

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
332A & 649	(2SB-FAGH)PS-1 & (107)PS-3	IL	42	1
IROQUOIS & LIVINGSTON		ILLINOIS	CONTRACT NO. 66168	

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7. MILFORD - PLUMBING, HEATING AND VENTILATION PLAN
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# PROPOSED HIGHWAY PLANS

## F.A.P. ROUTE 332A (IL 1) & F.A.P. ROUTE 649 (IL 17) SECTION (107)PS-3 & (2SB-FAGH)PS-1 PROJECT

### PUMP STATION REPAIRS IROQUOIS & LIVINGSTON

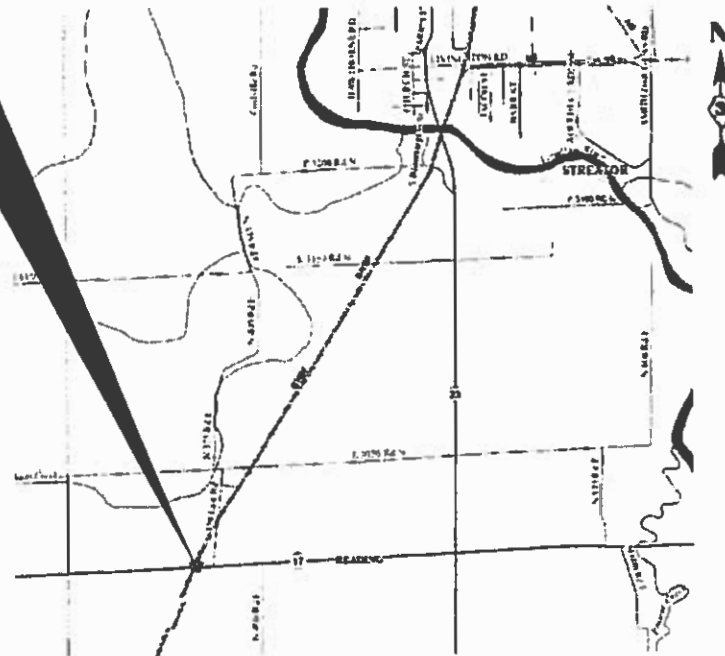
C-93-046-19

**STANDARDS**

000001-07	STANDARD SYMBOLS, ABBREVIATIONS AND PATTERNS
001001-02	AREAS OF REINFORCEMENT BARS
001006	DECIMAL OF INCH & FOOT
664001-02	CHAIN LINK FENCE

**PROJECT LOCATION NO. 1**

F.A.P. ROUTE 649 (IL 17)  
READING PUMP STATION  
1.3 MILES WEST OF IL ROUTE 23  
BURLINGTON NORTHERN SANTE FE  
(BNSF) RAILWAY VIADUCT



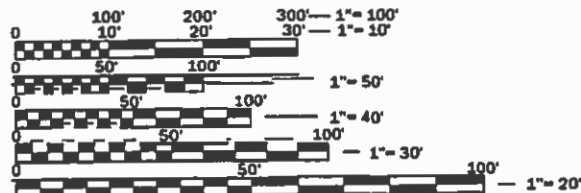
POINT LOCATION

**PROJECT LOCATION NO. 2**

F.A.P. ROUTE 332A (IL 1)  
MILFORD PUMP STATION  
0.6 MILES NORTH OF MILFORD  
CSX TRANSPORTATION  
RAILROAD VIADUCT



POINT LOCATION



FULL SIZE PLANS HAVE BEEN PREPARED USING STANDARD ENGINEERING SCALES. REDUCED SIZED PLANS WILL NOT CONFORM TO STANDARD SCALES. IN MAKING MEASUREMENTS ON REDUCED PLANS, THE ABOVE SCALES MAY BE USED.

J.U.L.I.E.  
JOINT UTILITY LOCATION INFORMATION FOR EXCAVATION  
1-800-892-0123  
OR 811

PROJECT ENGINEER: JOE KANNEL P.E.  
UNIT CHIEF: RON WOODSHANK  
DISTRICT 3 NO. (815) 434-6131  
CONTRACT NO. 66J68



LOCATION OF SECTION INDICATED THIS: - - -

**FUNCTIONAL CLASSIFICATION**

<b>RURAL</b>	<b>RURAL</b>
<b>MINOR ARTERIAL</b>	<b>OTHER ARTERIAL</b>
F.A.P. ROUTE 649 (IL 17)	F.A.P. ROUTE 332A (IL 1)
2017 ADT = 800	2017 ADT = 1350
P.V. 85.1%	P.V. 81.6%
S.U. 6.2%	S.U. 9.2%
M.U. 8.7%	M.U. 9.2%

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

SUBMITTED 02/25 2019  
*Kevin Kachel*  
REGIONAL ENGINEER

March 22 2019  
*[Signature]*  
ENGINEER OF DESIGN AND ENVIRONMENT

March 22 2019  
*[Signature]*  
DIRECTOR OF HIGHWAYS PROJECT IMPLEMENTATION

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OF THE STATE OF ILLINOIS

**GENERAL NOTES**

ALL EXCAVATED MATERIAL, WHICH INCLUDES DIGGING OR GRADING OF ANY SOIL OR FILL MATERIAL, WITH THE EXCEPTION OF AGGREGATE FILLS, MUST BE INCORPORATED WITHIN THE IDOT RIGHT OF WAY DUE TO ENVIRONMENTAL DOCUMENTATION REQUIREMENTS.

PLAN DIMENSIONS AND DETAILS RELATIVE TO EXISTING STRUCTURE HAVE BEEN TAKEN FROM EXISTING PLANS AND ARE SUBJECT TO NOMINAL CONSTRUCTION VARIATIONS. IT SHALL BE THE CONTRATOR'S RESPONSIBILITY TO VERIFY ALL DIMENSIONS AND DETAILS IN THE FIELD AND MAKE NECESSARY APPROVED ADJUSTMENTS PRIOR TO CONSTRUCTION OR ORDERING OF MATERIALS, SUCH VARIATIONS SHALL NOT BE CAUSE FOR ADDITIONAL COMPENSATION OR A CHANGE IN THE SCOPE OF THE WORK.

ABANDONED UNDERGROUND UTILITIES THAT CONFLICT WITH CONSTRUCTION SHALL BE DISPOSED OF OUTSIDE THE LIMITS OF THE RIGHT OF WAY ACCORDING TO ARTICLE 202.03 OF THE STANDARD SPECIFICATIONS AND AS DIRECTED BY THE ENGINEER. THIS WORK WILL NOT BE PAID FOR SEPARATELY, BUT WILL BE INCLUDED IN THE COST OF EARTH EXCAVATION.

ANY REFERENCE TO A STANDARD IN THESE PLANS SHALL BE INTERPRETED TO MEAN THE EDITION AS INDICATED BY THE SUBNUMBER SHOWN IN THE LIST OF STANDARDS OR THE COPY INCLUDED IN THESE PLANS.

THE FOLLOWING RATES OF APPLICATION HAVE BEEN USED IN CALCULATING PLAN QUANTITIES:

GRANULAR MATERIALS	2.05	TONS / CU YD
--------------------	------	--------------

THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE PRESENCE OF DEPARTMENT-OWNED UNDERGROUND ELECTRICAL CABLE WITHIN THE LIMITS OF THE PROPOSED IMPROVEMENT. THE CONTRACTOR SHALL REQUEST THE ILLINOIS DEPARTMENT OF TRANSPORTATION IN OTTAWA (815-434-8417) TO LOCATE THE UNDERGROUND FACILITIES, PROVIDING A MINIMUM OF 72 HOURS NOTICE. THE DEPARTMENT IS NOT A MEMBER OF THE JOINT UTILITY LOCATING INFORMATION FOR EXCAVATORS (JULIE) SYSTEM.

ALL DAMAGE TO DEPARTMENT OWNED UNDERGROUND FACILITIES, CAUSED BY THE CONTRACTOR SHALL BE REPAIRED TO THE SATISFACTION OF THE DEPARTMENT AT THE CONTRACTOR'S EXPENSE. THIS SHALL INCLUDE ALL TEMPORARY REPAIRS REQUIRED TO KEEP THE FACILITY OPERATIONAL WHILE MATERIAL IS BEING OBTAINED TO MAKE PERMANENT REPAIRS. SPLICING OF ELECTRIC CABLE WILL NOT BE ALLOWED. ELECTRIC CABLE SHALL BE REPLACED FROM POLE TO POLE OR CONTROLLER.

THE CONTRACTOR SHALL CONTACT JULIE AT LEAST 48 HOURS PRIOR TO EXCAVATION TO DETERMINE WHICH UTILITIES ARE IN THE AREA.

THE CONTRACTOR SHALL BE AWARE THAT WORK ENCROACHES ON RAILROAD PROPERTY. WORK SHALL BE PERFORMED TO MINIMIZE ENCROACHMENT ON RAILROAD PROPERTY.

THE CONTRACTOR SHALL VERIFY RAILROAD RIGHT-OF-WAY AND AVOID WORK INVOLVING ANYTHING MORE THAN HAND TOOLS IN RAILROAD RIGHT-OF-WAY.

**COMMITMENTS**

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION  
DISTRICT THREE  
AS BUILT INFORMATION

\_\_\_\_\_  
SUPERVISING CONSTRUCTION FIELD ENGINEER

\_\_\_\_\_  
RESIDENT ENGINEER / TECHNICIAN

START & END DATES  
OF CONSTRUCTION:

INSPECTORS:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION  
DISTRICT THREE

PREPARED BY: Tom Benoit  
DISTRICT STUDIES & PLANS ENGINEER

DATE: 2-25-19

EXAMINED BY: [Signature]  
DISTRICT CONSTRUCTION ENGINEER

[Signature]  
DISTRICT MATERIALS ENGINEER

[Signature]  
DISTRICT OPERATIONS ENGINEER

G-1

FILE NAME =	USER NAME = \$USERS	DESIGNED - RW	REVISED -
\$FILELS		DRAWN - RW	REVISED -
	PLOT SCALE = \$SCALES	CHECKED - EP	REVISED -
\$MODELNAMES	PLOT DATE = \$DATES	DATE - 10/10/2018	REVISED -

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

SCALE: SHEET 1 OF 1 SHEETS STA. TO STA.

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
332A & 649	(25B-FAGH)PS-1 & (107)PS-3	*	42	2
*IROQUOIS & LIVINGSTON			CONTRACT NO. 66168	
ILLINOIS FED. AID PROJECT				

CODE NO.	ITEM	UNIT	TOTAL QUANTITY	CONSTRUCTION CODE	
				IROQUOIS ROADWAY	LIVINGSTON ROADWAY
				0044 RURAL	0044 RURAL
20200100	EARTH EXCAVATION	CU YD	4	2	2
20800150	TRENCH BACKFILL	CU YD	18	4	14
50102400	CONCRETE REMOVAL	CU YD	2		2
50300225	CONCRETE STRUCTURES	CU YD	2.2		2.2
50800205	REINFORCEMENT BARS, EPOXY COATED	POUND	213		213
60406100	FRAMES AND LIDS, TYPE 1, CLOSED LID	EACH	2		2
66400505	CHAIN LINK FENCE, 8'	FOOT	127	60	67
66405600	CHAIN LINK GATES, 4' X 8' DOUBLE	EACH	3	1	2
67100100	MOBILIZATION	L SUM	1	0.5	0.5
84500120	REMOVAL OF ELECTRIC SERVICE INSTALLATION	EACH	1		1
* X0301028	PUMP STATION SCADA EQUIPMENT	L SUM	1		1
X0301280	PLUG EXISTING DRAINS	EACH	2		2
X0323586	PIPE DRAIN REMOVAL	FOOT	45		45

\* SPECIALITY ITEMS

G-2

	USER NAME :	DESIGNED - MTR	REVISED - RW 03-19-2019	<b>STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION</b>	<b>GENERAL SUMMARY OF QUANTITIES</b>			F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	PLOT SCALE :	DRAWN - MTR	REVISED -					649	(107)PS-3	LIVINGSTON	42	3
	PLOT DATE :	CHECKED - NWC	REVISED -					CONTRACT NO. 66J68				
		DATE - 03-19-2019	REVISED -					ILLINOIS FED. AID PROJECT XXXXXX				
				SCALE:	SHEET	OF	SHEETS	STA.	TO	STA.		

CODE NO.	ITEM	UNIT	TOTAL QUANTITY	CONSTRUCTION CODE	
				IROQUOIS ROADWAY	LIVINGSTON ROADWAY
				0044	0044
				RURAL	RURAL
X0323880	COMPLETE SPARE MAIN PUMP ASSEMBLY	L SUM	1		1
X0324582	PLUMBING EQUIPMENT, ACCESSORIES AND RELATED SYSTEMS	L SUM	1	0.5	0.5
X0325941	ACCESS LADDER	EACH	2		2
X0326566	REPLACEMENT OF SUMP PUMPS	EACH	2		2
X0327394	HEATING AND VENTILATION WORK	L SUM	1	0.5	0.5
* X0327739	MISCELLANEOUS ELECTRICAL WORK	L SUM	1		1
X0327779	GAS UTILITY SERVICE CONNECTION	L SUM	1	1	
X0335700	PUMP STATION GENERAL WORK	L SUM	1		1
X0462500	SUBMERSIBLE PUMP	EACH	2		2
* X0783300	PUMP STATION ELECTRICAL WORK	L SUM	1	0.5	0.5
X1400160	PUMP STATION PACKAGE ENGINE GENERATOR SYSTEMS	L SUM	1	0.5	0.5
X1400328	AUTOMATIC TRANSFER SWITCH	EACH	2	1	1
* X8040305	ELECTRICAL SERVICE CONNECTION	L SUM	1	0.5	0.5
Z0001904	STRUCTURAL STEEL REMOVAL	L SUM	1		1
Z0018500	DRAINAGE STRUCTURES TO BE CLEANED	EACH	1		1

\* SPECIALITY ITEMS

G-3

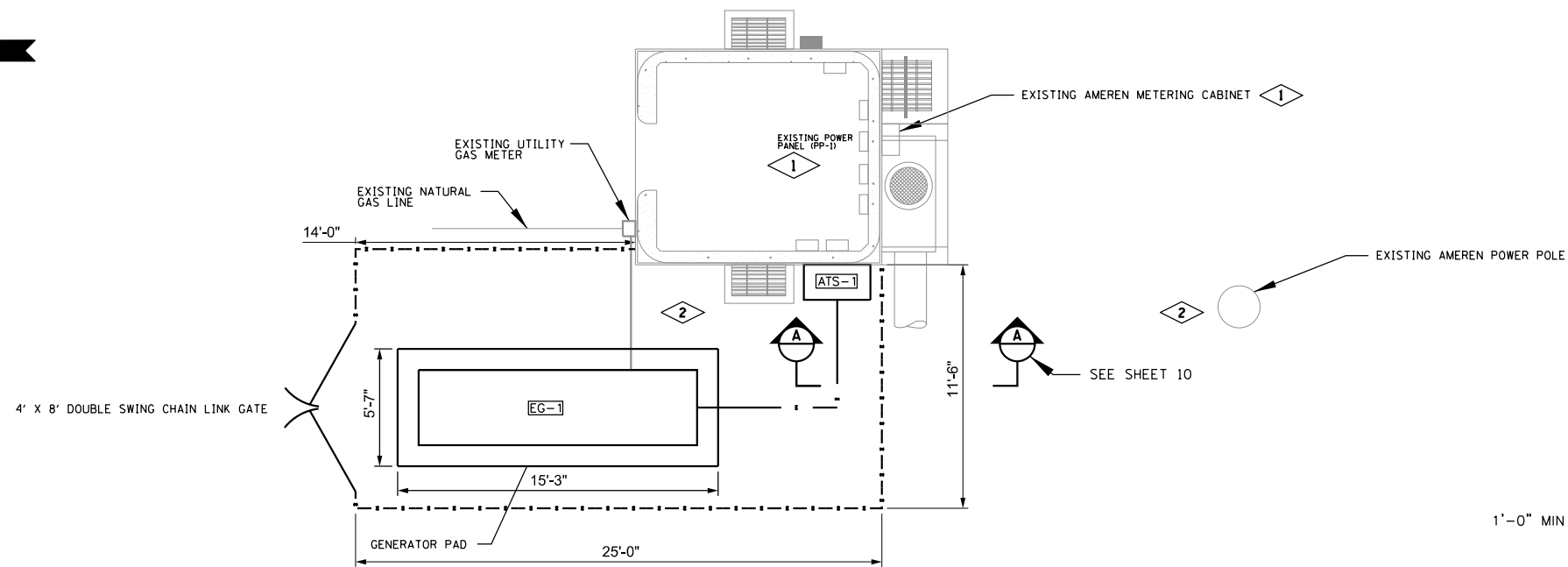
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		DRAWN - MTR	REVISED -					649	(107)PS-3	LIVINGSTON	42	4
	PLOT SCALE :	CHECKED - NWC	REVISED -					CONTRACT NO. 66J68				
	PLOT DATE :	DATE - 03-19-2019	REVISED -					ILLINOIS FED. AID PROJECT XXXXXX				



**SITE AERIAL - MILFORD PUMP STATION**  
NTS

STAGING AND STORAGE AREA

MILFORD PUMP STATION

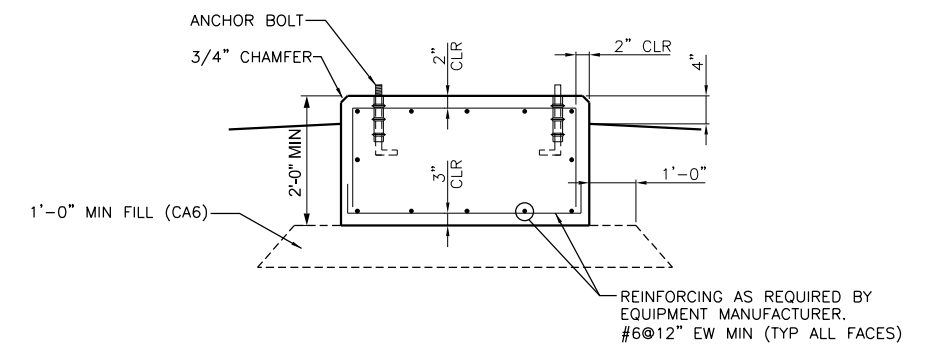


**PLAN**  
MILFORD PUMP STATION

SCALE: 0 2 4 FT.

**PLAN NOTES:**

1. CONTRACTOR TO DISCONNECT AND REMOVE SECONDARY CONDUCTORS FROM METERING CABINET TO POWER PANEL. PROVIDE CONDUIT AND CONDUCTORS FROM METERING CABINET TO AUTOMATIC TRANSFER SWITCH (ATS) AND FROM ATS TO EXISTING POWER PANEL; SEE SHEET 10 FOR CONDUIT AND CONDUCTOR REQUIREMENTS.
2. CONTRACTOR TO COORDINATE WITH AMEREN TO RELOCATE GUY WIRING LOCATED NEXT TO PUMP STATION.



**NOTE:**  
1. CONCRETE BASE AS REQUIRED BY EQUIPMENT MANUFACTURER. PAD WEIGHT SHALL BE MINIMUM TWO TIMES THE MASS OF EQUIPMENT OR 10 TIMES THE MASS OF MOVING PARTS, WHICHEVER IS GREATER. INCREASE PAD THICKNESS AS NEEDED.

**CONCRETE PAD FOR GENERATOR**  
N.T.S.

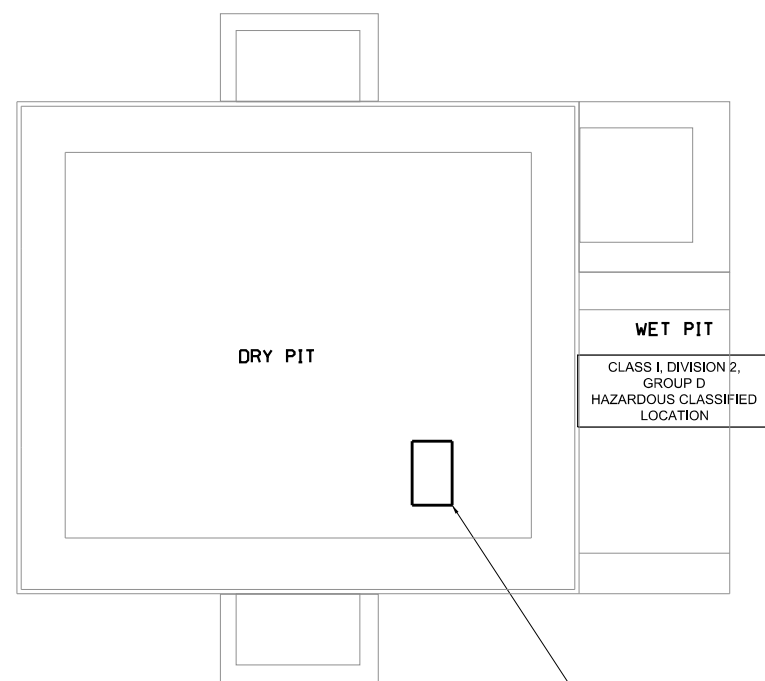
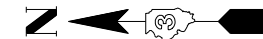
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		DRAWN - JRR	REVISED -
	PLOT SCALE =	CHECKED - JAB	REVISED -
	PLOT DATE =	DATE - 03-19-2019	REVISED -

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

MILFORD PUMP STATION <b>ELECTRICAL</b> <b>SITE PLAN</b>			
SCALE:	SHEET	OF SHEETS	STA. TO STA.

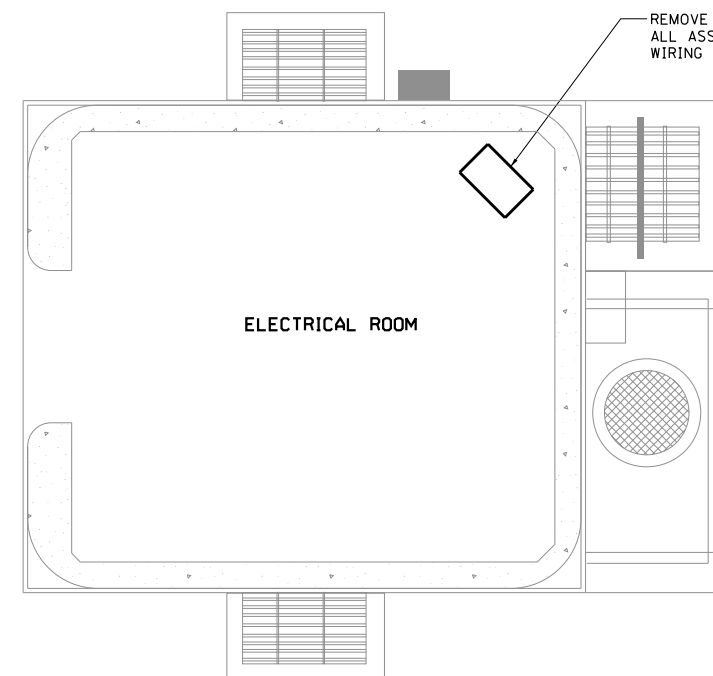
F.A.P. RTE. 332A	SECTION (25B-FACH)PS-1	COUNTY IROOUIOS	TOTAL SHEETS 42	SHEET NO. 5
CONTRACT NO. 66J68				
ILLINOIS FED. AID PROJECT XXXXXX				



**LOWER PLAN**

REMOVE 10KW ELECTRIC UNIT HEATER AND ALL ASSOCIATED SUPPORTS, CONTROLS, AND WIRING BACK TO SOURCE

WET PIT  
CLASS I, DIVISION 2,  
GROUP D  
HAZARDOUS CLASSIFIED  
LOCATION



**UPPER PLAN**

REMOVE 10KW ELECTRIC UNIT HEATER AND ALL ASSOCIATED SUPPORTS, CONTROLS, AND WIRING BACK TO SOURCE

**GENERAL NOTES:**

1. CONTRACTOR TO FIELD VERIFY EXISTING CONDITIONS, DIMENSIONS, AND ELEVATIONS PRIOR TO CONSTRUCTION AND/OR FABRICATION.
2. FULL TONE COMPONENTS ( ————— ) TO BE REMOVED.
3. WHERE EQUIPMENT IS INDICATED TO BE REMOVED, REMOVE ALL ASSOCIATED POWER AND CONTROL WIRING AND CONDUIT BACK TO SOURCE. REMOVE JUNCTION BOXES AND PULL BOXES ASSOCIATED WITH THE REMOVED CONDUITS. WHERE CONDUIT SYSTEM CONTAINS CIRCUITS TO OTHER EQUIPMENT THAT REMAINS, RETAIN THESE CIRCUITS AND RELOCATE EXISTING CONDUIT AND EXTEND EXISTING CIRCUITS AS REQUIRED FOR THE INSTALLATION OF NEW EQUIPMENT.
4. WHERE OPENINGS ARE LEFT IN WALLS, SLABS, OR CEILINGS DUE TO REMOVED PIPING, DUCTWORK, EQUIPMENT, OR OTHER WORK, PATCH OPENING TO MATCH ADJACENT SURFACES UNLESS NOTED OTHERWISE. THE PERIMETER OF OPENINGS IN CONCRETE WALLS AND SLABS EXPOSED TO EARTH, WEATHER, OR WATER SHALL BE LINED WITH A GASKET TYPE WATERSTOP PRIOR TO PATCHING OF THE WALL. OPENINGS IN PRECAST ROOF MEMBERS ARE TO BE PATCHED WITH CONCRETE AND DOWELED TO THE EXISTING ROOF MEMBERS UNLESS NOTED OTHERWISE. ROOFING SYSTEM SHALL BE PATCHED TO PREVENT ANY LEAKING AT THE OPENING.
5. ALL AREAS WITHIN BUILDING EXCEPT DRY PIT AND ELECTRICAL ROOM SHALL BE:

CLASS I, DIVISION 2,  
GROUP D  
HAZARDOUS CLASSIFIED  
LOCATION

SCALE: 0 2 4 FT.

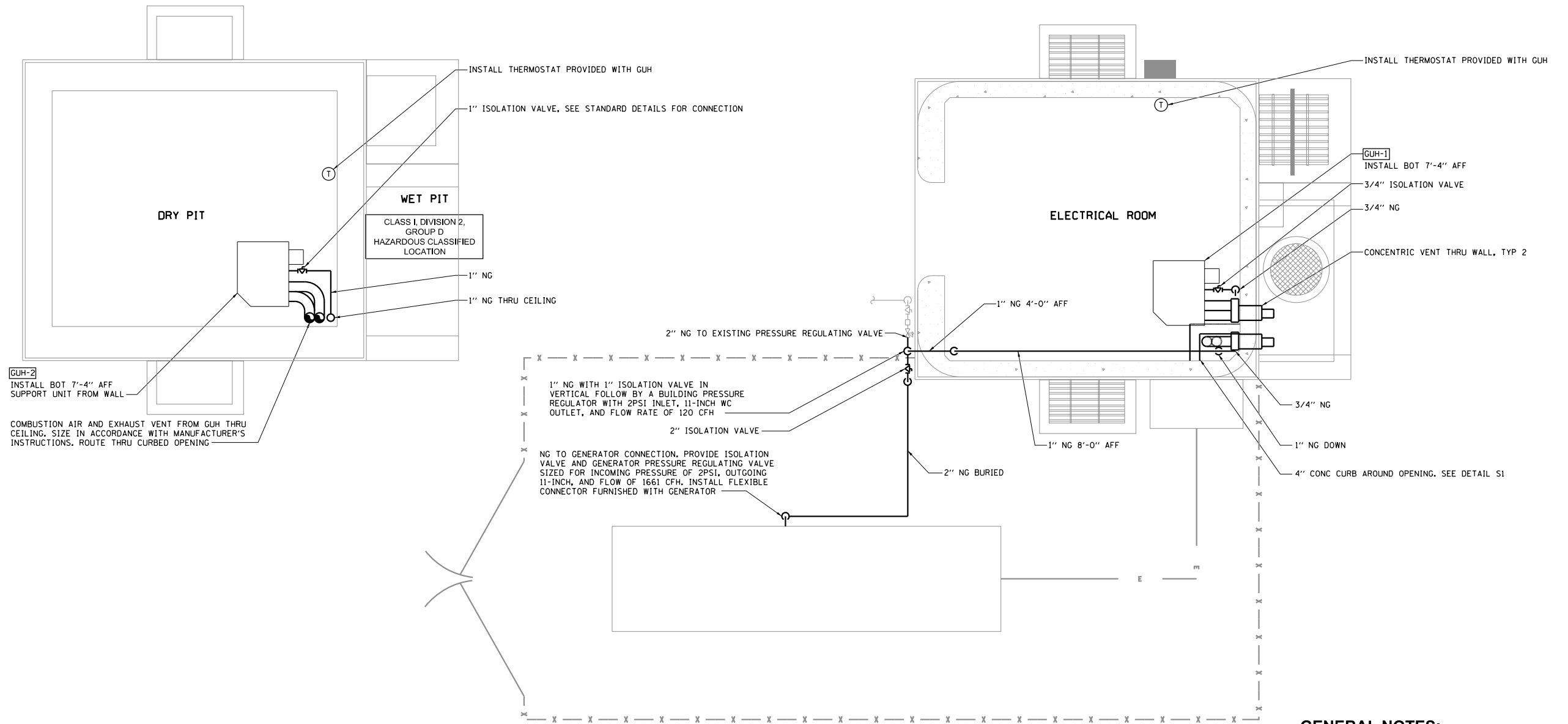
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		DRAWN - CAH	REVISED -
	PLOT SCALE :	CHECKED - JLW	REVISED -
	PLOT DATE :	DATE - 03-19-2019	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

MILFORD PUMP STATION  
**REMOVAL  
PLANS**  
SCALE: SHEET OF SHEETS STA. TO STA.

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
332A	(2SB-FACH)PS-1	IROOUIOS	42	6
CONTRACT NO. 66J68				
ILLINOIS FED. AID PROJECT XXXXXX				



**GUH-2**  
INSTALL BOT 7'-4" AFF  
SUPPORT UNIT FROM WALL

COMBUSTION AIR AND EXHAUST VENT FROM GUH THRU  
CEILING. SIZE IN ACCORDANCE WITH MANUFACTURER'S  
INSTRUCTIONS. ROUTE THRU CURBED OPENING

2" NG TO EXISTING PRESSURE REGULATING VALVE

1" NG WITH 1" ISOLATION VALVE IN  
VERTICAL FOLLOW BY A BUILDING PRESSURE  
REGULATOR WITH 2PSI INLET, 11-INCH WC  
OUTLET, AND FLOW RATE OF 120 CFH

2" ISOLATION VALVE

NG TO GENERATOR CONNECTION. PROVIDE ISOLATION  
VALVE AND GENERATOR PRESSURE REGULATING VALVE  
SIZED FOR INCOMING PRESSURE OF 2PSI, OUTGOING  
11-INCH, AND FLOW OF 1661 CFH. INSTALL FLEXIBLE  
CONNECTOR FURNISHED WITH GENERATOR

INSTALL THERMOSTAT PROVIDED WITH GUH

**GUH-1**  
INSTALL BOT 7'-4" AFF

3/4" ISOLATION VALVE

3/4" NG

CONCENTRIC VENT THRU WALL, TYP 2

1" NG 4'-0" AFF

3/4" NG

1" NG DOWN

4" CONC CURB AROUND OPENING. SEE DETAIL S1

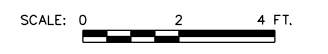
**LOWER PLAN**

**UPPER PLAN**

**GENERAL NOTES:**

1. ALL AREAS WITHIN BUILDING EXCEPT DRY PIT AND ELECTRICAL ROOM SHALL BE:

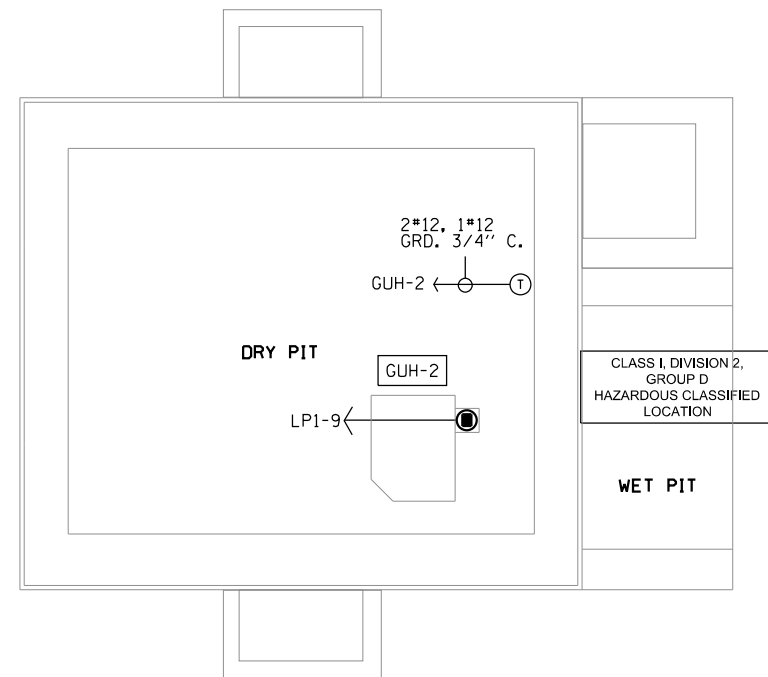
CLASS I, DIVISION 2,  
GROUP D  
HAZARDOUS CLASSIFIED  
LOCATION



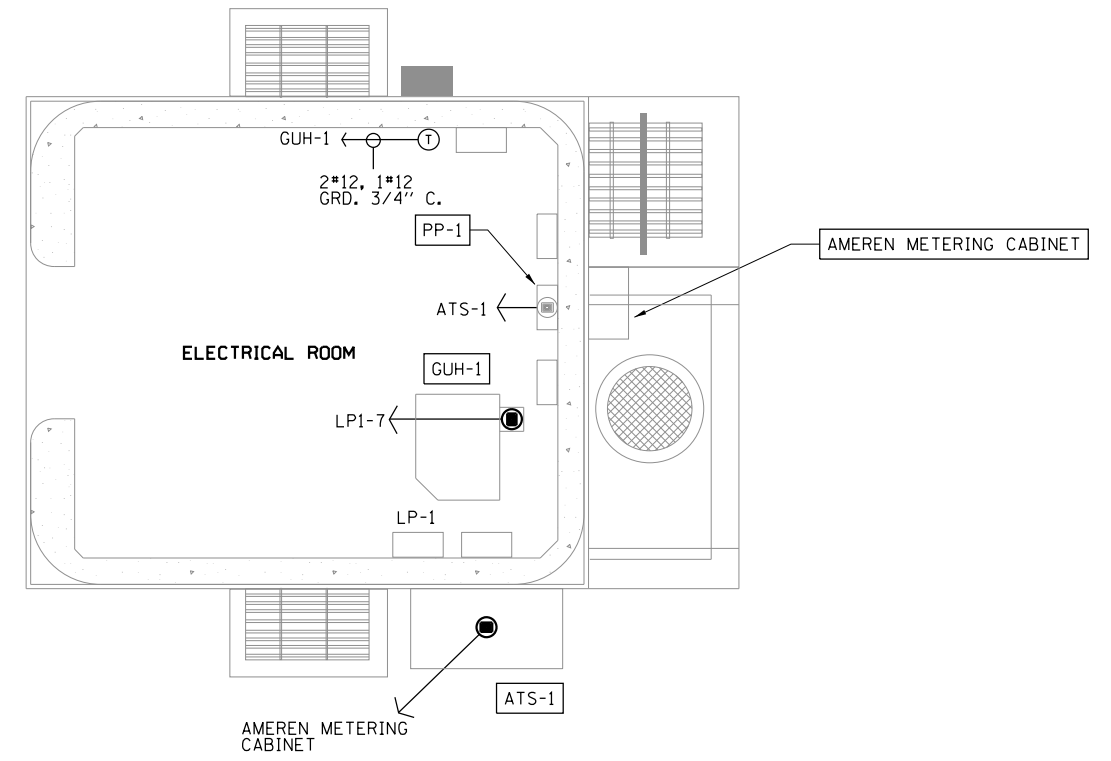
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	PLOT SCALE =	CHECKED - JLW	REVISED -		SCALE:	SHEET	OF	SHEETS	STA.	TO	STA.	CONTRACT NO. 66J68	
	PLOT DATE =	DATE - 03-19-2019	REVISED -		ILLINOIS FED. AID PROJECT XXXXXX								







**LOWER PLAN**

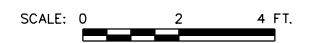


**UPPER PLAN**

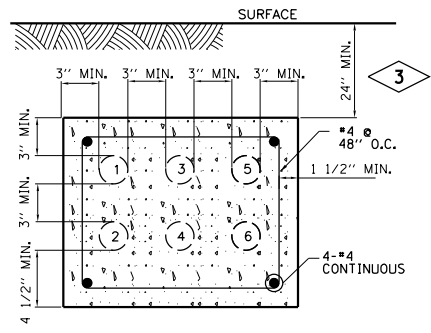
**GENERAL NOTES:**

1. ALL AREAS WITHING BUILDING EXCEPT DRY PIT AND ELECTRICAL ROOM SHALL BE:  

CLASS I, DIVISION 2,  
GROUP D  
HAZARDOUS CLASSIFIED  
LOCATION
2. PROVIDE CONDUIT AND CONDUCTORS TO SECONDARY OF METERING CABINET; SEE SHEET 10 FOR CONDUIT AND CONDUCTOR REQUIREMENTS.



	USER NAME =	DESIGNED - JRR	REVISED -	<b>STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION</b>	<b>MILFORD PUMP STATION ELECTRICAL PLANS</b>				F.A.P. RTE. 332A	SECTION (2SB-FACH)PS-1	COUNTY IROOUIOS	TOTAL SHEETS 42	SHEET NO. 9	
	PLOT SCALE =	CHECKED - JAB	REVISED -		SCALE: SHEET OF SHEETS STA. TO STA.				CONTRACT NO. 66J68					
	PLOT DATE =	DATE - 03-19-2019	REVISED -		ILLINOIS FED. AID PROJECT XXXXXX									



**DUCT BANK SECTION A**  
NTS SHEET 5

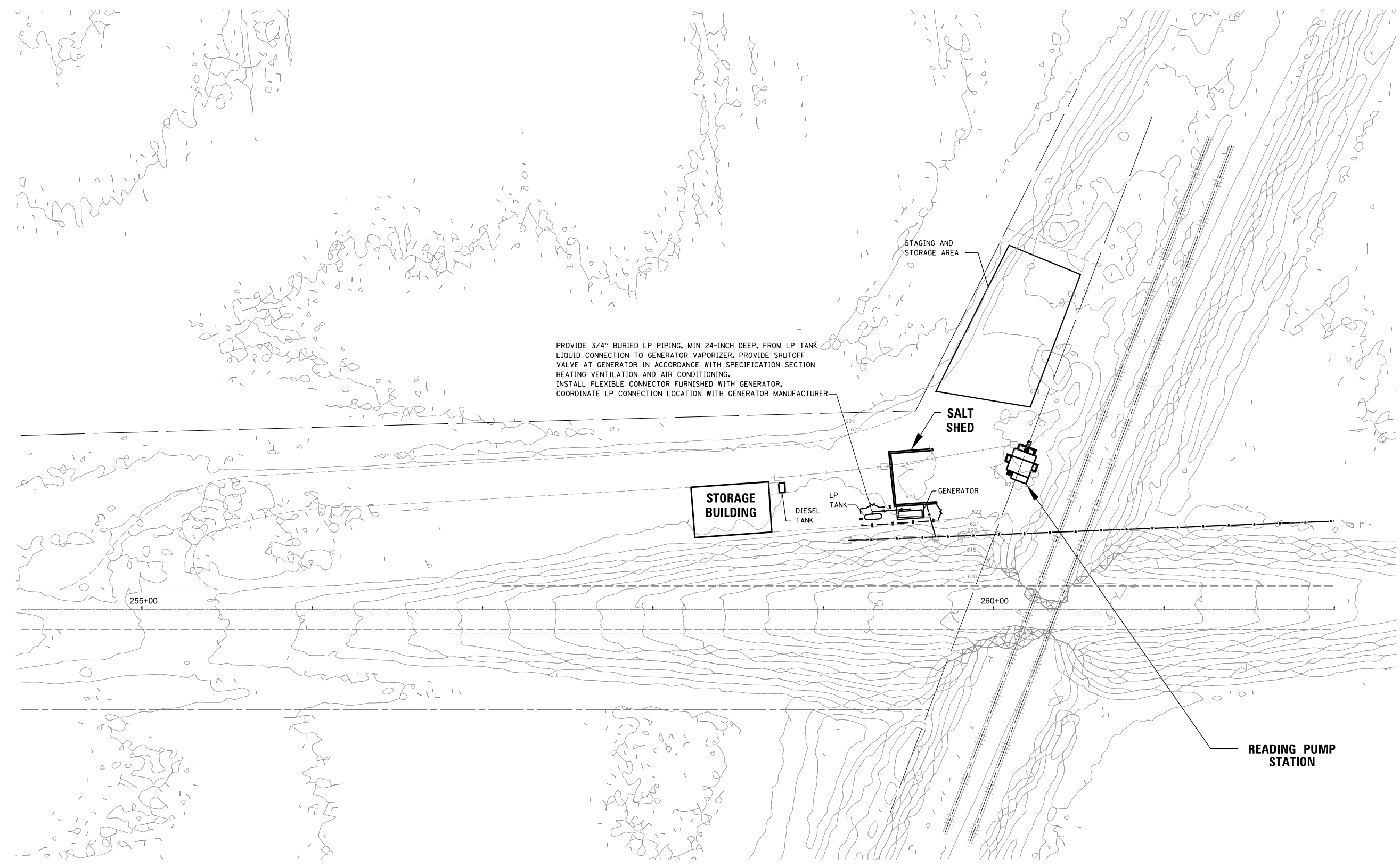
DUCTBANK SCHEDULE					
NUMBER	SIZE	FROM	TO	CONTENTS	REMARKS
1	2"	EG-1	ATS-1	POWER	480V
2	2"	EG-1	ATS-1	SPARE	CAP EACH END
3	1"	EG-1	LP-1	POWER	120V - COOLANT/ STRIP HEATER
4	1"	EG-1	LP-1	POWER	120V - BATTERY CHARGER/HTR & RECEPS
5	1"	EG-1	DIALER	CONTROLS	
6	1"	ATS-1	DIALER	CONTROLS	

- GENERAL NOTES:**
- CONDUIT ELBOWS IN UNDERGROUND DUCT BANKS SHALL BE PVC COATED GRS CONDUIT.
  - EXTERIOR ABOVE GRADE CONDUIT SHALL BE PVC COATED GRS CONDUIT.
  - CONDUITS ENCASED IN CONCRETE SHALL BE PVC UNLESS NOTED IN SCHEDULE.
  - "-" REPRESENTS A SPACE IN THE DUCT BANK.
  - CONTRACTOR SHALL VERIFY CONDUIT DUCT BANK LAYOUTS. CONTRACTOR SHALL MODIFY CONDUIT LOCATIONS IN DUCT BANK TO SUIT FIELD CONDITIONS.
  - CONCRETE SHALL BE DYED RED.

- PLAN NOTES:**
- RE-USE EXISTING CIRCUIT BREAKER FOR NEW LOAD; RE-LABEL PANEL ACCORDINGLY.
  - DISCONNECT AND REMOVE CONDUIT AND CONDUCTORS BACK TO SOURCE FOR EXISTING HEATER; RE-LABEL BREAKER AS SPARE.
  - TOP OF DUCT BANKS SHALL BE A MINIMUM OF 30" BELOW GRADE IN VEHICULAR TRAFFIC AREAS.

SURFACE MOUNTED NEMA 1		PANEL SCHEDULE PP-1		250A MAIN BREAKER		
480 V, 3 PHASE, 4 WIRE				250A MAIN BUS		
RATING 25,000 A.I.C.				250A MIN. GRD. BUS		
CKT. NO.	TRIP/P	DESCRIPTION	PHASE	DESCRIPTION	TRIP/P	CKT. NO.
			A	B	C	
1			•			2
3	80/3	SPARE		•		4
5					•	6
7			•			8
9	40/3	TRANSFORMER XFMR-1		•		10
11					•	12
13			•			14
15	20/3	SPARE		•		16
17					•	18
19			•			20
21		SPACE		•		22
23					•	24
25			•			26
27				•		28
29					•	30
TOTALS:						

SURFACE MOUNTED NEMA 1		PANEL SCHEDULE LP-1		100A MAIN BREAKER		
120/208 V, 3 PHASE, 4 WIRE				100A MAIN BUS		
RATING 10,000 A.I.C.				100A MIN. GRD. BUS		
CKT. NO.	TRIP/P	DESCRIPTION	PHASE	DESCRIPTION	TRIP/P	CKT. NO.
			A	B	C	
1			•			2
3	100/3	MAIN BREAKER		•		4
5					•	6
7	20/1	GAS UNIT HEATER GUH-1	•			8
9	20/1	GAS UNIT HEATER GUH-2		•		10
11	20/1	GENERATOR COOLANT HEATER			•	12
13	20/1	GENERATOR RECEPTACLES	•			14
15	20/1	GENERATOR STRIP HEATER		•		16
17	20/1	GENERATOR BATTERY CHARGER/CHARGER HEATER			•	18
19	20/1	SPARE	•			20
21	20/1	SPARE		•		22
23	20/1	SPARE			•	24
25	20/1	SPARE	•			26
27		SPACE		•		28
29		SPACE			•	30
31		SPACE	•			32
33		SPACE		•		34
35		SPACE			•	36
37		SPACE	•			38
39		SPACE		•		40
41		SPACE			•	42
TOTALS:			1355	2385	2100	-



PROVIDE 3/4" BURIED LP PIPING, MIN 24-INCH DEEP, FROM LP TANK LIQUID CONNECTION TO GENERATOR VAPORIZER. PROVIDE SHUTOFF VALVE AT GENERATOR IN ACCORDANCE WITH SPECIFICATION SECTION HEATING VENTILATION AND AIR CONDITIONING. INSTALL FLEXIBLE CONNECTOR FURNISHED WITH GENERATOR. COORDINATE LP CONNECTION LOCATION WITH GENERATOR MANUFACTURER.

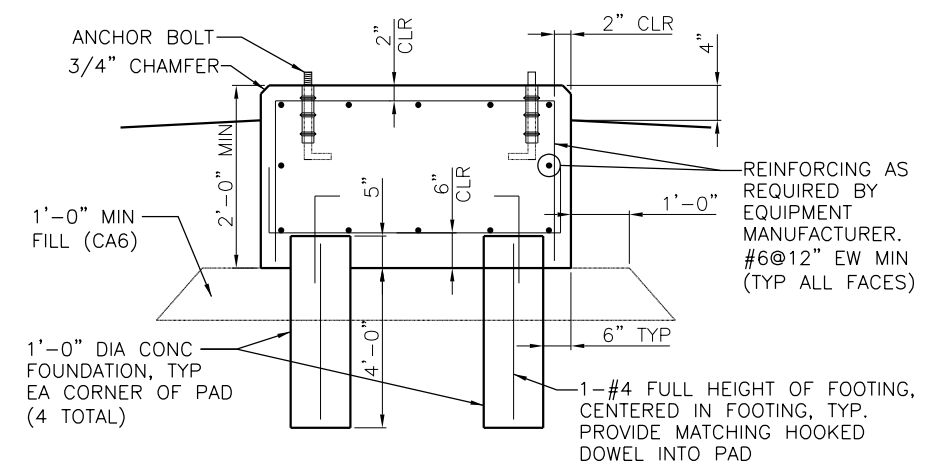
**GENERAL NOTES:**

1. SEE SHEET 29 FOR ELECTRICAL PLAN.
2. SEE SHEET 38 FOR FENCE GROUNDING DETAILS. GROUNDING SHALL BE CONTINUOUS. GROUND RODS SHALL BE SPACED NO MORE THAN 100 FEET APART.

SCALE: 0 10 20 40 FT.

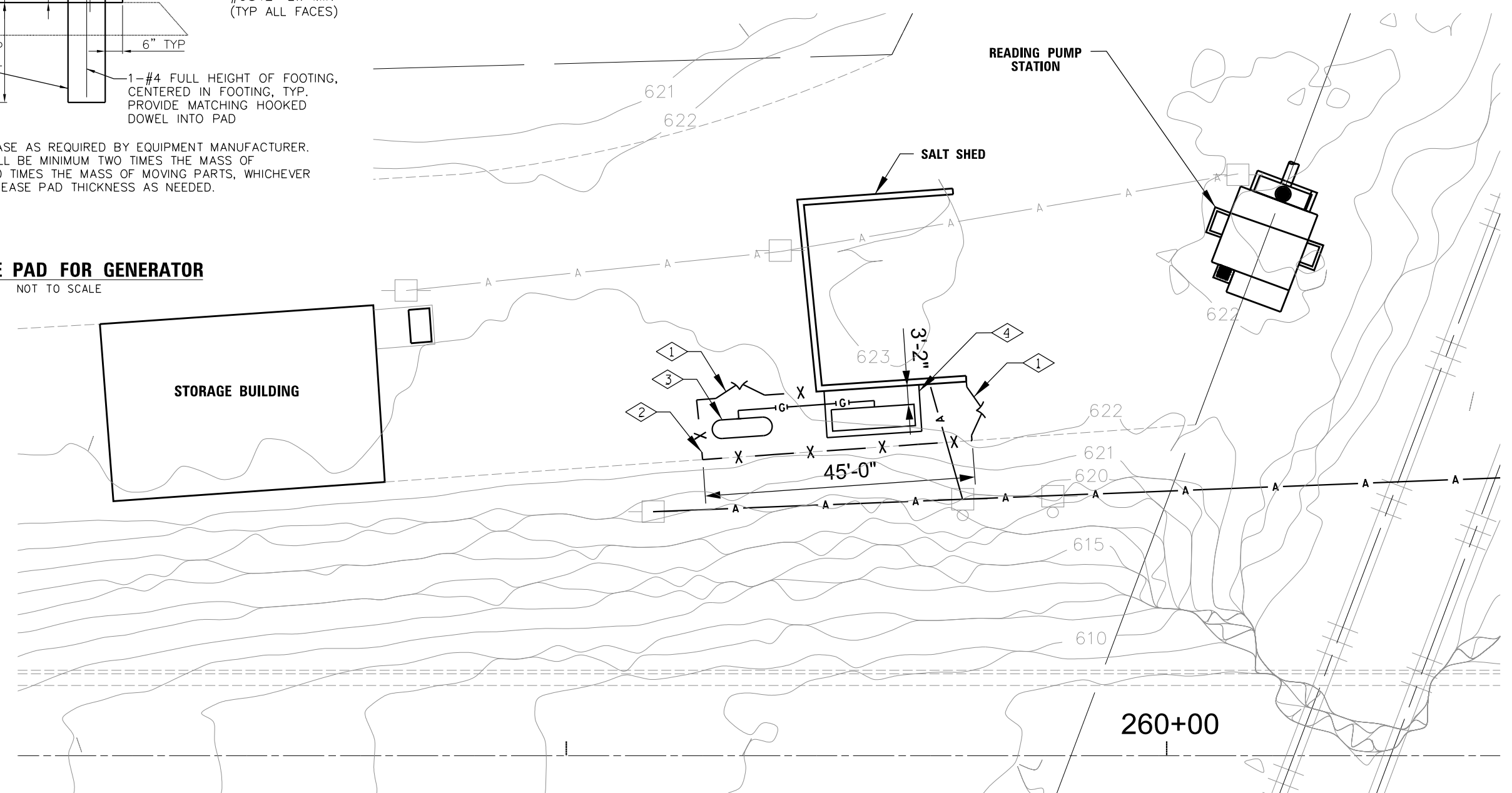
C-1

FILE NAME :	<b>DONOHUE</b>		USER NAME :	DESIGNED - LRE	REVISED -	<b>STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION</b>	<b>READING PUMP STATION CIVIL READING SITE PLAN</b>			F.A.P. RTE. 649	SECTION (107)PS-3	COUNTY LIVINGSTON	TOTAL SHEETS 42	SHEET NO. 11
	PLOT SCALE :	CHECKED - TLW	REVISED -	SCALE: SHEET OF SHEETS STA. TO STA.			ILLINOIS FED. AID PROJECT XXXXXX							
	PLOT DATE :	DATE - 03-19-2019	REVISED -											



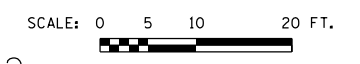
**NOTES:**  
 1. CONCRETE BASE AS REQUIRED BY EQUIPMENT MANUFACTURER. PAD WEIGHT SHALL BE MINIMUM TWO TIMES THE MASS OF EQUIPMENT OR 10 TIMES THE MASS OF MOVING PARTS, WHICHEVER IS GREATER. INCREASE PAD THICKNESS AS NEEDED.

**CONCRETE PAD FOR GENERATOR**  
 NOT TO SCALE



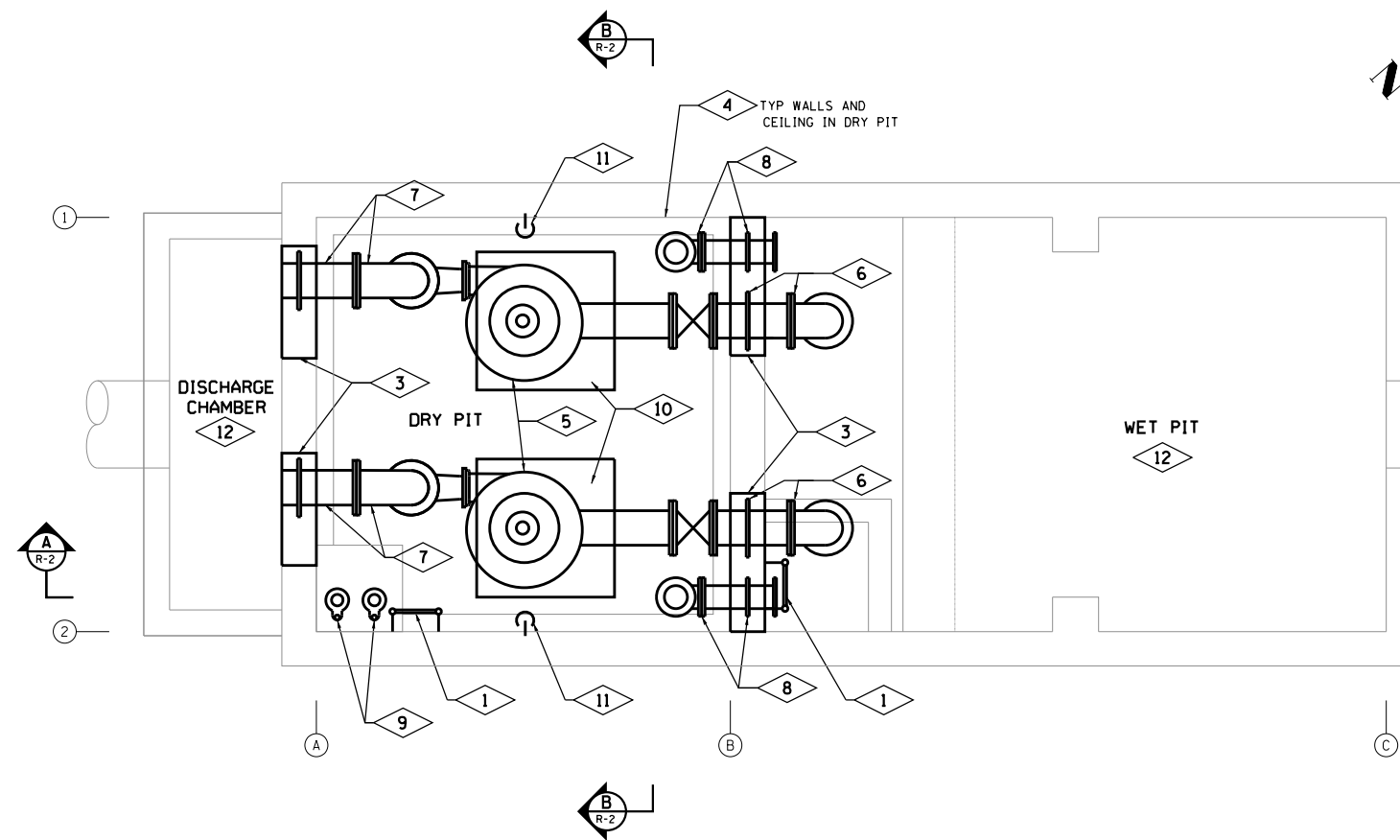
**PLAN**  
 READING PUMP STATION

- PLAN NOTES** ◊ :
1. 4' X 8' DOUBLE SWING CHAIN LINK GATE
  2. CHAIN LINK FENCE WITH BARB WIRE.
  3. PROPANE TANK BY IDOT.
  4. POUR 16' x 7'-5" GENERATOR PAD TIGHT AGAINST SALT SHED AND SLOPE GENERATOR PAD AWAY FROM BUILDING 1/4 IN/FT. SEE CONCRETE PAD FOR GENERATOR DETAIL THIS SHEET.

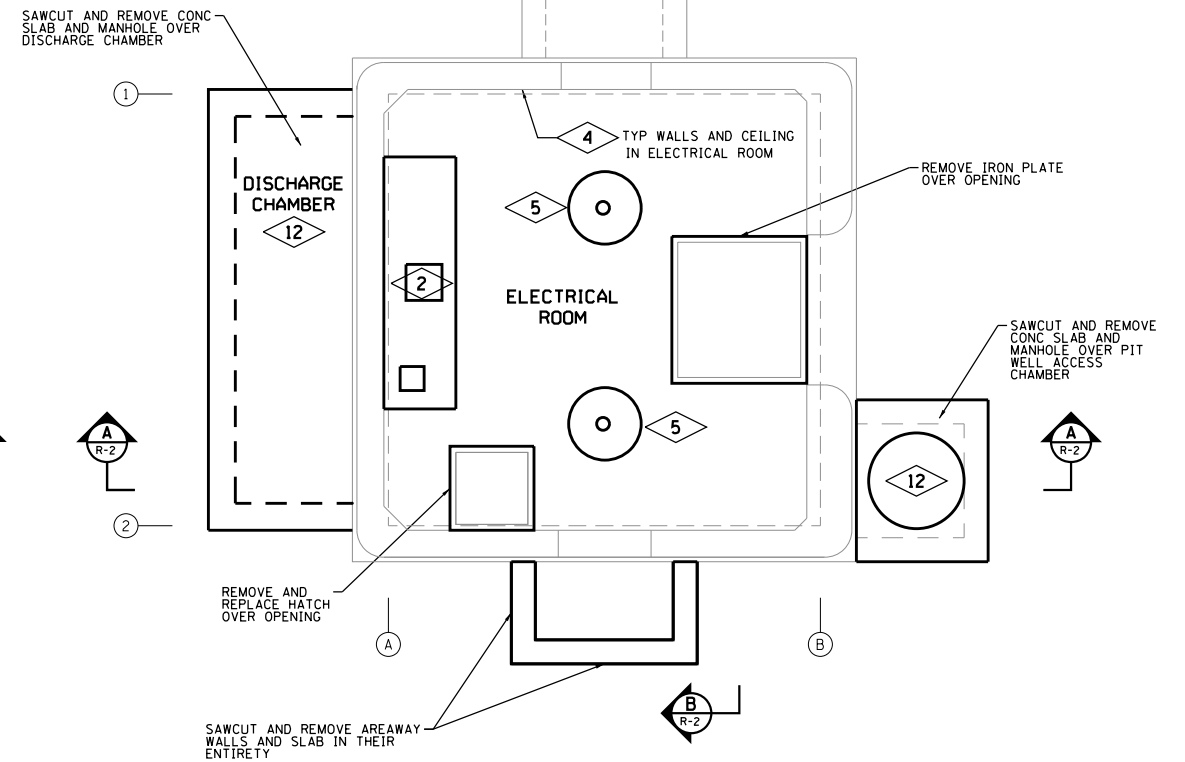


C-2

	USER NAME =	DESIGNED - LRE	REVISED -	<b>STATE OF ILLINOIS</b> <b>DEPARTMENT OF TRANSPORTATION</b>	<b>READING PUMP STATION</b> <b>CIVIL</b> <b>ENLARGED READING SITE PLAN</b>		F.A.P. RTE. 649	SECTION (107)PS-3	COUNTY LIVINGSTON	TOTAL SHEETS 42	SHEET NO. 12
	PLOT SCALE =	CHECKED - TLW	REVISED -		SCALE: SHEET OF SHEETS STA. TO STA.	CONTRACT NO. 66J68					
	PLOT DATE =	DATE - 03-19-2019	REVISED -			ILLINOIS FED. AID PROJECT XXXXXX					



**LOWER PLAN**



**UPPER PLAN**

**PLAN NOTES:**

1. REMOVE LADDER.
2. REMOVE MCC AND METERING EQUIPMENT IN ITS ENTIRETY. DISCONNECT AND PROTECT CONDUCTORS FOR SHED POWER FOR RE-USE. REMOVE CONDUIT BACK TO WALL OPENING AND RELOCATE WALL MOUNTED DISCONNECT; SEE DRAWING E10 FOR DISCONNECT LOCATION.
3. SAWCUT HOLE IN WALL AS REQUIRED FOR REMOVAL OF EXISTING PIPES AND INSTALLATION OF NEW PIPES. SEE S6.
4. REMOVE EXISTING COATING AND PREPARE SURFACE AS REQUIRED FOR APPLICATION OF NEW COATING.
5. REMOVE PUMP, MOTOR, MOTOR SHAFT AND SHAFT BEARING ASSEMBLIES INCLUDING SUPPORTS AND WALKWAYS IN THE DRY PIT.
6. REMOVE 12" SUCTION PIPE (INCLUDING WALL PIPE) IN DRY PIT AND WET PIT. REMOVE 12" GATE VALVE.
7. REMOVE 12" DISCHARGE PIPE (INCLUDING WALL PIPE).
8. REMOVE 2" AND 4" BALL FLOAT PIPING, INCLUDING WALL PIPES AND INSTRUMENTATION. SEE SECTION A FOR ADDITIONAL DETAILS.
9. REMOVE TWO SUMP PUMPS AND SUMP DISCHARGE PIPING TO DISCHARGE CHAMBER.
10. REMOVE CONCRETE PAD.
11. REMOVE AREA DRAIN PIPING.
12. CLASS I, DIVISION 2, GROUP D HAZARDOUS CLASSIFIED LOCATION

**GENERAL NOTES:**

1. CONTRACTOR TO FIELD VERIFY EXISTING CONDITIONS, DIMENSIONS, AND ELEVATIONS PRIOR TO CONSTRUCTION AND/OR FABRICATION.
2. FULL TONE COMPONENTS (——) TO BE REMOVED.
3. SAWCUT AND REMOVE CONCRETE TO LIMITS NOTED. IN EXPOSED AREAS NOT COVERED BY NEW CONSTRUCTION, REMOVE REINFORCEMENT AND EMBEDMENTS 1" BEYOND FINISHED SURFACE AND PATCH SURFACE WITH PATCHING MORTAR TO MATCH ADJACENT FINISHED SURFACE.
4. REMOVE CONCRETE ANCHORS, ANCHOR BOLTS, AND OTHER EMBEDMENTS FOR MATERIALS AND EQUIPMENT BEING REMOVED. IN EXPOSED AREAS NOT COVERED BY NEW CONSTRUCTION, REMOVE CONCRETE ANCHORS, ANCHOR BOLTS, AND OTHER EMBEDMENTS 1" BEYOND FINISHED SURFACE AND PATCH SURFACE TO MATCH ADJACENT FINISHED SURFACE.
5. WHERE EQUIPMENT IS INDICATED TO BE REMOVED, REMOVE ALL ASSOCIATED POWER AND CONTROL WIRING AND CONDUIT BACK TO SOURCE. REMOVE JUNCTION BOXES AND PULL BOXES ASSOCIATED WITH THE REMOVED CONDUITS. WHERE CONDUIT SYSTEM CONTAINS CIRCUITS TO OTHER EQUIPMENT THAT REMAINS, RETAIN THESE CIRCUITS AND RELOCATE EXISTING CONDUIT AND EXTEND EXISTING CIRCUITS AS REQUIRED FOR THE INSTALLATION OF NEW EQUIPMENT.
6. REMOVE ALL SUPPORTS ASSOCIATED WITH REMOVED PIPING, DUCTWORK, CONDUIT, AND EQUIPMENT. REMOVE RODS AND FASTENERS FROM CEILINGS, FLOORS, AND WALLS WITH CARE. WHERE SURFACE HAS BEEN MARRED, CHIPPED, SPAWLED, ETC. AS A RESULT OF REMOVAL, PATCH AND PAINT TO MATCH ADJACENT FINISHED SURFACE.
7. REMOVE EXISTING CONCRETE PADS OF ANY EQUIPMENT BEING REMOVED. REMOVE CONCRETE REINFORCEMENT A MINIMUM OF 1" BEYOND FINISHED SURFACE AT ANY LOCATION WHERE NEW CONCRETE PAD WILL NOT COVER ROUGH SURFACE OF REMOVED PAD. PATCH BACK TO FINISHED SURFACE WITH PATCHING MORTAR. COST OF REMOVAL OF CONCRETE PADS SHALL BE INCLUDED IN "CONCRETE REMOVAL".
8. WHERE OPENING ARE LEFT IN WALLS, SLABS, OR CEILINGS DUE TO REMOVED PIPING, DUCTWORK, EQUIPMENT, OR OTHER WORK, PATCH OPENING TO MATCH ADJACENT SURFACES UNLESS NOTED OTHERWISE. THE PERIMETER OF OPENINGS IN CONCRETE WALLS AND SLABS EXPOSED TO EARTH, WEATHER, OR WATER SHALL BE LINED WITH A GASKET TYPE WATERSTOP PRIOR TO PATCHING OF THE WALL. OPENINGS IN PRECAST ROOF MEMBERS ARE TO BE PATCHED WITH CONCRETE AND DOWELED TO THE EXISTING ROOF MEMBERS UNLESS NOTED OTHERWISE. ROOFING SYSTEM SHALL BE PATCHED TO PREVENT ANY LEAKING AT THE OPENING.
9. ALL AREAS WITHIN BUILDING EXCEPT DRY PIT AND ELECTRICAL ROOM SHALL BE: CLASS I, DIVISION 2, GROUP D HAZARDOUS CLASSIFIED LOCATION

SCALE: 0 3 8 FT.

R-1

	USER NAME =	DESIGNED - MTR	REVISED -	<b>STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION</b>	<b>READING PUMP STATION REMOVALS PLANS</b>			F.A.P. RTE. 649	SECTION (107)PS-3	COUNTY LIVINGSTON	TOTAL SHEETS 42	SHEET NO. 13	
	PLOT SCALE =	CHECKED - NWC	REVISED -		SCALE:	SHEET	OF	SHEETS	STA.	TO	STA.	ILLINOIS FED. AID PROJECT XXXXXX	
	PLOT DATE =	DATE - 03-19-2019	REVISED -										

FILE NAME =

**PLAN NOTES:**

1. SAWCUT AND REMOVE CONC SLAB OVER DISCHARGE CHAMBER AND UPPER PORTION OF WALLS TO DEPTH INDICATED.
2. REMOVE METAL PLATFORMS, REMOVE ANCHOR BOLTS AND ASSOCIATED ITEMS EMBEDDED IN CONCRETE WALLS 1" BEYOND SURFACE OF WALL AND PATCH TO MATCH ADJACENT SURFACE.
3. REMOVE LADDER.
4. REMOVE EXISTING COATING AND PREPARE SURFACE AS REQUIRED FOR APPLICATION OF NEW COATING.
5. SAWCUT AND REMOVE CONC SLAB AND MANHOLE OVER WET PIT ACCESS CHAMBER TO DEPTH INDICATED.
6. REMOVE IRON PLATE OVER OPENING
7. REMOVE PUMP, MOTOR, MOTOR SHAFT AND SHAFT BEARING ASSEMBLIES INCLUDING SUPPORTS AND WALKWAYS IN THE DRY PIT.
8. REMOVE CONCRETE EQUIPMENT PAD.
9. REMOVE 12" DISCHARGE PIPE AND 12" WALL PIPE WITH COLLAR.
10. REMOVE 12" SUCTION PIPE, 12" GATE VALVE, 12" WALL PIPE WITH COLLAR AND 12" 90 DEG FLARED ELBOW.
11. REMOVE AREAWAY DRAIN PIPING 1" BEYOND SURFACE OF WALL AND PATCH TO MATCH EXISTING WALL. FILL PIPE BETWEEN AREAWAY NO. 2 AND DRY PIT WITH NONSHRINK GROUT.
12. REMOVE 2" AND 4" BALL FLOAT PIPING, INCLUDING WALL PIPES AND INSTRUMENTATION.
13. REMOVE AREAWAY DRAIN PIPING AND PATCH TO MATCH EXISTING WALL.

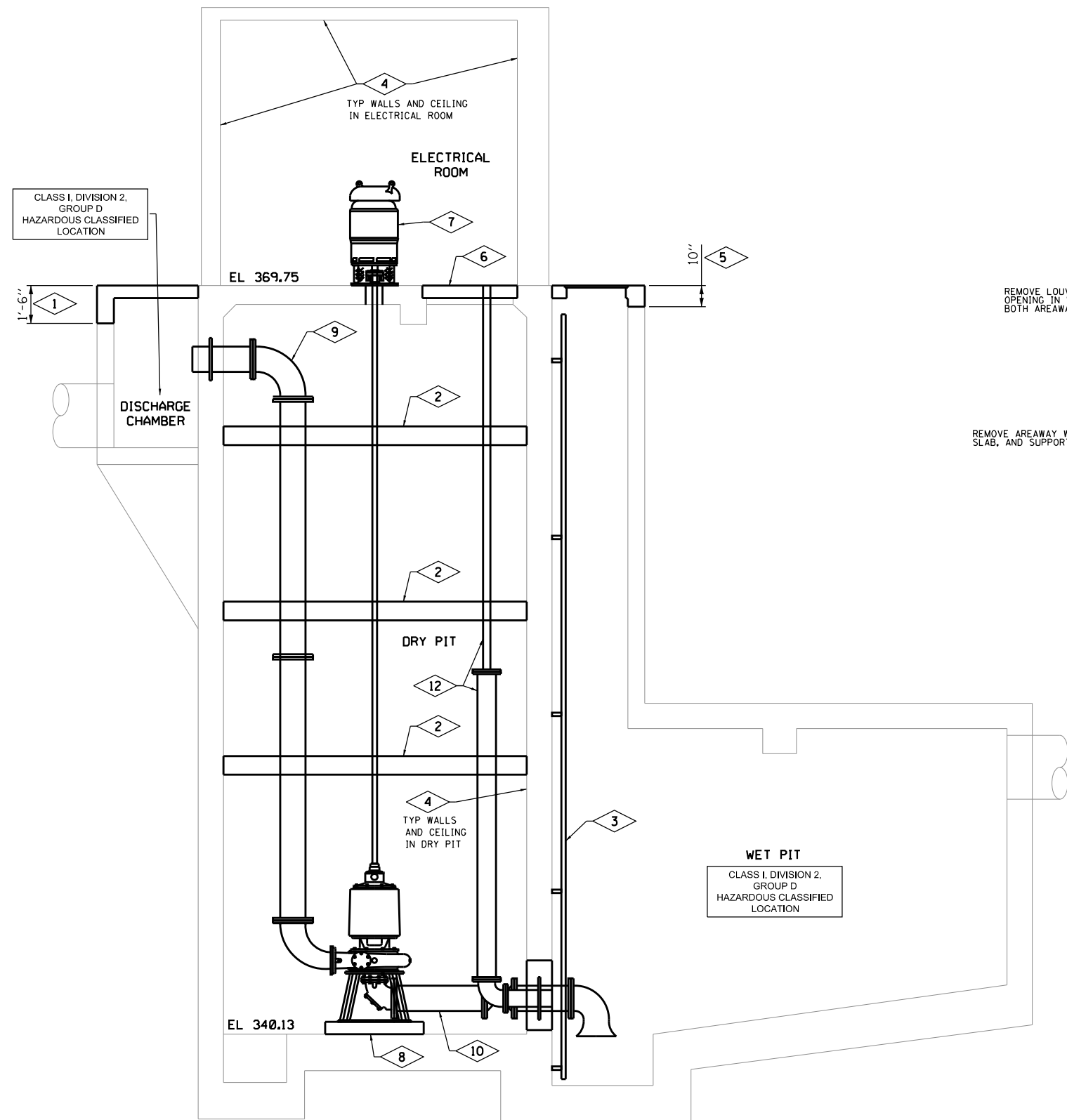
**GENERAL NOTES:**

1. CONTRACTOR TO FIELD VERIFY EXISTING CONDITIONS, DIMENSIONS, AND ELEVATIONS PRIOR TO CONSTRUCTION AND/OR FABRICATION.
2. FULL TONE COMPONENTS (————) TO BE REMOVED.
3. SAWCUT AND REMOVE CONCRETE TO LIMITS NOTED. IN EXPOSED AREAS NOT COVERED BY NEW CONSTRUCTION, REMOVE REINFORCEMENT AND EMBEDMENTS 1" BEYOND FINISHED SURFACE AND PATCH SURFACE WITH PATCHING MORTAR TO MATCH ADJACENT FINISHED SURFACE.
4. REMOVE CONCRETE ANCHORS, ANCHOR BOLTS, AND OTHER EMBEDMENTS FOR MATERIALS AND EQUIPMENT BEING REMOVED. IN EXPOSED AREAS NOT COVERED BY NEW CONSTRUCTION, REMOVE CONCRETE ANCHORS, ANCHOR BOLTS, AND OTHER EMBEDMENTS 1" BEYOND FINISHED SURFACE AND PATCH SURFACE TO MATCH ADJACENT FINISHED SURFACE.
5. WHERE EQUIPMENT IS INDICATED TO BE REMOVED, REMOVE ALL ASSOCIATED POWER AND CONTROL WIRING AND CONDUIT BACK TO SOURCE. REMOVE JUNCTION BOXES AND PULL BOXES ASSOCIATED WITH THE REMOVED CONDUITS. WHERE CONDUIT SYSTEM CONTAINS CIRCUITS TO OTHER EQUIPMENT THAT REMAINS, RETAIN THESE CIRCUITS AND RELOCATE EXISTING CONDUIT AND EXTEND EXISTING CIRCUITS AS REQUIRED FOR THE INSTALLATION OF NEW EQUIPMENT.
6. REMOVE ALL SUPPORTS ASSOCIATED WITH REMOVED PIPING, DUCTWORK, CONDUIT, AND EQUIPMENT. REMOVE RODS AND FASTENERS FROM CEILINGS, FLOORS, AND WALLS WITH CARE. WHERE SURFACE HAS BEEN MARRIED, CHIPPED, SPAWLED, ETC. AS A RESULT OF REMOVAL, PATCH AND PAINT TO MATCH ADJACENT FINISHED SURFACE.
7. REMOVE EXISTING CONCRETE PADS OF ANY EQUIPMENT BEING REMOVED. REMOVE CONCRETE REINFORCEMENT A MINIMUM OF 1" BEYOND FINISHED SURFACE AT ANY LOCATION WHERE NEW CONCRETE PAD WILL NOT COVER ROUGH SURFACE OF REMOVED PAD. PATCH BACK TO FINISHED SURFACE WITH PATCHING MORTAR. COST OF REMOVAL OF CONCRETE PADS SHALL BE INCLUDED IN "CONCRETE REMOVAL".
8. WHERE OPENING ARE LEFT IN WALLS, SLABS, OR CEILINGS DUE TO REMOVED PIPING, DUCTWORK, EQUIPMENT, OR OTHER WORK, PATCH OPENING TO MATCH ADJACENT SURFACES UNLESS NOTED OTHERWISE. THE PERIMETER OF OPENINGS IN CONCRETE WALLS AND SLABS EXPOSED TO EARTH, WEATHER, OR WATER SHALL BE LINED WITH A GASKET TYPE WATERSTOP PRIOR TO PATCHING OF THE WALL. OPENINGS IN PRECAST ROOF MEMBERS ARE TO BE PATCHED WITH CONCRETE AND DOWELED TO THE EXISTING ROOF MEMBERS UNLESS NOTED OTHERWISE. ROOFING SYSTEM SHALL BE PATCHED TO PREVENT ANY LEAKING AT THE OPENING.
9. ALL AREAS WITHIN BUILDING EXCEPT DRY PIT AND ELECTRICAL ROOM SHALL BE:

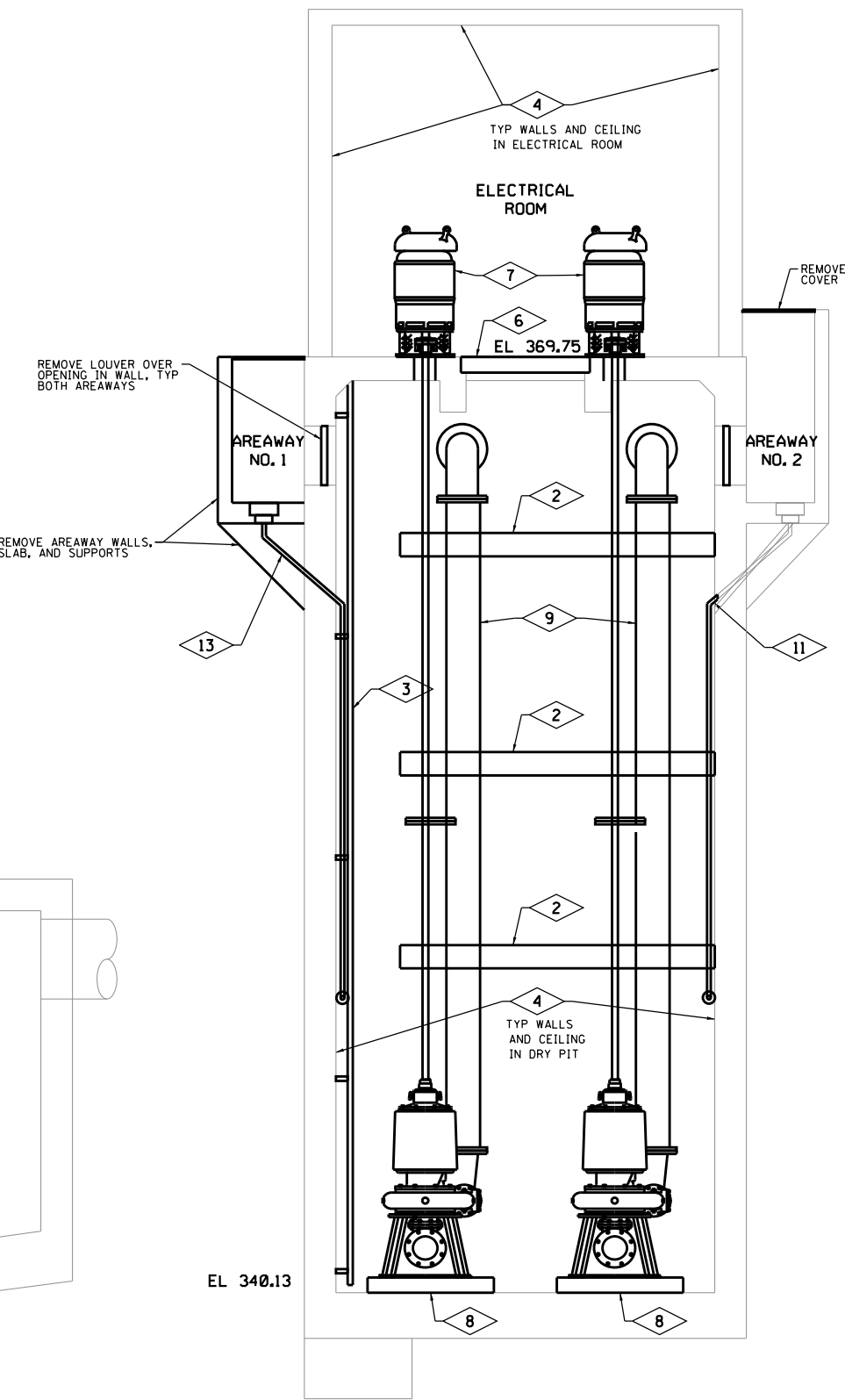
CLASS I, DIVISION 2,  
GROUP D  
HAZARDOUS CLASSIFIED  
LOCATION

SCALE: 0 3 8 FT.

R-2



**SECTION A-A**



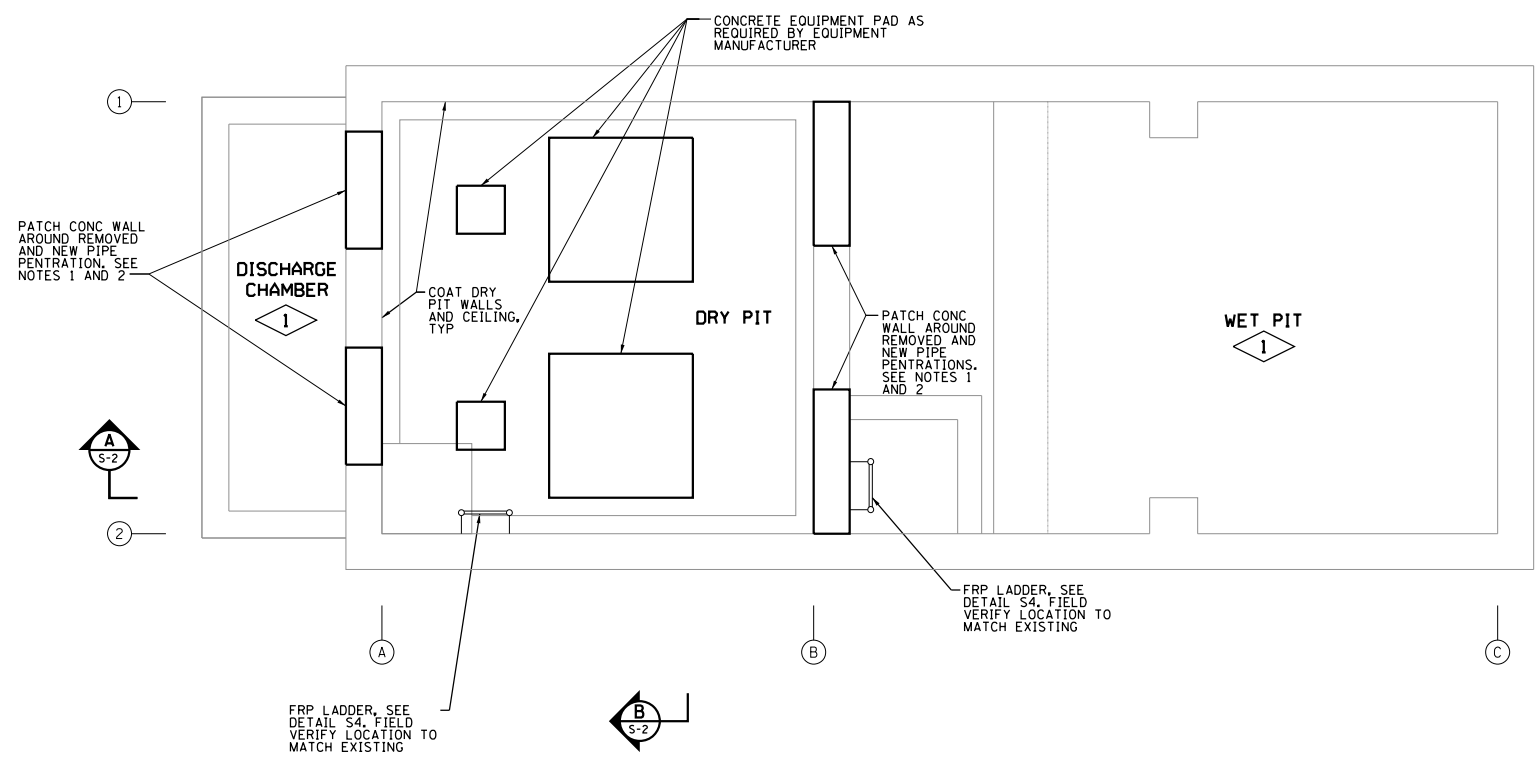
**SECTION B-B**

<b>DONOHUE</b>	USER NAME =	DESIGNED - MTR	REVISED -
	PLOT SCALE =	DRAWN - MTR	REVISED -
	PLOT DATE =	CHECKED - NWC	REVISED -
		DATE - 03-19-2019	REVISED -

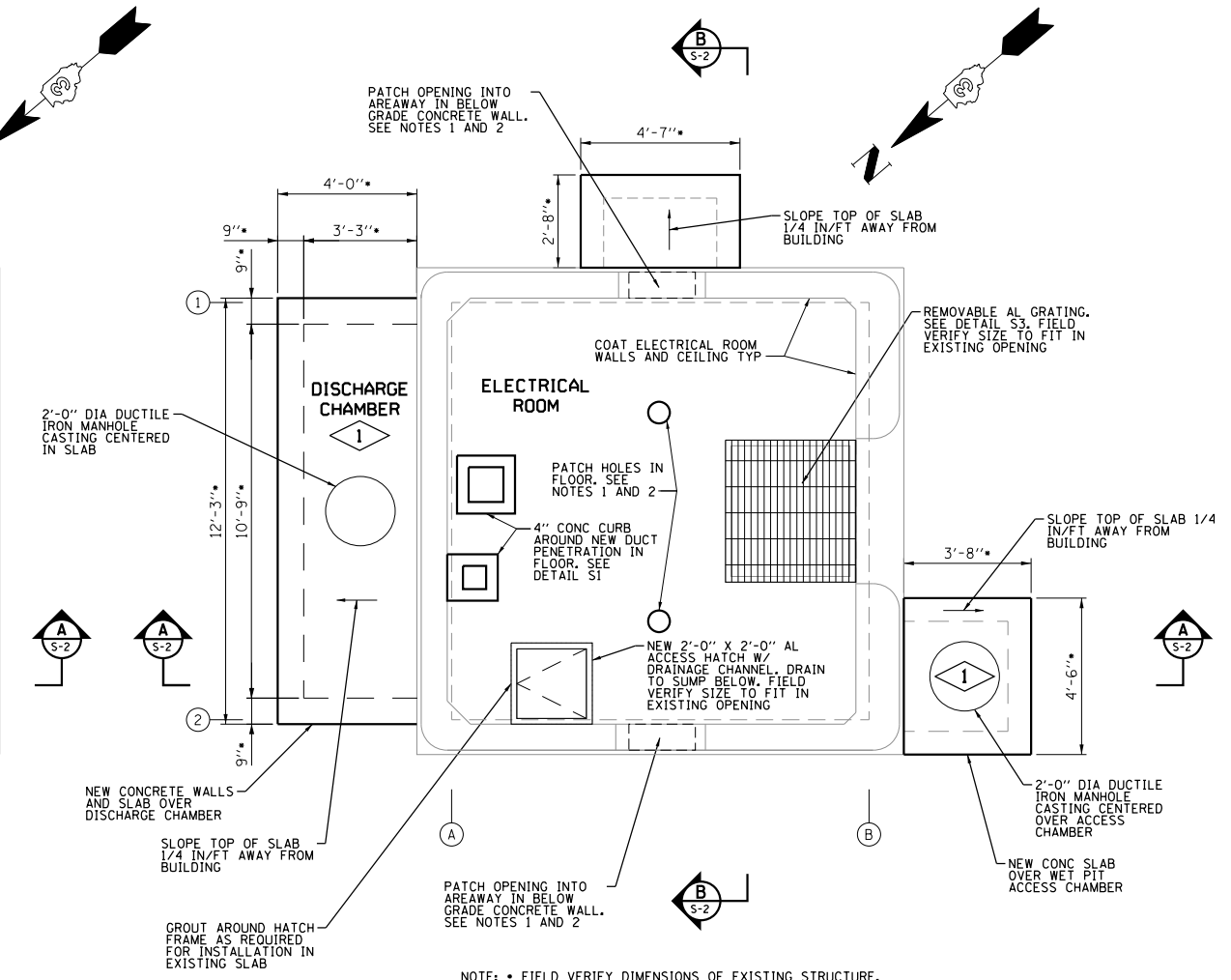
**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

<b>READING PUMP STATION REMOVALS SECTIONS</b>			
SCALE:	SHEET	OF SHEETS	STA. TO STA.

F.A.P. RTE. 649	SECTION (107)PS-3	COUNTY LIVINGSTON	TOTAL SHEETS 42	SHEET NO. 14
CONTRACT NO. 66J68				
ILLINOIS FED. AID PROJECT XXXXXX				



**LOWER PLAN**



**UPPER PLAN**

NOTE: \* FIELD VERIFY DIMENSIONS OF EXISTING STRUCTURE.

**GENERAL NOTES:**

- MATERIAL USED FOR PATCHING, DEPRESSIONS, SPALLS, HOLES REMAINING FROM THE REMOVAL OF PIPES, CONDUIT, PIPE HANGERS, ANCHORS, BRACKETS, ETC SHALL BE ACCORDING TO THE DEPARTMENT'S APPROVED LIST OF MATERIALS FOR "PACKAGED, DRY, FORMED CONCRETE REPAIR MIXTURES".
- CONSTRUCTION METHODS FOR REPAIR OF DEPRESSIONS, SPALLS, HOLES REMAINING FROM THE REMOVAL OF PIPES, PIPE HANGERS, ANCHORS, BRACKETS, ETC SHALL BE IN ACCORDANCE WITH DETAILS NOTED AND THE SPECIAL PROVISION FOR "STRUCTURAL REPAIR OF CONCRETE". THIS WORK SHALL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE COST OF THE RELATED REMOVAL ITEM.
- WHEN CONCRETE PADS ARE REQUIRED BY THE PUMP AND/OR EQUIPMENT MANUFACTURER(S), THE CONCRETE PADS SHALL BE CONSTRUCTED ACCORDING TO THE MANUFACTURER'S RECOMMENDATION WITH THE APPROVAL OF THE ENGINEER. THE PADS SHALL BE REINFORCED AND ANCHORED TO THE EXISTING CONCRETE FLOOR WITH APPROVED ANCHORS AND INSTALLED IN ACCORDANCE WITH DETAILS NOTED AND SECTION 584 OF THE STANDARD SPECIFICATIONS. COST OF FURNISHING ALL LABOR AND MATERIAL INCLUDING CONCRETE, REINFORCEMENT, AND ANCHORS SHALL BE PAID FOR ACCORDING TO ARTICLE 109.04 OF THE STANDARD SPECIFICATIONS.
- ALL AREAS WITHIN BUILDING EXCEPT DRY PIT AND ELECTRICAL ROOM SHALL BE:

**PLAN NOTES:**

- |   |
|---|
| ◇ |
|---|

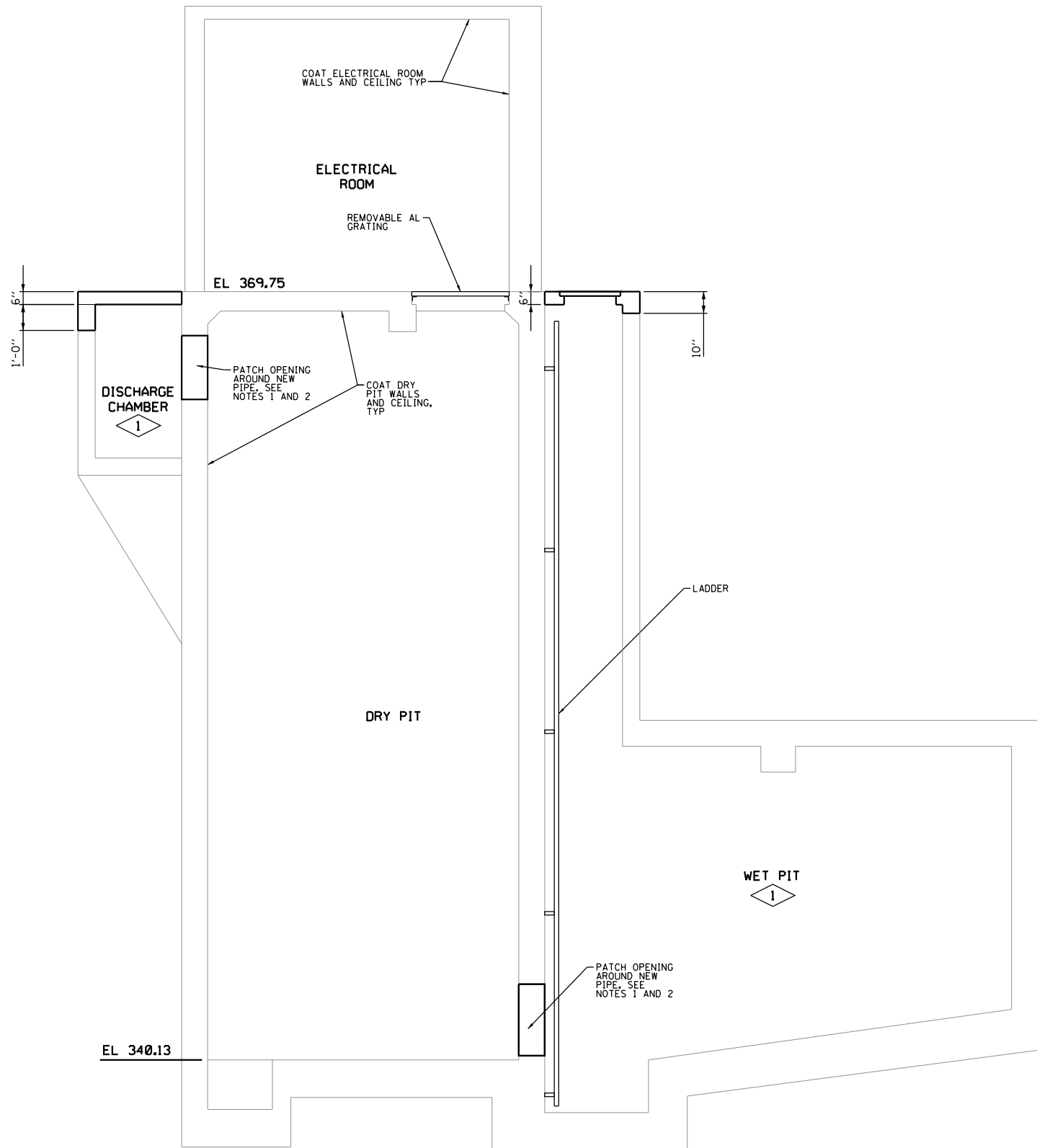
CLASS I, DIVISION 2, GROUP D HAZARDOUS CLASSIFIED LOCATION
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CLASS I, DIVISION 2, GROUP D HAZARDOUS CLASSIFIED LOCATION
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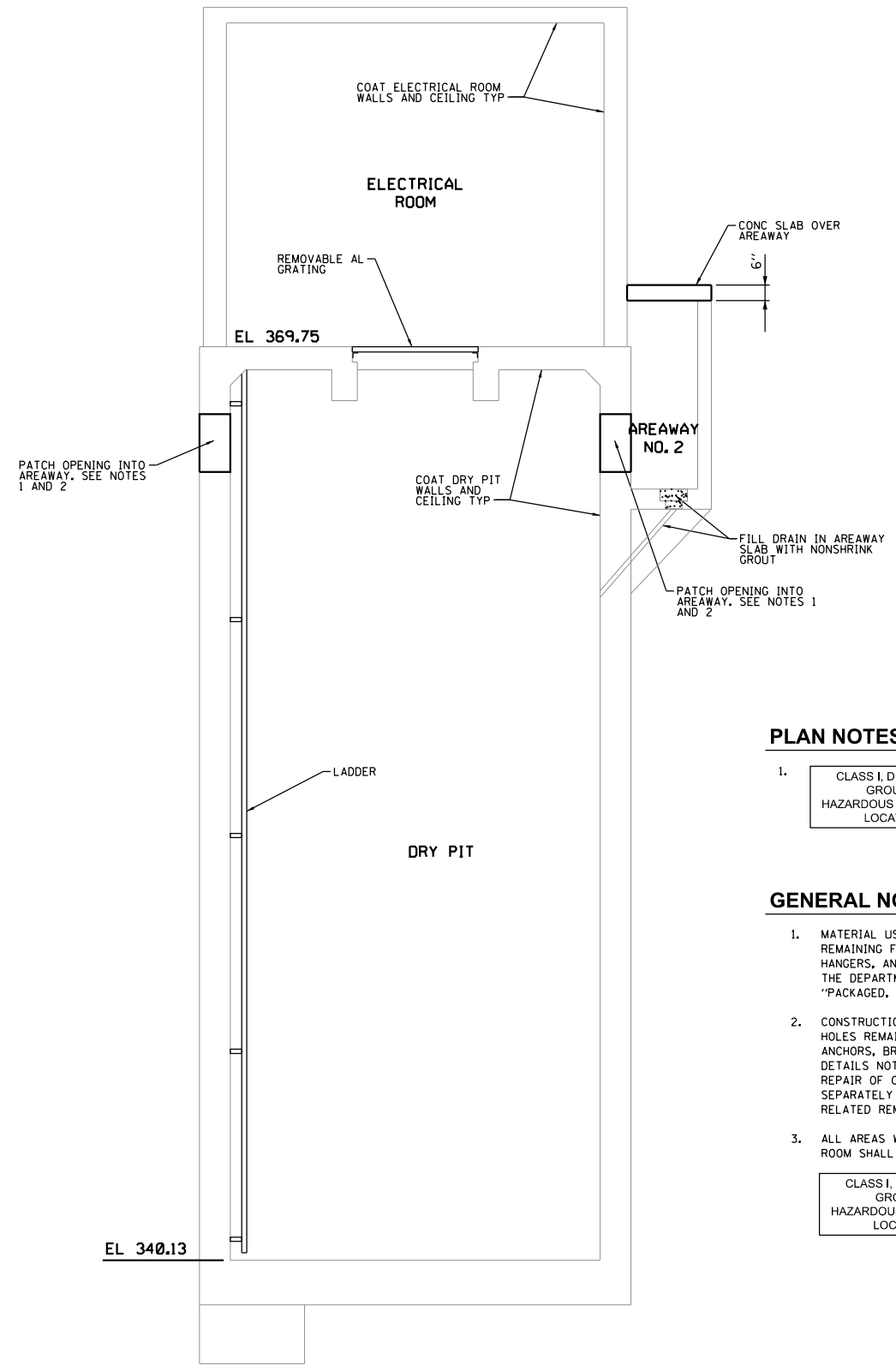
SCALE: 0 3 8 FT.

S-1

<b>DONOHUE</b>	USER NAME =	DESIGNED - SDR	REVISED -	<b>STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION</b>	<b>READING PUMP STATION STRUCTURAL PLANS</b>			F.A.P. RTE. 649	SECTION (107)PS-3	COUNTY LIVINGSTON	TOTAL SHEETS 42	SHEET NO. 15	
	PLOT SCALE =	CHECKED - TJB	REVISED -		SCALE: SHEET OF SHEETS STA. TO STA.			ILLINOIS FED. AID PROJECT XXXXXX					
	PLOT DATE =	DATE - 03-19-2019	REVISED -										



**SECTION A-A**



**SECTION B-B**

**PLAN NOTES:**

- 1. CLASS I, DIVISION 2, GROUP D HAZARDOUS CLASSIFIED LOCATION

**GENERAL NOTES:**

1. MATERIAL USED FOR PATCHING, DEPRESSIONS, SPALLS, HOLES REMAINING FROM THE REMOVAL OF PIPES, CONDUIT, PIPE HANGERS, ANCHORS, BRACKETS, ETC SHALL BE IN ACCORDANCE WITH THE DEPARTMENT'S APPROVED LIST OF MATERIALS FOR "PACKAGED, DRY, FORMED CONCRETE REPAIR MIXTURES".
2. CONSTRUCTION METHODS FOR REPAIR OF DEPRESSIONS, SPALLS, HOLES REMAINING FROM THE REMOVAL OF PIPES, PIPE HANGERS, ANCHORS, BRACKETS, ETC SHALL BE IN ACCORDANCE WITH DETAILS NOTED AND THE SPECIAL PROVISION FOR "STRUCTURAL REPAIR OF CONCRETE". THIS WORK SHALL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE COST OF THE RELATED REMOVAL ITEM.
3. ALL AREAS WITHIN BUILDING EXCEPT DRY PIT AND ELECTRICAL ROOM SHALL BE:

CLASS I, DIVISION 2, GROUP D HAZARDOUS CLASSIFIED LOCATION

S-2 SCALE: 0 3 8 FT.

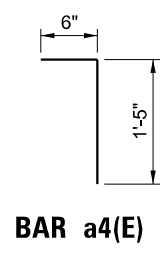
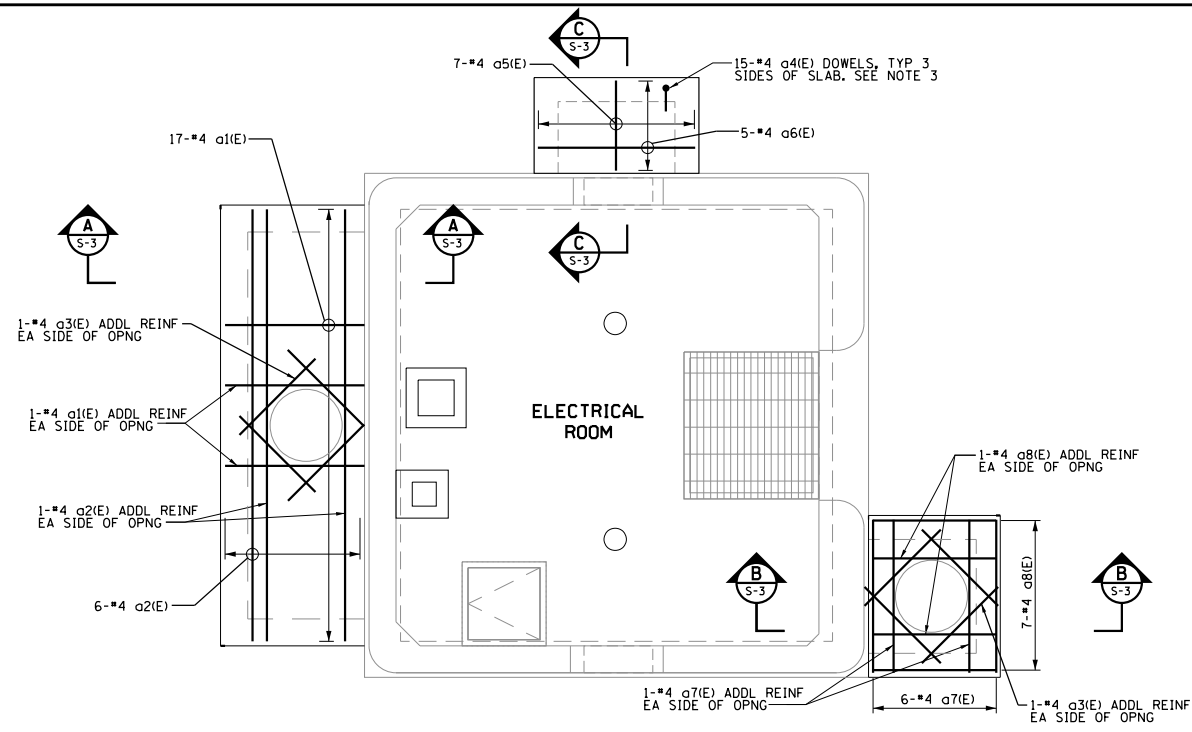
<b>DONOHUE</b>	USER NAME =	DESIGNED - SDR	REVISED -
		DRAWN - SDR	REVISED -
	PLOT SCALE =	CHECKED - TJB	REVISED -
	PLOT DATE =	DATE - 03-19-2019	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

<b>READING PUMP STATION STRUCTURAL SECTIONS</b>			
SCALE:	SHEET	OF SHEETS	STA. TO STA.

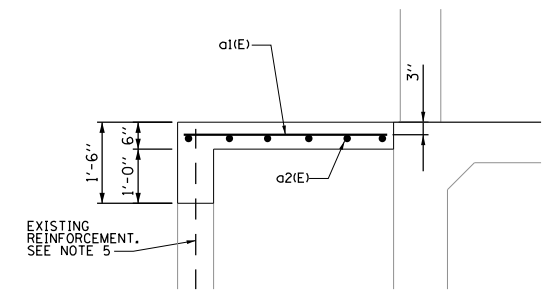
F.A.P. RTE. 649	SECTION (107)PS-3	COUNTY LIVINGSTON	TOTAL SHEETS 42	SHEET NO. 16
CONTRACT NO. 66J68				
ILLINOIS FED. AID PROJECT XXXXXX				



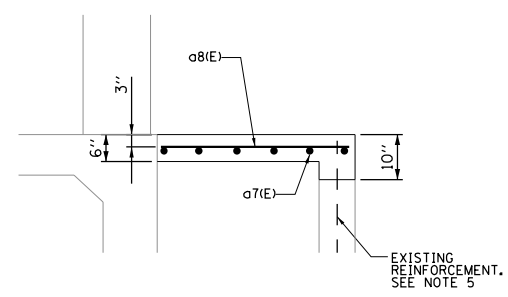


NOTES:  
 1) FIELD VERIFY DIMENSIONS OF EXISTING STRUCTURE.  
 2) ALL REINFORCEMENT SPACED AT 9" OC.

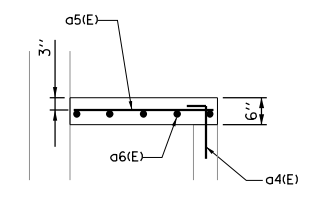
**PLAN AT EL 369.75**



**SECTION A-A**



**SECTION B-B**



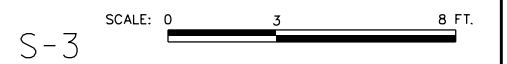
**SECTION C-C**

**GENERAL NOTES:**

1. REINFORCEMENT BARS SHALL BE FIELD CUT TO FIT AROUND FRAME AND LID.
2. (E) DENOTES EPOXY COATED.
3. a4(E) BARS SHALL BE DRILLED AND GROUTED INTO EXISTING CONCRETE IN ACCORDANCE WITH DETAIL S2 AND SECTION 584 OF THE STANDARD SPECIFICATIONS.
4. NEW REINFORCEMENT BARS SHALL HAVE A MIN. OF 1 1/2" CLEAR COVER TO FACE OF CONCRETE.
5. EXISTING VERTICAL REINFORCEMENT EXTENDING INTO REMOVAL AREA SHALL BE SAVED, CLEANED, AND INCORPORATED INTO NEW CONCRETE. IF THE VERTICAL BARS ARE DAMAGED OR DETERIORATED, THEY SHALL BE REPLACED WITH NEW BARS ACCORDING TO THE SPECIAL PROVISION FOR "STRUCTURAL REPAIR OF CONCRETE".

**BILL OF MATERIALS**

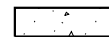



BAR	NO.	SIZE	LENGTH	SHAPE
a1(E)	19	#4	3'-10"	—
a2(E)	8	#4	12'-0"	—
a3(E)	8	#4	2'-3"	—
a4(E)	15	#4	1'-11"	┌
a5(E)	7	#4	2'-6"	—
a6(E)	5	#4	4'-4"	—
a7(E)	8	#4	4'-3"	—
a8(E)	9	#4	3'-5"	—
REINFORCEMENT BARS EPOXY COATED			POUNDS	213
CONCRETE STRUCTURES			CU YD	2.2



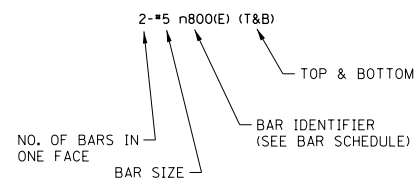
**STRUCTURAL LEGEND**  
**ABBREVIATIONS**

ADDL	ADDITIONAL	MFR	MANUFACTURER
AL	ALUMINUM	MH	MANHOLE
ALT	ALTERNATE	MIN	MINIMUM
B/	BOTTOM OF	MO	MASONRY OPENING
BLDG	BUILDING	NO. or	# NUMBER
BLK	BLOCK	NTS	NOT TO SCALE
BOT	BOTTOM	OC	ON CENTER
CL	CENTERLINE	OPNG	OPENING
CJT	CONTROL JOINT	P	PLATE
CLR	CLEAR	PCF	POUNDS PER CUBIC FOOT
CMU	CONCRETE MASONRY UNIT	PJF	PREFORMED JOINT FILLER
COL	COLUMN	R	RISER
CONC	CONCRETE	RAD	RADIUS
CONT	CONTINUOUS	RD	ROOF DRAIN
CONTR JT	CONTRACTION JOINT	REINF	REINFORCING
DBL	DOUBLE	REQD	REQUIRED
DET	DETAIL	SIM	SIMILAR
DIA	DIAMETER	SPA	SPACE OR SPACING
DIP	DUCTILE IRON PIPE	SS	STAINLESS STEEL
DN	DOWN	STL	STEEL
DWG	DRAWING	SO	SQUARE
EA	EACH	T	TREAD
EF	EACH FACE	T/	TOP OF
EL	ELEVATION	T/S	TOP OF STEEL
EQUIP	EQUIPMENT	T&B	TOP AND BOTTOM
EW	EACH WAY	TYP	TYPICAL
EXP	EXPANSION	UNO	UNLESS NOTED OTHERWISE
EXP JT	EXPANSION JOINT	VERT	VERTICAL
EXT	EXTERIOR	W/	WITH
FD	FLOOR DRAIN	WD	WOOD
FRP	FIBERGLASS REINFORCED PLASTIC	WWF	WELDED WIRE FABRIC
FTG	FOOTING	WS	WATERSTOP
GA	GAUGE		
GALV	GALVANIZED		
HORZ	HORIZONTAL		
HP	HIGH POINT		
INSUL	INSULATION		
INT	INTERIOR		
LLH	LONG LEG HORIZONTAL		
LLV	LONG LEG VERTICAL		
LP	LOW POINT		

**SYMBOLS**

	CONCRETE
	EARTH OR BACKFILL
	ROCK
	GRATING

**REINFORCING CALL-OUT IDENTIFIER**



**GENERAL STRUCTURAL NOTES**

**GENERAL**

1. THE GENERAL STRUCTURAL NOTES AND STANDARD STRUCTURAL DETAILS APPLY TO THE ENTIRE PROJECT UNLESS SPECIFICALLY NOTED OTHERWISE.

**DESIGN CRITERIA**

1. DESIGN AND CONSTRUCT IN CONFORMANCE WITH THE INTERNATIONAL BUILDING CODE 2015 EDITION, ACI 350 AND IDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.
2. SUPERIMPOSED DESIGN LOADS
  - A. SNOW LOAD
    1. FLAT ROOF SNOW LOAD, P<sub>f</sub> 24 PSF + DRIFT
    2. SNOW EXPOSURE FACTOR C<sub>e</sub> 1.0
    3. IMPORTANCE FACTOR, I 1.1
    4. THERMAL FACTOR, C<sub>t</sub> 1.0
  - B. MECHANICAL EQUIPMENT: VERIFY WITH EQUIPMENT SUPPLIER
  - C. FLOOR LIVE LOADS (OTHER THAN SLABS ON GRADE)
    1. DISCHARGE CHAMBER: 200 PSF

**FOUNDATIONS**

1. PLACE FOOTINGS ON NATURAL UNDISTURBED EARTH OR STRUCTURAL FILL.
2. PLACE FILL AGAINST FOUNDATION WALLS ENCLOSING INTERIOR SPACES AFTER CONSTRUCTION SUCH AS CROSS WALLS, BEAMS, OR SLABS ARE IN PLACE TO BRACE WALL AND SUCH CONSTRUCTION HAS REACHED ITS DESIGN STRENGTH.
3. TO MINIMIZE LATERAL FORCES AGAINST THE STRUCTURE DUE TO WEDGING ACTION OF THE SOIL, BEGIN COMPACTION OF EACH LAYER AT THE STRUCTURE WALL.

**REINFORCEMENT**

1. REINFORCING STEEL-ALL REINFORCING STEEL TO BE EPOXY COATED
  - A. DEFORMED BARS: ASTM A706-GRADE 60
  - B. EPOXY COATING: ASTM A775
2. UNLESS NOTED OTHERWISE PROVIDE CLEAR COVER FOR REINFORCEMENT AS FOLLOWS:
  - A. CAST AGAINST
    1. EARTH: 3 INCHES
    2. MUD SLAB: 2 INCHES
  - B. EXPOSED TO EARTH, WEATHER, OR WATER
    1. SLABS
      - a. #5 BARS OR SMALLER: 1 1/2 INCHES
      - b. #6 THROUGH # 11 BARS: 2 INCHES
    2. WALLS, BEAMS, AND COLUMNS: 2 INCHES
  - C. NOT EXPOSED TO EARTH, WEATHER, OR WATER
    1. SLABS AND WALLS
      - a. #3 THROUGH #7 BARS: 1 INCH
      - b. #8 THROUGH # 11 BARS: 1 1/2 INCHES
    2. BEAMS AND COLUMNS: 1 1/2 INCHES
3. PLACE DOWELS BEFORE PLACING CONCRETE.
4. DO NOT FIELD WELD OR FIELD BEND REINFORCING BARS.

**CONCRETE**

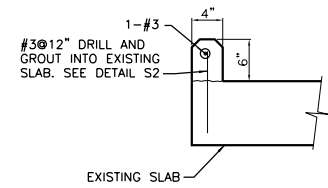
1. DESIGN STRENGTH
  - A. CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ILLINOIS DEPARTMENT OF TRANSPORTION STANDARD SPECIFICATIONS SECTION 503.
  - B. ALL CAST-IN-PLACE CONCRETE SHALL BE CLASS SI, f'c = 3,500 psi AT 14 DAYS.
2. PROVIDE WATERSTOP IN CONSTRUCTION JOINTS IN
  - A. WALLS AND SLABS SEPARATING DRY INTERIOR FROM EARTH OR LIQUID.
  - B. EXTERIOR WALLS AND SLABS OF LIQUID HOLDING TANKS.
  - C. OTHER LOCATIONS SHOWN.
3. CONSTRUCTION JOINTS NOT SHOWN SHALL BE APPROVED BY ENGINEER.
4. BEFORE CONCRETE IS PLACED, CONSTRUCTION JOINTS SHALL BE CLEANED, LAITANCE REMOVED, AND SURFACE WETTED. REMOVE STANDING WATER.
5. CONSTRUCTION JOINTS SHALL HAVE KEYS OR ROUGHENED SURFACES. WHERE ROUGHENED SURFACE USED, SURFACE SHALL HAVE AMPLITUDE OF 1/4 IN. MIN.
6. PROVIDE 3/4 IN. CHAMFER ON EXTERNAL CORNERS OF EXPOSED CONCRETE WALLS, EQUIPMENT BASES AND EXPOSED EDGES OF CONSTRUCTION JOINTS.
7. VERIFY EQUIPMENT PAD AND CURB LOCATIONS, DIMENSIONS, AND ELEVATIONS WITH EQUIPMENT MANUFACTURERS.

**METALS**

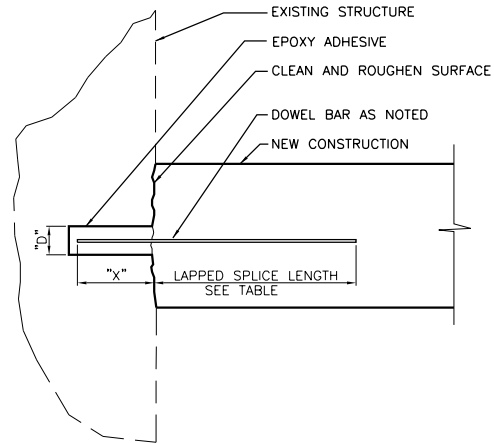
1. STEEL
  - A. W SHAPES: ASTM A992
  - B. SQUARE OR RECTANGULAR TUBE: ASTM A500
  - C. PIPE: ASTM A53
  - D. BOLTED CONNECTIONS: ASTM A325
  - E. PLATES, SHAPES, AND BARS: ASTM A36
  - F. STAINLESS STEEL: AISI TYPE 316
2. ALUMINUM SHAPES AND PLATES: ALLOY 6061-T6 OR 6063-T6
3. ANCHOR BOLTS: 1/2" MIN DIAMETER: TYPE 316 STAINLESS STEEL
4. WELD STRUCTURAL STEEL WITH E70XX ELECTRODES IN ACCORDANCE WITH AWS REQUIREMENTS.
5. WELD ALUMINUM IN ACCORDANCE WITH AWS AND ALUMINUM ASSOCIATION REQUIREMENTS.
6. COAT ALUMINUM SURFACES IN CONTACT WITH CONCRETE IN ACCORDANCE WITH AA REQUIREMENTS. UNDER NO CIRCUMSTANCES SHALL ALUMINUM CONTACT DISSIMILAR METALS.

**MISCELLANEOUS**

1. FOR ADDITIONAL OPENINGS, ANCHORS, AND EMBEDDED ITEMS SEE ARCHITECTURAL, PROCESS, PLUMBING, MECHANICAL, AND ELECTRICAL DRAWINGS.

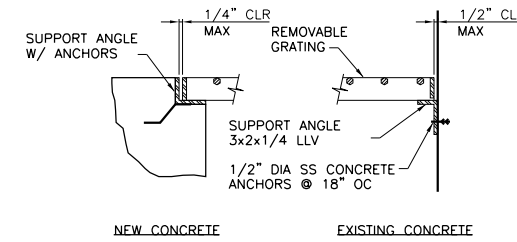


**CURB DETAIL-S1**  
N.T.S.



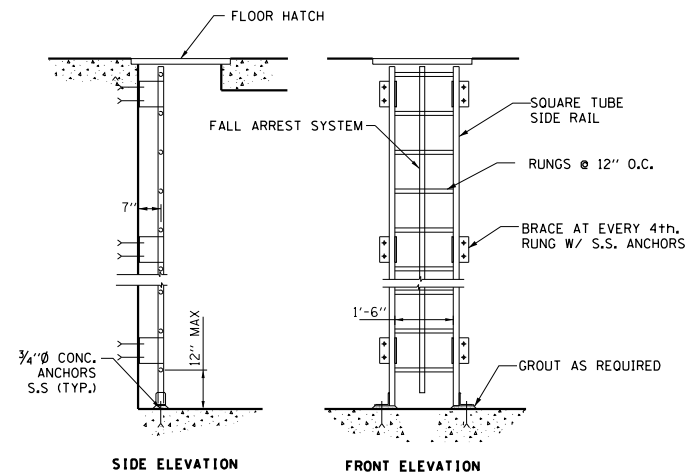
- NOTES:
1. EMBEDMENT "X" AS REQUIRED BY MFR (16 BAR DIAMETERS MIN).
  2. HOLE DIAMETER "D" AS REQUIRED BY MFR.

**DRILLED IN DOWEL DETAIL-S2**  
N.T.S.



- NOTES:
1. SUPPORT MATERIAL TO MATCH GRATING MATERIAL UNLESS OTHERWISE NOTED.
  2. PROVIDE GRATING SUPPORTS ALL AROUND OPENING UNLESS OTHERWISE NOTED.

**GRATING SUPPORT DETAIL-S3**  
N.T.S.



**FRP LADDER DETAIL-S4**  
N.T.S.

FILE NAME =	USER NAME =	DESIGNED - SDR	REVISED -	<b>STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION</b>	<b>READING PUMP STATION STRUCTURAL LEGEND / GENERAL NOTES</b>			F.A.P. RTE. =	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	
	PLOT SCALE =	CHECKED - TJB	REVISED -					649	(107)PS-3	LIVINGSTON	42	19	
	PLOT DATE =	DATE - 03-19-2019	REVISED -		SCALE:	SHEET OF SHEETS	STA. TO STA.	ILLINOIS FED. AID PROJECT XXXXXX					
	CONTRACT NO. 66J68												

**GENERAL MECHANICAL ABBREVIATIONS:**

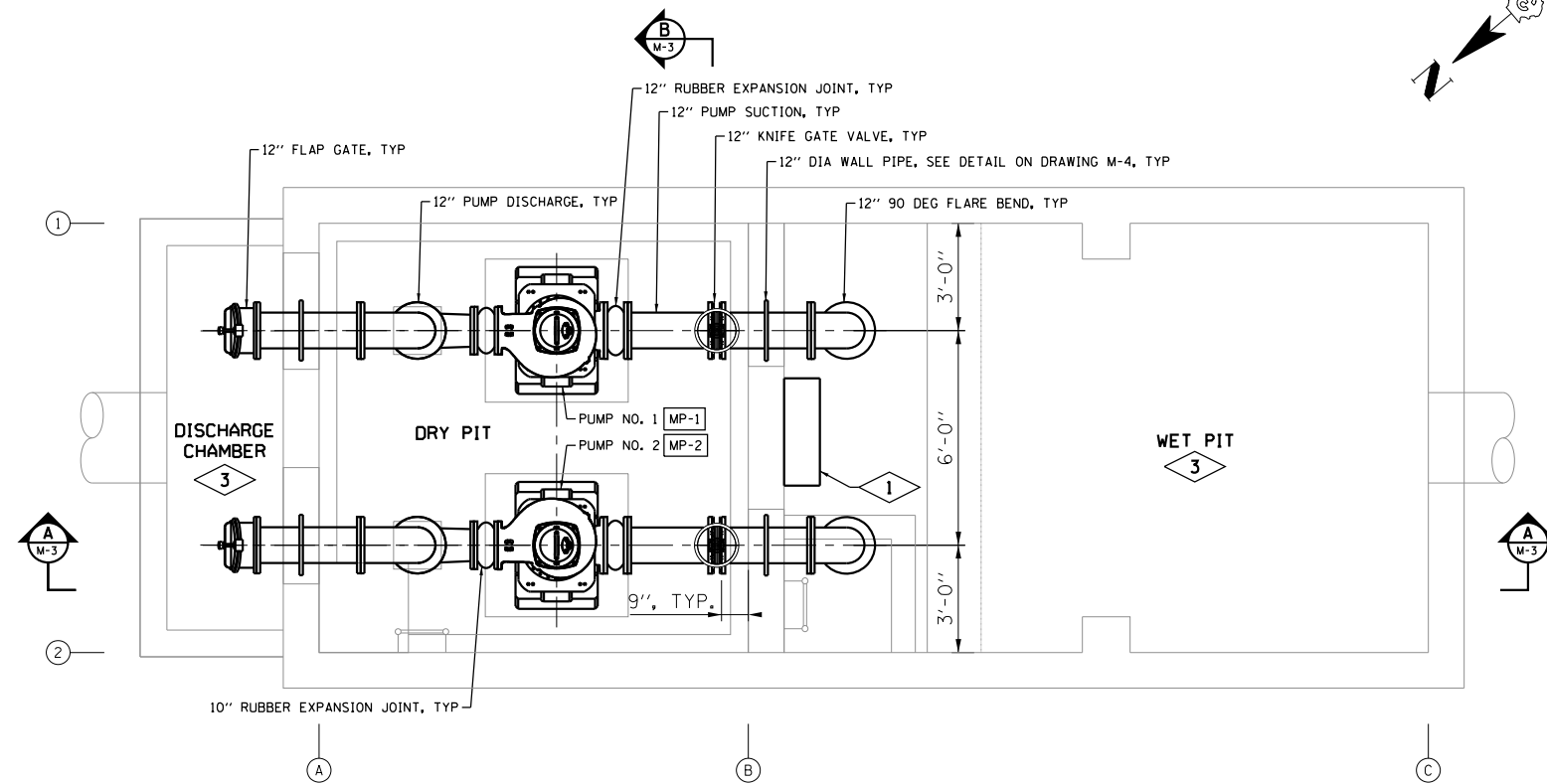
℄	CENTERLINE
DIA OR Ø	DIAMETER
EL	ELEVATION
EXIST	EXISTING
INV	INVERT
LR	LONG RADIUS
MIN	MINIMUM
NO.	NUMBER
PVC	POLYVINYL CHLORIDE
SST	STAINLESS STEEL
T/	TOP OF
TYP	TYPICAL

**GENERAL NOTES:**

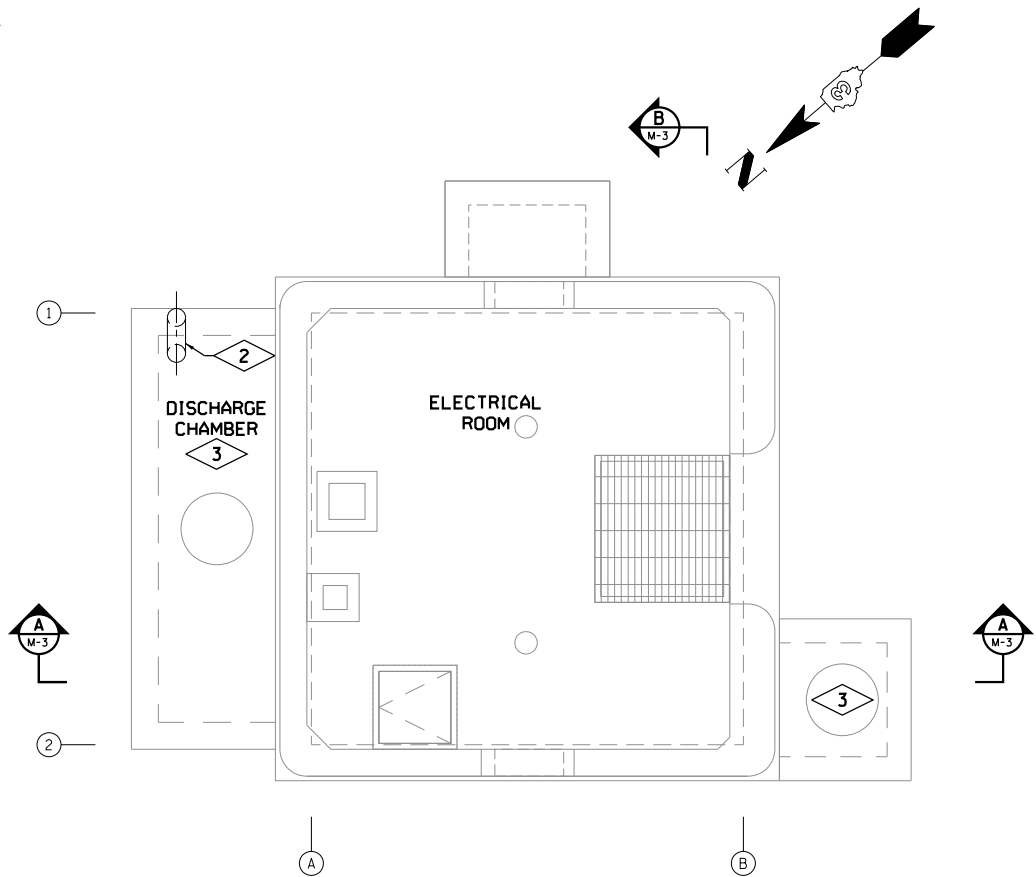
1. REFER TO STRUCTURAL DRAWINGS FOR HATCH AND GRATING DETAILS.
2. CONTRACTOR TO PROVIDE A LAYOUT DRAWING SHOWING ALL PIPING, SUPPORTS AND APPURTENANCES.
3. ALL DIMENSIONS LOCATING EQUIPMENT ARE FROM FINISHED WALL SURFACES OR CENTERLINES, AS INDICATED.
4. ALL PIPE PENETRATIONS THROUGH INTERIOR AND EXTERIOR WALLS AND FLOORS SHALL BE SEALED AND WATERTIGHT.
5. SLEEVE COUPLING MAY BE USED WHERE NECESSARY, AND AS APPROVED BY THE ENGINEER TO FACILITATE PIPING INSTALLATION.
6. FOR FLANGED SYSTEMS PROVIDE FLEXIBLE CONNECTORS WHERE NECESSARY, AND AS APPROVED BY THE ENGINEER, TO FACILITATE PIPING INSTALLATION AND VALVE AND EQUIPMENT REMOVAL.
7. ALL FLEXIBLE CONNECTORS, EXPANSION JOINTS, SLEEVE COUPLINGS SUBJECT TO PRESSURE SHALL BE RESTRAINED AS REQUIRED FOR EXPANSION AND FOR FLEXIBILITY.
8. THE CONTRACTOR SHALL MAKE ALL REQUIRED MEASUREMENTS TO VERIFY EXISTING AND CONTRACT INTERFACE DIMENSIONS, LOCATIONS, AND OTHER CONDITIONS.
9. THE PLANS ARE GENERALLY DIAGRAMMATIC IN NATURE, ROUTING OF PIPING, DUCT WORK, 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.
10. 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.
11. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN, DETAIL AND INSTALLATION OF PIPE HANGERS AND SUPPORTS IN ACCORDANCE WITH PROJECT SPECIAL PROVISIONS. PIPE HANGERS AND SUPPORTS SHOWN ON DRAWINGS SHALL BE PROVIDED AS A MINIMUM AND IN ADDITION TO WHAT IS REQUIRED. ABSENCE OF PIPE HANGERS AND SUPPORTS ON DRAWINGS SHALL NOT RELIEVE CONTRACTOR OF RESPONSIBILITY FOR PROVIDING PIPE HANGERS AND SUPPORTS.

M-1

	USER NAME :	DESIGNED - MTR	REVISED -	<b>STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION</b>	READING PUMP STATION <b>PROCESS MECHANICAL</b> GENERAL NOTES			F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	
								649	(107)PS-3	LIVINGSTON	42	20	
	PLOT SCALE :	CHECKED - NWC	REVISED -			SCALE: SHEET OF SHEETS STA. TO STA.			ILLINOIS FED. AID PROJECT XXXXXX				
	PLOT DATE :	DATE - 03-19-2019	REVISED -			CONTRACT NO. 66J68							



LOWER PLAN



UPPER PLAN

**PLAN NOTES:**

1. FLOAT STILLING WELL, SEE DETAIL ON DRAWING M-4.
2. AIR VENT PIPE, SEE DETAIL ON DRAWING M-4.
3. CLASS I, DIVISION 2, GROUP D HAZARDOUS CLASSIFIED LOCATION

**GENERAL NOTES:**

1. ALL AREAS WITHIN BUILDING EXCEPT DRY PIT AND ELECTRICAL ROOM SHALL BE: CLASS I, DIVISION 2, GROUP D HAZARDOUS CLASSIFIED LOCATION

SCALE: 0 3 8 FT.

M-2



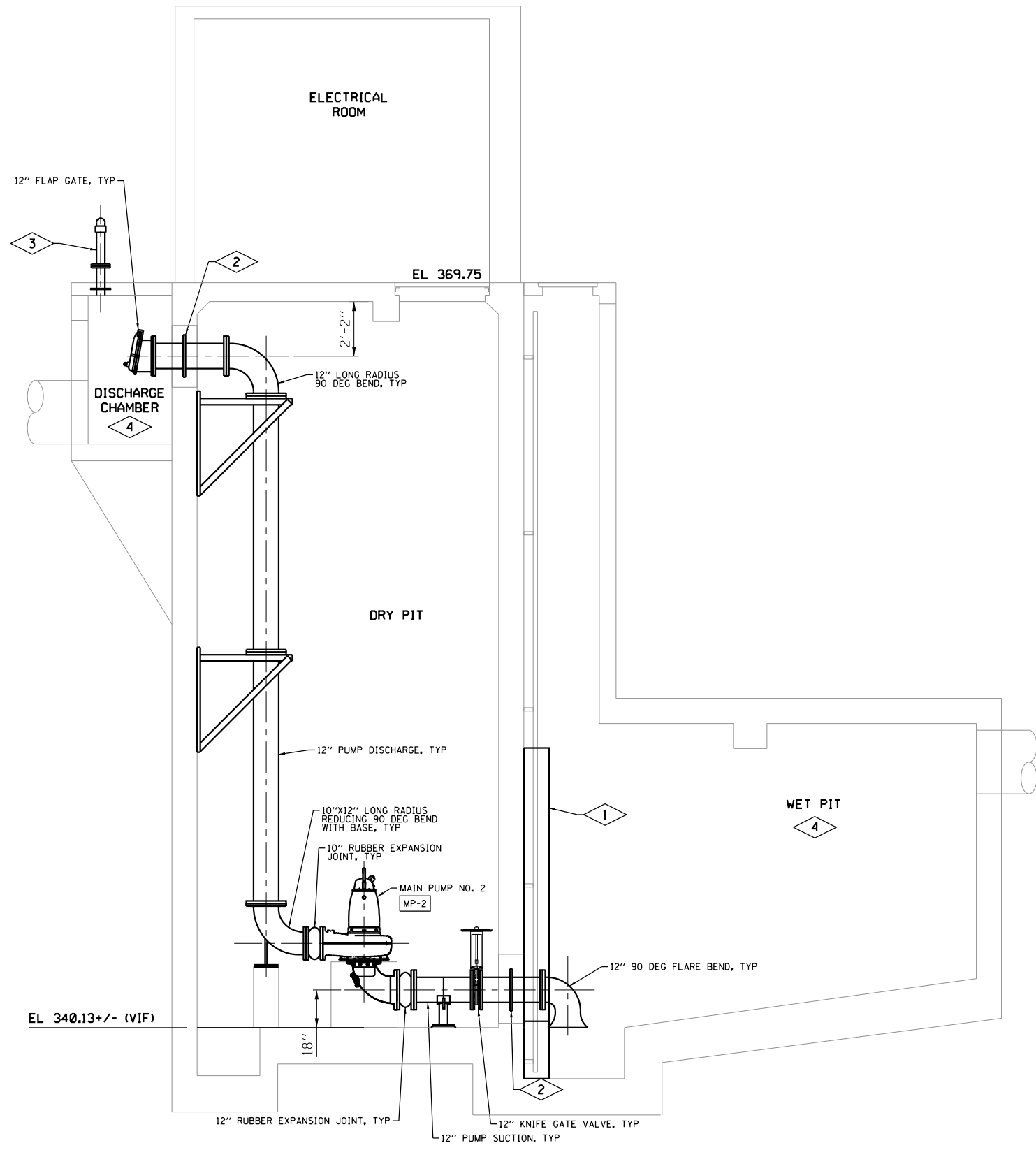
USER NAME =	DESIGNED - MTR	REVISED -
	DRAWN - MTR	REVISED -
PLOT SCALE =	CHECKED - NWC	REVISED -
PLOT DATE =	DATE - 03-19-2019	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

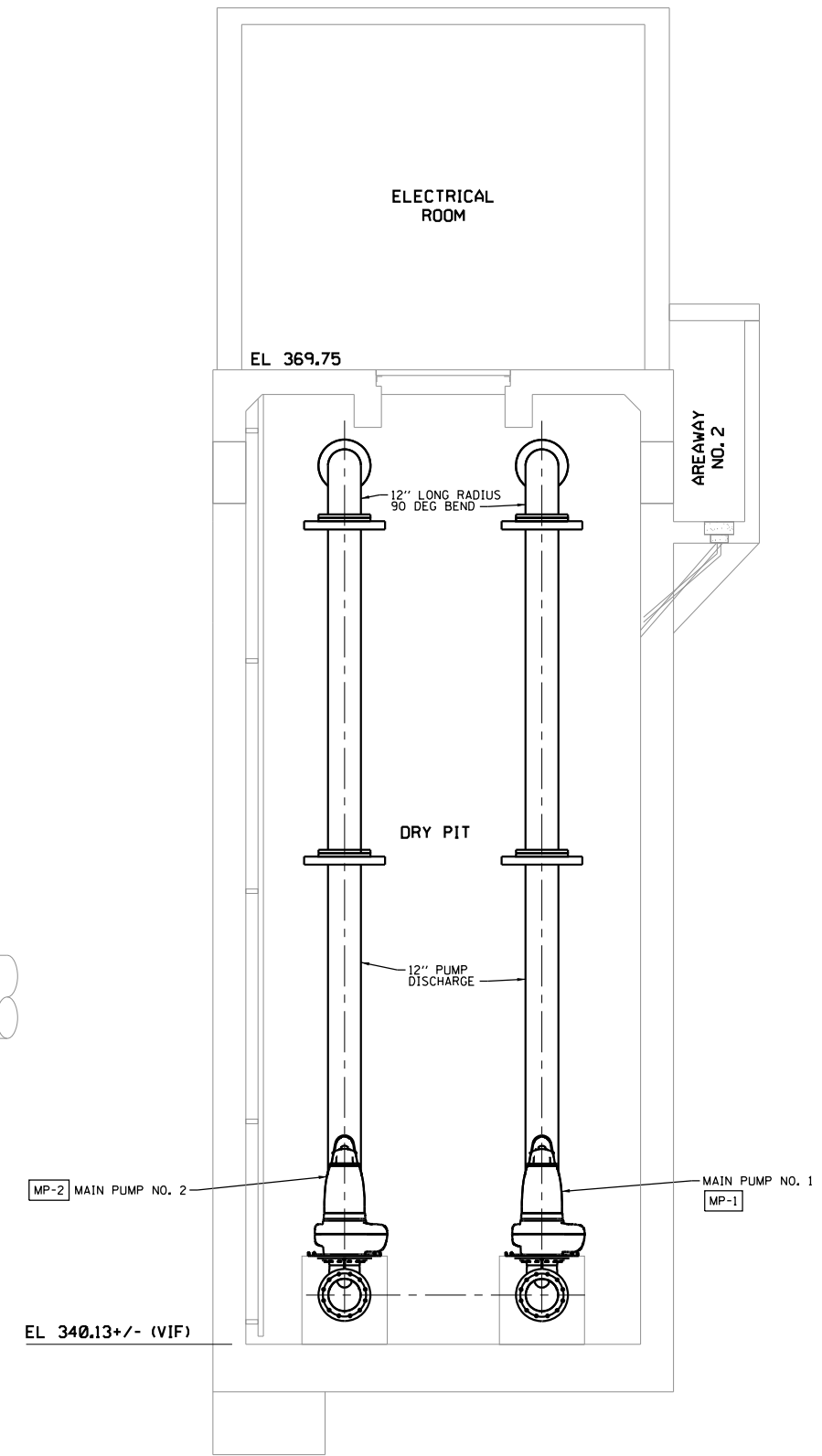
**READING PUMP STATION  
PROCESS MECHANICAL  
PLANS**

SCALE: SHEET OF SHEETS STA. TO STA.

F.A.P. RTE. 649	SECTION (107)PS-3	COUNTY LIVINGSTON	TOTAL SHEETS 42	SHEET NO. 21
CONTRACT NO. 66J68				
ILLINOIS FED. AID PROJECT XXXXXX				



SECTION A-A



SECTION B-B

- PLAN NOTES:**
- FLOAT STILLING WELL, SEE DETAIL ON DRAWING M-4.
  - 12" DIA WALL PIPE, SEE DETAIL ON DRAWING M-4, TYP.
  - AIR VENT PIPE, SEE DETAIL ON DRAWING M-4.
  - CLASS I, DIVISION 2, GROUP D HAZARDOUS CLASSIFIED LOCATION

- GENERAL NOTES:**
- ALL AREAS WITHIN BUILDING EXCEPT DRY PIT AND ELECTRICAL ROOM SHALL BE: CLASS I, DIVISION 2, GROUP D HAZARDOUS CLASSIFIED LOCATION

SCALE: 0 3 8 FT.

M-3

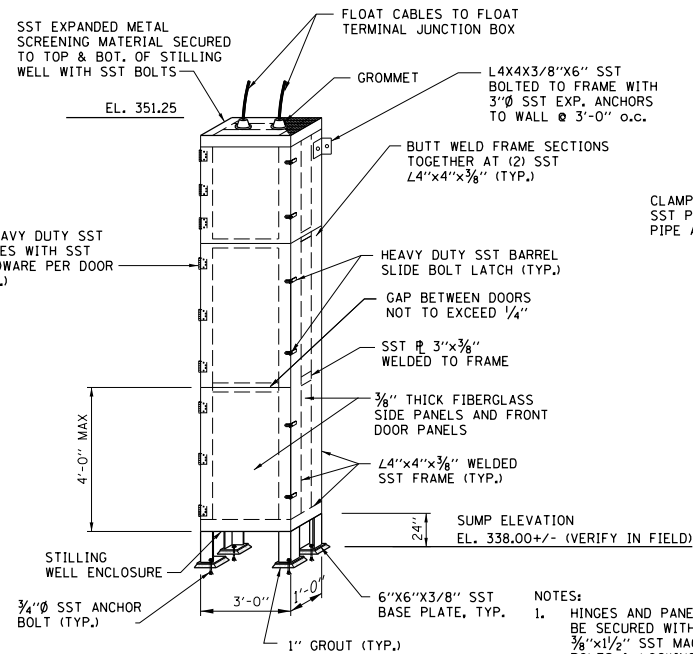


USER NAME =	DESIGNED - MTR	REVISED -
PLOT SCALE =	DRAWN - MTR	REVISED -
PLOT DATE =	CHECKED - NWC	REVISED -
	DATE - 03-19-2019	REVISED -

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

READING PUMP STATION PROCESS MECHANICAL SECTIONS			
SCALE:	SHEET	OF SHEETS	STA. TO STA.

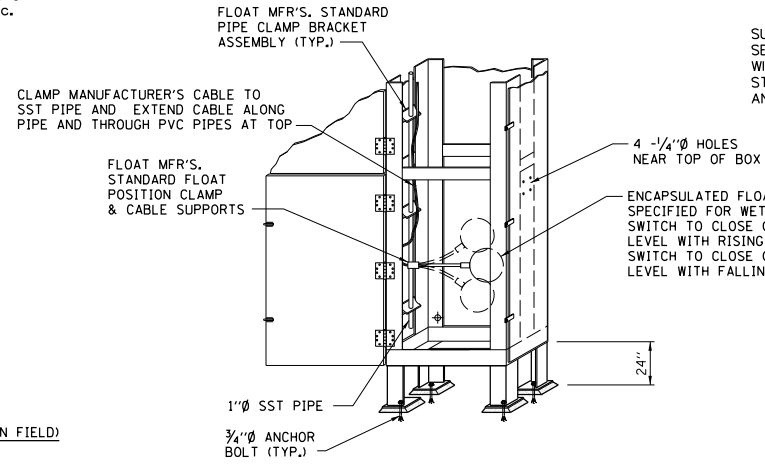
F.A.P. RTE. 649	SECTION (107)PS-3	COUNTY LIVINGSTON	TOTAL SHEETS 42	SHEET NO. 22
CONTRACT NO. 66J68				
ILLINOIS FED. AID PROJECT XXXXXX				



**FLOAT STILLING WELL DETAIL FOR PUMP FLOAT CONTROL**

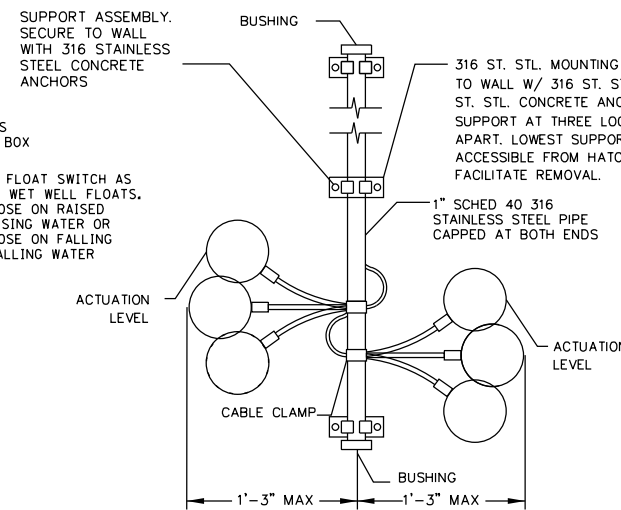
N.T.S.

- NOTES:
- HINGES AND PANELS TO BE SECURED WITH 3/8" x 1/2" SST MACHINE BOLTS & LOCKING WASHERS
  - STILL WELL DIMENSIONS OF 3'-0" X 1'-0" ARE INTERIOR DIMENSIONS.
  - SST = STAINLESS STEEL



**ENLARGED FLOAT DETAIL IN STILLING WELL ENCLOSURES**

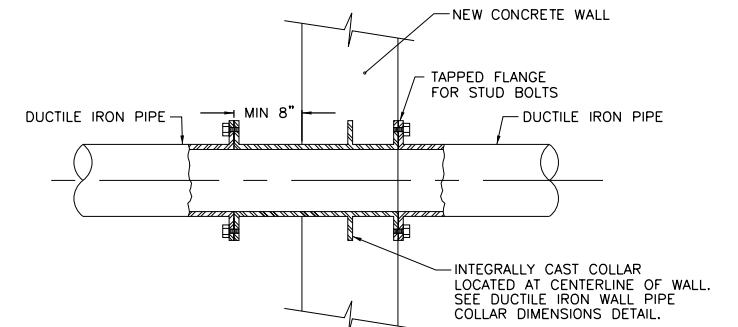
N.T.S.



- NOTE:
- FOLLOW FLOAT SWITCH MANUFACTURER INSTALLATION INSTRUCTIONS TO ENSURE BALL FLOAT SWITCH WILL ACTIVATE AT WATER LEVEL ELEVATIONS INDICATED ON CHARTS BELOW

**ENLARGED FLOAT DETAIL STILLING WELL REMOVED**

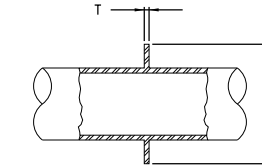
N.T.S.



**FLANGE /FLANGE DUCTILE IRON WALL PIPE DETAIL**

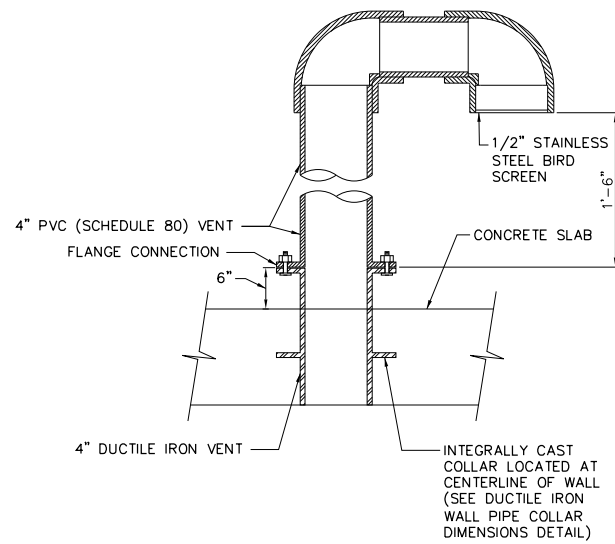
N.T.S.

NOMINAL PIPE DIA (INCHES)	MINIMUM COLLAR DIMENSIONS				
	INTEGRALLY CAST D.I. COLLAR		STEEL COLLAR		
	T THICKNESS (INCHES)	C DIAMETER (INCHES)	T THICKNESS (INCHES)	C DIAMETER (INCHES)	
4	0.50	8.00	0.25	6.80	
6	0.50	10.00	0.25	8.90	
8	0.50	12.50	0.25	11.05	
10	0.50	14.50	0.25	13.10	
12	0.50	16.50	0.25	15.20	
14	0.75	19.50	0.25	17.30	
16	0.75	21.75	0.25	19.40	
18	0.75	23.75	0.38	22.50	
20	0.75	25.75	0.38	24.60	
24	0.75	30.25	0.38	28.80	



**DUCTILE IRON WALL PIPE COLLAR DIMENSIONS DETAIL**

N.T.S.



**AIR VENT PIPE DETAIL**

NOT TO SCALE

PUMPING OPERATION WITH RISING WATER		
FUNCTION	ELEVATION (FT)	FLOAT FUNCTION
HIGH WATER ALARM	349.75	HIGH WATER ALARM
START LAG PUMP	348.25	START LAG PUMP
START LEAD PUMP	347.25	START LEAD PUMP

PUMPING OPERATION WITH FALLING WATER		
FUNCTION	ELEVATION (FT)	FLOAT FUNCTION
PUMPS STOP	343.75	START LEAD AND LAG PUMPS
LOW LOW LEVEL ALARM	343.50	LOW LEVEL ALARM

EQUIPMENT SCHEDULE									
ITEM	DESCRIPTION	LOCATION	ELECTRICAL MOTOR CHARACTERISTICS				PUMP		
			HP	RPM	VOLTS	PHASE	HZ	CAPACITY (GPM)	HEAD (FT)
MP-1	MAIN PUMP NO. 1	DRY PIT	25*	1,160	480	3	60	2,600	27.3
MP-2	MAIN PUMP NO. 2	DRY PIT	25*	1,160	480	3	60	2,600	27.3
MP-3	SPARE MAIN PUMP	SPARE (OFFSITE)	25*	1,160	480	3	60	2,600	27.3

\* MAXIMUM

NOTES:

- EQUIPMENT SHALL BE CLASS 1, DIV. 2 GROUP D EXPLOSION PROOF.



USER NAME =	DESIGNED - MTR	REVISED -
PLOT SCALE =	DRAWN - MTR	REVISED -
PLOT DATE =	CHECKED - NWC	REVISED -
	DATE - 03-19-2019	REVISED -

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

READING PUMP STATION  
PROCESS MECHANICAL  
DETAILS AND SCHEDULES

SCALE: SHEET OF SHEETS STA. TO STA.

M-4

F.A.P. RTE. 649	SECTION (107)PS-3	COUNTY LIVINGSTON	TOTAL SHEETS 42	SHEET NO. 23
CONTRACT NO. 66J68				
ILLINOIS FED. AID PROJECT XXXXXX				







DAMPERS SCHEDULE						
ITEM	SIZE	ACTUATOR			CONFIGURATION	REMARKS
		TYPE	VOLTAGE	FUNCTION		
ICD-1	16"x22"	NEMA 2 ELECTRIC	115	FLOATING POINT	INTAKE	INSULATED BLADE TYPE PROVIDE WITH LIMIT SWITCHES (2X) ASSOCIATED WITH OUTSIDE AIR LOUVER
ICD-2	16"x8"	---	---	---	RETURN	INSULATED BLADE TYPE CONTROLLED BY LINKAGE FROM ICD-1
BDD-1	8"x22"	GRAVITY	---	---	EXHAUST	ALUMINUM BACKDRAFT DAMPER ASSOCIATED WITH EF-1

AIR INLET AND OUTLET SCHEDULE									
TAG	MANUF.	MODEL	SERVICE	MAX. APD. (IN. W. C.)	MAX. NC	PATTERN	FINISH	MATERIAL	REMARKS
RG-1	CARNES AJ MANUF TITUS	RLRB 150 30IRS-SS	EXHAUST	0.10	30	SD	#4 SATIN FINSH	SST	
SG-1	CARNES AJ MANUF TITUS	RLOB 250 30ORS-SS	SUPPLY	0.10	35	DD	#4 SATIN FINSH	SST	

DD = 3/4" BLADE, DOUBLE DEFLECTION.  
SD = 3/4" BLADE, SINGLE DEFLECTION, 0 DEGREE BLADE ANGLE.  
ANOD = ANODIZED FINISH.

THERMOSTAT SCHEDULE			
THERMOSTAT	NEMA RATING	LOCATION	EQUIPMENT SERVED
T-1	4X	DRY PIT	EF-1, SF-1, ICD-1, ICD-2
T-2	4X	OUTSIDE NORTH WALL	EF-1, SF-1, ICD-1, ICD-2

NOTE: ALL THERMOSTATS SHALL BE MOUNTED AT 4'-0" ABOVE OPERATING FLOOR.

**ELECTRICAL ROOM AND DRY PIT VENTILATION CONTROL**

SUPPLY FAN (SF-1), EXHAUST FAN (EF-1), INSULATED CONTROL DAMPERS (ICD-1, ICD-2), ELECTRIC DUCT HEATER (EDH-1) AND SHALL BE CONTROLLED BY H-O-A SWITCH, T-1 (35F SETPOINT), AND T-2 (50F SETPOINT).

**AUTO MODE:**  
ICD-1 SHALL OPEN TO MINIMUM POSITION (145CFM), ICD-2 SHALL OPEN TO MAXIMUM POSITION (435CFM) AND PROVE OPEN. ONCE PROVED OPEN, SF-1 SHALL ENERGIZE AND RUN CONTINUOUSLY AND EF-1 SHALL ENERGIZE AND RUN AT LOW SPEED (145CFM) CONTINUOUSLY. EDH-1 SHALL ENERGIZE AND MODULATE ELECTRIC HEAT AS REQUIRED TO MAINTAIN A 50F DISCHARGE AIR TEMPERATURE. UNDER ANY OF THE FOLLOWING CONDITIONS:

- WHEN GAS SENSOR DETECTS COMBUSTIBLE GAS ABOVE SETPOINT.
- WHEN THE ELECTRICAL ROOM LIGHTS ARE ENERGIZED.
- OUTDOOR AIR TEMPERATURE (AS DETERMINED BY T-2) IS GREATER THAN 50F.

ICD-1 SHALL FULLY OPEN (580CFM), ICD-2 SHALL FULLY CLOSE, AND EF-1 SHALL RUN AT HIGH SPEED (580CFM) CONTINUOUSLY.

**OFF MODE:**  
EF-1, SF-1, EDH-1 SHALL DE-ENERGIZE. ICD-1 SHALL FULLY CLOSE, ICD-2 SHALL OPEN.

**HAND MODE:**  
EF-1 SHALL ENERGIZE AT HIGH SPEED (580CFM), SF-1 SHALL ENERGIZE AND RUN CONTINUOUSLY. ICD-1 SHALL FULLY OPEN, ICD-2 SHALL FULLY CLOSE.

**UNDER ALL MODES OF OPERATION:**  
IF CURRENT SWITCHES DETECT THAT EF-1 OR SF-1 ARE NOT RUNNING, A SIGNAL SHALL BE SENT TO THE DIALER TO SIGNAL A LOSS OF VENTILATION.  
IF T-1 DETECTS A TEMPERATURE LOWER THAN 35F OR LESS IN THE DRY PIT, SF-1 SHALL DE-ENERGIZE. LOSS OF VENTILATION SHALL BE SENT.

**ELECTRIC UNIT HEATERS**

EUH-1

UNIT HEATERS SHALL OPERATE ON CALL INTEGRAL HEATING THERMOSTAT. ON CALL FOR HEAT, UNIT FAN SHALL RUN AND HEATER SHALL ENERGIZE. UPON SATISFACTION OF SPACE TEMPERATURE UNIT HEATER SHALL STOP.

FAN SCHEDULE																
TAG	MANUF.	MODEL	TYPE	SERVICE	AIR FLOW DATA				FAN RPM	DRIVE	SONES	ELECTRICAL DATA				REMARKS
					CFM	ESP (IN WC)	TSP (IN WC)	BHP				HP/WATTS	VOLT	PH.	RPM	
EF-1	GREENHECK COOK PENNBARRY	SO-95-VG SOND-EC SX	CENTRI INLINE	EXHAUST	140-580	0.50	0.50	0.12	1675	DIRECT	10	1/6	120	1	1725	1,2,3,4,5,6
SF-1	GREENHECK COOK PENNBARRY	SO-99-VG SOND-EC SX	CENTRI INLINE	SUPPLY	580	0.45	0.52	0.16	1460	DIRECT	11	1/4	120	1	1725	1,2,3,4,5,7

ESP INCLUDES DUCT LOSSES ONLY. TSP INCLUDES ESP AND LOSSES FILTER BOX.  
1. = ALUMINUM CONSTRUCTION.  
2. = STAINLESS STEEL FASTENERS.  
3. = SPRING BASE, HANGING VIBRATION AND NEOPRENE ISOLATORS.  
4. = INSULATED FILTERED BOX WITH 2-INCH ALUMINUM WASHABLE FILTERS.  
5. = SIDE DISCHARGE, REFER TO PLANS FOR ORIENTATION.  
6. = ECM MOTOR WITH TWO SPEED FAN CONTROL SUITABLE FOR SCHEDULED AIRFLOW RATES.  
7. = ECM MOTOR WITH INTEGRAL DIAL FOR BALANCING PURPOSES ONLY.

ELECTRIC DUCT HEATER SCHEDULE															
TAG	MANUF.	MODEL	TYPE	ORIENTATION	AIR DATA				ELECTRICAL DATA			DIMENSIONS (IN)		OUTPUT (MBH)	REMARKS
					CFM	EAT (F)	LAT (F)	ΔP (IN WC)	KW	VOLT/Ø	AMP	WIDTH	LENGTH		
EDH-1	INDEECO	TFUZ	FINNDED TUBULAR	LEFT OVERHANG	580	-8	51	0.07	11	460/3	13.6	12	12	37.5	1,2,3,4,5,6,7,8

1. = STAINLESS STEEL CONSTRUCTION AND ELEMENTS  
2. = FLANGED DUCT CONNECTIONS.  
3. = DUCT MOUNTED TEMPERATURE SENSOR.  
4. = SCR CONTROLLER.  
5. = INTEGRAL AIRFLOW SWITCH.  
6. = INTEGRAL DISCONNECT SWITCH.  
7. = INTEGRAL CONTROL TRANSFORMER.  
8. = INTEGRAL MAGNETIC CONTACTOR

ELECTRIC UNIT HEATER SCHEDULE															
TAG	MANUF.	MODEL	TYPE	OUTPUT (MBH)	MOUNT HEIGHT (FT)	AIR DATA			ELECTRICAL DATA			MOTOR DATA			REMARKS
						CFM	THROW (FT)	ΔT (F)	KW	VOLT/•	AMP	HP	VOLT/•	RPM	
EUH-1	QMARK RUFFNECK INDEECO	QWD10432 CRI48036010 TRIAD	HOR PROP	34.1	7'-4"	1450	-	22	10	460/3	12.4	1/4	-	1725	1,2,3

1. = MANUFACTURERS MOUNTING ACCESSORIES.  
2. = STAINLESS STEEL CONSTRUCTION.  
3. = ELECTRICAL DISCONNECT.  
4. = INTEGRAL THERMOSTAT.

SUMP PUMP SCHEDULE											
TAG	MANUF.	MODEL	TYPE	FLOW (GPM)	HEAD (FT)	SHUTOFF (FT)	CONTROL	ELECTRICAL DATA			REMARKS
								HP	VOLT/•	RPM	
SP-1	ZOELLER	153	SUMP SUBMERSIBLE	25	33	44	CONTROL PANEL LEAD/LAD	1/2	120/1	3450	1,2,3,4
SP-2	ZOELLER	153	SUMP SUBMERSIBLE	25	33	44	CONTROL PANEL LEAD/LAG	1/2	120/1	3450	1,2,3,4

1. = CONTROL PANEL AS SCHEDULED.  
2. = SUITABLE FOR DUPLEX INSTALLATION IN A 30"x30" SUMP.  
3. = CAST IRON CONSTRUCTION.  
4. = ABLE TO PASS 1/2" SOLIDS.

GAS UNIT HEATER SCHEDULE												
TAG	MANUF.	MODEL	TYPE	INPUT (MBH)	OUTPUT (MBH)	MOUNT HEIGHT (FT)	AIR DATA		ELECTRICAL DATA			REMARKS
							CFM	ΔT (F)	HP	VOLT/•	RPM	
GUH-1	REZNOR MODINE	UDAS-45 HDS-45	HOR PROP	45	37.4	7'-4"	629	55	0.03	120/1	1550	1,2,3,4,5,6
GUH-2	REZNOR MODINE	UDAS-75 HDS-75	HOR PROP	75	62.3	7'-4"	961	60	0.06	120/1	1550	1,2,3,4,5,6

1. = MANUFACTURERS MOUNTING ACCESSORIES.  
2. = STAINLESS STEEL BURNER AND HEAT EXCHANGER.  
3. = INTEGRAL DISCONNECT.  
4. = HORIZONTAL COMBUSTION AIR/VENT KIT INCLUDING CONCENTRIC ADAPTER.  
5. = TEFC MOTOR.  
6. = WALL MOUNTED THERMOSTAT.

PH-4



**ABBREVIATIONS**

A	AMPERE
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AIC	AMPERE INTERRUPTING CAPACITY
AM	AMPERE METER
AP	AEGIS PANEL
AS	AMPERE METER SELECTOR
ATS	AUTOMATIC TRANSFER SWITCH
BVP	BUS VOLTAGE PRESENT
C	CONTACTOR/CONDUIT/COIL
CB	CIRCUIT BREAKER
CGD	COMBUSTIBLE GAS DETECTOR
CKT, CCT	CIRCUIT
CP	CONTROL PANEL
CS	CONTROL STATION
CT	CURRENT TRANSFORMER
DSC	DISCONNECT
DS	DOOR SWITCH
EF	EXHAUST FAN
EG	EMERGENCY GENERATOR
FAHS	FIRE ALARM HORN STROBE
FAPS	FIRE ALARM PULL STATION
FAS	FIRE ALARM STROBE
FX	LIGHT FIXTURE
FP	FIRE PANEL
FSPF	FLOAT SWITCH PAVEMENT FLOOD
FU	FUSE
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFR/GFP	GROUND FAULT RELAY/PROTECTION
GRD	GROUND
GRS	GALVANIZED RIGID STEEL
GS	GAS SENSOR
HD	HEAT DETECTOR
HF	HARMONIC FILTER
HH	HANDHOLE
HID	HIGH INTENSITY DISCHARGE
HP	HORSEPOWER
HR	HORN RELAY
HZ	HERTZ
J	JUNCTION BOX
KVA	KILOVOLT AMPERE
KW	KILOWATT
LCP	LOCAL CONTROL PANEL
LED	LIGHT EMITTING DIODE
LP	LIGHTING PANEL
MCC	MOTOR CONTROL CENTER
MH	MANHOLE
MFR	MANUFACTURER
MPR	MOTOR PROTECTOR RELAY
MV	MEDIUM VOLTAGE MANHOLE
NEC	NATIONAL ELECTRICAL CODE (ANSI/NFPA-70)
NEU, N	NEUTRAL
NF	NON FUSED
OL	OVERLOAD RELAY
PB	PUSHBUTTON
PC	PHOTOCELL
PMG	PADMOUNT GEAR
PMT	PADMOUNT TRANSFORMER
PP	POWER PANEL
PVC	POLY VINYL CHLORIDE
RECP	RECEPTACLE
SCADA	SUPERVISORY CONTROL AND DATA ACQUISITION
SD	SMOKE DETECTOR
SF	SUPPLY FAN
SS	SELECTOR SWITCH
SW	SWITCH
SWGR	SWITCHGEAR
SPCP	SUMP PUMP CONTROL PANEL
SPD	SURGE PROTECTIVE DEVICE
TBM	TEMPORARY BENCHMARK
TDR	TIME DELAY RELAY
UH	UNIT HEATER
UPS	UNINTERRUPTABLE POWER SUPPLY
V	VOLTS
VFC	VENDOR FURNISHED CABLE
VFD	VARIABLE FREQUENCY DRIVE
WP	WEATHERPROOF
XFMR	TRANSFORMER
XP	EXPLOSION PROOF

**ELECTRICAL ABBREVIATIONS AND SYMBOLS**

**PLAN SYMBOLS**

	LIGHTING FIXTURE - RECESSED (LETTER DENOTES TYPE)
	LIGHTING FIXTURE - SURFACE OR SUSPENDED (LETTER DENOTES TYPE)
	LIGHTING FIXTURE - WALL MOUNTED (LETTER DENOTES TYPE)
	POLE MOUNTED FIXTURE (LETTER DENOTES TYPE)
	EMERGENCY BATTERY LIGHT
	REMOTE HEAD FOR EMERGENCY BATTERY LIGHT
	EXIT LIGHT WITH INDICATING DIRECTIONAL ARROW
	SWITCH (SINGLE POLE, 2-POLE, 3-WAY, 4-WAY)
	MOMENTARY CONTACT SWITCH - CENTER OFF
	SWITCH / PILOT LIGHT
	DUPLEX GROUNDED RECEPTACLE - 120V
	EXPLOSIONPROOF SIMPLEX GROUNDED RECEPTACLE - 120V
	TELEPHONE OUTLET, WALL MOUNT WITH 3/4" CONDUIT TO TELEPHONE TERMINAL CABINET
	COMPUTER DATA OUTLET; RUN CAT 5E CABLE TO PLC
	RECESSED CEILING SPEAKER
	VOLUME CONTROL
	WALL SPEAKER
	SMOKE DETECTOR
	FIRE ALARM HORN
	FIRE ALARM HORN AND STROBE
	FIRE ALARM STROBE
	FIRE ALARM PULL STATION
	GAS SENSOR
	HEAT DETECTOR
	THERMOSTAT
	CONNECTION TO EQUIPMENT
	SPECIAL PURPOSE RECEPTACLE, NEMA TYPE AND AMPERE RATING AS INDICATED
	MANUAL STARTER WITH PILOT LIGHT
	THREE PHASE MAGNETIC STARTER
	THREE PHASE COMBINATION MAGNETIC STARTER AND DISCONNECT SWITCH

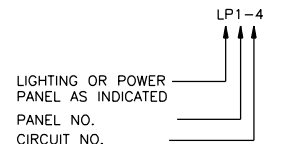
**MOTOR CONTROL CENTER**



NOTE:

1. THIS LIST OF ABBREVIATIONS SHOWN IS A STANDARD LIST. NOT ALL ABBREVIATIONS AND SYMBOLS ARE USED IN THESE CONTRACT DRAWINGS.

**PANEL BOARDS**



	INFORMATION OUTLET
	SINGLE PHASE MAGNETIC STARTER
	NON-FUSED DISCONNECT SWITCH (NUMERAL INDICATES SWITCH RATING)
	FUSED DISCONNECT SWITCH - 3 POLE UNLESS OTHERWISE INDICATED (UPPER NUMERAL INDICATES SWITCH RATING) (LOWER NUMERAL INDICATES FUSE RATING)
	3-PHASE MANUAL MOTOR SWITCH
	LIGHTING PANEL
	TRANSFORMER
	POWER PANEL
	TERMINAL CABINET (ITC - INDICATES INSTRUMENTATION) (TTC - INDICATES TELEPHONE)
	MOTOR
	JUNCTION BOX
	HANDHOLE
	MANHOLE
	SURVEILLANCE CAMERA
	GROUND ROD
	CAPPED CONDUIT STUB
	CONDUIT TURNING UP OR TO OBSERVER
	CONDUIT TURNING DOWN OR AWAY FROM OBSERVER
	FLEXIBLE CONDUIT CONNECTION
	HOMERUN CIRCUIT OR CONDUCTORS
	DIRECT BURIAL ELECTRICAL CABLE
	UNDERGROUND ELECTRICAL DUCT, CONCRETE ENCASED.

**ONE-LINE SYMBOLS**

	MOLDED CASE CIRCUIT BREAKER (UPPER NUMERAL INDICATES FRAME SIZE) (LOWER NUMERAL INDICATES TRIP SETTING) (CL - INDICATES CURRENT LIMITING CIRCUIT BREAKER) (M - INDICATES MOTOR CIRCUIT PROTECTOR)
	MAGNETIC STARTER AND MOLDED CASE CIRCUIT BREAKER (FVNR - INDICATES FULL VOLTAGE NON-REVERSING) (FVR - INDICATES FULL VOLTAGE REVERSING) (SSRV - INDICATES SOLID STATE REDUCED VOLTAGE) (TSTW - INDICATES TWO SPEED TWO WINDING) (TSSW - INDICATES TWO SPEED SINGLE WINDING) (CONT - INDICATES CONTACTOR) (AUXILIARY CONTACTS - (2a TWO N.O.)(1b ONE N.C.) (NUMERAL INDICATES NEMA SIZE)
	TRANSFORMER
	COMBINATION MAGNETIC STARTER WITH MOLDED CASE CIRCUIT BREAKER (FVNR - INDICATES FULL VOLTAGE NON-REVERSING) (FVR - INDICATES FULL VOLTAGE REVERSING) (SSRV - INDICATES SOLID STATE REDUCED VOLTAGE) (TSTW - INDICATES TWO SPEED TWO WINDING) (AUXILIARY SPARE CONTACTS - (2a TWO N.O.)(1b ONE N.C.) (NUMERAL INDICATES NEMA SIZE)
	GROUND
	MOTOR (NUMERAL INDICATES HORSEPOWER)

**SCHEMATIC SYMBOLS**

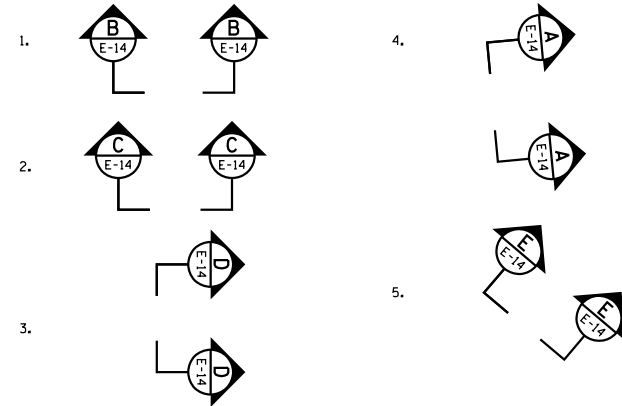
	TERMINAL ON A DEVICE		LIMIT SWITCH - NORMALLY CLOSED HELD OPEN
	NORMALLY OPEN CONTACT		LEVEL SWITCH - CLOSSES ON RISING LEVEL
	NORMALLY CLOSED CONTACT		LEVEL SWITCH - OPENS ON RISING LEVEL
	SINGLE POLE, SINGLE THROW SWITCH		FLOW SWITCH - CLOSSES ON FLOW
	SINGLE POLE, DOUBLE THROW SWITCH		FLOW SWITCH - OPENS ON FLOW
	DOUBLE POLE, SINGLE THROW SWITCH		TRANSFORMER - (TYPE AND RATING AS INDICATED)
	DOUBLE POLE, DOUBLE THROW SWITCH		CONNECTION TO GROUND
	THREE WAY ROTARY SWITCH		LIGHTNING OR SURGE ARRESTER
	NORMALLY CLOSED MOMENTARY PUSH BUTTON SWITCH		THERMAL OVERLOAD ELEMENT
	NORMALLY OPEN MOMENTARY PUSH BUTTON SWITCH		FUSE
	2 POSITION PUSH BUTTON (EXTRA CONTACT BLOCK)		CIRCUIT BREAKER
	NORMALLY OPEN DOUBLE BREAK SINGLE THROW CONTACT BLOCK		HEATING ELEMENT
	NORMALLY CLOSE DOUBLE BREAK SINGLE THROW CONTACT BLOCK		SOLENOID VALVE
	MUSHROOM HEAD PUSH BUTTON		COIL
	MAINTAINED CONTACT PUSHBUTTON		C - CLOSE
	2 OR 3 POSITIONS SELECTOR SWITCH (CLOSED CONTACTS INDICATED BY "X")		CR - CONTROL RELAY
	MULTI-POSITION, MULTI-CONTACT SELECTOR SWITCH (CLOSED CONTACTS INDICATED BY "X")		F - FAST OR FORWARD
	TEMPERATURE SWITCH - CLOSSES ON RISING TEMPERATURE		M - MOTOR STARTER
	TEMPERATURE SWITCH - OPENS ON RISING TEMPERATURE		MX - MOTOR STARTER AUXILIARY RELAY
	TIME DELAY RELAY SWITCH - NORMALLY OPEN, CLOSSES ON TIME DELAY AFTER ENERGIZATION OF RELAY COIL.		N - NORMAL
	TIME DELAY RELAY SWITCH - NORMALLY CLOSED, OPENS ON TIME DELAY AFTER ENERGIZATION OF RELAY COIL.		O - OPEN
	TIME DELAY RELAY SWITCH - NORMALLY CLOSED, CLOSSES ON TIME DELAY AFTER DE-ENERGIZATION OF RELAY COIL.		OL - OVERLOAD RELAY
	TIME DELAY RELAY SWITCH - NORMALLY OPEN, OPENS ON TIME DELAY AFTER DE-ENERGIZATION OF RELAY COIL.		R - REVERSE
	LIMIT SWITCH - NORMALLY OPEN		S - SLOW
	LIMIT SWITCH - NORMALLY OPEN HELD CLOSED		TDR - TIME DELAY RELAY
	LIMIT SWITCH - NORMALLY CLOSED		INDICATOR LIGHT (LETTER INDICATES COLOR)
	CURRENT DETECTION SWITCH (TOROIDAL) - NORMALLY OPEN		INDICATOR LIGHT (PUSH TO TEST TYPE)
			GAS SENSOR
			DEVICE ENCLOSURE
			ANNUNCIATOR
			PUMP START COUNTER
			ELAPSED TIME METER
			ELECTRONIC TIMER
			TOTALIZER

**ELECTRICAL GENERAL NOTES**

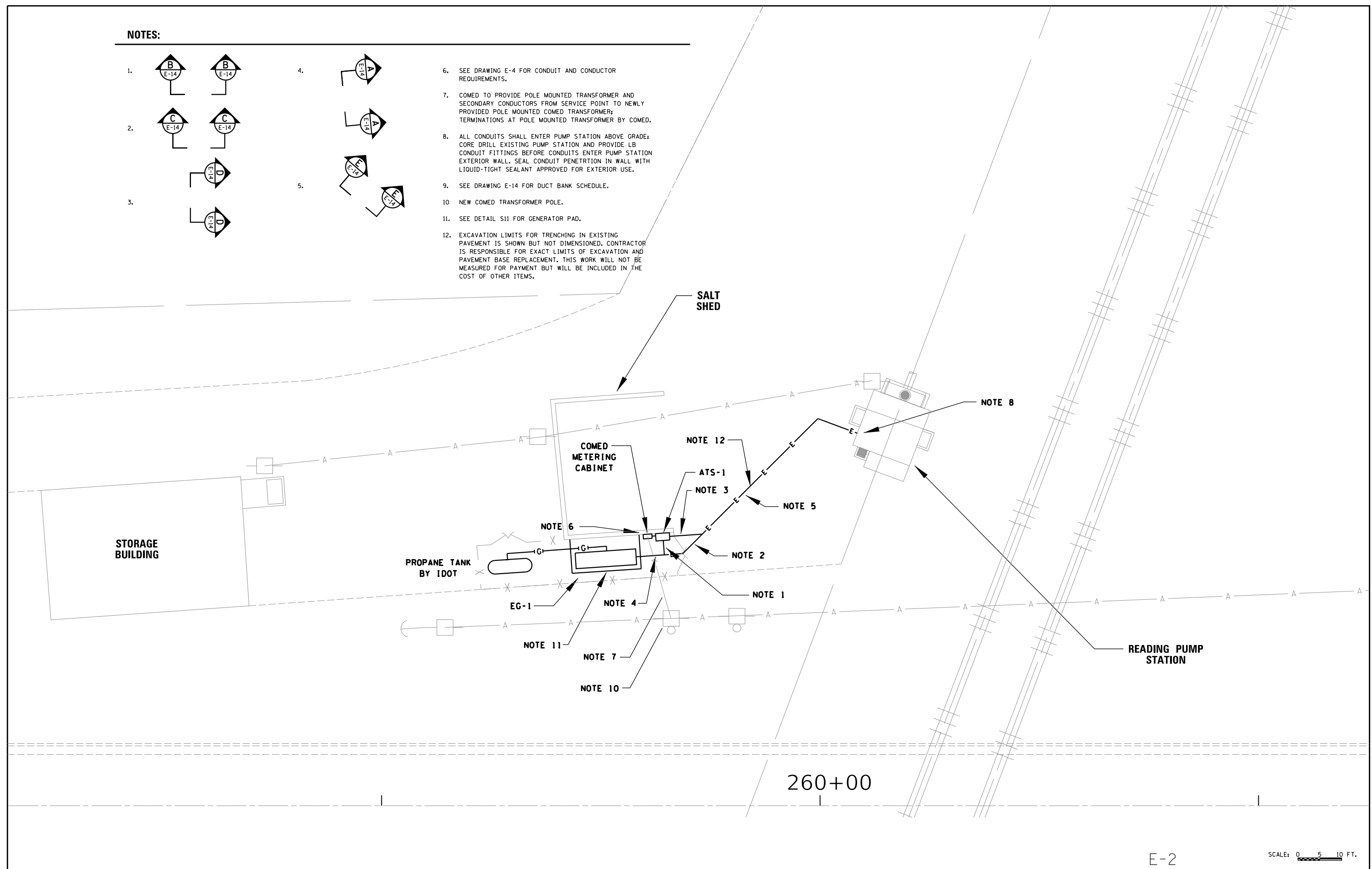
- SEE SHEET NO. 3 - GENERAL - ABBREVIATIONS AND GENERAL FOR ADDITIONAL NOTES.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WIRING, WHETHER SHOWN OR NOT, NECESSARY FOR A COMPLETE SYSTEM.
- PROVIDE EXPLOSION PROOF SEAL-OFF FITTINGS ON ALL CONDUITS EXITING CLASSIFIED OR RATED LOCATIONS. FITTINGS SHALL BE INSTALLED IN THE CLASSIFIED OR RATED LOCATION. CONTRACTOR IS RESPONSIBLE FOR VERIFYING NUMBER OF CONDUCTORS IN CONDUIT PRIOR TO INSTALLATION.
- ALL CONDUITS SHALL BE LABELED WITH AN ADHESIVE TO IDENTIFY THE CONTENTS PER SPECIFICATIONS. LABEL CONDUIT NUMBER AT EACH TERMINATING END AND ON EACH FLOOR. EQUIPMENT AND EQUIPMENT MOUNTED DEVICES SHALL HAVE NAMEPLATES PER SPECIFICATIONS.
- EACH LIGHT FIXTURE SHALL HAVE AN UNIQUE NAMEPLATE WHICH IDENTIFIES THE CIRCUIT IT IS POWERED FROM, SOURCE PANEL, AND QUANTITY WITHIN THE CIRCUIT. ACCEPTABLE EXAMPLE:

CIRCUIT 4  
FIXTURE 1  
LP-1

**NOTES:**



6. SEE DRAWING E-4 FOR CONDUIT AND CONDUCTOR REQUIREMENTS.
7. COMED TO PROVIDE POLE MOUNTED TRANSFORMER AND SECONDARY CONDUCTORS FROM SERVICE POINT TO NEWLY PROVIDED POLE MOUNTED COMED TRANSFORMER; TERMINATIONS AT POLE MOUNTED TRANSFORMER BY COMED.
8. ALL CONDUITS SHALL ENTER PUMP STATION ABOVE GRADE; CORE DRILL EXISTING PUMP STATION AND PROVIDE LB CONDUIT FITTINGS BEFORE CONDUITS ENTER PUMP STATION EXTERIOR WALL. SEAL CONDUIT PENETRTION IN WALL WITH LIQUID-TIGHT SEALANT APPROVED FOR EXTERIOR USE.
9. SEE DRAWING E-14 FOR DUCT BANK SCHEDULE.
10. NEW COMED TRANSFORMER POLE.
11. SEE DETAIL S11 FOR GENERATOR PAD.
12. EXCAVATION LIMITS FOR TRENCHING IN EXISTING PAVEMENT IS SHOWN BUT NOT DIMENSIONED. CONTRACTOR IS RESPONSIBLE FOR EXACT LIMITS OF EXCAVATION AND PAVEMENT BASE REPLACEMENT. THIS WORK WILL NOT BE MEASURED FOR PAYMENT BUT WILL BE INCLUDED IN THE COST OF OTHER ITEMS.



USER NAME =	DESIGNED - JRR	REVISED -
	DRAWN - JRR	REVISED -
PLOT SCALE =	CHECKED - JAB	REVISED -
PLOT DATE =	DATE - 01-04-2019	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

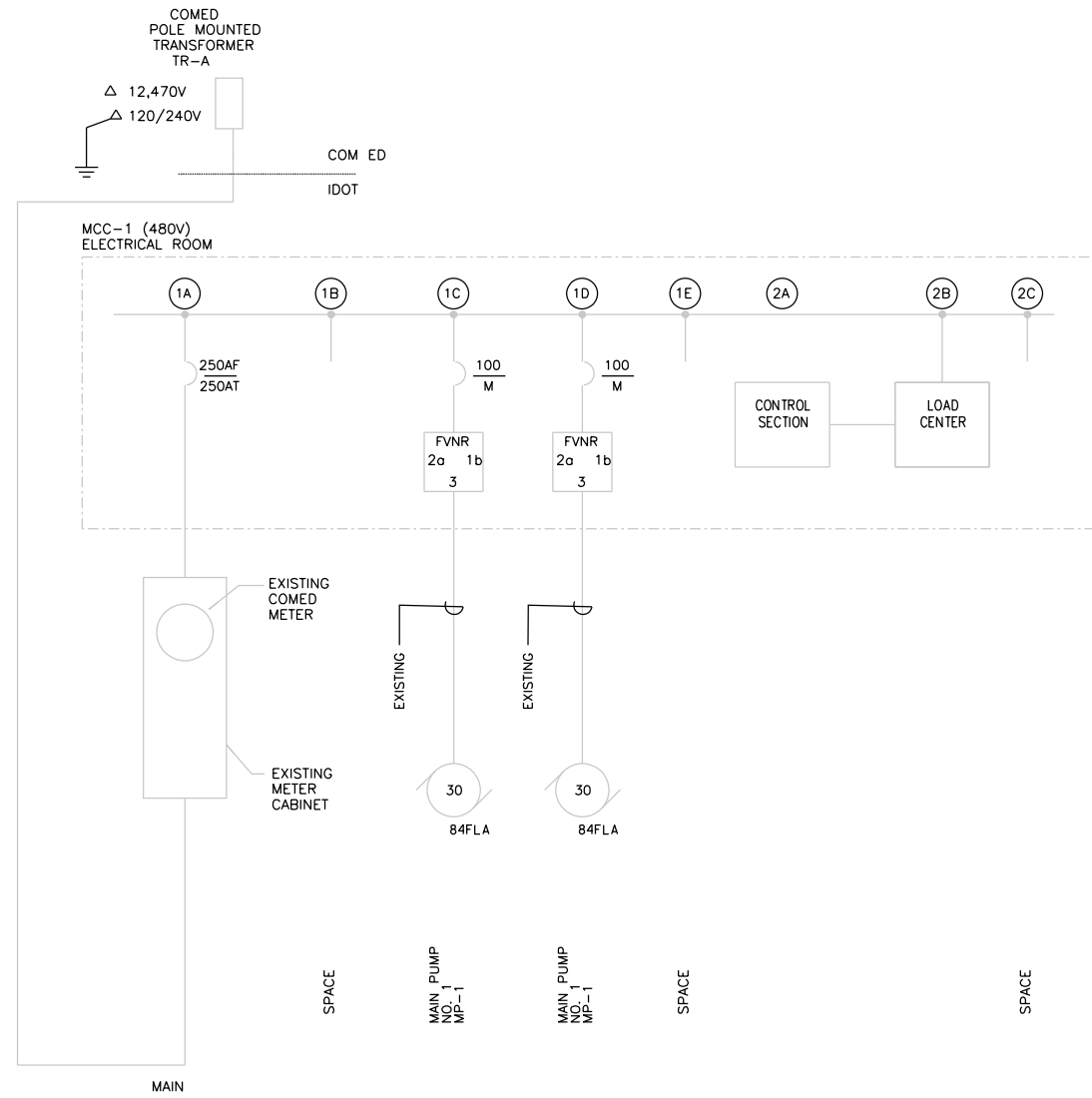
**READING PUMP STATION  
ELECTRICAL  
SITE PLAN**

SCALE: SHEET OF SHEETS STA. TO STA.

F.A.P. RTE. 649	SECTION (107)PS-3	COUNTY LIVINGSTON	TOTAL SHEETS 42	SHEET NO. 29
CONTRACT NO. 66J68				
ILLINOIS FED. AID PROJECT XXXXXX				

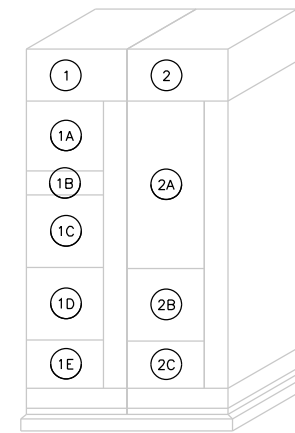
E-2

SCALE: 0 5 10 FT.



**OVERALL ONE-LINE DIAGRAM - EXISTING  
READING PUMP STATION**

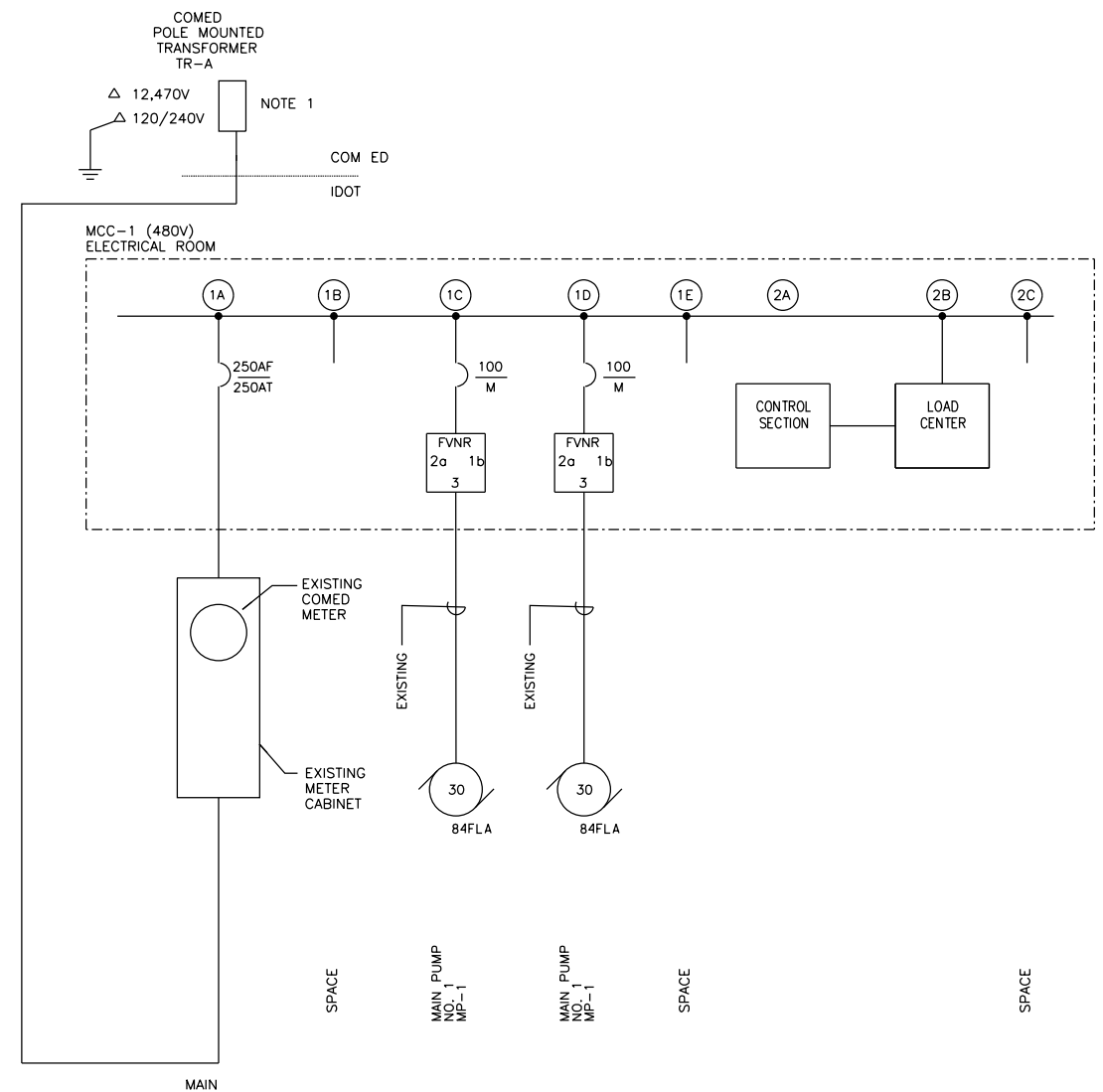
NTS



**MCC-1 ELEVATION  
READING PUMP STATION**

NTS

FURNAS MOTOR CONTROL CENTER  
CUSTOMER ORDER NO: 2655-1  
MAY 1981



**OVERALL ONE-LINE DIAGRAM - REMOVAL  
READING PUMP STATION**

NTS

**PLAN NOTES:**

1. DE-TERMINATION OF CONDUCTORS AND REMOVAL OF POLE MOUNTED TRANSFORMERS BY COMED.



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PLOT SCALE =	DRAWN - JRR	REVISED -
PLOT DATE =	CHECKED - JAB	REVISED -
	DATE - 01-04-2019	REVISED -

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

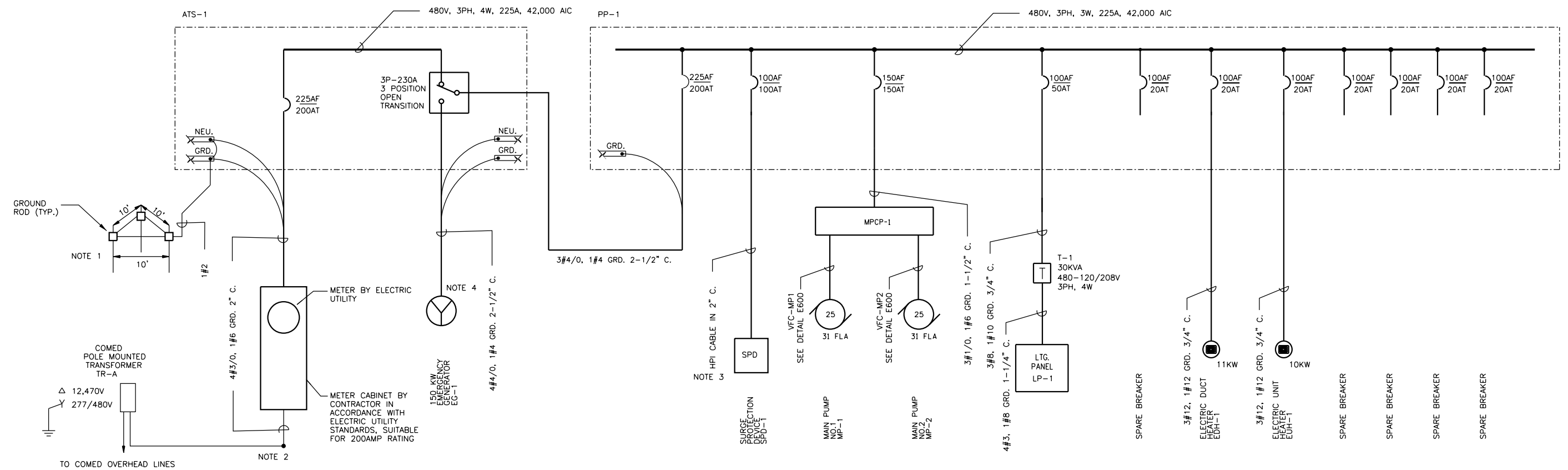
READING PUMP STATION ELECTRICAL ONE-LINE DIAGRAM, ELEVATION AND SCHEDULE			
SCALE:	SHEET	OF SHEETS	STA. TO STA.

E-3

F.A.P. RTE. 649	SECTION (107)PS-3	COUNTY LIVINGSTON	TOTAL SHEETS 42	SHEET NO. 30
CONTRACT NO. 66J68				
ILLINOIS FED. AID PROJECT XXXXXX				

**NOTES:**

- COORDINATE LOCATION AND INSTALLATION OF GROUNDING TRIAD WITH SITE PIPING AND ELECTRICAL DUCT BANK; ADJUST GROUNDING TRIAD AS REQUIRED.
- PROVIDE CONDUIT, CONDUCTORS AND WEATHERHEAD IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE FOR OVERHEAD COMED SECONDARY CONDUCTORS; PROVIDE COMPRESSION CONNECTORS FOR CONNECTION AT SERVICE POINT, COMED TO PROVIDE SECONDARY CONDUCTORS FROM NEW POLE MOUNTED TRANSFORMER TO SERVICE POINT; TERMINATIONS AT SERVICE POINT BY CONTRACTOR.
- PROVIDE HIGH PERFORMANCE IMPEDANCE CABLE FROM MANUFACTURER OF SPD. COORDINATE CONDUIT SIZE WITH CABLE REQUIREMENTS.
- GENERATOR SHALL BE CONFIGURED AS A NOT SEPARATELY DERIVED SYSTEM WITH NO GROUND-NEUTRAL BOND IN THE GENERATOR. SEE DETAIL (E606)



**OVERALL ONE-LINE DIAGRAM - PROPOSED READING PUMP STATION**

NTS

E-4

	USER NAME =	DESIGNED - JRR	REVISED -	<b>STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION</b>	<b>READING PUMP STATION ELECTRICAL ONE-LINE DIAGRAM</b>			F.A.P. RTE. 649	SECTION (107)PS-3	COUNTY LIVINGSTON	TOTAL SHEETS 42	SHEET NO. 31	
	PLOT SCALE =	CHECKED - JAB	REVISED -		SCALE:	SHEET OF SHEETS	STA. TO STA.	ILLINOIS FED. AID PROJECT XXXXXX					
	PLOT DATE =	DATE - 01-04-2019	REVISED -										



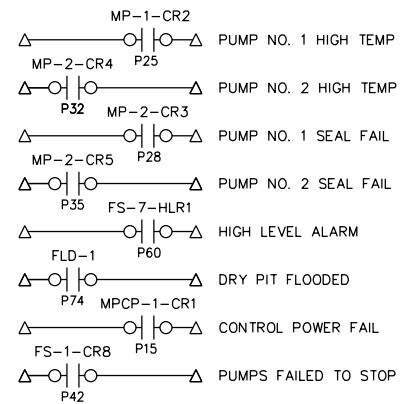


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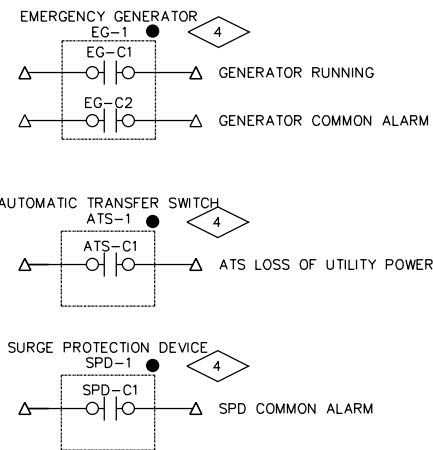
MPCP-1  
DIALER CONTACTS

3

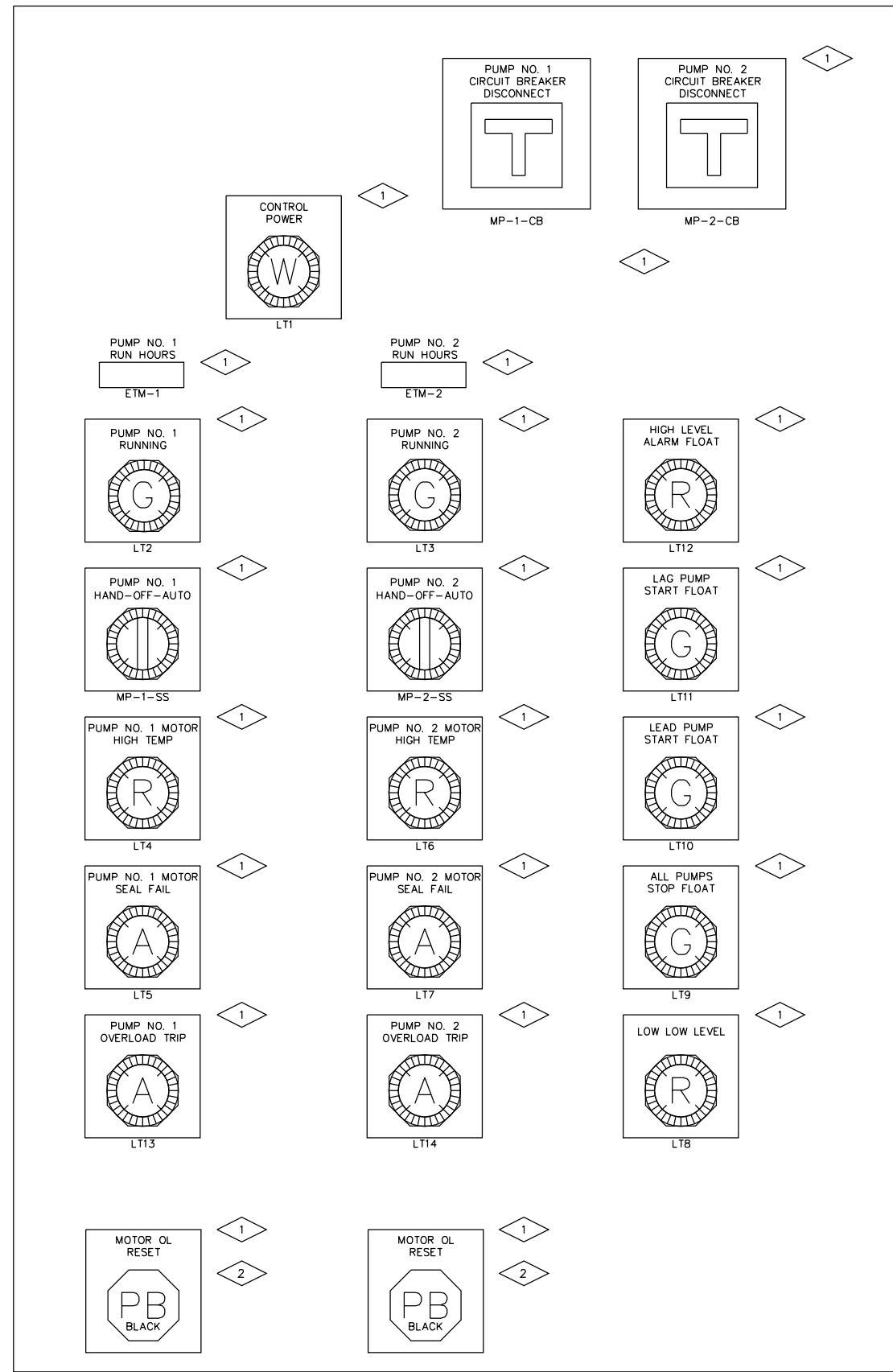
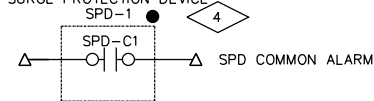


P2N

- LEGEND:**
- △ TERMINAL IN MPCP
  - TERMINAL ON DEVICE
  - ▲ DEVICE IN MPCP
  - ◆ DEVICE ON MPCP DOOR
  - DEVICE LOCALLY MOUNTED



STATION POWER EQUIPMENT  
DIALER CONTACTS



MPCP-1  
MAIN PUMP CONTROL PANEL  
OPERATOR DETAIL (NTS)

**GENERAL NOTES:**

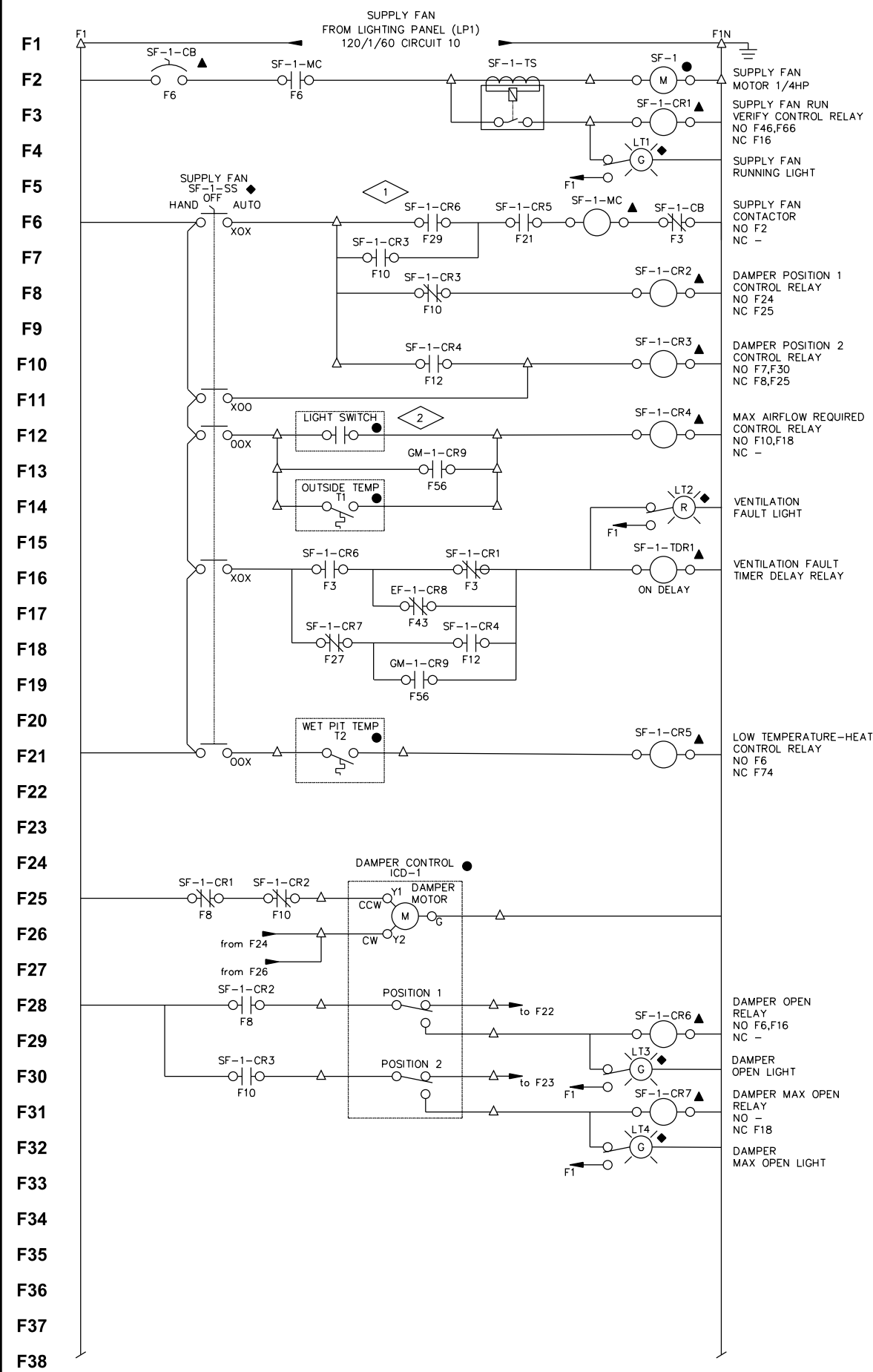
1. PANEL OPERATOR DETAIL NOT TO SCALE.
2. PILOT LIGHTS SHALL BE LED TYPE WITH PUSH-TO-TEST FUNCTIONALITY IN ACCORDANCE WITH GENERAL PROVISIONS.

**PLAN NOTES:**

1. LEGEND PLATES SHALL BE PROVIDED AS SHOWN WITH RESPECTIVE EQUIPMENT. TYP
2. PROVIDE MANUAL RESET PUSHBUTTON PER SPECIAL PROVISIONS.
3. ADDITIONAL DIALER SIGNALS FOR TEMPERATURE CONTROL PANEL(E-7).
4. PROVIDE ADDITIONAL TERMINALS FOR AUTO DIALER SIGNALS FROM EMERGENCY GENERATOR, AUTOMATIC TRANSFER SWITCH AND SURGE PROTECTION DEVICE.

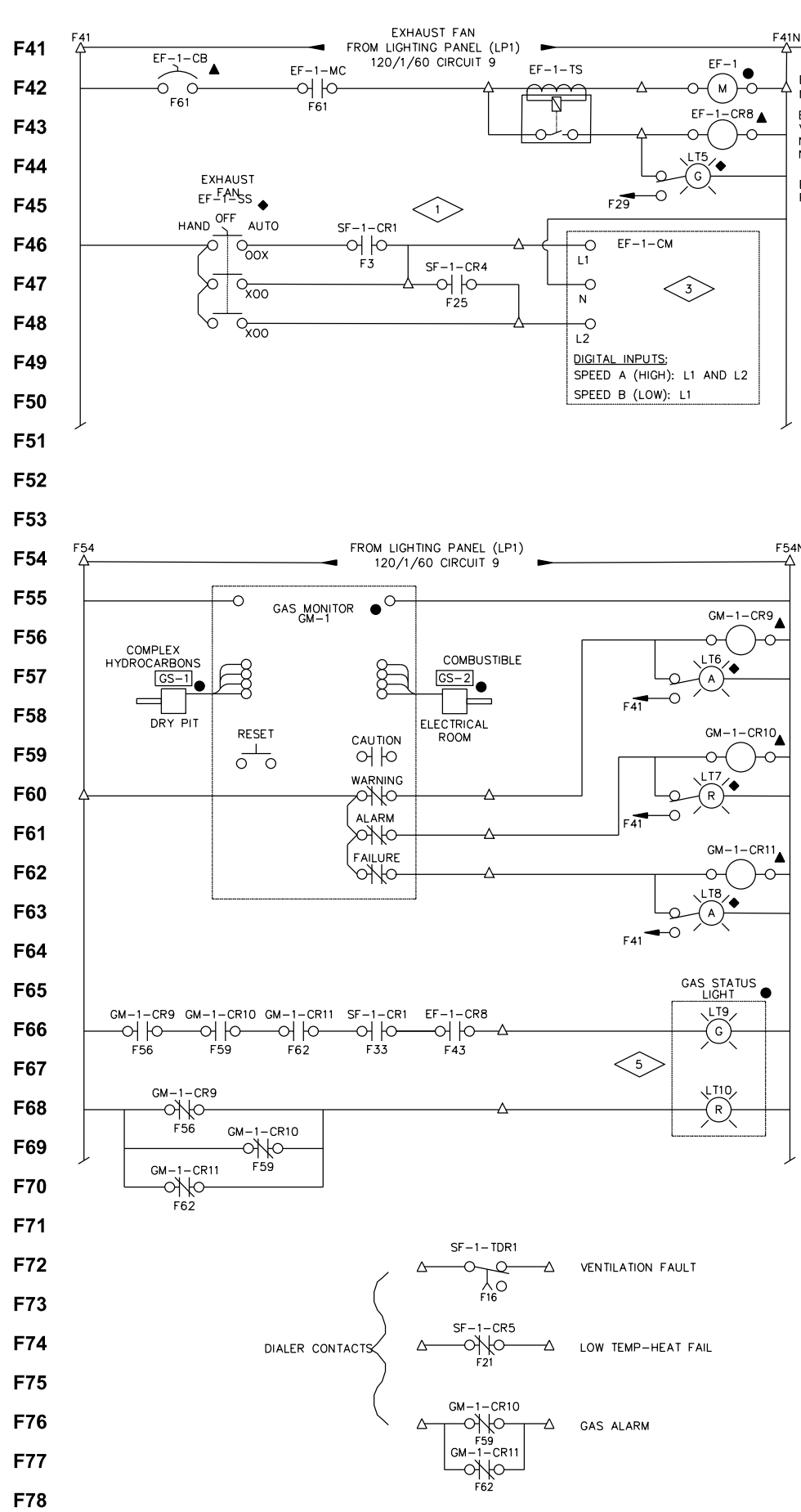
E-6

	USER NAME =	DESIGNED - JCE	REVISED -	<p style="text-align: center;"><b>STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION</b></p>	<p>READING PUMP STATION <b>MAIN PUMP CONTROL PANEL (MPCP-1) REFERENCE SCHEMATIC</b></p>			F.A.P. RTE. 649	SECTION (107)PS-3	COUNTY LIVINGSTON	TOTAL SHEETS 42	SHEET NO. 33
	PLOT SCALE =	CHECKED - DWG	REVISED -		SCALE:	SHEET OF SHEETS	STA. TO STA.	ILLINOIS FED. AID PROJECT XXXXXX				
	PLOT DATE =	DATE - 01-04-2019	REVISED -									



**SUPPLY FAN SF-1**

SUPPLY FAN (SF-1) SERVES ELECTRICAL ROOM AND DRY PIT.



**EXHAUST FAN EF-1**

EXHAUST FAN (EF-1) SERVES ELECTRICAL ROOM AND DRY PIT.

**LEGEND:**

- △ TERMINAL IN TCP
- TERMINAL ON DEVICE
- ▲ DEVICE ON TCP
- ◆ DEVICE ON DOOR
- DEVICE LOCALLY MOUNTED
- CBL CABLE
- CR CONTROL RELAY
- CM CONTROL MODULE(FAN MOUNTED)
- EF EXHAUST FAN
- GM GAS MONITOR
- GS GAS DETECTION SENSOR
- ICD INSULATED CONTROL DAMPER
- LT PANEL LIGHT(LED)
- MC MOTOR CONTACTOR
- MPR MOTOR PROTECTION RELAY
- OL OVERLOAD PROTECTION RELAY
- SF SUPPLY FAN
- TDR TIMED DELAY RELAY
- TS CURRENT DETECTION SWITCH (TOROIDAL)

**GAS MONITOR GM-1**

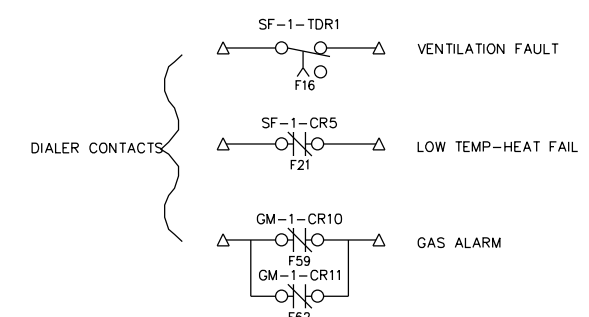
EXHAUST FAN (EF-1) SERVES ELECTRICAL ROOM, DRY PIT AND WET PIT.

**GENERAL NOTES:**

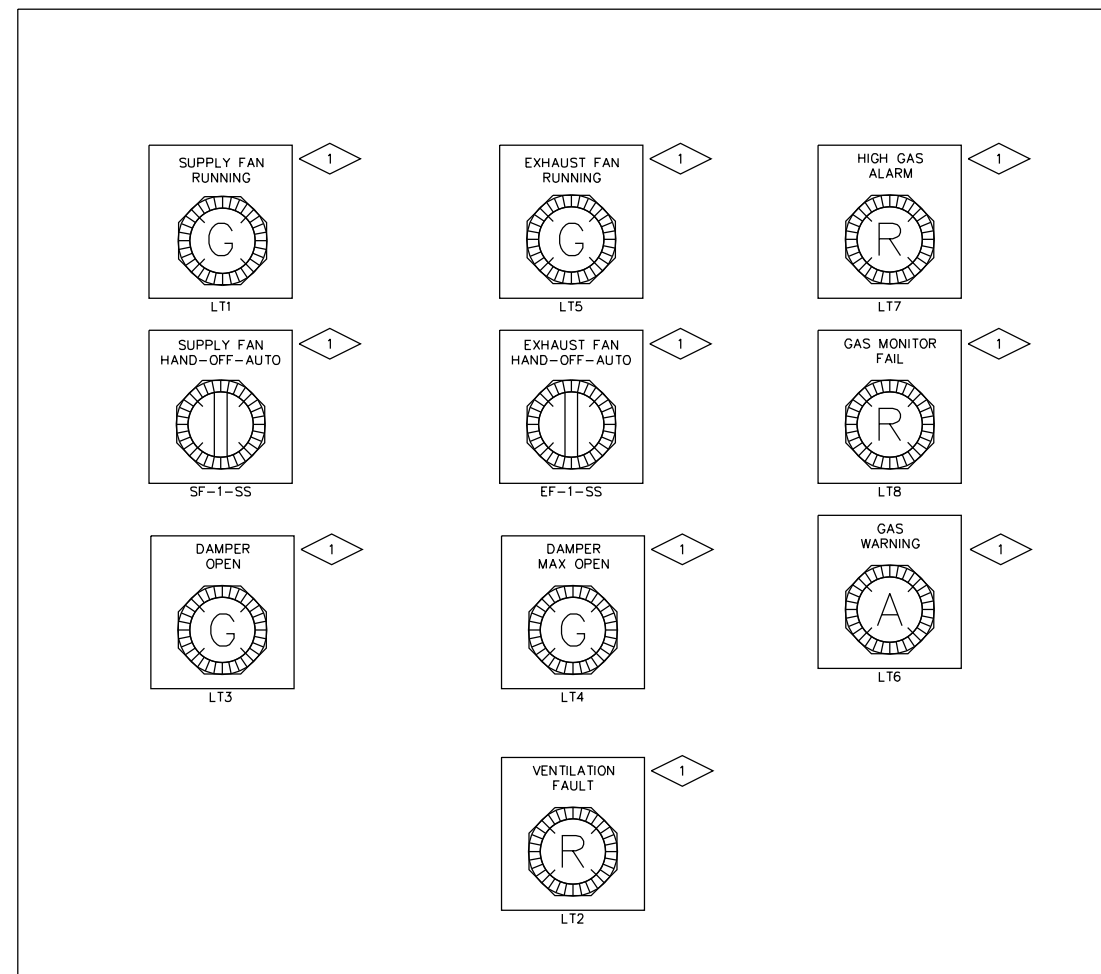
1. CONTRACTOR SHALL PROVIDE CONTROL SCHEMATIC SHOP DRAWINGS DEPICTING AND WIRE NUMBERS ASSOCIATED WITH MAIN PUMP CONTROL PANEL AND TERMINAL NUMBERS AS THEY ARE DEPICTED ON MANUFACTURERS EQUIPMENT TERMINAL BLOCKS. COORDINATE PRIOR TO SUBMITTING SHOP DRAWINGS. ALL WIRED DEVICES SHALL BE COORDINATED, DEPICTED, AND IDENTIFIED.

**PLAN NOTES:**

1. LIMIT SWITCH IS SHOWN IN THE DAMPER CLOSED POSITION. LIMIT SWITCH CLOSES WHEN DAMPER IS OPEN.
2. CONTACT CLOSES WHEN LIGHTS ARE ON IN SPACE AND/OR WHEN GAS ALARMS ARE EXCEEDED (AND WILL STAY ON FOR 15 MINUTES FOLLOWING GAS ALARM BEING CLEARED). SEE DRAWING E-20 FOR LIGHTING CIRCUITS.
3. 2-SPEED CONTROLLER IS FACTOR MOUNTED. DIGITAL INPUT SHALL USED FOR 2-SPEED CONTROL.
4. TEMPERATURE CONTROL PANEL SHALL CONTAIN POWER AND CONTROL COMPONENTS FOR THE SUPPLY FAN, EXHAUST FAN AND GAS MONITOR.
5. GAS STATUS LIGHTS SHALL BE MOUNTED TO EXTERIOR OF PUMP STATION. REFERENCE MOUNTING DETAIL N110 AND N606.



F79  
 F80  
 F81  
 F82  
 F83  
 F84  
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 F115  
 F116



TCP-1  
 VENTILATION CONTROL PANEL  
 OPERATOR DETAIL (NTS)

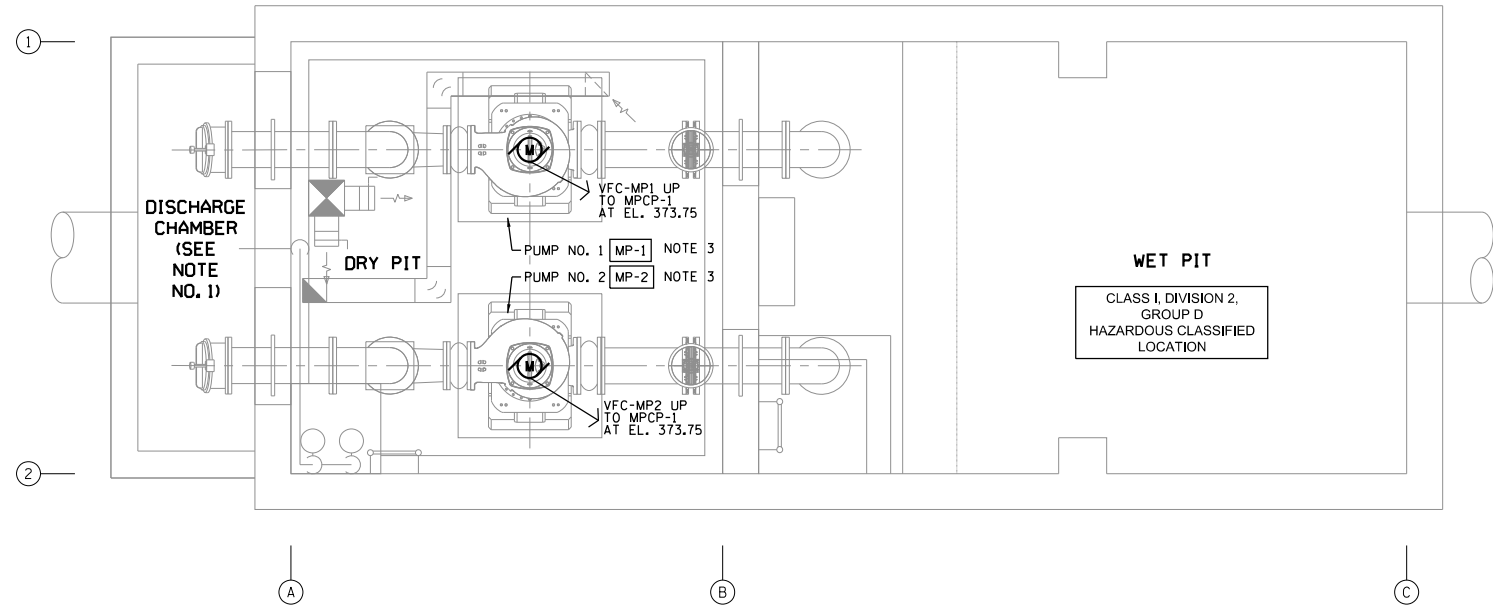
**GENERAL NOTES:**

- CONTRACTOR SHALL PROVIDE CONTROL SCHEMATIC SHOP DRAWINGS DEPICTING AND IDENTIFYING TERMINALS AND WIRE NUMBERS ASSOCIATED WITH SCADA PANEL AND TERMINAL NUMBERS AS THEY ARE DEPICTED ON MANUFACTURERS' EQUIPMENT TERMINAL BLOCKS. COORDINATE PRIOR TO SUBMITTING SHOP DRAWINGS. ALL WIRED DEVICES SHALL BE COORDINATED, DEPICTED, AND IDENTIFIED.

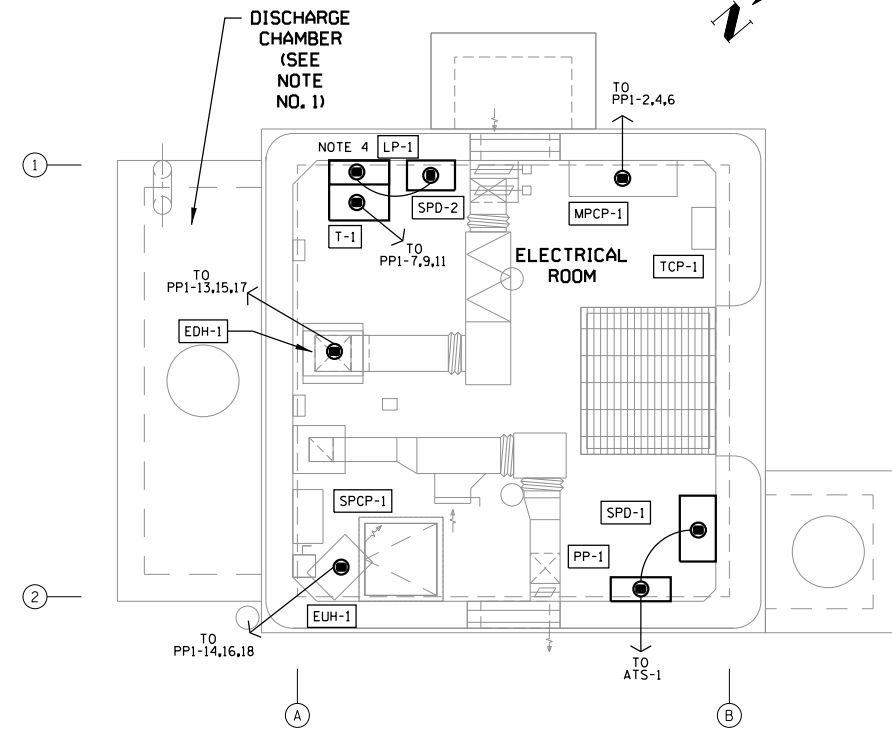
**PLAN NOTES:**

- LEGEND PLATES SHALL BE PROVIDED AS SHOWN WITH RESPECTIVE EQUIPMENT. TYP

	USER NAME =	DESIGNED - JCE	REVISED -	<b>STATE OF ILLINOIS</b> <b>DEPARTMENT OF TRANSPORTATION</b>	READING PUMP STATION <b>TEMPERATURE CONTROL PANEL (TCP-1)</b> <b>CONTROL SCHEMATIC</b>		F.A.P. RTE. 649	SECTION (107)PS-3	COUNTY LIVINGSTON	TOTAL SHEETS 42	SHEET NO. 35	
	PLOT SCALE =	CHECKED - DWG	REVISED -		SCALE:	SHEET OF	SHEETS STA. TO STA.	CONTRACT NO. 66J68				
	PLOT DATE =	DATE - 01-04-2019	REVISED -		ILLINOIS FED. AID PROJECT XXXXXX							



LOWER PLAN



UPPER PLAN

**NOTES:**

1. ALL AREAS WITHIN BUILDING EXCEPT DRY PIT AND ELECTRICAL ROOM SHALL BE:

CLASS I, DIVISION 2,  
GROUP D  
HAZARDOUS CLASSIFIED  
LOCATION

2. SEE DRAWING E-4 FOR CONDUIT AND CONDUCTOR REQUIREMENTS.

3. SEE DETAIL **E600**

4. SEE DETAIL **E901**

SCALE: 0 4 8 FT.

E-9



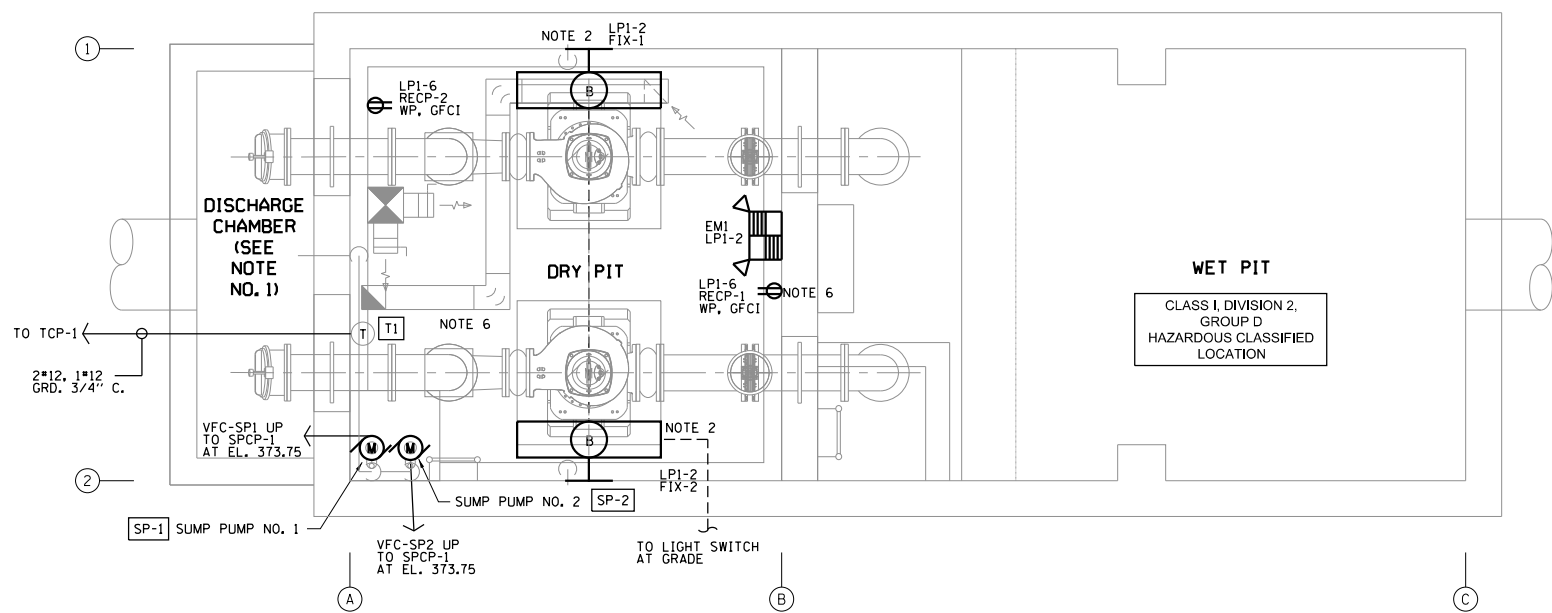
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	DRAWN - JRR	REVISED -
PLOT SCALE =	CHECKED - JAB	REVISED -
PLOT DATE =	DATE - 01-04-2019	REVISED -

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

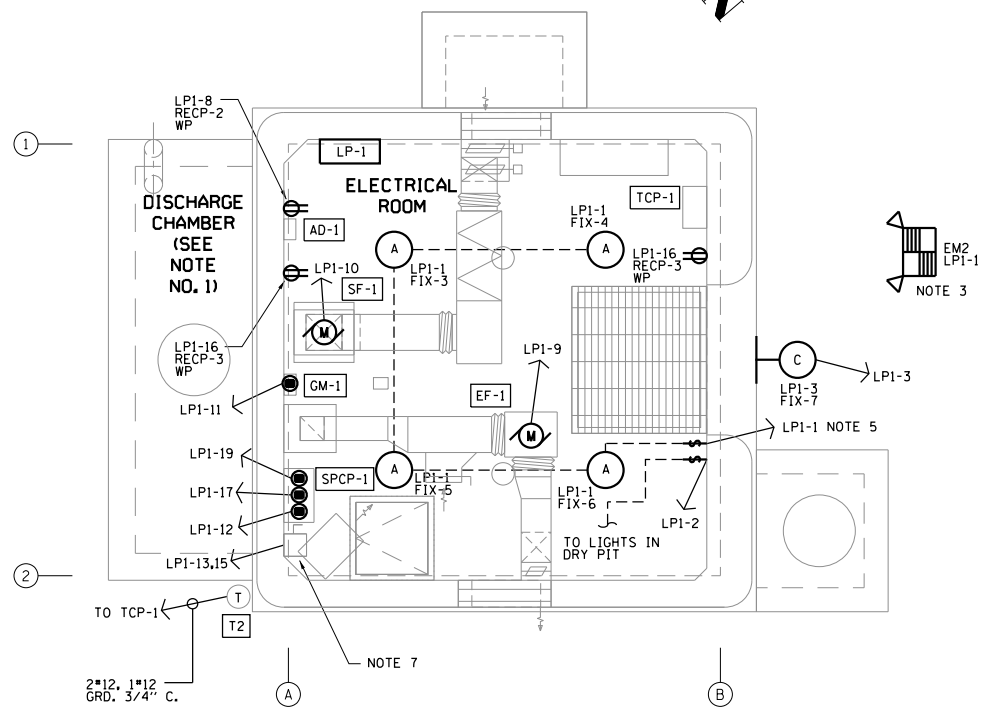
READING PUMP STATION  
ELECTRICAL  
PLANS

SCALE: SHEET OF SHEETS STA. TO STA.

F.A.P. RTE. 649	SECTION (107)PS-3	COUNTY LIVINGSTON	TOTAL SHEETS 42	SHEET NO. 36
CONTRACT NO. 66J68				
ILLINOIS FED. AID PROJECT XXXXXX				



LOWER PLAN



UPPER PLAN


- NOTES:**
- ALL AREAS WITHIN BUILDING EXCEPT DRY PIT AND ELECTRICAL ROOM SHALL BE:  

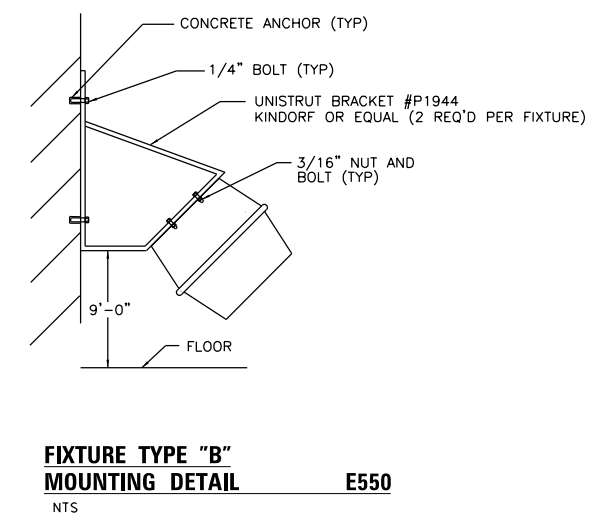
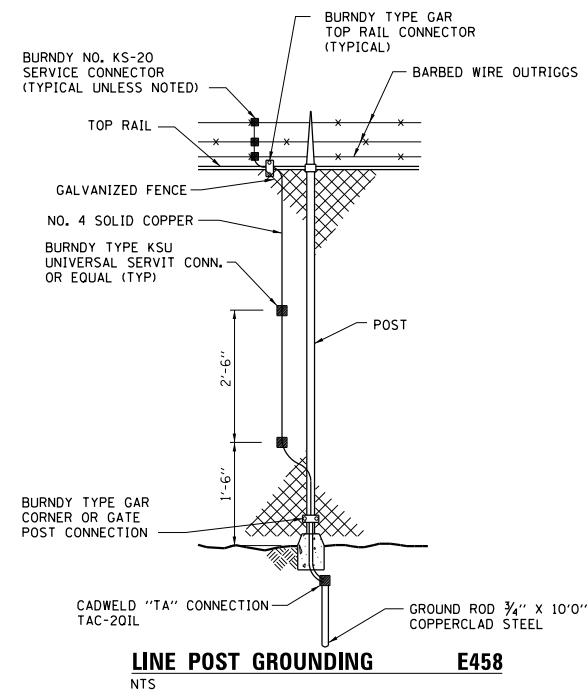
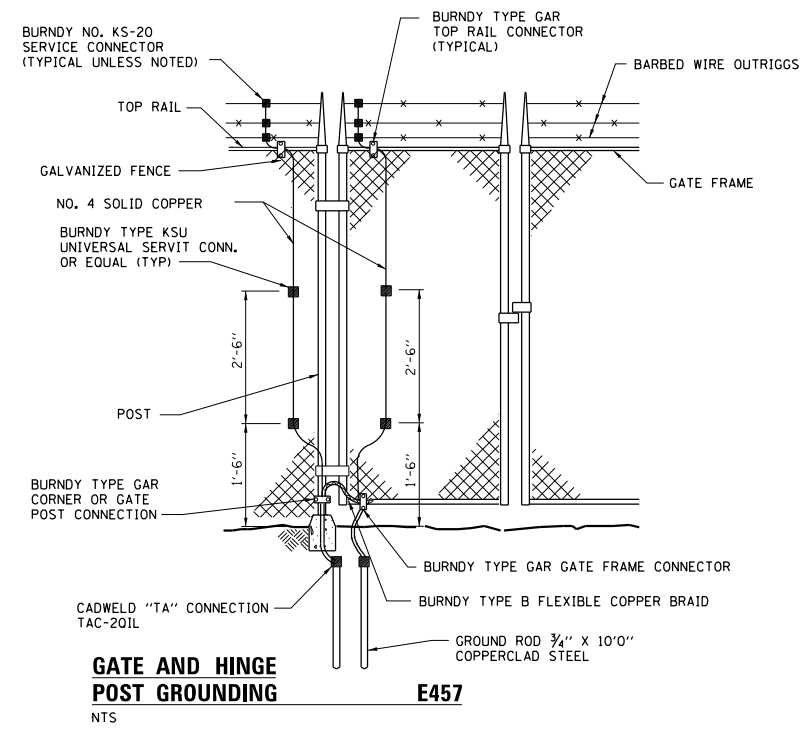
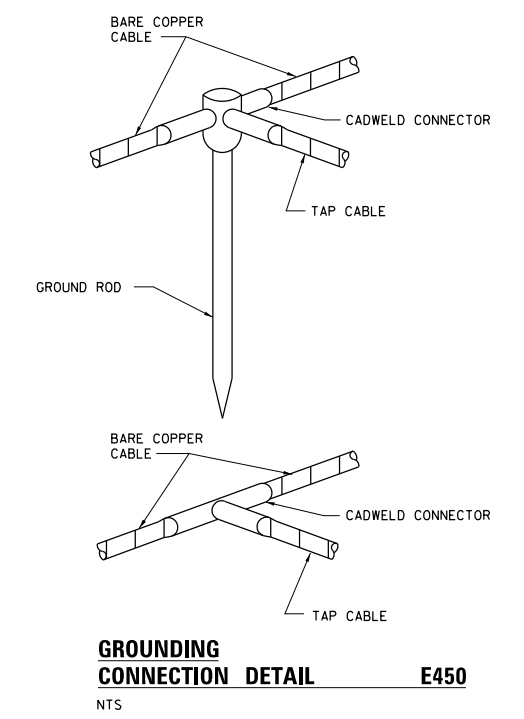
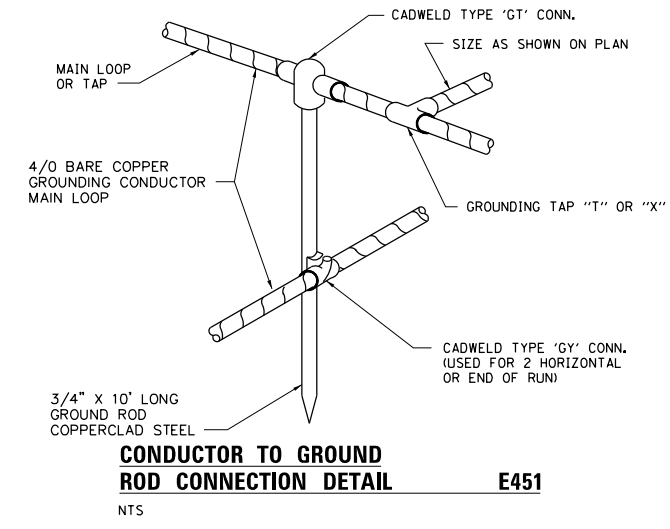
CLASS I, DIVISION 2,  
 GROUP D  
 HAZARDOUS CLASSIFIED  
 LOCATION
  - FIXTURES SHALL BE INSTALLED SUCH THAT THEY DO NOT IMPEDE THE REMOVAL OF THE PUMPS AND MAINTAIN ADEQUATE CLEARANCE AROUND LADDERS.
  - MOUNT FIXTURE CENTERED ABOVE DOOR; FIXTURE SHOWN OFF PAGE FOR CLARITY.
  - SEE DRAWING E-14 FOR PANEL SCHEDULE.
  - SWITCH SHALL BE 2 POLE SUCH THAT HVAC EQUIPMENT ADJUSTS PROPER AIR CHANGES IN PUMP STATION WHEN LIGHTING TURNS ON AND OFF.
  - RECEPTACLES IN DRY PIT SHALL BE MOUNTED 5'-0" ABOVE FINISHED FLOOR.
  - EXISTING RELOCATED DISCONNECT.

SCALE: 0 4 8 FT.

E-10

	USER NAME =	DESIGNED - JRR	REVISED -	<b>STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION</b>	<b>READING PUMP STATION ELECTRICAL LIGHTING PLANS</b>			F.A.P. RTE. 649	SECTION (107)PS-3	COUNTY LIVINGSTON	TOTAL SHEETS 42	SHEET NO. 37	
	PLOT SCALE =	CHECKED - JAB	REVISED -		SCALE: SHEET OF SHEETS STA. TO STA.			CONTRACT NO. 66J68					
	PLOT DATE =	DATE - 01-04-2019	REVISED -		ILLINOIS FED. AID PROJECT XXXXXX								

LUMINAIRE SCHEDULE						
TYPE	DESCRIPTION	LAMPS		MANUFACTURER	CATALOG NUMBER	REMARKS
		NO	ORD ABB			
A	1X4 ENCLOSED AND GASKETED LED FIXTURE	1	LED	APPLETON EATON	IMLLED C 2 C P5 BU P2LC/UNV1	CEILING MOUNTED
B	1X4 ENCLOSED AND GASKETED LED FIXTURE	1	LED	LITHONIA EATON	VAP 4000LM PCL MD MVOLT 50K 80CRI DL FPS2L	SEE E550 WALL MOUNTED 9'-0" ABOVE FLOOR
C	WALLPACK LED	1	LED	HOLOPHANE LITHONIA EATON	W4PLED 30C700 50K 120 PE BKSDP CSWX LED WPMLED	WALL MOUNTED ABOVE DOOR
	EMERGENCY BATTERY LIGHT WITH TWO UNIT MOUNTED LAMP HEADS AND CAPACITY FOR REMOTE HEADS	2	LED	HOLOPHANE APPLETON EATON	CZA11LT W LP03VS LTP SD ATX ELS SERIES AN SPECIFICATION EMERGENCY LIGHT	WALL MOUNTED 8'-0" ABOVE FLOOR



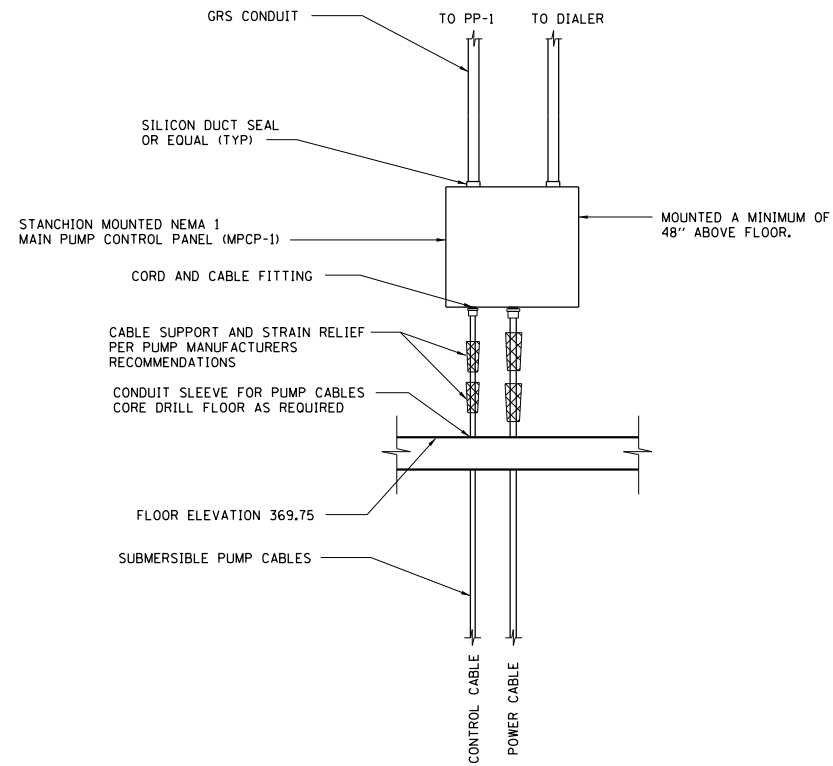
USER NAME =	DESIGNED - JRR	REVISED -
PLOT SCALE =	DRAWN - JRR	REVISED -
PLOT DATE =	CHECKED - JAB	REVISED -
	DATE - 01-04-2019	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

READING PUMP STATION  
**ELECTRICAL  
DETAILS**

SCALE: SHEET OF SHEETS STA. TO STA.

F.A.P. RTE. 649	SECTION (107)PS-3	COUNTY LIVINGSTON	TOTAL SHEETS 42	SHEET NO. 38
CONTRACT NO. 66J68				
ILLINOIS FED. AID PROJECT XXXXXX				

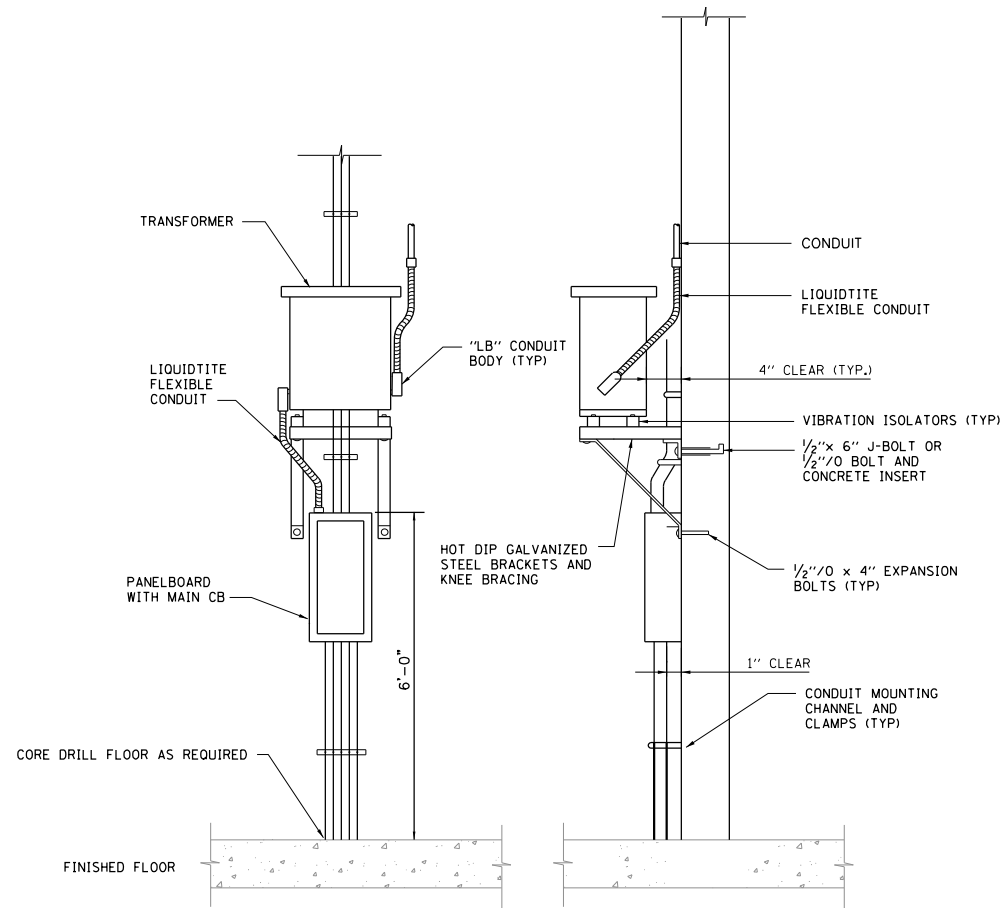


**FRONT VIEW**

NOTE: COORDINATE AMOUNT OF PUMP CABLES TO CONTROL PANEL WITH QUANTITY OF SUPPLIED PUMPS; SOME MANUFACTURERS REQUIRE ONE POWER CABLE AND ONE CONTROL CABLE

**SUBMERSIBLE PUMP CONTROL PANEL DETAIL E600**

NTS



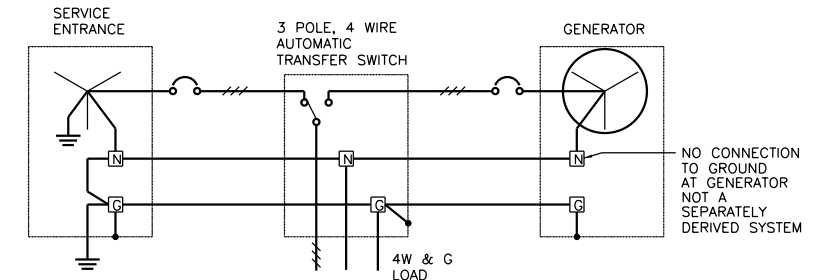
**FRONT**

**SIDE**

**WALL MOUNTED TRANSFORMER AND PANEL BOARD**

**E901**

NTS

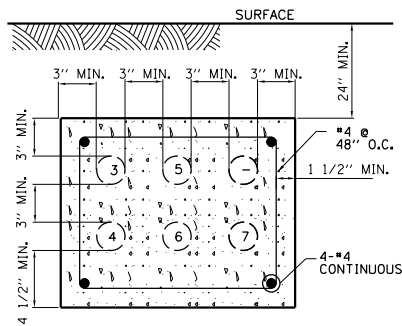


**GENERATOR GROUNDING DETAIL**

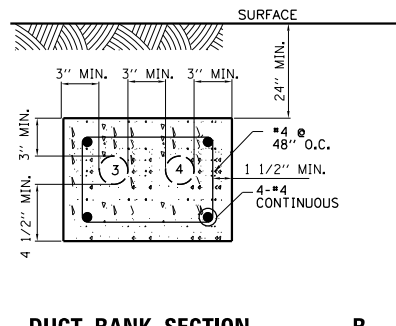
**E606**

NTS

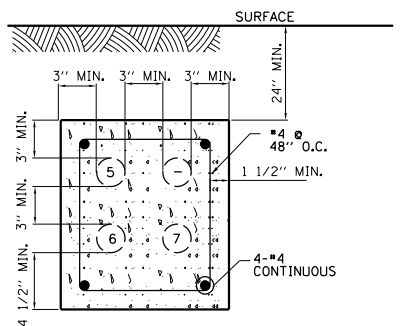
	USER NAME =	DESIGNED - JRR	REVISED -	<b>STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION</b>	<b>READING PUMP STATION ELECTRICAL DETAILS</b>			F.A.P. RTE. 649	SECTION (107)PS-3	COUNTY LIVINGSTON	TOTAL SHEETS 42	SHEET NO. 39
	PLOT SCALE =	CHECKED - JAB	REVISED -					CONTRACT NO. 66J68				
	PLOT DATE =	DATE - 01-04-2019	REVISED -					ILLINOIS FED. AID PROJECT XXXXXX				
	SCALE: SHEET OF SHEETS STA. TO STA.											



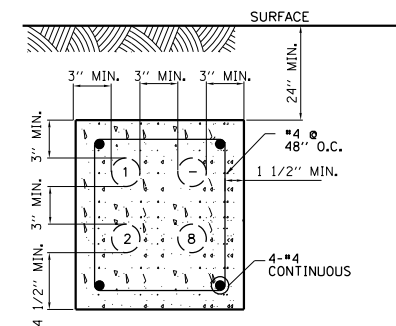
**DUCT BANK SECTION A**  
NTS E2



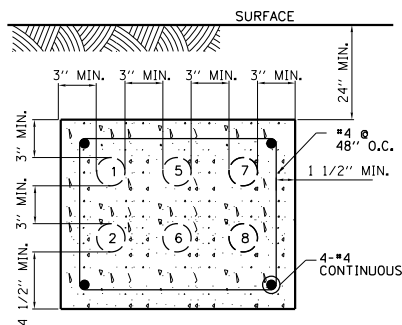
**DUCT BANK SECTION B**  
NTS E2



**DUCT BANK SECTION C**  
NTS E2



**DUCT BANK SECTION D**  
NTS E2



**DUCT BANK SECTION E**  
NTS E2

DUCTBANK SCHEDULE					
NUMBER	SIZE	FROM	TO	CONTENTS	REMARKS
1	2-1/2"	ATS-1	PP-1	POWER	480V
2	2-1/2"	ATS-1	PP-1	SPARE	CAP EACH END
3	2-1/2"	EG-1	ATS-1	POWER	480V
4	2-1/2"	EG-1	ATS-1	SPARE	CAP EACH END
5	1"	EG-1	LP-1	POWER	120V - COOLANT/ STRIP HEATER
6	1"	EG-1	LP-1	POWER	120V - BATTERY CHARGER/HTR & RECEPTACLES
7	1"	EG-1	DIALER	CONTROLS	
8	1"	ATS-1	DIALER	CONTROLS	

**NOTES:**

- CONDUIT ELBOWS IN UNDERGROUND DUCT BANKS SHALL BE PVC COATED GR5 CONDUIT.
- EXTERIOR ABOVE GRADE CONDUIT SHALL BE PVC COATED GR5 CONDUIT.
- CONDUITS ENCASED IN CONCRETE SHALL BE PVC UNLESS NOTED IN SCHEDULE.
- "-" REPRESENTS A SPACE IN THE DUCT BANK.
- CONTRACTOR SHALL VERIFY CONDUIT DUCT BANK LAYOUTS. CONTRACTOR SHALL MODIFY CONDUIT LOCATIONS IN DUCT BANK TO SUIT FIELD CONDITIONS.
- CONCRETE SHALL BE DYED RED.
- TOP OF DUCT BANKS SHALL BE A MINIMUM OF 30" BELOW GRADE IN VEHICULAR TRAFFIC AREAS.

SURFACE MOUNTED NEMA 1 480 V, 3 PHASE, 3 WIRE RATING 42,000 A.I.C.										
PANEL SCHEDULE PP-1										
200A MAIN BREAKER 200A MAIN BUS 200A MIN. GRD. BUS										
CKT. NO.	TRIP/P	DESCRIPTION	VA	PHASE			VA	DESCRIPTION	TRIP/P	CKT. NO.
				A	B	C				
1		SURGE PROTECTIVE DEVICE SPD-1					15,533	MAIN PUMP CONTROL PANEL MPCP-1	150/3	2
3	100/3						15,533			4
5							15,533			6
7		TRANSFORMER XFMR-1	10000							8
9	50/3		10000					SPARE	20/3	10
11			10000							12
13		ELECTRIC DUCT HEATER EDH-1	3333				3333	ELECTRIC UNIT HEATER EUH-1	20/3	14
15	20/3		3333				3333			16
17			3333				3333			18
19		SPARE							20/3	20
21	20/3							SPARE	20/3	22
23										24
25		SPARE							20/3	26
27	20/3							SPARE	20/3	28
29										30
TOTALS:			40000	32199	32199	32199	56600			

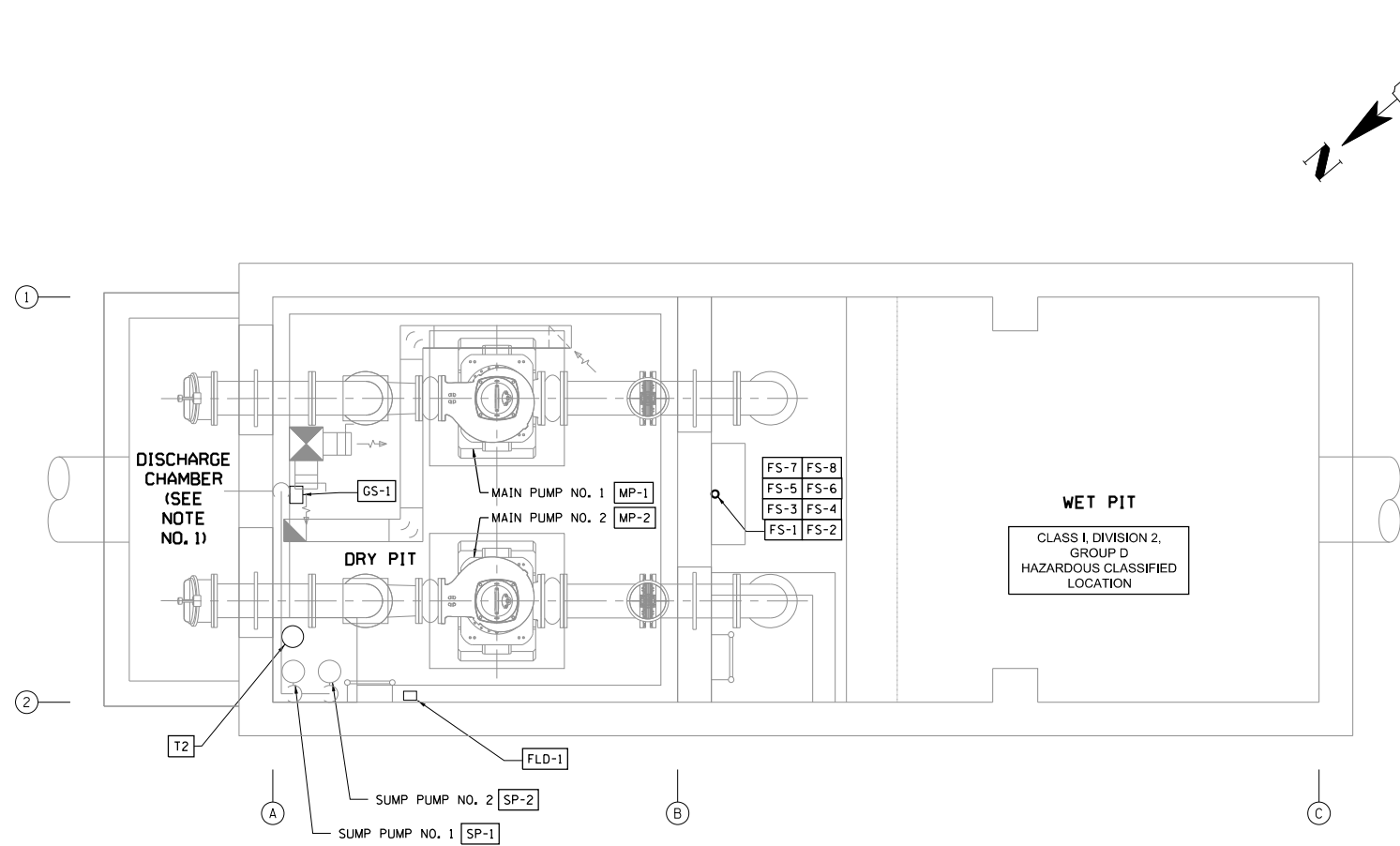
TOTAL PANEL CONNECTED LOAD: 96600VA, 116.2A @ 480 V

SURFACE MOUNTED NEMA 1 120/208 V, 3 PHASE, 4 WIRE RATING 22,000 A.I.C.										
PANEL SCHEDULE LP-1										
100A MAIN BREAKER 100A MAIN BUS 100A MIN. GRD. BUS										
VA	CKT. NO.	TRIP/P	DESCRIPTION	PHASE			DESCRIPTION	TRIP/P	CKT. NO.	VA
				A	B	C				
45	1	20/1	ELECTRICAL ROOM LIGHTS				DRY PIT LIGHTS	20/1	2	90
85	3	20/1	EXTERIOR BUILDING LIGHTS				GENERATOR BATTERY CHARGER/HEATER	30/1	4	1560
120	5	20/1	SUMP PUMP CONTROL PANEL SPCP-1				DRY PIT RECPT	20/1	6	360
600	7	20/1	GENERATOR STRIP HEATER				AUTODIALER - AD-1	20/1	8	180
120	9	20/1	EXHASUT FAN - EF-1				SUPPLY FAN - SF-1	20/1	10	120
120	11	20/1	GAS METER - GM-1				GENERATOR COOLANT HEATER	30/1	12	1500
500	13	60/2	STORAGE SHED				GENERATOR RECEPTACLES	20/1	14	360
	15						ELECTRICAL ROOM RECEPTACLES	20/1	16	360
1176	17	20/1	SUMP PUMP NO. 1 - SP-1				SPARE	20/1	18	-
1176	19	20/1	SUMP PUMP NO. 2 - SP-2				SPARE	20/1	20	-
-	21	20/1	SPARE				SPARE	20/1	22	-
-	23	20/1	SPARE				SPARE	20/1	24	-
-	25	20/1	SPARE				SPARE	20/1	26	-
-	27	20/1	SPARE				SPARE	20/1	28	-
-	29	20/1	SPARE				SPARE	20/1	30	-
-	31	20/1	SPARE							32
-	33	20/1	SPARE				SURGE PROTECTION DEVICE SPD-2	60/3	34	-
-	35	20/1	SPARE							36
TOTALS:				2531	2745	3276	-			4530

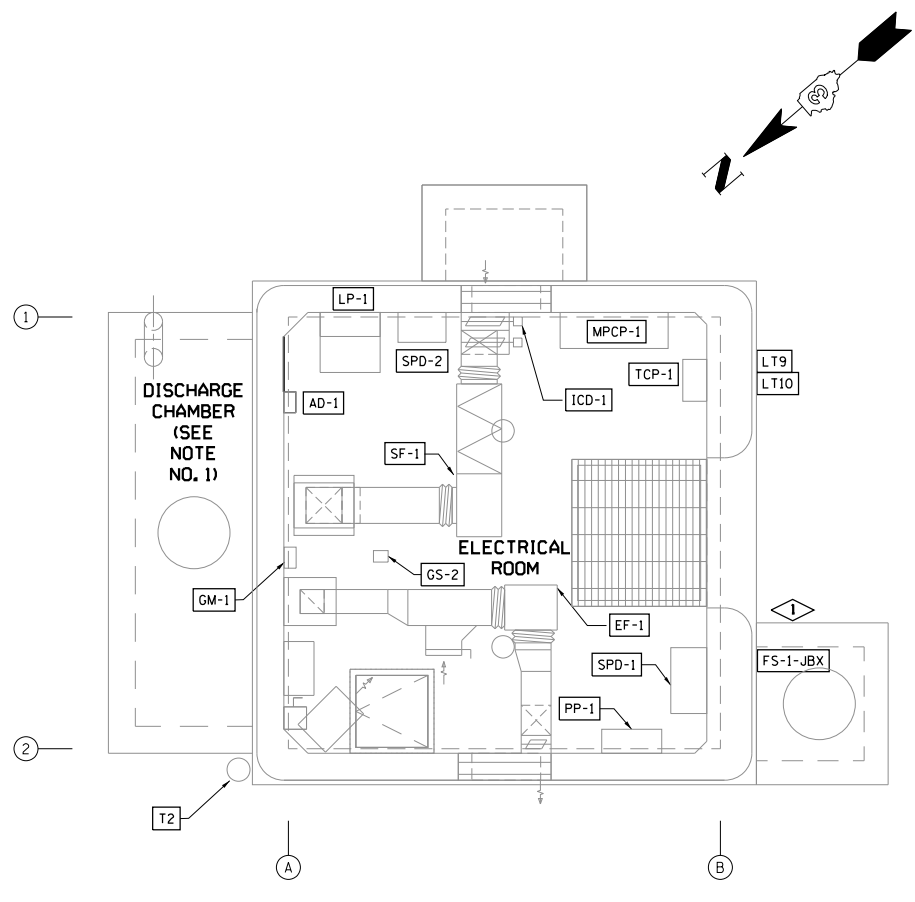
TOTAL PANEL CONNECTED LOAD: 8,472VA, 23.5A @ 208V

E-14





**LOWER PLAN**



**UPPER PLAN**

**INDEX LEGEND:**

- ( ) \*14 (QUANTITY) \*14 THHN/THWN CONDUCTORS.
- ( ) TSP (QUANTITY) \*16 TWISTED SHIELDED PAIR.
- ( ) MB (QUANTITY) \*16 TWISTED SHIELDED PAIR (MODBUS).
- ( ) 3C-S (QUANTITY) \*16 SHIELDED 3-CONDUCTOR.
- ( ) 4C-S (QUANTITY) \*16 SHIELDED 4-CONDUCTOR.
- ( ) 5C-S (QUANTITY) \*16 SHIELDED 5-CONDUCTOR.
- ( ) RTD (QUANTITY) 3-WIRE RTD CABLE.
- ( ) E (QUANTITY) TYPE E THERMOCOUPLE CABLE.
- ( ) K (QUANTITY) TYPE K THERMOCOUPLE CABLE.
- ( ) FOC (QUANTITY) FIBER OPTIC CABLE.
- ( ) CE (QUANTITY) COPPER ETHERNET.
- ( ) VFC (QUANTITY) VENDOR FURNISHED CABLE.

**I&C GENERAL NOTES:**

1. DRAWINGS SHOW CONTROL, SIGNAL AND ASSOCIATED SINGLE PHASE POWER WIRING REQUIREMENTS.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WIRING, WHETHER SHOWN OR NOT, NECESSARY FOR A COMPLETE AND OPERABLE SYSTEM.
3. DRAWINGS SHOW APPROXIMATE LOCATIONS OF DEVICES AND PANELS, FIELD VERIFY DIMENSIONS AND ELEVATIONS.
4. 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.
5. CONDUITS SHALL BE SIZED TO ACCOMMODATE REQUIRED CONDUCTORS AND SPARES.
6. DRAWINGS DO NOT SHOW CONDUIT SYSTEMS, PROVIDE, AS A MINIMUM, PULL BOXES AS RECOMMENDED BY CONDUCTOR MANUFACTURER. CONDULETS SHALL NOT BE USED AS PULL BOXES.
7. PROVIDE EXPLOSION-PROOF SEAL-OFF FITTINGS ON ALL CONDUIT EXITING CLASSIFIED OR RATED LOCATIONS. FITTINGS SHALL BE INSTALLED PER NEC.
8. SHIELDED AND UNSHIELDED CONDUCTORS SHALL HAVE A MINIMUM OF 6" SEPARATION BETWEEN CONDUIT ON PARALLEL RUNS.
9. SHIELDED AND UNSHIELDED CONDUCTORS SHALL BE SEPARATED BY STEEL BARRIERS IN ALL COMBINED SIGNAL JUNCTION BOXES AND INSTRUMENT TERMINATION CABINETS.
10. CONDUCTORS SHALL NOT BE SPLICED EXCEPT AT TERMINALS OR AS DESIGNATED BY ENGINEER.
11. FOR EACH CONDUIT, PROVIDE A MINIMUM OF TWO CONDUCTORS OR 10% OF TOTAL CONDUCTORS IN CONDUIT, WHICHEVER IS GREATER AS SPARES. TAG BOTH ENDS OF EACH SPARE. TERMINATE EACH END OF SPARE CONDUCTORS AT TERMINALS WHENEVER POSSIBLE.
12. SPARE AND GROUND CONDUCTORS ARE GENERALLY NOT SHOWN IN WIRING TABLES.

ID	DESCRIPTION	DETAIL	WIRING	DESTINATION	ID
MP-1-CBL	MAIN PUMP NO. 1	--	(1) VFC	MAIN PUMP CONTROL PANEL	MPCP-1
MP-2-CBL	MAIN PUMP NO. 2	--	(1) VFC		
FLD-1	FLOOD DETECTION SWITCH	N244	(4) #14		
EG-1	EMERGENCY GENERATOR	--	(4) #14		
ATS-1	AUTOMATIC TRANSFER SWITCH	--	(2) #14	FLOAT SWITCH JUNCTION BOX	FS-1-JBX
SPD-1	SURGE PROTECTION DEVICE	--	(2) #14		
FS-1-JBX	FLOAT SWITCH JUNCTION BOX	N170	(20) #14		
FS-1	FLOAT SWITCH NO. 1	--	(1) VFC		
FS-2	FLOAT SWITCH NO. 2	--	(1) VFC		
FS-3	FLOAT SWITCH NO. 3	--	(1) VFC		
FS-4	FLOAT SWITCH NO. 4	--	(1) VFC		
FS-5	FLOAT SWITCH NO. 5	--	(1) VFC		
FS-6	FLOAT SWITCH NO. 6	--	(1) VFC	TEMPERATURE CONTROL PANEL	TCP-1
FS-7	FLOAT SWITCH NO. 7	--	(1) VFC		
FS-8	FLOAT SWITCH NO. 8	--	(1) VFC		
ICD-1	INSULATED CONTROL DAMPER	--	(1) VFC		
SF-1	SUPPLY FAN	--	(2) #12		
EF-1	EXHAUST FAN	--	(2) #12		
EF-1	EXHAUST FAN	--	(3) #14		
LT9	SAFE ENTRY EXTERIOR LIGHT (GRN)	N110	(2) #14		
LT10	SAFE ENTRY EXTERIOR LIGHT (RED)	N110	(2) #14		
LS-1	LIGHT SWITCH	--	(2) #14		
T1	OUTDOOR THERMOSTAT	--	(2) #14		
T2	WET PIT THERMOSTAT	--	(2) #14		
GM-1	GAS MONITOR	N608	(12) #14	GAS MONITOR	GM-1
GS-1	GAS SENSOR NO. 1 (HYDROCARBONS)	N608	(1) TSP		
GS-2	GAS SENSOR NO. 2 (LEL)	N608	(1) TSP	AUTODIALER	AD-1
MPCP-1	MAIN PUMP CONTROL PANEL	N170	(24) #14		
TCP-1	TEMPERATURE CONTROL PANEL	N170	(12) #14		

**PLAN NOTES:**

1. FLOAT SWITCH JUNCTION BOX (FS-1-JBX) SHALL BE NEMA 4X 316 STAINLESS STEEL PAD LOCKABLE ENCLOSURE. ENCLOSURE SHALL BE MOUNTED ABOVE GRADE.

**GENERAL NOTES:**

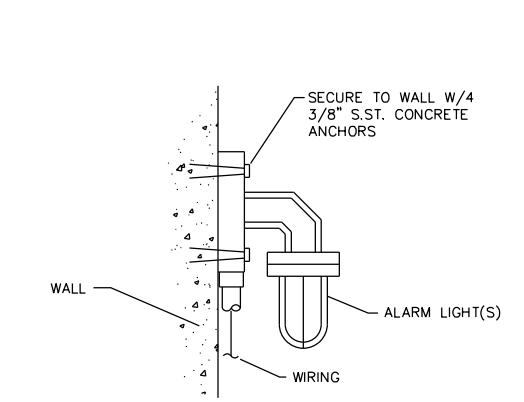
1. ALL AREAS WITHIN BUILDING EXCEPT DRY PIT AND ELECTRICAL ROOM SHALL BE:

CLASS I, DIVISION 2,  
GROUP D  
HAZARDOUS CLASSIFIED  
LOCATION

SCALE: 0 4 8 FT.

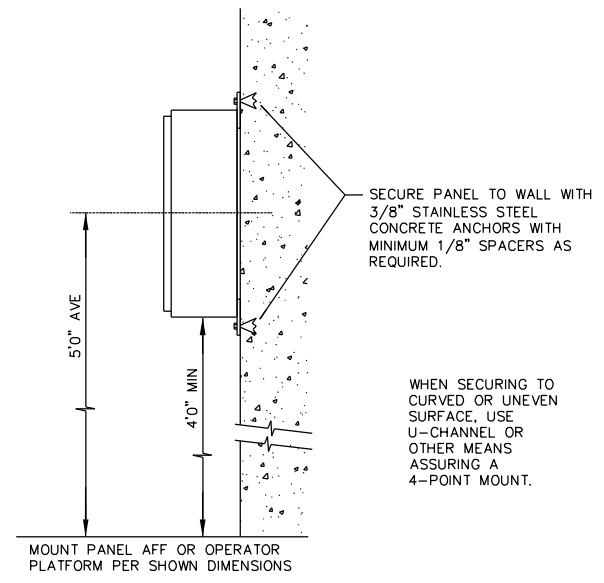
E-15

	USER NAME =	DESIGNED - JCE	REVISED -	<b>STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION</b>	<b>READING PUMP STATION INSTRUMENTATION AND CONTROLS PLANS</b>			F.A.P. RTE. 649	SECTION (107)PS-3	COUNTY LIVINGSTON	TOTAL SHEETS 42	SHEET NO. 41	
	PLOT SCALE =	CHECKED - DWG	REVISED -		SCALE:	SHEET	OF	SHEETS	STA.	TO	STA.	CONTRACT NO. 66J68	
	PLOT DATE =	DATE - 01-04-2019	REVISED -		ILLINOIS FED. AID PROJECT XXXXXX								

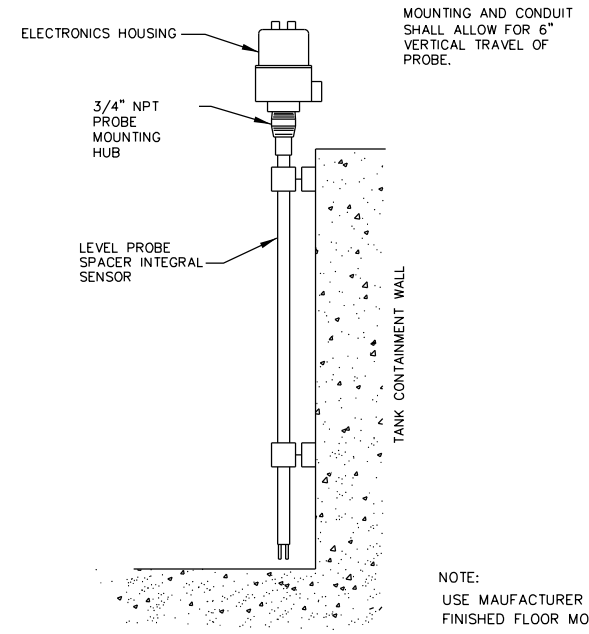
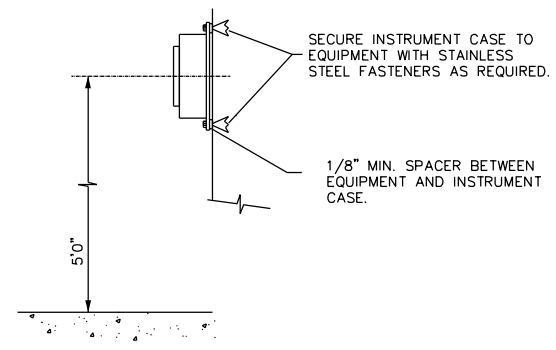


NOTE:  
1. PROVIDE SEAL-OFF CONNECTORS AS REQUIRED  
2. MOUNT OUTSIDE INSIGHT OF PUMP STATION ACCESS DOOR.

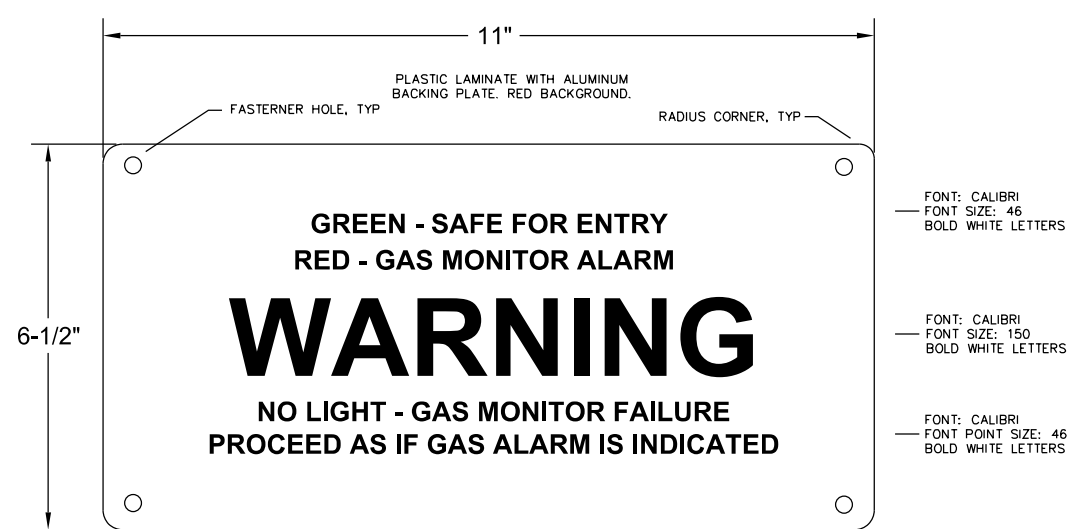
WALL MOUNT ALARM LIGHT **N110**  
NTS



ENCLOSURE AND INSTRUMENT WALL MOUNT **N170**  
NTS

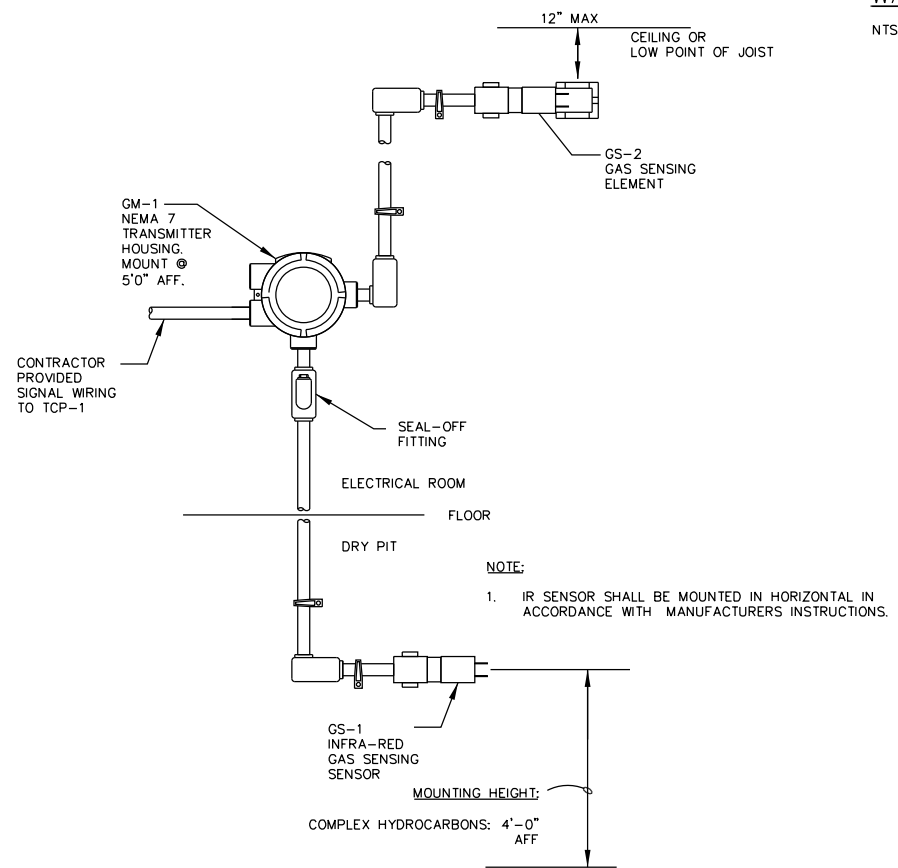


RF ADMITTANCE LEVEL SWITCH  
WALL MOUNT (AREA FLOOD) **N244**  
NTS



NOTES:  
1. PROVIDE WARNING SIGN FOR EACH SET OF ALARM LAMPS.  
AFFIX SIGN TO WALL WITH TYPE 316 STAINLESS STEEL  
FASTENERS.  
2. MOUNT ADJACENT DEVICES. READABLE FROM 15 FEET MINIMUM.  
FINAL LOCATION TO BE DETERMINED BY OWNER AND ENGINEER.

WARNING SIGN **N606**  
NTS



COMBUSTIBLE GAS AND COMPLEX HYDROCARBONS  
SENSORS/TRANSMITTER **N608**  
NTS



USER NAME =	DESIGNED - JCE	REVISED -
	DRAWN - JCE	REVISED -
PLOT SCALE =	CHECKED - DWG	REVISED -
PLOT DATE =	DATE - 01-04-2019	REVISED -

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

READING PUMP STATION INSTRUMENTATION AND CONTROLS DETAILS			
SCALE:	SHEET	OF SHEETS	STA. TO STA.

F.A.P. RTE. 649	SECTION (107)PS-3	COUNTY LIVINGSTON	TOTAL SHEETS 42	SHEET NO. 42
CONTRACT NO. 66J68				
ILLINOIS FED. AID PROJECT XXXXXX				