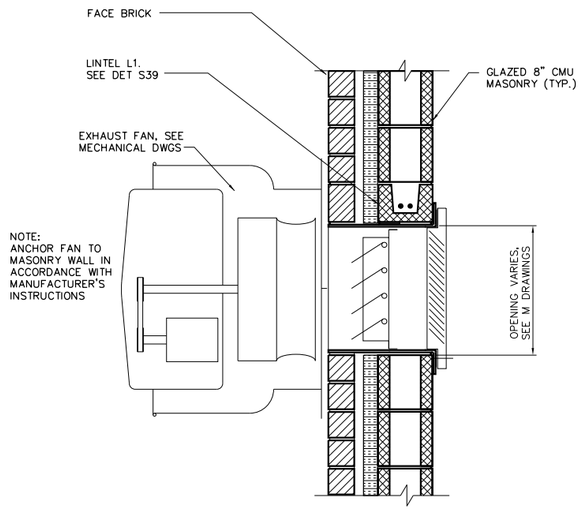
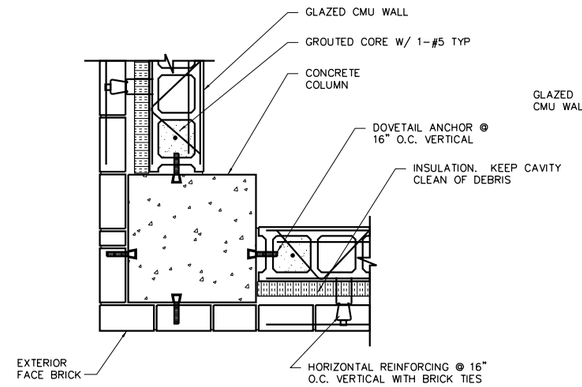


TYPICAL FAN WALL PENETRATION DETAIL–S32
N.T.S.



MASONRY WALL ANCHOR DETAIL–S33
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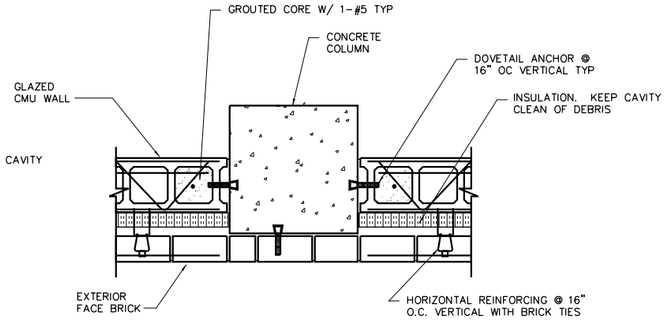

MASONRY WALL ANCHOR DETAIL–S34
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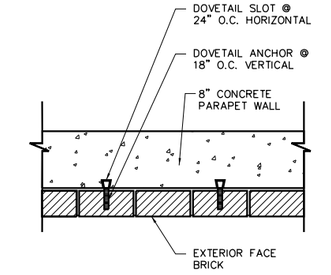
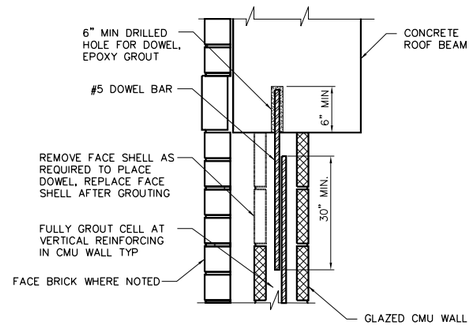
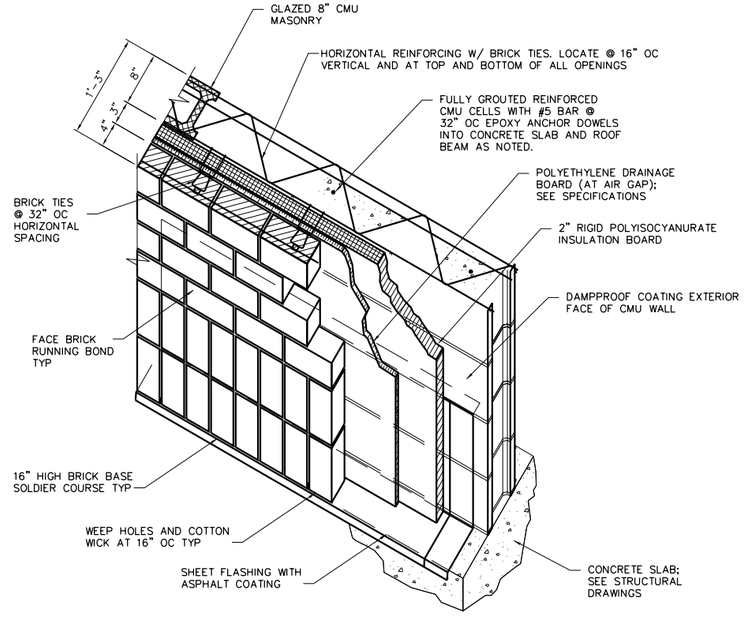


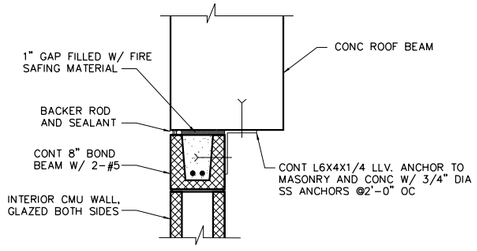
PARAPET WALL ANCHOR DETAIL–S35
N.T.S.



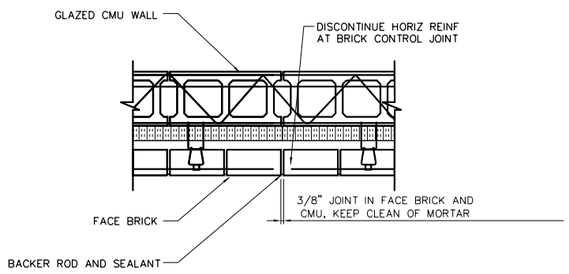
MASONRY WALL ANCHOR AT ROOF BEAM DETAIL–S36
N.T.S.



MASONRY WALL GENERAL DETAIL
N.T.S.



INTERIOR MASONRY WALL ANCHOR DETAIL–S37
N.T.S.



BRICK CONTROL JOINT DETAIL–S38
N.T.S.

FILE NAME =

DONOHUE

USER NAME =	DESIGNED - SDR	REVISED -
	DRAWN - SDR	REVISED -
PLOT SCALE =	CHECKED - TJB	REVISED -
PLOT DATE =	DATE - 09-29-17	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 8 RELOCATION
STRUCTURAL DETAILS
SCALE: | SHEET OF SHEETS | STA. TO STA.

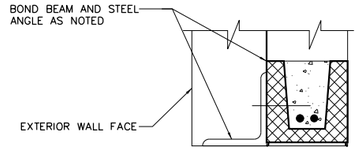
RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14	86 S-I-I	COOK	156	101
NORTHWEST HIGHWAY		CONTRACT NO. 60C48		
	ILLINOIS FED. AID PROJECT			

LINTEL SCHEDULE

LINTEL NO.	DESCRIPTION	LINTEL TYPE	REMARKS
L1	8"X8" BOND BEAM WITH 2-#5 AND L6X6X5/16 W/ 3/4" DIA SS CONC ANCHORS @ 18" OC		8" MINIMUM BEARING EACH END. SEE DET S39
L2	L6x3-1/2x5/16 LLV W/ 3/4" DIA. CONC ANCHORS @ 18" OC		SHELF ANGLE AT WINDOWS, DOORS, AND OTHER OPENINGS. FASTEN TO PERIMETER CONCRETE ROOF BEAM. SEE DET S40
L3	W8X21 W/ 5/16" PLATE AND L6X6X5/16		8" MINIMUM BEARING EACH END. SEE DET S41

NOTES:

1. MASONRY OPENINGS LESS THAN 4'-0" IN WIDTH THAT DO NOT HAVE A LINTEL SCHEDULE SHALL HAVE A BOND BEAM WITH 2-#5 OR STEEL ANGLE LINTEL WITH A TOTAL WIDTH OF HORIZONTAL LEGS APPROXIMATELY 1" LESS THAN WALL THICKNESS.
2. PROVIDE A MINIMUM OF 8" BEARING AT EACH END FOR STEEL BEAM AND ANGLE LINTELS, AND BOND BEAM LINTELS UNLESS NOTED OTHERWISE.



LINTEL DETAIL-S39
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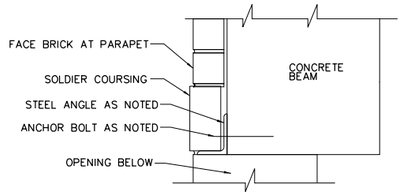

LINTEL DETAIL-S40
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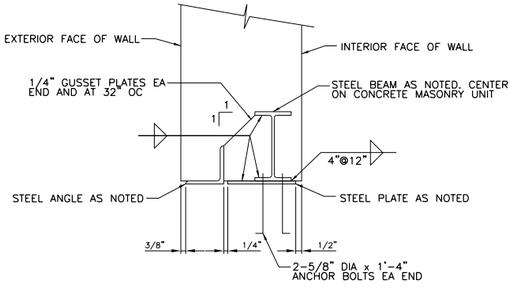


LINTEL DETAIL-S41
N.T.S.

S38

FILE NAME =

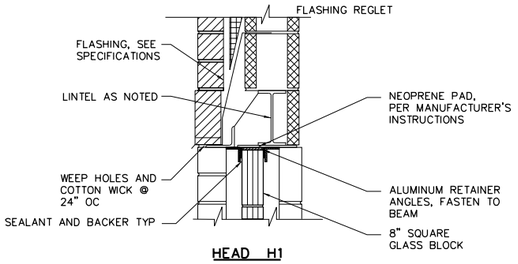
DONOHUE

USER NAME =	DESIGNED - SDR	REVISED -
	DRAWN - SDR	REVISED -
PLOT SCALE =	CHECKED - TJB	REVISED -
PLOT DATE =	DATE - 09-29-17	REVISED -

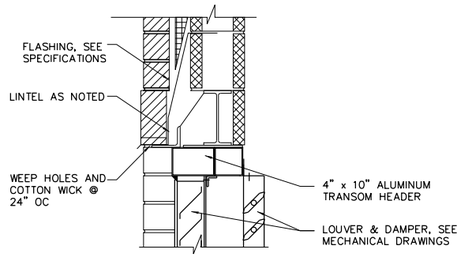
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 8 RELOCATION
STRUCTURAL DETAILS
SCALE: | SHEET OF SHEETS | STA. TO STA.

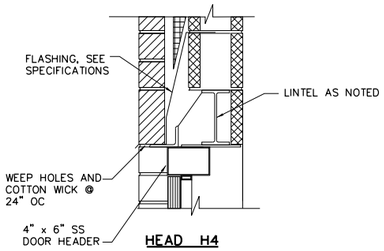
RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14 NORTHWEST HIGHWAY	86 S-I-I	COOK	156	102
		CONTRACT NO. 60C48		
	ILLINOIS	FED. AID PROJECT		



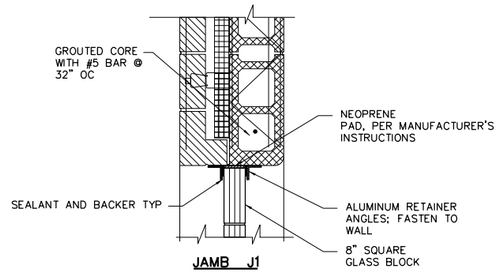
HEAD H1



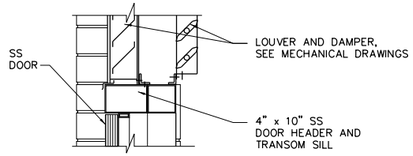
HEAD H2A



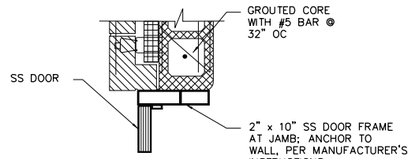
HEAD H4



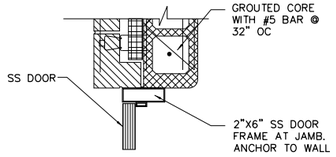
JAMB J1



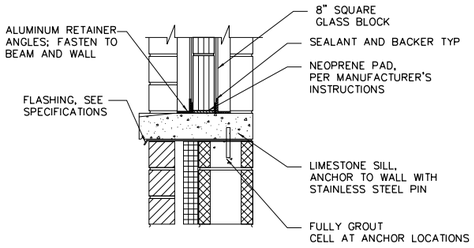
HEAD H2B



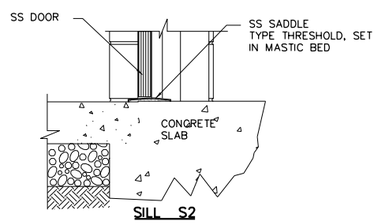
JAMB J2



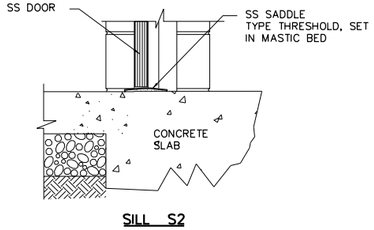
JAMB J4



SILL S1



SILL S2



SILL S2

GLASS BLOCK WINDOW DETAIL–S42
N.T.S.

EXTERIOR WALL DETAIL–S43
N.T.S.

EXTERIOR WALL DETAIL–S44
N.T.S.

FILE NAME =

DONOHUE

USER NAME =	DESIGNED - SDR	REVISED -
	DRAWN - SDR	REVISED -
PLOT SCALE =	CHECKED - TJB	REVISED -
PLOT DATE =	DATE - 09-29-17	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 8 RELOCATION
STRUCTURAL DETAILS
SCALE: | SHEET OF SHEETS | STA. TO STA.

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14	86 S-I-I	COOK	156	103
NORTHWEST HIGHWAY		CONTRACT NO. 60C48		
	ILLINOIS FED. AID PROJECT			

ROOM FINISH SCHEDULE

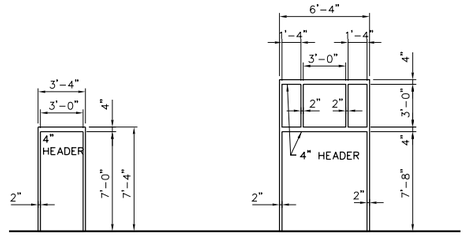
ROOM NAME	FLOOR		WALL				CEILING		REMARKS
	MATERIAL	FINISH	WALL BASE	WALL	FINISH		MATERIAL	FINISH	
PUMP ROOM: EL. 644.00	CONCRETE	EPOXY PAINT SEE SPECS	GLAZED CMU	GLAZED CMU AND CONCRETE	GLAZED CMU: COLOR: SEE REMARKS	CONCRETE: RUB SMOOTH EPOXY PAINT SEE REMARKS	CONCRETE	RUB SMOOTH EPOXY PAINT SEE REMARKS	GLAZED BASE: ASTRAGLAZE "COOL CREAM" GLAZED WALL: ASTRAGLAZE "WHITMAN WHITE" CONCRETE: PAINT TO MATCH "WHITMAN WHITE" CEILING "OFF WHITE" COLOR SELECTED BY ENGR.
ELECTRICAL CONTROL ROOM: EL. 644.00	CONCRETE	EPOXY PAINT SEE SPECS	GLAZED CMU	GLAZED CMU AND CONCRETE	GLAZED CMU: COLOR: SEE REMARKS	CONCRETE: RUB SMOOTH EPOXY PAINT SEE REMARKS	CONCRETE	RUB SMOOTH EPOXY PAINT SEE REMARKS	GLAZED BASE: ASTRAGLAZE "COOL CREAM" GLAZED WALL: ASTRAGLAZE "WHITMAN WHITE" CONCRETE: PAINT TO MATCH "WHITMAN WHITE" CEILING "OFF WHITE" COLOR SELECTED BY ENGR.
DISCHARGE FLOOR EL 631.00	CONCRETE	NONE	CONCRETE	CONCRETE	NONE		CONCRETE	NONE	CONCRETE WALLS, FLOOR AND CEILING: NO FINISH PAINT
INTERMEDIATE FLOOR EL 618.00	CONCRETE	NONE	CONCRETE	CONCRETE	NONE		CONCRETE	NONE	CONCRETE WALLS, FLOOR AND CEILING: NO FINISH PAINT
SCREEN CHAMBER/INLET CHAMBER/WET WELL EL 604.00	CONCRETE	NONE	CONCRETE	CONCRETE	NONE		CONCRETE	NONE	CONCRETE WALLS, FLOOR AND CEILING: NO FINISH PAINT

DOOR SCHEDULE

DOOR NO.	LOCATION (ROOM NO.)	DOOR AND FRAME SIZE	EXTERIOR INTERIOR	FIRE LABEL	DOOR TYPE	FRAME TYPE	MATERIAL		FINISH	WALL DETAILS				HARDWARE REQUIRED	REMARKS
							DOOR	FRAME		HEAD	JAMB	SILL	LINTEL		
D1	PUMP ROOM EL. 644.00	DOORS: (2) 3'-0" x 8'-0" x 1-3/4" FRAME: 6'-4"W x 11'-4"H	EXTERIOR	NONE	A	F2	SS	SS	MILL	H2A/B	J2	S2	L3	SEE SPECIFICATIONS	TRANSOM WITH 1 LOUVER/DAMPER, AND INSULATED PANELS
D2	ELEC ROOM EL. 644.00	DOORS: (2) 3'-0" x 8'-0" x 1-3/4" FRAME: 6'-4"W x 11'-4"H	EXTERIOR	NONE	A	F2	SS	SS	MILL	H2A/B	J2	S2	L3	SEE SPECIFICATIONS	TRANSOM WITH 1 LOUVER/DAMPER, AND INSULATED PANELS
D3	ELEC ROOM EL. 644.00	DOOR: 3'-0" x 7'-0" x 1-3/4" FRAME: 3'-4"W x 7'-4"H	EXTERIOR	NONE	A	F1	SS	SS	MILL	H4	J4	S2	L3	SEE SPECIFICATIONS	EXIT DEVICE WITH LEVER TYPE ACTIVATION AND KEYED OUTSIDE
D4	PUMP ROOM EL. 644.00	DOOR: 3'-0" x 7'-0" x 1-3/4" FRAME: 3'-4"W x 7'-4"H	EXTERIOR	NONE	A	F1	SS	SS	MILL	H4	J4	S2	L3	SEE SPECIFICATIONS	EXIT DEVICE WITH LEVER TYPE ACTIVATION AND KEYED OUTSIDE

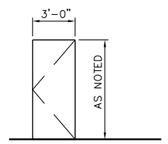
NOTE:

1. FIELD VERIFY ALL OPENING DIMENSIONS FOR DOORS AND FRAMES PRIOR TO FABRICATION AND INSTALLATION.
2. COORDINATE AND VERIFY LOUVER OPENING SIZE WITH MECHANICAL, PRIOR TO FABRICATION AND INSTALLATION OF DOORS AND FRAMES.
3. ALL MISCELLANEOUS STEEL AND STEEL FRAMING TO BE HOT DIP GALVANIZED. FINISH PAINT IN COLOR AS SELECTED BY ENGINEER AFTER INSTALLATION.
4. ALL STAINLESS STEEL DOORS AND FRAMES TO BE STANDARD MILL FINISH.



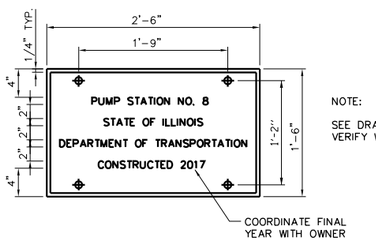
F1 FRAME
STAINLESS STEEL
6" WIDE

F2 FRAME
STAINLESS STEEL
10" WIDE



TYPE A
EXTERIOR
STAINLESS STEEL

DOOR AND FRAME ELEVATION DETAILS



NOTE:

SEE DRAWINGS FOR MOUNTING LOCATION, VERIFY WITH OWNER PRIOR TO MOUNTING

IDENTIFICATION PLATE DETAIL-S45

N.T.S.

FILE NAME =

DONOHUE

USER NAME =	DESIGNED - SDR	REVISED -
	DRAWN - SDR	REVISED -
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PLOT DATE =	DATE - 09-29-17	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 8 RELOCATION
STRUCTURAL DETAILS

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

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14	86 S-I-I	COOK	156	104
NORTHWEST HIGHWAY		CONTRACT NO. 60C48		
	ILLINOIS	FED. AID PROJECT		

GENERAL MECHANICAL ABBREVIATIONS

AVG	AVERAGE
B/	BOTTOM OF
BF	BLIND FLANGE
BFP	BACKFLOW PREVENTER
BFV	BUTTERFLY VALVE
℄	CENTERLINE
CO	CLEAN OUT
CONT	CONTINUATION
CPVC	CHLORINATED POLYVINYL CHLORIDE
CU YD	CUBIC YARD
DEG or °	DEGREE
DIA or Ø	DIAMETER
DIP	DUCTILE IRON PIPE
DWG	DRAWING
ECC	ECCENTRIC
EL	ELEVATION
ELB	ELBOW
EXIST	EXISTING
EA	EACH WAY
EXP	EXPANSION
FCA	FLANGED COUPLING ADAPTOR
FCV	FLOW CONTROL VALVE
FLG	FLANGE
FL	FLOOR
GALV	GALVANIZED
HB	HOSE BIB
HP	HIGH POINT
HWL	HIGH WATER LEVEL
ID	INSIDE DIAMETER
INV	INVERT
LP	LOW POINT
LR	LONG RADIUS
LWL	LOW WATER LEVEL
MAX	MAXIMUM
MFR	MANUFACTURER
MIN	MINIMUM
MJ	MECHANICAL JOINT
NO. OR #	NUMBER
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OBD	OPPOSED BLADE DAMPER
P&ID	PROCESS AND INSTRUMENTATION DIAGRAM
PCP	PRESTRESSED CONCRETE PIPE
PV	PLUG VALVE
PVC	POLYVINYL CHLORIDE
RCP	REINFORCED CONCRETE PIPE
RED	REDUCER
SR	SHORT RADIUS
SST	STAINLESS STEEL
STD	STANDARD
STL	STEEL
T/	TOP OF
TYP	TYPICAL
W/	WITH
WO	WITHOUT
WL	WATER LEVEL
YR	YEAR

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. SEE CIVIL DRAWINGS FOR CONTINUATION OF PIPING OUTSIDE STRUCTURES.
5. ALL PIPE PENETRATIONS THROUGH INTERIOR AND EXTERIOR WALLS AND FLOORS SHALL BE SEALED AND WATERTIGHT.
6. SLEEVE COUPLING MAY BE USED WHERE NECESSARY, AND AS APPROVED BY THE ENGINEER TO FACILITATE PIPING INSTALLATION.
7. FOR FLANGED SYSTEMS PROVIDE FLEXIBLE CONNECTORS WHERE NECESSARY, AND AS APPROVED BY THE ENGINEER, TO FACILITATE PIPING INSTALLATION AND VALVE AND EQUIPMENT REMOVAL.
8. ALL FLEXIBLE CONNECTORS, EXPANSION JOINTS, SLEEVE COUPLINGS SUBJECT TO PRESSURE SHALL BE RESTRAINED AS REQUIRED FOR EXPANSION AND FOR FLEXIBILITY.
9. THE CONTRACTOR SHALL MAKE ALL REQUIRED MEASUREMENTS TO VERIFY EXISTING AND CONTRACT INTERFACE DIMENSIONS, LOCATIONS, AND OTHER CONDITIONS.
10. 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.
11. THE DRAWINGS, SCHEDULES, AND SPECIFICATIONS HAVE BEEN PREPARED USING SPECIFIC MANUFACTURERS FOR THE BASIS OF DIMENSIONAL DESIGN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING ALL OF THE EQUIPMENT DIMENSIONS TO ENSURE THAT ALL COMPONENTS WILL FIT INTO THE DESIGNATED SPACES INDICATED ON THE DRAWINGS. MINOR DEVIATIONS IN DIMENSIONS WILL BE PERMITTED AT THE ENGINEER'S DISCRETION, PROVIDED THAT THE EQUIPMENT MEETS THE SPECIFIED RATINGS AND FITS INTO THE ALLOCATED SPACES WITH SUITABLE CLEARANCE FOR ACCESS. THE CONTRACTOR SHALL PROVIDE ALL ALTERATIONS REQUIRED TO ACCOMMODATE SUCH EQUIPMENT AT NO ADDITIONAL COST TO THE OWNER.
12. 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.
13. ALL MECHANICAL AND ELECTRICAL ITEMS INSTALLED IN THE PUMP STATION WET WELL, INTERMEDIATE FLOORS AND PUMP ROOM SHALL BE SUITABLE FOR CLASS 1, DIVISION II, GROUP D, EXPLOSION PROOF, AS CLASSIFIED BY THE NATIONAL ELECTRIC CODE (NEC) FOR HAZARDOUS LOCATIONS.

M1

FILE NAME =

DONOHUE

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	DRAWN - LRE	REVISED -
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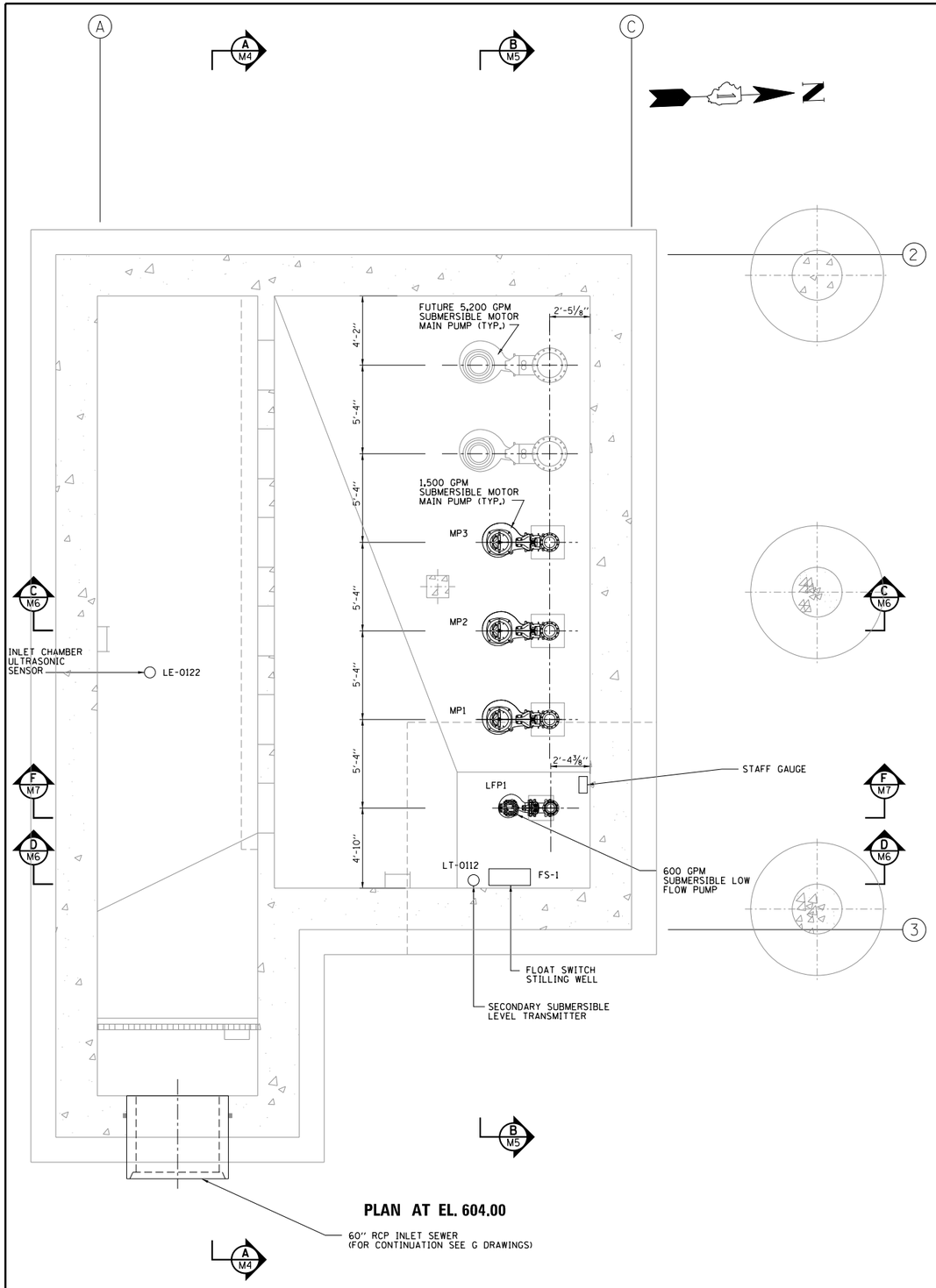
PLOT DATE =	DATE - 09-29-17	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

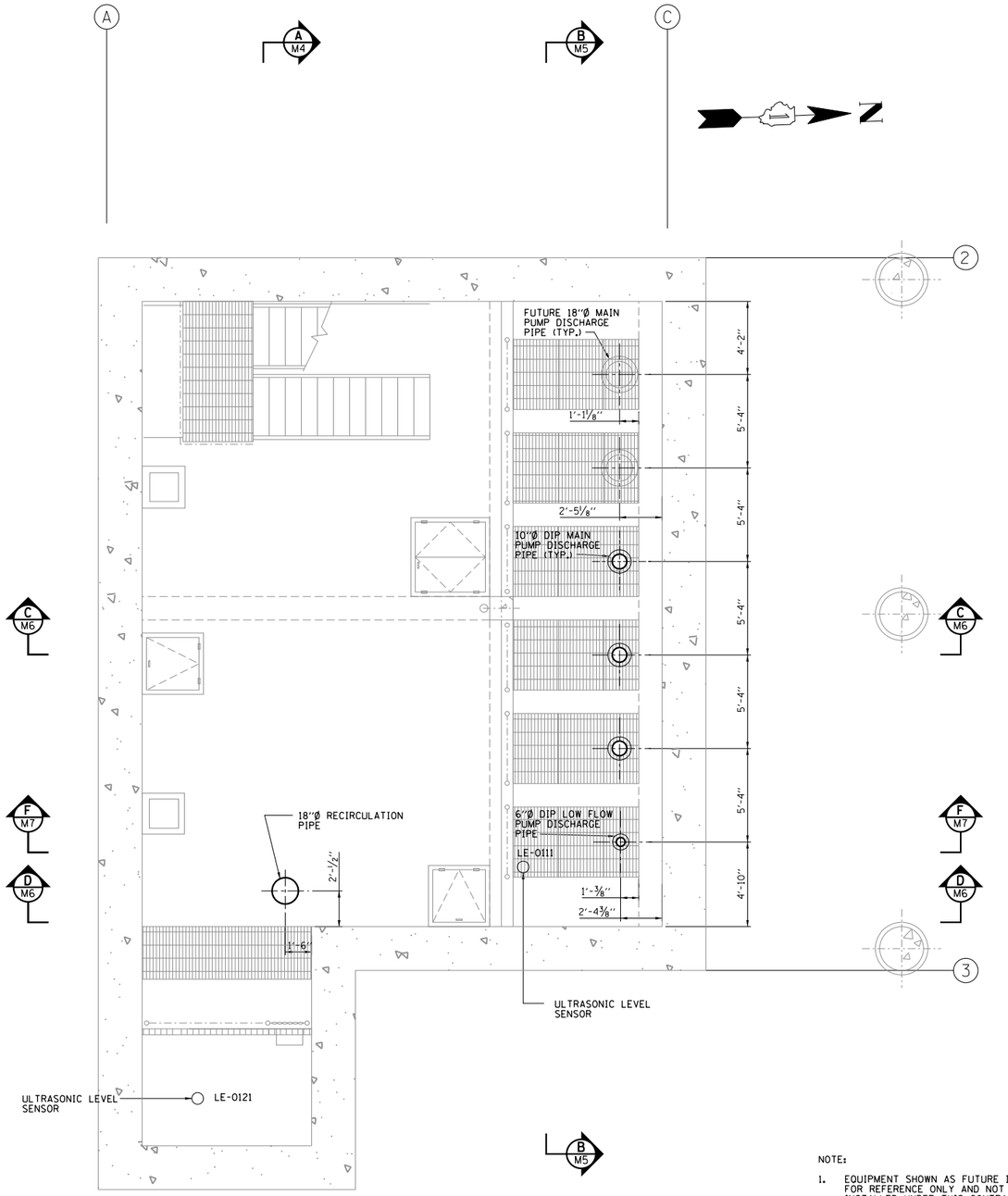
PUMP STATION NO. 8 RELOCATION
MECHANICAL GENERAL NOTES

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

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14 NORTHWEST HIGHWAY	86 S-I-I	COOK	156	105
		CONTRACT NO. 60C48		
	ILLINOIS	FED. AID PROJECT		



PLAN AT EL. 604.00



PLAN AT EL. 618.00

NOTE:

1. EQUIPMENT SHOWN AS FUTURE IS FOR REFERENCE ONLY AND NOT TO BE INSTALLED UNDER THIS CONTRACT.
2. ALL AREAS WITHIN BUILDING EXCEPT ELECTRICAL CONTROL ROOM SHALL BE CLASS 1, DIVISION 2, GROUP D EXPLOSION PROOF.

SCALE: 0 4 8 FT.

M2

FILE NAME =

DONOHUE

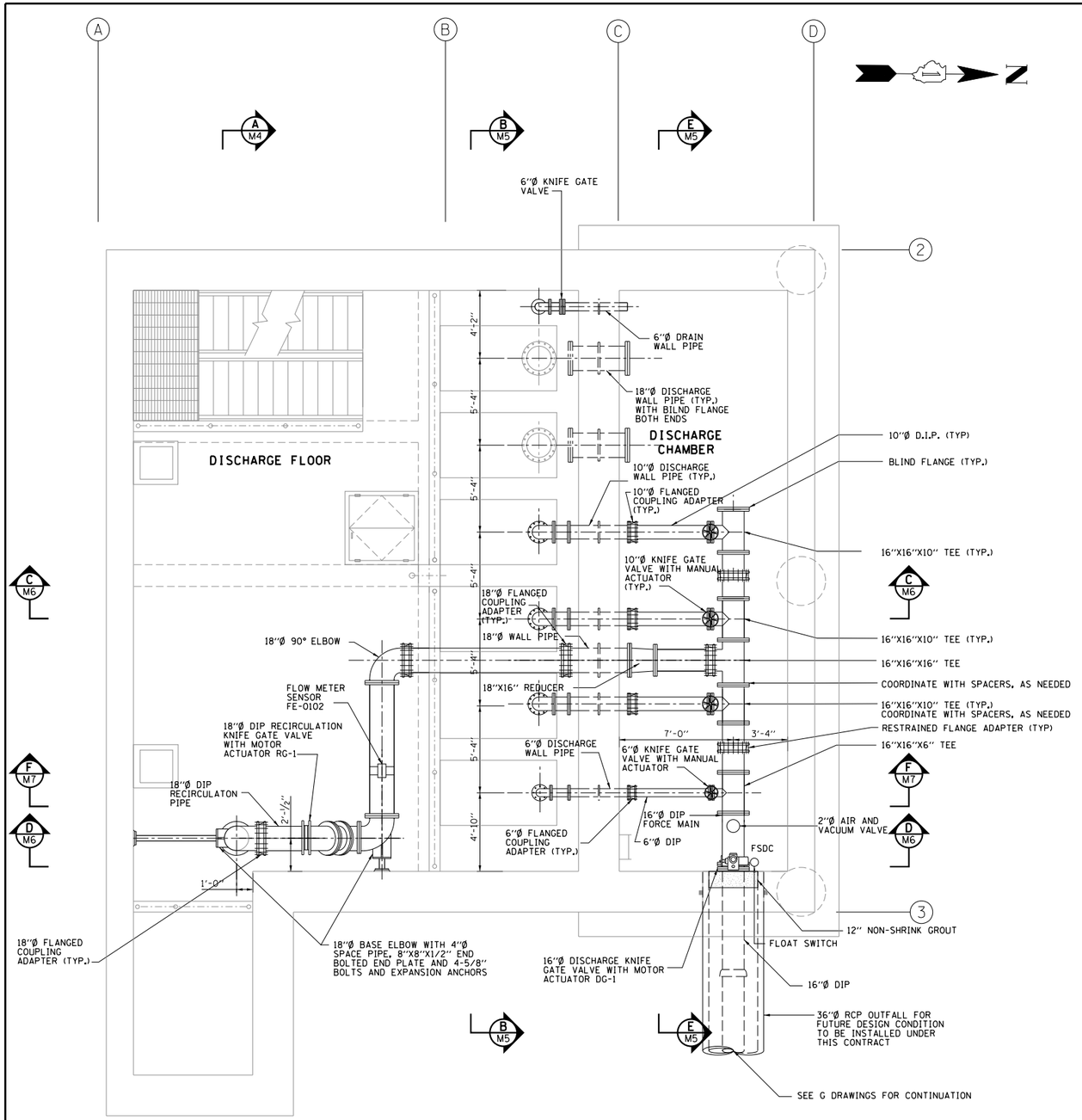
USER NAME =	DESIGNED - LRE	REVISED -
	DRAWN - LRE	REVISED -
PLOT SCALE =	CHECKED - MTR	REVISED -
PLOT DATE =	DATE - 09-29-17	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

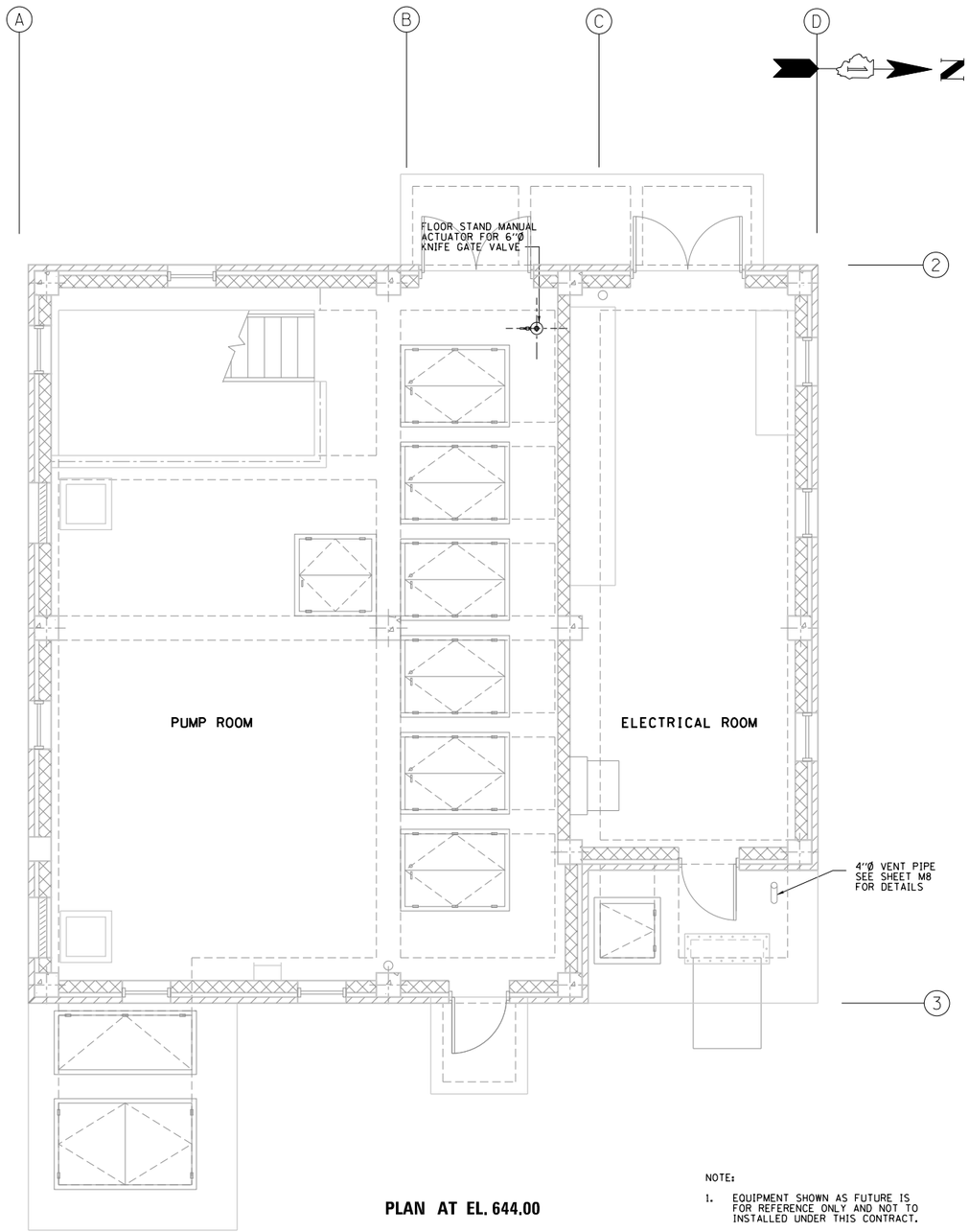
PUMP STATION NO. 8 RELOCATION
MECHANICAL PLANS

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

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14	86 S-I-I	COOK	156	106
NORTHWEST HIGHWAY		CONTRACT NO. 60C48		
	ILLINOIS FED. AID PROJECT			



PLAN AT EL. 631.00



PLAN AT EL. 644.00

NOTE:

1. EQUIPMENT SHOWN AS FUTURE IS FOR REFERENCE ONLY AND NOT TO INSTALLED UNDER THIS CONTRACT.
2. ALL AREAS WITHIN BUILDING EXCEPT ELECTRICAL CONTROL ROOM SHALL BE CLASS I, DIVISION 2, GROUP D EXPLOSION PROOF.
3. (3) 18"Ø DISCHARGE WALL PIPES AT CL 641.75 (TYP.) WITH BILND FLANGE BOTH ENDS AND 12"Ø DISCHARGE WALL PIPE AT CL 641.75 (TYP.) WITH BILND FLANGE BOTH ENDS ARE NOT SHOWN ABOVE 10" AND 6" DISCHARGE WALL PIPES FOR CLARITY. SEE SECTION B-B ON SHEET M5, SECTIONS C-C AND D-D ON SHEET M6, AND SECTION F-F ON SHEET M7 FOR LOCATIONS.

SCALE: 0 4 8 FT.

M3

FILE NAME =

DONOHUE

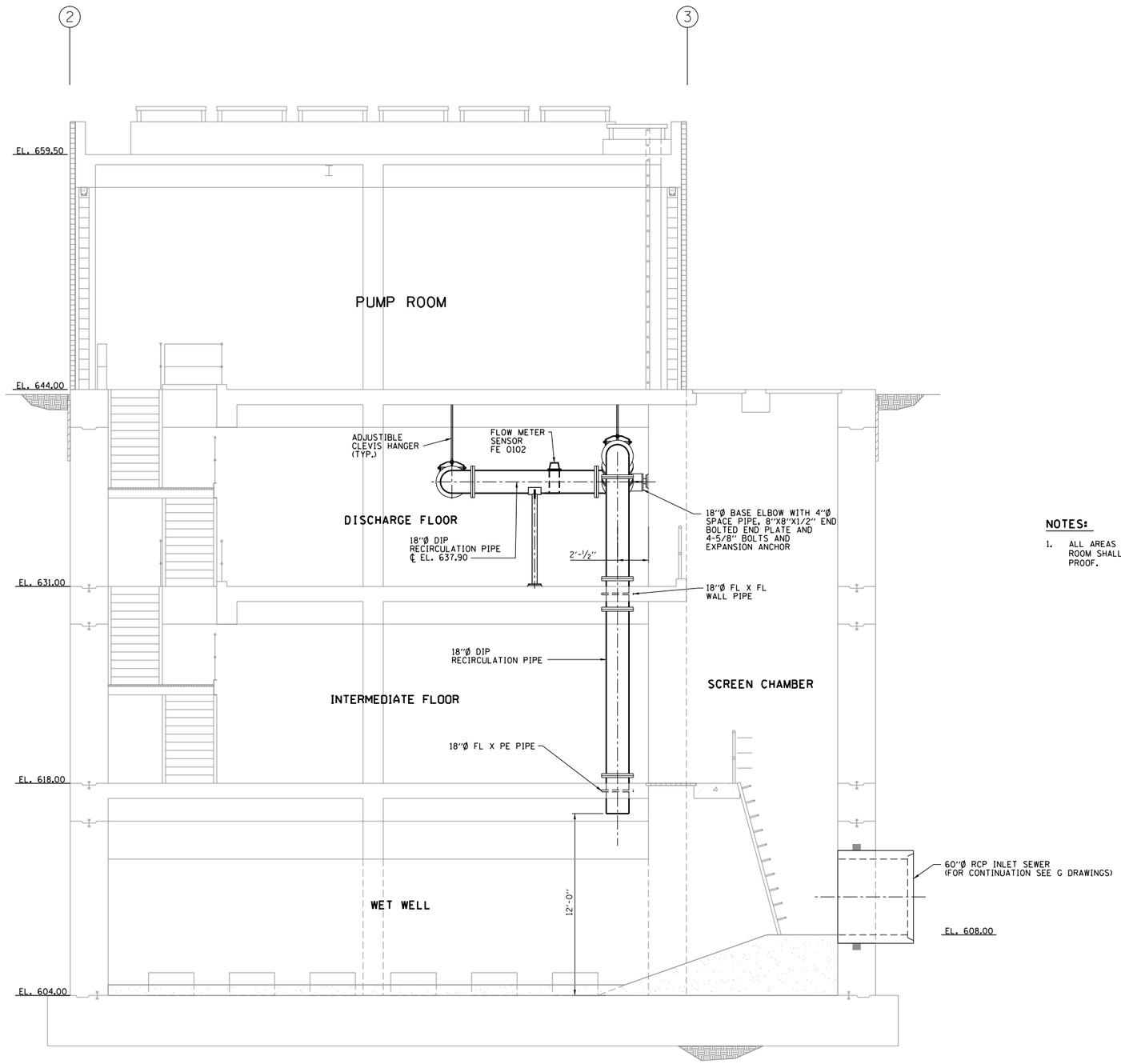
USER NAME =	DESIGNED - LRE	REVISED -	
	DRAWN - LRE	REVISED -	
PLOT SCALE =	CHECKED - MTR	REVISED -	
PLOT DATE =	DATE - 09-29-17	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 8 RELOCATION
MECHANICAL PLANS

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

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14 NORTHWEST HIGHWAY	86 S-I-I	COOK	156	107
		CONTRACT NO. 60C48		
	ILLINOIS	FED. AID PROJECT		



SECTION A-A

NOTES:

1. ALL AREAS WITHIN BUILDING EXCEPT ELECTRICAL CONTROL ROOM SHALL BE CLASS 1, DIVISION 2, GROUP D EXPLOSION PROOF.

SCALE: 0 4 8 FT.

M4

FILE NAME =

DONOHUE

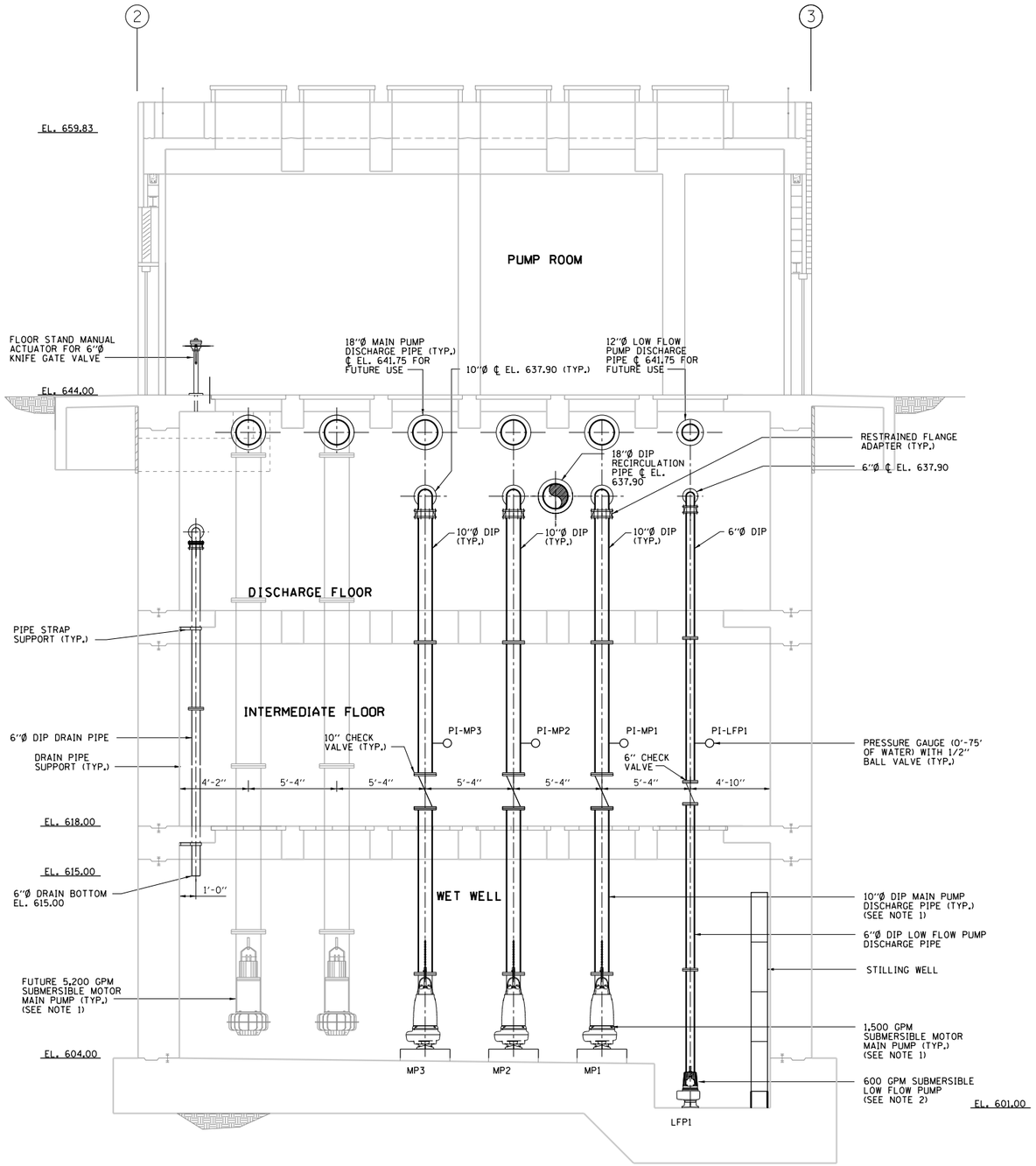
USER NAME =	DESIGNED - LRE	REVISED -
	DRAWN - LRE	REVISED -
PLOT SCALE =	CHECKED - MTR	REVISED -
PLOT DATE =	DATE - 09-29-17	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

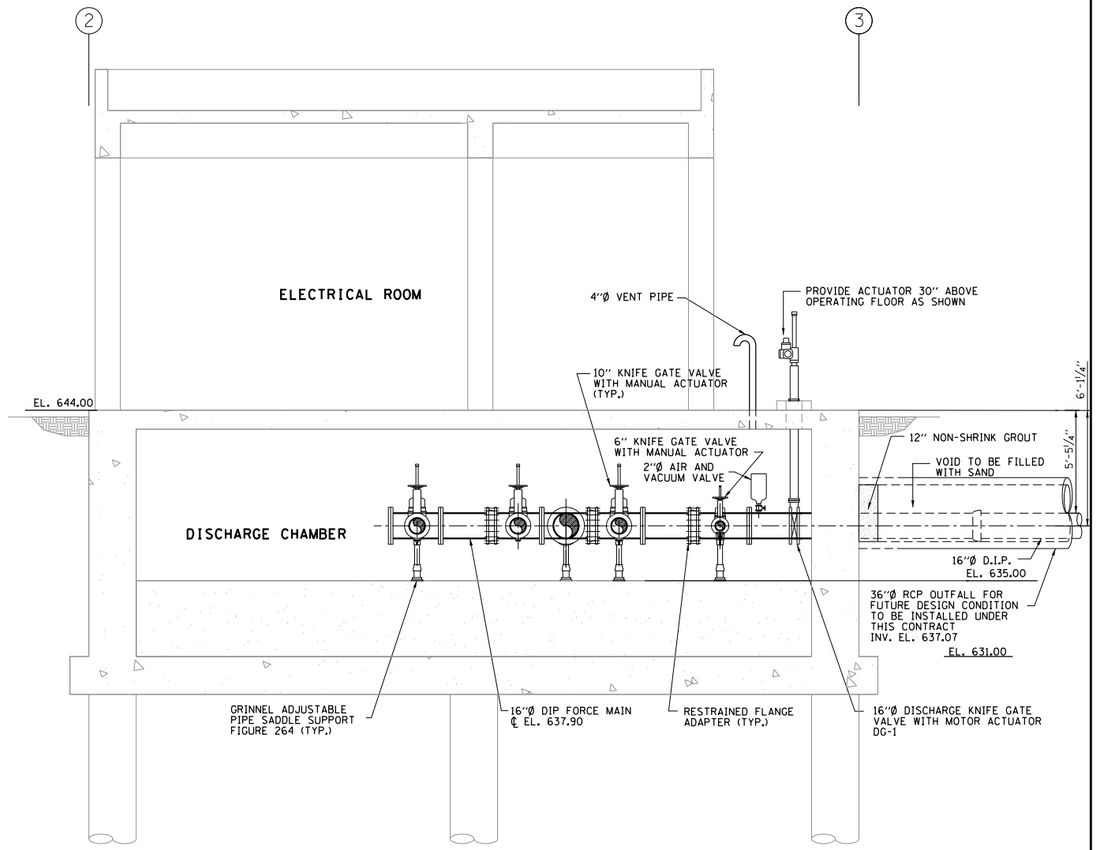
PUMP STATION NO. 8 RELOCATION
MECHANICAL SECTION

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

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14 NORTHWEST HIGHWAY	86 S-I-I	COOK	156	108
		CONTRACT NO. 60C48		
	ILLINOIS	FED. AID PROJECT		



SECTION B–B



SECTION E–E

NOTES:

1. 3-1,500 GPM SUBMERSIBLE MOTOR MAIN PUMPS AND DISCHARGE PIPES WILL BE REMOVED AND REPLACED LATER WITH 3-5,200 GPM AND 2-5,200 GPM SUBMERSIBLE MOTOR MAIN PUMPS AND PIPING FOR FUTURE DESIGN CONDITION.
2. 1-600 GPM SUBMERSIBLE MOTOR LOW FLOW PUMP WILL BE REMOVED AND REPLACED LATER WITH 1-2,100 GPM SUBMERSIBLE LOW FLOW PUMP AND PIPING FOR FUTURE DESIGN CONDITION.
3. EQUIPMENT SHOWN AS FUTURE IS FOR REFERENCE ONLY AND NOT TO INSTALLED UNDER THIS CONTRACT.
4. MAIN PUMP AND AND A LOW FLOW PUMP TOTAL DYNAMIC HEAD (TDH) IS THE READING OF A GAUGE IN FEET OF WATER PLUS THE DISTANCE FROM THE GAUGE CENTER LINE TO THE PUMP CENTER LINE AND PLUS THE VELOCITY HEAD AT THE POINT OF GAUGE ATTACHMENT.
5. ALL AREAS WITHIN BUILDING EXCEPT ELECTRICAL CONTROL ROOM SHALL BE CLASS 1, DIVISION 2, GROUP D EXPLOSION PROOF.

SCALE: 0 4 8 FT.

M5

FILE NAME =

DONOHUE

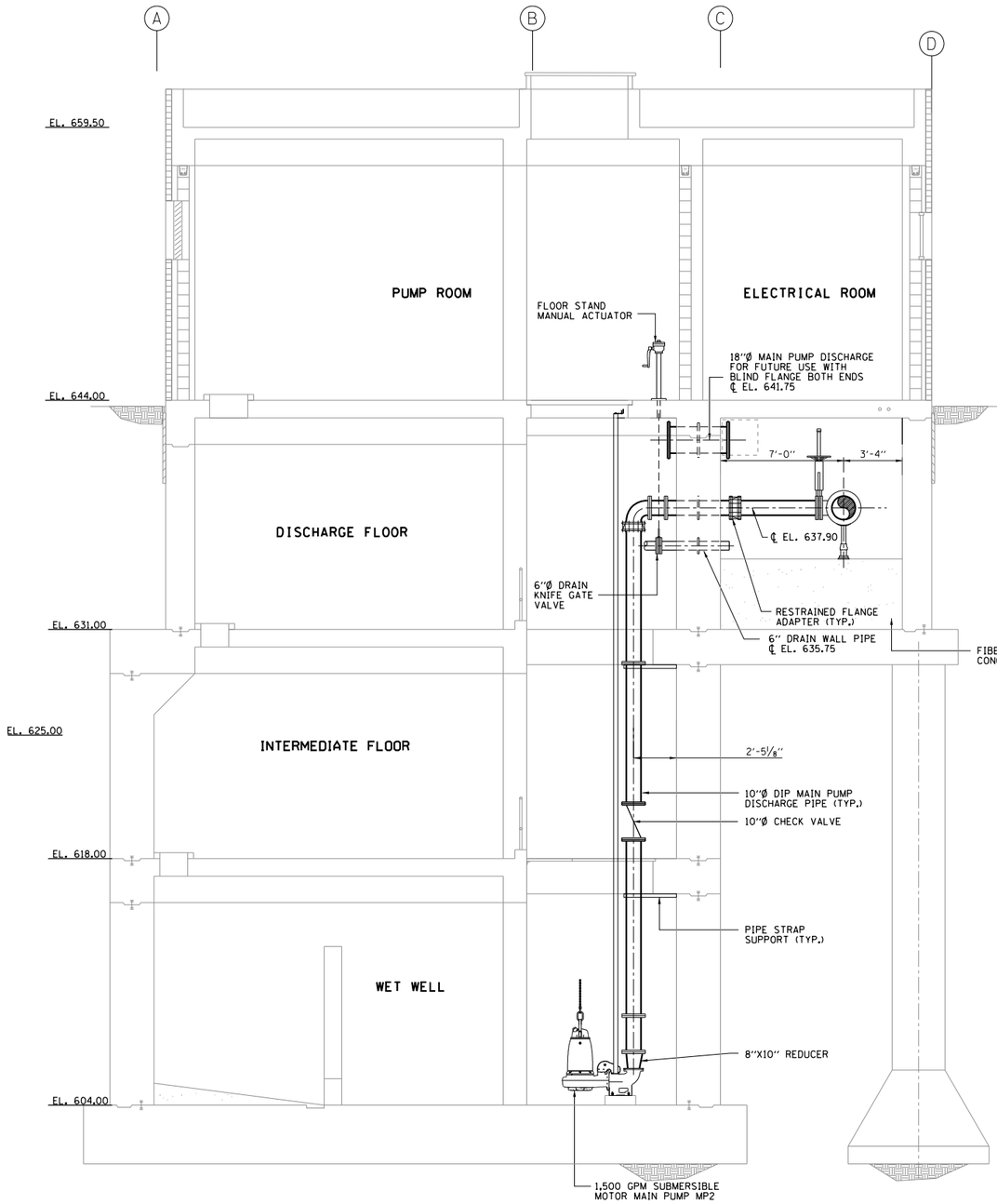
USER NAME =	DESIGNED - LRE	REVISED -
	DRAWN - LRE	REVISED -
PLOT SCALE =	CHECKED - MTR	REVISED -
PLOT DATE =	DATE - 09-29-17	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

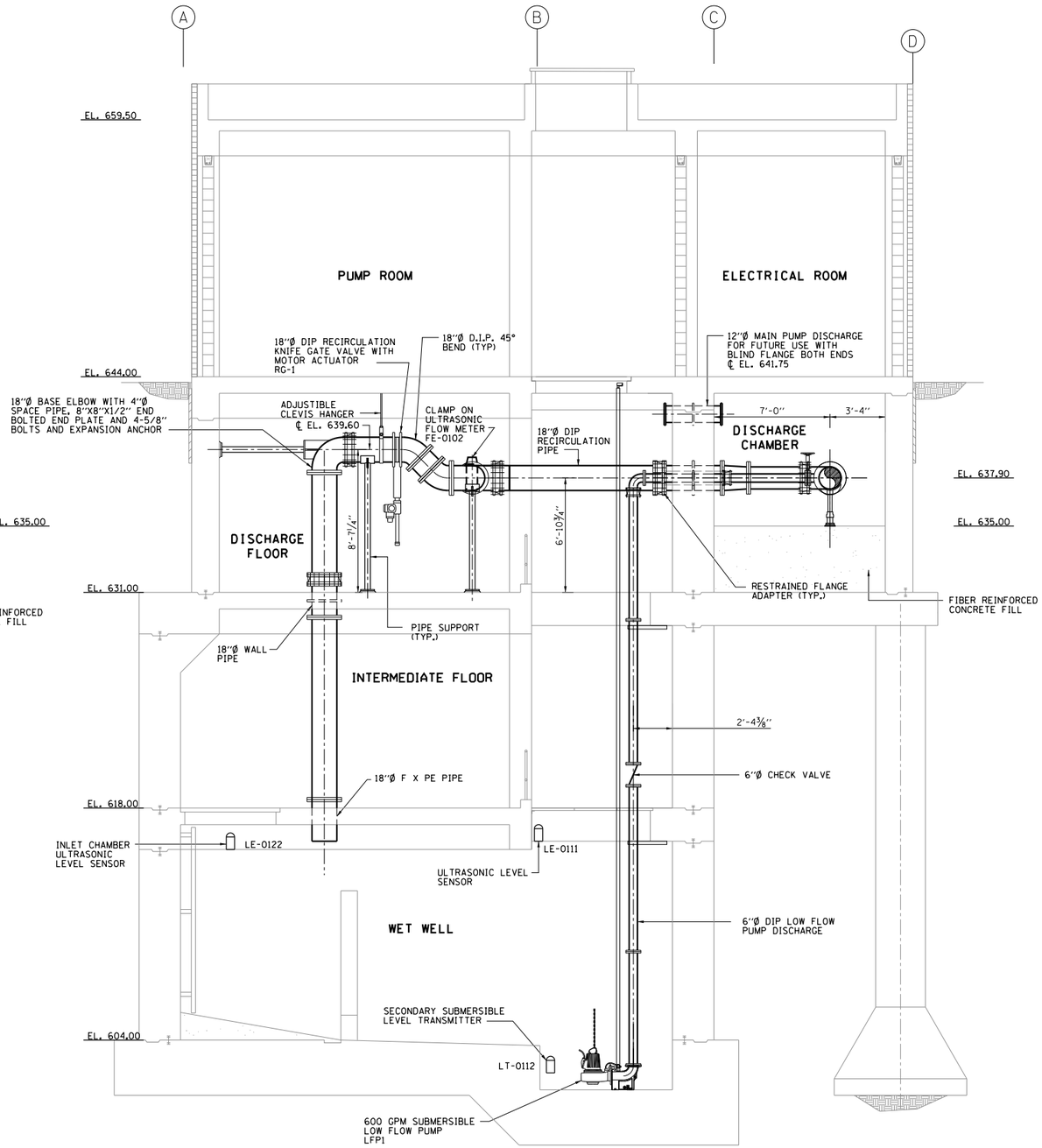
PUMP STATION NO. 8 RELOCATION
MECHANICAL SECTIONS

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

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14	86 S-I-I	COOK	156	109
NORTHWEST HIGHWAY		CONTRACT NO. 60C48		
	ILLINOIS FED. AID PROJECT			



SECTION C–C



SECTION D–D

NOTES:

1. ALL AREAS WITHIN BUILDING EXCEPT ELECTRICAL CONTROL ROOM SHALL BE CLASS 1, DIVISION 2, GROUP D EXPLOSION PROOF.

SCALE: 0 4 8 FT.

M6

FILE NAME =

DONOHUE

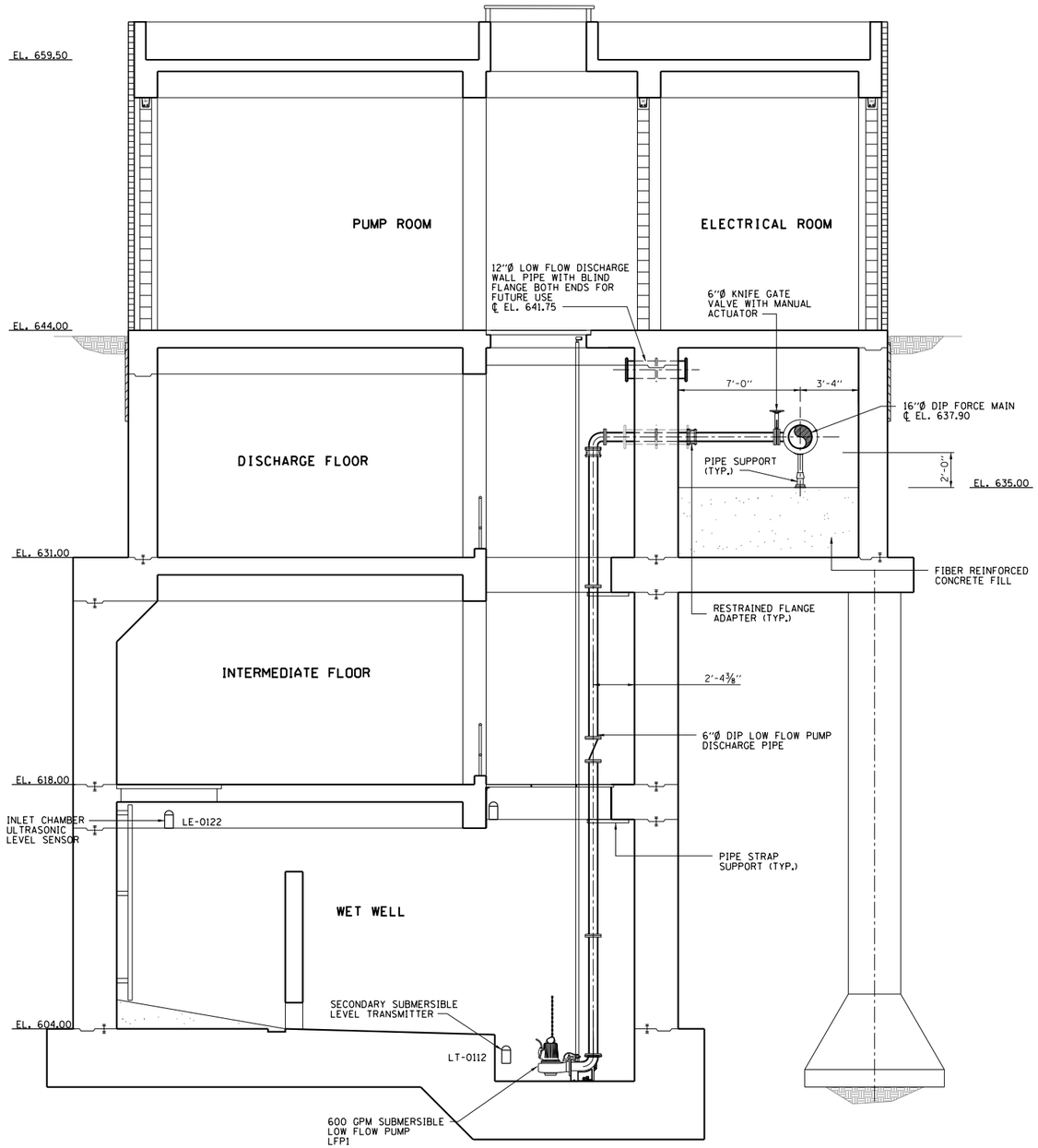
USER NAME =	DESIGNED - LRE	REVISED -
	DRAWN - LRE	REVISED -
PLOT SCALE =	CHECKED - MTR	REVISED -
PLOT DATE =	DATE - 09-29-17	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 8 RELOCATION
MECHANICAL SECTIONS

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

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14 NORTHWEST HIGHWAY	86 S-I-I	COOK	156	110
		CONTRACT NO. 60C48		
	ILLINOIS	FED. AID PROJECT		



SECTION F–F

NOTES:

1. ALL AREAS WITHIN BUILDING EXCEPT ELECTRICAL ROOM SHALL BE CLASS 1, DIVISION 2, GROUP D EXPLOSION PROOF.

SCALE: 0 4 8 FT.

M7

FILE NAME =

DONOHUE

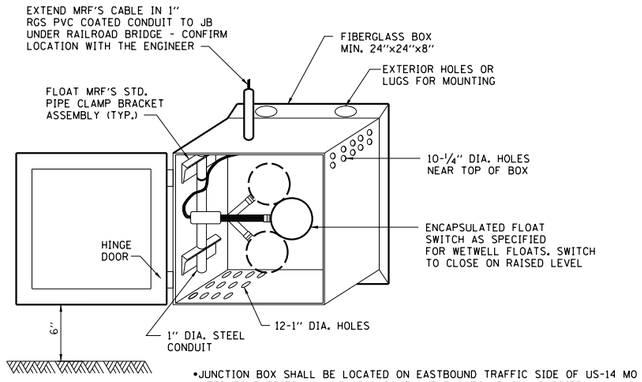
USER NAME =	DESIGNED - LRE	REVISED -	
	DRAWN - LRE	REVISED -	
PLOT SCALE =	CHECKED - MTR	REVISED -	
PLOT DATE =	DATE - 09-29-17	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 8 RELOCATION
MECHANICAL SECTION

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

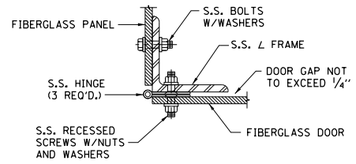
RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14	86 S-I-I	COOK	156	111
NORTHWEST HIGHWAY		CONTRACT NO. 60C48		
	ILLINOIS	FED. AID PROJECT		



•JUNCTION BOX SHALL BE LOCATED ON EASTBOUND TRAFFIC SIDE OF US-14 MOUNTED TO BARRIER WALL FACING SOUTH NEAR CATCH BASIN. BARRIER WALL SHALL BE MODIFIED TO ALLOW WATER FROM US-14 TO FLOW TOWARD THE BOX FROM OUTSIDE THE BARRIER.

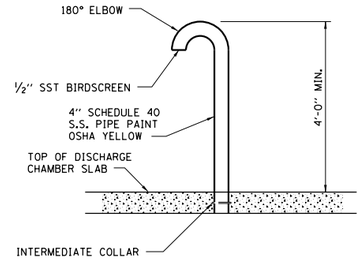
PAVEMENT FLOODED FLOAT ALARM BOX

NOT TO SCALE



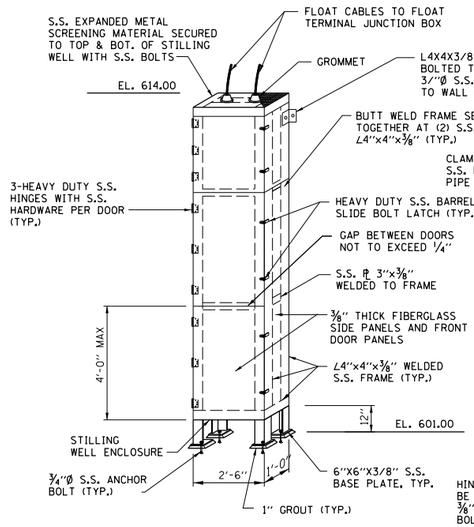
STAINLESS STEEL DOOR HINGE DETAIL

N.T.S.



AIR VENT PIPE DETAIL

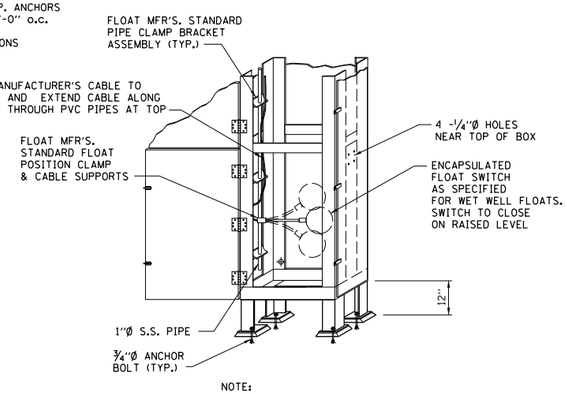
NOT TO SCALE



FLOAT STILLING WELL DETAIL FOR PUMP FLOAT CONTROL

N.T.S.

HINGES AND PANELS TO BE SECURED WITH 3/8"x1 1/2" S.S. MACHINE BOLTS & LOCKING WASHERS



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

ENLARGED FLOAT DETAIL IN STILLING WELL ENCLOSURES

N.T.S.

NOTE:

1. SUPPORTS SHALL BE CUSTOM FABRICATED FOR LOW FLOW AND HIGH FLOW PUMP.

M8

FILE NAME =

DONOHUE

USER NAME =	DESIGNED - LRE	REVISED -
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PLOT DATE =	DATE - 09-29-17	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 8 RELOCATION
MECHANICAL DETAILS

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

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14 NORTHWEST HIGHWAY	86 S-I-I	COOK	156	112
		CONTRACT NO. 60C48		
	ILLINOIS	FED. AID PROJECT		

PUMPING OPERATION WITH RISING WATER

SCADA FUNCTION	ELEVATION	LEVEL ABOVE SUMP PIT FLOOR	FLOAT FUNCTION
	(FT)	(FT)	
HIGH WATER ALARM	612.00	11.00	HIGH WATER ALARM
NO FUNCTION	611.00	10.00	START MAIN PUMP 3 (IF 1 OR 2 FAILED)
START LAG MAIN PUMP	608.00	7.00	START MAIN PUMP 2
START LEAD MAIN PUMP STOP LOW FLOW PUMP	607.00	6.00	START MAIN PUMP 1 STOP LOW FLOW PUMP
START LOW FLOW PUMP	605.00	4.00	START LOW FLOW PUMP
	627.3	26.30	PAVEMENT FLOOD ALARM

PUMPING OPERATION WITH FALLING WATER

SCADA FUNCTION	ELEVATION	LEVEL ABOVE SUMP PIT FLOOR	FLOAT FUNCTION
	(FT)	(FT)	
STOP MAIN PUMPS START LOW FLOW PUMP	606.00	5.00	STOP MAIN PUMPS START LOW FLOW PUMP
STOP LOW FLOW PUMP	604.50	3.50	STOP LOW FLOW PUMP
LOW WATER ALARM	603.50	2.50	LOW WATER ALARM

EQUIPMENT SCHEDULE

ITEM	DESCRIPTION	LOCATION	ELECTRICAL MOTOR CHARACTERISTICS						PUMP	
			KW	HP	RPM	VOLTS	PHASE	HZ	CAPACITY (GPM)	HEAD (FT)
MP 1	MAIN PUMP #1	WET PIT	33 *	44 *	1180 *	480	3	60	1,500	48
MP 2	MAIN PUMP #2	WET PIT	33 *	44 *	1180 *	480	3	60	1,500	48
MP 3	MAIN PUMP #3	WET PIT	33 *	44 *	1180 *	480	3	60	1,500	48
LFP 1	LOW FLOW PUMP #1	WET PIT	7.5 *	10 *	1,720 *	480	3	60	600	41
DG-1	DISCHARGE KNIFE GATE ACTUATOR	OUTSIDE ABOVE GRADE	0.95	1.2		480	3	60		
RG-1	RECIRCULATION KNIFE GATE ACTUATOR	DISCHARGE FLOOR	0.82	1.1		480	3	60		

* MAXIMUM

NOTES:

1. THE DESIGN OF THE PUMP STATION HAS BEEN BASED ON A SPECIFIC PUMP. OTHER PUMPS PRODUCING THE SAME HYDRAULIC CHARACTERISTIC ARE ACCEPTABLE. IT SHALL BE THE CONTRACTOR'S RESPONSIBLITY TO MAKE ALL ADJUSTMENTS TO THE STATION DESIGN REQUIRED TO ADOPT ITS FINAL SELECTED PUMPS AT NO ADDITIONAL COST.

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

M9

FILE NAME =

DONOHUE

USER NAME =	DESIGNED - LRE	REVISED -
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PLOT SCALE =	CHECKED - MTR	REVISED -
PLOT DATE =	DATE - 09-29-17	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

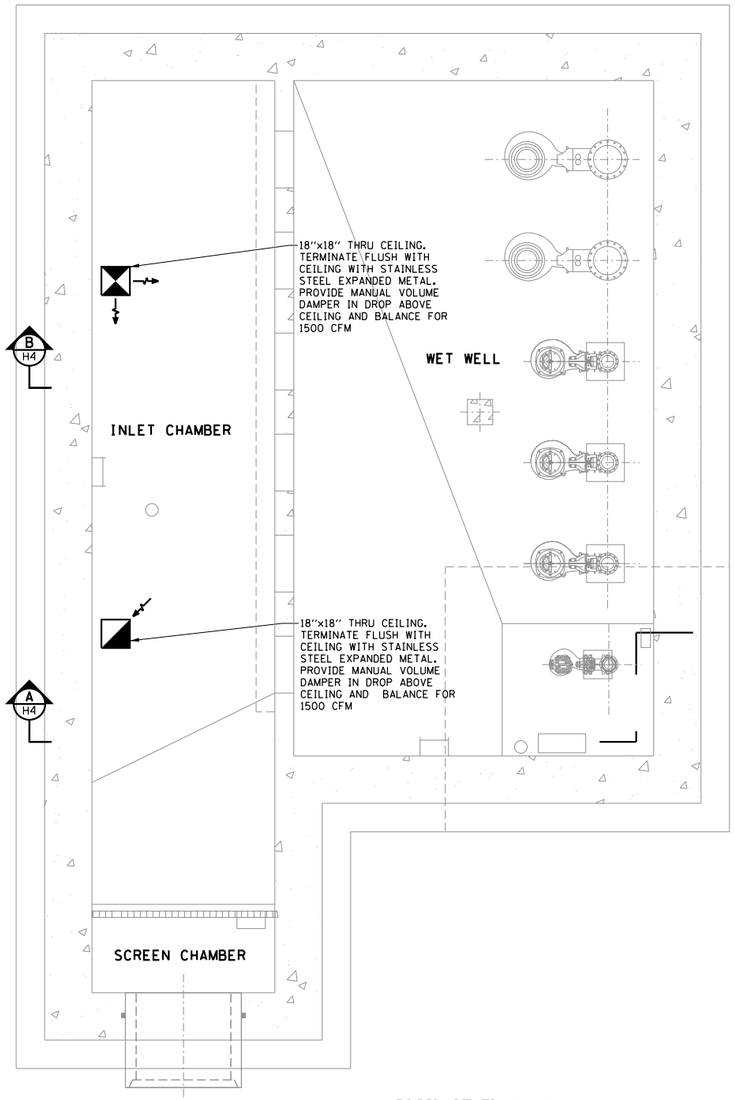
PUMP STATION NO. 8 RELOCATION
EQUIPMENT SCHEDULE AND
PUMPING OPERATING ELEVATIONS

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

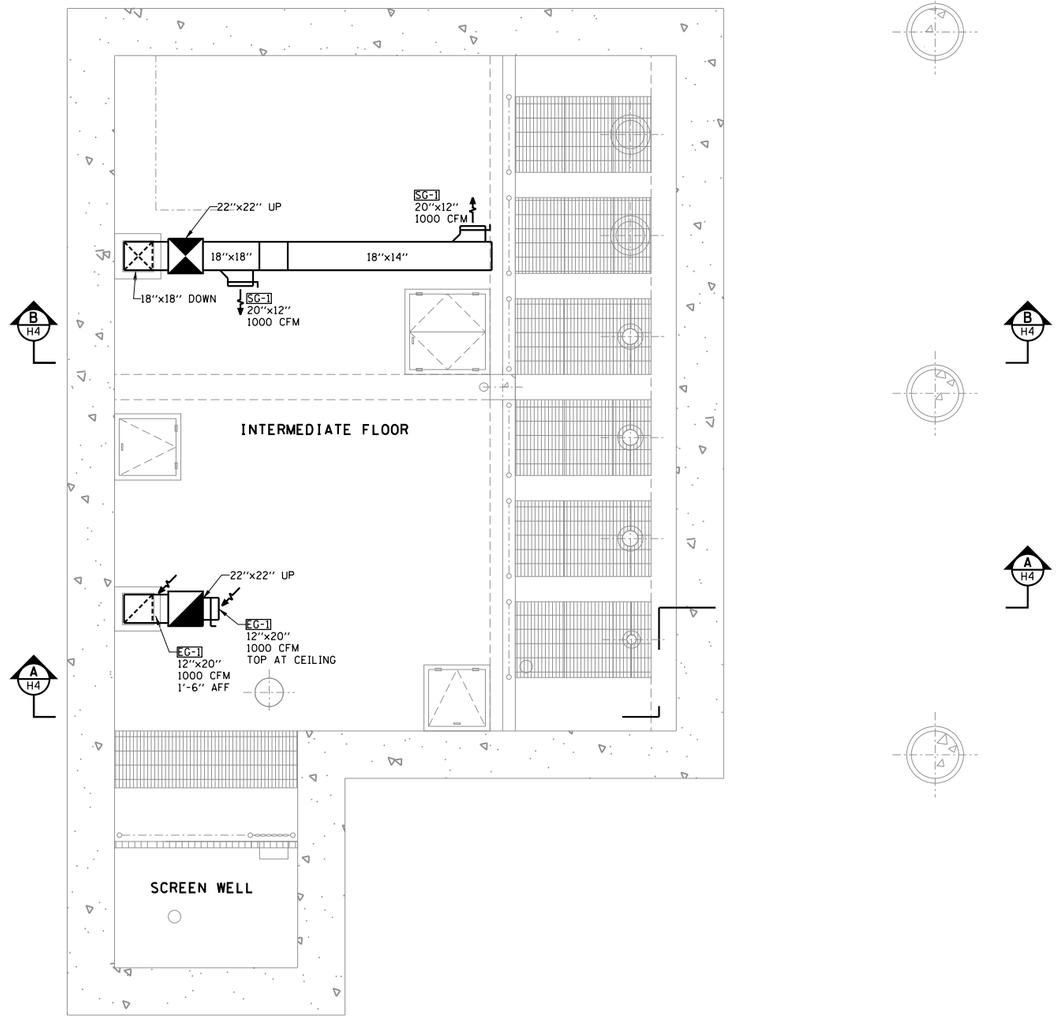
RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14	86 S-I-I	COOK	156	113
NORTHWEST HIGHWAY		CONTRACT NO. 60C48		
	ILLINOIS FED. AID PROJECT			

NOTES:

1. ALL AREAS WITHIN BUILDING EXCEPT ELECTRICAL CONTROL ROOM SHALL BE CLASS I, DIVISION 2, GROUP D EXPLOSION PROOF.



PLAN AT EL. 604.00



PLAN AT EL. 618.00

SCALE: 0 4 8 FT.

H1

FILE NAME =

DONOHUE	USER NAME =	DESIGNED - JLW	REVISED -
		DRAWN - JLW	REVISED -
	PLOT SCALE =	CHECKED - EPC	REVISED -
	PLOT DATE =	DATE - 09-29-17	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

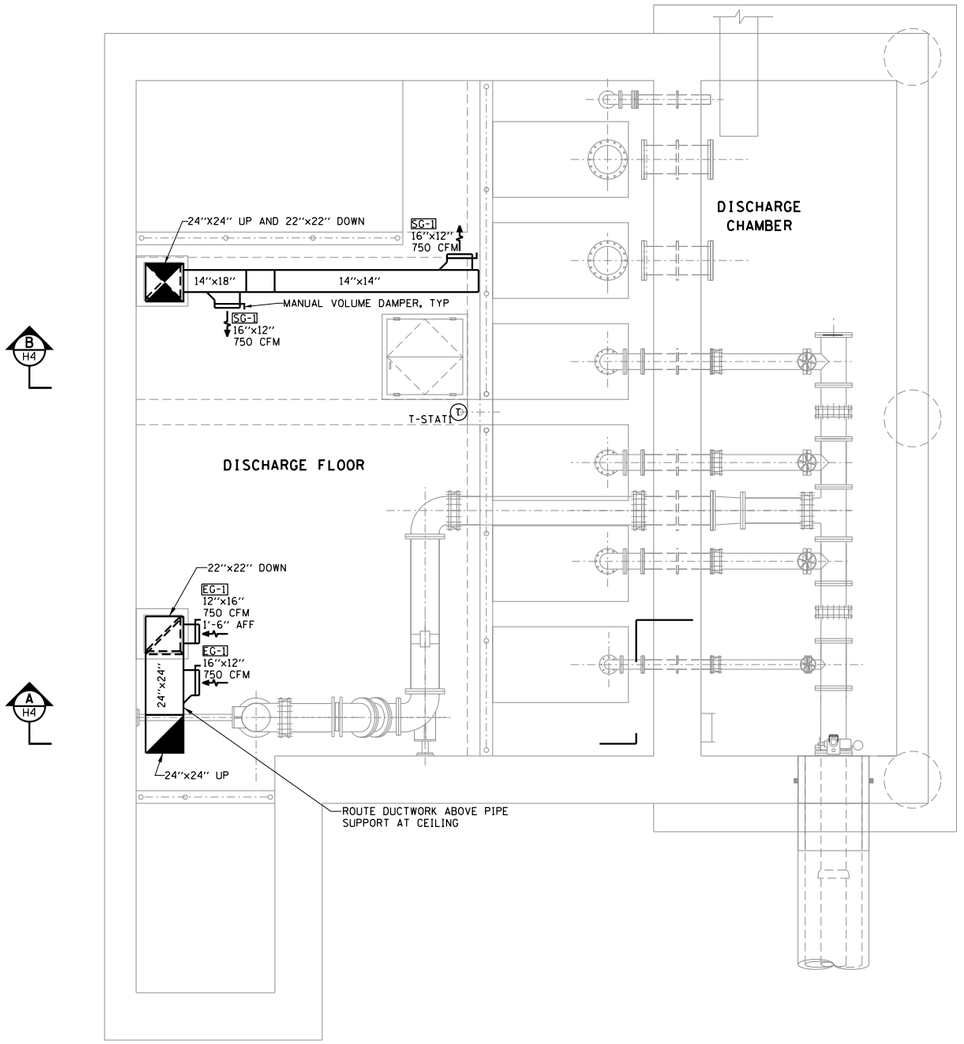
PUMP STATION NO. 8 RELOCATION
HVAC PLANS

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

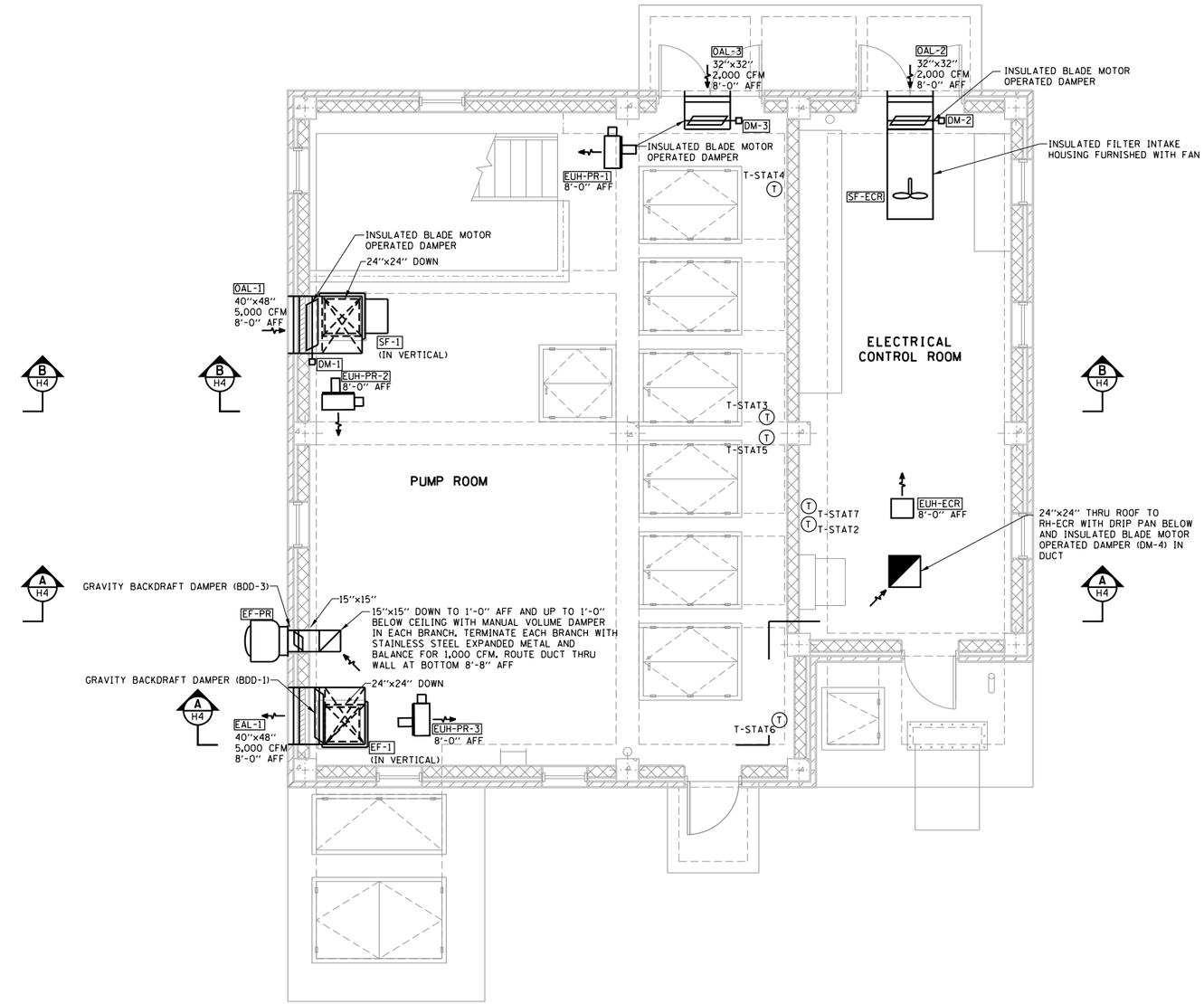
RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14 NORTHWEST HIGHWAY	86 S-I-I	COOK	156	114
		CONTRACT NO. 60C48		
	ILLINOIS	FED. AID PROJECT		

NOTES:

1. ALL AREAS WITHIN BUILDING EXCEPT ELECTRICAL CONTROL ROOM SHALL BE CLASS I, DIVISION 2, GROUP D EXPLOSION PROOF.



PLAN AT EL. 631.00



PLAN AT EL. 644.00

SCALE: 0 4 8 FT.

H2

FILE NAME =

DONOHUE

USER NAME =	DESIGNED - JLW	REVISED -
	DRAWN - JLW	REVISED -
PLOT SCALE =	CHECKED - EPC	REVISED -
PLOT DATE =	DATE - 09-29-17	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

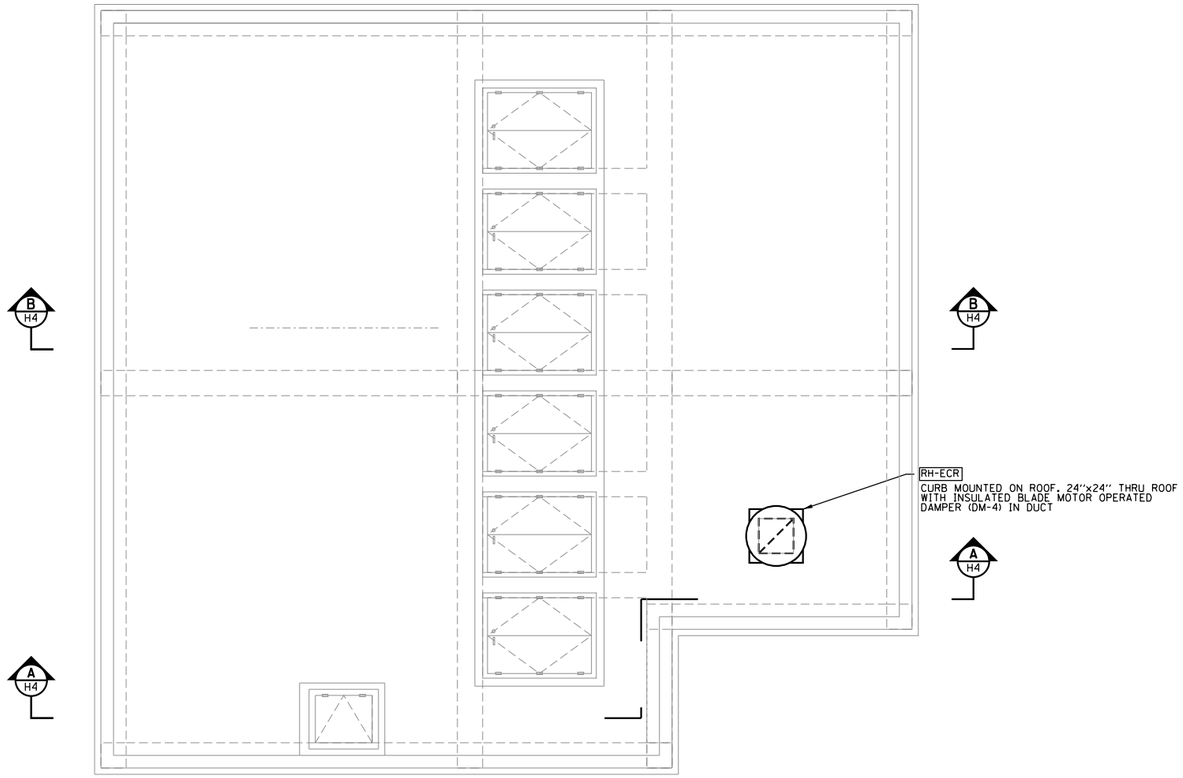
PUMP STATION NO. 8 RELOCATION
HVAC PLANS

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

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14	86 S-I-I	COOK	156	115
NORTHWEST HIGHWAY		CONTRACT NO. 60C48		
	ILLINOIS FED. AID PROJECT			

NOTES:

1. ALL AREAS WITHIN BUILDING EXCEPT ELECTRICAL CONTROL ROOM SHALL BE CLASS I, DIVISION 2, GROUP D EXPLOSION PROOF.



PLAN AT EL. 659.50

SCALE: 0 4 8 FT.

H3

DONOHUE	USER NAME =	DESIGNED - JLW	REVISED -
		DRAWN - JLW	REVISED -
	PLOT SCALE =	CHECKED - EPC	REVISED -
	PLOT DATE =	DATE - 09-29-17	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 8 RELOCATION
HVAC PLAN

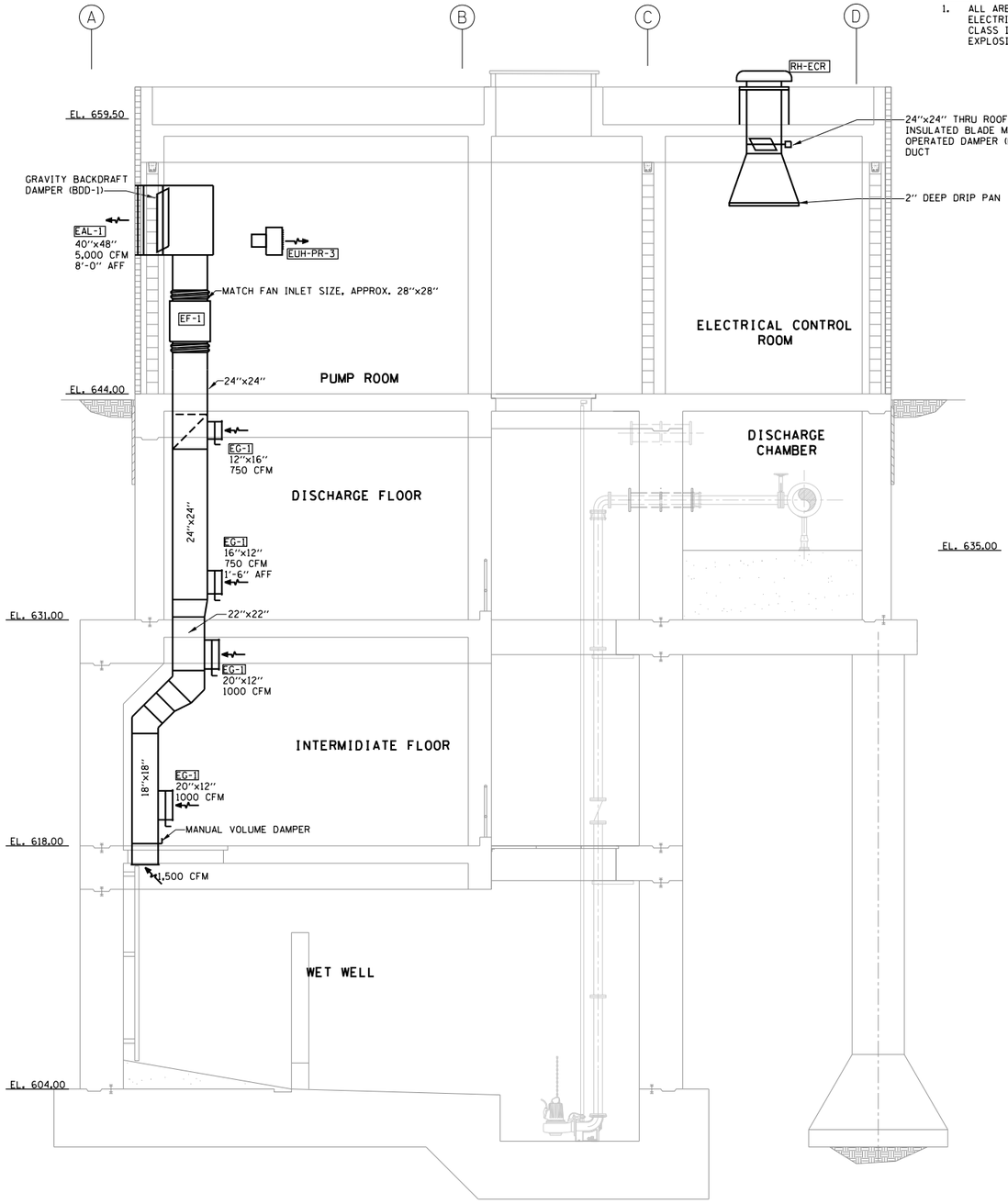
SCALE: | SHEET OF SHEETS | STA. TO STA.

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14	86 S-I-I	COOK	156	116
NORTHWEST HIGHWAY		CONTRACT NO. 60C48		
	ILLINOIS	FED. AID PROJECT		

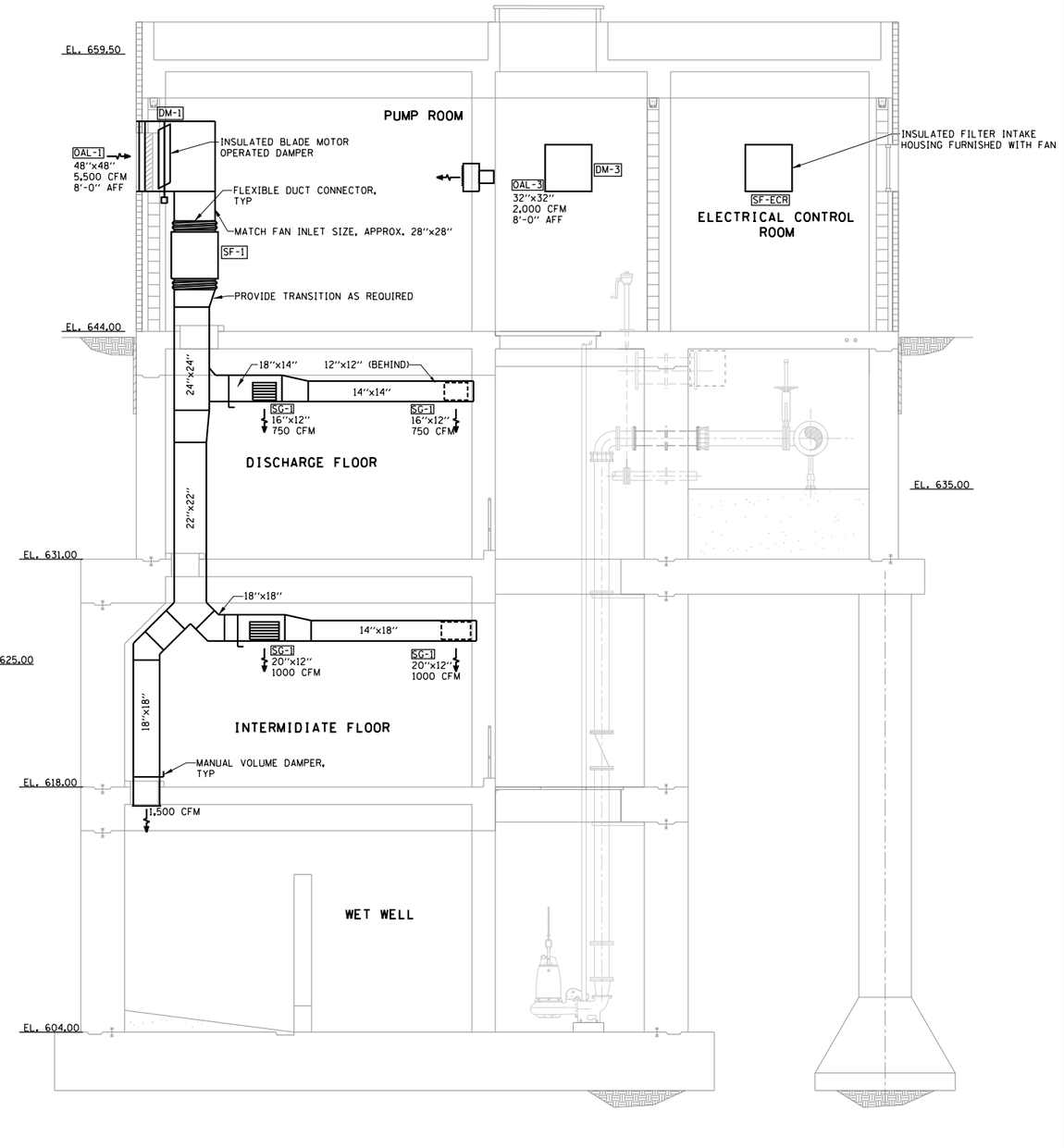
FILE NAME =

NOTES:

1. ALL AREAS WITHIN BUILDING EXCEPT ELECTRICAL CONTROL ROOM SHALL BE CLASS 1, DIVISION 2, GROUP D EXPLOSION PROOF.



SECTION A–A



SECTION B–B

SCALE: 0 4 8 FT.

H4

USER NAME =	DESIGNED - JLW	REVISED -	
	DRAWN - JLW	REVISED -	
PLOT SCALE =	CHECKED - EPC	REVISED -	
PLOT DATE =	DATE - 09-29-17	REVISED -	

FILE NAME =

DONOHUE

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 8 RELOCATION
HVAC SECTIONS

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

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14	86 S-I-I	COOK	156	117
NORTHWEST HIGHWAY		CONTRACT NO. 60C48		
	ILLINOIS	FED. AID PROJECT		

DAMPERS SCHEDULE

ITEM	SIZE	ACTUATOR			CONFIGURATION	REMARKS
		TYPE	VOLTAGE	PH		
DM-1	48"X48"	NEMA 7 ELECTRIC	115	1	INTAKE	INSULATED BLADE TYPE PROVIDE WITH LIMIT SWITCH LM-1 ASSOCIATED WITH LOUVER OAL-1
DM-2	32"x32"	NEMA 2 ELECTRIC	115	1	INTAKE	INSULATED BLADE TYPE PROVIDE WITH LIMIT SWITCH LM-2 ASSOCIATED WITH LOUVER OAL-2
DM-3	32"x32"	NEMA 7 ELECTRIC	115	1	INTAKE	INSULATED BLADE TYPE PROVIDE WITH LIMIT SWITCH LM-3 ASSOCIATED WITH LOUVER OAL-3
DM-4	24"x24"	NEMA 2 ELECTRIC	115	1	RELIEF	INSULATED BLADE TYPE PROVIDE WITH LIMIT SWITCH LM-4 ASSOCIATED WITH LOUVER RH-ECR
BDD-1	12"x12"	GRAVITY	---	---	EXHAUST	ALUMINUM BACKDRAFT DAMPER FURNISHED WITH EF-SW
BDD-2	40"x40"	GRAVITY	---	---	EXHAUST	ALUMINUM BACKDRAFT DAMPER ASSOCIATED WITH EAL-1
BDD-3	15"x15"	GRAVITY	---	---	EXHAUST	ALUMINUM BACKDRAFT DAMPER FURNISHED WITH EF-PR

HEATING AND VENTILATION CONTROLS SCHEDULE

AREA	HEATING/ VENTILATION	VENTILATION			
		MANUAL	AUTOMATIC		
			THERMOSTAT	COMBUSTIBLE GAS SENSOR	LIGHT INTERLOCK SWITCH
PUMP ROOM	THERMOSTAT	YES	YES	YES	YES
PUMPS LEVELS	THERMOSTAT	YES	YES	YES	YES
ELECTRICAL ROOM	THERMOSTAT	YES	YES	NA	NA

THERMOSTAT SCHEDULE

THERMOSTAT	NEMA RATING	LOCATION	EQUIPMENT SERVED
T-STAT1	7	DISCHARGE FLOOR	EF-1, SF-1
T-STAT2	4X	ELECTRICAL CONTROL ROOM	SF-ECR
T-STAT3	7	PUMP ROOM	EF-PR
T-STAT4	7	PUMP ROOM	EUH-PR-1
T-STAT5	7	PUMP ROOM	EUH-PR-2
T-STAT6	7	PUMP ROOM	EUH-PR-3
T-STAT7	4X	ELECTRICAL CONTROL ROOM	EUH-ECR

ELECTRICAL ROOM VENTILATION CONTROL

SUPPLY FAN (SF-ECR), RELEIF HOOD (RH-ECR) AND OUTSIDE AIR LOUVER (OAL-2) SHALL BE CONTROLLED BY H-O-A SWITCH AND SPACE COOLING THERMOSTAT (T2) SET AT (85℉, ADJUSTABLE).

AUTO MODE:
ON CALL FOR COOLING, MOTORIZED DAMPERS (DM-2 AND DM-4) SHALL OPEN. UPON PROOF OF OPENING, SUPPLY FAN (SF-ECR) SHALL ENERGIZE AND RUN CONTINUOUSLY. UPON SATISFACTION OF SPACE COOLING REQUIREMENTS, FAN SHALL STOP AND DAMPERS SHALL CLOSE.

OFF MODE:
SUPPLY FAN (SF-ECR) OFF AND DAMPERS (DM-2 AND DM-4) CLOSED.

HAND MODE:
SUPPLY FAN (SF-ECR) RUN CONTINUOUSLY AND DAMPERS (DM-2 AND DM-4) OPEN.

UNDER ALL MODES OF OPERATION, FIRE ALARM SIGNAL SHALL DISABLE ALL VENTILATION EQUIPMENT.

PUMP ROOM VENTILATION

EXHAUST FAN (EF-PR) AND OUTSIDE AIR LOUVER (OAL-3) SHALL BE CONTROLLED BY H-O-A SWITCH.

AUTO MODE:
MOTORIZED DAMPER (DM-3) SHALL OPEN AND PROVE OPEN. THAN EXHAUST FAN (EF-PR) SHALL ENERGIZE AND RUN CONTINUOUSLY UNDER ANY OF THE FOLLOWING CONDITIONS:

1. WHEN SPACE THERMOSTAT (T3) SENSES A ROOM TEMPERATURE ABOVE THERMOSTAT SETPOINT. (85℉, ADJUSTABLE).
2. WHEN GAS SENSOR DETECTS COMBUSTIBLE GAS ABOVE SETPOINT WITHIN PUMP ROOM. FAN SHALL REMAIN ON FOR AN ADJUSTABLE TIME PERIOD (5-MINUTES) UPON CLEARING OF ALARM CONDITION.
3. WHEN THE PUMP ROOM LIGHTS ARE ENERGIZED.

OFF MODE:
EXHAUST FAN (EF-PR) OFF AND DAMPER (DM-3) CLOSED.

HAND MODE:
EXHAUST FAN (EF-PR) RUN CONTINUOUSLY AND DAMPER (DM-3) OPEN.

UNDER ALL MODES OF OPERATION, FIRE ALARM SIGNAL SHALL DISABLE ALL VENTILATION EQUIPMENT.

DISCHARGE FLOOR, INTERMEDIATE FLOOR AND WET WELL

SUPPLY FAN (SF-1), EXHAUST FAN (EF-1) AND OUTSIDE AIR LOUVER (OAL-1) SHALL BE CONTROLLED BY H-O-A SWITCH.

AUTO MODE:
MOTORIZED DAMPER (DM-1) SHALL OPEN AND PROVE OPEN. THAN SUPPLY FAN (SF-1) AND EXHAUST FAN (EF-1) SHALL ENERGIZE AND RUN CONTINUOUSLY UNDER ANY OF THE FOLLOWING CONDITIONS:

1. WHEN SPACE THERMOSTAT (T1) SENSES A ROOM TEMPERATURE ABOVE THERMOSTAT SETPOINT. (85℉, ADJUSTABLE).
2. WHEN GAS SENSOR DETECTS COMBUSTIBLE GAS ABOVE SETPOINT WITHIN ANY LOWER LEVEL SPACE. FANS SHALL REMAIN ON FOR AN ADJUSTABLE TIME PERIOD (5-MINUTES) UPON CLEARING OF ALARM CONDITION.
3. WHEN THE STAIRWELL LIGHTS ARE ENERGIZED.

OFF MODE:
SUPPLY FAN (SF-1), EXHAUST FAN (EF-1) OFF AND DAMPER (DM-1) CLOSED.

HAND MODE:
SUPPLY FAN (SF-1) AND EXHAUST FAN (EF-1) RUN CONTINUOUSLY AND DAMPER (DM-1) OPEN.

UNDER ALL MODES OF OPERATION, FIRE ALARM SIGNAL SHALL DISABLE ALL VENTILATION EQUIPMENT.

ELECTRIC UNIT HEATERS

EUH-PR-1, EUH-PR-2, EUH-PR-3 AND EUH-SW

UNIT HEATERS SHALL OPERATE ON CALL FROM WALL MOUNTED SPACE 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

SECTION 15E

TAG	MANUF.	MODEL	TYPE	SERVICE	AIR FLOW DATA			FAN RPM	DRIVE	SONES	ELECTRICAL DATA				REMARKS
					CFM	ESP (IN WC)	BHP				HP/ WATTS	VOLT	PH.	RPM	
EF-1	GREENHECK CARNES COOK	BSQ-200 VIBK 21 195-SON-B	INLINE CENTRI	EXHAUST	5,000	0.65	1.6	1085	BELT	19	2	460	3	1725	1,2,3,4,8,9
EF-PR	GREENHECK CARNES COOK	CWB-141 VWBK 15 195-SON-B	CENTRI SIDEWALL	EXHAUST	2,000	0.35	0.40	1250	BELT	12	1/2	460	3	1725	1,2,3,4,5,6
SF-1	GREENHECK CARNES COOK	BSQ-200 VIBK 21 195-SON-B	CENTRI INLINE	SUPPLY	5,000	0.65	1.6	1085	BELT	19	2	460	3	1725	1,2,3,4,8,9
SF-ECR	GREENHECK CARNES COOK	SBS-2H24 LMBK 24 24 XMW	AXIAL SIDEWALL	SUPPLY	2,000	0.35	0.41	940	BELT	17	1/2	460	3	1725	2,10,11

1. = ALUMINUM CONSTRUCTION.
2. = STAINLESS STEEL FAN SHAFT AND FASTENERS.
3. = EXPLOSION PROOF MOTOR
4. = SPARK RESISTANT FAN CONSTRUCTION.
5. = ALUMINUM BIRDSCREEN.
6. = GRAVITY OPERATED DAMPER.
7. = ALUMINUM WALL GRILLE.
8. = MOTOR COVER AND BELT GUARD.
9. = SPRING BASE, HANGING VIBRATION AND NEOPRENE ISOLATORS.
10. = FILTERED INSULATED WALL HOUSING WITH OSHA FAN GUARD.
11. = EXTERNAL STATIC PRESSURE (ESP) INCLUDES LOSSES EXTERNAL TO THE FAN SYSTEM ONLY. MANUFACTURE SHALL INCLUDE ALL LOSSES ASSOCIATED WITH FILTERS AND HOUSING FOR FAN SELECTION. (APPROX. 0.45-IN W.C. TSP)

ELECTRIC HEATER SCHEDULE

SECTION 15E

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-PR-1	QMARK RUFFNECK BERKO	GUX500 FX5 RUX500	EXP PROOF	17.1	8'-6"	700	---		5.0	460/3	7.0	½	460/3	1725	1,2,3,4,6
EUH-PR-2	QMARK RUFFNECK BERKO	GUX500 FX5 RUX500	EXP PROOF	17.1	8'-6"	700	---		5.0	460/3	7.0	½	460/3	1725	1,2,3,4,6
EUH-ECR	QMARK RUFFNECK BERKO	IUH700 RGE077 HUH748	PROP UNIT	25.5	8'-6"	270	---		7.5	460/3	9.7	½	460/3	1725	2,3,5
EUH-PR-3	QMARK RUFFNECK BERKO	GUX500 FX5 RUX500	EXP PROOF	17.1	8'-6"	700	---		5.0	460/3	7.0	½	460/3	1725	1,2,3,4,6

1. = EXPLOSION PROOF UNIT.
2. = CONTROLS AS SPECIFIED.
3. = MANUFACTURES MOUNTING ACCESSORIES.
4. = WALL MOUNTED EXPLOSION PROOF THERMOSTAT.
5. = WALL MOUNTED THERMOSTAT.
6. = EPOXY COATED.

WALL LOUVER SCHEDULE

SECTION 15E

TAG	MANUF.	MODEL	SERVICE	CFM	WIDTH (IN)	HEIGHT (IN)	DEPTH (IN)	MAX. APD (IN WC)	MAX. FREE AREA VEL. (FPM)	REMARKS
OAL-1	GREENHECK CARNES RUSKIN	ESD-403 FPBB ELF445DX	INTAKE	5000	40	48	4	0.13	800	1,2,4,5
OAL-2	GREENHECK CARNES RUSKIN	ESD-403 FPBB ELF445DX	INTAKE	2000	32	32	4	0.09	700	1,2,3,5
OAL-3	GREENHECK CARNES RUSKIN	ESD-403 FPBB ELF445DX	INTAKE	2000	32	32	4	0.09	700	1,2,4,5
EAL-1	GREENHECK CARNES RUSKIN	ESD-403 FPBB ELF445DX	EXHAUST	5000	40	48	4	0.10	800	1,2,5,6

1. = ALUMINUM BIRDSCREEN.
2. = EXTENDED SILL.
3. = INSULATED BLADE MOTOR OPERATED DAMPER.
4. = EXPLOSION PROOF INSULATED BLADE MOTOR OPERATED DAMPER.
5. = KYNAR FINISH.
6. = GRAVITY OPERATED DAMPER

GRAVITY VENTILATOR SCHEDULE

SECTION 15E

TAG	MANUF.	MODEL	SERVICE	CFM	THROAT SIZE (INXIN)	MAX. THROAT VEL. (FPM)	PRESSURE DROP (IN W.C.)	REMARKS
RH-ECR	GREENHECK CARNES COOK	GRSR-24 GS PR	RELIEF	2000	24" DIA	625	0.05	1,2,3,4

1. = 24" TALL ALUMINUM ROOF CURB WITH INSULATION AND ALUMINUM LINER.
2. = ALUMINUM BIRD SCREEN.
3. = INSULATED BLADE MOTOR OPERATED DAMPER.
4. = ALUMINUM HOOD.

AIR INLET AND OUTLET SCHEDULE

SECTION 15E

TAG	MANUF.	MODEL	SERVICE	MAX. APD. (IN. W. C)	MAX. NC	PATTERN	FINISH	MATERIAL	REMARKS
EG-1	AJ MANUF CARNES TITUS	550 H RLAB 350ZRS	EXHAUST	0.10	30	SD	MATTE	SST	1,2
SG-1	AJ MANUF CARNES TITUS	250 RLDB 300RS-SS	SUPPLY	0.10	35	DD	MATTE	SST	1,2

DD = 3/4" BLADE, DOUBLE DEFLECTION.
SD = 3/4" BLADE, SINGLE DEFLECTION, 0 DEGREE BLADE ANGLE.
ANOD = ANODIZED FINISH.
1. = CARNES GRILLE 45 DEGREE BLADE
2. = TITUS GRILLE MATERIAL STEEL

H5

FILE NAME =

DONOHUE

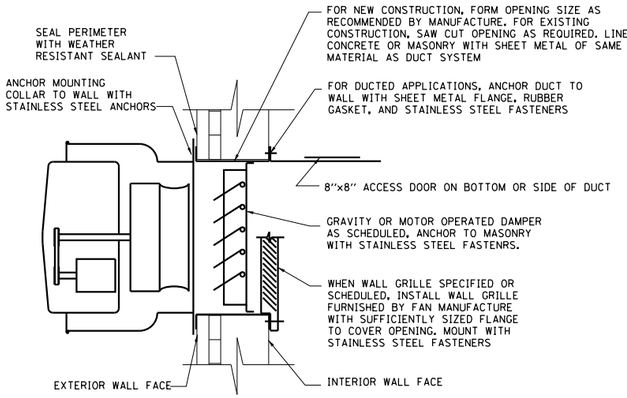
USER NAME =	DESIGNED - JLW	REVISED -
	DRAWN - JLW	REVISED -
PLOT SCALE =	CHECKED - EPC	REVISED -
PLOT DATE =	DATE - 09-29-17	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

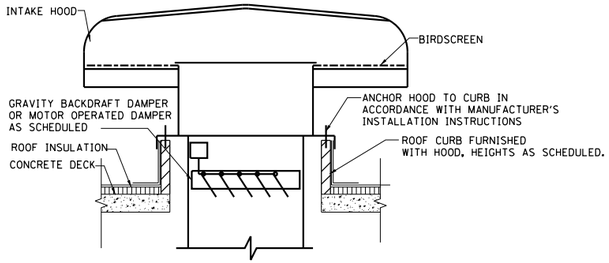
PUMP STATION NO. 8 RELOCATION
HVAC SCHEDULES

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

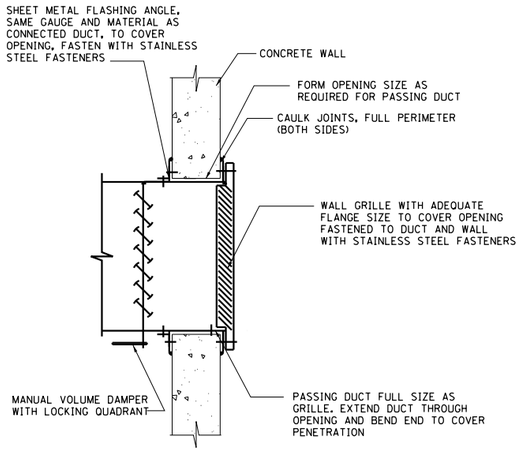
RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14	86 S-I-I	COOK	156	118
NORTHWEST HIGHWAY		CONTRACT NO. 60C48		
	ILLINOIS	FED. AID PROJECT		



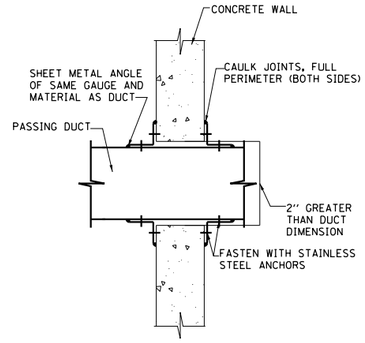
WALL MOUNTED EXHAUST FAN DETAIL



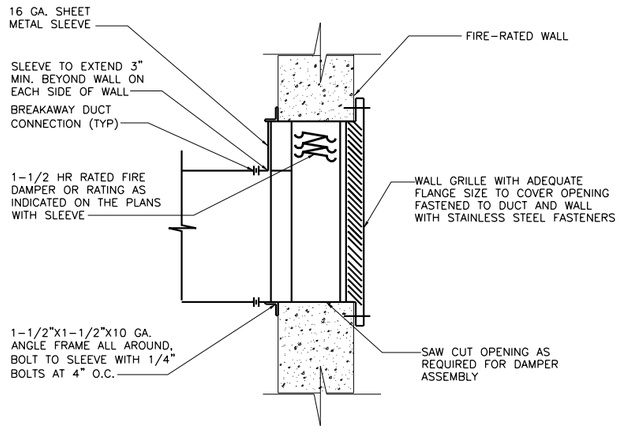
RELIEF HOOD ON ROOF CURB DETAIL



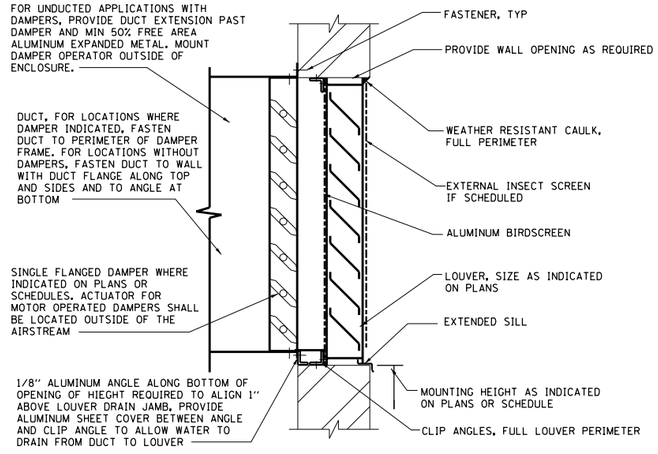
THROUGH WALL GRILLE DETAIL



TYPICAL DUCT WALL PENETRATION DETAIL

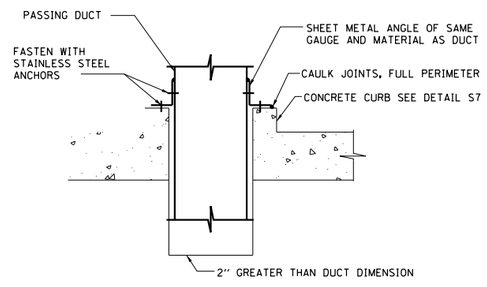


FIRE DAMPER OPENING WITH GRILLE DETAIL



NOTE: ALL FASTENERS SHALL BE OF STAINLESS STEEL CONSTRUCTION

TYPICAL LOUVER DETAIL



TYPICAL DUCT FLOOR PENETRATION DETAIL

H6

FILE NAME =

DONOHUE

USER NAME =	DESIGNED - JLW	REVISED -
	DRAWN - JLW	REVISED -
PLOT SCALE =	CHECKED - EPC	REVISED -
PLOT DATE =	DATE - 09-29-17	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 8 RELOCATION
HVAC DETAILS

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

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14 NORTHWEST HIGHWAY	86 S-I-I	COOK	156	119
		CONTRACT NO. 60C48		
	ILLINOIS FED. AID PROJECT			

VALVE SYMBOLS

SEATING PORT
ECCENTRIC PLUG
BUTTERFLY
BALL
VENTED BALL
GLOBE
GATE
KNIFE GATE
PINCH
DIAPHRAGM
SOLENOID
THREE–WAY
TELESCOPING
BALL CHECK
SWING CHECK
SPLIT DISC CHECK
DIAPHRAM CHECK
CALIBRATED BALANCE
PRESSURE CONTROL (REGULATED SIDE)
TEMPERATURE CONTROL
PRESSURE RELIEF
AIR RELEASE AND VACUUM RELIEF
MUD

GATE SYMBOLS

SLUICE
SLIDE
FLAP GATE
WIER GATE
STOP PLANK (LOG)

VALVE AND GATE POWER ACTUATOR SYMBOLS

ELECTRIC MOTOR
ELECTRIC MOTOR WITH POSITIONER
PNEUMATIC WITH SOLENOID
PNEUMATIC WITH POSITIONER
HYDRAULIC WITH SOLENOID
HYDRAULIC WITH POSITIONER

NOTE ON 'XX':

ON LOSS OF PRIMARY POWER (PNEUMATIC OR ELECTRICAL)

XX:
FC = FAIL CLOSED POSITION
FIP = FAIL INTERMEDIATE POSITION
FLP = FAIL LAST POSITION
FO = FAIL OPEN POSITION

FLOW AND LEVEL ELEMENT SYMBOLS

PARSHALL FLUME
ROTAMETER
PROPELLER OR TURBINE METER
LEVEL ELEMENT, ULTRASONIC, SUSPENDED, NON–INTRUSIVE
LEVEL ELEMENT, RADAR, SUSPENDED, NON–INTRUSIVE
LEVEL ELEMENT, HYDROSTATIC, SUSPENDED, SUBMERSIBLE
LEVEL ELEMENT, INDUCTIVE, SUSPENDED, SUBMERSIBLE
LEVEL ELEMENT, BUBBLER
CLAMP ON ULTRASONIC FLOWMETER
MAGNETIC FLOWMETER
PITOT–STATIC
VENTURI OR FLOW TUBE
VORTEX SHEDDING
ORIFICE METER
FLOAT SWITCH
FLOAT, MAGNETICALLY ACTIVATED REED SWITCH
ANALYSIS ELEMENT, SUSPENDED, IMMERSIBLE
LEVEL ELEMENT COMPRESSION BELL

MISCELLANEOUS SYMBOLS

SWITCHED RECEPTACLE (POWER, CONTROL OR SIGNAL) WITH CORD AND PLUG SET
BLIND FLANGE OR CLEAN OUT
DRAIN
STRAINER
FLUSHING WATER CONNECTION
SEAL WATER CONNECTION
EJECTOR
AUTOMATIC SAMPLER
DIFFUSER
VENT
PURGE SET
X: W = WATER
A = AIR
PULSATION DAMPENER
EXPANSION JOINT
FLAME ARRESTOR
FLAME TRAP ASSEMBLY
FLAME CHECK
DESK MOUNTED MONITOR AND KEYBOARD
120 VOLT, 60 HZ POWER SUPPLY POINT
MIXER WITH ELECTRIC MOTOR
ELECTRIC MOTOR
MANUAL SAMPLE PORT
AUTOMATIC DRAIN
MANUAL DRIP TRAP
DIAPHRAGM SEAL
ANNULAR SEAL
FLOW STRAIGHTENING VANE
CALIBRATION CHAMBER
DENSITY METER
X: N – NUCLEAR
O – OPTICAL
U – ULTRASONIC
M – MICROWAVE
RUPTURE DISK
BALANCING VALVE
ANTENNA
DESK MOUNTED THICK CLIENT/ WORK STATION WITH MONITOR(S)
INDUSTRIAL DATA OUTLET W/ 120VAC OUTLET AND ETHERNET CONNECTION
MEDIA CONVERTER

INPUTS & OUTPUTS (I/O) TO PLC, DAQ OR DISTRIBUTED CONTROL SYSTEMS

EQUIPMENT – I/O – FUNCTION (X)

UNIVERSAL INPUT/OUPUT
(I/O = I/O POINT TYPE)

I/O POINT TYPES:

DI (DIGITAL INPUT)
RO (RELAY OUTPUT)
AI (ANALOG INPUT)
AO (ANALOG OUTPUT)
RTD (RESISTANCE TEMPERATURE DETECTOR)

NOTE ON 'X':

X = TOTAL QUANTITY IF MORE THAN ONE.

PUMP & COMPRESSOR SYMBOLS

SUBMERSIBLE PUMP
CENTRIFUGAL PUMP (DRY PIT, PLAN VIEW)
CENTRIFUGAL PUMP (DRY PIT, ELEVATION)
CENTRIFUGAL PUMP (INLINE)
VERTICAL TURBINE PUMP
PROGRESSING CAVITY PUMP
CENTRIFUGAL BLOWER
CHEMICAL EDUCTOR PUMP
ROTARY LOBE PUMP, BLOWER OR COMPRESSOR (POSITIVE DISPLACEMENT)
AXIAL FLOW PUMP
AIR OPERATED DIAPHRAGM PUMPS W. INTEGRAL CHECK VALVES:
CYLINDER ASSIST
SPRING RETURN
COMPRESSOR (PISTON)
CHEMICAL FEED PUMP
PLUNGER PUMP
DIAPHRAGM PUMP
HOSE PUMP

NOTE ON 'XX':

AS : ADJUSTABLE SPEED
CS–1 : CONSTANT SPEED (SINGLE SPEED)
CS–2 : CONSTANT SPEED (TWO SPEED)
CS–R : CONSTANT SPEED (REVERSING)
MS : MECHANICAL SHIV (ADJUSTABLE)

INTERFACE SYMBOLS

PROCESS

XXX
A

XXX = DESTINATION SHEET NO.
A = INTERFACE DESIGNATOR

ELECTRICAL

XXX
A

XXX = DESTINATION SHEET NO.
A = INTERFACE DESIGNATOR

TO EXISTING INTERFACE NOT IN CONTRACT

TO NEW OR FUTURE INTERFACE NOT IN CONTRACT

NOTICE:

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

E1

FILE NAME =

DONOHUE

USER NAME =	DESIGNED - DWG	REVISED -
	DRAWN - DWG	REVISED -
PLOT SCALE =	CHECKED - MBS	REVISED -
PLOT DATE =	DATE 09-29-17	REVISED -

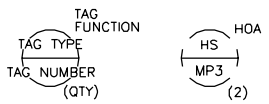
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 8 RELOCATION
INSTRUMENTATION & CONTROL
STANDARD SYMBOLOGY

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

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14 NORTHWEST HIGHWAY	86 S-H	COOK	156	120
		CONTRACT NO. 60C48		
	ILLINOIS FED. AID PROJECT			

INSTRUMENT TAG IDENTIFICATION



COMPONENT DESIGNATOR

TAG TYPE	P:	FIRST LETTER, SEE ISA TABLE BELOW
	AH:	SUCCEEDING LETTERS, SEE ISA TABLE BELOW
TAG NUMBER	12:	P&ID NUMBER
	3:	LOOP NUMBER
	4:	EQUIPMENT NUMBER
	A:	DEVICE LETTER IF MULTIPLE DEVICES
TAG FUNCTION	HOA:	TAG FUNCTION ABBREVIATION, SEE LISTING AT RIGHT
(QUANTITY)	(2):	TOTAL NUMBER OF DEVICES WHERE MORE THAN ONE DEVICE IS REQUIRED. DEVICE NUMBERS ARE SEQUENTIAL BEGINNING WITH THE TAG NUMBER SHOWN. IF QUANTITY IS NOT SHOWN THEN ONE DEVICE ONLY IS REQUIRED.

TAG FUNCTION ABBREVIATIONS

ALRT	ALERT
ALT	ALTERNATE
C	CLOSE(D)
COMM	COMMUNICATIONS
CM	COMPUTER–MANUAL
DIFF	DIFFERENCE OR DIFFERENTIAL
DN	DEVICENET
DO	DISSOLVED OXYGEN
ESTP	ESTOP (EMERGENCY STOP)
F	FAIL
F(X)	CHARACTERIZED
FOR	FORWARD–STOP(OFF)–REVERSE (MAINTAINED CONTACT)
FSR	FORWARD–STOP–REVERSE (MOMENTARY CONTACT)
FWD	FORWARD
F/R	FORWARD/REVERSE (MOTOR STARTER COILS)
HOA	HAND–OFF–AUTOMATIC (MAINTAINED CONTACT)
HOR	HAND–OFF–REMOTE (MAINTAINED CONTACT)
I	CURRENT–TO–CURRENT
IP	CURRENT–TO–PNEUMATIC
LL	LEAD–LAG (MAINTAINED CONTACT)
LOE	LOSS OF ECHO (ULTRASONIC SENSOR FAILURE)
LOR	LOCAL–OFF–REMOTE (MAINTAINED CONTACT)
LOS	LOCKOUT STOP (LOCKABLE IN "STOP" POSITION. MOMENTARY CONTACT)
L/R	LOCAL–REMOTE (MAINTAINED CONTACT)
MA	MANUAL–AUTOMATIC (MAINTAINED CONTACT)
MOA	MANUAL–OFF–AUTOMATIC (MAINTAINED CONTACT)
O	OPEN
OA	OFF–AUTOMATIC
OCA	OPEN–CLOSE–AUTOMATIC (MAINTAINED CONTACT)
OC	OPEN–CLOSE(D) (MAINTAINED CONTACT)
OSC	OPEN–STOP–CLOSE (MOMENTARY CONTACT SPRING RETURN TO CENTER POSITION)
OO	ON–OFF (MAINTAINED CONTACT)
OOA	ON–OFF–AUTOMATIC (MAINTAINED CONTACT)
OOR	ON–OFF–REMOTE (MAINTAINED CONTACT)
QTY	QUANTITY
R	RUN
REV	REVERSE
RSET	RESET
SBL	SLUDGE BLANKET INTERFACE LEVEL
SP	SPEED POT
SPD	SPEED
SQRT	SQUARE ROOT
SS	START–STOP (MOMENTARY CONTACT)
SSA	START–STOP–AUTOMATIC (MOMENTARY CONTACT)
SSL	START–STOP–LOCK (LOCKABLE IN "STOP" POSITION. MOMENTARY CONTACT)
STRT	START
SUM	SUMMATION
SUSP	SUSPEND
VIB	VIBRATION
X	MULTIPLY

TAG SYMBOLS

	FIELD MOUNTED	PANEL MOUNTED ACCESSIBLE TO OPERATOR	PANEL MOUNTED NONACCESSIBLE TO OPERATOR	MOTOR STARTER MOUNTED ACCESSIBLE TO OPERATOR	MOTOR STARTER MOUNTED NONACCESSIBLE TO OPERATOR
DISCRETE INSTRUMENTS	( )	⊢ ⊣	⊢ – – ⊣	⊢ ‖ ⊣	⊢ = = ⊣
PROGRAMMABLE CONTROLLER–BASED FUNCTIONS			⟨ – – ⟩		⟨ = = ⟩
PANEL MOUNTED OIU FUNCTIONS	( )	⟨ ⟩	⟨ – – ⟩	⟨ ‖ ⟩	⟨ = = ⟩
PC BASED HMI WORKSTATION FUNCTIONS		⊓ ⊔	⊓ – – ⊔		

INSTRUMENT SOCIETY OF AMERICA TABLE

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

LETTER	FIRST LETTER (S)		SUCCEEDING LETTERS		
	PROCESS OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS (*)		ALARM (W. LOGGING)	ANNUNCIATE	
B	BURNER COMBUSTION		USERS CHOICE (*)	USERS CHOICE (*)	USERS CHOICE (*)
C	USERS CHOICE (*)			CONTROL	
D	USERS CHOICE (*)	DIFFERENTIAL			
E	VOLTAGE		PRIMARY ELEMENT		
F	FLOW RATE	RATIO			FEEDBACK
G	USERS CHOICE (*)		GLASS		
H	HAND (MANUAL)				HIGH
I	CURRENT		INDICATE		
J	POWER	SCAN			
K	TIME OR SCHEDULE	TIME RATE OF CHANGE	KEYPAD (DATA ENTRY)	CONTROL STATION	
L	LEVEL		LIGHT (PILOT)		LOW
M	MOTOR	MOMENTARY			MONITORING
N	USERS CHOICE (*)		USERS CHOICE (*)	USERS CHOICE (*)	USERS CHOICE (*)
O	USERS CHOICE (*)		ORIFICE		
P	PRESSURE OR VACUUM		POINT (TEST CONNECTION)		
Q	QUANTITY	INTEGRATE			
R	RADIATION		RECORD, TREND, LOG		
S	SPEED OR FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	UNIVERSAL/MULTIVARIABLE (*)		MULTIFUNCTION (*)	MULTIFUNCTION (*)	MULTIFUNCTION (*)
V	VIBRATION			VALVE	
W	WEIGHT, FORCE, TORQUE		WELL		
X	UNCLASSIFIED (*)	X AXIS	UNCLASSIFIED (*)	UNCLASSIFIED (*)	UNCLASSIFIED (*)
Y	EVENT, STATE	Y AXIS		RELAY OR COMPUTE (*)	
Z	POSITION, DIMENSION	Z AXIS		DRIVE, ACTUATE OR UNCLASSIFIED FINAL CONTROL ELEMENT	

SPECIAL CASES:

ETM – ELAPSED TIME METER
JBX – JUNCTION BOX
NDX – INDEX #
CAM – CAMERA
MS – MOTOR STARTER
MOR – MOTOR OVERLOAD RELAY
MPR – MOTOR PROTECTION RELAY

EQUIPMENT AND VALVE TAG IDENTIFICATION

TAG NUMBER

W–XYZ
**

- W: EQUIPMENT – SEE LIST BELOW
- X: P&ID NUMBER
- Y: LOOP NUMBER
- Z: EQUIPMENT NUMBER
- ** COMPONENT DESIGNATOR

EQUIPMENT LIST

- E – EJECTOR
- G – GATE
- M – MECHANICAL EQUIPMENT
- P – PUMP
- T – TANK
- ATS – AUTOMATIC TRANSFER SWITCH
- EPS – EMERGENCY POWER SYSTEM

SELF CONTAINED VALVE ABBREVIATIONS

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

LOCAL CONTROL PANEL TAG IDENTIFICATION

TAG NUMBER

X–Y

- X: EQUIPMENT – SEE LIST AT RIGHT
- Z: PANEL NUMBER

EQUIPMENT LIST

- LCP – LOCAL CONTROL PANEL
- CS – CONTROL STATION
- ITC – INSTRUMENT TERM. CABINET
- ASD – ADJUSTABLE SPEED DRIVE
- AP – ALARM PANEL
- SP1–LCP SUMP PUMP CONTROL PANEL
- NET NETWORK RACK

DATA HIGHWAY SCHEMATIC ABBREVIATIONS

S	SERIAL LINK (RS232/485)
F	DATA HIGHWAY (FIBER OPTIC)
CE	COPPER ETHERNET
OIU	OPERATOR INTERFACE UNIT
MC	FIBER OPTIC/ COPPER MEDIA CONVERTER
NIC	NETWORK INTERFACE CARD
D	DATA OUTLET

LINE IDENTIFICATION

PROCESS FLOW

FLOW STREAM IDENTIFIERS. SEE PROCESS MECHANICAL LEGEND FOR LIST OF FLOW STREAM IDENTIFIERS

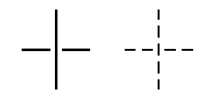
- PI: NEW MAJOR PROCESS FLOW STREAM (CLOSED CONDUIT)
- RAS: NEW INTERMEDIATE PROCESS FLOW STREAM (CLOSED CONDUIT)
- ALP: NEW MINOR PROCESS FLOW STREAM (CLOSED CONDUIT)
- PI: EXISTING MAJOR PROCESS FLOW STREAM (CLOSED CONDUIT)
- RAS: EXISTING INTERMEDIATE PROCESS FLOW STREAM (CLOSED CONDUIT)
- ALP: EXISTING MINOR PROCESS FLOW STREAM (CLOSED CONDUIT)
- PI: NEW MAJOR PROCESS FLOW STREAM (OPEN CONDUIT)
- PI: EXISTING MAJOR PROCESS FLOW STREAM (OPEN CONDUIT)
- PI: HEAT TRACED PROCESS FLOW STREAM (CLOSED CONDUIT)

SIGNALS

- DISCRETE (ON/OFF ETC.)
- A: MODULATED (4 TO 20 mADC ETC.)
- DATA HIGHWAY (COPPER OR FIBER)
- S: SERIAL LINK (RS–232, RS–485)
- INSTRUMENT SUPPLY OR CONNECTION TO EQUIPMENT
- X X: FILLED SYSTEM (CAPILLARY TUBING ETC.)
- PNUEMATIC
- L L: HYDRAULIC
- EM EM: ELECTROMAGNETIC OR SONIC (GUIDED)
- ELECTROMAGNETIC OR SONIC (UNGUIDED)
- MECHANICAL LINK

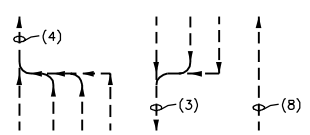
STRUCTURES AND EQUIPMENT

- NEW OR RELOCATED EQUIPMENT
- EXISTING EQUIPMENT
- NEW OR RELOCATED STRUCTURE
- EXISTING STRUCTURE



NON–CONNNECTING LINES

CONNECTING LINES



PARALLELING LINES. (PARENTHETICAL NUMBER INDICATES NUMBER OF SIGNALS REPRESENTED)

GENERAL NOTES

1. HALF–TONED PORTIONS OF P&ID'S

   INDICATE EXISTING DEVICES AND FACILITIES WHICH ARE NOT A PART OF THIS CONTRACT.

2. HALF–TONED RECTANGULAR SHAPES ON P&ID'S

   REPRESENT EXISTING CONTROL PANELS WHICH ARE NOT A PART OF THIS CONTRACT.

3. THERE IS NO INTENT TO SHOW ALL EXISTING FACILITIES OR EQUIPMENT ON THE P&ID'S.

NOTICE:

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

E2

FILE NAME =

DONOHUE

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	DRAWN - DWG	REVISED -	
PLOT SCALE =	CHECKED - MBS	REVISED -	
PLOT DATE =	DATE 09-29-17	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 8 RELOCATION
INSTRUMENTATION & CONTROL
STANDARD LEGEND

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

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14 NORTHWEST HIGHWAY	86 S-H	COOK	156	121
		CONTRACT NO. 60C48		
	ILLINOIS FED. AID PROJECT			

ELECTRICAL ABBREVIATIONS AND SYMBOLS

ABBREVIATIONS

A	AMPERE
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AIC	AMPERE INTERRUPTING CAPACITY
AP	AEGIS PANEL
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
CT	CURRENT TRANSFORMER
DSC	DISCONNECT
DS	DOOR SWITCH
EF	EXHAUST FAN
FAHS	FIRE ALARM HORN STROBE
FAPS	FIRE ALARM PULL STATION
FAS	FIRE ALARM STROBE
FIX	LIGHT FIXTURE
FP	FIRE PANEL
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
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
SPD	SURGE PROTECTIVE DEVICE
TBM	TEMPORARY BENCHMARK
TDR	TIME DELAY RELAY
UH	UNIT HEATER
UPS	UNINTERRUPTABLE POWER SUPPLY
V	VOLTS
VFD	VARIABLE FREQUENCY DRIVE
WP	WEATHERPROOF
XFMR	TRANSFORMER
XP	EXPLOSION PROOF

ELECTRICAL GENERAL NOTES

1. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WIRING, WHETHER SHOWN OR NOT, NECESSARY FOR A COMPLETE SYSTEM.
2. PROVIDE EXPLOSION PROOF SEAL-OFF FITTINGS ON ALL CONDUITS EXITING CLASSIFIED OR RATED LOCATIONS. FITTINGS SHALL BE INSTALLED IN THE CLASSIFIED OR RATED LOCATION.
3. CONTRACTOR IS RESPONSIBLE FOR VERIFYING NUMBER OF CONDUCTORS IN CONDUIT PRIOR TO INSTALLATION.
4. ALL ROOMS EXCEPT ELECTRICAL ROOM SHALL BE CLASS I, DIVISION 2,GROUP D EXPLOSION PROOF.
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, LOCATION (I.E. PUMP ROOM), AND QUANTITY WITHIN THE CIRCUIT. ACCEPTACLE EXAMPLE:

   CIRCUIT 4
   FIXTURE 1
   PUMP ROOM
8. SEE DRAWING G5 AND M1 FOR ADDITIONAL GENERAL NOTES.

PLAN SYMBOLS

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

MOTOR CONTROL CENTER

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.

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

ONE-LINE SYMBOLS

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

SCHEMATIC SYMBOLS

- TERMINAL ON A DEVICE
- 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
- 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
  - TD - TIME DELAY RELAY
  - TDAE - TIME DELAY AFTER ENERGIZATION
  - TDAD - TIME DELAY AFTER DE-ENERGIZATION
- R – INDICATOR LIGHT (SEE SCHEMATIC DIAGRAM DEVICE TABLE FOR COLOR SYMBOLS)
- INDICATOR LIGHT (PUSH TO TEST TYPE)
- GAS SENSOR
- DEVICE ENCLOSURE
- ANN – ANNUNCIATOR
- COUNT – COUNTER
- ETM – ELAPSED TIME METER
- TMR – ELECTRONIC TIMER
- TOT – TOTALIZER

E3

FILE NAME =

DONOHUE

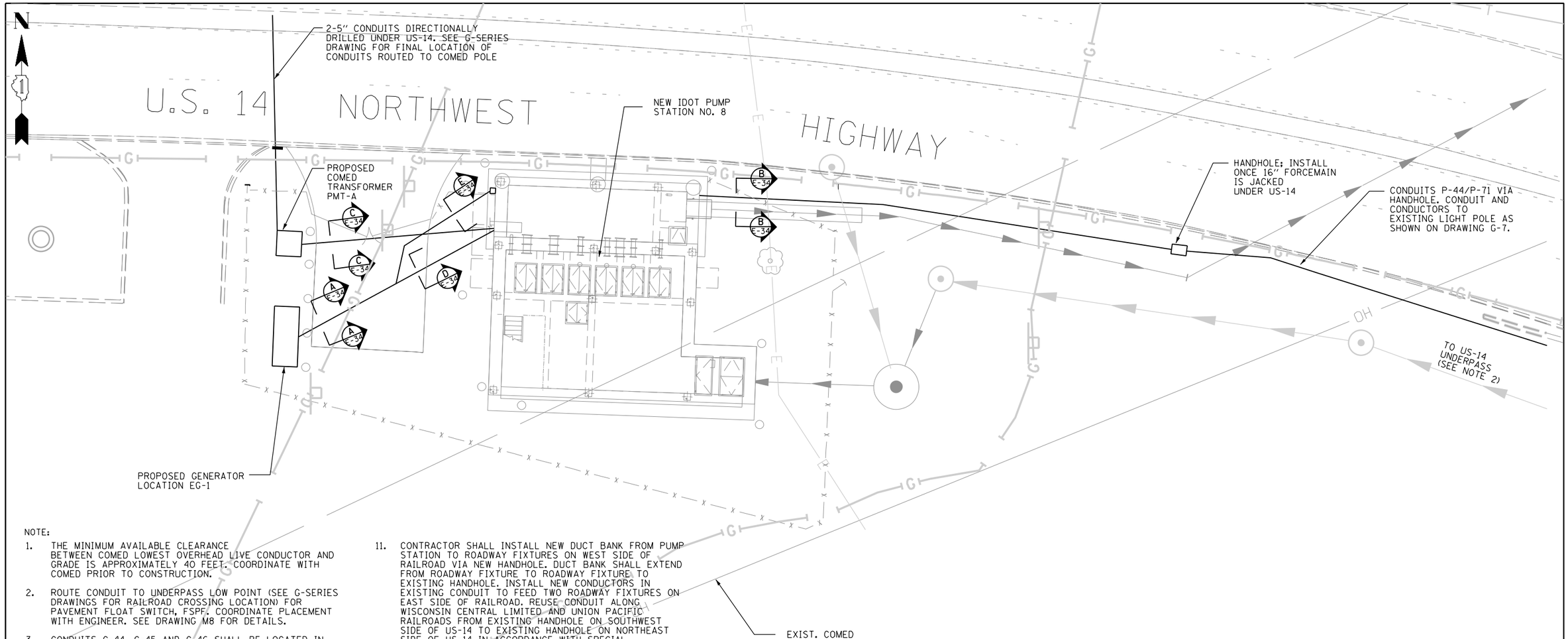
USER NAME =	DESIGNED - MBS	REVISED -
	DRAWN - MBS	REVISED -
PLOT SCALE =	CHECKED - JAB	REVISED -
PLOT DATE =	DATE - 09-29-17	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 8 RELOCATION
ELECTRICAL
ABBREVIATIONS AND SYMBOLS

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

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14	86 S-I-I	COOK	156	122
NORTHWEST HIGHWAY		CONTRACT NO. 60C48		
	ILLINOIS FED. AID PROJECT			



NOTE:

1. THE MINIMUM AVAILABLE CLEARANCE BETWEEN COMED LOWEST OVERHEAD LIVE CONDUCTOR AND GRADE IS APPROXIMATELY 40 FEET. COORDINATE WITH COMED PRIOR TO CONSTRUCTION.
2. ROUTE CONDUIT TO UNDERPASS LOW POINT (SEE G-SERIES DRAWINGS FOR RAILROAD CROSSING LOCATION) FOR PAVEMENT FLOAT SWITCH, FSPF. COORDINATE PLACEMENT WITH ENGINEER. SEE DRAWING M8 FOR DETAILS.
3. CONDUITS C-44, C-45 AND C-46 SHALL BE LOCATED IN DUCT BANK SECTION A.
4. CONTRACTOR TO NOTE EXISTING ADJACENT 345 KV OVERHEAD LINES AND FOLLOW APPLICABLE OSHA REQUIREMENTS. COORDINATE WITH COMED.
5. ALL EXPOSED METALLIC PARTS ASSOCIATED WITH PUMP STATION SHALL BE GROUNDED.
6. CONTRACTOR SHALL COORDINATE CROSSING OF DUCT BANK CONTAINING SECONDARY CONDUCTORS FROM PAD MOUNT TRANSFORMER (PMT-A) AND LIGHTING PANEL AND PLC CONDUCTORS FROM GENERATOR (EG-1).
7. CONTRACTOR SHALL STUB UP CONDUITS C-31, C-58, P-44 AND P-71 ON EAST SIDE OF DISCHARGE CHAMBER, PROVIDE LB FITTINGS BEFORE CONDUITS ENTER CONCRETE SLAB, AND MOUNT CONDUITS IN CONCRETE SLAB, SUCH THAT CONDUITS ARE NOT EXPOSED AND DO NOT CREATE A TRIPPING HAZARD.
8. CONTRACTOR SHALL PROVIDE PULLBOX ON EXTERIOR OF PUMP STATION FOR DUCT BANK 'E'. CONDUITS SHALL ENTER PUMP ABOVE GRADE SUCH THAT CONDUITS ARE ROUTED OVERHEAD OF ELECTRICAL EQUIPMENT WITHIN ELECTRICAL CONTROL ROOM; PROVIDE LB FITTINGS BEFORE CONDUITS ENTER PUMP STATION EXTERIOR WALL.
9. CONTRACTOR SHALL FIELD VERIFY EXISTING ROADWAY FIXTURE TYPE. REPLACE EXISTING FIXTURES WITH LED LUMINAIRE AND REPLACE EXISTING BALLASTS WITH MULTI-TAP BALLAST; TYPICAL OF FOUR. SEE DRAWING G-7 FOR LOCATION INFORMATION.
11. CONTRACTOR SHALL INSTALL NEW DUCT BANK FROM PUMP STATION TO ROADWAY FIXTURES ON WEST SIDE OF RAILROAD VIA NEW HANDHOLE. DUCT BANK SHALL EXTEND FROM ROADWAY FIXTURE TO ROADWAY FIXTURE TO EXISTING HANDHOLE. INSTALL NEW CONDUCTORS IN EXISTING CONDUIT TO FEED TWO ROADWAY FIXTURES ON EAST SIDE OF RAILROAD. REUSE CONDUIT ALONG WISCONSIN CENTRAL LIMITED AND UNION PACIFIC RAILROADS FROM EXISTING HANDHOLE ON SOUTHWEST SIDE OF US-14 TO EXISTING HANDHOLE ON NORTHEAST SIDE OF US-14 IN ACCORDANCE WITH SPECIAL PROVISIONS. CONTRACTOR RESPONSIBLE FOR APPURTENANCES TO INTERCONNECT EXISTING AND PROPOSED RACEWAYS. CONTRACTOR SHALL COORDINATE ROADWAY LIGHTING AND FIBER DUCT BANK CROSSINGS.

SCALE: 0 5 10 20 FT.

E4

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

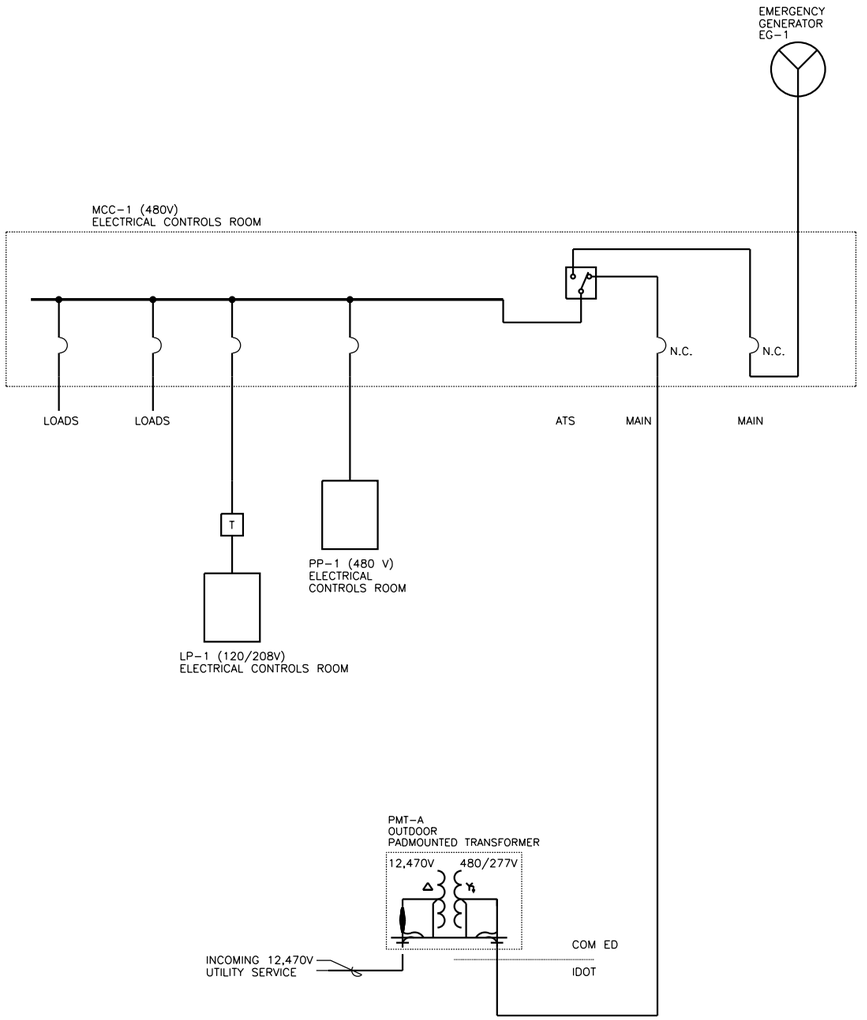
PUMP STATION NO. 8 RELOCATION
ELECTRICAL
SITE PLAN

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

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14	86 S-I-I	COOK	156	123
NORTHWEST HIGHWAY		CONTRACT NO. 60C48		
	ILLINOIS FED. AID PROJECT			

NOTES:

1. 12.47KV CONDUCTORS FURNISHED AND INSTALLED BY THE ELECTRICAL UTILITY (COM ED). CONTRACTOR TO INSTALL TWO – 5" CONDUITS FROM TRANSFORMER TO POLES AS SHOWN ON THE G SERIES OF DRAWINGS. CONTRACTOR SHALL PROVIDE SECONDARY 480V CONDUCTORS AND CONDUIT. COORDINATE WITH COM ED. ALL TERMINATIONS ON TRANSFORMER BY COMED.



OVERALL ELECTRICAL ONE-LINE DIAGRAM

NTS

E5

FILE NAME =

DONOHUE

USER NAME =	DESIGNED - MBS	REVISED -
	DRAWN - MBS	REVISED -
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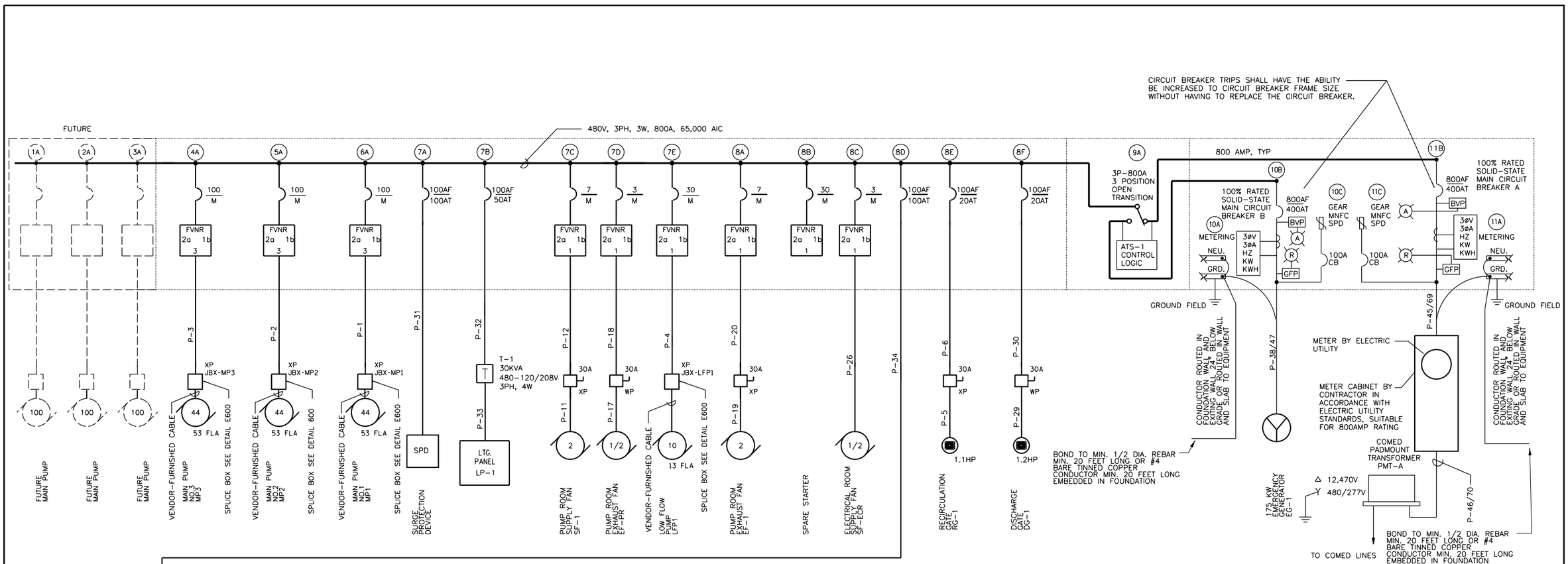
PLOT DATE =	DATE - 09-29-17	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 8 RELOCATION
ELECTRICAL
OVERALL ONE-LINE DIAGRAM

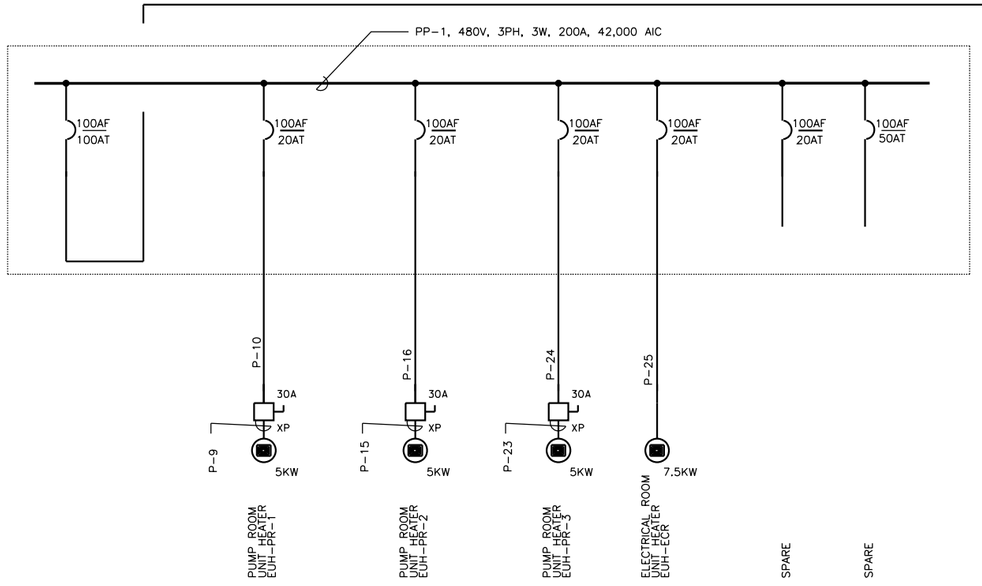
SCALE: | SHEET OF SHEETS | STA. | TO STA.

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14	86 S-I-I	COOK	156	124
NORTHWEST HIGHWAY		CONTRACT NO. 60C48		
	ILLINOIS FED. AID PROJECT			



MCC-1 ONE-LINE DIAGRAM
ELECTRICAL CONTROLS ROOM

NTS



NOTE: SEE PANEL SCHEDULE FOR REQUIRED SPARE BREAKERS AND PREPARED SPACES.

PP-1 ONE-LINE DIAGRAM
ELECTRICAL CONTROLS ROOM

NTS

NOTES:

1. MAIN BUS SIZED FOR FUTURE LOAD AND SHALL BE PROVIDED AS SHOWN.
2. AMBER INDICATING LIGHTS IN MAIN BREAKER SECTION SHALL ENERGIZE WHEN BUS BARS ARE ENERGIZED.
3. MCC MANUFACTURER SHALL BE RESPONSIBLE FOR SIZING AND PROVIDING CABLING TO AND FROM ATS.
4. SEE DRAWING E7 FOR MCC ELEVATION AND DRAWING E8 FOR FRONT OF BUCKET DEVICES AND NAMEPLATE REQUIREMENTS.
5. EQUIPMENT SHOWN AS FUTURE IS FOR REFERENCE ONLY. DO NOT PROVIDE EQUIPMENT IDENTIFIED AS FUTURE. MCC MANUFACTURER IS RESPONSIBLE FOR PROVIDING ONE LINE DIAGRAM AND DETAILED WIRING DIAGRAMS PREPARED BY MANUFACTURER AS SHOP DRAWING SUBMITTAL.
6. DISCONNECTS IDENTIFIED AS WP SHALL BE PROVIDED WITH NEMA 4X 316 SS ENCLOSURES. DISCONNECTS AND BREAKERS WITHIN MCC AND PANELS SHALL INCLUDE PROVISIONS TO BE PAD-LOCKED IN THE OFF POSITION. DISCONNECTS LOCATED OUTSIDE OF BUILDING SHALL INCLUDE PROVISIONS TO BE LOCKED IN BOTH THE OFF AND ON POSITIONS.
7. SEE DRAWING E37 FOR CONDUIT SCHEDULE.
8. PROVIDE UFER GROUND FROM SERVICE ENTRANCE INTO BUILDING FOUNDATION PER NEC. SERVICE ENTRANCE SHALL BE GROUNDED TO BUILDING GROUND GRID. MCC SHALL HAVE A COMMON GROUND ON NEUTRAL BUS WITH A SINGLE BOND FOR THE MAIN BREAKERS. GENERATOR SHALL BE CONFIGURED AS A NOT SEPARATELY DERIVED SYSTEM WITH NO GROUND-NEUTRAL BOND IN THE GENERATOR.
9. MCC, BREAKERS AND TRANSFER SWITCH (POWER FAILURE AND LOSS OF BUS VOLTAGE) SHALL BE PROVIDED WITH DRY CONTACTS PER SPECIFICATIONS FOR I/O TO SCADA.
10. MAIN BREAKERS SPD'S AND CONNECTING CIRCUIT BREAKERS SHALL BE SERVICE ENTRANCE RATED.
11. EXISTING MAIN PUMPS WILL BE REPLACED WITH 100 HP PUMPS IN FUTURE; SECOND POWER SYSTEM STUDIES MODEL SHALL BE BASED ON 5 - 100 HP PUMPS OPERATING.
12. MCC MANUFACTURER SHALL PROVIDE A ONE LINE DIAGRAM AS SHOP DRAWING SUBMITTAL.

E6

FILE NAME =

DONOHUE

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PLOT SCALE =	CHECKED - JAB	REVISED -
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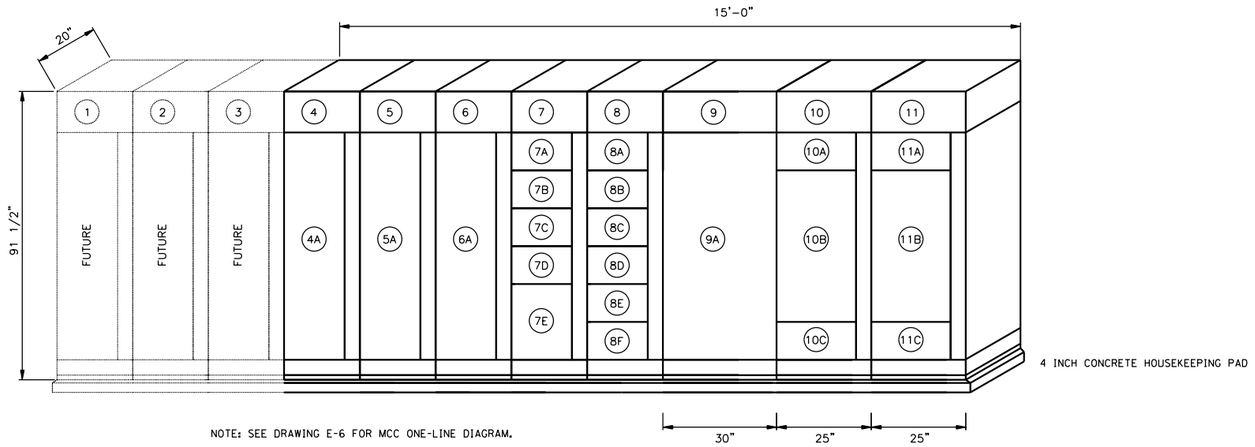
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 8 RELOCATION
ELECTRICAL
MCC ONE-LINE DIAGRAM

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

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14	86 S-I-I	COOK	156	125
NORTHWEST HIGHWAY		CONTRACT NO. 60C48		
	ILLINOIS FED. AID PROJECT			



NOTE: SEE DRAWING E-6 FOR MCC ONE-LINE DIAGRAM.

MCC-1
ELEVATION
ELECTRICAL CONTROLS ROOM

NTS

E7

FILE NAME =

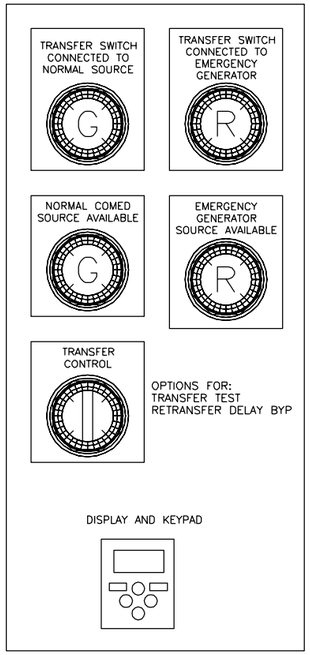
DONOHUE	USER NAME =	DESIGNED - MBS	REVISED -
		DRAWN - MBS	REVISED -
	PLOT SCALE =	CHECKED - JAB	REVISED -
	PLOT DATE =	DATE - 09-29-17	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

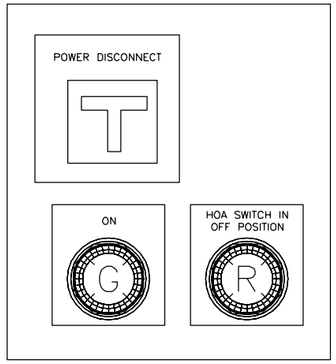
PUMP STATION NO. 8 RELOCATION
ELECTRICAL
MCC ELEVATION

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

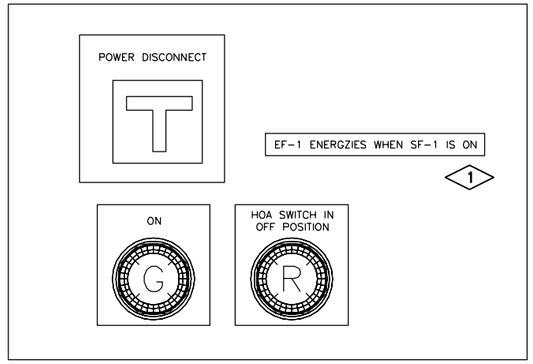
RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14	86 S-I-I	COOK	156	126
NORTHWEST HIGHWAY		CONTRACT NO. 60C48		
	ILLINOIS FED. AID PROJECT			



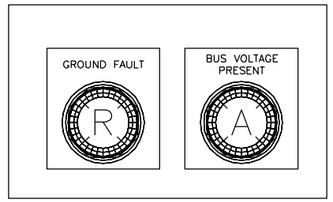
AUTOMATIC TRANSFER SWITCH
ATS–1



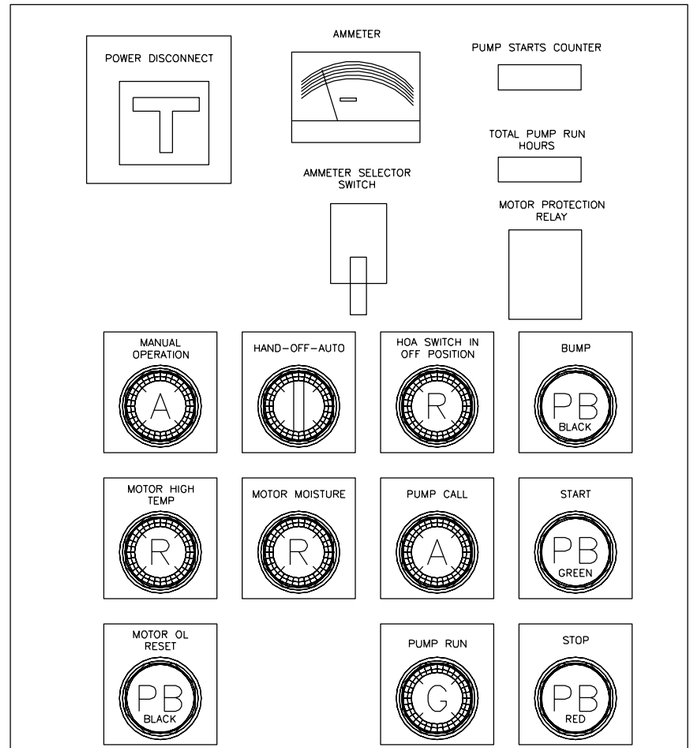
SUPPLY FANS <2>



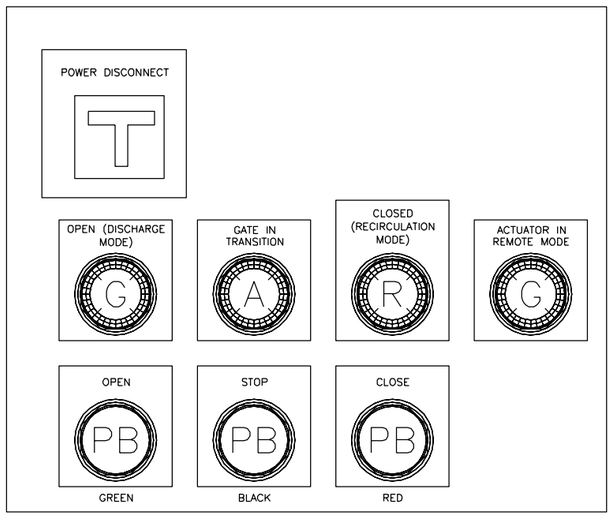
EXHAUST FANS <2>



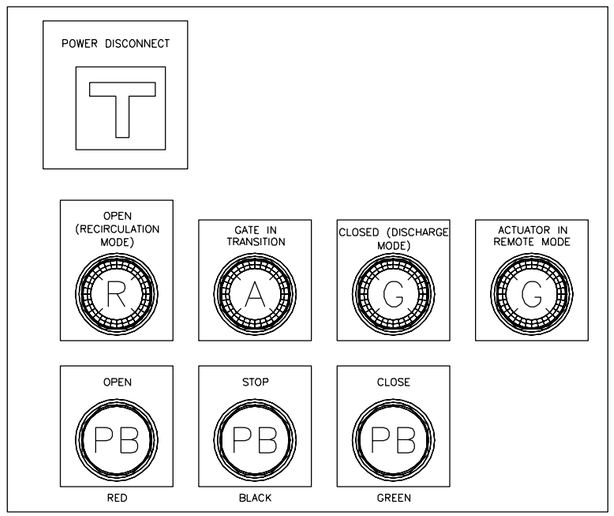
MAIN BREAKERS; POWER
METERS NOT SHOWN



PUMP STARTER <2>



DISCHARGE GATE
ACTUATOR – DG–1



RECIRCULATION GATE
ACTUATOR – RG–1

PLAN NOTES: <2>

1. NAMEPLATE SHALL BE PROVIDED FOR EF–1 AS SHOWN.
2. PROVIDE MANUAL RESET PUSHBUTTON PER SPECIAL PROVISIONS.

E8

FILE NAME =

DONOHUE

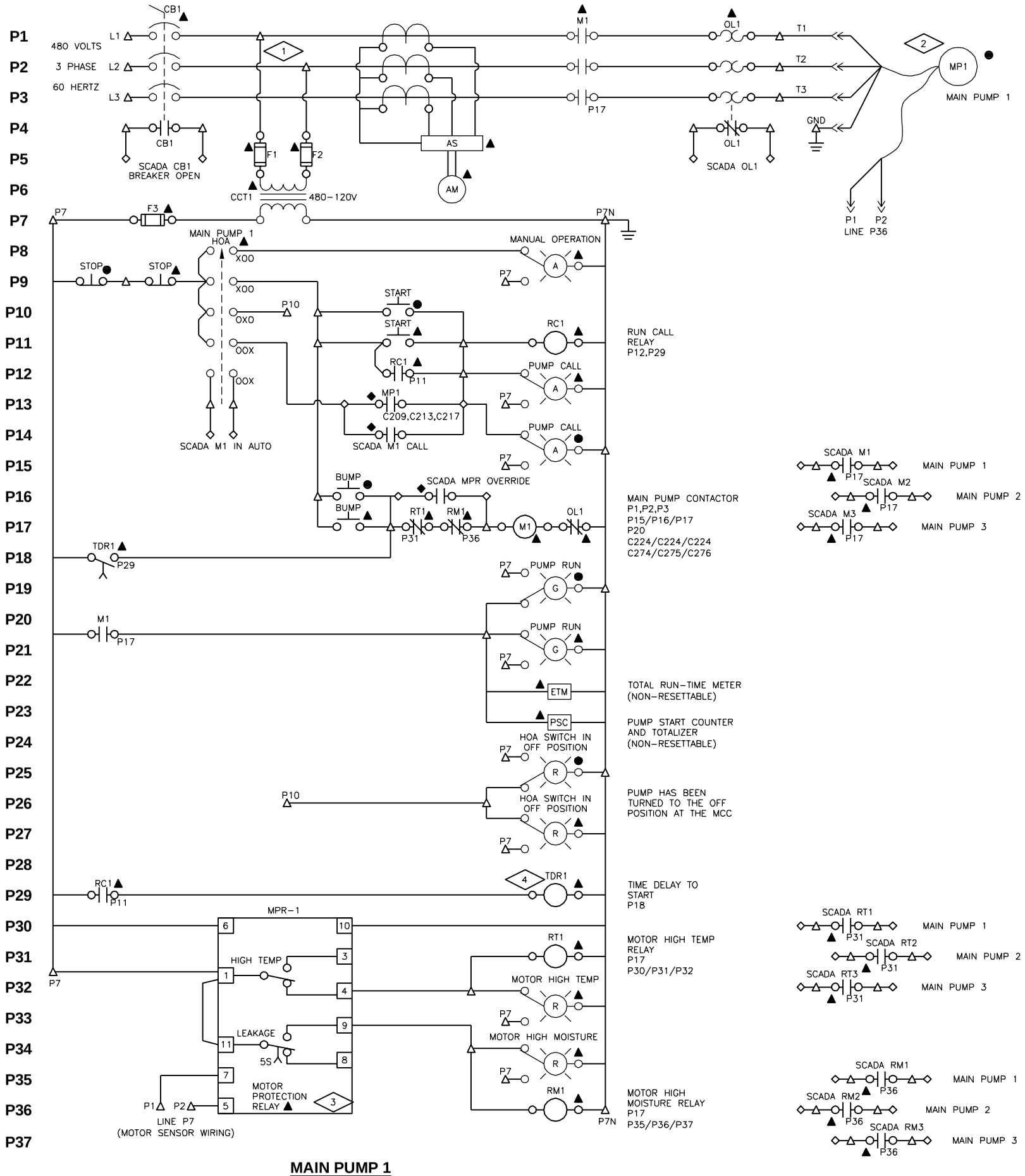
USER NAME =	DESIGNED - MBS	REVISED -
	DRAWN - MBS	REVISED -
PLOT SCALE =	CHECKED - JAB	REVISED -
PLOT DATE =	DATE 09-29-17	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 8 RELOCATION
MCC DEVICES

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

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14 NORTHWEST HIGHWAY	86 S-H	COOK	156	127
		CONTRACT NO. 60C48		
	ILLINOIS	FED. AID PROJECT		



MAIN PUMP 1

TYPICAL FOR MP2, MP3, AND FUTURE PUMPS.

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. EACH CONTROL CIRCUIT TRANSFORMER SHALL DERIVE PRIMARY VOLTAGE FROM PHASE PAIRS AS FOLLOWS:
   (PUMP 1 = L1-L2)
   (PUMP 2 = L2-L3)
   (PUMP 3 = L1-L3)
   (LOW FLOW PUMP 1 = L1-L2)
2. SOME PUMP MANUFACTURERS HAVE POWER AND MONITORING WIRES IN ONE CABLE. CONTRACTOR SHALL COORDINATE WITH PUMP MANUFACTURER.
3. 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.
4. TIME DELAY RELAYS SHALL BE SET FOR 10, 15, AND 20 SECONDS FOR PUMPS MP1, MP2, AND MP3 RESPECTIVELY.

LEGEND:

- △ TERMINAL IN MCC
- ◇ TERMINAL IN SCADA PANEL
- ▲ DEVICE IN MCC
- ◆ DEVICE IN SCADA PANEL
- ● DEVICE LOCALLY MOUNTED

DONOHUE	USER NAME =	DESIGNED - DWG	REVISED -
		DRAWN - DWG	REVISED -
	PLOT SCALE =	CHECKED - JAB	REVISED -
	PLOT DATE =	DATE 09-29-17	REVISED -

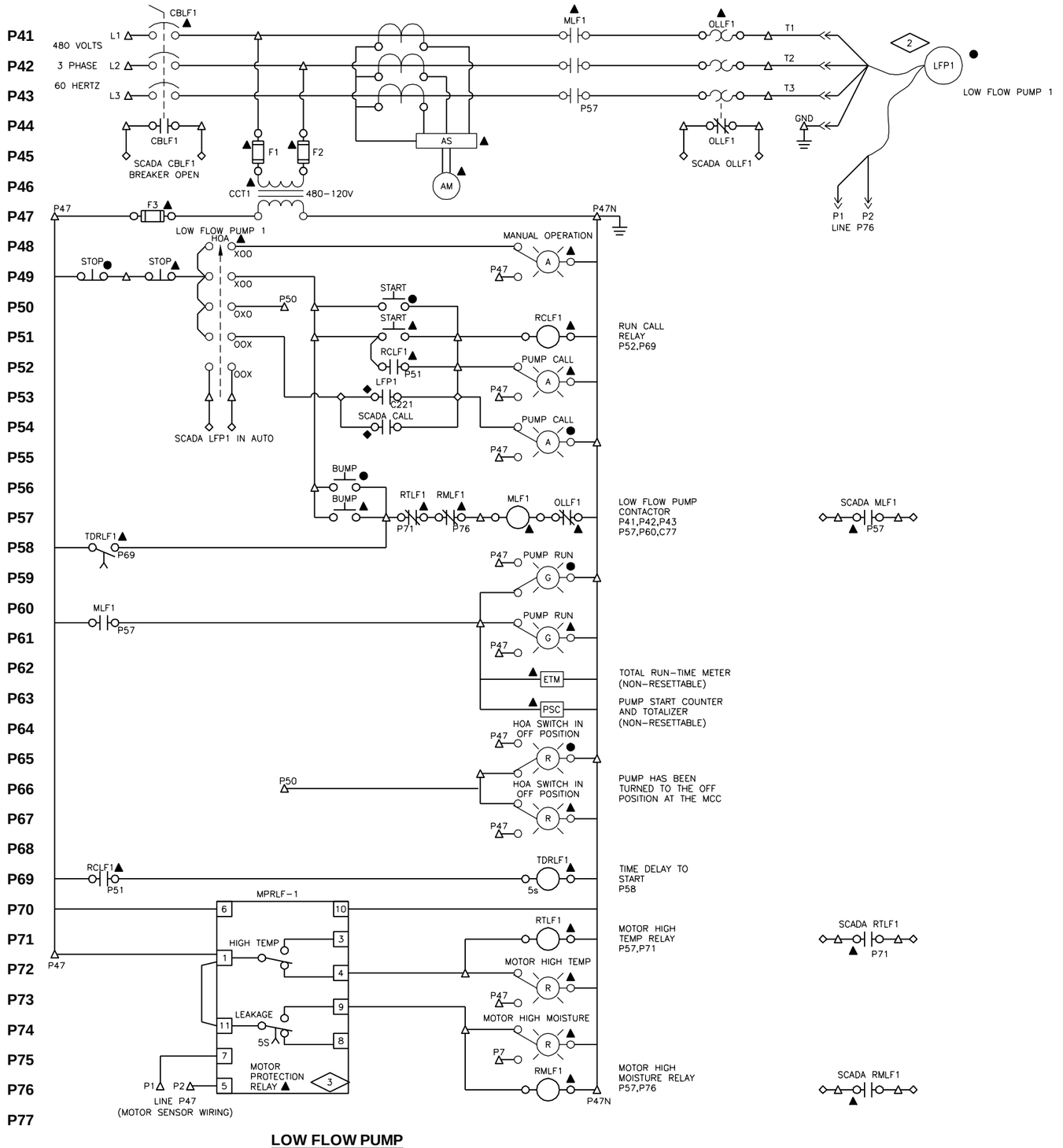
FILE NAME =

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 8 RELOCATION
MAIN PUMP CONTROL SCHEMATICS

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

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14 NORTHWEST HIGHWAY	86 S-I-I	COOK	156	128
		CONTRACT NO. 60C48		
	ILLINOIS FED. AID PROJECT			



LOW FLOW PUMP

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. NOT USED.
2. SOME PUMP MANUFACTURERS HAVE POWER AND MONITORING WIRES IN ONE CABLE. CONTRACTOR SHALL COORDINATE WITH PUMP MANUFACTURER.
3. 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.

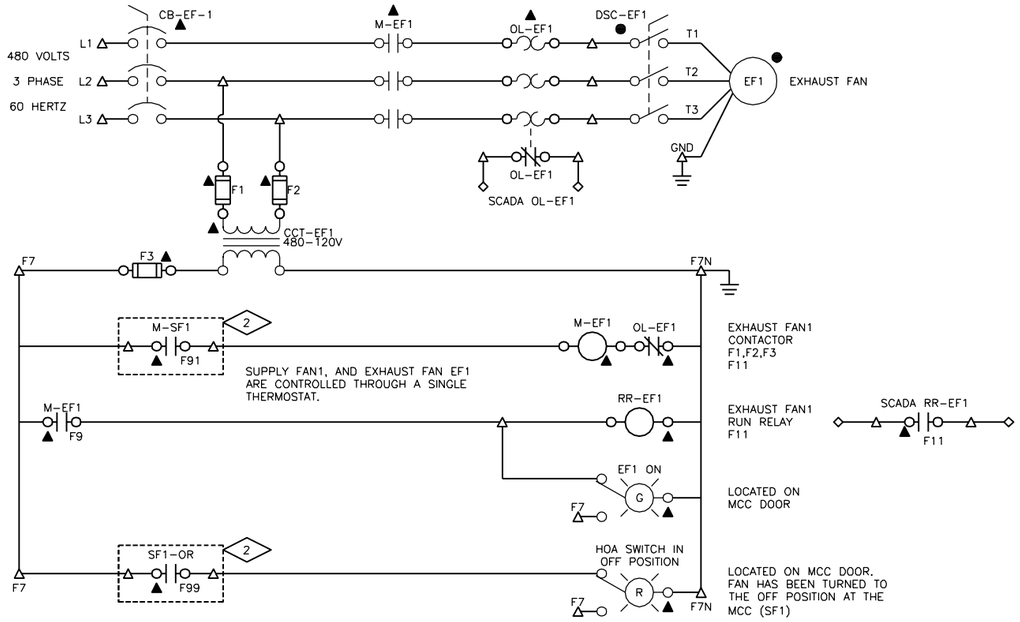
LEGEND:

- △ TERMINAL IN MCC
- ◇ TERMINAL IN SCADA PANEL
- ▲ DEVICE IN MCC
- ◆ DEVICE IN SCADA PANEL
- ● DEVICE LOCALLY MOUNTED

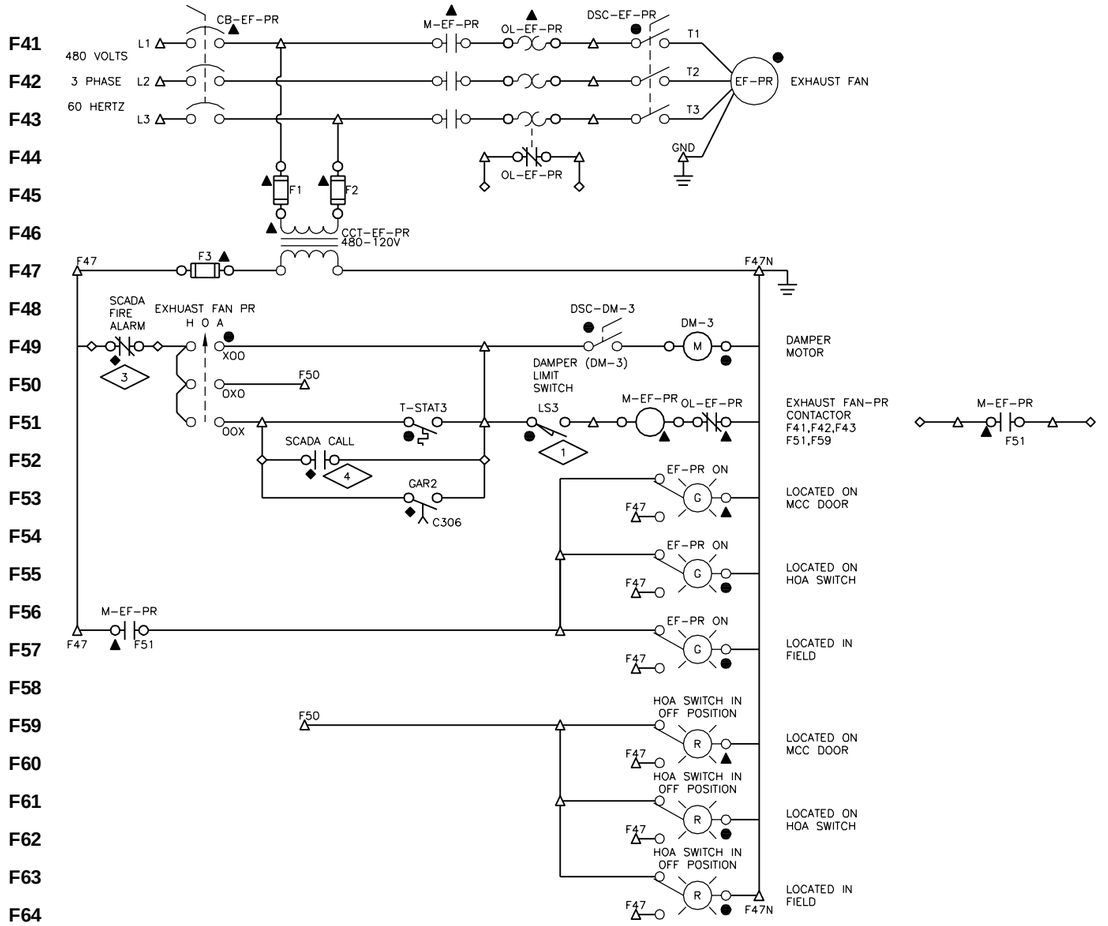
E10

DONOHUE	USER NAME =	DESIGNED - DWG	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	PUMP STATION NO. 8 RELOCATION LOW FLOW PUMP CONTROL SCHEMATICS						
		DRAWN - DWG	REVISED -								
	PLOT SCALE =	CHECKED - MBS	REVISED -								
	PLOT DATE =	DATE 09-29-17	REVISED -		SCALE:	SHEET OF SHEETS	STA.	TO STA.	RTE.	SECTION	COUNTY / TOTAL SHEETS / SHEET NO.
									US 14 NORTHWEST HIGHWAY	86 S-I-I	COOK / 156 / 129
											CONTRACT NO. 60C48
										ILLINOIS	FED. AID PROJECT

FILE NAME =



PUMP STATION EXHAUST FAN - EF1



PUMP ROOM EXHAUST FAN - EF-PR

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. LIMIT SWITCH IS SHOWN IN THE DAMPER CLOSED POSITION. LIMIT SWITCH CLOSES WHEN DAMPER IS OPEN.
2. LOCATED IN SUPPLY FAN1 MCC BUCKET.
3. CONTACT OPENS WHEN FIRE ALARM PRESENT.
4. CONTACT CLOSES WHEN LIGHTS ARE ON IN PUMP ROOM. SEE DRAWING E19 FOR LIGHTING CIRCUITS.

LEGEND:

- △ TERMINAL IN MCC
- ◇ TERMINAL IN SCADA PANEL
- ▲ DEVICE IN MCC
- ◆ DEVICE IN SCADA PANEL
- ● DEVICE LOCALLY MOUNTED

E11

FILE NAME =

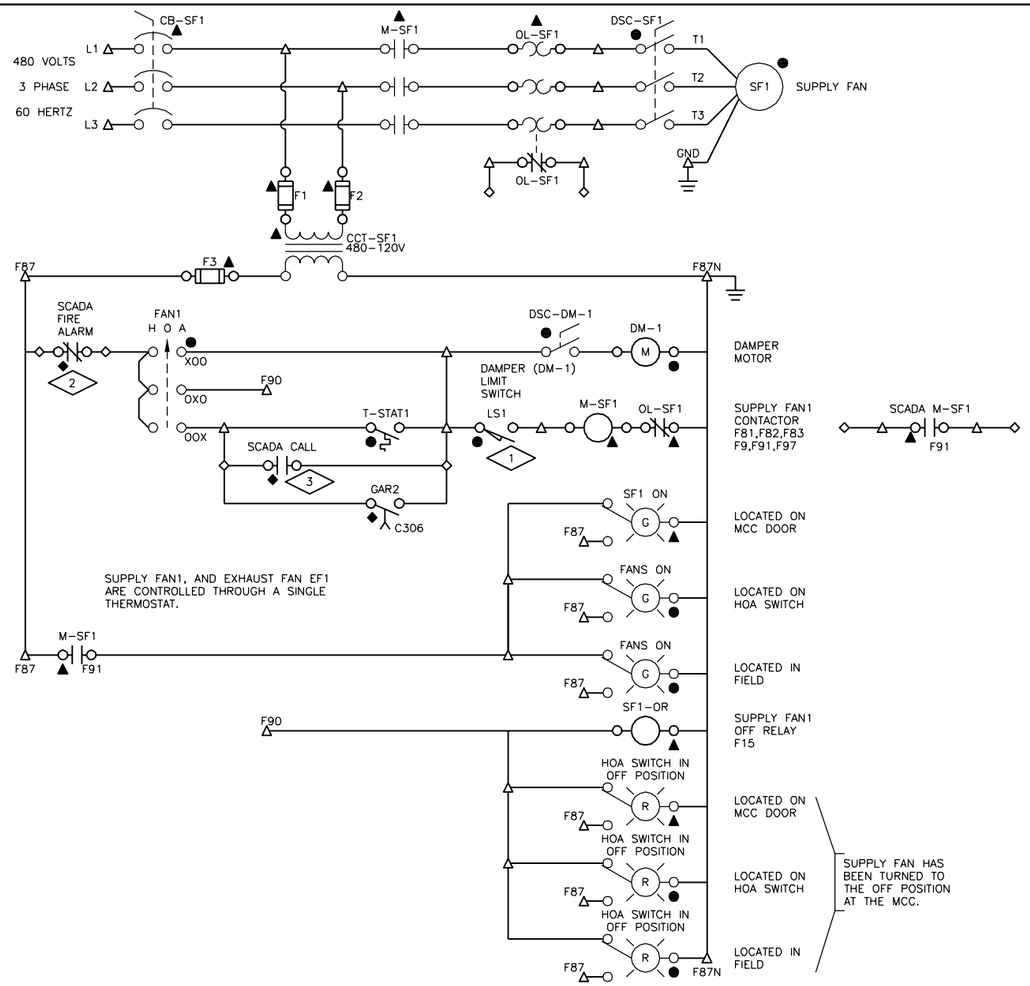
DONOHUE	USER NAME =	DESIGNED - DWG	REVISED -
		DRAWN - DWG	REVISED -
	PLOT SCALE =	CHECKED - MBS	REVISED -
	PLOT DATE =	DATE 09-29-17	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

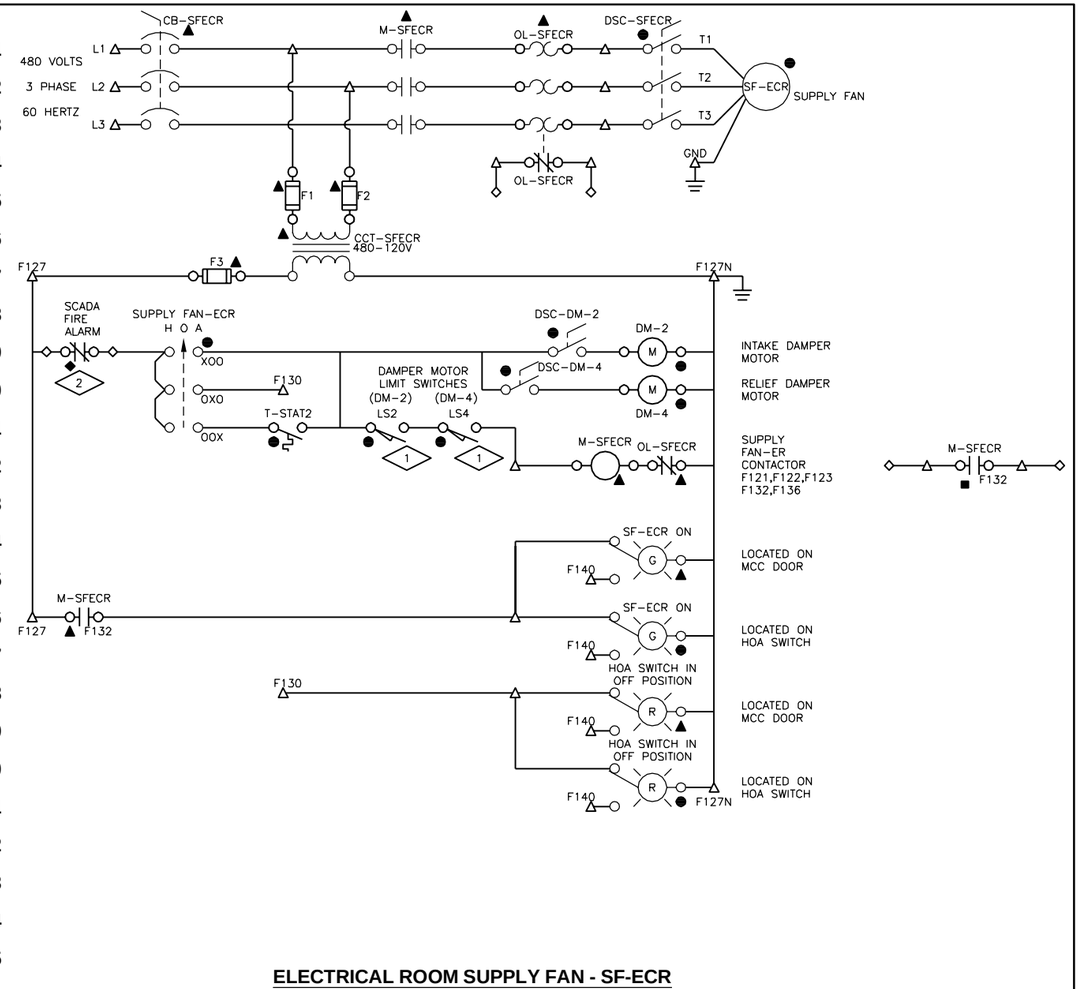
PUMP STATION NO. 8 RELOCATION
EXHAUST FANS
CONTROL SCHEMATICS

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

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14 NORTHWEST HIGHWAY	86 S-H	COOK	156	130
		CONTRACT NO. 60C48		
	ILLINOIS FED. AID PROJECT			



PUMP STATION SUPPLY FAN - SF1



ELECTRICAL ROOM SUPPLY FAN - SF-ECR

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. LIMIT SWITCH IS SHOWN IN THE DAMPER CLOSED POSITION. LIMIT SWITCH CLOSES WHEN DAMPER IS OPEN.
2. CONTACT OPENS WHEN FIRE ALARM PRESENT.
3. CONTACT CLOSES WHEN LIGHTS ARE ON IN STAIRWELL. SEE DRAWING E19 FOR LIGHTING CIRCUITS.

LEGEND:

- △ TERMINAL IN MCC
- ◇ TERMINAL IN SCADA PANEL
- ▲ DEVICE IN MCC
- ◆ DEVICE IN SCADA PANEL
- ● DEVICE LOCALLY MOUNTED

FILE NAME = DWG

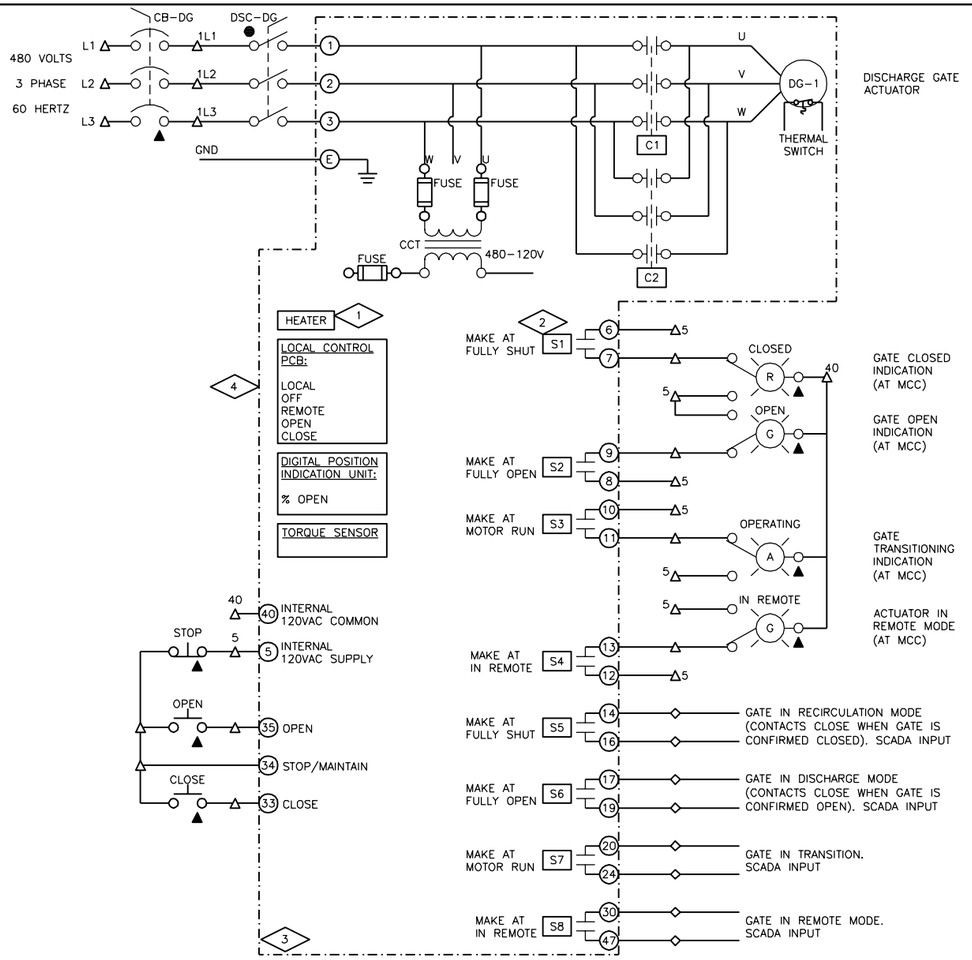
DONOHUE	USER NAME =	DESIGNED -	REVISED -
		DRAWN - DWG	REVISED -
	PLOT SCALE =	CHECKED - MBS	REVISED -
	PLOT DATE =	DATE 09-29-17	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

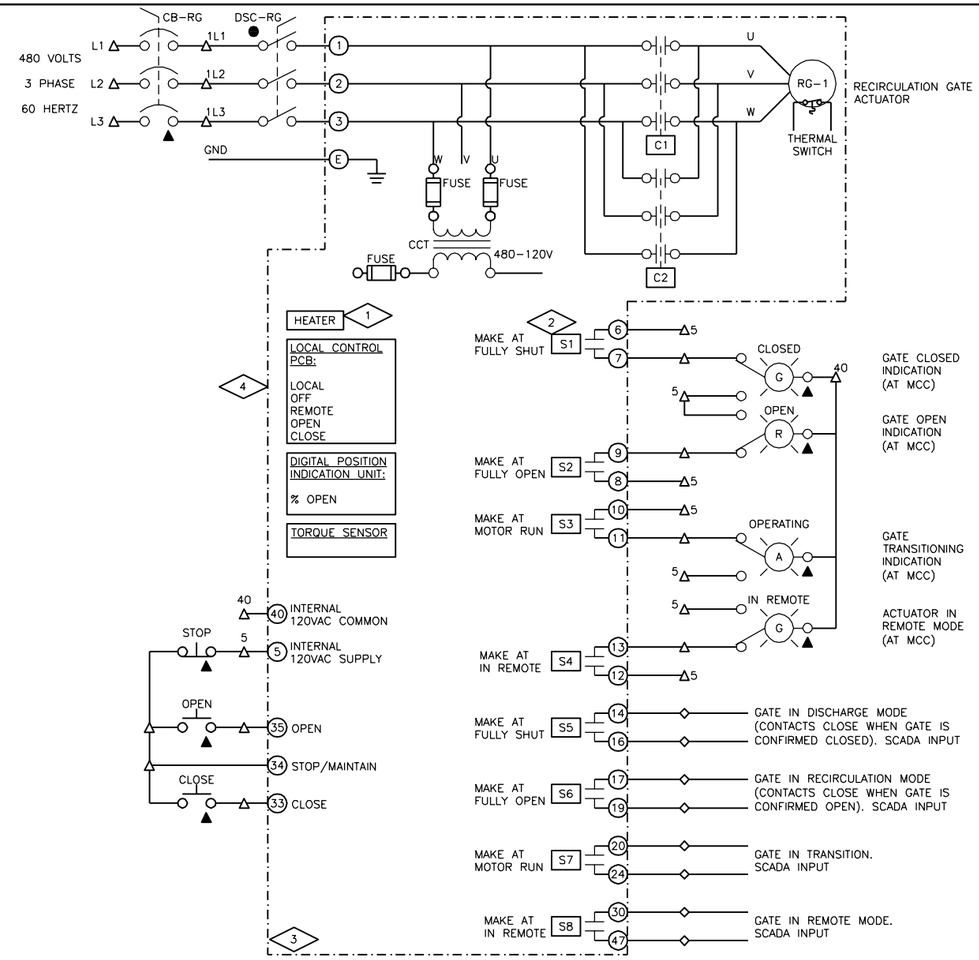
PUMP STATION NO. 8 RELOCATION
SUPPLY FANS
CONTROL SCHEMATICS

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

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14 NORTHWEST HIGHWAY	86 S-H	COOK	156	131
		CONTRACT NO. 60C48		
	ILLINOIS FED. AID PROJECT			



DISCHARGE GATE ACTUATOR - DG-1●



RECIRCULATION GATE ACTUATOR - RG-1●

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. SEE SPECIFICATIONS FOR HEATER REQUIREMENTS.
2. S1 THROUGH S8 ARE CONFICURABLE OUTPUTS, AND SHALL BE CONFIGURED AS SHOWN.
3. GATE ACTUATOR WIRING DIAGRAM IS REPRESENTATIVE OF MANUFACTURER ROTORK. IF ANOTHER MANUFACTURER IS APPROVED, THEN CONTRACTOR SHALL PROVIDE SIMILAR FUNCTIONALITY AND COORDINATE WIRING REQUIREMENTS WITH VENDOR.
4. LOCAL-OFF-REMOTE SWITCH SHALL BE PAD-LOCKABLE.

LEGEND:

- △ TERMINAL IN MCC
- ◇ TERMINAL IN SCADA PANEL
- ▲ DEVICE IN MCC
- ◆ DEVICE IN SCADA PANEL
- ● DEVICE LOCALLY MOUNTED

FILE NAME =

DONOHUE

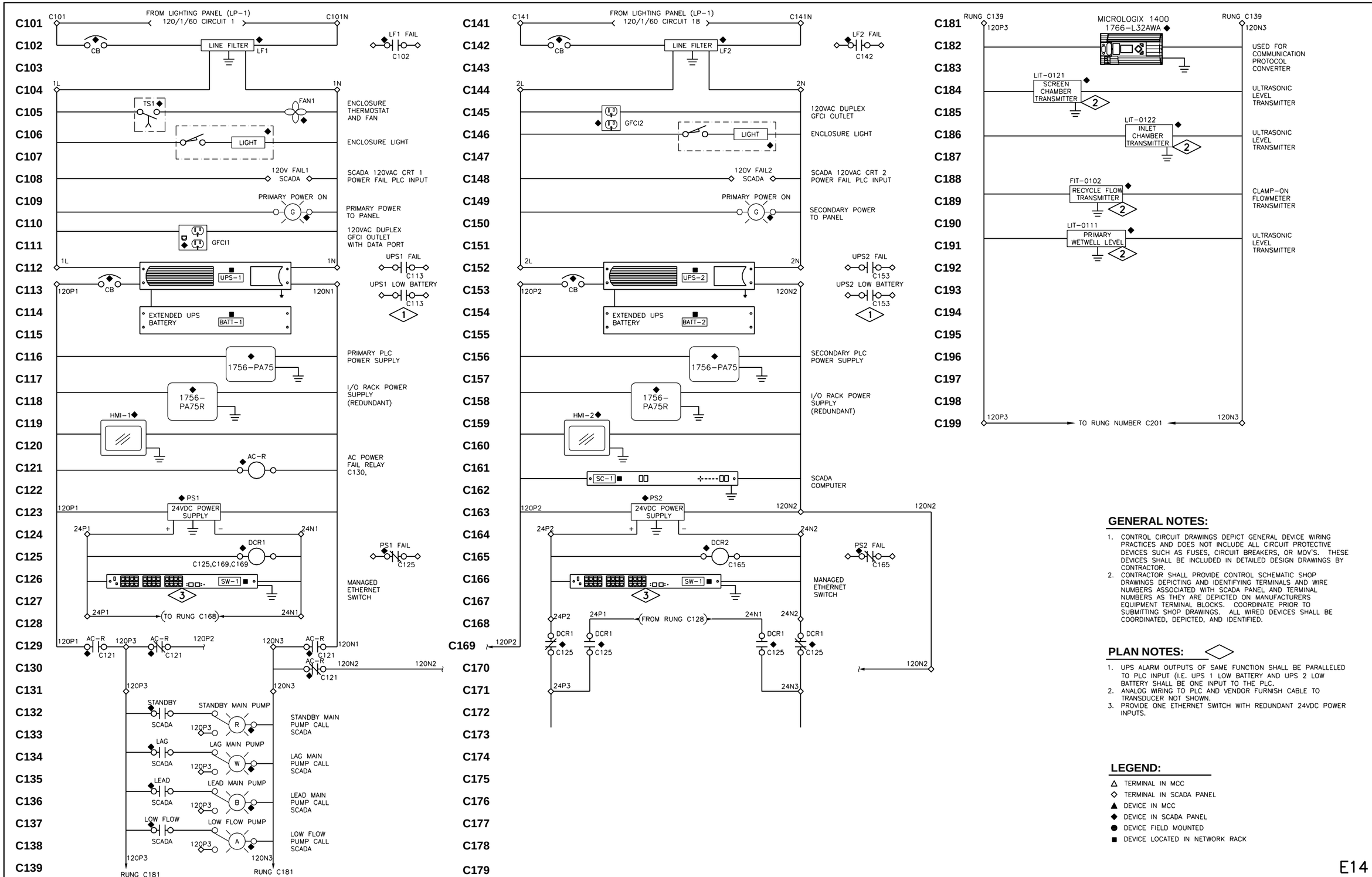
USER NAME =	DESIGNED - DWG	REVISED -	
	DRAWN - DWG	REVISED -	
PLOT SCALE =	CHECKED - MBS	REVISED -	
PLOT DATE =	DATE 09-29-17	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 8 RELOCATION
ELECTRIC GATE ACTUATORS
CONTROL SCHEMATICS

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

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14 NORTHWEST HIGHWAY	86 S-H	COOK	156	132
		CONTRACT NO. 60C48		
	ILLINOIS FED. AID PROJECT			



GENERAL NOTES:

1. CONTROL CIRCUIT DRAWINGS DEPICT GENERAL DEVICE WIRING PRACTICES AND DOES NOT INCLUDE ALL CIRCUIT PROTECTIVE DEVICES SUCH AS FUSES, CIRCUIT BREAKERS, OR MOV'S. THESE DEVICES SHALL BE INCLUDED IN DETAILED DESIGN DRAWINGS BY CONTRACTOR.
2. 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. UPS ALARM OUTPUTS OF SAME FUNCTION SHALL BE PARALLELED TO PLC INPUT (I.E. UPS 1 LOW BATTERY AND UPS 2 LOW BATTERY SHALL BE ONE INPUT TO THE PLC.
2. ANALOG WIRING TO PLC AND VENDOR FURNISH CABLE TO TRANSDUCER NOT SHOWN.
3. PROVIDE ONE ETHERNET SWITCH WITH REDUNDANT 24VDC POWER INPUTS.

LEGEND:

- △ TERMINAL IN MCC
- ◇ TERMINAL IN SCADA PANEL
- ▲ DEVICE IN MCC
- ◆ DEVICE IN SCADA PANEL
- ● DEVICE FIELD MOUNTED
- ■ DEVICE LOCATED IN NETWORK RACK

E14

FILE NAME =

DONOHUE

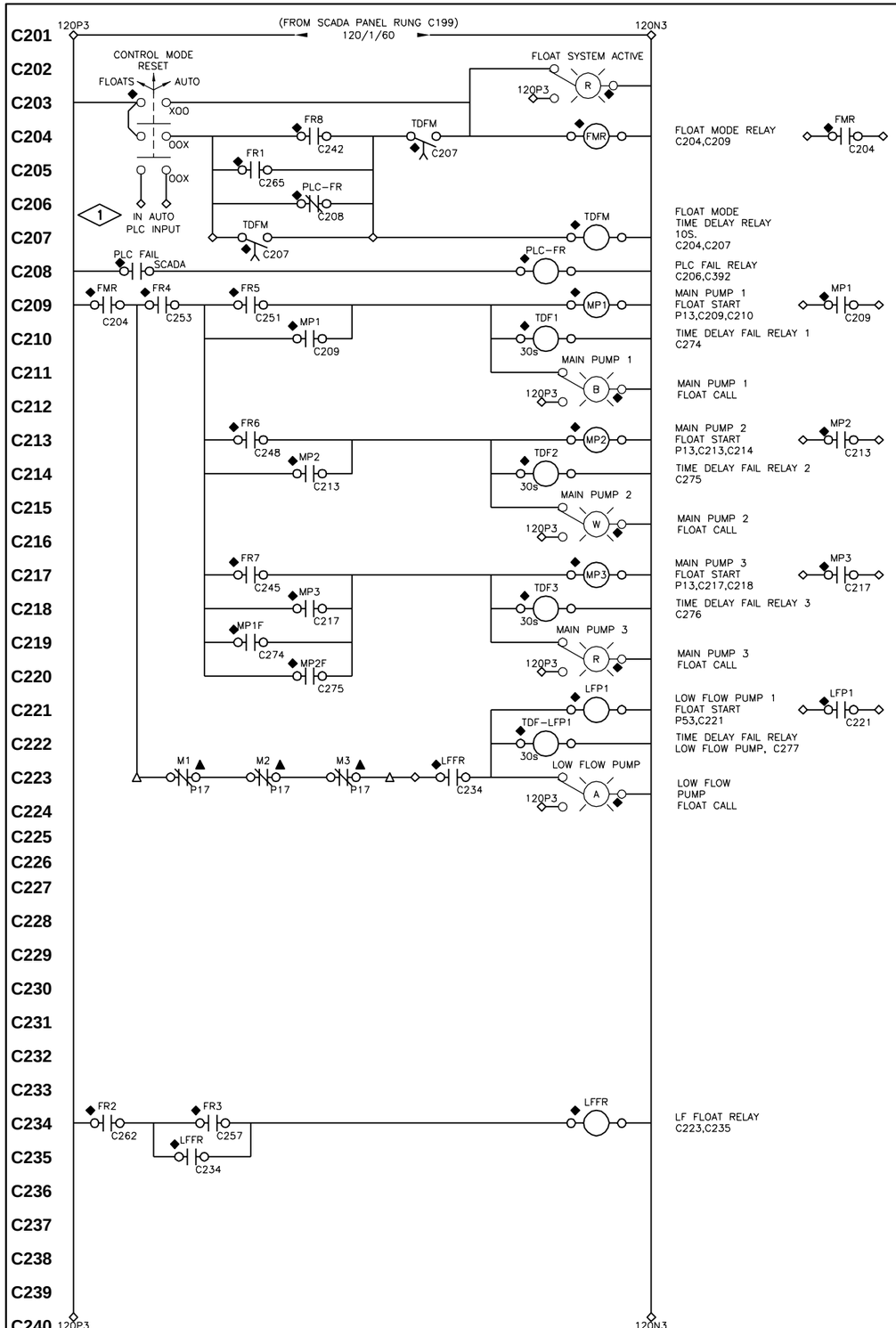
USER NAME =	DESIGNED - DWG	REVISED -	
	DRAWN - DWG	REVISED -	
PLOT SCALE =	CHECKED - MBS	REVISED -	
PLOT DATE =	DATE 09-29-17	REVISED -	

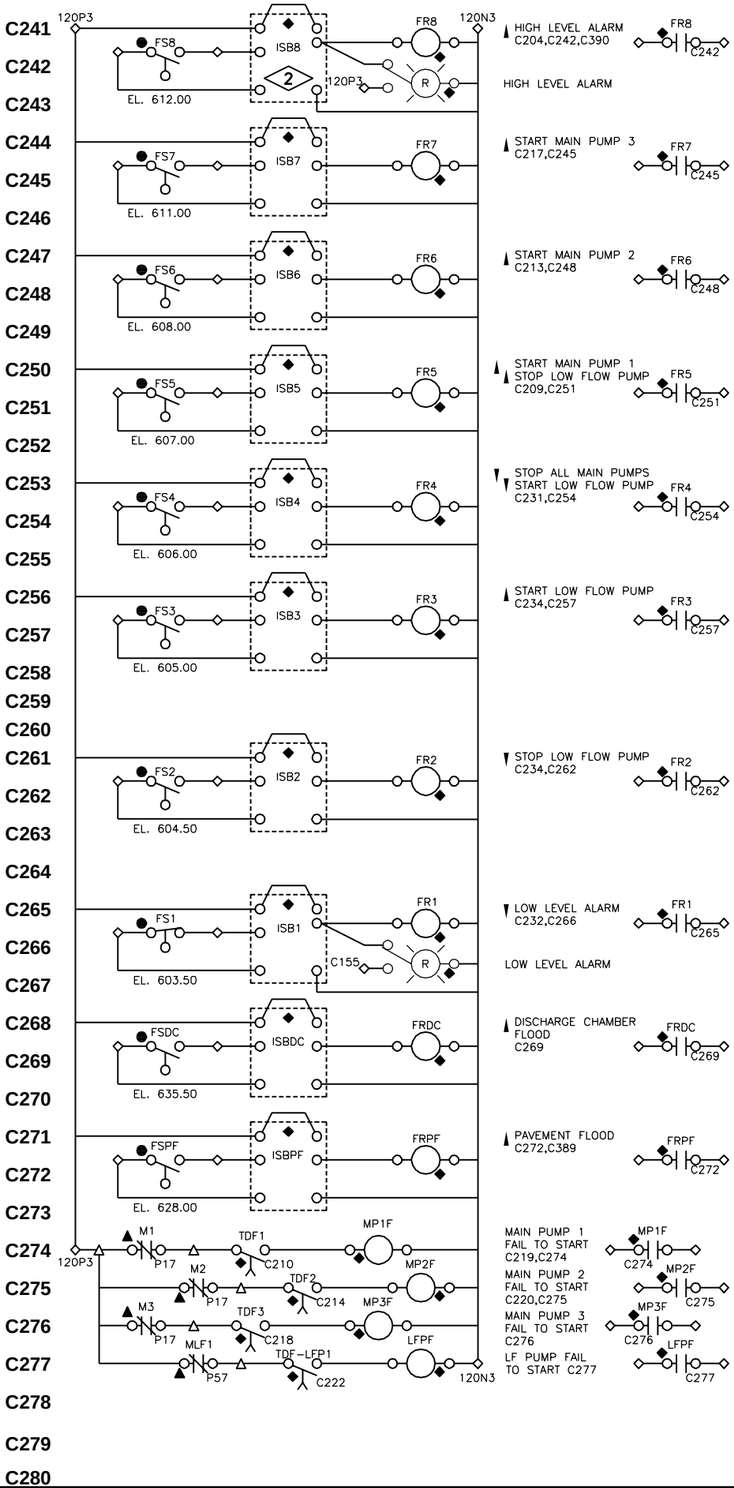
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 8 RELOCATION
CONTROL CIRCUITS
SCHEMATIC

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

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14 NORTHWEST HIGHWAY	86 S-H	COOK	156	133
		CONTRACT NO. 60C48		
	ILLINOIS	FED. AID PROJECT		





GENERAL NOTES:

1. CONTROL CIRCUIT DRAWINGS DEPICT GENERAL DEVICE WIRING PRACTICES AND DOES NOT INCLUDE ALL CIRCUIT PROTECTIVE DEVICES SUCH AS FUSES, CIRCUIT BREAKERS, OR MOV'S. THESE DEVICES SHALL BE INCLUDED IN DETAILED DESIGN DRAWINGS BY CONTRACTOR.
2. 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. PLC FAIL OUTPUT. OUTPUT DE-ENERGIZES WHEN PRIMARY AND SECONDARY LEVEL ELEMENTS ARE OUT OF RANGE, AND/OR BOTH PLC PROCESSORS FAIL. SEE SPECIFICATION FOR DETAILS.
2. INTRINSICALLY SAFE BARRIER. ONE ISB PER FLOAT. TYPICAL. WIRE AND CONDUIT IN ACCORDANCE WITH NEC ARTICLE 504.

LEGEND:

- △ TERMINAL IN MCC
- ◇ TERMINAL IN SCADA PANEL
- ▲ DEVICE IN MCC
- ◆ DEVICE IN SCADA PANEL
- ● DEVICE FIELD MOUNTED
- ▲ RISING WATER LEVEL TRIGGER
- ▼ FALLING WATER LEVEL TRIGGER

E15

FILE NAME =

DONOHUE

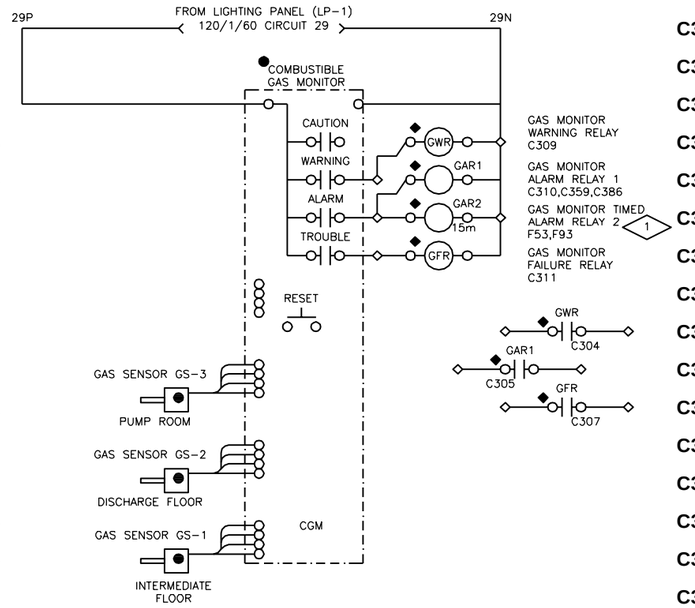
USER NAME =	DESIGNED - DWG	REVISED -	
	DRAWN - DWG	REVISED -	
PLOT SCALE =	CHECKED - MBS	REVISED -	
PLOT DATE =	DATE 09-29-17	REVISED -	

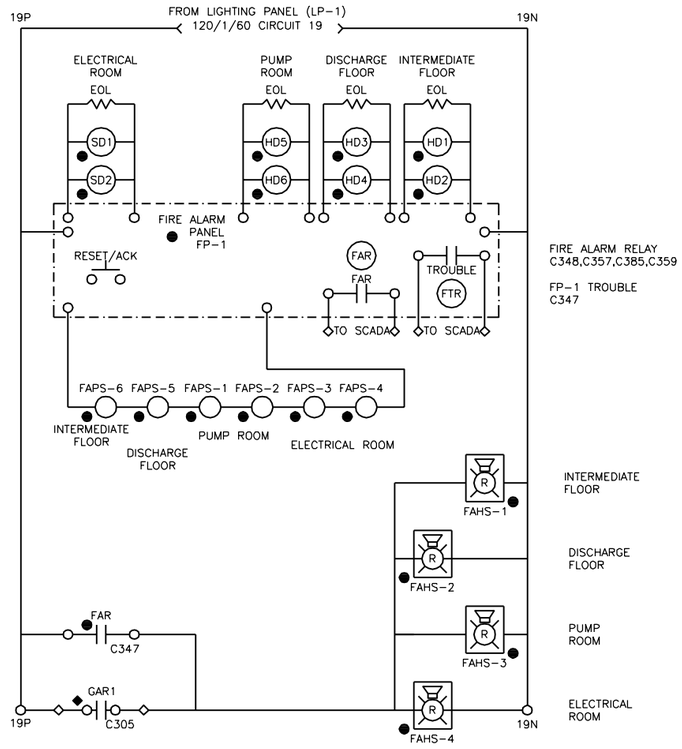
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 8 RELOCATION
CONTROL CIRCUITS
SCHEMATIC

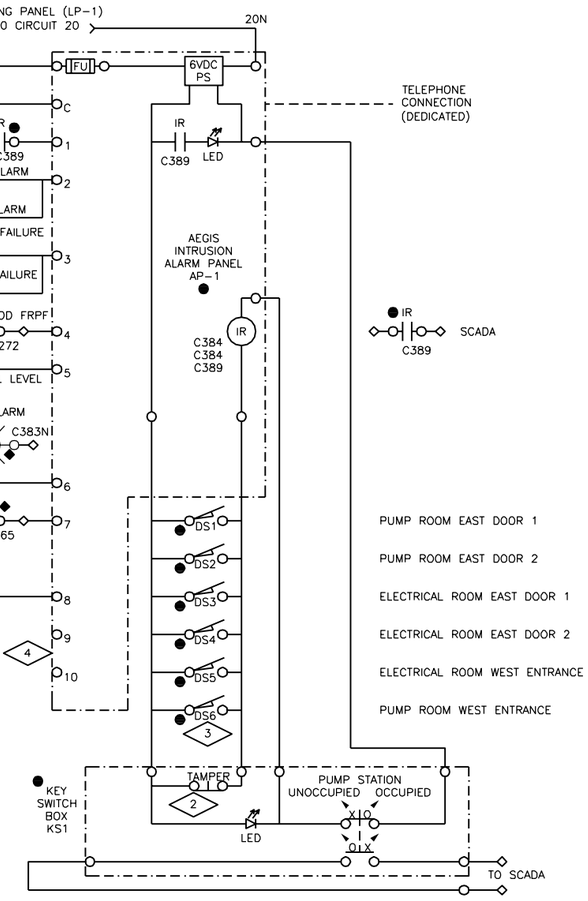
SCALE: | SHEET OF SHEETS | STA. | TO STA.

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14 NORTHWEST HIGHWAY	86 S-H	COOK	156	134
		CONTRACT NO. 60C48		
	ILLINOIS	FED. AID PROJECT		





FAPS = FIRE ALARM PULL BOX
FAHS = FIRE ALARM HORN AND STROBE



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.
2. CONTROL CIRCUIT DRAWINGS DEPICT GENERAL DEVICE WIRING PRACTICES AND DOES NOT INCLUDE ALL CIRCUIT PROTECTIVE DEVICES SUCH AS FUSES, CIRCUIT BREAKERS, OR MOV'S. THESE DEVICES SHALL BE INCLUDED IN DETAILED DESIGN DRAWINGS BY CONTRACTOR.

PLAN NOTES:

1. GAR2 IS AN OFF-DELAY TIMER INITIALLY SET FOR 15 MINUTES ALLOWING HVAC SYSTEMS TO COMPLETELY EVACUATE DANGEROUS ATMOSPHERE.
2. NORMALLY CLOSED EXTENDED HEAD PUSHBUTTON HELD OPEN BY COVER OF KEY SWITCH ENCLOSURE.
3. NORMALLY CLOSED HELD OPEN DOOR SWITCH (SWITCH CLOSES WHEN DOOR IS OPEN). MOUNTING SHALL BE FARTHEST POINT AWAY FROM HINGE LOCATED ATOP DOOR.
4. AEGIS ALARMS 9 AND 10 ARE AEGIS BATTERY LOW AND AEGIS HEARTBEAT RESPECTIVELY, AND ARE INTERNAL TO AEGIS PANEL.

LEGEND:

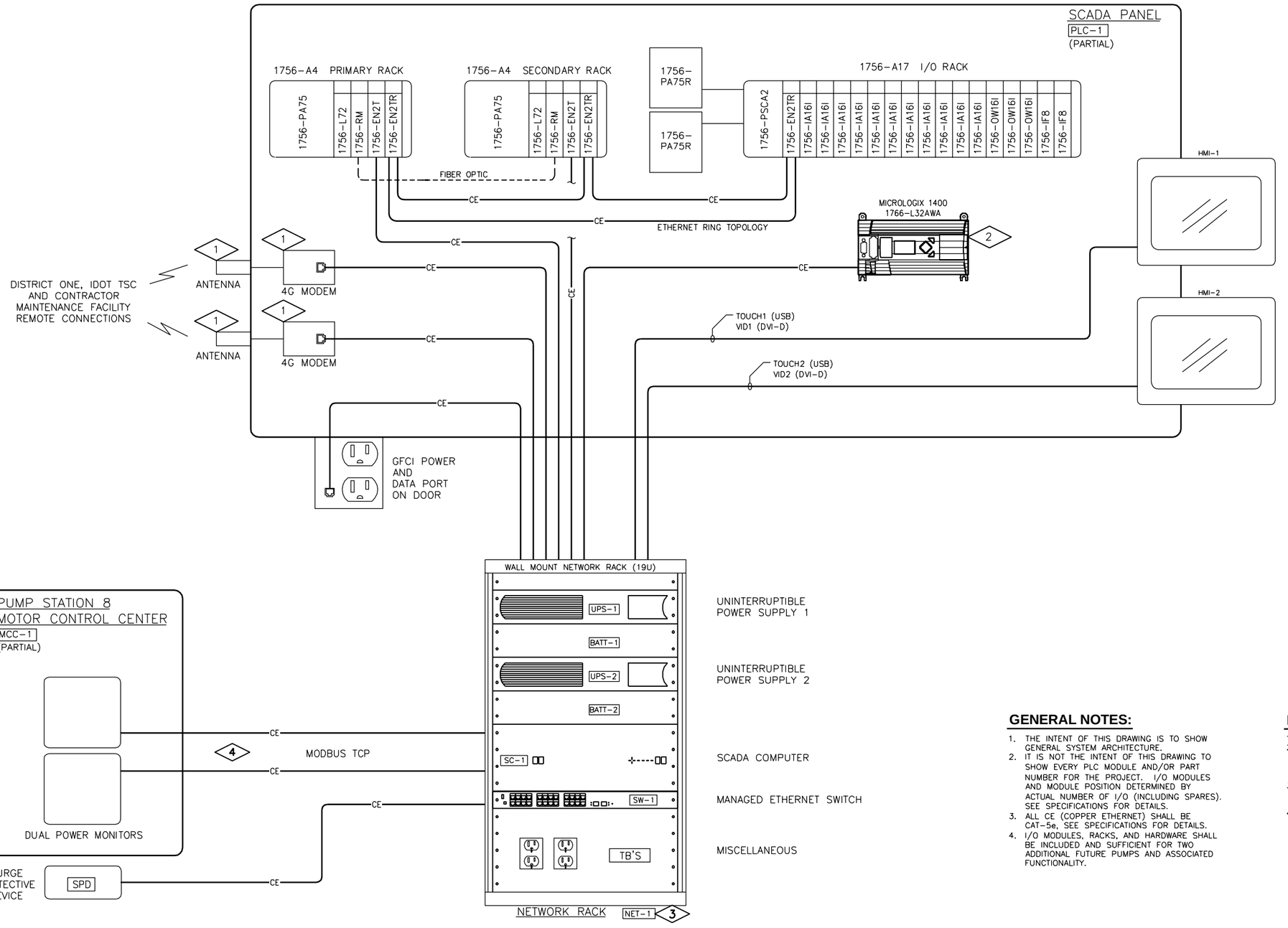
- △ TERMINAL IN MCC
- ◇ TERMINAL IN SCADA PANEL
- ▲ DEVICE IN MCC
- ◆ DEVICE IN SCADA PANEL
- ● DEVICE FIELD MOUNTED

E16

DONOHUE	USER NAME =	DESIGNED - DWG	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	PUMP STATION NO. 8 RELOCATION GAS, FIRE, AEGIS CONTROLS SCHEMATIC
		DRAWN - DWG	REVISED -		
	PLOT SCALE =	CHECKED - MBS	REVISED -		SCALE: SHEET OF SHEETS STA. TO STA.
	PLOT DATE =	DATE 09-29-17	REVISED -		

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14 NORTHWEST HIGHWAY	86 S-H	COOK	156	135
		CONTRACT NO. 60C48		
	ILLINOIS	FED. AID PROJECT		

FILE NAME =



GENERAL NOTES:

1. THE INTENT OF THIS DRAWING IS TO SHOW GENERAL SYSTEM ARCHITECTURE.
2. IT IS NOT THE INTENT OF THIS DRAWING TO SHOW EVERY PLC MODULE AND/OR PART NUMBER FOR THE PROJECT. I/O MODULES AND MODULE POSITION DETERMINED BY ACTUAL NUMBER OF I/O (INCLUDING SPARES). SEE SPECIFICATIONS FOR DETAILS.
3. ALL CE (COPPER ETHERNET) SHALL BE CAT-5e, SEE SPECIFICATIONS FOR DETAILS.
4. I/O MODULES, RACKS, AND HARDWARE SHALL BE INCLUDED AND SUFFICIENT FOR TWO ADDITIONAL FUTURE PUMPS AND ASSOCIATED FUNCTIONALITY.

PLAN NOTES: ◇

1. DEVICES PROVIDED BY IDOT MAINTENANCE.
2. MICROLOGIX 1400 PROCESSOR USED TO COMMUNICATE MODBUS TCP/IP TO POWER MONITORS AND ETHERNET/IP TO CONTROLOGIX PROCESSORS.
3. TWIN UPS PROVIDES POWER FOR ALL COMPONENTS IN NETWORK RACK AND RESPECTIVE SCADA PANEL.
4. SEE SPECIFICATIONS FOR POWER MONITORING DATA TO SCADA.

E17

FILE NAME =

DONOHUE

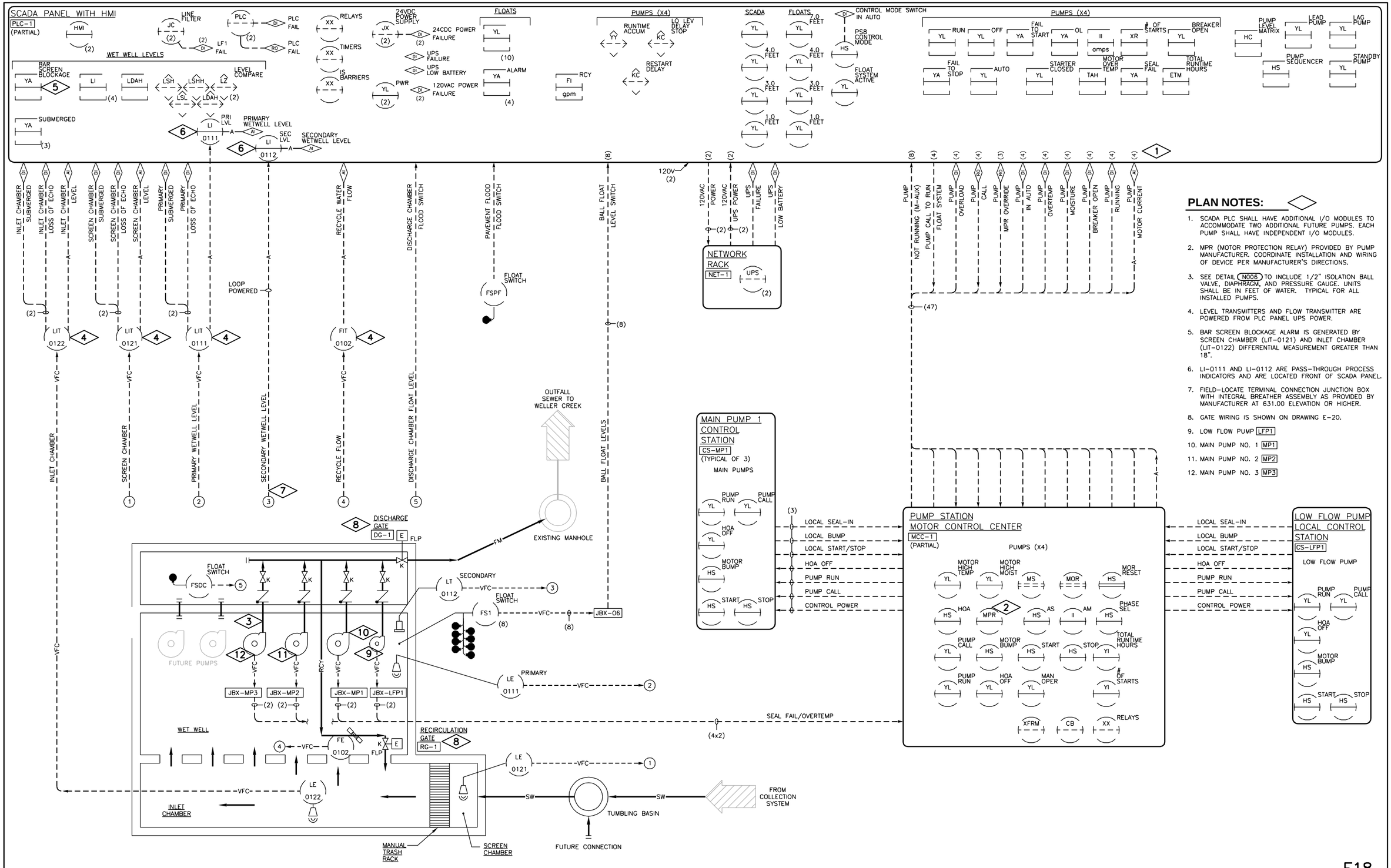
USER NAME =	DESIGNED - DWG	REVISED -	
	DRAWN - DWG	REVISED -	
PLOT SCALE =	CHECKED - MBS	REVISED -	
PLOT DATE =	DATE 09-29-17	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 8 RELOCATION
INSTRUMENTATION & CONTROL
SYSTEM ARCHITECTURE

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

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14 NORTHWEST HIGHWAY	86 S-I-I	COOK	156	136
		CONTRACT NO. 60C48		
	ILLINOIS	FED. AID PROJECT		



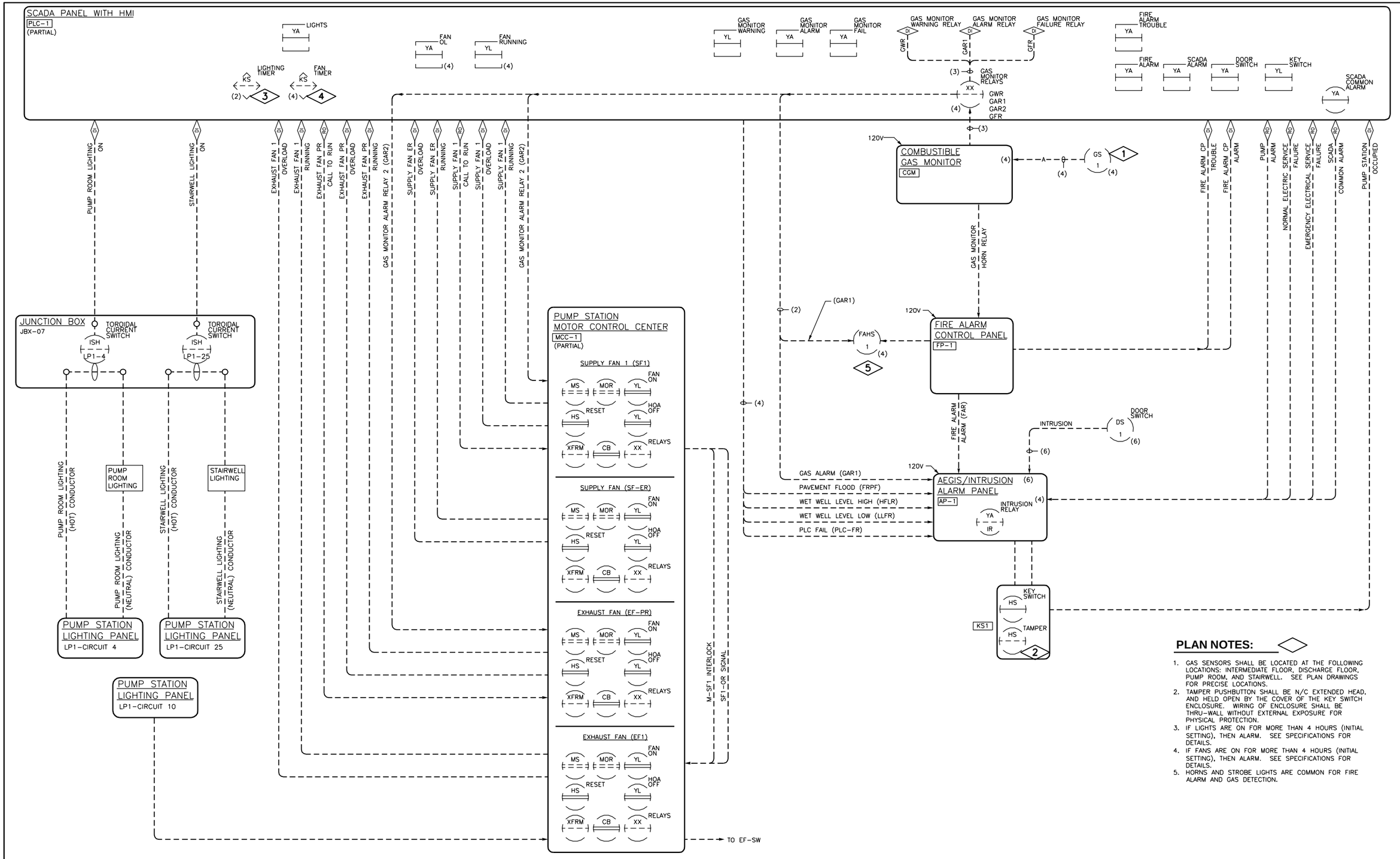
PLAN NOTES:

1. SCADA PLC SHALL HAVE ADDITIONAL I/O MODULES TO ACCOMMODATE TWO ADDITIONAL FUTURE PUMPS. EACH PUMP SHALL HAVE INDEPENDENT I/O MODULES.
2. MPR (MOTOR PROTECTION RELAY) PROVIDED BY PUMP MANUFACTURER. COORDINATE INSTALLATION AND WIRING OF DEVICE PER MANUFACTURER'S DIRECTIONS.
3. SEE DETAIL N006 TO INCLUDE 1/2" ISOLATION BALL VALVE, DIAPHRAGM, AND PRESSURE GAUGE. UNITS SHALL BE IN FEET OF WATER. TYPICAL FOR ALL INSTALLED PUMPS.
4. LEVEL TRANSMITTERS AND FLOW TRANSMITTER ARE POWERED FROM PLC PANEL UPS POWER.
5. BAR SCREEN BLOCKAGE ALARM IS GENERATED BY SCREEN CHAMBER (LIT-0121) AND INLET CHAMBER (LIT-0122) DIFFERENTIAL MEASUREMENT GREATER THAN 18".
6. LI-0111 AND LI-0112 ARE PASS-THROUGH PROCESS INDICATORS AND ARE LOCATED FRONT OF SCADA PANEL.
7. FIELD-LOCATE TERMINAL CONNECTION JUNCTION BOX WITH INTEGRAL BREATHER ASSEMBLY AS PROVIDED BY MANUFACTURER AT 631.00 ELEVATION OR HIGHER.
8. GATE WIRING IS SHOWN ON DRAWING E-20.
9. LOW FLOW PUMP LFP1
10. MAIN PUMP NO. 1 MP1
11. MAIN PUMP NO. 2 MP2
12. MAIN PUMP NO. 3 MP3

E18

DONOHUE	USER NAME =	DESIGNED - DWG	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	PUMP STATION NO. 8 RELOCATION PROCESS AND INSTRUMENTATION DIAGRAM	RTE.	SECTION / COUNTY / TOTAL SHEETS / SHEET NO.
		DRAWN - DWG	REVISED -			US 14 NORTHWEST HIGHWAY	86 S-H / COOK / 156 / 137
	PLOT SCALE =	CHECKED - MBS	REVISED -				CONTRACT NO. 60C48
	PLOT DATE =	DATE 09-29-17	REVISED -		SCALE: SHEET OF SHEETS STA. TO STA.		ILLINOIS / FED. AID PROJECT

FILE NAME =



PLAN NOTES:

1. GAS SENSORS SHALL BE LOCATED AT THE FOLLOWING LOCATIONS: INTERMEDIATE FLOOR, DISCHARGE FLOOR, PUMP ROOM, AND STAIRWELL. SEE PLAN DRAWINGS FOR PRECISE LOCATIONS.
2. TAMPER PUSHBUTTON SHALL BE N/C EXTENDED HEAD, AND HELD OPEN BY THE COVER OF THE KEY SWITCH ENCLOSURE. WIRING OF ENCLOSURE SHALL BE THRU-WALL WITHOUT EXTERNAL EXPOSURE FOR PHYSICAL PROTECTION.
3. IF LIGHTS ARE ON FOR MORE THAN 4 HOURS (INITIAL SETTING), THEN ALARM. SEE SPECIFICATIONS FOR DETAILS.
4. IF FANS ARE ON FOR MORE THAN 4 HOURS (INITIAL SETTING), THEN ALARM. SEE SPECIFICATIONS FOR DETAILS.
5. HORNS AND STROBE LIGHTS ARE COMMON FOR FIRE ALARM AND GAS DETECTION.

FILE NAME =

DONOHUE

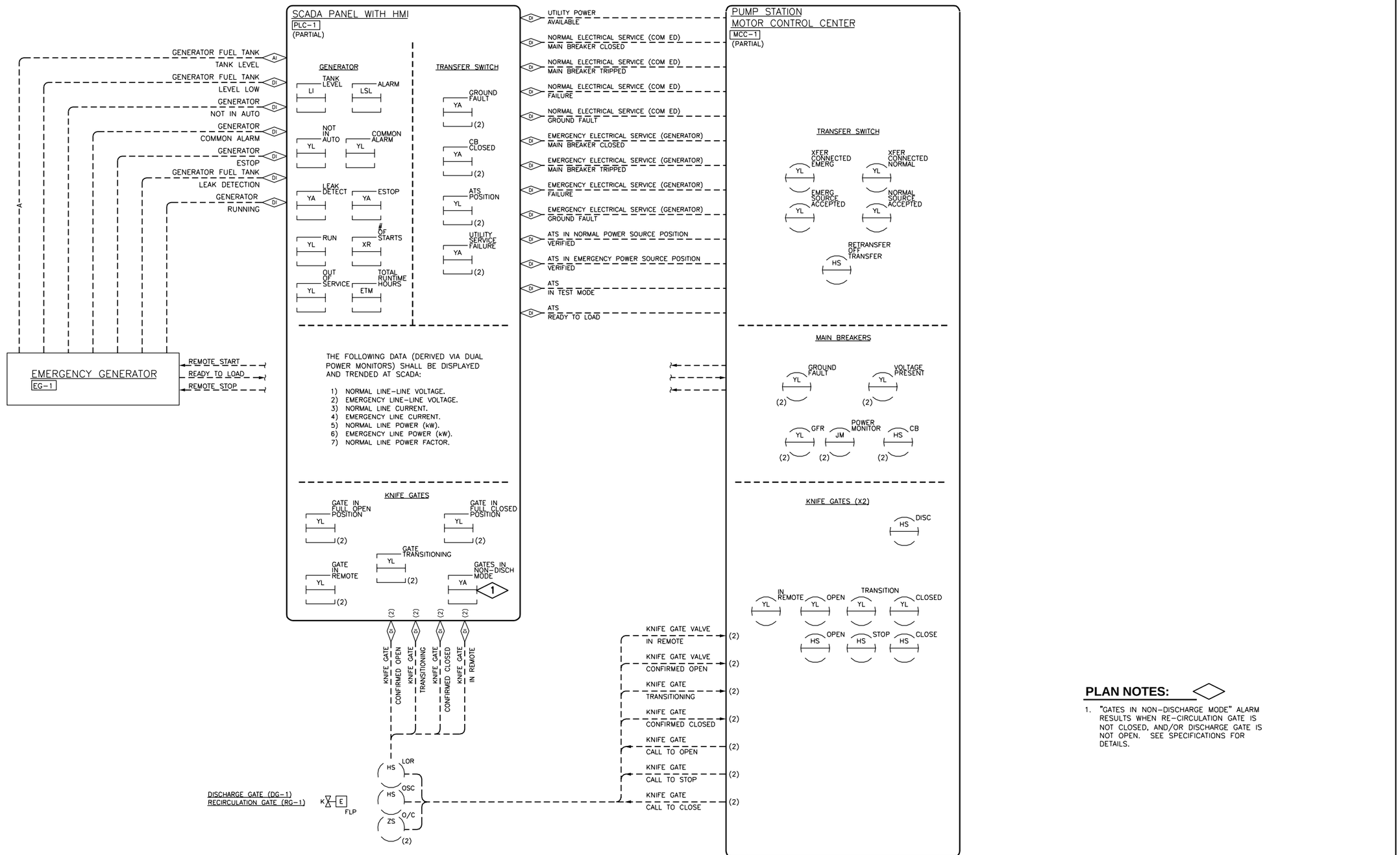
USER NAME =	DESIGNED - DWG	REVISED -
	DRAWN - DWG	REVISED -
PLOT SCALE =	CHECKED - MBS	REVISED -
PLOT DATE =	DATE 09-29-17	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 8 RELOCATION
PROCESS AND
INSTRUMENTATION DIAGRAM

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

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14 NORTHWEST HIGHWAY	86 S-H	COOK	156	138
		CONTRACT NO. 60C48		
	ILLINOIS	FED. AID PROJECT		



PLAN NOTES:

1. "GATES IN NON-DISCHARGE MODE" ALARM RESULTS WHEN RE-CIRCULATION GATE IS NOT CLOSED, AND/OR DISCHARGE GATE IS NOT OPEN. SEE SPECIFICATIONS FOR DETAILS.

E20

FILE NAME =

DONOHUE

USER NAME =	DESIGNED - DWG	REVISED -	
	DRAWN - DWG	REVISED -	
PLOT SCALE =	CHECKED - MBS	REVISED -	
PLOT DATE =	DATE 09-29-17	REVISED -	

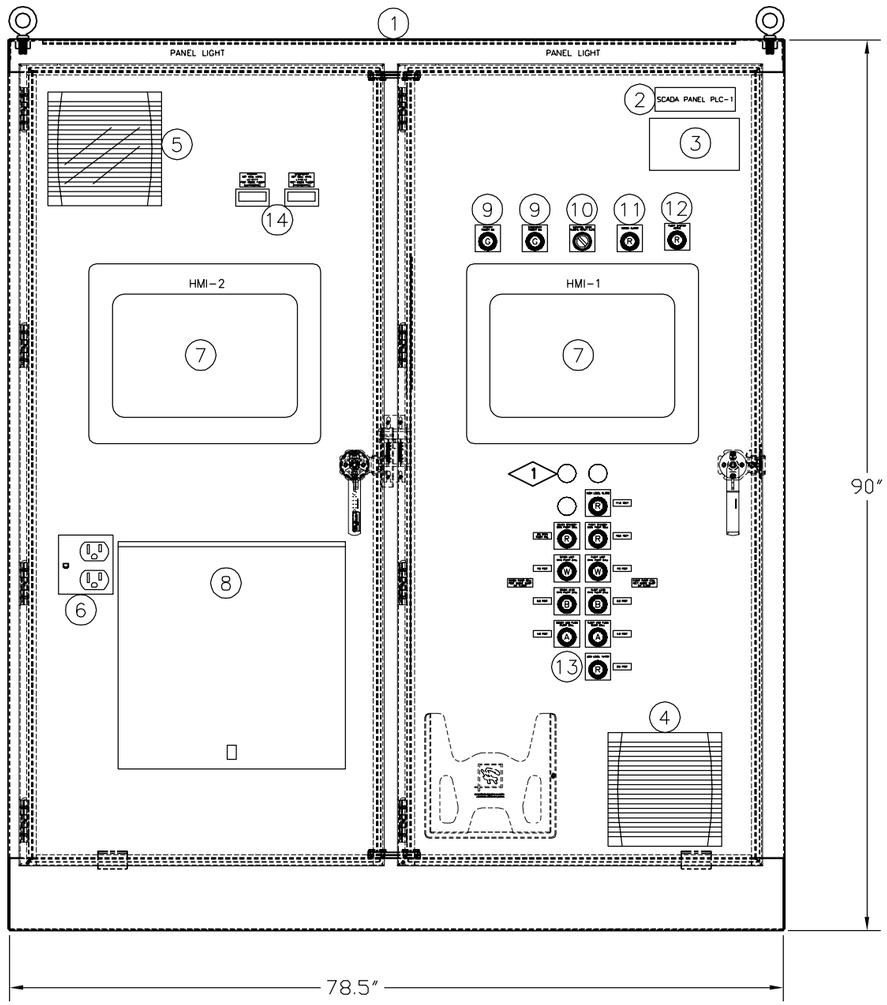
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

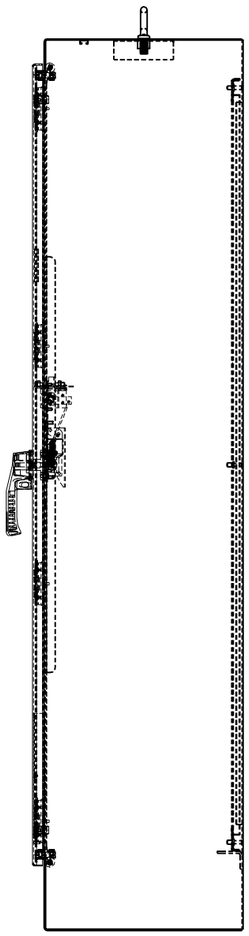
PUMP STATION NO. 8 RELOCATION
TRANSFER SWITCH, GATE VALVES AND GENERATOR

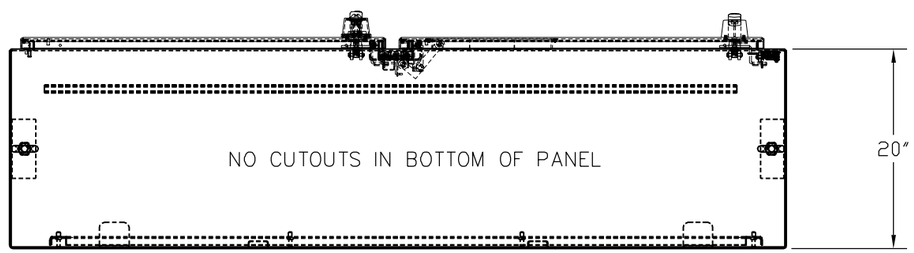
SCALE: | SHEET OF SHEETS | STA. | TO STA.

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14 NORTHWEST HIGHWAY	86 S-H	COOK	156	139
		CONTRACT NO. 60C48		
	ILLINOIS	FED. AID PROJECT		

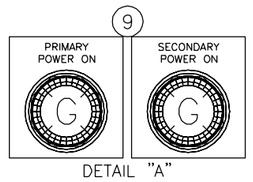
SCADA PANEL



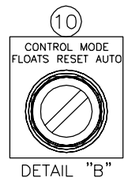




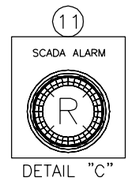
ITEM	QTY	DESCRIPTION	DETAIL
1	1	NEMA 12 ENCLOSURE, 2-DOOR, 90x78.5x20	N/A
2	1	PANEL NAMEPLATE "SCADA PANEL PLC-1"	N/A
3	1	ELECTRICAL NAMEPLATE	N/A
4	1	FAN AND FILTER ASSEMBLY	N/A
5	1	LOUVER KIT ASSEMBLY	N/A
6	1	GFCI 120VAC OUTLET AND ETHERNET PORT	N/A
7	2	SCADA HMI-1 AND HMI-2	N/A
8	1	24x24 FOLDING SHELF	N/A
9	2	PILOT LIGHT, LED, GREEN	A
10	1	SELECTOR SWITCH, 3-POSITION	B
11	1	PILOT LIGHT, LED, RED	C
12	1	PILOT LIGHT, LED, RED	D
13	2	PILOT LIGHT, LED, AMBER	E
	2	PILOT LIGHT, LED, BLUE	
	2	PILOT LIGHT, LED, WHITE	
	4	PILOT LIGHT, LED, RED	
14	2	PROCESS DISPLAY	F



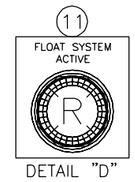
DETAIL "A"



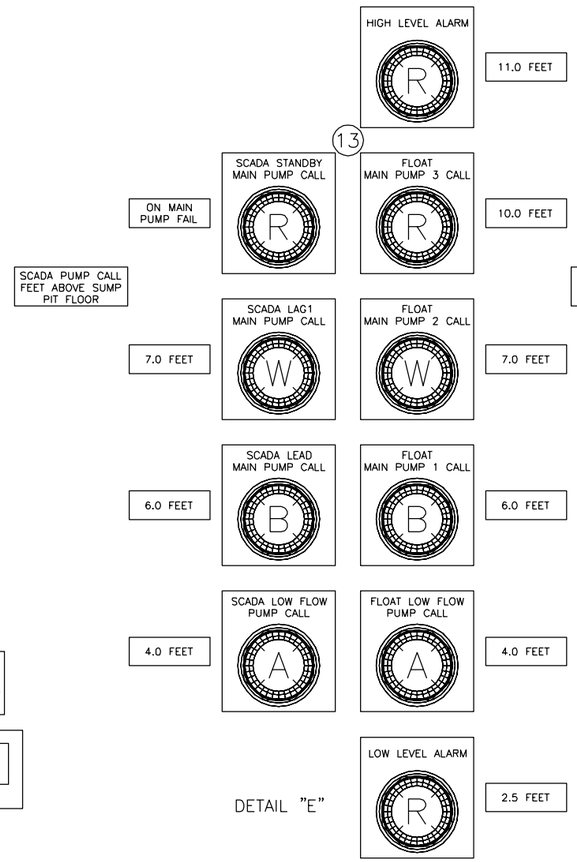
DETAIL "B"



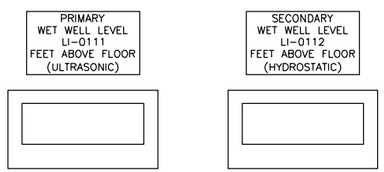
DETAIL "C"



DETAIL "D"



DETAIL "E"



DETAIL "F"

PLAN NOTES:

1. INCLUDE HOLES FOR FUTURE PUMP FUNCTIONALITY. PLUG WITH ALLEN BRADLEY 800T-N1 CLOSING BUTTONS.

GENERAL NOTES:

1. THIS DRAWING DEPICTS A RECOMMENDED LAYOUT OF PANEL COMPONENTS. FINAL LOCATIONS OF DEVICES SHALL BE APPROVED DURING SHOP DRAWING SUBMITTAL PHASE OF PROJECT.
2. 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.

E21

FILE NAME =

DONOHUE

USER NAME =	DESIGNED - DWG	REVISED -
	DRAWN - DWG	REVISED -
PLOT SCALE =	CHECKED - MBS	REVISED -
PLOT DATE =	DATE 09-29-17	REVISED -

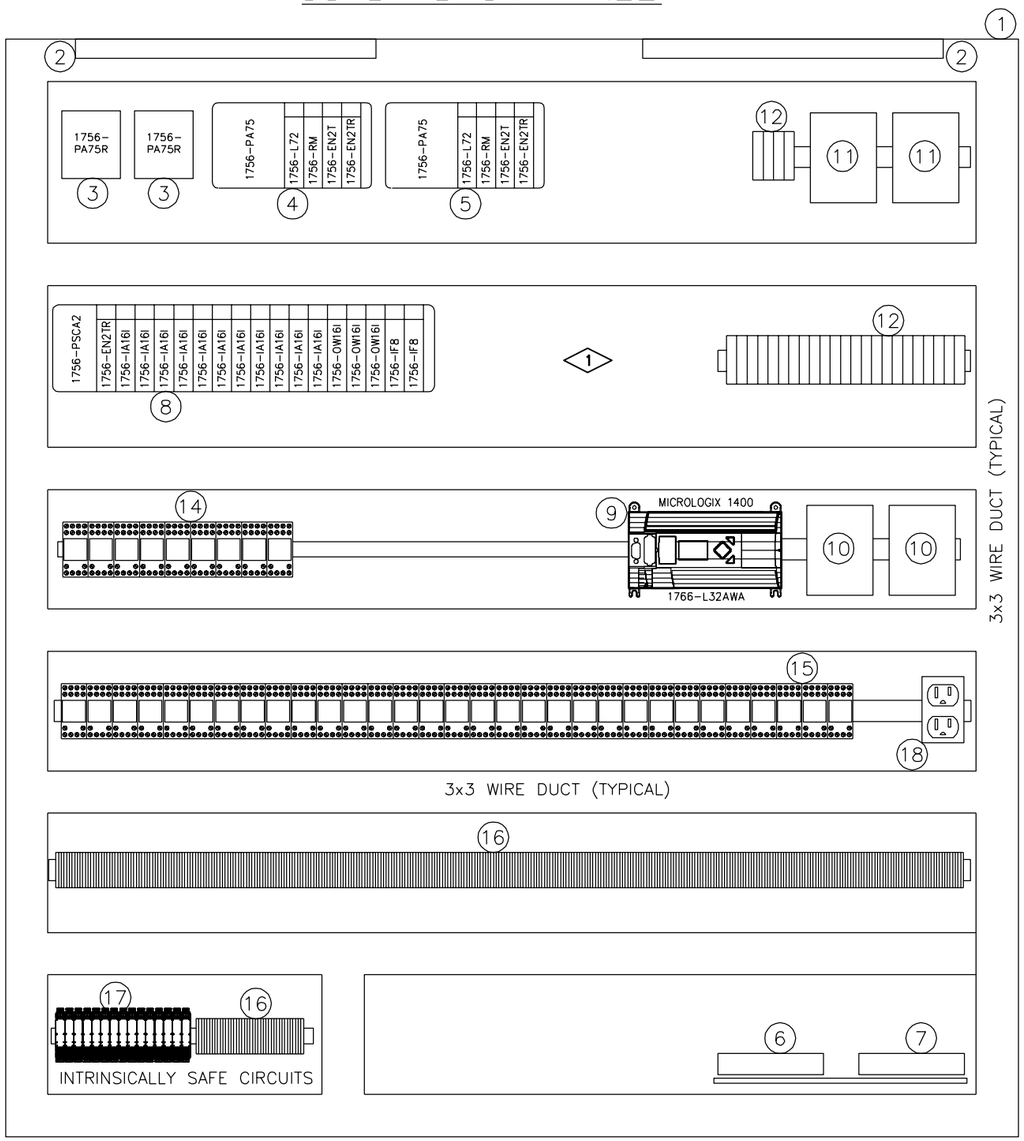
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 8 RELOCATION
SCADA PANEL
FRONT OF PANEL LAYOUT

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

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14 NORTHWEST HIGHWAY	86 S-I-H	COOK	156	140
		CONTRACT NO. 60C48		
	ILLINOIS	FED. AID PROJECT		

SCADA BACK PANEL



ITEM	QTY	DESCRIPTION
1	1	78x72 PANEL
2	2	LED LIGHT & DOOR SWITCH
3	2	PLC POWER SUPPLY
4	1	PRIMARY CONTROLLOGIX PROCESSOR AND RACK
5	1	SECONDARY CONTROLLOGIX PROCESSOR AND RACK
6	1	4G MODEM (PROVIDED BY IDOT)
7	1	4G MODEM (PROVIDED BY IDOT)
8	AS REQ'D	PLC REMOTE RACK AND MODULES
9	1	MICROLOGIX PLC PROCESSOR
10	2	24VDC POWER SUPPLY (PS1, PS2)
11	2	120VAC LINE FILTER (LF1, LF2)
12	AS REQ'D	CIRCUIT BREAKERS AND FUSES
13		NOT USED
14	AS REQ'D	TIME DELAY RELAYS
15	AS REQ'D	RELAYS
16	AS REQ'D	TERMINAL BLOCK
17	AS REQ'D	INTRINSICALLY SAFE RELAYS
18	1	GFCI, 120VAC, 10A

NAMEPLATE SCHEDULE			
(17)	(15)	(14)	(12)
ISB1	DCR1	TDFM	CB1
ISB2	DCR2	TDF1	CB2
ISB3	AC-R	TDF2	CB3
ISB4	FMR	TDF3	CB4
ISB5	PLC-FR	TDFLP1	CB5
ISB6	MP1	GAR2	CB6
ISB7	MP2	SPARE1	CB7
ISB8	MP3	SPARE2	CB8
ISBDC	LFP1	SPARE3	CB9
ISBPF	FR8		CB10
ISBSP1	FR7		CB11
ISBSP2	FR6		CB12
ISBSP3	FR5		CB13
ISBSP4	FR4		CB14
ISBSP5	FR3		CB15
	FR2		CB16
	FR1		CB17
	FRDC		CB18
	FRPF		CB19
	FLFR		SPARE1
	MP1F		SPARE2
	MP2F		SPARE3
	MP3F		SPARE4
	LFPF		
	GWR		
	GAR1		
	GFR		
	SPARE1		
	SPARE2		
	SPARE3		
	SPARE4		
	SPARE5		
	SPARE6		
	SPARE7		
	SPARE8		

GENERAL NOTES:

1. THIS DRAWING DEPICTS A RECOMMENDED LAYOUT OF PANEL COMPONENTS. FINAL LOCATIONS OF DEVICES AND WIRE BENDING SPACE SHALL BE APPROVED DURING SHOP DRAWING SUBMITTAL PHASE OF PROJECT.
2. ALL FIELD TERMINATIONS SHALL BE MADE AT TERMINAL BLOCKS, DESIGNATED AS SUCH, AND INCLUDE WIRE SIZE AND TIGHTENING TORQUE.
3. SEGREGATE INTRINSICALLY SAFE (I/S) CIRCUITS WITH NO. 20 GAUGE (OR THICKER) SHEET METAL PARTITION. I/S CIRCUITS SHALL BE ROUTED IN SEPARATE CONDUIT FROM ALL OTHER CONDUCTORS. INSTALL IN ACCORDANCE WITH ARTICLE 504 OF NEC (LATEST EDITION).
4. 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.
5. PANEL SHALL HAVE ADEQUATE SPACE FOR ADDITION OF TWO FUTURE PUMP ASSOCIATED HARDWARE AND CONTROLS.

PLAN NOTES: ◇

1. SPACE RESERVED FOR FUTURE 7-SLOT CHASSIS.

E22

FILE NAME =

DONOHUE

USER NAME =	DESIGNED - DWG	REVISED -	
	DRAWN - DWG	REVISED -	
PLOT SCALE =	CHECKED - MBS	REVISED -	
PLOT DATE =	DATE 09-29-17	REVISED -	

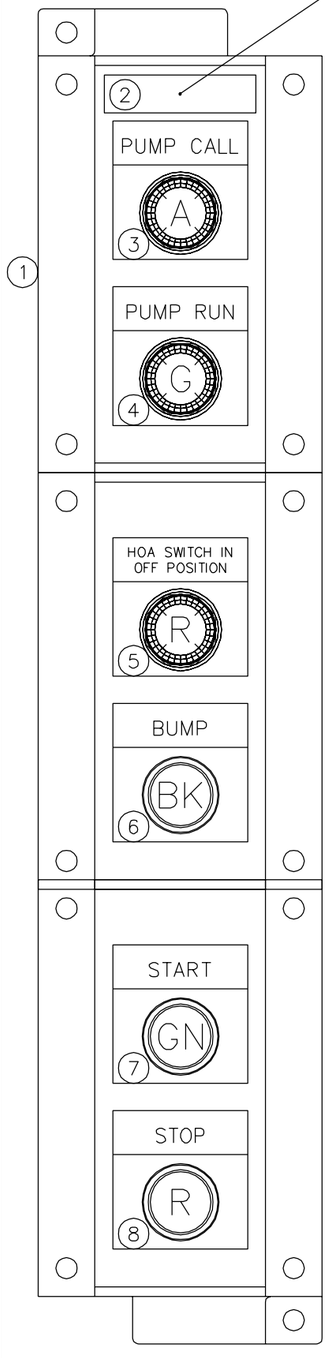
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 8 RELOCATION
SCADA PANEL
REAR OF PANEL LAYOUT

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

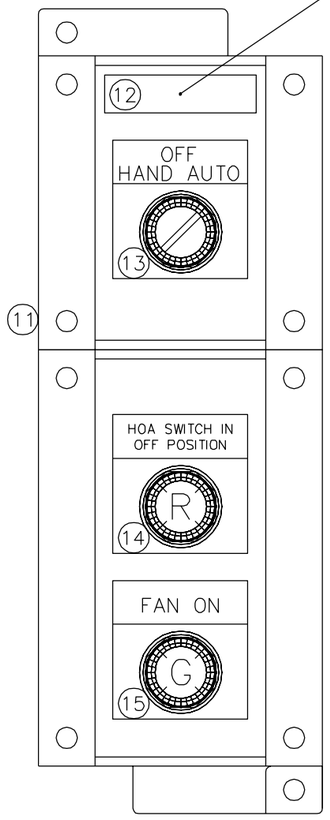
RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14 NORTHWEST HIGHWAY	86 S-H	COOK	156	141
		CONTRACT NO. 60C48		
	ILLINOIS FED. AID PROJECT			

NAMEPLATE SCHEDULE
CS-MP1
CS-MP2
CS-MP3
CS-LFP1



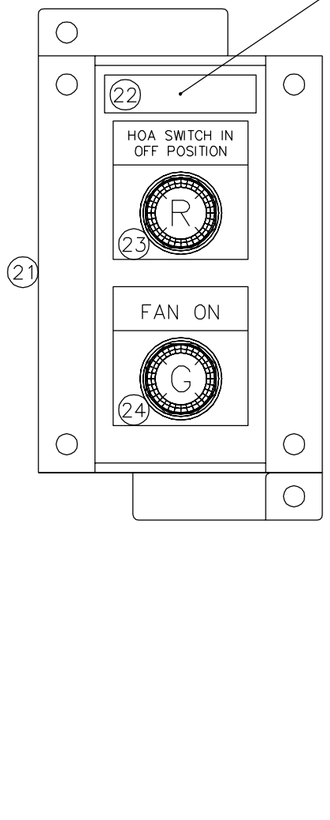
MATERIAL LIST (TYPICAL FOR EACH PUMP)		
ITEM	QTY	DESCRIPTION
1	AS REQ'D	NEMA 7 PUSHBUTTON ENCLOSURE
2	1	NAMEPLATE (SEE SCHEDULE)
3	1	NEMA 7 PILOT LIGHT, LED, AMBER
4	1	NEMA 7 PILOT LIGHT, LED, GREEN
5	1	NEMA 7 PILOT LIGHT, LED, RED
6	2	NEMA 7 PUSHBUTTON, BLACK
7	1	NEMA 7 PUSHBUTTON, GREEN
8	1	NEMA 7 PUSHBUTTON, RED
	AS REQ'D	LEGEND PLATES

NAMEPLATE SCHEDULE
CS-EF-PR
CS-SF1
CS-SF-ECR



MATERIAL LIST (TYPICAL FOR EACH CONTROL STATION)		
ITEM	QTY	DESCRIPTION
11	AS REQ'D	NEMA 7 PUSHBUTTON ENCLOSURE
12	1	NAMEPLATE (SEE SCHEDULE)
13	1	NEMA 7 3-POS SELECTOR SWITCH
14	1	NEMA 7 PILOT LIGHT, LED, RED
15	2	NEMA 7 PILOT LIGHT, LED, GREEN
	AS REQ'D	LEGEND PLATES

NAMEPLATE SCHEDULE
IS-EF-PR
IS-SF1



MATERIAL LIST (TYPICAL FOR EACH INDICATION STATION)		
ITEM	QTY	DESCRIPTION
21	AS REQ'D	NEMA 7 PUSHBUTTON ENCLOSURE
22	1	NAMEPLATE (SEE SCHEDULE)
23	1	NEMA 7 PILOT LIGHT, LED, RED
24	1	NEMA 7 PILOT LIGHT, LED, GREEN
	AS REQ'D	LEGEND PLATES

PLAN NOTES: ◇1

1. ELECTRICAL CONTROL ROOM SUPPLY FAN (SF-ECR) MAY BE NEMA 12 AS IT IS A NON-RATED SPACE.

E23

FILE NAME =

DONOHUE

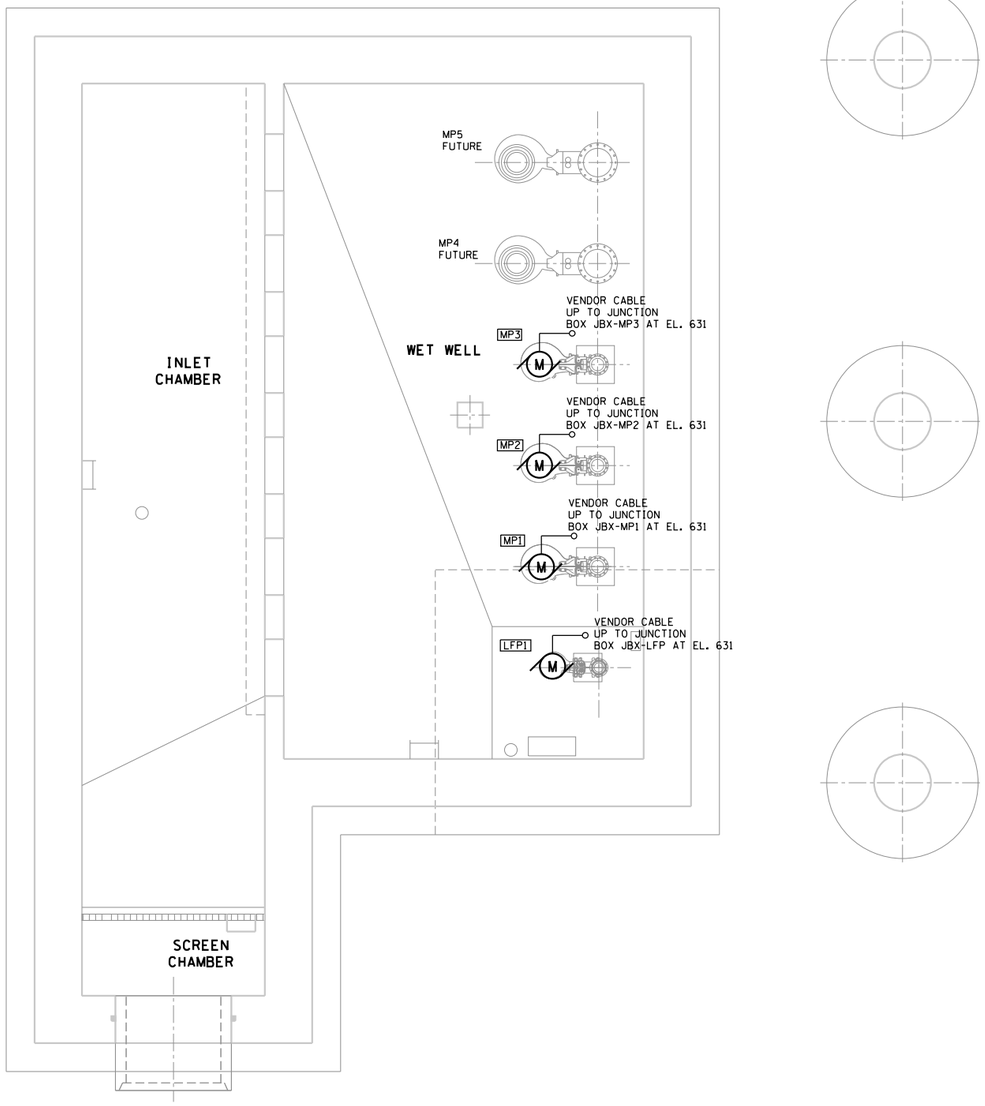
USER NAME =		DESIGNED - DWG	REVISED -
		DRAWN - DWG	REVISED -
PLOT SCALE =		CHECKED - MBS	REVISED -
PLOT DATE =		DATE 09-29-17	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

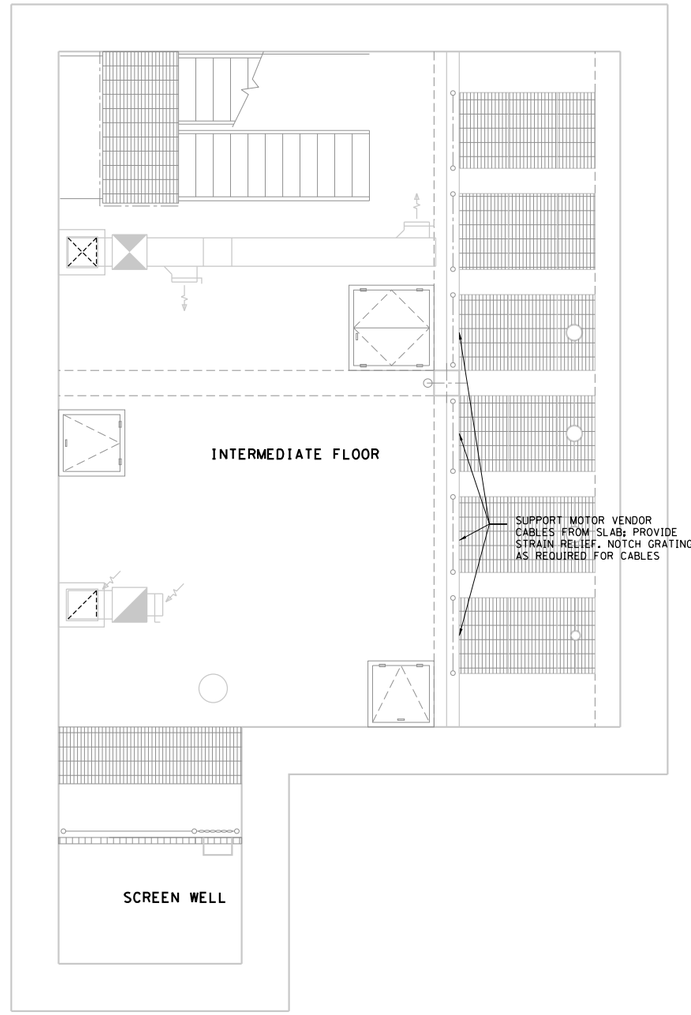
PUMP STATION NO. 8 RELOCATION
PUMP AND FAN CONTROL
PUSHBUTTON STATIONS

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

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14 NORTHWEST HIGHWAY	86 S-I-I	COOK	156	142
		CONTRACT NO. 60C48		
	ILLINOIS	FED. AID PROJECT		



PLAN AT EL. 604.00



PLAN AT EL. 618.00

NOTES:

1. SEE DRAWING E37 FOR CONDUCTOR AND CONDUIT REQUIREMENTS.
2. CONTRACTOR IS RESPONSIBLE FOR VERIFYING NUMBER OF CONDUCTORS IN CONDUIT PRIOR TO INSTALLATION. LOCATION OF BRANCH AND SWITCH LEGS AS INDICATED MAY BE ROUTED DIFFERENTLY AS DICTATED BY CONSTRUCTION AND SPECIFICATIONS. DEVICES SHOWN WIRED SEPARATELY TO SOURCE; SIGNALS WITH SAME FUNCTION INCLUDING 120 VOLT DEVICES AND BELOW MAY BE COMBINED IN RACEWAYS PER NEC.
3. ALL AREAS WITHIN BUILDING EXCEPT ELECTRICAL CONTROL ROOM SHALL BE CLASS I, DIVISION 2, GROUP D EXPLOSION PROOF.
4. COORDINATE POWER CONDUIT ROUTINGS WITH LIGHTING CONDUIT AND INSTRUMENTATION & CONTROL CONDUIT ROUTINGS. SEE DRAWINGS E27 AND E29.
5. COORDINATE CONDUIT ROUTING WITH HVAC DUCTS. SEE DRAWING H1.
6. SUPPORT VENDOR CABLES FROM SLABS AT INTERMEDIATE AND DISCHARGE LEVELS. SEE DETAIL E601.
7. ALL CONDUITS SHALL BE IDENTIFIED BY UNIQUE CONDUIT NUMBER, SHOW ON ADHESIVE LABEL. INSTALL PER DRAWING E3 AND SPECIFICATIONS.

SCALE: 0 4 8 FT.

E24

FILE NAME =

DONOHUE

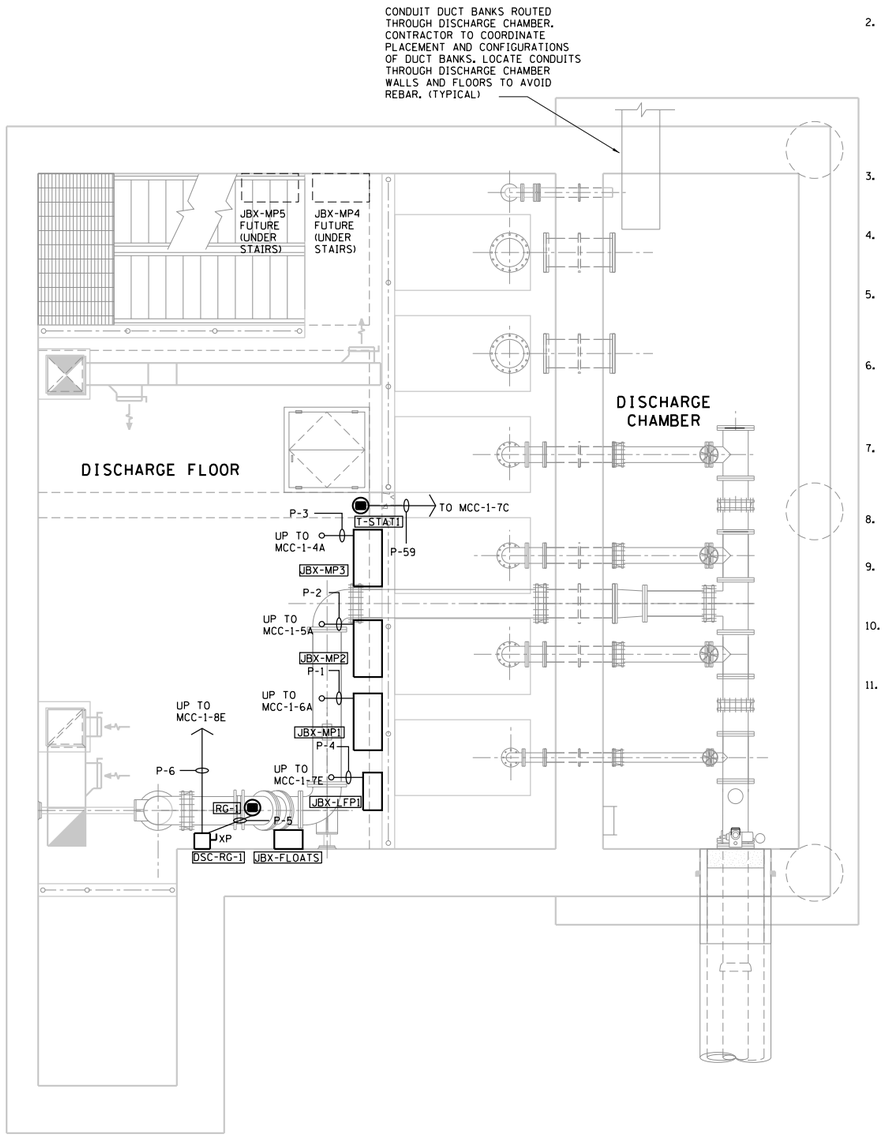
USER NAME =	DESIGNED - MBS	REVISED -
	DRAWN - MBS	REVISED -
PLOT SCALE =	CHECKED - JAB	REVISED -
PLOT DATE =	DATE - 09-29-17	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 8 RELOCATION
ELECTRICAL
POWER PLAN EL. 604 AND EL. 618

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

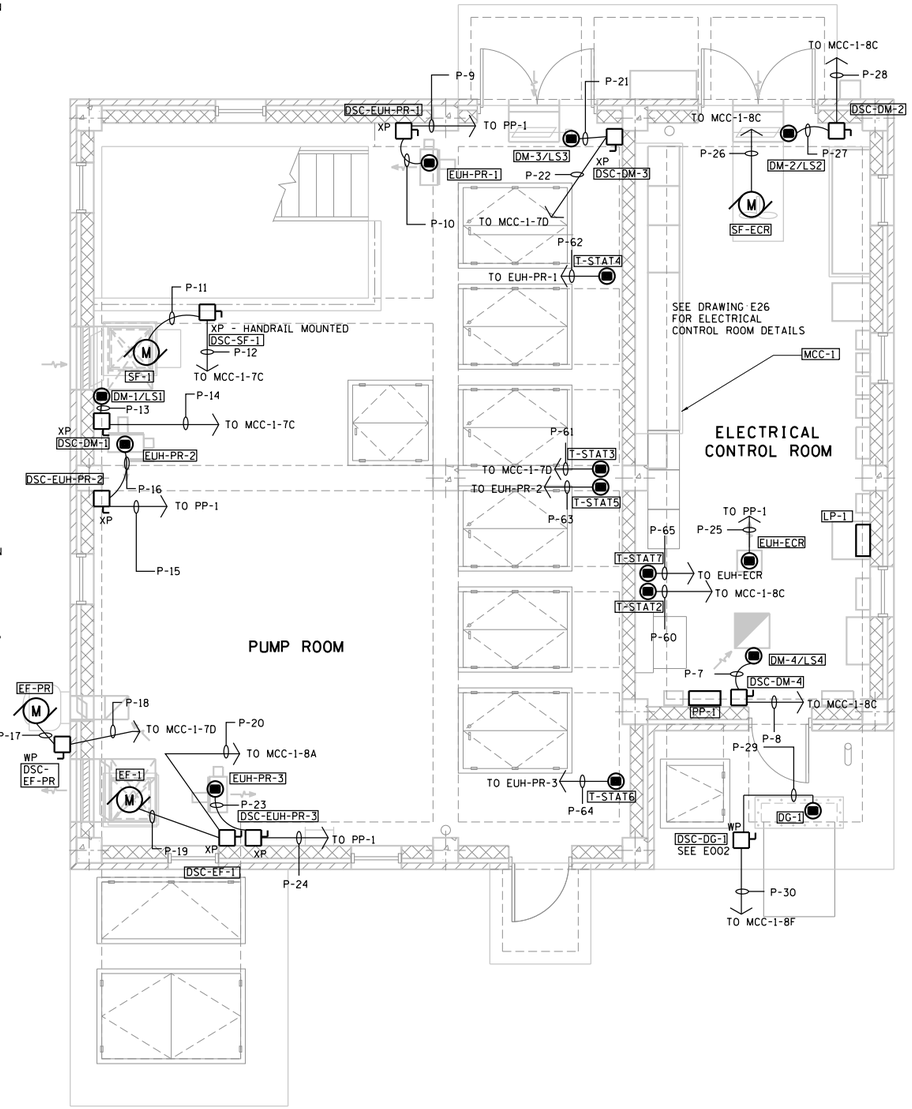
RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14	86 S-I-I	COOK	156	143
NORTHWEST HIGHWAY		CONTRACT NO. 60C48		
	ILLINOIS	FED. AID PROJECT		



PLAN AT EL. 631.00

NOTES:

1. SEE DRAWING E37 FOR CONDUCTOR AND CONDUIT REQUIREMENTS.
2. CONTRACTOR IS RESPONSIBLE FOR VERIFYING NUMBER OF CONDUCTORS IN CONDUIT PRIOR TO INSTALLATION. LOCATION OF BRANCH AND SWITCH LEGS AS INDICATED MAY BE ROUTED DIFFERENTLY AS DICTATED BY CONSTRUCTION AND SPECIFICATIONS. DEVICES SHOWN WIRED SEPARATELY TO SOURCE FOR CLARITY; SIGNALS WITH SAME FUNCTION INCLUDING 120 VOLT DEVICES AND BELOW MAY BE COMBINED IN RACEWAYS PER NEC.
3. THE AREAS BENEATH THE ROOF HATCHES SHALL REMAIN CLEAR OF CONDUITS AND EQUIPMENT SO THAT PUMPS CAN BE REMOVED.
4. ALL AREAS WITHIN BUILDING EXCEPT ELECTRICAL CONTROL ROOM SHALL BE CLASS I, DIVISION 2, GROUP D EXPLOSION PROOF.
5. COORDINATE POWER CONDUIT ROUTINGS WITH LIGHTING CONDUIT AND INSTRUMENTATION & CONTROL CONDUIT ROUTINGS. SEE DRAWINGS E28 AND E30.
6. CONDUITS FROM EXTERIOR GATES AND HANDHOLE SHALL BE INSTALLED IN CONCRETE SLAB TO DESTINATION SUCH THAT CONDUITS ARE NOT EXPOSED AND DO NOT CREATE A TRIPPING HAZARD.
7. COORDINATE CONDUIT ROUTING WITH MONORAILS. SEE DRAWINGS S3 AND S4. CONTRACTOR IS NOT ALLOWED TO DRILL CONCRETE BEAMS FOR CONDUITS.
8. COORDINATE CONDUIT ROUTING WITH HVAC DUCTS AND EQUIPMENT. SEE DRAWING H2.
9. ALL CONDUITS SHALL BE IDENTIFIED BY UNIQUE CONDUIT NUMBER. SHOW ON ADHESIVE LABEL. INSTALL PER DRAWING E3 AND SPECIFICATIONS.
10. CONDUITS ROUTED IN OR THROUGH ELECTRICAL CONTROL ROOM SHALL BE OVERHEAD. CONDUITS SHALL NOT BE ROUTED THROUGH DISCHARGE CHAMBER.
11. EXTERIOR DISCONNECTS SHALL HAVE ABILITY TO BE PADLOCKED IN ENERGIZED POSITION.



PLAN AT EL. 644.00

SCALE: 0 4 8 FT.

E25

USER NAME =	DESIGNED - MBS	REVISED -	
	DRAWN - MBS	REVISED -	
PLOT SCALE =	CHECKED - JAB	REVISED -	
PLOT DATE =	DATE - 09-29-17	REVISED -	

DONOHUE

FILE NAME =

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

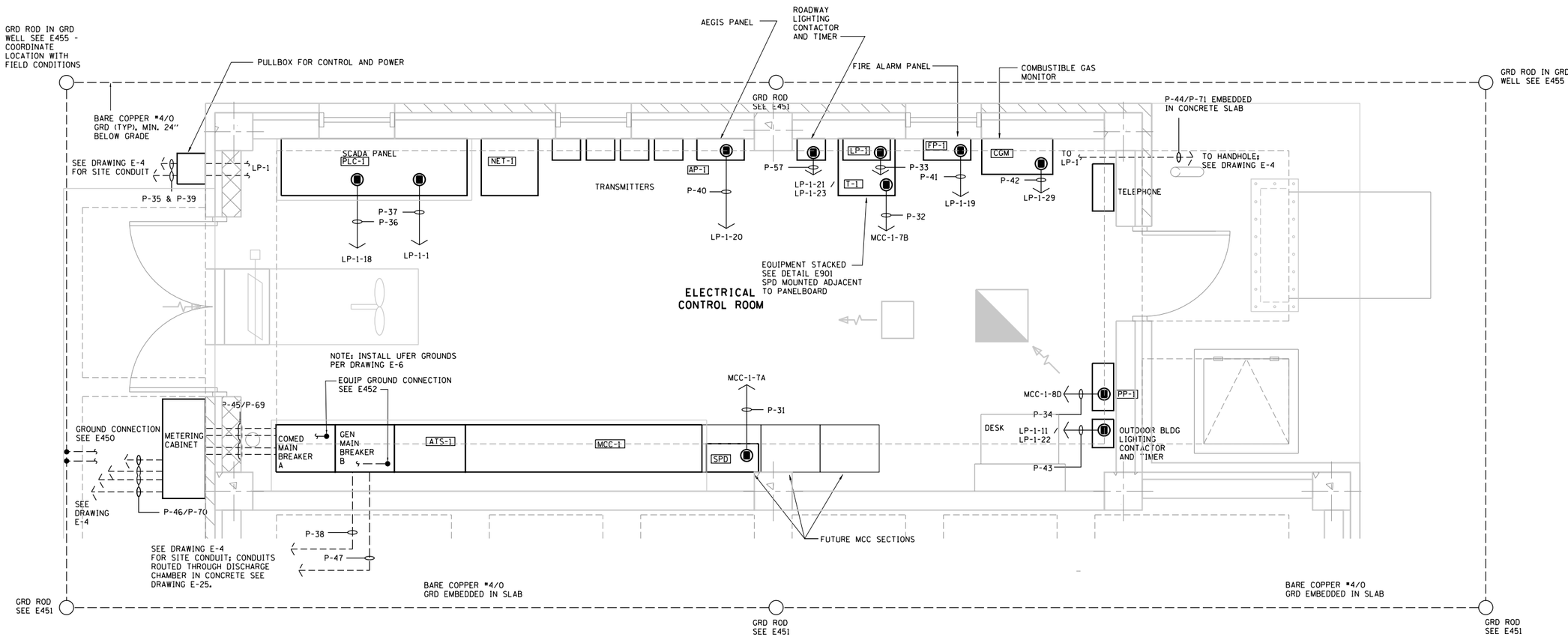
PUMP STATION NO. 8 RELOCATION
ELECTRICAL
POWER PLAN EL. 631 AND EL. 644

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

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14 NORTHWEST HIGHWAY	86 S-I-I	COOK	156	144
		CONTRACT NO. 60C48		
	ILLINOIS FED. AID PROJECT			

NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR VERIFYING NUMBER OF CONDUCTORS IN CONDUIT PRIOR TO INSTALLATION. LOCATION OF BRANCH AND SWITCH LEGS AS INDICATED MAY BE ROUTED DIFFERENTLY AS DICTATED BY CONSTRUCTION AND SPECIFICATIONS. DEVICES SHOWN WIRED SEPARATELY TO SOURCE; SIGNALS WITH SAME FUNCTION INCLUDING 120 VOLT DEVICES AND BELOW MAY BE COMBINED IN RACEWAYS PER NEC.
2. THE AREAS BENEATH THE ROOF HATCHES SHALL REMAIN CLEAR OF CONDUITS AND EQUIPMENT SO THAT PUMPS CAN BE REMOVED.
3. ALL AREAS WITHIN THE BUILDING EXCEPT ELECTRICAL CONTROL ROOM SHALL BE CLASS I, DIVISION 2,GROUP D EXPLOSION PROOF.
4. COORDINATE POWER CONDUIT ROUTINGS WITH LIGHTING CONDUIT AND INSTRUMENTATION & CONTROL CONDUIT ROUTINGS. SEE DRAWINGS E31.
5. CONDUITS FROM EXTERIOR GATES AND HANDHOLE SHALL BE MOUNTED IN CONCRETE SLAB TO DESTINATION SUCH THAT CONDUITS ARE NOT EXPOSED AND DO NOT CREATE A TRIPPING HAZARD.
6. COORDINATE CONDUIT ROUTING WITH MONORAILS. SEE DRAWINGS S3 AND 24. CONTRACTOR IS NOT ALLOWED TO DRILL CONCRETE OR STEEL BEAMS FOR CONDUITS.
7. COORDINATE CONDUIT ROUTING WITH HVAC DUCTS AND EQUIPMENT. SEE DRAWING H2.
8. PROVIDE A DEDICATED ¾" CONDUIT FROM AP-1 AND PLC-1 TO TELEPHONE PANEL FOR TELEPHONE LINES.
9. CONDUITS SHALL BE LABELED WITH AN ADHESIVE INCLUDING CONDUIT NUMBERS TO IDENTIFY THE CONTENTS PER SPECIFICATIONS.
10. EQUIPMENT AND EQUIPMENT MOUNTED DEVICES SUCH AS PILOT LIGHTS, PUSHBUTTONS, METERS AND SELECTOR SWITCHES SHALL HAVE NAMEPLATES PER SPECIFICATIONS.
11. ALL CONDUITS SHALL BE IDENTIFIED BY UNIQUE CONDUIT NUMBER, SHOW ON ADHESIVE LABEL. SEE DRAWING E-37 FOR CONDUIT REQUIREMENTS. INSTALL PER DRAWING E-3 AND SPECIFICATIONS.
12. CONDUITS ROUTED IN OR THROUGH ELECTRICAL CONTROL ROOM SHALL BE OVERHEAD. CONDUITS SHALL NOT BE ROUTED THROUGH DISCHARGE CHAMBER UNLESS NOTED.
13. JBOX-07 IS LOCATED BELOW THE NETWORK RACK. PROVIDE CONDUIT AND CONDUCTORS PER SCHEDULE.
14. CONTRACTOR SHALL PROVIDE SHIELDED BARRIER BETWEEN CONTROL AND POWER SECTIONS WITHIN JUNCTION BOX.



PLAN AT EL. 644.00

SCALE: 0 1 2 4 FT.

E26

USER NAME =	DESIGNED - MBS	REVISED -	
	DRAWN - MBS	REVISED -	
PLOT SCALE =	CHECKED - JAB	REVISED -	
PLOT DATE =	DATE - 09-29-17	REVISED -	

FILE NAME =

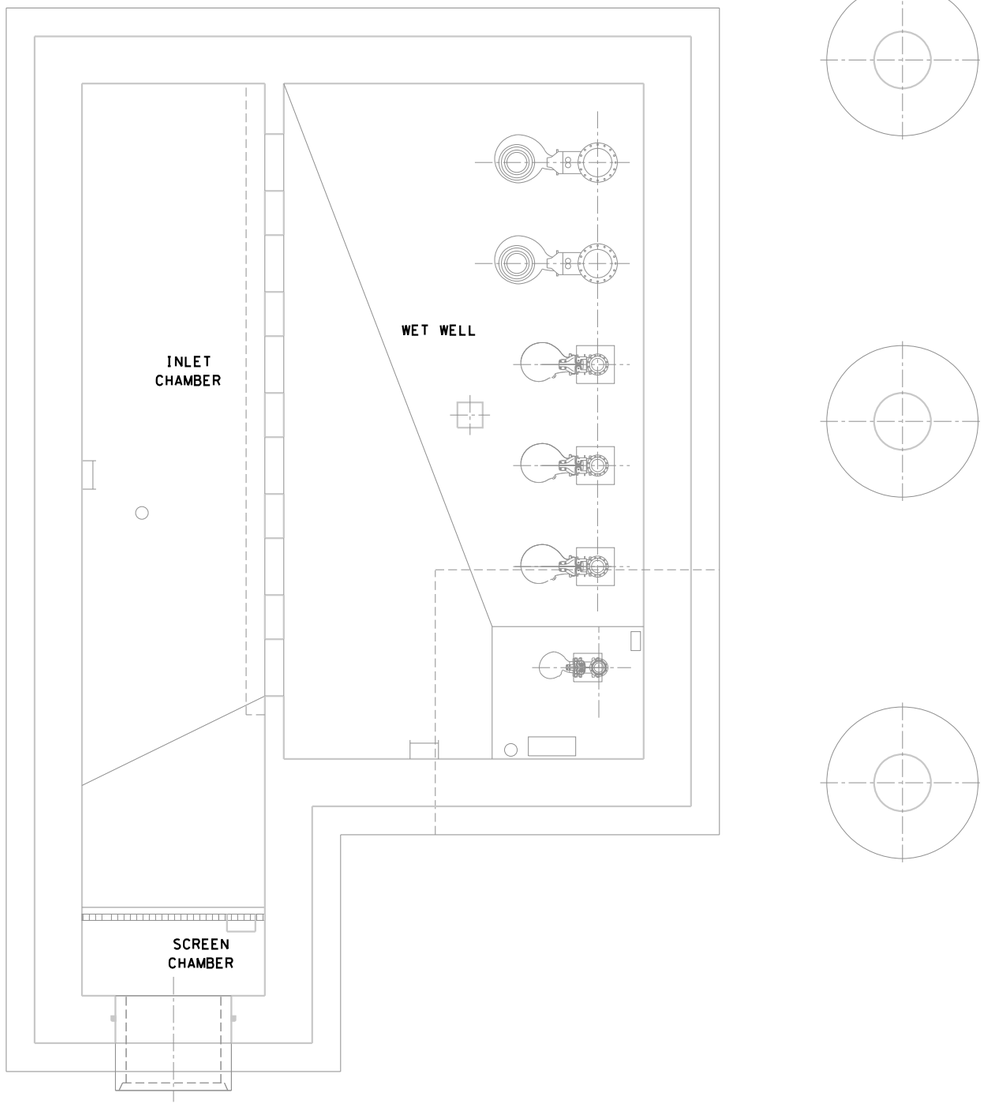
DONOHUE

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

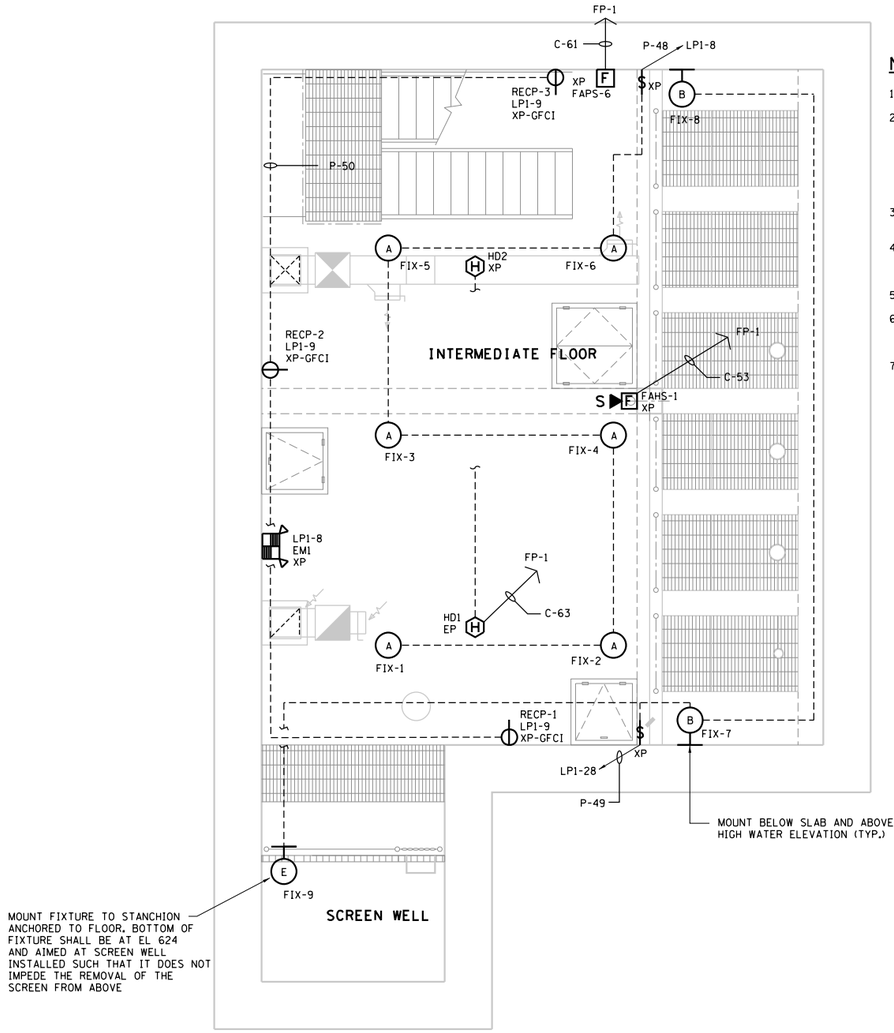
PUMP STATION NO. 8 RELOCATION
ELECTRICAL
POWER PLAN EL. 644 ELECTR/CONTROL ROOM

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

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14	86 S-1-I	COOK	156	145
NORTHWEST HIGHWAY		CONTRACT NO. 60C48		
	ILLINOIS FED. AID PROJECT			



PLAN AT EL. 604.00



PLAN AT EL. 618.00

NOTES:

1. SEE DRAWING E37 FOR CONDUCTOR AND CONDUIT REQUIREMENTS.
2. CONTRACTOR IS RESPONSIBLE FOR VERIFYING NUMBER OF CONDUCTORS IN CONDUIT PRIOR TO INSTALLATION. LOCATION OF BRANCH AND SWITCH LEGS AS INDICATED MAY BE ROUTED DIFFERENTLY AS DICTATED BY CONSTRUCTION AND SPECIFICATIONS. DEVICES SHOWN WIRED SEPARATELY TO SOURCE; SIGNALS WITH SAME FUNCTION INCLUDING 120 VOLT DEVICES AND BELOW MAY BE COMBINED IN RACEWAYS PER NEC.
3. ALL AREAS WITHIN BUILDING EXCEPT ELECTRICAL CONTROL ROOM SHALL BE CLASS I, DIVISION 2, GROUP D EXPLOSION PROOF.
4. COORDINATE LIGHTING CONDUIT ROUTINGS WITH POWER CONDUIT AND INSTRUMENTATION & CONTROL CONDUIT ROUTINGS. SEE DRAWINGS E24 AND E29.
5. COORDINATE CONDUIT ROUTING WITH HVAC DUCTS. SEE DRAWING H1.
6. ALL CONDUITS SHALL BE IDENTIFIED BY UNIQUE CONDUIT NUMBER, SHOW ON ADHESIVE LABEL. INSTALL PER DRAWING E3 AND SPECIFICATIONS.
7. HEAT DETECTORS SHALL BE MOUNTED TO CEILING.

SCALE: 0 4 8 FT.

E27

FILE NAME =

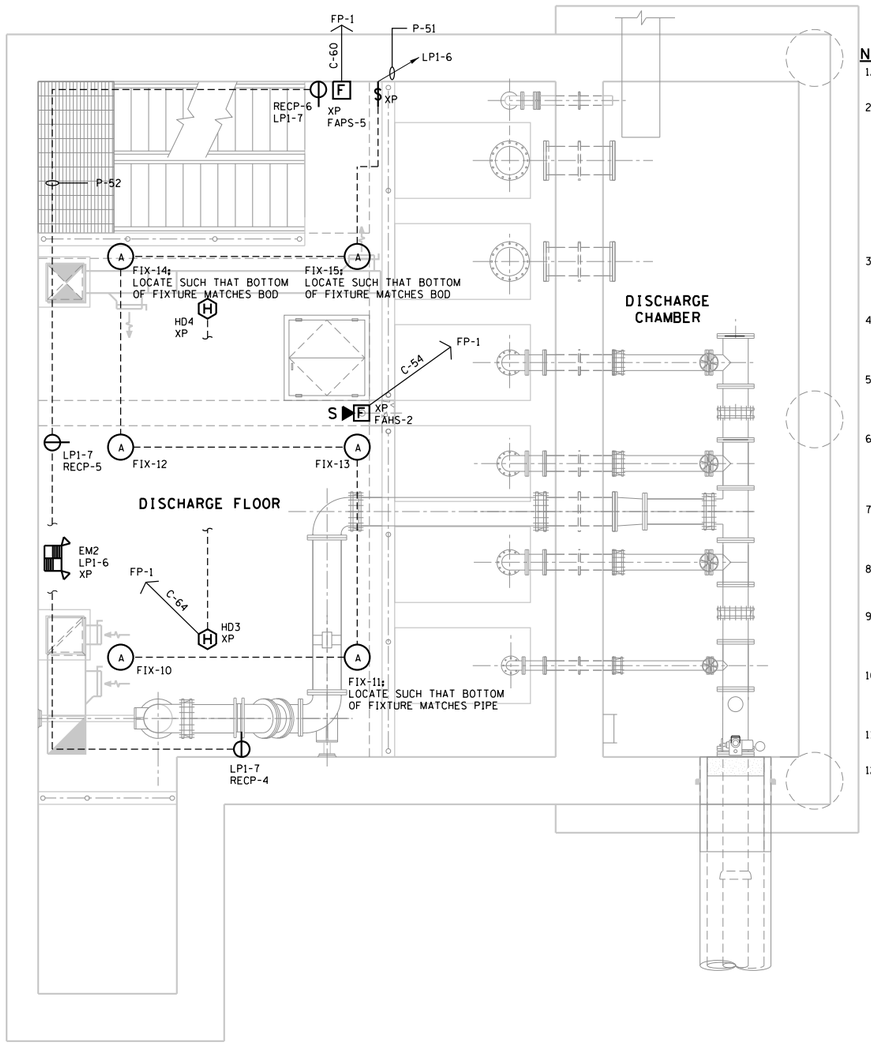
DONOHUE	USER NAME =	DESIGNED - MBS	REVISED -
		DRAWN - MBS	REVISED -
	PLOT SCALE =	CHECKED - JAB	REVISED -
	PLOT DATE =	DATE - 09-29-17	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 8 RELOCATION
ELECTRICAL
LIGHTING PLAN EL. 604 AND EL. 618

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

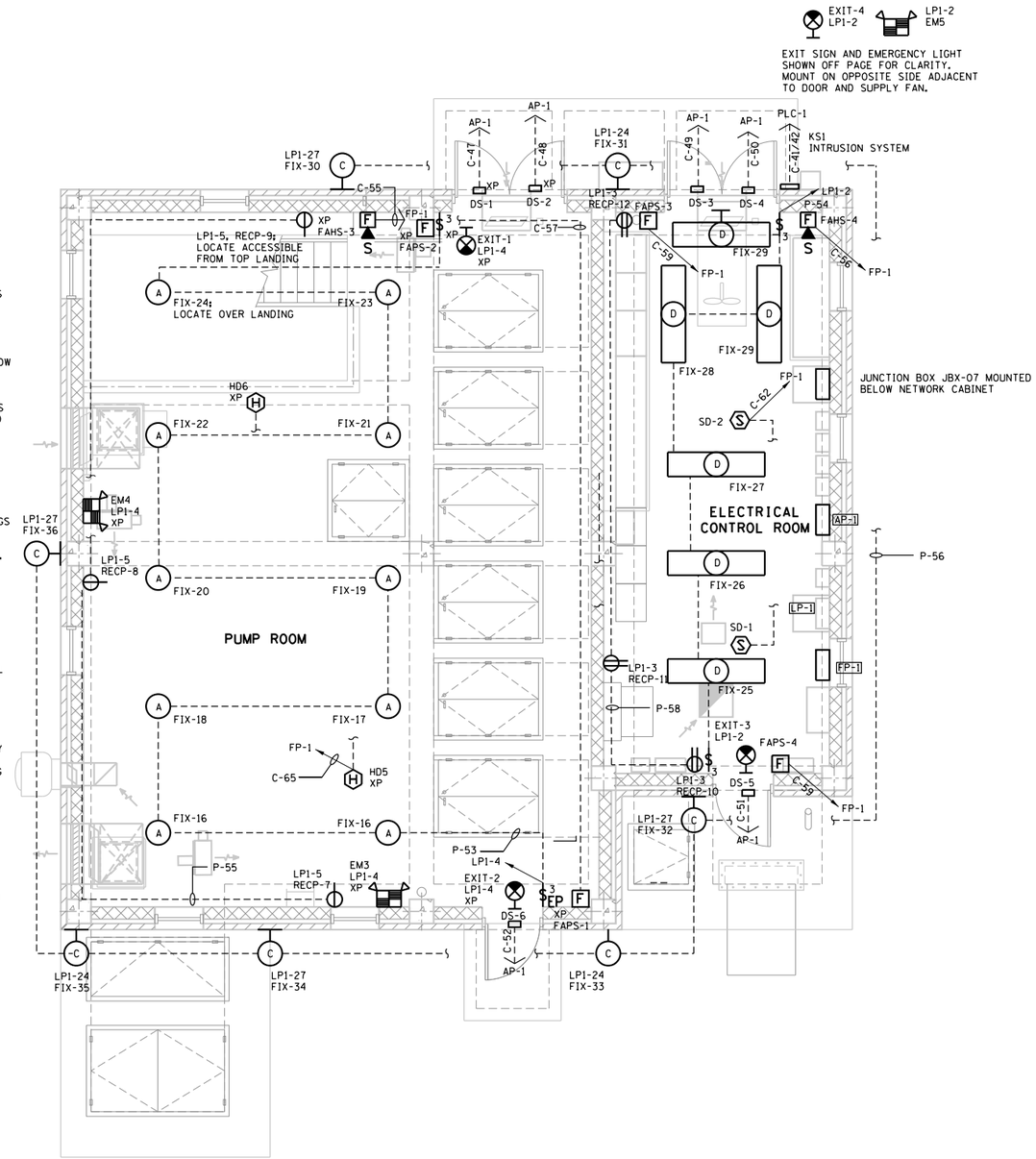
RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14	86 S-I-I	COOK	156	146
NORTHWEST HIGHWAY		CONTRACT NO. 60C48		
	ILLINOIS	FED. AID PROJECT		



PLAN AT EL. 631.00

NOTES:

1. SEE DRAWING E37 FOR CONDUCTOR AND CONDUIT REQUIREMENTS.
2. CONTRACTOR IS RESPONSIBLE FOR VERIFYING NUMBER OF CONDUCTORS IN CONDUIT PRIOR TO INSTALLATION. LOCATION OF BRANCH AND SWITCH LEGS AS INDICATED MAY BE ROUTED DIFFERENTLY AS DICTATED BY CONSTRUCTION AND SPECIFICATIONS. DEVICES SHOWN WIRED SEPARATELY TO SOURCE; SIGNALS WITH SAME FUNCTION INCLUDING 120 VOLT DEVICES AND BELOW MAY BE COMBINED IN RACEWAYS PER NEC.
3. THE AREAS BENEATH THE ROOF HATCHES SHALL REMAIN CLEAR OF CONDUITS AND EQUIPMENT SO THAT PUMPS CAN BE REMOVED.
4. ALL AREAS WITHIN BUILDING EXCEPT ELECTRICAL CONTROL ROOM SHALL BE CLASS I, DIVISION 2, GROUP D EXPLOSION PROOF.
5. COORDINATE LIGHTING CONDUIT ROUTINGS WITH POWER CONDUIT AND INSTRUMENTATION & CONTROL CONDUIT ROUTINGS. SEE DRAWINGS E25 AND E30.
6. CONDUITS FROM EXTERIOR GATES AND HANDHOLE SHALL BE INSTALLED IN CONCRETE SLAB TO DESTINATION SUCH THAT CONDUITS ARE NOT EXPOSED AND DO NOT CREATE A TRIPPING HAZARD.
7. COORDINATE CONDUIT ROUTING WITH MONORAILS. SEE DRAWINGS S3 AND S4. CONTRACTOR IS NOT ALLOWED TO DRILL CONCRETE BEAMS FOR CONDUITS.
8. COORDINATE CONDUIT ROUTING WITH HVAC DUCTS AND EQUIPMENT. SEE DRAWING H2.
9. ALL CONDUITS SHALL BE IDENTIFIED BY UNIQUE CONDUIT NUMBER, SHOW ON ADHESIVE LABEL. INSTALL PER DRAWING E3 AND SPECIFICATIONS.
10. CONDUITS ROUTED IN OR THROUGH ELECTRICAL CONTROL ROOM SHALL BE OVERHEAD. CONDUITS SHALL NOT BE ROUTED THROUGH DISCHARGE CHAMBER.
11. HEAT AND SMOKE DETECTORS SHALL BE MOUNTED TO CEILING.
12. MOUNT FIXTURES 28 AND 29 TO MATCH BOTTOM OF FAN AND DUCTWORK.



PLAN AT EL. 644.00

SCALE: 0 4 8 FT.

E28

USER NAME =	DESIGNED - MBS	REVISED -	
	DRAWN - MBS	REVISED -	
PLOT SCALE =	CHECKED - JAB	REVISED -	
PLOT DATE =	DATE - 09-29-17	REVISED -	

FILE NAME =

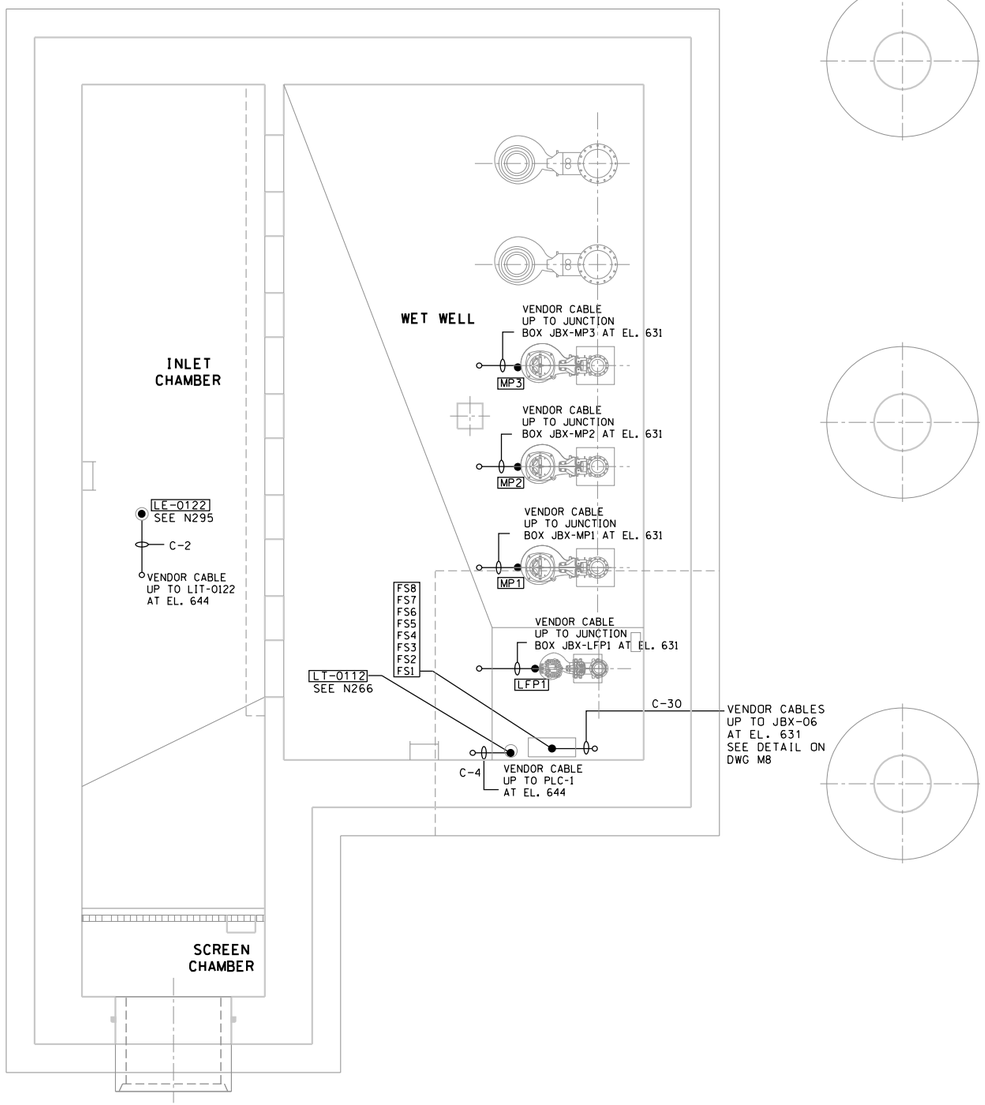
DONOHUE

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 8 RELOCATION
ELECTRICAL
LIGHTING PLAN EL. 631 AND EL. 644

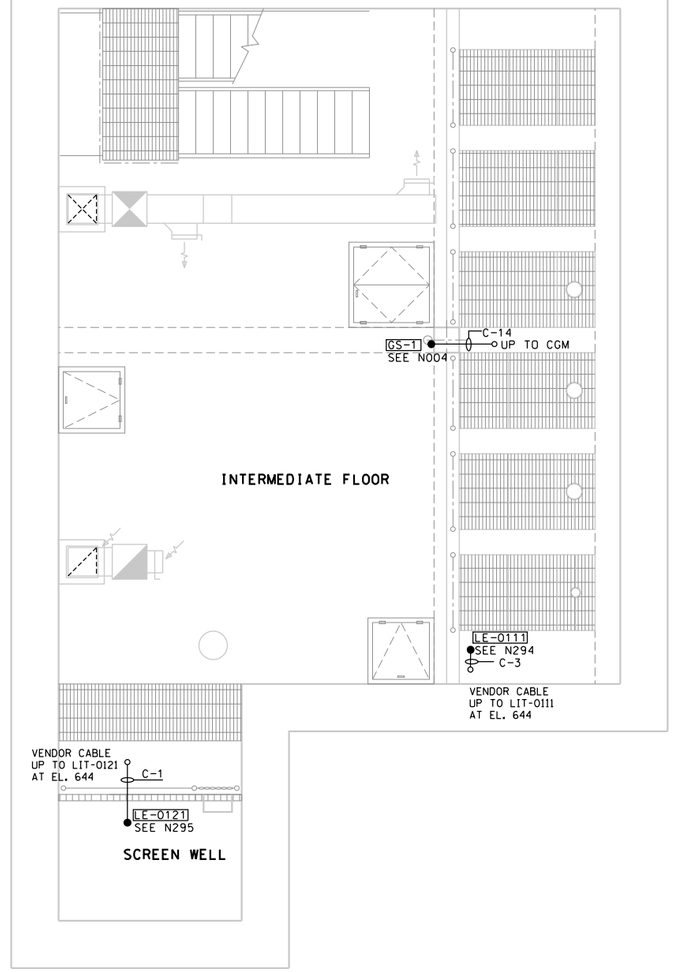
SCALE: | SHEET OF SHEETS | STA. | TO STA.

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14	86 S-I-I	COOK	156	147
NORTHWEST HIGHWAY		CONTRACT NO. 60C48		
	ILLINOIS	FED. AID PROJECT		



PLAN AT EL. 604.00

STAIR WELL



PLAN AT EL. 618.00

NOTES:

1. SEE DRAWING E37 FOR CONDUCTOR AND CONDUIT REQUIREMENTS.
2. CONTRACTOR IS RESPONSIBLE FOR VERIFYING NUMBER OF CONDUCTORS IN CONDUIT PRIOR TO INSTALLATION. LOCATION OF BRANCH AND SWITCH LEGS AS INDICATED MAY BE ROUTED DIFFERENTLY AS DICTATED BY CONSTRUCTION AND SPECIFICATIONS. DEVICES SHOWN WIRED SEPARATELY TO SOURCE; SIGNALS WITH SAME FUNCTION INCLUDING 120 VOLT DEVICES AND BELOW MAY BE COMBINED IN RACEWAYS PER NEC.
3. ALL AREAS WITHIN BUILDING EXCEPT ELECTRICAL CONTROL ROOM SHALL BE CLASS I, DIVISION 2, GROUP D EXPLOSION PROOF.
4. COORDINATE INSTRUMENTATION & CONTROL CONDUIT ROUTINGS WITH LIGHTING CONDUIT AND POWER CONDUIT ROUTINGS. SEE DRAWINGS E24 AND E27.
5. COORDINATE CONDUIT ROUTING WITH HVAC DUCTS. SEE DRAWING H1.
6. SUPPORT VENDOR CABLES FROM SLABS AT INTERMEDIATE AND DISCHARGE LEVELS. SEE DETAIL E601.
7. ALL CONDUITS SHALL BE IDENTIFIED BY UNIQUE CONDUIT NUMBER, AND SHOWN ON ADHESIVE LABELS. INSTALL PER DRAWING E3 AND SPECIFICATIONS.
8. ALL JUNCTION BOXES USED FOR INSTRUMENTATION SHALL BE MOUNTED AT ELEVATION 631.00 OR HIGHER.

SCALE: 0 4 8 FT.

E29

FILE NAME =

DONOHUE

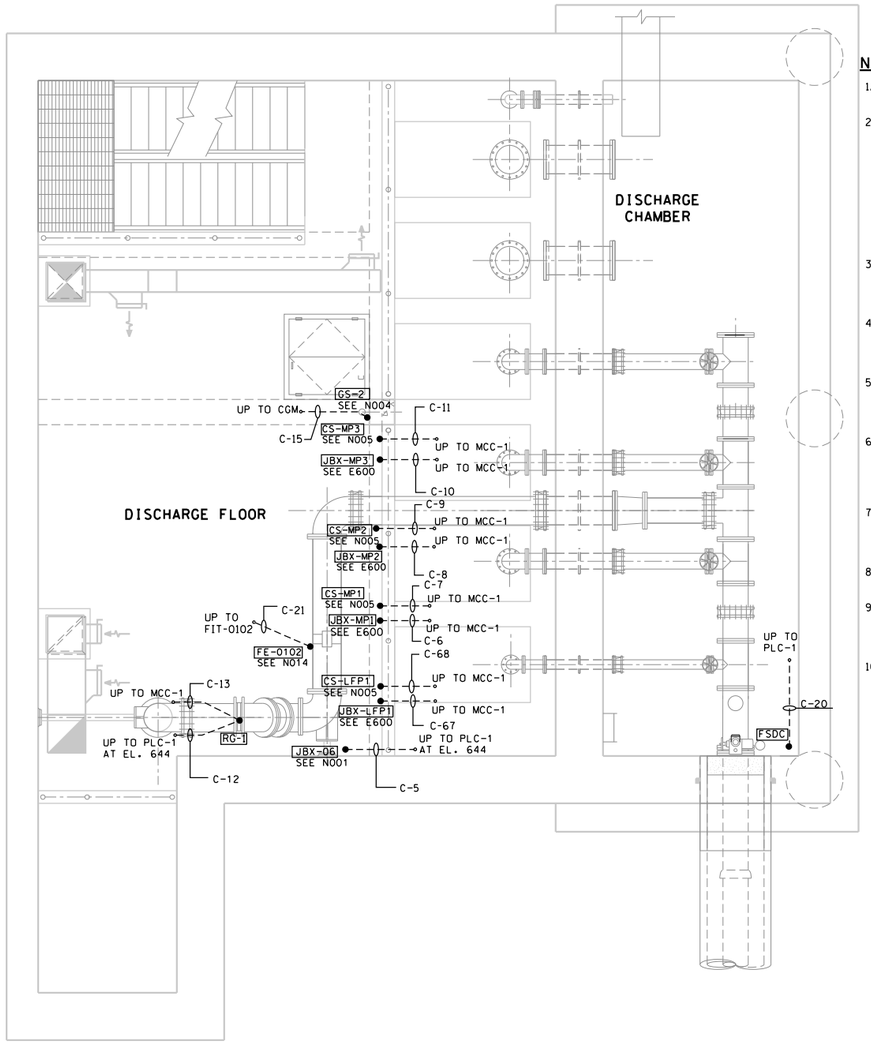
USER NAME =	DESIGNED - MBS	REVISED -
	DRAWN - MBS	REVISED -
PLOT SCALE =	CHECKED - JAB	REVISED -
PLOT DATE =	DATE - 09-29-17	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 8 RELOCATION
I&C
PLAN EL. 604 AND EL. 618

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

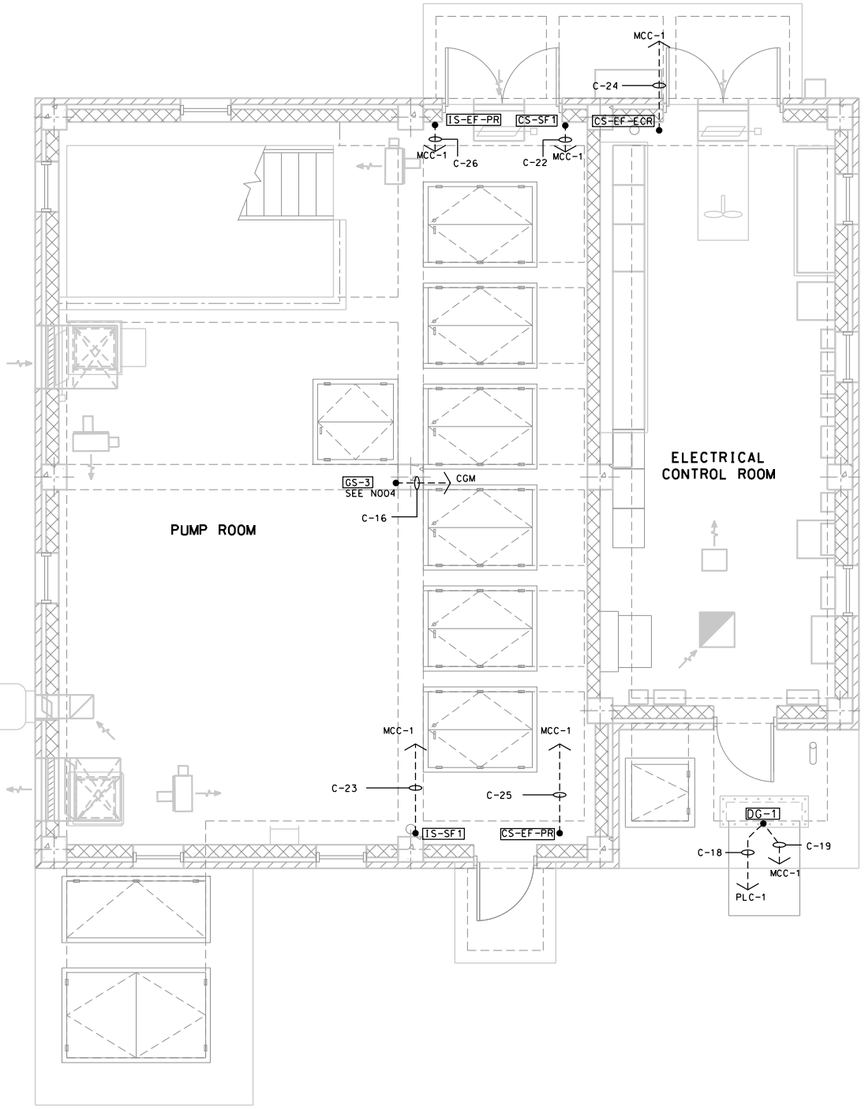
RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14 NORTHWEST HIGHWAY	86 S-I-I	COOK	156	148
		CONTRACT NO. 60C48		
	ILLINOIS	FED. AID PROJECT		



PLAN AT EL. 631.00

NOTES:

1. SEE DRAWING E37 FOR CONDUCTOR AND CONDUIT REQUIREMENTS.
2. CONTRACTOR IS RESPONSIBLE FOR VERIFYING NUMBER OF CONDUCTORS IN CONDUIT PRIOR TO INSTALLATION. LOCATION OF BRANCH AND SWITCH LEGS AS INDICATED MAY BE ROUTED DIFFERENTLY AS DICTATED BY CONSTRUCTION AND SPECIFICATIONS. DEVICES SHOWN WIRED SEPARATELY TO SOURCE; SIGNALS WITH SAME FUNCTION INCLUDING 120 VOLT DEVICES AND BELOW MAY BE COMBINED IN RACEWAYS PER NEC.
3. THE AREAS BENEATH THE ROOF HATCHES SHALL REMAIN CLEAR OF CONDUITS AND EQUIPMENT SO THAT PUMPS CAN BE REMOVED.
4. ALL AREAS WITHIN BUILDING EXCEPT ELECTRICAL CONTROL ROOM SHALL BE CLASS I, DIVISION 2, GROUP D EXPLOSION PROOF.
5. COORDINATE INSTRUMENTATION & CONTROL CONDUIT ROUTINGS WITH LIGHTING CONDUIT AND POWER CONDUIT ROUTINGS. SEE DRAWINGS E25 AND E28.
6. CONDUITS FROM EXTERIOR GATES AND HANDHOLE SHALL BE INSTALLED IN CONCRETE SLAB TO DESTINATION SUCH THAT CONDUITS ARE NOT EXPOSED AND DO NOT CREATE A TRIPPING HAZARD.
7. COORDINATE CONDUIT ROUTING WITH MONORAILS. SEE DRAWINGS S3 AND S4. CONTRACTOR IS NOT ALLOWED TO DRILL CONCRETE BEAMS FOR CONDUITS.
8. COORDINATE CONDUIT ROUTING WITH HVAC DUCTS AND EQUIPMENT. SEE DRAWING H2.
9. ALL CONDUITS SHALL BE IDENTIFIED BY UNIQUE CONDUIT NUMBER, AND SHOWN ON ADHESIVE LABELS. INSTALL PER DRAWING E3 AND SPECIFICATIONS.
10. CONDUITS ROUTED IN OR THROUGH ELECTRICAL CONTROL ROOM SHALL BE OVERHEAD. CONDUITS SHALL NOT BE ROUTED THROUGH DISCHARGE CHAMBER.



PLAN AT EL. 644.00

SCALE: 0 4 8 FT.

E30

USER NAME =	DESIGNED - MBS	REVISED -	
	DRAWN - MBS	REVISED -	
PLOT SCALE =	CHECKED - JAB	REVISED -	
PLOT DATE =	DATE - 09-29-17	REVISED -	

FILE NAME =

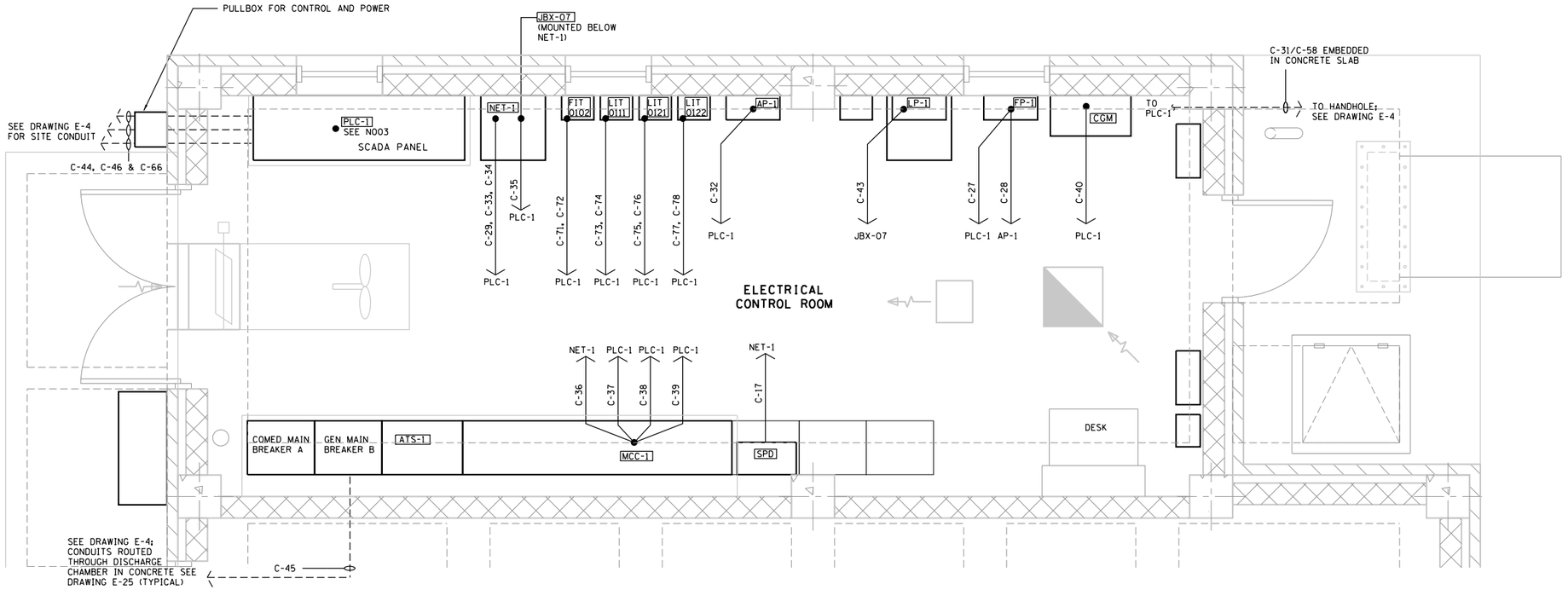
DONOHUE

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 8 RELOCATION
I&C
PLAN EL. 631 AND EL. 644

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

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14	86 S-I-I	COOK	156	149
NORTHWEST HIGHWAY		CONTRACT NO. 60C48		
	ILLINOIS	FED. AID PROJECT		



PLAN AT EL. 644.00

NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR VERIFYING NUMBER OF CONDUCTORS IN CONDUIT PRIOR TO INSTALLATION. LOCATION OF BRANCH AND SWITCH LEGS AS INDICATED MAY BE ROUTED DIFFERENTLY AS DICTATED BY CONSTRUCTION AND SPECIFICATIONS. DEVICES SHOWN WIRED SEPARATELY TO SOURCE; SIGNALS WITH SAME FUNCTION INCLUDING 120 VOLT DEVICES AND BELOW MAY BE COMBINED IN RACEWAYS PER NEC.
2. ALL AREAS WITHIN BUILDING EXCEPT ELECTRICAL CONTROL ROOM SHALL BE CLASS 1, DIVISION 2, GROUP D EXPLOSION PROOF.
3. COORDINATE INSTRUMENTATION AND CONTROL CONDUIT ROUTINGS WITH LIGHTING CONDUIT AND POWER CONDUIT ROUTINGS. SEE DRAWINGS E26 AND E28.
4. COORDINATE CONDUIT ROUTING WITH HVAC DUCTS AND EQUIPMENT. SEE DRAWING H2.
5. CONDUITS SHALL BE LABELED WITH AN ADHESIVE TO IDENTIFY THE CONTENTS PER SPECIFICATIONS. INSTALL PER DRAWING E3 AND SPECIFICATIONS.
6. CONDUITS ROUTED IN OR THROUGH ELECTRICAL CONTROL ROOM SHALL BE OVERHEAD. CONDUITS SHALL NOT BE ROUTED THROUGH DISCHARGE CHAMBER UNLESS NOTED.
7. CONDUITS FROM EXTERIOR GATES AND HANDHOLE SHALL BE MOUNTED IN CONCRETE SLAB TO DESTINATION SUCH THAT CONDUITS ARE NOT EXPOSED AND DO NOT CREATE A TRIPPING HAZARD.
8. CONTRACTOR SHALL PROVIDE SHIELDED BARRIER BETWEEN CONTROL AND POWER SECTIONS WITHIN JUNCTION BOX.

SCALE: 0 1 2 4 FT.

E31

FILE NAME =

DONOHUE

USER NAME =	DESIGNED - MBS	REVISED -
	DRAWN - MBS	REVISED -
PLOT SCALE =	CHECKED - JAB	REVISED -
PLOT DATE =	DATE - 09-29-17	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

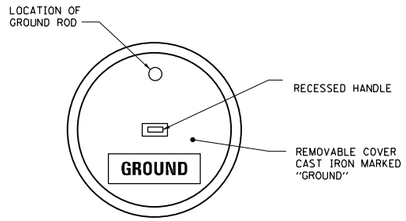
PUMP STATION NO. 8 RELOCATION
I&C
PLAN EL. 644 ELECTRICAL CONTROL ROOM

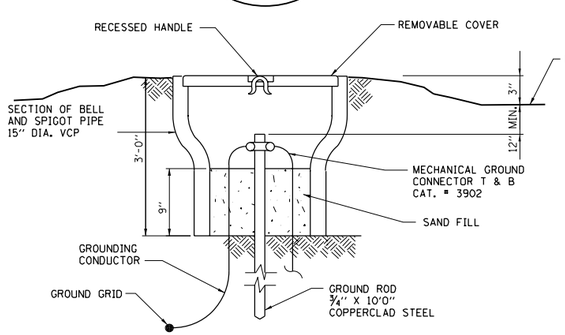
SCALE: | SHEET OF SHEETS | STA. | TO STA.

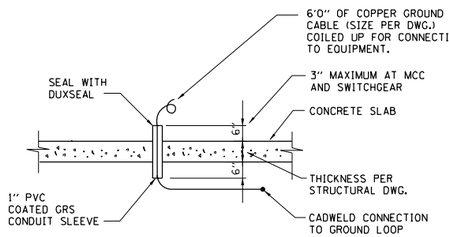
RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14	86 S-I-I	COOK	156	150
NORTHWEST HIGHWAY		CONTRACT NO. 60C48		
	ILLINOIS	FED. AID PROJECT		

LUMINAIRE SCHEDULE

TYPE	DESCRIPTION	LAMPS NO	LAMPS ORD ABB	MANUFACTURER	CATALOG NUMBER	REMARKS
A	CEILING MOUNTED LED FIXTURE SUITABLE FOR C1 D2 LOCATION	1	42 LED	HOLOPHANE EATON HUBBELL	HPLED-42-350-5K-AS-UN-G-L5-50C VMV SERIES LED HAZARDOUS LIGHTWATT LED	SEE (E500)
B	WALL MOUNTED PULSE START METAL HALIDE FIXTURE SUITABLE FOR C1 D2 LOCATION - MARINE RATED	1	175MH	APPLETON HOLOPHANE EATON	CFP400JBMT WITH CMR-4HB REFLECTOR HRLL LED FZD SERIES FLOODLIGHT LUMINAIRE	MOUNT AS NOTED ON PLANS
C	LED WALL PACK WITH FULL SHIELD	1	10 LED	HOLOPHANE LITHONIA EATON	W4PLED-10C-700-50K-T3M-MVOLT-BK TWH LED WPLLED	MOUNTED 10'-0" ABOVE GRADE/LANDING
D	1X4 ENCLOSED AND GASKETED LED FIXTURE	2	LED	HOLOPHANE LITHONIA EATON	EMS4-LED-3L-35-1MACD-BLANK-BLANK-CS89-DIM FEM LED VAPORTITE LED	MOUNTED 9'-6" AFF
E	POLE MOUNTED PULSE START METAL HALIDE FOR C1 D2 LOCATION WITH 30" FLEXIBLE CONNECTION - MARINE	1	400MH	APPLETON HOLOPHANE EATON	CFP400SFMT-MT WITH CMR-4HB REFLECTOR HRLL LED FZD SERIES FLOODLIGHT LUMINAIRE	MOUNT AS NOTED ON PLANS
	POLE MOUNTED ROADWAY LED FIXTURE	1	LED	GENERAL ELECTRIC AMERICAN ELECTRIC LIGHTING EATON	ERL2-0-27-C3-40-D-GRAY-A1L ATB2-80BLEDE85-MVOLT-R3-NL-P7'-SH VERD-M-A0485-D-U-T3-4N7-AP-OA/RA1013	MOUNT AS NOTED ON PLANS
	EXIT LIGHT WITH LED LAMPS RED LETTERS/WHITE HOUSING	-	WITH UNIT	LITHONIA HOLOPHANE EATON	LQM-S-W-3-R-120/277-EL N-SD DELEON DLTL CCH UX SERIES LED	MOUNTED ABOVE DOOR UNLESS OTHERWISE NOTED
XP	EXIT/EMERGENCY LIGHT WITH LED LAMPS RED LETTERS/WHITE HOUSING SUITABLE FOR C1 D2 ENVIRONMENT	-	WITH UNIT	LITHONIA HOLOPHANE EATON	LZ-S-1-R-120/277-EL N-SD-TD DELEON HD EX-LITE LED	MOUNTED ABOVE DOOR OR AS SHOWN
	EMERGENCY BATTERY LIGHT WITH TWO UNIT MOUNTED LAMP HEADS AND CAPACITY FOR REMOTE HEADS	2	20W, 12V HALOGEN WITH UNIT	LITHONIA APPLETON EATON	IND1254-H2012-SEL ATX ELS SERIES AN SPECIFICATION EMERGENCY LIGHT	WALL MOUNTED 8'-0" ABOVE FLOOR
XP	EMERGENCY BATTERY LIGHT WITH TWO UNIT MOUNTED LAMP HEADS SUITABLE FOR C1 D2 ENVIRONMENT	2	12W, 12V HALOGEN WITH UNIT	LITHONIA HOLOPHANE EATON	ZI2125N-H1212-SD-TD DESOTO M70 LIGHT-PAK LED N2LPS	WALL MOUNTED 8'-0" ABOVE FLOOR





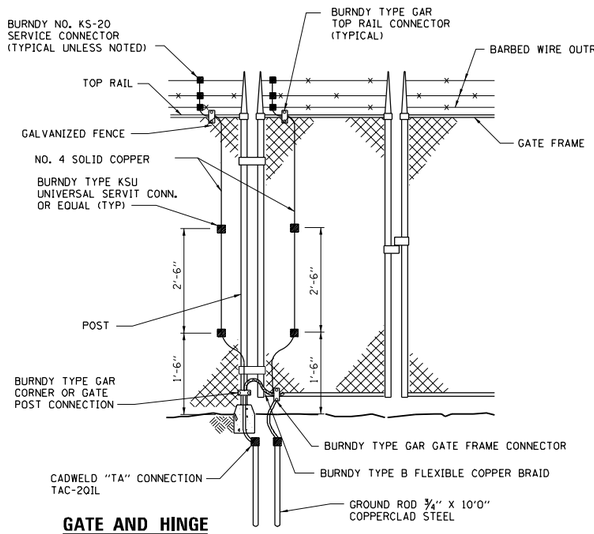


EQUIPMENT GROUND CABLE STUB-UP E452

NTS

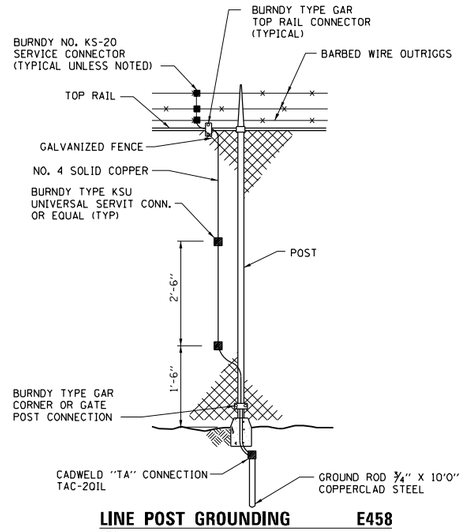
GROUNDING TEST STATION DETAIL E455

NTS



GATE AND HINGE POST GROUNDING E457

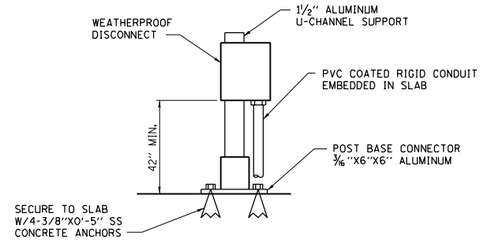
NTS



LINE POST GROUNDING E458

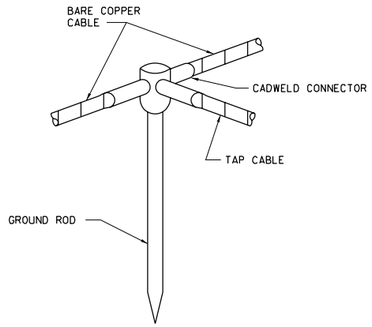
NTS

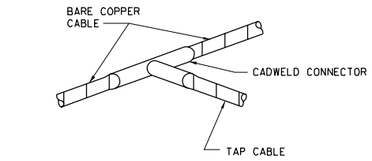
U-CHANNEL MOUNT



DISCONNECT INSTALLATION E002

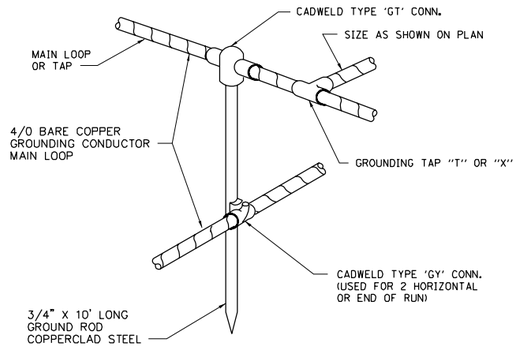
NTS





GROUNDING CONNECTION DETAIL E450

NTS



CONDUCTOR TO GROUND ROD CONNECTION DETAIL E451

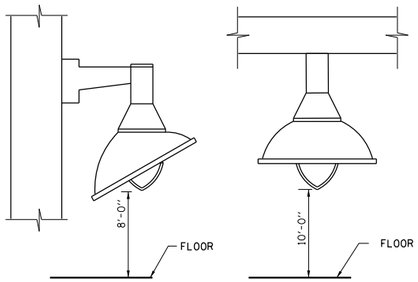
NTS

E32

DONOHUE	USER NAME =	DESIGNED - MBS	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	PUMP STATION NO. 8 RELOCATION ELECTRICAL DETAILS
		DRAWN - MBS	REVISED -		
	PLOT SCALE =	CHECKED - JAB	REVISED -		
	PLOT DATE =	DATE - 09-29-17	REVISED -		SCALE: SHEET OF SHEETS STA. TO STA.

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14 NORTHWEST HIGHWAY	86 S-I-I	COOK	156	151
		CONTRACT NO. 60C48		
	ILLINOIS	FED. AID PROJECT		

FILE NAME =

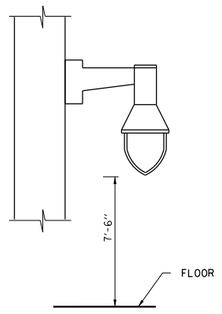


WALL MOUNTED CEILING MOUNTED

NOTE: FIXTURES IN PUMP ROOM SHALL BE MOUNTED 11'-0" AFF.

FIXTURE MOUNTING DETAIL E500

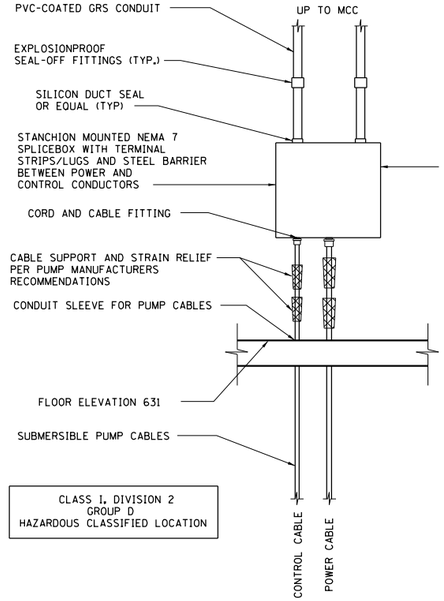
NTS



WALL MOUNTED

FIXTURE MOUNTING DETAIL E550

NTS



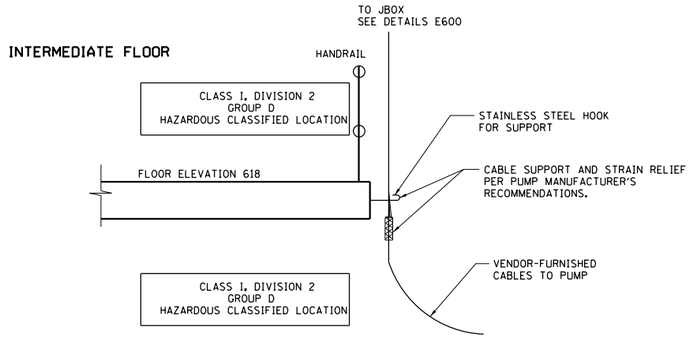
TO PUMPS; SEE DETAIL E605

FRONT VIEW

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

SUBMERSIBLE PUMP SPLICEBOX DETAIL E600

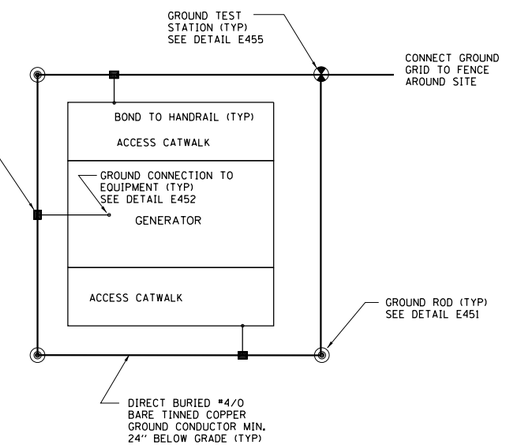
NTS



WET WELL SIDE VIEW

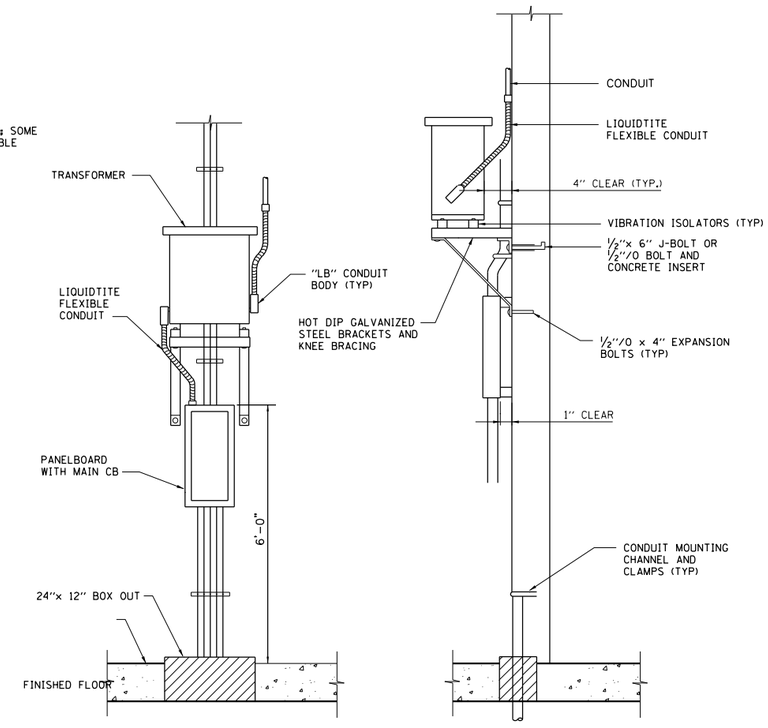
CABLE SUPPORT DETAIL E605

NTS



GENERATOR GROUNDING DETAIL E601

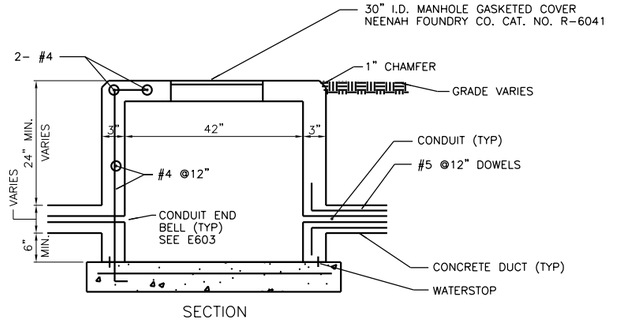
NTS



FRONT SIDE

WALL MOUNTED TRANSFORMER AND PANEL BOARD E901

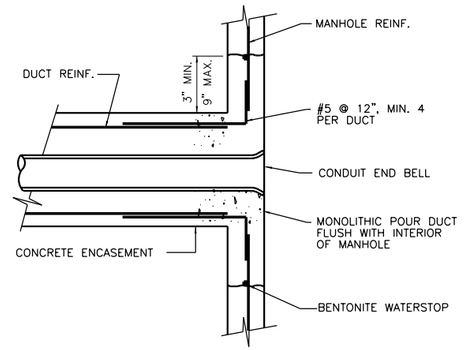
NTS



SECTION

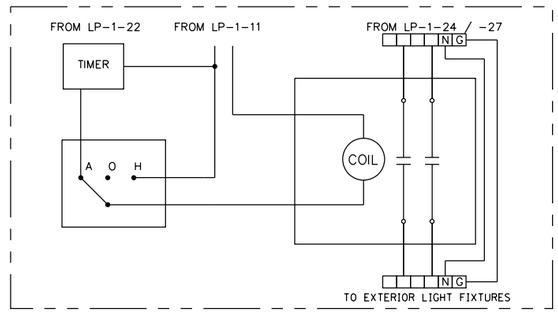
HANDHOLE DETAIL E602

NOT TO SCALE



DUCT PRECAST MANHOLE INTERFACE DETAIL E603

NOT TO SCALE



NOTE: NEMA 1 CONTACTOR WITH H-O-A SWITCH ON OUTER ENCLOSURE. TIME SHALL UTILIZE ASTRONOMICAL TIME SWITCH.

CIRCUITS SHOWN FOR BUILDING LIGHTING. REFER TO PANEL SCHEDULE FOR STREET LIGHTING CIRCUIT REQUIREMENTS.

LIGHTING CONTACTOR AND TIMER WIRING DIAGRAM E951

NTS

FILE NAME =

DONOHUE

USER NAME =	DESIGNED - MBS	REVISED -
	DRAWN - MBS	REVISED -
PLOT SCALE =	CHECKED - JAB	REVISED -
PLOT DATE =	DATE - 09-29-17	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 8 RELOCATION
ELECTRICAL
DETAILS

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

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14	86 S-I-I	COOK	156	152
NORTHWEST HIGHWAY		CONTRACT NO. 60C48		
	ILLINOIS FED. AID PROJECT			

PANEL SCHEDULE
PP-1

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

100A MAIN BREAKER
200A MAIN BUS
100A MIN. GRD. BUS

CKT. NO.	TRIP/P	DESCRIPTION	VA	PHASE A	PHASE B	PHASE C	VA	DESCRIPTION	TRIP/P	CKT. NO.
1			1666	•			1666			2
3	20/3	EUH-PR-1	1666		•		1666	EUH-PR-2	20/3	4
5			1666			•	1666			6
7			1666	•			2500			8
9	20/3	EUH-PR-3	1666		•		2500	EUH-ECR	20/3	10
11			1666			•	2500			12
13				•						14
15	20/3	SPARE			•			SPARE	20/3	16
17						•				18
19				•						20
21	50/3	SPARE			•			SPACE		22
23						•				24
25				•						26
27		SPACE			•			SPACE		28
29						•				30
		TOTALS:	10000	7500	7500	7500	12500			

TOTAL PANEL CONNECTED LOAD: 22500VA, 27.06A @ 480 V

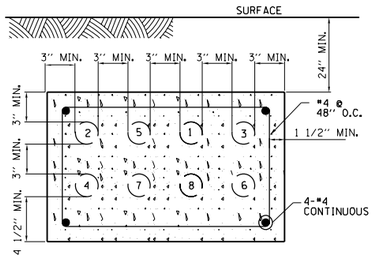
PANEL SCHEDULE
LP-1

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

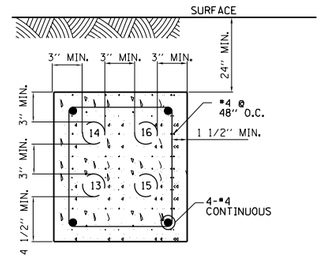
100A MAIN BREAKER
225A MAIN BUS
100A MIN. GRD. BUS

VA	CKT. NO.	TRIP/P	DESCRIPTION	PHASE A	PHASE B	PHASE C	DESCRIPTION	TRIP/P	CKT. NO.	VA
1200	1	20/1	SCADA PANEL SOURCE 1 PLC-1	•			ELECTRICAL CONTROLS ROOM LIGHTS	20/1	2	335
720	3	20/1	ELECTRICAL CONTROLS ROOM RECPT		•		PUMP ROOM LIGHTS	30/1	4	1710
1120	5	20/1	PUMP ROOM RECPT			•	DISCHARGE LEVEL LIGHTS	20/1	6	1045
540	7	20/1	DISCHARGE LEVEL RECPT	•			INTERMEDIATE LEVEL LIGHTS	20/1	8	1045
540	9	20/1	INTERMEDIATE LEVEL RECPT		•		SPARE	20/1	10	700
120	11	20/1	BLDG LIGHTING CONTACTOR COIL			•	ROADWAY LIGHTING	20/2	12	–
800	13	20/1	GENERATOR BATTERY CHARGER	•					14	
600	15	20/1	GENERATOR STRIP HEATER		•		SPARE	20/1	16	–
1500	17	20/1	GENERATOR COOLANT HEATER			•	SCADA PANEL SOURCE 2 PLC-1	20/1	18	1200
120	19	20/1	FIRE ALARM PANEL FP-1	•			AEGIS PANEL AP-1	20/1	20	120
120	21	20/1	ROADWAY LIGHTING CONTACTOR COIL		•		BLDG LIGHT TIMER - CLOCK MOTOR	20/1	22	120
120	23	20/1	ROADWAY LIGHT TIME -CLOCK MOTOR			•	EXTERIOR BLDG LIGHTS	20/1	24	105
1090	25	20/1	SPARE	•			SPARE	20/1	26	540
80	27	20/1	EXTERIOR BLDG LIGHTS		•		WET WELL LIGHTS	20/1	28	500
120	29	20/1	COMB GAS PANEL CGM			•	SPARE	20/1	30	–
–	31	20/2	SPARE	•			LIGHTING PANEL SURGE PROTECTION	60/3	32	–
	33				•				34	
–	35	20/1	SPARE			•			36	
8790			TOTALS:	5790	5090	5330	–			7420

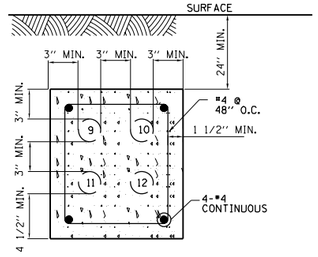
TOTAL PANEL CONNECTED LOAD: 16210VA, 45A @ 208V



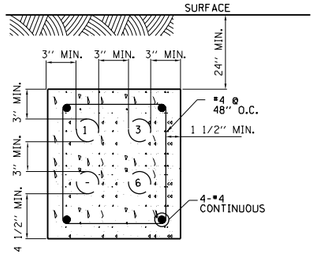
DUCT BANK SECTION A
NTS E4



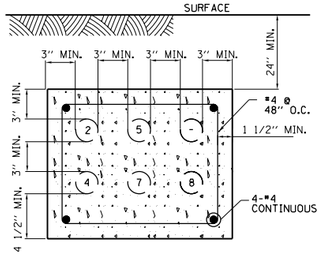
DUCT BANK SECTION B
NTS E4



DUCT BANK SECTION C
NTS E4



DUCT BANK SECTION D
NTS E4



DUCT BANK SECTION E
NTS E4

DUCTBANK SCHEDULE

NUMBER	SIZE	FROM	TO	CONTENTS	REMARKS
1	3.5"	EG1	MCC1	SPARE	CAP EACH END P-38
2	2"	EG1	PLC1	SPARE	CAP EACH END C-66; VIA PULLBOX
3	3.5"	EG1	MCC1	POWER	480V - P-47
4	2"	EG1	PLC1	CONTROLS	C-44; VIA PULLBOX
5	1"	EG1	PLC1	INSTRUMENTATION	GRS CONDUIT - C-46; VIA PULLBOX
6	1"	EG1	MCC1	CONTROLS	C-45
7	1"	EG1	LP1	POWER	120V - COOLANT HTR - P-35; VIA PULLBOX
8	1"	EG1	LP1	POWER	120V - CHARGER/STRIP - P-39; VIA PULLBOX
9	3"	UTILITY XFMR	METERING CAB.	SPARE	P-70
10	3"	UTILITY XFMR	METERING CAB.	SPARE	P-70
11	3"	UTILITY XFMR	METERING CAB.	POWER	480V - P-46
12	3"	UTILITY XFMR	METERING CAB.	POWER	480V - P-46
13	2"	PAVEMENT FLOAT BOX	PLC1 VIA HH	CONTROLS	C-31
14	2"	PAVEMENT FLOAT BOX	PLC1 VIA HH	SPARE	CAP IN PLC1; TERM IN BOX C-58
15	1.5"	LP1; VIA HANDHOLE	EX. LIGHT FIX.	POWER	P-44
16	1.5"	LP1; VIA HANDHOLE	EX. LIGHT FIX.	SPARE	CAP BELOW LP1 P-71

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.
4. SEE DRAWING E-37 FOR POWER AND CONTROL CONDUCTOR REQUIREMENTS.
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.

FILE NAME =

DONOHUE

USER NAME =	DESIGNED - MBS	REVISED -	
	DRAWN - MBS	REVISED -	
PLOT SCALE =	CHECKED - JAB	REVISED -	
PLOT DATE =	DATE - 09-29-17	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 8 RELOCATION
ELECTRICAL
PANEL AND DUCT BANK SCHEDULES

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

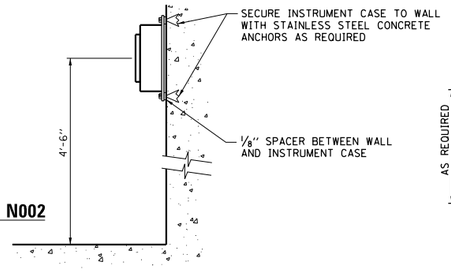
RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14 NORTHWEST HIGHWAY	86 S-I-I	COOK	156	153
		CONTRACT NO. 60C48		
	ILLINOIS	FED. AID PROJECT		

INSTRUMENT PLAN GENERAL NOTES

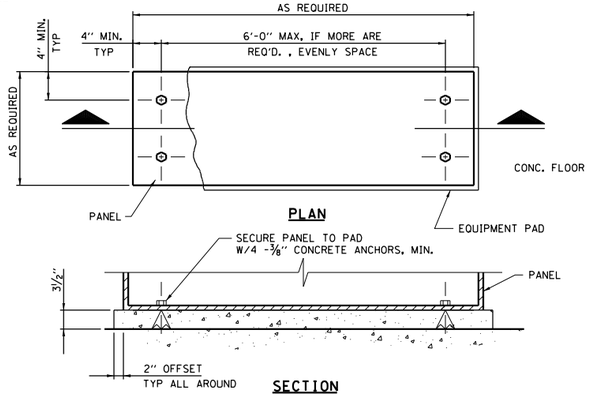
1. CONTRACTOR IS RESPONSIBLE FOR ALL WIRING, WHETHER SHOWN OR NOT, NECESSARY FOR A COMPLETE AND OPERABLE SYSTEM.
2. THIS DRAWING SHOWS APPROXIMATE INSTALLATION DETAILS AND IS NOT DRAWN TO SCALE.
3. SHIELDED AND UNSHIELDED CONDUCTORS SHALL BE RUN IN CONDUIT. SHIELDED CONDUCTORS SHALL NOT BE COMBINED WITH UNSHIELDED CONDUCTORS IN ANY CONDUIT. NEITHER SHIELDED NOR UNSHIELDED CONDUCTORS SHALL BE INCLUDED IN THE SAME CONDUIT AS POWER WIRING.
4. SHIELDED AND UNSHIELDED CONDUCTORS SHALL HAVE A MINIMUM OF 6" SEPARATION BETWEEN CONDUIT ON PARALLEL RUNS.
5. SHIELDED AND UNSHIELDED CONDUCTORS SHALL BE SEPARATED BY STEEL BARRIERS IN ALL COMBINED SIGNAL JUNCTION BOXES AND
6. INSTRUMENT TERMINATION CABINETS. CONDUCTORS SHALL NOT BE SPLICED EXCEPT AT TERMINALS OR AS DESIGNATED BY ENGINEER.
7. ONLY REQUIRED CONDUCTORS ARE SHOWN ON PLAN. SPARE CONDUCTORS NOT SHOWN.
8. FOR EACH CONDUIT CONTAINING MORE THAN TWO CONDUCTORS, 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
9. EACH END OF SPARE CONDUCTOR AT TERMINALS WHENEVER POSSIBLE.
10. CONDUIT SHALL BE SIZED TO ACCOMODATE REQUIRED CONDUCTORS AND ANTICIPATED SPARES.
11. THIS DRAWING DOES NOT SHOW CONDUIT SYSTEMS. PROVIDE, AS A MINIMUM, PULL BOXES AS RECOMMENDED BY CONDUCTOR MANUFACTURER. CONDULETS SHALL NOT BE USED AS PULL BOXES. PROVIDE EXPLOSION-PROOF SEAL-OFF FITTINGS ON ALL CONDUIT EXITING CLASSIFIED OR RATED LOCATIONS. FITTINGS SHALL BE INSTALLED IN THE CLASSIFIED OR RATED LOCATION.

INSTRUMENT PLAN LEGEND

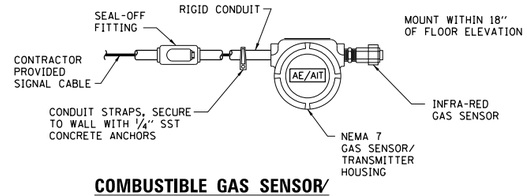
( )#14	(QUANTITY)	#14 THWN CONDUCTORS
( )TSP	(QUANTITY)	#16 SHIELDED PAIR
( )3C-S	(QUANTITY)	#16 SHIELDED TRIAD
( )TEL	(QUANTITY)	#18-4C TELEPHONE CABLE
( )CE	(QUANTITY)	CAT5e COPPER ETHERNET
( )VFC	(QUANTITY)	VENDOR FURNISHED CABLE



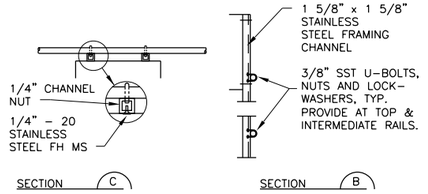
WALL MOUNT SMALL CASE INSTRUMENTATION N002
NTS

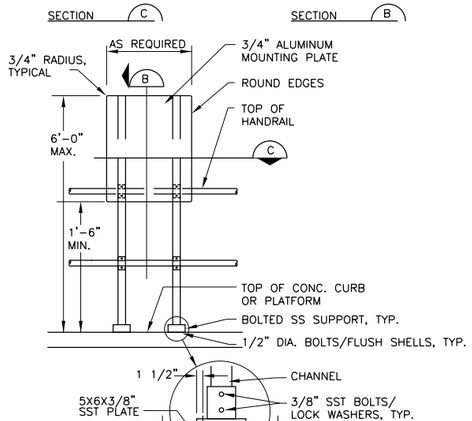


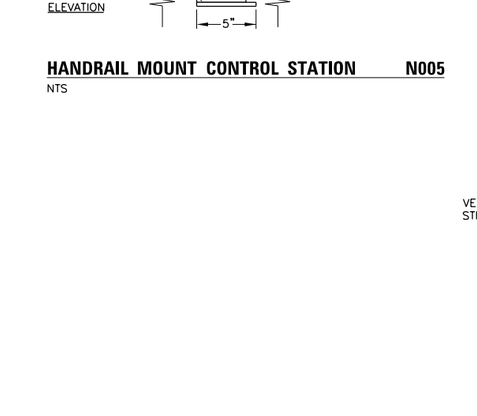
FREE STANDING OR FLOOR MOUNT CONTROL PANEL N003
NTS



COMBUSTIBLE GAS SENSOR/ TRANSMITTER–INFRA–RED N004
NTS

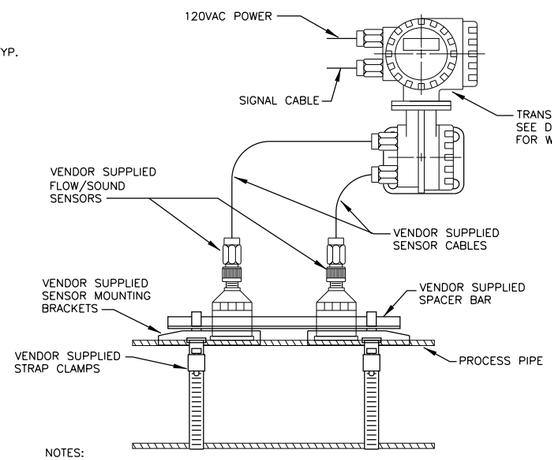






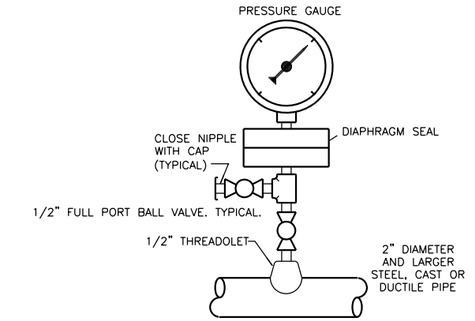
I&C JUNCTION BOX (JBX–xx) INSTALLATION N001
NTS

HANDRAIL MOUNT CONTROL STATION N005
NTS

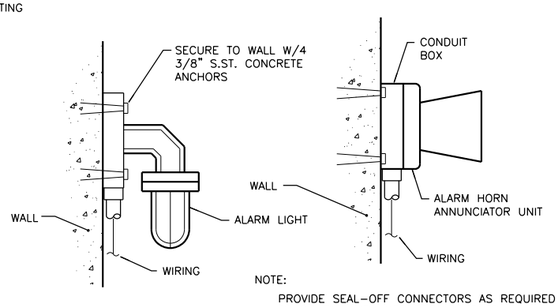


NOTES:
1. RETAIN SERVICES OF VENDOR TRAINED FIELD TECHNICIAN FOR MOUNTING OF SENSORS ON PROCESS PIPING.
2. REFER TO VENDOR'S LITERATURE FOR NUMBER OF TRAVERSES REQUIRED FOR PARTICULAR PIPE DIAMETER.
3. KEEP SENSOR LEADS AS SHORT AS POSSIBLE.

FLOW ELEMENT/TRANSMITTER N014
NTS



PRESSURE GAUGE N006
NTS



NOTE:
PROVIDE SEAL–OFF CONNECTORS AS REQUIRED TO COMPLY WITH NEC REQUIREMENTS.

ALARMLIGHT/HORN N015
NTS

E35

DONOHUE	USER NAME =	DESIGNED - DWG	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	PUMP STATION NO. 8 RELOCATION I&C DETAILS				
		DRAWN - DWG	REVISED -			RTE.	SECTION	COUNTY	TOTAL SHEETS / SHEET NO.
	PLOT SCALE =	CHECKED - MBS	REVISED -			US 14 NORTHWEST HIGHWAY	86 S-I-I	COOK	156 / 154
	PLOT DATE =	DATE - 09-29-17	REVISED -		SCALE: SHEET OF SHEETS STA. TO STA.			CONTRACT NO. 60C48	
							ILLINOIS	FED. AID PROJECT	

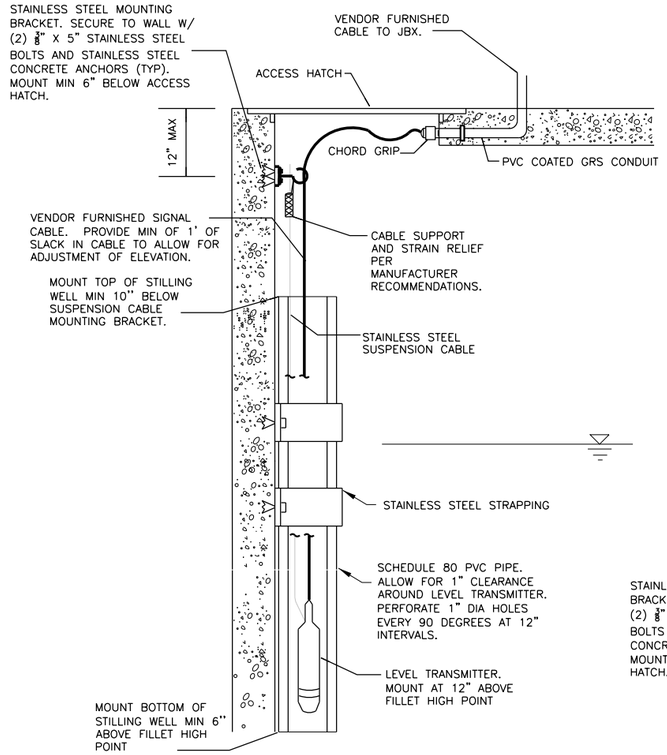
FILE NAME =

INSTRUMENT PLAN GENERAL NOTES

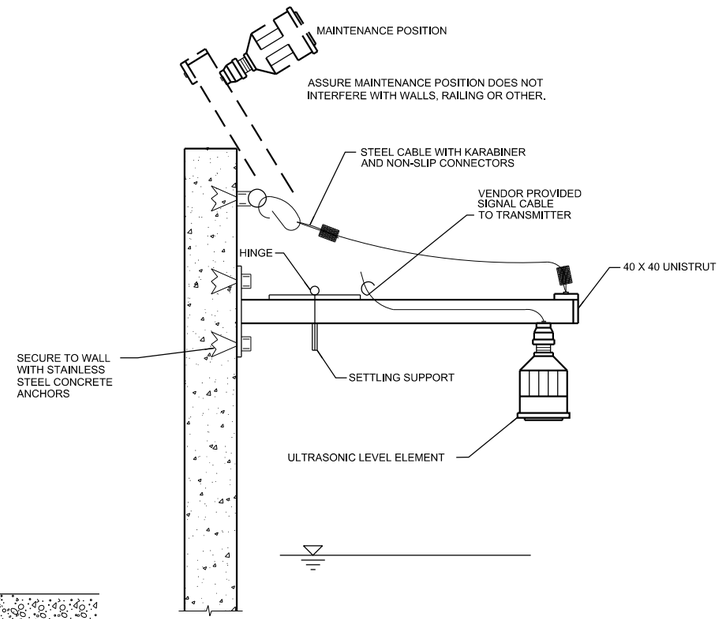
1. CONTRACTOR IS RESPONSIBLE FOR ALL WIRING, WHETHER SHOWN OR NOT, NECESSARY FOR A COMPLETE AND OPERABLE SYSTEM.
2. THIS DRAWING SHOWS APPROXIMATE INSTALLATION DETAILS AND IS NOT DRAWN TO SCALE.
3. SHIELDED AND UNSHIELDED CONDUCTORS SHALL BE RUN IN CONDUIT. SHIELDED CONDUCTORS SHALL NOT BE COMBINED WITH UNSHIELDED CONDUCTORS IN ANY CONDUIT. NEITHER SHIELDED NOR UNSHIELDED CONDUCTORS SHALL BE INCLUDED IN THE SAME CONDUIT AS POWER WIRING.
4. SHIELDED AND UNSHIELDED CONDUCTORS SHALL HAVE A MINIMUM OF 6" SEPARATION BETWEEN CONDUIT ON PARALLEL RUNS.
5. SHIELDED AND UNSHIELDED CONDUCTORS SHALL BE SEPARATED BY STEEL BARRIERS IN ALL COMBINED SIGNAL JUNCTION BOXES AND
6. INSTRUMENT TERMINATION CABINETS. CONDUCTORS SHALL NOT BE SPLICED EXCEPT AT TERMINALS OR AS DESIGNATED BY ENGINEER.
7. ONLY REQUIRED CONDUCTORS ARE SHOWN ON PLAN. SPARE CONDUCTORS NOT SHOWN.
8. FOR EACH CONDUIT CONTAINING MORE THAN TWO CONDUCTORS, 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
9. EACH END OF SPARE CONDUCTOR AT TERMINALS WHENEVER POSSIBLE.
10. CONDUIT SHALL BE SIZED TO ACCOMODATE REQUIRED CONDUCTORS AND ANTICIPATED SPARES.
11. THIS DRAWING DOES NOT SHOW CONDUIT SYSTEMS. PROVIDE, AS A MINIMUM, PULL BOXES AS RECOMMENDED BY CONDUCTOR MANUFACTURER. CONDULETS SHALL NOT BE USED AS PULL BOXES. PROVIDE EXPLOSION-PROOF SEAL-OFF FITTINGS ON ALL CONDUIT EXITING CLASSIFIED OR RATED LOCATIONS. FITTINGS SHALL BE INSTALLED IN THE CLASSIFIED OR RATED LOCATION.

INSTRUMENT PLAN LEGEND

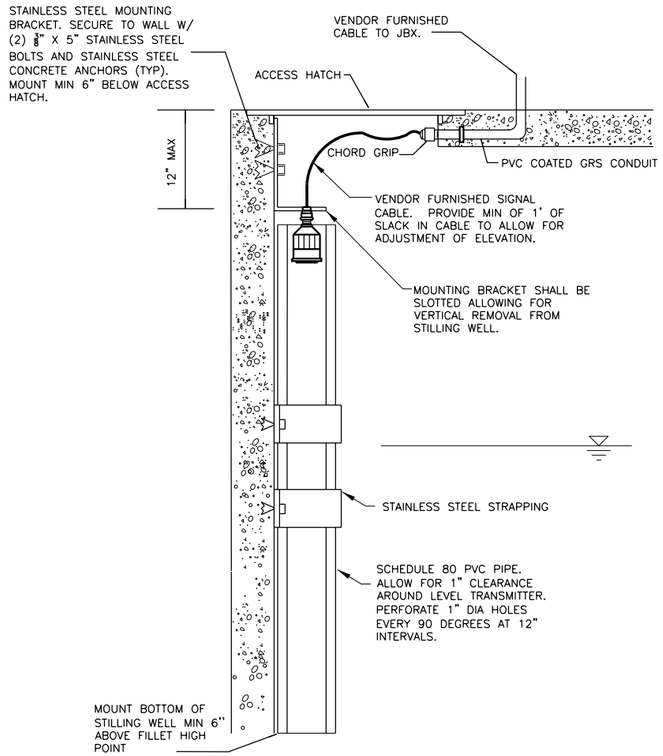
( )#14	(QUANTITY)	#14 THWN CONDUCTORS
( )TSP	(QUANTITY)	#16 SHIELDED PAIR
( )3C-S	(QUANTITY)	#16 SHIELDED TRIAD
( )TEL	(QUANTITY)	#18-4C TELEPHONE CABLE
( )CE	(QUANTITY)	CAT5e COPPER ETHERNET
( )VFC	(QUANTITY)	VENDOR FURNISHED CABLE



SUBMERSIBLE LEVEL TRANSMITTER N266



ULTRASONIC LEVEL SENSOR SIDEWALL HINGE MOUNT N294



ULTRASONIC LEVEL SENSOR SIDEWALL STILLING WELL N295

FILE NAME =

DONOHUE

USER NAME =	DESIGNED - MBS	REVISED -	
	DRAWN - MBS	REVISED -	
PLOT SCALE =	CHECKED - JAB	REVISED -	
PLOT DATE =	DATE - 09-29-17	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 8 RELOCATION
I&C
DETAILS

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

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14	86 S-I-I	COOK	156	155
NORTHWEST HIGHWAY		CONTRACT NO. 60C48		
	ILLINOIS FED. AID PROJECT			

CONTROLS CONDUIT						
NUMBER	MIN SIZE (IN.)	TYPE	CONDUCTOR QUANTITY AND SIZE (AWG-KCMIL)	COND./CABLE INSULATION	FROM	TO
C-1	3/4	PVC-GRS	VENDOR FURNISHED CABLE	-	LE-0121	LIT-0121
C-2	3/4	PVC-GRS	VENDOR FURNISHED CABLE	-	LE-0122	LIT-0122
C-3	3/4	PVC-GRS	VENDOR FURNISHED CABLE	-	LE-0111	LIT-0111
C-4	3/4	PVC-GRS	1 X 1 TWISTED SH PR CABLE	PVC	LT-0112	PLC-1
C-5	1 1/2	PVC-GRS	24-1/C#14 & 1-1/C#14 GRD	THHN	JBX-06	PLC-1
C-6	1	PVC-GRS	2-1/C#14 & 1-1/C#14 GRD	THHN	JBX-MP1	MCC-1 (SECTION 6A)
C-7	1	PVC-GRS	10-1/C#14 & 1-1/C#14 GRD	THHN	CS-MP1	MCC-1 (SECTION 6A)
C-8	1	PVC-GRS	2-1/C#14 & 1-1/C#14 GRD	THHN	JBX-MP2	MCC-1 (SECTION 5A)
C-9	1	PVC-GRS	10-1/C#14 & 1-1/C#14 GRD	THHN	CS-MP2	MCC-1 (SECTION 5A)
C-10	1	PVC-GRS	2-1/C#14 & 1-1/C#14 GRD	THHN	JBX-MP3	MCC-1 (SECTION 4A)
C-11	1	PVC-GRS	10-1/C#14 & 1-1/C#14 GRD	THHN	CS-MP3	MCC-1 (SECTION 4A)
C-12	3/4	PVC-GRS	8-1/C#14 & 1-1/C#14 GRD	THHN	RG-1	PLC-1
C-13	3/4	PVC-GRS	10-1/C#14 & 1-1/C#14 GRD	THHN	RG-1	MCC-1 (SECTION 8E)
C-14	3/4	PVC-GRS	3C-S & 1-1/C#14 GRD	PVC	GS-1	CGM
C-15	3/4	PVC-GRS	3C-S & 1-1/C#14 GRD	PVC	GS-2	CGM
C-16	3/4	PVC-GRS	3C-S & 1-1/C#14 GRD	PVC	GS-3	CGM
C-17	3/4	GRS	1 COPPER ETHERNET	CAT-5e	SPD	NET-1
C-18	3/4	PVC-GRS	8-1/C#14 & 1-1/C#14 GRD	THHN	DG-1	PLC-1
C-19	3/4	PVC-GRS	10-1/C#14 & 1-1/C#14 GRD	THHN	DG-1	MCC-1 (SECTION 8F)
C-20	3/4	PVC-GRS	VENDOR FURNISHED CABLE	-	FSDC	PLC-1
C-21	1	PVC-GRS	VENDOR FURNISHED CABLES	-	FE-0102	FIT-0102
C-22	3/4	PVC-GRS	6-1/C#14 & 1-1/C#14 GRD	THHN	CS-SF1	MCC-1 (SECTION 7C)
C-23	3/4	PVC-GRS	4-1/C#14 & 1-1/C#14 GRD	THHN	IS-SF1	MCC-1 (SECTION 7C)
C-24	3/4	PVC-GRS	6-1/C#14 & 1-1/C#14 GRD	THHN	CS-SF-ECR	MCC-1 (SECTION 8C)
C-25	3/4	PVC-GRS	6-1/C#14 & 1-1/C#14 GRD	THHN	CS-EF-PR	MCC-1 (SECTION 7D)
C-26	3/4	PVC-GRS	4-1/C#14 & 1-1/C#14 GRD	THHN	IS-EF-PR	MCC-1 (SECTION 7D)
C-27	3/4	GRS	6-1/C#14 & 1-1/C#14 GRD	THHN	FP-1	PLC-1
C-28	3/4	GRS	2-1/C#14 & 1-1/C#14 GRD	THHN	FP-1	AP-1
C-29	1	GRS	6 X 1 COPPER ETHERNET CABLES	CAT-5e	NET-1	PLC-1
C-30	-	-	VENDOR FURNISHED CABLES	-	FS1-FS8	JBX-06
C-31	2	PVC-GRS	2-1/C#14 & 1-1/C#14 GRD	THHN	FSPF	PLC-1
C-32	3/4	GRS	10-1/C#14 & 1-1/C#14 GRD	THHN	AP-1	PLC-1
C-33	1	GRS	14-1/C#14 & 4-1/C#14 GRD	THHN	NET-1	PLC-1
C-34	1	GRS	2 X 1 VIDEO CABLES	PVC	NET-1	PLC-1
C-35	3/4	GRS	4-1/C#14 & 1-1/C#14 GRD	THHN	JBX-07	PLC-1
C-36	3/4	GRS	2 COPPER ETHERNET	CAT-5e	MCC-1	NET-1
C-37	2	GRS	88-1/C#14 & 1-1/C#14 GRD	THHN	MCC-1	PLC-1
C-38	1 1/2	GRS	4 X 1 TWISTED SH PR CABLE	PVC	MCC-1	PLC-1
C-39	2	GRS	74-1/C#14 & 1-1/C#14 GRD	THHN	MCC-1	PLC-1
C-40	3/4	GRS	4-1/C#14 & 1-1/C#14 GRD	THHN	CGM	PLC-1
C-41	3/4	PVC-GRS	4-1/C#14 & 1-1/C#14 GRD	THHN	KS-1	AP-1
C-42	3/4	PVC-GRS	2-1/C#14 & 1-1/C#14 GRD	THHN	KS-1	PLC-1
C-43	3/4	GRS	4-1/C#14 & 1-1/C#14 GRD	THHN	LP-1	JBX-07
C-44	2	PVC	12-1/C#14 & 1-1/C#14 GRD	THHN	GENERATOR	PLC-1
C-45	1	PVC	6-1/C#14 & 1-1/C#14 GRD	THHN	GENERATOR	MCC-1 (SECTION 9A)
C-46	1	GRS	1 X 1 TWISTED SH PR CABLE	PVC	GENERATOR	PLC-1
C-47	3/4	PVC-GRS	2-1/C#14 & 1-1/C#14 GRD	THHN	DS-1	AP-1
C-48	3/4	PVC-GRS	2-1/C#14 & 1-1/C#14 GRD	THHN	DS-2	AP-1
C-49	3/4	GRS	2-1/C#14 & 1-1/C#14 GRD	THHN	DS-3	AP-1
C-50	3/4	GRS	2-1/C#14 & 1-1/C#14 GRD	THHN	DS-4	AP-1
C-51	3/4	GRS	2-1/C#14 & 1-1/C#14 GRD	THHN	DS-5	AP-1
C-52	3/4	PVC-GRS	2-1/C#14 & 1-1/C#14 GRD	THHN	DS-6	AP-1
C-53	3/4	PVC-GRS	2-1/C#14 & 1-1/C#14 GRD	THHN	FAHS-1	FP-1
C-54	3/4	PVC-GRS	2-1/C#14 & 1-1/C#14 GRD	THHN	FAHS-2	FP-1
C-55	3/4	PVC-GRS	2-1/C#14 & 1-1/C#14 GRD	THHN	FAHS-3	FP-1
C-56	3/4	GRS	2-1/C#14 & 1-1/C#14 GRD	THHN	FAHS-4	FP-1
C-57	3/4	GRS	4-1/C#14 & 1-1/C#14 GRD	THHN	FAPS-1, -2	FP-1
C-58	2	PVC-GRS	SPARE	-	FSPF	PLC-1
C-59	3/4	PVC-GRS	2-1/C#14 & 1-1/C#14 GRD	THHN	FAPS-3, -4	FP-1
C-60	3/4	PVC-GRS	2-1/C#14 & 1-1/C#14 GRD	THHN	FAPS-5	FP-1
C-61	3/4	PVC-GRS	2-1/C#14 & 1-1/C#14 GRD	THHN	FAPS-6	FP-1
C-62	3/4	GRS	4-1/C#14 & 1-1/C#14 GRD	THHN	SD-1, SD-2	FP-1
C-63	3/4	PVC-GRS	4-1/C#14 & 1-1/C#14 GRD	THHN	HD-1, HD-2	FP-1
C-64	3/4	PVC-GRS	4-1/C#14 & 1-1/C#14 GRD	THHN	HD-3, HD-4	FP-1
C-65	3/4	PVC-GRS	4-1/C#14 & 1-1/C#14 GRD	THHN	HD-5, HD-6	FP-1
C-66	2	PVC	SPARE	-	GENERATOR	PLC-1
C-67	1	PVC-GRS	2-1/C#14 & 1-1/C#14 GRD	THHN	JBX-LFP1	MCC-1 (SECTION 7E)
C-68	1	PVC-GRS	10-1/C#14 & 1-1/C#14 GRD	THHN	CS-LFP1	MCC-1 (SECTION 7E)
C-69	-	-	NOT USED - FUTURE PUMP	-	-	-
C-70	-	-	NOT USED - FUTURE PUMP	-	-	-
C-71	3/4	GRS	1 X 1 TWISTED SH PR CABLE	PVC	FIT-0102	PLC-1
C-72	3/4	GRS	2-1/C#14 & 1-1/C#14 GRD	THHN	FIT-0102	PLC-1
C-73	3/4	GRS	1 X 1 TWISTED SH PR CABLE	PVC	LIT-0111	PLC-1
C-74	3/4	GRS	4-1/C#14 & 1-1/C#14 GRD	THHN	LIT-0111	PLC-1
C-75	3/4	GRS	1 X 1 TWISTED SH PR CABLE	PVC	LIT-0121	PLC-1
C-76	3/4	GRS	4-1/C#14 & 1-1/C#14 GRD	THHN	LIT-0121	PLC-1
C-77	3/4	GRS	1 X 1 TWISTED SH PR CABLE	PVC	LIT-0122	PLC-1
C-78	3/4	GRS	4-1/C#14 & 1-1/C#14 GRD	THHN	LIT-0122	PLC-1

POWER CONDUIT						
NUMBER	MIN SIZE (IN.)	TYPE	CONDUCTOR QUANTITY AND SIZE (AWG-KCMIL)	COND./CABLE INSULATION	FROM	TO
P-1	1 1/2	PVC-GRS	3-1/C#3 & 1-1/C#8 GRD	XHHW-2	JBX-MP1	MCC-1 (SECTION 6A)
P-2	1 1/2	PVC-GRS	3-1/C#3 & 1-1/C#8 GRD	XHHW-2	JBX-MP2	MCC-1 (SECTION 5A)
P-3	1 1/2	PVC-GRS	3-1/C#3 & 1-1/C#8 GRD	XHHW-2	JBX-MP3	MCC-1 (SECTION 4A)
P-4	1	PVC-GRS	3-1/C#12 & 1-1/C#12 GRD	XHHW-2	JBX-LFP1	MCC-1 (SECTION 7E)
P-5	3/4	PVC-GRS	3-1/C#12 & 1-1/C#12 GRD	THHN	RG-1	DSC-RG-1
P-6	1	PVC-GRS	3-1/C#12 & 1-1/C#12 GRD	THHN	DSC-RG-1	MCC-1 (SECTION 8E)
P-7	3/4	GRS	2-1/C#12 & 1-1/C#12 GRD	THHN	DM-4	DSC-DM-4
P-8	3/4	GRS	4-1/C#12 & 1-1/C#12 GRD	THHN	DSC-DM-4/LS4	MCC-1 (SECTION 8C)
P-9	3/4	PVC-GRS	3-1/C#12 & 1-1/C#12 GRD	THHN	EUH-PR-1	DSC-EUH-PR-1
P-10	1	PVC-GRS	3-1/C#12 & 1-1/C#12 GRD	THHN	DSC-EUH-PR-1	PP-1 (CIRCUIT 1,3,5)
P-11	3/4	PVC-GRS	3-1/C#12 & 1-1/C#12 GRD	THHN	SF-1	DSC-SF-1
P-12	1	PVC-GRS	3-1/C#12 & 1-1/C#12 GRD	THHN	DSC-SF-1	MCC-1 (SECTION 7C)
P-13	3/4	PVC-GRS	2-1/C#12 & 1-1/C#12 GRD	THHN	DM-1	DSC-DM-1
P-14	3/4	PVC-GRS	4-1/C#12 & 1-1/C#12 GRD	THHN	DSC-DM-1/LS1	MCC-1 (SECTION 7C)
P-15	3/4	PVC-GRS	3-1/C#12 & 1-1/C#12 GRD	THHN	EUH-PR-2	DSC-EUH-PR-2
P-16	1	PVC-GRS	3-1/C#12 & 1-1/C#12 GRD	THHN	DSC-EUH-PR-2	PP-1 (CIRCUIT 2,4,6)
P-17	3/4	PVC-GRS	3-1/C#12 & 1-1/C#12 GRD	THHN	EF-PR	DSC-EF-PR
P-18	1	PVC-GRS	3-1/C#12 & 1-1/C#12 GRD	THHN	DSC-EF-PR	MCC-1 (SECTION 7D)
P-19	3/4	PVC-GRS	3-1/C#12 & 1-1/C#12 GRD	THHN	EF-1	DSC-EF-1
P-20	1	PVC-GRS	3-1/C#12 & 1-1/C#12 GRD	THHN	DSC-EF-1	MCC-1 (SECTION 8A)
P-21	3/4	PVC-GRS	2-1/C#12 & 1-1/C#12 GRD	THHN	DM-3	DSC-DM-3
P-22	3/4	PVC-GRS	4-1/C#12 & 1-1/C#12 GRD	THHN	DSC-DM-3/LS3	MCC-1 (SECTION 7D)
P-23	3/4	PVC-GRS	3-1/C#12 & 1-1/C#12 GRD	THHN	EUH-PR-3	DSC-EUH-PR-3
P-24	1	PVC-GRS	3-1/C#12 & 1-1/C#12 GRD	THHN	DSC-EUH-PR-3	PP-1 (CIRCUIT 7,9,11)
P-25	3/4	GRS	3-1/C#12 & 1-1/C#12 GRD	THHN	EUH-ECR	PP-1 (CIRCUIT 8,10,12)
P-26	3/4	GRS	3-1/C#12 & 1-1/C#12 GRD	THHN	SF-ECR	MCC-1 (SECTION 8C)
P-27	3/4	GRS	2-1/C#12 & 1-1/C#12 GRD	THHN	DM-2	DSC-DM-2
P-28	3/4	GRS	4-1/C#12 & 1-1/C#12 GRD	THHN	DSC-DM-2/LS2	MCC-1 (SECTION 8C)
P-29	3/4	PVC-GRS	3-1/C#12 & 1-1/C#12 GRD	THHN	DG-1	DSC-DG-1
P-30	1	PVC-GRS	3-1/C#12 & 1-1/C#12 GRD	THHN	DSC-DG-1	MCC-1 (SECTION 8F)
P-31	2	GRS	MANUFACTURER'S HPI CABLE		SPD	MCC-1 (SECTION 7A)
P-32	3/4	GRS	3-1/C#8 & 1-1/C#10 GRD	THHN	T-1	MCC-1 (SECTION 7B)
P-33	1 1/2	GRS	4-1/C#3 & 1-1/C#8 GRD	THHN	LP-1	T-1
P-34	1 1/2	GRS	3-1/C#3 & 1-1/C#8 GRD	XHHW-2	PP-1	MCC-1 (SECTION 8D)
P-35	1	PVC	2-1/C#12 & 1-1/C#12 GRD	THHN	GENCOOLANT HTR	LP-1 (CIRCUIT 17)
P-36	3/4	GRS	2-1/C#12 & 1-1/C#12 GRD	THHN	PLC-1	LP-1 (CIRCUIT 18)
P-37	3/4	GRS	2-1/C#12 & 1-1/C#12 GRD	THHN	PLC-1	LP-1 (CIRCUIT 1)
P-38	3 1/2	PVC	SPARE	-	GENERATOR	MCC-1 (SECTION 11B)
P-39	1	PVC	4-1/C#12 & 2-1/C#12 GRD	THHN	GEN STRIP HTR & BATT CHRGER	LP-1 (CIRCUITS 13 & 15)
P-40	3/4	GRS	2-1/C#12 & 1-1/C#12 GRD	THHN	AP-1	LP-1 (CIRCUIT 20)
P-41	3/4	GRS	2-1/C#12 & 1-1/C#12 GRD	THHN	FP-1	LP-1 (CIRCUIT 19)
P-42	3/4	GRS	2-1/C#12 & 1-1/C#12 GRD	THHN	CGM	LP-1 (CIRCUIT 29)
P-43	3/4	GRS	4-1/C#12 & 2-1/C#12 GRD	THHN	LIGHT CONTROL	LP-1 (CIRCUITS 11 & 22)
P-44	1 1/2	PVC	3-1/C#6 & 1-1/C#10 GRD	THHN	EX. LIGHT FIX.	LP-1 (CIRCUIT 12/14); VIA HANDHOLE
P-45	3	PVC-GRS	2 SETS: 4-1/C#3/0 & 1-1/C#1/0 GRD	XHHW-2	METERING CABINET	1
P-46	3	PVC	2 SETS: 4-1/C#3/0 & 1-1/C#1/0 GRD	XHHW-2	PMT-A	METERING CABINET
P-47	3 1/2	PVC	4-1/C#500 KCMIL & 1-1/C#3 GRD	XHHW-2	GENERATOR	MCC-1 (SECTION 11B)
P-48	3/4	PVC-GRS	2-1/C#12 & 1-1/C#12 GRD	THHN	INT FL LIGHTS	LP-1 (CIRCUIT 8)
P-49	3/4	PVC-GRS	2-1/C#12 & 1-1/C#12 GRD	THHN	WET WELL LIGHTS	LP-1 (CIRCUIT 28)
P-50	3/4	PVC-GRS	2-1/C#12 & 1-1/C#12 GRD	THHN	INT FL RECP	LP-1 (CIRCUIT 9)
P-51	3/4	PVC-GRS	2-1/C#12 & 1-1/C#12 GRD	THHN	DISCH FL LIGHTS	LP-1 (CIRCUIT 6)
P-52	3/4	PVC-GRS	2-1/C#12 & 1-1/C#12 GRD	THHN	DISCH FLOOR RECP	LP-1 (CIRCUIT 7)
P-53	1	PVC-GRS	2-1/C#10 & 1-1/C#10 GRD	THHN	PUMP RM LIGHTS	LP-1 (CIRCUIT 4)
P-54	3/4	GRS	2-1/C#12 & 1-1/C#12 GRD	THHN	ELECT RM LIGHTS	LP-1 (CIRCUIT 2)
P-55	3/4	PVC-GRS	2-1/C#12 & 1-1/C#12 GRD	THHN	PUMP RM RECP	LP-1 (CIRCUIT 5)
P-56	3/4 3/4	PVC-GRS PVC-GRS	2-1/C#12 & 1-1/C#12 GRD 2-1/C#12 & 1-1/C#12 GRD	THHN THHN	EXT LIGHTS EXT LIGHTS	LP-1 (CIRCUIT 24) LP-1 (CIRCUIT 27)
P-57	3/4	GRS	4-1/C#12 & 2-1/C#12 GRD	THHN	LIGHT CONTROL	LP-1 (CIRCUITS 21 & 23)
P-58	3/4	GRS	2-1/C#12 & 1-1/C#12 GRD	THHN	ELECT RM RECP	LP-1 (CIRCUIT 3)
P-59	3/4	PVC-GRS	2-1/C#12 & 1-1/C#12 GRD	THHN	T-STAT1	MCC-1 (SECTION 7C)
P-60	3/4	GRS	2-1/C#12 & 1-1/C#12 GRD	THHN	T-STAT2	MCC-1 (SECTION 8C)
P-61	3/4	PVC-GRS	2-1/C#12 & 1-1/C#12 GRD	THHN	T-STAT3	MCC-1 (SECTION 7D)
P-62	3/4	PVC-GRS	2-1/C#12 & 1-1/C#12 GRD	THHN	T-STAT4	EUH-PR-1
P-63	3/4	PVC-GRS	2-1/C#12 & 1-1/C#12 GRD	THHN	T-STAT5	EUH-PR-2
P-64	3/4	PVC-GRS	2-1/C#12 & 1-1/C#12 GRD	THHN	T-STAT6	EUH-PR-3
P-65	3/4	GRS	2-1/C#12 & 1-1/C#12 GRD	THHN	T-STAT7	EUH-ECR
P-66	-	-	NOT USED - FUTURE PUMP	-	-	-
P-67	-	-	NOT USED - FUTURE PUMP	-	-	-
P-68	-	-	NOT USED - FUTURE PUMP	-	-	-
P-69	3	PVC-GRS	2 SPARE CONDUITS		METERING CABINET	MCC-1 (SECTION 10B)
P-70	3	PVC	2 SPARE CONDUITS		PMT-A	METERING CABINET
P-71	1 1/2	PVC	SPARE	-	EX. LIGHT FIX.	LP-1; VIA HANDHOLE

NOTES:

1. PVC-GRS IS PVC COATED GRS CONDUIT
2. TWISTED SH PR IS #16AWG TWISTED SHIELDED PAIR
3. 3C-S IS #16 TWISTED TRIAD CABLE
4. CE IS COPPER ETHERNET

FILE NAME =

DONOHUE

USER NAME =	DESIGNED - MBS	REVISED -
	DRAWN - MBS	REVISED -
PLOT SCALE =	CHECKED - JAB	REVISED -
PLOT DATE =	DATE - 09-29-17	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 8 RELOCATION
ELECTRICAL
POWER AND CONTROL CONDUIT SCHEDULE

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

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
US 14	86 S-I-I	COOK	156	156
NORTHWEST HIGHWAY		CONTRACT NO. 60C48		
	ILLINOIS	FED. AID PROJECT		