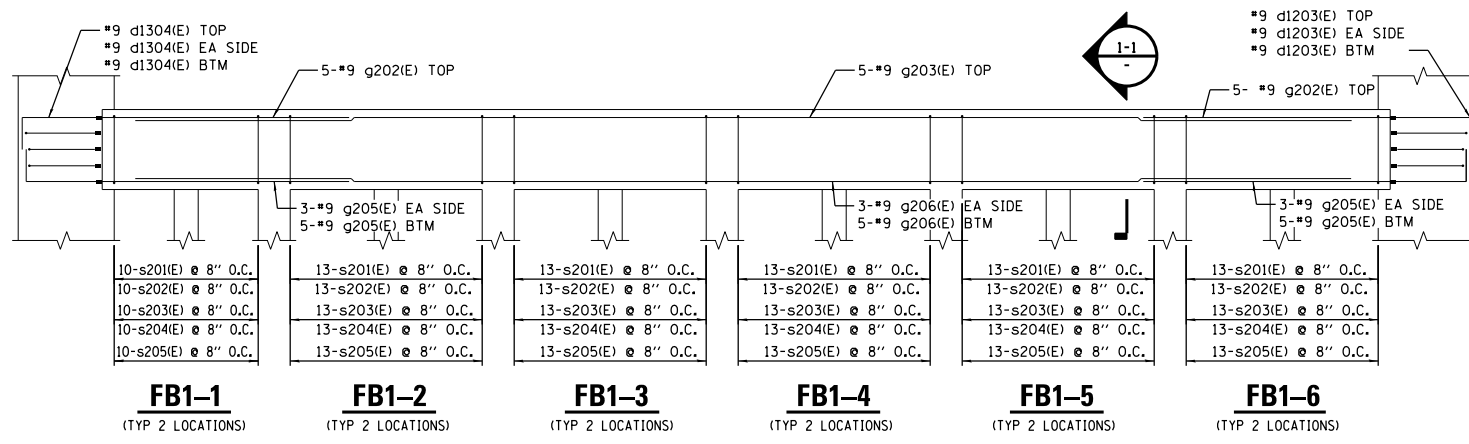
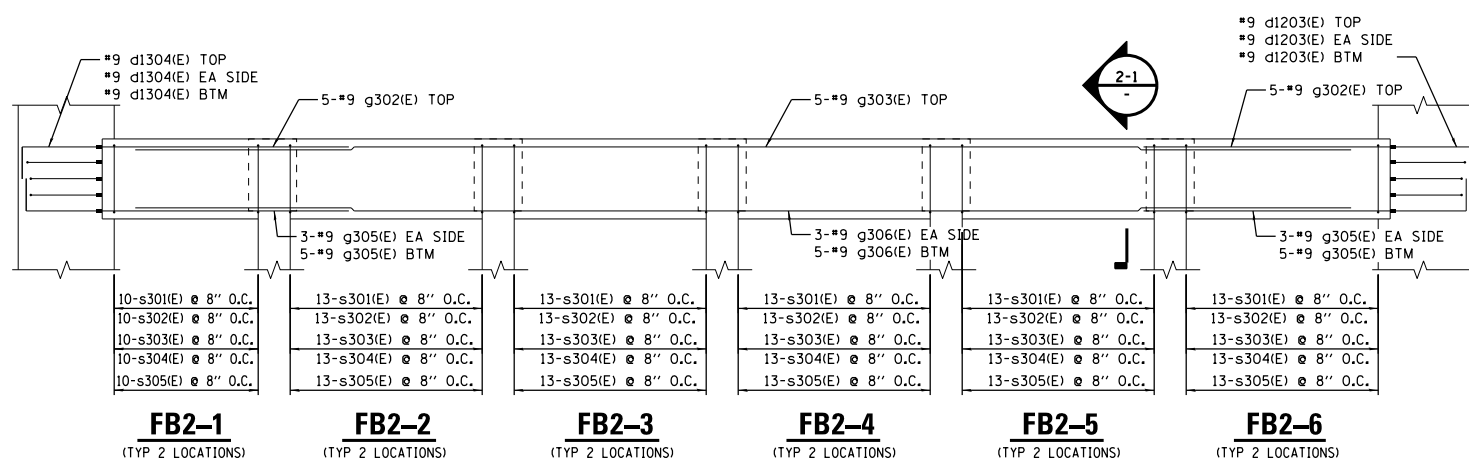
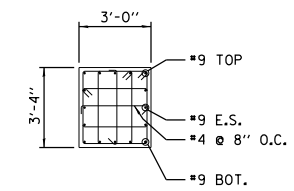


**BILL OF MATERIALS**

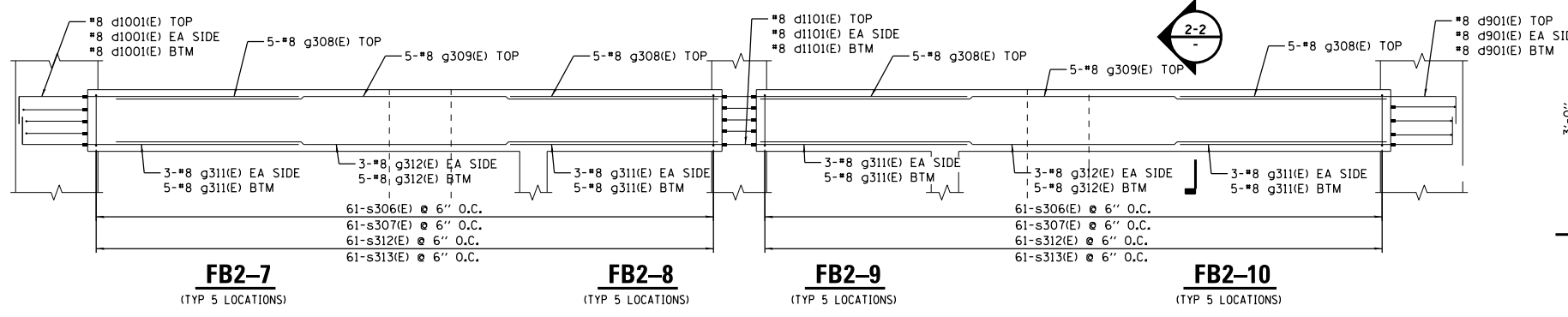
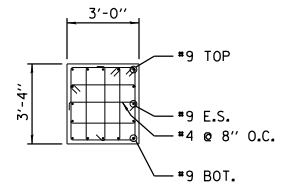
BAR	NO.	SIZE	LENGTH	SHAPE
g202(E)	20	9	10'-6"	—
g203(E)	10	9	49'-4"	—
g205(E)	44	9	10'-6"	—
g206(E)	22	9	49'-4"	—
s201(E)	150	4	12'-1"	□
s202(E)	150	4	9'-5"	□
s203(E)	150	4	9'-1"	□
s204(E)	150	4	3'-5"	⌒
s205(E)	150	4	3'-9"	⌒
g302(E)	20	9	10'-6"	—
g303(E)	10	9	49'-4"	—
g305(E)	44	9	10'-6"	—
g306(E)	22	9	49'-4"	—
s301(E)	150	4	12'-1"	□
s302(E)	150	4	9'-5"	□
s303(E)	150	4	9'-1"	□
s304(E)	150	4	3'-5"	⌒
s305(E)	150	4	3'-9"	⌒
g308(E)	100	8	10'-6"	—
g309(E)	50	8	23'-11"	—
g311(E)	220	8	10'-6"	—
g312(E)	110	8	23'-11"	—
s306(E)	610	4	3'-5"	⌒
s307(E)	610	4	2'-5"	⌒
s312(E)	610	4	9'-5"	□
s313(E)	610	4	6'-9"	□
g316(E)	6	8	9'-0"	—
g318(E)	18	8	9'-0"	—
g321(E)	6	8	8'-7"	—
g322(E)	18	8	8'-7"	—
s308(E)	32	4	6'-5"	□
s309(E)	32	4	4'-9"	□
s310(E)	32	4	2'-5"	⌒
s311(E)	32	4	1'-11"	⌒
REINFORCING BARS EPOXY COATED		POUND	52,481	
CONCRETE STRUCTURES		CU YD	N/A	



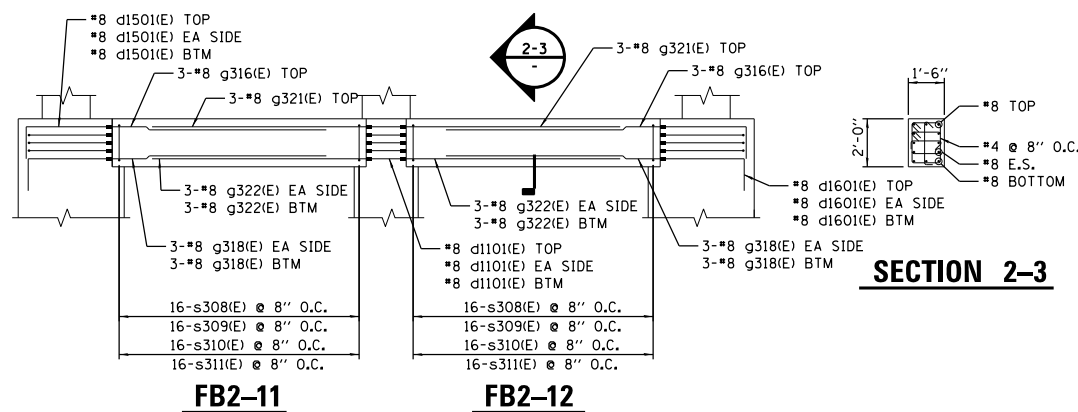
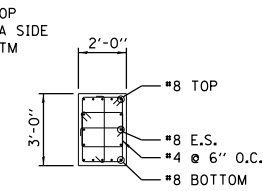
**SECTION 1-1**



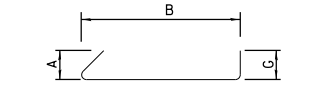
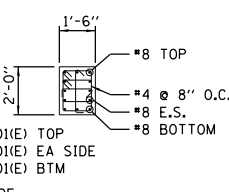
**SECTION 2-1**



**SECTION 2-2**

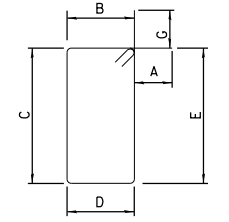


**SECTION 2-3**



BAR	A	B	G
s204(E)	4 1/2"	2'-8"	4 1/2"
s205(E)	4 1/2"	3'-0"	4 1/2"
s304(E)	4 1/2"	2'-8"	4 1/2"
s305(E)	4 1/2"	3'-0"	4 1/2"
s306(E)	4 1/2"	2'-8"	4 1/2"
s307(E)	4 1/2"	1'-8"	4 1/2"
s310(E)	4 1/2"	1'-8"	4 1/2"
s311(E)	4 1/2"	1'-2"	4 1/2"

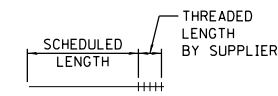
**BARS s204(E), s205(E), s304(E), s305(E), s306(E), s307(E), s310, s311(E)**



BAR	A	B	C	D	E	G
s201(E)	4 1/2"	2'-8"	3'-0"	2'-8"	3'-0"	4 1/2"
s202(E)	4 1/2"	1'-4"	3'-0"	1'-4"	3'-0"	4 1/2"
s203(E)	4 1/2"	2'-8"	1'-6"	2'-8"	1'-6"	4 1/2"
s301(E)	4 1/2"	2'-8"	3'-0"	2'-8"	3'-0"	4 1/2"
s302(E)	4 1/2"	1'-4"	3'-0"	1'-4"	3'-0"	4 1/2"
s303(E)	4 1/2"	2'-8"	1'-6"	2'-8"	1'-6"	4 1/2"
s308(E)	4 1/2"	1'-2"	1'-8"	1'-2"	1'-8"	4 1/2"
s309(E)	4 1/2"	1'-2"	10"	1'-2"	10"	4 1/2"
s312(E)	4 1/2"	1'-8"	2'-8"	1'-8"	2'-8"	4 1/2"
s313(E)	4 1/2"	1'-8"	1'-4"	1'-8"	1'-4"	4 1/2"

**BARS s201(E), s202(E), s203(E), s301(E), s302(E), s303(E), s308(E), s309(E), s312(E), s313(E)**

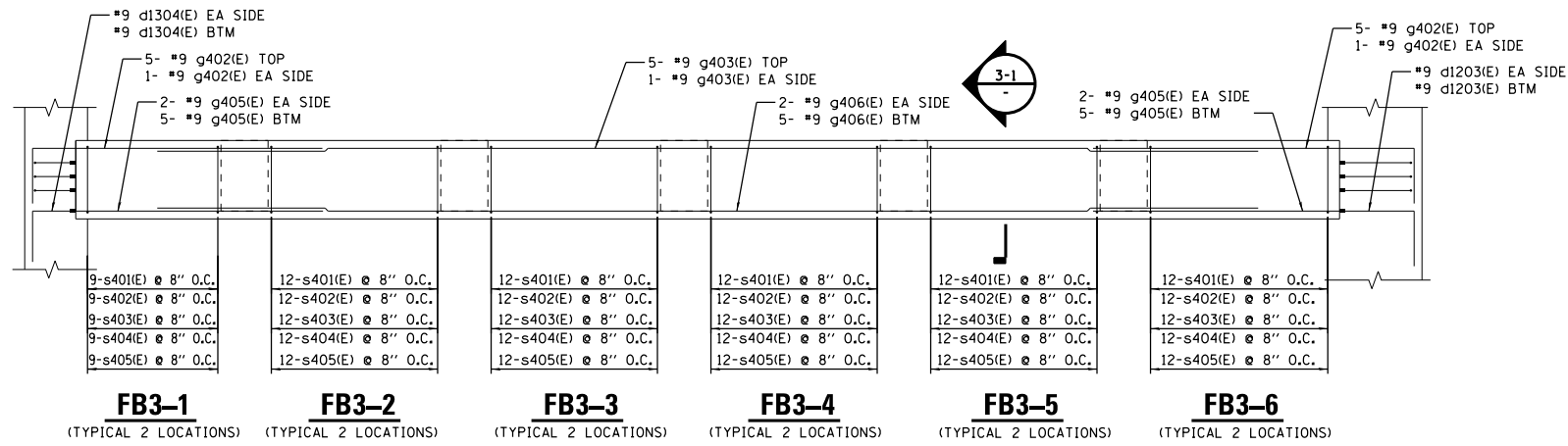
**BARS g202(E), g205(E), g302(E), g305(E), g308(E), g311(E), g316(E), g318(E), g321(E), g322(E)**



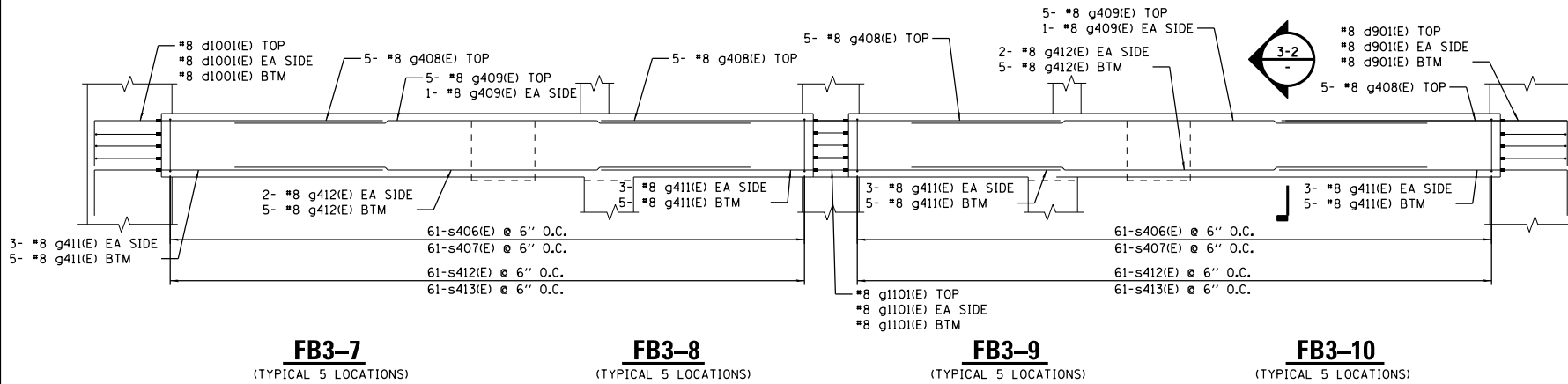
FILE NAME = D191454-S751.DGN  
 USER NAME = bgreen  
 DESIGNED - HDR - M. KIRCHNER  
 DRAWN - HDR - B. GREEN  
 PLOT SCALE = 0.1" = 1'-0"  
 PLOT DATE = 5/29/2019  
 HDR, Inc.  
 8550 W. Bryn Mawr Ave.,  
 Suite 900  
 Chicago, IL 60631  
 STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION  
 I-290 PUMP STATION NO. 4 RECONSTRUCTION  
 BEAM REINFORCING DETAILS - ELEVATION 566.75 STRUTS  
 SCALE: 1/8"=1'-0" SHEET OF SHEETS STA. TO STA.  
 SHEET 5751  
 TOTAL SHEETS 101  
 COUNTY COOK  
 CONTRACT NO. 62B78  
 ILLINOIS FED. AID PROJECT

**BILL OF MATERIALS**

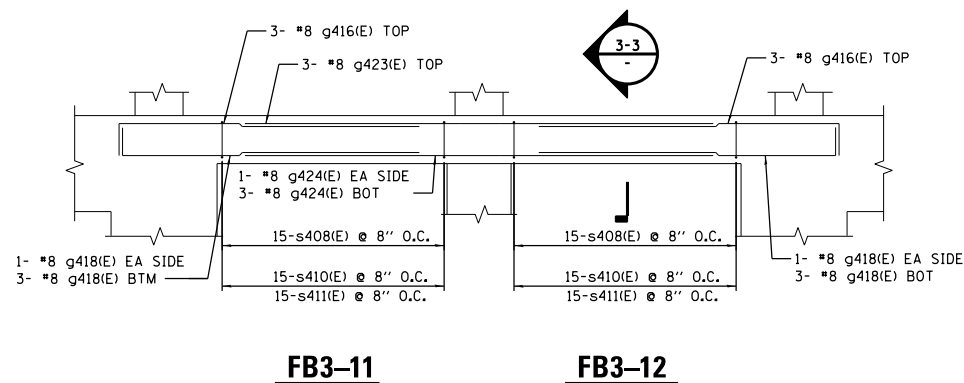
BAR	NO.	SIZE	LENGTH	SHAPE
q402(E)	28	9	10'-6"	—
q403(E)	14	9	49'-2"	—
q405(E)	36	9	10'-6"	—
q406(E)	18	9	49'-2"	—
q408(E)	100	8	10'-6"	—
q409(E)	70	8	23'-11"	—
q411(E)	220	8	10'-6"	—
q412(E)	90	8	23'-11"	—
q416(E)	6	8	13'-7"	—
q418(E)	10	8	13'-7"	—
q423(E)	3	8	22'-8"	—
q424(E)	5	8	22'-8"	—
q501(E)	4	7	7'-3"	—
q503(E)	4	7	7'-3"	—
q505(E)	4	7	7'-3"	—
q507(E)	4	7	7'-3"	—
s401(E)	138	4	12'-1"	□
s402(E)	138	4	9'-5"	□
s403(E)	138	4	9'-1"	□
s404(E)	138	4	3'-5"	—
s405(E)	138	4	3'-9"	—
s406(E)	610	4	3'-5"	—
s407(E)	610	4	2'-5"	—
s408(E)	30	4	6'-5"	□
s410(E)	30	4	2'-5"	—
s411(E)	30	4	1'-11"	—
s412(E)	610	4	9'-5"	□
s413(E)	610	4	6'-9"	□
s501(E)	17	4	4'-1"	□
s503(E)	17	4	4'-1"	□
REINFORCING BARS EPOXY COATED			POUND	40,877
CONCRETE STRUCTURES			CU YD	N/A



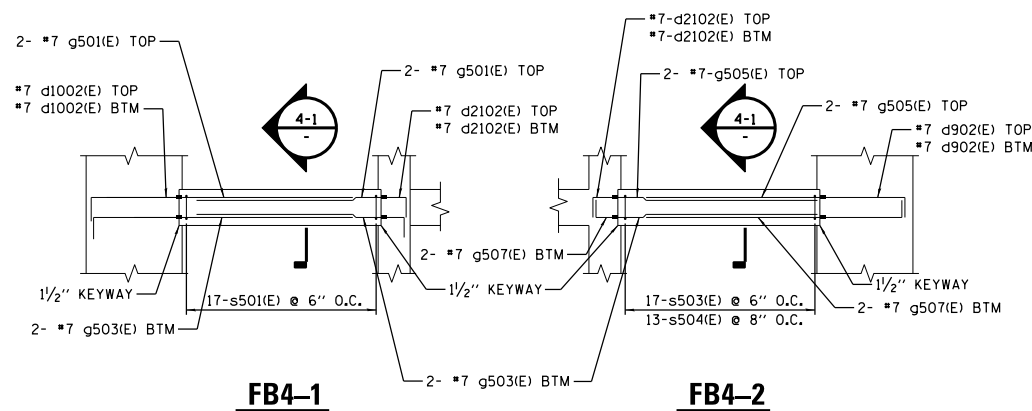
**SECTION 3-1**



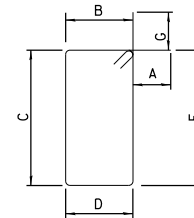
**SECTION 3-2**



**SECTION 3-3**



**SECTION 4-1**



BAR	A	B	G
s404(E)	4 1/2"	2'-8"	4 1/2"
s405(E)	4 1/2"	3'-0"	4 1/2"
s406(E)	4 1/2"	2'-8"	4 1/2"
s407(E)	4 1/2"	1'-8"	4 1/2"
s410(E)	4 1/2"	1'-8"	4 1/2"
s411(E)	4 1/2"	1'-2"	4 1/2"

**BARS s404(E), s405(E), s406(E), s407(E), s410(E), s411(E)**

BAR	A	B	C	D	E	G
s401(E)	4 1/2"	2'-8"	3'-0"	2'-8"	3'-0"	4 1/2"
s402(E)	4 1/2"	1'-4"	3'-0"	1'-4"	3'-0"	4 1/2"
s403(E)	4 1/2"	2'-8"	1'-6"	2'-8"	1'-6"	4 1/2"
s408(E)	4 1/2"	1'-2"	1'-8"	1'-2"	1'-8"	4 1/2"
s412(E)	4 1/2"	1'-8"	2'-8"	1'-8"	2'-8"	4 1/2"
s413(E)	4 1/2"	1'-8"	1'-4"	1'-8"	1'-4"	4 1/2"
s501(E)	4 1/2"	8"	1'-0"	8"	1'-0"	4 1/2"
s503(E)	4 1/2"	8"	1'-0"	8"	1'-0"	4 1/2"

**BARS s401(E), s402(E), s403(E), s408(E), s412(E), s413(E), s501(E), s503(E)**

BAR	A	B
q416(E)	1'-4"	12'-3"
q418(E)	1'-4"	12'-3"

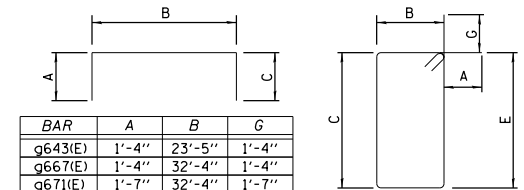
**BARS q416(E), q418(E)**

**BARS q402(E), q405(E), q408(E), q411(E), q501(E), q503(E), q505(E), q507(E)**

P:\15\15\15\CON0878431\0808080227972\6.6.CAD\_BIM\6.2\_Work\_In\_Progress\6.2.2\_CAD\_Sheets\0191454-S752

**BILL OF MATERIALS**

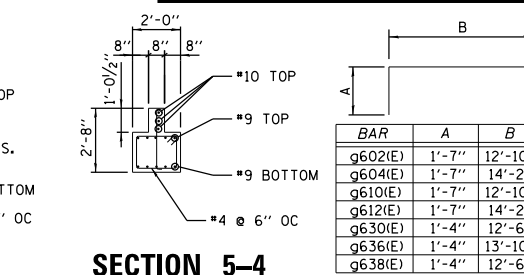
BAR	NO.	SIZE	LENGTH	SHAPE
g602(E)	7	9	14'-5"	
g603(E)	7	9	48'-9"	
g604(E)	7	9	15'-9"	
g606(E)	22	9	10'-6"	
g607(E)	11	9	48'-9"	
g610(E)	7	9	14'-5"	
g611(E)	7	9	48'-9"	
g612(E)	7	9	15'-9"	
g614(E)	22	9	10'-6"	
g615(E)	11	9	48'-9"	
g618(E)	6	10	11'-0"	
g620(E)	20	9	11'-0"	
g621(E)	1	8	32'-4"	
g622(E)	10	9	24'-0"	
g624(E)	40	9	11'-0"	
g626(E)	56	9	11'-0"	
g627(E)	12	9	32'-4"	
g630(E)	8	8	12'-0"	
g632(E)	2	8	17'-4"	
g633(E)	6	8	6'-10"	
g636(E)	10	8	15'-2"	
g637(E)	10	8	25'-8"	
g638(E)	10	8	13'-10"	
g640(E)	20	8	10'-6"	
g641(E)	10	8	25'-8"	
g643(E)	3	8	26'-1"	
g644(E)	3	8	23'-5"	
g667(E)	4	8	35'-0"	
g669(E)	2	8	28'-0"	
g671(E)	8	9	35'-6"	
g676(E)	6	8	13'-10"	
g677(E)	6	10	25'-6"	
g678(E)	10	9	35'-4"	
g679(E)	40	9	23'-0"	
g680(E)	56	9	35'-4"	
s601(E)	132	4	10'-9"	
s602(E)	132	4	10'-1"	
s603(E)	132	4	8'-1"	
s604(E)	132	4	3'-9"	
s605(E)	60	4	3'-1"	
s606(E)	60	4	6'-7"	
s627(E)	32	4	8'-9"	
s628(E)	32	4	7'-1"	
s629(E)	32	4	2'-5"	
s630(E)	240	4	6'-9"	
s631(E)	240	4	7'-3"	
s632(E)	128	4	9'-5"	
s633(E)	128	4	6'-9"	
s634(E)	128	4	2'-9"	
s608(E)	20	4	8'-9"	
s609(E)	20	4	7'-5"	
s610(E)	20	4	6'-5"	
s611(E)	92	4	6'-9"	
s612(E)	92	4	2'-5"	
s613(E)	32	4	6'-1"	
s614(E)	32	4	2'-1"	
REINFORCING BARS		POUND	41,016	
EPOXY COATED				
CONCRETE STRUCTURES		CU YD	N/A	



**BARS g643(E), g667(E), g671(E)**

BAR	A	B	C	D	E	G
s601(E)	4 1/2"	2'-0"	3'-0"	2'-0"	3'-0"	4 1/2"
s602(E)	4 1/2"	2'-8"	2'-0"	2'-8"	2'-0"	4 1/2"
s603(E)	4 1/2"	2'-8"	1'-0"	2'-8"	1'-0"	4 1/2"
s606(E)	4 1/2"	1'-8"	1'-3"	1'-8"	1'-3"	4 1/2"
s608(E)	4 1/2"	1'-8"	2'-4"	1'-8"	2'-4"	4 1/2"
s609(E)	4 1/2"	1'-0"	2'-4"	1'-0"	2'-4"	4 1/2"
s610(E)	4 1/2"	1'-8"	1'-2"	1'-8"	1'-2"	4 1/2"
s611(E)	4 1/2"	1'-4"	1'-8"	1'-4"	1'-8"	4 1/2"
s613(E)	4 1/2"	1'-4"	1'-4"	1'-4"	1'-4"	4 1/2"
s627(E)	4 1/2"	1'-8"	2'-4"	1'-8"	2'-4"	4 1/2"
s628(E)	4 1/2"	10"	2'-4"	10"	2'-4"	4 1/2"
s630(E)	4 1/2"	8"	2'-4"	8"	2'-4"	4 1/2"
s631(E)	4 1/2"	2'-0"	1'-3"	2'-0"	1'-3"	4 1/2"
s632(E)	4 1/2"	2'-0"	2'-0"	2'-0"	2'-4"	4 1/2"
s633(E)	4 1/2"	8"	2'-4"	8"	2'-4"	4 1/2"

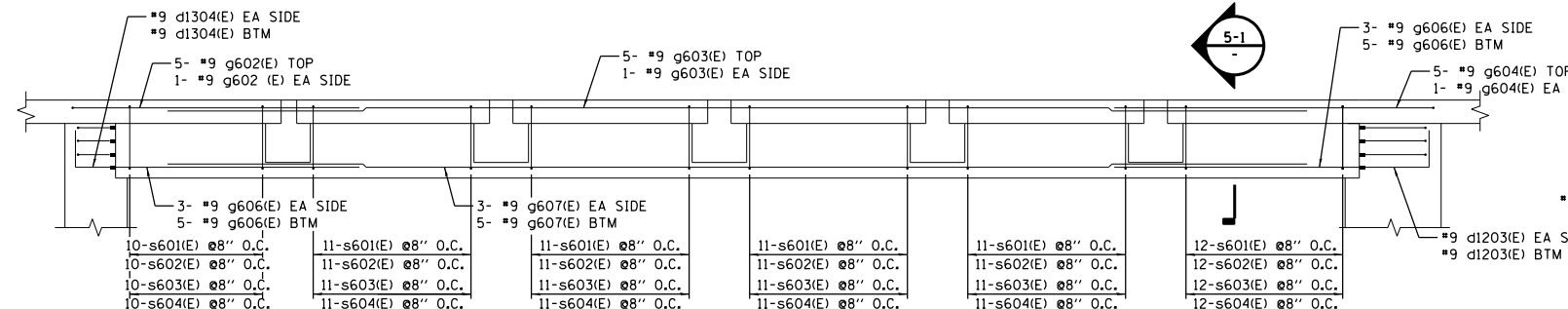
**BARS s601(E), s602(E), s603(E), s606(E), s627(E), s628(E), s630(E), s631(E), s632(E), s633(E), s608(E), s609(E), s610(E), s611(E), s613(E)**



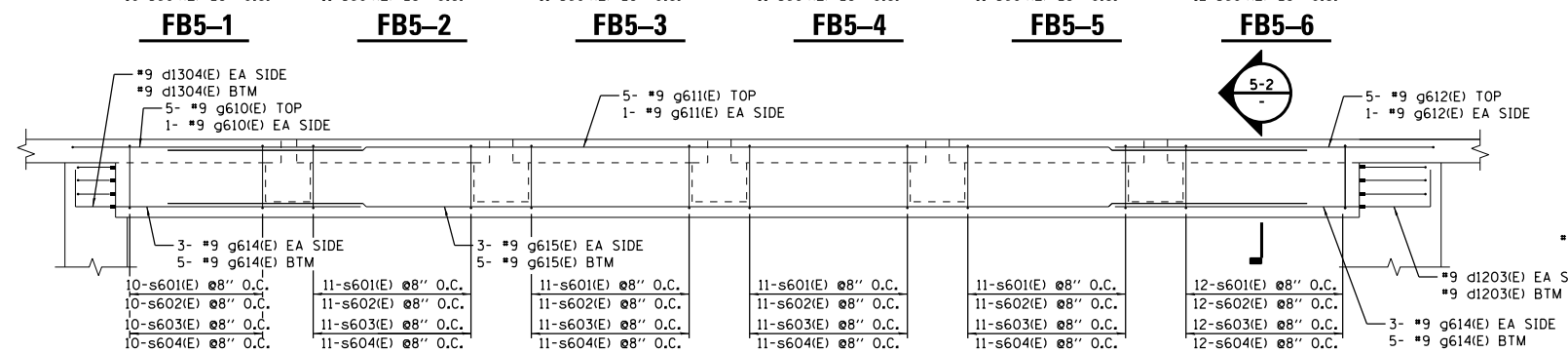
**BARS q602(E), q604(E), q610(E), q612(E), q630(E), q636(E), q638(E)**

BAR	A	B	G
q602(E)	1'-7"	12'-10"	
q604(E)	1'-7"	14'-2"	
q610(E)	1'-7"	12'-10"	
q612(E)	1'-7"	14'-2"	
q630(E)	1'-4"	13'-10"	
q636(E)	1'-4"	13'-10"	
q638(E)	1'-4"	12'-6"	
s604(E)	4 1/2"	3'-0"	4 1/2"
s605(E)	4 1/2"	2'-4"	4 1/2"
s612(E)	4 1/2"	1'-8"	4 1/2"
s614(E)	4 1/2"	1'-4"	4 1/2"
s629(E)	4 1/2"	1'-8"	4 1/2"
s634(E)	4 1/2"	2'-0"	4 1/2"

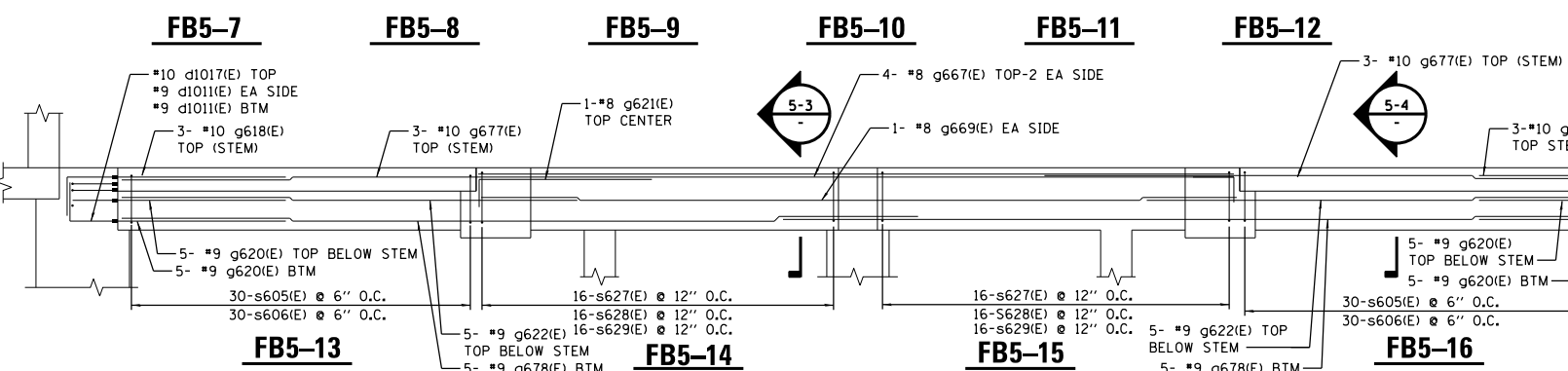
**BARS s604(E), s605(E), s629(E), s634(E), s612(E), s614(E)**



**SECTION 5-1**

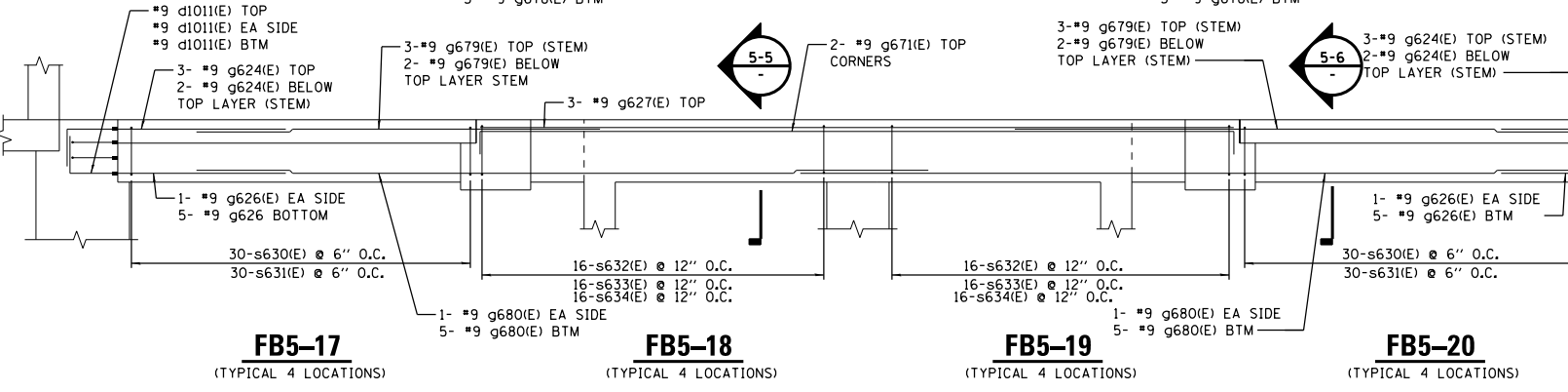


**SECTION 5-2**



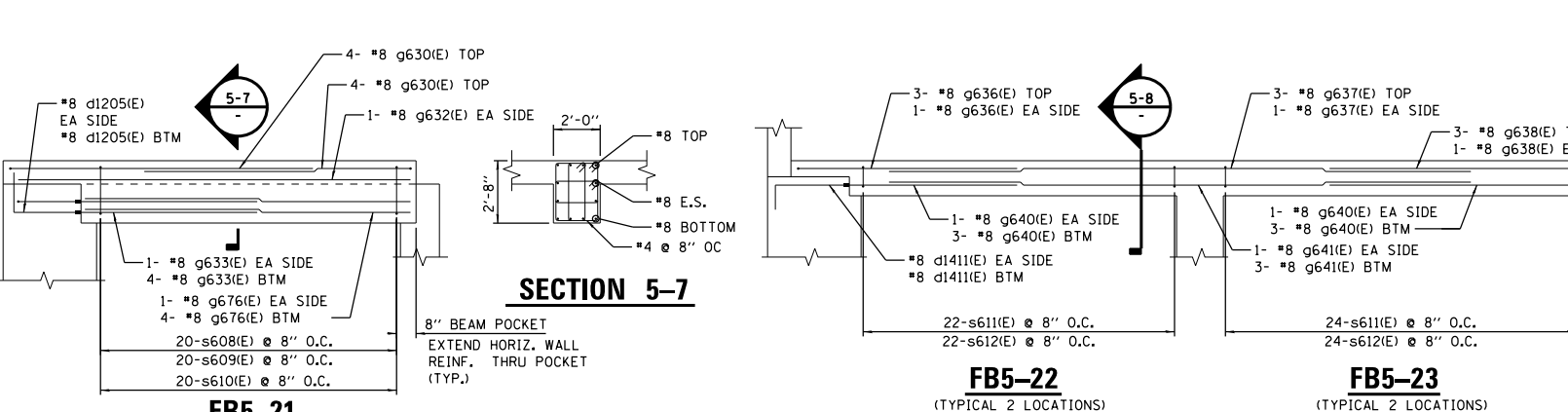
**SECTION 5-3**

**SECTION 5-4**



**SECTION 5-5**

**SECTION 5-6**



**SECTION 5-8**

**SECTION 5-9**

FILE NAME = D191454-S753.DGN  
 USER NAME = bgreen  
 DESIGNED - HDR - M. KIRCHNER  
 DRAWN - HDR - B. GREEN  
 PLOT SCALE = 0.1" = 1'-0"  
 PLOT DATE = 5/29/2019  
 CHECKED - HDR - B. BRADLEY  
 DATE - 05/30/2019  
 REVISIONS  
 STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION  
 I-290 PUMP STATION NO. 4 RECONSTRUCTION  
 BEAM REINFORCING DETAILS - ELEVATION 603.75 STRUTS  
 SCALE: 1/8"=1'-0" SHEET OF SHEETS STA. TO STA.  
 SHEET 5753  
 TOTAL SHEETS 103  
 COUNTY COOK  
 CONTRACT NO. 62B78  
 ILLINOIS FED. AID PROJECT



HDR, Inc.  
 8550 W. Bryn Mawr Ave.  
 Suite 900  
 Chicago, IL 60631

USER NAME = bgreen  
 DESIGNED - HDR - M. KIRCHNER  
 DRAWN - HDR - B. GREEN  
 PLOT SCALE = 0.1" = 1'-0"  
 PLOT DATE = 5/29/2019  
 CHECKED - HDR - B. BRADLEY  
 DATE - 05/30/2019  
 REVISIONS

STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION  
 I-290 PUMP STATION NO. 4 RECONSTRUCTION  
 BEAM REINFORCING DETAILS - ELEVATION 603.75 STRUTS  
 SCALE: 1/8"=1'-0" SHEET OF SHEETS STA. TO STA.

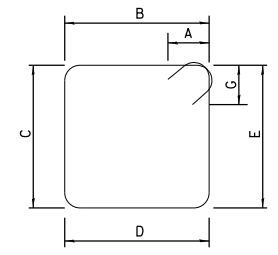
SHEET 5753  
 TOTAL SHEETS 103  
 COUNTY COOK  
 CONTRACT NO. 62B78  
 ILLINOIS FED. AID PROJECT

SHEET 5753  
 TOTAL SHEETS 103  
 COUNTY COOK  
 CONTRACT NO. 62B78  
 ILLINOIS FED. AID PROJECT

**BILL OF MATERIALS**

BAR	NO.	SIZE	LENGTH	SHAPE	
g646(E)	10	8	13'-4"	□	
g647(E)	6	8	17'-4"	□	
g649(E)	14	8	10'-6"	□	
g650(E)	18	8	17'-4"	□	
g651(E)	6	8	15'-2"	□	
g652(E)	10	8	8'-0"	□	
g654(E)	18	8	9'-2"	□	
g655(E)	14	8	8'-0"	□	
g657(E)	6	8	41'-6"	□	
g658(E)	18	8	30'-8"	□	
g660(E)	5	8	17'-2"	□	
g661(E)	5	8	23'-8"	□	
g662(E)	5	8	12'-10"	□	
g664(E)	5	8	12'-6"	□	
g665(E)	5	8	23'-8"	□	
g666(E)	5	8	9'-6"	□	
h601(E)	48	4	2'-6"	□	
h602(E)	96	4	4'-4"	□	
h603(E)	40	4	6'-0"	□	
h605(E)	8	4	10'-0"	□	
s615(E)	150	4	6'-5"	□	
s616(E)	150	4	4'-9"	□	
s617(E)	150	4	2'-5"	□	
s618(E)	150	4	1'-11"	□	
s619(E)	45	4	6'-9"	□	
s621(E)	45	4	2'-5"	□	
v601(E)	200	4	4'-4"	□	
REINFORCING BARS EPOXY COATED CONCRETE STRUCTURES				POUND	9,449
				CU YD	N/A

- NOTES:**
- ALL REINFORCING BARS SHALL BE PRE-CUT IN THE SHOP AT OPENING LOCATIONS.
  - COORDINATE WALL AND SLAB PENETRATIONS WITH ALL OTHER DISCIPLINE DRAWINGS.

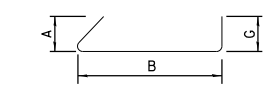


BAR	A	B
g646(E)	1'-4"	12'-0"
g647(E)	1'-4"	16'-0"
g650(E)	1'-4"	16'-0"
g654(E)	1'-4"	8'-5"
g660(E)	1'-4"	15'-10"
g662(E)	1'-4"	11'-6"
h602(E)	8"	3'-8"
v601(E)	8"	3'-8"

**BARS g646(E), g647(E), g650(E), g654(E), g660(E), g662(E), h602(E), v601(E)**

BAR	A	B	C	D	E	G
s615(E)	0'-4 1/2"	1'-2"	1'-8"	1'-2"	1'-8"	0'-4 1/2"
s616(E)	0'-4 1/2"	1'-2"	0'-10"	1'-2"	0'-10"	0'-4 1/2"
s619(E)	0'-4 1/2"	1'-4"	1'-8"	1'-4"	1'-8"	0'-4 1/2"

**BARS s615(E), s616(E), s619(E),**



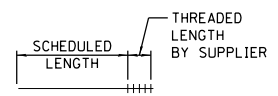
BAR	A	B	G
s617(E)	0'-4 1/2"	1'-8"	0'-4 1/2"
s618(E)	0'-4 1/2"	1'-2"	0'-4 1/2"
s621(E)	0'-4 1/2"	1'-8"	0'-4 1/2"

**BARS s617(E), s618(E), s621(E)**

BAR	A	B	G
g658(E)	1'-4"	28'-0"	1'-4"
h603(E)	0'-8"	4'-8"	0'-8"
h605(E)	0'-8"	8'-8"	0'-8"

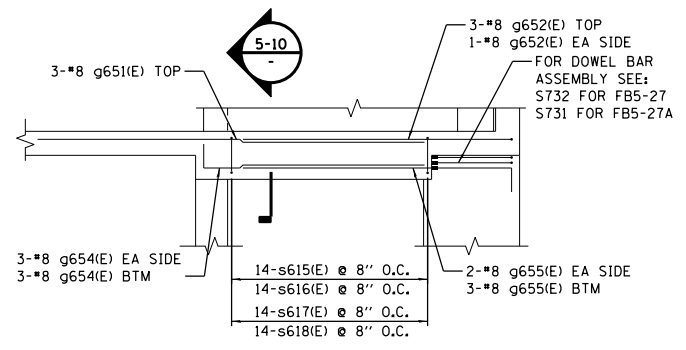
**BARS g658(E), h603(E), h605(E)**

**BARS g646(E), g649(E), g652(E), g655(E), g664(E), g664(E), g666(E), h601(E)**



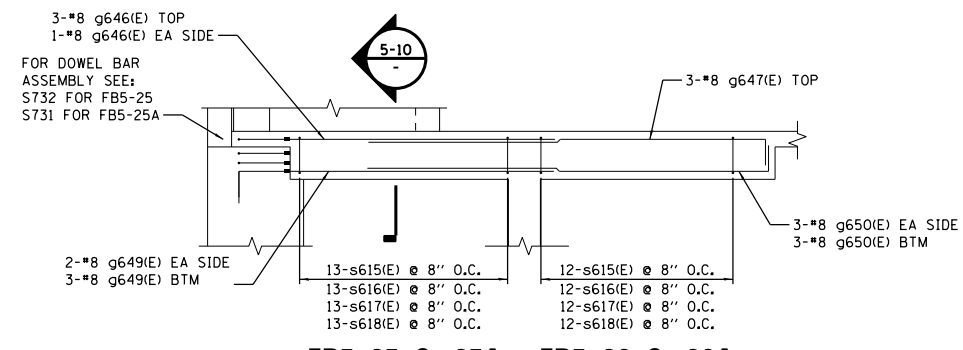
**BARS g646(E), g649(E), g652(E), g655(E), g664(E), g664(E), g666(E), h601(E)**

NOTE: FB5-27A SHOWN, FB5-27 IS OPPOSITE HAND.



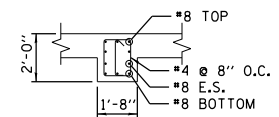
**FB5-27 & 27A**

**SECTION 5-10**



**FB5-25 & 25A FB5-26 & 26A**

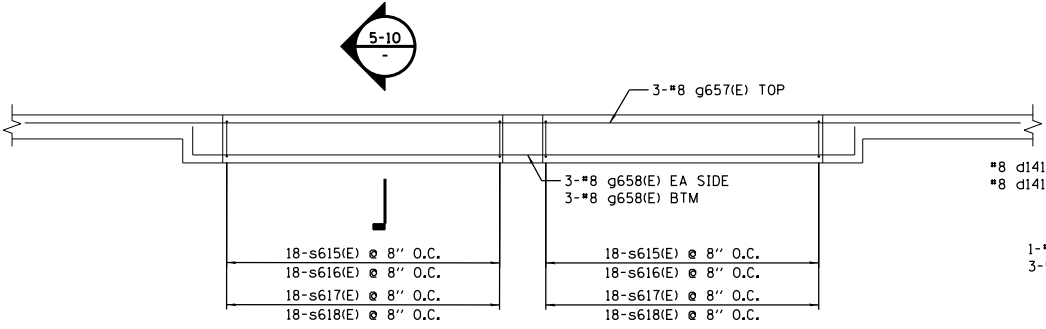
NOTE: FB5-25 & FB5-26 SHOWN, FB5-25A & FB5-26A ARE OPPOSITE HAND.



**SECTION 5-11**

**FB5-30**

**FB5-31**

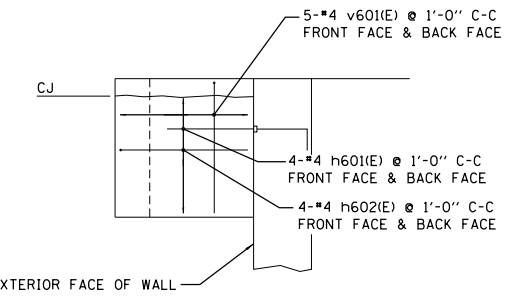


**FB5-28**

**FB5-29**

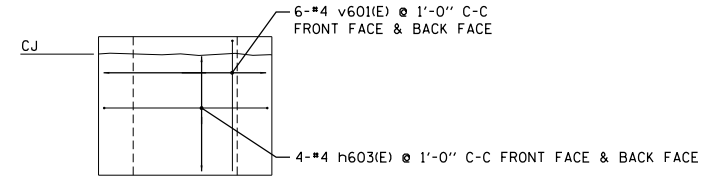
(TYPICAL 2 LOCATIONS)

(TYPICAL 2 LOCATIONS)



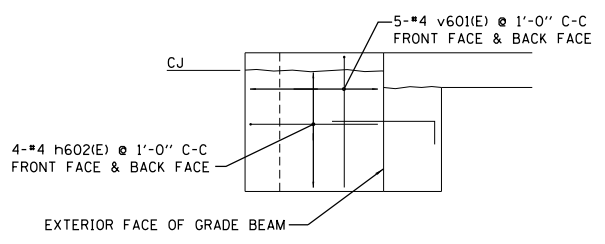
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(QTY: 6)



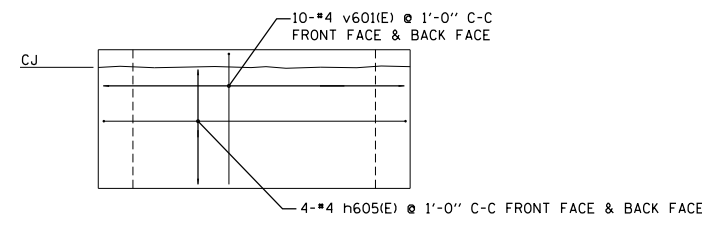
**GB5-15**

(QTY: 5)



**GB5-16**

(QTY: 6)



**GB5-17**

(QTY: 1)

D:\Projects\2019\15\CON\0078431\00000000027972\6.6.CAD\_BIM\6.2.Work\In\_Progress\6.2.2.CAD\_Sheets\0191454-5754

HDR, Inc.  
8550 W. Bryn Mawr Ave., Suite 900  
Chicago, IL 60631

USER NAME = bgreen  
PLOT SCALE = 0:1' = 1/8" / 1" / 16"  
PLOT DATE = 5/29/2019

DESIGNED - HDR - M. KIRCHNER  
DRAWN - HDR - B. GREEN  
CHECKED - HDR - B. BRADLEY  
DATE - 05/30/2019

REVISED -  
REVISED -  
REVISED -  
REVISED -

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

I-290 PUMP STATION NO. 4 RECONSTRUCTION  
BEAM REINFORCING DETAILS - ELEVATION 624.83 STRUTS  
SCALE: 1/8"=1'-0" SHEET OF SHEETS STA. TO STA.

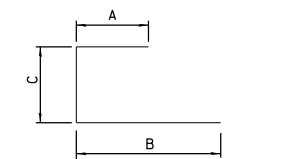
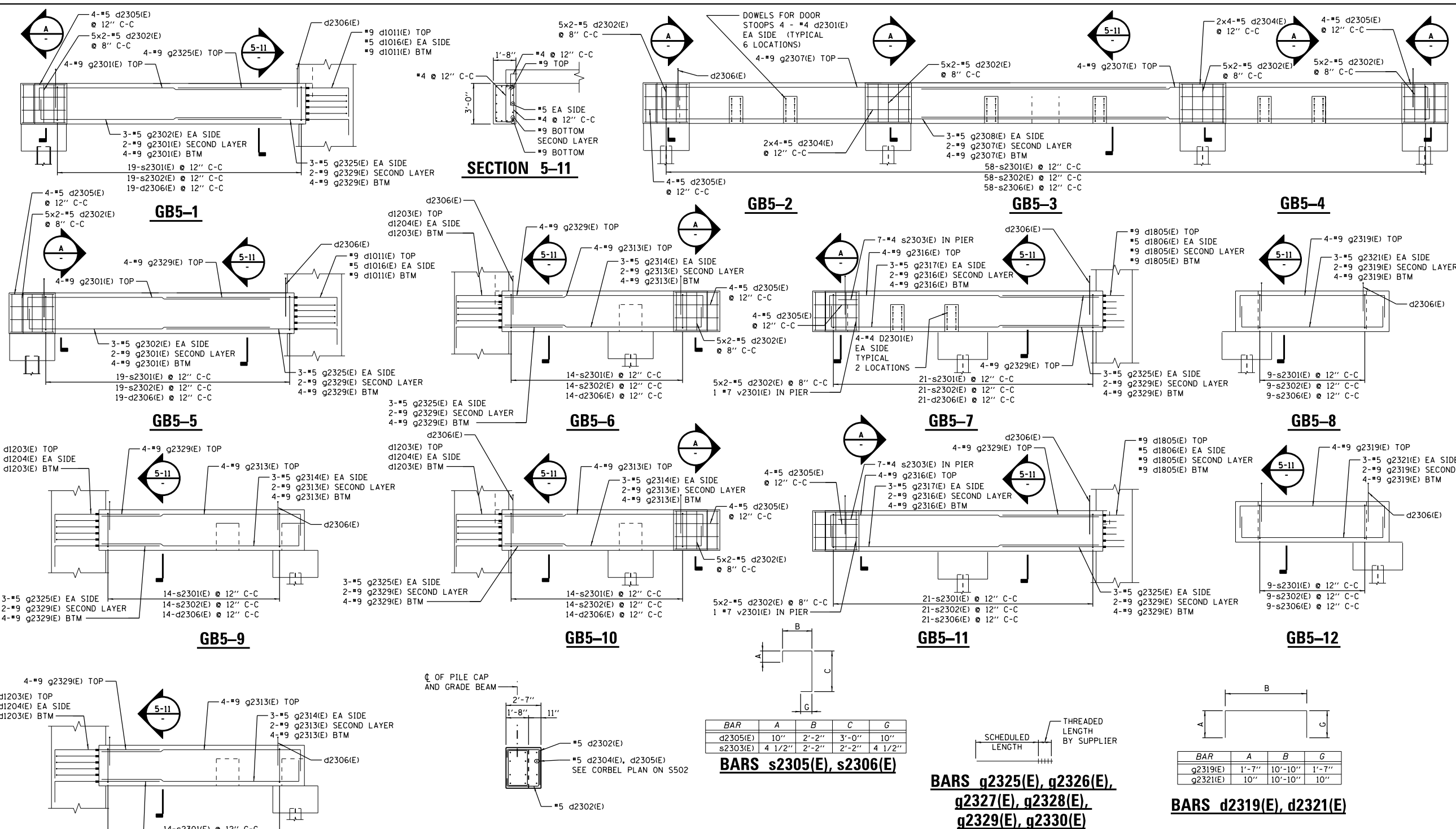
F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	104

CONTRACT NO. 62B78  
ILLINOIS FED. AID PROJECT

SHEET  
S754

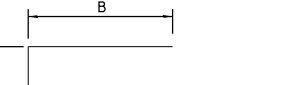


BILL OF MATERIALS				
BAR	NO.	SIZE	LENGTH	SHAPE
q2301(E)	20	9	20'-10"	
q2302(E)	12	6	20'-1"	
q2307(E)	20	9	34'-7"	
q2308(E)	12	5	30'-10"	
q2313(E)	60	9	16'-0"	
q2314(E)	24	5	15'-3"	
q2316(E)	20	9	21'-8"	
q2317(E)	12	5	20'-11"	
q2319(E)	20	9	14'-0"	
q2321(E)	12	5	12'-6"	
q2325(E)	48	5	3'-3"	
q2329(E)	80	9	9'-0"	
d2301(E)	64	4	4'-8"	
d2302(E)	100	5	5'-8"	
d2304(E)	16	5	5'-8"	
d2305(E)	32	5	6'-10"	
d2306(E)	212	4	2'-10"	
s2301(E)	212	4	8'-7"	
s2302(E)	212	4	3'-4"	
s2306(E)	14	4	5'-1"	
v2301(E)	2	7	2'-7"	
REINFORCING BARS EPOXY COATED		POUND	16,865	
CONCRETE STRUCTURES		CU YD	N/A	



BAR	A	B	C
d2302(E)	10"	2'-3"	2'-7"
d2304(E)	10"	2'-8"	2'-2"

**BARS d2302(E), d2304(E)**



BAR	A	B
d2301(E)	8"	4'-0"
q2319(E)	1'-7"	10'-10"
d2306(E)	8"	2'-2"
q2301(E)	1'-7"	19'-3"
q2302(E)	10"	19'-3"
q2307(E)	1'-7"	33'-0"
q2308(E)	10"	30'-0"
q2313(E)	1'-7"	14'-5"
q2314(E)	10"	14'-5"
q2316(E)	1'-7"	20'-1"
q2317(E)	10"	20'-1"

**BARS d2301(E), d2306(E),  
q2301(E), q2302(E),  
q2307(E), q2308(E), q2313(E),  
q2314(E), q2316(E), q2317(E),**

BAR	A	B	C	G
d2305(E)	10"	2'-2"	3'-0"	10"
s2303(E)	4 1/2"	2'-2"	2'-2"	4 1/2"

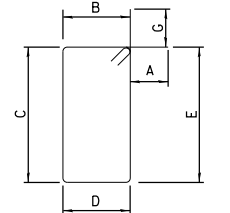
**BARS s2305(E), s2306(E)**

**BARS q2325(E), q2326(E),  
q2327(E), q2328(E),  
q2329(E), q2330(E)**

BAR	A	B	G
q2319(E)	1'-7"	10'-10"	1'-7"
q2321(E)	10"	10'-10"	10"

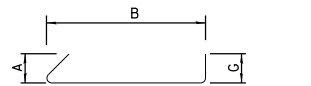
**BARS d2319(E), d2321(E)**

**SECTION A**



BAR	A	B	C	D	E	G
s2301(E)	4 1/2"	1'-4"	2'-7"	1'-4"	2'-7"	4 1/2"

**BARS s2301(E)**



BAR	A	B	G
s2302(E)	4 1/2"	2'-7"	4 1/2"

**BARS s2302(E)**

FILE NAME = D191454-S755.DGN  
 USER NAME = bgreen  
 DESIGNED - HDR - M. KIRCHNER  
 DRAWN - HDR - B. GREEN  
 PLOT SCALE = 0:1' = 1/8" = 1/8"  
 PLOT DATE = 5/29/2019  
 HDR, Inc.  
 8550 W. Bryn Mawr Ave.  
 Suite 900  
 Chicago, IL 60631



DESIGNED	REVISIONS
HDR - M. KIRCHNER	REVISIONS -
HDR - B. GREEN	REVISIONS -
HDR - B. BRADLEY	REVISIONS -
DATE - 05/30/2019	REVISIONS -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
BEAM REINFORCING DETAILS - ELEVATION 624.83 STRUTS**

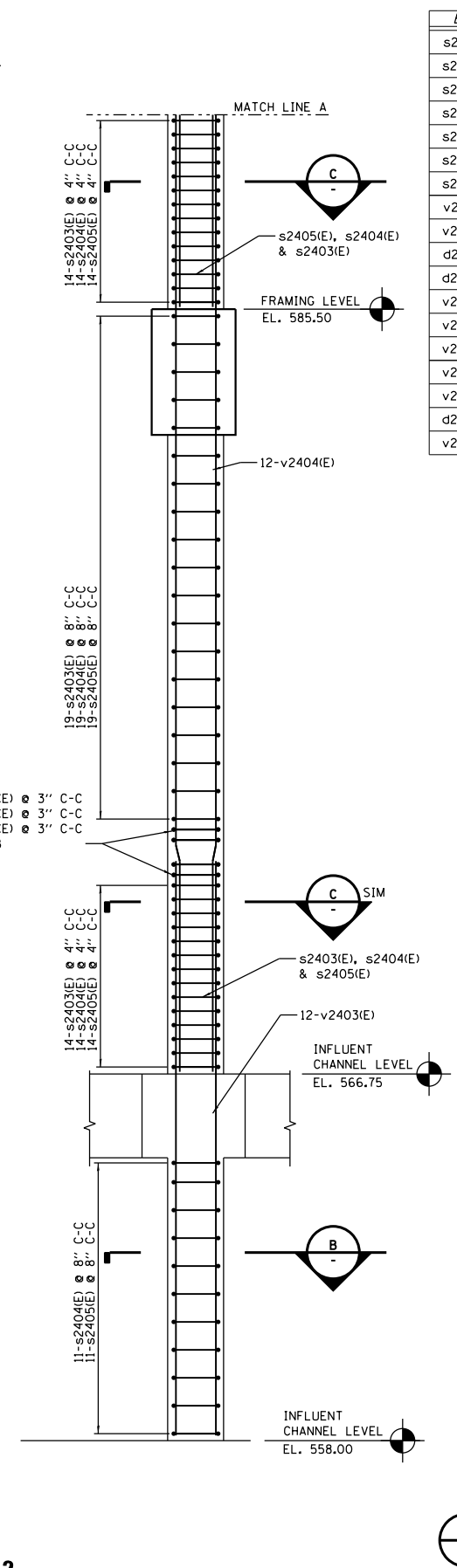
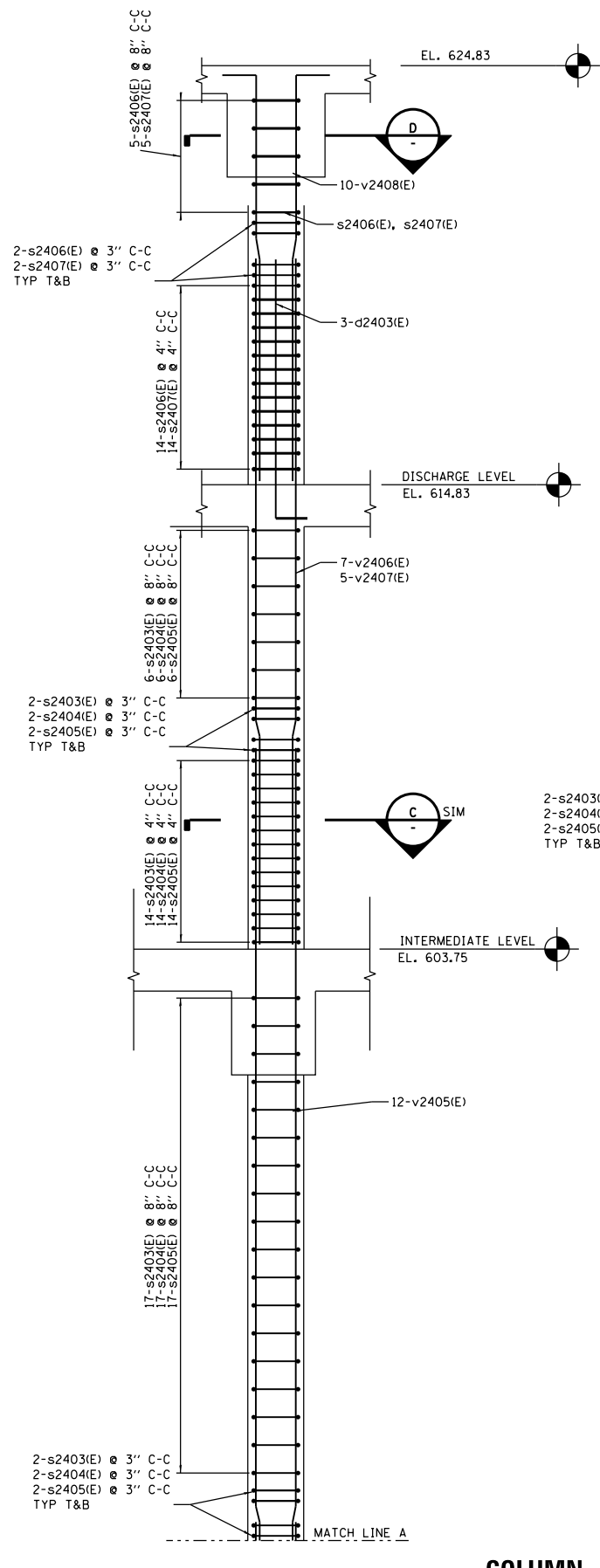
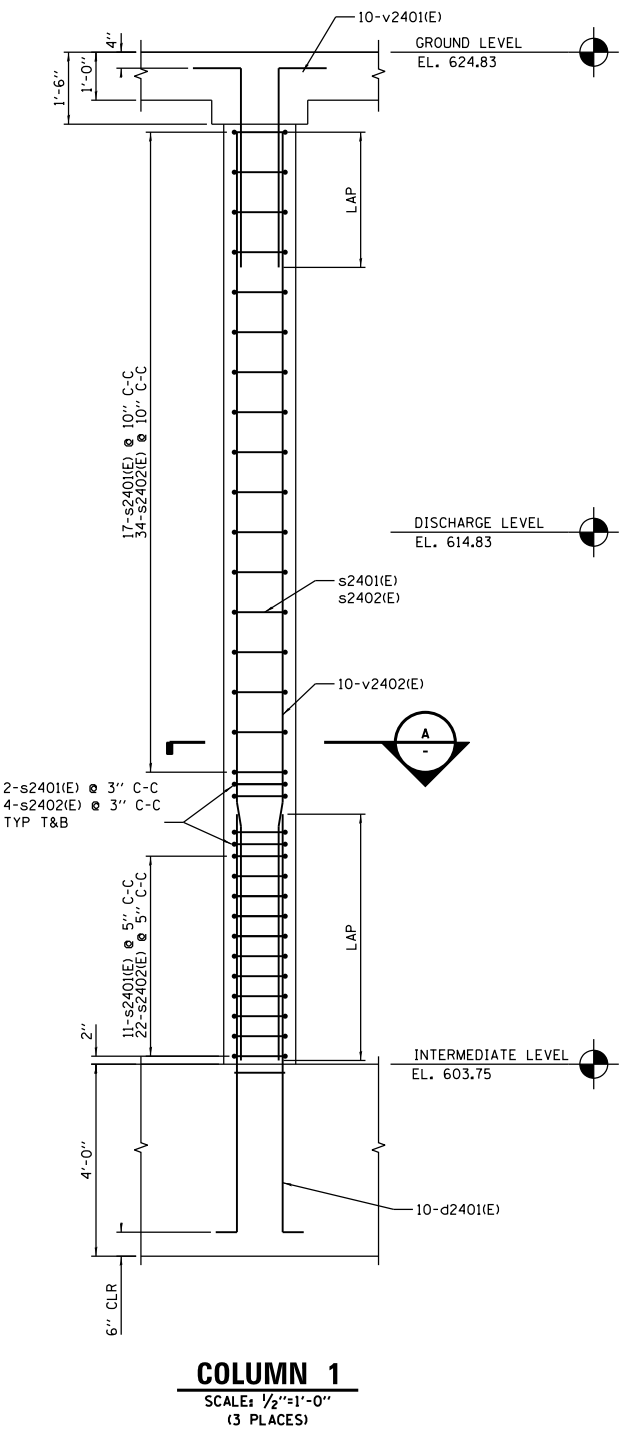
SCALE: 1/8"=1'-0" SHEET OF SHEETS STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	105

CONTRACT NO. 62B78  
ILLINOIS FED. AID PROJECT

SHEET  
S755

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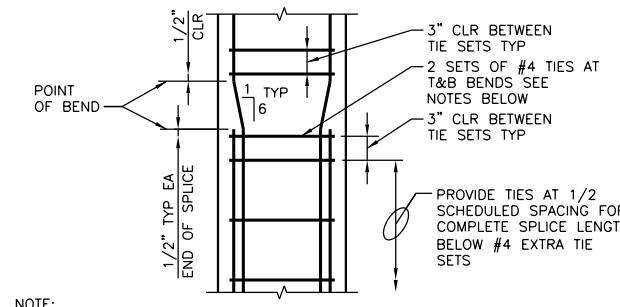
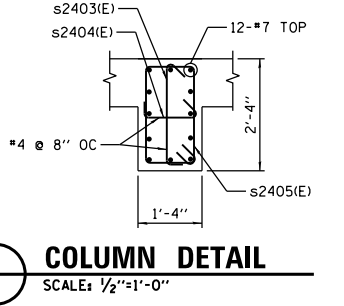
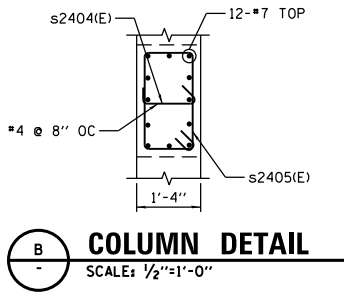
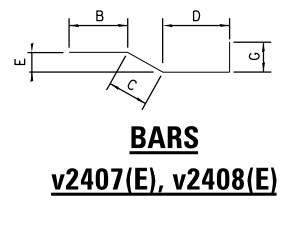
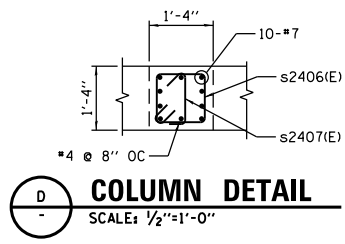
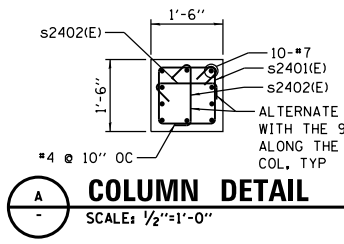
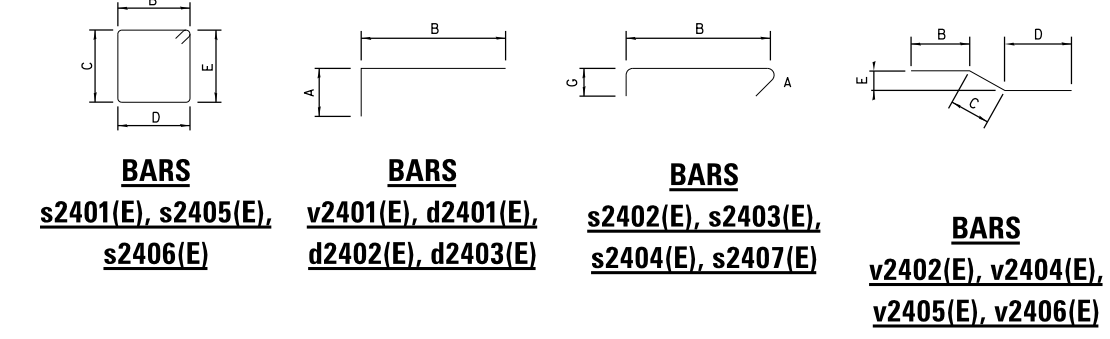


**BILL OF MATERIALS**

BAR	A	B	C	D	E	G	SHAPE
s2401(E)	0'-4 1/2"	1'-2"	1'-2"	1'-2"	1'-2"	0'-4 1/2"	[Shape]
s2402(E)	0'-4 1/2"	1'-2"	-	-	-	0'-4 1/2"	[Shape]
s2403(E)	0'-4 1/2"	2'-0"	-	-	-	0'-4 1/2"	[Shape]
s2404(E)	0'-4 1/2"	1'-0"	-	-	-	0'-4 1/2"	[Shape]
s2405(E)	0'-4 1/2"	1'-0"	2'-0"	1'-0"	2'-0"	0'-4 1/2"	[Shape]
s2406(E)	0'-4 1/2"	1'-0"	1'-0"	1'-0"	1'-0"	0'-4 1/2"	[Shape]
s2407(E)	0'-4 1/2"	1'-0"	-	-	-	0'-4 1/2"	[Shape]
v2401(E)	1'-2"	6'-4"	-	-	-	-	[Shape]
v2407(E)	1'-2"	17'-0"	-	-	-	-	[Shape]
d2401(E)	1'-2"	8'-8"	-	-	-	-	[Shape]
d2402(E)	1'-2"	7'-10"	-	-	-	-	[Shape]
v2404(E)	-	5'-3"	1'-0"	17'-8"	2"	-	[Shape]
v2405(E)	-	5'-3"	1'-0"	17'-2"	2"	-	[Shape]
v2406(E)	-	5'-3"	1'-0"	10'-0"	2"	-	[Shape]
v2407(E)	-	5'-3"	1'-0"	4'-7"	2"	1'-2"	[Shape]
v2408(E)	-	5'-3"	1'-0"	3'-6"	2"	1'-2"	[Shape]
d2403(E)	1'-2"	7'-0"	-	-	-	-	[Shape]
v2402(E)	-	5'-3"	1'-0"	13'-2"	2"	-	[Shape]

**BILL OF MATERIALS**

BAR	NO.	SIZE	LENGTH	SHAPE	
v2401(E)	30	7	7'-6"	[Shape]	
v2402(E)	30	7	19'-5"	[Shape]	
v2404(E)	120	7	23'-11"	[Shape]	
v2405(E)	120	7	23'-5"	[Shape]	
v2406(E)	70	7	16'-3"	[Shape]	
v2407(E)	50	7	12'-0"	[Shape]	
s2401(E)	96	4	5'-5"	[Shape]	
s2402(E)	192	4	1'-11"	[Shape]	
s2403(E)	960	4	2'-9"	[Shape]	
s2404(E)	1070	4	1'-9"	[Shape]	
s2405(E)	1070	4	6'-9"	[Shape]	
s2406(E)	230	4	4'-9"	[Shape]	
s2407(E)	230	4	1'-9"	[Shape]	
d2401(E)	30	7	9'-10"	[Shape]	
d2402(E)	120	7	9'-0"	[Shape]	
v2403(E)	120	7	13'-11"	[Shape]	
v2408(E)	100	7	10'-11"	[Shape]	
d2403(E)	30	7	8'-2"	[Shape]	
REINFORCING BARS EPOXY COATED				POUND	35,199
CONCRETE STRUCTURES				CU YD	65



**NOTE:**  
 AT VERT BAR BENDS, ALL COLUMN VERT BARS SHALL BE ENCLOSED BY 2 ADDITIONAL #4 TIES ABOVE AND BELOW BENDS. IF THE SCHEDULED TIES DO NOT BEND AROUND SOME OF THE VERT BARS (SEE SKETCH 1 BELOW), THEN @ VERT BAR BENDS, PROVIDE (2) #4 TIES AROUND THOSE BARS AS SHOWN IN SKETCH 2 BELOW. STAGGER LOCATION OF ADJACENT TIE HOOKS.

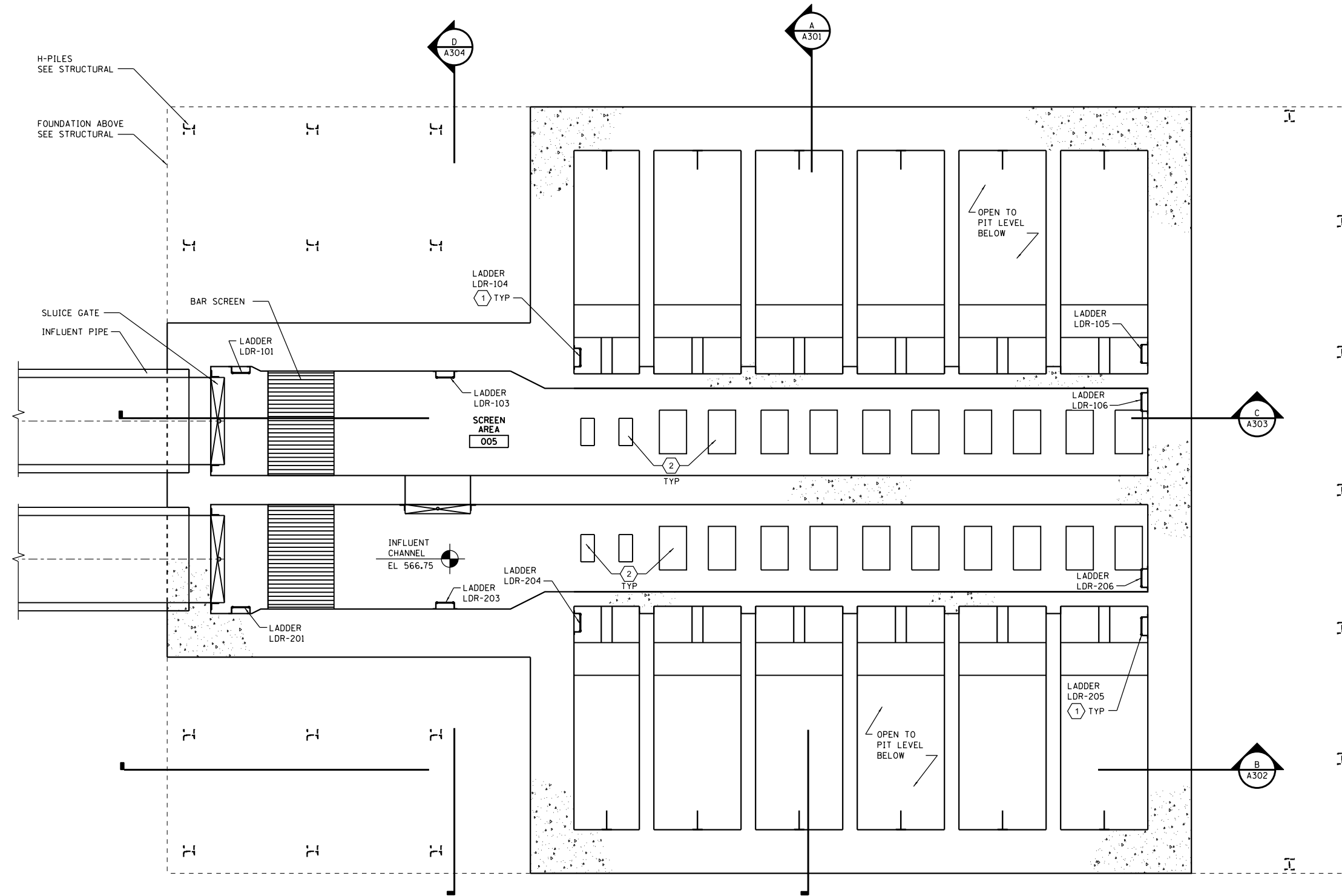


**GENERAL NOTES**

1. SEE STRUCTURAL FRAMING PLANS FOR DIMENSIONS OF CAST-IN-PLACE CONCRETE.
2. PIPING SHOWN FOR REFERENCE ONLY; SEE PIPING PLANS.
3. SEE INTERMEDIATE LEVEL FLOOR PLAN FOR LADDER LOCATIONS.

**KEY NOTES**

- (1) LADDER, SEE SCHEDULE SHEET A601.
- (2) FLOOR OPENINGS TO PIT LEVEL BELOW.



**INFLUENT CHANNEL LEVEL PLAN 566.75**



SCALE IN FEET

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**HDR**  
HDR, Inc.  
8550 W. Bryn Mawr Ave.,  
Suite 900  
Chicago, IL 60631

USER NAME = bgreen  
PLOT SCALE = 0.1" = 1'-0"  
PLOT DATE = 5/29/2019

DESIGNED - HDR - M. DOIEL  
DRAWN - HDR - D. AIKEN  
CHECKED - HDR - J. RICKERT  
DATE - 05/30/2019

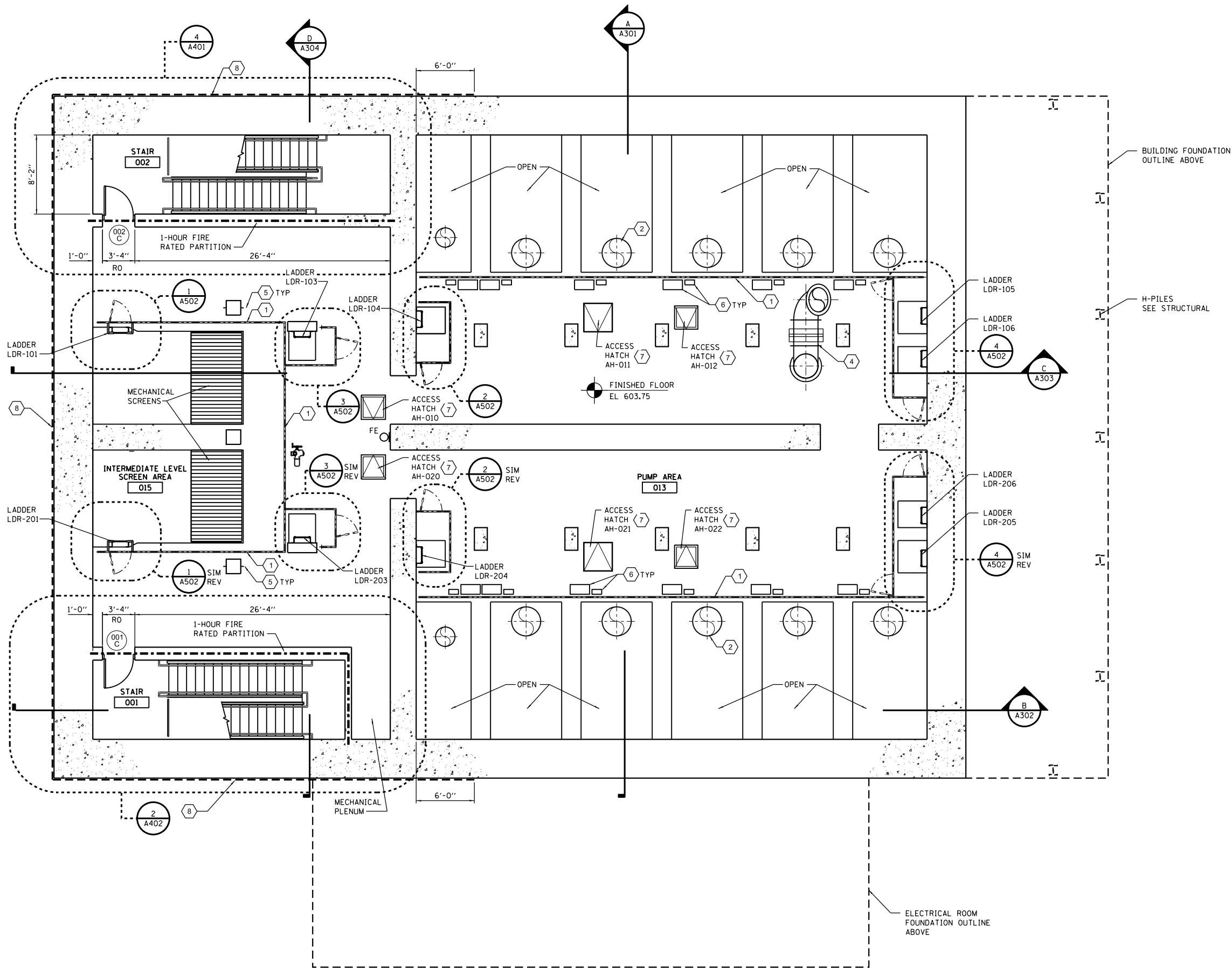
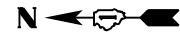
REVISED -  
REVISED -  
REVISED -  
REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
INFLUENT CHANNEL LEVEL PLAN AT ELEVATION 566.75**  
SCALE: 3/16"=1'-0" SHEET OF SHEETS STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	107
CONTRACT NO. 62B78				
ILLINOIS FED. AID PROJECT				

SHEET  
A101



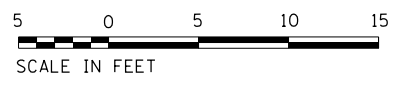
**GENERAL NOTES**

- SEE STRUCTURAL FRAMING PLANS FOR DIMENSIONS OF CAST-IN-PLACE CONCRETE.
- STAIR 001 AND 002 ARE 1-HOUR RATED EXIT ENCLOSURES. SEAL ALL OPENINGS AND PENETRATIONS W/ FIRESTOPPING PER SPEC SECTION 07 84 00.

**KEY NOTES**

- GUARDRAIL SEE DETAIL 1/A503 TYP
- PROCESS PIPING.
- NOT USED
- PIPE PENETRATION - SEE MECHANICAL PROCESS.
- SAFETY HARNESS TIE OFF ANCHOR. SEE SPEC SECTION 11 24 29
- ELECTRICAL CONTROLS AND MONITORING EQUIPMENT; SEE ELECTRICAL FOR MOUNTING AND INSTALLATION DETAILS.
- FLUSH FLOOR ACCESS HATCH, SEE SCHEDULE ON A601.
- FOUNDATION WATERPROOFING SYSTEM

**INTERMEDIATE LEVEL FLOOR PLAN AT ELEVATION 603.75**



D:\Projects\2019\I-290 Pump Station No. 4 Reconstruction\Drawings\Structural\191454-A102.dgn

FILE NAME = D191454-A102.DGN  
 HDR, Inc.  
 8550 W. Bryn Mawr Ave.,  
 Suite 900  
 Chicago, IL 60631

USER NAME = bgreen  
 PLOT SCALE = 3/16" = 1'-0"  
 PLOT DATE = 5/29/2019

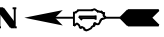
DESIGNED - HDR - M. DOIEL  
 DRAWN - HDR - D. AIKEN  
 CHECKED - HDR - J. RICKERT  
 DATE - 05/30/2019

REVISED -  
 REVISED -  
 REVISED -  
 REVISED -

**STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION**

**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
 INTERMEDIATE LEVEL PLAN AT ELEVATION 603.75**  
 SCALE: 3/16"=1'-0" SHEET OF SHEETS STA. TO STA.

SHEET A102		TOTAL SHEETS 232		SHEET NO. 108	
F.A.I. RTE. 290	SECTION 3434-2321-R	COUNTY COOK	CONTRACT NO. 62B78		
ILLINOIS FED. AID PROJECT					

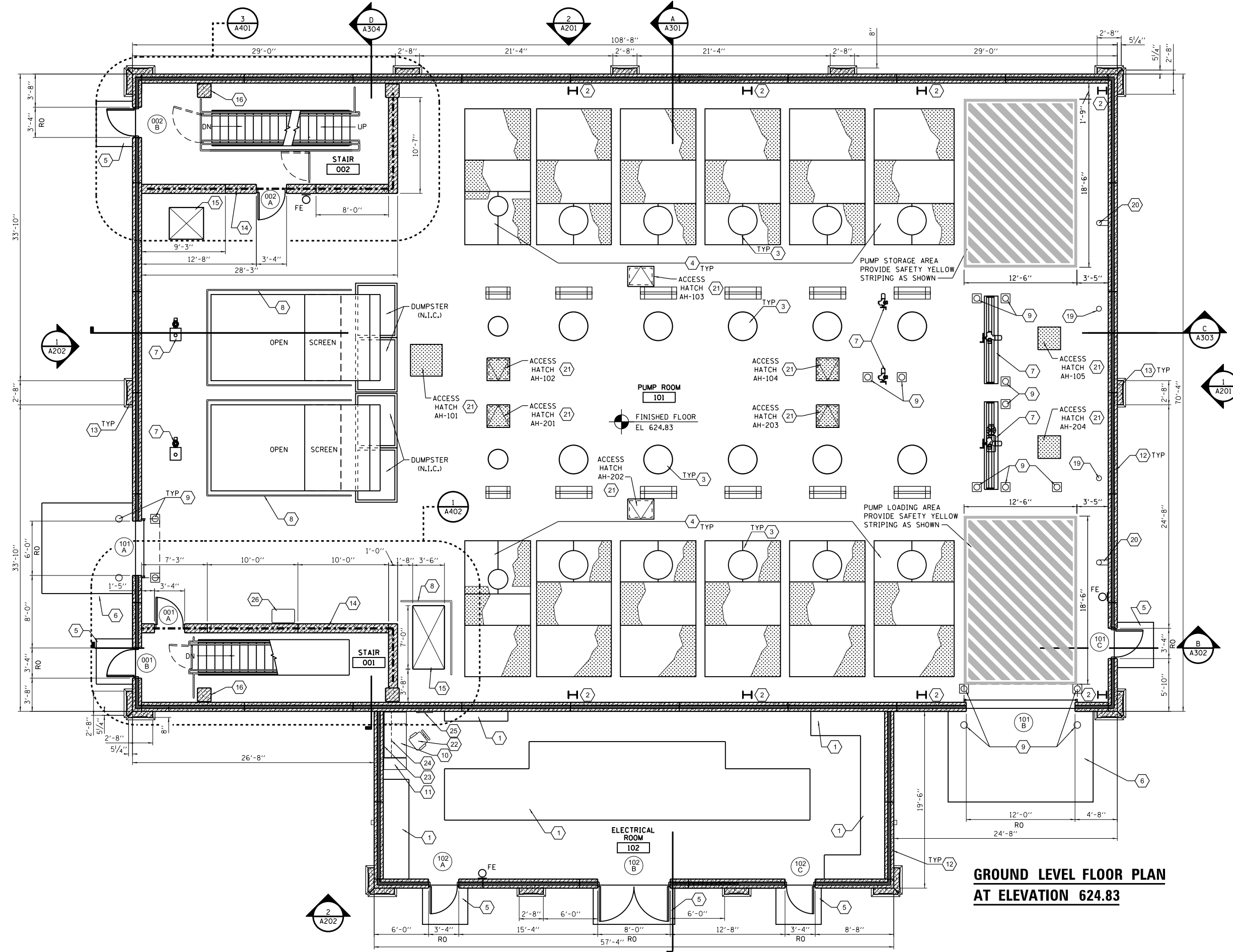


**GENERAL NOTES**

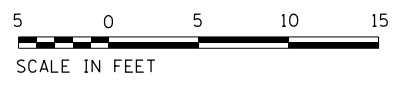
- SEE STRUCTURAL FOR DIMENSIONS OF CAST-IN-PLACE CONCRETE.
- SEAL ALL JOINTS AT 1-HOUR FIRE RATED STAIR TOWERS W/ RATED SEALANT AS PRESCRIBED IN SPEC. SECTION 07 84 00.
- SEE STRUCTURAL FRAMING PLANS FOR LOCATIONS OF OPENINGS.

**PLAN KEY NOTES**

- CONCRETE EQUIPMENT PAD, VERIFY W/ ELECTRICAL EQUIPMENT REQUIREMENTS. SEE STRUCTURAL SHEET S503.
- BRIDGE CRANE STEEL COLUMNS.
- PIPE PENETRATION - SEE PROCESS PIPING SHEET M106.
- REMOVABLE CHECKERED PLATE - SEE STRUCTURAL FRAMING PLAN S126.
- CONCRETE STOOP - SEE STRUCTURAL FRAMING PLAN S126.
- APPROACH SLAB - SEE STRUCTURAL FRAMING PLAN S126 & DETAIL 6/S502.
- GATE ACTUATOR - SEE MECHANICAL PROCESS
- GUARDRAIL SEE DETAIL 1/A503 TYP
- INTERIOR AND EXTERIOR BOLLARDS, SEE DETAILS 1, 2 & 3/A504.
- DESK.
- FILE CABINET.
- INSULATED PRECAST WALL PANEL, SEE ELEVATIONS FOR JOINTS AND PANEL SIZES.
- PRECAST PILASTER.
- FIRE RATED SOLID PRECAST WALL.
- DUCT THRU OPENING IN FLOOR.
- CONCRETE COLUMN, SEE STRUCTURAL FRAMING PLANS.
- ABRASIVE STAIR NOSING TYPICAL AT EACH TREAD.
- WATERPROOFING SYSTEM; SEE SECTIONS FOR VERTICAL TERMINATIONS.
- 6" ROOF DRAIN DOWN TO DISCHARGE CHANNEL.
- 6" OVERFLOW ROOF DRAIN WITH THRU WALL LAMBS TONGUE, SEE ELEVATIONS.
- ACCESS HATCH, SEE SCHEDULE ON SHEET A601.
- CHAIR.
- BULLETIN BOARD.
- SHELF.
- CLOCK.
- PORTABLE EYEWASH.



**GROUND LEVEL FLOOR PLAN  
AT ELEVATION 624.83**



FILE NAME = D191454-A103.DGN  
USER NAME = bgreen  
DESIGNED - HDR - M. DOIEL  
DRAWN - HDR - D. AIKEN  
PLOT SCALE = 3/16" = 1'-0"  
PLOT DATE = 5/29/2019



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8550 W. Bryn Mawr Ave.,  
Suite 900  
Chicago, IL 60631

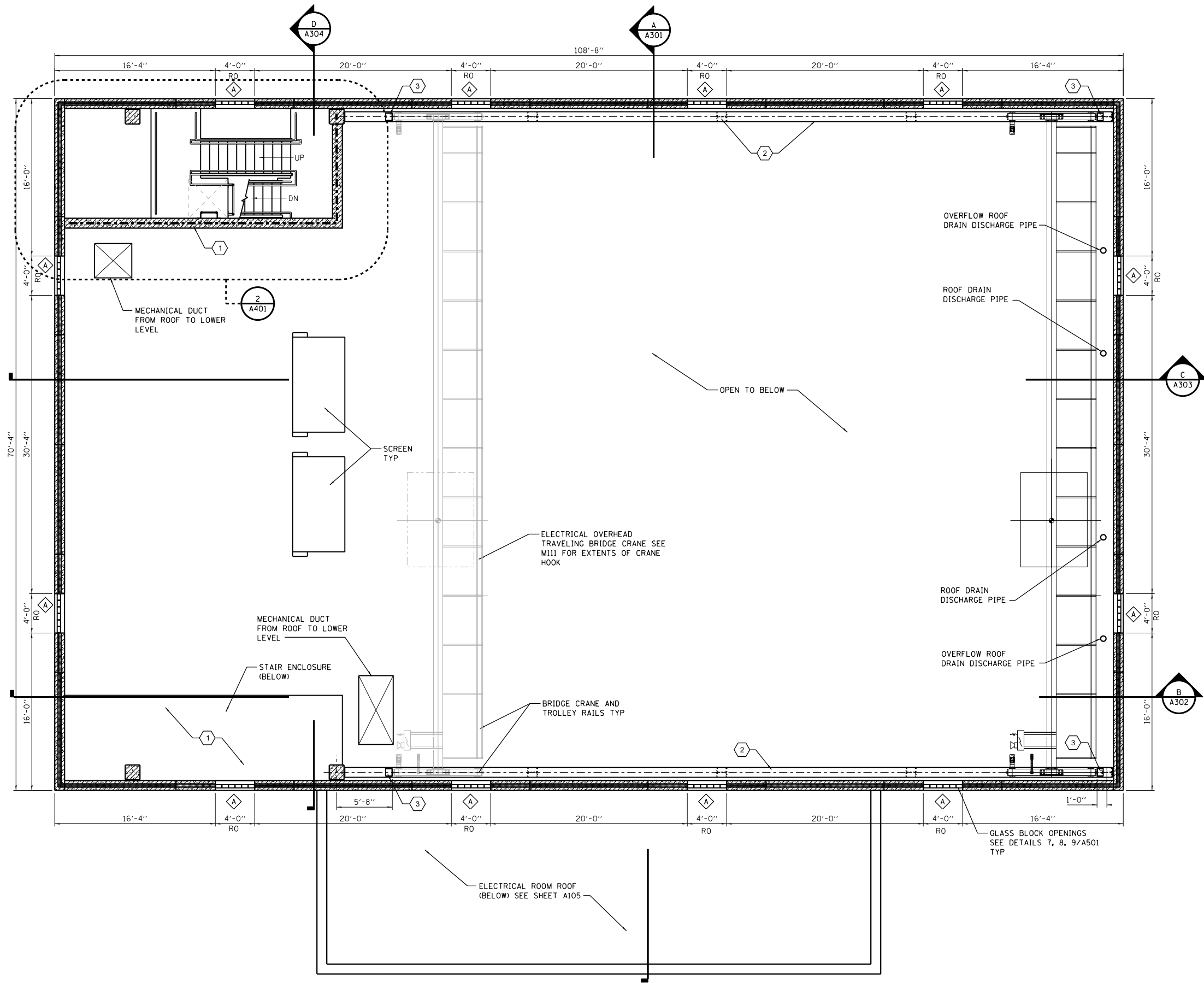
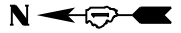
DESIGNED - HDR - M. DOIEL	REVISED -
DRAWN - HDR - D. AIKEN	REVISED -
CHECKED - HDR - J. RICKERT	REVISED -
DATE - 05/30/2019	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
GROUND LEVEL PLAN AT ELEVATION 624.83**

SCALE: 3/16"=1'-0" SHEET OF SHEETS STA. TO STA.

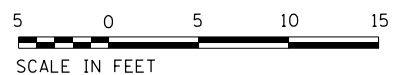
SHEET A103	
F.A.I. RTE.	TOTAL SHEETS
SECTION	COUNTY
290	COOK
SHEET NO.	
232 109	
CONTRACT NO. 62B78	
ILLINOIS FED. AID PROJECT	



**GENERAL NOTES**  
 1. SEE STRUCTURAL FOR DIMENSIONS OF CAST-IN-PLACE CONCRETE.

**PLAN KEY NOTES**  
 1 1-HOUR RATED EXIT ENCLOSURE  
 2 BRIDGE CRANE COLUMNS AND FRAMING, SEE STRUCTURAL SHEET S127.  
 3 FIELD VERIFY BRIDGE CRANE STOP LOCATIONS TO MAINTAIN CLEARANCE FROM DUCTS, DRAIN PIPES AND OTHER EQUIPMENT.

**LOWER ROOF AND CRANE LEVEL PLAN  
 AT ELEVATION 650.17**



FILE NAME = D191454-A104.DGN  
 USER NAME = bgreen  
 DESIGNED - HDR - M. DOIEL  
 DRAWN - HDR - D. AIKEN  
 CHECKED - HDR - J. RICKERT  
 DATE - 05/30/2019  
 PLOT SCALE = 1/8" = 1'-0"  
 PLOT DATE = 5/29/2019  
 HDR, Inc.  
 8550 W. Bryn Mawr Ave.,  
 Suite 900  
 Chicago, IL 60631

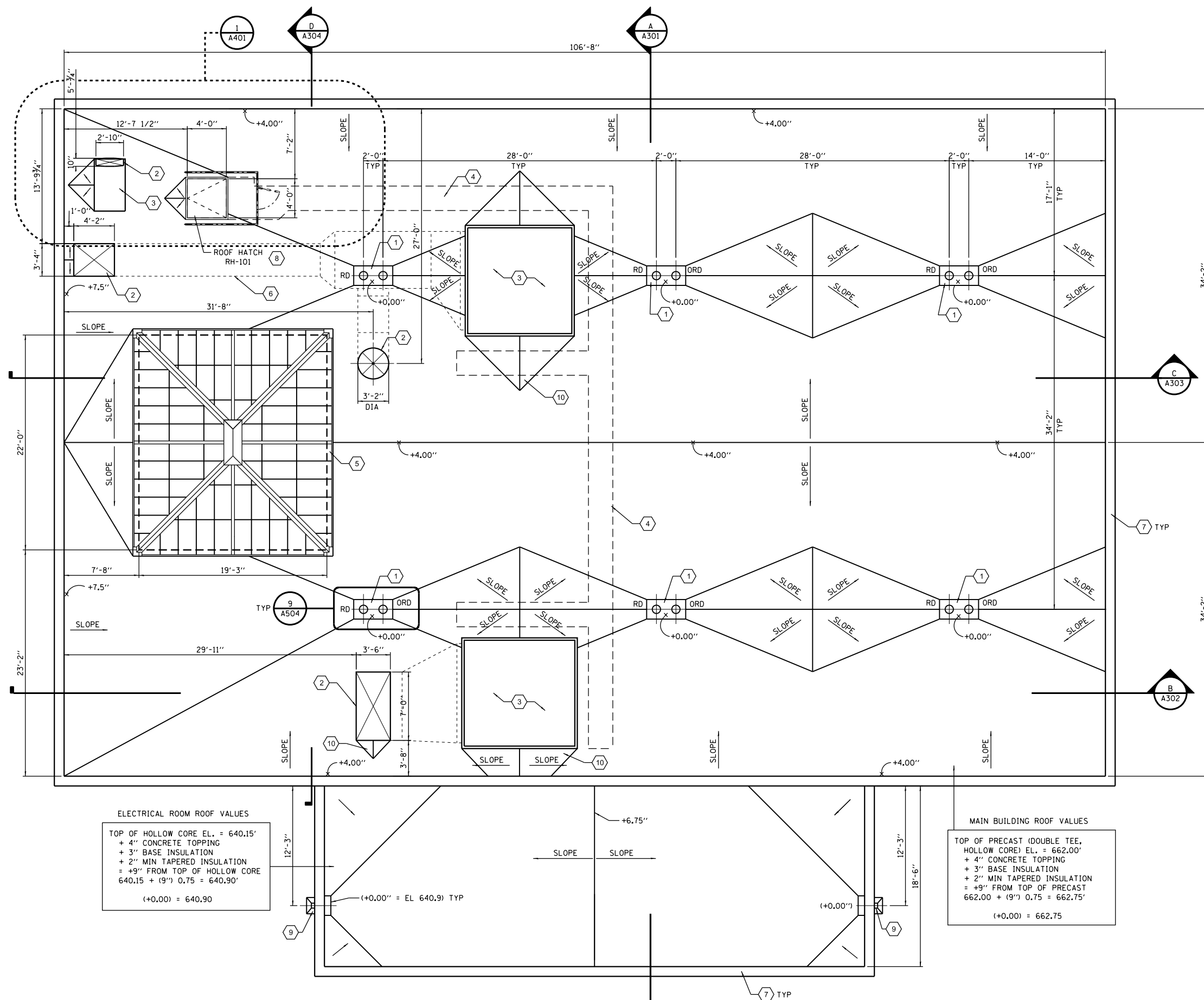
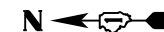
STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION

**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
 LOWER ROOF & CRANE LEVEL PLAN AT ELEVATION 650.17**

SCALE: 3/16"=1'-0" SHEET OF SHEETS STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	110

SHEET A104	
CONTRACT NO. 62B78	
ILLINOIS FED. AID PROJECT	



**ROOF PLAN GENERAL NOTES**

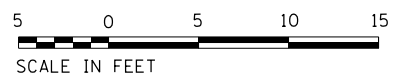
1. SEE ROOF VALUES ON PLANS.
2. TAPERED INSULATION IS 1/4":1'-0" UNLESS NOTED OTHERWISE.
3. CRICKETS AND SADDLES ARE 1/2":1'-0" UNLESS NOTED OTHERWISE.
4. MECHANICAL UNITS SHOWN ARE REPRESENTATIVE OF APPROXIMATE SIZE AND LOCATION. VERIFY SIZE AND LOCATION WITH UNITS PROVIDED.
5. NOT ALL PENETRATIONS ARE SHOWN. COORDINATE WITH ALL RELATED TRADES.
6. RD - ROOF DRAIN, ORD - OVERFLOW ROOF DRAIN. CONTINUE MEMBRANE AT PARAPET WALLS, OVER TOP OF WALL. SEE DETAIL 10/A504, TYPICAL.
7. MIN 8" ROOF INSULATION ADHERED TO ROOF DECK, SEE 7/A505 FOR TYPICAL ROOF SYSTEM.

**ROOF KEY NOTES**

- 1 PRIMARY AND OVERFLOW ROOF DRAINS IN A COMMON 2'-0" x 4'-0" SUMP. SEE MECHANICAL PLANS FOR CONNECTION, CONTINUATION AND COORDINATION; SEE 9/A504.
- 2 MECHANICAL DUCT THRU ROOF. SEE MECHANICAL AND DETAIL 6/A504.
- 3 MECHANICAL SYSTEM UNIT; SEE MECHANICAL FOR SIZE, CURBS, LOCATION AND CONNECTIONS.
- 4 ADHERED ROOF WALKWAY BY ROOF SYSTEM MANUFACTURER.
- 5 REMOVABLE INSULATED PANEL SKYLIGHT, SEE DETAIL 5/A504.
- 6 MECHANICAL DUCT ABOVE ROOF. COORDINATE SUPPORTS WITH MECHANICAL AND ROOF MANUFACTURER.
- 7 STAINLESS STEEL COPING.
- 8 ROOF HATCH WITH GUARDRAIL AND GATE, SEE DETAIL 4/A504.
- 9 THROUGH WALL SCUPPER TO COLLECTOR HEAD AND OPEN FACE DOWNSPOUT. SEE DETAIL 3/A505, TYPICAL.
- 10 CRICKET.

**ELECTRICAL ROOM ROOF VALUES**  
 TOP OF HOLLOW CORE EL. = 640.15'  
 + 4" CONCRETE TOPPING  
 + 3" BASE INSULATION  
 + 2" MIN TAPERED INSULATION  
 = +9" FROM TOP OF HOLLOW CORE  
 640.15 + (9") 0.75 = 640.90  
 (+0.00) = 640.90

**MAIN BUILDING ROOF VALUES**  
 TOP OF PRECAST (DOUBLE TEE, HOLLOW CORE) EL. = 662.00'  
 + 4" CONCRETE TOPPING  
 + 3" BASE INSULATION  
 + 2" MIN TAPERED INSULATION  
 = +9" FROM TOP OF PRECAST  
 662.00 + (9") 0.75 = 662.75  
 (+0.00) = 662.75



**ROOF PLAN**

FILE NAME = D191454-A105.DGN  
 USER NAME = bgreen  
 DESIGNED - HDR - M. DOIEL  
 DRAWN - HDR - D. AIKEN  
 CHECKED - HDR - J. RICKERT  
 DATE - 05/30/2019  
 PLOT SCALE = 0.1" = 1'-0"  
 PLOT DATE = 5/29/2019  
 HDR, Inc.  
 8550 W. Bryn Mawr Ave.,  
 Suite 900  
 Chicago, IL 60631

**STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION**

**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
 ROOF PLAN AT ELEVATION 662.17**

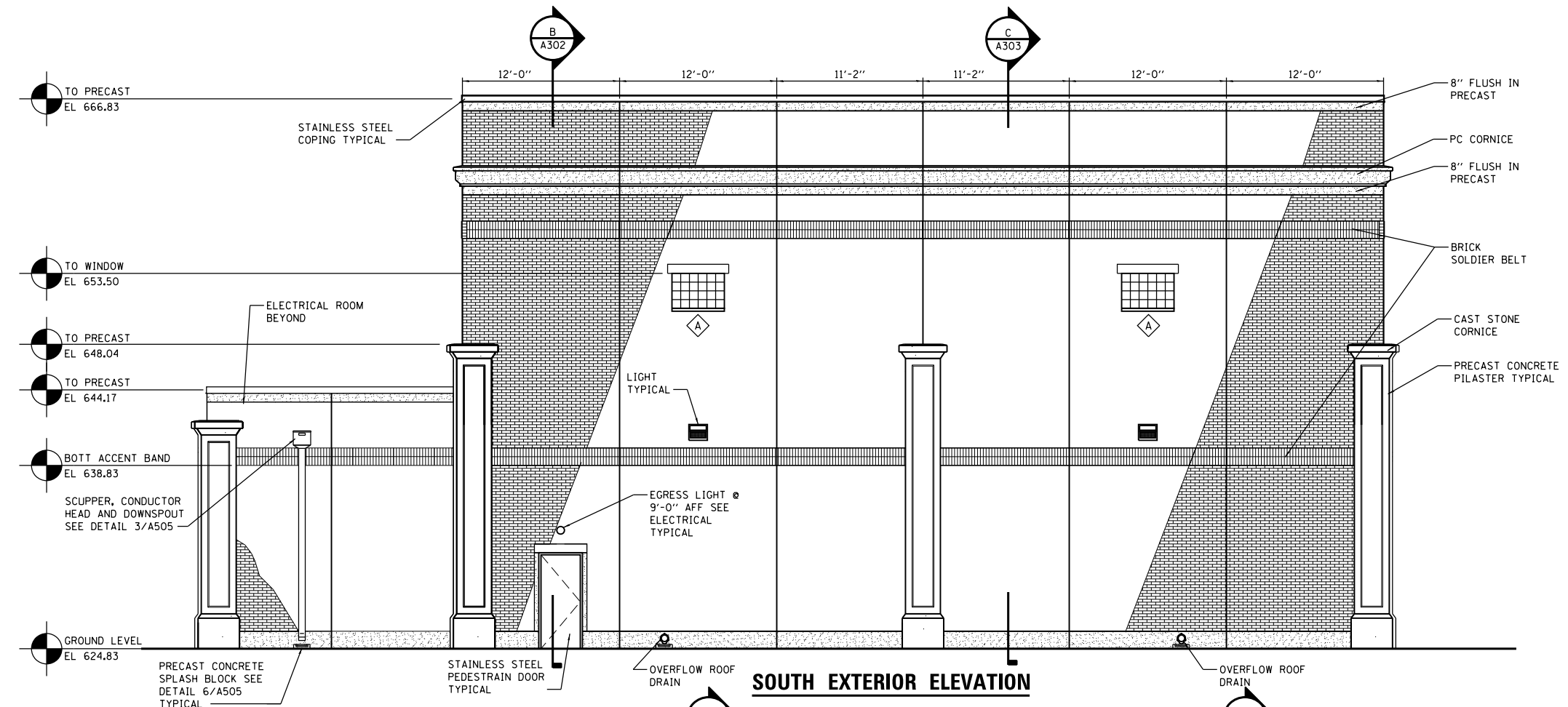
SHEET A105		TOTAL SHEETS 111	
F.A.I. RTE. 290	SECTION 3434-2321-R	COUNTY COOK	SHEET NO. 111
CONTRACT NO. 62B78			
ILLINOIS FED. AID PROJECT			

SCALE: 3/16"=1'-0" SHEET OF SHEETS STA. TO STA.

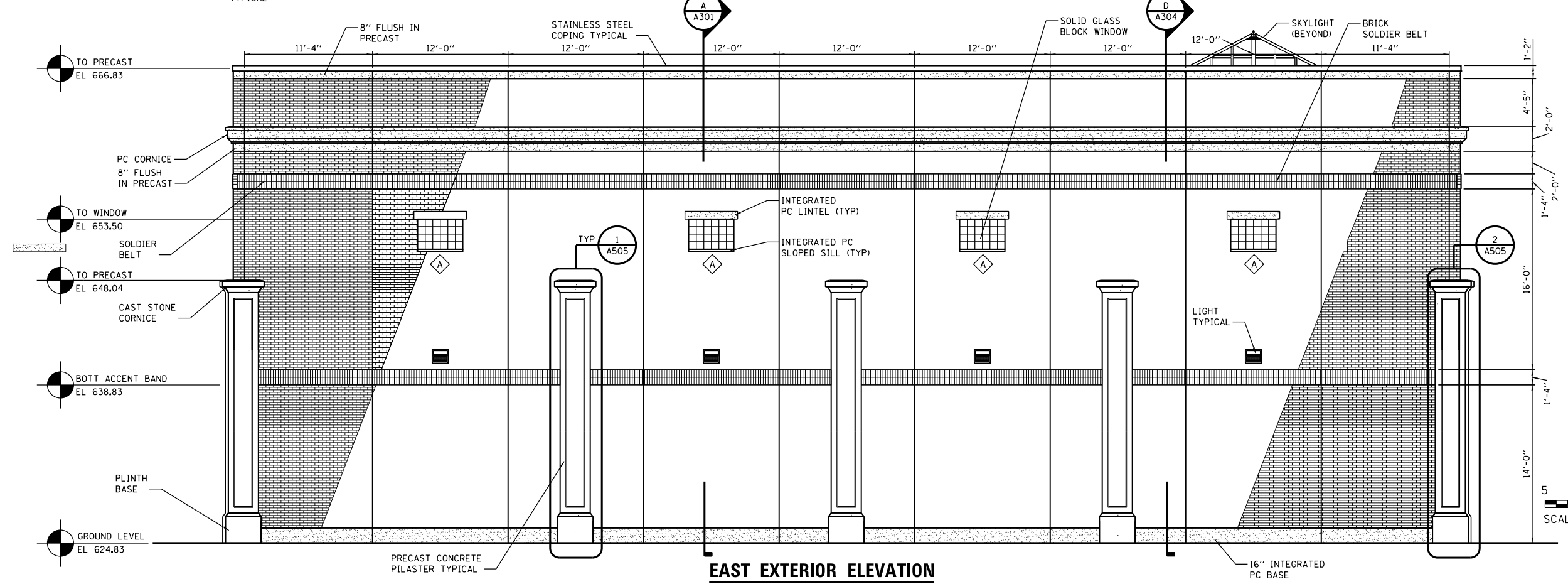




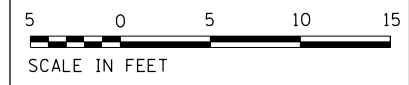
- NOTE:  
 1. SEE SHEET A505 FOR TYPICAL PILASTER DETAILS.  
 2. SEE SECTION D ON SHEET A305 FOR VERTICAL DIMENSIONS OF SOLDIER COURSES AND PRECAST CORNICE.



**SOUTH EXTERIOR ELEVATION**



**EAST EXTERIOR ELEVATION**



FILE NAME = D191454-A201.DGN  
 USER NAME = bgreen  
 DESIGNED - HDR - M. DOIEL  
 DRAWN - HDR - D. AIKEN  
 CHECKED - HDR - J. RICKERT  
 DATE - 05/30/2019  
 PLOT SCALE = 0.0833 ft / in.  
 PLOT DATE = 5/29/2019

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 8550 W. Bryn Mawr Ave.,  
 Suite 900  
 Chicago, IL 60631

DESIGNED - HDR - M. DOIEL	REVISED -
DRAWN - HDR - D. AIKEN	REVISED -
CHECKED - HDR - J. RICKERT	REVISED -
DATE - 05/30/2019	REVISED -

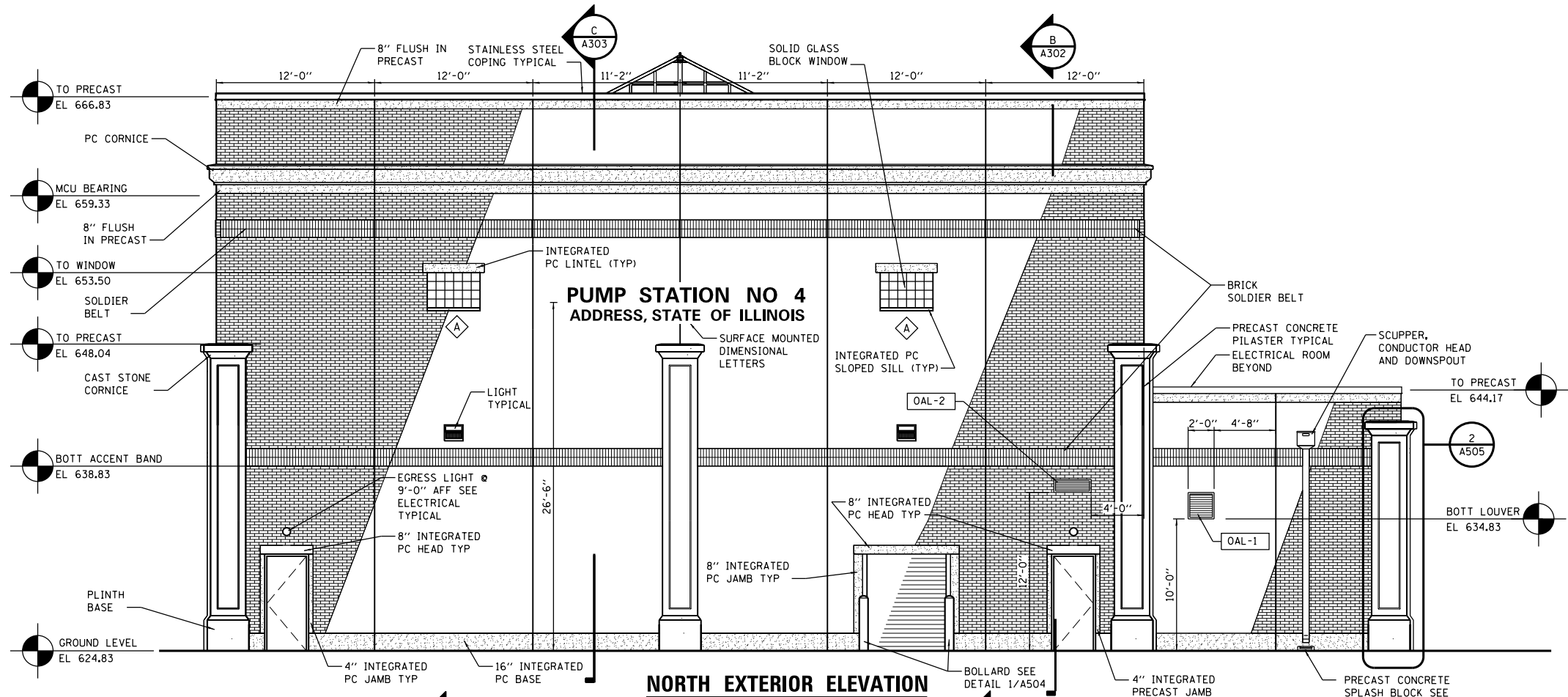
**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**I-290 PUMP STATION NO. 4 RECONSTRUCTION**  
**EXTERIOR ELEVATIONS**  
 SCALE: 3/16"=1'-0" SHEET OF SHEETS STA. TO STA.

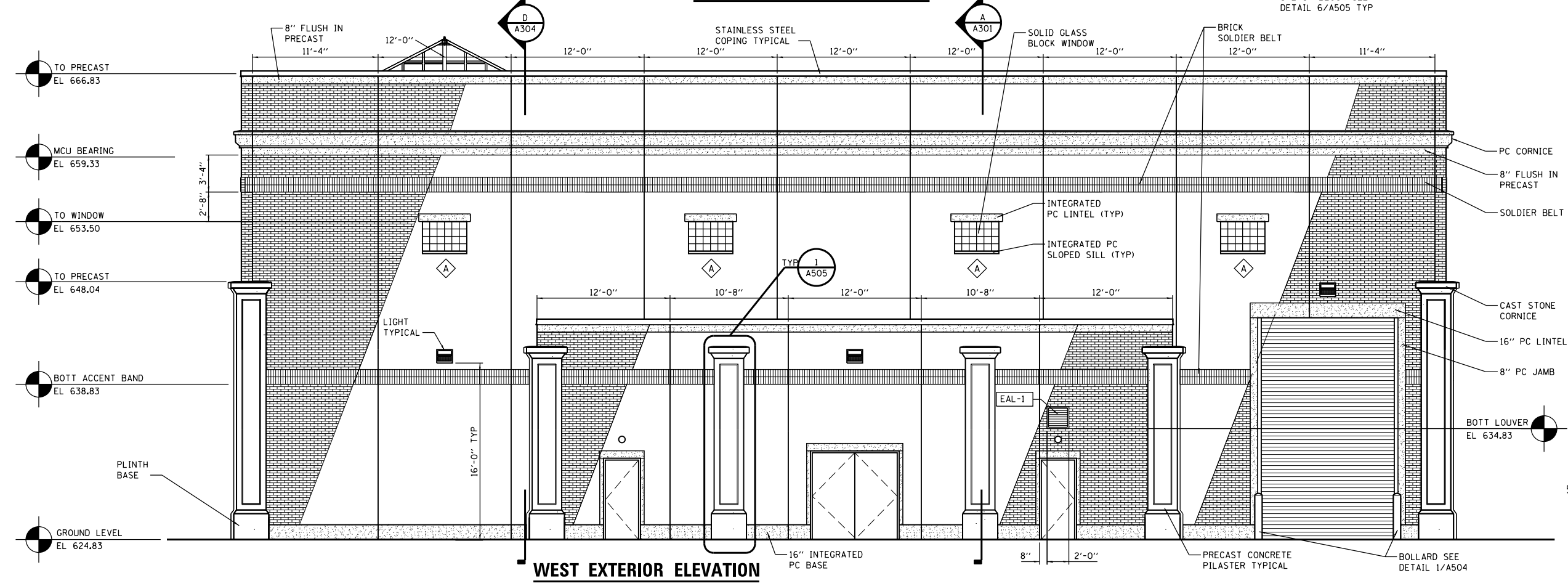
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	113
CONTRACT NO. 62B78				
ILLINOIS FED. AID PROJECT				

SHEET  
 A201

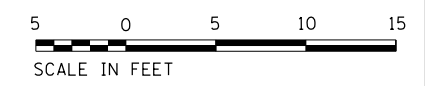
NOTE:  
 1. SEE SHEET A505 FOR TYPICAL PILASTER DETAILS.  
 2. SEE SECTION D ON SHEET A305 FOR VERTICAL DIMENSIONS OF SOLDIER COURSES AND PRECAST CORNICES.



**NORTH EXTERIOR ELEVATION**



**WEST EXTERIOR ELEVATION**



P:\A191454\A202\Drawings\A202.dgn  
 USER: bgreen  
 DATE: 5/29/2019  
 PROJECT: I-90 PUMP STATION NO. 4 RECONSTRUCTION  
 SHEET: A202

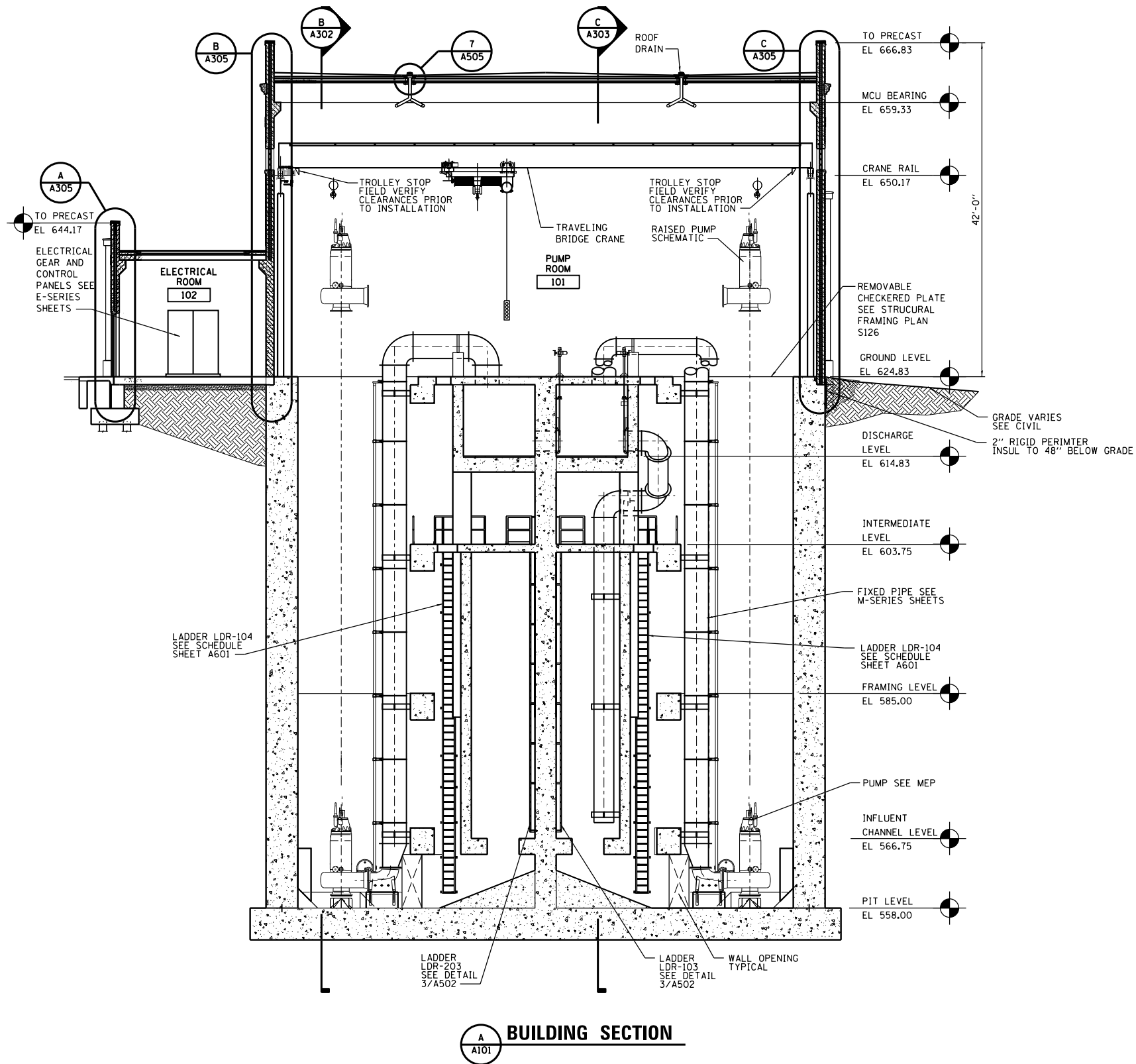
FILE NAME = D191454-A202.DGN  
 HDR, Inc.  
 8550 W. Bryn Mawr Ave.,  
 Suite 900  
 Chicago, IL 60631

USER NAME = bgreen	DESIGNED - HDR - M. DOIEL	REVISED -
PLOT SCALE = 0.0833 Ft / in.	DRAWN - HDR - D. AIKEN	REVISED -
PLOT DATE = 5/29/2019	CHECKED - HDR - J. RICKERT	REVISED -
	DATE - 05/30/2019	REVISED -

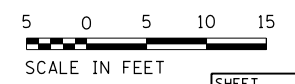
**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**I-90 PUMP STATION NO. 4 RECONSTRUCTION**  
**EXTERIOR ELEVATIONS**  
 SCALE: 3/16"=1'-0" SHEET OF SHEETS STA. TO STA.

SHEET A202		TOTAL SHEETS	SHEET NO.
290	3434-2321-R	232	114
ILLINOIS FED. AID PROJECT		CONTRACT NO. 62B78	



**A**  
A101 **BUILDING SECTION**



FILE NAME = D191454-A301.DGN  
 USER NAME = bgreen  
 DESIGNED - HDR - M. DOIEL  
 DRAWN - HDR - D. AIKEN  
 CHECKED - HDR - J. RICKERT  
 DATE - 05/30/2019  
 PLOT SCALE = 1/8" = 1'-0"  
 PLOT DATE = 5/29/2019  
 HDR, Inc.  
 8550 W. Bryn Mawr Ave.,  
 Suite 900  
 Chicago, IL 60631  
 STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION  
 I-290 PUMP STATION NO. 4 RECONSTRUCTION  
 BUILDING SECTION  
 SCALE: 1/8"=1'-0" SHEET OF SHEETS STA. TO STA.  
 F.A.I. RTE. SECTION COUNTY TOTAL SHEETS SHEET NO.  
 290 3434-2321-R COOK 232 115  
 CONTRACT NO. 62B78  
 ILLINOIS FED. AID PROJECT

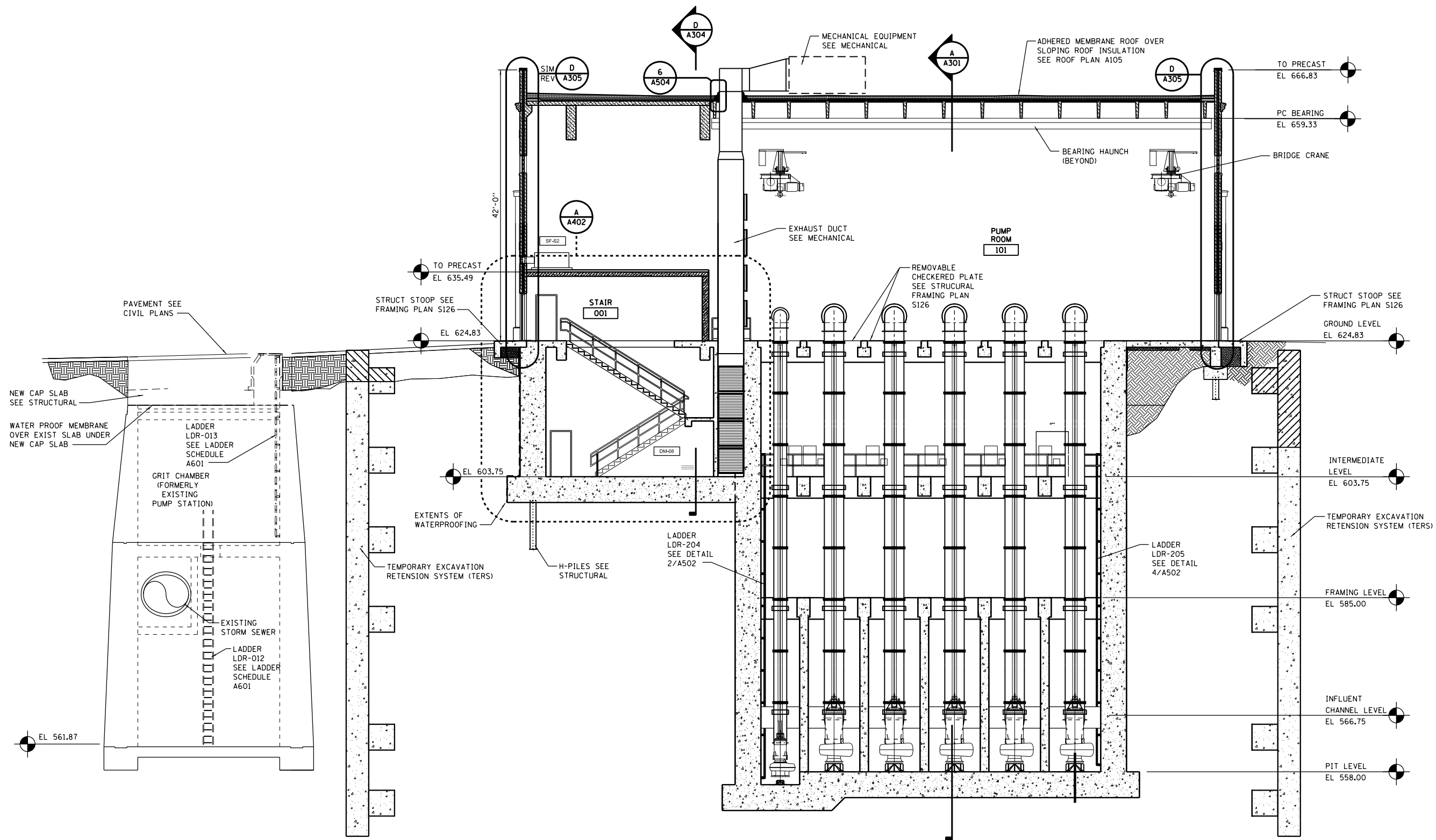


FILE NAME = D191454-A301.DGN	USER NAME = bgreen	DESIGNED - HDR - M. DOIEL	REVISED -
		DRAWN - HDR - D. AIKEN	REVISED -
		CHECKED - HDR - J. RICKERT	REVISED -
		DATE - 05/30/2019	REVISED -

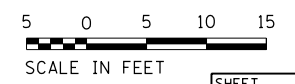
**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
BUILDING SECTION**  
SCALE: 1/8"=1'-0" SHEET OF SHEETS STA. TO STA.

SHEET A301	
F.A.I. RTE.	TOTAL SHEETS
SECTION	SHEET NO.
290	232
3434-2321-R	115
COUNTY	
COOK	
CONTRACT NO. 62B78	
ILLINOIS FED. AID PROJECT	



**B**  
A101  
**BUILDING SECTION**

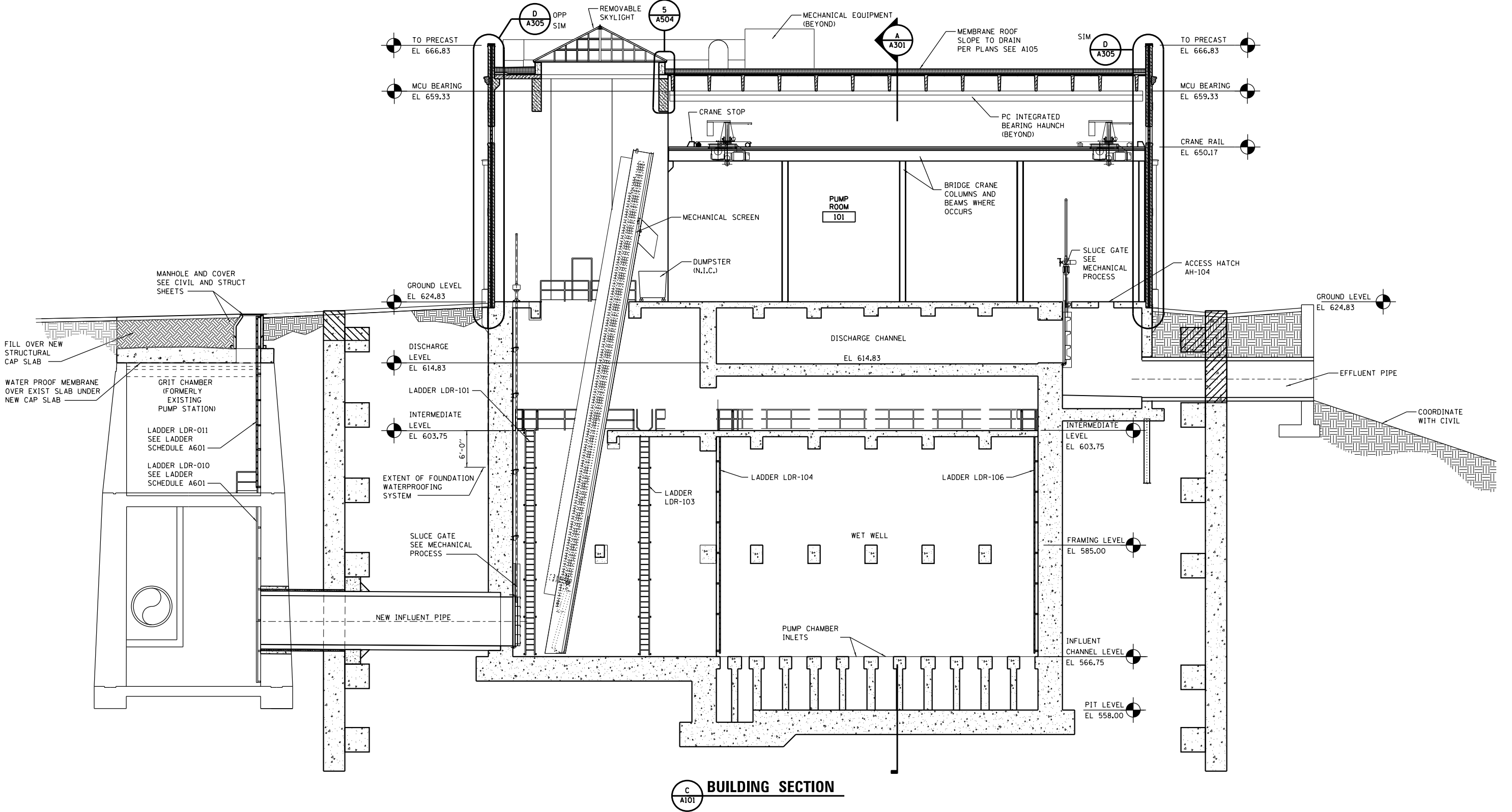


FILE NAME = D191454-A302.DGN  
 USER NAME = bgreen  
 DESIGNED - HDR - M. DOIEL  
 DRAWN - HDR - D. AIKEN  
 CHECKED - HDR - J. RICKERT  
 DATE - 05/30/2019  
 REVISIONS:  
 REVISED -  
 REVISED -  
 REVISED -  
 REVISED -  
 REVISED -  
 PLOT SCALE = 1/8" = 1'-0"  
 PLOT DATE = 5/29/2019  
 HDR, Inc.  
 8550 W. Bryn Mawr Ave.,  
 Suite 900  
 Chicago, IL 60631  
 ILLINOIS FED. AID PROJECT

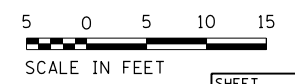
SHEET  
A302

FILE NAME = D191454-A302.DGN USER NAME = bgreen PLOT SCALE = 1/8" = 1'-0" PLOT DATE = 5/29/2019	DESIGNED - HDR - M. DOIEL DRAWN - HDR - D. AIKEN CHECKED - HDR - J. RICKERT DATE - 05/30/2019	REVISED - REVISED - REVISED - REVISED - REVISED -	<p align="center"><b>STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION</b></p>	<p align="center"><b>I-290 PUMP STATION NO. 4 RECONSTRUCTION BUILDING SECTION</b></p>	SCALE: 1/8" = 1'-0" SHEET OF SHEETS STA. TO STA.	<table border="1"> <tr> <th>F.A.I. RTE.</th> <th>SECTION</th> <th>COUNTY</th> <th>TOTAL SHEETS</th> <th>SHEET NO.</th> </tr> <tr> <td>290</td> <td>3434-2321-R</td> <td>COOK</td> <td>232</td> <td>116</td> </tr> </table>	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	290	3434-2321-R	COOK	232	116	<p align="center"><b>CONTRACT NO. 62B78</b></p>
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.													
290	3434-2321-R	COOK	232	116													

P:\191454\A303\Drawings\191454-CAD\BIM\6.2-Work\In-Progress\6.2.2-CAD\Sheets\191454-A303

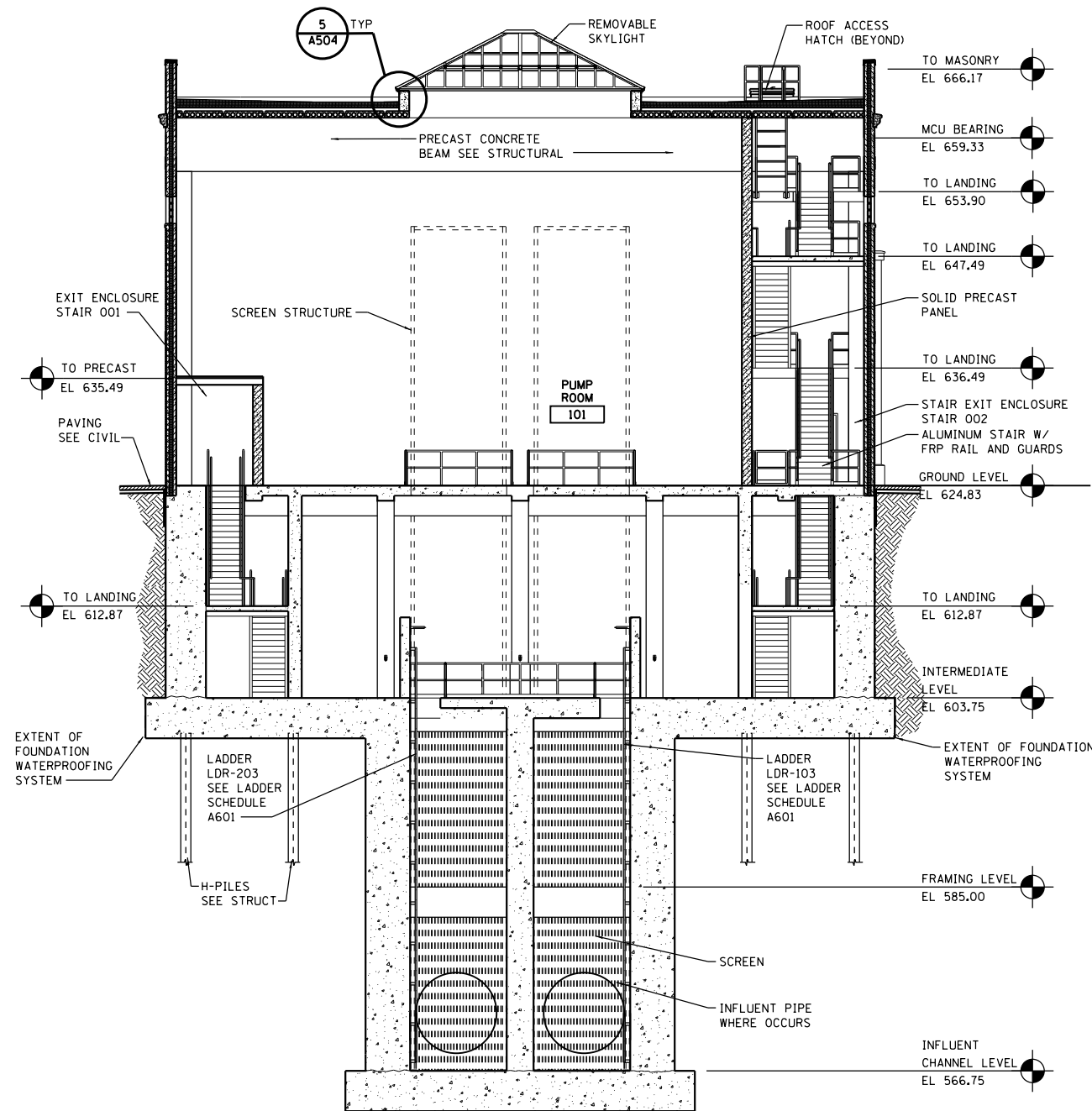


**C A101 BUILDING SECTION**

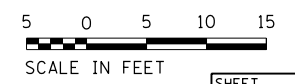


SHEET  
A303

<b>HDR</b> HDR, Inc. 8550 W. Bryn Mawr Ave., Suite 900 Chicago, IL 60631	USER NAME = bgreen	DESIGNED - HDR - M. DOIEL DRAWN - HDR - D. AIKEN	REVISED - REVISED -	<b>STATE OF ILLINOIS          DEPARTMENT OF TRANSPORTATION</b>	<b>I-290 PUMP STATION NO. 4 RECONSTRUCTION          BUILDING SECTION</b>			F.A.I. RTE. = 290	SECTION = 3434-2321-R	COUNTY = COOK	TOTAL SHEETS = 232	SHEET NO. = 117
	PLOT SCALE = 0:1' = 1/8"	CHECKED - HDR - J. RICKERT DATE = 05/30/2019	REVISED - REVISED -		SCALE: 1/8"=1'-0"	SHEET OF SHEETS	STA. TO STA.	<b>CONTRACT NO. 62B78</b>		ILLINOIS FED. AID PROJECT		



**D A101 BUILDING SECTION**



FILE NAME = D:\191454-A304.DGN  
 USER NAME = bgreen  
 DESIGNED - HDR - M. DOIEL  
 DRAWN - HDR - D. AIKEN  
 CHECKED - HDR - J. RICKERT  
 DATE - 05/30/2019  
 PLOT SCALE = 1/8" = 1'-0"  
 PLOT DATE = 5/29/2019  
 HDR, Inc.  
 8550 W. Bryn Mawr Ave.,  
 Suite 900  
 Chicago, IL 60631  
 STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION  
 I-290 PUMP STATION NO. 4 RECONSTRUCTION  
 WALL SECTIONS  
 SCALE: 1/2" = 1'-0"  
 SHEET OF SHEETS STA. TO STA.  
 F.A.I. RTE. SECTION COUNTY TOTAL SHEETS SHEET NO.  
 290 3434-2321-R COOK 232 118  
 CONTRACT NO. 62B78  
 ILLINOIS FED. AID PROJECT

FILE NAME = D:\191454-A304.DGN  
 USER NAME = bgreen  
 PLOT SCALE = 1/8" = 1'-0"  
 PLOT DATE = 5/29/2019

DESIGNED - HDR - M. DOIEL  
 DRAWN - HDR - D. AIKEN  
 CHECKED - HDR - J. RICKERT  
 DATE - 05/30/2019

REVISED -  
 REVISED -  
 REVISED -  
 REVISED -

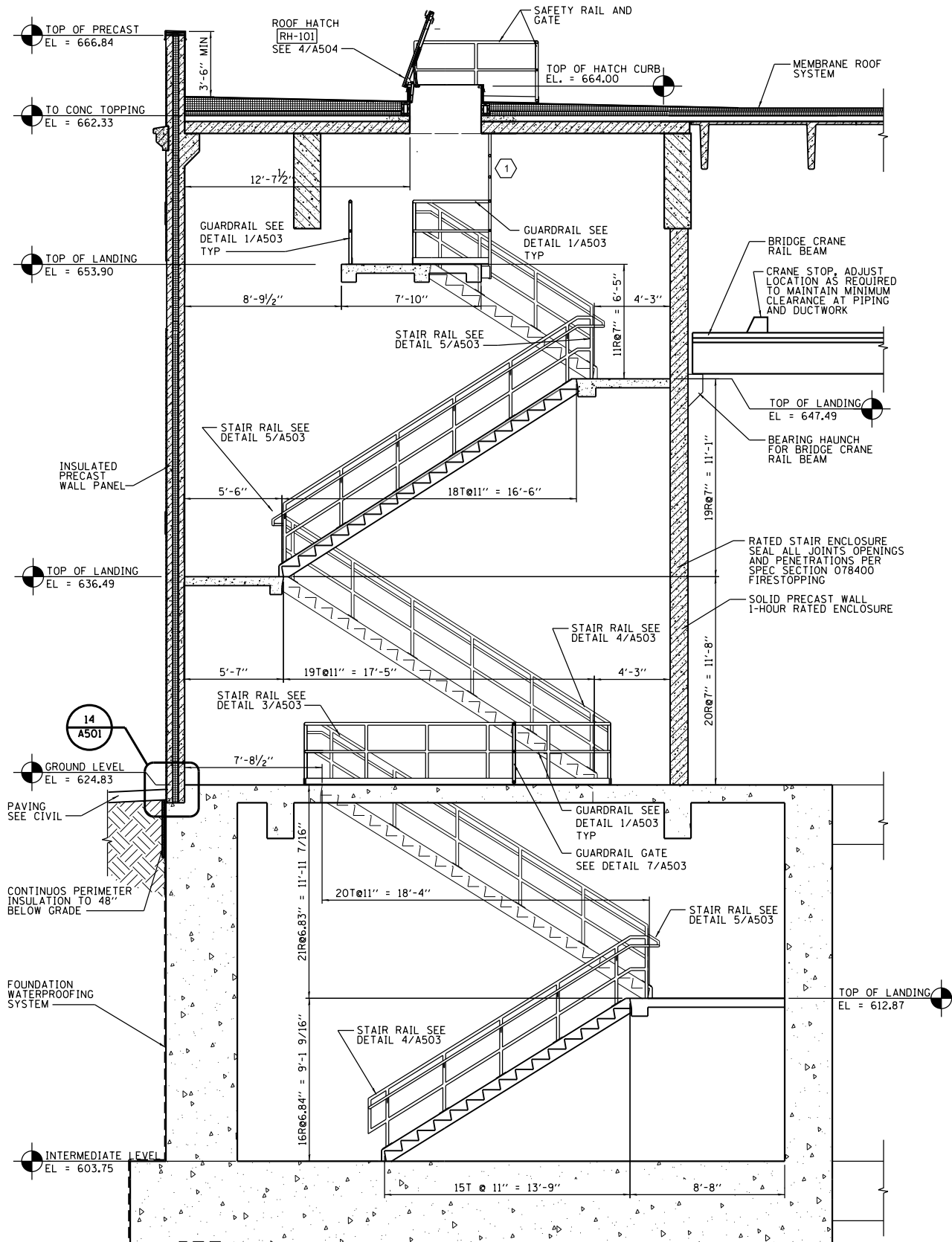
STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION

I-290 PUMP STATION NO. 4 RECONSTRUCTION  
 WALL SECTIONS  
 SCALE: 1/2" = 1'-0"  
 SHEET OF SHEETS STA. TO STA.

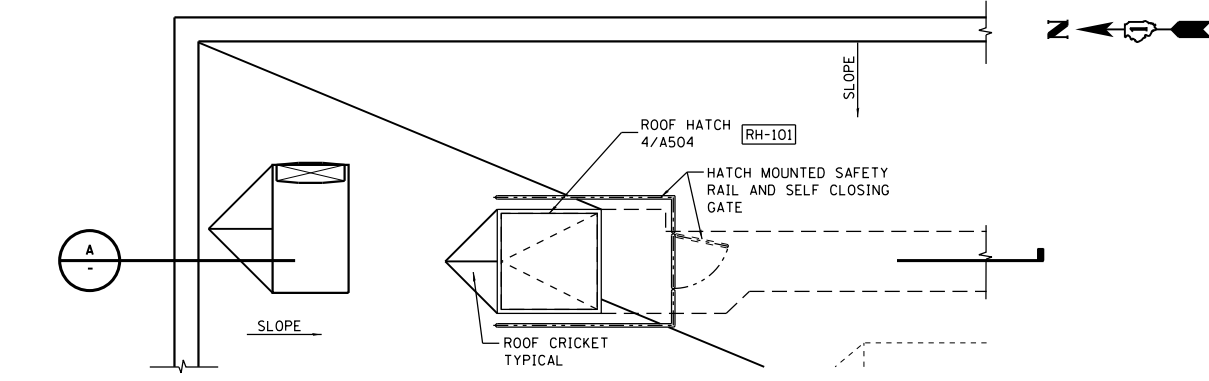
F.A.I. RTE. SECTION COUNTY TOTAL SHEETS SHEET NO.  
 290 3434-2321-R COOK 232 118  
 CONTRACT NO. 62B78  
 ILLINOIS FED. AID PROJECT

SHEET A304  
 TOTAL SHEETS 232  
 SHEET NO. 118

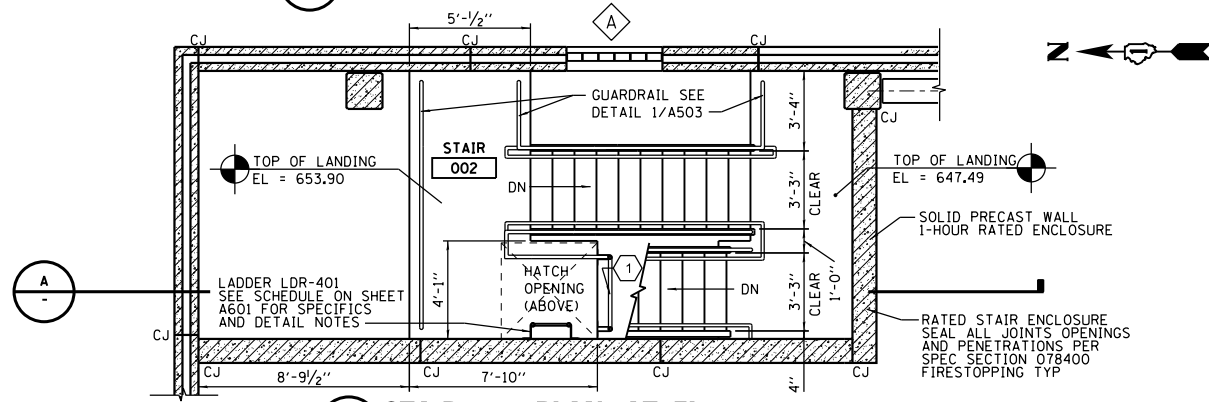




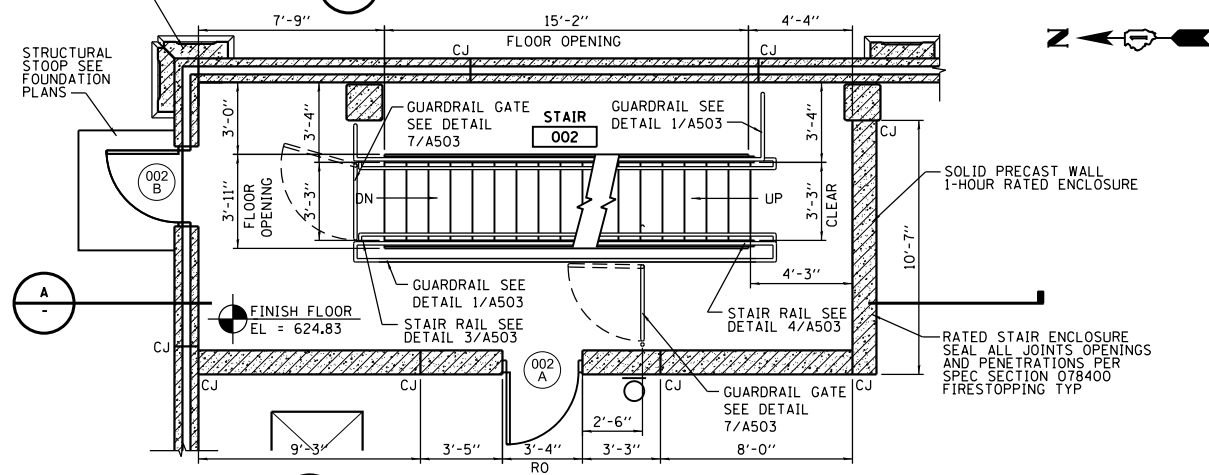
**STAIR 002 SECTION**



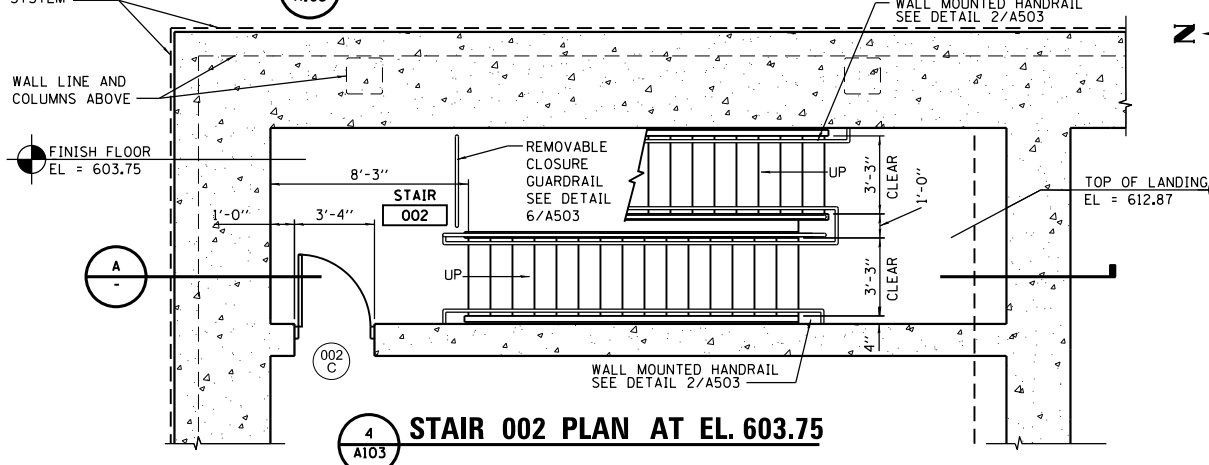
**1 STAIR 002 PLAN AT ROOF**



**2 STAIR 002 PLAN AT EL 653.90**



**3 STAIR 002 PLAN AT EL 624.83**



**4 STAIR 002 PLAN AT EL 603.75**

**KEY NOTES**  
 1 SIDE FALL PROTECTION, EXTEND RAILS TO BOTTOM OF STRUCTURE W/ HORIZ RAILS @ 21" MAX SPACING.



FILE NAME = D191454-A401.DGN  
 USER NAME = bgreen  
 DESIGNED - HDR - M. DOIEL  
 DRAWN - HDR - D. AIKEN  
 CHECKED - HDR - J. RICKERT  
 DATE - 05/30/2019  
 PLOT SCALE = 0.1" = 1'-0"  
 PLOT DATE = 5/29/2019  
 HDR, Inc.  
 8550 W. Bryn Mawr Ave.,  
 Suite 900  
 Chicago, IL 60631

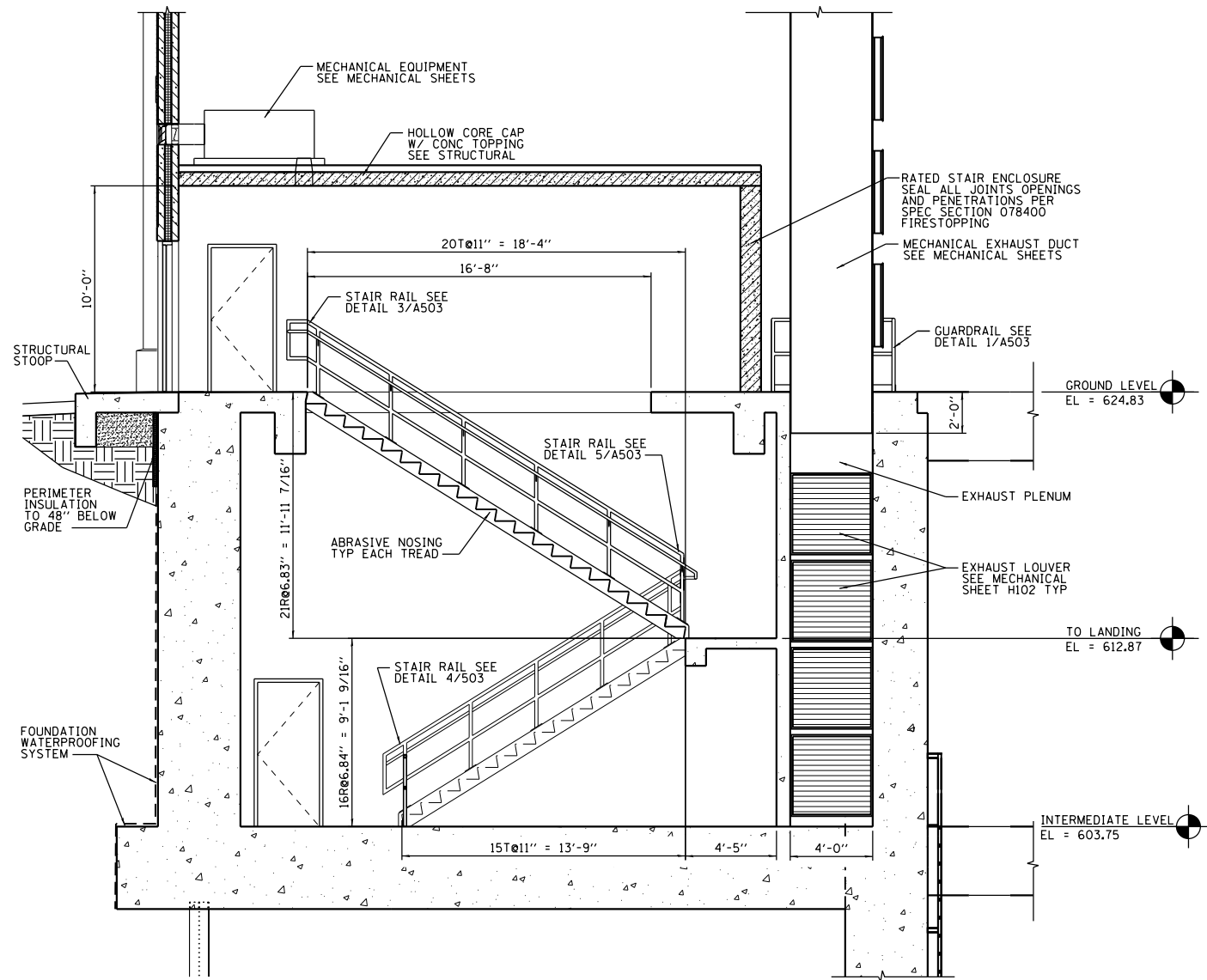
**STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION**

**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
 STAIR SECTION AND ENLARGED PLANS**  
 SCALE: 1/4"=1'-0" SHEET OF SHEETS STA. TO STA.

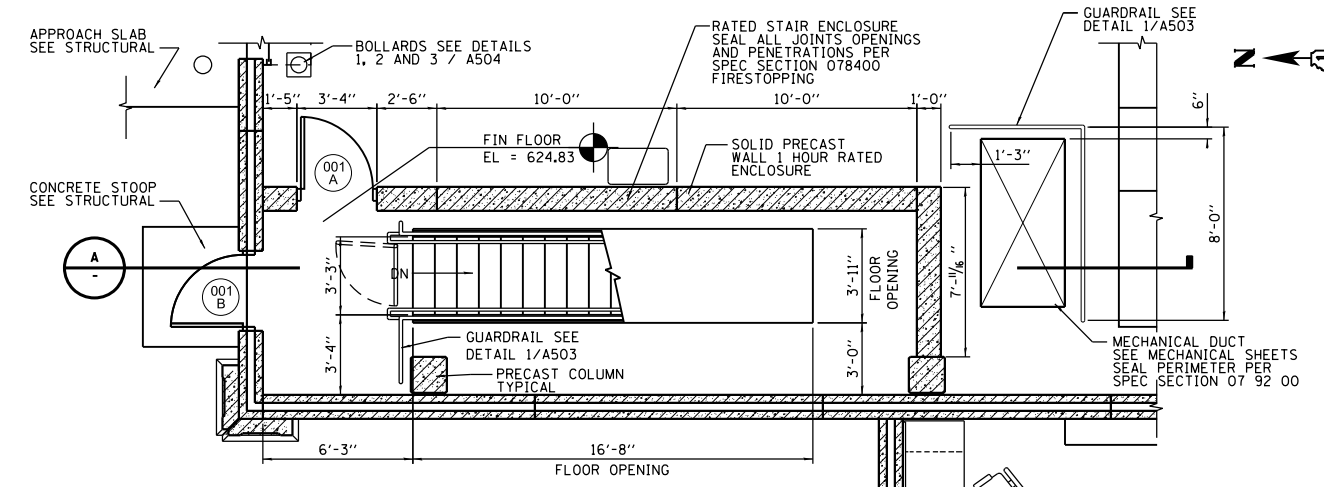
SHEET A401		TOTAL SHEETS 232		SHEET NO. 120	
F.A.I. RTE. 290	SECTION 3434-2321-R	COUNTY COOK	CONTRACT NO. 62B78		
ILLINOIS FED. AID PROJECT					



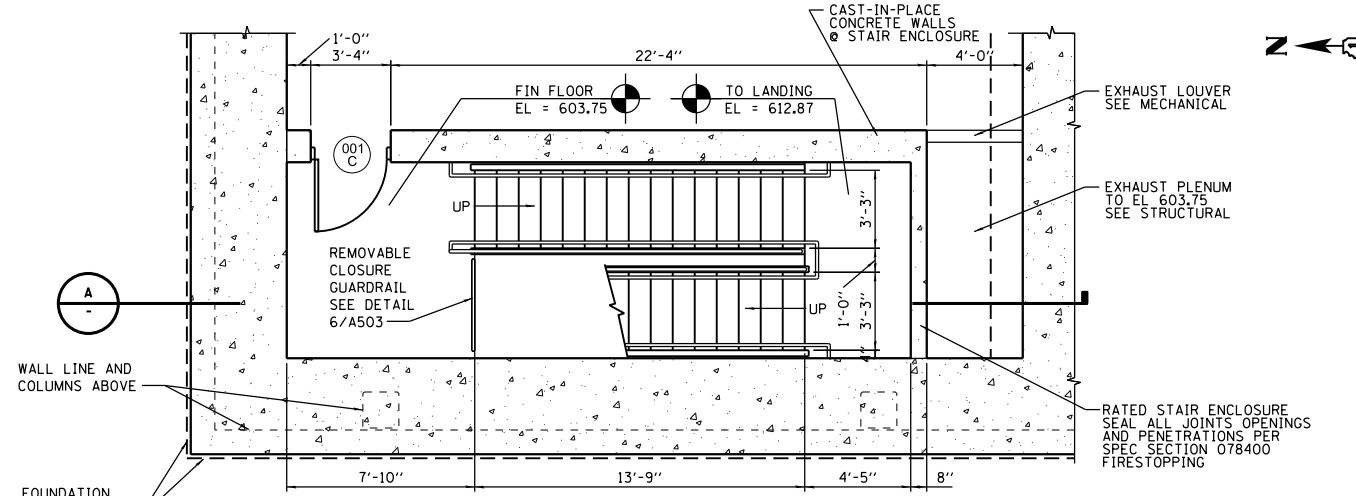
P:\15\1515\CON\07\431\000000000271972\6.6.CAD\_BIM\6.2\_Work\In\_Progress\6.2.2\_CAD\_Sheets\0191454-A402.dgn



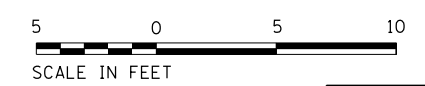
**A**  
A302  
**STAIR 001 SECTION**



**1**  
A103  
**STAIR 001 PLAN AT EL 624.83**



**2**  
A102  
**STAIR 001 PLAN AT EL 603.75**



**HDR**  
 HDR, Inc.  
 8550 W. Bryn Mawr Ave.,  
 Suite 900  
 Chicago, IL 60631

USER NAME = bgreen  
 PLOT SCALE = 1/4" = 1'-0"  
 PLOT DATE = 5/29/2019

DESIGNED - HDR - M. DOIEL  
 DRAWN - HDR - D. AIKEN  
 CHECKED - HDR - J. RICKERT  
 DATE - 05/30/2019

REVISED -  
 REVISED -  
 REVISED -  
 REVISED -

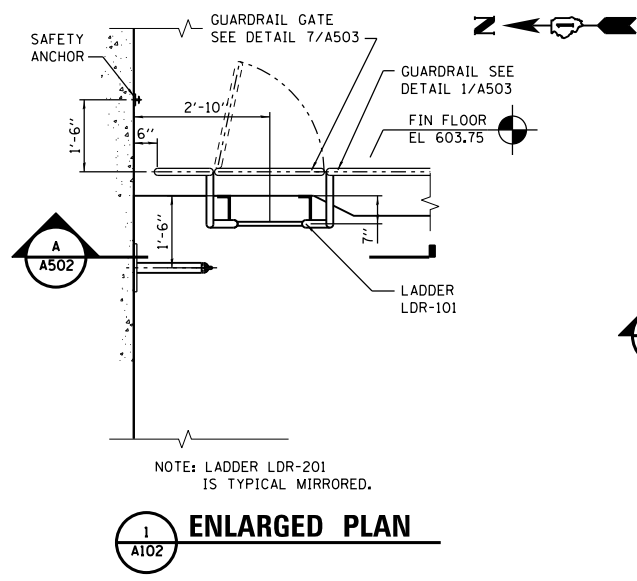
**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**I-290 PUMP STATION NO. 4 RECONSTRUCTION**  
**STAIR SECTION AND ENLARGED PLANS**  
 SCALE: 1/4" = 1'-0" SHEET OF SHEETS STA. TO STA.

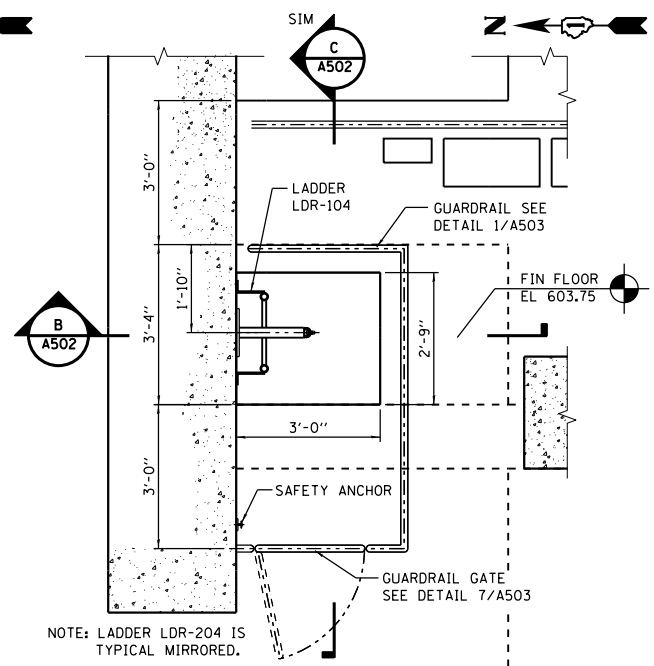
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	121
CONTRACT NO. 62B78				
ILLINOIS FED. AID PROJECT				

SHEET  
**A402**

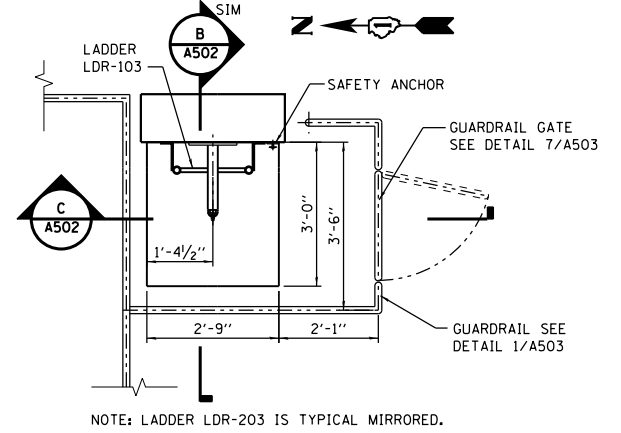




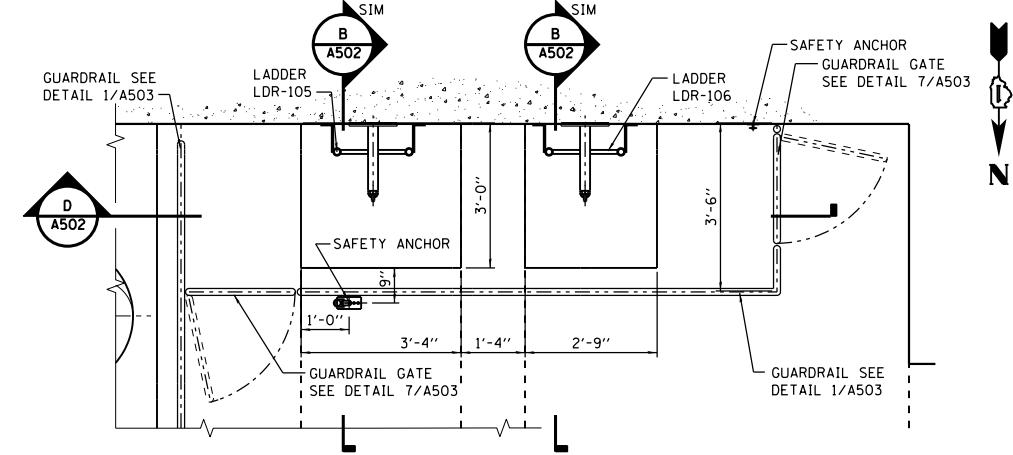
**1 ENLARGED PLAN**



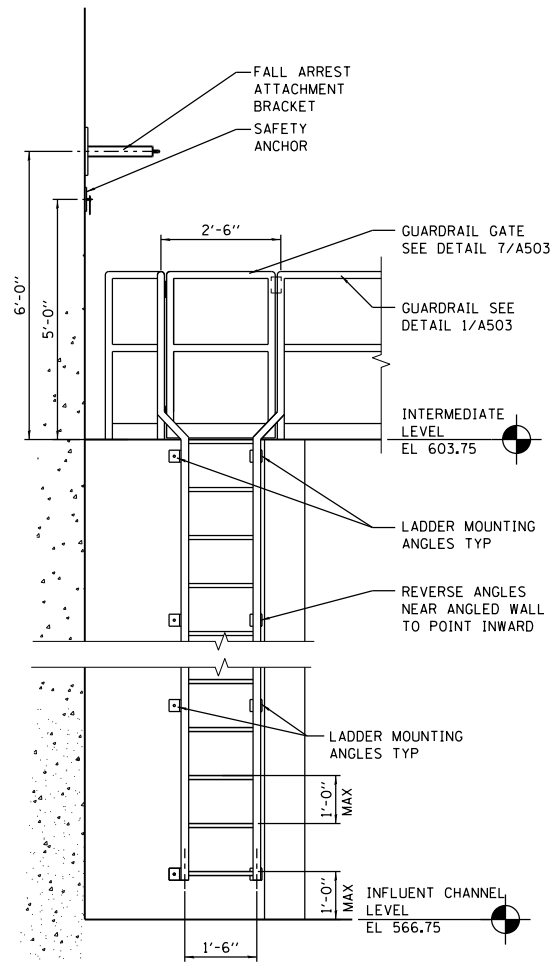
**2 ENLARGED PLAN**



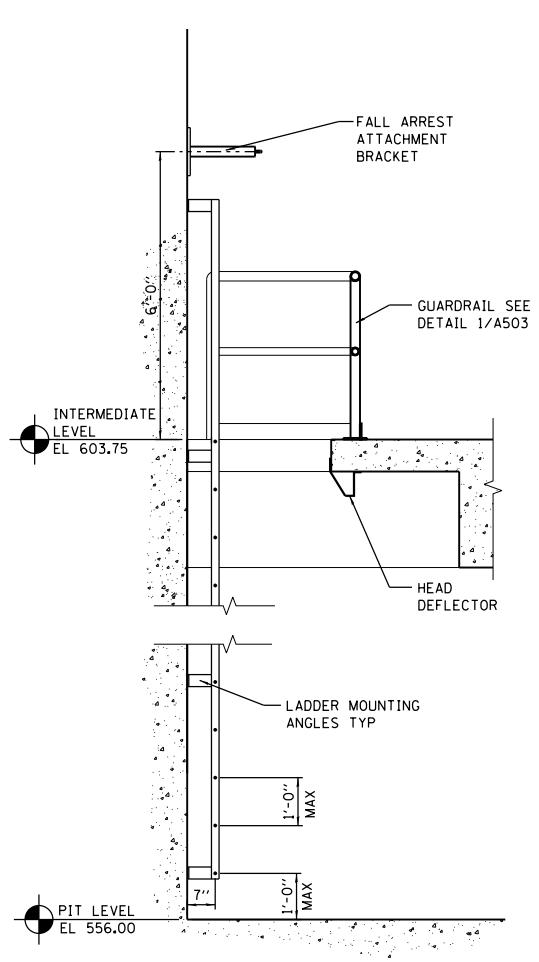
**3 ENLARGED PLAN**



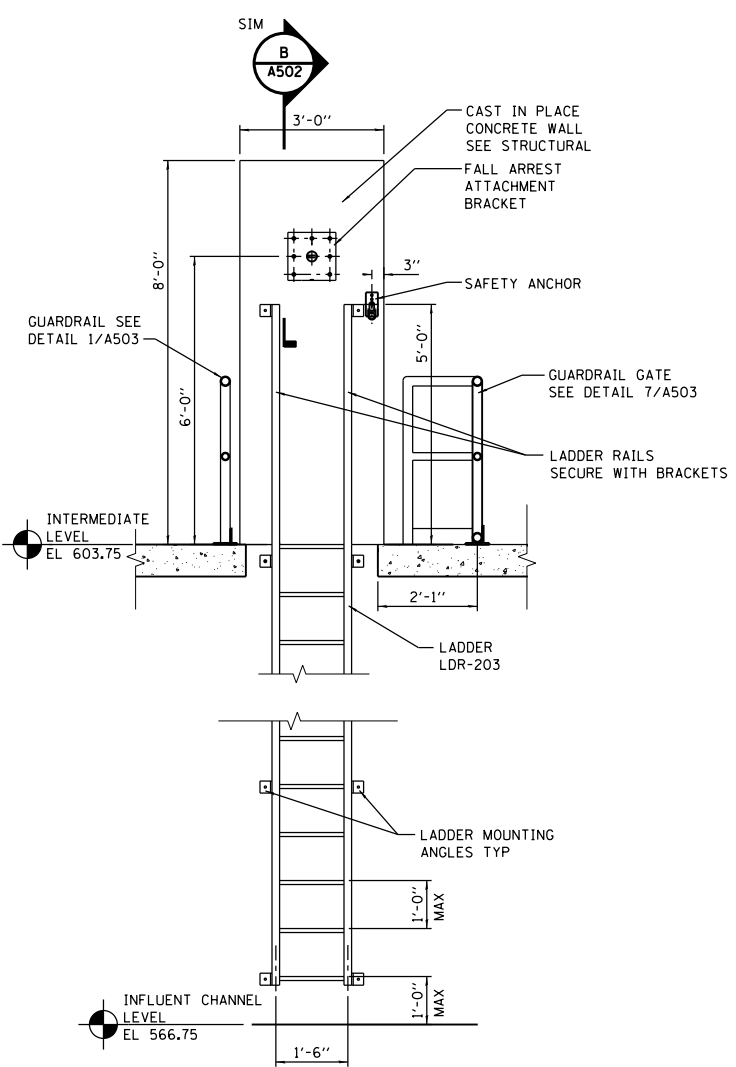
**4 ENLARGED PLAN**



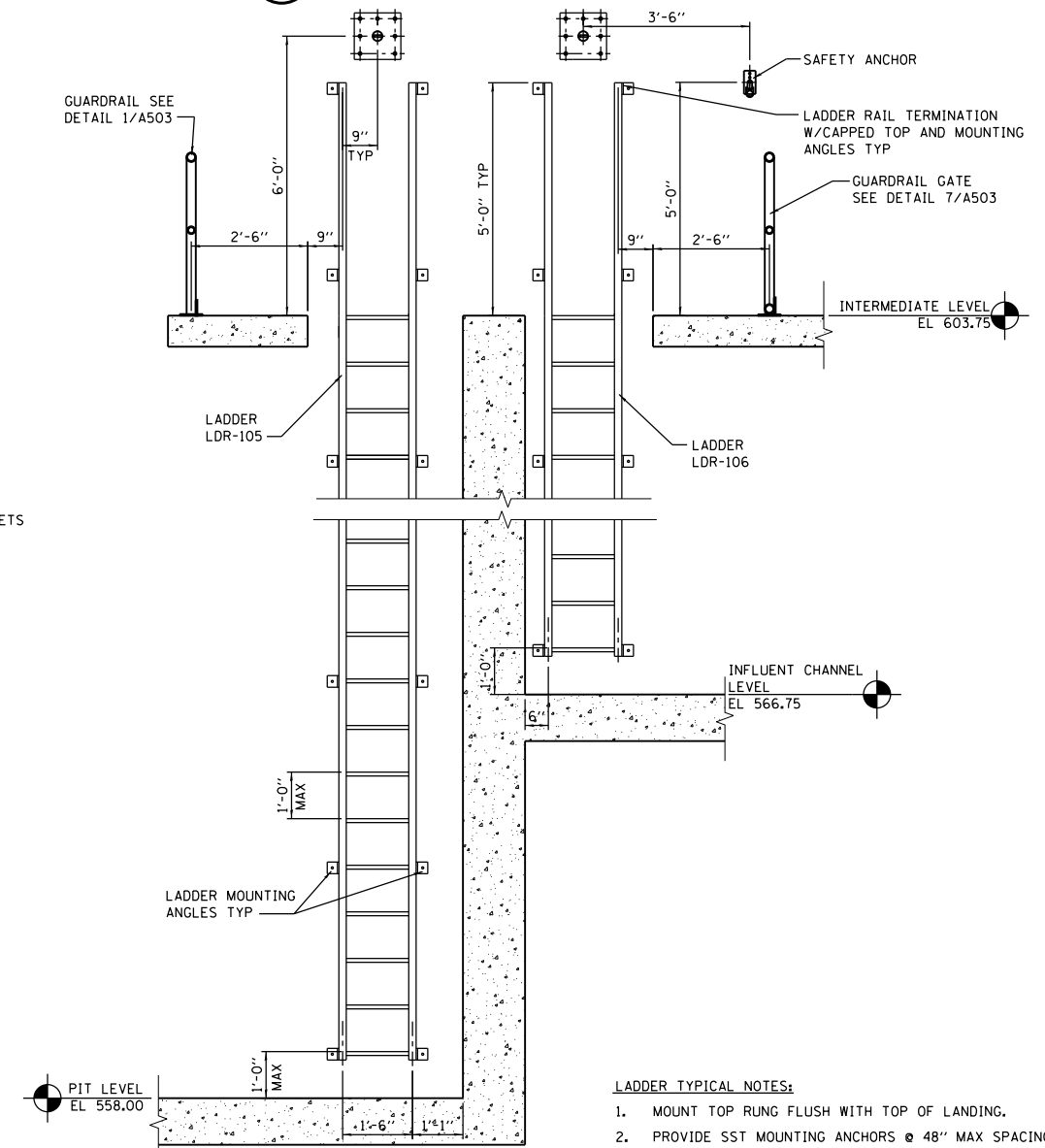
**A LADDER DETAIL**



**B LADDER DETAIL**



**C LADDER DETAIL**



**D LADDERS LDR-105 & LDR-106 SECTION**

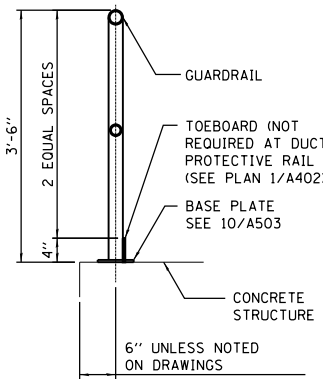
FILE NAME = D191454-A502.DGN  
 USER NAME = bgreen  
 DESIGNED - HDR - M. DOIEL  
 DRAWN - HDR - D. AIKEN  
 CHECKED - HDR - J. RICKERT  
 DATE - 05/30/2019  
 PLOT SCALE = 0.1" = 1'-0"  
 PLOT DATE = 5/29/2019  
 HDR, Inc.  
 8550 W. Bryn Mawr Ave.  
 Suite 900  
 Chicago, IL 60631

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

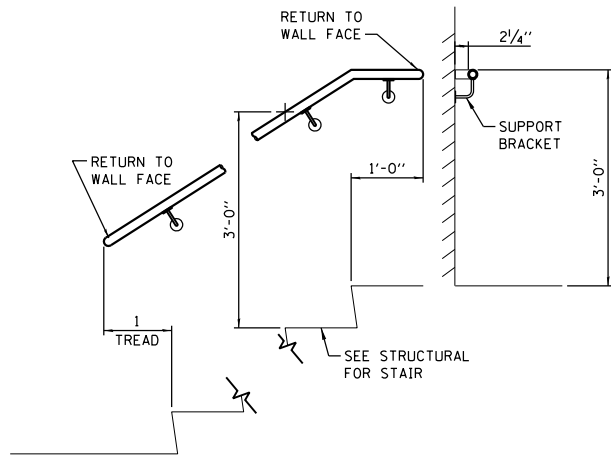
I-290 PUMP STATION NO. 4 RECONSTRUCTION  
LADDER PLANS AND SECTIONS  
SCALE: 1/2"=1'-0" SHEET OF SHEETS STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	123
CONTRACT NO. 62B78				
ILLINOIS FED. AID PROJECT				

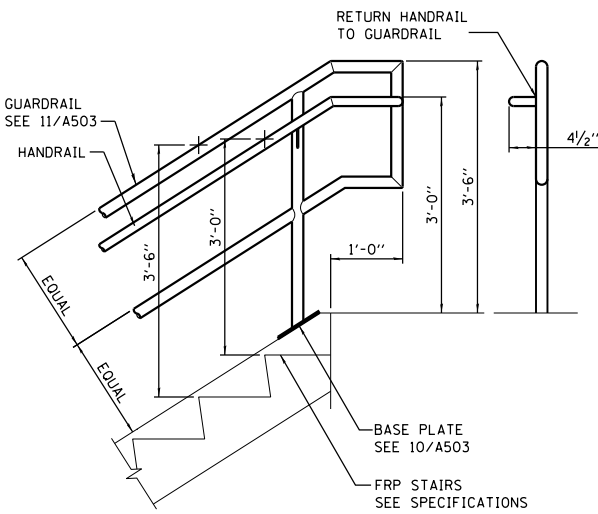
SHEET  
A502



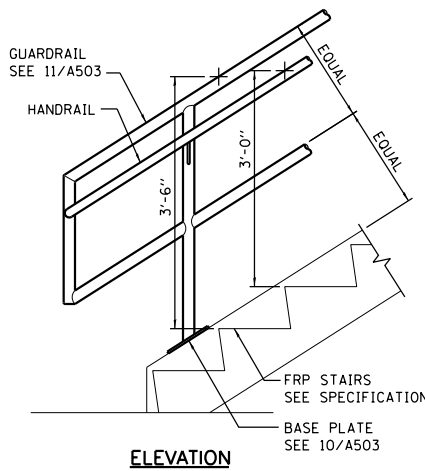
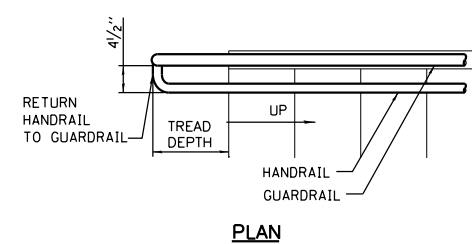
**1 FRP GUARDRAIL**  
3/4"=1'-0"



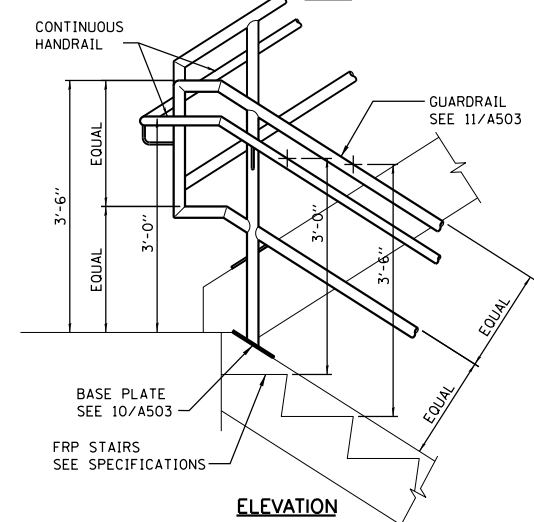
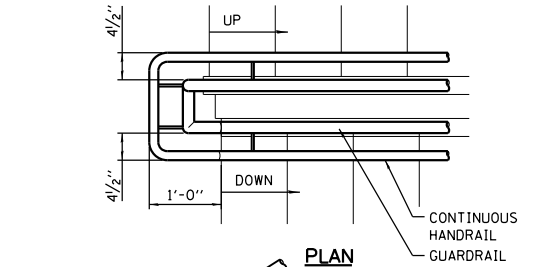
**2 WALL MOUNTED FRP HANDRAIL DETAIL**  
3/4"=1'-0"



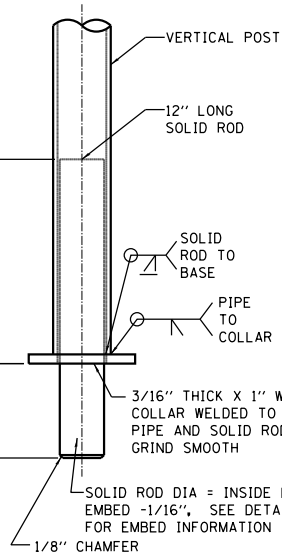
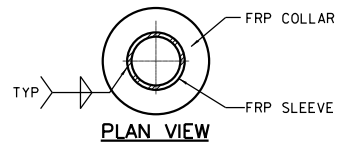
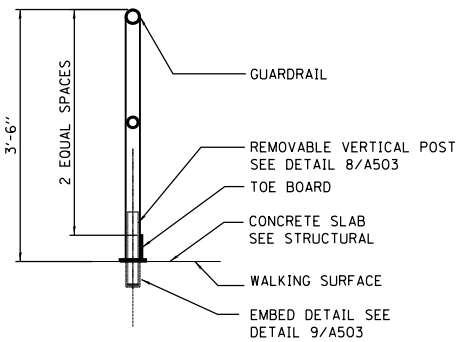
**3 FRP STAIR RAIL**  
3/4"=1'-0"



**4 FRP STAIR RAIL**  
3/4"=1'-0"

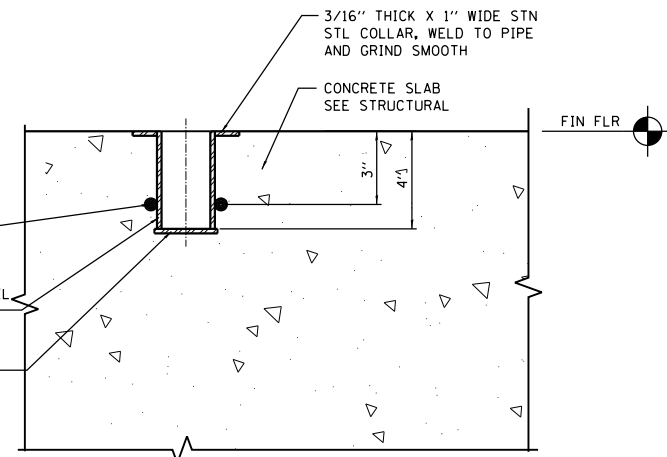


**5 FRP STAIR RAIL**  
3/4"=1'-0"



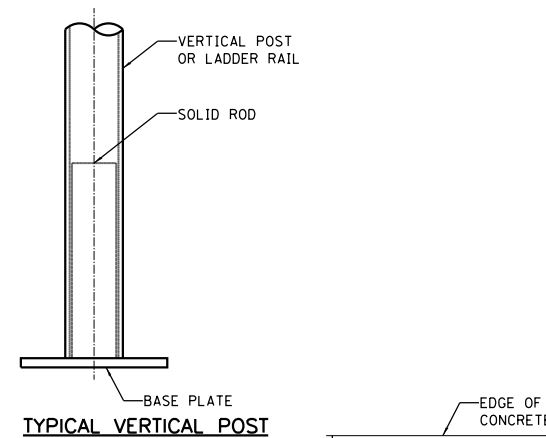
NOTE:  
1. FRP MANUFACTURER IS TO DESIGN AND VERIFY POST BASE TO MEET ALL CODES AND SPECIFICATIONS.

**TYPICAL VERTICAL POST  
FRP REMOVABLE  
GUARDRAIL POST DETAIL**  
3" = 1'-0"

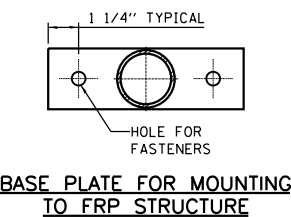


NOTE:  
1. REINFORCEMENT NOT SHOWN FOR CLARITY.  
2. RAILING @ 4/A401 AND 2/A402

**REMOVABLE GUARDRAIL  
POST EMBED DETAIL**  
3" = 1'-0"



**TYPICAL VERTICAL POST**

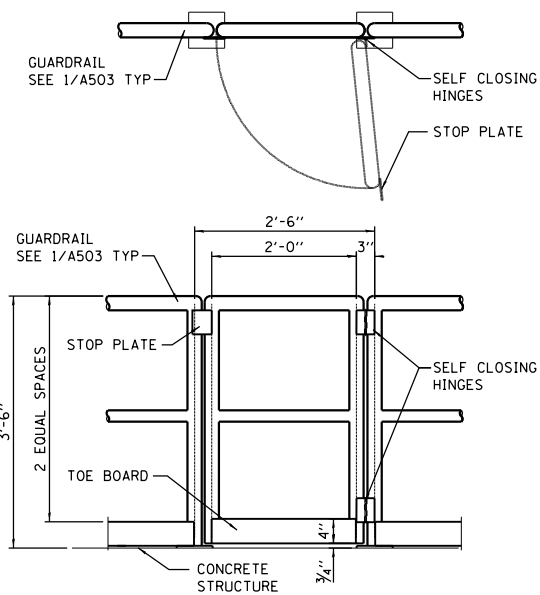


**BASE PLATE FOR MOUNTING  
TO FRP STRUCTURE**

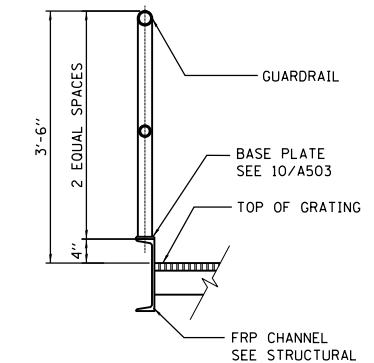
NOTE:  
1. TOEBOARD NOT SHOWN.  
2. DETAIL IS SHOWN AS AN EXAMPLE, FRP MANUFACTURER IS TO DESIGN AND VERIFY BASE PLATE TO MEET ALL CODES AND SPECIFICATIONS.

**VERTICAL POST BASE**  
3" = 1'-0"

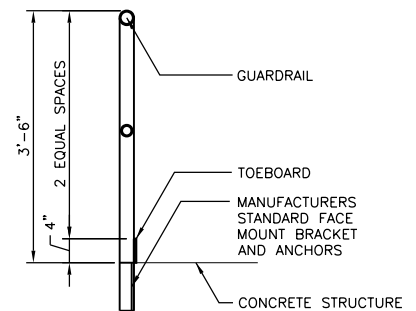
**6 REMOVABLE GUARDRAIL DETAIL**  
3/4"=1'-0"



**7 FRP GUARDRAIL GATE**  
3/4"=1'-0"

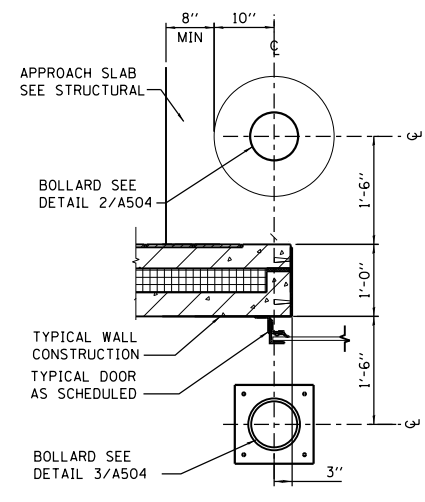


**11 FRP GUARDRAIL**  
3/4"=1'-0"

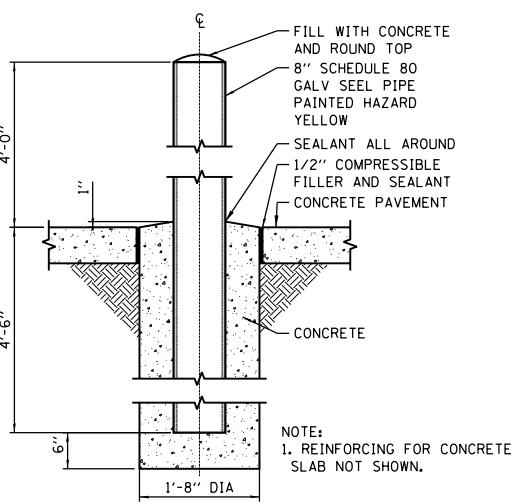


**12 FRP GUARDRAIL**  
3/4"=1'-0"

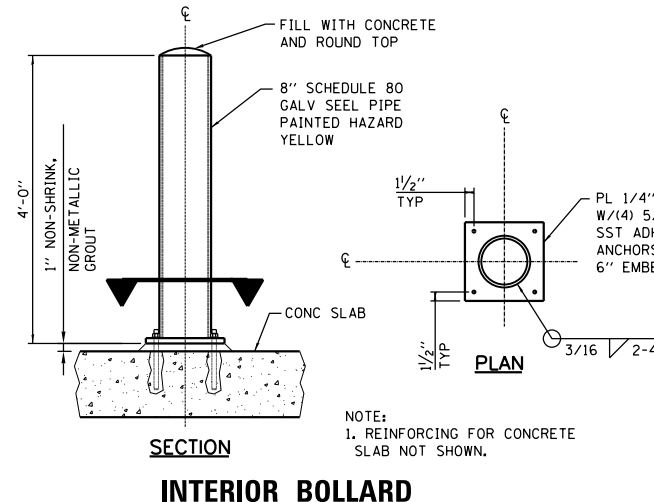
D:\Projects\2019\191454-A503\Drawings\191454-A503.dgn



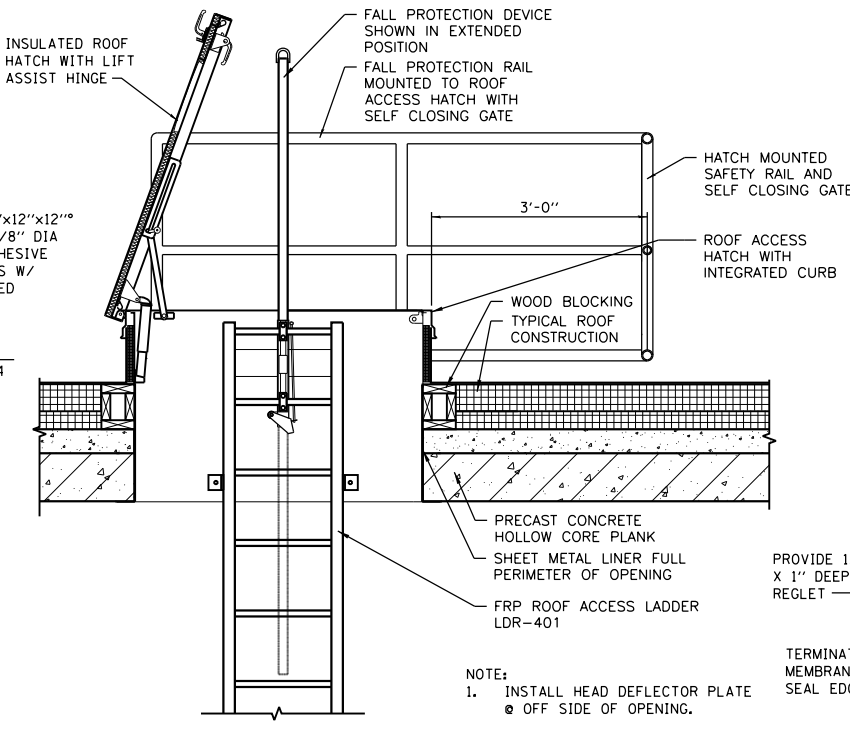
**1 BOLLARD PLAN DETAIL**  
3/4" = 1'-0"



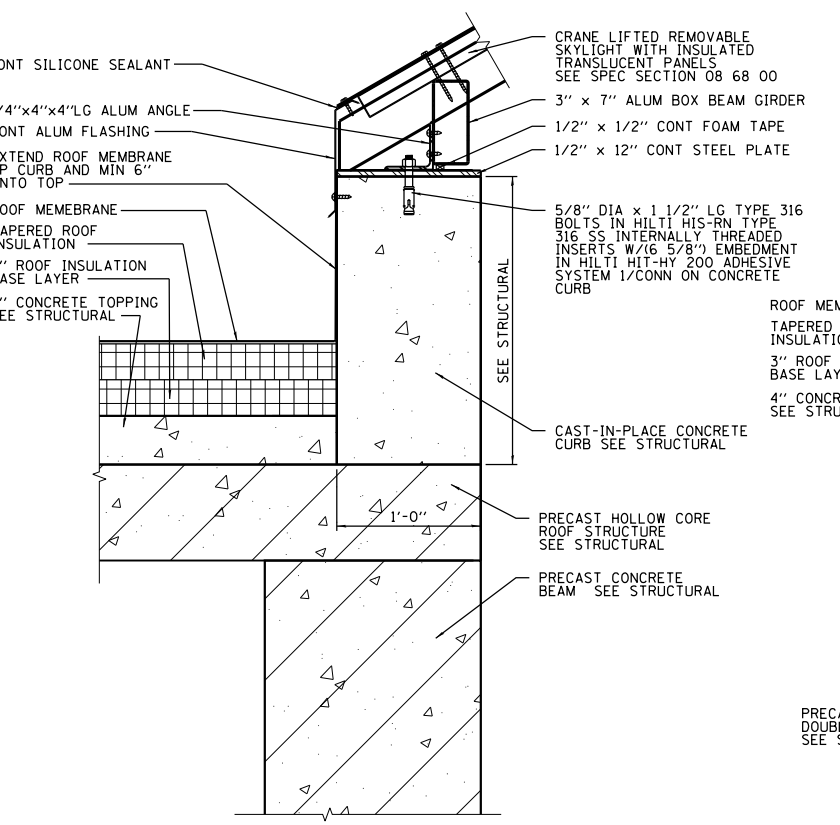
**2 EXTERIOR BOLLARD DETAIL**  
3/4" = 1'-0"



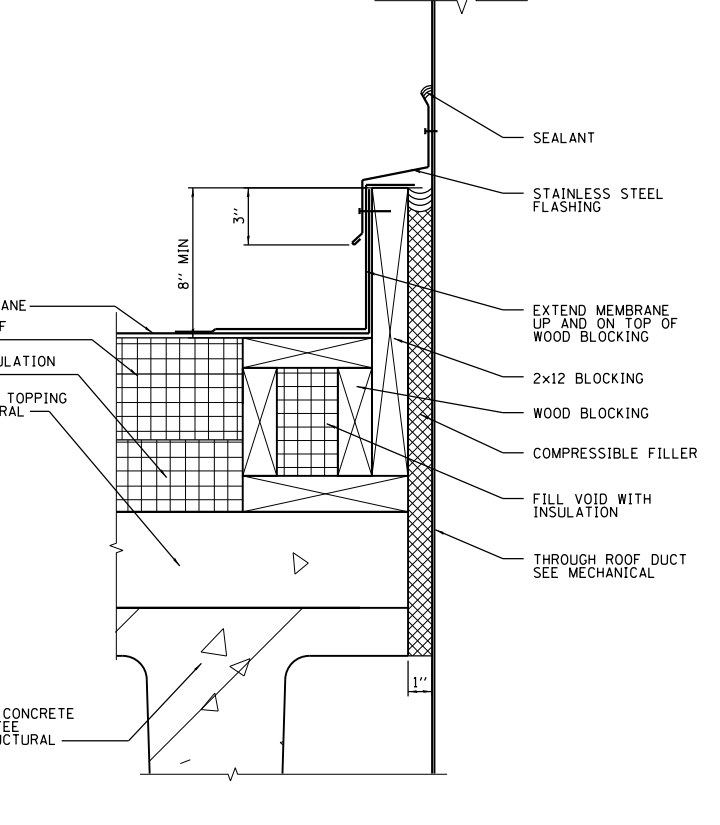
**3 INTERIOR BOLLARD STRUCTURED FLOOR SLAB**  
3/4" = 1'-0"



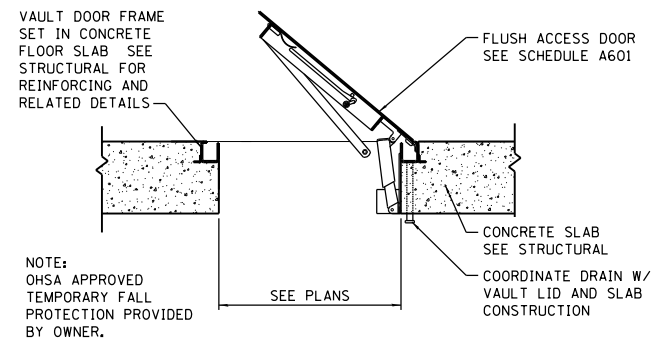
**4 ROOF HATCH DETAIL**  
3/4" = 1'-0"



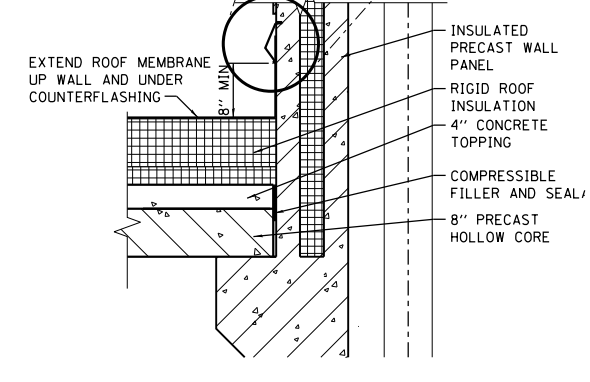
**5 SKYLIGHT DETAIL**  
1 1/2" = 1'-0"



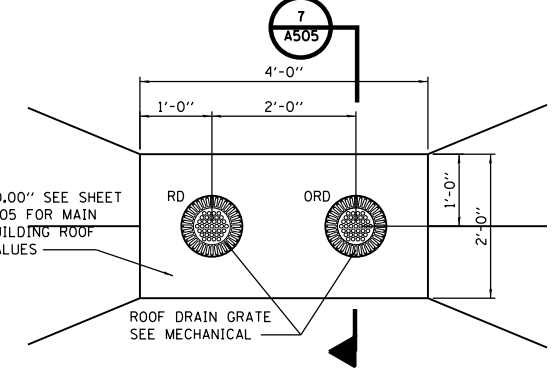
**6 MECHANICAL DUCT PENETRATION**  
3" = 1'-0"



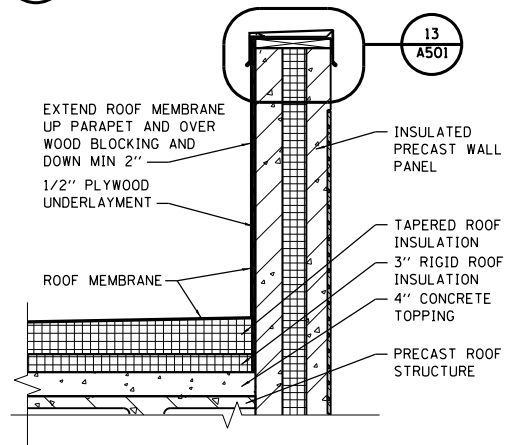
**7 ACCESS HATCH DETAIL**  
A601 3/4" = 1'-0"



**8 ROOF TO WALL DETAIL**  
A304 3/4" = 1'-0"

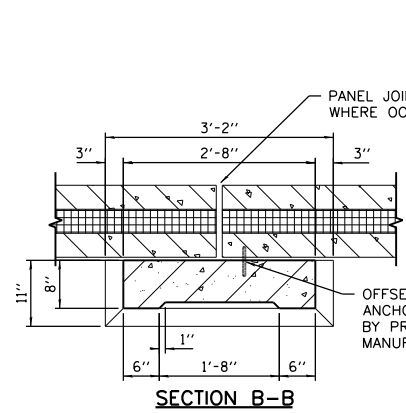


**9 ROOF DRAIN DETAIL**  
A105 3/4" = 1'-0"

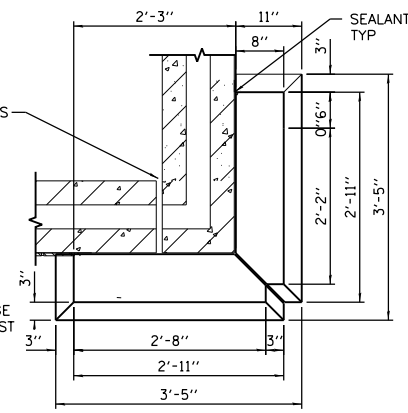


**10 PARAPET DETAIL**  
3/4" = 1'-0"

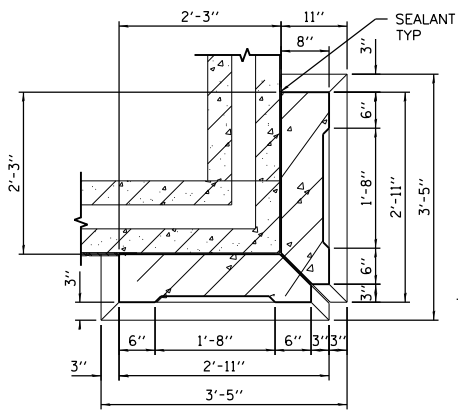
D:\Projects\191454-A504\Drawings\191454-A504.dgn



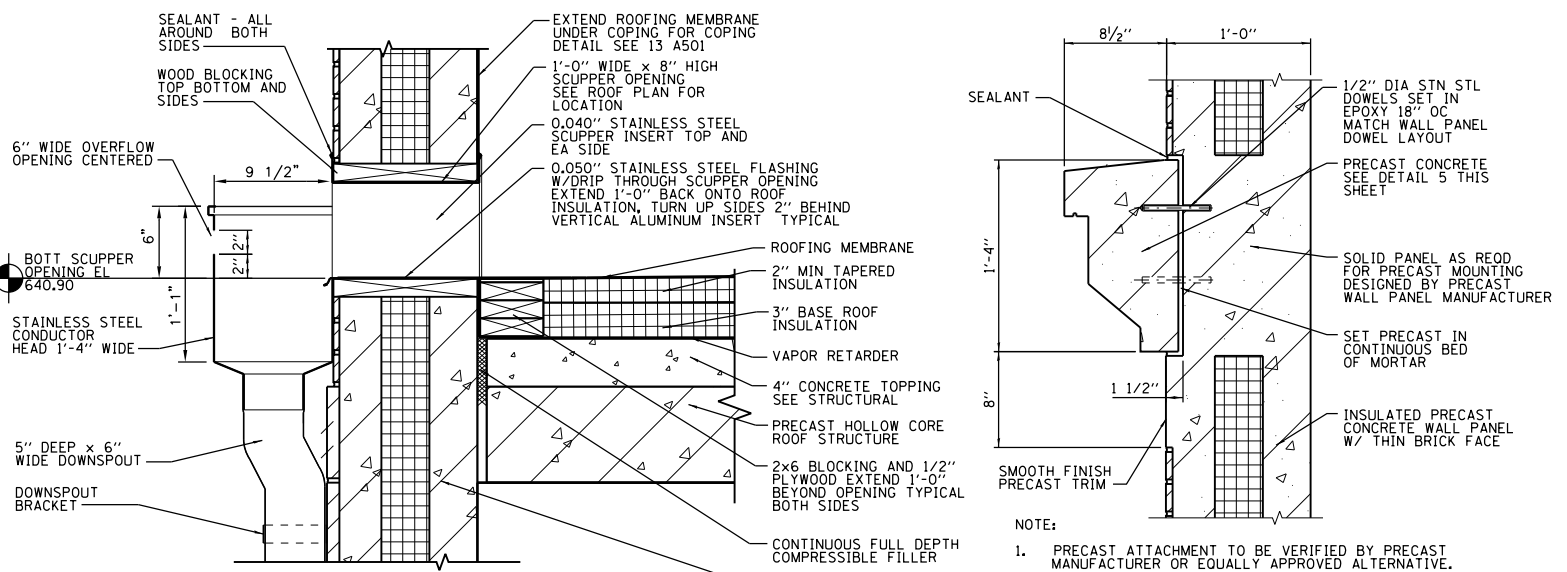
**SECTION B-B**



**SECTION C-C**



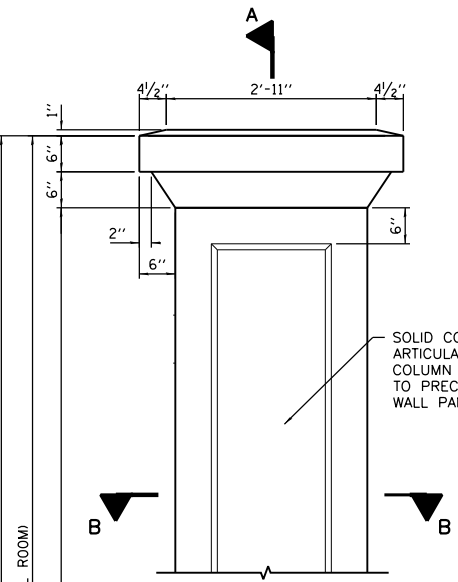
**SECTION D-D**



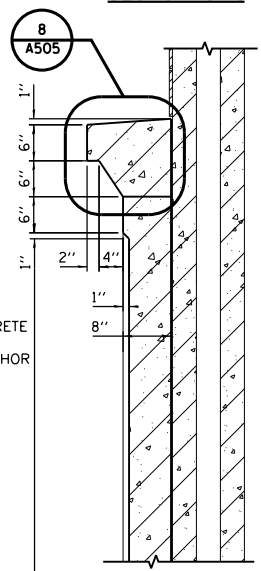
**SCUPPER DETAIL**

**PRECAST DETAIL**

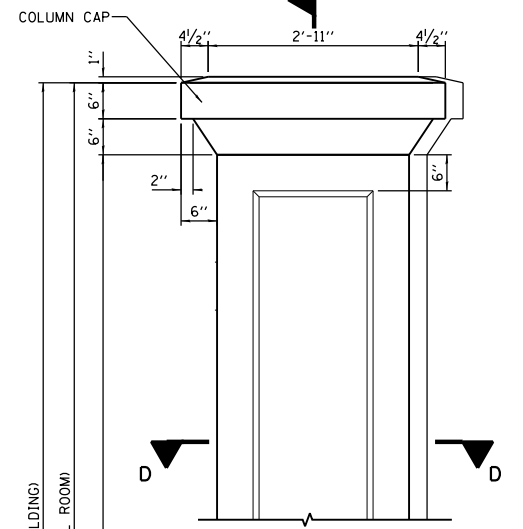
NOTE:  
1. PRECAST ATTACHMENT TO BE VERIFIED BY PRECAST MANUFACTURER OR EQUALLY APPROVED ALTERNATIVE.



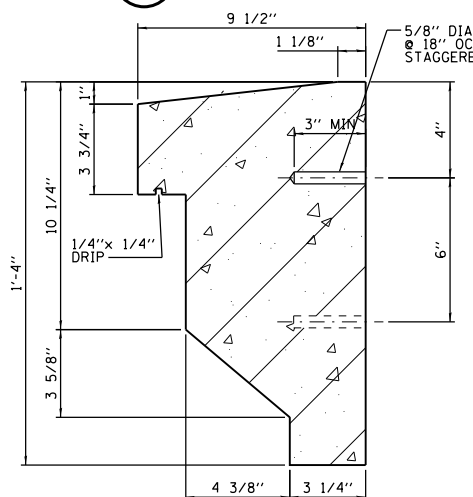
**ELEVATION**



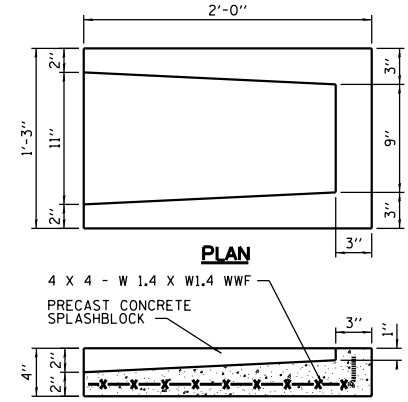
**SECTION A-A**



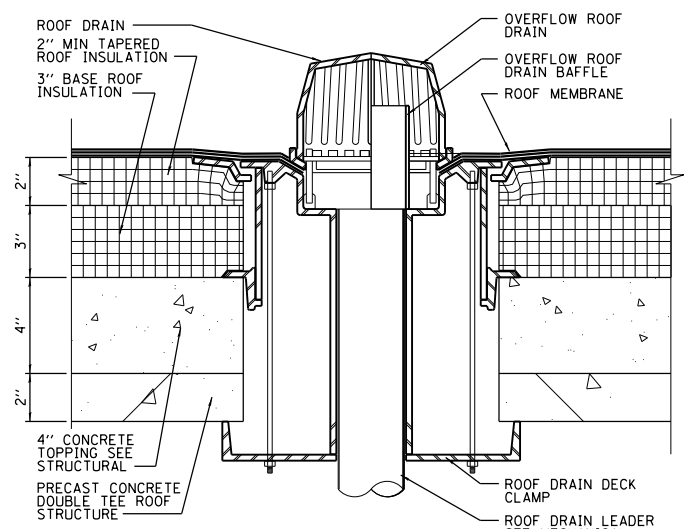
**ELEVATION**



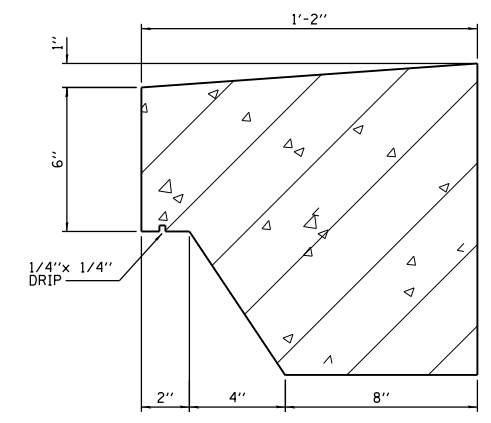
**PRECAST CORNICE DETAIL**



**PRECAST SPLASH BLOCK DETAIL**



**ROOF DRAIN/OVERFLOW DRAIN DETAIL**



**PRECAST COLUMN CAP DETAIL**

FILE NAME = D191454-A505.DGN  
 USER NAME = bgreen  
 DESIGNED - HDR - M. DOIEL  
 DRAWN - HDR - D. AIKEN  
 CHECKED - HDR - J. RICKERT  
 DATE - 05/30/2019  
 PLOT SCALE = 0:1' = 1/4" IN.  
 PLOT DATE = 5/29/2019  
 HDR, Inc.  
 8550 W. Bryn Mawr Ave.,  
 Suite 900  
 Chicago, IL 60631

**1 PRECAST PILASTER DETAIL**  
3/4" = 1'-0"

**2 PRECAST CORNER PILASTER DETAIL**  
3/4" = 1'-0"

**7 ROOF DRAIN/OVERFLOW DRAIN DETAIL**  
3" = 1'-0"

**8 PRECAST COLUMN CAP DETAIL**  
3" = 1'-0"

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

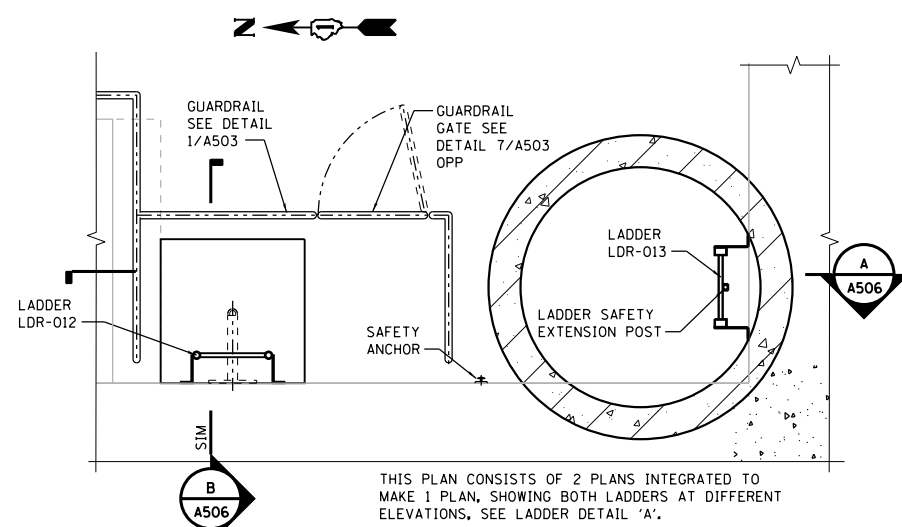
**I-290 PUMP STATION NO. 4 RECONSTRUCTION**  
**PRECAST DETAILS**

SCALE: AS NOTED SHEET OF SHEETS STA. TO STA.

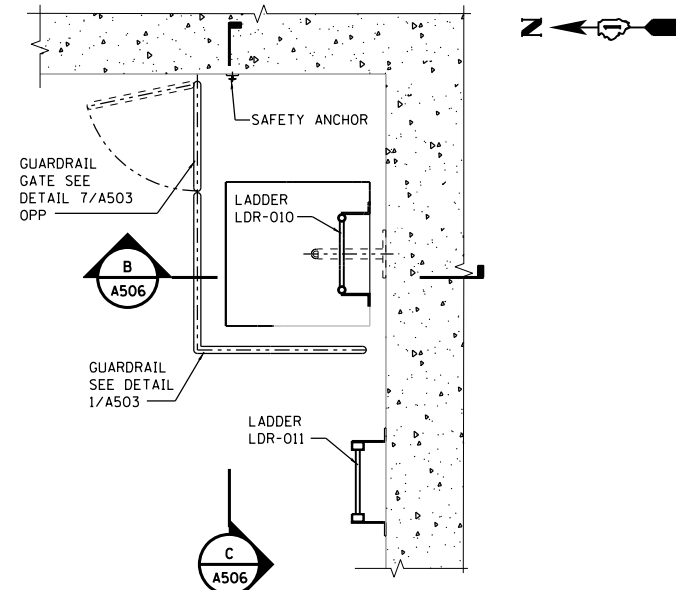
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	126
CONTRACT NO. 62B78				
ILLINOIS FED. AID PROJECT				

SHEET  
A505

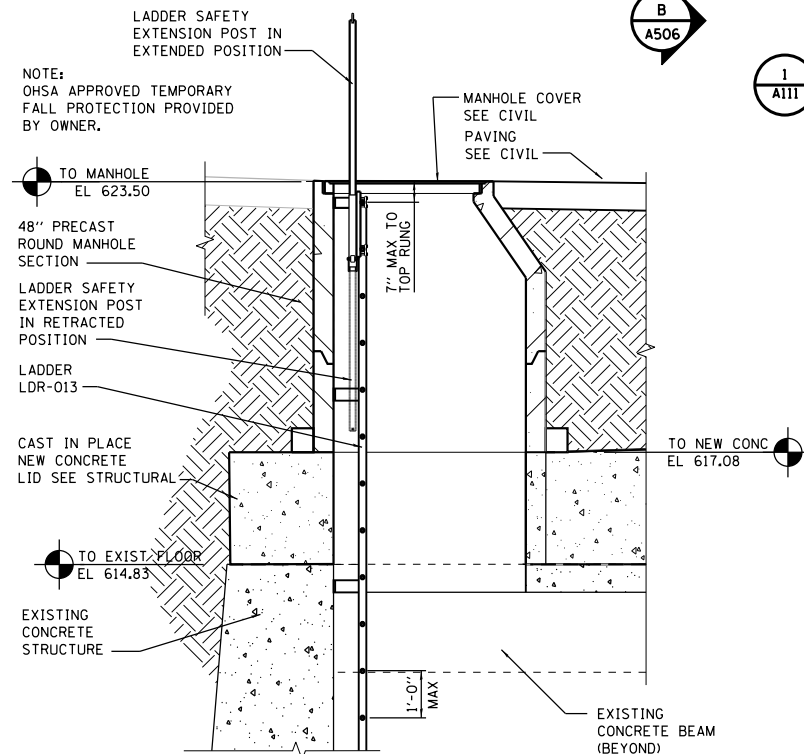
P:\\_PROJECTS\2019\20191121\CD\CD\119454-5506.dgn



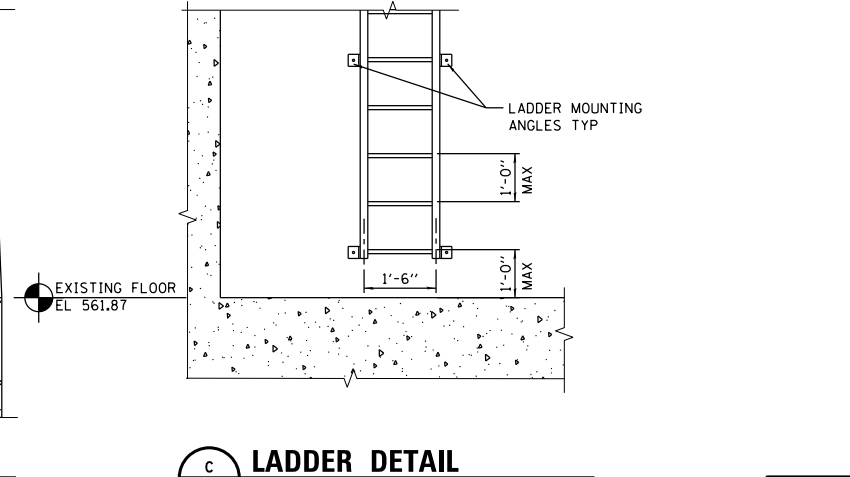
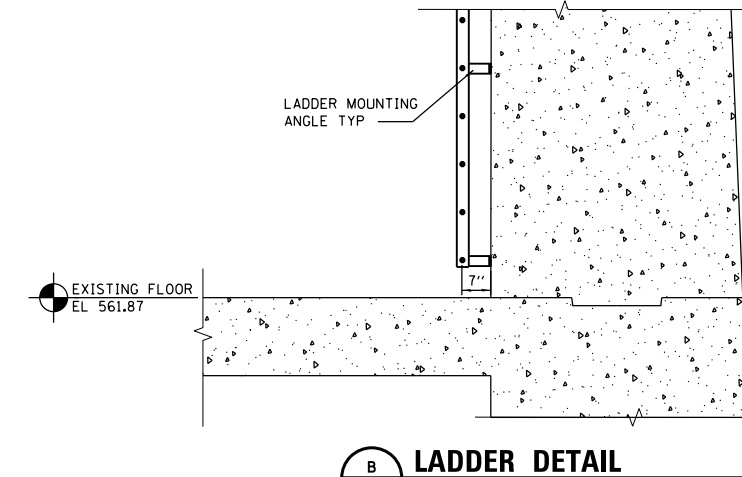
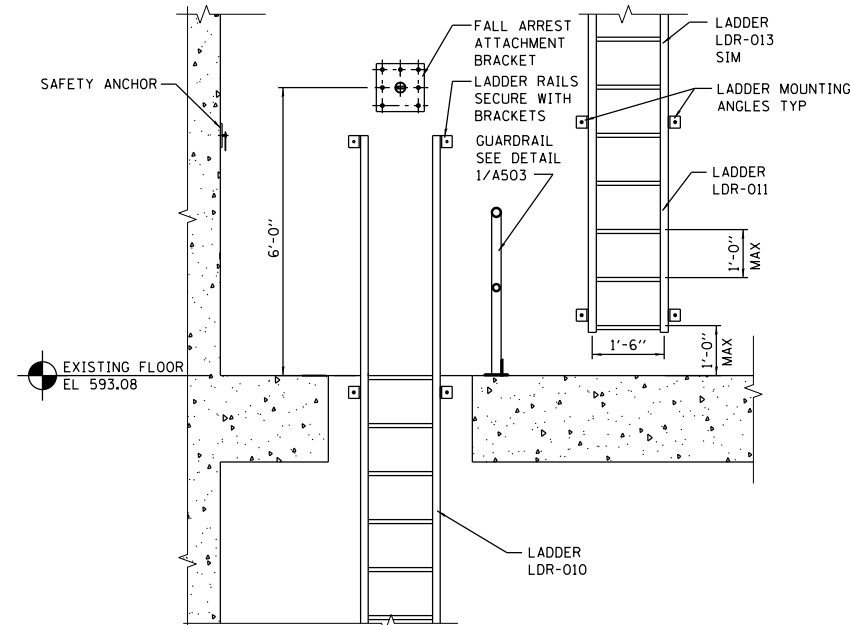
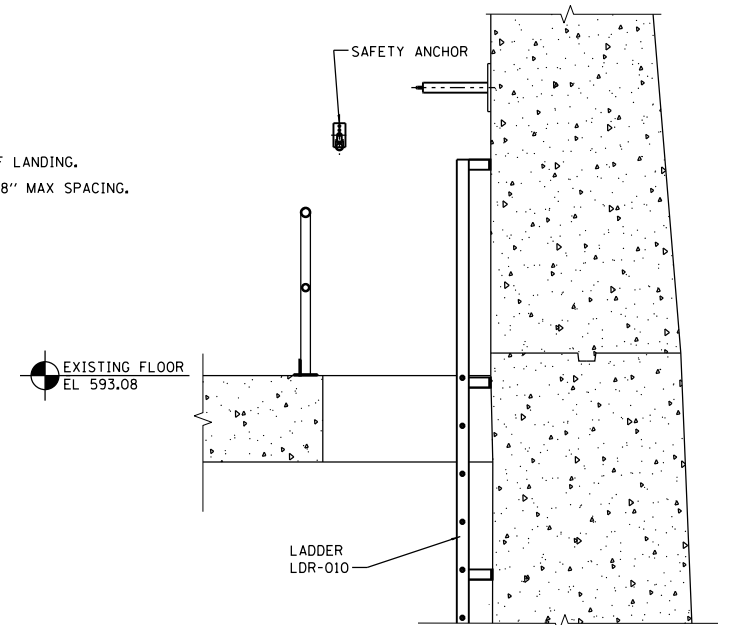
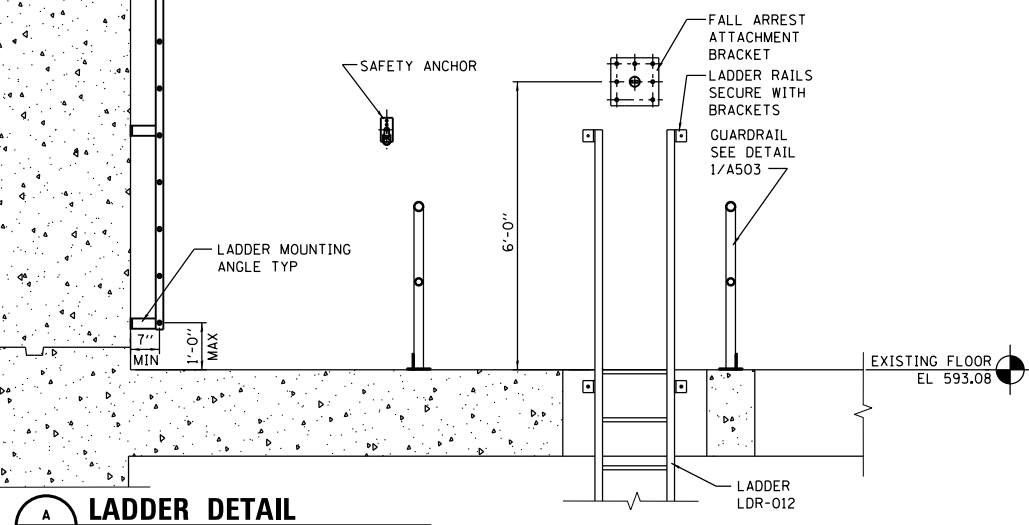
**ENLARGED PLAN**



**ENLARGED PLAN**



- LADDER TYPICAL NOTES:**
1. MOUNT TOP RUNG FLUSH WITH TOP OF LANDING.
  2. PROVIDE SST MOUNTING ANCHORS @ 48" MAX SPACING.



**HDR**  
 HDR, Inc.  
 8550 W. Bryn Mawr Ave.  
 Suite 900  
 Chicago, IL 60631

FILE NAME = D191454-A506.DGN	USER NAME = bgreen	DESIGNED - HDR - M. DOIEL	REVISED -
		DRAWN - HDR - D. AIKEN	REVISED -
		CHECKED - HDR - J. RICKERT	REVISED -
		DATE - 05/30/2019	REVISED -
PLOT SCALE = 0.1" = 1'-0"			
PLOT DATE = 5/29/2019			

**STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION**

**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
 MISCELLANEOUS DETAILS**

SCALE: AS NOTED SHEET OF SHEETS STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	127
CONTRACT NO. 62B78				
ILLINOIS FED. AID PROJECT				

SHEET A506

ROOM FINISH SCHEDULE										
ROOM NUMBER	ROOM NAME	DRAWING NUMBER	FLOOR	BASE	WALLS				CEILING FINISH	REMARKS
					NORTH	EAST	SOUTH	WEST		
001	STAIR	A101	SC	N	SC	SC	SC	SC	ES	
002	STAIR	A101	SC	N	SC	SC	SC	SC	ES	
003	PUMP AREA	A101	SC	N	SC	SC	SC	SC	ES	
004	PUMP AREA	A101	SC	N	SC	SC	SC	SC	ES	
005	SCREEN AREA	A101	SC	N	SC	SC	SC	SC	ES	
013	PUMP AREA	A102	SC	N	SC	SC	SC	SC	ES	
014	PUMP AREA	A102	SC	N	SC	SC	SC	SC	ES	
015	SCREEN AREA	A102	SC	N	SC	SC	SC	SC	ES	
101	PUMP ROOM	A103	SC	N	SC	SC	SC	SC	ES	
102	ELECTRICAL ROOM	A103	SC	N	SC	SC	SC	SC	ES	

MATERIAL AND FINISH LEGEND			
FLOOR	SC	SEALED CONCRETE	
BASE	N	NONE	
WALLS	SC	SEALED CONCRETE	
CEILING	ES	EXPOSED STRUCTURE	

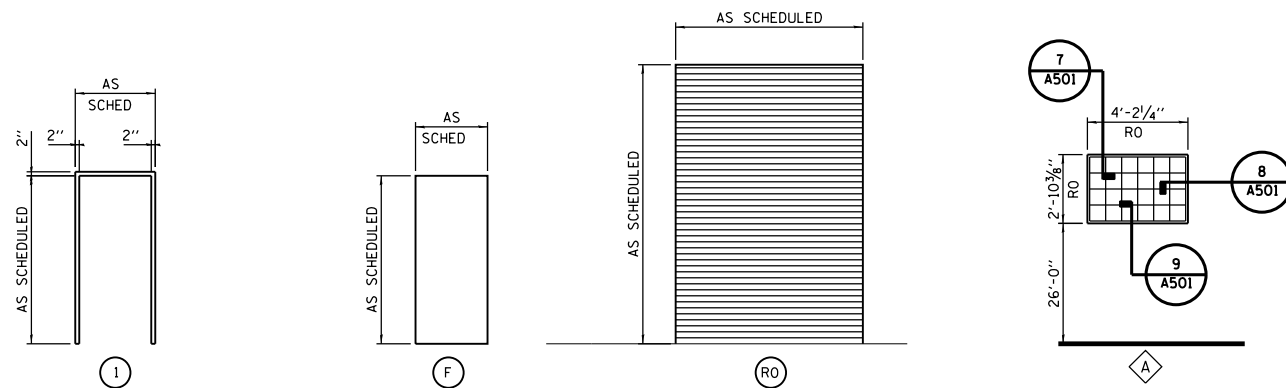
REMARKS:  
1

DOOR SCHEDULE												
DOOR NUMBER	SIZE (W x H)	DRAWING NUMBER	DOOR			FRAME/TRACK			DOOR HARDWARE	FIRE RATING	DETAILS	REMARKS
			TYPE	MATERIAL	FINISH	TYPE	MATERIAL	FINISH				
001A	3'-0" x 7'-2"	A103	F	SST	FF	1	SST	FF	HW-2	60	1, 2 / A501	
001B	3'-0" x 7'-2"	A103	F	SST	FF	1	SST	FF	HW-1	-	3, 4 / A501	
001C	3'-0" x 7'-2"	A102	F	SST	FF	1	SST	FF	HW-2	60	1, 2 / A501	
002A	3'-0" x 7'-2"	A103	F	SST	FF	1	SST	FF	HW-2	60	1, 2 / A501	
002B	3'-0" x 7'-2"	A103	F	SST	FF	1	SST	FF	HW-1	-	3, 4 / A501	
002C	3'-0" x 7'-2"	A102	F	SST	FF	1	SST	FF	HW-2	60	1, 2 / A501	
101A	6'-0" x 7'-2"	A103	RO	STT	PT	-	-	-	-	-	5, 6 / A501	
101B	12'-0" x 20'-0"	A103	RO	STT	PT	-	-	-	-	-	5, 6 / A501	
101C	3'-0" x 7'-2"	A103	F	SST	FF	1	SST	FF	HW-1	-	3, 4 / A501	
102A	3'-0" x 7'-2"	A103	F	SST	FF	1	SST	FF	HW-1	-	3, 4 / A501	
102B	PR 3'-10" x 7'-10"	A103	F	SST	FF	1	SST	FF	HW-4	-	3, 4 / A501	
102C	3'-0" x 7'-2"	A103	F	SST	FF	1	SST	FF	HW-1	-	3, 4 / A501	

MATERIAL AND FINISH LEGEND			
MATERIAL	SST	STAINLESS STEEL	
FINISH	FF	FACTORY FINISH	
	ST	STEEL	
	PT	PAINT	

REMARKS:  
1 SEE SPECIFICATIONS FOR DOOR HARDWARE



1 FRAME TYPES      2 DOOR TYPES      3 GLASS BLOCK WINDOW

LADDER SCHEDULE							
LADDER NUMBER	DRAWING NUMBER	LOCATION	ELEVATION		MATERIAL	DETAILS	REMARKS
			TOP	BOTTOM			
LDR-010	A111	EXISTING PUMP STATION	593.55'	561.87'	FRP	2, B & C/A506	1
LDR-011	A111	EXISTING PUMP STATION	623.50'	593.55'	FRP	2 & C/A506	1, 2
LDR-012	A111	EXISTING PUMP STATION	593.55'	561.87'	FRP	1 & A/A506	1
LDR-013	A111	EXISTING PUMP STATION	623.50'	593.55'	FRP	1 & A/A506	1, 2
LDR-101	A102	SCREEN AREA	603.75'	566.75'	FRP	1 & 2, A502	
LDR-102	-	NOT USED	-	-	-	-	
LDR-103	A102	SCREEN AREA	603.75'	566.75'	FRP	5 & 6, A502	
LDR-104	A102	NORTH PUMP AREA	603.75'	556.00'	FRP	3 & 4, A502	
LDR-105	A102	SOUTH PUMP AREA	603.75'	558.00'	FRP	7 & 8, A502	
LDR-106	A102	SOUTH PUMP AREA	603.75'	556.75'	FRP	7 & 8, A502	
LDR-201	A102	SCREEN AREA	603.75'	566.75'	FRP	1 & 2, A502, (MIRRORED)	
LDR-202	-	NOT USED	-	-	-	-	
LDR-203	A102	SCREEN AREA	603.75'	566.75'	FRP	5 & 6, A502, (MIRRORED)	
LDR-204	A102	NORTH PUMP AREA	603.75'	556.00'	FRP	3 & 4, A502, (MIRRORED)	
LDR-205	A102	SOUTH PUMP AREA	603.75'	558.00'	FRP	7 & 8, A502, (MIRRORED)	
LDR-206	A102	SOUTH PUMP AREA	603.75'	556.75'	FRP	7 & 8, A502, (MIRRORED)	
LDR-401	A401	STAIR TOWER TO ROOF	663.9'	653.9'	FRP	SECT 'A' & DET 2, A401	

MATERIAL LEGEND	
MATERIAL	FRP
	FIBERGLASS REINFORCED PLASTIC

REMARKS:  
1. FIELD VERIFY CONDITIONS (ELEVATIONS, DIMENSIONS) AFTER NEW CONSTRUCTION, PRIOR TO FABRICATION.  
2. PROVIDE LADDER ASSIST SAFETY POST.

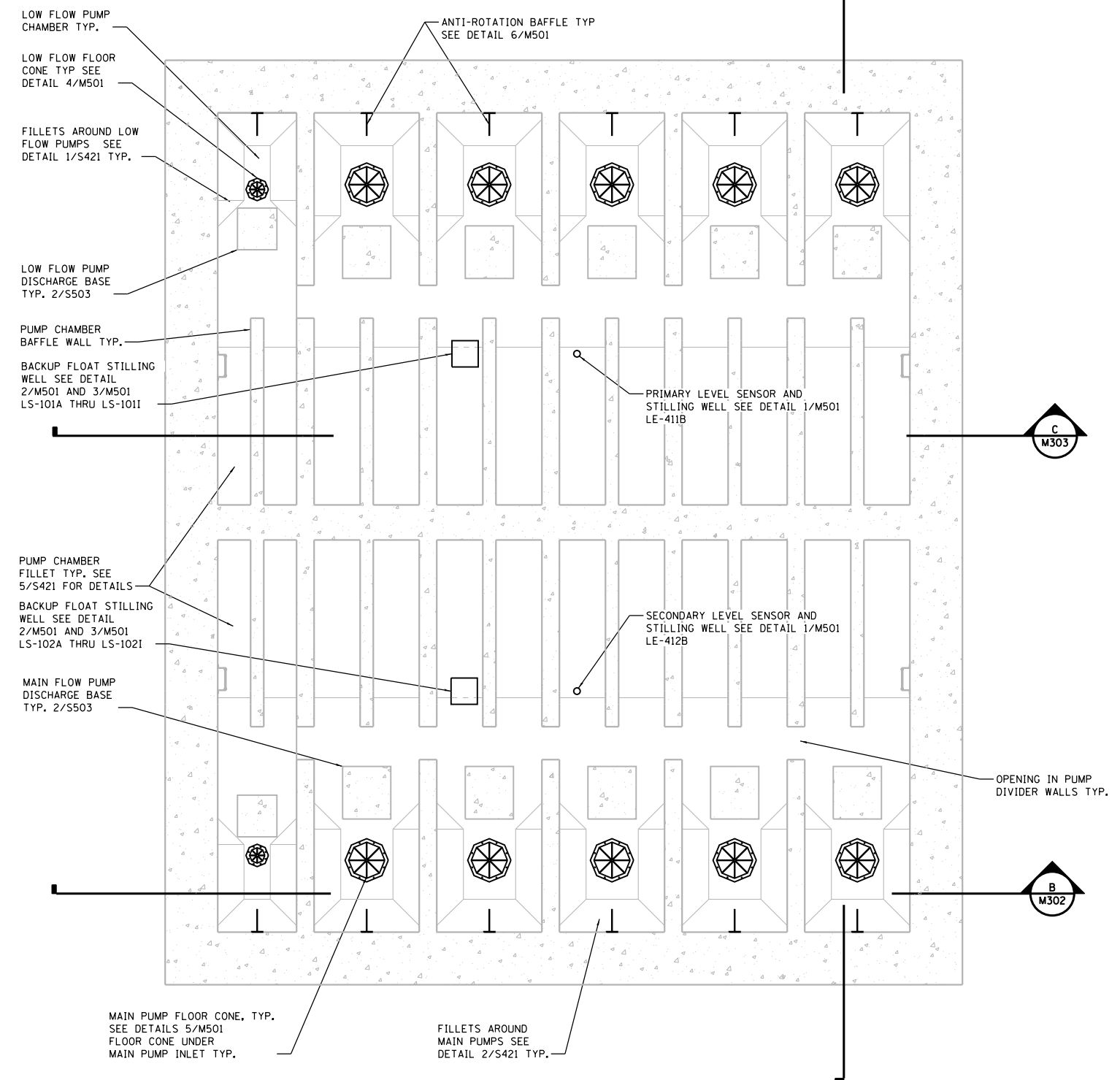
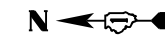
ACCESS HATCH SCHEDULE							
HATCH NUMBER	DRAWING NUMBER	LOCATION	CLEAR OPENING SIZE	TYPE	MATERIAL	DETAILS	REMARKS
AH-011	A102	PUMP AREA	3'-0" x 3'-0"	B	SST	7 / A504	
AH-012	A102	PUMP AREA	2'-0" x 2'-0"	A	SST	7 / A504	
AH-020	A102	SCREEN AREA	2'-0" x 2'-0"	A	SST	7 / A504	
AH-021	A102	PUMP AREA	3'-0" x 3'-0"	B	SST	7 / A504	
AH-022	A102	PUMP AREA	2'-0" x 2'-0"	A	SST	7 / A504	
AH-101	A103	PUMP ROOM	3'-6" x 3'-6"	C	SST	7 / A504	
AH-102	A103	PUMP ROOM	2'-6" x 2'-6"	C	SST	7 / A504	
AH-103	A103	PUMP ROOM	1'-10" x 2'-6"	D	SST	7 / A504	
AH-104	A103	PUMP ROOM	2'-6" x 2'-6"	C	SST	7 / A504	
AH-105	A103	PUMP ROOM	2'-6" x 2'-6"	C	SST	7 / A504	
AH-201	A103	PUMP ROOM	2'-6" x 2'-6"	C	SST	7 / A504	
AH-202	A103	PUMP ROOM	1'-10" x 2'-6"	D	SST	7 / A504	
AH-203	A103	PUMP ROOM	2'-6" x 2'-6"	C	SST	7 / A504	
AH-204	A103	PUMP ROOM	2'-6" x 2'-6"	C	SST	7 / A504	
RH-101	A105	ROOF	4'-0" x 4'-0"	D	SST	4 / A504	

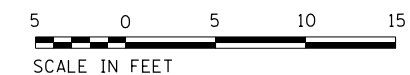
MATERIAL LEGEND	
MATERIAL	SST
	STAINLESS STEEL

REMARKS:





**PIPING PLAN AT ELEVATION. 558.00**



P:\\_P\488\0488\Hatch\Central\Omaha\Documents\001915\CON0078431\000000000271972\6.0\_CAD\_BIM\6.2\_Work\In\_Progress\6.2.2\_CAD\_Sheets\0191454-M101

**HDR**  
 HDR, Inc.  
 8550 W. Bryn Mawr Ave.,  
 Suite 900  
 Chicago, IL 60631

FILE NAME = D191454-M101.DGN	USER NAME = bgreen	DESIGNED - HDR - M. KASPER	REVISED -
		DRAWN - HDR - RHA	REVISED -
		CHECKED - HDR - B. RIEDE	REVISED -
		DATE - 05/30/2019	REVISED -

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

**I-290 PUMP STATION NO. 4 RECONSTRUCTION**  
**PIT LEVEL PIPING PLAN AT ELEVATION 558.00**  
 SCALE: 3/16"=1'-0" SHEET OF SHEETS STA. TO STA.

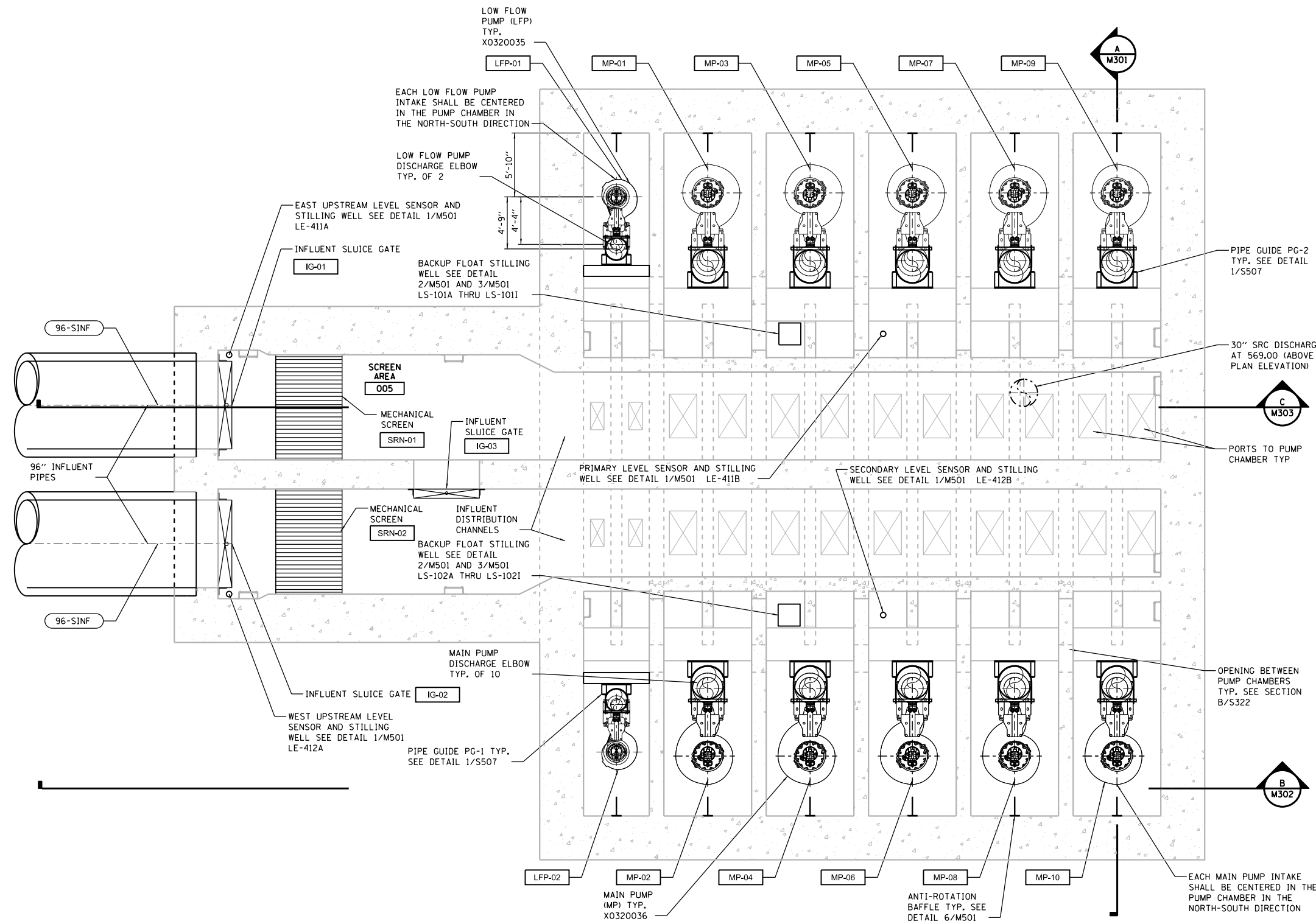
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	129
ILLINOIS FED. AID PROJECT			CONTRACT NO. 62B78	

SHEET M101

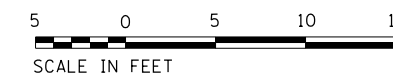


GENERAL NOTES:

- 1. ALL EQUIPMENT SHALL MEET CLASSIFICATION DEFINED ON SHEET E003.



PIPING PLAN AT ELEVATION 566.75



FILE NAME = D191454-M102.DGN  
 USER NAME = bgreen  
 DESIGNED - HDR - M. KASPER  
 DRAWN - HDR - RHA  
 PLOT SCALE = 0:1' = 1/4" / 1/8"  
 PLOT DATE = 5/29/2019  
 CHECKED - HDR - B. RIEDE  
 DATE - 05/30/2019  
 REVISED -  
 REVISED -  
 REVISED -  
 REVISED -  
 STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION  
 I-290 PUMP STATION NO. 4 RECONSTRUCTION  
 INFLUENT CHANNEL LEVEL PIPING PLAN AT EL. 566.75  
 SCALE: 3/8" = 1'-0"  
 SHEET OF SHEETS STA. TO STA.  
 SHEET M102  
 SECTION 3434-232I-R  
 COUNTY COOK  
 TOTAL SHEETS 232  
 SHEET NO. 130  
 CONTRACT NO. 62B78  
 ILLINOIS FED. AID PROJECT

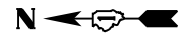


FILE NAME = D191454-M102.DGN	USER NAME = bgreen	DESIGNED - HDR - M. KASPER	REVISED -
HDR, Inc. 8550 W. Bryn Mawr Ave., Suite 900 Chicago, IL 60631		DRAWN - HDR - RHA	REVISED -
		CHECKED - HDR - B. RIEDE	REVISED -
		DATE - 05/30/2019	REVISED -

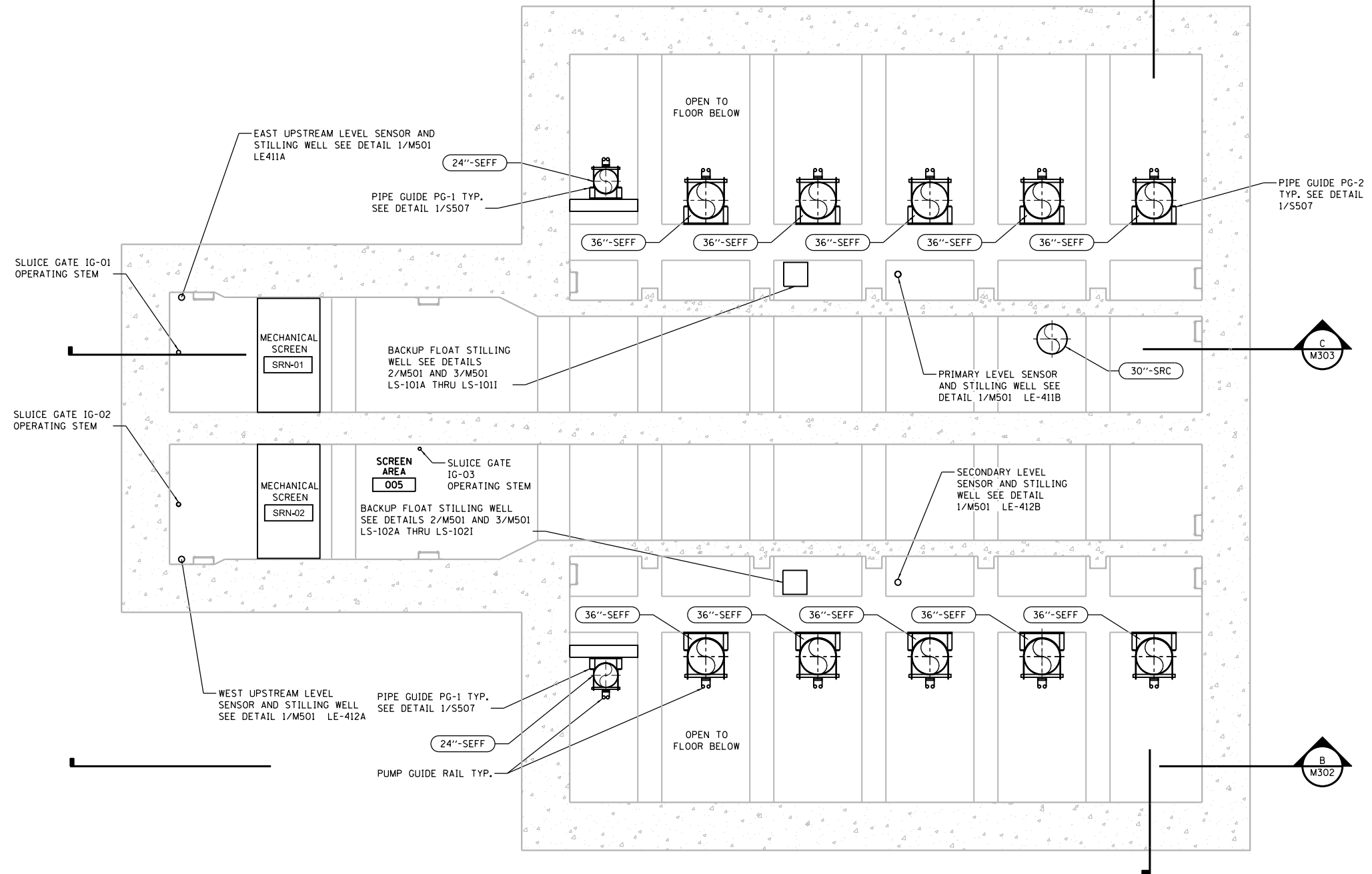
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

I-290 PUMP STATION NO. 4 RECONSTRUCTION  
INFLUENT CHANNEL LEVEL PIPING PLAN AT EL. 566.75

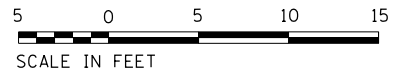
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-232I-R	COOK	232	130
CONTRACT NO. 62B78				
ILLINOIS FED. AID PROJECT				



- GENERAL NOTES:
- ALL EQUIPMENT SHALL MEET CLASSIFICATION DEFINED ON SHEET E003.



**PIPING PLAN AT ELEVATION 585.00**



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FILE NAME = D191454-M103.DGN  
 USER NAME = bgreen  
 DESIGNED - HDR - M. KASPER  
 DRAWN - HDR - RHA  
 CHECKED - HDR - B. RIEDE  
 DATE - 05/30/2019  
 PLOT SCALE = 0:1' = 1/4" / 1/8"  
 PLOT DATE = 5/29/2019

WEST UPSTREAM LEVEL SENSOR AND STILLING WELL SEE DETAIL 1/M501 LE-412A  
 MECHANICAL SCREEN SRN-02  
 SLUICE GATE 1G-02 OPERATING STEM  
 SLUICE GATE 1G-03 OPERATING STEM  
 SCREEN AREA 005  
 BACKUP FLOAT STILLING WELL SEE DETAILS 2/M501 AND 3/M501 LS-102A THRU LS-102I  
 SECONDARY LEVEL SENSOR AND STILLING WELL SEE DETAIL 1/M501 LE-412B  
 OPEN TO FLOOR BELOW  
 36''-SEFF  
 36''-SEFF  
 36''-SEFF  
 36''-SEFF  
 36''-SEFF  
 36''-SEFF  
 24''-SEFF  
 PIPE GUIDE PG-1 TYP. SEE DETAIL 1/S507  
 PUMP GUIDE RAIL TYP.

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

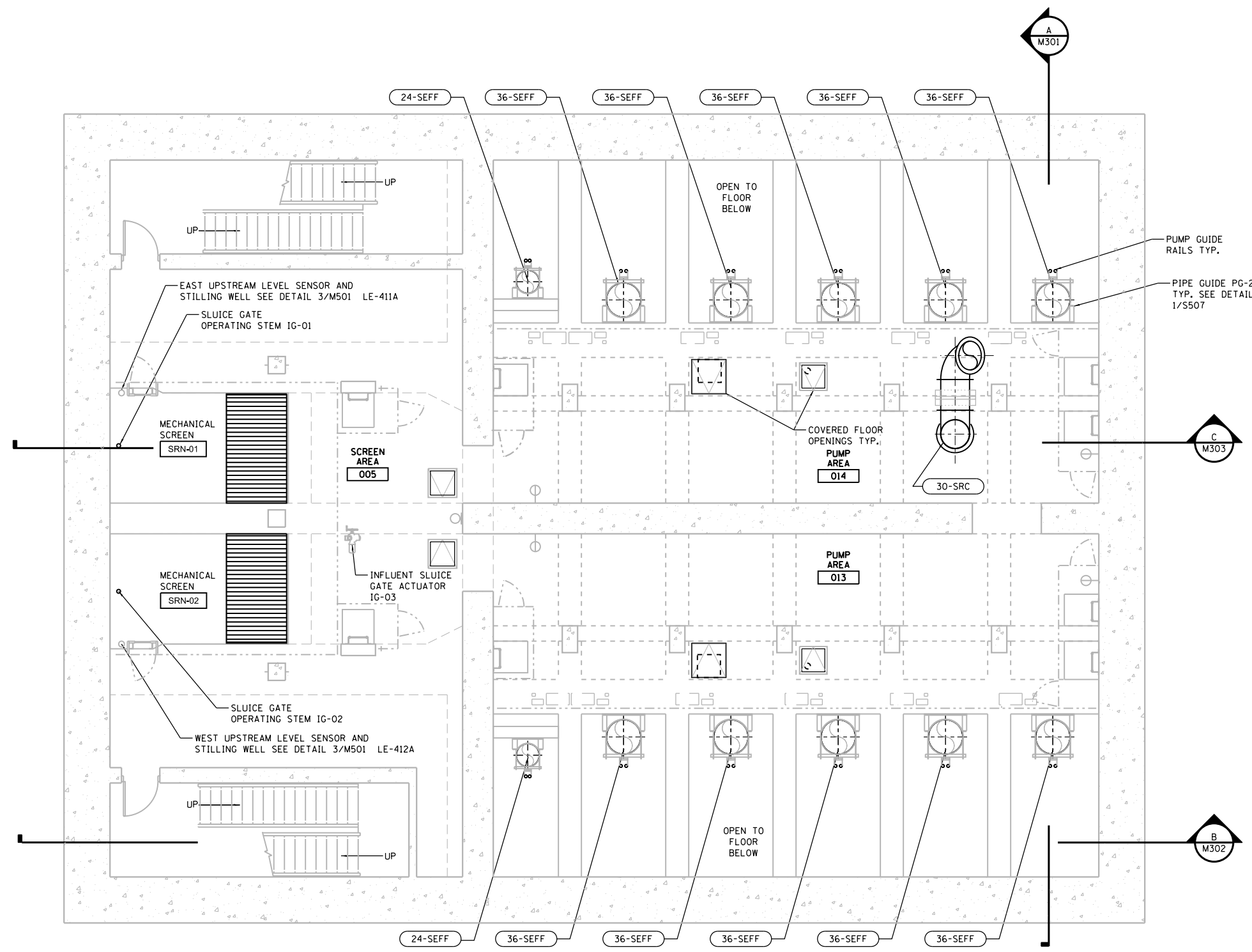
**I-290 PUMP STATION NO. 4 RECONSTRUCTION**  
**FRAMING LEVEL PIPING PLAN AT ELEVATION 585.00**  
 SCALE: 3/16"=1'-0" SHEET OF SHEETS STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	131
CONTRACT NO. 62B78				
ILLINOIS FED. AID PROJECT				

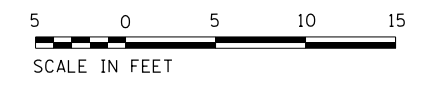
SHEET M103



GENERAL NOTES:  
 1. ALL EQUIPMENT SHALL MEET CLASSIFICATION DEFINED ON SHEET E003.



**PIPING PLAN AT ELEVATION 603.75**



P:\Projects\2019\I-290\Drawings\Sheet\I-290\_Pump\_Station\_No\_4\_Reconstruction\I-290\_Pump\_Station\_No\_4\_Reconstruction\_Sheet\_M104.dgn

FILE NAME = D191454-M104.DGN  
 USER NAME = bgreen  
 DESIGNED - HDR - M. KASPER  
 DRAWN - HDR - RHA  
 PLOT SCALE = 0:1' = 1/4" / 1/8"  
 PLOT DATE = 5/29/2019

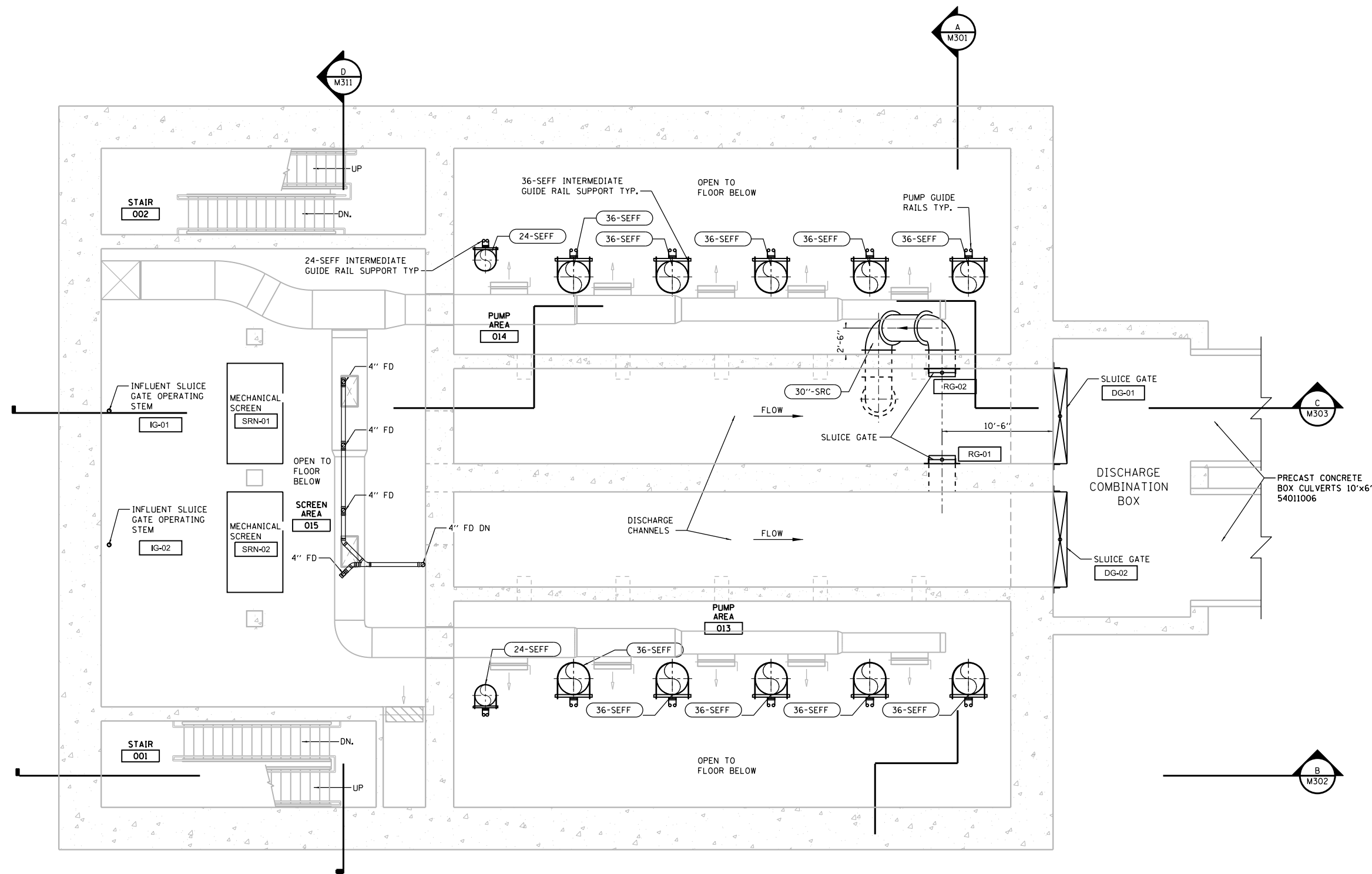
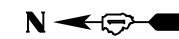
REVISOR -  
 REVISION -  
 CHECKED - HDR - B. RIEDE  
 DATE - 05/30/2019

**STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION**

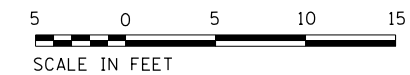
**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
 INTERMEDIATE LEVEL PIPING PLAN AT ELEVATION 603.75**  
 SCALE: 3/16"=1'-0" SHEET OF SHEETS STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	132
CONTRACT NO. 62B78				
ILLINOIS FED. AID PROJECT				

SHEET M104



**PIPING PLAN AT ELEVATION 614.83  
FLOOR PLAN AT ELEV. 650.17**



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**HDR**  
HDR, Inc.  
8550 W. Bryn Mawr Ave.,  
Suite 900  
Chicago, IL 60631

USER NAME = bgreen  
PLOT SCALE = 0:1" = 1'-0"  
PLOT DATE = 5/29/2019

DESIGNED - HDR - M. KASPER  
DRAWN - HDR - RHA  
CHECKED - HDR - B. RIEDE  
DATE - 05/30/2019

REVISED -  
REVISED -  
REVISED -  
REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
DISCHARGE LEVEL PIPING PLAN AT ELEVATION 614.83**

SCALE: 3/16"=1'-0" SHEET OF SHEETS STA. TO STA.

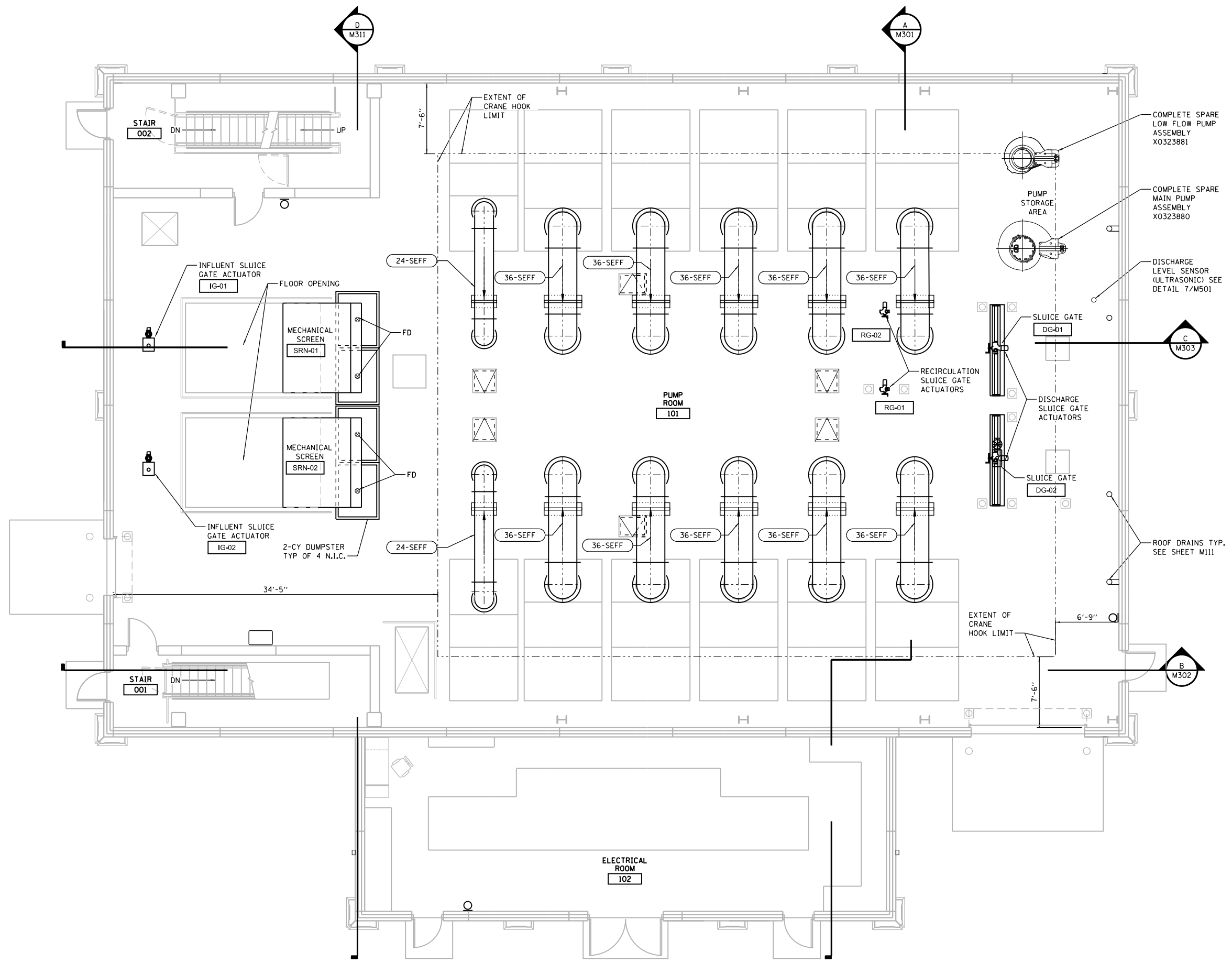
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	133
ILLINOIS FED. AID PROJECT			CONTRACT NO. 62B78	

SHEET M105

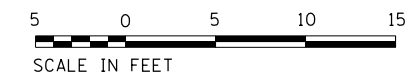


GENERAL NOTES:

- 1. ALL EQUIPMENT SHALL MEET CLASSIFICATION DEFINED ON SHEET E003.



PIPING PLAN AT ELEV. 624.83



P:\\_P\468P\0468\Hatch\Central\Omaha\Documents\001915\CON\0078431\00000000271972\6.0\_CAD\_BIM\6.2\_Work\In\_Progress\6.2.2\_CAD\_Sheets\0191454-M106

FILE NAME = D191454-M106.DGN  
 HDR, Inc.  
 8550 W. Bryn Mawr Ave.,  
 Suite 900  
 Chicago, IL 60631

USER NAME = bgreen  
 DESIGNED - HDR - M. KASPER  
 DRAWN - HDR - RHA  
 PLOT SCALE = 0:1' = 1/8" / 1/4"  
 PLOT DATE = 5/29/2019

CHECKED - HDR - B. RIEDE  
 DATE - 05/30/2019

REVISED -  
 REVISED -  
 REVISED -  
 REVISED -

STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION

I-290 PUMP STATION NO. 4 RECONSTRUCTION  
 GROUND LEVEL PIPING PLAN AT ELEVATION 624.83

SCALE: 3/16"=1'-0" SHEET OF SHEETS STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	134
CONTRACT NO. 62B78				
ILLINOIS FED. AID PROJECT				

SHEET  
 M106

- GENERAL NOTES:
- ALL EQUIPMENT SHALL MEET CLASSIFICATION DEFINED ON SHEET E003.

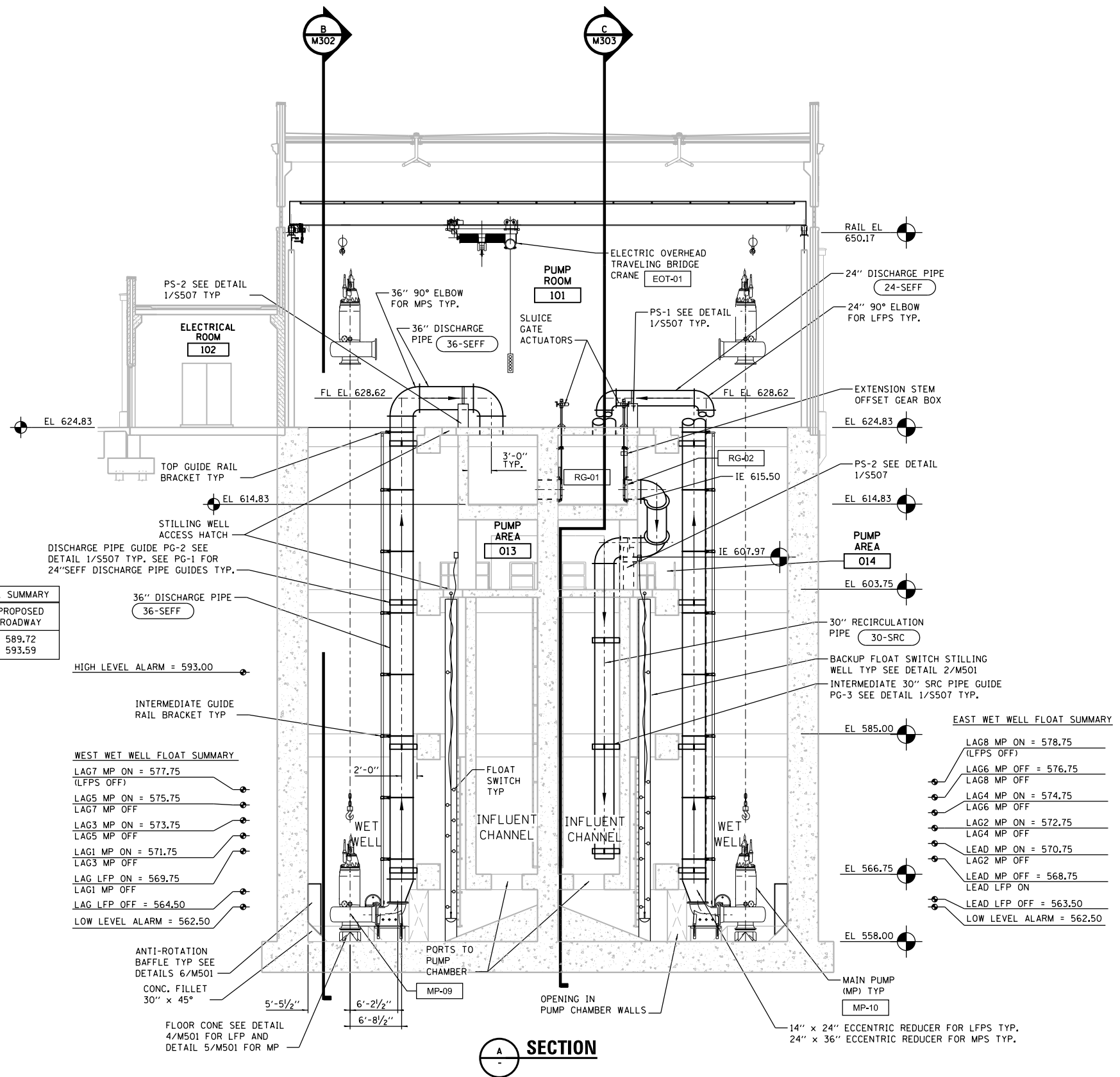
MAXIMUM WET WELL LEVEL SUMMARY		
DESIGN STORM	EXISTING ROADWAY	PROPOSED ROADWAY
50 YEAR	591.41	589.72
100 YEAR	593.67	593.59

- WEST WET WELL FLOAT SUMMARY  
(LFPS OFF)
- LAG7 MP ON = 577.75
  - LAG5 MP ON = 575.75
  - LAG3 MP ON = 573.75
  - LAG1 MP ON = 571.75
  - LAG LFP ON = 569.75
  - LAG LFP OFF = 564.50
  - LOW LEVEL ALARM = 562.50

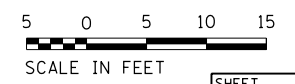
- EAST WET WELL FLOAT SUMMARY
- LAG8 MP ON = 578.75 (LFPS OFF)
  - LAG6 MP OFF = 576.75
  - LAG4 MP ON = 574.75
  - LAG2 MP ON = 572.75
  - LEAD MP ON = 570.75
  - LEAD MP OFF = 568.75
  - LEAD LFP ON
  - LEAD LFP OFF = 563.50
  - LOW LEVEL ALARM = 562.50

BILL OF MATERIALS PUMP DISCHARGE AND RECIRCULATION PIPING SYSTEMS			
ITEM	DIAMETER	QUANTITY	UNIT
90 ELBOW (FL)	24	4	EA
90 ELBOW (FL)	30	3	EA
90 ELBOW (FL)	36	20	EA
ECC. REDUCER (FL)	14x24	2	EA
ECC. REDUCER (FL)	24x36	10	EA
DIP (FL)	24	155	LF
DIP (FL)	30	46	LF
DIP (FL)	36	685	LF

ALL PIPE AND FITTINGS SHALL BE PAID FOR AS DESCRIBED IN THE SPECIAL PROVISIONS.



**SECTION**



D:\P\448P\048B1\Hort-Centr-ol\_Combos\Documents\001915\CON\0078431\00000000271972\6.6\_CAD\_BIM\6.2\_Work\In\_Progress\6.2.2\_CAD\_Sheets\0191454-M301

FILE NAME = D191454-M301.DGN  
 HDR, Inc.  
 8550 W. Bryn Mawr Ave.,  
 Suite 900  
 Chicago, IL 60631

USER NAME = bgreen  
 PLOT SCALE = 0:1' = 1/4" / 1/8"  
 PLOT DATE = 5/29/2019

DESIGNED - HDR - M. KASPER  
 DRAWN - HDR - RHA  
 CHECKED - HDR - B. RIEDE  
 DATE - 05/30/2019

REVISED -  
 REVISED -  
 REVISED -  
 REVISED -

**STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION**

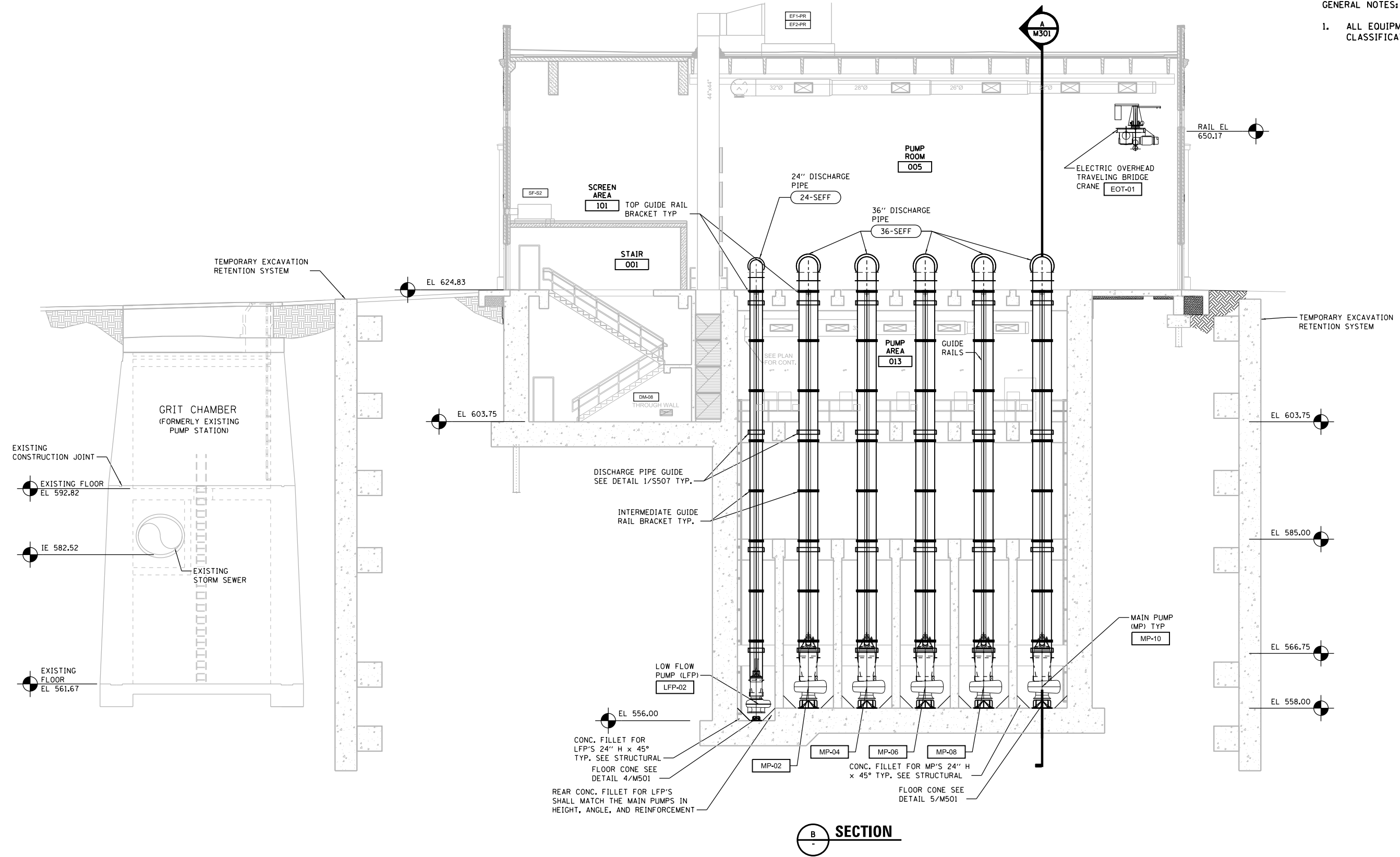
**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
 PIPING SECTION**  
 SCALE: 1/8"=1'-0" SHEET OF SHEETS STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	135

CONTRACT NO. 62B78  
 ILLINOIS FED. AID PROJECT

SHEET M301

- GENERAL NOTES:  
 1. ALL EQUIPMENT SHALL MEET CLASSIFICATION DEFINED ON SHEET E003.



**B SECTION**



FILE NAME = D191454-M302.DGN  
 USER NAME = bgreen  
 DESIGNED - HDR - M. KASPER  
 DRAWN - HDR - RHA  
 CHECKED - HDR - B. RIEDE  
 DATE - 05/30/2019  
 REVISED -  
 REVISED -  
 REVISED -  
 REVISED -

HDR  
 HDR, Inc.  
 8550 W. Bryn Mawr Ave.,  
 Suite 900  
 Chicago, IL 60631

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

**I-290 PUMP STATION NO. 4 RECONSTRUCTION**  
**PIPING SECTION**

SCALE: 1/8"=1'-0" SHEET OF SHEETS STA. TO STA.

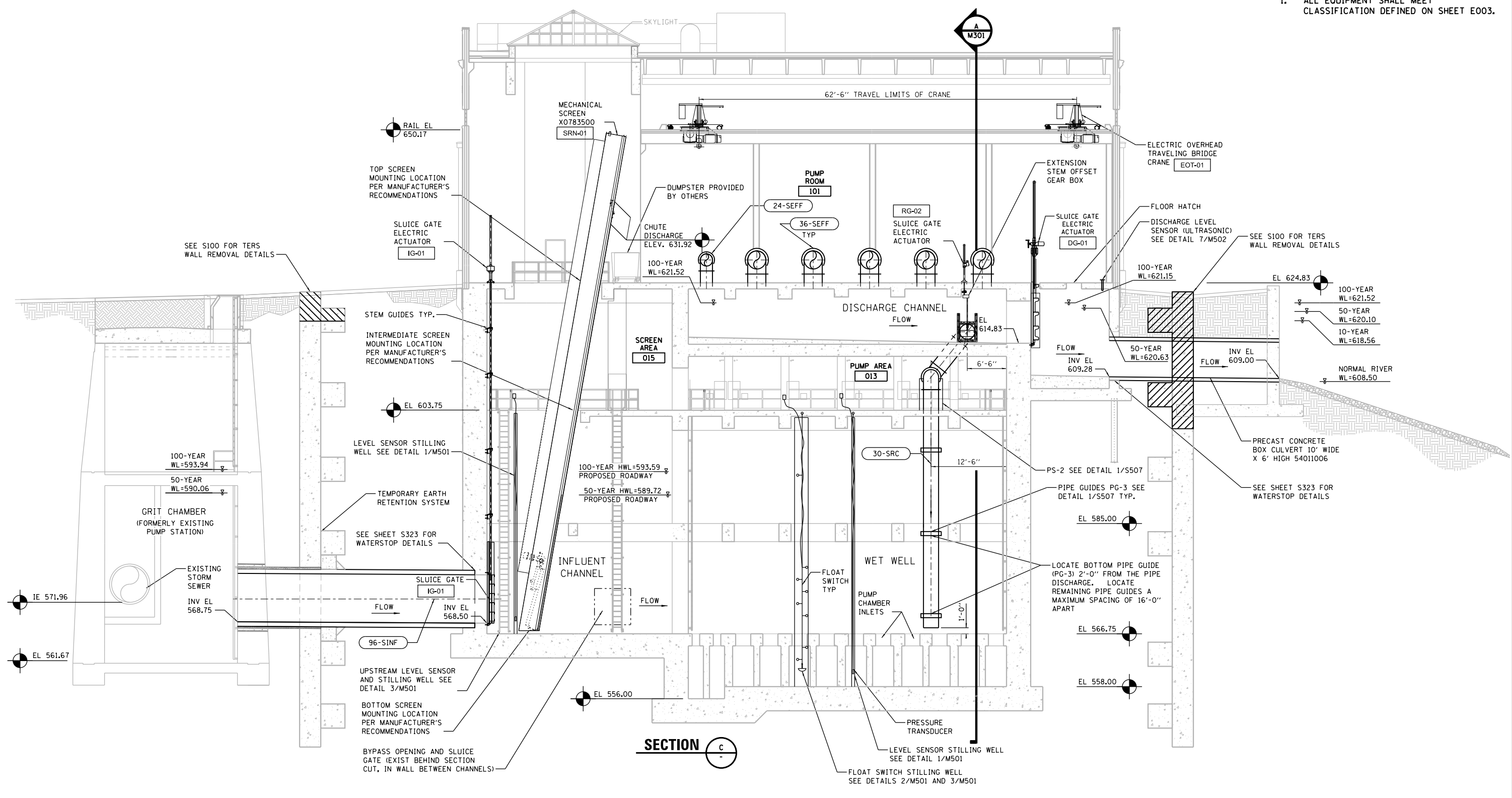
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	136
CONTRACT NO. 62B78				

SHEET  
 M302

ILLINOIS FED. AID PROJECT



GENERAL NOTES:  
 1. ALL EQUIPMENT SHALL MEET CLASSIFICATION DEFINED ON SHEET E003.



**SECTION C**



P:\\_P\4\APP\04881\Hort-Centr-al\_Dmaha\Documents\001915\CON\07\431\0000000002727972\6.0\_CAD\_BIM\6.2\_Work\In\_Progress\6.2.2\_CAD\_Sheets\0191454-M303

FILE NAME = D191454-M303.DGN  
 HDR, Inc.  
 8550 W. Bryn Mawr Ave.,  
 Suite 900  
 Chicago, IL 60631

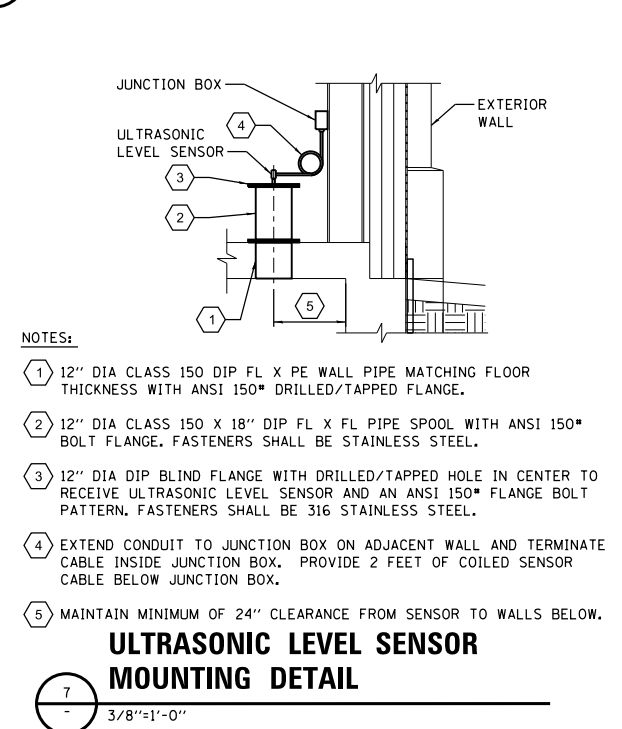
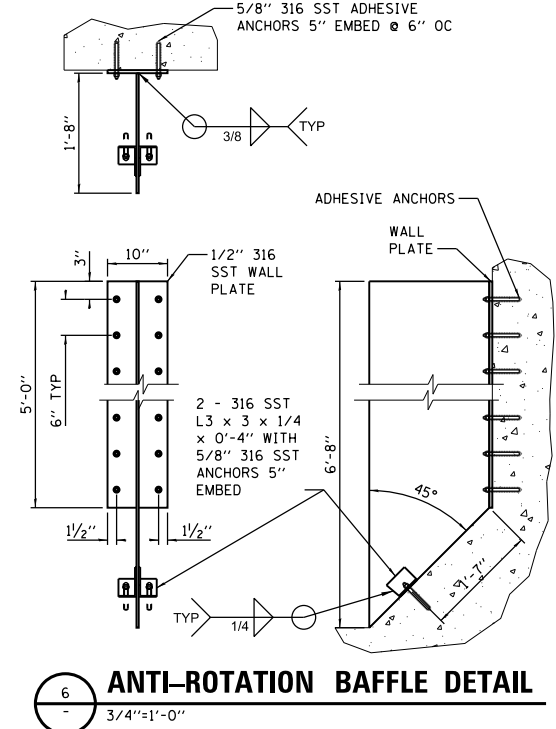
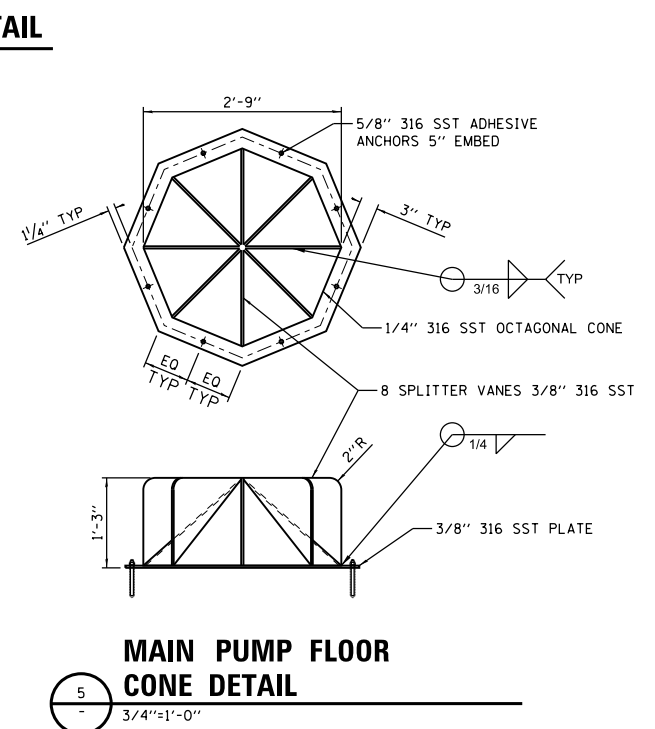
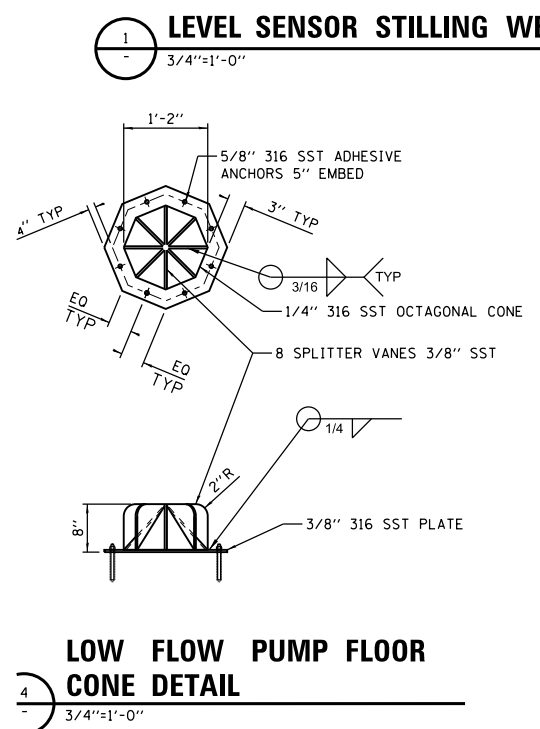
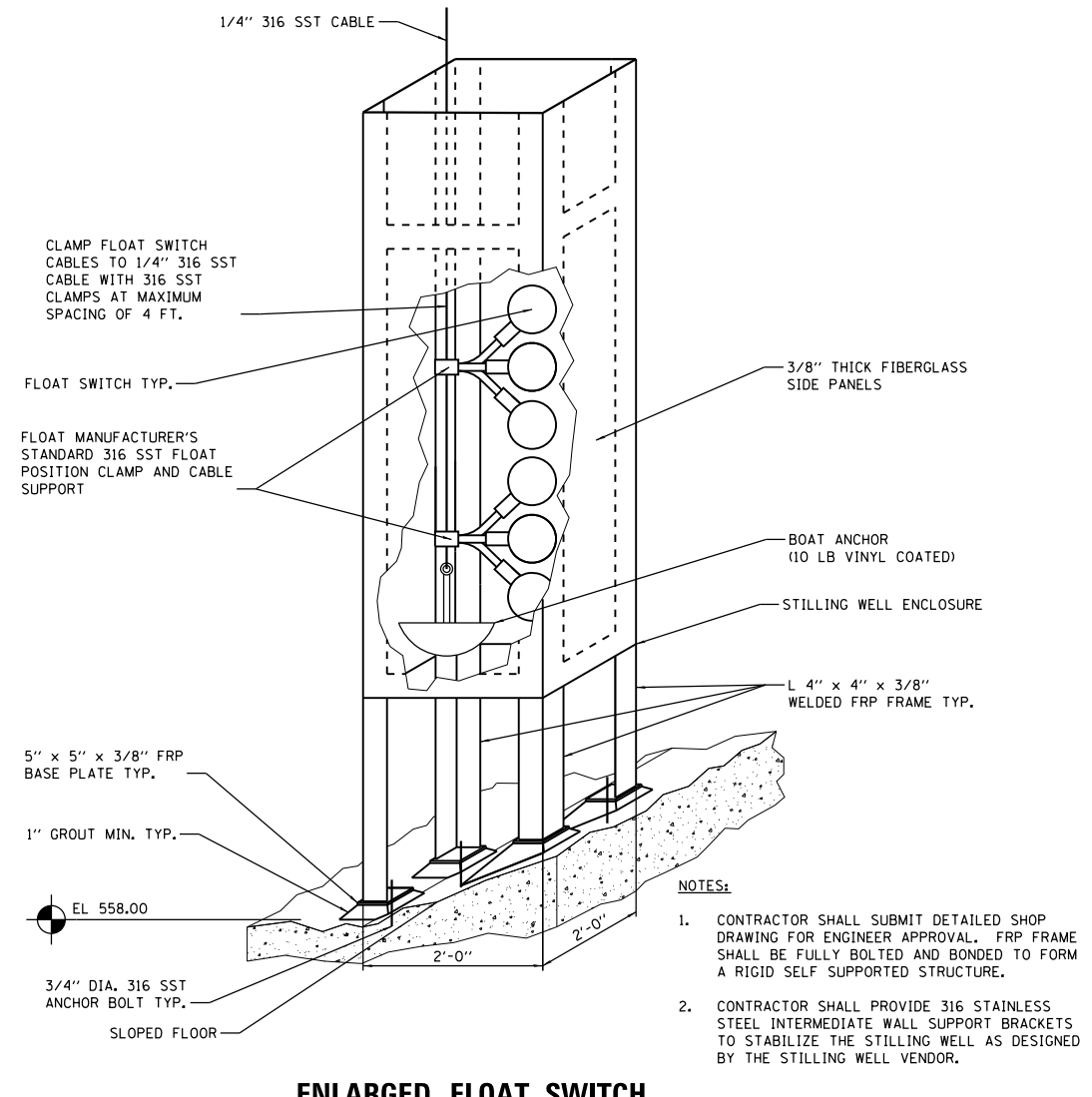
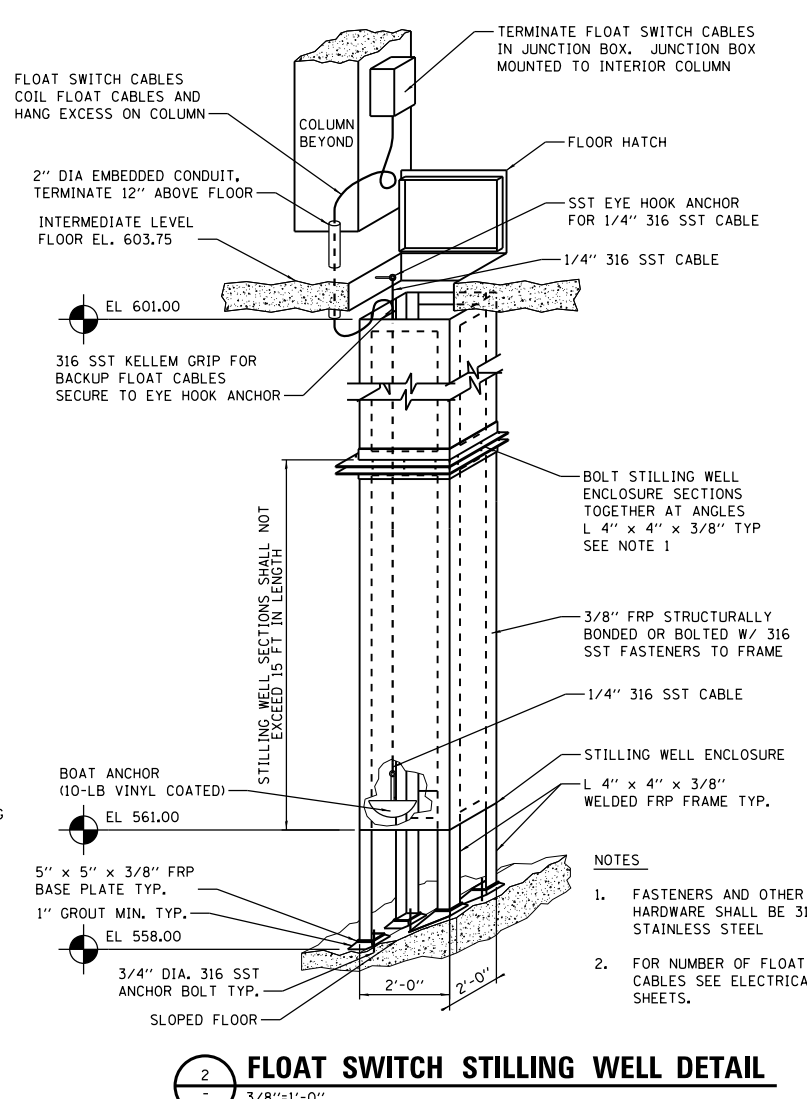
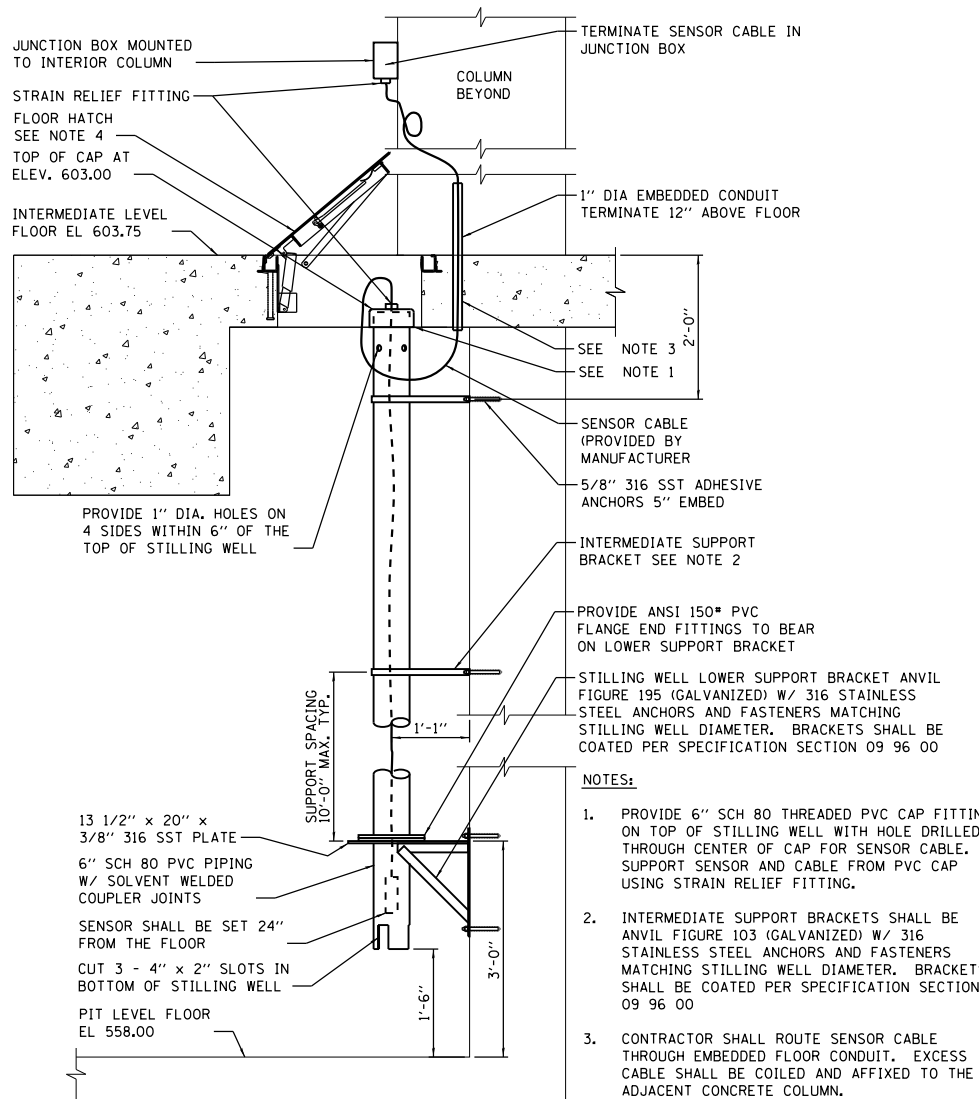
USER NAME = bgreen	DESIGNED - HDR - M. KASPER	REVISED -
	DRAWN - HDR - RHA	REVISED -
PLOT SCALE = 0:1' = 1/4"	CHECKED - HDR - B. RIEDE	REVISED -
PLOT DATE = 5/29/2019	DATE - 05/30/2019	REVISED -

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

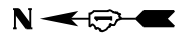
**I-290 PUMP STATION NO. 4 RECONSTRUCTION**  
**PIPING SECTION**

SCALE: 1/8"=1'-0" SHEET OF SHEETS STA. TO STA.

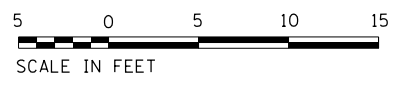
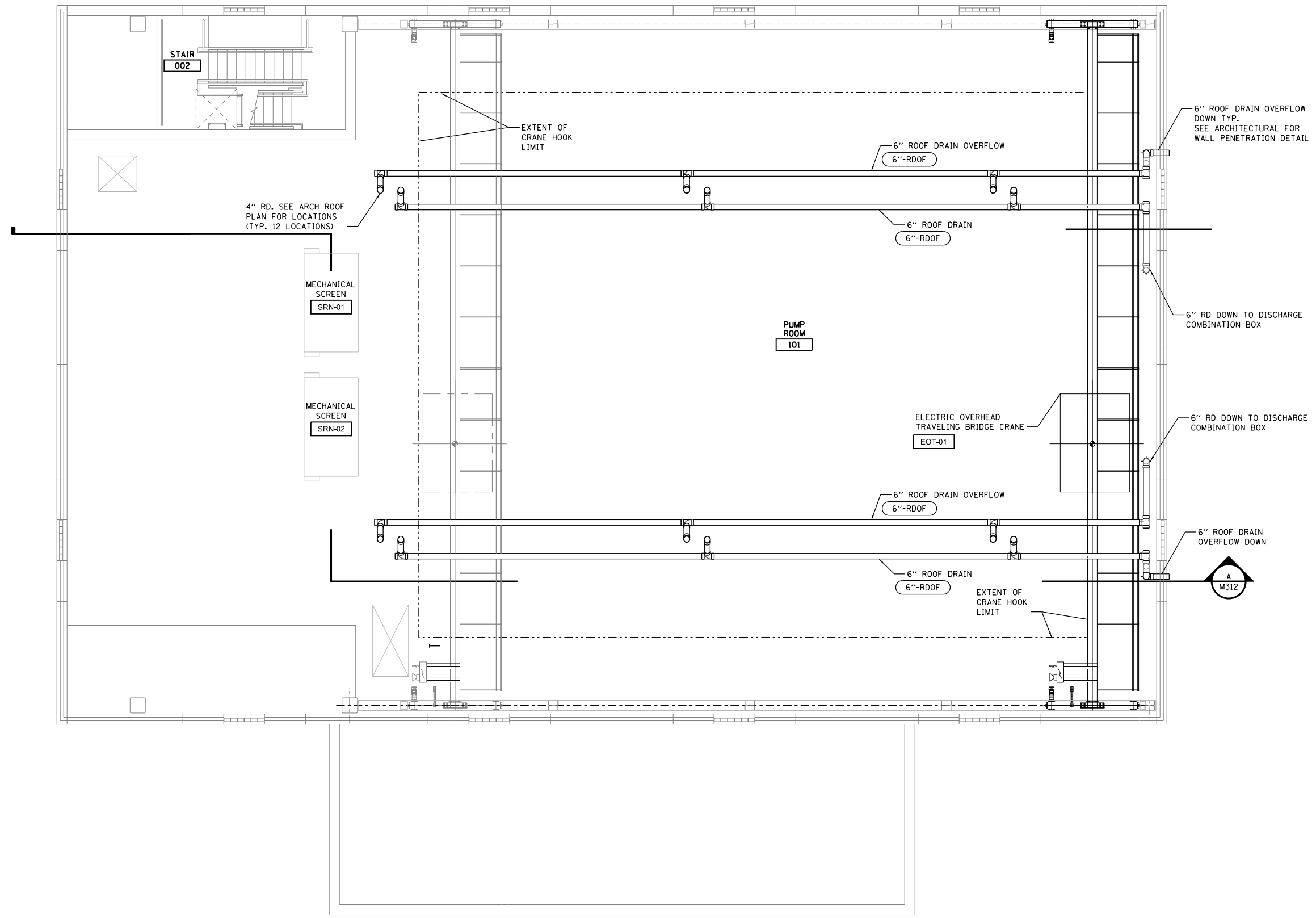
F.A.I. RTE. 290	SECTION 3434-2321-R	COUNTY COOK	TOTAL SHEETS 232	SHEET NO. 137
CONTRACT NO. 62B78				ILLINOIS FED. AID PROJECT



FILE NAME = D191454-M501.DGN  
 USER NAME = bgreen  
 DESIGNED - HDR - M. KASPER  
 DRAWN - HDR - RHA  
 PLOT SCALE = 0:1' = 1/4" / 1" / 1/4"  
 PLOT DATE = 5/29/2019  
 DATE - 05/30/2019  
 REVISIONS -  
 REVISIONS -  
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 REVISIONS -  
 STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION  
 I-290 PUMP STATION NO. 4 RECONSTRUCTION  
 PROCESS DETAILS  
 SCALE: AS NOTED  
 SHEET OF SHEETS STA. TO STA.  
 SHEET M501  
 TOTAL SHEETS 138  
 SHEET NO. 138  
 CONTRACT NO. 62B78  
 ILLINOIS FED. AID PROJECT



- GENERAL NOTES:
1. ALL EQUIPMENT SHALL MEET CLASSIFICATION DEFINED ON SHEET E003.



**FLOOR PLAN AT ELEV. 650.17**

P:\\_P\A\PP\DK\H\H\H\Central\Omaha\Documents\001915\CON\0078431\000000000271972\6.6\_CAD\_BIM\6.2\_Work\In\_Progress\6.2.2\_CAD\_Sheets\0191454-M11

FILE NAME = D191454-M111.DGN  

 HDR, Inc.  
 8550 W. Bryn Mawr Ave.,  
 Suite 900  
 Chicago, IL 60631

USER NAME = bgreen  
 DESIGNED -  
 DRAWN -  
 PLOT SCALE = 3/16" = 1' / 16"  
 PLOT DATE = 5/29/2019

DESIGNED -  
 DRAWN -  
 CHECKED - HDR - B. RIEDE  
 DATE - 05/30/2019

REVISED -  
 REVISED -  
 REVISED -  
 REVISED -

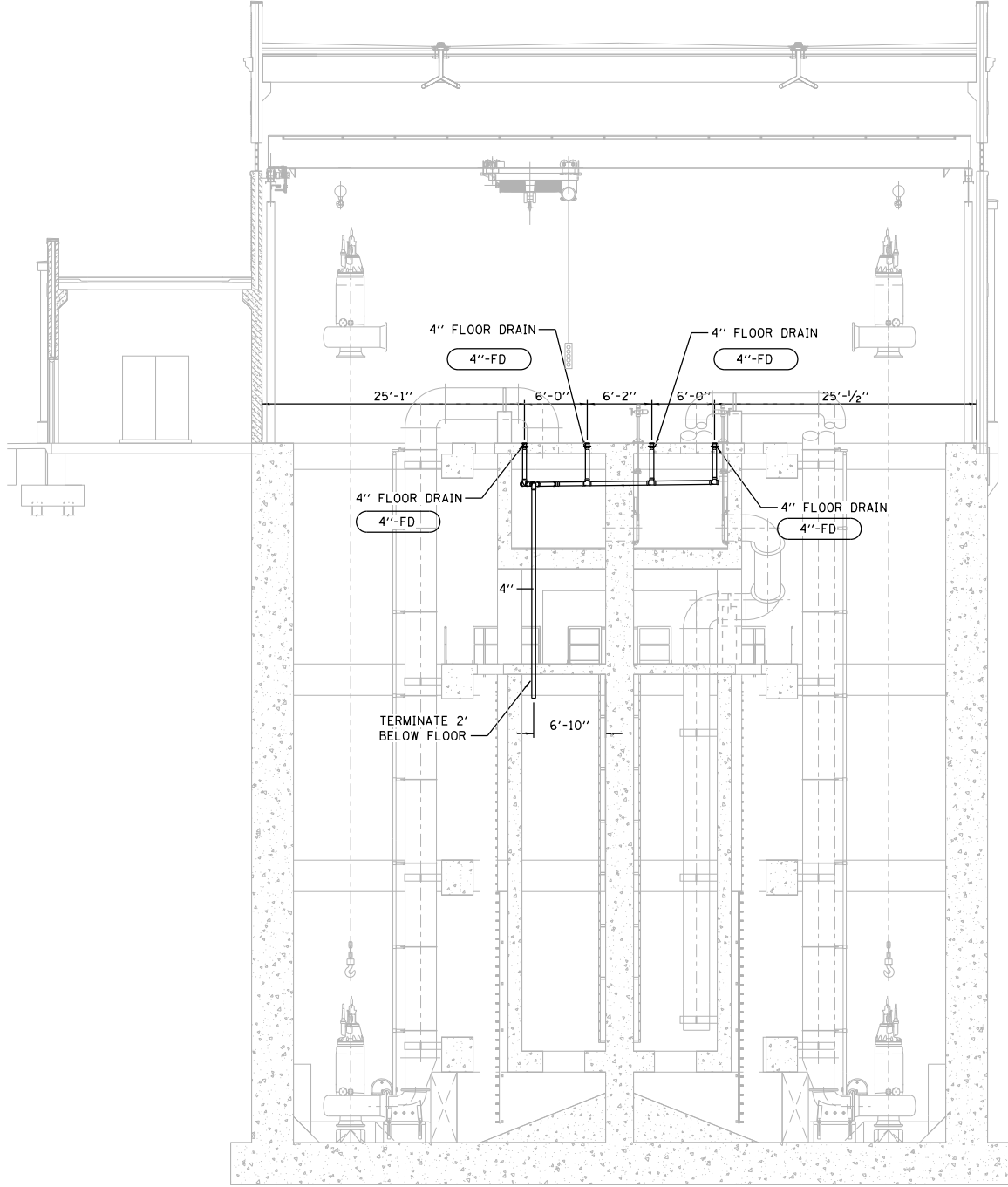
**STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION**

**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
 ROOF DRAIN PIPING PLAN AT ELEVATION 650.17**

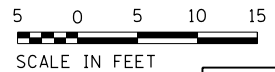
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	139
CONTRACT NO. 62B78				
ILLINOIS FED. AID PROJECT				

SCALE: 3/16"=1'-0" SHEET OF SHEETS STA. TO STA.

SHEET M111



D SECTION  
M311



P:\\_P\480P\0480\NorthCentral\Omaha\Documents\001915\CON0078431\0000000027972\6.0\_CAD\_BIM\6.2\_Work\In\_Progress\6.2.2\_CAD\_Sheets\0191454-M311

FILE NAME = D191454-M312.DGN  
 HDR, Inc.  
 8550 W. Bryn Mawr Ave.,  
 Suite 900  
 Chicago, IL 60631

USER NAME = bgreen	DESIGNED - HDR - M. KASPER	REVISED -
PLOT SCALE = 0:1" = 1'-0"	DRAWN - HDR - RHA	REVISED -
PLOT DATE = 5/29/2019	CHECKED - HDR - B. RIEDE	REVISED -
	DATE - 05/30/2019	REVISED -

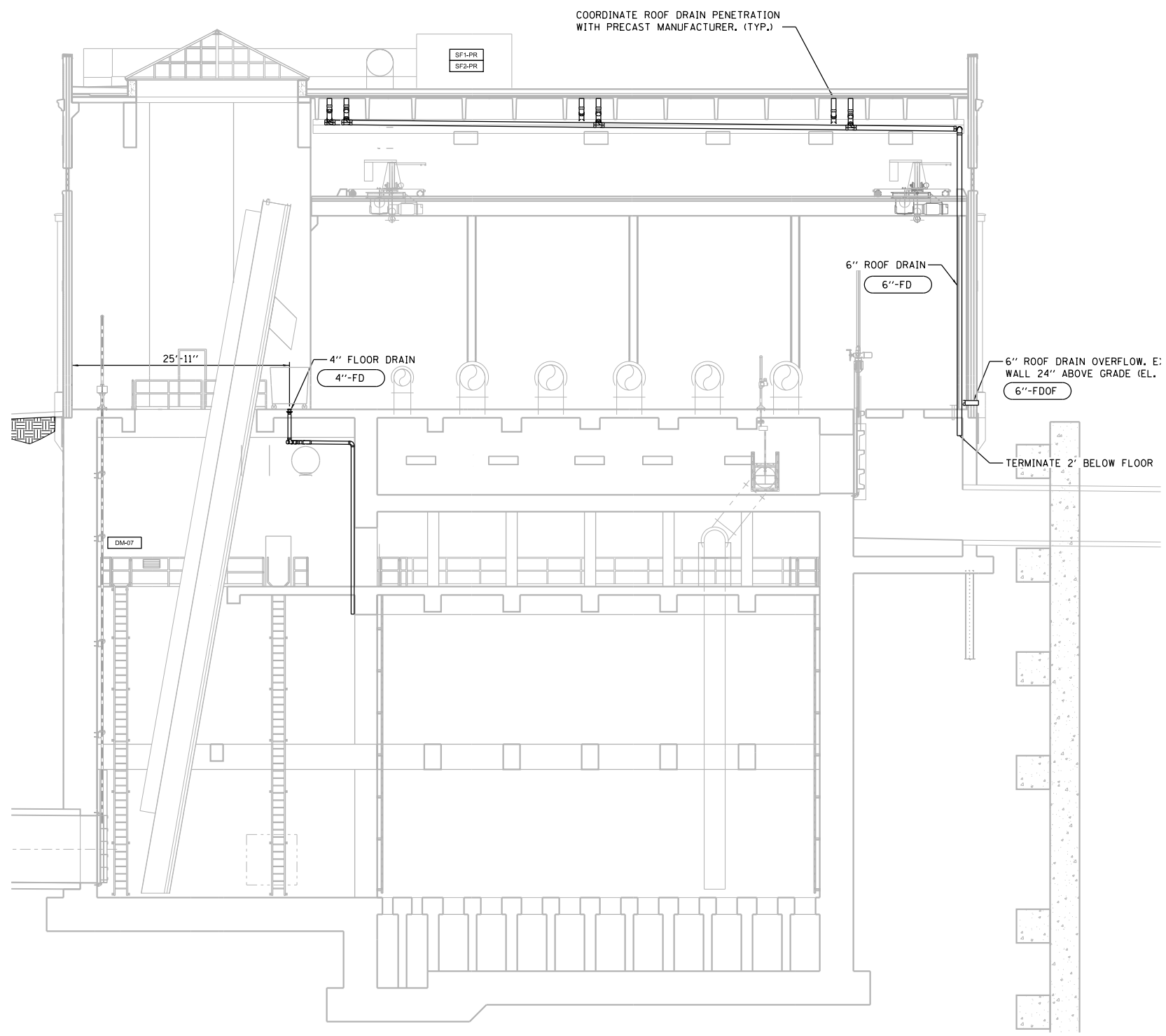
STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION

**I-290 PUMP STATION NO. 4 RECONSTRUCTION**  
**FLOOR DRAIN PIPING SECTION**

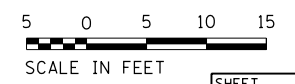
SCALE: 1/8"=1'-0" SHEET OF SHEETS STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	140
CONTRACT NO. 62B78				
ILLINOIS FED. AID PROJECT				

SHEET  
 M311



**A**  
SECTION  
M312



P:\\_P\488P\04881\NorthCentral\Omaha\Documents\001915\CON\071431\00000000271972\6.0\_CAD\_BIM\6.2\_Work\In\_Progress\6.2.2\_CAD\_Sheets\0191454-M312

FILE NAME = D191454-M311.DGN  
**HDR** HDR, Inc.  
 8550 W. Bryn Mawr Ave.,  
 Suite 900  
 Chicago, IL 60631

USER NAME = bgreen  
 DESIGNED - HDR - M. KASPER  
 DRAWN - HDR - RHA  
 PLOT SCALE = 0:1' = 1/8" / 1/4"  
 CHECKED - HDR - B. RIEDE  
 PLOT DATE = 5/29/2019

DESIGNED - HDR - M. KASPER  
 DRAWN - HDR - RHA  
 CHECKED - HDR - B. RIEDE  
 DATE - 05/30/2019

REVISED -  
 REVISED -  
 REVISED -  
 REVISED -

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

**I-290 PUMP STATION NO. 4 RECONSTRUCTION**  
**ROOF DRAIN PIPING SECTION**

SCALE: 1/8"=1'-0" SHEET OF SHEETS STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	141
CONTRACT NO. 62B78				
ILLINOIS FED. AID PROJECT				

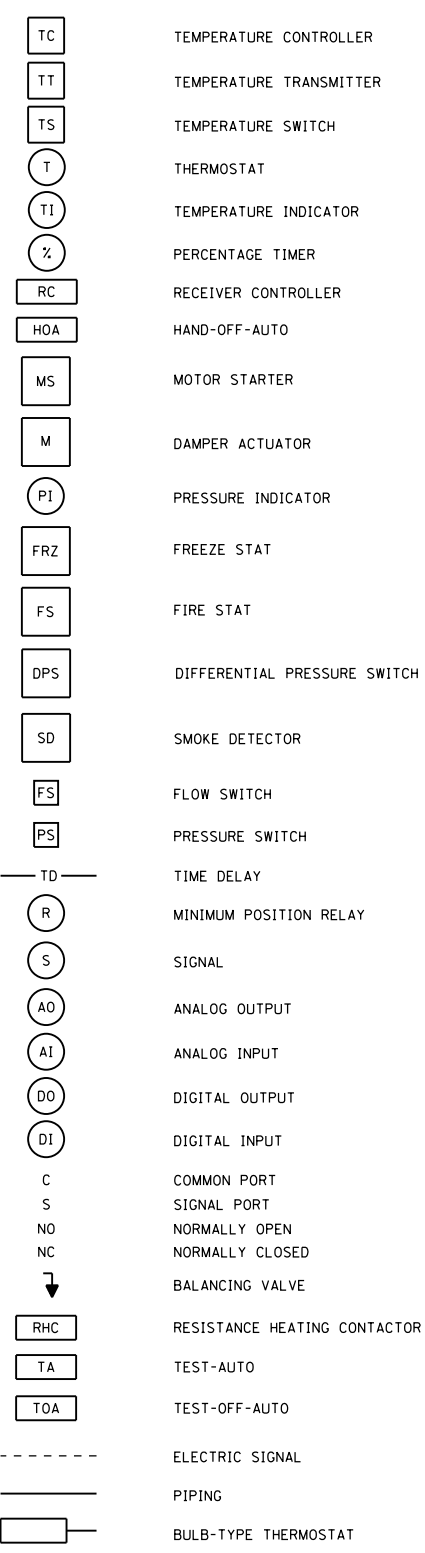
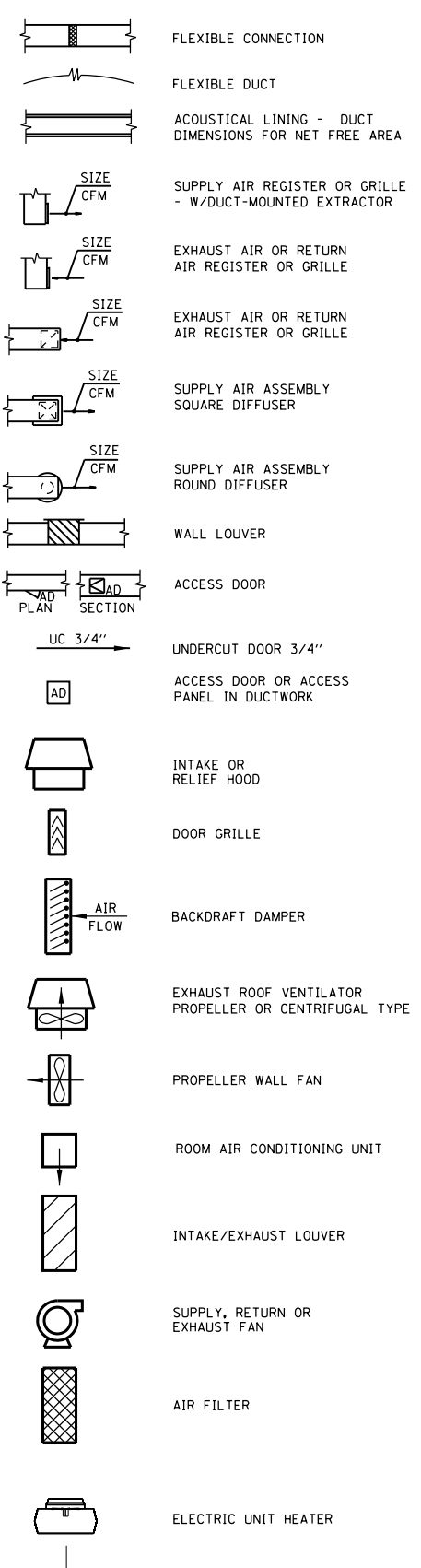
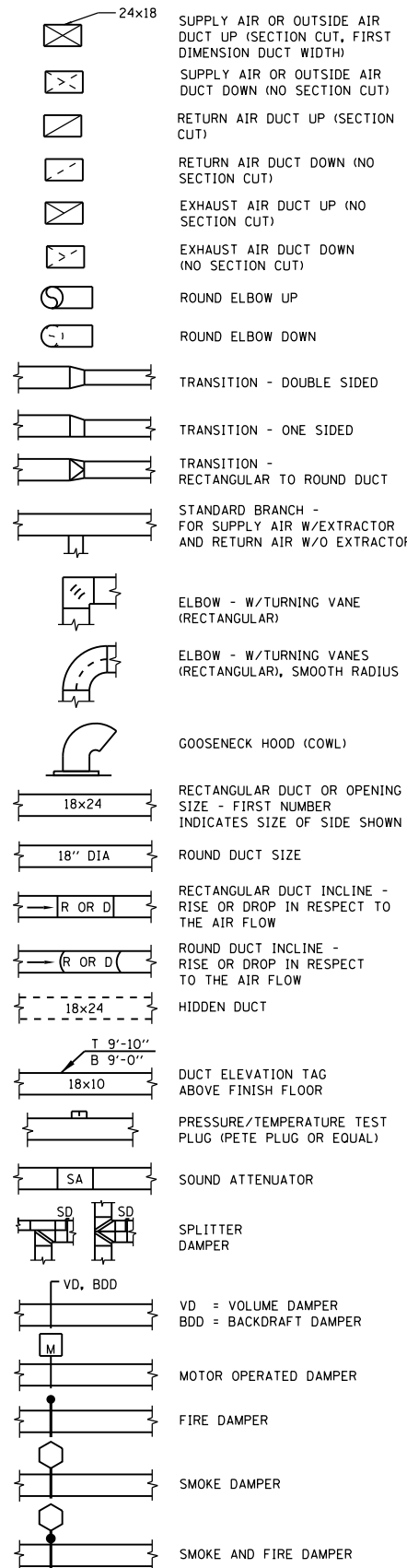
SHEET  
 M312

P:\\_P\APP\K0801\NorthCentr-01\Omaha\Documents\001915\CONR078431\0000000027972\6.0\_CAD\_BIM\6.2\_Work\_In\_Progress\6.2.2\_CAD\_Sheets\0191454-H001.dgn

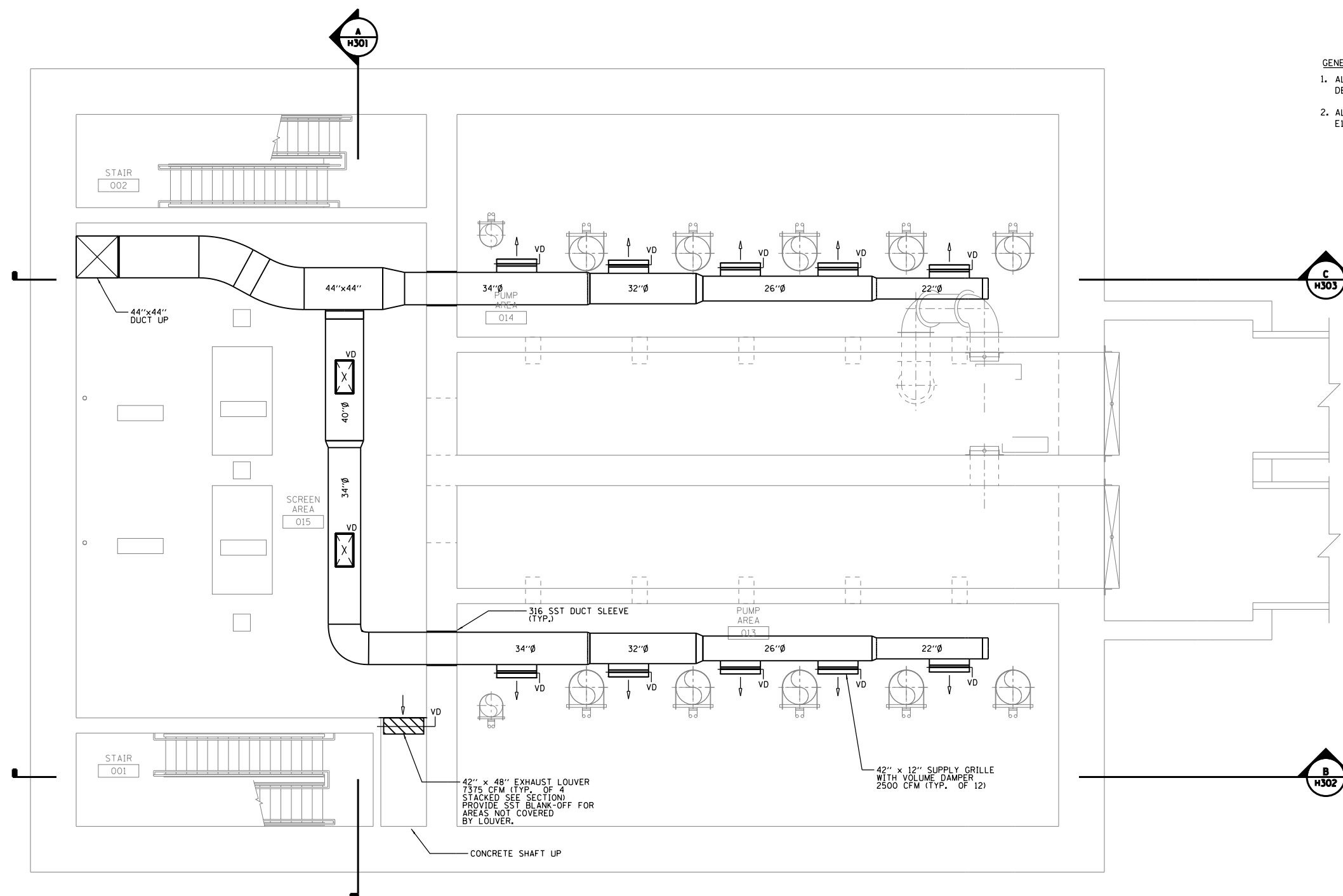
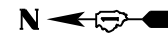
**HVAC SYMBOLOGY**

**HVAC CONTROL SYMBOLOGY**

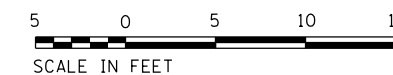
**GENERAL HVAC ABBREVIATION**



- GENERAL NOTES:**
1. THIS IS A STANDARD HVAC SYMBOLOGY SHEET. ALL SYMBOLS ARE NOT NECESSARILY USED ON THIS PROJECT.
  2. SCREENING OR SHADING OF WORK IS USED TO INDICATE EXISTING COMPONENTS OR TO DE-EMPHASIZE PROPOSED IMPROVEMENTS TO HIGHLIGHT SELECTED TRADE WORK. REFER TO CONTEXT OF EACH SHEET FOR USAGE.
  3. SEE INSTRUMENTATION LEGEND SHEET FOR PROJECT-SPECIFIC EQUIPMENT SYMBOLS, EQUIPMENT ABBREVIATIONS, AND PIPING SYSTEM ABBREVIATIONS.
  4. ALL DUCT WORK SHALL BE 316 STAINLESS STEEL (SSST).

**GENERAL NOTES:**

1. ALL EQUIPMENT SHALL MEET THE AREA CLASSIFICATIONS DEFINED ON SHEET E003 (CLASS 1 DIVISION 2 GROUP D)
2. ALL DUCTWORK SHALL BE GROUNDED AS SHOWN ON SHEET E113.

**HVAC PLAN AT ELEV 614.83**

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FILE NAME = D191454-H102.DGN	USER NAME = bgreen	DESIGNED - MEC - O. DIBLASI	REVISED -
		DRAWN - MEC - O. DIBLASI	REVISED -
		CHECKED - MEC - R. HEITNER	REVISED -
		DATE - 03/15/2019	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
DISCHARGE LEVEL HVAC PLAN AT ELEVATION 614.83**

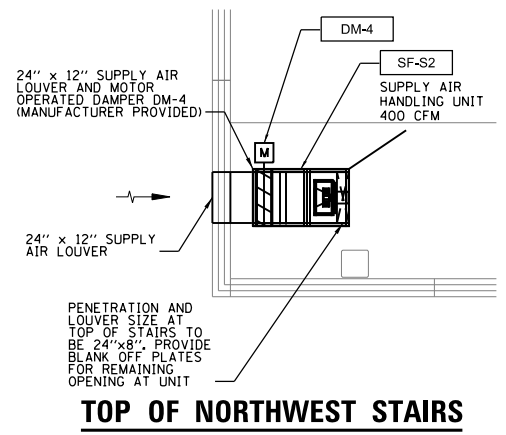
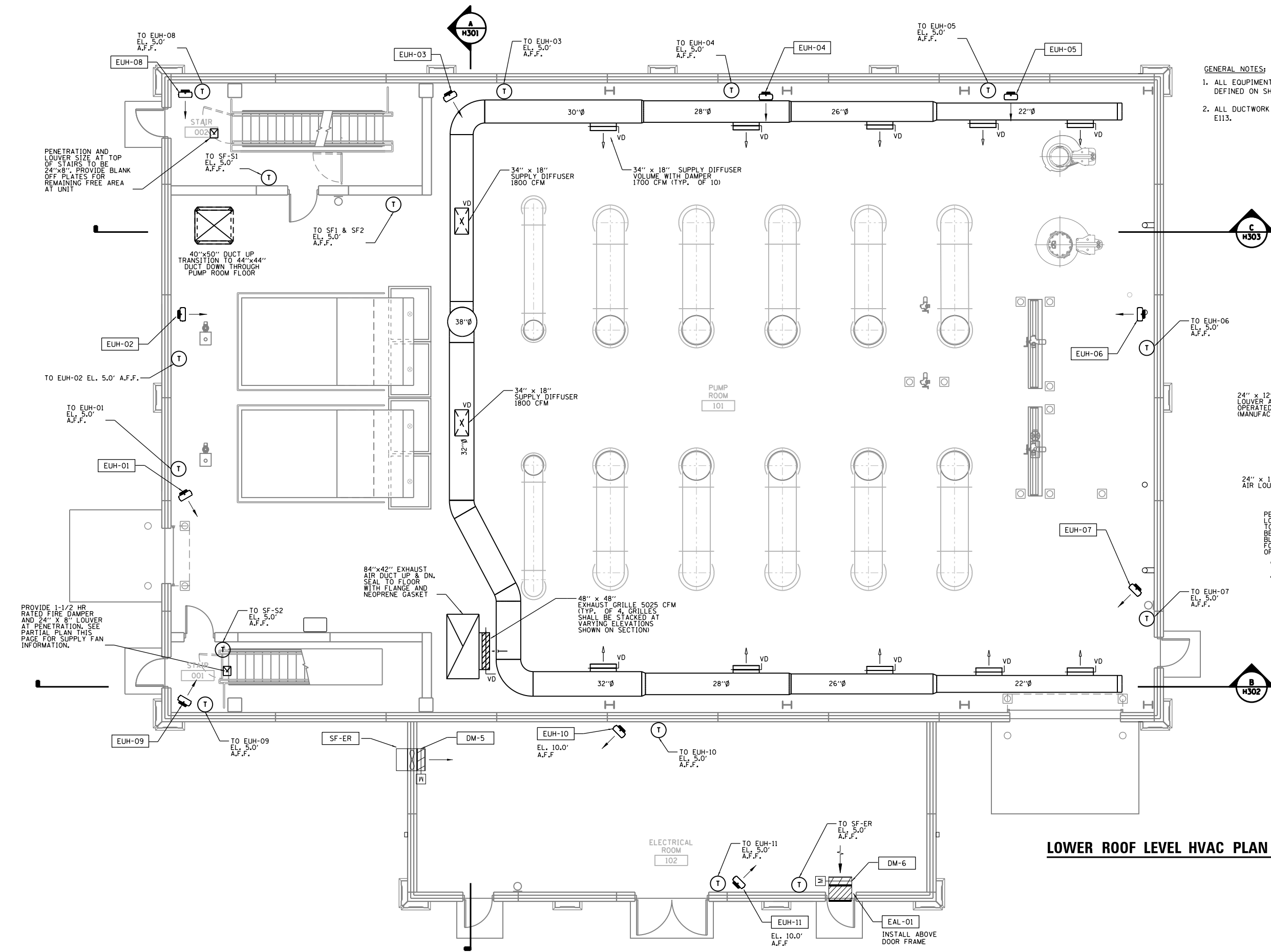
SCALE: 1/8"=1'-0" SHEET OF SHEETS STA. TO STA.

F.A.I. RTE.		SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290		3434-2321-R	COOK	232	143
ILLINOIS FED. AID PROJECT				CONTRACT NO. 62B78	

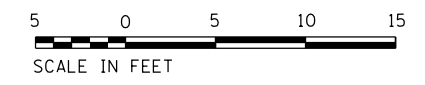
SHEET H102



- GENERAL NOTES:
1. ALL EQUIPMENT SHALL MEET THE AREA CLASSIFICATIONS DEFINED ON SHEET E003 (CLASS 1 DIVISION 2 GROUP D)
  2. ALL DUCTWORK SHALL BE GROUNDED AS SHOWN ON SHEET E113.



LOWER ROOF LEVEL HVAC PLAN AT ELEV 650.17



FILE NAME = D191454-H103.DGN  
 USER NAME = bgreen  
 DESIGNED - MEC - O. DIBLASI  
 DRAWN - MEC - O. DIBLASI  
 PLOT SCALE = 1/8" = 1'-0"  
 PLOT DATE = 5/29/2019



DESIGNED - MEC - O. DIBLASI	REVISED -
DRAWN - MEC - O. DIBLASI	REVISED -
CHECKED - MEC - R. HEITNER	REVISED -
DATE - 03/15/2019	REVISED -

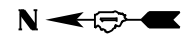
**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**I-290 PUMP STATION NO. 4 RECONSTRUCTION**  
**GROUND LEVEL HVAC PLAN AT ELEVATION 650.17**

SCALE: 1/8"=1'-0"    SHEET    OF    SHEETS    STA.    TO    STA.

SHEET H103		TOTAL SHEETS 232		SHEET NO. 144	
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	
290	3434-2321-R	COOK	232	144	
			CONTRACT NO. 62B78		
ILLINOIS FED. AID PROJECT					





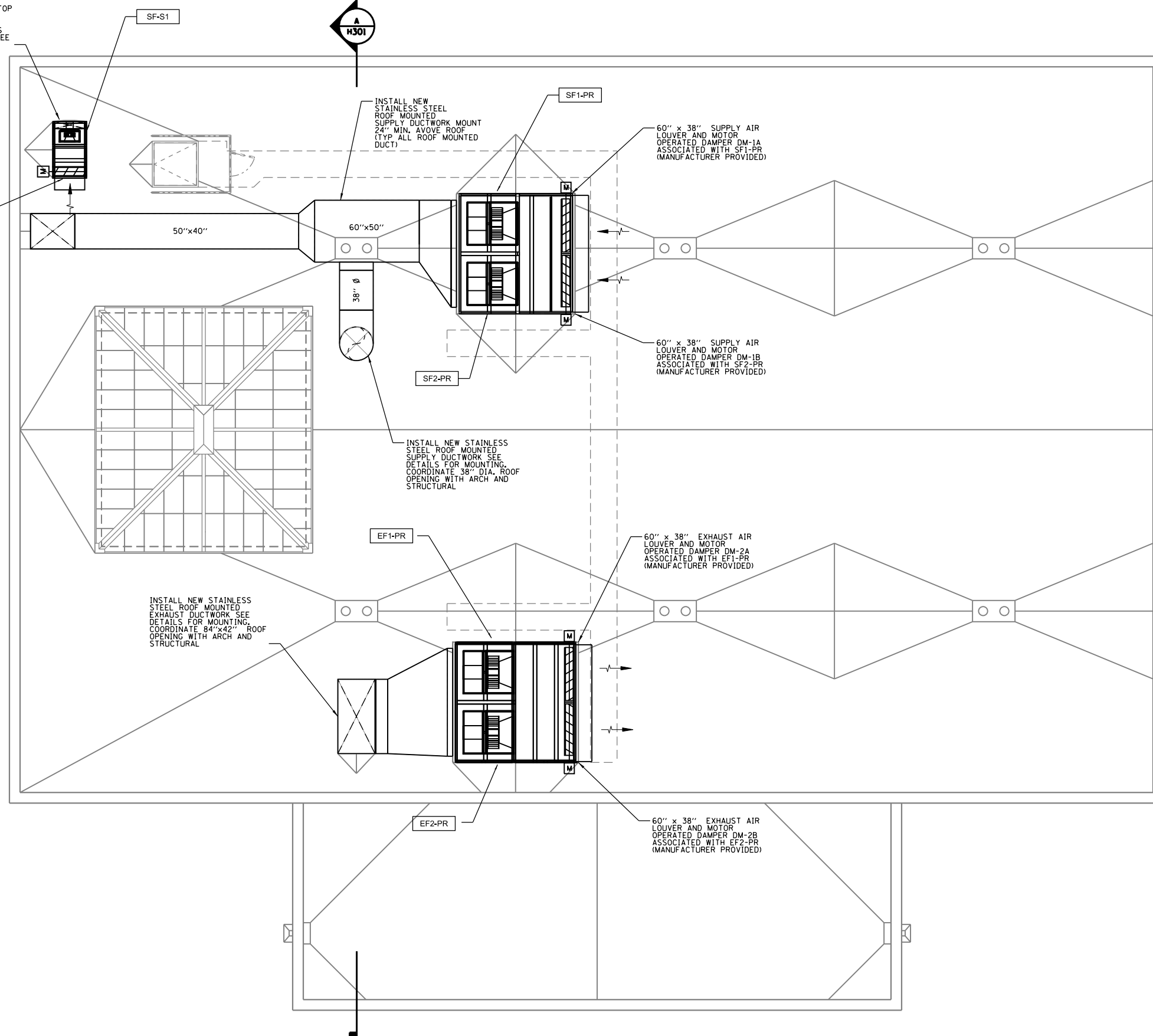
GENERAL NOTES:

1. ALL EQUIPMENT SHALL MEET THE AREA CLASSIFICATIONS DEFINED ON SHEET E003 (CLASS 1 DIVISION 2 GROUP D)
2. ALL DUCTWORK SHALL BE GROUNDED AS SHOWN ON SHEET E113.



PENETRATION AT TOP OF STAIRS TO BE 24"x8". PROVIDE BLANK OFF PLATES FOR REMAINING FREE AREA AT UNIT

24" x 12" SUPPLY AIR LOUVER AND MOTOR OPERATED DAMPER DM-3 (MANUFACTURER PROVIDED)



INSTALL NEW STAINLESS STEEL ROOF MOUNTED SUPPLY DUCTWORK MOUNT 24" MIN. ABOVE ROOF (TYP. ALL ROOF MOUNTED DUCT)

60" x 38" SUPPLY AIR LOUVER AND MOTOR OPERATED DAMPER DM-1A ASSOCIATED WITH SF1-PR (MANUFACTURER PROVIDED)

60" x 38" SUPPLY AIR LOUVER AND MOTOR OPERATED DAMPER DM-1B ASSOCIATED WITH SF2-PR (MANUFACTURER PROVIDED)

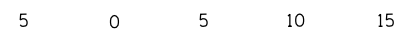
INSTALL NEW STAINLESS STEEL ROOF MOUNTED SUPPLY DUCTWORK SEE DETAILS FOR MOUNTING. COORDINATE 38" DIA. ROOF OPENING WITH ARCH AND STRUCTURAL

60" x 38" EXHAUST AIR LOUVER AND MOTOR OPERATED DAMPER DM-2A ASSOCIATED WITH EF1-PR (MANUFACTURER PROVIDED)

INSTALL NEW STAINLESS STEEL ROOF MOUNTED EXHAUST DUCTWORK SEE DETAILS FOR MOUNTING. COORDINATE 84"x42" ROOF OPENING WITH ARCH AND STRUCTURAL

60" x 38" EXHAUST AIR LOUVER AND MOTOR OPERATED DAMPER DM-2B ASSOCIATED WITH EF2-PR (MANUFACTURER PROVIDED)

HVAC PLAN AT ELEV 662.17



SCALE IN FEET

FILE NAME = D191454-H104.DGN  
 USER NAME = bgreen  
 DESIGNED - MEC - O. DIBLASI  
 DRAWN - MEC - O. DIBLASI  
 PLOT SCALE = 0:1' = 1/8" / 1/4"  
 PLOT DATE = 5/29/2019  
 REVISIONS:  
 REVISION NO. | DATE | DESCRIPTION  
 1 | 03/15/2019 |  
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USER NAME = bgreen  
 PLOT SCALE = 0:1' = 1/8" / 1/4"  
 PLOT DATE = 5/29/2019

DESIGNED - MEC - O. DIBLASI  
 DRAWN - MEC - O. DIBLASI  
 CHECKED - MEC - R. HEITNER  
 DATE - 03/15/2019

REVISED -  
 REVISED -  
 REVISED -  
 REVISED -

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

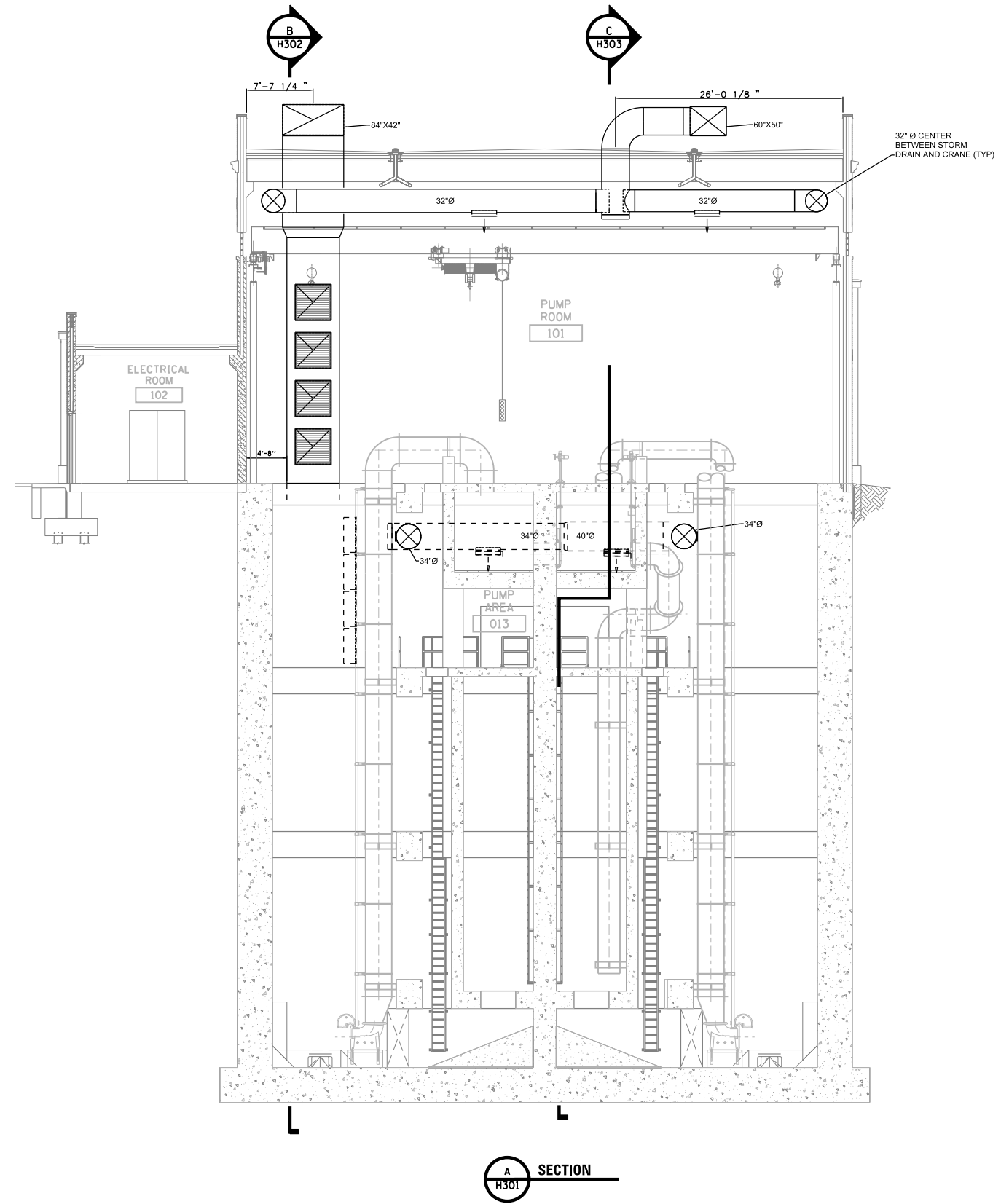
I-290 PUMP STATION NO. 4 RECONSTRUCTION  
ROOF LEVEL HVAC PLAN AT ELEVATION 662.17

SCALE: 1/8"=1'-0" SHEET OF SHEETS STA. TO STA.

F.A.I. RTE.		SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290		3434-2321-R	COOK	232	145
				CONTRACT NO. 62B78	
ILLINOIS FED. AID PROJECT					

SHEET H104

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FILE NAME = D191454-H301.DGN	USER NAME = bgreen	DESIGNED - MEC - O. DIBLASI	REVISED -
	HDR, Inc. 8550 W. Bryn Mawr Ave., Suite 900 Chicago, IL 60631	DRAWN - MEC - O. DIBLASI	REVISED -
		CHECKED - MEC - R. HEITNER	REVISED -
PLOT SCALE = 0:1' / 1/4" = 1/4"		DATE - 05/30/2019	REVISED -
PLOT DATE = 5/29/2019			

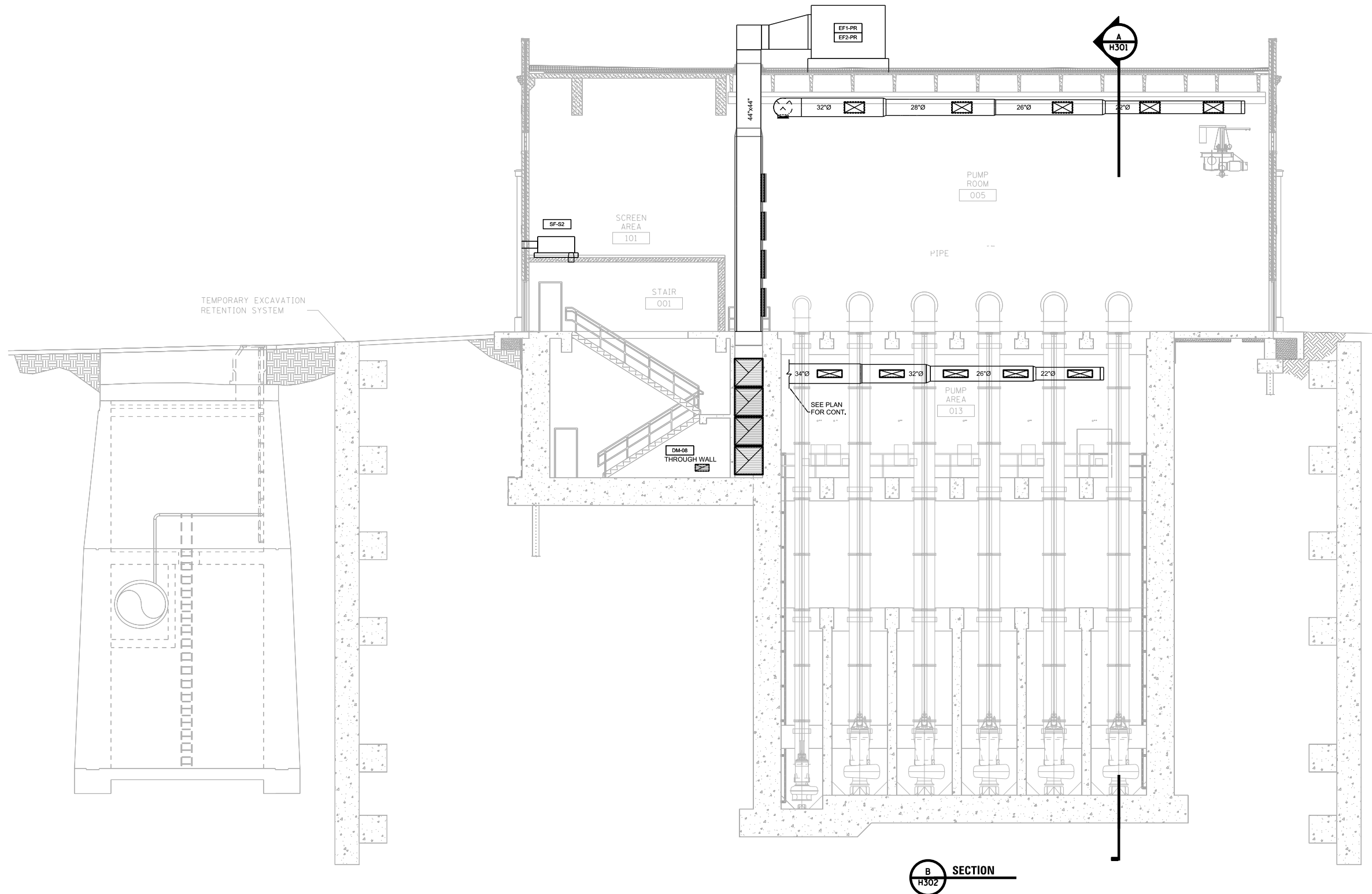
**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**I-290 PUMP STATION NO. 4 RECONSTRUCTION**  
**HVAC SECTION**

SCALE: 3/16"=1'-0"    SHEET    OF    SHEETS    STA.    TO    STA.

F.A.I. RTE. 290		SECTION 3434-2321-R		COUNTY COOK	
		TOTAL SHEETS 232		SHEET NO. 146	
<b>CONTRACT NO. 62B78</b>					
ILLINOIS FED. AID PROJECT					

SHEET H301



P:\\_P\48P\DKA\081\Hort-Centr-al\_Dmaha\Documents\081915\CON\078431\080808080271972\6.6\_CAD\_BIM\6.2\_Work...In\_Progress\6.2.2\_CAD\_Sheets\0191454-H302

FILE NAME = D191454-H302.DGN  
 USER NAME = bgreen  
 DESIGNED - MEC - O. DIBLASI  
 DRAWN - MEC - O. DIBLASI  
 PLOT SCALE = 0:1' = 1/4" / 1" = 1/4"  
 PLOT DATE = 5/29/2019

CHECKED - MEC - R. HEITNER  
 DATE - 05/30/2019

REVISED -  
 REVISED -  
 REVISED -  
 REVISED -

STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION

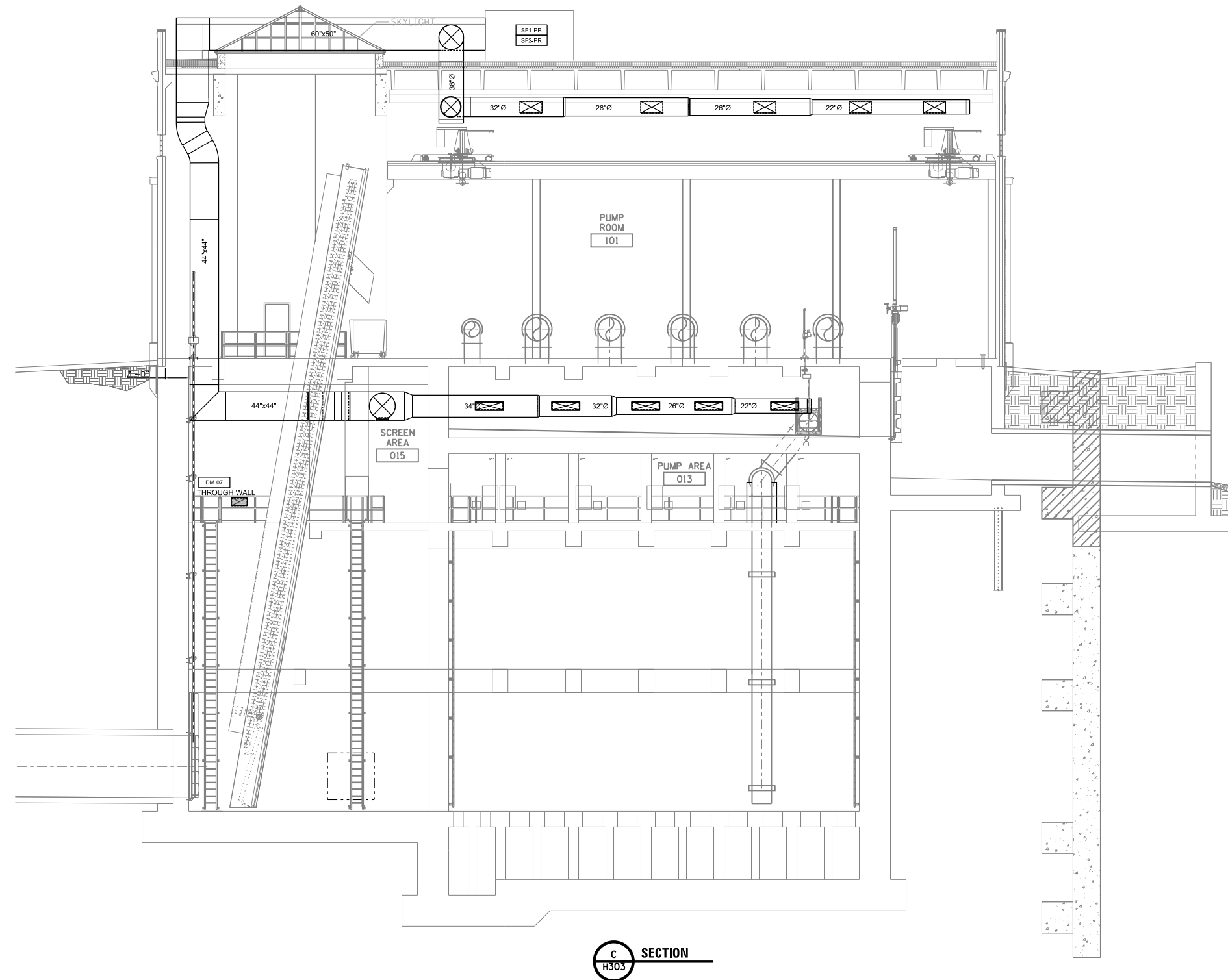
I-290 PUMP STATION NO. 4 RECONSTRUCTION  
 HVAC SECTION  
 SCALE: 3/16"=1'-0" SHEET OF SHEETS STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	147

CONTRACT NO. 62B78	
ILLINOIS FED. AID PROJECT	

SHEET H302

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**C**  
**H303 SECTION**

FILE NAME = D191454-H303.DGN  
**HDR** HDR, Inc.  
 8550 W. Bryn Mawr Ave.,  
 Suite 900  
 Chicago, IL 60631

USER NAME = bgreen  
 PLOT SCALE = 0:1' = 1/8" / 1/4"  
 PLOT DATE = 5/29/2019

DESIGNED - MEC - O. DIBLASI  
 DRAWN - MEC - O. DIBLASI  
 CHECKED - MEC - R. HEITNER  
 DATE - 05/30/2019

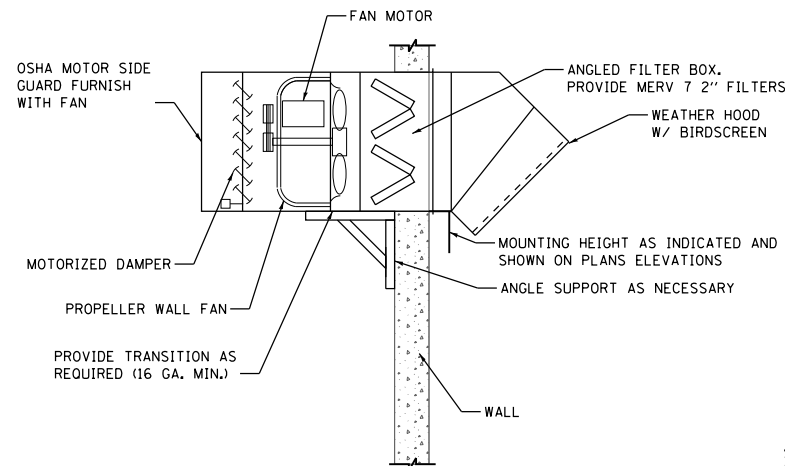
REVISED -  
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**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**I-290 PUMP STATION NO. 4 RECONSTRUCTION**  
**HVAC SECTION**  
 SCALE: 3/16"=1'-0" SHEET OF SHEETS STA. TO STA.

F.A.I. RTE.		SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290		3434-2321-R	COOK	232	148
<b>CONTRACT NO. 62B78</b>					
ILLINOIS FED. AID PROJECT					

SHEET  
**H303**



NOTE:  
SUPPORT FAN FROM TRANSITION DUCTWORK WHERE POSSIBLE.  
OTHERWISE, SUPPORT FROM ABOVE WITH CONTRACTOR DESIGNED SUPPORTS. DUCTWORK MATERIAL SHALL BE AS SPECIFIED FOR SERVICE.

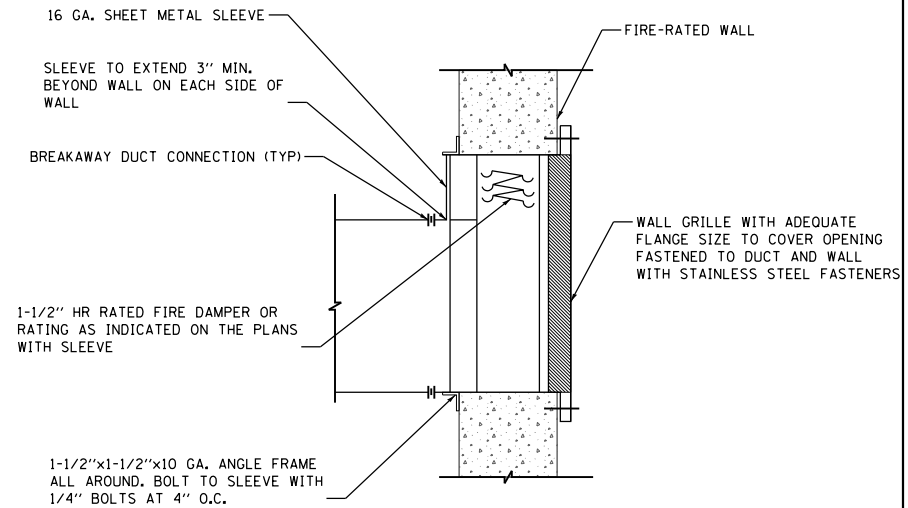
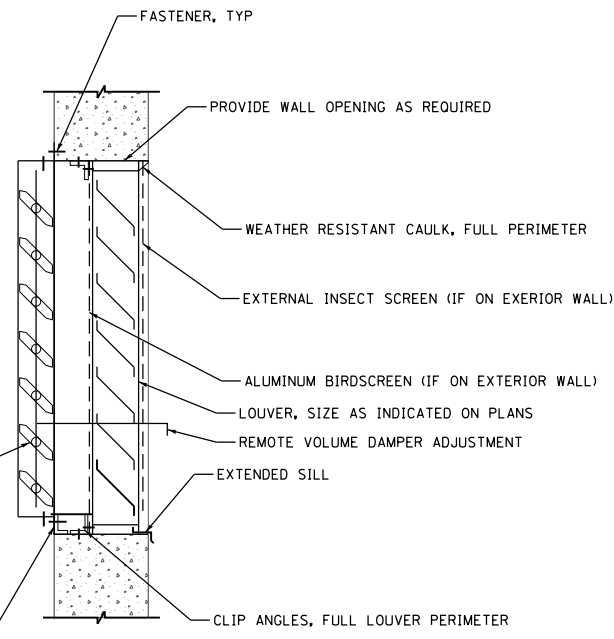
**1 SF-ER DETAIL**  
H501 SCALE: NOT TO SCALE

SINGLE FLANGED VOLUME DAMPER WHERE INDICATED ON PLANS OR SCHEDULES. PROVIDED REMOTE DAMPER ADJUSTMENT THROUGH FACE OF LOUVER.

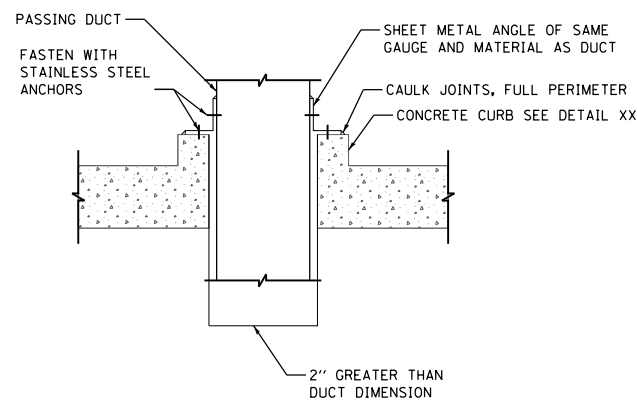
1/8" ALUMINUM ANGLE ALONG BOTTOM OF OPENING OF HEIGHT REQUIRED TO ALIGN 1" ABOVE LOUVER DRAIN JAMB, PROVIDE ALUMINUM SHEET COVER BETWEEN ANGLE AND CLIP ANGLE TO ALLOW WATER TO DRAIN FROM DUCT TO LOUVER.

NOTE:  
ALL FASTENERS SHALL BE OF STAINLESS STEEL CONSTRUCTION

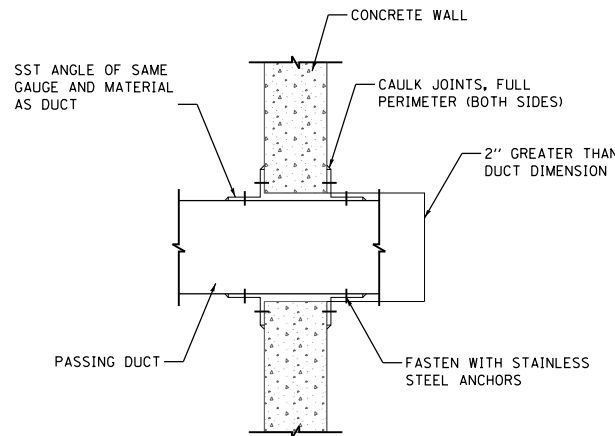
**2 TYPICAL THROUGH WALL LOUVER DETAIL**  
H501 SCALE: NOT TO SCALE



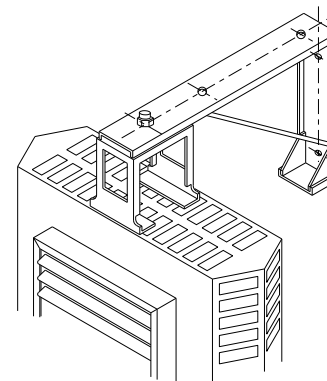
**3 FIRE DAMPER OPENING WITH GRILLE DETAIL**  
H501 SCALE: NOT TO SCALE



**4 TYPICAL DUCT FLOOR PENETRATION DETAIL**  
H501 SCALE: NOT TO SCALE



**5 TYPICAL DUCT WALL PENETRATION DETAIL**  
H501 SCALE: NOT TO SCALE



**6 UNIT HEATER MOUNTING DETAIL**  
H501 SCALE: NOT TO SCALE

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FILE NAME = D191454-H501.DGN	USER NAME = bgreen	DESIGNED - MEC - O. DIBLASI	REVISED -
		DRAWN - MEC - O. DIBLASI	REVISED -
	PLOT SCALE = 0:1' = 1/8\"/>		

DATE - 03/15/2019	REVISED -
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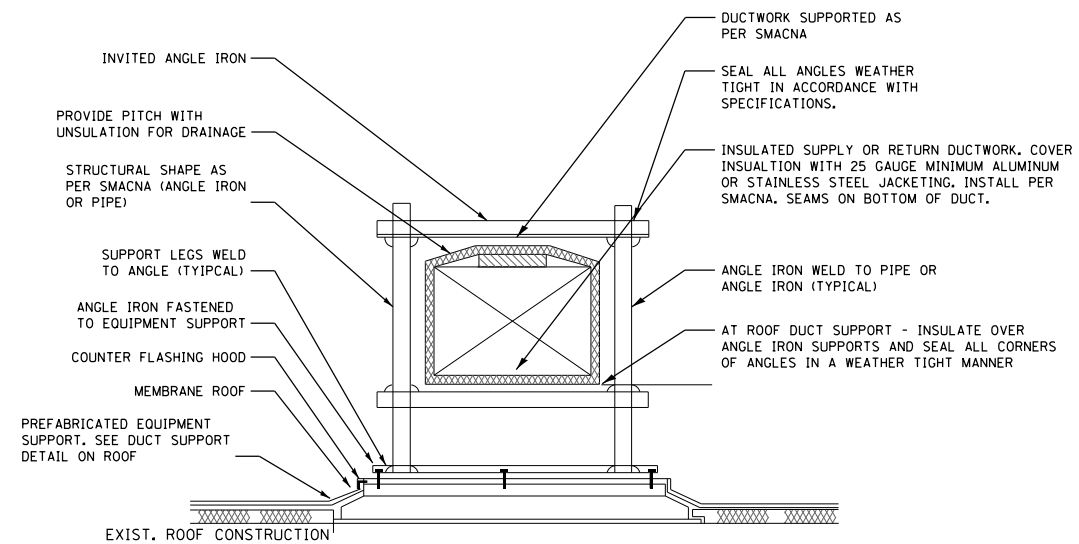
**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
HVAC DETAILS I**

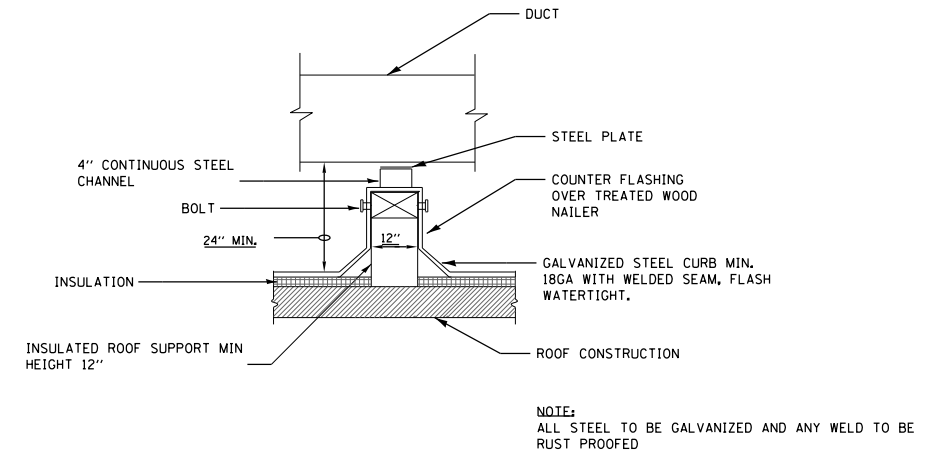
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F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	149
CONTRACT NO. 62B78				
ILLINOIS FED. AID PROJECT				

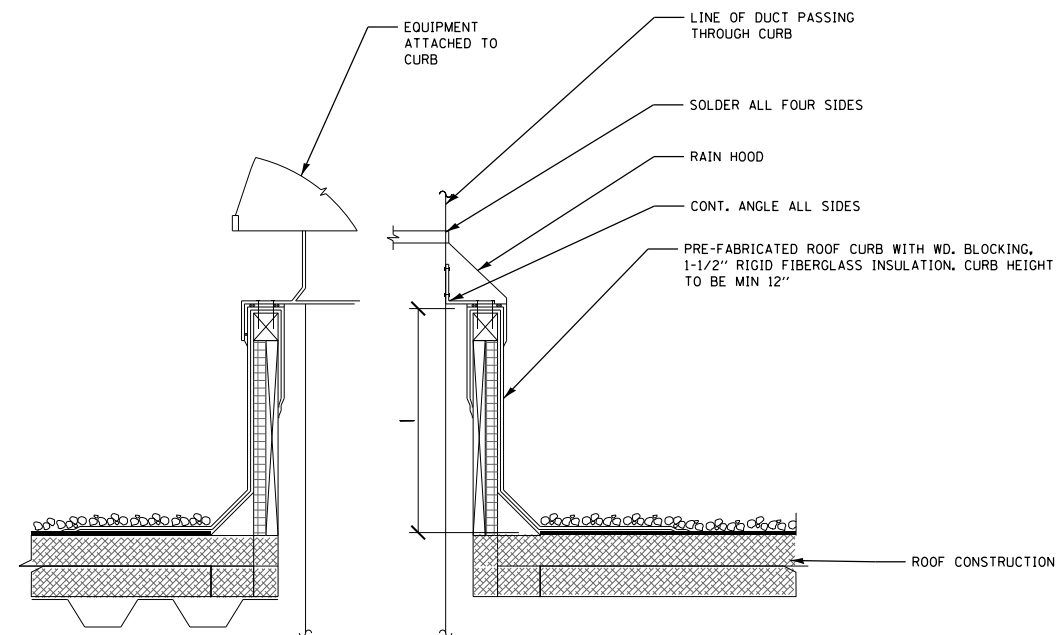
SHEET  
H501



1 TYPICAL ROOF DUCT SUPPORT DETAIL  
H502 SCALE: NOT TO SCALE



2 DUCT SUPPORT DETAIL ON ROOF  
H502 SCALE: NOT TO SCALE



3 ROOF CURB DETAIL  
H502 SCALE: NOT TO SCALE

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FILE NAME = D191454-H502.DGN  
USER NAME = bgreen  
PLOT SCALE = 0:1' = 1/8" / 1/4"  
PLOT DATE = 5/29/2019

DESIGNED - MEC - O. DIBLASI  
DRAWN - MEC - O. DIBLASI  
CHECKED - MEC - R. HEITNER  
DATE - 03/15/2019

REVISED -  
REVISED -  
REVISED -  
REVISED -

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

I-290 PUMP STATION NO. 4 RECONSTRUCTION  
HVAC DETAILS II

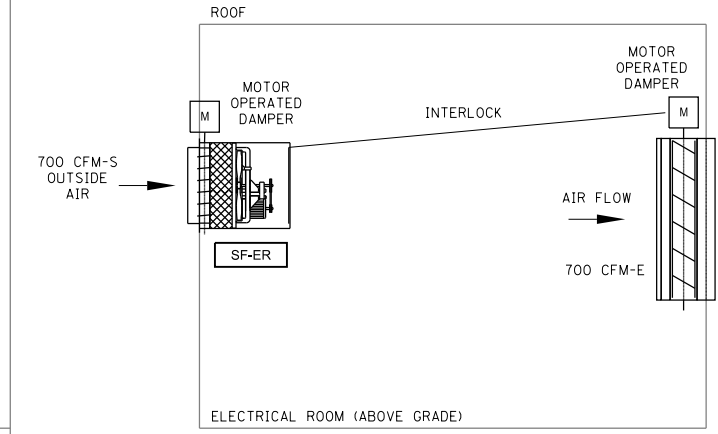
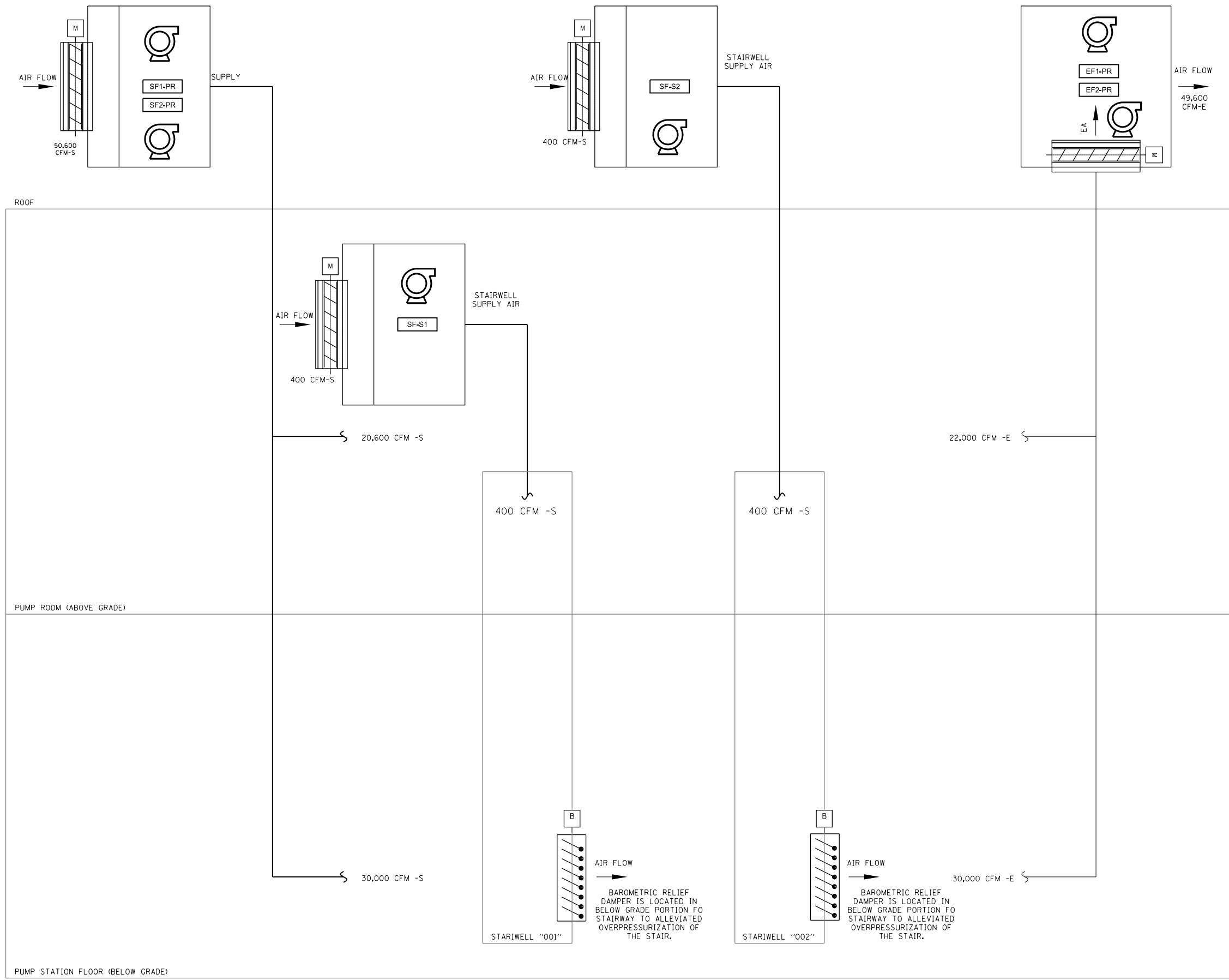
SCALE: 1/8" = 1'-0" SHEET OF SHEETS STA. TO STA.

F.A.I R.T.E.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	150
CONTRACT NO. 62B78				
ILLINOIS FED. AID PROJECT				

SHEET  
H502



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**GENERAL ELECTRICAL ABBREVIATIONS**

**PLAN SYMBOLS**

A	AMPERE
AEGIS/IAP	INTRUSION ALARM PANEL
AIC	AMPERE INTERRUPTING CAPACITY
AP	AEGIS PANEL
ARMS	ARC FLASH REDUCTION MAINTENANCE SWITCH
ATS	AUTO TRANSFER SWITCH
BDR	BUS DIFFERENTIAL RELAY
C	CONTRACTOR/CONDUIT/COIL
CB	CIRCUIT BREAKER
CGD	COMBUSTIBLE GAS DETECTOR
CKT, CCT	CIRCUIT
CP	CONTROL PANEL
CS	CURRENT SWITCH, CONTROL STATION
CT	CURRENT TRANSFORMER
DG	DISCHARGE SLUICE GATE
DM	DAMPER MOTOR
DSC	DISCONNECT
DS	DOOR SWITCH
EF	EXHAUST FAN
EO	ELECTRICALLY OPERATED CIRCUIT BREAKER
EOT	ELECTRICAL OVERHEAD TRAVELING CRANE
ER	ELECTRICAL ROOM
EUH	ELECTRICAL UNIT HEATER
F	FORWARD CONTACTOR
FACP	FIRE ALARM CONTROL PANEL
FAHS	FIRE ALARM HORN STROBE
FAPS	FIRE ALARM PULL STATION
FAS	FIRE ALARM STROBE
FB	FUSE BAY
FIX	LIGHT FIXTURE
FP	FIRE PANEL
FPR	FEEDER PROTECTION RELAY
FR	FAIL RELAY, FLOAT RELAY
FU	FUSE
FVNR	FULL VOLTAGE NON-REVERSING STARTER
FVR	FULL VOLTAGE REVERSING STARTER
GAR	GAS ALARM RELAY
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFR/GFP	GROUND FAULT RELAY/PROTECTION
GPR	GENERATOR PROTECTION RELAY
GRD	GROUND
GRS	GALVANIZED RIGID STEEL CONDUIT
GS	GAS SENSOR
HD	HEAT DETECTOR
HF	HARMONIC FILTER
HI	HIGH SPEED CONTACTOR
HMI	HUMAN MACHINE INTERFACE TERMINAL
HOA	HAND OFF AUTO SWITCH
HR	HORN RELAY
HTR	ANTI CONDENSATION HEATER
IG	INFLUENT SLUICE GATE
ISBR	INTRINSICALLY SAFE BARRIER RELAY
KVA	KILOVOLT AMPERE
KW	KILOWATT
LB	LINE BAY
LC	LIGHTING CONTROL
LCP	LOCAL CONTROL PANEL
LED	LIGHT EMITTING DIODE
LFP	LOW FLOW PUMP
LO	LOW SPEED CONTACTOR
LP	LIGHTING PANEL
LPR	LINE PROTECTION RELAY
LS	LIGHT SWITCH
LT	LIGHTING TRANSFORMER
MCC	MOTOR CONTROL CENTER
MCP	MAIN CONTROL PANEL
MM	MULTI MODE FIBER
MP	MAIN PUMP
MPR	MOTOR PROTECTION RELAY
NEC	NATIONAL ELECTRICAL CODE (ANSI/NFPA-70)
NEU, N	NEUTRAL
OL	OVERLOAD RELAY
OTDR	OPTICAL TIME DOMAIN REFLECTO METER
OTR	OVERTORQUE RELAY
OTS	OVER TEMPERATURE SWITCH
PB	PUSHBUTTON
PC	PHOTO CELL
PMG	PADMOUNT GEAR
PMPR	PUMP MOTOR PROTECTION RELAY
PMT	POWER MONITOR TRANSMITTER
PP	POWER PANEL
PR	PUMP ROOM
PVC	POLY VINYL CHLORIDE
PVC-GRS	PVC COATED GALVANIZED RIGID STEEL CONDUIT
R	REVERSE CONTACTOR
RECP	RECEPTACLE
RG	RECIRCULATING SLUICE GATE
SA	SURGE ARRESTOR
SBR	INTRINSICALLY SAFE BARRIER RELAY
SCADA	SUPERVISORY CONTROL AND DATA ACOUISITION
SD	SMOKE DETECTOR
SF	SUPPLY FAN
SM	SINGLE MODE FIBER
SP	SPARE
SPD	SURGE PROTECTIVE DEVICE
SRN	SCREEN MECHANICAL
SS	SELECTOR SWITCH
SW	SWITCH
SWGR	SWITCHGEAR
T, T-STAT	THERMOSTAT
TC	TIMER CONTROL
TPR	TIE PROTECTION RELAY
TS	TEST SWITCH
TDR	TIME DELAY RELAY
USS1	UNIT SUBSTATION NO.1

UPS	UNINTERRUPTABLE POWER SUPPLY
V	VOLT
VFD	VARIABLE FREQUENCY DRIVE
XFMR	TRANSFORMER
43	AUTO/MANUAL TRANSFER SELECTOR SWITCH

X	CEILING/PENDANT/BOLLARD MOUNTED LUMINAIRE, LAMP TYPE AS SPECIFIED
Y	CEILING/PENDANT/BOLLARD MOUNTED LUMINAIRE, LAMP TYPE AS SPECIFIED, EMERGENCY (INTERNAL OR EXTERNAL POWER SOURCE AS INDICATED)
Z	WALL MOUNTED LUMINAIRE, LAMP TYPE AS SPECIFIED
X	WALL MOUNTED LUMINAIRE, LAMP TYPE AS SPECIFIED, EMERGENCY (INTERNAL OR EXTERNAL POWER SOURCE AS INDICATED)
Y	WALL MOUNTED FLOOD LUMINAIRE, LAMP TYPE AS SPECIFIED
Z	POLE/STANCHION MOUNTED LUMINAIRE, LAMP TYPE AS SPECIFIED
X	POLE/STANCHION MOUNTED LUMINAIRE, LAMP TYPE AS SPECIFIED, EMERGENCY (INTERNAL OR EXTERNAL POWER SOURCE AS INDICATED)
Y	POLE/STANCHION MOUNTED FLOOD LUMINAIRE, LAMP TYPE AS SPECIFIED
Z	SURFACE/PENDANT MOUNTED LUMINAIRE, LAMP TYPE AS SPECIFIED
X	WALL MOUNTED LUMINAIRE, LAMP TYPE AS SPECIFIED
Y	CEILING/PENDANT MOUNTED LUMINAIRE, LAMP TYPE AS SPECIFIED, ALL OR PARTIAL EMERGENCY (INTERNAL OR EXTERNAL POWER SOURCE AS INDICATED)
Z	WALL MOUNTED LUMINAIRE, LAMP TYPE AS SPECIFIED
X	WALL MOUNTED LUMINAIRE, LAMP TYPE AS SPECIFIED, ALL OR PARTIAL EMERGENCY (INTERNAL OR EXTERNAL POWER SOURCE AS INDICATED)
Y	EMERGENCY LIGHT, 2 ATTACHED HEADS AS SHOWN
X	EMERGENCY LIGHT, REMOTE MOUNTED HEAD
Y	DOUBLE-FACED CEILING OR WALL-MOUNTED EXIT LIGHT; DIRECTIONAL ARROWS (IF REQUIRED) AS INDICATED ON PLANS
X	SINGLE-FACED CEILING OR WALL-MOUNTED EXIT LIGHT; DIRECTIONAL ARROWS (IF REQUIRED) AS INDICATED ON PLANS

**LIGHTING FIXTURE SUBSCRIPTS:**  
X - INDICATES LUMINAIRE TYPE PER LUMINAIRE SCHEDULE  
Y - INDICATES CIRCUIT NUMBER FROM PANELBOARD  
Z - INDICATES CONTROLLING SWITCH (IF REQUIRED)  
NL - NIGHT LIGHT UNSWITCHED

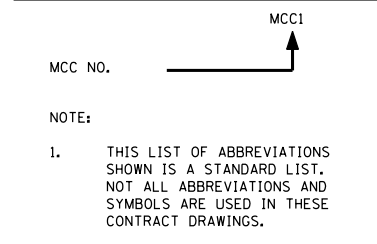
**TOGGLE SWITCH**  
Y - INDICATES CONTROLLING SWITCH (IF REQUIRED)

**SUBSCRIPTS:**  
X - INDICATES TYPE  
NONE - SINGLE POLE  
2 - DOUBLE POLE  
3 - THREE-WAY  
4 - FOUR-WAY  
K - KEY SWITCH  
P - PILOT LIGHT  
L - LIGHTED HANDLE  
DM - DIMMING  
MC - MOMENTARY CONTACT  
T - TIMER

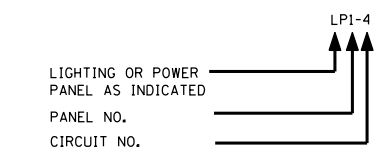
⏚	DUPLEX GFCI RECEPTACLE - 120V
⏚	DUPLEX GROUNDED RECEPTACLE - 120V
⏚	EXPLOSION PROOF SIMPLEX GROUNDED RECEPTACLE - 120V
⏚	TELEPHONE OUTLET, WALL MOUNT WITH 3/4" CONDUIT TO TELEPHONE TERMINAL CABINET
⏚	COMPUTER DATA OUTLET; RUN CAT 5E CABLE TO PLC
⏚	RECESSED CEILING SPEAKER
⏚	VOLUME CONTROL
⏚	WALL SPEAKER
⏚	SMOKE DETECTOR
⏚	HEAT DETECTOR
⏚	THERMOSTAT
⏚	FIRE ALARM HORN
⏚	FIRE ALARM HORN AND STROBE
⏚	FIRE ALARM STROBE
⏚	FIRE ALARM PULL STATION
⏚	CONNECTION TO EQUIPMENT
⏚	SPECIAL PURPOSE RECEPTACLE, NEMA TYPE AND AMPERE RATING AS INDICATED
⏚	MANUAL STARTER WITH PILOT LIGHT
⏚	THREE PHASE MAGNETIC STARTER
⏚	THREE PHASE COMBINATION MAGNETIC STARTER AND DISCONNECT SWITCH
⏚	INFORMATION OUTLET
⏚	ELECTRICAL EQUIPMENT ENCLOSURE: SWITCHBOARD, MOTOR CONTROL CENTER, CONTROL PANEL, TRANSFORMER OR OTHER EQUIPMENT AS INDICATED. ESTIMATED SIZE AS INDICATED. WHEN USED X INDICATES EQUIPMENT TYPE.
⏚	EQUIPMENT TYPES:
⏚	AP AEGIS PANEL
⏚	ATS AUTOMATIC TRANSFER SWITCH
⏚	CGM COMBUSTIBLE GAS MONITOR
⏚	CP CONTROL PANEL
⏚	FP FIRE PANEL
⏚	GCP GATE CONTROL PANEL
⏚	IAP INTRUSION ALARM PANEL
⏚	LP LIGHTING PANEL
⏚	MTS MANUAL TRANSFER SWITCH
⏚	MCC MOTOR CONTROL CENTER
⏚	PP POWER PANEL
⏚	UPS UNINTERRUPTABLE POWER SUPPLY
⏚	VFD VARIABLE FREQUENCY DRIVE
⏚	SB SWITCHBOARD
⏚	SG SWITCHGEAR
⏚	T TRANSFORMER
⏚	COMPUTER DATA OUTLET; RUN CAT 5E CABLE TO PLC
⏚	INFORMATION OUTLET
⏚	ELECTRIC UNIT HEATER
⏚	COMED TRANSFORMER

⏚	NON-FUSED DISCONNECT SWITCH (NUMERAL INDICATES SWITCH RATING)
⏚	FUSED DISCONNECT SWITCH - 3 POLE UNLESS OTHERWISE INDICATED (UPPER NUMERAL INDICATED SWITCH RATING) (LOWER NUMERAL INDICATED FUSE RATING)
⏚	1-PHASE MANUAL MOTOR SWITCH, 120V
⏚	TRANSFORMER
⏚	TERMINAL CABINET (ITC-INDICATES INSTRUMENTATION) (TTC-INDICATES TELEPHONE)
⏚	MOTOR
⏚	JUNCTION BOX
⏚	HANDHOLE
⏚	MANHOLE
⏚	CONTROL STATION XX INDICATES EQUIPMENT TAGS ** INDICATES EQUIPMENT NUMBER
⏚	SURVEILLANCE CAMERA
⏚	GROUND ROD
⏚	GROUND TEST WELL
⏚	AIR TERMINAL
⏚	CAPPED CONDUIT STUB
⏚	CONDUIT TURNING UP OR TO OBSERVER
⏚	CONDUIT TURNING DOWN OR AWAY FROM OBSERVER
⏚	FLEXIBLE CONDUIT CONNECTION
⏚	HOMERUN CIRCUIT OR CONDUCTORS
⏚	DIRECT BURIAL ELECTRICAL CABLE
⏚	UNDERGROUND ELECTRICAL DUCT, CONCRETE ENCASED
⏚	AERIAL UTILITIES

**MOTOR CONTROL CENTER**



**PANEL BOARDS**



**ELECTRICAL GENERAL NOTES**

1. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WIRING, WHETHER SHOWN OR NOT, NECESSARY FOR A COMPLETE SYSTEM.
2. PROVIDE EXPLOSION PROOF SEAL-OFF FITTINGS ON ALL CONDUITS EXITING CLASSIFIED OR RATED LOCATIONS. FITTINGS SHALL BE INSTALLED IN THE CLASSIFIED OR RATED LOCATION.
3. CONTRACTOR IS RESPONSIBLE FOR VERIFYING NUMBER OF CONDUCTORS IN CONDUIT PRIOR TO INSTALLATION.
4. ALL ROOMS EXCEPT ELECTRICAL ROOM SHALL BE CLASS I, DIVISION 2, GROUP D EXPLOSION PROOF.
5. ALL CONDUITS SHALL BE LABELED WITH AN ADHESIVE LABEL TO IDENTIFY THE CONTENTS PER SPECIFICATIONS. LABEL CONDUIT NUMBER AT EACH TERMINATING END AND ON EACH FLOOR, AND IN EACH ROOM.
6. EQUIPMENT AND EQUIPMENT MOUNTED DEVICES SHALL HAVE NAMEPLATES PER SPECIFICATIONS.
7. EACH LIGHT FIXTURE SHALL HAVE AN UNIQUE NAMEPLATE WHICH IDENTIFIES THE CIRCUIT IT IS POWERED FROM, LOCATION (I.E. PUMP ROOM), AND QUANTITY WITHIN THE CIRCUIT. ACCEPTABLE EXAMPLE:  
  
CIRCUIT 4  
FIXTURE 1  
PUMP ROOM
8. ABBREVIATIONS LISTED ARE SUPPLEMENTAL TO THE GENERAL ABBREVIATIONS LEGEND SHEET AND TAKE PRECEDENCE ON THE ELECTRICAL SHEETS. SEE DRAWING G002, G003, G004, M001, H001, AND IC001 FOR ADDITIONAL GENERAL NOTES.
9. PAYMENT FOR WORK SHOWN ON ELECTRICAL DRAWINGS, UNLESS NOTED OTHERWISE, SHALL BE INCLUDED IN THE CONTRACT LUMP SUM PRICE FOR THE ITEM, PUMP STATION ELECTRICAL WORK.

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FILE NAME = D191454-E001.DGN	USER NAME = bgreen
PLOT SCALE = 0:1" = 1"	PLOT DATE = 5/29/2019

DESIGNED - MEC - R. VAITLA	REVISED -
DRAWN - MEC - A. FREEMAN	REVISED -
CHECKED - MEC - J. ZURAD	REVISED -
DATE - 03/15/2019	REVISED -

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

**I-290 PUMP STATION NO. 4 RECONSTRUCTION**  
**ELECTRICAL LEGEND I**

SCALE: NONE      SHEET      OF      SHEETS      STA.      TO      STA.

F.A.I. RTE. 290	SECTION 3434-2321-R	COUNTY COOK	TOTAL SHEETS 232	SHEET NO. 153
CONTRACT NO. 62B78				

ILLINOIS FED. AID PROJECT

SHEET E001

**ONE-LINE SYMBOLS**

	MOLDED CASE CIRCUIT BREAKER (AF SUFFIX TO NUMERAL INDICATES FRAME SIZE) (AT SUFFIX TO NUMERAL INDICATES TRIP SETTING) (CL-INDICATES CURRENT LIMITING CIRCUIT BREAKER) (M-INDICATES MOTOR CIRCUIT PROTECTOR)
	DISCONNECT SWITCH
	CONTACTOR, NORMALLY OPEN
	MAGNETIC STARTER AND MOLDED CASE CIRCUIT BREAKER (FVNR-INDICATES FULL VOLTAGE NON-REVERSING) (FVR-INDICATES FULL VOLTAGE REVERSING) (SSVR-INDICATES SOLID STATE REDUCED VOLTAGE) (TSTW-INDICATED TWO SPEED TWO WINDING) (TSSW-INDICATES TWO SPEED SINGLE WINDING) (CONT-INDICATES CONTACTOR) (AUXILIARY CONTACTS-(2a TWO N.O.)(1b ONE N.C.) (NUMERAL INDICATES NEMA SIZE)
	TRANSFORMER
	COMBINATION MAGNETIC STARTER WITH MOLDED CASE CIRCUIT BREAKER (FVNR-INDICATES FULL VOLTAGE NON-REVERSING) (FVR-INDICATES FULL VOLTAGE REVERSING) (SSVR-INDICATES SOLID STATE REDUCED VOLTAGE) (TSTW-INDICATED TWO SPEED TWO WINDING) (AUXILIARY CONTACTS-(2a TWO N.O.)(1b ONE N.C.) (NUMERAL INDICATES NEMA SIZE)
	GROUND
	MOTOR
	CIRCUIT BREAKER
	CONTROL POWER TRANSFER RELAY
	ELECTRICAL INTERLOCK
	KIRK KEY INTERLOCK
	COMPARTMENT NUMBER IN USS1
	SWITCH BREAKER POSITION IN CUBICLE
	BUS 1 DIFFERENTIAL RELAY
	GROUND FAULT PROTECTION
	MOTOR PROTECTION RELAY WITH DIGITAL METERING DISPLAY
	PUMP AND MOTOR PROTECTION RELAY
	LINE PROTECTION RELAY
	GENERATOR PROTECTION RELAY
	TRANSFORMER PROTECTION RELAY

**SCHEMATIC SYMBOLS**

	TERMINAL ON A DEVICE
	NORMALLY OPEN CONTACT
	NORMALLY CLOSED CONTACT
	SINGLE POLE SINGLE THROW SWITCH
	SINGLE POLE DOUBLE THROW SWITCH
	DOUBLE POLE SINGLE THROW SWITCH
	DOUBLE POLE DOUBLE THROW SWITCH
	THREE WAY ROTARY SWITCH
	NORMALLY OPEN MOMENTARY PUSH BUTTON
	NORMALLY CLOSED MOMENTARY PUSH BUTTON
	NORMALLY OPEN DOUBLE BREAK SINGLE THROW CONTACT BLOCK
	NORMALLY CLOSED DOUBLE BREAK SINGLE THROW CONTACT BLOCK
	TWO POSITION PUSH BUTTON (EXTRA CONTACT BLOCK)
	MUSHROOM HEAD PUSHBUTTON
	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 - CLOSSES ON RISING TEMPERATURE
	TEMPERATURE SWITCH - OPENS ON RISING TEMPERATURE
	TIME DELAY RELAY SWITCH - NORMALLY OPEN, CLOSSES ON TIME DELAY AFTER ENERGIZATION OF RELAY COIL
	TIME DELAY RELAY SWITCH - NORMALLY CLOSED, OPENS ON TIME DELAY AFTER ENERGIZATION OF RELAY COIL
	TIME DELAY RELAY SWITCH - NORMALLY OPEN, OPENS ON TIME DELAY AFTER DE-ENERGIZATION OF RELAY COIL
	TIME DELAY RELAY SWITCH - NORMALLY CLOSED, CLOSSES ON TIME DELAY AFTER DE-ENERGIZATION OF RELAY COIL
	LIMIT SWITCH - NORMALLY CLOSED HELD OPEN
	LIMIT SWITCH - NORMALLY OPEN HELD CLOSED

	LIMIT SWITCH - NORMALLY CLOSED HELD CLOSED
	LIMIT SWITCH - NORMALLY OPEN HELD OPEN
	LEVEL SWITCH - CLOSSES ON RISING LEVEL
	LEVEL SWITCH - OPENS ON RISING LEVEL
	FLOW SWITCH - CLOSSES ON FLOW
	FLOW SWITCH - OPENS ON FLOW
	TRANSFORMER - (TYPE AND RATING IS INDICATED)
	DELTA CONNECTED PRIMARY AND Y CONNECTED SECONDARY WITH SOLIDLY GROUNDED NEUTRAL
	CT, CURRENT TRANSFORMER
	ZERO SEQUENCE CURRENT TRANSFORMER
	PT, POTENTIAL VT, VOLTAGE TRANSFORMER
	CPT, CONTROL POWER TRANSFORMER
	CONNECTION TO GROUND
	LIGHTNING ARRESTER
	THERMAL OVERLOAD ELEMENT
	FUSE
	PLUG IN CONNECTOR
	CIRCUIT BREAKER
	HEATING ELEMENT
	DIODE
	LED
	BLOCKING DIODE
	SOLENOID VALVE
	COIL C - CLOSE CR - CONTROL RELAY F - FAST OR FORWARD M - MOTOR STARTER COIL 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
	FAN

	THERMOSTAT
	INDICATOR LIGHT(SEE SCHEMATIC DIAGRAM DEVICE TABLE FOR COLOR SYMBOLS)
	THERMISTOR
	INDICATOR LIGHT (PUSH TO TEST TYPE)
	DEVICE ENCLOSURE
	120V PLUG OR RECEPTACLE
	ANNUNCIATOR
	COUNTER
	ELAPSED TIME METER
	PUMP START COUNTER
	ELECTRONIC TIMER
	TOTALIZER

**SCHEMATIC LEGEND:**

- TERMINAL IN MCC
- TERMINAL IN SCADA PANEL
- DEVICE LOCATED IN MCC
- DEVICE IN SCADA PANEL
- DEVICE FIELD MOUNTED
- RISING WATER LEVEL TRIGGER
- FALLING WATER LEVEL TRIGGER
- TERMINAL IN SCREEN MCP

FILE NAME = D191454-E002.DGN  
 USER NAME = bgreen  
 DESIGNED - MEC - R. VAITLA  
 DRAWN - MEC - A. FREEMAN  
 CHECKED - MEC - J. ZURAD  
 DATE - 03/15/2019  
 PLOT SCALE = 0:1" = 1'-0"  
 PLOT DATE = 5/29/2019



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

**I-290 PUMP STATION NO. 4 RECONSTRUCTION**  
**ELECTRICAL LEGEND II**

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	154
CONTRACT NO. 62B78				
ILLINOIS FED. AID PROJECT				

SHEET  
 E002

SCALE: NONE SHEET OF SHEETS STA. TO STA.

SHEET NOTES:

1. PHYSICALLY SEPARATED, A GASTIGHT PARTITION BETWEEN TWO ADJACENT SPACES, OR TWO NONADJACENT SPACES, WITH NO MEANS OF GAS COMMUNICATION BETWEEN THE SPACES.

IDOT PUMP STATION 4 AREA CLASSIFICATION, FIRE AND GAS DETECTION SUMMARY					
NO	AREA DESCRIPTION	2016 NFPA 820 HAZARD CLASSIFICATION	FIRE DETECTION	2016 NFPA 820 COMBUSTIBLE GAS DETECTION	2016 NFPA 820 REFERENCE
1	ELECTRICAL ROOM	UNCLASSIFIED	SMOKE DETECTION	NOT REQUIRED	§3.3.43 PHYSICALLY SEPARATED. SEE NOTE 1
2	INFLUENT CHANNEL LEVEL	CLASS I DIVISION 2 GROUP D	NOT REQUIRED	NONE	§4.2.2 (ROW 4); NNV POSSIBLE IGNITION OF FAMMABLE GASES AND FLOATING FAMMABLE LIQUIDS
3	PUMP ROOM INTERMEDIATE LEVEL	CLASS I DIVISION 2 GROUP D	HEAT DETECTION	GAS SENSORS TO MEASURE CONCENTRATIONS OF GASOLINE	§4.2.2 (ROW 4); NNV POSSIBLE IGNITION OF FAMMABLE GASES AND FLOATING FAMMABLE LIQUIDS
4	PUMP ROOM GROUND LEVEL	CLASS I DIVISION 2 GROUP D	HEAT DETECTION	GAS SENSORS TO MEASURE CONCENTRATIONS OF GASOLINE	§4.2.2 (ROW 4); NNV POSSIBLE IGNITION OF FAMMABLE GASES AND FLOATING FAMMABLE LIQUIDS
5	STAIRWELLS	CLASS I DIVISION 2 GROUP D	HEAT DETECTION	PROVIDED PER NO. 3 & 4	§4.2.2 (ROW 4); NNV POSSIBLE IGNITION OF FAMMABLE GASES AND FLOATING FAMMABLE LIQUIDS
6	EXISTING PS FLOOR ELEVATION 593.03	CLASS I DIVISION 2 GROUP D	NOT REQUIRED	GAS SENSORS TO MEASURE CONCENTRATIONS OF GASOLINE	§4.2.2 (ROW 4); NNV POSSIBLE IGNITION OF FAMMABLE GASES AND FLOATING FAMMABLE LIQUIDS

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FILE NAME = D191454-E003.DGN



USER NAME = bgreen

DESIGNED - MEC - R. VAITLA

REVISED -

DRAWN - MEC - A. FREEMAN

REVISED -

PLOT SCALE = 0:1' = 1/4" / 1/8"

CHECKED - MEC - J. ZURAD

REVISED -

PLOT DATE = 5/29/2019

DATE - 03/15/2019

REVISED -

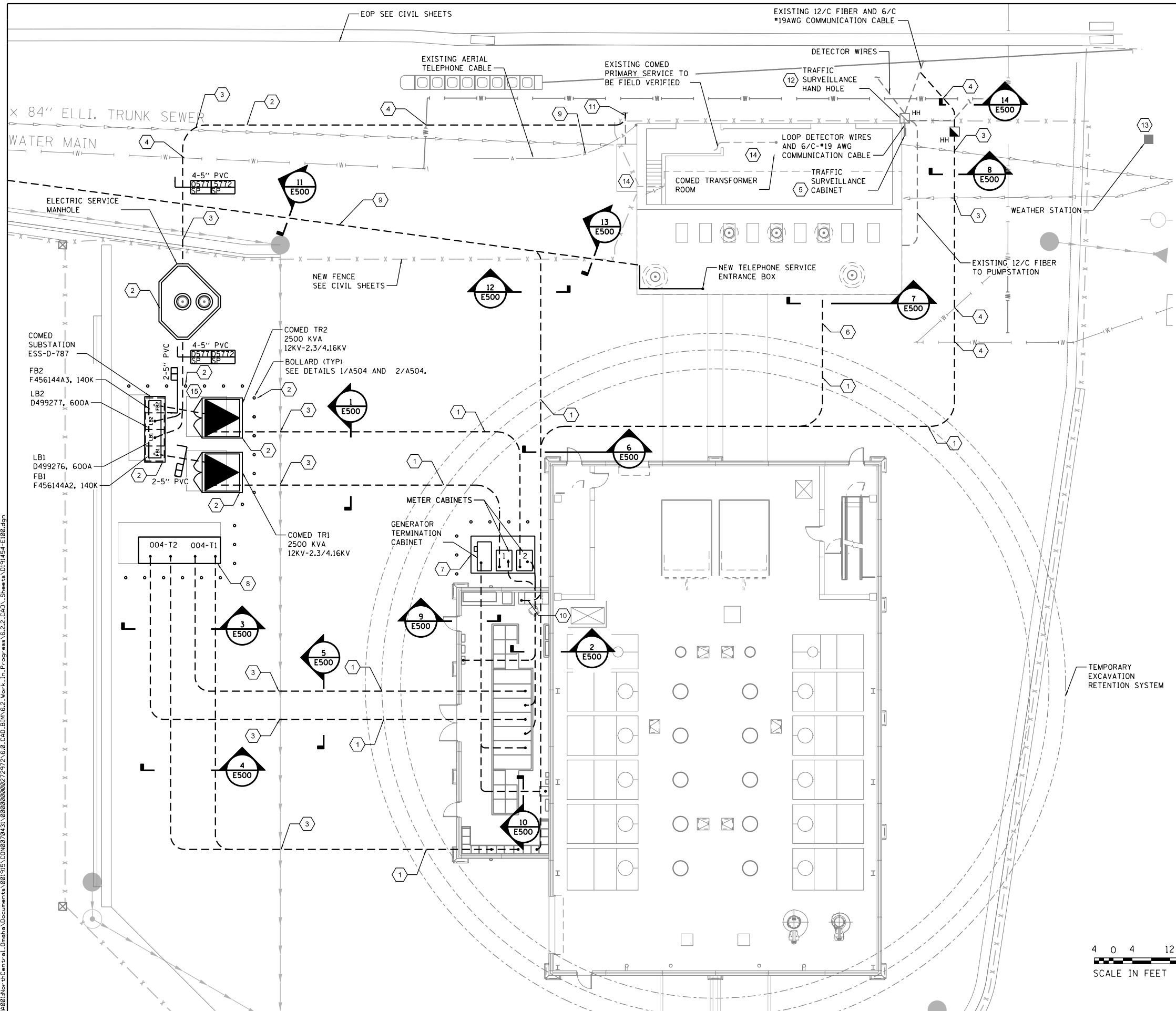
**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
CLASSIFICATION SUMMARY**

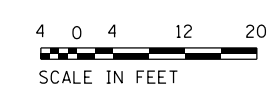
SCALE: NONE SHEET OF SHEETS STA. TO STA.

SHEET  
E003

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	155
CONTRACT NO. 62B78				
ILLINOIS FED. AID PROJECT				



- GENERAL NOTES:**
- SEE DM101 FOR SITE DEMOLITION WORK
  - SEE E113 FOR GROUND PLAN
  - SEE DETAIL 6/E507 FOR HEAVY DUTY HANDHOLE DETAIL
  - SEE E652 AND E653 FOR CABLE AND CONDUIT SCHEDULES
  - ALL ELECTRICAL WORK AND ALL SITE WORK SHOWN, UNLESS NOTED OTHERWISE, SHALL BE PERFORMED UNDER PAY ITEMS X0783300 AND X0335700 RESPECTIVELY.
- KEY NOTES**
- COORDINATE WITH TEMPORARY EXCAVATION RETENTION SYSTEM CONTRACTOR FOR REMOVAL TO INSTALL DUCTBANK. SEE SHEETS S100 AND M303.
  - INSTALL ELECTRIC SERVICE MANHOLE, TRANSFORMER PADS, SWITCHGEAR BASES AND GROUNDING PER COMED STANDARDS C4381, C5286.L, C5300.A AND C8550.CG0. INSTALL CONCRETE ENCASED CONDUITS INSIDE PUMP STATION RIGHT OF WAY, PADS AS SHOWN PER COMED STANDARDS C4171 AND SERVICE ENTRANCE LOCATION SKETCH. INSTALL BOLLARDS PER COMED STANDARD C5295.A. ALL WORK INCLUDING SITE PREPARATION, GROUNDING, BOLLARDS WORK SHOWN ON COMED LOCATION SKETCH AND COORDINATION WITH COMED FOR NEW ELECTRICAL SERVICE SHALL BE PERFORMED BY THE CONTRACTOR AND WILL BE PAID UNDER PAY ITEM 80400100.
  - COORDINATE WITH STORM SEWER SUBCONTRACTOR AND MAINTAIN SEPARATION PER SHEET C801.
  - LOCATE WATER MAIN AND EXISTING UTILITIES AND MAINTAIN MINIMUM 18" SEPARATION BETWEEN DUCTBANK AND WATER MAIN.
  - PROTECT TRAFFIC SURVEILLANCE CABINET, EXISTING HANDHOLE, EXISTING LOOP DETECTOR WIRING, EXISTING COMMUNICATION AND FIBER OPTIC CABLES DURING CONSTRUCTION WORK OF THE NEW PUMP STATION AND WATER MAIN. LOCATE AND SHORE CONDUITS TO THE HANDHOLE DURING EXCAVATION WORK FOR WATER MAIN RELOCATION. PROVIDE BARRIER WALL TO PROTECT THIS EQUIPMENT FROM DAMAGE. AFTER NEW PUMP STATION IS COMPLETED AND ACCEPTED, COORDINATE WITH THE ENGINEER FOR ITEMS TO BE SALVAGED IN THE SURVEILLANCE CABINET. AFTER ENGINEER'S APPROVAL, REMOVE SALVAGEABLE EQUIPMENT AND DELIVER TO IDOT STORAGE FACILITY AS DIRECTED BY THE ENGINEER. DISCONNECT AND REMOVE 120V POWER TO THE CABINET. DEMO CABINET AND DISPOSE PER SHEET DM103.
  - ADJUST DUCTBANK ELEVATION SO THAT CONDUITS ENTER THE EXISTING STATION AT EL 612.5.
  - SEE 5/E502 FOR GENERATOR CONNECTION CABINET DETAIL, SHEET E503 FOR METERING CABINET DETAILS AND SHEET E504 FOR CABINET PAD DETAILS.
  - SEE DETAILS 5/E507 AND 5/E507 FOR TRANSFORMER PAD DETAILS.
  - COORDINATE WITH TELEPHONE UTILITY TO RELOCATE OVERHEAD TELEPHONE SERVICE TO UNDERGROUND SERVICE. PROVIDE DUCTBANK FROM THE CONSTRUCTION LIMITS IN I 896 288.69, E I 121 995.22, SEE SHEET C1031, RACEWAY IN THE EXISTING PUMP STATION. TELEPHONE CABLE AND TELEPHONE SERVICE ENTRANCE BOX WITH SURGE SUPPRESSORS. RECONNECT EXISTING TELEPHONE SERVICE TERMINALS TO THE NEW SERVICE AND THEN REMOVE THE EXISTING AERIAL TELEPHONE SERVICE CABLE. THIS WORK MUST BE COMPLETED BEFORE CONSTRUCTION OF TEMPORARY EXCAVATION RETENTION SYSTEM. THIS WORK SHALL BE PERFORMED BY THE CONTRACTOR AND WILL BE PAID UNDER PAY ITEM X1400159.
  - COORDINATE WITH TELEPHONE UTILITY; PROVIDE DUCTBANK, TELEPHONE CABLE AND TELEPHONE SERVICE ENTRANCE BOX WITH SURGE SUPPRESSORS IN THE NETWORK RACK IN THE ELECTRICAL ROOM. THIS WORK WILL BE PAID UNDER PAY ITEM X1400159.
  - FIELD VERIFY, COORDINATE WITH COMED AND ADJUST THE DUCTBANK DEPTH TO MATCH DEPTH OF EXISTING COMED DUCTBANK. THIS WORK WILL BE PAID UNDER PAY ITEM 80400100. FINAL DUCTBANK CONNECTIONS TO THE EXISTING COMED DUCTBANK AND EXISTING ELECTRIC SERVICE MANHOLE SHALL BE PERFORMED BY COMED'S CONTRACTOR AND SHALL BE PAID UNDER PAY ITEM 80400200.
  - FIELD VERIFY ROUTING OF EXISTING FIBER OPTIC AND COMMUNICATION CABLE CONDUITS FROM MEDIAN WALL JUNCTION BOX TO THE EXISTING HANDHOLE. PRIOR TO DEMOLITION OF THE PUMP STATION AND AFTER NEW PUMP STATION IS ACCEPTED AND APPROVED BY THE ENGINEER, DISCONNECT FIBER OPTIC CABLE IN THE FIBER OPTIC CABLE JUNCTION BOX IN THE MEDIAN WALL (SEE SHEET DM101 FOR LOCATION) AND IN EXISTING PUMP STATION, REMOVE FIBER OPTIC CABLE. DISCONNECT COMMUNICATION CABLE IN THE MEDIAN JB AND IN THE SURVEILLANCE CABINET AND REMOVE IT. FIELD VERIFY THE PAIRS USED AT THIS LOCATION AND RESPLICE BLUE-BLACK AND ORANGE-BLACK PAIRS OF THE 25 PAIR 19 AWG BLUE BUNDLE OF THE COMMUNICATION TRUNK CABLE IN THE MEDIAN JB IN ACCORDANCE WITH SECTION 26 00 03 AND AS APPROVED BY THE ENGINEER. PROVIDE HEAVY DUTY HANDHOLE. INTERCEPT EXISTING CONDUITS FROM THE MEDIAN JB IN THE SHOULDER AND REROUTE THEM TO NEW HANDHOLE AS SHOWN. INSTALL NEW 12 COUNT FIBER OPTIC CABLE FROM MEDIAN JUNCTION BOX TO NETWORK RACK AS SHOWN ON SHEET E650. PROVIDE 25' OF SLACK CABLE IN THE HANDHOLE. SPLICE FIBERS 1-6 TO FIBERS 1-6 OF TRUNK CABLE BROWN BUNDLE TO PS05 (EAST CABLE RUN) AND SPLICE FIBERS 7-12 TO FIBERS 1-6 OF THE SAME BUNDLE TO PS20 (WEST CABLE RUN). SCHEDULE THIS WORK DURING DRY WEATHER TO MINIMIZE OUTAGE OF THE FIBER OPTIC COMMUNICATION LINK OF THE PUMP STATION NETWORK. COORDINATE WITH THE ELECTRICAL MAINTENANCE CONTRACTOR AND TEST FIBERS 1-6 TO PATCH PANEL AT PS05 AND 7-12 TO PATCH PANEL AT PS20. PERFORM TESTS WITH OTDR AND SUBMIT THE TEST DATA FOR APPROVAL BY THE ENGINEER.
  - PROTECT WEATHER STATION UNTIL ITS REMOVAL IS AUTHORIZED BY THE DEPARTMENT AND SALVAGE. SEE DM101 FOR DEMOLITION AND SALVAGE OF THE EQUIPMENT.
  - AFTER EXISTING PUMP STATION IS DECOMMISSIONED, REMOVE TWO SETS OF COMED CABLES ON IDOT ROW. REMOVE TRANSFORMERS AND OTHER COMED EQUIPMENT AND DELIVER TO COMED DESIGNATED FACILITY. ABANDON EXISTING MANHOLE AND VAULT PER COMED STANDARD C4030 AND FOR DEMOLITION UNDER THIS CONTRACT.
  - COMED WILL FURINSH AND INSTALL THE TRANSFORMERS AND COMED SWITCHGEAR, PRIMARY SERVICE CABLES AND PERFORM ALL TERMINATIONS AT ITS EQUIPMENT. THIS WORK WILL BE PAID UNDER PAY ITEM 80400200.



FILE NAME = D191454-E100.DGN  
**MILHOUSE**  
 ENGINEERING & CONSTRUCTION

USER NAME = bgreen  
 PLOT SCALE = 0=1' / 1" = 1/8"  
 PLOT DATE = 5/29/2019

DESIGNED - MEC - R. VAITLA  
 DRAWN - MEC - A. FREEMAN  
 CHECKED - MEC - J. ZURAD  
 DATE - 03/15/2019

REVISED -  
 REVISED -  
 REVISED -  
 REVISED -

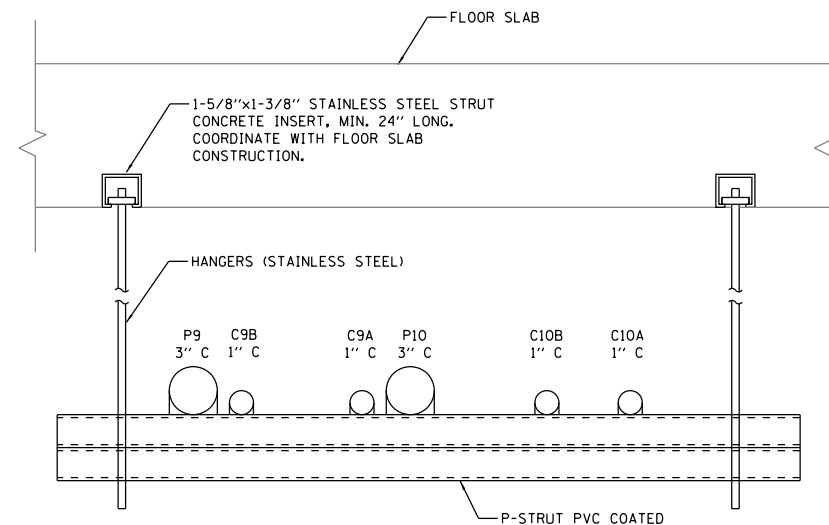
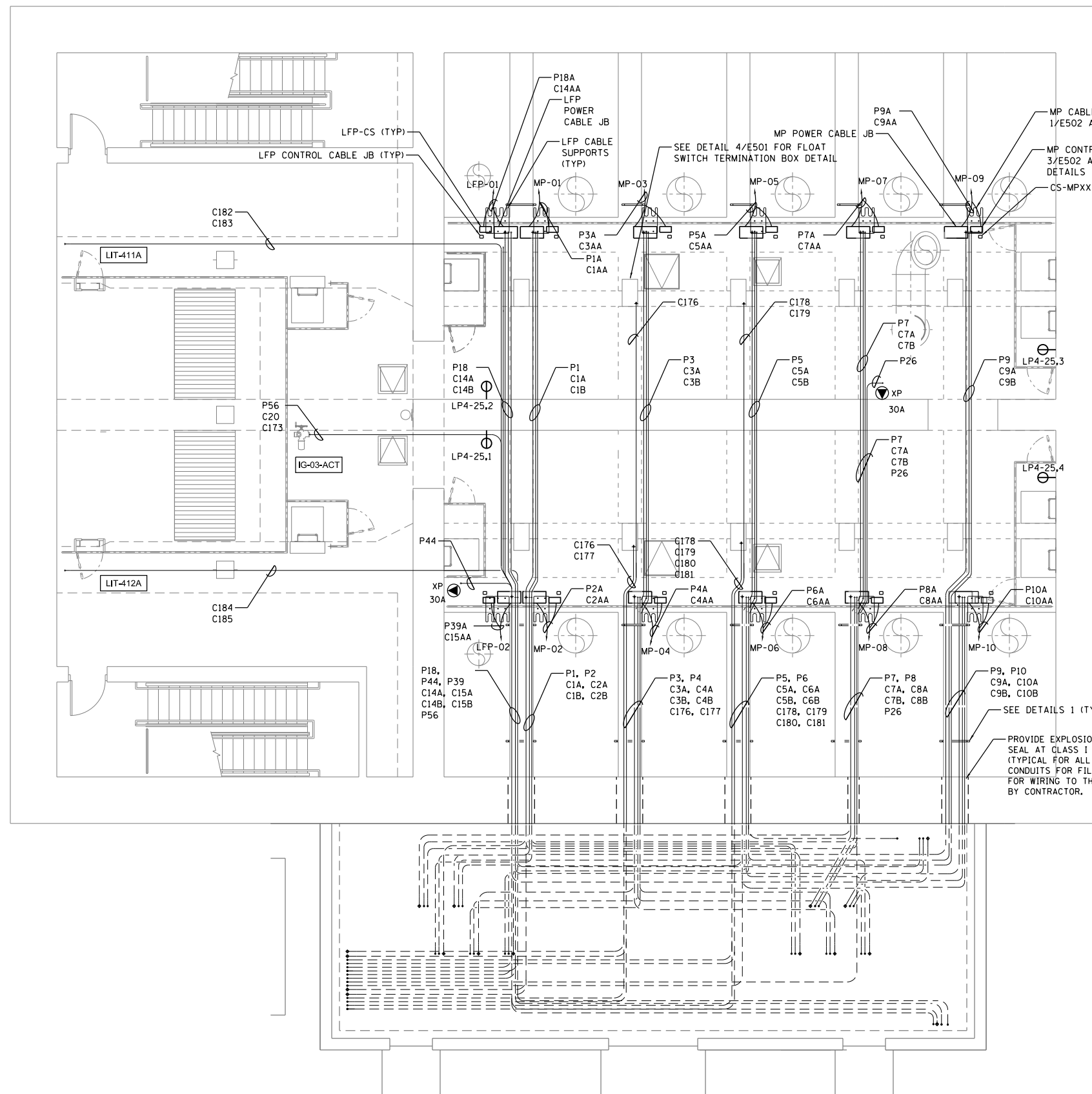
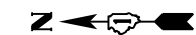
**STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION**

**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
 ELECTRICAL SITE PLAN**

SCALE: 1/8" = 1'-0" SHEET OF SHEETS STA. TO STA.

F.A.I. R.T.E.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	156
CONTRACT NO. 62B78				
ILLINOIS FED. AID PROJECT				

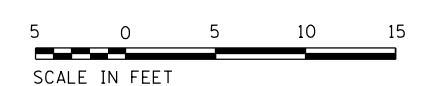
SHEET  
 E100



**1 PUMPS 9 AND 10 CONDUITS**

(TYPICAL FOR OTHER PUMPS AND LOADS SHOWN)  
SCALE: NTS

- GENERAL NOTES:**
1. SEE SHEETS E652 AND E653 FOR CONDUITS & CABLE SCHEDULES.
  2. SEE SHEET E301 FOR ELECTRICAL SECTION.
  3. RECEPTACLES CONNECTED TO PANEL LP4 CKT AS NOTED SHEET E651.
  4. SEE SHEET E612 FOR MCC ELEVATION.
  5. SEE E502 ELECTRICAL DETAILS.
  6. IN ORDER TO KEEP CLARITY, NOT ALL CONDUITS, SUCH AS LIGHTS, RECEPTACLES, FIRE PANEL AND ALARM CONDUITS, ARE SHOWN. THE CONTRACTOR IS RESPONSIBLE FOR ALL WIRING AND CONDUIT, WHETHER SHOWN OR NOT, NECESSARY FOR A COMPLETE AND OPERABLE SYSTEM.



**INTERMEDIATE LEVEL POWER PLAN AT ELEVATION 603.75**

FILE NAME = D191454-E101.DGN  
 USER NAME = bgreen  
 DESIGNED - MEC - R. VAITLA  
 DRAWN - MEC - A. FREEMAN  
 CHECKED - MEC - J. ZURAD  
 DATE - 03/15/2019  
 PLOT SCALE = 0:1' = 1/4" / 1/8"  
 PLOT DATE = 5/29/2019

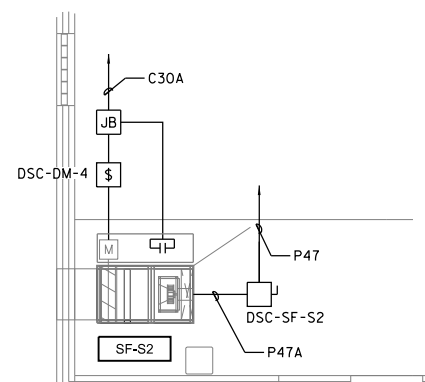
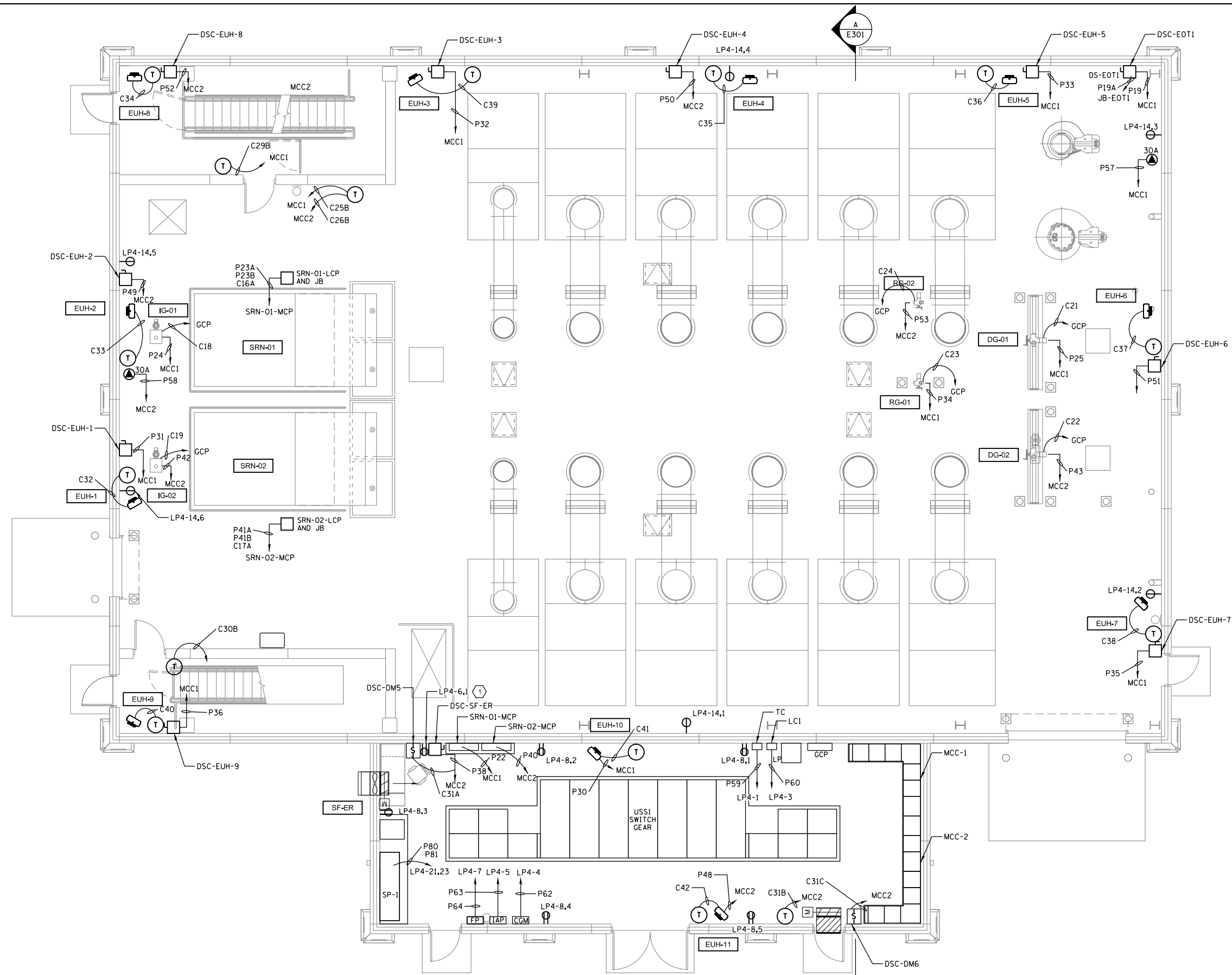


DESIGNED - MEC - R. VAITLA	REVISED -
DRAWN - MEC - A. FREEMAN	REVISED -
CHECKED - MEC - J. ZURAD	REVISED -
DATE - 03/15/2019	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
INTERMEDIATE LEVEL POWER PLAN AT ELEVATION 603.75**  
SCALE: 3/8"=1'-0" SHEET OF SHEETS STA. TO STA.

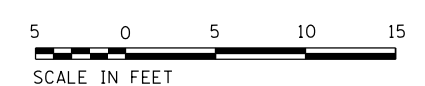
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F.A.I. RTE.	SECTION	COUNTY	
290	3434-2321-R	COOK	232 157
			CONTRACT NO. 62B78
ILLINOIS FED. AID PROJECT			



**FAN SF-S2 AND DM-4 WIRING DETAIL**  
TOP OF STAIRS

- GENERAL NOTES:**
- SEE SHEETS E652 AND E653 FOR CONDUITS & CABLE SCHEDULES.
  - SEE SHEETS E301 FOR ELECTRICAL SECTION.
  - RECEPTACLES CONNECTED TO PANEL LP4 CKT AS NOTED SHEET E651.
  - SEE SHEET E401 FOR ENLARGED ELECTRICAL ROOM.
  - IN ORDER TO KEEP CLARITY, NOT ALL CONDUITS, SUCH AS LIGHTS, RECEPTACLES, FIRE PANEL AND ALARM CONDUITS, ARE SHOWN. THE CONTRACTOR IS RESPONSIBLE FOR ALL WIRING AND CONDUIT, WHETHER SHOWN OR NOT, NECESSARY FOR A COMPLETE AND OPERABLE SYSTEM.

- KEYNOTES:**
- ① LOCATE 6' AFF, COORDINATE WITH SELECTED EQUIPMENT



**GROUND LEVEL POWER PLAN AT ELEVATION 624.83**

FILE NAME = D191454-E102.DGN  
 USER NAME = bgreen  
 DESIGNED - MEC - R. VAITLA  
 DRAWN - MEC - A. FREEMAN  
 CHECKED - MEC - J. ZURAD  
 DATE - 03/15/2019  
 PLOT SCALE = 0.1" = 1'-0"  
 PLOT DATE = 5/29/2019

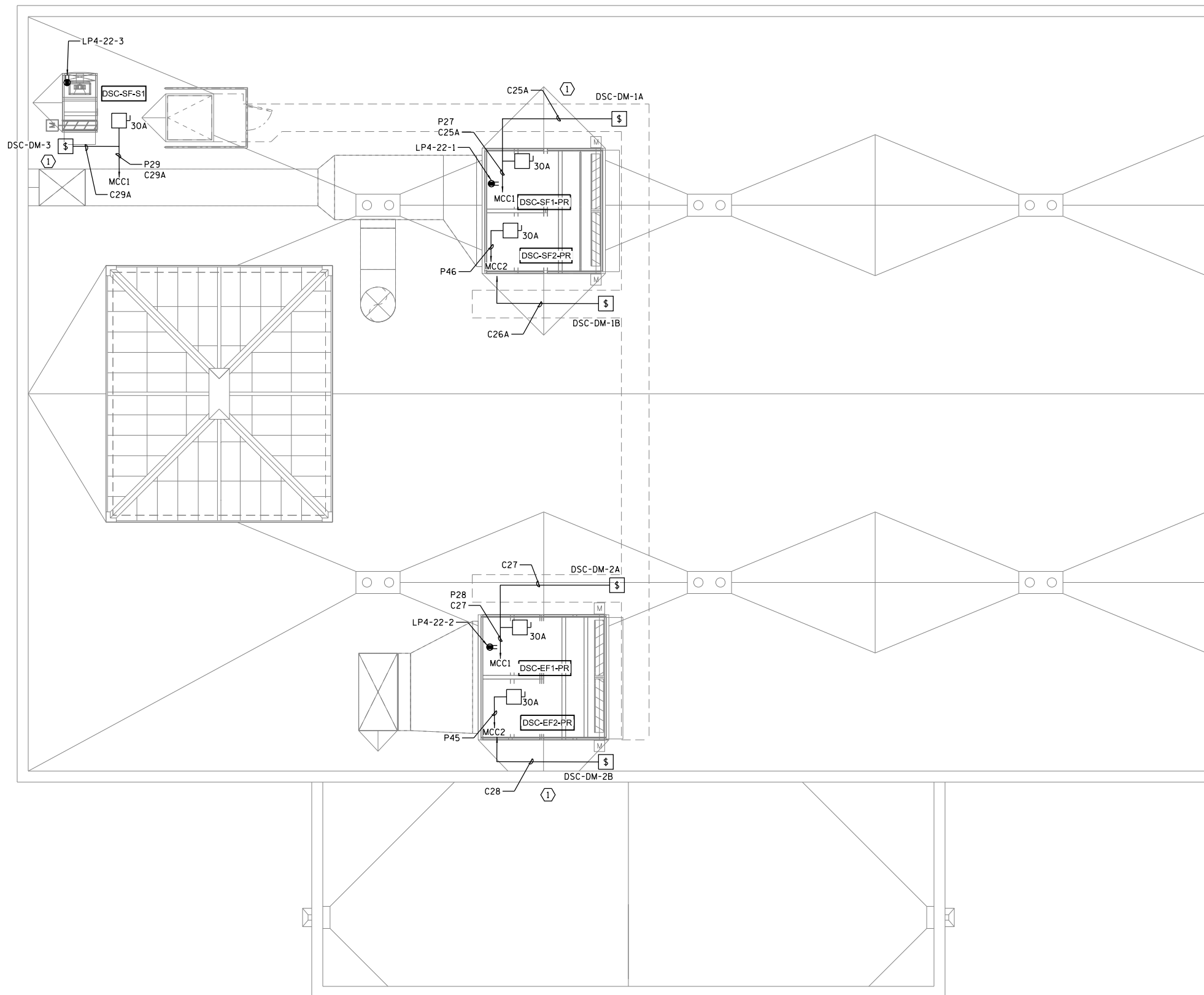


DESIGNED - MEC - R. VAITLA	REVISED -
DRAWN - MEC - A. FREEMAN	REVISED -
CHECKED - MEC - J. ZURAD	REVISED -
DATE - 03/15/2019	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**I-290 PUMP STATION NO. 4 RECONSTRUCTION**  
**GROUND LEVEL POWER PLAN AT ELEVATION 624.83**  
SCALE: 3/8" = 1'-0" SHEET OF SHEETS STA. TO STA.

SHEET E102	
F.A.I. RTE.	SECTION
290	3434-2321-R
COUNTY	TOTAL SHEETS
COOK	232 158
CONTRACT NO. 62B78	
ILLINOIS FED. AID PROJECT	



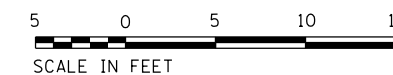
**ROOF POWER PLAN AT ELEVATION 662.17**

**GENERAL NOTES:**

1. SEE SHEETS E652 AND E653 FOR CONDUITS & CABLE SCHEDULES.
2. SEE SHEET E301 FOR ELECTRICAL SECTION.
3. RECEPTACLES CONNECTED TO PANEL LP4 CKT AS NOTED SHEET E651.
4. IN ORDER TO KEEP CLARITY, NOT ALL CONDUITS, SUCH AS LIGHTS, RECEPTACLES, FIRE PANEL AND ALARM CONDUITS, ARE SHOWN. THE CONTRACTOR IS RESPONSIBLE FOR ALL WIRING AND CONDUIT, WHETHER SHOWN OR NOT, NECESSARY FOR A COMPLETE AND OPERABLE SYSTEM.

**KEY NOTES:**

- ① SEE DSC-DM4 WIRING DETAIL ON E102 FOR DAMPER MOTOR AND LIMIT SWITCH WIRING.



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FILE NAME = D191454-E103.DGN	USER NAME = bgreen	DESIGNED - MEC - R. VAITLA	REVISED -
		DRAWN - MEC - A. FREEMAN	REVISED -
		CHECKED - MEC - J. ZURAD	REVISED -
		DATE - 03/15/2019	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
ROOF POWER PLAN AT ELEVATION 662.17**

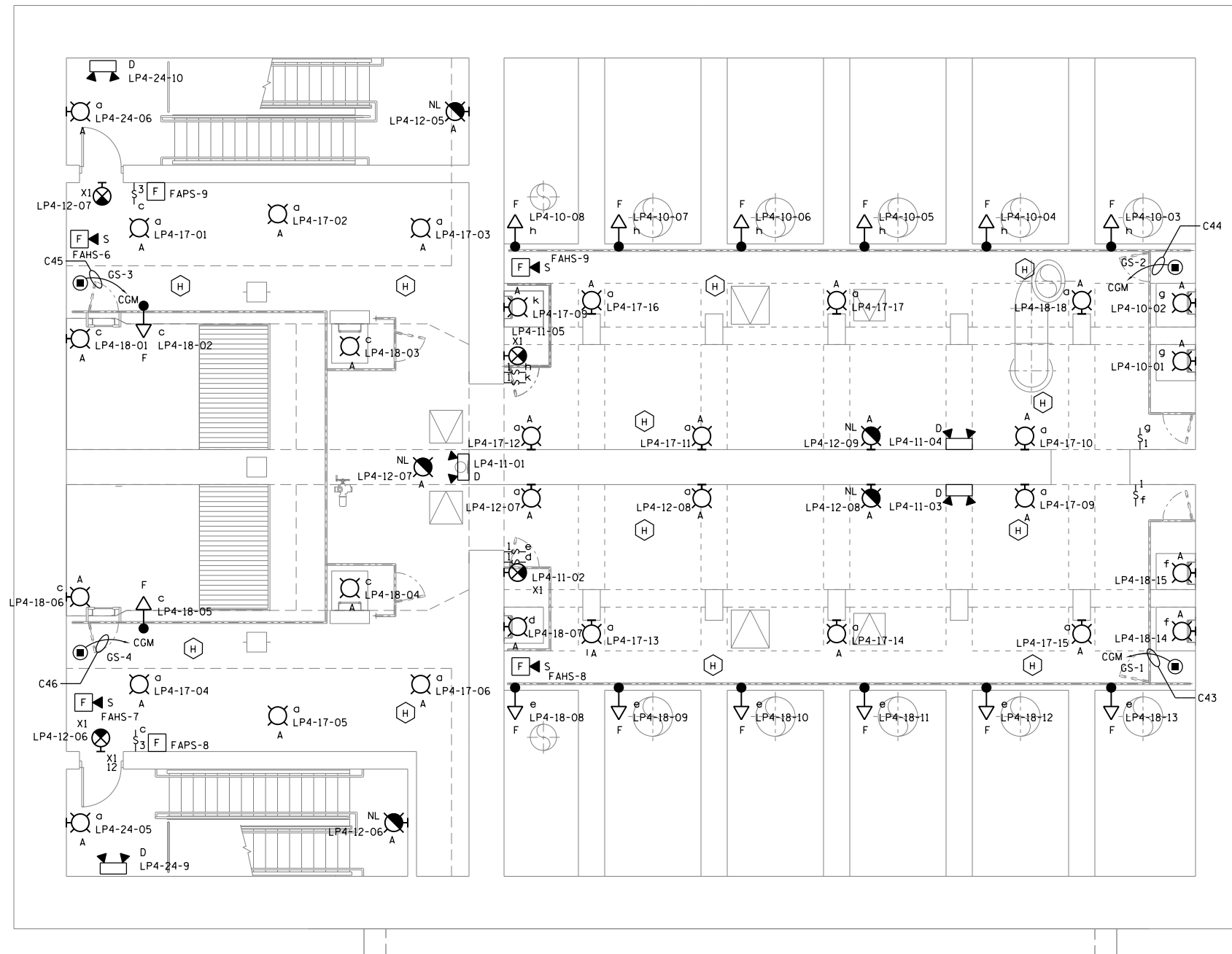
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F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	
290	3434-2321-R	COOK	232	159	
CONTRACT NO. 62B78					
ILLINOIS FED. AID PROJECT					

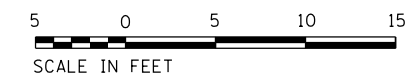


NOTES:

1. LIGHT FIXTURES ON THIS SHEET ARE TO BE INSTALLED PER THE LIGHT FIXTURE SCHEDULE (SHEET E651) UNLESS OTHERWISE NOTED, SEE SHEET E651.
2. LIGHT FIXTURES LOCATED IN STAIRWELLS ARE TO BE WALL MOUNTED 9' AFF, UNLESS OTHERWISE NOTED. SEE SHEET E113 FOR ADDITIONAL DETAIL.
3. ALL LIGHT FIXTURES ARE TO BE FED FROM THE MAIN ELECTRICAL ROOM, PANEL LP4.
4. CONTRACTOR TO PROVIDE 2\*12 & 1\*12 GRD IN 3/4" PVC-GRS CONDUIT FOR EACH LIGHTING CIRCUIT THAT PASSES THROUGH THE MAIN PUMP ROOM, BACK TO PANEL LP4.
5. FLOOD LIGHTS LOCATED IN THE SCREEN PIT AREA ARE TO BE POLE MOUNTED AND AS TO ILLUMINATE THE SCREEN AND PIT AREA BELOW WITH THE ABILITY TO BE REORIENTED.
6. SEE SHEET E651 FOR LP4 SCHEDULE.
7. SEE SHEET E647 FOR FIRE ALARM RISER DIAGRAM.
8. SEE SHEET E648 FOR COMBUSTIBLE GAS MONITORING PANEL SCHEMATIC.
9. SEE SHEETS E652, E653 AND IC611 FOR CONDUIT AND WIRING SCHEDULE.
10. IN ORDER TO KEEP CLARITY, NOT ALL CONDUITS, SUCH AS LIGHTS, RECEPTACLES, FIRE PANEL AND ALARM CONDUITS, ARE SHOWN. THE CONTRACTOR IS RESPONSIBLE FOR ALL WIRING AND CONDUIT, WHETHER SHOWN OR NOT, NECESSARY FOR A COMPLETE AND OPERABLE SYSTEM.



**INTERMEDIATE LEVEL LIGHTING PLAN AT ELEVATION 603.75**



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FILE NAME = 0191454-E111.DGN	USER NAME = bgreen	DESIGNED - MEC - R. VAITLA	REVISED -
		DRAWN - MEC - A. FREEMAN	REVISED -
		CHECKED - MEC - J. ZURAD	REVISED -
		DATE - 03/15/2019	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
INTERMEDIATE LEVEL LIGHTING PLAN EL 603.75**

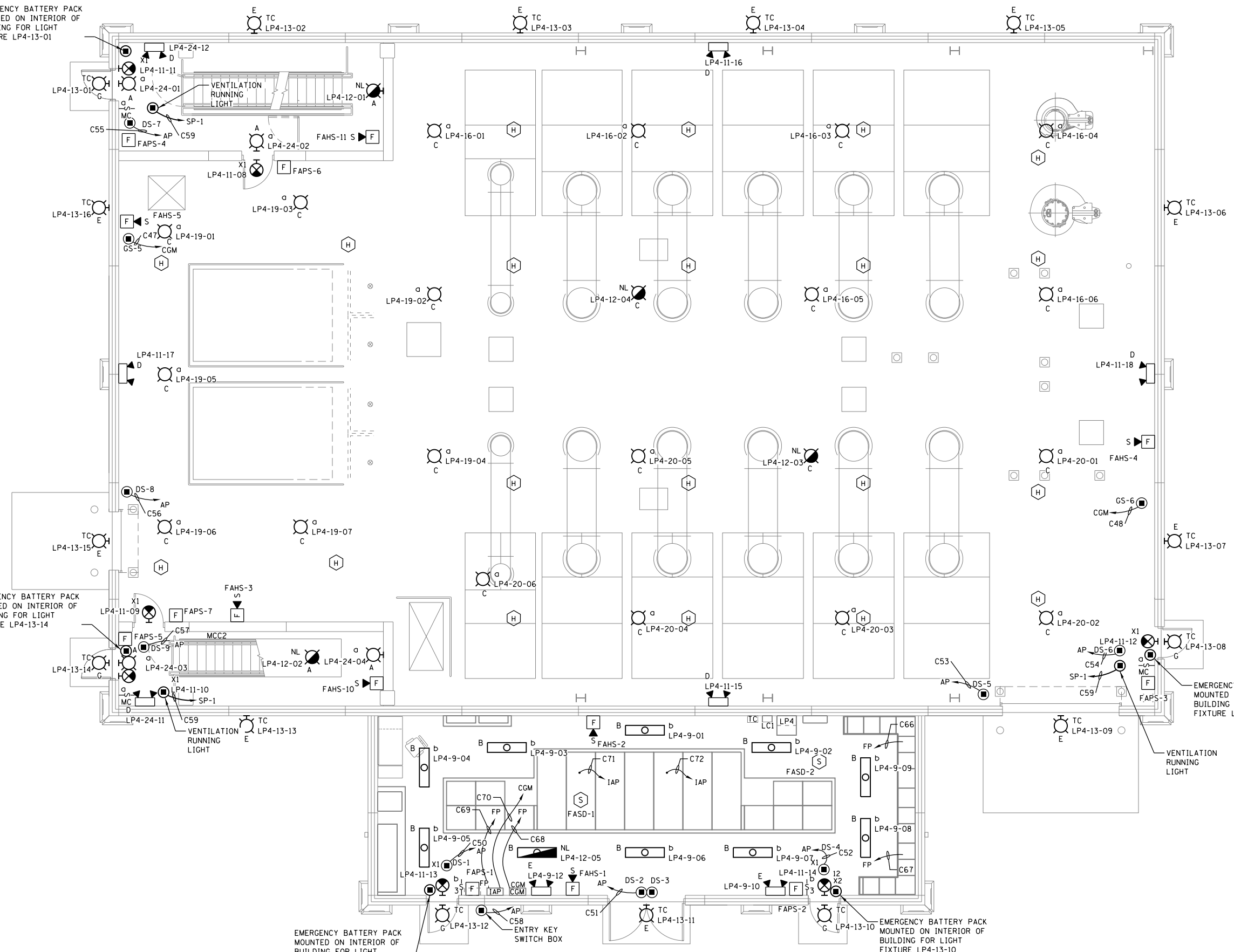
SCALE: 3/8" = 1'-0" SHEET OF SHEETS STA. TO STA.

SHEET E111		TOTAL SHEETS 232		SHEET NO. 160	
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	
290	3434-2321-R	COOK	232	160	
CONTRACT NO. 62B78					
ILLINOIS FED. AID PROJECT					



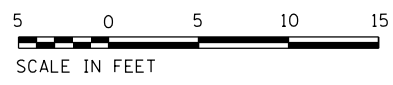


EMERGENCY BATTERY PACK MOUNTED ON INTERIOR OF BUILDING FOR LIGHT FIXTURE LP4-13-01



- GENERAL NOTES:**
1. LIGHT FIXTURES ON THIS SHEET ARE TO BE INSTALLED PER THE LIGHT FIXTURE SCHEDULE UNLESS OTHERWISE NOTED, SEE SHEET E651.
  2. LIGHT FIXTURES LOCATED IN STAIRWELLS ARE TO BE WALL MOUNTED 9' AFF, UNLESS OTHERWISE NOTED. SEE SHEET E302 FOR ADDITIONAL DETAIL.
  3. ALL LIGHT FIXTURES ARE TO BE FED FROM THE MAIN ELECTRICAL ROOM, PANEL LP4, SEE SHEET E651.
  4. CONTRACTOR TO PROVIDE 2"12 & 1"12 GRD IN 3/4" PVC-GRS CONDUIT FOR EACH LIGHTING CIRCUIT THAT PASSES THROUGH THE MAIN PUMP ROOM, BACK TO PANEL LP4.
  5. SEE SHEET E649 FOR AEGIS PANEL (AP) SCHEMATIC.
  6. SEE SHEET E648 FOR COMBUSTIBLE GAS MONITORING PANEL SCHEMATIC.
  7. SEE SHEET E647 FOR FIRE ALARM RISER DIAGRAM.
  8. SEE SHEETS E652, E653 AND IC611 FOR CONDUIT AND WIRING SCHEDULES.
  9. IN ORDER TO KEEP CLARITY, NOT ALL CONDUITS, SUCH AS LIGHTS, RECEPTACLES, FIRE PANEL AND ALARM CONDUITS, ARE SHOWN. THE CONTRACTOR IS RESPONSIBLE FOR ALL WIRING AND CONDUIT, WHETHER SHOWN OR NOT, NECESSARY FOR A COMPLETE AND OPERABLE SYSTEM.

### GROUND LEVEL LIGHTING PLAN AT ELEVATION 624.83



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USER NAME = bgreen
PLOT SCALE = 0:1' = 1/8"
PLOT DATE = 5/29/2019

DESIGNED - MEC - R. VAITLA	REVISED -
DRAWN - MEC - A. FREEMAN	REVISED -
CHECKED - MEC - J. ZURAD	REVISED -
DATE - 03/15/2019	REVISED -

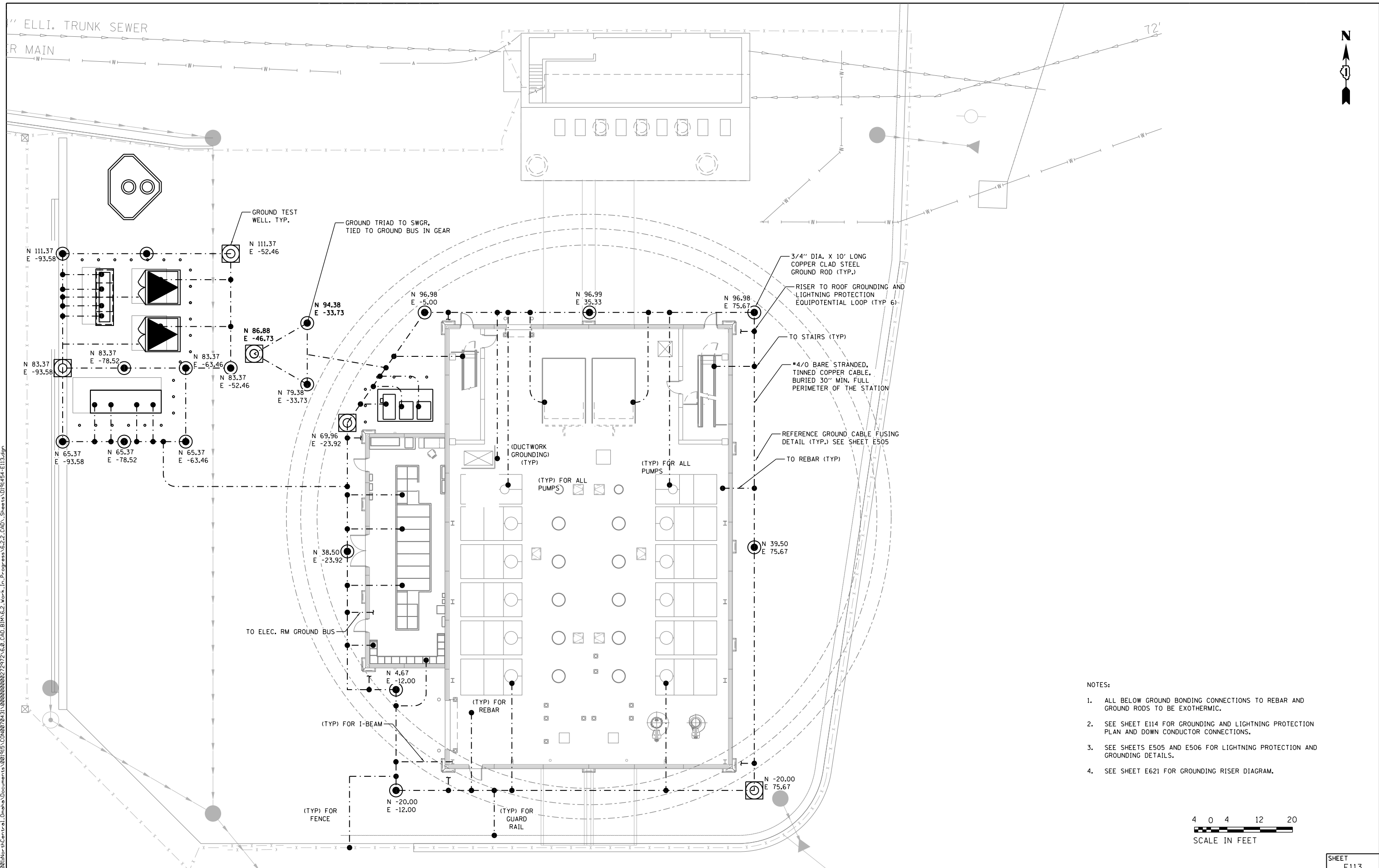
**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**I-290 PUMP STATION NO. 4 RECONSTRUCTION**  
**GROUND LEVEL LIGHTING PLAN EL 624.83**

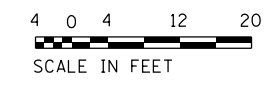
SCALE: 3/8" = 1'-0"

SHEET	OF	SHEETS	STA.	TO	STA.
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SHEET E112				
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	161
CONTRACT NO. 62B78				
ILLINOIS FED. AID PROJECT				



- NOTES:
1. ALL BELOW GROUND BONDING CONNECTIONS TO REBAR AND GROUND RODS TO BE EXOTHERMIC.
  2. SEE SHEET E114 FOR GROUNDING AND LIGHTNING PROTECTION PLAN AND DOWN CONDUCTOR CONNECTIONS.
  3. SEE SHEETS E505 AND E506 FOR LIGHTNING PROTECTION AND GROUNDING DETAILS.
  4. SEE SHEET E621 FOR GROUNDING RISER DIAGRAM.



FILE NAME = D191454-E113.DGN  
**MILHOUSE**  
 ENGINEERING & CONSTRUCTION

USER NAME = bgreen  
 PLOT SCALE = 0:1" = 1'-0"  
 PLOT DATE = 5/29/2019

DESIGNED - MEC - R. VAITLA  
 DRAWN - MEC - A. FREEMAN  
 CHECKED - MEC - J. ZURAD  
 DATE - 03/15/2019

REVISED -  
 REVISED -  
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 REVISED -

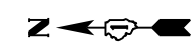
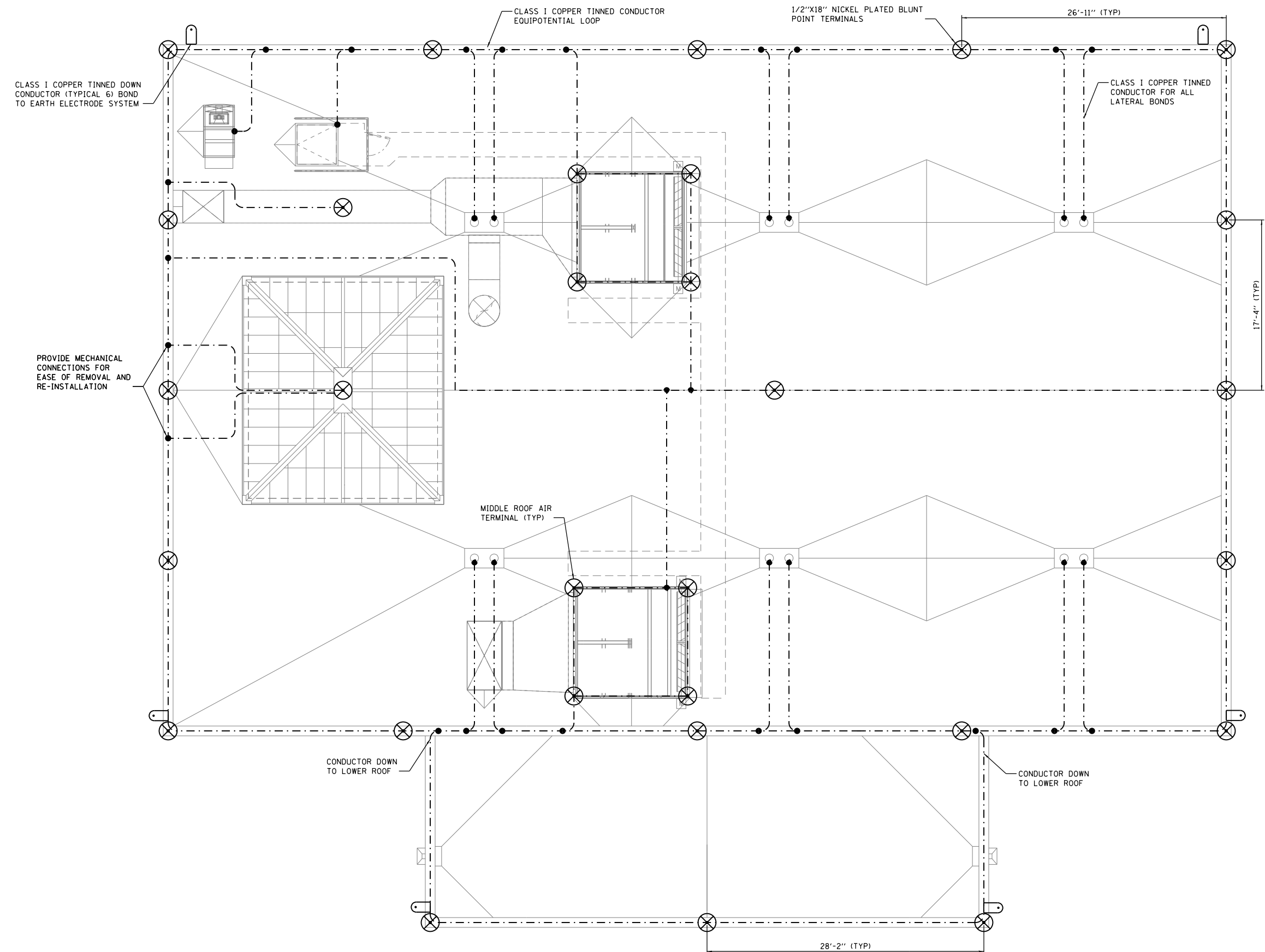
**STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION**

**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
 SITE GROUNDING PLAN**

SCALE: 1/32" = 1'-0" SHEET OF SHEETS STA. TO STA.

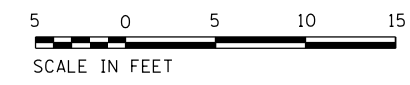
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	162
CONTRACT NO. 62B78				
ILLINOIS FED. AID PROJECT				

SHEET  
 E113



**ROOF GROUNDING AND LIGHTNING PROTECTION PLAN AT ELEVATION 662.17**

- GENERAL NOTES:**
- SEE SHEETS E505 AND E506 FOR LIGHTNING PROTECTION AND GROUNDING DETAILS.
  - SEE SHEET E113 FOR SITE GROUNDING PLAN AND EARTH ELECTRODE SYSTEM.



P:\1\FAIRTE\0801\NorthCentral\Omaha\Documents\080115\CON08078431\080808080271972\6.6.CAD\_BIM\6.2\_Work\In\_Progress\6.2.2\_CAD\_Sheets\0191454-E114.dgn

FILE NAME = D191454-E114.DGN  
**MILHOUSE**  
 ENGINEERING & CONSTRUCTION

USER NAME = bgreen	DESIGNED - MEC - R. VAITLA	REVISED -
	DRAWN - MEC - A. FREEMAN	REVISED -
PLOT SCALE = 0:1' = 1/8" / 1/4"	CHECKED - MEC - J. ZURAD	REVISED -
PLOT DATE = 5/29/2019	DATE - 03/15/2019	REVISED -

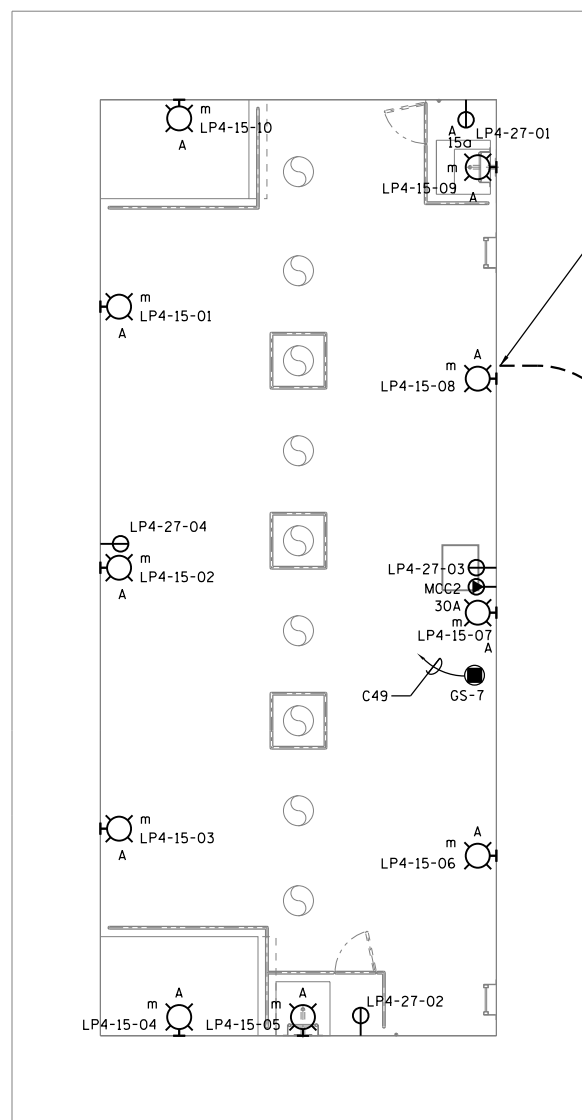
**STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION**

**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
 GROUNDING AND LIGHTNING PROTECTION PLAN**

SCALE: 3/8" = 1'-0" SHEET OF SHEETS STA. TO STA.

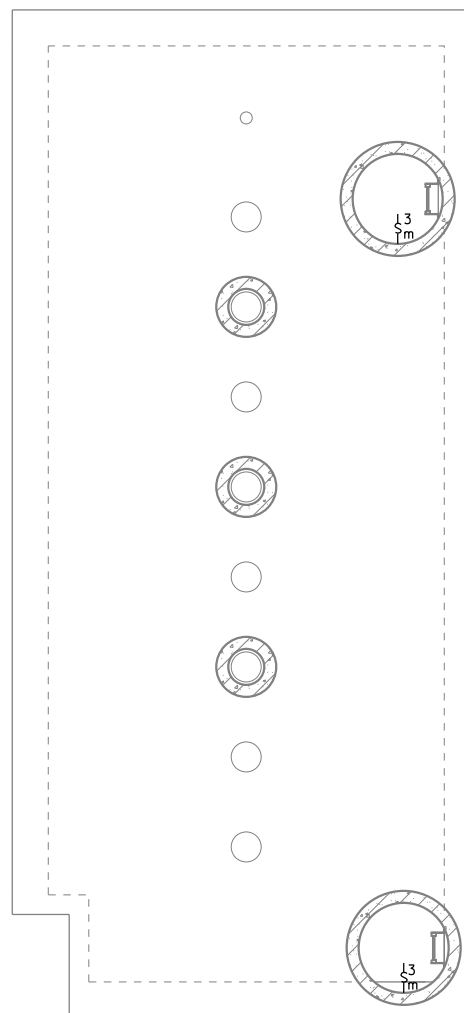
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	163
CONTRACT NO. 62B78				
ILLINOIS FED. AID PROJECT				

SHEET  
E114



DUCTBANK TO ENTER EXISTING BUILDING AT ELEVATION EL. 610, CORE THROUGH WALL AND SEAL WITH SILICON. PROVIDE NEMA 7 STAINLESS STEEL JUNCTION BOX AND SEALOFFS FOR EACH CONDUIT ENTERING THE BUILDING.

SEE ELECTRICAL SITE PLAN, SHEET E100 FOR DUCTBANK CONTINUATION.

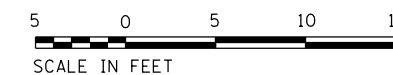


**GENERAL NOTES:**

1. LIGHT SWITCHES TO BE SURFACE MOUNTED ON THE INTERIOR OF THE PRECAST COLLAR JUST BELOW GRADE.
2. LIGHT FIXTURES TO BE MOUNTED 8' AFF.
3. ALL RECEPTACLES TO BE MOUNTED MIN. 4' AFF. ABOVE 100 YEAR FLOOD LINE.
4. PROVIDE 3/4" PVC-GRS FOR EACH CIRCUIT WITH 2 #10 AND 1 #10 GRD.
5. ALL DEVICES IN THIS BUILDING ARE TO BE EXPLOSION PROOF RATED. CLASS 1 DIVISION 2 GROUP D.
6. LIGHT FIXTURES TO BE CONNECTED TO LP4 SHEET E651.
7. SEE SHEET E612 FOR MCC2 LAYOUT.

**GRIT CHAMBER POWER PLAN AT ELEVATION 593.08**

**GRIT CHAMBER POWER PLAN AT ELEVATION 614.83**



P:\1\Projects\2019\191454-E115\Drawings\191454-E115.dgn



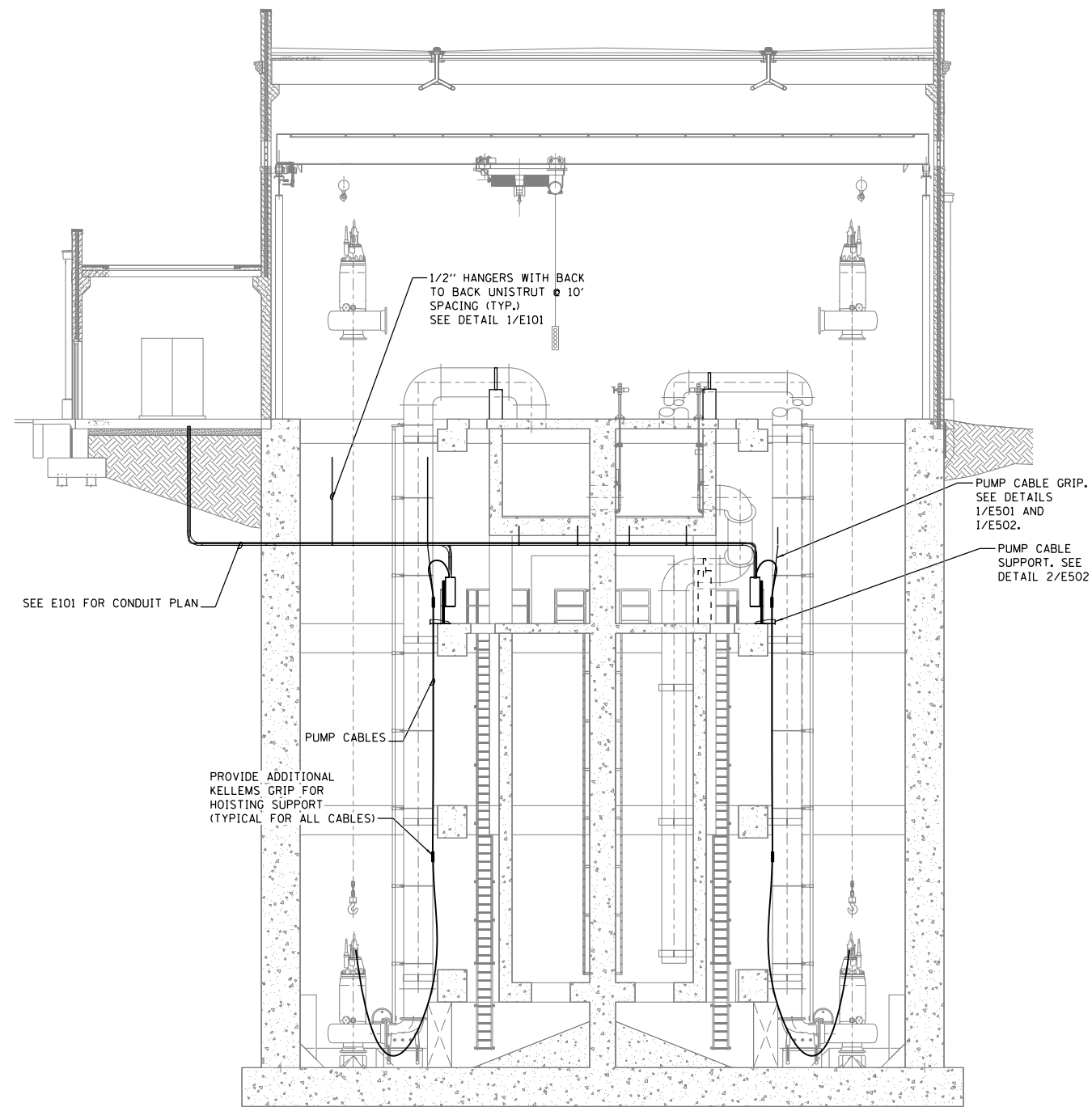
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		DRAWN - MEC - A. FREEMAN	REVISED -
	PLOT SCALE = 0:1' = 1/4" / 1/8"	CHECKED - MEC - J. ZURAD	REVISED -
	PLOT DATE = 5/29/2019	DATE - 03/15/2019	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

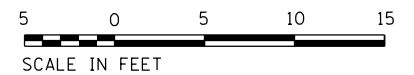
**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
GRIT CHAMBER ELECTRICAL POWER PLANS**

SCALE: 3/16"=1'-0" SHEET OF SHEETS STA. TO STA.

SHEET E115	
F.A.I. RTE.	SECTION
290	3434-2321-R
COUNTY	COOK
TOTAL SHEETS	SHEET NO.
232	164
CONTRACT NO. 62B78	
ILLINOIS FED. AID PROJECT	



**A**  
E101  
**ELECTRICAL SECTION**



P:\1\4\APP\DWG\NorthCentral\Omaha\Documents\001915\CON\0078431\00000000271972\6.0\_CAD\_BIM\6.2\_Work\In\_Progress\6.2.2\_CAD\_Sheets\0191454-E301

FILE NAME = D191454-E301.DGN  
**MILHOUSE**  
 ENGINEERING & CONSTRUCTION

USER NAME = bgreen	DESIGNED - MEC - R. VAITLA	REVISED -
	DRAWN - MEC - A. FREEMAN	REVISED -
PLOT SCALE = 0:1' = 1/8" / 1/4"	CHECKED - MEC - J. ZURAD	REVISED -
PLOT DATE = 5/29/2019	DATE - 03/15/2019	REVISED -

**STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION**

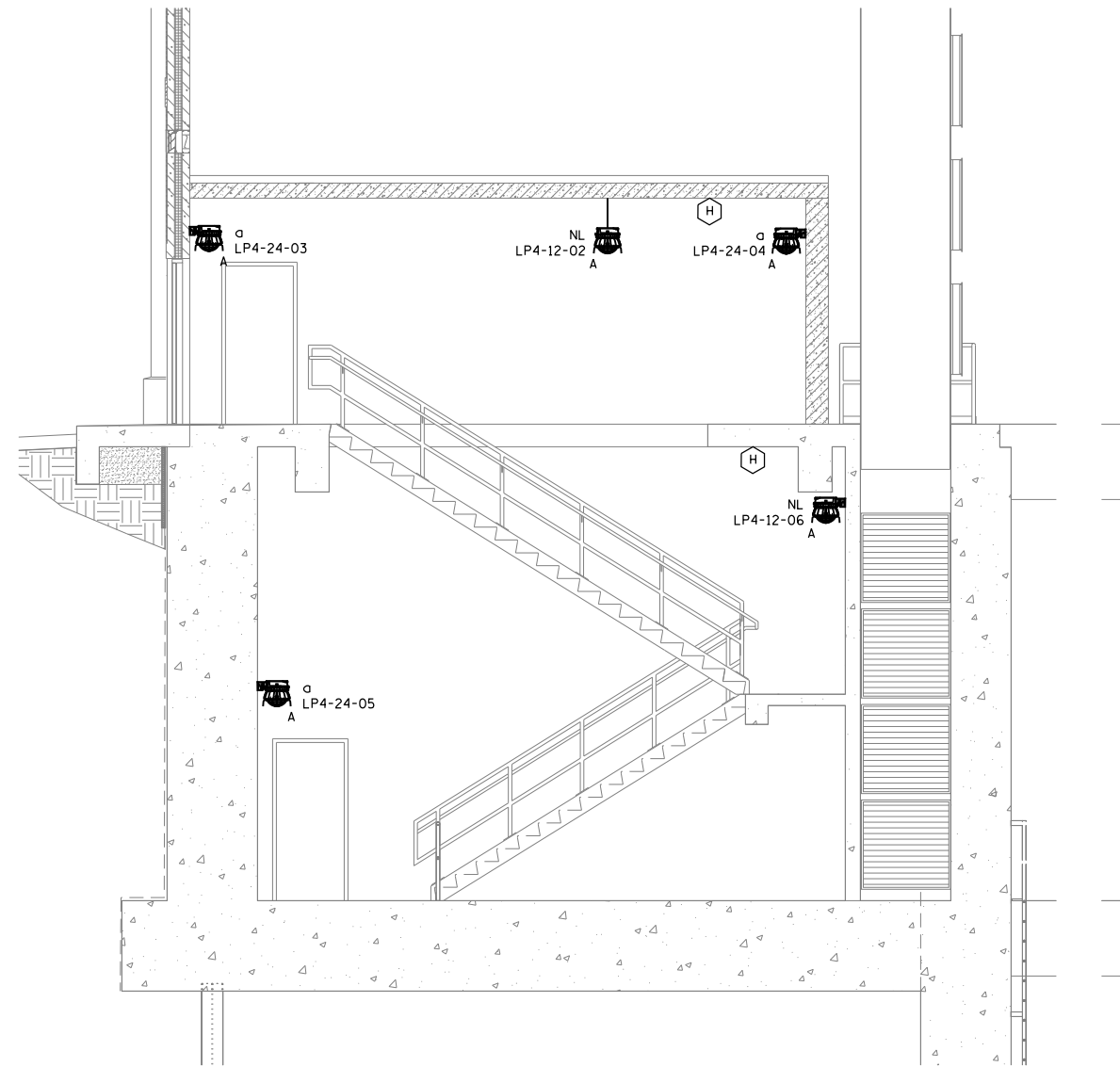
**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
 ELECTRICAL SECTION I**

SCALE: 1/8"=1'-0" SHEET OF SHEETS STA. TO STA.

F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	165
ILLINOIS FED. AID PROJECT			CONTRACT NO. 62B78	

SHEET  
E301

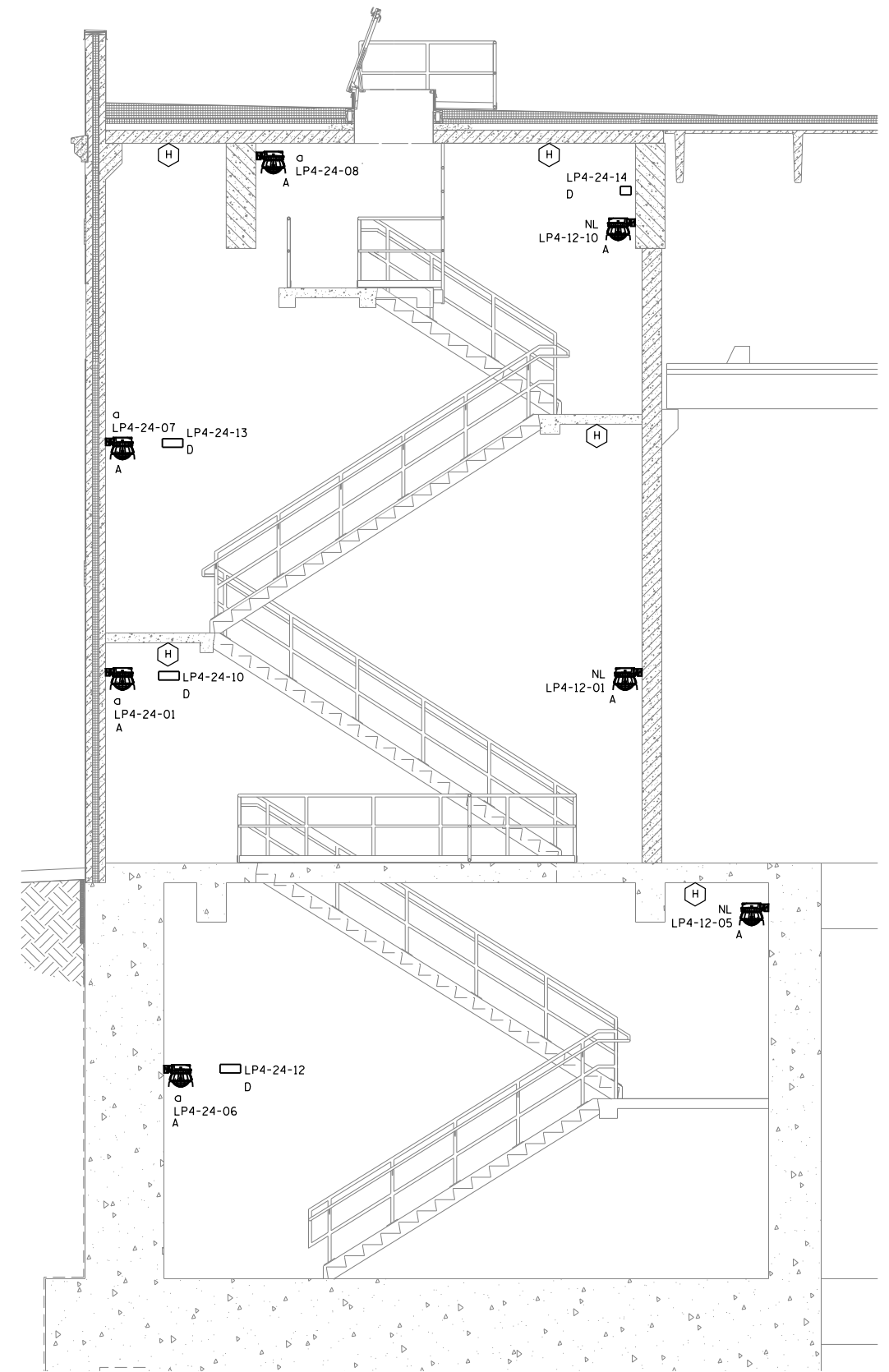
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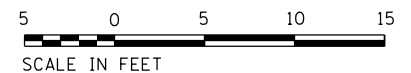
### WEST STAIRWELL LIGHTING SECTION

**NOTES:**

- 1. LIGHT FIXTURES ON THIS SHEET ARE TO BE INSTALLED PER THE LIGHT FIXTURE SCHEDULE UNLESS OTHERWISE NOTED, SEE SHEET E651.
- 2. LIGHT FIXTURES LOCATED IN STAIRWELLS ARE TO BE WALL MOUNTED 9' AFF, UNLESS OTHERWISE NOTED.
- 3. ALL LIGHT FIXTURES ARE TO BE FED FROM THE MAIN ELECTRICAL ROOM, PANEL LP4, SEE SHEET E651.
- 4. CONTRACTOR TO PROVIDE 2\*12 & 1\*12 GRD IN 3/4" PVC-GRS CONDUIT FOR EACH LIGHTING CIRCUIT THAT PASSES THROUGH THE MAIN PUMP ROOM, BACK TO PANEL LP4.
- 5. SEE SHEET E647 FOR FIRE ALARM RISER DIAGRAM.



### EAST STAIRWELL LIGHTING SECTION



SCALE IN FEET

FILE NAME = D191454-E302.DGN

USER NAME = bgreen

DESIGNED - MEC - R. VAITLA

REVISED -



DRAWN - MEC - A. FREEMAN

REVISED -

PLOT SCALE = 0:1 1/2" = 1'-0"

CHECKED - MEC - J. ZURAD

REVISED -

PLOT DATE = 5/29/2019

DATE - 03/15/2019

REVISED -

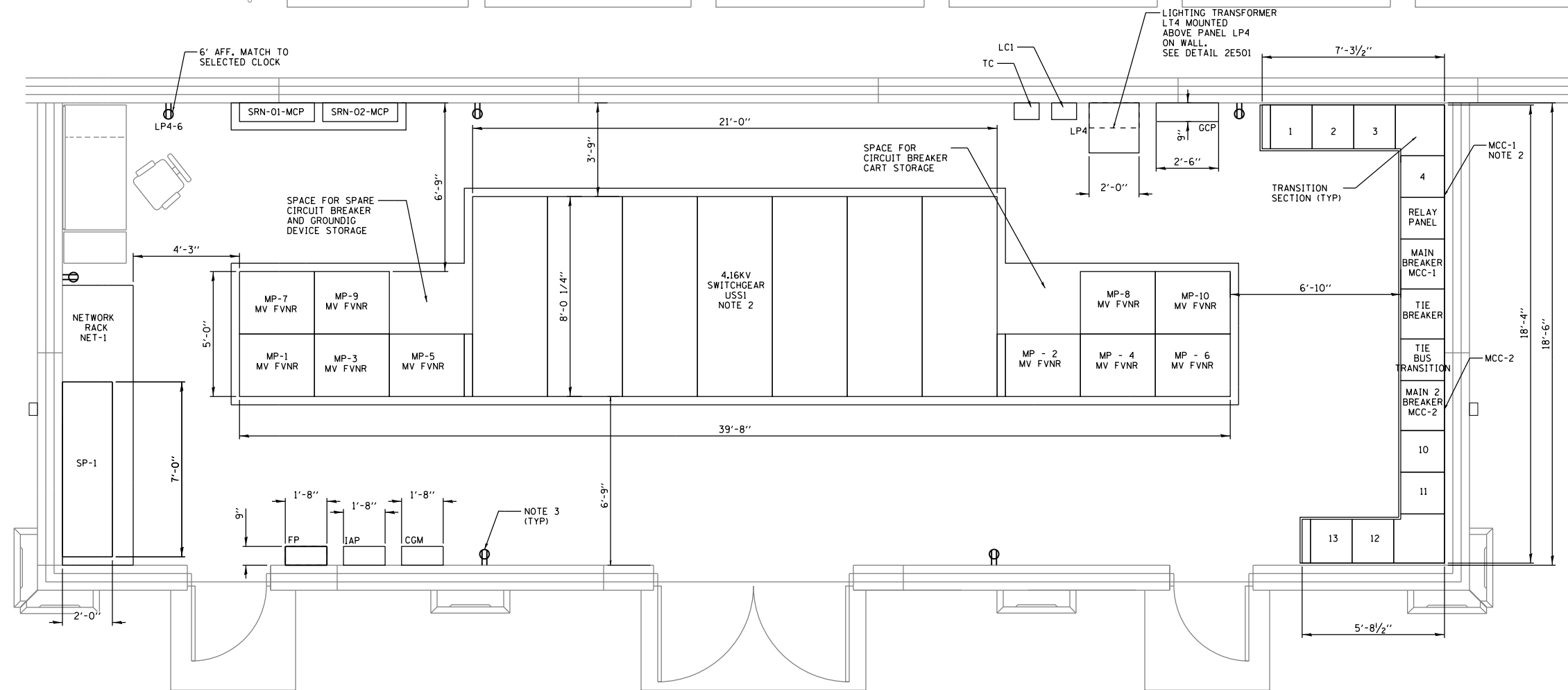
## STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION

### I-290 PUMP STATION NO. 4 RECONSTRUCTION STAIRWELL LIGHTING SECTIONS

SCALE: 1/4"=1'-0" SHEET OF SHEETS STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	166
CONTRACT NO. 62B78				SHEET E302

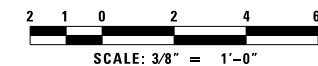
ILLINOIS FED. AID PROJECT



**ELECTRICAL ROOM PLAN**

**GENERAL NOTES:**

1. SEE SHEETS E611 AND E612 FOR USS1 AND MCC ELEVATIONS.
2. SEE SHEETS E601 AND E602 FOR ONE LINE DIAGRAMS.
3. ALL RECEPTACLES CONNECTED TO LP-4, CK 8, UNLESS NOTED OTHERWISE (SHEET E651).+
4. SEE SHEET S503 FOR EQUIPMENT PAD DETAILS.



FILE NAME = D191454-E401.DGN  
 USER NAME = bgreen  
 DESIGNED - MEC - R. VAITLA  
 DRAWN - MEC - A. FREEMAN  
 PLOT SCALE = 0:1' = 1/8"  
 PLOT DATE = 5/29/2019  
 DESIGNED - MEC - R. VAITLA  
 DRAWN - MEC - A. FREEMAN  
 CHECKED - MEC - J. ZURAD  
 DATE - 03/15/2019  
 REVISIONS  
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 REVISED -  
 REVISED -  
 REVISED -



**STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION**

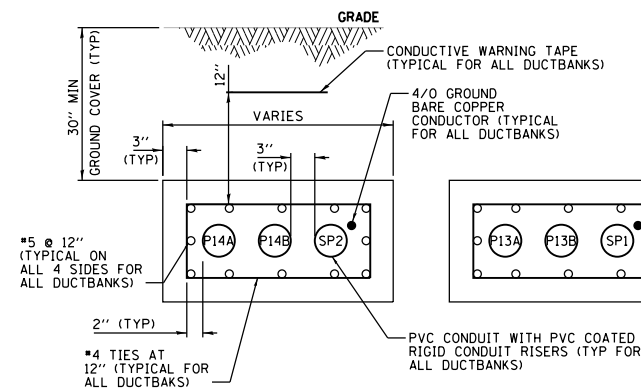
**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
 ENLARGED ELECTRICAL ROOM POWER PLAN EL 624.83**

SHEET E401		TOTAL SHEETS 232		SHEET NO. 167	
F.A.I. RTE. 290	SECTION 3434-2321-R	COUNTY COOK	CONTRACT NO. 62B78		
ILLINOIS FED. AID PROJECT					

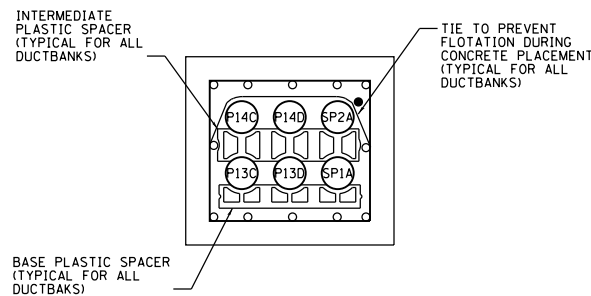
SCALE: 3/8" = 1'-0" SHEET OF SHEETS STA. TO STA.

NOTES:

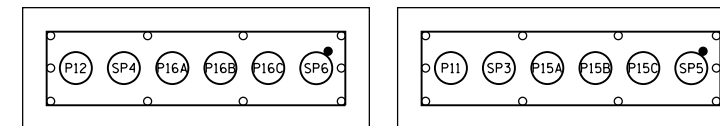
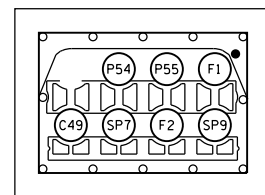
- SEE SHEET E100 FOR DUCTBANK PLAN.
- SEE SHEET E652 FOR DUCT SIZES AND CABLE DETAILS.



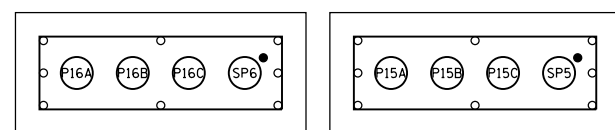
1 DUCTBANK SECTION  
E500



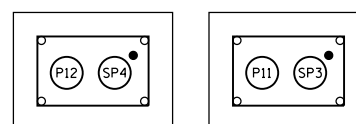
2 DUCTBANK SECTION  
E500



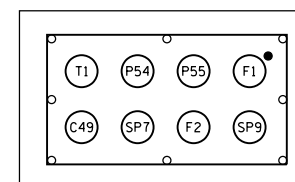
3 DUCTBANK SECTION  
E500



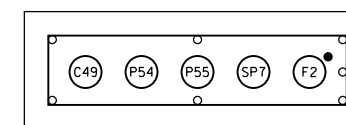
4 DUCTBANK SECTION  
E500



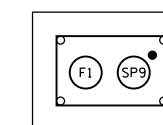
5 DUCTBANK SECTION  
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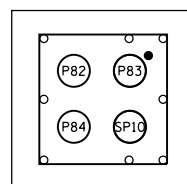
6 DUCTBANK SECTION  
E500



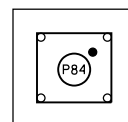
7 DUCTBANK SECTION  
E500



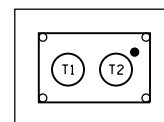
8 DUCTBANK SECTION  
E500



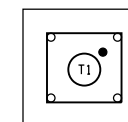
9 DUCTBANK SECTION  
E500



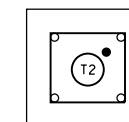
10 DUCTBANK SECTION  
E500



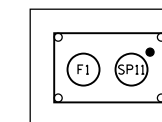
11 DUCTBANK SECTION  
E500



12 DUCTBANK SECTION  
E500



13 DUCTBANK SECTION  
E500



14 DUCTBANK SECTION  
E500



D:\Projects\2019\19-000000000271972\6.6.CAD\_BIM\6.2\_Work\In\_Progress\6.2.2\_CAD\_Sheets\191454-E500.dgn



FILE NAME = D191454-E500.DGN  
 USER NAME = bgreen  
 PLOT SCALE = 0:1' = 1/8\"/>

DESIGNED - MEC - R. VAITLA  
 DRAWN - MEC - A. FREEMAN  
 CHECKED - MEC - J. ZURAD  
 DATE - 03/15/2019

REVISED -  
 REVISED -  
 REVISED -  
 REVISED -

STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION

I-290 PUMP STATION NO. 4 RECONSTRUCTION  
 DUCTBANK DETAILS

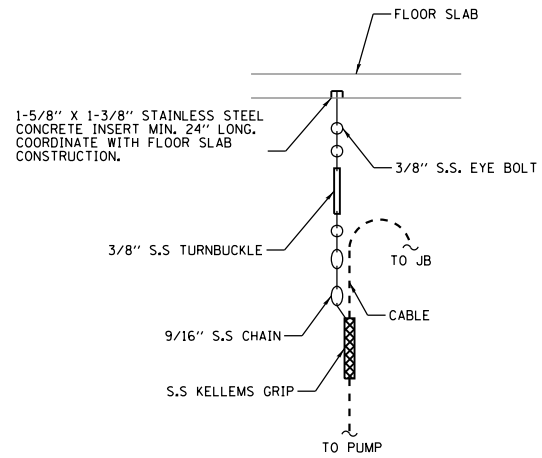
SCALE: 3/8" = 1'-0" SHEET OF SHEETS STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	168
CONTRACT NO. 62B78				

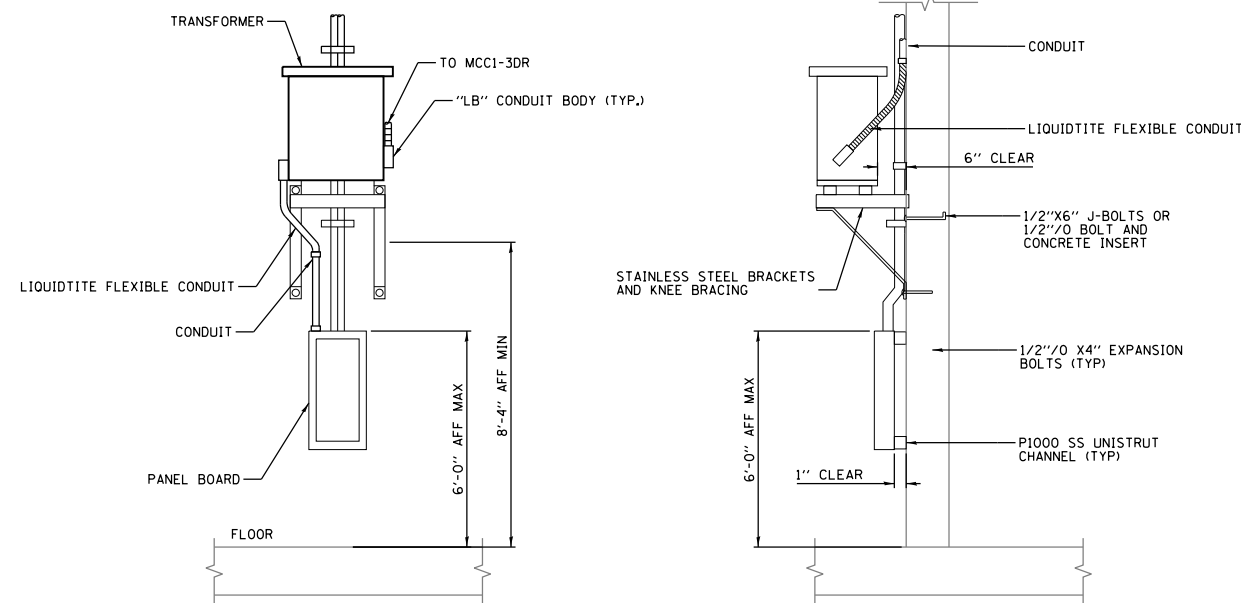
ILLINOIS FED. AID PROJECT

SHEET  
E500

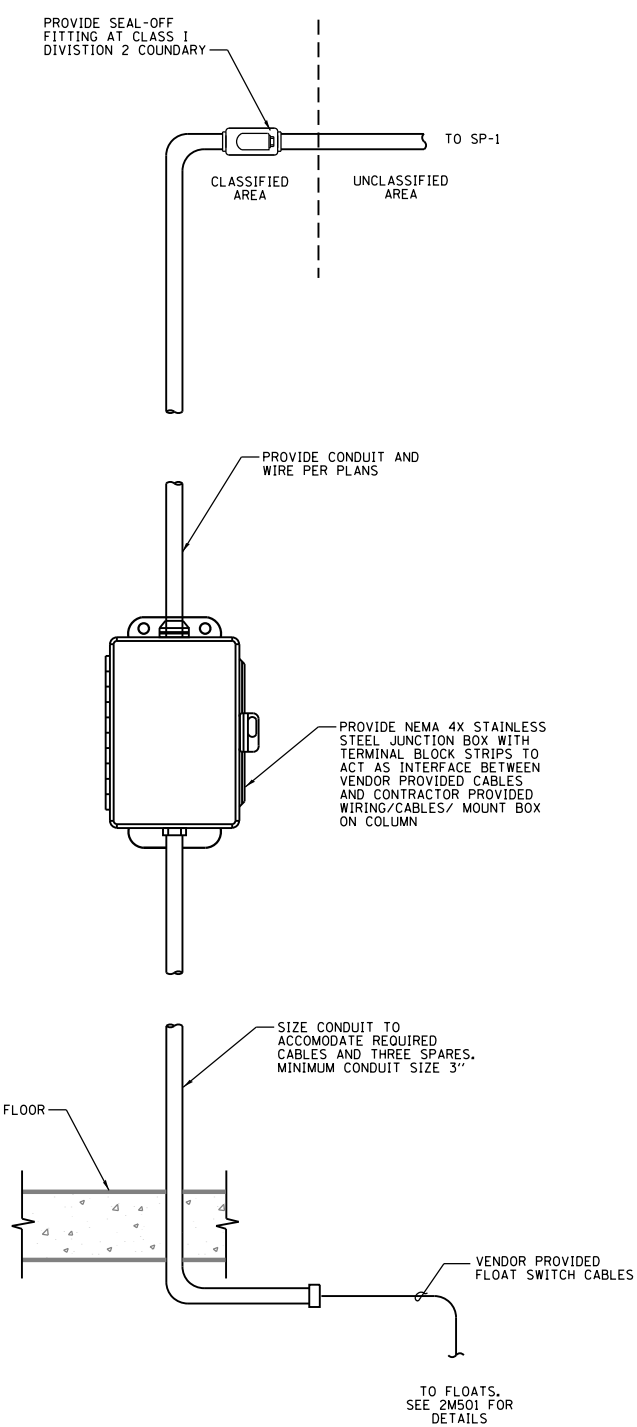




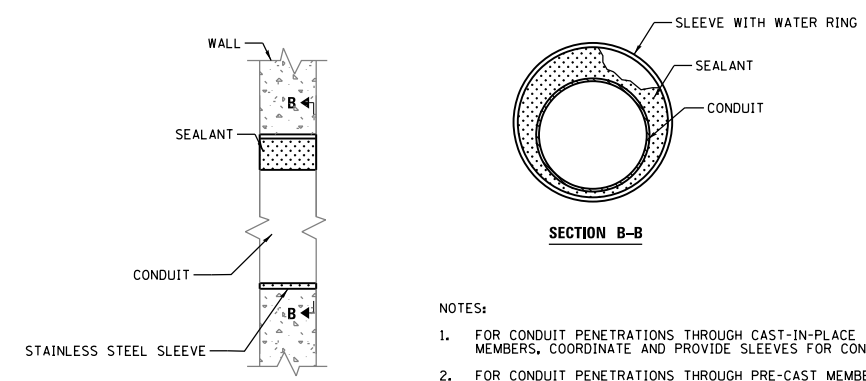
**1 PUMP CABLE GRIP DETAIL**  
E501 SCALE: NOT TO SCALE



**2 WALL MOUNTED TRANSFORMER, LT4 AND PANEL BOARD, LP4**  
E501 SCALE: NOT TO SCALE



**4 FLOAT SWITCH TERMINATION BOX DETAIL**  
E501 SCALE: NOT TO SCALE



- NOTES:
- FOR CONDUIT PENETRATIONS THROUGH CAST-IN-PLACE MEMBERS, COORDINATE AND PROVIDE SLEEVES FOR CONDUITS.
  - FOR CONDUIT PENETRATIONS THROUGH PRE-CAST MEMBERS, COORDINATE WITH THE PRE-CAST MEMBER SUPPLIER FOR PLACEMENT OF SLEEVES IN ACCORDANCE WITH SPECIFICATION SECTION 03 42 00.
  - PROVIDE OPENINGS AND SEALANTS IN CLASSIFIED AREAS, UNCLASSIFIED AREAS AND OUTDOOR WALLS IN ACCORDANCE WITH SCHEDULE A OF SPECIFICATION SECTION 01 73 20.
  - PROVIDE OPENINGS AND SEALANTS IN CLASSIFIED AREAS, UNCLASSIFIED AREAS AND OUTDOOR WALLS, WHEN CORED THROUGH EXISTING MEMBERS, IN ACCORDANCE WITH SCHEDULE B OF SPECIFICATION SECTION 01 73 20.

**3 CONDUIT SLEEVE DETAIL**  
E501 SCALE: NOT TO SCALE

P:\A\F\A\PP\04081\Nor-thCentral\Omaha\Documents\001915\CON0070431\00000000027072\6.0\_CAD\_BIM\6.2\_Work\In\_Progress\6.2.2\_CAD\_Sheets\0191454-E501.dgn



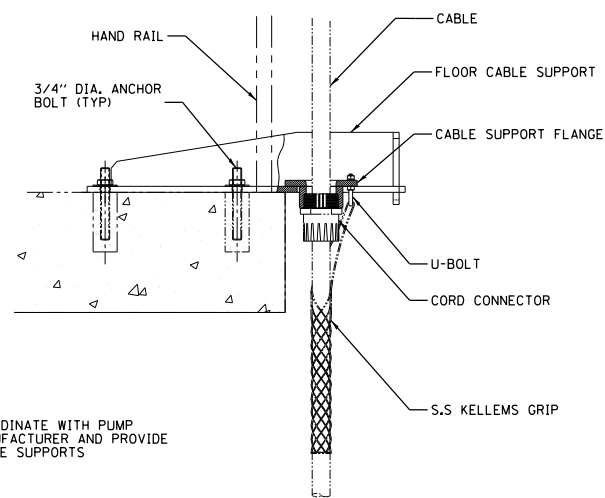
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		DRAWN - MEC - A. FREEMAN	REVISED -
	PLOT SCALE = 0:1' = 1/4"	CHECKED - MEC - J. ZURAD	REVISED -
	PLOT DATE = 5/29/2019	DATE - 03/15/2019	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

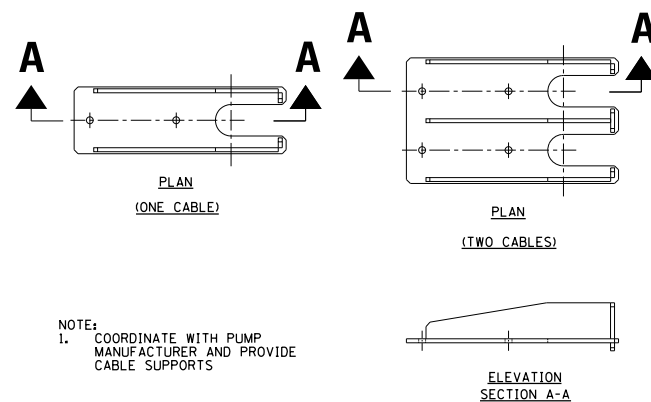
<b>I-290 PUMP STATION NO. 4 RECONSTRUCTION ELECTRICAL DETAILS I</b>			
SCALE: NONE	SHEET	OF SHEETS	STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	169
CONTRACT NO. 62B78				
ILLINOIS FED. AID PROJECT				

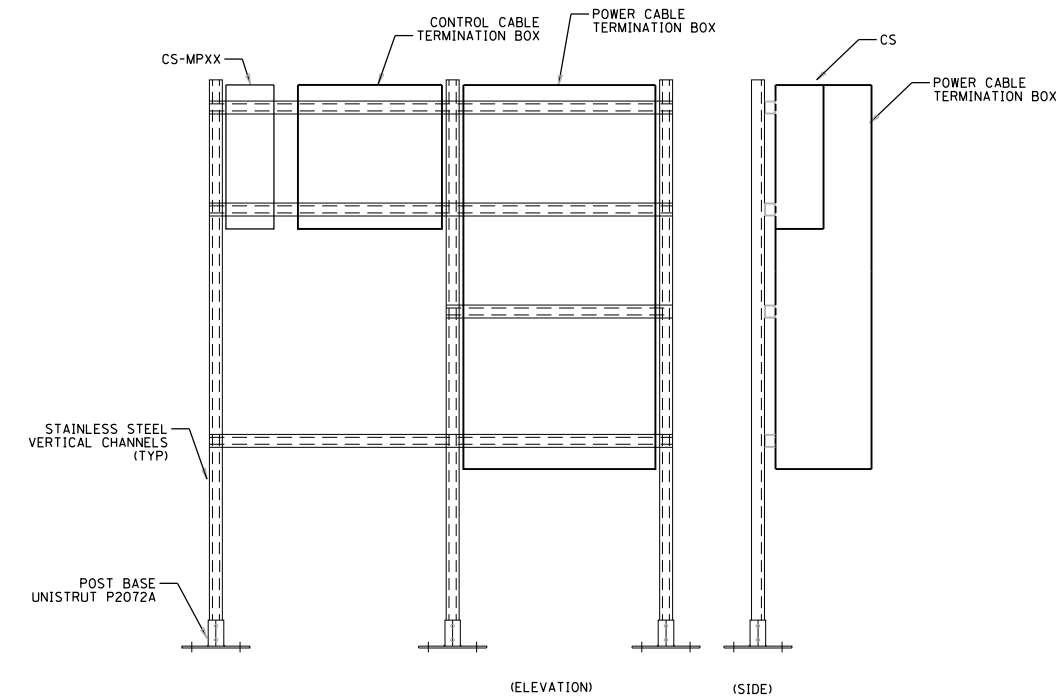
SHEET E501



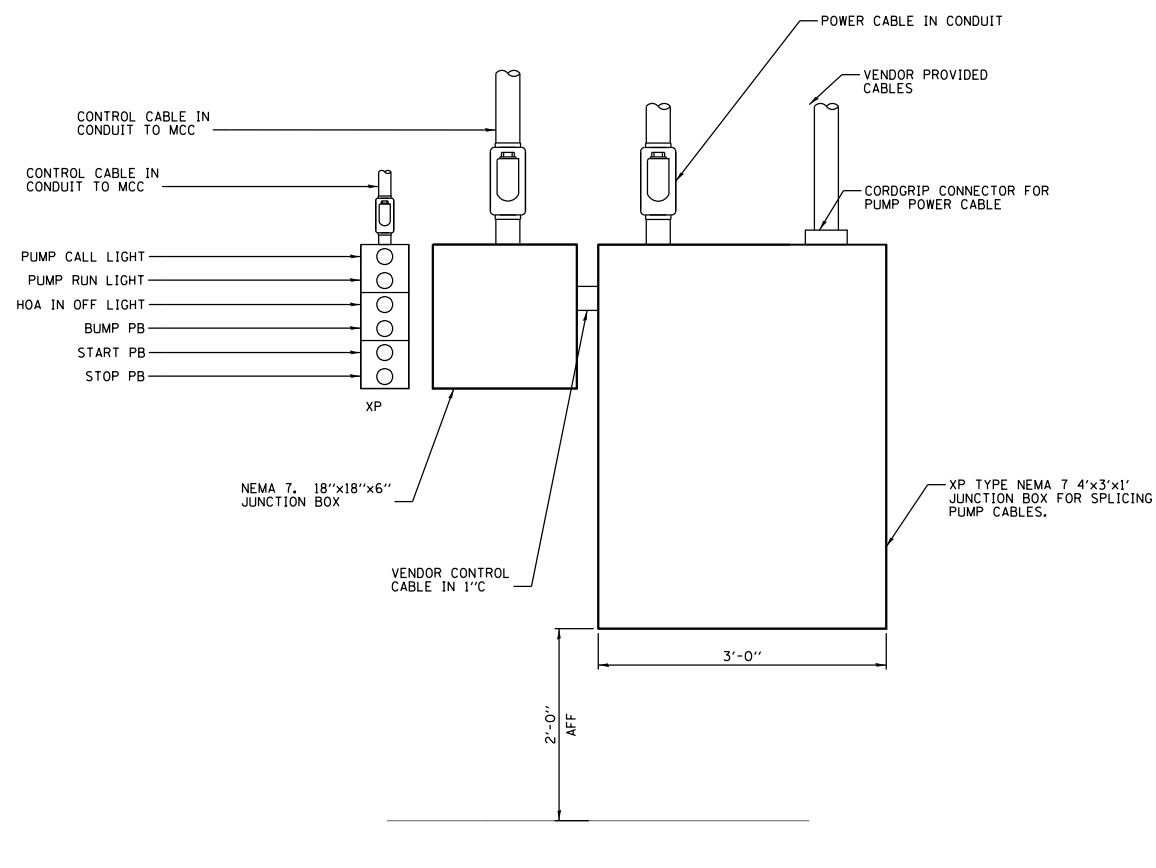
**1 CABLE SUPPORT DETAIL**  
E502 SCALE: NOT TO SCALE



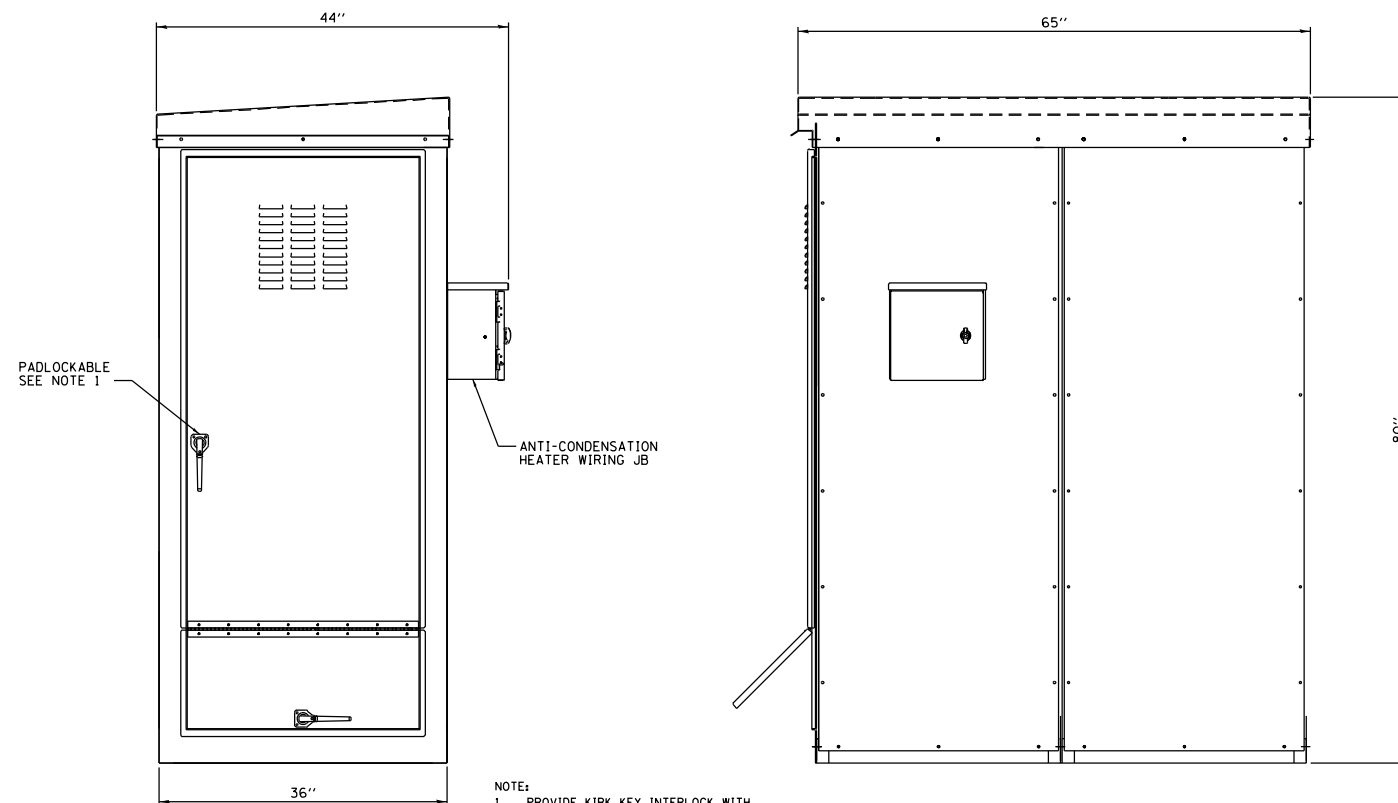
**2 FLOOR CABLE SUPPORT**  
E502 SCALE: NOT TO SCALE



**3 MAINLOW FLOW PUMP - CS, COMM. AND POWER TERMINATION BOX DETAIL**  
E502 SCALE: NOT TO SCALE

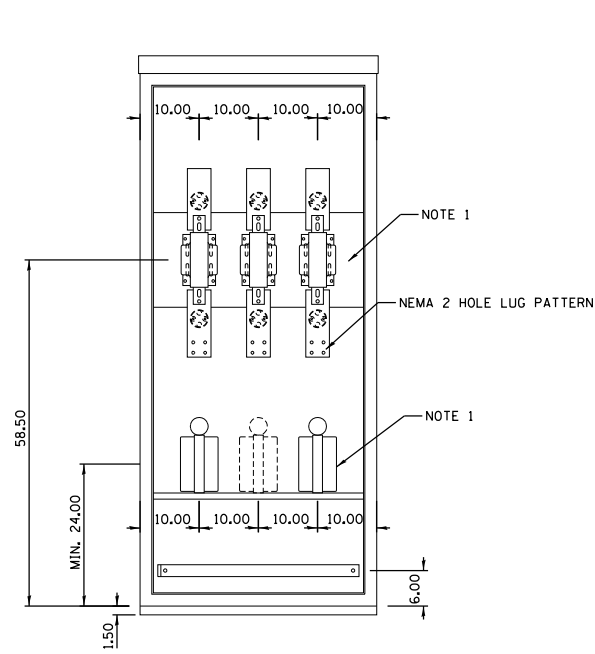


**4 MAIN /LOW FLOW PUMP WIRING DETAIL**  
E502 SCALE: NOT TO SCALE

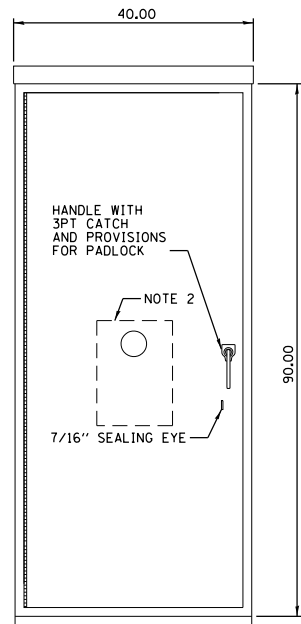


**5 GENERATOR CONNECTION CABINET**  
E502 SCALE: NOT TO SCALE

P:\1\Projects\2019\15\CON0074431\000000000271972\6.0\_CAD\_BIM\6.2\_Work\In\_Progress\6.2.2\_CAD\_Sheets\191454-E502.dgn



**1 OPEN VIEW**  
E503 SCALE: NOT TO SCALE



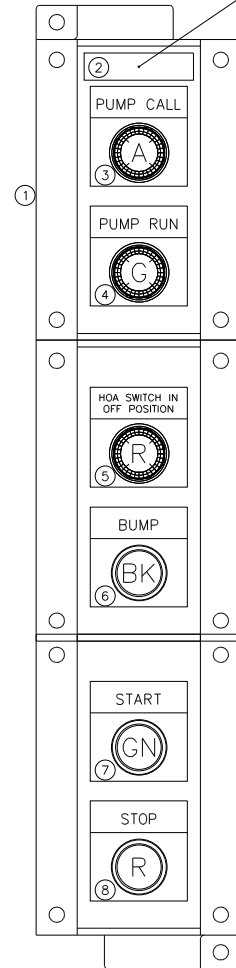
**2 FRONT VIEW**  
E503 SCALE: NOT TO SCALE

NAMEPLATE SCHEDULE

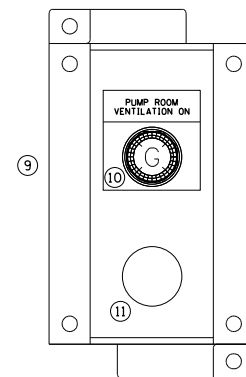
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CS-MP-02
CS-MP-03
CS-MP-04
CS-MP-05
CS-MP-06
CS-MP-07
CS-MP-08
CS-MP-09
CS-MP-10
CS-LFP-01
CS-LFP-02

MATERIAL LIST (TYPICAL FOR EACH PUMP)

ITEM	QTY	DESCRIPTION
1	AS REQD	NEMA 7 PUSHBUTTON ENCLOSURE
2	1	NAMEPLATE (SEE SCHEDULE)
3	1	NEMA 7 PILOT LIGHT, LED, AMBER
4	1	NEMA 7 PILOT LIGHT, LED, GREEN
5	1	NEMA 7 PILOT LIGHT, LED, RED
6	1	NEMA 7 PUSHBUTTON, BLACK
7	1	NEMA 7 PUSHBUTTON, GREEN
8	1	NEMA 7 PUSHBUTTON, RED
	AS REQD	LEGEND PLATES



**5 PUMP CONTROL STATIONS**  
E503 SCALE: NOT TO SCALE

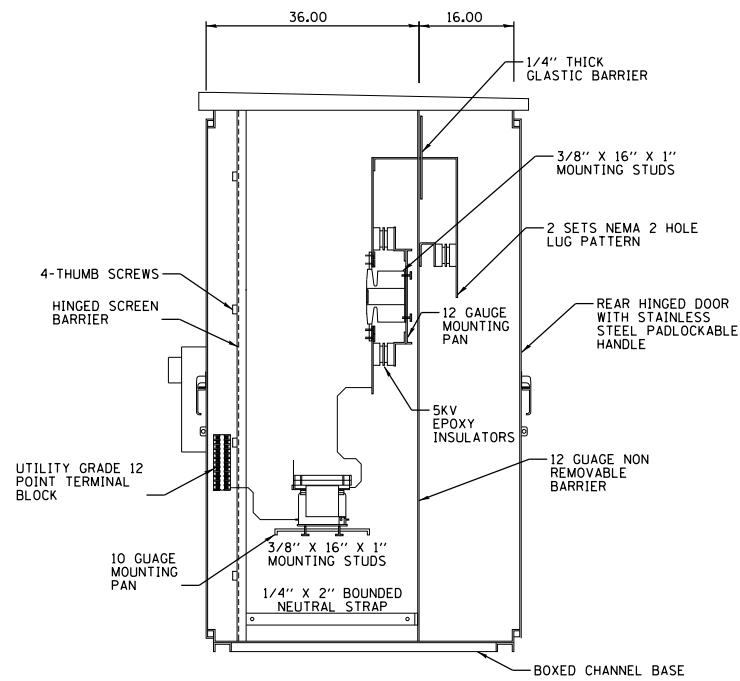


MATERIAL LIST (TYPICAL AT EACH PUMP ROOM ENTRANCE)

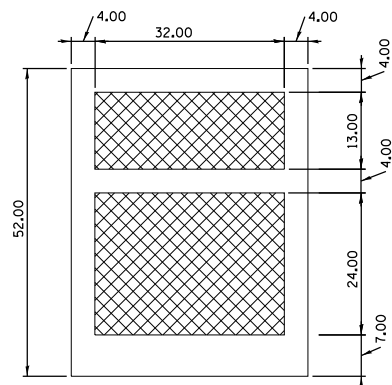
ITEM	QTY	DESCRIPTION
9	1	NEMA 7 PUSHBUTTON ENCLOSURE
10	1	NEMA 7 PILOT LIGHT, LED, GREEN
11	1	NEMA 7 PLUG
	1	LEGEND PLATE

**6 PUMP ROOM VENTILATION RUNNING INDICATING LIGHT**  
E503 SCALE: NOT TO SCALE

NOTES:  
1. QUANTITY 3 REQUIRED, ONE EACH AT THE NORTHEAST ENTRANCE, NORTHWEST ENTRANCE AND SOUTHWEST ENTRANCE TO THE PUMP ROOM



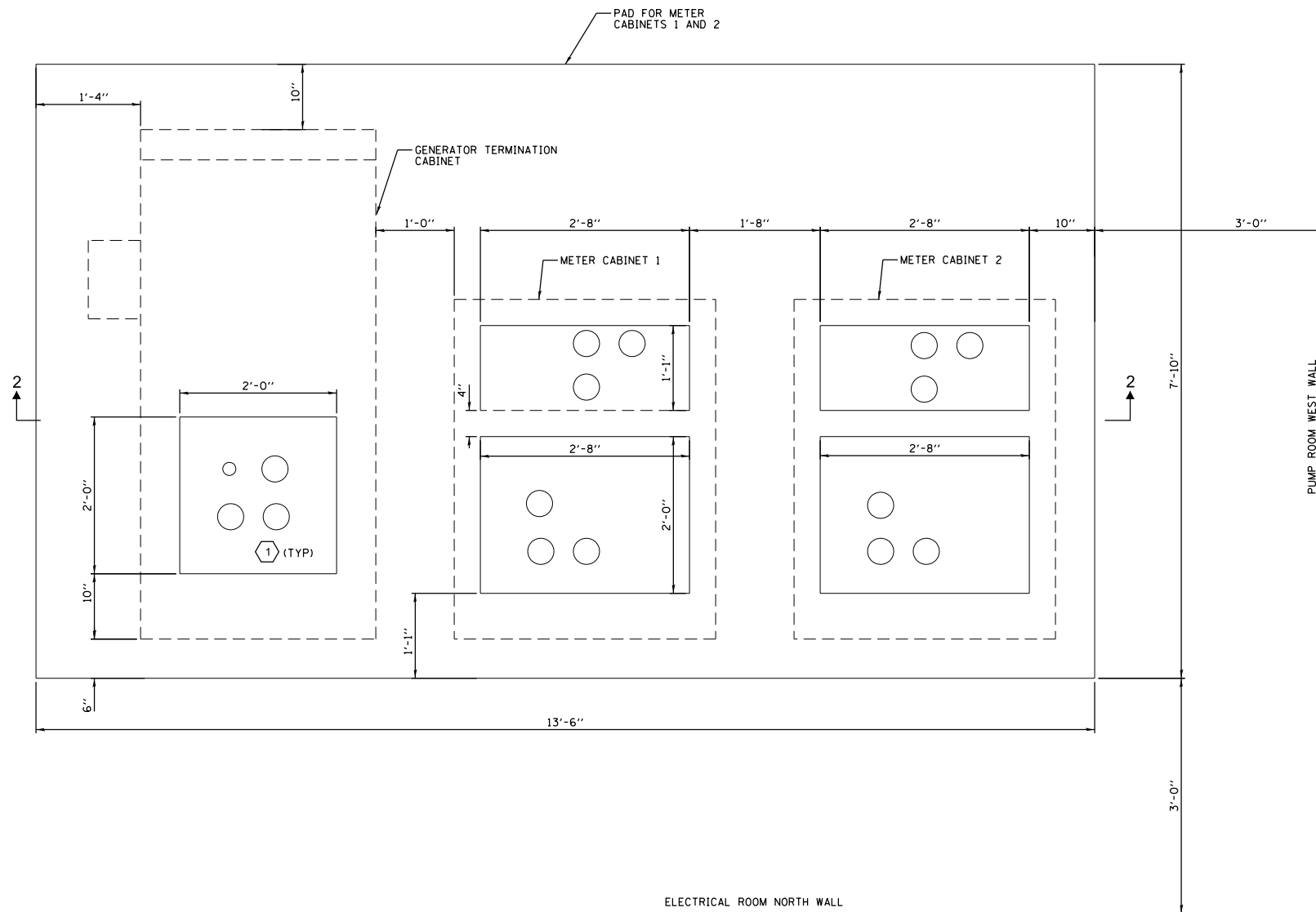
**3 SECTIONAL**  
E503 SCALE: NOT TO SCALE



**4 BOTTOM VIEW**  
E503 SCALE: NOT TO SCALE

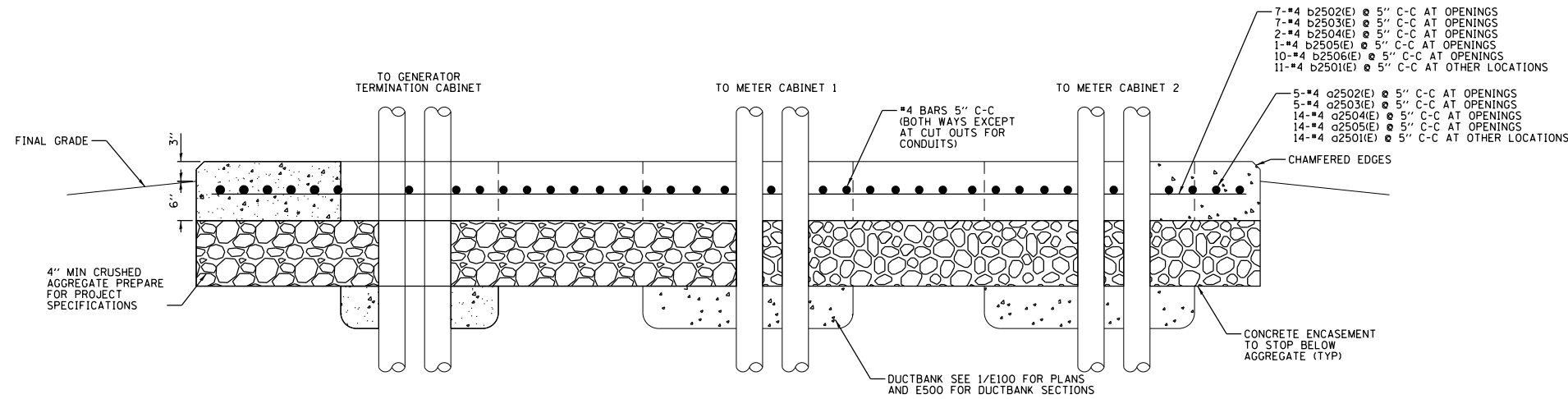
**COMED CT AND METERING CABINET**

- NOTES:
- COORDINATE WITH COMED AND MAKE PROVISIONS FOR COMED CURRENT TRANSFORMERS AND VOLTAGE TRANSFORMERS.
  - PROVIDE TRANSFORMER RATED COMED APPROVED METER SOCKET ON THE DOOR.
  - PROVIDE COMED APPROVED METERING CABINET.
  - ALL DIMENSIONS SHOWN ARE IN INCHES.



BILL OF MATERIALS				
BAR	NO.	SIZE	LENGTH	SHAPE
a2501(E)	14	#4	7'-6"	----
a2502(E)	5	#4	1'-0"	----
a2503(E)	5	#4	4'-2"	----
a2504(E)	14	#4	0'-9"	----
a2505(E)	14	#4	3'-0"	----
b2501(E)	11	#4	13'-2"	----
b2502(E)	7	#4	0'-6"	----
b2503(E)	7	#4	1'-4"	----
b2504(E)	2	#4	5'-4"	----
b2505(E)	1	#4	9'-4"	----
b2506(E)	10	#4	1'-6"	----
REINFORCING BARS EPOXY COATED			POUND	251
CONCRETE STRUCTURES			CU YD	2

**1 GENERATOR TERMINATION CABINET AND METER CABINET PAD DETAIL**  
 SCALE: NOT TO SCALE



**2 GENERATOR TERMINATION CABINET AND METER CABINET PAD DETAIL SECTION 2-2**  
 SCALE: NOT TO SCALE

- NOTE:  
 1. SEE SHEET E100 FOR EQUIPMENT LAYOUT.
- KEY NOTE:  
 1 ALL CONDUIT RISERS INCLUDING THE ELBOW SHALL BE PVC-GRS.

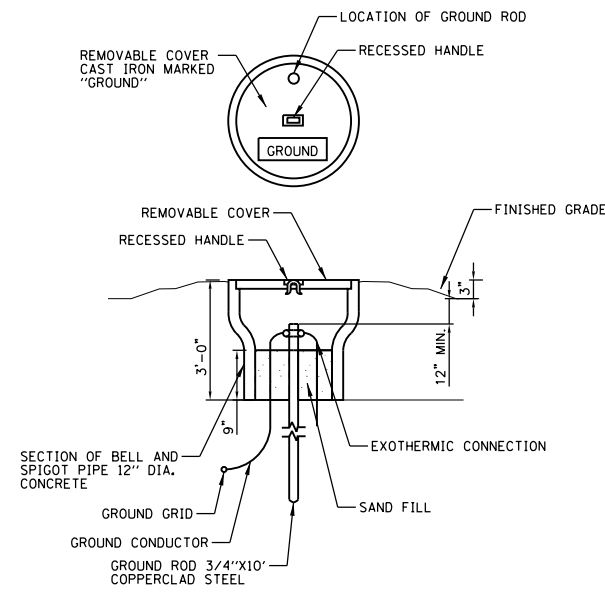
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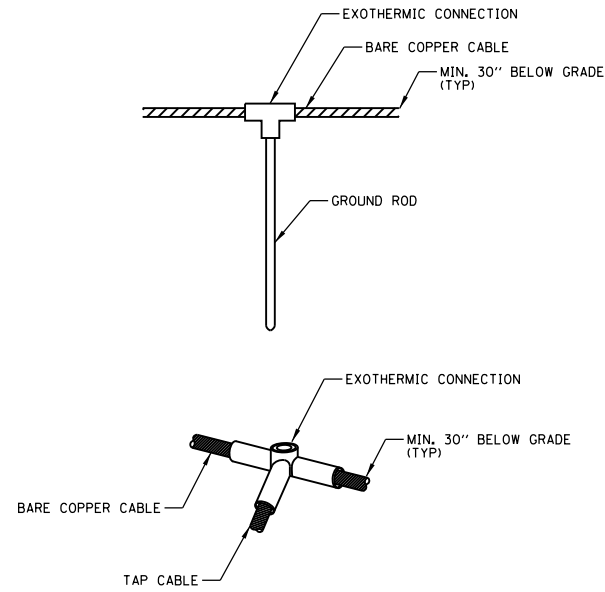
PAD FOR METER CABINETS

SHEET E504

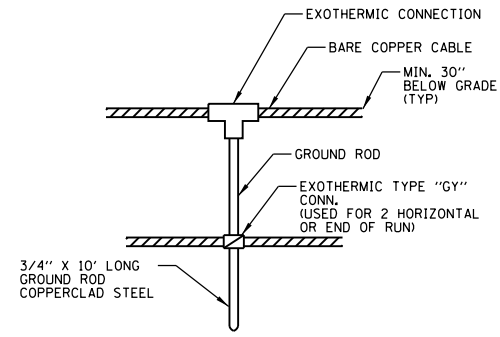
ILLINOIS FED. AID PROJECT



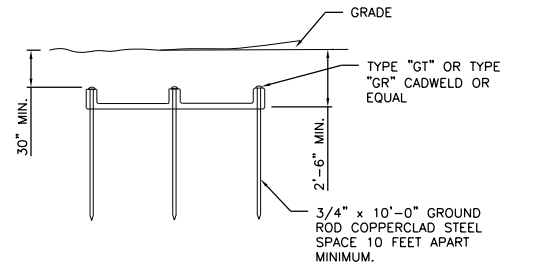
**1 GROUNDING WELL DETAIL**  
E505 SCALE: NOT TO SCALE



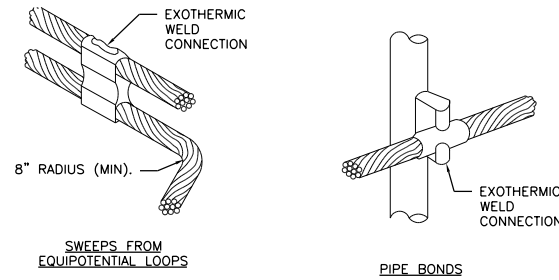
**2 GROUNDING CONNECTION DETAIL**  
E505 SCALE: NOT TO SCALE



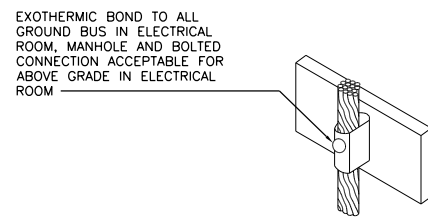
**3 CONDUCTOR TO GROUND ROD CONNECTION DETAIL WITH MULTIPLE CONNECTIONS**  
E505 SCALE: NOT TO SCALE



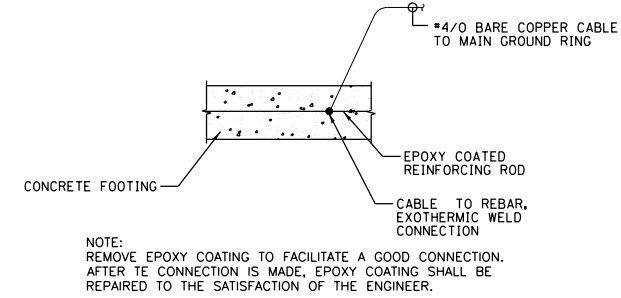
**4 GROUNDING TRIAD DETAIL**  
E505 SCALE: NOT TO SCALE



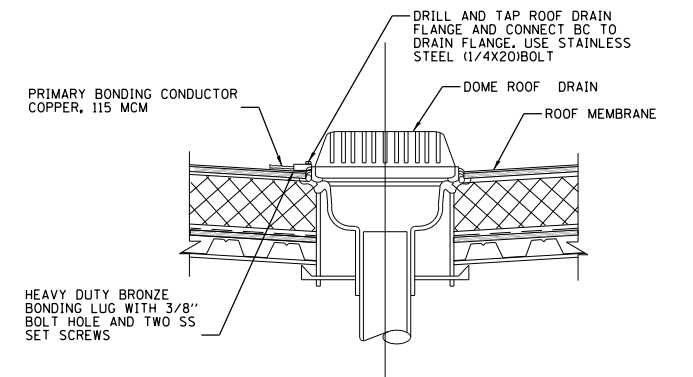
**5 GROUNDING AND BONDING CONNECTION (TYP) DETAILS**  
E505 SCALE: NOT TO SCALE



**6 GROUNDING AND BONDING CONNECTION (TYP) DETAILS**  
E505 SCALE: NOT TO SCALE



**7 REINFORCING BAR GROUNDING (INTERIOR)**  
E505 SCALE: NOT TO SCALE



**8 LIGHTING PROTECTION ROOF DRAIN BONDING**  
E505 SCALE: NOT TO SCALE

P:\A\4\2\2019\A\20190821\A\20190821.dwg, Sheets, D:\191454-E505.dgn

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**MILHOUSE**  
ENGINEERING & CONSTRUCTION

USER NAME = bgreen  
PLOT SCALE = 0:1" = 1/4" / 1" = 1/4"  
PLOT DATE = 5/29/2019

DESIGNED - MEC - R. VAITLA  
DRAWN - MEC - A. FREEMAN  
CHECKED - MEC - J. ZURAD  
DATE - 03/15/2019

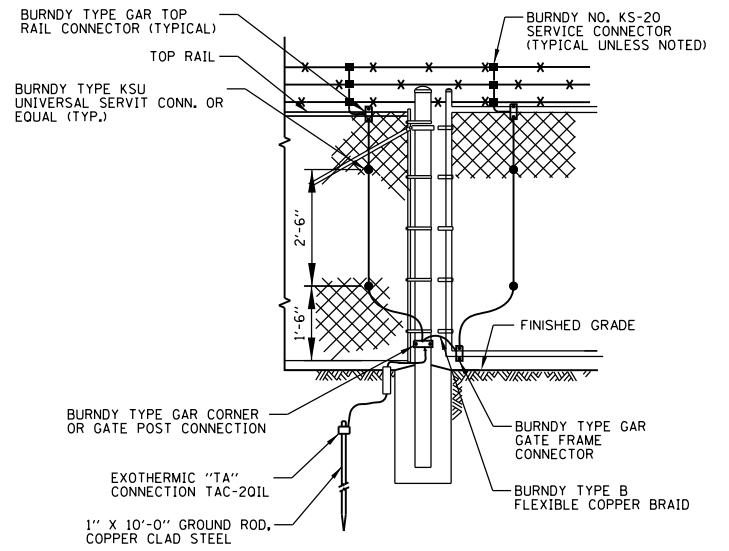
REVISED -  
REVISED -  
REVISED -  
REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

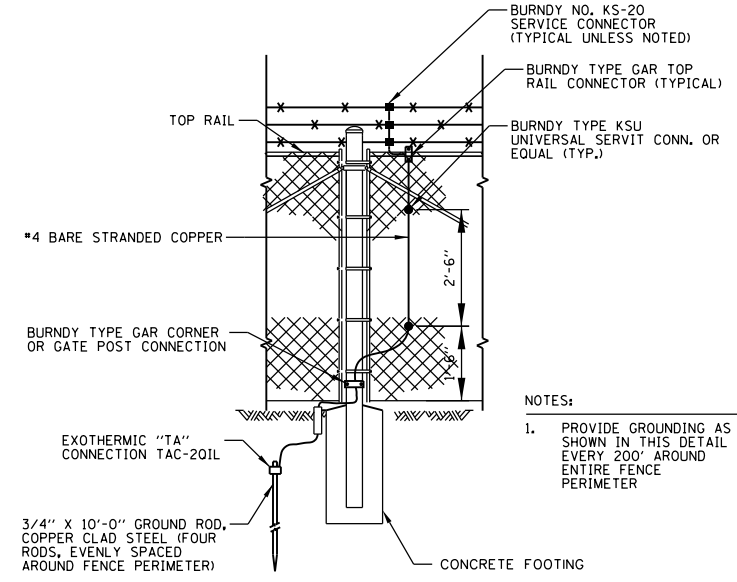
**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
ELECTRICAL DETAILS V**  
SCALE: NONE SHEET OF SHEETS STA. TO STA.

F.A.I. RTE.		SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290		3434-2321-R	COOK	232	173
					CONTRACT NO. 62B78
ILLINOIS FED. AID PROJECT					

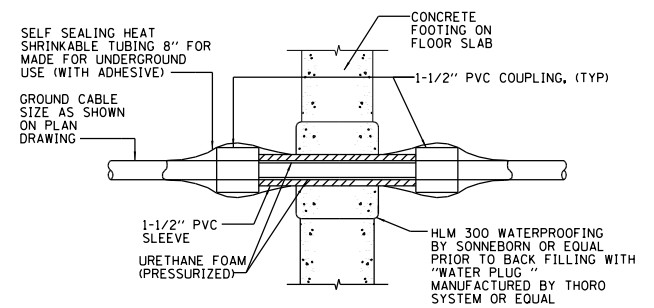
SHEET E505



**1 GATE AND HINGE POST GROUNDING**  
E506 SCALE: NOT TO SCALE

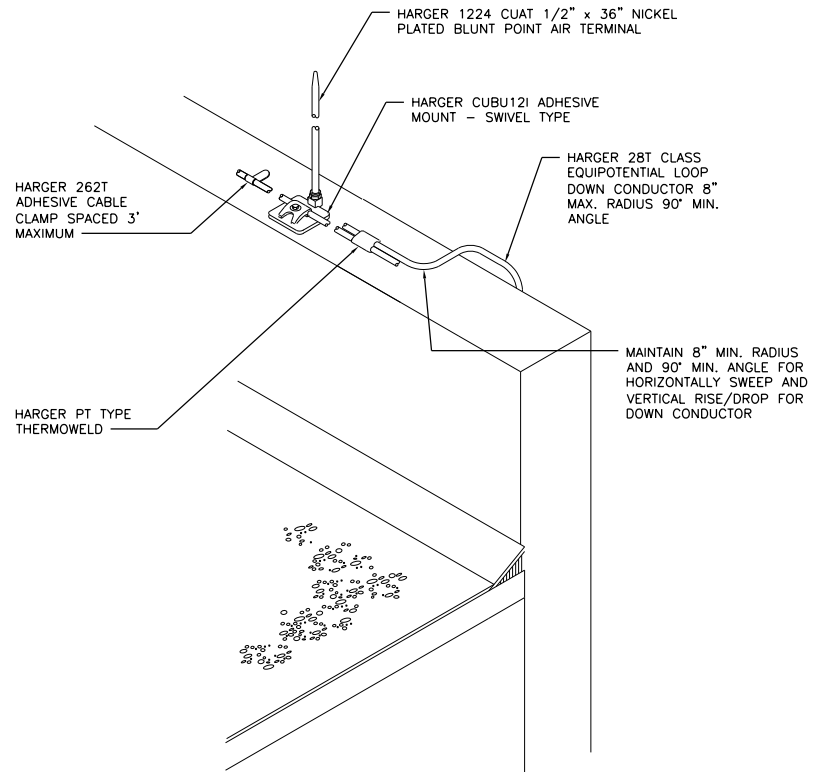


**2 LINE POST GROUNDING**  
E506 SCALE: NOT TO SCALE

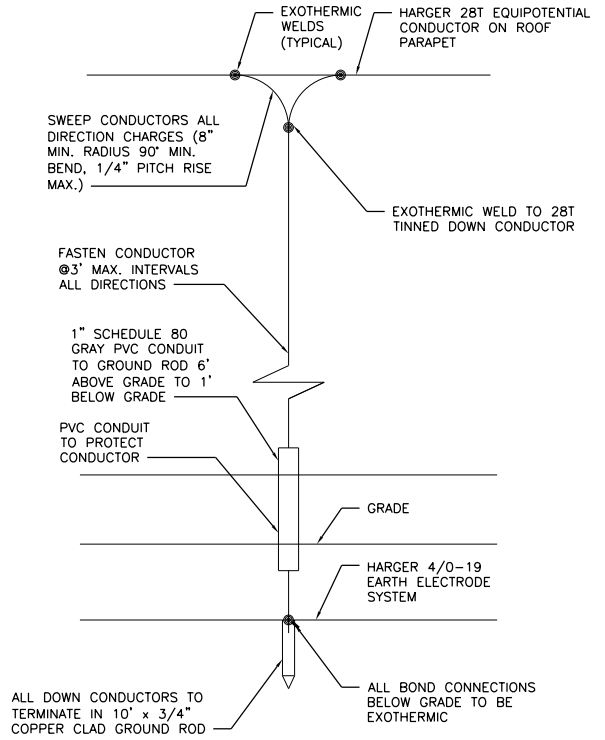


**3 GROUND CONDUCTOR WALL PENETRATION**  
E506 SCALE: NOT TO SCALE

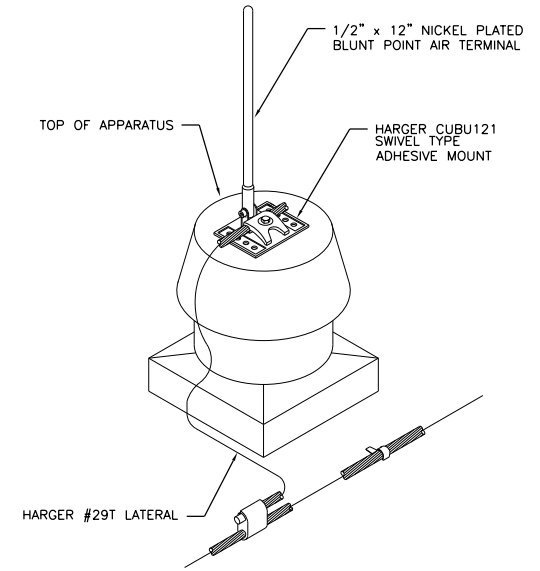
GENERAL NOTES:  
1. SEE SHEET E113 SITE GROUNDING PLAN.  
2. SEE SHEET E114 FOR GROUNDING AND LIGHTNING PROTECTION PLAN.  
3. SEE SHEET E621 FOR GROUNDING RISER DIAGRAM.



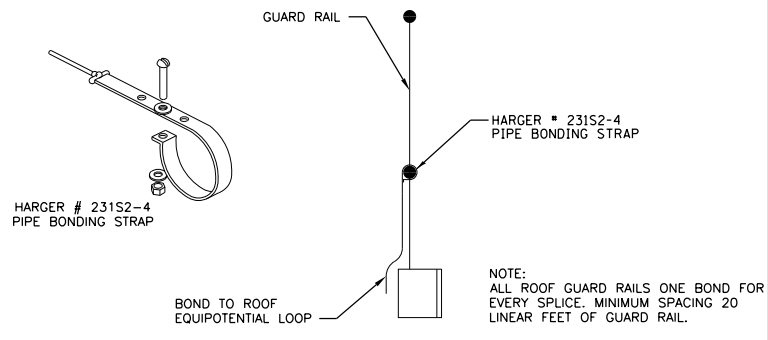
**4 AIR TERMINAL INSTALLATION AT ROOF PARAPET**  
E506 SCALE: NOT TO SCALE



**5 DOWN CONDUCTOR BONDING AND PROTECTION**  
E506 SCALE: NOT TO SCALE



**6 APPARATUS ROOF AIR TERMINAL**  
E506 SCALE: NOT TO SCALE



**7 GAURD RAIL BONDING**  
E506 SCALE: NOT TO SCALE

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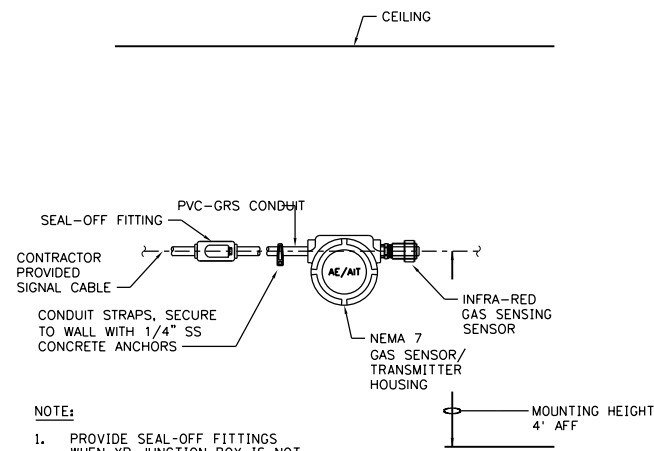
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		DRAWN - MEC - A. FREEMAN	REVISED -
		CHECKED - MEC - J. ZURAD	REVISED -
		DATE - 03/15/2019	REVISED -

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

I-290 PUMP STATION NO. 4 RECONSTRUCTION			
ELECTRICAL DETAILS VI			
SCALE: NONE	SHEET	OF SHEETS	STA. TO STA.

F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	174
CONTRACT NO. 62B78				
ILLINOIS FED. AID PROJECT				

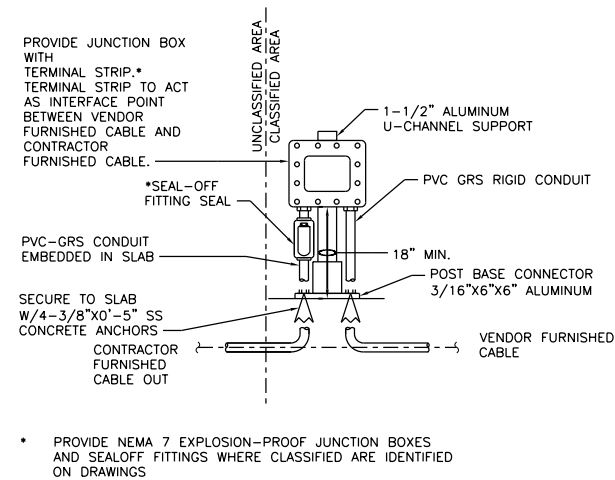
SHEET E506



**1 COMBUSTIBLE GAS SENSOR/ TRANSMITTER - INFRA - RED**

1  
E507

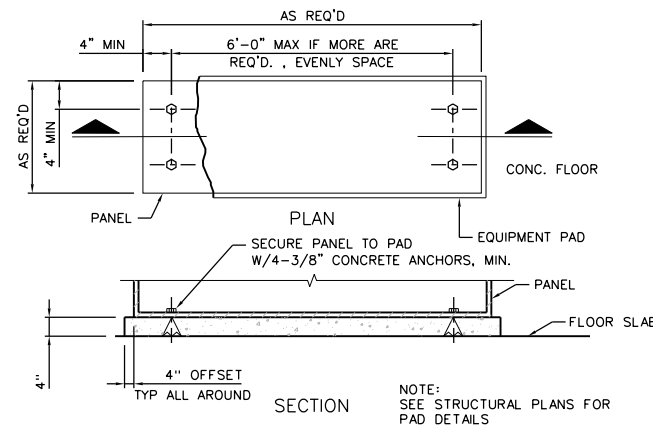
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**2 JUNCTION BOX INSTALLATION**

2  
E507

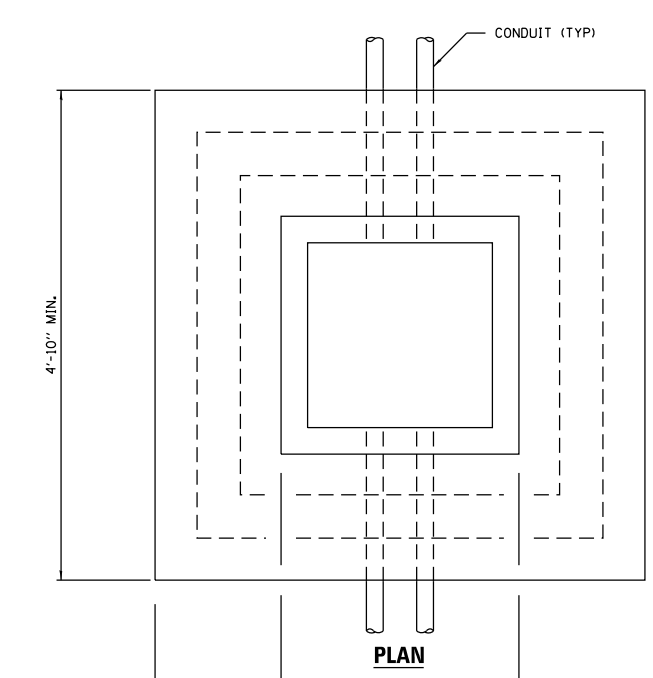
SCALE: NOT TO SCALE



**3 INSTALLATION OF FLOOR MOUNT CONTROL PANEL**

3  
E507

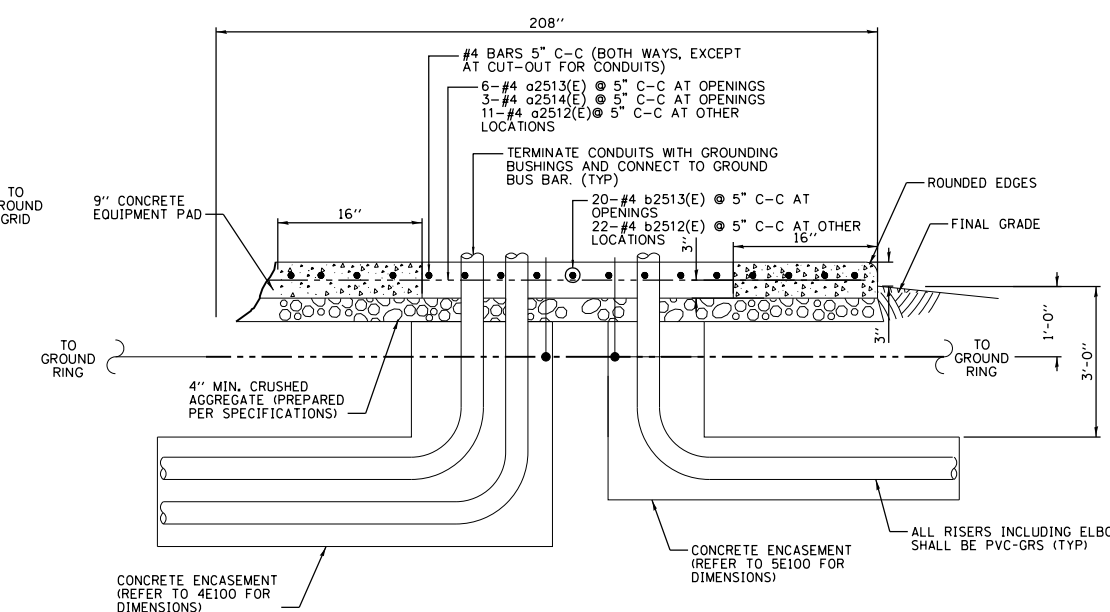
SCALE: NOT TO SCALE



**4 004T1 AND 004T2 TRANSFORMER PAD DETAIL**

4  
E507

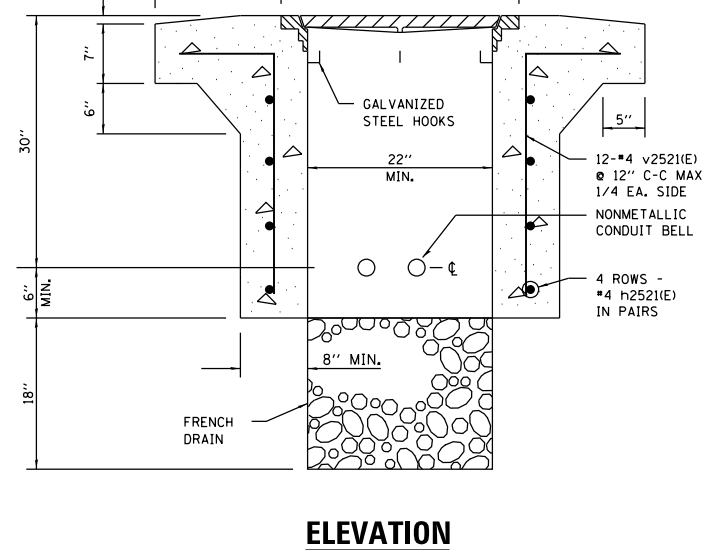
SCALE: NOT TO SCALE



**5 004T1 AND 004T2 TRANSFORMER PAD SECTION DETAIL**

5  
E507

SCALE: NOT TO SCALE

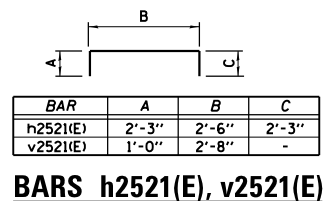


**ELEVATION**

**6 HEAVY DUTY HANDHOLE**

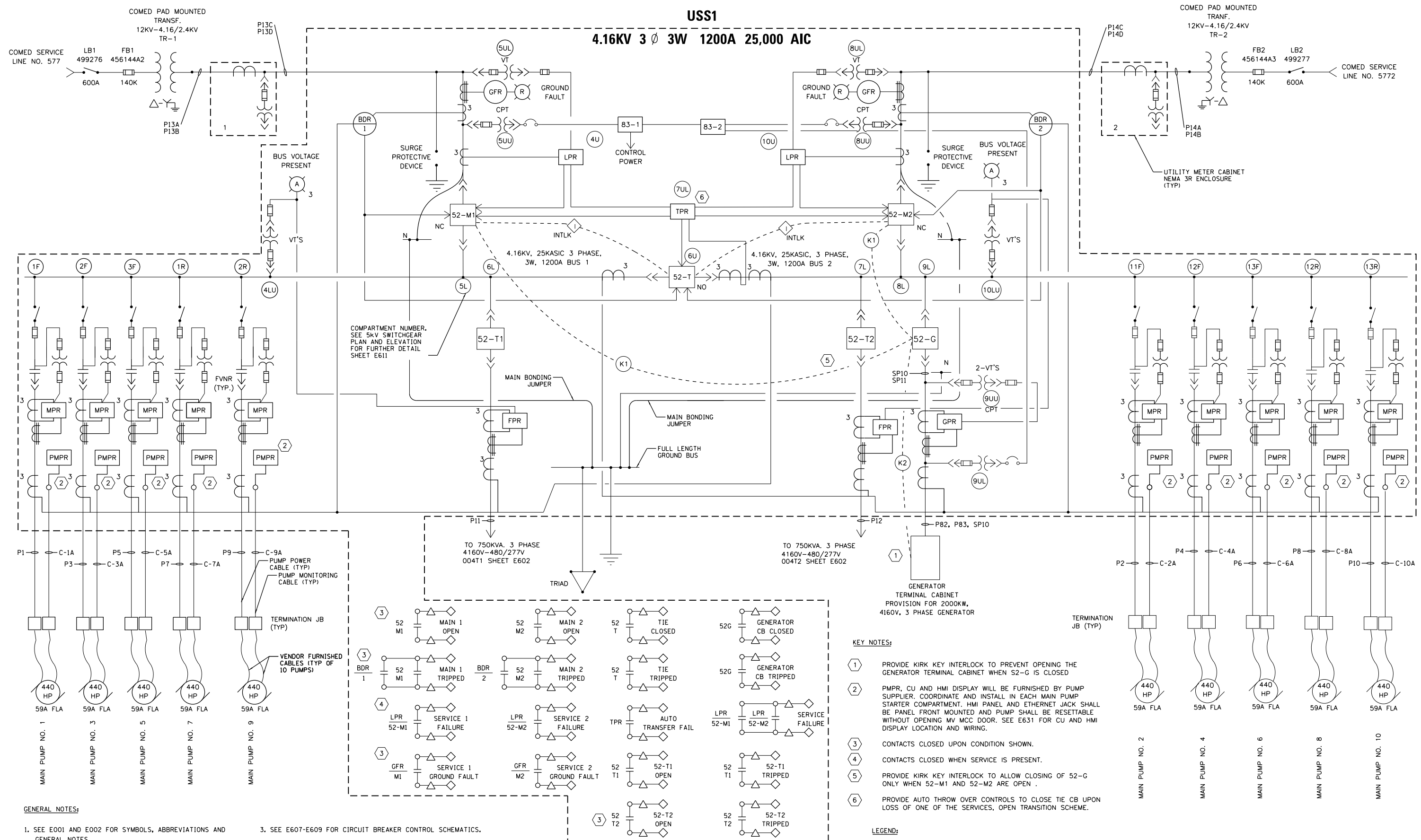
6  
E507

BILL OF MATERIALS				
BAR	NO.	SIZE	LENGTH	SHAPE
a2512(E)	11	#4	17'-0"	---
a2513(E)	6	#4	1'-0"	---
a2514(E)	3	#4	6'-4"	---
b2512(E)	22	#4	5'-3"	---
b2513(E)	20	#4	3'-7"	---
v2501(E)	12	#4	3'-6"	---
h2502(E)	8	#4	7'-0"	---
REINFORCING BARS EPOXY COATED			POUND	322
CONCRETE STRUCTURES			CU YD	4



**BARS h2521(E), v2521(E)**

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**USS1 (4160V) ONE LINE DIAGRAM**

**GENERAL NOTES:**

- SEE E001 AND E002 FOR SYMBOLS, ABBREVIATIONS AND GENERAL NOTES.
- SEE E603-E606 FOR USS1 THREE LINE DIAGRAM.
- SEE E607-E609 FOR CIRCUIT BREAKER CONTROL SCHEMATICS.
- PROVIDE INTERFACE FOR PROTECTIVE RELAYS FOR ETHERNET AND COAX CABLE WIRING FROM NETWORK RACK: MPR(10), FPR(2), TPR, LPR(2), BDR(2) AND GPR. SEE IC601 FOR DETAILS.
- SEE E652 AND E653 FOR CABLE/CONDUIT SCHEDULES.

**COMPARTMENT NUMBER.**  
SEE 5kV SWITCHGEAR PLAN AND ELEVATION FOR FURTHER DETAIL SHEET E611

- KEY NOTES:**
- PROVIDE KIRK KEY INTERLOCK TO PREVENT OPENING THE GENERATOR TERMINAL CABINET WHEN S2-G IS CLOSED
  - PMPR, CU AND HMI DISPLAY WILL BE FURNISHED BY PUMP SUPPLIER. COORDINATE AND INSTALL IN EACH MAIN PUMP STARTER COMPARTMENT. HMI PANEL AND ETHERNET JACK SHALL BE PANEL FRONT MOUNTED AND PUMP SHALL BE RESETTABLE WITHOUT OPENING MV MCC DOOR. SEE E631 FOR CU AND HMI DISPLAY LOCATION AND WIRING.
  - CONTACTS CLOSED UPON CONDITION SHOWN.
  - CONTACTS CLOSED WHEN SERVICE IS PRESENT.
  - PROVIDE KIRK KEY INTERLOCK TO ALLOW CLOSING OF S2-G ONLY WHEN S2-M1 AND S2-M2 ARE OPEN.
  - PROVIDE AUTO THROW OVER CONTROLS TO CLOSE TIE CB UPON LOSS OF ONE OF THE SERVICES, OPEN TRANSITION SCHEME.

- LEGEND:**
- △ TERMINAL IN USS1
  - ◇ TERMINAL IN SCADA
  - TERMINAL IN AEGIS PANEL

FILE NAME = D191454-E601.DGN  
 USER NAME = bgreen  
 DESIGNED - MEC - R. VAITLA  
 DRAWN - MEC - A. FREEMAN  
 CHECKED - MEC - J. ZURAD  
 DATE - 03/15/2019  
 PLOT SCALE = 0:1" = 1'-0"  
 PLOT DATE = 5/29/2019



USER NAME = bgreen  
 DESIGNED - MEC - R. VAITLA  
 DRAWN - MEC - A. FREEMAN  
 CHECKED - MEC - J. ZURAD  
 DATE - 03/15/2019

DESIGNED - MEC - R. VAITLA  
 DRAWN - MEC - A. FREEMAN  
 CHECKED - MEC - J. ZURAD  
 DATE - 03/15/2019

REVISIED -  
 REVISIED -  
 REVISIED -  
 REVISIED -

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

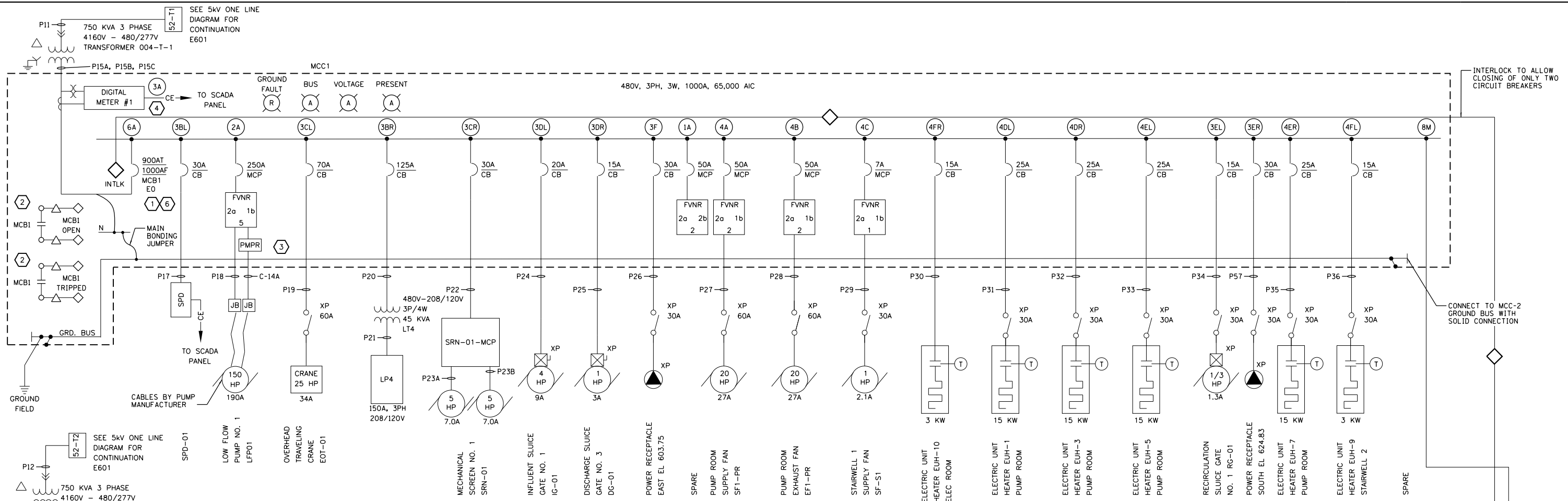
**I-290 PUMP STATION NO. 4 RECONSTRUCTION**  
**USS1 ONE LINE DIAGRAM**

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	176
CONTRACT NO. 62B78				
ILLINOIS FED. AID PROJECT				

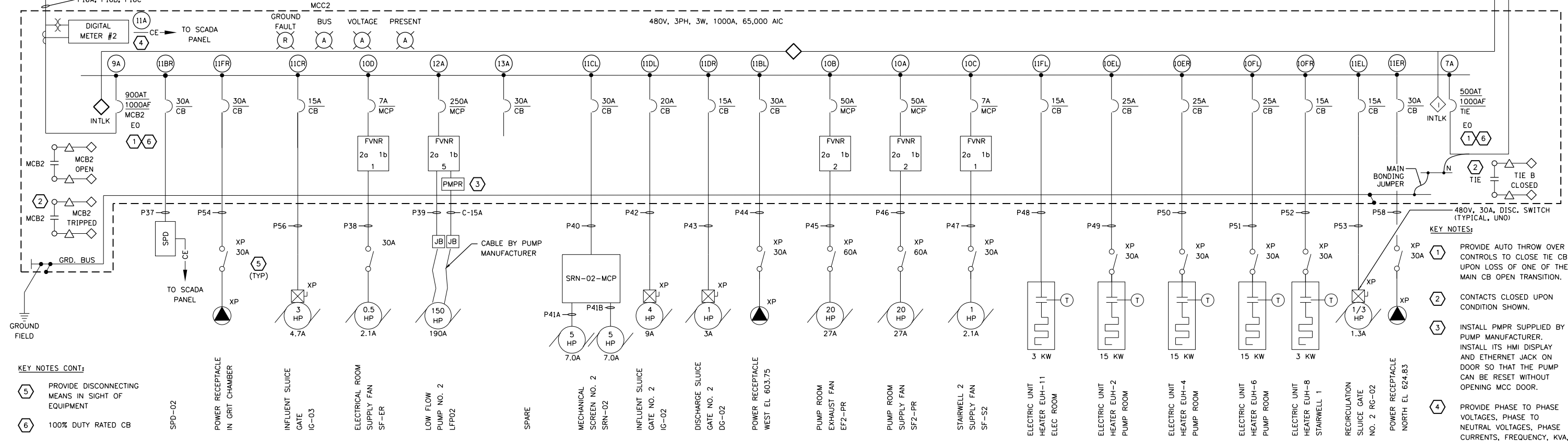
SHEET E601

SCALE: NONE SHEET OF SHEETS STA. TO STA.





**MCC-1 ONE LINE DIAGRAM PUMP STATION ELECTRICAL ROOM**



**MCC-2 ONE LINE DIAGRAM PUMP STATION ELECTRICAL ROOM**

**KEY NOTES CONT:**

5 PROVIDE DISCONNECTING MEANS IN SIGHT OF EQUIPMENT

6 100% DUTY RATED CB

**KEY NOTES:**

1 PROVIDE AUTO THROW OVER CONTROLS TO CLOSE TIE CB UPON LOSS OF ONE OF THE MAIN CB OPEN TRANSITION.

2 CONTACTS CLOSED UPON CONDITION SHOWN.

3 INSTALL PMPR SUPPLIED BY PUMP MANUFACTURER. INSTALL ITS HMI DISPLAY AND ETHERNET JACK ON DOOR SO THAT THE PUMP CAN BE RESET WITHOUT OPENING MCC DOOR.

4 PROVIDE PHASE TO PHASE VOLTAGES, PHASE TO NEUTRAL VOLTAGES, PHASE CURRENTS, FREQUENCY, KVA, KW, KVAR AND PF.

FILE NAME = D:\191454-E602.DGN USER NAME = bgreen DESIGNED - MEC - R. VAITLA REVISED - DRAWN - MEC - A. FREEMAN REVISED - PLOT SCALE = 0:1 "/>



USER NAME = bgreen  
 PLOT SCALE = 0:1 "/>

DESIGNED - MEC - R. VAITLA	REVISED -
DRAWN - MEC - A. FREEMAN	REVISED -
CHECKED - MEC - J. ZURAD	REVISED -
DATE - 03/15/2019	REVISED -

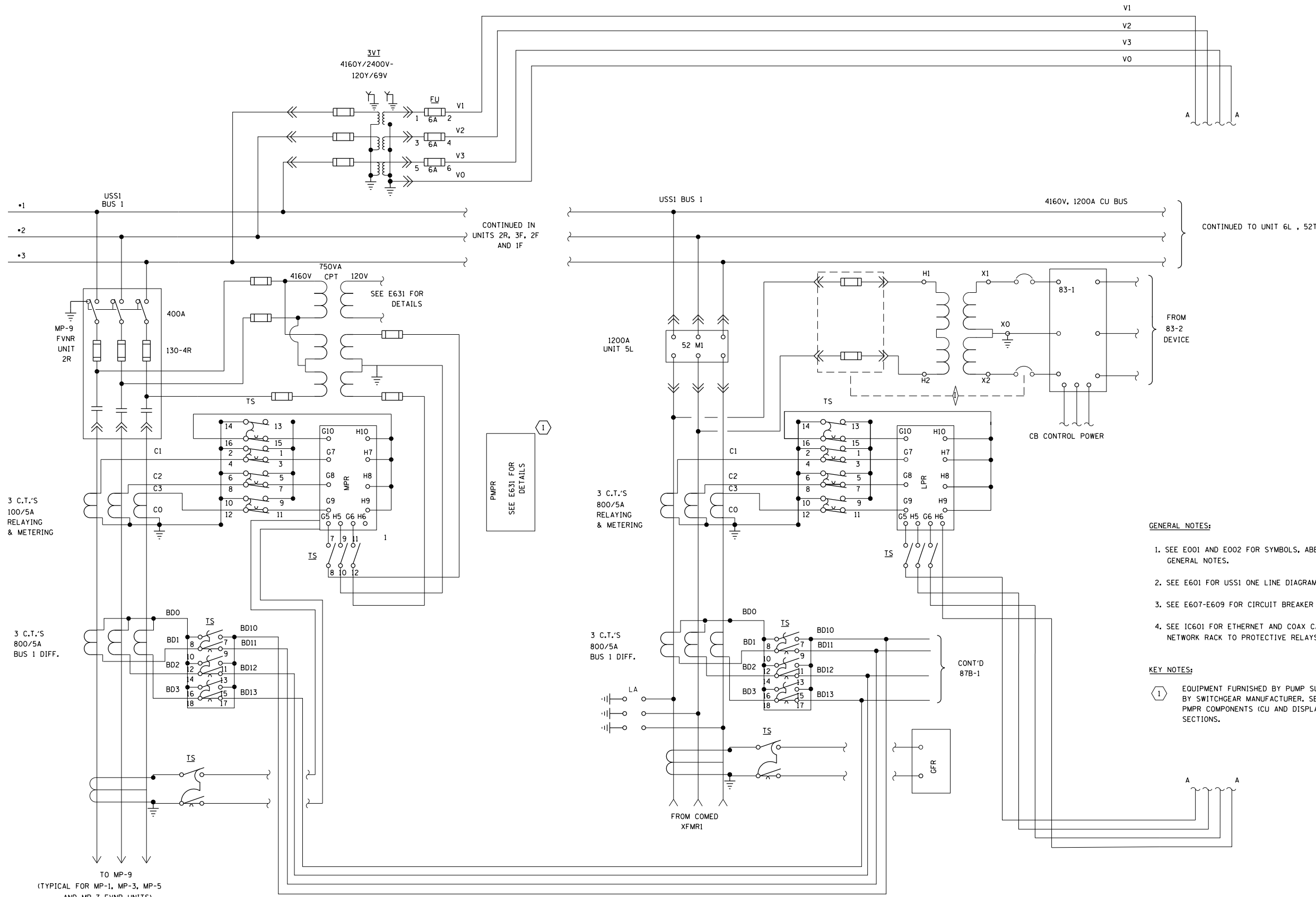
**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**I-290 PUMP STATION NO. 4 RECONSTRUCTION**  
**480V MCC ONE LINE DIAGRAM**

SCALE: NONE SHEET OF SHEETS STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	177
CONTRACT NO. 62B78				
ILLINOIS FED. AID PROJECT				

SHEET  
 E602



- GENERAL NOTES:**
- SEE E001 AND E002 FOR SYMBOLS, ABBREVIATIONS AND GENERAL NOTES.
  - SEE E601 FOR USS1 ONE LINE DIAGRAM.
  - SEE E607-E609 FOR CIRCUIT BREAKER CONTROL SCHEMATICS.
  - SEE IC601 FOR ETHERNET AND COAX CABLE WIRING FROM NETWORK RACK TO PROTECTIVE RELAYS.
- KEY NOTES:**
- EQUIPMENT FURNISHED BY PUMP SUPPLIER AND INSTALLED BY SWITCHGEAR MANUFACTURER. SEE E631 FOR ADDITIONAL PMPR COMPONENTS (CU AND DISPLAY) IN MP-3 AND MP-7 SECTIONS.

**USS1 THREE LINE DIAGRAM  
SHEET 1 OF 4**

FILE NAME = D191454-E603.DGN	USER NAME = bgreen	DESIGNED - MEC - R. VAITLA	REVISED -
MILHOUSE ENGINEERING & CONSTRUCTION		DRAWN - MEC - A. FREEMAN	REVISED -
PLOT SCALE = 0:1" = 1'-0"		CHECKED - MEC - J. ZURAD	REVISED -
PLOT DATE = 5/29/2019		DATE - 03/15/2019	REVISED -

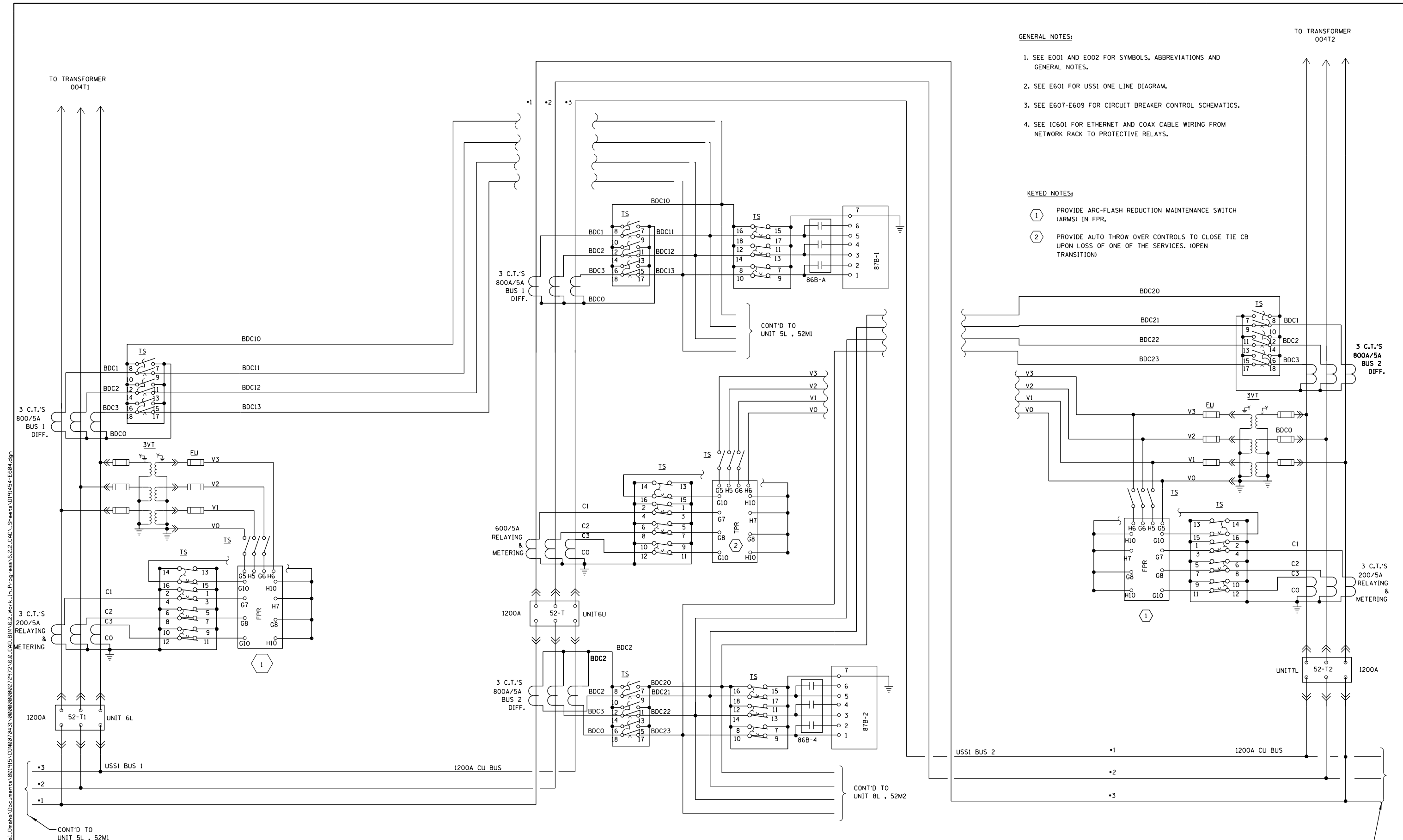
**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**I-290 PUMP STATION NO. 4 RECONSTRUCTION**

**USS1 THREE LINE DIAGRAM**

SCALE: NONE SHEET OF SHEETS STA. TO STA.

SHEET E603		TOTAL SHEETS	SHEET NO.
F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS
290	3434-2321-R	COOK	232 178
CONTRACT NO. 62B78			
ILLINOIS FED. AID PROJECT			



- GENERAL NOTES:**
- SEE E001 AND E002 FOR SYMBOLS, ABBREVIATIONS AND GENERAL NOTES.
  - SEE E601 FOR USS1 ONE LINE DIAGRAM.
  - SEE E607-E609 FOR CIRCUIT BREAKER CONTROL SCHEMATICS.
  - SEE IC601 FOR ETHERNET AND COAX CABLE WIRING FROM NETWORK RACK TO PROTECTIVE RELAYS.

- KEYED NOTES:**
- ① PROVIDE ARC-FLASH REDUCTION MAINTENANCE SWITCH (ARMS) IN FPR.
- ② PROVIDE AUTO THROW OVER CONTROLS TO CLOSE TIE CB UPON LOSS OF ONE OF THE SERVICES. (OPEN TRANSITION)

**USS1 THREE LINE DIAGRAM  
SHEET 2 OF 4**

FILE NAME = D191454-E604.DGN  
**MILHOUSE**  
ENGINEERING & CONSTRUCTION

USER NAME = bgreen	DESIGNED - MEC - R. VAITLA	REVISED -
PLOT SCALE = 0:1" = 1'-0"	DRAWN -	REVISED -
PLOT DATE = 5/29/2019	CHECKED - MEC - J. ZURAD	REVISED -
	DATE - 03/15/2019	REVISED -

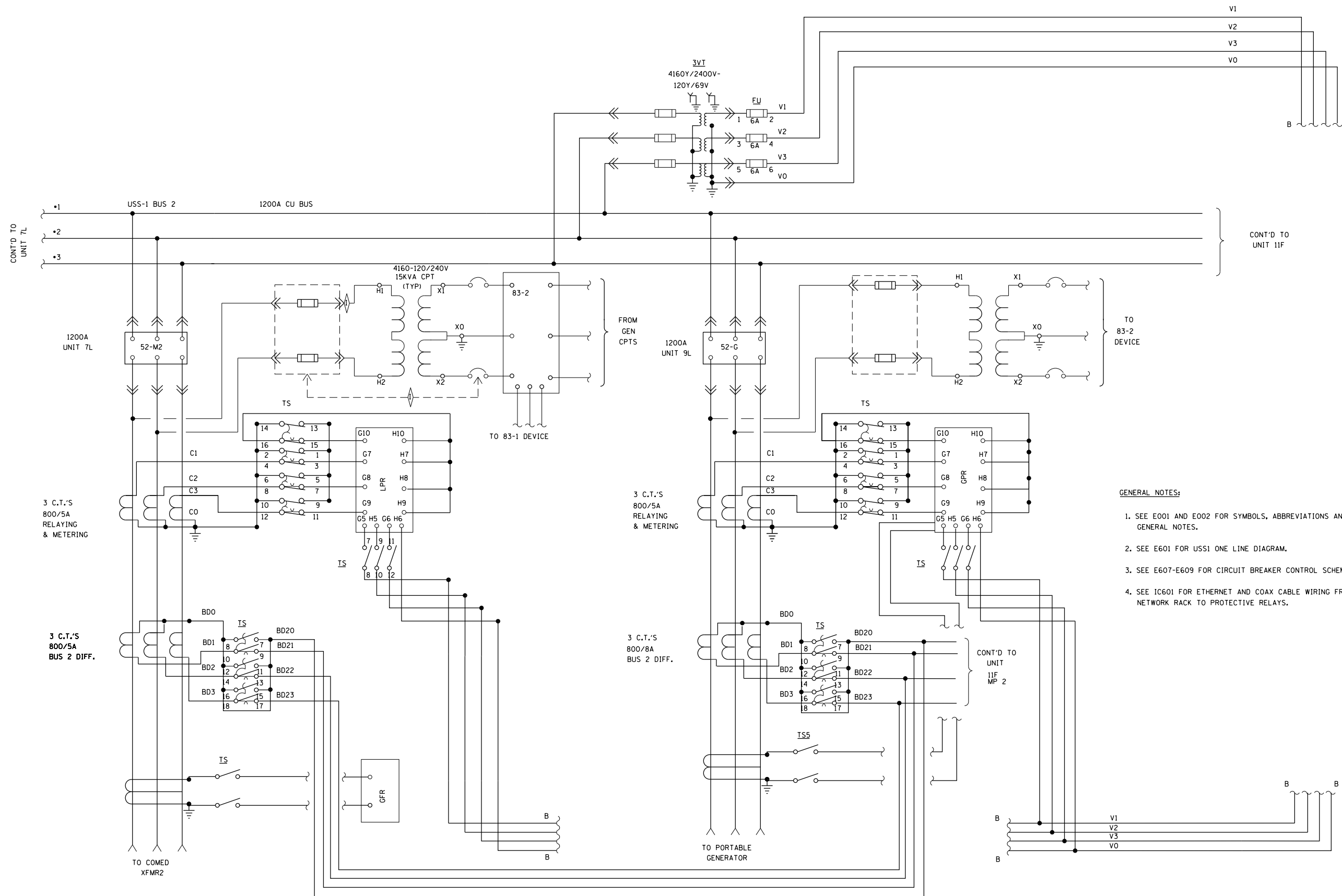
**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
USS1 THREE LINE DIAGRAM**

SCALE: NONE    SHEET    OF    SHEETS    STA.    TO    STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	179
CONTRACT NO. 62B78				
SHEET E604				

ILLINOIS FED. AID PROJECT



- GENERAL NOTES:**
- SEE E001 AND E002 FOR SYMBOLS, ABBREVIATIONS AND GENERAL NOTES.
  - SEE E601 FOR USS1 ONE LINE DIAGRAM.
  - SEE E607-E609 FOR CIRCUIT BREAKER CONTROL SCHEMATICS.
  - SEE IC601 FOR ETHERNET AND COAX CABLE WIRING FROM NETWORK RACK TO PROTECTIVE RELAYS.

**USS1 THREE LINE DIAGRAM  
SHEET 3 OF 4**

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FILE NAME = D191454-E605.DGN	USER NAME = bgreen	DESIGNED - MEC - R. VAITLA	REVISED -
		DRAWN -	REVISED -
PLOT SCALE = 0:1" = 1'-0"	CHECKED - MEC - J. ZURAD	REVISED -	
PLOT DATE = 5/29/2019	DATE - 03/15/2019	REVISED -	

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

<b>I-290 PUMP STATION NO. 4 RECONSTRUCTION</b>			
<b>USS1 THREE LINE DIAGRAM</b>			
SCALE: NONE	SHEET	OF SHEETS	STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	180
CONTRACT NO. 62B78				
ILLINOIS FED. AID PROJECT				

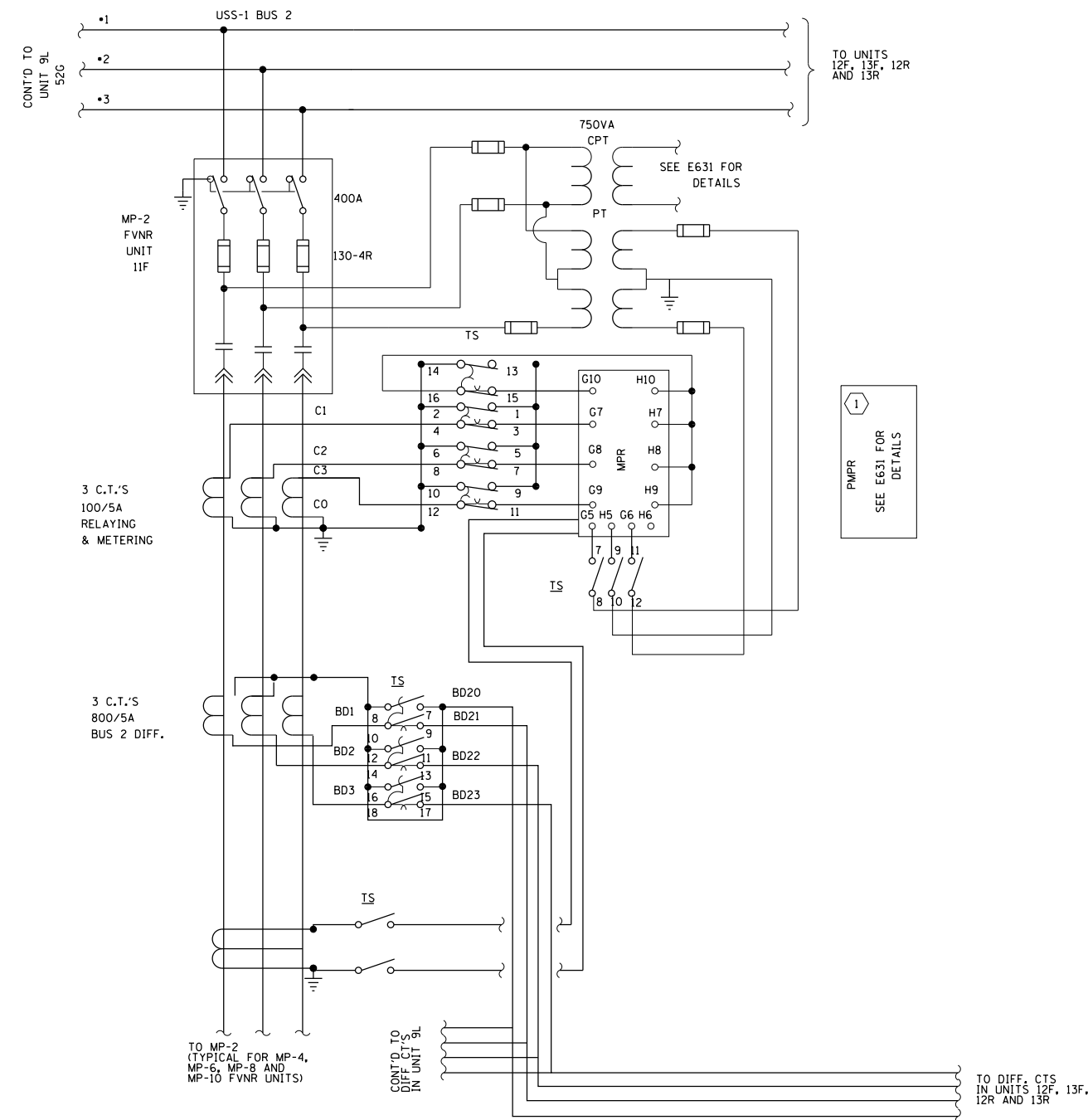
SHEET  
E605

**GENERAL NOTES:**

1. SEE E001 AND E002 FOR SYMBOLS, ABBREVIATIONS AND GENERAL NOTES.
2. SEE E601 FOR USS1 ONE LINE DIAGRAM.
3. SEE E607-E609 FOR CIRCUIT BREAKER CONTROL SCHEMATICS.
4. SEE IC601 FOR ETHERNET AND COAX CABLE WIRING FROM NETWORK RACK TO PROTECTIVE RELAYS.

**KEYED NOTES:**

- ① EQUIPMENT FURNISHED BY PUMP SUPPLIER AND INSTALLED BY SWITCHGEAR MANUFACTURER. SEE E631 FOR ADDITIONAL PMPR COMPONENTS (CU AND HMI DISPLAY) FOR INSTALLATION IN MP-4 AND MP-8 SECTIONS.



**USS1 THREE LINE DIAGRAM  
SHEET 4 OF 4**

P:\1\14\APP\04081\NorthCentral\Omaha\Documents\001915\CON\078431\00000000271972\6.6.CAD\_BIM\6.2\_Work\In\_Progress\6.2.2.CAD\_Sheets\0191454-E606.dgn



FILE NAME = D191454-E606.DGN	USER NAME = bgreen	DESIGNED - MEC - R. VAITLA	REVISED -
		DRAWN -	REVISED -
PLOT SCALE = 0:1' = 1" =	CHECKED - MEC - J. ZURAD	REVISED -	
PLOT DATE = 5/29/2019	DATE - 03/15/2019	REVISED -	

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
USS1 THREE LINE DIAGRAM**

SCALE: NONE SHEET OF SHEETS STA. TO STA.

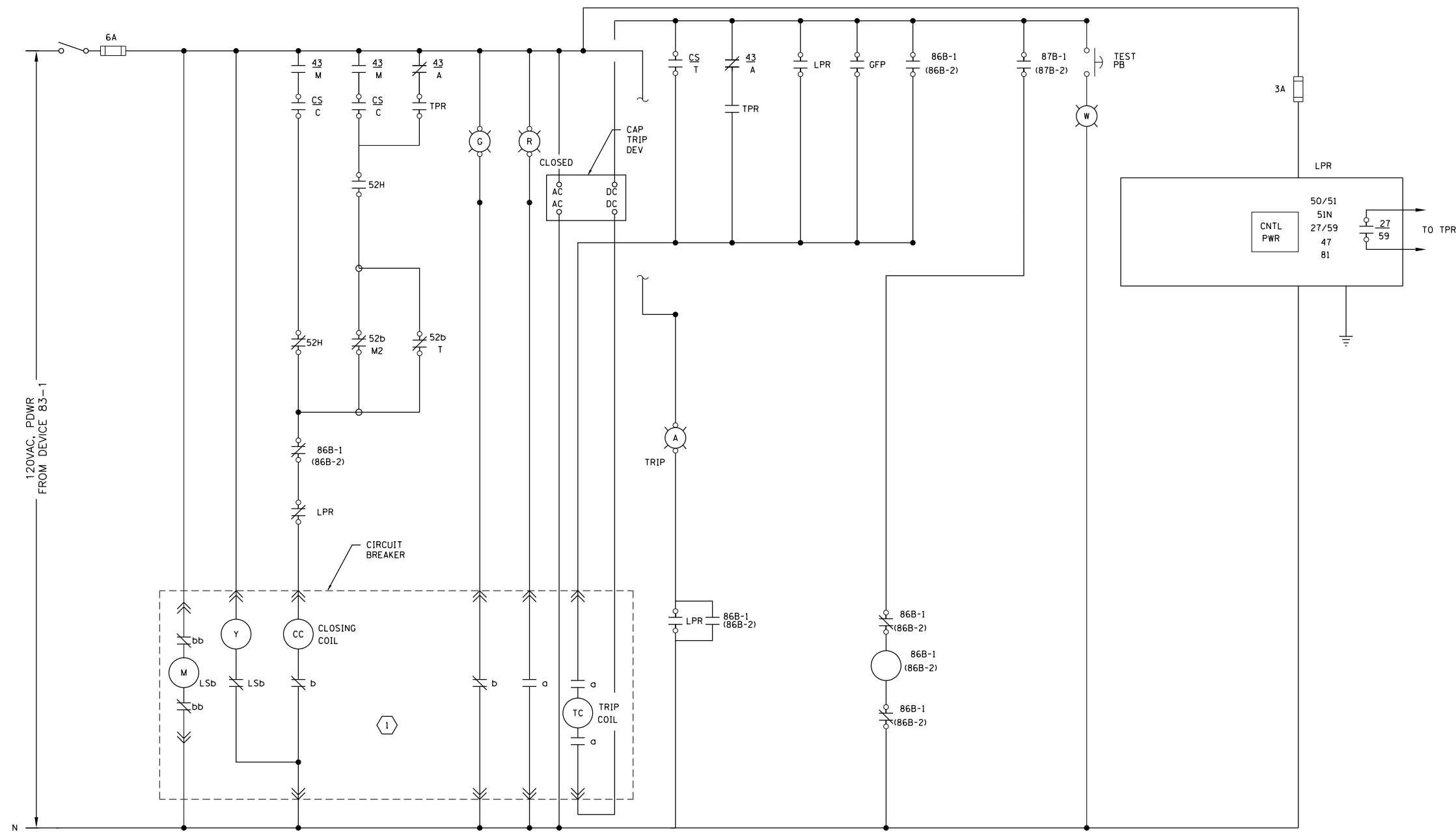
SHEET E606		TOTAL SHEETS 232		SHEET NO. 181	
F.A.I. RTE. 290	SECTION 3434-2321-R	COUNTY COOK	CONTRACT NO. 62B78		
ILLINOIS FED. AID PROJECT					

KEYED NOTES:

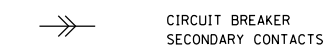
- 1 BREAKER INTERNAL WIRING, INCLUDING INTERLOCKS AND ANTI-PUMPING FEATURES AS PER MANUFACTURER.

GENERAL NOTES:

- 1. BREAKERS ARE SHOWN IN OPEN POSITION AND IN TEST POSITION.
- 2. RELAYS ARE SHOWN IN DEENERGIZED STATE.
- 3. AUTO/MANUAL TRANSFER SELECTOR SWITCH, 43 IS SHOWN IN AUTO POSITION.
- 4. PROVIDE PILOT DEVICES AND INDICATING LIGHTS SHOWN FOR EACH BREAKER.
- 3. SEE SHEETS E001 AND E002 FOR ELECTRICAL LEGENDS.



LEGEND:



**USS1 4.16KV MAIN BREAKER CONTROL SCHEMATIC**  
 (TYPICAL FOR 52-M1 AND 52-M2)

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FILE NAME = D191454-E607.DGN	USER NAME = bgreen	DESIGNED - MEC - R. VAITLA	REVISED -
		DRAWN - MEC - A. FREEMAN	REVISED -
		CHECKED - MEC - J. ZURAD	REVISED -
		DATE - 03/15/2019	REVISED -

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

**I-290 PUMP STATION NO. 4 RECONSTRUCTION**  
**4.16KV MAIN BREAKER CONTROL SCHEMATIC**

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	182
CONTRACT NO. 62B78				
ILLINOIS FED. AID PROJECT				

SHEET  
E607

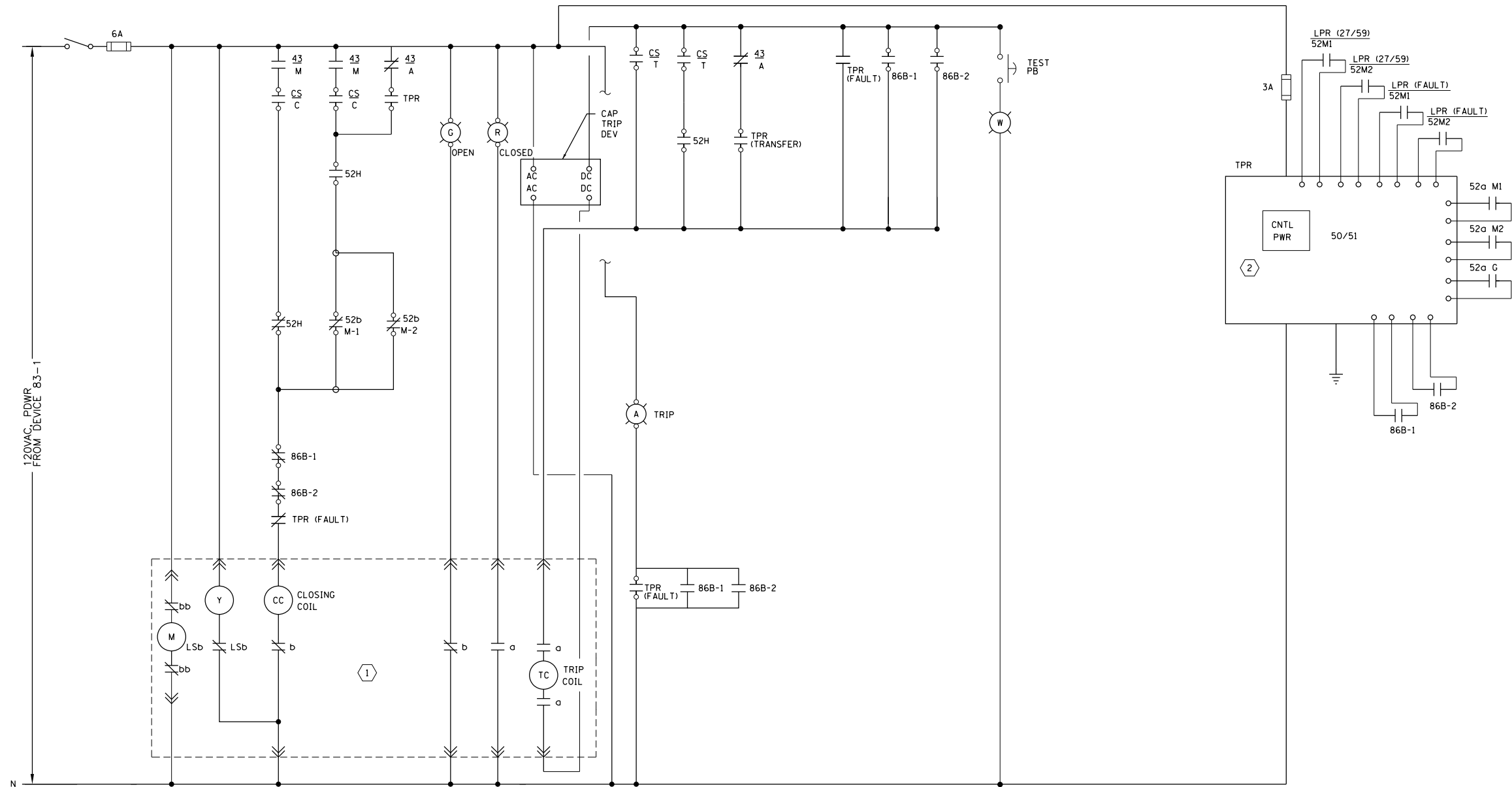
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GENERAL NOTES:

1. BREAKERS ARE SHOWN IN OPEN POSITION AND IN TEST POSITION.
2. RELAYS ARE SHOWN IN DEENERGIZED STATE.
3. AUTO/MANUAL TRANSFER SELECTOR SWITCH, 43 IS SHOWN IN AUTO POSITION.
4. PROVIDE PILOT DEVICES AND INDICATING LIGHTS SHOWN FOR EACH BREAKER.
3. SEE SHEETS E001 AND E002 FOR ELECTRICAL LEGENDS.

KEYED NOTES:

- 1 BREAKER INTERNAL WIRING, INCLUDING INTERLOCKS AND ANTI-PUMPING FEATURES AS PER MANUFACTURER.
- 2 PROVIDE AUTO THROW OVER CONTROLS TO CLOSE TIE CB UPON LOSS OF ONE OF THE SERVICES. (OPEN TRANSITION).



LEGEND:  
 CIRCUIT BREAKER SECONDARY CONTACTS

USS1 4.16KV TIE BREAKER CONTROL SCHEMATIC

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FILE NAME = D191454-E608.DGN	USER NAME = bgreen	DESIGNED - MEC - R. VAITLA	REVISED -
		DRAWN - MEC - A. FREEMAN	REVISED -
		CHECKED - MEC - J. ZURAD	REVISED -
		DATE - 03/15/2019	REVISED -

STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION

I-290 PUMP STATION NO. 4 RECONSTRUCTION  
 4.16KV TIE BREAKER CONTROL SCHEMATIC

SCALE: NONE SHEET OF SHEETS STA. TO STA.

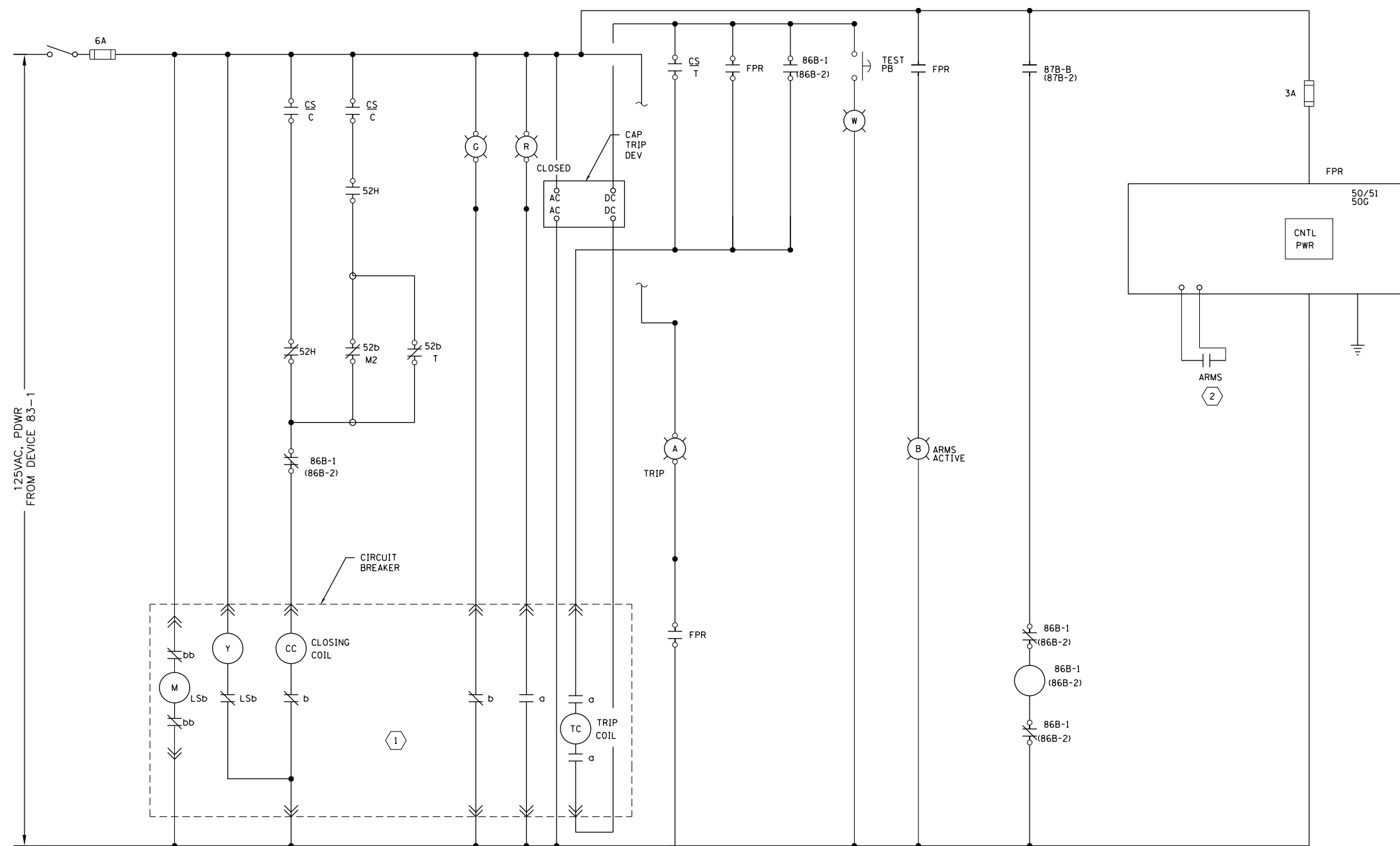
SHEET E608	
F.A.I. RTE.	SECTION
290	3434-2321-R
COUNTY	TOTAL SHEETS
COOK	232
SHEET NO.	183
CONTRACT NO. 62B78	
ILLINOIS FED. AID PROJECT	

**KEYED NOTES:**

- ① BREAKER INTERNAL WIRING, INCLUDING INTERLOCKS AND ANTI-PUMPING FEATURES AS PER MANUFACTURER.
- ② PROVIDE ARC FLASH REDUCTION MAINTENANCE SWITCH (ARMS) FOR S2-T1 AND S2-T2.

**GENERAL NOTES:**

- 1. BREAKERS ARE SHOWN IN OPEN POSITION AND IN TEST POSITION.
- 2. RELAYS ARE SHOWN IN DEENERGIZED STATE.
- 3. PROVIDE PILOT DEVICES AND INDICATING LIGHTS SHOWN FOR EACH BREAKER.
- 4. SEE SHEETS E001 AND E002 FOR ELECTRICAL LEGENDS.



**USS1 4.16KV FEEDER BREAKER CONTROL SCHEMATIC**

(TYPICAL FOR 52-T1 AND 52-T2) (TYPICAL FOR 52-G EXCEPT PROTECTIVE RELAY SHALL BE GPR AND WITHOUT ARMS)

**LEGEND:**

⋈ CIRCUIT BREAKER  
 ⋈ SECONDARY CONTACTS

D:\191454-E609\Drawings\Control\USS1\USS1 4.16KV FEEDER BREAKER CONTROL SCHEMATIC.dgn



FILE NAME = D191454-E609.DGN	USER NAME = bgreen	DESIGNED - MEC - R. VAITLA	REVISED -
		DRAWN - MEC - A. FREEMAN	REVISED -
		CHECKED - MEC - J. ZURAD	REVISED -
		DATE - 03/15/2019	REVISED -

**STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION**

**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
 4.16KV FEEDER BREAKER CONTROL SCHEMATIC**

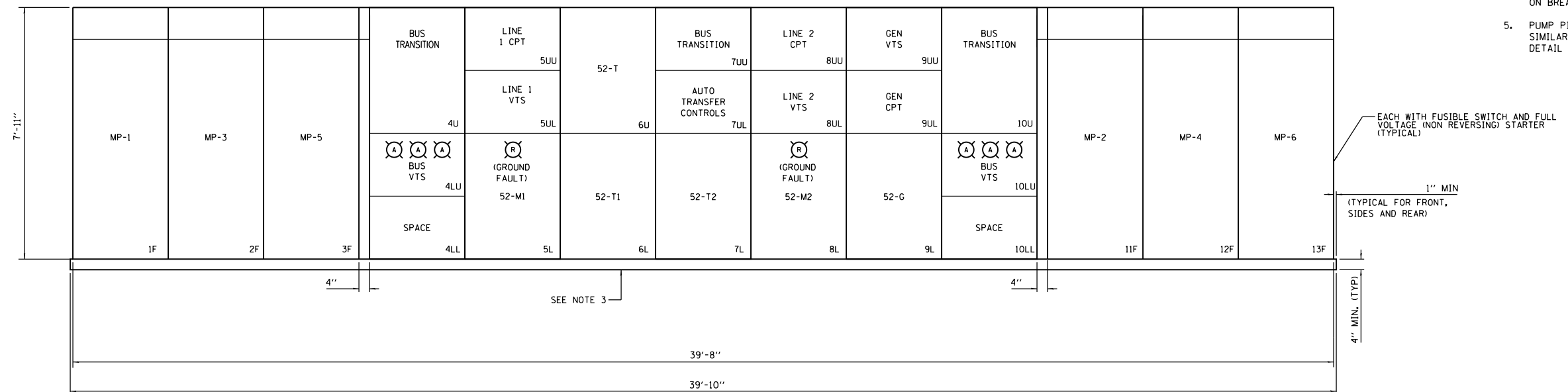
SCALE: NONE SHEET OF SHEETS STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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CONTRACT NO. 62B78				
ILLINOIS FED. AID PROJECT				

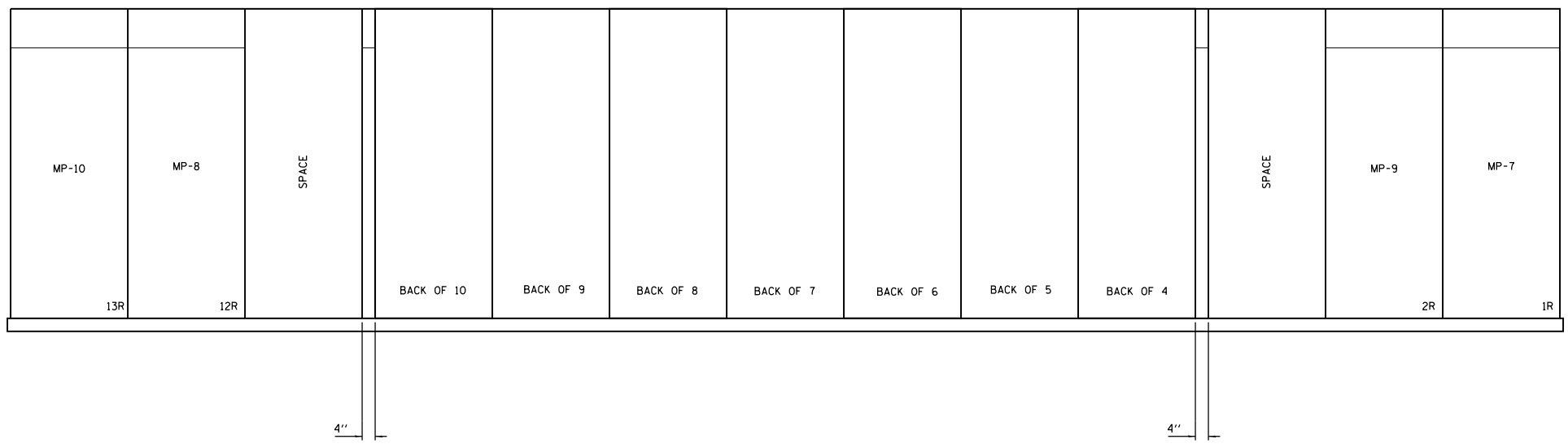
SHEET  
E609



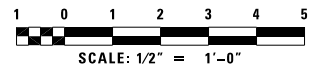
- GENERAL NOTES:
- SEE SHEET E601 FOR SINGLE LINE DIAGRAM.
  - SEE SHEET E401 FOR USS1 PLAN VIEW
  - PROVIDE EQUIPMENT PADS FOR SELECTED EQUIPMENT PER DETAIL 1 OF SHEET S503.
  - PROVIDE PILOT DEVICES AND INDICATING LIGHTS SHOWN ON THREE LINE DIAGRAMS E603-E606 AND ON BREAKER CONTROL SCHEMATICS, E607-E610.
  - PUMP PILOT DEVICES SHALL BE ARRANGED SIMILAR TO THOSE ON LOW FLOW PUMP LFP1 DETAIL ON SHEET E612.



**USS1 FRONT VIEW**



**USS1 REAR VIEW**



D:\Projects\2019\I-290\Drawings\Sheet\I-290-Pump Station No. 4\I-290-Pump Station No. 4-Sheet E611.dwg



FILE NAME = D191454-E611.DGN	USER NAME = bgreen	DESIGNED - MEC - R. VAITLA	REVISED -
		DRAWN - MEC - A. FREEMAN	REVISED -
		CHECKED - MEC - J. ZURAD	REVISED -
		DATE - 03/15/2019	REVISED -

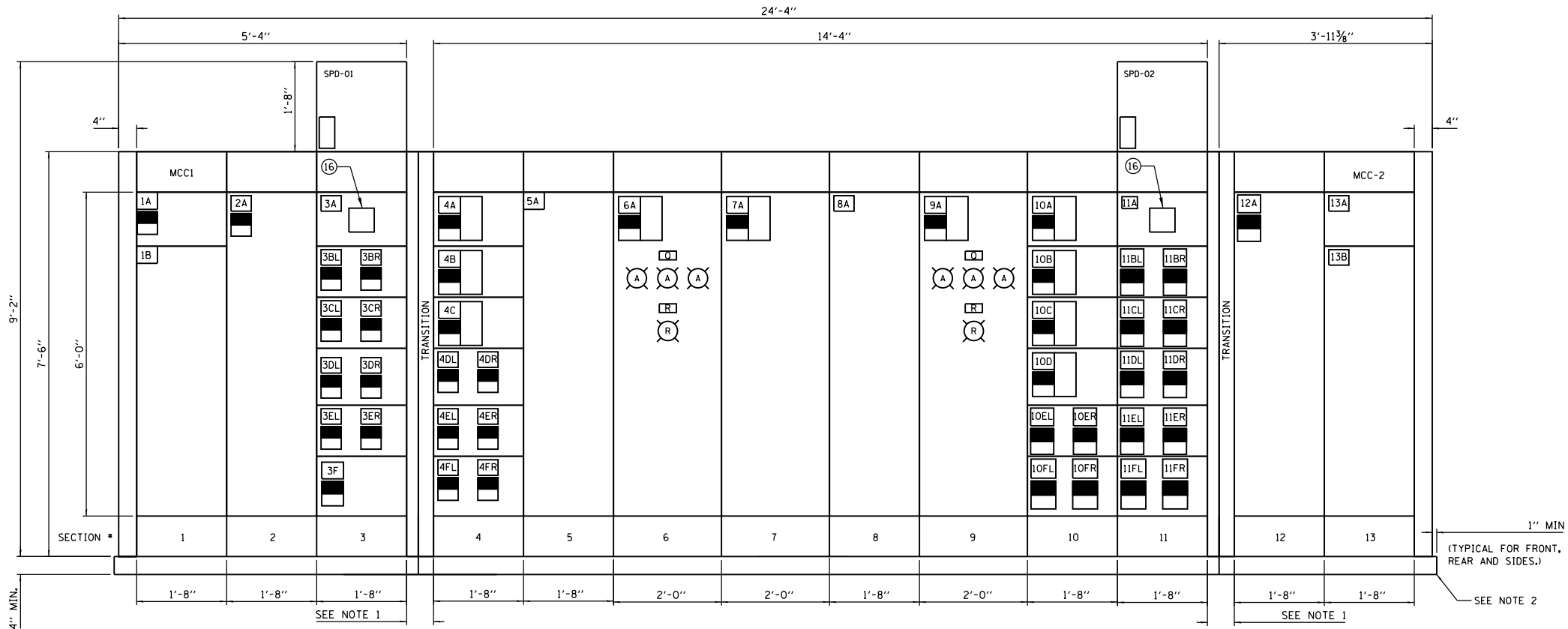
**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
5KV SWITCHGEAR ELEVATIONS**

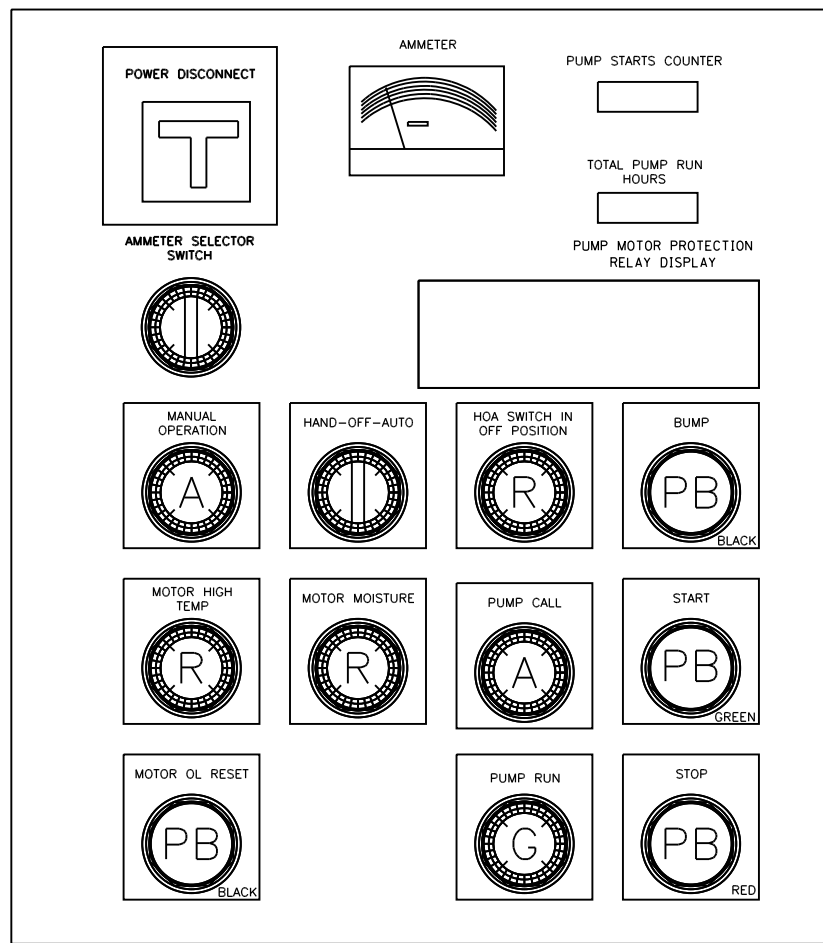
SCALE: 1/2"=1'-0" SHEET OF SHEETS STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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CONTRACT NO. 62B78				
ILLINOIS FED. AID PROJECT				

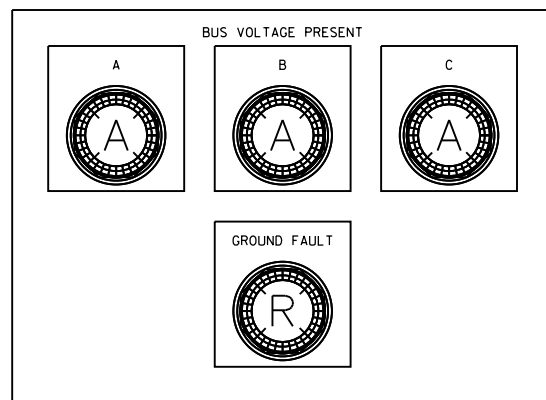
SHEET E611



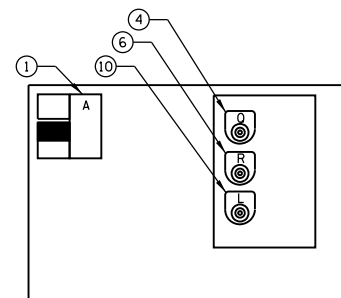
**480V MCC-1 AND MCC-2 ELEVATION**



**LOW FLOW PUMP STARTER LFP1 (TYPICAL FOR LFP2)**



**MAIN BREAKERS**



**DOOR MOUNTED DEVICE LAYOUT  
(TYPICAL FOR SUPPLY AND EXHAUST FANS)**

NAMEPLATE SCHEDULE	
ITEM	ENGRAVING
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	NOT USED
K	MANUAL OPERATION
L	HAND-OFF-AUTO SWITCH
M	NOT USED
N	AMMETER
O	AMMETER SWITCH (OFF-A-B-C)
P	MOTOR MOIST/TEMP MONITOR
Q	BUS VOLTAGE PRESENT
R	GROUND FAULT

DEVICE LEGEND	
ITEM	DEVICE DESCRIPTION
1	MOTOR CIRCUIT PROTECTOR
2	ELAPSED TIME METER
3	PUMP START COUNTER
4	GREEN INDICATING LIGHT
5	AMBER INDICATING LIGHT
6	RED INDICATING LIGHT
7	SURGE PROTECTIVE DEVICE, 250KA WITH CIRCUIT BREAKER
8	PUSHBUTTON
9	PUSHBUTTON
10	3 POSITION SELECTOR SWITCH
11	DIGITAL METER #2
12	AMMETER
13	AMMETER SWITCH 9 POSITION
14	CIRCUIT BREAKER
15	MOTOR TEMP/MOIST MONITOR
16	DIGITAL METER #1

**SHEET NOTES:**

- SEE SHEET E401 FOR MCC PLAN VIEW IN THE ELECTRICAL ROOM. PROVIDE EQUIPMENT PADS FOR CORNER SECTIONS.
- PROVIDE EQUIPMENT PADS FOR SELECTED EQUIPMENT PER DETAIL 1 OF SHEET S503.

NAMEPLATE SCHEDULE 3" WIDE	
ITEM	ENGRAVING
MCC-1	MOTOR CONTROL CENTER PS-04 MCC-1
1A	SPARE
1B	BLANK
2A	LOW FLOW PUMP NO.1 (LFP-01)
3A	DIGITAL METER #1
3B	SPD-01
3BR	LIGHTING TRANSFORMER LT4-1
3CL	ELECTRIC TRAVELLING OVERHEAD CRANE EOT-01
3CR	MECHANICAL SCREEN 01 SRN-01
3DL	INFLUENT GATE 01 IG-01
3DR	DISCHARGE GATE 01 DG-01
3EL	RECIRCULATION GATE 01 RG-01
3ER	POWER RECEPT. SOUTH EL 624.83
3F	POWER RECEPTACLE EAST
4A	SUPPLY FAN 1 PUMP ROOM SF1-PR
4B	EXHAUST FAN 1 PUMP ROOM EF1-PR
4C	SUPPLY FAN STAIRWELL 1 SF-S1
4DL	ELECTRIC UNIT HEATER 1 EUH-1
4DR	ELECTRIC UNIT HEATER 3 EUH-3
4EL	ELECTRIC UNIT HEATER 5 EUH-5
4ER	ELECTRIC UNIT HEATER 7 EUH-7
4FL	ELECTRIC UNIT HEATER 9 EUH-9
4FR	ELECTRIC UNIT HEATER 10 EUH-10
5A	CPT AND AUTO TRANSFER CONTROL PANEL
6A	MCC-1 MAIN CB
MCC2	MOTOR CONTROL CENTER PS-04 MCC2
7A	TIE CB
8A	BUS TRANSITION SECTION
9A	MCC-2 MAIN CB
10A	SUPPLY FAN 2 PUMP ROOM SF2-PR
10B	EXHAUST FAN 2 PUMP ROOM EF2-PR
10C	SUPPLY FAN STAIRWELL 2 SF-S2
10D	SUPPLY FAN ELECTRICAL RM SF-ER
10EL	ELECTRIC UNIT HEATER 2 EUH-2
10ER	ELECTRIC UNIT HEATER 4 EUH-4
10FL	ELECTRIC UNIT HEATER 6 EUH-6
10FR	ELECTRIC UNIT HEATER 8 EUH-8
11A	DIGITAL METER #2
11BL	POWER RECEPTACLE WEST
11BR	SPD-02
11CL	MECHANICAL SCREEN 02 SRN-02
11CR	INFLUENT GATE 02 IG-02
11DL	INFLUENT GATE 02 IG-02
11DR	DISCHARGE GATE 02 DG-02
11EL	RECIRCULATION GATE 02 RG-02
11ER	POWER RECEPT. NORTH EL 624.83
11FL	ELECTRIC UNIT HEATER 11 EUH-11
11FR	POWER RECEPTACLE IN GRIT CHAMBER
12A	LOW FLOW PUMP NO.2 LFP-02
13A	SPARE
13B	BLANK

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 USER NAME = bgreen  
 PLOT SCALE = 0:1' / 1"  
 PLOT DATE = 5/29/2019

DESIGNED - MEC - R. VAITLA  
 DRAWN - MEC - A. FREEMAN  
 CHECKED - MEC - J. ZURAD  
 DATE - 03/15/2019

REVISED -  
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 REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

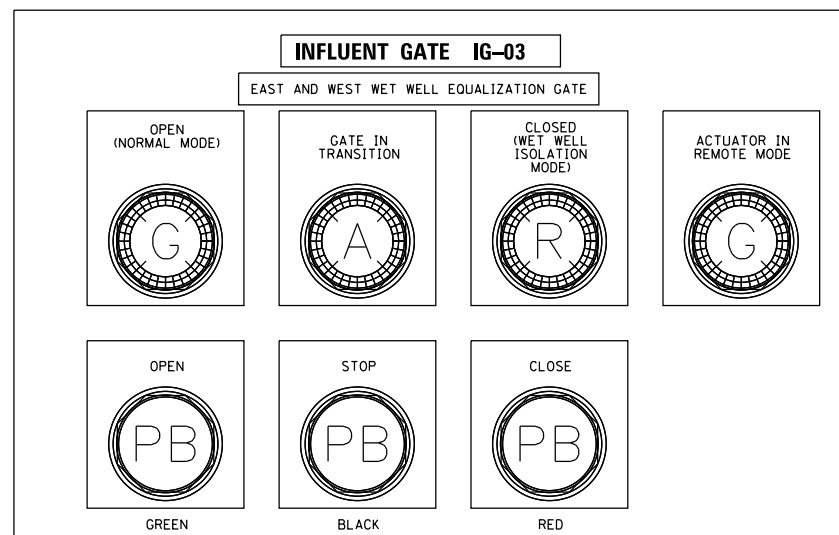
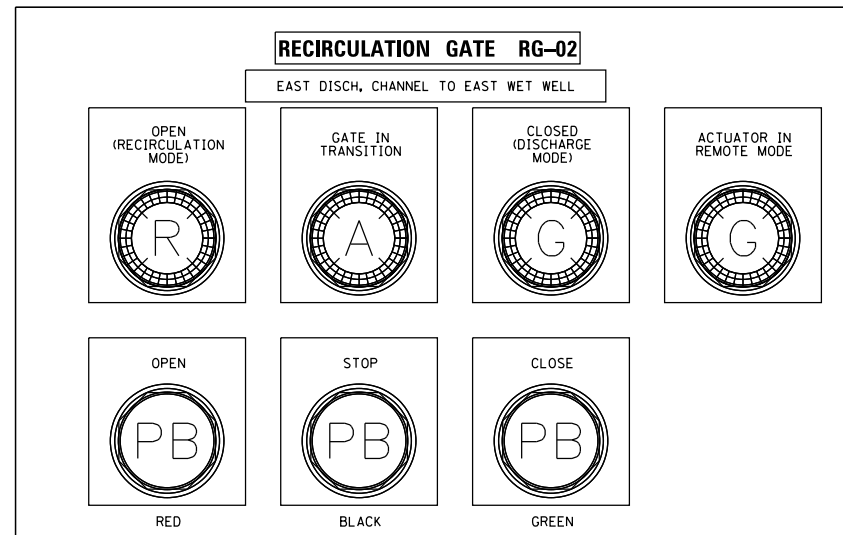
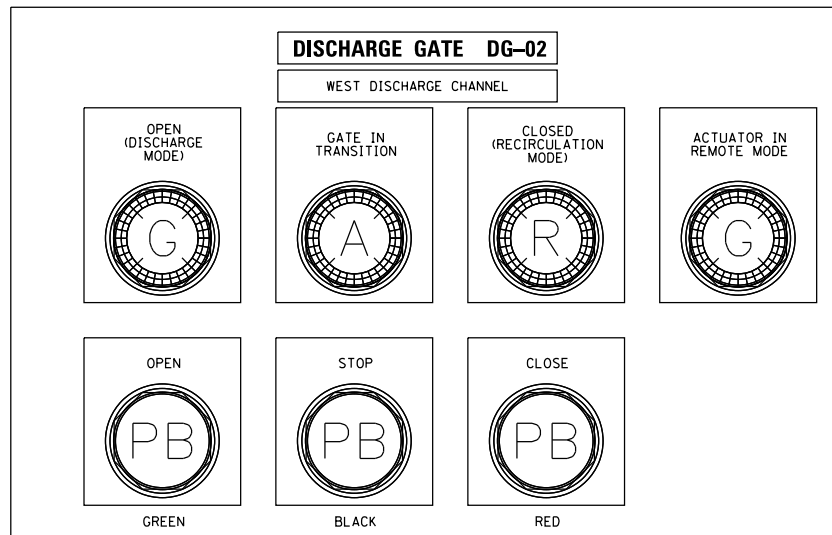
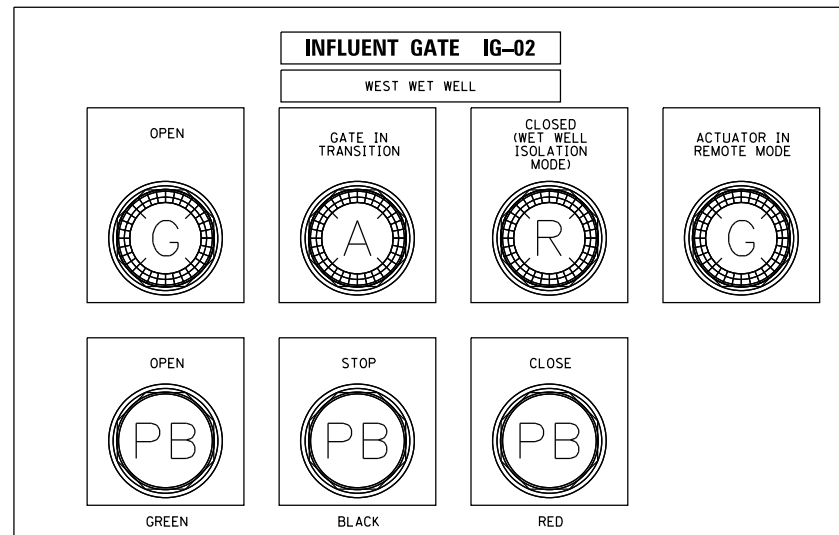
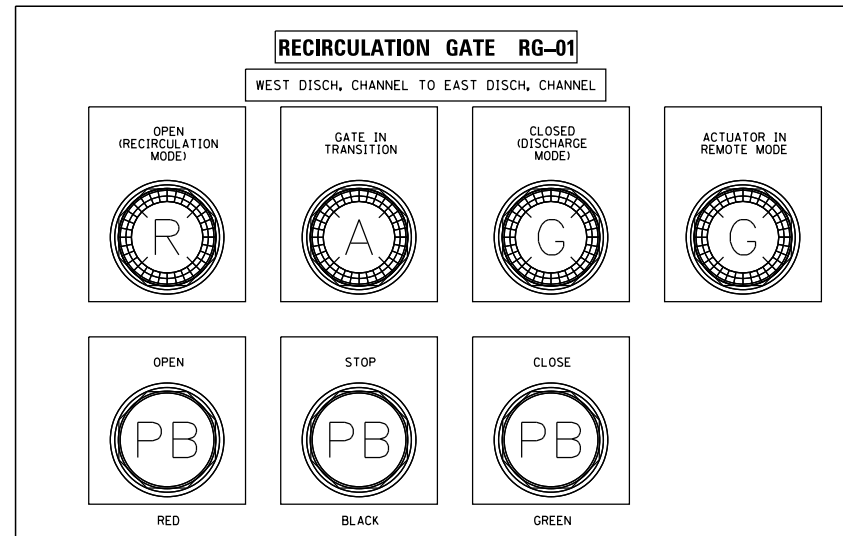
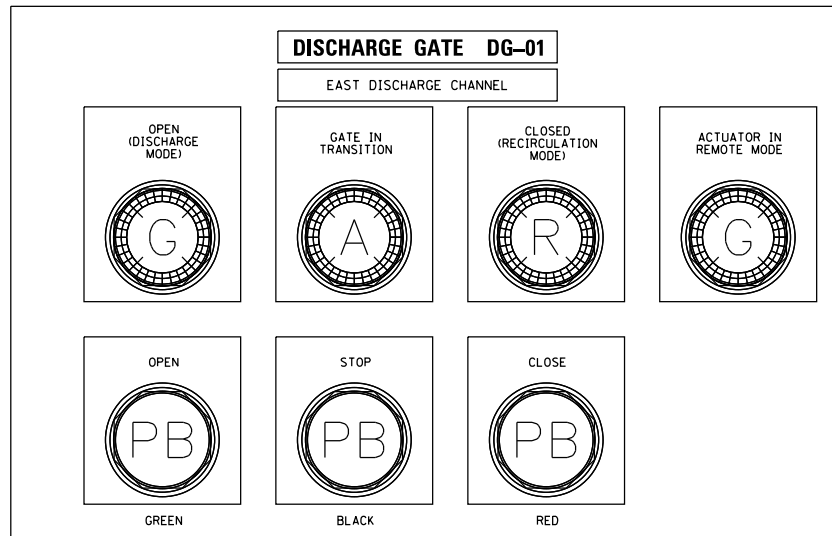
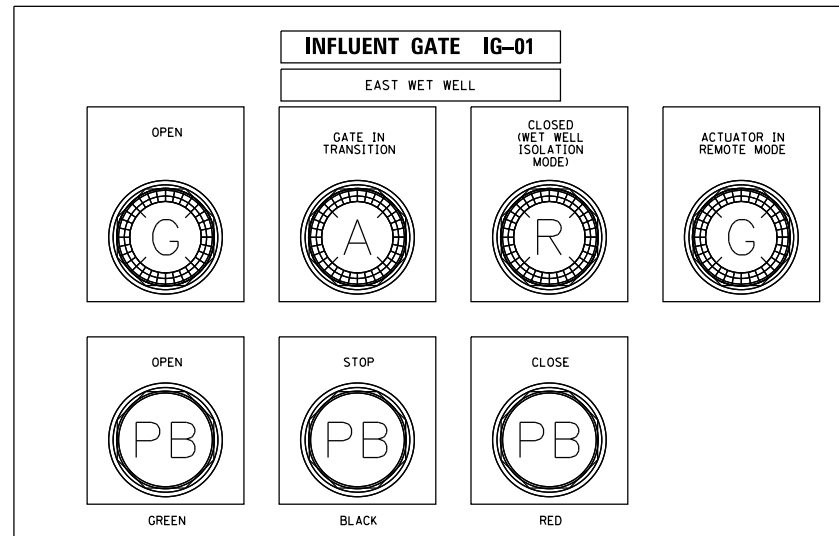
**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
MCC ELEVATIONS**

SCALE: 1/2"=1'-0" SHEET OF SHEETS STA. TO STA.

F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	186
CONTRACT NO. 62B78				
ILLINOIS FED. AID PROJECT				

SHEET E612

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**GATE CONTROL PANEL**  
DOOR MOUNTED DEVICE LAYOUT  
SCALE: NTS

FILE NAME = D191454-E613.DGN



USER NAME = bgreen

PLOT SCALE = 0:1' = 1/8"

PLOT DATE = 5/29/2019

DESIGNED - MEC - R. VAITLA

DRAWN - MEC - A. FREEMAN

CHECKED - MEC - J. ZURAD

DATE - 03/15/2019

REVISED -

REVISED -

REVISED -

REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

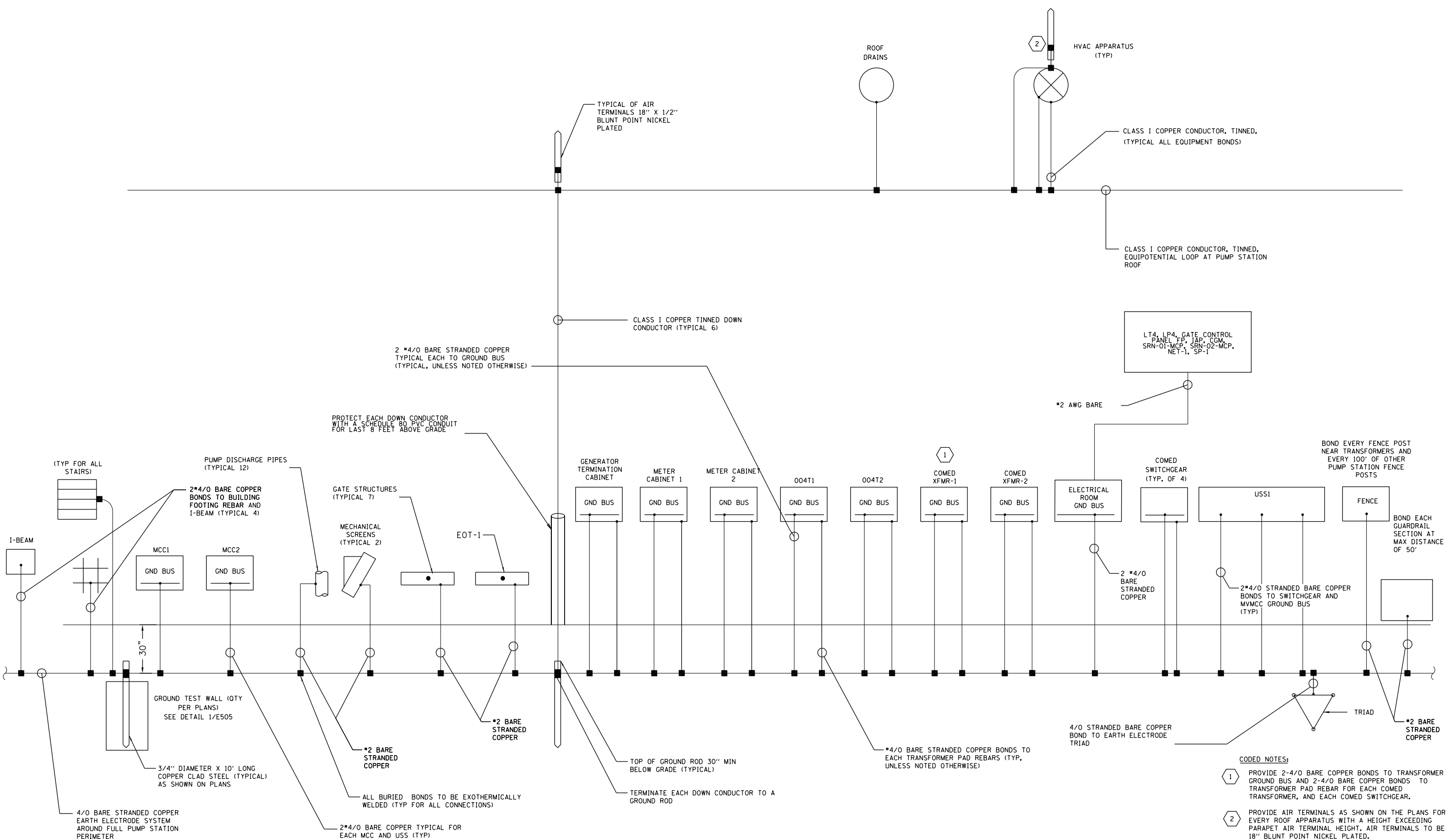
**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
GATE CONTROL PANEL**

SCALE: NONE SHEET OF SHEETS STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	187
CONTRACT NO. 62B78				
ILLINOIS FED. AID PROJECT				

SHEET  
E613

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- CODED NOTES:
- 1 PROVIDE 2-4/0 BARE COPPER BONDS TO TRANSFORMER GROUND BUS AND 2-4/0 BARE COPPER BONDS TO TRANSFORMER PAD REBAR FOR EACH COMED TRANSFORMER, AND EACH COMED SWITCHGEAR.
  - 2 PROVIDE AIR TERMINALS AS SHOWN ON THE PLANS FOR EVERY ROOF APPARATUS WITH A HEIGHT EXCEEDING PARAPET AIR TERMINAL HEIGHT. AIR TERMINALS TO BE 18" BLUNT POINT NICKEL PLATED.

**PUMP STATION GROUNDING AND LIGHTNING PROTECTION RISER DIAGRAM**

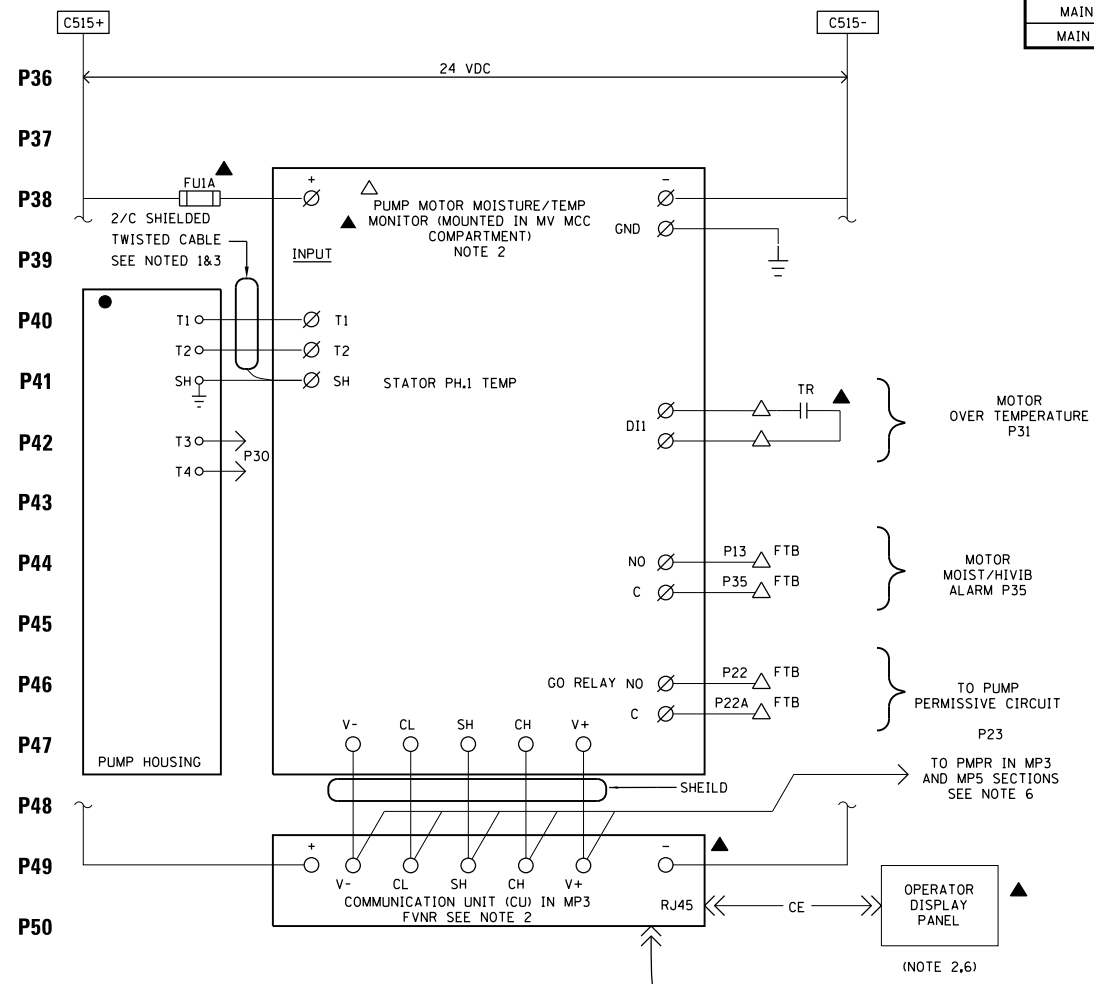
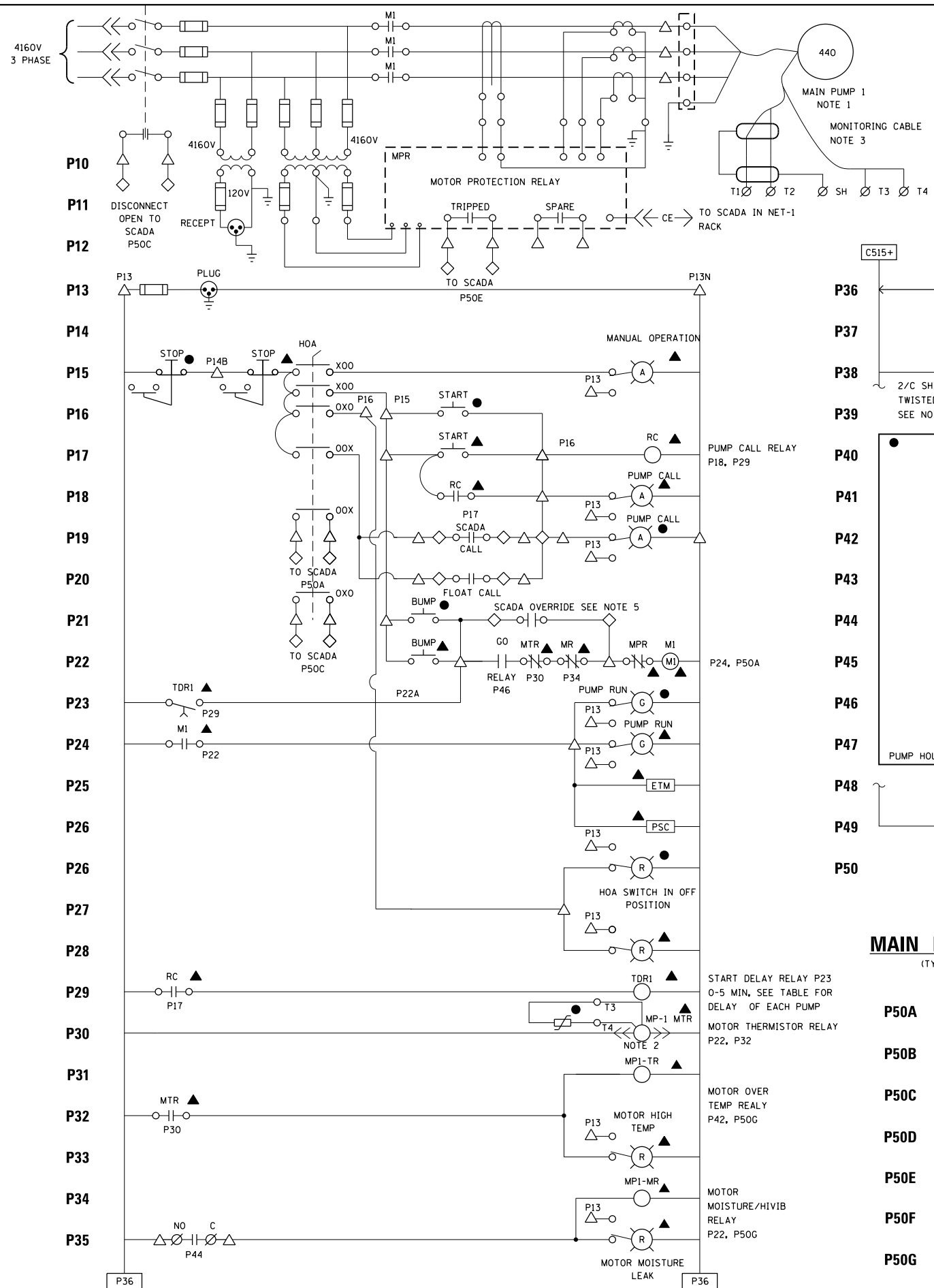
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	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.																											
290	3434-2321-R	COOK	232	188																												
CONTRACT NO. 62B78																																
ILLINOIS FED. AID PROJECT																																
SHEET																																
E621																																

LINE & WIRE NUMBER PREFIX			PUMP START DELAY
EQUIPMENT	PREFIX SHOWN ON DRAWING	PREFIX TO BE ASSIGNED	TDR1 DELAY
MAIN PUMP 1	P	MP1	15 SEC
MAIN PUMP 2	P	MP2	30 SEC
MAIN PUMP 3	P	MP3	45 SEC
MAIN PUMP 4	P	MP4	60 SEC
MAIN PUMP 5	P	MP5	75 SEC
MAIN PUMP 6	P	MP6	90 SEC
MAIN PUMP 7	P	MP7	105 SEC
MAIN PUMP 8	P	MP8	120 SEC
MAIN PUMP 9	P	MP9	135 SEC
MAIN PUMP 10	P	MP10	150 SEC

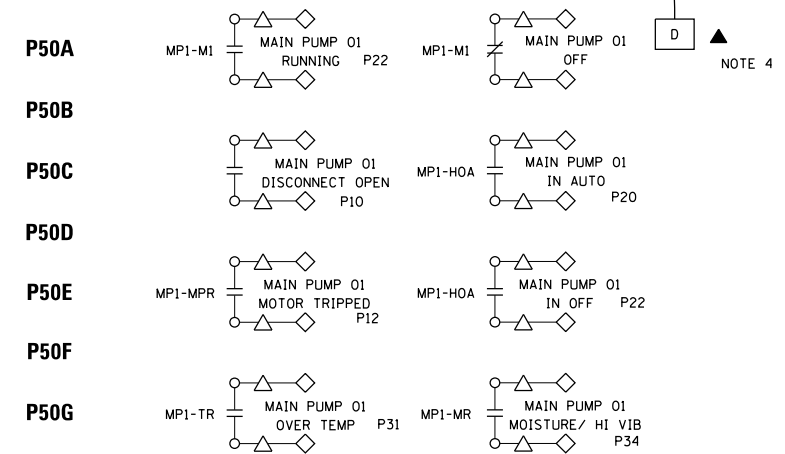
- PLAN NOTES:**
- SOME PUMP MANUFACTURERS MAY PROVIDE POWER AND MONITORING WIRES IN ONE CABLE. CONTRACTOR SHALL COORDINATE WITH THE PUMP MANUFACTURER.
  - PUMP MOTOR PROTECTION RELAY (PMR), ITS DISPLAY UNIT, MOTOR THERMISTOR RELAY AND COMMUNICATION UNIT ARE SUPPLIED BY THE PUMP MANUFACTURER. THESE UNITS SHALL BE INSTALLED IN RESPECTIVE MV MCC SECTIONS BY MV MCC MANUFACTURER. CONTRACTOR SHALL COORDINATE WITH BOTH MANUFACTURERS. PMR SHALL BE SET FOR AUTO RESET OPERATION. GROUND SHIELD AT ONE END ONLY.
  - PROVIDE PUMP MONITORING CABLE FROM PUMP CABLE TERMINATION BOX TO MV MCC AND COORDINATE THE CABLE TERMINATION WITH PUMP AND MV MCC MANUFACTURERS. THE CONTRACTOR SHALL IDENTIFY COLOR CODE OF THE VENDOR FURNISHED SENSOR CABLE. TERMINATE SHIELD AS SHOWN. CONTINUE SHIELD IN THE CONTROL CABLE TERMINATION BOX.
  - PROVIDE DISPLAY UNIT AND RJ-45 DATA JACK ON MV MCC DOOR IN THE SECTION WITH COMMUNICATION UNIT.
  - IF MORE THAN ONE PUMP FAILS DUE TO SEAL LEAK OR OVER-TEMP, THE FIRST PUMP WILL BE TAKEN OUT OF OPERATION SEQUENCE. SUBSEQUENT SEAL LEAK AND OVER-TEMP FAILURES WILL BE OVERRIDDEN BY SCADA SO THAT THE PUMPS SHALL CONTINUE TO OPERATE.
  - PROVIDE COMMUNICATION UNIT (CU) AND DISPLAY PANEL IN MP3, MP7, MP4 AND MP8 FVNR SECTIONS. WIRE CU IN MP3 TO PMR IN MP1, MP3 AND MP5. WIRE CU IN MP7 TO PMR IN MP7 AND MP9. WIRE CU IN MP4 TO PMR IN MP2, MP4 AND MP6. WIRE CU IN MP8 TO PMR IN MP8 AND MP10 SECTIONS.

- GENERAL NOTES:**
- CONTRACTOR SHALL PROVIDE SCHEMATIC SHOP DRAWINGS WITH WIRE AND TERMINAL NUMBERS AND COLOR CODING ASSOCIATED WITH SCADA PANEL AND PUMP CONTROL WIRING AS SHOWN ON MANUFACTURER'S EQUIPMENT TERMINATIONS. COORDINATE PRIOR TO SUBMITTING SHOP DRAWINGS. ALL DEVICES SHOWN SHALL BE COORDINATED, DEPICTED AND IDENTIFIED.
  - SEE SHEET E646 FOR POWER SOURCE TO PMR.

- LEGEND:**
- △ MV MCC TERMINATIONS
  - ▲ DEVICES IN MV MCC
  - ◇ TERMINATIONS IN SCADA PANEL
  - ◆ DEVICES IN SCADA PANEL
  - DEVICES LOCALLY MOUNTED
  - TERMINATIONS IN PUMP MOTOR PROTECTIONRELAY (PMR)



**MAIN PUMP NO. 1 CONTROL SCHEMATIC**  
(TYPICAL FOR MAIN PUMPS 2, 3, 4, 5, 6, 7, 8, 9 AND 10)



FILE NAME = D191454-E631.DGN  
 USER NAME = bgreen  
 DESIGNED - MEC - R. VAITLA  
 DRAWN - MEC - A. FREEMAN  
 PLOT SCALE = 0:1" = 1'-0"  
 PLOT DATE = 5/29/2019  
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DESIGNED - MEC - R. VAITLA	REVISIONS
DRAWN - MEC - A. FREEMAN	REVISIONS
CHECKED - MEC - J. ZURAD	REVISIONS
DATE - 03/15/2019	REVISIONS

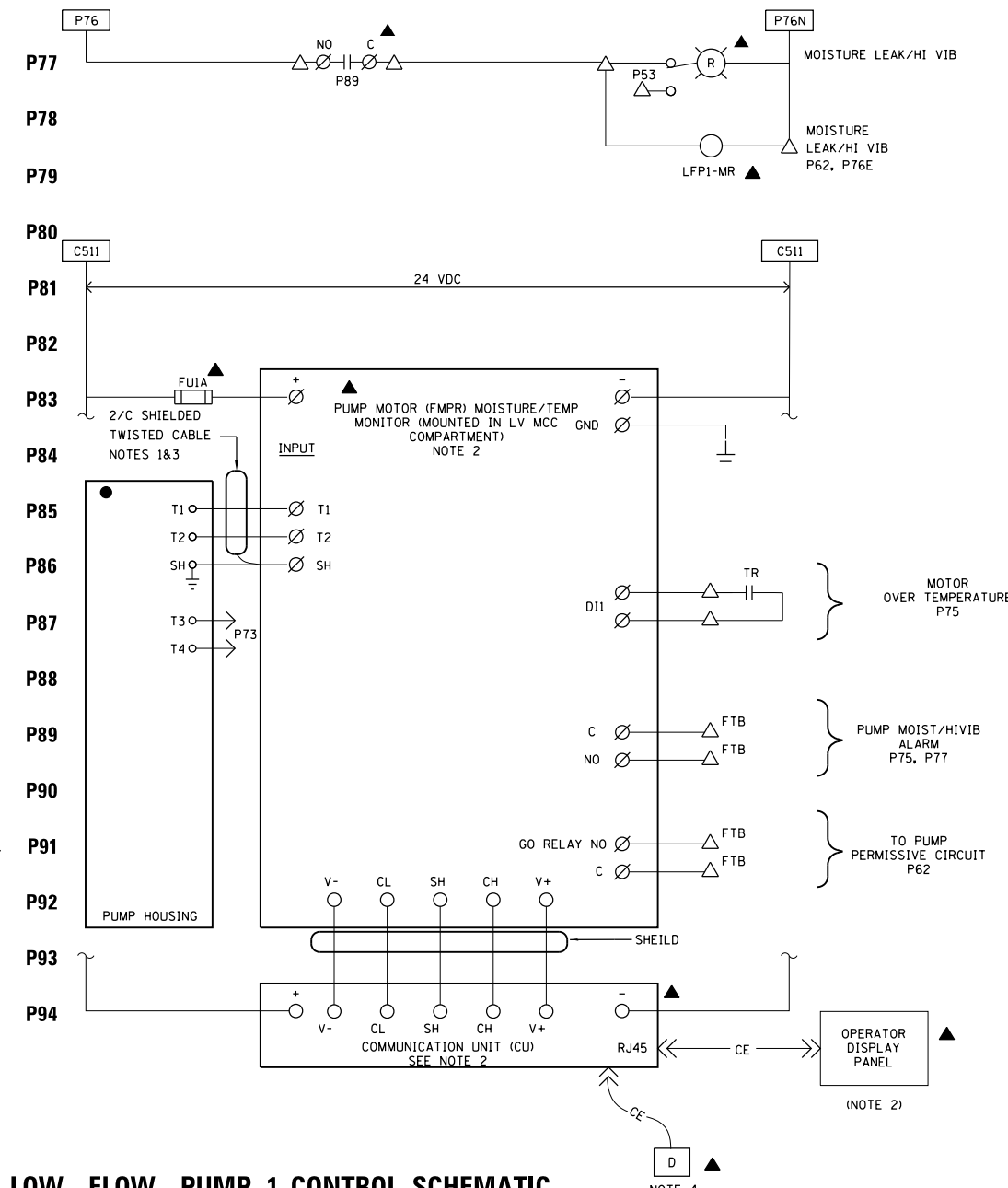
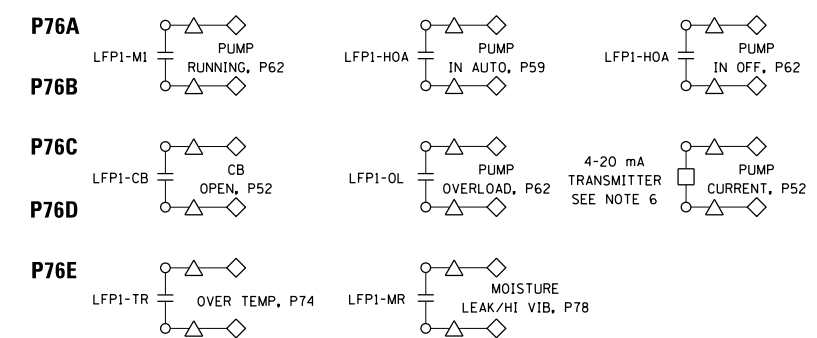
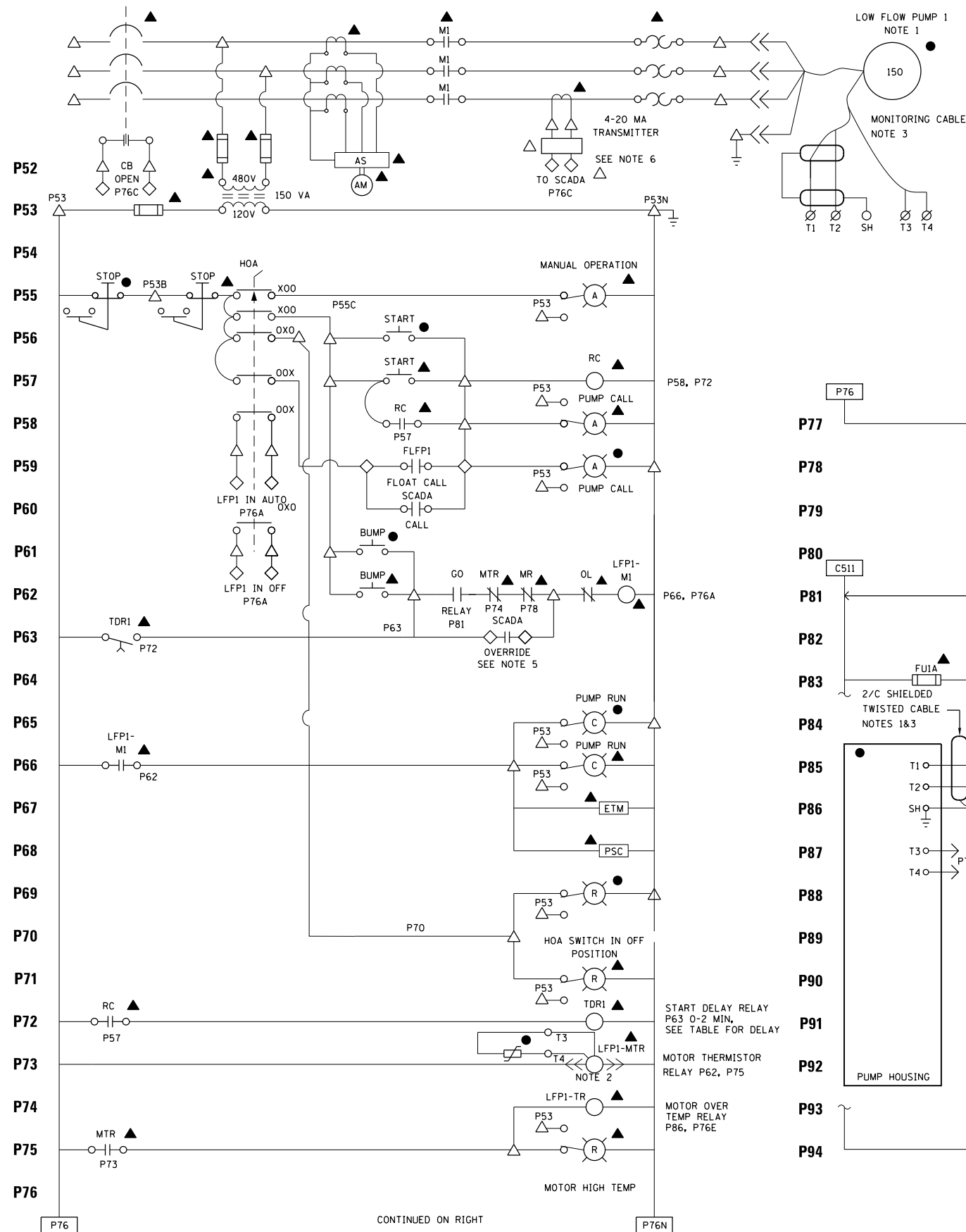
**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**I-290 PUMP STATION NO. 4 RECONSTRUCTION**  
**MAIN PUMP 1 CONTROL SCHEMATIC**

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	189
CONTRACT NO. 62B78				
ILLINOIS FED. AID PROJECT				

SHEET E631

LINE & WIRE NUMBER PREFIX			PUMP START DELAY
EQUIPMENT	PREFIX SHOWN ON DRAWING	PREFIX TO BE ASSIGNED	TDR1 DELAY
LOW FLOW PUMP 1	P	LFP1	5 SEC
LOW FLOW PUMP 2	P	LFP2	10 SEC



- PLAN NOTES:**
- SOME PUMP MANUFACTURERS MAY PROVIDE POWER AND MONITORING WIRES IN ONE CABLE. CONTRACTOR SHALL COORDINATE WITH THE PUMP MANUFACTURER.
  - PUMP MOTOR PROTECTION RELAY (PMPR) ITS DISPLAY UNIT, MOTOR THERMISTOR RELAY AND COMMUNICATION UNIT ARE SUPPLIED BY THE PUMP MANUFACTURER. THESE UNITS SHALL BE INSTALLED IN LFP1 AND LFP2 MCC SECTIONS BY MCC MANUFACTURER. CONTRACTOR SHALL COORDINATE WITH BOTH MANUFACTURERS. PMPR SHALL BE SET FOR AUTO RESET OPERATION.
  - PROVIDE PUMP MONITORING CABLE FROM PUMP CABLE TERMINATION BOX TO MCC AND COORDINATE THE CABLE TERMINATION WITH PUMP AND MV MCC MANUFACTURERS. GROUND SHIELD AT ONE END ONLY. THE CONTRACTOR SHALL IDENTIFY COLOR CODE OF THE VENDOR FURNISHED SENSOR CABLE. TERMINATE SHIELD AS SHOWN. CONTINUE SHIELD IN THE CONTROL CABLE TERMINATION BOX.
  - PROVIDE RJ-45 JACK IN MCC DOOR.
  - IF MORE THAN ONE PUMP FAILS DUE TO SEAL LEAK OR OVER-TEMP, THE FIRST PUMP WILL BE TAKEN OUT OF OPERATION SEQUENCE. SUBSEQUENT SEAL LEAK AND OVER-TEMP FAILURES WILL BE OVERRIDDEN BY SCADA SO THAT THE PUMPS SHALL CONTINUE TO OPERATE.
  - PROVIDE 4-20 mA CURRENT TRANSMITTER IN MCC BUCKET FOR PUMP CURRENT SIGNAL TO SCADA.

- GENERAL NOTES:**
- CONTRACTOR SHALL PROVIDE CONTROL SCHEMATIC SHOP DRAWINGS WITH WIRE AND TERMINAL NUMBERS AND COLOR CODING ASSOCIATED WITH SCADA PANEL AND PUMP CONTROL WIRING AS SHOWN ON MANUFACTURER'S EQUIPMENT TERMINATIONS, COORDINATE PRIOR TO SUBMITTING SHOP DRAWINGS. ALL DEVICES SHOWN SHALL BE COORDINATED, DEPICTED AND IDENTIFIED.
  - SEE SHEET E646 FOR POWER SOURCE TO PMPR.

- LEGEND:**
- △ MCC TERMINATIONS
  - ▲ DEVICES IN MCC
  - ◇ TERMINATIONS IN SCADA PANEL
  - ◆ DEVICES IN SCADA PANEL
  - DEVICES LOCALLY MOUNTED
  - TERMINATIONS IN PUMP MOTOR PROTECTION RELAY (PMPR)

**LOW FLOW PUMP 1 CONTROL SCHEMATIC**  
(TYPICAL FOR LOW FLOW PUMP 2)

FILE NAME = D191454-E632.DGN  
 USER NAME = bgreen  
 DESIGNED - MEC - R. VAITLA  
 DRAWN - MEC - A. FREEMAN  
 PLOT SCALE = 0:1" = 1'-0"  
 PLOT DATE = 5/29/2019  
 CHECKED - MEC - J. ZURAD  
 DATE - 03/15/2019



STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

I-290 PUMP STATION NO. 4 RECONSTRUCTION  
LOW FLOW PUMP 1 CONTROL SCHEMATIC

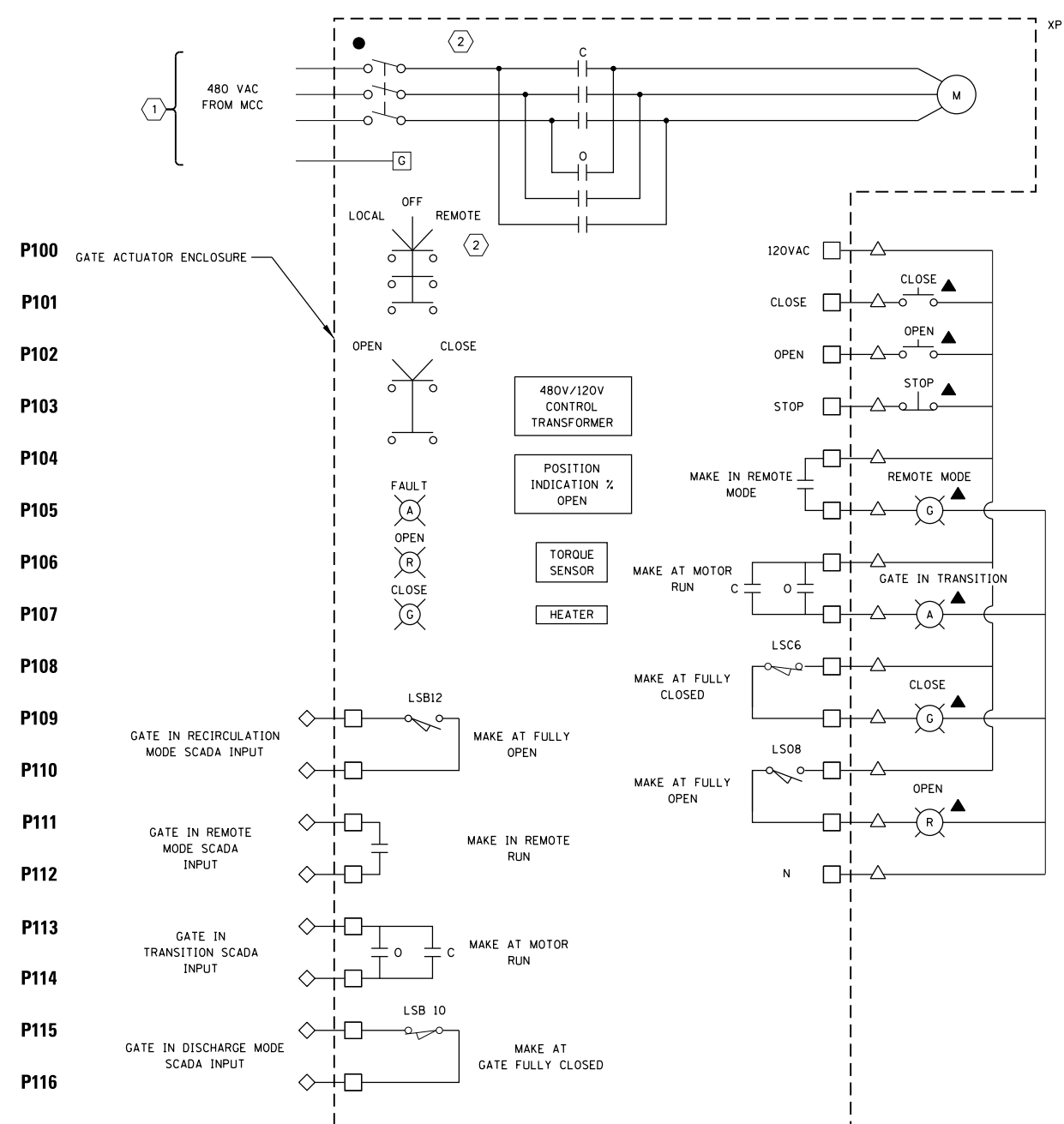
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290	3434-2321-R	COOK	232	190
CONTRACT NO. 62B78				

SHEET  
E632

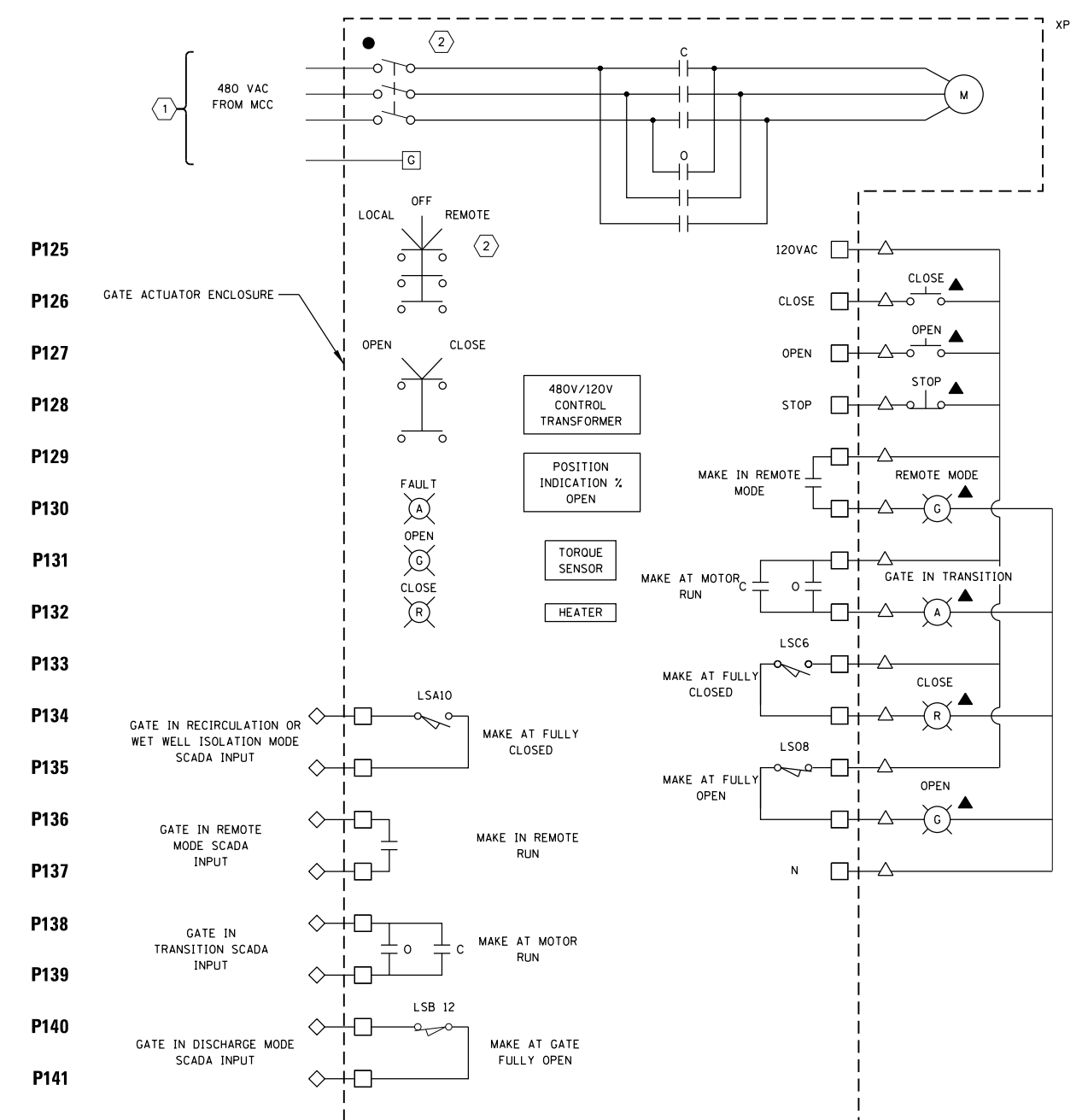
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ILLINOIS FED. AID PROJECT

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**RECIRCULATING SLUICE GATE ACTUATORS RG-01 AND RG-02**  
 (GATE SHOWN IN THE FULLY CLOSED POSITION)



**INLET SLUICE GATE ACTUATORS IG-01, IG-02 AND IG-03**  
 (GATE SHOWN IN THE FULLY OPEN POSITION)  
 (TYPICAL FOR DISCHARGE SLUICE GATE ACTUATORS, DG-01 AND DG-02)

SWITCH NUMBERS	VALVE/GATE POSITION		
	OPEN	INTERMEDIATE	CLOSE
LSC 5 (13)	█		
LSC 6 (14)		█	
LSO 7 (15)			█
LSO 8 (16)	█		
LSB 9 (17)		█	
LSA 10 (18)			█
LSB 11 (19)		█	
LSB 12 (20)			█

( — ) OPEN CONTACTS ( █ ) CLOSE CONTACTS

**(TYPICAL FOR ACTUATORS IG-01, IG-02, IG-03, DG-01, DG-02, RG-01, AND RG-02)**

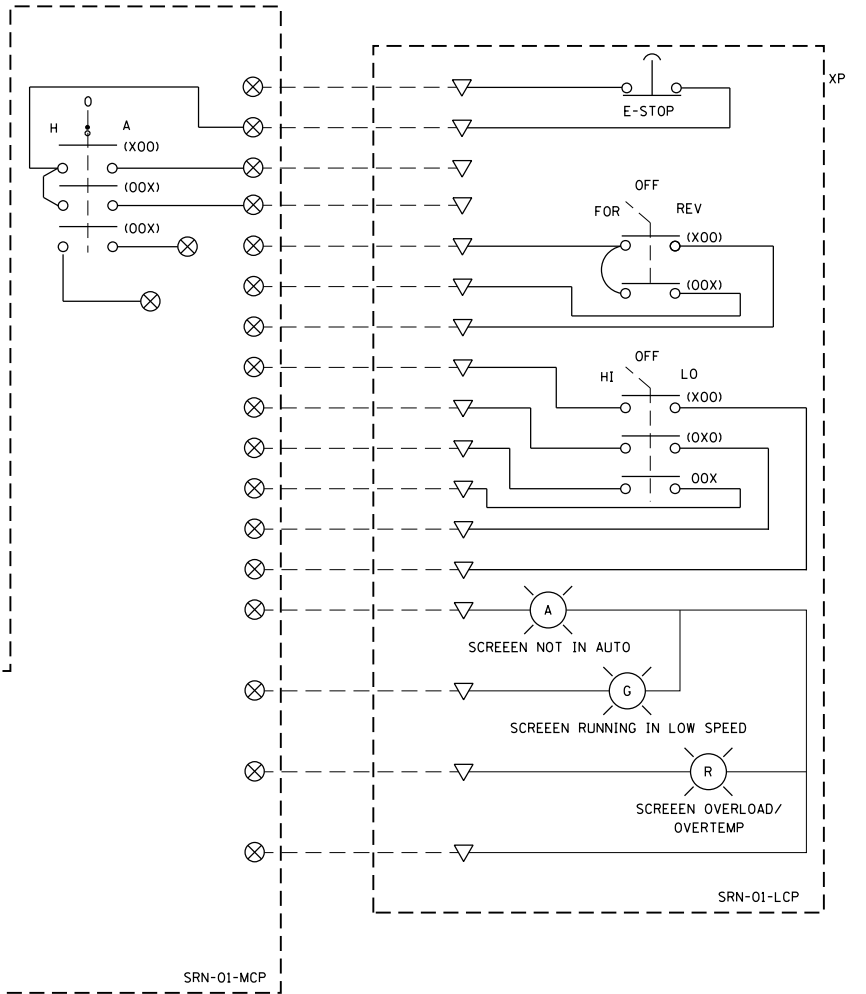
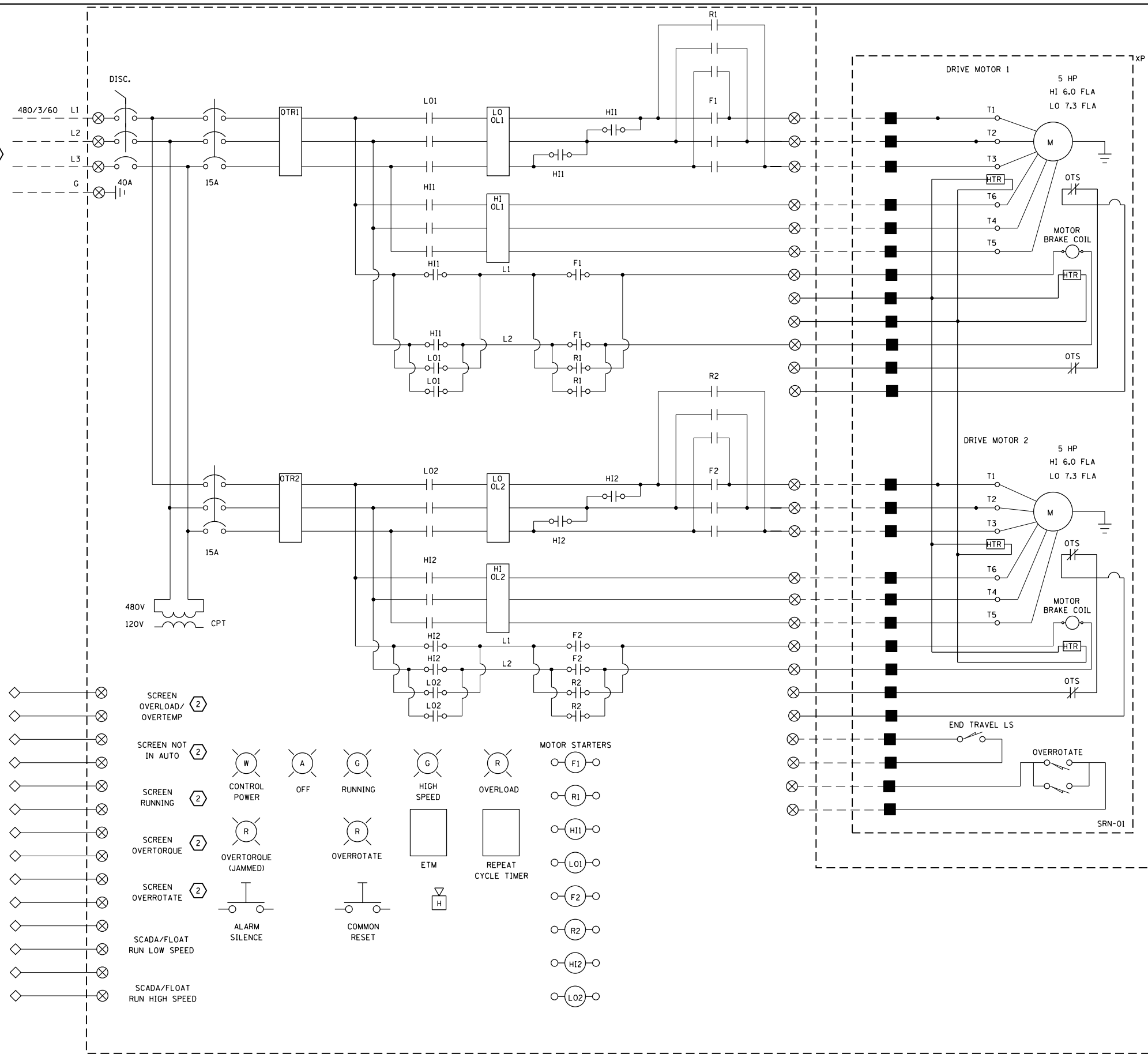
- LEGEND:**
- △ TERMINAL LOCATED IN GATE CONTROL PANEL
  - TERMINAL LOCATED IN GATE MOTOR STARTER
  - ◇ TERMINAL LOCATED IN SCADA PANEL
  - DEVICE LOCALLY MOUNTED
  - ▲ DEVICE LOCATED ON GATE CONTROL PANEL DOOR

- KEY NOTES:**
- 1 PROVIDE 480V DISCONNECT SWITCH WITH GATE ACTUATOR
  - 2 DISCONNECT SWITCH AND LOCAL-OFF-REMOTE SWITCH SHALL BE PAD-LOCKABLE

- NOTES:**
1. ALL DEVICES MOUNTED IN ACTUATOR ENCLOSURE UNLESS OTHERWISE NOTED.
  2. FOR EXPLOSION PROOF UNITS CONDUIT SEAL SHALL BE PLACED AS CLOSE AS PRACTICAL TO THE ACTUATOR BUT NO FURTHER THAN 18".

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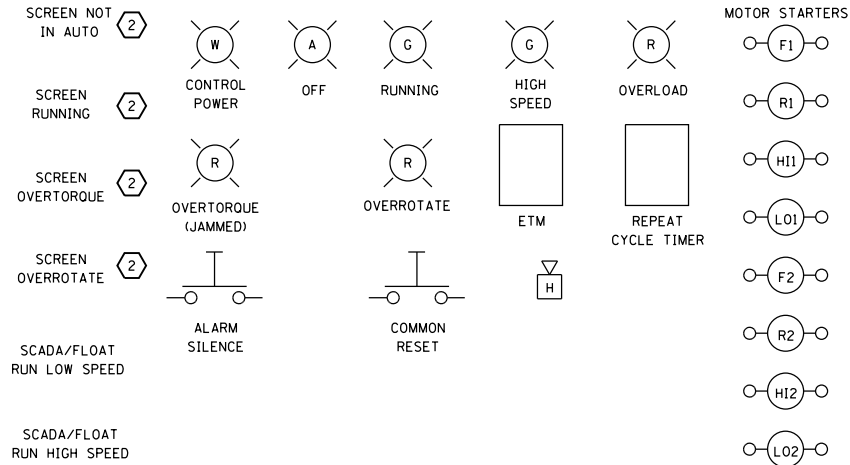


- GENERAL NOTES:**
- CONTRACTOR SHALL PROVIDE CONTROL SCHEMATIC SHOP DRAWINGS DEPICTING AND IDENTIFYING TERMINALS AND WIRE NUMBERS ASSOCIATED WITH SCADA PANEL AND TERMINAL NUMBERS AS THEY ARE DEPICTED ON MANUFACTURERS EQUIPMENT TERMINAL BLOCKS. COORDINATE PRIOR TO SUBMITTING SHOP DRAWINGS. ALL WIRED DEVICES SHALL BE COORDINATED, DEPICTED, AND IDENTIFIED.
  - ALL CIRCUIT BREAKERS AND DISCONNECTS SHALL BE PAD LOCKABLE IN OFF POSITION.
  - PROVIDE CONDUIT SEAL FITTINGS AS CLOSE AS PRACTICAL AT THE ENTRY TO EXPLOSION PROOF ENCLOSURE BUT NO FURTHER THAN 18".

- KEY NOTES:**
- SRN-01 IS POWERED FROM MCC1-3CR AND SRN-02 IS POWERED FROM MCC2 11CL.
  - PROVIDE DRY CONTACTS FOR ALL SCADA INPUTS.

- LEGEND:**
- ⊗ TERMINAL IN MCP
  - TERMINAL SCREEN JUNCTION BOX
  - ▽ TERMINAL IN LCP
  - ◇ TERMINAL IN SCADA PANEL

**EAST MECHANICAL SCREEN, SRN-01 CONTROL WIRING (TYPICAL FOR WEST MECHANICAL SCREEN, SRN-02)**



FILE NAME = D191454-E634.DGN	USER NAME = bgreen	DESIGNED - MEC - R. VAITLA	REVISED -
		DRAWN - MEC - A. FREEMAN	REVISED -
		CHECKED - MEC - J. ZURAD	REVISED -
		DATE - 03/15/2019	REVISED -

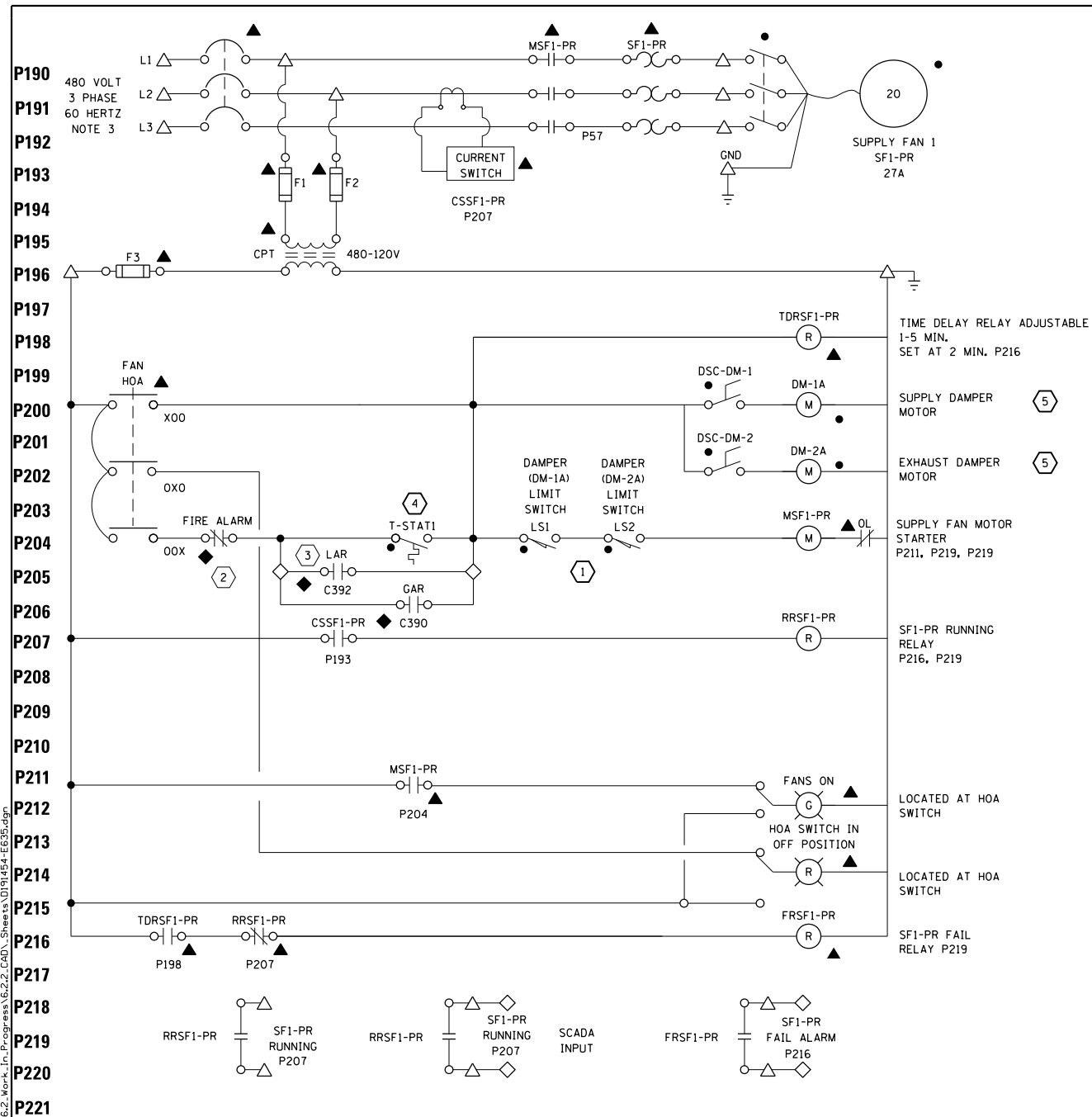
STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION

**I-290 PUMP STATION NO. 4 RECONSTRUCTION**  
**MECHANICAL SCREEN CONTROL WIRING**  
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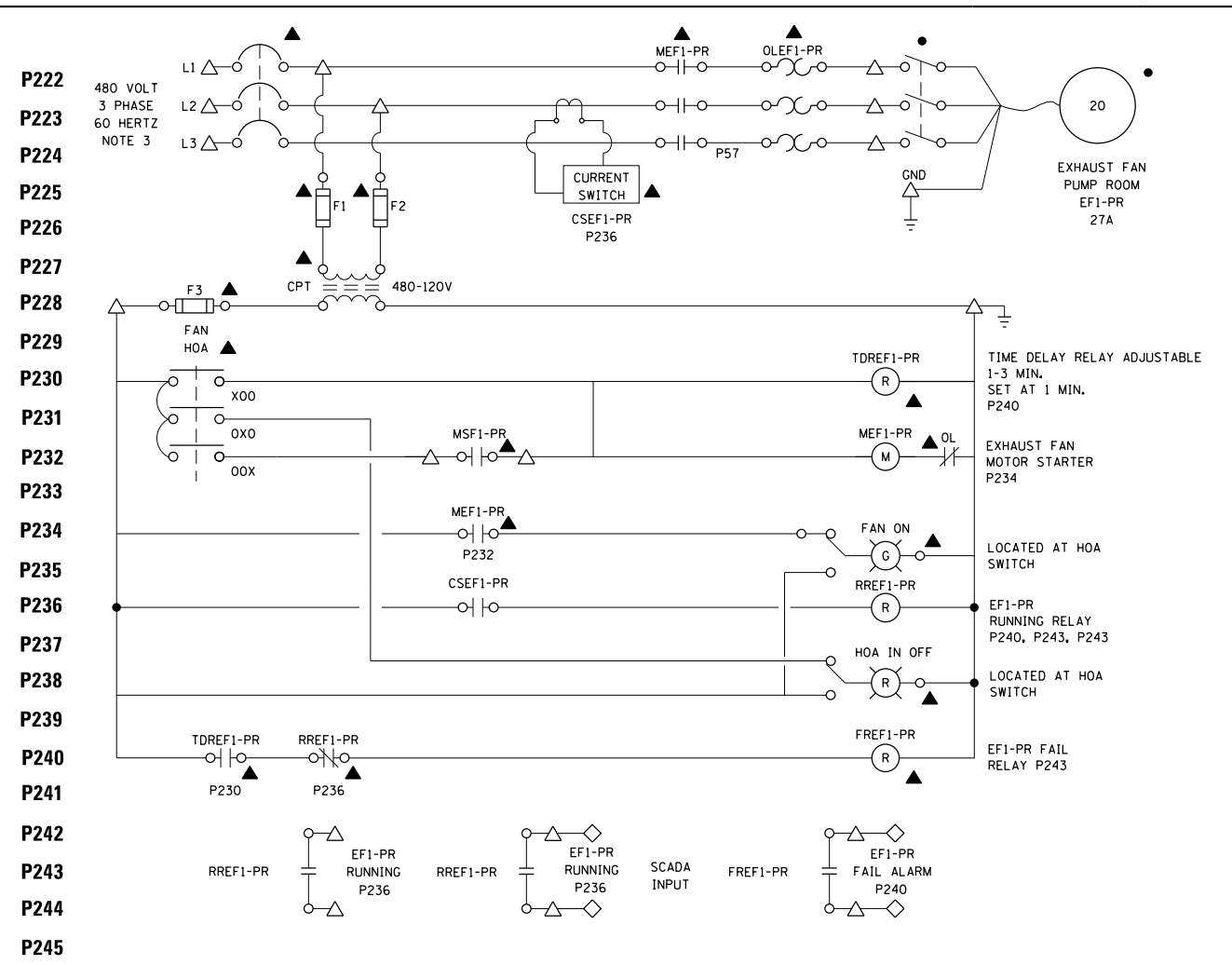
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	192
CONTRACT NO. 62B78				
ILLINOIS FED. AID PROJECT				

SHEET E634





**SUPPLY FAN 1 PUMP ROOM SF1-PR (TYPICAL FOR SF2-PR)**



**EXHAUST FAN 1 PUMP ROOM - EF1-PR TYPICAL FOR EF2-PR**

**GENERAL NOTES:**

- CONTRACTOR SHALL PROVIDE CONTROL SCHEMATIC SHOP DRAWINGS DEPICTING AND IDENTIFYING TERMINALS AND WIRE NUMBERS ASSOCIATED WITH SCADA PANEL AND TERMINAL NUMBERS AS THEY ARE DEPICTED ON MANUFACTURERS EQUIPMENT TERMINAL BLOCKS. COORDINATE PRIOR TO SUBMITTING SHOP DRAWINGS. ALL WIRED DEVICES SHALL BE COORDINATED, DEPICTED, AND IDENTIFIED.
- ALL CIRCUIT BREAKERS AND DISCONNECTS SHALL BE PAD LOCKABLE IN OFF POSITION.
- SEE E602 FOR POWER TO SUPPLY AND EXHAUST FANS.
- PROVIDE CONDUIT SEAL FITTINGS AT THE ENTRY TO EXPLOSION PROOF ENCLOSURE.

**KEY NOTES:**

- LIMIT SWITCH IS SHOWN IN THE DAMPER CLOSED POSITION. LIMIT SWITCH CLOSES WHEN DAMPER IS OPEN.
- CONTACT OPENS WHEN FIRE ALARM PRESENT
- CONTACT CLOSES WHEN LIGHTS ARE ON IN THE PUMP ROOM.
- SF1-PR AND SF2-PR ARE CONTROLLED THROUGH A SINGLE THERMOSTAT. PROVIDE THERMOSTAT WITH DOUBLE POLE DOUBLE THROW CONTACTS TO CONTROL BOTH FANS.
- SF2-PR SUPPLY AND EXHAUST DAMPER MOTORS ARE DM-1B AND DM-2B RESPECTIVELY.

- LEGEND:**
- △ TERMINAL IN MCC
  - TERMINAL IN CONTROL PANEL
  - ◇ TERMINAL IN SCADA PANEL
  - ◇ TERMINAL IN REMOTE DEVICE
  - ▲ DEVICE LOCATED IN MCC
  - DEVICE MOUNTED LOCALLY IN WATERPROOF AND EXPLOSION PROOF STATION
  - ◆ DEVICE IN SCADA PANEL



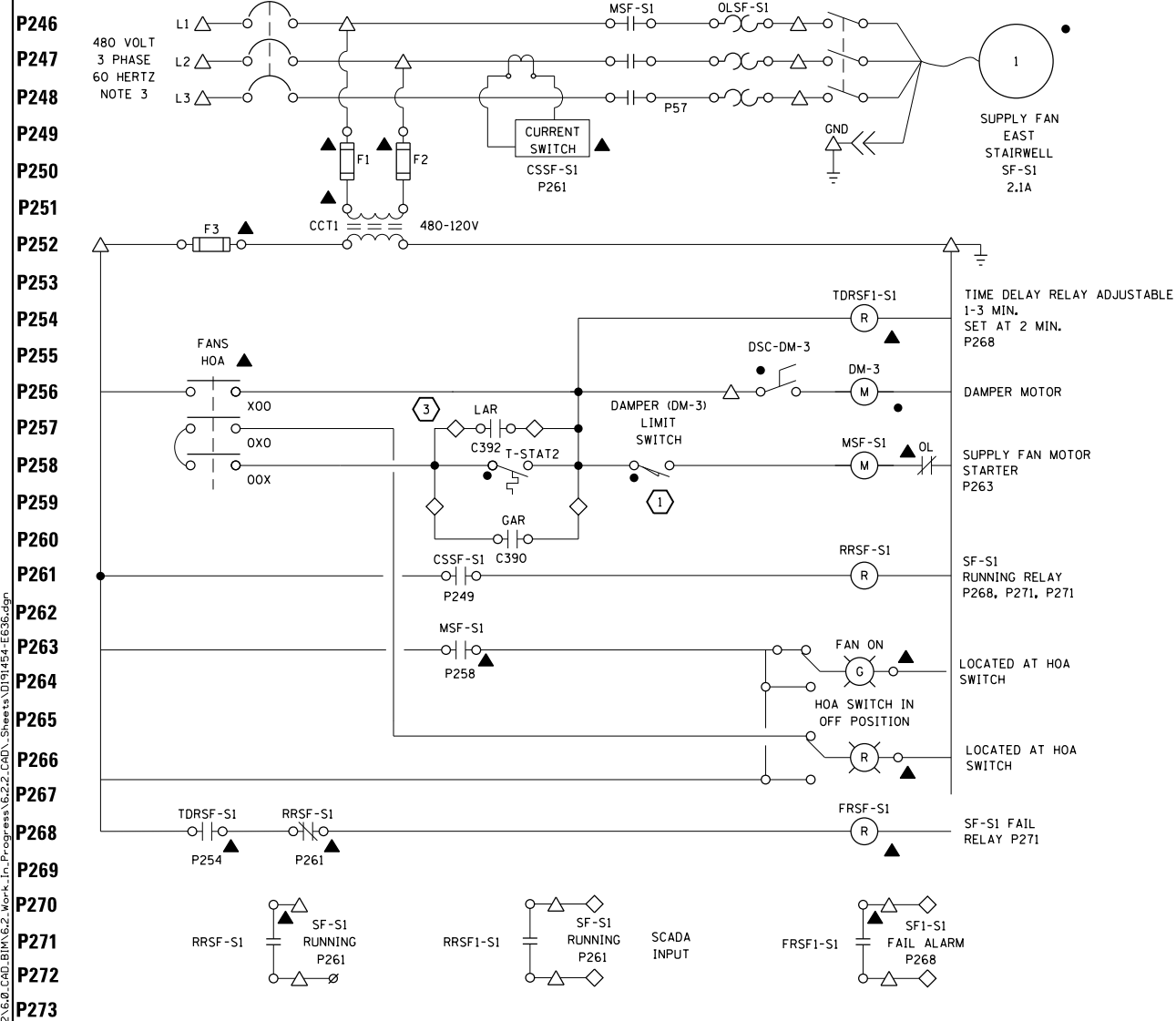
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		DRAWN - MEC - A. FREEMAN	REVISED -
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		DATE - 03/15/2019	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

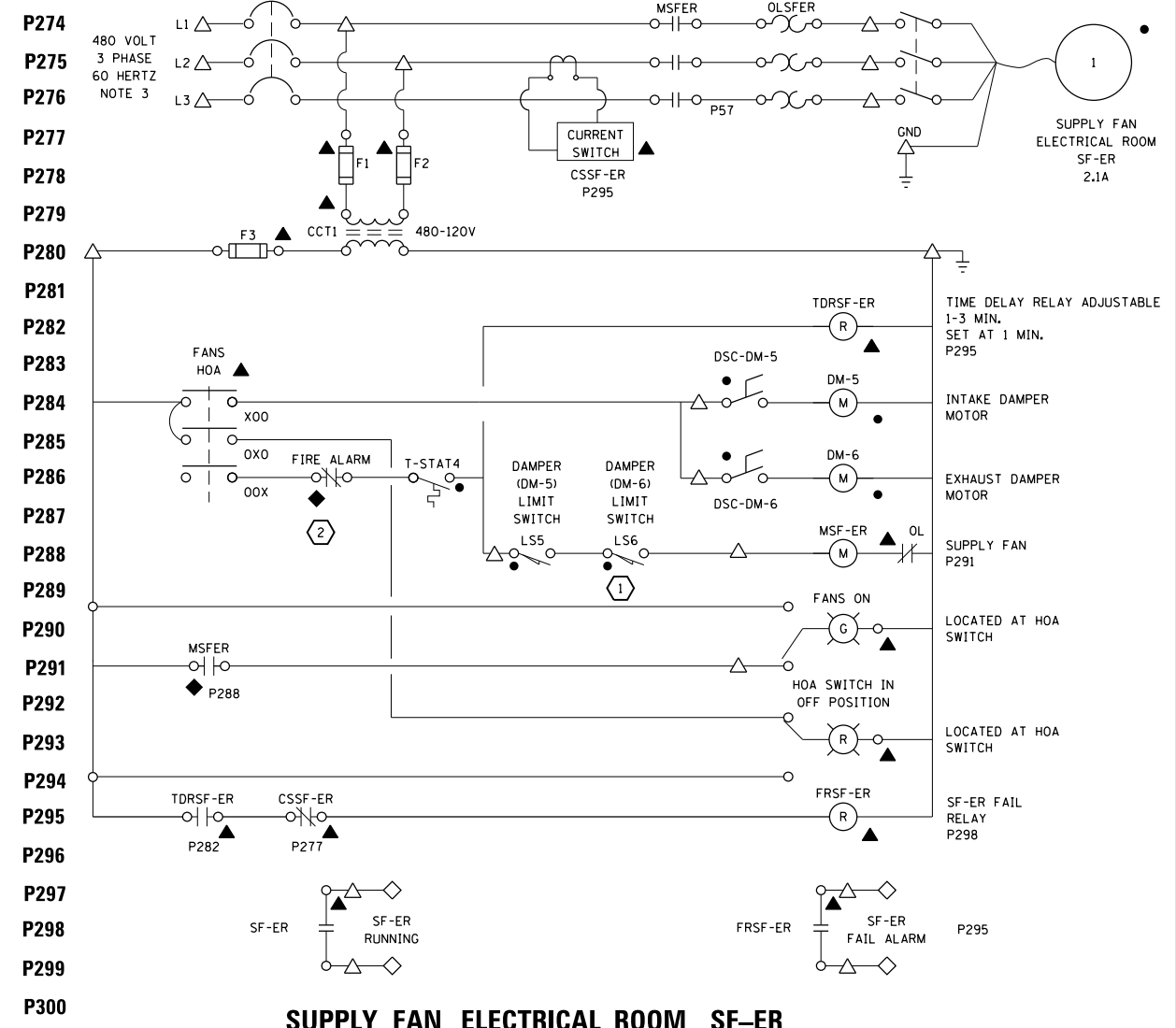
**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
HVAC CONTROL SCHEMATICS I**

SCALE: NONE SHEET OF SHEETS STA. TO STA.

SHEET E635		TOTAL SHEETS 232		SHEET NO. 193	
F.A.I. RTE.	SECTION	COUNTY	CONTRACT NO. 62B78		
290	3434-232I-R	COOK	ILLINOIS FED. AID PROJECT		



**SUPPLY FAN EAST STAIRWELL - SF-S1**  
(TYPICAL FOR SUPPLY FAN WEST STAIRWELL - SF-S2)



**SUPPLY FAN ELECTRICAL ROOM SF-ER**

- LEGEND:**
- △ TERMINAL IN MCC
  - ◇ TERMINAL IN CONTROL PANEL
  - ◇ TERMINAL IN SCADA PANEL
  - ∅ TERMINAL IN REMOTE DEVICE
  - DEVICE LOCATED IN MCC
  - DEVICE MOUNTED LOCALLY IN WATERPROOF AND EXPLOSION PROOF STATION
  - ◆ DEVICE IN SCADA PANEL

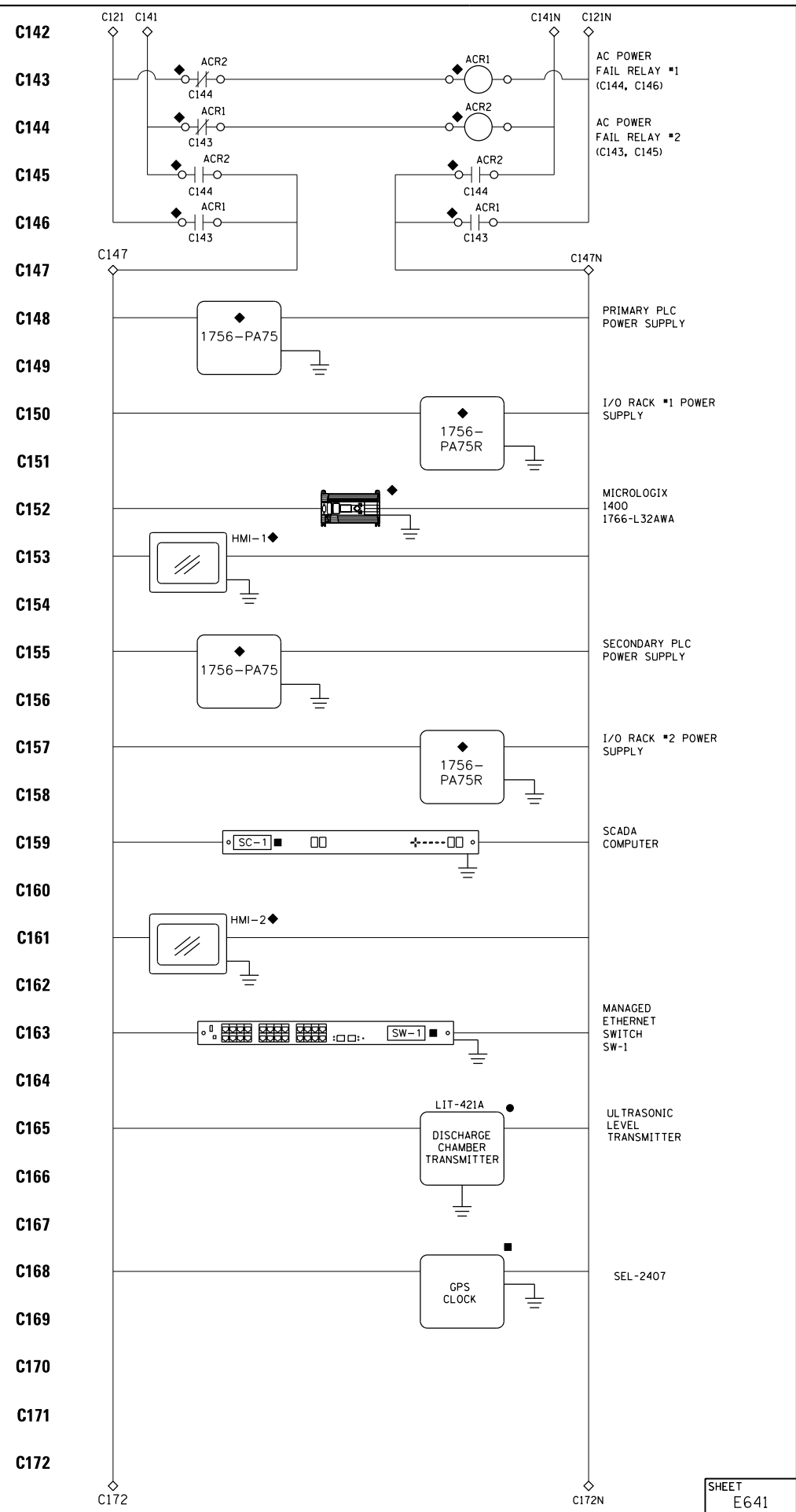
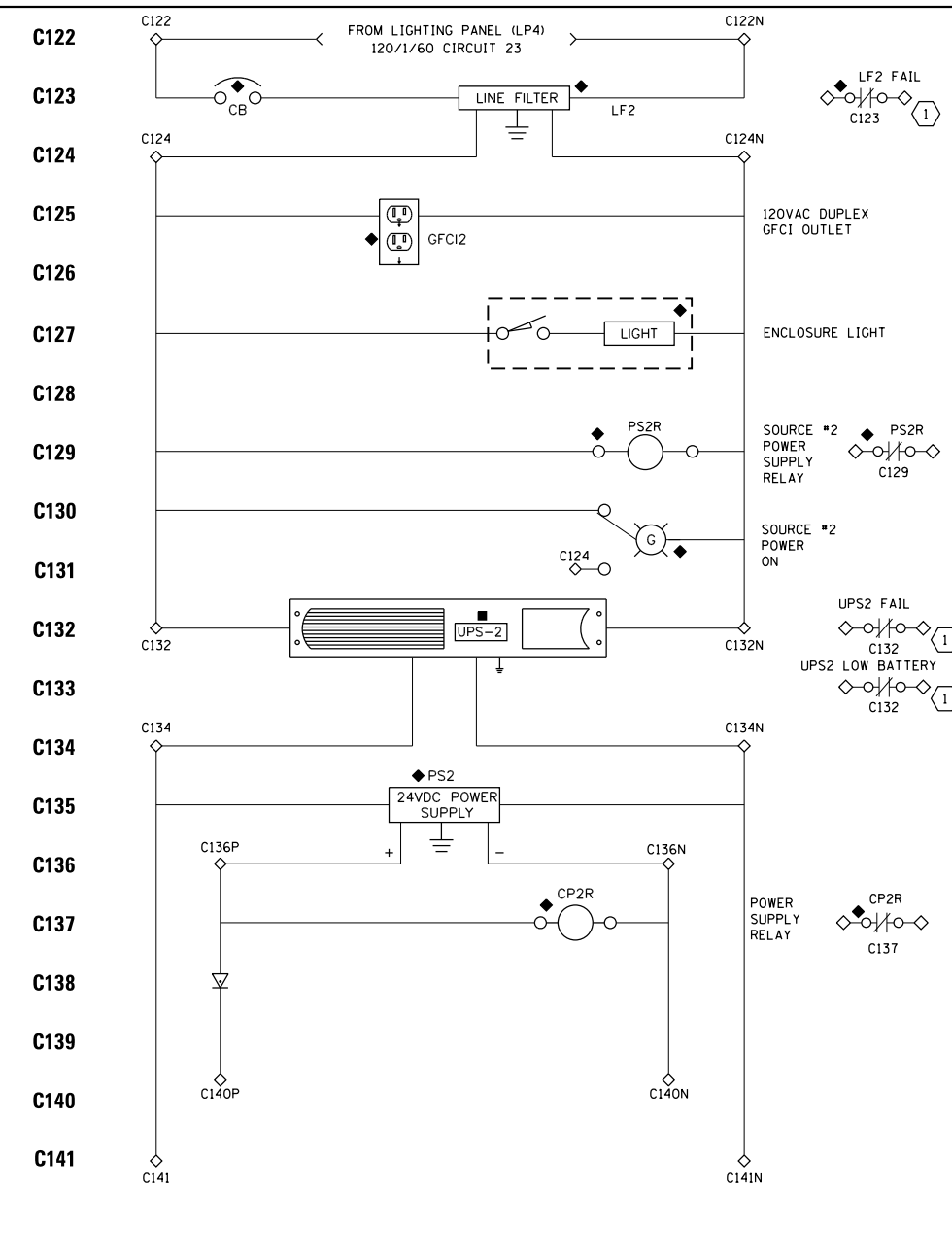
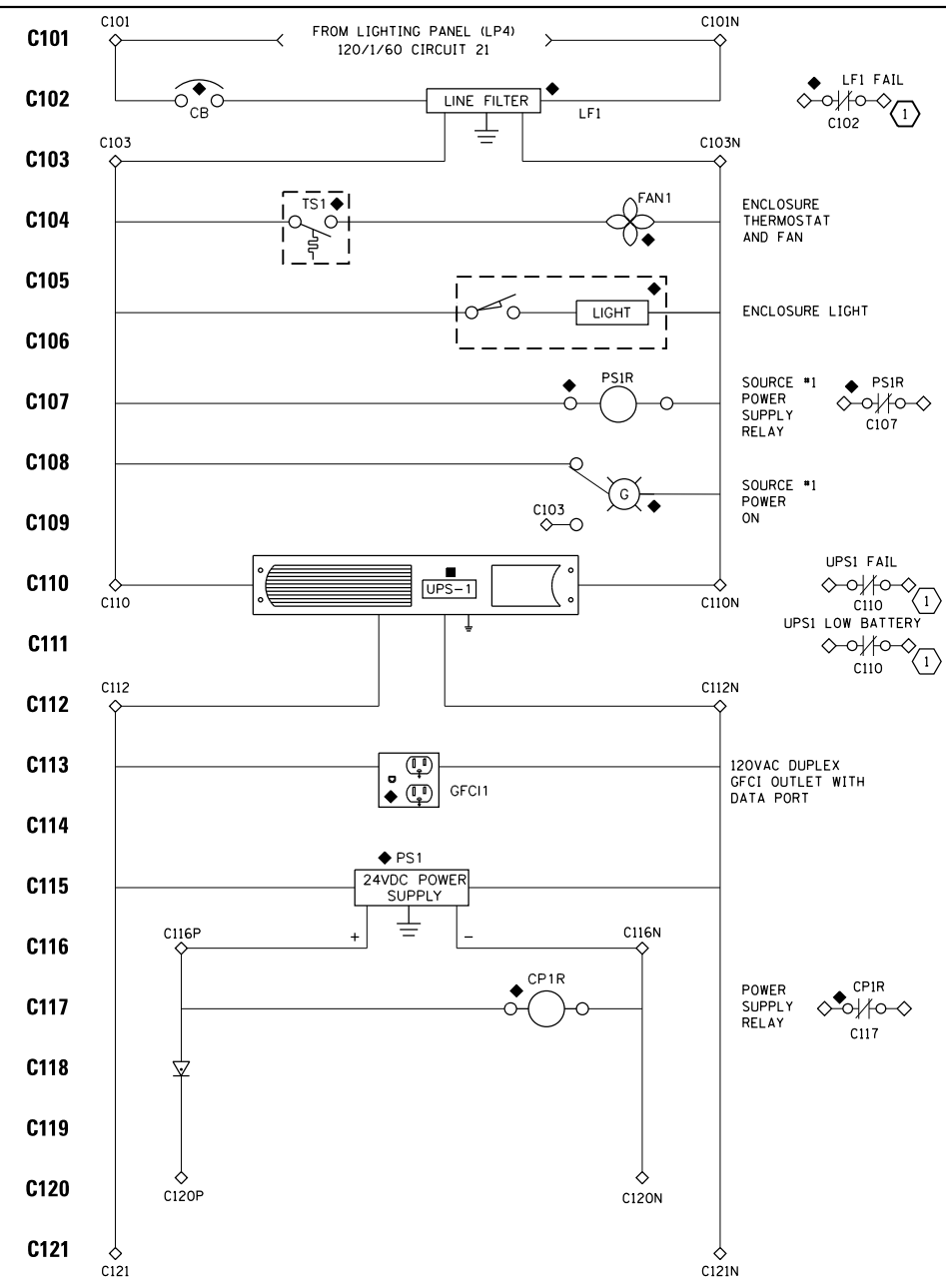
- GENERAL NOTES:**
1. CONTRACTOR SHALL PROVIDE CONTROL SCHEMATIC SHOP DRAWINGS DEPICTING AND IDENTIFYING TERMINALS AND WIRE NUMBERS ASSOCIATED WITH SCADA PANEL AND TERMINAL NUMBERS AS THEY ARE DEPICTED ON MANUFACTURERS EQUIPMENT TERMINAL BLOCKS. COORDINATE PRIOR TO SUBMITTING SHOP DRAWINGS, ALL WIRED DEVICES SHALL BE COORDINATED, DEPICTED, AND IDENTIFIED.
  2. ALL CIRCUIT BREAKERS AND DISCONNECTS SHALL BE PAD LOCKABLE IN OFF POSITION.
  3. SEE E602 FOR POWER SOURCE TO FANS.
  4. PROVIDE CONDUIT SEAL FITTINGS AT THE ENTRY TO EXPLOSION PROOF ENCLOSURE.

- KEY NOTES:**
- 1 LIMIT SWITCH IS SHOWN IN THE DAMPER CLOSED POSITION. LIMIT SWITCH CLOSURES WHEN DAMPER IS OPEN.
  - 2 CONTACT OPENS WHEN FIRE ALARM PRESENT
  - 3 CONTACT CLOSURES WHEN LIGHTS ARE ON IN THE PUMP ROOM. SEE DRAWING E651 FOR LIGHTING CIRCUITS.

USER NAME = bgreen	DESIGNED - MEC - R. VAITLA	REVISED -
PLOT SCALE = 0.1" = 1"	DRAWN - MEC - A. FREEMAN	REVISED -
PLOT DATE = 5/29/2019	CHECKED - MEC - J. ZURAD	REVISED -
	DATE - 03/15/2019	REVISED -

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	194
CONTRACT NO. 62B78				
ILLINOIS FED. AID PROJECT				

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- LEGEND:**
- △ MCC TERMINATIONS
  - ▲ DEVICES IN MCC
  - ◇ TERMINATIONS IN SCADA PANEL
  - ◆ DEVICES IN SCADA PANEL
  - DEVICES LOCALLY MOUNTED
  - DEVICES IN NETWORK RACK

- GENERAL NOTES:**
1. CONTROL CIRCUIT DRAWINGS DEPICT GENERAL DEVICE WIRING PRACTICES AND DOES NOT INCLUDE ALL CIRCUIT PROTECTIVE AND CONTROL DEVICES SUCH AS FUSES, CIRCUIT BREAKERS, MOV'S, ETC. THESE DEVICES SHALL BE INCLUDED IN DETAILED SHOP DRAWINGS BY CONTRACTOR.
  2. CONTRACTOR SHALL PROVIDE CONTROL SCHEMATIC SHOP DRAWINGS DEPICTING AND IDENTIFYING TERMINALS AND WIRE NUMBERS ASSOCIATED WITH SCADA PANEL AND TERMINAL NUMBERS AS THEY ARE DEPICTED ON MANUFACTURERS EQUIPMENT TERMINAL BLOCKS. COORDINATE PRIOR TO SUBMITTING SHOP DRAWINGS. ALL WIRED DEVICES SHALL BE COORDINATED, DEPICTED, AND IDENTIFIED.

- KEY NOTES:**
- ① FAIL-SAFE CONTACT. IN THE EVENT OF A COMPONENT FAILURE OR UNHEALTHY SYSTEM CONDITION, CONTACT SHALL REVERT TO NORMALLY CLOSED STATE.

FILE NAME = D191454-E641.DGN	USER NAME = bgreen	DESIGNED - MEC - P. DE SILVA	REVISED -
		DRAWN - MEC - A. FREEMAN	REVISED -
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		DATE - 03/15/2019	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

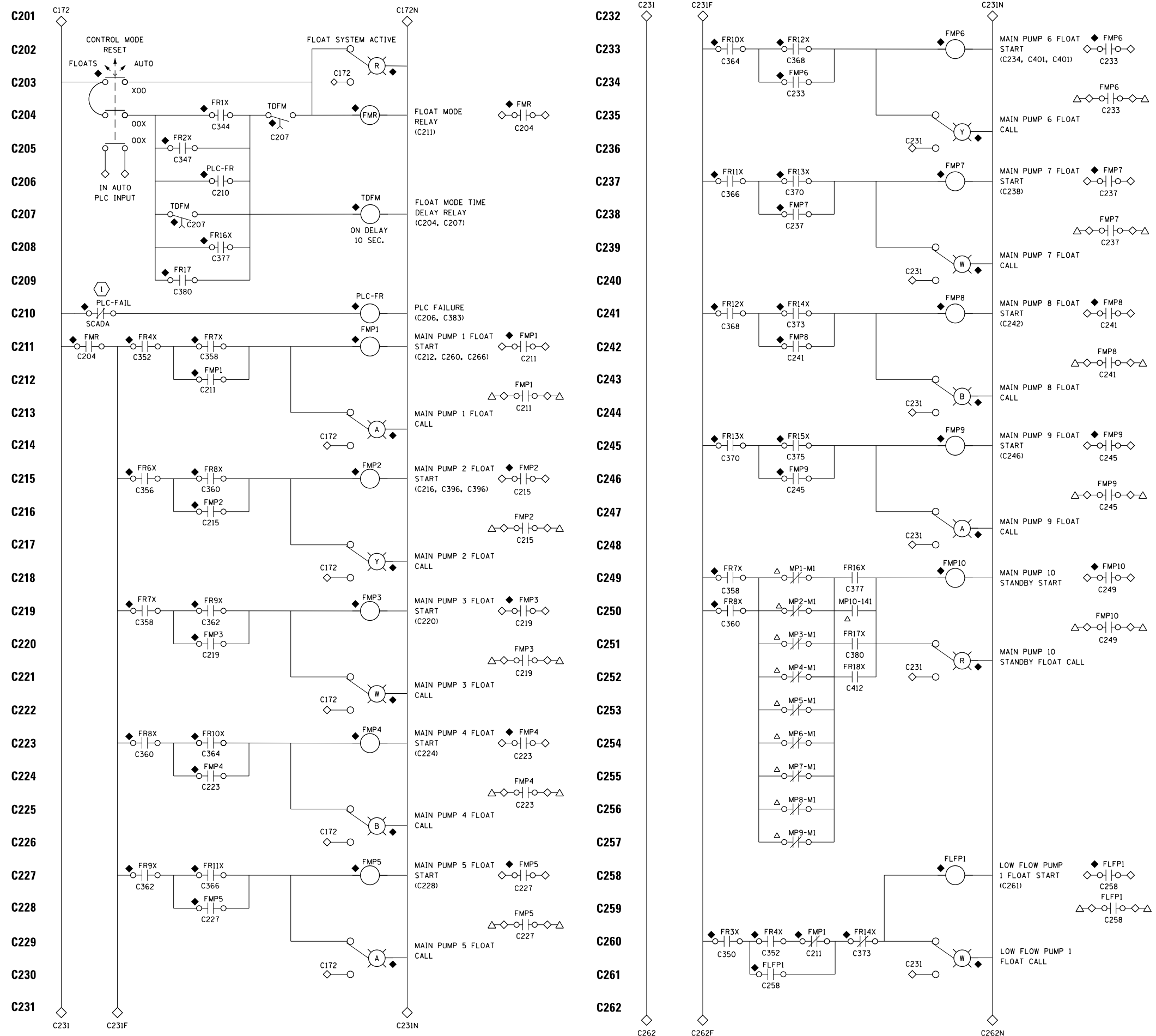
**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
SCADA PANEL SCHEMATIC I**

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	195
CONTRACT NO. 62B78				
ILLINOIS FED. AID PROJECT				

SHEET  
E641

SCALE: NONE SHEET OF SHEETS STA. TO STA.

P:\1\4\454\454\SCADA\Documents\001915\CON0078431\00000000027972\G6.0\_CAD\_BIM\G6.2\_Work\In\_Progress\G6.2\_CAD\_Sheets\0191454-E642.dgn



- GENERAL NOTES:**
- CONTROL CIRCUIT DRAWINGS DEPICT GENERAL DEVICE WIRING PRACTICES AND DOES NOT INCLUDE ALL CIRCUIT PROTECTIVE AND CONTROL DEVICES SUCH AS FUSES, CIRCUIT BREAKERS, MOV'S, ETC. THESE DEVICES SHALL BE INCLUDED IN DETAILED SHOP DRAWINGS BY CONTRACTOR.
  - CONTRACTOR SHALL PROVIDE CONTROL SCHEMATIC SHOP DRAWINGS DEPICTING AND IDENTIFYING TERMINALS AND WIRE NUMBERS ASSOCIATED WITH SCADA PANEL AND TERMINAL NUMBERS AS THEY ARE DEPICTED ON MANUFACTURERS EQUIPMENT TERMINAL BLOCKS. COORDINATE PRIOR TO SUBMITTING SHOP DRAWINGS. ALL WIRED DEVICES SHALL BE COORDINATED, DEPICTED, AND IDENTIFIED.

- KEY NOTES:**
- 1 FAIL-SAFE CONTACT. IN THE EVENT OF A COMPONENT FAILURE OR UNHEALTHY SYSTEM CONDITION, CONTACT SHALL REVERT TO NORMALLY CLOSED STATE. PLC FAIL OUTPUT. ALSO DE-ENERGIZES WHEN PRIMARY AND SECONDARY LEVEL ELEMENTS ARE OUT OF RANGE, AND/OR BOTH PLC PROCESSORS FAIL.

- LEGEND:**
- △ TERMINAL IN MCC
  - ◇ TERMINAL IN SCADA PANEL
  - ▲ DEVICE LOCATED IN MCC
  - ◆ DEVICE IN SCADA PANEL
  - DEVICE FIELD MOUNTED
  - ↑ RISING WATER LEVEL TRIGGER
  - ↓ FALLING WATER LEVEL TRIGGER
  - ⊠ TERMINAL IN SCREEN MCP



FILE NAME = D191454-E642.DGN	USER NAME = bgreen	DESIGNED - MEC - P. DE SILVA	REVISED -
		DRAWN - MEC - A. FREEMAN	REVISED -
		CHECKED - MEC - J. ZURAD	REVISED -
		DATE - 03/15/2019	REVISED -

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

**I-290 PUMP STATION NO. 4 RECONSTRUCTION**  
**SCADA PANEL SCHEMATIC II**

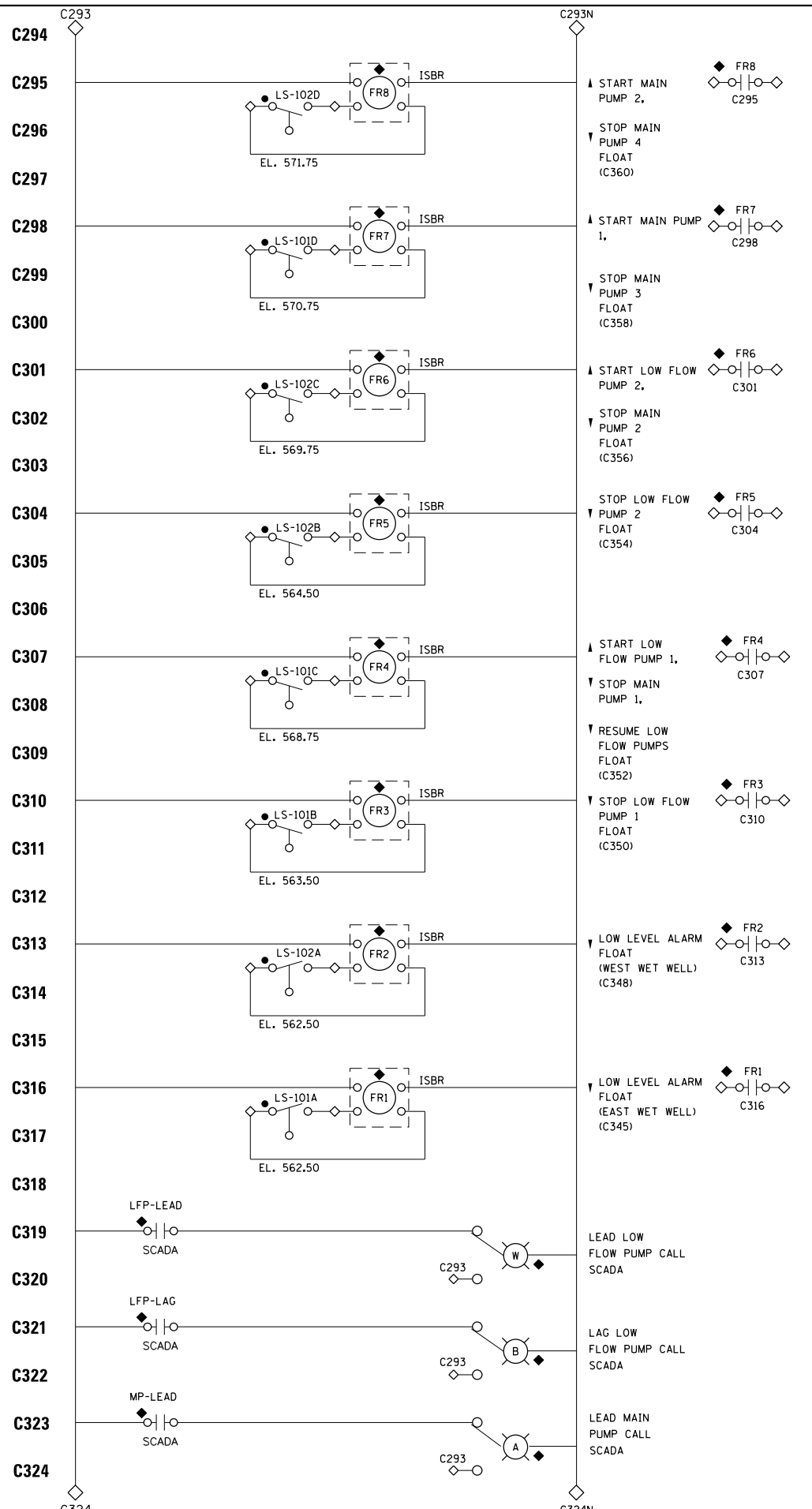
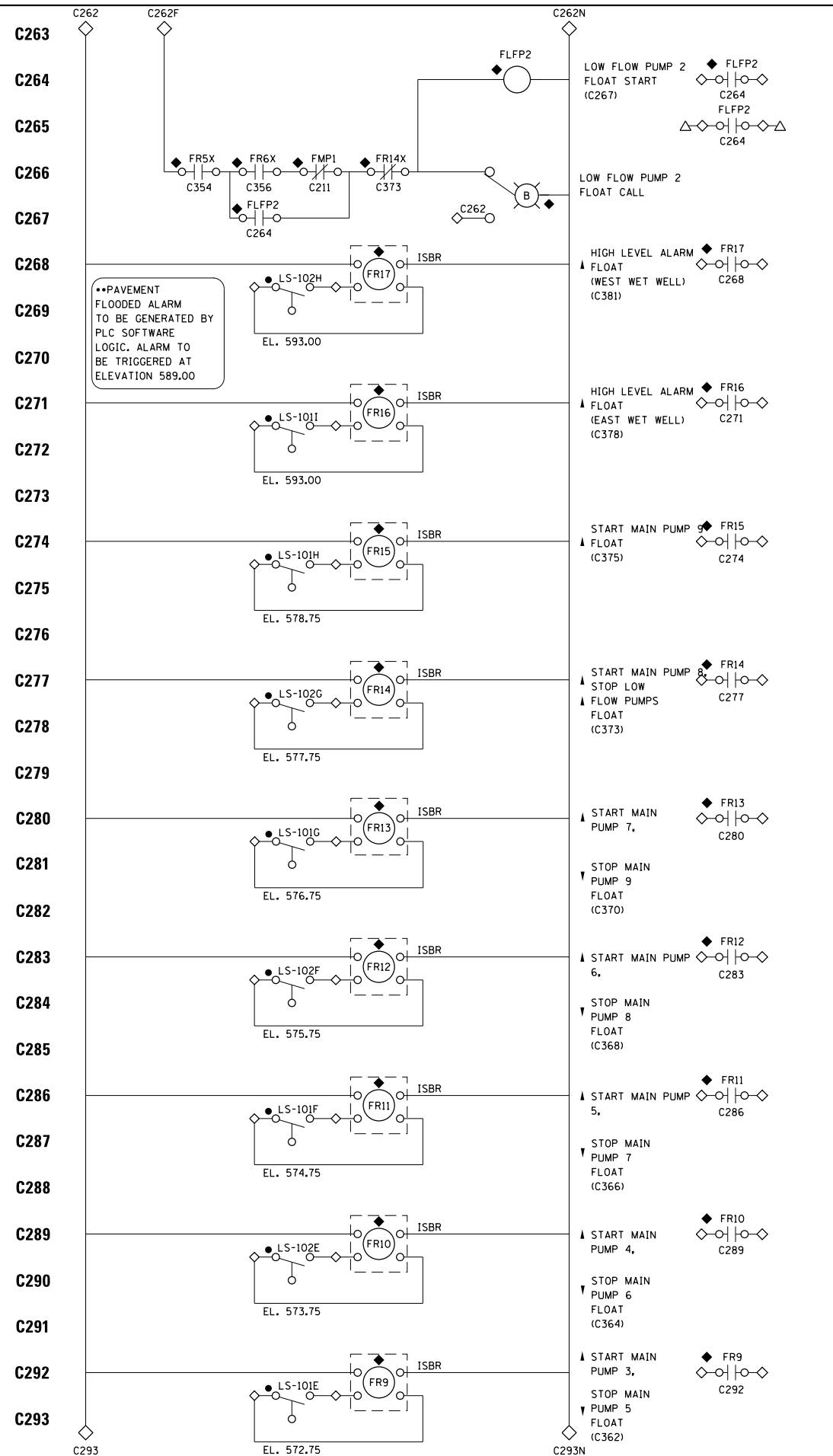
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	196
CONTRACT NO. 62B78				

SHEET  
 E642

SCALE: NONE SHEET OF SHEETS STA. TO STA.

ILLINOIS FED. AID PROJECT

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- GENERAL NOTES:**
- CONTROL CIRCUIT DRAWINGS DEPICT GENERAL DEVICE WIRING PRACTICES AND DOES NOT INCLUDE ALL CIRCUIT PROTECTIVE AND CONTROL DEVICES SUCH AS FUSES, CIRCUIT BREAKERS, MOV'S, ETC. THESE DEVICES SHALL BE INCLUDED IN DETAILED SHOP DRAWINGS BY CONTRACTOR.
  - CONTRACTOR SHALL PROVIDE CONTROL SCHEMATIC SHOP DRAWINGS DEPICTING AND IDENTIFYING TERMINALS AND WIRE NUMBERS ASSOCIATED WITH SCADA PANEL AND TERMINAL BLOCKS AS THEY ARE DEPICTED ON MANUFACTURERS EQUIPMENT TERMINAL BLOCKS. COORDINATE PRIOR TO SUBMITTING SHOP DRAWINGS. ALL WIRED DEVICES SHALL BE COORDINATED, DEPICTED, AND IDENTIFIED.
  - RELAYS FR1 THRU FR17 SHALL BE OF THE INTRINSICALLY SAFE BARRIER RELAY TYPE.

- LEGEND:**
- ◇ TERMINAL IN MCC
  - ◇ TERMINAL IN SCADA PANEL
  - ▲ DEVICE LOCATED IN MCC
  - ◆ DEVICE IN SCADA PANEL
  - DEVICE FIELD MOUNTED
  - ↑ RISING WATER LEVEL TRIGGER
  - ↓ FALLING WATER LEVEL TRIGGER
  - ⊠ TERMINAL IN SCREEN MCP



FILE NAME = D:\191454-E643.DGN	USER NAME = bgreen	DESIGNED - MEC - P. DE SILVA	REVISED -
		DRAWN - MEC - A. FREEMAN	REVISED -
		CHECKED - MEC - J. ZURAD	REVISED -
		DATE - 03/15/2019	REVISED -
PLOT SCALE = 0:1" = 1'-0"			
PLOT DATE = 5/29/2019			

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

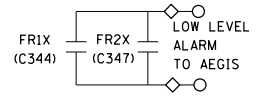
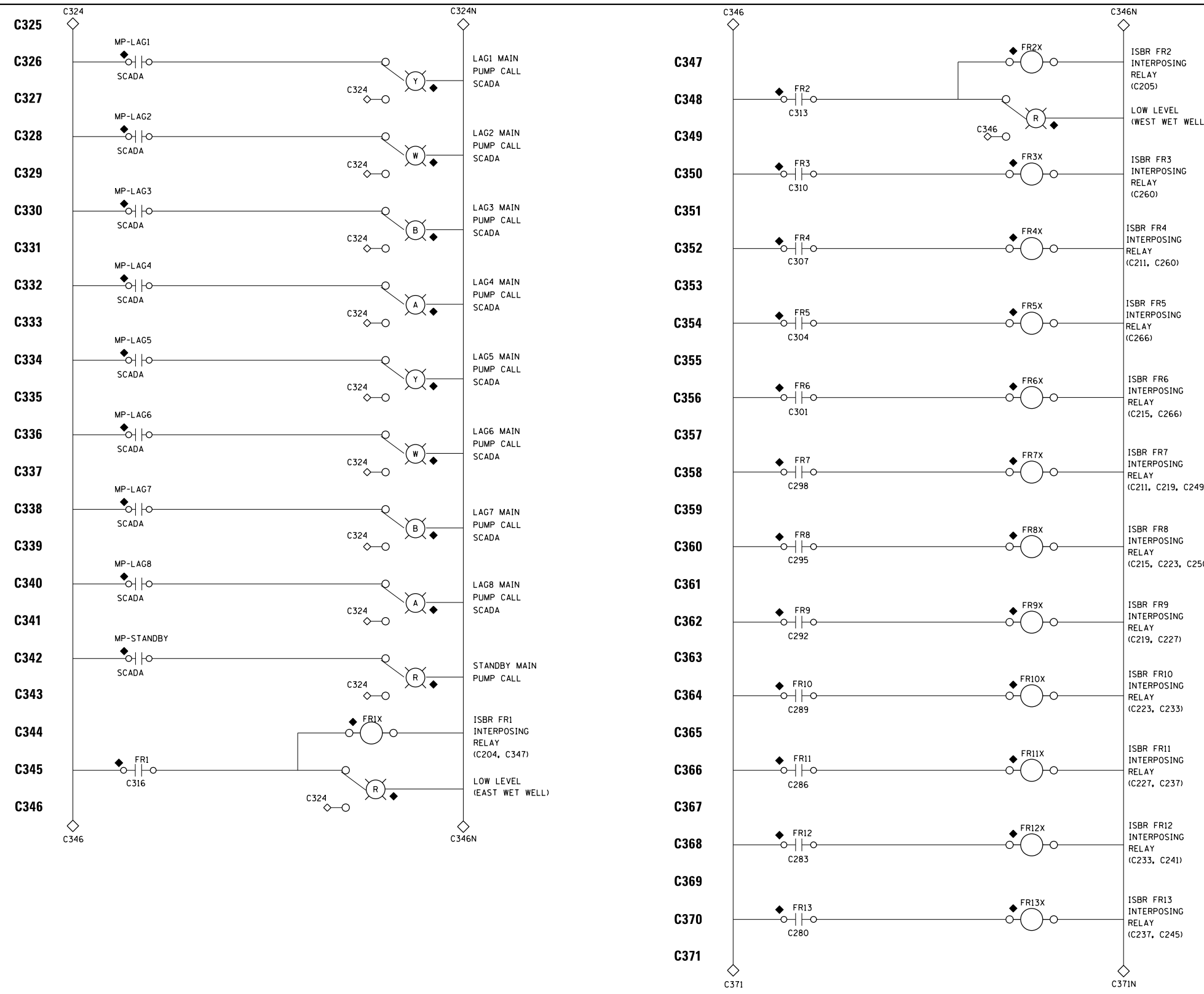
**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
SCADA PANEL SCHEMATIC III**

SCALE: NONE SHEET OF SHEETS STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	3434-2321-R	COOK	232	197
CONTRACT NO. 62B78				
ILLINOIS FED. AID PROJECT				

SHEET  
E643

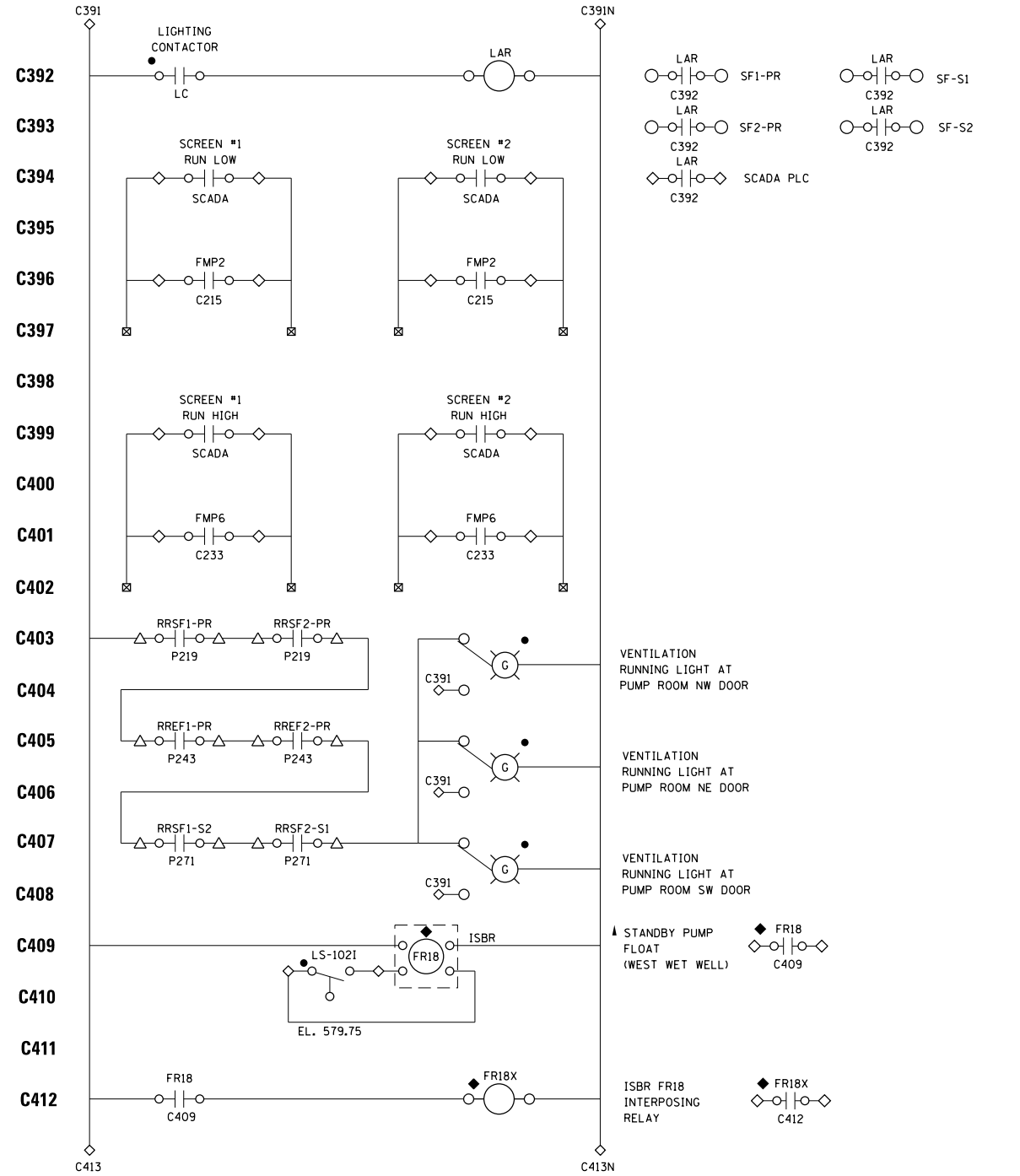
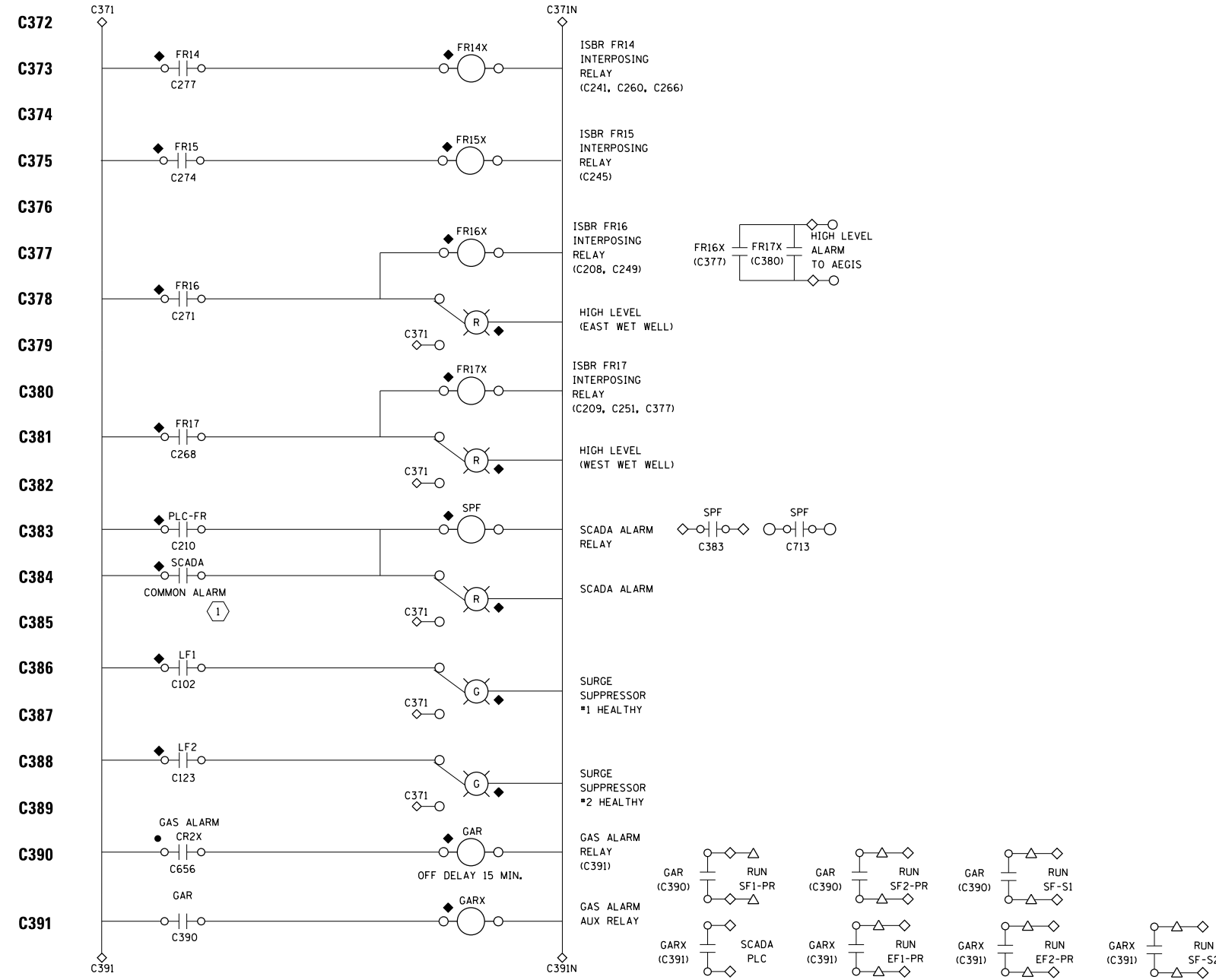
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- GENERAL NOTES:**
- CONTROL CIRCUIT DRAWINGS DEPICT GENERAL DEVICE WIRING PRACTICES AND DOES NOT INCLUDE ALL CIRCUIT PROTECTIVE AND CONTROL DEVICES SUCH AS FUSES, CIRCUIT BREAKERS, MOV'S, ETC. THESE DEVICES SHALL BE INCLUDED IN DETAILED SHOP DRAWINGS BY CONTRACTOR.
  - CONTRACTOR SHALL PROVIDE CONTROL SCHEMATIC SHOP DRAWINGS DEPICTING AND IDENTIFYING TERMINALS AND WIRE NUMBERS ASSOCIATED WITH SCADA PANEL AND TERMINAL NUMBERS AS THEY ARE DEPICTED ON MANUFACTURERS EQUIPMENT TERMINAL BLOCKS. COORDINATE PRIOR TO SUBMITTING SHOP DRAWINGS. ALL WIRED DEVICES SHALL BE COORDINATED, DEPICTED, AND IDENTIFIED.

- LEGEND:**
- △ TERMINAL IN MCC
  - ◇ TERMINAL IN SCADA PANEL
  - ▲ DEVICE LOCATED IN MCC
  - ◆ DEVICE IN SCADA PANEL
  - DEVICE FIELD MOUNTED
  - ↑ RISING WATER LEVEL TRIGGER
  - ↓ FALLING WATER LEVEL TRIGGER
  - ⊠ TERMINAL IN SCREEN MCP

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- GENERAL NOTES:**
- CONTROL CIRCUIT DRAWINGS DEPICT GENERAL DEVICE WIRING PRACTICES AND DOES NOT INCLUDE ALL CIRCUIT PROTECTIVE AND CONTROL DEVICES SUCH AS FUSES, CIRCUIT BREAKERS, MOV'S, ETC. THESE DEVICES SHALL BE INCLUDED IN DETAILED SHOP DRAWINGS BY CONTRACTOR.
  - CONTRACTOR SHALL PROVIDE CONTROL SCHEMATIC SHOP DRAWINGS DEPICTING AND IDENTIFYING TERMINALS AND WIRE NUMBERS ASSOCIATED WITH SCADA PANEL AND TERMINAL NUMBERS AS THEY ARE DEPICTED ON MANUFACTURERS EQUIPMENT TERMINAL BLOCKS. COORDINATE PRIOR TO SUBMITTING SHOP DRAWINGS. ALL WIRED DEVICES SHALL BE COORDINATED, DEPICTED, AND IDENTIFIED.
  - RELAY FR18 SHALL BE OF THE INTRINSICALLY SAFE BARRIER RELAY TYPE.

- KEY NOTES:**
- 1 SCADA PANEL COMMON ALARM IN ACCORDANCE WITH DIVISION 409005-2.30.A.7.

- LEGEND:**
- TERMINAL IN AEGIS
  - △ TERMINAL IN MCC
  - ◇ TERMINAL IN SCADA PANEL
  - ▲ DEVICE LOCATED IN MCC
  - ◆ DEVICE IN SCADA PANEL
  - DEVICE FIELD MOUNTED
  - ↑ RISING WATER LEVEL TRIGGER
  - ↓ FALLING WATER LEVEL TRIGGER
  - ⊠ TERMINAL IN SCREEN MCP

FILE NAME = D191454-E645.DGN	USER NAME = bgreen	DESIGNED - MEC - P. DE SILVA	REVISED -
		DRAWN - MEC - A. FREEMAN	REVISED -
	PLOT SCALE = 0:1" = 1'-0"	CHECKED - MEC - J. ZURAD	REVISED -
	PLOT DATE = 5/29/2019	DATE - 03/15/2019	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

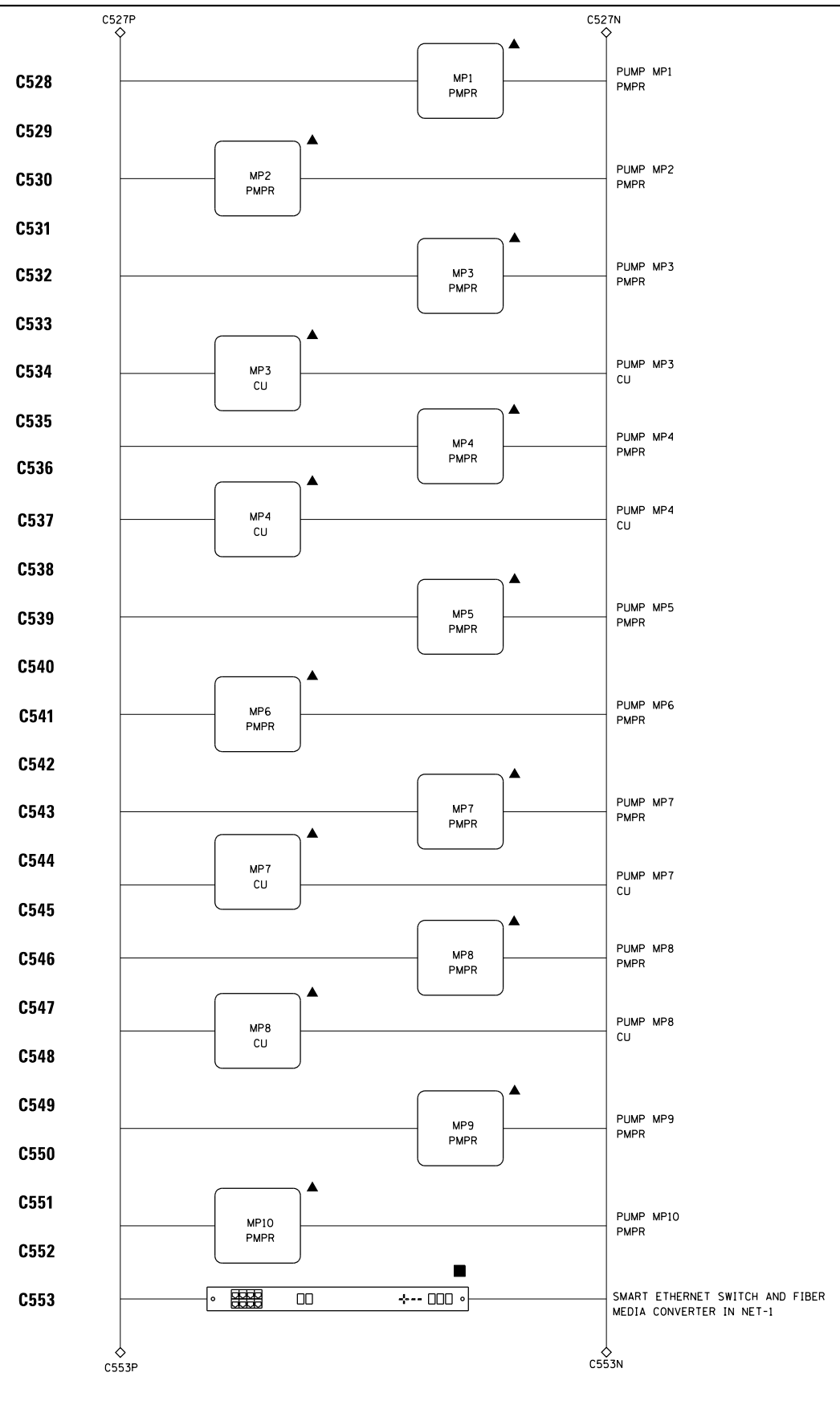
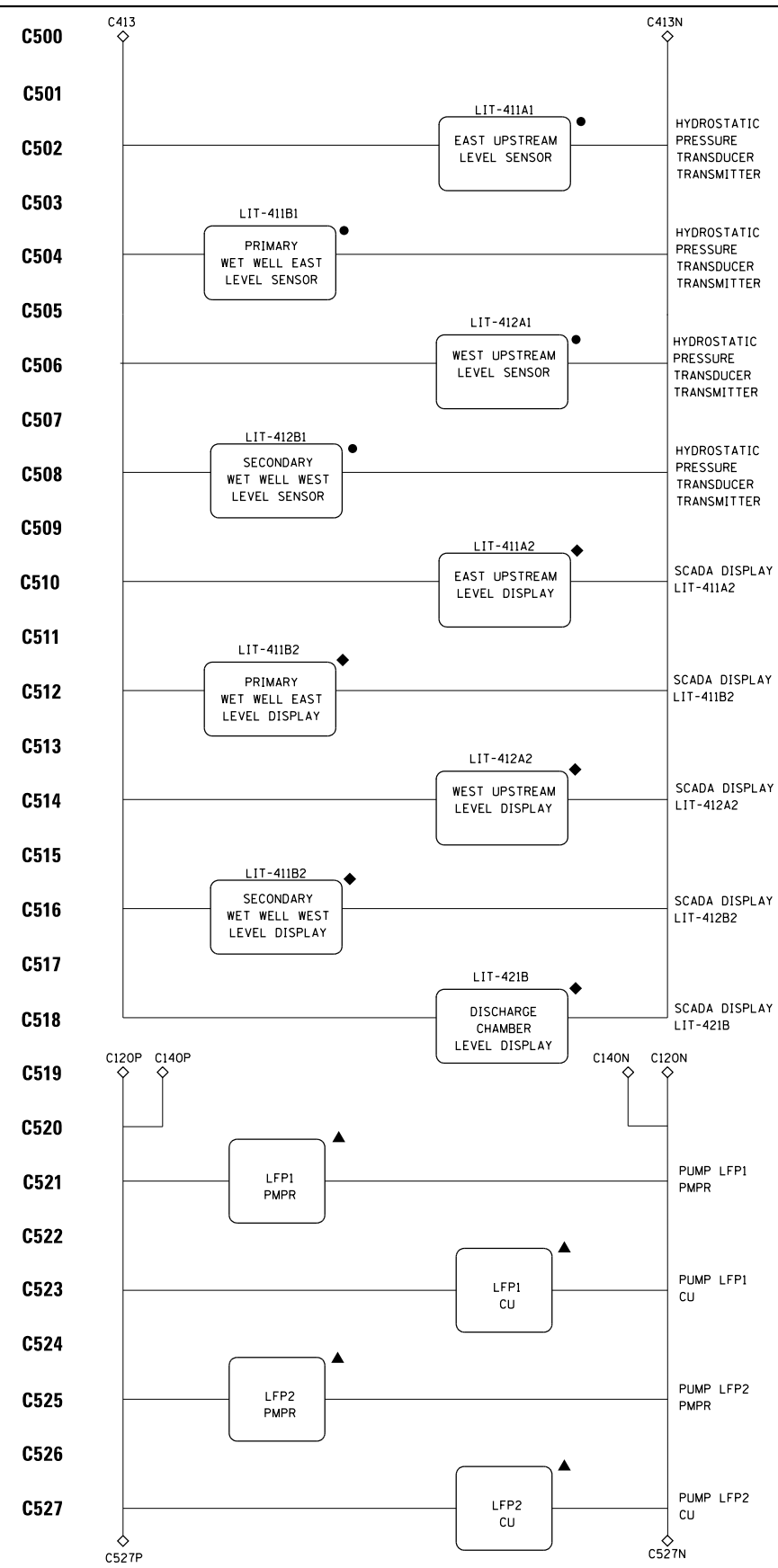
**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
SCADA PANEL SCHEMATIC V**

SCALE: NONE SHEET OF SHEETS STA. TO STA.

F.A.I. RTE.		SECTION	COUNTY	SHEET	
				TOTAL SHEETS	SHEET NO.
290		3434-2321-R	COOK	232	199
CONTRACT NO. 62B78				ILLINOIS FED. AID PROJECT	

SHEET  
E645

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- LEGEND:**
- △ TERMINAL IN MCC
  - ◇ TERMINAL IN SCADA PANEL
  - ◆ DEVICE LOCATED IN MCC
  - ▲ DEVICE IN SCADA PANEL
  - DEVICE FIELD MOUNTED
  - DEVICE IN NETWORK RACK
  - ↑ RISING WATER LEVEL TRIGGER
  - ↓ FALLING WATER LEVEL TRIGGER

- GENERAL NOTES:**
- CONTROL CIRCUIT DRAWINGS DEPICT GENERAL DEVICE WIRING PRACTICES AND DOES NOT INCLUDE ALL CIRCUIT PROTECTIVE AND CONTROL DEVICES SUCH AS FUSES, CIRCUIT BREAKERS, MOV'S, ETC. THESE DEVICES SHALL BE INCLUDED IN DETAILED SHOP DRAWINGS BY CONTRACTOR.
  - CONTRACTOR SHALL PROVIDE CONTROL SCHEMATIC SHOP DRAWINGS DEPICTING AND IDENTIFYING TERMINALS AND WIRE NUMBERS ASSOCIATED WITH SCADA PANEL AND TERMINAL NUMBERS AS THEY ARE DEPICTED ON MANUFACTURERS EQUIPMENT TERMINAL BLOCKS. COORDINATE PRIOR TO SUBMITTING SHOP DRAWINGS. ALL WIRED DEVICES SHALL BE COORDINATED, DEPICTED, AND IDENTIFIED.



FILE NAME = D191454-E646.DGN	USER NAME = bgreen	DESIGNED - MEC - P. DE SILVA	REVISED -
		DRAWN - MEC - A. FREEMAN	REVISED -
		CHECKED - MEC - J. ZURAD	REVISED -
		DATE - 03/15/2019	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**I-290 PUMP STATION NO. 4 RECONSTRUCTION  
SCADA PANEL SCHEMATIC VI**

SCALE: NONE SHEET OF SHEETS STA. TO STA.

SHEET E646		TOTAL SHEETS 232		SHEET NO. 200	
F.A.I. RTE. 290	SECTION 3434-2321-R	COUNTY COOK	CONTRACT NO. 62B78		
ILLINOIS FED. AID PROJECT					