250

06-14-2019 LETTING ITEM 250

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
332A & 649	(2SB-FAGH)PS-1 & (107)PS-3	*	42	1
*IROQUOIS & LIVINGSTON	ILLINOIS	CONTRACT NO 66J68		

INDEX OF SHEETS

STANDARDS

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

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

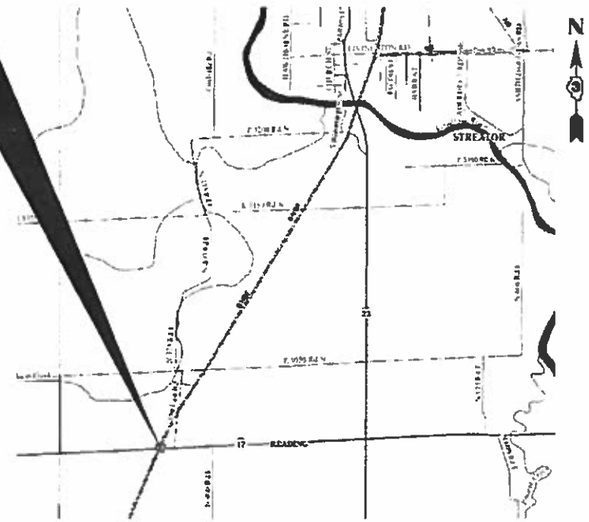
PROPOSED HIGHWAY PLANS

F.A.P. ROUTE 332A (IL 1) & F.A.P. ROUTE 649 (IL 17)
SECTION (2SB-FAGH)PS-1 & (107)PS-3 &
PROJECT
PUMP STATION REPAIRS
IROQUOIS & LIVINGSTON

C-93-046-19

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

100' 200' 300' — 1"= 100'
0 10' 20' 30' — 1"= 10'
0 50' 100' — 1"= 50'
0 50' 100' — 1"= 40'
0 50' 100' — 1"= 30'
0 50' 100' — 1"= 20'

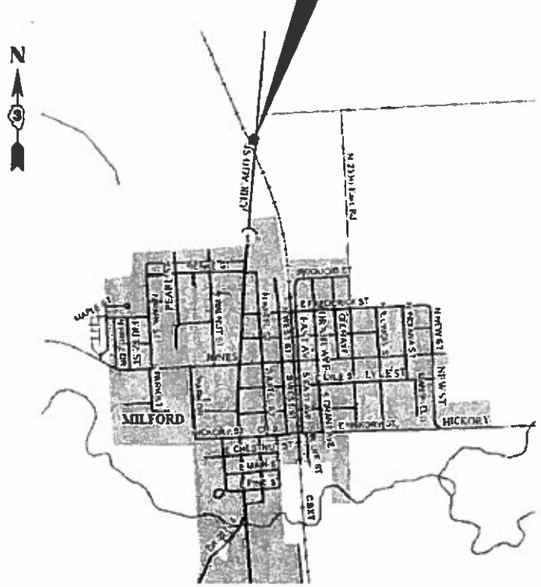
FULL SIZE PLANS HAVE BEEN PREPARED USING STANDARD ENGINEERING SCALES. REDUCED SIZED PLANS WILL NOT CONFORM TO STANDARD SCALES. IN MAKING MEASUREMENTS ON REDUCED PLANS, THE ABOVE SCALES MAY BE USED.

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

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

D-93-026-19

LOCATION OF SECTION INDICATED THUS: - ■ -

FUNCTIONAL CLASSIFICATION

RURAL MINOR ARTERIAL	RURAL OTHER ARTERIAL
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 04/25 2019
REGIONAL ENGINEER

May 10 2019
ENGINEER OF DESIGN AND ENVIRONMENT

May 10 2019
DIRECTOR OF HIGHWAYS PROJECT IMPLEMENTATION

PRINTED BY THE AUTHORITY 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:

DISTRICT STUDIES & PLANS ENGINEER

DATE: 2-25-19

EXAMINED BY:

DISTRICT CONSTRUCTION ENGINEER

DISTRICT MATERIALS ENGINEER

DISTRICT OPERATIONS ENGINEER

FILE NAME = $FILE$	USER NAME = $USER$	DESIGNED - RW	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	GENERAL NOTES	F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS / SHEET NO.
		DRAWN - RW	REVISED -			332A & 649	(2SB-FAGH)PS-1 & (107)PS-3	*	42 / 2
	PLOT SCALE = $SCALE$	CHECKED - EP	REVISED -			*IROQUOIS & LIVINGSTON		CONTRACT NO. 66J68	
$MODELNAME$	PLOT DATE = $DATE$	DATE - 10/10/2018	REVISED -		SCALE: SHEET 1 OF 1 SHEETS STA. TO STA.			ILLINOIS FED. AID PROJECT	

				CONSTRUCTION CODE	
				IROQUOIS	LIVINGSTON
				ROADWAY	ROADWAY
CODE NO.	ITEM	UNIT	TOTAL QUANTITY	0044	0044
				RURAL	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

FILE NAME =

DONOHUE

USER NAME =	DESIGNED - MTR	REVISED - RW 01-25-2019
	DRAWN - MTR	REVISED -
PLOT SCALE =	CHECKED - NWC	REVISED -
PLOT DATE =	DATE - 01-04-2019	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GENERAL
SUMMARY OF QUANTITIES

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

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

REV. 5/15/19

	CODE NO.	ITEM	UNIT	TOTAL QUANTITY	CONSTRUCTION CODE IROQUOIS ROADWAY 0044 RURAL	CONSTRUCTION CODE LIVINGSTON ROADWAY 0044 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

FILE NAME =

DONOHUE

USER NAME =	DESIGNED - MTR	REVISED - RW 01-25-2019
	DRAWN - MTR	REVISED -
PLOT SCALE =	CHECKED - NWC	REVISED -
PLOT DATE =	DATE - 01-04-2019	REVISED -

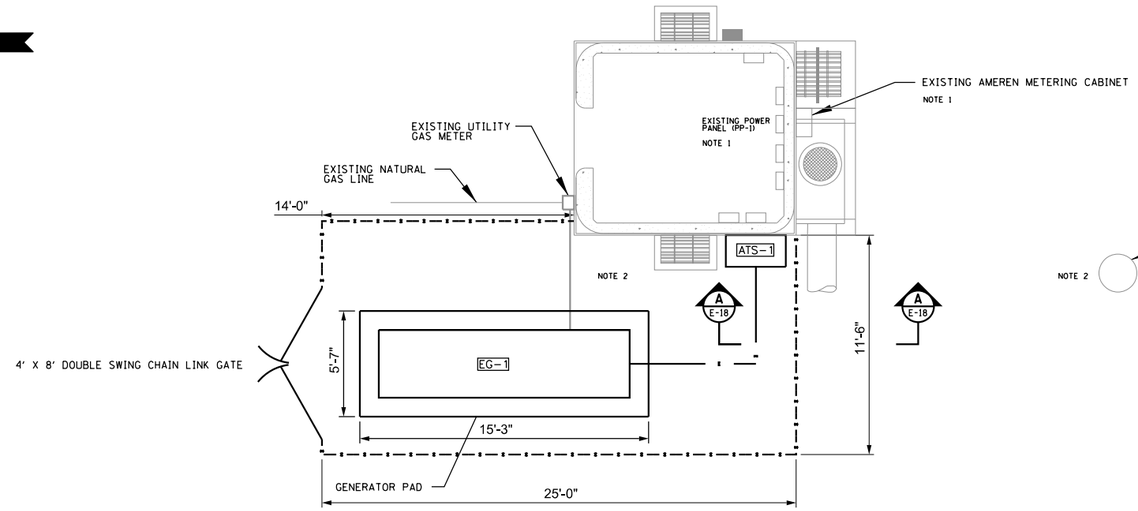
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GENERAL
SUMMARY OF QUANTITIES

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

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
649	(107)PS-3	LIVINGSTON	42	4
		CONTRACT NO. 66J68		
	ILLINOIS FED. AID PROJECT XXXXXXX			

SITE AERIAL - MIFORD PUMP STATION
NTS

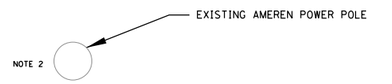


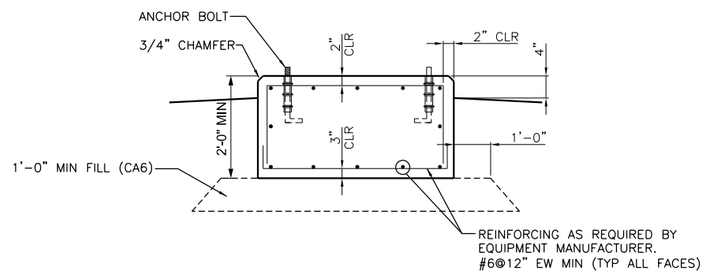
PLAN
MILFORD PUMP STATION

SCALE: 0 2 4 FT.

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 DRAWING E-17 FOR CONDUIT AND CONDUCTOR REQUIREMENTS.
2. CONTRACTOR TO COORDINATE WITH AMEREN TO RELOCATE GUY WIRING LOCATED NEXT TO PUMP STATION.





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
N.T.S.

FILE NAME =

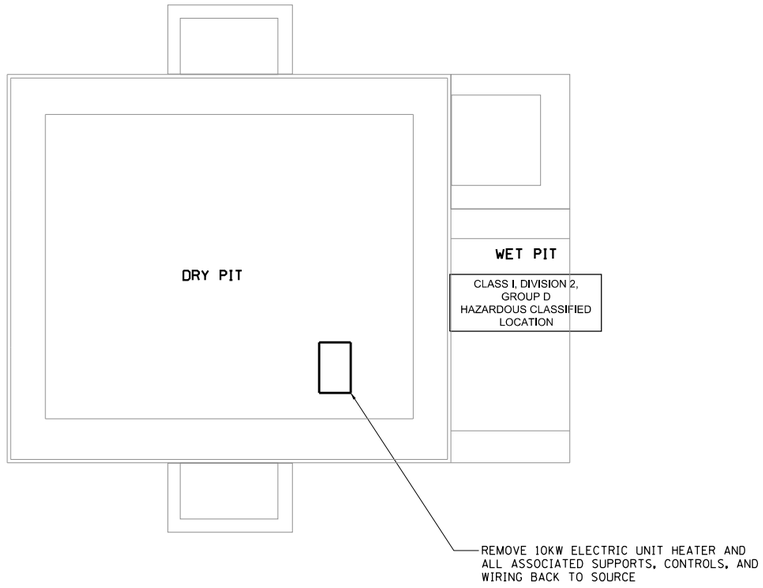
DONOHUE	USER NAME =	DESIGNED - JRR	REVISED -
		DRAWN - JRR	REVISED -
	PLOT SCALE =	CHECKED - JAB	REVISED -
	PLOT DATE =	DATE - 01-04-2019	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

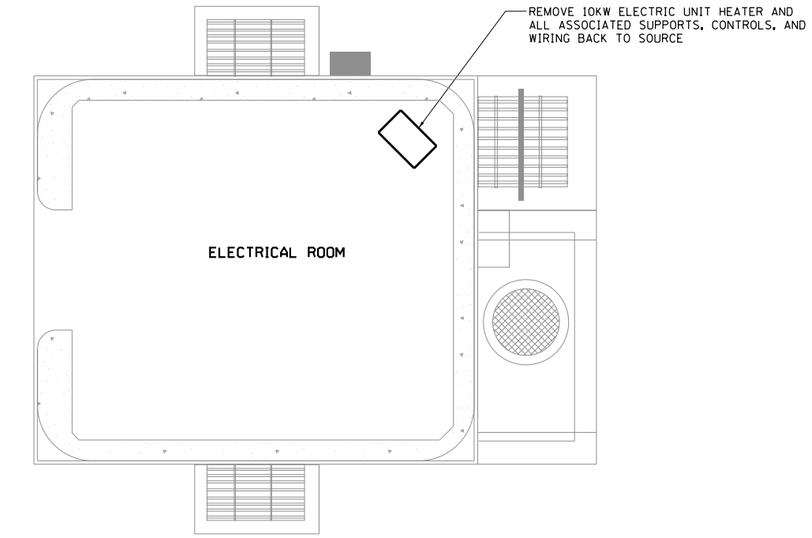
MILFORD PUMP STATION
ELECTRICAL
SITE PLAN

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

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
332A	(2SB-FAGH)PS-1	IROQUOIS	42	5
		CONTRACT NO. 66J68		
	ILLINOIS	FED. AID PROJECT XXXXXX		



LOWER PLAN



UPPER PLAN

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, REATIN THESE CIRCUITS AND RELOCATE EXISTING CONDUIT AND EXTEND EXISTING CIRCUITS AS REQUIRED FOR THE INSTALLATION OF NEW EQUIPMENT.
4. 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.
5. 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.

FILE NAME =

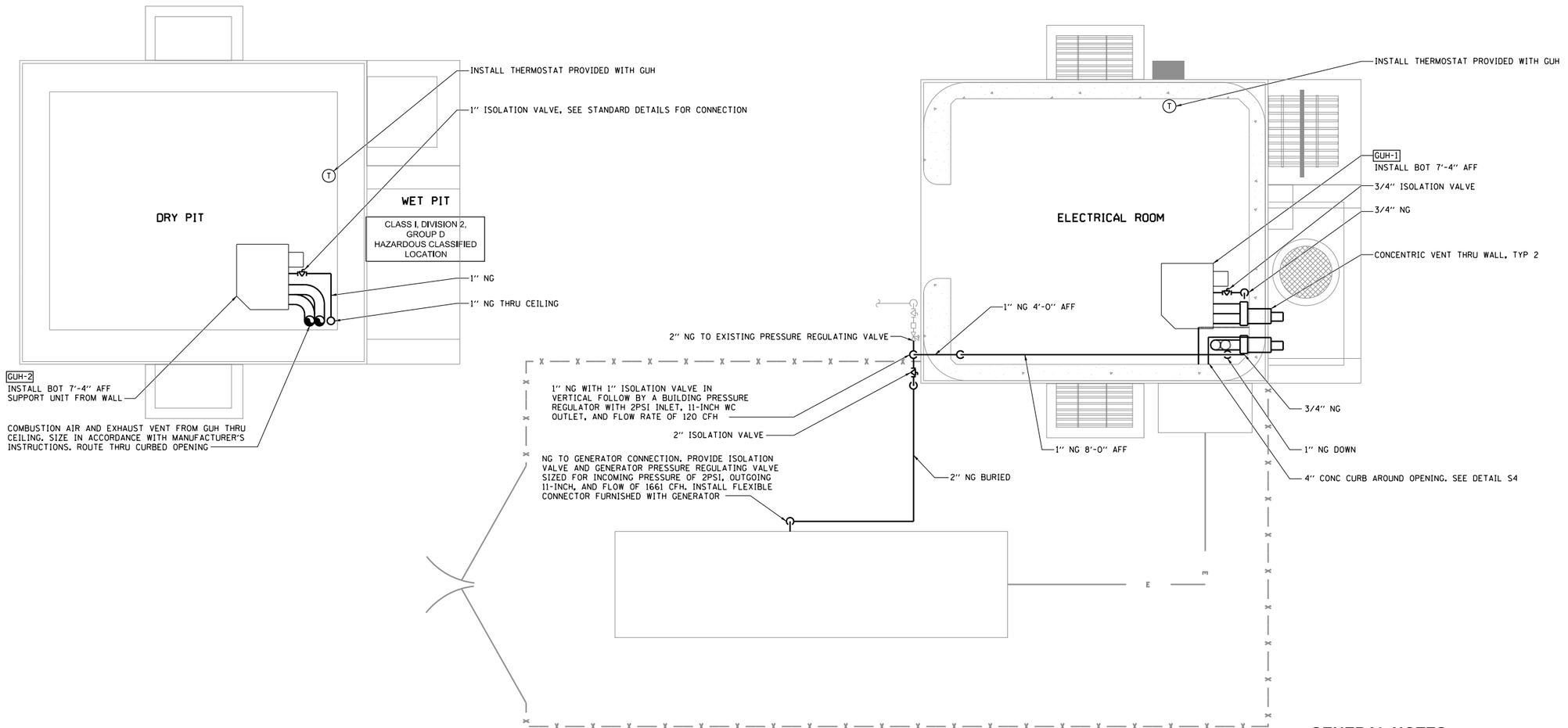
DONOHUE

USER NAME =	DESIGNED - CAH	REVISED -
	DRAWN - CAH	REVISED -
PLOT SCALE =	CHECKED - JLW	REVISED -
PLOT DATE =	DATE - 01-04-2019	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-FAG)PS-1	IROQUOIS	42	6
		CONTRACT NO. 66J68		
	ILLINOIS FED. AID PROJECT XXXXXX			



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

SCALE: 0 4 8 FT.

FILE NAME =

DONOHUE

USER NAME =	DESIGNED - CAH	REVISED -
	DRAWN - CAH	REVISED -
PLOT SCALE =	CHECKED - JLW	REVISED -
PLOT DATE =	DATE - 01-04-2019	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

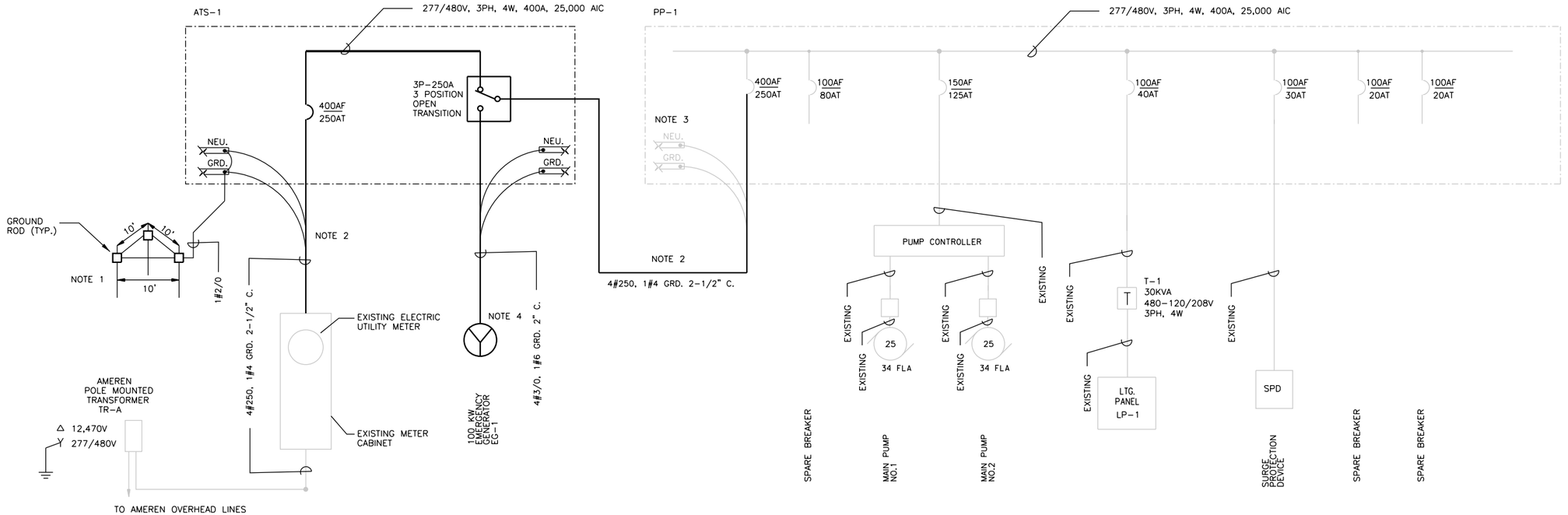
MILFORD PUMP STATION
PLUMBING AND HVAC PLANS

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

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
332A	(2SB-FAGH)PS-1	IROQUOIS	42	7
		CONTRACT NO. 66J68		
	ILLINOIS	FED. AID PROJECT XXXXXXX		

NOTES:

1. COORDINATE LOCATION AND INSTALLATION OF GROUNDING TRIAD WITH SITE PIPING AND ELECTRICAL DUCT BANK; ADJUST GROUNDING TRIAD AS REQUIRED. GROUNDING SHALL BE INSTALLED IN ACCORDANCE WITH ARTICLE 806 OF THE STANDARD SPECIFICATIONS AND TESTED IN ACCORDANCE WITH ARTICLE 801 OF THE STANDARD SPECIFICATIONS.
2. DISCONNECT AND REMOVE CONDUIT AND CONDUCTORS FROM EXISTING POWER PANEL TO SECONDARY OF METERING CABINET. PROVIDE CONDUIT AND CONDUCTORS FROM NEWLY PROVIDED SERVICE ENTRANCE AUTOMATIC TRANSFER SWITCH TO EXISTING POWER PANEL.
3. DISCONNECT AND REMOVE NEUTRAL TO GROUND BOND.
4. GENERATOR SHALL BE CONFIGURED AS A NOT SEPARATELY DERIVED SYSTEM WITH NO GROUND-NEUTRAL BOND IN THE GENERATOR.



OVERALL ONE-LINE DIAGRAM - PROPOSED MILFORD PUMP STATION

NTS

FILE NAME =

DONOHUE

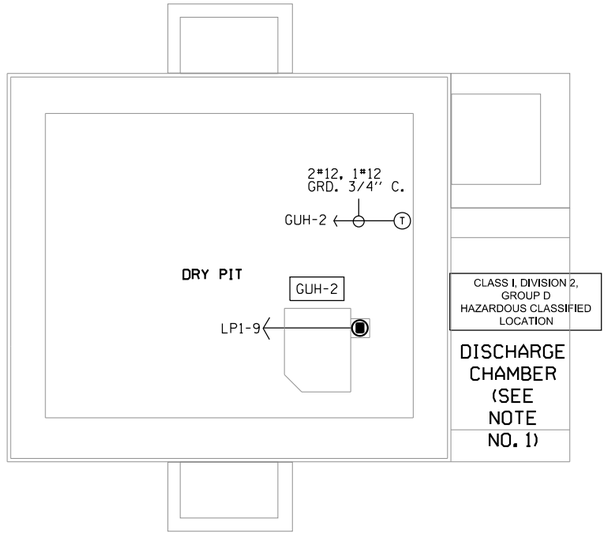
USER NAME =	DESIGNED - JRR	REVISED -	
	DRAWN - JRR	REVISED -	
PLOT SCALE =	CHECKED - JAB	REVISED -	
PLOT DATE =	DATE - 01-04-2019	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

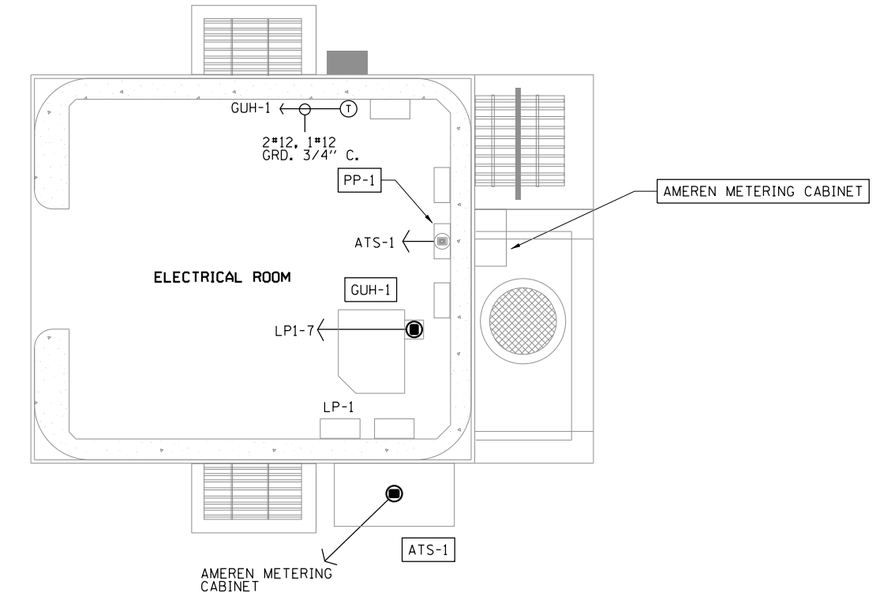
MILFORD PUMP STATION
ELECTRICAL
ONE-LINE DIAGRAM

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

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
332A	(2SB-FAG)PS-1	IROQUOIS	42	8
		CONTRACT NO. 66J68		
	ILLINOIS	FED. AID PROJECT XXXXXX		



LOWER PLAN



UPPER PLAN

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 DRAWING E-17 FOR CONDUIT AND CONDUCTOR REQUIREMENTS.

SCALE: 0 4 8 FT.

FILE NAME =

DONOHUE

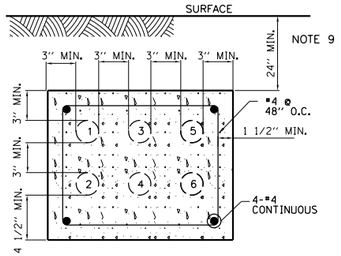
USER NAME =	DESIGNED - JRR	REVISED -	
	DRAWN - JRR	REVISED -	
PLOT SCALE =	CHECKED - JAB	REVISED -	
PLOT DATE =	DATE - 01-04-2019	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

MILFORD PUMP STATION
ELECTRICAL
PLANS

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

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
332A	(2SB-FAGH)PS-1	IROQUOIS	42	9
		CONTRACT NO. 66J68		
	ILLINOIS	FED. AID PROJECT xxxxxx		



DUCT BANK SECTION A

NTS E16

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	

NOTES:

1. RE-USE EXISTING CIRCUIT BREAKER FOR NEW LOAD; RE-LABEL PANEL ACCORDINGLY.
2. DISCONNECT AND REMOVE CONDUIT AND CONDUCTORS BACK TO SOURCE FOR EXISTING HEATER; RE-LABEL BREAKER AS SPARE.
3. CONDUIT ELBOWS IN UNDERGROUND DUCT BANKS SHALL BE PVC COATED GRS CONDUIT.
4. EXTERIOR ABOVE GRADE CONDUIT SHALL BE PVC COATED GRS CONDUIT.
5. CONDUITS ENCASED IN CONCRETE SHALL BE PVC UNLESS NOTED IN SCHEDULE.
6. "-" REPRESENTS A SPACE IN THE DUCT BANK.
7. CONTRACTOR SHALL VERIFY CONDUIT DUCT BANK LAYOUTS. CONTRACTOR SHALL MODIFY CONDUIT LOCATIONS IN DUCT BANK TO SUIT FIELD CONDITIONS.
8. CONCRETE SHALL BE DYED RED.
9. TOP OF DUCT BANKS SHALL BE A MINIMUM OF 30" BELOW GRADE IN VEHICULAR TRAFFIC AREAS.

SURFACE MOUNTED NEMA 1
480 V, 3 PHASE, 4 WIRE
RATING 25,000 A.I.C.

PANEL SCHEDULE PP-1

250A MAIN BREAKER
250A MAIN BUS
250A MIN. GRD. BUS

CKT. NO.	TRIP/P	DESCRIPTION	PHASE A	PHASE B	PHASE C	DESCRIPTION	TRIP/P	CKT. NO.
1			•					2
3	80/3	SPARE		•		PUMP CONTROLLER	125/3	4
5					•			6
7			•					8
9	40/3	TRANSFORMER XFMR-1		•		SURGE PROTECTOR	30/3	10
11					•			12
13			•					14
NOTE 2 15	20/3	SPARE		•		SPARE	20/3	16 NOTE 2
17					•			18
19			•					20
21		SPACE		•		SPACE		22
23					•			24
25			•					26
27		SPACE		•		SPACE		28
29					•			30
TOTALS:								

SURFACE MOUNTED NEMA 1
120/208 V, 3 PHASE, 4 WIRE
RATING 10,000 A.I.C.

PANEL SCHEDULE LP-1

100A MAIN BREAKER
100A MAIN BUS
100A MIN. GRD. BUS

CKT. NO.	TRIP/P	DESCRIPTION	PHASE A	PHASE B	PHASE C	DESCRIPTION	TRIP/P	CKT. NO.
1			•			SUMP PUMP	20/1	2
3	100/3	MAIN BREAKER		•		SUMP PUMP	30/1	4
5					•	PIT RECEPTACLES	20/1	6
NOTE 1 7	20/1	GAS UNIT HEATER GUH-1	•			EXHAUST FAN & LOUVERS	20/1	8
NOTE 1 9	20/1	GAS UNIT HEATER GUH-2		•		PIT LIGHTS	20/1	10
NOTE 1 11	20/1	GENERATOR COOLANT HEATER			•	DIALER	20/1	12
NOTE 1 13	20/1	GENERATOR RECEPTACLES	•			RECEP NEXT TO PANEL	20/1	14
NOTE 1 15	20/1	GENERATOR STRIP HEATER		•		RECEP N. & E. WALL	20/1	16
NOTE 1 17	20/1	GENERATOR BATTERY CHARGER/ CHARGER HEATER			•	MAIN FLOOR LIGHTS	20/1	18
19	20/1	SPARE	•			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		SPACE		•		SPARE	20/1	28
29		SPACE			•	SPARE	20/1	30
31		SPACE	•			SPACE		32
33		SPACE		•		SPACE		34
35		SPACE			•	SPACE		36
37		SPACE	•			SPACE		38
39		SPACE		•		SPACE		40
41		SPACE			•	SPACE		42
TOTALS:			1355	2385	2100	–		

FILE NAME =

DONOHUE

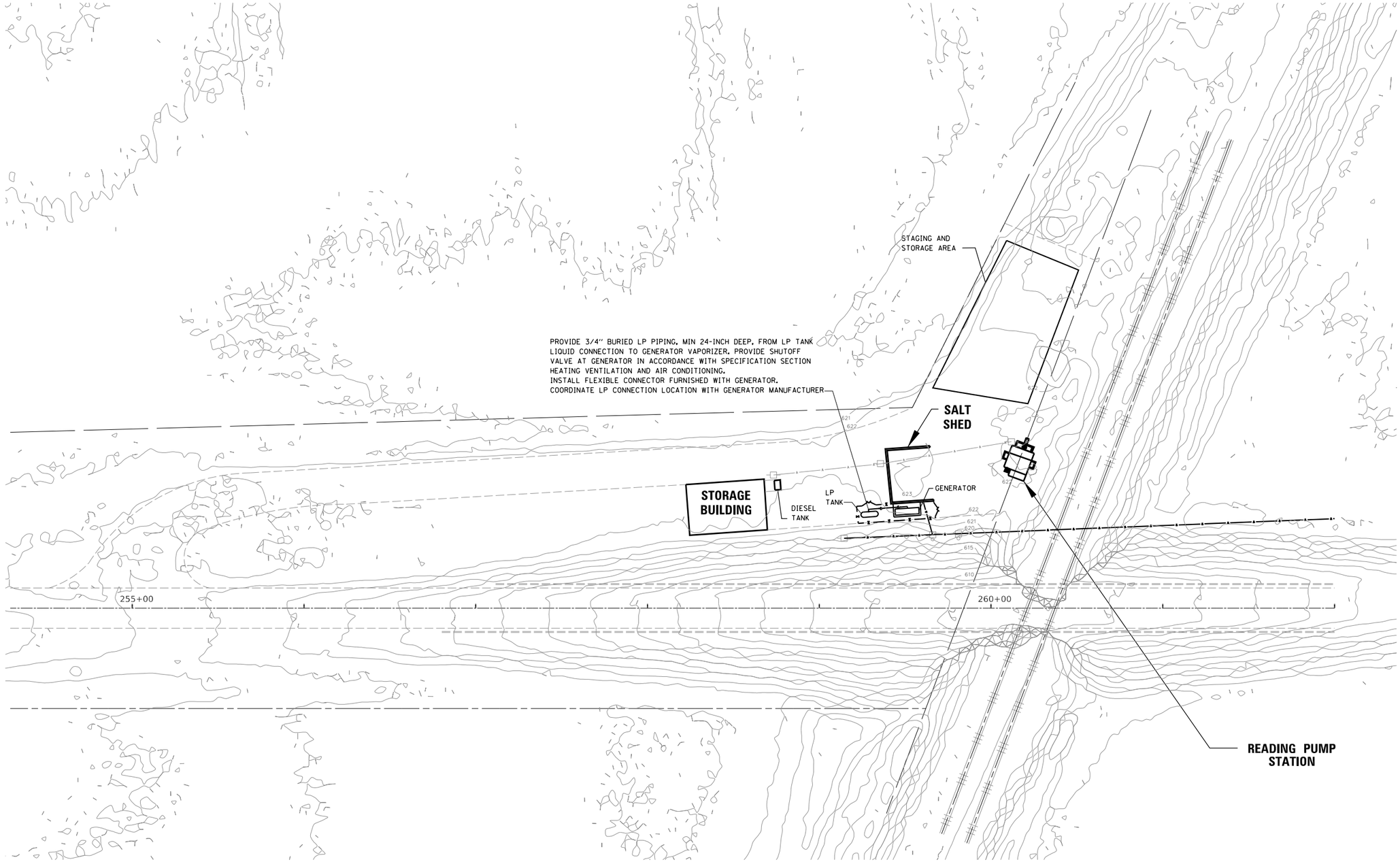
USER NAME =	DESIGNED - JRR	REVISED -
	DRAWN - JRR	REVISED -
PLOT SCALE =	CHECKED - JAB	REVISED -
PLOT DATE =	DATE - 01-04-2019	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

MILFORD PUMP STATION
ELECTRICAL
PANEL AND DUCT BANK SCHEDULES

SCALE: SHEET OF SHEETS STA. TO STA.

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
332A	(2SB-FAGH)PS-1	IROQUOIS	42	10
		CONTRACT NO. 66J68		
	ILLINOIS	FED. AID PROJECT XXXXXXX		



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 5 10 20 FT.

C-1

FILE NAME =

DONOHUE

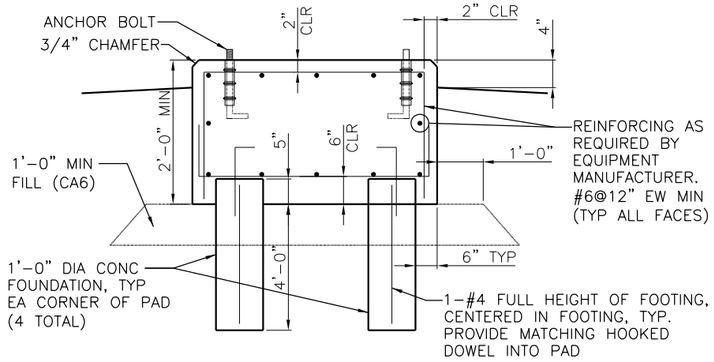
USER NAME =	DESIGNED - LRE	REVISED -
	DRAWN - LRE	REVISED -
PLOT SCALE =	CHECKED - TLW	REVISED -
PLOT DATE =	DATE - 01-04-2019	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

READING PUMP STATION
CIVIL
READING SITE PLAN

SCALE: | SHEET OF ___ SHEETS | STA. | TO STA.

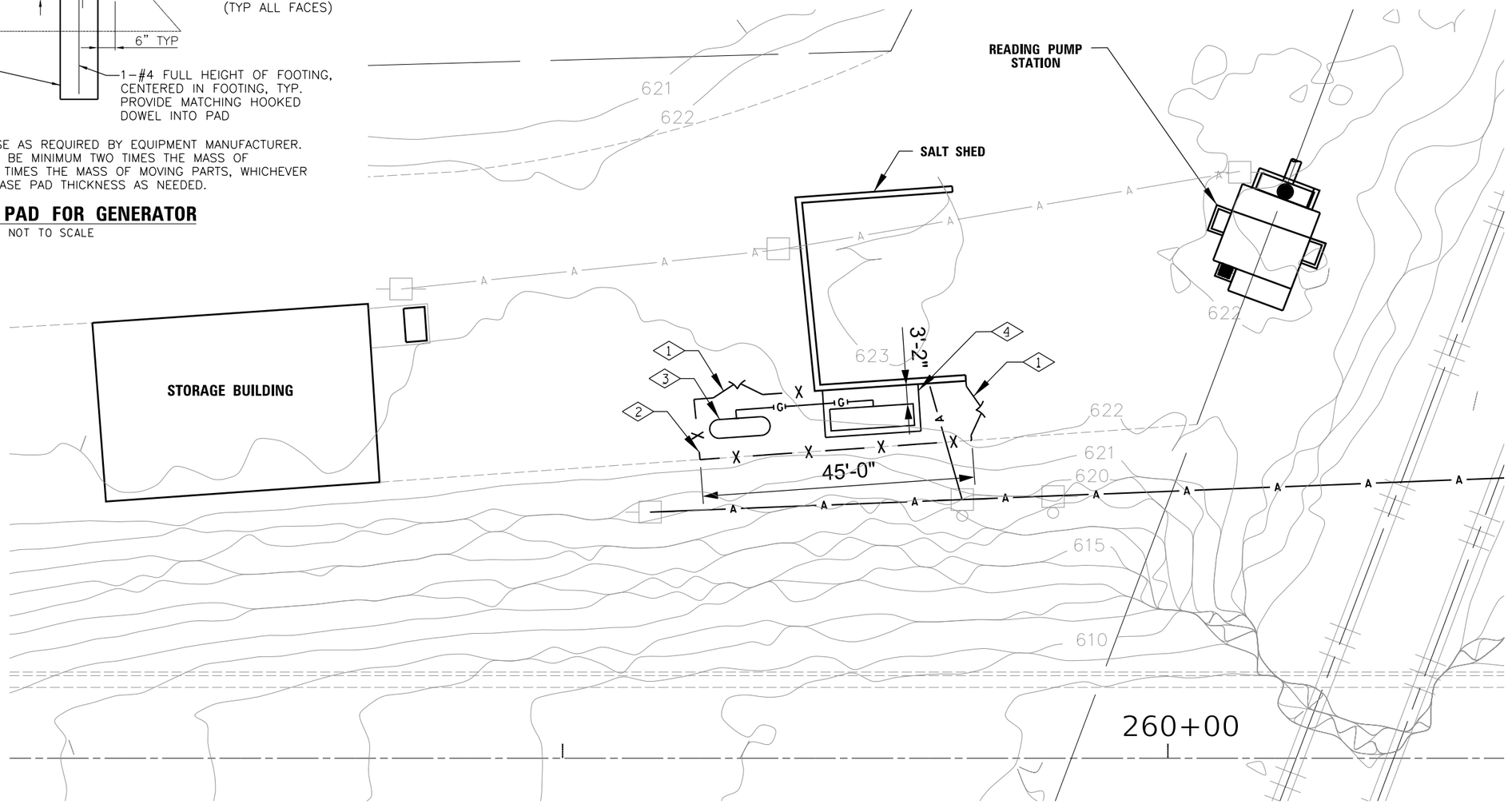
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
649	(107)PS-3	LIVINGSTON	42	11
		CONTRACT NO. 66J68		
	ILLINOIS FED. AID PROJECT XXXXXXX			



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.

SCALE: 0 5 10 20 FT.

C-2

FILE NAME =

DONOHUE

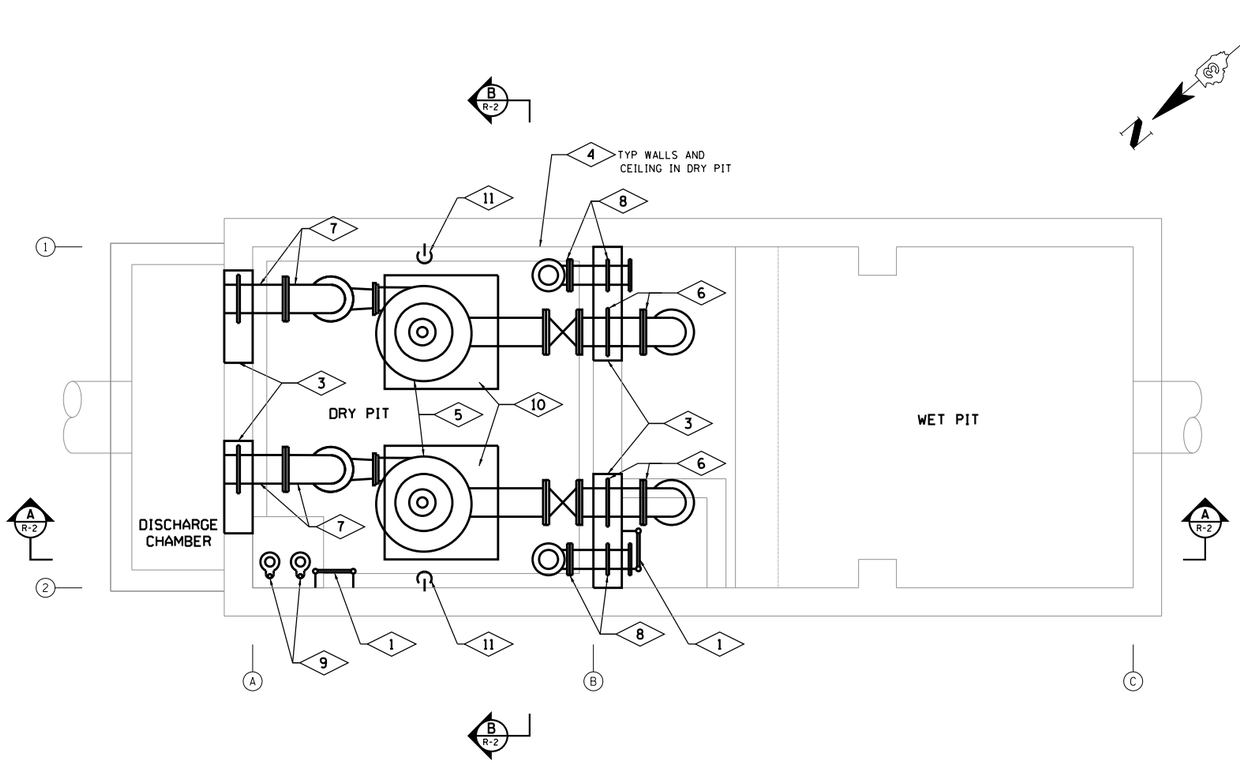
USER NAME =	DESIGNED - LRE	REVISED -
	DRAWN - LRE	REVISED -
PLOT SCALE =	CHECKED - TLW	REVISED -
PLOT DATE =	DATE - 01-04-2019	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

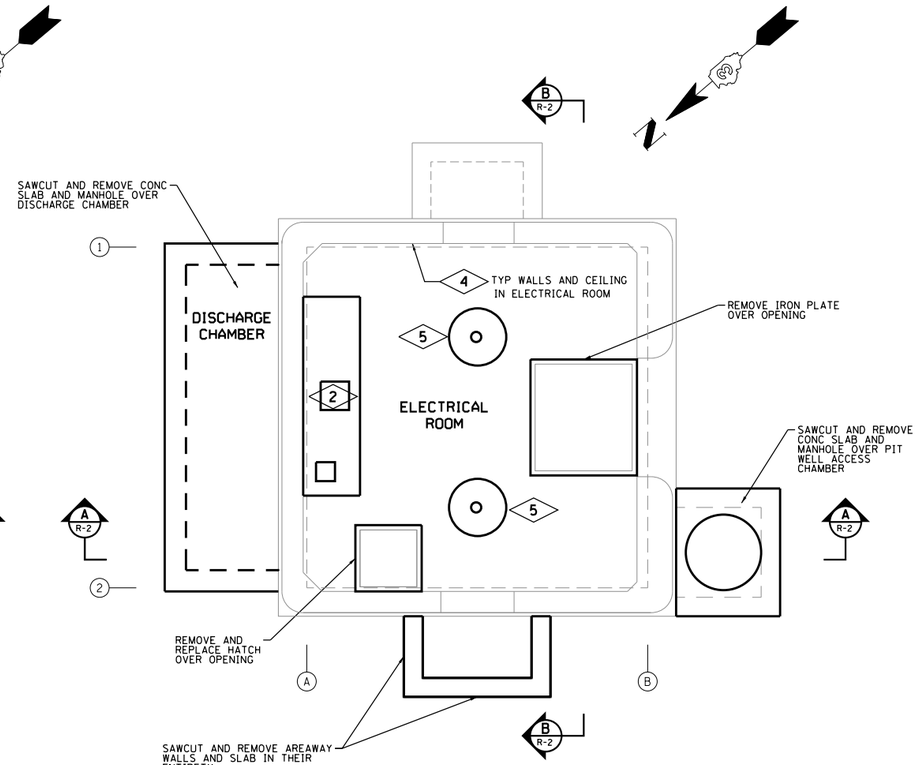
READING PUMP STATION
CIVIL
ENLARGED READING SITE PLAN

SCALE: | SHEET OF ___ SHEETS | STA. | TO STA.

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
649	(107)PS-3	LIVINGSTON	42	12
		CONTRACT NO. 66J68		
	ILLINOIS FED. AID PROJECT XXXXXXX			



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 AND WALL MOUNT 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 ASSEMBIES 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.
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.

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 CONRCRETE ANCHORS, ANCHOR BOLTS, AND OHTER 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 BUILING EXCEPT DRY PIT AND ELECTRICAL ROOM SHALL BE:

CLASS I, DIVISION 2, GROUP D HAZARDOUS CLASSIFIED LOCATION

SCALE: 0 4 8 FT.

R-1

FILE NAME =

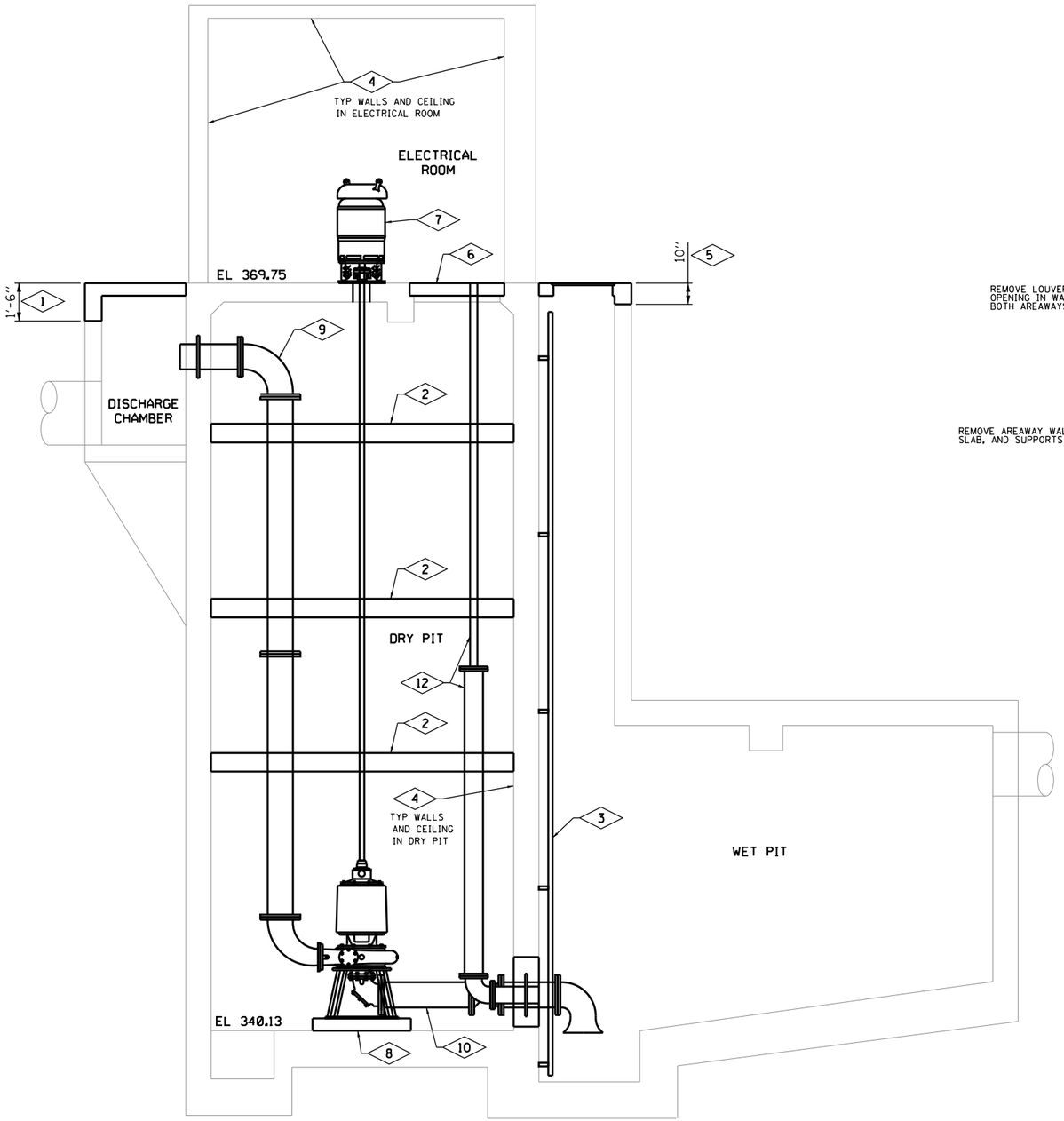
DONOHUE	USER NAME =	DESIGNED - MTR	REVISED -
		DRAWN - MTR	REVISED -
	PLOT SCALE =	CHECKED - NWC	REVISED -
	PLOT DATE =	DATE - 01-04-2019	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

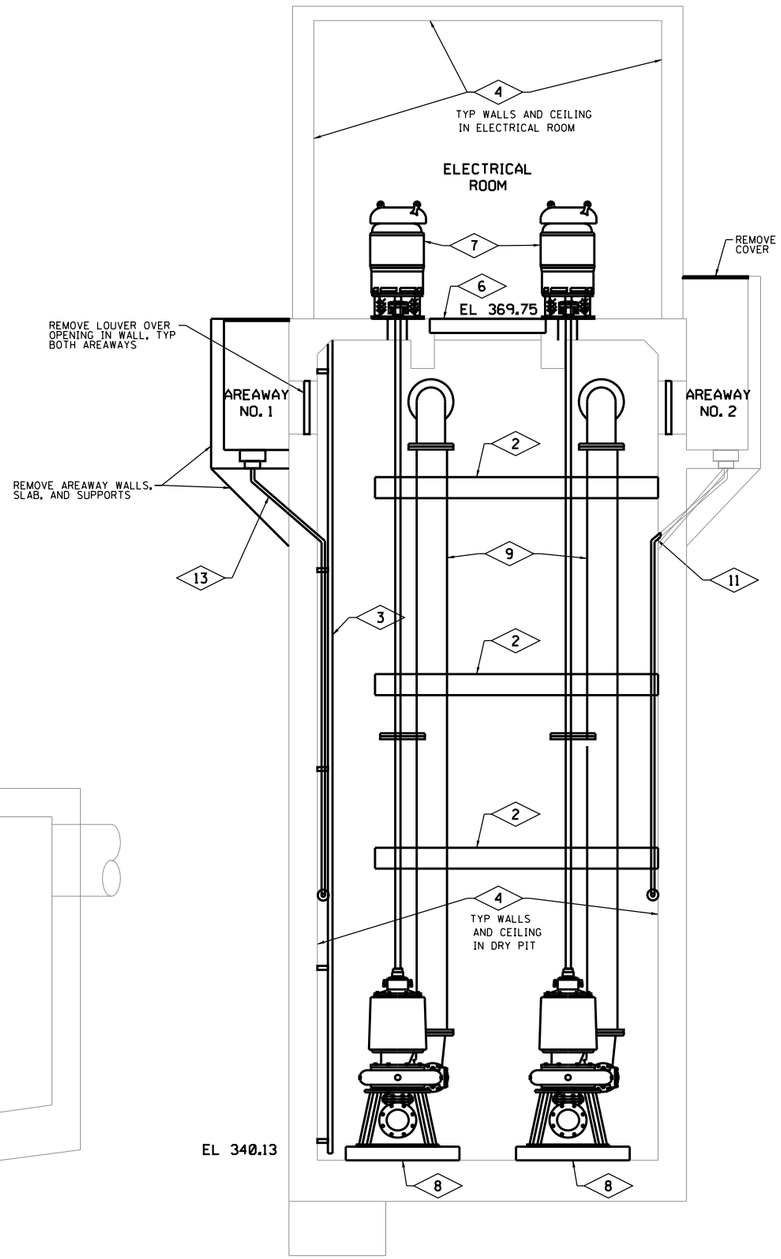
READING PUMP STATION
REMOVALS
PLANS

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

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
649	(107)PS-3	LIVINGSTON	42	13
		CONTRACT NO. 66J68		
	ILLINOIS FED. AID PROJECT xxxxxx			



SECTION A–A



SECTION B–B

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 ASSEMBIES 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 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 4 8 FT.

R-2

FILE NAME =

DONOHUE

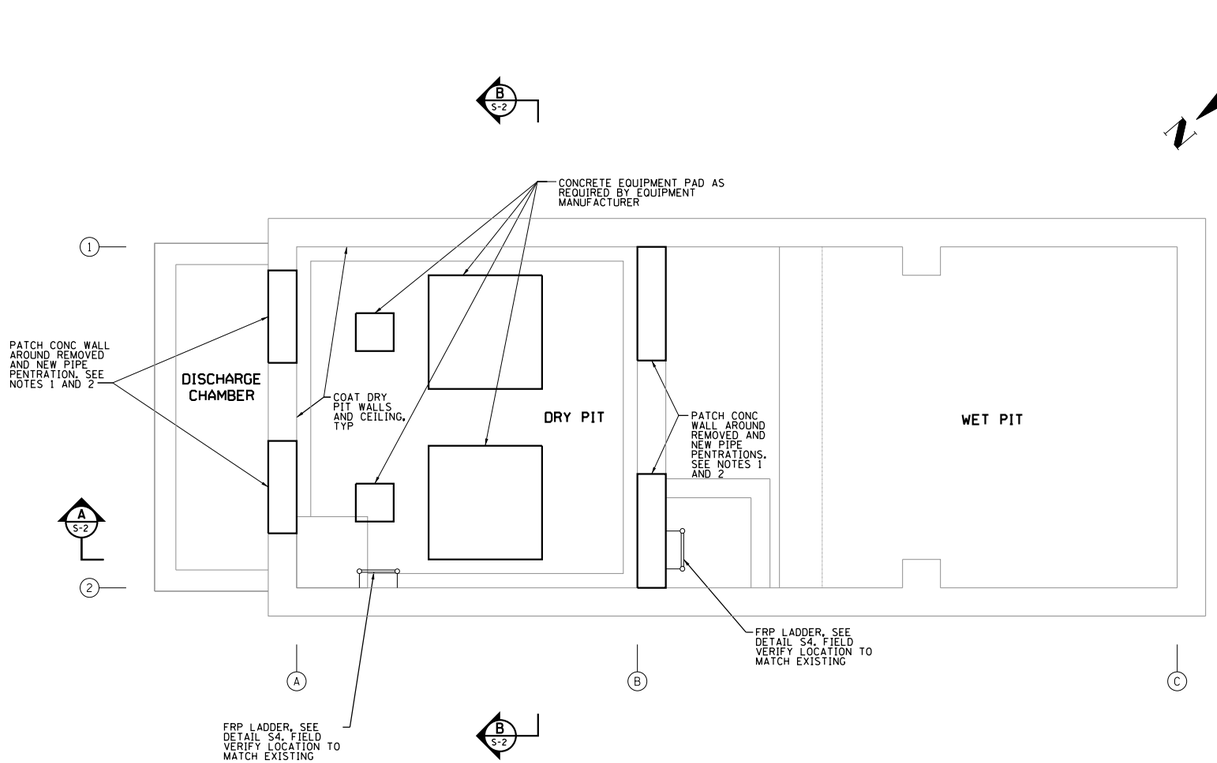
USER NAME =	DESIGNED - MTR	REVISED -
	DRAWN - MTR	REVISED -
PLOT SCALE =	CHECKED - NWC	REVISED -
PLOT DATE =	DATE - 01-04-2019	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

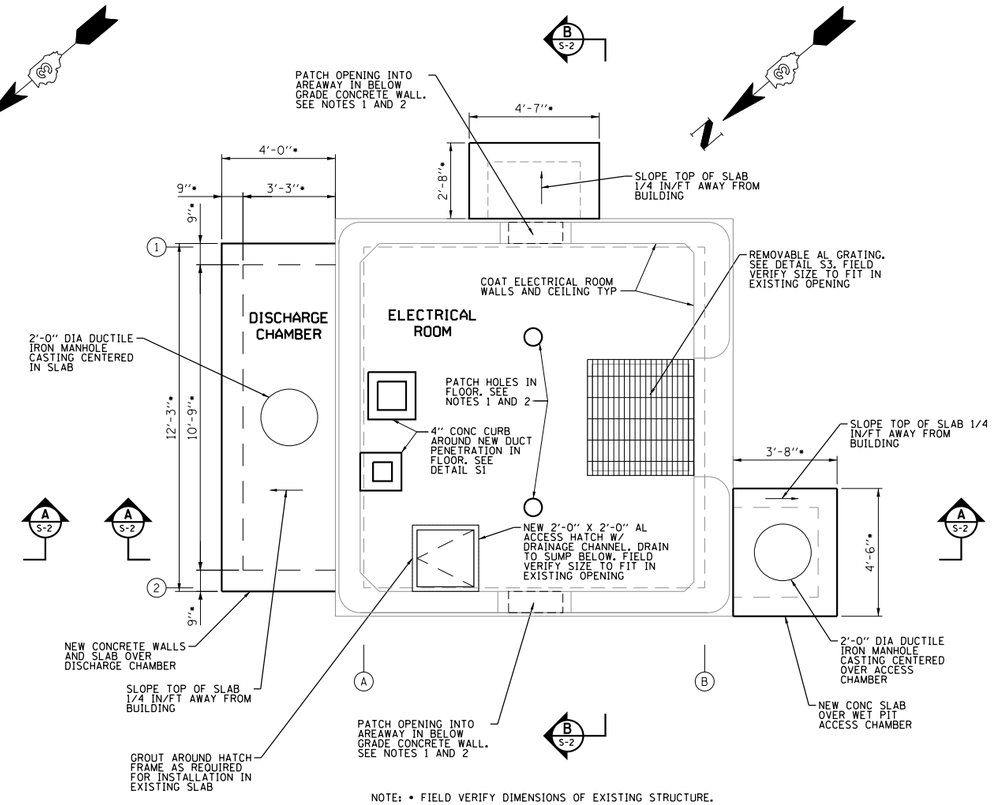
READING PUMP STATION
REMOVALS
SECTIONS

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

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



LOWER PLAN



NOTE: • FIELD VERIFY DIMENSIONS OF EXISTING STRUCTURE.

UPPER PLAN

GENERAL NOTES:

1. 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".

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. 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.

4. 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.

S-1

FILE NAME =

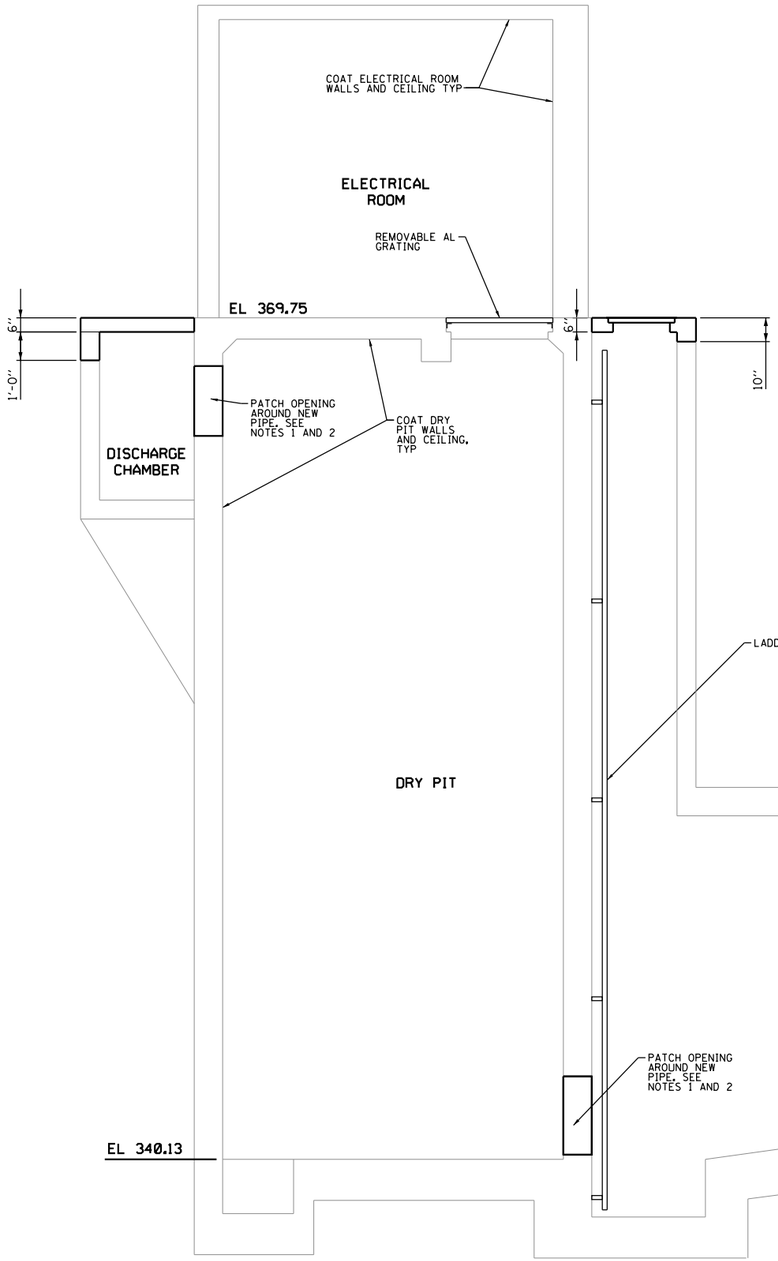
DONOHUE	USER NAME =	DESIGNED - SDR	REVISED -
		DRAWN - SDR	REVISED -
	PLOT SCALE =	CHECKED - TJB	REVISED -
	PLOT DATE =	DATE - 01-04-2019	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

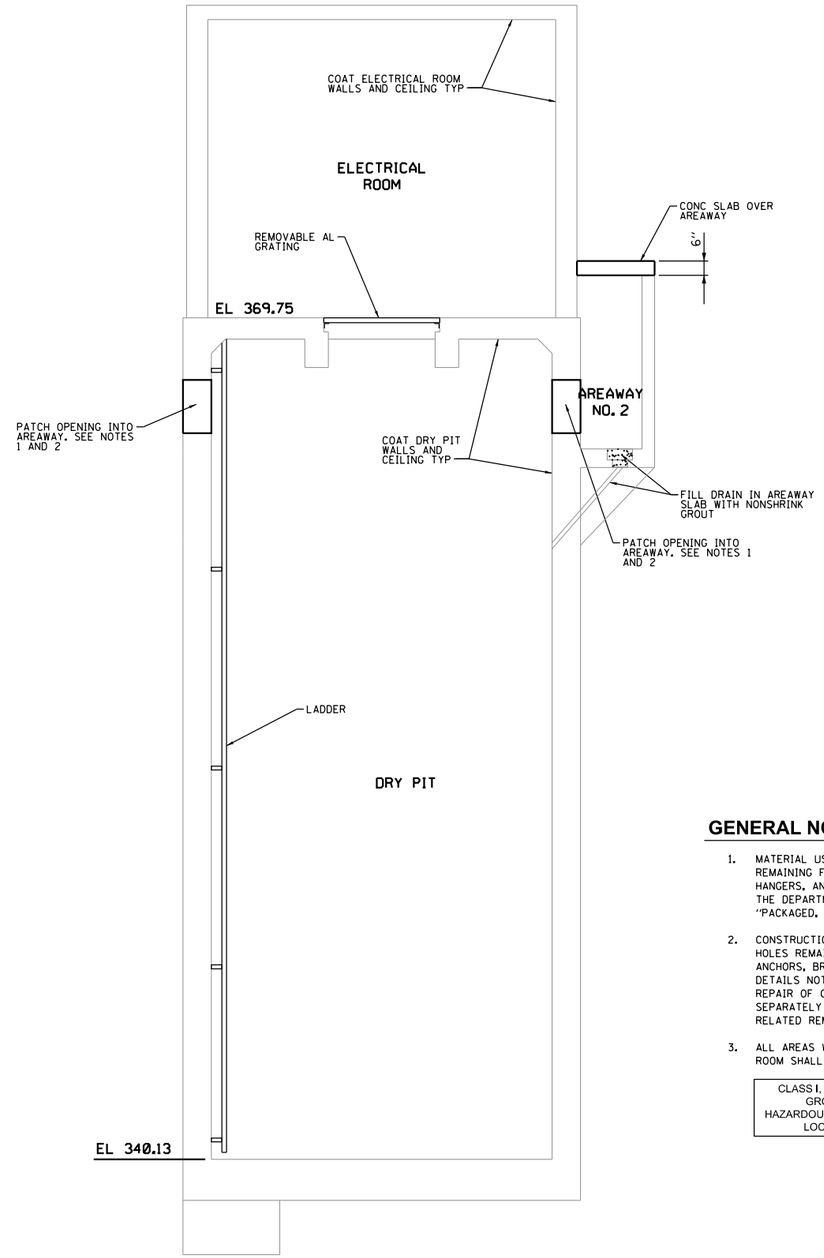
READING PUMP STATION
STRUCTURAL PLANS

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

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
649	(107)PS-3	LIVINGSTON	42	15
		CONTRACT NO. 66J68		
	ILLINOIS FED. AID PROJECT xxxxxxx			



SECTION A–A



SECTION B–B

GENERAL NOTES:

1. 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".

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

FILE NAME =

DONOHUE

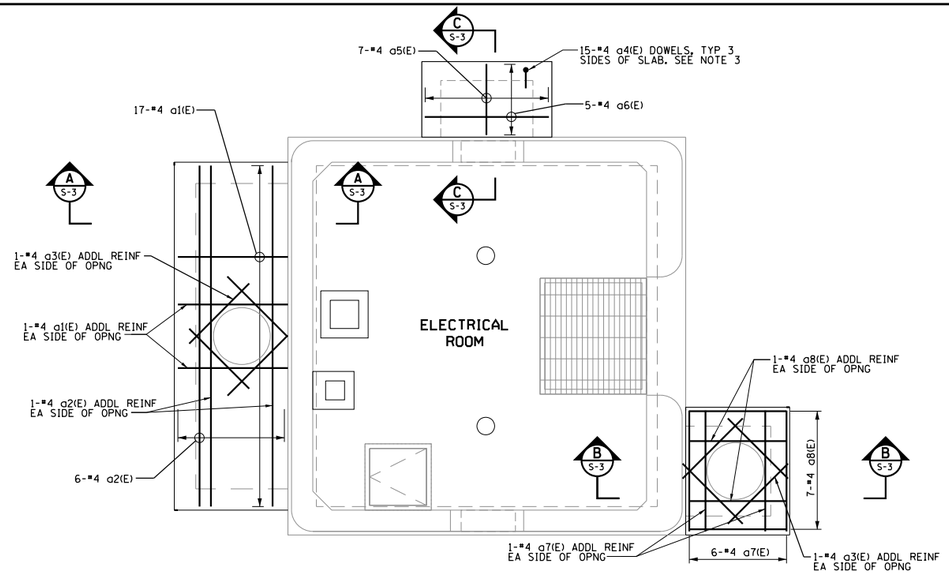
USER NAME =	DESIGNED - SDR	REVISED -
	DRAWN - SDR	REVISED -
PLOT SCALE =	CHECKED - TJB	REVISED -
PLOT DATE =	DATE - 01-04-2019	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

READING PUMP STATION
STRUCTURAL SECTIONS

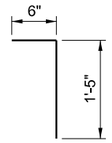
SCALE: | SHEET OF SHEETS | STA. | TO STA.

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
649	(107)PS-3	LIVINGSTON	42	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



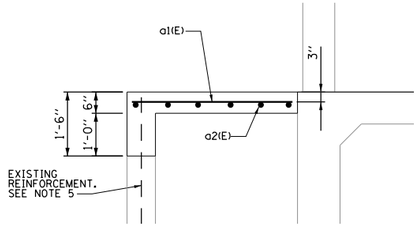
BAR a4(E)

GENERAL NOTES:

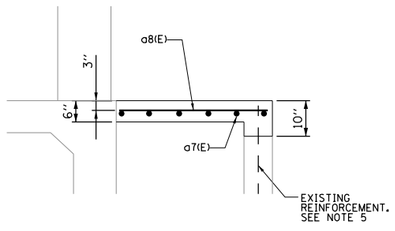
1. REINFORCEMENT BARS SHALL BE FIELD CUT TO FIT AROUND FRAME AND LID.
2. (E) DENOTES EPOXY COATED.
3. a4(E) BARS SHALL BE DRILLED AND GROUTED INTO EXISTING CONCRETE IN ACCORDANCE WITH DETAIL S2 AND SECTION 584 OF THE STANDARD SPECIFICATIONS.
4. NEW REINFORCEMENT BARS SHALL HAVE A MIN. OF 1 1/2" CLEAR 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

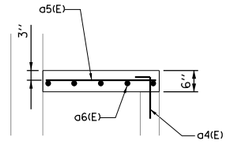
BAR	NO.	SIZE	LENGTH	SHAPE
a1(E)	19	#4	3'-10"	———
a2(E)	8	#4	12'-0"	———
a3(E)	8	#4	2'-3"	———
a4(E)	15	#4	1'-11"	⌜
a5(E)	7	#4	2'-6"	———
a6(E)	5	#4	4'-4"	———
a7(E)	8	#4	4'-3"	———
a8(E)	9	#4	3'-5"	———
REINFORCEMENT BARS EPOXY COATED			POUNDS	213
CONCRETE STRUCTURES			CU YD	2.2



SECTION A–A



SECTION B–B



SECTION C–C

S-3

FILE NAME =

DONOHUE

USER NAME =	DESIGNED - SDR	REVISED -
	DRAWN - SDR	REVISED -
PLOT SCALE =	CHECKED - TJB	REVISED -
PLOT DATE =	DATE - 01-04-2019	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

READING PUMP STATION
REINFORCEMENT DETAILS

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

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
649	(107)PS-3	LIVINGSTON	42	17
		CONTRACT NO. 66J68		
	ILLINOIS FED. AID PROJECT XXXXXXX			

STRUCTURAL LEGEND

ABBREVIATIONS

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

SYMBOLS

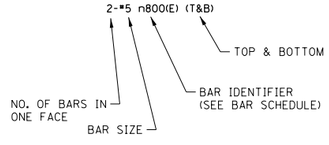
CONCRETE

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, Pf	24 PSF + DRIFT
2. SNOW EXPOSURE FACTOR Ce	1.0
3. IMPORTANCE FACTOR, I	1.1
4. THERMAL FACTOR, Ct	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.

FILE NAME =

DONOHUE

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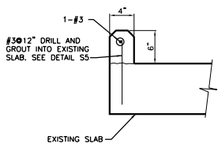
	DRAWN - SDR	REVISED -	
PLOT SCALE =	CHECKED - TJB	REVISED -	
PLOT DATE =	DATE - 01-04-2019	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

READING PUMP STATION
STRUCTURAL
LEGEND / GENERAL NOTES

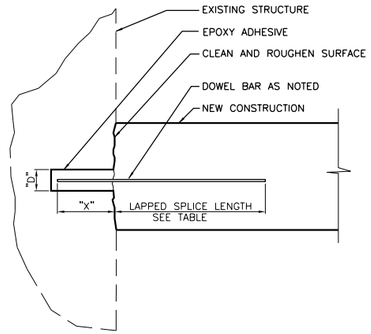
SCALE: | SHEET OF SHEETS | STA. TO STA.

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
649	(107)PS-3	LIVINGSTON	42	18
		CONTRACT NO. 66J68		
	ILLINOIS FED. AID PROJECT XXXXXXX			



CURB DETAIL–S1

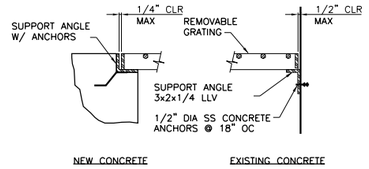
N.T.S.



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

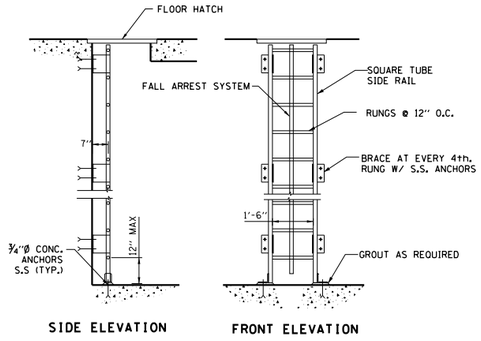
N.T.S.



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 =

DONOHUE

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	DRAWN - SDR	REVISED -
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PLOT DATE =	DATE - 01-04-2019	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

READING PUMP STATION
STRUCTURAL
LEGEND / GENERAL NOTES

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

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
649	(107)PS-3	LIVINGSTON	42	19
		CONTRACT NO. 66J68		
	ILLINOIS	FED. AID PROJECT XXXXXX		

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

NOTES:

1. REFER TO ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR HATCH AND GRATING DETAILS.
2. CONTRACTOR TO PROVIDE A LAYOUT DRAWING SHOWING ALL PIPING, SUPPORTS AND 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. ABSENSE OF PIPE HANGERS AND SUPPORTS ON DRAWINGS SHALL NOT RELIEVE CONTRACTOR OF RESPONSIBILITY FOR PROVIDING PIPE HANGERS AND SUPPORTS.

FILE NAME =

DONOHUE

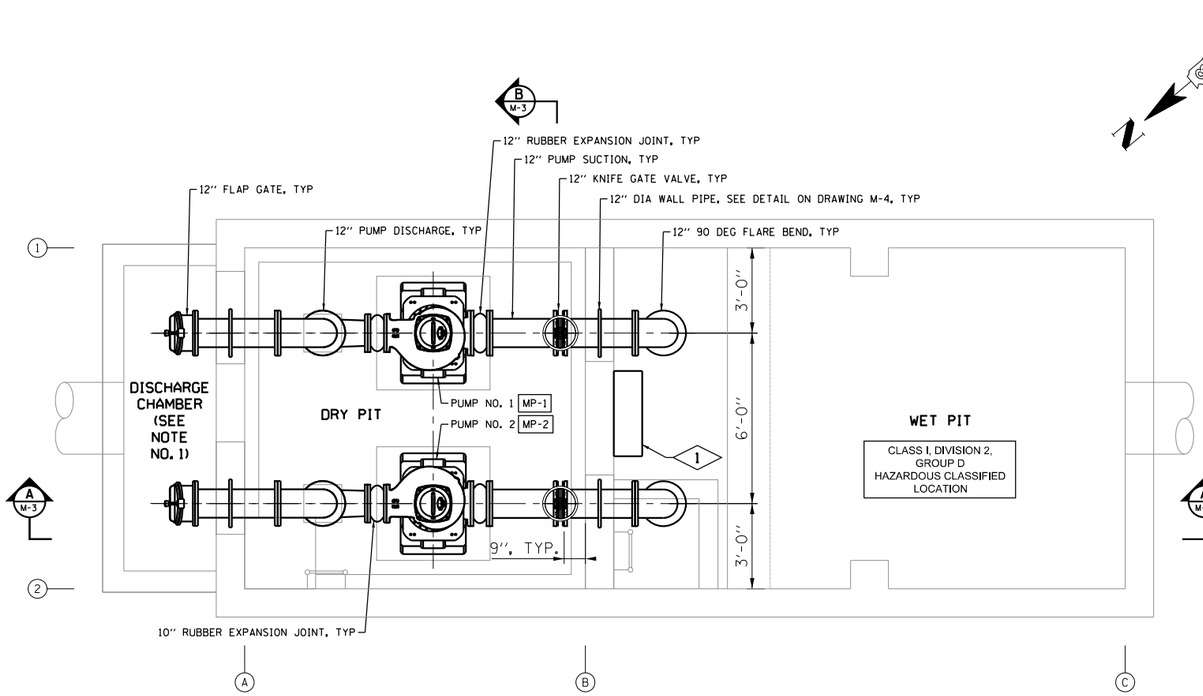
USER NAME =	DESIGNED - MTR	REVISED -
	DRAWN - MTR	REVISED -
PLOT SCALE =	CHECKED - NWC	REVISED -
PLOT DATE =	DATE - 01-04-2019	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

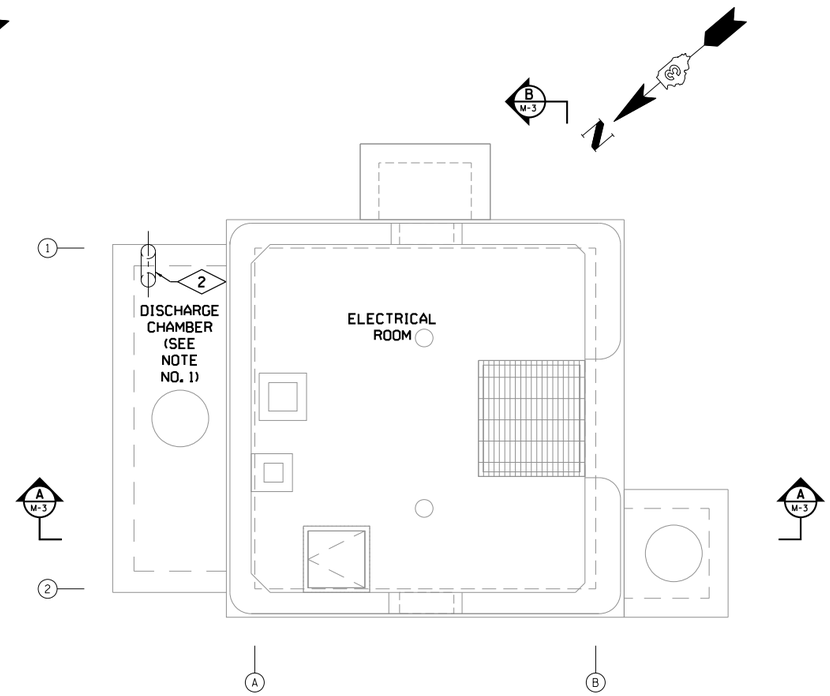
READING PUMP STATION
PROCESS MECHANICAL
GENERAL NOTES

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

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
649	(107)PS-3	LIVINGSTON	42	20
		CONTRACT NO. 66J68		
	ILLINOIS FED. AID PROJECT XXXXXXX			



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.

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.

M-2

FILE NAME =

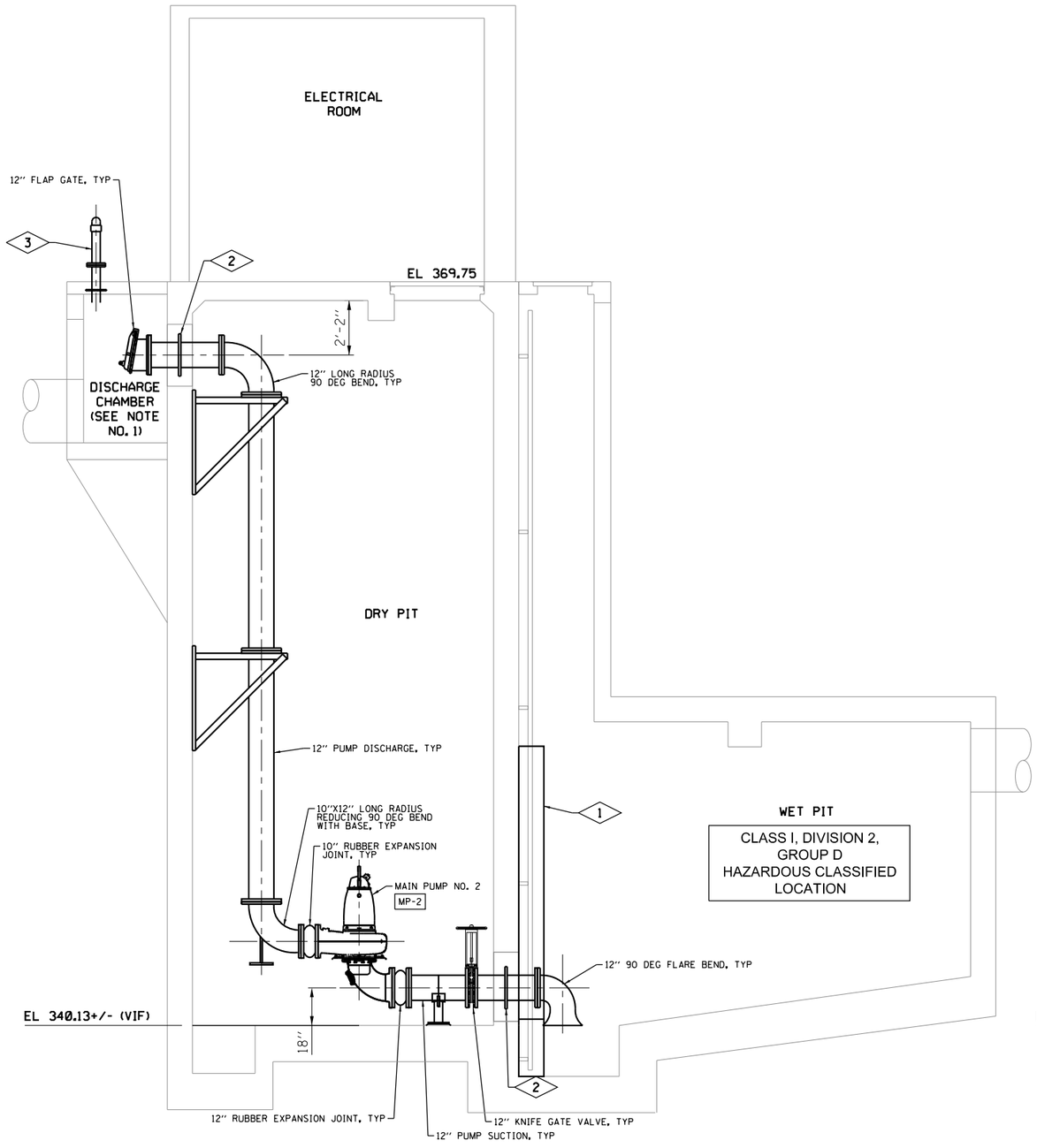
DONOHUE	USER NAME =	DESIGNED - MTR	REVISED -
		DRAWN - MTR	REVISED -
	PLOT SCALE =	CHECKED - NWC	REVISED -
	PLOT DATE =	DATE - 01-04-2019	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

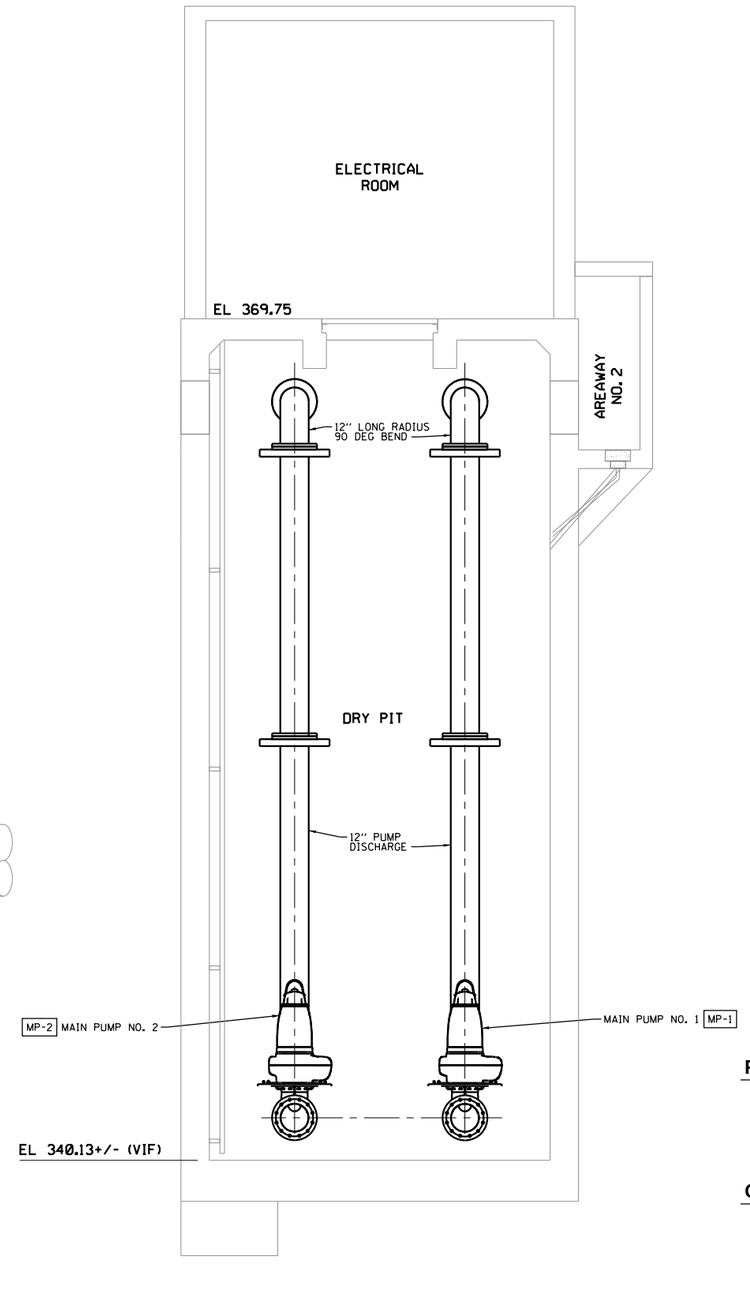
READING PUMP STATION
PROCESS MECHANICAL PLANS

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

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



SECTION A–A



SECTION B–B

PLAN NOTES:

1. FLOAT STILLING WELL, SEE DETAIL ON DRAWING M-4.
2. 12" DIA WALL PIPE, SEE DETAIL ON DRAWING M-4, TYP.
3. AIR VENT PIPE, SEE DETAIL ON DRAWING M-4.

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.

M-3

FILE NAME =

DONOHUE

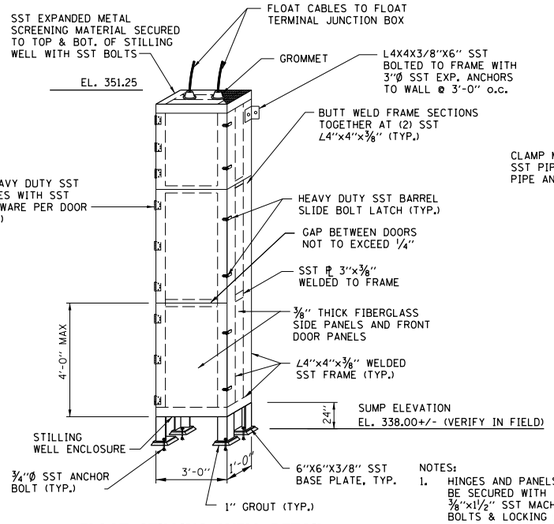
USER NAME =	DESIGNED - MTR	REVISED -
	DRAWN - MTR	REVISED -
PLOT SCALE =	CHECKED - NWC	REVISED -
PLOT DATE =	DATE - 01-04-2019	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

READING PUMP STATION
PROCESS MECHANICAL
SECTIONS

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

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

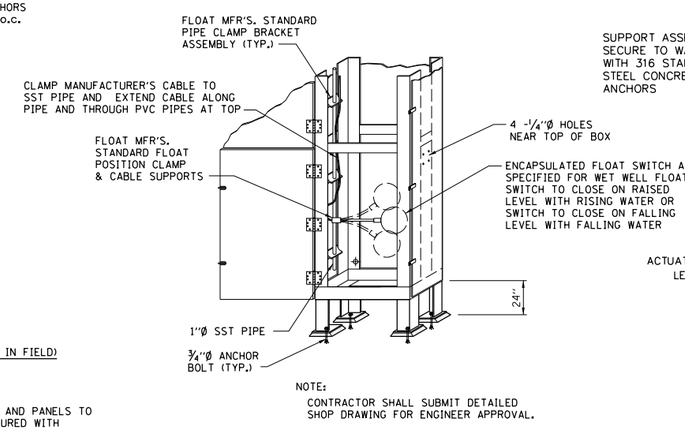


FLOAT STILLING WELL DETAIL FOR PUMP FLOAT CONTROL

N.T.S.

NOTES:

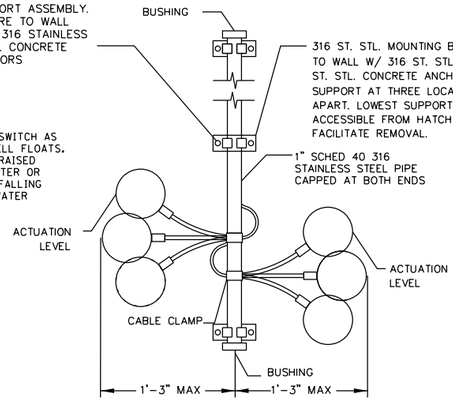
1. HINGES AND PANELS TO BE SECURED WITH 3/8"x1 1/2" SST MACHINE BOLTS & LOCKING WASHERS
2. STILL WELL DIMENSIONS OF 3'-0" X 1'-0" ARE INTERIOR DIMENSIONS.
3. SST = STAINLESS STEEL



NOTE:
CONTRACTOR SHALL SUBMIT DETAILED SHOP DRAWING FOR ENGINEER APPROVAL.

ENLARGED FLOAT DETAIL IN STILLING WELL ENCLOSURES

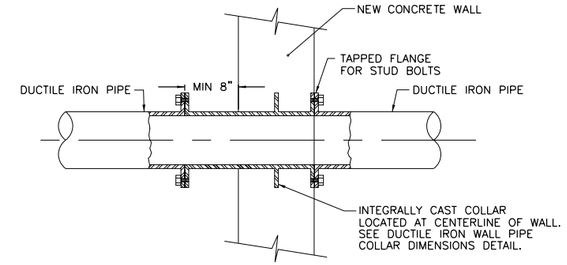
N.T.S.



NOTE:

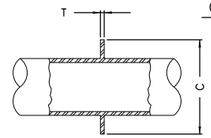
ENLARGED FLOAT DETAIL STILLING WELL REMOVED

N.T.S.



FLANGE /FLANGE DUCTILE IRON WALL PIPE DETAIL

N.T.S.

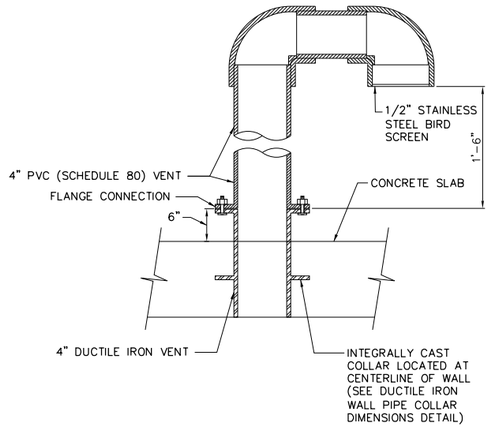


MINIMUM COLLAR DIMENSIONS

NOMINAL PIPE DIA (INCHES)	INTEGRALLY CAST D.I. COLLAR T THICKNESS (INCHES)	INTEGRALLY CAST D.I. COLLAR C DIAMETER (INCHES)	STEEL COLLAR T THICKNESS (INCHES)	STEEL COLLAR 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 HP	RPM	VOLTS	PHASE	HZ	PUMP CAPACITY (GPM)	PUMP 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:

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

FILE NAME =

DONOHUE

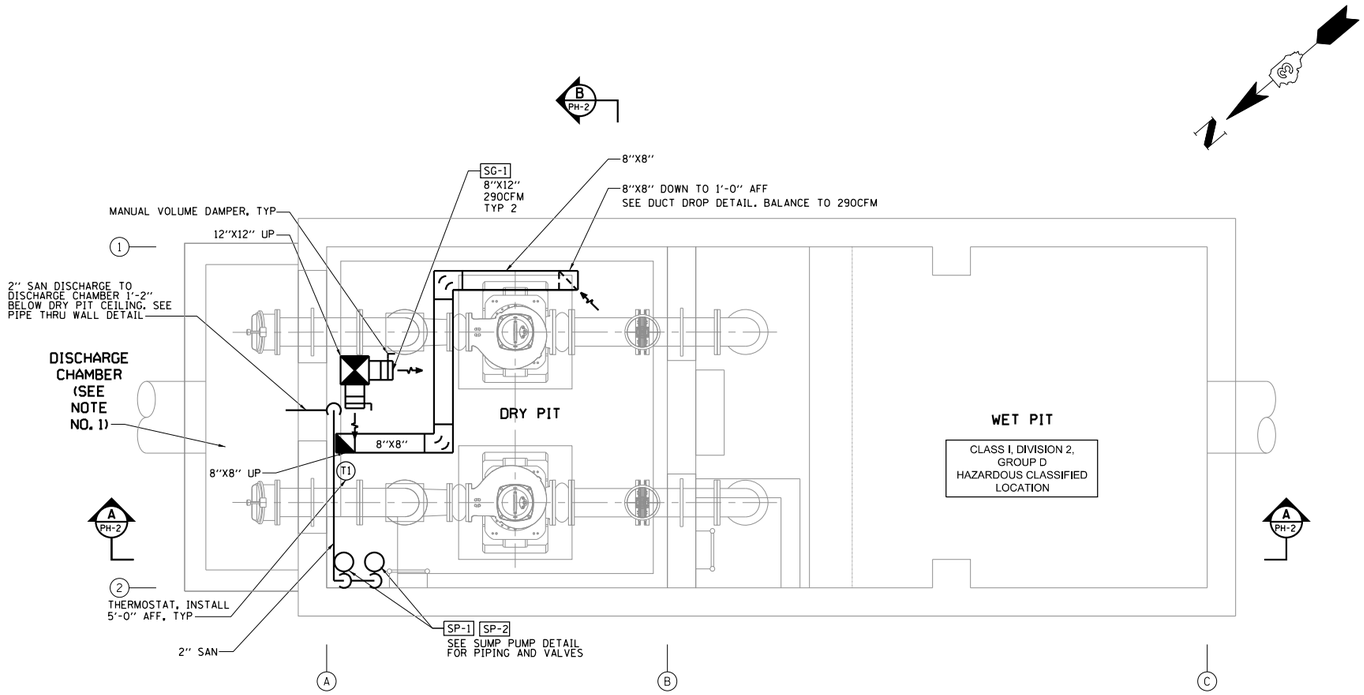
USER NAME =		DESIGNED - MTR	REVISED -		
		DRAWN - MTR	REVISED -		
PLOT SCALE =		CHECKED - NWC	REVISED -		
PLOT DATE =		DATE - 01-04-2019	REVISED -		

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

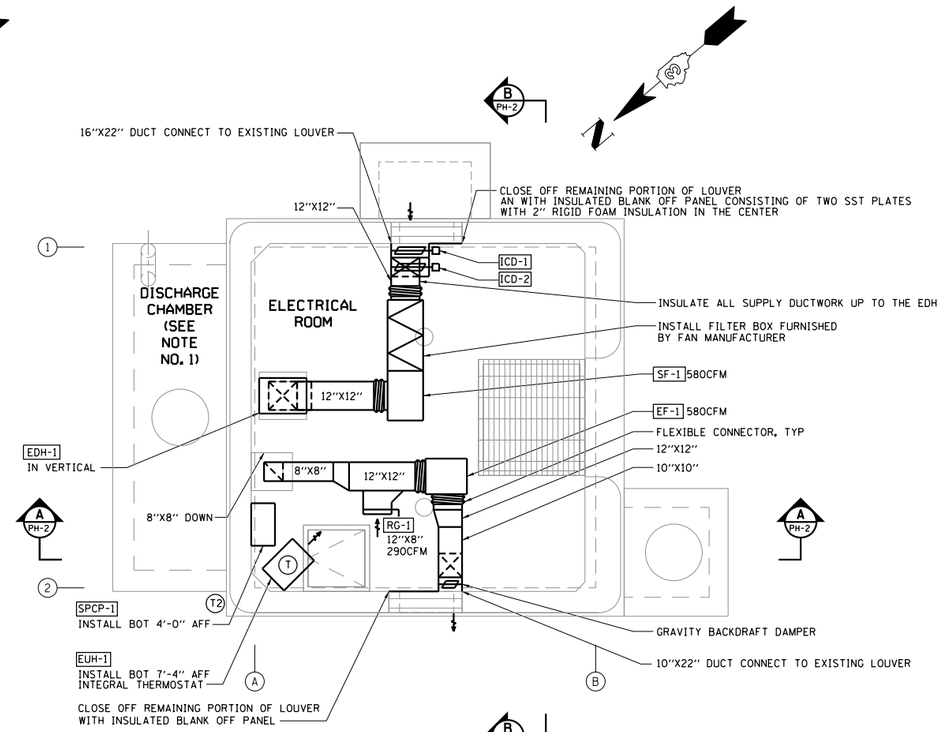
READING PUMP STATION
PROCESS MECHANICAL
DETAILS AND SCHEDULES

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

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



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

SCALE: 0 4 8 FT.

PH-1

FILE NAME =

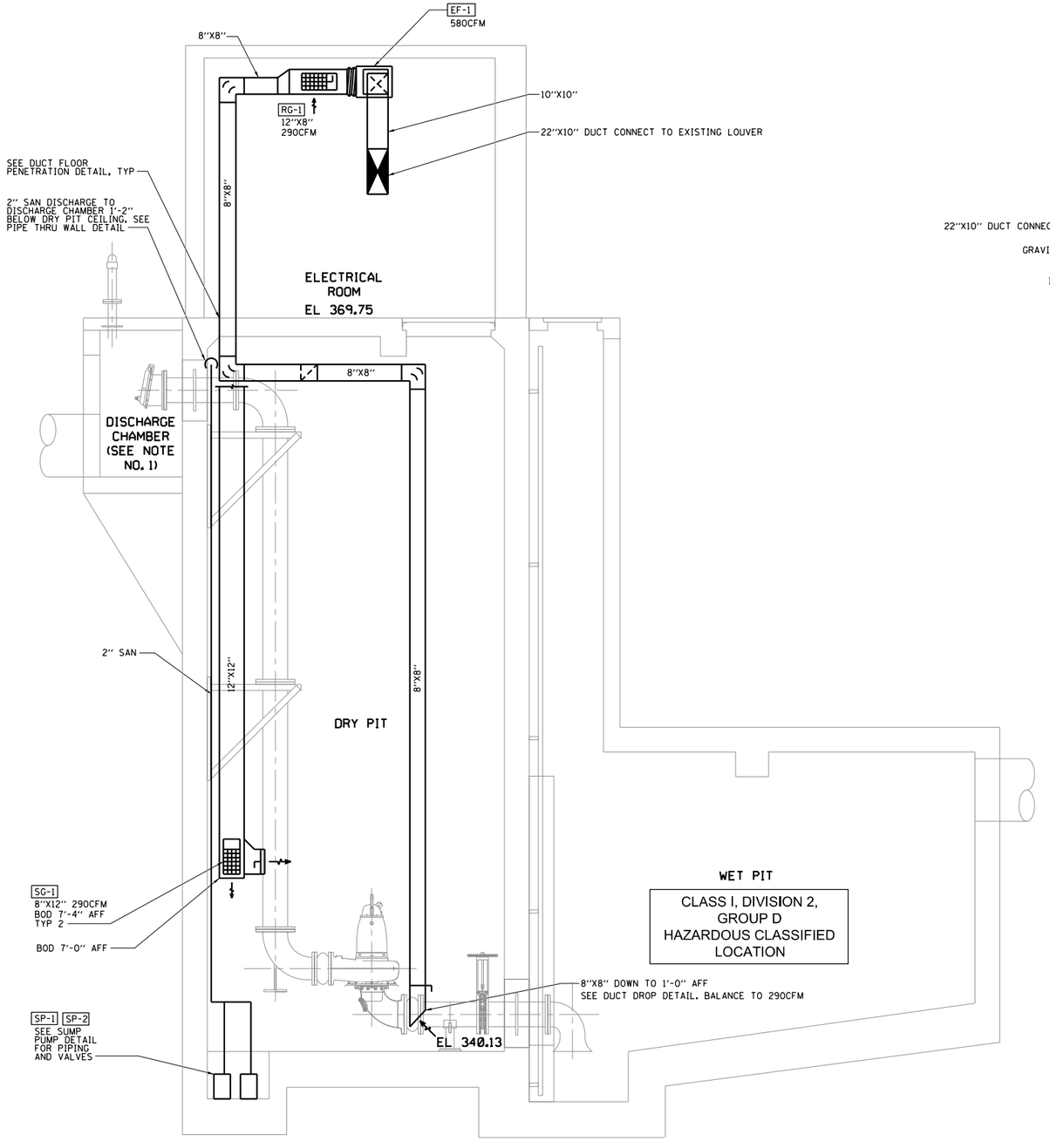
DONOHUE	USER NAME =	DESIGNED - CAH	REVISED -
		DRAWN - CAH	REVISED -
	PLOT SCALE =	CHECKED - JLW	REVISED -
	PLOT DATE =	DATE - 01-04-2019	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

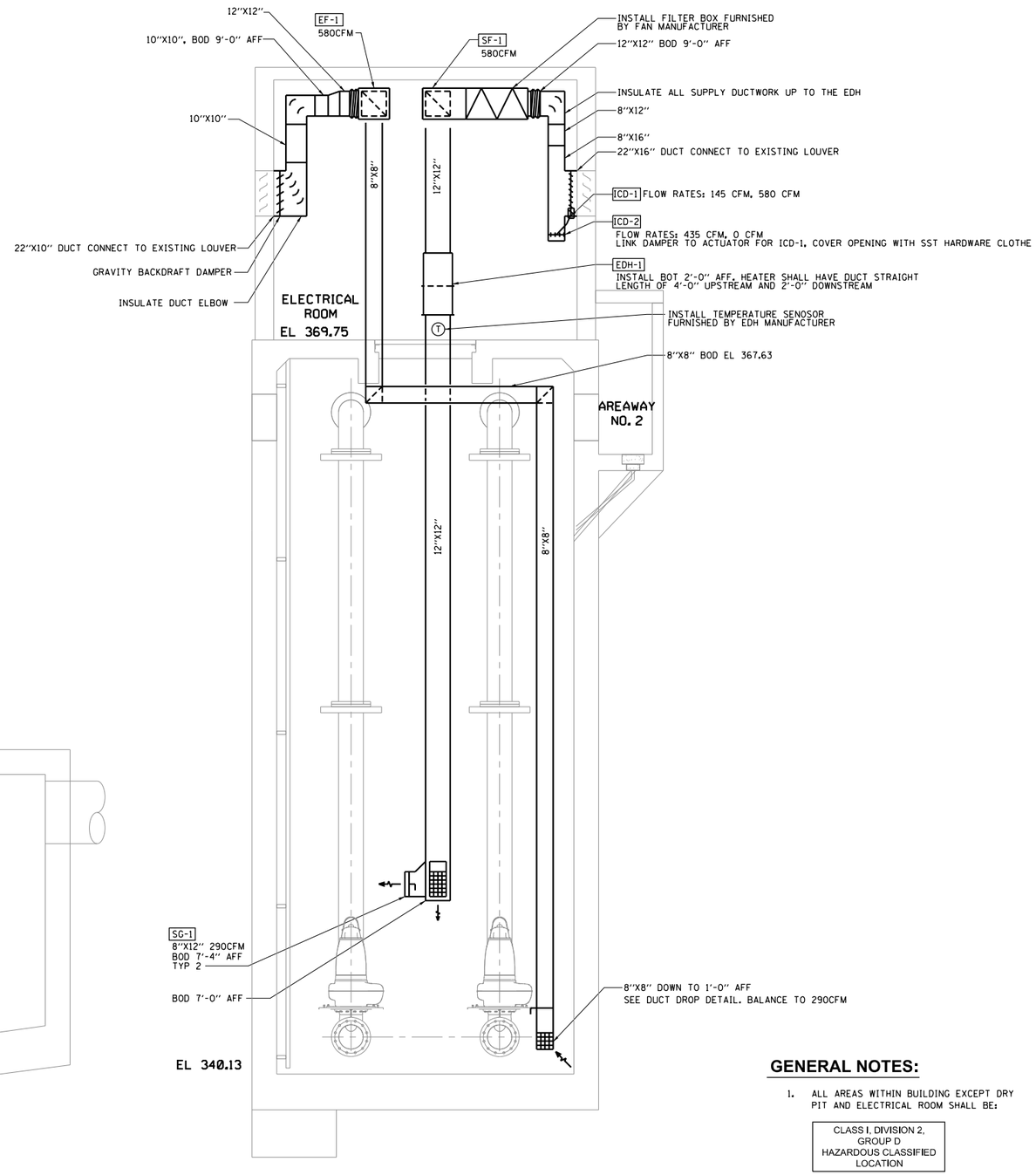
READING PUMP STATION
PLUMBING AND HVAC
PLANS

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

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
649	(107)PS-3	LIVINGSTON	42	24
		CONTRACT NO. 66J68		
	ILLINOIS FED. AID PROJECT XXXXXXX			



SECTION A–A



SECTION B–B

GENERAL NOTES:

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

CLASS I, DIVISION 2,
GROUP D
HAZARDOUS CLASSIFIED
LOCATION

PH-2

FILE NAME =

DONOHUE

USER NAME =	DESIGNED - CAH	REVISED -
	DRAWN - CAH	REVISED -
PLOT SCALE =	CHECKED - JLW	REVISED -
PLOT DATE =	DATE - 01-04-2019	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

READING PUMP STATION
PLUMBING AND HVAC
SECTIONS

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

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
649	(107)PS-3	LIVINGSTON	42	25
		CONTRACT NO. 66J68		
	ILLINOIS	FED. AID PROJECT XXXXXXX		

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 301RS-SS	EXHAUST	0.10	30	SD	#4 SATIN FINSH	SST	
SG-1	CARNES AJ MANUF TITUS	RLDB 250 300RS-SS	SUPPLY	0.10	35	DD	#4 SATIN FINSH	SST	

DD = 3/4" BLADE, DOUBLE DEFLECTION.
SD = 3/4" BLADE, SINGLE DEFLECTION, O 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:

1. WHEN GAS SENSOR DETECTS COMBUSTIBLE GAS ABOVE SETPOINT.
2. WHEN THE ELECTRICAL ROOM LIGHTS ARE ENERGIZED.
3. 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) CONTINOUSLY.

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 CONTINOUSLY,
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	SQ-95-VG SQND-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	SQ-99-VG SQND-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	OMARK 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

FILE NAME =

DONOHUE

USER NAME =	DESIGNED - CAH	REVISED -
	DRAWN - CAH	REVISED -
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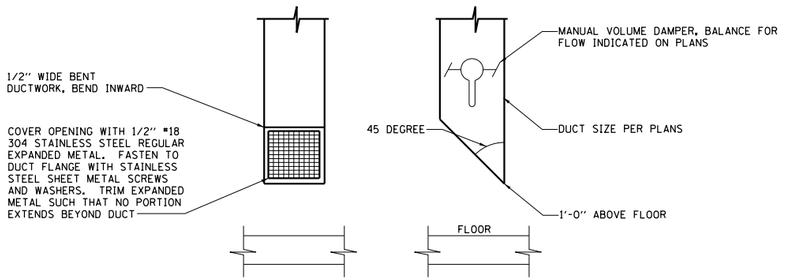
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

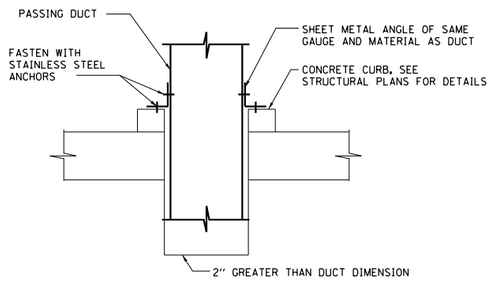
READING PUMP STATION
PLUMBING & HVAC
SCHEDULES

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

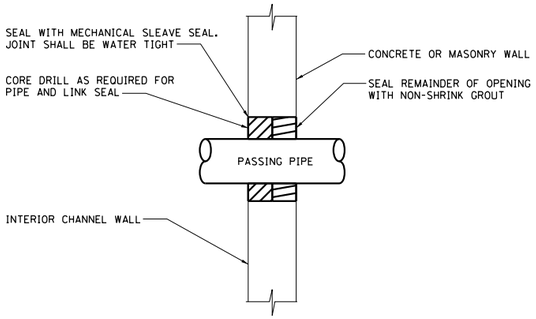
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
649	(107)PS-3	LIVINGSTON	42	26
		CONTRACT NO. 66J68		
	ILLINOIS	FED. AID PROJECT XXXXXXX		



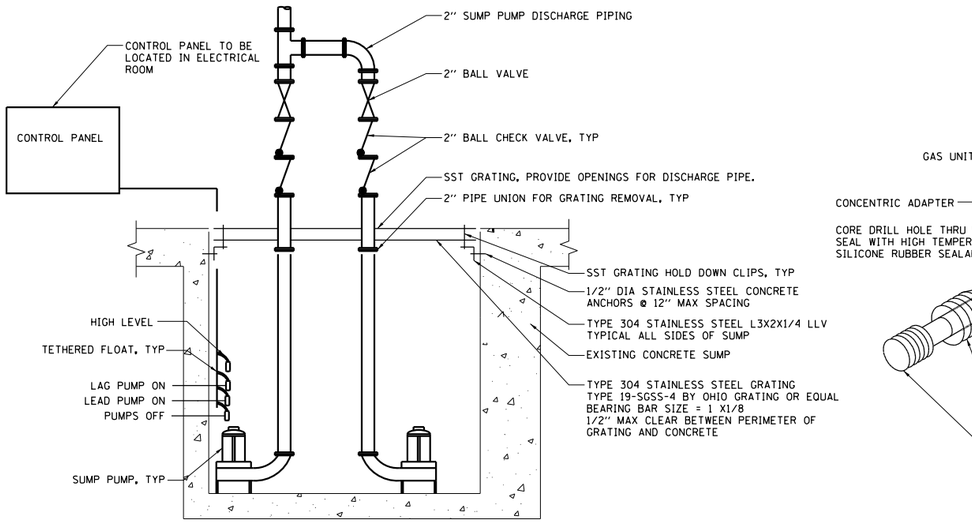
TYPICAL EXHAUST DUCT DROP DETAIL



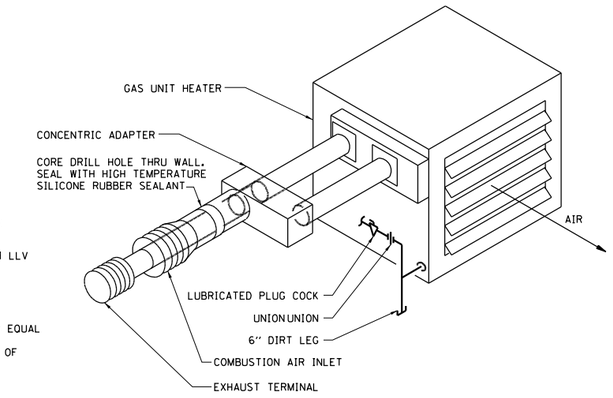
TYPICAL DUCT FLOOR PENETRATION DETAIL



TYPICAL PIPE WALL PENETRATION DETAIL



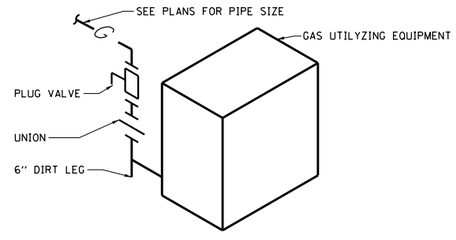
TYPICAL SUMP PUMP DETAIL



NOTES:

1. PIPE SIZES SHALL BE AS NOTED ON PLANS

TYPICAL GAS UNIT HEATER DETAIL



TYPICAL GAS CONNECTION

PH-5

FILE NAME =

DONOHUE

USER NAME =	DESIGNED - CAH	REVISED -
	DRAWN - CAH	REVISED -
PLOT SCALE =	CHECKED - JLW	REVISED -
PLOT DATE =	DATE - 01-04-2019	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

READING PUMP STATION
PLUMBING & HVAC
STANDARD DETAILS

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

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
649	(107)PS-3	LIVINGSTON	42	27
		CONTRACT NO. 66J68		
	ILLINOIS FED. AID PROJECT XXXXXXX			

ELECTRICAL ABBREVIATIONS AND SYMBOLS

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
FIX	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 GENERAL NOTES

1. SEE SHEET NO. 3 - GENERAL - ABBREVIATIONS AND GENERAL FOR ADDITIONAL NOTES.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WIRING, WHETHER SHOWN OR NOT, NECESSARY FOR A COMPLETE SYSTEM.
3. PROVIDE EXPLOSION PROOF SEAL-OFF FITTINGS ON ALL CONDUITS EXITING CLASSIFIED OR RATED LOCATIONS. FITTINGS SHALL BE INSTALLED IN THE CLASSIFIED OR RATED LOCATION.
4. CONTRACTOR IS RESPONSIBLE FOR VERIFYING NUMBER OF CONDUCTORS IN CONDUIT PRIOR TO INSTALLATION.
5. 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.
6. EQUIPMENT AND EQUIPMENT MOUNTED DEVICES SHALL HAVE NAMEPLATES PER SPECIFICATIONS.
7. 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

PLAN SYMBOLS

- LIGHTING FIXTURE – RECESSED (LETTER DENOTES TYPE)
- LIGHTING FIXTURE – SURFACE OR SUSPENDED (LETTER DENOTES TYPE)
- LIGHTING FIXTURE – WALL MOUNTED (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
- 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.

MOTOR CONTROL CENTER

MCC-1

MCC NO.

NOTE:

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

PANEL BOARDS

LP1-4

LIGHTING OR POWER PANEL AS INDICATED

PANEL NO.

CIRCUIT NO.

ONE-LINE SYMBOLS

- 15 M (OR) CL 600AF 500AT — 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)
- FVNR 2a 1b 2 — 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)
- T — TRANSFORMER
- FVNR 2a 1b 2 — 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
- 75 — MOTOR (NUMERAL INDICATES HORSEPOWER)

SCHEMATIC SYMBOLS

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

E-1

FILE NAME =

DONOHUE

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

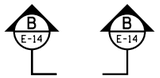
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

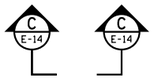
READING PUMP STATION
ELECTRICAL
ABBREVIATIONS AND SYMBOLS

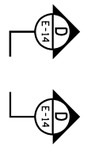
SCALE: | SHEET OF SHEETS | STA. | TO STA.

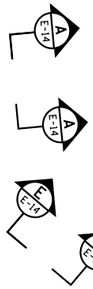
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
649	(107)PS-3	LIVINGSTON	42	28
		CONTRACT NO. 66J68		
	ILLINOIS FED. AID PROJECT XXXXXXX			

NOTES:

1. 

2. 

3. 

4. 

5.

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.

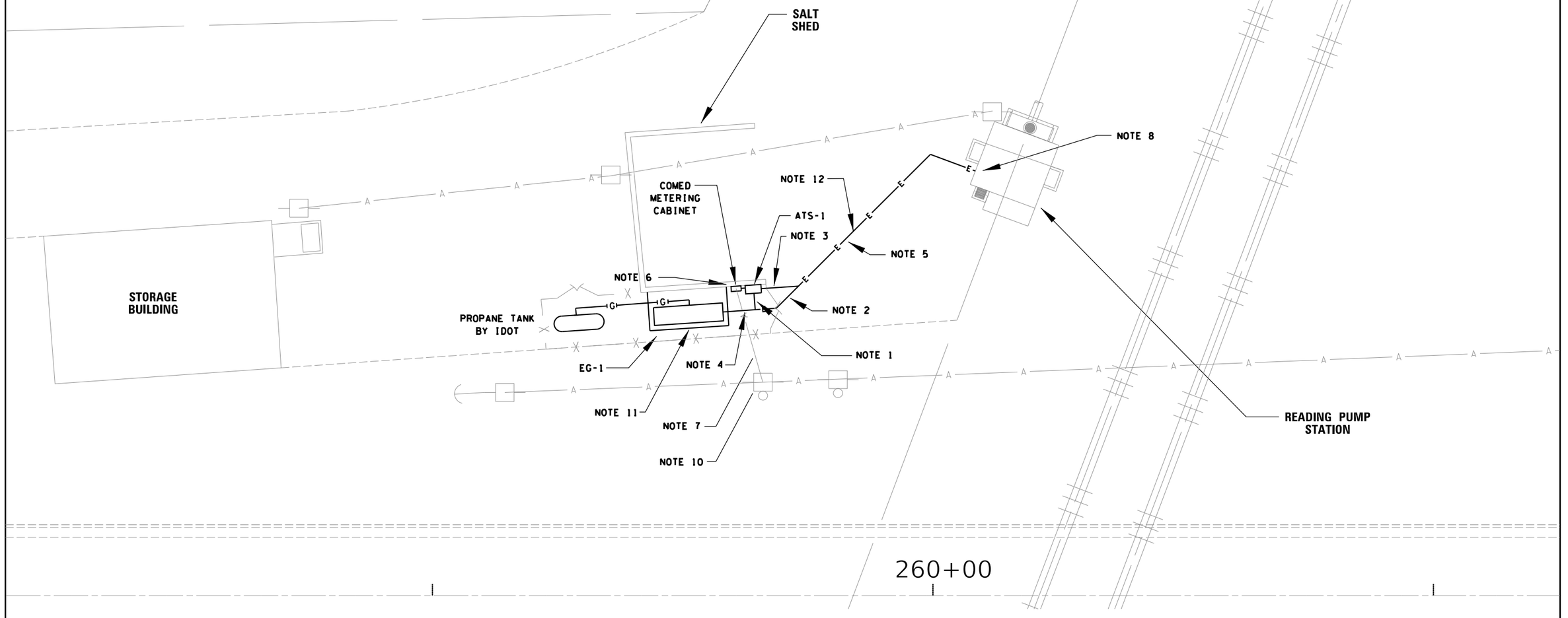
8. ALL CONDUITS SHALL ENTER PUMP STATION ABOVE GRADE; CORE DRILL EXISTING PUMP STATION AND PROVIDE LB CONDUIT FITTINGS BEFORE CONDUITS ENTER PUMP STATION EXTERIOR WALL. SEAL CONDUIT PENETRTION IN WALL WITH LIQUID-TIGHT SEALANT APPROVED FOR EXTERIOR USE.

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.



E-2

SCALE: 0 5 10 FT.

FILE NAME =

DONOHUE

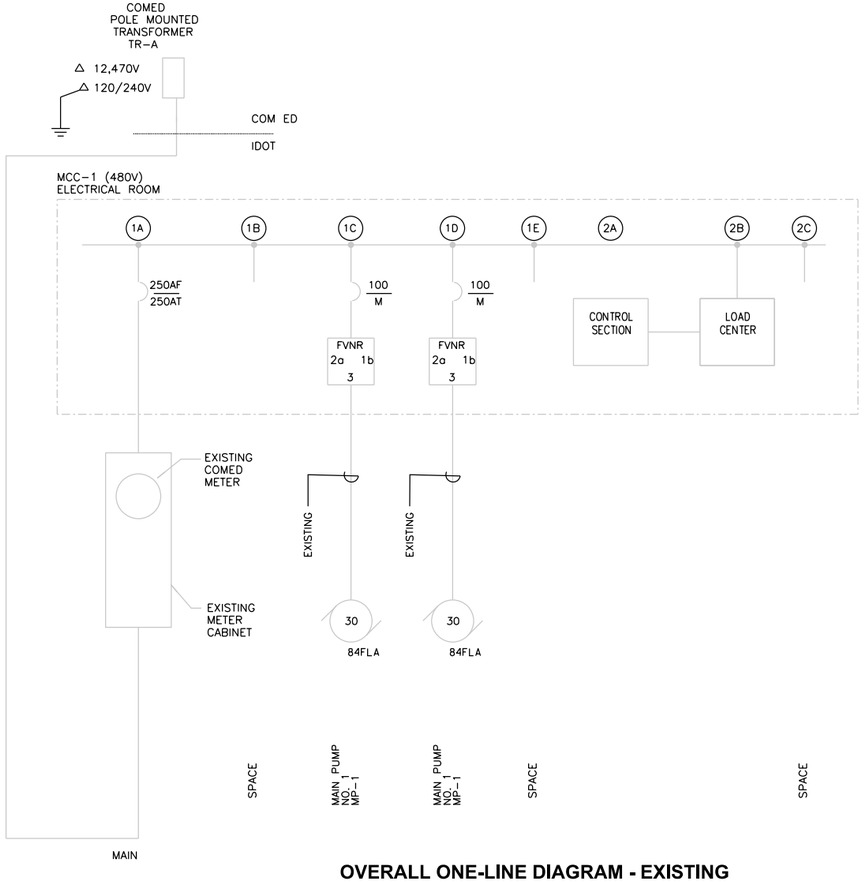
USER NAME =	DESIGNED - JRR	REVISED -
	DRAWN - JRR	REVISED -
PLOT SCALE =	CHECKED - JAB	REVISED -
PLOT DATE =	DATE - 01-04-2019	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

READING PUMP STATION
ELECTRICAL
SITE PLAN

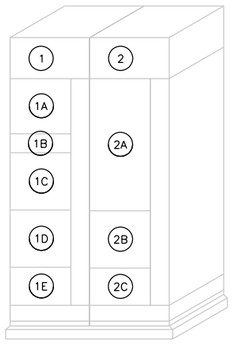
SCALE: | SHEET OF ___ SHEETS | STA. | TO STA.

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



OVERALL ONE-LINE DIAGRAM - EXISTING READING PUMP STATION

NTS



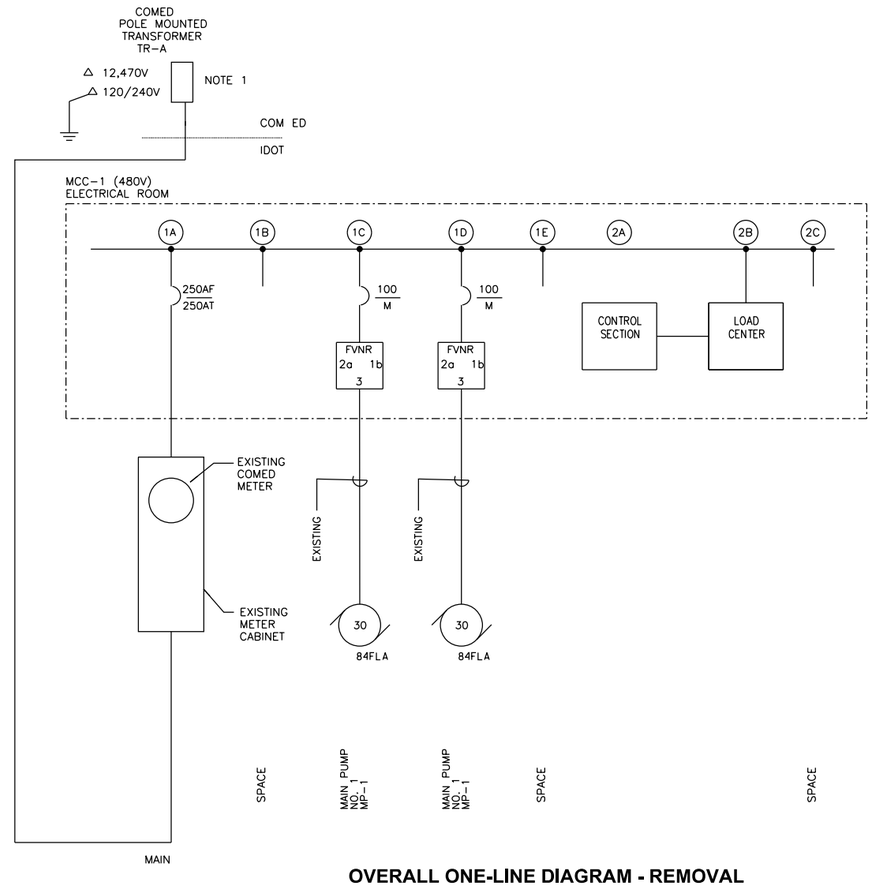
FURNAS MOTOR CONTROL CENTER
CUSTOMER ORDER NO: 2655-1
MAY 1981

MCC-1 ELEVATION READING PUMP STATION

NTS

PLAN NOTES:

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



OVERALL ONE-LINE DIAGRAM - REMOVAL READING PUMP STATION

NTS

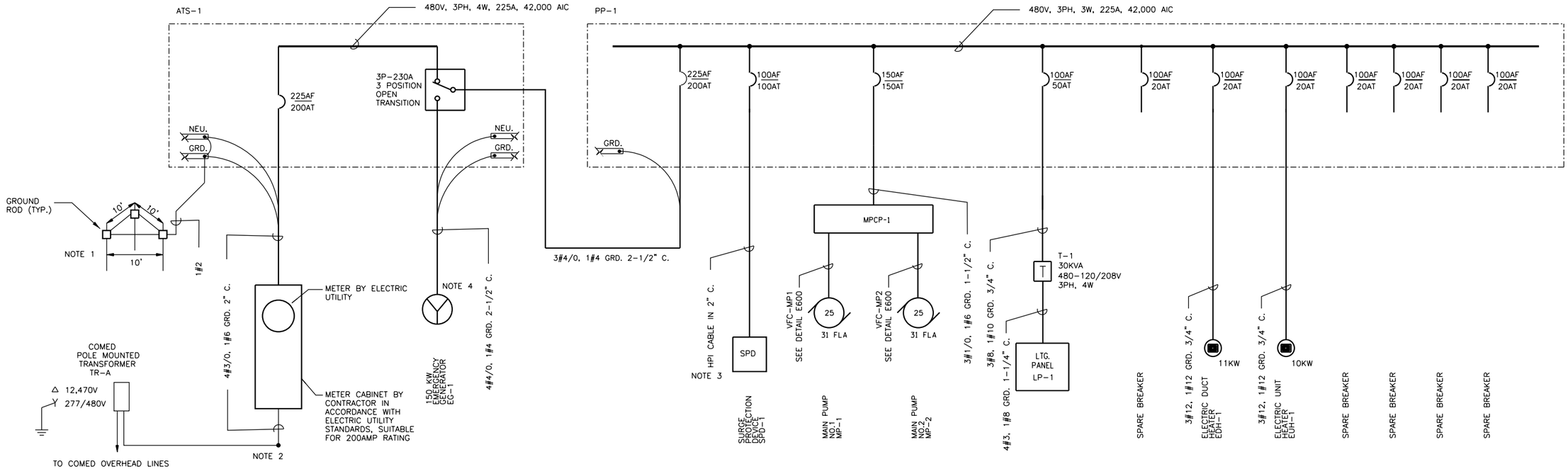
E-3

DONOHUE	USER NAME =	DESIGNED - JRR	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	READING PUMP STATION ELECTRICAL ONE-LINE DIAGRAM, ELEVATION AND SCHEDULE	F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
		DRAWN - JRR	REVISED -			649	(107)PS-3	LIVINGSTON	42	30
	PLOT SCALE =	CHECKED - JAB	REVISED -					CONTRACT NO. 66J68		
	PLOT DATE =	DATE - 01-04-2019	REVISED -		SCALE: SHEET OF SHEETS STA. TO STA.		ILLINOIS	FED. AID PROJECT XXXXXXX		

FILE NAME =

NOTES:

1. COORDINATE LOCATION AND INSTALLATION OF GROUNDING TRIAD WITH SITE PIPING AND ELECTRICAL DUCT BANK; ADJUST GROUNDING TRIAD AS REQUIRED.
2. 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 CONDCUTORS FROM NEW POLE MOUNTED TRANSFORMER TO SERVICE POINT; TERMINATIONS AT SERVICE POINT BY CONTRACTOR.
3. PROVIDE HIGH PERFORMANCE IMPEDANCE CABLE FROM MANUFACTURER OF SPD. COORDINATE CONDUIT SIZE WITH CABLE REQUIREMENTS.
4. 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

FILE NAME =

DONOHUE

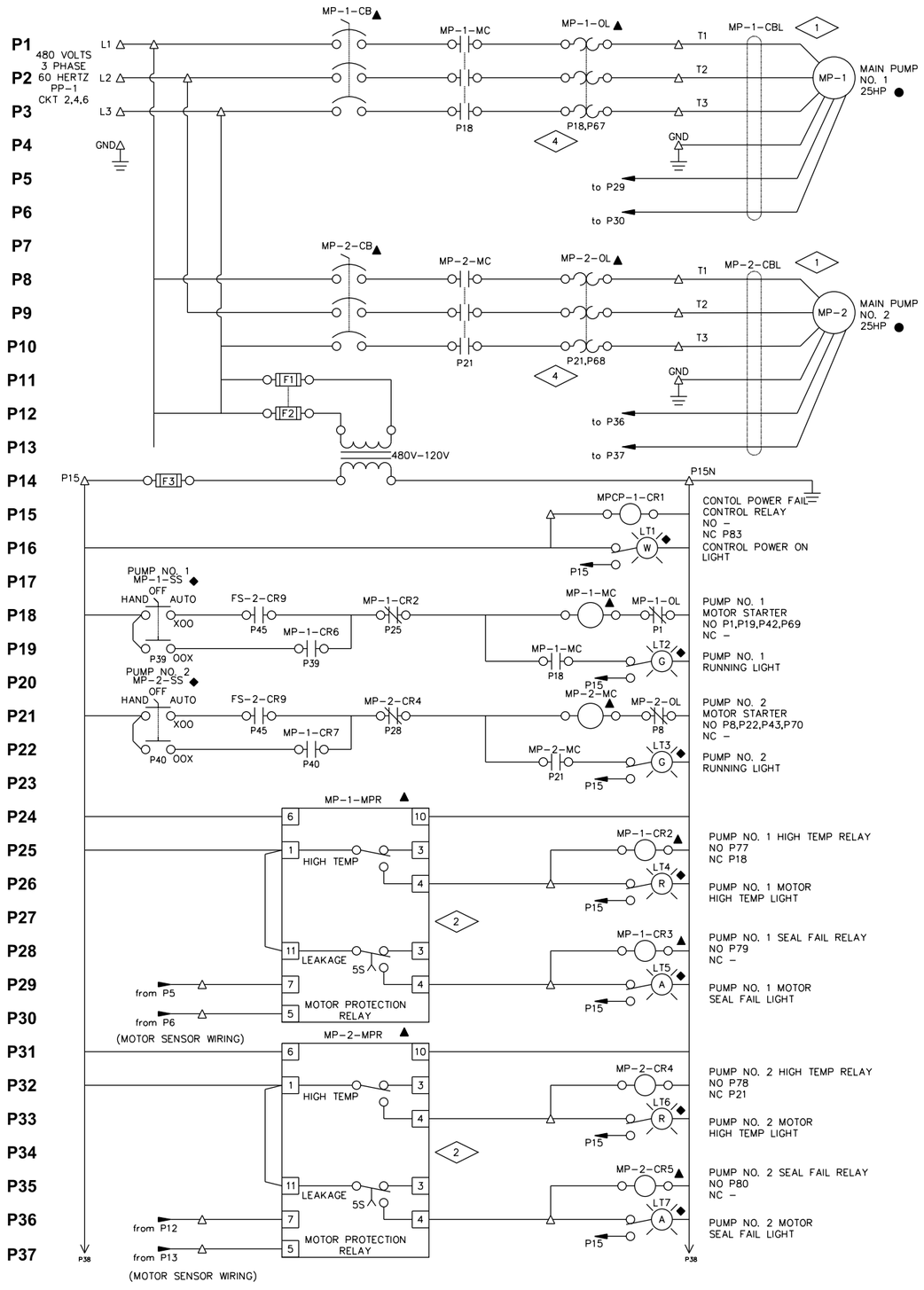
USER NAME =	DESIGNED - JRR	REVISED -
	DRAWN - JRR	REVISED -
PLOT SCALE =	CHECKED - JAB	REVISED -
PLOT DATE =	DATE - 01-04-2019	REVISED -

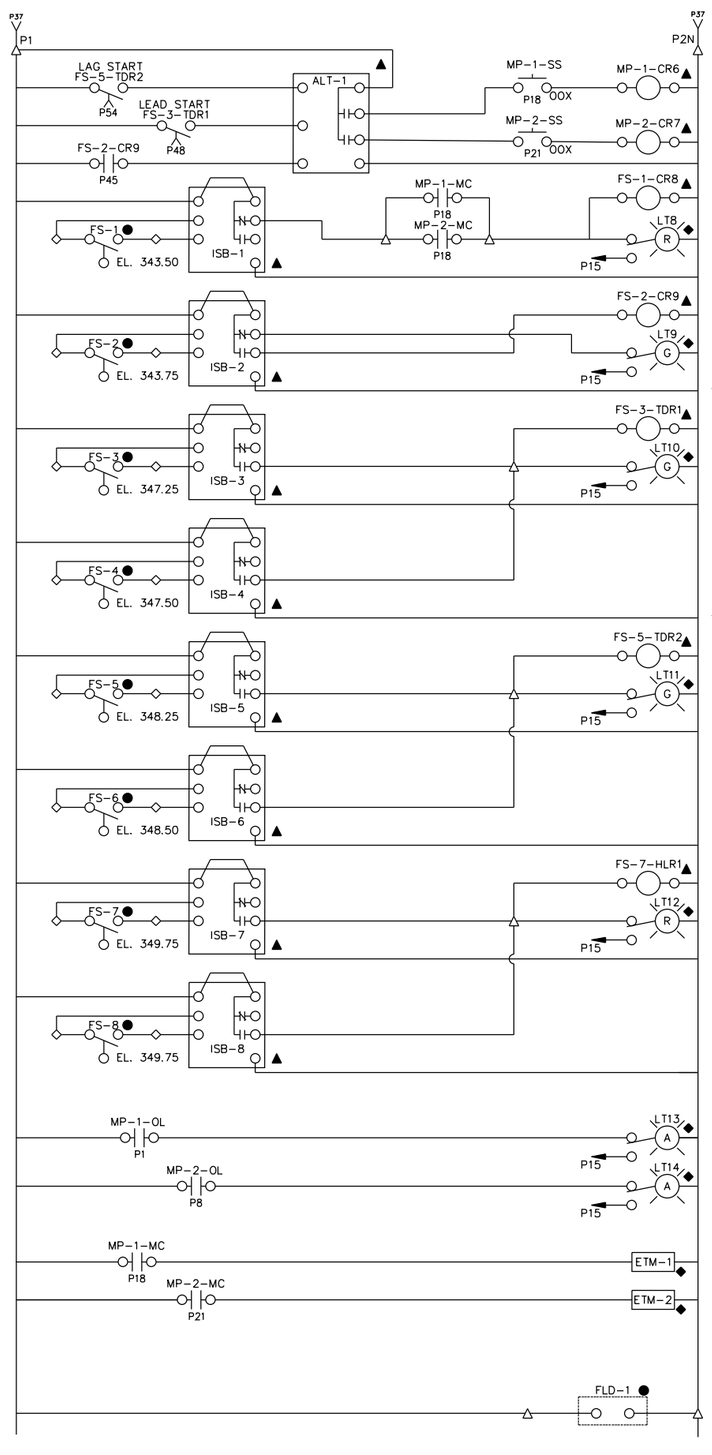
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

READING PUMP STATION
ELECTRICAL
ONE–LINE DIAGRAM

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

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
649	(107)PS-3	LIVINGSTON	42	31
		CONTRACT NO. 66J68		
	ILLINOIS	FED. AID PROJECT XXXXXX		





LEGEND:

- △ TERMINAL IN MPCP
- ◇ TERMINAL IN FS-1-JBX
- ○ TERMINAL ON DEVICE
- ▲ DEVICE ON MPCP
- ◆ DEVICE ON DOOR
- ● DEVICE LOCALLY MOUNTED

CBL CABLE
CR CONTROL RELAY
ETM ELAPSED TIME METER
FS BALL FLOAT SWITCH
FLD FLOOD DETECTION SWITCH
HLR ALARM RELAY(HIGH LEVEL)
ISB INTRINSICALLY SAFE BARRIER
LT PANEL LIGHT(LED)
MC MOTOR CONTACTOR
MPR MOTOR PROTECTION RELAY
OL OVERLOAD PROTECTION RELAY
TDR TIMED DELAY RELAY

GENERAL NOTES:

1. CONTRACTOR SHALL PROVIDE CONTROL SCHEMATIC SHOP DRAWINGS DEPICTING AND IDENTIFYING TERMINALS 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. SOME PUMP MANUFACTURERS PROVIDE MULTIPLE CABLES FOR MOTOR POWER AND MONITORING WIRES, CONTRACTOR SHALL COORDINATE WITH PUMP MANUFACTURER. ALL MOTOR CABLES SHALL BE A MINIMUM OF 75FT IN LENGTH.
2. MOTOR PROTECTION RELAY (MPR) PROVIDED BY PUMP MANUFACTURER. TERMINATIONS MAY VARY WITH MANUFACTURER. CONTACTS ARE SHOWN WITH THE DEVICE UN-POWERED. CONTRACTOR SHALL COORDINATE WITH PUMP MANUFACTURER. MPR'S SHALL BE SET FOR AUTO-RESET OPERATION. WHEN POWERED, OVERTEMP RELAY CONTACTS: 1-3 CLOSED, 1-4 OPEN, AND LEAKAGE RELAY CONTACTS: 11-8 CLOSED, 11-9 OPEN.
3. ON DELAY TIMER RELAYS SETTINGS SHALL BE AS FOLLOWS: SET TDR1 FOR 10 SECONDS AND TRD2 FOR 25 SECONDS.
4. PROVIDE DOOR MOUNTED MANUAL OVERLOAD RESET PUSHBUTTON PER SPECIAL PROVISIONS.

FILE NAME =

DONOHUE

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
MAIN PUMP CONTROL PANEL (MPCP-1)
REFERENCE SCHEMATIC

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

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
649	(107)PS-3	LIVINGSTON	42	32
		CONTRACT NO. 66J68		
	ILLINOIS FED. AID PROJECT xxxxxxx			

P75
P76
P77
P78
P79
P80
P81
P82
P83
P84
P85
P86
P87
P88
P89
P90
P91
P92
P93
P94
P95
P96
P97
P98
P99
P100
P101
P102
P103
P104
P105
P106
P107
P108
P109
P110
P111

P1

MPCP-1
DIALER CONTACTS
3

MP-1-CR2 P25 — PUMP NO. 1 HIGH TEMP
MP-2-CR4 P32 — PUMP NO. 2 HIGH TEMP
MP-2-CR3 P28 — PUMP NO. 1 SEAL FAIL
MP-2-CR5 P35 — PUMP NO. 2 SEAL FAIL
FS-7-HLR1 P60 — HIGH LEVEL ALARM
FLD-1 P74 — DRY PIT FLOODED
MPCP-1-CR1 P15 — CONTROL POWER FAIL
FS-1-CR8 P42 — PUMPS FAILED TO STOP

STATION POWER EQUIPMENT
DIALER CONTACTS

EMERGENCY GENERATOR EG-1 ◇4
EG-C1 — GENERATOR RUNNING
EG-C2 — GENERATOR COMMON ALARM

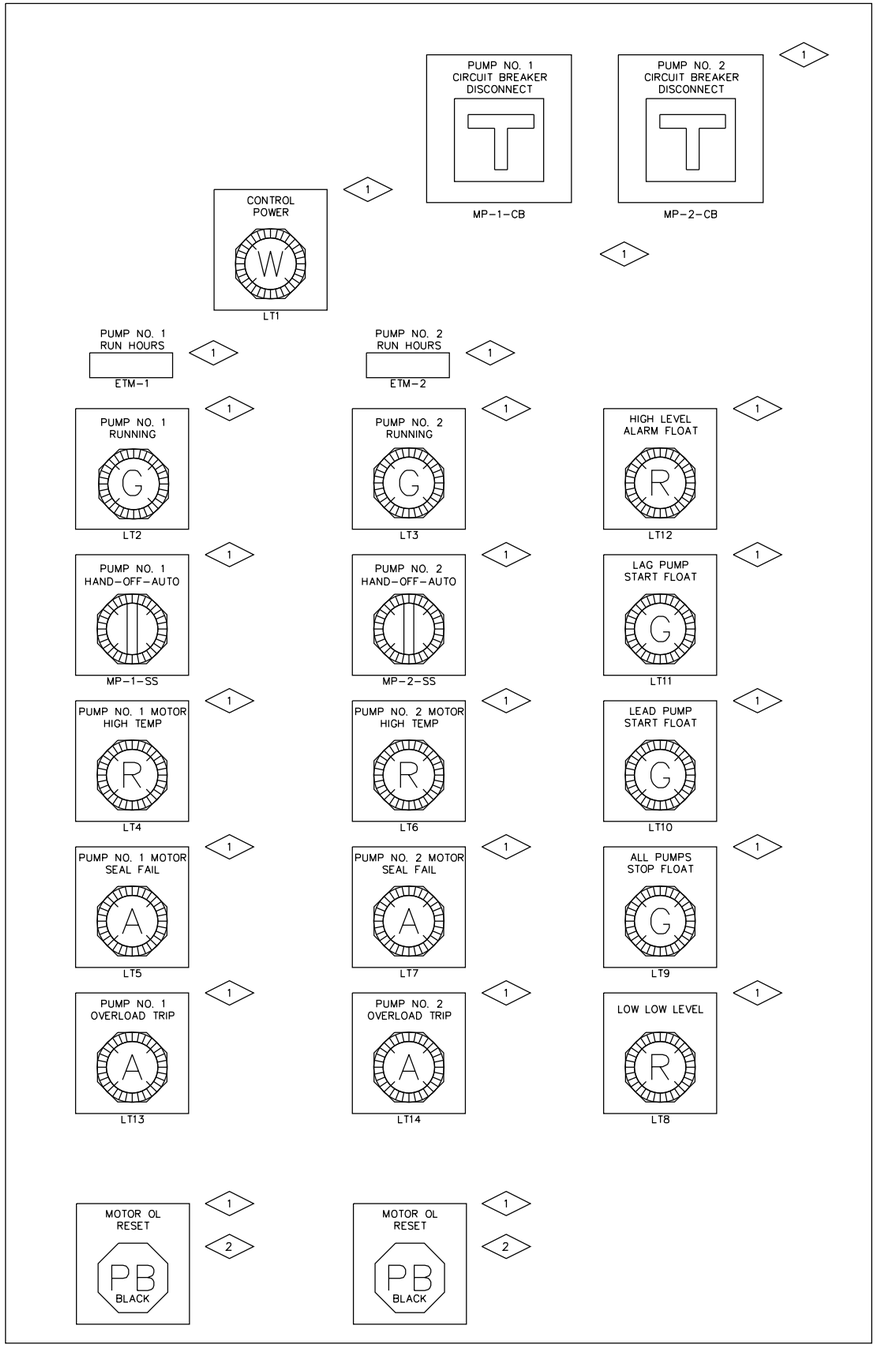
AUTOMATIC TRANSFER SWITCH ATS-1 ◇4
ATS-C1 — ATS LOSS OF UTILITY POWER

SURGE PROTECTION DEVICE SPD-1 ◇4
SPD-C1 — SPD COMMON ALARM

P2N

LEGEND:

- △ TERMINAL IN MPCP
- ○ TERMINAL ON DEVICE
- ▲ DEVICE IN MPCP
- ◆ DEVICE ON MPCP DOOR
- ● DEVICE LOCALLY MOUNTED



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.

FILE NAME =

DONOHUE

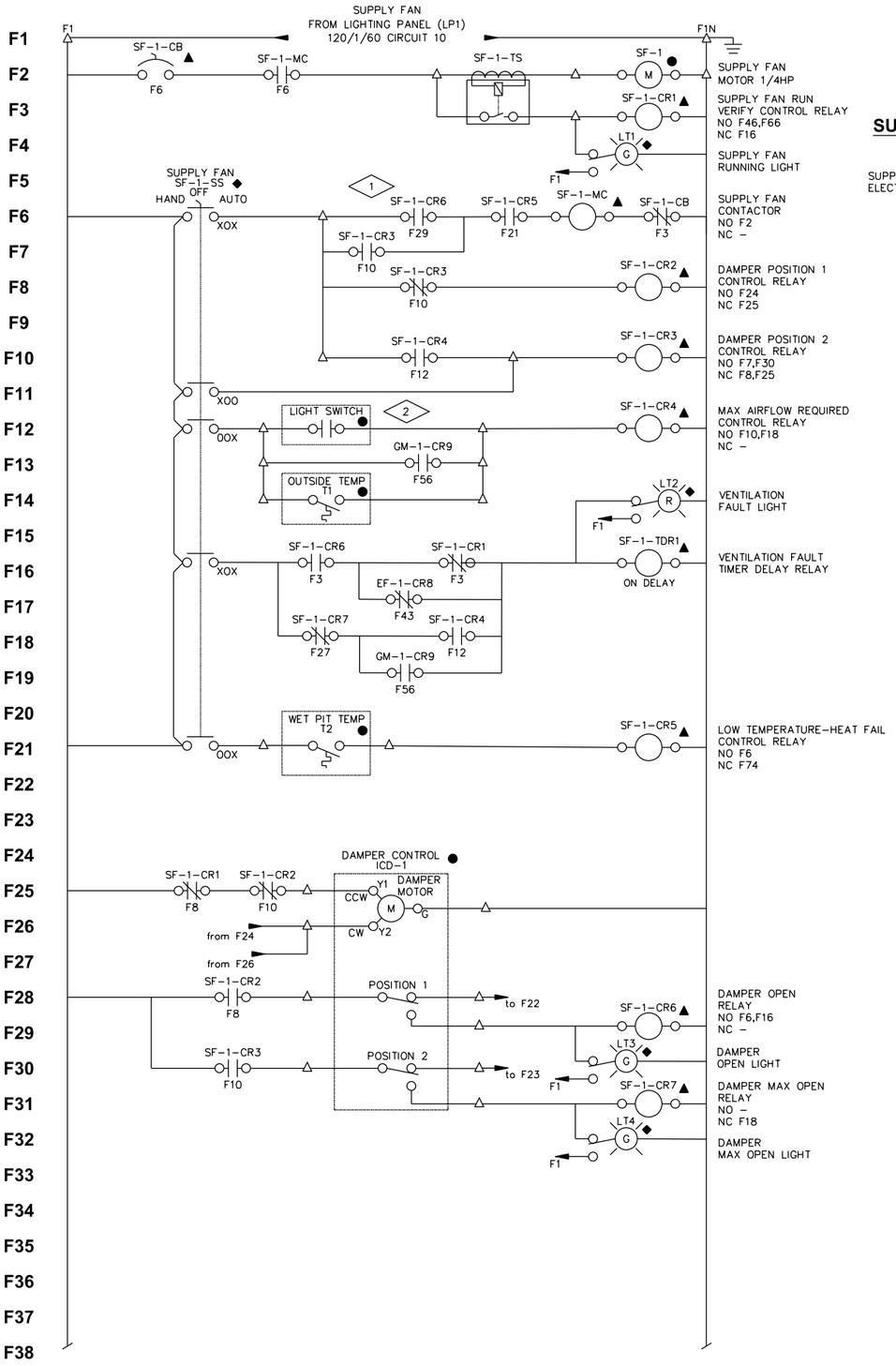
USER NAME =	DESIGNED - JCE	REVISED -
	DRAWN - JCE	REVISED -
PLOT SCALE =	CHECKED - DWG	REVISED -
PLOT DATE =	DATE - 01-04-2019	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

READING PUMP STATION
MAIN PUMP CONTROL PANEL (MPCP-1)
REFERENCE SCHEMATIC

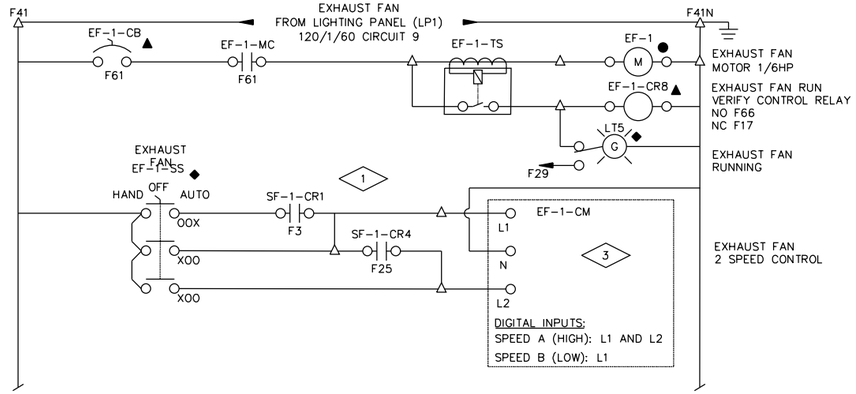
SCALE: | SHEET OF SHEETS | STA. | TO STA.

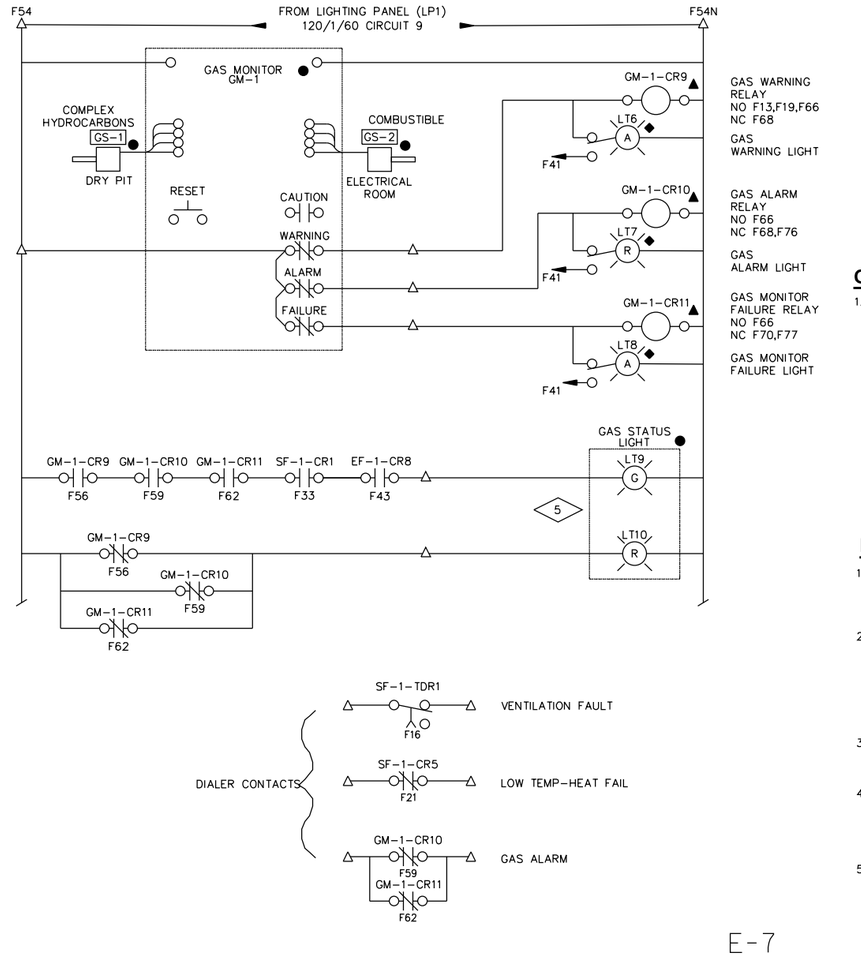
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
649	(107)PS-3	LIVINGSTON	42	33
		CONTRACT NO. 66J68		
	ILLINOIS FED. AID PROJECT XXXXXX			



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 IDENTIFYING TERMINALS 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.

FILE NAME =

DONOHUE

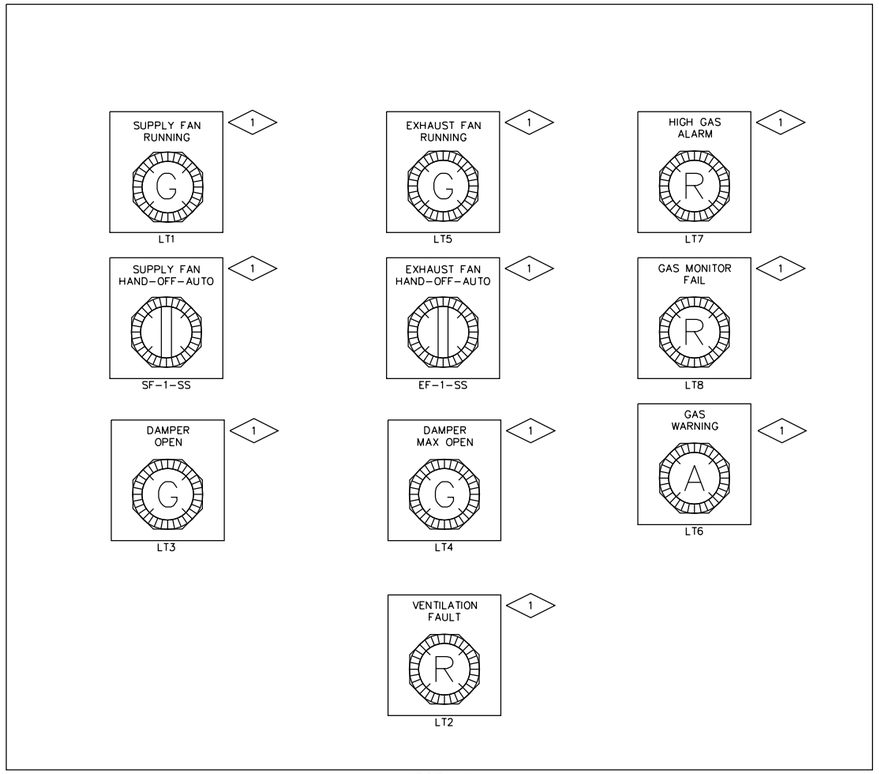
USER NAME =		DESIGNED - JCE	REVISED -	
		DRAWN - JCE	REVISED -	
PLOT SCALE =		CHECKED - DWG	REVISED -	
PLOT DATE =		DATE - 01-04-2019	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

READING PUMP STATION
TEMPERATURE CONTROL PANEL (TCP-1)
REFERENCE SCHEMATIC

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

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
649	(107)PS-3	LIVINGSTON	42	34
		CONTRACT NO. 66J68		
	ILLINOIS FED. AID PROJECT xxxxxxx			



TCP-1
VENTILATION CONTROL PANEL
OPERATOR DETAIL (NTS)

GENERAL NOTES:

1. 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: ◇

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

FILE NAME =

DONOHUE

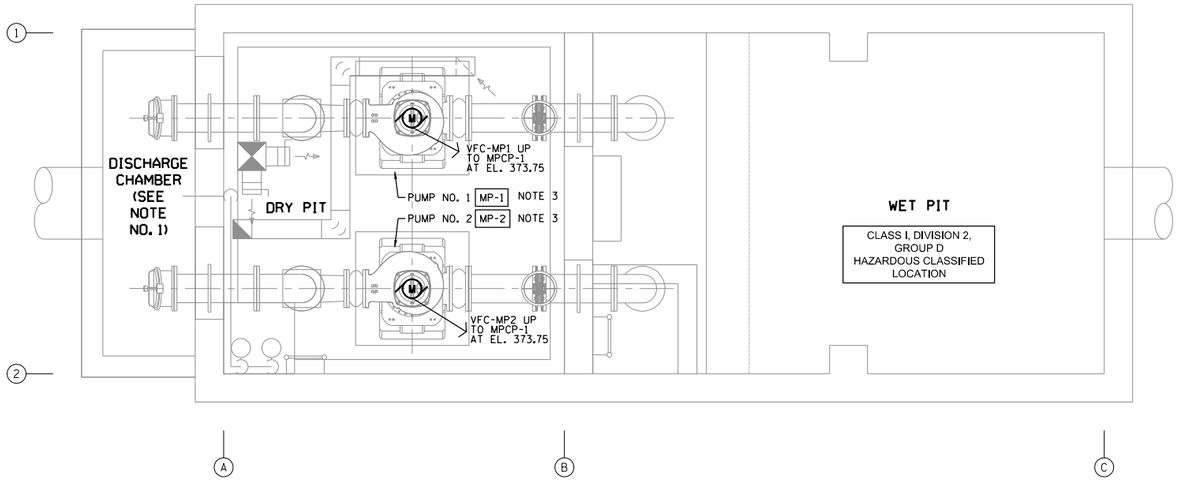
USER NAME =	DESIGNED - JCE	REVISED -
	DRAWN - JCE	REVISED -
PLOT SCALE =	CHECKED - DWG	REVISED -
PLOT DATE =	DATE - 01-04-2019	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

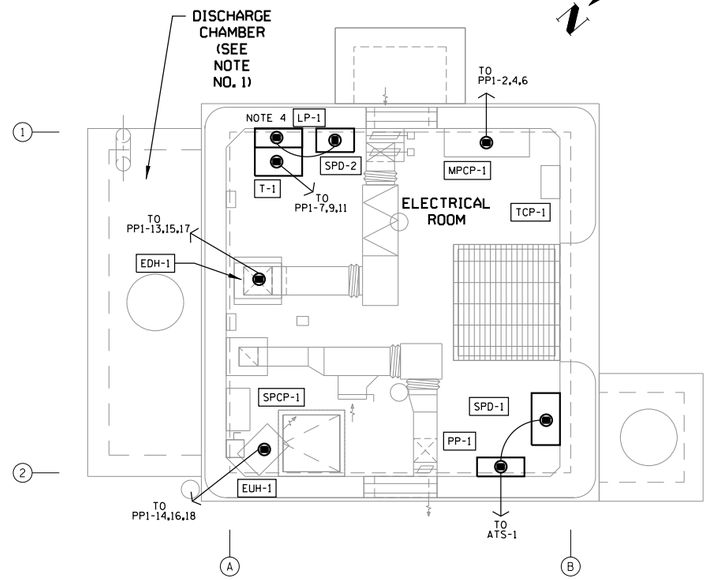
READING PUMP STATION
TEMPERATURE CONTROL PANEL (TCP-1)
CONTROL SCHEMATIC

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

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
649	(107)PS-3	LIVINGSTON	42	35
		CONTRACT NO. 66J68		
	ILLINOIS FED. AID PROJECT xxxxxxx			



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.

FILE NAME =

DONOHUE

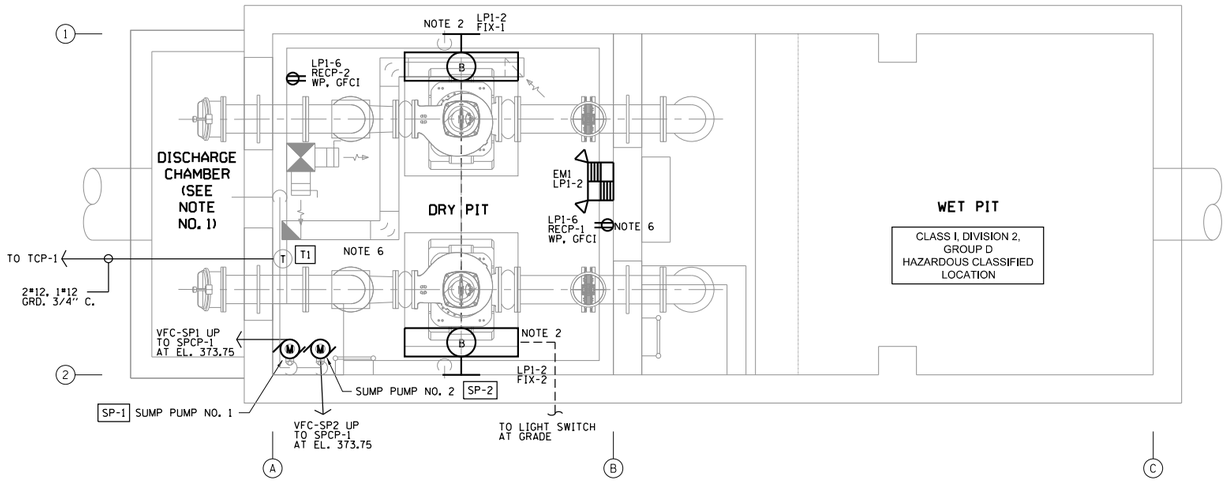
USER NAME =	DESIGNED - JRR	REVISED -	
	DRAWN - JRR	REVISED -	
PLOT SCALE =	CHECKED - JAB	REVISED -	
PLOT DATE =	DATE - 01-04-2019	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

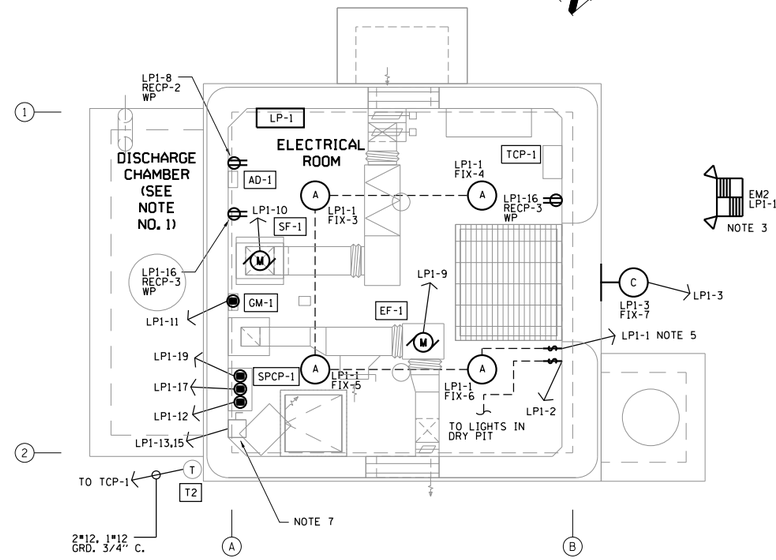
READING PUMP STATION
ELECTRICAL PLANS

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

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



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

SCALE: 0 4 8 FT.

E-10

FILE NAME =

DONOHUE

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

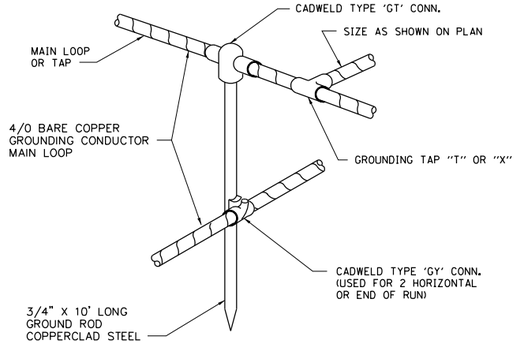
READING PUMP STATION
ELECTRICAL
LIGHTING PLANS

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

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
649	(107)PS-3	LIVINGSTON	42	37
		CONTRACT NO. 66J68		
	ILLINOIS FED. AID PROJECT XXXXXXX			

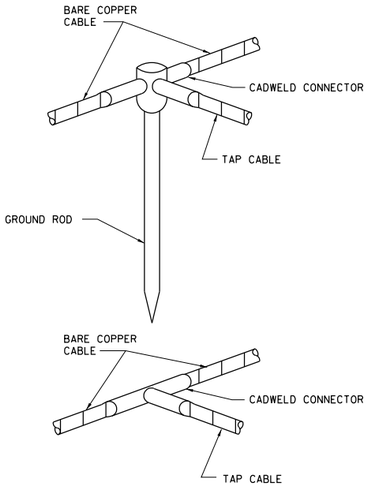
LUMINAIRE SCHEDULE

TYPE	DESCRIPTION	LAMPS NO	LAMPS ORD ABB	MANUFACTURER	CATALOG NUMBER	REMARKS
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 LPO3VS LTP SD ATX ELS SERIES AN SPECIFICATION EMERGENCY LIGHT	WALL MOUNTED 8'-0" ABOVE FLOOR



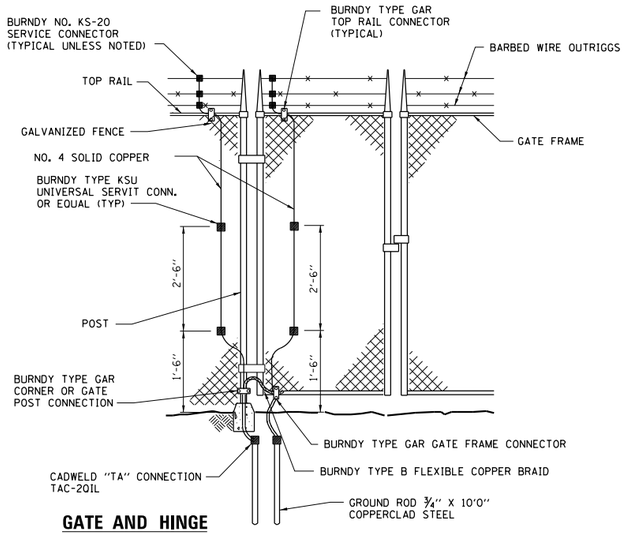
CONDUCTOR TO GROUND ROD CONNECTION DETAIL E451

NTS



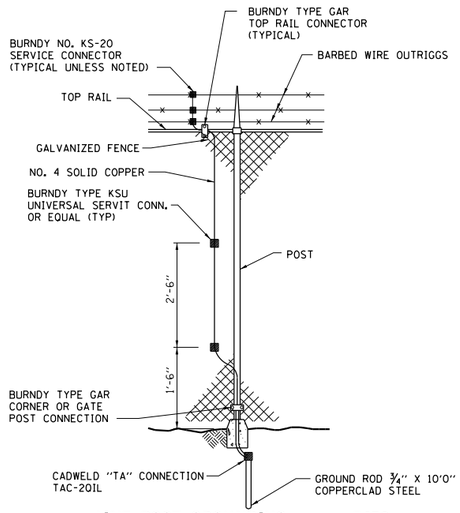
GROUNDING CONNECTION DETAIL E450

NTS



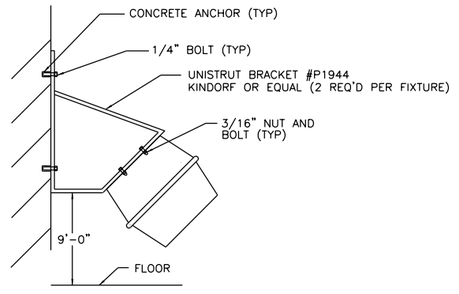
GATE AND HINGE POST GROUNDING E457

NTS



LINE POST GROUNDING E458

NTS



FIXTURE TYPE "B" MOUNTING DETAIL E550

NTS

FILE NAME =

DONOHUE

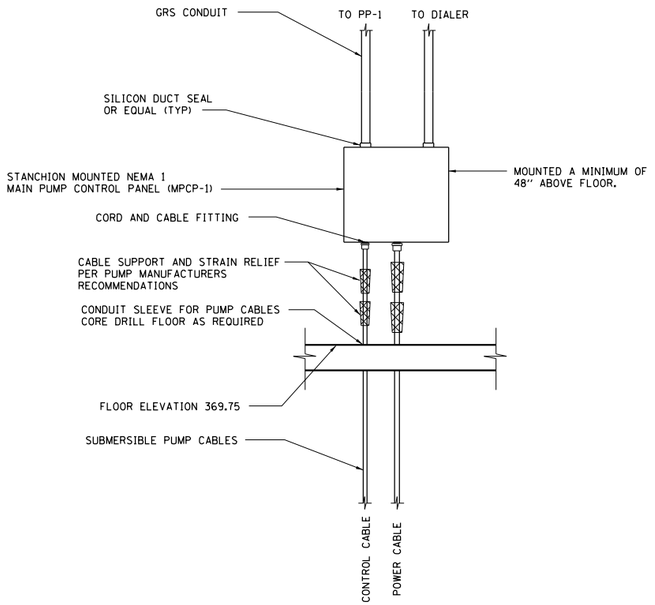
USER NAME =	DESIGNED - JRR	REVISED -
	DRAWN - JRR	REVISED -
PLOT SCALE =	CHECKED - JAB	REVISED -
PLOT DATE =	DATE - 01-04-2019	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

READING PUMP STATION
ELECTRICAL DETAILS

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

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

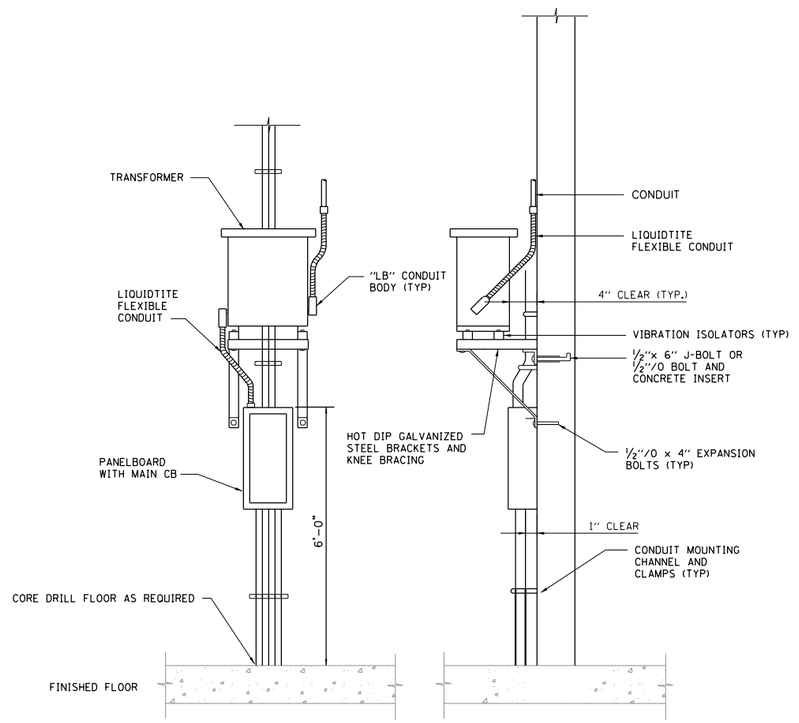


FRONT VIEW

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

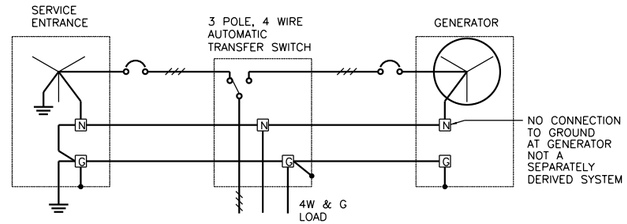
NTS



FRONT SIDE

WALL MOUNTED TRANSFORMER AND PANEL BOARD E901

NTS



GENERATOR GROUNDING DETAIL E606

NTS

FILE NAME =

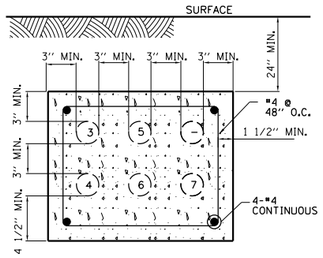
DONOHUE

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

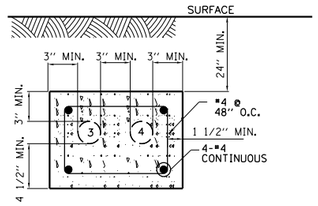
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

READING PUMP STATION
ELECTRICAL DETAILS
SCALE: SHEET OF SHEETS STA. TO STA.

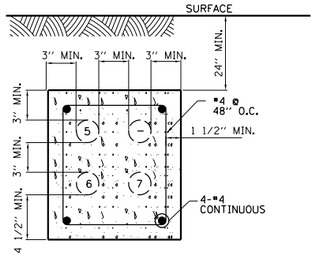
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
649	(107)PS-3	LIVINGSTON	42	39
		CONTRACT NO. 66J68		
	ILLINOIS	FED. AID PROJECT XXXXXXX		



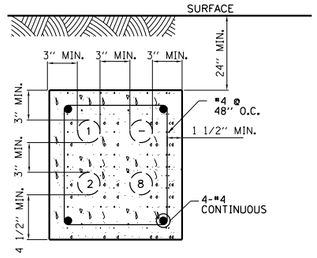
DUCT BANK SECTION A
NTS E2



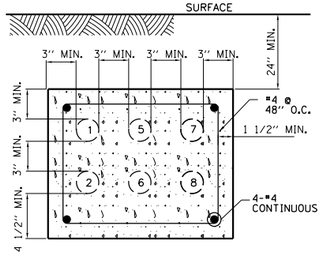
DUCT BANK SECTION B
NTS E2



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:

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

PANEL SCHEDULE PP-1

SURFACE MOUNTED NEMA 1
480 V, 3 PHASE, 3 WIRE
RATING 42,000 A.I.C.

200A MAIN BREAKER
200A MAIN BUS
200A MIN. GRD. BUS

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

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

PANEL SCHEDULE LP-1

SURFACE MOUNTED NEMA 1
120 / 208 V, 3 PHASE, 4 WIRE
RATING 22,000 A.I.C.

100A MAIN BREAKER
100A MAIN BUS
100A MIN. GRD. BUS

VA	CKT. NO.	TRIP/P	DESCRIPTION	PHASE A	PHASE B	PHASE C	DESCRIPTION	TRIP/P	CKT. NO.	VA
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	
3942			TOTALS:	2531	2745	3276	–			4530

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

FILE NAME =

DONOHUE

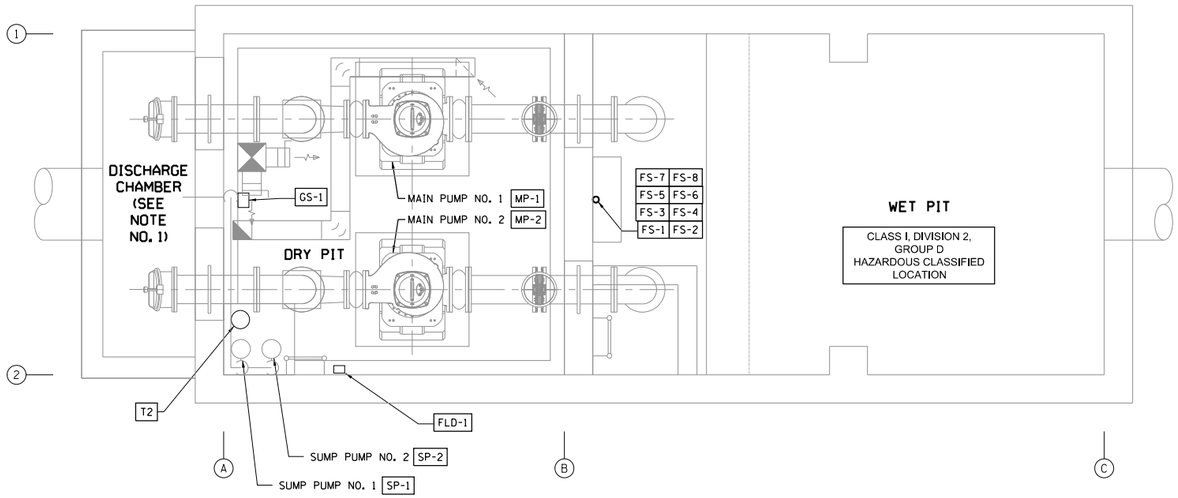
USER NAME =	DESIGNED – JRR	REVISED –
	DRAWN – JRR	REVISED –
PLOT SCALE =	CHECKED – JAB	REVISED –
PLOT DATE =	DATE – 01-04-2019	REVISED –

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

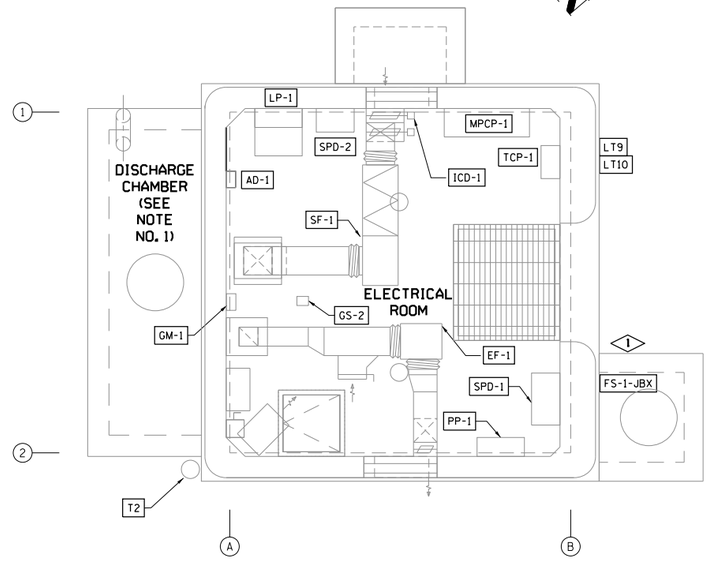
READING PUMP STATION
ELECTRICAL
PANEL AND DUCT BANK SCHEDULES

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

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
649	(107)PS-3	LIVINGSTON	42	40
		CONTRACT NO. 66J68		
	ILLINOIS	FED. AID PROJECT XXXXXXX		



LOWER PLAN



UPPER PLAN

INDEX LEDGEND:

( ) #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. P ROVIDE, 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		
SPD-1	SURGE PROTECTION DEVICE	--	(2) #14		
FS-1-JBX	FLOAT SWITCH JUNCTION BOX	N170	(20) #14	FLOAT SWITCH JUNCTION BOX	FS-1-JBX
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		
FS-7	FLOAT SWITCH NO. 7	--	(1) VFC		
FS-8	FLOAT SWITCH NO. 8	--	(1) VFC		
ICD-1	INSULATED CONTROL DAMPER	--	(1) VFC	TEMPERATURE CONTROL PANEL	TCP-1
SF-1	SUPPLY FAN	--	(2) #12		
EF-1	EXHAUST FAN	--	(2) #12		
EF-1		--	(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 THEMOSTAT	--	(2) #14		
T2	WET PIT THEMOSTAT	--	(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		
MPCP-1	MAIN PUMP CONTROL PANEL	N170	(24) #14	AUTODIALER	AD-1
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

FILE NAME =

DONOHUE

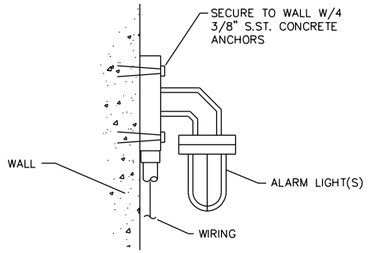
USER NAME =	DESIGNED - JCE	REVISED -	
	DRAWN - JCE	REVISED -	
PLOT SCALE =	CHECKED - DWG	REVISED -	
PLOT DATE =	DATE - 01-04-2019	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

READING PUMP STATION
INSTRUMENTATION AND CONTROLS
PLANS

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

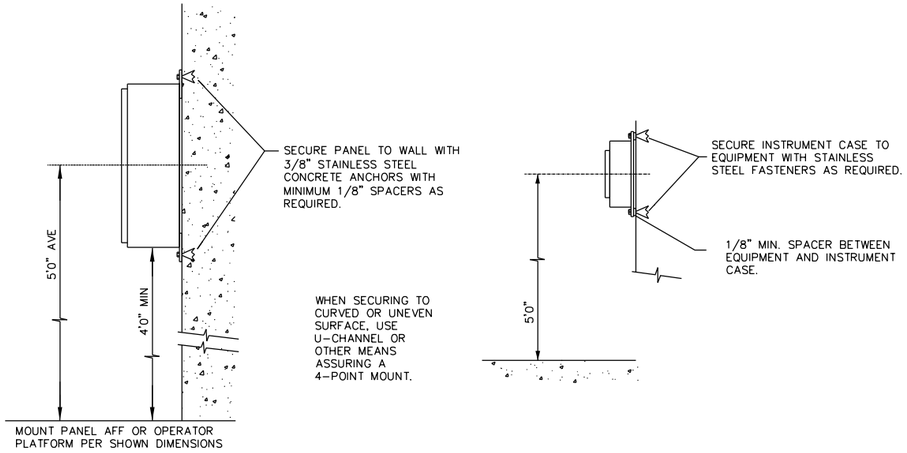
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
649	(107)PS-3	LIVINGSTON	42	41
		CONTRACT NO. 66J68		
	ILLINOIS FED. AID PROJECT XXXXXXX			



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

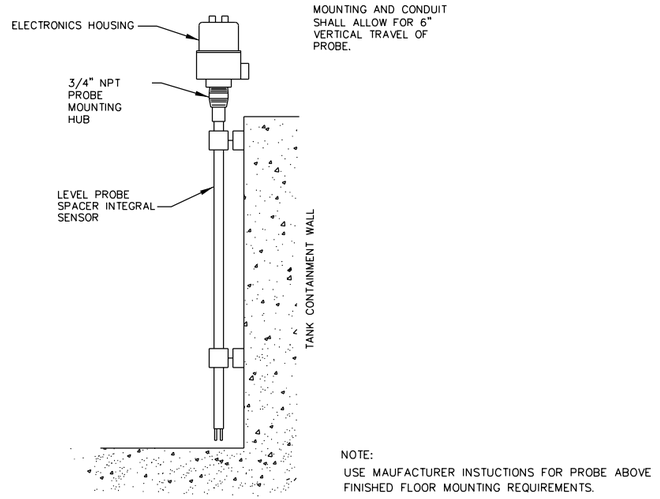
WALL MOUNT ALARM LIGHT **N110**

NTS



ENCLOSURE AND INSTRUMENT WALL MOUNT **N170**

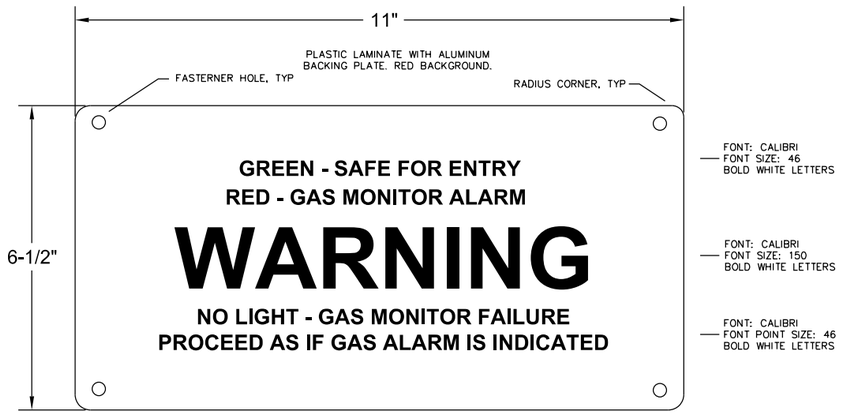
NTS



NOTE:
USE MAUFACTURER INSTUCTIONS FOR PROBE ABOVE FINISHED FLOOR MOUNTING REQUIREMENTS.

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

NTS

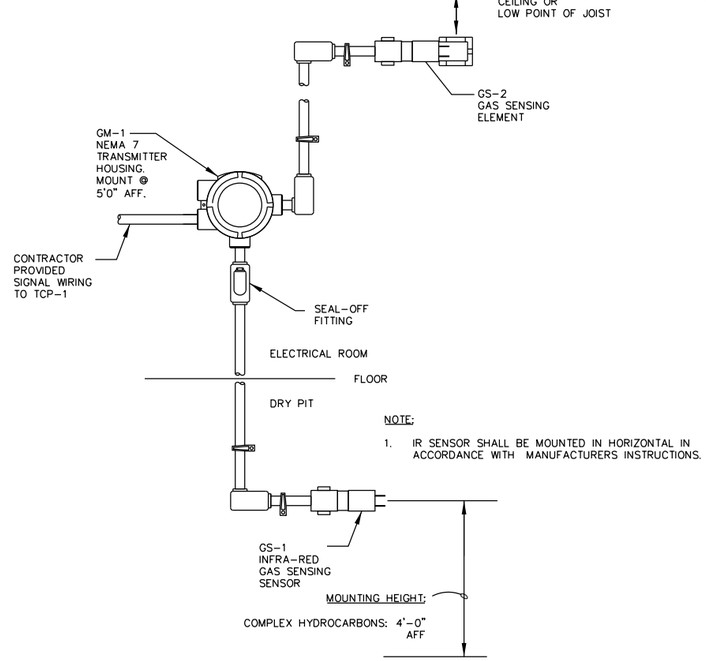


NOTES:

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



NOTE:

1. IR SENSOR SHALL BE MOUNTED IN HORIZONTAL IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS.

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

NTS

FILE NAME =

DONOHUE

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