



UTILITIES CO.

A Subsidiary of MDU Resources Group, Inc.

400 North Fourth Street
Bismarck, ND 58501
701-222-7900

MDU Morton County 230kV Transmission Line - Construction Monthly Project Report

Case No. PU-21-151

August 18 2023

Project Overview – The MDU 230kV transmission project is a 1.5 mile rebuild/reroute of the 230kV transmission line near Heskett Station north of Mandan in Morton County, North Dakota.

Monthly Progress – All work has been completed. This is the final report to the Commission for the project. As built drawings and files are attached or will be provided electronically. See Attachment A for the drawings.

Environmental – No update to report.

Cultural Impacts – None to report.

Damage to UG Facilities – None to report.

Landowner/Public Issues or Complaints – None to report.

Permitting – No update to report.

Extraordinary Events – None to report.

Safety – No items to report.

Additional Information – The electronic version of the corridor, the facility design specifications and transmission facilities compatible with ERIS GIS are being submitted to the Commission.



DWG. NO.
MAN-PP-101-01
REVISION: 0
164319

NORTH
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MANDAN SUBSTATION REROUTE - PHASE 1
TL-088 230 KV TRANSMISSION LINE

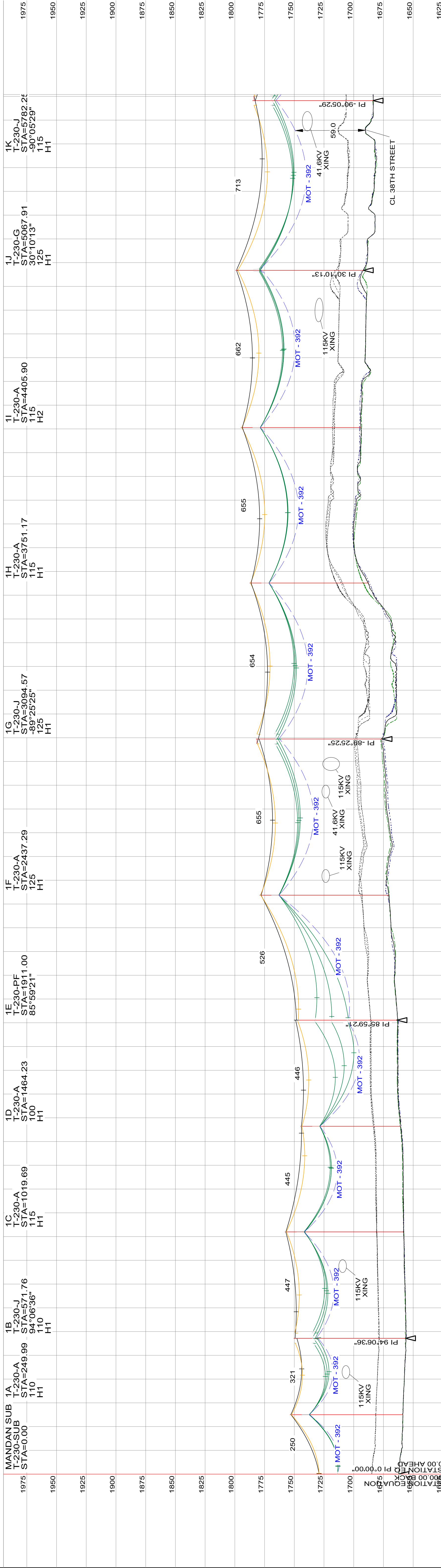
DESIGN DATA
CONDUCTOR: 795 KCMIL 457 TERN ACSS
PRIMARY OHGW: 1.1DN0.3825 ORGW
SECONDARY OHGW: 1-3/8" 7 STRAND EHS STEEL
GROUND CLEARANCE LINE: NESC MIN. = 22.7 FT
COORDINATES: SPS NORTH DAKOTA SOUTH, US FT

DATE
08/08/23
08/08/23
08/08/23
08/08/23

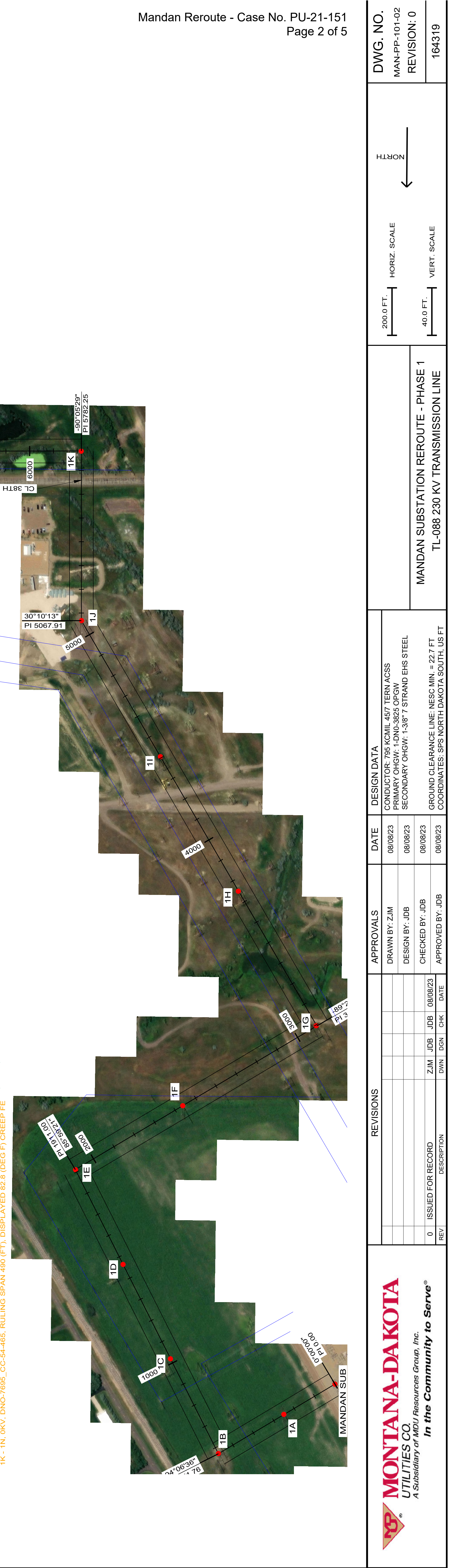
APPROVALS	
DRAWN BY: ZJM	
DESIGN BY: JDB	
CHECKED BY: JDB	
APPROVED BY: JDB	

REVISIONS			
REV	DESCRIPTION	DGN	CHK
0	ISSUED FOR RECORD	ZJM	JDB
		DWN	JDB

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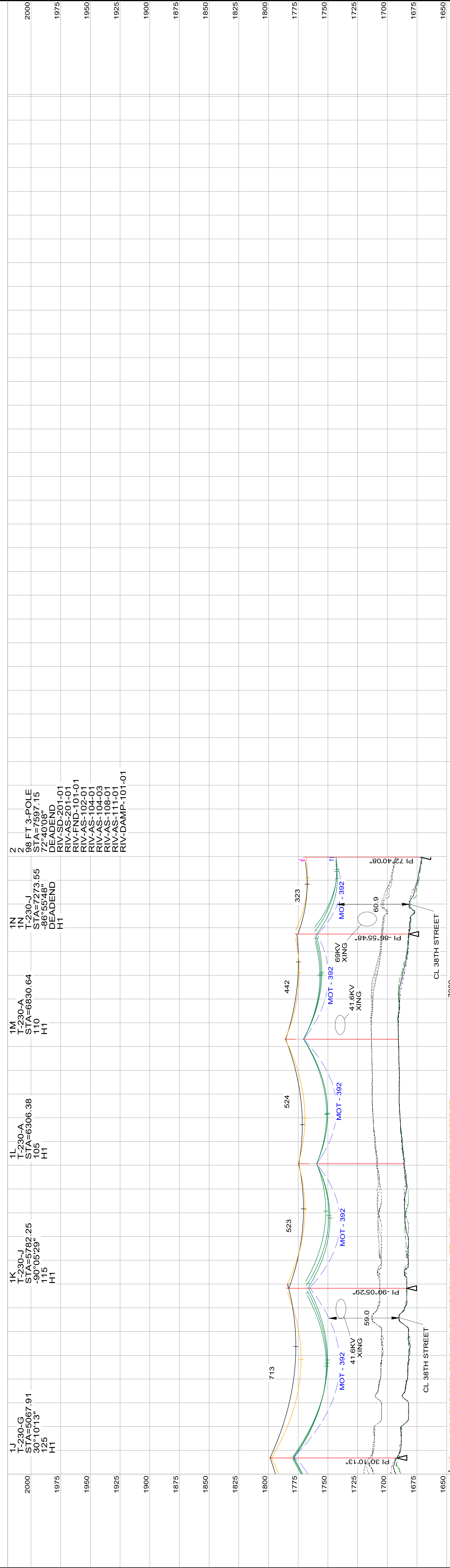


MANDAN SUB - 1B 0KV, 3 8-7 STRAND EHS STEEL WIR, RULING SPAN 306 (FT), DISPLAYED COLD/ULIFT CREEP FE 2000
 MANDAN SUB - 1B 0KV, 3 8-7 STRAND EHS STEEL WIR, RULING SPAN 279 (FT), DISPLAYED 82.9 (DEG F) CREEP FE
 MANDAN SUB - 1B 230KV, 795.0 KMIL 45-7 ACSS TERN-ACSS WIR, RULING SPAN 292 (FT), DISPLAYED 85.4 (DEG F) CREEP FE
 1B - 1E 0KV, 3 8-7 STRAND EHS STEEL WIR, RULING SPAN 446 (FT), DISPLAYED 88.7 (DEG F) CREEP FE
 1B - 1E 230KV, 795.0 KMIL 45-7 ACSS TERN-ACSS WIR, RULING SPAN 446 (FT), DISPLAYED 88.7 (DEG F) CREEP FE
 1E - 1G 0KV, 3 8-7 STRAND EHS STEEL WIR, RULING SPAN 445 (FT), DISPLAYED 85.4 (DEG F) CREEP FE
 1E - 1G 230KV, 795.0 KMIL 45-7 ACSS TERN-ACSS WIR, RULING SPAN 445 (FT), DISPLAYED 85.4 (DEG F) CREEP FE
 1G - 1K 0KV, 3 8-7 STRAND EHS STEEL WIR, RULING SPAN 447 (FT), DISPLAYED 85.4 (DEG F) CREEP FE
 1G - 1K 230KV, 795.0 KMIL 45-7 ACSS TERN-ACSS WIR, RULING SPAN 447 (FT), DISPLAYED 85.4 (DEG F) CREEP FE
 1K - 1N 0KV, 3 8-7 STRAND EHS STEEL WIR, RULING SPAN 448 (FT), DISPLAYED 85.4 (DEG F) CREEP FE
 1K - 1N 230KV, 795.0 KMIL 45-7 ACSS TERN-ACSS WIR, RULING SPAN 448 (FT), DISPLAYED 85.4 (DEG F) CREEP FE
 1N - 1J 0KV, 3 8-7 STRAND EHS STEEL WIR, RULING SPAN 526 (FT), DISPLAYED 88.7 (DEG F) CREEP FE
 1N - 1J 230KV, 795.0 KMIL 45-7 ACSS TERN-ACSS WIR, RULING SPAN 526 (FT), DISPLAYED 88.7 (DEG F) CREEP FE
 1J - 1H 0KV, 3 8-7 STRAND EHS STEEL WIR, RULING SPAN 655 (FT), DISPLAYED 85.4 (DEG F) CREEP FE
 1J - 1H 230KV, 795.0 KMIL 45-7 ACSS TERN-ACSS WIR, RULING SPAN 655 (FT), DISPLAYED 85.4 (DEG F) CREEP FE
 1H - 1I 0KV, 3 8-7 STRAND EHS STEEL WIR, RULING SPAN 654 (FT), DISPLAYED 85.4 (DEG F) CREEP FE
 1H - 1I 230KV, 795.0 KMIL 45-7 ACSS TERN-ACSS WIR, RULING SPAN 654 (FT), DISPLAYED 85.4 (DEG F) CREEP FE
 1I - 1G 0KV, 3 8-7 STRAND EHS STEEL WIR, RULING SPAN 655 (FT), DISPLAYED 85.4 (DEG F) CREEP FE
 1I - 1G 230KV, 795.0 KMIL 45-7 ACSS TERN-ACSS WIR, RULING SPAN 655 (FT), DISPLAYED 85.4 (DEG F) CREEP FE
 1G - 1F 0KV, 3 8-7 STRAND EHS STEEL WIR, RULING SPAN 662 (FT), DISPLAYED 85.4 (DEG F) CREEP FE
 1G - 1F 230KV, 795.0 KMIL 45-7 ACSS TERN-ACSS WIR, RULING SPAN 662 (FT), DISPLAYED 85.4 (DEG F) CREEP FE
 1F - 1E 0KV, 3 8-7 STRAND EHS STEEL WIR, RULING SPAN 713 (FT), DISPLAYED 88.7 (DEG F) CREEP FE
 1F - 1E 230KV, 795.0 KMIL 45-7 ACSS TERN-ACSS WIR, RULING SPAN 713 (FT), DISPLAYED 88.7 (DEG F) CREEP FE
 1E - 1D 0KV, 3 8-7 STRAND EHS STEEL WIR, RULING SPAN 713 (FT), DISPLAYED 88.7 (DEG F) CREEP FE
 1E - 1D 230KV, 795.0 KMIL 45-7 ACSS TERN-ACSS WIR, RULING SPAN 713 (FT), DISPLAYED 88.7 (DEG F) CREEP FE
 1D - 1C 0KV, 3 8-7 STRAND EHS STEEL WIR, RULING SPAN 713 (FT), DISPLAYED 88.7 (DEG F) CREEP FE
 1D - 1C 230KV, 795.0 KMIL 45-7 ACSS TERN-ACSS WIR, RULING SPAN 713 (FT), DISPLAYED 88.7 (DEG F) CREEP FE
 1C - 1B 0KV, 3 8-7 STRAND EHS STEEL WIR, RULING SPAN 713 (FT), DISPLAYED 88.7 (DEG F) CREEP FE
 1C - 1B 230KV, 795.0 KMIL 45-7 ACSS TERN-ACSS WIR, RULING SPAN 713 (FT), DISPLAYED 88.7 (DEG F) CREEP FE
 1B - 1A 0KV, 3 8-7 STRAND EHS STEEL WIR, RULING SPAN 713 (FT), DISPLAYED 88.7 (DEG F) CREEP FE
 1B - 1A 230KV, 795.0 KMIL 45-7 ACSS TERN-ACSS WIR, RULING SPAN 713 (FT), DISPLAYED 88.7 (DEG F) CREEP FE
 1A - 1975 0KV, 3 8-7 STRAND EHS STEEL WIR, RULING SPAN 713 (FT), DISPLAYED 88.7 (DEG F) CREEP FE
 1A - 1975 230KV, 795.0 KMIL 45-7 ACSS TERN-ACSS WIR, RULING SPAN 713 (FT), DISPLAYED 88.7 (DEG F) CREEP FE



REV		DESCRIPTION	DWN	JDB	JDB	08/08/23	DATE	APPROVALS	DATE	DESIGN DATA	MANDAN SUBSTATION REROUTE - PHASE 1 TL-088 230 KV TRANSMISSION LINE		DWG. NO. MAN-PP-101-02 REVISION: 0 164319	
0	ISSUED FOR RECORD	ZJM	JDB	JDB	08/08/23	DATE	APPROVED BY: JDB	08/08/23	CONDUCTOR: 795 KMIL 45/7 TERN ACSS PRIMARY OHGW: 1-DNO-3825 ORGN SECONDARY ORGN: 1-3/8" 7 STRAND EHS STEEL			200.0 FT. HORIZ. SCALE 40.0 FT. VERT. SCALE		
											NORTH			

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1G - 1K, 0KV, DNO-7695, CC-54-465, RULING SPAN 664 (FT), DISPLAYED 85.3 (DEG F) CREEP FE
 1G - 1K, 0KV, 3 8-7 STRAND EHS STEEL WIR, RULING SPAN 682 (FT), DISPLAYED COLD/LIFT INITIAL 1381 (LBS)
 1G - 1K, 230KV, 795.0 KCMIL 45-7 ACSS TERN-ACSS WIR, RULING SPAN 674 (FT), DISPLAYED 88.9 (DEG F) CREEP FE
 1K - 1N, 230KV, 795.0 KCMIL 45-7 ACSS TERN-ACSS WIR, RULING SPAN 664 (FT), DISPLAYED 85.3 (DEG F) CREEP FE
 1K - 1N, 230KV, 795.0 KCMIL 45-7 ACSS TERN-ACSS WIR, RULING SPAN 664 (FT), DISPLAYED 85.3 (DEG F) CREEP FE
 1K - 1N, 0KV, DNO-7695, CC-54-465, RULING SPAN 430 (FT), DISPLAYED 82.8 (DEG F) CREEP FE
 1K - 1N, 0KV, DNO-7695, CC-54-465, RULING SPAN 430 (FT), DISPLAYED 82.8 (DEG F) CREEP FE
 1N - 2, 230KV, 795.0 KCMIL 45-7 ACSS TERN-ACSS WIR, RULING SPAN 322 (FT), DISPLAYED 88.6 (DEG F) CREEP FE
 1N - 2, 0KV, 3 8-7 STRAND EHS STEEL WIR, RULING SPAN 325 (FT), DISPLAYED 83.4 (DEG F) CREEP FE
 2 - 6, 0KV, CC-135MM642, RULING SPAN 2041 (FT), DISPLAYED 83.4 (DEG F) CREEP FE
 2 - 6, 0KV, CC-135MM642, RULING SPAN 2041 (FT), DISPLAYED 83.4 (DEG F) CREEP FE
 2 - 6, 230KV, 1272.0 KCMIL TYPE 13 ACSS PHEASANT-TW-HS285 - SOUTH WIRE CERTIFIED V2, WIR, RULING SPAN 2044 (FT), DISPLAYED 85.2 (DEG F) CREEP FE
 2 - 6, 230KV, 1272.0 KCMIL ACSS TW HS285 "PHEASANT", DISPLAYED AT 60 DEG F "EVERYDAY", INITIAL SAG



REVISIONS		APPROVALS		DESIGN DATA	
REV	DESCRIPTION	DWN	CHK	DATE	DATE
0	ISSUED FOR RECORD	ZJM	JDB	08/08/23	08/08/23

DRAWN BY: ZJM		CONDUCTOR: 795 KCMIL 45/7 TERN ACSS	
DESIGN BY: JDB		PRIMARY OHGW: 1-DNO-3825 ORGW	
CHECKED BY: JDB		SECONDARY ORGW: 1-3/8" 7 STRAND EHS STEEL	
APPROVED BY: JDB		GROUND CLEARANCE LINE: NESC MIN. = 22.7 FT	
		COORDINATES: SPS NORTH DAKOTA SOUTH, US FT	

MANDAN SUBSTATION REROUTE - PHASE 1		T-088 230 KV TRANSMISSION LINE	
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DWG. NO. MAN-PP-101-03		REVISION: 0	
164319		200.0 FT. HORIZ. SCALE	
		40.0 FT. VERT. SCALE	

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TL-088 STRUCTURE LIST																				
MDU Structure Number	Construction Structure Number	Line Angle (deg)	Ahead Span (ft)	Station (ft)	Coordinates		Structure Height (ft)	Foundation Drawing	Foundation Schedule	Conductor Assembly	Left OHGW Assembly	Right OHGW Assembly	Misc. Assemblies	Cond Dampers		Left OHGW Dampers (2/18)		Right OHGW Dampers (2/14)		Comments
					Easting, X (ft) ⁽¹⁾	Northing, Y (ft) ⁽¹⁾								Centerline Elevation (ft)	Back	Ahead	Back	Ahead	Back	
2	15	72.7	668.83	7597.15	1872496.24	437404.44	1671.83	RIV-FND-101-01	RIV-FND-102-01	(3) RIV-AS-102-01 (AHEAD)	(1) RIV-AS-104-01 (AHEAD) (1) RIV-AS-104-03 (1) RIV-AS-104-02 (BACK)	(1) RIV-AS-104-01 (AHEAD) (1) RIV-AS-104-03 (1) RIV-AS-105-01 (BACK)	(3) RIV-AS-108-01 (3) RIV-AS-111-01 (1) RIV-DAMP-101-01	6	—	2 SVD	—	2 SVD	—	BNSF Railroad Crossing. OPGW Splice. 115KV Transmission Line Crossing.
3	1		2543.56	8265.98	1873142.68	437576.05	1653.92	RIV-FND-101-01	RIV-FND-102-01	(3) RIV-AS-101-01	(1) RIV-AS-103-01	(1) RIV-AS-103-01	(1) RIV-AS-114-01 (4) RIV-AS-108-01 (4) RIV-AS-111-01 (1) RIV-AS-112-01 (1) RIV-AS-112-02 (1) RIV-DAMP-101-01	6	18	2	8	2	8	"Ahead" dampers include midspan dampers. Missouri River Crossing.
4	2		1287.07	10809.53	1875601.21	438228.20	1638.51	RIV-FND-101-01	RIV-FND-102-01	(3) RIV-AS-101-01	(1) RIV-AS-103-01	(1) RIV-AS-103-01	(4) RIV-AS-108-01 (4) RIV-AS-111-01 (1) RIV-AS-112-01 (1) RIV-AS-112-02 (1) RIV-DAMP-101-01	6	6	2	3	2	3	Mistey Waters Marina Crossing.
6	3	32.1	1186.91	12096.60	1876845.06	438558.92	1638.46	RIV-FND-101-01	RIV-FND-102-01	(3) RIV-AS-102-01 (BACK) (3) RIV-AS-106-01 (AHEAD) (3) RIV-AS-107-01	(1) RIV-AS-104-01 (BACK) (3) RIV-AS-104-02 (AHEAD) (1) RIV-AS-104-03	(1) RIV-AS-104-01 (BACK) (3) RIV-AS-105-01 (AHEAD) (1) RIV-AS-104-03	(4) RIV-AS-108-01 (4) RIV-AS-111-01 (1) RIV-DAMP-101-01	—	6	—	4 SVD	—	4 SVD	Burnt Creek Loop Road Crossing.
7	4		1028.28	13283.51	1877978.34	438206.18	1637.19	—	—	—	—	—	—	—	—	—	—	—	—	Structure Provided for Reference.

Notes:

- (1) Coordinates are in NAD 83 State Plane System North Dakota South, US Surveyy FT
- (2) OHGW dampers may be either Spiral Vibration Dampers (SVD) or Stockbridge dampers. OHGW damper placement to follow manufacturer recommendations. Refer to RIV-DAMP-101-01 for Stockbridge damper placement sheets, and section "08 Manufacturer and Vendor" for SVD manufacturer installation recommendation and damper placement sheet
- (3) Left OHGW Dampers to be placed on the left OHGW wire when looking ahead on line
- (4) Right OHGW Dampers to be placed on the right OHGW wire when looking ahead on line