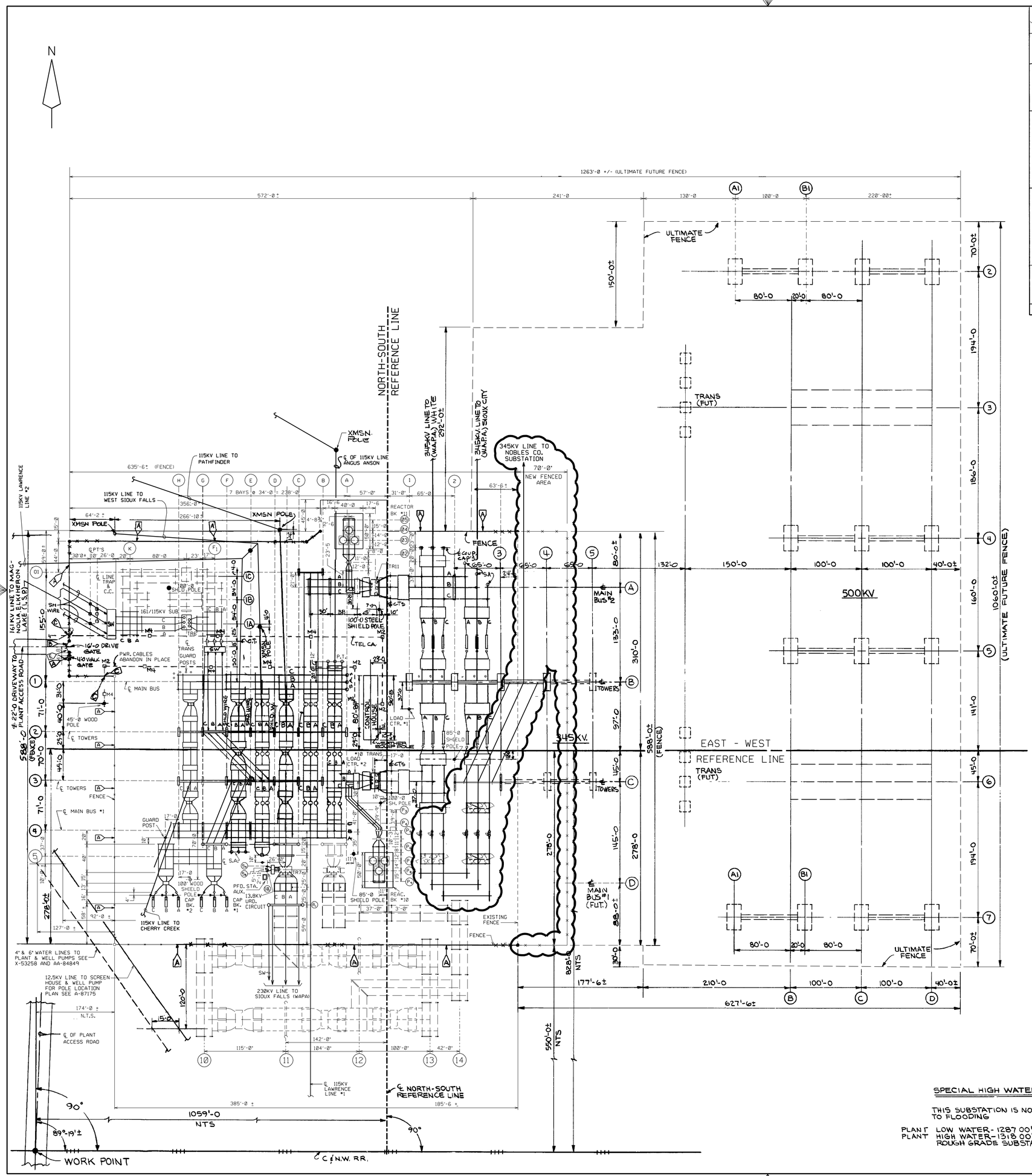

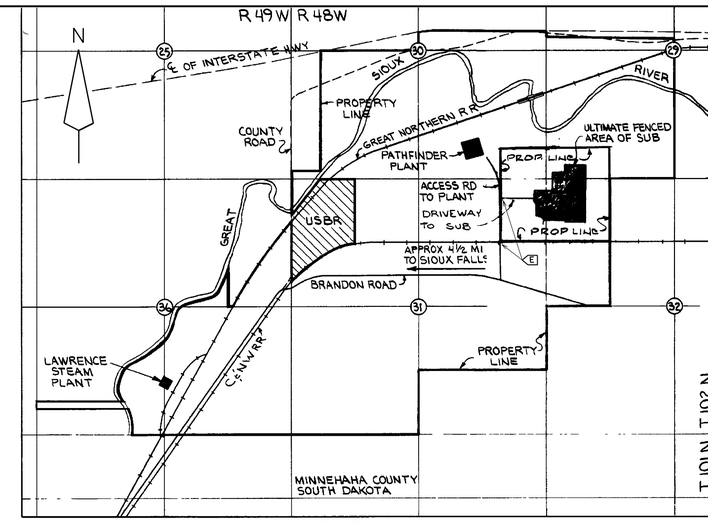

SITE PLAN

NO SCALE

SUBSTATION ADDRESS:
8200 EAST RICE STREET
SIOUX FALLS, SD 57110
PHONE: (605) 339-8237

GENERAL NOTES

1. LOCATION OF BENCH MARK FOR GRADE ELEVATION IS TOP OF OPERATING FLOOR IN POWER PLANT. ASSUME ELEVATION OF BENCH MARK IS 1327.00'
2. SUBSTATION ROUGH GRADE ELEVATION IS 1355.67'
3. SUBSTATION AREA ENCLOSED BY FENCE AND EXTENDING 2'-0" OUTSIDE, SURFACED WITH 4" CLEAN ¾" CRUSHED ROCK.
4. FENCE - 7'-0" HIGH STEEL CHAIN LINK FABRIC AND 1'-0" HIGH VERTICAL ARM BARBED WIRE ON TOP. IN ACCORDANCE WITH NSP ENG. & DES. STDS. ED 4.09.03.
5. SEE STRUCTURAL STEEL DRAWINGS FOR LOAD REQUIREMENTS OF EXTERNAL AND INTERNAL STRAINS.
6. U.G. POWER DUCTS PASS UNDER FENCE MIDWAY BETWEEN FENCE POSTS AND, WHERE POSSIBLE, NOT LESS THAN 2'-6" BELOW GRADE.

LEGEND

1. (A) → ON ALL MINNESOTA AND WISCONSIN COMPANY SUBSTATION FENCES INSTALL NO TRESPASSING SIGNS WORDED "WARNING/HAZARDOUS VOLTAGES INSIDE/KEEP OUT/CAN SHOCK BURN OR CAUSE DEATH". THIS SIGN IS NSP STOCK NO. 16-0092. (NSP STD. DWG. - ND-160280). THESE SIGNS ARE TO BE MOUNTED ON THE OUTSIDE OF THE FENCE FABRIC APPROXIMATELY 4'-6" FROM FINISHED GRADE TO THE CENTER OF SIGN AND EVERY 50'-0" AROUND THE FENCE PERIMETER.
2. (B) → ON ALL MINNESOTA AND WISCONSIN COMPANY SUBSTATION FENCES INSTALL ENTRY WARNING SIGNS WORDED "WARNING/LIMITED OVERHEAD ELECTRICAL CLEARANCES WITHIN/ENTRY BY AUTHORIZED PERSONNEL ONLY". THIS SIGN IS NSP STOCK NO. 16-0094. (NSP STD. DWG. - ND-160279). MOUNT TWO SIGNS APPROXIMATELY 4'-6" FROM GRADE TO CENTER OF SIGNS, BACK TO BACK, ON THE INSIDE AND OUTSIDE OF EACH WALK GATE AND DRIVE GATE FABRIC. THE DRIVE GATE SIGNS SHOULD BE MOUNTED ON THE DRIVERS SIDE PANEL OF THESE DOUBLE GATES.
3. (C) → INDICATES "CAUTION-BURIED CABLE" SIGNS. (NSP STOCK NO. 16-0088). ORDERED BY FIELD AND MOUNTED EACH SIDE OF FENCE FABRIC, BACK TO BACK, APPROXIMATELY 3'-6" FROM GRADE TO TOP OF SIGNS.
4. (D) → INDICATES "CAUTION-BURIED CABLE" SIGNS. (NSP STOCK NO. 16-0088). POST MOUNTED, ORDERED AND INSTALLED BY FIELD.
5. (E) → INDICATES SUBSTATION ADDRESS SIGN, ORDERED BY ENGINEERING AND FIELD MOUNTED BY CONSTRUCTION. MOUNT ADDRESS SIGN AT APPROXIMATELY 4'-6 FROM GRADE TO CENTER OF SIGN ON SUBSTATION GATE. FIELD TO ORDER POST AND MOUNT ADDRESS SIGNS AT THE ENTRANCE OF THE PLANT ACCESS ROAD AND THE SUBSTATION DRIVEWAY.
6. (M-1) □ INDICATES CONCRETE MARKERS FOR DIRECT BURIED CABLE RUNS. E & D STD. EE 1.0501. ORDERED BY FIELD.
7. ◆ INDICATES A 7'-0" STEEL CHANNEL POST, PAINTED ORANGE, NSP STOCK NO. 16-0095 ORDERED AND INSTALLED BY FIELD WHERE SHOWN.

DRAWING REFERENCE

PROPERTY PLAT	NF-20690
PROPERTY MAP	NF-17172
CONTOUR & GRADING LAYOUT	NH-85508
115KV ELECT LAYOUT SH 1	NH-85843
CIRCUIT DIAGRAM SH 1	NF-85945
GROUNDING LAYOUT	NF-85922
SOIL BORINGS	NH-85835
FOUNDATION LAYOUT	NH-85867
WEATHER MONITORING INST.	ND-89010

SPECIAL HIGH WATER NOTE

THIS SUBSTATION IS NOT NORMALLY SUBJECT TO FLOODING

PLANT LOW WATER - 1287.00' (DESIGN)
PLANT HIGH WATER - 1318.00' (DESIGN)
ROUGH GRADE SUBSTATION - 1355.67'

REVISIONS

N INSTALL TR6 AND REMOVE 6X AND 6Y TRANSFORMERS AND ASSOCIATED BUS AS OUTLINED. REPLACE 161KV LINE TRAP AND TR6 METERING CT'S.
DWN: LJG
DESIGNER: R.N.
PHONE NO. 571-2500
DATE: 1-6-98
E-97AE01
CHK'D BY: JH
PHONE NO. 571-2500
APPD & CERT:
ROBERT NUNDAHL
P.E. #25013
5-19-98
FILMED: 6-4-98

P ADD 115KV BKRS 5X81 AND 5X83, TR7, CT'S CCVT'S AND 230KV SW. AS OUTLINED. RELOCATE FENCE 30' WEST
DESIGNER: BAW
PHONE NO. 571-2500
DATE: 12-8-97
E-96BT01
CHK'D BY: MM
PHONE NO. 571-2500
APPD & CERT:
JONATHON P. HAUSER
PE 5965
10-15-98
PHONE NO. 571-2500
FILMED: 11-13-98

O ADD REACTOR BKS 10 & 11 AND ASSOC. EQUIP. UPGRADE CAP BKS 1 & 2 TO 120 MVARS
DWN: M.M.
DESIGNER: M.M.
PHONE NO. 612-571-2500
DATE: 5-20-98
E-97DK03
CHK'D BY: JH
PHONE NO. 612-571-2500
APPD & CERT:
ROBERT D. NUNDAHL
PE #6258
11-23-98
PHONE NO. 612-571-2500
FILMED: 12-28-98

R ADD ARRESTERS & PT'S TO CAP BANKS 1 & 2.
DESIGNER: M. MANTHEI
PHONE NO. 612-571-2500
DATE: 6-28-99
E-97DK03
CHK'D BY: R.D. NUNDAHL
PHONE NO. 612-571-2500
APPD & CERT:
JONATHON HAUSER
P. E. #5965
8-11-99
PHONE NO. 612-571-2500
FILMED: 8-23-99

S ADD NEW PREFERRED STATION AUX. TRANSFORMER TO TR7 TERTIARY. ADD SUBSTATION ADDRESS SIGNS AS OUTLINED.
DESIGNER: GLS
PHONE NO. (763) 571-2500
DATE: 01-11-01
E-00GB01
CHK'D BY: RN
PHONE NO. (763) 571-2500
APPD & CERT:
PHONE NO. (763) 571-2500
FILMED:

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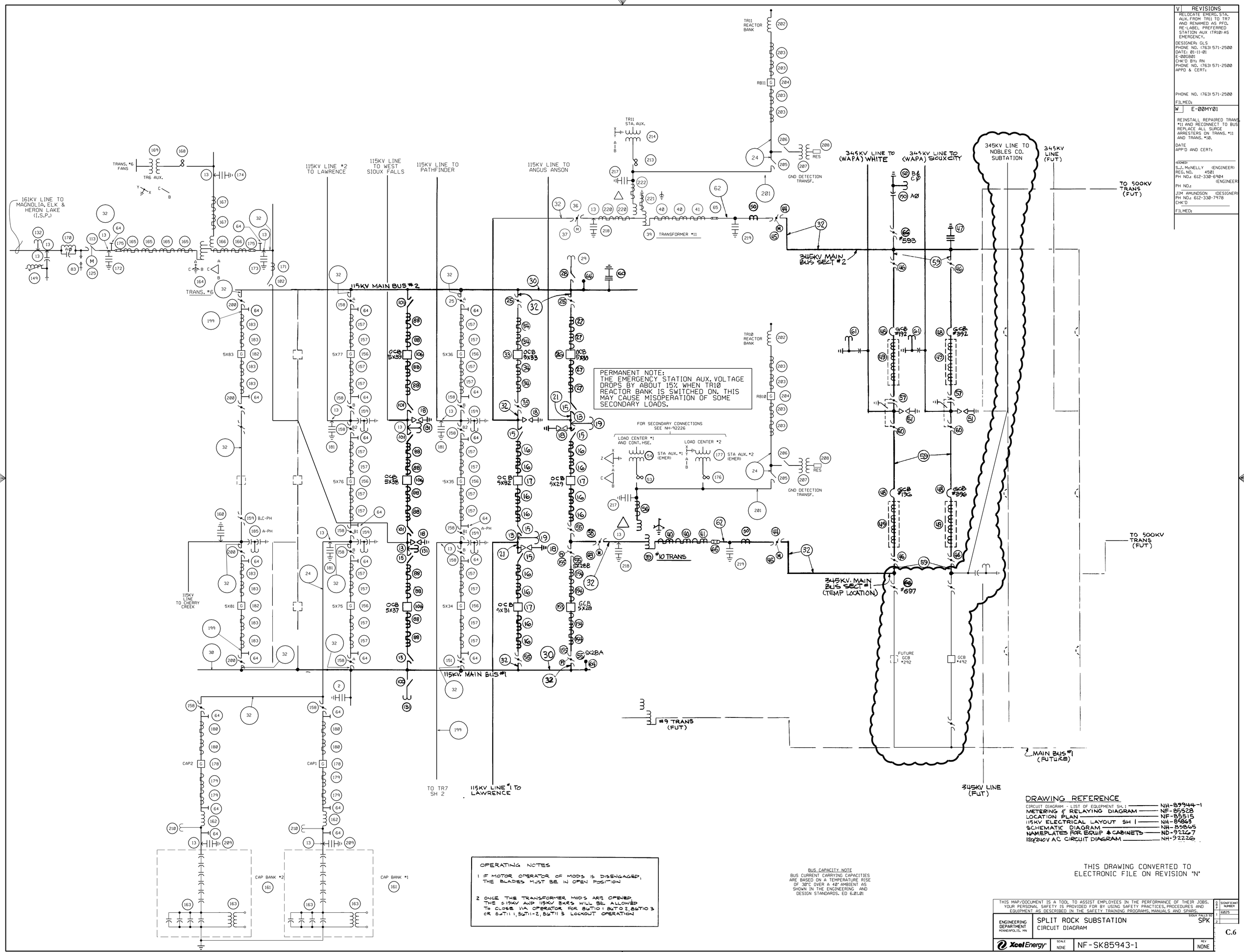
ENGINEERING DEPARTMENT MINNEAPOLIS, MN

SPLIT ROCK SUBSTATION SPK
LOCATION PLAN

Xcel Energy | SCALE 1"=50'-0" | NF-SK85515 | REV NONE

REV	SIGNIFICANT NUMBER
0	6825
1	
2	
3	
4	
5A	
5B	
6	
7	

C.5



PERMANENT NOTE:
THE EMERGENCY STATION AUX. VOLTAGE DROPS BY ABOUT 15% WHEN TR10 REACTOR BANK IS SWITCHED ON. THIS MAY CAUSE MISOPERATION OF SOME SECONDARY LOADS.

OPERATING NOTES

1 IF MOTOR OPERATOR OF MODS IS DISENGAGED, THE BLADES MUST BE IN OPEN POSITION

2 ONCE THE TRANSFORMER MODS ARE OPENED, THE 345KV AND 115KV BKRS WILL BE ALLOWED TO CLOSE VIA OPERATOR FOR 86T10 1 86T10 2, 86T10 3 OR 86T11 1, 86T11-2, 86T11 3 LOCKOUT OPERATION

BUS CAPACITY NOTE
BUS CURRENT CARRYING CAPACITIES ARE BASED ON A TEMPERATURE RISE OF 30°C OVER A 40° AMBIENT AS SHOWN IN THE ENGINEERING AND DESIGN STANDARDS. ED 6.01.01

DRAWING REFERENCE

CIRCUIT DIAGRAM - LIST OF EQUIPMENT SH. 1	NH-89944-1
METERING & RELAYING DIAGRAM	NF-85528
LOCATION PLAN	NF-85515
115KV ELECTRICAL LAYOUT SH 1	NH-85865
SCHEMATIC DIAGRAM	NH-85865
NAMEPLATES FOR EQUIP & CABINETS	ND-92267
120/240V AC CIRCUIT DIAGRAM	NH-92226

THIS DRAWING CONVERTED TO ELECTRONIC FILE ON REVISION "N"

V REVISIONS

RELOCATE EMERG. STA. AUX. FROM TR11 TO TR7 AND RENAMED AS PFD. RE-LABEL PREFERRED STATION AUX (TR10) AS EMERGENCY.

DESIGNER: GLS
PHONE NO. (763) 571-2500
DATE: 01-11-01
E-00GB01
CHK'D BY: RN
PHONE NO. (763) 571-2500
APP'D & CERT:

PHONE NO. (763) 571-2500

FILMED:

W E-00MY01

REINSTALL REPAIRED TRANS. #11 AND RECONNECT TO BUS REPLACE ALL SURGE ARRESTERS ON TRANS. #11 AND TRANS. #10.

DATE
APP'D AND CERT:

SIGNED:
S.J. McNELLY (ENGINEER)
REG. NO. 4501
PH NO.: 612-330-6904
(ENGINEER)

PH NO.:

JIM AMUNDSON (DESIGNER)
PH NO.: 612-330-7978
CHK'D

FILMED:

THIS MAP/DOCUMENT IS A TOOL TO ASSIST EMPLOYEES IN THE PERFORMANCE OF THEIR JOBS. YOUR PERSONAL SAFETY IS PROVIDED FOR BY USING SAFETY PRACTICES, PROCEDURES AND EQUIPMENT AS DESCRIBED IN THE SAFETY TRAINING PROGRAMS, MANUALS AND SPARS.

ENGINEERING DEPARTMENT MINNEAPOLIS, MN

SPLIT ROCK SUBSTATION
CIRCUIT DIAGRAM

SIOUX FALLS SD SPK

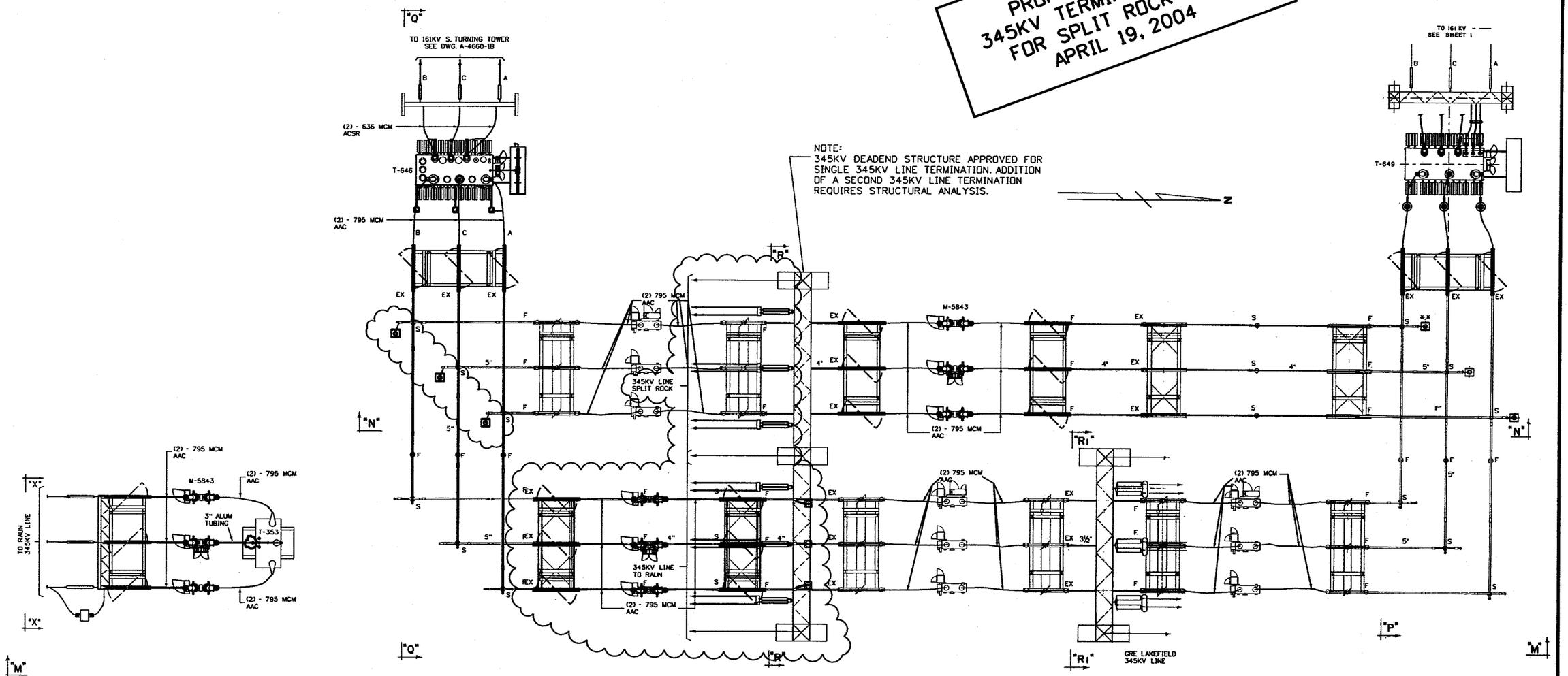
Xcel Energy

SCALE NONE | NF-SK85943-1 | REV NONE

SIGNIFICANT NUMBER	
6825	1
	2

C.6

PROPOSED CHANGES
345KV TERMINAL ADDITION
FOR SPLIT ROCK LINE
APRIL 19, 2004



PLAN VIEW
(345 KV SECTION)

NO.	REVISION DESCRIPTION	ENG	CADD	DATE
	REPLACE N. 345/161KV XFMR	DLW	RT	9-5-01
	AS CONST	DLW	DL	9-20-02
	REPLACE CB 881, 884, 885	CKP	SAP	11-3-03

CADD WCW DATE 3-26-69
TRANS ___ DATE ___
ENG'R ___ DATE ___
APPD ___ DATE ___
SCALE 1/8" = 1'-0

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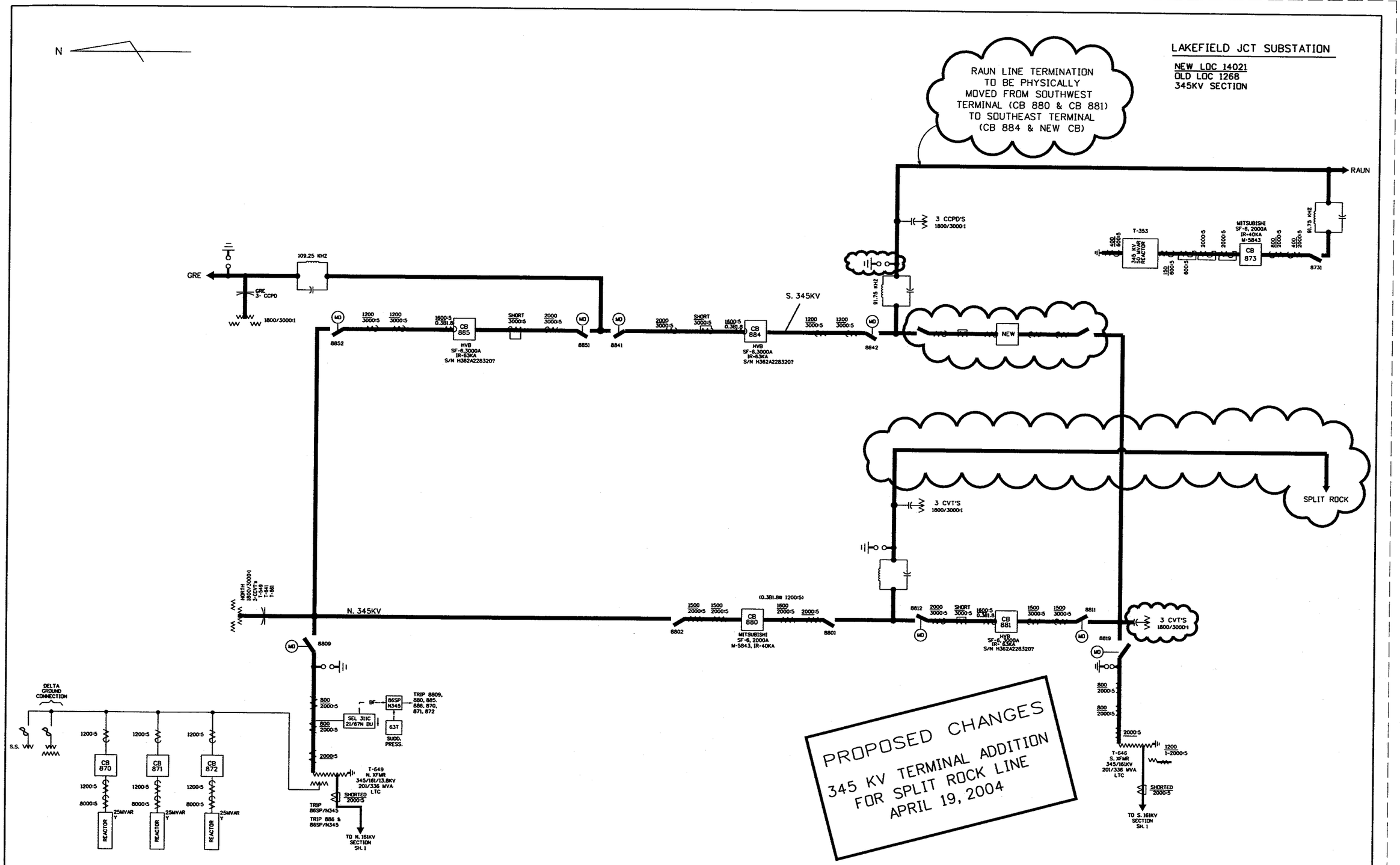
ALLIANT ENERGY.

GENERAL ARRANGEMENT
345/161KV SUBSTATION
LAKEFIELD, MINNESOTA

A-4660 SH 2



Plotted:04/19/2004
File: I:\Users\Wagner.D\Lakefield 1-line (proposed).dgn

NO.	DATE	REVISION	BY	CHK'D	APV'D
	12-22-03	REPLACE 881, 884, 885 BKRS.	SE		CKP
	10-25-02	AS CONST	RT		JLK
	9-20-02	REPLACE S. 345KV RELAYS	RT		JLK
●	12-2-88	ORIGINAL ISSUE	JRS	RJS	DRD

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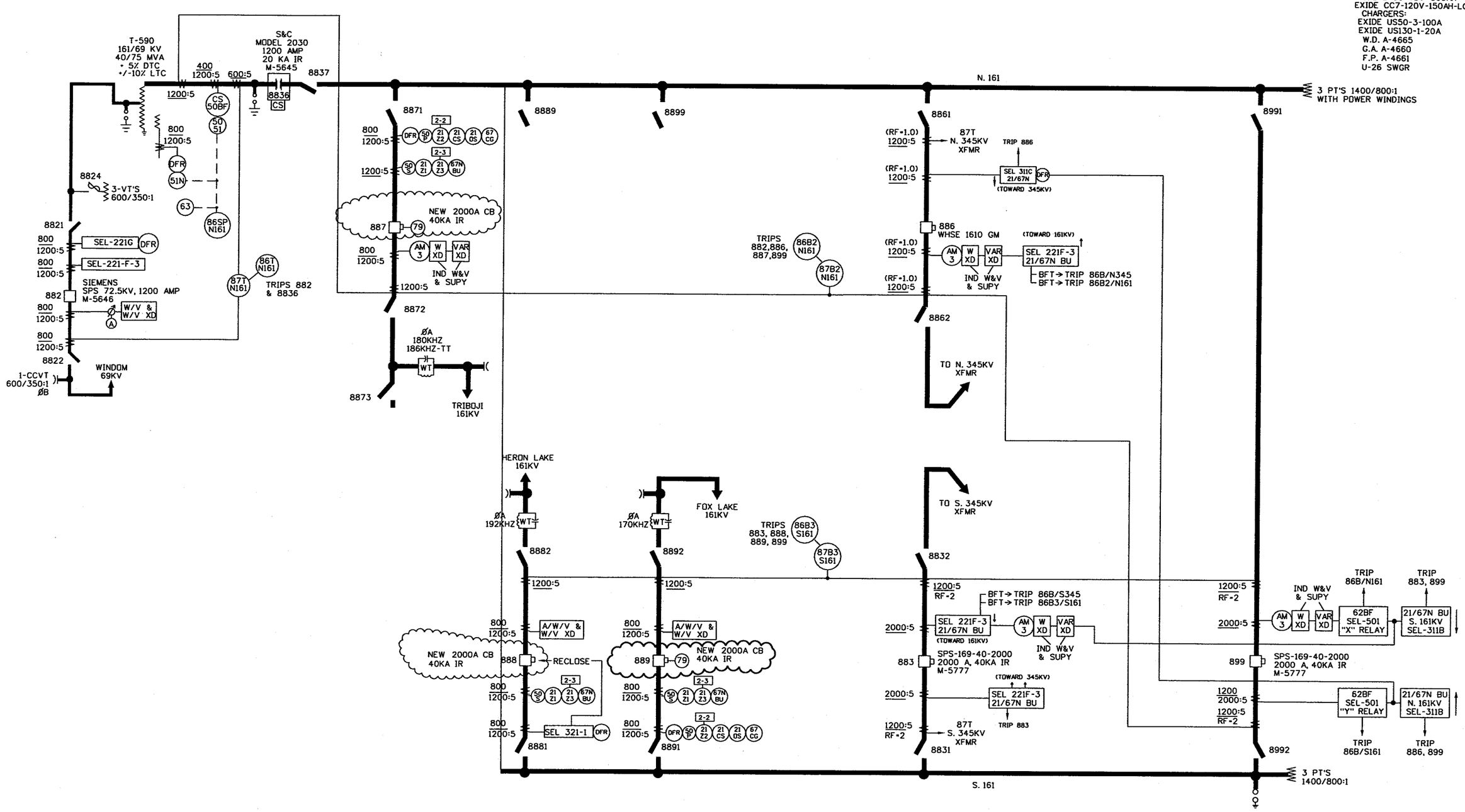
ALLIANT ENERGY.

Interstate Power and Light Company
LAKEFIELD JCT. SUBSTATION — LAKEFIELD, MN
SWITCH DIAGRAM
345 KV SECTION
REF A4665-02
Scale: NONE
DWG. NO. 14021-10-01-S2

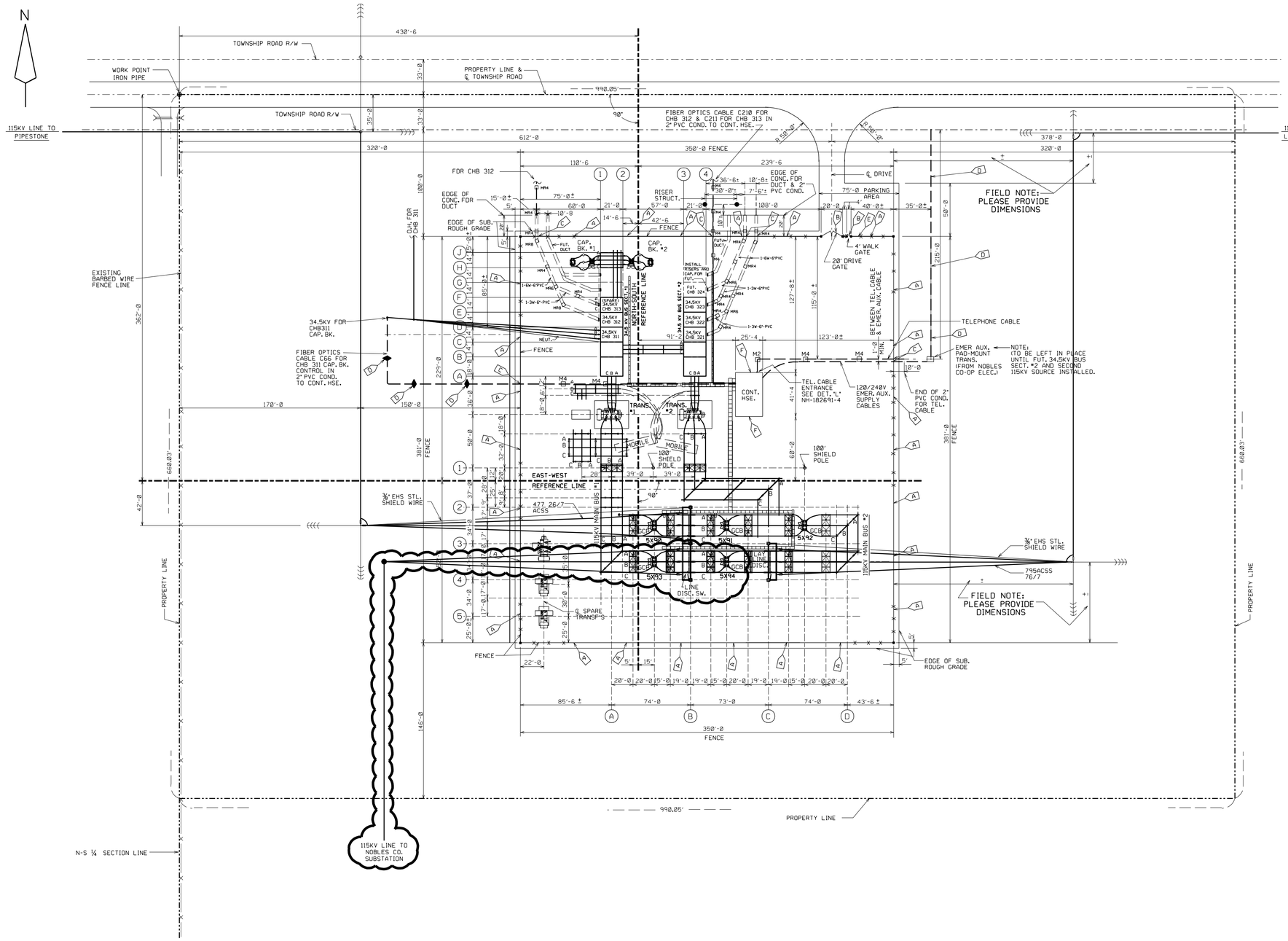
LAKEFIELD JCT
161-69 KV SECTION
LOC 009 1268

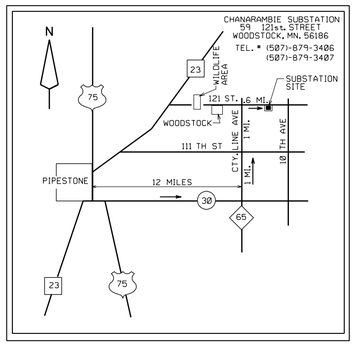
EMERGENCY POWER-NONE
STATION BATTERIES:
EXIDE EHGS-48V 360AH
EXIDE CC7-120V-150AH-LC
CHARGERS:
EXIDE US50-3-100A
EXIDE US130-1-20A
W.D. A-4665
G.A. A-4660
F.P. A-4661
U-26 SWGR



9-26-03

PART OF A4665 SH.1





SITE PLAN

NO SCALE

GENERAL NOTES

1. LOCATION OF BENCH MARK FOR GRADE ELEVATION IS TOP OF REBAR SET APPROXIMATELY 2 FT. SOUTH OF A RED FENCE POST LOCATED ALONG THE NORTH SIDE OF THE TOWNSHIP ROAD APPROXIMATELY 480 FT. EAST OF THE WEST PROPERTY LINE OF THE SITE. ELEVATION OF BENCH MARK IS 1842.84'
2. SUBSTATION ROUGH GRADE ELEVATION IS 1843.00'
3. SUBSTATION AREA ENCLOSED BY FENCE AND EXTENDING 5'-0" OUTSIDE, SURFACED WITH 4" OF CLEAN ¾" CRUSHED ROCK.
4. FENCE - 7'-0" HIGH STEEL CHAIN LINK FABRIC AND 1'-0" HIGH VERTICAL HEIGHT BARBED WIRE ON TOP, MOUNTED AT A 45° ANGLE POINTED OUTSIDE OF SUBSTATION. IN ACCORDANCE WITH ENG & DSGN STD ED 4.09.03.
5. SEE STRUCTURAL STEEL DRAWINGS FOR LOAD REQUIREMENTS OF EXTERNAL AND INTERNAL STRAINS.
6. U.G. POWER DUCTS PASS UNDER FENCE MIDWAY BETWEEN FENCE POSTS AND, WHERE POSSIBLE, NOT LESS THAN 2'-6" BELOW GRADE.

LEGEND

A → OLD FENCE SIGN WORDED "WARNING, HAZARDOUS VOLTAGES INSIDE, KEEP OUT, CAN SHOCK BURN OR CAUSE DEATH". (THIS SIGN CAN NO LONGER BE ORDERED)

B → FENCE WARNING SIGN (16-0092), PER ENG & DSGN STD ED 4.10.01. THE SIGNS ARE TO BE MOUNTED 5'-0" FROM GRADE TO TOP OF SIGN, 30'-0" - 45'-0" APART AND NO MORE THAN 15'-0" FROM THE CORNERS. ONE SIGN SHOULD BE PLACED ON THE OUTSIDE OF EACH WALK GATE. ONE SIGN SHOULD BE PLACED ON BOTH THE INSIDE AND OUTSIDE OF EACH DRIVE GATE.

C → BURIED CABLE SIGN (16-0088), PER ENG & DSGN STD ED 4.10.06. THE SIGNS ARE TO BE MOUNTED ON EACH SIDE OF FENCE FABRIC, BACK TO BACK AND APPROXIMATELY 3'-6" FROM GRADE TO TOP OF SIGNS. ORDERED BY FIELD.

D → BURIED CABLE SIGN (16-0088) MOUNTED ON POST (16-0095), PER ENG & DSGN STD ED 4.10.06. POST AND SIGN ORDERED BY FIELD.

E → SUBSTATION IDENTIFICATION SIGN PER ENG & DSGN STD ED 4.10.02 (TOP) AND ADDRESS SIGN PER ENG & DSGN STD ED 4.10.03 (BOTTOM). THE TOP SIGN MOUNTED 6'-0" FROM GRADE TO TOP OF SIGN AND LOCATED ADJACENT TO WALK OR DRIVE GATES.

F → BATTERY WARNING SIGN (57-5454), PER ENG & DSGN STD ED 4.10.04. THE SIGNS ARE TO MOUNTED ON THE OUTSIDE OF EACH CONTROL HOUSE DOOR, APPROXIMATELY 5'-0" FROM THE BOTTOM OF THE DOOR TO THE TOP OF SIGN.

6. M-1 INDICATES CONCRETE MARKERS FOR DIRECT BURIED CABLE RUNS. E & D STD. EE 1.0501, ORDERED BY FIELD.

7. MR1 INDICATES CONCRETE MARKERS FOR DIRECT BURIED CABLE RUNS OVER 600 VOLTS WITH SLOTS PAINTED RED. E & D STD. EE 1.0501, ORDERED BY FIELD.

SPECIAL NOTES FOR MOBILE TRANSFORMER

1. MOBILE TRANSFORMER TO BE PARKED IN POSITION AS SHOWN.
2. HIGH VOLTAGE LEADS CONNECTED OVERHEAD WITH HOT LINE CLAMPS TO TRANSFORMER LEADS.
3. LOW VOLTAGE LEADS CONNECTED WHERE SHOWN ON ELECTRICAL LAYOUT SO THAT TRANSFORMER CURRENT TRANSFORMERS AND CIRCUIT BREAKER (OR LOAD INTERRUPTER SWITCH) REMAIN IN THE CIRCUIT.
4. ENTRANCE TO CONTROL HOUSE FOR MOBILE TRANSFORMER CONTROL CABLE SHOWN ON CONTROL HOUSE DRAWING NF-182691.

DRAWING REFERENCE

PROPERTY PLAT	
CONTOUR AND GRADING LAYOUT	NH-158184
115KV ELECTRICAL LAYOUT	NH-182673
34.5KV ELECTRICAL LAYOUT	NH-182674
CIRCUIT DIAGRAM	NH-182671
GROUNDING LAYOUT	NF-182676
STEEL STAND LOCATION PLAN	NH-158216
U.G. FEEDER DUCT LAYOUT BUS SECT. #2	NH-184513
U.G. FEEDER DUCT LAYOUT BUS SECT. 1#	NH-185281

TELEPHONE # (507)-879-3406
(507)-879-3407

ADDRESS:
CHANARAMBIE SUBSTATION
59 121st. STREET
WOODSTOCK, MN. 56186

REVISIONS

D E-00AJ02

REPLACE TRANS. #1 AND ADD TRANS. #2 AND ASSOC. 34.5KV BUS SECTION #2 AND 1-2 BUS-TIE. ADD O.H. 34.5KV FDR CHB 313 AND U.G. FDRS CHB321, CHB322 & CHB323. ADD FUT. FDR CHB312. ADD 115KV TR2 DISC. SW. AND ASSOC. SWS. AND BUS WORK AS OUTLINED. UPDATE SIGNS AS OUTLINED.

DATE 6-19-2001

(SIGNED)
BRIAN R. LORENTZ (ENGINEER)
REG. NO. 40212
PH NO.: 612-330-6964
(ENGINEER)
PH NO.:
JIM AMUNDSON (DESIGNER)
PH NO.: 612-330-7978
CHK'D

FILMED:

E E-00AJ02

ADD U.G. DUCT FOR GEN. OUTLET CONNECTIONS TO 34.5KV FDRS CHB 321 & CHB 322. ADD DUCT FOR FUT. FRDS CHB 323 & CHB 324. ADD 120 MVA SPARE TRANS. IN STORAGE.

DATE
APP'D AND CERT:
BRIAN R. LORENTZ

(SIGNED)
BRIAN R. LORENTZ (ENGINEER)
REG. NO. 40212
PH NO.: 612-330-6964
(ENGINEER)
PH NO.:
JIM AMUNDSON (DESIGNER)
PH NO.: 612-330-7978
CHK'D

FILMED: 8-30-2001

F E-01BK03

INSTALL 115KV LAY LINE TERMINATION. ADD 115KV PIP LINE SW., ADD 115KV BUSWORK AND ASSOCIATED EQUIPMENT AND MATERIAL AS OUTLINED.

DATE
APP'D AND CERT:

(SIGNED)
S. MCNELLY (ENGINEER)
REG. NO. 18545
PH NO.: 612/330-6904
A. MULAWARMAN (ENGINEER)
PH NO.: 612/337-2349
M. MATTFIELD (DESIGNER)
PH NO.: 612/337-2036
CHK'D KEN

FILMED:

G W.O.-10316901

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF:

MINNESOTA

ADD U.G. FDR. DUCT FOR 34.5KV FDRS CHB 312 & 313 BUS SECT. #1. TERMINATE U.G. CABLE FOR CHB 312. CONVERT FOR CHB 312 & CHB 313 TO U.G. EXITS. ADD FIBER OPTICS CABLE AND CONDUIT FOR CHB 312 & CHB 313. ADD SPARE COND. FOR FUT. FIBER OPTICS. PLACE FDRS CHB 312, CHB 321 & CHB 322 IN SERVICE.

APP'D AND CERT:

(SIGNED)
DATE
BRIAN R. LORENTZ (ENGINEER)
REG. NO. 40212
PH NO.: 612-330-6964
APP'D:
(SIGNED)
(ENGINEER)
PH NO.:
JIM AMUNDSON (DESIGNER)
PH NO.: 612-330-7978
CHK'D

H W.O.-10393683

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF:

MINNESOTA

PLACE 34.5KV FDR. CHB 323 IN SERVICE. ADDED RISER STRUCTURES.

APP'D AND CERT:

(SIGNED)
DATE 5-29-03
BRIAN LORENTZ (ENGINEER)
REG. NO. 40212
PH NO.: 612-330-6964
APP'D:
(SIGNED)
(ENGINEER)
PH NO.:
JULIE FOLGER (DESIGNER)
PH NO.: 612-330-5718
CHK'D

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REV	SIGNIFICANT NUMBER
0	6882
1	
2	
3	
4	
5A	
5B	
6	
7	

ENGINEERING DEPARTMENT MINNEAPOLIS, MN

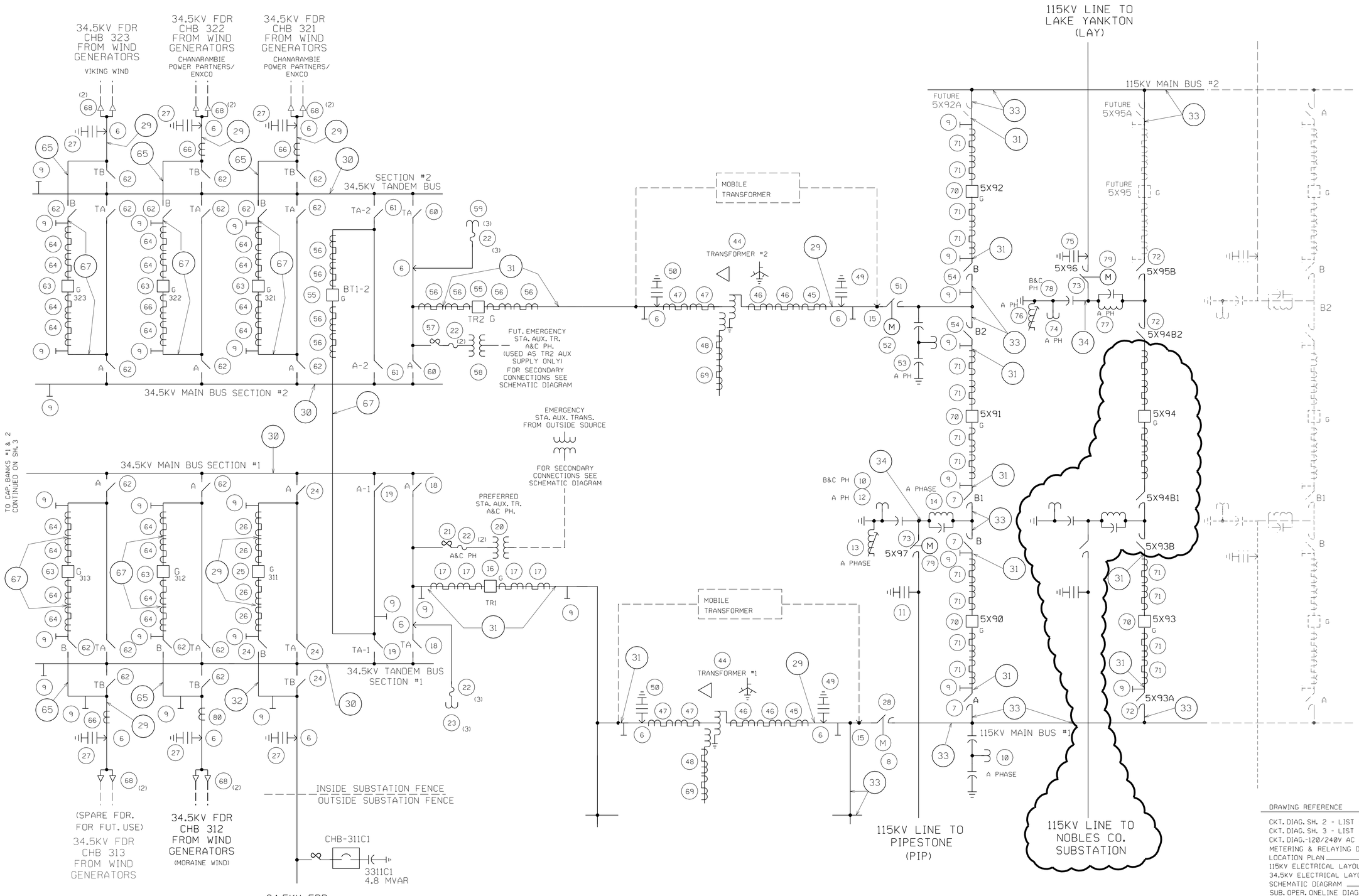
CHANARAMBIE SUBSTATION CHB
LOCATION PLAN

Xcel Energy

SCALE 1"=40'-0" | NF-SK182672 | REV NONE

C.10

$$$$DATE&TIME$$$$ $$DOS FILENAME$$ $USER



REVISIONS

E E-01BK03

INSTALL 115KV LAY LINE TERMINATION AND ASSOCIATEDEQUIPMENT AND BUS WORK AS OUTLINED.

DATE 2-11-2002
APP'D AND CERT:
S.J. McNELLY
(SIGNED)
S. MCNELLY (ENGINEER)
REG. NO. 18545
PH NO.: 612/330-6904
A. MULAWARMAN (ENGINEER)
PH NO.: 612/337-2349
M. MATTFIELD (DESIGNER)
PH NO.: 612/337-2036
CHK'D KEN

FILMED: 2-12-2002

F W.O.-10316901

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF:
MINNESOTA

CONVERT 34.5KV FDRS CHB 312 & 313 TO UNDER-GROUND EXITS. ADD CT'S TO FDR CHB 312 AND PLACE CHB 312 IN SERVICE. CONNECT FDRS. CHB 321 & 322 TO U.G. CABLE TERMINATORS AND PLACE IN SERVICE.

APP'D AND CERT:
(SIGNED)
DATE
BRIAN R. LORENTZ (ENGINEER)
REG. NO. 40212
PH NO.: 612-330-6964
APP'D:
(SIGNED)
(ENGINEER)
PH NO.:
JIM AMUNDSON (DESIGNER)
PH NO.: 612-330-7978
CHK'D

G W.O.-10393683

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF:
MINNESOTA

REMOVE C.T.'S ON 34.5KV FDR. CHB 323. CONNECT FDR. TO U.G. CABLE TERMINATORS, AND PLACE IN SERVICE.

APP'D AND CERT:
(SIGNED)
DATE 5-29-03
BRIAN LORENTZ (ENGINEER)
REG. NO. 40212
PH NO.: 612-330-6964
APP'D:
(SIGNED)
(ENGINEER)
PH NO.:
JULIE FOLGER (DESIGNER)
PH NO.: 612-330-5718
CHK'D

DRAWING REFERENCE

CKT. DIAG. SH. 2 - LIST OF EQUIPMENT	NH-182671-2
CKT. DIAG. SH. 3 - LIST OF EQUIPMENT	NH-182671-3
CKT. DIAG.-120/240V AC AUX. SYSTEM	NH-173073
METERING & RELAYING DIAGRAM	NF-182654
LOCATION PLAN	NF-182672
115KV ELECTRICAL LAYOUT - SH. 1	NH-182673
34.5KV ELECTRICAL LAYOUT - SH. 1	NH-182674
SCHEMATIC DIAGRAM	NH-182655
SUB. OPER. ONELINE DIAG.	NE-182848

BUS CAPACITY NOTE

BUS CURRENT CARRYING CAPACITIES ARE BASED ON A TEMPERATURE RISE OF 30°C. OVER A 40°C. AMBIENT AS SHOWN IN THE ENGINEERING AND DESIGN STANDARDS ED 6.01.01

THIS MAP/DOCUMENT IS A TOOL TO ASSIST EMPLOYEES IN THE PERFORMANCE OF THEIR JOBS. YOUR PERSONAL SAFETY IS PROVIDED FOR BY USING SAFETY PRACTICES, PROCEDURES AND EQUIPMENT AS DESCRIBED IN THE SAFETY TRAINING PROGRAMS, MANUALS AND SPARS.

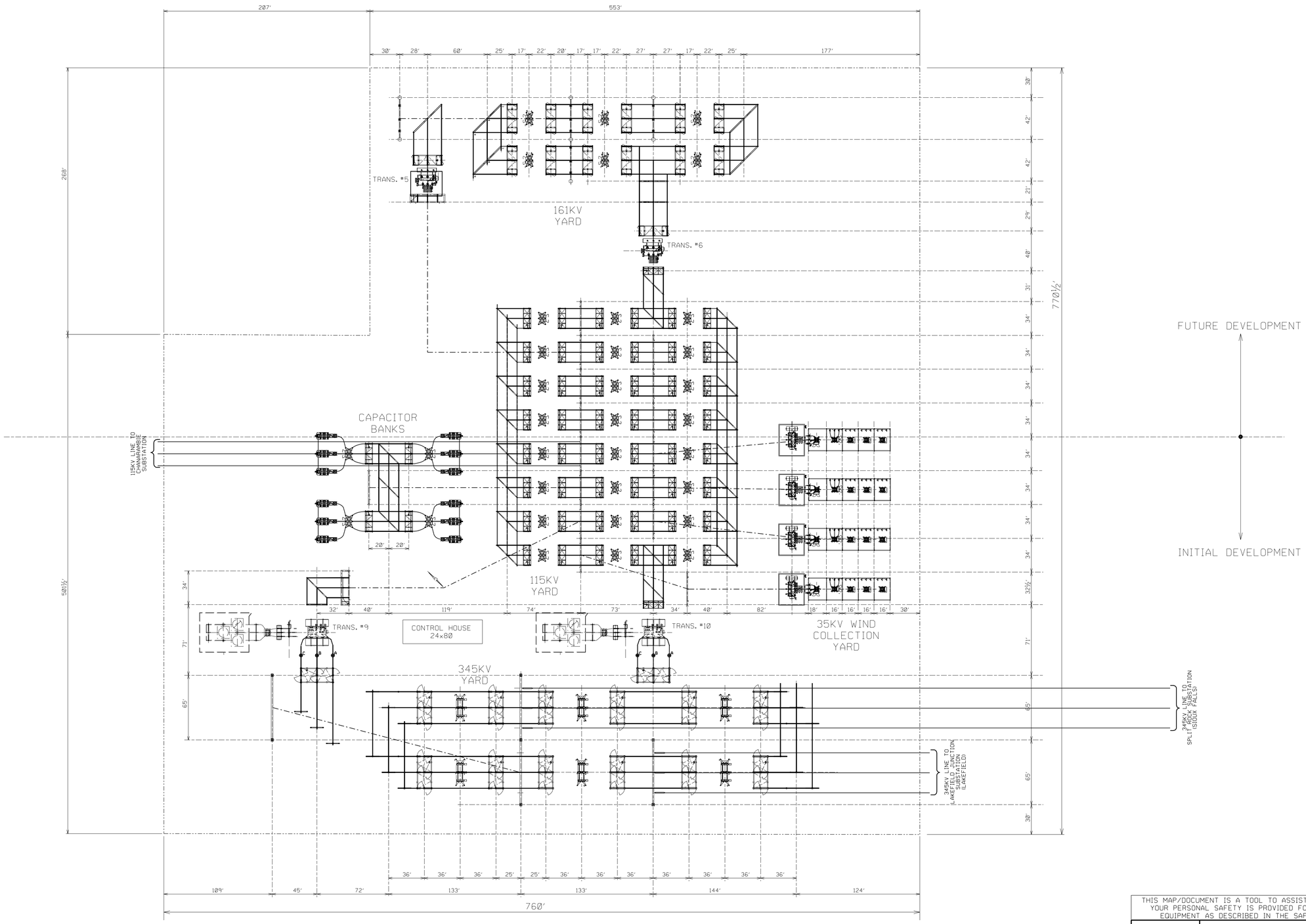
ENGINEERING DEPARTMENT
MINNEAPOLIS, MN

WOODSTOCK MN
CHANARAMBIE SUBSTATION
CIRCUIT DIAGRAM
CHB

GRP	SIGNIFICANT NUMBER
1	6082
2	
3	
4	
5A	
5B	2200
6	
CL	

Xcel Energy | SCALE NONE | NH-SK182671-1 | REV NONE

$$$$DATE&TIME$$$$ $$DOS FILENAME$$ $USER$



"PRELIMINARY"
"NOT FOR CONSTRUCTION"

NOTES:
APPROXIMATE LAND REQUIREMENTS:
40 ACRES FOR SITE
12 ACRES TO BE GRADED AND FENCED

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ENGINEERING DEPARTMENT
MINNEAPOLIS, MN

NOBLES SUBSTATION
LOCATION PLAN

Xcel Energy

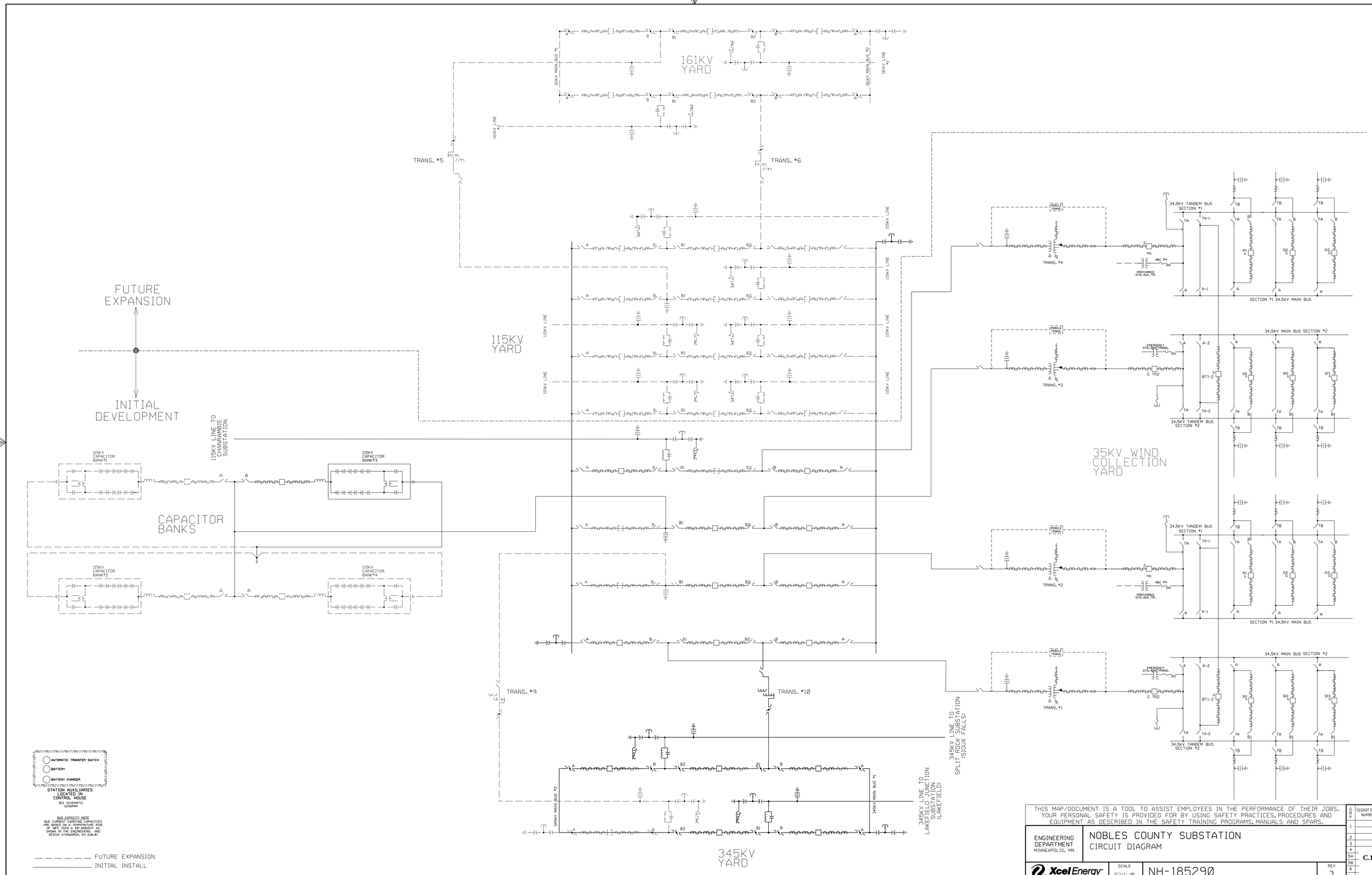
SCALE 1"=50'-0"

NH-185291

REV 4

G P	SIGNIFICANT NUMBER
1	
2	
3	
4	
5A	
5B	
6	
CL	

C.12



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ENGINEERING DEPARTMENT
MINNEAPOLIS, MN

NOBLES COUNTY SUBSTATION
CIRCUIT DIAGRAM

Xcel Energy

SCALE: ½"=1'-0"

NH-185290

REV: 3

SIGNIFICANT NUMBER

C.13