

REFERENCE DRAWINGS									
DRAWING No	TITLE								
1827-03-ML-02-020	MAINLINE- ALIGNMENT SHEET								
1801-03-ML-03-113	NORTH BRANCH PARK RIVER DRY CROSSING								
REV No	DATE	REVISION	PROJECT CODE	DRAFT BY	DRAFT CHK	DESIGN BY	DESIGN CHK	PROJ MGR	
0	MAR 28 08	FILED WITH THE ND PSC MAR 28 08	THES005388S	JB	SS	HF	RG	RG	
1	JUN 05 08	ISSUED FOR CONSTRUCTION (REVISED PER ND PSC REQUIREMENTS)	THES005388S	JB	SS	HF	RG	RG	
2	JUL 28 08	REVISED ATWs PER CONTR. SUB. TO ND PSC JULY 28, 2008	THES005388S	BM	SS	HF	RG	RG	

JUSTIFICATION

- EXTRA WORK SPACE REQUIRED TO STORE A SIGNIFICANT VOLUME OF SPOIL GENERATED FROM INCREASED DEPTH AND LENGTH OF EXTRA DEPTH DITCH AT THE CROSSING THAT IS REQUIRED TO ADDRESS POTENTIAL SCOUR DEPTH AND LATERAL MIGRATION OF THE STREAM RESPECTIVELY.
- 3160 CUBIC YARDS OF GRADING AND TRENCH SOIL.

PRELIMINARY

CADD DRAWING: DO NOT MAKE MANUAL REVISIONS

PREPARED BY:
TROW ENGINEERING CONSULTANTS INC.

TransCanada
In business to deliver

1300 Metropolitan Boulevard, Suite 200
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Phone: 1-850-385-5441
Fax: 1-850-385-5523

Trow

EDINBURG PUMP STATION

FIA # 1801 CHAINAGE: MP 29.4 DISCIPLINE # 03

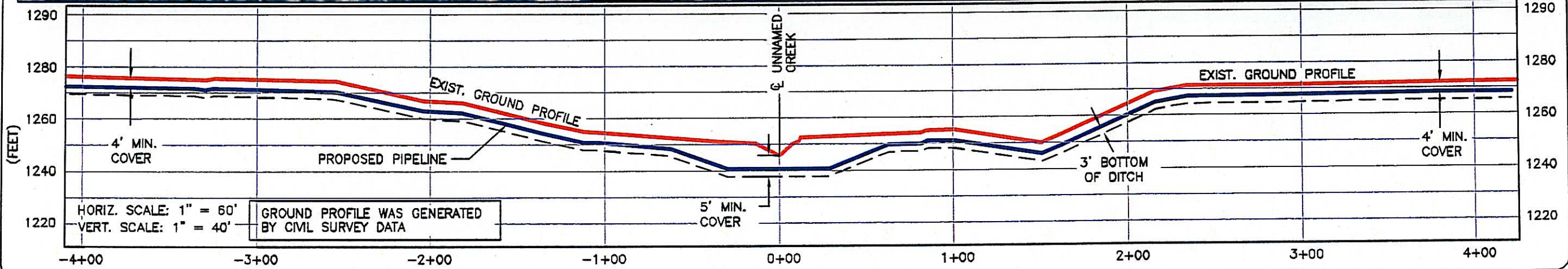
NORTH BRANCH PARK RIVER
FORESTED STREAM CROSSING
PEMBINA COUNTY, NORTH DAKOTA

SCALE As Shown DRAWING No 1801-03-ML-03-057 REV 2

TIME-DESIGNFILE



Scale: 1" = 60'



REFERENCE DRAWINGS									
DRAWING No	TITLE								
1827-03-ML-02-021	MAINLINE - ALIGNMENT SHEET								
REV No	DATE	REVISION	PROJECT CODE	DRAFT BY	DRAFT CHK	DESIGN BY	DESIGN CHK	PROJ MGR	
0	MAR 28 08	FILED WITH THE ND PSC MAR 28 08	THES005388S	JB	SS	HF	RG	RG	
1	JUN 05 08	ISSUED FOR CONSTRUCTION (REVISED PER ND PSC REQUIREMENTS)	THES005388S	AH	SS	HF	RG	RG	
2	JUL 28 08	REVISED ATW _s PER CONTR. SUB. TO ND PSC JULY 28, 2008	THES005388S	DH	SS	SS	SS	RG	

JUSTIFICATION

- EXTRA WORK SPACE REQUIRED TO STORE A SIGNIFICANT VOLUME OF SPOIL GENERATED FROM GRADING OF STEEP SLOPES ON BOTH SIDES OF THE CROSSING AND A SUBSTANTIAL LENGTH OF EXTRA DEPTH DITCH AT THE CROSSING THAT IS REQUIRED TO ADDRESS POTENTIAL LATERAL MIGRATION OF THE STREAM.
- 3785 CUBIC YARDS OF GRADING AND TRENCH SPOIL.

PRELIMINARY

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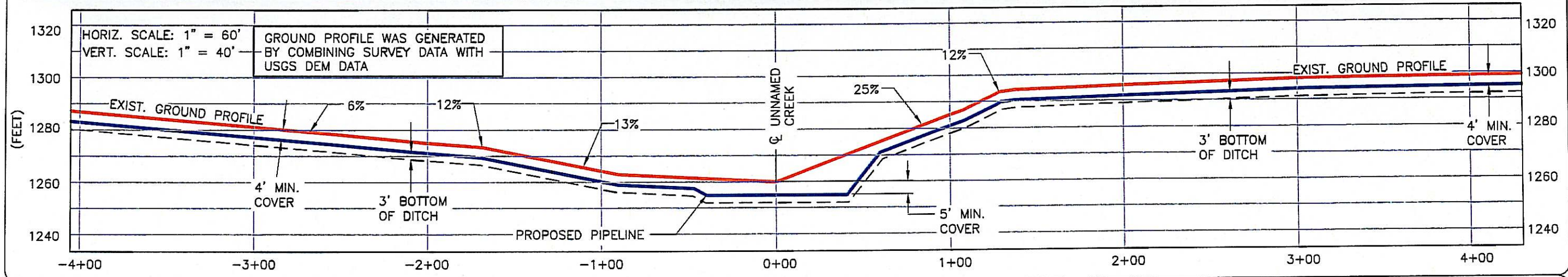
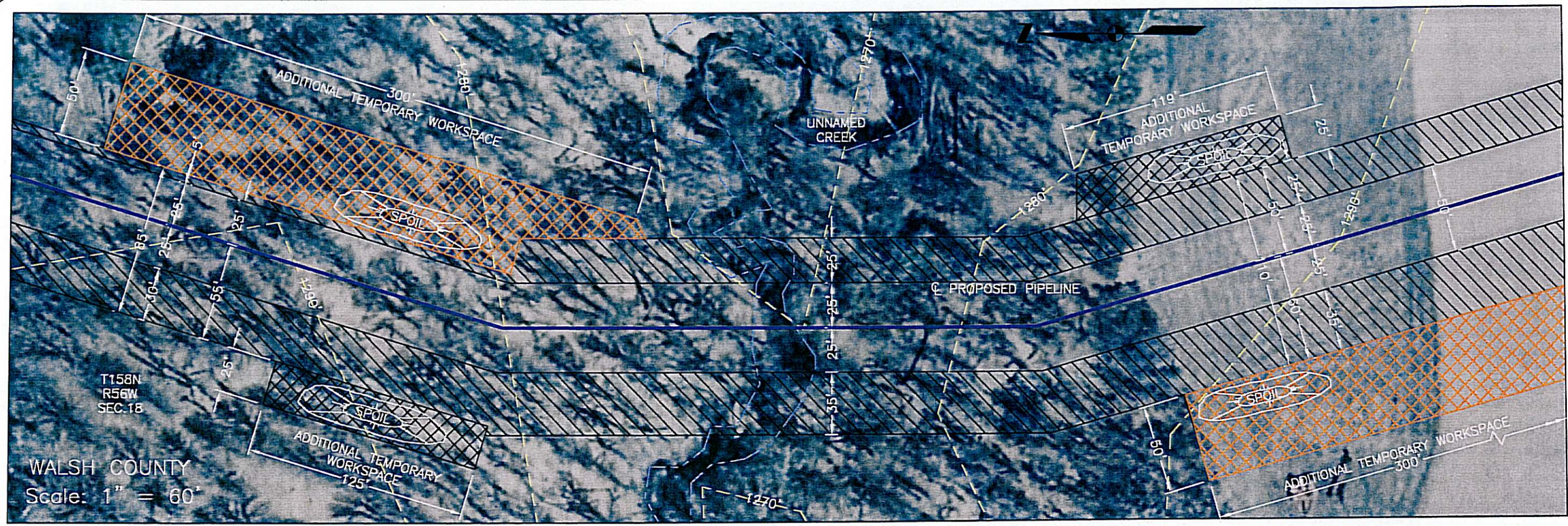
EDINBURG PUMP STATION

FIA # 1801	CHAINAGE: MP 31.8	DISCIPLINE # 03
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UNNAMED CREEK
 FORESTED STREAM CROSSING
 PEMBINA COUNTY, NORTH DAKOTA

SCALE As Shown	DRAWING No 1801-03-ML-03-058	REV 1
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TIME-DESIGNFILE



REFERENCE DRAWINGS								
DRAWING No	TITLE							
1828-03-ML-02-001	MAINLINE - ALIGNMENT SHEET							


REV No	DATE	REVISION	PROJECT CODE	DRAFT BY	DRAFT CHK	DESIGN BY	DESIGN CHK	PROJ MGR
0	MAR 28 08	FILED WITH THE ND PSC MAR 28 08	THES005388S	CB	SS	HF	RG	RG
1	MAY 27 08	UPDATED PER PSC COMMENTS	THES005388S	BM	TB	SS	SS	RG
2	JUN 05 08	ISSUED FOR CONSTRUCTION (REVISED PER ND PSC REQUIREMENTS)	THES005388S	BM	TB	SS	SS	RG
3	JUL 28 08	REVISED ATWs PER CONTR. SUB. TO ND PSC JULY 28, 2008	THES005388S	BM	TB	SS	SS	RG


JUSTIFICATION

- EXTRA WORK SPACE REQUIRED TO STORE A SIGNIFICANT VOLUME OF SPOIL GENERATED FROM GRADING OF STEEP SLOPES ON BOTH SIDES OF THE CROSSING AND A SUBSTANTIAL LENGTH OF EXTRA DEPTH DITCH AT THE CROSSING THAT IS REQUIRED TO ADDRESS POTENTIAL LATERAL MIGRATION OF THE STREAM.
- 3416 CUBIC YARDS OF GRADING AND TRENCH SPOIL.

PRELIMINARY

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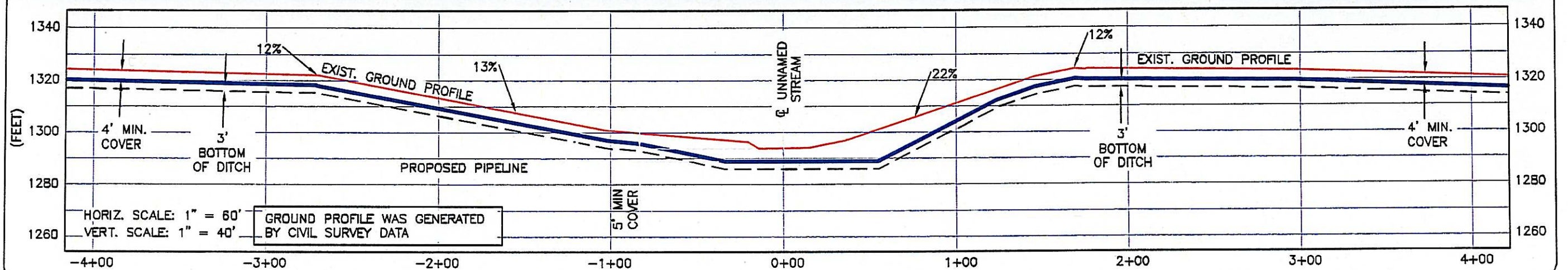
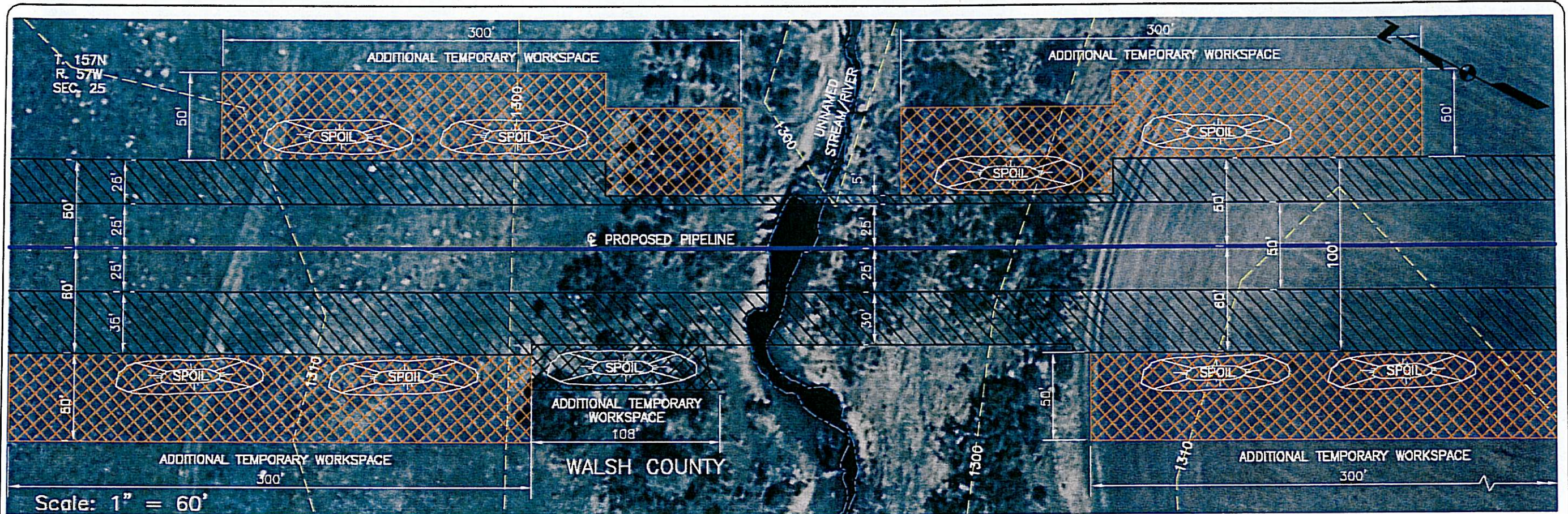


NIAGRA PUMP STATION
 FIA # 1802 CHAINAGE: MP 35.3 DISCIPLINE # 03

UNNAMED CREEK
 FORESTED STREAM CROSSING
 WALSH COUNTY, NORTH DAKOTA

SCALE: As Shown DRAWING No: 1802-03-ML-03-051 REV: 3

TIME-DESIGNFILE



REFERENCE DRAWINGS									
DRAWING No	TITLE								
1828-03-ML-02-008	MAINLINE - ALIGNMENT SHEET								
REV No	DATE	REVISION	PROJECT CODE	DRAFT BY	DRAFT CHK	DESIGN BY	DESIGN CHK	PROJ MGR	
0	MAR 28 08	FILED WITH THE ND PSC MAR 28 08	THES005388S	CB	SS	HF	RG	RG	
1	MAY 27 08	UPDATED PER PSC COMMENTS	THES005388S	JB	TB	SS	SS	RG	
2	JUN 05 08	ISSUED FOR CONSTRUCTION (REVISED PER ND PSC REQUIREMENTS)	THES005388S	AH	TB	SS	SS	RG	
3	JUL 28 08	REVISED ATWs PER CONTR. SUB. TO ND PSC JULY 28 2008	THES005388S	JB	TB	SS	SS	RG	

JUSTIFICATION

- EXTRA WORK SPACE REQUIRED TO STORE A SIGNIFICANT VOLUME OF SPOIL GENERATED FROM GRADING OF THE STEEP SLOPES ON BOTH SIDES OF THE CROSSING AND A SUBSTANTIAL LENGTH OF EXTRA DEPTH DITCH AT THE CROSSING THAT IS REQUIRED TO ADDRESS POTENTIAL LATERAL MIGRATION OF THE STREAM.
- 3369 CUBIC YARDS OF GRADING AND TRENCH SPOIL.

PRELIMINARY



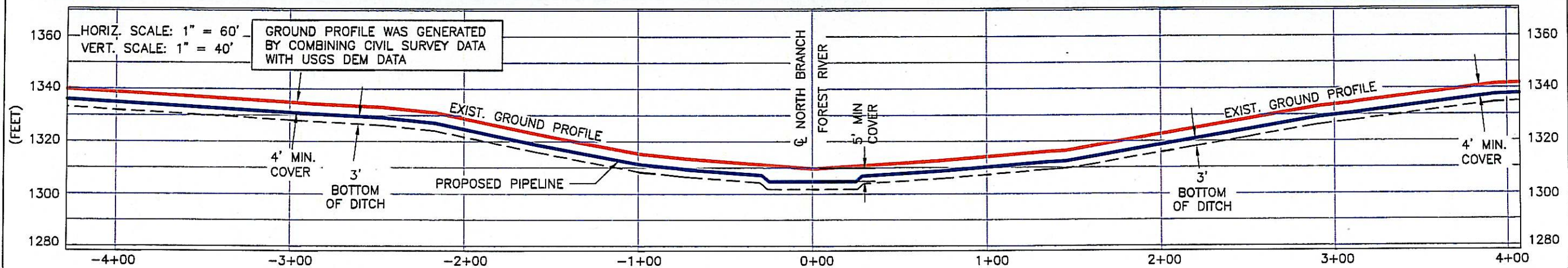
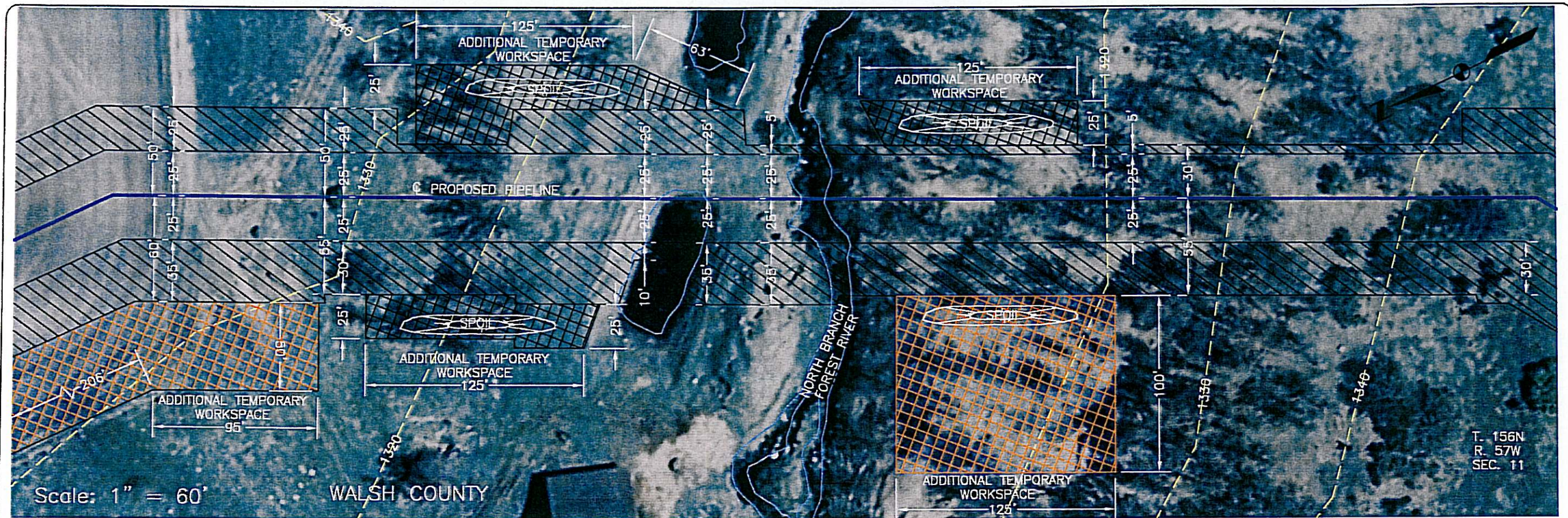
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NIAGRA PUMP STATION			
FIA #	1802	CHAINAGE:	MP 42.7
		DISCIPLINE #	03

UNNAMED STREAM
FORESTED STREAM CROSSING
WALSH COUNTY, NORTH DAKOTA

SCALE	DRAWING No	REV
As Shown	1802-03-ML-03-055	3



REFERENCE DRAWINGS										
DRAWING No	TITLE									
1828-03-ML-02-009	MAINLINE - ALIGNMENT SHEET									
1802-03-ML-03-009	NORTH BRANCH FOREST RIVER - DRY CROSSING									
REV No	DATE	REVISION	PROJECT CODE	DRAFT BY	DRAFT CHK	DESIGN BY	DESIGN CHK	PROJ MGR		
0	MAR 28 08	FILED WITH THE ND PSC MAR 28 08	THES005388S	BM	SS	HF	RG	RG		
1	JUN 05 08	ISSUED FOR CONSTRUCTION (REVISED PER ND PSC REQUIREMENTS)	THES005388S	JB	SS	HF	RG	RG		
2	JUL 28 08	REVISED ATW's PER CONTR. SUB. TO ND PSC JULY 28, 2008	THES005388S	BM	SS	HF	RG	RG		

JUSTIFICATION

- EXTRA WORK SPACE REQUIRED TO STORE A SIGNIFICANT VOLUME OF SPOIL GENERATED FROM GRADING OF THE STEEP SLOPES ON THE NORTH SIDE OF THE CROSSING AND A SUBSTANTIAL LENGTH OF EXTRA DEPTH DITCH AT THE CROSSING THAT IS REQUIRED TO ADDRESS POTENTIAL LATERAL MIGRATION OF THE RIVER.
- 3258 CUBIC YARDS OF GRADING AND TRENCH SPOIL.

PRELIMINARY

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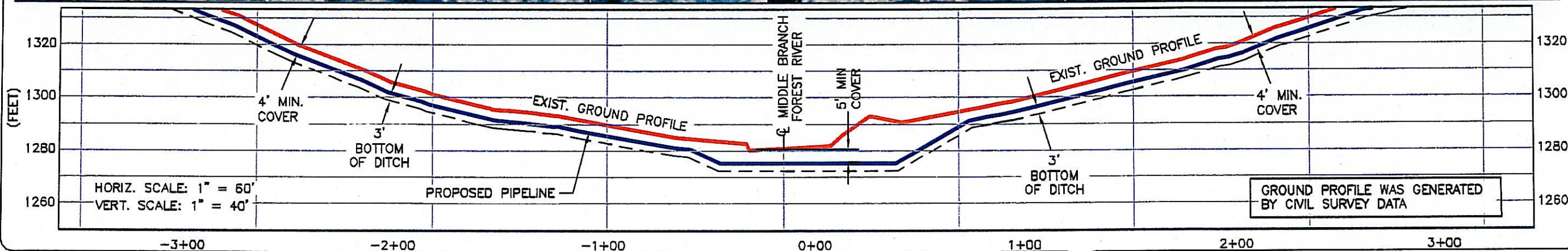
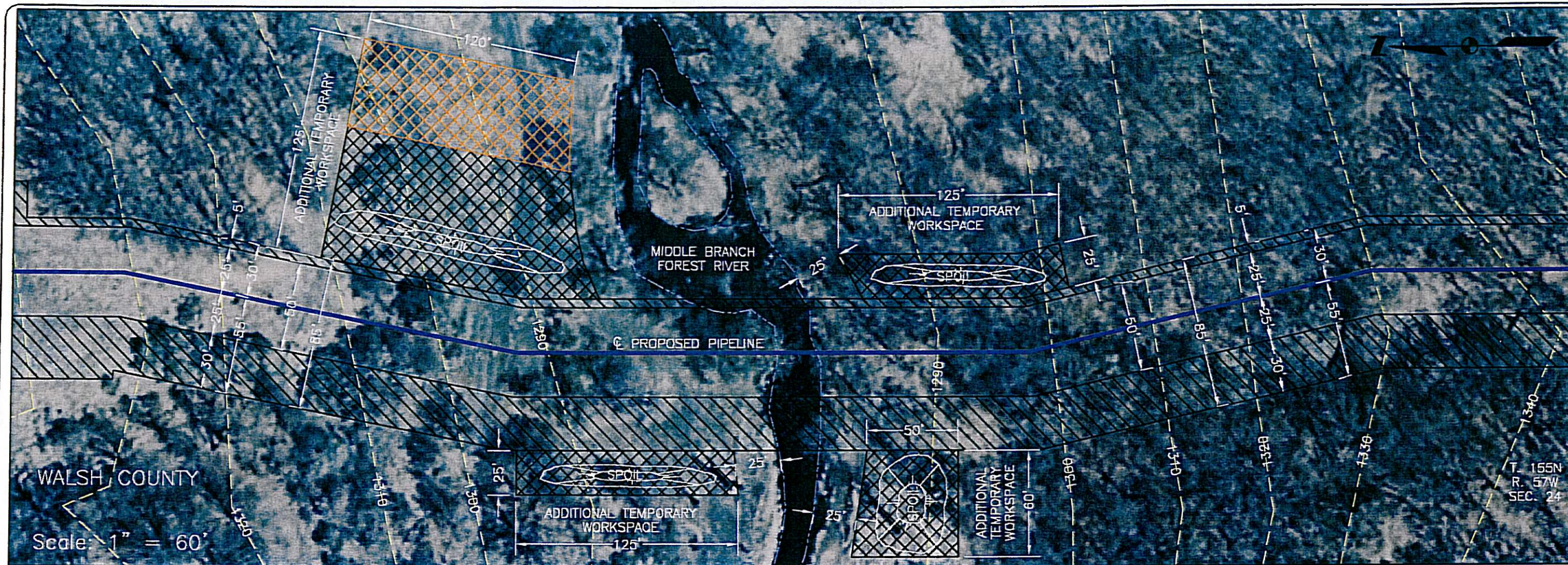
NIAGRA PUMP STATION

FIA # 1802 CHAINAGE: MP 46.4 DISCIPLINE # 03

NORTH BRANCH FOREST RIVER
FORESTED STREAM CROSSING
WALSH COUNTY, NORTH DAKOTA

SCALE As Shown DRAWING No 1802-03-ML-03-056 REV 2

TIME-DESIGNFILE



REFERENCE DRAWINGS										
DRAWING No	TITLE									
1828-03-ML-02-014	MAINLINE - ALIGNMENT SHEET									
1802-03-ML-03-004	MIDDLE BRANCH FOREST RIVER - DRY CROSSING									
REV No	DATE	REVISION	PROJECT CODE	DRAFT BY	DRAFT CHK	DESIGN BY	DESIGN CHK	PROJ MGR		
0	MAR 28 08	FILED WITH THE ND PSC MAR 28 08	THES0053885	BM	SS	HF	RG	RG		
1	JUN 05 08	ISSUED FOR CONSTRUCTION (REVISED PER ND PSC REQUIREMENTS)	THES0053885	BM	TB	SS	SS	RG		
2	JUL 28 08	REVISED ATWs PER CONTR. SUB. TO ND PSC JULY 28, 2008	THES0053885	TB	SS	SS	SS	RG		

JUSTIFICATION

- EXTRA WORK SPACE REQUIRED TO STORE A SIGNIFICANT VOLUME OF SPOIL GENERATED FROM GRADING OF STEEP SLOPES ON BOTH SIDES OF THE RIVER AND INCREASED DEPTH AND LENGTH OF EXTRA DEPTH DITCH AT THE CROSSING THAT IS REQUIRED TO ADDRESS POTENTIAL SCOUR DEPTH AND LATERAL MIGRATION OF THE RIVER RESPECTIVELY.
- 5891 CUBIC YARDS OF GRADING AND TRENCH SPOIL.

PRELIMINARY



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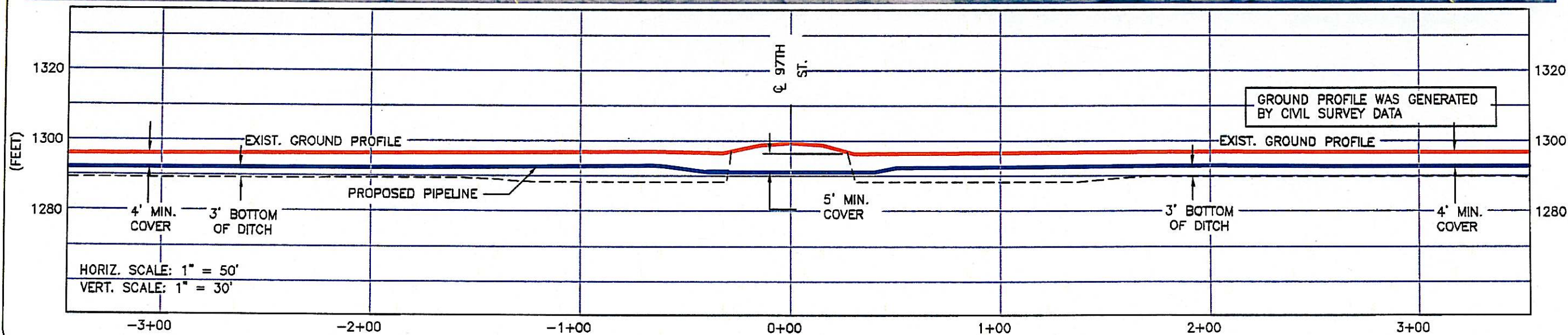
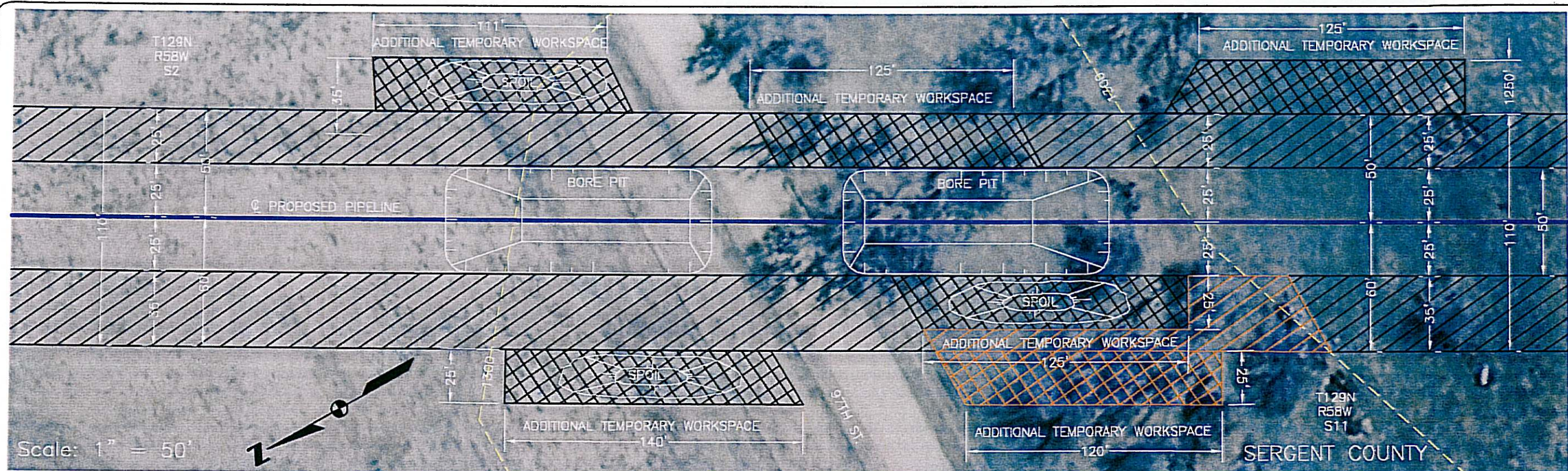


EDINBURG PUMP STATION

FIA # 1802 CHAINAGE: MP 54.8 DISCIPLINE # 03

MIDDLE BRANCH FOREST RIVER
FORESTED STREAM CROSSING
WALSH COUNTY, NORTH DAKOTA

SCALE As Shown DRAWING No 1802-03-ML-03-058 REV 2



REFERENCE DRAWINGS	
DRAWING No	TITLE
1831-03-ML-02-028	MAINLINE - ALIGNMENT SHEET

REV No	DATE	REVISION	PROJECT CODE	DRAFT BY	DRAFT CHK	DESIGN BY	DESIGN CHK	PROJ MGR
0	MAR 28 08	FILED WITH THE ND PSC MAR 28 08	THES005388S	AH	SS	HF	RG	RG
1	JUN 5 08	ISSUED FOR CONSTRUCTION (REVISED PER ND PSC REQUIREMENTS)	THES005388S	BM	TB	SS	SS	RG
2	JUL 28 08	REVISED ATWS PER CONTR. SUB. TO ND PSC JULY 28, 2008	THES005388S	TB	SS	SS	SS	RG

JUSTIFICATION

- EXTRA WORK SPACE REQUIRED TO STORE A SIGNIFICANT VOLUME OF SPOIL GENERATED BY EXCAVATING SAFE BORE AND RECEIVING PITS. BECAUSE WORKERS WILL OPERATE IN THE EXCAVATION, SAFETY CONSIDERATION REQUIRE THE TRENCH WALLS TO BE APPROPRIATELY SLOPED, RESULTING IN A SIGNIFICANTLY LARGER AND WIDER EXCAVATION, WITH RESULTING LARGE SPOIL VOLUMES GENERATED.
- AVOID TREES ON SOUTH SIDE TO EXTENT POSSIBLE.
- 2,507 CUBIC YARDS OF GRADING AND BORE PITS.

PRELIMINARY

CADD DRAWING: DO NOT MAKE MANUAL REVISIONS



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LUDDEN PUMP STATION

FIA # 1805 CHAINAGE: MP 212.6 DISCIPLINE # 03

97TH ST.
FORESTED ROAD CROSSING
SERGENT COUNTY, NORTH DAKOTA

SCALE As Shown DRAWING No 1805-03-ML-03-101 REV 2

PLOTTED SIZE: ANSI B (11x17)