North Dakota Public Service Commission

Topsoil Removal & Construction Inspection Reports

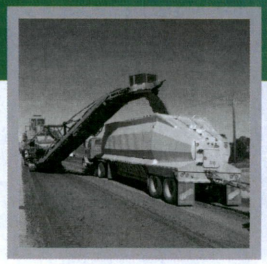
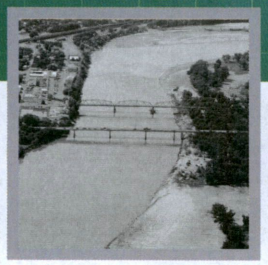
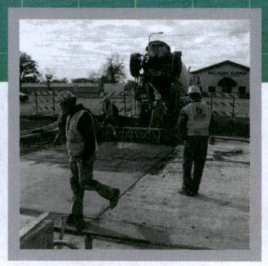
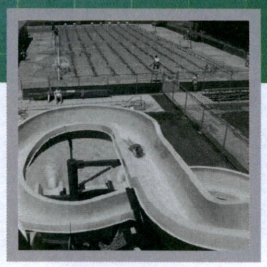
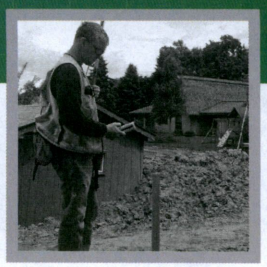
Bakken Oil Express
Reroute of Dickinson Bypass Pipeline
Section 23 & 26, T140N R97W, 5th P.M.
Stark, North Dakota

Prepared By:

INTERSTATE ENGINEERING

(Project No. E16-00-075)
May-June 2016

Contents

INTERSTATE ENGINEERING

1. EXECUTIVE SUMMARY

The North Dakota Energy Conversion and Transmission Facility Act (North Dakota Century Code Chapter 49-22) authorizes the Public Service Commission (Commission) to determine that the location, construction, and operation of jurisdictional energy conversion and transmission facilities will produce minimal adverse effects on the environment and the welfare of the citizens of North Dakota. Commission construction inspections ensure that energy projects are constructed in compliance with the siting laws (North Dakota Century Code Chapter 49-22), rules (North Dakota Administrative Code Article 69-06) and applicable Commission Orders.

The Commission retained Interstate Engineering, Inc. (Interstate) to complete construction inspections of the Bakken Oil Express, LLC (BOE) Dickinson Bypass Pipeline Reroute Project (Project), Case No. PU-16-95, which is currently under construction in Stark County, North Dakota. The Project involves the construction of approximately 0.7 miles of 16-inch outside diameter pipeline and associated facilities for the transmission of crude oil.

Construction of the project commenced on May 17, 2016. Interstate conducted the Topsoil Removal and Construction Inspections from May 18, 2016 to June 9, 2016. Interstate prepared this report to document the topsoil removal inspection and to provide a summary of compliance with the Commission Orders.

The purpose of the Topsoil Removal Inspection was to observe the topsoil removal phase to verify that topsoil has been properly removed and kept segregated from subsoil until replacement occurs. The inspection continued until the inspector determined that the equipment operators had demonstrated proficiency concerning topsoil removal, in accordance with the Certification Relating to Order Provisions for Case PU-16-95. Photographs taken during the site inspection are included in Appendix B. Note that subsoil removal will occur during trenching activities, which will take place in a later phase of the construction process. The inspector took photos of the trenching activities to document that the subsoil piles are separated from the topsoil piles.

The purpose of the Construction Inspection was to observe construction procedures in the construction phase. The inspection continued until the inspector determined that the equipment operators had demonstrated proficiency concerning bury depth, bore crossings of State and County roads in accordance with the Certification Relating To Order Provisions and Order for Case PU-16-95. Photographs taken during the construction inspection are included in Appendix B. The inspector took photos of the trenching activities to document the bury depth, bores and other general construction activities as related to Order for Case PU-16-95.

Prior to the construction inspection, Interstate reviewed Project documents and filings from the North Dakota Public Service Commission Hearing held on April 22, 2016 in Dickinson, North Dakota. Overall, the topsoil removal activities were satisfactory and the inspector determined that the equipment operators had demonstrated proficiency concerning topsoil removal in compliance with the Commission's Order.

2. BACKGROUND AND SCOPE

On February 26, 2016, BOE filed applications in Case No. PU-16-95 for a First Amended Certificate of Corridor Compatibility No. 150 and First Amended Route Permit No. 160 for the construction of its Reroute of Dickinson Bypass Pipeline. The Project consists of 0.7 miles of 16 inch outside diameter pipe. The maximum capacity of the Project will be 165,000 barrels per day. The maximum operating pressure will be 1,480 psig. The Project is proposed to be designed, constructed, operated and maintained in compliance with Code of Federal Regulations Title 49 Part 195, Hazardous Liquids Pipeline Safety Regulations. The Commission issued a decision approving a corridor and a route on March 23, 2016 in accordance with the Commission's Findings of Fact, Conclusions of Law and Order.

The Commission retained Interstate to complete construction inspections for the Project, which is currently under construction in Stark County, North Dakota. The purpose of the first inspection (Topsoil Removal Inspection) was to observe the topsoil removal phase to verify that topsoil has been properly removed and kept segregated from subsoil until replacement occurs. The inspection continued until the inspector determined that the equipment operators had demonstrated proficiency concerning topsoil removal, in accordance with Certification Relating to Order Provisions for Case PU-16-95.

The purpose of the second inspection (Construction Inspection) was to observe the construction phase to verify that construction procedures in the construction phase. The inspection continued until the inspector determined that the equipment operators had demonstrated proficiency concerning bury depth, bore crossings of State and County roads in accordance with the Certification Relating To Order Provisions and Order for Case PU-16-95. The inspector took photos of the trenching activities to document the bury depth, bores and other general construction activities as related to Order for Case PU-16-95.

According to BOE, the purpose of the Project is to reroute 3,575 feet of the Dickinson Bypass Pipeline, because of a NDDOT bypass project. From these facilities, the product will be transported via interconnecting pipelines for distribution to refineries across the United States.

BOE selected the proposed pipeline corridor based on several criteria designed to conform to the Commission's siting requirements and to avoid or minimize socioeconomic and environmental impacts, while maximizing the benefits to local resource developers. According to BOE, the location of existing assets were also considered during the selection process. The selection of the corridor was also influenced by the opportunity to parallel or co-locate within other utility corridors. Most or all of the Project is co-located with existing corridors.

3. TOPSOIL REMOVAL INSPECTION

On May 18, 2016, an Interstate inspector, working under Mr. Robert Procive, Project Manager at Interstate, conducted the topsoil removal inspection. The Interstate inspector met Mr. Scott Besmer, Construction Supervisor from KLJ at the work site to discuss construction details, topsoil removal methods and restoration procedures. The discussion included many construction-related items such as environmental training, communication of topsoil removal procedures with the equipment operators, width and depth of topsoil removal, and specific areas of topsoil removal.

Mr. Besmer explained that topsoil removal was discussed in the environmental training session prior to construction and confirmed that, as the right of way supervisor, he will be in regular communication with the equipment operators regarding depth of topsoil removal. Mr. Besmer also described the potholing process that is being employed to determine topsoil depth at various locations along the right of way. The pothole process involves hand digging a hole approximately one foot by one foot to a depth where the subsoil is identified. The depth is communicated to the equipment operators and is inspected by Mr. Besmer following topsoil removal to confirm the correct depths are excavated. Following the meeting, Mr. Besmer accompanied the Interstate inspector on the field inspection.

During the field inspection, continuing after May 18, 2016, an issue was identified as needing corrective action. The inspector identified an area that appeared that the topsoil from the NDDOT Bypass project placed their topsoil on top of this projects right of way. These topsoil piles had to be moved and then the topsoil removed for this project. The contractor's supervisor directed the equipment operators in conjunction with the Bypass contractor's supervisor to perform this task. The Interstate inspector observed the separation of each projects topsoil to assure this project had adequate topsoil.

Observations were made to confirm that the construction activities were occurring within the staked right of way. Thetopsoil removal process consisted of bulldozers removing twelve inches of the topsoil by pushing it to one side of the right of way. The subsoil removal process consisted of backhoes moving subsoil to the other side of the right of way to keep the piles segregated. Pictures were taken observing the different processes and depth of topsoil. Daily field reports we also written to narrate the projects progress. Overall, the topsoil removal activities were satisfactory and the inspector determined that the equipment operators

4. CONSTRUCTION INSPECTION

The construction inspection was initiated at Station 0+00 and continued through approximate Station 36+91.76. Stakes present in the ground at the time of inspection were labeled with stationing that did not match the current reroute plans, starting at 1707+00. Wood lathe was set in place along the right of way to identify the approved work areas by BOE surveying contractor. Observations were made to confirm that the construction activities were occurring within the staked right of way. Observations and photos were taken of silt fencing and potholes/bell-holes for un-covering utilities along the project. Observations of pipe depth and bore crossing were made by RTK GPS survey equipment as well as photos. Daily field reports we also written to narrate the projects progress.

The Interstate Inspector noted that the pipe for the creek bore (sta. 1720+76 to 1715+37) was a green coated thin (.281") walled pipe. He discussed this with BOE's construction supervisor (Scott B.) and he stated that it was "OKed" by the state and that they would put on an additional coating to thicken. During this bore operation there were several blowouts of the bore that Interstate inspector observed and photographed.

On the road crossing of 116th Avenue the Interstate Inspector noted that the trench compaction was at 90%.

At the beginning and end of the reroute the pipe depth was insufficient on 6-7-16 and was adjusted on 6-8-16.

With a NDDOT construction project and this reroute project done simultaneously there was a substantial volume of equipment, traffic, utility construction crew and workers on the site. This contributed additional time and logistic delays to coordinate with and between all the entities, which affected topsoil piles that were misplaced, silt fencing placement, numerous utility potholing and bury depth adjustments.

5. CONCERNS AND CORRECTIVE ACTIONS

During the construction inspection, two issues were identified as needing corrective action. Stationing on stakes in the ground did not match stationing on the plans which created confusion. Trench depth at both ends of the project did not provide enough cover and needed to be dug deeper.

6. CONCLUSION

Generally, the topsoil removal along the right of way appeared to be satisfactory and consistent with the Commission's Order. Based on the field observations, daily field reports and photographs, the Interstate Inspector determined that equipment operators demonstrated proficiency concerning topsoil removal in compliance with the Commission's Order.

Generally, it appeared that construction of this pipeline appears to be to be satisfactory and consistent with the Commission's Order. Based on the field observations, daily field reports and photographs, the Interstate Inspector determined that equipment operators demonstrated proficiency concerning construction practices of bury depth, silt fencing, bore and utility crossings in compliance with the Commission's Order.

7. SIGNATURE

Observations and findings contained in this report are based on available information, daily field reports and photographs in a generally accepted technically practice at the present time.

Project Manager Robert L. Procive, PLS, West Central Region Vice President.

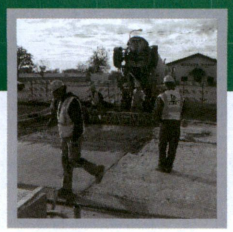
Robert L. Procive, PLS, West Central Region Vice President
Interstate Engineering, Inc.

6/20/16
Date

8. REFERENCES

Scott Besmer, KLJ Construction Supervisor for BOE.
4585 Coleman Street, Bismarck ND, May 2016-July 2016

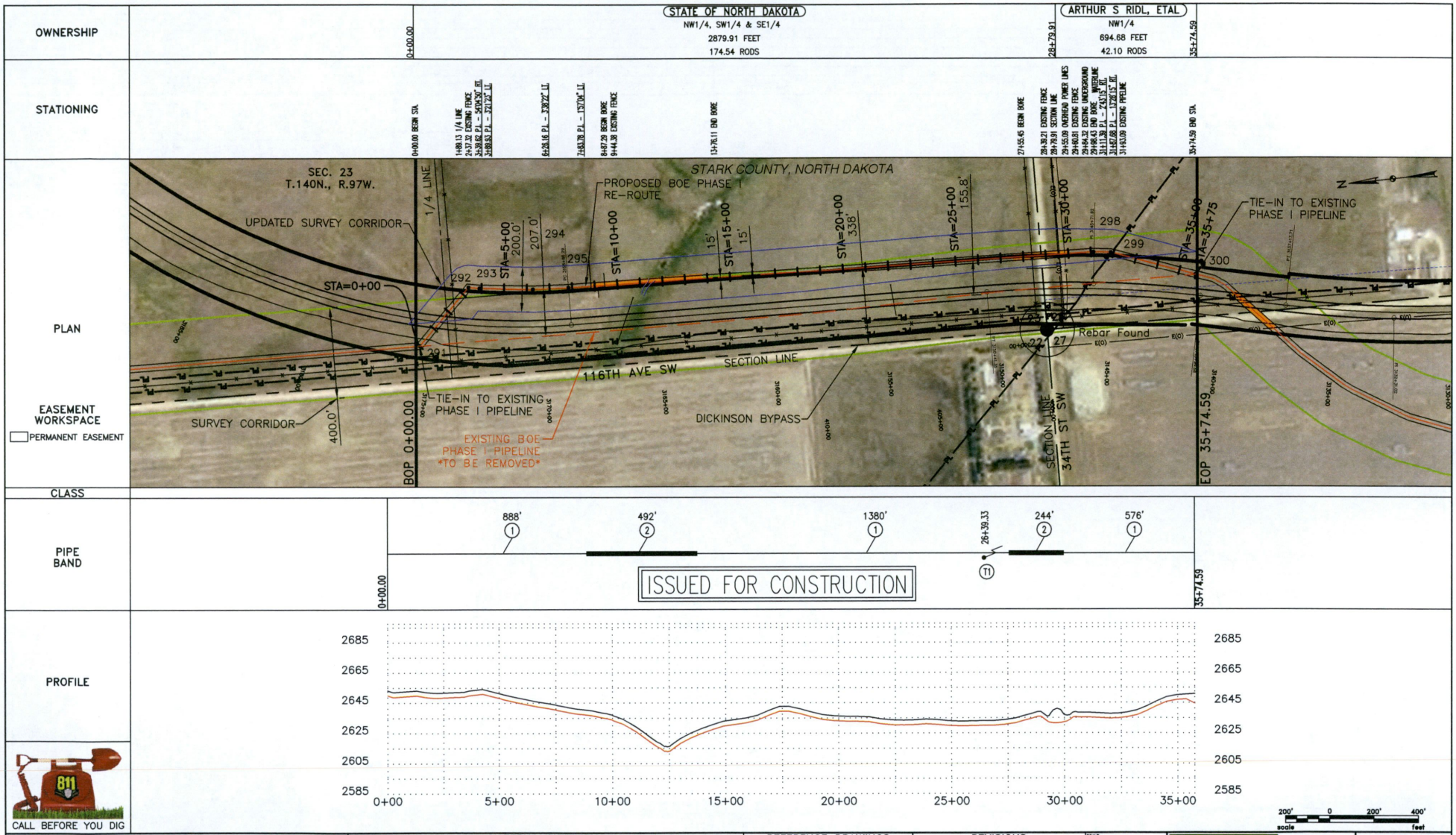
North Dakota Public Service Commission (NDPSC) Online Case Search. Available from http://www.psc.nd.gov/database/docket_file_list.php (Accessed March 2016)



APPENDIX A

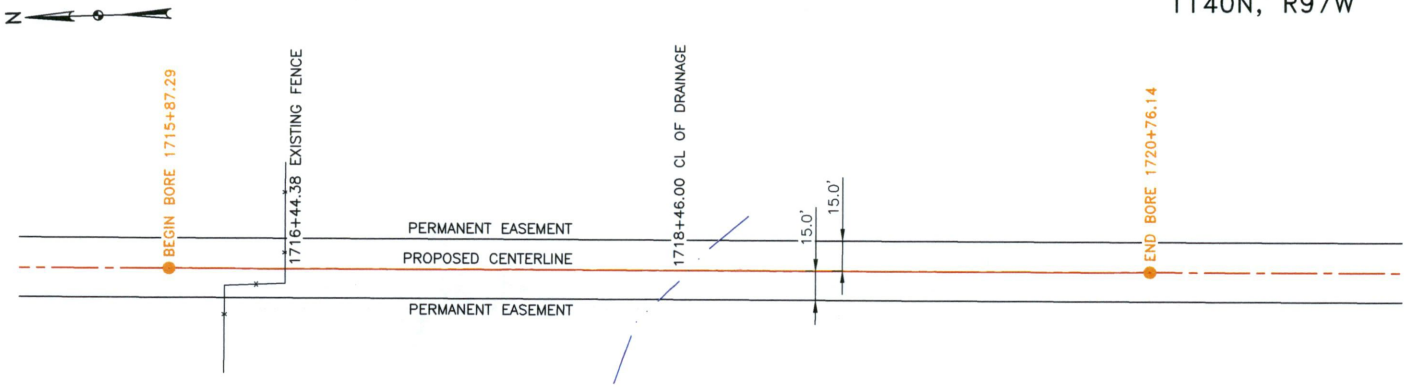
Field Inspection Maps and County Maps

INTERSTATE ENGINEERING


OWNERSHIP
STATE OF NORTH DAKOTA
NW1/4, SW1/4 & SE1/4
2879.91 FEET
174.54 RODS
ARTHUR S RIDL, ETAL
NW1/4
694.68 FEET
42.10 RODS
STATIONING
PLAN
SEC. 23
T.140N., R.97W.
STARK COUNTY, NORTH DAKOTA
UPDATED SURVEY CORRIDOR
PROPOSED BOE PHASE I
RE-ROUTE
STA=0+00
STA=5+00
STA=10+00
STA=15+00
STA=20+00
STA=25+00
STA=30+00
STA=35+00
TIE-IN TO EXISTING
PHASE I PIPELINE
Rebar Found
116TH AVE SW
SECTION LINE
DICKINSON BYPASS
34TH ST SW
SURVEY CORRIDOR
400.0'
BOP 0+00.00
EOP 35+74.59
EXISTING BOE
PHASE I PIPELINE
TO BE REMOVED
EASEMENT
WORKSPACE
PERMANENT EASEMENT
CLASS
PIPE
BAND
888'
492'
1380'
244'
576'
ISSUED FOR CONSTRUCTION
PROFILE
2685
2665
2645
2625
2605
2585
0+00
5+00
10+00
15+00
20+00
25+00
30+00
35+00
CALL BEFORE YOU DIG
LEGEND
PROPERTY LINE
SECTION LINE
EASEMENT LINE
PIPELINE CENTERLINE
WATER LINE
FOREIGN PIPELINE
EXISTING ROAD
UNDERGROUND COM. LINE
BARBED WIRE FENCE
FIBER OPTIC COM. LINE
RAILROAD
OVERHEAD ELECTRIC
UTILITY POLE
PROPOSED BORE
MARKER POST
EROSION/SEDIMENT CONTROL BMP AVOIDANCE AREA
WETLAND EASEMENT
TEST LEAD
VALVE SETTING
MATERIAL SUMMARY
MK.NO. | QTY. | DESCRIPTION
1 | 2844' | 16" OD, 0.281" W.T. API 5L X70, 13-15 MIL FBE
2 | 736' | 16" OD, 0.344" W.T. API 5L X70, 14-16 MIL FBE, 30-35 MIL ARO
T1 | 1 | TYPE-1
REFERENCE DRAWINGS
DWG. NO. | DESCRIPTION
REVISIONS
NO. | DATE | DESCRIPTION
SCALE: 1"=400'
DRAWN BY: A. ROMANN
DATE: 4/5/2016
CHECKED BY: D. DIONNE
APPROVED BY: S. BESMER
KLJ JOB NUMBER: 1715137
REVISION:
SHEET: 41
BOE
BAKKEN OIL EXPRESS
A EN I
EXP E PIPE INE
BOE PIPELINE PHASE I
SECTIONS 23, 26 & 27, T140N, R97W
STARK COUNTY, NORTH DAKOTA
KLJ
4585 Coleman Street
Bismarck, ND 58503
© KLJ 2016
P:\Oil\BakkenOilExpress\1715137-Phase I Reroute\CADD\Preliminary\Alignment\1715137BAS01.dwg

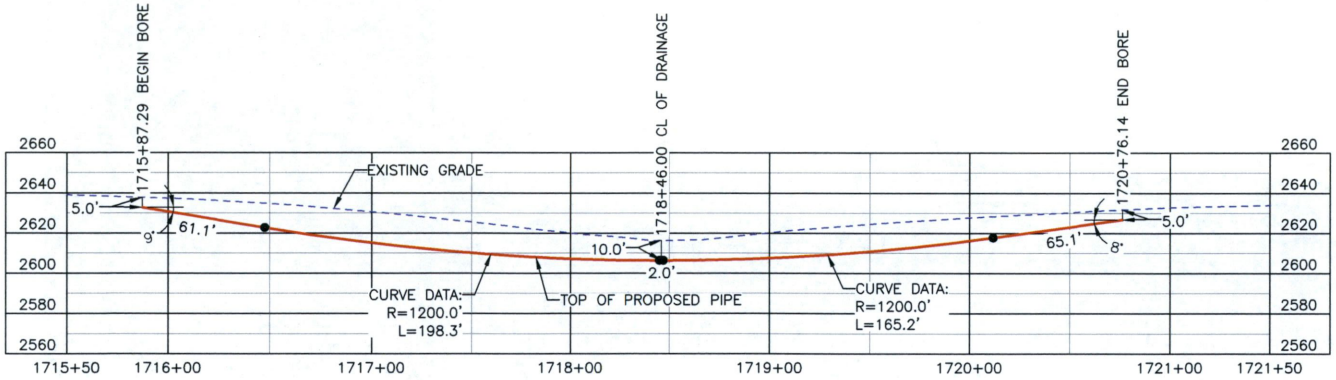
BOE PIPELINE PHASE I
DRAINAGE CROSSING BORE #41
STARK COUNTY, NORTH DAKOTA

STARK COUNTY
SW1/4, SEC. 23,
T140N, R97W



Location Map

PIPE SPECIFICATION
Crossing designed using: PRCI Report PR-227-9424
Contents: Oil
Carrier Pipe: 16.0" OD x 0.344" W.T., API 5L X70
Coating: 14-16 Mils FBE, 30-35 Mils ARO



FINAL
11/05/2015

BORE	STATIONING	LATITUDE	LONGITUDE
BEGIN BORE	1715+87.29	46°55'30.27" N	102°53'34.17" W
END BORE	1720+76.14	46°55'25.45" N	102°53'34.20" W

NOTE:
INSTALL MARKER POSTS ON BOTH SIDES OF RIGHT OF WAY FOR ALL LINE CROSSINGS

TOTAL HORIZONTAL DISTANCE = 488.85 FT.

TOTAL BORE LENGTH = 491.7 FT.

LEGEND
PROPOSED PIPE

scale 1"=60' feet (50 0 30 60)

LEGEND
PROPERTY LINE, SECTION LINE, EASEMENT LINE, PIPELINE CENTERLINE, WATER LINE, FOREIGN PIPELINE, EXISTING ROAD, UNDERGROUND COM. LINE
EXISTING FENCE, FIBER OPTIC COM. LINE, RAILROAD, OVERHEAD ELECTRIC, UTILITY POLE, PROPOSED BORE, EROSION/SEDIMENT CONTROL BMP, MARKER POST
AVOIDANCE AREA, WETLAND EASEMENT, TEST LEAD, VALVE SETTING

MATERIAL SUMMARY

MK.NO.	QTY.	DESCRIPTION
2	492'	16" OD, 0.344" W.T. API 5L X70, 14-16 MIL FBE, ARO

REFERENCE DRAWINGS

DWG. NO.	DESCRIPTION

REVISIONS

NO.	DATE	DESCRIPTION

SCALE: 1" = 60'
DRAWN BY: A. ROMANN
DATE: 11/3/15
CHECKED BY: D. DIONNE
APPROVED BY: S. BROMER
KLJ JOB NUMBER: 1715137
REVISION: SHEET:

BOE BAKKEN OIL EXPRESS
A EN I
EXP E PIPE INE

BOE PIPELINE PHASE I
DRAINAGE CROSSING BORE
BORE #41
SECTION 23, T.140N., R.97W., STARK COUNTY, ND

KLJ
4585 Coleman Street
Bismarck, ND 58503

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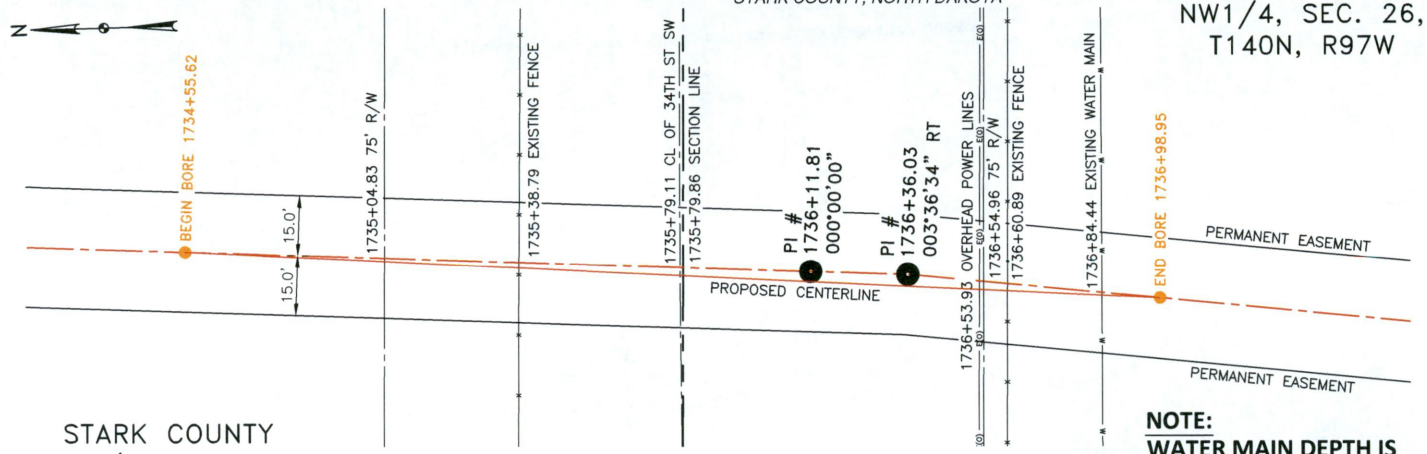
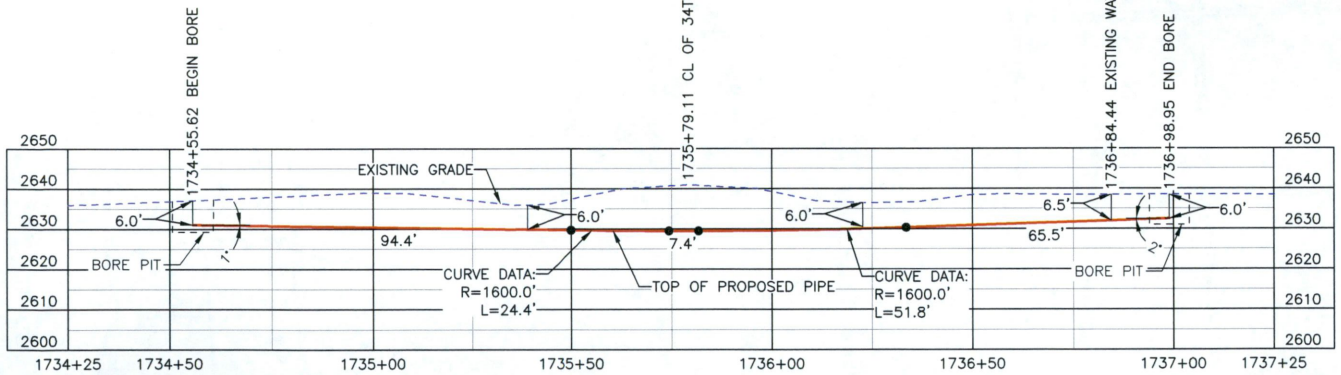
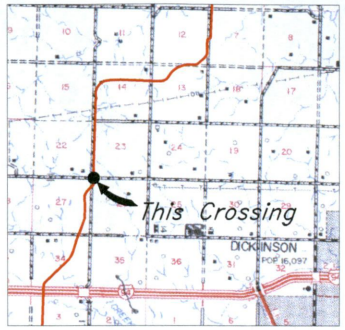
BOE PIPELINE PHASE I
34TH ST SW CROSSING BORE #42
STARK COUNTY, NORTH DAKOTA



STARK COUNTY
NW1/4, SEC. 26,
T140N, R97W

STARK COUNTY
SW1/4, SEC. 23,
T140N, R97W





Location Map

NOTE:
WATER MAIN DEPTH IS UNKNOWN. IT MUST BE FIELD VERIFIED.

PIPE SPECIFICATION
Crossing designed using: PRCI Report PR-227-9424
Contents: Oil
Carrier Pipe: 16.0" OD x 0.344" W.T., API 5L X70
Coating: 14-16 Mils FBE, 30-35 Mils ARO

FINAL
11/05/2015

BORE	STATIONING	LATITUDE	LONGITUDE
BEGIN BORE	1734+55.62	46°55'11.83" N	102°53'34.32" W
END BORE	1736+98.95	46°55'09.44" N	102°53'34.49" W

NOTE:
INSTALL MARKER POSTS ON BOTH SIDES OF RIGHT OF WAY FOR ALL LINE CROSSINGS

TOTAL HORIZONTAL DISTANCE = 243.33 FT.
TOTAL BORE LENGTH = 243.5 FT.

LEGEND
PROPOSED PIPE

15 0 15 30
scale 1"=30' feet

LEGEND
PROPERTY LINE
SECTION LINE
EASEMENT LINE
PIPELINE CENTERLINE
WATER LINE
FOREIGN PIPELINE
EXISTING ROAD
UNDERGROUND COM. LINE
EXISTING FENCE
FIBER OPTIC COM. LINE
RAILROAD
OVERHEAD ELECTRIC
UTILITY POLE
PROPOSED BORE
EROSION/SEDIMENT CONTROL BMP
MARKER POST
AVOIDANCE AREA
WETLAND
EASEMENT
TEST LEAD
VALVE SETTING

MATERIAL SUMMARY

MK. NO.	QTY.	DESCRIPTION
2	244'	16" OD, 0.344" W.T. API 5L X70, 14-16 MIL FBE, ARO

REFERENCE DRAWINGS

DWG. NO.	DESCRIPTION

REVISIONS

NO.	DATE	DESCRIPTION

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DRAWN BY: A. ROMANN
DATE: 11/5/15
CHECKED BY: D. DIONNE
APPROVED BY: S. BESMER
KLJ JOB NUMBER: 1715137
REVISION: SHEET:

BOE BAKKEN OIL EXPRESS
A EN I
EXP E PIPE INE

BOE PIPELINE PHASE I
34TH ST SW CROSSING BORE
BORE #42
SECTION 23 & SECTION 26, T.140N., R.97W., STARK COUNTY, ND

KLJ
4585 Coleman Street
Bismarck, ND 58503

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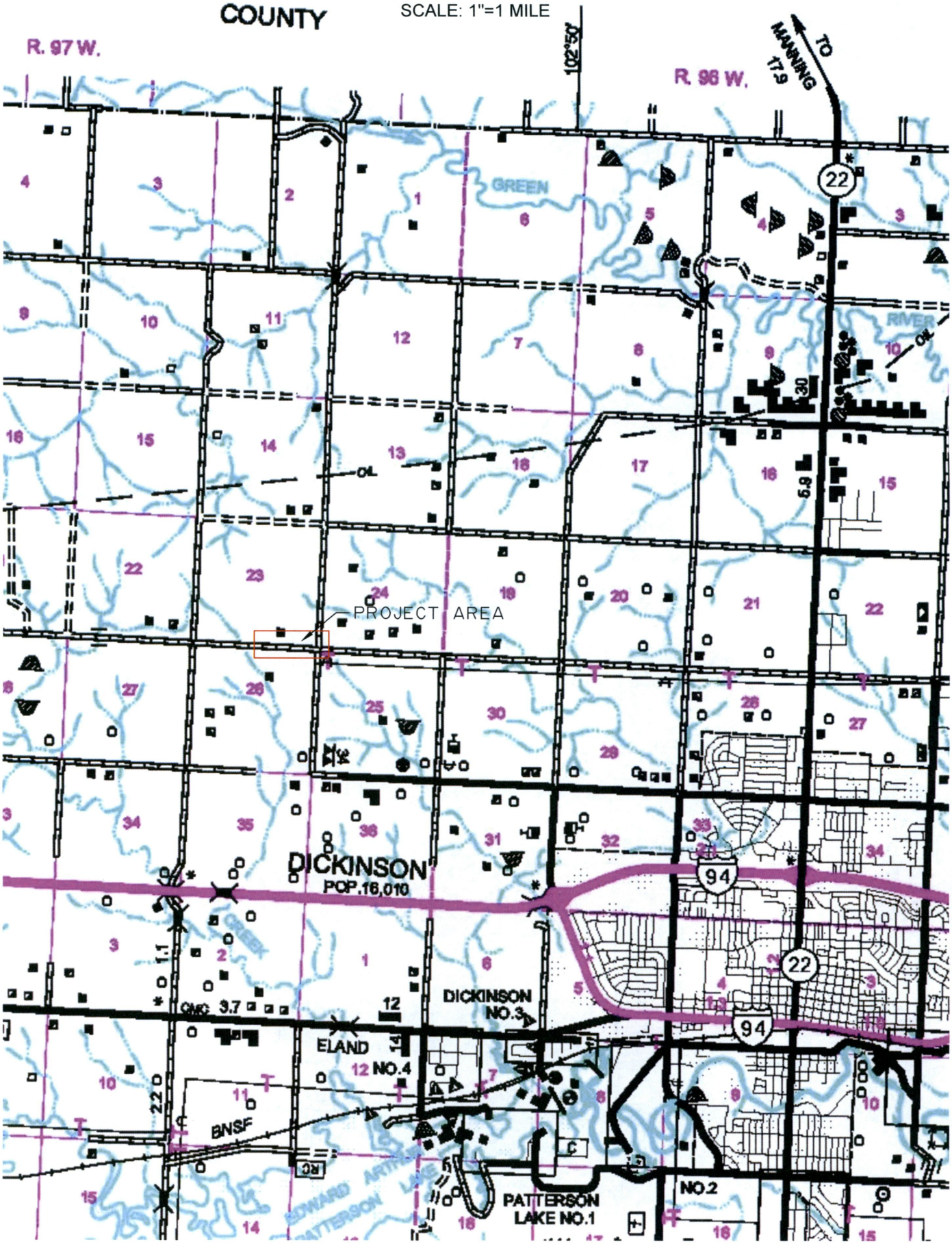
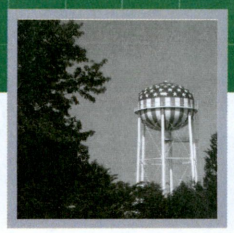
COUNTY ROAD MAP
SCALE: 1"=1 MILE





APPENDIX B

Photographs

Pictures 1-31	May 18
Pictures 32-52	May 19
Pictures 53-67	May 20
Pictures 68-85	May 23
Pictures 86-88	May 24
Pictures 89-94	May 25
Pictures 95-103	May 26
Pictures 104-106	May 28
Picture 107	May 31
Picture 108	June 2
Picture 109	June 3
Picture 110	June 7
Pictures 111-115	June 8
Pictures 116-117	June 9

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Pictures taken: May 18th, 2016

Photo 1: Topsoil piles

Photo 2: Topsoil piles

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Pictures taken: May 18th, 2016

Photo 3: Topsoil piles

Photo 4: Topsoil piles

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Pictures taken: May 18th, 2016

Photo 5: Station 1710+39.62, looking North at right-of-way being stripped and topsoil pile

Photo 6: Station 1710+39.62, right-of-way being stripped

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Pictures taken: May 18th, 2016

Photo 7: Station 1710+39.62, topsoil stripped, topsoil pile to the right

Photo 8: Station 1710+39.62, topsoil stripped, approximate depth of 12"

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Pictures taken: May 18th, 2016

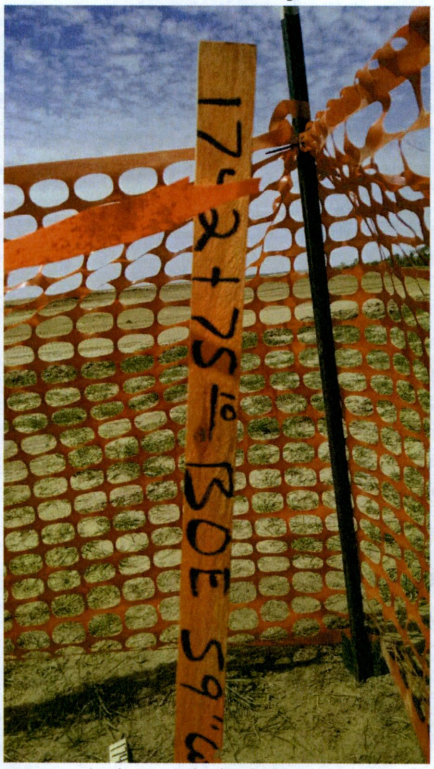

Photo 9: Station 1742+75.10, stake next to pot hole

Photo 10: Station 1742+75.10, pot hole showing crude pipe with 59" cover

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Pictures taken: May 18th, 2016

Photo 11: Station 1741+75, stake next to pot hole

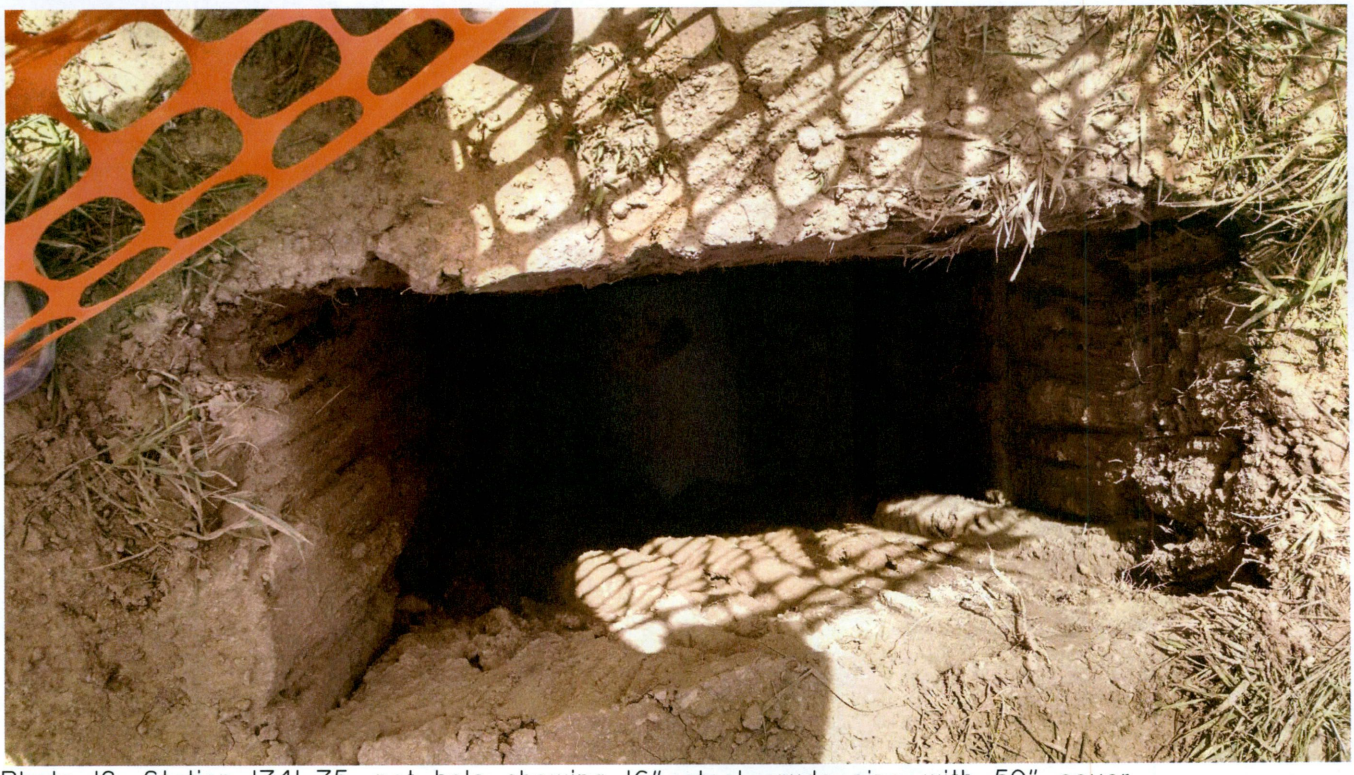

Photo 12: Station 1741+75, pot hole showing 16" steel crude pipe with 59" cover

INTERSTATE ENGINEERING

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Pictures taken: May 18th, 2016

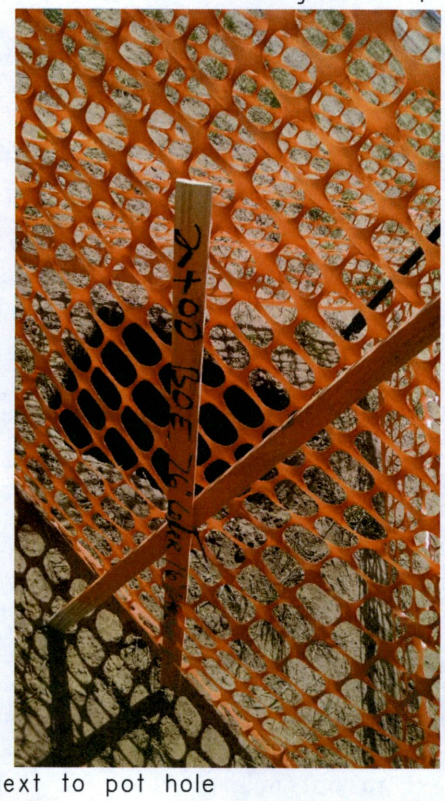

Photo 13: Station 2+00, stake next to pot hole

Photo 14: Station 2+00, pot hole showing 16" steel crude pipe with 76" cover

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Pictures taken: May 18th, 2016

Photo 15: Station 4+00, stake next to pot hole

Photo 16: Station 4+00, pot hole showing 1/2" consolidated cable with 26" cover

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Pictures taken: May 18th, 2016

Photo 17: Station 1730+75, topsoil stripped, approximate depth of 12"

Photo 18: Station 1730+75, stake for centerline of pipeline

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Pictures taken: May 18th, 2016

Photo 19: Station 1730+75, looking North at right-of-way being stripped and topsoil pile right

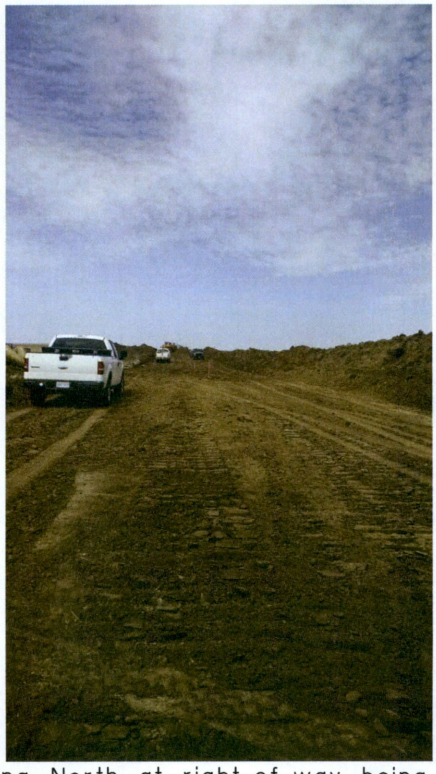


Photo 20: Station 1730+75, looking North at right-of-way being stripped

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: May 18th, 2016

Photo 21: Station 1731+75, hydrovac dump area, looking north

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: May 18th, 2016

Photo 22: Station 1726+75, looking North at right-of-way being stripped and topsoil pile right

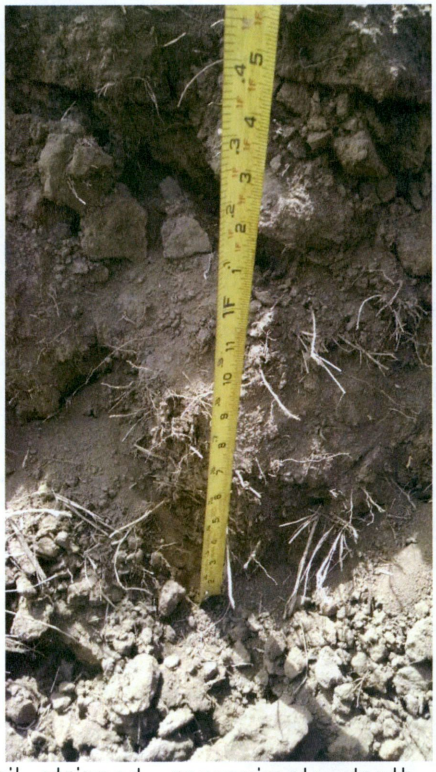


Photo 23: Station 1726+75, topsoil stripped, approximate depth of 12"

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: May 18th, 2016

Photo 24: Station 1726+75, looking North at right-of-way being stripped and topsoil pile right

Photo 25: Station 1726+75, stake for centerline of pipeline

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: May 18th, 2016

Photo 26: Station 1723+50, topsoil stripped, approximate depth of 12"

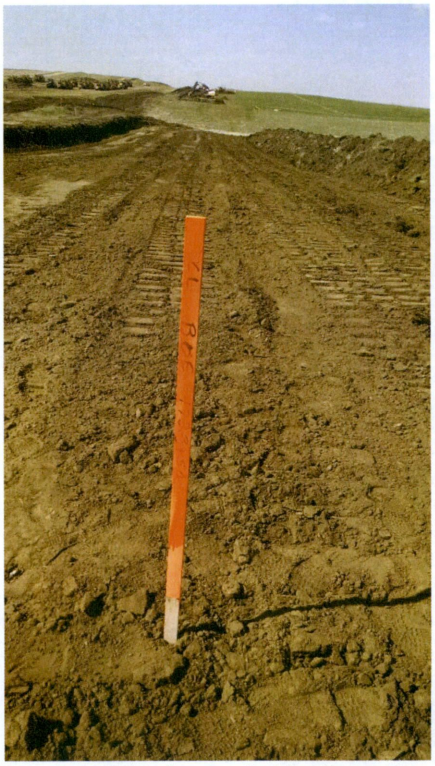


Photo 27: Station 1723+50, stake for centerline of pipeline

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: May 18th, 2016

Photo 28: Station 1723+50, looking North at right-of-way being stripped

Photo 29: Station 1723+50, looking North at right-of-way being stripped and topsoil pile right

Pictures taken: May 18th, 2016

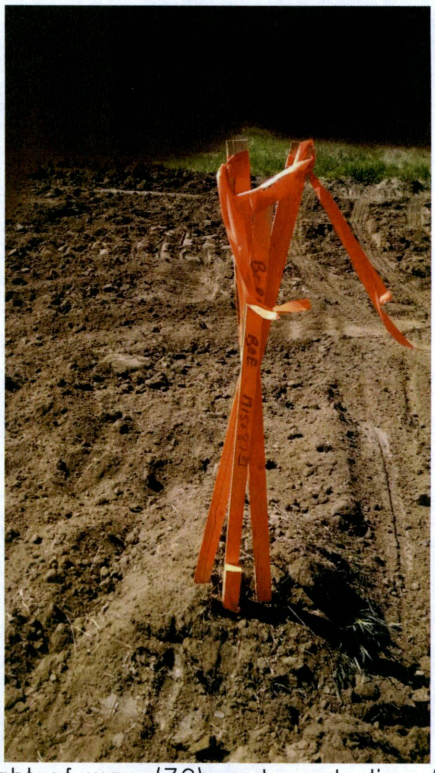
Photo 30: Station 1710+39.62, stake

Photo 31: Station 1710+39.62, looking South at right-of-way being stripped

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: May 19th, 2016



Photos 32 & 33: Station 1715+87.29, stakes at 40' right-of-way (32) and centerline (33)

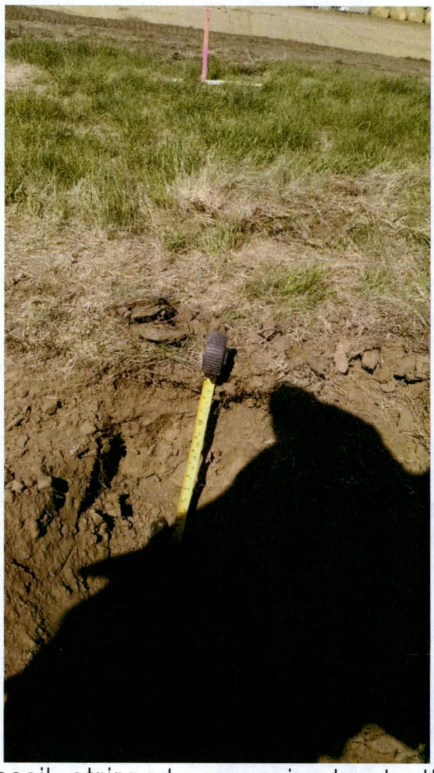


Photo 34: Station 1715+87.29, topsoil stripped, approximate depth of 12"

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: May 19th, 2016

Photos 35 & 36: Station 1715+87.29, looking North at right-of-way being stripped

Photo 37: Station 1715+87.29, looking North at topsoil pile

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: May 19th, 2016

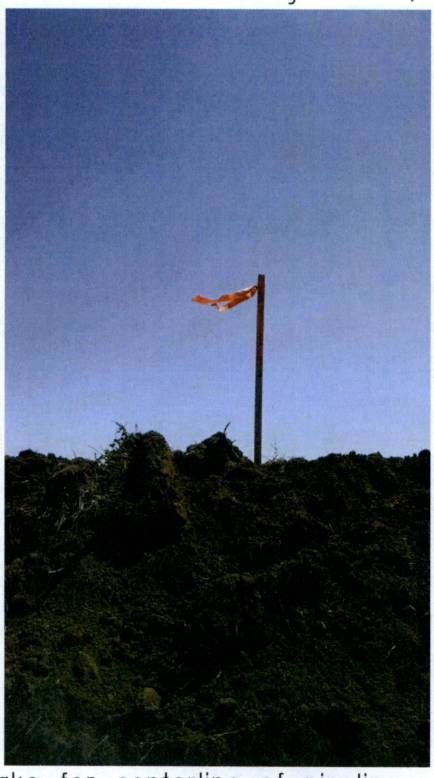


Photo 38: Station 1710+89.93, stake for centerline of pipeline

Photo 39: Station 1710+89.93, topsoil stripped, approximate depth of 12"

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: May 19th, 2016

Photos 40 & 41: Station 1710+89.93, looking North at right-of-way being stripped

Photo 42: Station 1710+89.93, looking North at topsoil pile, contained within right-of-way

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: May 19th, 2016

Photo 43: Station 1742+75.10, looking North at right-of-way being stripped

Photo 44: Station 1742+75.10, pot hole with fence

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: May 19th, 2016

Photo 45: Station 1742+75.10, fence east of right-of-way

Photo 46: Station 1742+75.10, stake east of centerline for 40' right-of-way

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: May 19th, 2016

Photo 47: Station 1741+75, replacing old wood fence with steel fence east of centerline

Photo 48: Station 1741+75, stake east of centerline for 40' right-of-way

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: May 19th, 2016

Photo 49: Station 1715+87.29, stake for centerline of pipeline, begin bore

Photo 50: Station 1715+87.29, Looking South at stake by old fence, back hoe digging bell hole for end of bore in the distance

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: May 19th, 2016

Photo 51: Station 1720+74.08, stake for centerline of pipeline, end bore

Photo 52: Station 1720+74.08, looking North at silt fence

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: May 20th, 2016

Photo 53: stake next to pot hole

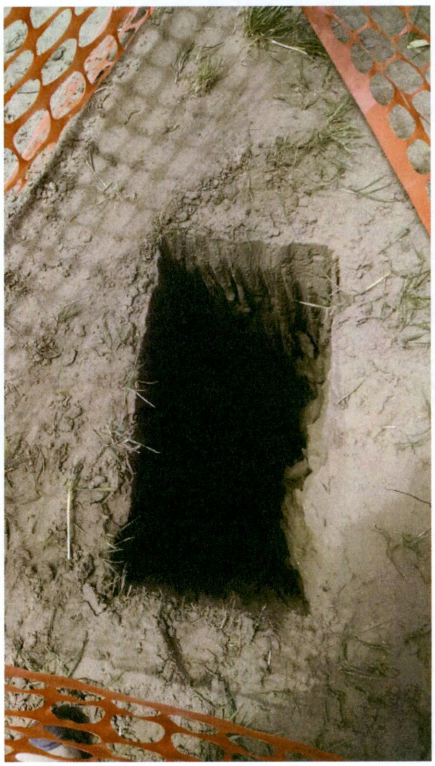


Photo 54: pot hole

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: May 20th, 2016

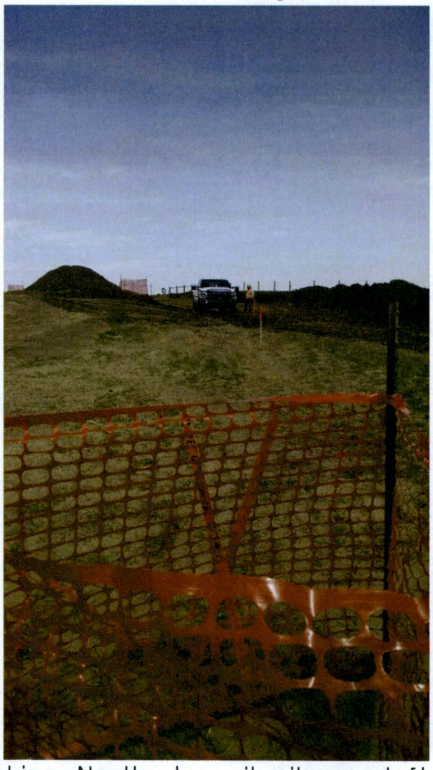


Photo 55: Station 1742+75.10, looking North, topsoil pile on left

Photo 56: Station 1742+75.10, fence around pot hole

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: May 20th, 2016

Photo 57: Station 1742+75.10, looking North at topsoil pile

Photo 58: Station 1742+75.10, looking North at stake for centerline of reroute

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: May 20th, 2016

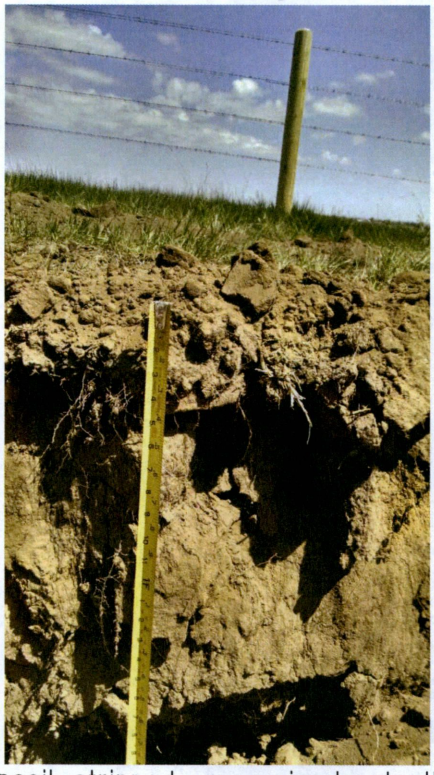


Photo 59: Station 1742+75.10, topsoil stripped, approximate depth of 12"

Photo 60: Station 1742+75.10, looking North at right-of-way being stripped

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: May 20th, 2016

Photo 61: Station 1742+75.10, looking North at right-of-way being stripped

Photo 62: Station 1742+75.10, topsoil stripped, approximate depth of 12"

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: May 20th, 2016

Photo 63: Station 1741+75, stake for 40' right-of-way

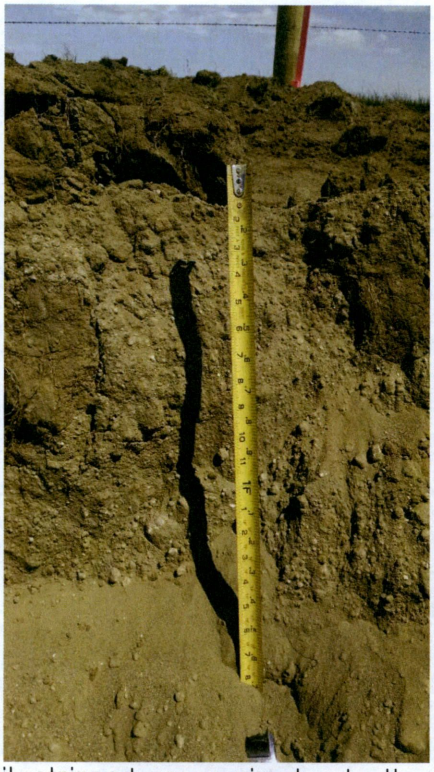


Photo 64: Station 1741+75, topsoil stripped, approximate depth of 12"

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: May 20th, 2016

Photos 65 & 66: Station 1741+75, looking North, topsoil pile left (66) centerline stake (65)

Photo 67: Station 1741+75, topsoil stripped, approximate depth of 12"

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: May 23rd, 2016

Photo 68: Station 1733+93.41, stake for 40' right-of-way

Photo 69: Station 1733+93.41, looking North at pipes to be installed

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: May 23rd, 2016

Photo 70: Station 1733+93.41, trench pipe detail

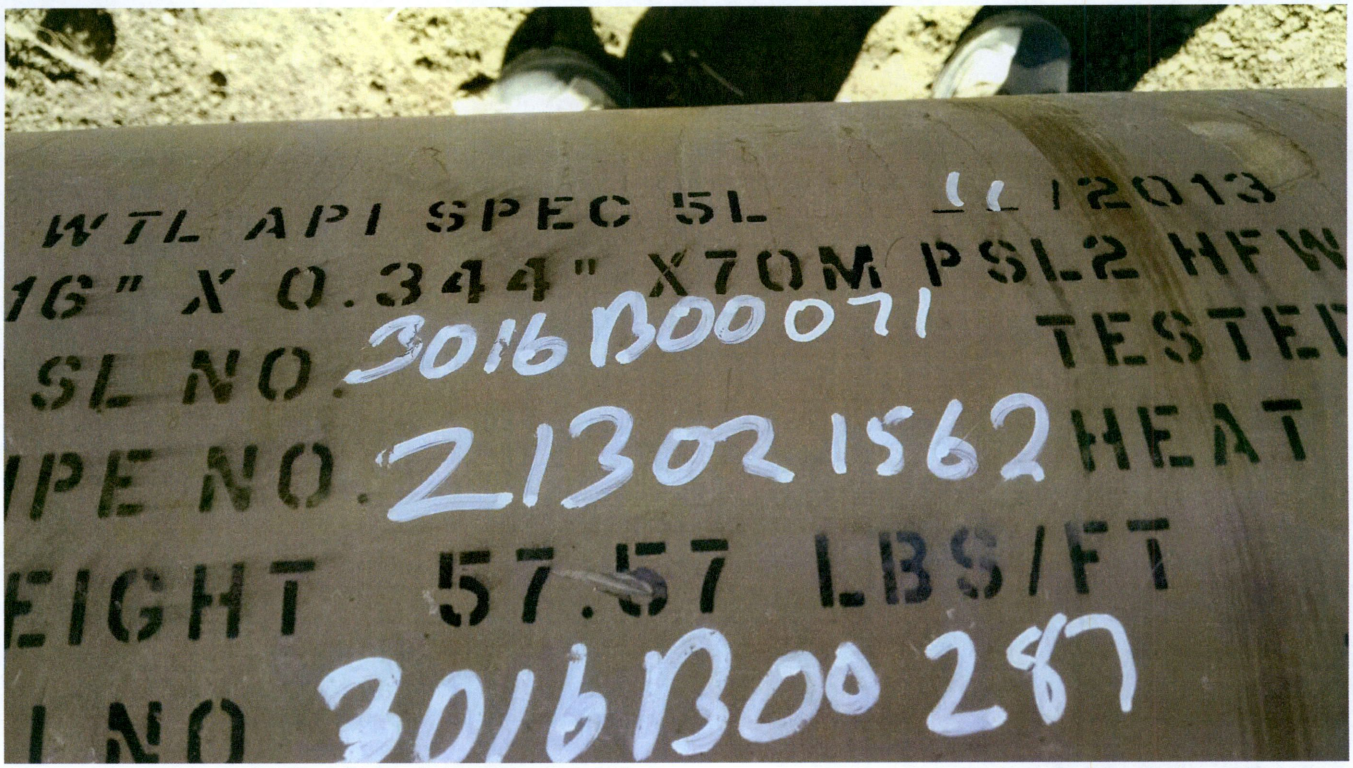


Photo 71: Station 1733+93.41, bore pipe detail

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: May 23rd, 2016

Photo 72: Station 5+50, stake by pot hole

Photo 73: Station 5+50, pot hole

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: May 23rd, 2016

Photo 74: Station 5+79, stake by pot hole

Photo 75: Station 5+79, pot hole

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: May 23rd, 2016

Photo 76: Station 6+00, stake by pot hole

Photo 77: Station 6+00, pot hole

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: May 23rd, 2016

Photo 78: Station 5+50, 5+79, and 6+00, pot holes on South side of 34th Street

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: May 23rd, 2016

Photo 79: Station 7+94, stake by pot hole

Photo 80: Station 7+94, pot hole

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: May 23rd, 2016

Photo 81: Station 7+86, stake by pot hole

Photo 82: Station 7+86, pot hole

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: May 23rd, 2016

Photo 83: Station 7+37, stake by pot hole

Photo 84: Station 7+37, pot hole

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: May 23rd, 2016

Photo 85: Station 7+94, 7+86, & 7+37, pot holes

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: May 24th, 2016

Photos 86 & 87: Station 1724+75, bore pipe to be installed (86) and centerline stake (87)

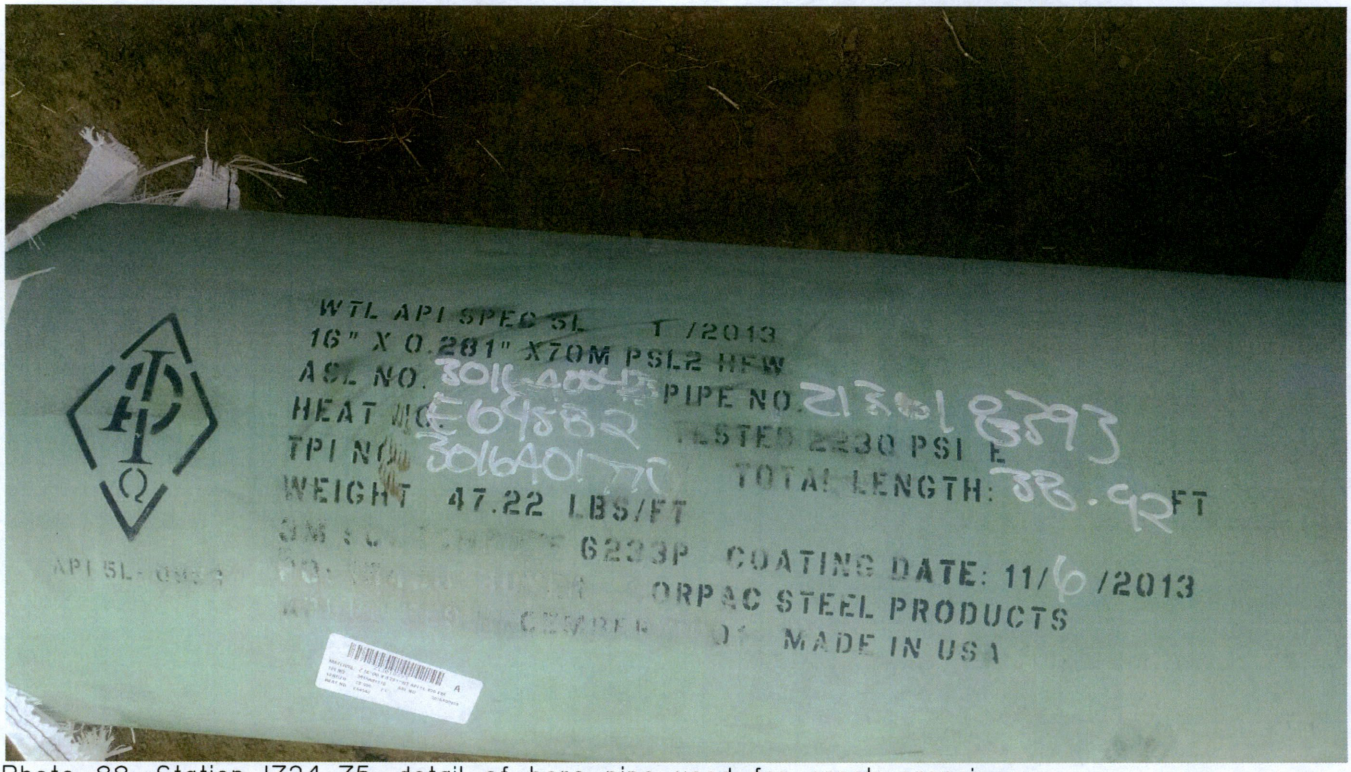


Photo 88: Station 1724+75, detail of bore pipe used for creek crossing

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: May 25th, 2016

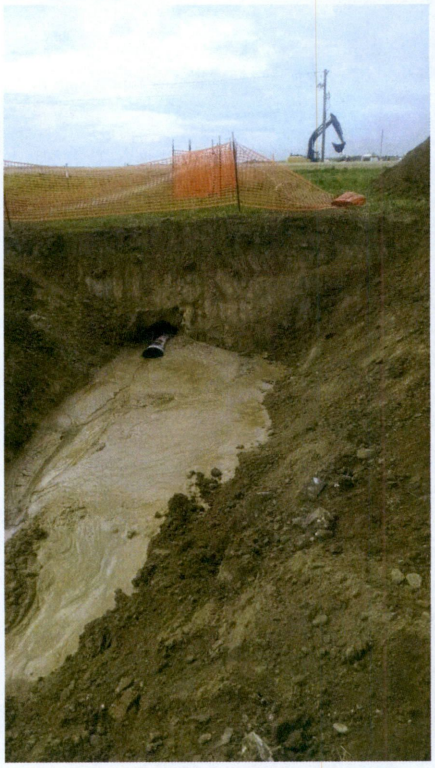


Photo 89 & 90: looking South at 34th Street bore

Photo 91: looking North at 34th Street bore

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: May 25th, 2016

Photos 92 & 93: Station 1707+00, stakes next to pot hole

Photo 94: Station 1707+00, pot hole

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: May 26th, 2016

Photo 95: coating bore pipe for creek bore

Photo 96: Station 8+91, frac out while drilling bore

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: May 26th, 2016

Photo 97 & 98: Station 8+91, looking South at frac outs

Photo 99: Station 8+91, looking South at frac out

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: May 26th, 2016

Photo 100: Station 8+91, looking South at frac outs at creek bore

Photo 101: Station 8+91, bore pipe at creek bore

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: May 26th, 2016

Photo 102: Station 13+85, bore pipe at creek bore

Photo 103: Station 13+85, looking North at silt fences at creek bore

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: May 28th, 2016

Photo 104: Station 27+56, looking North at bore pipe at 34th street

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: May 28th, 2016

Photo 105: Station 13+85, looking South at bore pipe

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: May 28th, 2016

Photo 106: Station 8+91, looking North at bore pipe at creek crossing

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: May 31st, 2016

Photo 107: Station 0+00, looking east at tie-in, 12 foot deep trench

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: June 2nd, 2016

Photo 108: Station 0+00, Looking east at tie-in to mainline

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: June 3rd, 2016

Photo 109: Tie-in at end of project, looking Southeast

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: June 7th, 2016

Photo 110: Station 0+00, Reroute tied in to mainline, looking East

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: June 8th, 2016

Photo 111: Station 36+91.76, Looking North at tie-in from mainline to reroute, mainline dug out to lower pipe

Photo 112: Station 36+91.76, Looking North at tie-in from mainline to tie-in, compacting soil and getting density checked to 90%

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: June 8th, 2016

Photo 113: Station 1710+89, Looking South at completed right-of-way

INTERSTATE ENGINEERING

Professionals you need, people you trust

Pictures taken: June 8th, 2016

Photo 114: At 34th Street, looking South at completed right-of-way with fence back in place

Photo 115: At 34th Street, looking North at completed right-of-way

INTERSTATE ENGINEERING

Professionals you need, people you trust

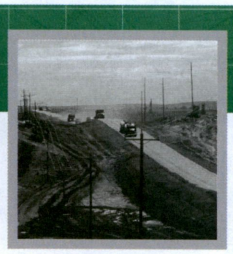
Pictures taken: June 9th, 2016

Photo 116: Station 0+00, Looking East at completed right-of-way over tie-in to mainline

Photo 117: Station 36+91.76, Looking South at completed right-of-way over end of reroute

INTERSTATE ENGINEERING

Professionals you need, people you trust



APPENDIX C

Geo-Reference Table for Photographs

INTERSTATE ENGINEERING

Project file data		Coordinate System	
Name:	Q:\2016\16-00-xxx\E16-00-075\Field	Name:	US State Plane 1983
Size:	260 KB	Datum:	NAD 1983 (Conus)
Modified:	6/10/2016 6:50:28 AM (UTC:-6)	Zone:	Default
Time zone:	Mountain Standard Time	Geoid:	GEOID12A (Conus)
Reference number:		Vertical datum:	
Description:			

Additional Coordinate System Details

Local Site Settings			
Project latitude:	?	Ground scale factor:	1
Project longitude:	?	False northing offset:	0.000
Project height:	8551.751	False easting offset:	0.000

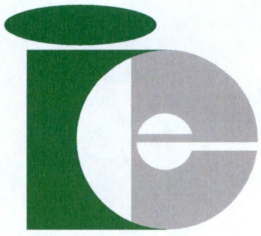
Point List

ID	Latitude (Global)	Longitude (Global)	Height (Global)	Feature Code
9	N46°52'45.41072"	W102°53'38.19620"	2486.273	GPS*2-139-97 RB
11	N46°55'42.74396"	W102°53'38.24467"	2606.579	GPS*23-140-97 AC
2000	N46°55'10.21797"	W102°53'34.37869"	2567.405	SPOT*12.9"TO TOP PIPE
2001	N46°55'10.52895"	W102°53'34.37914"	2570.518	SPOT*14.6"TO TOP PIPE
2002	N46°55'10.67603"	W102°53'34.36654"	2573.318	SPOT*11.9"TO TOP PIPE
2003	N46°55'10.97386"	W102°53'34.34487"	2578.829	SPOT*8.1"TO TOP PIPE
2004	N46°55'21.51540"	W102°53'34.22600"	2582.250	SPOT*1724+75
2005	N46°55'25.46247"	W102°53'34.20212"	2574.681	SPOT*1720+74
2006	N46°55'30.27530"	W102°53'34.17245"	2581.311	SPOT*1715+87 27
2007	N46°55'27.96767"	W102°53'34.22104"	2549.917	SPOT*12 TO TOP PIPE
2008	N46°55'27.68587"	W102°53'34.23098"	2549.465	SPOT*10.5 TO TOP PIPE
2009	N46°55'27.53285"	W102°53'34.19407"	2549.518	SPOT*10.8 TO TOP PIPE
2010	N46°55'35.66117"	W102°53'33.61208"	2596.902	SPOT*C/L1710+39 62
2011	N46°55'35.17223"	W102°53'33.73049"	2595.453	SPOT*C/L1710+89 93
2012	N46°55'19.43385"	W102°53'34.24430"	2572.688	BOE*ASB ML
2013	N46°55'22.53352"	W102°53'34.23114"	2579.790	BOE*ASB ML
2014	N46°55'16.40872"	W102°53'34.26748"	2570.797	BOE*ASB ML
2015	N46°55'11.82664"	W102°53'34.30521"	2575.062	BOE*ASB END ML BEGIN BORE
2016	N46°55'25.36434"	W102°53'34.20887"	2569.716	BOE*ASB BEGIN ML END BORE
2017	N46°55'30.23730"	W102°53'34.17580"	2575.052	BOE* END MBEGIN BORE
2018	N46°55'34.94138"	W102°53'33.78474"	2588.938	BOE*ASB ML
2019	N46°55'35.59747"	W102°53'33.70494"	2588.734	BOE*ASB ML
2020	N46°55'33.13981"	W102°53'33.99122"	2583.265	BOE*ASB ML

2021	N46°55'36.73179"	W102°53'35.17724"	2585.300	BOE*ASB ML
2022	N46°55'09.05151"	W102°53'34.39832"	2575.571	BOE*ASB END BORE BEGIN ML
2023	N46°55'05.91629"	W102°53'35.48502"	2585.773	BOE*ASB ML
2024	N46°55'15.58850"	W102°53'34.26729"	2576.838	SPOT*C/L 1730+75
2025	N46°55'22.74684"	W102°53'34.22237"	2585.872	SPOT*C/L 1723+50
2026	N46°55'21.51354"	W102°53'34.23508"	2583.243	SPOT*C/L 1724+75
2027	N46°55'14.60315"	W102°53'34.27708"	2576.249	SPOT*C/L 1731+75
2028	N46°55'12.44997"	W102°53'34.28922"	2577.639	SPOT*C/L 1733+93.41
2029	N46°55'35.17173"	W102°53'33.73013"	2587.487	SPOT*C/L 1710+89.93
2030	N46°55'09.60408"	W102°53'34.12998"	2582.986	SPOT*C/L 1736+81
2031	N46°55'04.85909"	W102°53'35.88091"	2588.280	SPOT*C/L 1741+75
2032	N46°55'03.95965"	W102°53'36.63023"	2591.959	SPOT*POT HOLE 1742+75.1
2033	N46°55'38.16810"	W102°53'37.06727"	2593.255	BOE*END ML BEGIN REROUTE 0+00
2034	N46°55'02.90328"	W102°53'37.31740"	2578.428	BOE*BEGIN ML END REROUTE 36+91.76
2035	N46°55'03.10100"	W102°53'37.09826"	2578.532	BOE* ML J9
2036	N46°55'03.40176"	W102°53'36.76261"	2579.224	BOE* ML J10

6/10/2016 7:07:36 AM	Q:\2016\16-00-xxx\E16-00-075\Field Data\E16-00-	Trimble Business Center

Engineering • Surveying • Planning



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