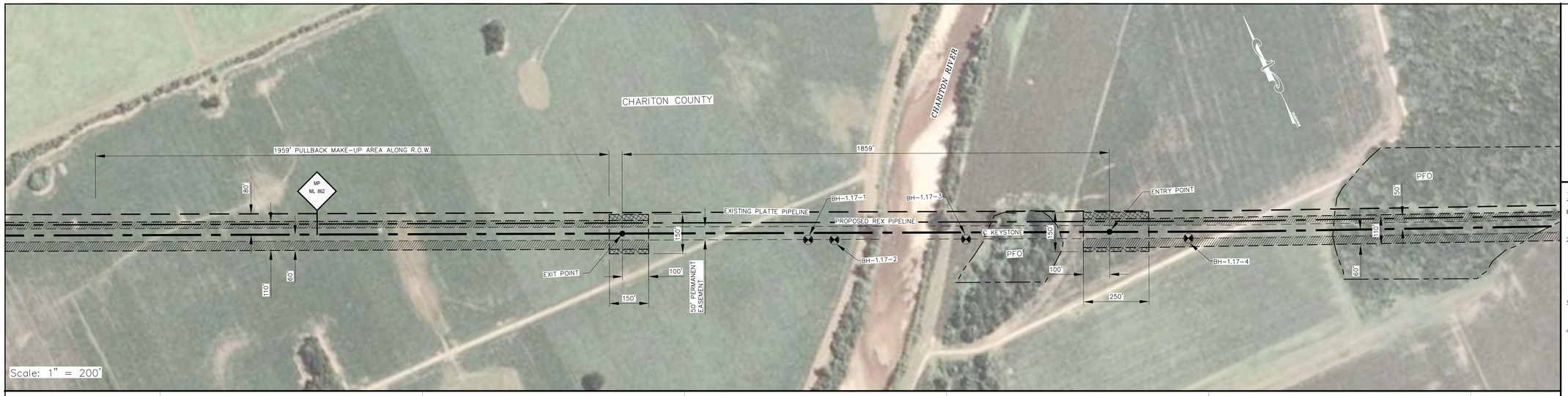

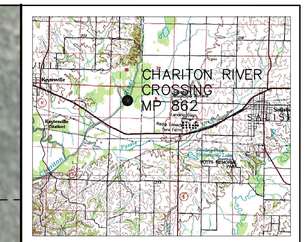

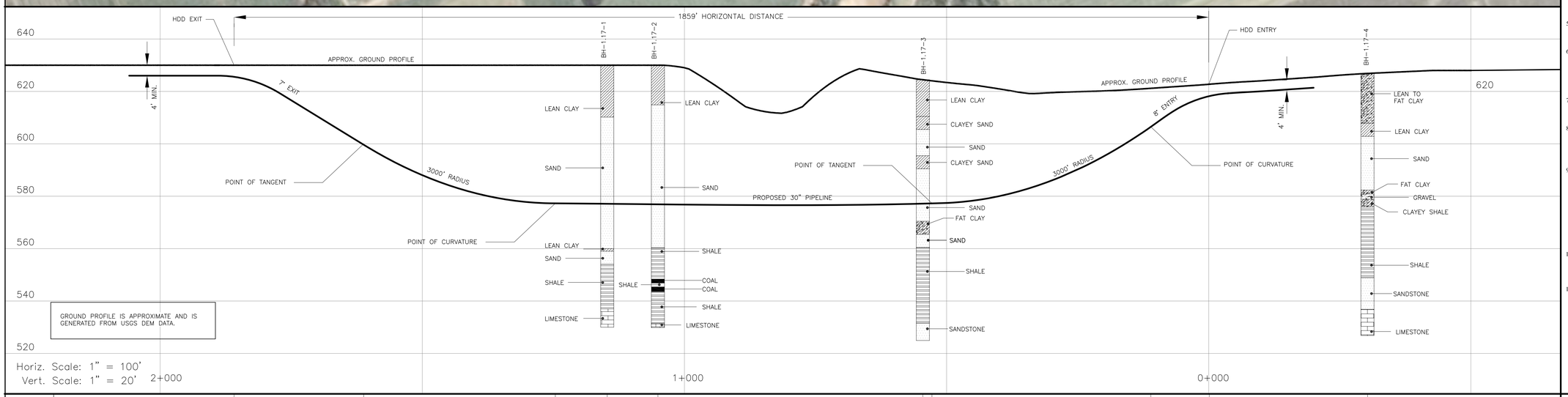

INSTALLATION NOTES:

1. ACCESS: ALL EQUIPMENT MUST ACCESS THE SITE ALONG THE CONSTRUCTION RIGHT-OF-WAY OR FROM APPROVED ROADS.
2. 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 AMOUNT NECESSARY TO STRING LOCATION WIRES AND INSTALL PUMPS AND PIPING TO OBTAIN WATER (WHERE APPROVED).
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7. PRIOR TO PIPE PULLBACK, CONTRACTOR'S ACTUAL DRILL PROFILE SHALL BE SUBMITTED TO KEYSTONE FOR APPROVAL.
8. 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 PULL BACK.
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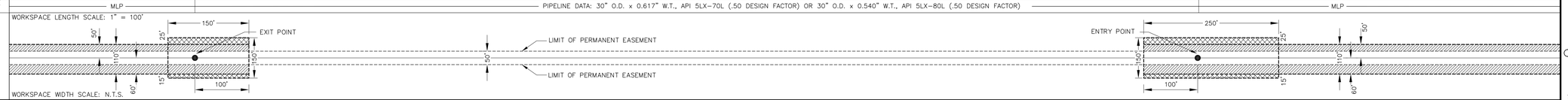
10. CLEANUP/STABILIZATION/RESTORATION: ALL DISTURBED AREAS SHALL BE RETURNED TO THE ORIGINAL CONTOURS. DISTURBED AREAS SHALL BE SEEDED AS SPECIFIED IN THE CONSTRUCTION SPECIFICATIONS.
11. GEOTECHNICAL DATA: BOREHOLES ARE OFFSET FROM THE PIPELINE CENTERLINE AS SHOWN ON THE PLAN VIEW. THE GEOTECHNICAL INFORMATION PROVIDED ON THIS DRAWING IS A GENERAL SUMMARY AND IS BASED ON PRELIMINARY BOREHOLE LOGS. CONTRACTOR SHALL UTILIZE IT'S OWN INTERPRETATION OF THIS FACTUAL BOREHOLE DATA OR DECIDE ON IT'S OWN INVESTIGATION OF SUBSURFACE CONDITIONS.

CROSSING INFORMATION (DESIGN STATIONING)

STA 1+859 HDD EXIT POINT | STA 1+612 PT OF TANGENT | STA 1+246 PT OF CURVATURE | STA 1+147 BH-1.17-1 | STA 1+051 BH-1.17-2 | STA 0+545 BH-1.17-3 | STA 0+528 PT OF TANGENT | STA 0+110 PT OF CURVATURE | STAT 0+000 HDD ENTRY POINT | STA -0+303 BH-1.17-4

PIPE LINE DATA: MLP — PIPELINE DATA: 30" O.D. x 0.617" W.T., API 5LX-70L (.50 DESIGN FACTOR) OR 30" O.D. x 0.540" W.T., API 5LX-80L (.50 DESIGN FACTOR) — MLP

CONSTRUCTION WORK SPACE



MITIGATION/RECLAMATION

CLEAR AND GRADE METHOD		
TOPSOIL SALVAGE METHOD		
WATER CROSSING	STREAMS	
	WETLANDS	
STATIONS		
TEMPORARY EROSION CONTROL	EROSION CONTROL CODE	
	SLOPE BREAKER CODE	
PERMANENT EROSION CONTROL	EROSION CONTROL CODE	
	SLOPE BREAKER CODE	
RECLAMATION		
TIMING CONSTRAINTS		

TO BE DETERMINED

LEGEND:

- ENTRY OR EXIT POINT
- GEOTECHNICAL BOREHOLE
- MLP — MAINLINE PIPE
- WETLANDS
- 500FL-H1-246.1000L — TYPICAL PROPERTY TRACT NO.
- TYPICAL PROPERTY LINES

EASEMENT/WORKSPACE:

- PERMANENT EASEMENT
- TEMPORARY WORK SPACE
- ADDITIONAL TEMPORARY WORK SPACE

MATERIAL SUMMARY

NO.	DESCRIPTION	QTY.

REFERENCE DRAWINGS

NO.	DESCRIPTION	DWG NO.

REVISIONS

NO.	DATE	DESCRIPTION	BY	CHKD	APPR
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TROW PROJ. No.:	THES0050388E
DATE	OCT.09.06
DESIGNED:	HF
DRAWN:	BK
CHECKED:	JG
APPROVED:	RG

TransCanada — In business to deliver

KEYSTONE PIPELINE PROJECT

Trow Engineering Consultants Inc.
1300 Metropolitan Blvd. Suite 200
Tallahassee, Florida 32308
Phone: 1-850-385-5441
Fax: 1-850-385-5523

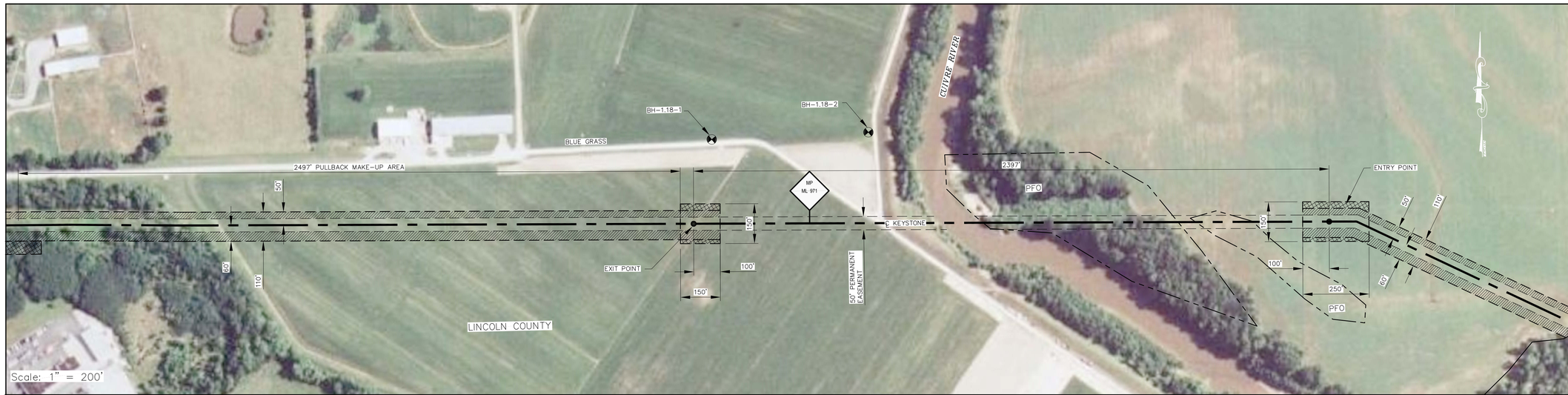
CHARITON RIVER CROSSING HDD INSTALLATION

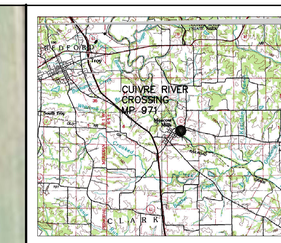
30" KEYSTONE PIPELINE

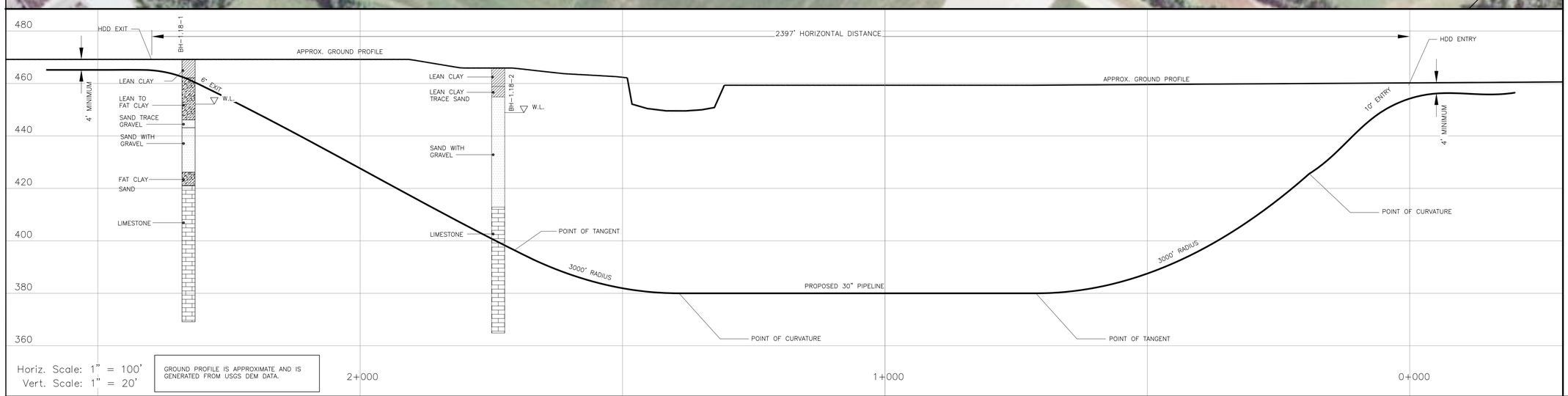
CHARITON COUNTY MISSOURI
T53N-R18W, SECTION 1

MP 862

SCALE	DRAWING No.:	REV.
AS NOTED	K-29-P-6001-A-1.17	0







INSTALLATION NOTES:

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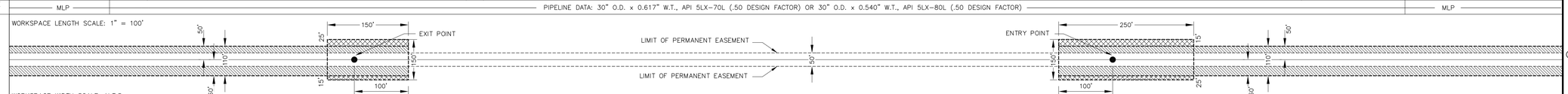
CROSSING INFORMATION (DRAWING STATIONING)	STA 2+397 HDD EXIT POINT	STA 2+327 BH-1.18-1	STA 1+737 BH-1.18-2	STA 1+705 PT OF TANGENT	STA 1+391 PT OF CURVATURE	STA 0+712 PT OF TANGENT	STA 0+191 PT OF CURVATURE	STAT 0+000 HDD ENTRY POINT
PIPE LINE DATA	MLP	PIPELINE DATA: 30" O.D. x 0.617" W.T., API 5LX-70L (.50 DESIGN FACTOR) OR 30" O.D. x 0.540" W.T., API 5LX-80L (.50 DESIGN FACTOR)						MLP

CONSTRUCTION WORK SPACE



MITIGATION/RECLAMATION

CLEAR AND GRADE METHOD		
TOPSOIL SALVAGE METHOD		
WATER CROSSING	STREAMS	
	WETLANDS	
STATIONS		
TEMPORARY EROSION CONTROL	EROSION CONTROL CODE	
	SLOPE BREAKER CODE	
PERMANENT EROSION CONTROL	EROSION CONTROL CODE	
	SLOPE BREAKER CODE	
RECLAMATION		
TIMING CONSTRAINTS		

TO BE DETERMINED

LEGEND:

- ENTRY OR EXIT POINT
- GEOTECHNICAL BOREHOLE
- MLP — MAINLINE PIPE
- WETLANDS
- 500FL-H1-246.1000L — TYPICAL PROPERTY TRACT NO.
- TYPICAL PROPERTY LINES

EASEMENT/WORKSPACE:

- PERMANENT EASEMENT
- TEMPORARY WORK SPACE
- ADDITIONAL TEMPORARY WORK SPACE

MATERIAL SUMMARY

NO.	DESCRIPTION	QTY.

REFERENCE DRAWINGS

NO.	DESCRIPTION	DWG NO.

REVISIONS

NO.	DATE	DESCRIPTION	BY	CHKD	APPR
0	NOV 15 06	PRELIMINARY DESIGN ISSUED FOR DOS SUPPLEMENTAL FILING	HF	JG	RG

TROW PROJ. No.:	THES0050388E
DATE	OCT.09.06
DESIGNED:	HF
DRAWN:	BK
CHECKED:	JG
APPROVED:	RG

TransCanada — In business to deliver

KEYSTONE PIPELINE PROJECT

Trow Engineering Consultants Inc.
1300 Metropolitan Blvd. Suite 200
Tallahassee, Florida 32308
Phone: 1-850-385-5441
Fax: 1-850-385-5523

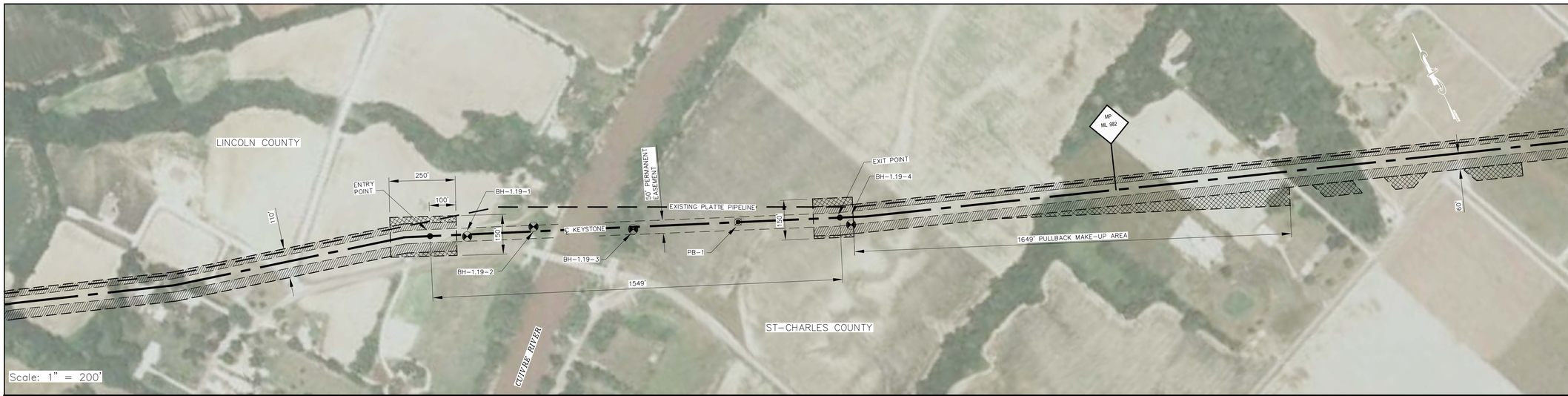
CUIVRE RIVER CROSSING HDD INSTALLATION

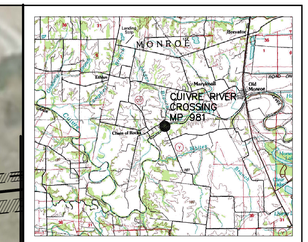
30" KEYSTONE PIPELINE

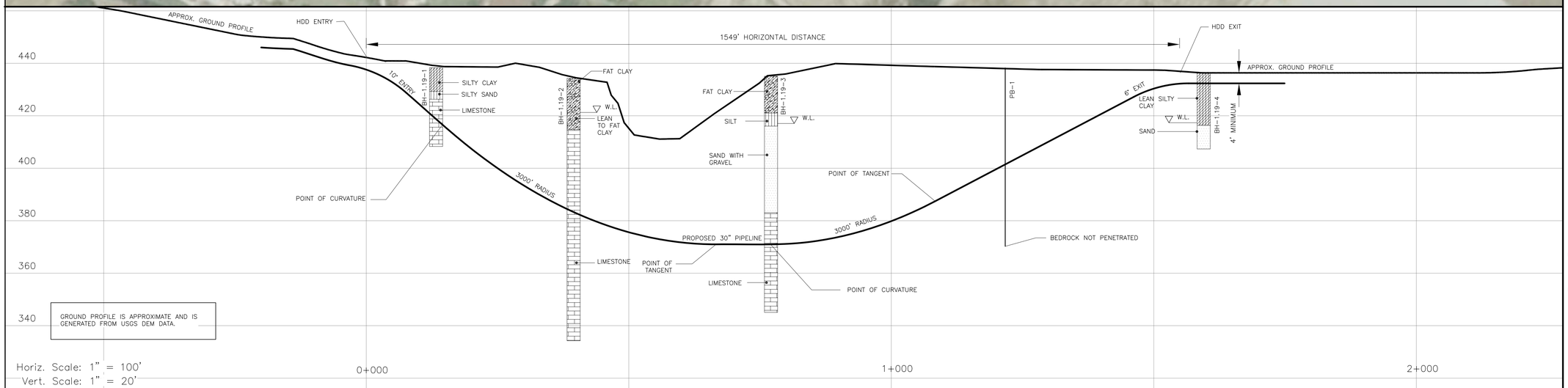
LINCOLN COUNTY, MISSOURI
T49N-R1E, SECTION 19

MP 971

SCALE	DRAWING No.:	REV.
AS NOTED	K-29-P-6001-A-1.18	0







INSTALLATION NOTES:

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LEGEND:

- ENTRY OR EXIT POINT
- GEOTECHNICAL BOREHOLE
- BEDROCK PROBE
- MLP — MAINLINE PIPE
- WETLANDS
- 500FL-HI-246.100CL — TYPICAL PROPERTY TRACT NO.
- TYPICAL PROPERTY LINES

EASEMENT/WORKSPACE:

- PERMANENT EASEMENT
- TEMPORARY WORK SPACE
- ADDITIONAL TEMPORARY WORK SPACE

CROSSING INFORMATION (DRAWING STATIONING)

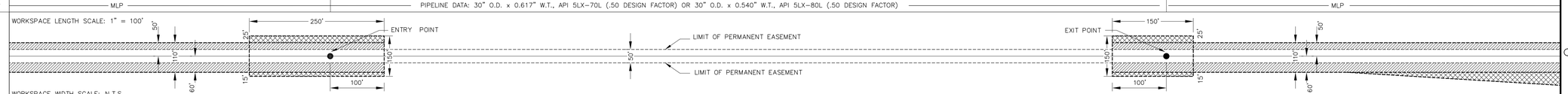
STA 0+000 HDD ENTRY POINT
STA 0+133 BH-1.19-1
STA 0+145 PT OF CURVATURE
STA 0+395 BH-1.19-2
STA 0+666 PT OF TANGENT
STA 0+770 PT OF CURVATURE
STA 0+771 BH-1.19-3
STA 1+084 PT OF TANGENT
STAT 1+549 HDD EXIT POINT
STA 1+595 BH-1.19-4

PIPE LINE DATA

MLP — PIPELINE DATA: 30" O.D. x 0.617" W.T., API 5LX-70L (.50 DESIGN FACTOR) OR 30" O.D. x 0.540" W.T., API 5LX-80L (.50 DESIGN FACTOR) — MLP

CONSTRUCTION WORK SPACE

WORKSPACE LENGTH SCALE: 1" = 100'



WORKSPACE WIDTH SCALE: N.T.S.

MITIGATION/RECLAMATION

CLEAR AND GRADE METHOD		
TOPSOIL SALVAGE METHOD		
WATER CROSSING	STREAMS	
	WETLANDS	
STATIONS		
TEMPORARY EROSION CONTROL	EROSION CONTROL CODE	
	SLOPE BREAKER CODE	
PERMANENT EROSION CONTROL	EROSION CONTROL CODE	
	SLOPE BREAKER CODE	
RECLAIMATION		
TIMING CONSTRAINTS		

TO BE DETERMINED

MATERIAL SUMMARY

NO.	DESCRIPTION	QTY.

REFERENCE DRAWINGS

NO.	DESCRIPTION	DWG NO.

REVISIONS

NO.	DATE	DESCRIPTION	BY	CHKD	APPR
0	NOV 15 06	PRELIMINARY DESIGN ISSUED FOR DOS SUPPLEMENTAL FILING	HF	JG	RG

TROW PROJ. No.:	THES0050388E
DATE	OCT.09.06
DESIGNED:	HF
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APPROVED:	RG

TransCanada
In business to deliver
KEYSTONE PIPELINE PROJECT

Trow Engineering Consultants Inc.
1300 Metropolitan Blvd. Suite 200
Tallahassee, Florida 32308
Phone: 1-850-385-5441
Fax: 1-850-385-5523

CUIVRE RIVER CROSSING HDD INSTALLATION

30" KEYSTONE PIPELINE

LINCOLN & ST. CHARLES COUNTIES, MISSOURI
CHAIN OF ROCKS TOWNSHIP
MP 981

SCALE	DRAWING No.:	REV.
AS NOTED	K-29-P-6001-A-1.19	0