F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
365	59(SA, SB&SF)1	COOK	39	1
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

INDEX OF SHEETS/DRAWINGS

SHEET NO.	DRAWING NO.	TITLE
1.		TITLE SHEET
2.	G1	GENERAL NOTES & SUMMARY OF QUANTITIES
3.	G2	SITE PLAN
4.	G3	DETAILS
5.	G4	SOIL BORING LOGS
6.	DM1	DEMOLITION PLANS & SECTIONS
7.	S1	STRUCTURAL PLANS
8.	S2	STRUCTURAL SECTIONS
9.	S3	REINFORCING PLANS & SECTIONS
10.	S4	STRUCTURAL DETAILS
11.	S5	STRUCTURAL DETAILS
12.	A1	PLANS, ELEVATIONS & SCHEDULES
13.	A2	ARCHITECTURAL DETAILS
14.	M1	MECHANICAL PLANS
15.	M2	MECHANICAL SECTIONS
16.	M3	MECHANICAL DETAILS
17.	M4	EQUIPMENT SCHEDULE & PUMPING OPERATING ELEV.
18.	M5	HVAC SCHEDULE AND OPERATING SEQUENCE
19.	E1	ELECTRICAL SYMBOL LIST
20.	E2	ELECTRICAL SITE PLAN
21.	E3	ELECTRICAL DEMOLITION PLANS
22.	E4	MCC – ONE LINE DIAGRAM
23.	E5	MCC – ELEVATION
24.	E6	PUMP & FAN CONTROL SCHEMATICS
25.	E7	ELECTRICAL VALVE ACTUATOR CONTROL SCHEMATICS
26.	E8	LIGHTING PLANS
27.	E9	POWER PLANS
28.	E10	MAIN PUMPS & LOW FLOW PUMP TERMINAL SCHEDULE
29.	E11	CONTROL PANEL SCHEMATIC SHEET 1
30.	E12	CONTROL PANEL SCHEMATIC SHEET 2
31.	E13	CONTROL PANEL EQUIPMENT LAYOUT SHEET 1
32.	E14	CONTROL PANEL EQUIPMENT LAYOUT SHEET 2
33.	E15	CONTROL PANEL DETAILS
34.	E16	CONTROL PANEL TERMINAL SCHEDULE
35.	E17	SCADA PANEL TERMINAL SCHEDULE
36.	E18	SCADA PANEL LAYOUT & DETAILS
37.	E19	SCADA SYSTEM DIAGRAMS
38.	E20	ELECTRICAL DETAILS
39.	E21	I & C DETAILS

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

ALL UTILITY LOCATION INFORMATION FOR EXCAVATION CALL JULIE 1–800–0123

CONTRACT NO. 82726

MARK JENKINS – IDOT ELECTRICAL OPERATIONS SECTION CHIEF (847)705-4350

06-17-11 LETTING ITEM 251

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

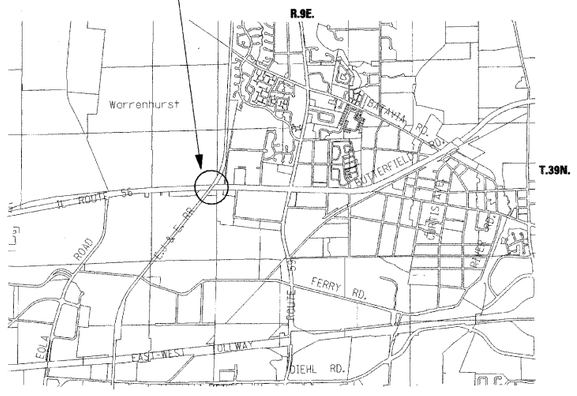
PLANS FOR PROPOSED FEDERAL AID HIGHWAY

FAP RTE. 365 (BUTTERFIELD ROAD) (IL 56)
PUMP STATION REHABILITATION
PUMP STATION NO. 48
IL 56 AT E.J. & E. RR
SECTION: 59 (SA,SB & SF) 1
PROJECT: F-0365(014)
C–91–155–94
DUPAGE COUNTY

D–91–155–94

LOCATION OF SECTION INDICATED THUS: –

PROJECT LOCATION



LOCATION MAP

SCALE: 0 1,000 2,000 4,000 FT.

N

1

IDOT STANDARDS

664001 CHAIN LINK FENCE

KOU H. CHANG
28805
REGISTERED PROFESSIONAL ENGINEER
OF
ILLINOIS

SIGNED: Kou H. Chang
KOU H. CHANG P.E.
LIC. NO.: 062-028805
EXPIRES: 11-30-2011
DATE: 3/10/11

SEAL

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

SUBMITTED MARCH 15, 20 11
Diane M. O'Keefe
DISTRICT ENGINEER

May 13 20 11
Scott E. Stitt, P.E. /bc
acting ENGINEER OF PROJECT DEVELOPMENT AND IMPLEMENTATION

May 13 20 11
Christine M. Reed /bc
ENGINEER OF DESIGN AND ENVIRONMENT

20

DONOHUE & ASSOCIATES

PRINTED BY THE AUTHORITY OF THE STATE OF ILLINOIS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
365	59(SA, SB&SF)1	DUPAGE	39	2
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

SUMMARY OF QUANTITIES

URBAN
80% FED. 20% STATE

CODE NO.	ITEM	UNIT	TOTAL QUANTITY	CONSTRUCTION TYPE CODE 0040	
20200100	EARTH EXCAVATION	CU YD	300	300	
35101800	AGGREGATE BASE COURSE, TYPE B 6"	SQ YD	820	820	
40300100	BITUMINOUS MATERIAL (PRIME COAT)	GALLON	90	90	
40603080	HOT-MIX ASPHALT BINDER COURSE, IL-90.0, N50	TON	75	75	
40603310	HOT-MIX ASPHALT SURFACE COURSE, MIX "C", N50	TON	75	75	
50102400	CONCRETE REMOVAL	CU YD	4	4	
50200100	STRUCTURE EXCAVATION	CU YD	300	300	
50300225	CONCRETE STRUCTURES	CU YD	90	90	
50500405	FURNISHING AND ERECTING STRUCTURAL STEEL	POUND	1,350	1,350	
50800205	REINFORCEMENT BARS, EPOXY COATED	POUND	9000	9000	
X6640570	CHAIN LINK FENCE, 8' (SPECIAL)	FOOT	210	210	
66409400	CHAIN LINK GATES, 8'X12' DOUBLE	EACH	1	1	
67000400	ENGINEER'S FIELD OFFICE, TYPE A	CAL MO	20	20	
67100100	MOBILIZATION	L SUM	1	1	
X0301028	PUMP STATION SCADA EQUIPMENT	L SUM	1	1	
X0335700	PUMP STATION GENERAL WORK	L SUM	1	1	
X0783300	PUMP STATION ELECTRICAL WORK	L SUM	1	1	
* X0783500	PUMP STATION MECHANICAL WORK	L SUM	1	1	
X8040305	ELECTRICAL SERVICE CONNECTION	L SUM	1	1	
* X0323880	COMPLETE SPARE MAIN PUMP ASSEMBLY	L SUM	1	1	
* X0323881	COMPLETE SPARE LOW FLOW PUMP ASSEMBLY	L SUM	1	1	
X0325156	REMOVAL AND DISPOSAL OF LEAD BASED PAINT	SQ FT	3,400	3,400	

* SPECIALTY ITEM

DONOHUE & ASSOCIATES

GENERAL NOTES

1. THE CONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE HIMSELF WITH THE EXISTING CONDITIONS, SITE ACCESS, POWER SUPPLY AND OTHER ITEMS THAT AFFECT THE CONTRACT AND THE CONSTRUCTION OF THE IMPROVEMENT.

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

3. THE LOCATIONS OF UNDERGROUND UTILITIES AS SHOWN ON THESE PLANS HAVE BEEN OBTAINED BY FIELD SURVEYS AND SEARCHES OF AVAILABLE RECORDS. IT IS BELIEVED THAT THIS DATA IS ESSENTIALLY CORRECT, BUT THE DEPARTMENT AND OTHERS ASSOCIATED WITH THESE PLANS DO NOT GUARANTEE THEIR ACCURACY OR COMPLETENESS. THE CONTRACTOR WILL BE REQUIRED TO VERIFY THE EXACT LOCATION OF EACH FACILITY WITH THE UTILITY COMPANY WHEN THE POTENTIAL EXISTS FOR INVOLVEMENT AND SHALL TAKE DUE CARE IN ALL PHASES OF THE CONSTRUCTION TO PROTECT ANY SUCH FACILITIES WHICH MAY BE AFFECTED BY THE WORK. ANY DAMAGES TO THE UTILITIES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

4. ALL MECHANICAL AND ELECTRICAL EQUIPMENT REMOVED FROM THE PUMP STATION SHALL BECOME THE PROPERTY OF THE ILLINOIS DEPARTMENT OF TRANSPORTATION, BUREAU OF ELECTRICAL OPERATIONS. IF AT THE TIME OF REMOVAL, THE ENGINEER DECIDES THAT THE EQUIPMENT IS NOT USEABLE, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REMOVE AND DISPOSE OF SAME, AS APPROVED BY THE ENGINEER.

5. IN GENERAL, PRIOR TO CUTTING OPENINGS IN THE EXISTING REINFORCED CONCRETE SLABS AND WALLS, THE CONTRACTOR SHALL IDENTIFY EXACT LOCATIONS OF MAIN REINFORCING BARS (REBAR DETECTOR OR OTHER APPROVED PROCEDURE). THE CONTRACTOR SHALL RECEIVE APPROVAL FROM THE ENGINEER PRIOR TO CUTTING REINFORCED CONCRETE.

6. THE CONTRACTOR SHALL COMPLY WITH APPLICABLE OSHA. REGULATIONS WHILE AT THE CONSTRUCTION SITE.

7. ALL EXPOSED CONCRETE CORNERS SHALL BE CHAMFERED ¾" EXCEPT AT SIDEWALKS AND CURBS WHERE ROUNDED CORNERS ARE REQUIRED.

8. CLASS SI, CONCRETE SHALL BE USED THROUGHOUT.

10. REINFORCEMENT BARS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-31, M-42 OR M-53 GRADE 60. EPOXY COATED REINFORCEMENT BARS ARE USED IN THIS WORK.

11. FOR BACKFILLING AND COMPACTION SEE STANDARD SPECIFICATIONS.

12. STRUCTURAL DESIGN DATA:

    REINFORCING STEEL fy = 60,000 psi
    CONCRETE f'c = 3,500psi 14 DAYS
    STRUCTURAL STEEL fy = 36.0 ksi

    MINIMUM SLAB AND STAIR LIVE LOADING = 100 psf
    MINIMUM ROOF LIVE LOADING = 25 psf

13. UNLESS OTHERWISE INDICATED ALL ITEMS AND WORK SHOWN ON THESE SHEETS ARE PROPOSED NEW ITEMS AND WORK.

14. THESE SHEETS DEPICT BASIC REMOVAL AND PROPOSED CONSTRUCTION REQUIREMENTS. TO MAINTAIN THE FACILITY IN CONTINUOUS OPERATION DURING THE CONSTRUCTION PERIOD, TEMPORARY EQUIPMENT AND WIRING CONNECTIONS MAY BE REQUIRED. SUCH WORK SHALL BE STAGED BY THE CONTRACTOR TO FACILITATE THE PROJECT WITHOUT JEOPARDIZING THE OPERATING INTEGRITY OF THE STATION. THE CONTRACTOR SHALL SUBMIT A DETAILED WRITTEN AND DIAGRAMED SEQUENCE OF WORK, WELL IN ADVANCE OF CONSTRUCTION ACTIVITY, FOR REVIEW AND APPROVAL BY THE ENGINEER. THE PUMPING CAPACITY OF THE EXISTING STATION MUST BE MAINTAINED AT ALL TIMES (SPECIFIED STATION PUMPING CAPACITY 5,800 gpm. THE CONTRACTOR SHALL OBTAIN APPROVAL OF THE ENGINEER FOR ALL TEMPORARY WORK. REFER TO DIVISION 1 OF THE SPECIFICATIONS.

15. NOTE THAT DURING CONSTRUCTION THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE PUMPING STATION ACCORDING TO THE REQUIREMENTS OF THE STATE'S ELECTRICAL MAINTENANCE CONTRACT. SHORT-TERM SHUTDOWN WILL BE PERMMITED WITH SPECIFIC WRITTEN PERMISSION (SEE SPECIFICATIONS).

16. COORDINATE EXACT LOCATION OF ALL MAJOR COMPONENTS, WITH THE ENGINEER, BEFORE INSTALLATION.

17. ANY SITE AREA DISTURBED BY CONSTRUCTION SHALL BE RESTORED TO ITS ORIGINAL CONDITION BY THE CONTRACTOR, TO THE SATISFACTION OF THE ENGINEER, AT NO ADDITIONAL COST TO THE STATE.

18. ALL SHOP DRAWINGS, MATERIAL SAMPLES ETC. MUST BE SUBMITTED AND APPROVED BY THE ENGINEER BEFORE INSTALLATION.

19. ALL CONCRETE CONSTRUCTION JOINTS BETWEEN NEW AND EXISTING CONCRETE SHOWN ON THE PLANS OR ADDED BY THE CONTRACTOR SHALL BE BONDED CONSTRUCTION JOINTS. (SEE SPECIAL PROVISIONS)

20. CRUSHED SLAG SHALL NOT BE USED AS AN AGGREGATE MATERIAL.

21. BEFORE STARTING EXCAVATION THE CONTRACTOR SHALL CALL JULIE AT 1-800 -892-0123 FOR FIELD LOCATION OF BURIED UNDERGROUND UTILITIES (48 HOURS NOTIFICATION REQUIRED)

G1

REVISIONS NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

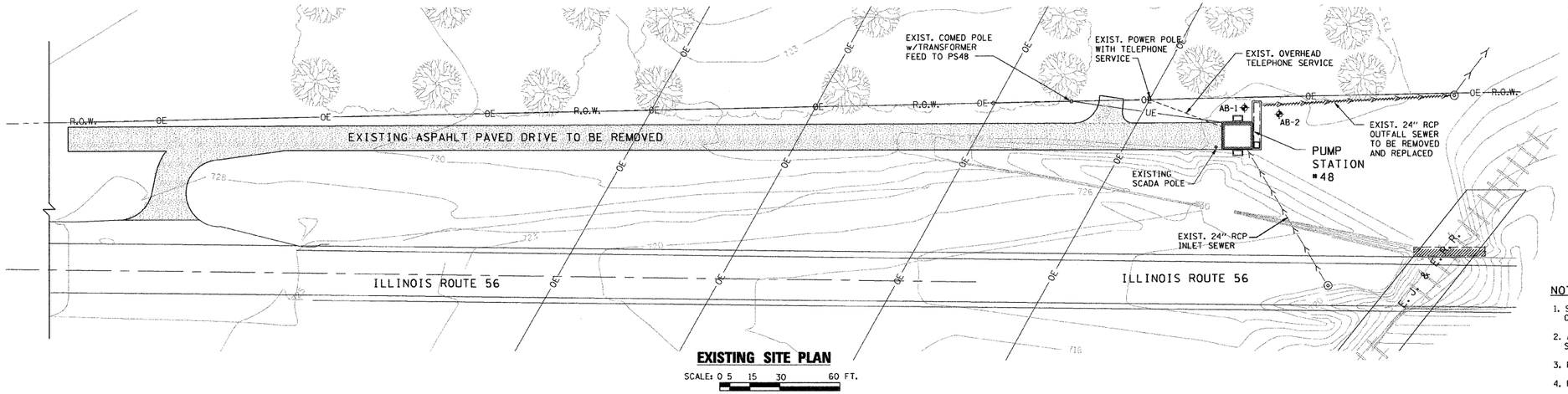
PUMP STATION NO. 48
REHABILITATION

GENERAL NOTES
SUMMARY OF QUANTITIES

SCALE: N/A DRAWN BY: HFF

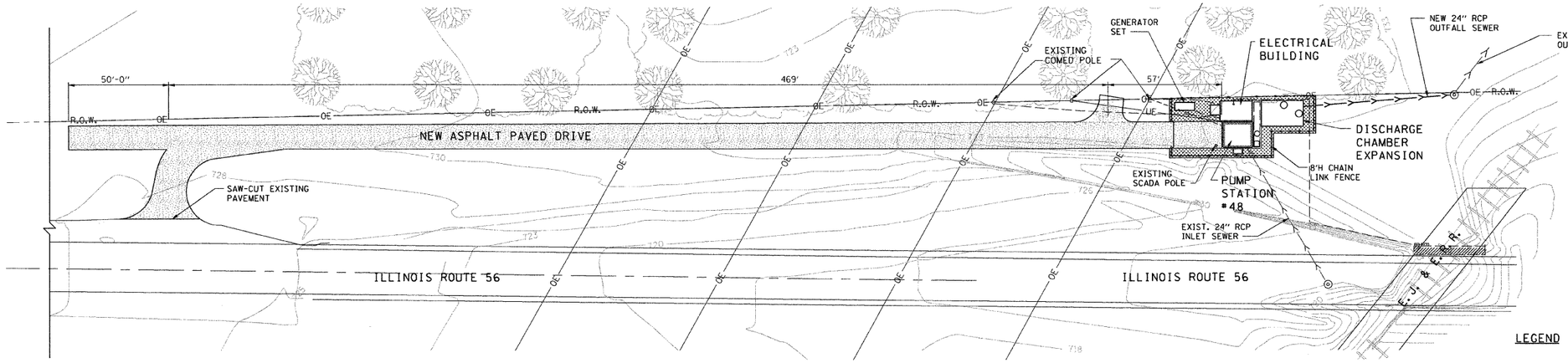
DATE: 03-10-11 CHECKED BY: KHC

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
365	59(SA, SB&SF)1	DUPAGE	39	3
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		



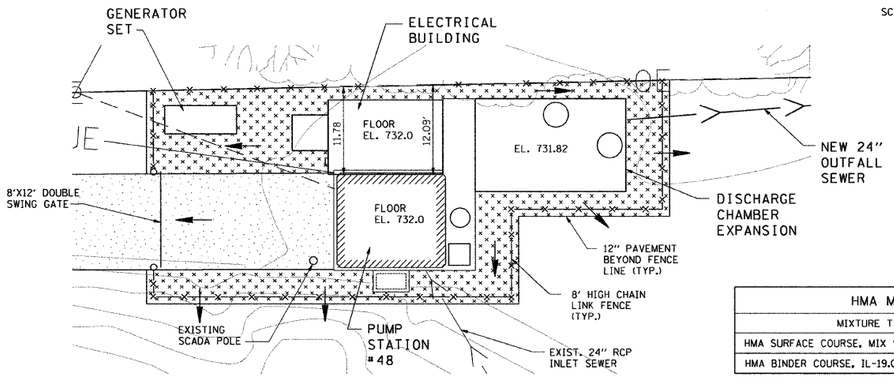
EXISTING SITE PLAN

SCALE: 0 5 15 30 60 FT.



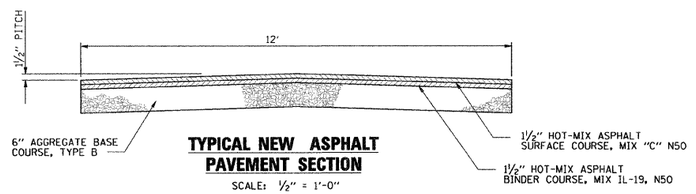
PROPOSED SITE PLAN

SCALE: 0 5 15 30 60 FT.



ENLARGED SITE PLAN

SCALE: 0 5 10 20 30 FT.



TYPICAL NEW ASPHALT PAVEMENT SECTION

SCALE: ½" = 1'-0"

HMA MIX REQUIREMENT CHART	
MIXTURE TYPE	AIR VOIDS @ Ndes
HMA SURFACE COURSE, MIX "C" N50 (IL 9.5mm), 1½"	4% @ 50 GYRATIONS
HMA BINDER COURSE, IL-19.0, N50, 1½"	4% @ 50 GYRATIONS

NOTES:

1. THE UNIT WEIGHT USED TO CALCULATE ALL HMA SURFACE MIXTURE QUANTITES IS 112 LBS/SQ YD/IN.
2. THE "AC TYPE" FOR POLYMERIZED HMA MIXES SHALL BE "SBS/SBR PG 70-22" AND FOR NON-POLYMERIZED HMA THE "AC TYPE" SHALL BE "PG 64-22" UNLESS MODIFIED BY DISTRICT ONE SPECIAL PROVISIONS. FOR "PERCENT OF RAP" SEE DISTRICT ONE SPECIAL PROVISIONS.

NOTES:

1. SAWCUT EXISTING PAVEMENT EDGE FOR THE CONSTRUCTION OF THE NEW ASPHALT PAVEMENT
2. AREA DISTURBED DURING CONSTRUCTION SHALL BE RESTORED WITH TOP SOIL AND SEEDING.
3. FOR SOIL BORING LOG SEE DRAWING G4.
4. FOR CHAIN LINK FENCE DETAIL SEE DRAWING G3.
5. FOR GENERATOR SET FOUNDATION SEE DRAWING G3.

LEGEND

- RIGHT OF WAY
- EXIST. SEWER LINE
- NEW SEWER LINE
- OE — OVERHEAD ELECTRIC LINE
- UE — UTILITY ELECTRIC LINE
- NEW CHAIN LINK FENCE
- EXIST. BITUMINUOUS PAVEMENT TO BE REMOVED AND REPLACED WITH NEW PAVEMENT
- NEW BITUMINUOUS PAVEMENT
- DIRECTION OF SURFACE DRAINAGE
- SOIL BORING LOCATION

DONOHUE & ASSOCIATES

G2

REVISIONS	
NAME	DATE

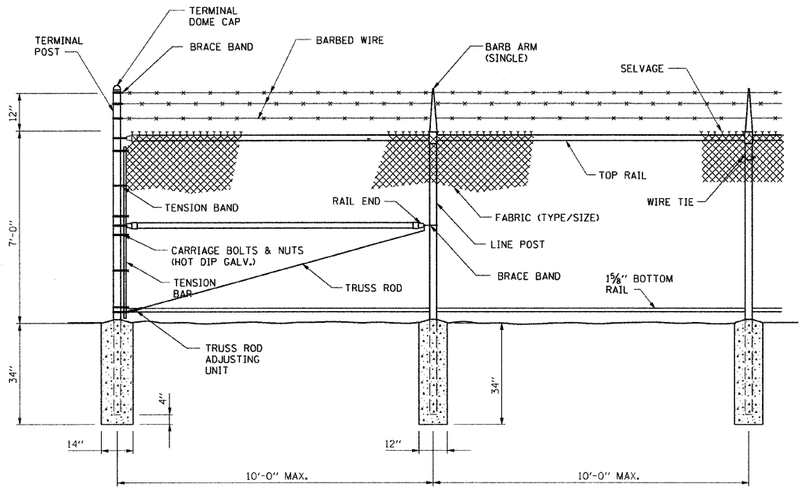
ILLINOIS DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 48 REHABILITATION

SITE PLAN

SCALE: AS SHOWN
DRAWN BY: HFF
DATE: 03-10-11
CHECKED BY: KHC

F.A.P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
365	59(SA, SB&SF)1	DUPAGE	39	4
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		



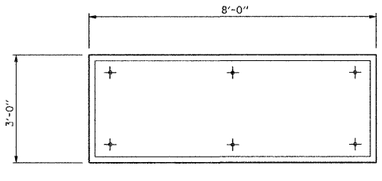
FENCE DETAIL

NOT TO SCALE

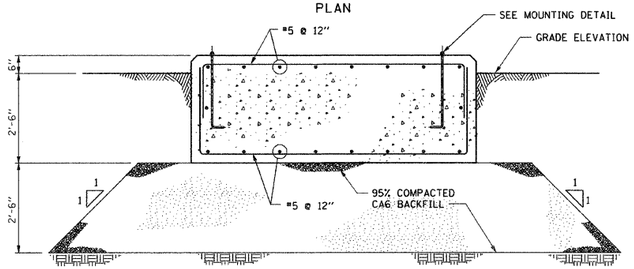
SPECIFICATIONS			
FABRIC	MESH	GAUGE	SELVAGE
ALUM.	2"	9	K+B
BARBED WIRE	TYPE 4 PT.	3 STR. ☒	6 STR.. ☐
FRMWRK.	O.D.	WALL	LBS/LF
TOP & BOT. RAIL	1⅝"	.140	2.27
LINE POSTS	2⅜"	.154	3.65
BRACE RAIL	1⅝"	.140	2.27
CORNER POSTS	2⅞"	.203	5.79
END POSTS	2⅞"	.203	5.79

NOTES:

1. ALL MATERIALS SHALL BE HOT DIP GALVANIZED
2. ALL FITTINGS SHALL BE PRESSED STEEL.



PLAN

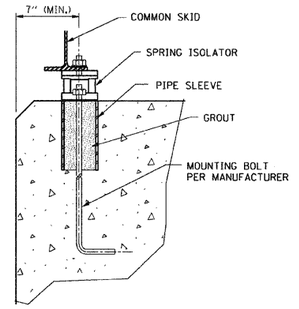


SECTION

1. CONCRETE PAD AS REQUIRED BY EQUIPMENT MANUFACTURER. MINIMUM OF 2 TIMES THE MASS OF EQUIPMENT SUPPORTED OR 10 TIMES THE MASS OF MOVING PARTS, WHICHEVER IS GREATER.
2. VERIFY CONCRETE PAD DIMENSIONS WITH QUIPMENT MANUFACTURER.
3. STRIP APPROXIMATELY FIVE FOOT OF TOP SOIL PRIOR TO PLACING BACKFILL.

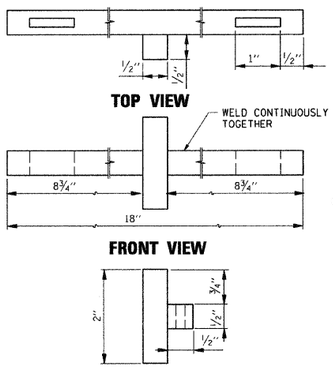
ENGINE GENERATOR FOUNDATION

NOT TO SCALE

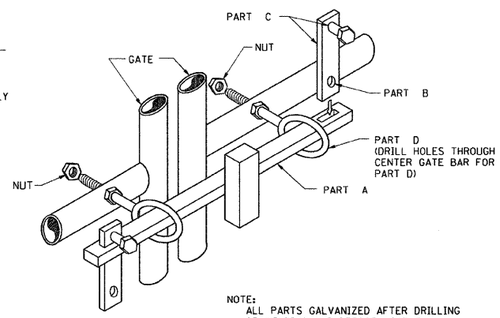


TYPICAL SPRING ISOLATOR MOUNTING DETAIL

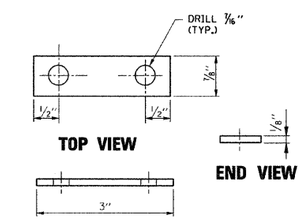
NOT TO SCALE



PART A



NOTE:
ALL PARTS GALVANIZED AFTER DRILLING OR WELDING AND BEFORE ASSEMBLY



PART B

PART C IS FABRICATED THE SAME WITH A BOLT INTO EACH HOLE

PART C

SWING GATE LOCKING DEVICE

NOT TO SCALE

DONOHUE & ASSOCIATES

G3

REVISIONS	
NAME	DATE

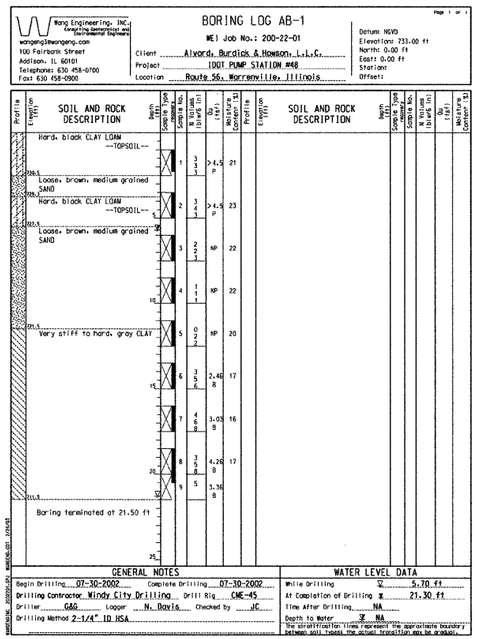
ILLINOIS DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 48
REHABILITATION

DETAILS

SCALE: AS SHOWN
DRAWN BY: HFF
DATE: 03-10-11
CHECKED BY: KHC

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
365	59(SA, SB&SF)1	DUPAGE	39	5
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		



Wang Engineering, INC.
Consulting Geotechnical and Environmental Engineers
wangeng3@wangeng.com
100 Fairbank Street
Addison, IL 60101
Telephone: 630 458-0700
Fax: 630 458-0900

BORING LOG AB-1

WEI Job No.: 200-22-01

Client: Alvord, Burdick & Howson, L.L.C.
Project: IDOT PUMP STATION #48
Location: Route 56, Warrenville, Illinois

Datum: NGVD
Elevations: 733.00 ft
North: 0.00 ft
East: 0.00 ft
Stations:
Offsets:

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type	Sample No.	N Values (blows/foot)	Qu (tsf)	Moisture Content (%)
		Hard, black CLAY LOAM --TOPSOIL--						
	709.5	Loose, brown, medium grained SAND			1	3 4 3	>4.5 P	21
	709.2	Hard, black CLAY LOAM --TOPSOIL--			2	3 3 5	>4.5 P	23
	707.5	Loose, brown, medium grained SAND	5		3	2 2 3	NP	22
			10		4	1 1 1	NP	22
	701.5	Very stiff to hard, gray CLAY			5	0 2 2	NP	20
			15		6	3 5 6	2.46 B	17
					7	4 6 8	3.03 B	16
			20		8	3 5 8	4.26 B	17
	711.5	Boring terminated at 21.50 ft			9	5	3.36 B	
			25					

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type	Sample No.	N Values (blows/foot)	Qu (tsf)	Moisture Content (%)
		Very stiff, black CLAY LOAM --TOPSOIL--			1	3 4 4	3.50 P	16
					2	2 3 4	3.50 P	22
	727.5	Stiff, brown SANDY CLAY to SILAND			3	2 2 2	1.50 P	22
	723.5	Stiff, brown CLAY	5		4	1 1 2	NP	31
		Very loose to loose, brown SANDY LOAM to SANDY CLAY LOAM	10		5	WOH WOH 1	<0.5 P	25
	718.1	Very stiff to hard , gray CLAY			6	0 2 2	NP	20
			15		7	2 4 5	2.81 B	15
	713.9	Boring terminated at 20.00 ft			8	3 6 8	4.00 P	20
			20					
			25					

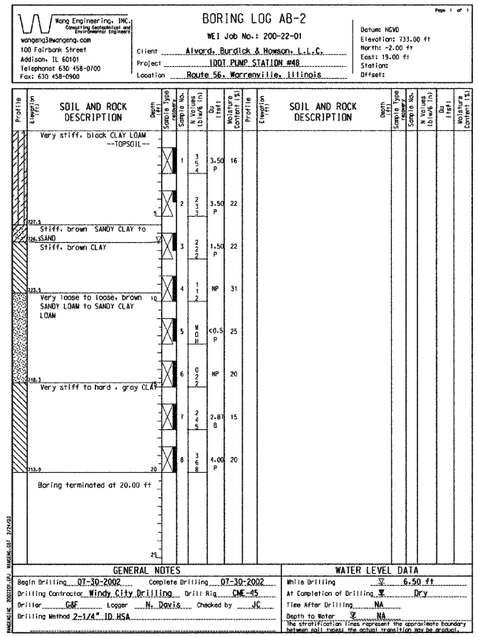
GENERAL NOTES

Begin Drilling: 07-30-2002 Complete Drilling: 07-30-2002
Drilling Contractor: Windy City Drilling Drill Rig: CME-45
Driller: GAG Logger: N. Davis Checked by: JC
Drilling Method: 2-1/4" ID HSA

WATER LEVEL DATA

While Drilling ▽ 5.70 ft
At Completion of Drilling ▽ 21.30 ft
Time After Drilling: NA
Depth to Water ▽ NA

The stratification lines represent the approximate boundary between soil types, the actual transition may be gradual.



Wang Engineering, INC.
Consulting Geotechnical and Environmental Engineers
wangeng3@wangeng.com
100 Fairbank Street
Addison, IL 60101
Telephone: 630 458-0700
Fax: 630 458-0900

BORING LOG AB-2

WEI Job No.: 200-22-01

Client: Alvord, Burdick & Howson, L.L.C.
Project: IDOT PUMP STATION #48
Location: Route 56, Warrenville, Illinois

Datum: NGVD
Elevation: 733.00 ft
North: -2.00 ft
East: 15.00 ft
Stations:
Offsets:

GENERAL NOTES

Begin Drilling: 07-30-2002 Complete Drilling: 07-30-2002
Drilling Contractor: Windy City Drilling Drill Rig: CME-45
Driller: CAF Logger: N. Davis Checked by: JC
Drilling Method: 2-1/4" ID HSA

WATER LEVEL DATA

While Drilling ▽ 6.50 ft
At Completion of Drilling ▽ Dry
Time After Drilling: NA
Depth to Water ▽ NA

The stratification lines represent the approximate boundary between soil types, the actual transition may be gradual.

DONOHUE & ASSOCIATES

G4

REVISIONS	
NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

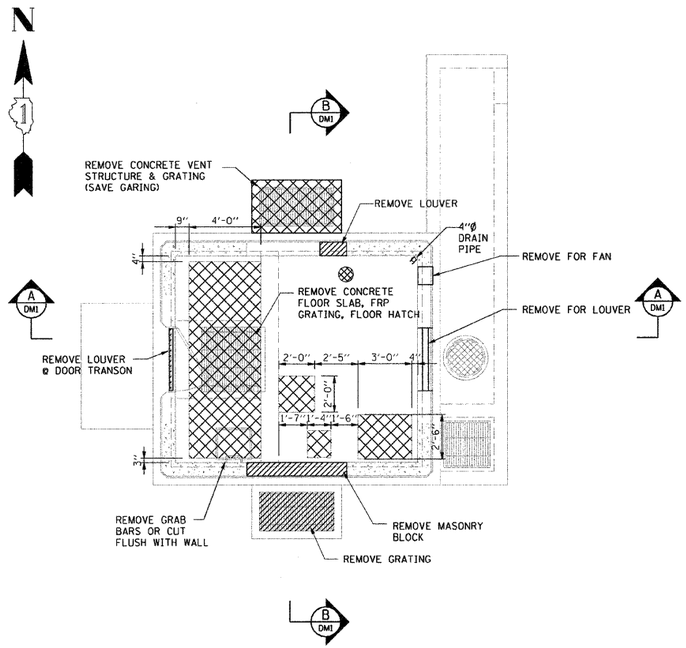
PUMP STATION NO. 48
REHABILITATION

SOIL BORING LOGS

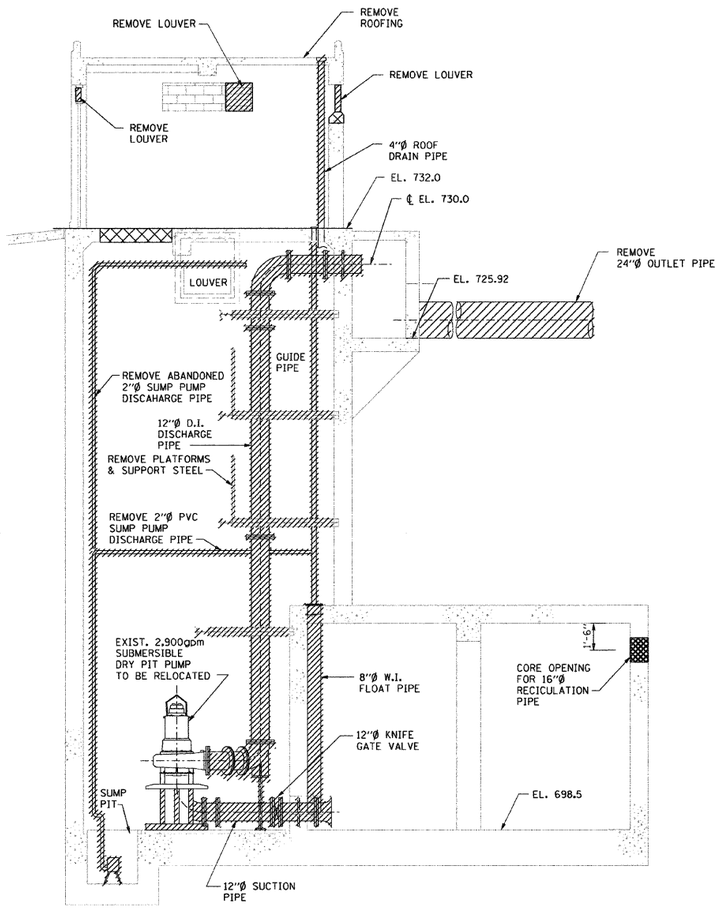
SCALE: N/A
DATE: 03-10-11

DRAWN BY: HFF
CHECKED BY: KHC

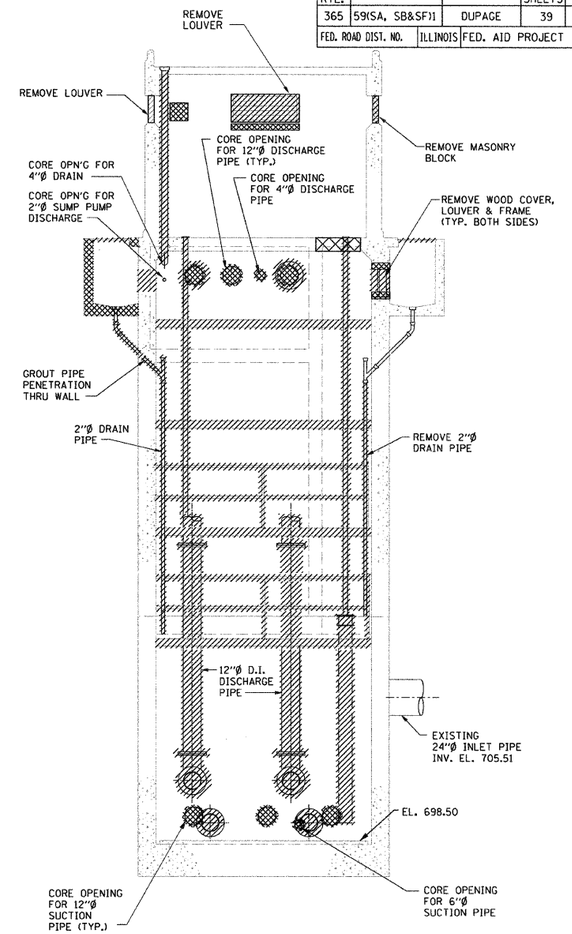
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
365	59(SA, SB&SF)1	DUPAGE	39	6
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		



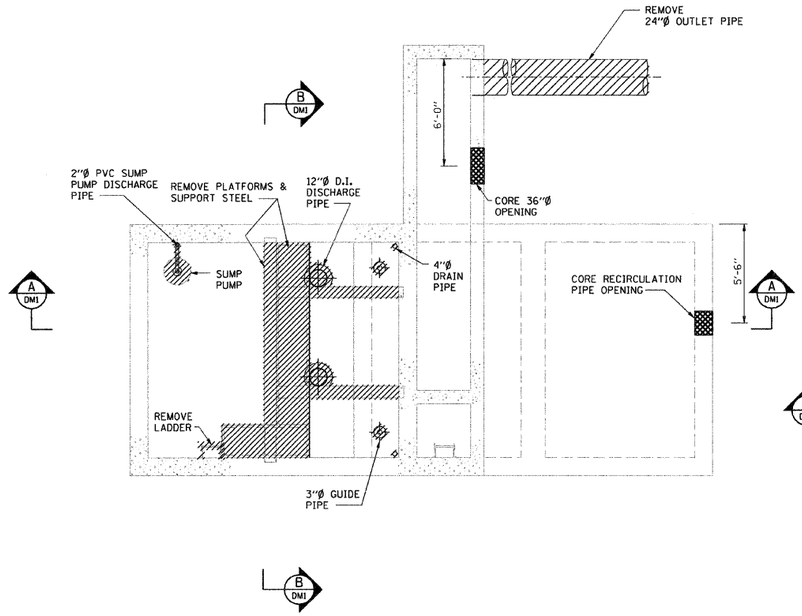
PLAN @ EL. 732.00



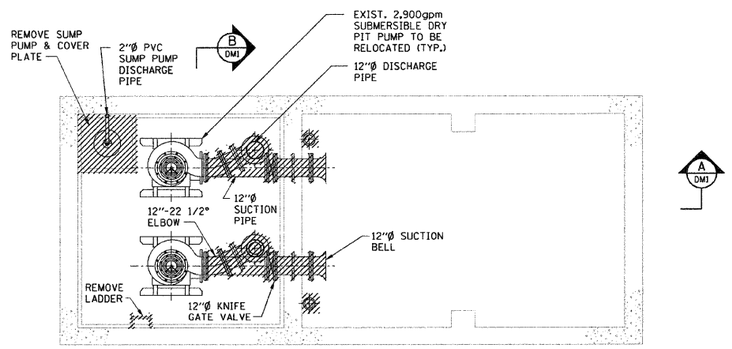
SECTION A–A



SECTION B–B



PLAN @ EL. 727.00



PLAN @ EL. 698.50

SCALE: 0 4 8 12

NOTE:
1.FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS.
2.FOR REMOVAL OF EQUIPMENT, REMOVE ALL ASSOCIATED ELECTRICAL AND I&C WIRING AND CONDUIT BACK TO SOURCE. PLUG ALL PIPES AND CONDUIT AT FLOOR OR WALL PENETRATION.
3REMOVE ALL HVAC UNITS, DUCT WORK, WIRINGS AND ALL ASSOCIATED COMPONENTS.

LEGEND:

EQUIPMENT AND OTHER REMOVAL

CONCRETE REMOVAL

DONOHUE & ASSOCIATES

DM1

REVISIONS	
NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

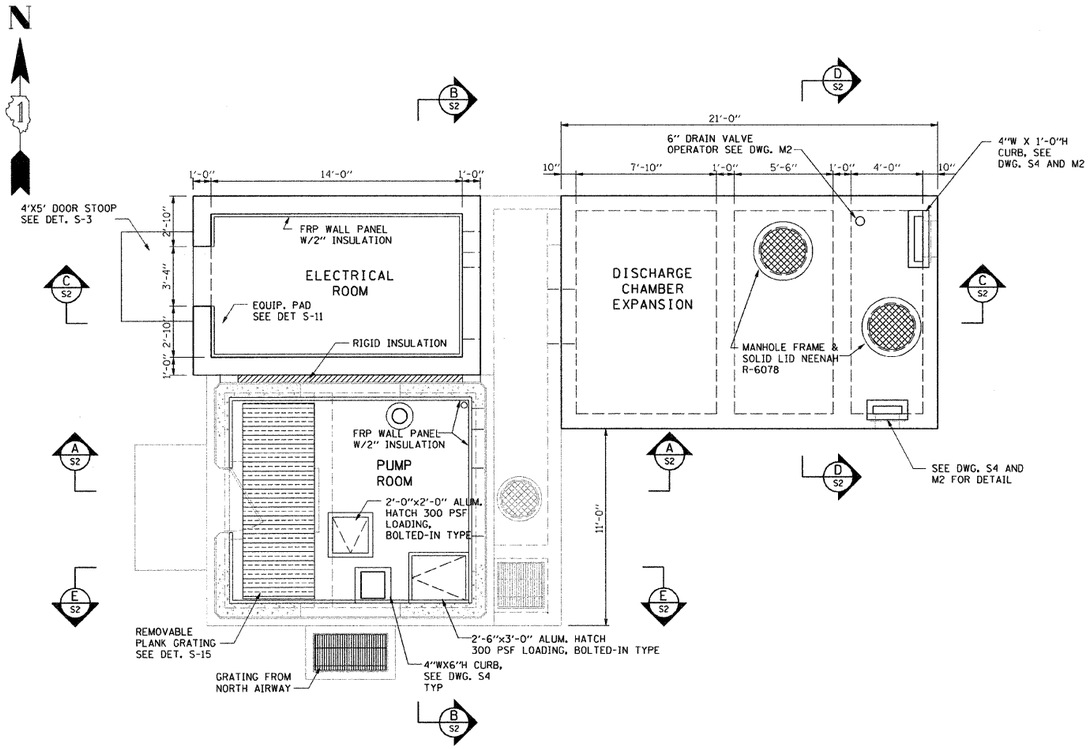
PUMP STATION NO. 48 REHABILITATION

DEMOLITION PLANS & SECTIONS

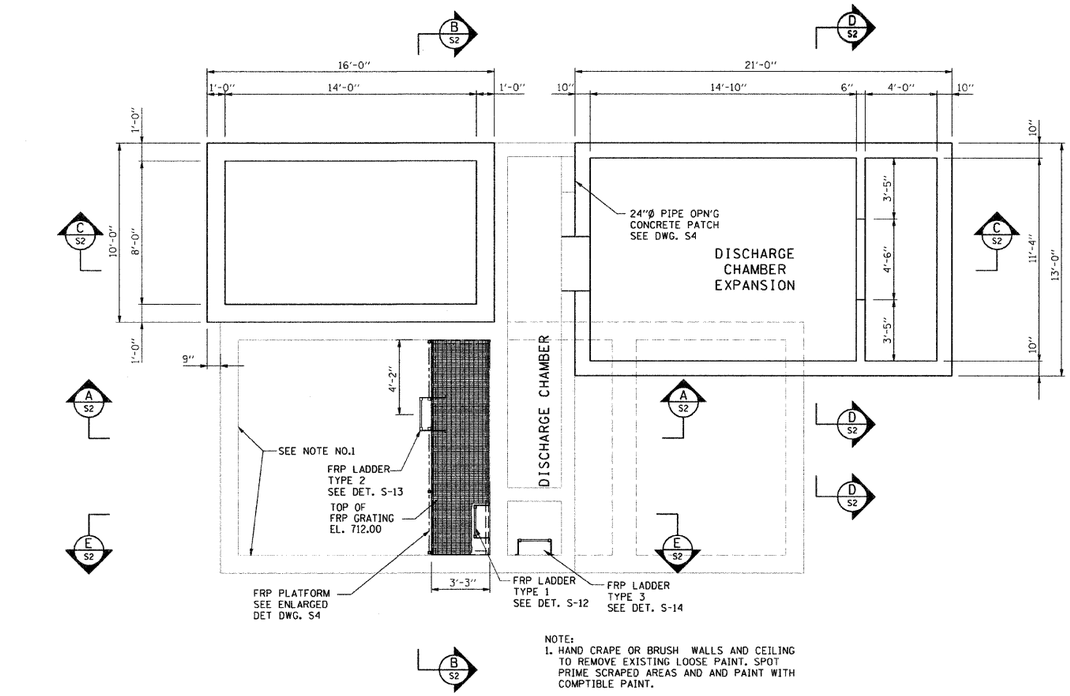
SCALE: AS SHOWN DRAWN BY: HFF

DATE: 03-10-11 CHECKED BY: FL

F.A.P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
365	59(SA, SB&SF)1	DUPAGE	39	7
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

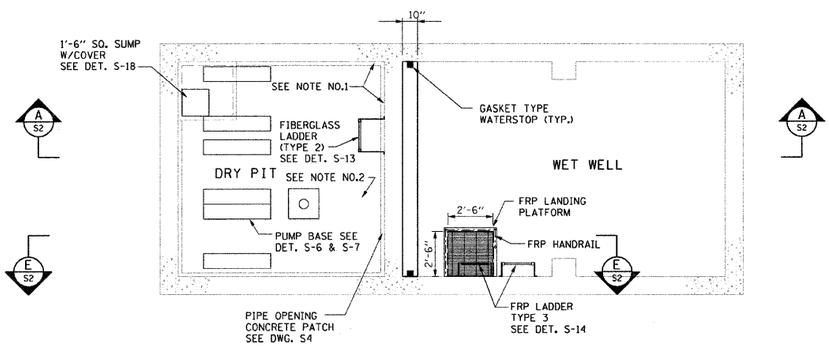


FLOOR PLAN @ EL. 732.0



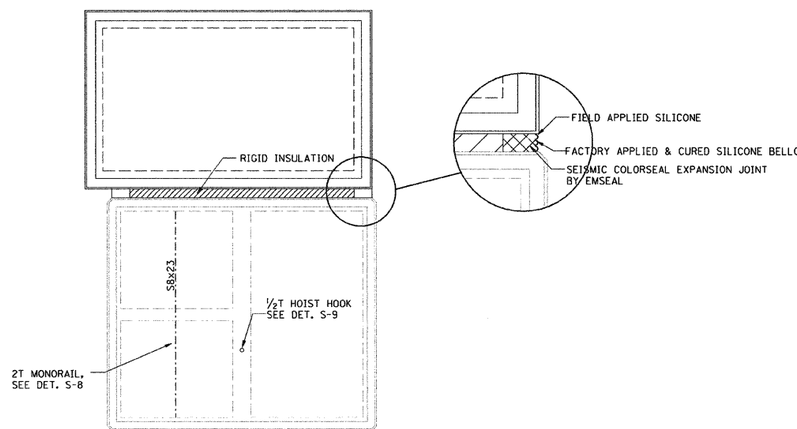
NOTE:
1. HAND CRAPE OR BRUSH WALLS AND CEILING TO REMOVE EXISTING LOOSE PAINT. SPOT PRIME SCRAPED AREAS AND AND PAINT WITH COMPTIBLE PAINT.

FLOOR PLAN @ EL. 725.92



NOTES:
1. HAND SCRAPE OR BRUSH WALLS AND CEILING TO REMOVE EXISTING LOOSE PAINT. SPOT PRIME SCRAPED AREAS AND AND PAINT WITH COMPTIBLE PAINT.
2. ACID WASH FLOOR AND APPLY NON-SLIP EPOXY COATING.

PLAN @ EL. 698.50



ROOF PLAN

NOTE:
COORDINATE WITH PUMP MANUFACTURER FOR LOCATION OF 2T MONORAIL AND 1/2T HOIST HOOK.

SCALE: 0 4 8 12

STATE OF ILLINOIS
PHILIP J. ENGLEBERT
81-4066
LICENSED STRUCTURAL ENGINEER
3/10/11

DONOHUE & ASSOCIATES

S1

REVISIONS	
NAME	DATE

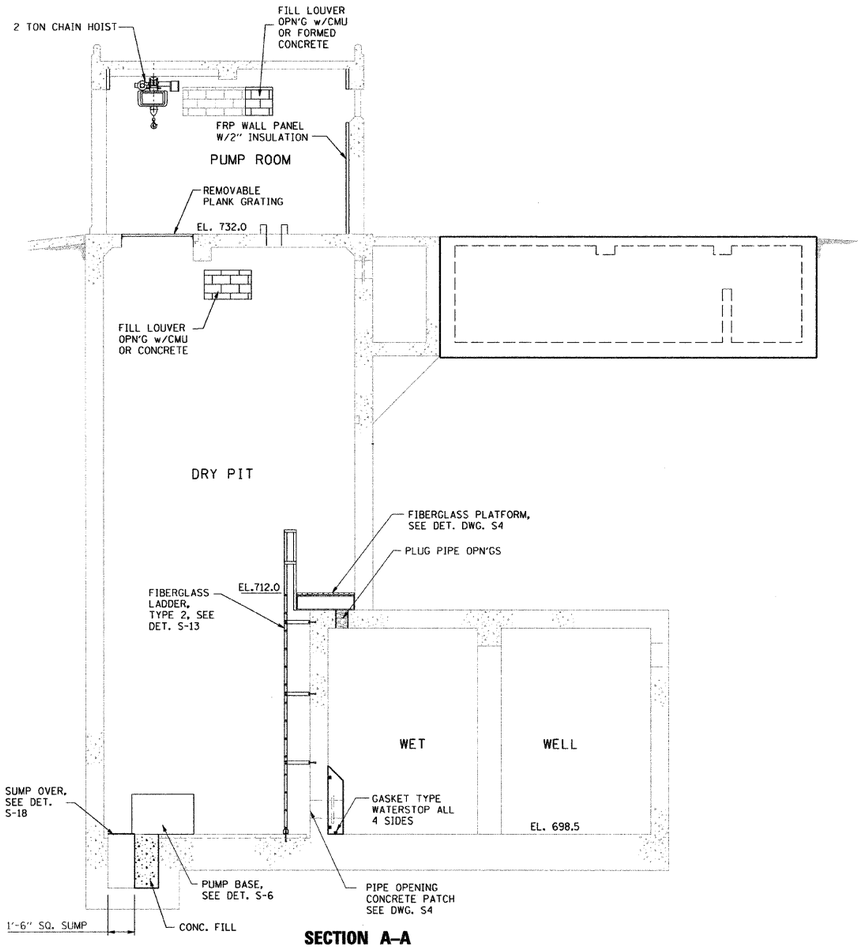
ILLINOIS DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 48
REHABILITATION

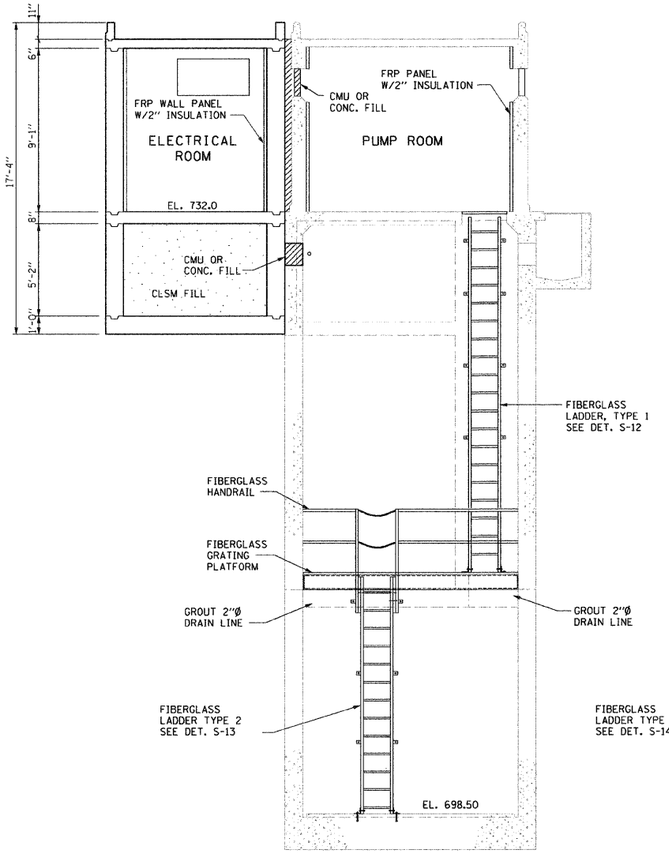
STRUCTURAL PLANS

SCALE: AS SHOWN
DRAWN BY: FL
DATE: 03-10-11
CHECKED BY: PJE

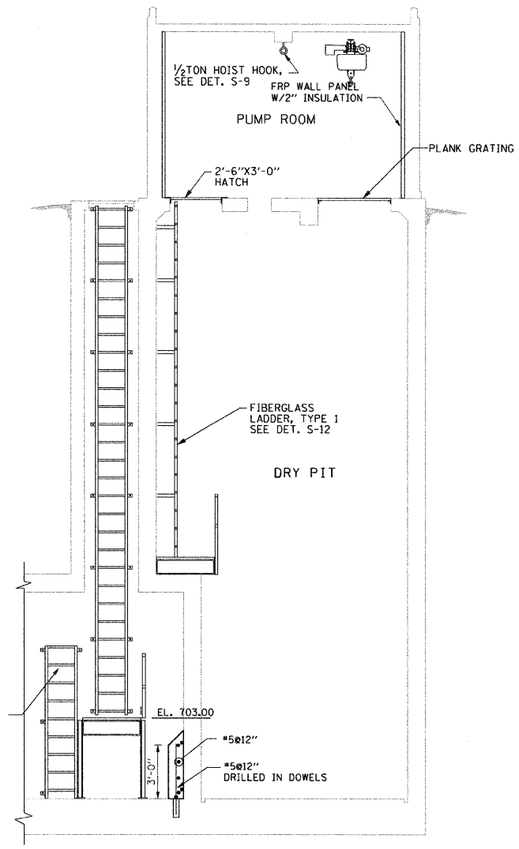
F.A.P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
365	59(SA, SB&SF)I	DUPAGE	39	8
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		



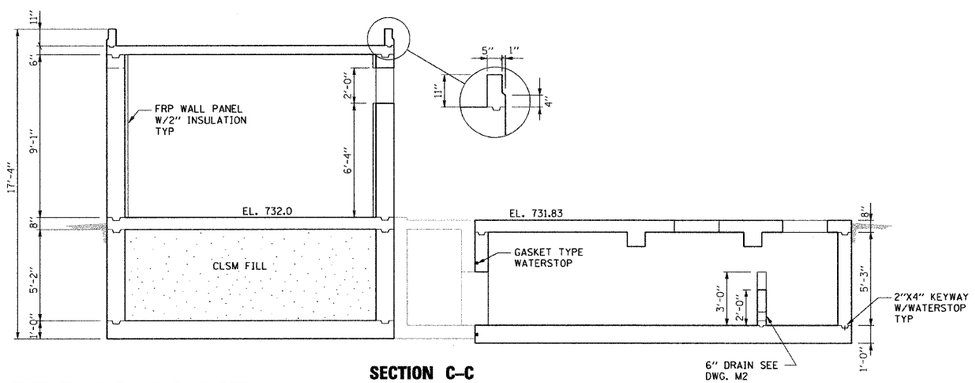
SECTION A–A



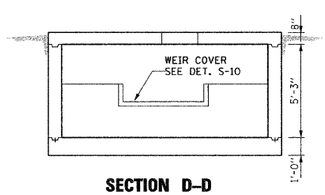
SECTION B–B



SECTION E–E



SECTION C–C



SECTION D–D

SCALE: 0 4 8 12

STATE OF ILLINOIS
PHILIP J. ENGLEBERT
81-4066
LICENSED STRUCTURAL ENGINEER
3/10/11

NOTE:
PATCH ALL OPENINGS WHERE PIPES WERE REMOVED.

DONOHUE & ASSOCIATES

S2

REVISIONS	
NAME	DATE

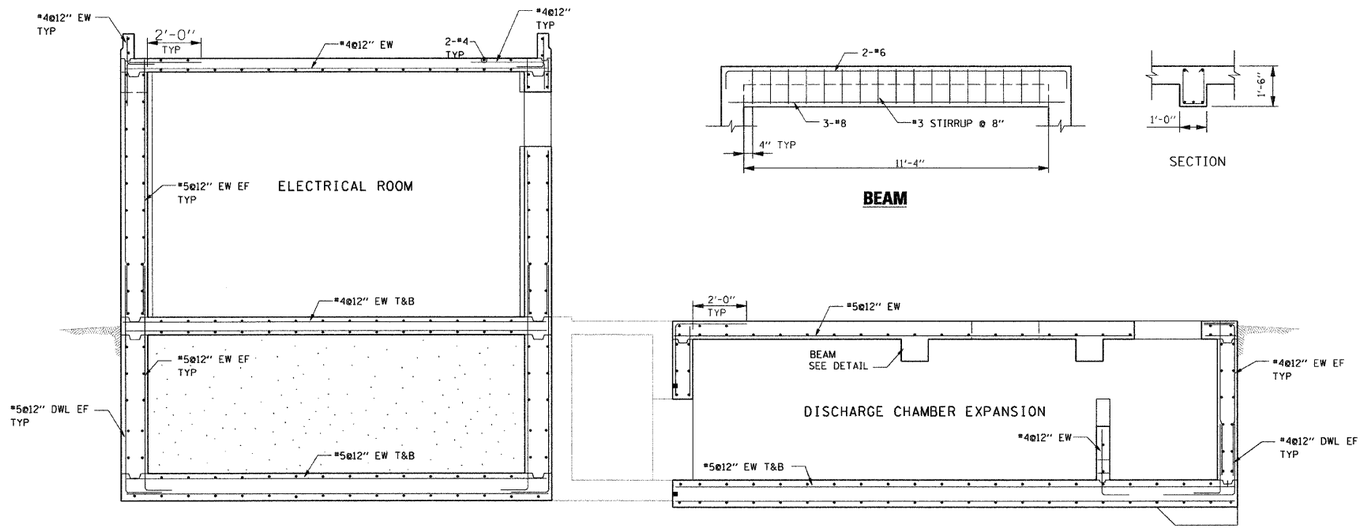
ILLINOIS DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 48
REHABILITATION

STRUCTURAL SECTIONS

SCALE: AS SHOWN
DRAWN BY: FL
DATE: 03-10-11
CHECKED BY: PJE

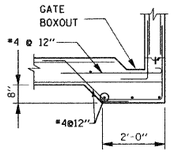
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
365	59(SA, SB&SF)1	DUPAGE	39	9
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		



SECTION C–C

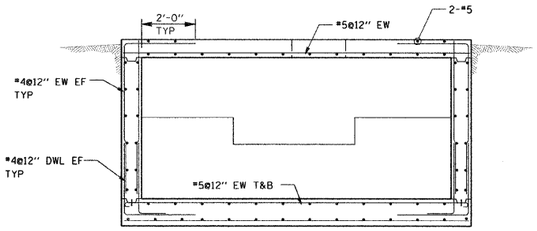
BEAM

SECTION

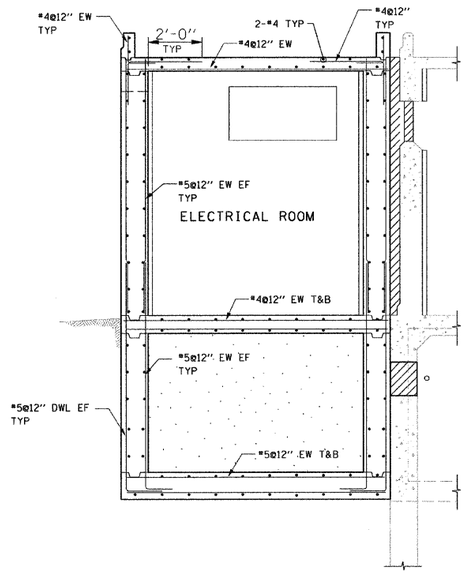


GATE BOXOUT DETAIL

NOT TO SCALE



SECTION D–D



SECTION B–B

DONOHUE & ASSOCIATES

STATE OF ILLINOIS
PHILIP J. ENGLEBERT
81—4066
LICENSED STRUCTURAL ENGINEER
3/10/11

LEGEND:

B	BOTTOM	EF	EACH FACE
EW	EACH WAY	T	TOP
TYP	TYPICAL	DWL	DOWEL

SCALE: 0 4 8

S3

REVISIONS	
NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

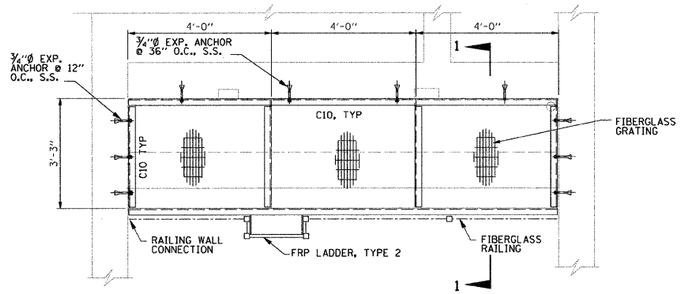
PUMP STATION NO. 48 REHABILITATION

REINFORCEMENT SECTIONS AND DETAILS

SCALE: AS SHOWN DRAWN BY: FL

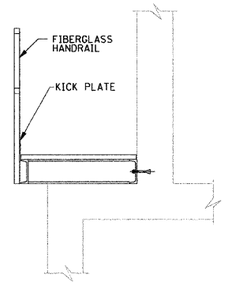
DATE: 03-10-11 CHECKED BY: PJE

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
365	59(SA, SB&SF)1	DUPAGE	39	10
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		



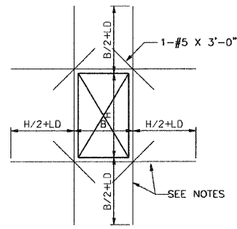
FIBERGLASS PLATFORM @ EL. 712.0

SCALE: 0 2 4 FT.

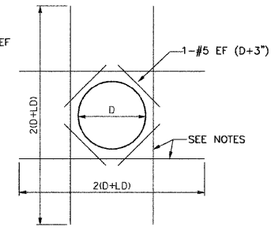


SECTION 1-1

SCALE: 0 2 4 FT.



RECTANGULAR OPENING



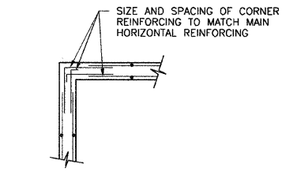
CIRCULAR OPENING

NOTES:

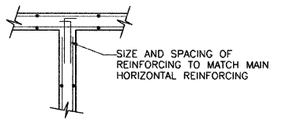
1. THESE DETAILS APPLY TO ALL OPENINGS IN CONCRETE WALLS AND SLABS WHEN THE LARGEST OPENING DIMENSION IS GREATER THAN TWO TIMES SECTION THICKNESS OR GREATER THAN REINFORCING SPACING IN THE SECTION, UNLESS OTHERWISE INDICATED IN THE DRAWINGS.
2. THE AREA OF ADDITIONAL REINFORCING REQUIRED IN EACH FACE ON EACH SIDE OF AN OPENING SHALL EQUAL OR EXCEED ONE-HALF OF THE AREA OF THE INTERCEPTED BARS IN EACH FACE, IN EACH DIRECTION, RESPECTIVELY WITH A MINIMUM OF 1-#5 BAR EACH FACE.
3. PLACE THE ADDED BARS IN THE SAME LAYERS AS THE WALL OR SLAB REINFORCING.
4. LD=40 X BAR DIAMETER.

ADDITIONAL REINFORCEMENT AT OPENINGS IN WALLS AND SLABS DETAIL (S-1)

NOT TO SCALE



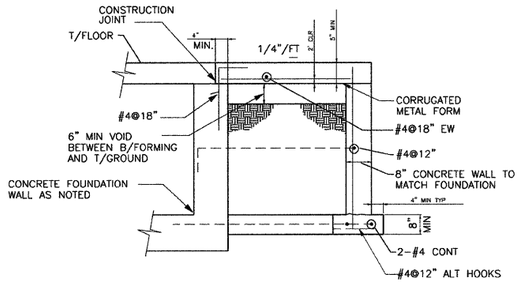
90° CORNER



T-INTERSECTION

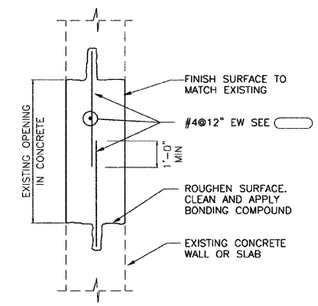
HORIZONTAL REINFORCEMENT DETAIL (S-2)

NOT TO SCALE



DOOR STOOP DETAIL (S-3)

NOT TO SCALE

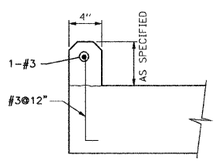


NOTES:

1. USE FOR OPENINGS 4'-0" SQ AND SMALLER WITH DRY FACES BOTH SIDES OR WHERE NOTED.
2. REINFORCEMENT NOT REQUIRED FOR OPENINGS ≤ 16".

CONCRETE OPENING PATCH DETAIL (S-4)

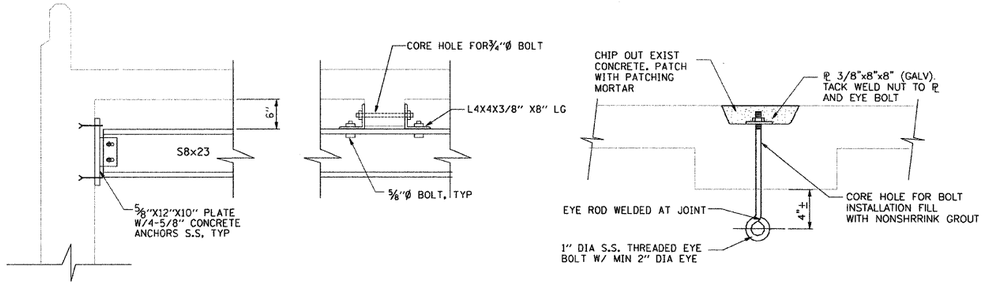
NOT TO SCALE



4" CURB

CURB DETAIL (S-5)

NOT TO SCALE



END SUPPORT INTERMEDIATE SUPPORT

2T MONORAIL DETAIL (S-8)

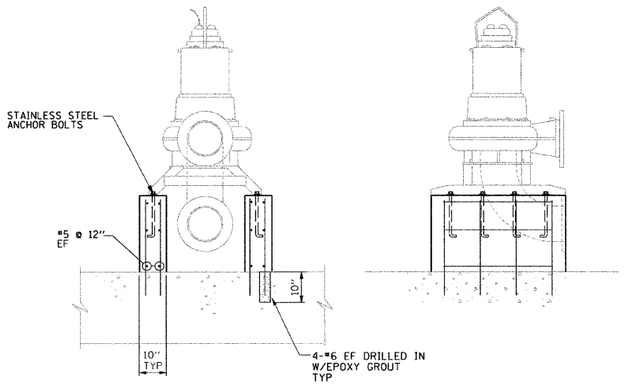
NOT TO SCALE

NOTES:

1. LOCATION OF HOIST HOOK TO BE FIELD VERIFIED WITH EQUIPMENT SUPPLIED.

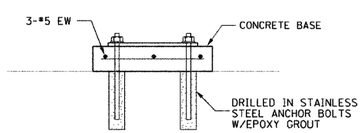
1/2T HOIST HOOK DETAIL (S-9)

NOT TO SCALE



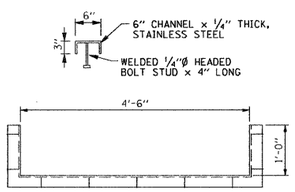
HIGH LIFT PUMP BASE DETAIL (S-6)

NOT TO SCALE



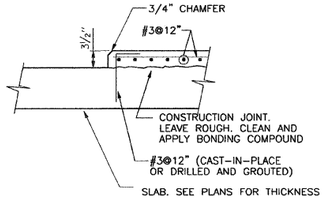
LOW FLOW PUMP BASE DETAIL (S-7)

NOT TO SCALE



WEIR COVER DETAIL (S-10)

NOT TO SCALE



EQUIPMENT PAD DETAIL (S-11)

NOT TO SCALE

NOTES:

1. VERIFY ALL DIMENSIONS AND ANCHOR BOLTS WITH EXISTING EQUIPMENT.
2. VERIFY ALL DIMENSIONS AND ANCHOR BOLTS WITH EQUIPMENT MANUFACTURES.

DONOHUE & ASSOCIATES

STATE OF ILLINOIS
PHILIP J. ENGLEBERT
81-4066
LICENSED STRUCTURAL ENGINEER
3/10/11

S4

REVISIONS	
NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

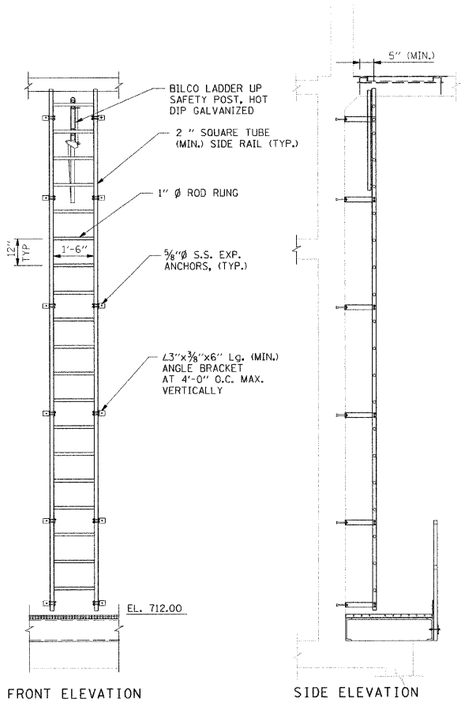
PUMP STATION NO. 48 REHABILITATION

STRUCTURAL DETAILS

SCALE: AS SHOWN DRAWN BY: FL

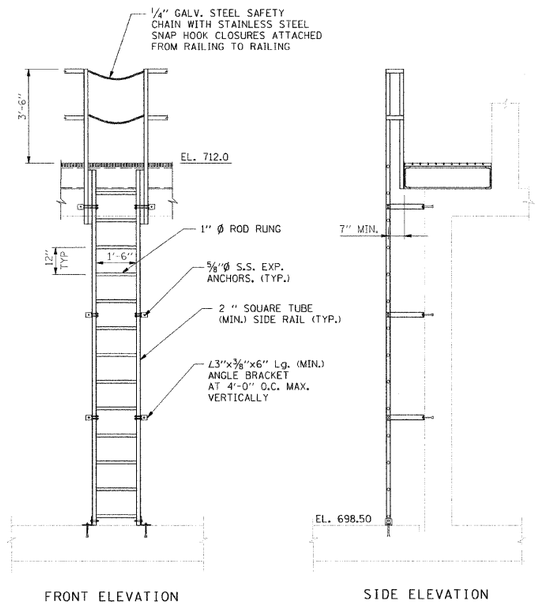
DATE: 03-10-11 CHECKED BY: PJE

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
365	59(SA, SB&SF)1	DUPAGE	39	11
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		



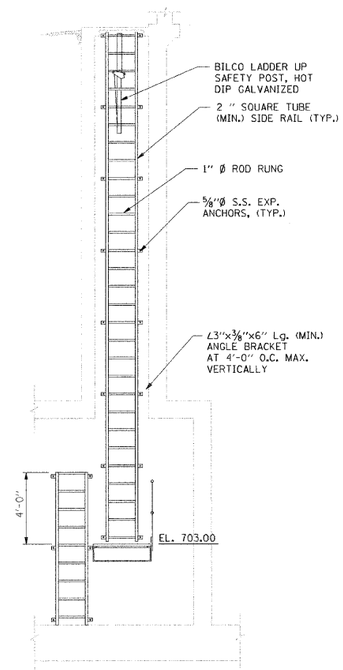
FRONT ELEVATION

SIDE ELEVATION



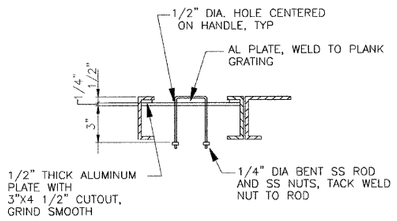
FRONT ELEVATION

SIDE ELEVATION

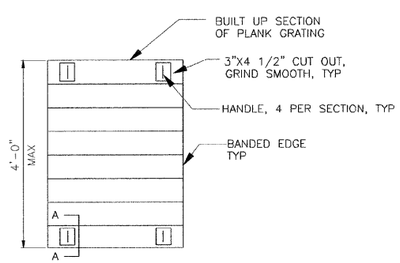


FIBERGLASS LADDER TYPE 1 DETAIL (S–12)

NOT TO SCALE



SECT. A-A

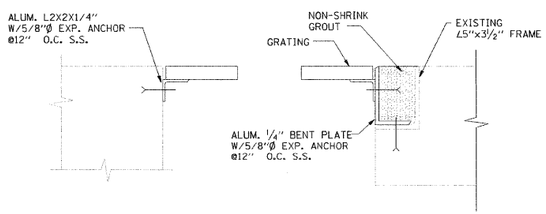


PLANK GRATING DETAIL (S–15)

NOT TO SCALE

FIBERGLASS LADDER TYPE 2 DETAIL (S–13)

NOT TO SCALE

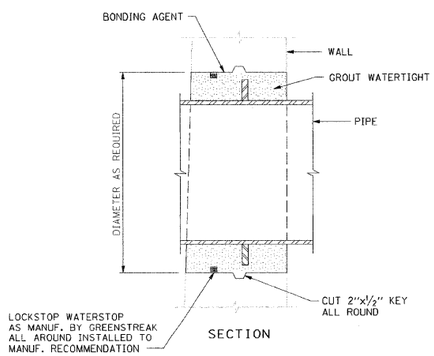


GRATING SUPPORT DETAIL (S–16)

NOT TO SCALE

FIBERGLASS LADDER TYPE 3 DETAIL (S–14)

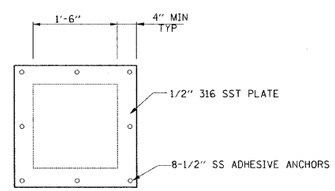
NOT TO SCALE



SECTION

PIPE PENETRATION DETAIL (S–17)

NOT TO SCALE



SUMP COVER DETAIL (S–18)

NOT TO SCALE

STATE OF ILLINOIS
PHILIP J. ENGLEBERT 81–4066
LICENSED STRUCTURAL ENGINEER
3/10/11

DONOHUE & ASSOCIATES

S5

REVISIONS	
NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 48 REHABILITATION

STRUCTURAL DETAILS

SCALE: AS SHOWN DRAWN BY: FL

DATE: 03-10-11 CHECKED BY: PJE

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
365	59(SA, SB&SF)1	DUPAGE	39	12
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

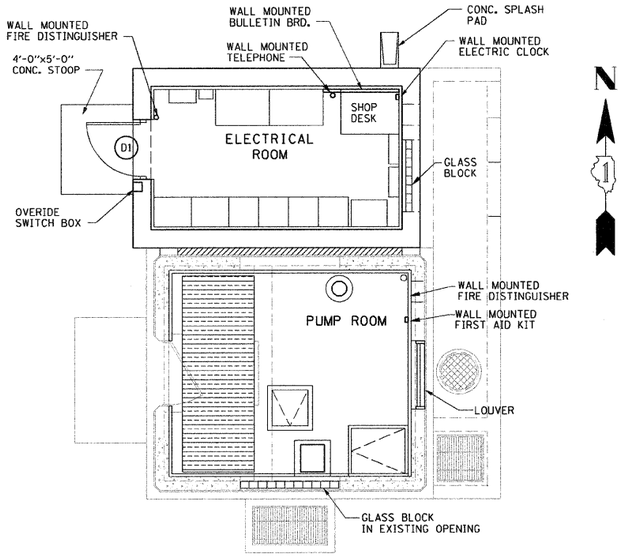
ROOM FINISH SCHEDULE

ROOM NAME	FLOOR		CEILING		REMARKS
	FINISH	COLOR	FINISH	COLOR	
ELECTRICAL ROOM	NON-SLIP EPOXY COATING	GRAY	PAINT	WHITE	PRESENT INTERIOR/EXTERION PAINTED WALL AND CEILING SURFACES TO BE HAND SCRAPED OR BRUSHED TO REMOVE LOOSE PAINT. SPOT PRIME SCRAPED AREAS AND PAINT WITH COMPATIBLE PAINT. ACID WASH FLOOR BEFORE APPLYING EPOXY.
PUMP ROOM	NON-SLIP EPOXY COATING	GRAY	PAINT	WHITE	

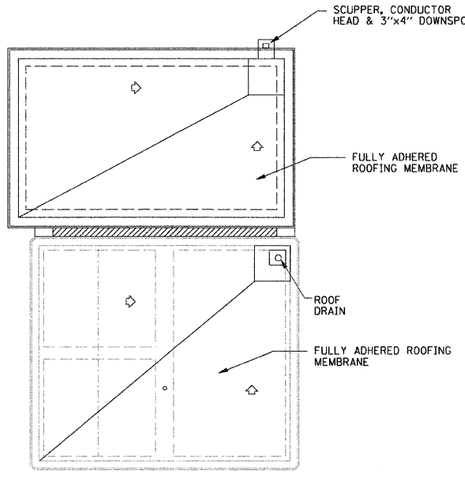
DOOR SCHEDULE

DOOR NO.	SIZE	MATERIAL	FRAME	FINISH	REMARKS
D1	DOOR 3'-0"W x 7'-0"H x 1-3/4" w/INSULATED TRANSOM FOR LOUVER AS REQ'D	INSULATED FLUSH ALUMINUM	2" ALUMINUM	CLEAR ANODIZED	

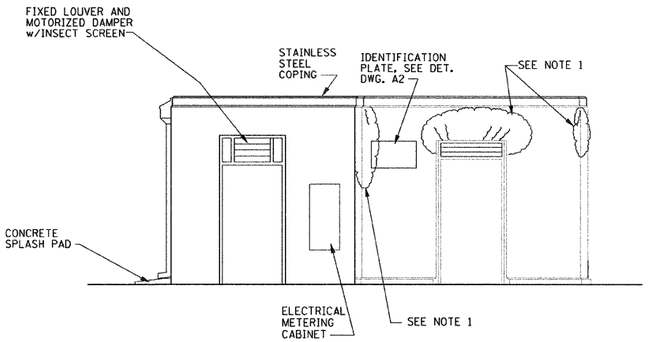
NOTE: FIELD MEASURE ALL EXISTING OPENINGS PRIOR TO FABRICATION



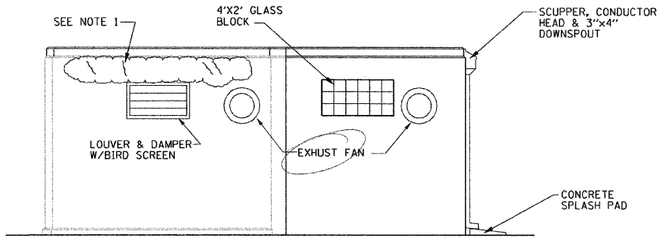
FLOOR PLAN @ EL. 732.0



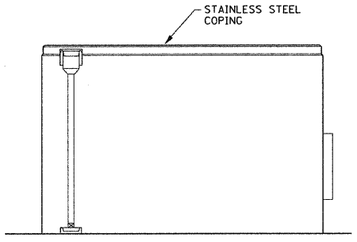
ROOF PLAN



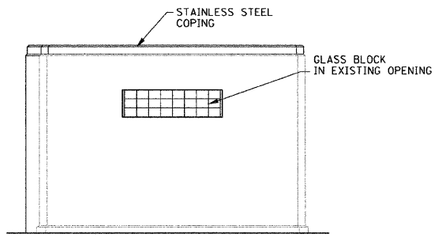
WEST ELEVATION



EAST ELEVATION



NORTH ELEVATION



SOUTH ELEVATION

NOTE:

1. EPOXY GROUT REPAIR CRACKS IN EXISTING CONCRETE WALL AS INDICATED. GRIND SMOOTH SURFACE TO MATCH EXISTING.
2. PAINT NEW AND EXISTING EXTERIOR CONCRETE WALL SURFACES. COLOR AS SPECIFIED IN PAINTING SECTION.

SCALE: 0 4 8 12

A1

REVISIONS	
NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 48 REHABILITATION

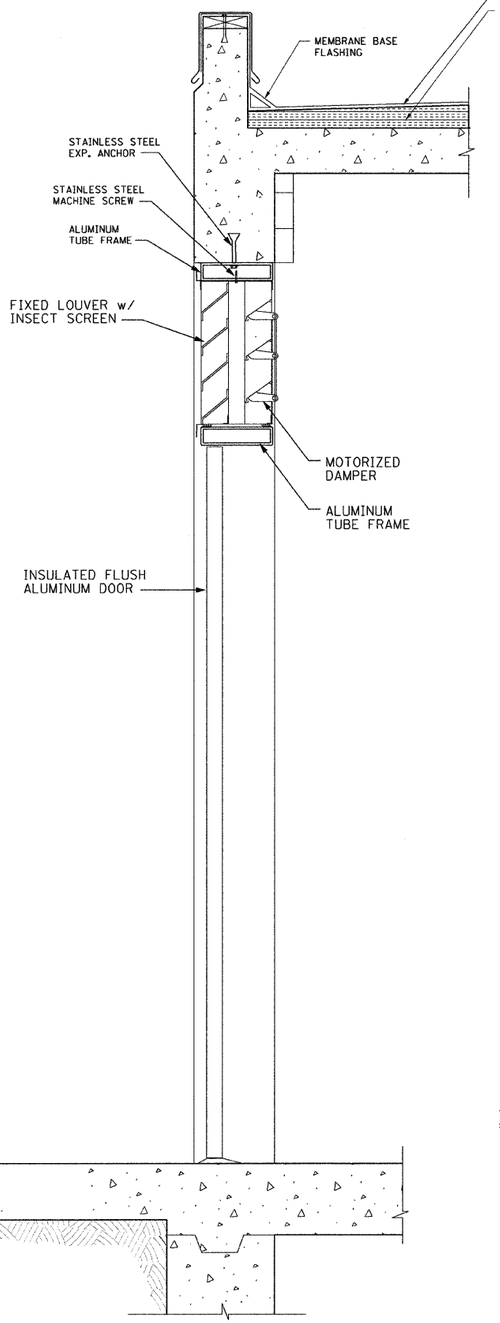
ARCHITECTURAL PLANS, ELEVATIONS & SCHEDULES

SCALE: AS SHOWN DRAWN BY: FL

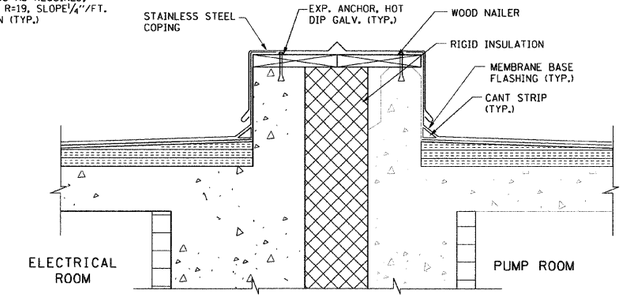
DATE: 03-10-11 CHECKED BY: PJE

DONOHUE & ASSOCIATES

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
365	59(SA, SB&SF)1	DUPAGE	39	13
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

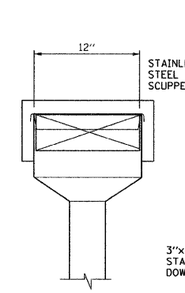


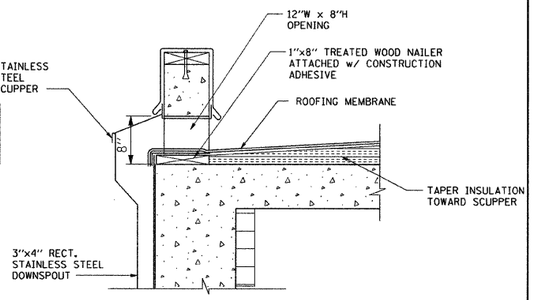
DOOR DETAIL



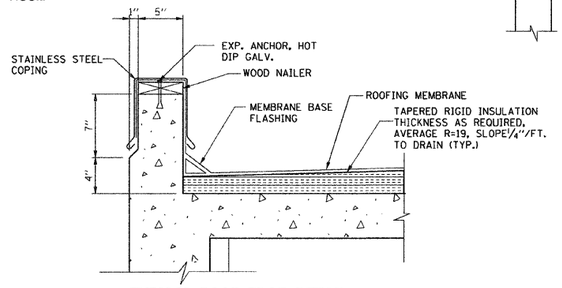
ELECTRICAL/PUMP ROOM

PARAPET FLASHING DETAIL

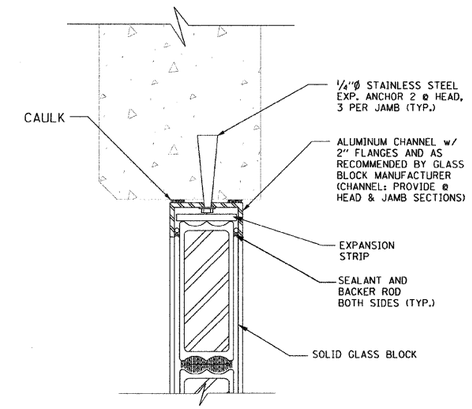




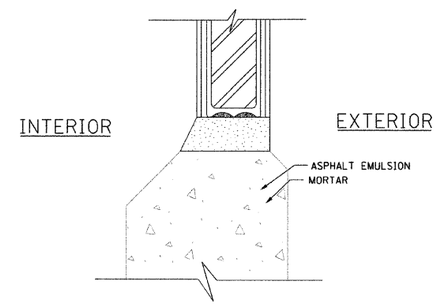
SCUPPER DETAIL



TYPICAL ROOF EDGE DETAIL

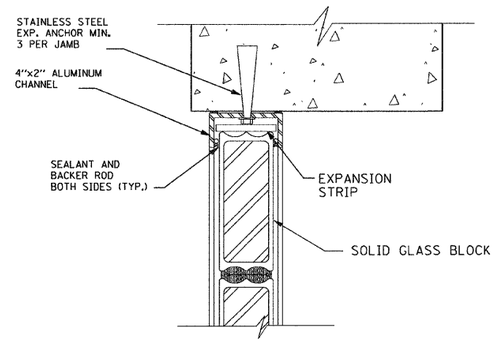


HEAD & JAMB

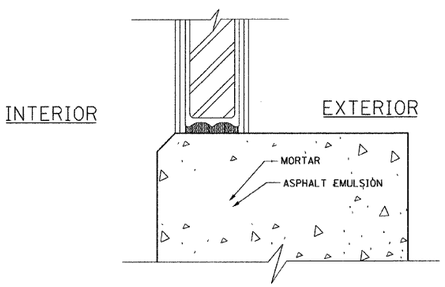


SILL

PUMP ROOM



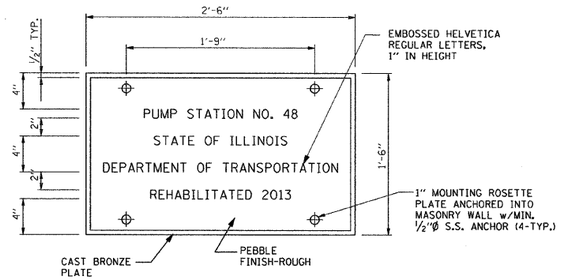
HEAD & JAMB



SILL

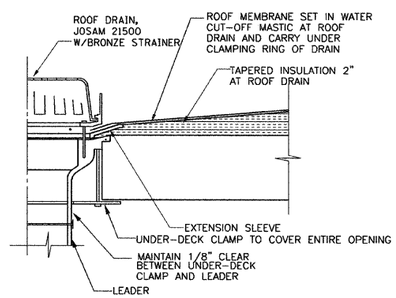
ELECTRICAL ROOM

GLASS BLOCK WINDOW DETAIL



IDENTIFICATION PLATE

NO SCALE



ROOF DRAIN DETAIL

NO SCALE

DONOHUE & ASSOCIATES

A2

REVISIONS	
NAME	DATE

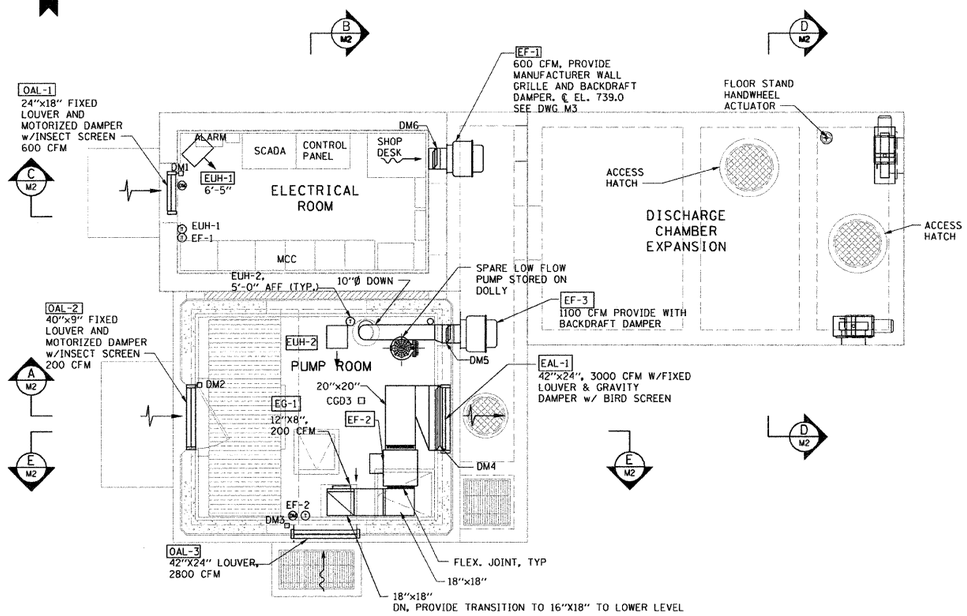
ILLINOIS DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 48
REHABILITATION

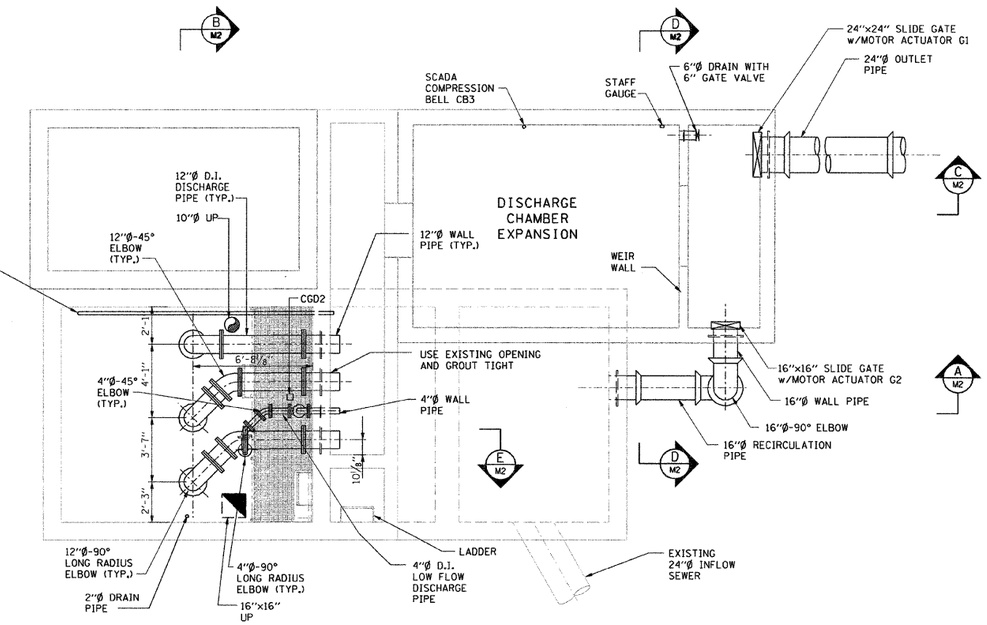
ARCHITECTURAL DETAILS

SCALE: AS SHOWN
DRAWN BY: CM
DATE: 03-10-11
CHECKED BY: PJE

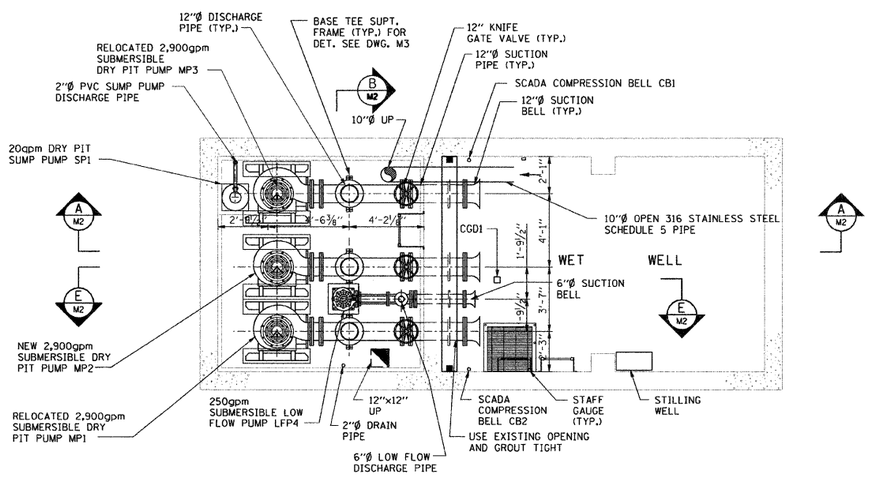
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
365	59(SA, SB&SF)1	DUPAGE	39	14
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		



FLOOR PLAN @ EL. 732.0



FLOOR PLAN @ EL. 725.92



FLOOR PLAN @ EL. 698.50

NOTE:

1. WET WELL SHALL BE CLASS 1, DIVISION 1 GROUP D EXPLOSION PROOF.
2. ALL STAINLESS STEEL FEILD WELDING SHOULD BE PASSIVATED.

SCALE: 0 4 8 12

M1

REVISIONS	
NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

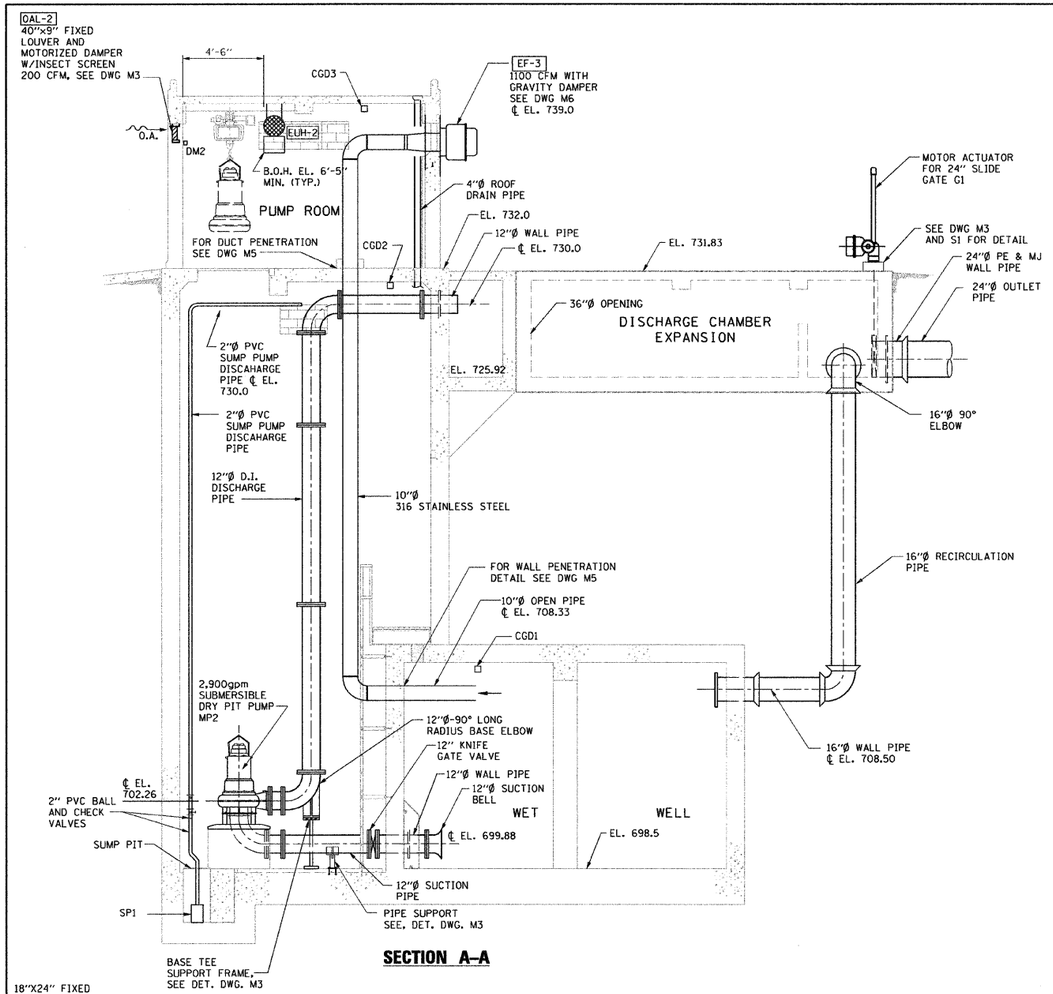
PUMP STATION NO. 48 REHABILITATION

MECHANICAL PLANS

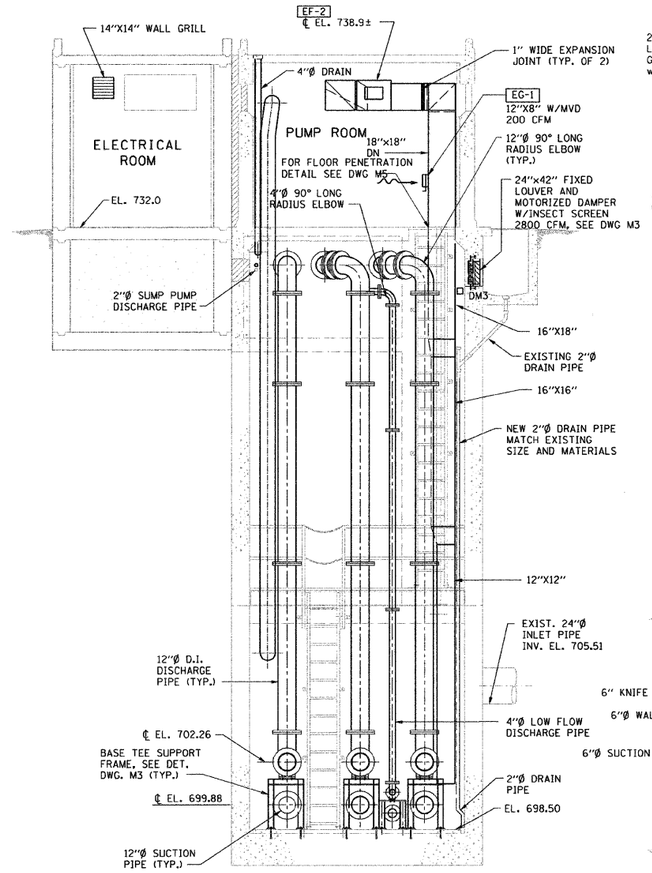
SCALE: AS SHOWN
DATE: 03-10-11
DRAWN BY: HFF
CHECKED BY: KHC

DONOHUE & ASSOCIATES

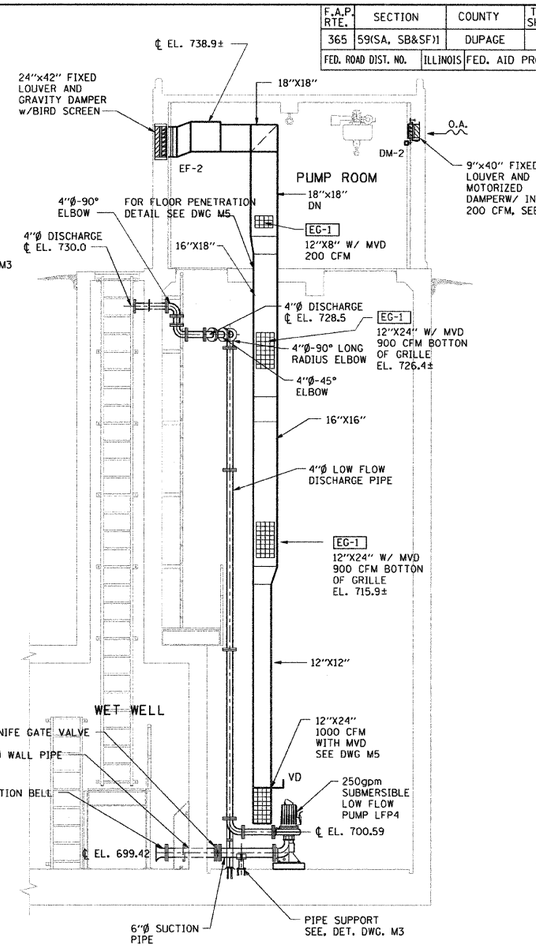
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
365	59(SA, SB&SF)1	DUPAGE	39	15
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		



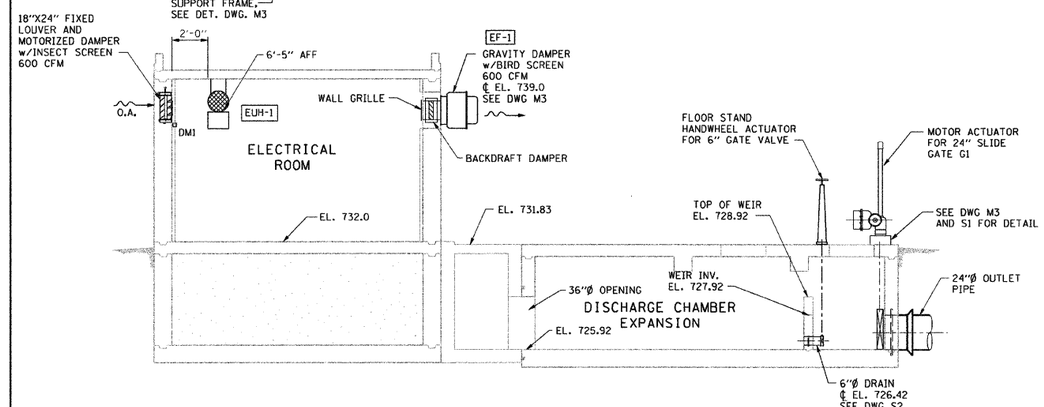
SECTION A–A



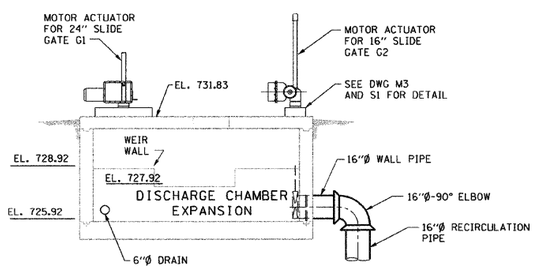
SECTION B–B



SECTION E–E



SECTION C–C



SECTION D–D

FLOW VERSUS WEIR HEIGHT TABLE

HEAD OVER WEIR IN INCH	LEVEL ABOVE BOTTOM IN FOOT (FT.)	FLOW RATE IN GPM
0	2.00	0
1	2.08	144.62
2	2.17	409.05
3	2.25	756.00
4	2.33	1162.19
5	2.42	1622.75
6	2.50	2138.29
7	2.58	2692.25
8	2.67	3287.18
9	2.75	3928.29
10	2.83	4598.11
11	2.92	5310.87
12	3.00	6048.00

NOTE:

1. WET WELL SHALL BE CLASS 1, DIVISION 1 GROUP D EXPLOSION PROOF.
2. ALL STAINLESS STEEL FEILD WELDING SHOULD BE PASSIVATED.

SCALE: 0 4 8 12

DONOHUE & ASSOCIATES

M2

REVISIONS	
NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

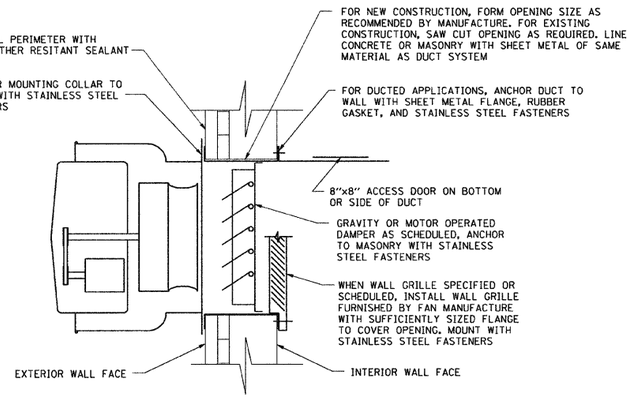
PUMP STATION NO. 48 REHABILITATION

MECHANICAL SECTIONS

SCALE: AS SHOWN DRAWN BY: HFF

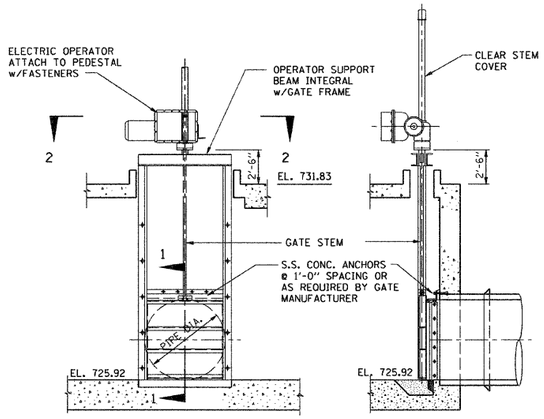
DATE: 03-10-11 CHECKED BY: KHC

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
365	59(SA, SB&SF)1	DUPAGE	39	16
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		



WALL MOUNTED EXHAUST FAN DETAIL

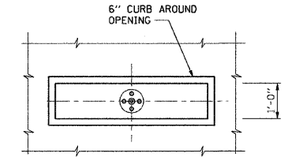
NOT TO SCALE



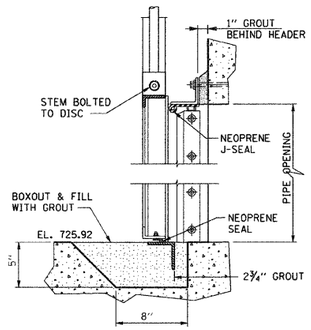
FRONT ELEVATION **SIDE ELEVATION**

24"X24" AND 16"X16" FLUSH BOTTOM SLIDE GATE DETAIL

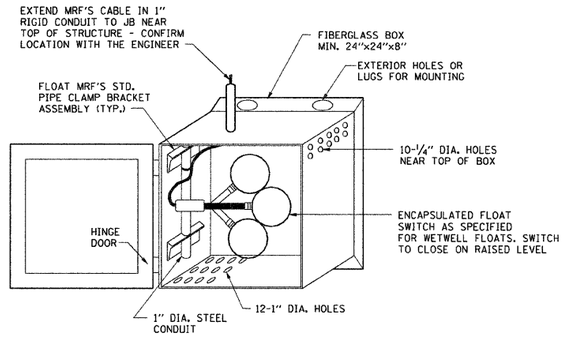
N.T.S.



SECTION 2–2

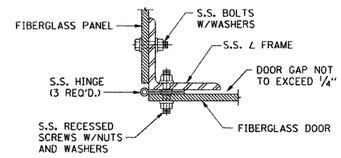


SECTION 1–1



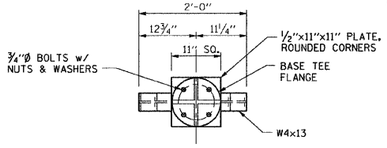
FLOAT ALARM BOX

NOT TO SCALE

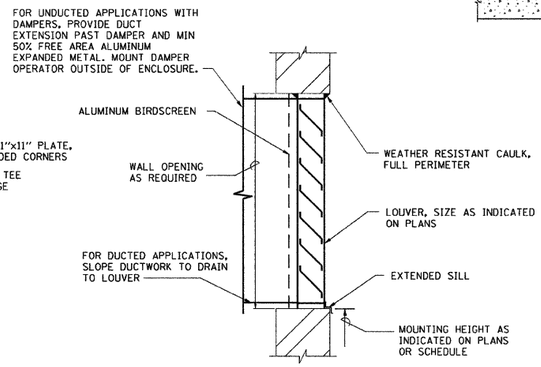


STAINLESS STEEL DOOR HINGE DETAIL

N.T.S.

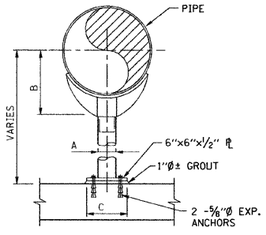


SECTION 1–1



TYPICAL LOUVER DETAIL

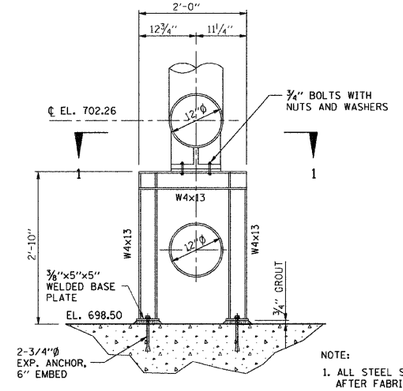
NOT TO SCALE



TYPICAL PIPE SUPPORT

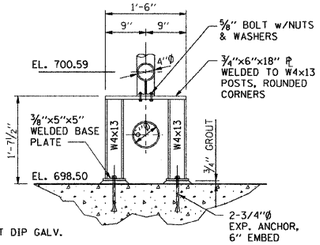
NOT TO SCALE

PIPE SIZE	SUPPORT DIMENSION		
	A	B	C
6"	3"	5⅜"	6"
12"	3"	9⅜"	6"



ELEVATION

12" BASE TEE SUPPORT FRAME



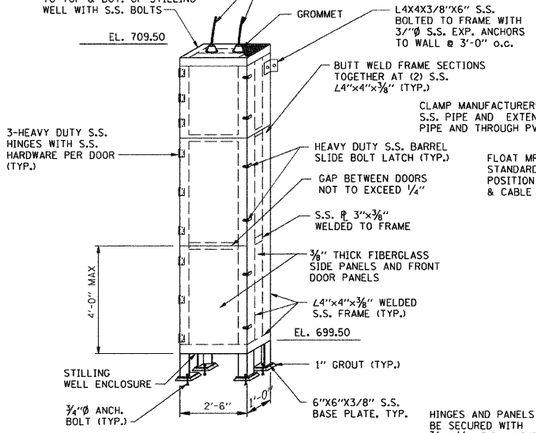
ELEVATION

4" BASE TEE SUPPORT FRAME

NOTE:
1. ALL STEEL SHALL BE HOT DIP GALV. AFTER FABRICATION.

SCALE: 0 6" 1 2 3 FT.

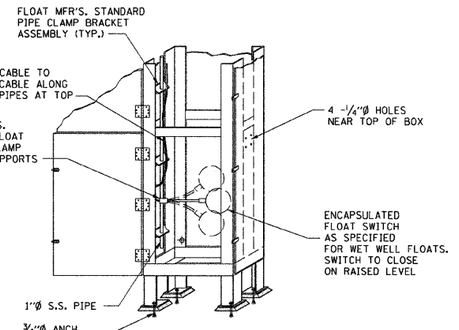
NOTE:
1. SUPPORTS SHALL BE CUSTOM FABRICATED FOR LOW FLOW AND HIGH FLOW PUMP.



FLOAT STILLING WELL DETAIL FOR PUMP FLOAT CONTROL

N.T.S.

HINGES AND PANELS TO BE SECURED WITH ⅜"x1½" 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.

DONOHUE & ASSOCIATES

M3

REVISIONS	
NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 48 REHABILITATION

MECHANICAL DETAILS

SCALE: AS SHOWN DRAWN BY: HFF

DATE: 03-10-11 CHECKED BY: KHC

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
365	59(SA, SB&SF)1	DUPAGE	39	17
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

PUMPING OPERATION RANGES WITH RISING WATER

FUNCTION	SCADA (BUBBLER)		FLOAT	
	ELEVATION	LEVEL ABOVE WET PIT FLOOR	ELEVATION	LEVEL ABOVE WET PIT FLOOR
	(FT)	(FT)	(FT)	(FT)
LOW FLOW PUMP START	701.50	3.0	702.5	4.0
LEAD PUMP START & LOW FLOW PUMP STOP	706.0	7.5	706.5	8.0
LAG PUMP START	706.50	8.0	707.0	8.5
STANDBY PUMP START	707.00	8.5	707.5	9.0
HIGH WATER ALARM	708.00	9.5	708.00	9.5

PUMPING OPERATION RANGES WITH FALLING WATER

FUNCTION	SCADA (BUBBLER)		FLOAT	
	ELEVATION	LEVEL ABOVE WET PIT FLOOR	ELEVATION	LEVEL ABOVE WET PIT FLOOR
	(FT)	(FT)	(FT)	(FT)
MAIN PUMPS STOP AND LOW FLOW PUMP START	703.00	4.5	703.00	4.5
LOW FLOW PUMP STOP	701.00	2.5	701.00	2.5
LOW WATER ALARM	700.00	1.5	700.00	1.5

EQUIPMENT SCHEDULE

ITEM	DESCRIPTION	LOCATION	ELECTRICAL MOTOR CHARACTERISTICS						PUMP		FAN				MOUNTING	REMARKS
			KW	HP	RPM	VOLTS	PHASE	HZ	CAPACITY (GPM)	HEAD (FT)	TYPE	CAPACITY (CFM)	SP (IN)	DRIVE		
MP 1	RELOCATE EXIST. MAIN PUMP #1	DRY PIT	22 *	30 *	860 *	460	3	60	2,900	30						RELOCATE EXIST. PUMP
MP 2	NEW MAIN PUMP #2	DRY PIT	22 *	30 *	860 *	460	3	60	2,900	30						SEE NOTES 1
MP 3	RELOCATE EXIST. MAIN PUMP #3	DRY PIT	22 *	30 *	860 *	460	3	60	2,900	30						RELOCATE EXIST. PUMP
LFP 4	NEW LOW FLOW PUMP #4	DRY PIT	4.8 *	7.5 *	1,750 *	460	3	60	250	33						SEE NOTES 1
SP 1	NEW SUMP PUMP	DRY PIT	0.45 *	0.5 *	3,300 *	460	3	60	20	35						SEE NOTES 1
G 1	SLIDE GATE ACTUATOR	OUTSIDE ABOVE GRADE	0.75	1		460	3	60								
G 2	SLIDE GATE ACTUATOR	OUTSIDE ABOVE GRADE	0.75	1		460	3	60								
-	TROLLEY HOIST MOTOR	PUMP ROOM	3.7	5		460	3	60								
-	ELECTRIC HOIST MOTOR	PUMP ROOM	0.45	0.5		460	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 HIS FINAL SELECTED PUMPS AT NO ADDITIONAL COST.

2. STAND-BY PUMP STARTS ONLY WHEN MOTOR OVERLOADS OR STARTING SEQUENCE FAILS FOR ANY MAIN PUMP

3. PROVIDE NEW MOTOR PROTECTION RELAYS (MPR) FOR EXISTING PUMPS (MP-1 AND MP-3).

DONOHUE & ASSOCIATES

M4

REVISIONS	
NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 48
REHABILITATION

EQUIPMENT SCHEDULE AND PUMPING OPERATING ELEV.

SCALE: N/A
DRAWN BY: HFF
DATE: 03-10-11
CHECKED BY: KHC

F.A.P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
365	59(SA, SB&SF)I	DUPAGE	39	18
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

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	CWB 101	CENTRI SIDEWALL	EXHAUST	600	0.25	0.05	950	BELT	3.0	1/4	115	1	1725	1,2,6,10,11,12,13
EF-2	GREENHECK	BSO 180	INLINE CENTRI	EXHAUST	3000	0.80	1.21	1815	BELT	19.9	2	460	3	1725	1,2,6,7,8,9,11
EF-3	GREENHECK	CWB-121	CENTRI SIDEWALL	EXHAUST	1100	0.80	0.24	1367	BELT	11.9	1/3	115	1	1725	1,2,3,4,5,6,12

1. = ALUMINUM CONSTRUCTION.
2. = STAINLESS STEEL FAN SHAFT AND FASTENERS.
3. = EXPLOSION PROOF MOTOR
4. = AMCA TYPE B SPARK RESISTANT CONSTRUCTION.
5. = EXPLOSION PROOF INTEGRAL DISCONNECT SWITCH AND INSTALLED IN ACCORDANCE WITH DIVISION 16
6. = HI-PRO POLYESTER (HERESITE) COATING ON FAN AND DAMPER.
7. = MOTOR COVER ON MOTOR AND BELT.
8. = FLEX CONNECTION.
9. = VIBRATION ISOLATION HANGING ACCESSORIES.
10. = GRAVITY OPERATED DAMPER
11. = NEMA 4X INTEGRAL DISCONNECT SWITCH AND INSTALLED IN ACCORDANCE WITH DIVISION 16
12. = ALUMINUM BIRDSCREEN
13. = MANUFACTURER ALUMINUM WALL GRILLE

ELECTRIC HEATER SCHEDULE

TAG	MANUF.	MODEL	TYPE	OUTPUT (MBH)	MOUNT. HEIGHT (FT)	AIR DATA			ELECTRICAL DATA			MOTOR DATA			REMARKS
						CFM	THROW (FT)	ΔT (F)	KW	VOLT/ ϕ	AMP	HP	VOLT/ ϕ	RPM	
EUH-1	MARLEY	JUW500	CORR UNIT	17.06	6'-5"	405		37	5.0	460/3	6.0	1/2	-	1725	1,2,3,4,5
EUH-2	MARLEY	JUW750	CORR UNIT	25.59	6'-5"	485		46	7.5	460/3	9.0	1/2	-	1725	1,2,3,4,5

1. = STAINLESS STEEL CORROSION RESISTANCE CONSTRUCTION.
2. = NEMA 4X DISCONNECT SWITCH AND INSTALLED IN ACCORDANCE WITH DIVISION
3. = CONTROLS AS SPECIFIED.
4. = MANUFACTURES MOUNTING ACCESSORIES.
5. = WALL MOUNTED THERMOSTAT.

WALL LOUVER SCHEDULE

TAG	MANUF.	MODEL	SERVICE	CFM	WIDTH (IN)	HEIGHT (IN)	DEPTH (IN)	MAX. APD (IN WC)	MAX. FREE AREA VEL. (FPM)	REMARKS
OAL-1	GREENHECK	ESD-403	INTAKE	600	24	18	4	0.048	522	1,2,3,4,5
OAL-2	GREENHECK	ESD-403	INTAKE	200	40	9	4	--	--	1,2,3,4,5
OAL-3	GREENHECK	ESD-403	INTAKE	2800	42	24	4	0.088	854	1,2,3,4,5
EAL-1	GREENHECK	ESD-403	EXHAUST	3000	42	24	4	0.092	915	1,2,5,6

1. = ALUMINUM BIRDSCREEN.
2. = EXTENDED SILL.
3. = INSULATED BLADE MOTOR OPERATED DAMPER TO BE FURNISHED BY TEMPERATURE CONTROLS CONTRACTOR.
4. = EXTERNALLY MOUNTED STAINLESS STEEL REMOVABLE INSECT SCREEN.
5. = KYNAR FINISH.
6. = GRAVITY OPERATED DAMPER

AIR INLET AND OUTLET SCHEDULE

TAG	MANUF.	MODEL	SERVICE	MAX. APD. (IN. W. C)	MAX. NC	PATTERN	FINISH	MATERIAL	REMARKS
EG-1	AJ MANUF	550 H	EXHAUST	0.10	30	SD	MATTE	SST	

SD = 3/4" BLADE SINGLE DEFLECTION.

DAMPERS SCHEDULE

ITEM	SIZE	ACTUATOR			CONFIGURATION	REMARKS
		TYPE	VOLTAGE	PH		
DM1	24"X18"	ELECTRIC MOTOR	115	1	SUPPLY	MOTOR OPERATED DAMPER ASSOCIATED WITH LOUVER OAL-1
DM2	40"X9"	ELECTRIC MOTOR	115	1	SUPPLY	MOTOR OPERATED DAMPER ASSOCIATED WITH LOUVER OAL-2
DM3	42"X24"	ELECTRIC MOTOR	115	1	SUPPLY	MOTOR OPERATED DAMPER ASSOCIATED WITH LOUVER OAL-3
DM4	42"X24"	GRAVITY	---	---	EXHAUST	BACK DRAFT DAMPER ASSOCIATED WITH LOUVER EAL-1
DM5	12"X12"	GRAVITY	---	---	EXHAUST	BACK DRAFT DAMPER ASSOCIATED WITH LOUVER EF-3
DM6	12"X12"	GRAVITY	---	---	EXHAUST	BACK DRAFT DAMPER ASSOCIATED WITH LOUVER EF-1

NOTE: MOTOR OPERATED DAMPERS TO BE FURNISHED BY TEMPERATURE CONTROL CONTRACTOR.
GRAVITY OPERATED DAMPERS TO BE FURNISHED BY EQUIPMENT SUPPLIER

ELECTRICAL ROOM VENTILATION CONTROL

EXHAUST FAN EF-1 WILL BE CONTROLLED BY THE H-O-A SWITCH WITH THE THERMOSTAT SET AT (80° F. ADJUSTABLE).

AUTO MODE:
ON CALL FOR COOLING FROM THERMOSTAT THE STARTER WILL ENERGIZE EF-1 AND MOTOR OPERATED DAMPER (DM1) ASSOCIATED WITH OAL1 WILL OPEN.

OFF MODE:
EF-1 STOP AND DM1 CLOSED.

HAND MODE:
EF-1 RUN CONTINUOUSLY AND DM1 OPENED.

PUMP ROOM VENTILATION

EXHAUST FAN EF-2 WILL BE CONTROLLED BY THE H-O-A SWITCH WITH THE THERMOSTAT SET AT (85° F, ADJUSTABLE).

AUTO MODE:
THE STARTER WILL ENERGIZE EF-2, FAN WILL RUN CONTINUOUSLY AND MOTOR OPERATED DAMPERS (DM2, DM3) WILL OPEN UNDER ANYONE OF THESE FOLLOWING CONDITIONS:

1. WHEN THE THERMOSTAT SENSES A ROOM TEMPERATURE ABOVE THE THERMOSTAT SET POINT.
2. WHEN THE GAS SENSOR DETECTS COMBUSTIBLE GAS ABOVE THE SETPOINT IN THE PUMP ROOM .
3. WHEN THE PUMP ROOM LIGHTS ARE TURNED ON.

OFF MODE:
EF-2 STOP AND DM2 AND DM3 CLOSED.

HAND MODE:
EF-2 RUN CONTINUOUSLY, DM2 AND DM3 OPENED.

WET WELL VENTILATION CONTROL

EXHAUST FAN EF-3 WILL BE CONTROLLED BY THE H-O-A SWITCH.

AUTO MODE:
EF-3 WILL ENERGIZE, FAN WILL RUN CONTINUOUSLY UPON ANY ONE OF THE FOLLOWING CONDITIONS:

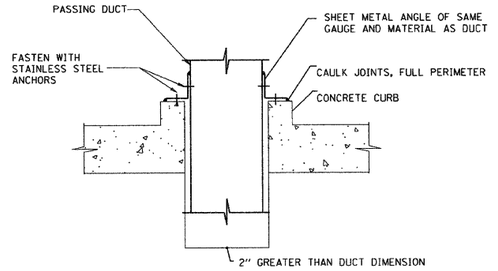
1. WHEN THE GAS SENSOR DETECTS COMBUSTIBLE GAS ABOVE SETPOINT IN PUMP ROOM OR WETWELL.
2. WHEN THE WET WELL LIGHTS ARE TURNED ON.

OFF MODE;
EF-3 STOP

HAND MODE:
EF-3 RUN CONTINUOUSLY.

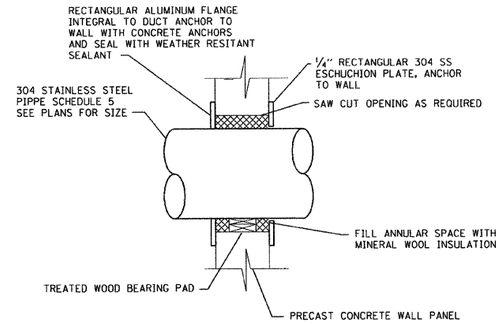
ELECTRIC UNIT HEATERS

EUH-1 AND EUH-2 UNIT HEATERS WILL RUN IN RESPONSE TO SPACE THERMOSTATE, WHEN WALL MOUNTED THERMOSTAT DETECTS A TEMPERATURE BELOW THE SETPOINT TEMPERATURE, HEATING ELEMENTS SHALL ENERGIZE AND FAN SHALL RUN. UPON SATISFACTION OF SPACE TEMPERATURE UNIT HEATER FAN AND ELEMENTS SHALL DE-ENERGIZE AND STOP.



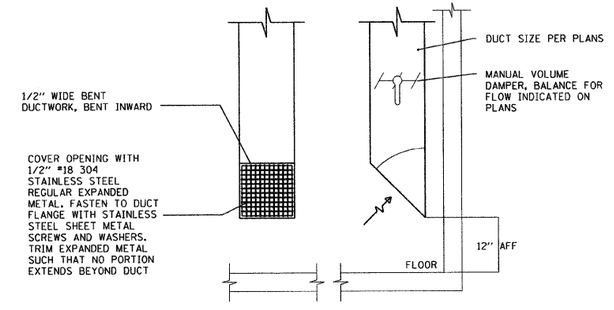
DUCTWORK FLOOR PENETRATION DETAIL

NOT TO SCALE



DUCTWORK WALL PENETRATION DETAIL

NOT TO SCALE



EXHAUST DUCT DROP DETAIL

NOT TO SCALE

DONOHUE & ASSOCIATES

M5

REVISIONS	
NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 48 REHABILITATION

HVAC SCHEDULE AND OPERATING SEQUENCE

SCALE: N/A DRAWN BY: HFF

DATE: 03-10-11 CHECKED BY: KHC

BUILDING PLANS

SYMBOL	DESCRIPTION
	SPECIAL PURPOSE RECEPTACLE
	TELEPHONE OUTLET
	DATA OUTLET
LP-1	FLUSH MOUNTED PANELBOARD PANEL TYPE (LIGHTING PANEL) UNIT NUMBER
	SURFACE MOUNTED PANELBOARD
	MANUAL DISCONNECT SWITCH NONFUSED (RATING AS INDICATED)
	MANUAL DISCONNECT SWITCH FUSED (RATING AS INDICATED)
	MAGNETIC MOTOR STARTER (RATING AS INDICATED)
	COMBINATION MAGNETIC MOTOR & FUSED DISCONNECT SWITCH (RATING AS INDICATED)
	PUSHBUTTON STATION (1, 2 & 3 BUTTONS SHOWN)
50HP	SINGLE SPEED ELECTRIC MOTOR (KW OR HP RATING AS INDICATED)
60HP/50HP	DOUBLE SPEED ELECTRIC MOTOR (KW OR HP RATING AS INDICATED)
250 KW	ELECTRIC GENERATOR SET (KW RATING AS INDICATED)
L	LIMIT SWITCH
F	FLOAT SWITCH
P	PRESSURE SWITCH
FW	FLOW SWITCH
EP	ELECTRIC - PNEUMATIC SWITCH
PE	PNEUMATIC - ELECTRIC SWITCH
TQ	TORQUE SWITCH
T	TRANSFORMER
F	FIRE ALARM PULL STATION
AV	AUDIO VISUAL ALARM
S	SMOKE DETECTOR
H	HEAT DETECTOR
C	COMBUSTIBLE GAS DETECTOR
T	THERMOSTAT
	UNIT HEATER - HORIZONTAL TYPE
UH	UNIT HEATER - DOWNBLAST TYPE OR CENTRIFUGAL FAN TYPE
CUH	CABINET UNIT HEATER
	ALARM HORN

BUILDING PLANS

SYMBOL	DESCRIPTION
F1-2a	FLUORESCENT FIXTURE (F1 INDICATES FIXTURE TYPE- REFER TO FIXTURE SCHEDULE - 2a INDICATES CIRCUIT No.2 ON SWITCH a.(TYP).
T	FLUORESCENT FIXTURE, WALL MOUNTED
	INCANDESCENT, COMPACT FLUORESCENT OR HID FIXTURE
	WALL MOUNTED INCANDESCENT, COMPACT FLUORESCENT OR HID FIXTURE
	FLUORESCENT FIXTURE ON EMERGENCY CIRCUIT
	INCANDESCENT, COMPACT FLUORESCENT OR HID FIXTURE ON EMERGENCY CIRCUIT
	EXIT SIGN SINGLE SIDED (ABOVE DOOR)
	DIRECTIONAL EXIT SIGN - DOUBLE SIDED (DIRECTION AS INDICATED - TYP.)
	DIRECTIONAL EXIT SIGN - SINGLE SIDED
	BATTERY UNIT FOR EMERGENCY LIGHT
	BATTERY OPERATED EMERGENCY LIGHT
	EMERGENCY LIGHT, REMOTE HEAD
P	ELECTRIC PULLBOX
J ■	ELECTRIC JUNCTION BOX
	BARE GROUND CABLE
	EXPOSED CONDUIT
	CONCEALED CONDUIT IN FLOOR OR UNDERGROUND
	CONCEALED CONDUIT IN CEILING OR WALLS
LP-1-6	CONDUIT HOME-RUN TO PANEL AS INDICATED (LP-1-6 DENOTES PANEL DESIGNATION, SLASH LINES INDICATE QUANTITY OF WIRE. GROUND WIRE INDICATED AS LONG LINE WITH DOT, NEUTRAL WIRE INDICATED AS LONG LINE, PHASE WIRE AND SWITCH LEGS INDICATED AS SHORT LINES.)
	CABLE TRAY
	CONDUIT TURNED UP OR DOWN
	CONDUIT TERMINATED OR CAPPED
$	SINGLE POLE TOGGLE SWITCH
$2	DOUBLE POLE TOGGLE SWITCH
$3	THREE-WAY TOGGLE SWITCH
$4	FOUR-WAY TOGGLE SWITCH
$K	KEY OPERATED SWITCH
$T	MANUAL MOTOR STARTER SWITCH WITH THERMAL OVERLOAD PROTECTION
$P	TOGGLE SWITCH WITH PILOT LIGHT
$D	DIMMER SWITCH
	SINGLE RECEPTACLE
	DUPLEX RECEPTACLE
	QUADRUPLEX RECEPTACLE
GFCI	DUPLEX RECEPTACLE WITH GROUND FAULT CIRCUIT INTERRUPTER
IG	DUPLEX RECEPTACLE WITH ISOLATED GROUND

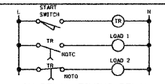
SCHEMATIC SYMBOLS

SYMBOL	DESCRIPTION
	CONDUCTOR CONNECTION
	NO CONNECTION
	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
	PRESSURE SWITCH - CLOSES ON RISING PRESSURE
	PRESSURE SWITCH - OPENS ON RISING PRESSURE
	DIFFERENTIAL PRESSURE SWITCH - CLOSES WHEN THE DIFFERENTIAL IN PRESSURE BETWEEN TWO DIAPHRAGMS EXCEEDS A SET POINT
	DIFFERENTIAL PRESSURE SWITCH - OPENS WHEN THE DIFFERENTIAL IN PRESSURE BETWEEN TWO DIAPHRAGMS EXCEEDS A SET POINT
	TIME DELAY RELAY SWITCH - CLOSES ON TIME DELAY AFTER ENERGIZATION OF RELAY COIL.
	TIME DELAY RELAY SWITCH - OPENS ON TIME DELAY AFTER ENERGIZATION OF RELAY COIL.
	TIME DELAY RELAY SWITCH - CLOSES ON TIME DELAY AFTER DE-ENERGIZATION OF RELAY COIL.
	TIME DELAY RELAY SWITCH - OPENS ON TIME DELAY AFTER DE-ENERGIZATION OF RELAY COIL.
	LIMIT SWITCH - NORMALLY OPEN
	LIMIT SWITCH - NORMALLY CLOSED
	LIMIT SWITCH - NORMALLY OPEN HELD CLOSED

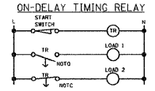
SCHEMATIC SYMBOLS

SYMBOL	DESCRIPTION
	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)
R	INDICATOR LIGHT (PUSH TO TEST TYPE)
	DEVICE ENCLOSURE
ANN	ANNUNCIATOR
COUNT	COUNTER
ETM	ELAPSED TIME METER
TMR	ELECTRONIC TIMER
TOT	TOTALIZER

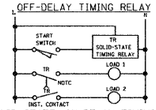
TIMING RELAY SAMPLE DIAGRAMS



ON-DELAY TIMING RELAY



OFF-DELAY TIMING RELAY



SOLID STATE, ON-DELAY TIMING RELAY

ONE-LINE DIAGRAMS

SYMBOL	DESCRIPTION
	POWER CIRCUIT
	EQUIPMENT ENCLOSURE
	CONTROL OR INTERLOCK CIRCUIT
	BUS (RATING AS INDICATED)
	CONDUCTOR CONNECTION
	DRAWOUT DEVICE
500AT 600AF	DRAWOUT MOLDED CASE CIRCUIT BREAKER (600V, THERMAL-MAGNETIC TYPE, UNLESS NOTED OTHERWISE) TRIP SETTING (TYP.) FRAME SIZE (TYP.)
M	MOLDED CASE CIRCUIT BREAKER (600V, THERMAL-MAGNETIC TYPE, UNLESS NOTED OTHERWISE)
AIR TRIP FUNCTION	AIR CIRCUIT BREAKER
IC TRIP FUNCTION	INSULATED CASE CIRCUIT BREAKER
	FUSE (RATING AS INDICATED)
	DRAWOUT FUSE (RATING AS INDICATED)
	FUSE - SWITCH (RATING AS INDICATED)
	NON-FUSIBLE DISCONNECT SWITCH
	THERMAL OVERLOAD ELEMENT
	INSTANTANEOUS CONTACT
	CONNECTION TO GROUND
	LIGHTNING OR SURGE ARRESTER
	CURRENT TRANSFORMER-DOUGHNUT TYPE (QUANTITY, RATIO AND RATING AS INDICATED)
	CURRENT TRANSFORMER-WINDOW TYPE (RATIO AND RATING AS INDICATED)
	POTENTIAL TRANSFORMER (QUANTITY, RATIO AND RATING AS INDICATED)
	CAPACITOR
	BATTERY
AS	AMMETER SWITCH
VS	VOLTMETER SWITCH
SS	SELECTOR SWITCH
A	AMMETER (RANGE AS INDICATED)
V	VOLTMETER (RANGE AS INDICATED)
KWH	KILOWATTHOUR METER
K----K	KIRK-KEY INTERLOCK
GFR	GROUND FAULT RELAY

ONE-LINE DIAGRAMS

SYMBOL	DESCRIPTION
50HP	SINGLE SPEED ELECTRIC MOTOR (KW OR HP RATING AS INDICATED)
60HP/50HP	DOUBLE SPEED ELECTRIC MOTOR (KW OR HP RATING AS INDICATED)
250 KW	ELECTRIC GENERATOR SET (TYPE & KW RATING AS INDICATED)
	TRANSFER SWITCH (TYPE AND RATING AS INDICATED)
	SINGLE SPEED NON-REVERSING MANUAL STARTER (NEMA OR IEC DESIGNATION AS SPECIFIED OR SHOWN)
	SINGLE SPEED NON-REVERSING MAGNETIC STARTER (NEMA OR IEC DESIGNATION AS SPECIFIED OR SHOWN)
	COMBINATION CIRCUIT BREAKER & SINGLE SPEED NON-REVERSING MAGNETIC STARTER (NEMA OR IEC DESIGNATION AS SPECIFIED OR SHOWN)
	COMBINATION DISCONNECT SWITCH & SINGLE SPEED NON-REVERSING STARTER (NEMA OR IEC DESIGNATION AS SPECIFIED OR SHOWN)
	COMBINATION CIRCUIT BREAKER & SINGLE SPEED REVERSING MAGNETIC STARTER (NEMA OR IEC DESIGNATION AS SPECIFIED OR SHOWN)
	COMBINATION CIRCUIT BREAKER & TWO SPEED NON-REVERSING MAGNETIC STARTER (NEMA OR IEC DESIGNATION AS SPECIFIED OR SHOWN)
	REDUCED VOLTAGE STARTER, AUTO TRANSFORMER TYPE (NEMA OR IEC DESIGNATIONS AS SPECIFIED OR SHOWN)
	REDUCED VOLTAGE STARTER, WYE-DELTA TYPE (NEMA OR IEC DESIGNATIONS AS SPECIFIED OR SHOWN)
	REDUCED VOLTAGE STARTER, PRIMARY-RESISTOR TYPE (NEMA OR IEC DESIGNATIONS AS SPECIFIED OR SHOWN)
S.S.	SOLID STATE REDUCED VOLTAGE STARTER

SCHEMATIC DIAGRAM DEVICE DESIGNATIONS

SYMBOL	DESCRIPTION
	DESIGNATION DESCRIBING DEVICE OPERATION OR FUNCTION
A AUTO	AUTOMATIC
ACK	ACKNOWLEDGE
CL	CLOSE
F	FAST
FWD	FORWARD
HI	HIGH
H	HAND
INST	INSTANTANEOUS
L	LOW
LOS	LOCKOUT-STOP
LOC	LOCAL
HR	HAND RESET
HS	HIGH SPEED
LSP	LOW SPEED
N	NORMAL
NC	NORMALLY CLOSED
NCTC	NORMALLY CLOSED TIMED CLOSED
NCTO	NORMALLY CLOSED TIMED OPEN
NO	NORMALLY OPEN
NOTC	NORMALLY OPEN TIMED CLOSED
NOTO	NORMALLY OPEN TIMED OPEN
O	OFF
OP	OPEN
REM	REMOTE
REV	REVERSE
S	SLOW
A	AMBER
BL	BLUE
C	CLEAR
G	GREEN
R	RED
W	WHITE
Y	YELLOW

E1

REVISIONS	
NAME	DATE

F.A.P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
365	59(SA, SB&SF)1	DUPAGE	39	19
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

ABBREVIATIONS

SYMBOL	DESCRIPTION
AC	ALTERNATING CURRENT
ACK	ACKNOWLEDGE
A/C	AERIAL CABLE
AFG	ABOVE FINISHED GRADE
AFF	ABOVE FINISHED FLOOR
ANN	ANNUNCIATOR
ATS	AUTOMATIC TRANSFER SWITCH
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CM	CENTIMETER
CT	CURRENT TRANSFORMER
CP	CONTROL PANEL
DC	DIRECT CURRENT
DIA	DIAMETER
DP	DISTRIBUTION PANEL
EF	EXHAUST FAN
EMER	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
FT	FEET OR FOOT
FND CON	FOUNDATION CONCRETE
FU	FUSE
FVNR	FULL VOLTAGE NON-REVERSING
FVR	FULL VOLTAGE REVERSING
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFR	GROUND FAULT RELAY
GND	GROUND
HID	HIGH INTENSITY DISCHARGE
HP	HORSEPOWER
IG	ISOLATED GROUND
JB	JUNCTION BOX
KVA	KILOVOLT AMPERE
KW	KILOWATTS
LP	LIGHTING PANEL
M	METER
MCC	MOTOR CONTROL CENTER
MM	MILLIMETER
MTG HT	MOUNTING HEIGHT
MTS	MANUAL TRANSFER SWITCH
NL	NIGHT LIGHT
NO. #	NUMBER
PB	PUSH BUTTON
PLC	PROGRAMMABLE LOGIC CONTROLLER
PNL	PANEL
PT	POTENTIAL TRANSFORMER
RECP	RECEPTACLE
RGC	RIGID GALVANIZED CONDUIT
RVS	REDUCED VOLTAGE STARTER
SCADA	SUPERVISORY CONTROL AND DATA AQUISITION
SEL SW	SELECTOR SWITCH
SF	SUPPLY FAN
SPARE	SPARE
SPACE	SPACE
SS	STAINLESS STEEL
STA	STATION
SWGR	SWITCHGEAR
TMP	TEMPORARY
TEMP	TEMPERATURE
T' STAT	THERMOSTAT
TEFC	FULLY ENCLOSED FAN COOLED
UH	UNIT HEATER
VFD	VARIABLE FREQUENCY DRIVE
WP	WEATHERPROOF
XFER	TRANSFER
XFMR	TRANSFORMER
XP	EXPLOSION-PROOF (CLASS 1, DIV 1, GROUP C & D UNLESS NOTED OTHERWISE)

ILLINOIS DEPARTMENT OF TRANSPORTATION

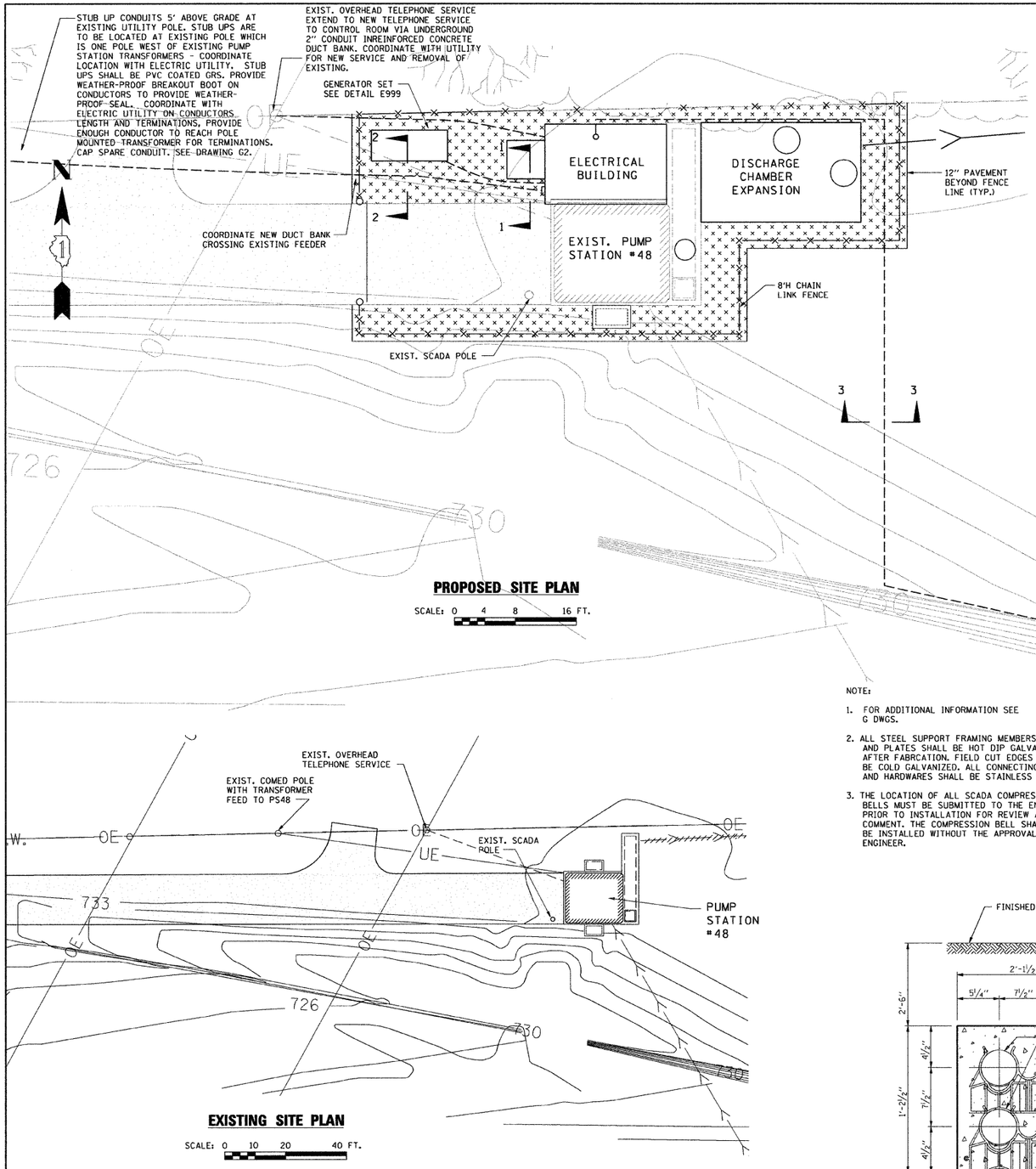
PUMP STATION NO. 48
REHABILITATION

ELECTRICAL SYMBOL LIST

SCALE: N/A
DRAWN BY: HFF
DATE: 03-10-11
CHECKED BY: MS

DONOHUE & ASSOCIATES

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
365	59(SA, SB&SF)1	DUPAGE	39	20
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		



PROPOSED SITE PLAN

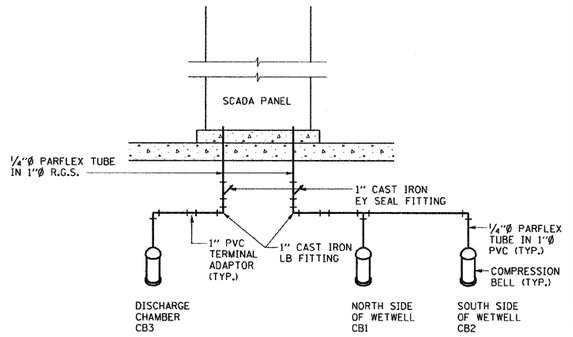
SCALE: 0 4 8 16 FT.

NOTE:

1. FOR ADDITIONAL INFORMATION SEE G DWGS.
2. ALL STEEL SUPPORT FRAMING MEMBERS AND PLATES SHALL BE HOT DIP GALVANIZED AFTER FABRCATION. FIELD CUT EDGES SHALL BE COLD GALVANIZED. ALL CONNECTING BOLTS AND HARDWARES SHALL BE STAINLESS STEEL.
3. THE LOCATION OF ALL SCADA COMPRESSION BELLS MUST BE SUBMITTED TO THE ENGINEER PRIOR TO INSTALLATION FOR REVIEW AND COMMENT. THE COMPRESSION BELL SHALL NOT BE INSTALLED WITHOUT THE APPROVAL OF THE ENGINEER.

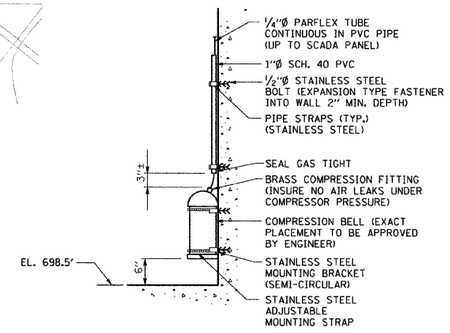
EXISTING SITE PLAN

SCALE: 0 10 20 40 FT.



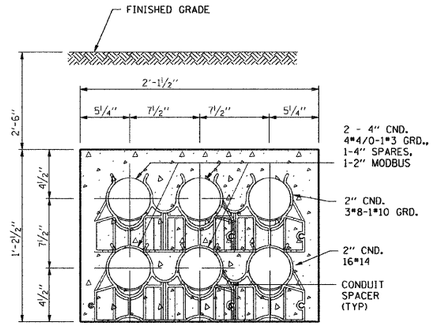
COMPRESSION BELL PIPING SCHEMATIC

NOT TO SCALE



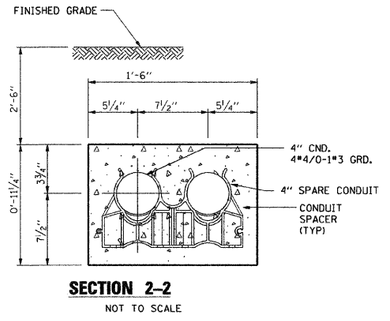
COMPRESSION BELL MOUNTING DETAIL

NOT TO SCALE



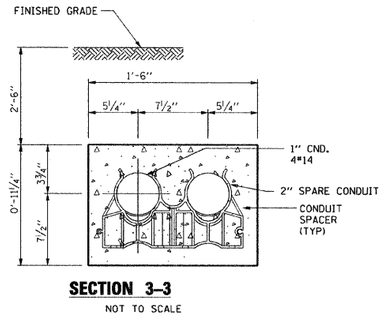
SECTION 1–1

NOT TO SCALE



SECTION 2–2

NOT TO SCALE



SECTION 3–3

NOT TO SCALE

DONOHUE & ASSOCIATES

E2

REVISIONS	
NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 48 REHABILITATION

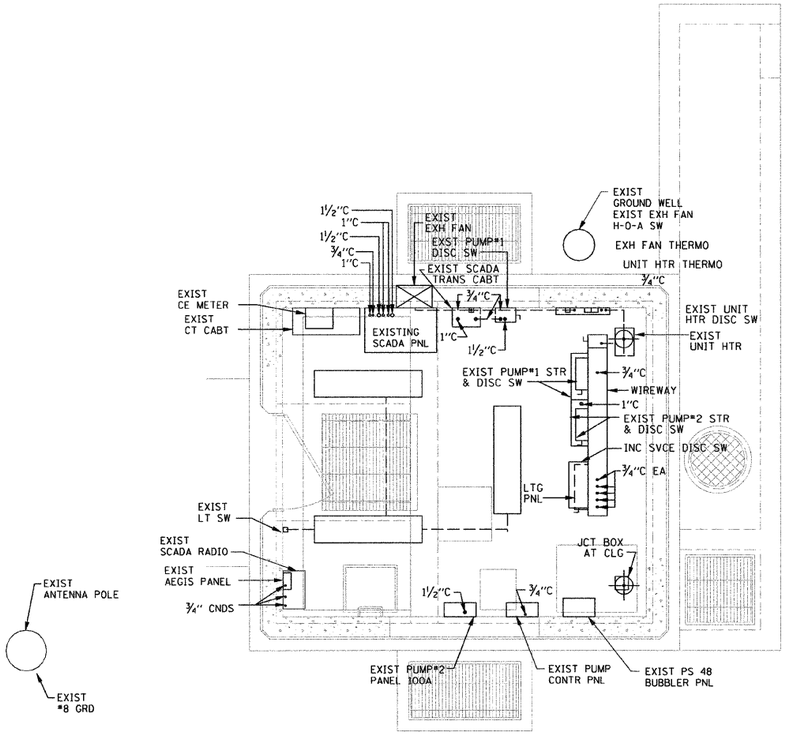
ELECTRICAL SITE PLANS

SCALE: AS SHOWN
DATE: 03-10-11
DRAWN BY: HFF
CHECKED BY: MS

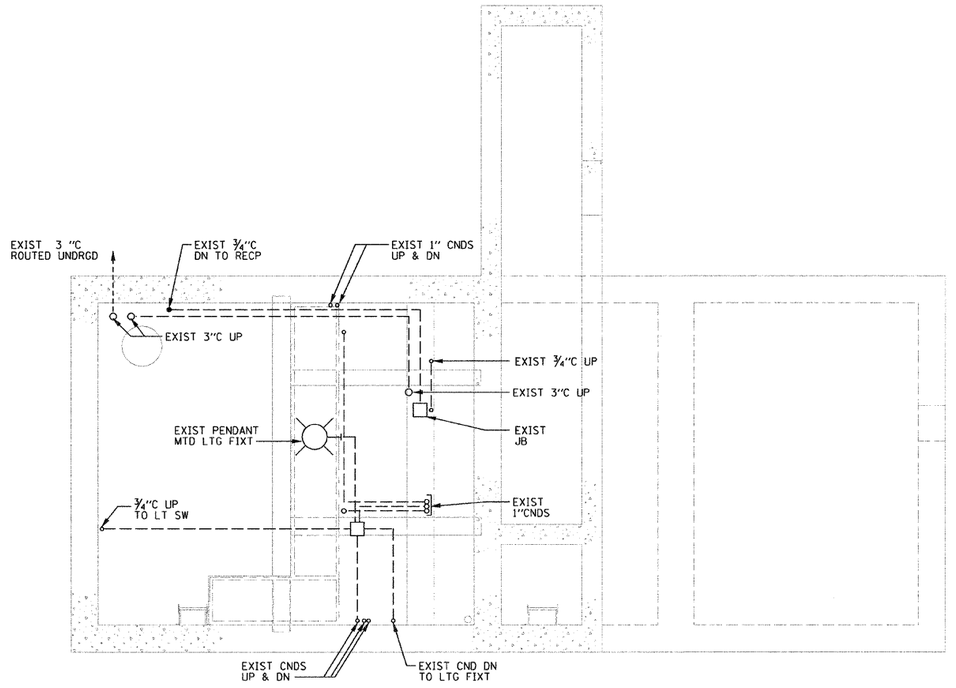
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
365	59(SA, SB&SF)1	DUPAGE	39	21
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

GENERAL NOTES:

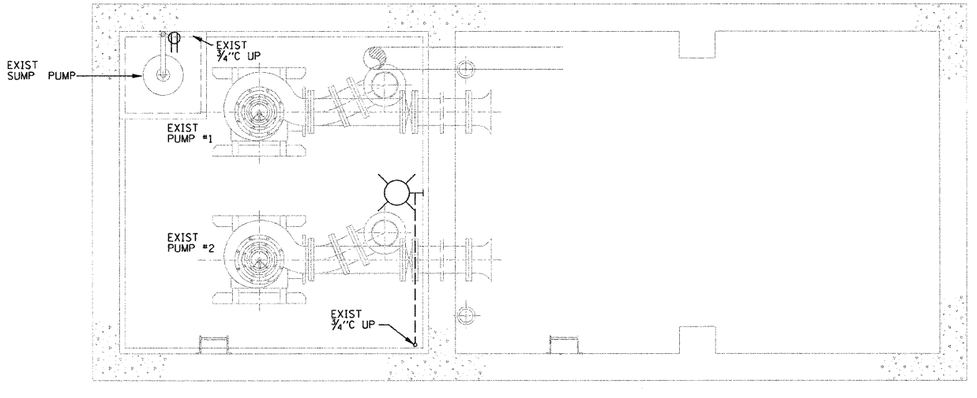
1. THE CONTRACTOR SHALL VISIT THE SITE IN ORDER TO FAMILIARIZE THEMSELVES WITH THE CONDITIONS UNDER WHICH THEY WILL PERFORM THE WORK.
2. THE CONTRACTOR SHALL INCLUDE DISCONNECTION AND REMOVAL OF ALL RELATED ELECTRICAL EQUIUPMENT, CABLE, CONDUIT AND APPURTENENANCES AS PART OF THEIR DEMOLITION WORK.
3. ALL MATERIALS, EQUIPMENT & APPURTENANCES NOT SPECIFICALLY IDENTIFIED BUT WHICH REQUIRE REMOVAL FOR COMPLETION OF THE REQUIRED WORK SHALL BE REMOVED AT NO ADDITIONAL COST TO THE OWNER.
4. EXISTING ELECTRICAL SERVICE FEEDERS SHALL BE REMOVED BY THE CONTRACTOR, ALL OTHER ELECTRIC SERVICE EQUIPMENT SHALL BE REMOVED BY ComEd.
5. ALL CONDUIT OPENINGS SHALL BE SEALED, FOR PATCHING REQUIREMENTS SEE NOTES ON SH. DM1.



FLOOR PLAN @ EL. 732.0



PLAN @ EL. 727.0



PLAN @ EL. 703.50

SCALE: 0 2 4 6

E3

REVISIONS	
NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 48 REHABILITATION

ELECTRICAL DEMOLITION PLANS

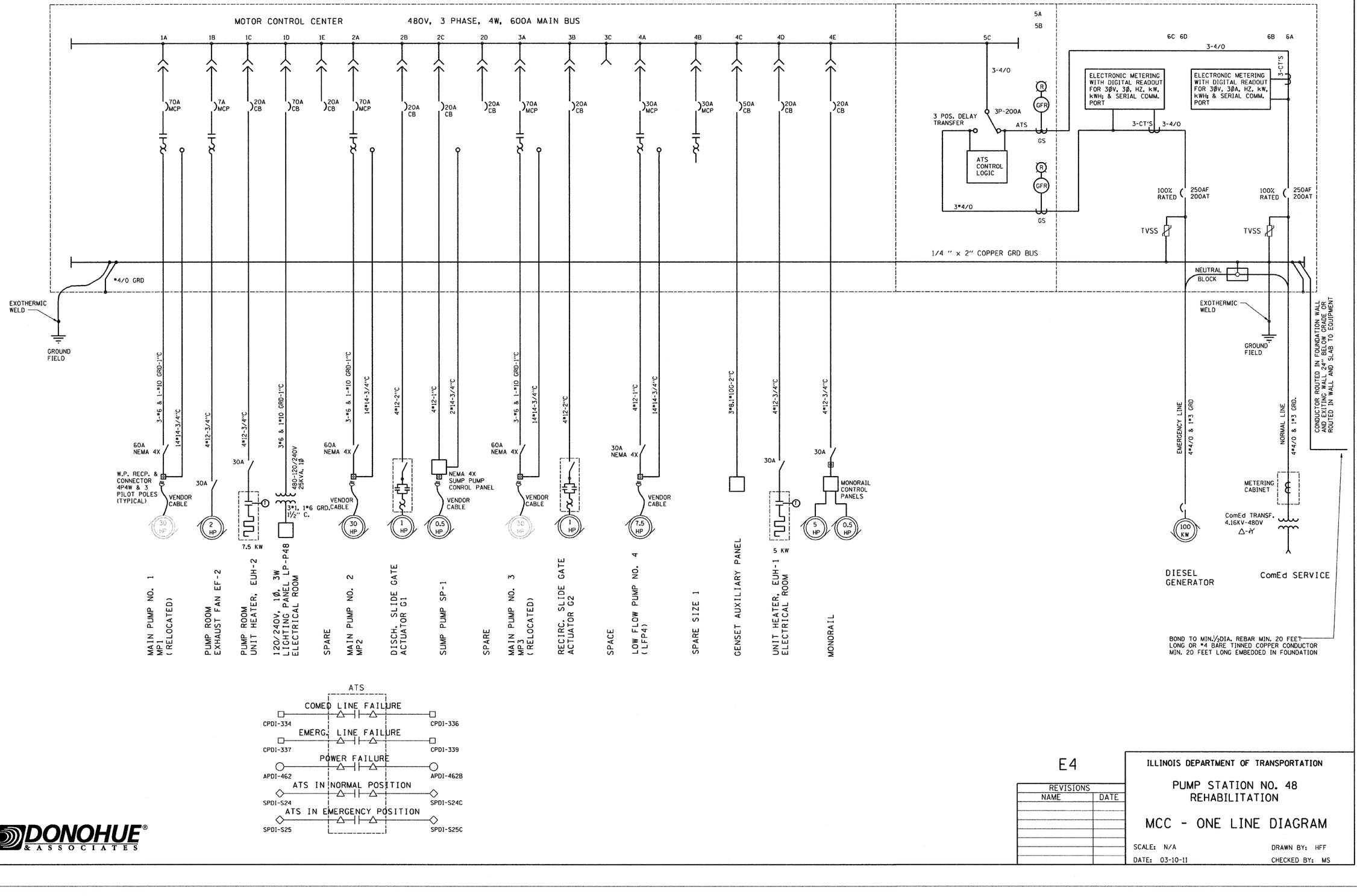
SCALE: (AS SHOWN OR N/A) DRAWN BY: HFF

DATE: 03-10-11 CHECKED BY: MS

DONOHUE & ASSOCIATES

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
365	59(SA, SB&SF)1	DUPAGE	39	22
FED. ROAD DIST. NO. _	ILLINOIS	FED. AID PROJECT		

MCC-PS48 ONE LINE DIAGRAM



DONOHUE & ASSOCIATES

E4

REVISIONS	
NAME	DATE

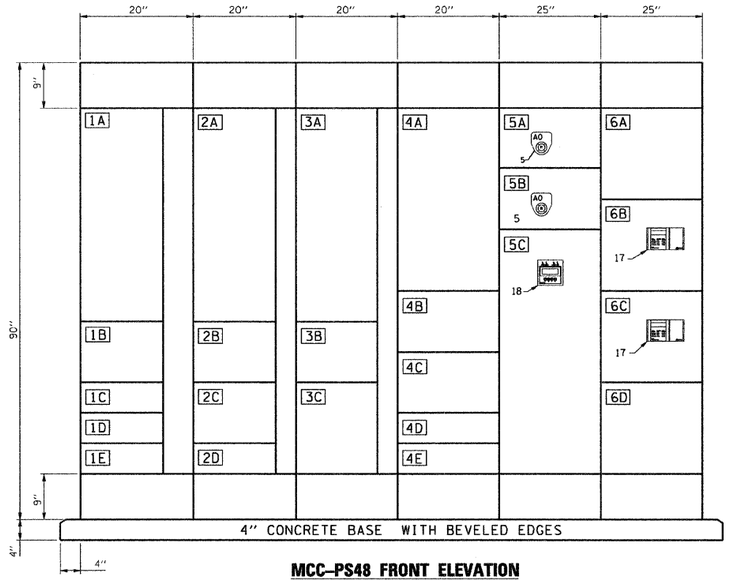
ILLINOIS DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 48 REHABILITATION

MCC - ONE LINE DIAGRAM

SCALE: N/A
DRAWN BY: HFF
DATE: 03-10-11
CHECKED BY: MS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
365	59(SA, SB&SF)1	DUPAGE	39	23
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		



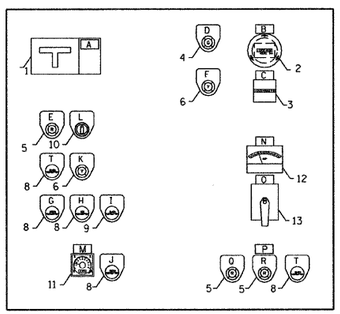
MCC–PS48 FRONT ELEVATION

ITEM	NAMEPLATE SCHEDULE
A	POWER DISCONNECT
B	ELAPSED RUN TIME
C	PUMP STARTS
D	PUMP RUNNING
E	PUMP OFF
F	PUMP CALL
G	MANUAL START
H	MOTOR BUMP
I	MANUAL STOP
J	TIMED START
K	MANUAL OPERATION
L	MANUAL OPERATION - OFF - AUTO OPERATION
M	TIMED RUN TIMER
N	AMMETER
O	AMMETER SWITCH (OFF-0A-0B-0C)
P	MOTOR MOISTURE/TEMPERATURE DETECTOR
Q	MOTOR HIGH MOISTURE
R	MOTOR HIGH TEMPERATURE
S	BEARING HIGH TEMPERATURE
T	RESET
U	OPEN
V	GATE OPERATING
W	CLOSE
X	STOP
Y	LOCAL-OFF-REMOTE
Z	ON-OFF-AUTO
AA	ON
AB	OFF
AC	OPEN (DISCHARGE POSITION)
AD	CLOSED (RECIRCULATION POSITION)
AE	OPEN (RECIRCULATION POSITION)
AF	CLOSED (DISCHARGE POSITION)
AG	MOIST. DETECTOR TEST
AH	ON-AUTO

ITEM	NAMEPLATE SCHEDULE
AI	RAKE PARKED
AJ	RAKE JAMMED
AK	RAKE ON
AL	RAKE OFF
AM	SUPPLY FAN SF1
AN	EXHAUST FAN EF2
AO	GROUND FAULT
AP	
AQ	
AR	

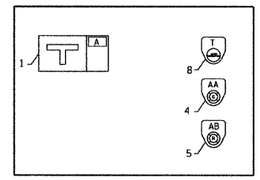
DEVICE LEGEND		
ITEM	DEVICE DESCRIPTION	DEVICE COLOR
1	MOTOR CIRCUIT PROTECTOR	
2	ELAPSED TIME METER	BLACK
3	ELECTROMECHANICAL COUNTER	BLACK
4	INDICATING LIGHT	GREEN
5	INDICATING LIGHT	RED
6	INDICATING LIGHT	YELLOW
7	PUSHBUTTON	GREEN
8	PUSHBUTTON	BLACK
9	PUSHBUTTON	RED
10	3 - POSITION SELECTOR SWITCH	BLACK
11	0 - 30 MINUTE TIMER, RESETABLE	BLACK
12	AMMETER	BLACK
13	AMMETER SWITCH (4-POSITION)	BLACK
14	CIRCUIT BREAKER	BLACK
15	LIGHTED PUSHBUTTON	RED
16	2-POSITION SELECTOR SWITCH	BLACK
17	ELECTRONIC METERING	BLACK
18	TRANSFER SWITCH CONTROLLER	

NAMEPLATE SCHEDULE 1" x 3"	
ITEM	ENGRAVING
MCC	MOTOR CONTROL CENTER - PS48
1A	1A-MAIN PUMP NO. 1 MP-1
1B	1B-PUMP ROOM EXHAUST FAN EF-2
1C	1C-PUMP ROOM UNIT HEATER EUH-2
1D	1D-LIGHTING TRANSFORMER PRIMARY BREAKER
1E	1E-SPARE BREAKER 3P-20A
2A	2A-MAIN PUMP NO. 2 MP-2
2B	2B-DISCHARGE SLIDE GATE ACTUATOR G1
2C	2C-SUMP PUMP CONTROL PANEL BREAKER 3P-20A
2D	2D-SPARE BREAKER 3P-20A
3A	3A-MAIN PUMP NO. 3 MP-3
3B	3B-RECIRCULATION SLIDE GATE ACTUATOR G2
3C	3C-SPACE
4A	4A-LOW FLOW PUMP LFP4
4B	4B-SPARE SIZE 1 FVNR
4C	4C-GENERATOR AUXILIARY PANEL
4D	4D-ELECTRICAL ROOM UNIT HEATER EUH-1
4E	4E-MONORAL
5A	5A-NORMAL LINE GROUND FAULT RELAY
5B	5B-EMERGENCY LINE GROUND FAULT RELAY
5C	5C-AUTOMATIC TRANSFER SWITCH (3P-200A)
6A	6A-NORMAL LINE TVSS
6B	6B-NORMAL LINE (ComEd) BREAKER (200A)
6C	6C-EMERG. LINE (GENERATOR) BREAKER (200A)
6D	6D-EMERG. LINE TVSS

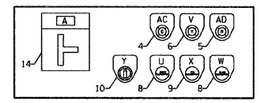


MAIN PUMP NO. 1 STARTER DOOR

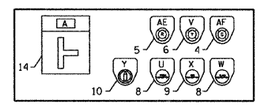
(TYPICAL FOR MAIN PUMPS NO. 2 - NO. 3 AND LOW FLOW PUMP NO. 4)



PUMP ROOM EXHAUST FAN EF2



DISCHARGE SLIDE GATE ACTUATOR G1



RECIRCULATION SLIDE GATE ACTUATOR G2

DONOHUE & ASSOCIATES

E5

REVISIONS	
NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

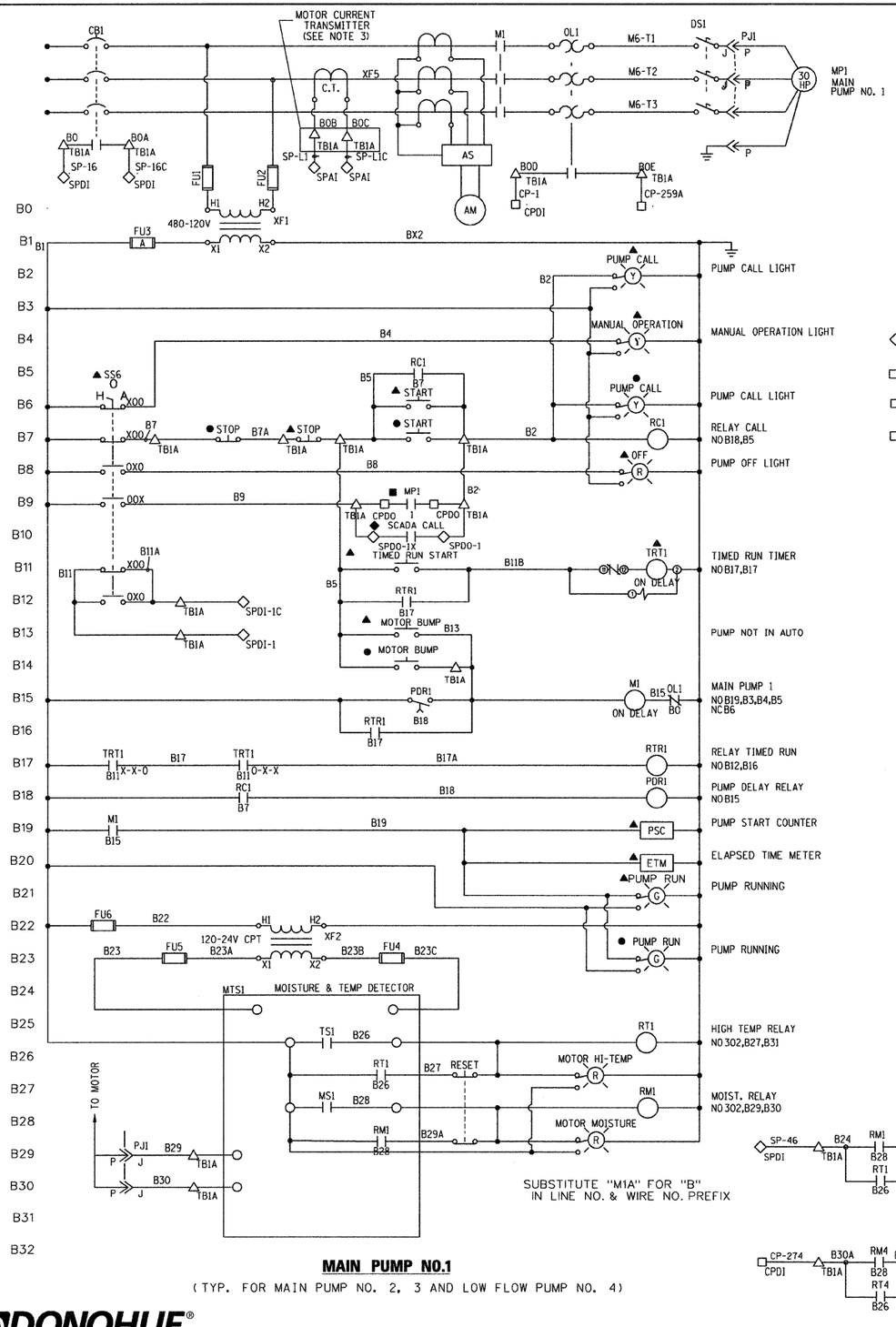
PUMP STATION NO. 48
REHABILITATION

MCC - ELEVATION

SCALE: N/A DRAWN BY: HFF

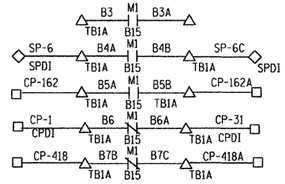
DATE: 03-10-11 CHECKED BY: MS

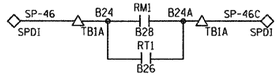
F.A.P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
365	59(SA, SB&SF)1	DUPAGE	39	24
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

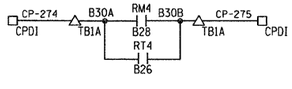


MAIN PUMP NO.1

(TYP. FOR MAIN PUMP NO. 2, 3 AND LOW FLOW PUMP NO. 4)





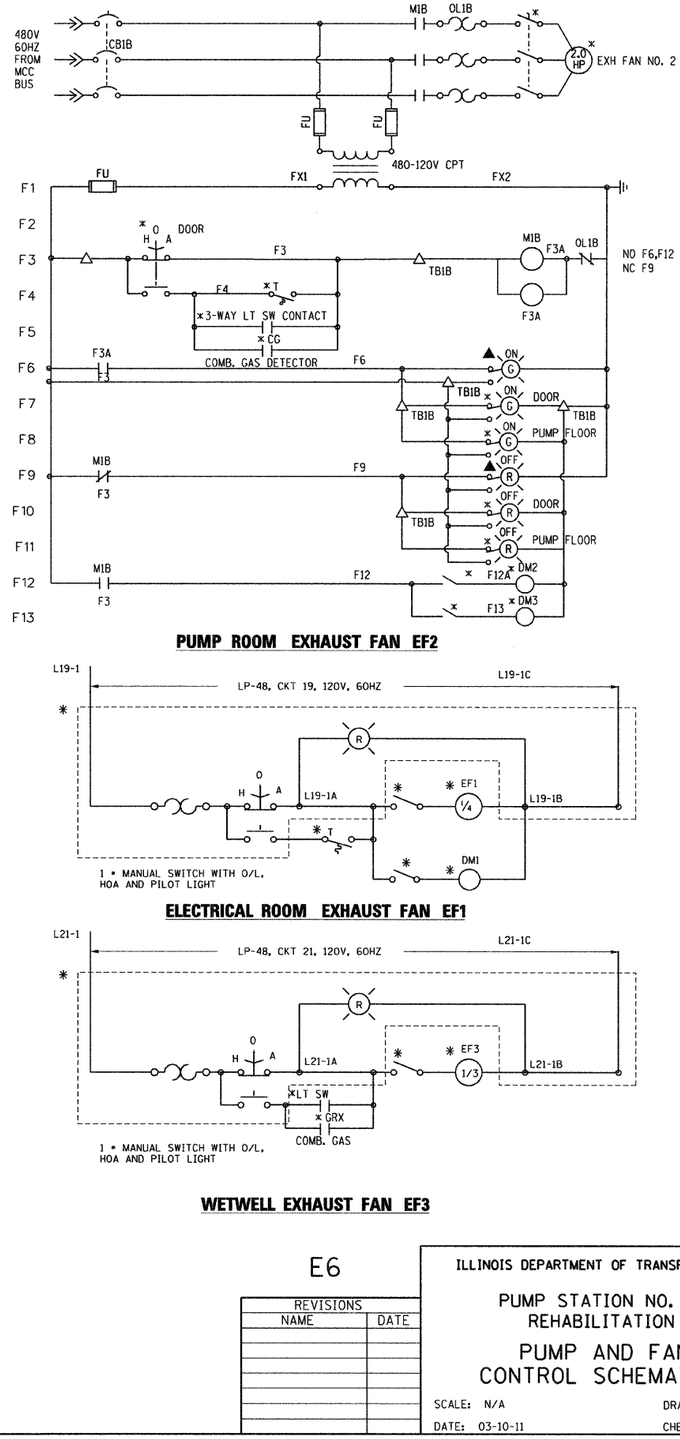


LEGEND

- △ TERMINAL IN MOTOR STARTER
- □ TERMINAL IN CONTROL PANEL
- ◇ TERMINAL IN SCADA PANEL
- ▲ DEVICE LOCATED ON STARTER DOOR
- ● DEVICE LOCALLY MTD
- ■ DEVICE IN CONTROL PANEL
- ◆ DEVICE IN SCADA PANEL

NOTES:

1. ALL DEVICES MOUNTED IN MOTOR STARTER UNLESS OTHERWISE NOTED
   LINE NO. & WIRE NO. PREFIX "B"
   MAIN PUMP 1: "M1A"
   MAIN PUMP 2: "M2A"
   MAIN PUMP 3: "M3A"
   MAIN PUMP 4: "M4A"
2. NEW MPR FOR EXISTING PUMPS TO BE PROVIDED UNDER NEW CONTRACT.
3. PROVIDE M.C.T. AS SPECIFIED IN SECTION 16D



PUMP ROOM EXHAUST FAN EF2

ELECTRICAL ROOM EXHAUST FAN EF1

WETWELL EXHAUST FAN EF3

E6

REVISIONS	
NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 48 REHABILITATION

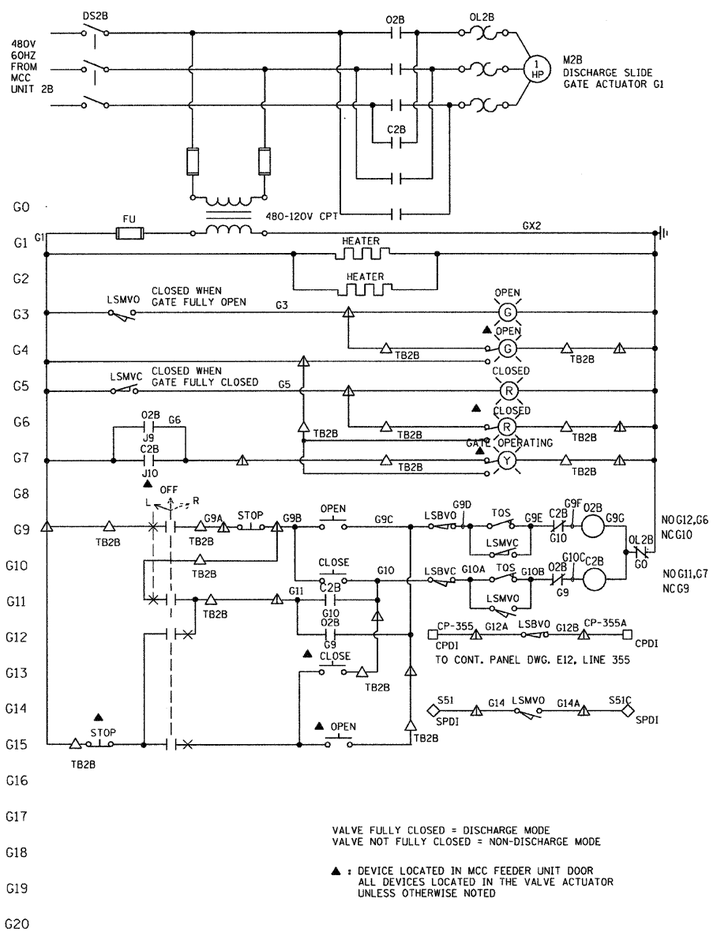
PUMP AND FAN CONTROL SCHEMATICS

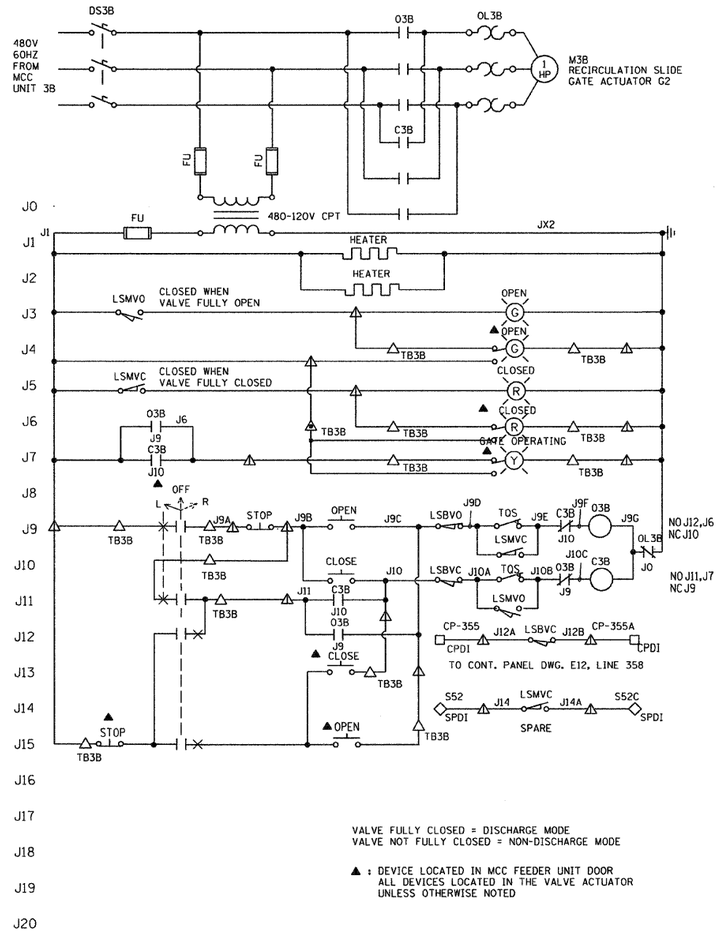
SCALE: N/A DRAWN BY: HFF

DATE: 03-10-11 CHECKED BY: MS

DONOHUE & ASSOCIATES

F.A.P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
365	59(SA, SB&SF)1	DUPAGE	39	25
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		





VALVE FULLY CLOSED = DISCHARGE MODE
VALVE NOT FULLY CLOSED = NON-DISCHARGE MODE

▲ : DEVICE LOCATED IN MCC FEEDER UNIT DOOR
ALL DEVICES LOCATED IN THE VALVE ACTUATOR
UNLESS OTHERWISE NOTED

DISCHARGE SLIDE GATE ACTUATOR G1

VALVE FULLY CLOSED = DISCHARGE MODE
VALVE NOT FULLY CLOSED = NON-DISCHARGE MODE

▲ : DEVICE LOCATED IN MCC FEEDER UNIT DOOR
ALL DEVICES LOCATED IN THE VALVE ACTUATOR
UNLESS OTHERWISE NOTED

RECIRCULATION SLIDE GATE VALVE ACTUATOR G2

LINE NUMBER & WIRE NUMBER PREFIX		
EQUIPMENT	PREFIX SHOWN ON DRAWING	PREFIX TO BE ASSIGNED
DISCHARGE SLIDE GATE G1	G	M2B
RECIRCULATION SLIDE GATE G2	J	M3B

NOTE: ALL DEVICES MOUNTED IN MOTOR STARTER UNLESS OTHERWISE NOTED

LEGEND:

- LSBVC : LIMIT SWITCH CONTACT BREAKS WHEN GATE IS FULLY CLOSED.
- LSBVO : LIMIT SWITCH CONTACT BREAKS WHEN GATE IS FULLY OPEN.
- LSMVO : LIMIT SWITCH CONTACT MAKES WHEN GATE IS FULLY OPEN.
- LSMVC : LIMIT SWITCH CONTACT MAKES WHEN GATE IS FULLY CLOSED.
- △ : TERMINAL LOCATED IN MCC STARTER OR FEEDER UNIT
- ⚠ : TERMINAL LOCATED IN LOCAL MOTOR STARTER
- □ : TERMINAL LOCATED IN CONTROL PANEL
- ◇ : TERMINAL LOCATED IN SCADA PANEL
- ✳ : DEVICE LOCALLY MOUNTED

DONOHUE & ASSOCIATES

E7

REVISIONS	
NAME	DATE

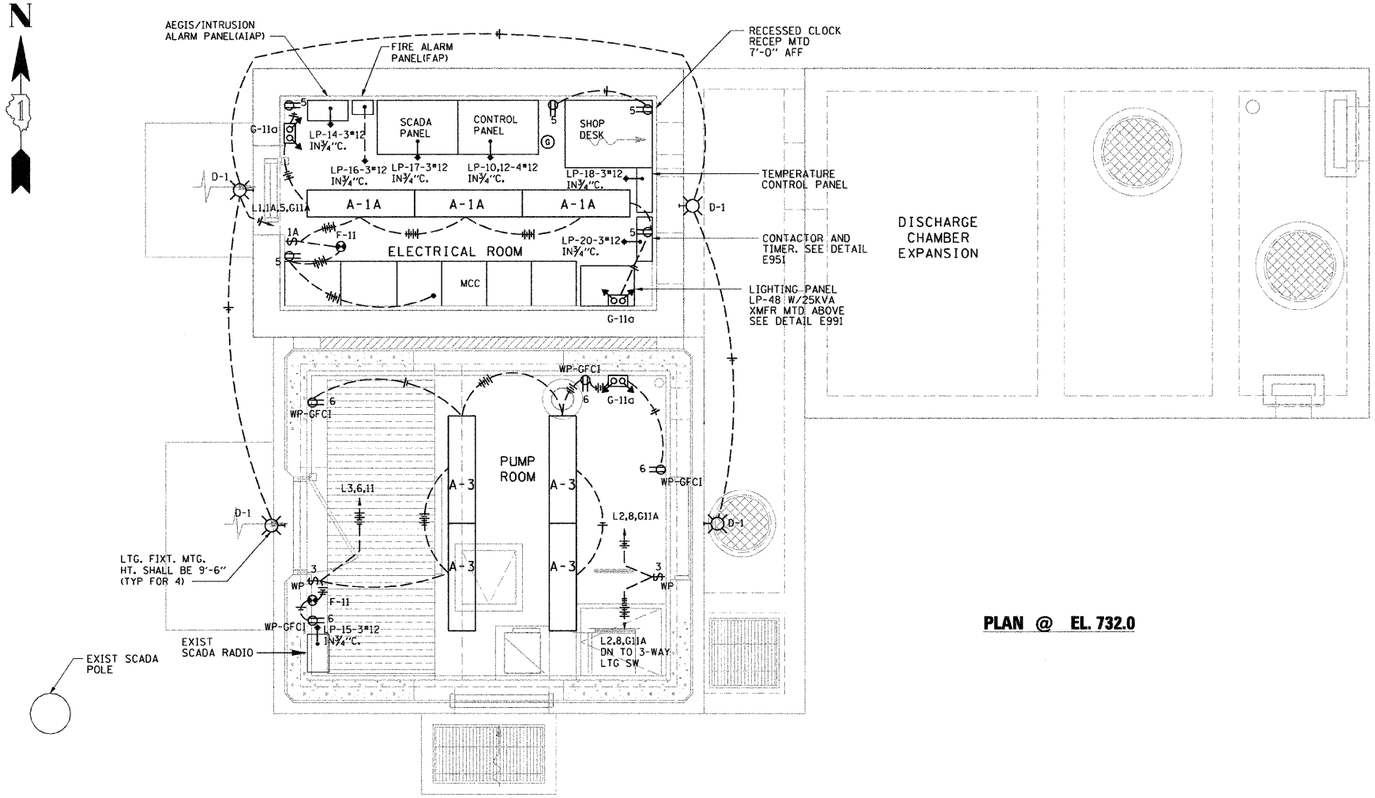
ILLINOIS DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 48
REHABILITATION

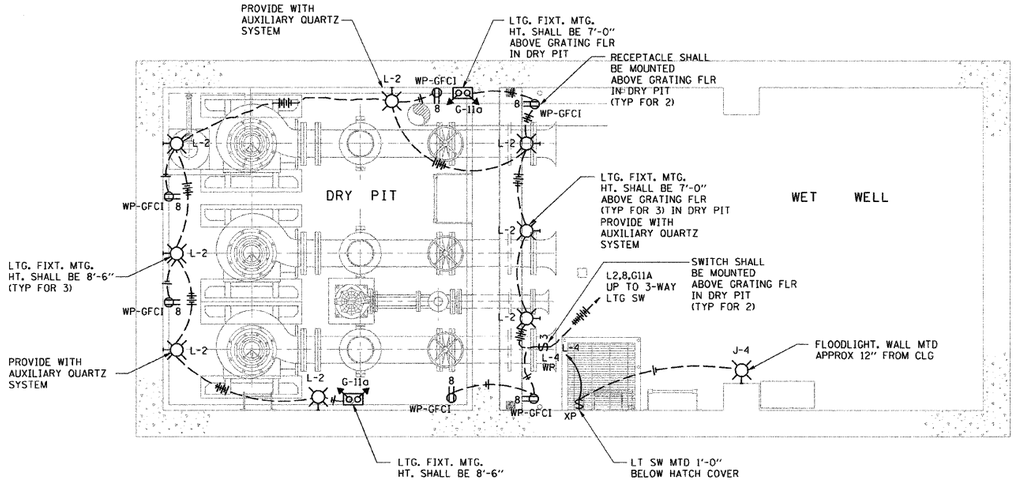
ELECTRIC VALVE ACTUATOR CONTROL SCHEMATICS

SCALE: N/A
DRAWN BY: HFF
DATE: 03-10-11
CHECKED BY: MS

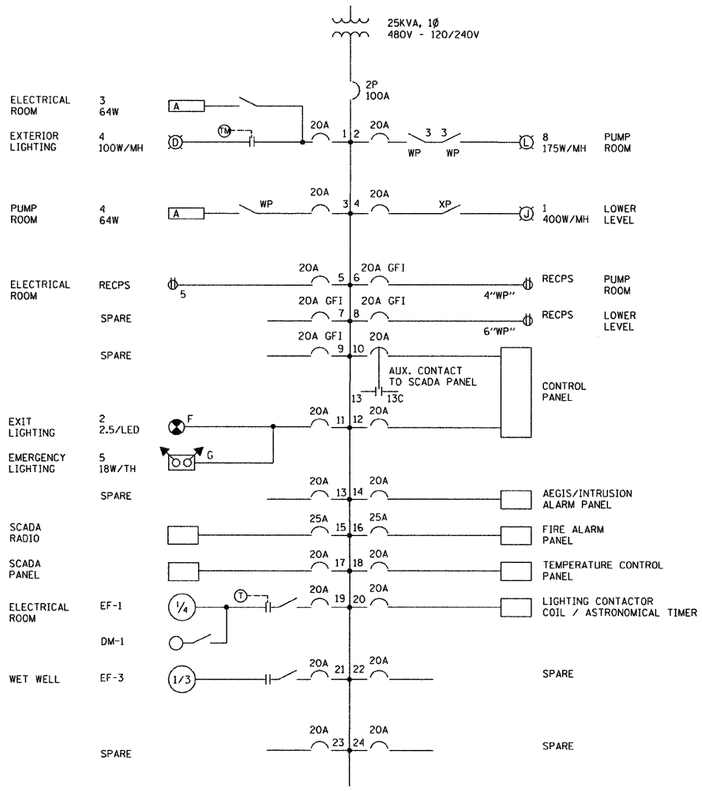
F.A.P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
365	59(SA, SB&SF)1	DUPAGE	39	26
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		



PLAN @ EL. 732.0



PLAN @ EL. 703.50



LIGHTING PANEL 48 (LP-48)

120/240V, 1ø, 3W, 100A MB, S/N
ALL BRKRS 1P, UNLESS OTHERWISE NOTED

GENERAL NOTES:

1. ALL CONDUIT PENETRATIONS THROUGH WALL AND/OR FLOOR SLAB BETWEEN ROOMS SHALL BE GROUTED GAS TIGHT.
2. CONTRACTOR IS RESPONSIBLE FOR COORDINATING CONDUIT LOCATIONS WITH OTHER DISCIPLINES.
3. CONTRACTOR IS RESPONSIBLE FOR VERIFYING CONDUIT AND CONDUCTOR SIZES AND QUANTITY PRIOR TO INSTALLATION.
4. ALL FLOOR AND WALL PENETRATIONS SHALL BE CORED DRILLED AND SEALED WITH NON-SHRINK GROUT UNLESS OTHERWISE NOTED.
5. SEE DRAWING E19 FOR DETAILS AND FIXTURE SCHEDULE.
6. THE WET WELL AND DISCHARGE CHAMBERS ARE A CLASS 1, DIVISION 1 GROUP D HAZARDOUS AREA.
7. RECEPTACLES LOCATED IN LOWER LEVEL OF DRY PIT SHALL BE LOCATED 36" ABOVE FINISHED FLOOR.

SCALE: 0 2 4 6

DONOHUE & ASSOCIATES

E8

REVISIONS	
NAME	DATE

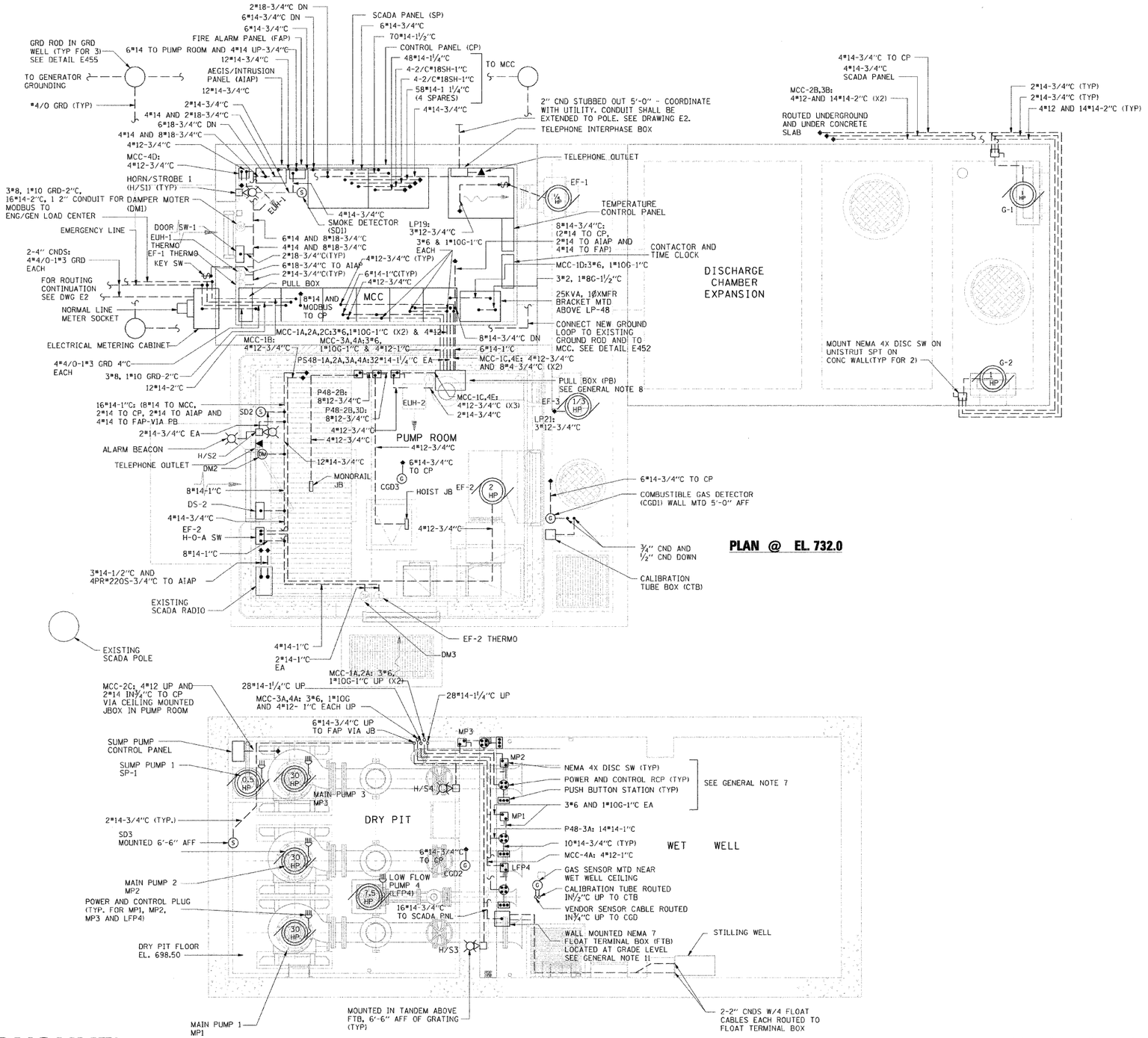
ILLINOIS DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 48 REHABILITATION

LIGHTING PLANS

SCALE: AS SHOWN
DATE: 03-10-11
DRAWN BY: HFF
CHECKED BY: MS

F.A.P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
365	59(SA, SB&SF)1	DUPAGE	39	27
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		



PLAN @ EL. 732.0

PLAN @ EL. 703.50

GENERAL NOTES:

1. ALL CONTROL CABLES SHALL BE AWG NO. 14, STRANDED.
2. ALL CONDUIT AND PIPE PENETRATIONS, THROUGH WALL AND/OR FLOOR SLAB, BETWEEN ROOMS SHALL BE GROUTED GAS TIGHT.
3. ALL FLOOR & WALL PENETRATIONS SHALL BE CORE DRILLED & SEALED WITH NON-SHRINK GROUT UNLESS OTHERWISE NOTED.
4. "2C/#18SH" REPRESENTS "2 CONDUCTOR #18 SHIELDED CABLE".
5. CONTRACTOR IS RESPONSIBLE FOR COORDINATING CONDUIT LOCATIONS WITH OTHER DISCIPLINES.
6. CONTRACTOR IS RESPONSIBLE FOR VERIFYING CONDUIT AND CONDUCTOR SIZES AND QUANTITY PRIOR TO INSTALLATION.
7. EQUIPMENT FOR DRY WELL PUMPS SHALL BE MOUNTED ABOVE GRATING FLOOR IN THE DRY PIT. EQUIPMENT INCLUDES DISCONNECT SWITCHES, PUSHBUTTON STATIONS, POWER AND CONTROL RECEPTACLES, AND CGD2 AS WELL AS EQUIPMENT NOTED ON DRAWING.
8. CEILING MOUNTED PULL BOX FOR CONDUITS PASSING BETWEEN PUMP ROOM AND ELECTRICAL ROOM. PULL BOX SHALL BE NEMA 4X AND INCLUDE ACCESSORIES AS SPECIFIED IN SECTION 16B.
9. CONTRACTOR SHALL COORDINATE TEMPERATURE CONTROL PANEL, TIME CLOCK, AND CONTACTOR MOUNTING HEIGHTS WITH EF-1 WALL GRILLE.
10. SEE DRAWING E19 FOR DETAILS.
11. PROVIDE CONDUIT THRU SLAB TO TERMINAL BOX. PROVIDE TERMINAL STRIPS IN BOX TO ACT AS INTERFACE POINT BETWEEN VENDOR CABLE AND CONTROL WIRING. SEAL-OFFS SHALL BE ON CONTROL WIRING; SEAL-OFFS INSTALLED ON VENDOR CABLE IS NOT ALLOWED.
12. SEE CGD1 AND DETAILS FOR GAS DETECTOR MOUNTING AND CONENCTIONS.
13. THE WET WELL AND DISCHARGE CHAMBER ARE A CLASS 1, DIVISION 1 GROUP D HAZARDOUS LOCATION.

SCALE: 0 2 4 6

DONOHUE & ASSOCIATES

E9

REVISIONS	
NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 48 REHABILITATION

POWER PLANS

SCALE: AS SHOWN DRAWN BY: HFF

DATE: 03-10-11 CHECKED BY: MS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
365	59(SA, SB&SF)1	DUPAGE	39	28
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

MCC UNIT 1A, MAIN PUMP NO. 1 STARTER TERMINAL CONNECTIONS

TERMINAL NO.	WIRE NO.	ORIGINATION	DESCRIPTION OF INPUT
M1A-29	M1A-29	MP1 CONTROL RECP	MOTOR TEMP/MOIST SENSOR
M1A-30	M1A-30	MP1 CONTROL RECP	MOTOR TEMP/MOIST SENSOR
M1A-2	M1A-2	MP1 LOCAL PUSH BUTTON STA.	START PUSH BUTTON
M1A-5	M1A-5	MP1 LOCAL PUSH BUTTON STA.	START PUSH BUTTON
M1A-7	M1A-7	MP1 LOCAL PUSH BUTTON STA.	STOP PUSH BUTTON
M1A-7A	M1A-7A	MP1 LOCAL PUSH BUTTON STA.	STOP PUSH BUTTON
M1A-5	M1A-5	MP1 LOCAL PUSH BUTTON STA.	MOTOR BUMP BUTTON
M1A-13	M1A-13	MP1 LOCAL PUSH BUTTON STA.	MOTOR BUMP BUTTON
M1A-2	M1A-2	CP-DO-4A	FLOAT PUMP CALL
M1A-9	M1A-9	CP-DO-4	FLOAT PUMP CALL
M1A-2	M1A-2	SP-DO-P1	SCADA PUMP CALL
M1A-9	M1A-9	SP-DO-P1X	SCADA PUMP CALL

TERMINAL NO.	WIRE NO.	OUTPUT DESTINATION	DESCRIPTION OF OUTPUT
M1A-6	CP-1	CP-DI-1	STARTER CONTACT NC
M1A-6A	CP-31	CP-DI-31	STARTER CONTACT NC
M1A-0D	CP-1	CP-DI-1	MOTOR OVERLOAD
M1A-0E	CP-259	CP-DI-259	MOTOR OVERLOAD
M1A-30A	CP-274	CP-DI-274	MP1 HI-TEMP/MOIST
M1A-30B	CP-275	CP-DI-275	MP1 HI-TEMP/MOIST
M1A-2	M1A-2	MP1 LOCAL PUSH BUTTON STA.	PUMP CALL LIGHT
M1A-X2	M1A-X2	MP1 LOCAL PUSH BUTTON STA.	PUMP CALL LIGHT
M1A-1	M1A-1	MP1 LOCAL PUSH BUTTON STA.	PUMP CALL LIGHT
M1A-19	M1A-19	MP1 LOCAL PUSH BUTTON STA.	PUMP RUN LIGHT
M1A-X2	M1A-X2	MP1 LOCAL PUSH BUTTON STA.	PUMP RUN LIGHT
M1A-1	M1A-1	MP1 LOCAL PUSH BUTTON STA.	PUMP RUN LIGHT
M1A-11	SP-1	SP-DI-1	PUMP #1 NOT IN AUTO CONTROL
M1A-11A	SP-1C	SP-DI-1C	PUMP #1 NOT IN AUTO CONTROL
M1A-4A	SP-6	SP-DI-6	STARTER CONTACT NO
M1A-4B	SP-6C	SP-DI-6C	STARTER CONTACT NO
M1A-0	SP-16	SP-DI-16	CIRCUIT BREAKER OPEN
M1A-0A	SP-16C	SP-DI-16C	CIRCUIT BREAKER OPEN
M1A-0B	SP-L1	SP-AI-L1	MOTOR CURRENT, PHASE B
M1A-0C	SP-L1C	SP-AI-L1C	MOTOR CURRENT, PHASE B
M1A-5A	M1A-5A	CP-DI-162	STARTER CONTACT NO
M1A-5B	M1A-5B	CP-DI-162A	STARTER CONTACT NO
M1A-7B	M1A-7B	CP-DI-418	STARTER CONTACT NC
M1A-7C	M1A-7C	CP-DI-418A	STARTER CONTACT NC
M24-A	SP-47	SP-DI-47	MOTOR HIGH TEMP/MOISTURE
M24-B	SP-47C	SP-DI-47C	MOTOR HIGH TEMP/MOISTURE

MCC UNIT 2A, MAIN PUMP NO. 2 STARTER TERMINAL CONNECTIONS

TERMINAL NO.	WIRE NO.	ORIGINATION	DESCRIPTION OF INPUT
M2A-29	M2A-29	MP2 CONTROL RECP	MOTOR TEMP/MOIST SENSOR
M2A-30	M2A-30	MP2 CONTROL RECP	MOTOR TEMP/MOIST SENSOR
M2A-2	M2A-2	MP2 LOCAL PUSH BUTTON STA.	START PUSH BUTTON
M2A-5	M2A-5	MP2 LOCAL PUSH BUTTON STA.	START PUSH BUTTON
M2A-7	M2A-7	MP2 LOCAL PUSH BUTTON STA.	STOP PUSH BUTTON
M2A-7A	M2A-7A	MP2 LOCAL PUSH BUTTON STA.	STOP PUSH BUTTON
M2A-5	M2A-5	MP2 LOCAL PUSH BUTTON STA.	MOTOR BUMP BUTTON
M2A-13	M2A-13	MP2 LOCAL PUSH BUTTON STA.	MOTOR BUMP BUTTON
M2A-2	M2A-2	CP-DO-10A	FLOAT PUMP CALL
M2A-9	M2A-9	CP-DO-10	FLOAT PUMP CALL
M2A-2	M2A-2	SP-DO-P2	SCADA PUMP CALL
M2A-9	M2A-9	SP-DO-P2X	SCADA PUMP CALL

TERMINAL NO.	WIRE NO.	OUTPUT DESTINATION	DESCRIPTION OF OUTPUT
M2A-6	CP-31	CP-DI-31	STARTER CONTACT NC
M2A-6A	CP-31A	CP-DI-31A	STARTER CONTACT NC
M2A-0D	CP-1	CP-DI-1	MOTOR OVERLOAD
M2A-0E	CP-262A	CP-DI-262A	MOTOR OVERLOAD
M2A-30A	CP-277	CP-DI-277	MP2 HI-TEMP/MOIST
M2A-30B	CP-278	CP-DI-278	MP2 HI-TEMP/MOIST
M2A-2	M2A-2	MP2 LOCAL PUSH BUTTON STA.	PUMP CALL LIGHT
M2A-X2	M2A-X2	MP2 LOCAL PUSH BUTTON STA.	PUMP CALL LIGHT
M2A-1	M2A-1	MP2 LOCAL PUSH BUTTON STA.	PUMP CALL LIGHT
M2A-19	M2A-19	MP2 LOCAL PUSH BUTTON STA.	PUMP RUN LIGHT
M2A-X2	M2A-X2	MP2 LOCAL PUSH BUTTON STA.	PUMP RUN LIGHT
M2A-1	M2A-1	MP2 LOCAL PUSH BUTTON STA.	PUMP RUN LIGHT
M2A-11	SP-2	SP-DI-2	PUMP #3 NOT IN AUTO CONTROL
M2A-11A	SP-2C	SP-DI-2C	PUMP #3 NOT IN AUTO CONTROL
M2A-4A	SP-7	SP-DI-7	STARTER CONTACT NO
M2A-4B	SP-7C	SP-DI-7C	STARTER CONTACT NO
M2A-0	SP-17	SP-DI-17	CIRCUIT BREAKER OPEN
M2A-0A	SP-17C	SP-DI-17C	CIRCUIT BREAKER OPEN
M2A-0B	SP-L2	SP-AI-L2	MOTOR CURRENT, PHASE B
M2A-0C	SP-L2C	SP-AI-L2C	MOTOR CURRENT, PHASE B
M2A-5A	M2A-5A	CP-DI-162	STARTER CONTACT NO
M2A-5B	M2A-5B	CP-DI-162A	STARTER CONTACT NO
M2A-7B	M2A-7B	CP-DI-419	STARTER CONTACT NC
M2A-7C	M2A-7C	CP-DI-419A	STARTER CONTACT NC
M24-A	SP-47	SP-DI-47	MOTOR HIGH TEMP/MOISTURE
M24-B	SP-47C	SP-DI-47C	MOTOR HIGH TEMP/MOISTURE

MCC UNIT 3A, MAIN PUMP NO. 3 STARTER TERMINAL CONNECTIONS

TERMINAL NO.	WIRE NO.	ORIGINATION	DESCRIPTION OF INPUT
M3A-29	M3A-29	MP3 CONTROL RECP	MOTOR TEMP/MOIST SENSOR
M3A-30	M3A-30	MP3 CONTROL RECP	MOTOR TEMP/MOIST SENSOR
M3A-2	M3A-2	MP3 LOCAL PUSH BUTTON STA.	START PUSH BUTTON
M3A-5	M3A-5	MP3 LOCAL PUSH BUTTON STA.	START PUSH BUTTON
M3A-7	M3A-7	MP3 LOCAL PUSH BUTTON STA.	STOP PUSH BUTTON
M3A-7A	M3A-7A	MP3 LOCAL PUSH BUTTON STA.	STOP PUSH BUTTON
M3A-5	M3A-5	MP3 LOCAL PUSH BUTTON STA.	MOTOR BUMP BUTTON
M3A-13	M3A-13	MP3 LOCAL PUSH BUTTON STA.	MOTOR BUMP BUTTON
M3A-2	M3A-2	CP-DO-16A	FLOAT PUMP CALL
M3A-9	M3A-9	CP-DO-16	FLOAT PUMP CALL
M3A-2	M3A-2	SP-DO-P3	SCADA PUMP CALL
M3A-9	M3A-9	SP-DO-P3X	SCADA PUMP CALL

TERMINAL NO.	WIRE NO.	OUTPUT DESTINATION	DESCRIPTION OF OUTPUT
M3A-6	CP-31A	CP-DI-31A	STARTER CONTACT NC
M3A-6A	CP-31B	CP-DI-31B	STARTER CONTACT NC
M3A-0D	CP-1	CP-DI-1	MOTOR OVERLOAD
M3A-0E	CP-265	CP-DI-265A	MOTOR OVERLOAD
M3A-30A	CP-280	CP-DI-280	MP3 HI-TEMP/MOIST
M3A-30B	CP-281	CP-DI-281	MP3 HI-TEMP/MOIST
M3A-2	M3A-2	MP3 LOCAL PUSH BUTTON STA.	PUMP CALL LIGHT
M3A-X2	M3A-X2	MP3 LOCAL PUSH BUTTON STA.	PUMP CALL LIGHT
M3A-1	M3A-1	MP3 LOCAL PUSH BUTTON STA.	PUMP CALL LIGHT
M3A-19	M3A-19	MP3 LOCAL PUSH BUTTON STA.	PUMP RUN LIGHT
M3A-X2	M3A-X2	MP3 LOCAL PUSH BUTTON STA.	PUMP RUN LIGHT
M3A-1	M3A-1	MP3 LOCAL PUSH BUTTON STA.	PUMP RUN LIGHT
M3A-11	SP-3	SP-DI-3	PUMP #3 NOT IN AUTO CONTROL
M3A-11A	SP-3C	SP-DI-3C	PUMP #3 NOT IN AUTO CONTROL
M3A-4A	SP-8	SP-DI-8	STARTER CONTACT NO
M3A-4B	SP-8C	SP-DI-8C	STARTER CONTACT NO
M3A-0	SP-18	SP-DI-18	CIRCUIT BREAKER OPEN
M3A-0A	SP-18C	SP-DI-18C	CIRCUIT BREAKER OPEN
M3A-0B	SP-L3	SP-AI-L3	MOTOR CURRENT, PHASE B
M3A-0C	SP-L3C	SP-AI-L3C	MOTOR CURRENT, PHASE B
M3A-5A	M3A-5A	CP-DI-162	STARTER CONTACT NO
M3A-5B	M3A-5B	CP-DI-162A	STARTER CONTACT NO
M3A-7B	M3A-7B	CP-DI-420	STARTER CONTACT NC
M3A-7C	M3A-7C	CP-DI-420A	STARTER CONTACT NC
M24-A	SP-47	SP-DI-47	MOTOR HIGH TEMP/MOISTURE
M24-B	SP-47C	SP-DI-47C	MOTOR HIGH TEMP/MOISTURE

MCC UNIT 4A, LOW FLOW PUMP NO. 4 STARTER TERMINAL CONNECTIONS

TERMINAL NO.	WIRE NO.	ORIGINATION	DESCRIPTION OF INPUT
M4A-29	M4A-29	LFP4 CONTROL RECP	MOTOR TEMP/MOIST SENSOR
M4A-30	M4A-30	LFP4 CONTROL RECP	MOTOR TEMP/MOIST SENSOR
M4A-2	M4A-2	LFP4 LOCAL PUSH BUTTON STA.	START PUSH BUTTON
M4A-5	M4A-5	LFP4 LOCAL PUSH BUTTON STA.	START PUSH BUTTON
M4A-7	M4A-7	LFP4 LOCAL PUSH BUTTON STA.	STOP PUSH BUTTON
M4A-7A	M4A-7A	LFP4 LOCAL PUSH BUTTON STA.	STOP PUSH BUTTON
M4A-5	M4A-5	LFP4 LOCAL PUSH BUTTON STA.	MOTOR BUMP BUTTON
M4A-13	M4A-13	LFP4 LOCAL PUSH BUTTON STA.	MOTOR BUMP BUTTON
M4A-2	M4A-2	CP-DO-32A	FLOAT PUMP CALL
M4A-9	M4A-9	CP-DO-32	FLOAT PUMP CALL
M4A-2	M4A-2	SP-DO-P12	SCADA PUMP CALL
M4A-9	M4A-9	SP-DO-P12X	SCADA PUMP CALL

TERMINAL NO.	WIRE NO.	OUTPUT DESTINATION	DESCRIPTION OF OUTPUT
M4A-6	-	-	STARTER CONTACT NC
M4A-6A	-	-	STARTER CONTACT NC
M4A-0D	CP-1	CP-DI-1	MOTOR OVERLOAD
M4A-0E	CP-268A	CP-DI-268A	MOTOR OVERLOAD
M4A-30A	CP-283	CP-DI-283	MP4 HI-TEMP/MOIST
M4A-30B	CP-284	CP-DI-284	MP4 HI-TEMP/MOIST
M4A-2	M4A-2	LFP4 LOCAL PUSH BUTTON STA.	PUMP CALL LIGHT
M4A-X2	M4A-X2	LFP4 LOCAL PUSH BUTTON STA.	PUMP CALL LIGHT
M4A-1	M4A-1	LFP4 LOCAL PUSH BUTTON STA.	PUMP CALL LIGHT
M4A-19	M4A-19	LFP4 LOCAL PUSH BUTTON STA.	PUMP RUN LIGHT
M4A-X2	M4A-X2	LFP4 LOCAL PUSH BUTTON STA.	PUMP RUN LIGHT
M4A-1	M4A-1	LFP4 LOCAL PUSH BUTTON STA.	PUMP RUN LIGHT
M4A-11	SP-34	SP-DI-34	LF PUMP #4 NOT IN AUTO CONTROL
M4A-11A	SP-34C	SP-DI-34C	LF PUMP #4 NOT IN AUTO CONTROL
M4A-4A	SP-35	SP-DI-35	LF PUMP #4 STARTER CONTACT NO
M4A-4B	SP-35C	SP-DI-35C	LF PUMP #4 STARTER CONTACT NO
M4A-0	SP-36	SP-DI-36	CIRCUIT BREAKER OPEN
M4A-0A	SP-36C	SP-DI-36C	CIRCUIT BREAKER OPEN
M4A-0B	SP-L17	SP-AI-L17	MOTOR CURRENT, PHASE B
M4A-0C	SP-L17C	SP-AI-L17C	MOTOR CURRENT, PHASE B
M4A-5A	M4A-5A	CP-DI-162	STARTER CONTACT NO
M4A-5B	M4A-5B	CP-DI-162A	STARTER CONTACT NO
M4A-7B	M4A-7B	CP-DI-421	STARTER CONTACT NC
M4A-7C	M4A-7C	CP-DI-421A	STARTER CONTACT NC
M24-A	SP-47	SP-DI-47	MOTOR HIGH TEMP/MOISTURE
M24-B	SP-47C	SP-DI-47C	MOTOR HIGH TEMP/MOISTURE

E10

REVISIONS	
NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 48
REHABILITATION

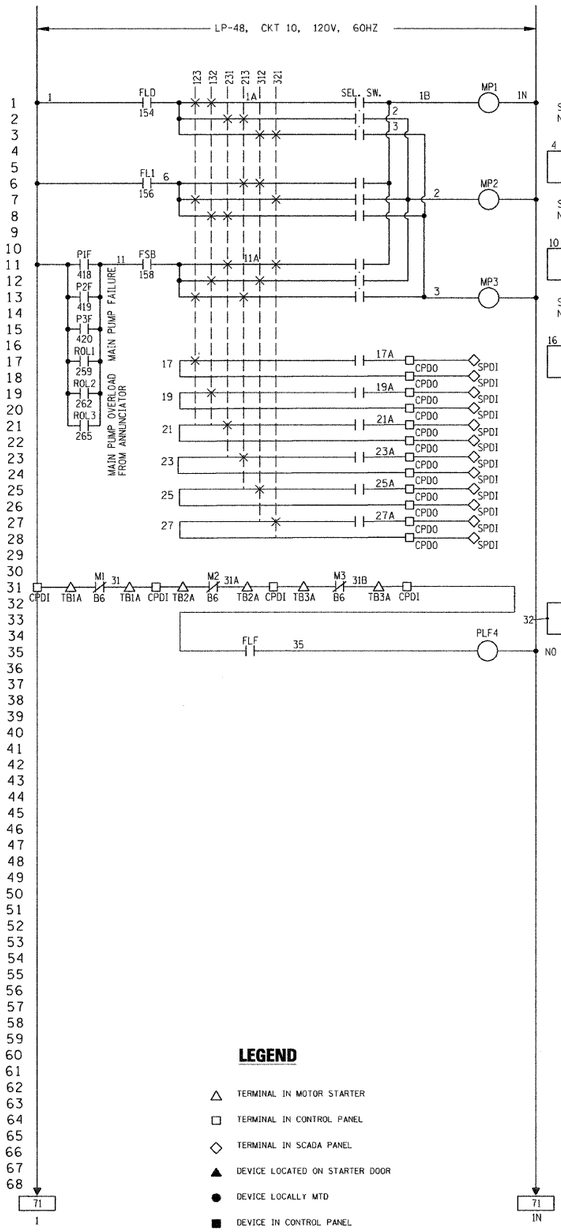
MAIN PUMPS AND LOW FLOW PUMP TERMINAL SCHEDULE

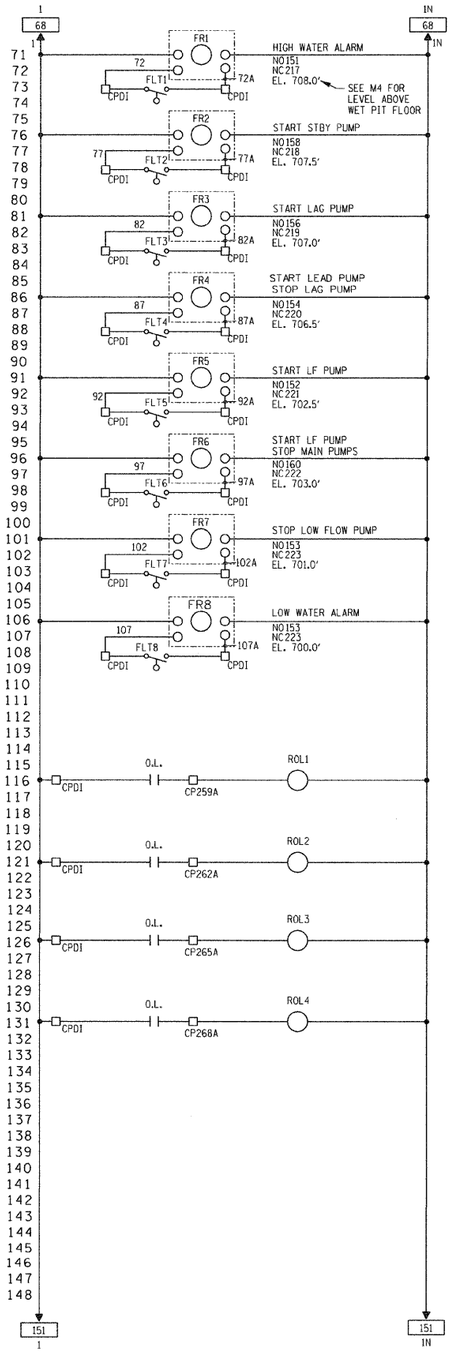
SCALE: N/A DRAWN BY: HFF

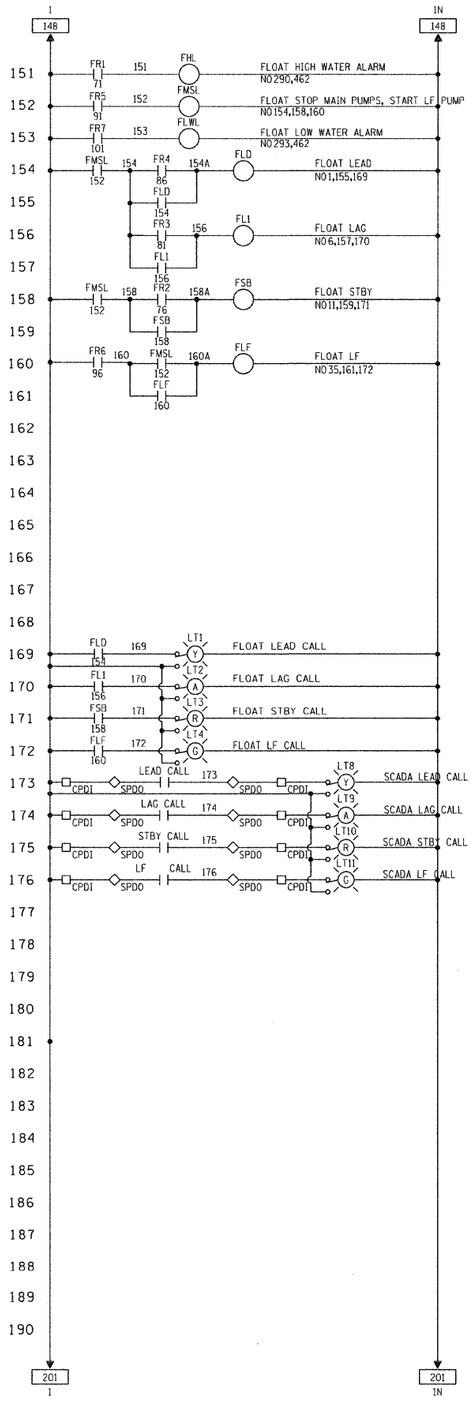
DATE: 03-10-11 CHECKED BY: MS

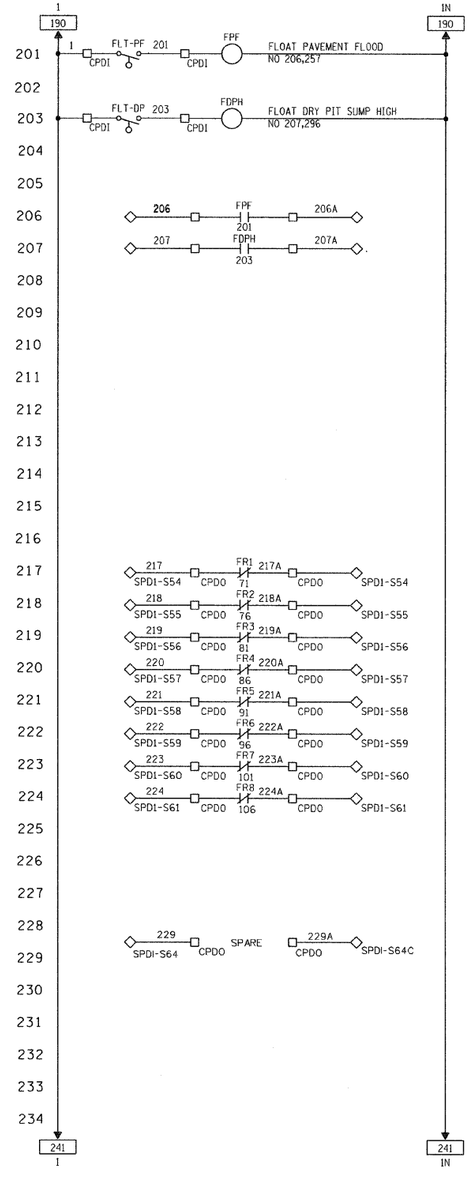
DONOHUE & ASSOCIATES

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
365	59KSA, SB&SF)1	DUPAGE	39	29
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		









E11

REVISIONS	
NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

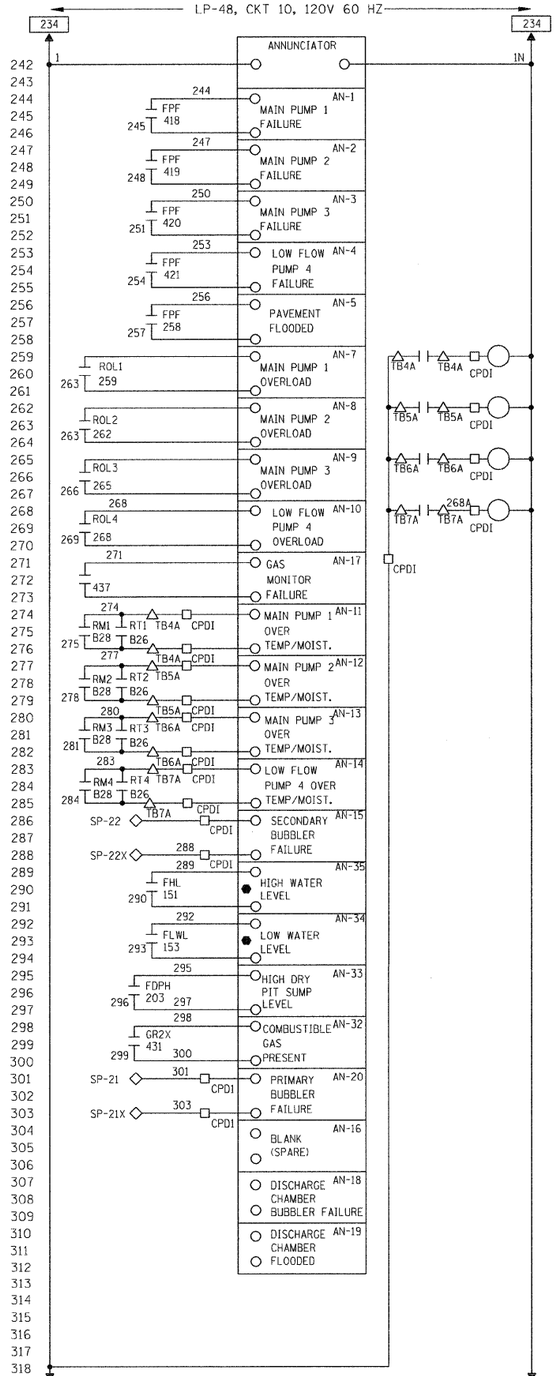
PUMP STATION NO. 48
REHABILITATION

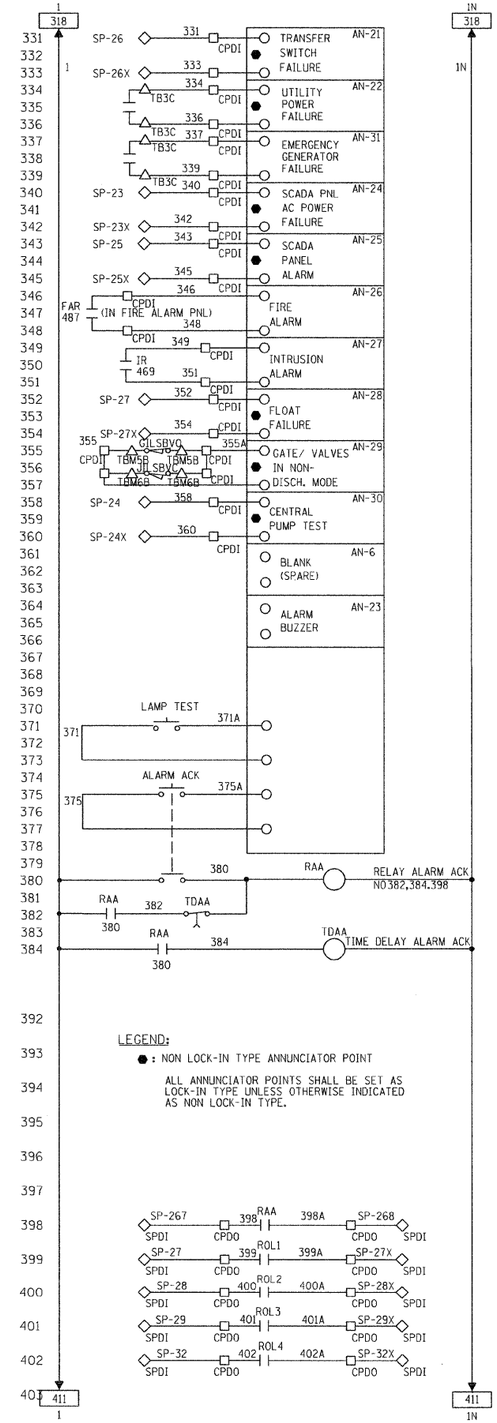
CONTROL PANEL
SCHEMATIC SHEET - 1

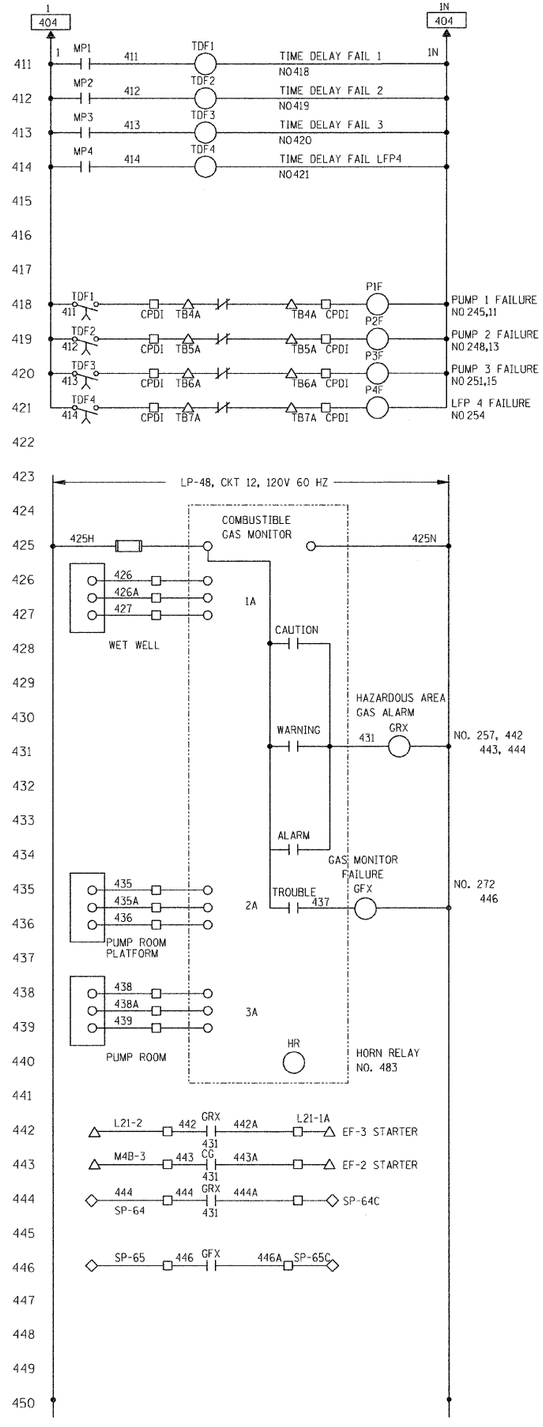
SCALE: N/A
DRAWN BY: HFF
DATE: 03-10-11
CHECKED BY: LT

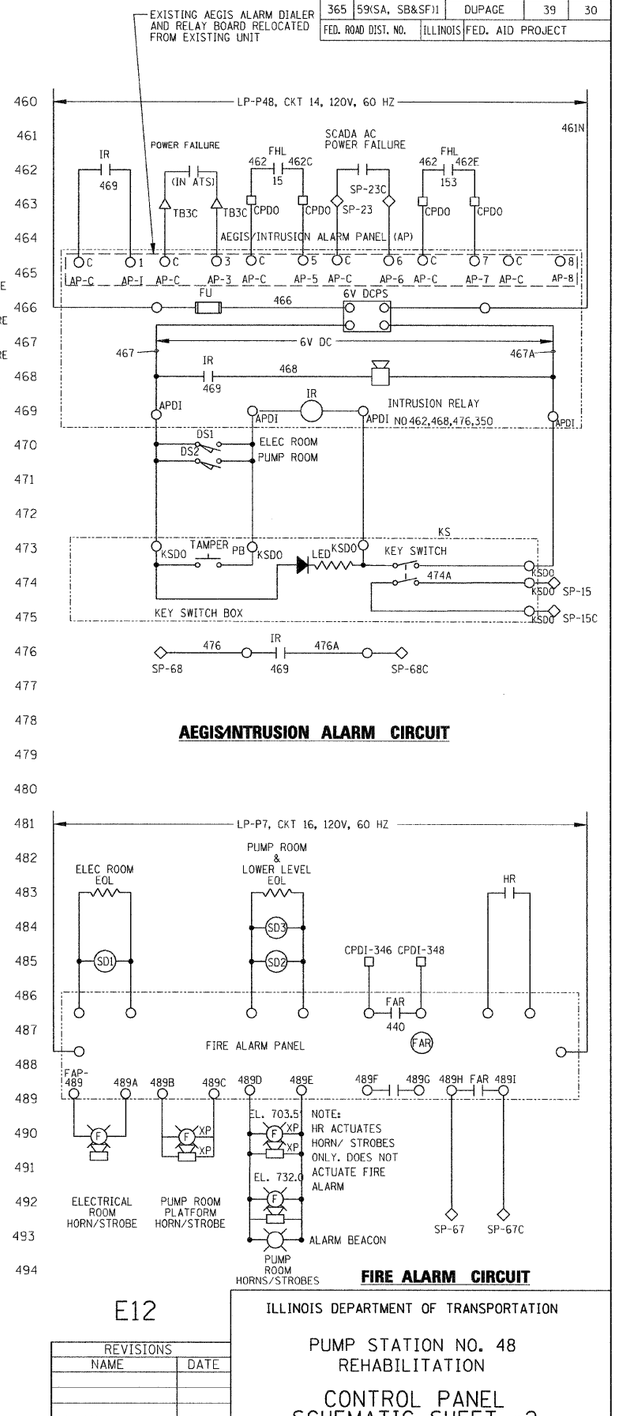
DONOHUE & ASSOCIATES

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
365	59(SA, SB&SF)1	DUPAGE	39	30
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		









E12

REVISIONS	
NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 48
REHABILITATION

CONTROL PANEL
SCHEMATIC SHEET -2

SCALE: N/A
DRAWN BY: HFF
DATE: 03-10-11
CHECKED BY: MS

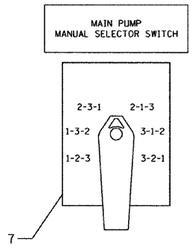
DONOHUE & ASSOCIATES

F.A.P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
365	59(SA, SB&SF)1	DUPAGE	39	31
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

MAIN PUMP 1 FAILURE [1]	MAIN PUMP 2 FAILURE [2]	MAIN PUMP 3 FAILURE [3]	LOW FLOW PUMP 4 FAILURE [4]	EMERGENCY GENERATOR FAILURE [31]
MAIN PUMP 1 OVERLOAD [7]	MAIN PUMP 2 OVERLOAD [8]	MAIN PUMP 3 OVERLOAD [9]	LOW FLOW PUMP 4 OVERLOAD [10]	SPARE [6]
MAIN PUMP 1 OVERTEMP/ MOISTURE [11]	MAIN PUMP 2 OVERTEMP/ MOISTURE [12]	MAIN PUMP 3 OVERTEMP/ MOISTURE [13]	LOW FLOW PUMP 4 OVERTEMP/ MOISTURE [14]	SECONDARY BUBBLER FAILURE [15]
HIGH WATER LEVEL 13.9' ABOVE WET PIT FLR [35]	LOW WATER LEVEL 3' ABOVE WET PIT FLR [34]	HIGH SUMP LEVEL [33]	DISCHARGE CHAMBER FLOODED [19]	PRIMARY BUBBLER FAILURE [20]
TRANSFER SWITCH FAILURE [21]	UTILITY PWR FAILURE [22]	ALARM BUZZER [23]	SCADA PANEL POWER FAILURE [24]	SCADA PANEL ALARM [25]
FIRE ALARM [26]	INTRUSION ALARM [27]	FLOAT FAILURE [28]	VALVE/GATE IN NON-DISCHARGE MODE [29]	CENTRAL PUMP TEST [30]
PAVEMENT FLOODED [5]	SPARE [16]	GAS MONITOR FAILURE [17]	DISCHARGE CHAMBER BUBBLER FAILURE [18]	COMBUSTIBLE GAS PRESENT [32]

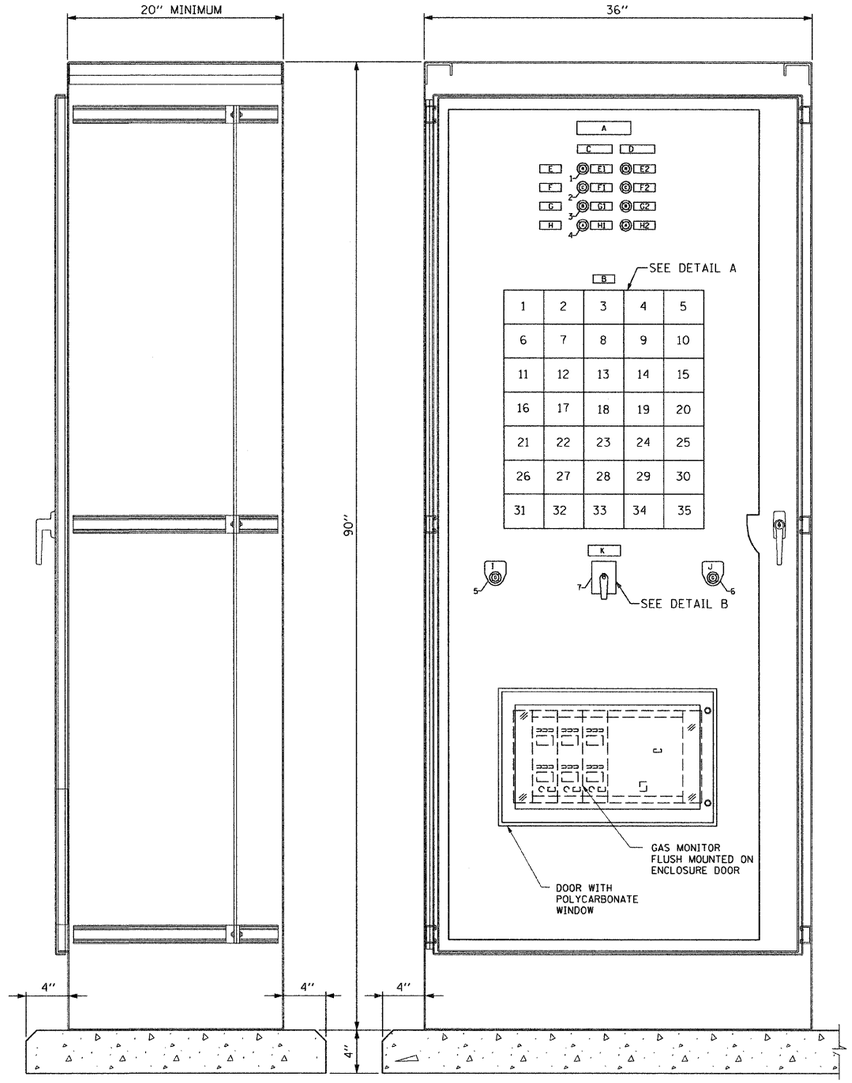
DETAIL A

ITEM	NAMEPLATE SCHEDULE
A	CONTROL PANEL
B	ALARM PANEL
C	SCADA PUMP CALL, FEET ABOVE WET PIT FLOOR
D	FLOAT PUMP CALL, FEET ABOVE WET PIT FLOOR
E	STANDBY PUMP CALL
F	LAG PUMP CALL
G	LEAD PUMP CALL
H	LOW FLOW PUMP CALL
I	ALARM ACKNOWLEDGE
J	LAMP TEST
K	MAIN PUMP MANUAL SELECTOR SWITCH (SEE DETAIL B)
E1	8.5 FEET
E2	9.0 FEET
F1	8.0 FEET
F2	8.5 FEET
G1	7.5 FEET
G2	8.0 FEET
H1	3.0 FEET
H2	4.0 FEET



DETAIL B

DEVICE LEGEND		
ITEM	DEVICE DESCRIPTION	DEVICE COLOR
1	INDICATING LIGHT	RED
2	INDICATING LIGHT	CLEAR
3	INDICATING LIGHT	BLUE
4	INDICATING LIGHT	AMBER
5	PUSH BUTTON	YELLOW
6	PUSH BUTTON	GREEN
7	6 POSITION SELECTOR SWITCH	BLACK



SIDE VIEW – PANEL REMOVED

CONTROL PANEL – FRONT VIEW

NOTE:
THE CONTROL PANEL SHALL BE OF SUFFICIENT DEPTH TO ACCOMODATE THE GAS MONITOR, ANNUNCIATOR AND OTHER DEVICES. PROPER CLEARANCE SHALL BE PROVIDED BETWEEN DOOR MOUNTED DEVICES AND PANEL MOUNTED DEVICES.

DONOHUE & ASSOCIATES

E13

REVISIONS	
NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

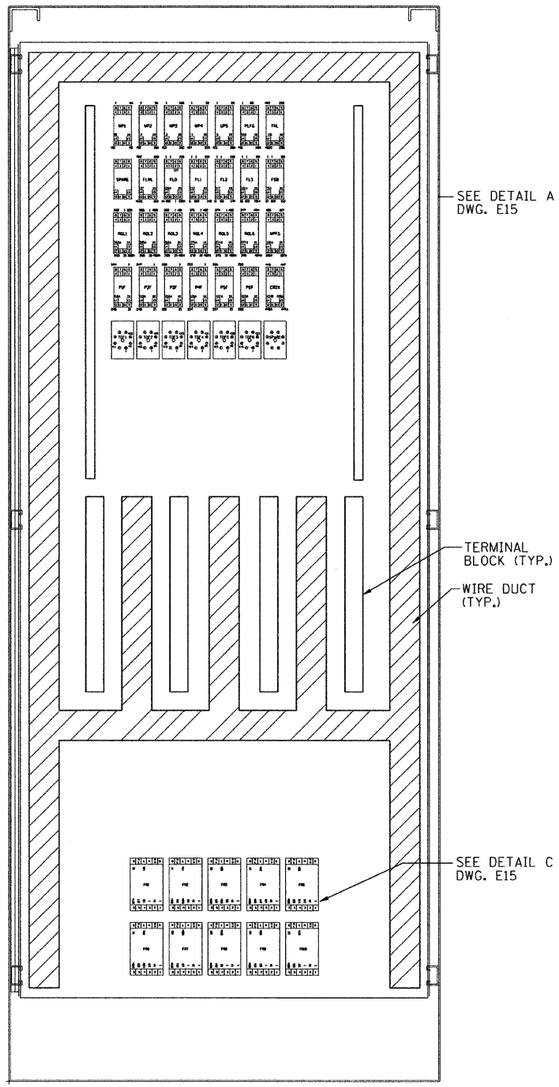
PUMP STATION NO. 48
REHABILITATION

CONTROL PANEL
EQUIPMENT LAYOUT SHEET -1

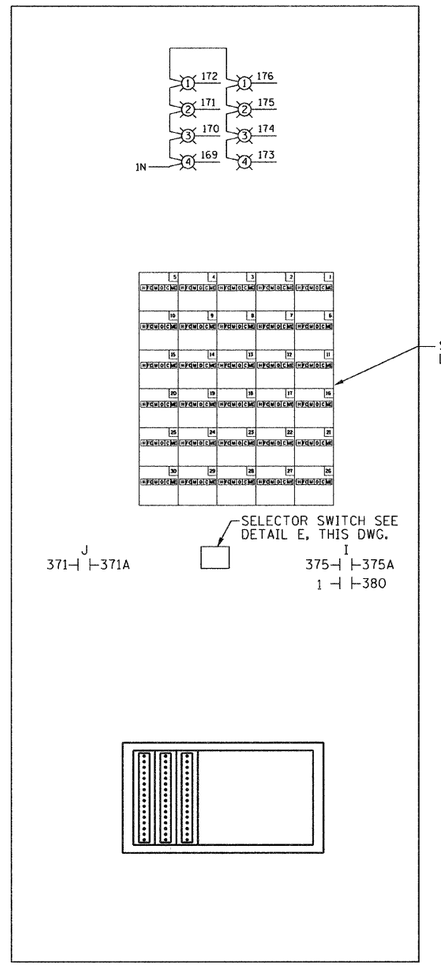
SCALE: N/A DRAWN BY: HFF

DATE: 03-10-11 CHECKED BY: MS

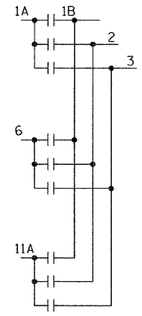
F.A.P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
365	59(SA, SB&SF)1	DUPAGE	39	32
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		



INSIDE ENCLOSURE PANEL



INSIDE ENCLOSURE DOOR



17 ⊣⊢ 17A
19 ⊣⊢ 19A
21 ⊣⊢ 21A
23 ⊣⊢ 23A
25 ⊣⊢ 25A
27 ⊣⊢ 27A

DETAIL E

DONOHUE & ASSOCIATES

E14

REVISIONS	
NAME	DATE

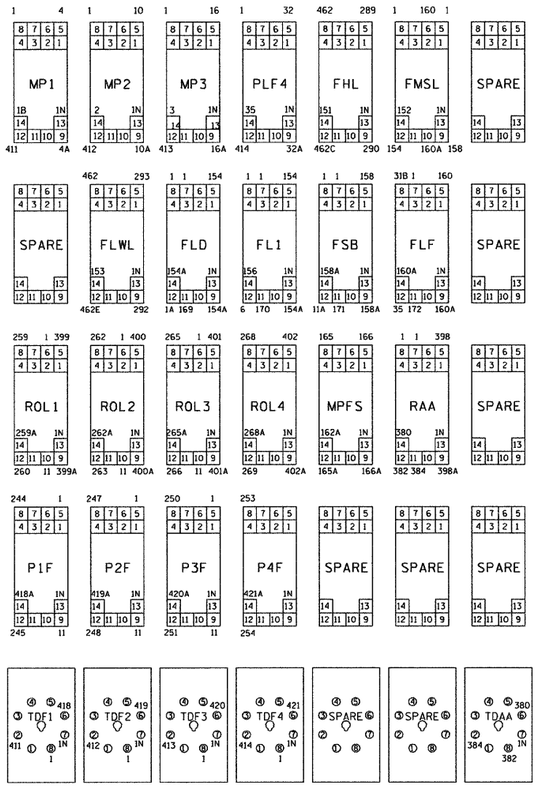
ILLINOIS DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 48
REHABILITATION

CONTROL PANEL
EQUIPMENT LAYOUT SHEET-2

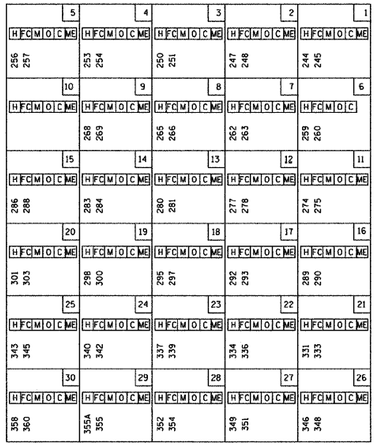
SCALE: N/A
DRAWN BY: DAK/HFF
DATE: 03-10-11
CHECKED BY: KCC/MS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
365	59(SA, SB&SF)1	DUPAGE	39	33
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

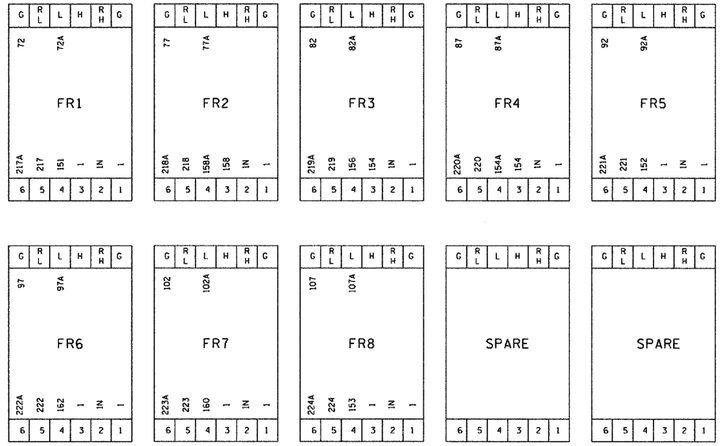


DETAIL A
DWG. E14

EACH RELAY SHALL HAVE AN ENGRAVED NAMEPLATE



DETAIL B
DWG. E14



DETAIL C
DWG. E14

ALL RELAYS IN DETAIL C ARE INTRINSICALLY SAFE.
EACH RELAY SHALL HAVE AN ENGRAVED NAMEPLATE

DONOHUE & ASSOCIATES

E15

REVISIONS	
NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 48
REHABILITATION

CONTROL PANEL DETAILS

SCALE: N/A
DRAWN BY: DAK/HFF
DATE: 03-10-11
CHECKED BY: KCC/MS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
365	59(SA, SB&SF)1	DUPAGE	39	34
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

CONTROL PANEL DIGITAL INPUTS(TBDI)

INTO CONTROL PANEL		OUT OF CONTROL PANEL			DESCRIPTION OF INPUTS
DESTINATION	WIRE #	TERM #	WIRE #	ORIGINATIION	
PUMP1 CALL RELAYS	1	1	CP-1	M1A-DO-6	PUMP 1 STARTER CONTACT NC
PUMP1 CALL RELAYS	31	31	CP-31	M1A-DO-6A	PUMP 1 STARTER CONTACT NC
PUMP2 CALL RELAYS	31	31	CP-31	M2A-DO-6	PUMP 2 STARTER CONTACT NC
PUMP2 CALL RELAYS	31A	31A	CP-31A	M2A-DO-6A	PUMP 2 STARTER CONTACT NC
PUMP3 CALL RELAYS	31A	31A	CP-31A	M3A-DO-6	PUMP 3 STARTER CONTACT NC
PUMP3 CALL RELAYS	31B	31B	CP-31B	M3A-DO-6A	PUMP 3 STARTER CONTACT NC
FLOAT 1 RELAY	72	72	CP-72	FLOAT 1	HIGH WATER ALARM
FLOAT 1 RELAY	72A	72A	CP-72A	FLOAT 1	HIGH WATER ALARM
FLOAT 2 RELAY	77	77	CP-77	FLOAT 2	START STANDBY PUMP
FLOAT 2 RELAY	77A	77A	CP-77A	FLOAT 2	START STANDBY PUMP
FLOAT 3 RELAY	82	82	CP-82	FLOAT 3	START LAG PUMP
FLOAT 3 RELAY	82A	82A	CP-82A	FLOAT 3	START LAG PUMP
FLOAT 4 RELAY	87	87	CP-87	FLOAT 4	START LEAD PUMP
FLOAT 4 RELAY	87A	87A	CP-87A	FLOAT 4	START LEAD PUMP
FLOAT 5 RELAY	92	92	CP-92	FLOAT 5	START LF PUMP
FLOAT 5 RELAY	92A	92A	CP-92A	FLOAT 5	START LF PUMP
FLOAT 6 RELAY	97	97	CP-97	FLOAT 6	STOP MAIN PUMPS, START LF PUMP
FLOAT 6 RELAY	97A	97A	CP-97A	FLOAT 6	STOP MAIN PUMPS, START LF PUMP
FLOAT 7 RELAY	102	102	CP-102	FLOAT 7	STOP LF PUMP
FLOAT 7 RELAY	102A	102A	CP-102A	FLOAT 7	STOP LF PUMP
FLOAT 8 RELAY	107	107	CP-107	FLOAT 8	LOW WATER ALARM
FLOAT 8 RELAY	107A	107A	CP-107A	FLOAT 8	LOW WATER ALARM
LEAD LIGHT	1	1	CP-1	SP-DO-P14X	SCADA LEAD CALL
LEAD LIGHT	173	173	CP-173	SP-DO-P14	SCADA LEAD CALL
LAG LIGHT	1	1	CP-1	SP-DO-P15X	SCADA LAG CALL
LAG LIGHT	174	174	CP-174	SP-DO-P15	SCADA LAG CALL
STAND-BY LIGHT	1	1	CP-1	SP-DO-P18X	SCADA STBY CALL
STAND-BY LIGHT	175	175	CP-175	SP-DO-P18	SCADA STBY CALL
LF LIGHT	1	1	CP-1	SP-DO-P19X	SCADA LF LEAD CALL
LF LIGHT	176	176	CP-176	SP-DO-P19	SCADA LF LEAD CALL
RELAY ROL1	1	1	CP-1	M1A-DO-0D	PUMP 1 OVERLOAD
RELAY ROL1	259A	259A	259A	M1A-DO-0E	PUMP 1 OVERLOAD
RELAY ROL2	1	1	CP-1	M2A-DO-0D	PUMP 2 OVERLOAD
RELAY ROL2	262A	262A	CP-262A	M2A-DO-0E	PUMP 2 OVERLOAD
RELAY ROL3	1	1	CP-1	M3A-DO-0D	PUMP 3 OVERLOAD
RELAY ROL3	265A	265A	CP-265A	M3A-DO-0E	PUMP 3 OVERLOAD
RELAY ROL4	1	1	CP-1	M4A-DO-0D	LF PUMP 4 OVERLOAD
RELAY ROL4	268A	268A	CP-268A	M4A-DO-0E	LF PUMP 4 OVERLOAD
ALARM AN11 IN	274	274	CP-274	M1A-DO-30A	PUMP 1 MOIST/HIGH TEMP
ALARM AN11 IN	275	275	CP-275	M1A-DO-30B	PUMP 1 MOIST/HIGH TEMP
ALARM AN12 IN	277	277	CP-277	M2A-DO-30A	PUMP 2 MOIST/HIGH TEMP
ALARM AN12 IN	278	278	CP-278	M2A-DO-30B	PUMP 2 MOIST/HIGH TEMP
ALARM AN13 IN	280	280	CP-280	M3A-DO-30A	PUMP 3 MOIST/HIGH TEMP
ALARM AN13 IN	281	281	CP-281	M3A-DO-30B	PUMP 3 MOIST/HIGH TEMP
ALARM AN14 IN	283	283	CP-283	M4A-DO-30A	LF PUMP 4 MOIST/HIGH TEMP
ALARM AN14 IN	284	284	CP-284	M4A-DO-30B	LF PUMP 4 MOIST/HIGH TEMP
ALARM AN18 IN	307	307	CP-307	SP-DO-32	DISCHARGE CHAMBER BUBBLER FAILURE
ALARM AN18 IN	309	309	CP-309	SP-DO-32X	DISCHARGE CHAMBER BUBBLER FAILURE
ALARM AN19 IN	310	310	CP-310	SP-DO-29	DISCHARGE CHAMBER FLOODED
ALARM AN19 IN	312	312	CP-312	SP-DO-29X	DISCHARGE CHAMBER FLOODED
ALARM AN20 IN	301	301	CP-301	SP-DO-21	PRIMARY BUBBLER FAILURE
ALARM AN20 IN	303	303	CP-303	SP-DO-21X	PRIMARY BUBBLER FAILURE
ALARM AN15 IN	286	286	CP-286	SP-DO-22	SECONDARY BUBBLER FAILURE
ALARM AN15 IN	288	288	CP-288	SP-DO-22X	SECONDARY BUBBLER FAILURE
ALARM AN21 IN	331	331	CP-331	SP-DO-P26	TRANSFER SWITCH FAILURE
ALARM AN21 IN	333	333	CP-333	SP-DO-P26X	TRANSFER SWITCH FAILURE
ALARM AN22 IN	334	334	CP-334	TRANSFER SWITCH	UTILITY POWER FAILURE
ALARM AN22 IN	336	336	CP-336	TRANSFER SWITCH	UTILITY POWER FAILURE
ALARM AN23 IN					ALARM BUZZER
ALARM AN23 IN					ALARM BUZZER
ALARM AN24 IN	340	340	CP-340	SP-DO-P23	SCADA PANEL AC POWER FAILURE RELAY
ALARM AN24 IN	342	342	CP-342	SP-DO-P23X	SCADA PANEL AC POWER FAILURE RELAY
ALARM AN25 IN	343	343	CP-343	SP-DO-P25	SCADA PANEL ALARM
ALARM AN25 IN	345	345	CP-345	SP-DO-P25X	SCADA PANEL ALARM
ALARM AN26 IN	346	346	CP-346	FIRE ALARM PANEL	FIRE ALARM
ALARM AN26 IN	348	348	CP-348	FIRE ALARM PANEL	FIRE ALARM
ALARM AN27 IN	349	349	CP-349	AEGIS PANEL	INTRUSION ALARM
ALARM AN27 IN	351	351	CP-351	AEGIS PANEL	INTRUSION ALARM
ALARM AN28 IN	352	352	CP-352	SP-DO-P27	FLOAT FAILURE
ALARM AN28 IN	354	354	CP-354	SP-DO-P27X	FLOAT FAILURE
ALARM AN29 IN	355	355	CP-355	MBC(M8D)-DO-12A	VALVE/GATE IN NON-DISCHARGE MODE
ALARM AN29 IN	355A	355A	CP-355A	MBC(M8D)-DO-12B	VALVE/GATE IN NON-DISCHARGE MODE
ALARM AN30 IN	358	358	CP-358	SP-DO-P24	CENTRAL PUMP TEST
ALARM AN30 IN	360	360	CP-360	SP-DO-P24X	CENTRAL PUMP TEST
PUMP 1 FAILURE RELAY	418	418	CP-418	M1A-DO-5B	PUMP 1 STARTER CONTACT NC
PUMP 1 FAILURE RELAY	418A	418A	CP-418A	M1A-DO-5C	PUMP 1 STARTER CONTACT NC
PUMP 2 FAILURE RELAY	419	419	CP-419	M2A-DO-5B	PUMP 2 STARTER CONTACT NC
PUMP 2 FAILURE RELAY	419A	419A	CP-419A	M2A-DO-5C	PUMP 2 STARTER CONTACT NC
PUMP 3 FAILURE RELAY	420	420	CP-420	M3A-DO-5B	PUMP 3 STARTER CONTACT NC
PUMP 3 FAILURE RELAY	420A	420A	CP-420A	M3A-DO-5C	PUMP 3 STARTER CONTACT NC
LF PUMP 4 FAILURE RELAY	421	421	CP-421	M4A-DO-6	LF PUMP 4 STARTER CONTACT NC
LF PUMP 4 FAILURE RELAY	421A	421A	CP-421A	M4A-DO-6A	LF PUMP 4 STARTER CONTACT NC
PUMP 1 FAIL TO STOP	162	162	CP-162	M1A-DO-5A	PUMP 1 STARTER CONTACT NO
PUMP 1 FAIL TO STOP	162A	162A	CP-162A	M1A-DO-5B	PUMP 1 STARTER CONTACT NO
PUMP 2 FAIL TO STOP	162	162	CP-162	M2A-DO-5A	PUMP 2 STARTER CONTACT NO
PUMP 2 FAIL TO STOP	162A	162A	CP-162A	M2A-DO-5B	PUMP 2 STARTER CONTACT NO
PUMP 3 FAIL TO STOP	162	162	CP-162	M3A-DO-5A	PUMP 3 STARTER CONTACT NO
PUMP 3 FAIL TO STOP	162A	162A	CP-162A	M3A-DO-5B	PUMP 3 STARTER CONTACT NO
LF PUMP 4 FAIL TO STOP	162	162	CP-162	M4A-DO-7B	LF PUMP 4 STARTER CONTACT NO
LF PUMP 4 FAIL TO STOP	162A	162A	CP-162A	M4A-DO-7C	LF PUMP 4 STARTER CONTACT NO

CONTROL PANEL DIGITAL INPUTS(TBDI)

INTO CONTROL PANEL		OUT OF CONTROL PANEL			DESCRIPTION OF INPUTS
DESTINATION	WIRE #	TERM #	WIRE #	ORIGINATIION	
ALARM AN31 IN	337	337	CP-337		EMERGENCY GENERATOR FAILURE
ALARM AN31 IN	339	339	CP-339		EMERGENCY GENERATOR FAILURE
ALARM AN32 IN	298	298	CP-298		COMBUSTIBLE GAS PRESENT
ALARM AN32 IN	300	300	CP-300		COMBUSTIBLE GAS PRESENT
ALARM AN33 IN	295	295	CP-295		HIGH DRY PIT SUMP LEVEL
ALARM AN33 IN	297	297	CP-297		HIGH DRY PIT SUMP LEVEL
ALARM AN34 IN	292	292	CP-292		LOW WATER LEVEL
ALARM AN34 IN	294	294	CP-294		LOW WATER LEVEL
ALARM AN35 IN	289	289	CP-289		HIGH WATER LEVEL
ALARM AN35 IN	291	291	CP-291		HIGH WATER LEVEL
ALARM AN16 IN					SPARE
ALARM AN16 IN					SPARE
ALARM AN17 IN	289	289	CP-289		GAS MONITOR FAILURE
ALARM AN17 IN	291	291	CP-291		GAS MONITOR FAILURE

CONTROL PANEL DIGITAL OUTPUTS - TBDO

INTO CONTROL PANEL		OUT OF CONTROL PANEL			
ORIGINATION	WIRE #	TERM #	WIRE #	DESTINATION	DESCRIPTION OF INPUTS
RELAY MP1	4	4	M1A-9	M1A-DI-9	PUMP 1 FLOAT CALL
RELAY MP1	4A	4A	M1A-2	M1A-DI-2	PUMP 1 FLOAT CALL
RELAY MP2	10	10	M2A-9	M2A-DI-9	PUMP 2 FLOAT CALL
RELAY MP2	10A	10A	M2A-2	M2A-DI-2	PUMP 2 FLOAT CALL
RELAY MP3	16	16	M3A-9	M3A-DI-9	PUMP 3 FLOAT CALL
RELAY MP3	16A	16A	M3A-2	M3A-DI-2	PUMP 3 FLOAT CALL
RELAY PLF4	32	32	M4A-9	M4A-DI-9	LF PUMP 4 FLOAT CALL
RELAY PLF4	32A	32A	M4A-2	M4A-DI-2	LF PUMP 4 FLOAT CALL
MP SEQ. SEL. SWITCH	17	17	SP-S40	SP-DI-S40	MP MANUAL SEQ. SW. 1-2-3
MP SEQ. SEL. SWITCH	17A	17A	SP-S40C	SP-DI-S40C	MP MANUAL SEQ. SW. 1-2-3
MP SEQ. SEL. SWITCH	19	19	SP-S41	SP-DI-S41	MP MANUAL SEQ. SW. 1-3-2
MP SEQ. SEL. SWITCH	19A	19A	SP-S41C	SP-DI-S41C	MP MANUAL SEQ. SW. 1-3-2
MP SEQ. SEL. SWITCH	21	21	SP-S42	SP-DI-S42	MP MANUAL SEQ. SW. 2-3-1
MP SEQ. SEL. SWITCH	21A	21A	SP-S42C	SP-DI-S42C	MP MANUAL SEQ. SW. 2-3-1
MP SEQ. SEL. SWITCH	23	23	SP-S43	SP-DI-S43	MP MANUAL SEQ. SW. 2-1-3
MP SEQ. SEL. SWITCH	23A	23A	SP-S43C	SP-DI-S43C	MP MANUAL SEQ. SW. 2-1-3
MP SEQ. SEL. SWITCH	25	25	SP-S44	SP-DI-S44	MP MANUAL SEQ. SW. 3-1-2
MP SEQ. SEL. SWITCH	25A	25A	SP-S44C	SP-DI-S44C	MP MANUAL SEQ. SW. 3-1-2
MP SEQ. SEL. SWITCH	27	27	SP-S45	SP-DI-S45	MP MANUAL SEQ. SW. 3-2-1
MP SEQ. SEL. SWITCH	27A	27A	SP-S45C	SP-DI-S45C	MP MANUAL SEQ. SW.,3-2-1
RELAY MPFS	165	165	SP-S53	SP-DI-S53	MAIN PUMP FAIL TO STOP
RELAY MPFS	165A	165A	SP-S53C	SP-DI-S53C	MAIN PUMP FAIL TO STOP
SPARE	166	166			
SPARE	166A	166A			
RELAY FR1	217	217	SP-S54	SP-DI-S54	HIGH WATER ALARM-FLOAT
RELAY FR1	217A	217A	SP-S54C	SP-DI-S54C	HIGH WATER ALARM-FLOAT
RELAY FR1	217	217	SP-S54	SP-DI-S54	HIGH WATER ALARM-FLOAT
RELAY FR1	217A	217A	SP-S54C	SP-DI-S54C	HIGH WATER ALARM-FLOAT
RELAY FR2	218	218	SP-S55	SP-DI-S55	START STANDBY LEVEL-FLOAT
RELAY FR2	218A	218A	SP-S55C	SP-DI-S55C	START STANDBY LEVEL-FLOAT
RELAY FR3	219	219	SP-S56	SP-DI-S56	START LAG LEVEL-FLOAT
RELAY FR3	219A	219A	SP-S56C	SP-DI-S56C	START LAG LEVEL-FLOAT
RELAY FR4	220	220	SP-S57	SP-DI-S57	START LEAD LEVEL-FLOAT
RELAY FR4	220A	220A	SP-S57C	SP-DI-S57C	START LEAD LEVEL-FLOAT
RELAY FR5	221	221	SP-S58	SP-DI-S58	STOP MAIN PUMP, START LF LEVEL-FLOAT
RELAY FR5	221A	221A	SP-S58C	SP-DI-S58C	STOP MAIN PUMP, START LF LEVEL-FLOAT
RELAY FR6	222	222	SP-S59	SP-DI-S59	MAIN PUMP FAIL TO STOP LEVEL
RELAY FR6	222A	222A	SP-S59C	SP-DI-S59C	MAIN PUMP FAIL TO STOP LEVEL
RELAY FR7	223	223	SP-S60	SP-DI-S60	STOP LF PUMP LEVEL-FLOAT
RELAY FR7	223A	223A	SP-S60C	SP-DI-S60C	STOP LF PUMP LEVEL-FLOAT
RELAY FR8	224	224	SP-S61	SP-DI-S61	LOW WATER LEVEL ALARM
RELAY FR8	224A	224A	SP-S61C	SP-DI-S61C	LOW WATER LEVEL ALARM
SPARE	229	229	SP-S64	SP-DI-S64	SPARE
SPARE	229A	229A	SP-S64C	SP-DI-S64C	SPARE
SPARE	229B	229B	SP-S65	SP-DI-S65	SPARE
SPARE	229C	229C	SP-S65C	SP-DI-S65C	SPARE
RELAY ROL1	399	399	SP-S27	SP-DI-S27	PUMP 1 OVERLOAD TRIP
RELAY ROL1	399A	399A	SP-S27C	SP-DI-S27C	PUMP 1 OVERLOAD TRIP
RELAY ROL2	400	400	SP-S28	SP-DI-S28	PUMP 2 OVERLOAD TRIP
RELAY ROL2	400A	400A	SP-S28C	SP-DI-S28C	PUMP 2 OVERLOAD TRIP
RELAY ROL3	401	401	SP-S29	SP-DI-S29	PUMP 3 OVERLOAD TRIP
RELAY ROL3	401A	401A	SP-S29C	SP-DI-S29C	PUMP 3 OVERLOAD TRIP
ALARM ROL4	402	402	SP-S32	SP-DI-S32	LF PUMP 4 OVERLOAD TRIP
ALARM ROL4	402A	402A	SP-S32C	SP-DI-S32C	LF PUMP 4 OVERLOAD TRIP
RELAY RAA	398	398	SP-SO	SP-DI-SO	ALARM ACKNOWLEDGE
RELAY RAA	398A	398A	SP-SOC	SP-DI-SOC	ALARM ACKNOWLEDGE
RELAY FHL	462C	462C	AIAP-5	AEGIS-DI-5	HIGH WATER ALARM-FLOAT
RELAY FHL	462	462	AIAP-C	AEGIS-DI-C	HIGH WATER ALARM-FLOAT
RELAY FLWL	462E	462E	AIAP-7	AEGIS-DI-7	LOW WATER ALARM-FLOAT
RELAY FLWL	462	462	AIAP-C	AEGIS-DI-C	LOW WATER ALARM-FLOAT

DONOHUE & ASSOCIATES

E16

REVISIONS	
NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 48
REHABILITATION

CONTROL PANEL
TERMINAL SCHEDULE

SCALE: N/A
DRAWN BY: KCC/HFF
DATE: 03-10-11
CHECKED BY: KCC/MS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
365	59(SA, SB&SF)1	DUPAGE	39	35
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

SCADA PANEL DIGITAL INPUTS
TERMINAL BLOCK TBDI

TERM #	WIRE #	ORIGINATIION	DESCRIPTION OF INPUTS
S0	S0	CP-DO-398	ALARM ACKNOWLEDGE
S0C	S0C	CP-DO-398A	ALARM ACKNOWLEDGE
S1	S1	M1A-11	PUMP 1 NOT IN AUTO
S1C	S1C	M1A-11A	PUMP 1 NOT IN AUTO
S2	S2	M2A-11	PUMP 2 NOT IN AUTO
S2C	S2C	M2A-11A	PUMP 2 NOT IN AUTO
S3	S3	M3A-11	PUMP 3 NOT IN AUTO
S3C	S3C	M3A-11A	PUMP 3 NOT IN AUTO
S4	S4		EF-1 RUNNING
S4C	S4C		EF-1 RUNNING
S5	S5		EF-2 RUNNING
S5C	S5C		EF-2 RUNNING
S6	S6	M1A-4A	PUMP 1 START CONTACTOR CALLED
S6C	S6C	M1A-4B	PUMP 1 START CONTACTOR CALLED
S7	S7	M2A-4A	PUMP 2 START CONTACTOR CALLED
S7C	S7C	M2A-4B	PUMP 2 START CONTACTOR CALLED
S8	S8	M3A-4A	PUMP 3 START CONTACTOR CALLED
S8C	S8C	M3A-4B	PUMP 3 START CONTACTOR CALLED
S9	S9		SPARE
S9C	S9C		SPARE
S10	S10		SPARE
S10C	S10C		SPARE
S11	S11		MANUAL LOCKOUT
S11C	S11C		MANUAL LOCKOUT
S12	S12		MANUAL PURGE
S12C	S12C		MANUAL PURGE
S13	S13	LIGHTING PANEL	CONTROL PANEL POWER FAILURE
S13C	S13C	LIGHTING PANEL	CONTROL PANEL POWER FAILURE
S14	S14		SPARE
S14C	S14C		SPARE
S15	S15	KS-DO-474	ENTRY KEY SW. IN NOT ARMED
S15C	S15C	KS-DO-474A	ENTRY KEY SW. IN NOT ARMED
S16	S16	M1A-O	PUMP 1 BREAKER OPEN
S16C	S16C	M1A-OA	PUMP 1 BREAKER OPEN
S17	S17	M2A-O	PUMP 2 BREAKER OPEN
S17C	S17C	M2A-OA	PUMP 2 BREAKER OPEN
S18	S18	M3A-O	PUMP 3 BREAKER OPEN
S18C	S18C	M3A-OA	PUMP 3 BREAKER OPEN
S19	S19		SPARE
S19C	S19C		SPARE
S20	S20		SPARE
S20C	S20C		SPARE
S21	S21		SPARE
S21C	S21C		SPARE
S22	S22		120V AC POWER FAILURE
S22C	S22C		120V AC POWER FAILURE
S23	S23	UPS	12V DC POWER FAILURE
S23C	S23C	UPS	12V DC POWER FAILURE
S24	S24	TRANSFER SWITCH	TRANSFER SW. IN NORM. POSITION
S24C	S24C	TRANSFER SWITCH	TRANSFER SW. IN NORM. POSITION
S25	S25	TRANSFER SWITCH	TRANSFER SW. IN EMERG. POSITION
S25C	S25C	TRANSFER SWITCH	TRANSFER SW. IN EMERG. POSITION
S26	S26		SPARE
S26C	S26C		SPARE
S27	S27	CP-DO-399	PUMP 1 OVERLOAD TRIP
S27C	S27C	CP-DO-399A	PUMP 1 OVERLOAD TRIP
S28	S28	CP-DO-400	PUMP 2 OVERLOAD TRIP
S28C	S28C	CP-DO-400A	PUMP 2 OVERLOAD TRIP
S29	S29	CP-DO-401	PUMP 3 OVERLOAD TRIP
S29C	S29C	CP-DO-401A	PUMP 3 OVERLOAD TRIP
S30	S30		SPARE
S30C	S30C		SPARE
S31	S31		SPARE
S31C	S31C		SPARE
S32	S32	CP-DO-402	LF PUMP 4 OVERLOAD TRIP
S32C	S32C	CP-DO-402A	LF PUMP 4 OVERLOAD TRIP
S33	S33		SPARE
S33C	S33C		SPARE
S34	S34	M4A-11	LF PUMP 4 NOT IN AUTO
S34C	S34C	M4A-11A	LF PUMP 4 NOT IN AUTO
S35	S35	M4A-4A	LF PUMP 4 STARTER CONTACT CALL
S35C	S35C	M4A-4B	LF PUMP 4 STARTER CONTACT CALL
S36	S36	M4A-O	LF PUMP 4 CIRCUIT BREAKER OPEN
S36C	S36C	M4A-OA	LF PUMP 4 CIRCUIT BREAKER OPEN

SCADA PANEL DIGITAL INPUTS
TERMINAL BLOCK TBDI

TERM #	WIRE #	ORIGINATIION	DESCRIPTION OF INPUTS
S40	S40	CP-DO-17	MP MANUAL SEQ. SW. 1-2-3
S40C	S40C	CP-DO-17A	MP MANUAL SEQ. SW. 1-2-3
S41	S41	CP-DO-19	MP MANUAL SEQ. SW. 1-3-2
S41C	S41C	CP-DO-19A	MP MANUAL SEQ. SW. 1-3-2
S42	S42	CP-DO-21	MP MANUAL SEQ. SW. 2-3-1
S42C	S42C	CP-DO-21A	MP MANUAL SEQ. SW. 2-3-1
S43	S43	CP-DO-23	MP MANUAL SEQ. SW. 2-1-3
S43C	S43C	CP-DO-23A	MP MANUAL SEQ. SW. 2-1-3
S44	S44	CP-DO-25	MP MANUAL SEQ. SW. 3-1-2
S44C	S44C	CP-DO-25A	MP MANUAL SEQ. SW. 3-1-2
S45	S45	CP-DO-27	MP MANUAL SEQ. SW. 3-2-1
S45C	S45C	CP-DO-27A	MP MANUAL SEQ. SW. 3-2-1
S46	S46	M1A-24A	PUMP 1 HIGH MOISTURE/TEMP
S46C	S46C	M1A-24B	PUMP 1 HIGH MOISTURE/TEMP
S47	S47	M2A-24A	PUMP 2 HIGH MOISTURE/TEMP
S47C	S47C	M2A-24B	PUMP 2 HIGH MOISTURE/TEMP
S48	S48	M3A-24A	PUMP 3 HIGH MOISTURE/TEMP
S48C	S48C	M3A-24B	PUMP 3 HIGH MOISTURE/TEMP
S49	S49	M4A-24A	LOW FLOW PUMP HIGH MOISTURE/TEMP
S49C	S49C	M4A-24B	LOW FLOW PUMP HIGH MOISTURE/TEMP
S50	S50	M-6A	ELECTRICAL SYSTEM GROUND FAULT
S50C	S50C	M-6A	ELECTRICAL SYSTEM GROUND FAULT
S51	S51		G1 NOT IN DISCHARGE MODE
S51C	S51C		G1 NOT IN DISCHARGE MODE
S52	S52		G2 NOT IN DISCHARGE MODE
S52C	S52C		G2 NOT IN DISCHARGE MODE
S53	S53	CP-DO-165	MAIN PUMP FAIL TO STOP
S53C	S53C	CP-DO-165A	MAIN PUMP FAIL TO STOP
S54	S54	CP-DO-217	HIGH WATER ALARM-FLOAT
S54C	S54C	CP-DO-217A	HIGH WATER ALARM-FLOAT
S55	S55	CP-DO-218	START STANDBY LEVEL-FLOAT
S55C	S55C	CP-DO-218A	START STANDBY LEVEL-FLOAT
S56	S56	CP-DO-219	START LAG LEVEL-FLOAT
S56C	S56C	CP-DO-219A	START LAG LEVEL-FLOAT
S57	S57	CP-DO-220	START LEAD PUMP LEVEL-FLOAT
S57C	S57C	CP-DO-220A	START LEAD PUMP LEVEL-FLOAT
S58	S58	CP-DO-221	STOP MAIN PUMP, START LF LEVEL-FLOAT
S58C	S58C	CP-DO-221A	STOP MAIN PUMP, START LF LEVEL-FLOAT
S59	S59	CP-DO-222	MAIN PUMP FAIL TO STOP LEVEL
S59C	S59C	CP-DO-222A	MAIN PUMP FAIL TO STOP LEVEL
S60	S60	CP-DO-223	STOP LF PUMP LEVEL-FLOAT
S60C	S60C	CP-DO-223A	STOP LF PUMP LEVEL-FLOAT
S61	S61	CP-DO-224	LOW WATER LEVEL ALARM
S61C	S61C	CP-DO-224A	LOW WATER LEVEL ALARM
S62	S62		SPARE
S62C	S62C		SPARE
S63	S63	UPS	UPS ALARM
S63C	S63C	UPS	UPS ALARM
S64	S64	COMB GAS MONITOR	COMB GAS DETECTOR FAILURE
S64C	S64C	COMB GAS MONITOR	COMB GAS DETECTOR FAILURE
S65	S65	COMB GAS MONITOR	COMB GAS DETECTOR WARNING/ALARM
S65C	S65C	COMB GAS MONITOR	COMB GAS DETECTOR WARNING
S66	S66		
S66C	S66C		
S67	S67	FAP-DO-487	FIRE ALARM
S67C	S67C	FAP-DO-487A	FIRE ALARM
S68	S68	AP-DO-476	INTRUSION ALARM
S68C	S68C	AP-DO-476A	INTRUSION ALARM
S69	S69		PUMP ROOM TSH ALARM
S69C	S69C		PUMP ROOM TSH ALARM
S70	S70		ELECTRICAL ROOM TSH ALARM
S70C	S70C		ELECTRICAL ROOM TSH ALARM
S71	S71	ATS	ATS IN TEST MODE
S71C	S71C	ATS	ATS IN TEST MODE
S72	S72	ATS	UTILITY POWER AVAILABLE
S72C	S72C	ATS	UTILITY POWER AVAILABLE
S73	S73	ATS	GENERATOR LOADED
S73C	S73C	ATS	GENERATOR LOADED
S74	S74	ATS	GENERATOR RUNNING
S74C	S74C	ATS	GENERATOR RUNNING
S75	S75	GENERATOR CP	GENERATOR FUEL TANK LOW
S75C	S75C	GENERATOR CP	GENERATOR FUEL TANK LOW
S76	S76	GENERATOR CP	GENERATOR NOT IN AUTO
S76C	S76C	GENERATOR CP	GENERATOR NOT IN AUTO
S77	S77	GENERATOR CP	GENERATOR COMMON ALARM
S77C	S77C	GENERATOR CP	GENERATOR COMMON ALARM
S78	S78	GENERATOR CP	GENERATOR E-STOP
S78C	S78C	GENERATOR CP	GENERATOR E-STOP
S79	S79	GENERATOR CP	GENERATOR FUEL TANK LEVEL
S79C	S79C	GENERATOR CP	GENERATOR FUEL TANK LEVEL

SCADA PANEL DIGITAL OUTPUTS
TERMINAL BLOCK TBDO

TERM #	WIRE #	DESTINATION	DESCRIPTION OF OUTPUTS
P0			
P0X			
P1	M1A-2	M1A-DI-2	MAIN PUMP 1 CALL
P1X	M1A-9	M1A-DI-9	MAIN PUMP 1 CALL
P2	M2A-2	M2A-DI-2	MAIN PUMP 2 CALL
P2X	M2A-9	M2A-DI-9	MAIN PUMP 2 CALL
P3	M3A-2	M3A-DI-2	MAIN PUMP 3 CALL
P3X	M3A-9	M3A-DI-9	MAIN PUMP 3 CALL
P4			SPARE
P4X			SPARE
P5			SPARE
P5X			SPARE
P6			PRIMARY COMPR CALL
P6X			PRIMARY COMPR CALL
P7			PRIMARY SOL. VALVE CALL
P7X			PRIMARY SOL. VALVE CALL
P8			SECONDARY COMPR CALL
P8X			SECONDARY COMPR CALL
P9			SECONDARY SOL. VALVE CALL
P9X			SECONDARY SOL. VALVE CALL
P10			COMPR. INFLOW VALVE CALL
P10X			COMPR. INFLOW VALVE CALL
P11			SOLENOID INFLOW VALVE CALL
P11X			SOLENOID INFLOW VALVE CALL
P12	M4A-2	M4A-DI-2	LF PUMP 4 CALL
P12X	M4A-9	M4A-DI-9	LF PUMP 4 CALL
P13			
P13X			
P14	CP-173	CP-DI-173	CALL MAIN LEAD PUMP
P14X	CP-1	CP-DI-1	CALL MAIN LEAD PUMP
P15	CP-174	CP-DI-174	CALL MAIN LAG PUMP
P15X	CP-1	CP-DI-1	CALL MAIN LAG PUMP
P16			
P16X			
P17			
P17X			
P18	CP-175	CP-DI-175	CALL MAIN STBY PUMP
P18X	CP-1	CP-DI-1	CALL MAIN STBY PUMP
P19	CP-176	CP-DI-176	CALL LF PUMP
P19X	CP-1	CP-DI-1	CALL LF PUMP
P20			PUMP STATION INTRUSION
P20X			PUMP STATION INTRUSION
P21	CP-301	CP-DI-301	PRIMARY BUBBLER FAILURE
P21X	CP-303	CP-DI-303	PRIMARY BUBBLER FAILURE
P22	CP-286	CP-DI-286	SECONDARY BUBBLER FAILURE
P22X	CP-288	CP-DI-288	SECONDARY BUBBLER FAILURE
P23	CP-340	CP-DI-340	SCADA PANEL POWER FAILURE
P23X	CP-342	CP-DI-342	SCADA PANEL POWER FAILURE
P24	CP-361	CP-DI-358	CENTRAL PUMP TEST
P24X	CP-363	CP-DI-360	CENTRAL PUMP TEST
P25	CP-343	CP-DI-343	SCADA PANEL ALARM
P25X	CP-345	CP-DI-345	SCADA PANEL ALARM
P26	CP-331	CP-DI-331	TRANSFER SWITCH FAILURE
P26X	CP-333	CP-DI-333	TRANSFER SWITCH FAILURE
P27	CP-352	CP-DI-352	FLOAT FAILURE
P27X	CP-354	CP-DI-354	FLOAT FAILURE
P28			
P28X			
P29	CP-298	CP-DI-298	DISCHARGE CHAMBER FLOODED
P29X	CP-300	CP-DI-300	DISCHARGE CHAMBER FLOODED
P30			DISCHARGE CHAMBER COMPR CALL
P30X			DISCHARGE CHAMBER COMPR CALL
P31			DISCHARGE CHAMBER SOL. VALVE CALL
P31X			DISCHARGE CHAMBER SOL. VALVE CALL
P32	CP-294	CP-DI-294	DISCHARGE CHAMBER BUBBLER FAILURE
P32X	CP-296	CP-296-DI	DISCHARGE CHAMBER BUBBLER FAILURE

SCADA PANEL ANALOG INPUTS
TERMINAL BLOCK TBAI

TERM #	WIRE #	ORIGINATIION	DESCRIPTION OF INPUTS
L1	L1	M1A-OB	MAIN PUMP 1 CURRENT - AMP
L1C	L1C	M1A-OC	MAIN PUMP 1 CURRENT - AMP
L1S	SHIELD	M1A	MAIN PUMP 1 CURRENT - AMP
L2	L2	M2A-OB	MAIN PUMP 2 CURRENT - AMP
L2C	L2C	M2A-OC	MAIN PUMP 2 CURRENT - AMP
L2S	SHIELD	M2A	MAIN PUMP 2 CURRENT - AMP
L3	L3	M3A-OB	MAIN PUMP 3 CURRENT - AMP
L3C	L3C	M3A-OC	MAIN PUMP 3 CURRENT - AMP
L3S	SHIELD	M3A	MAIN PUMP 3 CURRENT - AMP
L4	L4	GENERATOR FUEL TANK	FUEL TANK LEVEL
L4C	L4C	GENERATOR FUEL TANK	FUEL TANK LEVEL
L4S	SHIELD	GENERATOR FUEL TANK	FUEL TANK LEVEL
L5	L5		SPARE
L5C	L5C		SPARE
L5S	SHIELD		SPARE
L6A	L6A		SPARE
L6B	L6B		SPARE
L7B	L7B		SPARE
L7C	L7C		SPARE
L8C	L8C		SPARE
L8A	L8A		SPARE
L9A	L9A		SPARE
L9B	L9B		SPARE
L10B	L10B		SPARE
L10C	L10C		SPARE
L11C	L11C		SPARE
L11A	L11A		SPARE
L12	L12	SCADA EQUIPMENT	PRIMARY BUBBLER LEVEL CB1
L12A	L12A	SCADA EQUIPMENT	PRIMARY BUBBLER LEVEL CB1
L13	L13	SCADA EQUIPMENT	SECONDARY BUBBLER LEVEL CB2
L13A	L13A	SCADA EQUIPMENT	SECONDARY BUBBLER LEVEL CB2
L14	L14	SCADA EQUIPMENT	DISCHARGE CHAMBER BUBBLER LEVEL CB3
L14A	L14A	SCADA EQUIPMENT	DISCHARGE CHAMBER BUBBLER LEVEL CB3
L15	L15		SPARE
L15C	L15C		SPARE
L15S	SHIELD		SPARE
L16	L16	MAG FLOW METER	STATION DISCHARGE FLOW
L16C	L16C	MAG FLOW METER	STATION DISCHARGE FLOW
L16S	SHIELD	MAG FLOW METER	STATION DISCHARGE FLOW
L17	L17	M4A-OB	LF PUMP 4 CURRENT - AMP
L17C	L17C	M4A-OC	LF PUMP 4 CURRENT - AMP
L17S	SHIELD	M4A	LF PUMP 4 CURRENT - AMP

DONOHUE & ASSOCIATES

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REVISIONS	
NAME	DATE

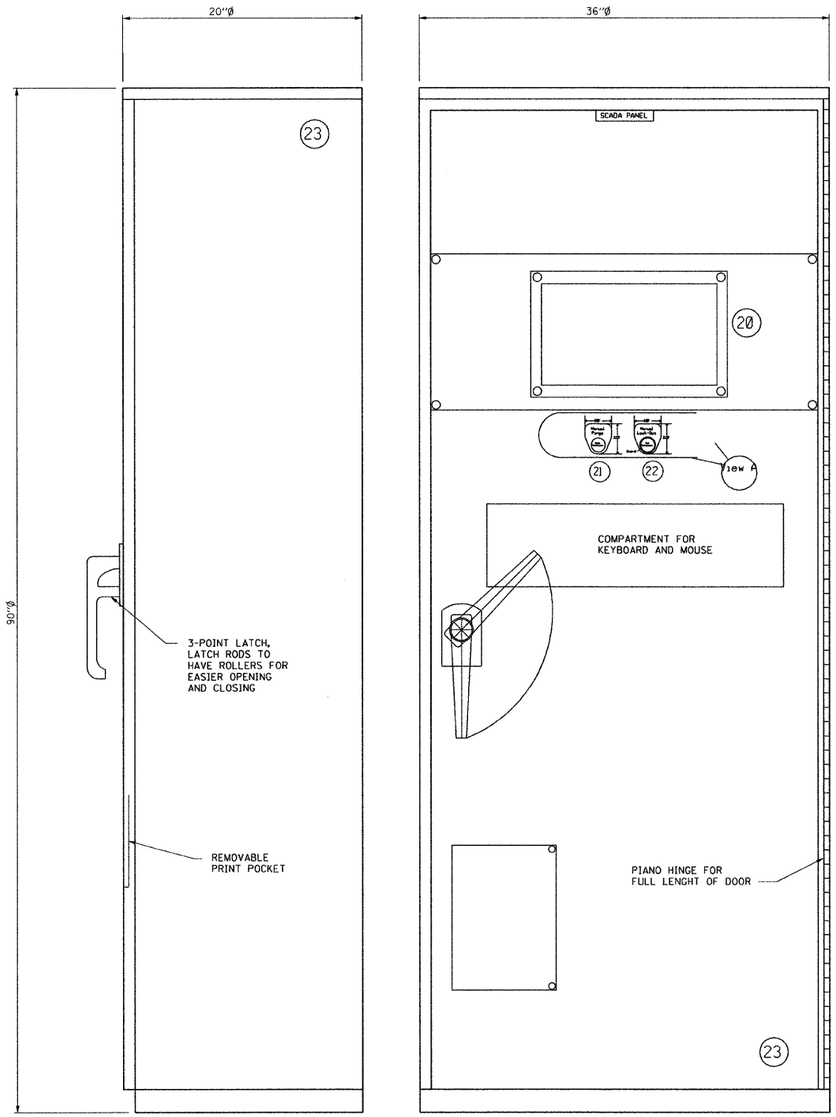
ILLINOIS DEPARTMENT OF TRANSPORTATION

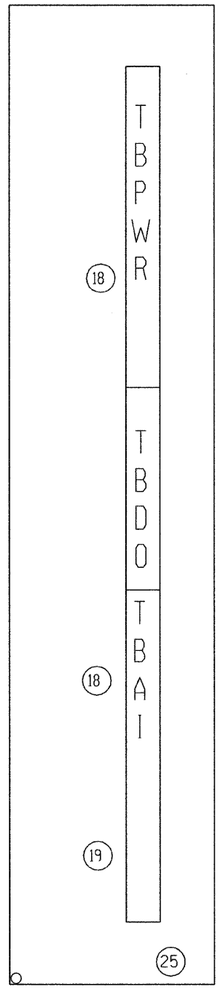
PUMP STATION NO. 48
REHABILITATION

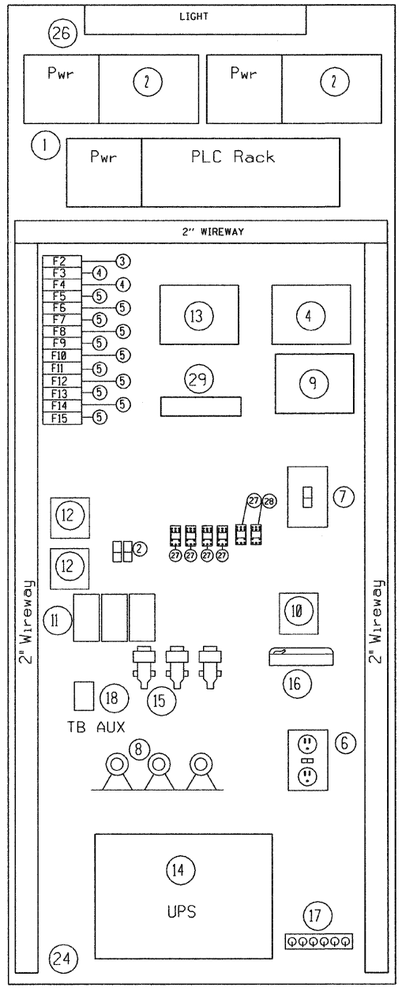
SCADA PANEL
TERMINAL SCHEDULE

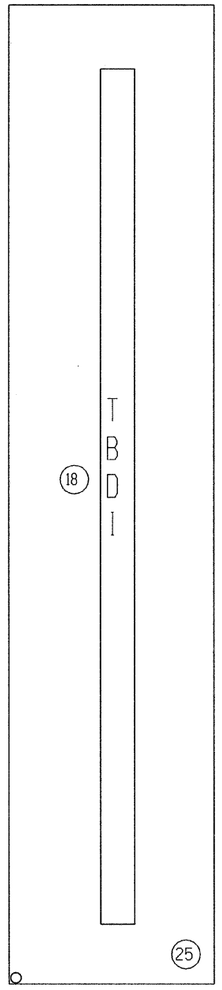
SCALE: N/A
DRAWN BY: KCC/HFF
DATE: 03-10-11
CHECKED BY: KCC/MS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
365	59(SA, SB&SF)1	DUPAGE	39	36
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		









BILL OF MATERIALS

* DESCRIPTION
1. 1756-A17 17-SLOT PLC RACK
2. REDUNDANT 1756-A7 7SLOT RACK
3. BREAKER
4. NETWARE ETHERNET SWITCH
5. FUSE
6. GFCI OUTLET, 125V, 20A, IN HANDY BOX
7. LIGHT SWITCH, 125V, 20A, IN HANDY BOX
8. GAST COMPRESSOR, MOA-P101-CA
9. CROMPTON CURRENT TRANSDUCER, 256-TALU-LSHGO-C6-BC
10. DITEK MRJ11SCP-RUV PHONE LINE SUPPRESSOR
11. MOORE INDUSTRIES PRESSURE TRANSDUCER PIT 3-27PSIG 4-20MA 12-28VDC ISB-DIN
12. POWER INTEGRITY SURGE SUPPRESSOR, ZTAS-03-15-0
13. SOLA 12 VOLT DC POWER SUPPLY, SFL6-12-100
14. UPS, 120 VAC, DOUBLE CONVERSION TYPE
15. ASCO SOLENOID VALVE, 8360G77
16. US ROBOTICS 56K MODEM, 5686
17. GROUND BUS
18. TERMINAL BLOCKS, 300 V, SCREW TYPE
19. TERMINAL BLOCKS, 300 V, FUSE HOLDER, SCREW TYPE
20. PLC DISPLAY, AB PANELVIEW PLUS 1250
21. OILTIGHT PUSH BUTTON WITH NAMEPLATE, AB 800T-A2A
22. OILTIGHT LOCKING PUSH BUTTON WITH SHROUD & NAMEPLATE AB 800T-FX6AL
23. ENCLOSURE, NEMA 12, FREE STANDING WITH HINGED DOOR AND THREE-POINT LATCH
24. BACK PANEL
25. SIDE PANEL
26. FLOURESCENT LIGHT 120 V, 20 W
27. AUXILIARY RELAY, DPDT, 120 V AC COIL
28. AUXILIARY RELAY, DPTP, 12 VDC COIL

DONOHUE & ASSOCIATES

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REVISIONS	
NAME	DATE

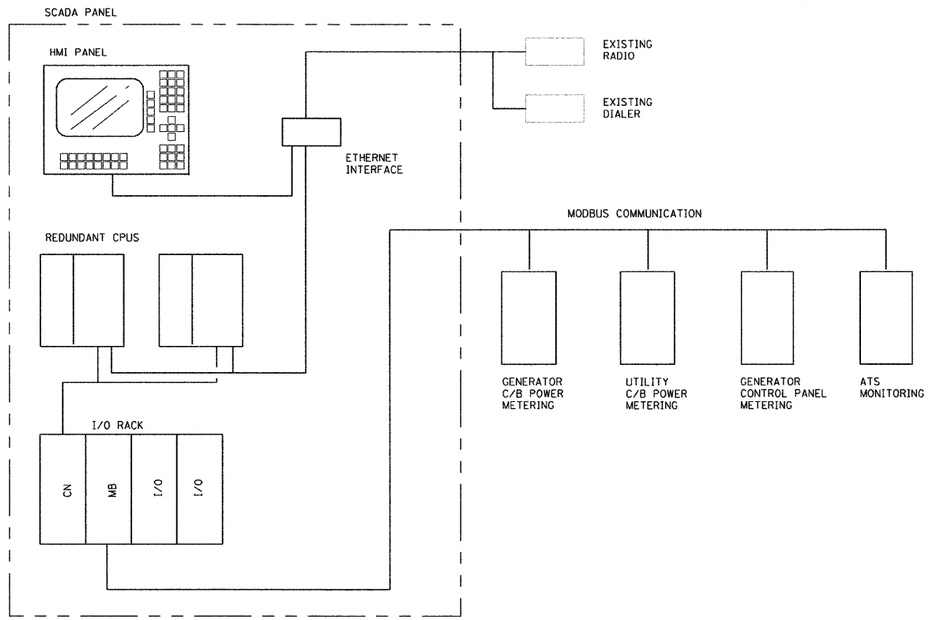
ILLINOIS DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 48
REHABILITATION

SCADA PANEL
LAYOUT AND DETAILS

SCALE: N/A
DRAWN BY: DAK/HFF
DATE: 03-10-11
CHECKED BY: KCC/MS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
365	59(SA, SB&SF)I	DUPAGE	39	37
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		



SCADA SYSTEM DIAGRAMS

DONOHUE & ASSOCIATES

E19

REVISIONS	
NAME	DATE

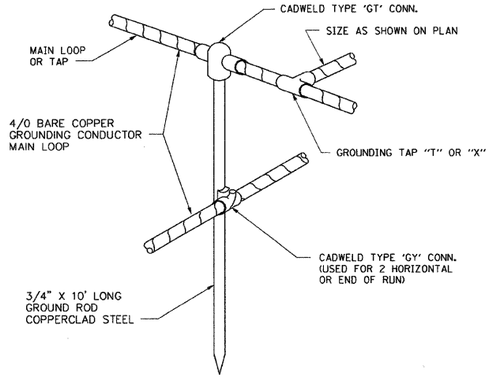
ILLINOIS DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 48
REHABILITATION

SCADA SYSTEM DIAGRAMS

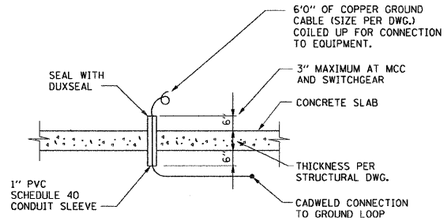
SCALE: N/A
DRAWN BY: HFF
DATE: 03-10-11
CHECKED BY: LET

F.A.P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
365	59(SA, SB&SF)I	DUPAGE	39	38
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		



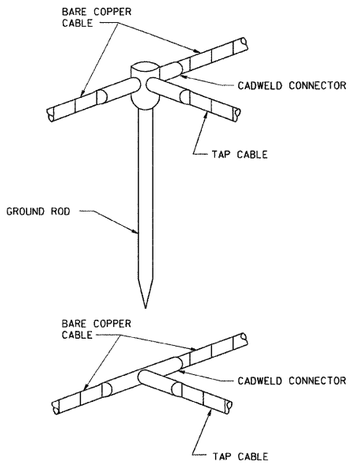
CONDUCTOR TO GROUND ROD CONNECTION DETAIL E451

NTS



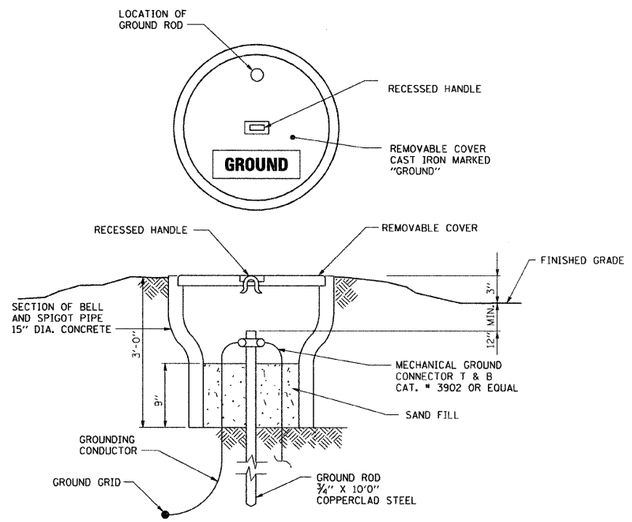
EQUIPMENT GROUND CABLE STUB-UP E452

NTS



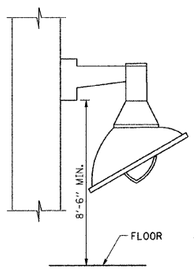
GROUNDING CONNECTION DETAIL E453

NTS



GROUNDING TEST STATION DETAIL E455

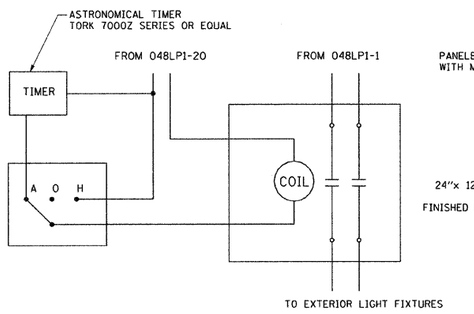
NTS



WALL MOUNTED

FIXTURE MOUNTING DETAIL E500

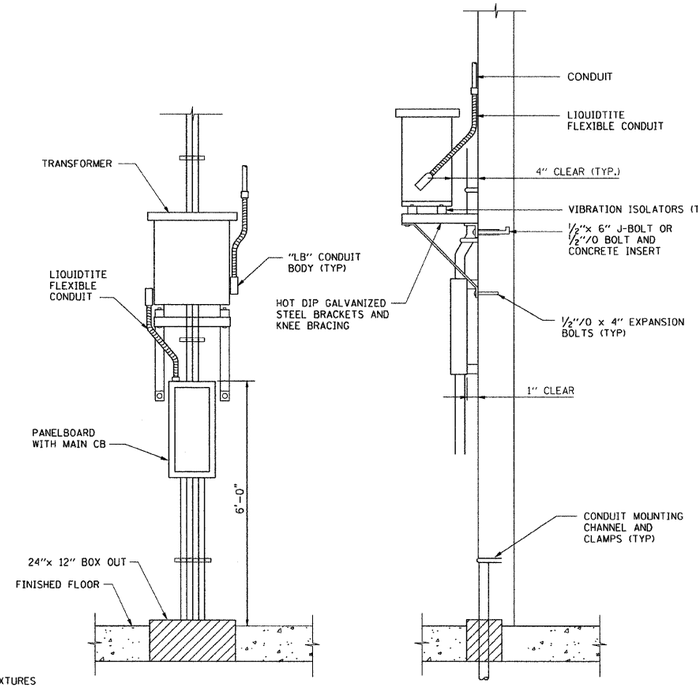
NTS



NOTE: NEMA 1 CONTACTOR WITH H-O-A SWITCH ON OUTER ENCLOSURE

LIGHTING CONTACTOR AND TIMER WIRING DIAGRAM E951

NTS

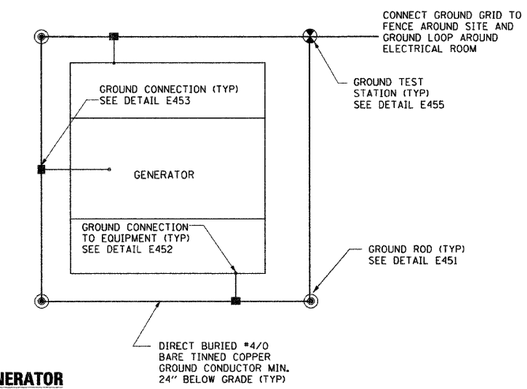


WALL MOUNTED TRANSFORMER AND PANEL BOARD E991

NTS

FIXTURE SCHEDULE

TYPE	DESCRIPTION	LAMPS NO	LAMPS ORD ABB	MANUFACTURER	CATALOG NUMBER	REMARKS
A	1X4 ENCLOSED AND GASKETED FLUORESCENT FIXTURE	2	T8 32W	LITHONIA	DMW-2-32-120-GEB10IS	MOUNTED 9'-6" AFF
D	PULSE START METAL HALIDE WALL PACK	1	175MH	LITHONIA	TWP-175M-120-SCWA-LPI	WALL MOUNTED AS INDICATED FIXTURES SHALL BE LOCATED AT LEAST 3'-0" FROM BLDG OPENINGS
F	EXIT LIGHT WITH LED LAMPS RED LETTERS/WHITE HOUSING	-	WITH UNIT	LITHONIA	LQM-S-W-3-R-120/277- EL N	MOUNTED ABOVE DOOR UNLESS OTHERWISE NOTED
G	EMERGENCY BATTERY LIGHT WITH TWO UNIT MOUNTED LAMP HEADS AND CAPACITY FOR REMOTE HEADS	2	WITH UNIT	LITHONIA	ETL180	WALL MOUNTED 8'-0" ABOVE FLOOR
J	WALL MOUNTED PULSE START METAL HALIDE FLOODLIGHT FIXTURE SUITABLE FOR C1 D1 LOCATION	1	400MH	APPLETON	CFL400-MTCA-AF-EXL-CMR-4AN	SEE (E500) PROVIDE WITH 30" FLEXIBLE CONNECTION
L	WALL MOUNTED PULSE START METAL HALIDE FIXTURE SUITABLE FOR WET LOCATION	1	175MH	APPLETON	LPWBP1775-MT-VPGL-2PL-KR2-AN-MTE	SEE (E500) PROVIDE WITH QUARTZ AUXILIARY EMERGENCY LAMP (MTE) AND SOCKET WHERE INDICATED ON DRAWINGS



GENERATOR GROUNDING DETAIL E999

NTS

DONOHUE & ASSOCIATES

E20

REVISIONS NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

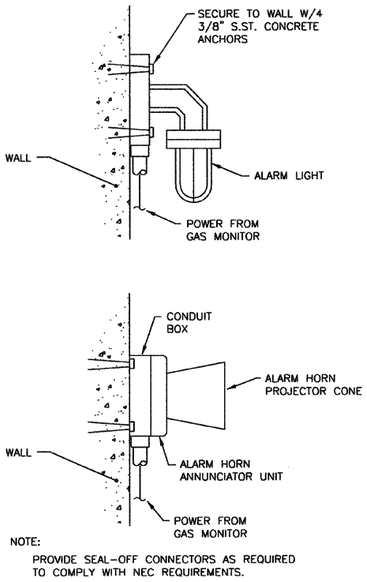
PUMP STATION NO. 48 REHABILITATION

ELECTRICAL DETAILS

SCALE: N/A DRAWN BY: HFF

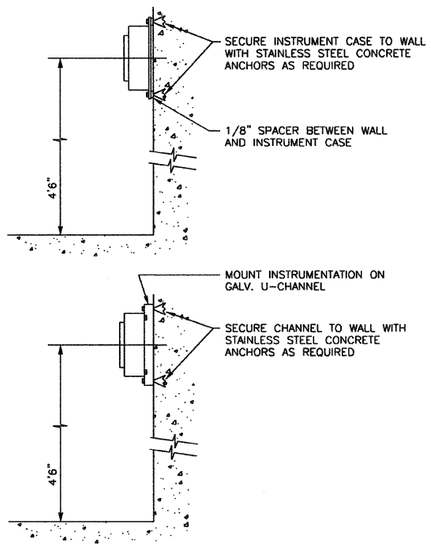
DATE: 03-10-11 CHECKED BY: MS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
365	59(SA, SB&SF)1	DUPAGE	39	39
FED. ROAD DIST. NO. _	ILLINOIS	FED. AID PROJECT		



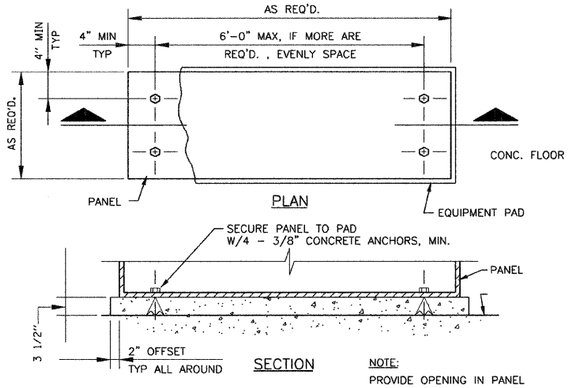
EXTERIOR MOUNTED ALARM LIGHT AND HORN N110

NTS



WALL MOUNT SMALL CASE INSTRUMENTATION N171

NTS

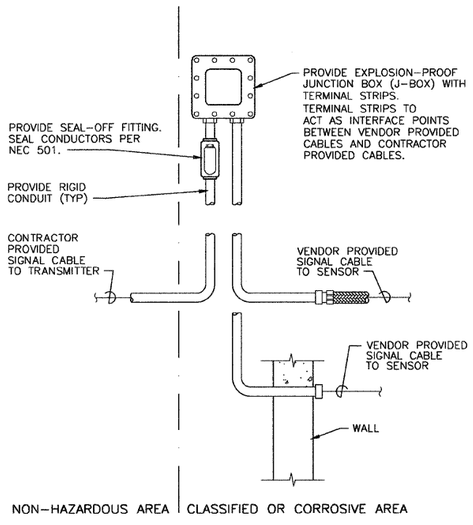


FREE STANDING OR FLOOR MOUNT CONTROL PANEL N003

NTS

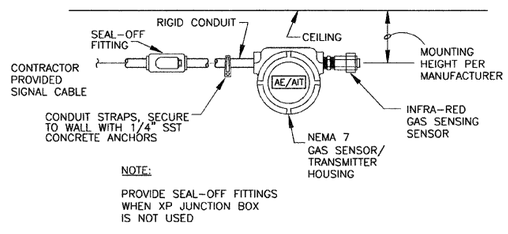
INSTRUMENT PLAN GENERAL NOTES

1. DRAWING SHOWS CONTROL, SIGNAL AND ASSOCIATED SINGLE PHASE POWER WIRING REQUIREMENTS.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WIRING, WHETHER SHOWN OR NOT, NECESSARY FOR A COMPLETE AND OPERABLE SYSTEM.
3. THIS DRAWING SHOWS APPROXIMATE LOCATIONS OF DEVICES AND PANELS AND IS DRAWN TO SCALE.
4. SHIELDED AND UNSHIELDED CONDUCTORS SHALL BE RUN IN CONDUIT. SHIELDED CONDUCTORS SHALL NOT BE COMBINED WITH UNSHIELDED CONDUCTORS IN ANY CONDUIT. NEITHER SHIELDED NOR UNSHIELDED CONDUCTORS SHALL BE INCLUDED IN THE SAME CONDUIT AS POWER WIRING.
5. SHIELDED AND UNSHIELDED CONDUCTORS SHALL HAVE A MINIMUM OF 6" SEPARATION BETWEEN CONDUIT ON PARALLEL RUNS.
6. SHIELDED AND UNSHIELDED CONDUCTORS SHALL BE SEPARATED BY STEEL BARRIERS IN ALL COMBINED SIGNAL JUNCTION BOXES AND INSTRUMENT TERMINATION CABINETS.
7. CONDUCTORS SHALL NOT BE SPLICED EXCEPT AT TERMINALS OR AS DESIGNATED BY ENGINEER.
8. ONLY REQUIRED CONDUCTORS ARE SHOWN ON PLAN. SPARE CONDUCTORS NOT SHOWN.
9. 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 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.
12. PROVIDE EXPLOSION-PROOF SEAL-OFF FITTINGS ON ALL CONDUIT EXITING CLASSIFIED OR RATED LOCATIONS. FITTINGS SHALL BE INSTALLED IN THE CLASSIFIED OR RATED LOCATION.



EXPLOSION-PROOF JUNCTION BOX N160

NTS



COMBUSTIBLE GAS SENSOR/ TRANSMITTER - INFRA-RED N004

NTS

INSTRUMENT PLAN LEGEND

( ) #14	(QUANTITY)	#14 THWN CONDUCTORS
( ) SH.PR.	(QUANTITY)	#16 SHIELDED PAIR
( ) TEL	(QUANTITY)	#18 TELEPHONE CABLE 4 - CONDUCTOR
(X/Y) FOC	(CABLE/STRAND QUANTITY)	FIBER OPTIC CABLE
( ) CAT6	(QUANTITY)	DATA HIGHWAY CABLE
( ) RG62	(QUANTITY)	RG62 A/U COAXIAL CABLE
( ) VFC	(QUANTITY)	VENDOR FURNISHED CABLE
( ) RTD	(QUANTITY)	3 WIRE RTD CABLE

DONOHUE & ASSOCIATES

E21

REVISIONS	
NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

PUMP STATION NO. 48 REHABILITATION

I&C DETAILS

SCALE: AS SHOWN DRAWN BY: HFF

DATE: 03-10-11 CHECKED BY: LET