

REFERENCE DRAWINGS									
DRAWING No	TITLE								
MAIN LINE PROFILE	PROFILE_ML.dwg								
UTM 14 BASE FILE	ML_14_OC_BASE.dwg								
NOTES AND LEGEND	NOTES_LEGEND.dwg								
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	MAY 09 08	IDENTIFY 12% SLOPES	THES005388S	CB	TB	SS	SS	RG	
2	MAY 27 08	UPDATED PER PSC COMMENTS	THES005388S	BM	TB	SS	SS	RG	

JUSTIFICATION

- EXTRA WORK SPACE REQUIRED TO STORE A SIGNIFICANT VOLUME OF SPOIL GENERATED TO GRADE DOWN THE RIDGE 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 STREAM.
- 4034 CUBIC YARDS OF GRADING AND TRENCH SPOIL.

TransCanada
In business to deliver

PREPARED BY:
TROW ENGINEERING CONSULTANTS INC.

1300 Metropolitan Boulevard, Suite 200
Tallahassee, Florida, USA 32308
Phone: 1-850-385-5441
Fax: 1-850-385-5523

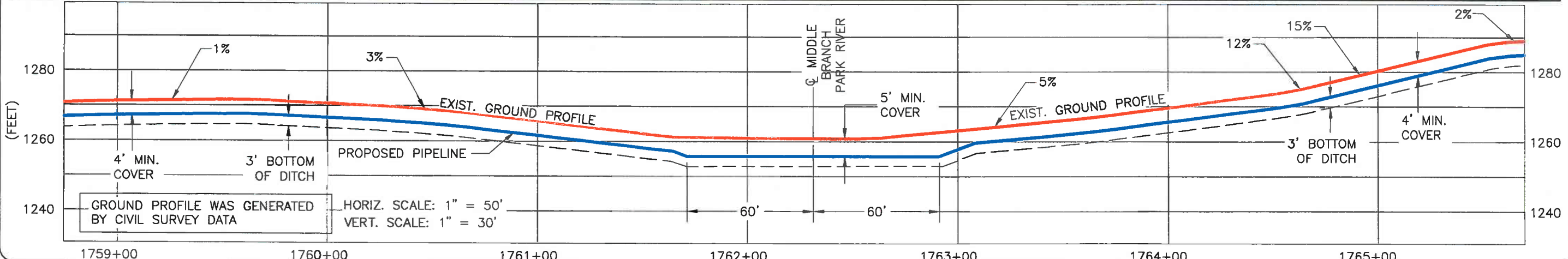
EDINBURG PUMP STATION

FIA # 1801	CHAINAGE: MP 22.7	DISCIPLINE # 03
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UNNAMED CREEK
FORESTED STREAM CROSSING
PEMBINA COUNTY, NORTH DAKOTA

SCALE As Shown	DRAWING No 1801-03-ML-03-054	REV 2
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TIME-DESIGNFILE



DRAWING No		TITLE						
MAIN LINE PROFILE		PROFILE_ML.dwg						
UTM 14 BASE FILE		ML_14_OC_BASE.dwg						
ND AERIAL		ND13 & ND 14.sid						
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	MAY 09 08	IDENTIFY 12% SLOPES	THES005388S	CB	TB	SS	SS	RG
2	MAY 15 08	UPDATE RE-ROUTE	THES005388S	BM	TB	SS	SS	RG
3	MAY 27 08	UPDATED PER PSC COMMENTS	THES005388S	BM	TB	SS	SS	RG

JUSTIFICATION

- EXTRA WORK SPACE REQUIRED TO STORE A SIGNIFICANT VOLUME OF SPOIL GENERATED FROM GRADING OF THE STEEP SLOPE ON THE NORTH SIDE OF THE CROSSING AND A SUBSTANTIAL LENGTH OF EXTRA DEPTH DITCH AT BOTH CROSSINGS THAT IS REQUIRED TO ADDRESS POTENTIAL LATERAL MIGRATION OF BOTH STREAMS.
- 3637 CUBIC YARDS OF GRADING AND TRENCH SPOIL.

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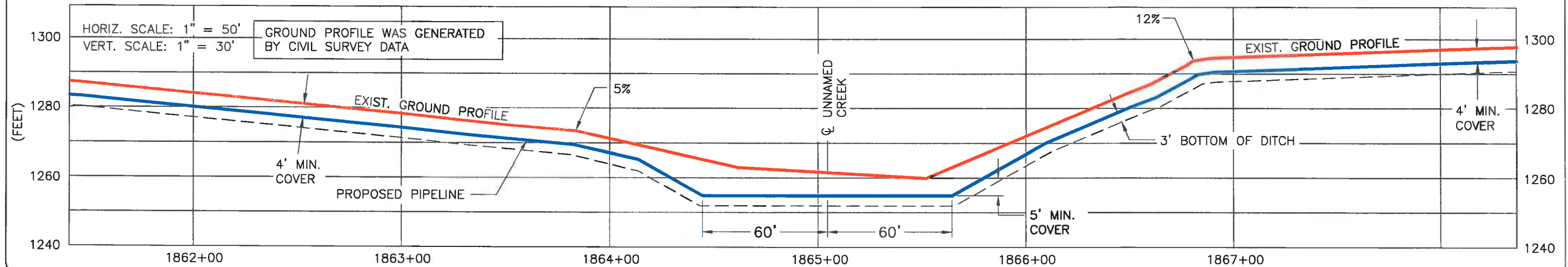
EDINBURG PUMP STATION

FIA # 1801	CHAINAGE: MP 33.4	DISCIPLINE # 03
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MIDDLE BRANCH PARK RIVER
FORESTED STREAM CROSSING
WALSH COUNTY, NORTH DAKOTA

SCALE As Shown	DRAWING No 1801-03-ML-03-059	REV 3
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TIME-DESIGNFILE



REFERENCE DRAWINGS	
DRAWING No	TITLE
MAIN LINE PROFILE	PROFILE_ML.dwg
UTM 14 BASE FILE	ML_14_OC_BASE.dwg
ND AERIAL	ND15.sid

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 09 08	IDENTIFY 12% SLOPES	THES005388S	CB	TB	SS	SS	RG
2	MAY 27 08	UPDATED PER PSC COMMENTS	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.



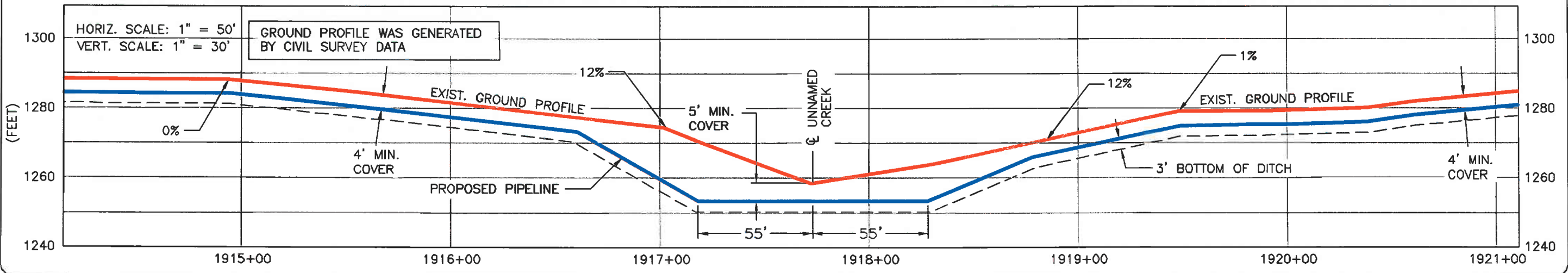
PREPARED BY:
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NIAGRA PUMP STATION
 FIA # 1802 CHAINAGE: MP 35.3 DISCIPLINE # 03

UNNAMED CREEK
 FORESTED STREAM CROSSING
 WALSH COUNTY, NORTH DAKOTA

SCALE As Shown DRAWING No 1802-03-ML-03-051 REV 2



REFERENCE DRAWINGS									
DRAWING No	TITLE								
MAIN LINE PROFILE	PROFILE_ML.dwg								
UTM 14 BASE FILE	ML_14_OC_BASE.dwg								
ND AERIAL	ND15.sid								
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 09 08	IDENTIFY 12% SLOPE	THES005388S	BM	TB	SS	SS	RG	
2	MAY 27 08	UPDATED PER PSC COMMENTS	THES005388S	JB	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.
- 4472 CUBIC YARDS OF GRADING AND TRENCH SPOIL.

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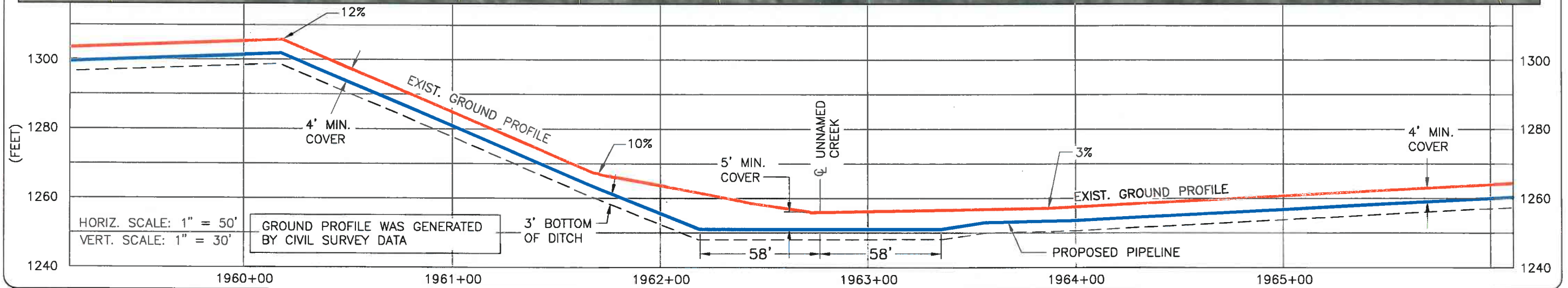
NIAGRA PUMP STATION

FIA # 1802	CHAINAGE: MP 36.3	DISCIPLINE # 03
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UNNAMED CREEK
FORESTED STREAM CROSSING
WALSH COUNTY, NORTH DAKOTA

SCALE As Shown	DRAWING No 1802-03-ML-03-052	REV 2
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TIME-DESIGNFILE



REFERENCE DRAWINGS									
DRAWING No	TITLE								
MAIN LINE PROFILE	PROFILE_ML.dwg								
UTM 14 BASE FILE	ML_14_OC_BASE.dwg								
ND AERIAL	ND15.sid								
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 09 08	IDENTIFY 12% SLOPE	THES005388S	BM	TB	SS	SS	RG	
2	MAY 27 08	UPDATED PER PSC COMMENTS	THE S005388S	BM	TB	SS	SS	RG	

JUSTIFICATION

- EXTRA WORK SPACE REQUIRED TO STORE A SIGNIFICANT VOLUME OF SPOIL GENERATED FROM GRADING OF THE STEEP SLOPE 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 STREAM.
- 3173 CUBIC YARDS OF GRADING AND TRENCH SPOIL.



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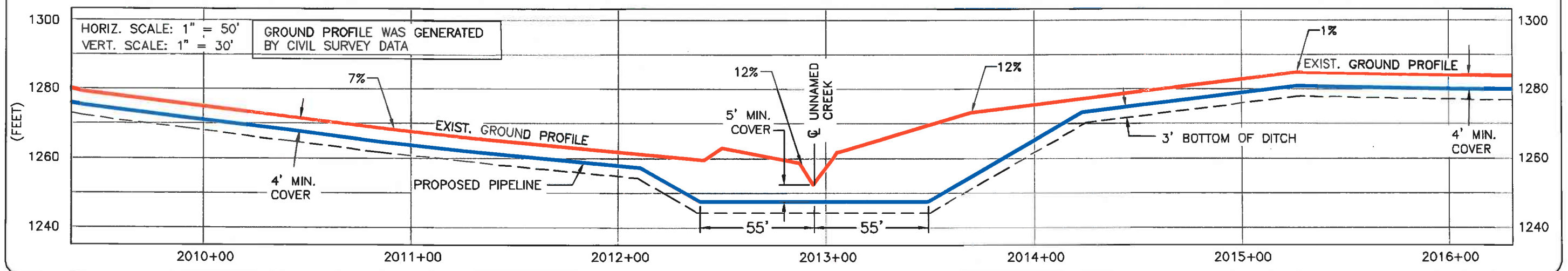
NIAGRA PUMP STATION

FIA # 1802 CHAINAGE: MP 37.2 DISCIPLINE # 03

UNNAMED CREEK
FORESTED STREAM CROSSING
WALSH COUNTY, NORTH DAKOTA

SCALE As Shown DRAWING No 1802-03-ML-03-053 REV 2


TIME-DESIGNFILE



REFERENCE DRAWINGS									
DRAWING No	TITLE								
MAIN LINE PROFILE	PROFILE_ML.dwg								
UTM 14 BASE FILE	ML_14_OC_BASE.dwg								
ND AERIAL	ND16.sid								
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 09 08	IDENTIFY 12% SLOPES	THES005388S	BM	TB	SS	SS	RG	
2	MAY 27 08	UPDATED PER PSC COMMENTS	THES005388S	JB	TB	SS	SS	RG	

JUSTIFICATION


- EXTRA WORK SPACE REQUIRED TO STORE A SIGNIFICANT VOLUME OF SPOIL GENERATED FROM GRADING OF THE STEEP SLOPE ON THE SOUTH 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 STREAM.
- 6000 CUBIC YARDS OF GRADING AND TRENCH SPOIL.



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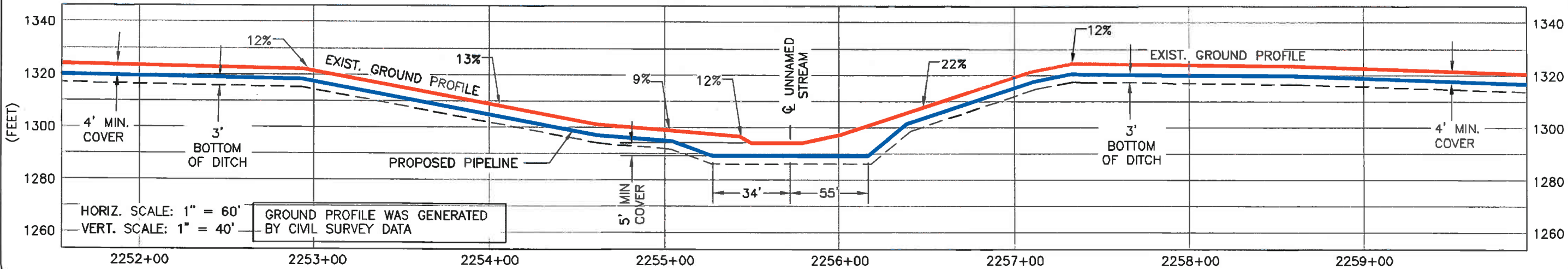
NIAGRA PUMP STATION

FIA # 1802	CHAINAGE: MP 38.1	DISCIPLINE # 03
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UNNAMED CREEK
FORESTED STREAM CROSSING
WALSH COUNTY, NORTH DAKOTA

SCALE As Shown	DRAWING No 1802-03-ML-03-054	REV 2
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TIME-DESIGNFILE



DRAWING No		TITLE						
MAIN LINE PROFILE		PROFILE_ML.dwg						
UTM 14 BASE FILE		ML_14_OC_BASE.dwg						
NOTES AND LEGEND		ND 18.sid						
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 09 08	IDENTIFY 12% SLOPES	THES005388S	BM	TB	SS	SS	RG
2	MAY 27 08	UPDATED PER PSC COMMENTS	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.
- 3180 CUBIC YARDS OF GRADING AND TRENCH SPOIL.

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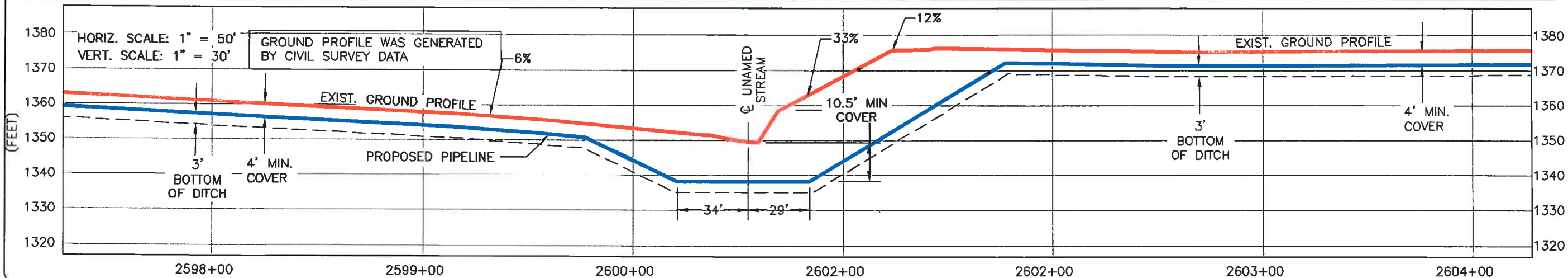
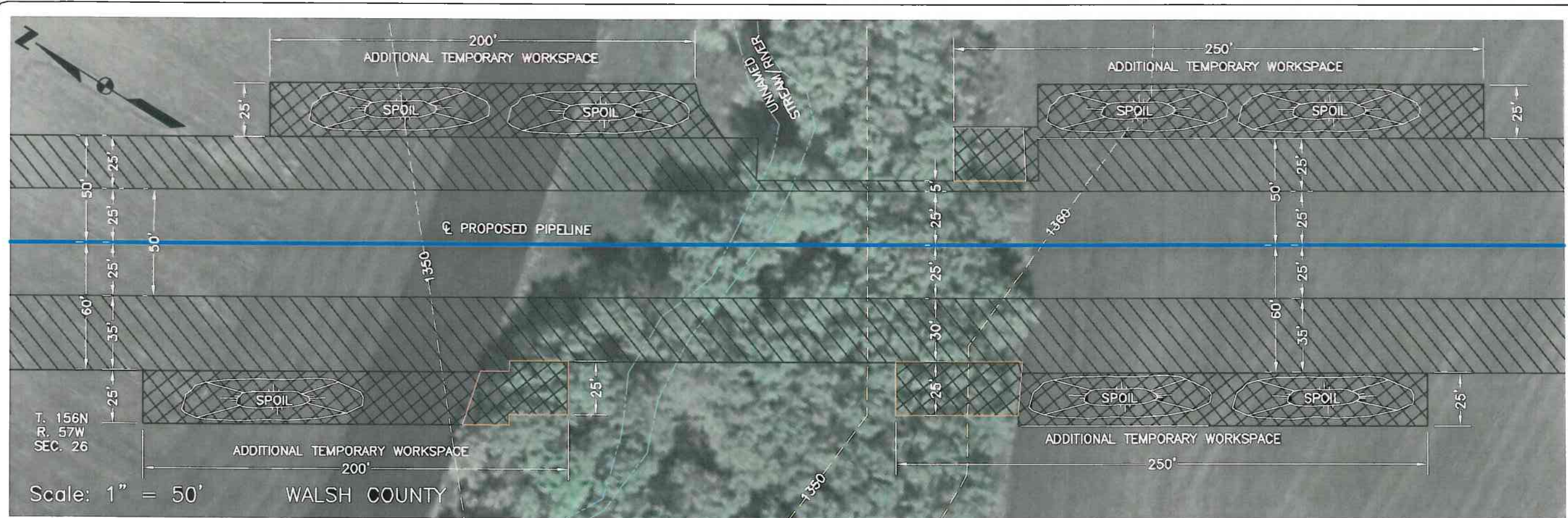
EDINBURG PUMP STATION

FIA # 1802 CHAINAGE: MP 42.7 DISCIPLINE # 03

UNNAMED STREAM
FORESTED STREAM CROSSING
WALSH COUNTY, NORTH DAKOTA

SCALE: As Shown DRAWING No: 1802-03-ML-03-055 REV: 2

TIME-DESIGNFILE



REFERENCE DRAWINGS								
DRAWING No	TITLE							
MAIN LINE PROFILE	PROFILE_ML.dwg							
UTM 14 BASE FILE	ML_14_OC_BASE.dwg							
NOTES AND LEGEND	ND 20.sid							
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 09 08	IDENTIFY 12% SLOPES	THES005388S	BM	TB	SS	SS	RG
2	MAY 27 08	UPDATED PER PSC COMMENTS	THES005388S	JB	TB	SS	SS	RG

JUSTIFICATION

- EXTRA WORK SPACE REQUIRED TO STORE A SIGNIFICANT VOLUME OF SPOIL GENERATED FROM GRADING OF THE STEEP SLOPE ON THE SOUTH SIDE OF THE CROSSING, INCREASED DEPTH AND LENGTH OF EXTRA DEPTH DITCH AT THE CROSSING THAT IS REQUIRED TO ADDRESS POTENTIAL SCOUR DEPTH AND LATERAL MIGRATION OF STREAM RESPECTIVELY.
- 6142 CUBIC YARDS OF GRADING AND TRENCH SPOIL.

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EDINBURG PUMP STATION

FIA # 1801	CHAINAGE: MP 49.2	DISCIPLINE # 03
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**UNNAMED STREAM
 FORESTED STREAM CROSSING
 WALSH COUNTY, NORTH DAKOTA**

SCALE As Shown	DRAWING No 1802-03-ML-03-057	REV 2
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TIME-DESIGNFILE