



BEAR DEN PROJECT

Plan of Development

APPENDIX C
Construction Typical Drawings



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Plan of Development

Construction Typical Drawings

**Prepared for:
BUREAU OF LAND MANAGEMENT**

JUNE 2013

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1. Survey and Staking
2. Clearing
3. Front-End Grading
4. ROW Topsoil Stripping
5. Restaking Centerline of Trench
6. Stringing Pipe
7. Field Bending Pipe
8. Line-Up, Initial Weld
9. Fill & Cap, Final Weld
10. As-Built Footage
11. X-Ray Inspection, Weld Repair
12. Coating Field Welds
- 13a. Trenching (wheel ditcher)
- 13b. Trenching (backhoe)
- 13c. Trenching (rock)
14. Inspection & Repair of Coating
15. Lowering Pipe into Trench
16. As-Built Survey
17. Pad, Backfill, Rough Grade
18. Hydrostatic Testing, Final Tie-in
19. Replace Topsoil, Final Clean-Up, Full Restoration

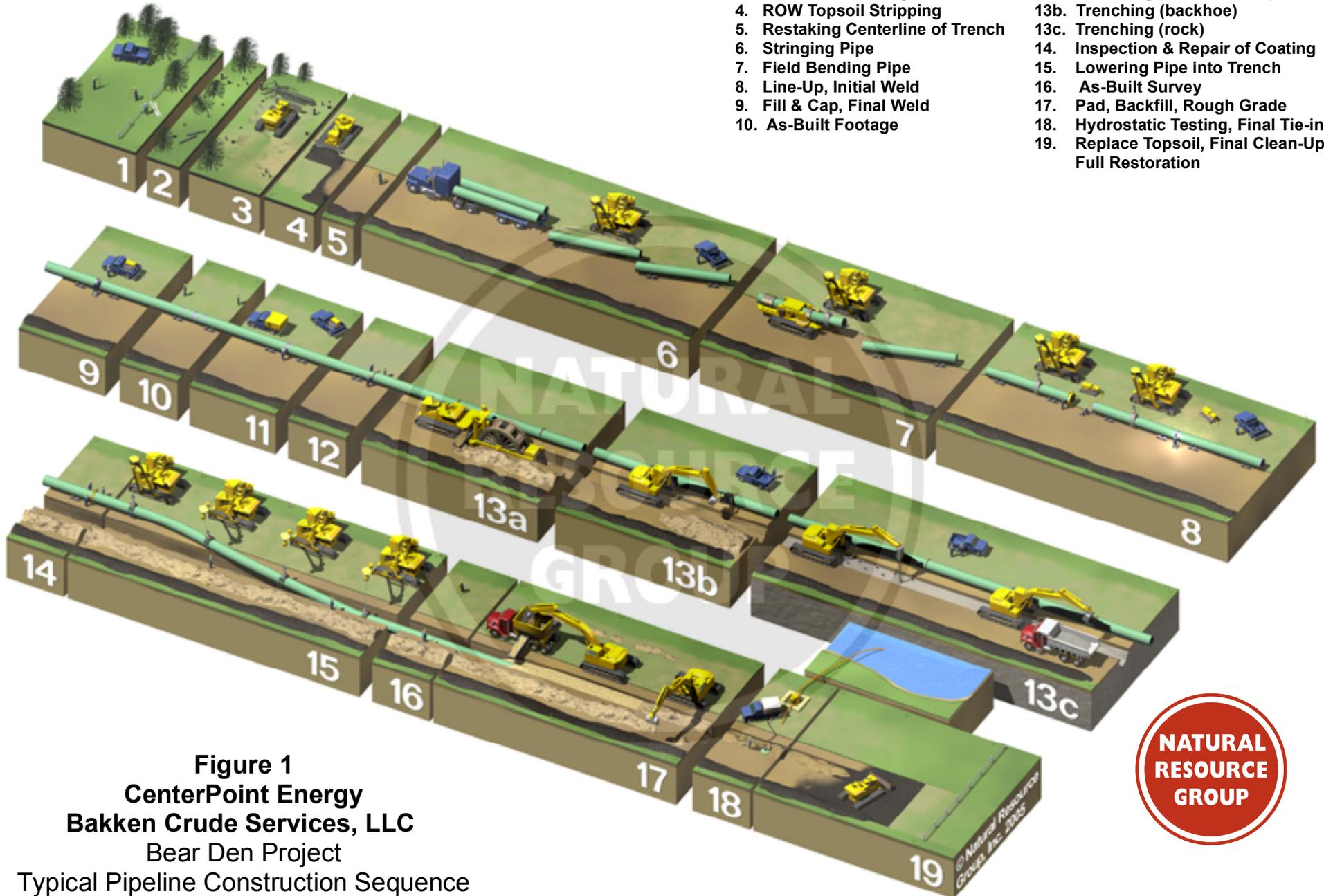
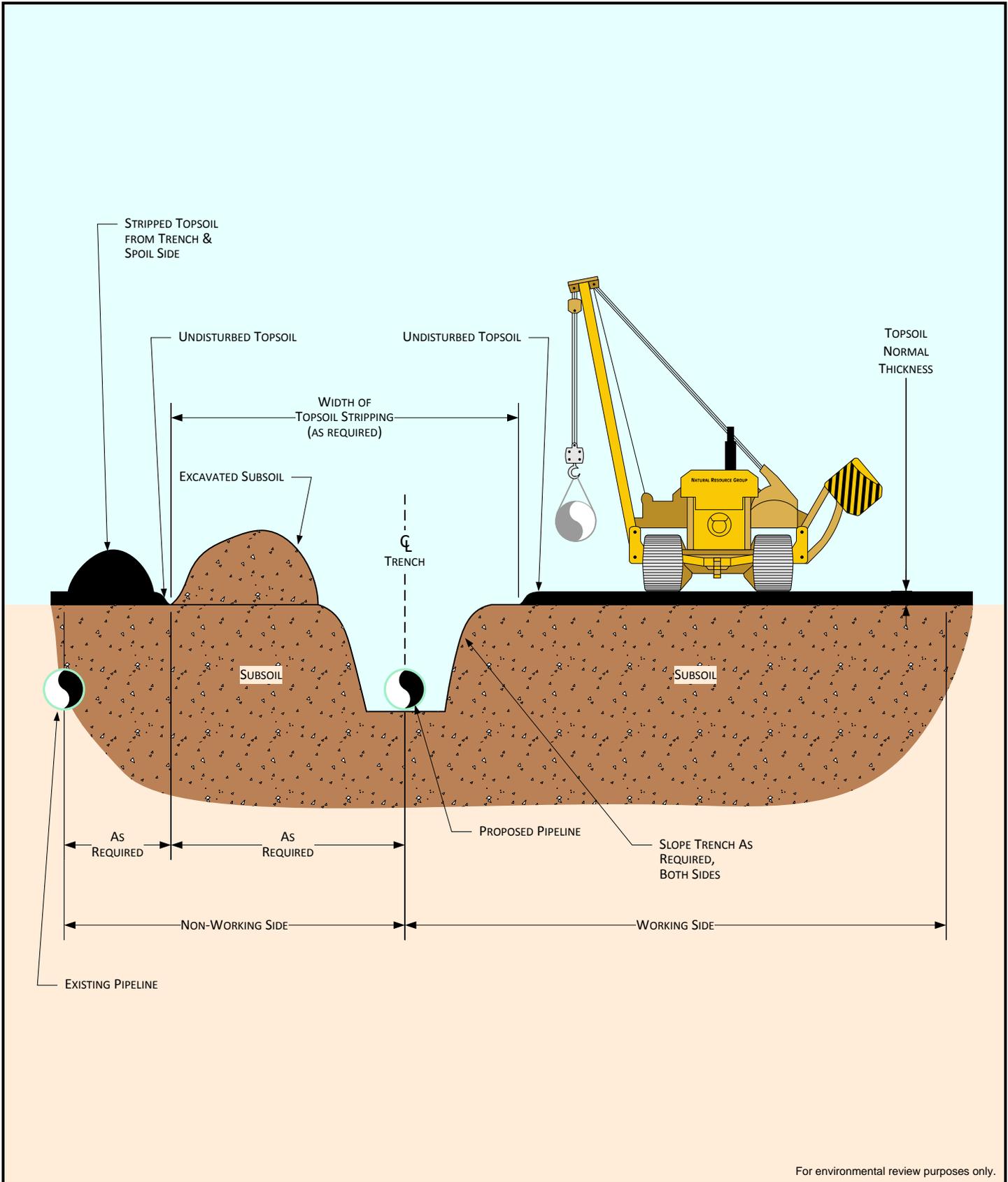


Figure 1
CenterPoint Energy
Bakken Crude Services, LLC
Bear Den Project
Typical Pipeline Construction Sequence

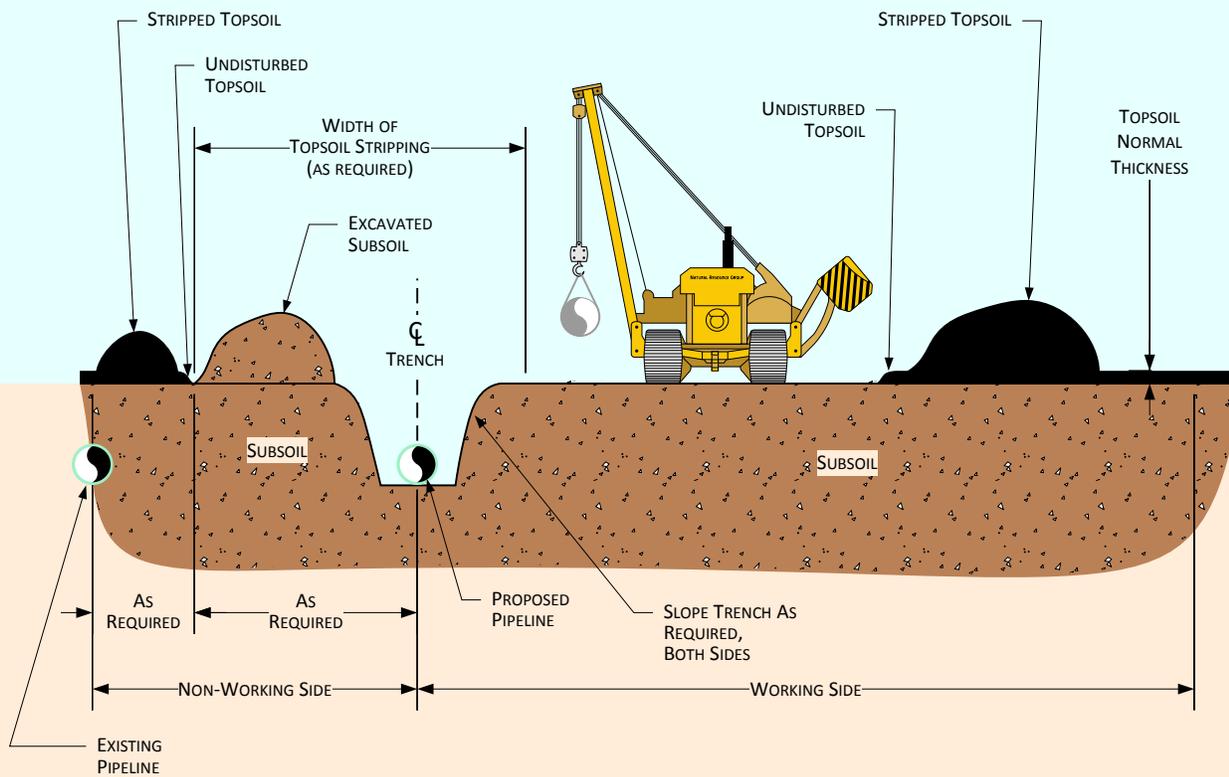




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Figure 2
Bear Den Project
CenterPoint Energy Bakken Crude Services, LLC
Topsoil Segregation: Typical Ditch Line Plus Spoil Side

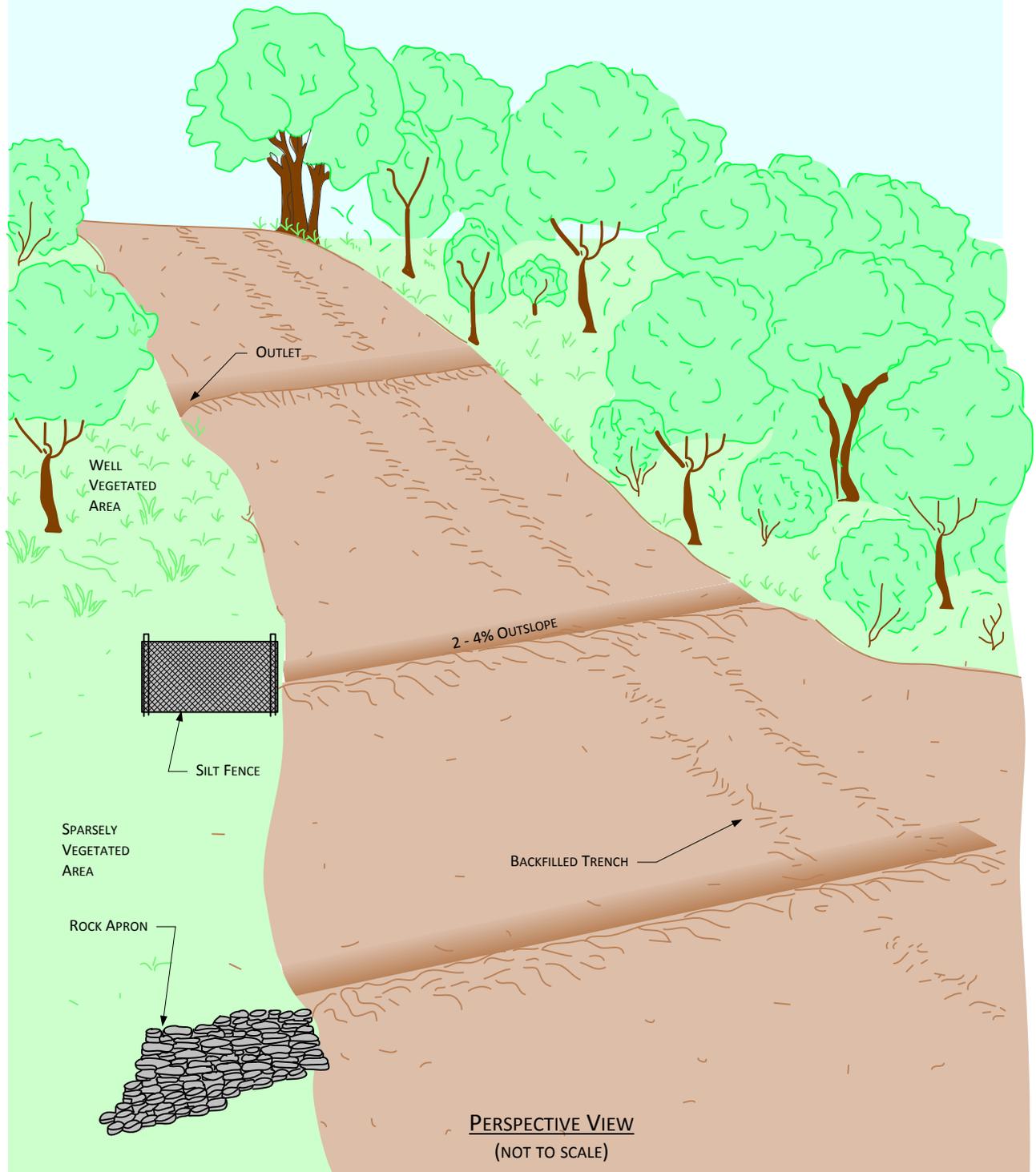




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Figure 3
Bear Den Project
CenterPoint Energy Bakken Crude Services, LLC
Topsoil Segregation: Typical Full ROW Topsoil Stripping



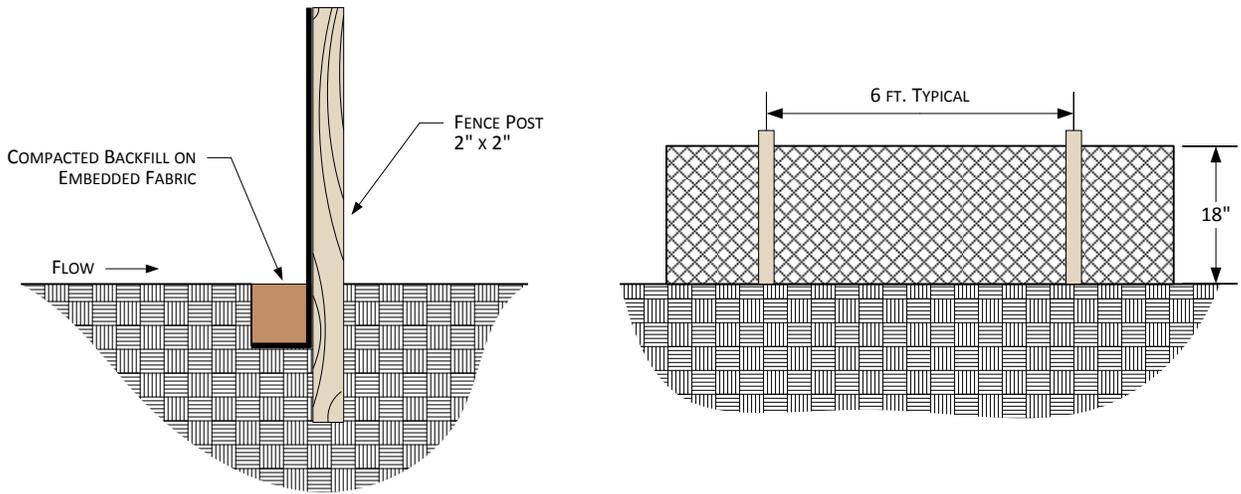


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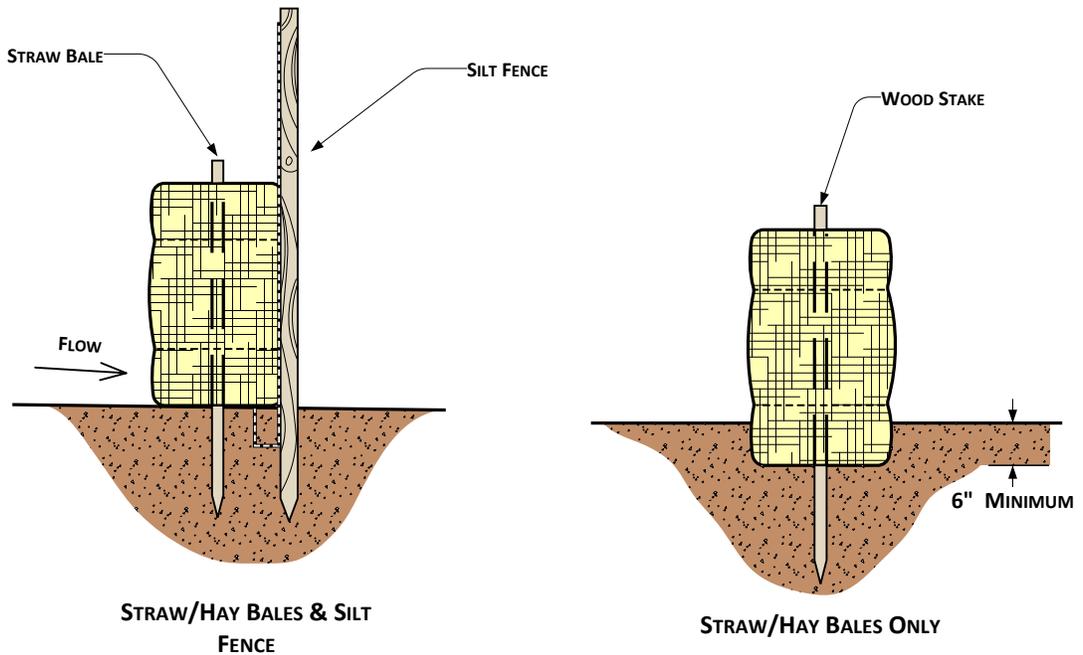
Figure 4
Bear Den Project
CenterPoint Energy Bakken Crude Services, LLC
Temporary Slope Breakers Perspective



TYPICAL SILT FENCE INSTALLATION



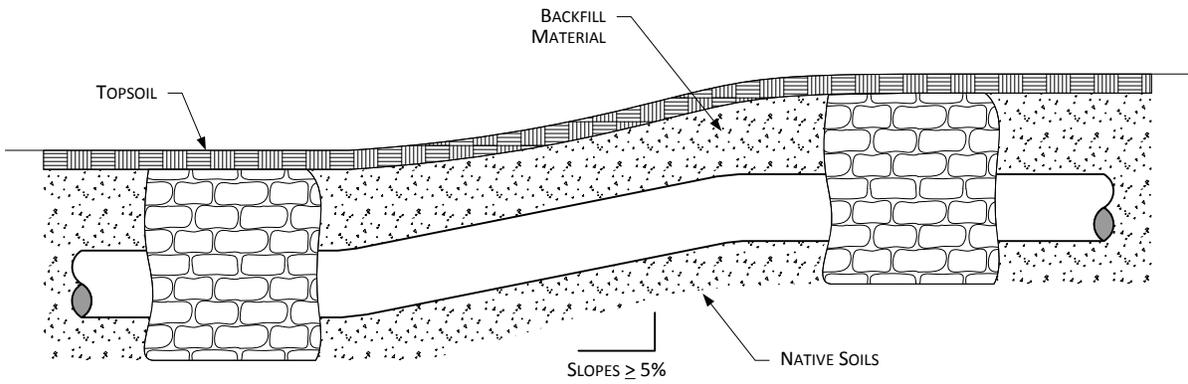
TYPICAL STRAW/HAY BALE INSTALLATION



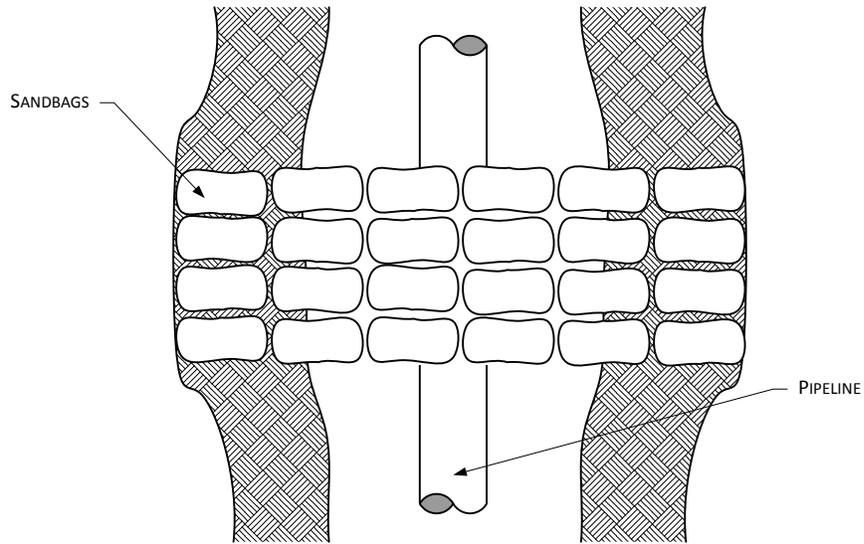
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Figure 5
Bear Den Project
CenterPoint Energy Bakken Crude Services, LLC
Control Measures: Typical Soil Erosion

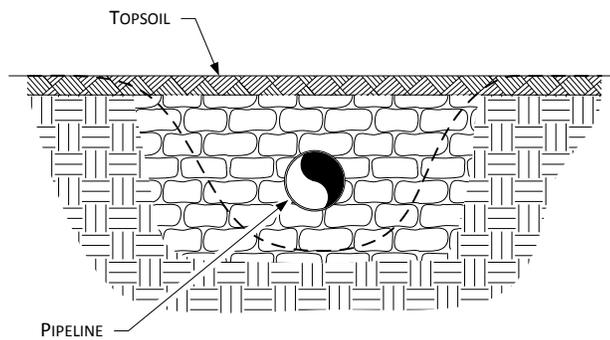




PROFILE VIEW



PLAN VIEW

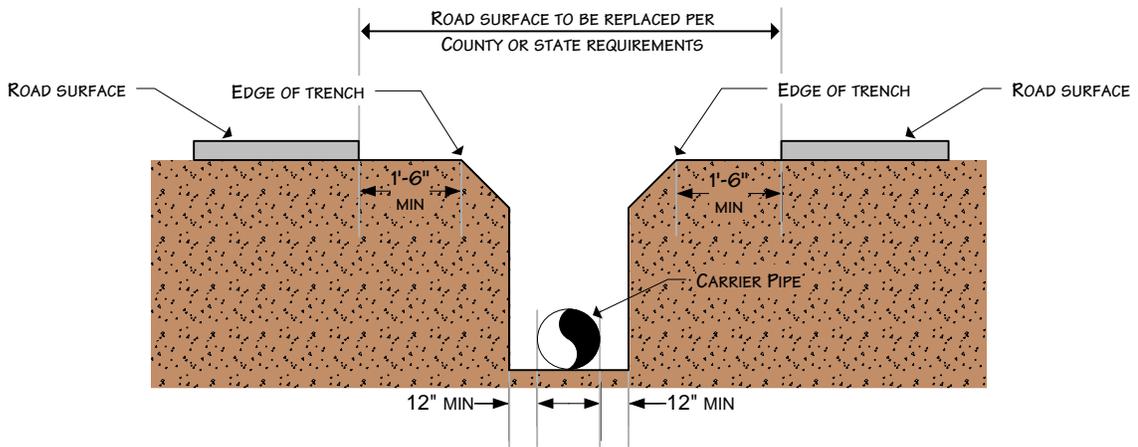
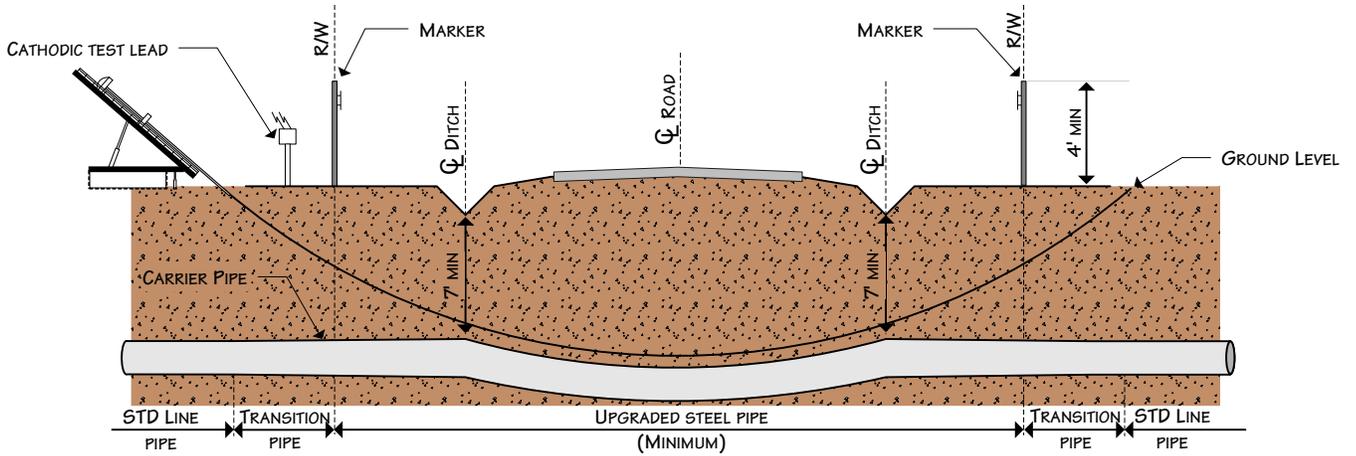


FACE VIEW

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Figure 6
Bear Den Project
CenterPoint Energy Bakken Crude Services, LLC
Trench Breaker Installation





NOTES

1. ALL CARRIER & CASING PIPE SHALL BE CARBON STEEL PIPE.
2. ALL GIRTH WELDS SHALL BE 100% RADIOGRAPHICALLY INSPECTED AND COATED WITH TAPE COAT OR SHRINK SLEEVE PER OWNER SPECIFICATIONS.
3. WORK SHALL BE PERFORMED IN ACCORDANCE WITH PERMIT REQUIREMENTS, RESTRICTIONS AND COMPANY'S SPECIFICATIONS.
4. BACKFILL ACROSS ROAD RIGHT-OF-WAY SHALL BE OF SELECT, NON-ORGANIC AND MOIST BACKFILL MATERIAL, PLACED IN LAYERS AND THOROUGHLY COMPACTED PER SPECIFICATIONS AS REQUIRED BY THE PERMIT UNDER WHICH THE WORK IS BEING PERFORMED. ALL OTHER BACKFILL ACROSS ROAD RIGHT-OF-WAY SHALL BE COMPACTED AS WELL. IN LIEU OF SPECIFICATION REQUIREMENTS, BACKFILL WILL BE WATER-PACKED IN NO LESS THAN THREE (3) LIFTS.
5. CONTRACTOR SHALL INSTALL WELD CAPS ON EACH END OF TRANSITION PIPE AND HYDROSTATIC TEST ROAD CROSSING SEGMENT TO 98% OF SMYS PRIOR TO INSTALLATION.

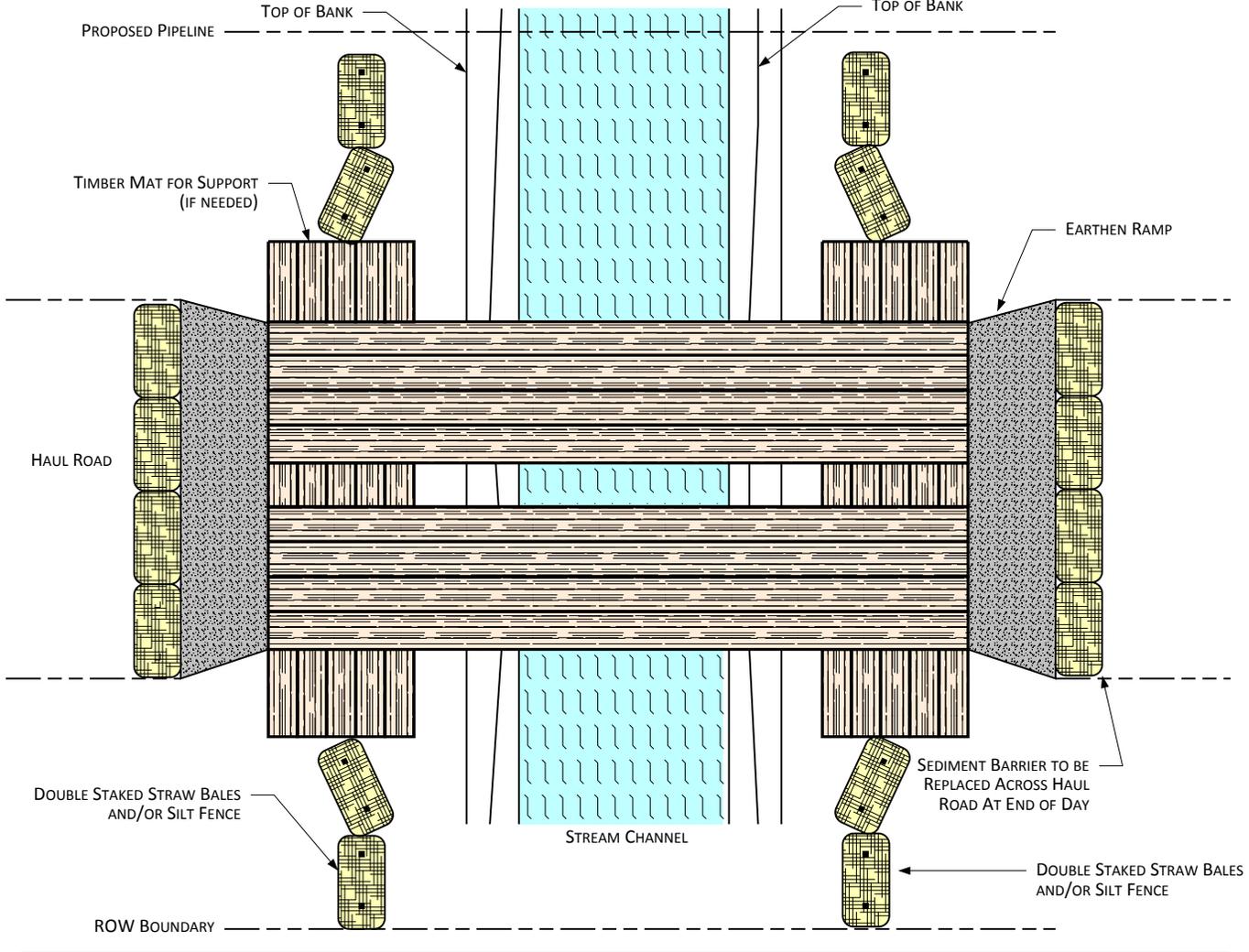
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Figure 7
Bear Den Project

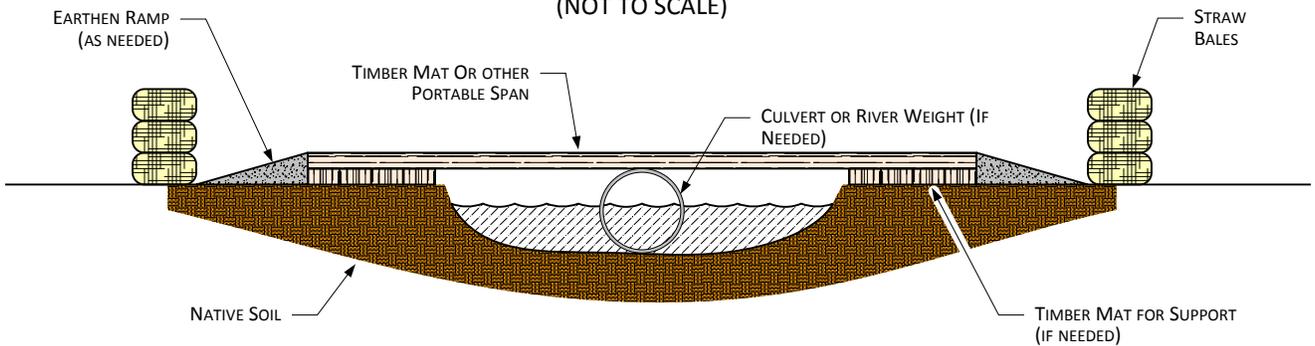
CenterPoint Energy Bakken Crude Services, LLC
Typical Road Crossing: Bore Method and Open Cut Method



PLAN VIEW
(NOT TO SCALE)



PROFILE VIEW
(NOT TO SCALE)

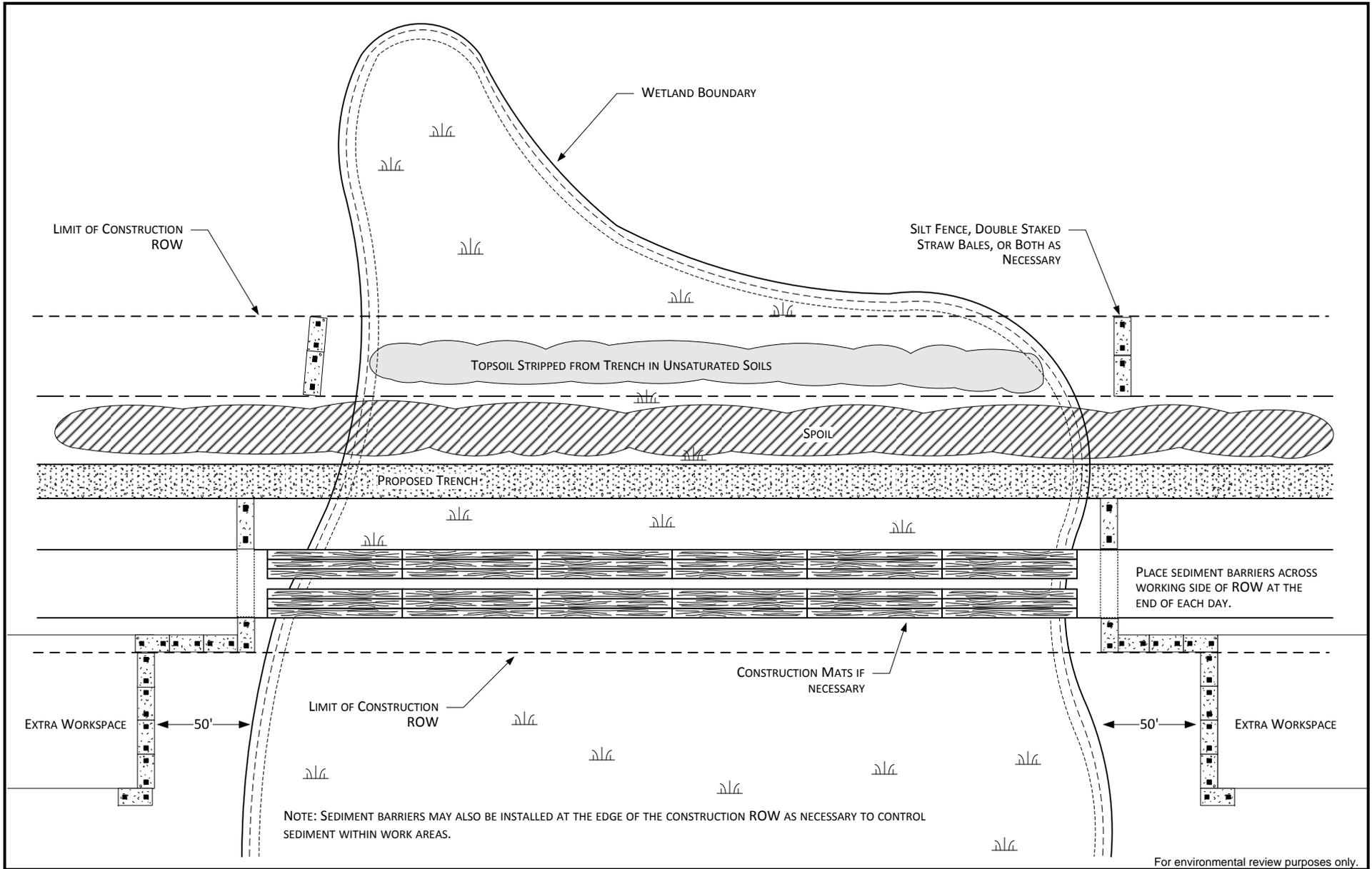


NOTE:
STAW BALES SHALL BE PLACED ACROSS BRIDGE ENTRANCE EVERY NIGHT.

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Figure 8
Bear Den Project
CenterPoint Energy Bakken Crude Services, LLC
Timber Mat Bridge





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Figure 9
Bear Den Project
CenterPoint Energy Bakken Crude Services, LLC
Typical Open-Cut Wetland Crossing

