BAR h900(E) **BAR s900(E)**



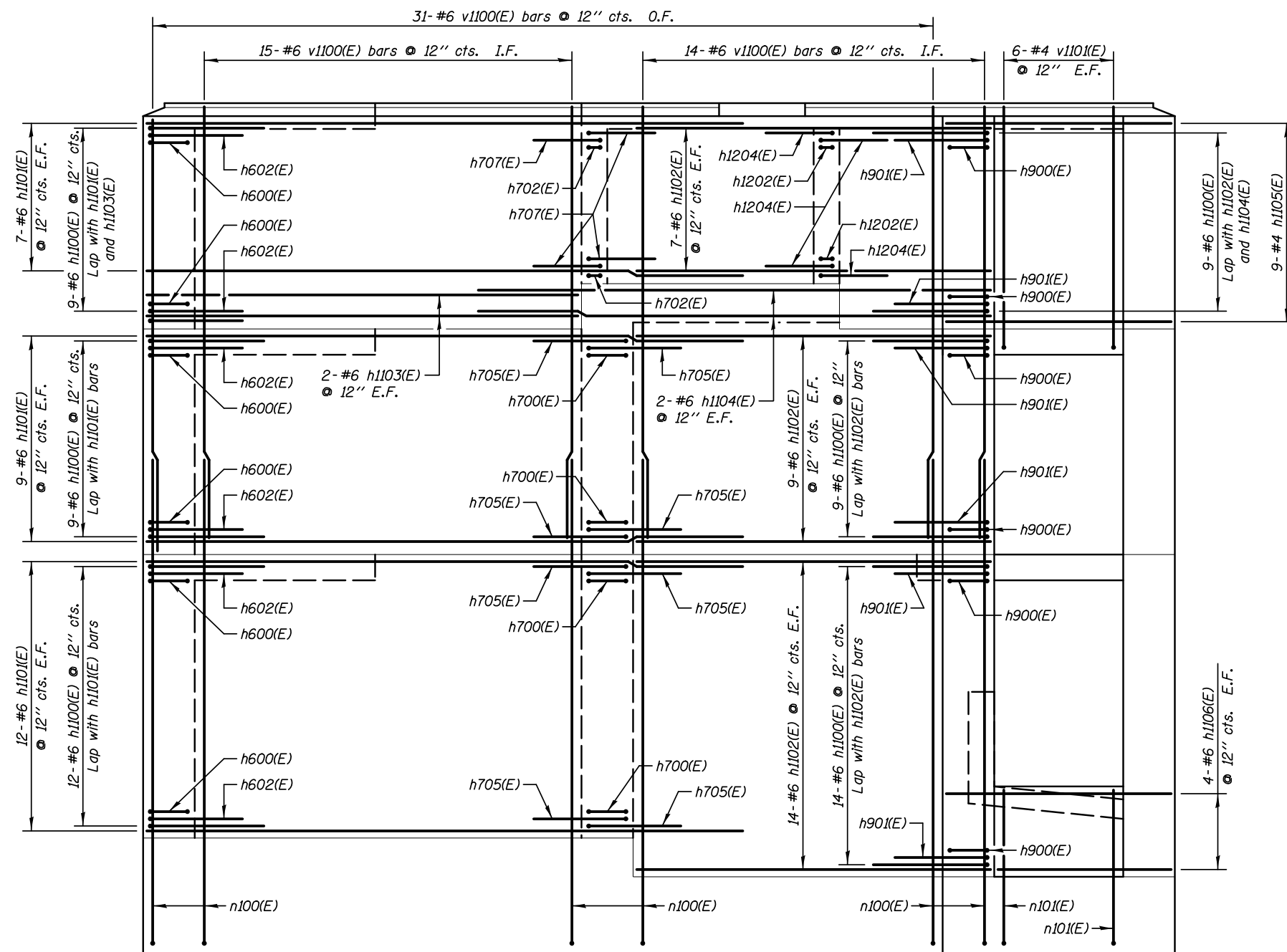
BARS h901(E) & h902(E)

ELEVATION 4

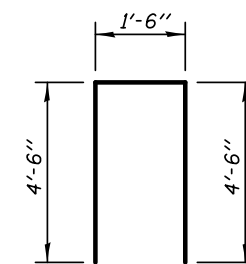
BILL OF MATERIAL

BAR	NO.	SIZE	LENGTH	SHAPE
h1100(E)	62	#6	10'-6"	┌
h1101(E)	56	#6	23'-0"	▬
h1102(E)	60	#6	13'-8"	▬
h1103(E)	4	#6	16'-8"	▬
h1104(E)	4	#6	20'-0"	▬
h1105(E)	18	#4	9'-0"	▬
h1106(E)	8	#6	8'-6"	▬
v1100(E)	60	#6	16'-9"	└
v1101(E)	12	#4	12'-5"	└
Reinforcement Bars, Epoxy Coated			LB	6190

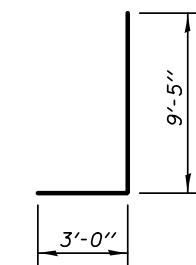
Work this sheet with sheet SA-32.



ELEVATION 6



BAR h1100(E)



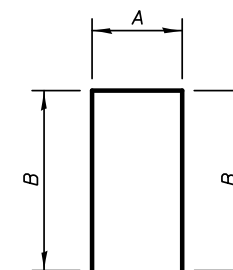
BAR v1101(E)

BILL OF MATERIAL

BAR	NO.	SIZE	LENGTH	SHAPE
h1200(E)	64	#6	14'-6"	┌
h1201(E)	16	#4	31'-0"	┌
h1202(E)	8	#4	9'-7"	┌
h1203(E)	27	#4	13'-7"	┌
h1204(E)	32	#4	4'-2"	┌
h1205(E)	9	#4	2'-10"	┌
h1206(E)	8	#4	10'-0"	┌
h1207(E)	8	#4	4'-4"	┌
v1200(E)	16	#6	16'-9"	┌
v1201(E)	90	#4	11'-2"	┌
Reinforcement Bars, Epoxy Coated			LB	3280

Work this sheet with sheet SA-32.

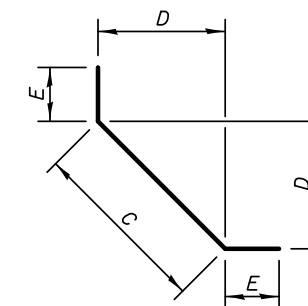
A & B DIMENSIONS



BAR	A	B
h1200(E)	1'-0"	6'-9"
h1202(E)	7"	4'-6"
h1203(E)	7"	6'-6"

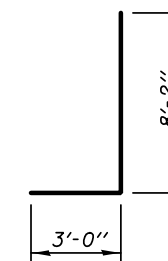
BARS h1200(E), h1202(E) & h1203(E)

C, D & E DIMENSIONS

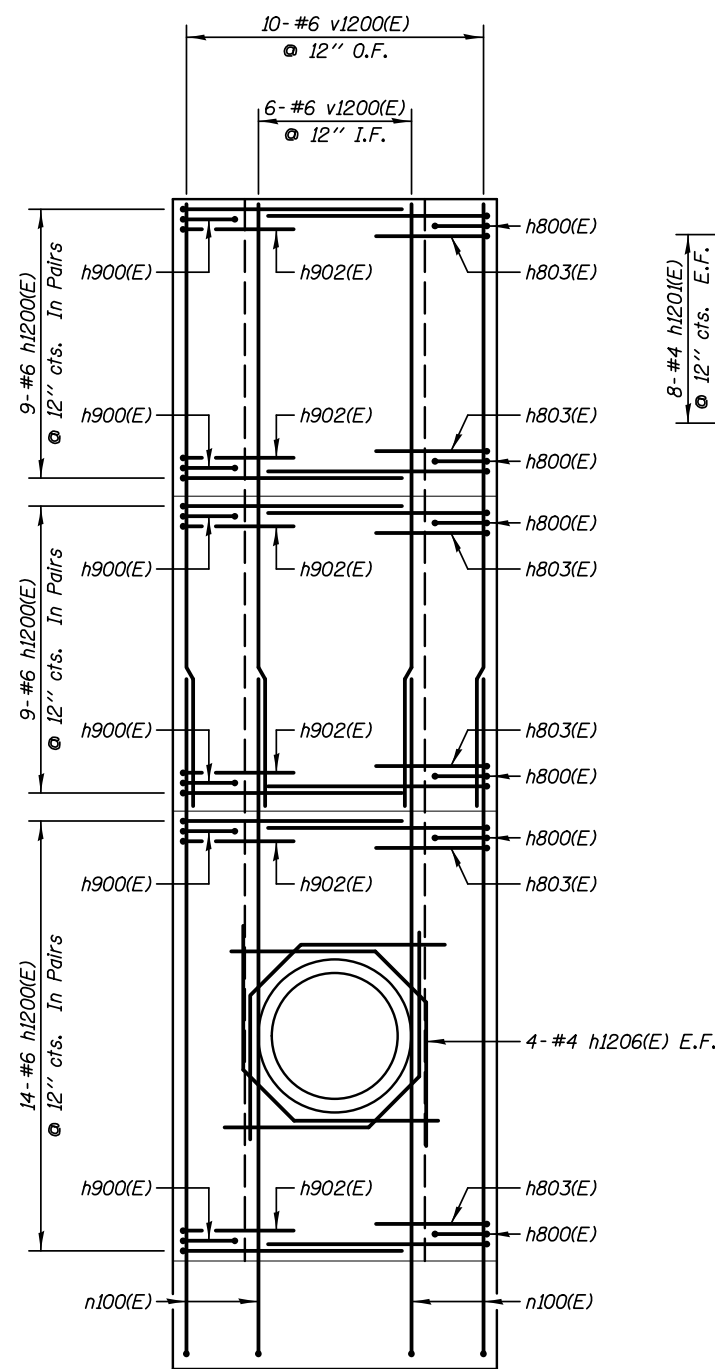


BAR	C	D	E
h1204(E)	3'-2"	2'-2"	6"
h1205(E)	1'-10"	1'-3 1/2"	6"
h1206(E)	2'-0"	1'-5"	4'-0"
h1207(E)	10"	7"	1'-9"

BARS h1204(E), h1205(E), h1206(E) & h1207(E)

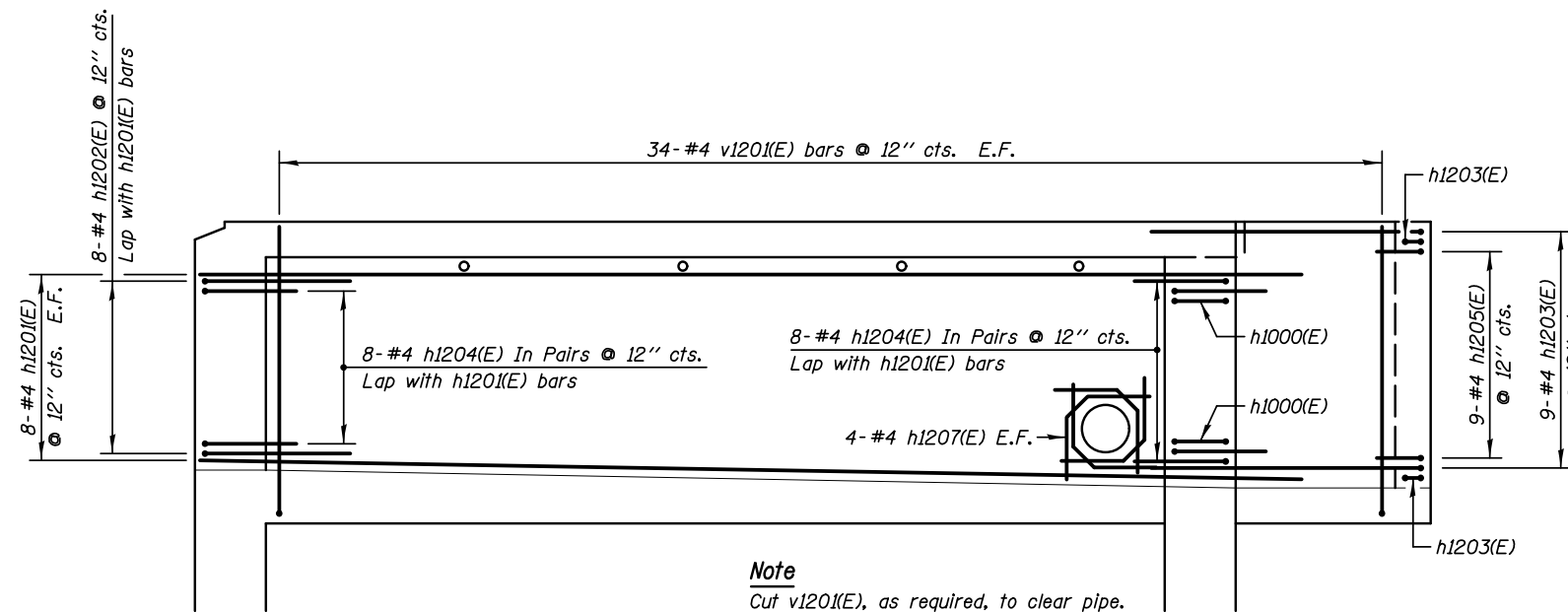


BAR v1201(E)



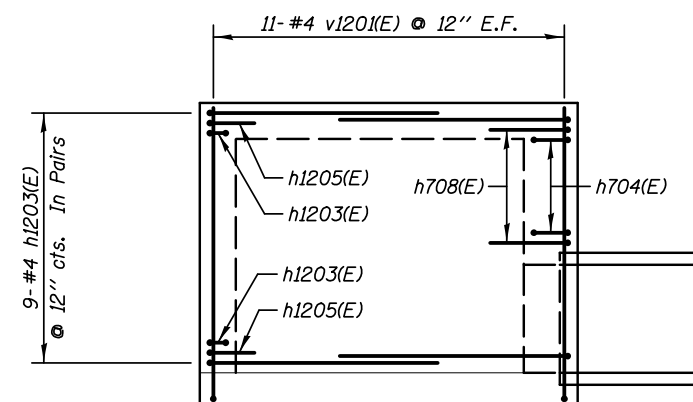
Note
Cut n100(E), as required, to clear pipe.

ELEVATION 7



Note
Cut v1201(E), as required, to clear pipe.

ELEVATION 8



ELEVATION 9

KNIGHT
Engineers & Architects

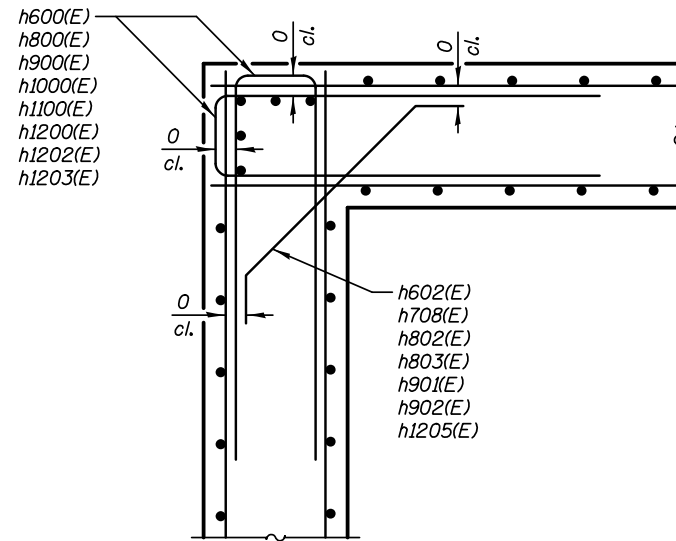
DESIGNED - WPM	REVISIONS
CHECKED - TB	1
DRAWN - TB	2
CHECKED - WPM	3
SCALE - NONE	
DATE - 3/22/2012	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

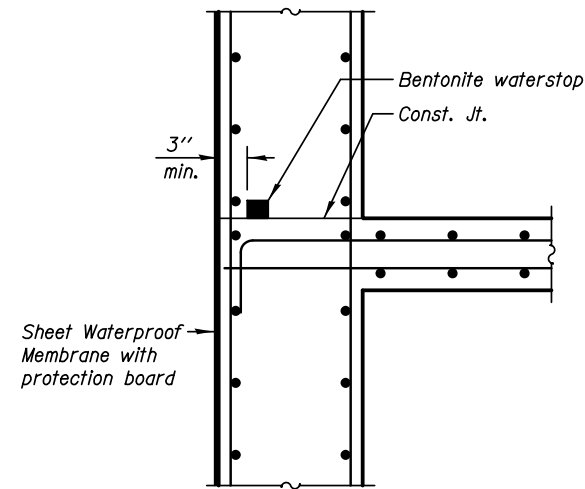
REINFORCEMENT DETAILS - ELEVATIONS
PUMP STATION 47

SHEET NO. SA-31 OF 34 SHEETS

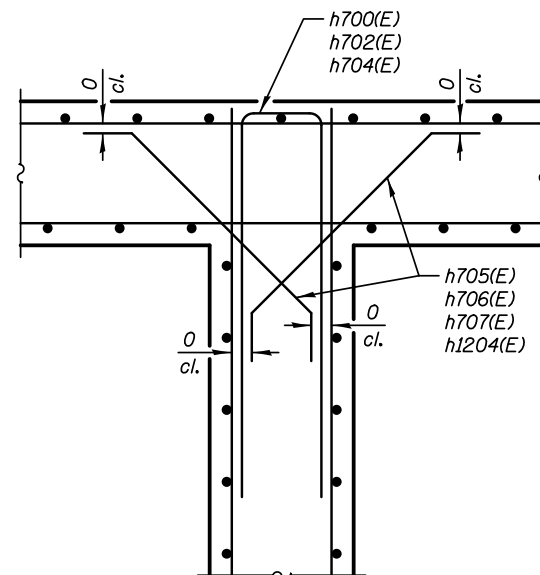
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035-I	DUPAGE	181	106
CONTRACT NO. 60P41			ILLINOIS FED. AID PROJECT	



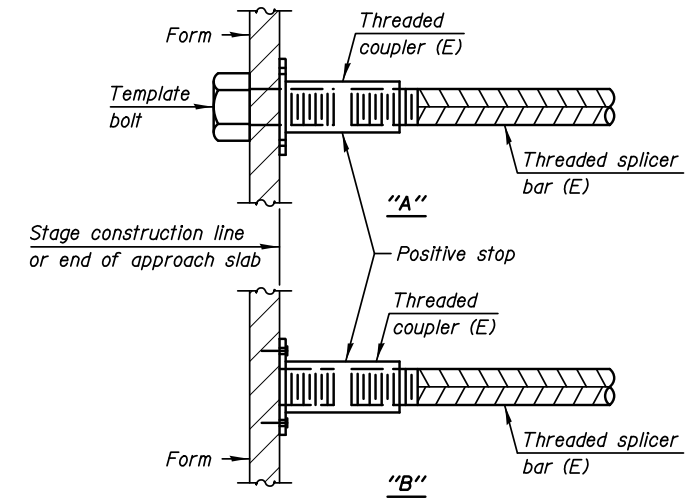
TYPICAL CORNER DETAIL



TYPICAL WATERSTOP DETAIL

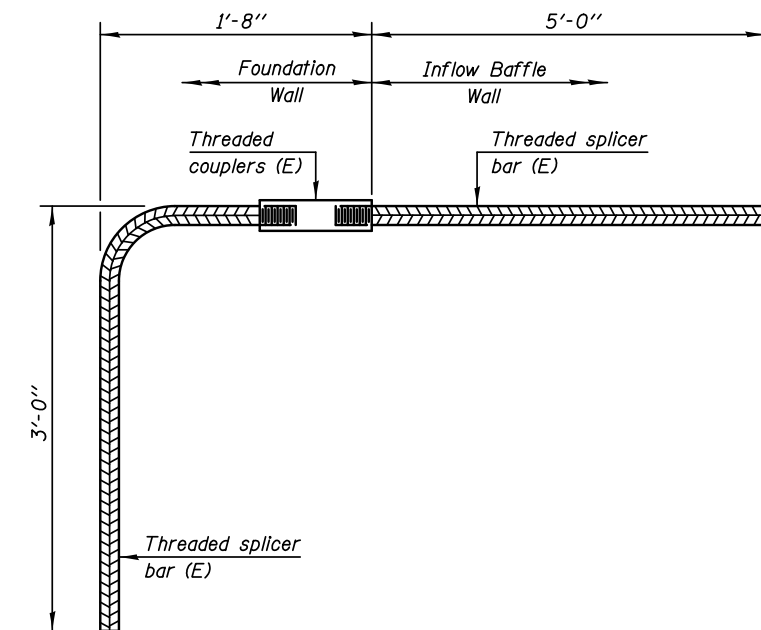


TYPICAL WALL INTERSECTION DETAIL



INSTALLATION AND SETTING METHODS

"A" : Set bar splicer assembly by means of a template bolt.
 "B" : Set bar splicer assembly by nailing to wood forms or cementing to steel forms.
 (E) : Indicates epoxy coating.



BAR SPLICER ASSEMBLY

No. required = 12

Bar Splicer Assembly Notes:

Splicer bars shall be deformed with threaded ends and have a minimum 60 ksi yield strength.

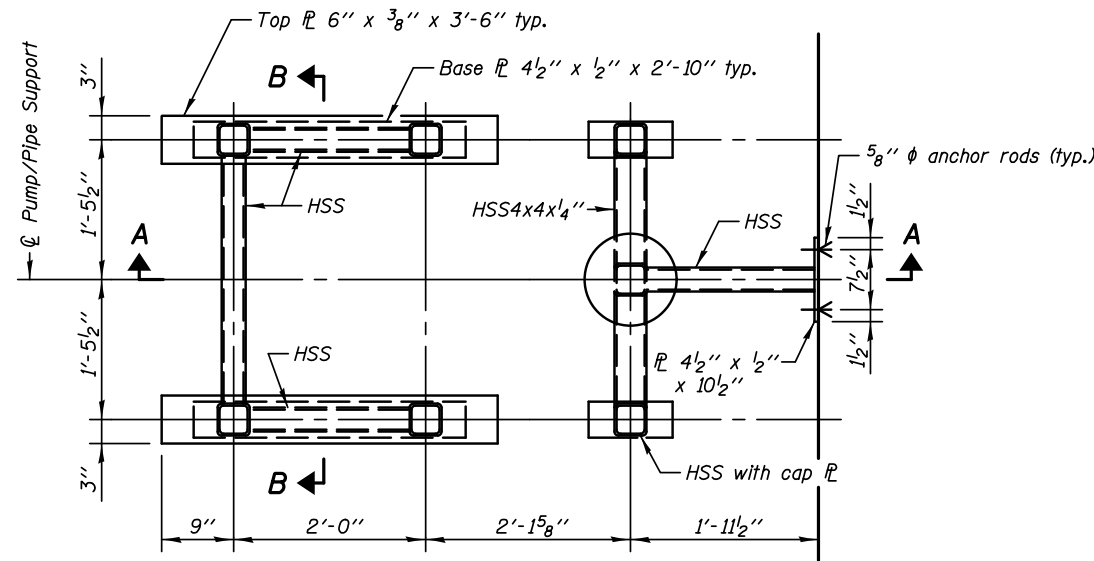
All reinforcement shall be lapped and tied to the splicer bars.

Bar splicer assemblies shall be epoxy coated according to the requirements for reinforcement bars. See Section 508 of the Standard Specifications.

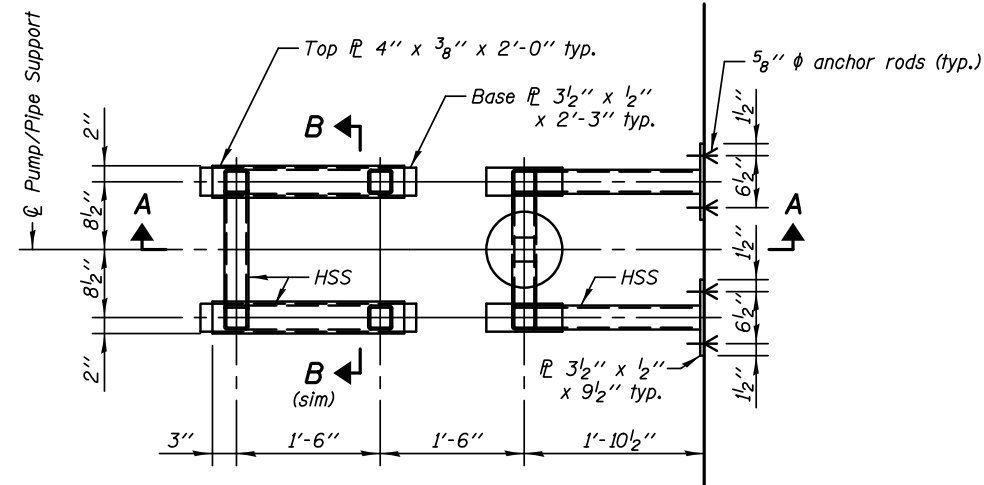
See approved list of bar splicer assemblies for alternatives.

DESIGNED - WPM	REVIS
CHECKED - TB	REVIS
DRAWN - TB	REVIS
CHECKED - WPM	REVIS
SCALE - NONE	
DATE - 3/22/2012	

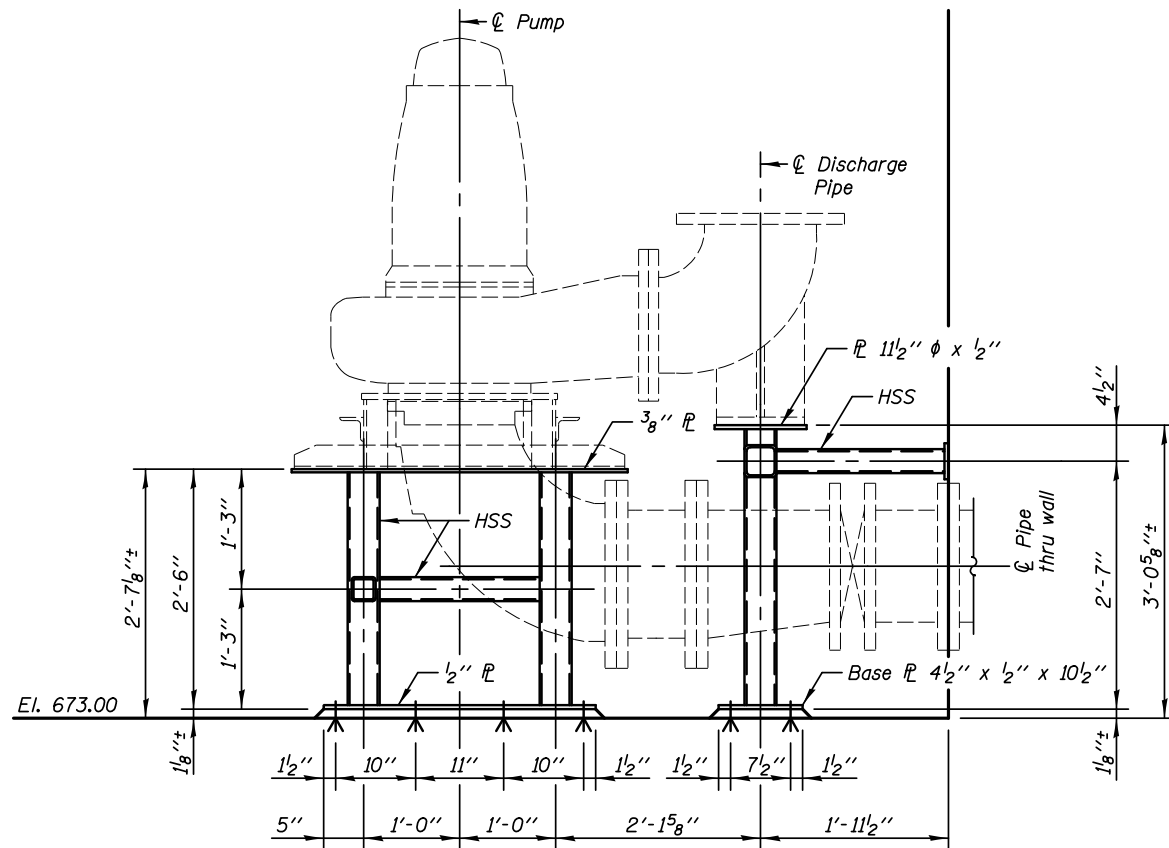
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035-I	DUPAGE	181	107
CONTRACT NO. 60P41			ILLINOIS FED. AID PROJECT	



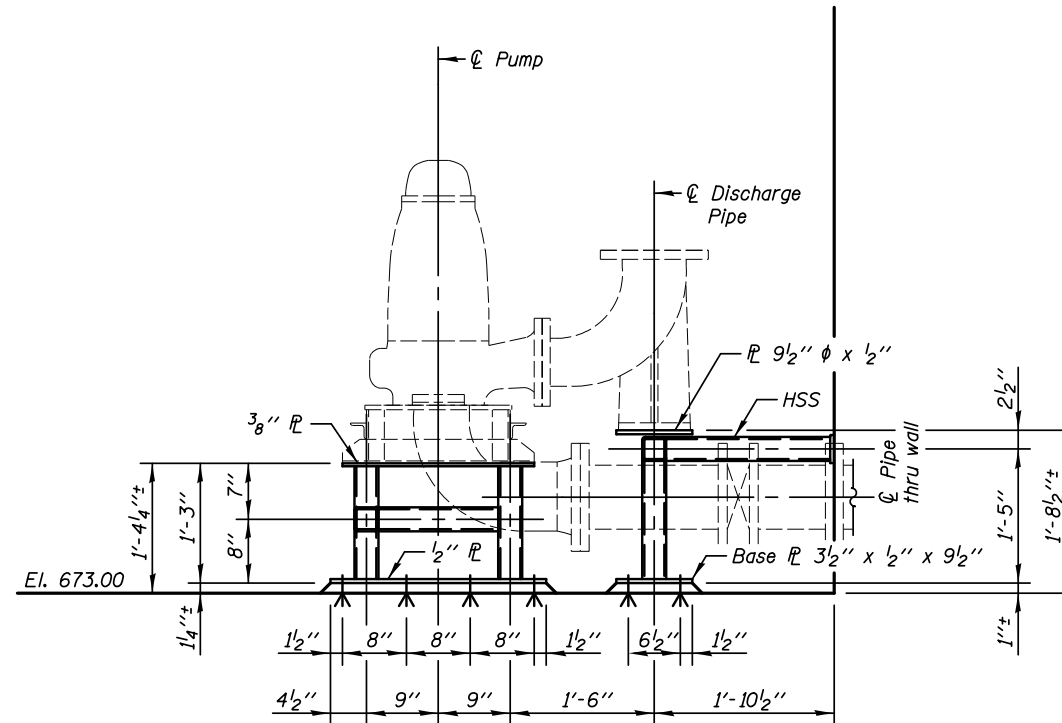
PLAN



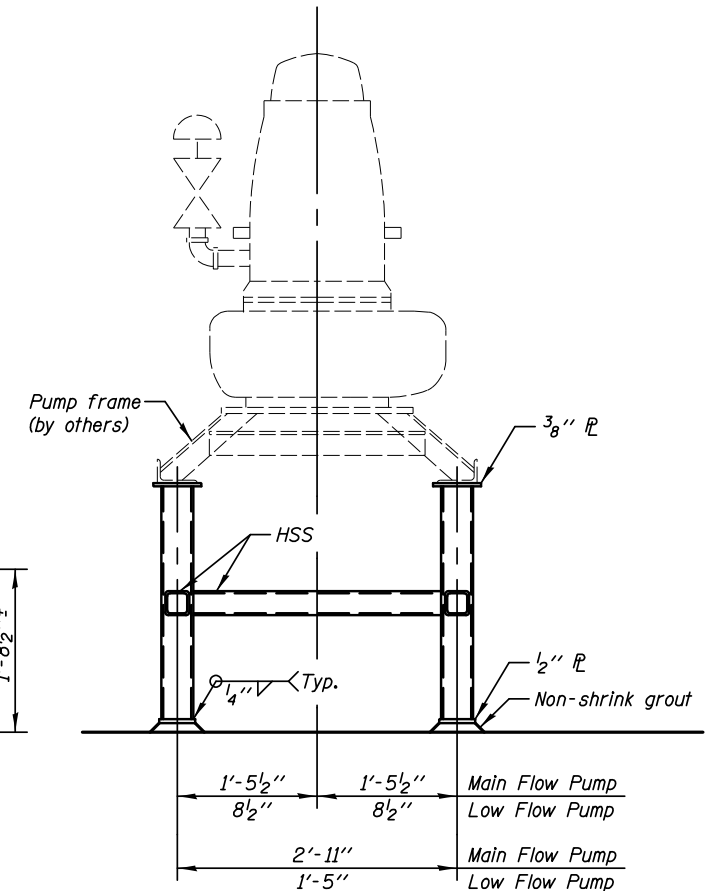
PLAN



SECTION A-A



SECTION A-A



SECTION B-B

(Main Flow Pump shown, Low Flow Pump similar)

Notes:

Drill and set 5/8" ϕ S.S. anchor rods according to Article 509.06 of the Standard Specifications. Embedment shall be 6".

Coordinate dimensions of pump/pipe support with pump manufacturer prior to fabrication of support.

Coordinate anchor hole location in top plate with pump frame.

All steel to be Hot-Dipped Galvanized after fabrication.

Pump and piping support drawings have been prepared based on the weights and dimensions of specific manufacturers for the basis of design. The Contractor shall be responsible for verifying with the approved pump manufacturer that the pump and piping support system as constructed is suitable for the particular make and models of pumps to be installed and shall provide certification of suitability from the pump manufacturer. If required by the pump manufacturer, the Contractor shall provide alternative pump and piping supports at no additional cost to the owner. Alternatives shall fit into the allocated spaces with suitable clearance. The design of alternative pump and piping supports shall be signed and sealed by a Structural Engineer licensed in the State of Illinois and be submitted to the Engineer for approval along with certification of suitability from the pump manufacturer.

Notes:

All vertical HSS are HSS4x4x1/4" U.N.O
All horizontal HSS are HSS3x3x1/4" U.N.O

MAIN FLOW PUMP / PIPE SUPPORT
(3 Locations)

Notes:

All vertical HSS are HSS3x3x1/4" U.N.O
All horizontal HSS are HSS3x3x1/4" U.N.O

LOW FLOW PUMP / PIPE SUPPORT
(1 Location)

KNIGHT
Engineers & Architects

DESIGNED - WPM	REVISIONS
CHECKED - TB	REVISIONS
DRAWN - TB	REVISIONS
CHECKED - WPM	REVISIONS

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

STRUCTURAL DETAILS
PUMP STATION 47

SHEET NO. SA-33 OF 34 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035-I	DUPAGE	181	108
CONTRACT NO. 60P41				

ILLINOIS FED. AID PROJECT

 Geo Services Inc. Geotechnical, Environmental & Civil Engineering 805 Arden Court, Naperville, IL 60565 (630) 255-1288	SOIL BORING LOG	PAGE <u>1</u> of <u>2</u>																																
	DATE <u>4/29/2011</u>	LOGGED BY <u>MD</u>																																
	GSI JOB No. <u>09173</u>																																	
ROUTE <u>Il. Route 59 (FAP 338)</u> DESCRIPTION <u>Illinois Route 59-Aurora Avenue/New York Street To Ferry Road</u>																																		
SECTION <u>(112 & 113) WRS-5</u> LOCATION <u>SEC. 3, 9-10, 15-16, 21-22 TWP. 38N, RNG. 9E, Naperville Township</u>																																		
COUNTY <u>DuPage</u> DRILLING METHOD <u>Hollow Stem Auger/Rotary</u> HAMMER TYPE <u>CME Automatic</u>																																		
STRUCT. NO. <u>XX</u> Station: <u>XX</u>	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>D</th> <th>B</th> <th>U</th> <th>M</th> </tr> <tr> <th>DEPTH</th> <th>LOG</th> <th>CS</th> <th>MOIST</th> </tr> <tr> <th>H</th> <th>S</th> <th>Qu</th> <th>T</th> </tr> <tr> <th>(ft)</th> <th>(/6")</th> <th>(tsf)</th> <th>(%)</th> </tr> </table>	D	B	U	M	DEPTH	LOG	CS	MOIST	H	S	Qu	T	(ft)	(/6")	(tsf)	(%)	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>D</th> <th>B</th> <th>U</th> <th>M</th> </tr> <tr> <th>DEPTH</th> <th>LOG</th> <th>CS</th> <th>MOIST</th> </tr> <tr> <th>H</th> <th>S</th> <th>Qu</th> <th>T</th> </tr> <tr> <th>(ft)</th> <th>(/6")</th> <th>(tsf)</th> <th>(%)</th> </tr> </table>	D	B	U	M	DEPTH	LOG	CS	MOIST	H	S	Qu	T	(ft)	(/6")	(tsf)	(%)
D	B	U	M																															
DEPTH	LOG	CS	MOIST																															
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(ft)	(/6")	(tsf)	(%)																															
D	B	U	M																															
DEPTH	LOG	CS	MOIST																															
H	S	Qu	T																															
(ft)	(/6")	(tsf)	(%)																															
BORING NO. <u>PS-01</u> Station: <u>3963+47 IL RTE-59</u> Offset: <u>74.0' Left</u> Ground Surface Elev. <u>697.9</u>	Surface Water Elev. <u>n/a</u> Stream Bed Elev. <u>n/a</u> Groundwater Elevation: First Encounter <u>690.9</u> Upon Completion <u>n/a</u> After <u> </u> Hrs. <u> </u>	Surface Water Elev. <u>n/a</u> Stream Bed Elev. <u>n/a</u> Groundwater Elevation: First Encounter <u>690.9</u> Upon Completion <u>n/a</u> After <u> </u> Hrs. <u> </u>																																
CLAY LOAM-gray-very stiff (A-6) 677.4																																		
4.0" ASPHALT, 26.0" CRUSHED STONE-medium dense 695.4																																		
SAND, GRAVEL & STONE- loose (Fill) 692.4																																		
Silty SAND & GRAVEL-dark brown- very loose (Fill) 688.9																																		
TOPSOIL-black 687.4																																		
CLAY to CLAY LOAM-gray- stiff to very stiff (A-6) 682.4																																		
SILTY CLAY LOAM-gray- hard (A-4/A-6) 679.9																																		
CLAY LOAM-gray-very stiff (A-6) 677.4																																		

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrator) ST-Shelby Tube Sample VS-Vane Shear Test
 The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206) The Unit Dry Weight (pcf) is noted in italics above moist (%)
 NR-No Recovery

 Geo Services Inc. Geotechnical, Environmental & Civil Engineering 805 Arden Court, Naperville, IL 60565 (630) 255-1288	SOIL BORING LOG	PAGE <u>2</u> of <u>2</u>																																
	DATE <u>4/29/2011</u>	LOGGED BY <u>MD</u>																																
	GSI JOB No. <u>09173</u>																																	
ROUTE <u>Il. Route 59 (FAP 338)</u> DESCRIPTION <u>Illinois Route 59-Aurora Avenue/New York Street To Ferry Road</u>																																		
SECTION <u>(112 & 113) WRS-5</u> LOCATION <u>SEC. 3, 9-10, 15-16, 21-22 TWP. 38N, RNG. 9E, Naperville Township</u>																																		
COUNTY <u>DuPage</u> DRILLING METHOD <u>Hollow Stem Auger/Rotary</u> HAMMER TYPE <u>CME Automatic</u>																																		
STRUCT. NO. <u>XX</u> Station: <u>XX</u>	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>D</th> <th>B</th> <th>U</th> <th>M</th> </tr> <tr> <th>DEPTH</th> <th>LOG</th> <th>CS</th> <th>MOIST</th> </tr> <tr> <th>H</th> <th>S</th> <th>Qu</th> <th>T</th> </tr> <tr> <th>(ft)</th> <th>(/6")</th> <th>(tsf)</th> <th>(%)</th> </tr> </table>	D	B	U	M	DEPTH	LOG	CS	MOIST	H	S	Qu	T	(ft)	(/6")	(tsf)	(%)	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>D</th> <th>B</th> <th>U</th> <th>M</th> </tr> <tr> <th>DEPTH</th> <th>LOG</th> <th>CS</th> <th>MOIST</th> </tr> <tr> <th>H</th> <th>S</th> <th>Qu</th> <th>T</th> </tr> <tr> <th>(ft)</th> <th>(/6")</th> <th>(tsf)</th> <th>(%)</th> </tr> </table>	D	B	U	M	DEPTH	LOG	CS	MOIST	H	S	Qu	T	(ft)	(/6")	(tsf)	(%)
D	B	U	M																															
DEPTH	LOG	CS	MOIST																															
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BORING NO. <u>PS-01</u> Station: <u>3963+47 IL RTE-59</u> Offset: <u>74.0' Left</u> Ground Surface Elev. <u>697.9</u>	Surface Water Elev. <u>n/a</u> Stream Bed Elev. <u>n/a</u> Groundwater Elevation: First Encounter <u>690.9</u> Upon Completion <u>n/a</u> After <u> </u> Hrs. <u> </u>	Surface Water Elev. <u>n/a</u> Stream Bed Elev. <u>n/a</u> Groundwater Elevation: First Encounter <u>690.9</u> Upon Completion <u>n/a</u> After <u> </u> Hrs. <u> </u>																																
SAND-gray-medium dense (A-3) 655.9																																		
SANDY LOAM with Fractured Rock- gray-very dense (A-2) 651.9																																		
Drillers Observation: Apparent Bedrock 650.9																																		
Silurian System, Niagaran Series Dolomite RUN 1 (-47.0' to -54.0') Light gray to gray with horizontal to wavy bedding. Porous & weathered with numerous horizontal fractures throughout. Recovery=100.0% R.Q.D.=13.1% 649.9																																		
Silurian System, Niagaran Series Dolomite RUN 2 (-54.0' to -57.0') Light gray to gray with horizontal to wavy bedding. Porous & weathered with numerous horizontal fractures throughout. Recovery=100.0% R.Q.D.=50.0% 640.9																																		
End Of Boring @ -57.0' Hollow Stem Augers to -15.0' Rotary Drilling To Completion CME Automatic Hammer																																		

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrator) ST-Shelby Tube Sample VS-Vane Shear Test
 The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206) The Unit Dry Weight (pcf) is noted in italics above moist (%)
 NR-No Recovery

 Geo Services Inc. Geotechnical, Environmental & Civil Engineering 805 Arden Court, Naperville, IL 60565 (630) 255-1288	ROCK CORE LOG	PAGE <u>1</u> of <u>1</u>																																																
	DATE <u>4/29/2011</u>	LOGGED BY <u>MD</u>																																																
	GSI JOB No. <u>09173</u>																																																	
ROUTE <u>Il. Route 59 (FAP 338)</u> DESCRIPTION <u>Illinois Route 59-Aurora Avenue/New York Street To Ferry Road</u>																																																		
SECTION <u>(112 & 113) WRS-5</u> LOCATION <u>SEC. 3, 9-10, 15-16, 21-22 TWP. 38N, RNG. 9E, Naperville Township</u>																																																		
COUNTY <u>DuPage</u> CORING METHOD <u>Rotary Wash</u>																																																		
STRUCT. NO. <u>XX</u> Station: <u>XX</u>	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>D</th> <th>C</th> <th>R</th> <th>R</th> <th>C</th> <th>S</th> </tr> <tr> <th>DEPTH</th> <th>CORE</th> <th>RECOV</th> <th>Q</th> <th>OR</th> <th>STRE</th> </tr> <tr> <th>H</th> <th>RUN</th> <th>ERY</th> <th>D</th> <th>E</th> <th>NGTH</th> </tr> <tr> <th>(ft)</th> <th>(#)</th> <th>(%)</th> <th>(%)</th> <th>(min</th> <th>(tsf)</th> </tr> </table>	D	C	R	R	C	S	DEPTH	CORE	RECOV	Q	OR	STRE	H	RUN	ERY	D	E	NGTH	(ft)	(#)	(%)	(%)	(min	(tsf)	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>D</th> <th>C</th> <th>R</th> <th>R</th> <th>C</th> <th>S</th> </tr> <tr> <th>DEPTH</th> <th>CORE</th> <th>RECOV</th> <th>Q</th> <th>OR</th> <th>STRE</th> </tr> <tr> <th>H</th> <th>RUN</th> <th>ERY</th> <th>D</th> <th>E</th> <th>NGTH</th> </tr> <tr> <th>(ft)</th> <th>(#)</th> <th>(%)</th> <th>(%)</th> <th>(min</th> <th>(tsf)</th> </tr> </table>	D	C	R	R	C	S	DEPTH	CORE	RECOV	Q	OR	STRE	H	RUN	ERY	D	E	NGTH	(ft)	(#)	(%)	(%)	(min	(tsf)
D	C	R	R	C	S																																													
DEPTH	CORE	RECOV	Q	OR	STRE																																													
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H	RUN	ERY	D	E	NGTH																																													
(ft)	(#)	(%)	(%)	(min	(tsf)																																													
BORING NO. <u>PS-01</u> Station: <u>3963+47 IL RTE-59</u> Offset: <u>74.0' Left</u> Ground Surface Elev. <u>697.9</u>	CORING BARREL TYPE & SIZE <u>NX Double Swivel-10 ft</u> Core Diameter <u>2.0 in</u> Top of Rock Elev. <u>651.9</u> Begin Core Elev. <u>650.9</u>	CORING BARREL TYPE & SIZE <u>NX Double Swivel-10 ft</u> Core Diameter <u>2.0 in</u> Top of Rock Elev. <u>651.9</u> Begin Core Elev. <u>650.9</u>																																																
Silurian System, Niagaran Series Dolomite RUN 1 (-47.0' to -54.0') Light gray to gray with horizontal to wavy bedding. Porous & weathered with numerous horizontal fractures throughout.																																																		
Silurian System, Niagaran Series Dolomite RUN 2 (-54.0' to -57.0') Light gray to gray with horizontal to wavy bedding. Porous & weathered with numerous horizontal fractures throughout.																																																		

Color pictures of the cores Yes Cores will be stored for examination for XX
 The "Strength" column represents the uniaxial compressive strength of the core sample (ASTM D-2938)

GENERAL MECHANICAL ABBREVIATIONS

ACFM	ACTUAL CUBIC FEET PER MINUTE	L.R.	RED. BASE ELL.	LONG RADIUS REDUCING BASE ELBOW
AFF	ABOVE FINISHED FLOOR	L.R.	RED. ELL.	LONG RADIUS REDUCING ELBOW
APPROX.	APPROXIMATE	LSH		PRESSURE SWITCH LOW
ARCH.	ARCHITECTURAL	LSP		LIQUID SAMPLE PORT
BCR	BRIDGE CRANE	LxW		LENGTH X WIDTH
BOD	BOTTOM OF DUCT	MAX.		MAXIMUM
CFM	CUBIC FEET PER MINUTE	MATL.		MATERIAL
C.I.	CAST IRON	MECH.		MECHANICAL
©	CENTERLINE	MGD		MILLION GALLONS PER DAY
CMU	CONCRETE MASONRY UNIT	MH		MANHOLE
C.O.	CLEANOUT	MIN.		MINIMUM
CONC.	CONCRETE	N.C.		NORMALLY CLOSED
CONN.	CONNECTION	N.O.		NORMALLY OPEN
CONT.	CONTINUATION	NO.		NUMBER
CORP.	CORPORATION	NOM.		NOMINAL
CPVC	CHLORINATED POLYVINYL CHLORIDE	NPT		NATIONAL PIPE THREAD
CS	CARBON STEEL	NTS		NOT TO SCALE
DEG. F.	DEGREES FAHRENHEIT	O.C.		ON CENTER
DET.	DETAIL	O.D.		OUTSIDE DIAMETER
D.I.	DUCTILE IRON	OPER.		OPERATING
DIA.	DIAMETER	P		PRESSURE GAUGE
DN	DOWN	PL		PLATE
DWG'S.	DRAWINGS	PLUMB.		PLUMBING
ECC. RED.	ECCENTRIC REDUCER	PS		PRESSURE SWITCH
EFF.	EFFLUENT	PSH		PRESSURE SWITCH HIGH
EFF. %	% EFFICIENCY	PSI		POUNDS PER SQUARE INCH
EGL	ENERGY GRADE LINE	PSIA		POUNDS PER SQUARE INCH ABSOLUTE
ELEC.	ELECTRICAL	PSIG		POUNDS PER SQUARE INCH GAGE
EL.	ELEVATION	PVC		POLYVINYL CHLORIDE
ENCL.	ENCLOSURE	R		RADIUS
EW	EFFLUENT WATER	RED.		REDUCER
EXIST.	EXISTING	RED. FLG.		REDUCING FLANGE
FE	FLOWMETER	REF.		REFERENCE
FIN. FL.	FINISHED FLOOR	REINF.		REINFORCING
FIN. GR.	FINISHED GRADE	REQ'D.		REQUIRED
FIT	FLOW INDICATING TRANSMITTER	RPM		REVOLUTIONS PER MINUTE
FLEX.	FLEXIBLE	SCH.		SCHEDULE
FL.	FLANGE	SCR		SCREEN
F.O.B.	FLAT ON BOTTOM	SG		SLIDE GATE
F.O.S.	FLAT ON SIDE	SH.		SHEET
F.O.T.	FLAT ON TOP	SL		STOP LOG
FPM	FEET PER MINUTE	SPD		SUMP PUMP DISCHARGE
FS	FLOW SWITCH	SPECS.		SPECIFICATIONS
FT.	FEET	SO.		SQUARE
GAL.	GALLONS	SR		RAW SEWAGE
GALV.	GALVANIZED	S.S.		STAINLESS STEEL
GPM	GALLONS PER MINUTE	STD.		STANDARD
HGL	HYDRAULIC GRADE LINE	STR.		STRUCTURAL
HO	HYDRAULIC OIL	SW		SEAL WATER
H.P.	HIGH POINT	TEMP.		TEMPERATURE
HP	HORSE POWER	THK.		THICK
HPT	HOSE PIPE THREAD	T.O.C.		TOP OF CONCRETE
HST	HOIST	T.O.D.		TOP OF DUCT
HVAC	HEATING VENTILATION	TYP.		TYPICAL
I.D.	INSIDE DIAMETER	V		VENT
IN.	INCHES	VAC		VACUUM
INSUL.	INSULATION	W/		WITH
INV.	INVERT	WxH		WIDTH X HEIGHT
KGV	KNIFE GATE VALVE	WC		WATER COLUMN
LB.	POUND	WS		WATER SURFACE
LG.	LONG	XPROOF		EXPLOSION PROOF
L.P.	LOW POINT			
L.R. ELL.	LONG RADIUS ELBOW			

NOTES:

1. THIS IS A GENERAL LEGEND PROVIDED TO FACILITATE USE OF THE PLANS. REFER TO THE PLANS AND SPECIFICATIONS FOR ITEMS REQUIRED.
2. VALVES AND PIPE FITTINGS ARE SHOWN WITH FLANGED JOINTS. OTHER JOINTS ARE SHOWN AS REQUIRED ON MECHANICAL DRAWINGS.
3. ALL SYMBOLS AND APPREVIATIONS SHOWN ON THIS SHEET MAY NOT APPEAR ON THIS SET OF DRAWINGS.

PIPE FITTINGS

DESCRIPTION	SYMBOL
CROSS	
CROSS (BRANCH UP)	
TEE	
TEE (BRANCH UP)	
TEE (BRANCH DOWN)	
SIDE OUTLET TEE (UP)	
SIDE OUTLET TEE (DOWN)	
LATERAL OR WYE	
90° BEND	
90° BEND (UP)	
90° BEND (DOWN)	
90° BEND (LONG RADIUS)	
45° BEND	
45° BEND (UP)	
45° BEND (DOWN)	
45° BEND (LONG RADIUS)	
SIDE OUTLET ELBOW (UP)	
SIDE OUTLET ELBOW (DOWN)	
BLIND FLANGE (TEE BRANCH UP)	
BASE ELBOW	
BLIND FLANGE	
REDUCER	
REDUCER - ECCENTRIC	
SLEEVE TYPE COUPLING	
FILLING RING	

PIPE FITTINGS

DESCRIPTION	SYMBOL
SLEEVE TYPE COUPLING (HARNESSED)	
EXPANSION JOINT RUBBER BELLOWS TYPE	
FLOW METER	
STRAINER	
DUPLEX STRAINER	
VENT	
THERMOSTAT (TEMP. REGULATOR)	
PRESSURE GAUGE	
THERMOMETER	
WATER LEVEL ALARM (HWL OR LWL)	
PIPE CAP (SCREWED)	
DIRECTION OF FLOW	

PIPE JOINTS

DESCRIPTION	SYMBOL
FLANGE	
MECHANICAL (R = RESTRAINED)	
PUSH-ON (R = RESTRAINED)	
WELDED	
SCREWED	
CONCRETE	
GROOVED	

OTHER SYMBOLS

DESCRIPTION	SYMBOL
WATER SURFACE	

VALVE SYMBOLS

DESCRIPTION	SYMBOL
GATE VALVE	
KNIFE GATE VALVE	
CHECK (SWING)	
BALL	
AUTO AIR/VACUUM RELEASE	
HOSE	
STOP AND DRAIN	
DRAIN VALVE ON MAIN VALVE BODY	
VALVE MOTOR OPERATED	
VALVE HANDWHEEL OPERATED	

WALL FITTINGS

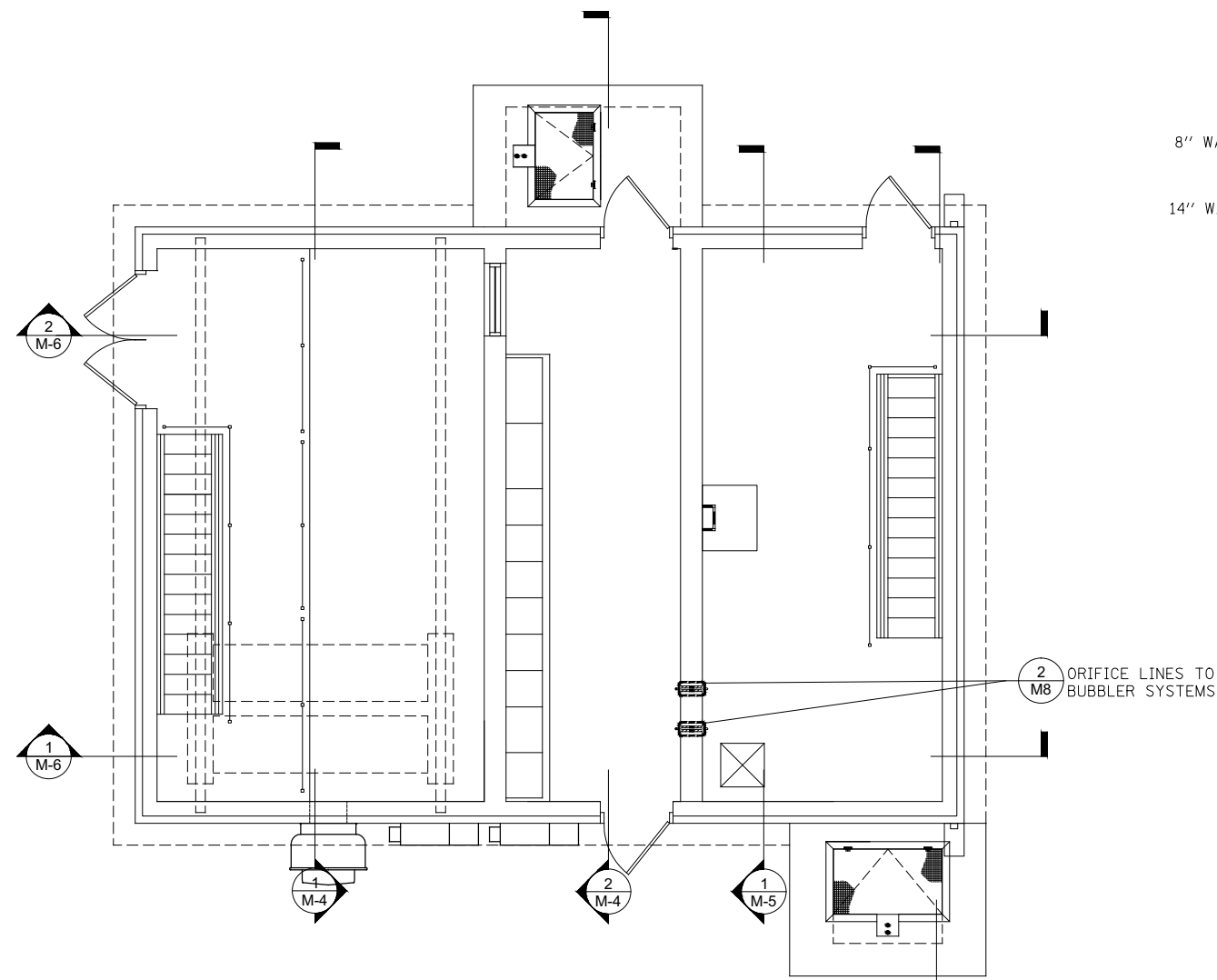
DESCRIPTION	SYMBOL
WALL SLEEVE (CAULKED OR GROUTED)	
WALL SLEEVE WITH MECHANICAL LINK SEAL	
FLEXIBLE RESILIENT COMPRESSION CONNECTION	
FLANGE AND FLANGE FLUSH WALL PIPE WITH INTERMEDIATE COLLAR (FL x FL)	
FLANGE AND PLAIN END FLUSH WALL PIPE WITH INTERMEDIATE COLLAR (FL x PE)	

GENERAL MECHANICAL NOTES

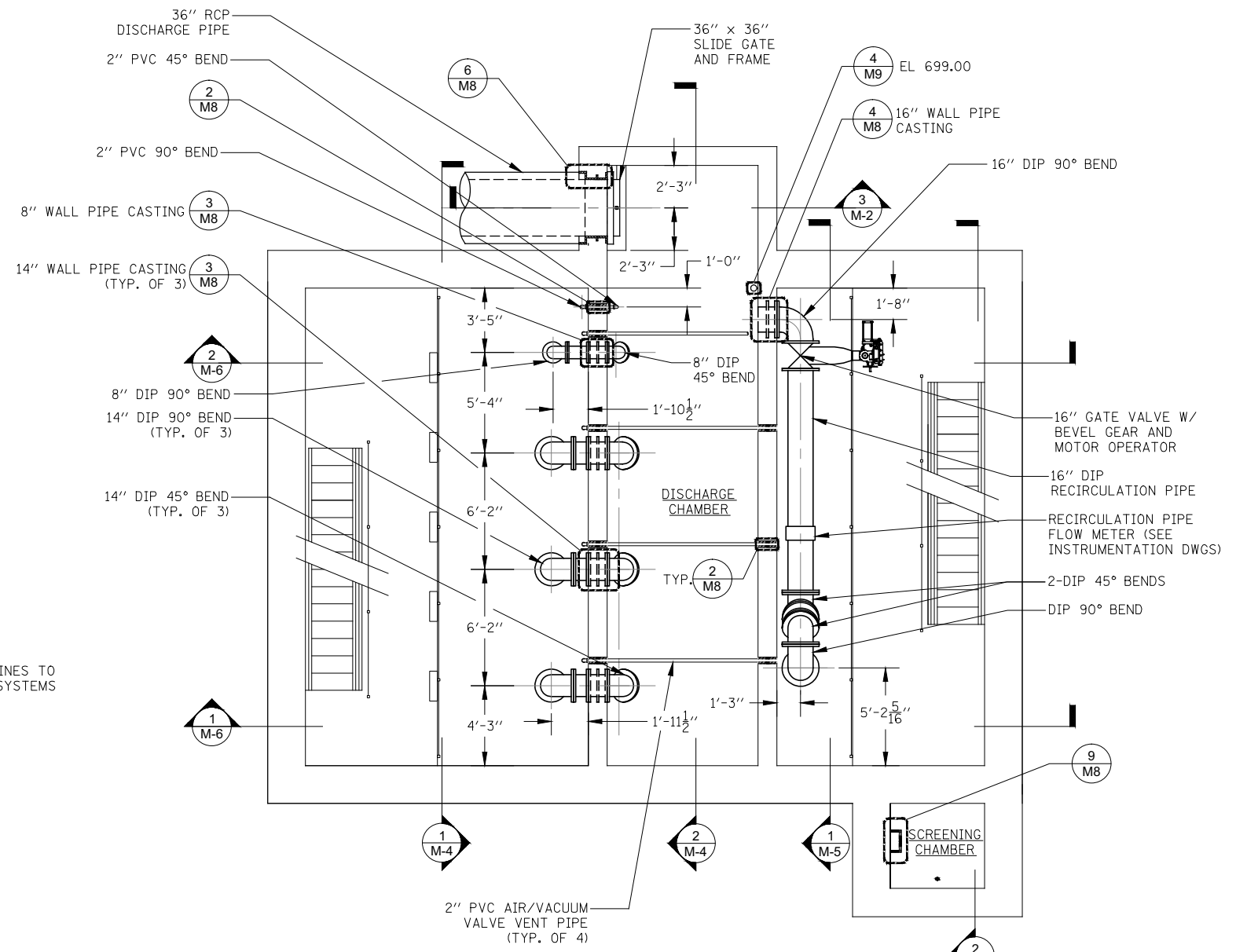
1. REFER TO ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR HATCH AND GRATING DETAILS.
2. CONTRACTOR TO PROVIDE A LAYOUT DRAWING SHOWING ALL PIPING, SUPPORTS, AND APPURTANENCES.
3. ALL DIMENSIONS LOCATING EQUIPMENT ARE FROM FINISHED WALL SURFACES OR CENTERLINES, AS INDICATED.
4. SEE CIVIL DRAWINGS FOR CONTINUATION OF PIPING OUTSIDE STRUCTURES.
5. ALL PIPE PENETRATIONS THROUGH INTERIOR AND EXTERIOR WALLS AND FLOORS SHALL BE SEALED WATERTIGHT.
6. SLEEVE COUPLINGS MAY BE USED WHERE NECESSARY, AND AS APPROVED BY THE ENGINEER, TO FACILITATE PIPING INSTALLATION.
7. FOR FLANGED SYSTEMS PROVIDE FLEXIBLE CONNECTORS WHERE NECESSARY, AND AS APPROVED BY THE ENGINEER, TO FACILITATE PIPING INSTALLATION AND VALVE AND EQUIPMENT REMOVAL.
8. ALL FLEXIBLE CONNECTORS, EXPANSION JOINTS, AND SLEEVE COUPLINGS SUBJECT TO PRESSURE SHALL BE RESTRAINED AS REQUIRED FOR EXPANSION AND FOR FLEXIBILITY.
9. THE CONTRACTOR SHALL MAKE ALL REQUIRED FIELD MEASUREMENTS TO VERIFY EXISTING AND CONTRACT INTERFACE DIMENSIONS, LOCATIONS, AND OTHER CONDITIONS.
10. THE PLANS ARE GENERALLY DIAGRAMMIC IN NATURE. ROUTING OF PIPING, DUCKWORK, CONDUITS, ETC., AS SHOWN ON THE DRAWINGS, DOES NOT INTEND TO SHOW EVERY RISE, DROP, OFFSET, FITTING, OR STRUCTURAL ELEMENT THAT MAY BE REQUIRED. THE CONTRACTOR SHALL VERIFY EXACT PLACEMENT OF ALL DEVICES AND EQUIPMENT WITH FIELD CONDITIONS AND APPROVED SHOP DRAWINGS.
11. THE DRAWINGS, SCHEDULES, AND SPECIFICATIONS HAVE BEEN PREPARED USING SPECIFIC MANUFACTURERS FOR THE BASIS OF DIMENSIONAL DESIGN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING ALL OF THE EQUIPMENT DIMENSIONS TO ENSURE THAT ALL COMPONENTS WILL FIT INTO THE DESIGNATED SPACES INDICATED ON THE DRAWINGS. MINOR DEVIATIONS IN DIMENSIONS WILL BE PERMITTED AT THE ENGINEER'S DISCRETION, PROVIDED THAT THE EQUIPMENT MEETS THE SPECIFIED RATINGS AND FITS INTO THE ALLOCATED SPACES WITH SUITABLE CLEARANCE FOR ACCESS. THE CONTRACTOR SHALL PROVIDE ALL ALTERATIONS REQUIRED TO ACCOMMODATE SUCH EQUIPMENT AT NO ADDITIONAL COST TO THE OWNER.
12. PIPE SUPPORTS FOR PIPES LESS THAN 8-INCHES IN DIAMETER ARE NOT SHOWN ON THESE PLANS FOR CLARITY. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY PIPE SUPPORT SYSTEMS WITH SUITABLE SPACING AS REQUIRED BY THE PROJECT SPECIAL PROVISIONS.
13. ALL MECHANICAL AND ELECTRICAL ITEMS INSTALLED IN THE PUMP STATION WET WELL AND DRY WELL AREAS SHALL BE SUITABLE FOR CLASS 1, DIVISION II, GROUP D, EXPLOSION PROOF; AS CLASSIFIED BY THE NATIONAL ELECTRIC CODE (NEC) FOR HAZARDOUS LOCATIONS.

DESIGNED	DF	REVISED	-
CHECKED	APF	REVISED	-
SCALE	DF	REVISED	-
DATE	03/22/2012	CHECKED	APF
		REVISED	-

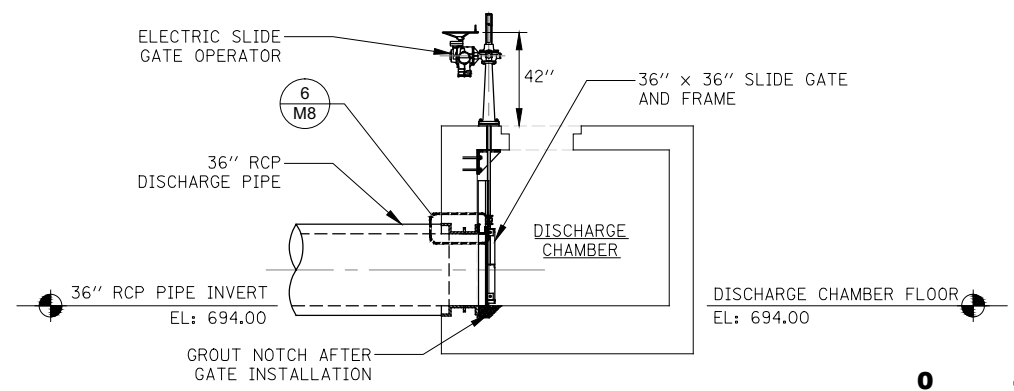
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035-I	DUPAGE	181	110
CONTRACT NO. 60P41				
ILLINOIS FED. AID PROJECT				



1 GROUND FLOOR PLAN - EL: 701.50
SCALE: 1/4" = 1'-0"



2 INTERMEDIATE FLOOR PLAN (-1) - EL: 692.75
SCALE: 1/4" = 1'-0"
- DISCHARGE EL: 694.00 HP



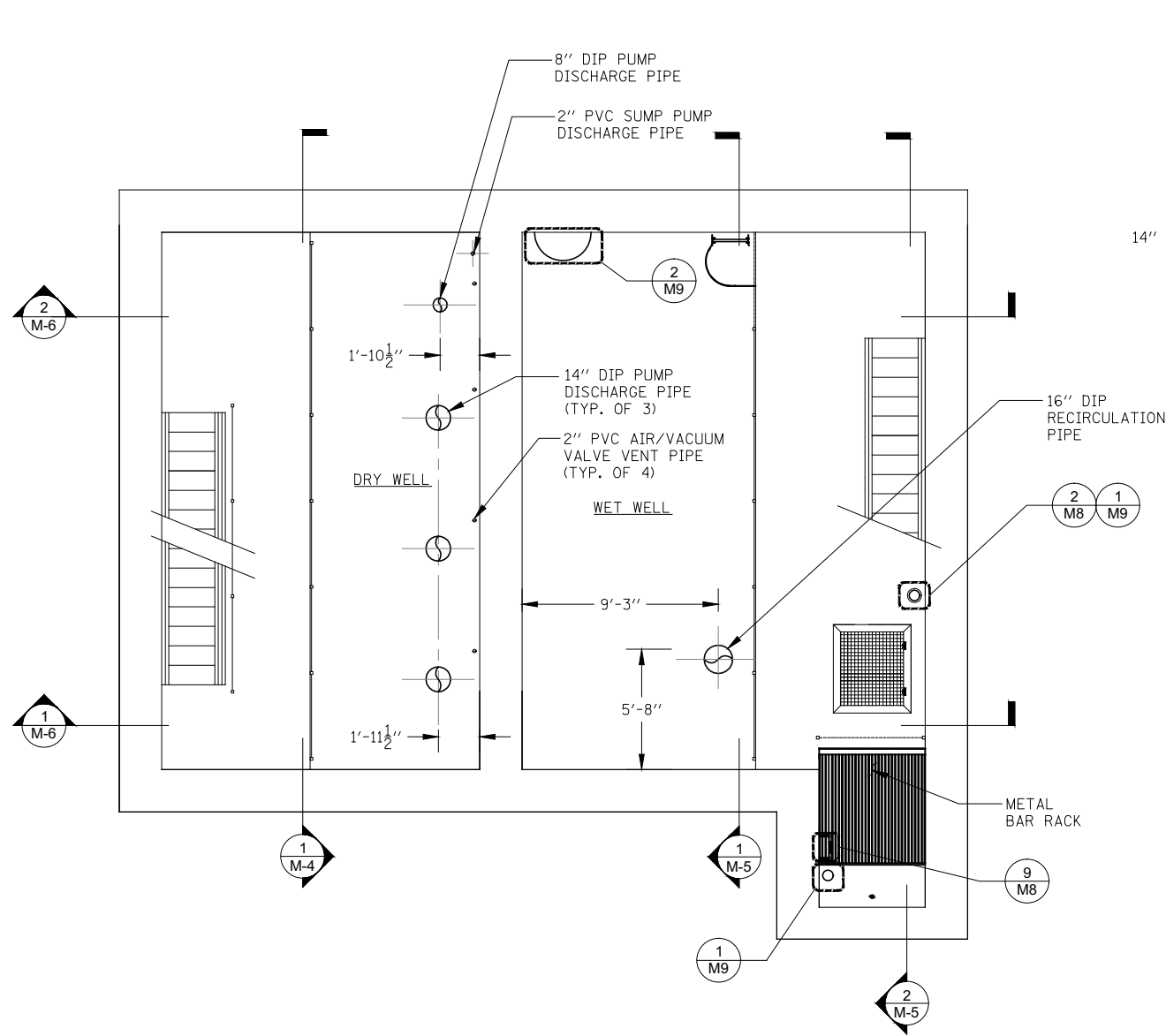
3 DISCHARGE CHAMBER SECTION
SCALE: 1/4" = 1'-0"



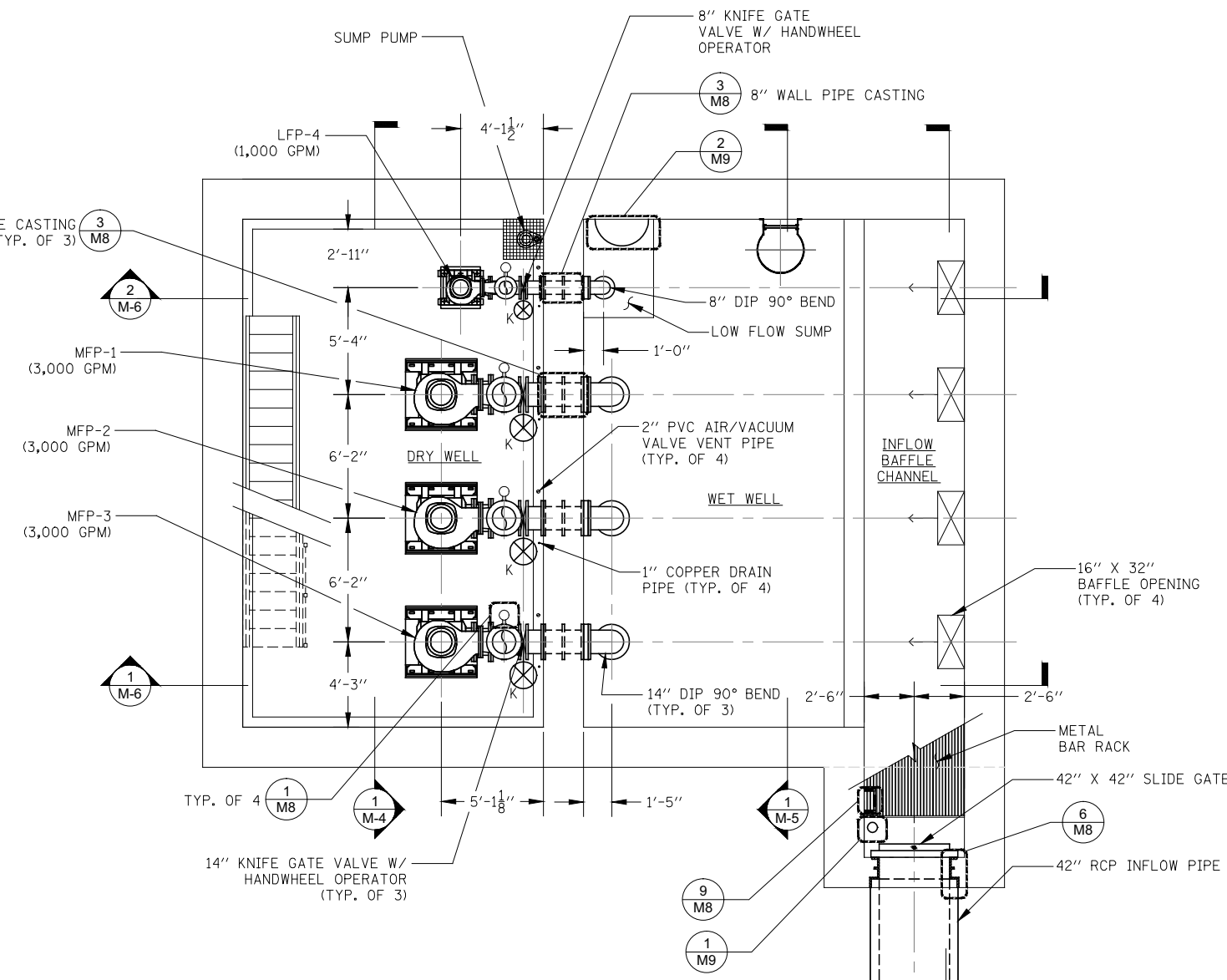
M2

DESIGNED	DF	REVISED	-
CHECKED	APF	REVISED	-
SCALE	DRAWN	REVISED	-
DATE	03/22/2012	CHECKED	APF
		REVISED	-

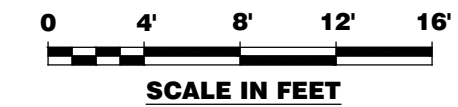
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035-I	DUPAGE	181	111
CONTRACT NO. 60P41			ILLINOIS FED. AID PROJECT	



1 INTERMEDIATE FLOOR PLAN (-2) - EL: 684.00
SCALE: 1/4" = 1'-0"



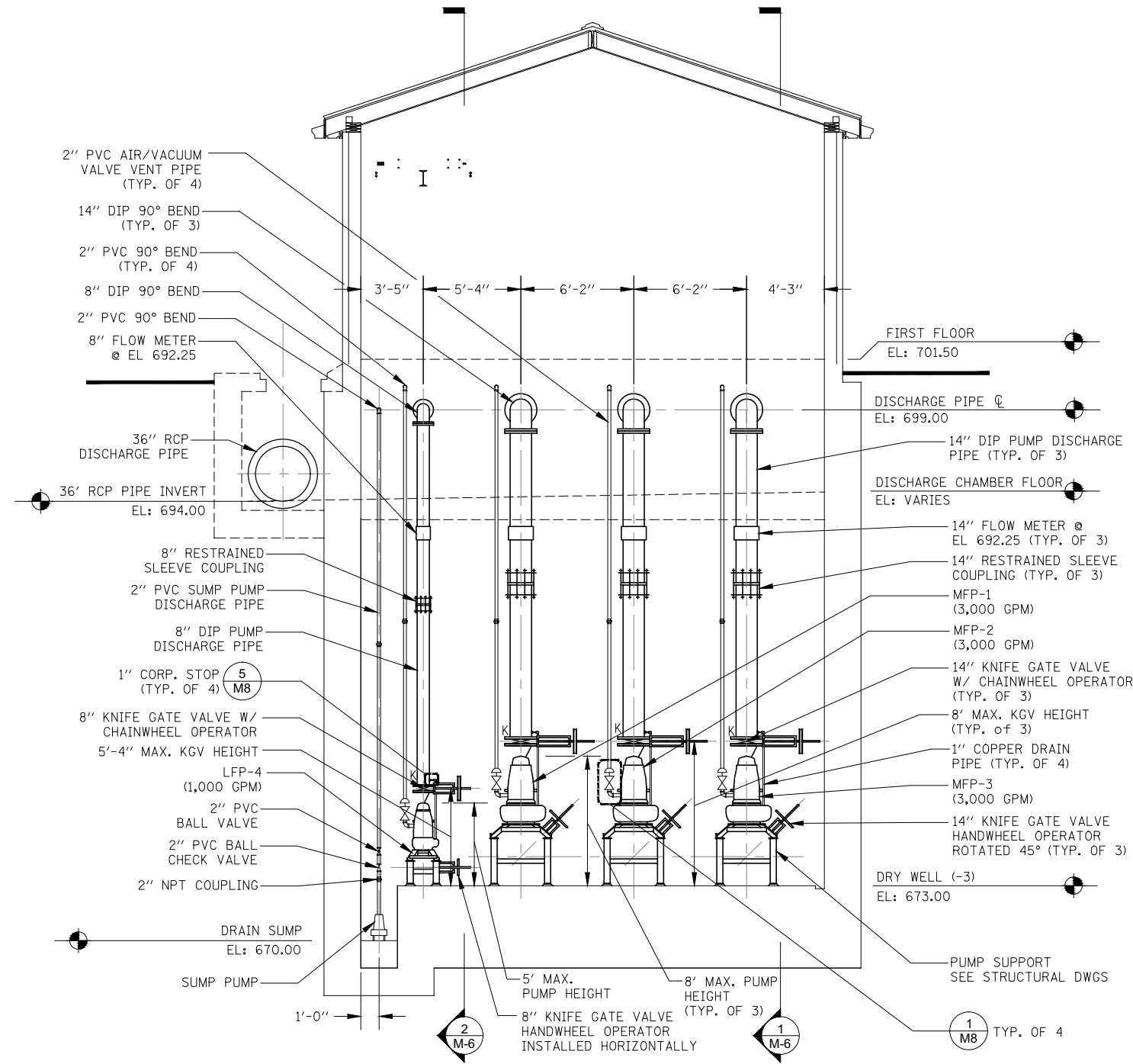
2 WELL LEVEL FLOOR PLAN (-3) - DRY EL: 673.00
- WET EL: 671.50
SCALE: 1/4" = 1'-0"



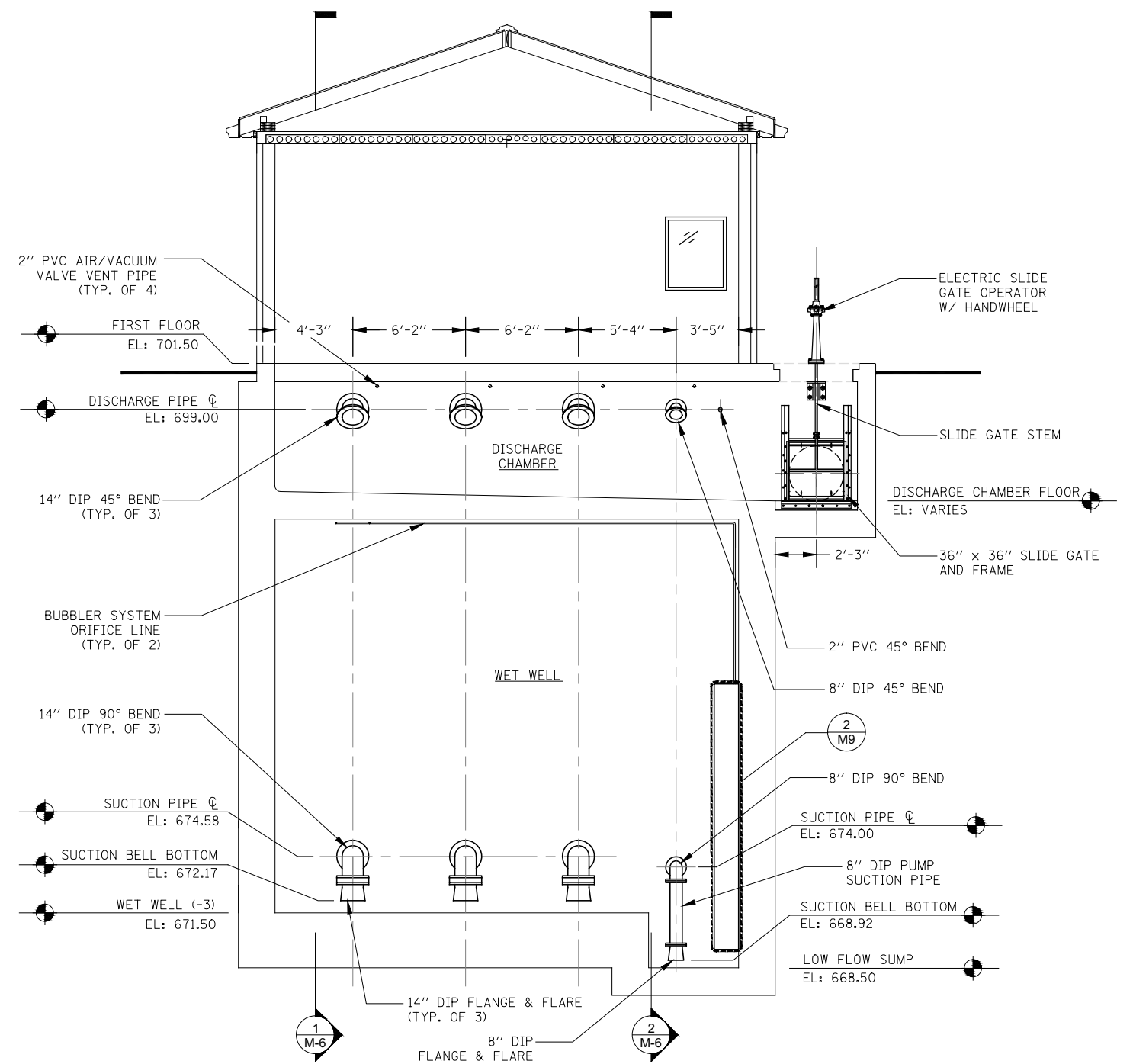
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DESIGNED	DF	REVISED	-
CHECKED	APF	REVISED	-
SCALE	DRAWN	REVISED	-
DATE	03/22/2012	CHECKED	APF
		REVISED	-

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035-I	DUPAGE	181	112
CONTRACT NO. 60P41			ILLINOIS FED. AID PROJECT	



1 DRY WELL SECTION
SCALE: 1/4" = 1'-0"



2 WET WELL AND DISCHARGE CHAMBER SECTION
SCALE: 1/4" = 1'-0"



M4

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Engineers/Architects
130 East Randolph Street - Suite 1000
Chicago, Illinois 60601 Phone: (312) 546-9900

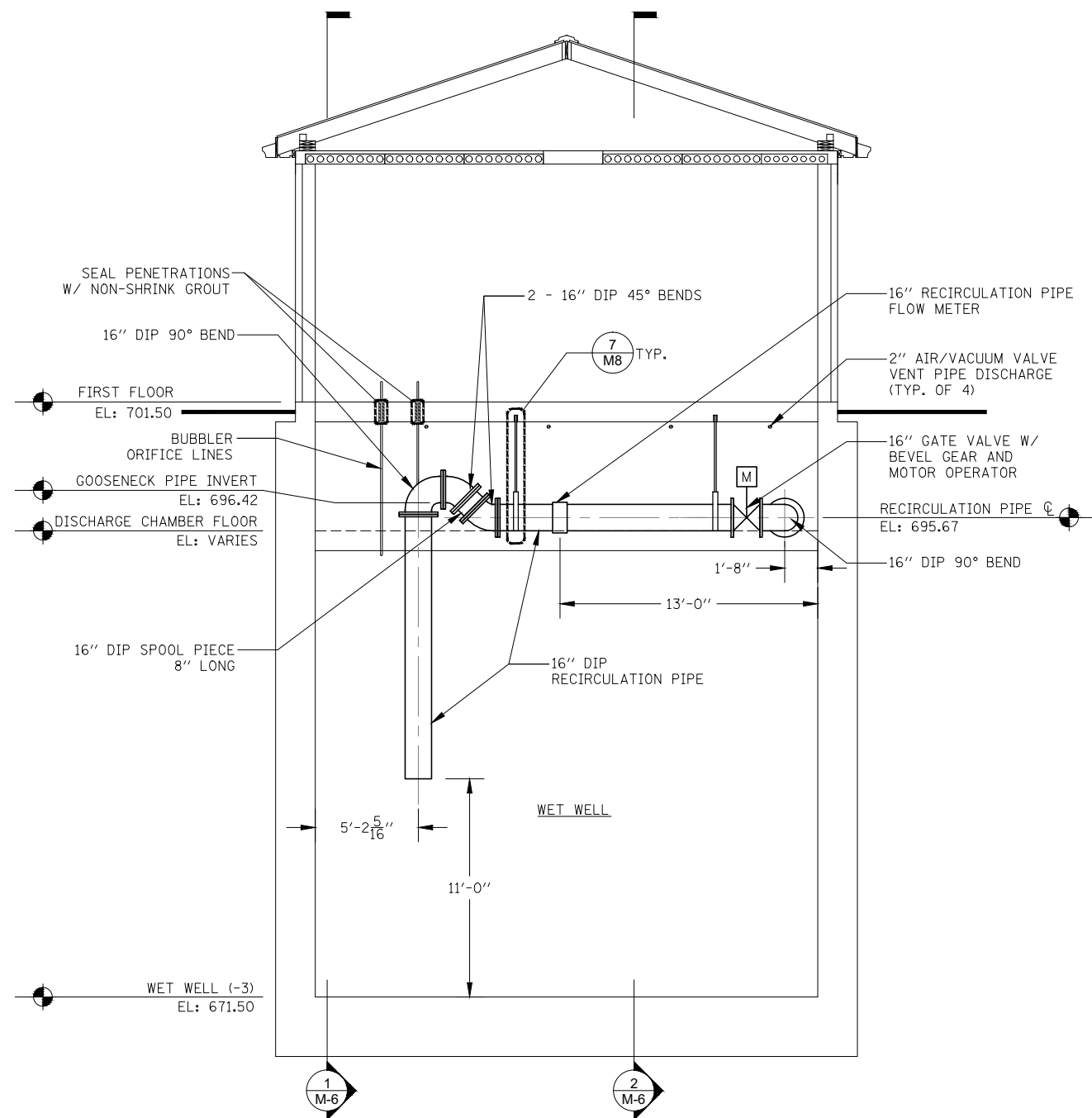
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CHECKED	APF	REVISED	-
SCALE	DF	REVISED	-
DATE	03/22/2012	REVISED	-

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

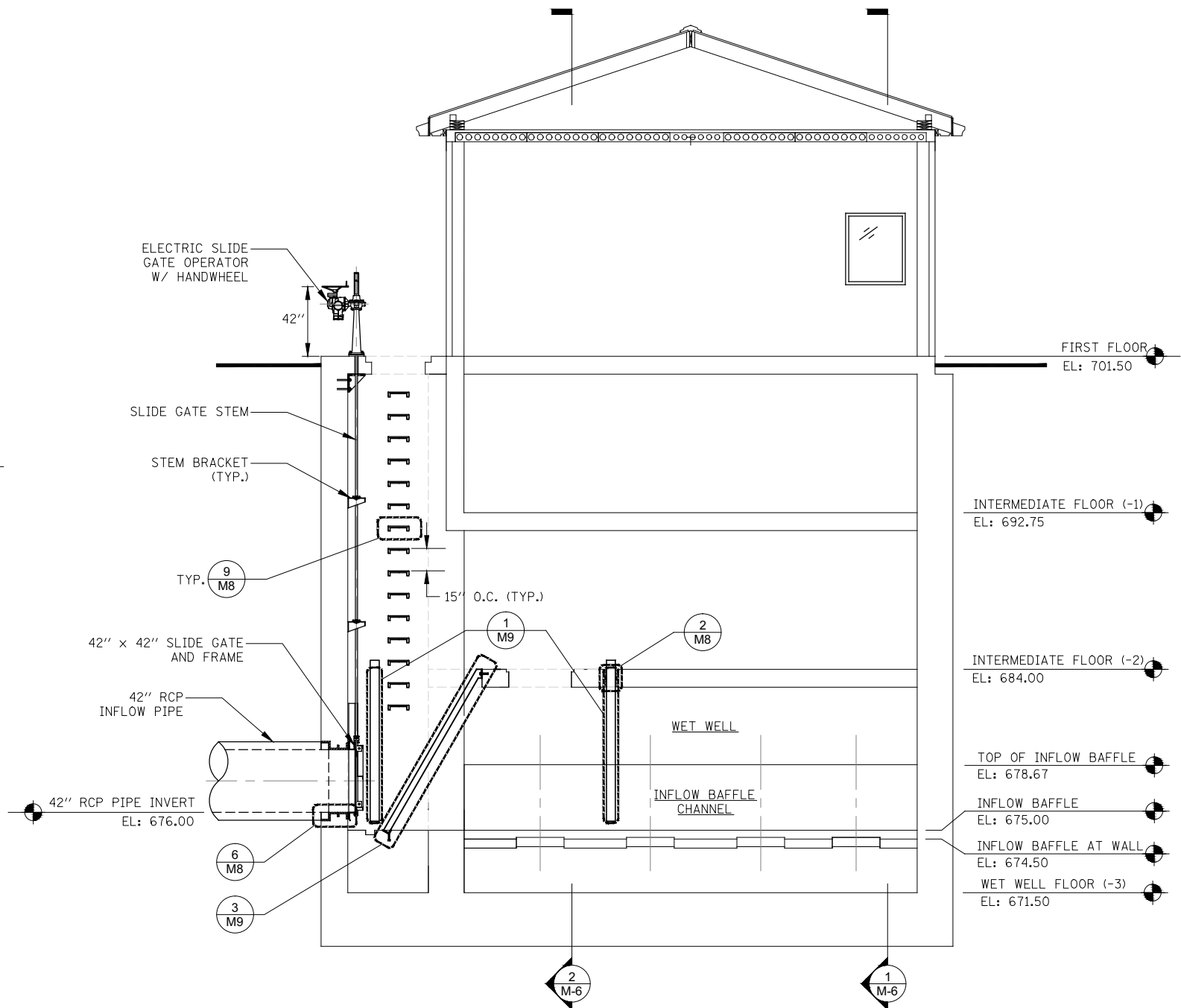
MECHANICAL SECTIONS
PUMP STATION 47

SHEET NO. M4 OF 9 SHEETS

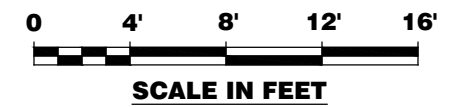
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035-I	DUPAGE	181	113
CONTRACT NO. 60P41				
ILLINOIS FED. AID PROJECT				



1 WET WELL SECTION
SCALE: 1/4" = 1'-0"



2 WET WELL AND INFLOW CHAMBER SECTION
SCALE: 1/4" = 1'-0"



M5

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Engineers/Architects
130 East Randolph Street - Suite 1000
Chicago, Illinois 60601 Phone: (312) 546-9900

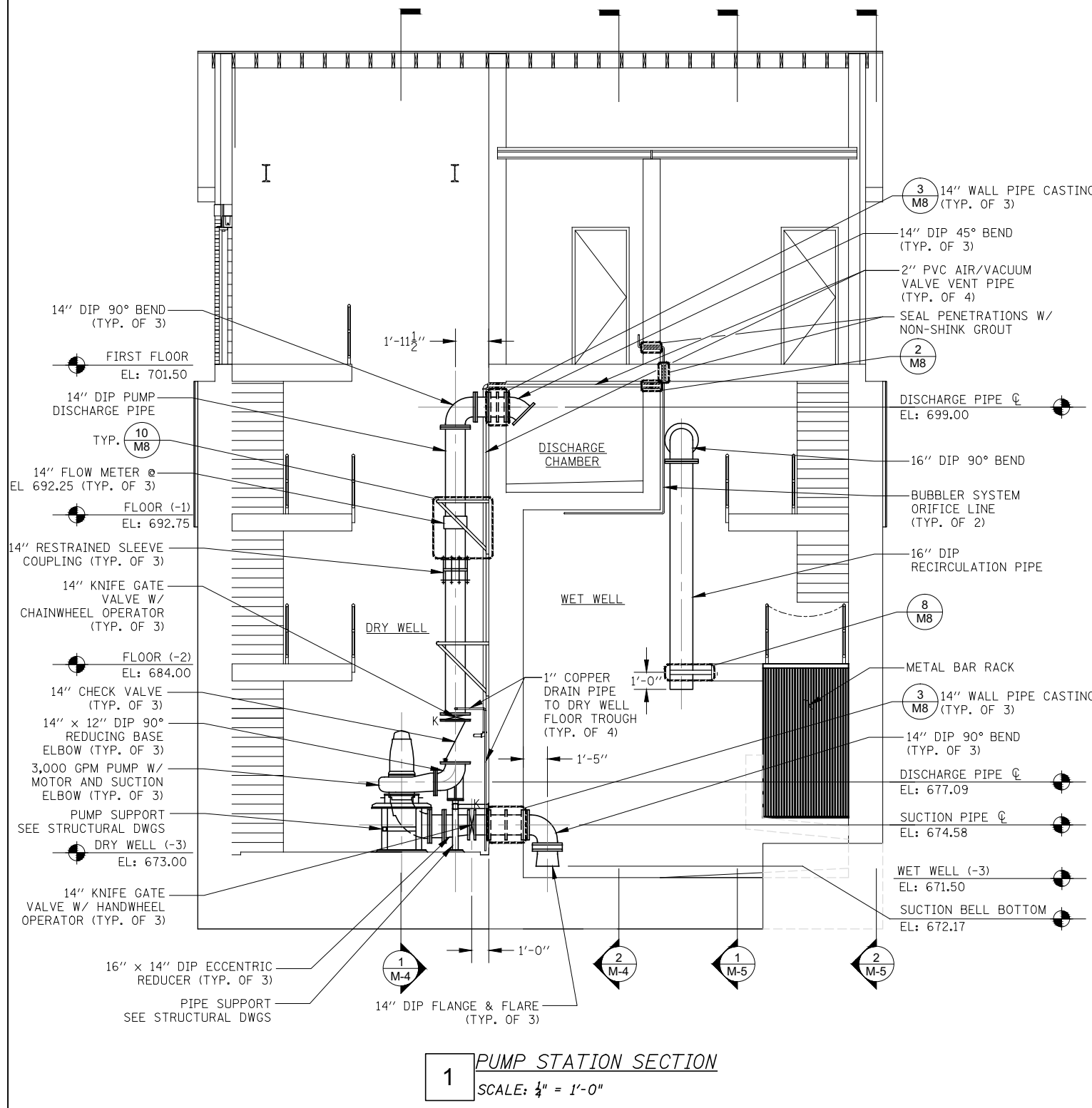
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CHECKED	APF	REVISED	-
SCALE	DRAWN DF	REVISED	-
DATE	03/22/2012	CHECKED	APF
		REVISED	-

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

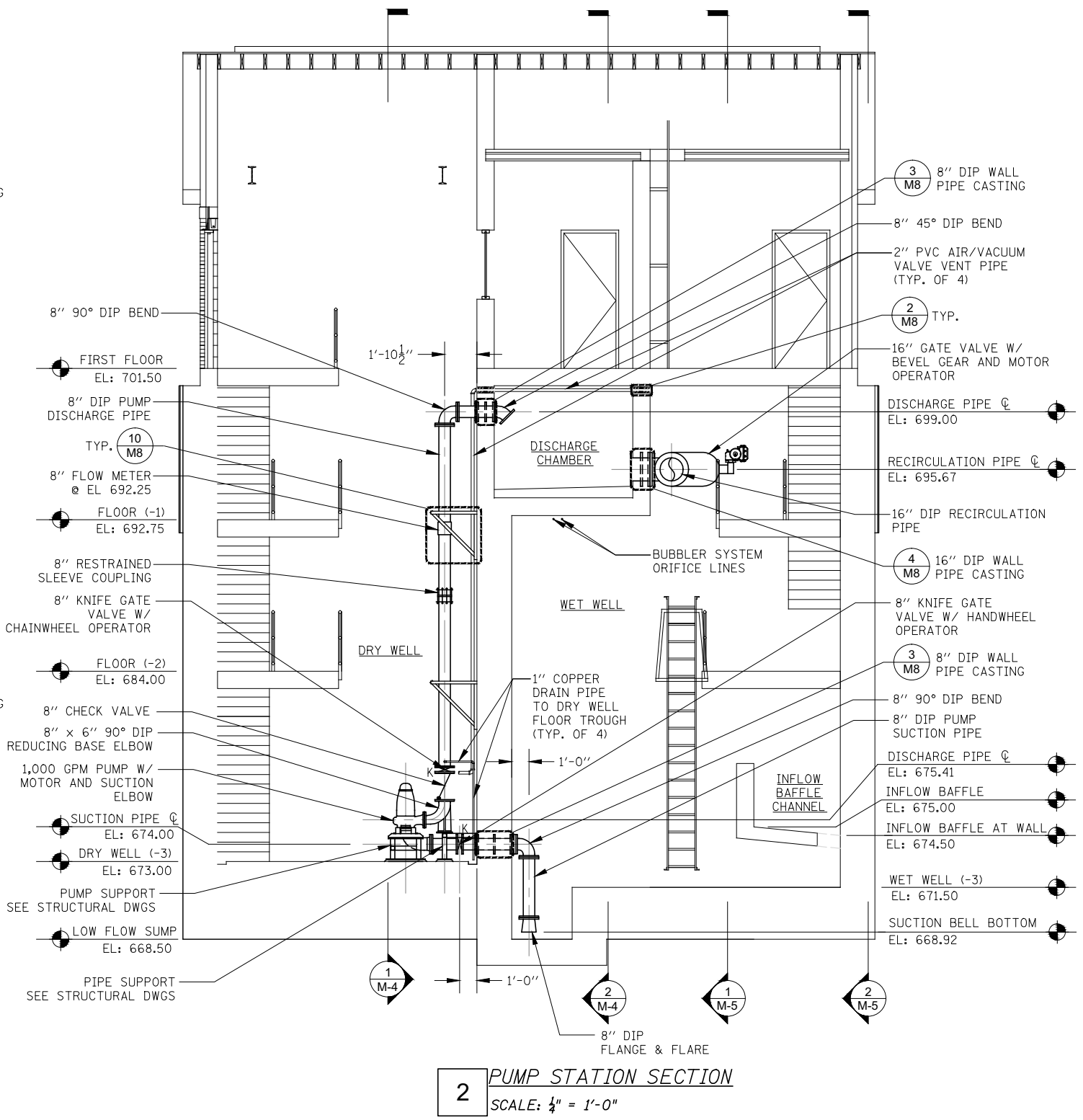
MECHANICAL SECTIONS
PUMP STATION 47

SHEET NO. M5 OF 9 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035-I	DUPAGE	181	114
ILLINOIS FED. AID PROJECT			CONTRACT NO. 60P41	



1 PUMP STATION SECTION
SCALE: 1/4" = 1'-0"



2 PUMP STATION SECTION
SCALE: 1/4" = 1'-0"



M6

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Engineers/Architects
130 East Randolph Street - Suite 1000
Chicago, Illinois 60601 Phone: (312) 546-9900

DESIGNED	DF	REVISED	-
CHECKED	APF	REVISED	-
SCALE	DRAWN	REVISED	-
DATE	03/22/2012	CHECKED	APF
		REVISED	-

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

MECHANICAL SECTIONS
PUMP STATION 47
SHEET NO. M6 OF 9 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035-I	DUPAGE	181	115
CONTRACT NO. 60P41				
ILLINOIS FED. AID PROJECT				

PUMPING OPERATIONS WITH RISING WATER LEVEL				
FUNCTION	SCADA		FLOAT	
	ELEVATION (FT)	LEVEL ABOVE WET PIT FLOOR (FT)	ELEVATION (FT)	LEVEL ABOVE WET PIT FLOOR (FT)
LOW FLOW PUMP (LFP) START	676.00	4.5	676.00	4.5
LEAD MAIN FLOW PUMP (MFP) START	678.00	6.5	678.00	6.5
LOW FLOW PUMP (LFP) STOP	678.00	6.5	678.00	6.5
LAG MAIN FLOW PUMP (MFP) START	680.00	8.5	680.00	8.5
HIGH WATER ALARM	682.30	10.8	682.30	10.8

PUMPING OPERATIONS WITH FALLING WATER LEVEL				
FUNCTION	SCADA		FLOAT	
	ELEVATION (FT)	LEVEL ABOVE WET PIT FLOOR (FT)	ELEVATION (FT)	LEVEL ABOVE WET PIT FLOOR (FT)
LAG MAIN FLOW PUMP (MFP) STOP	678.00	6.5	678.00	6.5
LEAD MAIN FLOW PUMP (MFP) STOP	676.00	4.5	676.00	4.5
LOW FLOW PUMP (LFP) START	676.00	4.5	676.00	4.5
MAIN FLOW PUMP (MFP) FAILURE TO STOP ALARM	674.00	2.5	674.00	2.5
LOW FLOW PUMP (LFP) STOP	672.00	0.5	672.00	0.5
LOW WATER ALARM	671.50	0.0	671.50	0.0

PUMP SCHEDULE									
ITEM	LOCATION	ELEC. MOTOR CHARACTERISTICS						PUMP CHARACTERISTICS	
		KW	HP	RPM	VOLTS	PHASE	HZ	FLOW (GPM)	HEAD (FT)
MAIN FLOW PUMP (MFP-1)	DRY WELL	26.0	35	1,200	460	3	60	3,000	27.6
MAIN FLOW PUMP (MFP-2)	DRY WELL	26.0	35	1,200	460	3	60	3,000	27.6
MAIN FLOW PUMP (MFP-3)	DRY WELL	26.0	35	1,200	460	3	60	3,000	27.6
LOW FLOW PUMP (LFP-4)	DRY WELL	11.2	15	1,800	460	3	60	1,000	32.4
SUMP PUMP	DRY WELL	0.4	1/2	3,450	240	1	60	20	30.0

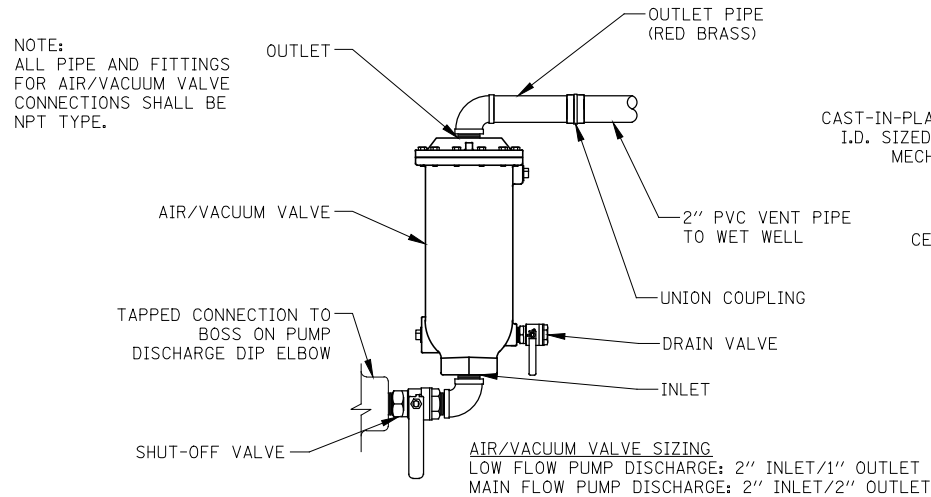
NOTES:

1. THE DESIGN OF THE PUMP STATION HAS BEEN BASED ON A SPECIFIC PUMP(S). OTHER PUMPS PRODUCING THE SAME HYDRAULIC CHARACTERISTICS ARE ACCEPTABLE. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO MAKE ALL ADJUSTMENTS TO THE STATION TO ADAPT THE FINAL ACCEPTED PUMPS AT NO ADDITIONAL COST.
2. THE STAND-BY MAIN FLOW PUMP SHALL START ONLY WHEN THE OTHER MAIN FLOW PUMPS FAIL.

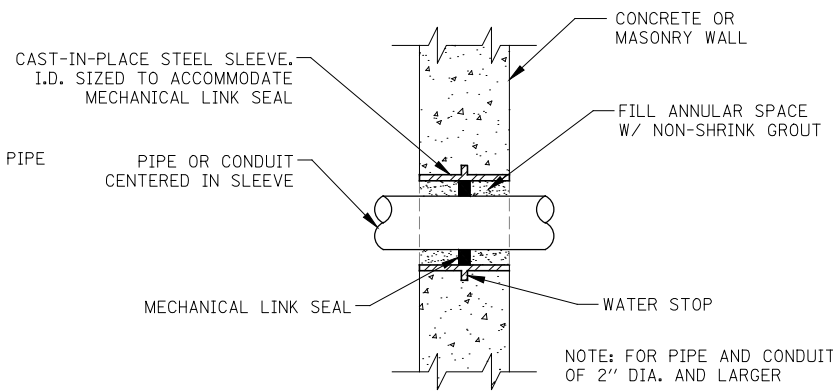
M7

DESIGNED	DF	REVISED	-
CHECKED	APF	REVISED	-
SCALE	DF	REVISED	-
DATE	03/22/2012	REVISED	-
	CHECKED	APF	

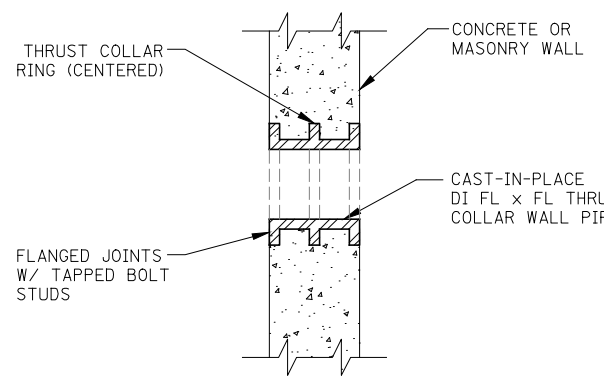
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035-I	DUPAGE	181	116
ILLINOIS FED. AID PROJECT			CONTRACT NO. 60P41	



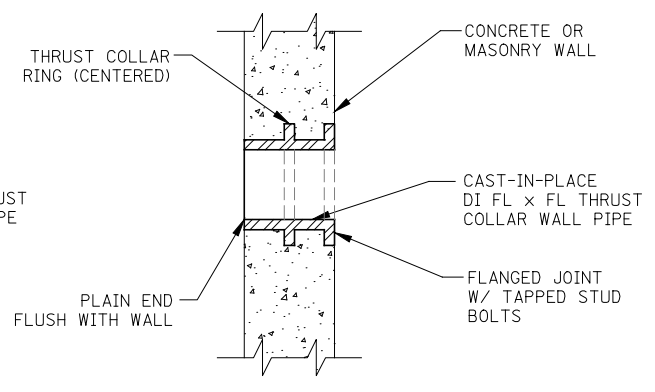
1 AIR/VACUUM VALVE
SCALE: NTS



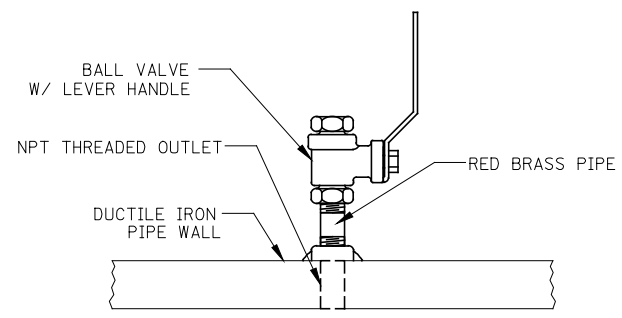
2 PIPE AND CONDUIT SEALED PENETRATION
SCALE: NTS



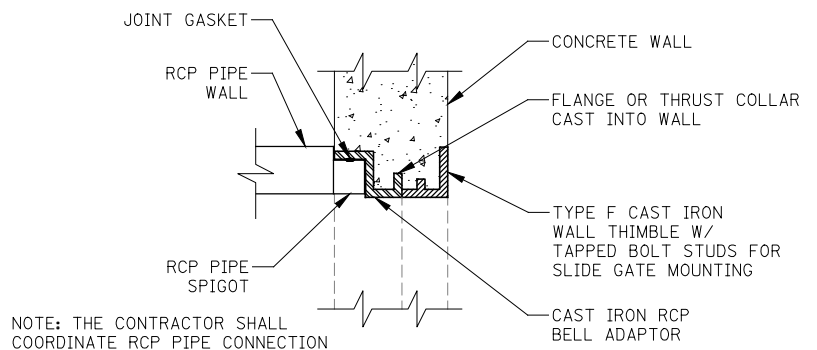
3 WALL PIPE CASTING (FL x FL)
SCALE: NTS



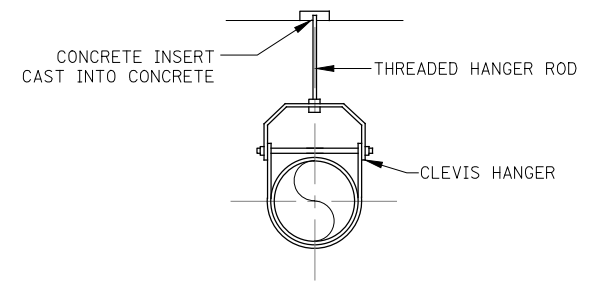
4 WALL PIPE CASTING (PE x FL)
SCALE: NTS



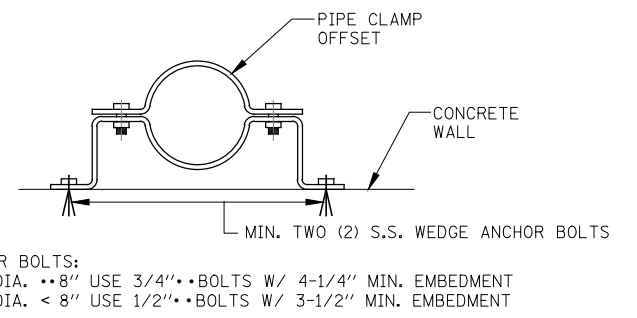
5 CORPORATION STOP
SCALE: NTS



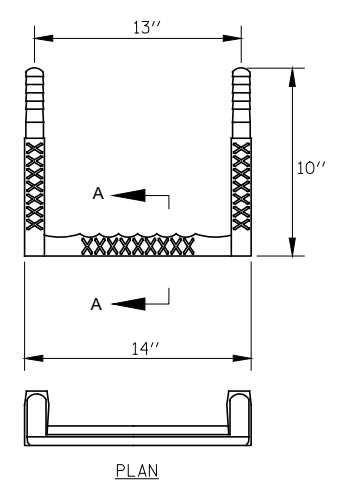
6 WALL CASTING CONNECTION
SCALE: NTS



7 PIPE HANGERS
SCALE: NTS

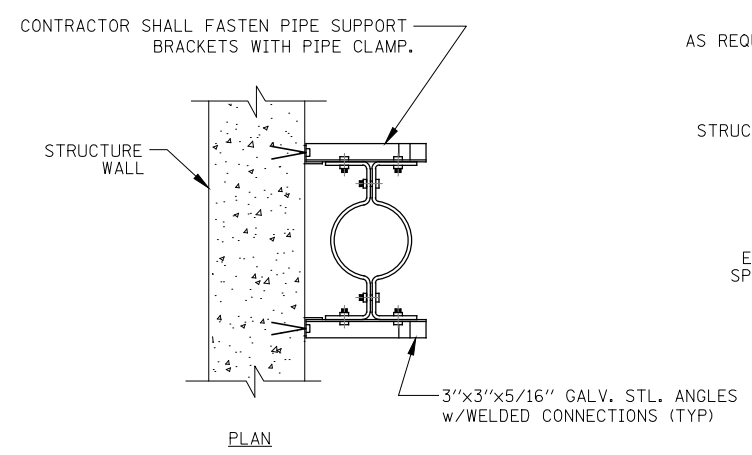
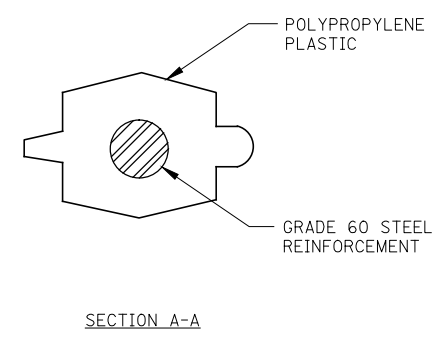
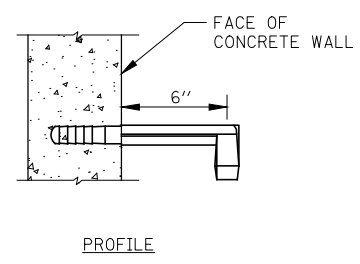


8 PIPE SUPPORT-1
SCALE: NTS

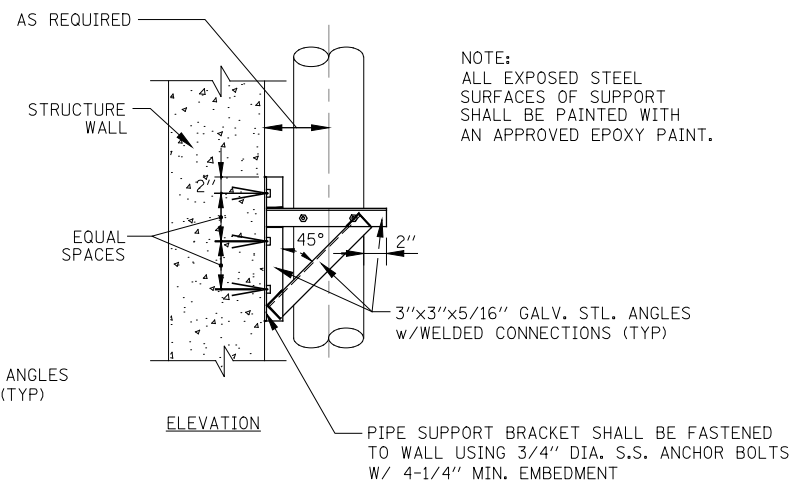


- NOTES:
- STEPS SHALL BE PLACED AS SHOWN ON DRAWINGS. PLACEMENT SHALL BE DURING CONSTRUCTION PER THE MANUFACTURER'S INSTRUCTIONS.
 - STEPS SHALL BE MANUFACTURED BY M.A. INDUSTRIES, OR APPROVED EQUAL.

9 STEPS
SCALE: NTS

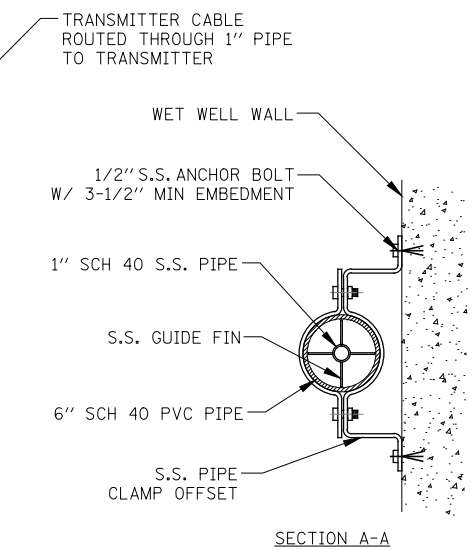
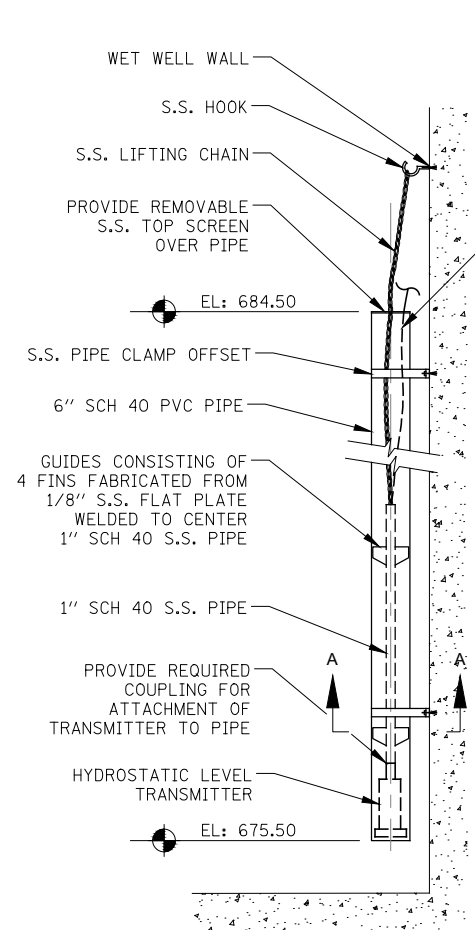


10 PIPE SUPPORT-2
SCALE: NTS



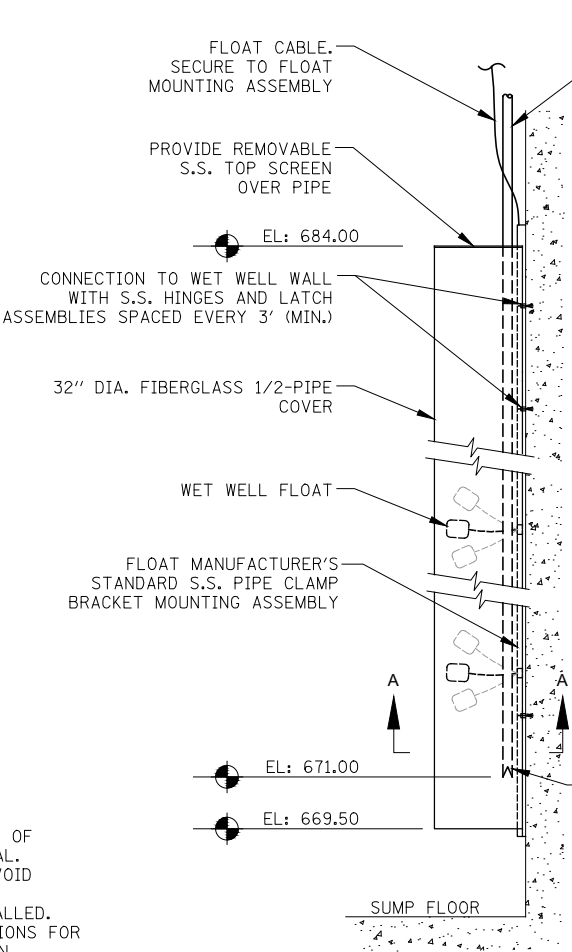
DESIGNED	DF	REVISED	-
CHECKED	APF	REVISED	-
SCALE	DF	REVISED	-
DATE	03/22/2012	REVISED	-
CHECKED	APF	REVISED	-

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035-I	DUPAGE	181	117
CONTRACT NO. 60P41				
ILLINOIS FED. AID PROJECT				

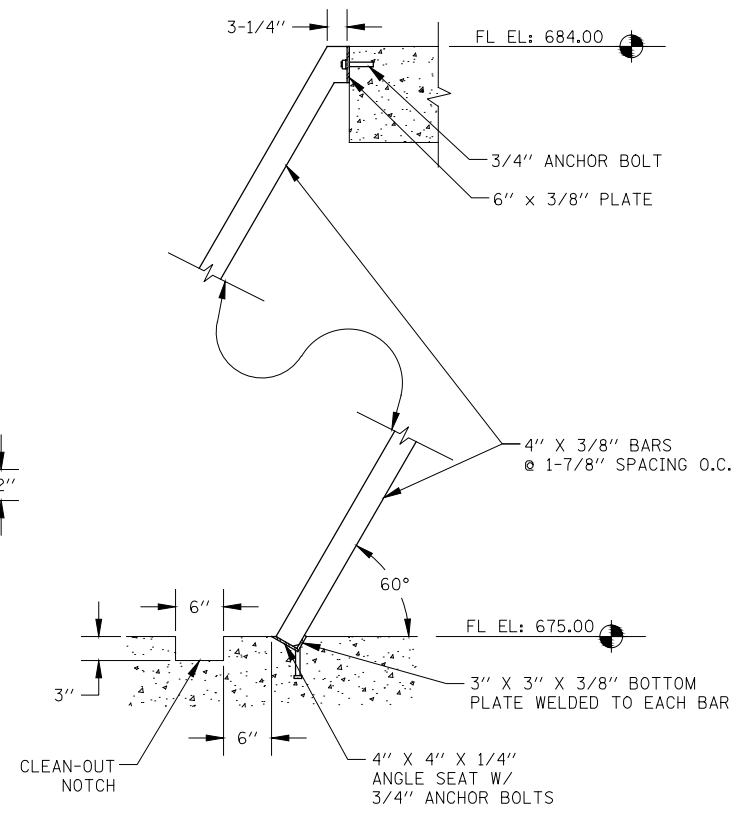


NOTES:
 1. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF MATERIAL, HARDWARE, AND LAYOUT FOR APPROVAL.
 2. THE INTERNAL GUIDE SHALL BE WEIGHTED TO AVOID BUOYANCY, SUCH THAT THE HYDROSTATIC LEVEL TRANSMITTER WILL REMAIN AT THE LEVEL INSTALLED.
 3. REFER TO DIVISION 40 OF THE SPECIAL PROVISIONS FOR HYDROSTATIC LEVEL TRANSMITTER SPECIFICATION.

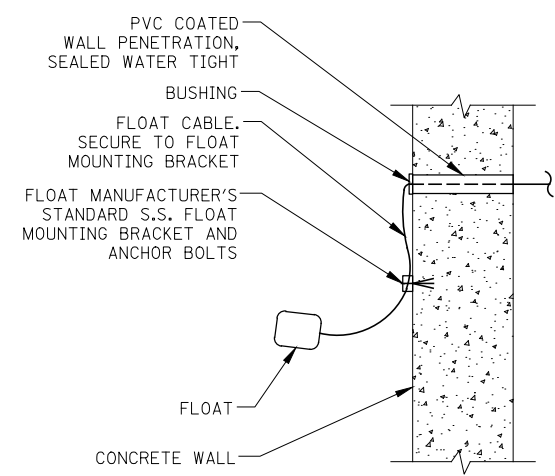
1 HYDROSTATIC LEVEL TRANSMITTER INSTALLATION
 SCALE: NTS



NOTES:
 1. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF MATERIAL, HARDWARE, AND LAYOUT FOR APPROVAL.
 2. SEE SHEET M7 FOR FLOAT MOUNTING ELEVATION SCHEDULE.
 3. REFER TO DIVISION 40 OF THE SPECIAL PROVISIONS FOR FLOAT AND BUBBLER SYSTEM SPECIFICATIONS.
 4. ALL ASSEMBLY HARDWARE SHALL BE STAINLESS STEEL.
 5. FIBERGLASS 1/2-PIPE SHALL EXHIBIT THE FOLLOWING PHYSICAL PROPERTIES (MINIMUM):
 TENSILE STRENGTH - 26,500 PSI (ASTM D638)
 COMPRESSIVE STRENGTH - 26,500 PSI (ASTM D695)
 FLEXURAL STRENGTH - 39,000 PSI (ASTM D790)
 FLEXURAL MODULUS - 1,500,000 PSI (ASTM D790)
 BARCOL HARDNESS - 45 (ASTM 2583)
 WATER ABSORPTION - 0.09% MAX (ASTM D570)



3 METAL BAR RACK CONNECTIONS
 SCALE: NTS



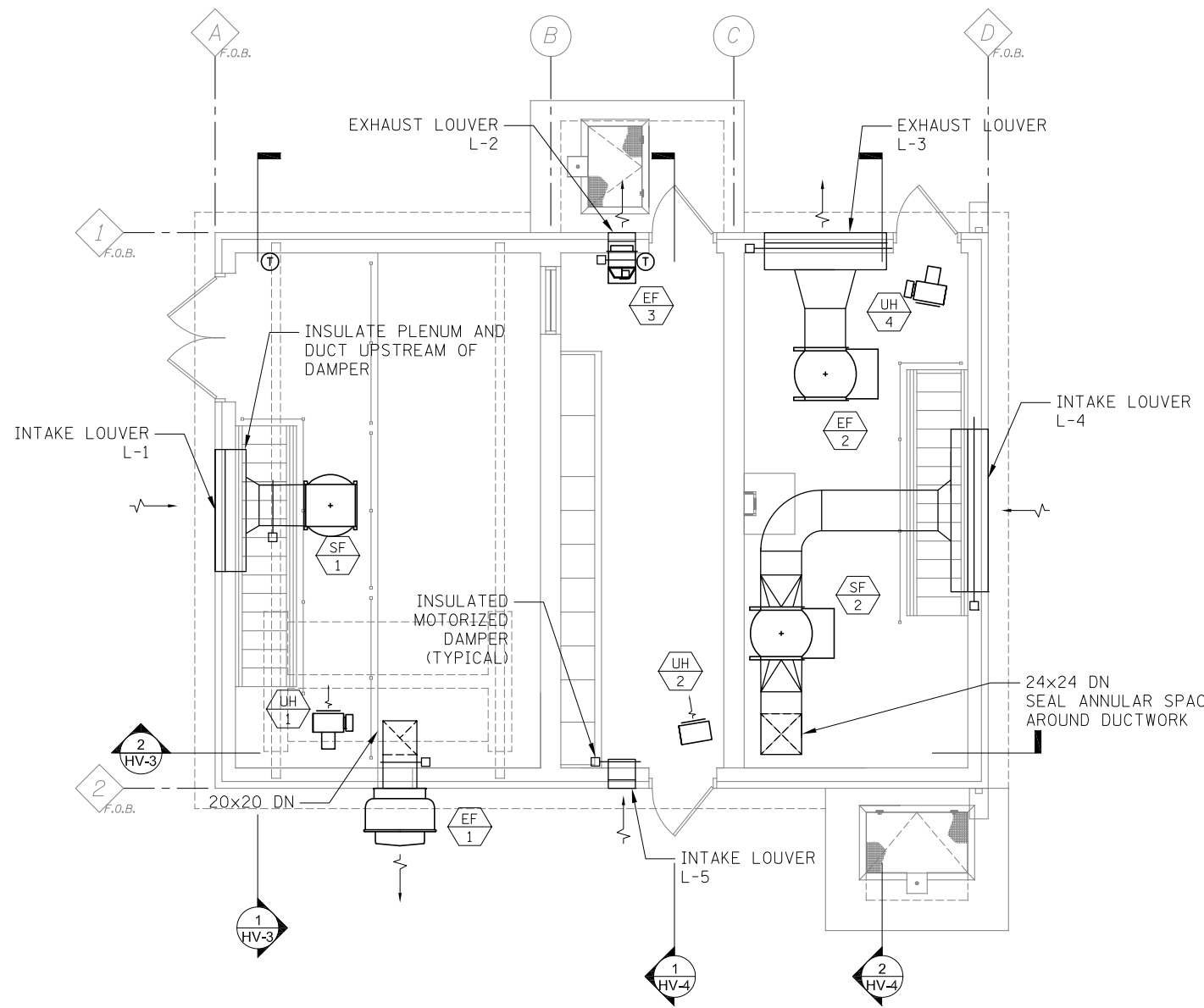
NOTES:
 1. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF MATERIAL, HARDWARE, AND LAYOUT FOR APPROVAL.
 2. SEE MECHANICAL AND INSTRUMENTATION DRAWINGS FOR MOUNTING ELEVATIONS AND LOCATIONS.
 3. REFER TO DIVISION 40 OF THE SPECIAL PROVISIONS FOR FLOAT SPECIFICATION.

4 SINGLE FLOAT INSTALLATION
 SCALE: NTS

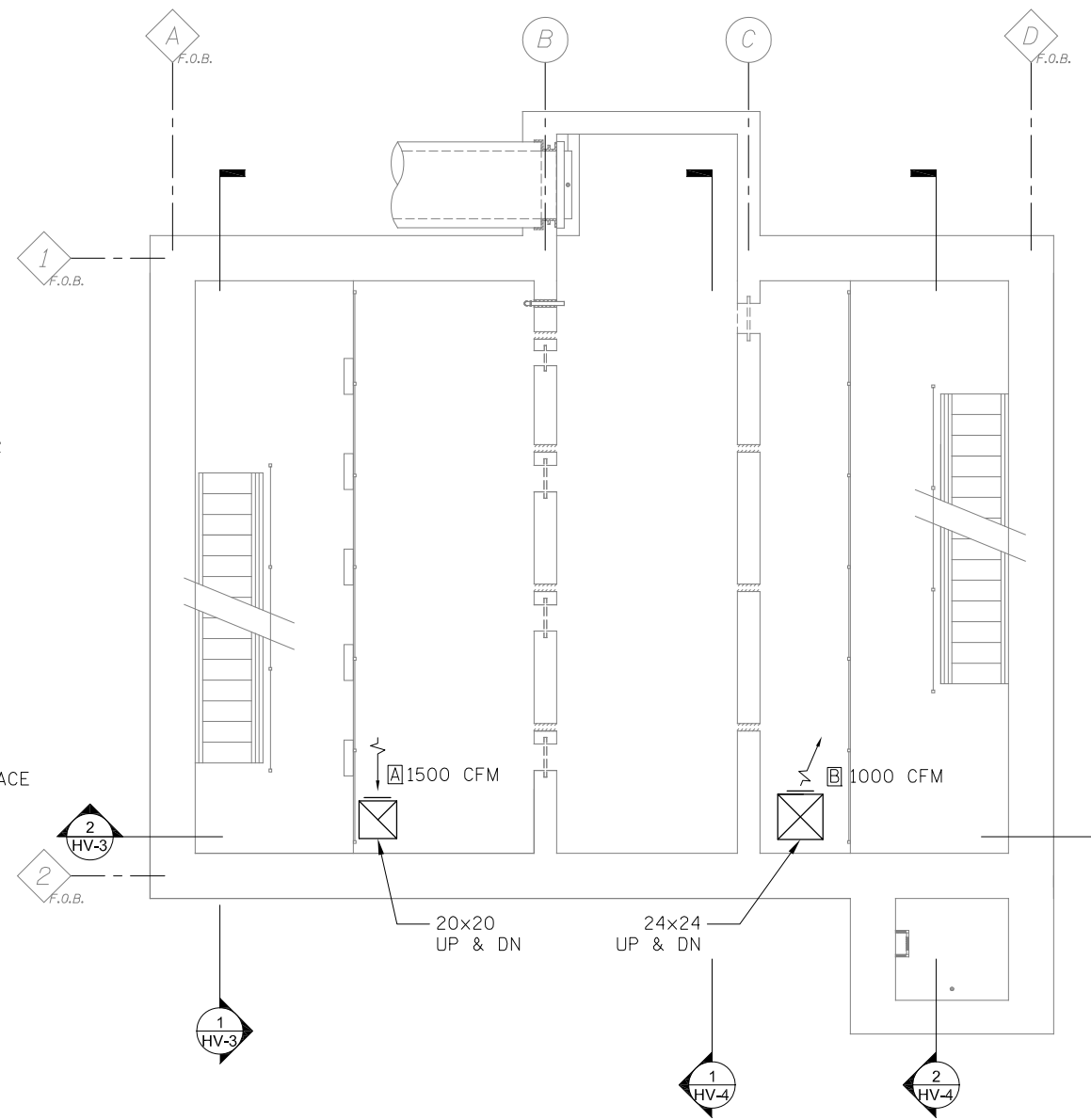
2 STILLING WELL INSTALLATION
 SCALE: NTS

DESIGNED	DF	REVISED	-
CHECKED	APF	REVISED	-
SCALE	DRAWN DF	REVISED	-
DATE	03/22/2012	CHECKED	APF
		REVISED	-

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035-I	DUPAGE	181	118
CONTRACT NO. 60P41				
ILLINOIS FED. AID PROJECT				



1 GROUND FLOOR PLAN - EL: 701.50
SCALE: 1/4" = 1'-0"



2 INTERMEDIATE FLOOR PLAN (-1) - EL: 692.75
SCALE: 1/4" = 1'-0"
- DISCHARGE EL: 694.00 HP

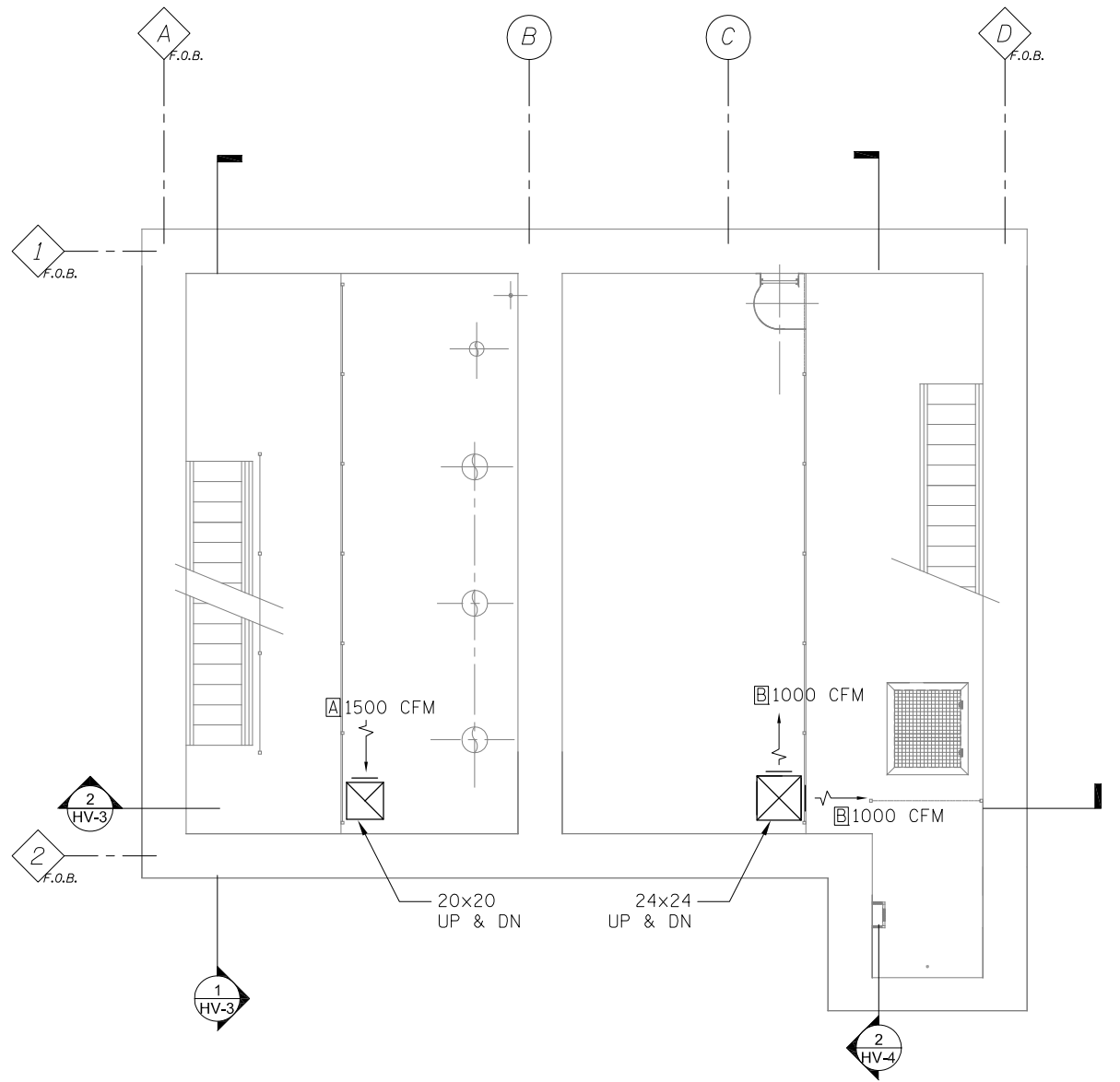
NOTES:

1. ALL DUCTWORK, HANGERS AND SUPPORTS LOCATED THROUGHOUT THE WET WELL SHALL BE STAINLESS STEEL.
2. THE DRY WELL AND THE WET WELL ARE CLASS I, DIVISION 2 HAZARDOUS LOCATIONS. ALL HEATERS, FANS, ACTUATORS, CONTROLS AND ASSOCIATED APPURTENANCES SERVING THESE SPACES SHALL BE SUITABLE FOR THIS CLASSIFICATION.

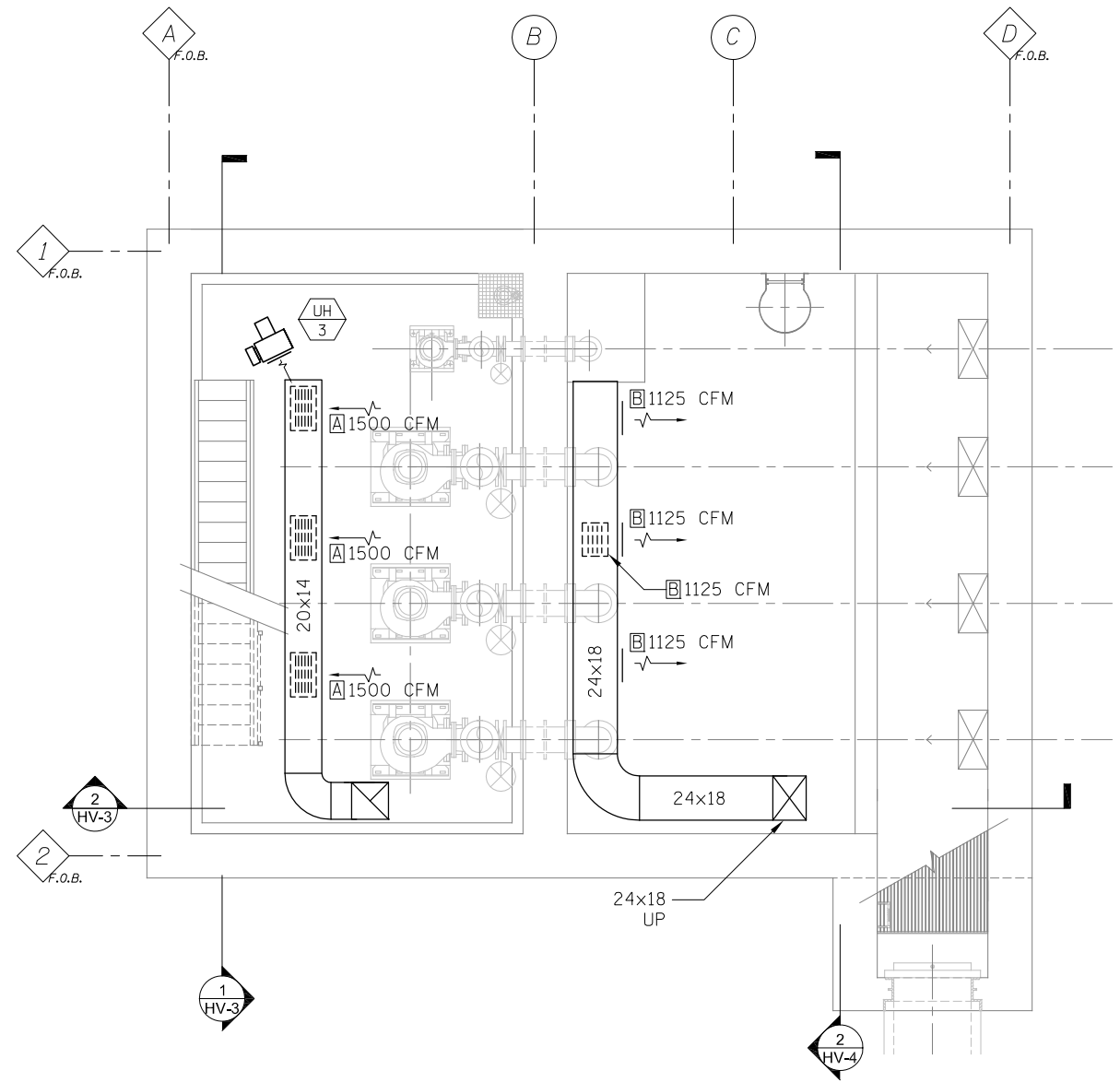


DESIGNED	WMC	REVISED	-
CHECKED	RS	REVISED	-
SCALE	DATE	DRAWN	WMC
DATE	03/22/2012	CHECKED	RS
		REVISED	-

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035-I	DUPAGE	181	119
CONTRACT NO. 60P41			ILLINOIS FED. AID PROJECT	



1 INTERMEDIATE FLOOR PLAN (-2) - EL: 684.00
 SCALE: 1/4" = 1'-0"



2 WET WELL FLOOR PLAN (-3) - DRY EL: 673.00
 SCALE: 1/4" = 1'-0"
 - WET EL: 671.50

NOTES:
 1. ALL DUCTWORK, HANGERS AND SUPPORTS LOCATED THROUGHOUT THE WET WELL SHALL BE STAINLESS STEEL.
 2. THE DRY WELL AND THE WET WELL ARE CLASS I, DIVISION 2 HAZARDOUS LOCATIONS. ALL HEATERS, FANS, ACTUATORS, CONTROLS AND ASSOCIATED APPURTENANCES SERVING THESE SPACES SHALL BE SUITABLE FOR THIS CLASSIFICATION.



HV2

McDonough Associates Inc.
 Engineers/Architects
 130 East Randolph Street - Suite 1000
 Chicago, Illinois 60601 Phone (312) 546-8600

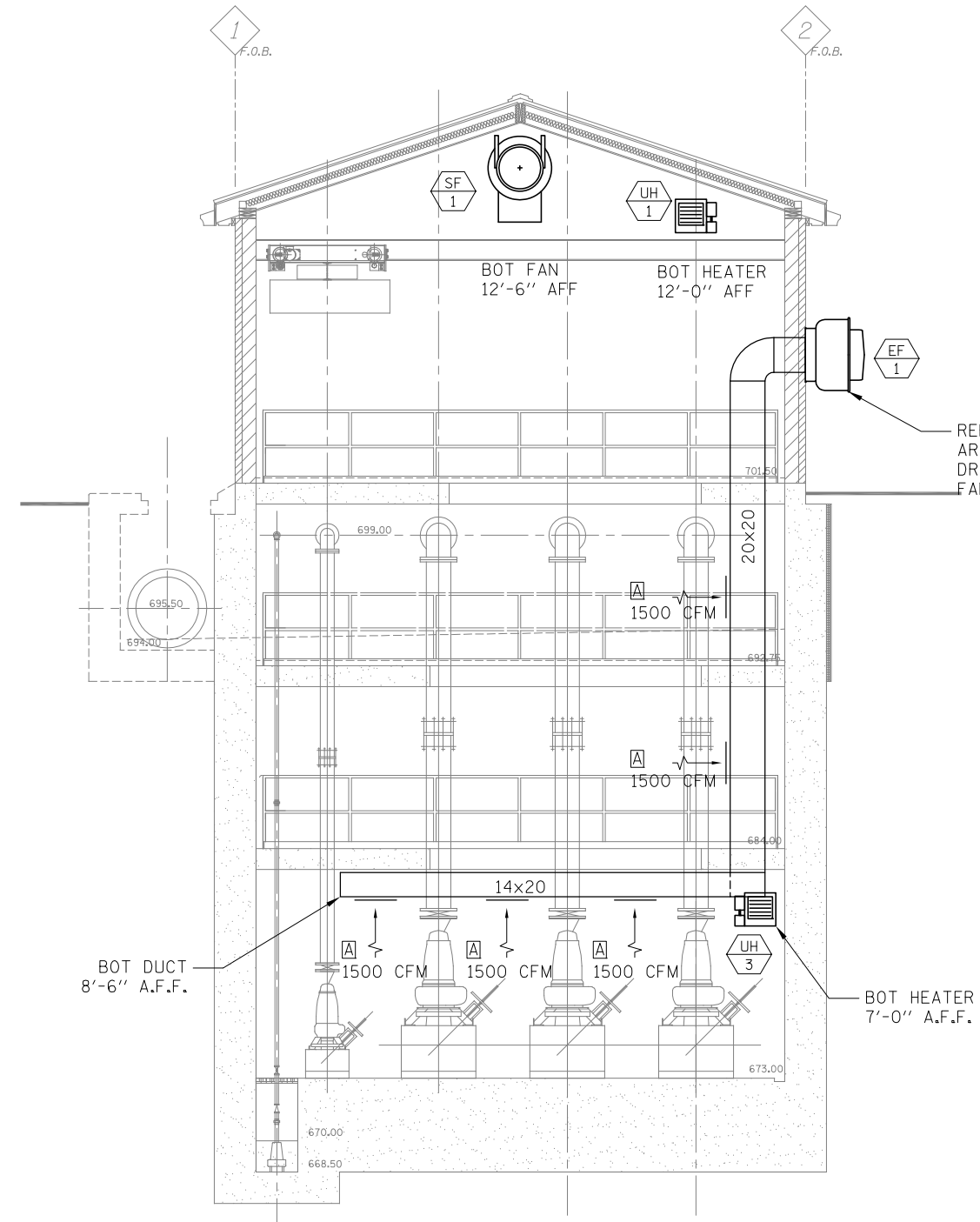
DESIGNED	WMC	REVISED	-
CHECKED	RS	REVISED	-
SCALE	DRAWN	REVISED	-
DATE	03/22/2012	CHECKED	RS
		REVISED	-

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

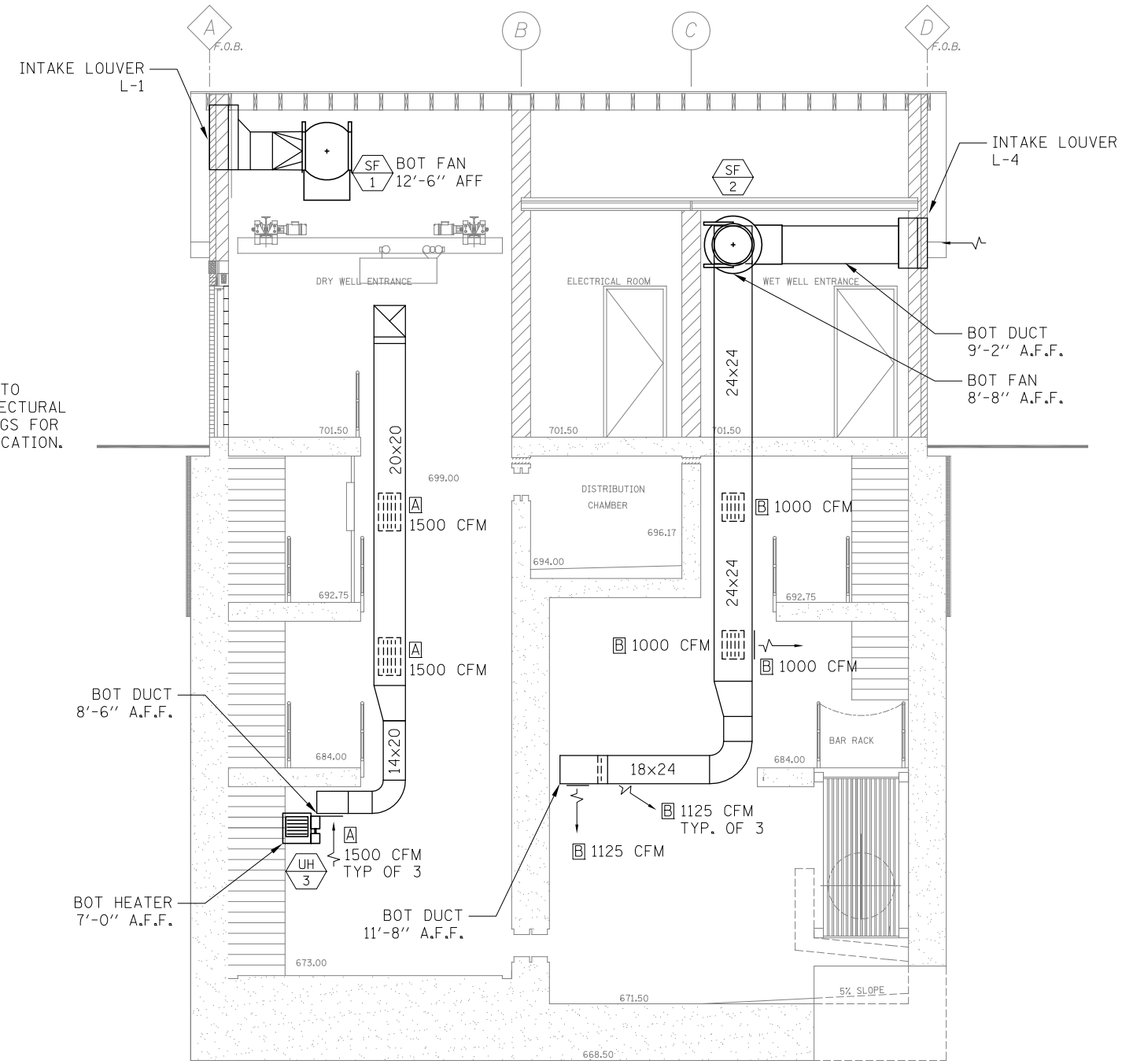
HEATING AND VENTILATION PLANS
PUMP STATION 47

SHEET NO. HV2 OF 5 SHEETS

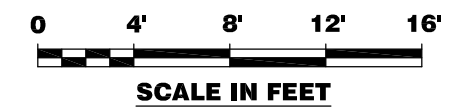
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035-I	DUPAGE	181	120
CONTRACT NO. 60P41			ILLINOIS FED. AID PROJECT	



1 PUMP STATION SECTION
SCALE: 1/4" = 1'-0"



2 PUMP STATION SECTION
SCALE: 1/4" = 1'-0"



McDonough Associates Inc.
Engineers/Architects
130 East Randolph Street, Suite 1000
Chicago, Illinois 60601 Phone (312) 946-8600

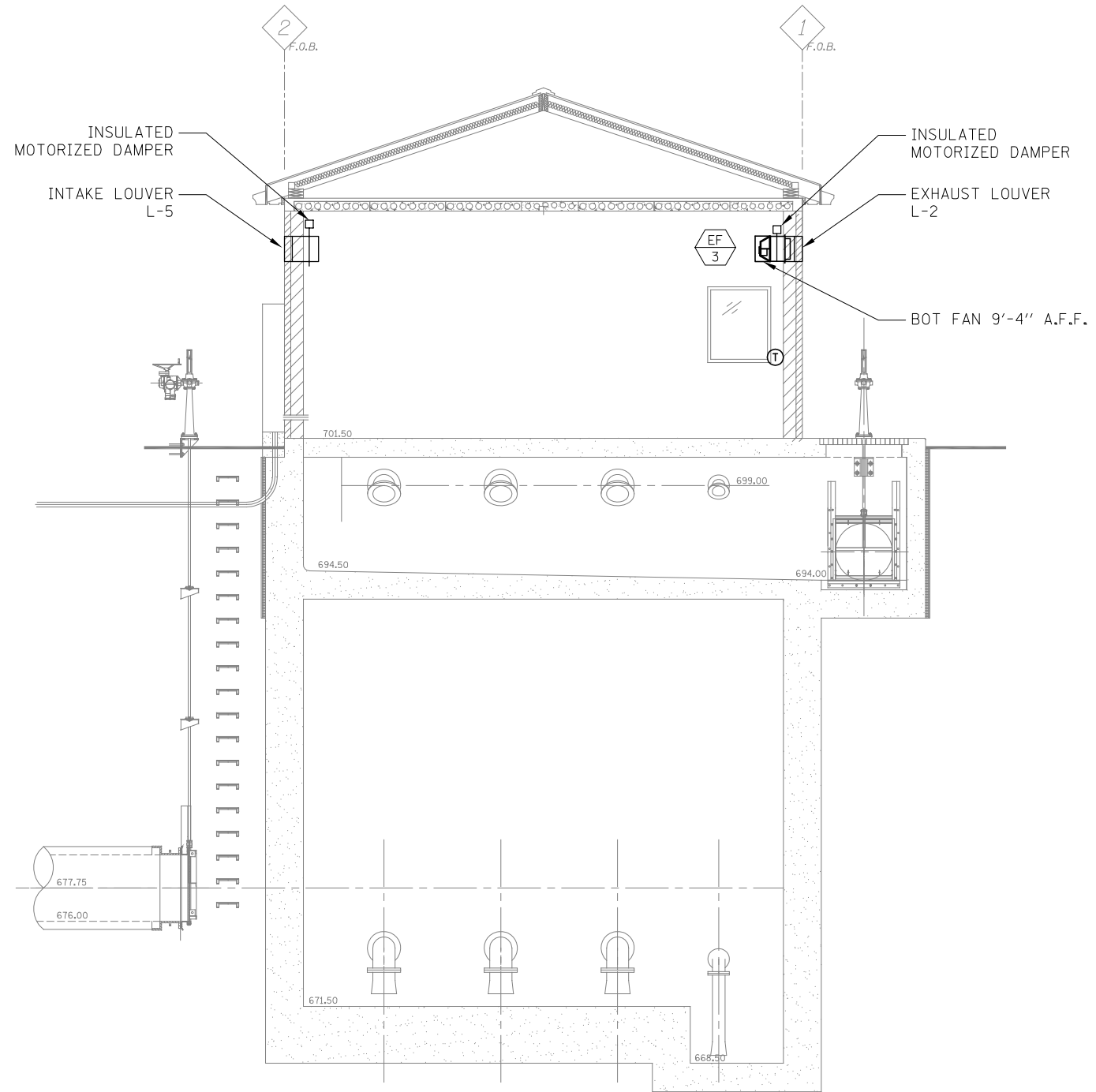
DESIGNED	WMC	REVISED	-
CHECKED	RS	REVISED	-
SCALE	WMC	REVISED	-
DATE	03/22/2012	REVISED	-

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

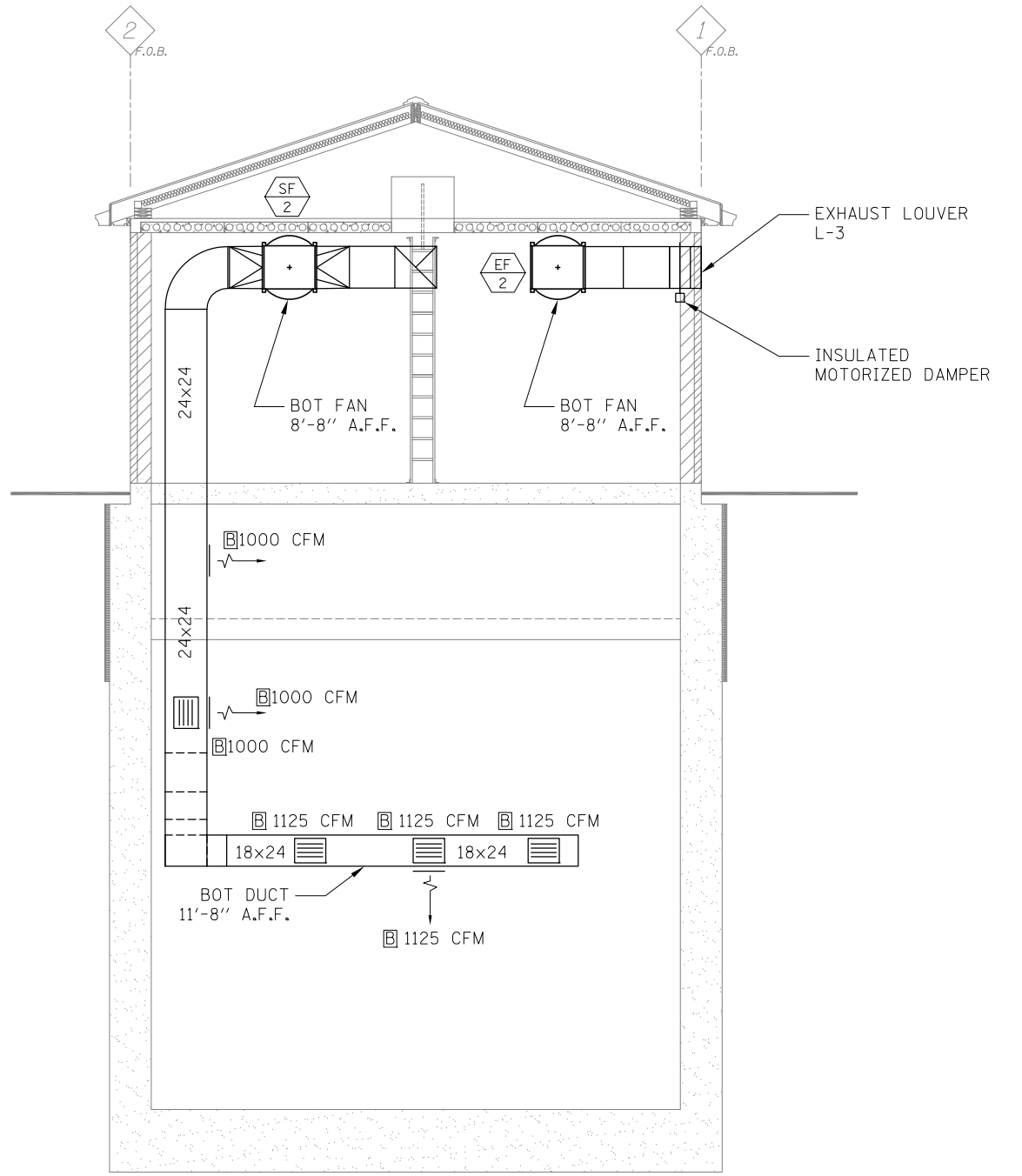
HEATING AND VENTILATION PLANS
PUMP STATION 47
SHEET NO. HV3 OF 5 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035-I	DUPAGE	181	121
CONTRACT NO. 60P41			ILLINOIS FED. AID PROJECT	

HV3



1 PUMP STATION SECTION
SCALE: 1/4" = 1'-0"



2 PUMP STATION SECTION
SCALE: 1/4" = 1'-0"



McDonough Associates Inc.
Engineers/Architects
130 East Randolph Street, Suite 1000
Chicago, Illinois 60601 Phone (312) 546-8600

DESIGNED	WMC	REVISED	-
CHECKED	RS	REVISED	-
DRAWN	WMC	REVISED	-
CHECKED	RS	REVISED	-
DATE	03/22/2012		

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

HEATING AND VENTILATION PLANS
PUMP STATION 47

SHEET NO. HV4 OF 5 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035-I	DUPAGE	181	122
CONTRACT NO. 60P41			ILLINOIS FED. AID PROJECT	

HV4

EXHAUST/SUPPLY FAN SCHEDULE

TAG	LOCATION	CFM	STATIC PRESS. IN. W.C.	FAN DATA			MOTOR DATA			MANUFACTURER AND MODEL	WEIGHT (LBS.)	REMARKS
				FAN TYPE	RPM	DRIVE	HP	VOLT	PHASE			
SF-1	DRY WELL	7500	0.375	INLINE	1011	BELT	3	460	3	COOK 24CVB OR APPROVED EQUAL	400	①
SF-2	WET WELL	7500	0.5	INLINE	1011	BELT	3	460	3	COOK 24CVB OR APPROVED EQUAL	400	①
EF-1	DRY WELL	7500	0.5	WALL	1011	BELT	2	460	3	GREENHECK CWB-240-20 OR APPROVED EQUAL	200	
EF-2	WET WELL	7500	0.375	INLINE	1011	BELT	3	460	3	COOK 24CVB OR APPROVED EQUAL	400	①
EF-3	ELECTRICAL ROOM	500	0.375	SIDEWALL	1725	DIRECT	1/4	115	1	COOK 12A17D OR APPROVED EQUAL	110	

① EXPLOSION PROOF

ELECTRIC UNIT HEATER SCHEDULE

TAG	CFM	TYPE	HEATING ELEMENT DATA					WEIGHT (LBS.)	MANUFACTURER AND MODEL	REMARKS
			MBH	KW	VOLT	PH	AMPS			
UH-1	700	VERTICAL	17.1	5	480	3	9.7	135	BERKO RUX500 OR APPROVED EQUAL	① ②
UH-2	350	VERTICAL	17.1	5	480	3	6	23	BERKO HUHAAS OR APPROVED EQUAL	②
UH-3	700	VERTICAL	17.1	5	480	3	9.7	135	BERKO RUX500 OR APPROVED EQUAL	① ②
UH-4	700	VERTICAL	17.1	5	480	3	9.7	135	BERKO RUX500 OR APPROVED EQUAL	① ②

① EXPLOSION PROOF

② UNIT MOUNTED THERMOSTAT

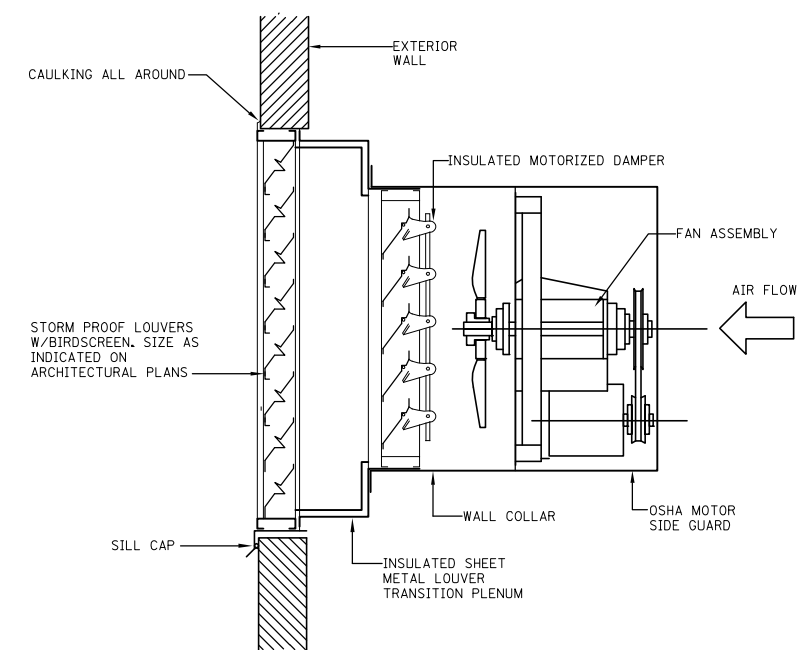
DIFFUSER-REGISTER-GRILLE SCHEDULE

TAG	SERVICE	TYPE	NECK SIZE	DAMPER	MATERIAL	FINISH	MANUFACTURER AND MODEL
A	EXHAUST	GRILLE	14x24	OBD	ALUMINUM	CLEAR ANODIZED	TITUS 355ZR OR APPROVED EQUAL
B	SUPPLY	REGISTER	14x18	OBD	STAINLESS STEEL	MILL	TITUS 300RL-SS OR APPROVED EQUAL

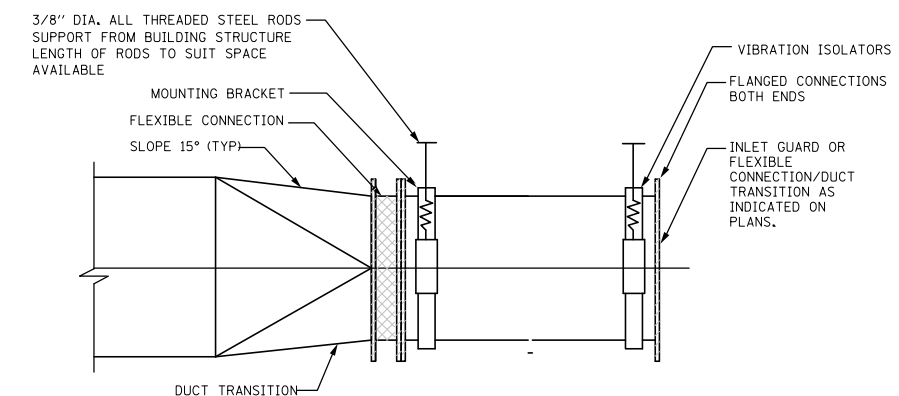
LOUVER SCHEDULE

TAG	SERVICE	DIMENSIONS		FREE AREA (SQ FT)	CFM	VELOCITY (FPM)	WATER PENETRATION VELOCITY (FPM)	MANUFACTURER AND MODEL
		WIDTH	HEIGHT					
L-1	INTAKE	15'-10 3/4"	2'-7 3/4"	9.9	7500	756	1250	RUSKIN MODEL ELF6350DMP OR APPROVED EQUAL (TRIANGULAR)
L-2	EXHAUST	16"	16"	1.1	500	454	1250	RUSKIN MODEL ELF6350DMP OR APPROVED EQUAL
L-3	EXHAUST	6'-0"	2'-0"	7.5	7500	1000	1250	RUSKIN MODEL ELF6350DMP OR APPROVED EQUAL
L-4	INTAKE	8'-4"	2'-5"	12.4	7500	604	1250	RUSKIN MODEL ELF6350DMP OR APPROVED EQUAL
L-5	INTAKE	16"	16"	1.1	500	454	1250	RUSKIN MODEL ELF6350DMP OR APPROVED EQUAL

NOTE: FINISH SHALL BE KYNAR 500 WITH CUSTOM COLOR AS SELECTED BY THE ARCHITECT.

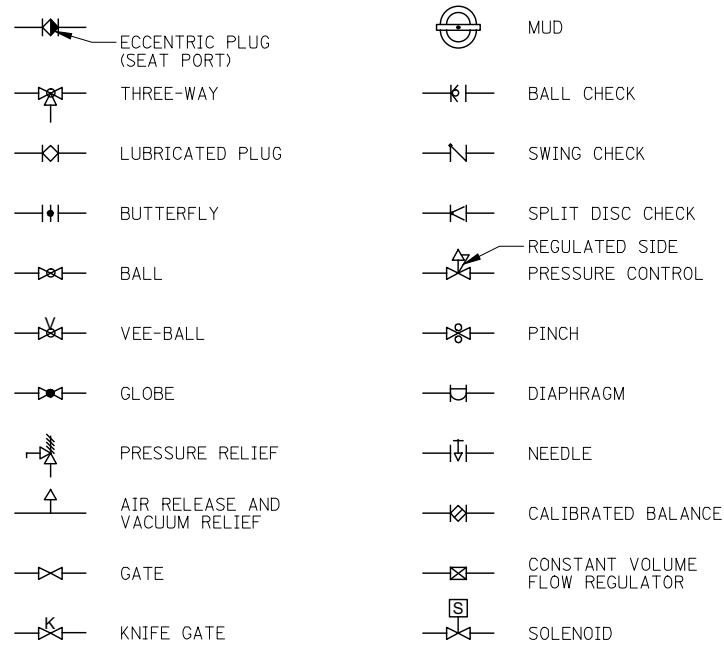


1 TYPICAL SIDEWALL PROPELLER FAN MOUNTING DETAIL
SCALE: NONE



2 TYPICAL INLINE FAN DETAIL
SCALE: NONE

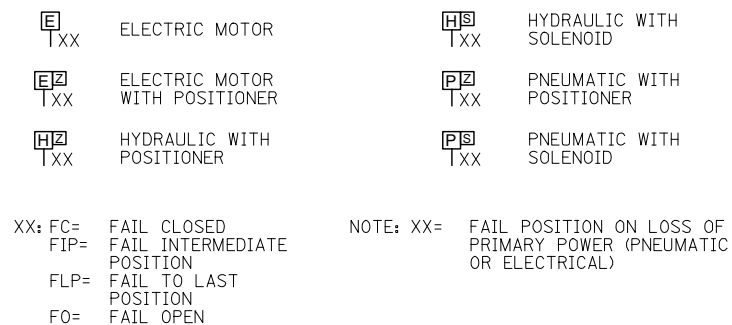
VALVE SYMBOLS



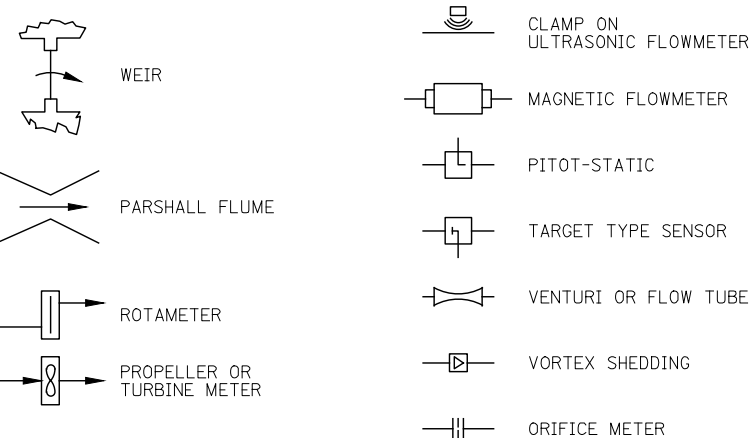
GATE SYMBOLS



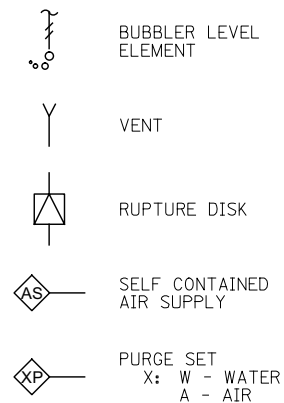
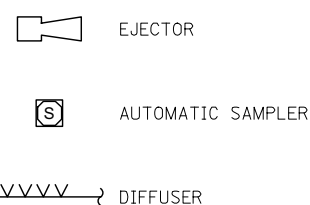
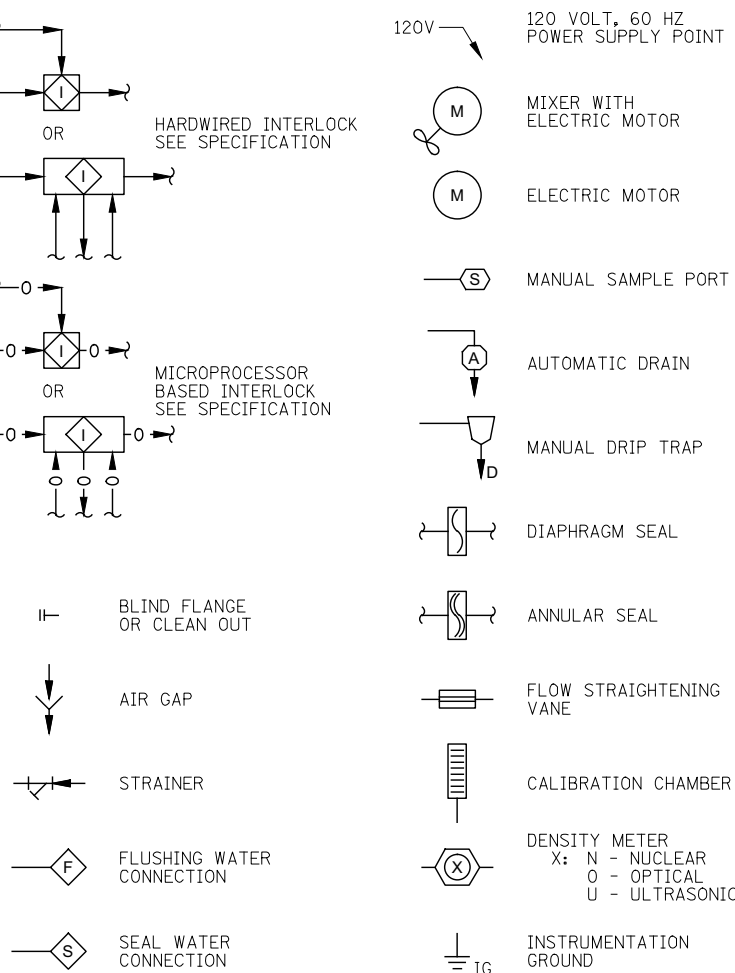
VALVE AND GATE POWER ACTUATOR SYMBOLS



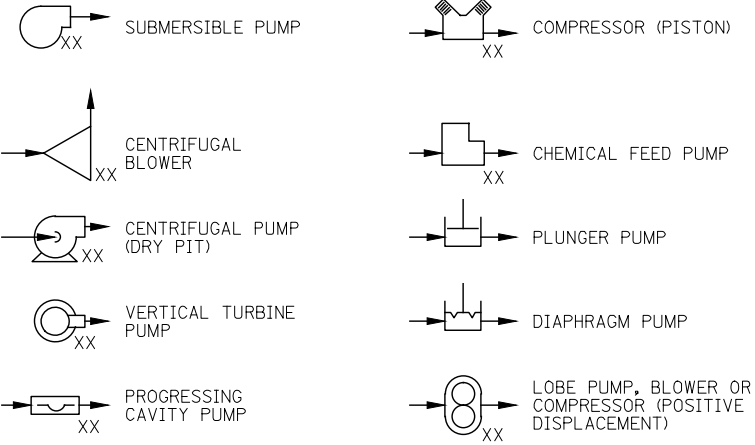
FLOW ELEMENT SYMBOLS



MISCELLANEOUS SYMBOLS

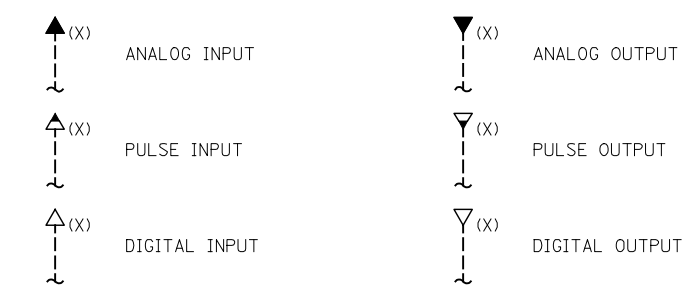


PUMP & COMPRESSOR SYMBOLS



NOTE: XX= AS= ADJUSTABLE SPEED
CS-1= CONSTANT SPEED (SINGLE SPEED)
CS-2= CONSTANT SPEED (TWO SPEED)

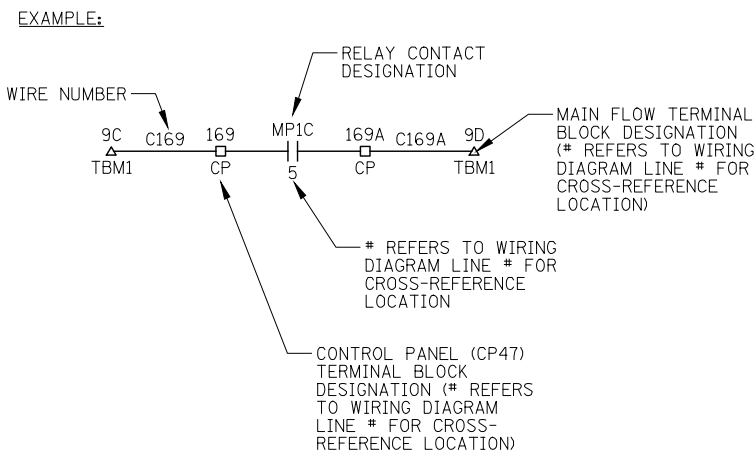
INPUTS & OUTPUTS TO PLC OR DISTRIBUTED CONTROL



NOTE: X= TOTAL NUMBER OF SIGNALS WHERE MORE THAN ONE SIGNAL IS REQUIRED. IF QUANTITY IS NOT SHOWN, THEN ONE SIGNAL IS REQUIRED.

WIRING DIAGRAM SYMBOLS & EXAMPLE

- TERMINAL IN CONTROL PANEL (CP47)
- ◇ TERMINAL IN SCADA PANEL (SP47)
- △ TERMINAL IN MOTOR STARTER OR OTHER MISCELLANEOUS EQUIPMENT AS IDENTIFIED BY TERMINAL BLOCK DESIGNATION



GENERAL NOTES:

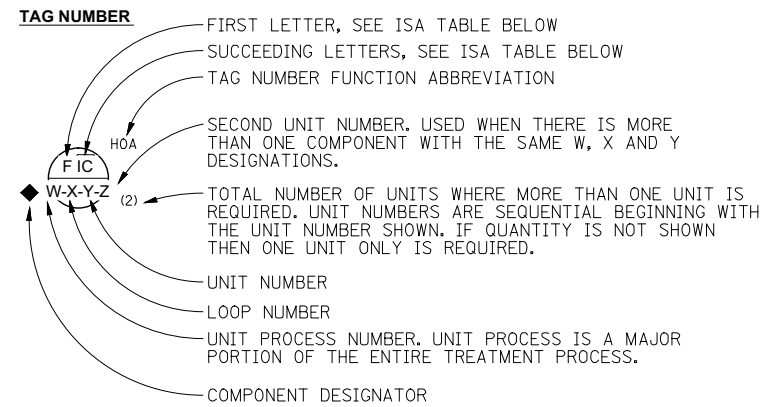
1. THIS IS A STANDARD LEGEND. NOT ALL OF THE INFORMATION SHOWN ON THIS LEGEND IS USED IN THESE CONTRACT DRAWINGS.

DESIGNED	DKC
CHECKED	KMY
SCALE	DRAWN CJM
DATE	03/22/2012
CHECKED	KMY

REVISED	-
REVISED	-
REVISED	-
REVISED	-

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035-I	DUPAGE	181	124
ILLINOIS FED. AID PROJECT			CONTRACT NO. 60P41	

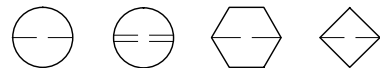
INSTRUMENT IDENTIFICATION



EXAMPLE SYMBOLS

	CONTROL PANEL MOUNTED ACCESSIBLE TO OPERATOR	FIELD MOUNTED	MCC/MOTOR STARTER MOUNTED NORMALLY ACCESSIBLE TO OPERATOR
DISCRETE INSTRUMENTS			
MICROPROCESSOR BASED SHARED INSTRUMENT			
COMPUTER FUNCTION		NONE	NONE

INACCESSIBLE OR BEHIND-THE-PANEL DEVICES OR FUNCTIONS MAY BE DEPICTED BY USING THE SAME SYMBOLS BUT WITH DASHED HORIZONTAL BARS, I.E.



INSTRUMENT SOCIETY OF AMERICA TABLE

LETTER	FIRST LETTER (S)		SUCCEEDING LETTERS		
	PROCESS OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS (+)		ALARM		
B	BURNER COMBUSTION		USERS CHOICE (+)	CLOSE, STOP, DECREASE	USERS CHOICE (+)
C	USERS CHOICE (+)			CONTROL	CLOSED
D	USERS CHOICE (+)	DIFFERENTIAL		OPEN, START, INCREASE	
E	VOLTAGE		PRIMARY ELEMENT		
F	FLOW RATE, FIRE				
G	USERS CHOICE (+)		GLASS		FAIL
H	HAND (MANUAL)				HIGH (OPEN)
I	CURRENT		INDICATE		INTERMEDIATE
J	POWER	SCAN			
K	TIME OR SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT (PILOT)		LOW (CLOSED)
M	MOTOR, MOISTURE	MOMENTARY			MIDDLE
N	USERS CHOICE (+)		USERS CHOICE (+)	USERS CHOICE (+)	ON
O	USERS CHOICE (+)		ORIFICE		OPENED
P	PRESSURE OR VACUUM		POINT (TEST CONNECTION)		
Q	QUANTITY	INTEGRATE			
R	RADIOACTIVITY		RECORD OR PRINT		
S	SPEED OR FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE (+)		MULTIFUNCTION (+)	MULTIFUNCTION (+)	MULTIFUNCTION (+)
V	VIBRATION			VALVE	
W	WEIGHT OR FORCE		WELL		
X	UNCLASSIFIED (+)	X AXIS	UNCLASSIFIED (+)	UNCLASSIFIED (+)	UNCLASSIFIED (+)
Y	EVENT, STATE, OR PRESSURE	Y AXIS		RELAY OR COMPUTE (+)	
Z	POSITION, DIMENSION	Z AXIS		DRIVE, ACTUATE OR UNCLASSIFIED FINAL CONTROL ELEMENT	

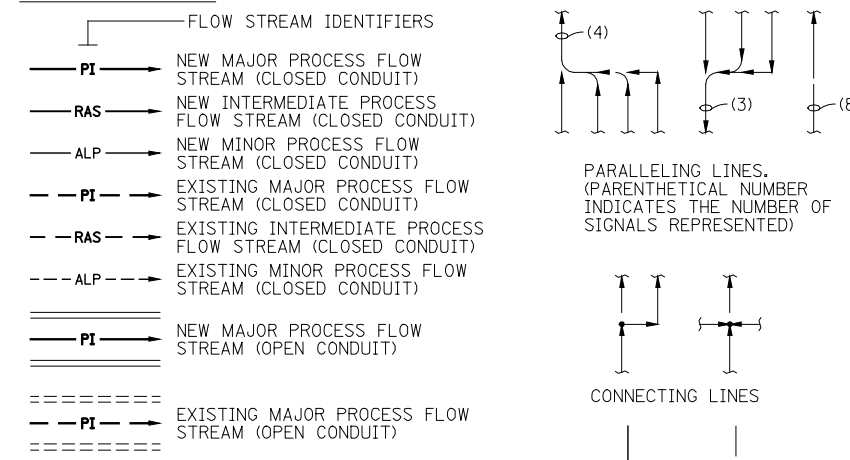
(+) WHEN USED, EXPLANATION IS SHOWN ADJACENT TO INSTRUMENT SYMBOL.

SPECIAL CASES:
ELAPSED TIME METER

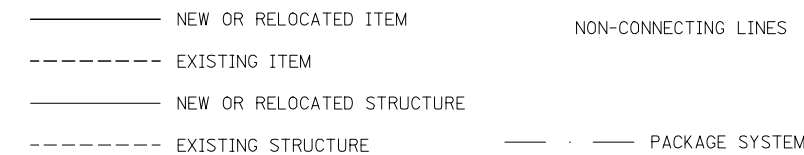
TAG NUMBER FUNCTION ABBREVIATIONS

ALT	ALTERNATE
C	CLOSE(D)
CM	COMPUTER-MANUAL
DIFF	DIFFERENCE OR DIFFERENTIAL
DO	DISSOLVED OXYGEN
F	FAIL
F(X)	CHARACTERIZED
FOR	FORWARD-STOP-REVERSE (MAINTAINED CONTACT)
FSR	FORWARD-STOP-REVERSE (MOMENTARY CONTACT)
HOA	HAND-OFF-AUTOMATIC (MAINTAINED CONTACT)
II	CURRENT-TO-CURRENT
IP	CURRENT-TO-PNEUMATIC
LL	LEAD-LAG (MAINTAINED CONTACT)
LOR	LOCAL-OFF-REMOTE (MAINTAINED CONTACT)
LOS	LOCKOUT STOP (LOCKABLE IN "STOP" POSITION, MOMENTARY CONTACT)
LR	LOCAL-REMOTE (MAINTAINED CONTACT)
MA	MANUAL-AUTOMATIC (MAINTAINED CONTACT)
MOA	MANUAL-OFF-AUTOMATIC (MAINTAINED CONTACT)
O	OPEN
OA	OFF-AUTOMATIC
OAC	OPEN-AUTOMATIC-CLOSE (MAINTAINED CONTACT)
OC	OPEN-CLOSE(D) (MAINTAINED CONTACT)
OSC	OPEN-STOP-CLOSE (MOMENTARY CONTACT)
OO	ON-OFF (MAINTAINED CONTACT)
OOA	ON-OFF-AUTOMATIC (MAINTAINED CONTACT)
OOR	ON-OFF-REMOTE (MAINTAINED CONTACT)
R	RUN
S	STOP
SP	SPEED POT
SQRT	SQUARE ROOT
SS	START-STOP (MOMENTARY CONTACT)
SSA	START-STOP-AUTOMATIC (MOMENTARY CONTACT)
SSL	START-STOP-LOCK (LOCKABLE IN "STOP" POSITION, MOMENTARY CONTACT)
SUM	SUMMATION
VIB	VIBRATION
X	MULTIPLY

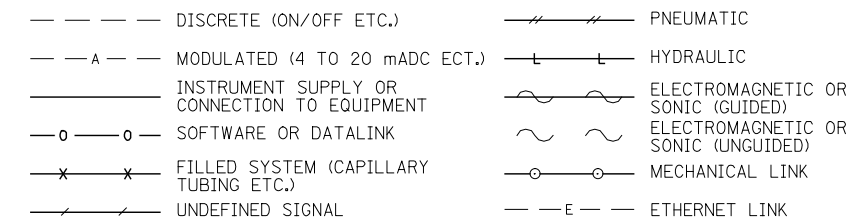
PROCESS FLOW



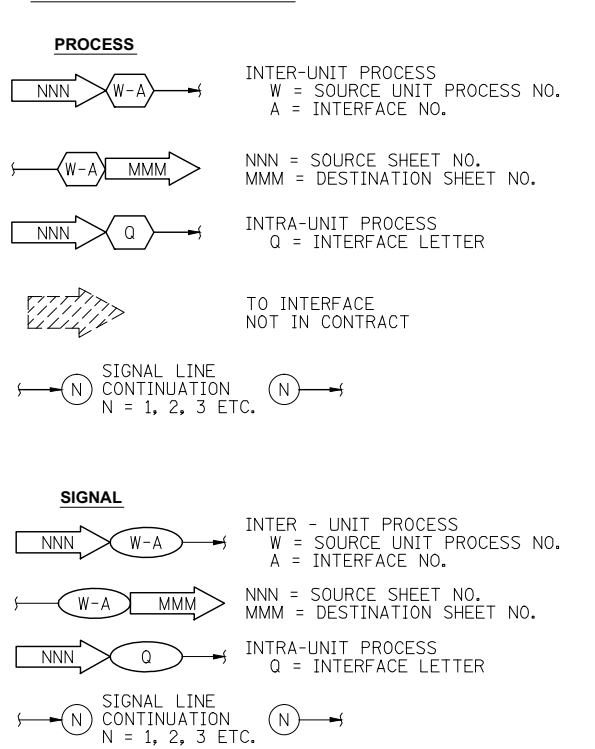
STRUCTURES AND EQUIPMENT



SIGNALS

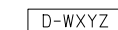


INTERFACE SYMBOLS



EQUIPMENT AND SELF ACTUATED VALVE IDENTIFICATION

TAG NUMBER



**

D: INSTRUMENTATION TAG, EQUIPMENT OR SELF CONTAINED VALVE ABBREVIATION

W: UNIT PROCESS NUMBER

X: LOOP NUMBER

Y: UNIT NUMBER

** COMPONENT DESIGNATOR

EQUIPMENT ABBREVIATIONS

E	EJECTOR
G	GATE
M	MECHANICAL EQUIPMENT
P	PUMP
T	TANK

SELF CONTAINED VALVE ABBREVIATIONS

ARV	AIR RELEASE VALVE
AVRV	AIR AND VACUUM RELEASE VALVE
LCV	LEVEL CONTROL VALVE
PCV	PRESSURE CONTROL VALVE
PSV	PRESSURE SAFETY (RELIEF) VALVE
TCV	TEMPERATURE CONTROL VALVE

COMPONENT DESIGNATORS

- CRITICAL ALARM
- ◆ PROVIDE IN ACCORDANCE WITH SECTION 16900
- ◆◆ EXISTING COMPONENT TO BE RELOCATED IN ACCORDANCE WITH SECTION 16900
- ◆◆◆ OWNER FURNISHED COMPONENT TO BE INSTALLED IN ACCORDANCE WITH SECTION 16900
- * OWNER FURNISHED COMPONENT TO BE INSTALLED IN ACCORDANCE WITH DIVISION 11 AND DIVISION 15
- ** PROVIDE AS PART OF A MANUFACTURER'S OR VENDOR'S PACKAGED SYSTEM IN ACCORDANCE WITH DIVISION 11, DIVISION 13 AND DIVISION 15
- *** EXISTING COMPONENT TO BE RELOCATED IN ACCORDANCE WITH DIVISION 11 AND DIVISION 15

PROVIDE COMPONENT WITHOUT A DESIGNATOR IN ACCORDANCE WITH DIVISION 11, DIVISION 13 AND DIVISION 15

POWER OPERATED VALVE IDENTIFICATION

SAME AS INSTRUMENT IDENTIFICATION.

ELECTRICAL PANEL/ CONTROL STATION IDENTIFICATION

TAG NUMBER: (LCP-P) ◆
LCP PANEL DESIGNATION
P PANEL NUMBER
◆ COMPONENT DESIGNATOR

GENERAL NOTES:

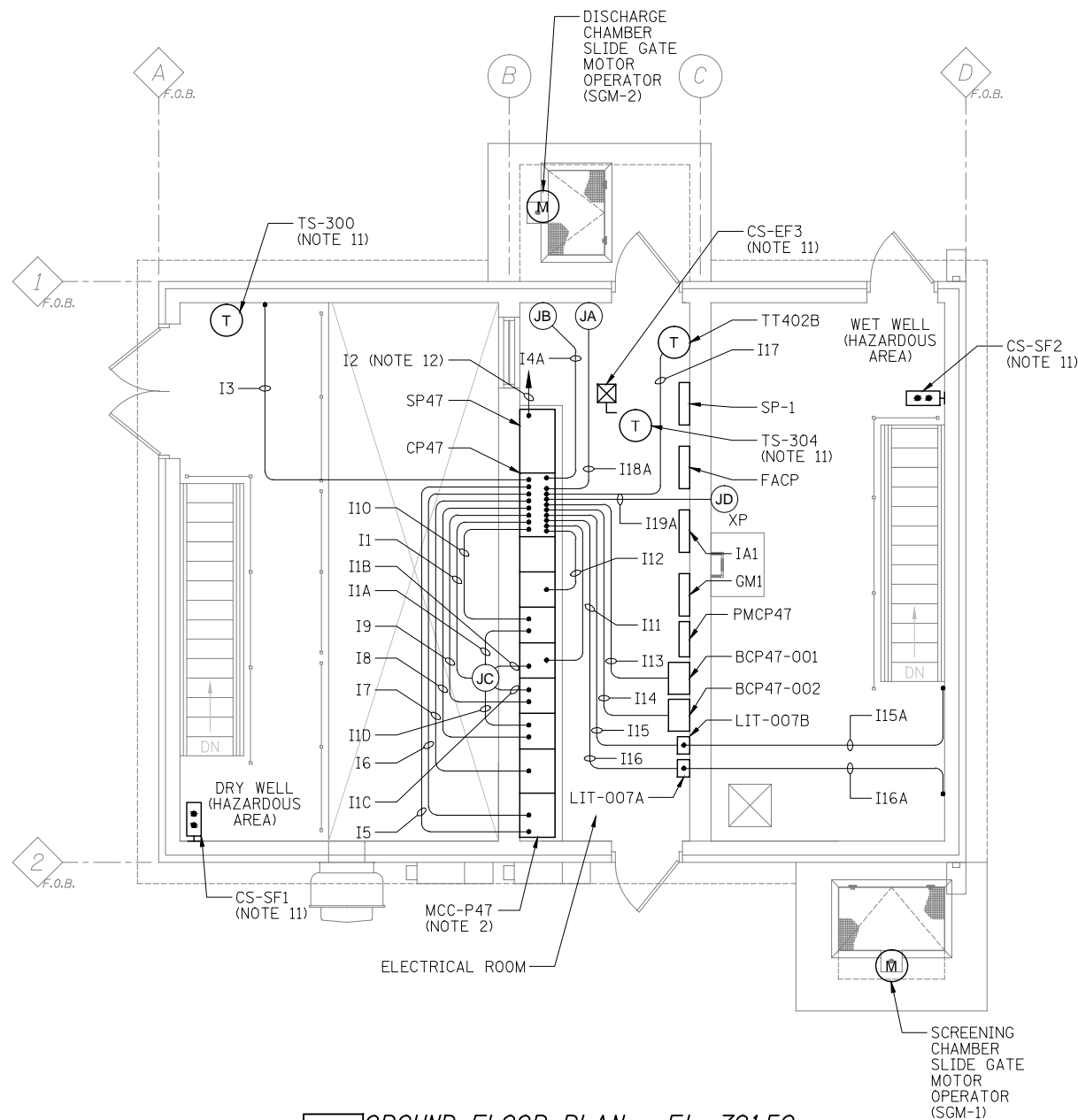
1. THIS IS A STANDARD LEGEND. NOT ALL OF THE INFORMATION SHOWN ON THIS LEGEND IS USED IN THESE CONTRACT DRAWINGS.
2. CROSS-HATCHED PORTIONS OF P&ID'S

INDICATE FUTURE OR CONCURRENT WORK WHICH IS NOT A PART OF THIS CONTRACT.
3. THERE IS NO INTENT TO SHOW ALL EXISTING FACILITIES ON THE P&ID'S.

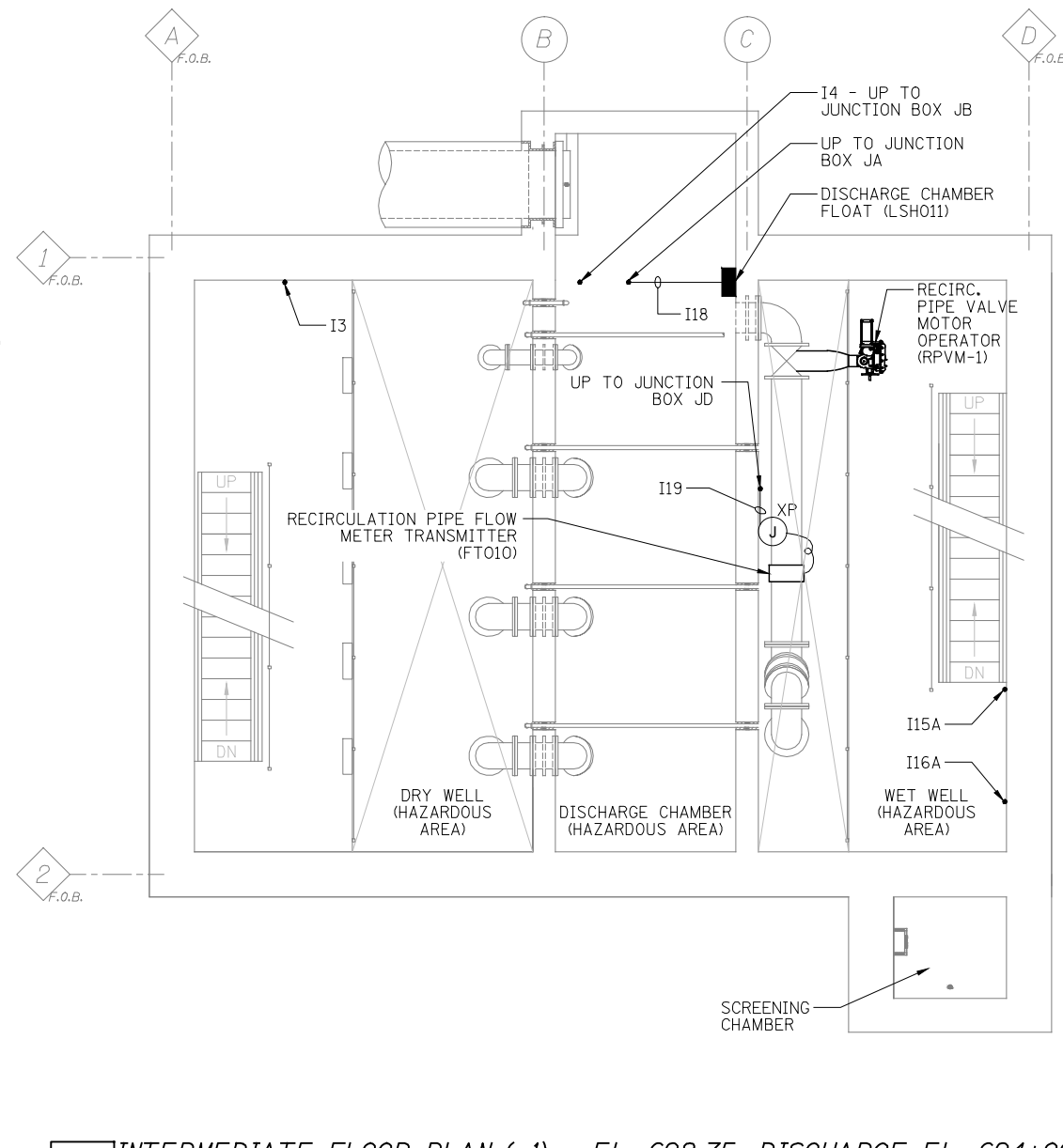
GI-2

NOTES:

- SEE SHEETS GI-1 AND GI-2 FOR INSTRUMENTATION SYMBOL LIST, ABBREVIATIONS, AND GENERAL NOTES.
- REFER TO SHEETS E3 AND E8 FOR DETAILS REGARDING MCC-P47.
- PROVIDE EXPLOSION-PROOF SEAL-OFF FITTINGS ON ALL CONDUIT EXITING CLASSIFIED OR RATED LOCATIONS. FITTINGS SHALL BE INSTALLED IN THE CLASSIFIED OR RATED LOCATION.
- ALL EQUIPMENT INSTALLED IN DRY WELL, WET WELL, AND DISCHARGE CHAMBER SHALL BE RATED FOR CLASS 1, DIVISION 2 EXPLOSION-PROOF ENVIRONMENT.
- INTRINSICALLY SAFE WIRING SHALL BE SEGREGATED FROM ALL OTHER TYPES OF WIRING. INTRINSICALLY SAFE WIRING SHALL BE INSTALLED IN A CONDUIT ONLY WITH OTHER INTRINSICALLY SAFE CIRCUITS IN PANELS AND EQUIPMENT. INTRINSICALLY SAFE CIRCUIT WIRING SHALL HAVE A MINIMUM OF 3 INCHES OF CLEARANCE, OR A GROUNDED METAL OR INSULATING PARTITION, BETWEEN THE INTRINSICALLY SAFE AND OTHER TYPES OF WIRING. SEE NEC ARTICLE 504.
- SHIELDED AND UNSHIELDED CONDUCTORS SHALL BE RUN IN CONDUIT. SHIELDED CONDUCTORS SHALL NOT BE COMBINED WITH UNSHIELDED CONDUCTORS IN ANY CONDUIT. NEITHER SHIELDED NOR UNSHIELDED CONDUCTORS SHALL BE INCLUDED IN THE SAME CONDUIT AS POWER WIRING.
- SHIELDED AND UNSHIELDED CONDUCTORS SHALL HAVE A MINIMUM OF 6" SEPARATION BETWEEN CONDUIT ON PARALLEL RUNS.
- SHIELDED AND UNSHIELDED CONDUCTORS SHALL BE SEPARATED BY STEEL BARRIERS IN ALL COMBINED SIGNAL JUNCTION BOXES AND INSTRUMENT TERMINATION CABINETS.
- CONDUCTORS SHALL NOT BE SPLICED EXCEPT AT TERMINALS OR AS DESIGNATED BY THE ENGINEER.
- THE CONDUIT PLANS ARE DIAGRAMMATIC IN NATURE, AND DO NOT SHOW A COMPLETE CONDUIT SYSTEM. PROVIDE PULL BOXES AND OTHER CONDUIT SYSTEM COMPONENTS AS REQUIRED FOR INSTALLATION AND TO MEET NEC.
- REFER TO SHEET E5 FOR ADDITIONAL DETAILS.
- (4) PAIR TELEPHONE CABLE SHALL BE CONNECTED FROM TELEPHONE MODEM IN SCADA PANEL TO TELEPHONE SERVICE.



1 GROUND FLOOR PLAN - EL: 701.50
SCALE: 1/4" = 1'-0"



2 INTERMEDIATE FLOOR PLAN (-1) - EL: 692.75, DISCHARGE EL: 694+00 HP
SCALE: 1/4" = 1'-0"



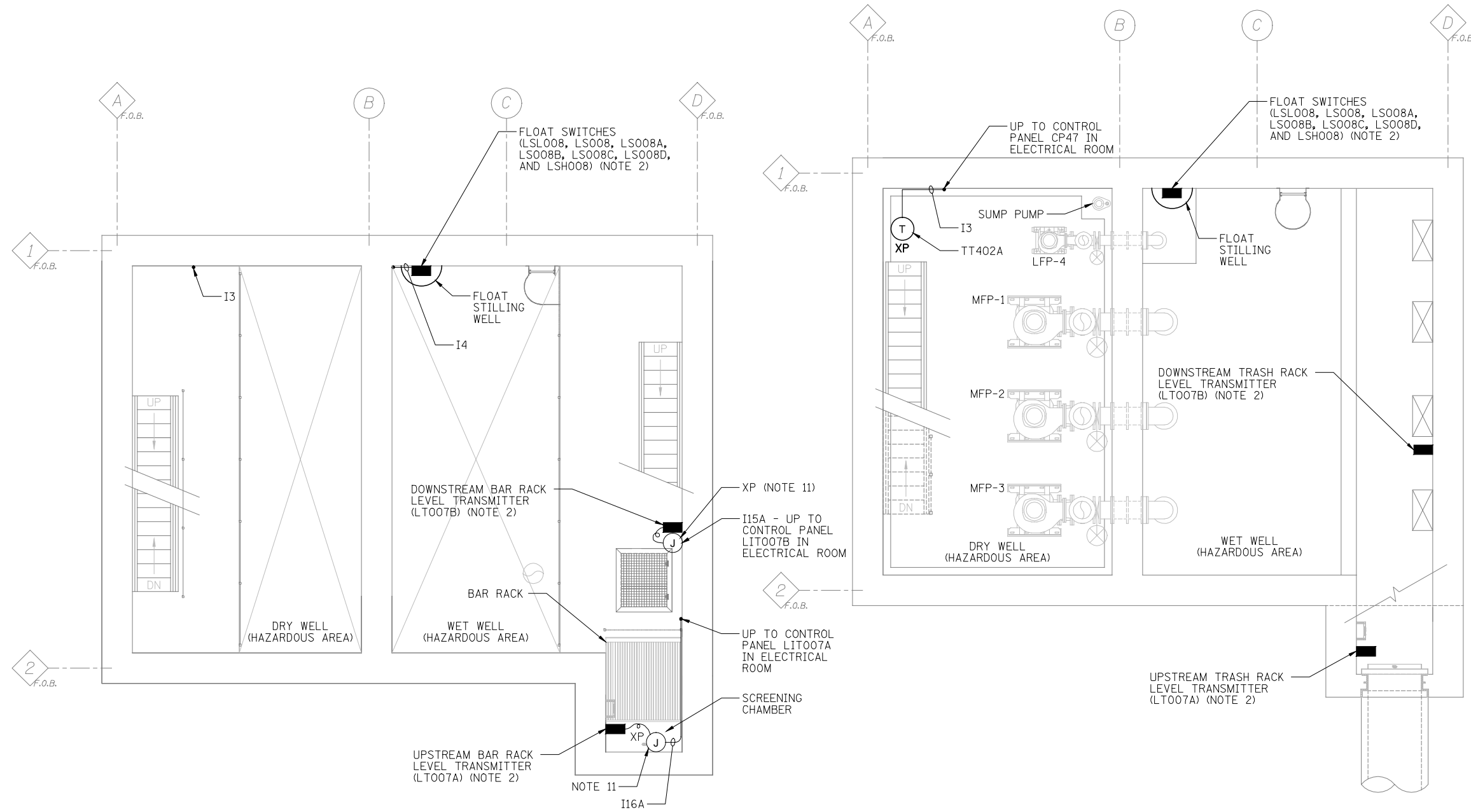
IP-1

DESIGNED	DKC	REVISED	- 4-19-2012
CHECKED	KMY	REVISED	-
SCALE	DRAWN	REVISED	-
DATE	03/22/2012	REVISED	-
CHECKED	KMY		

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035-I	DUPAGE	181	126
			CONTRACT NO. 60P41	
ILLINOIS FED. AID PROJECT				

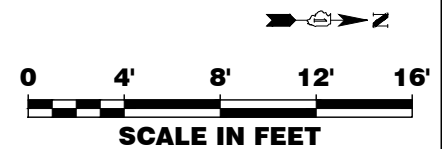
NOTES:

1. SEE SHEETS GI-1 AND GI-2 FOR INSTRUMENTATION SYMBOL LIST, ABBREVIATIONS, AND GENERAL NOTES.
2. REFER TO MECHANICAL DRAWING M3 FOR ADDITIONAL DETAILS.
3. PROVIDE EXPLOSION-PROOF SEAL-OFF FITTINGS ON ALL CONDUIT EXITING CLASSIFIED OR RATED LOCATIONS. FITTINGS SHALL BE INSTALLED IN THE CLASSIFIED OR RATED LOCATION.
4. ALL EQUIPMENT INSTALLED IN DRY WELL, WET WELL, AND DISCHARGE CHAMBER SHALL BE RATED FOR CLASS 1, DIVISION 2 EXPLOSION-PROOF ENVIRONMENT.
5. INTRINSICALLY SAFE WIRING SHALL BE SEGREGATED FROM ALL OTHER TYPES OF WIRING. INTRINSICALLY SAFE WIRING SHALL BE INSTALLED IN A CONDUIT ONLY WITH OTHER INTRINSICALLY SAFE CIRCUITS IN PANELS AND EQUIPMENT. INTRINSICALLY SAFE CIRCUIT WIRING SHALL HAVE A MINIMUM OF 3 INCHES OF CLEARANCE, OR A GROUNDED METAL OR INSULATING PARTITION, BETWEEN THE INTRINSICALLY SAFE AND OTHER TYPES OF WIRING. SEE NEC ARTICLE 504.
6. SHIELDED AND UNSHIELDED CONDUCTORS SHALL BE RUN IN CONDUIT. SHIELDED CONDUCTORS SHALL NOT BE COMBINED WITH UNSHIELDED CONDUCTORS IN ANY CONDUIT. NEITHER SHIELDED NOR UNSHIELDED CONDUCTORS SHALL BE INCLUDED IN THE SAME CONDUIT AS POWER WIRING.
7. SHIELDED AND UNSHIELDED CONDUCTORS SHALL HAVE A MINIMUM OF 6" SEPARATION BETWEEN CONDUIT ON PARALLEL RUNS.
8. SHIELDED AND UNSHIELDED CONDUCTORS SHALL BE SEPARATED BY STEEL BARRIERS IN ALL COMBINED SIGNAL JUNCTION BOXES AND INSTRUMENT TERMINATION CABINETS.
9. CONDUCTORS SHALL NOT BE SPLICED EXCEPT AT TERMINALS OR AS DESIGNATED BY THE ENGINEER.
10. THE CONDUIT PLANS ARE DIAGRAMMATIC IN NATURE, AND DO NOT SHOW A COMPLETE CONDUIT SYSTEM. PROVIDE PULL BOXES AND OTHER CONDUIT SYSTEM COMPONENTS AS REQUIRED FOR INSTALLATION AND TO MEET NEC.
11. JUNCTION BOX TO BE MOUNTED AT ELEVATION 689.00 ABOVE TRANSDUCER PIPE HOUSING.



1 INTERMEDIATE FLOOR PLAN (-2) - EL: 684.00
SCALE: 1/4" = 1'-0"

2 WELL LEVEL FLOOR PLAN (-3) - DRY EL: 673.00, WET EL: 671.50
SCALE: 1/4" = 1'-0"



IP-2

McDonough Associates Inc.
Engineers/Architects
130 East Randolph Street - Suite 1000
Chicago, Illinois 60601 Phone: (312) 946-6000

DESIGNED	DKC	REVISED	- 4-19-2012
CHECKED	KMY	REVISED	-
SCALE	DRAWN	REVISED	-
DATE	03/22/2012	CHECKED	KMY
		REVISED	-

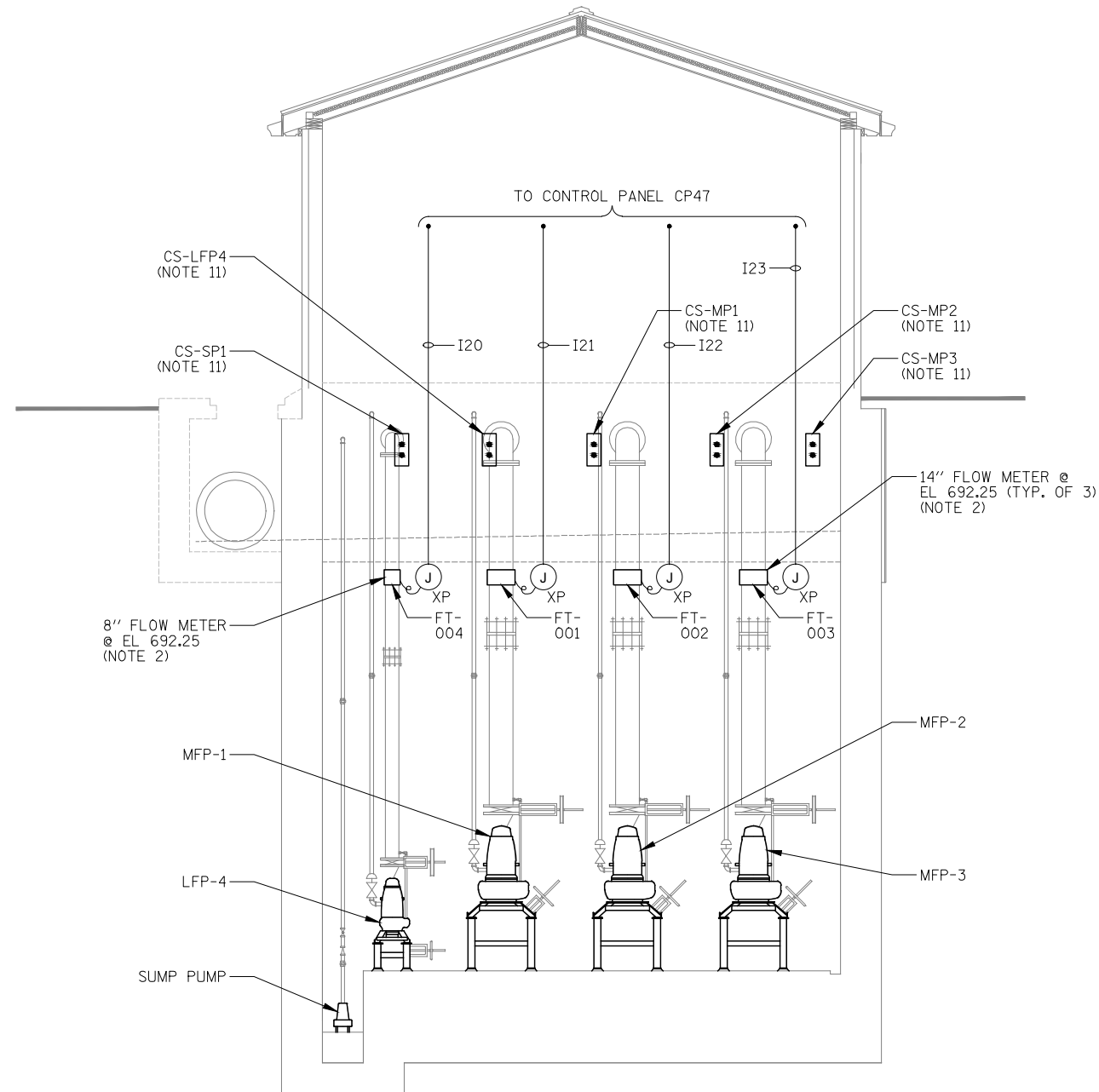
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PUMP STATION INSTRUMENTATION CONDUIT PLANS
PUMP STATION 47

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035-I	DUPAGE	181	127
			CONTRACT NO. 60P41	
ILLINOIS FED. AID PROJECT				

NOTES:

1. SEE SHEETS GI-1 AND GI-2 FOR INSTRUMENTATION SYMBOL LIST, ABBREVIATIONS, AND GENERAL NOTES.
2. REFER TO MECHANICAL DRAWING M4 FOR ADDITIONAL DETAILS.
3. PROVIDE EXPLOSION-PROOF SEAL-OFF FITTINGS ON ALL CONDUIT EXITING CLASSIFIED OR RATED LOCATIONS. FITTINGS SHALL BE INSTALLED IN THE CLASSIFIED OR RATED LOCATION.
4. ALL EQUIPMENT INSTALLED IN DRY WELL, WET WELL, AND DISCHARGE CHAMBER SHALL BE RATED FOR CLASS 1, DIVISION 2 EXPLOSION-PROOF ENVIRONMENT.
5. INTRINSICALLY SAFE WIRING SHALL BE SEGREGATED FROM ALL OTHER TYPES OF WIRING. INTRINSICALLY SAFE WIRING SHALL BE INSTALLED IN A CONDUIT ONLY WITH OTHER INTRINSICALLY SAFE CIRCUITS IN PANELS AND EQUIPMENT. INTRINSICALLY SAFE CIRCUIT WIRING SHALL HAVE A MINIMUM OF 3 INCHES OF CLEARANCE, OR A GROUNDED METAL OR INSULATING PARTITION, BETWEEN THE INTRINSICALLY SAFE AND OTHER TYPES OF WIRING. SEE NEC ARTICLE 504.
6. SHIELDED AND UNSHIELDED CONDUCTORS SHALL BE RUN IN CONDUIT. SHIELDED CONDUCTORS SHALL NOT BE COMBINED WITH UNSHIELDED CONDUCTORS IN ANY CONDUIT. NEITHER SHIELDED NOR UNSHIELDED CONDUCTORS SHALL BE INCLUDED IN THE SAME CONDUIT AS POWER WIRING.
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8. SHIELDED AND UNSHIELDED CONDUCTORS SHALL BE SEPARATED BY STEEL BARRIERS IN ALL COMBINED SIGNAL JUNCTION BOXES AND INSTRUMENT TERMINATION CABINETS.
9. CONDUCTORS SHALL NOT BE SPLICED EXCEPT AT TERMINALS OR AS DESIGNATED BY THE ENGINEER.
10. THE CONDUIT PLANS ARE DIAGRAMMATIC IN NATURE, AND DO NOT SHOW A COMPLETE CONDUIT SYSTEM. PROVIDE PULL BOXES AND OTHER CONDUIT SYSTEM COMPONENTS AS REQUIRED FOR INSTALLATION AND TO MEET NEC.
11. REFER TO SHEET E6 FOR ADDITIONAL DETAILS.



1 DRY WELL SECTION
SCALE: 1/4" = 1'-0"



IP-3

DESIGNED	<i>DKC</i>	REVISED	-
CHECKED	<i>KMY</i>	REVISED	-
SCALE		DRAWN	<i>CJM</i>
DATE	<i>03/22/2012</i>	CHECKED	<i>KMY</i>
		REVISED	-

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035-I	DUPAGE	181	128
			CONTRACT NO. 60P41	
ILLINOIS FED. AID PROJECT				

NOTES:

- UNLESS NOTED OTHERWISE, ALL CONDUITS INSTALLED INDOORS SHALL BE RIGID GALVANIZED STEEL.

NUMBER	CONDUIT SIZE (IN.) (NOTE 1)	CONDUCTOR QUANTITY & SIZE	COND./CABLE INSULATION	FROM	TO
I1	1	QTY. 4 - (2) CONDUCTOR 16 AWG SHIELDED TWISTED PAIR CABLE	PVC	CONTROL PANEL CP47	JUNCTION BOX JC
I1A	3/4	QTY. 1 - (2) CONDUCTOR 16 AWG SHIELDED TWISTED PAIR CABLE	PVC	JUNCTION BOX JC	LOW FLOW PUMP STARTER (MCC-P47, SECTION 6A)
I1B	3/4	QTY. 1 - (2) CONDUCTOR 16 AWG SHIELDED TWISTED PAIR CABLE	PVC	JUNCTION BOX JC	MFP-3 STARTER (MCC-P47, SECTION 5A)
I1C	3/4	QTY. 1 - (2) CONDUCTOR 16 AWG SHIELDED TWISTED PAIR CABLE	PVC	JUNCTION BOX JC	MFP-2 STARTER (MCC-P47, SECTION 4A)
I1D	3/4	QTY. 1 - (2) CONDUCTOR 16 AWG SHIELDED TWISTED PAIR CABLE	PVC	JUNCTION BOX JC	MFP-1 STARTER (MCC-P47, SECTION 3A)
I2	3/4	QTY. 1 - (4) PAIR TELEPHONE CABLE	THWN	SCADA PANEL SP47	TELEPHONE SERVICE POINT
I3	3/4	QTY. 1 - (2) CONDUCTOR 16 AWG SHIELDED TWISTED PAIR CABLE	PVC	CONTROL PANEL CP47	THERMOSTAT TT 402A
I4	---	MANUFACTURER SUPPLIED CABLES	SEE SPECIFICATIONS	JUNCTION BOX JB	WET WELL FLOAT SWITCHES LSL-008, LS-008, LS-008A, LS-008B, LS-008C, LS-008D, LSH-008)
I4A	1	QTY. 18-#12 & QTY. 1-#12 GND.	THHN/THWN	CONTROL PANEL CP47	JUNCTION BOX JB
I5	3/4	QTY. 1 - CATEGORY 6 DATA CABLE	PVC	CONTROL PANEL CP47	CUSTOMER METERING DEVICE (MCC-P47, SECTION 1)
I6	1	QTY. 6-#12 & QTY. 1-#12 GND.	THWN	CONTROL PANEL CP47	SERVICE No. 1 BREAKER (MCC-P47, SECTION 1A)
		QTY. 6-#12 & QTY. 1-#12 GND.	THWN	CONTROL PANEL CP47	SERVICE No. 2 BREAKER (MCC-P47, SECTION 2A)
I7	1	QTY. 12-#12 & QTY. 1-#12 GND.	THWN	CONTROL PANEL CP47	ATS (MCC-P47, SECTION 2B)
I8	1-1/2	QTY. 42-#12 & QTY. 1-#12 GND.	THWN	CONTROL PANEL CP47	MFP-1 STARTER (MCC-P47, SECTION 3A)
		QTY. 10-#12 & QTY. 1-#12 GND.	THWN	CONTROL PANEL CP47	EF-1 STARTER (MCC-P47, SECTION 3B)
I9	2	QTY. 42-#12 & QTY. 1-#12 GND.	THWN	CONTROL PANEL CP47	MFP-2 STARTER (MCC-P47, SECTION 4A)
		QTY. 10-#12 & QTY. 1-#12 GND.	THWN	CONTROL PANEL CP47	EF-2 STARTER (MCC-P47, SECTION 4B)
		QTY. 10-#12 & QTY. 1-#12 GND.	THWN	CONTROL PANEL CP47	EF-3 STARTER (MCC-P47, SECTION 4C)
I10	1-1/2	QTY. 42-#12 & QTY. 1-#12 GND.	THWN	CONTROL PANEL CP47	LOW FLOW PUMP STARTER (MCC-P47, SECTION 6A)
		QTY. 10-#12 & QTY. 1-#12 GND.	THWN	CONTROL PANEL CP47	SF-2 STARTER (MCC-P47, SECTION 6B)
I11	1-1/2	QTY. 42-#12 & QTY. 1-#12 GND.	THWN	CONTROL PANEL CP47	MFP-3 STARTER (MCC-P47, SECTION 5A)
		QTY. 10-#12 & QTY. 1-#12 GND.	THWN	CONTROL PANEL CP47	SF-1 STARTER (MCC-P47, SECTION 5B)
I12	NOT USED				
I13	3/4	QTY. 1 - (2) CONDUCTOR 16 AWG SHIELDED TWISTED PAIR CABLE	PVC	CONTROL PANEL CP47	PRIMARY BUBBLER CONTROL PANEL BCP47-001
I14	3/4	QTY. 1 - (2) CONDUCTOR 16 AWG SHIELDED TWISTED PAIR CABLE	PVC	CONTROL PANEL CP47	SECONDARY BUBBLER CONTROL PANEL BCP47-002
I15	3/4	QTY. 1 - (2) CONDUCTOR 16 AWG SHIELDED TWISTED PAIR CABLE	PVC	CONTROL PANEL CP47	DOWNSTREAM BAR RACK CONTROL PANEL LIT-007B
I15A	1	MANUFACTURER SUPPLIED CABLE	SEE SPECIFICATIONS	DOWNSTREAM BAR RACK CONTROL PANEL LIT-007B	DOWNSTREAM BAR RACK TRANSMITTER LT-007B
I16	3/4	QTY. 1 - (2) CONDUCTOR 16 AWG SHIELDED TWISTED PAIR CABLE	PVC	CONTROL PANEL CP47	UPSTREAM BAR RACK CONTROL PANEL LIT-007A
I16A	1	MANUFACTURER SUPPLIED CABLE	SEE SPECIFICATIONS	UPSTREAM BAR RACK CONTROL PANEL LIT-007A	UPSTREAM BAR RACK TRANSMITTER LT-007A
I17	3/4	QTY. 1 - (2) CONDUCTOR 16 AWG SHIELDED TWISTED PAIR CABLE	PVC	CONTROL PANEL CP47	THERMOSTAT TT 402B
I18	---	MANUFACTURER SUPPLIED CABLE	SEE SPECIFICATIONS	JUNCTION BOX JA	DISCHARGE CHAMBER FLOAT SWITCH LSH-011
I18A	3/4	QTY. 4-#12 & QTY. 1-#12 GND.	THWN	CONTROL PANEL CP47	JUNCTION BOX JA
I19	3/4	MANUFACTURER SUPPLIED CABLE	SEE SPECIFICATIONS	JUNCTION BOX JD	RECIRCULATION PIPE FLOW METER TRANSMITTER FT-010
I19A	3/4	MANUFACTURER SUPPLIED CABLE	SEE SPECIFICATIONS	CONTROL PANEL CP47	JUNCTION BOX JD
I20	3/4	MANUFACTURER SUPPLIED CABLE	SEE SPECIFICATIONS	PUMP METER CONTROL PANEL (PMCP47)	LOW FLOW PUMP NO. 4 FLOW TRANSMITTER FT-004
I21	3/4	MANUFACTURER SUPPLIED CABLE	SEE SPECIFICATIONS	PUMP METER CONTROL PANEL (PMCP47)	MAIN FLOW PUMP NO. 1 FLOW TRANSMITTER FT-001
I22	3/4	MANUFACTURER SUPPLIED CABLE	SEE SPECIFICATIONS	PUMP METER CONTROL PANEL (PMCP47)	MAIN FLOW PUMP NO. 2 FLOW TRANSMITTER FT-002
I23	3/4	MANUFACTURER SUPPLIED CABLE	SEE SPECIFICATIONS	PUMP METER CONTROL PANEL (PMCP47)	MAIN FLOW PUMP NO. 3 FLOW TRANSMITTER FT-003

IP-4

McDonough Associates Inc. Engineers/Architects 130 East Randolph Street - Suite 1000 Chicago, Illinois 60601 Phone: (312) 946-6000	DESIGNED <i>DKC</i>	REVISED - <i>4-19-2012</i>	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	I & C CONDUIT AND WIRING SCHEDULE PUMP STATION 47	F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.		
	CHECKED <i>KMY</i>	REVISED -			338/IL 59	2011-035-I	DUPAGE	181	129		
	SCALE	DRAWN <i>CJM</i>			REVISED -	CONTRACT NO. 60P41					
	DATE <i>03/22/2012</i>	CHECKED <i>KMY</i>			REVISED -	SHEET NO. IP-4 OF 6 SHEETS					
					ILLINOIS FED. AID PROJECT						

CONTROL PANEL DIGITAL INPUTS (TBDI)			
TERM #	WIRE #	ORIGINATION	DESCRIPTION OF INPUTS
CP-165A	C165A	TBM1-10E	MFP-1 FAIL TO STOP
CP-165B	C165B	TBM1-10F	MFP-1 FAIL TO STOP
CP-166A	C166A	TBM2-10E	MFP-2 FAIL TO STOP
CP-166B	C166B	TBM2-10F	MFP-2 FAIL TO STOP
CP-167A	C167A	TBM3-10E	MFP-3 FAIL TO STOP
CP-167B	C167B	TBM3-10F	MFP-3 FAIL TO STOP
CP-400	C400	TBM1-7E	TIME DELAY FAIL 1
CP-400A	C400A	TBM1-7F	TIME DELAY FAIL 1
CP-401	C401	TBM2-7E	TIME DELAY FAIL 2
CP-401A	C401A	TBM2-7F	TIME DELAY FAIL 2
CP-402	C402	TBM3-7E	TIME DELAY FAIL 3
CP-402A	C402A	TBM3-7F	TIME DELAY FAIL 3
CP-403	C403	TBLF4-7E	TIME DELAY FAIL 4
CP-403A	C403A	TBLF4-7F	TIME DELAY FAIL 4
CP-404A	C404A	TBM1-12	MFP-1 FAIL
CP-404B	C404B	TBM1-12A	MFP-1 FAIL
CP-405A	C405A	TBM2-12	MFP-2 FAIL
CP-405B	C405B	TBM2-12A	MFP-2 FAIL
CP-406A	C406A	TBM3-12	MFP-3 FAIL
CP-406B	C406B	TBM3-12A	MFP-3 FAIL
CP-407A	C407A	TBLF4-13	LFP-4 FAIL
CP-407B	C407B	TBLF4-13A	LFP-4 FAIL
CP-501	C501	TBM1-11C	MFP-1 RUNNING
CP-501A	C501A	TBM1-11D	MFP-1 RUNNING
CP-502	C502	TBM1-13	MFP-1 OFF
CP-502A	C502A	TBM1-13A	MFP-1 OFF
CP-503	C503	TBM1-0	MFP-1 CIRCUIT BREAKER TRIPPED
CP-503A	C503A	TBM1-0A	MFP-1 CIRCUIT BREAKER TRIPPED
CP-504	C504	TBM1-32A	MFP-1 HIGH TEMP
CP-504A	C504A	TBM1-32B	MFP-1 HIGH TEMP
CP-505	C505	TBM1-29D	MFP-1 MOISTURE SENSED
CP-505A	C505A	TBM1-29E	MFP-1 MOISTURE SENSED
CP-506	C506	TBM1-14	MFP-1 RVSS FAULT
CP-506A	C506A	TBM1-14A	MFP-1 RVSS FAULT
CP-507	C507	TBM1-9A	MFP-1 IN MANUAL MODE
CP-507A	C507A	TBM1-9B	MFP-1 IN MANUAL MODE
CP-508	C508	TBM1-11A	MFP-1 IN AUTO MODE
CP-508A	C508A	TBM1-11B	MFP-1 IN AUTO MODE
CP-512	C512	TBM1-0H	MFP-1 OVERLOAD TRIP
CP-512A	C512A	TBM1-0I	MFP-1 OVERLOAD TRIP
CP-513	C513	TBM1-15	MFP-1 HIGH TEMP/MOIST PROTECTION IN BYPASS MODE
CP-513A	C513A	TBM1-15A	MFP-1 HIGH TEMP/MOIST PROTECTION IN BYPASS MODE
CP-517	C517	TBM2-11C	MFP-2 RUNNING
CP-517A	C517A	TBM2-11D	MFP-2 RUNNING
CP-518	C518	TBM2-13	MFP-2 OFF
CP-518A	C518A	TBM2-13A	MFP-2 OFF
CP-519	C519	TBM2-0	MFP-2 CIRCUIT BREAKER TRIPPED
CP-519A	C519A	TBM2-0A	MFP-2 CIRCUIT BREAKER TRIPPED
CP-520	C520	TBM2-32A	MFP-2 HIGH TEMP
CP-520A	C520A	TBM2-32B	MFP-2 HIGH TEMP

CONTROL PANEL DIGITAL INPUTS (TBDI)			
TERM #	WIRE #	ORIGINATION	DESCRIPTION OF INPUTS
CP-521	C521	TBM2-29D	MFP-2 MOISTURE SENSED
CP-521A	C521A	TBM2-29E	MFP-2 MOISTURE SENSED
CP-522	C522	TBM2-14C	MFP-2 RVSS FAULT
CP-522A	C522A	TBM2-14D	MFP-2 RVSS FAULT
CP-523	C523	TBM2-9A	MFP-2 IN MANUAL MODE
CP-523A	C523A	TBM2-9B	MFP-2 IN MANUAL MODE
CP-524	C524	TBM2-11A	MFP-2 IN AUTO MODE
CP-524A	C524A	TBM2-11B	MFP-2 IN AUTO MODE
CP-526	C526	TSF1-8A	SF-1 IN HAND MODE
CP-526A	C526A	TSF1-8B	SF-1 IN HAND MODE
CP-527	C527	TSF1-9A	SF-1 IN AUTO MODE
CP-527A	C527A	TSF1-9B	SF-1 IN AUTO MODE
CP-528	C528	TSF1-10A	SF-1 MOTOR OL
CP-528A	C528A	TSF1-10B	SF-1 MOTOR OL
CP-529	C529	TSF1-11A	SF-1 RUNNING
CP-529A	C529A	TSF1-11B	SF-1 RUNNING
CP-530	C530	TBM2-0H	MFP-2 OVERLOAD TRIP
CP-530A	C530A	TBM2-0I	MFP-2 OVERLOAD TRIP
CP-532	C532	TBM2-15	MFP-2 HIGH TEMP/MOIST PROTECTION IN BYPASS MODE
CP-532A	C532A	TBM2-15A	MFP-2 HIGH TEMP/MOIST PROTECTION IN BYPASS MODE
CP-533	C533	TBM3-11C	MFP-3 RUNNING
CP-533A	C533A	TBM3-11D	MFP-3 RUNNING
CP-534	C534	TBM3-13	MFP-3 OFF
CP-534A	C534A	TBM3-13A	MFP-3 OFF
CP-535	C535	TBM3-0	MFP-3 CIRCUIT BREAKER TRIPPED
CP-535A	C535A	TBM3-0A	MFP-3 CIRCUIT BREAKER TRIPPED
CP-536	C536	TBM3-32A	MFP-3 HIGH TEMP
CP-536A	C536A	TBM3-32B	MFP-3 HIGH TEMP
CP-537	C537	TBM3-29D	MFP-3 MOISTURE SENSED
CP-537A	C537A	TBM3-29E	MFP-3 MOISTURE SENSED
CP-538	C538	TBM3-14C	MFP-3 RVSS FAULT
CP-538A	C538A	TBM3-14D	MFP-3 RVSS FAULT
CP-539	C539	TBM3-9A	MFP-3 IN MANUAL MODE
CP-539A	C539A	TBM3-9B	MFP-3 IN MANUAL MODE
CP-540	C540	TBM3-11A	MFP-3 IN AUTO MODE
CP-540A	C540A	TBM3-11B	MFP-3 IN AUTO MODE
CP-542	C542	TBM3-0H	MFP-3 OVERLOAD TRIP
CP-542A	C542A	TBM3-0I	MFP-3 OVERLOAD TRIP
CP-544	C544	TSF2-7A	SF-2 IN HAND MODE
CP-544A	C544A	TSF2-7B	SF-2 IN HAND MODE
CP-545	C545	TSF2-8A	SF-2 IN AUTO MODE
CP-545A	C545A	TSF2-8B	SF-2 IN AUTO MODE
CP-546	C546	TSF2-9A	SF-2 MOTOR OL
CP-546A	C546A	TSF2-9B	SF-2 MOTOR OL
CP-547	C547	TSF2-10A	SF-2 RUNNING
CP-547A	C547A	TSF2-10B	SF-2 RUNNING
CP-548	C548	TBM3-15	MFP-3 HIGH TEMP/MOIST PROTECTION IN BYPASS MODE
CP-548A	C548A	TBM3-15A	MFP-3 HIGH TEMP/MOIST PROTECTION IN BYPASS MODE
CP-549	C549	TBLF4-11C	LFP-4 RUNNING
CP-549A	C549A	TBLF4-11D	LFP-4 RUNNING

CONTROL PANEL DIGITAL INPUTS (TBDI)			
TERM #	WIRE #	ORIGINATION	DESCRIPTION OF INPUTS
CP-550	C550	TBLF4-12	LFP-4 OFF
CP-550A	C550A	TBLF4-12A	LFP-4 OFF
CP-551	C551	TBLF4-0	LFP-4 CIRCUIT BREAKER TRIPPED
CP-551A	C551A	TBLF4-0A	LFP-4 CIRCUIT BREAKER TRIPPED
CP-552	C552	TBLF4-32A	LFP-4 HIGH TEMP
CP-552A	C552A	TBLF4-32B	LFP-4 HIGH TEMP
CP-553	C553	TBLF4-29D	LFP-4 MOISTURE SENSED
CP-553A	C553A	TBLF4-29E	LFP-4 MOISTURE SENSED
CP-554	C554	TBLF4-14C	LFP-4 RVSS FAULT
CP-554A	C554A	TBLF4-14D	LFP-4 RVSS FAULT
CP-555	C555	TBLF4-9A	LFP-4 IN MANUAL MODE
CP-555A	C555A	TBLF4-9B	LFP-4 IN MANUAL MODE
CP-556	C556	TBLF4-11A	LFP-4 IN AUTO MODE
CP-556A	C556A	TBLF4-11B	LFP-4 IN AUTO MODE
CP-558	C558	TEF2-5A	EF-2 IN HAND MODE
CP-558A	C558A	TEF2-5B	EF-2 IN HAND MODE
CP-559	C559	TEF2-6A	EF-2 IN AUTO MODE
CP-559A	C559A	TEF2-6B	EF-2 IN AUTO MODE
CP-560	C560	TEF2-7A	EF-2 MOTOR OL
CP-560A	C560A	TEF2-7B	EF-2 MOTOR OL
CP-561	C561	TEF2-8A	EF-2 RUNNING
CP-561A	C561A	TEF2-8B	EF-2 RUNNING
CP-562	C562	TBLF4-15	LFP-4 HIGH TEMP/MOIST PROTECTION IN BYPASS MODE
CP-562A	C562A	TBLF4-15A	LFP-4 HIGH TEMP/MOIST PROTECTION IN BYPASS MODE
CP-563	C563	TBLF4-0H	LFP-4 OVERLOAD TRIP
CP-563A	C563A	TBLF4-0I	LFP-4 OVERLOAD TRIP
CP-565	C565	TEF3-7A	EF-3 IN HAND MODE
CP-565A	C565A	TEF3-7B	EF-3 IN HAND MODE
CP-566	C566	TEF3-8A	EF-3 IN AUTO MODE
CP-566A	C566A	TEF3-8B	EF-3 IN AUTO MODE
CP-567	C567	TEF3-9A	EF-3 MOTOR OL
CP-567A	C567A	TEF3-9B	EF-3 MOTOR OL
CP-568	C568	TEF3-10A	EF-3 RUNNING
CP-568A	C568A	TEF3-10B	EF-3 RUNNING
CP-571	C571	SG1-3	SCREENING CHAMBER SLIDE GATE FULLY OPENED
CP-571A	C571A	SG1-4	SCREENING CHAMBER SLIDE GATE FULLY OPENED
CP-572	C572	SG1-5	SCREENING CHAMBER SLIDE GATE FULLY CLOSED
CP-572A	C572A	SG1-6	SCREENING CHAMBER SLIDE GATE FULLY CLOSED
CP-573	C573	SG1-1	SCREENING CHAMBER SLIDE GATE INTERMEDIATE POSITION
CP-573A	C573A	SG1-2	SCREENING CHAMBER SLIDE GATE INTERMEDIATE POSITION
CP-574	C574	SG2-1	DISCHARGE CHAMBER SLIDE GATE INTERMEDIATE POSITION
CP-574A	C574A	SG2-2	DISCHARGE CHAMBER SLIDE GATE INTERMEDIATE POSITION
CP-575	C575	SG2-3	DISCHARGE CHAMBER SLIDE GATE FULLY OPENED
CP-575A	C575A	SG2-4	DISCHARGE CHAMBER SLIDE GATE FULLY OPENED
CP-576	C576	SG2-5	DISCHARGE CHAMBER SLIDE GATE FULLY CLOSED
CP-576A	C576A	SG2-6	DISCHARGE CHAMBER SLIDE GATE FULLY CLOSED
CP-577	C577	GM-7	COMBUSTIBLE GAS MONITORING SYSTEM ALARM (20% LEL)
CP-577A	C577A	GM-8	COMBUSTIBLE GAS MONITORING SYSTEM ALARM (20% LEL)
CP-578	C578	GM-5	COMBUSTIBLE GAS MONITORING SYSTEM ALARM (50% LEL)
CP-578A	C578A	GM-6	COMBUSTIBLE GAS MONITORING SYSTEM ALARM (50% LEL)

IP-5

 <p>McDonough Associates Inc. Engineers/Architects 130 East Randolph Street - Suite 1000 Chicago, Illinois 60601 Phone: (312) 946-6000</p>	DESIGNED <i>DKC</i>	REVISED -	<p align="center">STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION</p> <p align="center">I & C CONTROL PANEL TERMINATION SCHEDULE PUMP STATION 47</p> <p align="center">SHEET NO. IP-5 OF 6 SHEETS</p>	F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	
	CHECKED <i>KMY</i>	REVISED -		338/IL 59	2011-035-I	DUPAGE	181	130	
	SCALE	DRAWN <i>CJM</i>		REVISED -	CONTRACT NO. 60P41				
	DATE <i>03/22/2012</i>	CHECKED <i>KMY</i>		REVISED -	ILLINOIS FED. AID PROJECT				

CONTROL PANEL DIGITAL INPUTS (TBDI)			
TERM #	WIRE #	ORIGINATION	DESCRIPTION OF INPUTS
CP-579	C579	GM-9	COMBUSTIBLE GAS MONITORING SYSTEM TROUBLE
CP-579A	C579A	GM-10	COMBUSTIBLE GAS MONITORING SYSTEM TROUBLE
CP-581	C581	FA-1	FIRE PANEL ALARM (ZONE 1)
CP-581A	C581A	FA-2	FIRE PANEL ALARM (ZONE 1)
CP-582	C582	FA-3	FIRE PANEL ALARM (ZONE 2)
CP-582A	C582A	FA-4	FIRE PANEL ALARM (ZONE 2)
CP-583	C583	FA-5	FIRE PANEL ALARM (ZONE 3)
CP-583A	C583A	FA-6	FIRE PANEL ALARM (ZONE 3)
CP-584	C584	FA-7	FIRE PANEL TROUBLE ALARM
CP-584A	C584A	FA-8	FIRE PANEL TROUBLE ALARM
CP-585	C585	BC1-1	PRIMARY BUBBLER SYSTEM FAILURE
CP-585A	C585A	BC1-2	PRIMARY BUBBLER SYSTEM FAILURE
CP-597	C597	ATS-A	OPERATING VIA SERVICE NO. 1
CP-597A	C597A	ATS-B	OPERATING VIA SERVICE NO. 1
CP-598	C598	ATS-C	OPERATING VIA SERVICE NO. 2
CP-598A	C598A	ATS-D	OPERATING VIA SERVICE NO. 2
CP-599	C599	ATS-E	SERVICE NO. 1 POWER FAILURE
CP-599A	C599A	ATS-F	SERVICE NO. 1 POWER FAILURE
CP-600	C600	ATS-G	SERVICE NO. 2 POWER FAILURE
CP-600A	C600A	ATS-H	SERVICE NO. 2 POWER FAILURE
CP-601	C601	CB1-A	SERVICE NO. 1 MAIN BREAKER CLOSED
CP-601A	C601A	CB1-B	SERVICE NO. 1 MAIN BREAKER CLOSED
CP-602	C602	CB1-C	SERVICE NO. 1 MAIN BREAKER OPEN
CP-602A	C602A	CB1-D	SERVICE NO. 1 MAIN BREAKER OPEN
CP-603	C603	CB1-E	SERVICE NO. 1 MAIN BREAKER TRIPPED
CP-603A	C603A	CB1-F	SERVICE NO. 1 MAIN BREAKER TRIPPED
CP-604	C604	CB2-A	SERVICE NO. 2 MAIN BREAKER CLOSED
CP-604A	C604A	CB2-B	SERVICE NO. 2 MAIN BREAKER CLOSED
CP-605	C605	CB2-C	SERVICE NO. 2 MAIN BREAKER OPEN
CP-605A	C605A	CB2-D	SERVICE NO. 2 MAIN BREAKER OPEN
CP-606	C606	CB2-E	SERVICE NO. 2 MAIN BREAKER TRIPPED
CP-606A	C606A	CB2-F	SERVICE NO. 2 MAIN BREAKER TRIPPED
CP-610	C610	ATS-I	TRANSFER SWITCH FAILURE
CP-610A	C610A	ATS-J	TRANSFER SWITCH FAILURE
CP-611	C611	ATS-K	TRANSFER SWITCH IN BYPASS MODE
CP-611A	C611A	ATS-L	TRANSFER SWITCH IN BYPASS MODE
CP-615	C615	RP1-A	RECIRCULATION PIPE VALVE FULLY OPEN
CP-615A	C615A	RP1-B	RECIRCULATION PIPE VALVE FULLY OPEN
CP-618	C618	RP3-A	RECIRCULATION PIPE VALVE FULLY CLOSED
CP-618A	C618A	RP3-B	RECIRCULATION PIPE VALVE FULLY CLOSED
CP-629	C629	SP-10	SUMP PUMP OPERATING IN AUTO MODE
CP-629A	C629A	SP-11	SUMP PUMP OPERATING IN AUTO MODE
CP-630	C630	SP-12	SUMP PUMP ALARM
CP-630A	C630A	SP-13	SUMP PUMP ALARM
CP-631	C631	SP-14	SUMP PUMP RUNNING
CP-631A	C631A	SP-15	SUMP PUMP RUNNING
CP-632	C632	SP-16	SUMP PUMP HIGH WATER ALARM
CP-632A	C632A	SP-17	SUMP PUMP HIGH WATER ALARM
CP-633	C633	IA-11	INTRUSION ALARM PANEL ALARM
CP-633A	C633A	IA-12	INTRUSION ALARM PANEL ALARM

CONTROL PANEL DIGITAL INPUTS (TBDI)			
TERM #	WIRE #	ORIGINATION	DESCRIPTION OF INPUTS
CP-634	C634	IA-13	INTRUSION ALARM PANEL TROUBLE
CP-634A	C634A	IA-14	INTRUSION ALARM PANEL TROUBLE
CP-636	C636	BC2-1	SECONDARY BUBBLER SYSTEM FAILURE
CP-636A	C636A	BC2-2	SECONDARY BUBBLER SYSTEM FAILURE
CP-637	C637	TEF1-5A	EF-1 IN HAND MODE
CP-637A	C637A	TEF1-5B	EF-1 IN HAND MODE
CP-638	C638	TEF1-6A	EF-1 IN AUTO MODE
CP-638A	C638A	TEF1-6B	EF-1 IN AUTO MODE
CP-639	C639	TEF1-7A	EF-1 MOTOR OL
CP-639A	C639A	TEF1-7B	EF-1 MOTOR OL
CP-640	C640	TEF1-8A	EF-1 RUNNING
CP-640A	C640A	TEF1-8B	EF-1 RUNNING

CONTROL PANEL INTRINSICALLY SAFE DIGITAL INPUTS (TBDIIS)			
TERM #	WIRE #	ORIGINATION	DESCRIPTION OF INPUTS
CP-58	C58	LSH-008	HIGH WATER ALARM
CP-58A	C58A	LSH-008	HIGH WATER ALARM
CP-63	C63	LS-008D	LAG PUMP START
CP-63A	C63A	LS-008D	LAG PUMP START
CP-68	C68	LS-008C	LEAD START/LFP-4 STOP (LAG STOP)
CP-68A	C68A	LS-008C	LEAD START/LFP-4 STOP (LAG STOP)
CP-73	C73	LS-008B	LFP-4 START (LEAD STOP/LFP-4 START)
CP-73A	C73A	LS-008B	LFP-4 START (LEAD STOP/LFP-4 START)
CP-78	C78	LS-008A	MAIN PUMPS FAIL TO STOP
CP-78A	C78A	LS-008A	MAIN PUMPS FAIL TO STOP
CP-83	C83	LS-008	LFP-4 STOP
CP-83A	C83A	LS-008	LFP-4 STOP
CP-88	C88	LSL-008	LOW WATER ALARM
CP-88A	C88A	LSL-008	LOW WATER ALARM
CP-96	C96	LSH-050	PAVEMENT FLOODED CONTROL RELAY
CP-96A	C96A	LSH-050	PAVEMENT FLOODED CONTROL RELAY
CP-413	C413	LSH-011	DISCHARGE CHAMBER HIGH WATER ALARM
CP-413A	C413A	LSH-011	DISCHARGE CHAMBER HIGH WATER ALARM

CONTROL PANEL DIGITAL OUTPUTS (TBDO)			
TERM #	WIRE #	DESTINATION	DESCRIPTION OF OUTPUTS
CP-169	C169	TBM1-9C	MFP-1 FLOAT CALL
CP-169A	C169A	TBM1-9D	MFP-1 FLOAT CALL
CP-170	C170	TBM2-9C	MFP-2 FLOAT CALL
CP-170A	C170A	TBM2-9D	MFP-2 FLOAT CALL
CP-171	C171	TBM3-9C	MFP-3 FLOAT CALL
CP-171A	C171A	TBM3-9D	MFP-3 FLOAT CALL
CP-172	C172	TBLF4-9C	LFP-4 FLOAT CALL
CP-172A	C172A	TBLF4-9D	LFP-4 FLOAT CALL
CP-701	C701	TBM1-8A	MFP-1 SCADA CALL
CP-701A	C701A	TBM1-8B	MFP-1 SCADA CALL
CP-717	C717	TBM2-8A	MFP-2 SCADA CALL
CP-717A	C717A	TBM2-8B	MFP-2 SCADA CALL
CP-733	C733	TBM3-8A	MFP-3 SCADA CALL
CP-733A	C733A	TBM3-8B	MFP-3 SCADA CALL
CP-749	C749	TBLF4-8A	LFP-4 SCADA CALL
CP-749A	C749A	TBLF4-8B	LFP-4 SCADA CALL

CONTROL PANEL ANALOG INPUTS (TBAI)			
TERM #	WIRE #	ORIGINATION	DESCRIPTION OF INPUTS
CP-800A	C800A	TBM1-0B	MFP-1 MOTOR CURRENT TRANSDUCER IT-001
CP-801A	C801A	TBM1-0C	MFP-1 MOTOR CURRENT TRANSDUCER IT-001
CP-829A	C829A	LIT-007A	BAR RACK LEVEL TRANSDUCER LIT-007A
CP-830A	C830A	LIT-007A	BAR RACK LEVEL TRANSDUCER LIT-007A
CP-832A	C832A	LT-008A	WET WELL LEVEL TRANSDUCER LT-008A
CP-833A	C833A	LT-008A	WET WELL LEVEL TRANSDUCER LT-008A
CP-834A	C834A	TBM2-0B	MFP-2 MOTOR CURRENT TRANSDUCER IT-002
CP-835A	C835A	TBM2-0C	MFP-2 MOTOR CURRENT TRANSDUCER IT-002
CP-851A	C851A	LIT-007B	BAR RACK LEVEL TRANSDUCER LIT-007B
CP-852A	C852A	LIT-007B	BAR RACK LEVEL TRANSDUCER LIT-007B
CP-854A	C854A	LT-008B	WET WELL LEVEL TRANSDUCER LT-008B
CP-855A	C855A	LT-008B	WET WELL LEVEL TRANSDUCER LT-008B
CP-856A	C856A	TBM3-0B	MFP-3 MOTOR CURRENT TRANSDUCER IT-003
CP-857A	C857A	TBM3-0C	MFP-3 MOTOR CURRENT TRANSDUCER IT-003
CP-875A	C875A	TBLF4-0B	LFP-4 MOTOR CURRENT TRANSDUCER IT-004
CP-876A	C876A	TBLF4-0C	LFP-4 MOTOR CURRENT TRANSDUCER IT-004

CONTROL PANEL INTRINSICALLY SAFE ANALOG INPUTS (TBAIIS)			
TERM #	WIRE #	ORIGINATION	DESCRIPTION OF INPUTS
CP-804A	C804A	FT-001	MFP-1 FLOW METER TRANSDUCER FT-001
CP-805A	C805A	FT-001	MFP-1 FLOW METER TRANSDUCER FT-001
CP-806A	C806A	TT-402B	ELECT. ROOM THERMOSTAT TT-402B
CP-807A	C807A	TT-402B	ELECT. ROOM THERMOSTAT TT-402B
CP-826A	C826A	FT-010	RECIRC. FLOW METER TRANSMITTER FT-010
CP-827A	C827A	FT-010	RECIRC. FLOW METER TRANSMITTER FT-010
CP-838A	C838A	FT-002	MFP-2 FLOW METER TRANSDUCER FT-002
CP-839A	C839A	FT-002	MFP-2 FLOW METER TRANSDUCER FT-002
CP-840A	C840A	TT-402A	DRY WELL THERMOSTAT TT-402A
CP-841A	C841A	TT-402A	DRY WELL THERMOSTAT TT-402A
CP-860A	C860A	FT-003	MFP-3 FLOW METER TRANSDUCER FT-003
CP-861A	C861A	FT-003	MFP-3 FLOW METER TRANSDUCER FT-003
CP-879A	C879A	FT-004	LFP-4 FLOW METER TRANSDUCER FT-004
CP-880A	C880A	FT-004	LFP-4 FLOW METER TRANSDUCER FT-004

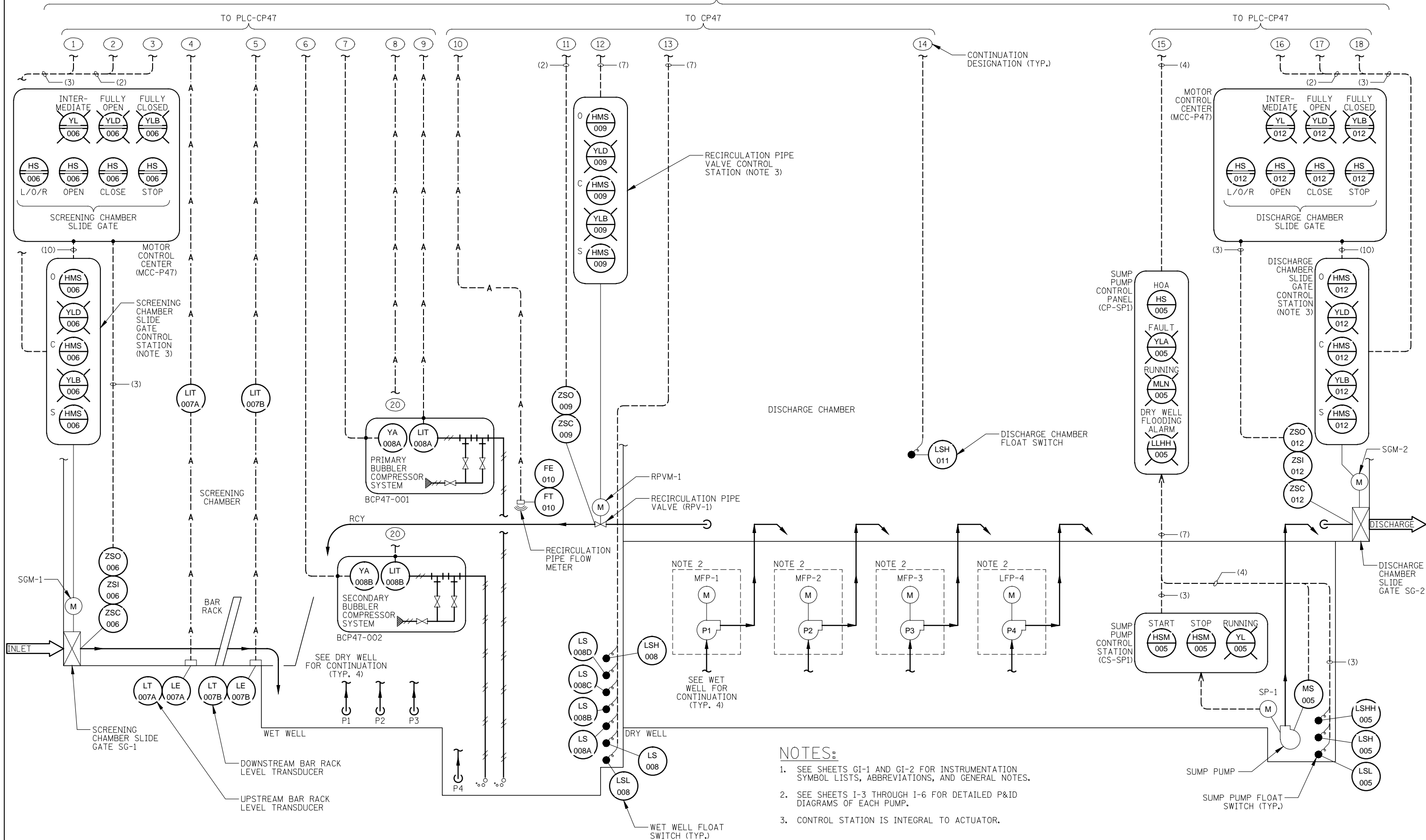


DESIGNED	DKC	REVISIONS	-
CHECKED	KMY	REVISIONS	-
SCALE	CJM	REVISIONS	-
DATE	03/22/2012	REVISIONS	-
CHECKED	KMY	REVISIONS	-

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**I & C CONTROL PANEL TERMINATION SCHEDULE
PUMP STATION 47**

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035-I	DUPAGE	181	131
			CONTRACT NO. 60P41	
ILLINOIS FED. AID PROJECT				

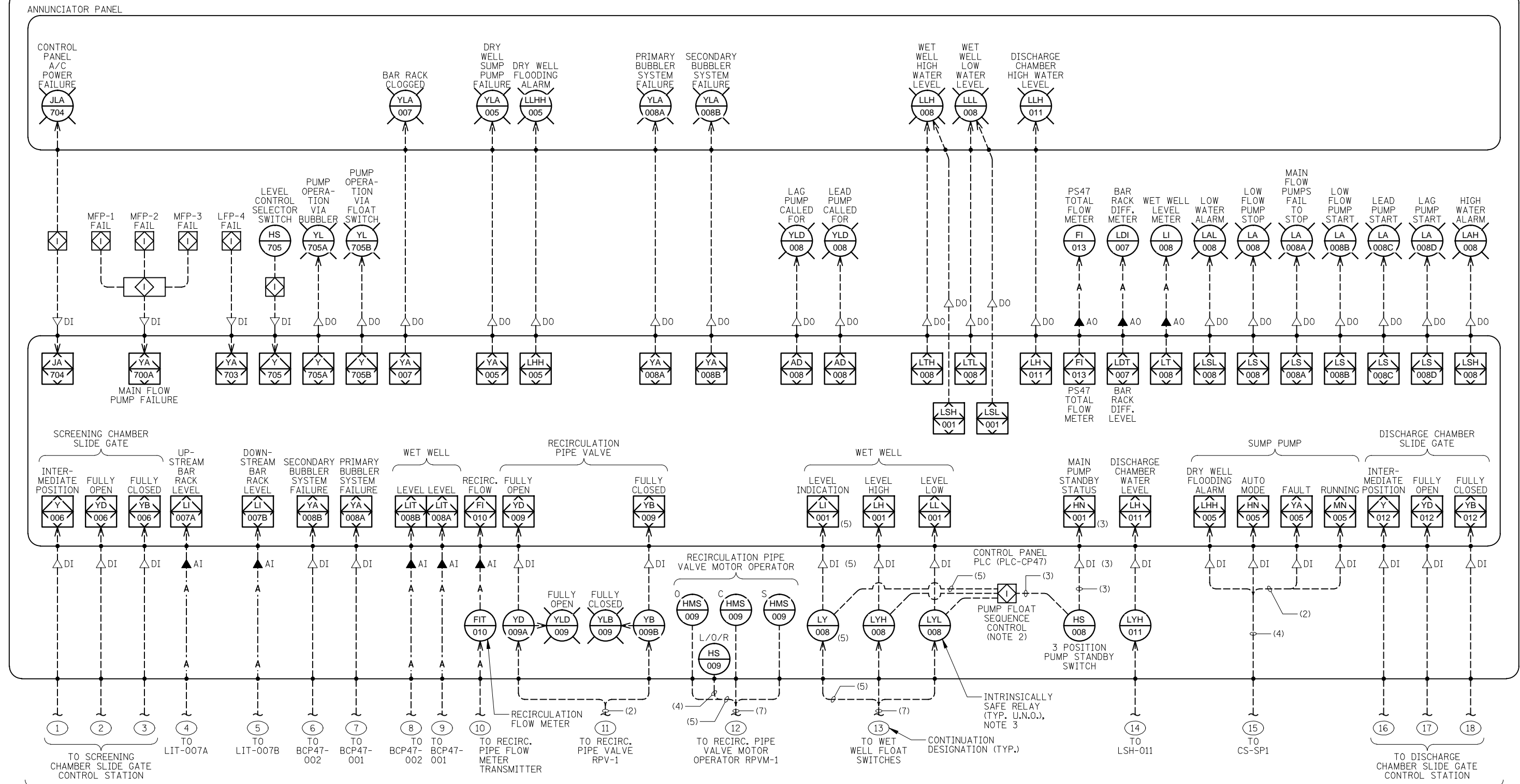


NOTES:

1. SEE SHEETS GI-1 AND GI-2 FOR INSTRUMENTATION SYMBOL LISTS, ABBREVIATIONS, AND GENERAL NOTES.
2. SEE SHEETS I-3 THROUGH I-6 FOR DETAILED P&ID DIAGRAMS OF EACH PUMP.
3. CONTROL STATION IS INTEGRAL TO ACTUATOR.

DESIGNED	DKC	REVISED	- 4-19-2012
CHECKED	KMY	REVISED	-
SCALE	DRAWN	REVISED	-
DATE	03/22/2012	CHECKED	KMY

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035-I	DUPAGE	181	132
		CONTRACT NO. 60P41		



CONTINUED ON SHEET I-1

NOTES:

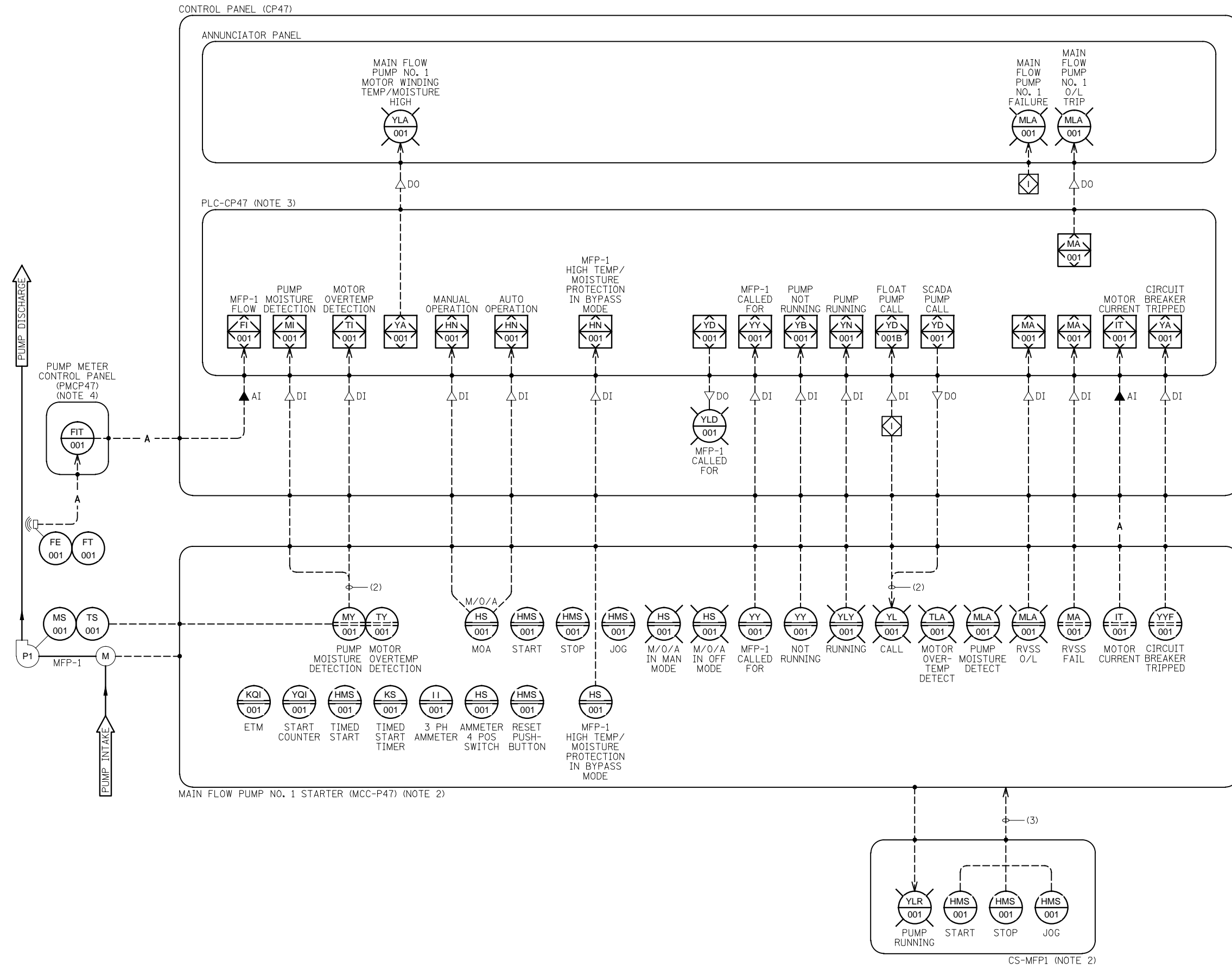
1. SEE SHEETS GI-1 AND GI-2 FOR INSTRUMENTATION SYMBOL LISTS, ABBREVIATIONS, AND GENERAL NOTES.
2. REFER TO SHEET CPD-1 FOR DETAILS.
3. PROVIDE INTRINSICALLY SAFE RELAYS AND BARRIERS FOR ALL CONTROL AND INSTRUMENT CABLES RUN FROM HAZARDOUS LOCATIONS INTO CONTROL PANELS.
4. REFER TO SPECIFICATION SECTION 40 94 23 FOR ADDITIONAL PUMP ALTERNATOR CONTROLLER REQUIREMENTS & SEQUENCE OF OPERATION.
5. REFER TO SPECIFICATION SECTION 40 94 23 FOR CONTROL PANEL REQUIREMENTS.

I-2

<p>McDonough Associates Inc. Engineers/Architects 130 East Randolph Street - Suite 1000 Chicago, Illinois 60601 Phone: (312) 946-6000</p>	DESIGNED <i>DKC</i>	REVISED - <i>4-19-2012</i>	<p>STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION</p>	<p>I & C PROCESS & INSTRUMENTATION DIAGRAM PUMP STATION 47</p>	F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	CHECKED <i>KMY</i>	REVISED -			338/IL 59	2011-035-I	DUPAGE	181	133
	SCALE	DRAWN <i>CJM</i>			REVISED -	SHEET NO. I-2 OF 9 SHEETS		CONTRACT NO. 60P41	
DATE <i>03/22/2012</i>	CHECKED <i>KMY</i>	REVISED -							

NOTES:

1. SEE SHEETS GI-1 AND GI-2 FOR INSTRUMENTATION SYMBOL LISTS, ABBREVIATIONS, AND GENERAL NOTES.
2. REFER TO SHEET E-3 FOR PUMP CONTROL WIRING DIAGRAM.
3. REFER TO SPECIFICATION SECTION 40 94 23 FOR ADDITIONAL PUMP ALTERNATOR CONTROLLER REQUIREMENTS & SEQUENCE OF OPERATION.
4. PUMP METER CONTROL PANEL INCLUDES A METER FOR EACH OF THE MAIN FLOW PUMPS AND THE LOW FLOW PUMP. REFER TO SHEETS I-4, I-5, I-6, AND ID-4 DETAIL 1 FOR ADDITIONAL INFORMATION.
5. PROVIDE INTRINSICALLY SAFE RELAYS AND BARRIERS FOR CONTROL AND INSTRUMENT CABLES RUN FROM HAZARDOUS LOCATIONS INTO CONTROL PANELS, AS REQUIRED TO INSURE SAFE OPERATION IN HAZARDOUS LOCATIONS.



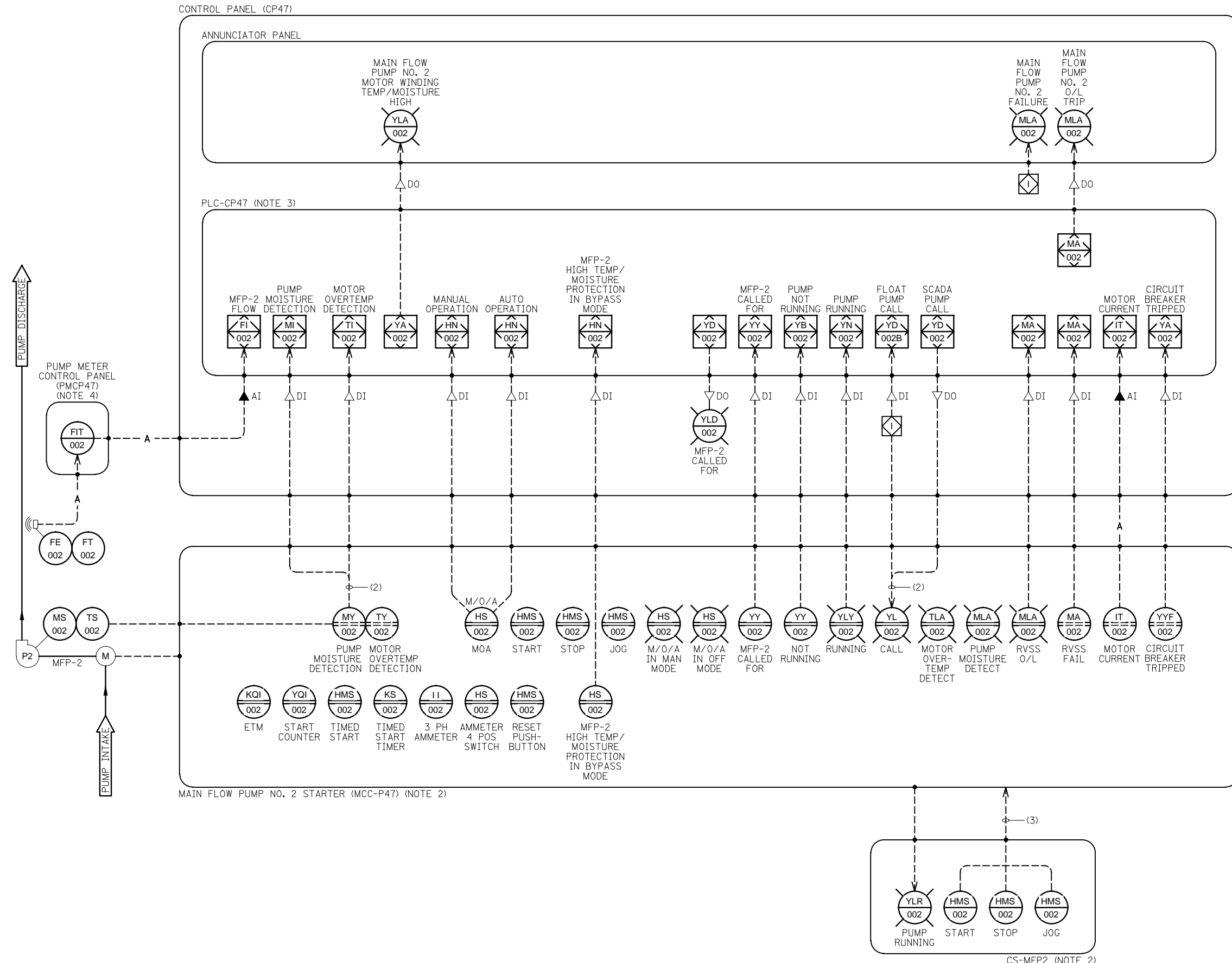
1 MAIN FLOW PUMP NO. 1 P&ID DRAWING

DESIGNED	DKC	REVISED	- 4-19-2012
CHECKED	KMY	REVISED	-
SCALE	DRAWN CJM	REVISED	-
DATE	03/22/2012	CHECKED	KMY
		REVISED	-

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035-I	DUPAGE	181	134
CONTRACT NO. 60P41				
ILLINOIS FED. AID PROJECT				

NOTES:

- SEE SHEETS GI-1 AND GI-2 FOR INSTRUMENTATION SYMBOL LISTS, ABBREVIATIONS, AND GENERAL NOTES.
- REFER TO SHEET E-3 FOR PUMP CONTROL WIRING DIAGRAM.
- REFER TO SPECIFICATION SECTION 40 94 23 FOR ADDITIONAL PUMP ALTERNATOR CONTROLLER REQUIREMENTS & SEQUENCE OF OPERATION.
- PUMP METER CONTROL PANEL INCLUDES A METER FOR EACH OF THE MAIN FLOW PUMPS AND THE LOW FLOW PUMP. REFER TO SHEETS I-3, I-5, I-6, AND ID-4 DETAIL 1 FOR ADDITIONAL INFORMATION.
- PROVIDE INTRINSICALLY SAFE RELAYS AND BARRIERS FOR CONTROL AND INSTRUMENT CABLES RUN FROM HAZARDOUS LOCATIONS INTO CONTROL PANELS, AS REQUIRED TO INSURE SAFE OPERATION IN HAZARDOUS LOCATIONS.



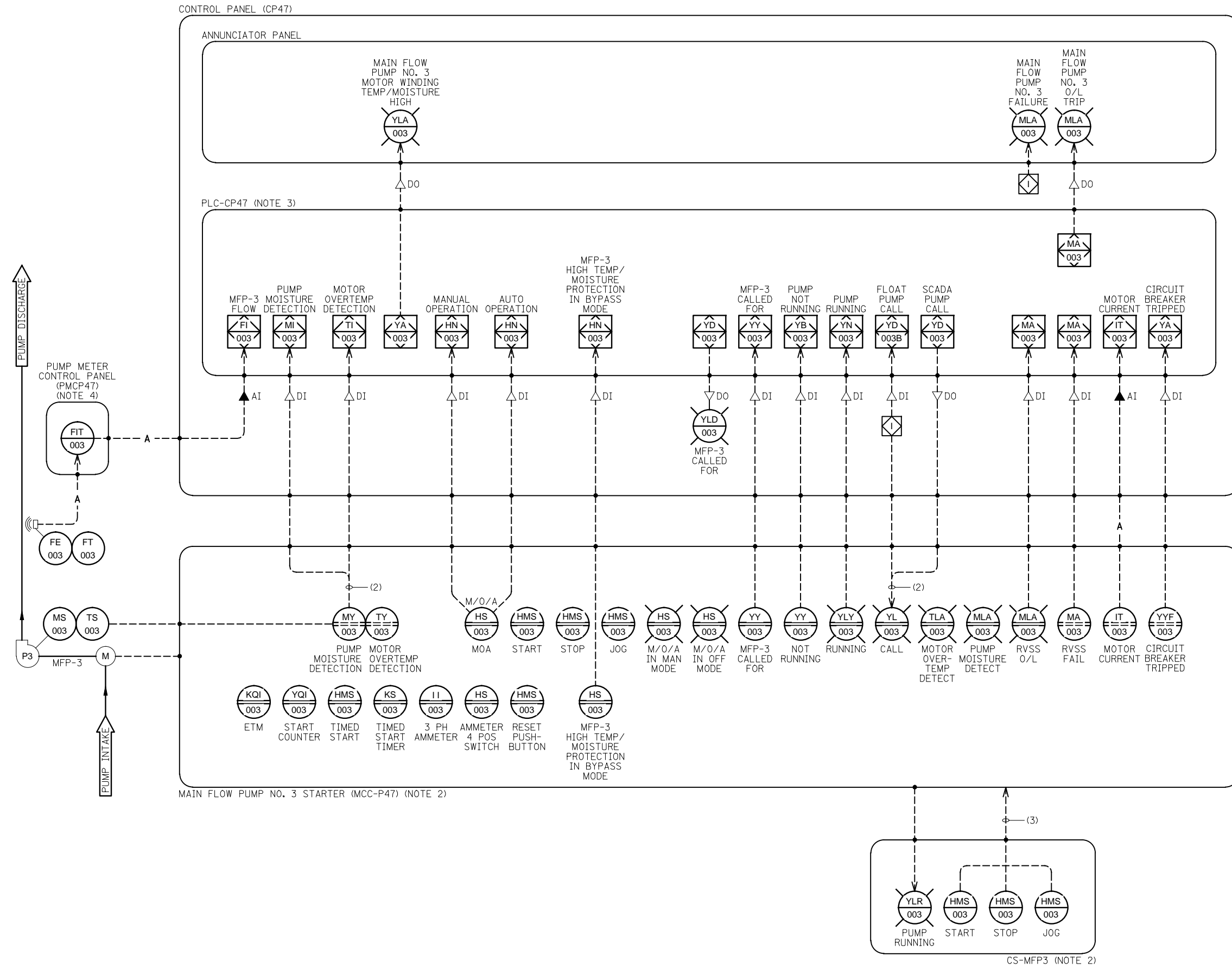
1 MAIN FLOW PUMP NO. 2 P&ID DRAWING

DESIGNED	DKC	REVISED	- 4-19-2012
CHECKED	KMY	REVISED	-
SCALE	DRAWN	REVISED	-
DATE	03/22/2012	CHECKED	KMY
		REVISED	-

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035-I	DUPAGE	181	135
			CONTRACT NO. 60P41	
ILLINOIS FED. AID PROJECT				

NOTES:

1. SEE SHEETS GI-1 AND GI-2 FOR INSTRUMENTATION SYMBOL LISTS, ABBREVIATIONS, AND GENERAL NOTES.
2. REFER TO SHEET E-3 FOR PUMP CONTROL WIRING DIAGRAM.
3. REFER TO SPECIFICATION SECTION 40 94 23 FOR ADDITIONAL PUMP ALTERNATOR CONTROLLER REQUIREMENTS & SEQUENCE OF OPERATION.
4. PUMP METER CONTROL PANEL INCLUDES A METER FOR EACH OF THE MAIN FLOW PUMPS AND THE LOW FLOW PUMP. REFER TO SHEETS I-3, I-4, I-6, AND ID-4 DETAIL 1 FOR ADDITIONAL INFORMATION.
5. PROVIDE INTRINSICALLY SAFE RELAYS AND BARRIERS FOR CONTROL AND INSTRUMENT CABLES RUN FROM HAZARDOUS LOCATIONS INTO CONTROL PANELS, AS REQUIRED TO INSURE SAFE OPERATION IN HAZARDOUS LOCATIONS.



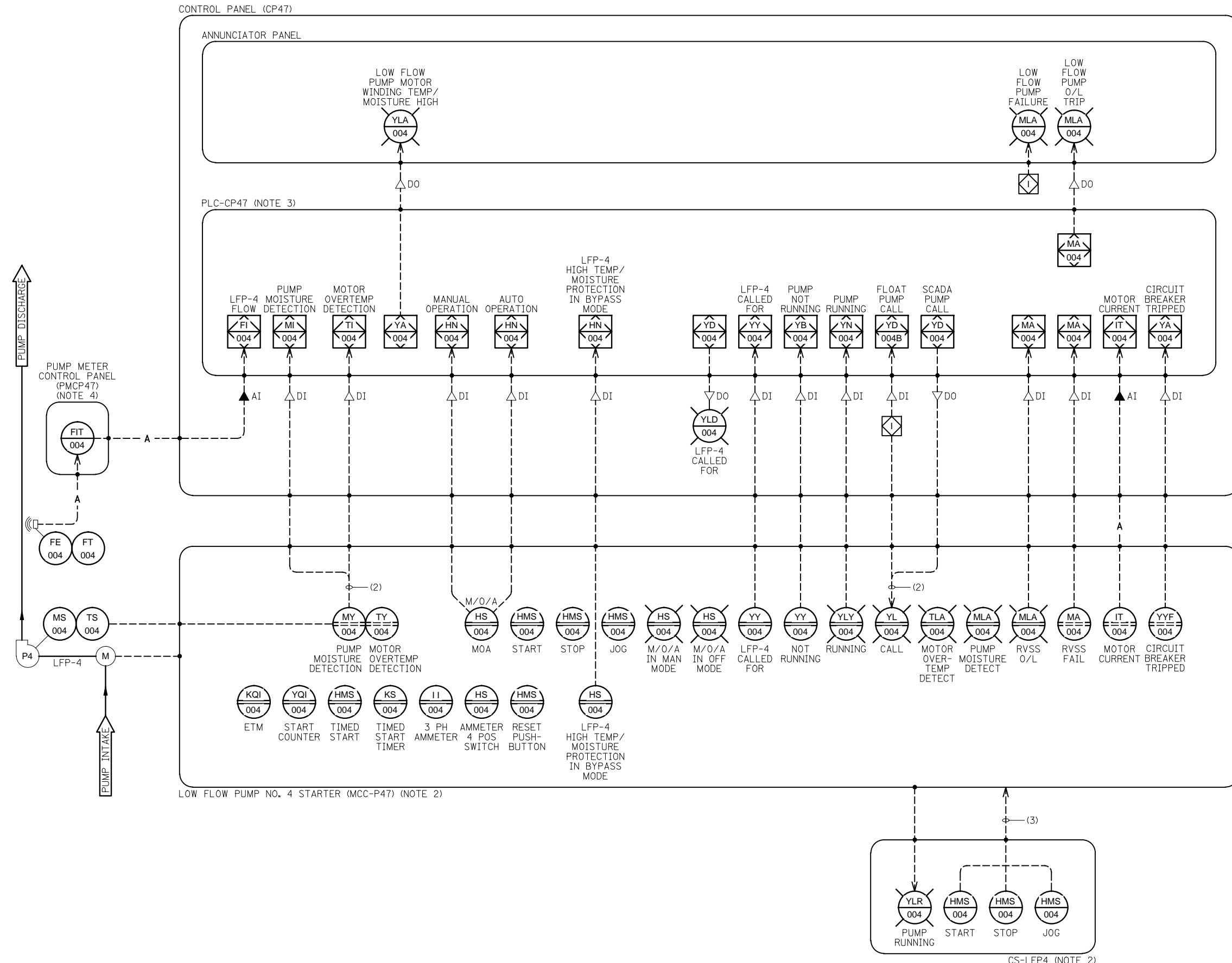
1 MAIN FLOW PUMP NO. 3 P&ID DRAWING

DESIGNED	DKC	REVISED	- 4-19-2012
CHECKED	KMY	REVISED	-
SCALE	DRAWN	REVISED	-
DATE	03/22/2012	CHECKED	KMY
		REVISED	-

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035-I	DUPAGE	181	136
CONTRACT NO. 60P41				
ILLINOIS FED. AID PROJECT				

NOTES:

- SEE SHEETS GI-1 AND GI-2 FOR INSTRUMENTATION SYMBOL LISTS, ABBREVIATIONS, AND GENERAL NOTES.
- REFER TO SHEET E-3 FOR PUMP CONTROL WIRING DIAGRAM.
- REFER TO SPECIFICATION SECTION 40 94 23 FOR ADDITIONAL PUMP ALTERNATOR CONTROLLER REQUIREMENTS & SEQUENCE OF OPERATION.
- PUMP METER CONTROL PANEL INCLUDES A METER FOR EACH OF THE MAIN FLOW PUMPS AND THE LOW FLOW PUMP. REFER TO SHEETS I-3, I-4, I-5, AND ID-4 DETAIL 1 FOR ADDITIONAL INFORMATION.
- PROVIDE INTRINSICALLY SAFE RELAYS AND BARRIERS FOR CONTROL AND INSTRUMENT CABLES RUN FROM HAZARDOUS LOCATIONS INTO CONTROL PANELS, AS REQUIRED TO INSURE SAFE OPERATION IN HAZARDOUS LOCATIONS.

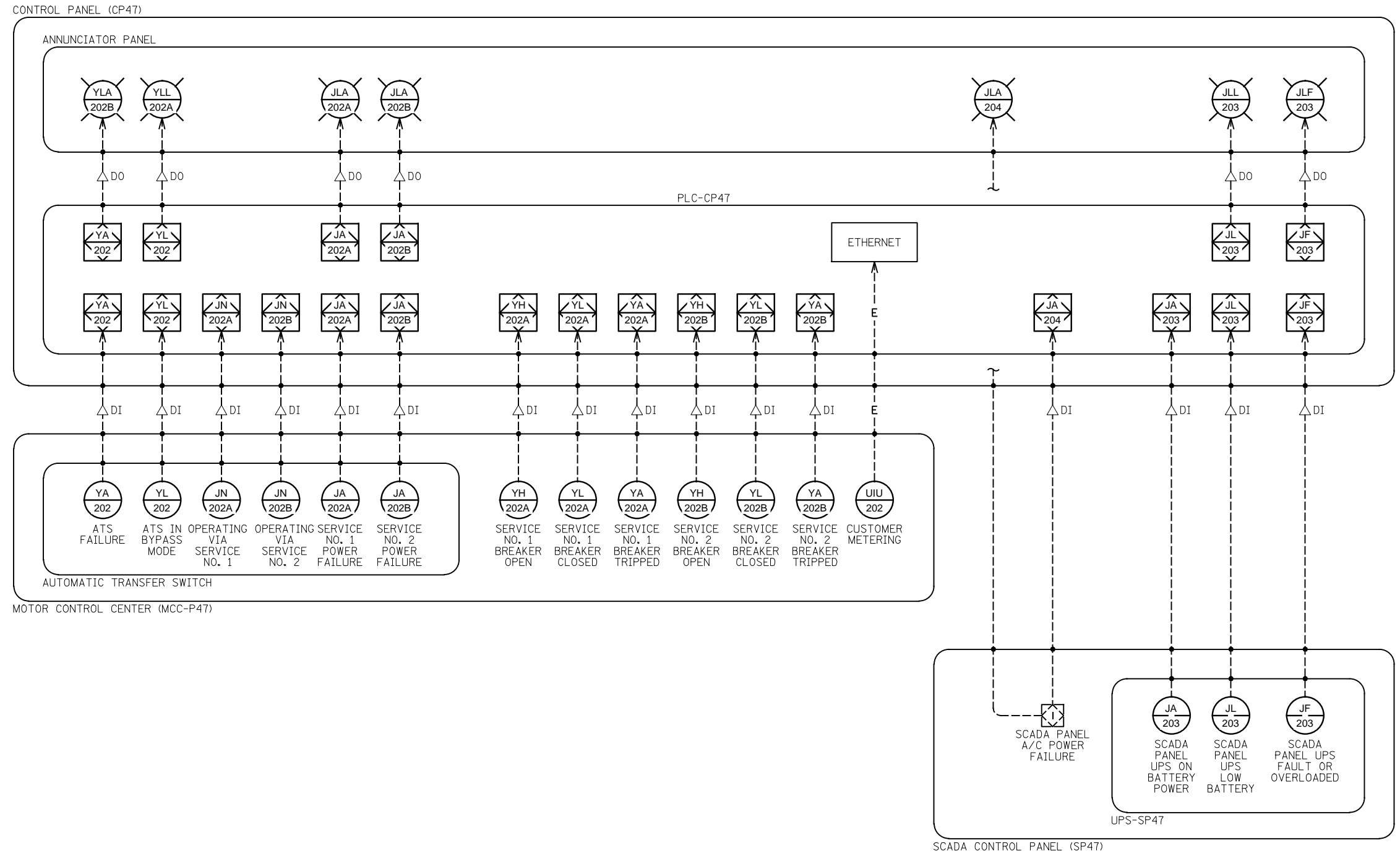


1 LOW FLOW PUMP NO. 4 P&ID DRAWING

DESIGNED	DKC	REVISED	- 4-19-2012
CHECKED	KMY	REVISED	-
SCALE	DRAWN CJM	REVISED	-
DATE	03/22/2012	CHECKED	KMY
		REVISED	-

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035-I	DUPAGE	181	137
ILLINOIS FED. AID PROJECT			CONTRACT NO. 60P41	

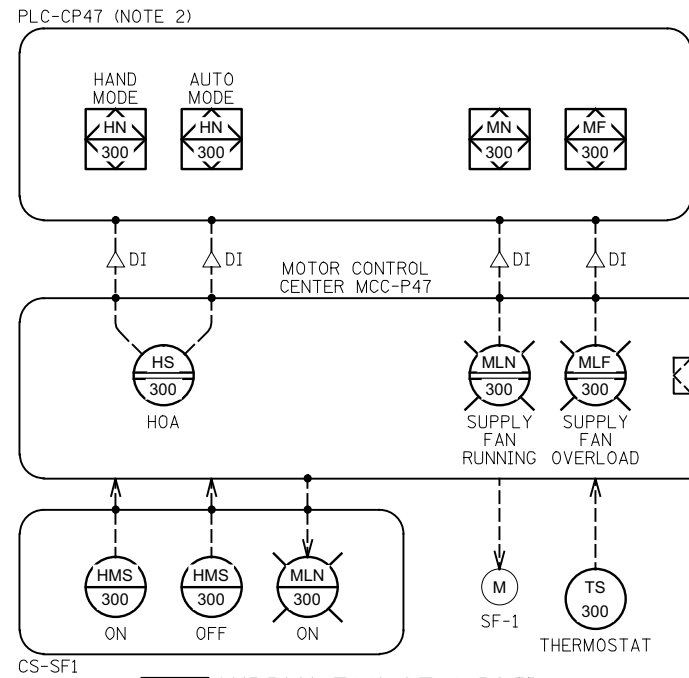
- NOTES:**
- SEE SHEETS GI-1 AND GI-2 FOR INSTRUMENTATION SYMBOL LISTS, ABBREVIATIONS, AND GENERAL NOTES.
 - REFER TO SPECIFICATION SECTION 40 94 23 FOR SCADA PANEL REQUIREMENTS.



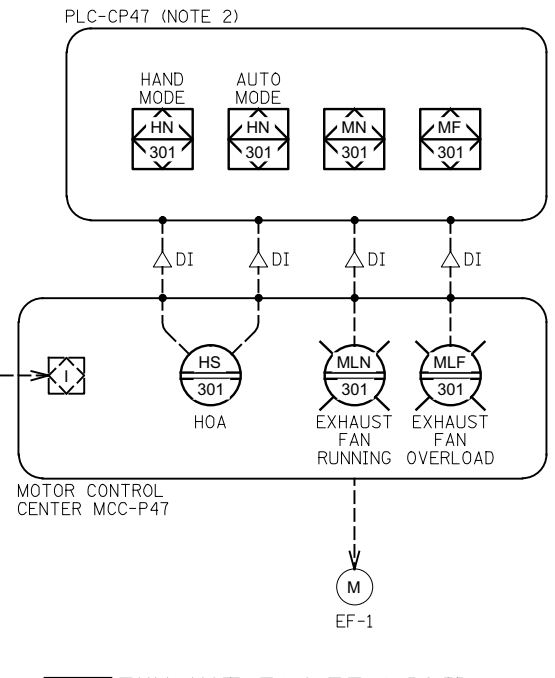
1 POWER TRANSFER P&ID DRAWING

DESIGNED	DKC	REVISED	- 4-19-2012
CHECKED	KMY	REVISED	-
SCALE	DRAWN CJM	REVISED	-
DATE	03/22/2012	CHECKED	KMY
		REVISED	-

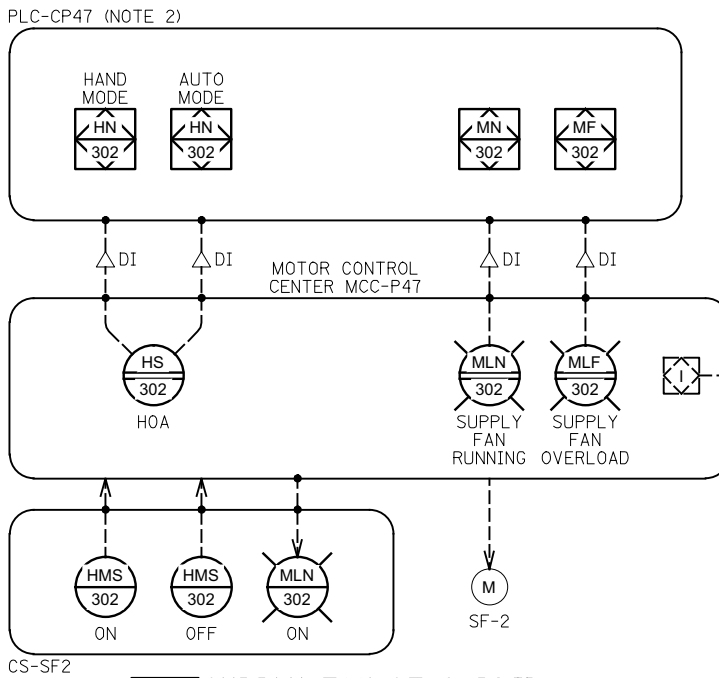
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035-I	DUPAGE	181	138
CONTRACT NO. 60P41				
ILLINOIS FED. AID PROJECT				



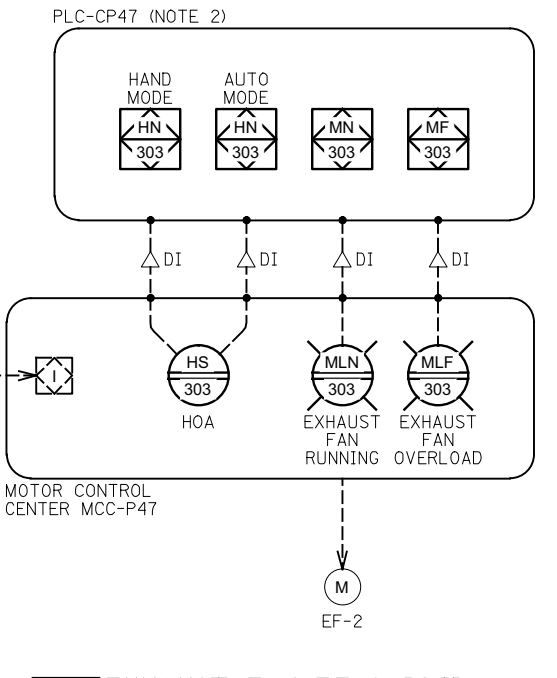
1 SUPPLY FAN SF-1 P&ID
(NOTE 3)



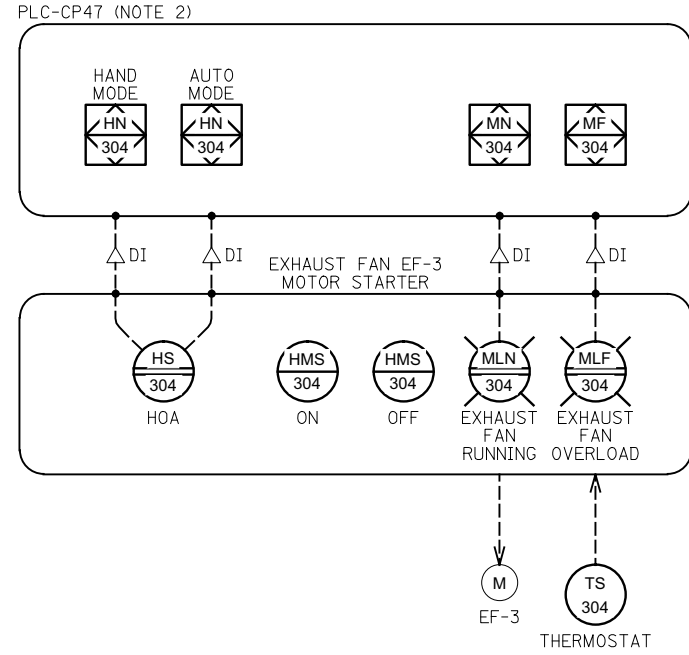
2 EXHAUST FAN EF-1 P&ID



3 SUPPLY FAN SF-2 P&ID
(NOTE 3)



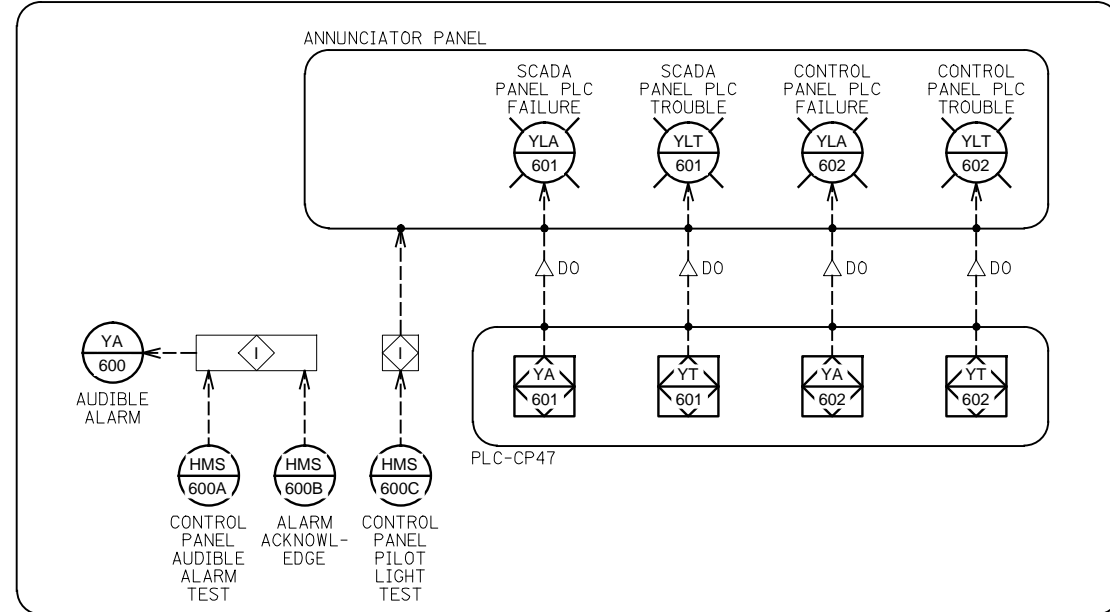
4 EXHAUST FAN EF-2 P&ID



5 EXHAUST FAN EF-5 P&ID

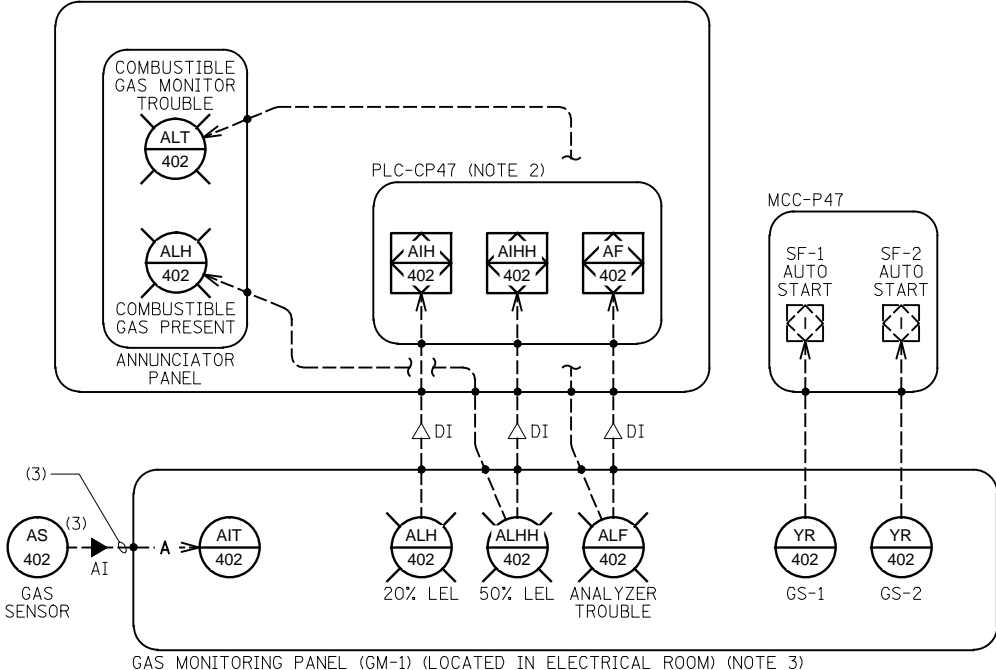
- NOTES:
- SEE SHEETS GI-1 AND GI-2 FOR INSTRUMENTATION SYMBOL LISTS, ABBREVIATIONS, AND GENERAL NOTES.
 - REFER TO SPECIFICATION SECTION 40 94 23 FOR SCADA REQUIREMENTS.
 - REFER TO DETAIL 2 ON SHEET I-9 FOR AUTOMATIC START INPUT FROM GAS MONITORING PANEL.

CONTROL PANEL (CP47)



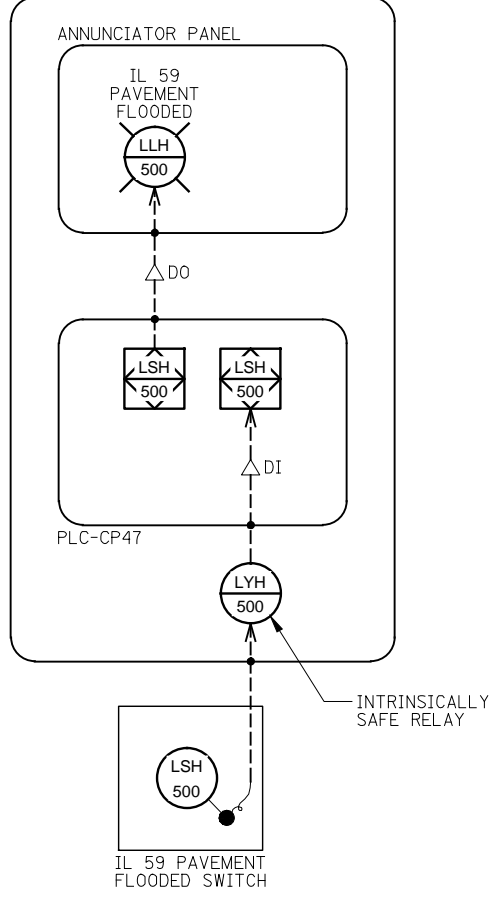
1 MISCELLANEOUS CONTROL PANEL P&ID

CONTROL PANEL (CP47)



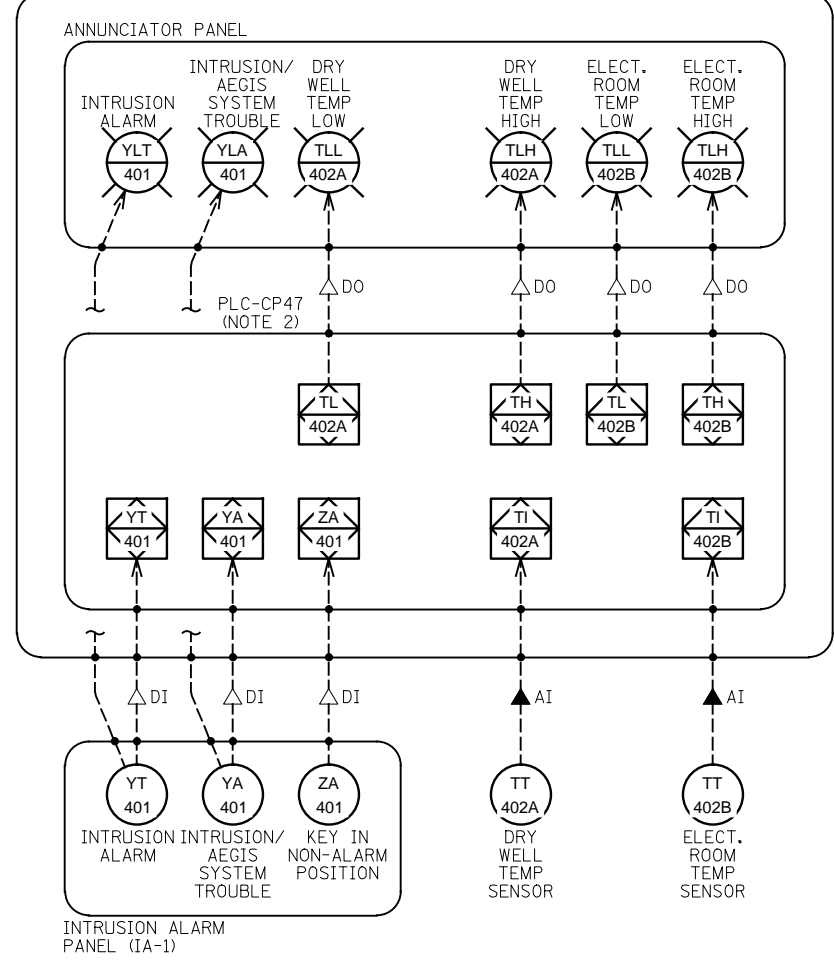
2 GAS MONITORING PANEL P&ID

CONTROL PANEL (CP47)



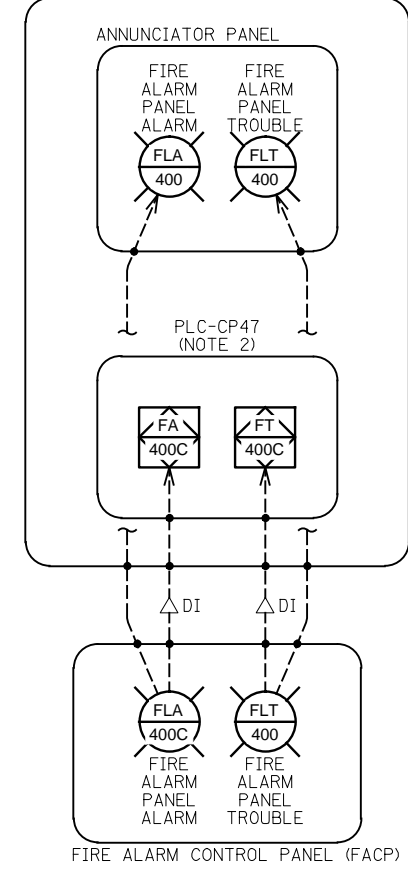
3 PAVEMENT FLOOD SYSTEM P&ID

CONTROL PANEL (CP47)



4 GENERAL BUILDING P&ID

CONTROL PANEL (CP47)

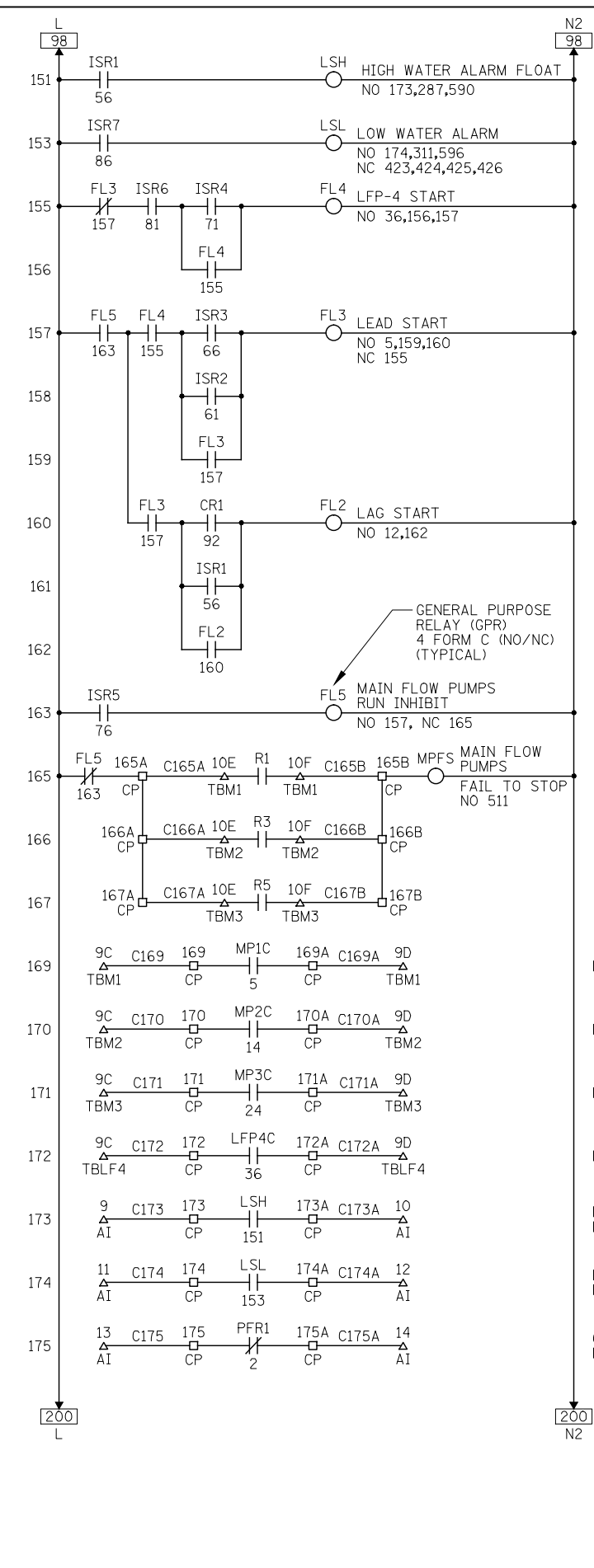
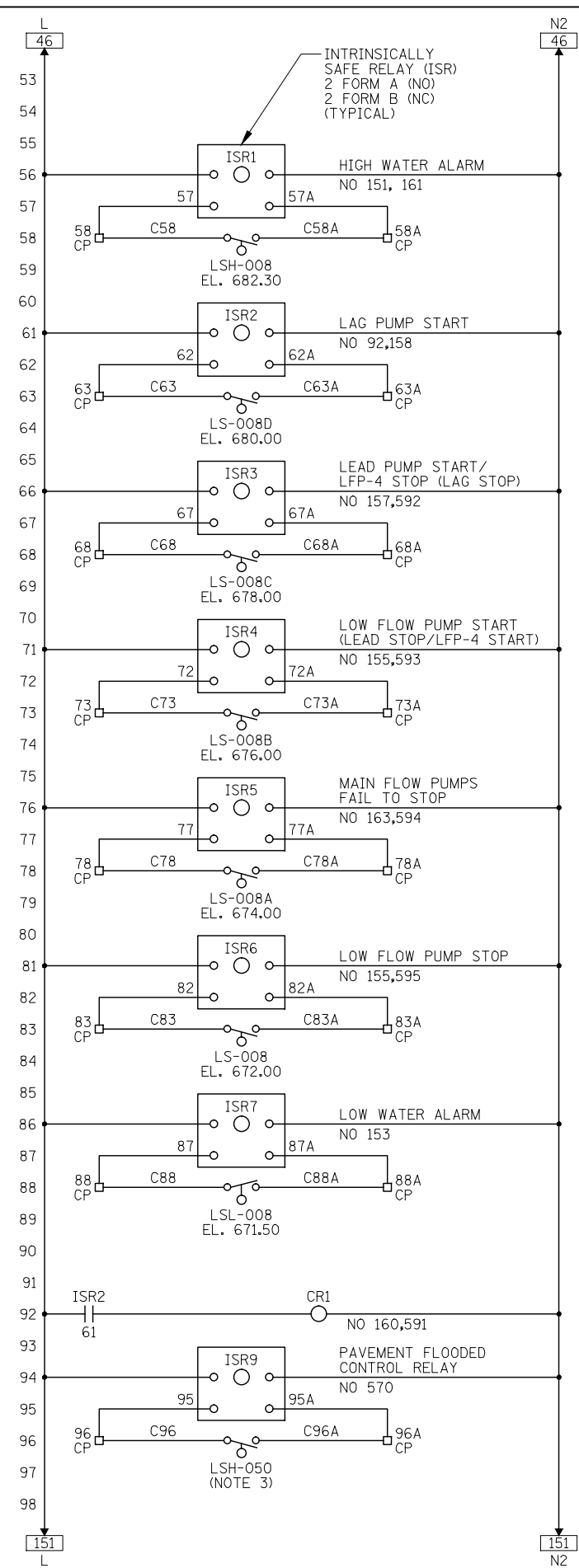
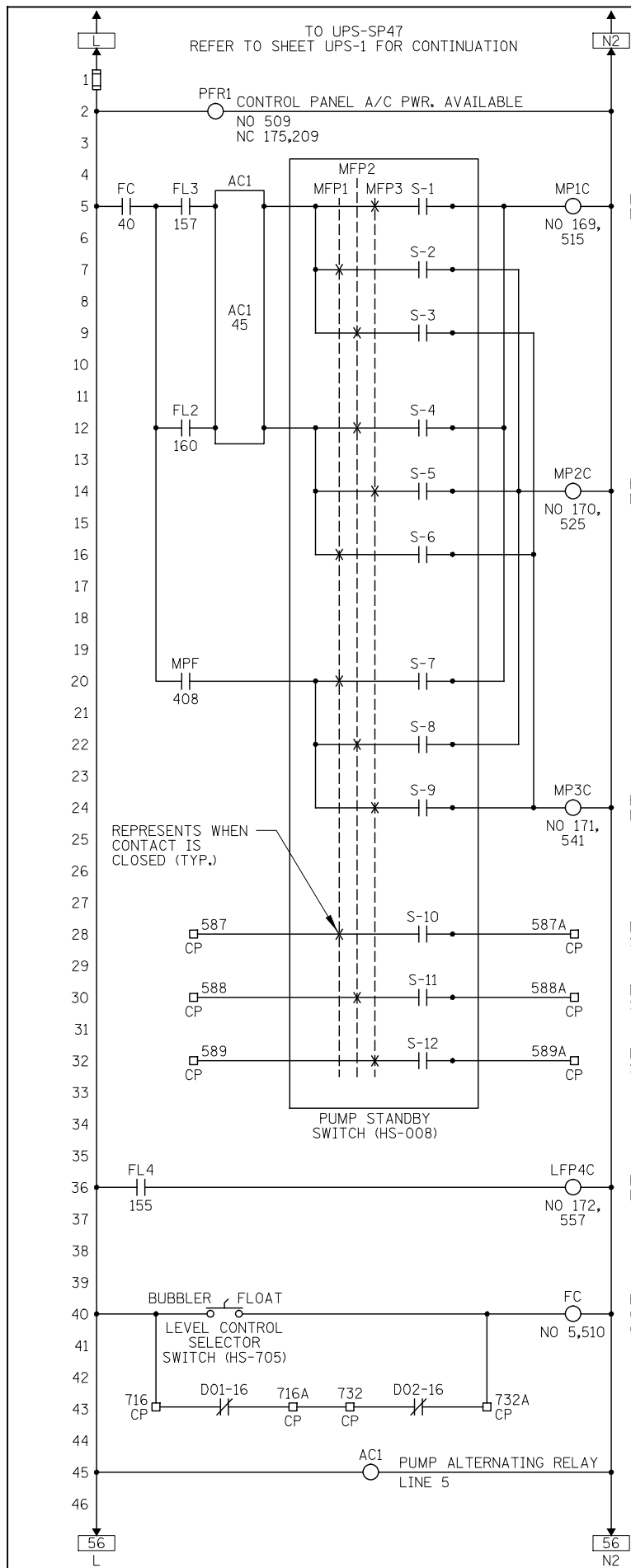


5 FIRE ALARM CONTROL PANEL (FACP) P&ID

- NOTES:
- SEE SHEETS GI-1 AND GI-2 FOR INSTRUMENTATION SYMBOL LISTS, ABBREVIATIONS, AND GENERAL NOTES.
 - REFER TO SPECIFICATION SECTION 40 94 23 FOR SCADA REQUIREMENTS.
 - GAS ANALYZERS ARE LOCATED IN THE WET WELL, DRY WELL, AND DISCHARGE CHAMBER.

DESIGNED	DKC	REVISED	- 4-19-2012
CHECKED	KMY	REVISED	-
SCALE	DRAWN	CJM	REVISED
DATE	03/22/2012	CHECKED	KMY

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035-I	DUPAGE	181	140
			CONTRACT NO. 60P41	
ILLINOIS FED. AID PROJECT				



- NOTES:**
- SEE SHEETS GI-1 AND GI-2 FOR INSTRUMENTATION SYMBOL LIST, ABBREVIATIONS, AND GENERAL NOTES.
 - WHEN THIS RELAY IS ENERGIZED, THE FLOAT LEVELING SYSTEM WILL CONTROL PUMP OPERATION. REFER TO NOTE 2 ON SHEET CPD-6 FOR ADDITIONAL DETAILS.
 - PAVEMENT FLOODED FLOAT SWITCH (LSH050) IS INSTALLED IN MANHOLE LOCATED ADJACENT TO ROADWAY. REFER TO ELECTRICAL SITE PLAN FOR MANHOLE LOCATION.
 - ALL INTERCONNECTING WIRES/CABLES BETWEEN PANELS SHALL TERMINATE ON TERMINAL STRIPS AND SHOULD NOT BE DIRECTLY CONNECTED TO DEVICES LOCATED IN THE PANELS.

MFP-1 FLOAT CALL

MFP-2 FLOAT CALL

MFP-3 FLOAT CALL

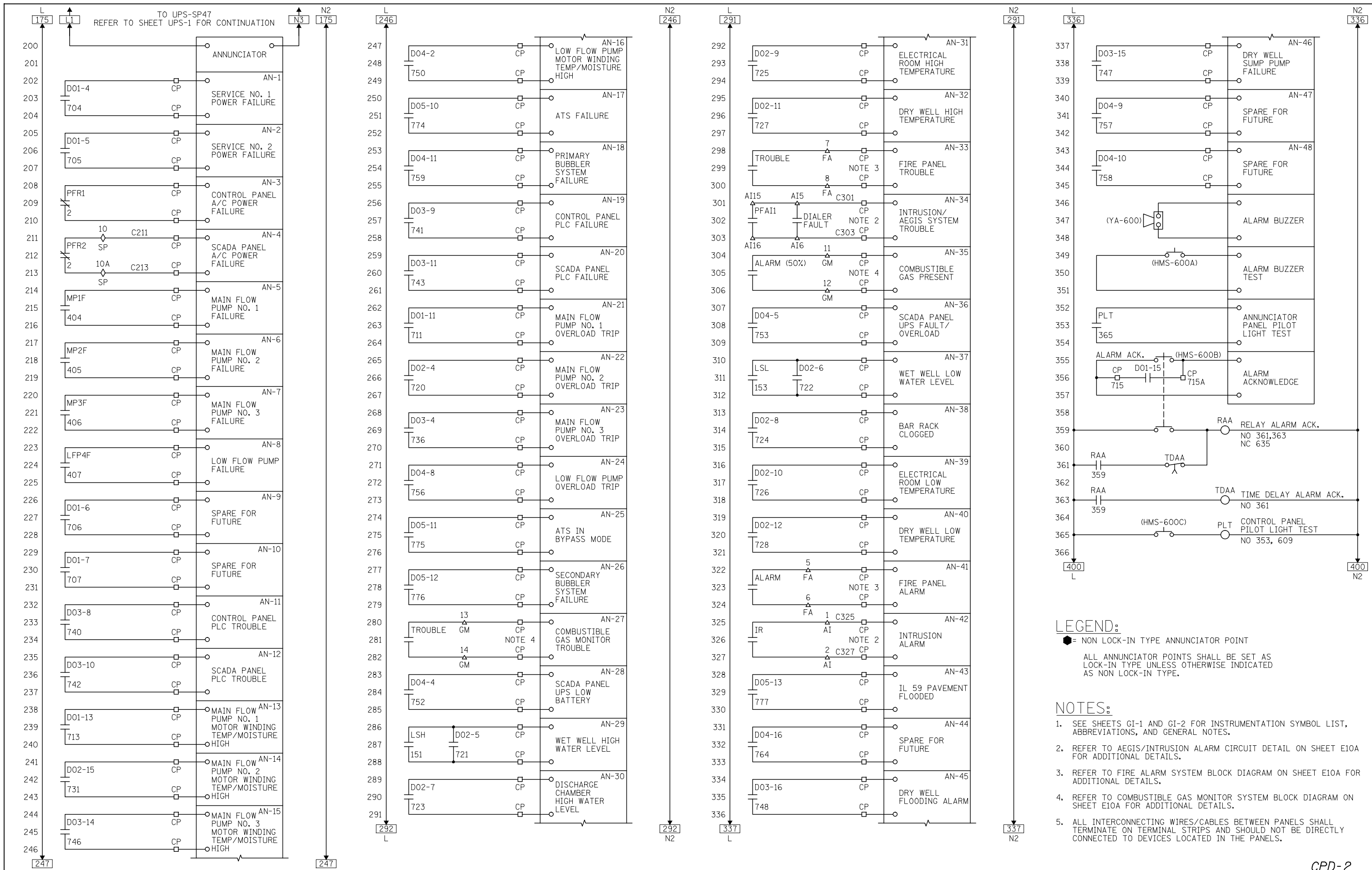
LFP-4 FLOAT CALL

HIGH WATER ALARM FOR AEGIS SYSTEM

LOW WATER ALARM FOR AEGIS SYSTEM

CONTROL PANEL CP47 POWER FAILURE

REFER TO SHEET E-10A

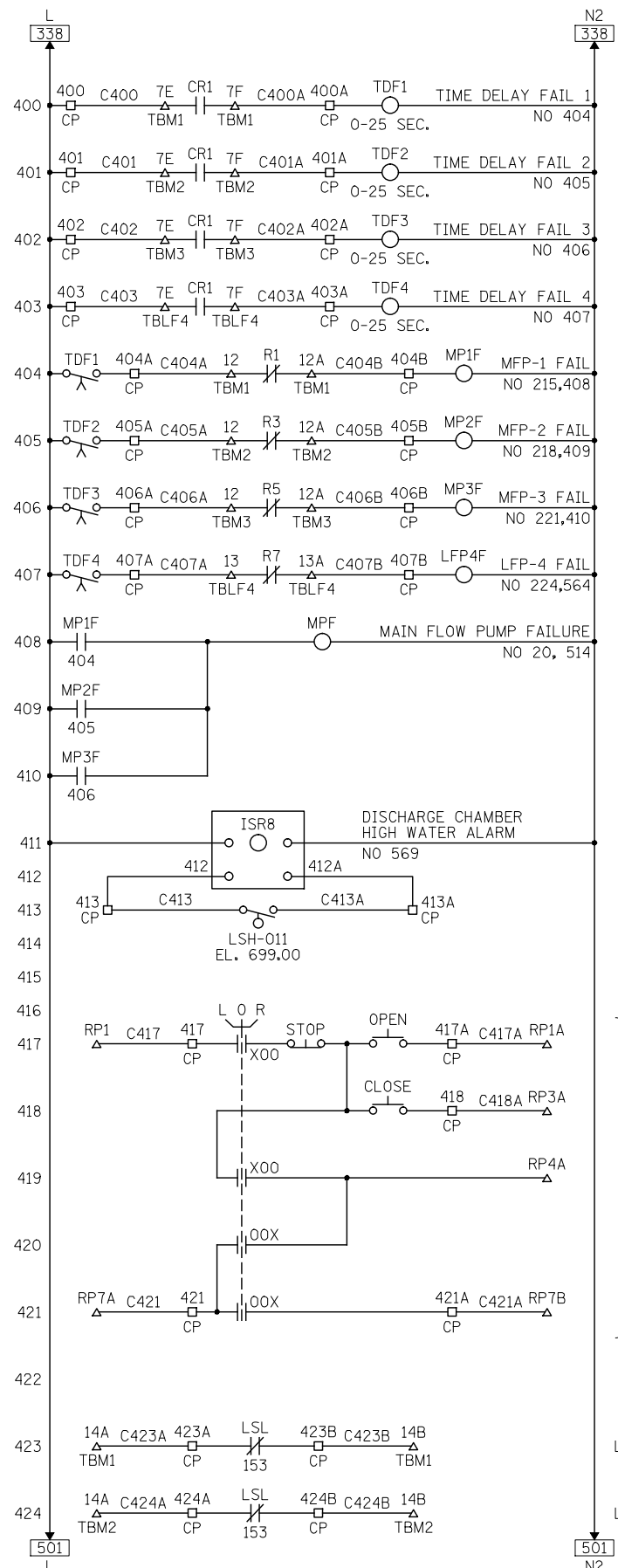


LEGEND:
 ● = NON LOCK-IN TYPE ANNUNCIATOR POINT
 ALL ANNUNCIATOR POINTS SHALL BE SET AS LOCK-IN TYPE UNLESS OTHERWISE INDICATED AS NON LOCK-IN TYPE.

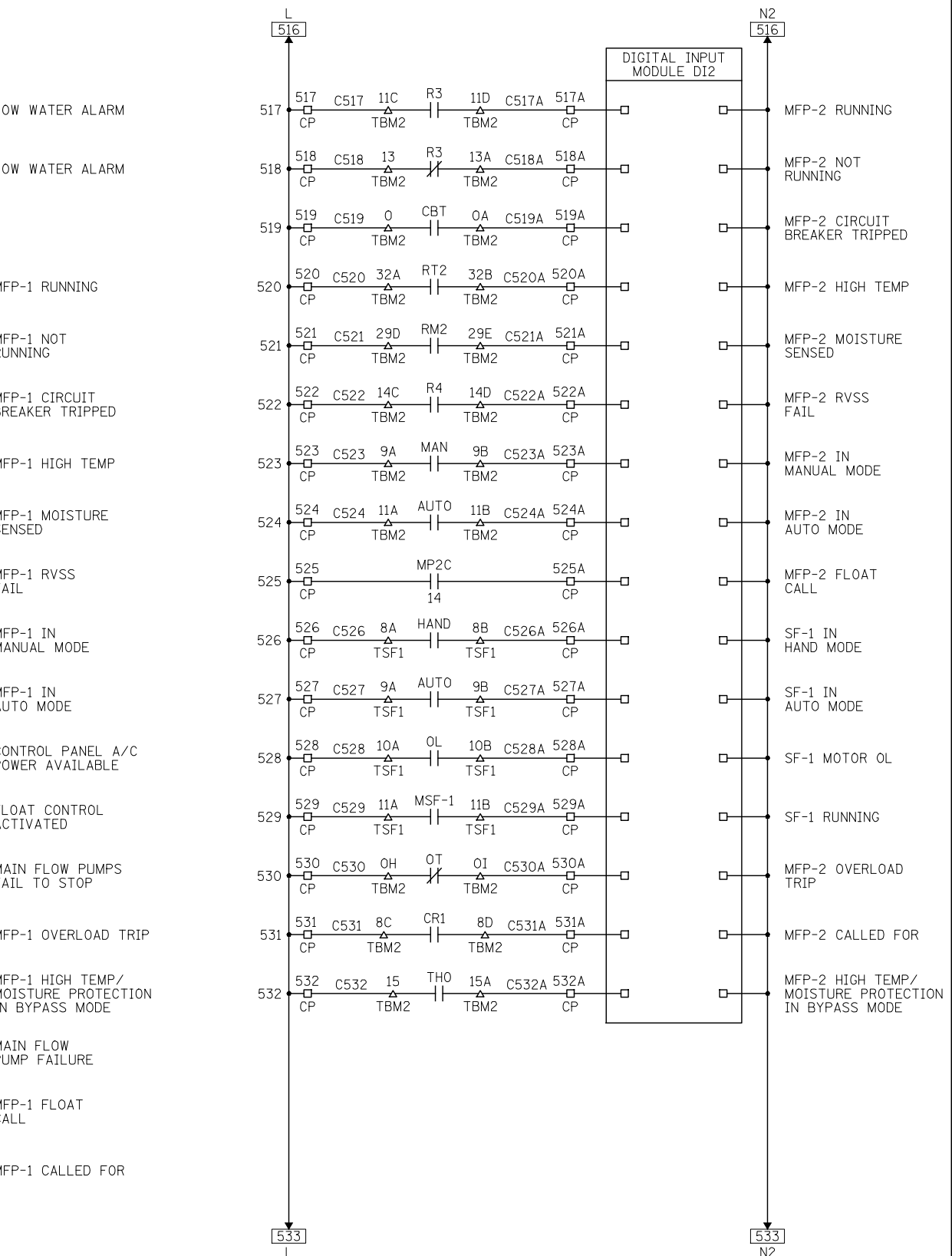
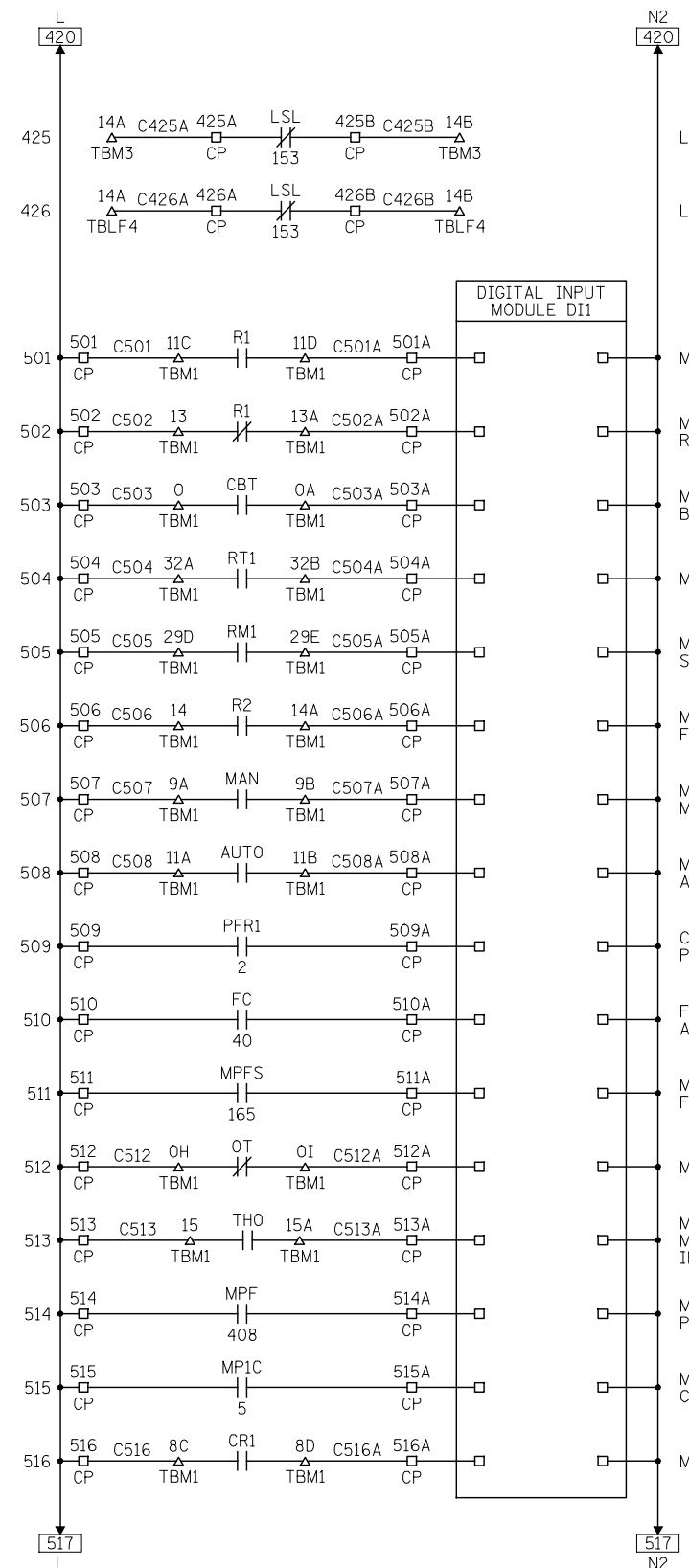
- NOTES:**
- SEE SHEETS GI-1 AND GI-2 FOR INSTRUMENTATION SYMBOL LIST, ABBREVIATIONS, AND GENERAL NOTES.
 - REFER TO AEGIS/INTRUSION ALARM CIRCUIT DETAIL ON SHEET E10A FOR ADDITIONAL DETAILS.
 - REFER TO FIRE ALARM SYSTEM BLOCK DIAGRAM ON SHEET E10A FOR ADDITIONAL DETAILS.
 - REFER TO COMBUSTIBLE GAS MONITOR SYSTEM BLOCK DIAGRAM ON SHEET E10A FOR ADDITIONAL DETAILS.
 - ALL INTERCONNECTING WIRES/CABLES BETWEEN PANELS SHALL TERMINATE ON TERMINAL STRIPS AND SHOULD NOT BE DIRECTLY CONNECTED TO DEVICES LOCATED IN THE PANELS.

CPD-2

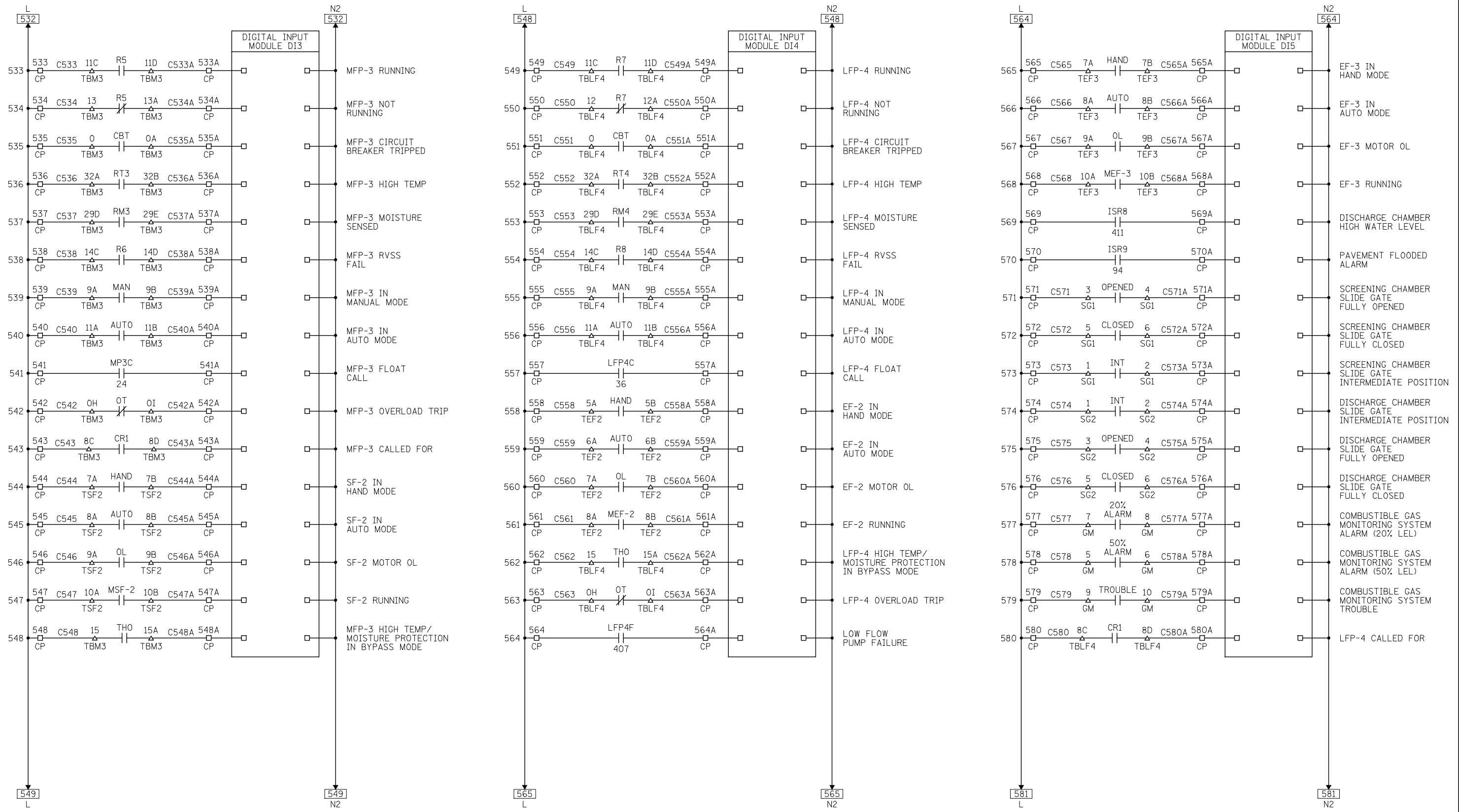
McDonough Associates Inc. Engineers/Architects 130 East Randolph Street - Suite 1000 Chicago, Illinois 60601 Phone: (312) 944-6000	DESIGNED <i>DKC</i>	REVISED - <i>4-19-2012</i>	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	I & C CONTROL PANEL SCHEMATIC PUMP STATION 47	F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	
	CHECKED <i>KMY</i>	REVISED -			338/IL 59	2011-035-1	DUPAGE	181	142	
	SCALE	DRAWN <i>CJM</i>			REVISED -	CONTRACT NO. 60P41				
	DATE <i>03/22/2012</i>	CHECKED <i>KMY</i>			REVISED -	ILLINOIS FED. AID PROJECT				



REFER TO RECIRCULATION PIPE VALVE RPV-1 DETAIL ON SHEET E-10



- NOTES:**
- SEE SHEETS GI-1 AND GI-2 FOR INSTRUMENTATION SYMBOL LIST, ABBREVIATIONS, AND GENERAL NOTES.
 - ALL INTERCONNECTING WIRES/CABLES BETWEEN PANELS SHALL TERMINATE ON TERMINAL STRIPS AND SHOULD NOT BE DIRECTLY CONNECTED TO DEVICES LOCATED IN THE PANELS.



- NOTES:**
- SEE SHEETS GI-1 AND GI-2 FOR INSTRUMENTATION SYMBOL LIST, ABBREVIATIONS, AND GENERAL NOTES.
 - ALL INTERCONNECTING WIRES/CABLES BETWEEN PANELS SHALL TERMINATE ON TERMINAL STRIPS AND SHOULD NOT BE DIRECTLY CONNECTED TO DEVICES LOCATED IN THE PANELS.



DESIGNED	DKC	REVISED	- 4-19-2012
CHECKED	KMY	REVISED	-
SCALE		REVISED	-
DATE	03/22/2012	REVISED	-
DRAWN	CJM		
CHECKED	KMY		

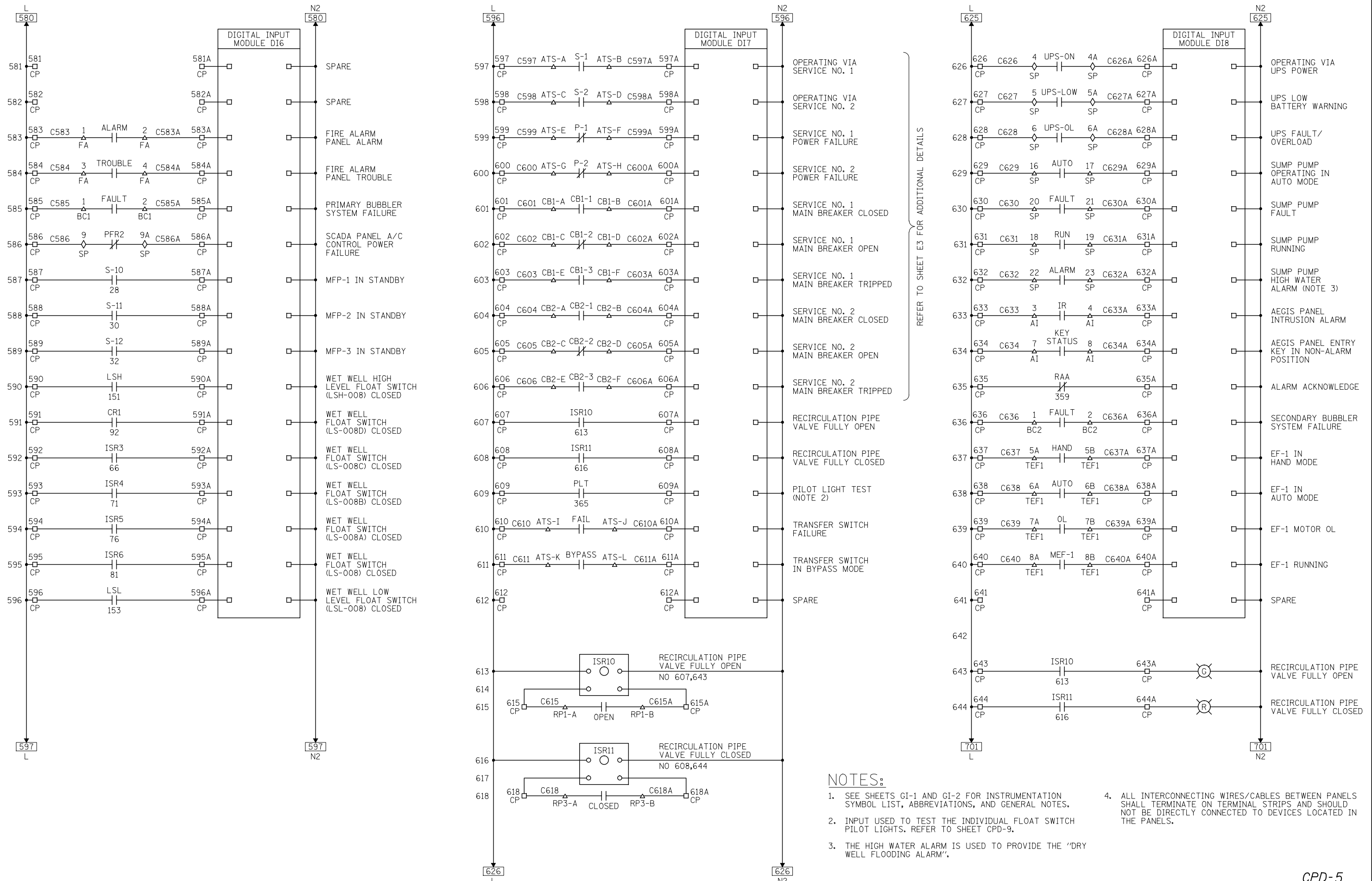
**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**I & C CONTROL PANEL SCHEMATIC
PUMP STATION 47**

SHEET NO. CPD-4 OF 9 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035-I	DUPAGE	181	144
			CONTRACT NO. 60P41	
ILLINOIS FED. AID PROJECT				

CPD-4



REFER TO SHEET E3 FOR ADDITIONAL DETAILS

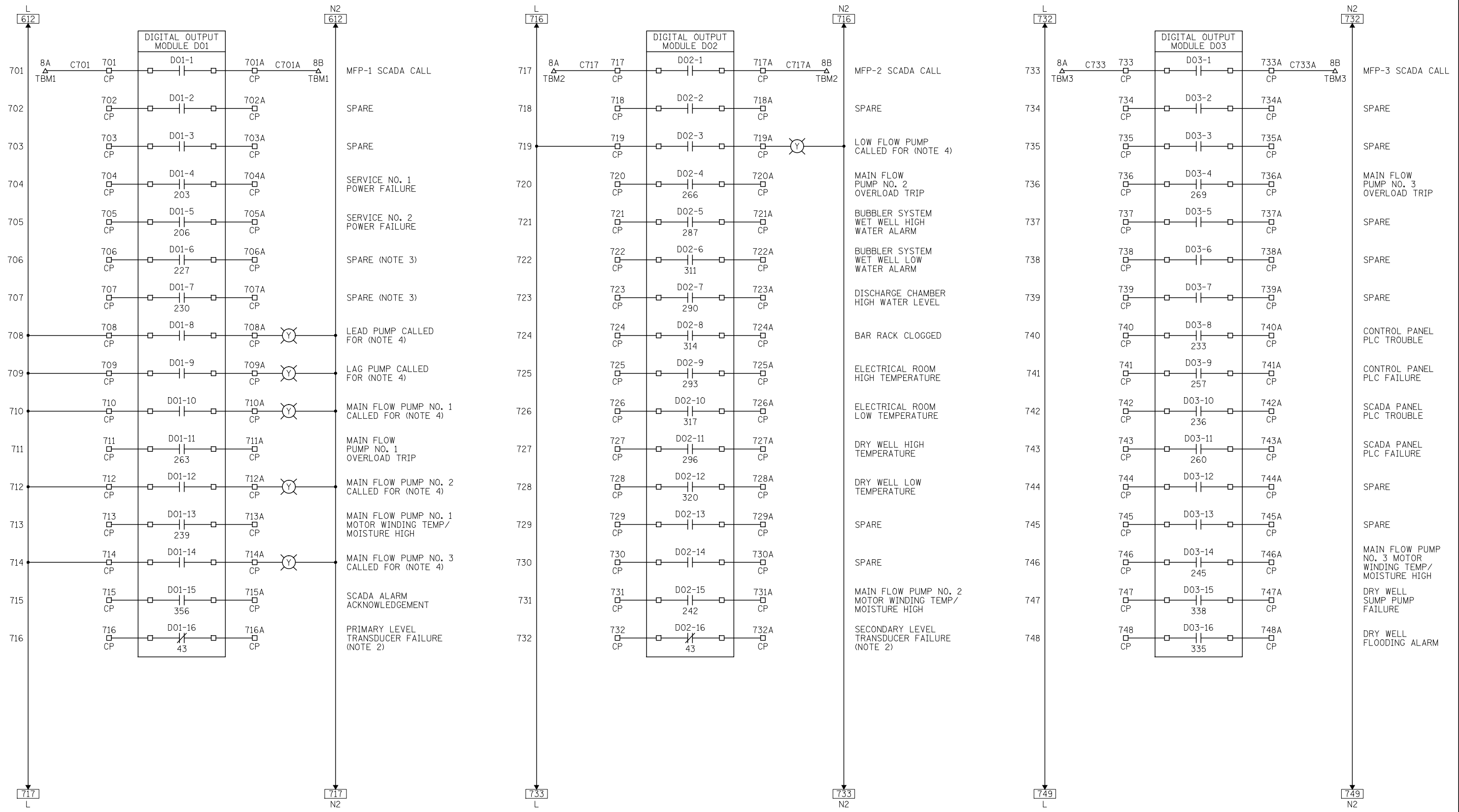
NOTES:

- SEE SHEETS GI-1 AND GI-2 FOR INSTRUMENTATION SYMBOL LIST, ABBREVIATIONS, AND GENERAL NOTES.
- INPUT USED TO TEST THE INDIVIDUAL FLOAT SWITCH PILOT LIGHTS. REFER TO SHEET CPD-9.
- THE HIGH WATER ALARM IS USED TO PROVIDE THE "DRY WELL FLOODING ALARM".
- ALL INTERCONNECTING WIRES/CABLES BETWEEN PANELS SHALL TERMINATE ON TERMINAL STRIPS AND SHOULD NOT BE DIRECTLY CONNECTED TO DEVICES LOCATED IN THE PANELS.

DESIGNED	DKC
CHECKED	KMY
DRAWN	CJM
CHECKED	KMY
SCALE	
DATE	03/22/2012

REVISED	- 4-19-2012
REVISED	-
REVISED	-
REVISED	-

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035-I	DUPAGE	181	145
			CONTRACT NO. 60P41	
ILLINOIS FED. AID PROJECT				

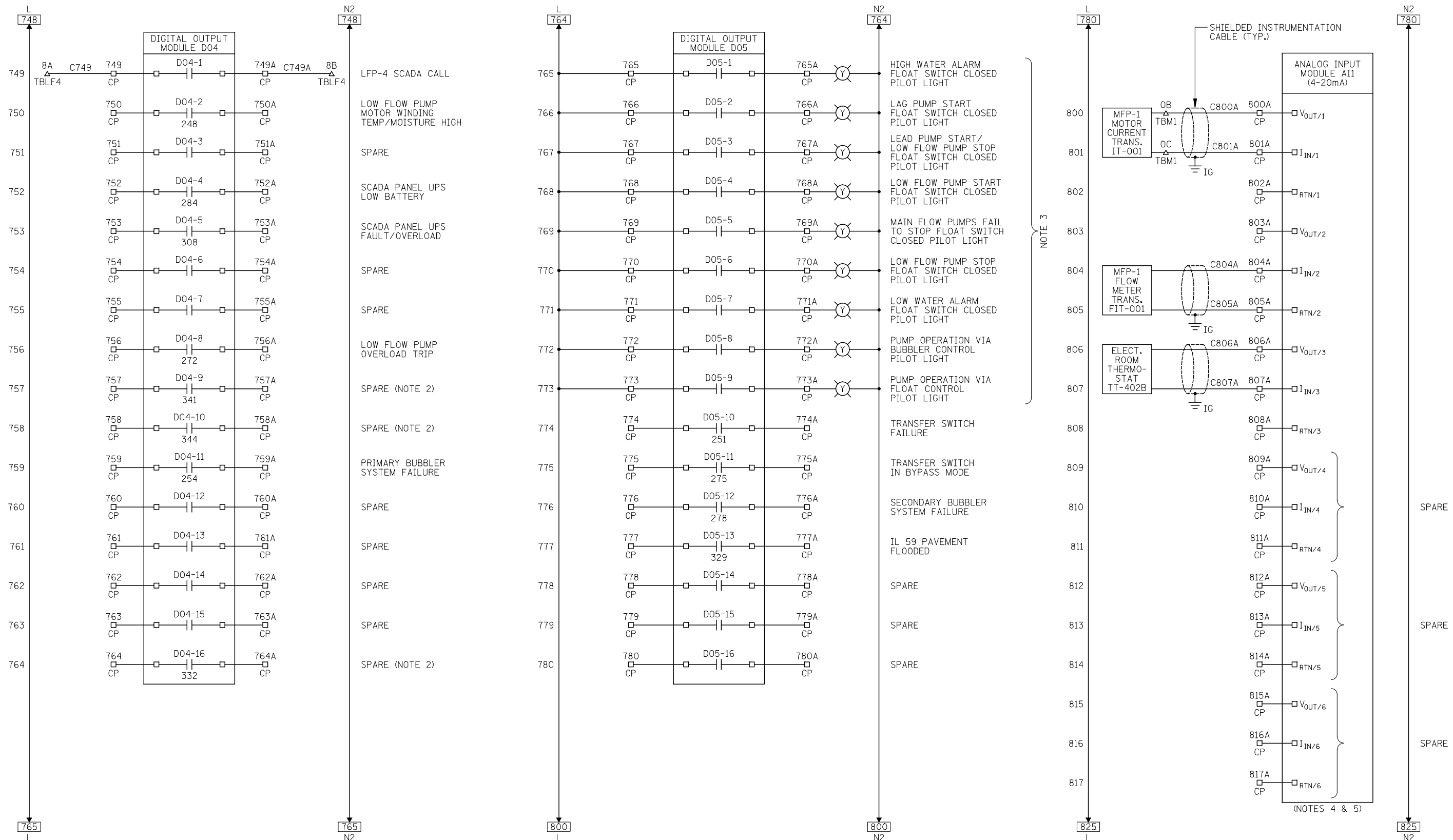


NOTES:

- SEE SHEETS GI-1 AND GI-2 FOR INSTRUMENTATION SYMBOL LIST, ABBREVIATIONS, AND GENERAL NOTES.
- PLC SHALL MONITOR STATUS OF 4-20mA INPUT FROM PRIMARY AND SECONDARY TRANSDUCERS. IF SIGNALS FROM BOTH TRANSDUCERS ARE LOST, THE FLOAT LEVELING SYSTEM SHALL AUTOMATICALLY TAKE OVER CONTROL OF PUMP OPERATION. NORMALLY CLOSED CONTACTS SHALL OPEN WHEN TRANSDUCER SIGNAL IS AVAILABLE.
- THIS OUTPUT SHALL BE HARDWIRED TO ANNUNCIATOR PANEL FOR FUTURE USE.
- PILOT LIGHT MOUNTED ON CONTROL PANEL CP47. REFER TO SHEET ID-2.
- ALL INTERCONNECTING WIRES/CABLES BETWEEN PANELS SHALL TERMINATE ON TERMINAL STRIPS AND SHOULD NOT BE DIRECTLY CONNECTED TO DEVICES LOCATED IN THE PANELS.

DESIGNED	DKC	REVISED	- 4-19-2012
CHECKED	KMY	REVISED	-
SCALE	DRAWN	REVISED	-
DATE	03/22/2012	CHECKED	KMY

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035-I	DUPAGE	181	146
			CONTRACT NO. 60P41	
ILLINOIS FED. AID PROJECT				

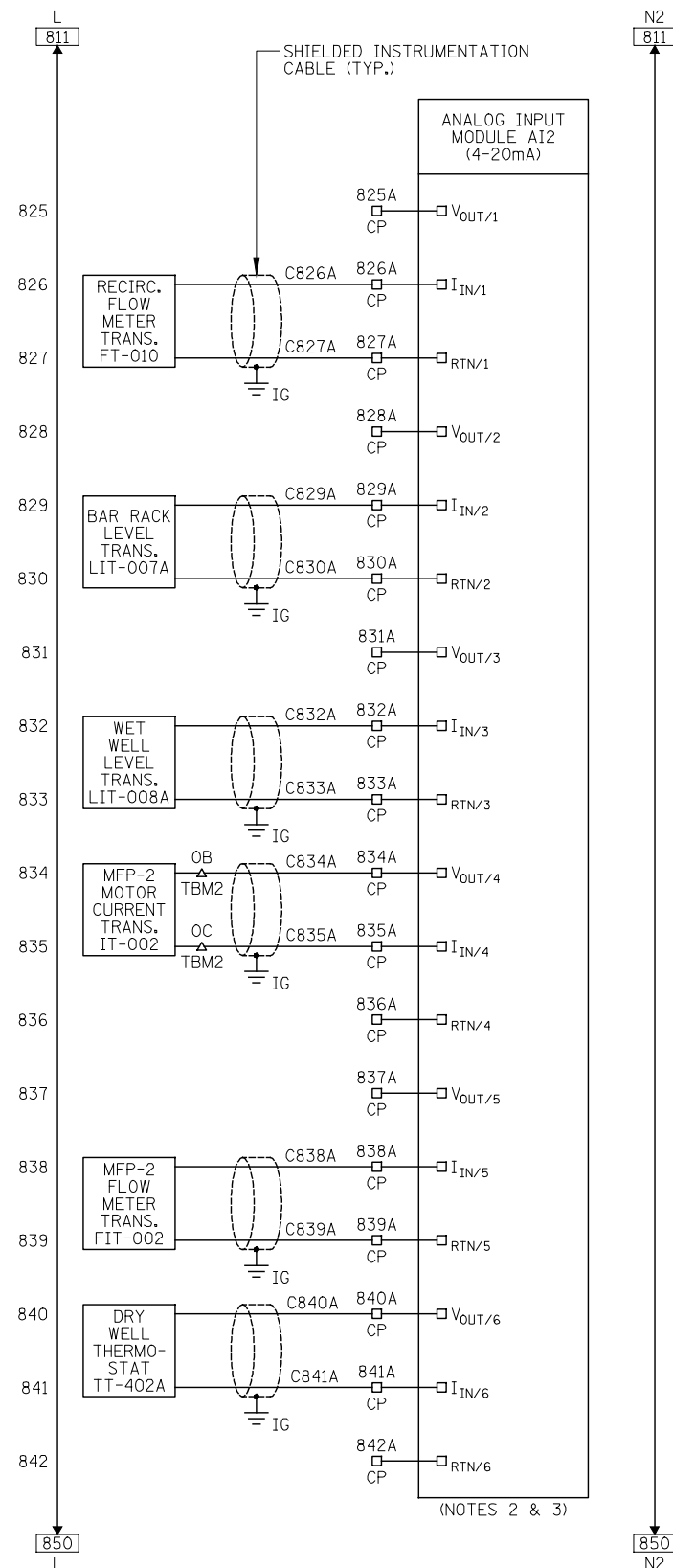


NOTES:

1. SEE SHEETS GI-1 AND GI-2 FOR INSTRUMENTATION SYMBOL LIST, ABBREVIATIONS, AND GENERAL NOTES.
2. THIS OUTPUT SHALL BE HARDWIRED TO ANNUNCIATOR PANEL FOR FUTURE USE.
3. PILOT LIGHTS MOUNTED ON CONTROL PANEL CP47. REFER TO DRAWING ID-2.
4. PROVIDE INTRINSICALLY SAFE BARRIERS FOR ALL 4-20mA INPUT SIGNALS COMING FROM THOSE DEVICES THAT ARE INSTALLED IN HAZARDOUS LOCATIONS.
5. CONTRACTOR TO VERIFY IF FIELD DEVICES SELECTED REQUIRE 2-WIRE OR 4-WIRE CONTROL AND CONNECT TO ANALOG INPUT MODULES ACCORDINGLY.
6. ALL INTERCONNECTING WIRES/CABLES BETWEEN PANELS SHALL TERMINATE ON TERMINAL STRIPS AND SHOULD NOT BE DIRECTLY CONNECTED TO DEVICES LOCATED IN THE PANELS.

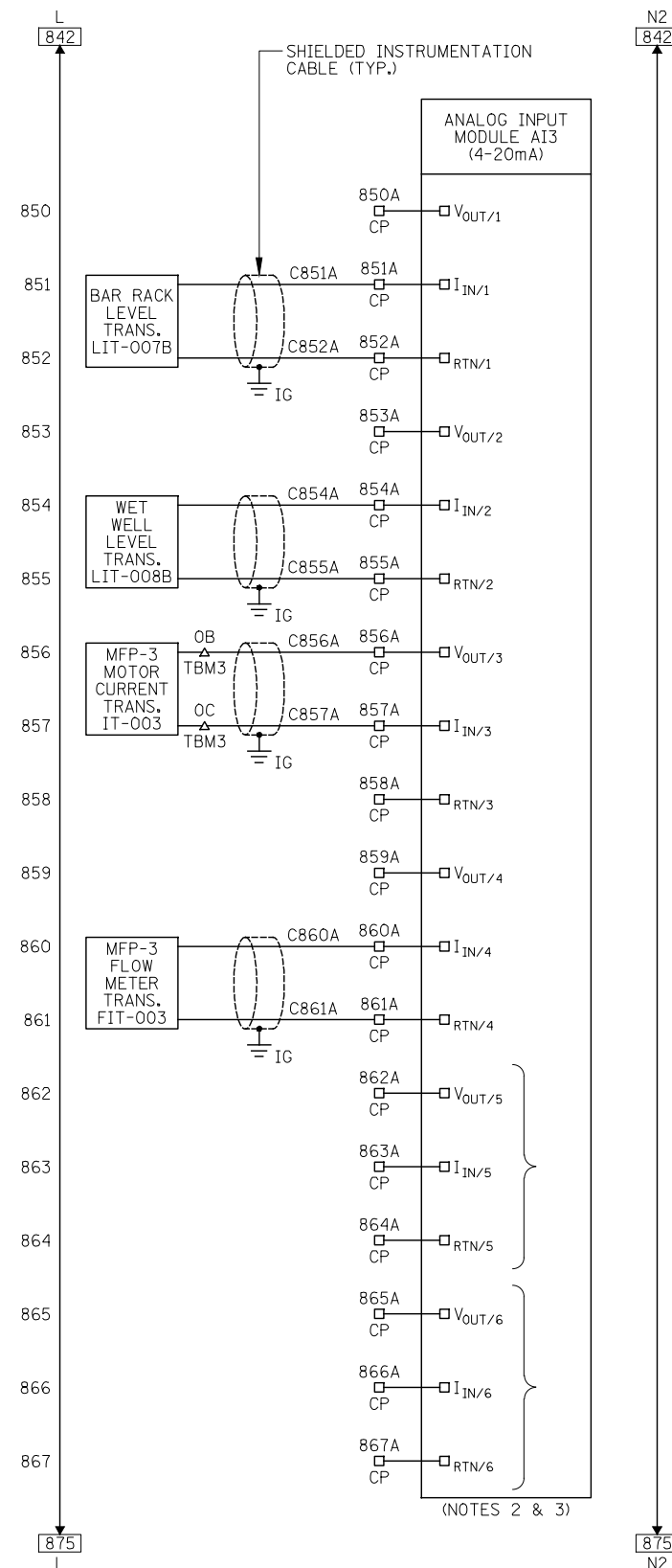
DESIGNED	DKC	REVISED	- 4-19-2012
CHECKED	KMY	REVISED	-
SCALE	DRAWN	REVISED	-
DATE	03/22/2012	CHECKED	KMY

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035-I	DUPAGE	181	147
			CONTRACT NO. 60P41	
ILLINOIS FED. AID PROJECT				



UPSTREAM TRANSDUCER

PRIMARY BUBBLER LEVEL TRANSDUCER



DOWNSTREAM TRANSDUCER

SECONDARY BUBBLER LEVEL TRANSDUCER

SPARE

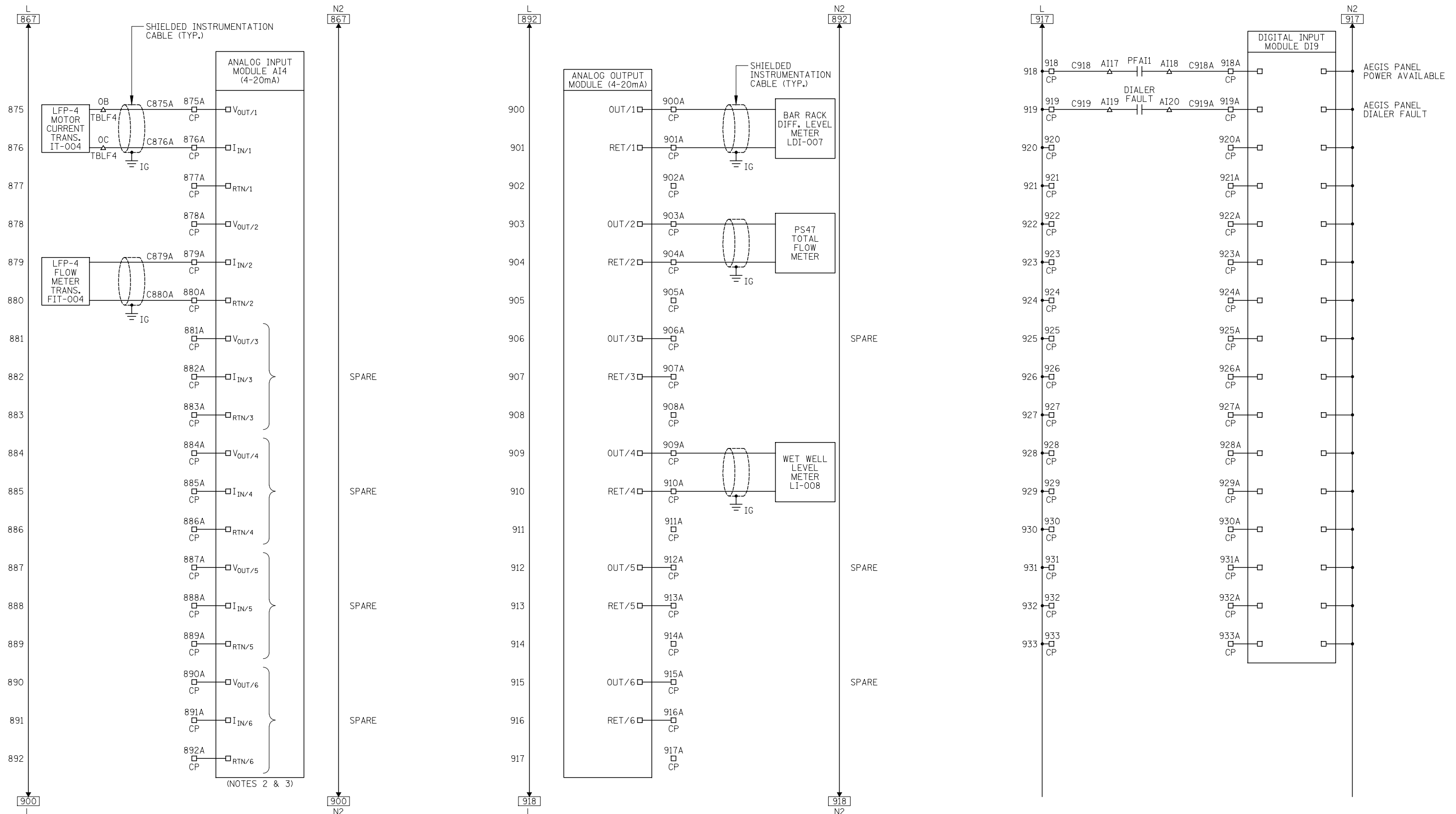
SPARE

NOTES:

- SEE SHEETS GI-1 AND GI-2 FOR INSTRUMENTATION SYMBOL LIST, ABBREVIATIONS, AND GENERAL NOTES.
- PROVIDE INTRINSICALLY SAFE BARRIERS FOR ALL 4-20mA INPUT SIGNALS COMING FROM THOSE DEVICES THAT ARE INSTALLED IN HAZARDOUS LOCATIONS.
- CONTRACTOR TO VERIFY IF FIELD DEVICES SELECTED REQUIRE 2-WIRE OR 4-WIRE CONTROL AND CONNECT TO ANALOG INPUT MODULES ACCORDINGLY.
- ALL INTERCONNECTING WIRES/CABLES BETWEEN PANELS SHALL TERMINATE ON TERMINAL STRIPS AND SHOULD NOT BE DIRECTLY CONNECTED TO DEVICES LOCATED IN THE PANELS.

DESIGNED	DKC	REVISED	- 4-19-2012
CHECKED	KMY	REVISED	-
SCALE	DRAWN	CJM	REVISED
DATE	03/22/2012	CHECKED	KMY

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035-I	DUPAGE	181	148
			CONTRACT NO. 60P41	
ILLINOIS FED. AID PROJECT				



NOTES:

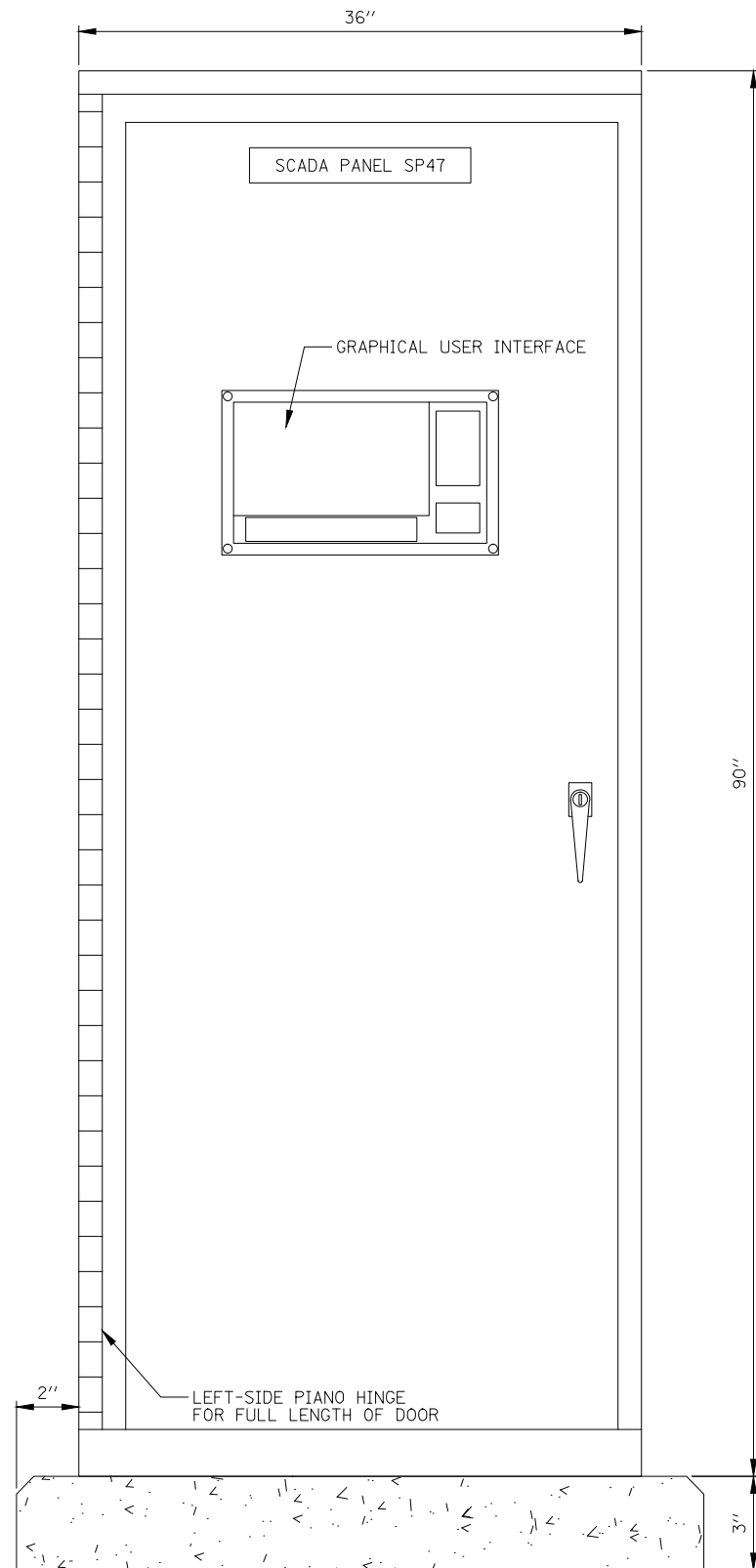
- SEE SHEETS GI-1 AND GI-2 FOR INSTRUMENTATION SYMBOL LIST, ABBREVIATIONS, AND GENERAL NOTES.
- PROVIDE INTRINSICALLY SAFE BARRIERS FOR ALL 4-20mA INPUT SIGNALS COMING FROM THOSE DEVICES THAT ARE INSTALLED IN HAZARDOUS LOCATIONS.
- CONTRACTOR TO VERIFY IF FIELD DEVICES SELECTED REQUIRE 2-WIRE OR 4-WIRE CONTROL AND CONNECT TO ANALOG INPUT MODULES ACCORDINGLY.
- ALL INTERCONNECTING WIRES/CABLES BETWEEN PANELS SHALL TERMINATE ON TERMINAL STRIPS AND SHOULD NOT BE DIRECTLY CONNECTED TO DEVICES LOCATED IN THE PANELS.

DESIGNED	DKC	REVISED	- 4-19-2012
CHECKED	KMY	REVISED	-
SCALE	DRAWN CJM	REVISED	-
DATE 03/22/2012	CHECKED KMY	REVISED	-

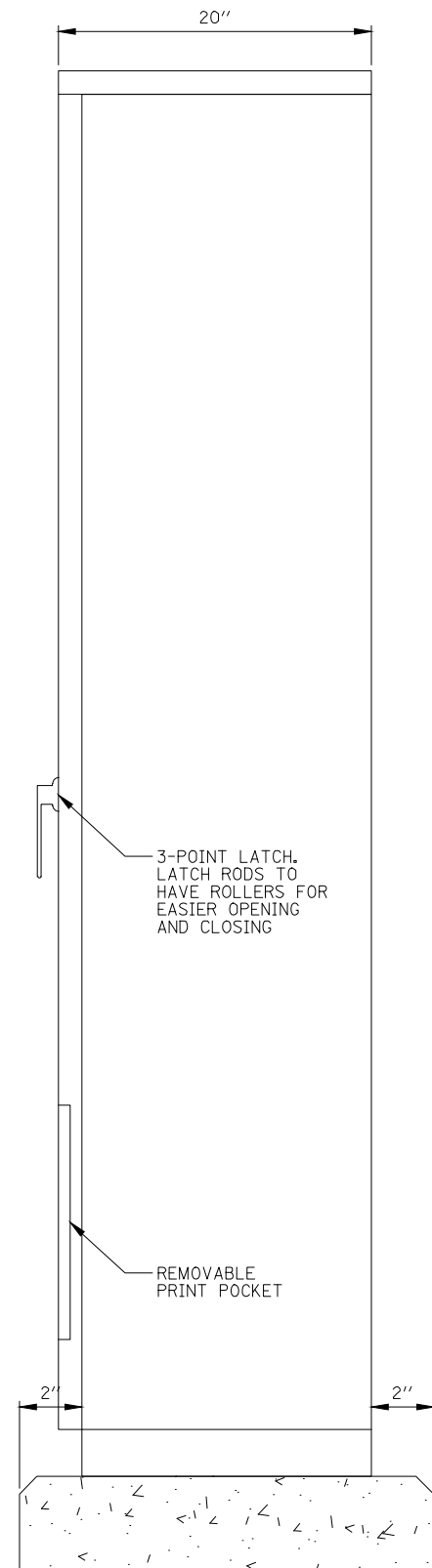
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035-I	DUPAGE	181	149
			CONTRACT NO. 60P41	
ILLINOIS FED. AID PROJECT				

NOTES:

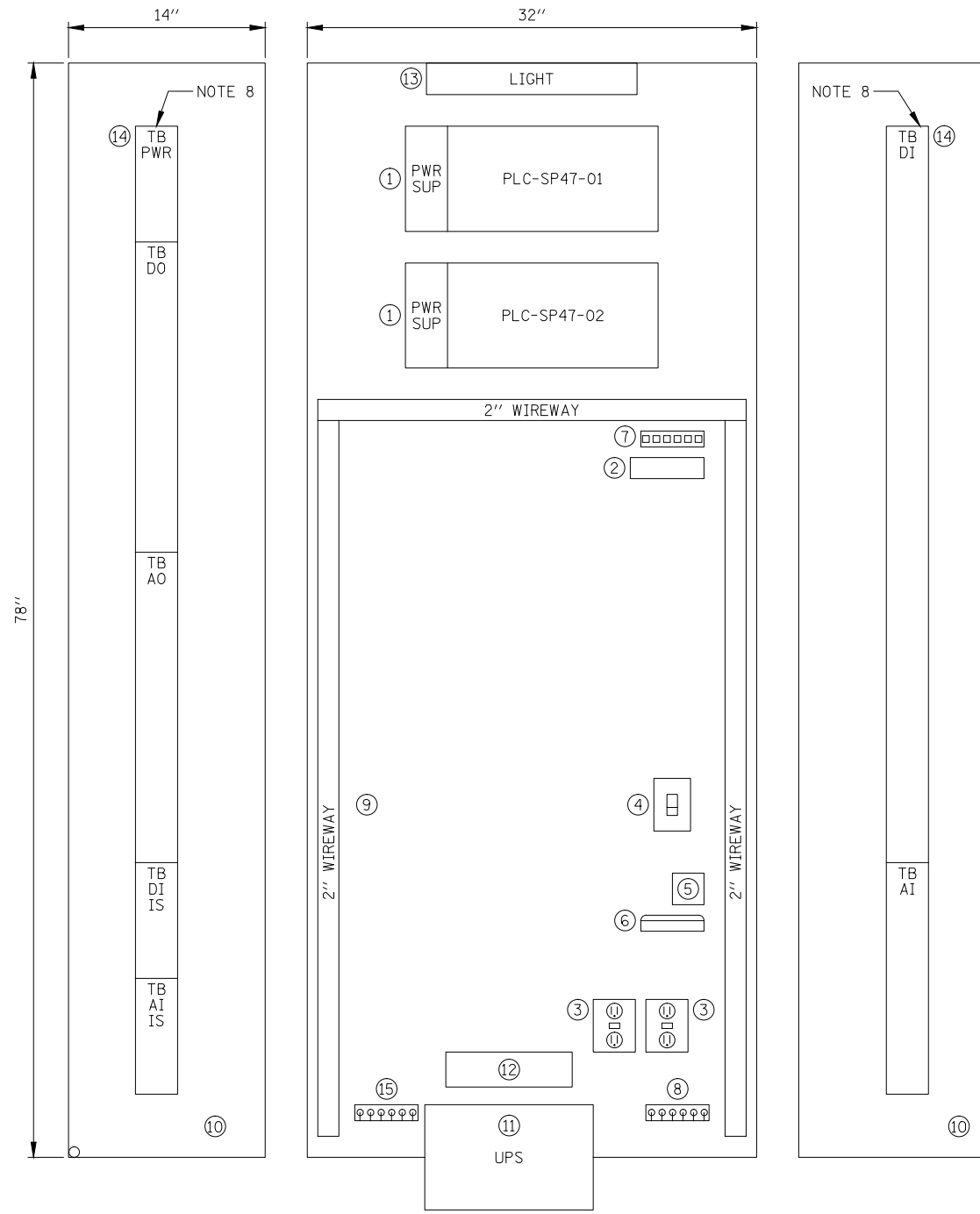
- SEE SHEETS GI-1 AND GI-2 FOR INSTRUMENTATION SYMBOL LIST, ABBREVIATIONS, AND GENERAL NOTES.
- THE SCADA PANEL SHALL BE OF SUFFICIENT DEPTH TO ACCOMMODATE ALL DEVICES. PROPER CLEARANCE SHALL BE PROVIDED BETWEEN DOOR MOUNTED DEVICES AND PANEL MOUNTED DEVICES.
- SCADA PANEL DETAIL PROVIDES INFORMATION REGARDING SOME OF THE MAJOR COMPONENTS TO BE MOUNTED IN THE PANEL. ANCILLARY DEVICES SUCH AS RELAYS, TIMER, POWER SUPPLIES, ETC., ARE NOT SHOWN. ALL DEVICES TO PROVIDE A FUNCTIONING SYSTEM AS DETAILED IN THE PLANS AND SPECIFICATIONS SHALL BE PROVIDED. CONTRACTOR TO PROVIDE SUBMITTAL DETAILING PANEL LAYOUT FOR ALL COMPONENTS.
- REFER TO SPECIFICATION SECTION 40 94 23 FOR ADDITIONAL CONTROL PANEL AND INTRINSICALLY SAFE DEVICE INSTALLATION REQUIREMENTS.
- NAMEPLATES TO BE WHITE WITH BLACK LETTERING.
- INTRINSICALLY SAFE WIRING SHALL BE SEGREGATED FROM ALL OTHER TYPES OF WIRING. INTRINSICALLY SAFE WIRING SHALL BE INSTALLED IN A CONDUIT ONLY WITH OTHER INTRINSICALLY SAFE CIRCUITS IN PANELS AND EQUIPMENT. INTRINSICALLY SAFE CIRCUIT WIRING SHALL HAVE A MINIMUM OF 3 INCHES OF CLEARANCE, OR A GROUNDED METAL OR INSULATING PARTITION, BETWEEN THE INTRINSICALLY SAFE AND OTHER TYPES OF WIRING. SEE NEC ARTICLE 504.
- REFER TO SHEET ID-4 DETAIL NO. 2 FOR GROUNDING REQUIREMENTS.
- TERMINAL BLOCK DESIGNATIONS ARE AS FOLLOWS:
 TBPWR - POWER
 TB DI - DIGITAL INPUTS
 TBAI - ANALOG INPUTS
 TBDO - DIGITAL OUTPUTS
 TBAO - ANALOG OUTPUTS
 TB DIIS - INTRINSICALLY SAFE DIGITAL INPUTS
 TBAIIS - INTRINSICALLY SAFE ANALOG INPUTS
- PATCH PANEL MUST BE SUITABLE FOR SC, ST, OR LC FIBER CONNECTION, CONNECTOR, FIBER CABLE, AND FIBER PATCH CABLE TO BE PROVIDED BY OTHERS IN THE FUTURE.



1 SCADA PANEL SP47 FRONT VIEW
NOT TO SCALE

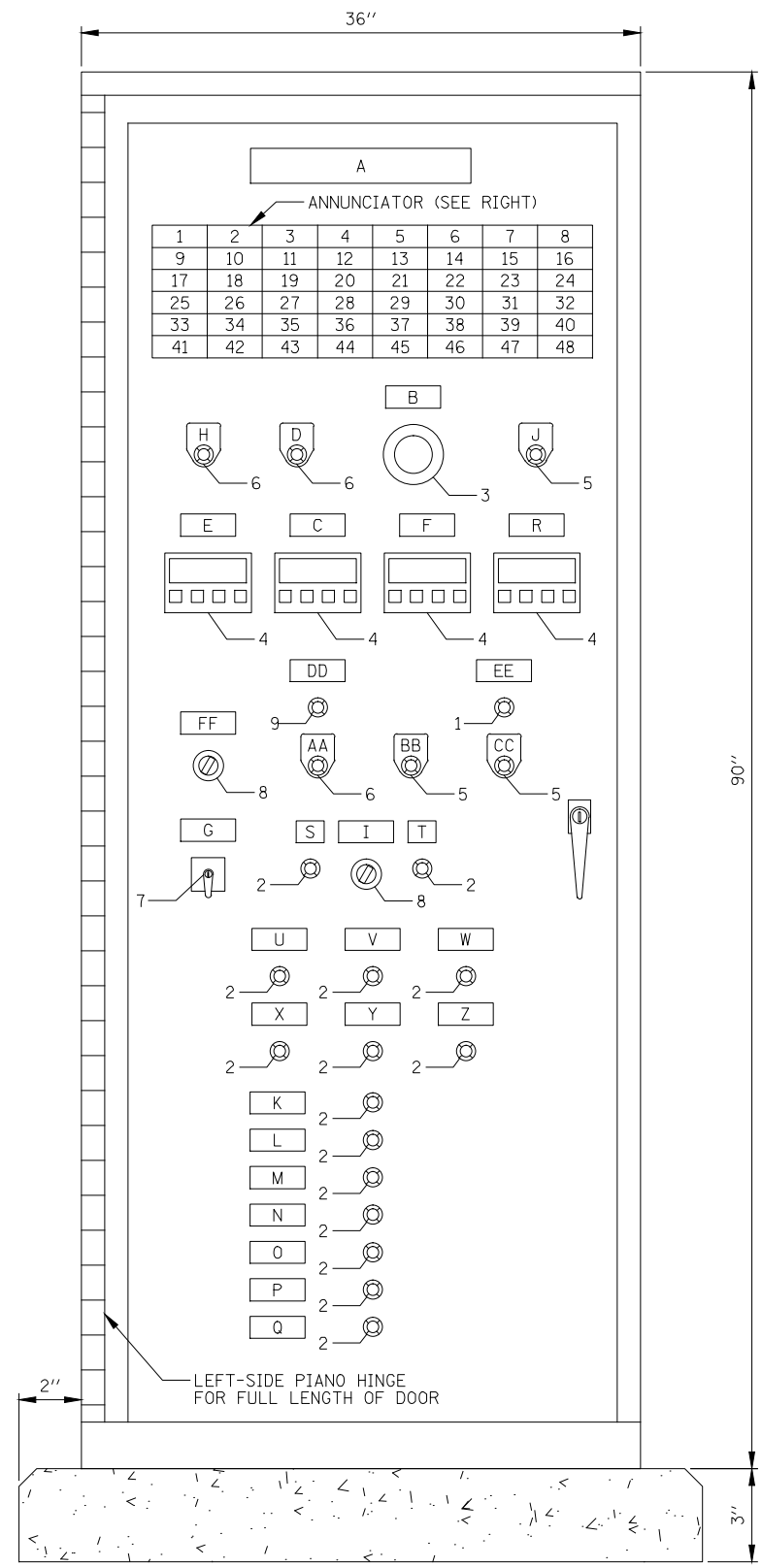


2 SCADA PANEL SP47 SIDE VIEW
NOT TO SCALE

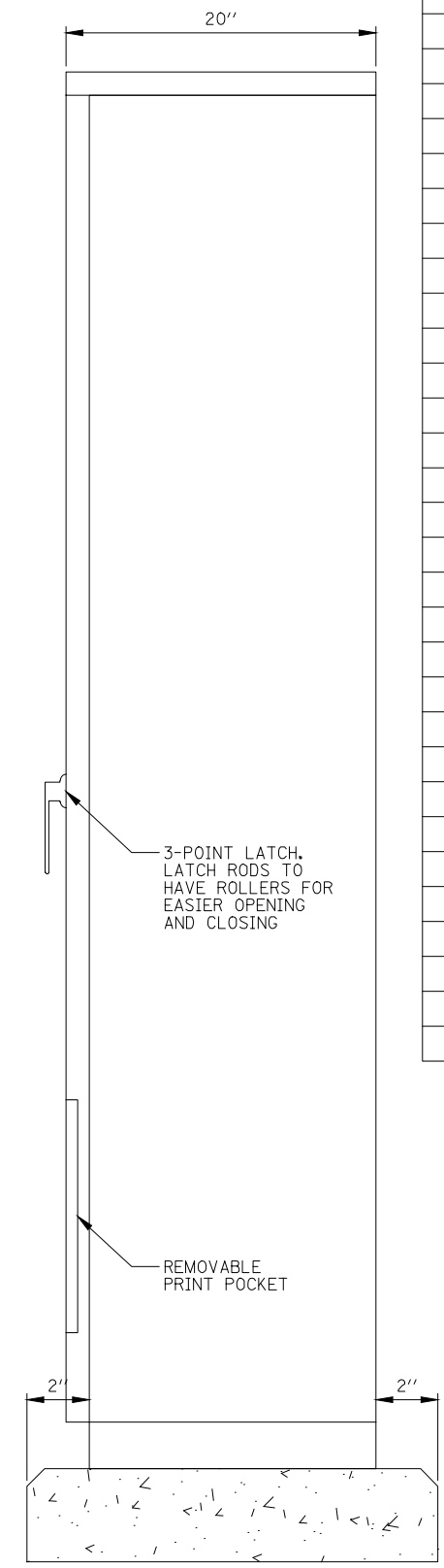


3 SCADA PANEL SP47 INTERIOR DETAIL
NOT TO SCALE

MAJOR EQUIPMENT LIST	
ITEM #	DESCRIPTION
1	ALLEN BRADLEY 1756-L7 REDUNDANT CONTROL LOGIC PLC
2	ALLEN BRADLEY ETHERNET SWITCH
3	GFCI OUTLET, 125V, 20A, IN HANDY BOX
4	LIGHT SWITCH, 125V, 20A, IN HANDY BOX
5	PHONE LINE SUPPRESSOR
6	MODEM, TELEPHONE (LEASE-LINE)
7	6-PORT FIBER PATCH PANEL (NOTE 9)
8	GROUND BUS (NOTE 7)
9	BACK PANEL
10	SIDE PANEL
11	UPS, 120VAC (UPS-SP47)
12	UPS MAINTENANCE BYPASS SWITCH (BPS-SP47)
13	FLUORESCENT LIGHT, 120V, 20W
14	TERMINAL BLOCKS, 300V, SCREW TYPE
15	INSTRUMENTATION GROUND BUS (NOTE 7)



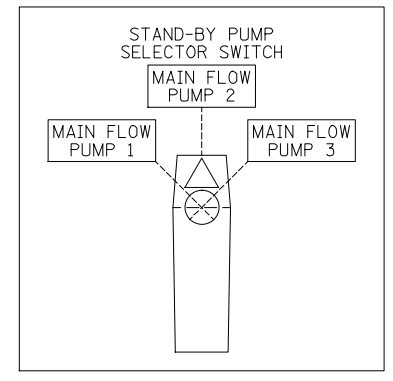
1 CONTROL PANEL CP47 FRONT VIEW
NOT TO SCALE



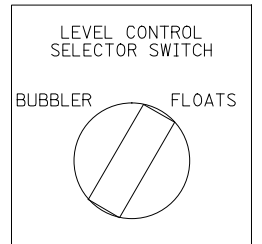
2 CONTROL PANEL CP47 SIDE VIEW
NOT TO SCALE

ITEM	NAMEPLATE SCHEDULE
A	CONTROL PANEL CP47
B	SCADA SYSTEM AUDIBLE ALARM
C	BAR RACK DIFFERENTIAL LEVEL (Ft.)
D	AUDIBLE ALARM TEST PUSHBUTTON
E	PS47 TOTAL FLOW (gpm)
F	WET WELL LEVEL (Ft.)
G	-- SEE DETAIL NO. 3 --
H	CONTROL PANEL PILOT LIGHT TEST
I	-- SEE DETAIL NO. 4 --
J	ALARM ACKNOWLEDGE
K	HIGH WATER ALARM FLOAT (682.30 FT)
L	LAG PUMP START FLOAT (680.00 FT)
M	LEAD PUMP START/LOW FLOW PUMP STOP FLOAT (678.00 FT)
N	LOW FLOW PUMP START FLOAT (676.00 FT)
O	MAIN FLOW PUMPS FAIL TO STOP FLOAT (674.00 FT)
P	LOW FLOW PUMP STOP FLOAT (672.00 FT)
Q	LOW WATER ALARM FLOAT (671.50 FT)
R	RECIRCULATION FLOW METER (gpm)
S	PUMP OPERATION VIA BUBBLER CONTROL
T	PUMP OPERATION VIA FLOAT CONTROL
U	LOW FLOW PUMP CALLED FOR
V	LEAD PUMP CALLED FOR
W	LAG PUMP CALLED FOR
X	MAIN FLOW PUMP NO. 1 CALLED FOR
Y	MAIN FLOW PUMP NO. 2 CALLED FOR
Z	MAIN FLOW PUMP NO. 3 CALLED FOR
AA	RECIRCULATION PIPE VALVE OPEN
BB	RECIRCULATION PIPE VALVE STOP
CC	RECIRCULATION PIPE VALVE CLOSE
DD	RECIRCULATION PIPE VALVE FULLY OPEN
EE	RECIRCULATION PIPE VALVE FULLY CLOSED
FF	RECIRCULATION PIPE VALVE LOCAL/OFF/REMOTE

- NOTES:**
- SEE SHEETS GI-1 AND GI-2 FOR INSTRUMENTATION SYMBOL LIST, ABBREVIATIONS, AND GENERAL NOTES.
 - THE CONTROL PANEL SHALL BE OF SUFFICIENT DEPTH TO ACCOMMODATE ALL DEVICES. PROPER CLEARANCE SHALL BE PROVIDED BETWEEN DOOR MOUNTED DEVICES AND PANEL MOUNTED DEVICES.
 - SEE DETAIL 1 ON SHEET ID-3 FOR CONTROL PANEL INTERIOR DETAILS.
 - NAMEPLATES TO BE WHITE WITH BLACK LETTERING.
 - FOR EACH SPARE PROVIDE ALARM CARD, ALARM MODULE, BULBS, ETC. TO ENSURE FUNCTIONALITY IN THE FUTURE.
 - REFER TO SPECIFICATION SECTION 40 94 23 FOR ADDITIONAL SCADA PANEL REQUIREMENTS.



3 STAND-BY PUMP SELECTOR SWITCH (HS-008) DETAIL
NOT TO SCALE



4 LEVEL CONTROL SELECTOR SWITCH (HS-705) DETAIL
NOT TO SCALE

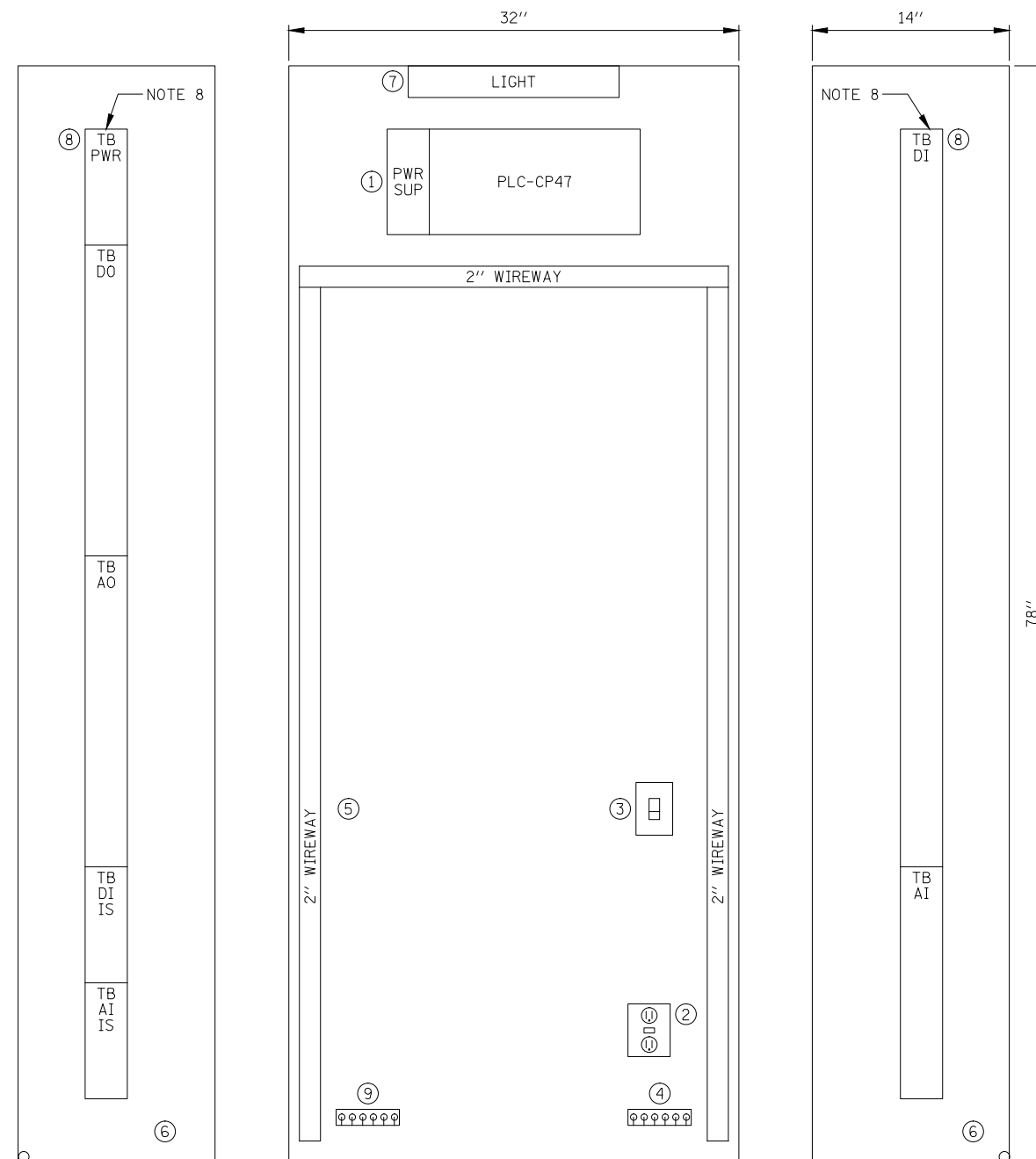
ITEM	DEVICE DESCRIPTION	DEVICE COLOR
1	INDICATING LIGHT	RED
2	INDICATING LIGHT	YELLOW
3	ALARM BUZZER	
4	DIGITAL METER	
5	PUSH BUTTON	RED
6	PUSH BUTTON	GREEN
7	3 POSITION PISTOL GRIP TYPE SELECTOR SWITCH	
8	2 POSITION SELECTOR SWITCH	
9	INDICATING LIGHT	GREEN

1	SERVICE NO. 1 POWER FAILURE	SERVICE NO. 2 POWER FAILURE	CONTROL PANEL A/C POWER FAILURE	SCADA PANEL A/C POWER FAILURE	MAIN FLOW PUMP NO. 1 FAILURE	MAIN FLOW PUMP NO. 2 FAILURE	MAIN FLOW PUMP NO. 3 FAILURE	LOW FLOW PUMP FAILURE	8
9	SPARE FOR FUTURE (NOTE 5)	SPARE FOR FUTURE (NOTE 5)	CONTROL PANEL PLC TROUBLE	SCADA PANEL PLC TROUBLE	MAIN FLOW PUMP NO. 1 MOTOR WINDING TEMP/MOISTURE HIGH	MAIN FLOW PUMP NO. 2 MOTOR WINDING TEMP/MOISTURE HIGH	MAIN FLOW PUMP NO. 3 MOTOR WINDING TEMP/MOISTURE HIGH	LOW FLOW PUMP MOTOR WINDING TEMP/MOISTURE HIGH	16
17	ATS FAILURE	PRIMARY BUBBLER SYSTEM FAILURE	CONTROL PANEL PLC FAILURE	SCADA PANEL PLC FAILURE	MAIN FLOW PUMP NO. 1 OVERLOAD TRIP	MAIN FLOW PUMP NO. 2 OVERLOAD TRIP	MAIN FLOW PUMP NO. 3 OVERLOAD TRIP	LOW FLOW PUMP OVERLOAD TRIP	24
25	ATS IN BYPASS MODE	SECONDARY BUBBLER SYSTEM FAILURE	COMBUSTIBLE GAS MONITOR TROUBLE	SCADA PANEL UPS LOW BATTERY	WET WELL HIGH WATER LEVEL	DISCHARGE CHAMBER HIGH WATER LEVEL	ELECTRICAL ROOM HIGH TEMPERATURE	DRY WELL HIGH TEMPERATURE	32
33	FIRE PANEL TROUBLE	INTRUSION/AEGIS SYSTEM TROUBLE	COMBUSTIBLE GAS PRESENT	SCADA PANEL UPS FAULT/OVERLOAD	WET WELL LOW WATER LEVEL	BAR RACK CLOGGED	ELECTRICAL ROOM LOW TEMPERATURE	DRY WELL LOW TEMPERATURE	40
41	FIRE PANEL ALARM	INTRUSION ALARM	IL 59 PAVEMENT FLOODED	SPARE FOR FUTURE (NOTE 5)	DRY WELL FLOODING ALARM	DRY WELL SUMP PUMP FAILURE	SPARE FOR FUTURE (NOTE 5)	SPARE FOR FUTURE (NOTE 5)	48

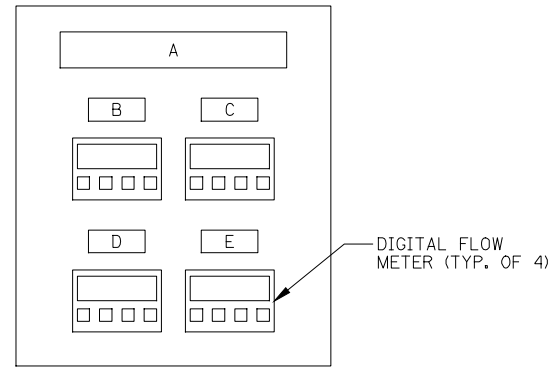
NOTES:

1. SEE SHEETS GI-1 AND GI-2 FOR INSTRUMENTATION SYMBOL LIST, ABBREVIATIONS, AND GENERAL NOTES.
2. THE CONTROL PANEL SHALL BE OF SUFFICIENT DEPTH TO ACCOMMODATE ALL DEVICES. PROPER CLEARANCE SHALL BE PROVIDED BETWEEN DOOR MOUNTED DEVICES AND PANEL MOUNTED DEVICES.
3. CONTROL PANEL DETAIL PROVIDES INFORMATION REGARDING SOME OF THE MAJOR COMPONENTS TO BE MOUNTED IN THE PANEL. ANCILLARY DEVICES SUCH AS RELAYS, TIMER, POWER SUPPLIES, ETC., ARE NOT SHOWN. ALL DEVICES TO PROVIDE A FUNCTIONING SYSTEM AS DETAILED IN THE PLANS AND SPECIFICATIONS SHALL BE PROVIDED. CONTRACTOR TO PROVIDE SUBMITTAL DETAILED PANEL LAYOUT FOR ALL COMPONENTS.
4. REFER TO SPECIFICATION SECTION 40 94 23 FOR INTRINSICALLY SAFE DEVICE INSTALLATION REQUIREMENTS.
5. NAMEPLATES TO BE WHITE WITH BLACK LETTERING.
6. INTRINSICALLY SAFE WIRING SHALL BE SEGREGATED FROM ALL OTHER TYPES OF WIRING. INTRINSICALLY SAFE WIRING SHALL BE INSTALLED IN A CONDUIT ONLY WITH OTHER INTRINSICALLY SAFE CIRCUITS IN PANELS AND EQUIPMENT. INTRINSICALLY SAFE CIRCUIT WIRING SHALL HAVE A MINIMUM OF 3 INCHES OF CLEARANCE, BETWEEN THE INTRINSICALLY SAFE AND OTHER TYPES OF WIRING. SEE NEC ARTICLE 504.
7. REFER TO SHEET ID-4 DETAIL NO. 2 FOR GROUNDING REQUIREMENTS.
8. TERMINAL BLOCK DESIGNATIONS ARE AS FOLLOWS:
 TBPWR - POWER
 TB DI - DIGITAL INPUTS
 TBAI - ANALOG INPUTS
 TBDO - DIGITAL OUTPUTS
 TBAO - ANALOG OUTPUTS
 TB DI IS - INTRINSICALLY SAFE DIGITAL INPUTS
 TBAI IS - INTRINSICALLY SAFE ANALOG INPUTS

MAJOR EQUIPMENT LIST	
ITEM #	DESCRIPTION
1	ALLEN BRADLEY 1756-L7 REDUNDANT CONTROL LOGIC PLC
2	GFCI OUTLET, 125V, 20A, IN HANDY BOX
3	LIGHT SWITCH, 125V, 20A, IN HANDY BOX
4	GROUND BUS (NOTE 7)
5	BACK PANEL
6	SIDE PANEL
7	FLUORESCENT LIGHT, 120V, 20W
8	TERMINAL BLOCKS, 300V, SCREW TYPE
9	INSTRUMENTATION GROUND BUS (NOTE 7)

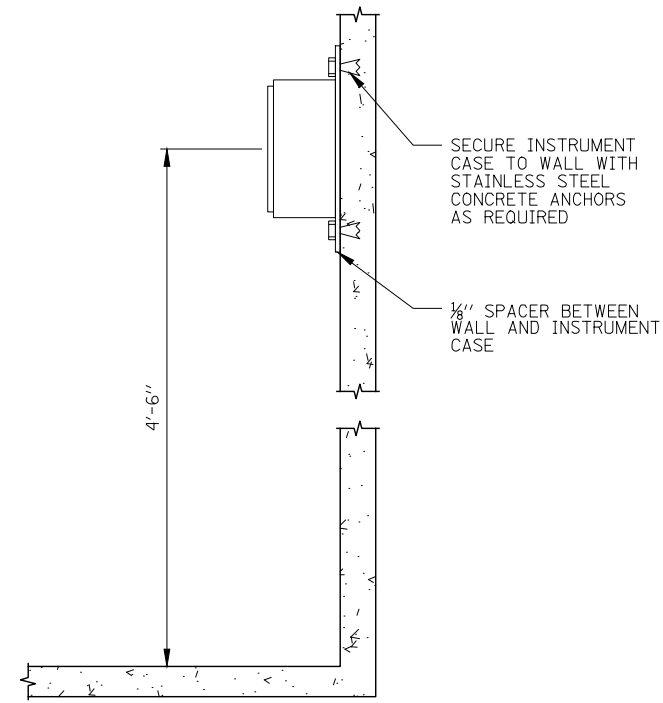


1 CONTROL PANEL CP47 INTERIOR DETAIL
NOT TO SCALE

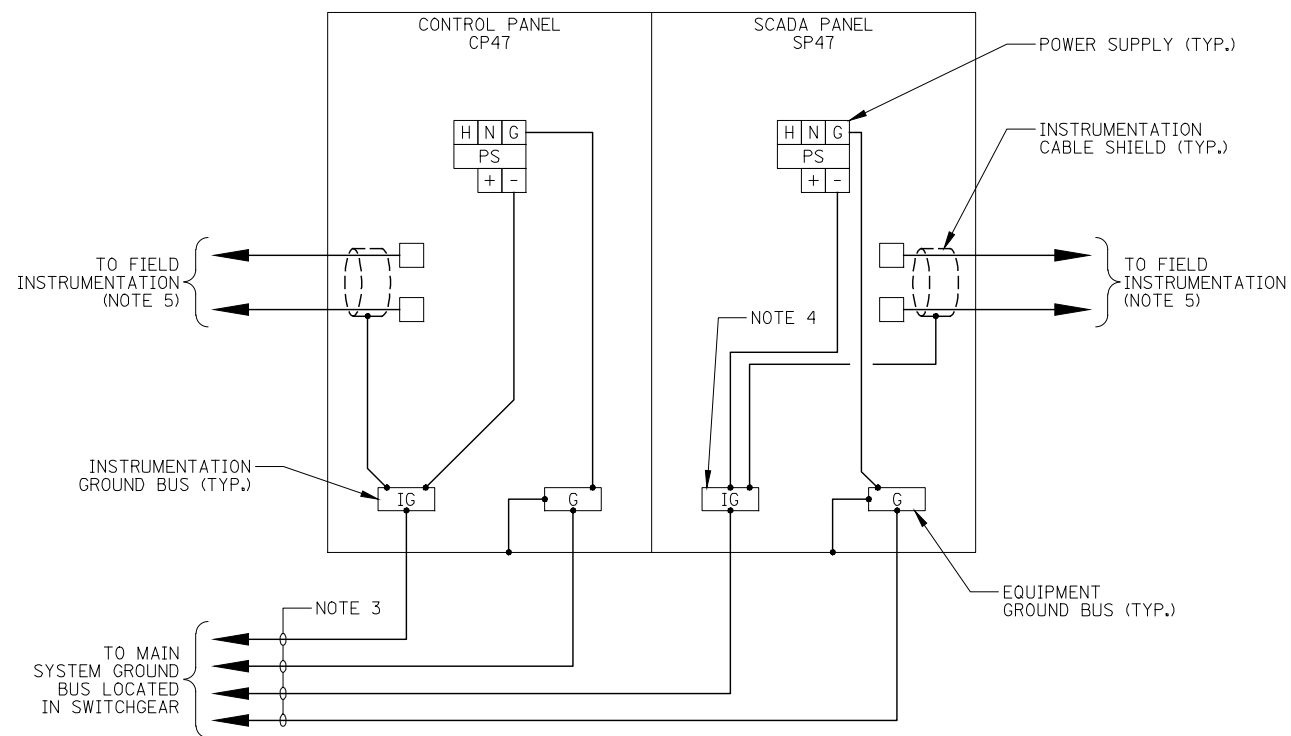


ITEM	NAMEPLATE SCHEDULE
A	PS47 PUMP METER CONTROL PANEL (PMCP47)
B	MFP-1 FLOW METER (gpm)
C	MFP-2 FLOW METER (gpm)
D	MFP-3 FLOW METER (gpm)
E	LFP-4 FLOW METER (gpm)

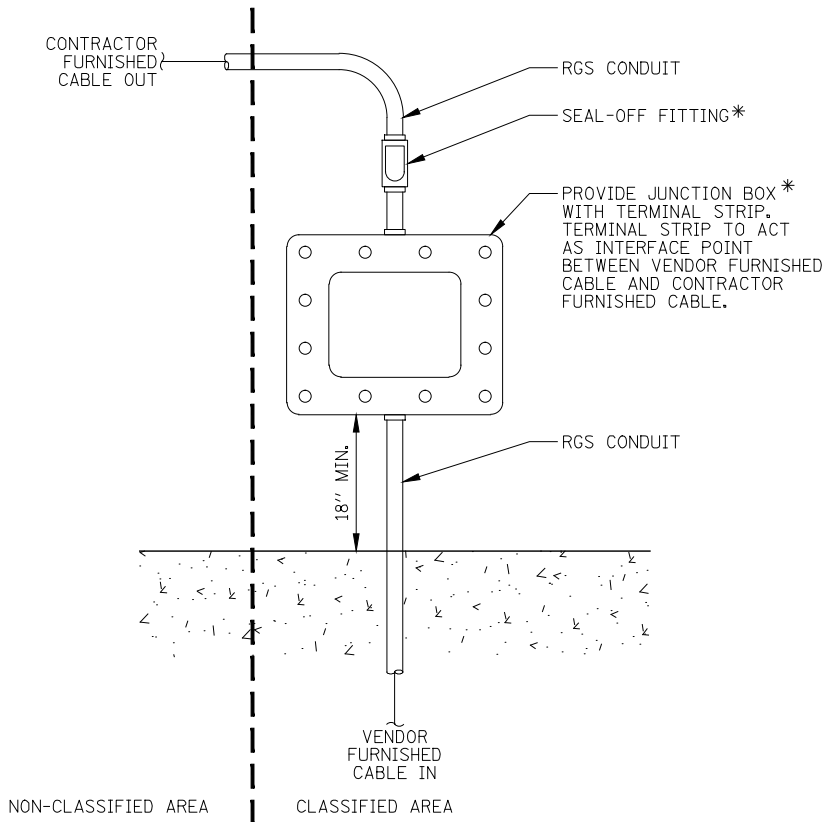
1 PUMP METER CONTROL PANEL PMCP47 DETAIL
NOT TO SCALE



3 INSTRUMENTATION CASE MOUNTING DETAIL
NOT TO SCALE



2 CONTROL AND SCADA PANEL GROUNDING DETAIL
NOT TO SCALE

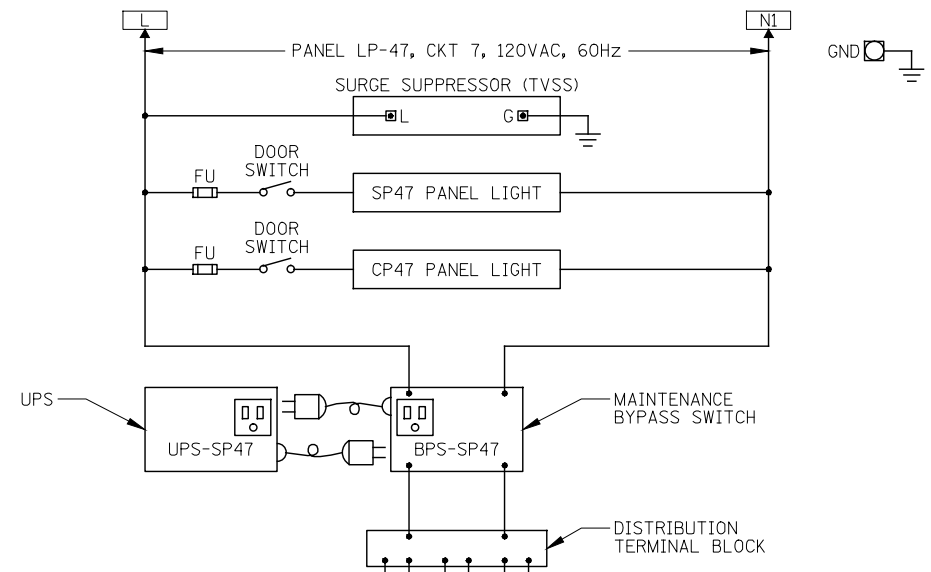


4 I & C JUNCTION BOX INSTALLATION DETAIL
NOT TO SCALE

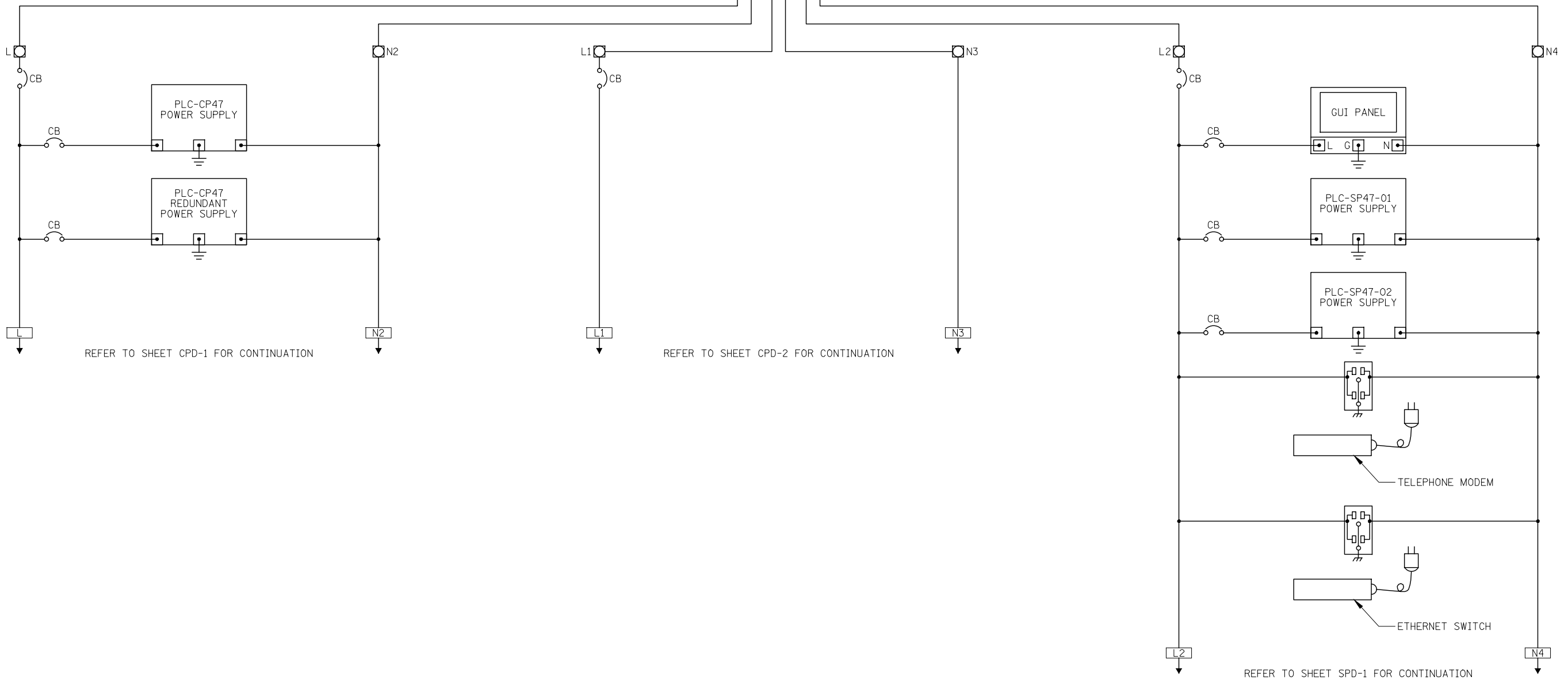
NOTES:

- SEE SHEETS GI-1 AND GI-2 FOR INSTRUMENTATION SYMBOL LIST, ABBREVIATIONS, AND GENERAL NOTES.
- NAMEPLATES TO BE WHITE WITH BLACK LETTERING.
- PROVIDE A #4 AWG MINIMUM GROUND WIRE. GROUND WIRE MUST BE INSULATED TO ENSURE SINGLE POINT GROUND. IG GROUND WIRE TO BE GREEN w/ YELLOW LINE FOR IDENTIFICATION PURPOSES.
- IG GROUND BUS MUST BE ISOLATED FROM CONTROL PANEL.
- CABLE SHIELD MUST NOT BE CONNECTED AT FIELD DEVICE. TERMINATE SHIELD ONLY ON INSTRUMENTATION GROUND BAR AS INDICATED.

* PROVIDE NEMA 7 EXPLOSION-PROOF JUNCTION BOXES AND SEAL-OFF FITTINGS WHERE CLASSIFIED OR CORROSIVE LOCATIONS ARE IDENTIFIED ON DRAWINGS.



- NOTES:**
1. SEE SHEETS GI-1 AND GI-2 FOR INSTRUMENTATION SYMBOL LIST, ABBREVIATIONS, AND GENERAL NOTES.
 2. REFER TO SHEETS ID-1, ID-2, AND ID-3 FOR LOCATION OF EQUIPMENT.
 3. PROVIDE OVERCURRENT PROTECTION PER NEC AND AS REQUIRED BY MANUFACTURERS.
 4. SCHEMATIC ONLY DETAILS MAJOR COMPONENTS THAT ARE CONNECTED TO THE POWER SUPPLY. PROVIDE ALL COMPONENTS REQUIRED TO MEET SPECIFICATIONS AND TO PROVIDE A FULLY FUNCTIONAL SYSTEM.



REFER TO SHEET CPD-1 FOR CONTINUATION

REFER TO SHEET CPD-2 FOR CONTINUATION

REFER TO SHEET SPD-1 FOR CONTINUATION

UPS-1

McDonough Associates Inc.
 Engineers/Architects
 130 East Randolph Street - Suite 1000
 Chicago, Illinois 60601 Phone: (312) 946-6000

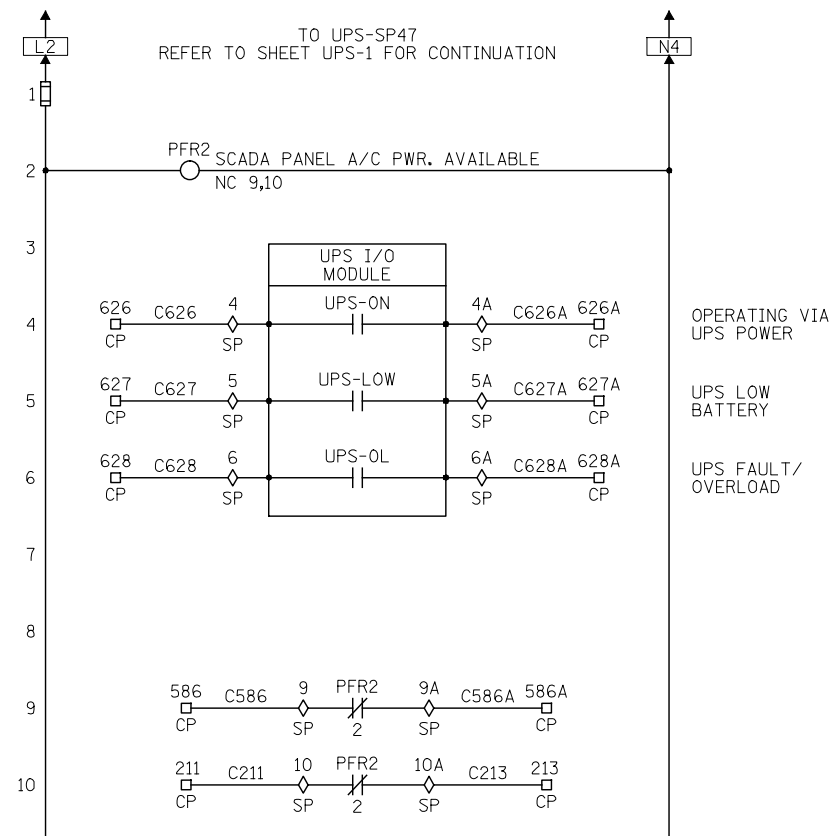
DESIGNED	<i>DKC</i>	REVISED	- 4-19-2012
CHECKED	<i>KMY</i>	REVISED	-
SCALE		DRAWN	<i>CJM</i>
DATE	03/22/2012	CHECKED	<i>KMY</i>
		REVISED	-

**STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION**

**CONTROL PANEL & SCADA PANEL POWER SCHEMATICS
 PUMP STATION 47**

SHEET NO. UPS-1 OF 1 SHEETS

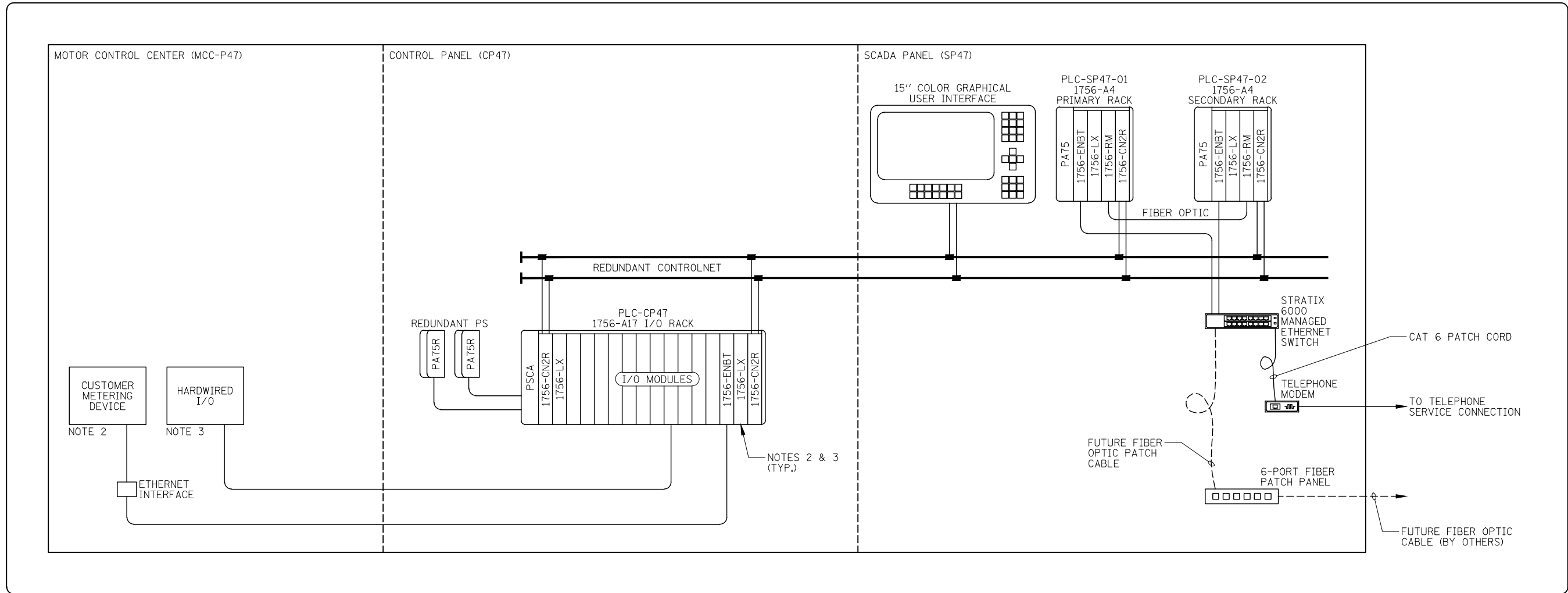
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035-I	DUPAGE	181	154
			CONTRACT NO. 60P41	
ILLINOIS FED. AID PROJECT				



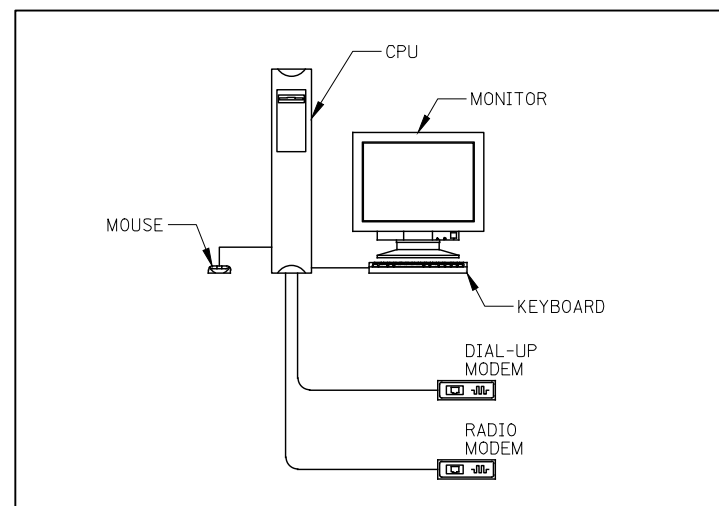
SCADA PANEL DIGITAL OUTPUTS (TBDO)			
TERM #	WIRE #	DESTINATION	DESCRIPTION OF OUTPUTS
SP-4	C626	CP-626	OPERATING VIA UPS POWER
SP-4A	C626A	CP-626A	OPERATING VIA UPS POWER
SP-5	C627	CP-627	UPS LOW BATTERY
SP-5A	C627A	CP-627A	UPS LOW BATTERY
SP-6	C628	CP-628	UPS FAULT/OVERLOAD
SP-6A	C628A	CP-628A	UPS FAULT/OVERLOAD
SP-9	C586	CP-586	SCADA PANEL A/C PWR. AVAILABLE
SP-9A	C586A	CP-586A	SCADA PANEL A/C PWR. AVAILABLE
SP-10	C211	CP-211	SCADA PANEL A/C PWR. AVAILABLE
SP-10A	C213	CP-213	SCADA PANEL A/C PWR. AVAILABLE

NOTES:
 1. SEE SHEETS GI-1 AND GI-2 FOR INSTRUMENTATION SYMBOL LIST, ABBREVIATIONS, AND GENERAL NOTES.

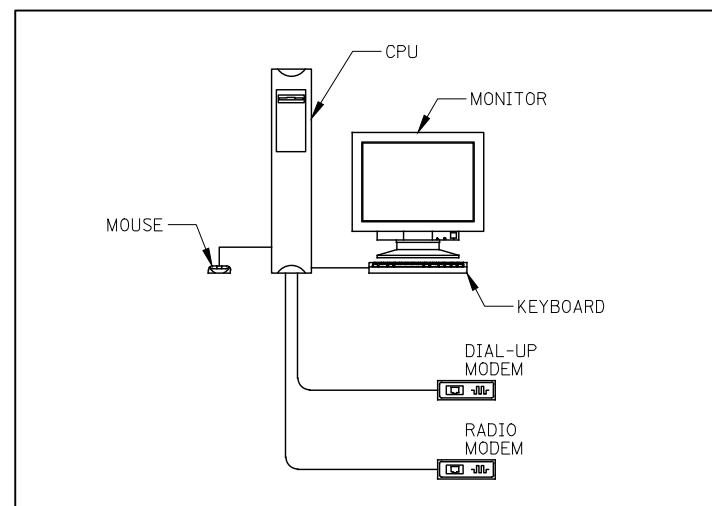
SPD-1



PUMP STATION 47



EXISTING IDOT DISTRICT 1 MONITORING STATION (NOTE 4)



EXISTING IDOT ELECTRICAL MAINTENANCE CONTRACTOR (EMC) FACILITY (NOTE 4)

NOTES:

1. SEE SHEETS GI-1 AND GI-2 FOR INSTRUMENTATION SYMBOL LIST, ABBREVIATIONS, AND GENERAL NOTES.
2. CONTRACTOR TO SIZE CONTROLLER FOR APPLICATION. PROVIDE 25% SPARE MEMORY FOR FUTURE GROWTH.
3. CONTRACTOR IS RESPONSIBLE FOR PROVIDING ADDITIONAL PLC MODULES AS REQUIRED TO ENSURE OPERATION AS DETAILED IN THE CONTRACT DOCUMENTS.
4. REFER TO SPECIFICATION SECTION 40 94 24 - HMI IMPROVEMENTS FOR DETAILS REGARDING WORK AT THIS LOCATION.

DESIGNED	<i>DKC</i>	REVISED	-
CHECKED	<i>KMY</i>	REVISED	-
SCALE	<i>CJM</i>	REVISED	-
DATE	<i>03/22/2012</i>	REVISED	-

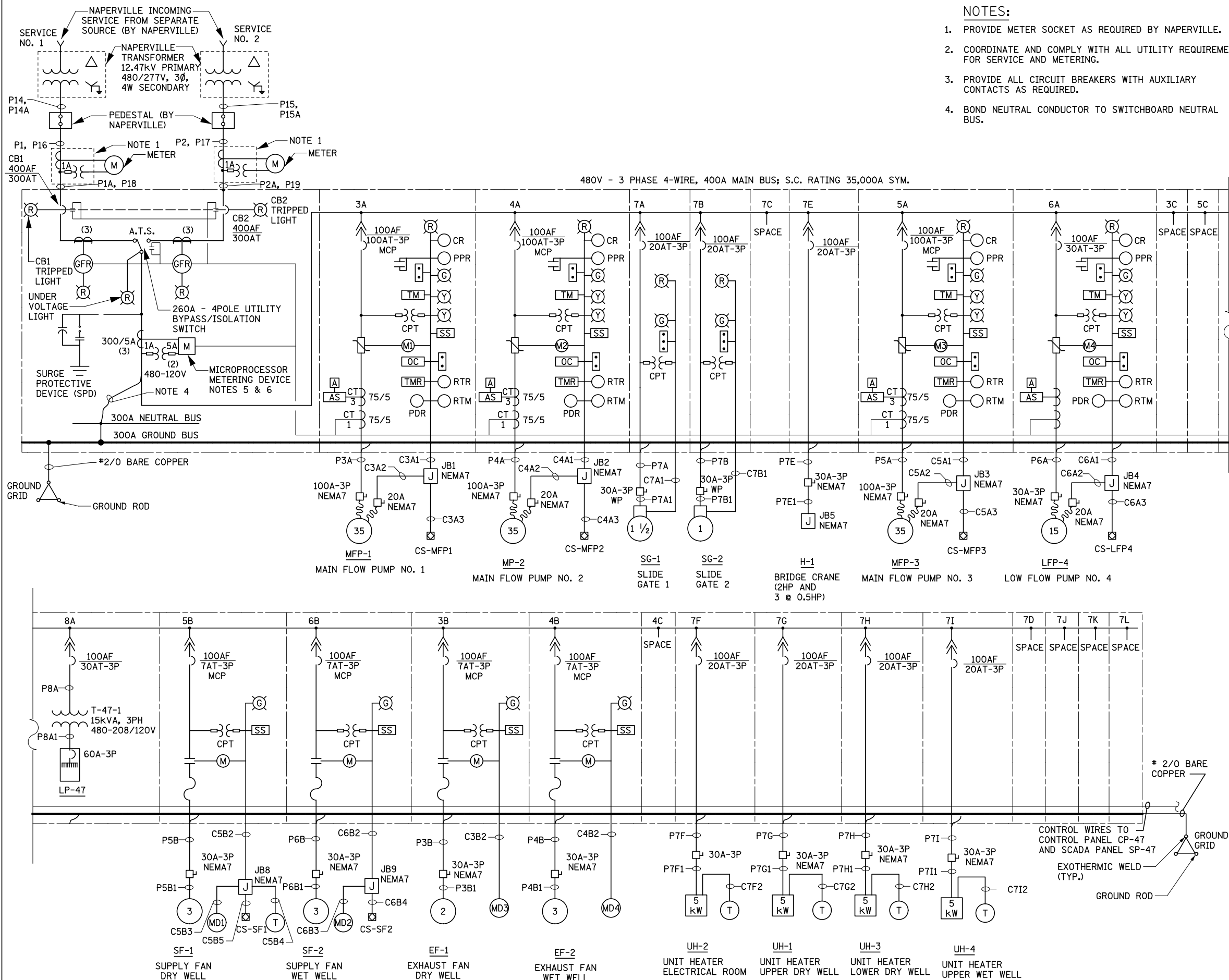
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035-I	DUPAGE	181	156
			CONTRACT NO. 60P41	
ILLINOIS FED. AID PROJECT				

BUILDING PLANS	BUILDING PLANS	SCHEMATIC SYMBOLS	SCHEMATIC SYMBOLS	SCHEMATIC SYMBOLS	ONE-LINE DIAGRAMS
SPECIAL PURPOSE RECEPTACLE TELEPHONE OUTLET DATA OUTLET POWER PANELBOARD SURFACE MOUNTED CONTROL PANELBOARD MANUAL DISCONNECT SWITCH NONFUSED (RATING AS INDICATED) MANUAL DISCONNECT SWITCH FUSED (RATING AS INDICATED) MAGNETIC MOTOR STARTER (RATING AS INDICATED) COMBINATION MAGNETIC MOTOR STARTER AND FUSED DISCONNECT SWITCH (RATING AS INDICATED) PUSHBUTTON STATION (1, 2 & 3 BUTTONS SHOWN) SINGLE SPEED ELECTRIC MOTOR (KW OR HP RATING AS INDICATED) MOTORIZED DAMPER LIMIT SWITCH INTRUSION ALARM OVERRIDE SWITCH RECESSED IN WALL MAGNETICALLY OPERATED REED SWITCH FLOAT SWITCH PRESURE SWITCH FLOW SWITCH ELECTRIC - PNEUMATIC SWITCH PNEUMATIC - ELECTRIC SWITCH TORQUE SWITCH TRANSFORMER FIRE ALARM PULL STATION AUDIO VISUAL ALARM SMOKE DETECTOR HEAT DETECTOR COMBUSTIBLE GAS DETECTOR THERMOSTAT UNIT HEATER - DOWNBLAST TYPE OR CENTRIFUGAL FAN TYPE CABINET UNIT HEATER ALARM HORN FLUORESCENT FIXTURE F1 INDICATES FIXTURE TYPE-REFER TO FIXTURE SCHEDULE 2a INDICATES CIRCUIT NO. 2 ON SWITCH a (TYP.) FLUORESCENT FIXTURE, WALL MOUNTED INCANDESCENT, COMPACT FLUORESCENT OR HID FIXTURE	WALL MOUNTED INCANDESCENT, COMPACT FLUORESCENT OR HID FIXTURE FLUORESCENT FIXTURE ON EMERGENCY CIRCUIT INCANDESCENT, COMPACT FLUORESCENT OR HID FIXTURE ON EMERGENCY CIRCUIT EXIT SIGN SINGLE SIDED (ABOVE DOOR) DIRECTIONAL EXIT SIGN - DOUBLE SIDED (DIRECTION AS INDICATED - TYP.) DIRECTIONAL EXIT SIGN - SINGLE SIDED BATTERY UNIT FOR EMERGENCY LIGHT BATTERY OPERATED EMERGENCY LIGHT WITH TWO HEADS EMERGENCY LIGHT, REMOTE HEAD PB ELECTRIC PULL BOX J ELECTRIC JUNCTION BOX --- BARE GROUND CABLE --- EXPOSED CONDUIT --- CONCEALED CONDUIT IN FLOOR OR UNDERGROUND CONDUIT HOME-RUN TO PANEL AS INDICATED (LP-1-6 DENOTES PANEL DESIGNATION, SLASH LINES INDICATE QUANTITY OF WIRE, GROUND WIRE INDICATED AS LONG LINE WITH DOT, NEUTRAL WIRE INDICATED AS LONG LINE, PHASE WIRES AND SWITCH LEGS INDICATED AS SHORT LINES) CABLE TRAY --- CONDUIT TURNED UP OR DOWN --- CONDUIT TERMINATED OR CAPPED \$ SINGLE POLE TOGGLE SWITCH \$ T MANUAL MOTOR STARTER SWITCH WITH THERMAL OVERLOAD PROTECTION ○ SINGLE RECEPTACLE ⊕ DUPLEX RECEPTACLE ⊕⊕ QUADRUPLEX RECEPTACLE GFCI DUPLEX RECEPTACLE WITH GROUND FAULT CIRCUIT INTERRUPTER IG DUPLEX RECEPTACLE WITH ISOLATED GROUND	SINGLE POLE, SINGLE THROW SWITCH SINGLE POLE, DOUBLE THROW SWITCH DOUBLE POLE, SINGLE THROW SWITCH DOUBLE POLE, DOUBLE THROW SWITCH THREE WAY ROTARY SWITCH NORMALLY CLOSED MOMENTARY PUSH BUTTON SWITCH NORMALLY OPEN MOMENTARY PUSH BUTTON SWITCH 2 POSITION SELECTOR SWITCH (EXTRA CONTACT BLOCK) NORMALLY OPEN DOUBLE BREAK SINGLE THROW CONTACT BLOCK NORMALLY CLOSED DOUBLE BREAK SINGLE THROW CONTACT BLOCK DOUBLE BREAK DOUBLE THROW CONTACT BLOCK MUSHROOM HEAD PUSH BUTTON MAINTAINED CONTACT PUSH BUTTON 2 OR 3 POSITIONS SELECTOR SWITCH (CLOSED CONTACTS INDICATED BY "X") 3 POLE SINGLE THROW DISCONNECT SWITCH HEATER ELEMENT SWITCH - CLOSSES ON RISING TEMPERATURE HEATER ELEMENT SWITCH - OPENS ON RISING TEMPERATURE PRESSURE SWITCH - CLOSSES ON RISING PRESSURE PRESSURE SWITCH - OPENS ON RISING PRESSURE AUTOMATIC TRANSFER SWITCH	DIFFERENTIAL PRESSURE SWITCH - CLOSSES WHEN THE DIFFERENTIAL IN PRESSURE BETWEEN TWO DIAPHRAGMS EXCEEDS A SET POINT DIFFERENTIAL PRESSURE SWITCH - OPENS WHEN THE DIFFERENTIAL IN PRESSURE BETWEEN TWO DIAPHRAGMS EXCEEDS A SET POINT TIME DELAY RELAY SWITCH -CLOSSES ON TIME DELAY AFTER ENERGIZATION OF RELAY COIL TIME DELAY RELAY SWITCH -OPENS ON TIME DELAY AFTER ENERGIZATION OF RELAY COIL TIME DELAY RELAY SWITCH -CLOSSES ON TIME DELAY AFTER DE-ENERGIZATION OF RELAY COIL TIME DELAY RELAY SWITCH -OPENS ON TIME DELAY AFTER DE-ENERGIZATION OF RELAY COIL LIMIT SWITCH - NORMALLY CLOSED HELD OPEN LIMIT SWITCH - NORMALLY OPEN HELD CLOSED LIMIT SWITCH - NORMALLY CLOSED HELD OPEN LIMIT SWITCH - NORMALLY OPEN HELD CLOSED LEVEL SWITCH - CLOSSES ON RISING LEVEL LEVEL SWITCH - OPENS ON RISING LEVEL FLOW SWITCH - CLOSSES ON FLOW FLOW SWITCH - OPENS ON FLOW TRANSFORMER TYPE AND RATED AS INDICATED CONNECTION TO GROUND LIGHTNING OR SURGE ARRESTER THERMAL OVERLOAD ELEMENT CIRCUIT BREAKER HEATING ELEMENT SOLENOID VALVE DEVICE ENCLOSURE ANNUNCIATOR COUNT COUNTER ETM ELAPSED TIME METER TMR ELECTRONIC TIMER TOT TOTALIZER PSC PUMP START COUNTER INDICATOR LIGHT (SEE SCHEMATIC DIAGRAM DEVICE TABLE FOR COLOR SYMBOLS) INDICATOR LIGHT (PUSH TO TEST TYPE)	COIL C - CLOSE CR - CONTROL RELAY F - FAST OR FORWARD M - MOTOR STARTER MX - MOTOR STARTER AUXILIARY RELAY N - NORMAL O - OPEN OL - OVERLOAD RELAY R - REVERSE S - SLOW TD - TIME DELAY RELAY TDAE - TIME DELAY AFTER ENERGIZATION TDAD - TIME DELAY AFTER DE-ENERGIZATION	VOLTMETER (RANGE AS INDICATED) KWH KILOWATHOUR METER K-K KIRK-KEY INTERLOCK GFR GROUND FAULT RELAY CONTROL STATION TRANSFER SWITCH (TYPE AND RATING AS INDICATED) SINGLE SPEED NON-REVERSING MANUAL STARTER (NEMA OR IEC DESIGNATION AS SPECIFIED OR SHOWN) SINGLE SPEED NON-REVERSING MAGNETIC STARTER (NEMA OR IEC DESIGNATION AS SPECIFIED OR SHOWN) COMBINATION CIRCUIT BREAKER & SINGLE SPEED NON-REVERSING MAGNETIC STARTER (NEMA OR IEC DESIGNATION AS SPECIFIED OR SHOWN) COMBINATION DISCONNECT SWITCH & SINGLE SPEED NON-REVERSING STARTER (NEMA OR IEC DESIGNATION AS SPECIFIED OR SHOWN) REDUCED VOLTAGE STARTER
ONE-LINE DIAGRAMS					
POWER CIRCUIT EQUIPMENT ENCLOSURE CONTROL OR INTERLOCK CIRCUIT BUS (RATING AS INDICATED) CONDUCTOR CONNECTION DRAWOUT DEVICE DRAWOUT MOLDED CASE CIRCUIT BREAKER (600V, THERMAL MAGNETIC TYPE, UNLESS NOTED OTHERWISE) 500AT 600AF TRIP SETTING (TYP.) FRAME SIZE (TYP.) MOLDED CASE CIRCUIT BREAKER (600V, THERMAL MAGNETIC TYPE, UNLESS NOTED OTHERWISE) AIR CIRCUIT BREAKER IC INSULATED CASE CIRCUIT BREAKER FUSE (RATING AS INDICATED) DRAWOUT FUSE (RATING AS INDICATED) FUSE - SWITCH (RATING AS INDICATED) NON-FUSIBLE DISCONNECT SWITCH THERMAL OVERLOAD ELEMENT INSTANTANEOUS CONTACT CURRENT TRANSFORMER-DOUGHNOUT TYPE (QUANTITY, RATIO AND RATING AS INDICATED) CURRENT TRANSFORMER-WINDOW TYPE (RATIO AND RATING AS INDICATED) POTENTIAL TRANSFORMER (QUANTITY, RATIO AND RATING AS INDICATED) CAPACITOR BATTERY AS AMMETER SWITCH VS VOLTMETER SWITCH SS SELECTOR SWITCH A AMMETER (RANGE AS INDICATED)					
ABBREVIATIONS					
A AMMETER AS AMMETER SWITCH SS SELECTOR SWITCH TMR TIMER CR CONTROL RELAY FLS FLOAT LEVEL SWITCH GD GAS DETECTOR GM GAS MONITORING PANEL LS LIMIT SWITCH RVS REDUCED VOLTAGE STARTER PDR PUMP DELAY RELAY PPR PUMP PROTECTION RELAY RTM RELAY TEMP/MOISTURE RTR RELAY TIMED RUN T THERMOSTAT TQ TORQUE SWITCH TS TEMPERATURE SWITCH MFP-1 MAIN FLOW PUMP #1 AFF ABOVE FINISHED FLOOR LP LIGHTING PANELBOARD MH MOUNTING HEIGHT RTU REMOTE TERMINAL UNIT WP WEATHERPROOF XP EXPLOSION-PROOF LFP LOW FLOW PUMP PP POWER PANEL JB JUNCTION BOX MD MOTORIZED DAMPER MCP MINIMUM CURRENT PROTECTION CPT CONTROL POWER TRANSFORMER DPU-E DEPARTMENT OF PUBLIC UTILITIES - ELECTRICAL EF EXHAUST FAN SF SUPPLY FAN HD HEAT DETECTOR SG SLIDE GATE UH UNIT HEATER SD SMOKE DETECTOR					

POWER CONDUIT						
NUMBER	SIZE (IN.)	TYPE	CONDUCTOR QUANTITY AND SIZE (AWG-kcmil)	COND./CABLE INSULATION	FROM	TO
P1	3	PVC	4-300kcmil & 1-#3 GND	XHHW-2	PEDESTAL (LINE 1)	METER ENCLOSURE (LINE 1)
P1A	3	RGS	4-300kcmil & 1-#3 GND	XHHW-2	METER ENCLOSURE (LINE 1)	MCC-P47 (SECTION 1A)
P2	3	PVC	4-300kcmil & 1-#3 GND	XHHW-2	PEDESTAL (LINE 2)	METER ENCLOSURE (LINE 2)
P2A	3	RGS	4-300kcmil & 1-#3 GND	XHHW-2	METER ENCLOSURE (LINE 2)	MCC-P47 (SECTION 1B)
P3A	1	RGS	3-#4 & 1-#8 GND	THWN	MCC-P47 (SECTION 3A)	100A DISCONNECT FOR MFP-1
P3B	3/4	RGS	3-#12 & 1-#12 GND	THWN	MCC-P47 (SECTION 3B)	30A DISCONNECT FOR EF-1
P3B1	3/4	RGS	3-#12 & 1-#12 GND	THWN	30A DISCONNECT	EXHAUST FAN EF-1
P4A	1	RGS	3-#4 & 1-#8 GND	THWN	MCC-P47 (SECTION 4A)	100A DISCONNECT FOR MFP-2
P4B	3/4	RGS	3-#12 & 1-#12 GND	THWN	MCC-P47 (SECTION 4B)	30A DISCONNECT FOR EF-2
P4B1	3/4	RGS	3-#12 & 1-#12 GND	THWN	30A DISCONNECT	EXHAUST FAN EF-2
P5A	1	RGS	3-#4 & 1-#8 GND	THWN	MCC-P47 (SECTION 5A)	100A DISCONNECT FOR MFP-3
P5B	3/4	RGS	3-#12 & 1-#12 GND	THWN	MCC-P47 (SECTION 5B)	30A DISCONNECT FOR SF-1
P5B1	3/4	RGS	3-#12 & 1-#12 GND	THWN	30A DISCONNECT	SUPPLY FAN SF-1
P6A	1	RGS	3-#10 & 1-#10 GND	THWN	MCC-P47 (SECTION 6A)	30A DISCONNECT FOR LFP-4
P6B	3/4	RGS	3-#12 & 1-#12 GND	THWN	MCC-P47 (SECTION 6B)	30A DISCONNECT FOR SF-2
P6B1	3/4	RGS	3-#12 & 1-#12 GND	THWN	30A DISCONNECT	SUPPLY FAN SF-2
P7A	3/4	RGS	3-#12 & 1-#12 GND	THWN	MCC-P47 (SECTION 7A)	30A DISCONNECT FOR SG-1
P7A1	3/4	RGS	3-#12 & 1-#12 GND	THWN	30A DISCONNECT	SLIDE GATE SG-1
P7B	3/4	RGS	3-#12 & 1-#12 GND	THWN	MCC-P47 (SECTION 7B)	30A DISCONNECT FOR SG-2
P7B1	3/4	RGS	3-#12 & 1-#12 GND	THWN	30A DISCONNECT	SLIDE GATE SG-2
P7E	3/4	RGS	3-#12 & 1-#12 GND	THWN	MCC-P47 (SECTION 7E)	30A DISCONNECT FOR HOIST H-1
P7E1	3/4	RGS	3-#12 & 1-#12 GND	THWN	30A DISCONNECT	JB5
P7F	3/4	RGS	3-#12 & 1-#12 GND	THWN	MCC-P47 (SECTION 7F)	30A DISCONNECT FOR UH-2
P7F1	3/4	RGS	3-#12 & 1-#12 GND	THWN	30A DISCONNECT	UNIT HEATER UH-2
P7G	3/4	RGS	3-#12 & 1-#12 GND	THWN	MCC-P47 (SECTION 7G)	30A DISCONNECT FOR UH-1
P7G1	3/4	RGS	3-#12 & 1-#12 GND	THWN	30A DISCONNECT	UNIT HEATER UH-1
P7H	3/4	RGS	3-#12 & 1-#12 GND	THWN	MCC-P47 (SECTION 7H)	30A DISCONNECT FOR UH-3
P7H1	3/4	RGS	3-#12 & 1-#12 GND	THWN	30A DISCONNECT	UNIT HEATER UH-3
P7I	3/4	RGS	3-#12 & 1-#12 GND	THWN	MCC-P47 (SECTION 7I)	30A DISCONNECT FOR UH-4
P7I1	3/4	RGS	3-#12 & 1-#12 GND	THWN	30A DISCONNECT	UNIT HEATER UH-4
P8A	3/4	RGS	3-#8 & 1-#10 GND	THWN	MCC-P47 (SECTION 8A)	MCC-P47 (TRANSFORMER T-47)
P8A1	3/4	RGS	4-#6 & 1-#10 GND	THWN	MCC-P47 (T-47)	MCC-P47 (PANEL LP-47)
P9	3/4	RGS	2-#12 & 1-#12 GND	THWN	CP-SP1	SP-1 DISCONNECT
P10	3/4	RGS	2-#12 & 1-#12 GND	THWN	PNL LP-47	GAS MONITORING SYSTEM
P11	3/4	RGS	2-#12 & 1-#12 GND	THWN	PNL LP-47	AEGIS/INTRUSION ALARM SYSTEM
P12	3/4	RGS	2-#12 & 1-#12 GND	THWN	PNL LP-47	FIRE ALARM SYSTEM (FACP)
P13	3/4	RGS	2-#12 & 1-#12 GND	THWN	PNL LP-47	SUMP PUMP CONTROL PNL (CP-SP)
P14	3	PVC	4-300kcmil & 1-#3 GND BY NAPERVILLE ELECTRIC		SERVICE NO. 1 TRANSFORMER	PEDESTAL (LINE 1)
P14A	3	PVC	FUTURE		SERVICE NO. 1 TRANSFORMER	PEDESTAL (LINE 1)
P15	3	PVC	4-300kcmil & 1-#3 GND BY NAPERVILLE ELECTRIC		SERVICE NO. 2 TRANSFORMER	PEDESTAL (LINE 2)
P15A	3	PVC	FUTURE		SERVICE NO. 2 TRANSFORMER	PEDESTAL (LINE 2)
P16	3	PVC	FUTURE		PEDESTAL (LINE 1)	METER ENCLOSURE (LINE 1)
P17	3	PVC	FUTURE		PEDESTAL (LINE 2)	METER ENCLOSURE (LINE 2)
P18	3	RGS	FUTURE		METER ENCLOSURE (LINE 1)	MCC-P47 (SECTION 1A)
P19	3	RGS	FUTURE		METER ENCLOSURE (LINE 2)	MCC-P47 (SECTION 1B)
P20	3/4	RGS	2-#12 & 1-#12 GND	THWN	BGP47-001	MCC-P47 (PANEL LP-47)
P21	3/4	RGS	2-#12 & 1-#12 GND	THWN	BGP47-002	MCC-P47 (PANEL LP-47)
P22	3/4	RGS	2-#12 & 1-#12 GND	THWN	MCC-P47 (PANEL LP-47)	LIT-JB
P23	3/4	RGS	2-#12 & 1-#12 GND	THWN	LIT-JB	LIT-007A
P24	3/4	RGS	2-#12 & 1-#12 GND	THWN	LIT-JB	LIT-007B
P25	3/4	RGS	2-#12 & 1-#12 GND	THWN	MCC-P47 (PANEL LP-47)	MOTOR OPER. VALVE
P27	3/4	RGS	2-#12 & 1-#12 GND	THWN	PNL LP-47	PMCP47 PANEL

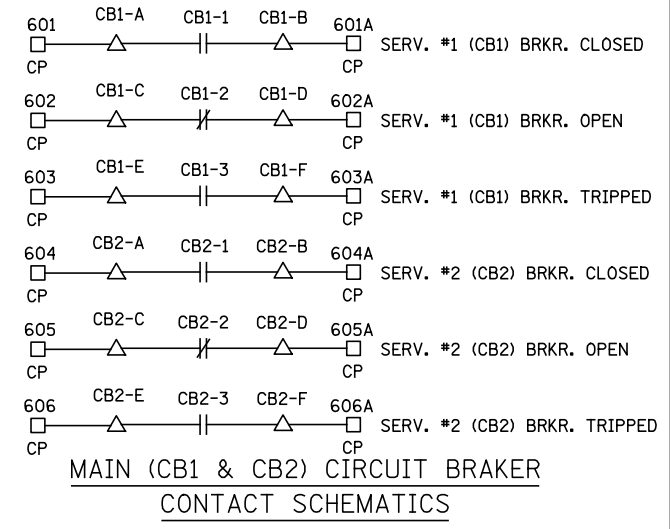
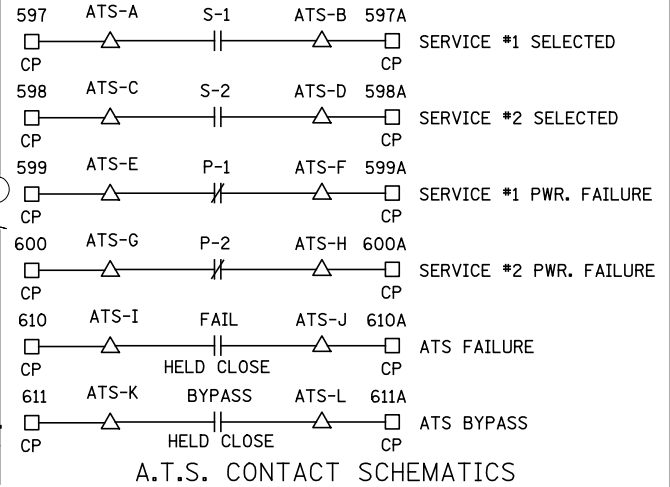
CONTROL CONDUIT						
NUMBER	SIZE (IN.)	TYPE	CONDUCTOR QUANTITY AND SIZE (AWG-kcmil)	COND./CABLE INSULATION	FROM	TO
CONTROLS						
C3A1	1	RGS	13-#10, 5-#12 & 1-#12 GND	THWN	MCC-P47 (SECTION 3A)	JB-1
C3A2	1	RGS	5-#10 & 1-#10 GND	THWN	JB1	20A DISCONNECT FOR MFP-1
C3A3	1	RGS	8-#12 & 1-#12 GND	THWN	JB1	MFP-1 CONTROL STATION
C3B2	3/4	RGS	3-#12 & 1-#12 GND	THWN	MCC-P47 (SECTION 3B)	MD-3
C4A1	1	RGS	13-#10, 5-#12 & 1-#12 GND	THWN	MCC-P47 (SECTION 4A)	JB-2
C4A2	1	RGS	5-#10 & 1-#10 GND	THWN	JB2	20A DISCONNECT FOR MFP-2
C4A3	1	RGS	8-#12 & 1-#12 GND	THWN	JB2	MFP-2 CONTROL STATION
C4B2	3/4	RGS	3-#12 & 1-#12 GND	THWN	MCC-P47 (SECTION 4B)	MD-4
C5A1	1	RGS	13-#10, 5-#12 & 1-#12 GND	THWN	MCC-P47 (SECTION 5A)	JB-3
C5A2	1	RGS	5-#10 & 1-#10 GND	THWN	JB3	20A DISCONNECT FOR MFP-3
C5A3	1	RGS	8-#12 & 1-#12 GND	THWN	JB3	MFP-3 CONTROL STATION
C5B2	3/4	RGS	12-#12 & 1-#12 GND	THWN	MCC-P47 (SECTION 5B)	JB8
C5B3	3/4	RGS	3-#12 & 1-#12 GND	THWN	JB8	MD-1
C5B4	3/4	RGS	2-#12 & 1-#12 GND	THWN	JB8	THERMOSTAT (SF-1)
C5B5	3/4	RGS	7-#12 & 1-#12 GND	THWN	JB8	SF-1 CONTROL STATION
C6A1	1	RGS	13-#10, 5-#12 & 1-#12 GND	THWN	MCC-P47 (SECTION 6A)	JB4
C6A2	1	RGS	5-#10 & 1-#10 GND	THWN	JB4	20A DISCONNECT FOR LFP-4
C6A3	1	RGS	8-#12 & 1-#12 GND	THWN	JB4	LFP-4 CONTROL STATION
C6B2	3/4	RGS	10-#12 & 1-#12 GND	THWN	MCC-P47 (SECTION 6B)	JB9
C6B3	3/4	RGS	3-#12 & 1-#12 GND	THWN	JB9	MD-2
C6B4	3/4	RGS	7-#12 & 1-#12 GND	THWN	JB9	SF-2 CONTROL STATION
CTA1	3/4	RGS	8-#12 & 1-#12 GND	THWN	MCC-P47 (SECTION 7A)	SLIDE GATE SG-1
CTB1	3/4	RGS	8-#12 & 1-#12 GND	THWN	MCC-P47 (SECTION 7B)	SLIDE GATE SG-2
CTF2	3/4	RGS	2-#12 & 1-#12 GND	THWN	THERMOSTAT (UH-2)	UNIT HEATER UH-2
CTG2	3/4	RGS	2-#12 & 1-#12 GND	THWN	THERMOSTAT (UH-1)	UNIT HEATER UH-1
CTH2	3/4	RGS	2-#12 & 1-#12 GND	THWN	THERMOSTAT (UH-3)	UNIT HEATER UH-3
CTI2	3/4	RGS	2-#12 & 1-#12 GND	THWN	THERMOSTAT (UH-4)	UNIT HEATER UH-4
C1	1	PVC	2-#12 & 1-#12 GND	THWN	CP-47	UNDERPASS FLOAT SENSOR
C2	3/4	RGS	2-#12 & 1-#12 GND	THWN	FIRE ALARM CONTROL PANEL	AEGIS/INTRUSION ALARM PNL
C3	3/4	RGS	4-#12 & 1-#12 GND	THWN	FIRE ALARM CONTROL PANEL	ANNUNCIATOR IN CP-47
C4	3/4	RGS	4-#12 & 1-#12 GND	THWN	MOTOR OPER. VALVE	CONTROL PANEL CP47
C5	3/4	RGS	4-#12 & 1-#12 GND	THWN	AEGIS/INTRUSION ALARM PNL	SCADA PANEL SP47
C6	3/4	RGS	2-#12 & 1-#12 GND	THWN	AEGIS/INTRUSION ALARM PNL	WEST SINGLE DOOR
C7	3/4	RGS	2-#12 & 1-#12 GND	THWN	AEGIS/INTRUSION ALARM PNL	EAST SINGLE DOOR
C8	3/4	RGS	2-#12 & 1-#12 GND	THWN	AEGIS/INTRUSION ALARM PNL	WET WELL DOOR
C9	3/4	RGS	4-#12 & 1-#12 GND	THWN	AEGIS/INTRUSION ALARM PNL	OVERRIDE SWITCH
C10	3/4	RGS	4-#12 & 1-#12 GND	THWN	AEGIS/INTRUSION ALARM PNL	PB-1
C11	3/4	RGS	2-#12 & 1-#12 GND	THWN	PB-1	SOUTH DOUBLE DOOR (LEFT DOOR)
C12	3/4	RGS	2-#12 & 1-#12 GND	THWN	PB-1	SOUTH DOUBLE DOOR (RIGHT DOOR)
C13	3/4	RGS	4-#12 & 1-#12 GND	THWN	FIRE ALARM CONTROL PANEL	PLC IN CONTROL PANEL CP47
C14	3/4	RGS	8-#14 & 1-#14 GND	THWN	JB10	CONTROL PANEL CP-SP1
C15	3/4	RGS	6-#14 & 1-#14 GND	THWN	JB10	CS-SP1
C16	3/4	RGS	6-#12 & 1-#12 GND	THWN	GAS MONIT. CONTROL PNL	PLC IN CONTROL PANEL CP47
C17	3/4	RGS	4-#12 & 1-#12 GND	THWN	GAS MONIT. CONTROL PNL	MCC-P47 (SECTION 5B)
C18	3/4	RGS	2-#12 & 1-#12 GND	THWN	GAS MONIT. CONTROL PNL	MCC-P47 (SECTION 6B)
C19	3/4	RGS	8-#12 & 1-#12 GND	THWN	CONTROL PANEL CP-SP	CONTROL PANEL CP47
C20	3/4	RGS	4-#12 & 1-#12 GND	THWN	GAS MONIT. CONTROL PNL	ALARM HORN
C21	3/4	RGS	2-#12 & 1-#12 GND	THWN	GAS MONIT. CONTROL PNL	GAS SENSOR IN DISCH. CHAMBER
C22	3/4	RGS	2-#12 & 1-#12 GND	THWN	GAS MONIT. CONTROL PNL	GAS SENSOR IN DRY WELL
C23	3/4	RGS	2-#12 & 1-#12 GND	THWN	GAS MONIT. CONTROL PNL	GAS SENSOR IN WET WELL
C24	3/4	RGS	6-#14 & 1-#14 GND	THWN	JB10	SP1 FLOAT SWITCHES
C25	3/4	RGS	2-#12 & 1-#12 GND	THWN	MOISTURE CONTROL SWITCH	CONTROL PANEL CP-SP1
C26	3/4	RGS	4-#12 & 1-#12 GND	THWN	GAS MONIT. CONTROL PNL	ANNUNC. IN CONTROL PANEL CP47
C27	3/4	RGS	6-#12 & 1-#12 GND	THWN	SUMP PUMP CP-SP1 PANEL	AEGIS/INTRUSION ALARM PNL

E2



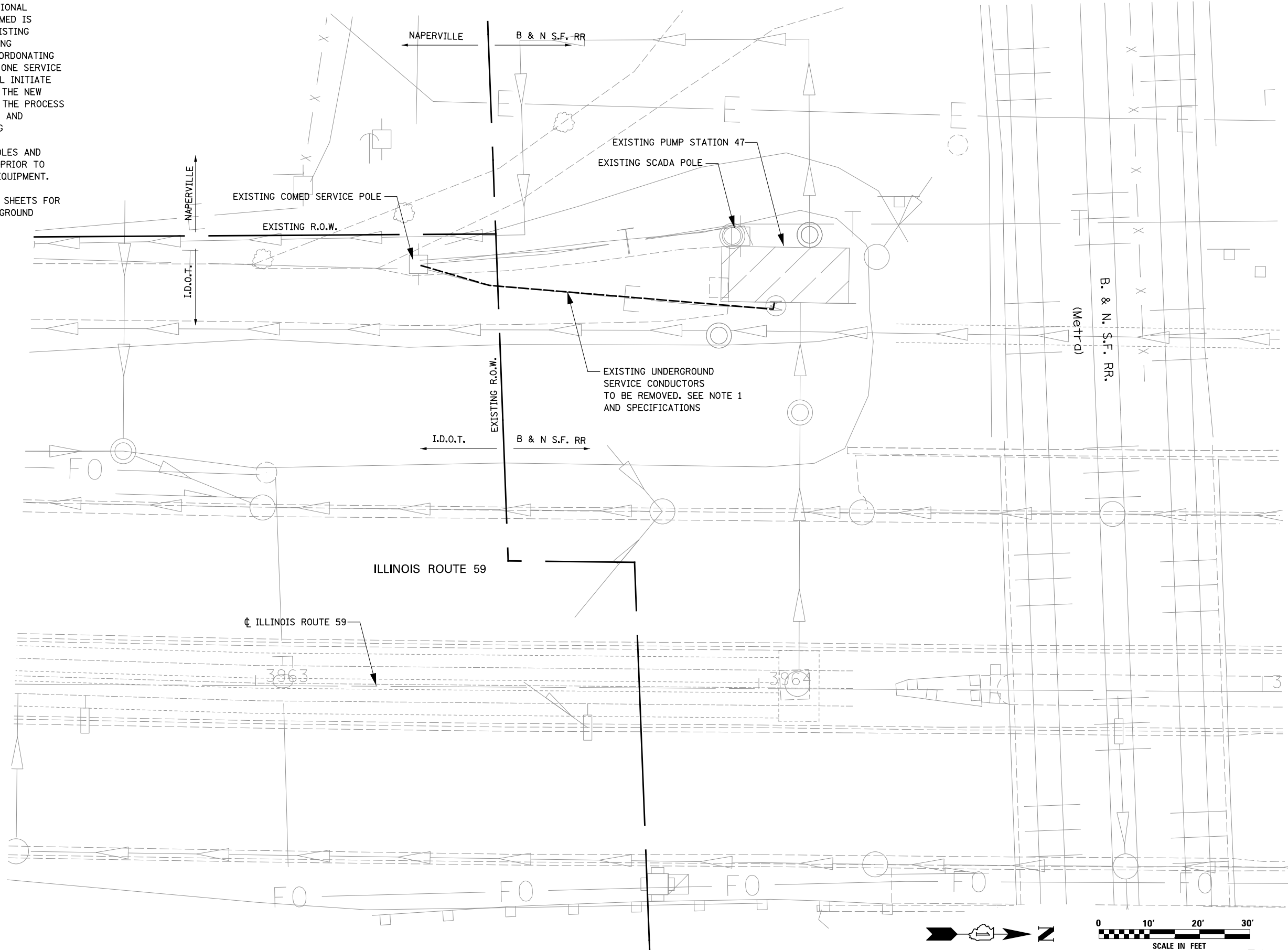
NOTES:

1. PROVIDE METER SOCKET AS REQUIRED BY NAPERVILLE.
2. COORDINATE AND COMPLY WITH ALL UTILITY REQUIREMENTS FOR SERVICE AND METERING.
3. PROVIDE ALL CIRCUIT BREAKERS WITH AUXILIARY CONTACTS AS REQUIRED.
4. BOND NEUTRAL CONDUCTOR TO SWITCHBOARD NEUTRAL BUS.
5. PROVIDE ETHERNET CONNECTION BETWEEN METER DEVICE AND CONTROL PANEL PCC.
6. THE MONITOR SHALL PROVIDE TRUE RMS MEASUREMENTS OF TOTAL PUMP STATION LOAD IN AMPS, VOLTAGE, MAXIMUM DEMAND LOAD IN KW, PHASE TO NEUTRAL AND PHASE TO PHASE; CURRENT, PER PHASE AND NEUTRAL; REAL POWER, REACTIVE POWER, APPARENT POWER, POWER FACTOR AND FREQUENCY. DATA SHALL BE TRANSMITTED TO REMOTE LOCATIONS IN DISTRICT 1 AND AT CONTRACTOR'S MAINTENANCE FACILITY VIA SCADA.
7. ALL CT'S ARE TO HAVE A 4-20mA OUTPUT PROPORTIONAL TO CURRENT DRAW.
8. ATS TO SWITCH NEUTRAL AND PHASE WIRES BETWEEN SERVICE NO. 1 AND SERVICE NO. 2.



NOTES:

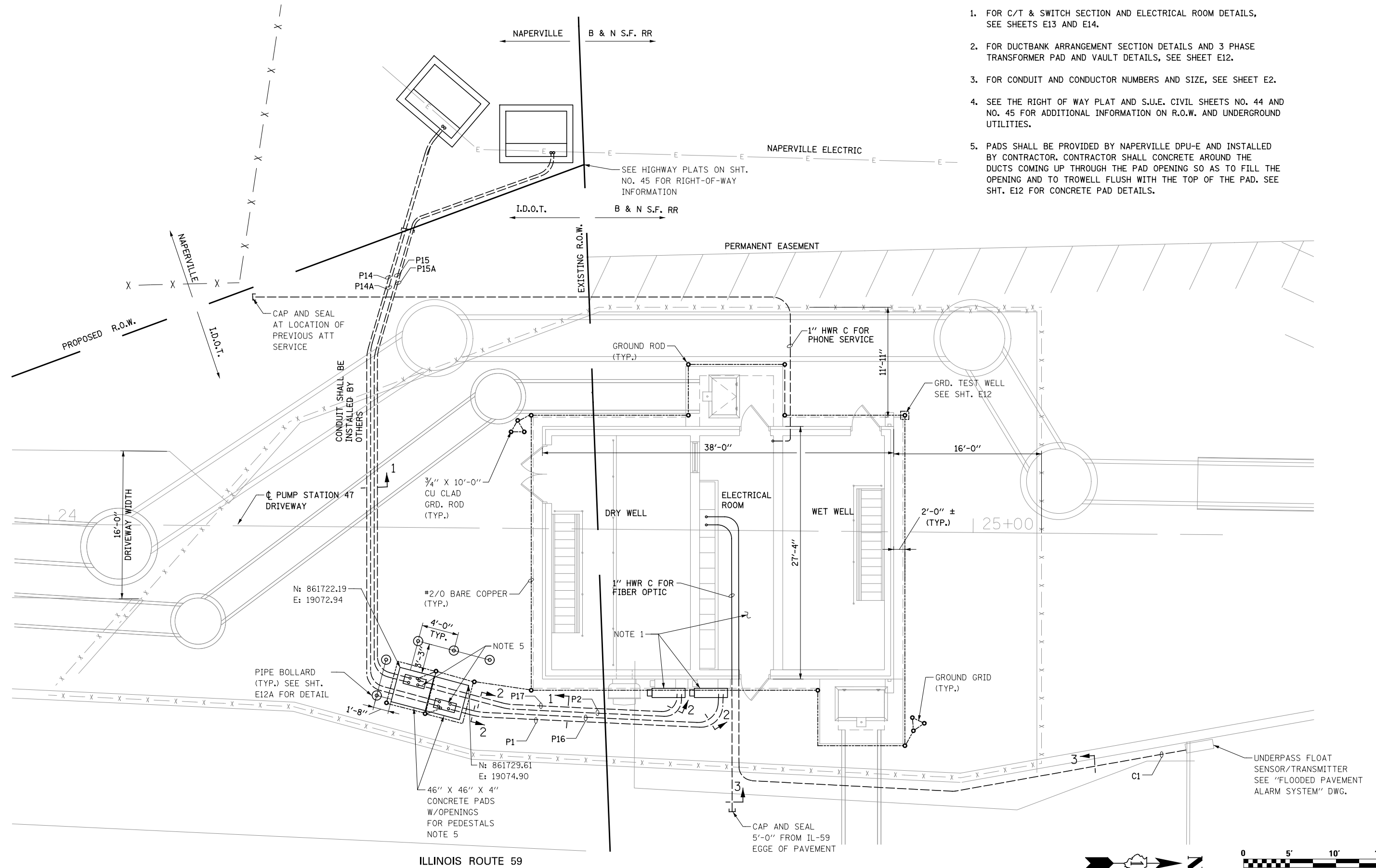
- EXISTING PUMP STATION SHALL REMAIN OPERATIONAL UNTIL NEW PUMP STATION IS OPERATIONAL. COMED IS TO PROVIDE A TEMPORARY SERVICE TO THE EXISTING PUMP STATION PRIOR TO REMOVING THE EXISTING SERVICE. CONTRACTOR IS RESPONSIBLE FOR COORDONATING WITH COMED SERVICE DISRUPTIONS SUCH THAT ONE SERVICE IS IN CONSTANT OPERATION. CONTRACTOR SHALL INITIATE CANCELOATION OF EXISTING SERVICE, AND ONCE THE NEW PUMP STATION IS COMMISSIONED ENSURE THAT THE PROCESS IS COMPLETED INCLUDING TERMINATING BILLING AND INVOICES FOR ENERGY CHARGES. THE FOLLOWING CONSTRAINT SHALL BE FOLLOWED:
THE TEMPORARY COMED TRANSFORMERS, POLES AND SERVICE EXTENSION SHALL BE INSTALLED PRIOR TO DISCONNECTION OF THE EXISTING COMED EQUIPMENT.
- SEE THE RIGHT OF WAY PLAT AND S.U.E. CIVIL SHEETS FOR ADDITIONAL INFORMATION ON R.O.W. AND UNDERGROUND UTILITIES.



	USER NAME = *USER*	DESIGNED - MCP	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	PUMP STATION EXISTING ELECTRICAL SITE PLAN			F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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	PLOT DATE = *DATE*	CHECKED - MCP	REVISED -		DATE 03-22-2012	SCALE:	SHEET NO. OF SHEETS	STA. 3942+00 TO STA. 3969+00	ILLINOIS FED. AID PROJECT			

NOTES:

1. FOR C/T & SWITCH SECTION AND ELECTRICAL ROOM DETAILS, SEE SHEETS E13 AND E14.
2. FOR DUCTBANK ARRANGEMENT SECTION DETAILS AND 3 PHASE TRANSFORMER PAD AND VAULT DETAILS, SEE SHEET E12.
3. FOR CONDUIT AND CONDUCTOR NUMBERS AND SIZE, SEE SHEET E2.
4. SEE THE RIGHT OF WAY PLAT AND S.U.E. CIVIL SHEETS NO. 44 AND NO. 45 FOR ADDITIONAL INFORMATION ON R.O.W. AND UNDERGROUND UTILITIES.
5. PADS SHALL BE PROVIDED BY NAPERVILLE DPU-E AND INSTALLED BY CONTRACTOR. CONTRACTOR SHALL CONCRETE AROUND THE DUCTS COMING UP THROUGH THE PAD OPENING SO AS TO FILL THE OPENING AND TO TROWEL FLUSH WITH THE TOP OF THE PAD. SEE SHT. E12 FOR CONCRETE PAD DETAILS.



E4A

KNIGHT
Engineers & Architects

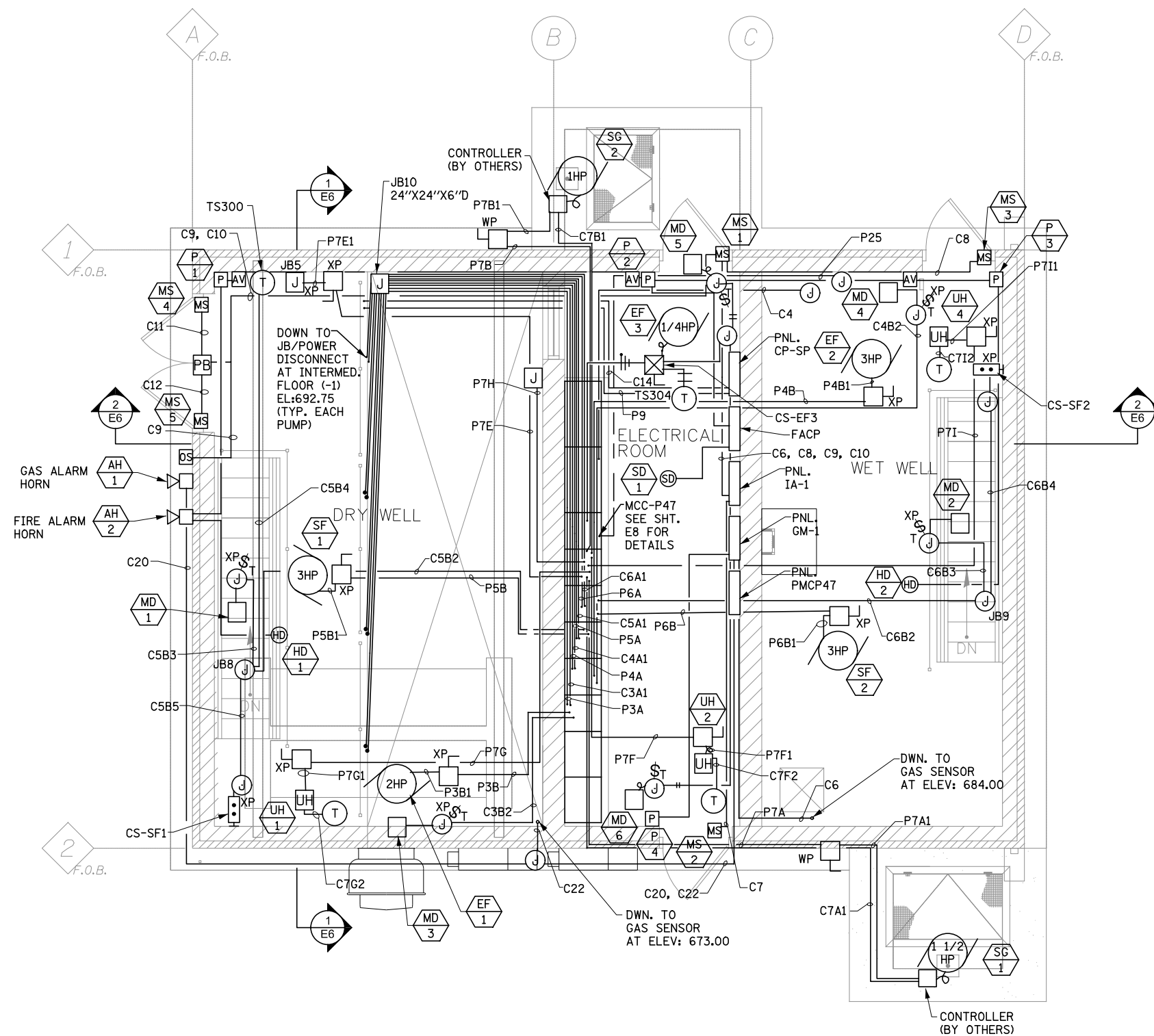
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	DATE 03-22-2012	REVISED -

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**NEW PUMP STATION
ELECTRICAL SITE PLAN**

SCALE:	SHEET NO.	OF SHEETS	STA.	TO STA.
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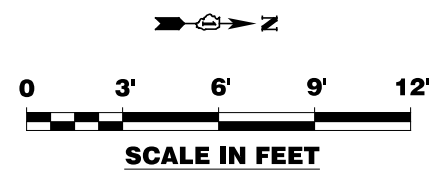
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035-I	DUPAGE	181	161
CONTRACT NO. 60P41				
ILLINOIS FED. AID PROJECT				



NOTES:

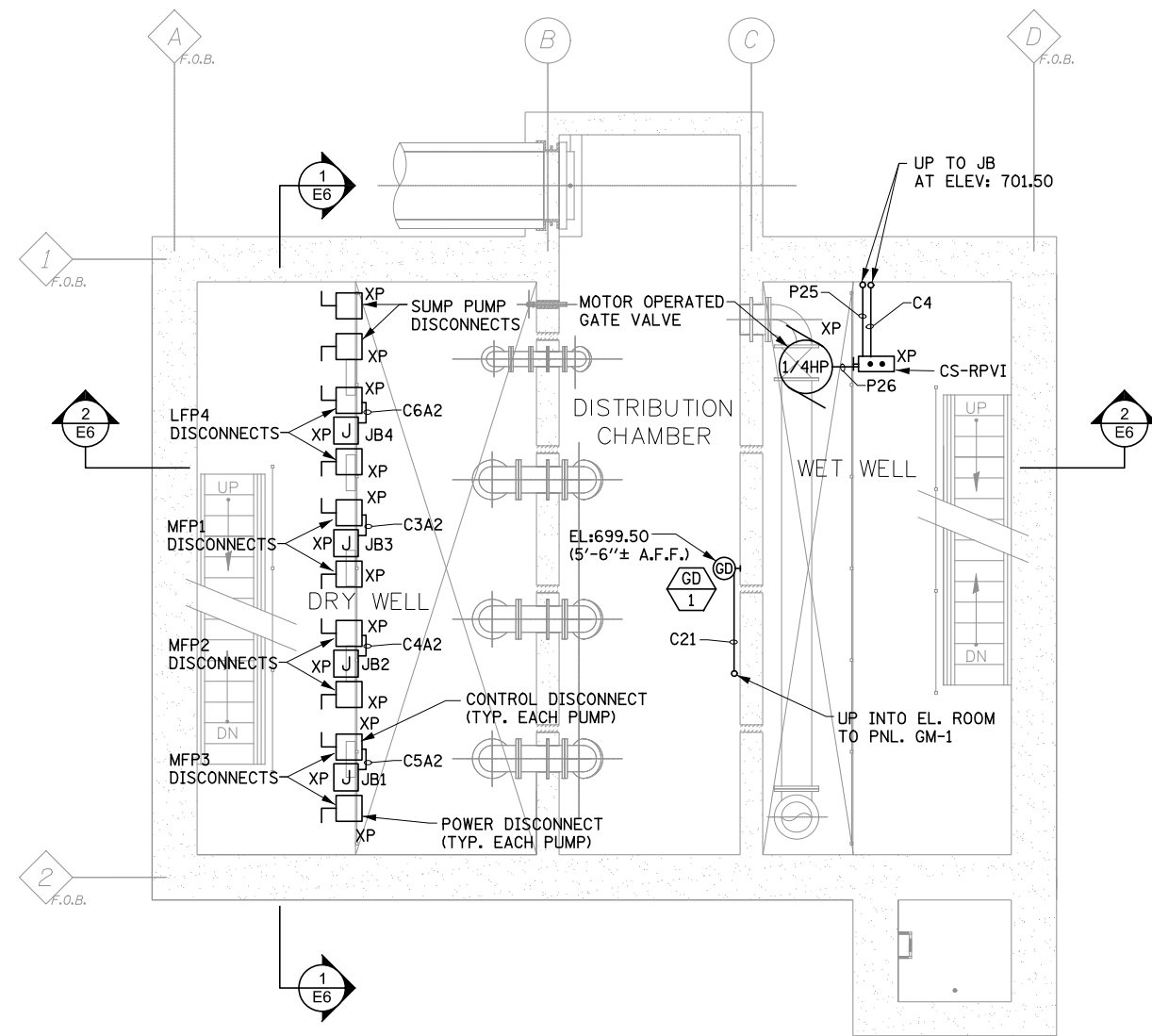
1. FOR DETAILS OF CONDUIT AND CABLE RUNS FROM MCC TO MFP-1, MFP-2, MFP-3, LFP-4 AND SP-1, SEE SHEET E6.
2. ALL OUTSIDE JUNCTION BOXES, ENCLOSURES AND DEVICES SHALL BE NEMA4X RATED.
3. ELECTRICAL INSTALLATION AND EQUIPMENT WITHIN ENTIRE WET AND DRY WELL AREA SHALL BE PER N.E.C. CLASS I DIV. 2.

1 GROUND FLOOR POWER PLAN - EL: 701.50
SCALE: 3/16" = 1'-0"



E5

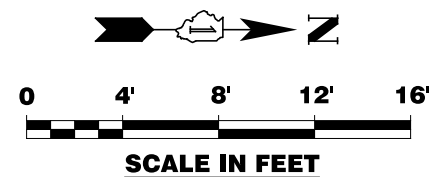
KNIGHT Engineers & Architects	USER NAME = *USER*	DESIGNED - MCP	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	PUMP STATION NO. 47 POWER PLANS			F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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				DATE 03-22-2012	REVISED -	SCALE:	SHEET NO.	OF SHEETS	STA.	TO STA.	ILLINOIS FED. AID PROJECT	



NOTES:

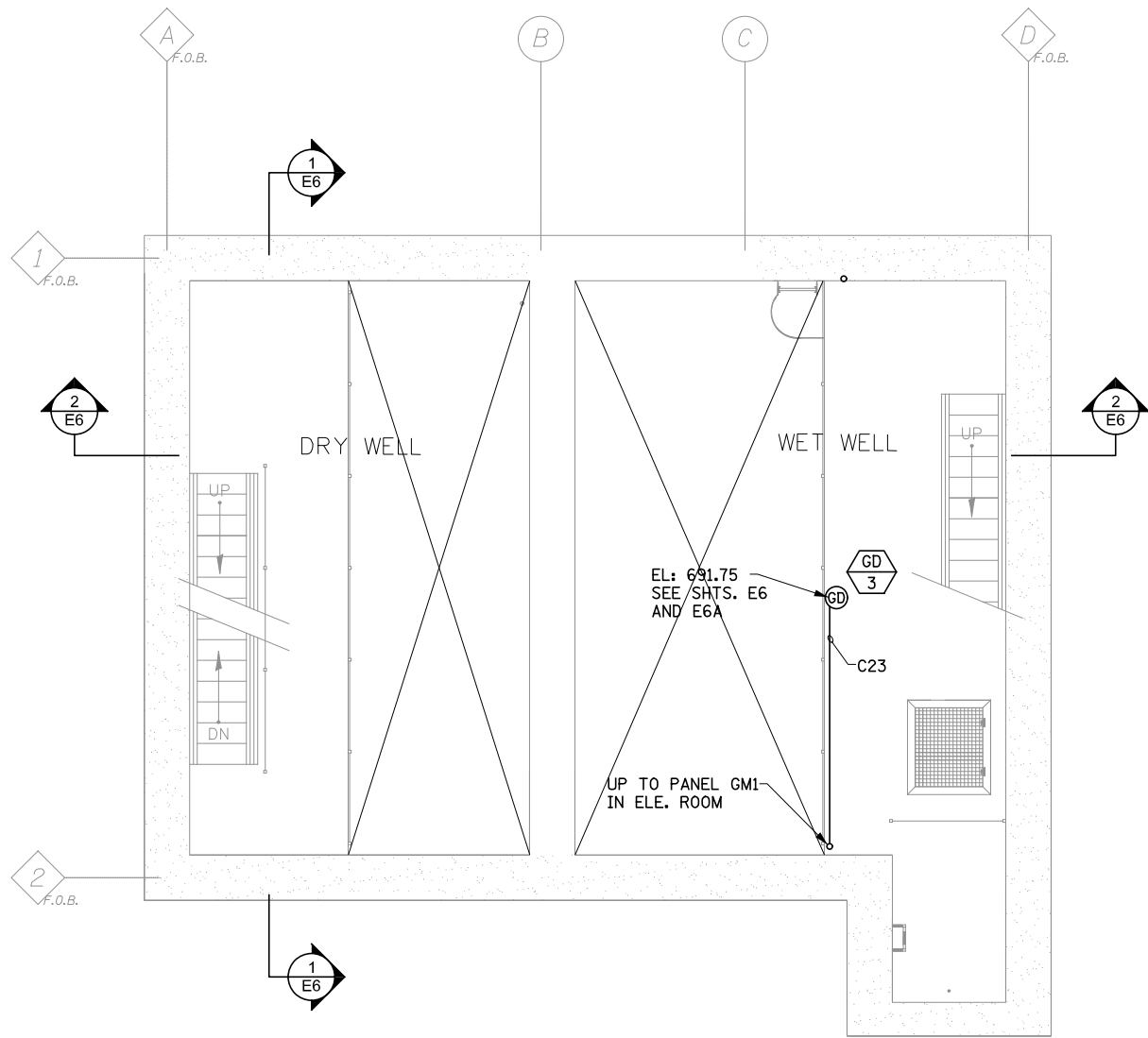
1. FOR DETAILS OF CONDUIT AND CABLE RUNS FROM MCC TO MFP-1, MFP-2, MFP-3, LFP-4 AND SP-1, SEE SHEET E6.
2. ELECTRICAL INSTALLATION AND EQUIPMENT WITHIN ENTIRE WET AND DRY WELL AREA SHALL BE PER N.E.C. CLASS I DIV. 2.

2 INTERMEDIATE FLOOR (-1) POWER PLAN - EL:692.75
 SCALE: 1/4" = 1'-0" - DISCHARGE EL:694.00

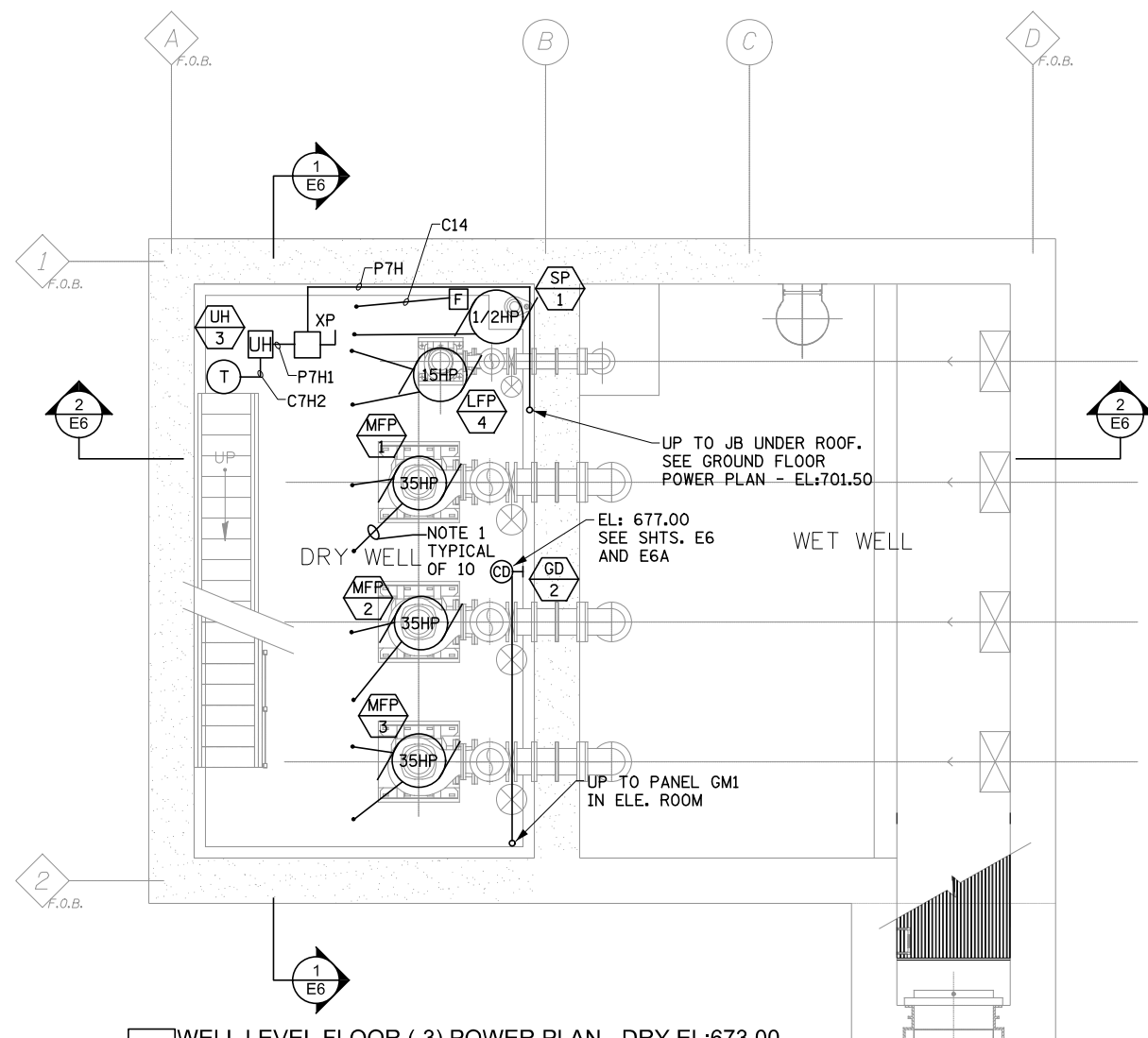


E5A

KNIGHT Engineers & Architects	USER NAME = *USER*	DESIGNED - MCP	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	PUMP STATION NO. 47 POWER PLANS			F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	PLOT SCALE = *SCALE*	DRAWN - MLB	REVISED -					338/IL 59	2011-035-I	DUPAGE	181	163
	PLOT DATE = *DATE*	CHECKED - MCP	REVISED -					CONTRACT NO. 60P41			ILLINOIS FED. AID PROJECT	
				SCALE:	SHEET NO.	OF SHEETS	STA.	TO STA.				



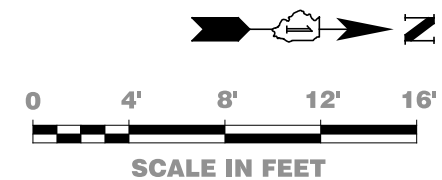
3 INTERMEDIATE FLOOR (-2) POWER PLAN - EL:684.00
SCALE: 1/4" = 1'-0"



4 WELL LEVEL FLOOR (-3) POWER PLAN - DRY EL:673.00
- WET EL:671.50
SCALE: 1/4" = 1'-0"

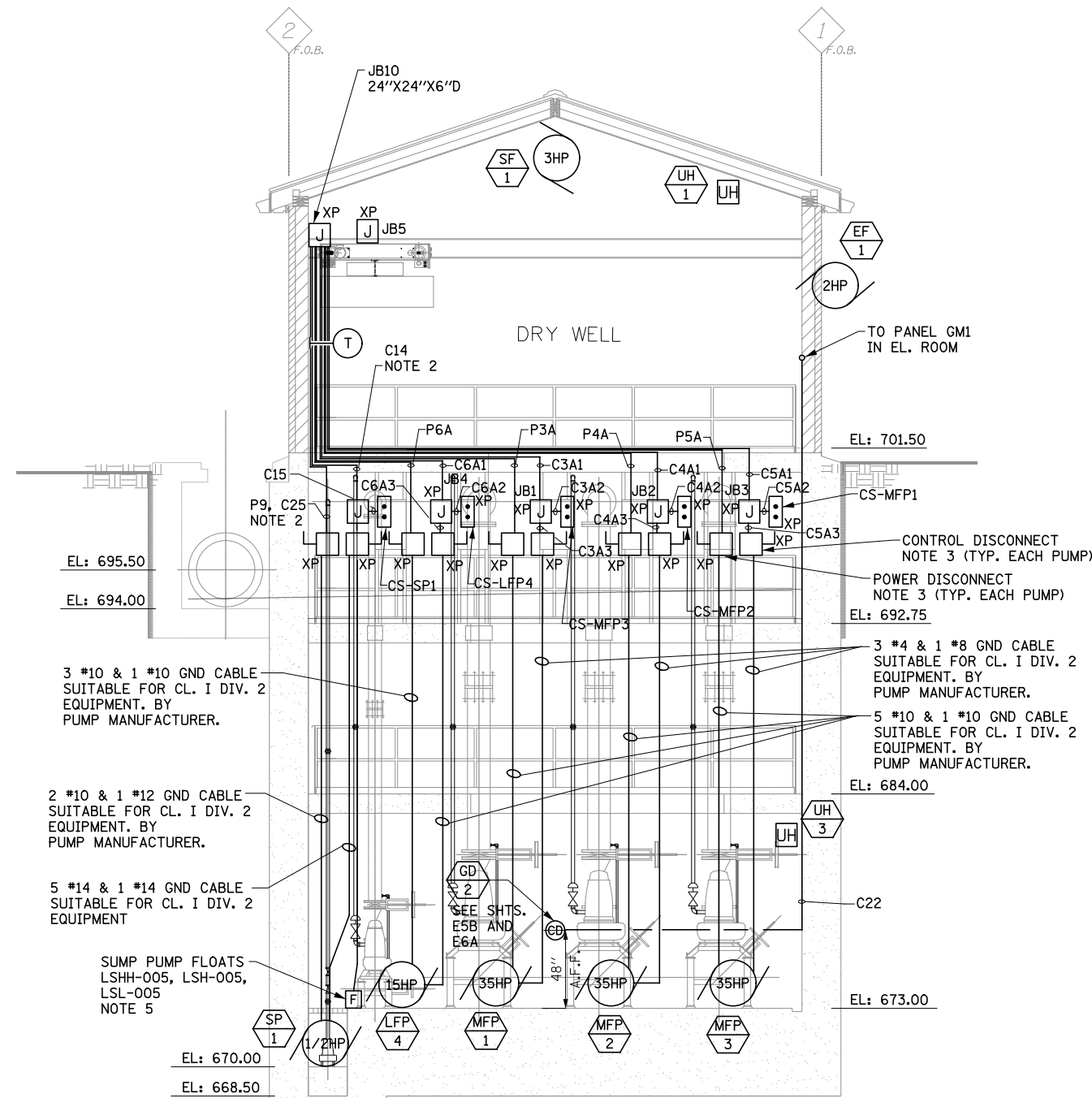
NOTES:

1. CABLES BY PUMP MANUFACTURER UP TO DISCONNECTS AT INTERMEDIATE FLOOR (-1) - EL:692.75
2. FOR DETAILS OF CONDUIT AND CABLE RUNS FROM MCC TO MFP-1, MFP-2, MFP-3, LFP-4, AND SP-1 SEE SHEET E6.
3. ELECTRICAL INSTALLATION AND EQUIPMENT WITHIN ENTIRE WET AND DRY WELL AREA SHALL BE PER N.E.C. CLASS I DIV. 2.

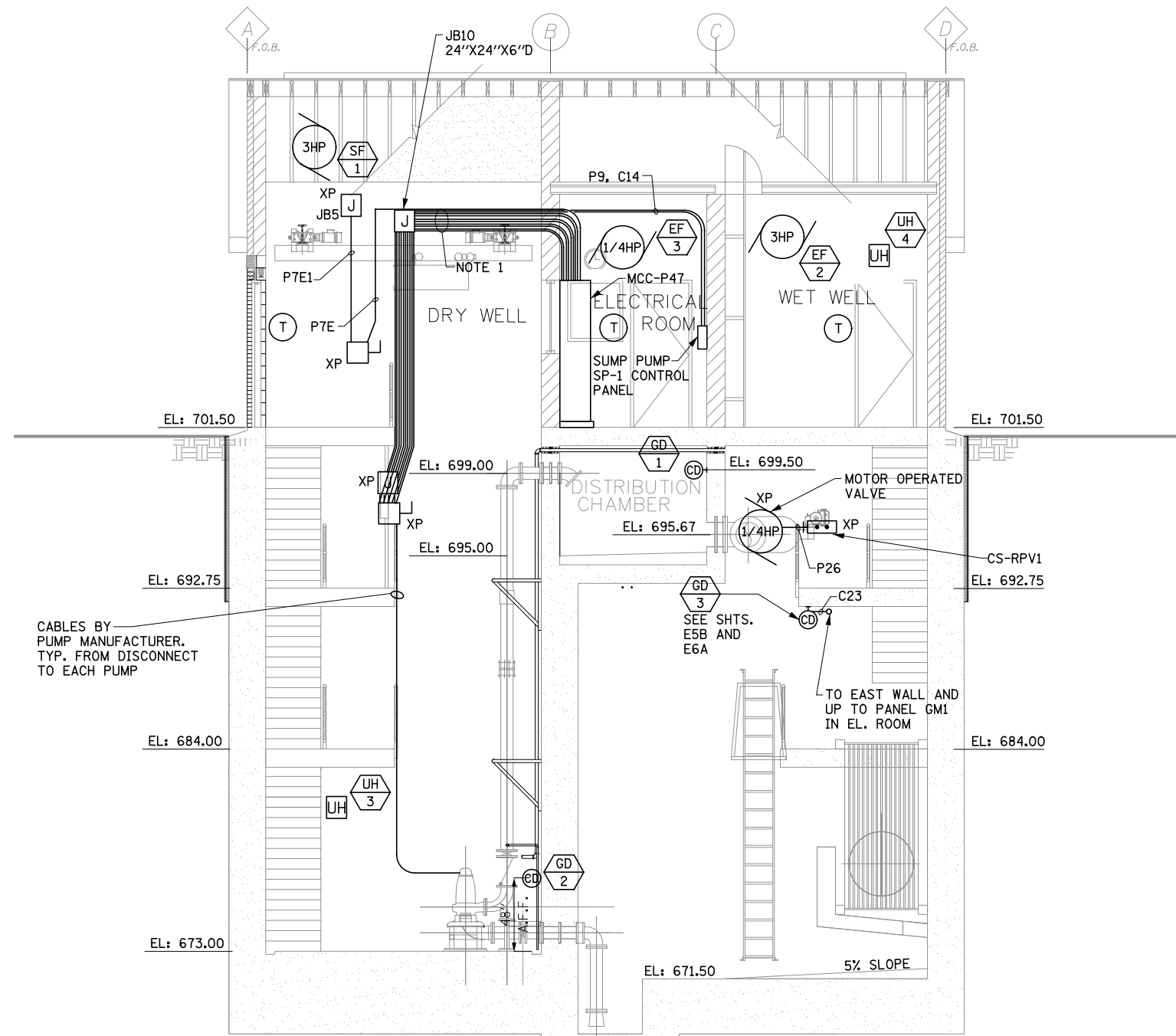


E5B

KNIGHT Engineers & Architects	USER NAME = *USER*	DESIGNED - MCP	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	PUMP STATION NO. 47 POWER PLANS			F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	PLOT SCALE = *SCALE*	DRAWN - MLB	REVISED -					338/IL 59	2011-035-I	DUPAGE	181	164
PLOT DATE = *DATE*	CHECKED - MCP	REVISED -	REVISED -	SCALE: SHEET NO. OF SHEETS STA. TO STA.			CONTRACT NO. 60P41					
	DATE 03-22-2012	REVISED -	REVISED -				ILLINOIS FED. AID PROJECT					

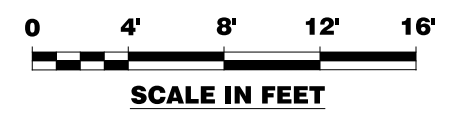


1 DRY WELL SECTION ELEVATION LOOKING NORTH
SCALE: 3/4" = 1'-0"



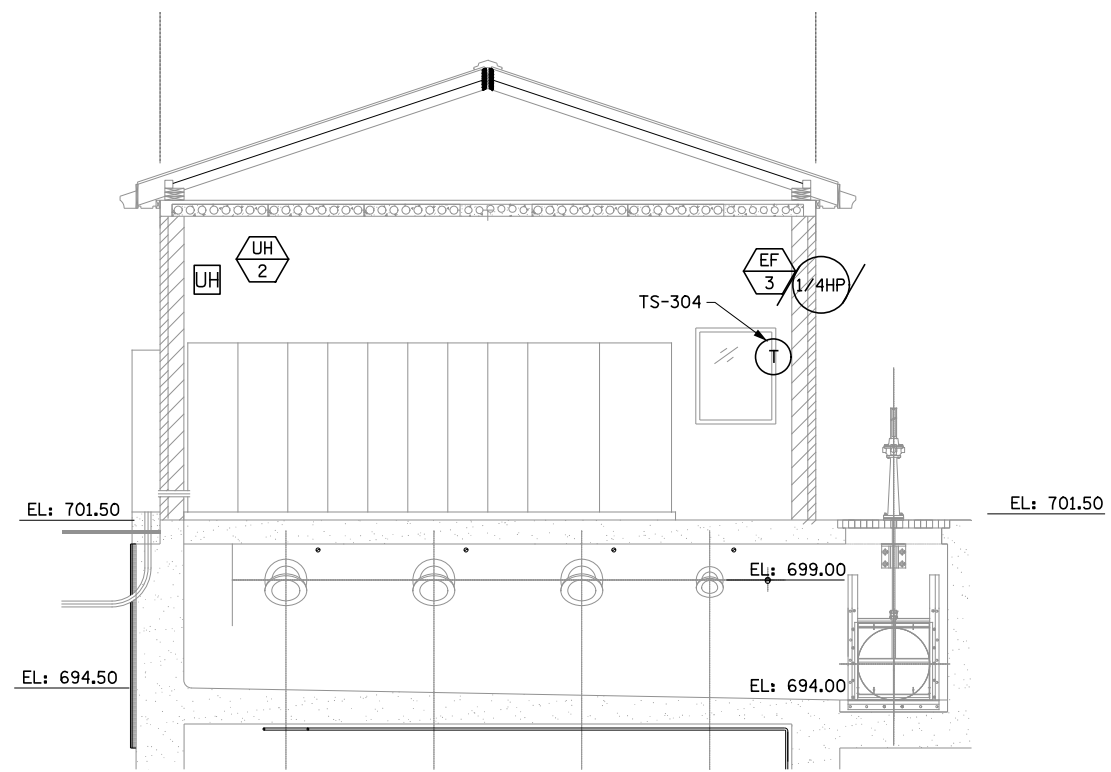
2 PUMP STATION SECTION ELEVATION LOOKING WEST
SCALE: 3/4" = 1'-0"

- NOTES:**
1. FOR DETAILED WIRING/CONDUIT RUNS, SEE SHEETS E5, E5A AND E5B.
 2. WIRED TO SUMP PUMP CONTROL PANEL.
 3. ALL DISCONNECTS AND PUSH BUTTONS SHALL BE INSTALLED APPROXIMATELY 48" ABOVE FINISHED FLOOR ON UNISTRUTS.
 4. ELECTRICAL INSTALLATION AND EQUIPMENT WITHIN ENTIRE WET AND DRY WELL AREA SHALL BE PER N.E.C. CLASS I DIV. 2.
 5. LSHH = 672.50, LSH = PUMP TOP ELEV OR AS PER PUMP MANUFACTURER., LSL = PUMP BOTTOM ELEV. + 10" OR AS PER PUMP MANUFACTURER



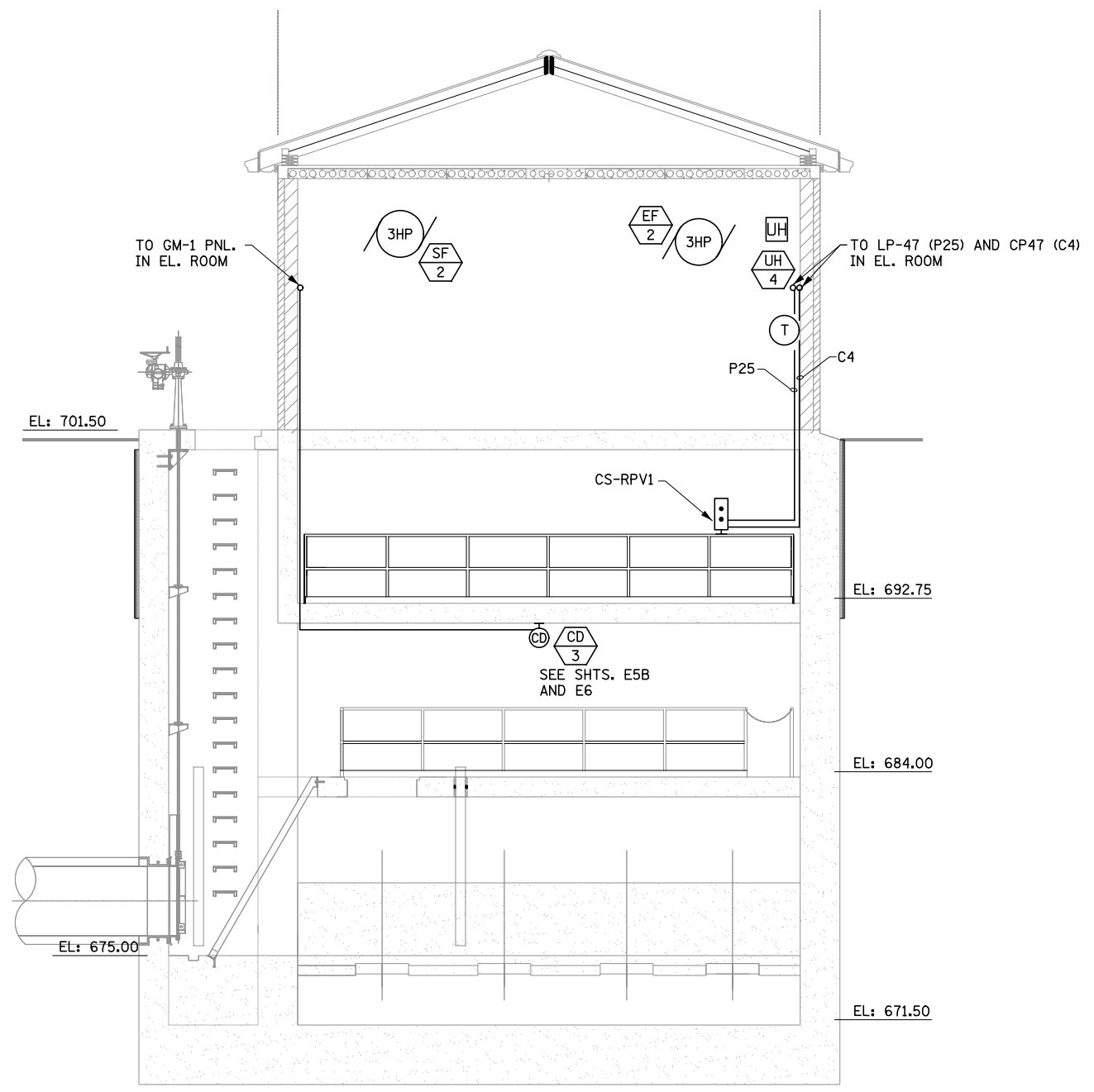
E6

KNIGHT Engineers & Architects	USER NAME : *USER*	DESIGNED - MCP	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	PUMP STATION NO. 47 POWER SECTION ELEVATIONS				F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	PLOT SCALE : *SCALE*	DRAWN - MLB	REVISED -						338/IL 59	2011-035-I	DUPAGE	181	165
	PLOT DATE : *DATE*	CHECKED - MCP	REVISED -						CONTRACT NO. 60P41				
					SCALE:	SHEET NO.	OF SHEETS	STA.	TO STA.	ILLINOIS FED. AID PROJECT			



2 EL. ROOM AND DISTRIBUTION CHAMBER SECTION ELEVATION LOOKING SOUTH
SCALE: 1/4" = 1'-0"

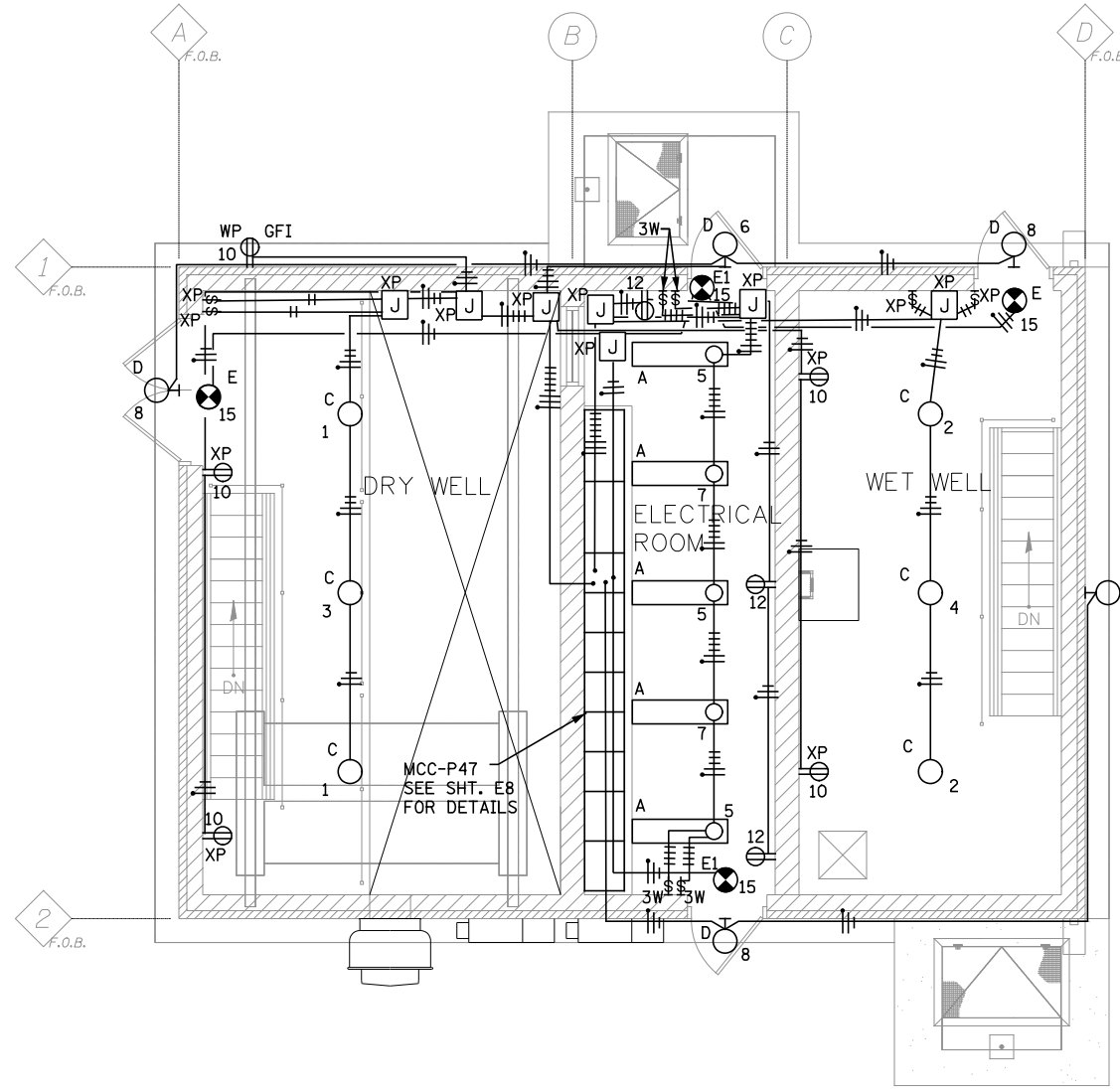
- NOTES:**
1. FOR DETAILED WIRING/CONDUIT RUNS, SEE SHEETS E5, E5A AND E5B.
 2. ELECTRICAL INSTALLATION AND EQUIPMENT WITHIN ENTIRE WET AND DRY WELL AREA SHALL BE PER N.E.C. CLASS I DIV. 2.



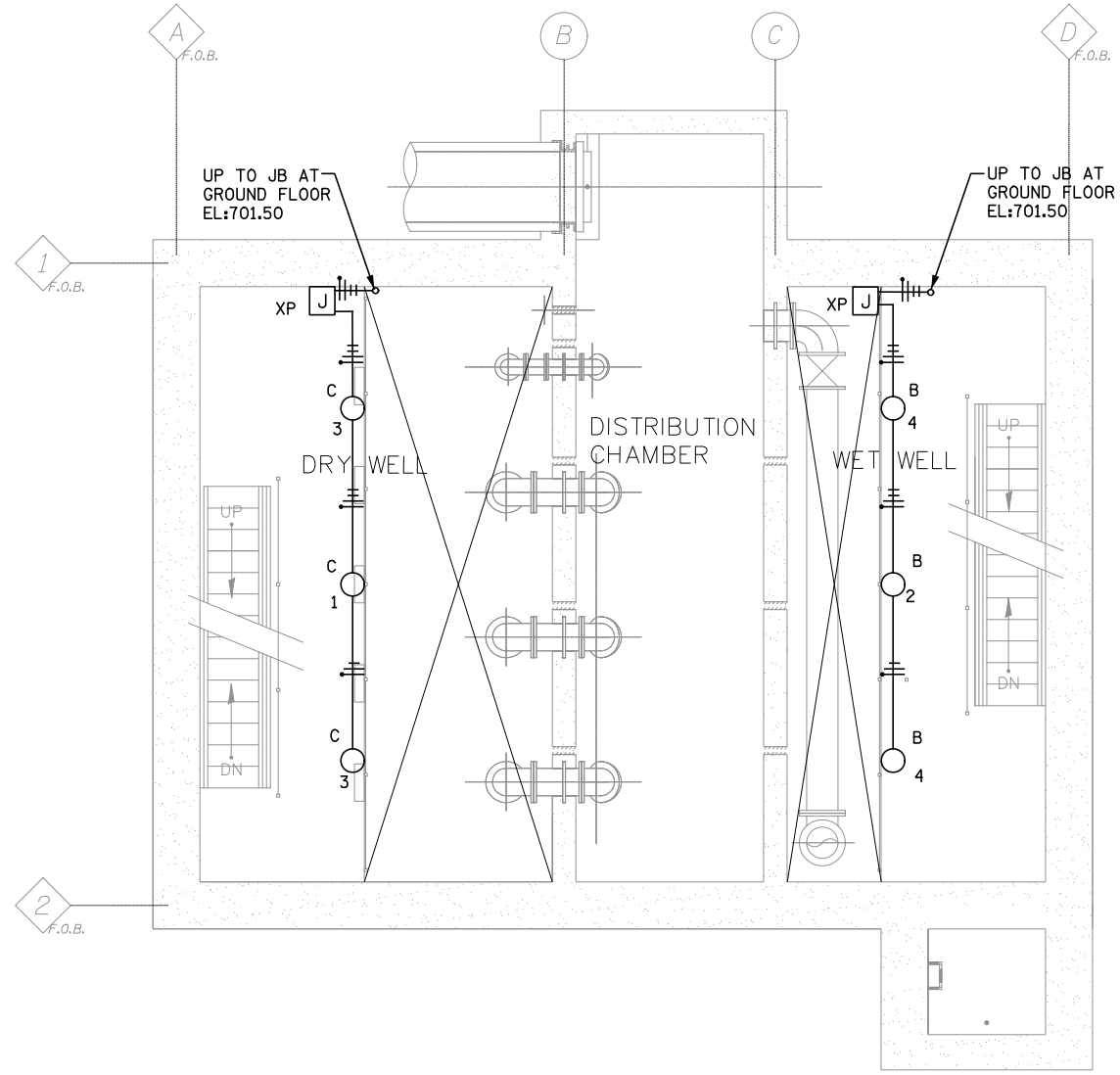
1 WET WELL SECTION ELEVATION LOOKING SOUTH
SCALE: 1/4" = 1'-0" SCALE: 1/4" = 1'-0"

E6A

USER NAME = *USER*	DESIGNED - MCP	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	PUMP STATION NO. 47 POWER SECTION ELEVATIONS				F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	
DRAWN - MLB	CHECKED - MCP	REVISED -		SCALE:	SHEET NO.	OF SHEETS	STA.	TO STA.	338/IL 59	2011-035-I	DUPAGE	181	166
PLOT SCALE = *SCALE*	DATE 03-22-2012	REVISED -						CONTRACT NO. 60P41			ILLINOIS FED. AID PROJECT		
PLOT DATE = *DATE*													



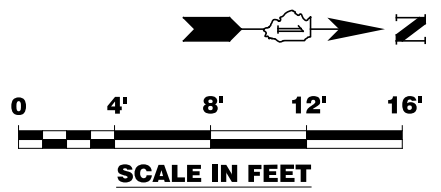
1 GROUND FLOOR LIGHTING/RECEPTACLE PLAN - EL: 701.50
SCALE: 1/4" = 1'-0"



2 INTERMEDIATE FLOOR (-1) LIGHTING/RECEPTACLE PLAN - EL:692.75
SCALE: 1/4" = 1'-0" - DISCHARGE EL:694.00

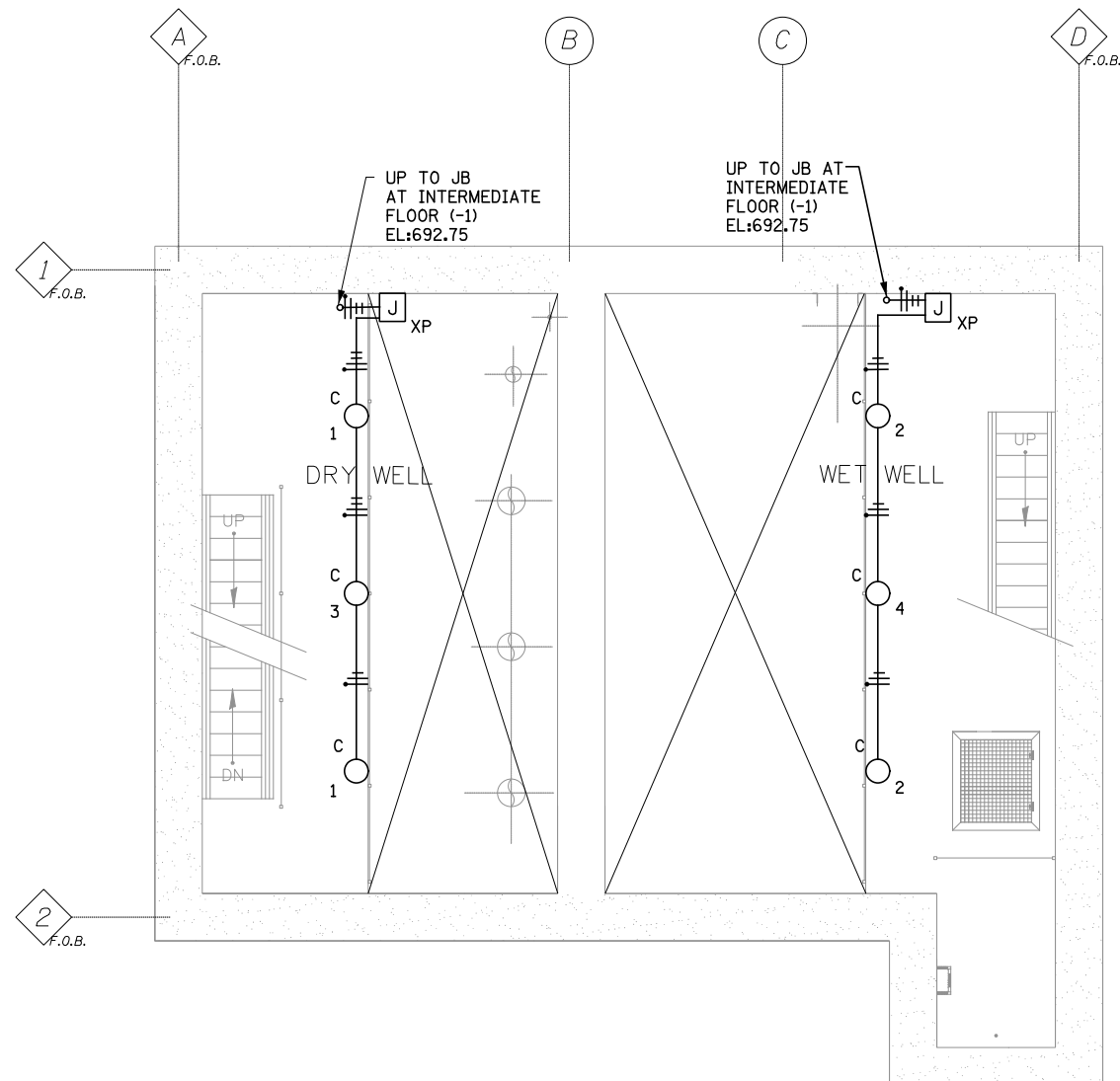
NOTES:

1. SEE SHT. E11 FOR LIGHTING PANEL SCHEDULE AND LIGHTING FIXTURE SCHEDULE.
2. ELECTRICAL INSTALLATION AND EQUIPMENT WITHIN ENTIRE WET AND DRY WELL AREA SHALL BE PER N.E.C. CLASS I DIV. 2.

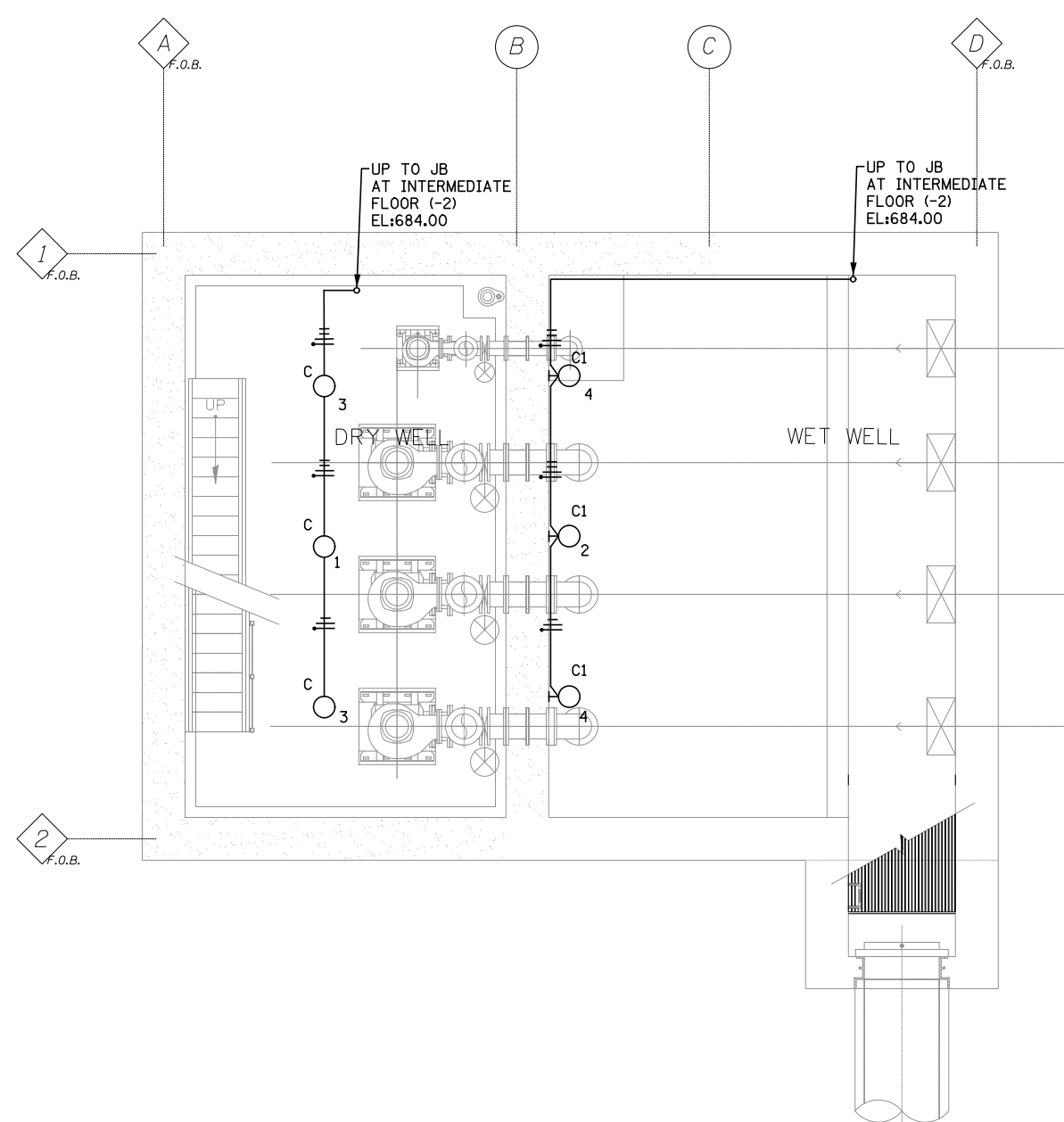


E7

KNIGHT Engineers & Architects	USER NAME = *USER*	DESIGNED - MCP	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	PUMP STATION 47 LIGHTING AND RECEPTACLE PLANS				F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	PLOT SCALE = *SCALE*	DRAWN - MLB	REVISED -		338/IL 59	2011-035-I	DUPAGE	181	167				
	PLOT DATE = *DATE*	CHECKED - MCP	REVISED -		SCALE: SHEET NO. OF SHEETS STA. TO STA.				CONTRACT NO. 60P41				
								ILLINOIS FED. AID PROJECT					



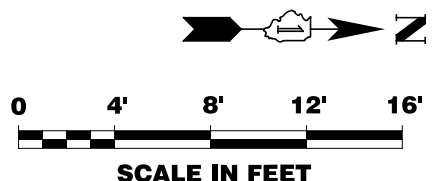
3 INTERMEDIATE FLOOR (-2) LIGHTING/RECEPTACLE PLAN - EL:684.00
SCALE: 1/4" = 1'-0"



4 WELL LEVEL FLOOR (-3) LIGHTING/RECEPTACLE PLAN - EL:673.00
SCALE: 1/4" = 1'-0"
- WET EL:671.50

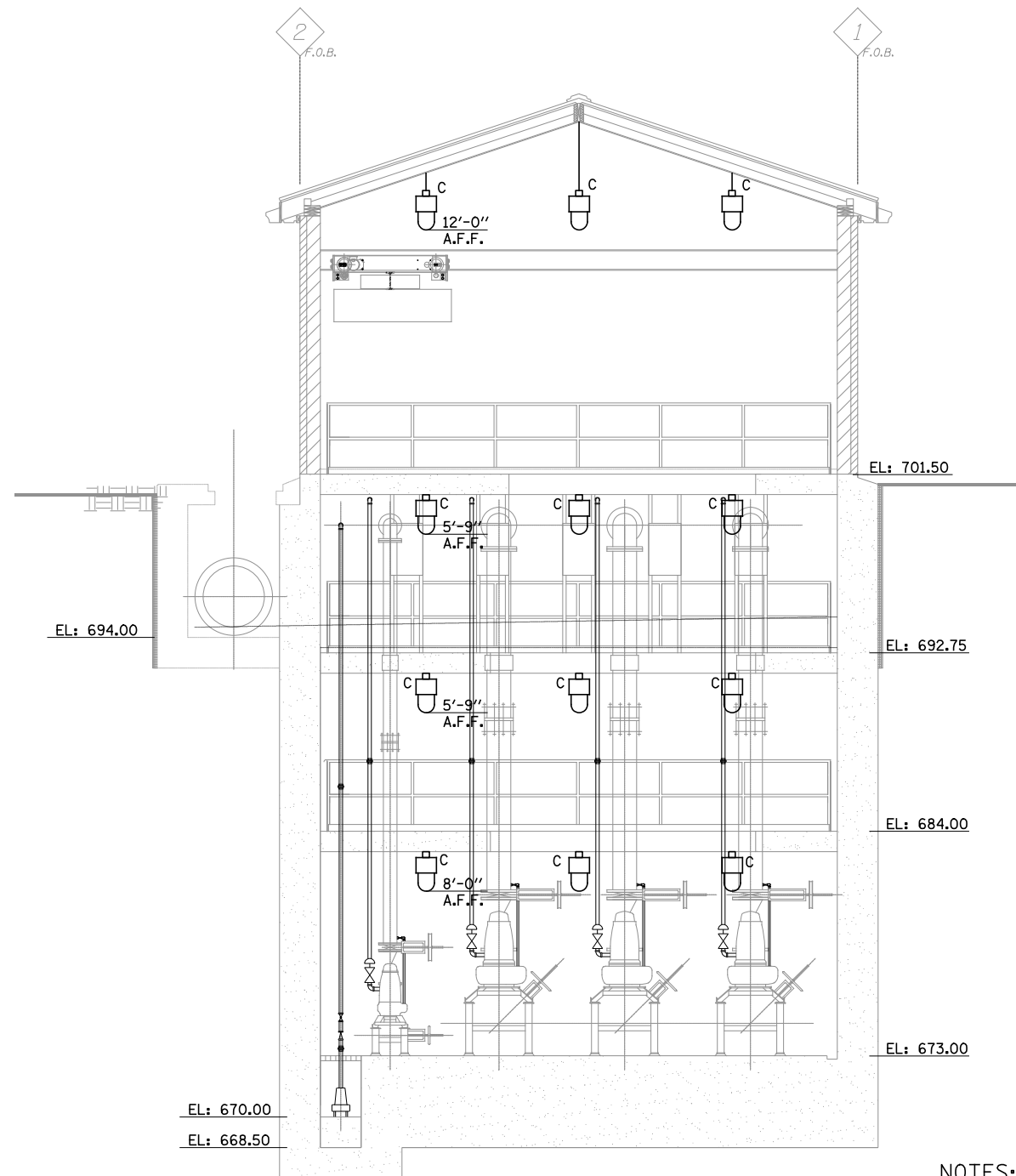
NOTES:

1. SEE SHT. E11 FOR LIGHTING PANEL SCHEDULE AND LIGHTING FIXTURE SCHEDULE.
2. ELECTRICAL INSTALLATION AND EQUIPMENT WITHIN ENTIRE WET AND DRY WELL AREA SHALL BE PER N.E.C. CLASS I DIV. 2.

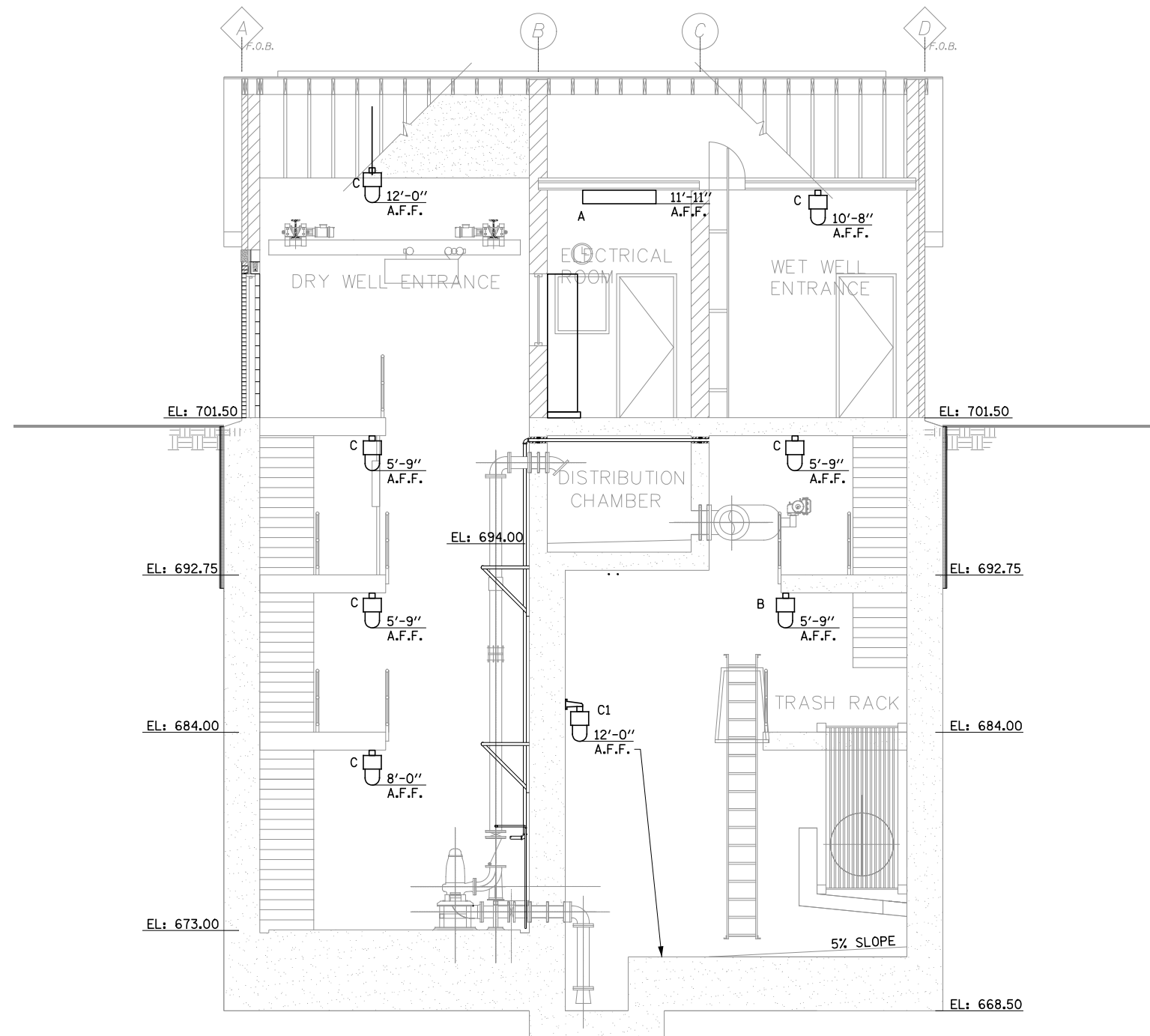


E7A

KNIGHT Engineers & Architects	USER NAME = *USER*	DESIGNED - MCP	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	PUMP STATION 47 LIGHTING AND RECEPTACLE PLANS			F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	PLOT SCALE = *SCALE*	DRAWN - MLB	REVISED -					338/IL 59	2011-035-I	DUPAGE	181	168
PLOT DATE = *DATE*	CHECKED - MCP	DATE 03-22-2012	REVISED -	SCALE:	SHEET NO.	OF SHEETS	STA.	TO STA.	CONTRACT NO. 60P41			
									ILLINOIS FED. AID PROJECT			

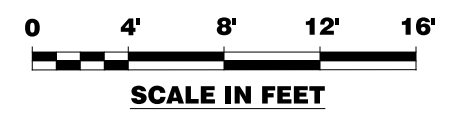


1 DRY WELL SECTION ELEVATION LOOKING NORTH
SCALE: 1/4" = 1'-0"



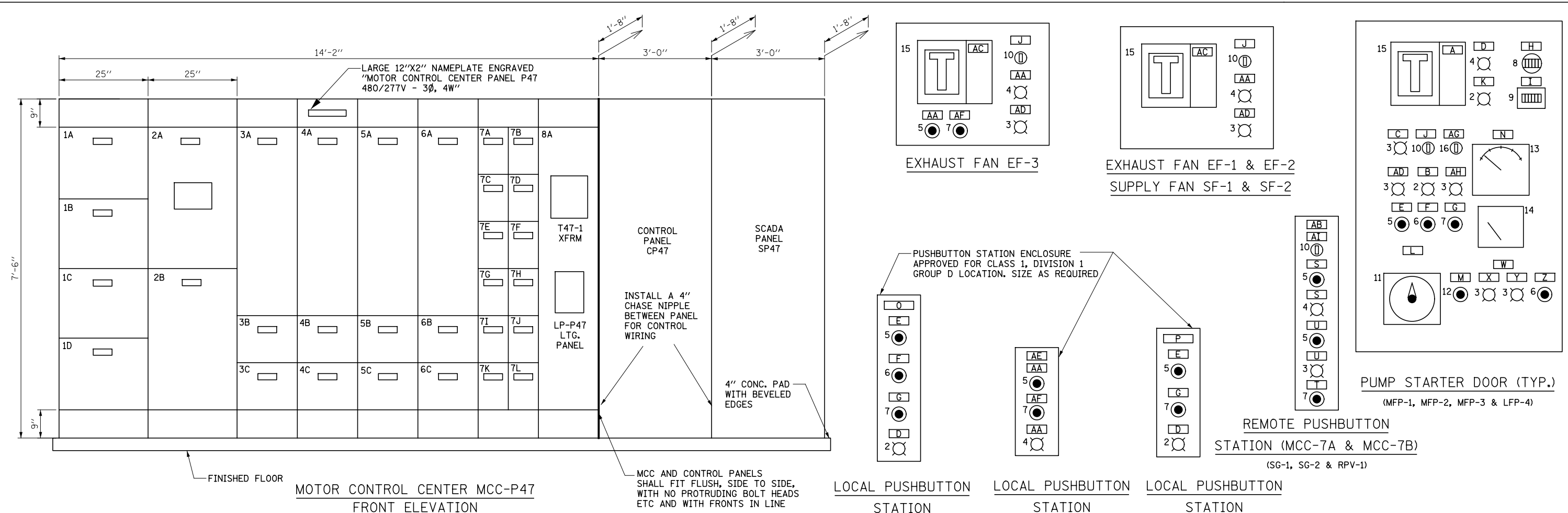
2 PUMP STATION SECTION ELEVATION LOOKING WEST
SCALE: 1/4" = 1'-0"

- NOTES:**
- FOR DETAILS OF CONDUIT AND CABLE RUNS FROM MCC LP-47 TO LIGHT FIXTURES, SEE SHEETS E7 AND E7A.
 - SEE SHT. E11 FOR LIGHTING PANEL SCHEDULE AND LIGHTING FIXTURE SCHEDULE.
 - ELECTRICAL INSTALLATION AND EQUIPMENT WITHIN ENTIRE WET AND DRY WELL AREA SHALL BE PER N.E.C. CLASS 1 DIV. 2.



E7B

KNIGHT Engineers & Architects	USER NAME = *USER*	DESIGNED - MCP	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	PUMP STATION NO. 47 LIGHTING ELEVATION PLANS			F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	PLOT SCALE = *SCALE*	DRAWN - MLB	REVISED -					338/IL 59	2011-035-I	DUPAGE	181	169
PLOT DATE = *DATE*	CHECKED - MCP	REVISED -	REVISED -				CONTRACT NO. 60P41		ILLINOIS FED. AID PROJECT			
	DATE 03-22-2012	REVISED -	REVISED -	SCALE:	SHEET NO.	OF SHEETS	STA.	TO STA.				



MCC-P47 NAMEPLATE SCHEDULE	
ITEM	NAMEPLATE ENGRAVING
1A	MAIN BREAKER SERVICE NO. 1 (PS47-1A)
1B	MAIN BREAKER SERVICE NO. 2 (PS47-1B)
1C	SERVICE NO. 1 GRD FAULT RELAY (PS47-1C)
1D	SERVICE NO. 2 GRD FAULT RELAY (PS47-1D)
2A	ELECTRIC SERVICE METERING (PS47-2A)
2B	AUTOMATIC TRANSFER SWITCH
3A	MAIN FLOW PUMP NO. 1 (PS47-3A)
3B	EXHAUST FAN EF-1 (PS47-3B)
3C	SPACE
4A	MAIN FLOW PUMP NO. 2 (PS47-4A)
4B	EXHAUST FAN EF-2 (PS47-4B)
4C	SPACE
5A	MAIN FLOW PUMP NO. 3 (PS47-5A)
5B	SUPPLY FAN SF-1 (PS47-5B)
5C	SPACE (PS47-5C)
6A	LOW FLOW PUMP NO. 4 (PS47-6A)
6B	SUPPLY FAN SF-2 (PS47-6B)
6C	SPACE (PS47-6C)
7A	SLIDE GATE NO. 1 (PS47-7A)
7B	SLIDE GATE NO. 2 (PS47-7B)
7C	SPACE (PS47-7C)
7D	SPACE (PS47-7D)
7E	HOIST PUMP ROOM (PS47-7E)
7F	UNIT HEATER UH-2 (PS47-7F)
7G	UNIT HEATER UH-1 (PS47-7G)
7H	UNIT HEATER UH-3 (PS47-7H)
7I	UNIT HEATER UH-4 (PS47-7I)
7J	SPACE (PS47-7J)
7K	SPACE (PS47-7K)
7L	SPACE (PS47-7L)
8A	LIGHTING TRANSFORMER T47-1 AND PANEL LP-P47 (PS47-8A)

MOTOR STARTER AND REMOTE NAMEPLATE SCHEDULE	
ITEM	NAMEPLATE ENGRAVING
*A	MAIN FLOW PUMP NO. 1 DISCONNECT
B	MANUAL OPERATION
C	PUMP OFF
D	PUMP RUNNING
E	MANUAL START
F	MOTOR JOG
G	MANUAL STOP
H	NUMBERS OF STARTS
I	ELAPSED TIME RUN
J	MANUAL-OFF-AUTO
K	PUMP CALL
L	TIMED RUN TIMER
M	TIMED START
N	AMPERE METER
*O	MAIN FLOW PUMP NO. 1 LOCAL
P	SUMP PUMP
**Q	SLIDE GATE FULLY CLOSED
**R	SLIDE GATE FULLY OPEN
S	OPEN
T	STOP
U	CLOSE
**V	SLIDE GATE OPERATING
W	MOTOR MOISTURE/TEMPERATURE DETECTOR
X	MOTOR HIGH MOISTURE
Y	BEARING HIGH TEMPERATURE
Z	RESET
***AA	S-1 ON
**AB	SLIDE GATE NO.1 LOCAL
***AC	EF-1 DISCONNECT
AD	OVERLOAD TRIP
***AE	S-1 LOCAL
***AF	OFF
*AG	BY-PASS ON
*AH	BYPASS
*AI	LOCAL-OFF-REMOTE

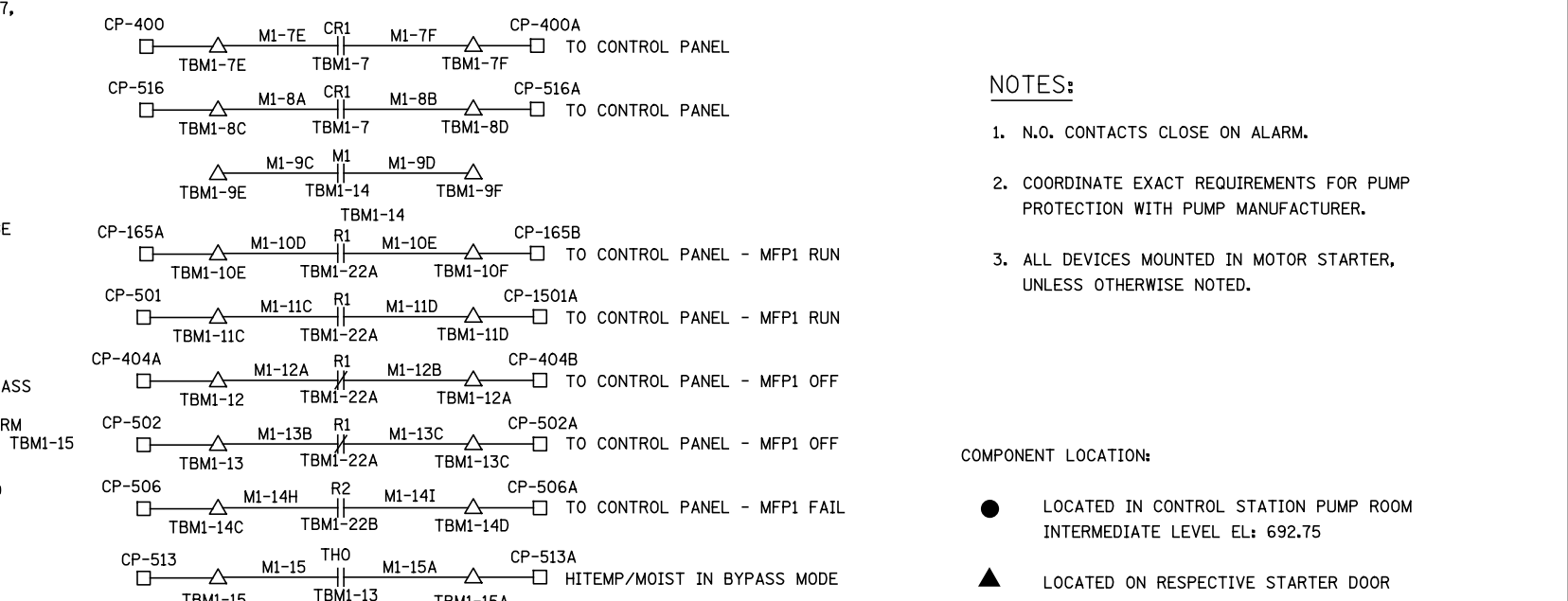
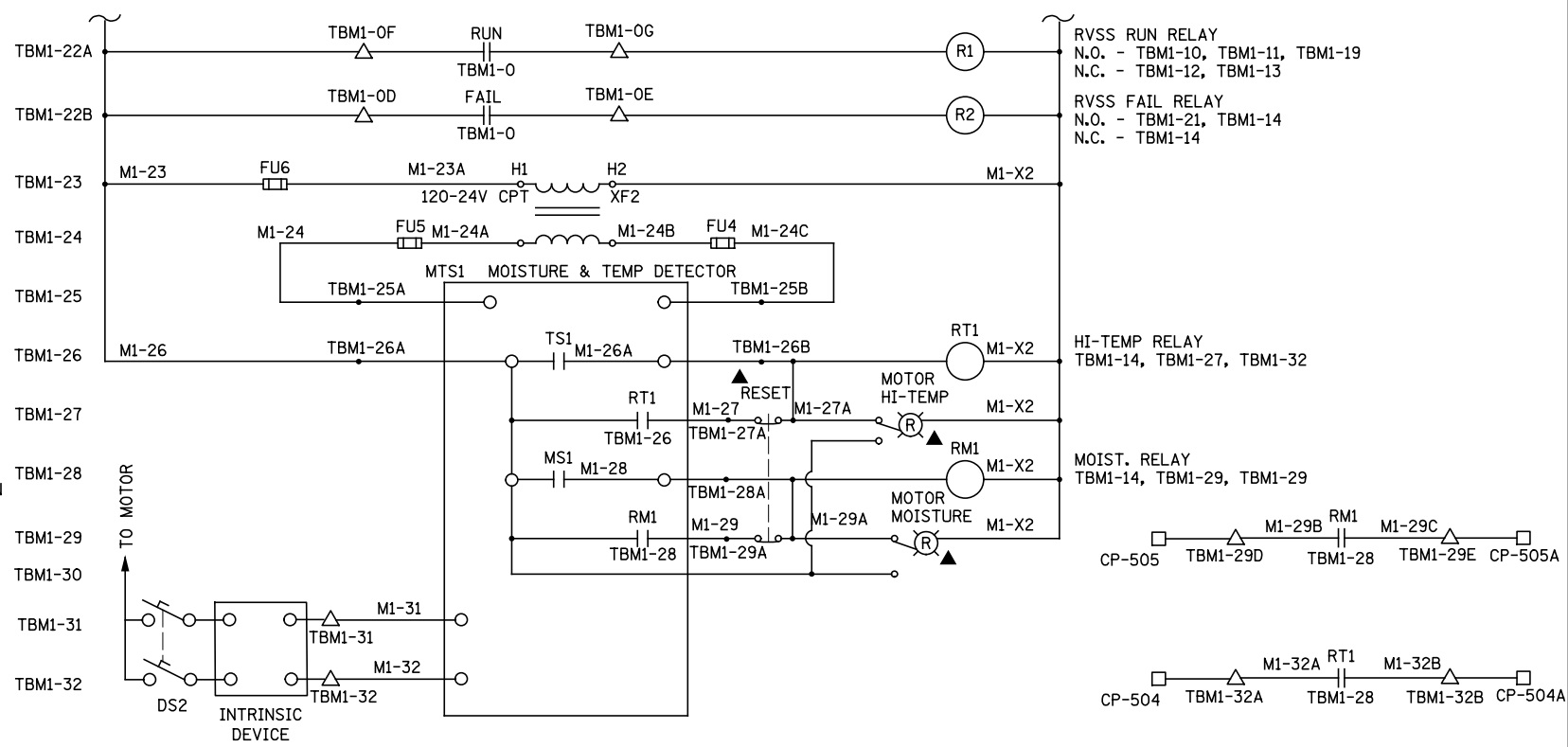
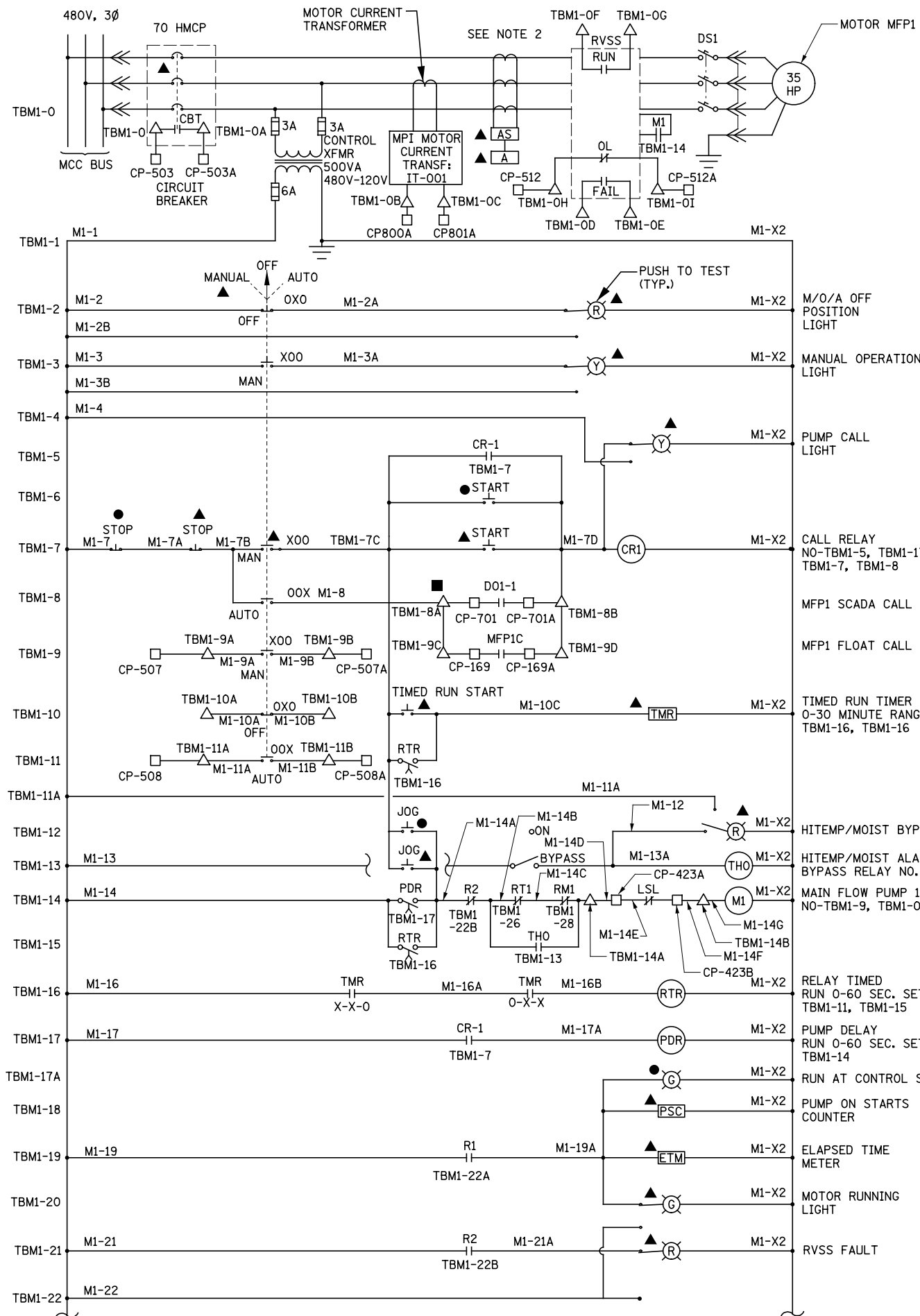
MOTOR STARTER, GATE BREAKER DOORS AND REMOTE DEVICE LEGEND		
ITEM	DEVICE DESIGNATION	DEVICE COLOR
1	MOTOR CIRCUIT PROTECTION	-
2	INDICATING LIGHT	YELLOW
3	INDICATING LIGHT	RED
4	INDICATING LIGHT	GREEN
5	PUSHBUTTON	BLACK
6	PUSHBUTTON	BLACK
7	PUSHBUTTON	RED
8	ELECTROMECHANICAL COUNTER	BLACK
9	NONRESETABLE ELAPSED TIME METER	BLACK
10	3 POSITION SELECTOR SWITCH	BLACK
11	RESET TIMER (0 TO 30 MINUTE)	BLACK
12	PUSHBUTTON	BLACK
13	AMMETER	BLACK
14	AMMETER SWITCH (4 POSITION)	BLACK
15	CIRCUIT BREAKER	-
16	2 POSITION SELECTOR SWITCH	BLACK

- * DESIGNATION TO CORRESPOND TO ACTUAL PUMP DESIGNATION
- ** DESIGNATION TO CORRESPOND TO SLIDE GATES SG-1, SG-2 OR RPV-1.
- *** DESIGNATION TO CORRESPOND TO ACTUAL FAN DESIGNATION

NOTES:

1. ALL NAMEPLATES SHALL BE CENTERED ABOVE DEVICES AND SIZED AS REQUIRED. THE NAMEPLATES SHALL BE ATTACHED WITH BRASS OR STAINLESS STEEL SCREWS. NAMEPLATES SHALL BE WHITE WITH BLACK LETTERS IN CONFORMANCE WITH DIVISION 26 OF THE SPECIFICATIONS. NAMEPLATES LIST SHALL BE APPROVED BY THE ENGINEER BEFORE INSTALLATION. PROVIDE NAMEPLATES AS SHOWN ON THE LEGENDS AND/OR DIRECTED BY THE ENGINEER.
2. DIMENSIONED DRAWINGS SHOWING ALL CUTOUT SIZES AND LOCATIONS ON PANEL MOUNTED EQUIPMENT, SHALL BE SUBMITTED FOR APPROVAL BEFORE CONSTRUCTION.
3. THE MOTOR CONTROL CENTER LAYOUT SHALL GENERALLY CONFORM TO THE LAYOUT SHOWN ON THE CONTRACT DRAWINGS. INSTALL ALL SWITCHES AND CIRCUIT BREAKERS, SO THAT THE CENTER OF THE GRIP WILL NOT BE MORE THAN 6'-6" A.F.F., WITH THE MOTOR CONTROL CENTER ON A 4" CONCRETE PAD.
4. THE RIGHT END OF THE MCC MUST BE SMOOTH TO ALLOW FLUSH MOUNTING OF THE CONTROL PANEL.

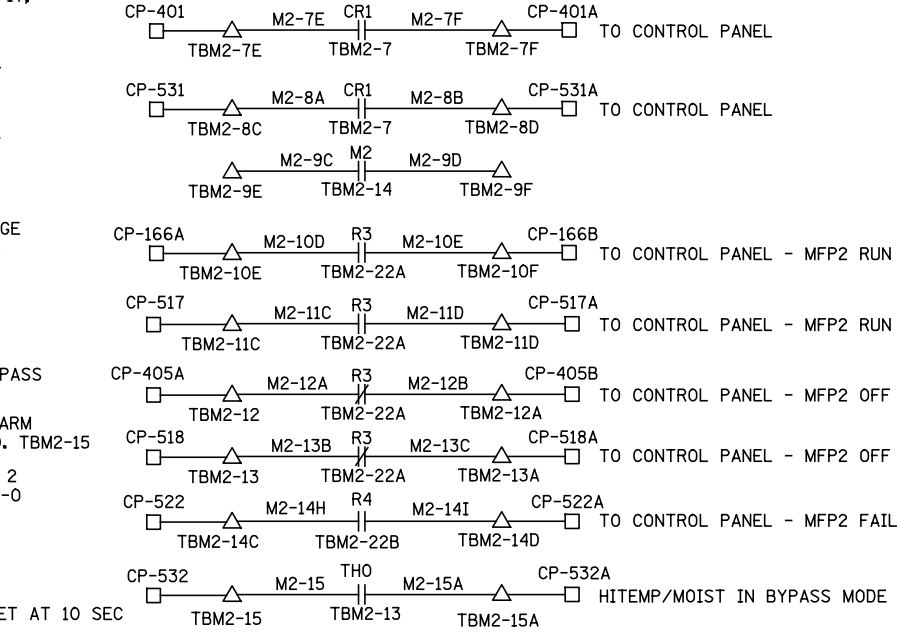
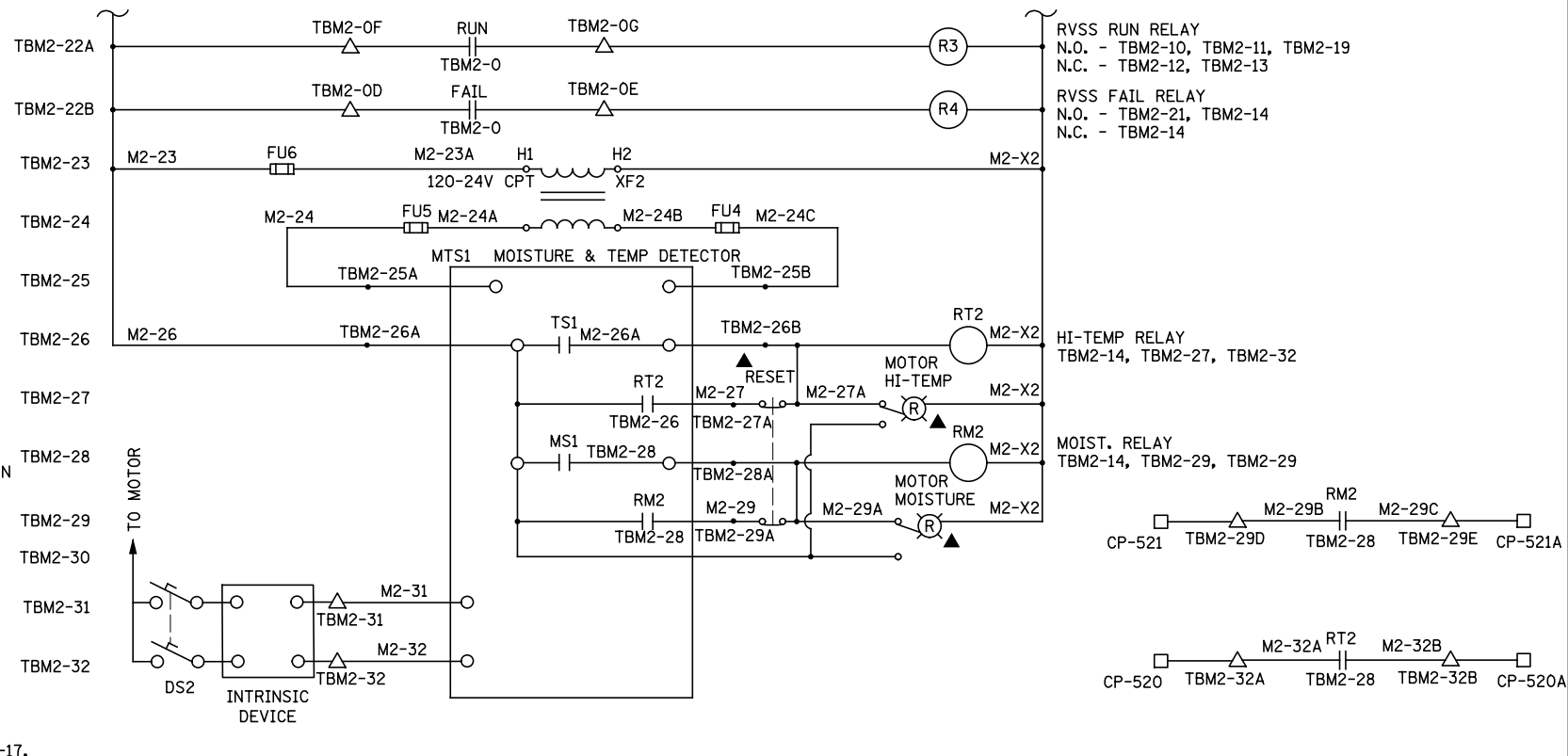
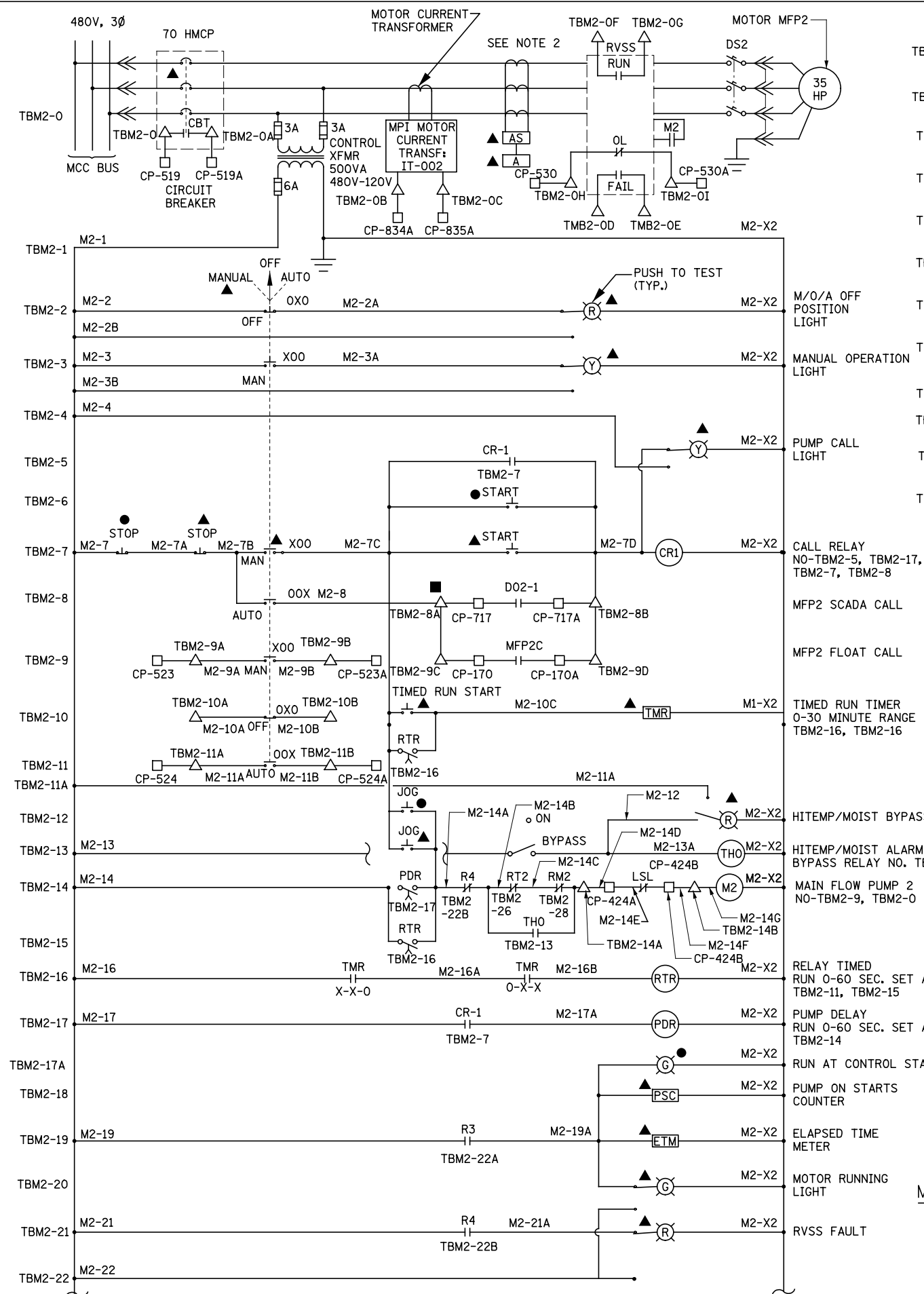
E8



- NOTES:**
- N.O. CONTACTS CLOSE ON ALARM.
 - COORDINATE EXACT REQUIREMENTS FOR PUMP PROTECTION WITH PUMP MANUFACTURER.
 - ALL DEVICES MOUNTED IN MOTOR STARTER, UNLESS OTHERWISE NOTED.

- COMPONENT LOCATION:**
- LOCATED IN CONTROL STATION PUMP ROOM INTERMEDIATE LEVEL EL: 692.75
 - ▲ LOCATED ON RESPECTIVE STARTER DOOR
 - LOCATED IN CONTROL PANEL
 - ◆ LOCATED IN SCADA PANEL
 - TERMINAL IN CONTROL PANEL
 - △ TERMINAL IN MOTOR STARTER
 - ◇ TERMINAL IN SCADA PANEL
 - TSI MOTOR TEMPERATURE SENSOR
 - MSI MOTOR MOISTURE SENSOR

MAIN FLOW PUMP NO. 1 (MFP-1) SCHEMATICS



- NOTES:**
- N.O. CONTACTS CLOSE ON ALARM.
 - COORDINATE EXACT REQUIREMENTS FOR PUMP PROTECTION WITH PUMP MANUFACTURER.
 - ALL DEVICES MOUNTED IN MOTOR STARTER, UNLESS OTHERWISE NOTED.

- COMPONENT LOCATION:**
- LOCATED IN CONTROL PANEL PUMP ROOM INTERMEDIATE LEVEL EL: 692.75
 - ▲ LOCATED ON RESPECTIVE STARTER DOOR
 - LOCATED IN CONTROL PANEL
 - ◆ LOCATED IN SCADA PANEL
 - TERMINAL IN CONTROL PANEL
 - △ TERMINAL IN MOTOR STARTER
 - ◇ TERMINAL IN SCADA PANEL
 - TSI MOTOR TEMPERATURE SENSOR
 - MSI MOTOR MOISTURE SENSOR

MAIN FLOW PUMP NO. 2 (MFP-2) SCHEMATICS

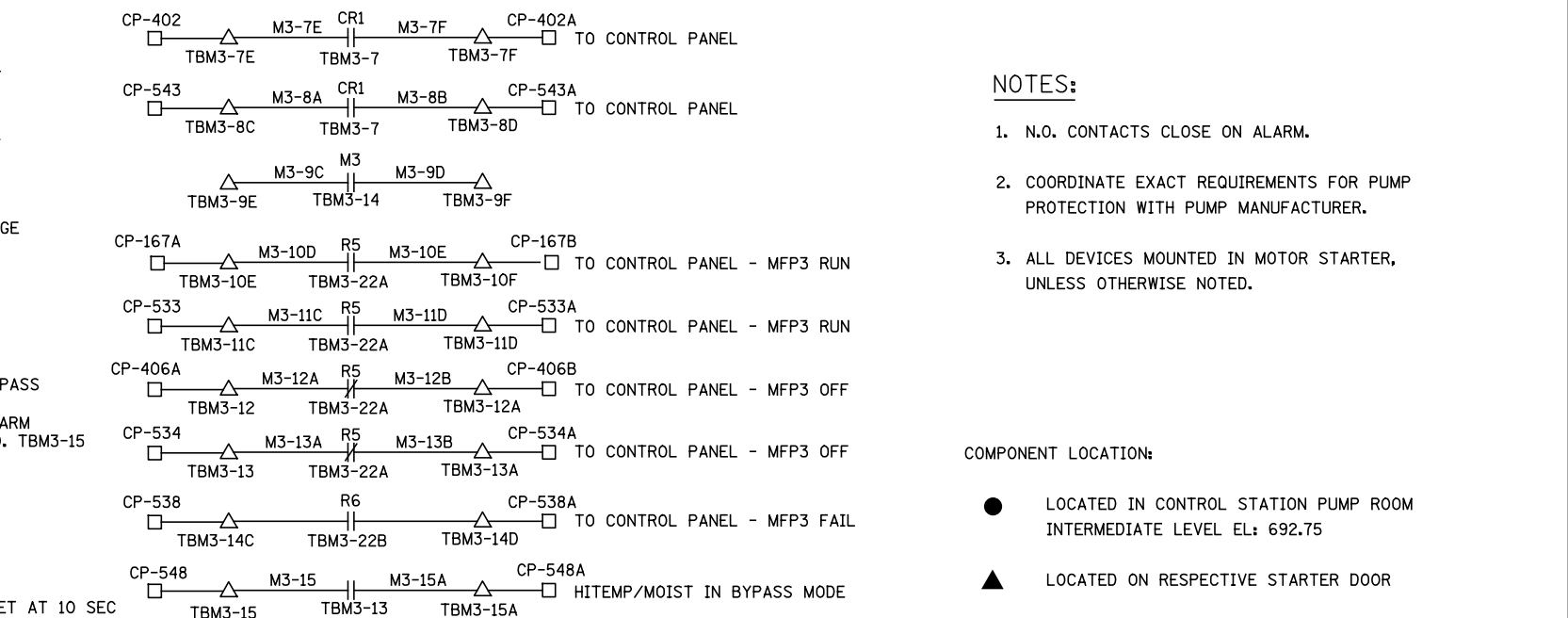
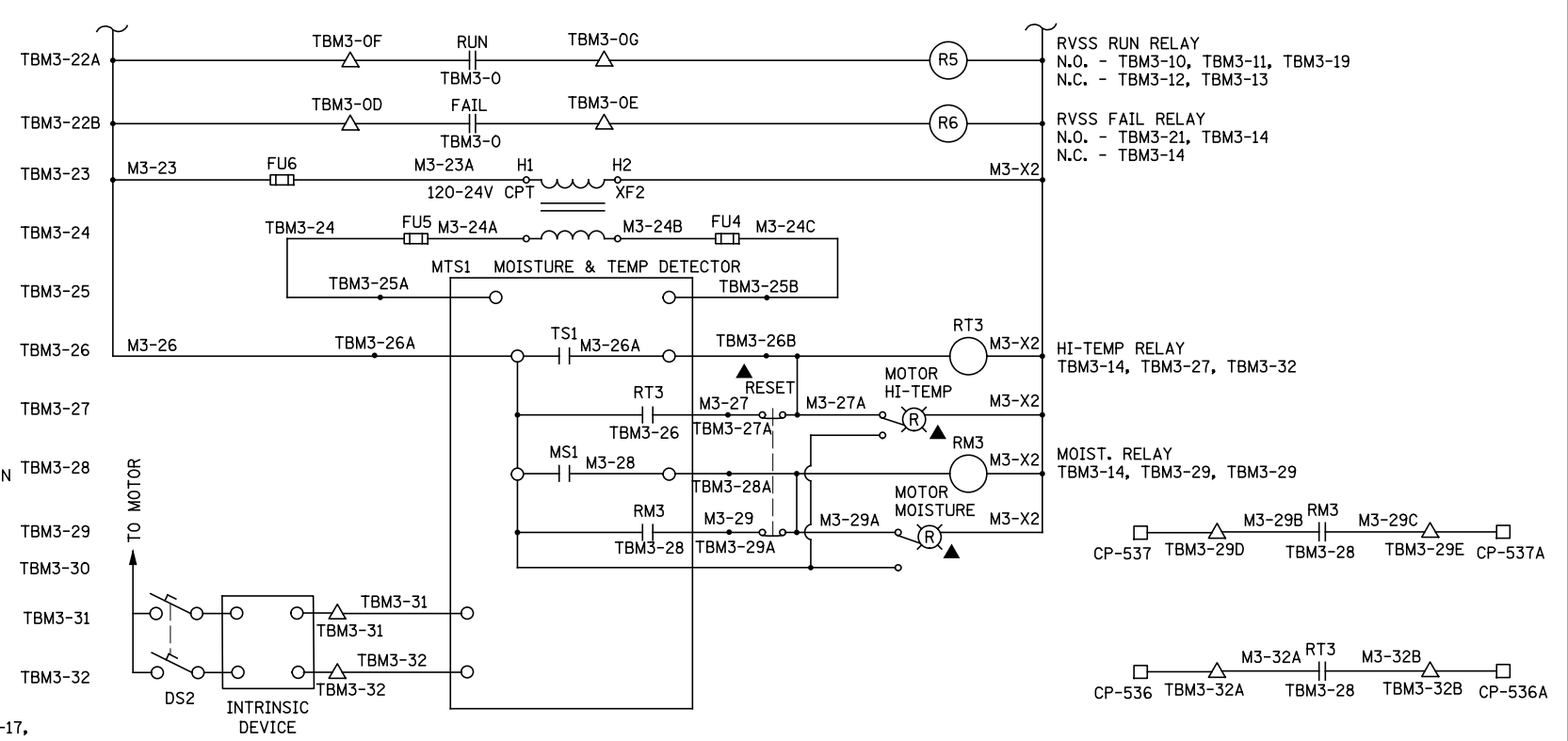
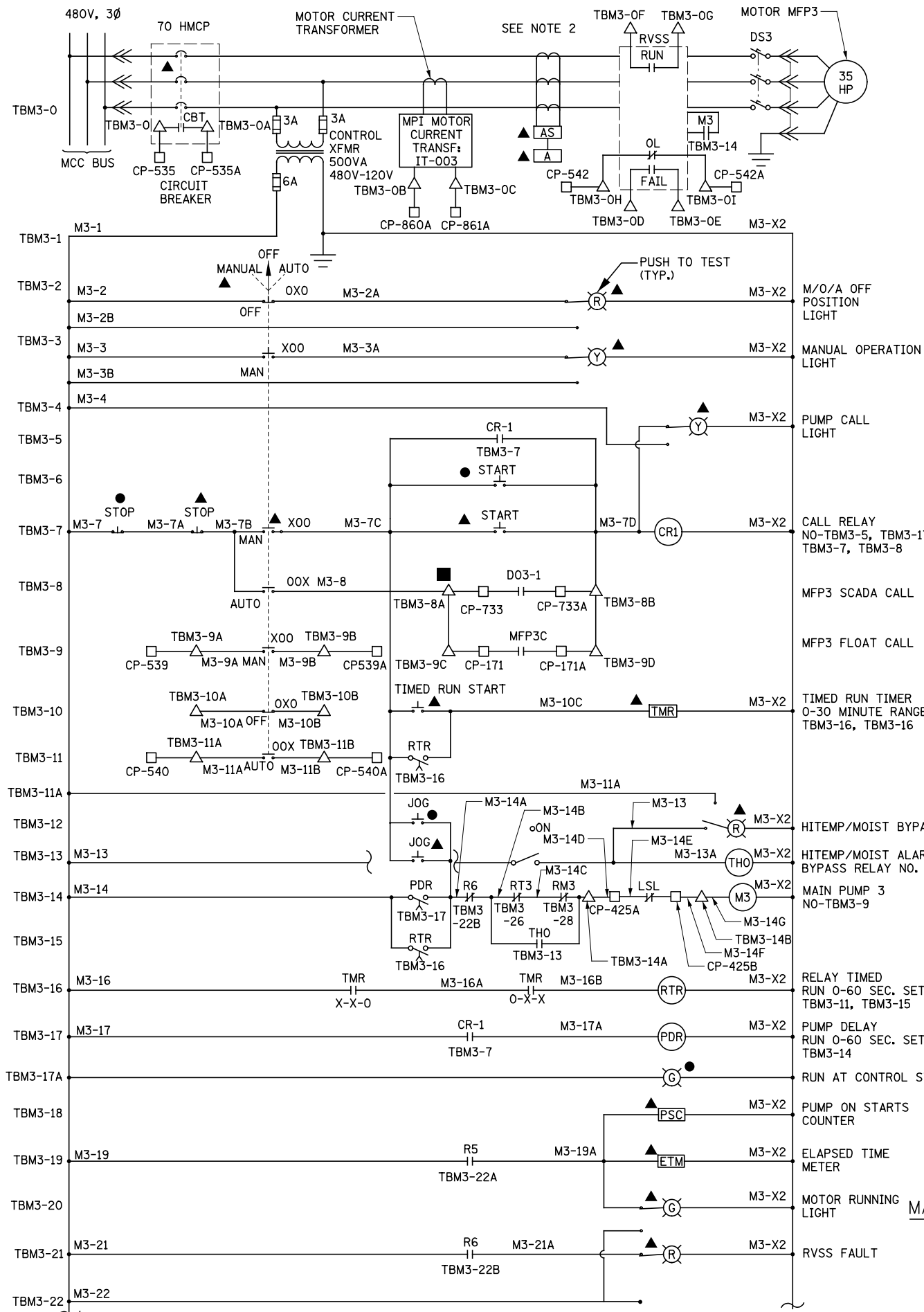
KNIGHT Engineers & Architects	USER NAME : *USER*	DESIGNED - MCP	REVISED 4-19-12
	PLOT SCALE : *SCALE*	DRAWN - MLB	REVISED -
	PLOT DATE : *DATE*	CHECKED - MCP	REVISED -
		DATE 03-22-2012	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PUMP STATION 47 MAIN PUMP NO.2 SCHEMATICS

SCALE: SHEET NO. OF SHEETS STA. TO STA.

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035-I	DUPAGE	181	172
CONTRACT NO. 60P41				
ILLINOIS FED. AID PROJECT				



- NOTES:**
- N.O. CONTACTS CLOSE ON ALARM.
 - COORDINATE EXACT REQUIREMENTS FOR PUMP PROTECTION WITH PUMP MANUFACTURER.
 - ALL DEVICES MOUNTED IN MOTOR STARTER, UNLESS OTHERWISE NOTED.

- COMPONENT LOCATION:**
- LOCATED IN CONTROL STATION PUMP ROOM INTERMEDIATE LEVEL EL: 692.75
 - ▲ LOCATED ON RESPECTIVE STARTER DOOR
 - LOCATED IN CONTROL PANEL
 - ◆ LOCATED IN SCADA PANEL
 - TERMINAL IN CONTROL PANEL
 - △ TERMINAL IN MOTOR STARTER
 - ◇ TERMINAL IN SCADA PANEL
 - TSI MOTOR TEMPERATURE SENSOR
 - MSI MOTOR MOISTURE SENSOR

MAIN FLOW PUMP NO. 3 (MFP-3) SCHEMATICS

KNIGHT Engineers & Architects	USER NAME = *USER*	DESIGNED - MCP	REVISED - 4-19-12
	PLOT SCALE = *SCALE*	DRAWN - MLB	REVISED -
	PLOT DATE = *DATE*	CHECKED - MCP	REVISED -
		DATE 03-22-2012	REVISED -

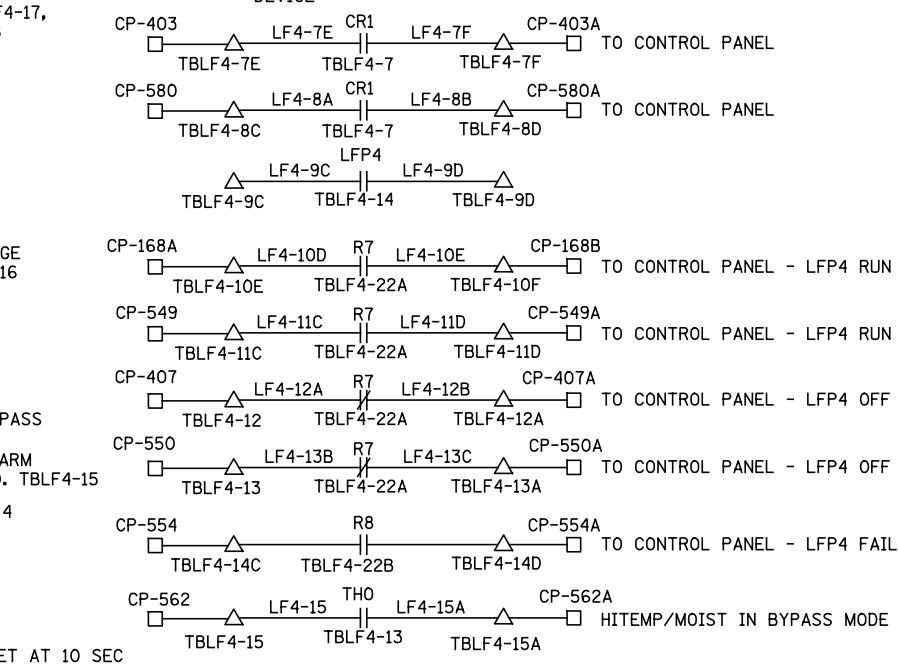
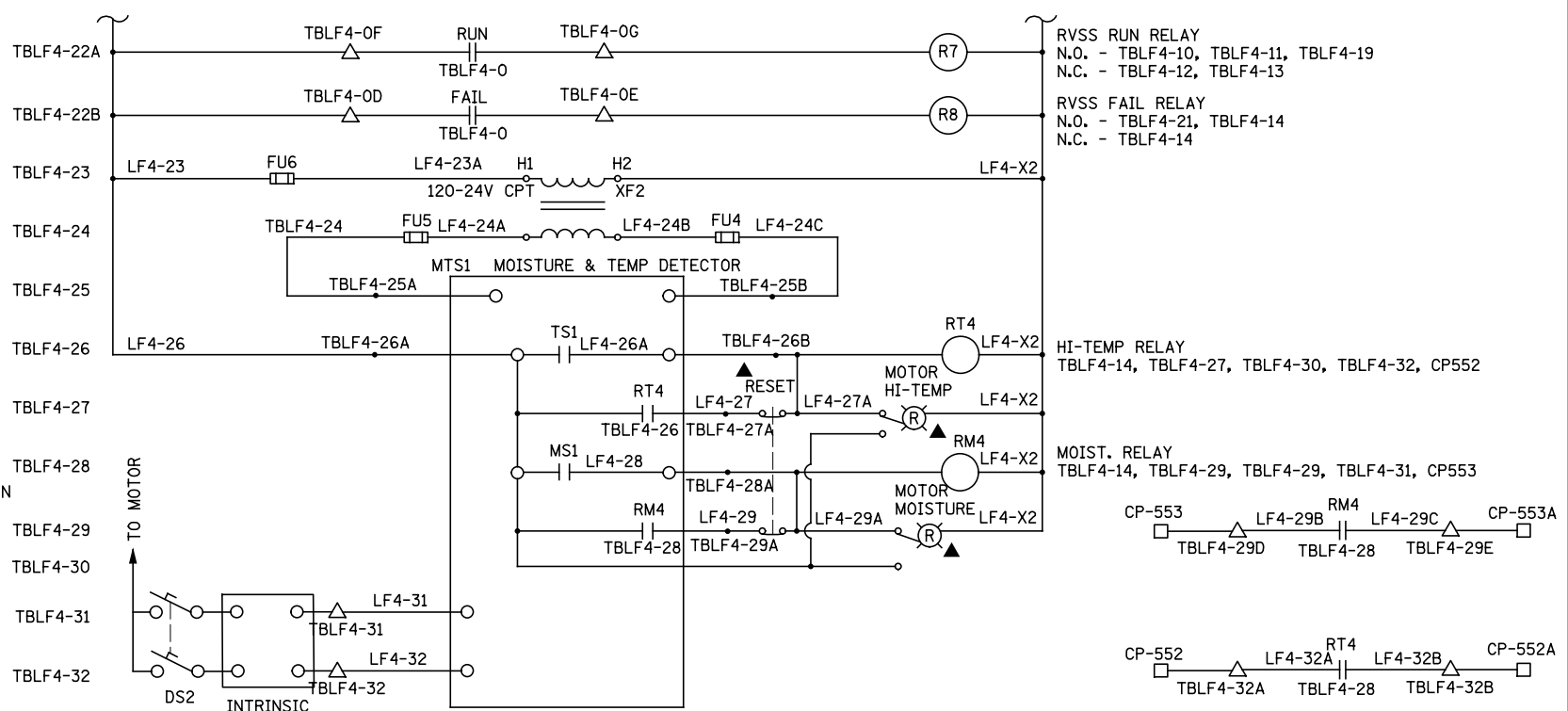
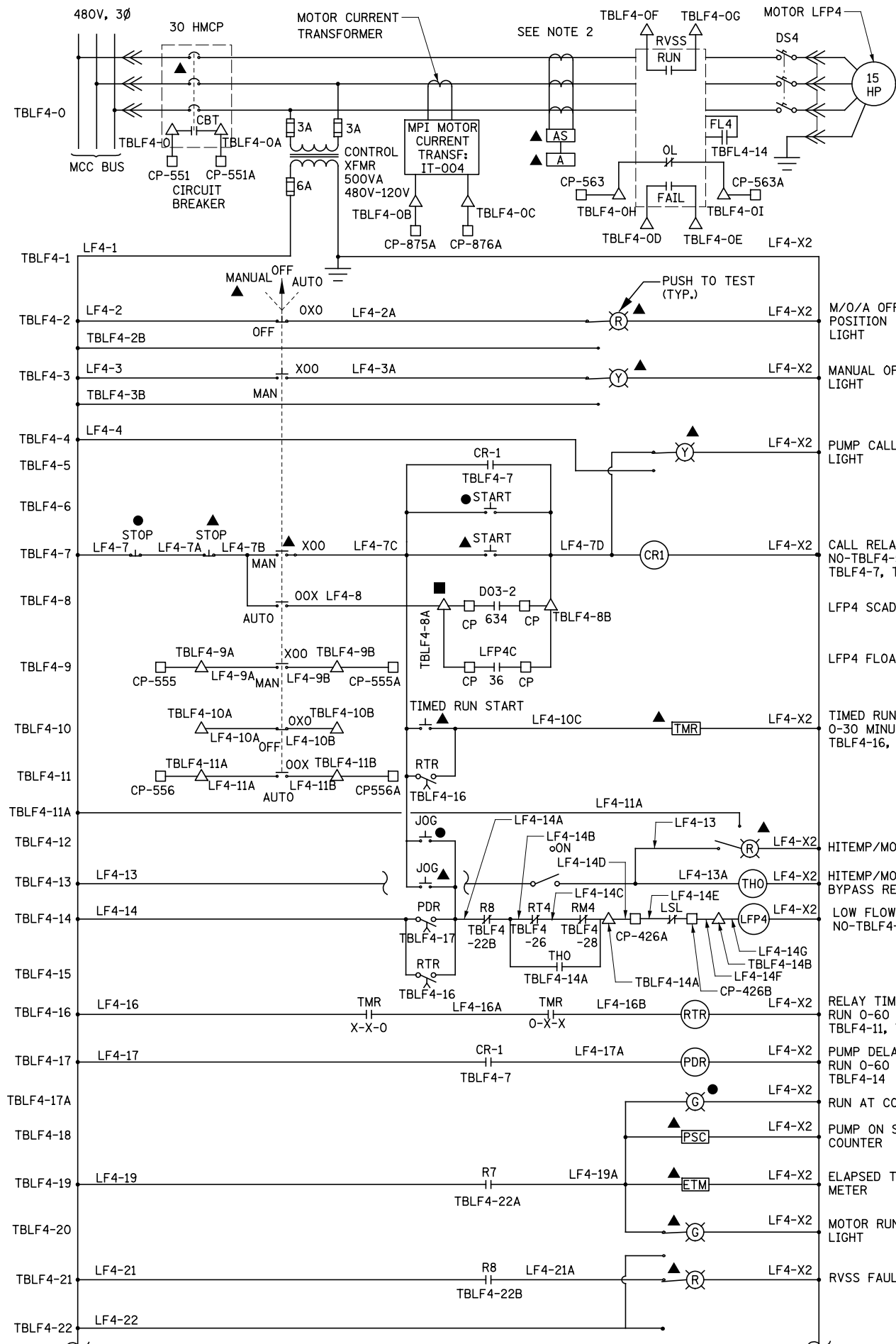
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PUMP STATION 47 MAIN PUMP NO.3 SCHEMATICS

SCALE: SHEET NO. OF SHEETS STA. TO STA.

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035-I	DUPAGE	181	173
CONTRACT NO. 60P41				
ILLINOIS FED. AID PROJECT				

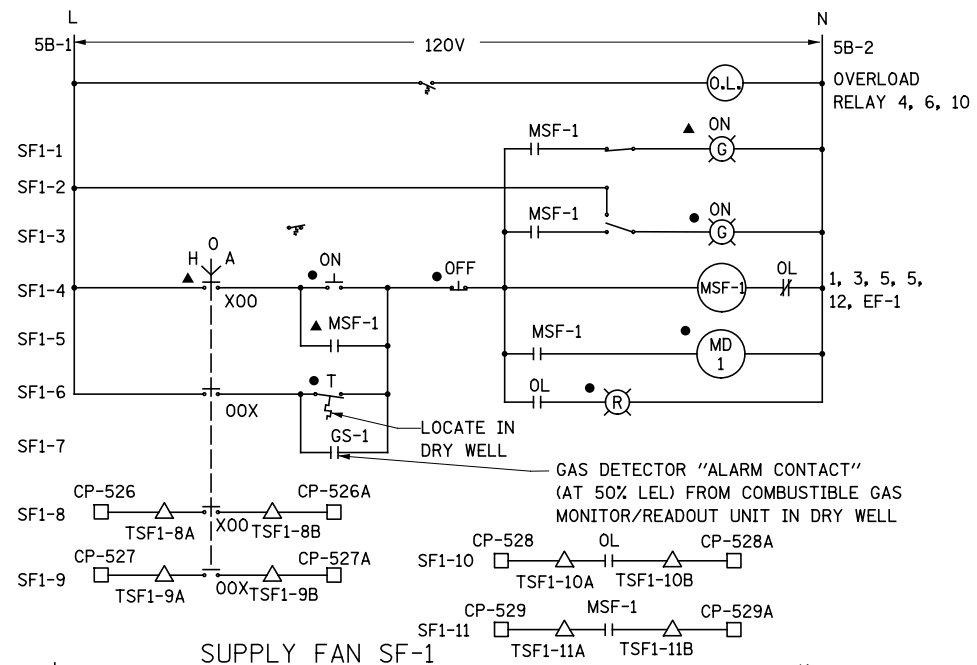
E9B



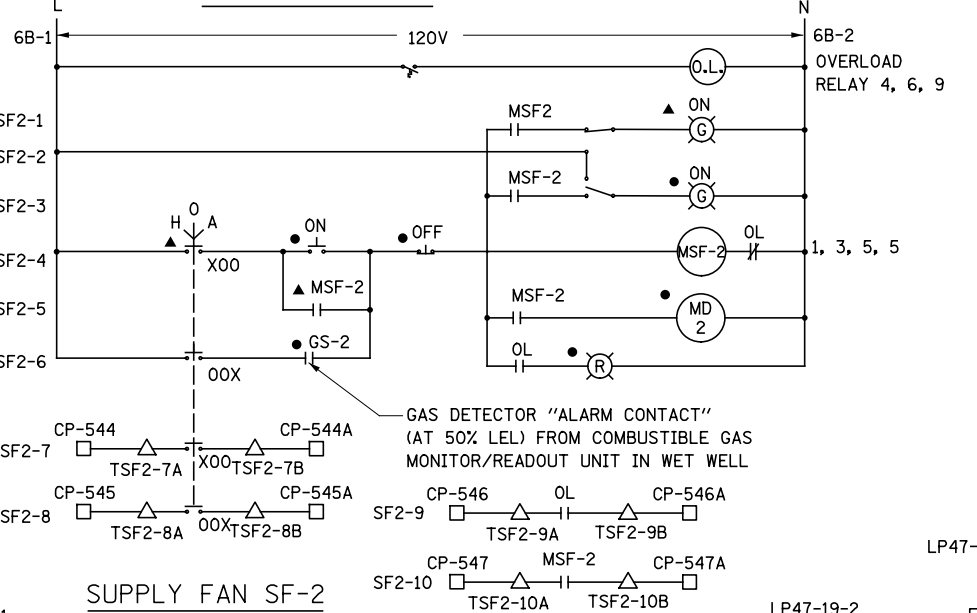
- NOTES:**
- N.O. CONTACTS CLOSE ON ALARM.
 - COORDINATE EXACT REQUIREMENTS FOR PUMP PROTECTION WITH PUMP MANUFACTURER.
 - ALL DEVICES MOUNTED IN MOTOR STARTER, UNLESS OTHERWISE NOTED.

- COMPONENT LOCATION:**
- LOCATED IN CONTROL STATION PUMP ROOM INTERMEDIATE LEVEL EL: 692.75
 - ▲ LOCATED ON RESPECTIVE STARTER DOOR
 - LOCATED IN CONTROL PANEL
 - ◆ LOCATED IN SCADA PANEL
 - TERMINAL IN CONTROL PANEL
 - △ TERMINAL IN MOTOR STARTER
 - ◇ TERMINAL IN SCADA PANEL
 - TSI MOTOR TEMPERATURE SENSOR
 - MSI MOTOR MOISTURE SENSOR

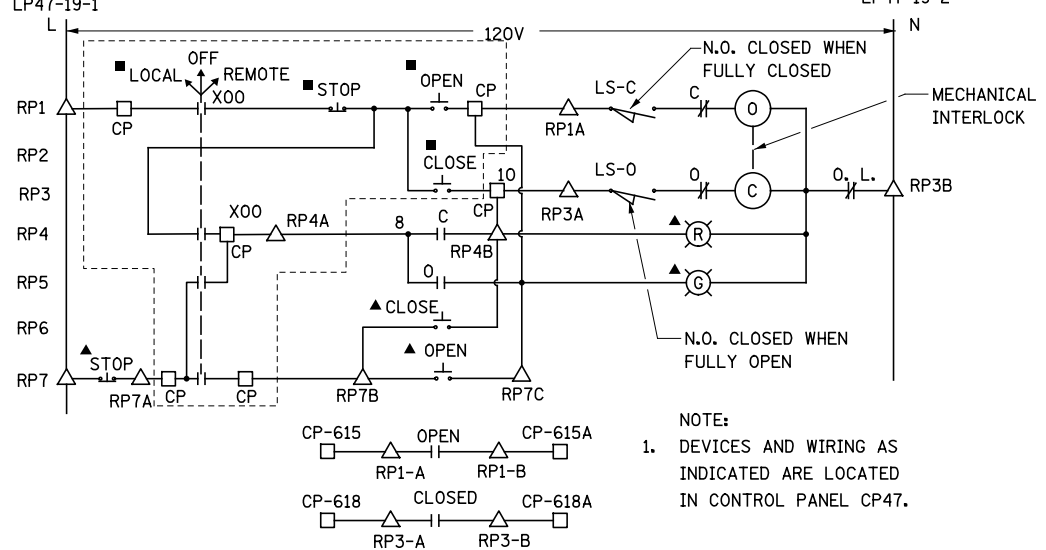
LOW FLOW PUMP NO. 4 (LFP-4) SCHEMATICS



SUPPLY FAN SF-1

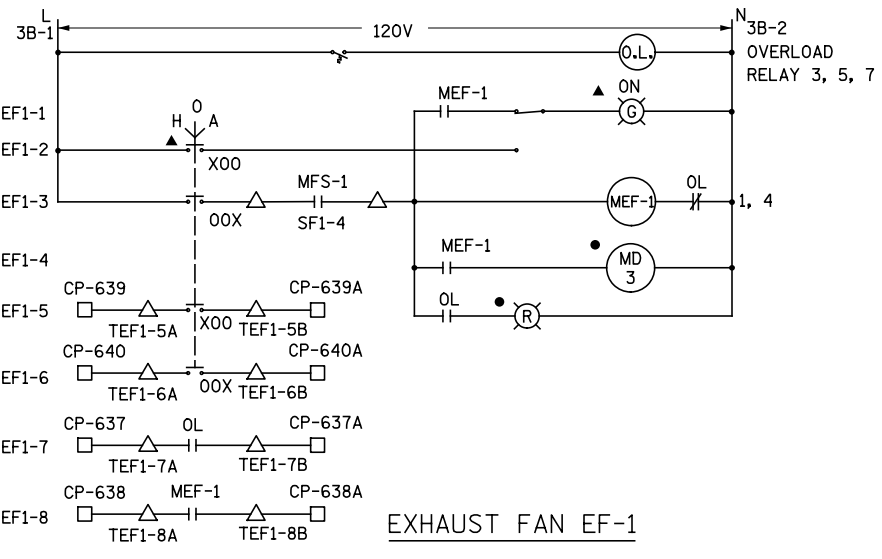


SUPPLY FAN SF-2

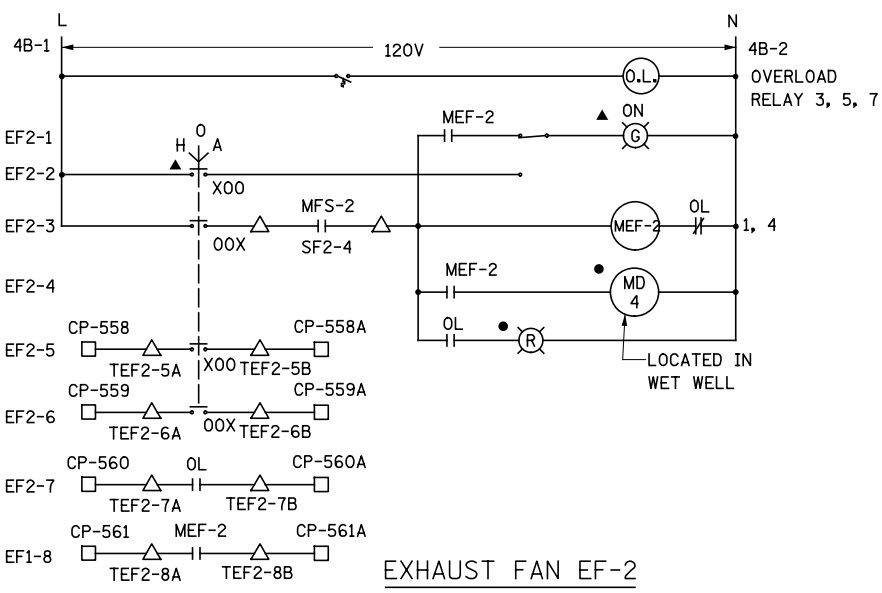


RECIRCULATING PIPE VALVE RPV-1

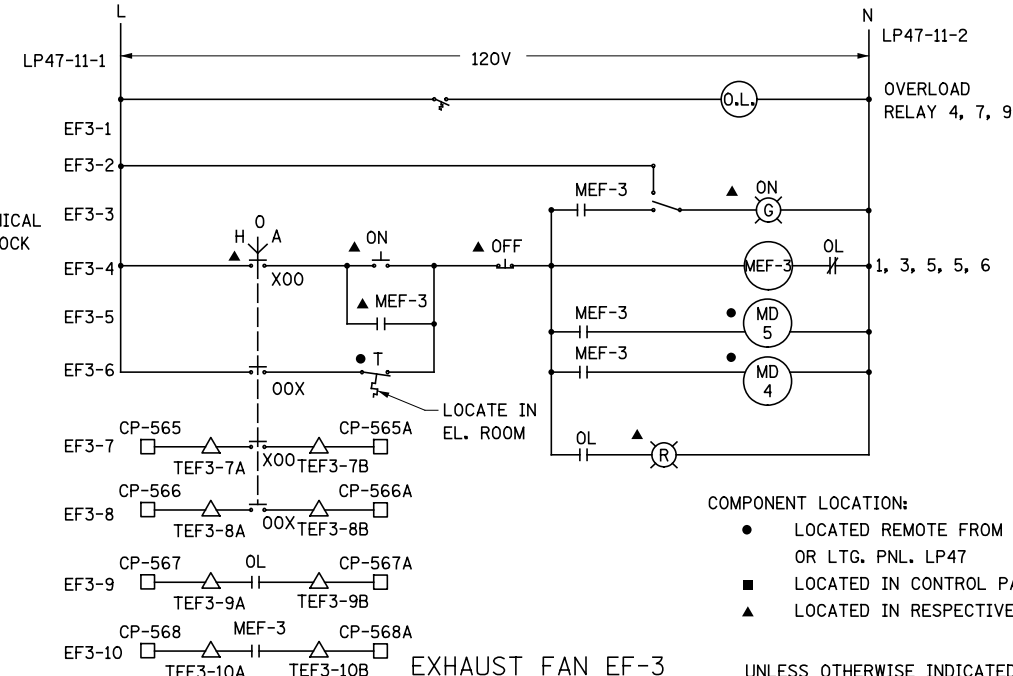
NOTE:
1. DEVICES AND WIRING AS INDICATED ARE LOCATED IN CONTROL PANEL CP47.



EXHAUST FAN EF-1



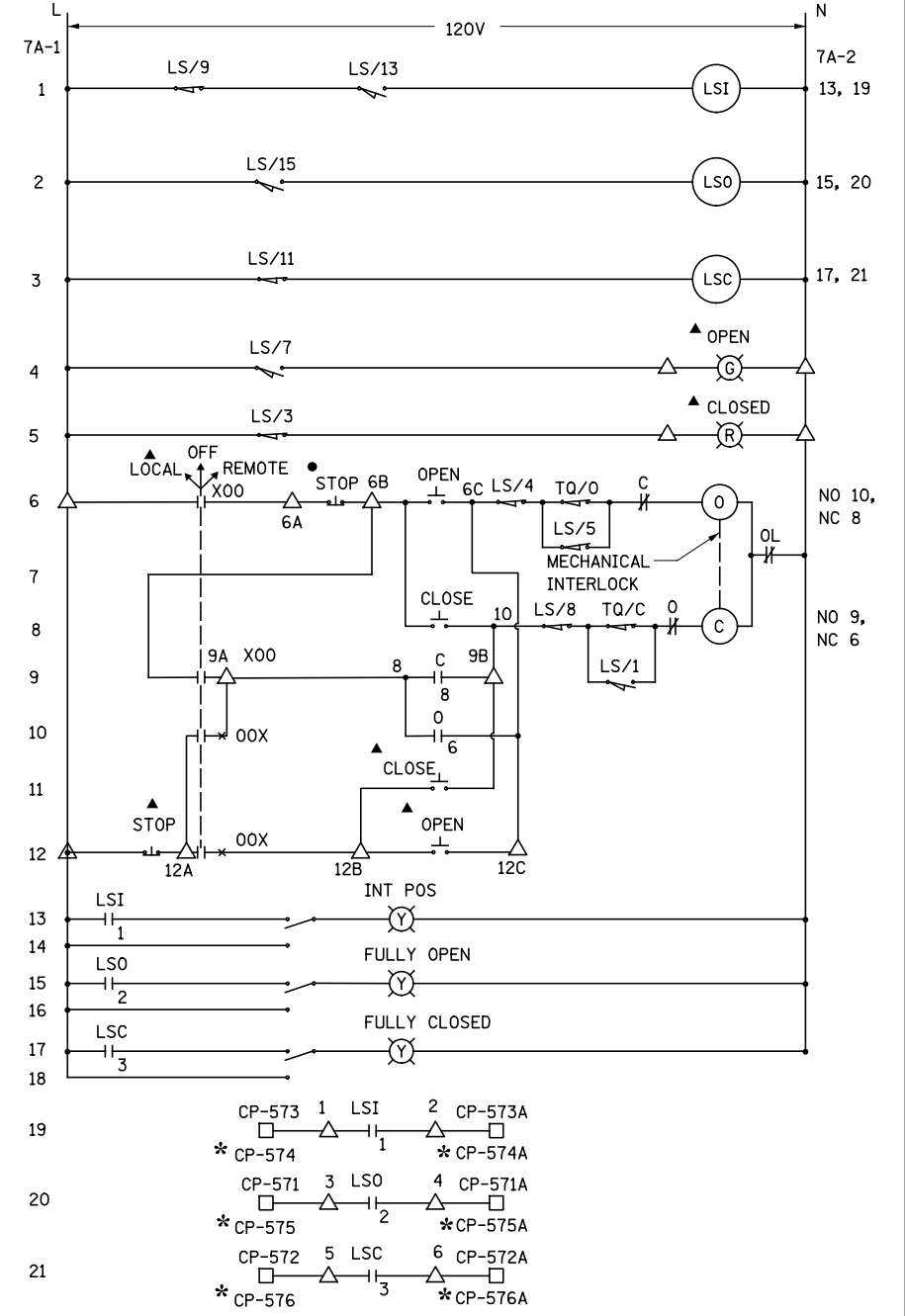
EXHAUST FAN EF-2



EXHAUST FAN EF-3 (LOCAL STARTER)

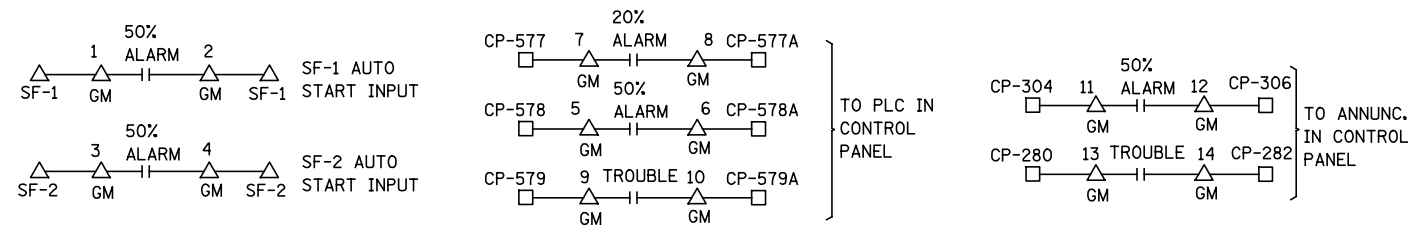
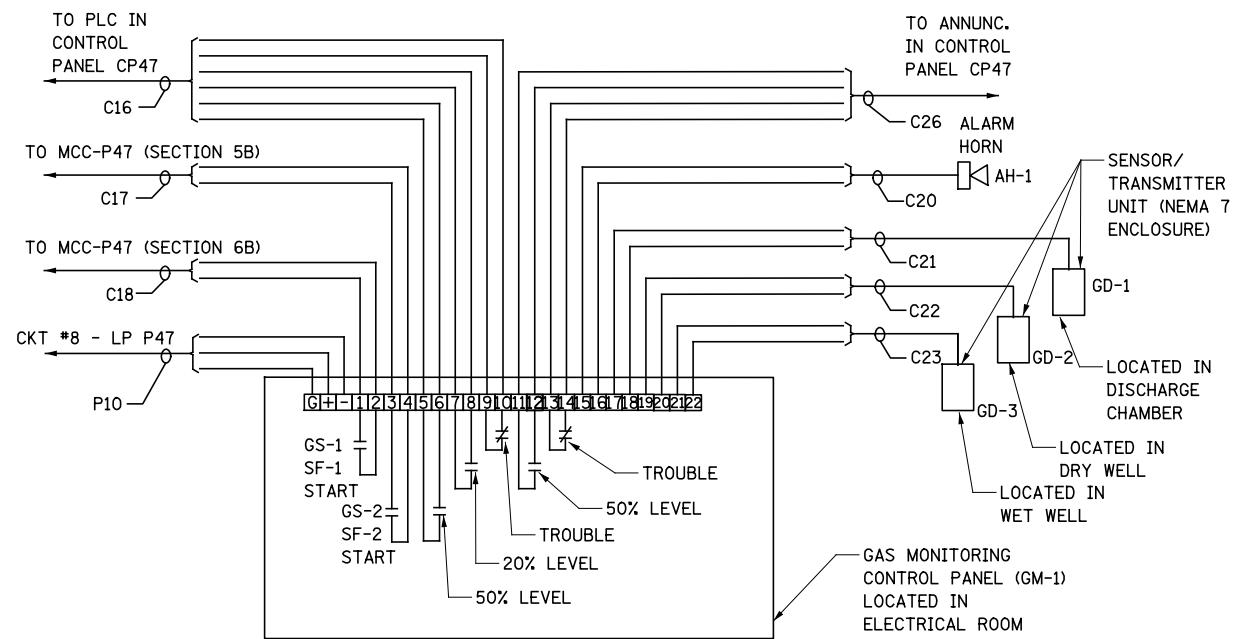
COMPONENT LOCATION:
 ● LOCATED REMOTE FROM MOTOR CONTROL PANEL P47 OR LTG. PNL. LP47
 ■ LOCATED IN CONTROL PANEL CP47
 ▲ LOCATED IN RESPECTIVE MCC STARTER DOOR

UNLESS OTHERWISE INDICATED ALL ITEMS WITHOUT FURTHER DESIGNATION SHALL BE LOCATED IN THE RESPECTIVE STARTER COMPARTMENT

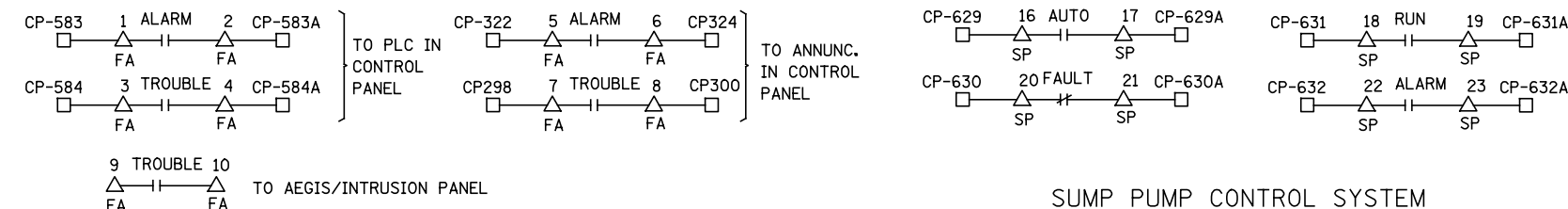
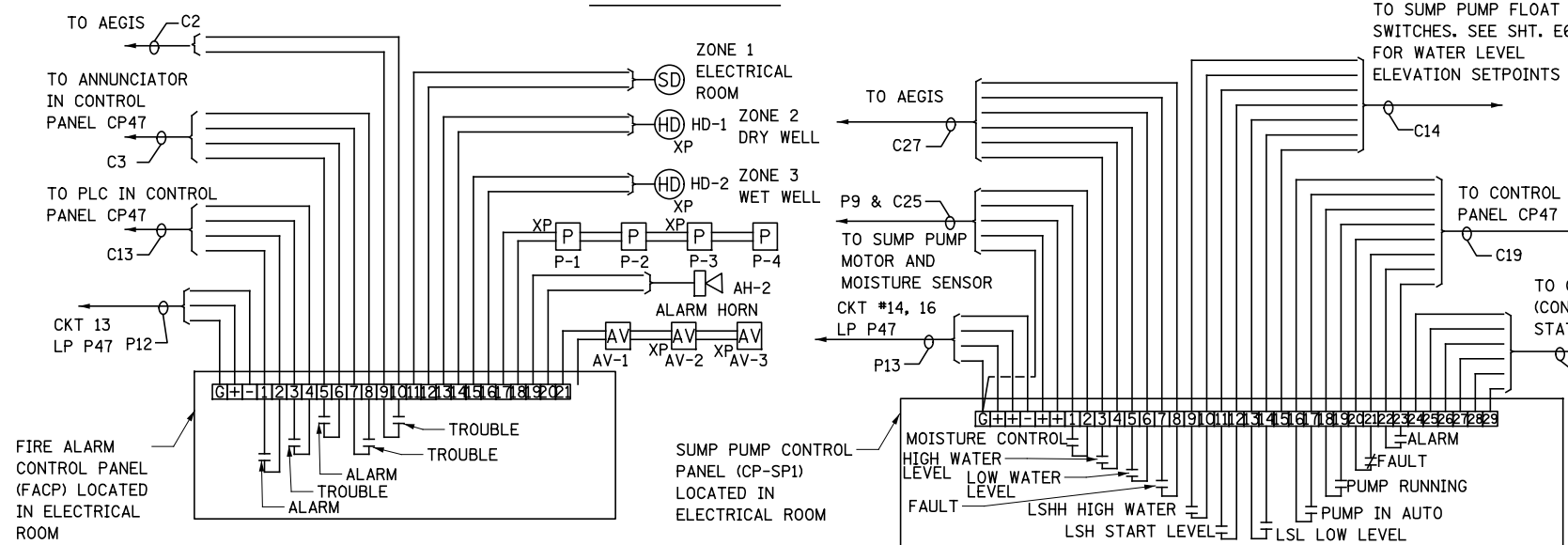


SLIDE GATE SG-1 (SG-2)

NOTES:
 * INDICATES SIMILAR FOR SG-2
 1. ALL ITEMS WITHOUT DESIGNATIONS ARE INTEGRAL TO MOTOR OPERATOR
 2. INTRINSICALLY SAFE RELAYS MUST BE PROVIDED

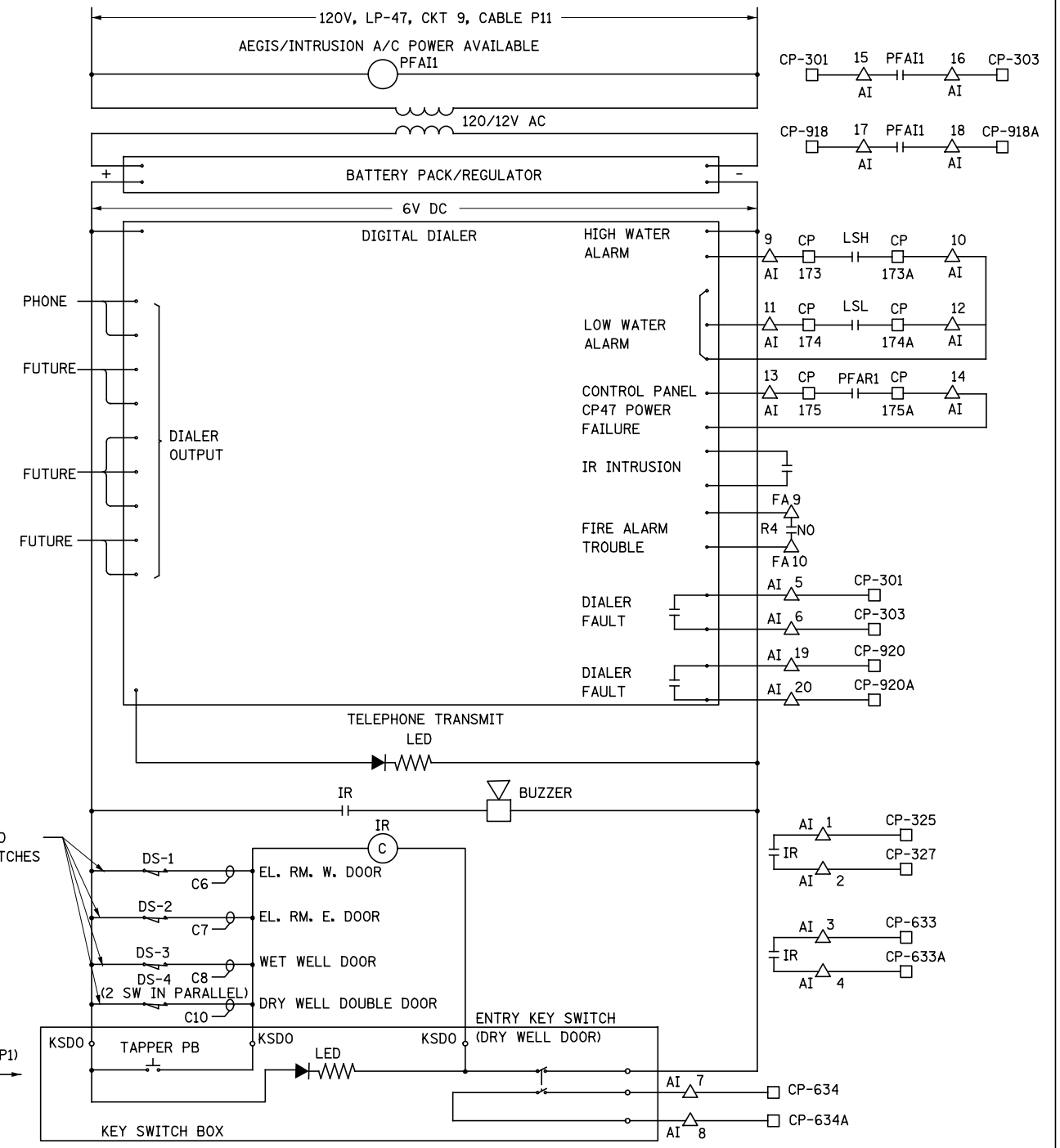


COMBUSTIBLE GAS MONITOR SYSTEM
BLOCK DIAGRAM



FIRE ALARM SYSTEM
BLOCK DIAGRAM

SUMP PUMP CONTROL SYSTEM
BLOCK DIAGRAM

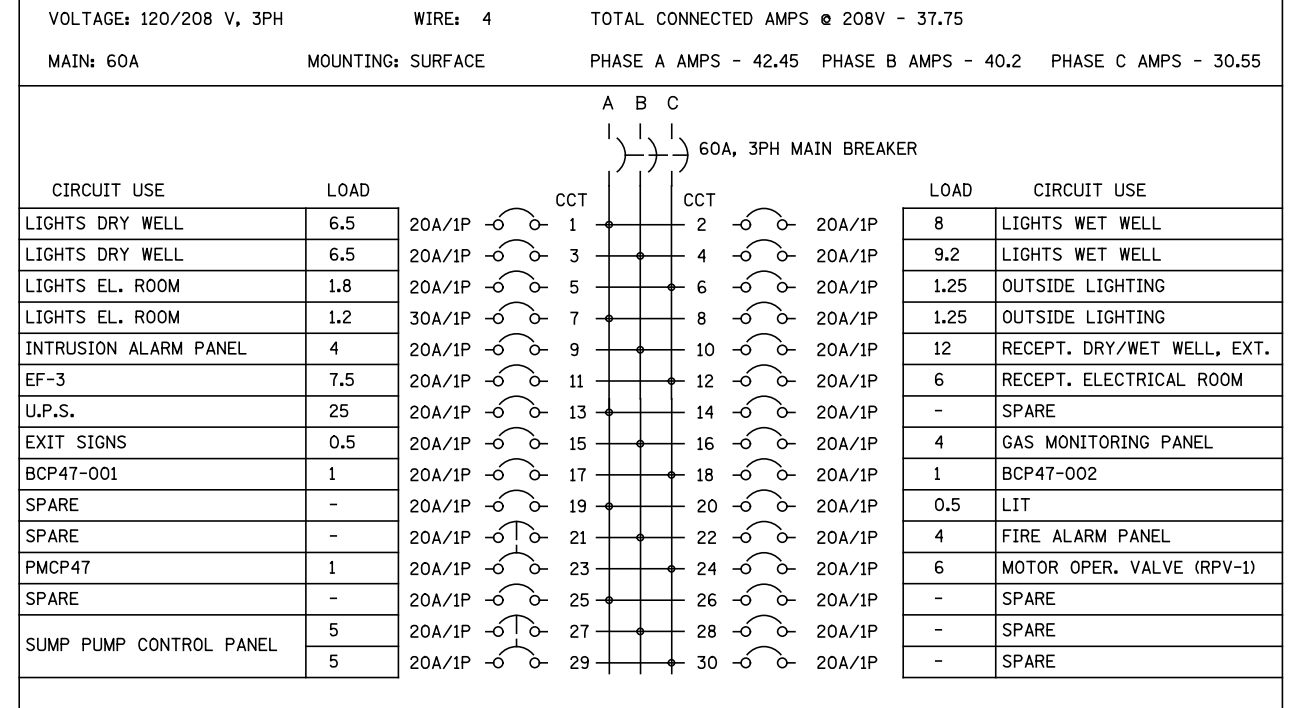


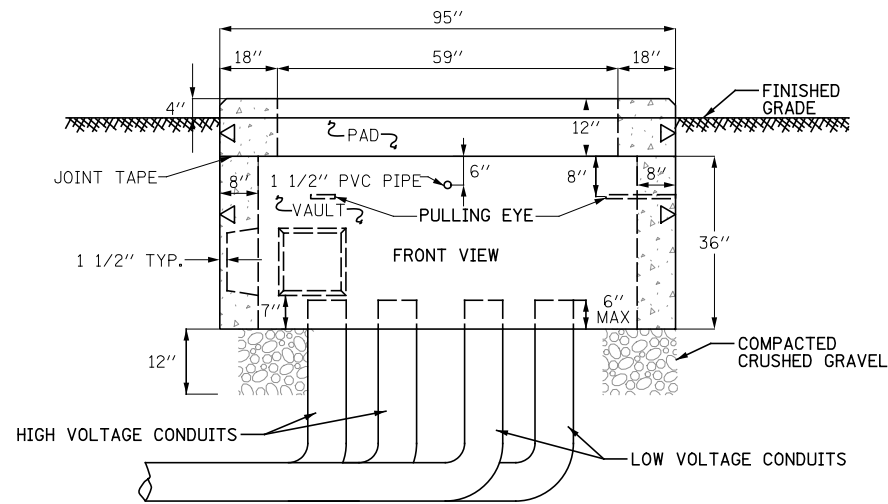
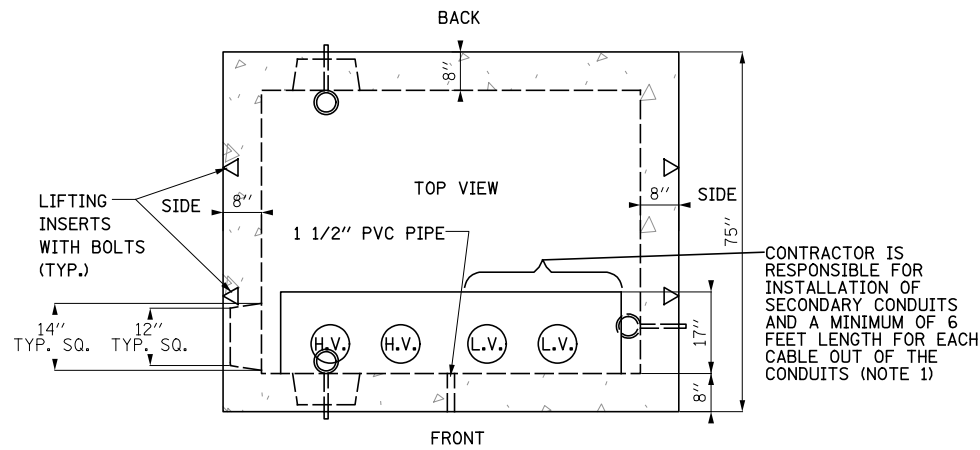
AEGIS/INTRUSION ALARM CIRCUIT

LIGHTING FIXTURE SCHEDULE

TYPE	MANUFACTURER	CATALOG NUMBER	VOLT	LAMPS			MOUNTING	NO. OF FIXT.	DESCRIPTION
				NO.	WATTS	TYPE			
A	LITHONIA HOLOPHANE DAY-BRIGHT	DMW-232-120-GEB10IS DWAE-2-32-120 CTL4-HT0-232-12	120	2	32	FL F32 T8	PENDANT	5	FLUORESCENT FIXTURE LISTED FOR DAMP LOCATIONS, POLYESTER HOUSING, ACRYLIC GASKETED DIFFUSER WITH CAPTIVE LATCHES
B	HOLOPHANE COOPER/CROOSE HINDS HUBBEL	PETM-250PM-12-SY-CE EVMCX92250 S828/120 HLEZ-P-25-Q-X2	120	1	250	PSMH	SURFACE CEILING	3	EXPLOSION PROOF HID FIXTURE SUITABLE FOR CLASS I, DIV. 2, GROUP D LOCATION, COPPER FREE ALUMINUM BALLAST BODY, CLASS GLOBE, CEILING MOUNTED
C	HOLOPHANE COOPER/CROOSE HINDS HUBBEL	PETM-100MH-12-SY-CE EVMCX92100/120 HLEZ-H-10-Q-X2	120	1	100	PSMH	SURFACE CEILING	18	EXPLOSION PROOF HID FIXTURE SUITABLE FOR CLASS I, DIV. 2, GROUP D LOCATION, COPPER FREE ALUMINUM BALLAST BODY, CLASS GLOBE
C1	HOLOPHANE COOPER/CROOSE HINDS HUBBEL	PETM-100M-12-SY-WL EVMX92100/120 HLEZ-H-10-Q-B2	120	1	100	PSMH	WALL	3	EXPLOSION PROOF HID FIXTURE SUITABLE FOR CLASS I, DIV. 2, GROUP D LOCATION, COPPER FREE ALUMINUM BALLAST BODY, CLASS GLOBE, WALL MOUNTED
D	LITHONIA LTG. H.E. WILLIAMS ACCULITE	WST 50M FT 120 SCWA WPSV-PSMH-50-MED-120 DT50PS-QT-FT	120	1	50	PSMH	WALL	5	WALL PACK OUTDOOR FIXTURE, DIE CAST ALUMINUM HOUSING, FULL CUTOFF
E	GREENTORCH MAGNALIGHT/LARSON ELECTRONICS	XPL-EM-R-1W-WP EXP-EXT-3W	120	1	3	LED	WALL	2	EXPLOSION PREOOF EXIT SIGN SUITABLE FOR CLASS I, DIV. 2, GROUP D LOCATIONS, HIGH INTENSITY LED, COPPER FREE ALUMINUM HOUSING AND 3 HR. BATTERY BACKUP TIME
E1	H. E. WILLIAMS COOPER/SURE-LITES HUBBEL/DUAL LITE	EXIT-R-EM-WHT EEX71R SESRWE	120	1	3	LED	WALL	2	LED LIT EXIT SIGN, WALL MOUNTED, SINGLE FACE, RED LETTERS ON WHITE BACKGROUND

LIGHTING PANEL LP-47 SCHEDULE

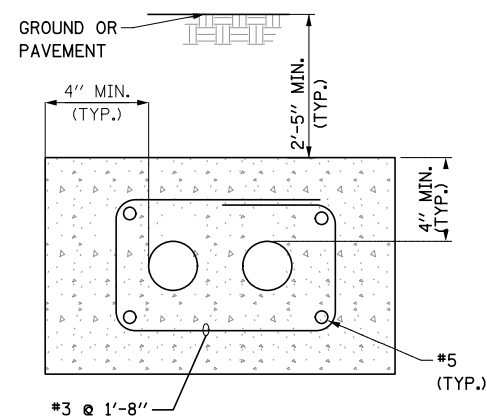




- CONDUIT AND CABLES TO BE INSTALLED IN DESIGNATED AREA AND NOT CROSS PATHS OR CAUSE INTERFERENCE WITH PRIMARY CABLES. COORDINATE VAULT AND CONDUIT PLACEMENT WITH DPU-E ENGINEER BEFORE INSTALLATION.

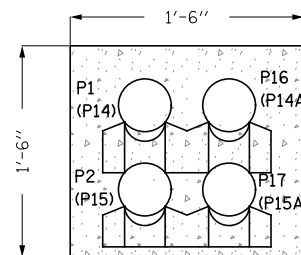
**3 PHASE TRANSFORMER PAD AND VAULT
(WORK UNDER CONTRACT 60P42)**

NOT TO SCALE



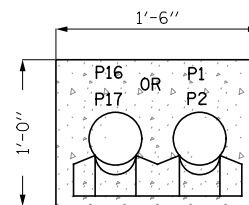
TYPICAL REINFORCING FOR CONCRETE ENCASED DUCT

NOT TO SCALE



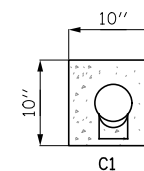
SECTION 1

NOT TO SCALE



SECTION 2

NOT TO SCALE

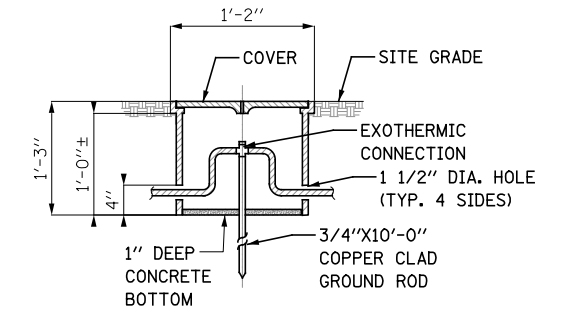


SECTION 3

NOT TO SCALE

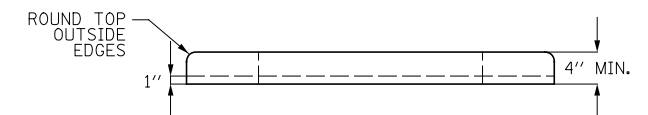
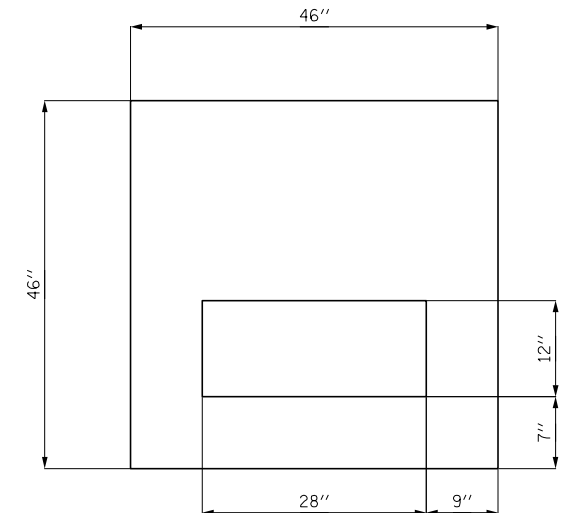
- INSTALLATION NOTES:**
- NAPERVILLE DPU-E IS TO FURNISH AND INSTALL THE TRANSFORMER PAD AND VAULT ON 12" COMPACTED CRUSHED ROCK BASE.
 - SECONDARY CONDUITS SHALL NOT EXTEND MORE THAN 6" INTO THE VAULT FROM THE BOTTOM OF THE VAULT AND SHALL NOT PENETRATE THROUGH THE VAULT WALLS. EXACT LOCATION OF THE CONDUIT STUBS MAY VARY; COORDINATE THE EXACT LOCATION WITH THE NAPERVILLE DEPARTMENT OF PUBLIC UTILITIES - ELECTRIC (DPU-E) PRIOR THE CONSTRUCTION.
 - THE PAD (LID) MUST BE POURED SEPARATELY FROM THE VAULT SO THAT IT IS REMOVABLE.

- CONSTRUCTION NOTES:**
- CONCRETE SHALL REACH 4,000 PSI AT 28 DAYS.
 - REINFORCING BARS SHALL BE NUMBER 4, ASTM A615 GRADE 60. PAD AND VAULT REBAR ARE TO BE PLACED AT 12" INTERVALS, CENTER TO CENTER, AND BE TIED AT POINTS OF CROSSING. VAULT REINFORCING IS TO BE CONTINUOUS IN THE FOUR SIDES OF THE VAULT, AND OVERLAP 12" AND TIED AT REBAR ENDS.
 - PAD AND VAULT ARE TO EACH HAVE FOUR 1" PLASTIC LIFTING INSERTS.
 - EACH VAULT IS TO HAVE THREE KNOCK-OUT WINDOWS, 12" SQUARE AND 1-1/2" THICK AS SHOWN ON THE DETAIL. IN ADDITION, A 1-1/2" PIPE SHALL BE PLACED IN THE FRONT WALL, AS SHOWN ON THE DETAIL, TO ALLOW A GROUNDING CONDUCTOR TO BE EXTENDED TO THE OUTSIDE OF THE VAULT.
 - A PULLING IRON IS TO BE INSTALLED OPPOSITE EACH WINDOW (3 REQUIRED). EACH IRON SHALL BE GALVANIZED OR COATED TO PROVIDE 30 YEARS' SERVICE IN A CORROSIVE ATMOSPHERE AND HAVE AN INSTALLED PULLING STRENGTH OF 3000 POUNDS MINIMUM.
 - JOINT TAPE SHALL BE 1" X 1" BUTYL SEALANT AS APPROVED BY THE CITY.
 - THE MANUFACTURER SHALL CERTIFY, IN WRITING, THAT THE VAULT AND PAD MEET OR EXCEED THE CITY OF NAPERVILLE STANDARDS. FOR FIELD POURS, 48 HOURS ADVANCE NOTICE SHALL BE PROVIDED TO THE NAPERVILLE DPU-E (420-6185) OF THE PROPOSED CONCRETE POURS, SO THAT AN INSPECTOR MAY DETERMINE THAT CITY STANDARDS HAVE BEEN MET.



GROUND ROD AND ACCESS BOX DETAIL

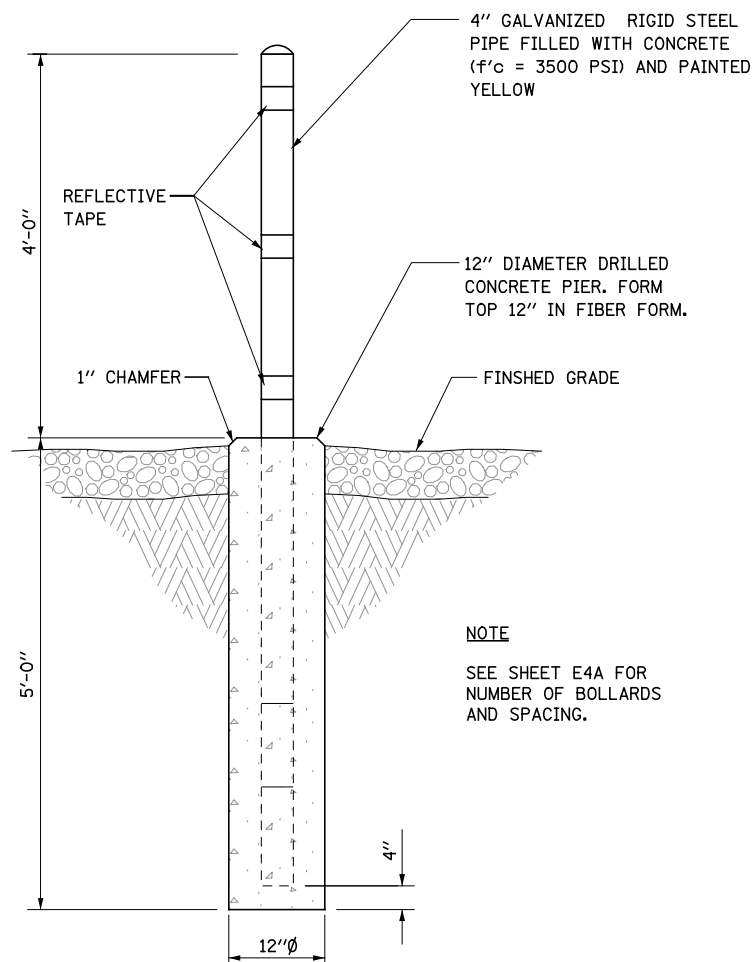
NOT TO SCALE



- NOTE:**
- PAD SHALL BE PROVIDED BY NAPERVILLE DPU-E AND INSTALLED BY CONTRACTOR

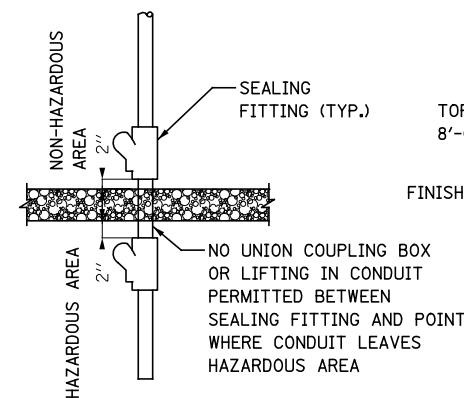
CONCRETE PAD FOR PEDESTAL

NOT TO SCALE

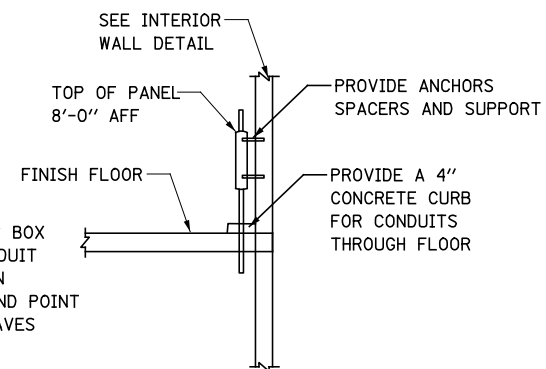


PIPE BOLLARD DETAIL
NOT TO SCALE

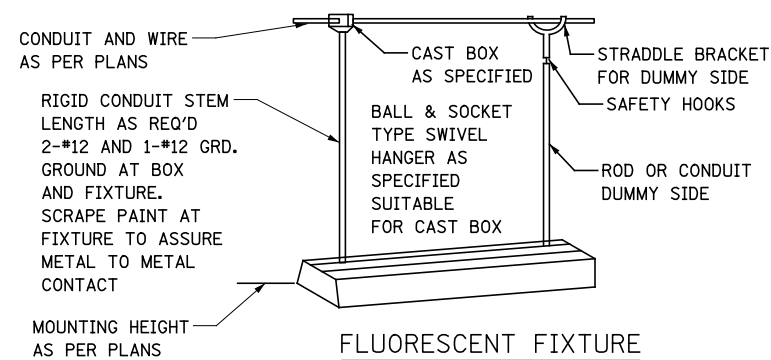
NOTE
SEE SHEET E4A FOR NUMBER OF BOLLARDS AND SPACING.



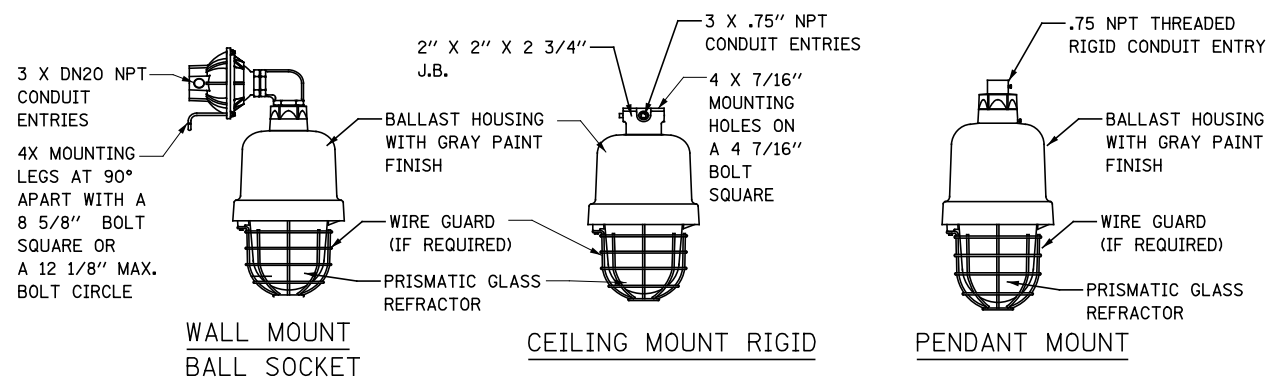
CONDUIT SEALING DETAIL
NOT TO SCALE



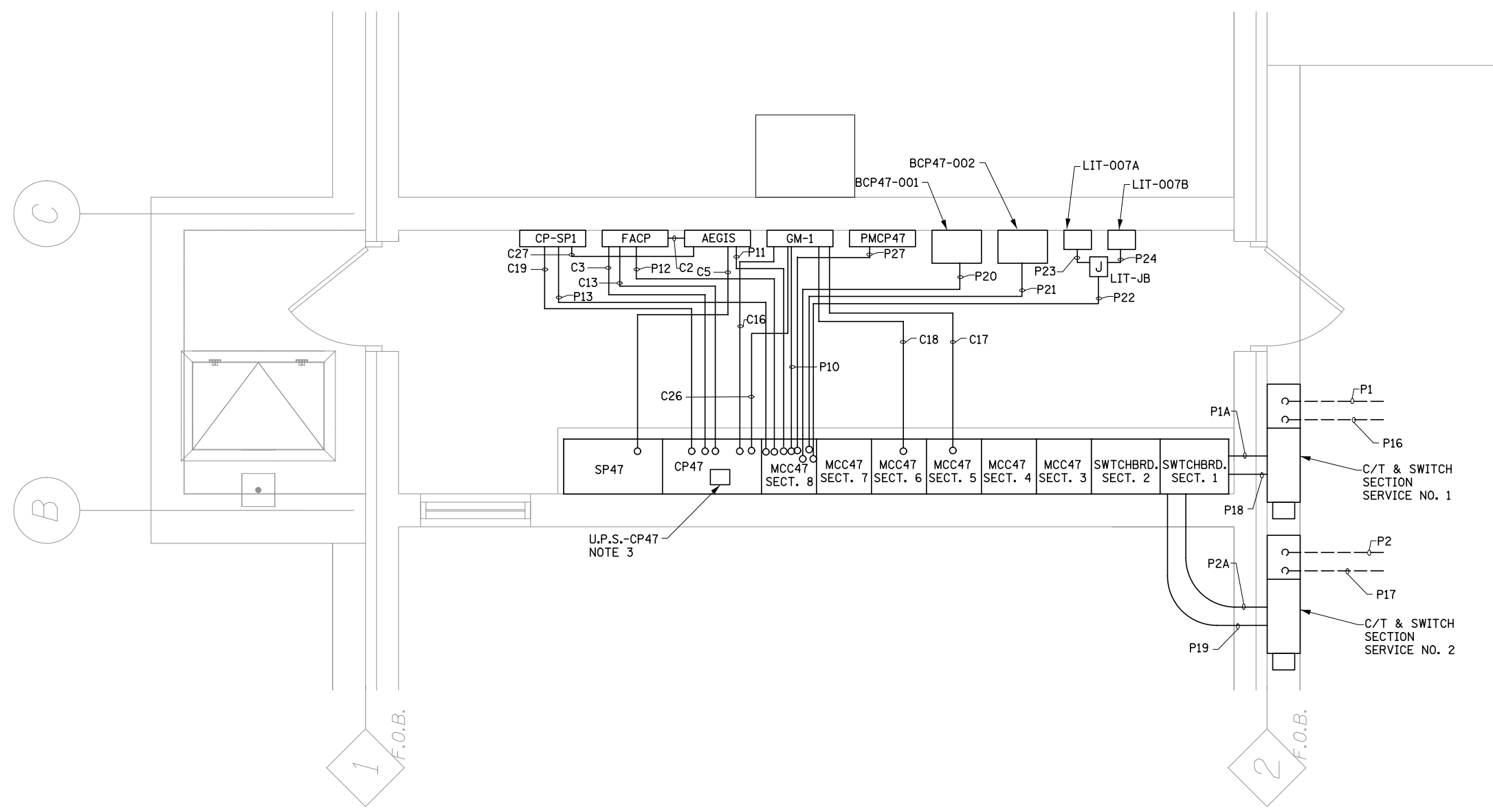
WALL MOUNT PANEL DETAIL
NOT TO SCALE



FLUORESCENT FIXTURE MOUNTING DETAIL
NOT TO SCALE



TYPICAL METAL HALIDE LIGHT FIXTURE INSTALLATION
NOT TO SCALE



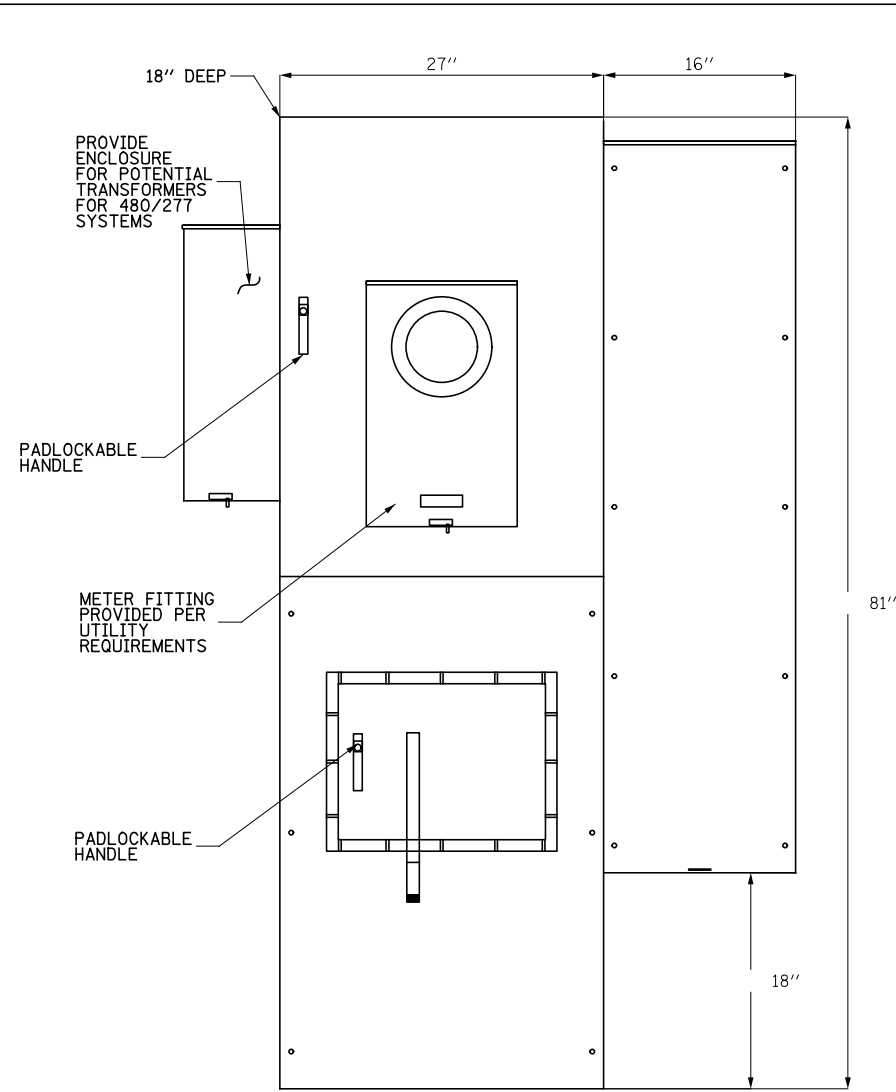
NOTES:

1. FOR CONDUIT AND CABLE RUNS FROM ELECTRICAL EQUIPMENT TO ALL OTHER EQUIPMENT/DEVICES, SEE PLAN AND SECTION ELEVATION SHEETS.
2. FOR C/T & SWITCH SECTION DETAILS, SEE SHEET E14.
3. INSTALL 3 KVA U.P.S. INSIDE CONTROL PANEL CP-47. INSTALL 1 (ONE) 1 POLE 30A BREAKER IN PANEL LP-47 FOR U.P.S. CIRCUIT.
4. CP47 AND SCADA PANELS SHALL BE FED FROM UPS-CP47.

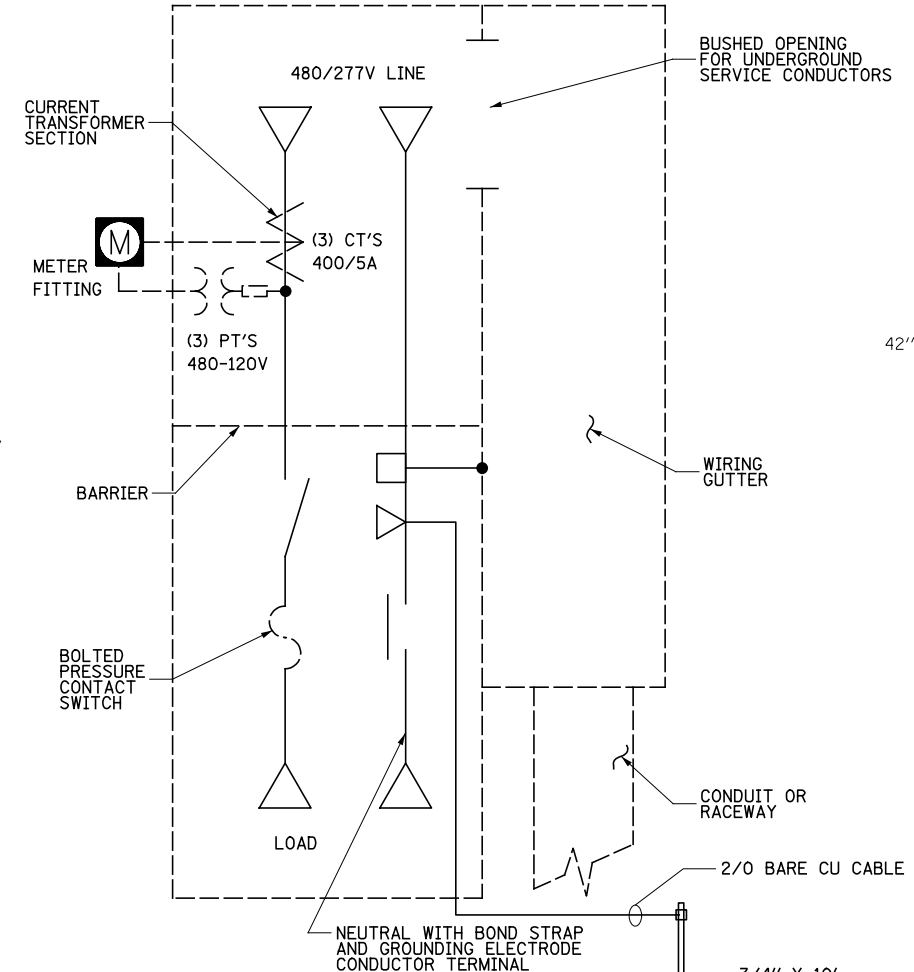


E13

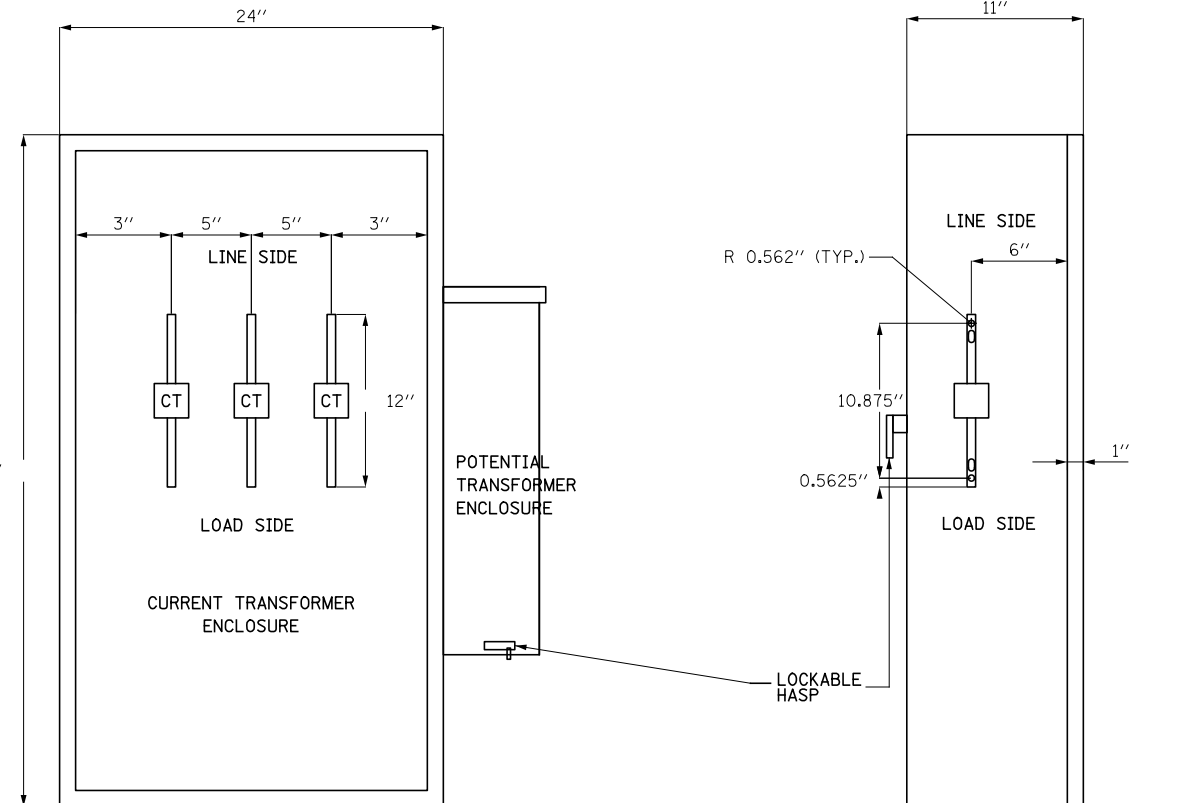
	USER NAME = *USER*	DESIGNED - MCP	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	PUMP STATION NO. 47 ELECTRICAL ROOM ELECTRICAL EQUIPMENT LAYOUT	F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	DRAWN - MLB	CHECKED - MCP	REVISED -			338/IL 59	2011-035-I	DUPAGE	181	180
PLOT SCALE = *SCALE*	CHECKED - MCP	REVISED -	REVISED -	SCALE: 1/2" = 1'-0" SHEET NO. OF SHEETS STA. TO STA.		CONTRACT NO. 60P41				
PLOT DATE = *DATE*	DATE 03-22-2012	REVISED -	REVISED -			ILLINOIS FED. AID PROJECT				



FRONT ENCLOSED VIEW



ONE LINE DIAGRAM



FRONT INTERIOR VIEW

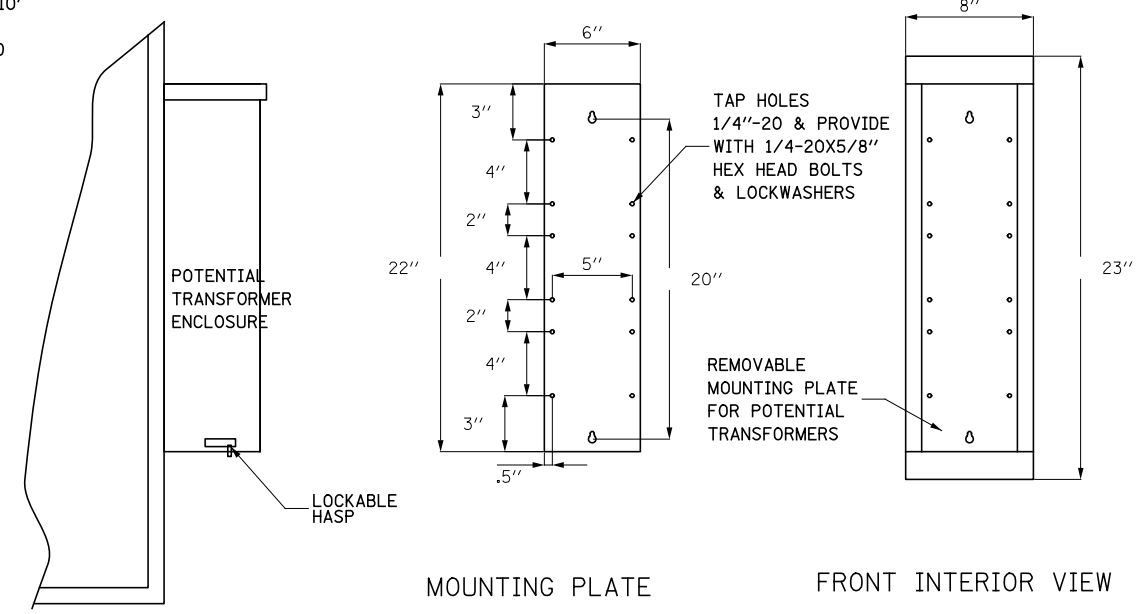
SIDE INTERIOR VIEW

800A C/T. AND SWITCH SECTION
600V MAX.
PER NAPERVILLE REQUIREMENTS.
(UNDERGROUND SERVICE CONDUCTORS.)
 NOT TO SCALE

NOTES:

1. THE CONTRACTOR SHALL PROVIDE CT/PT SWITCH SECTIONS SHOWN AND AS PER NAPERVILLE REQUIREMENTS.
2. THE SWITCH SECTION SHALL BE LISTED BY UNDERWRITERS LABORATORIES INC., AS A DEADFRONT SWITCHBOARD AND MARKED SUITABLE FOR USE AS SERVICE EQUIPMENT.
3. THE SWITCH SECTION SHALL BE TYPE 3R ALUMINUM ENCLOSURE FOR INDOOR OR OUTDOOR USE.
4. THE LINE AND LOAD LUGS PROVIDED SHALL ACCEPT 1-300kcmil CONDUCTORS PER PHASE AND NEUTRAL.
5. THE 800AMP. CURRENT TRANSFORMER SECTION SHALL BE PROVIDED PER UTILITY COMPANY REQUIREMENTS.
6. THE MAIN SWITCH SHALL BE A "BOLTSWITCH INC." 800 AMP., 600 V. MAX. CLASS "L" FUSIBLE BOLTED PRESSURE CONTACT SWITCH.

INSTRUMENT TRANSFORMER CABINET
 NOT TO SCALE



MOUNTING PLATE

FRONT INTERIOR VIEW

POTENTIAL TRANSFORMER ENCLOSURE
 NOT TO SCALE