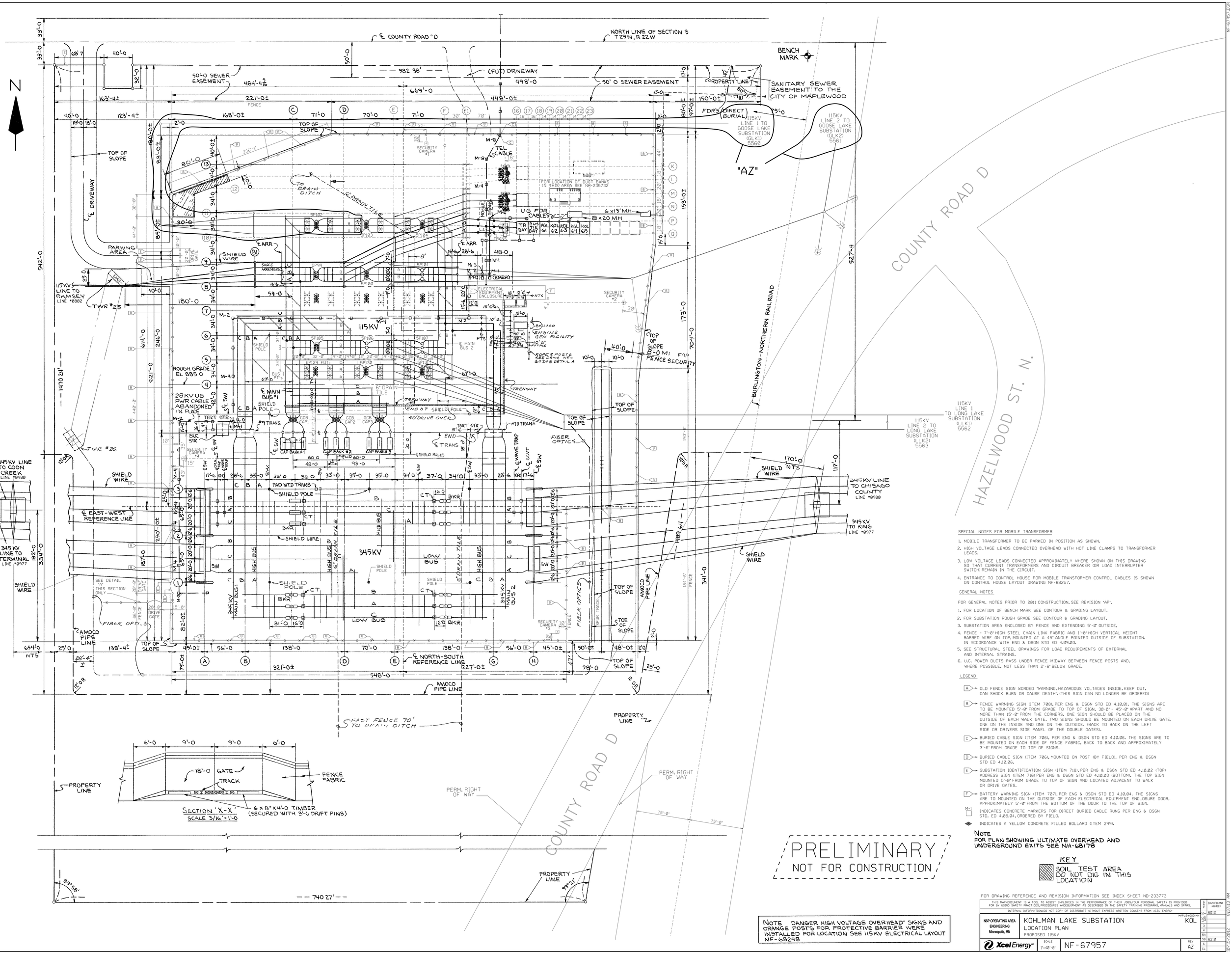
APPENDIX E

Substation Layouts

APPENDIX E.1

Kohlman Lake Substation



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 APPROXIMATELY WHERE SHOWN ON THIS DRAWING SO THAT CURRENT TRANSFORMERS AND CIRCUIT BREAKER (OR LOAD INTERRUPTER SWITCH) REMAIN IN THE CIRCUIT.
4. ENTRANCE TO CONTROL HOUSE FOR MOBILE TRANSFORMER CONTROL CABLES IS SHOWN ON CONTROL HOUSE LAYOUT DRAWING NF-68257.

GENERAL NOTES

FOR GENERAL NOTES PRIOR TO 2011 CONSTRUCTION, SEE REVISION 'AP'.

1. FOR LOCATION OF BENCH MARK SEE CONTOUR & GRADING LAYOUT.
2. FOR SUBSTATION ROUGH GRADE SEE CONTOUR & GRADING LAYOUT.
3. SUBSTATION AREA ENCLOSED BY FENCE AND EXTENDING 5'-0" OUTSIDE.
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 (ITEM 708), 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. TWO SIGNS SHOULD BE MOUNTED ON EACH DRIVE GATE, ONE ON THE INSIDE AND ONE ON THE OUTSIDE. (BACK TO BACK ON THE LEFT SIDE OR DRIVERS SIDE PANEL OF THE DOUBLE GATES).
- (C) → BURIED CABLE SIGN (ITEM 706), 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.
- (D) → BURIED CABLE SIGN (ITEM 706), MOUNTED ON POST (BY FIELD), PER ENG & DSGN STD ED 4.10.06.
- (E) → SUBSTATION IDENTIFICATION SIGN (ITEM 718), PER ENG & DSGN STD ED 4.10.02 (TOP) ADDRESS SIGN (ITEM 716) PER ENG & DSGN STD ED 4.10.03 (BOTTOM). THE TOP SIGN MOUNTED 5'-0" FROM GRADE TO TOP OF SIGN AND LOCATED ADJACENT TO WALK OR DRIVE GATES.
- (F) → BATTERY WARNING SIGN (ITEM 707), PER ENG & DSGN STD ED 4.10.04. THE SIGNS ARE TO MOUNTED ON THE OUTSIDE OF EACH ELECTRICAL EQUIPMENT ENCLOSURE DOOR, APPROXIMATELY 5'-0" FROM THE BOTTOM OF THE DOOR TO THE TOP OF SIGN.
- M-1 → INDICATES CONCRETE MARKERS FOR DIRECT BURIED CABLE RUNS PER ENG & DSGN STD. ED 4.05.04, ORDERED BY FIELD.
- ◆ INDICATES A YELLOW CONCRETE FILLED BOLLARD (ITEM 299).

NOTE
FOR PLAN SHOWING ULTIMATE OVERHEAD AND UNDERGROUND EXITS SEE NH-68178

KEY
SOIL TEST AREA DO NOT DIG IN THIS LOCATION

PRELIMINARY
NOT FOR CONSTRUCTION

NOTE DANGER HIGH VOLTAGE OVERHEAD" SIGNS AND ORANGE POSTS FOR PROTECTIVE BARRIER WERE INSTALLED FOR LOCATION SEE 115KV ELECTRICAL LAYOUT NF-68248

FOR DRAWING REFERENCE AND REVISION INFORMATION SEE INDEX SHEET ND-233773

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.
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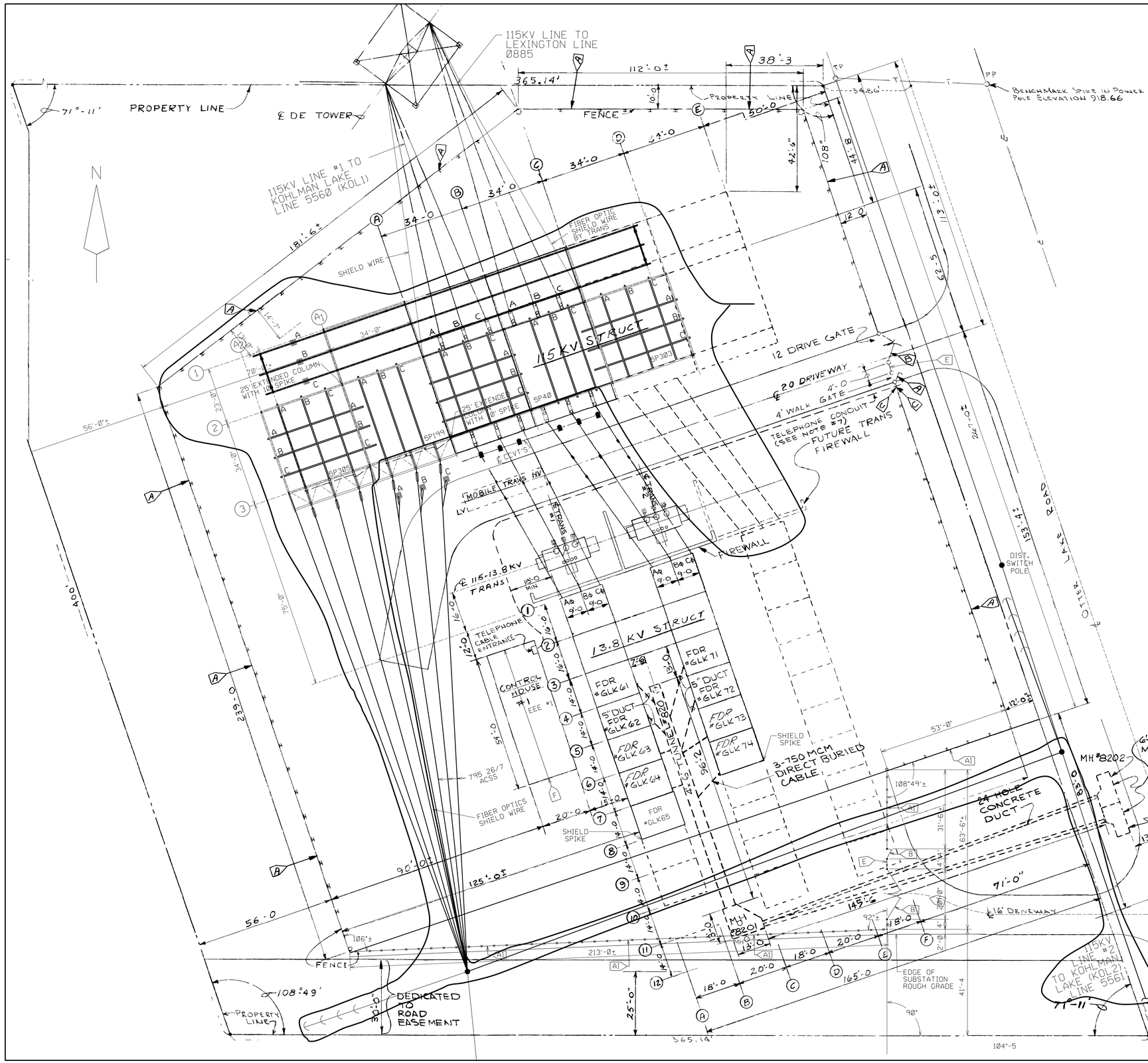
NSP OPERATING AREA ENGINEERING Minneapolis, MN	KOHLMAN LAKE SUBSTATION LOCATION PLAN PROPOSED 115KV	MAPLEWOOD MN KOL
Xcel Energy®	SCALE 1"=40'-0"	NF-67957 REV AZ

REV	DATE	SIGNIFICANT NUMBER
0	6012	
1		
2		
3		
4		
5A	6210	
5B		
6		
7		

10/15/2012 8:37:13 AM
NF-67957.DGN

APPENDIX E.2

Goose Lake Substation



GENERAL NOTES

FOR GENERAL NOTES PRIOR TO 2012 CONSTRUCTION, SEE REVISION 'AD'.

1. FOR LOCATION OF BENCH MARK SEE CONTOUR & GRADING LAYOUT.
2. FOR SUBSTATION ROUGH GRADE SEE CONTOUR & GRADING LAYOUT.
3. SUBSTATION AREA ENCLOSED BY FENCE AND EXTENDING 5'-0" OUTSIDE.
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.
7. TELEPHONE CONDUIT (PVC) WILL BE USED FROM 90° ELBOW AT THE CONTROL HOUSE TO 2'-0" OUTSIDE THE FENCE AT APPROXIMATELY 1'-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 (ITEM 708), 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. TWO SIGNS SHOULD BE MOUNTED ON EACH DRIVE GATE, ONE ON THE INSIDE AND ONE ON THE OUTSIDE. (BACK TO BACK ON THE LEFT SIDE OR DRIVERS SIDE PANEL OF THE DOUBLE GATES).
- (C) → BURIED CABLE SIGN (ITEM 706), 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.
- (D) → BURIED CABLE SIGN (ITEM 706), MOUNTED ON POST (BY FIELD), PER ENG & DSGN STD ED 4.10.06.
- (E) → SUBSTATION IDENTIFICATION SIGN (ITEM 718), PER ENG & DSGN STD ED 4.10.02 (TOP) ADDRESS SIGN (ITEM 716) PER ENG & DSGN STD ED 4.10.03 (BOTTOM). THE TOP SIGN MOUNTED 5'-0" FROM GRADE TO TOP OF SIGN AND LOCATED ADJACENT TO WALK OR DRIVE GATES.
- (F) → BATTERY WARNING SIGN (ITEM 707), PER ENG & DSGN STD ED 4.10.04. THE SIGNS ARE TO MOUNTED ON THE OUTSIDE OF EACH ELECTRICAL EQUIPMENT ENCLOSURE DOOR, APPROXIMATELY 5'-0" FROM THE BOTTOM OF THE DOOR TO THE TOP OF SIGN.
- M-1 → INDICATES CONCRETE MARKERS FOR DIRECT BURIED CABLE RUNS PER ENG & DSGN STD. ED 4.05.04, ORDERED BY FIELD.
- ◆ INDICATES A YELLOW CONCRETE FILLED BOLLARD (ITEM 299).
- (A1) → INDICATES NO TRESPASSING SIGNS WORDED "WARNING/HAZARDOUS VOLTAGES INSIDE/KEEP OUT/CAN SHOCK BURN OR CAUSE DEATH". THIS SIGN IS NSP STOCK NO. 16-00092. (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.

SPECIAL NOTES FOR MOBILE SUBSTATION

1. MOBILE SUBSTATION TO BE PARKED IN POSITION AS SHOWN.
2. HIGH VOLTAGE LEADS CONNECTED WITH HOT LINE CLAMPS TO OVERHEAD TRANSFORMER LEADS.
3. LOW VOLTAGE LEADS CONNECTED APPROXIMATELY WHERE SHOWN ON THIS DRAWING.

PRELIMINARY
NOT FOR CONSTRUCTION

OPTION 2
WEST ADDITION

FOR DRAWING REFERENCE AND REVISION INFORMATION SEE INDEX SHEET ND-242143

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NSP OPERATING AREA
ENGINEERING
Minneapolis, MN

GOOSE LAKE SUBSTATION — WHITE BEAR MN — GLK
LOCATION PLAN
4275 OTTER LAKE RD

Xcel Energy®

SCALE 1"=20'-0" | NH-29149 | REV AF

DRC	SIGNIFICANT NUMBER
2	2219
3	
4	
5A	
5B	6210
6	
CL	

$DATE$ $TIMES$ $FILES$