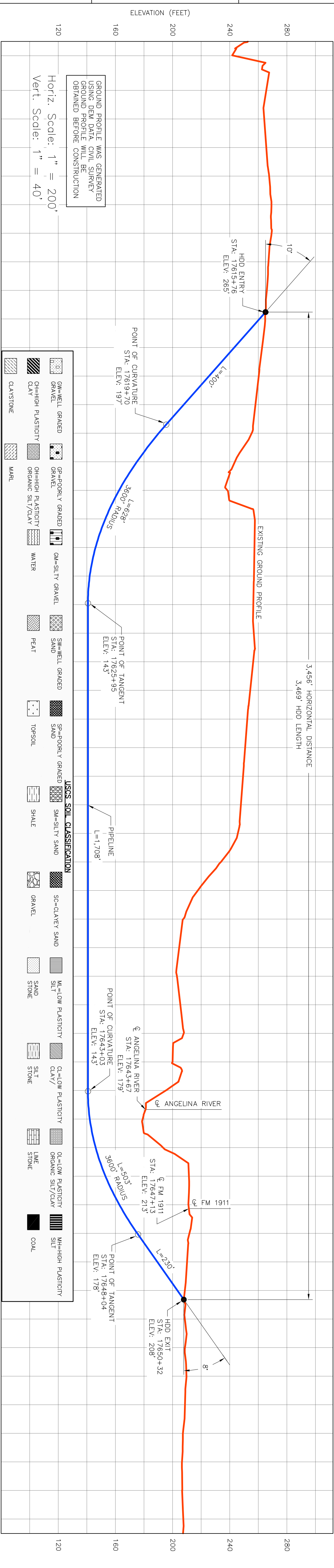
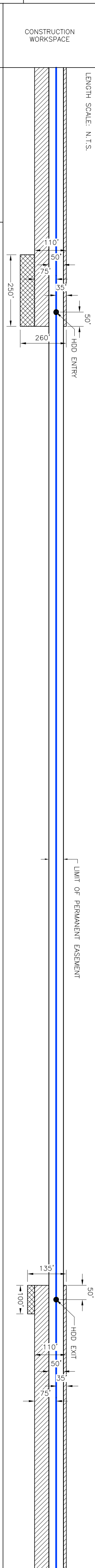


**INSTALLATION NOTES**

- 1) ACCESS: ALL EQUIPMENT MUST ACCESS THE SITE ALONG THE EXISTING ROADS. ACCESS SHALL BE PROVIDED BY THE CONTRACTOR.
- 2) VEHICLE AND EQUIPMENT ACCESS CROSSING MAY BE INSTALLED IF APPROVED BY THE ENVIRONMENTAL INSPECTOR.
- 3) WORK SPACE: WORK SPACE LIMITS ARE DETERMINED BY THE CONTRACTOR AND SHALL BE DETERMINED BY THE ENVIRONMENTAL INSPECTOR. WORK SPACE SHALL BE MAINTAINED AT ALL TIMES. WORK SPACE SHALL BE MAINTAINED AT ALL TIMES. WORK SPACE SHALL BE MAINTAINED AT ALL TIMES.
- 4) WATER SOURCE: DRILL WATER AND PRE-INSTALLATION HYDROLOGIC DATA SHALL BE OBTAINED FROM THE ENVIRONMENTAL INSPECTOR. THE CONTRACTOR SHALL OBTAIN WATER FROM THE SOURCE IDENTIFIED BY THE ENVIRONMENTAL INSPECTOR. THE CONTRACTOR SHALL OBTAIN WATER FROM THE SOURCE IDENTIFIED BY THE ENVIRONMENTAL INSPECTOR.
- 5) HYDROLOGIC TEST: PRE-INSTALLATION HYDROLOGIC TEST SHALL BE CONDUCTED BY THE CONTRACTOR AND SHALL BE APPROVED BY THE ENVIRONMENTAL INSPECTOR. THE CONTRACTOR SHALL OBTAIN WATER FROM THE SOURCE IDENTIFIED BY THE ENVIRONMENTAL INSPECTOR.
- 6) SOIL SAMPLING: ALL PIPES SHALL BE SET IN SEQUENCE. SOIL SAMPLING SHALL BE CONDUCTED BY THE CONTRACTOR AND SHALL BE APPROVED BY THE ENVIRONMENTAL INSPECTOR. THE CONTRACTOR SHALL OBTAIN WATER FROM THE SOURCE IDENTIFIED BY THE ENVIRONMENTAL INSPECTOR.
- 7) INSTALL AND MAINTAIN SEISMIC CONTROL STRUCTURES IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL OBTAIN WATER FROM THE SOURCE IDENTIFIED BY THE ENVIRONMENTAL INSPECTOR.
- 8) TIEBACK SHALL BE SUBMITTED TO KERSTONE FOR APPROVAL.
- 9) PRIOR TO PRE-PULLBACK, CONTRACTORS ACTUAL DRILL PROFILE SHALL BE SUBMITTED TO KERSTONE FOR APPROVAL.
- 10) INSTALLATION: THE PRE-SECTION FOR THE DRILLED CROSSING SHALL BE SUBMITTED TO KERSTONE FOR APPROVAL. THE CONTRACTOR SHALL OBTAIN WATER FROM THE SOURCE IDENTIFIED BY THE ENVIRONMENTAL INSPECTOR.
- 11) WIND PROTECT: CONTRACTOR SHALL PROTECT OR EXCESS DRILLING FLUIDS FROM BEING DEPOSITED ON THE WATER BODIES OR WETLANDS. THE CONTRACTOR SHALL OBTAIN WATER FROM THE SOURCE IDENTIFIED BY THE ENVIRONMENTAL INSPECTOR.
- 12) CLEANUP/RESTORATION: ALL DISTURBED AREAS SHALL BE RESTORED TO ORIGINAL CONDITION OR BETTER. THE CONTRACTOR SHALL OBTAIN WATER FROM THE SOURCE IDENTIFIED BY THE ENVIRONMENTAL INSPECTOR.
- 13) NORMAL WORKING SPACE DIMENSIONS ARE SHOWN. LARGER AREAS MAY BE REQUIRED IN IRREGULAR TERRAIN. UNDATED DIMENSIONS MAY BE PROVIDED WHEN LOCAL TOPOGRAPHICAL SURVEYS ARE REFERENCED.



STATION	DESCRIPTION	STATION	DESCRIPTION
17608+00	17610+00	17612+00	17614+00
17616+00	17618+00	17620+00	17622+00
17624+00	17626+00	17628+00	17630+00
17632+00	17634+00	17636+00	17638+00
17640+00	17642+00	17644+00	17646+00
17648+00	17650+00	17652+00	17654+00
17656+00			



ENVIRONMENTAL MITIGATION/RECLAMATION	REVISION	APPROVAL	PERMIT/ ENG. APPROVAL
STREAMS	PROJECT CODE	DESIGNER	DESIGN CHECKER
WETLANDS	DRAFTER	DRAFTING CHECKER	PROJECT MANAGER
TIMING CONSTRAINTS	PROJECT CODE	DESIGNER	DESIGN CHECKER
MILEPOST	DRAFTER	DRAFTING CHECKER	PROJECT MANAGER
MONITORING	PROJECT CODE	DESIGNER	DESIGN CHECKER
RECLAMATION	DRAFTER	DRAFTING CHECKER	PROJECT MANAGER
SPECIAL CONSIDERATIONS	PROJECT CODE	DESIGNER	DESIGN CHECKER

LEGEND	DESCRIPTION
○	POINT OF INTERSECTION (P.I.)
●	ENTRY OR EXIT POINT
⊕	GEOTECHNICAL BORERHOLE
⊕	POWERPOLE
—	MANHOLE 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

DRAWING NO.	TITLE	REVISION	DESCRIPTION	PROJECT CODE	DRAFTER	DRAFTING CHECKER	DESIGNER	DESIGN CHECKER	PROJECT MANAGER	COMPANY
11042 HDD XREF-15	11042 HDD XREF-15.dwg									
TC_UD_BR_UIE	TC_UD_BR_UIE.dwg									
NOTES-LEGEND	NOTES-LEGEND.dwg									
REV NO.	DATE	DESCRIPTION	PROJECT CODE	DRAFTER	DRAFTING CHECKER	DESIGNER	DESIGN CHECKER	PROJECT MANAGER	COMPANY	
0	06/22/09	ISSUED FOR BID REVIEW	11042	UEI	UEI	BM	JW	JH	UEI	
1	07/27/09	ISSUED FOR BID REVIEW	11042	UEI	UEI	BM	JW	JH	UEI	
2	09/08/09	ISSUED FOR RFP PACKAGE	11042	UEI	UEI	BM	JW	JH	UEI	
3	03/15/10	ISSUED FOR CONTRACT PRE-AWARD	11042	UEI	UEI	DW	JW	JH	UEI	

UNIVERSAL ENGINEERING INC. **TransCanada** *in partnership with*

FILE # 4384 CHANGE: M.P. 334.2 DISCIPLINE # 03

LUFKIN CULTURAL SITE & ANGELINA RIVER CROSSING HDD INSTALLATION

KEYSTONE XL PROJECT

NACOGDOCHES & CHEROKEE COUNTIES, TEXAS

SCALE AS SHOWN DRAWING NO. 4384-03-MI-03-003 REV 3