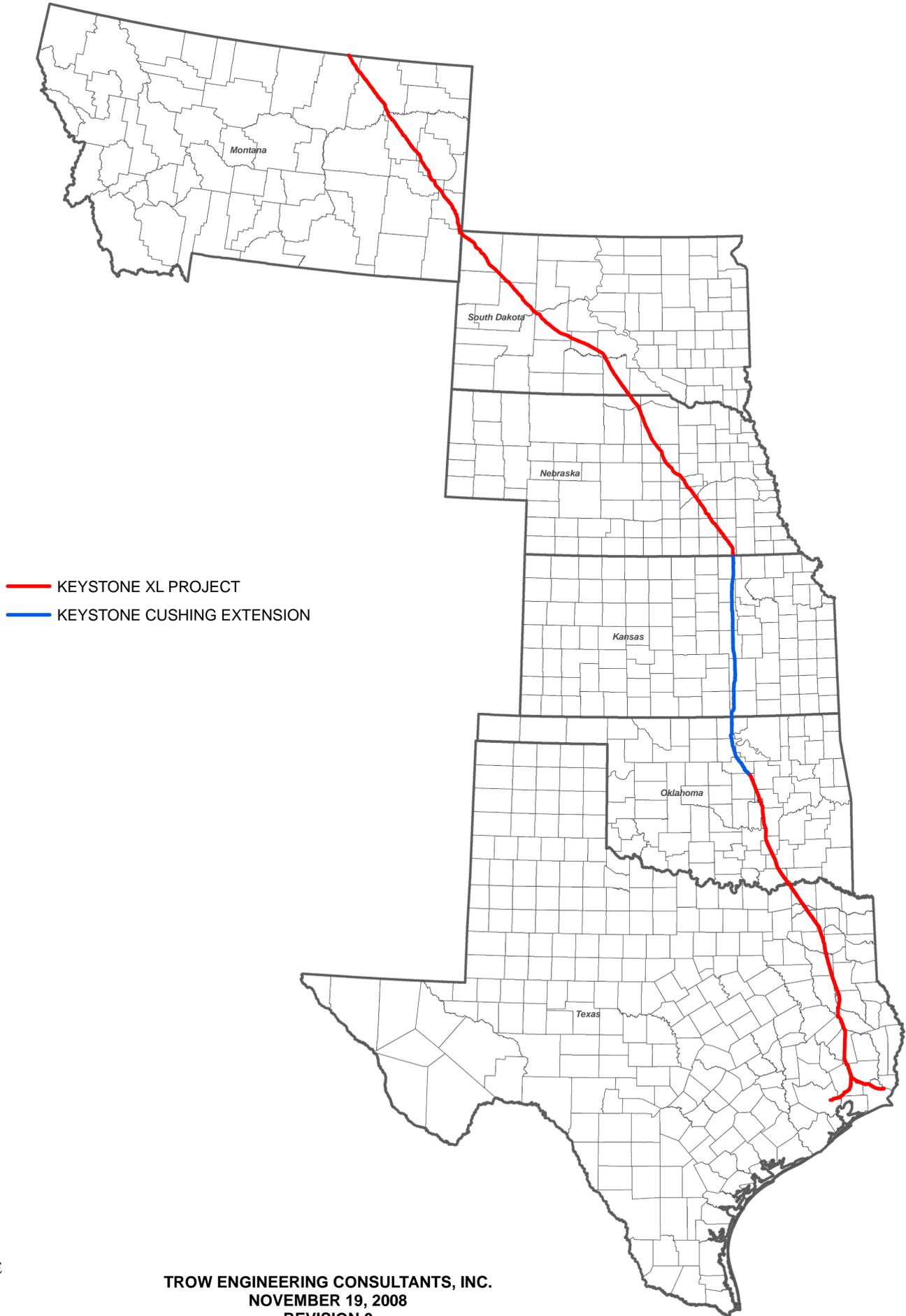


TransCanada Keystone Pipeline, L.P. United States Department of State Keystone XL Project Appendix D

Site Specific Waterbody Crossing Plans



Morgan, MT to Steele City, NE		
Crossing	Milepost	Drawing #
Milk River	82.7	XL-03-ML-03-001
Missouri River	88.8	XL-03-ML-03-002
Yellowstone River	195.9	XL-03-ML-03-003
Little Missouri	291.8	XL-03-ML-03-004
Cheyenne River	425.5	XL-03-ML-03-005
White River	535.4	XL-03-ML-03-006
Keya Paha River	598.3	XL-03-ML-03-007
Niobrara River	613.7	XL-03-ML-03-008
Loup River	738.6	XL-03-ML-03-009
Platte River	754.2	XL-03-ML-03-010

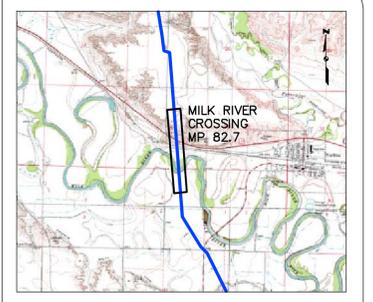
Cushing, OK to Nederland, TX		
Crossing	Milepost	Drawing #
Deep Fork	22.7	XL-03-ML-03-051
North Canadian River	39.1	XL-03-ML-03-052
Little River	70.6	XL-03-ML-03-053
Canadian River	74.6	XL-03-ML-03-054
Red River	154.7	XL-03-ML-03-055
Bois D'Arc Creek	161.1	XL-03-ML-03-056
North Sulphur	189.6	XL-03-ML-03-057
South Sulphur	200.7	XL-03-ML-03-058
Sabine River	262.2	XL-03-ML-03-059
East Fork Angelina River	311.5	XL-03-ML-03-060
Angelina River	332.3	XL-03-ML-03-061
Neches River	366.0	XL-03-ML-03-062
Menard Creek	412.4	XL-03-ML-03-063
Neches Valley Canal	457.7	XL-03-ML-03-064
Railroad, I-10 and Canal	466.2	XL-03-ML-03-065
Hillebrandt Bayou	469.5	XL-03-ML-03-066
Muddy Boggy Creek	87.1	XL-03-ML-03-067
Clear Boggy Creek	126.2	XL-03-ML-03-068

Houston Lateral		
Crossing	Milepost	Drawing #
Turkey Creek Marsh	17.3	XL-03-LA-03-001
Trinity River	22.0	XL-03-LA-03-002
Cedar Bayou	35.0	XL-03-LA-03-003
McCracken Lake	42.1	XL-03-LA-03-004
San Jacinto	43.3	XL-03-LA-03-005

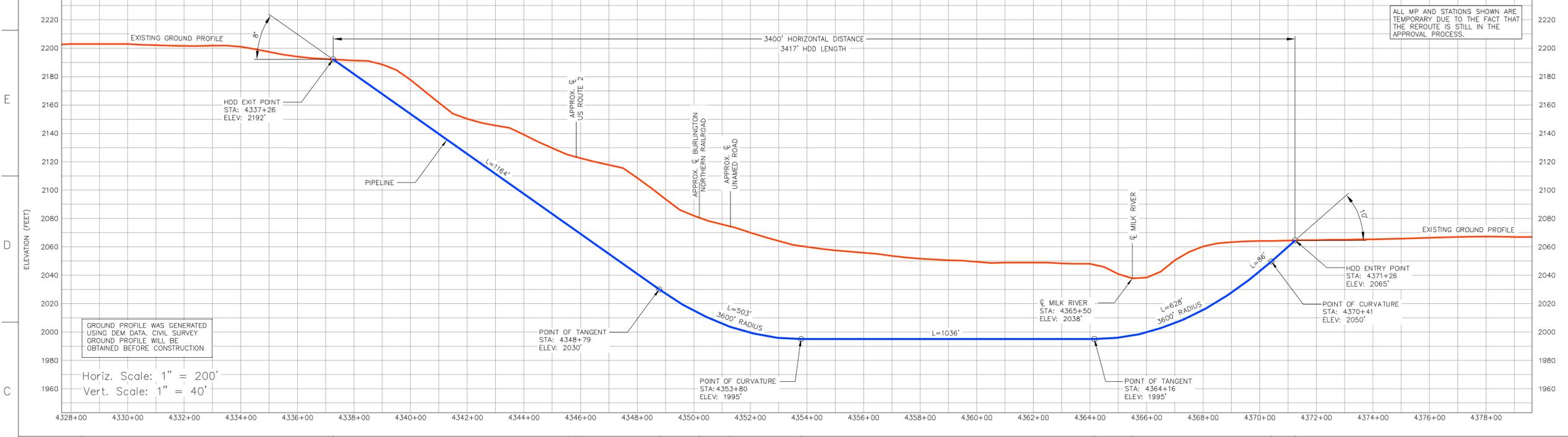


TROW ENGINEERING CONSULTANTS, INC.
NOVEMBER 19, 2008
REVISION 0

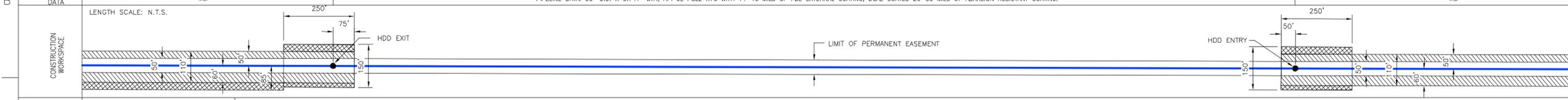
PREPARED BY: TROW ENGINEERING CONSULTANTS INC. 1300 Metropolitan Boulevard, Suite 200 Tallahassee, Florida, USA 32308 Phone: 1-850-385-5441 Fax: 1-850-385-5523	 Trow			KEYSTONE XL PROJECT SITE SPECIFIC DRAWINGS MAP PARAMETERS PROJECTION: NAD83, UTM: 13/14/15N NTS						
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NO.	REVISION	DATE								
DRAWING NUMBER: XL-FIPS-ML-2002-P-000	DRAWN BY: GS	CHECKED BY: SS	APPROVED BY: RG							



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CROSSING INFORMATION (STRIPING)	PIPELINE DATA
4337+26 HDD EXIT POINT	PIPELINE DATA: 36" O.D. X 0.741" W.T., API 5L PSL2 X70 WITH 14-16 MILS OF FBE EXTERNAL COATING, DUAL COATED 20-30 MILS OF ABRASION RESISTANT COATING.
4345+84 APPROX. Q. US ROUTE 2	
4348+79 PT OF TANGENT	
4350+20 APPROX. Q. BURLINGTON NORTHERN RAILROAD	
4351+30 APPROX. Q. ROAD	
4353+80 PT OF CURVATURE	
4364+16 PT OF TANGENT	
4365+50 Q. MILK RIVER	
4370+41 PT OF CURVATURE	
4371+26 HDD ENTRY POINT	



ENVIRONMENTAL MITIGATION/RECLAMATION	TOPSOIL SALVAGE METHOD
STREAMS	
WETLANDS	
TIMING CONSTRAINTS	
MILEPOST	
MONITORING	
RECLAMATION	
SPECIAL CONSIDERATIONS	

LEGEND

- POINT OF INTERSECTION (P.I.)
- ENTRY OR EXIT POINT
- ⊕ GEOTECHNICAL BOREHOLE
- POWERPOLE
- MLP MAINLINE PIPE
- PIPELINE
- FOREIGN PIPELINE
- EDGE OF WATER
- PRIVATE ACCESS SHOULDER ROAD
- COUNTY BOUNDARY
- ▽ WATER LEVEL
- ⊕ USACE CONSTRUCTION REFERENCE POINT
- WETLANDS
- PERMANENT EASEMENT
- TEMPORARY EASEMENT
- EXTRA WORKSPACE

TO BE DETERMINED

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REVISION			APPROVAL						
REV No	DATE	DESCRIPTION	PROJECT CODE	DRAFTER	DRAFTING CHECKER	DESIGNER	DESIGN CHECKER	PROJECT MANAGER	COMPANY
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PROFESSIONAL ENGINEER/RPT		PERMIT/ ENG. APPROVAL	
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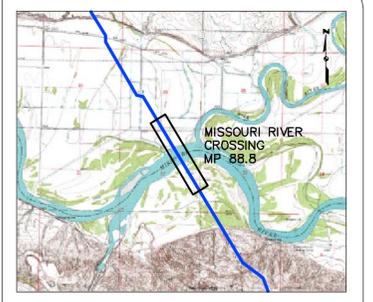
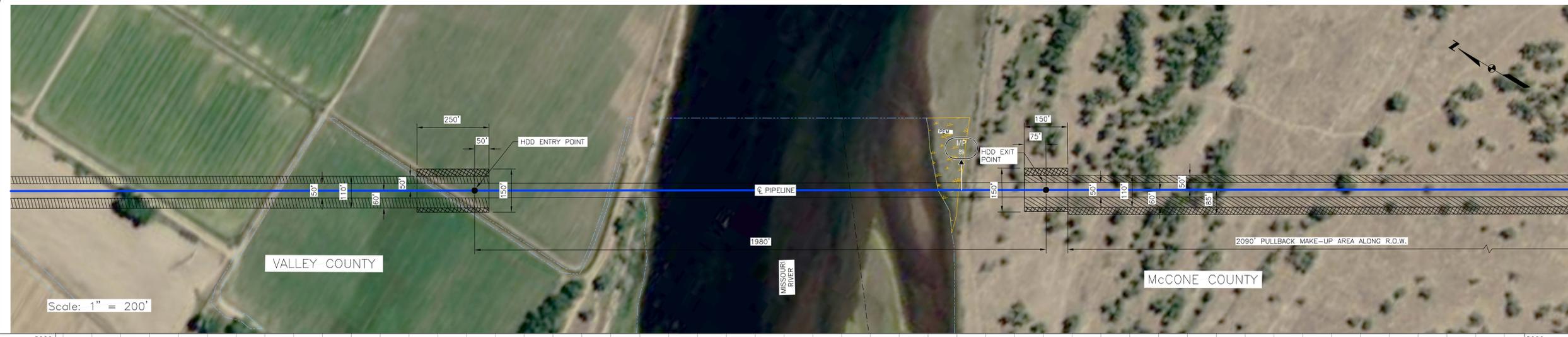
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in business to deliver

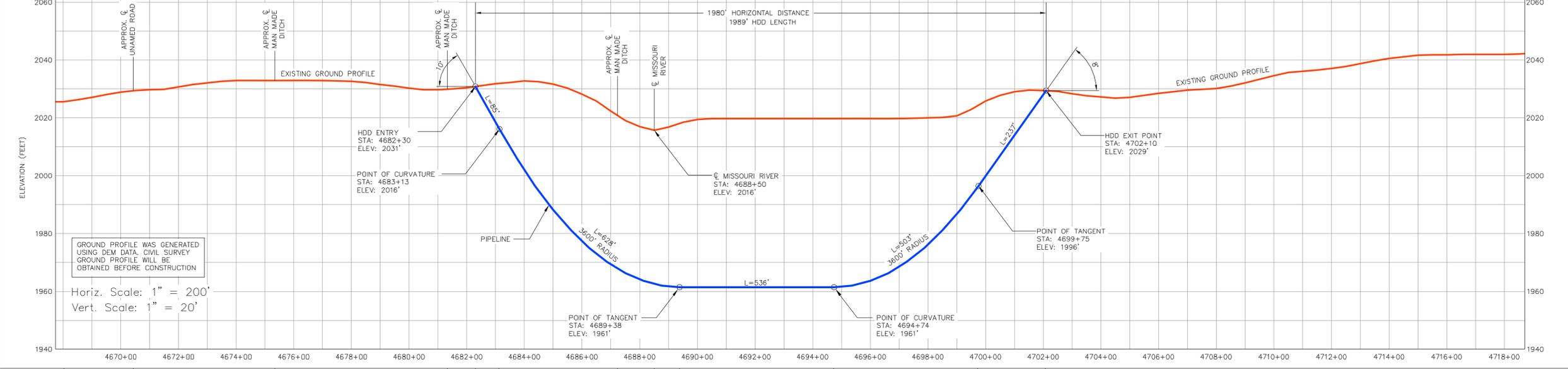
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**MILK RIVER HDD INSTALLATION
KEYSTONE XL PROJECT
VALLEY COUNTY, MONTANA**

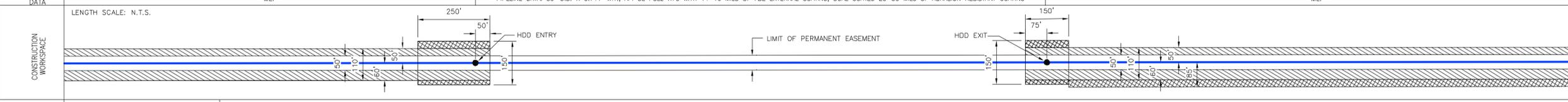
SCALE AS SHOWN DRAWING No XL-03-ML-03-001 REV 0



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CROSSING INFORMATION (STRIKING)	4670+42 APPROX. & UNPAVED ROAD	4675+34 APPROX. & MAN MADE DITCH	4681+30 APPROX. & MAN MADE DITCH	4682+30 HDD ENTRY POINT	4683+13 PT OF CURVATURE	4687+22 APPROX. & MAN MADE DITCH	4688+50 & MISSOURI RIVER	4689+38 PT OF TANGENT	4694+74 PT OF CURVATURE	4699+75 PT OF TANGENT	4702+10 HDD EXIT POINT
	PIPELINE DATA: 36" O.D. X 0.741" W.T., API 5L PSL2 X70 WITH 14-16 MILS OF FBE EXTERNAL COATING, DUAL COATED 20-30 MILS OF ABRASION RESISTANT COATING										



ENVIRONMENTAL MITIGATION/RECLAMATION	TOPSOIL SALVAGE METHOD	
	STREAMS	
	WETLANDS	
	TIMING CONSTRAINTS	
	MILEPOST	
	MONITORING	
RECLAMATION		
SPECIAL CONSIDERATIONS		

LEGEND

- POINT OF INTERSECTION (P.I.)
- ENTRY OR EXIT POINT
- ⊕ GEOTECHNICAL BOREHOLE
- POWERPOLE
- MLP MAINLINE PIPE
- PIPELINE
- FOREIGN PIPELINE
- EDGE OF WATER
- PRIVATE ACCESS SHOULDER ROAD
- COUNTY BOUNDARY
- △ WATER LEVEL
- ⊕ USACE CONSTRUCTION REFERENCE POINT
- WETLANDS
- PERMANENT EASEMENT
- TEMPORARY EASEMENT
- EXTRA WORKSPACE

TO BE DETERMINED

REFERENCE DRAWINGS

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CENTERLINE	CL_XL_Ph_2_UTM_13_20080731.shp

REVISION

REV No	DATE	DESCRIPTION
0	11.19.08	ISSUED FOR UNITED STATES DEPARTMENT OF STATE (7.31.08 CL)

APPROVAL

PROJECT CODE	DRAFTER	DRAFTING CHECKER	DESIGNER	DESIGN CHECKER	PROJECT MANAGER	COMPANY
THES0050388X	JB	JP	HF	RB	RC	TROW

PROFESSIONAL ENGINEER/RPT

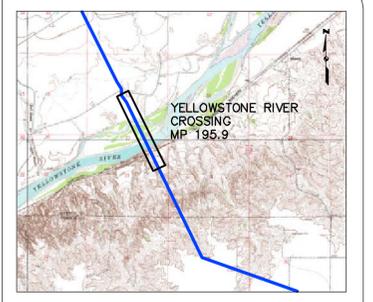
PERMIT/ ENG. APPROVAL

REV. NO.	DATE	PERMIT NUMBER:
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FIA # - CHAINAGE: MP 88.8 DISCIPLINE # 03

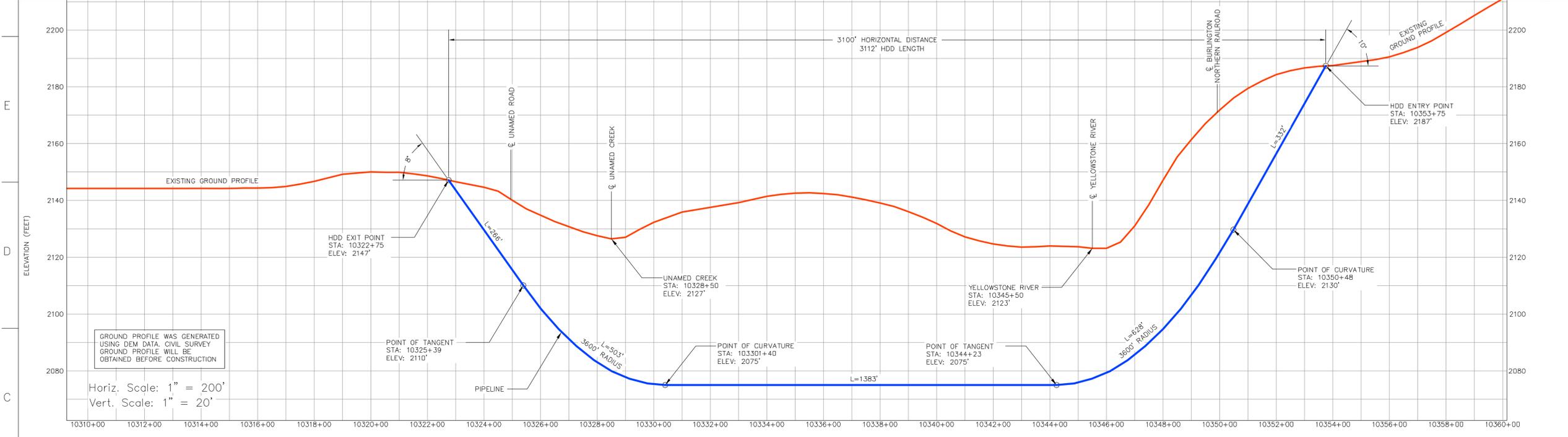
**MISSOURI RIVER HDD INSTALLATION
KEYSTONE XL PROJECT
VALLEY & McCONE COUNTY, MONTANA**

SCALE AS SHOWN DRAWING No XL-03-ML-03-002 REV 0



INSTALLATION NOTES

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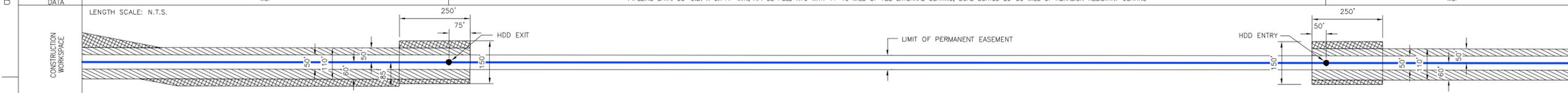


GROUND PROFILE WAS GENERATED USING DEM DATA. CIVIL SURVEY GROUND PROFILE WILL BE OBTAINED BEFORE CONSTRUCTION

Horiz. Scale: 1" = 200'
Vert. Scale: 1" = 20'

CROSSING INFORMATION (STRIKING)	10314+16 P.I. 0834+40' RT.	10322+75 HDD EXIT POINT	10324+96 UNNAMED ROAD	10325+39 PT OF TANGENT	10328+50 UNNAMED CREEK	10330+40 PT OF CURVATURE	10344+23 PT OF TANGENT	10345+50 YELLOWSTONE RIVER	10349+92 BURLINGTON NORTHERN RAILROAD	10350+48 PT OF CURVATURE	10354+75 HDD ENTRY POINT
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PIPELINE DATA	PIPELINE DATA: 36" O.D. X 0.741" W.T., API 5L PSL2 X70 WITH 14-16 MILS OF FBE EXTERNAL COATING, DUAL COATED 20-30 MILS OF ABRASION RESISTANT COATING										
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ENVIRONMENTAL MITIGATION/RECLAMATION	TOPSOIL SALVAGE METHOD	
	STREAMS	
	WETLANDS	
	TIMING CONSTRAINTS	
	MILEPOST	
	MONITORING	
	RECLAMATION	
	SPECIAL CONSIDERATIONS	

LEGEND	●	POINT OF INTERSECTION (P.I.)
	○	ENTRY OR EXIT POINT
	⊕	GEOTECHNICAL BOREHOLE
	—	POWERPOLE
	—	MLP
	—	MAINLINE PIPE
	—	PIPELINE
	—	FOREIGN PIPELINE
	—	EDGE OF WATER
	—	PRIVATE ACCESS SHOULDER ROAD
	—	COUNTY BOUNDARY
	—	WATER LEVEL
	—	USACE CONSTRUCTION REFERENCE POINT
	—	WETLANDS
	—	PERMANENT EASEMENT
	—	TEMPORARY EASEMENT
	—	EXTRA WORKSPACE

TO BE DETERMINED

REFERENCE DRAWINGS	
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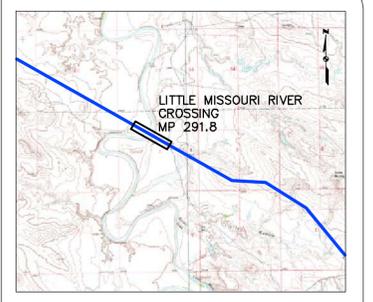
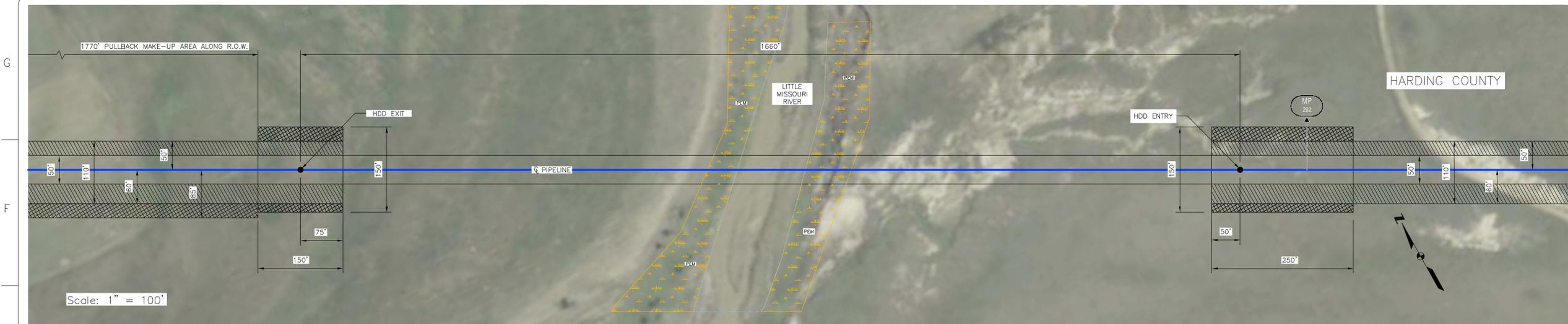
REVISION			APPROVAL						
REV No	DATE	DESCRIPTION	PROJECT CODE	DRAFTER	DRAFTING CHECKER	DESIGNER	DESIGN CHECKER	PROJECT MANAGER	COMPANY
0	11.19.08	ISSUED FOR UNITED STATES DEPARTMENT OF STATE (7.31.08 CL)	THES0050388X	JB	JP	HF	RB	RC	TROW

PROFESSIONAL ENGINEER/RPT		PERMIT/ ENG. APPROVAL	
REV. NO.	DATE	PERMIT NUMBER:	DATE

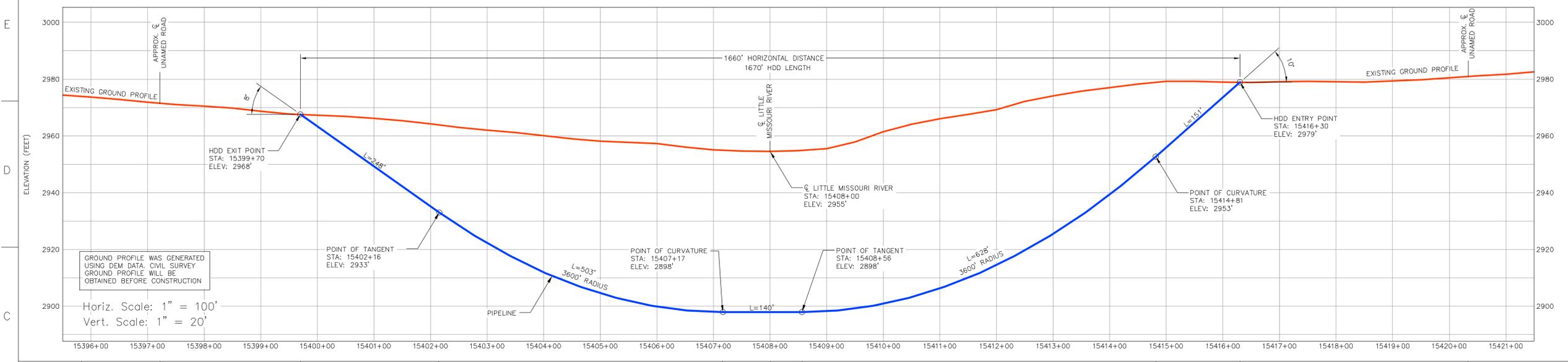
TROW ENGINEERING CONSULTANTS INC.

in business to deliver

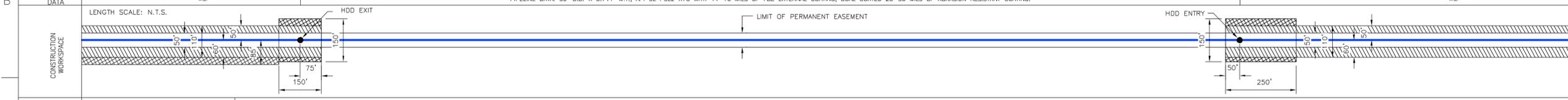
FIA #	CHAINAGE: MP 195.9	DISCIPLINE # 03
YELLOWSTONE RIVER HDD INSTALLATION KEYSTONE XL PROJECT DAWSON & PRAIRIE COUNTY, MONTANA		
SCALE AS SHOWN	DRAWING No XL-03-ML-03-003	REV 0



- INSTALLATION NOTES**
- ACCESS: ALL EQUIPMENT MUST ACCESS THE SITE ALONG THE CONSTRUCTION RIGHT-OF-WAY FROM PUBLIC OR APPROVED PRIVATE ROADS.
 - VEHICLE AND EQUIPMENT ACCESS CROSSING MAY BE INSTALLED IF APPROVED BY THE ENVIRONMENTAL INSPECTOR.
 - WORK SPACE: WORK SPACE LIMITS ARE DEPICTED. CLEARING WILL BE RESTRICTED TO THE WORK SPACES INDICATED AT THE ENTRY AND EXIT POINTS AND PULLBACK MAKE-UP AREA ALONG THE RIGHT-OF-WAY. CLEARING BETWEEN THE ENTRY AND EXIT POINTS IS LIMITED TO THE MINIMUM AMOUNT NECESSARY TO STRING LOCATION WIRES AND INSTALL PUMPS AND PIPING TO OBTAIN WATER (WHERE APPROVED).
 - WATER SOURCE: DRILL WATER AND PRE-INSTALLATION HYDROSTATIC TEST WATER SHALL BE OBTAINED FROM AN APPROVED SOURCE. THE CONTRACTOR SHALL SCREEN THE INTAKE HOSE TO PREVENT THE ENTRAPMENT OF FISH OR DEBRIS AND IN ACCORDANCE WITH THE CONSTRUCTION MITIGATION AND RECLAMATION PLAN (CMRP) AND PERMIT REQUIREMENTS, THE HOSE SHALL BE KEPT OFF THE BOTTOM OF THE WATER BODY.
 - HYDROSTATIC TEST: PRE-INSTALLATION HYDROSTATIC TEST SHALL BE CONDUCTED IN ACCORDANCE WITH PERMIT REQUIREMENTS. THE CONTRACTOR SHALL DISCHARGE HYDROSTATIC TEST WATER IN ACCORDANCE WITH PROJECT PERMITS. DISCHARGES WILL BE BACK TO THE WATER SOURCE UNLESS OTHERWISE DIRECTED BY THE ENVIRONMENTAL INSPECTOR. DISCHARGES SHALL NOT CAUSE EROSION OR SEDIMENTATION. TO REDUCE THE VELOCITY OF THE DISCHARGE, THE CONTRACTOR SHALL UTILIZE AN ENERGY-DISSIPATING DEVICE AS DESCRIBED IN THE CMRP.
 - SPILL-PREVENTION: ALL PUMPS SHALL BE SET IN SECONDARY CONTAINMENT AND IN ACCORDANCE WITH THE SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN (SPCC). EQUIPMENT AND PUMPS OPERATING WITHIN 100 FEET OF ANY WATER BODY OR WETLAND SHALL BE OPERATED AND REFUELED IN ACCORDANCE WITH THE SPCC PLAN. EQUIPMENT REFUELING AND STORAGE OF HAZARDOUS MATERIALS, FUELS, ETC. SHALL BE CONDUCTED AT LEAST 100 FEET FROM WATER BODIES AND WETLANDS. EACH CONSTRUCTION CREW SHALL HAVE ON HAND SUFFICIENT TOOLS AND MATERIALS TO STOP LEAKS AND SUPPLIES OF ABSORBENT AND BARRIER MATERIALS TO ALLOW RAPID CONTAINMENT AND RECOVERY OF SPILLED MATERIALS.
 - EROSION AND SEDIMENT CONTROL: CONTRACTOR SHALL SUPPLY, INSTALL AND MAINTAIN SEDIMENT CONTROL STRUCTURES IN ACCORDANCE WITH CONTRACT DOCUMENTS. CONTRACTOR SHALL INSTALL ADDITIONAL EROSION CONTROL STRUCTURES AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.
 - TOPSOIL SHALL BE STRIPPED AS REQUIRED BY PROJECT DOCUMENTS.
 - PRIOR TO PIPE PULLBACK, CONTRACTOR'S ACTUAL DRILL PROFILE SHALL BE SUBMITTED TO KEYSTONE FOR APPROVAL.
 - INSTALLATION: THE PIPE SECTION FOR THE DRILLED CROSSING SHALL BE MADE UP WITHIN THE RIGHT-OF-WAY AT THE DRILL EXIT POINT AS SHOWN. CONTRACTOR SHALL ASSESS THE NEED FOR AND SUPPLY APPROPRIATE BALLAST DURING PULLBACK.
 - MUD DISPOSAL: CONTRACTOR SHALL DISPOSE OF EXCESS DRILLING MUD AS DIRECTED BY THE COMPANY REPRESENTATIVE IN ACCORDANCE WITH PERMIT CONDITIONS. UNDER NO CIRCUMSTANCES SHALL DRILLING FLUID BE DISPOSED OF IN WATER BODIES OR WETLANDS. ANY DRILLING MUD WHICH INADEQUATELY EXITS AT POINTS OTHER THAN THE ENTRY AND EXIT POINTS SHALL BE CONTAINED AND COLLECTED TO THE EXTENT PRACTICABLE AND DISPOSED OF AS DIRECTED BY THE COMPANY REPRESENTATIVE IN ACCORDANCE WITH PERMIT CONDITIONS.
 - CLEANUP/STABILIZATION/RESTORATION: ALL DISTURBED AREAS SHALL BE RETURNED TO THE ORIGINAL CONDITIONS. DISTURBED AREAS SHALL BE SEEDED AS SPECIFIED IN PROJECT DOCUMENTS.
 - NOMINAL WORKING SPACE DIMENSIONS ARE SHOWN. LARGER AREAS MAY BE NEEDED IN IRREGULAR TERRAIN. UPDATED DIMENSIONS MAY BE PROVIDED AFTER LOCAL TOPOGRAPHICAL SURVEYS ARE PERFORMED.



CROSSING INFORMATION (STATIONS)	PIPELINE DATA
15397+00 APPROX. Q. UNNAMED ROAD	PIPELINE DATA: 36" O.D. X 0.741" W.T., API 5L PSL2 X70 WITH 14-16 MILS OF FBE EXTERNAL COATING, DUAL COATED 20-30 MILS OF ABRASION RESISTANT COATING.
15399+70 HDD EXIT POINT	
15402+16 PT. OF TANGENT	
15407+17 PT. OF CURVATURE	
15408+00 Q. MISSOURI RIVER	
15408+56 PT. OF TANGENT	
15414+81 PT. OF CURVATURE	
15416+30 HDD ENTRY POINT	
15420+33 APPROX. Q. UNNAMED ROAD	



ENVIRONMENTAL MITIGATION/RECLAMATION	TOPSOIL SALVAGE METHOD	STREAMS	WETLANDS	TIMING CONSTRAINTS	MILEPOST	MONITORING	RECLAMATION	SPECIAL CONSIDERATIONS

LEGEND

- POINT OF INTERSECTION (P.I.)
- ENTRY OR EXIT POINT
- ⊕ GEOTECHNICAL BOREHOLE
- ⊖ POWERPOLE
- MLP MAINLINE PIPE
- PIPELINE
- FOREIGN PIPELINE
- EDGE OF WATER
- PRIVATE ACCESS SHOULDER ROAD
- COUNTY BOUNDARY
- WATER LEVEL
- USACE CONSTRUCTION REFERENCE POINT
- WETLANDS
- PERMANENT EASEMENT
- TEMPORARY EASEMENT
- EXTRA WORKSPACE

TO BE DETERMINED

REFERENCE DRAWINGS

DRAWING No	TITLE
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NOTES-LEGEND	NOTES-LEGEND.dwg
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REVISION

REV No	DATE	DESCRIPTION
0	11.19.08	ISSUED FOR UNITED STATES DEPARTMENT OF STATE (7.31.08 CL)

APPROVAL

PROJECT CODE	DRAFTER	DRAFTING CHECKER	DESIGNER	DESIGN CHECKER	PROJECT MANAGER	COMPANY
THES0050388X	BM	JP	HF	RB	RC	TROW

PROFESSIONAL ENGINEER/RPT

PERMIT/ ENG. APPROVAL

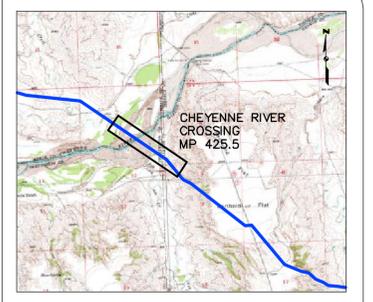
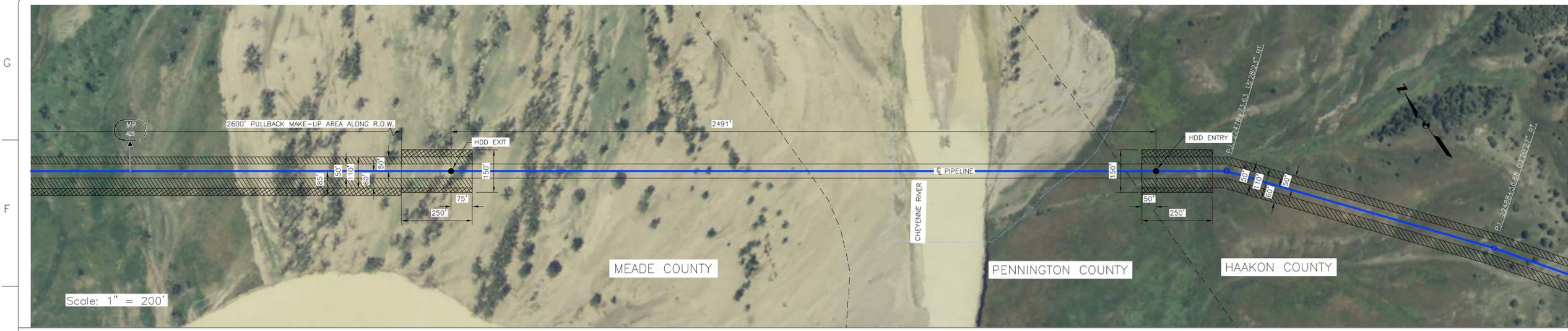
REV. NO.	DATE	PERMIT NUMBER:

Trow Engineering Inc.
ConocoPhillips
TransCanada

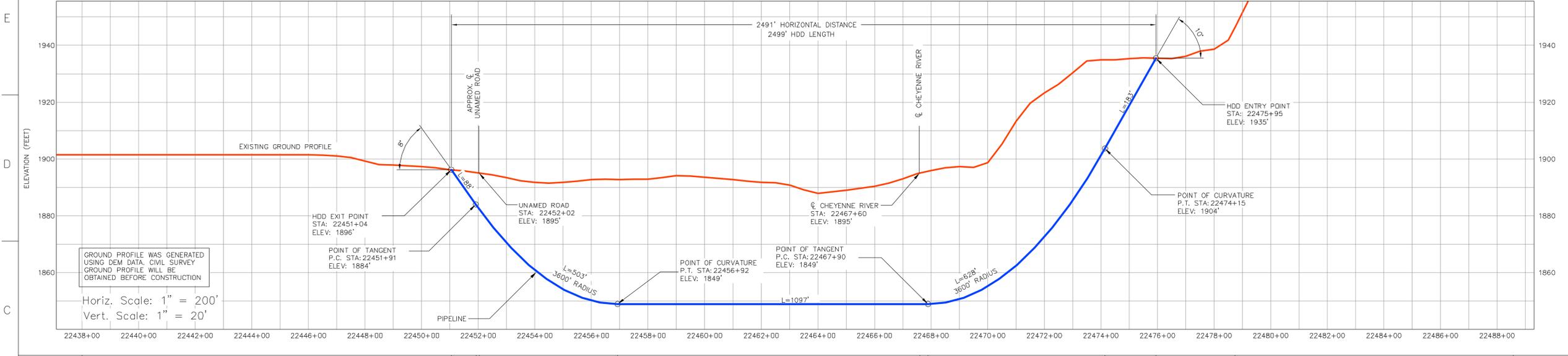
FIA # - CHAINAGE: MP 291.8 DISCIPLINE # -

LITTLE MISSOURI RIVER HDD INSTALLATION
 KEYSTONE XL PROJECT
 HARDING COUNTY, SOUTH DAKOTA

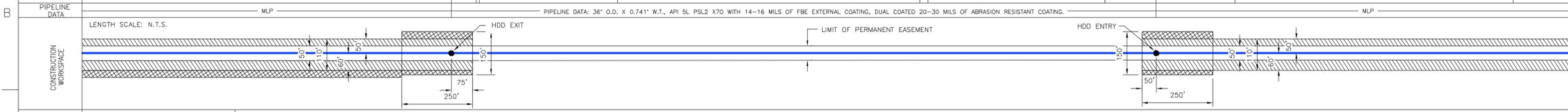
SCALE AS SHOWN DRAWING No XL-03-ML-03-004 REV 0



- INSTALLATION NOTES**
- ACCESS: ALL EQUIPMENT MUST ACCESS THE SITE ALONG THE CONSTRUCTION RIGHT-OF-WAY FROM PUBLIC OR APPROVED PRIVATE ROADS.
 - VEHICLE AND EQUIPMENT ACCESS CROSSING MAY BE INSTALLED IF APPROVED BY THE ENVIRONMENTAL INSPECTOR.
 - WORK SPACE: WORK SPACE LIMITS ARE DEPICTED. CLEARING WILL BE RESTRICTED TO THE WORK SPACES INDICATED AT THE ENTRY AND EXIT POINTS AND PULLBACK MAKE-UP AREA ALONG THE RIGHT-OF-WAY. CLEARING BETWEEN THE ENTRY AND EXIT POINTS IS LIMITED TO THE MINIMUM AMOUNT NECESSARY TO STRING LOCATIONS AND INSTALL PUMPS AND PIPING TO OBTAIN WATER (WHERE APPROVED).
 - WATER SOURCE: DRILL WATER AND PRE-INSTALLATION HYDROSTATIC TEST WATER SHALL BE OBTAINED FROM AN APPROVED SOURCE. THE CONTRACTOR SHALL SCREEN THE INTAKE HOSE TO PREVENT THE ENTRAPMENT OF FISH OR DEBRIS AND IN ACCORDANCE WITH THE CONSTRUCTION MITIGATION AND RECLAMATION PLAN (CMRP) AND PROJECT REQUIREMENTS, THE HOSE SHALL BE KEPT OFF THE BOTTOM OF THE WATER BODY.
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 - MUD DISPOSAL: CONTRACTOR SHALL DISPOSE OF EXCESS DRILLING MUD AS DIRECTED BY THE COMPANY REPRESENTATIVE IN ACCORDANCE WITH PERMIT CONDITIONS. UNDER NO CIRCUMSTANCES SHALL DRILLING FLUID BE DISPOSED OF IN WATER BODIES OR WETLANDS. ANY DRILLING MUD WHICH INADEQUATELY EXITS AT POINTS OTHER THAN THE ENTRY AND EXIT POINTS SHALL BE CONTAINED AND CELESTIAL BODIES SHALL BE PRACTICALLY AND DISPOSED OF AS DIRECTED BY THE COMPANY REPRESENTATIVE IN ACCORDANCE WITH PERMIT CONDITIONS.
 - CLEANUP/STABILIZATION/RESTORATION: ALL DISTURBED AREAS SHALL BE RETURNED TO THE ORIGINAL CONFOURURE. DISTURBED AREAS SHALL BE SEEDED AS SPECIFIED IN PROJECT DOCUMENTS.
 - NOMINAL WORKING SPACE DIMENSIONS ARE SHOWN. LARGER AREAS MAY BE NEEDED IN IRREGULAR TERRAIN. UPDATED DIMENSIONS MAY BE PROVIDED AFTER LOCAL TOPOGRAPHICAL SURVEYS ARE PERFORMED.



CROSSING INFORMATION (STRIPING)	PIPELINE DATA
22451+04 HDD EXIT POINT	MLP
22451+91 PT OF TANGENT	PIPELINE DATA: 36" O.D. X 0.741" W.T., API 5L PSL2 X70 WITH 14-16 MILS OF FBE EXTERNAL COATING, DUAL COATED 20-30 MILS OF ABRASION RESISTANT COATING.
22452+02 APPROX. Q. UNNAMED ROAD	
22456+92 PT OF CURVATURE	MLP
22467+60 Q. CHEYENNE RIVER	
22467+90 PT OF TANGENT	
22474+15 PT OF CURVATURE	
22475+95 HDD ENTRY POINT	
22478+74 P.I. 15228.23" RT.	
22488+57 P.I. 13220.27" RT.	



ENVIRONMENTAL MITIGATION/RECLAMATION	TOPSOIL SALVAGE METHOD	STREAMS	WETLANDS	TIMING CONSTRAINTS	MILEPOST	MONITORING	RECLAMATION	SPECIAL CONSIDERATIONS

LEGEND

- POINT OF INTERSECTION (P.I.)
- ENTRY OR EXIT POINT
- ⊙ GEOTECHNICAL BOREHOLE
- POWERPOLE
- MLP
- MAINLINE PIPE
- PIPELINE
- FOREIGN PIPELINE
- EDGE OF WATER
- PRIVATE ACCESS SHOULDER ROAD
- COUNTY BOUNDARY
- ▽ WATER LEVEL
- ⊕ USACE CONSTRUCTION REFERENCE POINT
- WETLANDS
- PERMANENT EASEMENT
- TEMPORARY EASEMENT
- EXTRA WORKSPACE

TO BE DETERMINED

REFERENCE DRAWINGS

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NOTES-LEGEND	NOTES-LEGEND.dwg
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REVISION

REV No	DATE	DESCRIPTION
0	11.19.08	ISSUED FOR UNITED STATES DEPARTMENT OF STATE (7.31.08 CL)

APPROVAL

PROJECT CODE	DRAFTER	DRAFTING CHECKER	DESIGNER	DESIGN CHECKER	PROJECT MANAGER	COMPANY
HES0050388X	BM	JP	HF	RB	RC	TROW

PROFESSIONAL ENGINEER/RPT

PERMIT/ ENG. APPROVAL

REV. NO.	DATE	PERMIT NUMBER:

Trow ENGINEERING CONSULTANTS INC.

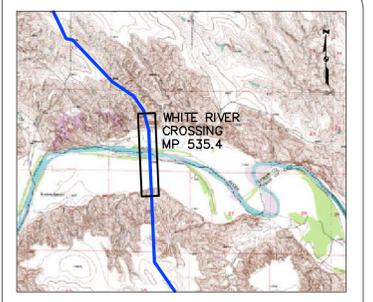
ConocoPhillips

TransCanada

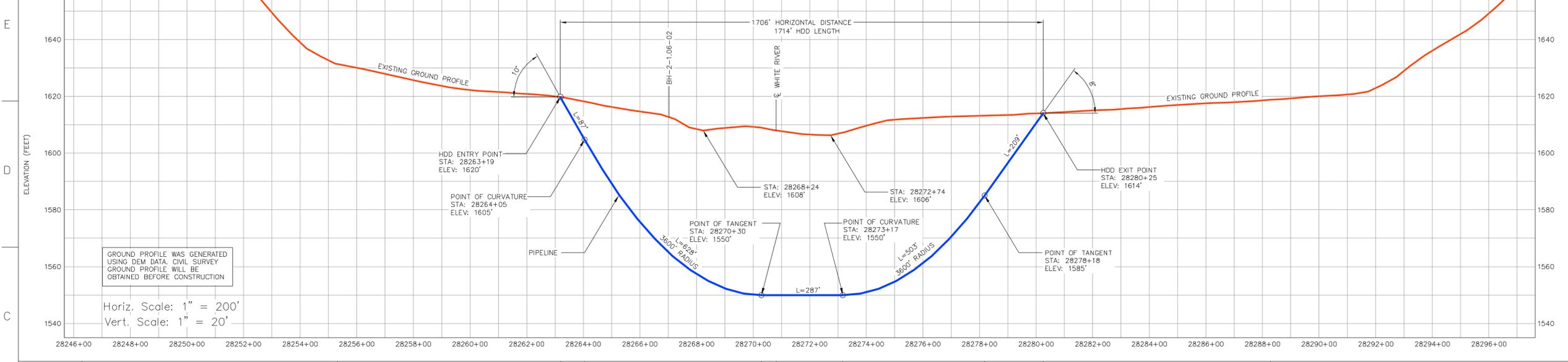
FIA # - CHAINAGE: MP 425.5 DISCIPLINE # 03

CHEYENNE RIVER HDD INSTALLATION
KEYSTONE XL PROJECT
MEADE & HAAKON COUNTY, SOUTH DAKOTA

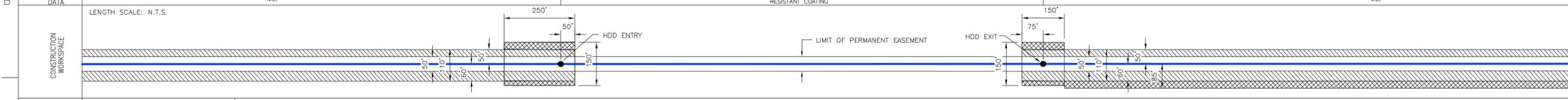
SCALE AS SHOWN DRAWING No XL-03-ML-03-005 REV 0



- INSTALLATION NOTES**
- ACCESS: ALL EQUIPMENT MUST ACCESS THE SITE ALONG THE CONSTRUCTION RIGHT-OF-WAY FROM PUBLIC OR APPROVED PRIVATE ROADS.
 - VEHICLE AND EQUIPMENT ACCESS CROSSING MAY BE INSTALLED IF RESTRICTED TO THE WORK SPACES INDICATED AT THE ENTRY AND EXIT POINTS AND PULLBACK MAKE-UP AREA ALONG THE RIGHT-OF-WAY. CLEARING BETWEEN THE ENTRY AND EXIT POINTS IS LIMITED TO THE MINIMUM AMOUNT NECESSARY TO STRING LOCATIONS AND INSTALL PUMPS AND PIPING TO OBTAIN WATER (WHERE APPROVED).
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 - HYDROSTATIC TEST: PRE-INSTALLATION HYDROSTATIC TEST SHALL BE CONDUCTED IN ACCORDANCE WITH PERMIT REQUIREMENTS. THE CONTRACTOR SHALL DISCHARGE HYDROSTATIC TEST WATER IN ACCORDANCE WITH PROJECT PERMITS. DISCHARGES WILL BE BACK TO THE WATER SOURCE UNLESS OTHERWISE DIRECTED BY THE ENVIRONMENTAL INSPECTOR. DISCHARGES SHALL NOT CAUSE EROSION OR SEDIMENTATION. TO REDUCE THE VELOCITY OF THE DISCHARGE, THE CONTRACTOR SHALL UTILIZE AN ENERGY-DISSIPATING DEVICE AS DESCRIBED IN THE CMRP.
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 - EROSION AND SEDIMENT CONTROL: CONTRACTOR SHALL SUPPLY, INSTALL AND MAINTAIN SEDIMENT CONTROL STRUCTURES IN ACCORDANCE WITH CONTRACT DOCUMENTS. CONTRACTOR SHALL INSTALL ADDITIONAL EROSION CONTROL STRUCTURES AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.
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 - INSTALLATION: THE PIPE SECTION FOR THE DRILLED CROSSING SHALL BE MADE UP WITHIN THE RIGHT-OF-WAY AT THE DRILL EXIT POINT AS SHOWN. CONTRACTOR SHALL ASSESS THE NEED FOR AND SUPPLY APPROPRIATE BALLAST DURING PULLBACK.
 - MUD DISPOSAL: CONTRACTOR SHALL DISPOSE OF EXCESS DRILLING MUD AS DIRECTED BY THE COMPANY REPRESENTATIVE IN ACCORDANCE WITH PERMIT CONDITIONS. UNDER NO CIRCUMSTANCES SHALL DRILLING FLUID BE DISPOSED OF IN WATER BODIES OR WETLANDS. ANY DRILLING MUD WHICH IMPROPERLY EXITS AT POINTS OTHER THAN THE ENTRY AND EXIT POINTS SHALL BE CONTAINED AND COLLECTED TO THE EXTENT PRACTICAL AND DISPOSED OF AS DIRECTED BY THE COMPANY REPRESENTATIVE IN ACCORDANCE WITH PERMIT CONDITIONS.
 - CLEANUP/STABILIZATION/RESTORATION: ALL DISTURBED AREAS SHALL BE RETURNED TO THE ORIGINAL CONDITIONS. DISTURBED AREAS SHALL BE SEEDING AS SPECIFIED IN PROJECT DOCUMENTS.
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CROSSING INFORMATION (STRIKING)	28254+31 P.L. 1231705" RT.	PIPELINE DATA: 36" O.D. X 0.741" W.T., API 5L PSL2 X70 WITH 14-16 MILS OF FBE EXTERNAL COATING, DUAL COATED 20-30 MILS OF ABRASION RESISTANT COATING	28284+28 APPROX. Q. UNNAMED ROAD
	28263+19 HDD ENTRY POINT		
PIPELINE DATA	MLP	MLP	MLP



ENVIRONMENTAL MITIGATION/RECLAMATION	TOPSOIL SALVAGE METHOD	
	STREAMS	
	WETLANDS	
	TIMING CONSTRAINTS	
	MILEPOST	
	MONITORING	
	RECLAMATION	
	SPECIAL CONSIDERATIONS	

LEGEND

- POINT OF INTERSECTION (P.I.)
- ENTRY OR EXIT POINT
- ⊕ GEOTECHNICAL BOREHOLE
- ⊖ POWERPOLE
- MLP MAINLINE PIPE
- PIPELINE
- FOREIGN PIPELINE
- EDGE OF WATER
- PRIVATE ACCESS SHOULDER ROAD
- COUNTY BOUNDARY
- WATER LEVEL
- USACE CONSTRUCTION REFERENCE POINT
- WETLANDS
- PERMANENT EASEMENT
- TEMPORARY EASEMENT
- EXTRA WORKSPACE

TO BE DETERMINED

REFERENCE DRAWINGS

DRAWING No	TITLE
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ML PROFILE XREF	XL_PROFILE_UTM13_14_CL_July31_08_Interv100scaleH200V20
TRANSCANADA BORDER	TC_UD_BR.dwg
NOTES-LEGEND	NOTES-LEGEND.dwg
AERIAL	ortho_1-1_1_n_s_sd085_2008_1.sid / LYMAN_2008_CLIPPED
QUAD	drg_n_e085.sid
CENTERLINE	CL_XL_Ph_2_UTM_14_20080731.shp

REVISION

REV No	DATE	DESCRIPTION
0	11.19.08	ISSUED FOR UNITED STATES DEPARTMENT OF STATE (7.31.08 CL)

APPROVAL

PROJECT CODE	DRAFTER	DRAFTING CHECKER	DESIGNER	DESIGN CHECKER	PROJECT MANAGER	COMPANY
THES0050388X	JIB	JP	HF	RB	RG	TROW

PROFESSIONAL ENGINEER/RPT

PERMIT/ ENG. APPROVAL

DATE	DATE
PERMIT NUMBER:	

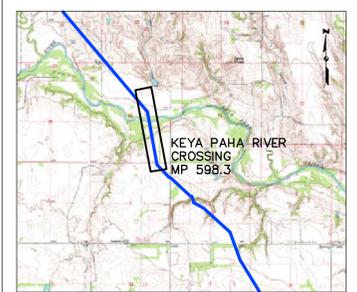
TROW ENGINEERING CONSULTANTS INC.

in business to deliver

FIA # - CHAINAGE: MP 535.4 DISCIPLINE # 03

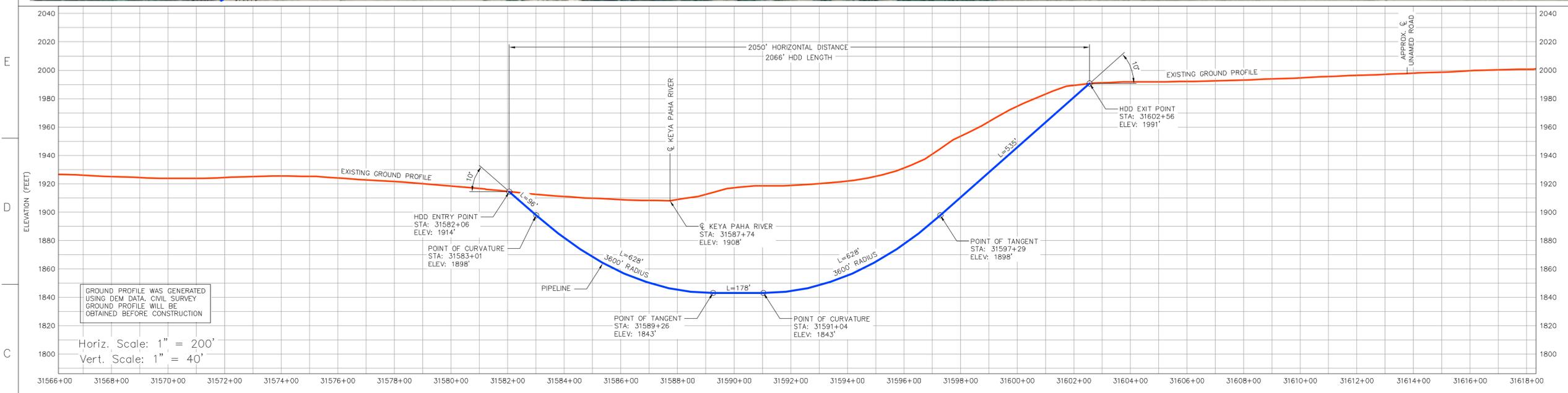
WHITE RIVER HDD INSTALLATION
KEYSTONE XL PROJECT
LYMAN COUNTY, SOUTH DAKOTA

SCALE AS SHOWN DRAWING No XL-03-ML-03-006 REV 0

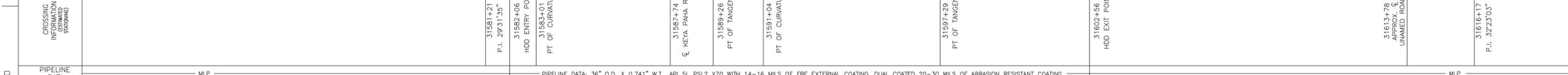


INSTALLATION NOTES

- ACCESS: ALL EQUIPMENT MUST ACCESS THE SITE ALONG THE CONSTRUCTION RIGHT-OF-WAY FROM PUBLIC OR APPROVED PRIVATE ROADS.
- VEHICLE AND EQUIPMENT ACCESS CROSSING MAY BE INSTALLED IF RESTRICTED TO THE WORK SPACES INDICATED AT THE ENTRY AND EXIT POINTS AND PULLBACK MAKE-UP AREA ALONG THE RIGHT-OF-WAY. CLEARING BETWEEN THE ENTRY AND EXIT POINTS IS LIMITED TO THE MINIMUM AMOUNT NECESSARY TO STRING LOCATION WIRES AND INSTALL PUMPS AND PIPING TO OBTAIN WATER (WHERE APPROVED).
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- HYDROSTATIC TEST: PRE-INSTALLATION HYDROSTATIC TEST SHALL BE CONDUCTED IN ACCORDANCE WITH PERMIT REQUIREMENTS. THE CONTRACTOR SHALL DISCHARGE HYDROSTATIC TEST WATER IN ACCORDANCE WITH PROJECT PERMITS. DISCHARGES WILL BE BACK TO THE WATER SOURCE UNLESS OTHERWISE DIRECTED BY THE ENVIRONMENTAL INSPECTOR. DISCHARGES SHALL NOT CAUSE EROSION OR SEDIMENTATION. TO REDUCE THE VELOCITY OF THE DISCHARGE, THE CONTRACTOR SHALL UTILIZE AN ENERGY-DISSIPATING DEVICE AS DESCRIBED IN THE CMRP.
- SPILL-PREVENTION: ALL PUMPS SHALL BE SET IN SECONDARY CONTAINMENT AND IN ACCORDANCE WITH THE SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN (SPCC). EQUIPMENT AND PUMPS OPERATING WITHIN 100 FEET OF ANY WATER BODY OR WETLAND SHALL BE OPERATED AND REFUELED IN ACCORDANCE WITH THE SPCC PLAN. EQUIPMENT REFUELING AND STORAGE OF HAZARDOUS MATERIALS, FUELS, ETC. SHALL BE CONDUCTED AT LEAST 100 FEET FROM WATER BODIES AND WETLANDS. EACH CONSTRUCTION CREW SHALL HAVE ON HAND SUFFICIENT TOOLS AND MATERIALS TO STOP LEAKS AND SUPPLIES OF ADSORBENT AND BARRIER MATERIALS TO ALLOW RAPID CONTAINMENT AND RECOVERY OF SPILLED MATERIALS.
- EROSION AND SEDIMENT CONTROL: CONTRACTOR SHALL SUPPLY, INSTALL AND MAINTAIN SEDIMENT CONTROL STRUCTURES IN ACCORDANCE WITH CONTRACT DOCUMENTS. CONTRACTOR SHALL INSTALL ADDITIONAL EROSION CONTROL STRUCTURES AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.
- TOPSOIL SHALL BE STRIPPED AS REQUIRED BY PROJECT DOCUMENTS.
- PRIOR TO PIPE PULLBACK, CONTRACTOR'S ACTUAL DRILL PROFILE SHALL BE SUBMITTED TO KEYSTONE FOR APPROVAL.
- INSTALLATION: THE PIPE SECTION FOR THE DRILLED CROSSING SHALL BE MADE UP WITHIN THE RIGHT-OF-WAY AT THE DRILL EXIT POINT AS SHOWN. CONTRACTOR SHALL ASSESS THE NEED FOR AND SUPPLY APPROPRIATE BALLAST DURING PULLBACK.
- MUD DISPOSAL: CONTRACTOR SHALL DISPOSE OF EXCESS DRILLING MUD AS DIRECTED BY THE COMPANY REPRESENTATIVE IN ACCORDANCE WITH PERMIT CONDITIONS. UNDER NO CIRCUMSTANCES SHALL DRILLING FLUID BE DISPOSED OF IN WATER BODIES OR WETLANDS. ANY DRILLING MUD WHICH INADEQUATELY EXITS AT POINTS OTHER THAN THE ENTRY AND EXIT POINTS SHALL BE CONTAINED AND COLLECTED TO THE EXTENT PRACTICAL AND DISPOSED OF AS DIRECTED BY THE COMPANY REPRESENTATIVE IN ACCORDANCE WITH PERMIT CONDITIONS.
- CLEANUP/STABILIZATION/RESTORATION: ALL DISTURBED AREAS SHALL BE RETURNED TO THE ORIGINAL CONDITION. DISTURBED AREAS SHALL BE SEEDED AS SPECIFIED IN PROJECT DOCUMENTS.
- NOMINAL WORKING SPACE DIMENSIONS ARE SHOWN. LARGER AREAS MAY BE NEEDED IN IRREGULAR TERRAIN. UPDATED DIMENSIONS MAY BE PROVIDED AFTER LOCAL TOPOGRAPHICAL SURVEYS ARE PERFORMED.



CROSSING INFORMATION (STRIKING)	31581+21 P.L. 29°31'35" RT.	31582+06 HDD ENTRY POINT	31583+01 PT OF CURVATURE	31587+74 KEYA PAHA RIVER	31589+26 PT OF TANGENT	31591+04 PT OF CURVATURE	31597+29 PT OF TANGENT	31602+56 HDD EXIT POINT	31613+78 APPROX. UNNAMED ROAD	31616+17 P.L. 32°23'03" LT.
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ENVIRONMENTAL MITIGATION/RECLAMATION	TOPSOIL SALVAGE METHOD	
	STREAMS	
	WETLANDS	
	TIMING CONSTRAINTS	
	MILEPOST	
	MONITORING	
	RECLAMATION	
	SPECIAL CONSIDERATIONS	

LEGEND

- POINT OF INTERSECTION (P.I.)
- ENTRY OR EXIT POINT
- ⊕ GEOTECHNICAL BOREHOLE
- POWERPOLE
- MLP
- MAINLINE PIPE
- PIPELINE
- FOREIGN PIPELINE
- EDGE OF WATER
- PRIVATE ACCESS SHOULDER ROAD
- COUNTY BOUNDARY
- ▽ WATER LEVEL
- ⊕ USACE CONSTRUCTION REFERENCE POINT
- WETLANDS
- PERMANENT EASEMENT
- TEMPORARY EASEMENT
- EXTRA WORKSPACE

TO BE DETERMINED

REFERENCE DRAWINGS

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QUAD	drg_s_ne103.sid
CENTERLINE	CL_XL_Ph_2_UTM_14_20080731.shp

REVISION

REV No	DATE	DESCRIPTION
0	11.19.08	ISSUED FOR UNITED STATES DEPARTMENT OF STATE (07.31.08 CL)

APPROVAL

PROJECT CODE	DRAFTER	DRAFTING CHECKER	DESIGNER	DESIGN CHECKER	PROJECT MANAGER	COMPANY
THES0050388X	JB	JP	HF	RB	RC	TROW

PROFESSIONAL ENGINEER/RPT

PERMIT/ ENG. APPROVAL

DATE	DATE
PERMIT NUMBER:	

Trow TROW ENGINEERING CONSULTANTS INC.

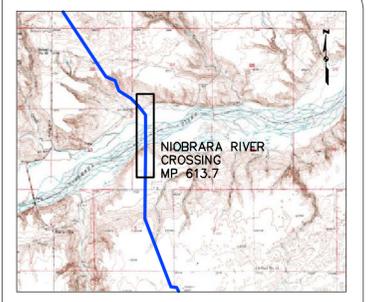
ConocoPhillips

TransCanada in business to deliver

FIA # _____ CHAINAGE: MP 598.3 DISCIPLINE # 03

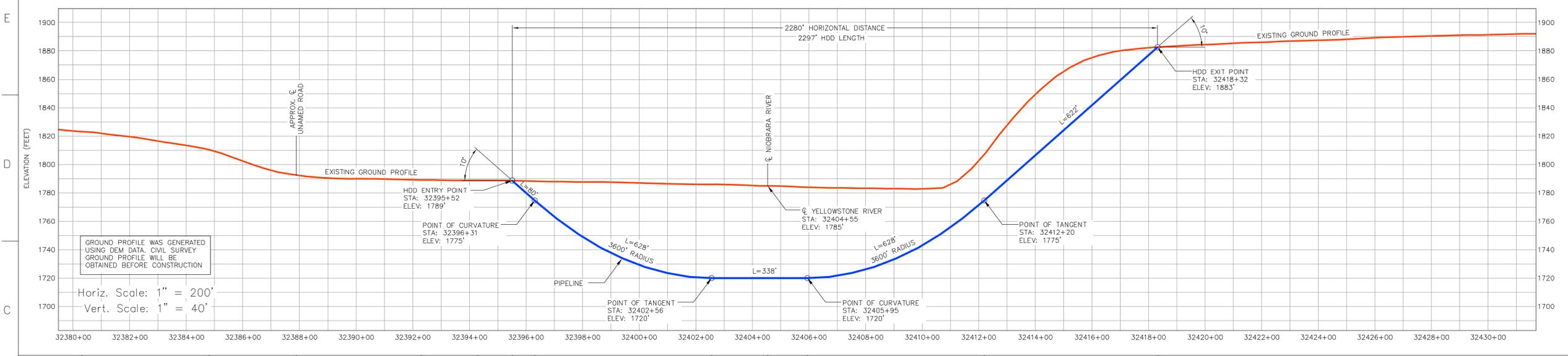
KEYA PAHA RIVER HDD INSTALLATION
KEYSTONE XL PROJECT
KEYA PAHA COUNTY, NEBRASKA

SCALE AS SHOWN DRAWING No XL-03-ML-03-007 REV 0

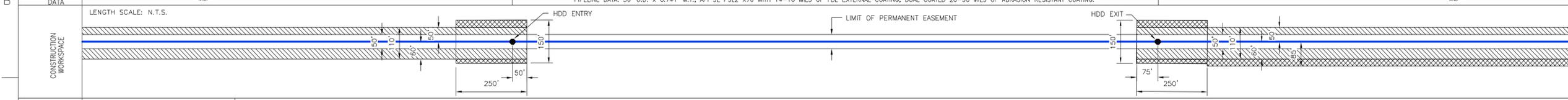


INSTALLATION NOTES

- ACCESS: ALL EQUIPMENT MUST ACCESS THE SITE ALONG THE CONSTRUCTION RIGHT-OF-WAY FROM PUBLIC OR APPROVED PRIVATE ROADS.
- VEHICLE AND EQUIPMENT ACCESS CROSSING MAY BE INSTALLED IF RESTRICTED TO THE WORK SPACES INDICATED AT THE ENTRY AND EXIT POINTS AND PULLBACK MAKE-UP AREA ALONG THE RIGHT-OF-WAY. CLEARING BETWEEN THE ENTRY AND EXIT POINTS IS LIMITED TO THE MINIMUM AMOUNT NECESSARY TO STRING LOCATION WIRES AND INSTALL PUMPS AND PIPING TO OBTAIN WATER (WHERE APPROVED).
- WATER SOURCE: DRILL WATER AND PRE-INSTALLATION HYDROSTATIC TEST WATER SHALL BE OBTAINED FROM AN APPROVED SOURCE. THE CONTRACTOR SHALL SCREEN THE INTAKE HOSE TO PREVENT THE ENTRAPMENT OF FISH OR DEBRIS AND IN ACCORDANCE WITH THE CONSTRUCTION MITIGATION AND RECLAMATION PLAN (CMRP) AND PROJECT REQUIREMENTS, THE HOSE SHALL BE KEPT OFF THE BOTTOM OF THE WATER BODY.
- HYDROSTATIC TEST: PRE-INSTALLATION HYDROSTATIC TEST SHALL BE CONDUCTED IN ACCORDANCE WITH PERMIT REQUIREMENTS. THE CONTRACTOR SHALL DISCHARGE HYDROSTATIC TEST WATER IN ACCORDANCE WITH PROJECT PERMITS. DISCHARGES WILL BE BACK TO THE WATER SOURCE UNLESS OTHERWISE DIRECTED BY THE ENVIRONMENTAL INSPECTOR. DISCHARGES SHALL NOT CAUSE EROSION OR SEDIMENTATION. TO REDUCE THE VELOCITY OF THE DISCHARGE, THE CONTRACTOR SHALL UTILIZE AN ENERGY-DISSIPATING DEVICE AS DESCRIBED IN THE CMRP.
- SPILL-PREVENTION: ALL PUMPS SHALL BE SET IN SECONDARY CONTAINMENT AND IN ACCORDANCE WITH THE SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN (SPCC). EQUIPMENT AND PUMPS OPERATING WITHIN 100 FEET OF ANY WATER BODY OR WETLAND SHALL BE OPERATED AND REFUELED IN ACCORDANCE WITH THE SPILL PLAN. EQUIPMENT REFUELING AND STORAGE OF HAZARDOUS MATERIALS, FUELS, ETC. SHALL BE CONDUCTED AT LEAST 100 FEET FROM WATER BODIES AND WETLANDS. EACH CONSTRUCTION CREW SHALL HAVE ON HAND SUFFICIENT TOOLS AND MATERIALS TO STOP LEAKS AND SUPPLIES OF ABSORBENT AND BARRIER MATERIALS TO ALLOW RAPID CONTAINMENT AND RECOVERY OF SPILLED MATERIALS.
- EROSION AND SEDIMENT CONTROL: CONTRACTOR SHALL SUPPLY, INSTALL AND MAINTAIN SEDIMENT CONTROL STRUCTURES IN ACCORDANCE WITH CONTRACT DOCUMENTS. CONTRACTOR SHALL INSTALL ADDITIONAL EROSION CONTROL STRUCTURES AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.
- TOPSOIL SHALL BE STRIPPED AS REQUIRED BY PROJECT DOCUMENTS.
- PRIOR TO PIPE PULLBACK, CONTRACTOR'S ACTUAL DRILL PROFILE SHALL BE MADE UP WITHIN THE RIGHT-OF-WAY AT THE DRILL EXIT POINT AS SHOWN. CONTRACTOR SHALL ASSESS THE NEED FOR AND SUPPLY APPROPRIATE BALLAST DURING PULLBACK.
- MUD DISPOSAL: CONTRACTOR SHALL DISPOSE OF EXCESS DRILLING MUD AS DIRECTED BY THE COMPANY REPRESENTATIVE IN ACCORDANCE WITH PERMIT CONDITIONS. UNDER NO CIRCUMSTANCES SHALL DRILLING FLUID BE DISPOSED OF IN WATER BODIES OR WETLANDS. ANY DRILLING MUD WHICH IMPROPERLY EXITS AT POINTS OTHER THAN THE ENTRY AND EXIT POINTS SHALL BE CONTAINED AND COLLECTED TO THE EXTENT PRACTICAL AND DISPOSED OF AS DIRECTED BY THE COMPANY REPRESENTATIVE IN ACCORDANCE WITH PERMIT CONDITIONS.
- CLEANUP/STABILIZATION/RESTORATION: ALL DISTURBED AREAS SHALL BE RETURNED TO THE ORIGINAL CONDITION OR BETTER. DISTURBED AREAS SHALL BE SEEDING AS SPECIFIED IN PROJECT DOCUMENTS.
- NOMINAL WORKING SPACE DIMENSIONS ARE SHOWN. LARGER AREAS MAY BE NEEDED IN IRREGULAR TERRAIN. UPDATED DIMENSIONS MAY BE PROVIDED AFTER LOCAL TOPOGRAPHICAL SURVEYS ARE PERFORMED.



CROSSING INFORMATION (STRIKING)	32384+80 P.I. 10712'06" RT.	32387+89 APPROX. & UNNAMED ROAD	32392+29 P.I. 3810'35" RT.	32394+29 P.I. 0001'38" RT.	32395+52 HDD ENTRY POINT	32396+31 PT OF CURVATURE	32402+56 PT OF TANGENT	32404+55 & NIORBARA RIVER	32405+95 PT OF CURVATURE	32412+20 PT OF TANGENT	32418+32 HDD EXIT POINT
PIPELINE DATA	PIPELINE DATA: 36" O.D. X 0.741" W.T., API 5L PSL2 X70 WITH 14-16 MILS OF FBE EXTERNAL COATING, DUAL COATED 20-30 MILS OF ABRASION RESISTANT COATING.										



ENVIRONMENTAL MITIGATION/RECLAMATION	TOPSOIL SALVAGE METHOD	
	STREAMS	
	WETLANDS	
	TIMING CONSTRAINTS	
	MILEPOST	
	MONITORING	
	RECLAMATION	
	SPECIAL CONSIDERATIONS	

LEGEND

- POINT OF INTERSECTION (P.I.)
- ENTRY OR EXIT POINT
- ⊙ GEOTECHNICAL BOREHOLE
- POWERPOLE
- MLP
- MAINLINE PIPE
- PIPELINE
- FOREIGN PIPELINE
- EDGE OF WATER
- PRIVATE ACCESS SHOULDER ROAD
- COUNTY BOUNDARY
- ▽ WATER LEVEL
- USACE CONSTRUCTION REFERENCE POINT
- WETLANDS
- PERMANENT EASEMENT
- TEMPORARY EASEMENT
- EXTRA WORKSPACE

TO BE DETERMINED

REFERENCE DRAWINGS

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NOTES-LEGEND	NOTES-LEGEND.dwg
AERIAL	Niobrara_River.jpg
QUAD	drg_s_ne149
CENTERLINE	CL_XL_Ph_2_UTM_14_20080731.shp

REVISION

REV No	DATE	DESCRIPTION
0	11.19.08	ISSUED FOR UNITED STATES DEPARTMENT OF STATE (7.31.08 CL)

APPROVAL

PROJECT CODE	DRAFTER	DRAFTING CHECKER	DESIGNER	DESIGN CHECKER	PROJECT MANAGER	COMPANY
HES0050388X	BM	JP	HF	RB	RG	TROW

PROFESSIONAL ENGINEER/RPT

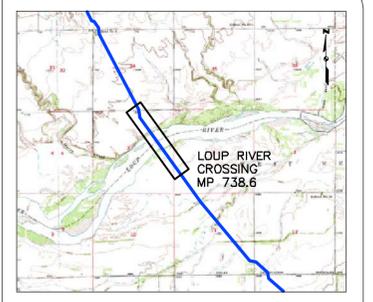
PERMIT/ ENG. APPROVAL

DATE	DATE
REV. NO.	PERMIT NUMBER:

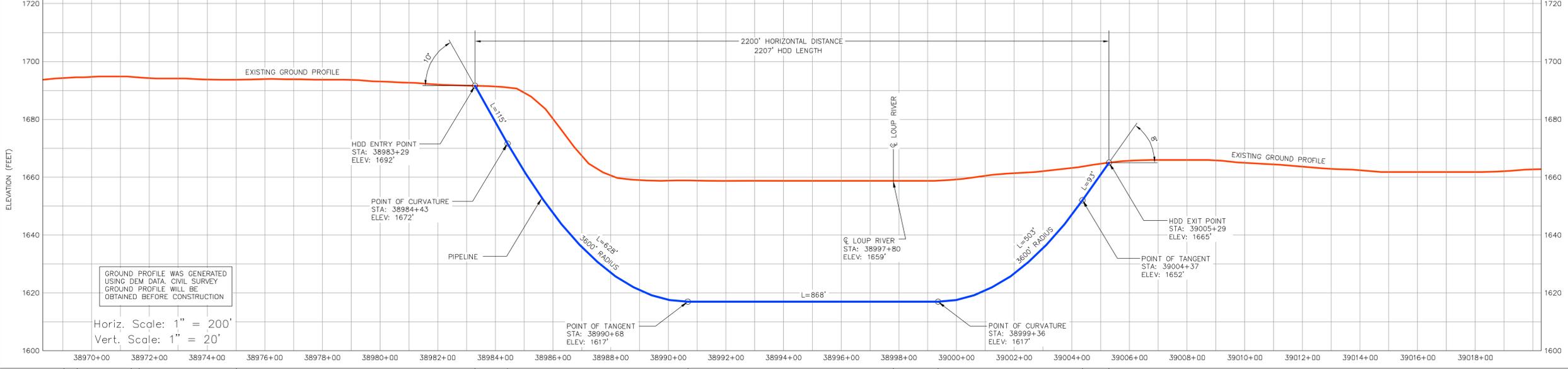
FIA # - CHAINAGE: MP 613.7 DISCIPLINE # 03

**NIORBARA RIVER HDD INSTALLATION
KEYSTONE XL PROJECT
KEYA PAHA & ROCK COUNTY, NEBRASKA**

SCALE AS SHOWN DRAWING No XL-03-ML-03-008 REV 0



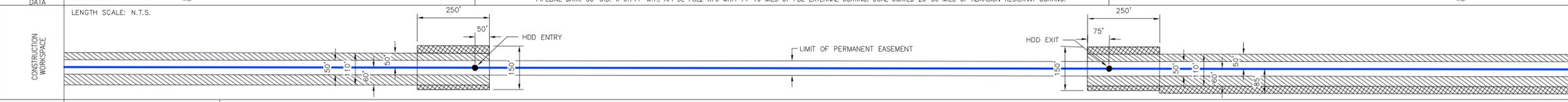
- INSTALLATION NOTES**
- ACCESS: ALL EQUIPMENT MUST ACCESS THE SITE ALONG THE CONSTRUCTION RIGHT-OF-WAY FROM PUBLIC OR APPROVED PRIVATE ROADS.
 - VEHICLE AND EQUIPMENT ACCESS CROSSING MAY BE INSTALLED IF APPROVED BY THE ENVIRONMENTAL INSPECTOR.
 - WORK SPACE: WORK SPACE LIMITS ARE DEPICTED. CLEARING WILL BE RESTRICTED TO THE WORK SPACES INDICATED AT THE ENTRY AND EXIT POINTS AND PULLBACK MAKE-UP AREA ALONG THE RIGHT-OF-WAY. CLEARING BETWEEN THE ENTRY AND EXIT POINTS IS LIMITED TO THE MINIMUM AMOUNT NECESSARY TO STRING LOCATION WIRES AND INSTALL PUMPS AND PIPING TO OBTAIN WATER (WHERE APPROVED).
 - WATER SOURCE: DRILL WATER AND PRE-INSTALLATION HYDROSTATIC TEST WATER SHALL BE OBTAINED FROM AN APPROVED SOURCE. THE CONTRACTOR SHALL SCREEN THE INTAKE HOSE TO PREVENT THE ENTRINMENT OF FISH OR DEBRIS AND IN ACCORDANCE WITH THE CONSTRUCTION MITIGATION AND RECLAMATION PLAN (CMRP) AND PROJECT REQUIREMENTS, THE HOSE SHALL BE KEPT OFF THE BOTTOM OF THE WATER BODY.
 - HYDROSTATIC TEST: PRE-INSTALLATION HYDROSTATIC TEST SHALL BE CONDUCTED IN ACCORDANCE WITH PERMIT REQUIREMENTS. THE CONTRACTOR SHALL DISCHARGE HYDROSTATIC TEST WATER IN ACCORDANCE WITH PROJECT PERMITS. DISCHARGES WILL BE BACK TO THE WATER SOURCE UNLESS OTHERWISE DIRECTED BY THE ENVIRONMENTAL INSPECTOR. DISCHARGES SHALL NOT CAUSE EROSION OR SEDIMENTATION. TO REDUCE THE VELOCITY OF THE DISCHARGE, THE CONTRACTOR SHALL UTILIZE AN ENERGY-DISSIPATING DEVICE AS DESCRIBED IN THE CMRP.
 - SPILL-PREVENTION: ALL PUMPS SHALL BE SET IN SECONDARY CONTAINMENT AND IN ACCORDANCE WITH THE SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN (SPCC). EQUIPMENT AND PUMPS OPERATING WITHIN 100 FEET OF ANY WATER BODY OR WETLAND SHALL BE OPERATED AND REFUELED IN ACCORDANCE WITH THE SPCC PLAN. EQUIPMENT FUELING AND STORAGE OF HAZARDOUS MATERIALS, FUELS, ETC. SHALL BE CONDUCTED AT LEAST 100 FEET FROM WATER BODIES AND WETLANDS. EACH CONSTRUCTION CREW SHALL HAVE ON HAND SUFFICIENT TOOLS AND MATERIALS TO STOP LEAKS AND SUPPLIES OF ABSORBENT AND BARRIER MATERIALS TO ALLOW RAPID CONTAINMENT AND RECOVERY OF SPILLED MATERIALS.
 - EROSION AND SEDIMENT CONTROL: CONTRACTOR SHALL SUPPLY, INSTALL AND MAINTAIN SEDIMENT CONTROL STRUCTURES IN ACCORDANCE WITH CONTRACT DOCUMENTS. CONTRACTOR SHALL INSTALL ADDITIONAL EROSION CONTROL STRUCTURES AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.
 - TOPSOIL SHALL BE STRIPPED AS REQUIRED BY PROJECT DOCUMENTS.
 - PRIOR TO PIPE PULLBACK, CONTRACTOR'S ACTUAL DRILL PROFILE SHALL BE SUBMITTED TO KEYSTONE FOR APPROVAL.
 - INSTALLATION: THE PIPE SECTION FOR THE DRILLED CROSSING SHALL BE MADE UP WITHIN THE RIGHT-OF-WAY AT THE DRILL EXIT POINT AS SHOWN. CONTRACTOR SHALL ASSESS THE NEED FOR AND SUPPLY APPROPRIATE BALLAST DURING PULLBACK.
 - MUD DISPOSAL: CONTRACTOR SHALL DISPOSE OF EXCESS DRILLING MUD AS DIRECTED BY THE COMPANY REPRESENTATIVE IN ACCORDANCE WITH PERMIT CONDITIONS. UNDER NO CIRCUMSTANCES SHALL DRILLING FLUID BE DISPOSED OF IN WATER BODIES OR WETLANDS. ANY DRILLING MUD WHICH INCONVENIENTLY EXITS AT POINTS OTHER THAN THE ENTRY AND EXIT POINTS SHALL BE CONTAINED AND COLLECTED TO THE EXTENT PRACTICAL AND DISPOSED OF AS DIRECTED BY THE COMPANY REPRESENTATIVE IN ACCORDANCE WITH PERMIT CONDITIONS.
 - CLEANUP/STABILIZATION/RESTORATION: ALL DISTURBED AREAS SHALL BE RETURNED TO THE ORIGINAL CONDITIONS. DISTURBED AREAS SHALL BE SEEDED AS SPECIFIED IN PROJECT DOCUMENTS.
 - NOMINAL WORKING SPACE DIMENSIONS ARE SHOWN. LARGER AREAS MAY BE NEEDED IN IRREGULAR TERRAIN. UPDATED DIMENSIONS MAY BE PROVIDED AFTER LOCAL TOPOGRAPHICAL SURVEYS ARE PERFORMED.



GROUND PROFILE WAS GENERATED USING DEM DATA. CIVIL SURVEY GROUND PROFILE WILL BE OBTAINED BEFORE CONSTRUCTION

Horiz. Scale: 1" = 200'
Vert. Scale: 1" = 20'

CROSSING INFORMATION (STRIKING)	38968+47 P.I. 1724'01" RT. 38971+37 APPROX. & PLEASANT VALLEY ROAD 38971+57 P.I. 0044'41" LT. 38975+01 P.I. 24'50'49" LT.
PIPELINE DATA	MLP PIPELINE DATA: 36" O.D. X 0.741" W.T., API 5L PSL2 X70 WITH 14-16 MILS OF FBE EXTERNAL COATING, DUAL COATED 20-30 MILS OF ABRASION RESISTANT COATING. MLP



ENVIRONMENTAL MITIGATION/RECLAMATION	TOPSOIL SALVAGE METHOD	
	STREAMS	
	WETLANDS	
	TIMING CONSTRAINTS	
	MILEPOST	
	MONITORING	
	RECLAMATION	
	SPECIAL CONSIDERATIONS	

TO BE DETERMINED

LEGEND

- POINT OF INTERSECTION (P.I.)
- ENTRY OR EXIT POINT
- ⊕ GEOTECHNICAL BOREHOLE
- ⊖ POWERPOLE
- MLP MAINLINE PIPE
- PIPELINE
- FOREIGN PIPELINE
- EDGE OF WATER
- PRIVATE ACCESS SHOULDER ROAD
- COUNTY BOUNDARY
- WATER LEVEL
- USACE CONSTRUCTION REFERENCE POINT
- WETLANDS
- PERMANENT EASEMENT
- TEMPORARY EASEMENT
- EXTRA WORKSPACE

REFERENCE DRAWINGS	
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TRANSCANADA BORDER	TC_UD_BR.dwg
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AERIAL	Loup River.jpg
QUAD	dfg_s_ne_125.sid
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REVISION			APPROVAL						
REV No	DATE	DESCRIPTION	PROJECT CODE	DRAFTER	DRAFTING CHECKER	DESIGNER	DESIGN CHECKER	PROJECT MANAGER	COMPANY
0	11.19.08	ISSUED FOR UNITED STATES DEPARTMENT OF STATE (7.31.08 CL)	THES0050388X	JB	JP	HF	RB	RC	TROW

PROFESSIONAL ENGINEER/RPT		PERMIT/ ENG. APPROVAL	
REV. NO.	DATE	PERMIT NUMBER:	DATE

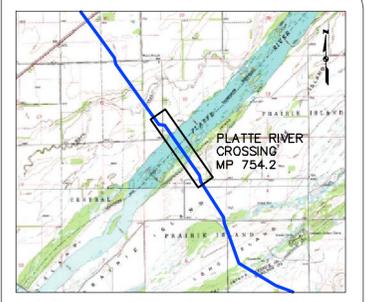
TROW ENGINEERING CONSULTANTS INC.

in business to deliver

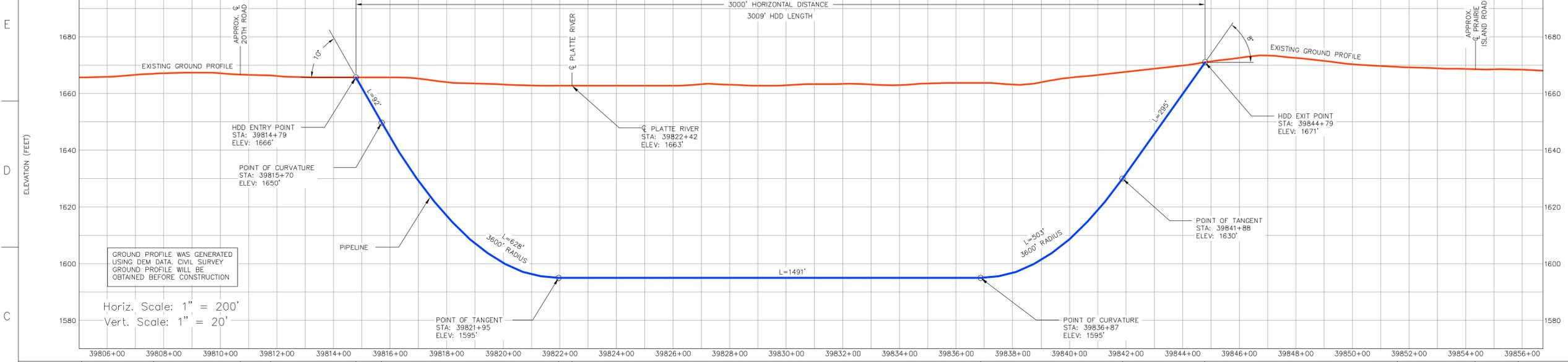
FIA # - CHAINAGE: MP 738.6 DISCIPLINE # 03

LOUP RIVER HDD INSTALLATION
KEYSTONE XL PROJECT
NANCE COUNTY, NEBRASKA

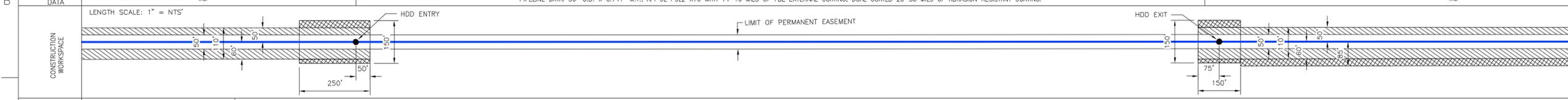
SCALE AS SHOWN DRAWING No XL-03-ML-03-009 REV 0



- INSTALLATION NOTES**
- ACCESS: ALL EQUIPMENT MUST ACCESS THE SITE ALONG THE CONSTRUCTION RIGHT-OF-WAY FROM PUBLIC OR APPROVED PRIVATE ROADS.
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 - WORK SPACE: WORK SPACE LIMITS ARE DEPICTED. CLEARING WILL BE RESTRICTED TO THE WORK SPACES INDICATED AT THE ENTRY AND EXIT POINTS AND PULLBACK MAKE-UP AREA ALONG THE RIGHT-OF-WAY. CLEARING BETWEEN THE ENTRY AND EXIT POINTS IS LIMITED TO THE MINIMUM AMOUNT NECESSARY TO STRING LOCATION WIRES AND INSTALL PUMPS AND PIPING TO OBTAIN WATER (WHERE APPROVED).
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 - EROSION AND SEDIMENT CONTROL: CONTRACTOR SHALL SUPPLY, INSTALL AND MAINTAIN SEDIMENT CONTROL STRUCTURES IN ACCORDANCE WITH CONTRACT DOCUMENTS. CONTRACTOR SHALL INSTALL ADDITIONAL EROSION CONTROL STRUCTURES AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.
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 - PRIOR TO PIPE PULLBACK, CONTRACTOR'S ACTUAL DRILL PROFILE SHALL BE SUBMITTED TO KEYSTONE FOR APPROVAL.
 - INSTALLATION: THE PIPE SECTION FOR THE DRILLED CROSSING SHALL BE MADE UP WITHIN THE RIGHT-OF-WAY AT THE DRILL EXIT POINT AS SHOWN. CONTRACTOR SHALL ASSESS THE NEED FOR AND SUPPLY APPROPRIATE BALLAST DURING PULLBACK.
 - MUD DISPOSAL: CONTRACTOR SHALL DISPOSE OF EXCESS DRILLING MUD AS DIRECTED BY THE COMPANY REPRESENTATIVE IN ACCORDANCE WITH PERMIT CONDITIONS. UNDER NO CIRCUMSTANCES SHALL DRILLING FLUID BE DISPOSED OF IN WATER BODIES OR WETLANDS. ANY DRILLING MUD WHICH INADEQUATELY EXITS AT POINTS OTHER THAN THE ENTRY AND EXIT POINTS SHALL BE CONTAINED AND COLLECTED TO THE EXTENT PRACTICAL AND DISPOSED OF AS DIRECTED BY THE COMPANY REPRESENTATIVE IN ACCORDANCE WITH PERMIT CONDITIONS.
 - CLEANUP/STABILIZATION/RESTORATION: ALL DISTURBED AREAS SHALL BE RETURNED TO THE ORIGINAL CONTOUR. DISTURBED AREAS SHALL BE SEEDED AS SPECIFIED IN PROJECT DOCUMENTS.
 - NOMINAL WORKING SPACE DIMENSIONS ARE SHOWN. LARGER AREAS MAY BE NEEDED IN IRREGULAR TERRAIN. UPDATED DIMENSIONS MAY BE PROVIDED AFTER LOCAL TOPOGRAPHICAL SURVEYS ARE PERFORMED.



CROSSING INFORMATION (STANDARD)	39807+63 P.I. 4426'25" LT.	39810+71 APPROX. & 20TH ROAD	39811+78 P.I. 4502'17" RT.	39814+79 HDD ENTRY POINT	39815+70 PT OF CURVATURE	39821+95 PT OF TANGENT	39822+42 & PLATTE RIVER	39836+87 PT OF CURVATURE	39841+88 PT OF TANGENT	39844+79 HDD EXIT POINT	39851+59 P.I. 2452'37" RT.	39854+35 APPROX. & PRAIRIE ISLAND ROAD	39855+87 P.I. 2248'21" LT.
	PIPELINE DATA: 36" O.D. X 0.741" W.T., API 5L PSL2 X70 WITH 14-16 MILS OF FBE EXTERNAL COATING, DUAL COATED 20-30 MILS OF ABRASION RESISTANT COATING.												



ENVIRONMENTAL MITIGATION/RECLAMATION	TOPSOIL SALVAGE METHOD	
	STREAMS	
	WETLANDS	
	TIMING CONSTRAINTS	
	MILEPOST	
	MONITORING	
RECLAMATION		
SPECIAL CONSIDERATIONS		

- LEGEND**
- POINT OF INTERSECTION (P.I.)
 - ENTRY OR EXIT POINT
 - ⊙ GEOTECHNICAL BOREHOLE
 - ⊙ POWERPOLE
 - MLP MAINLINE PIPE
 - PIPELINE
 - FOREIGN PIPELINE
 - EDGE OF WATER
 - PRIVATE ACCESS SHOULDER ROAD
 - COUNTY BOUNDARY
 - WATER LEVEL
 - USACE CONSTRUCTION REFERENCE POINT
 - WETLANDS
 - PERMANENT EASEMENT
 - TEMPORARY EASEMENT
 - EXTRA WORKSPACE

TO BE DETERMINED

REFERENCE DRAWINGS

DRAWING No	TITLE
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ML PROFILE XREF	XL_PROFILE_UTM13_14_CL_July31_08_Interv100scaleH200V20.dwg
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REVISION

REV No	DATE	DESCRIPTION
0	11.19.08	ISSUED FOR UNITED STATES DEPARTMENT OF STATE (7.31.08 CL)

APPROVAL

PROJECT CODE	DRAFTER	DRAFTING CHECKER	DESIGNER	DESIGN CHECKER	PROJECT MANAGER	COMPANY
THES0050388X	JIB	JP	HF	RB	RG	TROW

PROFESSIONAL ENGINEER/RPT

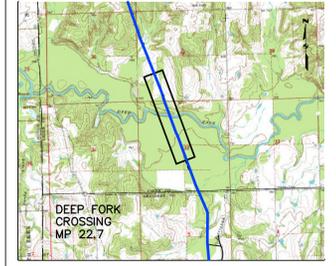
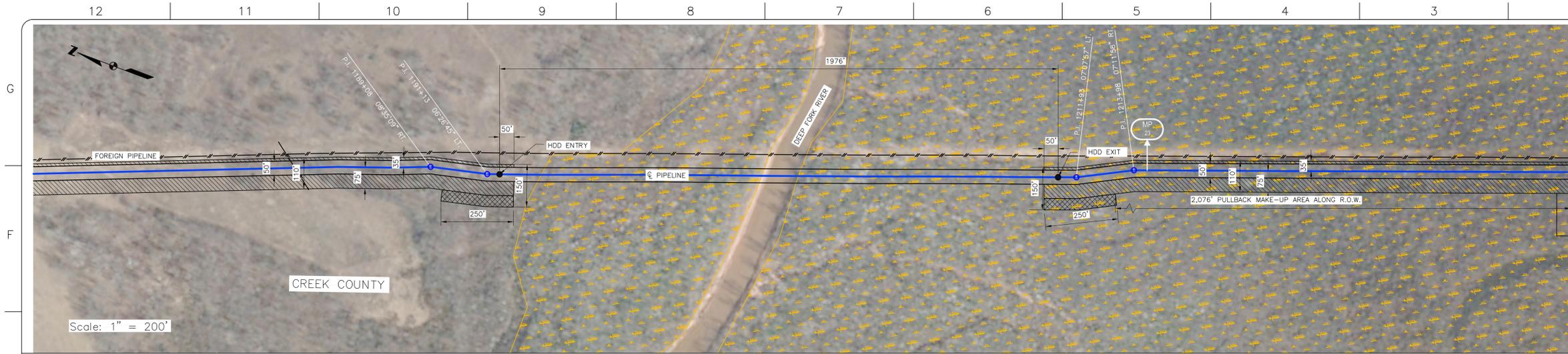
PERMIT/ ENG. APPROVAL

DATE	DATE
PERMIT NUMBER:	

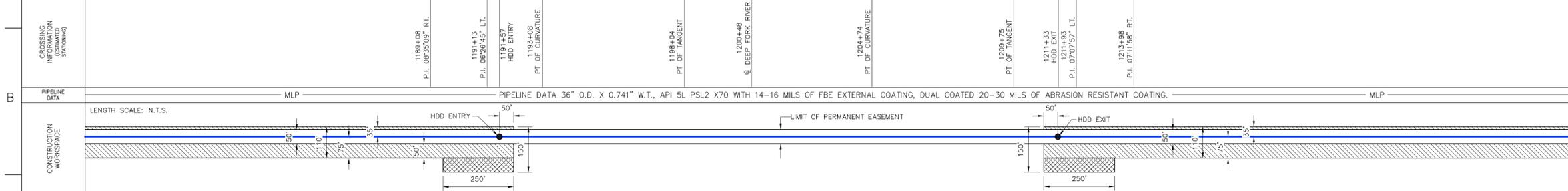
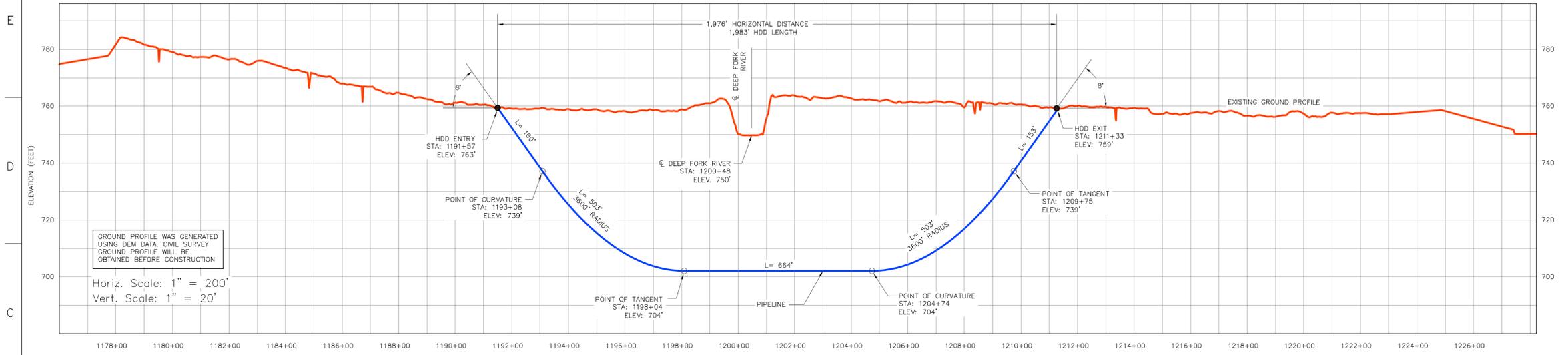
FIA # - CHAINAGE: MP 754.2 DISCIPLINE # 03

**PLATTE RIVER HDD INSTALLATION
KEYSTONE XL PROJECT
MERRICK COUNTY, NEBRASKA**

SCALE AS SHOWN DRAWING No XL-03-ML-03-010 REV 0



- INSTALLATION NOTES**
- ACCESS: ALL EQUIPMENT MUST ACCESS THE SITE ALONG THE CONSTRUCTION RIGHT-OF-WAY FROM PUBLIC OR APPROVED PRIVATE ROADS.
 - VEHICLE AND EQUIPMENT ACCESS CROSSING MAY BE INSTALLED IF APPROVED BY THE ENVIRONMENTAL INSPECTOR.
 - WORK SPACE: WORK SPACE LIMITS ARE DEPICTED. CLEARING WILL BE RESTRICTED TO THE WORK SPACES INDICATED AT THE ENTRY AND EXIT POINTS AND PULLBACK MAKE-UP AREA ALONG THE RIGHT-OF-WAY. CLEARING BETWEEN THE ENTRY AND EXIT POINTS IS LIMITED TO THE MINIMUM AMOUNT NECESSARY TO STRING LOCATION WIRES AND INSTALL PUMPS AND PIPING TO OBTAIN WATER (WHERE APPROVED).
 - WATER SOURCE: DRILL WATER AND PRE-INSTALLATION HYDROSTATIC TEST WATER SHALL BE OBTAINED FROM AN APPROVED SOURCE. THE CONTRACTOR SHALL SCREEN THE INTAKE HOSE TO PREVENT THE ENTRAPMENT OF FISH OR DEBRIS AND IN ACCORDANCE WITH THE CONSTRUCTION MITIGATION AND RECLAMATION PLAN (CMRP) AND PROJECT REQUIREMENTS, THE HOSE SHALL BE KEPT OFF THE BOTTOM OF THE WATER BODY.
 - HYDROSTATIC TEST: PRE-INSTALLATION HYDROSTATIC TEST SHALL BE CONDUCTED IN ACCORDANCE WITH PERMIT REQUIREMENTS. THE CONTRACTOR SHALL DISCHARGE HYDROSTATIC TEST WATER IN ACCORDANCE WITH PROJECT PERMITS. DISCHARGES WILL BE BACK TO THE WATER SOURCE UNLESS OTHERWISE DIRECTED BY THE ENVIRONMENTAL INSPECTOR. DISCHARGES SHALL NOT CAUSE EROSION OR SEDIMENTATION TO REDUCE THE VELOCITY OF THE DISCHARGE. THE CONTRACTOR SHALL UTILIZE AN ENERGY-DISSIPATING DEVICE AS DESCRIBED IN THE CMRP.
 - SPILL-PREVENTION: ALL PUMPS SHALL BE SET IN SECONDARY CONTAINMENT AND IN ACCORDANCE WITH THE SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN (SPCC). EQUIPMENT AND PUMPS OPERATING WITHIN 100 FEET OF ANY WATER BODY OR WETLAND SHALL BE OPERATED AND REFUELED IN ACCORDANCE WITH THE SPCC PLAN. EQUIPMENT REFUELING AND STORAGE OF HAZARDOUS MATERIALS, FUELS, ETC. SHALL BE CONDUCTED AT LEAST 100 FEET FROM WATER BODIES AND WETLANDS. EACH CONSTRUCTION CREW SHALL HAVE ON HAND SUFFICIENT TOOLS AND MATERIALS TO STOP LEAKS AND SUPPLIES OF ABSORBENT AND BARRIER MATERIALS TO ALLOW RAPID CONTAINMENT AND RECOVERY OF SPILLED MATERIALS.
 - EROSION AND SEDIMENT CONTROL: CONTRACTOR SHALL SUPPLY, INSTALL AND MAINTAIN SEDIMENT CONTROL STRUCTURES IN ACCORDANCE WITH CONTRACT DOCUMENTS. CONTRACTOR SHALL INSTALL ADDITIONAL EROSION CONTROL STRUCTURES AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.
 - TOPSOIL SHALL BE STRIPPED AS REQUIRED BY PROJECT DOCUMENTS.
 - PRIOR TO PIPE PULLBACK, CONTRACTOR'S ACTUAL DRILL PROFILE SHALL BE SUBMITTED TO KEYSTONE FOR APPROVAL.
 - INSTALLATION: THE PIPE SECTION FOR THE DRILLED CROSSING SHALL BE MADE UP WITHIN THE RIGHT-OF-WAY AT THE DRILL EXIT POINT AS SHOWN. CONTRACTOR SHALL ASSESS THE NEED FOR AND SUPPLY APPROPRIATE BALLAST DURING PULLBACK.
 - MUD DISPOSAL: CONTRACTOR SHALL DISPOSE OF EXCESS DRILLING MUD AS DIRECTED BY THE COMPANY REPRESENTATIVE IN ACCORDANCE WITH PERMIT CONDITIONS. UNDER NO CIRCUMSTANCES SHALL DRILLING FLUID BE DISPOSED OF IN WATER BODIES OR WETLANDS. ANY DRILLING MUD WHICH INVENTENTLY EXITS AT POINTS OTHER THAN THE ENTRY AND EXIT POINTS SHALL BE CONTAINED AND COLLECTED TO THE EXTENT PRACTICAL AND DISPOSED OF AS DIRECTED BY THE COMPANY REPRESENTATIVE IN ACCORDANCE WITH PERMIT CONDITIONS.
 - CLEANUP/STABILIZATION/RESTORATION: ALL DISTURBED AREAS SHALL BE RETURNED TO THE ORIGINAL CONTOURS. DISTURBED AREAS SHALL BE SEED AS SPECIFIED IN PROJECT DOCUMENTS.
 - NOMINAL WORKING SPACE DIMENSIONS ARE SHOWN. LARGER AREAS MAY BE NEEDED IN IRREGULAR TERRAIN. UPDATED DIMENSIONS MAY BE PROVIDED AFTER LOCAL TOPOGRAPHICAL SURVEYS ARE PERFORMED.



ENVIRONMENTAL MITIGATION/RECLAMATION

TOPSOIL SALVAGE METHOD	
STREAMS	
WETLANDS	
TIMING CONSTRAINTS	
MILEPOST	
MONITORING	
RECLAMATION	
SPECIAL CONSIDERATIONS	

- LEGEND**
- POINT OF INTERSECTION (P.I.)
 - ENTRY OR EXIT POINT
 - ⊕ GEOTECHNICAL BOREHOLE
 - ⊙ POWERPOLE
 - MLP MAINLINE PIPE
 - PIPELINE
 - - - FOREIGN PIPELINE
 - - - EDGE OF WATER
 - - - PRIVATE ACCESS SHOULDER ROAD
 - - - COUNTY BOUNDARY
 - ▽ WATER LEVEL
 - ⊕ USACE CONSTRUCTION REFERENCE POINT
 - WETLANDS
 - PERMANENT EASEMENT
 - TEMPORARY EASEMENT
 - EXTRA WORKSPACE

TO BE DETERMINED

REFERENCE DRAWINGS

DRAWING No	TITLE
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TC_UD_BR_UEI	TC_UD_BR_UEI.dwg
NOTES-LEGEND	NOTES-LEGEND.dwg

REVISION

REV No	DATE	DESCRIPTION
0	11.19.08	ISSUED FOR UNITED STATES DEPARTMENT OF STATE (7.31.08 CL)

APPROVAL

PROJECT CODE	DRAFTER	DRAFTING CHECKER	DESIGNER	DESIGN CHECKER	PROJECT MANAGER	COMPANY
11042	UEI	UEI	RB	JW	JH	UEI

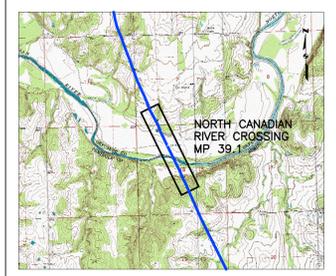
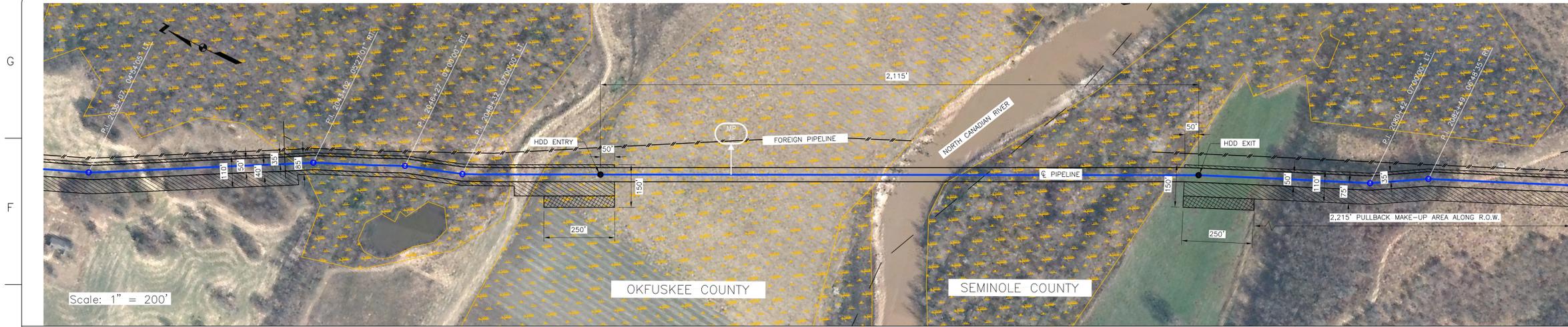
PROFESSIONAL ENGINEER/RPT

DATE	DATE
PERMIT/ ENG. APPROVAL	DATE

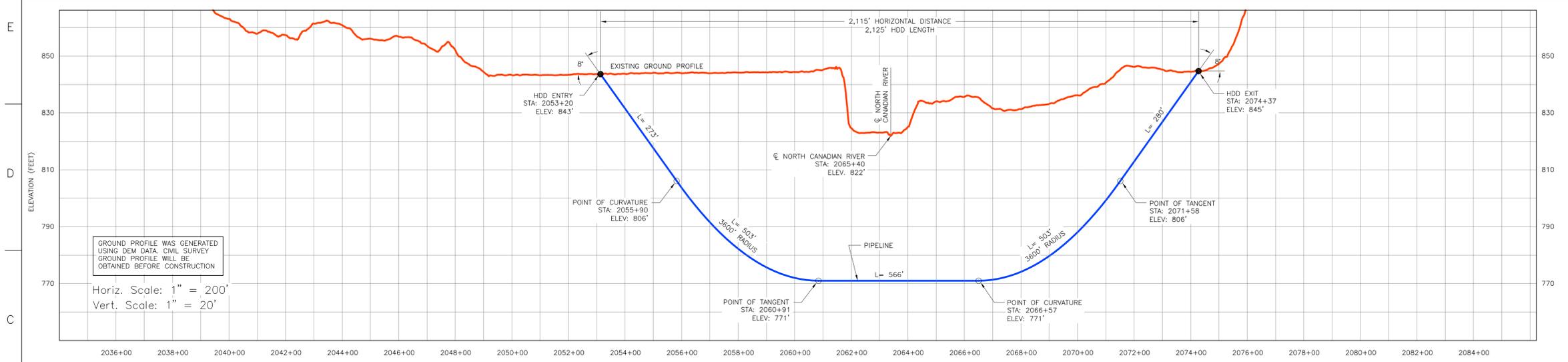
FIA # TCPL CHAINAGE: M.P. 22.7 DISCIPLINE # 03

**DEEP FORK HDD INSTALLATION
KEYSTONE XL PROJECT
CREEK COUNTY, OKLAHOMA**

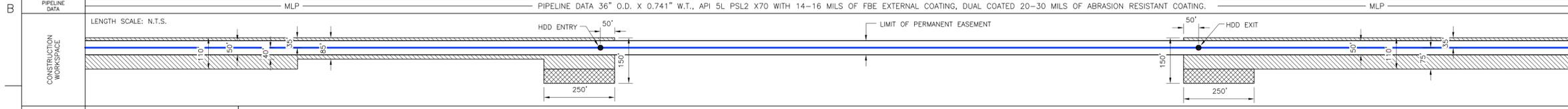
SCALE AS SHOWN DRAWING No XL-03-ML-03-051 REV 0



- INSTALLATION NOTES**
- ACCESS: ALL EQUIPMENT MUST ACCESS THE SITE ALONG THE CONSTRUCTION RIGHT-OF-WAY FROM PUBLIC OR APPROVED PRIVATE ROADS.
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 - EROSION AND SEDIMENT CONTROL: CONTRACTOR SHALL SUPPLY, INSTALL AND MAINTAIN SEDIMENT CONTROL STRUCTURES IN ACCORDANCE WITH CONTRACT DOCUMENTS. CONTRACTOR SHALL INSTALL ADDITIONAL EROSION CONTROL STRUCTURES AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.
 - TOPSOIL SHALL BE STRIPPED AS REQUIRED BY PROJECT DOCUMENTS.
 - PRIOR TO PIPE PULLBACK, CONTRACTOR'S ACTUAL DRILL PROFILE SHALL BE SUBMITTED TO KEYSTONE FOR APPROVAL.
 - INSTALLATION: THE PIPE SECTION FOR THE DRILLED CROSSING SHALL BE MADE UP WITHIN THE RIGHT-OF-WAY AT THE DRILL EXIT POINT AS SHOWN. CONTRACTOR SHALL ASSESS THE NEED FOR AND SUPPLY APPROPRIATE BALLAST DURING PULLBACK.
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CROSSING INFORMATION (ESTIMATED STATIONING)	2036+00	2038+00	2040+00	2042+00	2044+00	2046+00	2048+00	2050+00	2052+00	2054+00	2056+00	2058+00	2060+00	2062+00	2064+00	2066+00	2068+00	2070+00	2072+00	2074+00	2076+00	2078+00	2080+00	2082+00	2084+00
PIPELINE DATA	PIPELINE DATA 36" O.D. X 0.741" W.T., API 5L PSL2 X70 WITH 14-16 MILS OF FBE EXTERNAL COATING, DUAL COATED 20-30 MILS OF ABRASION RESISTANT COATING.																								



ENVIRONMENTAL MITIGATION/RECLAMATION	TOPSOIL SALVAGE METHOD	
	STREAMS	
	WETLANDS	
	TIMING CONSTRAINTS	
	MILEPOST	
	MONITORING	
RECLAMATION		
SPECIAL CONSIDERATIONS		

- LEGEND**
- POINT OF INTERSECTION (P.I.)
 - ENTRY OR EXIT POINT
 - ⊕ GEOTECHNICAL BOREHOLE
 - ⊙ POWERPOLE
 - MLP
 - MAINLINE PIPE
 - PIPELINE
 - FOREIGN PIPELINE
 - EDGE OF WATER
 - PRIVATE ACCESS SHOULDER ROAD
 - COUNTY BOUNDARY
 - ▽ WATER LEVEL
 - ⊕ USACE CONSTRUCTION REFERENCE POINT
 - WETLANDS
 - PERMANENT EASEMENT
 - TEMPORARY EASEMENT
 - EXTRA WORKSPACE

TO BE DETERMINED

REFERENCE DRAWINGS	
DRAWING No	TITLE
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TC_UD_BR_UFI	TC_UD_BR_UFI.dwg
NOTES-LEGEND	NOTES-LEGEND.dwg

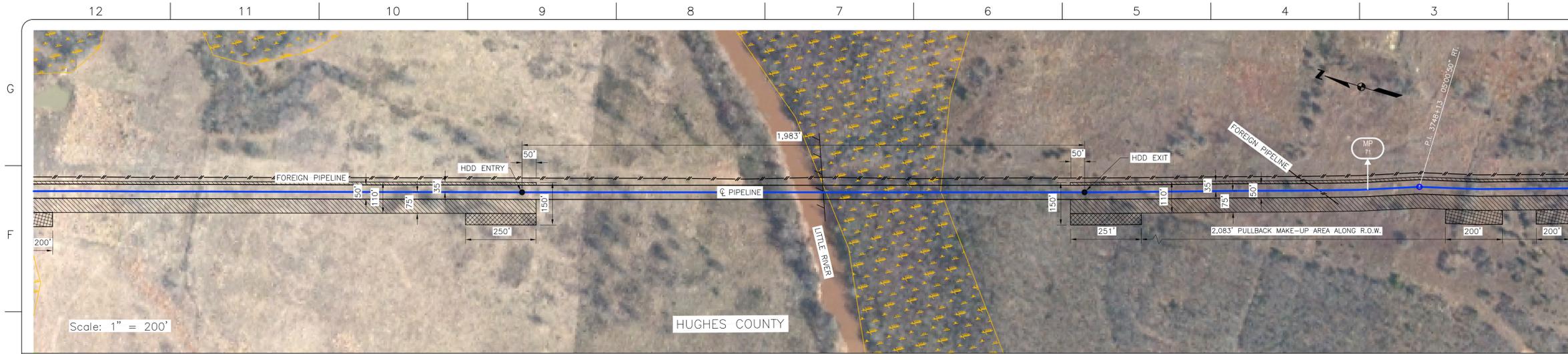
REVISION		APPROVAL							
REV No	DATE	DESCRIPTION	PROJECT CODE	DRAFTER	DRAFTING CHECKER	DESIGNER	DESIGN CHECKER	PROJECT MANAGER	COMPANY
0	11.19.08	ISSUED FOR UNITED STATES DEPARTMENT OF STATE (7.31.08 CL)	11042	UEI	UEI	RB	JW	JH	UEI

PROFESSIONAL ENGINEER/RPT	PERMIT/ ENG. APPROVAL
	DATE
REV. NO.	DATE
	PERMIT NUMBER:

FIA # TCPL CHAINAGE: M.P. 39.1 DISCIPLINE # 03

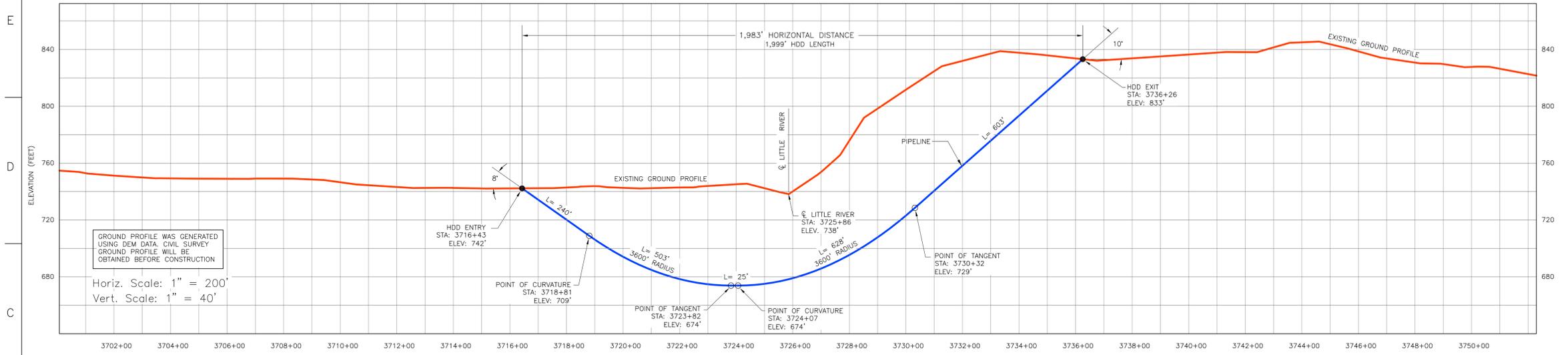
NORTH CANADIAN RIVER HDD INSTALLATION
KEYSTONE XL PROJECT
OKFUSKEE & SEMINOLE COUNTY, OKLAHOMA

SCALE AS SHOWN DRAWING No XL-03-ML-03-052 REV 0



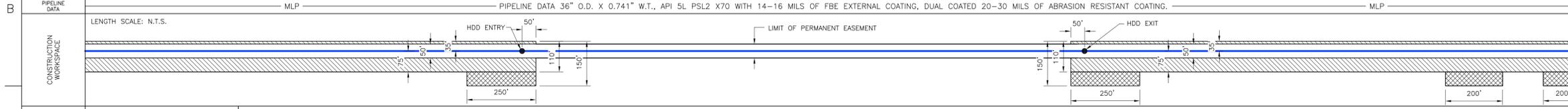
INSTALLATION NOTES

- ACCESS: ALL EQUIPMENT MUST ACCESS THE SITE ALONG THE CONSTRUCTION RIGHT-OF-WAY FROM PUBLIC OR APPROVED PRIVATE ROADS.
- VEHICLE AND EQUIPMENT ACCESS CROSSING MAY BE INSTALLED IF APPROVED BY THE ENVIRONMENTAL INSPECTOR.
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GROUND PROFILE WAS GENERATED USING DEM DATA. CIVIL SURVEY GROUND PROFILE WILL BE OBTAINED BEFORE CONSTRUCTION.
 Horiz. Scale: 1" = 200'
 Vert. Scale: 1" = 40'

CROSSING INFORMATION (ESTIMATED STATIONING)	3716+43 HDD ENTRY	3718+81 PT OF CURVATURE	3723+82 PT OF TANGENT	3724+07 PT OF CURVATURE	3725+86 LITTLE RIVER	3730+32 PT OF TANGENT	3736+26 HDD EXIT	3748+13 P.L. 05°00'50" RT
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LEGEND

- POINT OF INTERSECTION (P.I.)
- ENTRY OR EXIT POINT
- ⊕ GEOTECHNICAL BOREHOLE
- ⊙ POWERPOLE
- MLP MAINLINE PIPE
- PIPELINE
- - - FOREIGN PIPELINE
- - - EDGE OF WATER
- - - PRIVATE ACCESS SHOULDER ROAD
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- ▽ WATER LEVEL
- ⊕ USACE CONSTRUCTION REFERENCE POINT
- WETLANDS
- PERMANENT EASEMENT
- TEMPORARY EASEMENT
- EXTRA WORKSPACE

ENVIRONMENTAL MITIGATION/RECLAMATION	TOPSOIL SALVAGE METHOD	
	STREAMS	
	WETLANDS	
	TIMING CONSTRAINTS	
	MILEPOST	
	MONITORING	
RECLAMATION		
SPECIAL CONSIDERATIONS		

TO BE DETERMINED

REFERENCE DRAWINGS

DRAWING No	TITLE
11042 HDD_XREF_14	11042 HDD_XREF_14.dwg
TC_UD_BR_UEI	TC_UD_BR_UEI.dwg
NOTES-LEGEND	NOTES-LEGEND.dwg

REVISION

REV No	DATE	DESCRIPTION
0	11.19.08	ISSUED FOR UNITED STATES DEPARTMENT OF STATE (7.31.08 CL)

APPROVAL

PROJECT CODE	DRAFTER	DRAFTING CHECKER	DESIGNER	DESIGN CHECKER	PROJECT MANAGER	COMPANY
11042	UEI	UEI	RB	JW	JH	UEI

PROFESSIONAL ENGINEER/RPT

DATE: _____

PERMIT/ ENG. APPROVAL

DATE: _____

UNIVERSAL UNIVERSAL ENSCO, INC.

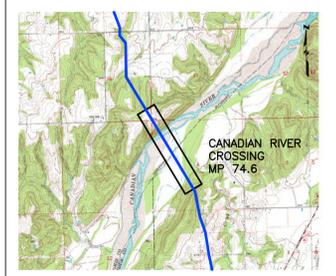
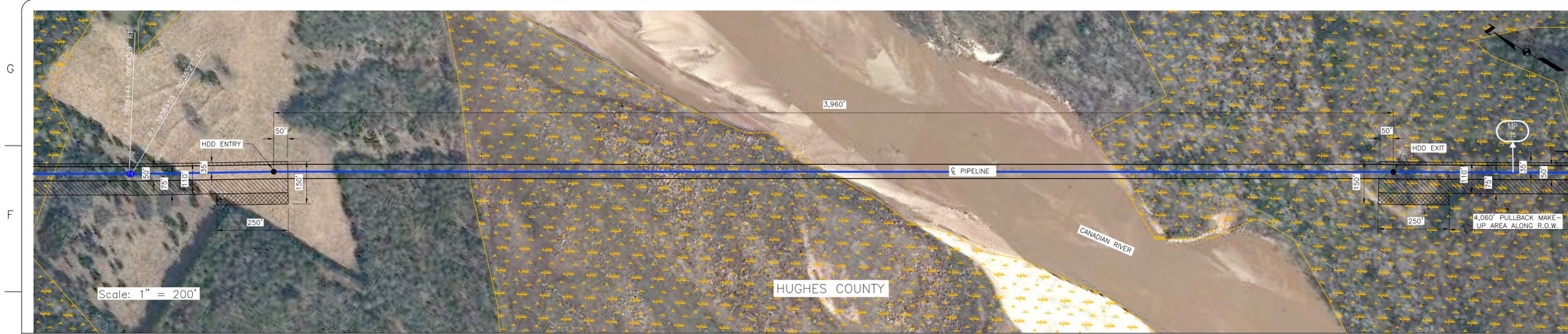
ConocoPhillips

TransCanada In business to deliver

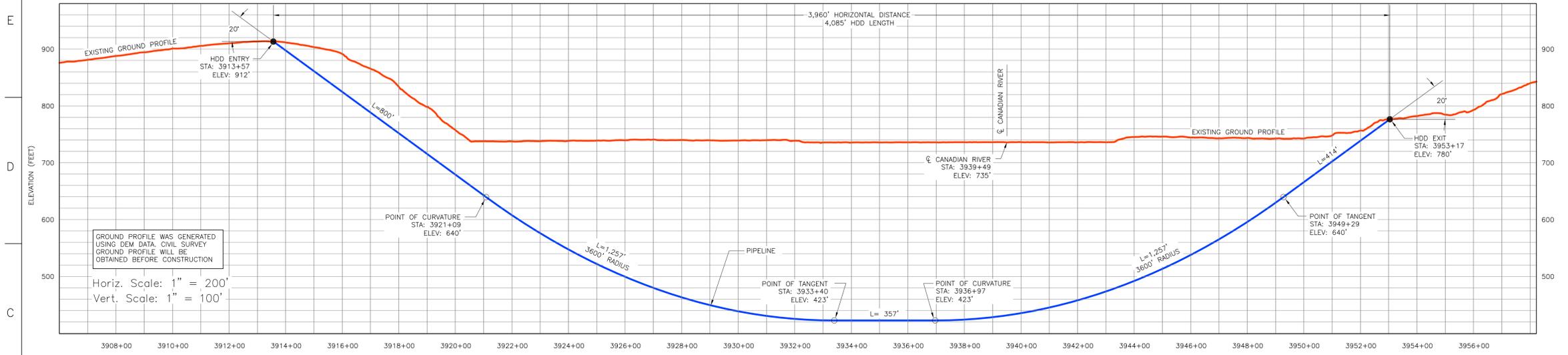
FIA # TCPL CHAINAGE: M.P. 70.6 DISCIPLINE # 03

LITTLE RIVER HDD INSTALLATION
KEYSTONE XL PROJECT
HUGHES COUNTY, OKLAHOMA

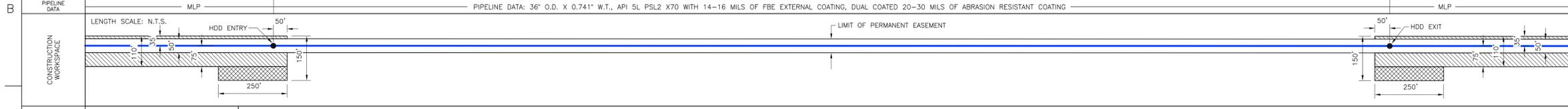
SCALE AS SHOWN DRAWING No XL-03-ML-03-053 REV 0



- INSTALLATION NOTES**
- ACCESS: ALL EQUIPMENT MUST ACCESS THE SITE ALONG THE CONSTRUCTION RIGHT-OF-WAY FROM PUBLIC OR APPROVED PRIVATE ROADS.
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 - INSTALLATION: THE PIPE SECTION FOR THE DRILLED CROSSING SHALL BE MADE UP WITHIN THE RIGHT-OF-WAY AT THE DRILL EXIT POINT AS SHOWN. CONTRACTOR SHALL ASSESS THE NEED FOR AND SUPPLY APPROPRIATE BALLAST DURING PULLBACK.
 - MUD DISPOSAL: CONTRACTOR SHALL DISPOSE OF EXCESS DRILLING MUD AS DIRECTED BY THE COMPANY REPRESENTATIVE IN ACCORDANCE WITH PERMIT CONDITIONS. UNDER NO CIRCUMSTANCES SHALL DRILLING FLUID BE DISPOSED OF IN WATER BODIES OR WETLANDS. ANY DRILLING MUD WHICH INVENTENTLY EXITS AT POINTS OTHER THAN THE ENTRY AND EXIT POINTS SHALL BE CONTAINED AND COLLECTED TO THE EXTENT PRACTICAL AND DISPOSED OF AS DIRECTED BY THE COMPANY REPRESENTATIVE IN ACCORDANCE WITH PERMIT CONDITIONS.
 - CLEANUP/STABILIZATION/RESTORATION: ALL DISTURBED AREAS SHALL BE RETURNED TO THE ORIGINAL CONTOURS. DISTURBED AREAS SHALL BE SEEDING AS SPECIFIED IN PROJECT DOCUMENTS.
 - NORMAL WORKING SPACE DIMENSIONS ARE SHOWN. LARGER AREAS MAY BE NEEDED IN IRREGULAR TERRAIN. UPDATED DIMENSIONS MAY BE PROVIDED AFTER LOCAL TOPOGRAPHICAL SURVEYS ARE PERFORMED.



CROSSING INFORMATION (ESTIMATED STATIONING)	3908+44 P.I. 09'44'28" RT.	3908+53 P.I. 10'35'27" LT.	3913+57 HDD ENTRY	3921+09 PT OF CURVATURE	3933+40 PT OF TANGENT	3936+97 PT OF CURVATURE	3939+49 CANADIAN RIVER	3949+29 PT OF TANGENT	3953+17 HDD EXIT
PIPELINE DATA	MLP PIPELINE DATA: 36" O.D. X 0.741" W.T., API 5L PSL2 X70 WITH 14-16 MILS OF FBE EXTERNAL COATING, DUAL COATED 20-30 MILS OF ABRASION RESISTANT COATING MLP								



ENVIRONMENTAL MITIGATION/RECLAMATION	TOPSOIL SALVAGE METHOD	
	STREAMS	
	WETLANDS	
	TIMING CONSTRAINTS	
	MILEPOST	
	MONITORING	
	RECLAMATION	
	SPECIAL CONSIDERATIONS	

- LEGEND**
- POINT OF INTERSECTION (P.I.)
 - ENTRY OR EXIT POINT
 - ⊕ GEOTECHNICAL BOREHOLE
 - ⊙ POWERPOLE
 - MLP MAINLINE PIPE
 - PIPELINE
 - - - FOREIGN PIPELINE
 - · - · EDGE OF WATER
 - · - · PRIVATE ACCESS SHOULDER ROAD
 - - - COUNTY BOUNDARY
 - ▽ WATER LEVEL
 - ⊕ USACE CONSTRUCTION REFERENCE POINT
 - WETLANDS
 - PERMANENT EASEMENT
 - TEMPORARY EASEMENT
 - EXTRA WORKSPACE

REFERENCE DRAWINGS

DRAWING No	TITLE
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TC_UD_BR_UFI	TC_UD_BR_UFI.dwg
NOTES-LEGEND	NOTES-LEGEND.dwg

REVISION

REV No	DATE	DESCRIPTION
0	11.19.08	ISSUED FOR UNITED STATES DEPARTMENT OF STATE (7.31.08 CL)

APPROVAL

PROJECT CODE	DRAFTER	DRAFTING CHECKER	DESIGNER	DESIGN CHECKER	PROJECT MANAGER	COMPANY
11042	UEI	UEI	RB	JW	JH	UEI

PROFESSIONAL ENGINEER/RPT

PERMIT/ ENG. APPROVAL

REV. NO.	DATE	PERMIT NUMBER:
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UNIVERSAL
UNIVERSAL ENSCO, INC.

ConocoPhillips

TransCanada
In business to deliver

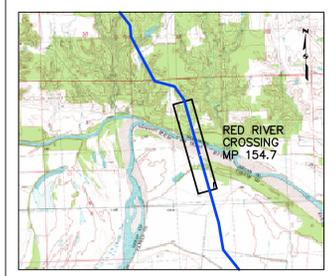
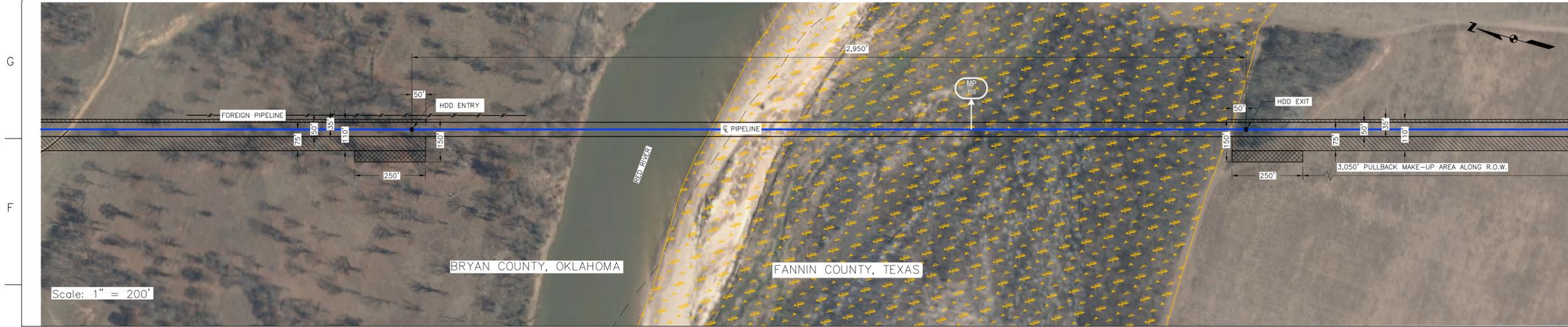
FIA # TCPL CHAINAGE: M.P. 74.6 DISCIPLINE # 03

CANADIAN RIVER HDD INSTALLATION
KEYSTONE XL PROJECT
HUGHES COUNTY, OKLAHOMA

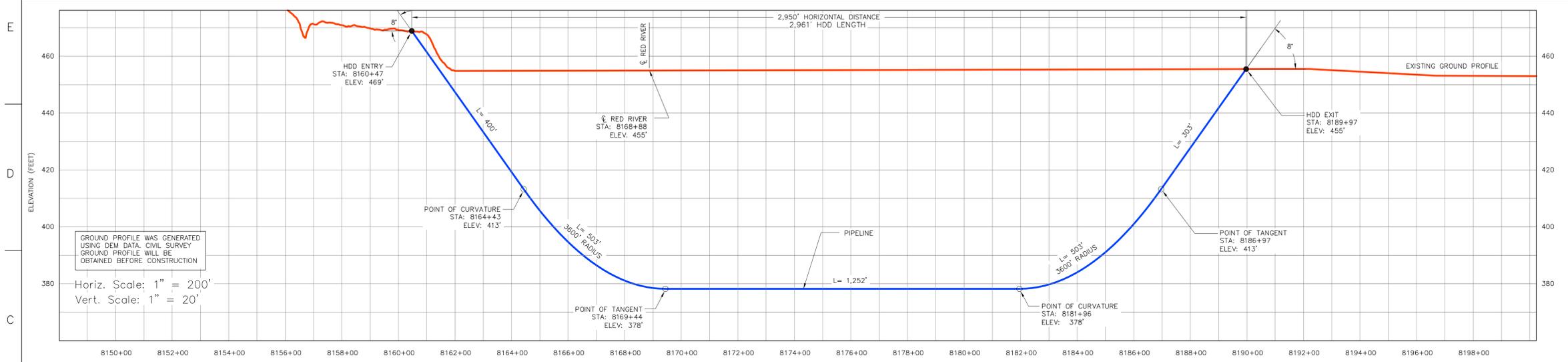
SCALE AS SHOWN DRAWING No XL-03-ML-03-054 REV 0

TO BE DETERMINED

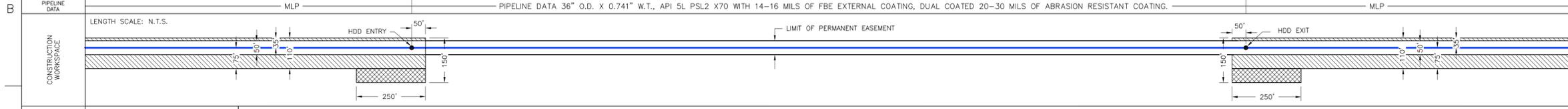
TIME-DESIGNFILE



- INSTALLATION NOTES**
- ACCESS: ALL EQUIPMENT MUST ACCESS THE SITE ALONG THE CONSTRUCTION RIGHT-OF-WAY FROM PUBLIC OR APPROVED PRIVATE ROADS.
 - VEHICLE AND EQUIPMENT ACCESS CROSSING MAY BE INSTALLED IF APPROVED BY THE ENVIRONMENTAL INSPECTOR.
 - WORK SPACE: WORK SPACE LIMITS ARE DEPICTED. CLEARING WILL BE RESTRICTED TO THE WORK SPACES INDICATED AT THE ENTRY AND EXIT POINTS AND PULLBACK MAKE-UP AREA ALONG THE RIGHT-OF-WAY. CLEARING BETWEEN THE ENTRY AND EXIT POINTS IS LIMITED TO THE MINIMUM AMOUNT NECESSARY TO STRING LOCATION WIRES AND INSTALL PUMPS AND PIPING TO OBTAIN WATER (WHERE APPROVED).
 - WATER SOURCE: DRILL WATER AND PRE-INSTALLATION HYDROSTATIC TEST WATER SHALL BE OBTAINED FROM AN APPROVED SOURCE. THE CONTRACTOR SHALL SCREEN THE INTAKE HOSE TO PREVENT THE ENTRAPMENT OF FISH OR DEBRIS AND IN ACCORDANCE WITH THE CONSTRUCTION MITIGATION AND RECLAMATION PLAN (CMRP) AND PROJECT REQUIREMENTS, THE HOSE SHALL BE KEPT OFF THE BOTTOM OF THE WATER BODY.
 - HYDROSTATIC TEST: PRE-INSTALLATION HYDROSTATIC TEST SHALL BE CONDUCTED IN ACCORDANCE WITH PERMIT REQUIREMENTS. THE CONTRACTOR SHALL DISCHARGE HYDROSTATIC TEST WATER IN ACCORDANCE WITH PROJECT PERMITS. DISCHARGES WILL BE BACK TO THE WATER SOURCE UNLESS OTHERWISE DIRECTED BY THE ENVIRONMENTAL INSPECTOR. DISCHARGES SHALL NOT CAUSE EROSION OR SEDIMENTATION TO REDUCE THE VELOCITY OF THE DISCHARGE. THE CONTRACTOR SHALL UTILIZE AN ENERGY-DISSIPATING DEVICE AS DESCRIBED IN THE CMRP.
 - SPILL-PREVENTION: ALL PUMPS SHALL BE SET IN SECONDARY CONTAINMENT AND IN ACCORDANCE WITH THE SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN (SPCC). EQUIPMENT AND PUMPS OPERATING WITHIN 100 FEET OF ANY WATER BODY OR WETLAND SHALL BE OPERATED AND REFUELED IN ACCORDANCE WITH THE SPCC PLAN. EQUIPMENT REFUELING AND STORAGE OF HAZARDOUS MATERIALS, FUELS, ETC. SHALL BE CONDUCTED AT LEAST 100 FEET FROM WATER BODIES AND WETLANDS. EACH CONSTRUCTION CREW SHALL HAVE ON HAND SUFFICIENT TOOLS AND MATERIALS TO STOP LEAKS AND SUPPLIES OF ABSORBENT AND BARRIER MATERIALS TO ALLOW RAPID CONTAINMENT AND RECOVERY OF SPILLED MATERIALS.
 - EROSION AND SEDIMENT CONTROL: CONTRACTOR SHALL SUPPLY, INSTALL AND MAINTAIN SEDIMENT CONTROL STRUCTURES IN ACCORDANCE WITH CONTRACT DOCUMENTS. CONTRACTOR SHALL INSTALL ADDITIONAL EROSION CONTROL STRUCTURES AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.
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CROSSING INFORMATION (ESTIMATED STATIONING)	8160+47 HDD ENTRY	8164+43 PT OF CURVATURE	8169+44 PT OF TANGENT	8181+96 PT OF CURVATURE	8186+97 PT OF TANGENT	8189+97 HDD EXIT
PIPELINE DATA	MLP — PIPELINE DATA 36" O.D. X 0.741" W.T., API 5L PSL2 X70 WITH 14-16 MILS OF FBE EXTERNAL COATING, DUAL COATED 20-30 MILS OF ABRASION RESISTANT COATING. — MLP					



ENVIRONMENTAL MITIGATION/RECLAMATION	TOPSOIL SALVAGE METHOD	
	STREAMS	
	WETLANDS	
	TIMING CONSTRAINTS	
	MILEPOST	
	MONITORING	
	RECLAMATION	
SPECIAL CONSIDERATIONS		

- LEGEND**
- POINT OF INTERSECTION (P.I.)
 - ENTRY OR EXIT POINT
 - ⊕ GEOTECHNICAL BOREHOLE
 - ⊙ POWERPOLE
 - MLP
 - PIPELINE
 - FOREIGN PIPELINE
 - EDGE OF WATER
 - PRIVATE ACCESS SHOULDER ROAD
 - COUNTY BOUNDARY
 - ▽ WATER LEVEL
 - ⊕ USACE CONSTRUCTION REFERENCE POINT
 - WETLANDS
 - PERMANENT EASEMENT
 - TEMPORARY EASEMENT
 - EXTRA WORKSPACE

TO BE DETERMINED

REFERENCE DRAWINGS	
DRAWING No	TITLE
11042 HDD_XREF_14	11042 HDD_XREF_14.dwg
TC_UD_BR_UFI	TC_UD_BR_UFI.dwg
NOTES-LEGEND	NOTES-LEGEND.dwg

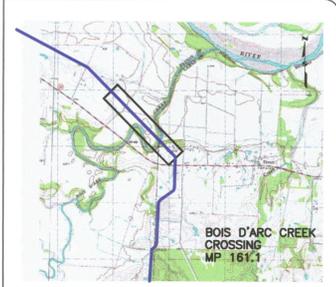
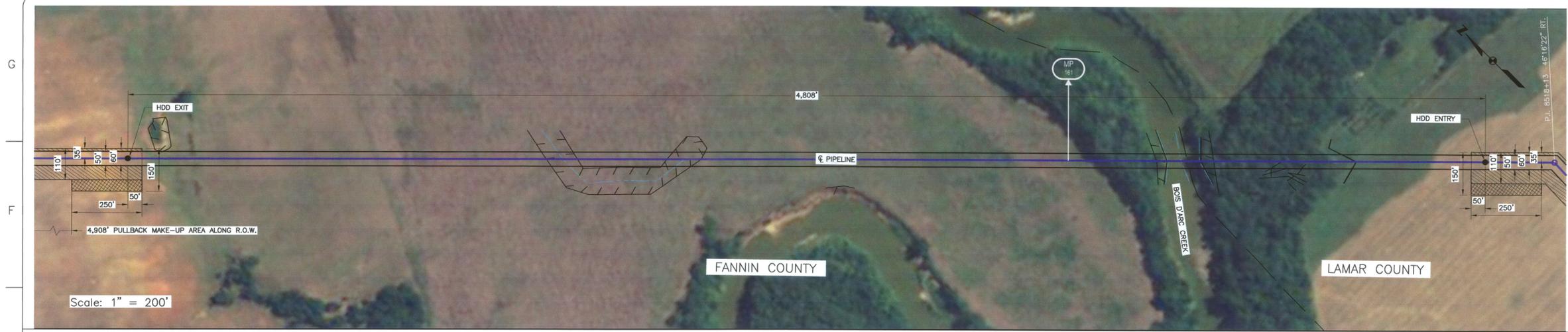
REVISION			APPROVAL						
REV No	DATE	DESCRIPTION	PROJECT CODE	DRAFTER	DRAFTING CHECKER	DESIGNER	DESIGN CHECKER	PROJECT MANAGER	COMPANY
0	11.19.08	ISSUED FOR UNITED STATES DEPARTMENT OF STATE (7.31.08 CL)	11042	UEI	UEI	RB	JW	JH	UEI

PROFESSIONAL ENGINEER/RPT	PERMIT/ ENG. APPROVAL
REV. NO.	DATE
	PERMIT NUMBER:

FIA # TCPL CHAINAGE: M.P. 154.7 DISCIPLINE # 03

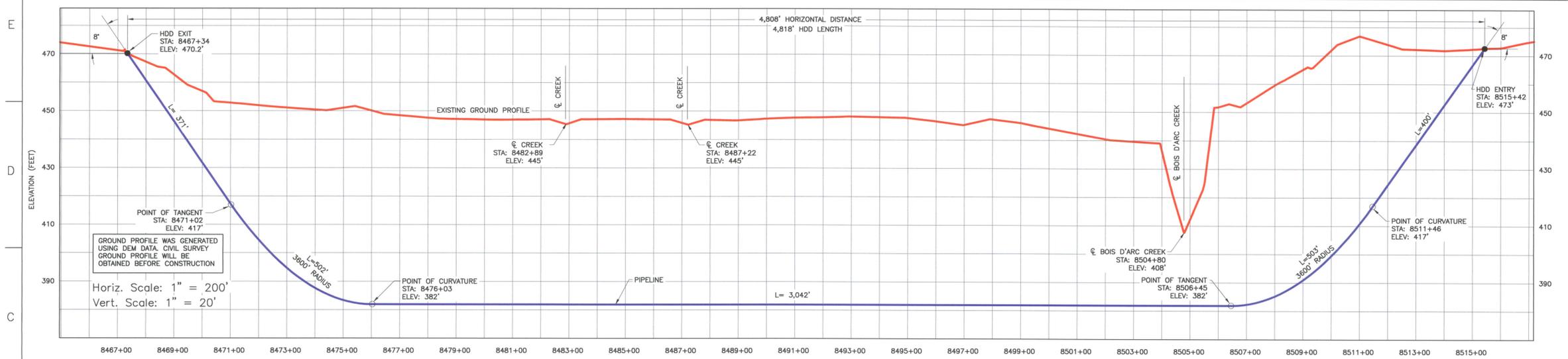
RED RIVER HDD INSTALLATION
KEYSTONE XL PROJECT
BRYAN & FANNIN COUNTY, OKLAHOMA

SCALE AS SHOWN DRAWING No XL-03-ML-03-055 REV 0

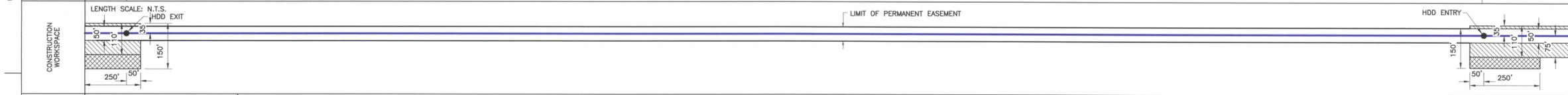


INSTALLATION NOTES

- ACCESS: ALL EQUIPMENT MUST ACCESS THE SITE ALONG THE CONSTRUCTION RIGHT-OF-WAY FROM PUBLIC OR APPROVED PRIVATE ROADS.
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CROSSING INFORMATION (STANDARD)	STATIONING
HDD EXIT	8467+34
PT OF TANGENT	8471+02
PT OF CURVATURE	8476+03
PIPELINE	8482+89 & CREEK
PIPELINE	8487+22 & CREEK
PIPELINE	8504+80 & BOIS D'ARC CREEK
PT OF TANGENT	8506+45
PT OF CURVATURE	8511+46
HDD ENTRY	8515+42
P.L.	8518+13 46°16'22" RT.



ENVIRONMENTAL MITIGATION/RECLAMATION	TOPSOIL SALVAGE METHOD
STREAMS	
WETLANDS	
TIMING CONSTRAINTS	
MILEPOST	
MONITORING	
RECLAMATION	
SPECIAL CONSIDERATIONS	

LEGEND

- POINT OF INTERSECTION (P.I.)
- ENTRY OR EXIT POINT
- ⊕ GEOTECHNICAL BOREHOLE
- ⊙ POWERPOLE
- MLP
- MAINLINE PIPE
- PIPELINE
- FOREIGN PIPELINE
- EDGE OF WATER
- PRIVATE ACCESS SHOULDER ROAD
- COUNTY BOUNDARY
- ▽ WATER LEVEL
- ⊕ USACE CONSTRUCTION REFERENCE POINT
- WETLANDS
- PERMANENT EASEMENT
- TEMPORARY EASEMENT
- EXTRA WORKSPACE

TO BE DETERMINED

REFERENCE DRAWINGS

DRAWING No	TITLE
11042 HDD_XREF_15	11042 HDD_XREF_15.dwg
TC_UD_BR_UFI	TC_UD_BR_UFI.dwg
NOTES-LEGEND	NOTES-LEGEND.dwg

REVISION

REV No	DATE	DESCRIPTION
0	11.19.08	ISSUED FOR UNITED STATES DEPARTMENT OF STATE (7.31.08 CL)

APPROVAL

PROJECT CODE	DRAFTER	DRAFTING CHECKER	DESIGNER	DESIGN CHECKER	PROJECT MANAGER	COMPANY
11042	UEI	UEI	RB	JW	JH	UEI

PROFESSIONAL ENGINEER/RPT

PERMIT/ ENG. APPROVAL

REV. NO.	DATE	PERMIT NUMBER:

UNIVERSAL UNIVERSAL ENSCO, INC.

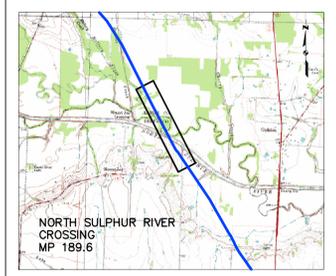
ConocoPhillips

TransCanada In business to deliver

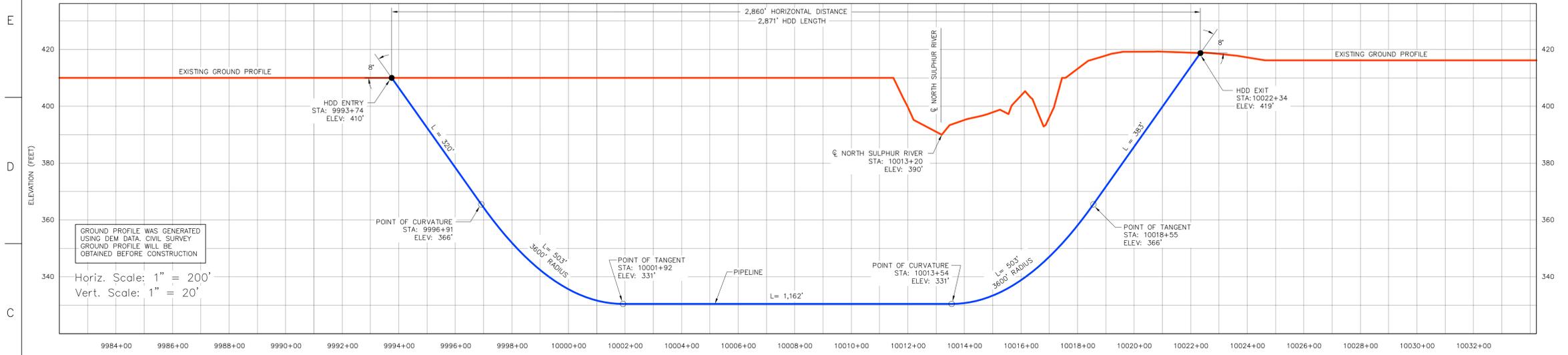
FIA # TCPL CHAINAGE: M.P. 161.1 DISCIPLINE # 03

BOIS D'ARC CREEK HDD INSTALLATION
KEYSTONE XL PROJECT
LAMAR COUNTY, TEXAS

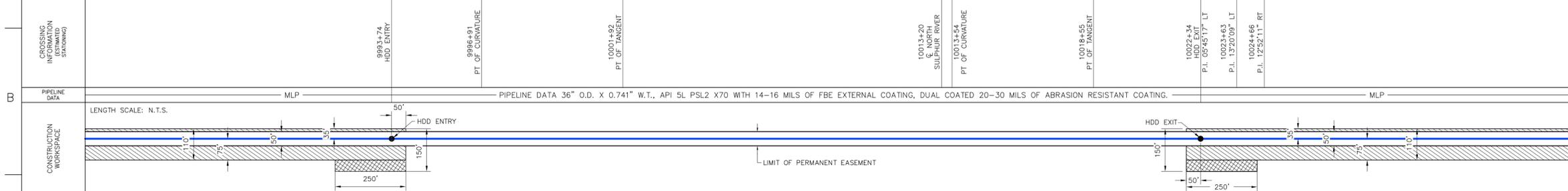
SCALE AS SHOWN DRAWING No XL-03-ML-03-056 REV 0



- INSTALLATION NOTES**
- ACCESS: ALL EQUIPMENT MUST ACCESS THE SITE ALONG THE CONSTRUCTION RIGHT-OF-WAY FROM PUBLIC OR APPROVED PRIVATE ROADS.
 - VEHICLE AND EQUIPMENT ACCESS CROSSING MAY BE INSTALLED IF APPROVED BY THE ENVIRONMENTAL INSPECTOR.
 - WORK SPACE: WORK SPACE LIMITS ARE DEPICTED. CLEARING WILL BE RESTRICTED TO THE WORK SPACES INDICATED AT THE ENTRY AND EXIT POINTS AND PULLBACK MAKE-UP AREA ALONG THE RIGHT-OF-WAY. CLEARING BETWEEN THE ENTRY AND EXIT POINTS IS LIMITED TO THE MINIMUM AMOUNT NECESSARY TO STRING LOCATION WIRES AND INSTALL PUMPS AND PIPING TO OBTAIN WATER (WHERE APPROVED).
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 - ▽ WATER LEVEL
 - ⊕ USACE CONSTRUCTION REFERENCE POINT
 - WETLANDS
 - PERMANENT EASEMENT
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ENVIRONMENTAL MITIGATION/RECLAMATION

TOPSOIL SALVAGE METHOD	
STREAMS	
WETLANDS	
TIMING CONSTRAINTS	
MILEPOST	
MONITORING	
RECLAMATION	
SPECIAL CONSIDERATIONS	

TO BE DETERMINED

REFERENCE DRAWINGS

DRAWING No	TITLE
11042 HDD_XREF_15	11042 HDD_XREF_15.dwg
TC_UD_BR_UFI	TC_UD_BR_UFI.dwg
NOTES-LEGEND	NOTES-LEGEND.dwg

REVISION

REV No	DATE	DESCRIPTION
0	11.19.08	ISSUED FOR UNITED STATES DEPARTMENT OF STATE (7.31.08 CL)

APPROVAL

PROJECT CODE	DRAFTER	DRAFTING CHECKER	DESIGNER	DESIGN CHECKER	PROJECT MANAGER	COMPANY
11042	UEI	UEI	RB	JW	JH	UEI

PROFESSIONAL ENGINEER/RPT

REV. NO.	DATE	PERMIT NUMBER:
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UNIVERSAL
UNIVERSAL ENSCO, INC.

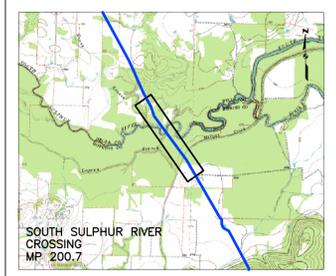
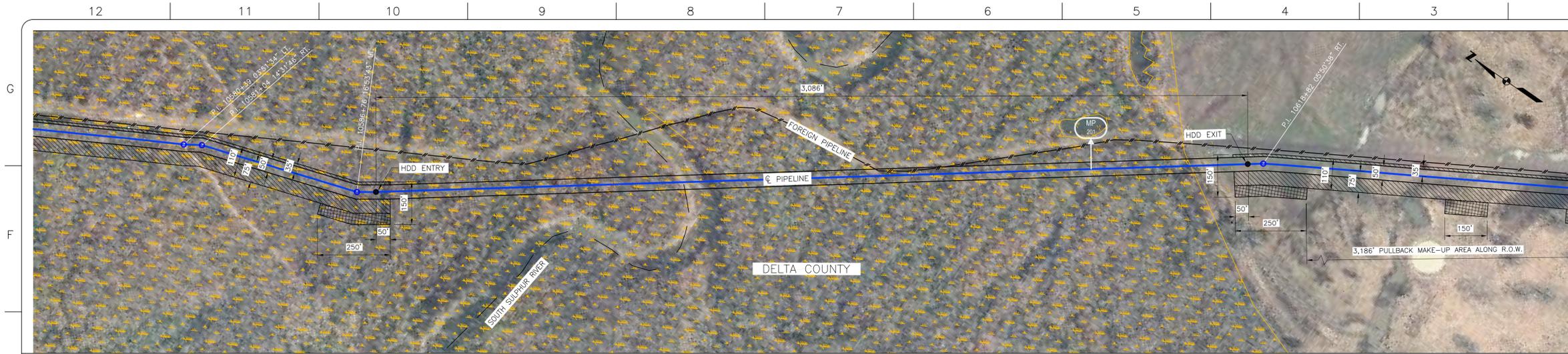
ConocoPhillips

TransCanada
In business to deliver

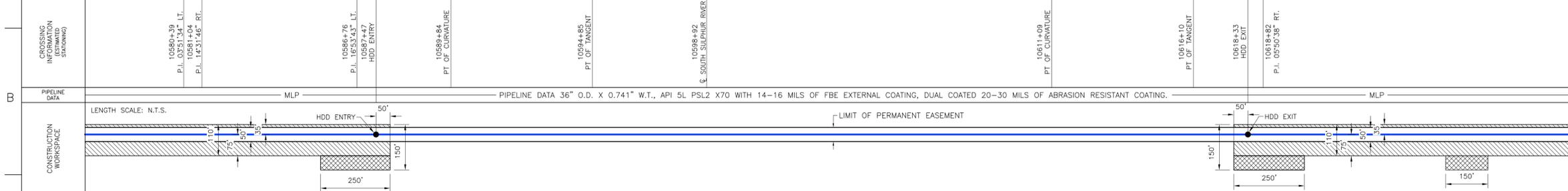
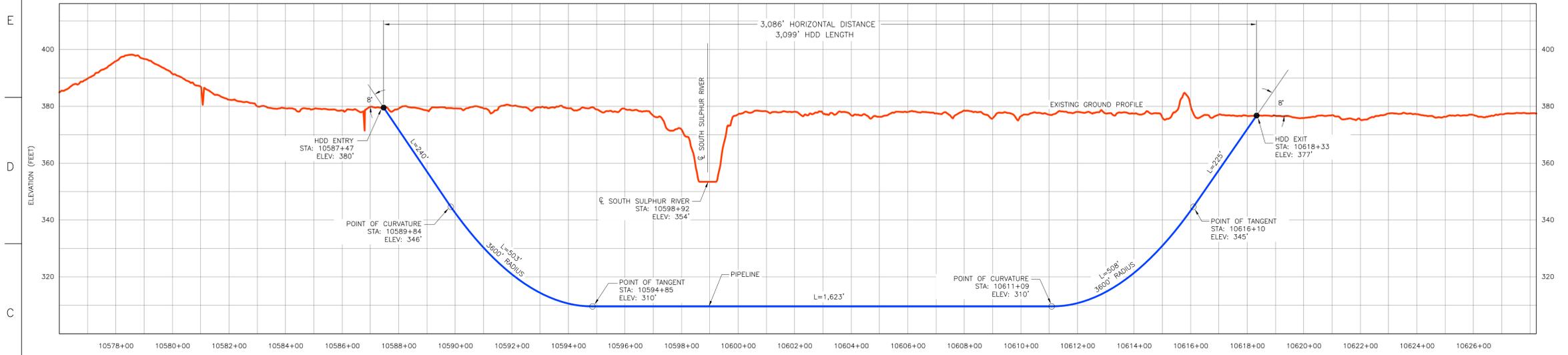
FIA # TCPL CHAINAGE: M.P. 189.6 DISCIPLINE # 03

NORTH SULPHUR RIVER HDD INSTALLATION
KEYSTONE XL PROJECT
LAMAR & DELTA COUNTY, TEXAS

SCALE AS SHOWN DRAWING No XL-03-ML-03-057 REV 0



- INSTALLATION NOTES**
- ACCESS: ALL EQUIPMENT MUST ACCESS THE SITE ALONG THE CONSTRUCTION RIGHT-OF-WAY FROM PUBLIC OR APPROVED PRIVATE ROADS.
 - VEHICLE AND EQUIPMENT ACCESS CROSSING MAY BE INSTALLED IF APPROVED BY THE ENVIRONMENTAL INSPECTOR.
 - WORK SPACE: WORK SPACE LIMITS ARE DEPICTED. CLEARING WILL BE RESTRICTED TO THE WORK SPACES INDICATED AT THE ENTRY AND EXIT POINTS AND PULLBACK MAKE-UP AREA ALONG THE RIGHT-OF-WAY. CLEARING BETWEEN THE ENTRY AND EXIT POINTS IS LIMITED TO THE MINIMUM AMOUNT NECESSARY TO STRING LOCATION WIRES AND INSTALL PUMPS AND PIPING TO OBTAIN WATER (WHERE APPROVED).
 - WATER SOURCE: DRILL WATER AND PRE-INSTALLATION HYDROSTATIC TEST WATER SHALL BE OBTAINED FROM AN APPROVED SOURCE. THE CONTRACTOR SHALL SCREEN THE INTAKE HOSE TO PREVENT THE ENTRAPMENT OF FISH OR DEBRIS AND IN ACCORDANCE WITH THE CONSTRUCTION MITIGATION AND RECLAMATION PLAN (CMRP) AND PROJECT REQUIREMENTS, THE HOSE SHALL BE KEPT OFF THE BOTTOM OF THE WATER BODY.
 - HYDROSTATIC TEST: PRE-INSTALLATION HYDROSTATIC TEST SHALL BE CONDUCTED IN ACCORDANCE WITH PERMIT REQUIREMENTS. THE CONTRACTOR SHALL DISCHARGE HYDROSTATIC TEST WATER IN ACCORDANCE WITH PROJECT PERMITS. DISCHARGES WILL BE BACK TO THE WATER SOURCE UNLESS OTHERWISE DIRECTED BY THE ENVIRONMENTAL INSPECTOR. DISCHARGES SHALL NOT CAUSE EROSION OR SEDIMENTATION. TO REDUCE THE VELOCITY OF THE DISCHARGE, THE CONTRACTOR SHALL UTILIZE AN ENERGY-DISSIPATING DEVICE AS DESCRIBED IN THE CMRP.
 - SPILL-PREVENTION: ALL PUMPS SHALL BE SET IN SECONDARY CONTAINMENT AND IN ACCORDANCE WITH THE SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN (SPCC). EQUIPMENT AND PUMPS OPERATING WITHIN 100 FEET OF ANY WATER BODY OR WETLAND SHALL BE OPERATED AND REFUELED IN ACCORDANCE WITH THE SPILL PLAN. EQUIPMENT REFUELING AND STORAGE OF HAZARDOUS MATERIALS, FUELS, ETC. SHALL BE CONDUCTED AT LEAST 100 FEET FROM WATER BODIES AND WETLANDS. EACH CONSTRUCTION CREW SHALL HAVE ON HAND SUFFICIENT TOOLS AND MATERIALS TO STOP LEAKS AND SUPPLIES OF ABSORBENT AND BARRIER MATERIALS TO ALLOW RAPID CONTAINMENT AND RECOVERY OF SPILLED MATERIALS.
 - EROSION AND SEDIMENT CONTROL: CONTRACTOR SHALL SUPPLY, INSTALL AND MAINTAIN SEDIMENT CONTROL STRUCTURES IN ACCORDANCE WITH CONTRACT DOCUMENTS. CONTRACTOR SHALL INSTALL ADDITIONAL EROSION CONTROL STRUCTURES AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.
 - TOPSOIL SHALL BE STRIPPED AS REQUIRED BY PROJECT DOCUMENTS.
 - PRIOR TO PIPE PULLBACK, CONTRACTOR'S ACTUAL DRILL PROFILE SHALL BE SUBMITTED TO KEYSTONE FOR APPROVAL.
 - INSTALLATION: THE PIPE SECTION FOR THE DRILLED CROSSING SHALL BE MADE UP WITHIN THE RIGHT-OF-WAY AT THE DRILL EXIT POINT AS SHOWN. CONTRACTOR SHALL ASSESS THE NEED FOR AND SUPPLY APPROPRIATE BALLAST DURING PULLBACK.
 - MUD DISPOSAL: CONTRACTOR SHALL DISPOSE OF EXCESS DRILLING MUD AS DIRECTED BY THE COMPANY REPRESENTATIVE IN ACCORDANCE WITH PERMIT CONDITIONS. UNDER NO CIRCUMSTANCES SHALL DRILLING FLUID BE DISPOSED OF IN WATER BODIES OR WETLANDS. ANY DRILLING MUD WHICH INCONVENIENTLY EXITS AT POINTS OTHER THAN THE ENTRY AND EXIT POINTS SHALL BE CONTAINED AND COLLECTED TO THE EXTENT PRACTICAL AND DISPOSED OF AS DIRECTED BY THE COMPANY REPRESENTATIVE IN ACCORDANCE WITH PERMIT CONDITIONS.
 - CLEANUP/STABILIZATION/RESTORATION: ALL DISTURBED AREAS SHALL BE RETURNED TO THE ORIGINAL CONTOURS. DISTURBED AREAS SHALL BE SEED AS SPECIFIED IN PROJECT DOCUMENTS.
 - NOMINAL WORKING SPACE DIMENSIONS ARE SHOWN. LARGER AREAS MAY BE NEEDED IN IRREGULAR TERRAIN. UPDATED DIMENSIONS MAY BE PROVIDED AFTER LOCAL TOPOGRAPHICAL SURVEYS ARE PERFORMED.



ENVIRONMENTAL MITIGATION/RECLAMATION

TOPSOIL SALVAGE METHOD	
STREAMS	
WETLANDS	
TIMING CONSTRAINTS	
MILEPOST	
MONITORING	
RECLAMATION	
SPECIAL CONSIDERATIONS	

- LEGEND**
- POINT OF INTERSECTION (P.I.)
 - ENTRY OR EXIT POINT
 - ⊕ GEOTECHNICAL BOREHOLE
 - ⊙ POWERPOLE
 - MLP MAINLINE PIPE
 - PIPELINE
 - FOREIGN PIPELINE
 - EDGE OF WATER
 - PRIVATE ACCESS SHOULDER ROAD
 - COUNTY BOUNDARY
 - ▽ WATER LEVEL
 - ⊕ USACE CONSTRUCTION REFERENCE POINT
 - WETLANDS
 - PERMANENT EASEMENT
 - TEMPORARY EASEMENT
 - EXTRA WORKSPACE

TO BE DETERMINED

REFERENCE DRAWINGS

DRAWING No	TITLE
11042 HDD XREF_15	11042 HDD XREF_15
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NOTES-LEGEND	NOTES-LEGEND.dwg

REVISION

REV No	DATE	DESCRIPTION
0	11.19.08	ISSUED FOR UNITED STATES DEPARTMENT OF STATE (7.31.08 CL)

APPROVAL

PROJECT CODE	DRAFTER	DRAFTING CHECKER	DESIGNER	DESIGN CHECKER	PROJECT MANAGER	COMPANY
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PROFESSIONAL ENGINEER/RPT

DATE: _____

PERMIT/ ENG. APPROVAL

DATE: _____

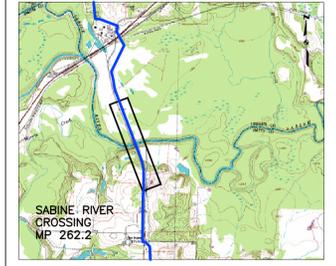
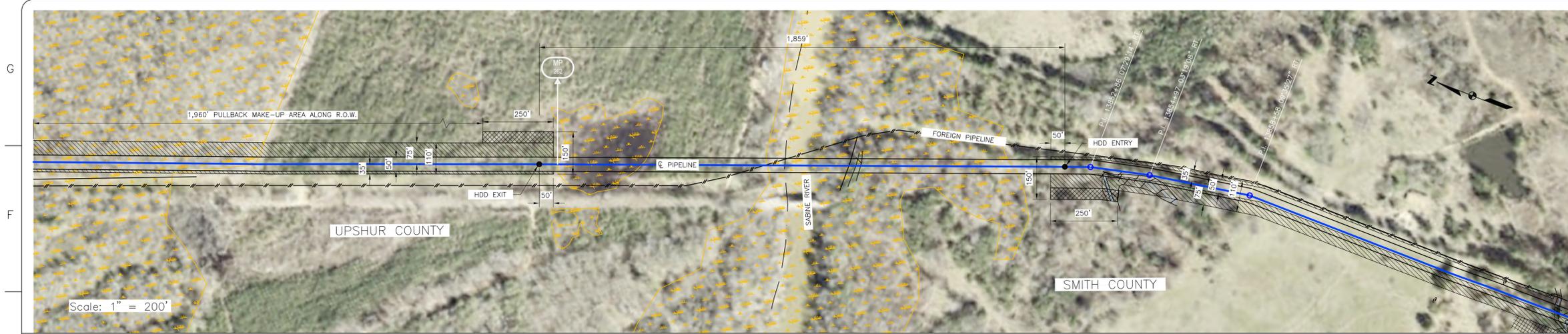
UNIVERSAL **ConocoPhillips** **TransCanada**

UNIVERSAL ENSCO, INC. In business to deliver

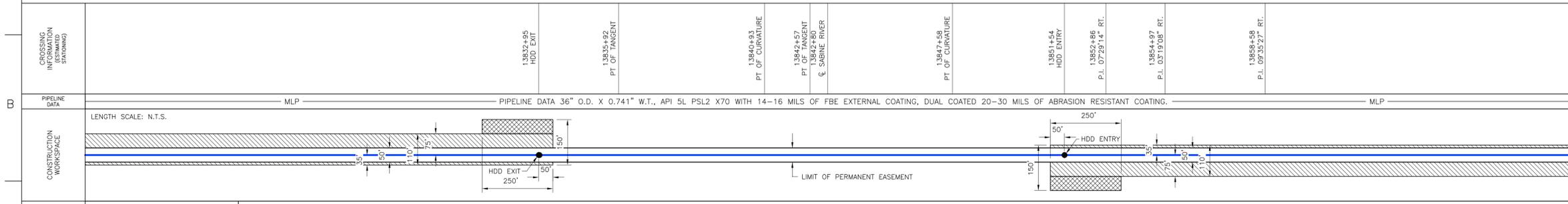
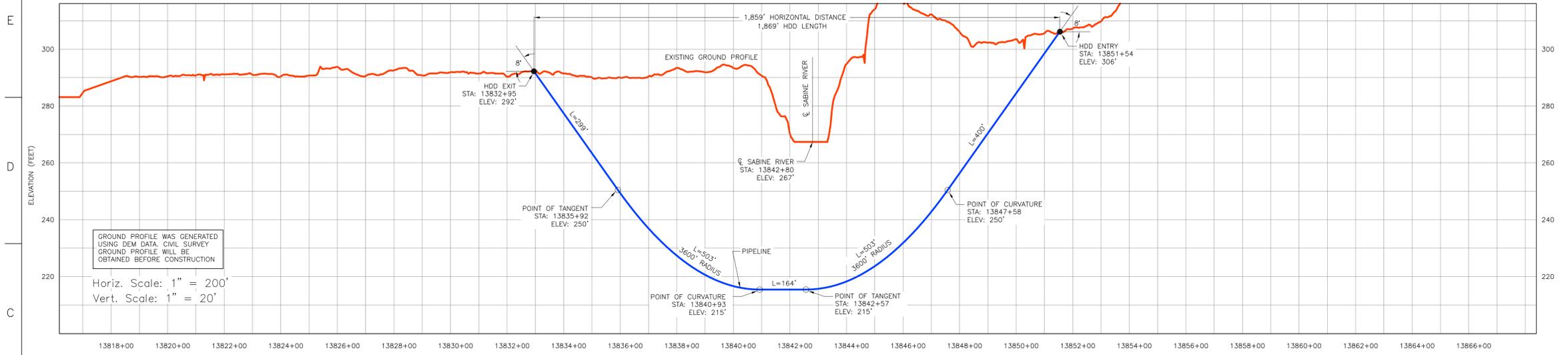
FIA # TCPL CHAINAGE: M.P. 200.7 DISCIPLINE # 03

SOUTH SULPHUR RIVER HDD INSTALLATION
KEYSTONE XL PROJECT
DELTA COUNTY, TEXAS

SCALE AS SHOWN DRAWING No XL-03-ML-03-058 REV 0



- INSTALLATION NOTES**
- ACCESS: ALL EQUIPMENT MUST ACCESS THE SITE ALONG THE CONSTRUCTION RIGHT-OF-WAY FROM PUBLIC OR APPROVED PRIVATE ROADS.
 - VEHICLE AND EQUIPMENT ACCESS CROSSING MAY BE INSTALLED IF APPROVED BY THE ENVIRONMENTAL INSPECTOR.
 - WORK SPACE: WORK SPACE LIMITS ARE DEPICTED. CLEARING WILL BE RESTRICTED TO THE WORK SPACES INDICATED AT THE ENTRY AND EXIT POINTS AND PULLBACK MAKE-UP AREA ALONG THE RIGHT-OF-WAY. CLEARING BETWEEN THE ENTRY AND EXIT POINTS IS LIMITED TO THE MINIMUM AMOUNT NECESSARY TO STRING LOCATOR WIRES AND INSTALL PUMPS AND PIPING TO OBTAIN WATER (WHERE APPROVED).
 - WATER SOURCE: DRILL WATER AND PRE-INSTALLATION HYDROSTATIC TEST WATER SHALL BE OBTAINED FROM AN APPROVED SOURCE. THE CONTRACTOR SHALL SCREEN THE INTAKE HOSE TO PREVENT THE ENTRAPMENT OF FISH OR DEBRIS AND IN ACCORDANCE WITH THE CONSTRUCTION MITIGATION AND RECLAMATION PLAN (CMRP) AND PROJECT REQUIREMENTS, THE HOSE SHALL BE KEPT OFF THE BOTTOM OF THE WATER BODY.
 - HYDROSTATIC TEST: PRE-INSTALLATION HYDROSTATIC TEST SHALL BE CONDUCTED IN ACCORDANCE WITH PERMIT REQUIREMENTS. THE CONTRACTOR SHALL DISCHARGE HYDROSTATIC TEST WATER IN ACCORDANCE WITH PROJECT PERMITS. DISCHARGES WILL BE BACK TO THE WATER SOURCE UNLESS OTHERWISE DIRECTED BY THE ENVIRONMENTAL INSPECTOR. DISCHARGES SHALL NOT CAUSE EROSION OR SEDIMENTATION TO REDUCE THE VELOCITY OF THE DISCHARGE. THE CONTRACTOR SHALL UTILIZE AN ENERGY-DISSIPATING DEVICE AS DESCRIBED IN THE CMRP.
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 - EROSION AND SEDIMENT CONTROL: CONTRACTOR SHALL SUPPLY, INSTALL AND MAINTAIN SEDIMENT CONTROL STRUCTURES IN ACCORDANCE WITH CONTRACT DOCUMENTS. CONTRACTOR SHALL INSTALL ADDITIONAL EROSION CONTROL STRUCTURES AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.
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ENVIRONMENTAL MITIGATION/RECLAMATION	TOPSOIL SALVAGE METHOD	
	STREAMS	
WETLANDS		
TIMING CONSTRAINTS		
MILEPOST		
MONITORING		
RECLAMATION		
SPECIAL CONSIDERATIONS		

LEGEND

- POINT OF INTERSECTION (P.I.)
- ENTRY OR EXIT POINT
- ⊕ GEOTECHNICAL BOREHOLE
- ⊙ POWERPOLE
- MLP
- MANLINE PIPE
- PIPELINE
- FOREIGN PIPELINE
- EDGE OF WATER
- PRIVATE ACCESS SHOULDER ROAD
- COUNTY BOUNDARY
- ▽ WATER LEVEL
- ⊕ USACE CONSTRUCTION REFERENCE POINT
- WETLANDS
- PERMANENT EASEMENT
- TEMPORARY EASEMENT
- EXTRA WORKSPACE

REFERENCE DRAWINGS

DRAWING No	TITLE
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NOTES-LEGEND	NOTES-LEGEND.dwg

REVISION

REV No	DATE	DESCRIPTION
0	11.19.08	ISSUED FOR UNITED STATES DEPARTMENT OF STATE (7.31.08 CL)

APPROVAL

PROJECT CODE	DRAFTER	DRAFTING CHECKER	DESIGNER	DESIGN CHECKER	PROJECT MANAGER	COMPANY
11042	UEI	UEI	RB	JW	JH	UEI

PROFESSIONAL ENGINEER/RPT

DATE: _____

PERMIT/ ENG. APPROVAL

DATE: _____

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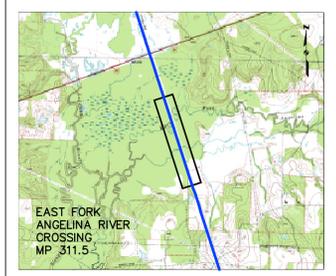
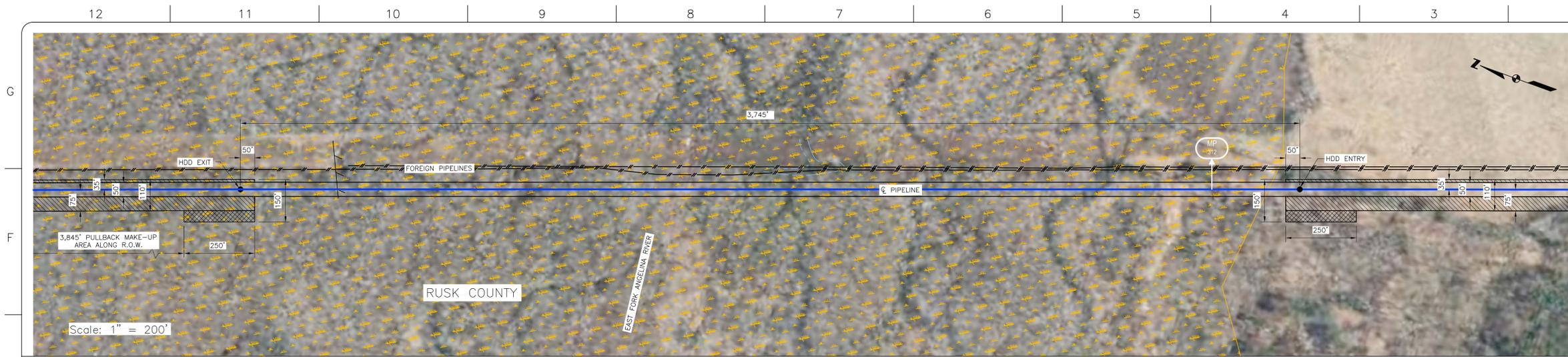
ConocoPhillips

TransCanada In business to deliver

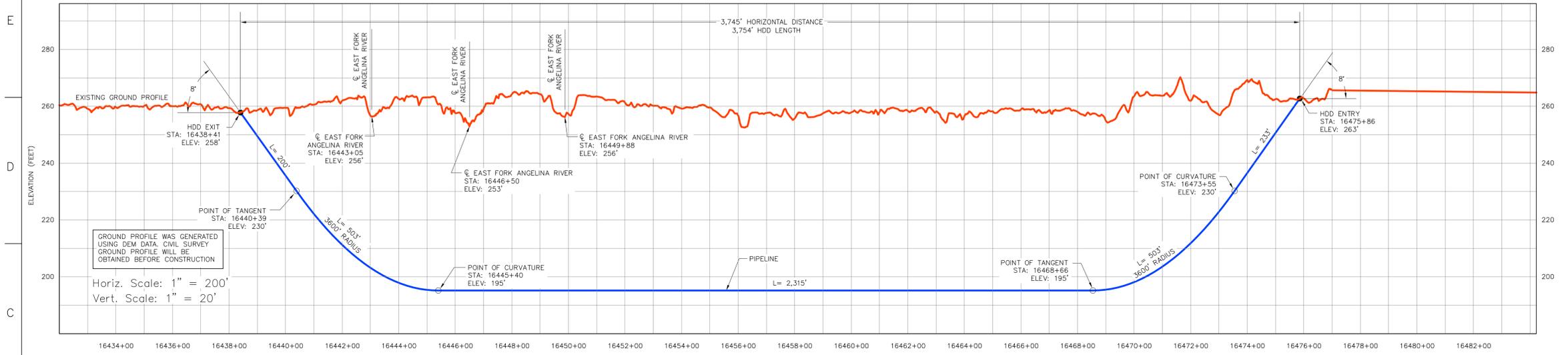
FIA # TCPL CHAINAGE: M.P. 262.2 DISCIPLINE # 03

SABINE RIVER HDD INSTALLATION
KEYSTONE XL PROJECT
UPSHUR & SMITH COUNTIES, TEXAS

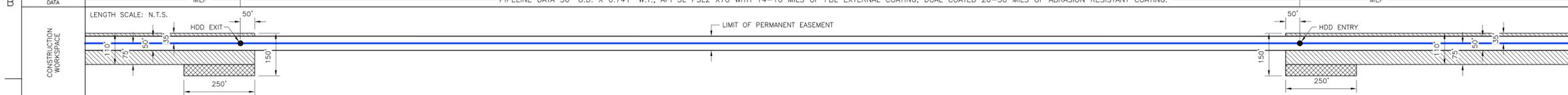
SCALE AS SHOWN DRAWING No XL-03-ML-03-059 REV 0



- INSTALLATION NOTES**
- ACCESS: ALL EQUIPMENT MUST ACCESS THE SITE ALONG THE CONSTRUCTION RIGHT-OF-WAY FROM PUBLIC OR APPROVED PRIVATE ROADS.
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CROSSING INFORMATION (ESTIMATED STATIONING)	PIPELINE DATA
16438+41 HDD EXIT	MLP
16440+39 PT OF TANGENT	PIPELINE DATA 36" O.D. X 0.741" W.T., API 5L PSL2 X70 WITH 14-16 MILS OF FBE EXTERNAL COATING, DUAL COATED 20-30 MILS OF ABRASION RESISTANT COATING.
16445+40 PT OF CURVATURE	MLP
16446+50 EAST FORK ANGELINA RIVER	
16449+55 EAST FORK ANGELINA RIVER	
16468+66 PT OF TANGENT	
16473+55 PT OF CURVATURE	
16475+86 HDD ENTRY	MLP



ENVIRONMENTAL MITIGATION/RECLAMATION

TOPSOIL SALVAGE METHOD	
STREAMS	
WETLANDS	
TIMING CONSTRAINTS	
MILEPOST	
MONITORING	
RECLAMATION	
SPECIAL CONSIDERATIONS	

LEGEND

- POINT OF INTERSECTION (P.I.)
- ENTRY OR EXIT POINT
- ⊕ GEOTECHNICAL BOREHOLE
- ⊙ POWERPOLE
- MLP MAINLINE PIPE
- PIPELINE
- - - FOREIGN PIPELINE
- - - EDGE OF WATER
- - - PRIVATE ACCESS SHOULDER ROAD
- - - COUNTY BOUNDARY
- ▽ WATER LEVEL
- ⊕ USACE CONSTRUCTION REFERENCE POINT
- WETLANDS
- PERMANENT EASEMENT
- TEMPORARY EASEMENT
- EXTRA WORKSPACE

TO BE DETERMINED

REFERENCE DRAWINGS

DRAWING No	TITLE
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TC_UD_BR_U01	TC_UD_BR_U01.dwg
NOTES-LEGEND	NOTES-LEGEND.dwg

REVISION

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0	11.19.08	ISSUED FOR UNITED STATES DEPARTMENT OF STATE (7.31.08 CL)

APPROVAL

PROJECT CODE	DRAFTER	DRAFTING CHECKER	DESIGNER	DESIGN CHECKER	PROJECT MANAGER	COMPANY
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PROFESSIONAL ENGINEER/RPT

DATE: _____

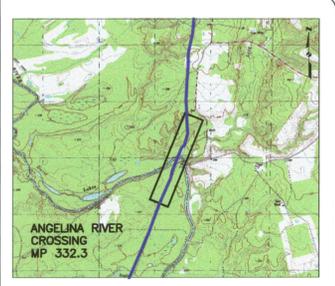
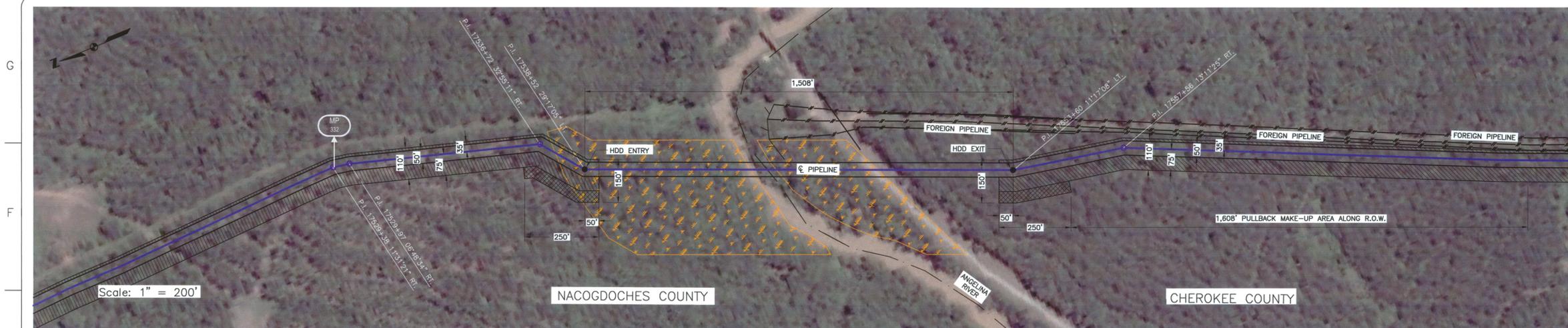
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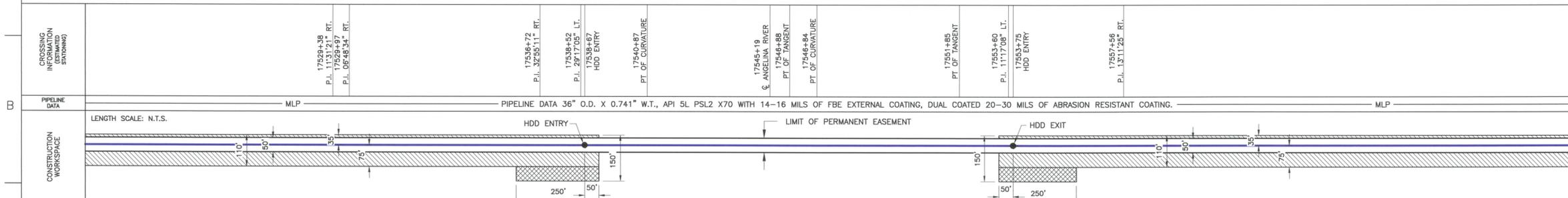
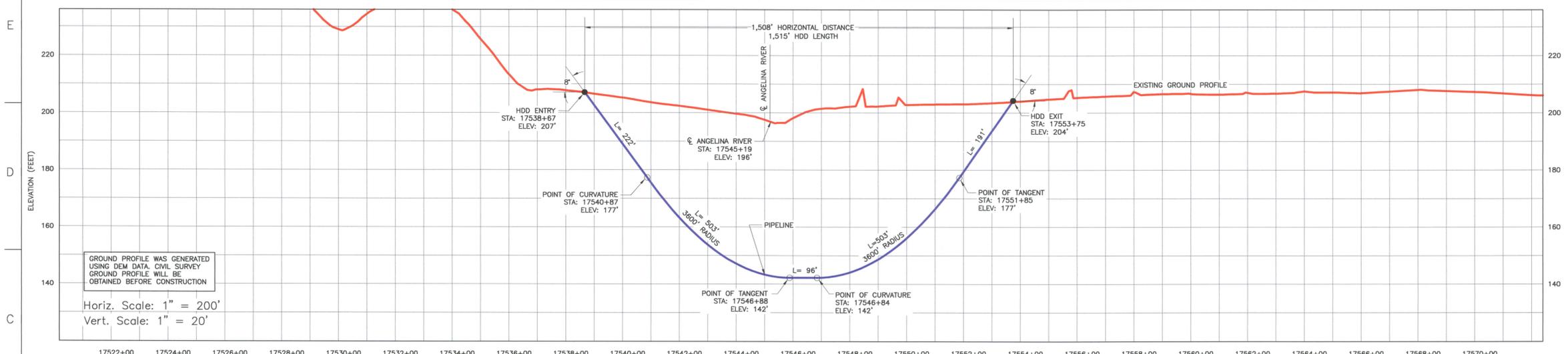
FIA # _____ TCPL _____ CHAINAGE: M.P. 311.5 DISCIPLINE # 03

EAST FORK ANGELINA RIVER HDD INSTALLATION
KEYSTONE XL PROJECT
RUSK COUNTY, TEXAS

SCALE: AS SHOWN DRAWING No: XL-03-ML-03-060 REV 0



- INSTALLATION NOTES**
- ACCESS: ALL EQUIPMENT MUST ACCESS THE SITE ALONG THE CONSTRUCTION RIGHT-OF-WAY FROM PUBLIC OR APPROVED PRIVATE ROADS.
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ENVIRONMENTAL MITIGATION/RECLAMATION	TOPSOIL SALVAGE METHOD	STREAMS	WETLANDS	TIMING CONSTRAINTS	MILEPOST	MONITORING	RECLAMATION	SPECIAL CONSIDERATIONS

- LEGEND**
- POINT OF INTERSECTION (P.I.)
 - ENTRY OR EXIT POINT
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 - EDGE OF WATER
 - PRIVATE ACCESS SHOULDER ROAD
 - COUNTY BOUNDARY
 - WATER LEVEL
 - USACE CONSTRUCTION REFERENCE POINT
 - WETLANDS
 - PERMANENT EASEMENT
 - TEMPORARY EASEMENT
 - EXTRA WORKSPACE

TO BE DETERMINED

REFERENCE DRAWINGS	
DRAWING No	TITLE
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TC_UD_BR_UI	TC_UD_BR_UI.dwg
NOTES-LEGEND	NOTES-LEGEND.dwg

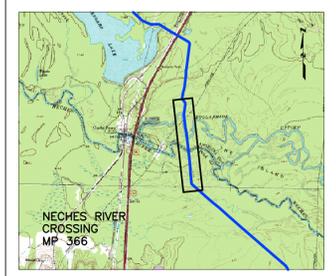
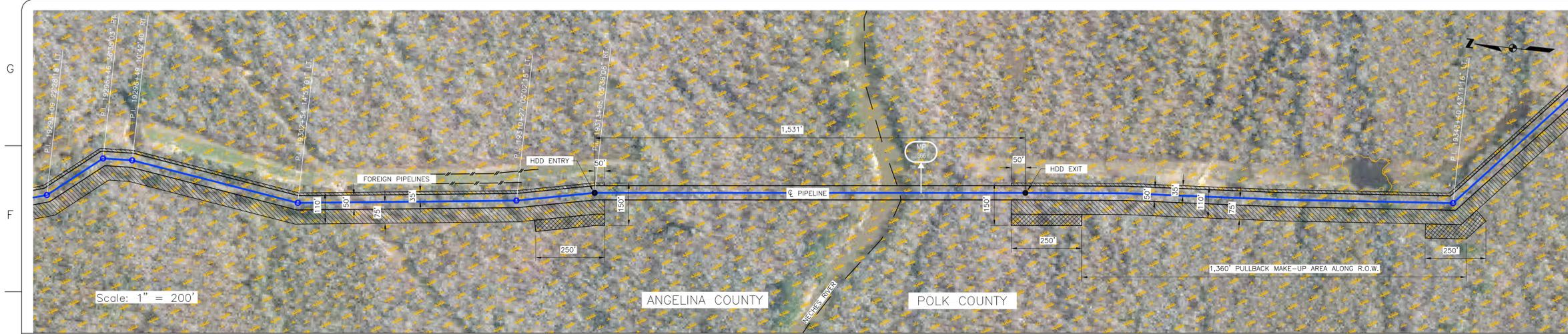
REVISION			APPROVAL						
REV No	DATE	DESCRIPTION	PROJECT CODE	DRAFTER	DRAFTING CHECKER	DESIGNER	DESIGN CHECKER	PROJECT MANAGER	COMPANY
0	11.19.08	ISSUED FOR UNITED STATES DEPARTMENT OF STATE (7.31.08 CL)	11042	UEI	UEI	RB	JW	JH	UEI

PROFESSIONAL ENGINEER/RPT		PERMIT/ ENG. APPROVAL	
REV. NO.	DATE	PERMIT NUMBER:	DATE

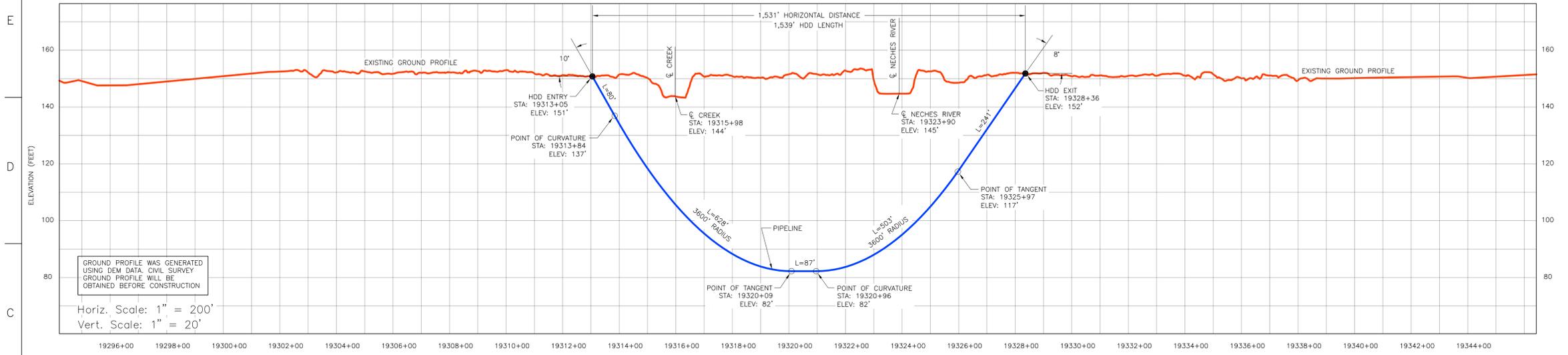
FA # TCPL CHAINAGE: M.P. 332.3 DISCIPLINE # 03

ANGELINA RIVER HDD INSTALLATION
KEYSTONE XL PROJECT
NACOGDOCHES & CHEROKEE COUNTIES, TEXAS

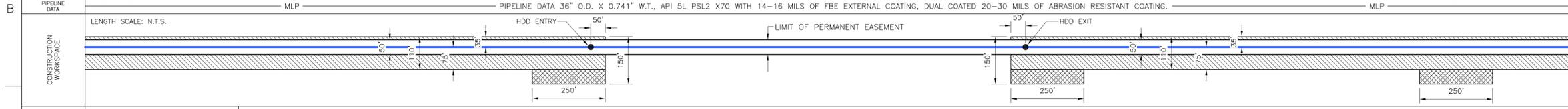
SCALE AS SHOWN DRAWING No XL-03-ML-03-061 REV 0



- INSTALLATION NOTES**
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 - WORK SPACE: WORK SPACE LIMITS ARE DEPICTED. CLEARING WILL BE RESTRICTED TO THE WORK SPACES INDICATED AT THE ENTRY AND EXIT POINTS AND PULLBACK MAKE-UP AREA ALONG THE RIGHT-OF-WAY. CLEARING BETWEEN THE ENTRY AND EXIT POINTS IS LIMITED TO THE MINIMUM AMOUNT NECESSARY TO STRING LOCATION WIRES AND INSTALL PUMPS AND PIPING TO OBTAIN WATER (WHERE APPROVED).
 - WATER SOURCE: DRILL WATER AND PRE-INSTALLATION HYDROSTATIC TEST WATER SHALL BE OBTAINED FROM AN APPROVED SOURCE. THE CONTRACTOR SHALL SCREEN THE INTAKE HOSE TO PREVENT THE ENTRAPMENT OF FISH OR DEBRIS AND IN ACCORDANCE WITH THE CONSTRUCTION MITIGATION AND RECLAMATION PLAN (CMRP) AND PROJECT REQUIREMENTS, THE HOSE SHALL BE KEPT OFF THE BOTTOM OF THE WATER BODY.
 - HYDROSTATIC TEST: PRE-INSTALLATION HYDROSTATIC TEST SHALL BE CONDUCTED IN ACCORDANCE WITH PERMIT REQUIREMENTS. THE CONTRACTOR SHALL DISCHARGE HYDROSTATIC TEST WATER IN ACCORDANCE WITH PROJECT PERMITS. DISCHARGES WILL BE BACK TO THE WATER SOURCE UNLESS OTHERWISE DIRECTED BY THE ENVIRONMENTAL INSPECTOR. DISCHARGES SHALL NOT CAUSE EROSION OR SEDIMENTATION. TO REDUCE THE VELOCITY OF THE DISCHARGE, THE CONTRACTOR SHALL UTILIZE AN ENERGY-DISSIPATING DEVICE AS DESCRIBED IN THE CMRP.
 - SPILL-PREVENTION: ALL PUMPS SHALL BE SET IN SECONDARY CONTAINMENT AND IN ACCORDANCE WITH THE SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN (SPCC). EQUIPMENT AND PUMPS OPERATING WITHIN 100 FEET OF ANY WATER BODY OR WETLAND SHALL BE OPERATED AND REFUELED IN ACCORDANCE WITH THE SPCC PLAN. EQUIPMENT REFUELING AND STORAGE OF HAZARDOUS MATERIALS, FUELS, ETC. SHALL BE CONDUCTED AT LEAST 100 FEET FROM WATER BODIES AND WETLANDS. EACH CONSTRUCTION CREW SHALL HAVE ON HAND SUFFICIENT TOOLS AND MATERIALS TO STOP LEAKS AND SUPPLIES OF ABSORBENT AND BARRIER MATERIALS TO ALLOW RAPID CONTAINMENT AND RECOVERY OF SPILLED MATERIALS.
 - EROSION AND SEDIMENT CONTROL: CONTRACTOR SHALL SUPPLY, INSTALL AND MAINTAIN SEDIMENT CONTROL STRUCTURES IN ACCORDANCE WITH CONTRACT DOCUMENTS. CONTRACTOR SHALL INSTALL ADDITIONAL EROSION CONTROL STRUCTURES AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.
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 - PRIOR TO PIPE PULLBACK, CONTRACTOR'S ACTUAL DRILL PROFILE SHALL BE SUBMITTED TO KEYSTONE FOR APPROVAL.
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 - CLEANUP/STABILIZATION/RESTORATION: ALL DISTURBED AREAS SHALL BE RETURNED TO THE ORIGINAL CONTOURS. DISTURBED AREAS SHALL BE SEEDED AS SPECIFIED IN PROJECT DOCUMENTS.
 - NOMINAL WORKING SPACE DIMENSIONS ARE SHOWN. LARGER AREAS MAY BE NEEDED IN IRREGULAR TERRAIN. UPDATED DIMENSIONS MAY BE PROVIDED AFTER LOCAL TOPOGRAPHICAL SURVEYS ARE PERFORMED.



CROSSING INFORMATION (ESTIMATED STATIONING)	PIPELINE DATA
19295+46 P.I. 36°38'03" RT.	MLP
19296+49 P.I. 10°42'40" RT.	
19302+54 P.I. 14°52'01" LT.	PIPELINE DATA 36" O.D. X 0.741" W.T., API 5L PSL2 X70 WITH 14-16 MILS OF FBE EXTERNAL COATING, DUAL COATED 20-30 MILS OF ABRASION RESISTANT COATING.
19310+27 P.I. 05°02'15" LT.	
19313+05 HDD ENTRY	MLP
19313+84 P.T. OF CURVATURE	
19315+98 & CREEK	MLP
19320+09 P.T. OF TANGENT	
19320+96 P.T. OF CURVATURE	MLP
19323+90 & NECHES RIVER	
19325+97 P.T. OF TANGENT	MLP
19328+36 HDD EXIT	
19343+40 P.I. 43°11'16" LT.	MLP



ENVIRONMENTAL MITIGATION/RECLAMATION
TOPSOIL SALVAGE METHOD
STREAMS
WETLANDS
TIMING CONSTRAINTS
MILEPOST
MONITORING
RECLAMATION
SPECIAL CONSIDERATIONS

- LEGEND**
- POINT OF INTERSECTION (P.I.)
 - ENTRY OR EXIT POINT
 - ⊕ GEOTECHNICAL BOREHOLE
 - ⊙ POWERPOLE
 - MLP
 - MAINLINE PIPE
 - PIPELINE
 - FOREIGN PIPELINE
 - EDGE OF WATER
 - PRIVATE ACCESS SHOULDER ROAD
 - COUNTY BOUNDARY
 - ▽ WATER LEVEL
 - ⊕ USACE CONSTRUCTION REFERENCE POINT
 - WETLANDS
 - PERMANENT EASEMENT
 - TEMPORARY EASEMENT
 - EXTRA WORKSPACE

REFERENCE DRAWINGS

DRAWING No	TITLE
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NOTES-LEGEND	NOTES-LEGEND.dwg

REVISION

REV No	DATE	DESCRIPTION
0	11.19.08	ISSUED FOR UNITED STATES DEPARTMENT OF STATE (7.31.08 CL)

APPROVAL

PROJECT CODE	DRAFTER	DRAFTING CHECKER	DESIGNER	DESIGN CHECKER	PROJECT MANAGER	COMPANY
11042	UEI	UEI	RB	JW	JH	UEI

PROFESSIONAL ENGINEER/RPT

DATE: _____

PERMIT/ ENG. APPROVAL

DATE: _____

UNIVERSAL UNIVERSAL ENSCO, INC.

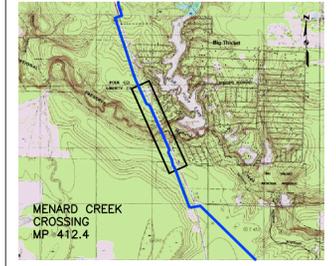
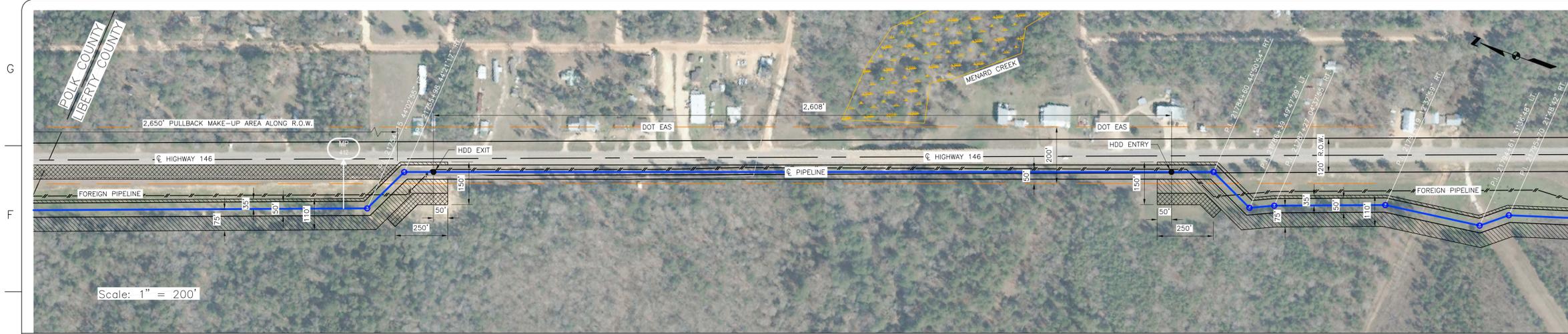
ConocoPhillips

TransCanada In business to deliver

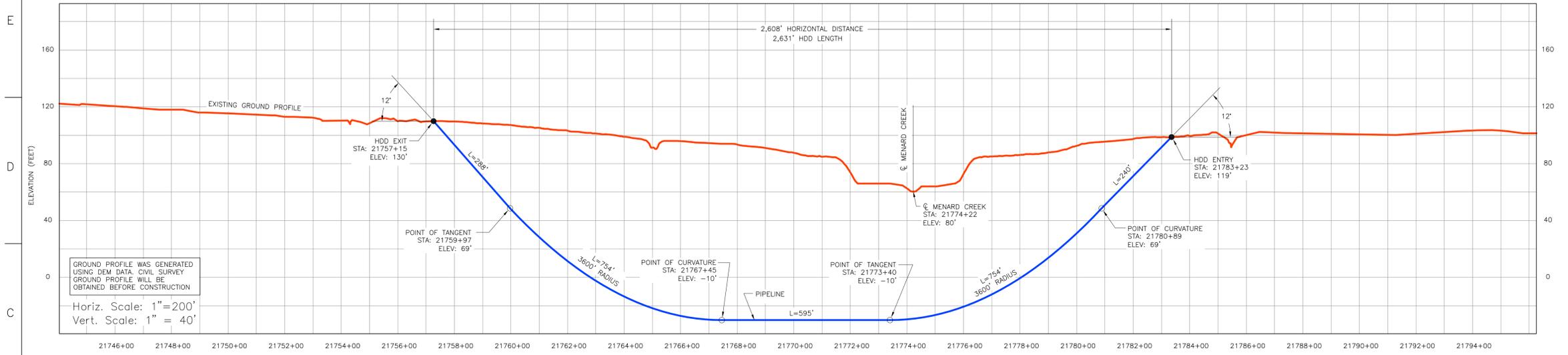
FIA # TCPL CHAINAGE: M.P. 366 DISCIPLINE # 03

NECHES RIVER HDD INSTALLATION
KEYSTONE XL PROJECT
ANGELINA & POLK COUNTIES, TEXAS

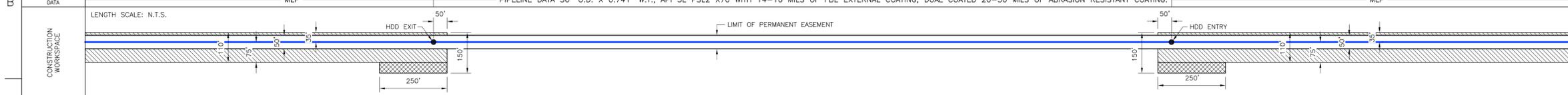
SCALE AS SHOWN DRAWING No XL-03-ML-03-062 REV 0



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CROSSING INFORMATION (ESTIMATED STATIONING)	PIPELINE DATA
21754+15 P.I. 44°02'55" LT. 21755+98 P.I. 44°21'17" RT. 21757+15 HDD EXIT 21759+97 PT. OF TANGENT 21767+45 PT. OF CURVATURE 21773+40 PT. OF TANGENT 21774+22 P.T. OF TANGENT 21780+89 PT. OF CURVATURE 21783+23 HDD ENTRY 21784+60 P.I. 44°50'54" RT. 21786+39 P.I. 49°47'29" LT. 21787+27 P.I. 04°31'58" RT. 21791+19 P.I. 12°32'59" RT. 21794+61 P.I. 31°36'48" LT. 21795+70 P.I. 21°46'42" RT.	MLP PIPELINE DATA 36" O.D. X 0.741" W.T., API 5L PSL2 X70 WITH 14-16 MILS OF FBE EXTERNAL COATING, DUAL COATED 20-30 MILS OF ABRASION RESISTANT COATING. MLP



ENVIRONMENTAL MITIGATION/RECLAMATION
TOPSOIL SALVAGE METHOD
STREAMS
WETLANDS
TIMING CONSTRAINTS
MILEPOST
MONITORING
RECLAMATION
SPECIAL CONSIDERATIONS

LEGEND

- POINT OF INTERSECTION (P.I.)
- ENTRY OR EXIT POINT
- ⊕ GEOTECHNICAL BOREHOLE
- ⊙ POWERPOLE
- MLP MAINLINE PIPE
- PIPELINE
- - - FOREIGN PIPELINE
- - - EDGE OF WATER
- - - PRIVATE ACCESS SHOULDER ROAD
- - - COUNTY BOUNDARY
- ▽ WATER LEVEL
- ⊕ USACE CONSTRUCTION REFERENCE POINT
- WETLANDS
- PERMANENT EASEMENT
- TEMPORARY EASEMENT
- EXTRA WORKSPACE

TO BE DETERMINED

REFERENCE DRAWINGS	
DRAWING No	TITLE
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NOTES-LEGEND	NOTES-LEGEND.dwg

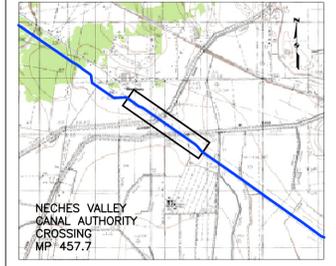
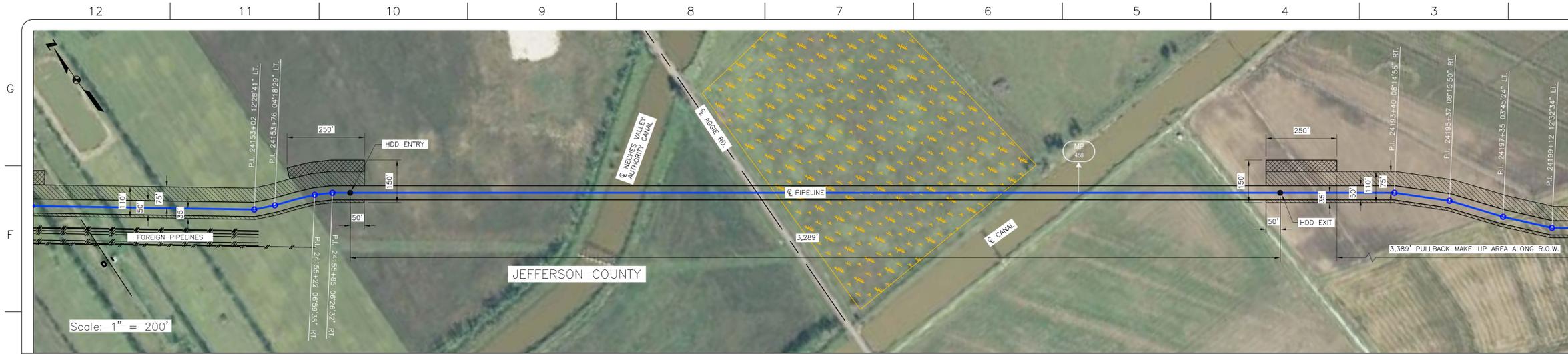
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REV No	DATE	DESCRIPTION	PROJECT CODE	DRAFTER	DRAFTING CHECKER	DESIGNER	DESIGN CHECKER	PROJECT MANAGER	COMPANY
0	11.19.08	ISSUED FOR UNITED STATES DEPARTMENT OF STATE (7.31.08 CL)	11042	UEI	UEI	RB	JW	JH	UEI

PROFESSIONAL ENGINEER/RPT		PERMIT/ ENG. APPROVAL	
REV. NO.	DATE	PERMIT NUMBER:	DATE

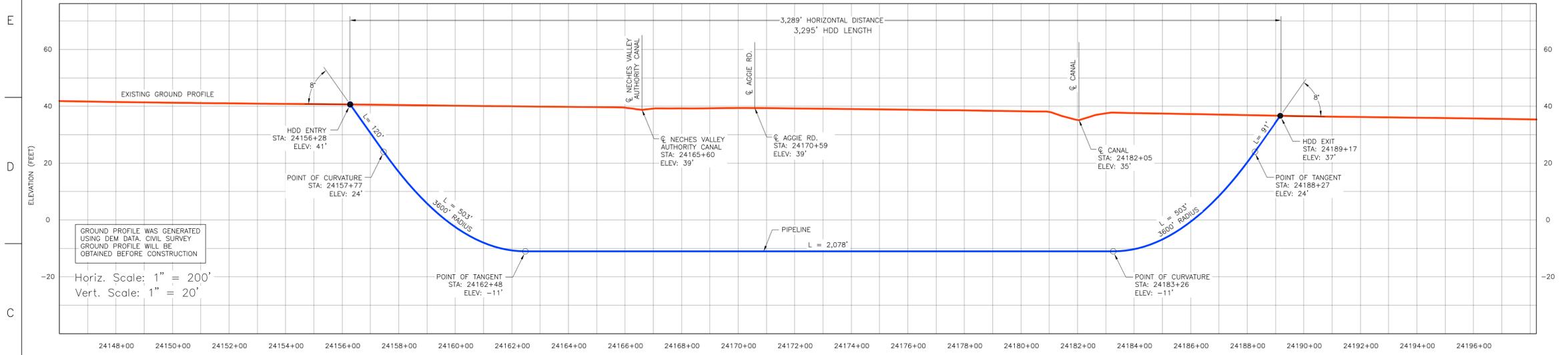
FIA # TCPL CHAINAGE: M.P. 412.4 DISCIPLINE # 03

MENARD CREEK HDD INSTALLATION
KEYSTONE XL PROJECT
LIBERTY COUNTY, TEXAS

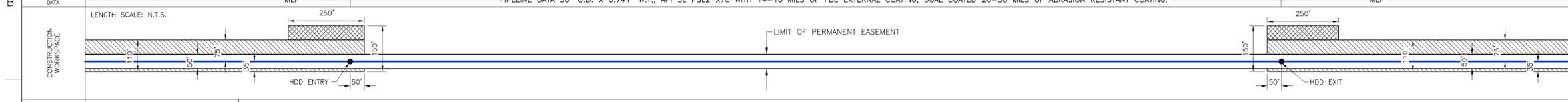
SCALE AS SHOWN DRAWING No XL-03-ML-03-063 REV 0



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CROSSING INFORMATION (ESTIMATED STATIONING)	PIPELINE DATA
24153+02 P.I. 122841° LT.	MLP PIPELINE DATA 36" O.D. X 0.741" W.T., API 5L PSL2 X70 WITH 14-16 MILS OF FBE EXTERNAL COATING, DUAL COATED 20-30 MILS OF ABRASION RESISTANT COATING. MLP
24153+76 P.I. 041829° RT.	
24154+22 P.I. 065935° RT.	
24154+85 P.I. 062632° RT.	
24156+08 HDD ENTRY	
24157+77 PT. OF CURVATURE	
24162+48 PT. OF TANGENT	
24166+60 & NECHES VALLEY AUTHORITY CANAL	
24170+59 & AGGIE ROAD	
24182+05 & CANAL	
24183+26 PT. OF CURVATURE	
24188+27 PT. OF TANGENT	
24189+17 HDD EXIT	
24193+40 P.I. 081455° RT.	
24195+37 P.I. 081850° RT.	
24197+35 P.I. 032452° LT.	
24199+12 P.I. 123234° LT.	



ENVIRONMENTAL MITIGATION/RECLAMATION
TOPSOIL SALVAGE METHOD
STREAMS
WETLANDS
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MILEPOST
MONITORING
RECLAMATION
SPECIAL CONSIDERATIONS

- LEGEND**
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 - - - EDGE OF WATER
 - - - PRIVATE ACCESS SHOULDER ROAD
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 - ▽ WATER LEVEL
 - ⊕ USACE CONSTRUCTION REFERENCE POINT
 - WETLANDS
 - PERMANENT EASEMENT
 - TEMPORARY EASEMENT
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REFERENCE DRAWINGS

DRAWING No	TITLE
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TC_UD_BR_UFI	TC_UD_BR_UFI.dwg
NOTES-LEGEND	NOTES-LEGEND.dwg

REVISION

REV No	DATE	DESCRIPTION
0	11.19.08	ISSUED FOR UNITED STATES DEPARTMENT OF STATE (7.31.08 CL)

APPROVAL

PROJECT CODE	DRAFTER	DRAFTING CHECKER	DESIGNER	DESIGN CHECKER	PROJECT MANAGER	COMPANY
11042	UEI	UEI	RB	JW	JH	UEI

PROFESSIONAL ENGINEER/RPT

PERMIT/ ENG. APPROVAL

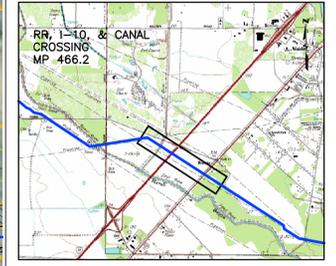
REV. NO.	DATE	PERMIT NUMBER:

UNIVERSAL ENSCO, INC. **ConocoPhillips** **TransCanada**

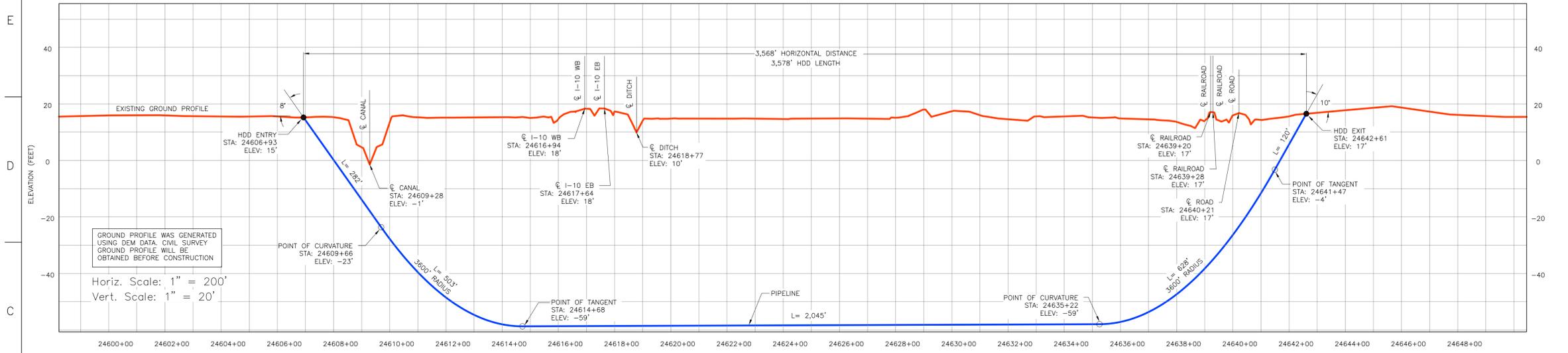
FIA # TCPL CHAINAGE: M.P. 457.7 DISCIPLINE # 03

NECHES VALLEY CANAL AUTHORITY HDD INSTALLATION
KEYSTONE XL PROJECT
JEFFERSON COUNTY, TEXAS

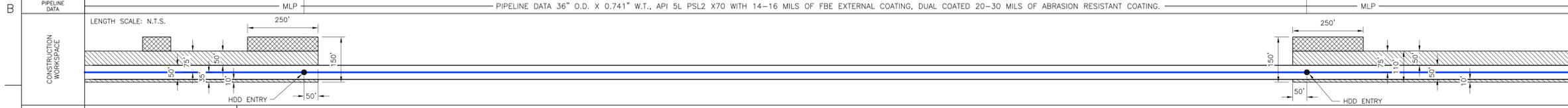
SCALE AS SHOWN DRAWING No XL-03-ML-03-064 REV 0



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 - EROSION AND SEDIMENT CONTROL: CONTRACTOR SHALL SUPPLY, INSTALL AND MAINTAIN SEDIMENT CONTROL STRUCTURES IN ACCORDANCE WITH CONTRACT DOCUMENTS. CONTRACTOR SHALL INSTALL ADDITIONAL EROSION CONTROL STRUCTURES AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.
 - TOPSOIL SHALL BE STRIPPED AS REQUIRED BY PROJECT DOCUMENTS.
 - PRIOR TO PIPE PULLBACK, CONTRACTOR'S ACTUAL DRILL PROFILE SHALL BE SUBMITTED TO KEYSTONE FOR APPROVAL.
 - INSTALLATION: THE PIPE SECTION FOR THE DRILLED CROSSING SHALL BE MADE UP WITHIN THE RIGHT-OF-WAY AT THE DRILL EXIT POINT AS SHOWN. CONTRACTOR SHALL ASSESS THE NEED FOR AND SUPPLY APPROPRIATE BALLAST DURING PULLBACK.
 - MUD DISPOSAL: CONTRACTOR SHALL DISPOSE OF EXCESS DRILLING MUD AS DIRECTED BY THE COMPANY REPRESENTATIVE IN ACCORDANCE WITH PERMIT CONDITIONS. UNDER NO CIRCUMSTANCES SHALL DRILLING FLUID BE DISPOSED OF IN WATER BODIES OR WETLANDS. ANY DRILLING MUD WHICH INCONVENIENTLY EXITS AT POINTS OTHER THAN THE ENTRY AND EXIT POINTS SHALL BE CONTAINED AND COLLECTED TO THE EXTENT PRACTICAL AND DISPOSED OF AS DIRECTED BY THE COMPANY REPRESENTATIVE IN ACCORDANCE WITH PERMIT CONDITIONS.
 - CLEANUP/STABILIZATION/RESTORATION: ALL DISTURBED AREAS SHALL BE RETURNED TO THE ORIGINAL CONTOURS. DISTURBED AREAS SHALL BE SEED AS SPECIFIED IN PROJECT DOCUMENTS.
 - NOMINAL WORKING SPACE DIMENSIONS ARE SHOWN. LARGER AREAS MAY BE NEEDED IN IRREGULAR TERRAIN. UPDATED DIMENSIONS MAY BE PROVIDED AFTER LOCAL TOPOGRAPHICAL SURVEYS ARE PERFORMED.



CROSSING INFORMATION (ESTIMATED STATIONING)	PIPELINE DATA
24600+26 P.I. 40744.45' R.T.	MLP
24609+93 HDD ENTRY	PIPELINE DATA 36" O.D. X 0.741" W.T., API 5L PSL2 X70 WITH 14-16 MILS OF FBE EXTERNAL COATING, DUAL COATED 20-30 MILS OF ABRASION RESISTANT COATING.
24609+28 CANAL	MLP
24614+68 PT OF TANGENT	
24616+94 I-10 WB	
24617+64 I-10 EB	
24618+77 DITCH	
24635+22 PT OF CURVATURE	
24639+20 RAILROAD	
24639+28 RAILROAD	
24640+21 ROAD	
24641+47 PT OF TANGENT	
24642+61 HDD EXIT	



ENVIRONMENTAL MITIGATION/RECLAMATION	LEGEND
TOPSOIL SALVAGE METHOD	○ POINT OF INTERSECTION (P.I.)
STREAMS	● ENTRY OR EXIT POINT
WETLANDS	⊕ GEOTECHNICAL BOREHOLE
TIMING CONSTRAINTS	⊙ POWERPOLE
MILEPOST	— MLP
MONITORING	— PIPELINE
RECLAMATION	— FOREIGN PIPELINE
SPECIAL CONSIDERATIONS	— EDGE OF WATER
	— PRIVATE ACCESS SHOULDER ROAD
	— COUNTY BOUNDARY
	▽ WATER LEVEL
	⊕ USACE CONSTRUCTION REFERENCE POINT
	WETLANDS
	PERMANENT EASEMENT
	TEMPORARY EASEMENT
	EXTRA WORKSPACE

TO BE DETERMINED

REFERENCE DRAWINGS	
DRAWING No	TITLE
11042 HDD XREF_15	11042 HDD XREF_15.dwg
TC_UD_BR_U01	TC_UD_BR_U01.dwg
NOTES-LEGEND	NOTES-LEGEND.dwg

REVISION		APPROVAL							
REV No	DATE	DESCRIPTION	PROJECT CODE	DRAFTER	DRAFTING CHECKER	DESIGNER	DESIGN CHECKER	PROJECT MANAGER	COMPANY
0	11.19.08	ISSUED FOR UNITED STATES DEPARTMENT OF STATE (7.31.08 CL)	11042	UEI	UEI	RB	JW	JH	UEI

PROFESSIONAL ENGINEER/RPT		PERMIT/ ENG. APPROVAL	
REV. NO.	DATE	PERMIT NUMBER:	DATE

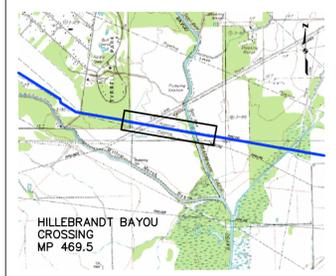
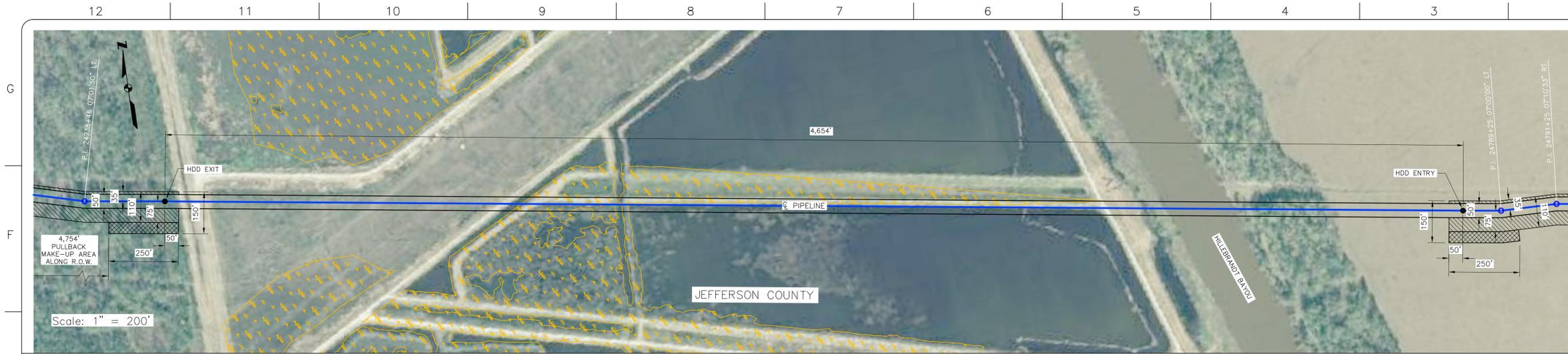




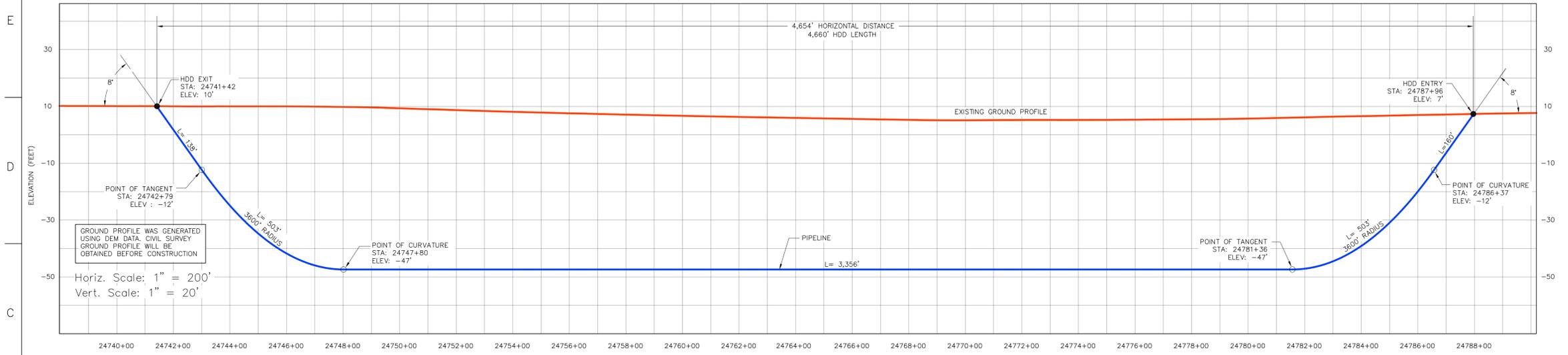
FIA # TCPL CHAINAGE: M.P. 466.2 DISCIPLINE # 03

RR, 1-10, & CANAL HDD INSTALLATION
KEYSTONE XL PROJECT
JEFFERSON COUNTY, TEXAS

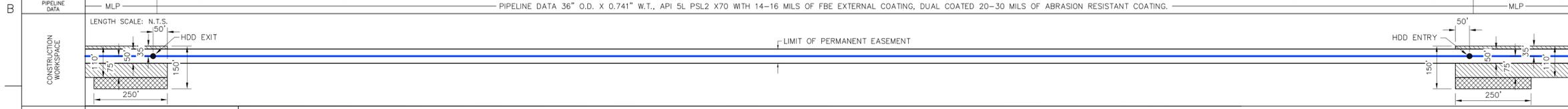
SCALE AS SHOWN DRAWING No XL-03-ML-03-065 REV 0



- INSTALLATION NOTES**
- ACCESS: ALL EQUIPMENT MUST ACCESS THE SITE ALONG THE CONSTRUCTION RIGHT-OF-WAY FROM PUBLIC OR APPROVED PRIVATE ROADS.
 - VEHICLE AND EQUIPMENT ACCESS CROSSING MAY BE INSTALLED IF APPROVED BY THE ENVIRONMENTAL INSPECTOR.
 - WORK SPACE: WORK SPACE LIMITS ARE DEPICTED. CLEARING WILL BE RESTRICTED TO THE WORK SPACES INDICATED AT THE ENTRY AND EXIT POINTS AND PULLBACK MAKE-UP AREA ALONG THE RIGHT-OF-WAY. CLEARING BETWEEN THE ENTRY AND EXIT POINTS IS LIMITED TO THE MINIMUM AMOUNT NECESSARY TO STRING LOCATION WIRES AND INSTALL PUMPS AND PIPING TO OBTAIN WATER (WHERE APPROVED).
 - WATER SOURCE: DRILL WATER AND PRE-INSTALLATION HYDROSTATIC TEST WATER SHALL BE OBTAINED FROM AN APPROVED SOURCE. THE CONTRACTOR SHALL SCREEN THE INTAKE HOSE TO PREVENT THE ENTRAPMENT OF FISH OR DEBRIS AND IN ACCORDANCE WITH THE CONSTRUCTION MITIGATION AND RECLAMATION PLAN (CMRP) AND PROJECT REQUIREMENTS, THE HOSE SHALL BE KEPT OFF THE BOTTOM OF THE WATER BODY.
 - HYDROSTATIC TEST: PRE-INSTALLATION HYDROSTATIC TEST SHALL BE CONDUCTED IN ACCORDANCE WITH PERMIT REQUIREMENTS. THE CONTRACTOR SHALL DISCHARGE HYDROSTATIC TEST WATER IN ACCORDANCE WITH PROJECT PERMITS. DISCHARGES WILL BE BACK TO THE WATER SOURCE UNLESS OTHERWISE DIRECTED BY THE ENVIRONMENTAL INSPECTOR. DISCHARGES SHALL NOT CAUSE EROSION OR SEDIMENTATION TO REDUCE THE VELOCITY OF THE DISCHARGE. THE CONTRACTOR SHALL UTILIZE AN ENERGY-DISSIPATING DEVICE AS DESCRIBED IN THE CMRP.
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 - NORMAL WORKING SPACE DIMENSIONS ARE SHOWN. LARGER AREAS MAY BE NEEDED IN IRREGULAR TERRAIN. UPDATED DIMENSIONS MAY BE PROVIDED AFTER LOCAL TOPOGRAPHICAL SURVEYS ARE PERFORMED.



CROSSING INFORMATION (ESTIMATED STATIONING)	24739+46 P.L. 07'01'50" LT	24741+42 HDD EXIT	24742+79 PT. OF TANGENT	24747+80 PT. OF CURVATURE	24781+36 PT. OF TANGENT	24786+37 PT. OF CURVATURE	24787+96 HDD ENTRY	24789+25 P.L. 07'00'00" LT	24791+25 P.L. 07'10'33" RT
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ENVIRONMENTAL MITIGATION/RECLAMATION	TOPSOIL SALVAGE METHOD	
	STREAMS	
	WETLANDS	
	TIMING CONSTRAINTS	
	MILEPOST	
	MONITORING	
RECLAMATION		
SPECIAL CONSIDERATIONS		

- LEGEND**
- POINT OF INTERSECTION (P.I.)
 - ENTRY OR EXIT POINT
 - ⊕ GEOTECHNICAL BOREHOLE
 - ⊙ POWERPOLE
 - MLP
 - PIPELINE
 - FOREIGN PIPELINE
 - - - EDGE OF WATER
 - - - PRIVATE ACCESS SHOULDER ROAD
 - - - COUNTY BOUNDARY
 - ▽ WATER LEVEL
 - ⊕ USACE CONSTRUCTION REFERENCE POINT
 - WETLANDS
 - PERMANENT EASEMENT
 - TEMPORARY EASEMENT
 - EXTRA WORKSPACE

TO BE DETERMINED

REFERENCE DRAWINGS	
DRAWING No	TITLE
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TC_UD_BR_UEI	TC_UD_BR_UEI.dwg
NOTES-LEGEND	NOTES-LEGEND.dwg

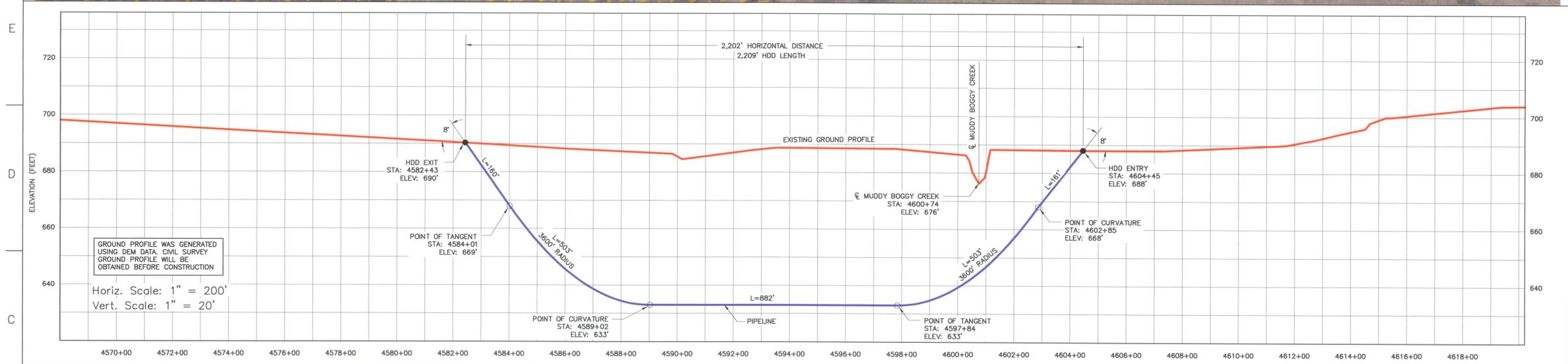
REVISION		APPROVAL							
REV No	DATE	DESCRIPTION	PROJECT CODE	DRAFTER	DRAFTING CHECKER	DESIGNER	DESIGN CHECKER	PROJECT MANAGER	COMPANY
0	11.19.08	ISSUED FOR UNITED STATES DEPARTMENT OF STATE (7.31.08 CL)	11042	UEI	UEI	RB	JW	JH	UEI

PROFESSIONAL ENGINEER/RPT		PERMIT/ ENG. APPROVAL	
REV. NO.	DATE	PERMIT NUMBER:	DATE

FIA # TCPL CHAINAGE: M.P. 469.5 DISCIPLINE # 03

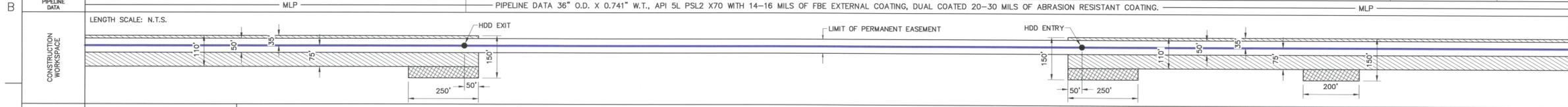
HILLEBRANDT BAYOU HDD INSTALLATION
KEYSTONE XL PROJECT
JEFFERSON COUNTY, TEXAS

SCALE AS SHOWN DRAWING No XL-03-ML-03-066 REV 0



CROSSING INFORMATION (STATIONING)	4582+43 HDD EXIT	4584+01 PT. OF TANGENT	4589+02 PT. OF CURVATURE	4597+84 PT. OF TANGENT	4602+85 PT. OF CURVATURE	4604+45 HDD ENTRY	4615+40 P.I. 14°19'32" RT.	4619+32 P.I. 13°30'44" LT.
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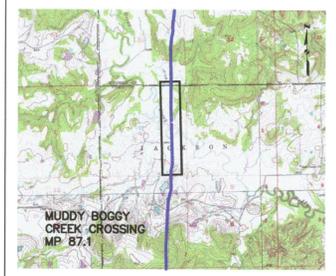
PIPELINE DATA	PIPELINE DATA 36" O.D. X 0.741" W.T., API 5L PSL2 X70 WITH 14-16 MILS OF FBE EXTERNAL COATING, DUAL COATED 20-30 MILS OF ABRASION RESISTANT COATING.							
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ENVIRONMENTAL MITIGATION/RECLAMATION	TOPSOIL SALVAGE METHOD	
	STREAMS	
	WETLANDS	
	TIMING CONSTRAINTS	
	MILEPOST	
	MONITORING	
	RECLAMATION	
SPECIAL CONSIDERATIONS		

REFERENCE DRAWINGS	
DRAWING No	TITLE
11042 HDD XREF_14	11042 HDD XREF_14.dwg
TC_UD_BR_UEI	TC_UD_BR_UEI.dwg
NOTES-LEGEND	NOTES-LEGEND.dwg

REVISION			APPROVAL								
REV No	DATE	DESCRIPTION	PROJECT CODE	DRAFTER	DRAFTING CHECKER	DESIGNER	DESIGN CHECKER	PROJECT MANAGER	COMPANY	PROFESSIONAL ENGINEER/RPT	PERMIT/ ENG. APPROVAL
0	11.19.08	ISSUED FOR UNITED STATES DEPARTMENT OF STATE (7.31.08 CL)	11042	UEI	UEI	RB	JW	JH	UEI		



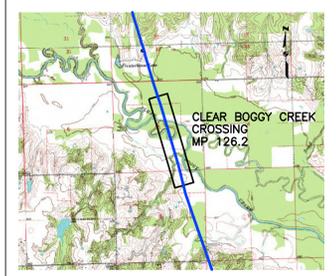
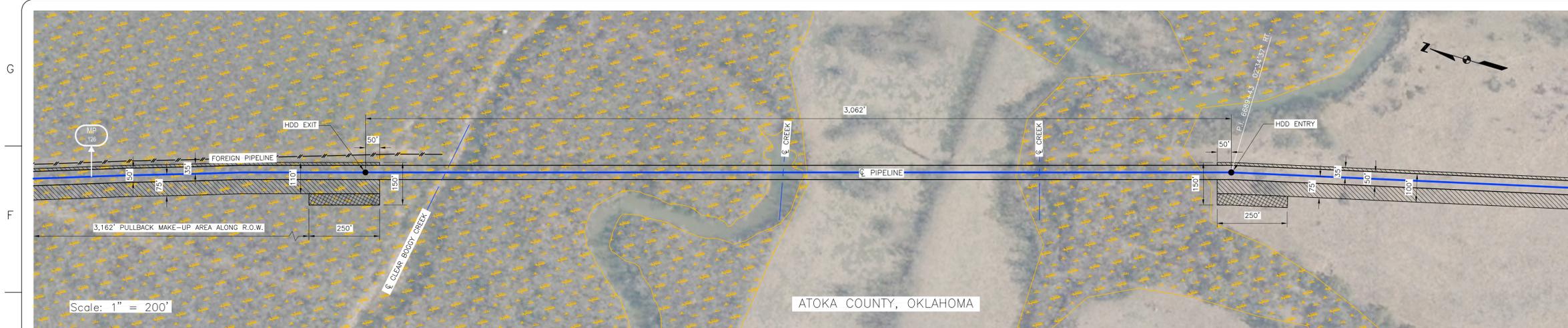
- INSTALLATION NOTES**
- ACCESS: ALL EQUIPMENT MUST ACCESS THE SITE ALONG THE CONSTRUCTION RIGHT-OF-WAY FROM PUBLIC OR APPROVED PRIVATE ROADS.
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LEGEND

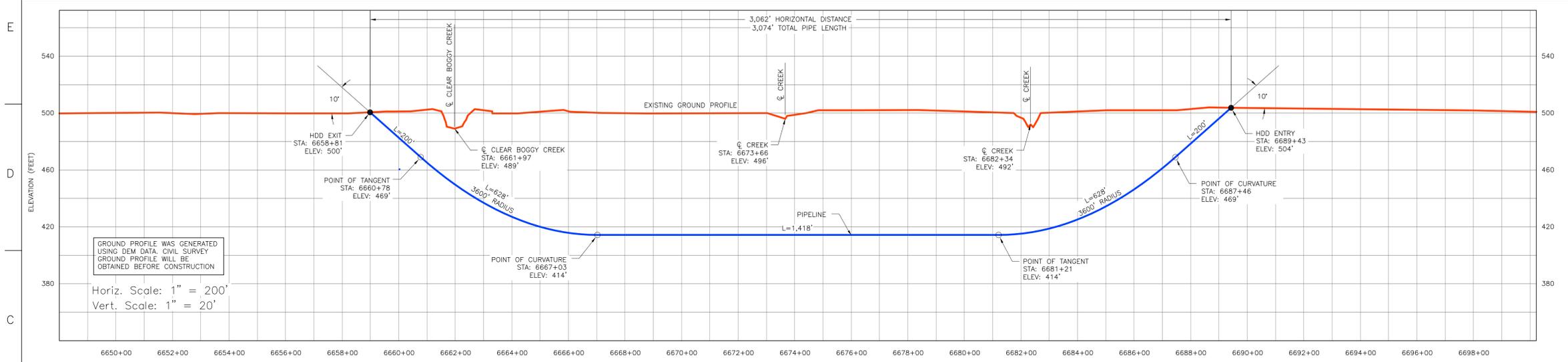
- POINT OF INTERSECTION (P.I.)
- ENTRY OR EXIT POINT
- ⊕ GEOTECHNICAL BOREHOLE
- ⊕ POWERPOLE
- MLP MAINLINE PIPE
- PIPELINE
- FOREIGN PIPELINE
- EDGE OF WATER
- PRIVATE ACCESS SHOULDER ROAD
- COUNTY BOUNDARY
- ▽ WATER LEVEL
- USACE CONSTRUCTION REFERENCE POINT
- WETLANDS
- PERMANENT EASEMENT
- TEMPORARY EASEMENT
- EXTRA WORKSPACE

FIA #	TCPL	CHAINAGE:	M.P. 87.1	DISCIPLINE #	03
MUDDY BOGGY CREEK HDD INSTALLATION KEYSTONE XL PROJECT COAL COUNTY, OKLAHOMA					
SCALE	AS SHOWN	DRAWING No	XL-03-ML-03-067	REV	0

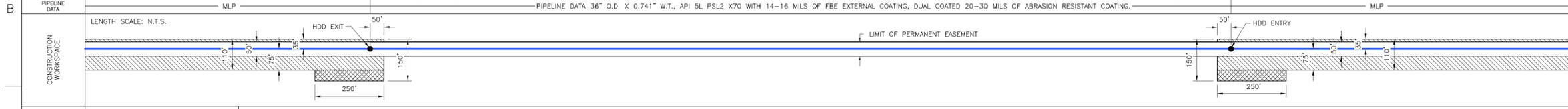
TIME-DESIGNFILE



- INSTALLATION NOTES**
- ACCESS: ALL EQUIPMENT MUST ACCESS THE SITE ALONG THE CONSTRUCTION RIGHT-OF-WAY FROM PUBLIC OR APPROVED PRIVATE ROADS.
 - VEHICLE AND EQUIPMENT ACCESS CROSSING MAY BE INSTALLED IF APPROVED BY THE ENVIRONMENTAL INSPECTOR.
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CROSSING INFORMATION (ESTIMATED STATIONING)	PIPELINE DATA
6658+81 HDD EXIT	MLP
6660+78 PT OF TANGENT	PIPELINE DATA 36" O.D. X 0.741" W.T., API 5L PSL2 X70 WITH 14-16 MILS OF FBE EXTERNAL COATING, DUAL COATED 20-30 MILS OF ABRASION RESISTANT COATING.
6661+97 C CLEAR BOGGY CREEK	MLP
6667+03 PT OF CURVATURE	
6673+66 C CREEK	
6681+21 PT OF TANGENT	
6682+34 C CREEK	
6687+46 PT OF CURVATURE	
6689+43 P.I. 02°24'37" RT HDD ENTRY	



ENVIRONMENTAL MITIGATION/RECLAMATION	CONSTRUCTION WORKSPACE
TOPSOIL SALVAGE METHOD	LENGTH SCALE: N.T.S.
STREAMS	HDD EXIT
WETLANDS	HDD ENTRY
TIMING CONSTRAINTS	LIMIT OF PERMANENT EASEMENT
MILEPOST	
MONITORING	
RECLAMATION	
SPECIAL CONSIDERATIONS	

- LEGEND**
- POINT OF INTERSECTION (P.I.)
 - ENTRY OR EXIT POINT
 - ⊕ GEOTECHNICAL BOREHOLE
 - ⊙ POWERPOLE
 - MLP MAINLINE PIPE
 - PIPELINE
 - - - FOREIGN PIPELINE
 - - - EDGE OF WATER
 - - - PRIVATE ACCESS SHOULDER ROAD
 - - - COUNTY BOUNDARY
 - ▽ WATER LEVEL
 - ⊕ USACE CONSTRUCTION REFERENCE POINT
 - WETLANDS
 - PERMANENT EASEMENT
 - TEMPORARY EASEMENT
 - EXTRA WORKSPACE

REFERENCE DRAWINGS

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TC_UD_BR_UFI	TC_UD_BR_UFI.dwg
NOTES-LEGEND	NOTES-LEGEND.dwg

REVISION

REV No	DATE	DESCRIPTION
0	11.19.08	ISSUED FOR UNITED STATES DEPARTMENT OF STATE (7.31.08 CL)

APPROVAL

PROJECT CODE	DRAFTER	DRAFTING CHECKER	DESIGNER	DESIGN CHECKER	PROJECT MANAGER	COMPANY
11042	UEI	UEI	RB	JW	JH	UEI

PROFESSIONAL ENGINEER/RPT

PERMIT/ ENG. APPROVAL

REV. NO.	DATE	PERMIT NUMBER:

UNIVERSAL UNIVERSAL ENSCO, INC.

ConocoPhillips

TransCanada In business to deliver

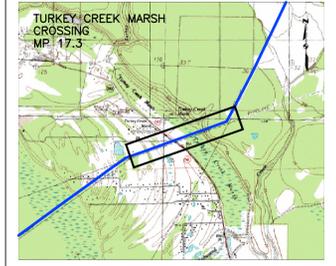
FIA # TCPL CHAINAGE: M.P.126.2 DISCIPLINE # 03

CLEAR BOGGY CREEK HDD INSTALLATION
KEYSTONE XL PROJECT
ATOKA COUNTY, OKLAHOMA

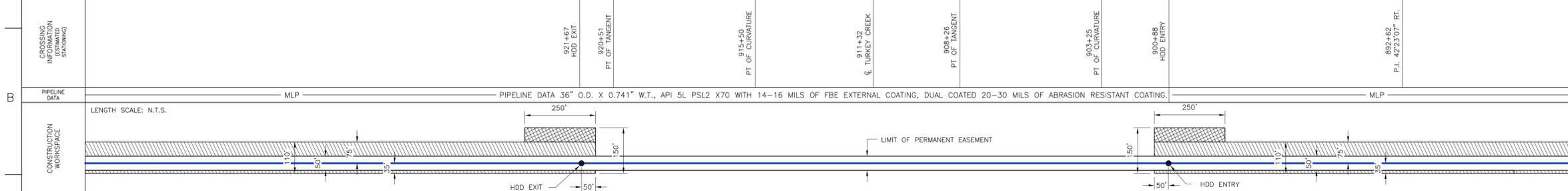
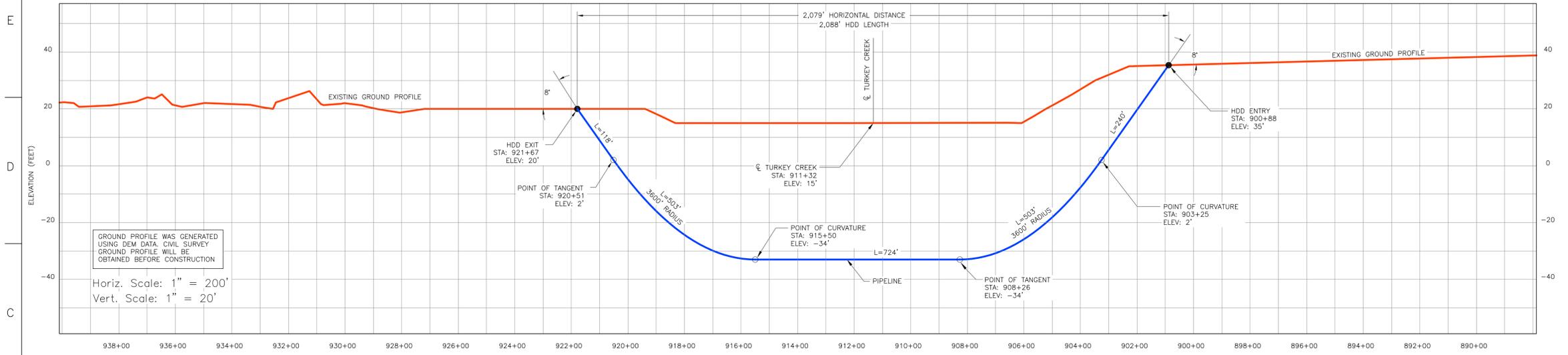
SCALE AS SHOWN DRAWING No XL-03-ML-03-068 REV 0

TO BE DETERMINED

TIME-DESIGNFILE



- INSTALLATION NOTES**
- ACCESS: ALL EQUIPMENT MUST ACCESS THE SITE ALONG THE CONSTRUCTION RIGHT-OF-WAY FROM PUBLIC OR APPROVED PRIVATE ROADS.
 - VEHICLE AND EQUIPMENT ACCESS CROSSING MAY BE INSTALLED IF APPROVED BY THE ENVIRONMENTAL INSPECTOR.
 - WORK SPACE: WORK SPACE LIMITS ARE DEPICTED. CLEARING WILL BE RESTRICTED TO THE WORK SPACES INDICATED AT THE ENTRY AND EXIT POINTS AND PULLBACK MAKE-UP AREA ALONG THE RIGHT-OF-WAY. CLEARING BETWEEN THE ENTRY AND EXIT POINTS IS LIMITED TO THE MINIMUM AMOUNT NECESSARY TO STRING LOCATION WIRES AND INSTALL PUMPS AND PIPING TO OBTAIN WATER (WHERE APPROVED).
 - WATER SOURCE: DRILL WATER AND PRE-INSTALLATION HYDROSTATIC TEST WATER SHALL BE OBTAINED FROM AN APPROVED SOURCE. THE CONTRACTOR SHALL SCREEN THE INTAKE HOSE TO PREVENT THE ENTRAPMENT OF FISH OR DEBRIS AND IN ACCORDANCE WITH THE CONSTRUCTION MITIGATION AND RECLAMATION PLAN (CMRP) AND PROJECT REQUIREMENTS, THE HOSE SHALL BE KEPT OFF THE BOTTOM OF THE WATER BODY.
 - HYDROSTATIC TEST: PRE-INSTALLATION HYDROSTATIC TEST SHALL BE CONDUCTED IN ACCORDANCE WITH PERMIT REQUIREMENTS. THE CONTRACTOR SHALL DISCHARGE HYDROSTATIC TEST WATER IN ACCORDANCE WITH PROJECT PERMITS. DISCHARGES WILL BE BACK TO THE WATER SOURCE UNLESS OTHERWISE DIRECTED BY THE ENVIRONMENTAL INSPECTOR. DISCHARGES SHALL NOT CAUSE EROSION OR SEDIMENTATION TO REDUCE THE VELOCITY OF THE DISCHARGE. THE CONTRACTOR SHALL UTILIZE AN ENERGY-DISSIPATING DEVICE AS DESCRIBED IN THE CMRP.
 - SPILL-PREVENTION: ALL PUMPS SHALL BE SET IN SECONDARY CONTAINMENT AND IN ACCORDANCE WITH THE SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN (SPCC). EQUIPMENT AND PUMPS OPERATING WITHIN 100 FEET OF ANY WATER BODY OR WETLAND SHALL BE OPERATED AND REFUELED IN ACCORDANCE WITH THE SPECIFIC PLAN. EQUIPMENT REFUELING AND STORAGE OF HAZARDOUS MATERIALS, FUELS, ETC. SHALL BE CONDUCTED AT LEAST 100 FEET FROM WATER BODIES AND WETLANDS. EACH CONSTRUCTION CREW SHALL HAVE ON HAND SUFFICIENT TOOLS AND MATERIALS TO STOP LEAKS AND SUPPLIES OF ABSORBENT AND BARRIER MATERIALS TO ALLOW RAPID CONTAINMENT AND RECOVERY OF SPILLED MATERIALS.
 - EROSION AND SEDIMENT CONTROL: CONTRACTOR SHALL SUPPLY, INSTALL AND MAINTAIN SEDIMENT CONTROL STRUCTURES IN ACCORDANCE WITH CONTRACT DOCUMENTS. CONTRACTOR SHALL INSTALL ADDITIONAL EROSION CONTROL STRUCTURES AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.
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 - MUD DISPOSAL: CONTRACTOR SHALL DISPOSE OF EXCESS DRILLING MUD AS DIRECTED BY THE COMPANY REPRESENTATIVE IN ACCORDANCE WITH PERMIT CONDITIONS. UNDER NO CIRCUMSTANCES SHALL DRILLING FLUID BE DISPOSED OF IN WATER BODIES OR WETLANDS. ANY DRILLING MUD WHICH INVENTENTLY EXITS AT POINTS OTHER THAN THE ENTRY AND EXIT POINTS SHALL BE CONTAINED AND COLLECTED TO THE EXTENT PRACTICABLE AND DISPOSED OF AS DIRECTED BY THE COMPANY REPRESENTATIVE IN ACCORDANCE WITH PERMIT CONDITIONS.
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 - NORMAL WORKING SPACE DIMENSIONS ARE SHOWN. LARGER AREAS MAY BE NEEDED IN IRREGULAR TERRAIN. UPDATED DIMENSIONS MAY BE PROVIDED AFTER LOCAL TOPOGRAPHICAL SURVEYS ARE PERFORMED.



ENVIRONMENTAL MITIGATION/RECLAMATION

TOPSOIL SALVAGE METHOD	
STREAMS	
WETLANDS	
TIMING CONSTRAINTS	
MILEPOST	
MONITORING	
RECLAMATION	
SPECIAL CONSIDERATIONS	

- LEGEND**
- POINT OF INTERSECTION (P.I.)
 - ENTRY OR EXIT POINT
 - ⊕ GEOTECHNICAL BOREHOLE
 - ⊙ POWERPOLE
 - MLP MAINLINE PIPE
 - PIPELINE
 - FOREIGN PIPELINE
 - EDGE OF WATER
 - PRIVATE ACCESS SHOULDER ROAD
 - COUNTY BOUNDARY
 - ▽ WATER LEVEL
 - USACE CONSTRUCTION REFERENCE POINT
 - WETLANDS
 - PERMANENT EASEMENT
 - TEMPORARY EASEMENT
 - EXTRA WORKSPACE

TO BE DETERMINED

REFERENCE DRAWINGS

DRAWING No	TITLE
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TC_UD_BR_UFI	TC_UD_BR_UFI.dwg
NOTES-LEGEND	NOTES-LEGEND.dwg

REVISION

REV No	DATE	DESCRIPTION
0	11.19.08	ISSUED FOR UNITED STATES DEPARTMENT OF STATE (7.31.08 CL)

APPROVAL

PROJECT CODE	DRAFTER	DRAFTING CHECKER	DESIGNER	DESIGN CHECKER	PROJECT MANAGER	COMPANY
11042	UEI	UEI	RB	JW	JH	UEI

PROFESSIONAL ENGINEER/RPT

REV. NO.	DATE	PERMIT NUMBER:

UNIVERSAL
UNIVERSAL ENSCO, INC.

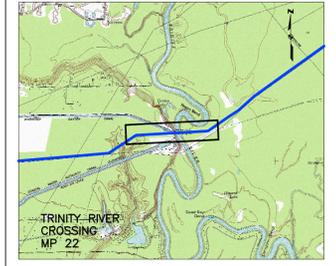
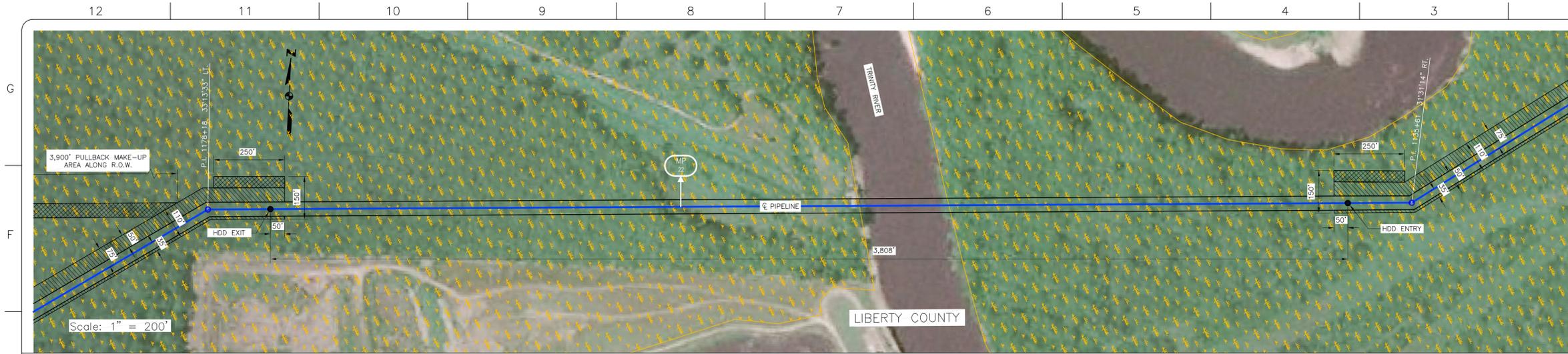
ConocoPhillips

TransCanada
In business to deliver

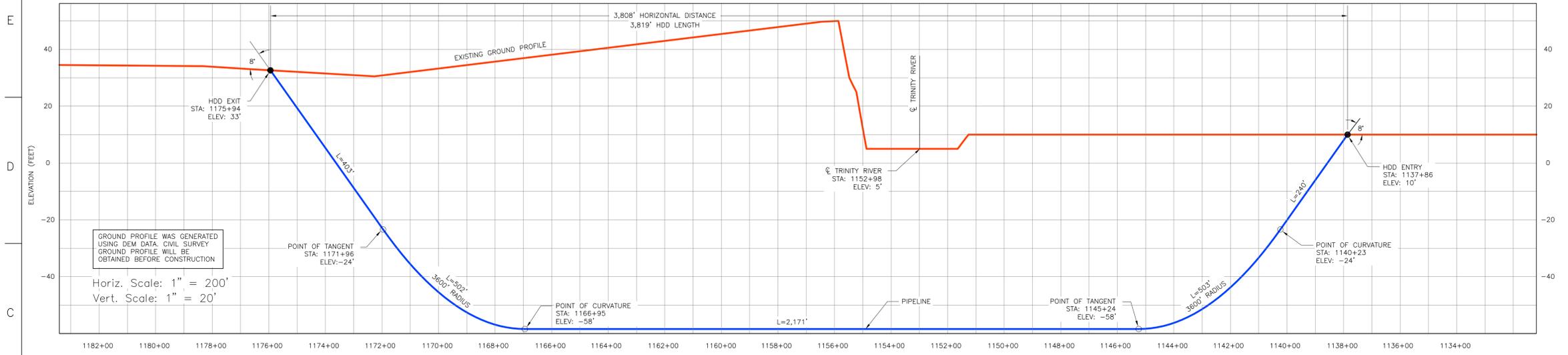
FIA # TCPL CHAINAGE: M.P. 17.3 DISCIPLINE # 03

TURKEY CREEK MARSH HDD INSTALLATION
KEYSTONE XL PROJECT
LIBERTY COUNTY, TEXAS

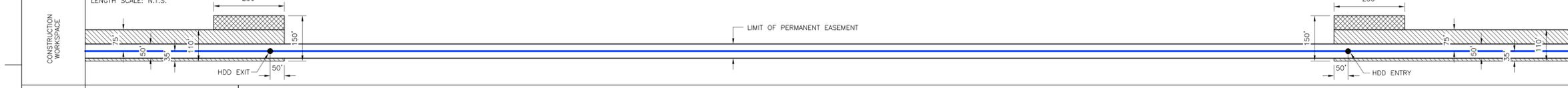
SCALE AS SHOWN DRAWING No XL-03-LA-03-001 REV 0



- INSTALLATION NOTES**
- ACCESS: ALL EQUIPMENT MUST ACCESS THE SITE ALONG THE CONSTRUCTION RIGHT-OF-WAY FROM PUBLIC OR APPROVED PRIVATE ROADS.
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CROSSING INFORMATION (ESTIMATED STATIONING)	1178+18 P.L. 371333' LT	1175+94 HDD EXIT	1171+96 PT OF TANGENT	1166+95 PT OF CURVATURE	1152+98 TRINITY RIVER	1145+24 PT OF TANGENT	1140+23 PT OF CURVATURE	1137+86 HDD ENTRY	1135+61 P.L. 31331'14" RT
PIPELINE DATA	MLP — PIPELINE DATA 36" O.D. X 0.741" W.T., API 5L PSL2 X70 WITH 14-16 MILS OF FBE EXTERNAL COATING, DUAL COATED 20-30 MILS OF ABRASION RESISTANT COATING. — MLP								



ENVIRONMENTAL MITIGATION/RECLAMATION	TOPSOIL SALVAGE METHOD	
	STREAMS	
	WETLANDS	
	TIMING CONSTRAINTS	
	MILEPOST	
	MONITORING	
RECLAMATION		
SPECIAL CONSIDERATIONS		

- LEGEND**
- POINT OF INTERSECTION (P.I.)
 - ENTRY OR EXIT POINT
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 - ⊙ POWERPOLE
 - MLP MAINLINE PIPE
 - PIPELINE
 - - - FOREIGN PIPELINE
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 - - - PRIVATE ACCESS SHOULDER ROAD
 - - - COUNTY BOUNDARY
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 - WETLANDS
 - PERMANENT EASEMENT
 - TEMPORARY EASEMENT
 - EXTRA WORKSPACE

REFERENCE DRAWINGS

DRAWING No	TITLE
11042 HDD_XREF_15	11042 HDD_XREF_15.dwg
TC_UD_BR_UEI	TC_UD_BR_UEI.dwg
NOTES-LEGEND	NOTES-LEGEND.dwg

REVISION

REV No	DATE	DESCRIPTION
0	11.19.08	ISSUED FOR UNITED STATES DEPARTMENT OF STATE (7.31.08 CL)

APPROVAL

PROJECT CODE	DRAFTER	DRAFTING CHECKER	DESIGNER	DESIGN CHECKER	PROJECT MANAGER	COMPANY
11042	UEI	UEI	RB	JW	JH	UEI

PROFESSIONAL ENGINEER/RPT

DATE: _____

PERMIT/ ENG. APPROVAL

DATE: _____

UNIVERSAL UNIVERSAL ENSCO, INC.

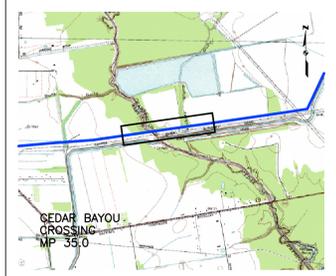
ConocoPhillips

TransCanada In business to deliver

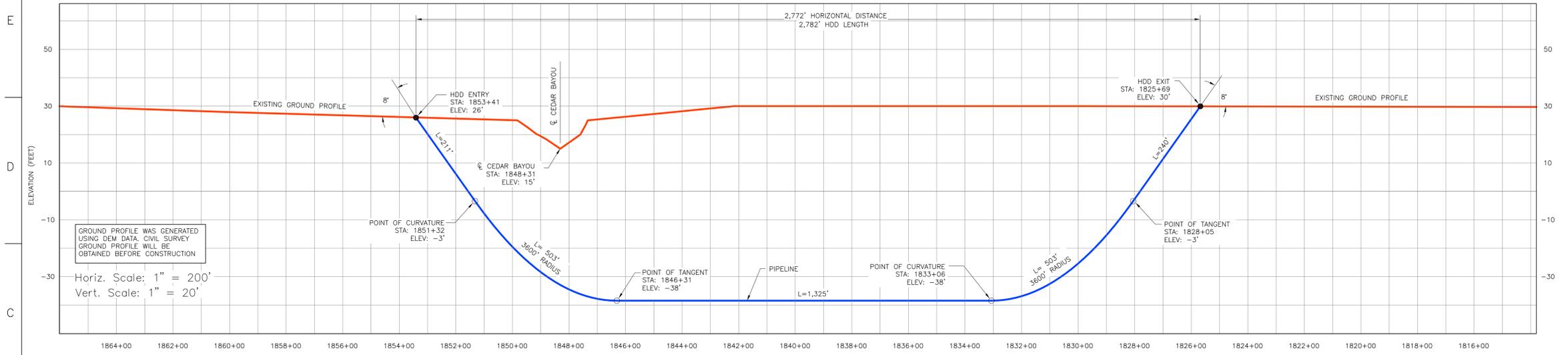
FIA # TCPL CHAINAGE: M.P. 22 DISCIPLINE # 03

TRINITY RIVER HDD INSTALLATION
KEYSTONE XL PROJECT
LIBERTY COUNTY, TEXAS

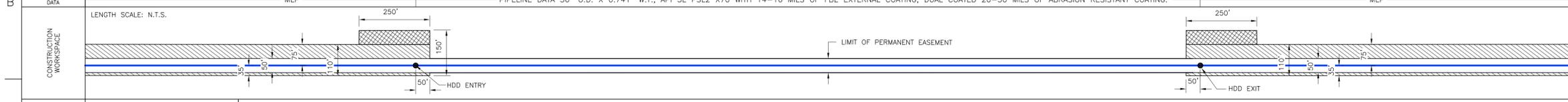
SCALE AS SHOWN DRAWING No XL-03-LA-03-002 REV 0



- INSTALLATION NOTES**
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CROSSING INFORMATION (ESTIMATED STATIONING)	1853+41 HDD ENTRY	1851+32 PT OF CURVATURE	1848+31 CEDAR BAYOU	1846+31 PT OF TANGENT	1833+06 PT OF CURVATURE	1828+05 PT OF TANGENT	1825+69 HDD EXIT PI 07/08/18' RT
PIPELINE DATA	MLP ——— PIPELINE DATA 36" O.D. X 0.741" W.T., API 5L PSL2 X70 WITH 14-16 MILS OF FBE EXTERNAL COATING, DUAL COATED 20-30 MILS OF ABRASION RESISTANT COATING. ——— MLP						



ENVIRONMENTAL MITIGATION/RECLAMATION	TOPSOIL SALVAGE METHOD	
	STREAMS	
	WETLANDS	
	TIMING CONSTRAINTS	
	MILEPOST	
	MONITORING	
	RECLAMATION	
SPECIAL CONSIDERATIONS		

- LEGEND**
- POINT OF INTERSECTION (P.I.)
 - ENTRY OR EXIT POINT
 - ⊕ GEOTECHNICAL BOREHOLE
 - ⊙ POWERPOLE
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 - - - PRIVATE ACCESS SHOULDER ROAD
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 - ▽ WATER LEVEL
 - ⊕ USACE CONSTRUCTION REFERENCE POINT
 - WETLANDS
 - PERMANENT EASEMENT
 - TEMPORARY EASEMENT
 - EXTRA WORKSPACE

TO BE DETERMINED

REFERENCE DRAWINGS

DRAWING No	TITLE
11042 HDD XREF_15	11042 HDD XREF_15.dwg
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NOTES-LEGEND	NOTES-LEGEND.dwg
CEDARBAYOU	CEDARBAYOU.png

REVISION

REV No	DATE	DESCRIPTION
0	11.19.08	ISSUED FOR UNITED STATES DEPARTMENT OF STATE (7.31.08 CL)

APPROVAL

PROJECT CODE	DRAFTER	DRAFTING CHECKER	DESIGNER	DESIGN CHECKER	PROJECT MANAGER	COMPANY
11042	UEI	UEI	RB	JW	JH	UEI

PROFESSIONAL ENGINEER/RPT

DATE: _____

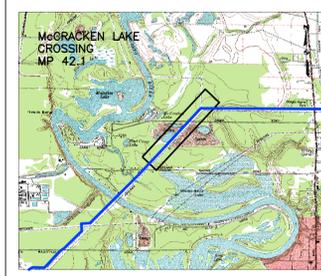
PERMIT/ ENG. APPROVAL

DATE: _____

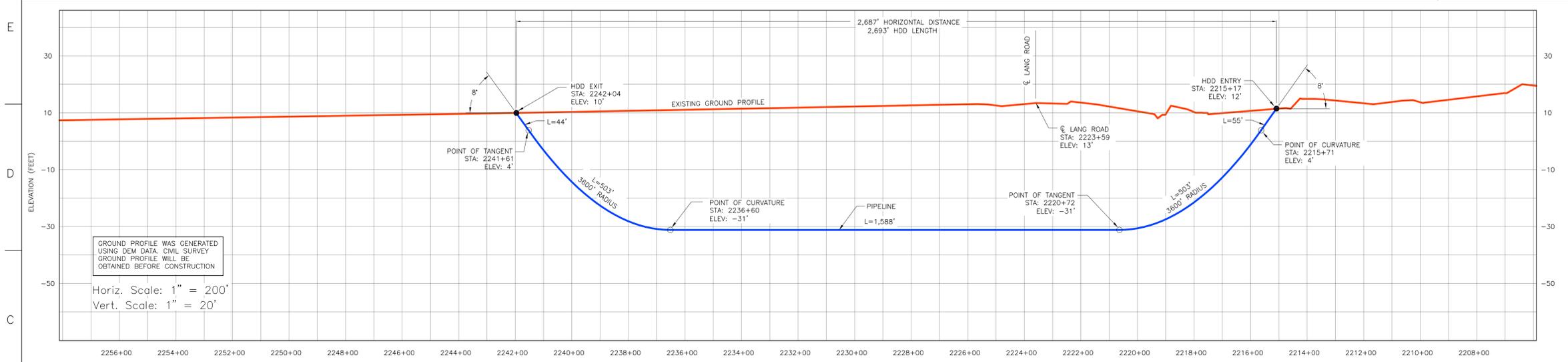
FIA # TCPL CHAINAGE: M.P. 35.0 DISCIPLINE # 03

CEDAR BAYOU HDD INSTALLATION
KEYSTONE XL PROJECT
HARRIS COUNTY, TX

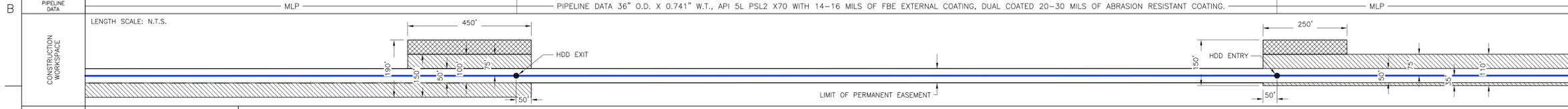
SCALE AS SHOWN DRAWING No XL-03-LA-03-003 REV 0



- INSTALLATION NOTES**
- ACCESS: ALL EQUIPMENT MUST ACCESS THE SITE ALONG THE CONSTRUCTION RIGHT-OF-WAY FROM PUBLIC OR APPROVED PRIVATE ROADS.
 - VEHICLE AND EQUIPMENT ACCESS CROSSING MAY BE INSTALLED IF APPROVED BY THE ENVIRONMENTAL INSPECTOR.
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CROSSING INFORMATION (STATIONING)	2242+04 HDD EXIT	2241+61 PT OF TANGENT	2236+60 PT OF CURVATURE	2223+59 LANG ROAD	2220+72 PT OF TANGENT	2215+71 PT OF CURVATURE	2215+17 HDD ENTRY	47+08.11 L.T. P.I.
	PIPELINE DATA 36" O.D. X 0.741" W.T., API 5L PSL2 X70 WITH 14-16 MILS OF FBE EXTERNAL COATING, DUAL COATED 20-30 MILS OF ABRASION RESISTANT COATING.							



ENVIRONMENTAL MITIGATION/RECLAMATION	TOPSOIL SALVAGE METHOD	
	STREAMS	
	WETLANDS	
	TIMING CONSTRAINTS	
	MILEPOST	
	MONITORING	
	RECLAMATION	
SPECIAL CONSIDERATIONS		

- LEGEND**
- POINT OF INTERSECTION (P.I.)
 - ENTRY OR EXIT POINT
 - ⊕ GEOTECHNICAL BOREHOLE
 - ⊙ POWERPOLE
 - MLP MAINLINE PIPE
 - PIPELINE
 - - - FOREIGN PIPELINE
 - - - EDGE OF WATER
 - - - PRIVATE ACCESS SHOULDER ROAD
 - - - COUNTY BOUNDARY
 - ▽ WATER LEVEL
 - ⊕ USACE CONSTRUCTION REFERENCE POINT
 - WETLANDS
 - PERMANENT EASEMENT
 - TEMPORARY EASEMENT
 - EXTRA WORKSPACE

TO BE DETERMINED

REFERENCE DRAWINGS

DRAWING No	TITLE
11042 HDD_XREF_15	11042 HDD_XREF_15.dwg
TC_UD_BR_UFI	TC_UD_BR_UFI.dwg
NOTES-LEGEND	NOTES-LEGEND.dwg
MCCRACKENLAKE	MCCRACKENLAKE.dwg

REVISION

REV No	DATE	DESCRIPTION
0	11.19.08	ISSUED FOR UNITED STATES DEPARTMENT OF STATE (7.31.08 CL)

APPROVAL

PROJECT CODE	DRAFTER	DRAFTING CHECKER	DESIGNER	DESIGN CHECKER	PROJECT MANAGER	COMPANY
11042	UEI	UEI	RB	JW	JH	UEI

PROFESSIONAL ENGINEER/RPT

DATE: _____

PERMIT/ ENG. APPROVAL

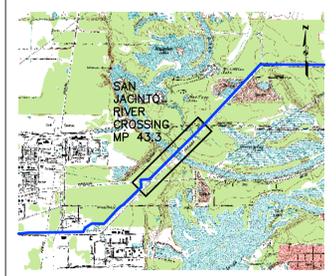
DATE: _____

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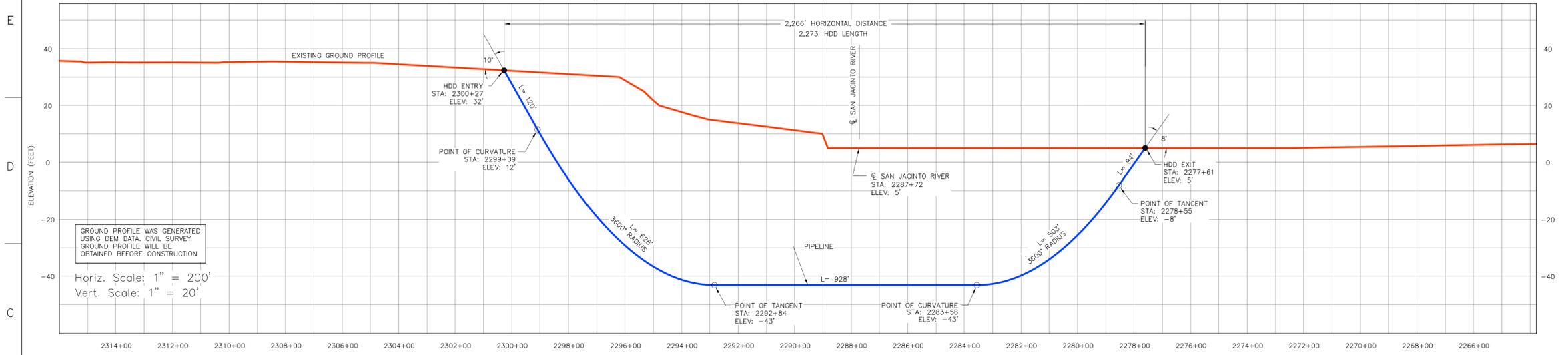
FIA # TCPL CHAINAGE: M.P. 42.1 DISCIPLINE # 03

McCRACKEN LAKE HDD INSTALLATION
KEYSTONE XL PROJECT
HARRIS COUNTY, TEXAS

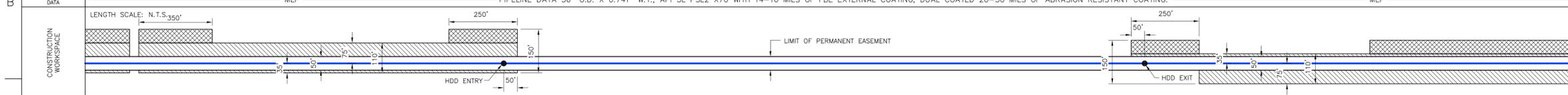
SCALE AS SHOWN DRAWING No XL-03-LA-03-004 REV 0



- INSTALLATION NOTES**
- ACCESS: ALL EQUIPMENT MUST ACCESS THE SITE ALONG THE CONSTRUCTION RIGHT-OF-WAY FROM PUBLIC OR APPROVED PRIVATE ROADS.
 - VEHICLE AND EQUIPMENT ACCESS CROSSING MAY BE INSTALLED IF APPROVED BY THE ENVIRONMENTAL INSPECTOR.
 - WORK SPACE: WORK SPACE LIMITS ARE DEPICTED. CLEARING WILL BE RESTRICTED TO THE WORK SPACES INDICATED AT THE ENTRY AND EXIT POINTS AND PULLBACK MAKE-UP AREA ALONG THE RIGHT-OF-WAY. CLEARING BETWEEN THE ENTRY AND EXIT POINTS IS LIMITED TO THE MINIMUM AMOUNT NECESSARY TO STRING LOCATION WIRES AND INSTALL PUMPS AND PIPING TO OBTAIN WATER (WHERE APPROVED).
 - WATER SOURCE: DRILL WATER AND PRE-INSTALLATION HYDROSTATIC TEST WATER SHALL BE OBTAINED FROM AN APPROVED SOURCE. THE CONTRACTOR SHALL SCREEN THE INTAKE HOSE TO PREVENT THE ENTRAPMENT OF FISH OR DEBRIS AND IN ACCORDANCE WITH THE CONSTRUCTION MITIGATION AND RECLAMATION PLAN (CMRP) AND PROJECT REQUIREMENTS, THE HOSE SHALL BE KEPT OFF THE BOTTOM OF THE WATER BODY.
 - HYDROSTATIC TEST: PRE-INSTALLATION HYDROSTATIC TEST SHALL BE CONDUCTED IN ACCORDANCE WITH PERMIT REQUIREMENTS. THE CONTRACTOR SHALL DISCHARGE HYDROSTATIC TEST WATER IN ACCORDANCE WITH PROJECT PERMITS. DISCHARGES WILL BE BACK TO THE WATER SOURCE UNLESS OTHERWISE DIRECTED BY THE ENVIRONMENTAL INSPECTOR. DISCHARGES SHALL NOT CAUSE EROSION OR SEDIMENTATION TO REDUCE THE VELOCITY OF THE DISCHARGE. THE CONTRACTOR SHALL UTILIZE AN ENERGY-DISSIPATING DEVICE AS DESCRIBED IN THE CMRP.
 - SPILL-PREVENTION: ALL PUMPS SHALL BE SET IN SECONDARY CONTAINMENT AND IN ACCORDANCE WITH THE SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN (SPCC). EQUIPMENT AND PUMPS OPERATING WITHIN 100 FEET OF ANY WATER BODY OR WETLAND SHALL BE OPERATED AND REFUELED IN ACCORDANCE WITH THE SPECIFIC PLAN. EQUIPMENT REFUELING AND STORAGE OF HAZARDOUS MATERIALS, FUELS, ETC. SHALL BE CONDUCTED AT LEAST 100 FEET FROM WATER BODIES AND WETLANDS. EACH CONSTRUCTION CREW SHALL HAVE ON HAND SUFFICIENT TOOLS AND MATERIALS TO STOP LEAKS AND SUPPLIES OF ABSORBENT AND BARRIER MATERIALS TO ALLOW RAPID CONTAINMENT AND RECOVERY OF SPILLED MATERIALS.
 - EROSION AND SEDIMENT CONTROL: CONTRACTOR SHALL SUPPLY, INSTALL AND MAINTAIN SEDIMENT CONTROL STRUCTURES IN ACCORDANCE WITH CONTRACT DOCUMENTS. CONTRACTOR SHALL INSTALL ADDITIONAL EROSION CONTROL STRUCTURES AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.
 - TOPSOIL SHALL BE STRIPPED AS REQUIRED BY PROJECT DOCUMENTS.
 - PRIOR TO PIPE PULLBACK, CONTRACTOR'S ACTUAL DRILL PROFILE SHALL BE SUBMITTED TO KEYSTONE FOR APPROVAL.
 - INSTALLATION: THE PIPE SECTION FOR THE DRILLED CROSSING SHALL BE MADE UP WITHIN THE RIGHT-OF-WAY AT THE DRILL EXIT POINT AS SHOWN. CONTRACTOR SHALL ASSESS THE NEED FOR AND SUPPLY APPROPRIATE BALLAST DURING PULLBACK.
 - MUD DISPOSAL: CONTRACTOR SHALL DISPOSE OF EXCESS DRILLING MUD AS DIRECTED BY THE COMPANY REPRESENTATIVE IN ACCORDANCE WITH PERMIT CONDITIONS. UNDER NO CIRCUMSTANCES SHALL DRILLING FLUID BE DISPOSED OF IN WATER BODIES OR WETLANDS. ANY DRILLING MUD WHICH INADVERTENTLY EXITS AT POINTS OTHER THAN THE ENTRY AND EXIT POINTS SHALL BE CONTAINED AND COLLECTED TO THE EXTENT PRACTICAL AND DISPOSED OF AS DIRECTED BY THE COMPANY REPRESENTATIVE IN ACCORDANCE WITH PERMIT CONDITIONS.
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CROSSING INFORMATION (ESTIMATED STATIONING)	PIPELINE DATA
2317+74 P.I. 5070455' RT.	MLP PIPELINE DATA 36" O.D. X 0.741" W.T., API 5L PSL2 X70 WITH 14-16 MILS OF FBE EXTERNAL COATING, DUAL COATED 20-30 MILS OF ABRASION RESISTANT COATING. MLP
2313+40 P.I. 9052700' LT.	
2308+30 P.I. 4110740' RT.	
2299+09 P.T. OF CURVATURE	
2300+27 HDD ENTRY	2283+56 P.T. OF CURVATURE
2299+09 P.T. OF CURVATURE	2277+61 HDD EXIT
2292+84 P.T. OF TANGENT	
2287+72 SAN JACINTO RIVER	
2283+56 P.T. OF CURVATURE	
2278+55 P.T. OF TANGENT	
2277+61 HDD EXIT	



ENVIRONMENTAL MITIGATION/RECLAMATION

TOPSOIL SALVAGE METHOD	
STREAMS	
WETLANDS	
TIMING CONSTRAINTS	
MILEPOST	
MONITORING	
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SPECIAL CONSIDERATIONS	

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- ⊕ USACE CONSTRUCTION REFERENCE POINT
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- PERMANENT EASEMENT
- TEMPORARY EASEMENT
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TO BE DETERMINED

REFERENCE DRAWINGS

DRAWING No	TITLE
11042 HDD XREF_15	11042 HDD XREF_15.dwg
TC_UD_BR_UEI	TC_UD_BR_UEI.dwg
NOTES-LEGEND	NOTES-LEGEND.dwg

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PROFESSIONAL ENGINEER/RPT

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PERMIT/ ENG. APPROVAL

DATE: _____

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SAN JACINTO RIVER HDD INSTALLATION
KEYSTONE XL PROJECT
HARRIS COUNTY, TEXAS

SCALE AS SHOWN DRAWING No XL-03-LA-03-005 REV 0