

MVP Variance Request Form



Variance Request No.: MVP-018

Date Approval Requested by Contractor: 6/25/2019

Date Submitted by Chief Inspector to LEI: 6/27/2019

Date Received by FERC:

FERC Approval Reference No.:

Requested By: Jeff Klinefelter

Spread: Project Wide

Variance Type: PM

Request Prepared By *: Megan Neylon

Variance Sequence Number: MVP-018

* The FERC compliance monitor should be alerted and given a copy of the draft variance for review prior to submittal

Location (Use either Station or Milepost)

Station: Project Wide **To:** Project Wide **Milepost:** Project Wide **To:** Project Wide

Alignment Sheet Number: N/A **Tract No.:** Various

Current Land Use/ Vegetative Cover: All **Other Agency Jurisdiction:** None

Nearby Features (Water body, T&E Habitat, Wetland, Noxious Weed Area, Residence (distance), Cultural Resource Site (distance) etc.):

- Noxious Weed Area
- Raptor Nest
- Residence (Distance)
- T/E Species Habitat
- Cultural Resource Site
- Water Well
- Other (Specify): Site Specific

In or w/in 50 feet of a wetland: Yes No

In or w/in 50 feet of a waterbody: Yes No

Wetland or Waterbody ID: Site Specific

Additional Stream footage impacted: None **Additional Wetland impacts:** None

Net acreage affected: N/A

Tree Clearing Required: N/A **Acreage of tree clearing:** N/A

Variance Level: Level 1 Level 2 Level 3

Variance From: Permit Plan Procedures EPPM Specification Drawing Mitigation Measure
 Line List Other: Describe:

Detailed Description of Variance: Attachments? Yes No Photos? Yes No

Mountain Valley requests a variance to change the crossing method of nine streams and one wetland from an open cut dry method as indicated in the FEIS to conventional bores. Updated alignment sheets can be found in Attachment 1. A table of crossing method changes can be found in Attachment 2. All earth disturbance necessary to complete the crossings and spoil stockpile will remain within the previously permitted limits-of-disturbance. Resources will be protected using Reinforced Filtration Devices (RFDs), which may include Priority 1 Silt Fence, Triple Stacked Compost Filter Sock, or Super Silt Fence. A description of the geological conditions of each crossing is included in Attachment 3. As indicated in Mountain Valley's Karst Hazard Assessment, no karst topography is present in the area of these bores. While all of the conditions in attachment 3 are not expected to be encountered within the area of the bore pits, they do exist in the general area as indicated by the referenced geological map of West Virginia. A copy of an email from Michael Hatten, U.S. Army Corps of Engineers, Huntington District Chief, Regulatory Division confirms that boring under non-Section 10 waters is not a USACE jurisdictional activity is included in Attachment 4. Bore pits and construction activities will be located outside of the Ordinary High Water Mark of streams and outside of wetlands. Bore pits will be monitored and dewatered when necessary by utilizing a standard water pump. Pumping may need to occur 24 hours a day. The pumps will discharge into dewatering structures that will be built in compliance with both FERC and WVDEP requirements. If at any time a temporary dewatering structure is required off LOD, Mountain Valley will obtain permission from the landowner prior to building the structure. Bore profiles can be found in attachment 5. At stream S-F18, MVP has developed a temporary access completely within the LOD around the bore pit so the landowner has access to his property during the bore. Following work each day, the bore machine will either be removed and placed outside of the 100-foot waterbody boundary or placed it within a secondary containment system if the machine must remain within the buffer overnight.

A list of streams and wetlands within 50 feet can be found below:
Streams: SA5a, S-A6a, S-J60, S-M5, S-I13, S-I14, S-I15, S-I16, S-F18, and S-Z1
Wetlands: W-A4a and W-Z1

List Attachments:	Attachment 1- Alignment Sheets; Attachment 2- Crossing Method Table; Attachment 3 - Geological Conditions Table; Attachment 4 - Email Correspondence USACE; Attachment 5 - Bore Profiles		
Variance Justification:			
Needed to reduce stream and wetland impacts and increase project restoration efforts.			
For MVP Use Only			
Additional Surveys Required		Surveyed Corridor Description	Additional Surveys Completed
Cultural Survey	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	N/A	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
T & E Survey	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Waterbodies/Wetlands	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Proof of Previous Biological and Cultural Survey Clearance			
N/A			
Landowner:		REDACTED	
Land Agent Contact		Joe Park	
Landowner Approval Obtained		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Sign Off:	Name	Signature	Date
Construction Manager	Jon Zwierzynski	<i>Jon Zwierzynski</i>	7/24/2019
Lead Environmental Inspector	Percy Jones	<i>Percy Jones</i>	7/24/2019
Third Party Compliance Manager or monitor			
ROW Land Agent *	Joe Park	<i>Joe Park</i>	7/24/2019
Environmental Supervisor	Megan Neylon	<i>Megan Neylon</i>	7/24/2019
*signature denotes confirmed landowner approval			

For FERC Compliance Monitor and Compliance Manager Use Only

Variance Approved:		Variance Denied:		Beyond Authority:	
Signature:	_____				
Date:					
Stipulations:					

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Spread No.:	<u>Project Wide</u>	Variance Request No.:	<u>MVP-018</u>
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VARIANCE CONDITIONS

Name:		Title:		Organization:	
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Conditions:

Name:		Title:		Organization:	
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Conditions:

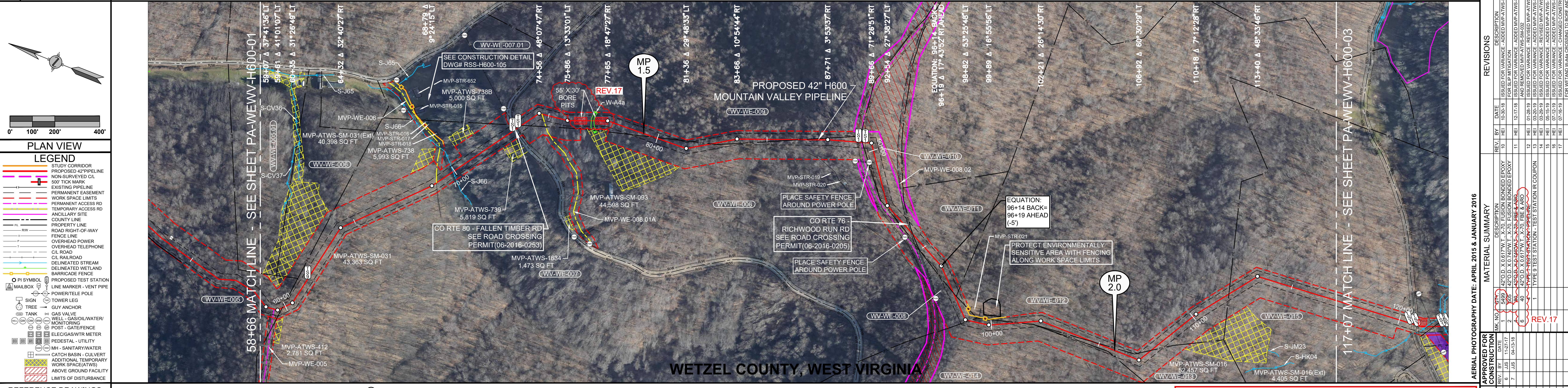
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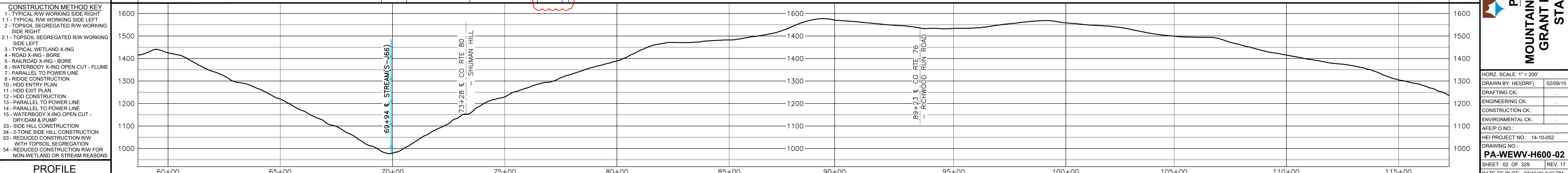
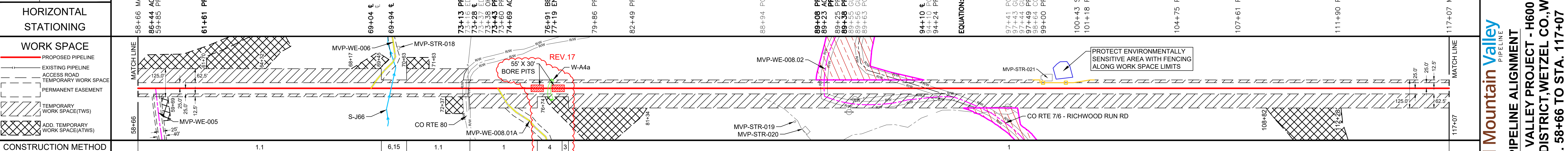
**Mountain Valley Pipeline, LLC
Mountain Valley Pipeline Project
Docket No. CP16-10-000**

**Alignment
Sheets
Attachment 1**

DESIGN	RIGHT-OF-WAY & OWNERSHIP DATA													
	PIPE / COATING													
SLOPE DISTANCE	1													2
CLASS LOCATION / HCA	1101'													505'
ENVIRONMENTAL	CONSTRUCTION EXCLUSION													
	T.O.Y.R.: NO CONSTRUCTION WITHIN STREAM S-J66 APRIL 1ST TO JUNE 30TH													
ENVIRONMENTAL	WETLAND / STREAM													
	S-J66 3 LF													



REFERENCE DRAWINGS	DESCRIPTION
MVP-AR-H600-01	ACCESS ROADS, ANCILLARY SITES, MAINLINE VALVES & LAUNCHER/RECEIVER SITES
MVP-QDAR-H600-01	ACCESS ROAD DETAIL MAP
MVP-QDAR-H600-02	ACCESS ROAD DETAIL MAP
06-2016-0203	ROAD CROSSING PERMIT
06-2016-0205	ROAD CROSSING PERMIT
RSS-H600-105	RESIDENTIAL SITE SPECIFIC
P-W-H600-1204-01	CATHODIC PROTECTION STANDARD DRAWING



CONSTRUCTION METHOD	
CONSTRUCTION METHOD KEY	1 - TYPICAL R/W WORKING SIDE RIGHT
	1.1 - TYPICAL R/W WORKING SIDE LEFT
	2 - TOPSOIL SEGREGATED R/W WORKING SIDE RIGHT
	2.1 - TOPSOIL SEGREGATED R/W WORKING SIDE LEFT
	3 - TYPICAL WETLAND X-ING
	4 - ROAD X-ING - BORE
	5 - RAILROAD X-ING - BORE
	6 - WATERBODY X-ING OPEN CUT - FLUME
	7 - PARALLEL TO POWER LINE
	8 - RIDGE CONSTRUCTION
	10 - HDD ENTRY PLAN
	11 - HDD EXIT PLAN
	12 - HDD CONSTRUCTION
	13 - PARALLEL TO POWER LINE
	14 - PARALLEL TO POWER LINE
	15 - WATERBODY X-ING OPEN CUT - DRY/DAM & PUMP
	33 - SIDE HILL CONSTRUCTION
	34 - 2-TONE SIDE HILL CONSTRUCTION
	53 - REDUCED CONSTRUCTION R/W WITH TOPSOIL SEGREGATION
	54 - REDUCED CONSTRUCTION R/W FOR NON-WETLAND OR STREAM REASONS

HOLLAND ENGINEERING
2000 Hoover Boulevard, Suite 400
Martinsburg, WV 26151
Tel: 304.263.0008 Fax: 304.263.7549
www.hollandengineering.com

REVISIONS		
NO.	DATE	DESCRIPTION
1	01-20-15	ISSUED FOR VARIANCE - ADDED M.P.A.TWS-SM-032
2	02-17-15	FOR SUBMITTAL - ADDED M.P.A.TWS-SM-031
3	02-17-15	AND REVISED M.P.A.TWS-SM-032
4	02-17-15	ISSUED FOR VARIANCE - REVISED M.P.A.TWS-SM-031
5	02-20-15	ISSUED FOR VARIANCE - ADDED M.P.A.TWS-SM-033
6	02-20-15	ISSUED FOR VARIANCE - ADDED M.P.A.TWS-SM-034
7	02-20-15	ISSUED FOR VARIANCE - ADDED M.P.A.TWS-SM-035
8	02-20-15	ISSUED FOR VARIANCE - ADDED M.P.A.TWS-SM-036
9	02-20-15	ISSUED FOR VARIANCE - ADDED M.P.A.TWS-SM-037
10	02-20-15	ISSUED FOR VARIANCE - ADDED M.P.A.TWS-SM-038
11	02-20-15	ISSUED FOR VARIANCE - ADDED M.P.A.TWS-SM-039
12	02-20-15	ISSUED FOR VARIANCE - ADDED M.P.A.TWS-SM-040
13	02-20-15	ISSUED FOR VARIANCE - ADDED M.P.A.TWS-SM-041
14	02-20-15	ISSUED FOR VARIANCE - ADDED M.P.A.TWS-SM-042
15	02-20-15	ISSUED FOR VARIANCE - ADDED M.P.A.TWS-SM-043
16	02-20-15	ISSUED FOR VARIANCE - ADDED M.P.A.TWS-SM-044
17	02-20-15	ISSUED FOR VARIANCE - ADDED M.P.A.TWS-SM-045

APPROVED FOR CONSTRUCTION	
REV. NO.	DATE
1	01-20-15
2	02-17-15
3	02-17-15
4	02-17-15
5	02-17-15
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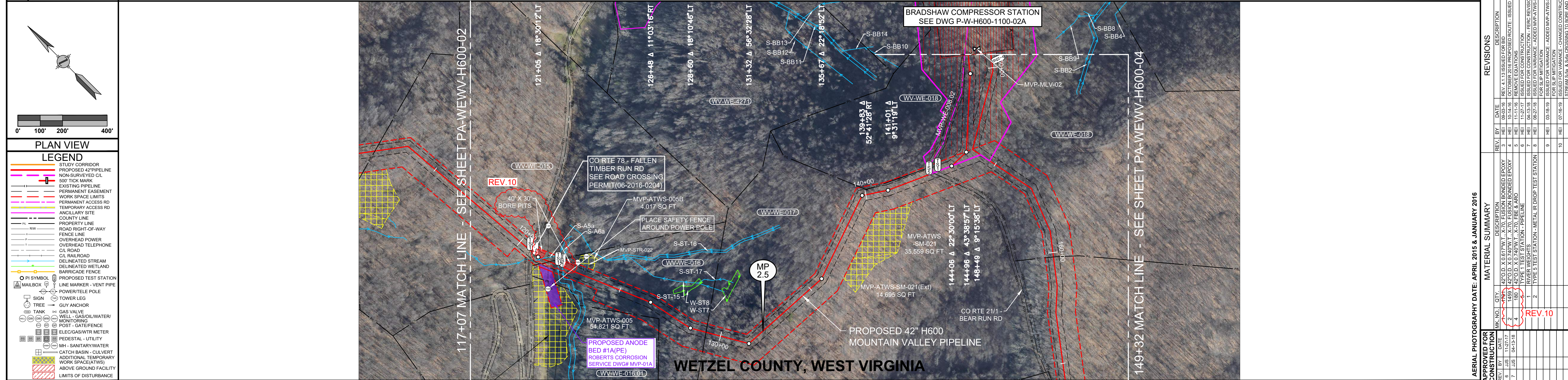
Mountain Valley PIPELINE
MOUNTAIN VALLEY PROJECT - H600 LINE
GRANT DISTRICT, WETZEL CO., W.V.
STA. 58+66 TO STA. 117+07

APPROVED FOR CONSTRUCTION
DATE: APRIL 2015 & JANUARY 2016
MATERIAL SUMMARY
DESCRIPTION
1. 42" O.D. X 0.817 W.T. X 70' FUSION BONDED EPOXY
2. 42" O.D. X 0.750 W.T. X 70' FUSION BONDED EPOXY
3. 42" O.D. X 0.817 W.T. X 70' FUSION BONDED EPOXY
4. 42" O.D. X 0.817 W.T. X 70' FUSION BONDED EPOXY
5. 42" O.D. X 0.817 W.T. X 70' FUSION BONDED EPOXY
6. 42" O.D. X 0.817 W.T. X 70' FUSION BONDED EPOXY
7. 42" O.D. X 0.817 W.T. X 70' FUSION BONDED EPOXY
8. 42" O.D. X 0.817 W.T. X 70' FUSION BONDED EPOXY
9. 42" O.D. X 0.817 W.T. X 70' FUSION BONDED EPOXY
10. 42" O.D. X 0.817 W.T. X 70' FUSION BONDED EPOXY
11. 42" O.D. X 0.817 W.T. X 70' FUSION BONDED EPOXY
12. 42" O.D. X 0.817 W.T. X 70' FUSION BONDED EPOXY
13. 42" O.D. X 0.817 W.T. X 70' FUSION BONDED EPOXY
14. 42" O.D. X 0.817 W.T. X 70' FUSION BONDED EPOXY
15. 42" O.D. X 0.817 W.T. X 70' FUSION BONDED EPOXY
16. 42" O.D. X 0.817 W.T. X 70' FUSION BONDED EPOXY
17. 42" O.D. X 0.817 W.T. X 70' FUSION BONDED EPOXY

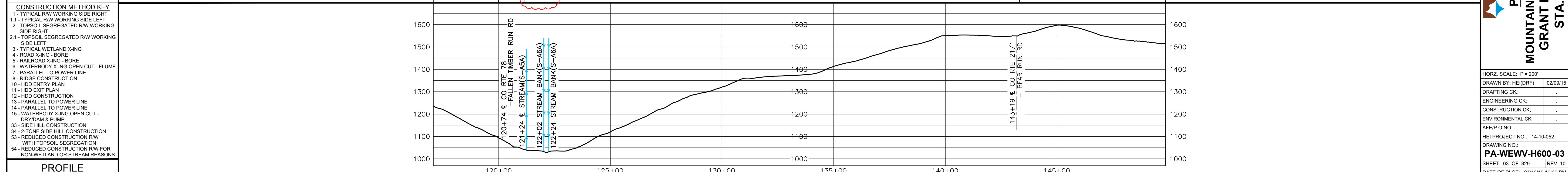
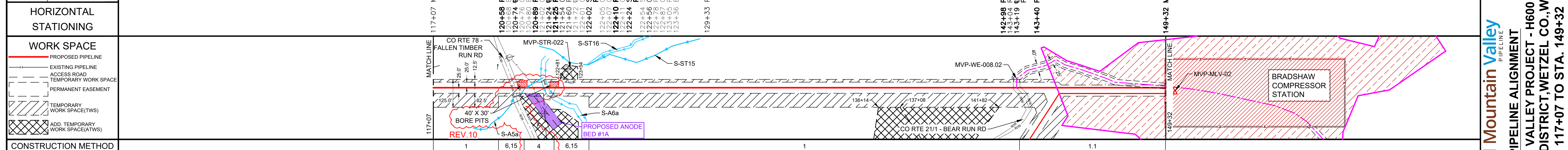
APPROVED FOR PERC	
REV. NO.	DATE
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6	02-13-15
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9	02-13-15
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11	02-13-15
12	02-13-15
13	02-13-15
14	02-13-15
15	02-13-15
16	02-13-15
17	02-13-15

HORIZ SCALE: 1" = 200'
DRAWN BY: HEI(DRF) 02/09/15
DRAWING NO.: PA-WEWV-H600-02
DATE OF PLOT: 07/16/19 3:32 PM

RIGHT-OF-WAY & OWNERSHIP DATA		117+07		351 LF 384 SLOPE	420-48 120+55	17 LF 121+06	17 LF 121+06	108 LF 110 SLOPE	122+14	343 LF 368 SLOPE	122+55	192 LF 211 SLOPE	127+49	184 LF 198 SLOPE	129+33	1050 LF 1088 SLOPE	137+44	139 LF 128 SLOPE	142+09	142+38	505 LF 519 SLOPE	149+32			
DESIGN	PIPE / COATING	117+07		1	4	2	4	2	1		2		4	2		1		2	4	2		1			
	SLOPE DISTANCE	117+07		392'	40'	34'	100'	209'	1		555'		40'	661'		1		555'	40'	661'		1			
	CLASS LOCATION / HCA	117+07		REV. 10		REV. 10		REV. 10		REV. 10		REV. 10		REV. 10		REV. 10		REV. 10		REV. 10		REV. 10			
ENVIRONMENTAL	CONSTRUCTION EXCLUSION	117+07		T.O.Y.R.: NO CONSTRUCTION WITHIN STREAMS S-A5a & S-A6a APRIL 1ST TO JUNE 30TH																		TIME OF YEAR RESTRICTION: NO CLEARING JUNE 1 - JULY 31 SEE TREE CLEARING PLAN FOR FURTHER DETAILS		149+32	
	WETLAND / STREAM	117+07		S-A5a		S-A6a		4 LF		22 LF															



REFERENCE DRAWINGS	
DRAWING NO.	DESCRIPTION
MVP-AR-H600-01	ACCESS ROADS, ANCILLARY SITES, MAINLINE VALVES & LAUNCHER/RECEIVER SITES
MVP-QDAR-H600-02	ACCESS ROAD DETAIL MAP 06-2016-0204
P-W-H600-1204-01	ROAD CROSSING PERMIT
P-W-H600-1204-01	CATHODIC PROTECTION STANDARD DRAWING
P-W-H600-1204-02	CATHODIC PROTECTION STANDARD DRAWING
P-W-H600-1100-02A	BRADSHAW PLOT PLAN STANDARD DRAWINGS
MVP-01A	ROBERTS CORROSION SERVICE DRAWING



CONSTRUCTION METHOD KEY	
1	TYPICAL R/W WORKING SIDE RIGHT
1.1	TYPICAL R/W WORKING SIDE LEFT
2	TOPSOIL SEGREGATED R/W WORKING SIDE RIGHT
2.1	TOPSOIL SEGREGATED R/W WORKING SIDE LEFT
3	TYPICAL WETLAND X-ING
4	ROAD X-ING - BORE
5	RAILROAD X-ING - BORE
6	WATERBODY X-ING OPEN CUT - FLUME
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53	REDUCED CONSTRUCTION R/W WITH TOPSOIL SEGREGATION
54	REDUCED CONSTRUCTION R/W FOR NON-WETLAND OR STREAM REASONS

HOLLAND ENGINEERING

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1860-2005B F 618-262-1119 1748-27-752 F 618-262-7549
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REVISIONS

REV.	BY	DATE	DESCRIPTION
1	HE	09-03-16	REV. 4.1.13 ISSUED FOR BID
2	HE	10-14-16	OCTOBER 2016 PROPOSED ROUTE - ISSUED TO FERC
3	HE	11-27-17	ISSUED FOR CONSTRUCTION - PIPELINE
4	HE	04-13-18	ISSUED FOR CONSTRUCTION - FERC REVISION REQUEST
5	HE	04-13-18	ISSUED FOR CONSTRUCTION - FERC REVISION REQUEST
6	HE	09-27-18	ISSUED FOR VARIANCE - ADDED MVP-ATWS-SM-021
7	HE	03-18-19	ISSUED FOR VARIANCE - ADDED MVP-ATWS-SM-021(EA)
8	HE	07-16-19	ISSUED FOR VARIANCE - CHANGED CONSTRUCTION METHOD FOR BRADSHAW & BEAR CROSSINGS TO GRADE AND ASBESTOS PER

MATERIAL SUMMARY

QTY.	DESCRIPTION
142'0.0	X.0.617M X.70 FUSION BONDED EPOXY
143'0.0	X.0.749M X.70 FUSION BONDED EPOXY
2	TYPE 1 TEST STATION - PIPELINE
1	RIVER WEIGHTS
2	TYPE 5 TEST STATION - METAL IR DROP TEST STATION
1	TYPE 5 TEST STATION - ADDED MVP-ATWS-SM-021(EA)

APPROVED FOR CONSTRUCTION

APPROVED FOR BIDDING

APPROVED FOR FERC

Mountain Valley Pipeline

PIPELINE ALIGNMENT

MOUNTAIN VALLEY PROJECT - H600 LINE

GRANT DISTRICT, WETZEL CO., W.V.

STA. 117+07 TO STA. 149+32

HORIZ SCALE: 1" = 200'

DRAWN BY: HEI(DRF) 02/09/15

DRAFTING CK:

ENGINEERING CK:

CONSTRUCTION CK:

ENVIRONMENTAL CK:

AFE/P.O. NO.:

HEI PROJECT NO.: 14-10-052

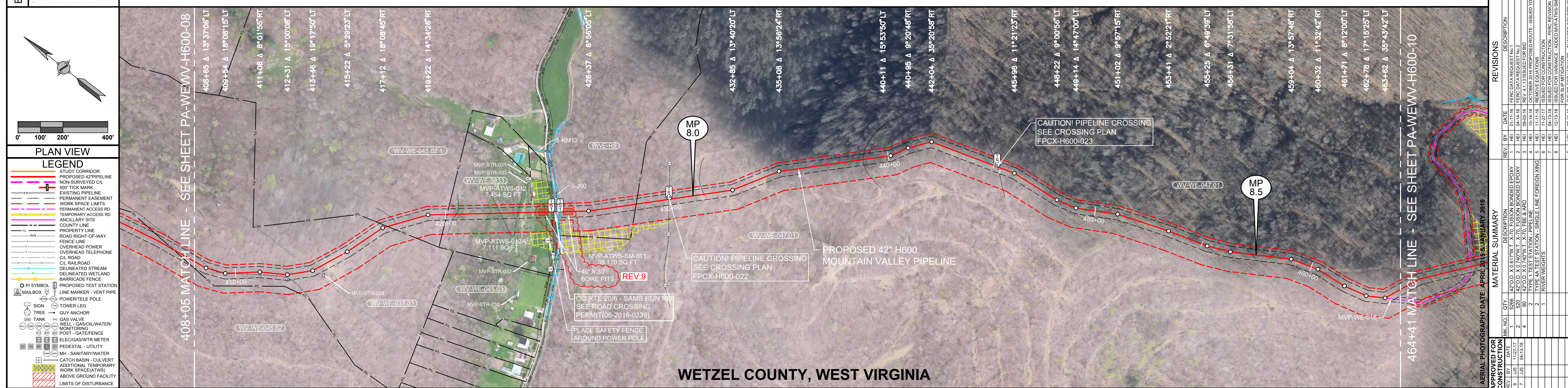
DRAWING NO.:

PA-WEVV-H600-03

SHEET 03 OF 329 REV. 10

DATE OF PLOT: 07/16/19 12:32 PM

DESIGN	PIPE / COATING	1										1																			
	SLOPE DISTANCE	1417'										3849'																			
	CLASS LOCATION / HCA	1																													
ENVIRONMENTAL	CONSTRUCTION EXCLUSION	TIME OF YEAR RESTRICTION: NO CLEARING JUNE 1 - JULY 31 SEE TREE CLEARING PLAN FOR FURTHER DETAILS										T.O.Y.R. NO CONSTRUCTION WITHIN STREAM S-J60 APRIL 1ST TO JUNE 30TH										TIME OF YEAR RESTRICTION: NO CLEARING JUNE 1 - JULY 31 SEE TREE CLEARING PLAN FOR FURTHER DETAILS									
	WETLAND / STREAM											S-J60 14 LF																			



REFERENCE DRAWINGS	DRAWING NO.	DESCRIPTION									
	MVP-AR-H600-01	ACCESS ROADS, ANCILLARY SITES, MAINLINE VALVES & LAUNCHER/RECEIVER SITES									
FPCX-H600-022	FPCX-H600-022	FOREIGN PIPELINE X-ING PLAN									
	FPCX-H600-023	FOREIGN PIPELINE X-ING PLAN									
06-2016-0239	06-2016-0239	ROAD CROSSING PERMIT									
	P-W-H600-1204-01	CATHODIC PROTECTION STANDARD DRAWING									
HORIZONTAL STATIONING	408+05 MATCH LINE	409+07 FENCE - BARBED WIRE 409+45 FENCE - BARBED WIRE 409+76 FENCE - BARBED WIRE									
	413+16 3" VERTICAL PIPE 16" RT 413+79 BUILDING - SHED 31" RT	417+34 PROPERTY LINE 417+75 FENCE - BARBED WIRE									
WORK SPACE	420+06 PROPERTY LINE 420+48 TRAIL(DIRT)	422+44 TRAIL(DIRT) 423+23 DRIVEWAY(DIRT) 423+71 BUILDING - BARN 38" LT 424+43 OHP LINE 424+71 PROPOSED TYPE 1 TEST STATION/W 424+86 CO RTE 20/6 - SAMS RUN 424+96 STREAM BANK(S-J60) 425+05 PROPOSED RIVER WEIGHT - STREAM 425+10 PROPOSED TYPE 1 TEST STATION 428+52 PROPERTY LINE 429+99 PIPELINE - FOREIGN - ASCENT, PROPOSED TYPE 4A TEST STATION 431+57 TRAIL(DIRT) 438+87 TRAIL(DIRT) 445+15 LINE MARKER 3" LT 445+16 PIPELINE - FOREIGN - EOT 10" M44, PROPOSED TYPE 4A TEST STATION 445+41 LINE MARKER 3" RT 463+63 ACCESS RD - PERMANENT (MVP-WE-016) 464+41 MATCH LINE									
	CONSTRUCTION METHOD	CONSTRUCTION METHOD KEY 1 - TYPICAL R/W WORKING SIDE RIGHT 1.1 - TYPICAL R/W WORKING SIDE LEFT 2 - TOPSOIL SEGREGATED R/W WORKING SIDE RIGHT 2.1 - TOPSOIL SEGREGATED R/W WORKING SIDE LEFT 3 - TYPICAL WETLAND X-ING 4 - ROAD X-ING - BORE 5 - RAILROAD X-ING - BORE 6 - WATERBODY X-ING OPEN CUT - FLUME 7 - PARALLEL TO POWER LINE 8 - RIDGE CONSTRUCTION 10 - HDD ENTRY PLAN 11 - HDD EXIT PLAN 12 - HDD CONSTRUCTION 13 - PARALLEL TO POWER LINE 14 - PARALLEL TO POWER LINE 15 - WATERBODY X-ING OPEN CUT - DRY/DAM & PUMP 33 - SIDE HILL CONSTRUCTION 34 - 2-TONE SIDE HILL CONSTRUCTION 53 - REDUCED CONSTRUCTION R/W WITH TOPSOIL SEGREGATION 54 - REDUCED CONSTRUCTION R/W FOR NON-WETLAND OR STREAM REASONS									
PROFILE	410+00	415+00	420+00	425+00	430+00	435+00	440+00	445+00	450+00	455+00	460+00

LEGEND

- STUDY CORRIDOR
- PROPOSED PIPELINE
- NON-SURVEYED CL
- 500' TICK MARK
- EXISTING PIPELINE
- PERMANENT EASEMENT
- WORK SPACE LIMITS
- PERMANENT ACCESS RD
- TEMPORARY ACCESS RD
- ANCILLARY SITE
- COUNTY LINE
- PROPERTY LINE
- ROAD RIGHT-OF-WAY
- FENCE LINE
- OVERHEAD POWER
- OVERHEAD TELEPHONE
- CL ROAD
- RAILROAD
- DELINEATED STREAM
- DELINEATED WETLAND
- BARICADE FENCE
- PROPOSED TEST STATION
- PI SYMBOL
- MAILBOX
- LINE MARKER - VENT PIPE
- POWER/TELE POLE
- TOWER LEG
- GUY ANCHOR
- TANK
- GAS VALVE
- WELL - GAS/OIL/WATER
- MONITORING
- POST - GATE/FENCE
- ELECTRICITY METER
- PEDESTAL - UTILITY
- WELL - SANITARY/WATER
- CATCH BASIN - CULVERT
- ADDITIONAL TEMPORARY WORK SPACE(TWS)
- ABOVE GROUND FACILITY
- LIMITS OF DISTURBANCE

REVISIONS

REV.	DATE	DESCRIPTION
1	01-11-16	FERC DATA REQUEST NO. 1
2	04-14-16	FERC DATA REQUEST NO. 2
3	05-14-16	FERC DATA REQUEST NO. 3
4	05-14-16	OCTOBER 2016 PROPOSED ROUTE - ISSUED TO FERC
5	11-11-16	REMOVE EASEMENTS
6	11-27-17	ISSUED FOR CONSTRUCTION - FERC PERMITS REQUEST
7	12-13-18	ISSUED FOR VARIANCE - ADDRESS APTS-SM-011
8	07-16-19	FOR SLOPE MITIGATION
9	07-16-19	ISSUED FOR VARIANCE - CHANGED CONSTRUCTION METHOD FOR STREAM CROSSING TO BORE AND ACCESS ROADS

APPROVED FOR CONSTRUCTION

DATE: APRIL 2019 & JANUARY 2016

APPROVED FOR BIDDING

DATE: APRIL 2016

APPROVED FOR FERC

DATE: APRIL 2016

APPROVED FOR CONSTRUCTION

DATE: APRIL 2019 & JANUARY 2016

Mountain Valley
PIPELINE ALIGNMENT
MOUNTAIN VALLEY PROJECT - H600 LINE
GRANT DISTRICT, WETZEL CO., W.V.
STA. 408+05 TO STA. 464+41

HOLLAND ENGINEERING
2005 Engineer's Seal
1800-300-0000 F 1800-300-0000
www.hollandengineering.com

HORIZ SCALE: 1" = 200'

DRAWN BY: HEI(DRF) 3/11/15

DRAFTING CK: .

ENGINEERING CK: .

CONSTRUCTION CK: .

ENVIRONMENTAL CK: .

AFEP D.O.:

HEI PROJECT NO.: 14-10-052

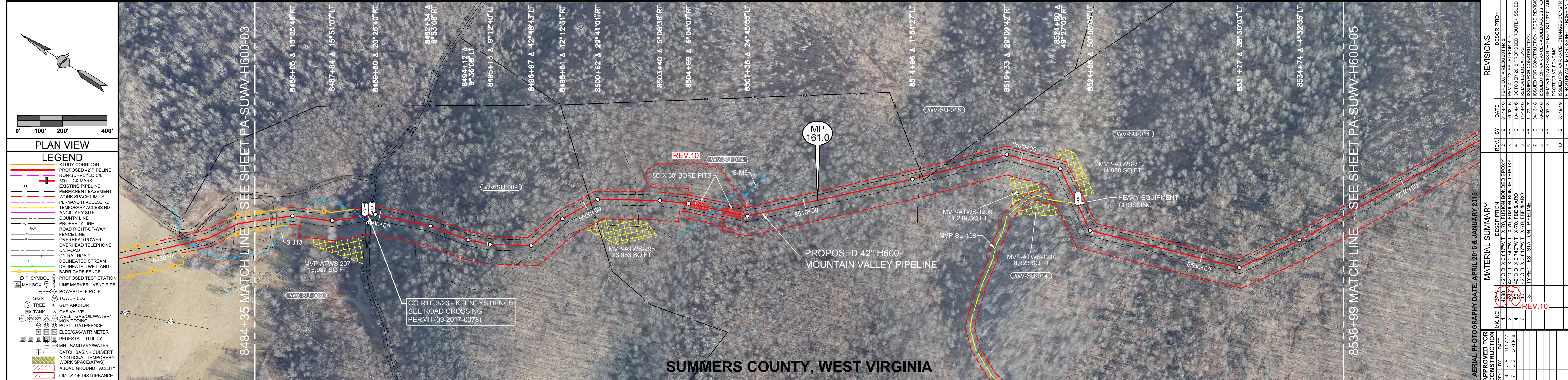
DRAWING NO.: PA-WEWV-H600-09

SHEET 09 OF 329 REV. 9

DATE OF PLOT: 07/16/19 12:28 PM

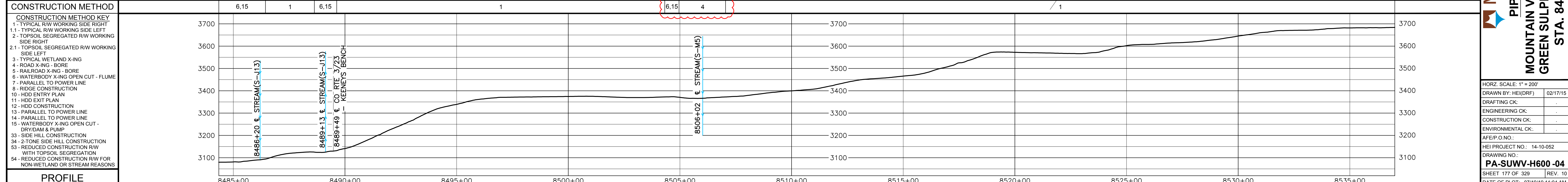
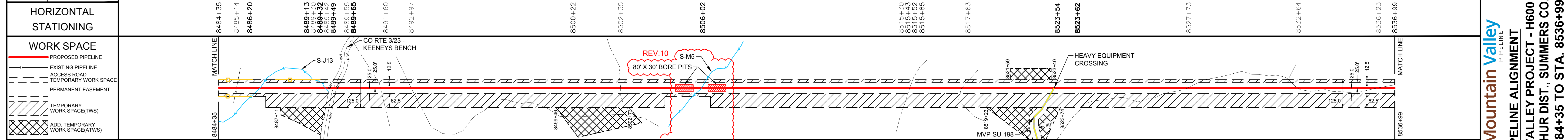
ISSUED FOR CONSTRUCTION

RIGHT-OF-WAY & OWNERSHIP DATA		DESIGN		ENVIRONMENTAL	
PIPE / COATING		PIPE / COATING		CONSTRUCTION EXCLUSION	
SLOPE DISTANCE	499'	SLOPE DISTANCE	1638'	WETLAND / STREAM	S-J13 4 LF
CLASS LOCATION / HCA		CLASS LOCATION / HCA			S-J13 4 LF
TIME OF YEAR RESTRICTION: NO CLEARING JUNE 1 - JULY 31 SEE TREE CLEARING PLAN FOR FURTHER DETAILS					
				S-M5 6 LF	



DRAWING NO.	DESCRIPTION
MVP-AR-H600-09	ACCESS ROADS, ANCILLARY SITES, MAINLINE VALVES & LAUNCHER/RECEIVER SITES
MVP-SOAR-H600-07	ACCESS ROAD DETAIL MAP
09-20170078	ROAD CROSSING PERMIT
P-W-H600-1204-01	CATHODIC PROTECTION STANDARD DRAWING

REV.	DATE	DESCRIPTION
1	04-14-15	HEI DATA REQUEST No 2
2	06-05-15	REV. 4.13 ISSUED FOR BID
3	06-05-15	REV. 4.13 ISSUED FOR BID
4	11-04-15	REVISED EASMENTS ISSUED TO PERC
5	11-04-15	REVISED EASMENTS
6	11-04-15	REVISED EASMENTS
7	11-04-15	REVISED EASMENTS
8	11-04-15	REVISED EASMENTS
9	11-04-15	REVISED EASMENTS
10	11-04-15	REVISED EASMENTS



CONSTRUCTION METHOD KEY	CONSTRUCTION METHOD
1	TYPICAL R/W WORKING SIDE RIGHT
1.1	TYPICAL R/W WORKING SIDE LEFT
2	TOPSOIL SEGREGATED R/W WORKING SIDE RIGHT
2.1	TOPSOIL SEGREGATED R/W WORKING SIDE LEFT
3	TYPICAL WETLAND X-ING
4	ROAD X-ING - BORE
5	RAILROAD X-ING - BORE
6	WATERBODY X-ING OPEN CUT - FLUME
7	PARALLEL TO POWER LINE
8	RIDGE CONSTRUCTION
10	HDD ENTRY PLAN
11	HDD EXIT PLAN
12	HDD CONSTRUCTION
13	PARALLEL TO POWER LINE
14	PARALLEL TO POWER LINE
15	WATERBODY X-ING OPEN CUT - DRY/DAM & PUMP
33	SIDE HILL CONSTRUCTION
34	2-TONE SIDE HILL CONSTRUCTION
53	REDUCED CONSTRUCTION R/W WITH TOPSOIL SEGREGATION
54	REDUCED CONSTRUCTION R/W FOR NON-WETLAND OR STREAM REASONS

ISSUED FOR CONSTRUCTION

APPROVED FOR BIDDING
 DATE: 04-15-15
 BY: HEI

APPROVED FOR PERC
 DATE: 04-15-15
 BY: HEI

APPROVED FOR CONSTRUCTION
 DATE: 04-15-15
 BY: HEI

APPROVED FOR BIDDING
 DATE: 04-15-15
 BY: HEI

APPROVED FOR PERC
 DATE: 04-15-15
 BY: HEI

APPROVED FOR CONSTRUCTION
 DATE: 04-15-15
 BY: HEI

APPROVED FOR BIDDING
 DATE: 04-15-15
 BY: HEI

APPROVED FOR PERC
 DATE: 04-15-15
 BY: HEI

APPROVED FOR CONSTRUCTION
 DATE: 04-15-15
 BY: HEI

APPROVED FOR BIDDING
 DATE: 04-15-15
 BY: HEI

APPROVED FOR PERC
 DATE: 04-15-15
 BY: HEI

APPROVED FOR CONSTRUCTION
 DATE: 04-15-15
 BY: HEI

APPROVED FOR BIDDING
 DATE: 04-15-15
 BY: HEI

APPROVED FOR PERC
 DATE: 04-15-15
 BY: HEI

APPROVED FOR CONSTRUCTION
 DATE: 04-15-15
 BY: HEI

APPROVED FOR BIDDING
 DATE: 04-15-15
 BY: HEI

APPROVED FOR PERC
 DATE: 04-15-15
 BY: HEI

APPROVED FOR CONSTRUCTION
 DATE: 04-15-15
 BY: HEI

MOUNTAIN VALLEY PIPELINE

PIPELINE ALIGNMENT

MOUNTAIN VALLEY PROJECT - H600 LINE

GREEN SULPHUR DIST., SUMMERS CO., W.V.

STA. 8484+35 TO STA. 8536+99

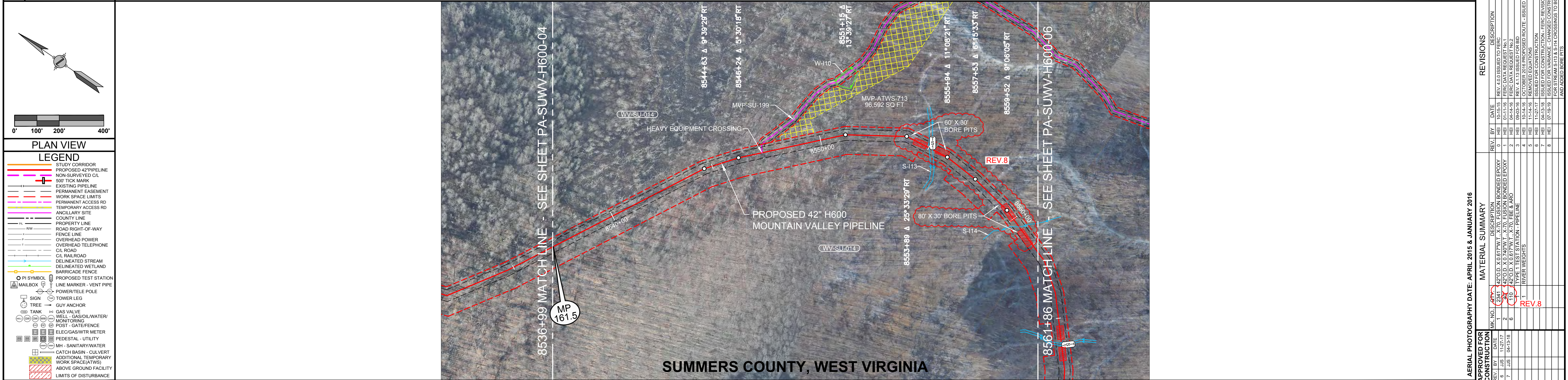
HORZ SCALE: 1" = 200'
 DRAWN BY: HEI(DRF) 02/17/15
 DRAFTING CK:

ENGINEERING CK:
 CONSTRUCTION CK:
 ENVIRONMENTAL CK:

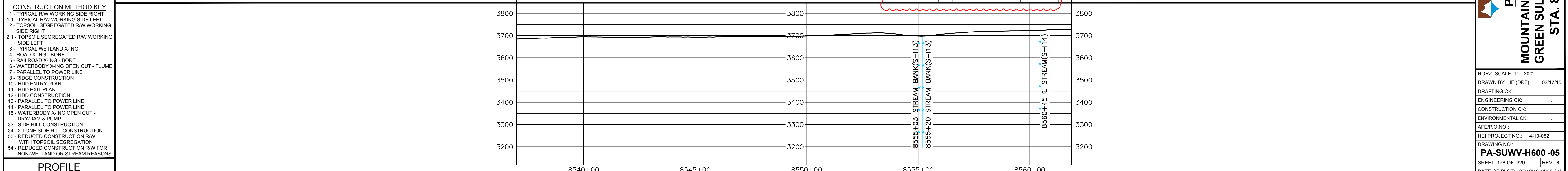
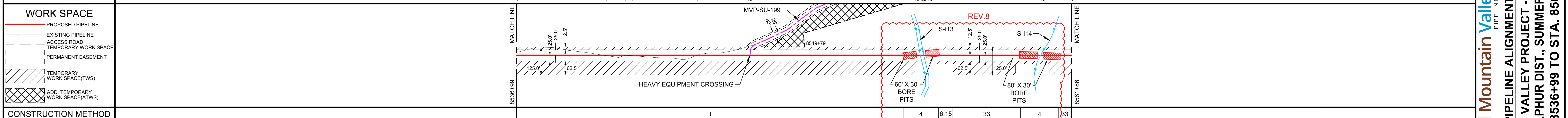
AFE/PO NO.:
 HEI PROJECT NO.: 14-10-052
 DRAWING NO.:

PA-SUWV-H600-04
 SHEET 177 OF 329 REV. 10
 DATE OF PLOT: 07/19/19 11:04 AM

RIGHT-OF-WAY & OWNERSHIP DATA									
DESIGN	PIPE / COATING								
	SLOPE DISTANCE								
	CLASS LOCATION / HCA								
ENVIRONMENTAL	CONSTRUCTION EXCLUSION								
	WETLAND / STREAM								



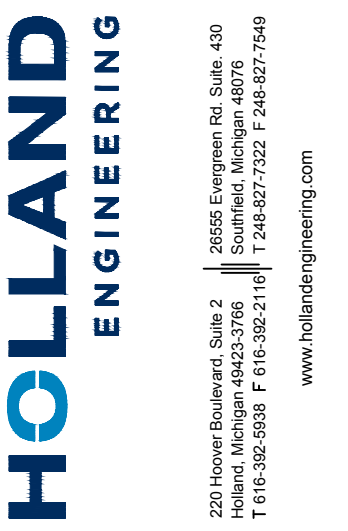
REFERENCE DRAWINGS									
DRAWING NO.	DESCRIPTION								
MVP-AR-H600-09	ACCESS ROADS, ANCILLARY SITES, MAINLINE VALVES & LAUNCHER/RECEIVER SITES								
MVP-SDAR-H600-08	ACCESS ROAD DETAIL MAP								
PA-W-H600-1204-01	CATHODIC PROTECTION STANDARD DRAWING								



CONSTRUCTION METHOD									
CONSTRUCTION METHOD KEY									
1	TYPICAL R/W WORKING SIDE RIGHT								
1.1	TYPICAL R/W WORKING SIDE LEFT								
2	TOPSOIL SEGREGATED R/W WORKING SIDE RIGHT								
2.1	TOPSOIL SEGREGATED R/W WORKING SIDE LEFT								
3	TYPICAL WETLAND X-ING								
4	ROAD X-ING - BORE								
5	RAILROAD X-ING - BORE								
6	WATERBODY X-ING OPEN CUT - FLUME								
7	PARALLEL TO POWER LINE								
8	RIDGE CONSTRUCTION								
10	HDD ENTRY PLAN								
11	HDD EXIT PLAN								
12	HDD CONSTRUCTION								
13	PARALLEL TO POWER LINE								
14	PARALLEL TO POWER LINE								
15	WATERBODY X-ING OPEN CUT - DRY/DAM & PUMP								
33	SIDE HILL CONSTRUCTION								
34	2-TONE SIDE HILL CONSTRUCTION								
53	REDUCED CONSTRUCTION R/W WITH TOPSOIL SEGREGATION								
54	REDUCED CONSTRUCTION R/W FOR NON-WETLAND OR STREAM REASONS								

PROFILE									
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ISSUED FOR CONSTRUCTION



200 Hoover Boulevard, Suite 2
 20050 Englewood, NJ, Suite 430
 Tel: 908-982-9808 F: 908-982-2111 P: 248-827-2322 F: 248-827-7949
 www.hollandengineering.com

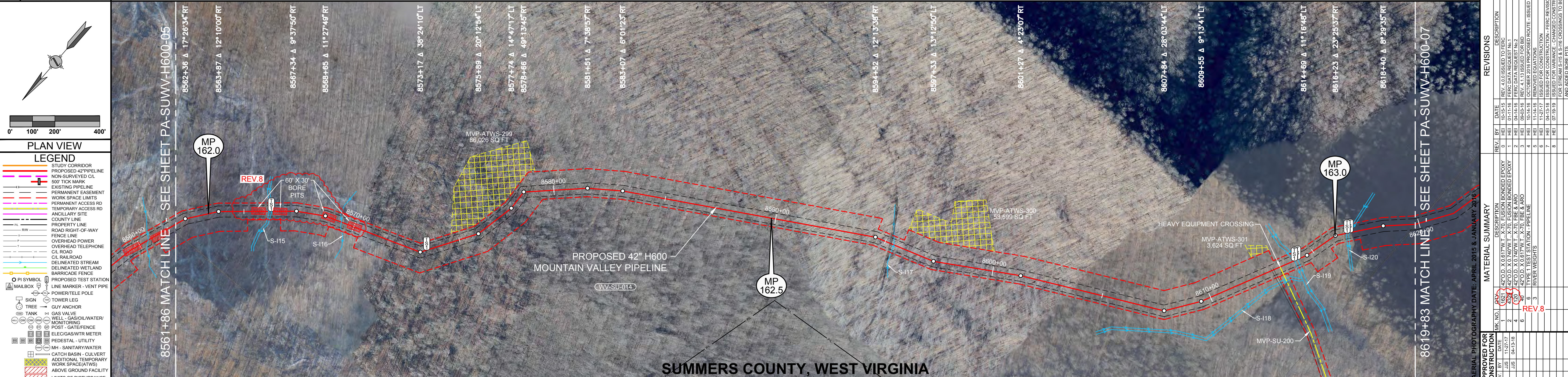
AERIAL PHOTOGRAPHY DATE: APRIL 2015 & JANUARY 2016	
APPROVED FOR CONSTRUCTION	APPROVED FOR BIDDING
APPROVED FOR FERC	APPROVED FOR FERC
MATERIAL SUMMARY	
REV. NO.	DESCRIPTION
0	42\"/>



PIPELINE ALIGNMENT
MOUNTAIN VALLEY PROJECT - H600 LINE
GREEN SULPHUR DIST., SUMMERS CO., W.V.
STA. 8536+99 TO STA. 8561+86

HORZ SCALE: 1" = 200'	
DRAWN BY: HEI(DRF)	02/17/15
DRAFTING CK:	
ENGINEERING CK:	
CONSTRUCTION CK:	
ENVIRONMENTAL CK:	
AFE/P.O.N.O.:	
HEI PROJECT NO.: 14-10-052	
DRAWING NO.:	
PA-SUWV-H600-05	
SHEET 178 OF 329	REV. 8
DATE OF PLOT: 07/19/19 11:53 AM	

RIGHT-OF-WAY & OWNERSHIP DATA																							
DESIGN	PIPE / COATING		1	6	1	6	1	6	1	2	4	2	4	2									
	SLOPE DISTANCE		411'	40'	285'	40'	925'			3744'	40'	247'	40'	338'									
	CLASS LOCATION / HCA																						
ENVIRONMENTAL	CONSTRUCTION EXCLUSION	T.O.Y.R.: SEE TREE CLEARING PLAN	T.O.Y.R.: NO CONSTRUCTION WITHIN STREAMS S-115 & S-116 APRIL 1ST TO JUNE 30TH				TIME OF YEAR RESTRICTION: NO CLEARING JUNE 1 - JULY 31 SEE TREE CLEARING PLAN FOR FURTHER DETAILS				T.O.Y.R.: NO CONSTRUCTION WITHIN STREAM S-117 APRIL 1ST TO JUNE 30TH				TIME OF YEAR RESTRICTION: NO CLEARING JUNE 1 - JULY 31 SEE TREE CLEARING PLAN FOR FURTHER DETAILS				T.O.Y.R.: NO CONSTRUCTION WITHIN STREAMS S-119 & S-120 APRIL 1ST TO JUNE 30TH				T.O.Y.R.: SEE TREE CLEARING PLAN
	WETLAND / STREAM		S-115	S-116		S-117		S-119	S-120														
			10 LF	4 LF		2.5 LF		16 LF	14 LF														



PLAN VIEW

LEGEND

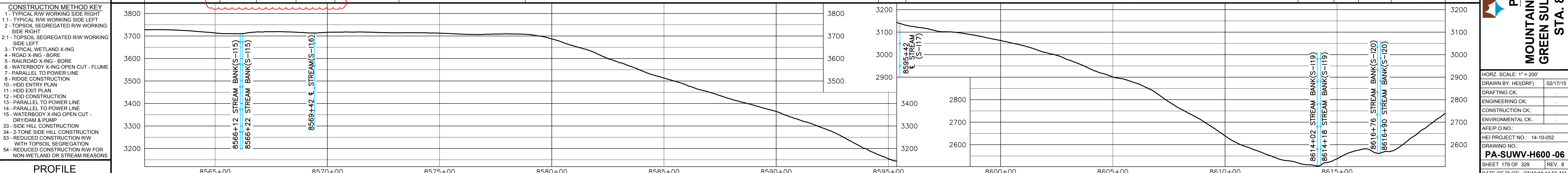
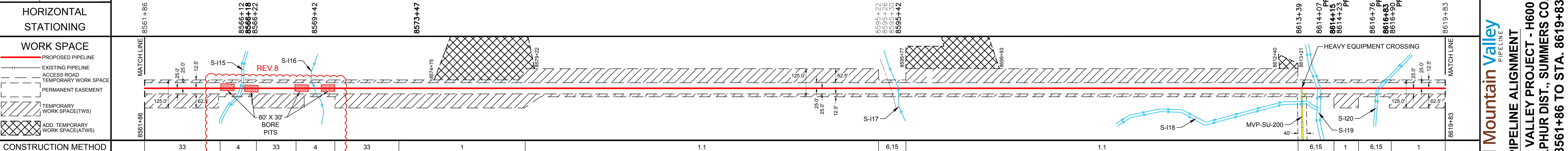
- STUDY CORRIDOR
- PROPOSED 42" PIPELINE
- NON-SURVEYED C.L.
- 500' TICK MARK
- EXISTING PIPELINE
- PERMANENT EASEMENT
- WORK SPACE LIMITS
- PERMANENT ACCESS RD
- TEMPORARY ACCESS RD
- ANGLIARY SITE
- COUNTY LINE
- PROPERTY LINE
- ROAD RIGHT-OF-WAY
- FENCE LINE
- OVERHEAD POWER
- OVERHEAD TELEPHONE
- C.L. ROAD
- C.L. RAILROAD
- DELINEATED STREAM
- DELINEATED WETLAND
- BARRICADE FENCE
- PROPOSED TEST STATION
- PI SYMBOL
- LINE MARKER - VENT PIPE
- MAILBOX
- POWER/TELE POLE
- SIGN
- TOWER LEG
- GUY ANCHOR
- TREE
- TANK
- GAS VALVE
- WELL - GAS/OIL/WATER
- MONITORING
- POST - GATE/FENCE
- ELEC/GAS/WTR METER
- PEDESTAL - UTILITY
- MI - SANITARY WATER
- CATCH BASIN - CULVERT
- ADDITIONAL TEMPORARY WORK SPACE(TWS)
- ABOVE GROUND FACILITY
- LIMITS OF DISTURBANCE

REFERENCE DRAWINGS

DRAWING NO.	DESCRIPTION
MVP-AR-H600-09	ACCESS ROADS, ANCILLARY SITES, MAINLINE VALVES & LAUNCHER/RECEIVER SITES
MVP-SDAR-H600-08	ACCESS ROAD DETAIL MAP
PA-WV-H600-1204-01	CATHODIC PROTECTION STANDARD DRAWING

HORIZONTAL STATIONING

8561+86 MATCH LINE	8566+12 STREAM BANK(S-115)	8566+12 PROPOSED RIVER WEIGHT - STREAM	8566+22 STREAM BANK(S-115)	8566+22 PROPOSED TYPE 1 TEST STATION	8569+42 & STREAM(S-116)	8573+47 PROPOSED TYPE 1 TEST STATION	8595+22 EDGE OF DIRT	8595+26 FIELD ROAD(DIRT)	8595+30 EDGE OF DIRT	8595+42 & STREAM(S-117)	8613+39 ACCESS ROAD - TEMPORARY HEAVY EQUIPMENT CROSSING	8614+07 STREAM BANK(S-118)	8614+15 PROPOSED RIVER WEIGHT - STREAM	8614+23 STREAM BANK(S-119)	8614+23 PROPOSED TYPE 1 TEST STATION	8616+76 STREAM BANK(S-120)	8616+83 PROPOSED RIVER WEIGHT - STREAM	8616+90 STREAM BANK(S-120)	8616+90 PROPOSED TYPE 1 TEST STATION	8619+83 MATCH LINE
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CONSTRUCTION METHOD

CONSTRUCTION METHOD KEY	CONSTRUCTION METHOD
1 - TYPICAL R/W WORKING SIDE RIGHT	33
1.1 - TYPICAL R/W WORKING SIDE LEFT	4
2 - TOPSOIL SEGREGATED R/W WORKING SIDE RIGHT	33
2.1 - TOPSOIL SEGREGATED R/W WORKING SIDE LEFT	4
3 - TYPICAL WETLAND X-ING	33
4 - ROAD X-ING - BORE	1
5 - RAILROAD X-ING - BORE	1.1
6 - WATERBODY X-ING OPEN CUT - FLUME	6.15
7 - PARALLEL TO POWER LINE	1.1
8 - RIDGE CONSTRUCTION	1
10 - HDD ENTRY PLAN	6.15
11 - HDD EXIT PLAN	1
12 - HDD CONSTRUCTION	6.15
13 - PARALLEL TO POWER LINE	1
14 - PARALLEL TO POWER LINE	6.15
15 - WATERBODY X-ING OPEN CUT - DRY/DAM & PUMP	1
33 - SIDE HILL CONSTRUCTION	
34 - 2 TONE SIDE HILL CONSTRUCTION	
53 - REDUCED CONSTRUCTION R/W WITH TOPSOIL SEGREGATION	
54 - REDUCED CONSTRUCTION R/W FOR NON-WETLAND OR STREAM REASONS	

PROFILE

STATION	ELEVATION (FEET)
8565+00	3750
8570+00	3700
8575+00	3650
8580+00	3600
8585+00	3550
8590+00	3500
8595+00	3450
8600+00	3400
8605+00	3350
8610+00	3300
8615+00	3250

HOLLAND ENGINEERING

200 Hoover Boulevard, Suite 2
 26050 Englewood, West Virginia
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REVISIONS

NO.	DATE	DESCRIPTION
0	05-15-16	REV. 4.0 ISSUED TO FERC
1	05-15-16	FERC DATA REQUEST NO. 1
2	06-24-16	REV. 4.1 ISSUED FOR BIDDING
3	06-24-16	REV. 4.1 ISSUED FOR BIDDING
4	06-24-16	OCTOBER 2016 PROPOSED ROUTE - ISSUED TO FERC
5	06-24-16	REVISED EDITIONS
6	06-24-16	REVISED EDITIONS
7	06-24-16	ISSUED FOR CONSTRUCTION - FERC CONSTRUCTION REQUEST
8	07-19-16	ISSUED FOR VARIANCE - CHANGED CONSTRUCTION METHOD FOR STREAM SITES S-116 CROSSINGS TO DIRT

MATERIAL SUMMARY

MAT. NO.	DESCRIPTION
1	42" O.D. X 0.817" W.T. X 70' FUSION BONDED EPOXY
2	42" O.D. X 0.750" W.T. X 70' FUSION BONDED EPOXY
3	42" O.D. X 0.817" W.T. X 70' FUSION BONDED EPOXY
4	42" O.D. X 0.817" W.T. X 70' FUSION BONDED EPOXY
5	42" O.D. X 0.817" W.T. X 70' FUSION BONDED EPOXY
6	42" O.D. X 0.817" W.T. X 70' FUSION BONDED EPOXY
7	TYPE 1 TEST STATION - PIPELINE
8	RIVER WEIGHTS

APPROVED FOR CONSTRUCTION

DATE: APRIL 2015 & JANUARY 2016

ISSUED FOR CONSTRUCTION

APPROVED FOR BIDDING

REV.	DATE	DESCRIPTION
1	04-15-16	REV. 4.0 ISSUED TO FERC
2	04-15-16	REV. 4.1 ISSUED FOR BIDDING
3	04-15-16	REV. 4.1 ISSUED FOR BIDDING
4	04-15-16	REV. 4.1 ISSUED FOR BIDDING
5	04-15-16	REV. 4.1 ISSUED FOR BIDDING
6	04-15-16	REV. 4.1 ISSUED FOR BIDDING
7	04-15-16	REV. 4.1 ISSUED FOR BIDDING

Mountain Valley PIPELINE

PIPELINE ALIGNMENT

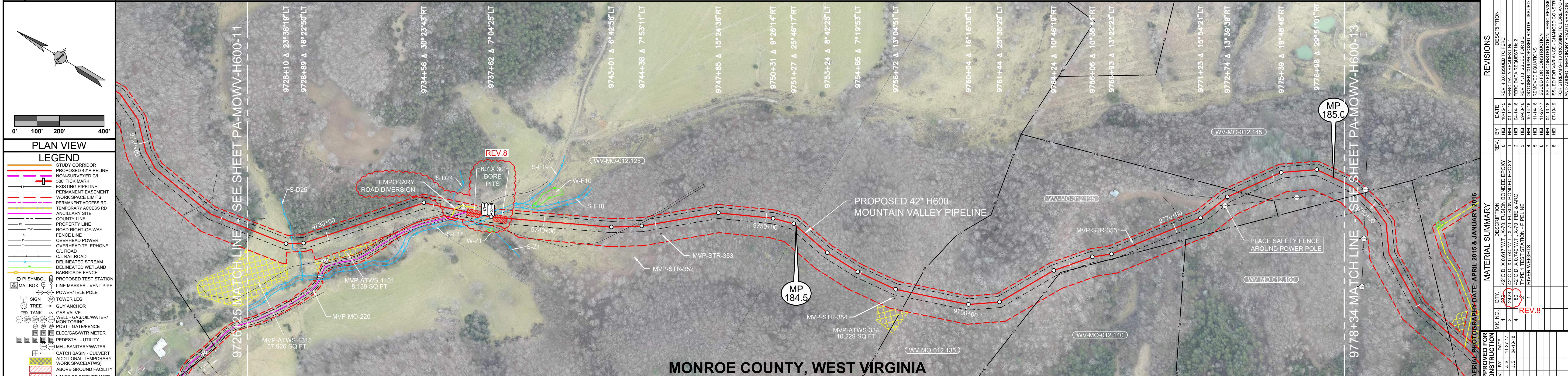
MOUNTAIN VALLEY PROJECT - H600 LINE

GREEN SULPHUR DIST., SUMMERS CO., W.V.

STA. 8561+86 TO STA. 8619+83

HORIZ. SCALE: 1" = 200'	02/17/15
DRAWN BY: HEI(DRF)	
DRAFTING CK:	
ENGINEERING CK:	
CONSTRUCTION CK:	
ENVIRONMENTAL CK:	
AF/EP O.N.O.:	
HEI PROJECT NO.: 14-10-052	
DRAWING NO.:	
PA-SUWV-H600-06	
SHEET 179 OF 329	REV. 8
DATE OF PLOT: 07/19/15 11:55 AM	

RIGHT-OF-WAY & OWNERSHIP DATA		DESIGN		ENVIRONMENTAL	
PIPE / COATING		PIPE / COATING		CONSTRUCTION EXCLUSION	
SLOPE DISTANCE	1091'	SLOPE DISTANCE	1057'	WETLAND / STREAM	S-D25 4 LF
CLASS LOCATION / HCA	2	CLASS LOCATION / HCA	2		S-F18 31 LF
				T.O.Y.R.: NO CONSTRUCTION WITHIN STREAM S-D25 APRIL 1ST TO JUNE 30TH	
				T.O.Y.R.: NO CLEARING JUNE 1 - JULY 31 SEE TREE CLEARING PLAN FOR FURTHER DETAILS	
				T.O.Y.R.: NO CONSTRUCTION WITHIN STREAM S-F18 APRIL 1ST TO JUNE 30TH	
				TIME OF YEAR RESTRICTION: NO CLEARING JUNE 1 - JULY 31 SEE TREE CLEARING PLAN FOR FURTHER DETAILS	



PLAN VIEW

0' 100' 200' 400'

LEGEND

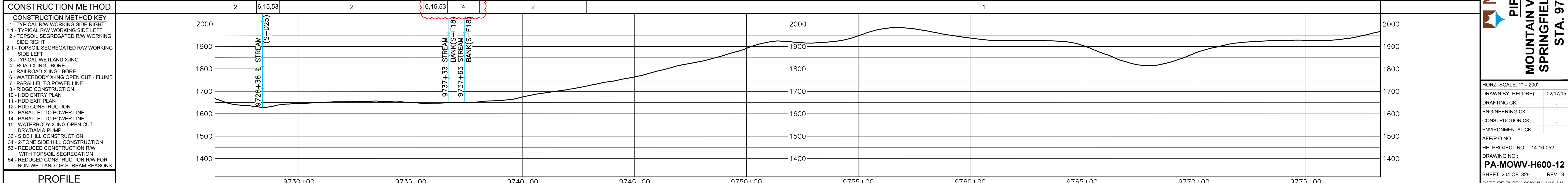
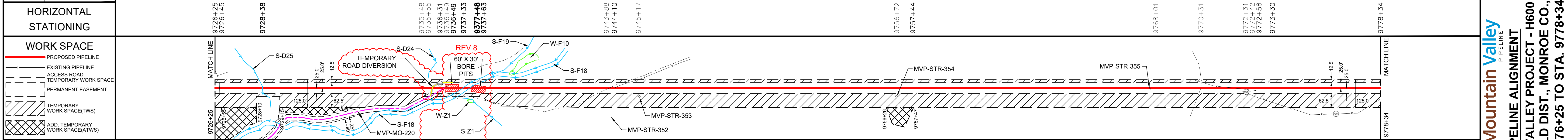
- STUDY CORRIDOR
- PROPOSED PIPELINE
- NON-SURVEYED C/L
- 500' TICK MARK
- EXISTING PIPELINE
- PERMANENT EASEMENT
- WORK SPACE LIMITS
- PERMANENT ACCESS RD
- TEMPORARY ACCESS RD
- ANGULAR SITE
- COUNTY LINE
- PROPERTY LINE
- ROAD RIGHT-OF-WAY
- FENCE LINE
- OVERHEAD POWER
- OVERHEAD TELEPHONE
- C/L ROAD
- C/L RAILROAD
- DELINEATED STREAM
- DELINEATED WETLAND
- BARRICADE FENCE
- PROPOSED TEST STATION
- PI SYMBOL
- MAILBOX
- LINE MARKER
- VENT PIPE
- POWER/TELE POLE
- TOWER LEG
- GUY ANCHOR
- TANK
- GAS VALVE
- WELL - GAS/OIL/WATER
- MONITORING
- POST - GATE/FENCE
- ELEC/GAS/WTR METER
- PEDESTAL - UTILITY
- MH - SANITARY/WATER
- CATCH BASIN - CULVERT
- ADDITIONAL TEMPORARY WORK SPACE(TWS)
- ABOVE GROUND FACILITY
- LIMITS OF DISTURBANCE

REFERENCE DRAWINGS

DRAWING NO.	DESCRIPTION
MVP-AR-H600-10	ACCESS ROADS, ANCILLARY SITES, MAINLINE VALVES & LAUNCHER/RECEIVER SITES
MVP-DNR-H600-10	ACCESS ROAD DETAIL MAP
PA-W-660-1204-01	CATHODIC PROTECTION STANDARD DRAWING

HORIZONTAL STATIONING

9726+25 MATCH LINE
9726+45 FENCE - ELECTRIC
9728+38 & STREAM(S-D25)
9735+48 CULVERT OPEN END 48'RT
9735+55 CULVERT OPEN END 67'RT
9736+31 WELL WATER 18"LT
9736+49 FIELD ROAD(DIRT)
9736+49 ACCESS RD - PERMANENT(MVP-MO-220)
9737+33 STREAM BANK(S-F18)
9737+48 PROPOSED RIVER WEIGHT - STREAM BANK(S-F18)
9737+63 PROPOSED TYPE 1 TEST STATION
9743+88 & FIELD ROAD(DIRT)
9744+10 FENCE - BARBED WIRE
9745+17 DEER BLIND 44'RT
9756+72 DEER BLIND 33'RT
9757+44 PROPERTY LINE
9770+31 & FIELD ROAD(DIRT)
9772+31 GUY ANCHOR 36'RT
9772+42 POWER POLE 24'RT
9772+58 FENCE - BARBED WIRE
9773+30 PROPERTY LINE
9778+34 MATCH LINE



HOLLAND
ENGINEERING

200 Hoover Boulevard, Suite 2
28006 Englewood, NC, Suite 430
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www.hollandengineering.com

REVISIONS

REV.	DATE	DESCRIPTION
0	10-15-14	REVISED TO FERC
1	01-15-15	FERC DATA REQUEST NO. 1
2	02-10-15	REVISED TO FERC
3	02-10-15	REVISED TO FERC
4	02-10-15	REVISED TO FERC
5	02-10-15	REVISED TO FERC
6	02-10-15	REVISED TO FERC
7	02-10-15	REVISED TO FERC
8	02-10-15	REVISED TO FERC

MATERIAL SUMMARY

QTY.	DESCRIPTION
1	42" O.D. X 0.0717 W.T. X 70' FUSION BONDED EPOXY
2	42" O.D. X 0.0717 W.T. X 70' FUSION BONDED EPOXY
3	42" O.D. X 0.0717 W.T. X 70' FUSION BONDED EPOXY
4	42" O.D. X 0.0717 W.T. X 70' FUSION BONDED EPOXY
5	42" O.D. X 0.0717 W.T. X 70' FUSION BONDED EPOXY
6	42" O.D. X 0.0717 W.T. X 70' FUSION BONDED EPOXY
7	42" O.D. X 0.0717 W.T. X 70' FUSION BONDED EPOXY
8	42" O.D. X 0.0717 W.T. X 70' FUSION BONDED EPOXY

APPROVED FOR CONSTRUCTION

REV.	DATE	DESCRIPTION
1	02-10-15	REVISED TO FERC
2	02-10-15	REVISED TO FERC
3	02-10-15	REVISED TO FERC
4	02-10-15	REVISED TO FERC
5	02-10-15	REVISED TO FERC
6	02-10-15	REVISED TO FERC
7	02-10-15	REVISED TO FERC
8	02-10-15	REVISED TO FERC

Mountain Valley
PIPELINE

PIPELINE ALIGNMENT
MOUNTAIN VALLEY PROJECT - H600 LINE
SPRINGFIELD DIST., MONROE CO., W.V.
STA. 9776+25 TO STA. 9778+34

ISSUED FOR CONSTRUCTION

**Mountain Valley Pipeline, LLC
Mountain Valley Pipeline Project
Docket No. CP16-10-000**

**Crossing
Method Table
Attachment 2**

Stream/ Wetland	Nearest Station	Milepost	Original Crossing Method	Update Proposed Crossing Method	Approximate Bore Pit Depth (Feet)	Approximate Pipe Depth Below Resource (Feet)
W-A4a (PEM)	76+91	1.4	Dry Ditch Open-Cut	Conventional Bore	15	4
S-A5a (Unt to Fallen Timber Run)	121+24	2.3	Dry Ditch Open-Cut	Conventional Bore	20	5
S-A6a (Fallen Timber Run)	122+02	2.3	Dry Ditch Open-Cut	Conventional Bore	20	5
S-J60 (Sams Run)	424+96	7.9	Dry Ditch Open-Cut	Conventional Bore	20	5
S-M5 (Red Spring Branch)	8506+02	160.9	Dry Ditch Open-Cut	Conventional Bore	15	5
S-I13 (Unt to Lick Creek)	8555+03	161.8	Dry Ditch Open-Cut	Conventional Bore	15	5
S-I14 (Unt to Lick Creek)	8560+45	161.9	Dry Ditch Open-Cut	Conventional Bore	15	5
S-I15 (Unt to Lick Creek)	8566+12	162.1	Dry Ditch Open-Cut	Conventional Bore	15	5
S-I16 (Unt to Lick Creek)	8569+42	162.1	Dry Ditch Open-Cut	Conventional Bore	15	5
S-F18 (Unt to Hans Creek)	9737+33	184.2	Dry Ditch Open-Cut	Conventional Bore	15	5

**Mountain Valley Pipeline, LLC
Mountain Valley Pipeline Project
Docket No. CP16-10-000**

**Geological
Conditions
Attachment 3**

Stream/ Wetland	Era	Period	Period 2	Class	Group	Formation	Coal
W-A4a (PEM)	Paleozoic	Pennsylvanian	Permian	sedimentary	sandstone	Dunkard	Greene, Washington, Waynesburg
S-A5a (Unt to Fallen Timber Run)	Paleozoic	Pennsylvanian	Permian	sedimentary	sandstone	Dunkard	Greene, Washington, Waynesburg
S-A6a (Fallen Timber Run)	Paleozoic	Pennsylvanian	Permian	sedimentary	sandstone	Dunkard	Greene, Washington, Waynesburg
S-J60 (Sams Run)	Paleozoic	Mississippian	N/A	sedimentary	shale/sandstone	Mauch Chunk	Bluestone, Princeton
S-M5 (Red Spring Branch)	Paleozoic	Pennsylvanian	N/A	sedimentary	sandstone	Pottsville	Pocahontas
S-I13 (Unt to Lick Creek)	Paleozoic	Pennsylvanian	N/A	sedimentary	sandstone	Pottsville	Pocahontas
S-I14 (Unt to Lick Creek)	Paleozoic	Pennsylvanian	N/A	sedimentary	sandstone	Pottsville	Pocahontas
S-I15 (Unt to Lick Creek)	Paleozoic	Mississippian	N/A	sedimentary	shale	Mauch Chunk	Bluefield
S-I16 (Unt to Lick Creek)	Paleozoic	Pennsylvanian	Permian	sedimentary	sandstone	Dunkard	Greene, Washington, Waynesburg
S-F18 (Unt to Hans Creek)	Paleozoic	Pennsylvanian	Permian	sedimentary	sandstone	Dunkard	Greene, Washington, Waynesburg

Reference: 1968 geological map of West Virginia. 1:250,000. D. H. Cardwell S. West Virginia Geological and Economic Survey

**Mountain Valley Pipeline, LLC
Mountain Valley Pipeline Project
Docket No. CP16-10-000**

**Email
Correspondence
USACE
Attachment 4**

Neylon, Megan

Subject: FW: Mountain Valley Pipeline (UNCLASSIFIED)

-----Original Message-----

From: Hatten, Michael E CIV USARMY CELRH (USA) [mailto:Michael.E.Hatten@usace.army.mil]

Sent: Friday, May 10, 2019 12:42 PM

To: Paul Friedman <Paul.Friedman@ferc.gov>

Cc: Hatten, Michael E CIV USARMY CELRH (USA) <Michael.E.Hatten@usace.army.mil>

Subject: FW: Mountain Valley Pipeline (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

Paul,

As you requested today, below is a response to your question about horizontal directional drill (HDD) (or directional bore) under small non-Navigable streams (and Non-Section 10 designated slack waters), which ARE NOT regulated pursuant to Section 10 of the Rivers and Harbors Act, but ARE REGULATED by this office pursuant to Section 404 of the Clean Water Act:

*An HDD constructed entirely under these types of jurisdictional waters can be performed in a manner that would not constitute a discharge of dredged or fill material.

Thanks, Mike

Michael Hatten

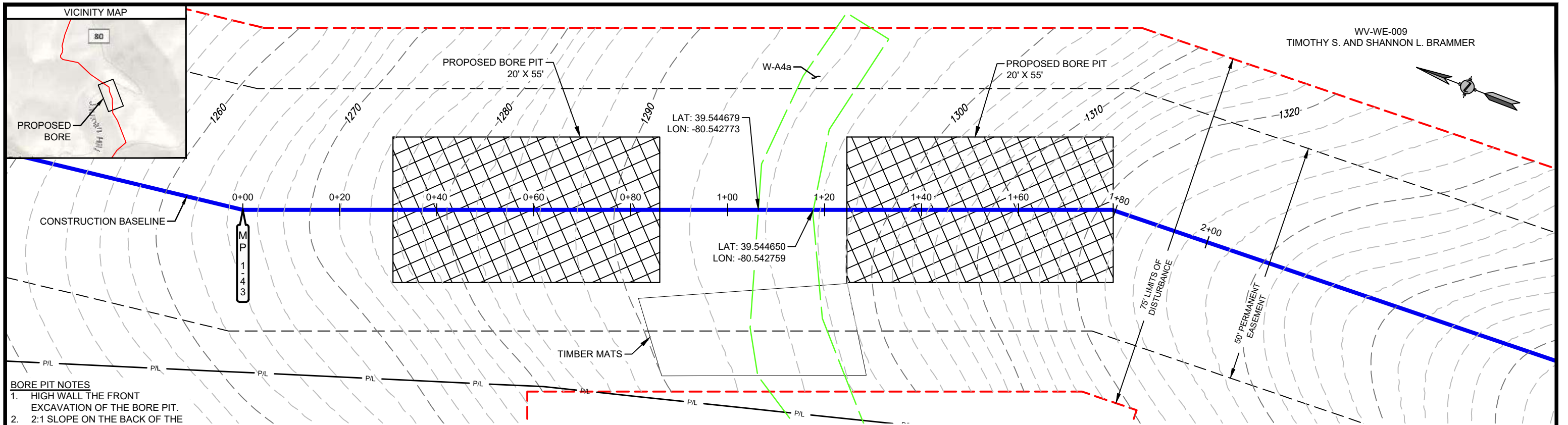
U.S. Army Corps of Engineers, Huntington District Chief, Regulatory Division

304-399-5610 Phone 304-399-5085 Fax

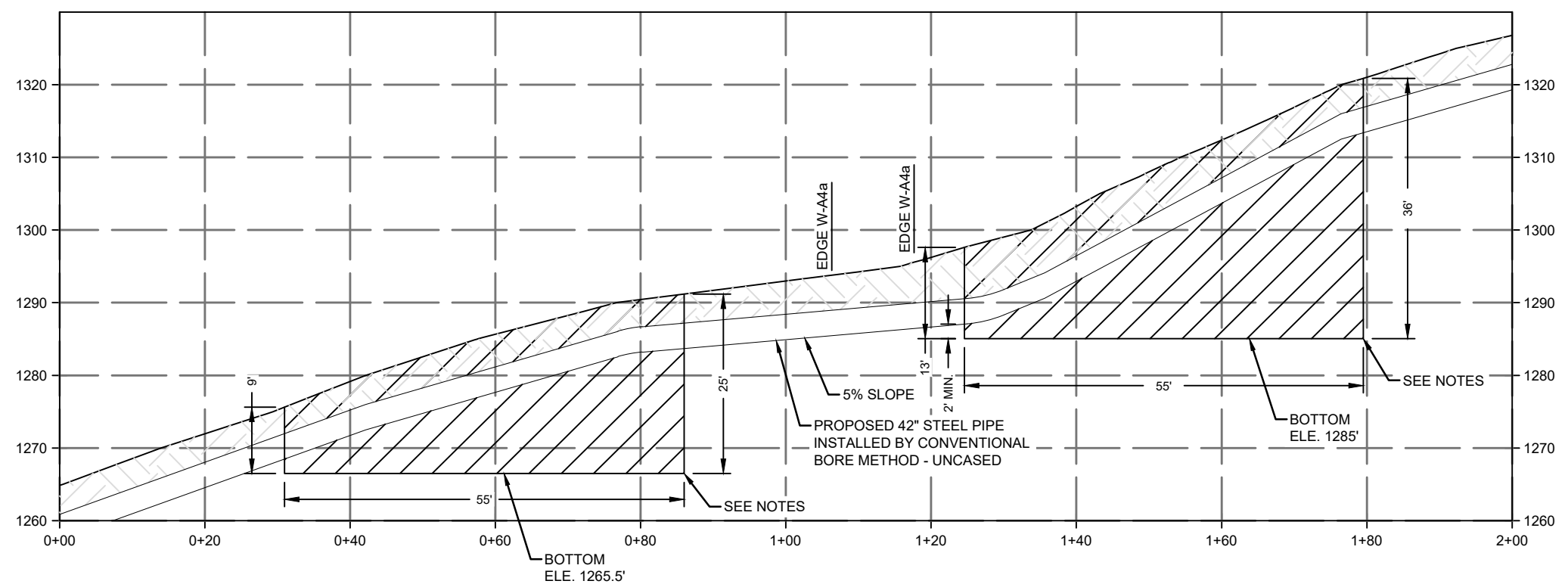
304-399-6918 Direct 304-638-9573 Cell

**Mountain Valley Pipeline, LLC
Mountain Valley Pipeline Project
Docket No. CP16-10-000**

**Bore Profiles
Attachment 5**



- BORE PIT NOTES**
1. HIGH WALL THE FRONT EXCAVATION OF THE BORE PIT.
 2. 2:1 SLOPE ON THE BACK OF THE BORE PIT GOING AWAY SIDE FROM LITTLE KANAWHA RIVER.
 3. TEST STATIONS/MARKERS TO BE INSTALLED AT TOP OF BANKS.
 4. CONTRACTOR TO VERIFY RIVER BOTTOM DEPTHS.



LEGEND

	CONSTRUCTION BASELINE		C/L ROAD
	FOREIGN PIPELINE		C/L RAILROAD
	PERMANENT ACCESS RD		WETLAND
	DRAIN TILE		TOWNSHIP BOUNDARY
	FENCE LINE		PROPERTY LINE
	OVERHEAD POWER		MILEPOST (TENTHS OF A MILE)
	OVERHEAD TELEPHONE		POWER/TELE POLE
	C/L STREAM		

	SACK WEIGHT		GUY ANCHOR
	TRENCH BREAKER		GAS VALVE
			CULVERT

SCALE: 1" = 20'

REV	DATE	BY	DESCRIPTION	CHK.
0	07/15/19	TGF	ISSUE FOR REVIEW	JAW

PROJECT NO: 61538

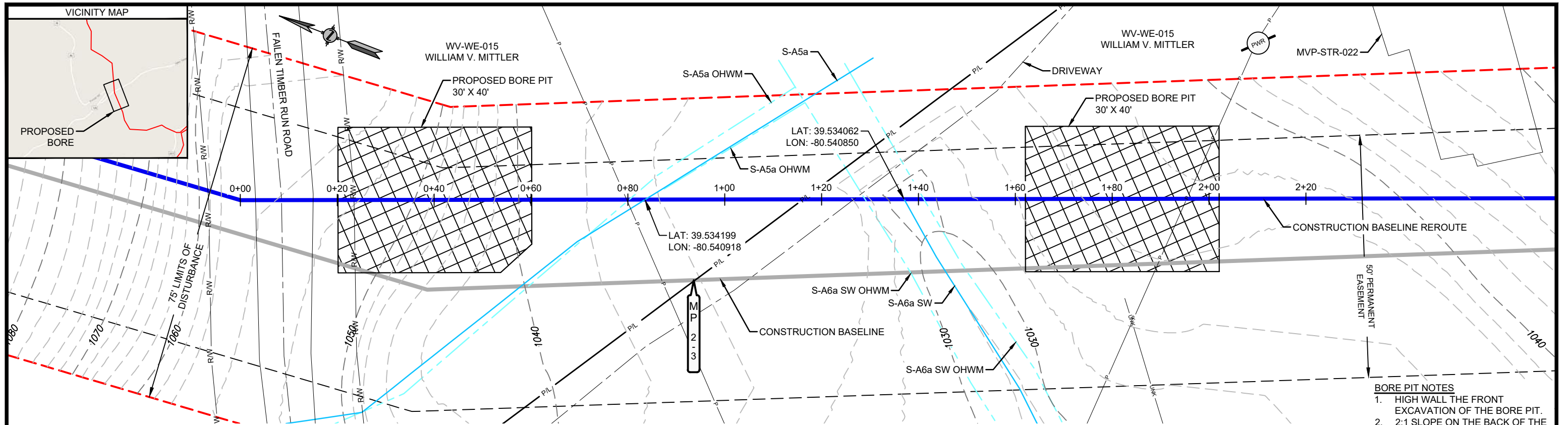
encompass ENCOMPASS SERVICES, LLC
1370 WASHINGTON PIKE, SUITE 308
BRIDGEVILLE, PA 15017

MOUNTAIN VALLEY PIPELINE, LLC

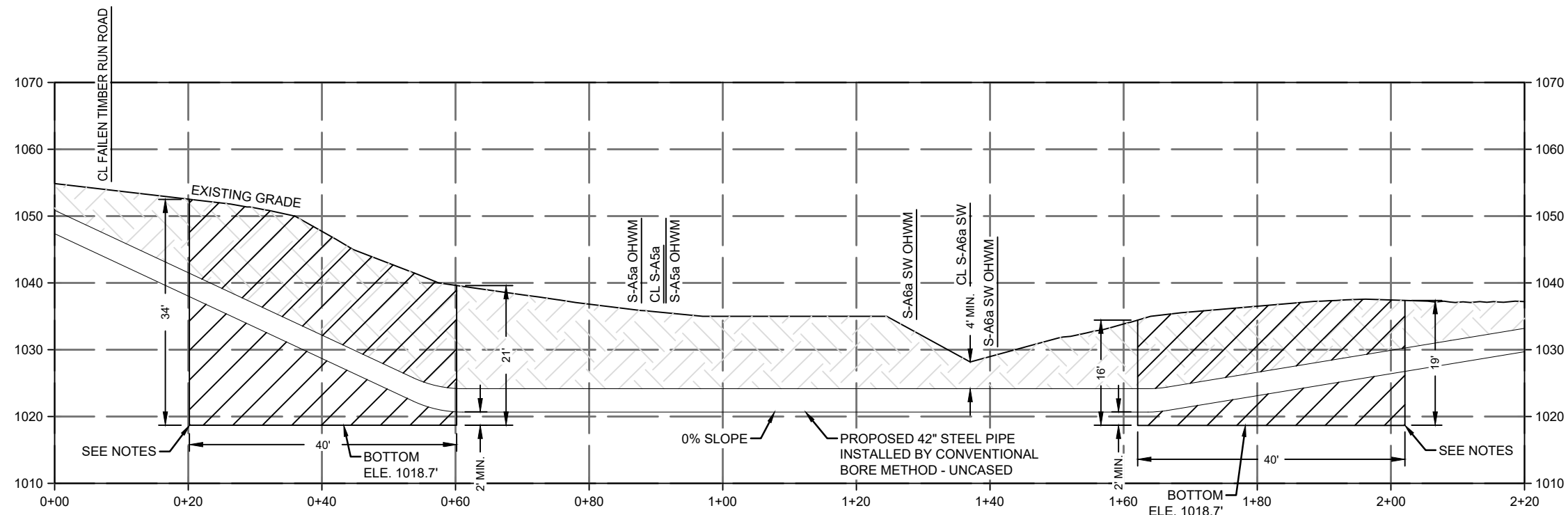
WETZEL COUNTY WEST VIRGINIA

BORE PIT MP 1.4

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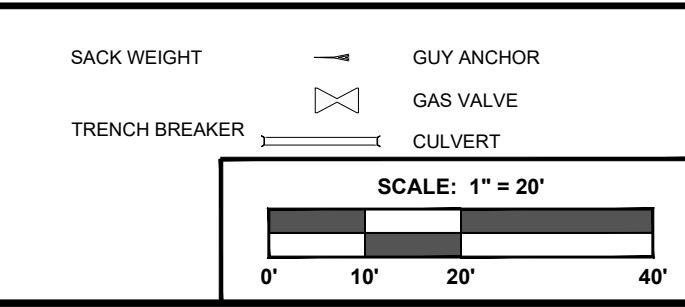


- BORE PIT NOTES**
1. HIGH WALL THE FRONT EXCAVATION OF THE BORE PIT.
 2. 2:1 SLOPE ON THE BACK OF THE BORE PIT GOING AWAY SIDE FROM S-A5a and S-A6a.
 3. TEST STATIONS/MARKERS TO BE INSTALLED AT TOP OF BANKS.
 4. CONTRACTOR TO VERIFY CREEK BOTTOM DEPTHS.



LEGEND

	CONSTRUCTION BASELINE		C/L ROAD
	FOREIGN PIPELINE		C/L RAILROAD
	PERMANENT ACCESS RD		WETLAND
	DRAIN TILE		TOWNSHIP BOUNDARY
	FENCE LINE		PROPERTY LINE
	OVERHEAD POWER		MILEPOST (TENTHS OF A MILE)
	OVERHEAD TELEPHONE		POWER/TELE POLE
	C/L STREAM		



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0	07/16/19	TGF	ISSUE FOR REVIEW	JAW

PROJECT NO: 61538

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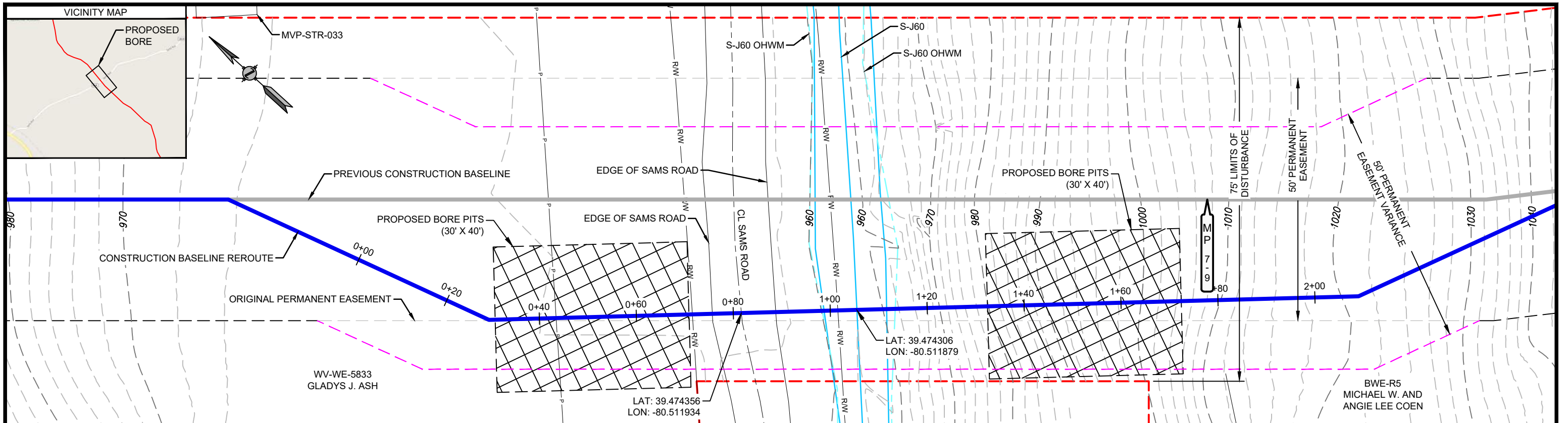
MOUNTAIN VALLEY PIPELINE, LLC

BORE PIT
MP 2.3 / S-A5a

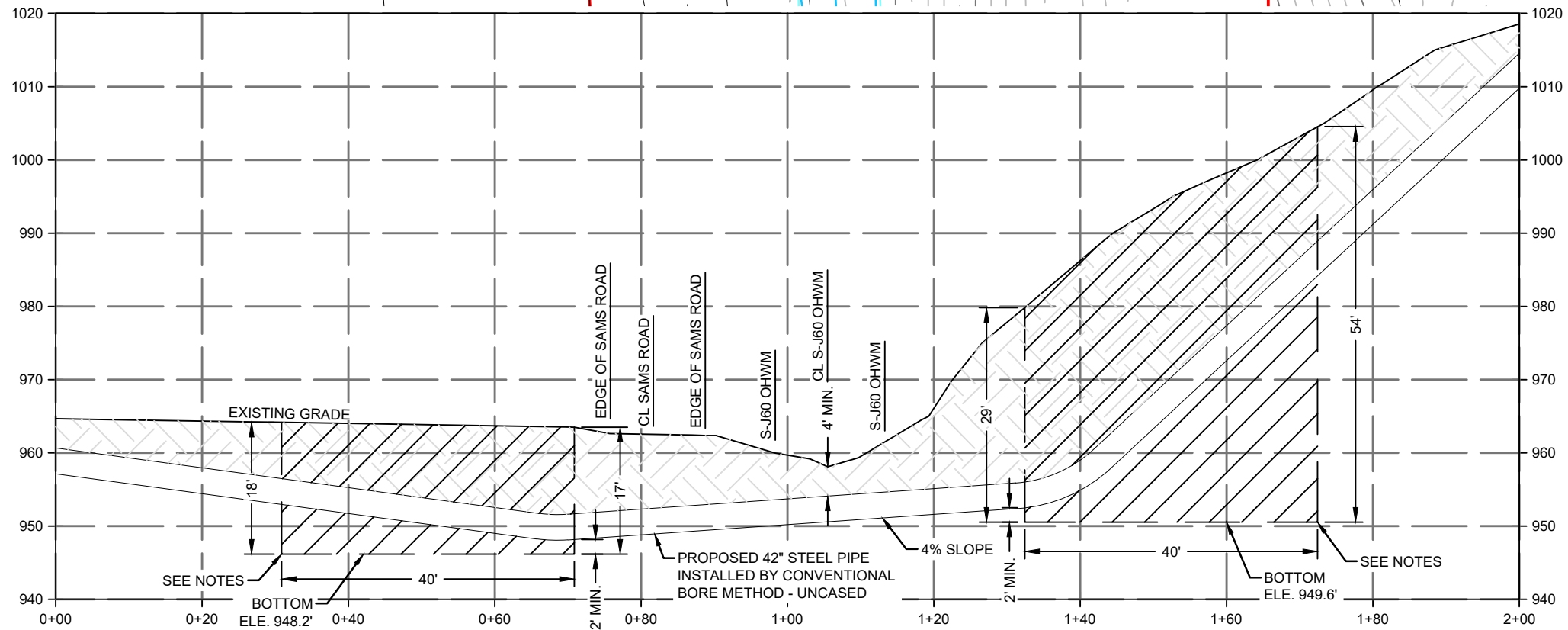
WETZEL COUNTY WEST VIRGINIA

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REV. 0

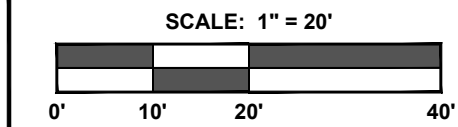


- BORE PIT NOTES**
1. HIGH WALL THE FRONT EXCAVATION OF THE BORE PIT.
 2. 2:1 SLOPE ON THE BACK OF THE BORE PIT GOING AWAY SIDE FROM S-J60.
 3. TEST STATIONS/MARKERS TO BE INSTALLED AT TOP OF BANKS.
 4. CONTRACTOR TO VERIFY STREAM BOTTOM DEPTHS.



LEGEND

- CONSTRUCTION BASELINE
- - - FOREIGN PIPELINE
- - - PERMANENT ACCESS RD
- - - DRAIN TILE
- x FENCE LINE
- P OVERHEAD POWER
- T OVERHEAD TELEPHONE
- C/L STREAM
- - - C/L ROAD
- - - C/L RAILROAD
- WETLAND
- - - TOWNSHIP BOUNDARY
- P/L PROPERTY LINE
- 0.0 0.1 0.2 MILEPOST (TENTHS OF A MILE)
- PWR TELE POWER/TELE POLE
- █ SACK WEIGHT
- ▨ TRENCH BREAKER
- ▲ GUY ANCHOR
- ⊗ GAS VALVE
- CULVERT



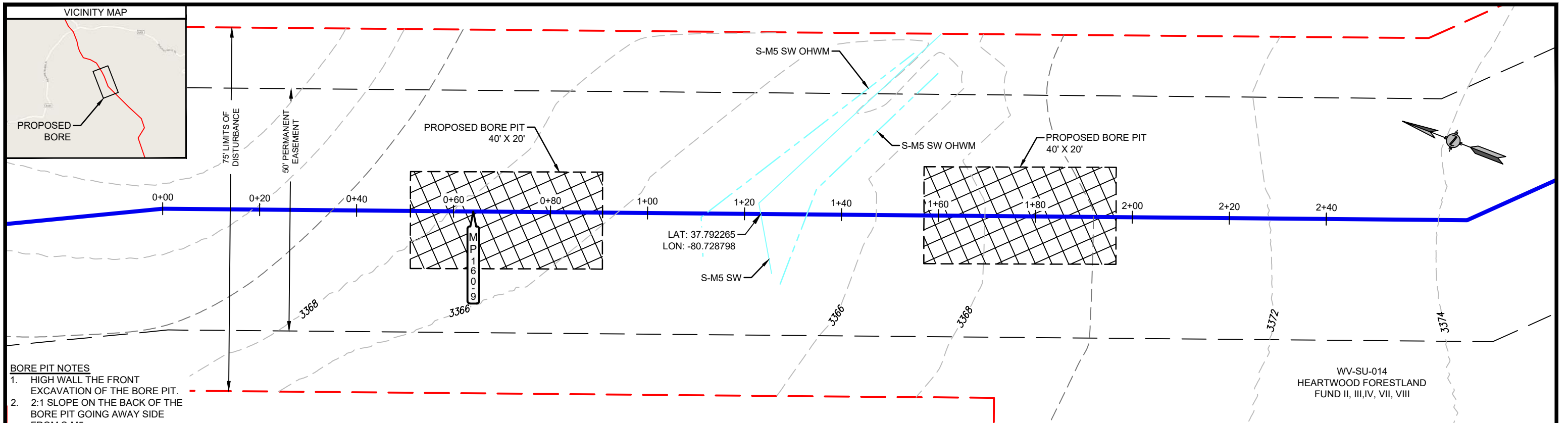
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PROJECT NO: **61538**

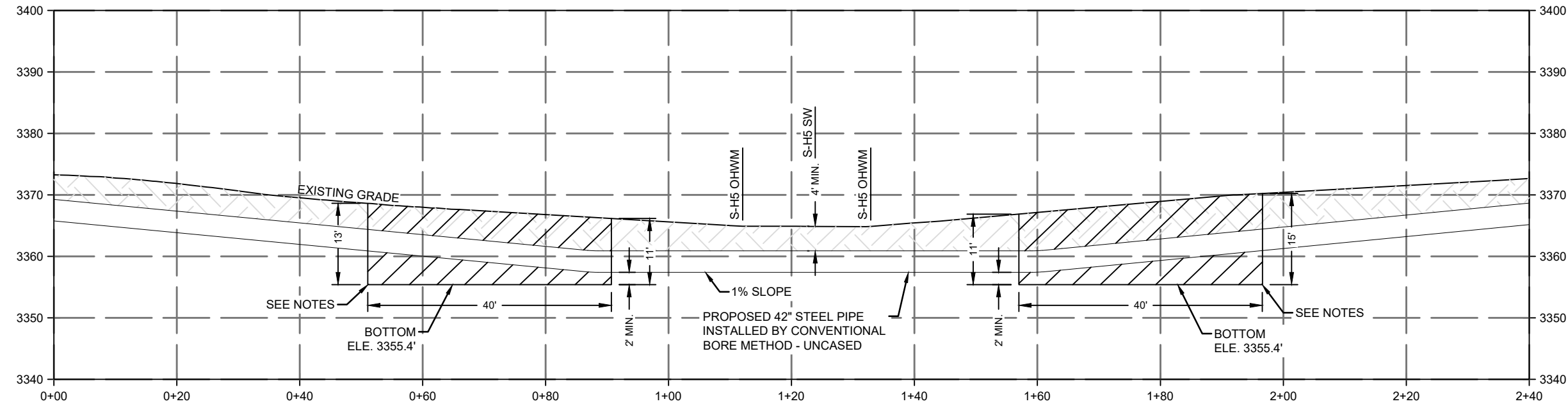
encompass ENCOMPASS SERVICES, LLC
1370 WASHINGTON PIKE, SUITE 308
BRIDGEVILLE, PA 15017

MOUNTAIN VALLEY PIPELINE, LLC

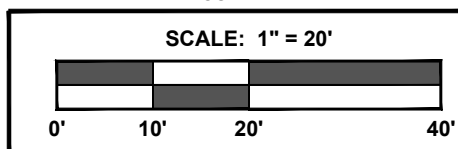
BORE VARIANCE S-J60		MP 7.9 / SAMS ROAD		WEST VIRGINIA
WETZEL COUNTY	DRAWN BY: TGF	DATE: 07/16/19	DWG. NO.	REV.
	CHECKED BY: JAW	DATE: 07/16/19	A-BP-WV-WE-R5	1
SCALE: 1"=20'	APP BY: TN		SHEET NO.	



- BORE PIT NOTES**
1. HIGH WALL THE FRONT EXCAVATION OF THE BORE PIT.
 2. 2:1 SLOPE ON THE BACK OF THE BORE PIT GOING AWAY SIDE FROM S-M5.
 3. TEST STATIONS/MARKERS TO BE INSTALLED AT TOP OF BANKS.
 4. CONTRACTOR TO VERIFY CREEK BOTTOM DEPTHS.



LEGEND	
	CONSTRUCTION BASELINE
	FOREIGN PIPELINE
	PERMANENT ACCESS RD
	DRAIN TILE
	FENCE LINE
	OVERHEAD POWER
	OVERHEAD TELEPHONE
	C/L STREAM
	C/L ROAD
	C/L RAILROAD
	WETLAND
	TOWNSHIP BOUNDARY
	PROPERTY LINE
	MILEPOST (TENTHS OF A MILE)
	POWER/TELE POLE
	POWER/TELE POLE
	SACK WEIGHT
	TRENCH BREAKER
	GUY ANCHOR
	GAS VALVE
	CULVERT



REV	DATE	BY	DESCRIPTION	CHK.
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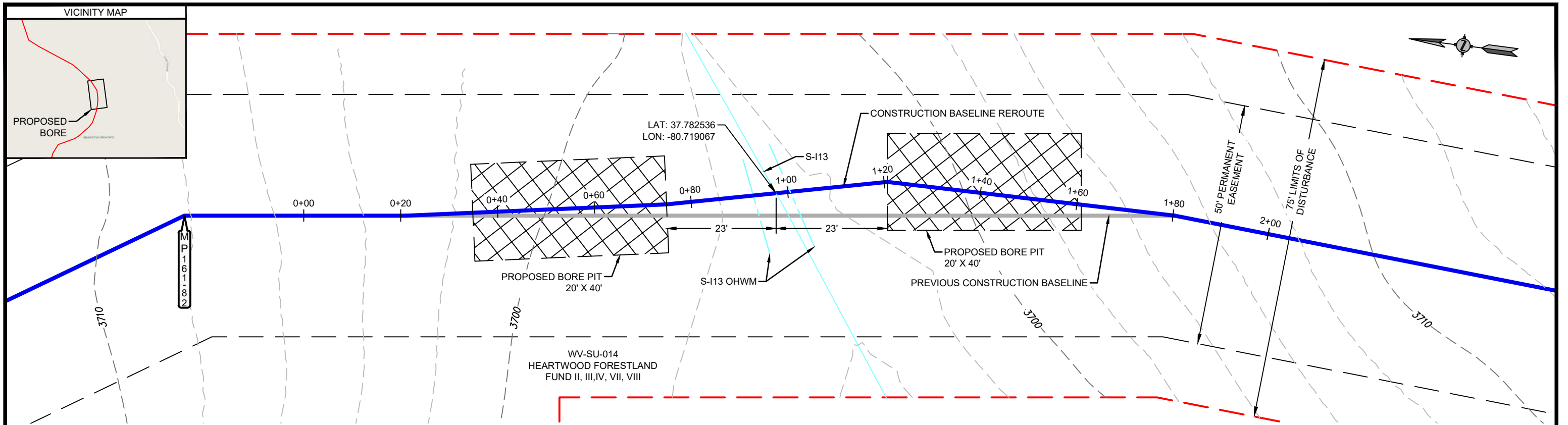
ENCOMPASS SERVICES, LLC
1370 WASHINGTON PIKE, SUITE 308
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MOUNTAIN VALLEY PIPELINE, LLC

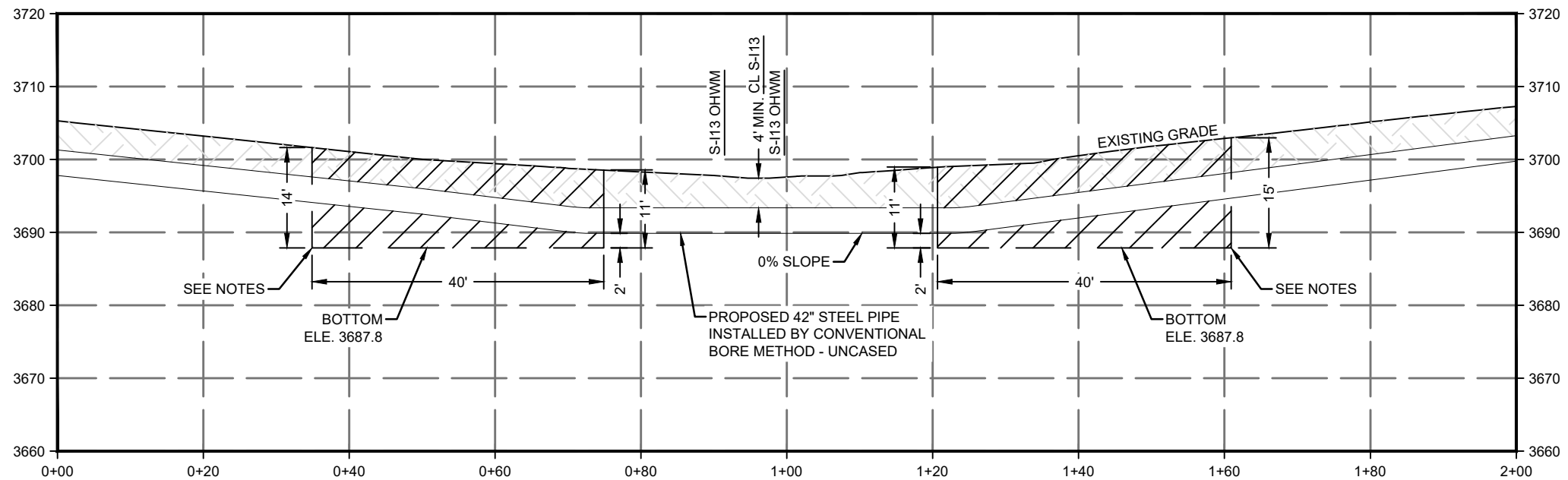
BORE VARIANCE S-M5

SUMMERS COUNTY MP 160.9 WEST VIRGINIA

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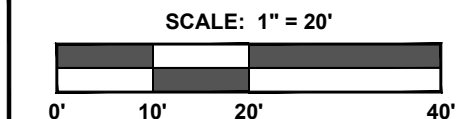


- BORE PIT NOTES**
1. HIGH WALL THE FRONT EXCAVATION OF THE BORE PIT.
 2. 2:1 SLOPE ON THE BACK OF THE BORE PIT GOING AWAY SIDE FROM S-113.
 3. TEST STATIONS/MARKERS TO BE INSTALLED AT TOP OF BANKS.
 4. CONTRACTOR TO VERIFY STREAM BOTTOM DEPTHS.



LEGEND

- CONSTRUCTION BASELINE
- - - - - FOREIGN PIPELINE
- - - - - PERMANENT ACCESS RD
- - - - - DRAIN TILE
- - - - - FENCE LINE
- - - - - OVERHEAD POWER
- - - - - OVERHEAD TELEPHONE
- C/L STREAM
- - - - - C/L ROAD
- - - - - C/L RAILROAD
- WETLAND
- - - - - TOWNSHIP BOUNDARY
- - - - - PROPERTY LINE
- - - - - MILEPOST (TENTHS OF A MILE)
- - - - - POWER/TELE POLE
- SACK WEIGHT
- TRENCH BREAKER
- ▲ GUY ANCHOR
- ⊗ GAS VALVE
- ⊘ CULVERT



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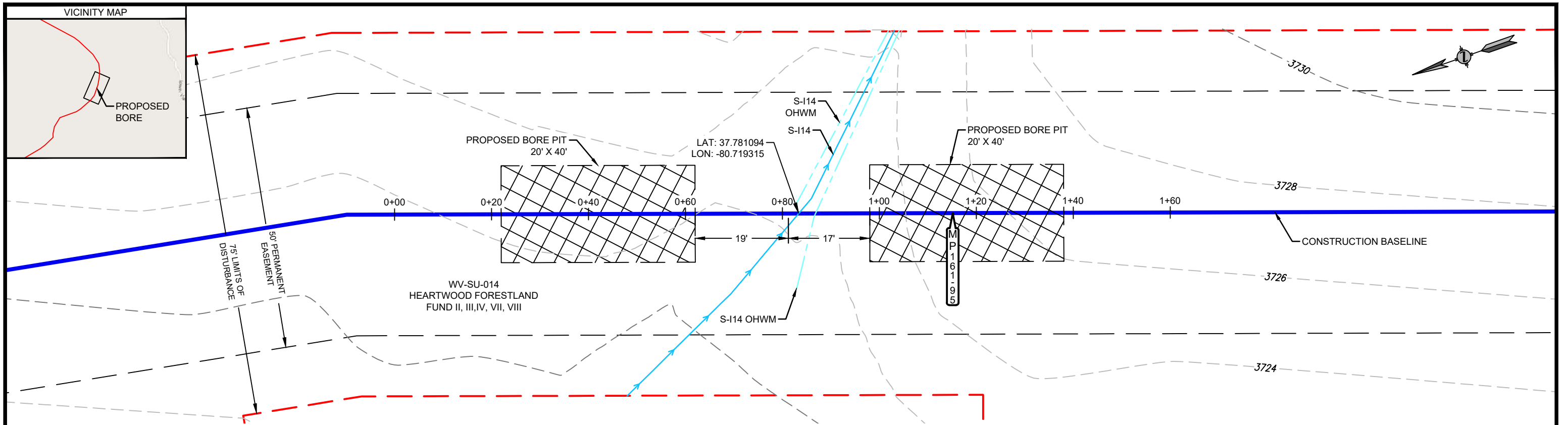
MOUNTAIN VALLEY PIPELINE, LLC

BORE VARIANCE S-113

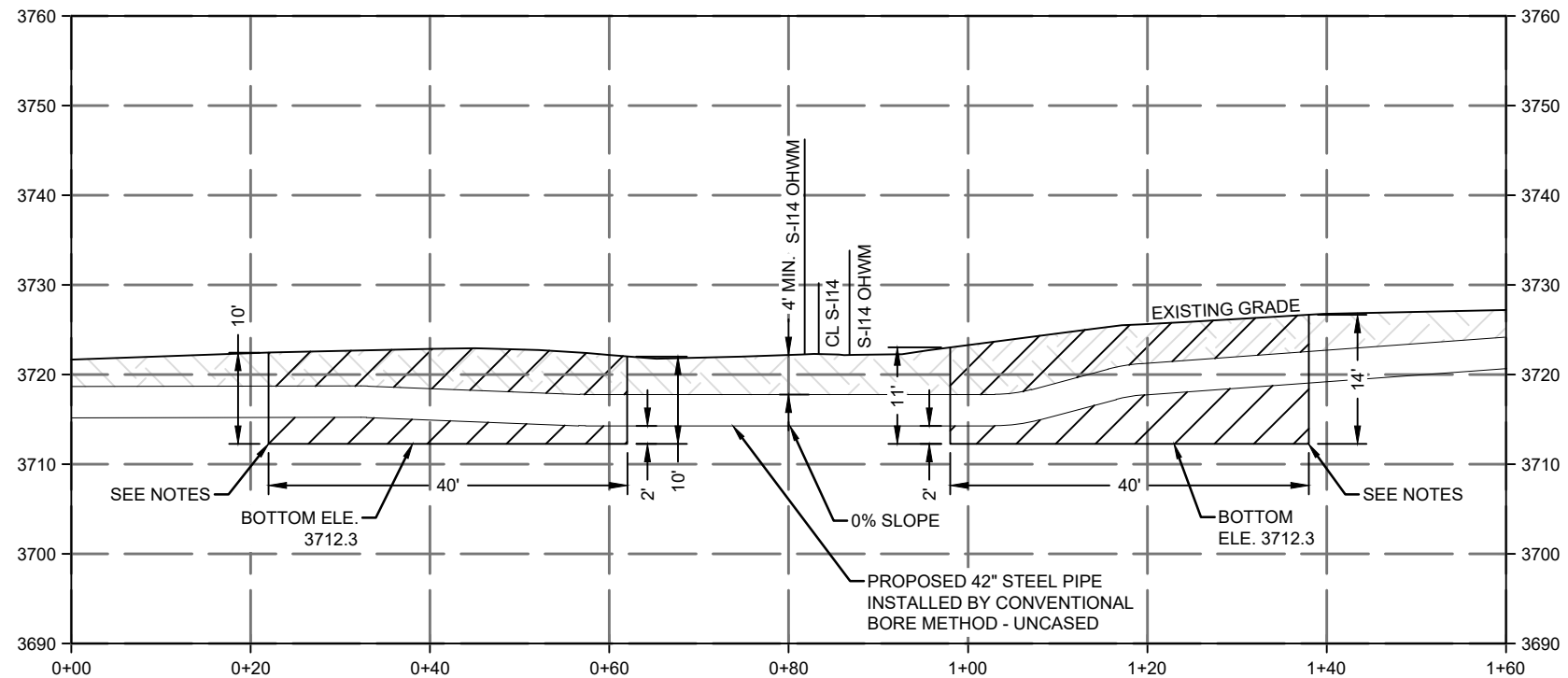
SUMMERS COUNTY MP 161.8 WEST VIRGINIA

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REV. 0

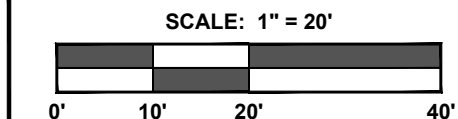


- BORE PIT NOTES**
1. HIGH WALL THE FRONT EXCAVATION OF THE BORE PIT.
 2. 2:1 SLOPE ON THE BACK OF THE BORE PIT GOING AWAY SIDE FROM S-I14.
 3. TEST STATIONS/MARKERS TO BE INSTALLED AT TOP OF BANKS.
 4. CONTRACTOR TO VERIFY STREAM BOTTOM DEPTHS.



LEGEND

- CONSTRUCTION BASELINE
- - - - - FOREIGN PIPELINE
- - - - - PERMANENT ACCESS RD
- - - - - DRAIN TILE
- - - - - FENCE LINE
- - - - - OVERHEAD POWER
- - - - - OVERHEAD TELEPHONE
- C/L STREAM
- - - - - C/L ROAD
- - - - - C/L RAILROAD
- - - - - WETLAND
- - - - - TOWNSHIP BOUNDARY
- - - - - PROPERTY LINE
- - - - - MILEPOST (TENTHS OF A MILE)
- - - - - POWER/TELE POLE
- SACK WEIGHT
- TRENCH BREAKER
- ▲ GUY ANCHOR
- ⊗ GAS VALVE
- ▬ CULVERT



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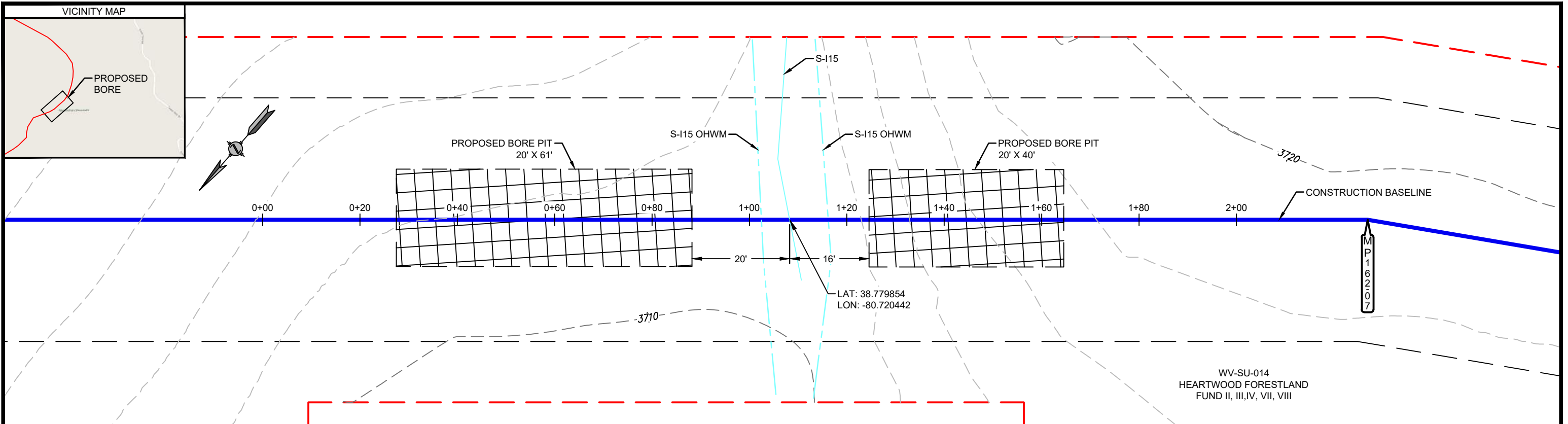
MOUNTAIN VALLEY PIPELINE, LLC

BORE VARIANCE S-I14

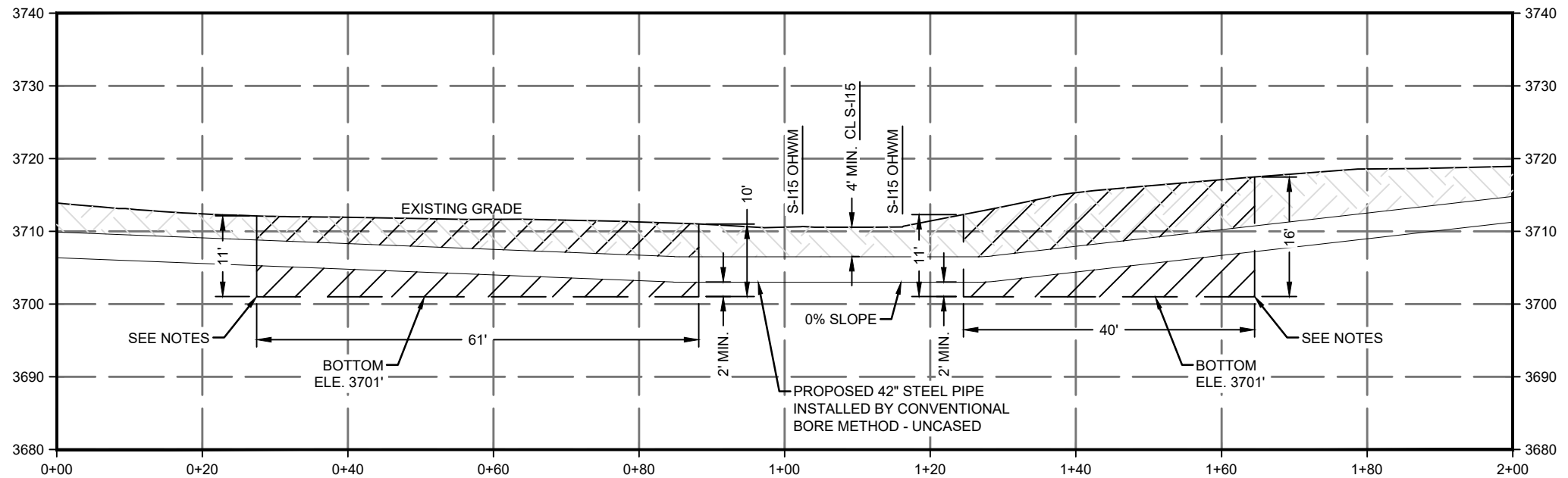
MP 161.95

SUMMERS COUNTY WEST VIRGINIA

DRAWN BY: BJO	DATE: 08/12/19	DWG. NO.	REV.
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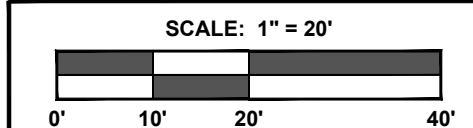


- BORE PIT NOTES**
- HIGH WALL THE FRONT EXCAVATION OF THE BORE PIT.
 - 2:1 SLOPE ON THE BACK OF THE BORE PIT GOING AWAY SIDE FROM S-I15.
 - TEST STATIONS/MARKERS TO BE INSTALLED AT TOP OF BANKS.
 - CONTRACTOR TO VERIFY STREAM BOTTOM DEPTHS.



LEGEND

	CONSTRUCTION BASELINE		C/L ROAD		SACK WEIGHT
	FOREIGN PIPELINE		C/L RAILROAD		TRENCH BREAKER
	PERMANENT ACCESS RD		WETLAND		GUY ANCHOR
	DRAIN TILE		TOWNSHIP BOUNDARY		GAS VALVE
	FENCE LINE		PROPERTY LINE		CULVERT
	OVERHEAD POWER		MILEPOST (TENTHS OF A MILE)		
	OVERHEAD TELEPHONE		POWER/TELE POLE		
	C/L STREAM				



REV	DATE	BY	DESCRIPTION	CHK.
0	08/09/19	TGF	ISSUE FOR REVIEW	JAW

PROJECT NO: 61538

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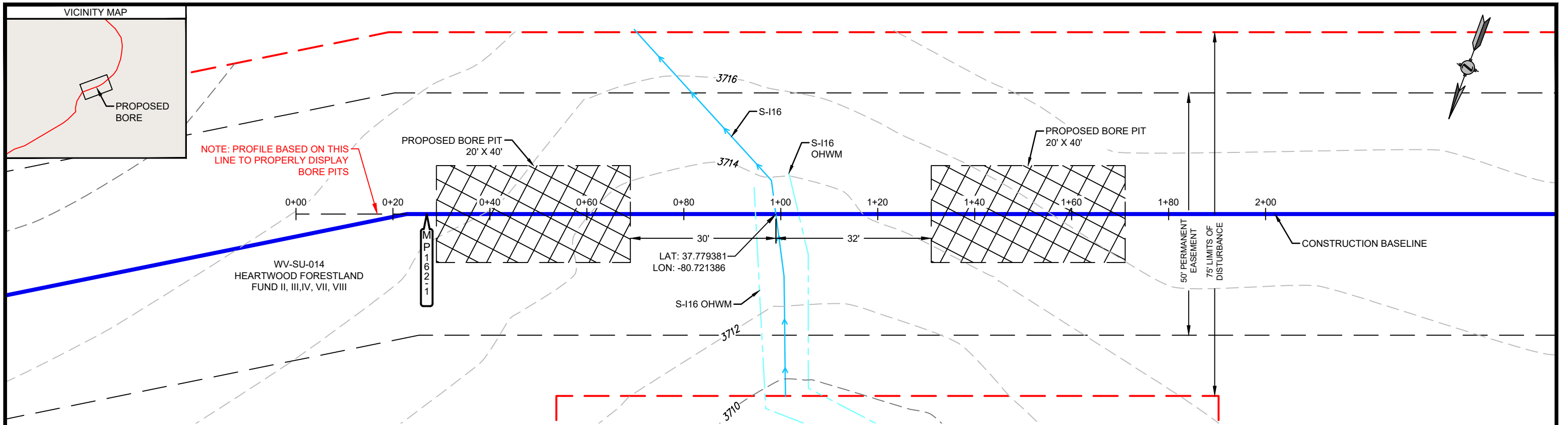
ENCOMPASS SERVICES, LLC
1370 WASHINGTON PIKE, SUITE 308
BRIDGEVILLE, PA 15017

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BORE VARIANCE S-I15
MP 162.1

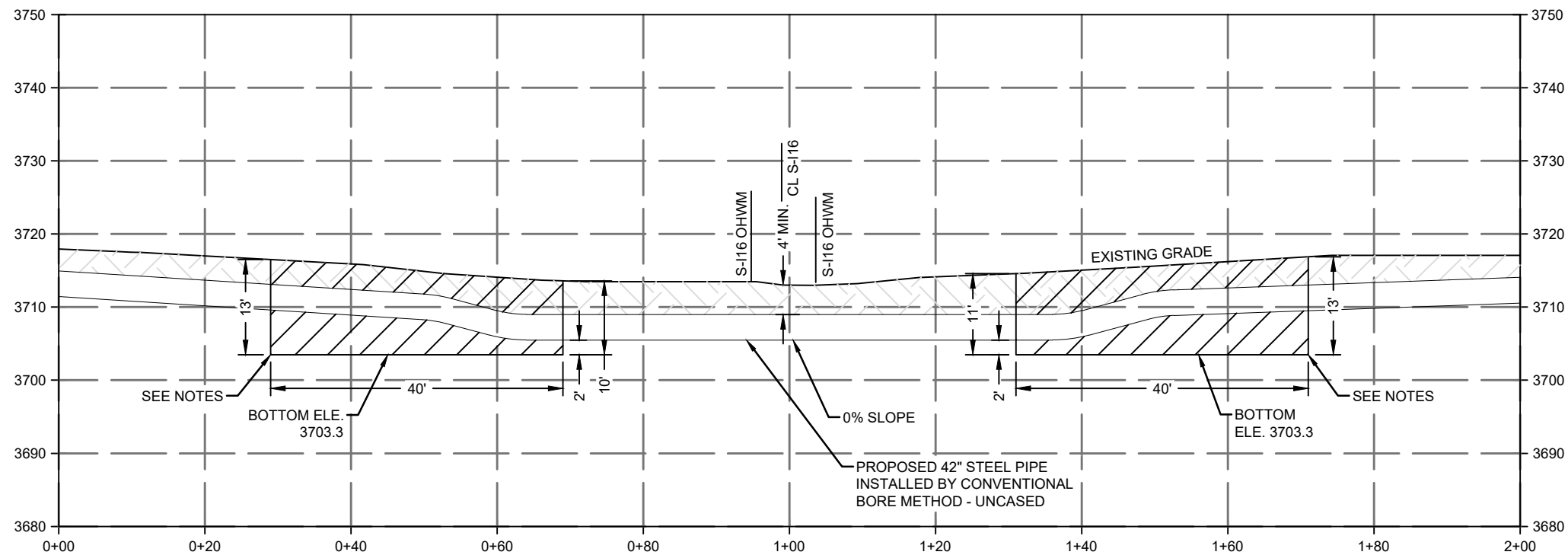
SUMMERS COUNTY WEST VIRGINIA

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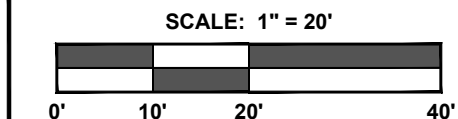
BORE PIT NOTES

1. HIGH WALL THE FRONT EXCAVATION OF THE BORE PIT.
2. 2:1 SLOPE ON THE BACK OF THE BORE PIT GOING AWAY SIDE FROM S-116.
3. TEST STATIONS/MARKERS TO BE INSTALLED AT TOP OF BANKS.
4. CONTRACTOR TO VERIFY STREAM BOTTOM DEPTHS.



LEGEND

- CONSTRUCTION BASELINE
- FOREIGN PIPELINE
- PERMANENT ACCESS RD
- DRAIN TILE
- FENCE LINE
- OVERHEAD POWER
- OVERHEAD TELEPHONE
- C/L STREAM
- C/L ROAD
- C/L RAILROAD
- WETLAND
- TOWNSHIP BOUNDARY
- PROPERTY LINE
- MILEPOST (TENTHS OF A MILE)
- POWER/TELE POLE
- SACK WEIGHT
- TRENCH BREAKER
- GUY ANCHOR
- GAS VALVE
- CULVERT



REV	DATE	BY	DESCRIPTION	CHK.
0	08/12/19	BJO	ISSUE FOR REVIEW	JAW

PROJECT NO: 61538

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Providing Solutions

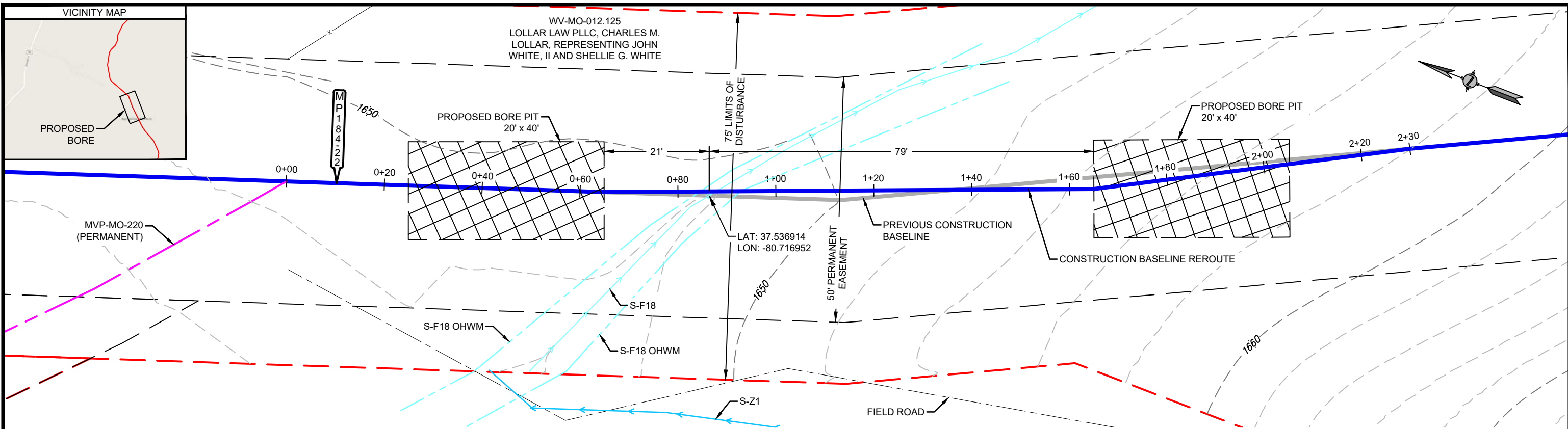
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1370 WASHINGTON PIKE, SUITE 308
BRIDGEVILLE, PA 15017

MOUNTAIN VALLEY PIPELINE, LLC

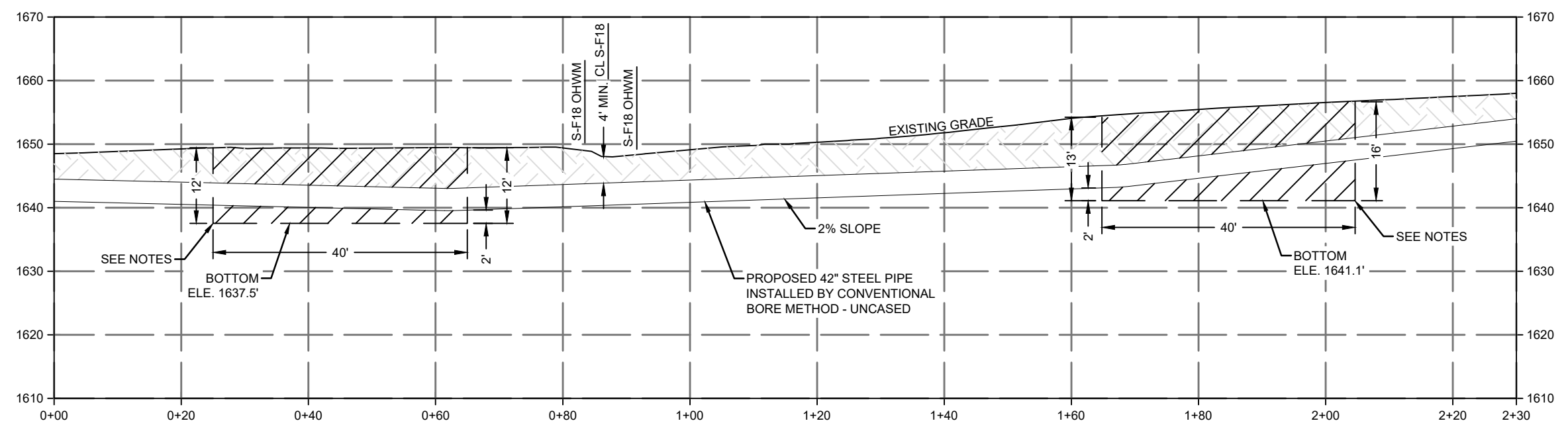
BORE VARIANCE S-116
MP 162.1

SUMMERS COUNTY WEST VIRGINIA

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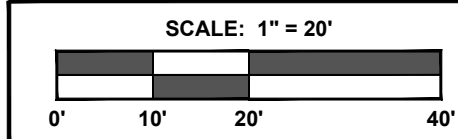


- BORE PIT NOTES**
1. HIGH WALL THE FRONT EXCAVATION OF THE BORE PIT.
 2. 2:1 SLOPE ON THE BACK OF THE BORE PIT GOING AWAY SIDE FROM S-F18.
 3. TEST STATIONS/MARKERS TO BE INSTALLED AT TOP OF BANKS.
 4. CONTRACTOR TO VERIFY STREAM BOTTOM DEPTHS.



LEGEND

	CONSTRUCTION BASELINE		C/L ROAD		SACK WEIGHT		GUY ANCHOR
	FOREIGN PIPELINE		C/L RAILROAD		TRENCH BREAKER		GAS VALVE
	PERMANENT ACCESS RD		WETLAND				CULVERT
	DRAIN TILE		TOWNSHIP BOUNDARY				
	FENCE LINE		PROPERTY LINE				
	OVERHEAD POWER		MILEPOST (TENTHS OF A MILE)				
	OVERHEAD TELEPHONE		POWER/TELE POLE				
	C/L STREAM						



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1370 WASHINGTON PIKE, SUITE 308
BRIDGEVILLE, PA 15017

MOUNTAIN VALLEY PIPELINE, LLC

BORE VARIANCE S-F18
MP 184.2

MONROE COUNTY WEST VIRGINIA

DRAWN BY: TGF	DATE: 08/12/19	DWG. NO.
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SCALE: 1"=20'	APP BY: TN	SHEET NO.

REV. 0