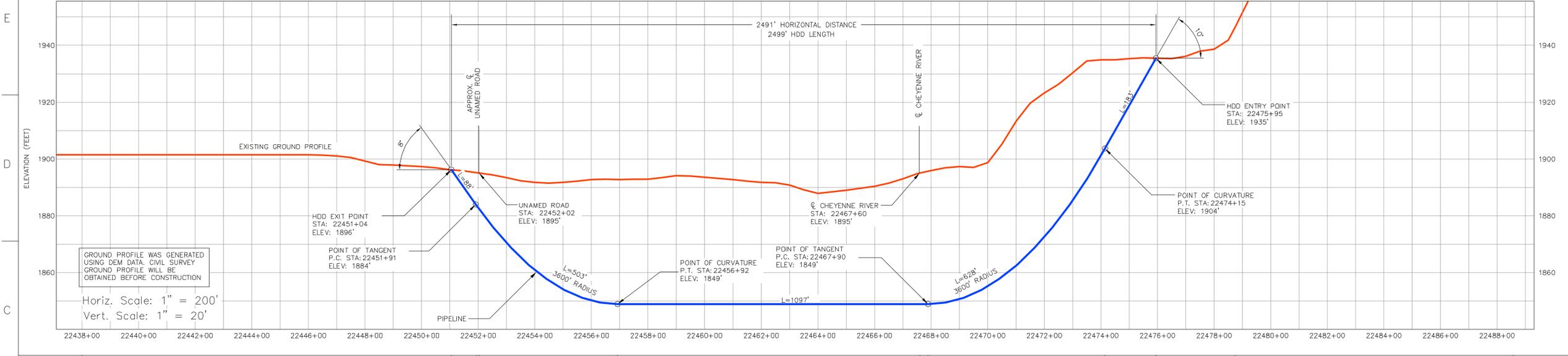
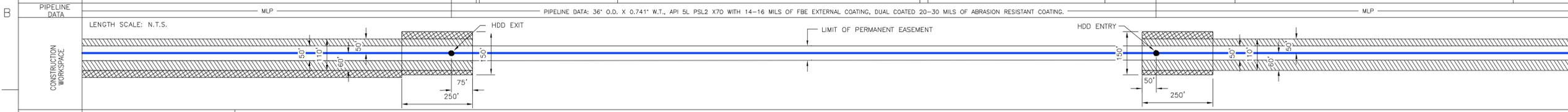


- INSTALLATION NOTES**
- ACCESS: ALL EQUIPMENT MUST ACCESS THE SITE ALONG THE CONSTRUCTION RIGHT-OF-WAY FROM PUBLIC OR APPROVED PRIVATE ROADS.
  - VEHICLE AND EQUIPMENT ACCESS CROSSING MAY BE INSTALLED IF APPROVED BY THE ENVIRONMENTAL INSPECTOR.
  - WORK SPACE: WORK SPACE LIMITS ARE DEPICTED. CLEARING 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.
  - 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 REFUELED 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 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 CONDITIONS. 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 (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	
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	TO BE DETERMINED
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
ML HDD XREF	ML_13_HDD_XREF.dwg
ML PROFILE XREF	XL_PROFILE_UTM13_14_CL_July31_08_Interv100scaleH200V20.dwg
TRANSCANADA BORDER	TC_UD_BR.dwg
NOTES-LEGEND	NOTES-LEGEND.dwg
AERIAL	ortho_1-1_1_n_s_sd093_2008_1.sid / MEADE_2008_CLIPPED.jpg
AERIAL	ortho_1-1_1_n_s_sd055_2008_1.sid / MEADE_2008_CLIPPED.jpg
QUAD	f44101e1.tif & f44102e1.tif
CENTERLINE	CL_XL_PH_2_UTM_13_20080731.shp

**REVISION**

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)	HES0050388X	BM	JP	HF	RB	RC	TROW

**APPROVAL**

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

**Trow Engineering Consultants Inc.**  
**ConocoPhillips**  
**TransCanada**  
*in business to deliver*

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