

SHEET INDEX

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FREDERICK COUNTY, MARYLAND
DIVISION OF PUBLIC WORKS
OFFICE OF TRANSPORTATION ENGINEERING
REPLACEMENT OF BRIDGE NO. F-16-14
ON BRETHREN CHURCH ROAD
OVER CATOCTIN CREEK

SURVEY INFORMATION

THE SURVEY DATA WAS COLLECTED ELECTRONICALLY AND NO PHYSICAL FIELD BOOKS EXIST. CONTROL INFORMATION IS AVAILABLE UPON REQUEST

HORIZONTAL DATUM : MARYLAND COORDINATE SYSTEM
NAD 83/91 BY FREDERICK COUNTY

VERTICAL DATUM : NAVD 88 BY FREDERICK COUNTY

FREDERICK COUNTY MARKS:

MYERS: N. 666609.366
E. 1151957.178
EL. 609.43

MYERS AZ:
N. 665618.813
E. 1151978.126
EL. 609.79

NOTICE TO BIDDERS

THE SPECIFICATIONS FOR THIS CONTRACT WILL BE THOSE OF THE MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION, TITLED "STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS", DATED JULY 2019, REVISIONS THERETO, AND THE SPECIAL PROVISIONS.

SEDIMENT AND EROSION CONTROL WILL BE STRICTLY ENFORCED DURING CONSTRUCTION BY ENVIRONMENTAL COMPLIANCE SECTION PHONE No. 301-600-3507.

THE GRADING LIMITS SHOWN ON THE PLANS ARE NOT TO BE EXCEEDED. CHANGES IN THE GRADING, EROSION AND SEDIMENT CONTROL PLAN, OR OTHER SEGMENT OF THE WORK MUST BE REVIEWED AND APPROVED BY THE FREDERICK COUNTY DIVISION OF PUBLIC WORKS.

THE FREDERICK COUNTY DIVISION OF PUBLIC WORKS SHALL ONLY BE RESPONSIBLE FOR THE COMPLETENESS OF DOCUMENTS OBTAINED DIRECTLY FROM FREDERICK COUNTY. FAILURE TO ATTACH ALL ADDENDA MAY CAUSE THE BID TO BE NON-RESPONSIVE.

IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR THAT THE STANDARD PLATES IN HIS/HER POSSESSION ARE THE LATEST REVISED S.H.A. STANDARD PLATES AS OF THE DATE OF THE AWARD OF THIS PROJECT.

RIGHT OF WAY LINES ON THESE PLANS DO NOT INCLUDE EASEMENTS. THEY ARE FOR ASSISTANCE IN INTERPRETING THE PLANS. THESE LINES DO NOT REPRESENT THE OFFICIAL PROPERTY ACQUISITION LINES. FOR OFFICIAL FEE SIMPLE RIGHT OF WAY AND EASEMENT INFORMATION, SEE APPROPRIATE R/W PLATS NUMBERED _____

MDE PERMIT NO. _____ EXPIRATION DATE: _____
USACE PERMIT NO. _____ EXPIRATION DATE: _____

OWNER'S / DEVELOPER'S CERTIFICATION

I/WE CERTIFY THAT THIS PLAN OF SEDIMENT CONTROL WILL BE IMPLEMENTED TO THE FULLEST EXTENT, AND ALL STRUCTURES WILL BE INSTALLED TO THE DESIGN AND SPECIFICATIONS AS SPELLED OUT IN THIS PLAN AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON SITE EVALUATION BY THE FREDERICK SOIL CONSERVATION DISTRICT PERSONNEL AND COOPERATING AGENCIES.

JASON M. STITT, P.E., CHIEF DATE _____
FREDERICK COUNTY OFFICE OF TRANSPORTATION ENGINEERING
355 MONTEVUE LANE, SUITE 200
FREDERICK, MARYLAND 21702
301-600-2932

ENGINEER'S CERTIFICATION

I HEREBY CERTIFY THAT THE PLANS HAVE BEEN DESIGNED IN ACCORDANCE WITH LOCAL ORDINANCES, COMAR 26.17.01 AND 2017 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL (LATEST VERSION AND REVISIONS).

SIGNATURE _____ DATE _____ REG. NO. _____

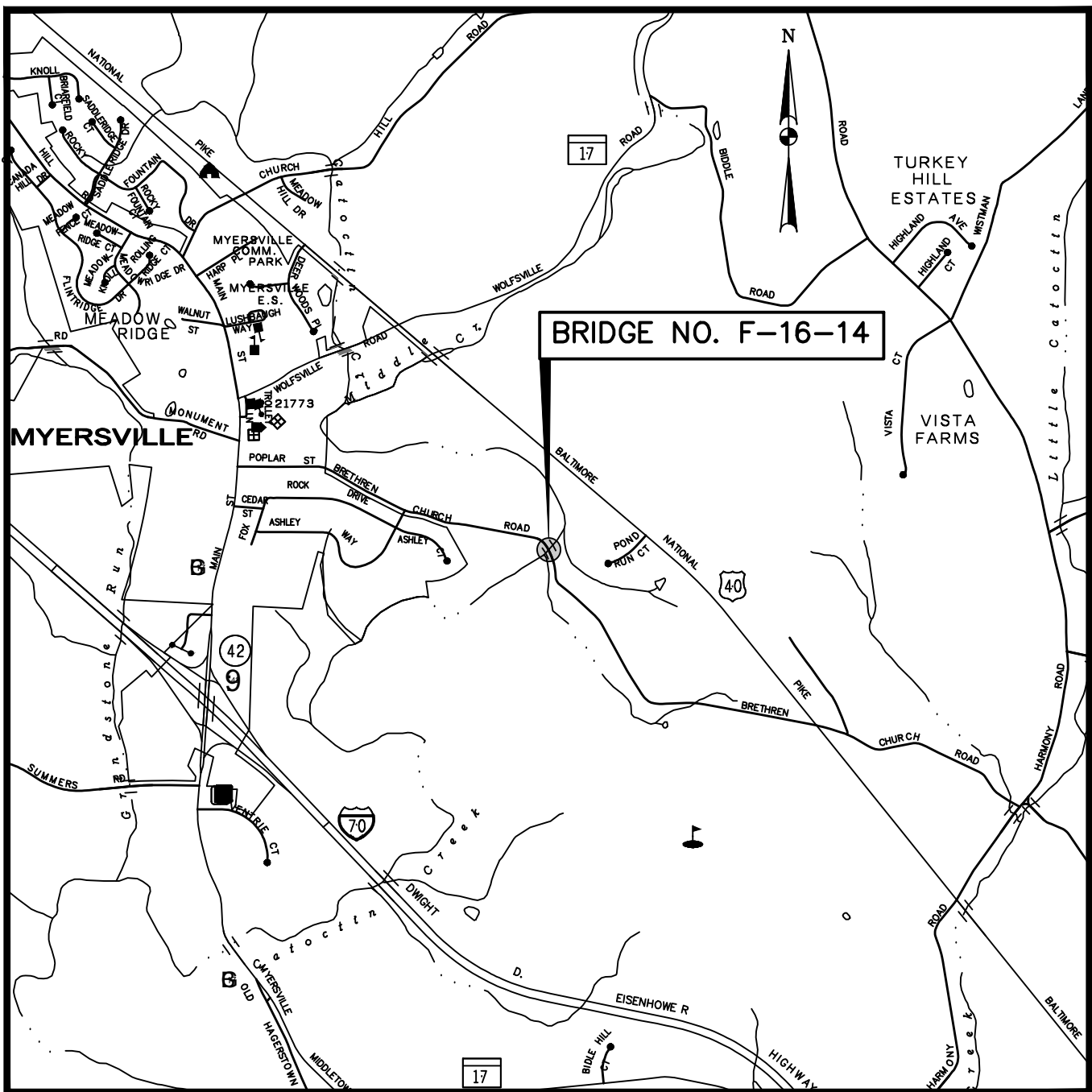
FOR T.S. & L. REVIEW

FEB 09 2021

THE WILSON T. BALLARD CO.

EXISTING UTILITIES

THE TYPE AND LOCATIONS OF EXISTING UTILITIES SHOWN ON THE PLANS ARE FOR INFORMATION AND GUIDANCE ONLY. NO GUARANTEE IS MADE AS TO THE ACCURACY OF SAID LOCATIONS. CONTACT "MISS UTILITY" AT 1-800-257-7777 A MINIMUM OF 5 DAYS PRIOR TO START OF WORK



LOCATION MAP
SCALE 1" = 2000'

TRAFFIC DATA	
ROAD CLASSIFICATION	RURAL MINOR COLLECTOR
DESIGN SPEED	35 M.P.H.
A.D.T. (Existing) 2020	910 V.P.D.
A.D.T. (Future) 2040	1110 V.P.D.
PERCENT TRUCKS	2%

FREDERICK SOIL CONSERVATION DISTRICT

APPROVED BY: _____
District Manager

DATE: _____

SCD APPROVAL FOR SEDIMENT AND EROSION CONTROL IS CONTINGENT UPON ISSUANCE OF ALL APPLICABLE REGULATORY PERMITS.

FREDERICK COUNTY, MARYLAND DEVELOPMENT REVIEW ENGINEERING				
APPROVED: _____ DEVELOPMENT REVIEW CHIEF DATE				
APPROVED: _____ STORMWATER MANAGEMENT DATE				
Reviewed in accordance with local County requirements. Frederick County assumes no liability for design and/or construction. Approval is valid for two (2) years after the last date shown above. The project must be under construction before the approval expiration to be considered active. Otherwise, resubmit of plans including applicable fees, must be made to Development Review for approval. Fees for resubmittal cannot be waived.				
REV. #	DATE	REVISION DESCRIPTION *FILL IN THESE BLOCKS FOR REVISIONS ONLY	CONSULTANT DATE AND INITIAL	DEV. REVIEW DATE AND INITIAL

DISTURBED AREA QUANTITY

THE TOTAL AREA TO BE DISTURBED AS SHOWN ON THESE PLANS HAS BEEN DETERMINED TO BE APPROXIMATELY XX SQUARE FEET, AND THE TOTAL AMOUNT OF EXCAVATION AND FILL AS SHOWN ON THESE PLANS HAS BEEN COMPUTED TO BE APPROXIMATELY XX CUBIC YARDS OF EXCAVATION AND APPROXIMATELY XX CUBIC YARDS OF FILL. THESE QUANTITIES ARE APPROXIMATE AND SHALL NOT BE USED BY THE CONTRACTOR FOR BIDDING PURPOSES.

NAME _____ DATE _____

TT-1

FREDERICK COUNTY, MARYLAND
DIVISION OF PUBLIC WORKS
DEPARTMENT OF ENGINEERING AND CONSTRUCTION MANAGEMENT
OFFICE OF TRANSPORTATION ENGINEERING
FREDERICK COUNTY, MARYLAND

**REPLACEMENT OF BRIDGE NO. F-16-14
ON BRETHREN CHURCH ROAD
OVER CATOCTIN CREEK**

TITLE SHEET

DATE: FEBRUARY 2021 SCALE: AS SHOWN

PROJECT NO: _____ DWG. 1 OF 26

WB THE WILSON T. BALLARD CO.
CONSULTING ENGINEERS | OWINGS MILLS, MD

PROFESSIONAL CERTIFICATION.
I CERTIFY THAT THIS DOCUMENT WAS PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.
LICENSE NO. 36070
EXPIRATION DATE: JUNE 29, 2022

FREDERICK COUNTY OFFICE OF
TRANSPORTATION ENGINEERING

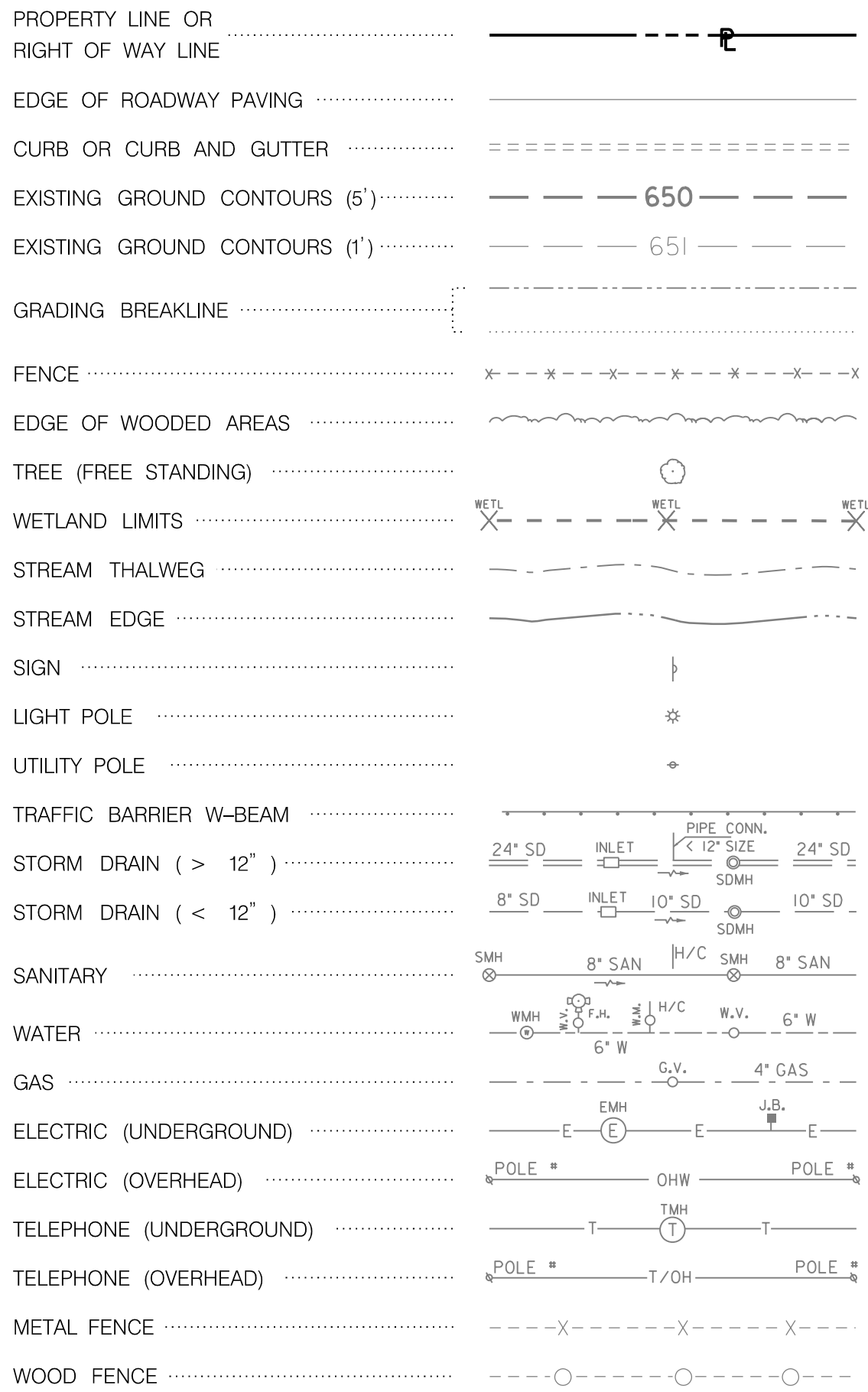
CHIEF DATE _____

FREDERICK COUNTY DIVISION OF
PUBLIC WORKS

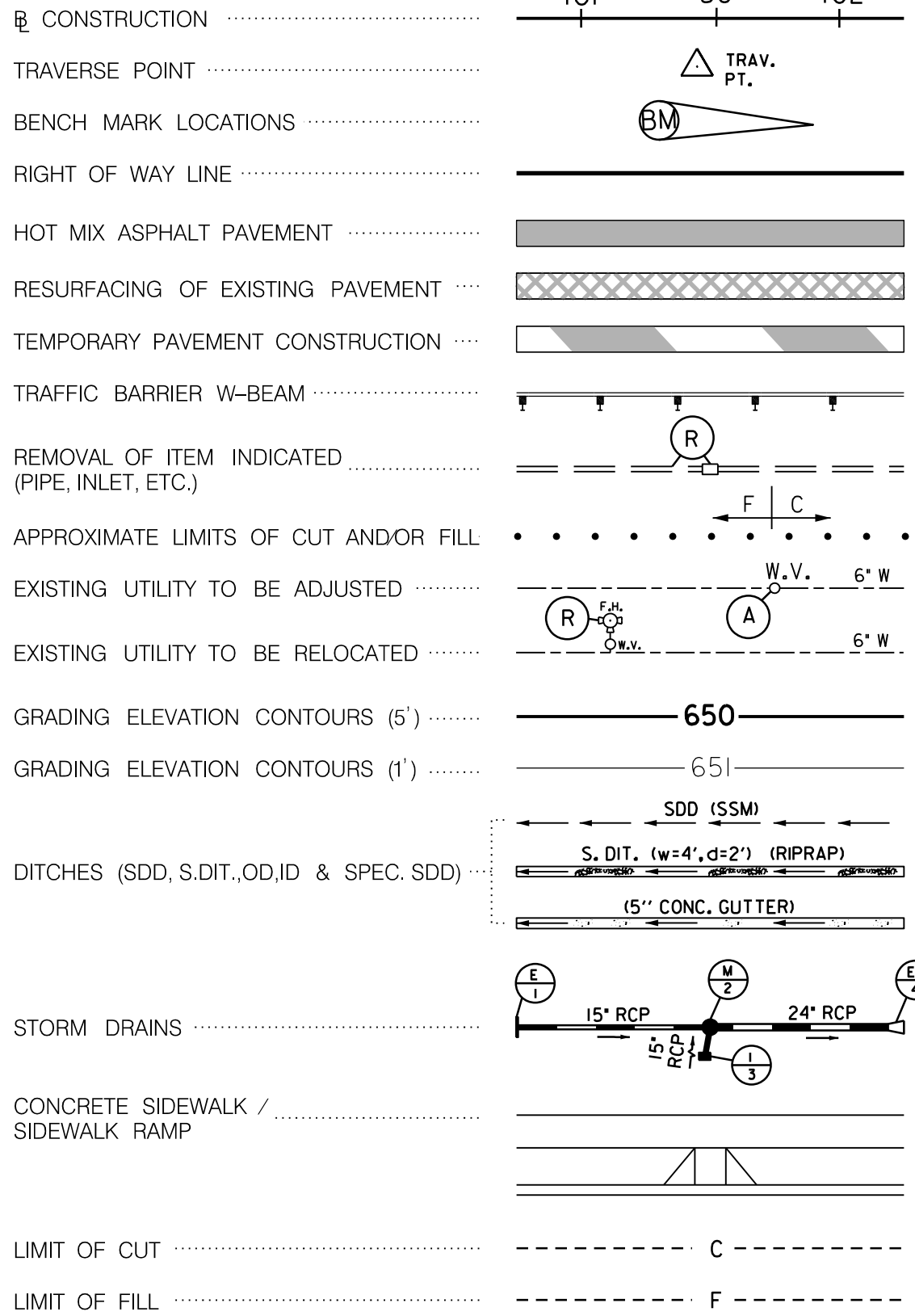
DIRECTOR DATE _____

SUPPLEMENT TO CONVENTIONAL SIGNS

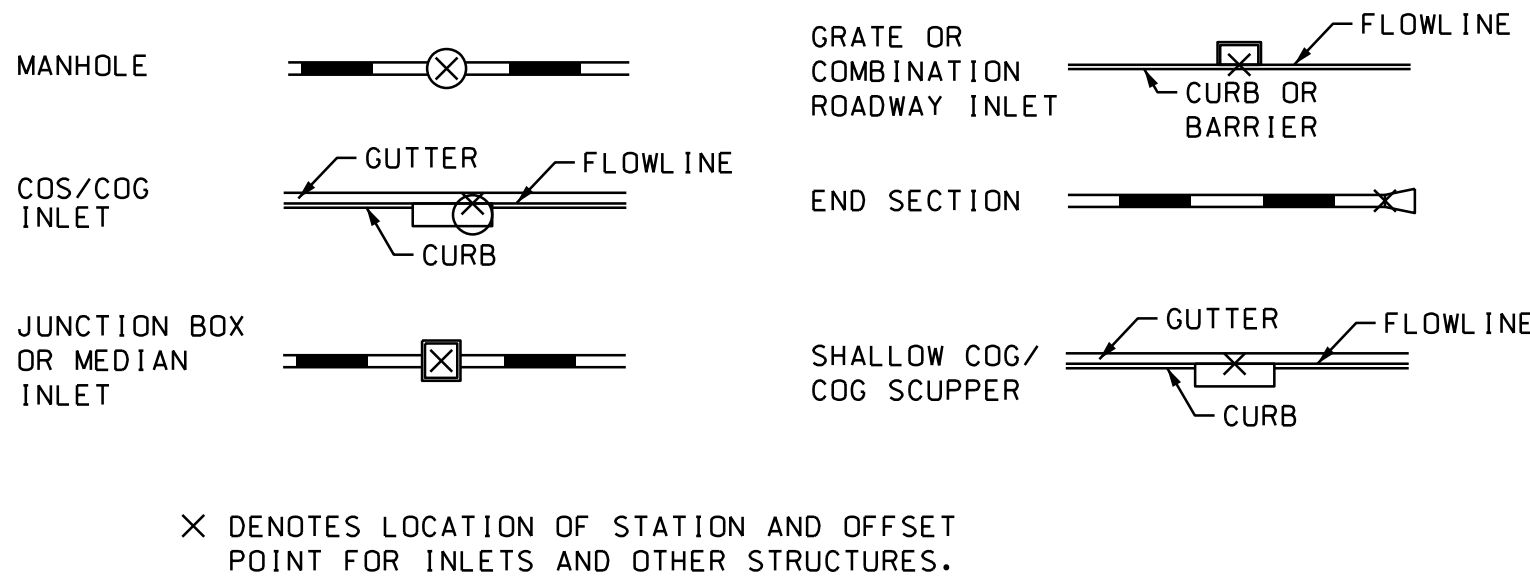
EXISTING CONSTRUCTION



PROPOSED CONSTRUCTION



DRAINAGE STRUCTURE STAKEOUT LOCATIONS



EXPLANATORY NOTES AND REFERENCES

VERTICAL CONTROL

THE LOCATION AND ELEVATION OF BENCH MARKS ARE SHOWN ON PLANS. ALL ELEVATIONS SHOWN ARE BASED ON NAVD 88.

HORIZONTAL CONTROL

THE PROJECT IS ORIENTED TO CONFORM TO NAD 83/91.

STANDARD PLATES

IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR THAT THE STANDARD PLATES IN THEIR POSSESSION ARE THE LATEST REVISED SHA STANDARD PLATES AS OF THE DATE OF AWARD OF THIS PROJECT.

SIGHT DISTANCES

STOPPING SIGHT DISTANCE FOR VERTICAL CURVES ARE BASED ON A HEIGHT OF EYE 3.5 FEET AND A HEIGHT OF OBJECT OF 6 INCHES. HEAD-LIGHT SIGHT DISTANCE FOR SAG VERTICAL CURVES ARE BASED ON HEAD LAMP BEAM 2.0 FEET ABOVE THE ROADWAY AND A 1° UPWARD DIVERGENCE.

ABBREVIATIONS

BL SURVEY	BASE LINE OF SURVEY	HC	UTILITY HOUSE CONNECTION	SMH	SANITARY MAN-HOLE
BL CONSTR.	BASE LINE OF CONSTRUCTION	HP	HIGH POINT	SDMH	STORM DRAIN MANHOLE
BA	BELL ATLANTIC	INV	INVERT	SD	SIDE DITCH
B.C.	BOTTOM CURB	ID	INLET DITCH	SDD	SURFACE DRAIN DITCH
BD	BERM DITCH	LP	LIGHT POLE /LOW POINT	SW	SIDEWALK
BM	BENCH MARK	L / W	LIMIT OF WORK	SE	SUPERELEVATION RATE
CMPA	CORRUGATED METAL PIPE ARCH (ALUM.)	SHA	MARYLAND STATE HIGHWAY ADMINISTRATION	SSD	STOPPING SIGHT DISTANCE
CO	CURB OPENING	MH	MANHOLE	SSM	SOIL STABILIZATION MATTING
CONC	CONCRETE	NBR	NORTHBOUND ROADWAY	SBR	SOUTHBOUND ROADWAY
C&G	COMBINATION CONCRETE CURB AND GUTTER	OD	OUTLET DITCH	STA	STATION
CG	CONCRETE GUTTER	PROP	PROPOSED	STY	STORY
CAB TV	CABLE T.V. (TELE-COMMUNICATIONS INC.)	PC	POINT OF CURVATURE	TB	TRAFFIC BARRIER
CIP	CAST IRON PIPE	PRC	POINT OF REVERSE CURVATURE	TBW	TRAFFIC BARRIER W BEAM
EOH	OVERHEAD ELECTRIC LINE	PT	POINT OF TANGENCY	T	TELEPHONE
E	UNDERGROUND ELECTRIC LINE	PCC	POINT OF COMPOUND CURVATURE	T.C.	TOP CURB
EBR	EAST BOUND ROADWAY	PL	PROPERTY LINE	TMH	TELEPHONE MANHOLE
EMH	ELECTRIC MANHOLE	PGL	PROFILE GRADE LINE	T / OH	TELEPHONE LINE/OVERHEAD
EX	EXISTING	P/G/L	PROFILE OF GROUND LINE	TCP	TERRA COTTA PIPE
ES	PIPE CULVERT END SECTION	P/R	POINT OF ROTATION	UD	LONGITUDINAL UNDERDRAIN (SIZE AS INDICATED ON PLANS)
FH	FIRE HYDRANT	PGE	POINT OF APPLICATION OF PROFILE GRADE ELEVATION	UDO	LONGITUDINAL UNDERDRAIN OUTLET (SIZE AS INDICATED ON PLANS)
G	GAS LINE	P/C	POINT OF CROWN	VD	VERTICAL DEPTH
GV	GAS VALVE	PD	PERIMETER DIKE	VPD	VEHICLES PER DAY
GB	GAS HANDBOX	POT	POINT ON TANGENT	W	WATER LINE
GM	GAS METER	POL	POINT ON LINE	WBR	WEST BOUND ROADWAY
HW	HEADWALL	RCCP	REINFORCED CEMENT CONCRETE PIPE	WV	WATER VALVE
HB	HAND BOX	R-I	REMOVE EXISTING ITEM AS INDICATED ON PLANS	WMH	WATER VALVE MANHOLE
HR	HANDICAP RAMP	Rel	EXISTING UTILITY TO BE RELOCATED BY OTHERS	WM	WATER METER
HSD	HEADLIGHT SIGHT DISTANCE	R / W	RIGHT OF WAY LINE	(A)	ABANDON EXISTING STORM DRAIN
		SD	STORM DRAIN	(R)	REMOVE EXISTING ITEM
		SAN	SANITARY SEWER LINE		

PROFESSIONAL CERTIFICATION.
I CERTIFY THAT THIS DOCUMENT WAS
PREPARED OR APPROVED BY ME, AND
THAT I AM A DULY LICENSED
PROFESSIONAL ENGINEER UNDER THE
LAWS OF THE STATE OF MARYLAND.
LICENSE NO. 24828
EXPIRATION DATE: 02-25-2022

WB
CONSULTING ENGINEERS | THE WILSON T. BALLARD CO.
OWINGS MILLS, MD

AB-1

FREDERICK COUNTY, MARYLAND
DIVISION OF PUBLIC WORKS
DEPARTMENT OF ENGINEERING AND CONSTRUCTION MANAGEMENT
OFFICE OF TRANSPORTATION ENGINEERING
FREDERICK COUNTY, MARYLAND

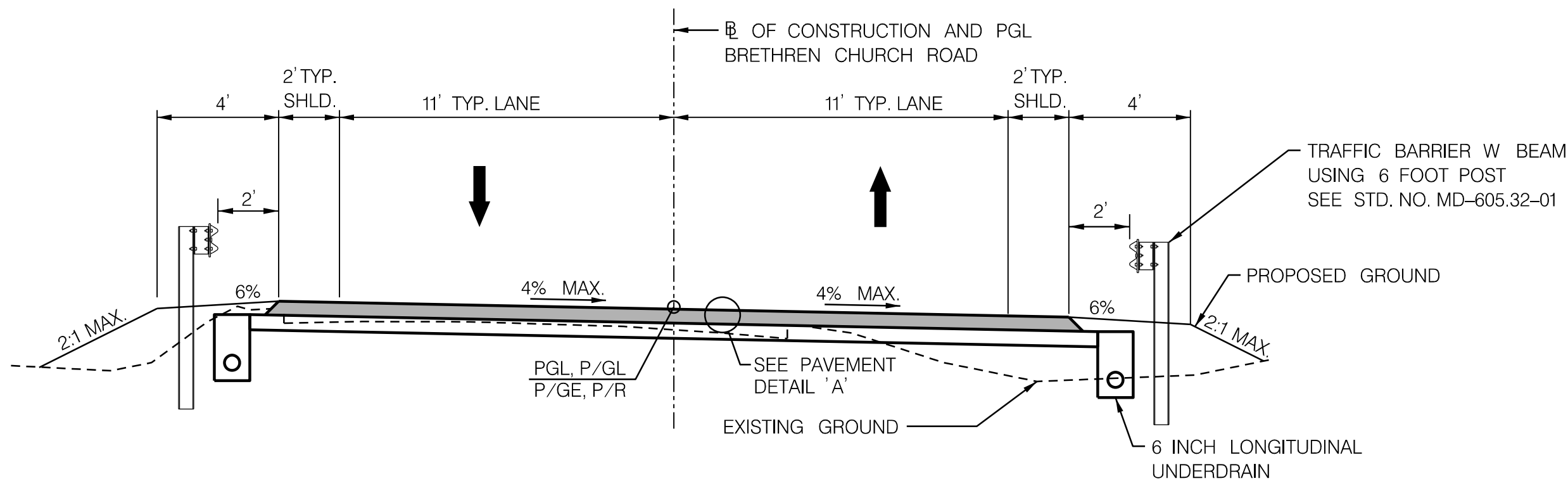
**REPLACEMENT OF BRIDGE NO. F-16-14
ON BRETHREN CHURCH ROAD
OVER CATOCTIN CREEK**

**CONVENTIONAL SIGNS,
ABBREVIATIONS AND NOTES**

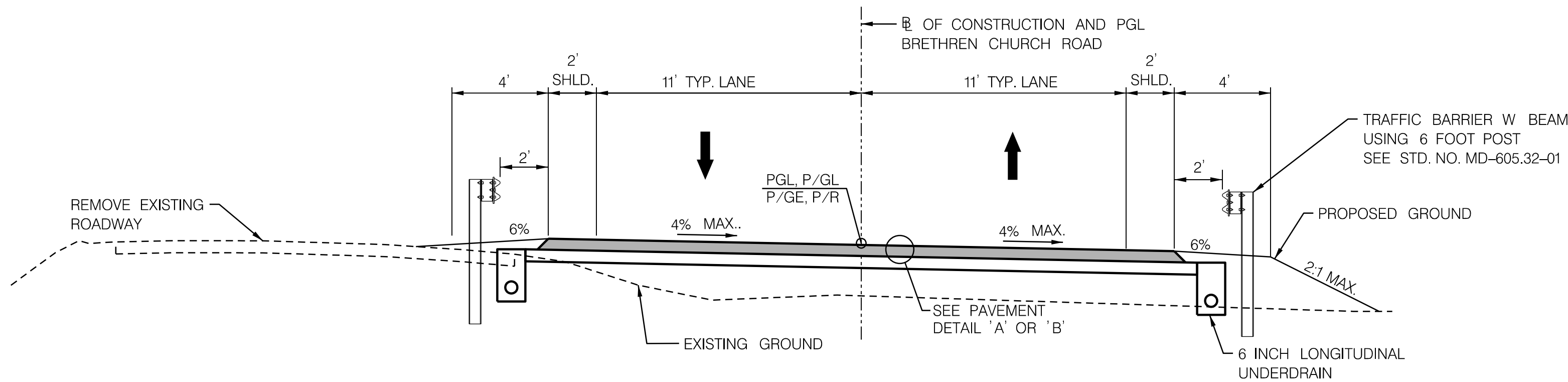
DATE: FEBRUARY 2021 SCALE: NONE

PROJECT NO. DWG. 2 OF 26

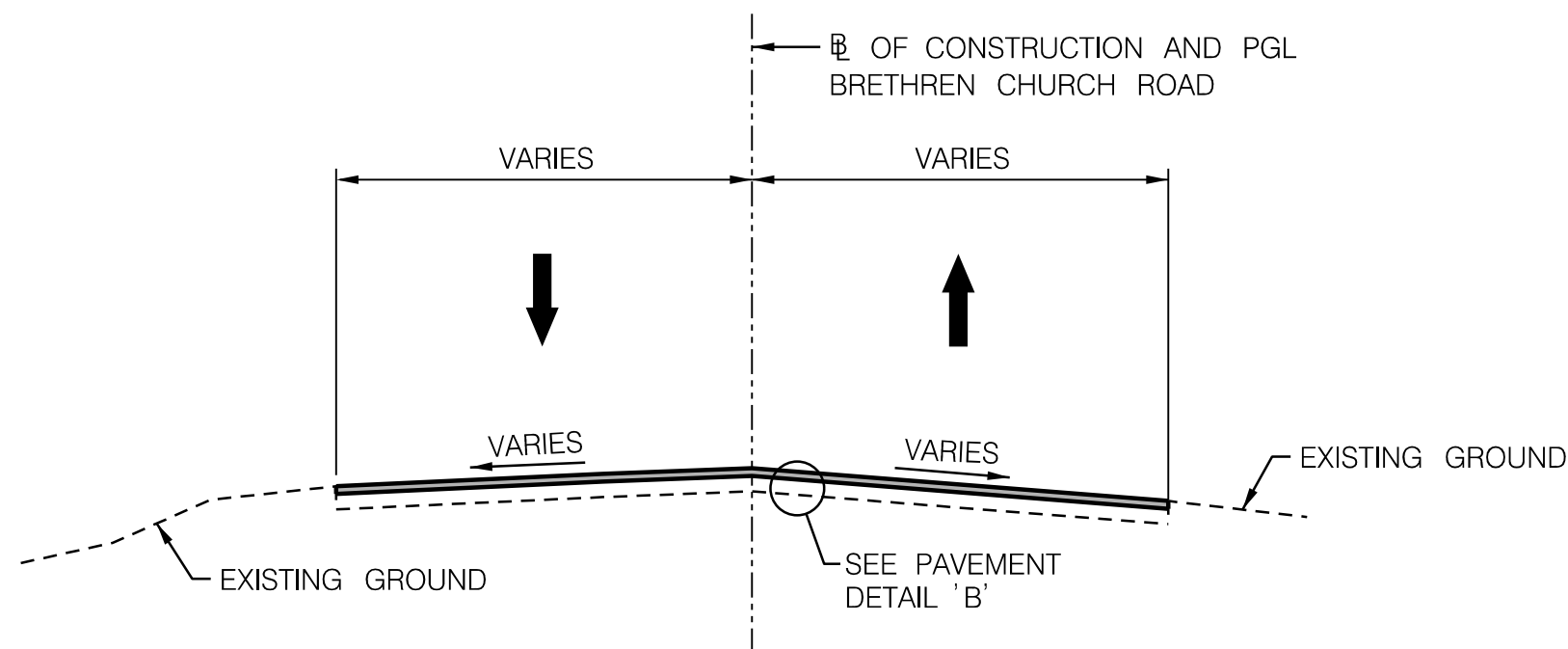
BY: JWW -
PLOTTED: Tuesday, February 09, 2021 AT 04:0 PM
FILE: USF1002813-BrethrenDesign_Files\JWW-0001-Brethren.dgn



BRETHREN CHURCH RD
TYPICAL FULL DEPTH SECTION
STA. 42+25 TO STA. 43+00
STA. 47+25 TO STA. 48+00
SCALE: 1/4" = 1'



BRETHREN CHURCH RD
TYPICAL OFFLINE FULL DEPTH SECTION
STA. 43+00 TO STA. 45+48 +/-
STA. 46+33 +/- TO STA. 47+25
SCALE: 1/4" = 1'
*SEE CULVERT SECTION FROM
STA. 45+48 +/- TO STA. 46+33 +/-



BRETHREN CHURCH RD
TYPICAL RESURFACING SECTION
STA. 42+00 TO STA. 42+25
STA. 48+00 TO STA. 48+50
SCALE: 1/4" = 1'

PAVEMENT LEGEND

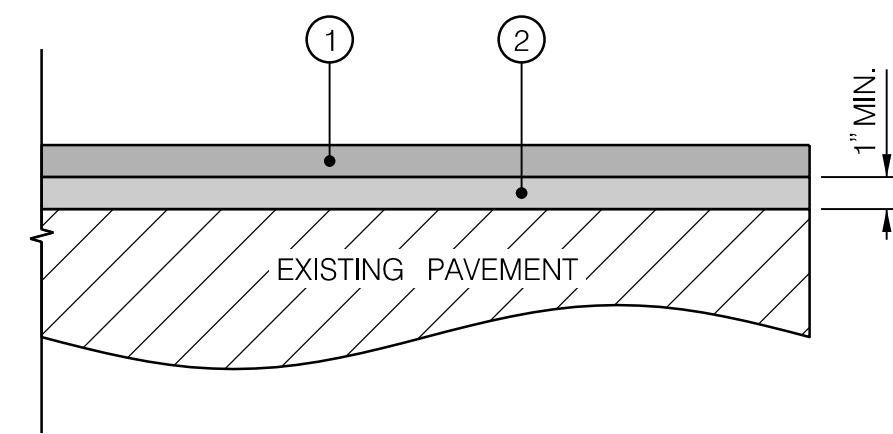
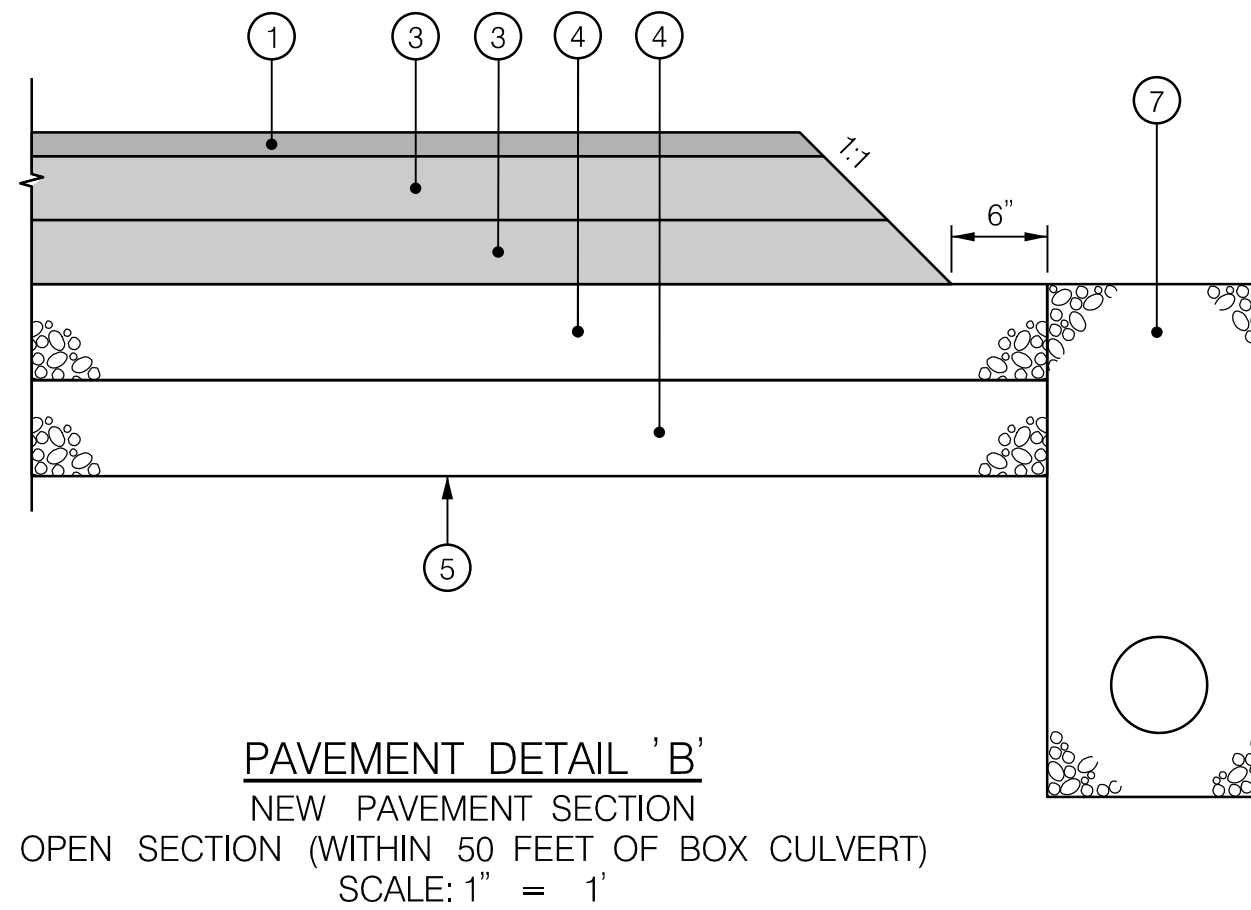
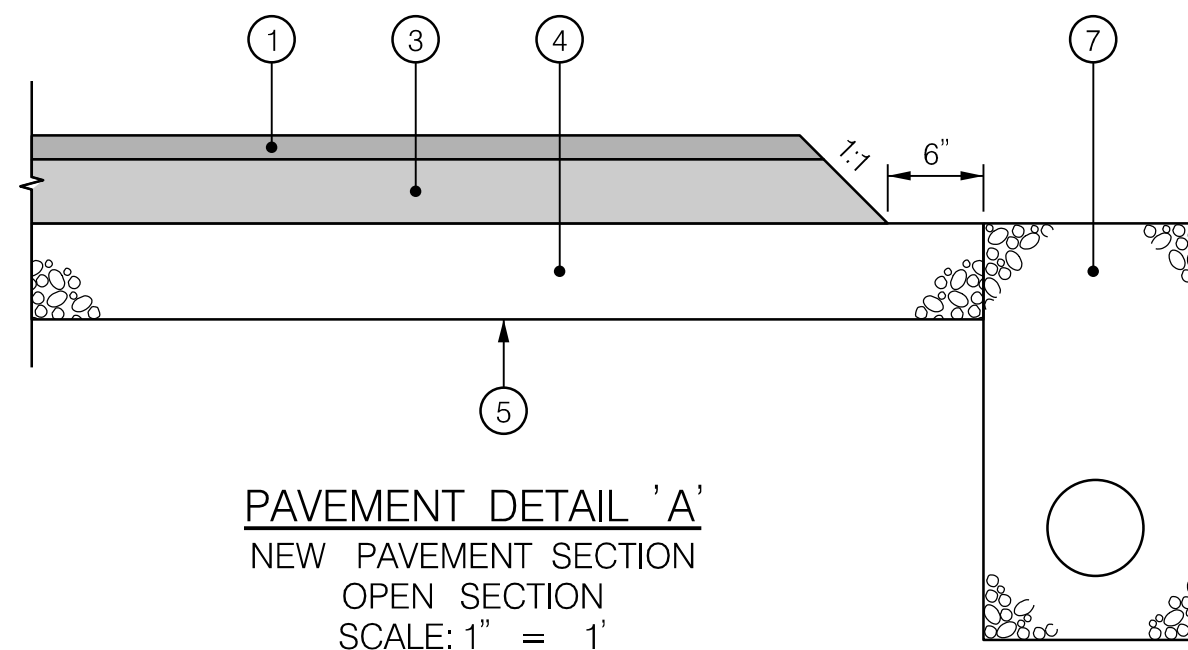
- | | | |
|---|----------------|--|
| ① | 1.5" | SUPERPAVE ASPHALT MIX 12.5 MM FOR SURFACE, PG 64S-22, LEVEL 2. |
| ② | VARIABLE DEPTH | SUPERPAVE ASPHALT WEDGE/LEVEL (SEE NOTE 1) |
| ③ | 4" | SUPERPAVE ASPHALT MIX 19.0 MM FOR BASE, PG 64S-22, LEVEL 2. |
| ④ | 6" | GRADED AGGREGATE BASE COURSE. |
| ⑤ | | TOP OF SUBGRADE AND LIMIT OF EXCAVATION. |
| ⑥ | | TOP OF EXISTING PAVEMENT AFTER 1" TO 2" OF FINE MILLING |
| ⑦ | | 6 INCH LONGITUDINAL UNDERDRAIN (SHA STD. NO. 387.11) |

NOTES:

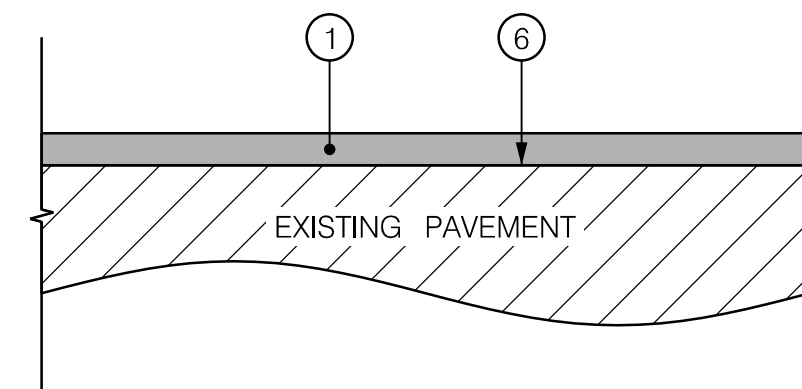
- IF NEEDED, USE THE FOLLOWING ITEMS FOR WEDGE /LEVEL AS DIRECTED BY THE ENGINEER:

FOR WEDGE /LEVEL LAYER 2" THICK OR LESS:
VARIABLE DEPTH SUPERPAVE ASPHALT MIX 9.5 MM FOR WEDGE /LEVEL, PG 64S-22, LEVEL-2 (MIN. 1" AND MAX. 2" LIFTS)

FOR WEDGE /LEVEL LAYER GREATER THAN 2":
VARIABLE DEPTH SUPERPAVE ASPHALT MIX 19.0 MM FOR WEDGE /LEVEL, PG 64S-22, LEVEL-2 (MIN. 2" AND MAX. 4" LIFTS)
- IN AREAS WHERE THE EXISTING PAVEMENT IS BEING REMOVED, THE LIMIT OF CLASS 1 EXCAVATION SHALL BE AT THE BOTTOM OF THE BOUND MATERIALS IN THE EXISTING PAVEMENT OR THE TOP OF SUBGRADE, WHICHEVER IS LOWER.
- PERFORM ALL RESURFACING AFTER PATCHING AND BASE WIDENING OPERATIONS ARE COMPLETED.
- ALL FULL-DEPTH SAW CUTS FOR PAVEMENT REMOVAL SHALL BE INCIDENTAL TO THE RESPECTIVE PAY ITEM.
- 6" MINIMUM THICKNESS FOR REMOVAL AND REPLACEMENT OF UNSUITABLE MATERIAL. USE GRADED AGGREGATE BASE FOR BACKFILL MATERIAL.



RESURFACING WITH WEDGE /LEVEL
LT. STA. 48+00 TO LT. STA. 48+25



RESURFACING WITH NO WEDGE /LEVEL
STA. 42+00 TO STA. 42+25
RT. STA. 48+00 TO RT. STA. 48+25
STA. 48+25 TO STA. 48+50

PAVEMENT DETAIL 'C'
RESURFACING SECTION
STA. 42+00 TO STA. 42+25
STA. 48+00 TO STA. 48+50
SCALE: 1" = 1'

PROFESSIONAL CERTIFICATION.
I CERTIFY THAT THIS DOCUMENT WAS
PREPARED OR APPROVED BY ME, AND
THAT I AM A DULY LICENSED
PROFESSIONAL ENGINEER UNDER THE
LAWS OF THE STATE OF MARYLAND.
LICENSE NO. 24828
EXPIRATION DATE: 02-25-2022

WB
CONSULTING ENGINEERS | THE WILSON T. BALLARD CO.
OWINGS MILLS, MD

FREDERICK COUNTY, MARYLAND
DIVISION OF PUBLIC WORKS
DEPARTMENT OF ENGINEERING AND CONSTRUCTION MANAGEMENT
OFFICE OF TRANSPORTATION ENGINEERING
FREDERICK COUNTY, MARYLAND

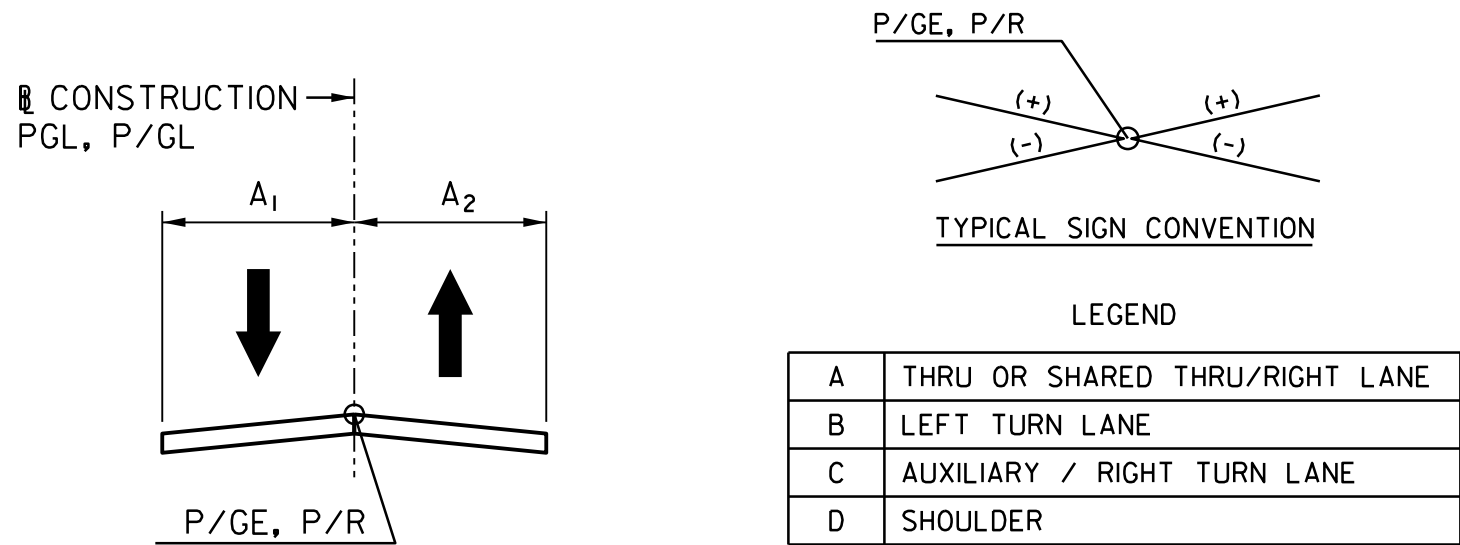
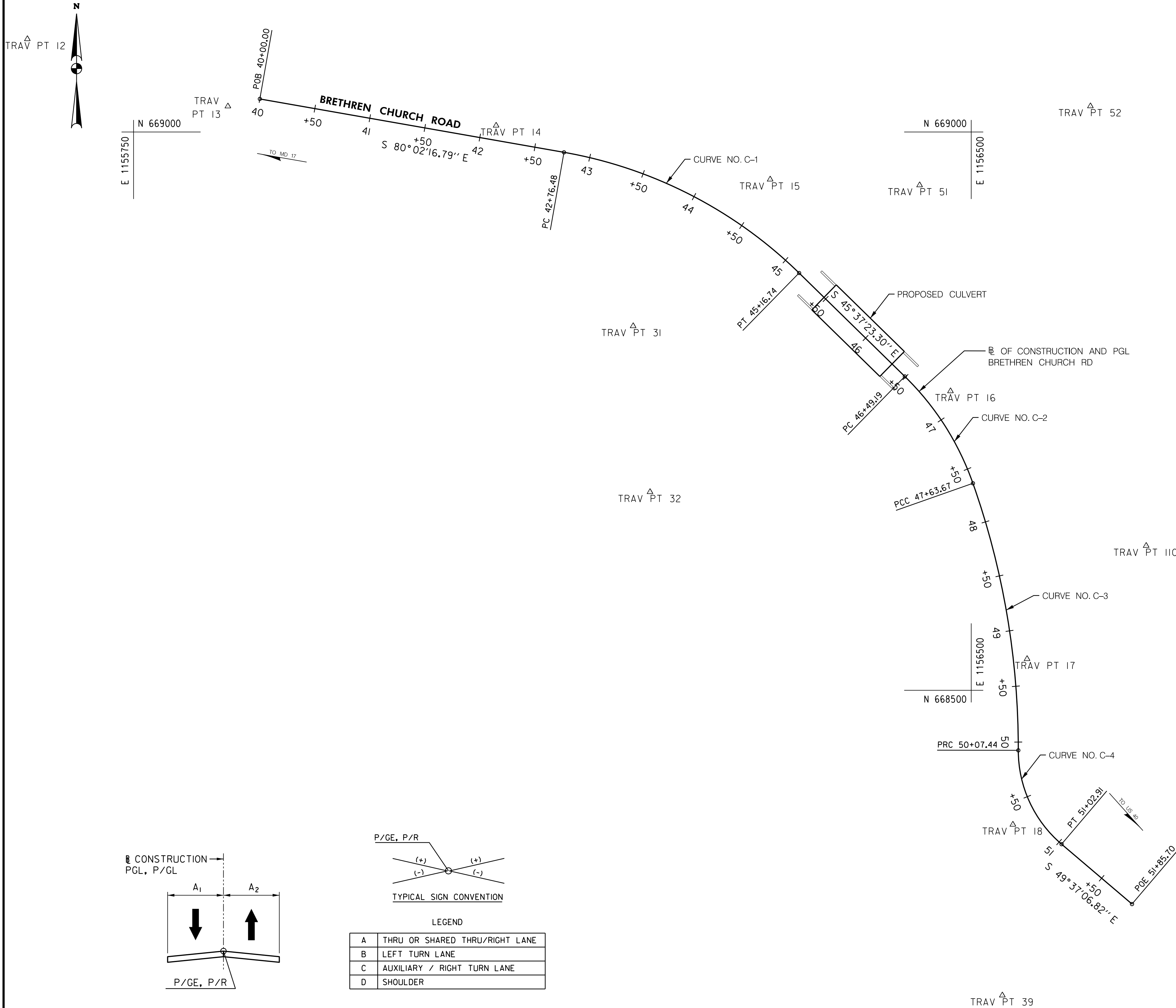
**REPLACEMENT OF BRIDGE NO. F-16-14
ON BRETHREN CHURCH ROAD
OVER CATOCTIN CREEK**

TYPICAL DETAIL

DATE: FEBRUARY 2021
PROJECT NO.
SCALE: AS SHOWN
DWG. 3 OF 26

TD-1

BY: JWW -
PLOTED: Tuesday, February 09, 2021 AT 04:01 PM
FILE: USSTR-V0028113-BrethrenDesign_Files\LOGS-POD-Brethren.dgn



c = 0.0004				DS = 35MPH
				E MAX = 4%
STATION	A ₁	A ₂	REMARKS	
42+00	-0.0015	-0.0027	TIE INTO EXISTING CROSS SLOPE	
42+25	-0.0015	-0.0027	HOLD EXISTING CROSS SLOPE	
43+25	+0.040	-0.040	TRANSITION TO 4% SUPER	
45+00	+0.040	-0.040	END 4% SUPER	
45+50	+0.020	-0.020	TRANSITION TO 2% SUPER	
46+50	+0.020	-0.020	END 2% SUPER	
47+00	+0.040	-0.040	TRANSITION TO 4% SUPER	
48+00	+0.040	-0.040	END 4% SUPER	
48+50	+0.020	-0.040	TIE INTO EXISTING CROSS SLOPE	

CURVE DATA							
CURVE NO.	STATION	DELTA	Dc	RADIUS	TANGENT	LENGTH	EXTERNAL
C-1	PC 42+76.48	34°24'53.50"	14°19'26.20"	400.00'	123.88'	240.26'	18.74'
C-2	PC 46+49.19	26°14'13.16"	22°55'05.92"	250.00'	58.26'	114.48'	6.70'
C-3	PCC 47+63.67	19°29'52.64"	7°59'55.46"	716.31'	123.07'	243.76'	10.50'
C-4	PRC 50+07.44	49°43'49.32"	52°05'13.46"	110.00'	50.98'	95.48'	11.24'

BRETHREN CHURCH RD - BASELINE OF CONSTRUCTION				
CURVE NO.	ALIGNMENT	NORTHING	EASTING	BEARING
C-1	P/OB 40+00.00	669029.6418	1155863.0641	
	PC 42+76.48	668981.8116	1156135.3787	
	PI 44+00.36	668960.3814	1156257.3885	
	CC	668587.8425	1156066.1807	
	PT 45+16.74	668873.7446	1156345.9306	S 45°37'23.30" E
C-2	PC 46+49.19	668781.1123	1156440.6000	
	PI 47+07.46	668740.3654	1156482.2430	
	CC	668602.4235	1156265.7563	
	PCC 47+63.67	668685.4068	1156501.5820	S 19°23'10.14" E
C-3	PI 48+86.75	668569.3132	1156542.4335	
	CC	668447.6398	1155825.8845	
	PRC 50+07.44	668446.2419	1156542.1933	S 0°06'42.51" W
C-4	PI 50+58.42	668395.2630	1156542.0939	
	CC	668446.0273	1156652.1931	
	PT 51+02.91	668362.2350	1156580.9271	S 49°37'06.82" E
	P/OE 51+85.70	668308.6003	1156643.9890	

TRAVERSE POINTS			
POINT NO.	NORTHING	EASTING	ELEVATION
TRAV 12	669083.3003	1155654.9136	566.84
TRAV 13	669023.0530	1155834.4738	550.78
TRAV 14	669005.8141	1156074.6161	546.33
TRAV 15	668957.5745	1156320.0061	544.71
TRAV 16	668767.9847	1156481.4782	547.86
TRAV 17	668528.1363	1156550.0426	563.47
TRAV 18	668379.8052	1156537.3335	582.77
TRAV 31	668826.2400	1156197.3262	542.47
TRAV 32	668677.6885	1156212.4504	542.57
TRAV 39	668226.8550	1156527.8983	596.03
TRAV 51	668952.4398	1156453.8346	545.98
TRAV 52	669023.1982	1156606.7748	545.45
TRAV 101	668629.4998	1156656.7040	561.69

PROFESSIONAL CERTIFICATION.
I CERTIFY THAT THIS DOCUMENT WAS
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EXPIRATION DATE: 02-25-2022

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THE
WILSON T.
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GS-1

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OFFICE OF TRANSPORTATION ENGINEERING
FREDERICK COUNTY, MARYLAND

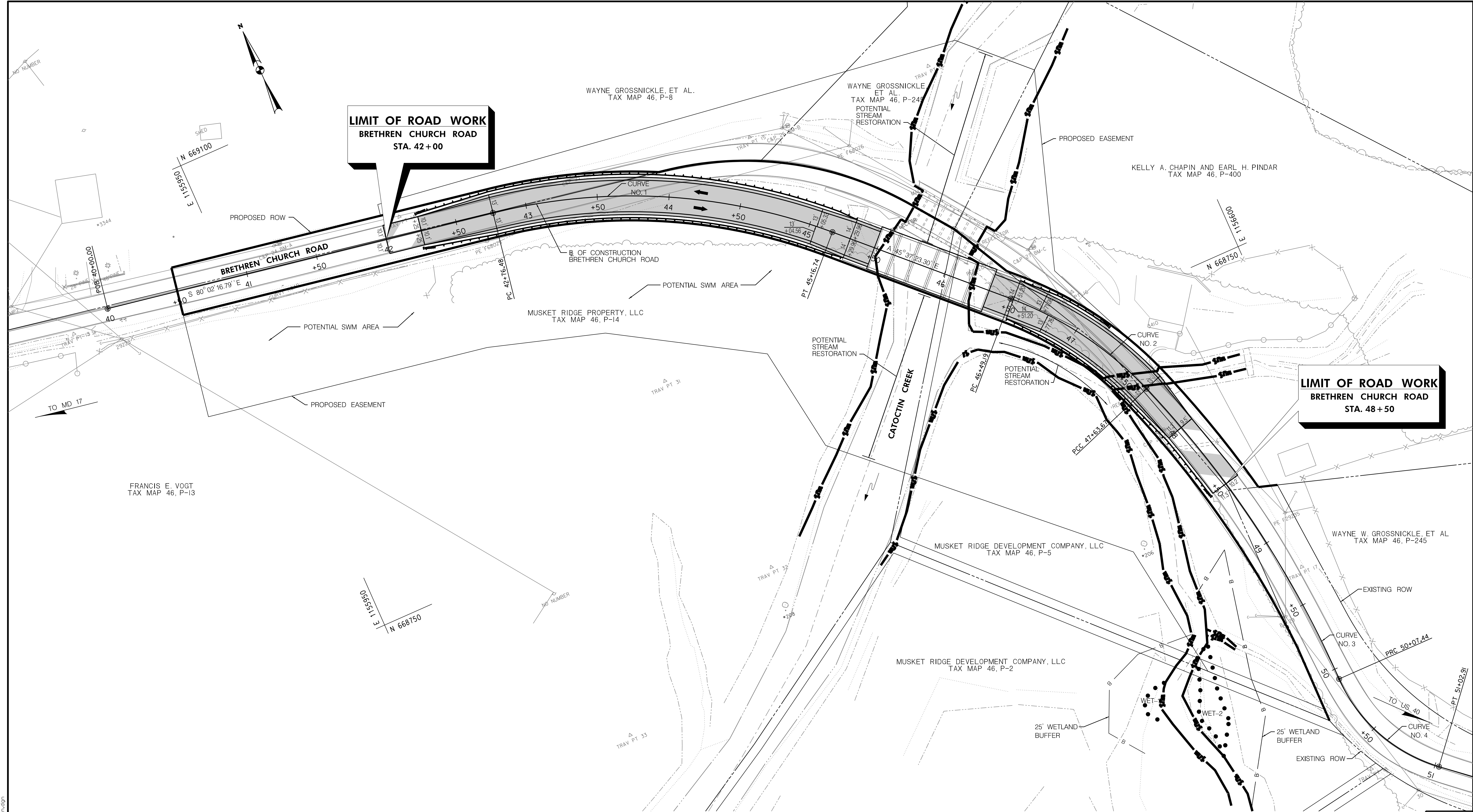
**REPLACEMENT OF BRIDGE NO. F-16-14
ON BRETHREN CHURCH ROAD
OVER CATOCTIN CREEK**

GEOMETRY SHEET

DATE: FEBRUARY 2021SCALE: 1"=50'

PROJECT NO.DWG. 4 OF 26

BY: JLM -
PLOTED: Tuesday, February 09, 2021 AT 04:2 PM
FILE: USSTR-V002813-Brethren-Design_Files-LPD-A14-Brethren.dgn



PS-1

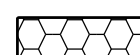
FREDERICK COUNTY, MARYLAND
DIVISION OF PUBLIC WORKS
DEPARTMENT OF ENGINEERING AND CONSTRUCTION MANAGEMENT
OFFICE OF TRANSPORTATION ENGINEERING
FREDERICK COUNTY, MARYLAND

**REPLACEMENT OF BRIDGE NO. F-16-14
ON BRETHREN CHURCH ROAD
OVER CATOCTIN CREEK**

ROADWAY PLAN

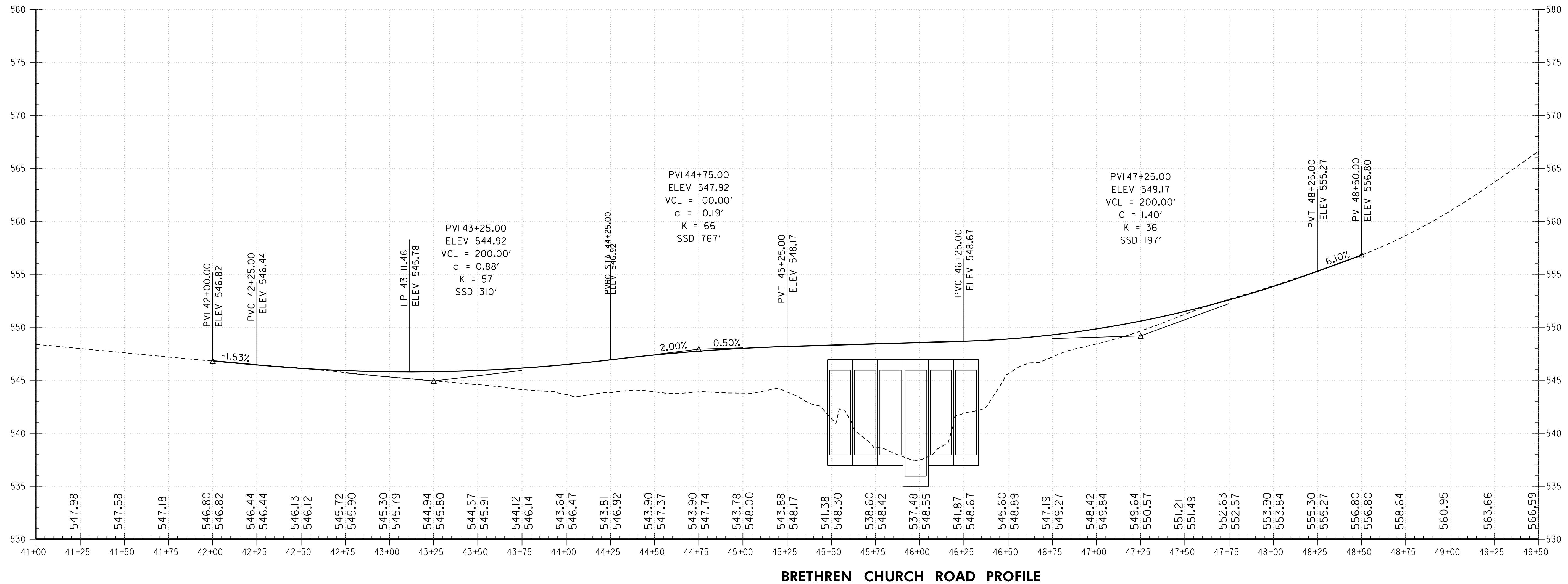
DATE: FEBRUARY 2021 SCALE: 1" = 30'
PROJECT NO. DWG. 5 OF 26

LEGEND

- | | |
|--|--|
|  PROPOSED FULL DEPTH ASPHALT PAVEMENT |  CELLULAR CONFINEMENT ACCESS ROAD |
|  PROPOSED RESURFACING |  RIPRAP FOR SLOPE OR CHANNEL PROTECTION |

PROFESSIONAL CERTIFICATION.
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LICENSE NO. 24828
EXPIRATION DATE: 02-25-2022

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OWINGS MILLS, MD



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FREDERICK COUNTY, MARYLAND
DIVISION OF PUBLIC WORKS
DEPARTMENT OF ENGINEERING AND CONSTRUCTION MANAGEMENT
OFFICE OF TRANSPORTATION ENGINEERING
FREDERICK COUNTY, MARYLAND

**REPLACEMENT OF BRIDGE NO. F-16-14
ON BRETHREN CHURCH ROAD
OVER CATOCTIN CREEK**

PROFILE SHEET

DATE: FEBRUARY 2021

SCALE: H: 1"=30'
V: 1"=6'

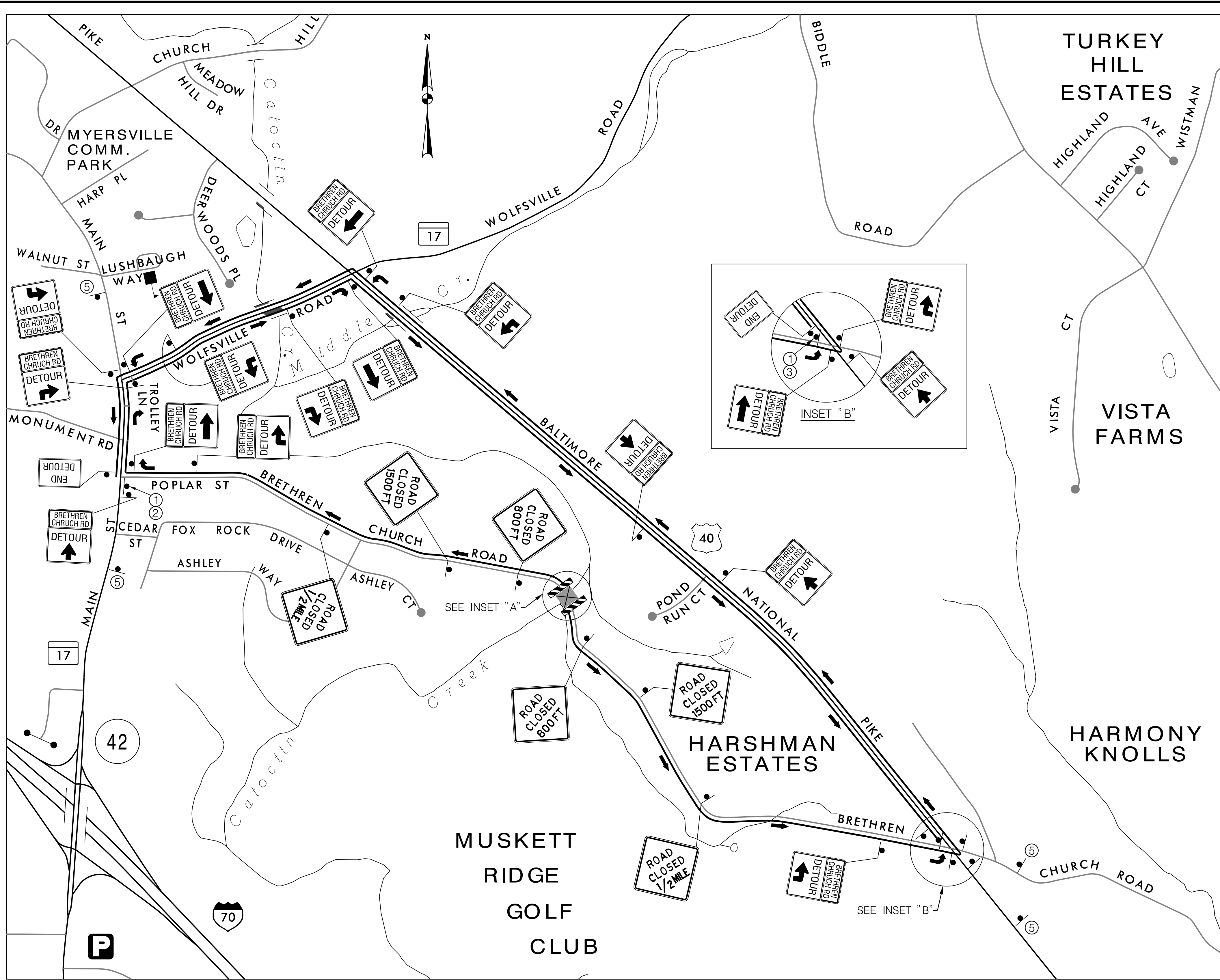
PROJECT NO.

DWG. 6 OF 26

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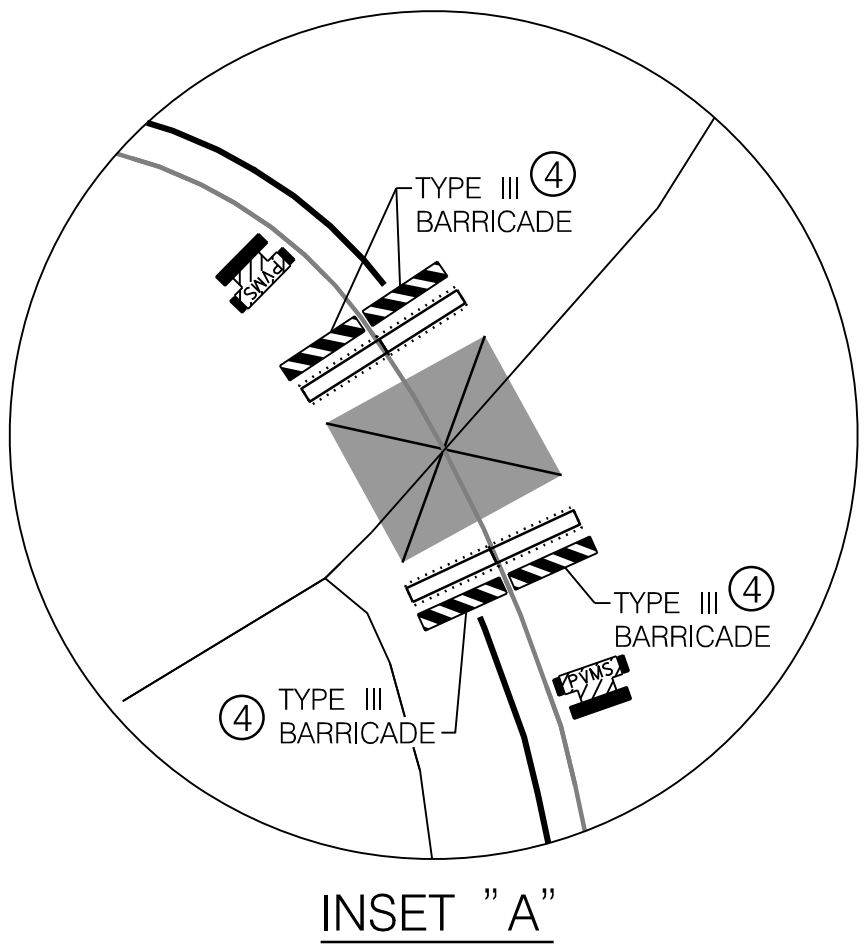
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BY: JWW -
PLOTED: Tuesday, February 09, 2021 AT 04:13 PM
FILE: USFS-FY-002813-Brethren\Design_Files\DMT-0001-Brethren.dgn

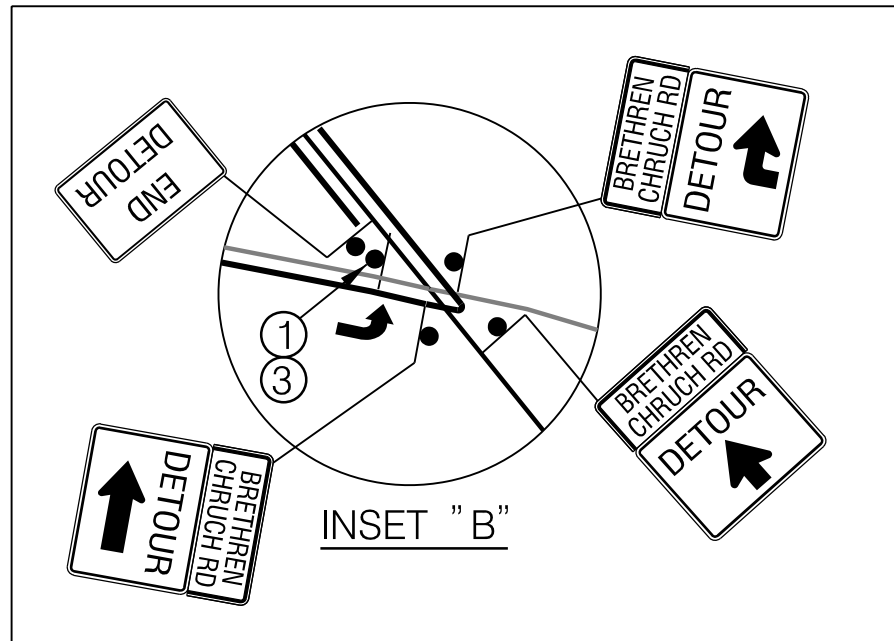


MAP SCALE: 1' = 500'

- LEGEND**
- TEMPORARY TRAFFIC SIGN(S) MOUNTED ON WOODEN SUPPORT
DETOUR ROUTE
 - TYPE III BARRICADE WITH RED FLASHING LIGHTS
 - PORTABLE VARIABLE MESSAGE SIGN
 - WORK AREA (CLOSED SECTION)
 - DOUBLE FACE TEMPORARY CONCRETE BARRIER



PVMS DISPLAY DETAIL	
DISPLAY 1	DISPLAY 2
ROAD WORK TO BEGIN	ON OR ABOUT XXXXXX
1. TWO WEEKS PRIOR TO THE START OF CONSTRUCTION, ALL PROPOSED PVMS SHALL BE PLACED IN ACCORDANCE WITH MD. STD. 104.01-22. 2. THE PROJECT ENGINEER SHALL DETERMINE THE FINAL VARIABLE SIGN MESSAGES.	



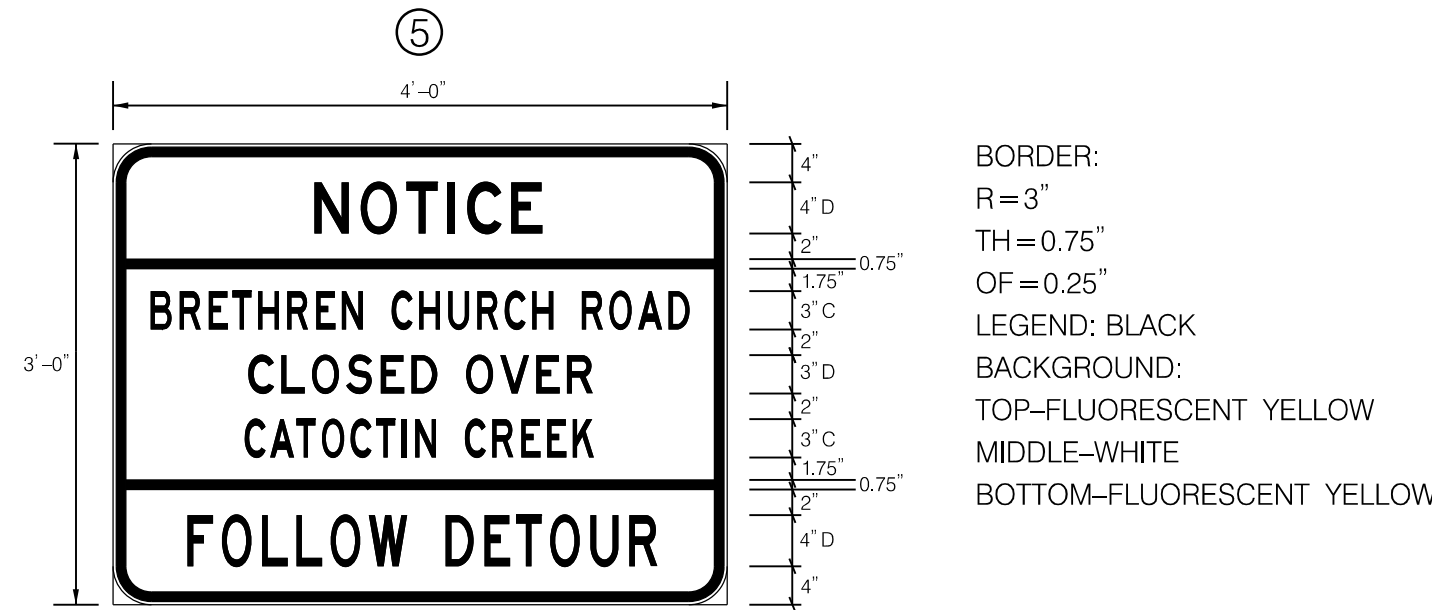
- DETOUR SIGNS**
- | | | | | |
|--|--|--|--|--|
|
M4-9(1)
30" X12"
M4-9L
30" X24" |
M4-9(1)
30" X12"
M4-9R
30" X24" |
M4-9(1)(MOD)
30" X12"
M4-9L(MOD)
30" X24" |
M4-9(1)(MOD)
30" X12"
M4-9R(MOD)
30" X24" |
M4-9(1)(MOD)
30" X12"
M4-9L(MOD)
30" X24" |
|
W20-3(1)
36" X36" |
W20-3(1)
36" X36" |
W20-3(1)
36" X36" |
M4-8a
24" X18" | |
| ①

R11-3a
60" X30" | ②

M4-10L
48" X18" | ③

M4-10R
48" X18" | ④

R11-2
48" X30" | |



GENERAL NOTES:

- ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH CATEGORY 1 OF THE BOOK OF STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES, THE 2011 EDITION OF THE MD MUTCD, AND THIS PLAN.
- NO WORK IS TO BEGIN UNTIL ALL ADVANCE WARNING SIGNS, PAVEMENT MARKINGS, AND CHANNELIZATION DEVICES ARE IN PLACE AND OPERATIONAL.
- VARIABLE MESSAGE SIGN(S) MESSAGES MAY BE MODIFIED AS DIRECTED BY THE ENGINEER. ALL PROPOSED PVMS SHALL BE PLACED ACCORDING TO STD. NO. MD. 104.01-22.
- ALL DETOUR SIGNS SHALL BE FULLY COVERED BY WITH AN OPAQUE BLACK MATERIAL WHEN DETOUR IS NOT IN USE AS APPROVED BY THE ENGINEER.
- TRAFFIC CONTROL DEVICES SHOWN ON THIS PLAN MAY BE MODIFIED BASED ON FIELD CONDITION, AS DIRECTED BY THE ENGINEER.

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FREDERICK COUNTY, MARYLAND

**REPLACEMENT OF BRIDGE NO. F-16-14
ON BRETHREN CHURCH ROAD
OVER CATOCTIN CREEK**

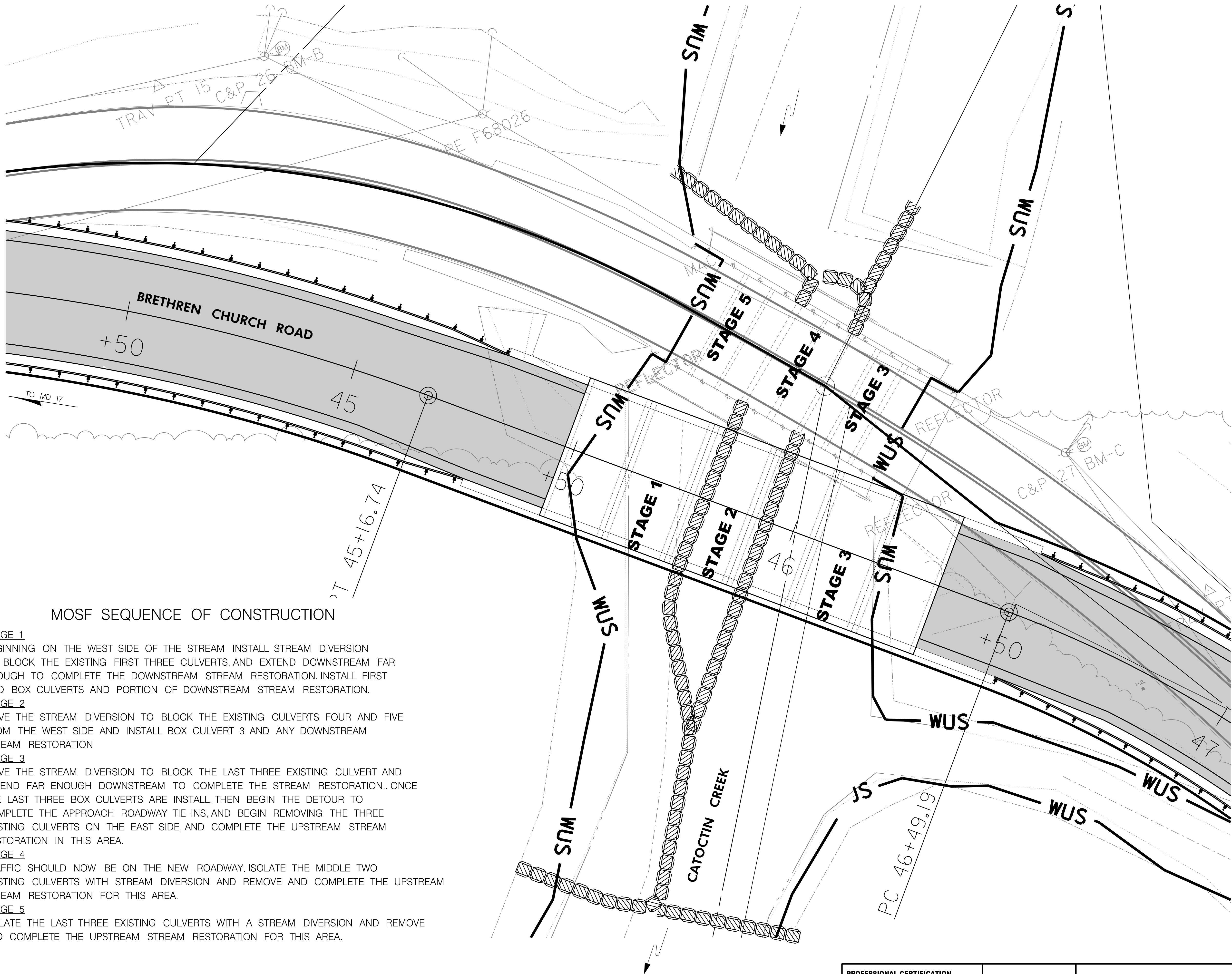
DETOUR PLAN

DATE: FEBRUARY 2021

SCALE: AS SHOWN

PROJECT NO.

DWG. 7 OF 26



MOSF SEQUENCE OF CONSTRUCTION

- STAGE 1**
BEGINNING ON THE WEST SIDE OF THE STREAM INSTALL STREAM DIVERSION TO BLOCK THE EXISTING FIRST THREE CULVERTS, AND EXTEND DOWNSTREAM FAR ENOUGH TO COMPLETE THE DOWNSTREAM STREAM RESTORATION. INSTALL FIRST TWO BOX CULVERTS AND PORTION OF DOWNSTREAM STREAM RESTORATION.
- STAGE 2**
MOVE THE STREAM DIVERSION TO BLOCK THE EXISTING CULVERTS FOUR AND FIVE FROM THE WEST SIDE AND INSTALL BOX CULVERT 3 AND ANY DOWNSTREAM STREAM RESTORATION
- STAGE 3**
MOVE THE STREAM DIVERSION TO BLOCK THE LAST THREE EXISTING CULVERT AND EXTEND FAR ENOUGH DOWNSTREAM TO COMPLETE THE STREAM RESTORATION.. ONCE THE LAST THREE BOX CULVERTS ARE INSTALL, THEN BEGIN THE DETOUR TO COMPLETE THE APPROACH ROADWAY TIE-INS, AND BEGIN REMOVING THE THREE EXISTING CULVERTS ON THE EAST SIDE, AND COMPLETE THE UPSTREAM STREAM RESTORATION IN THIS AREA.
- STAGE 4**
TRAFFIC SHOULD NOW BE ON THE NEW ROADWAY. ISOLATE THE MIDDLE TWO EXISTING CULVERTS WITH STREAM DIVERSION AND REMOVE AND COMPLETE THE UPSTREAM STREAM RESTORATION FOR THIS AREA.
- STAGE 5**
ISOLATE THE LAST THREE EXISTING CULVERTS WITH A STREAM DIVERSION AND REMOVE AND COMPLETE THE UPSTREAM STREAM RESTORATION FOR THIS AREA.

CATOCTIN CREEK IS A USE III STREAM WITH A CLOSURE PERIOD OF OCTOBER 1ST TO APRIL 30TH INCLUSIVE.

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FREDERICK COUNTY, MARYLAND

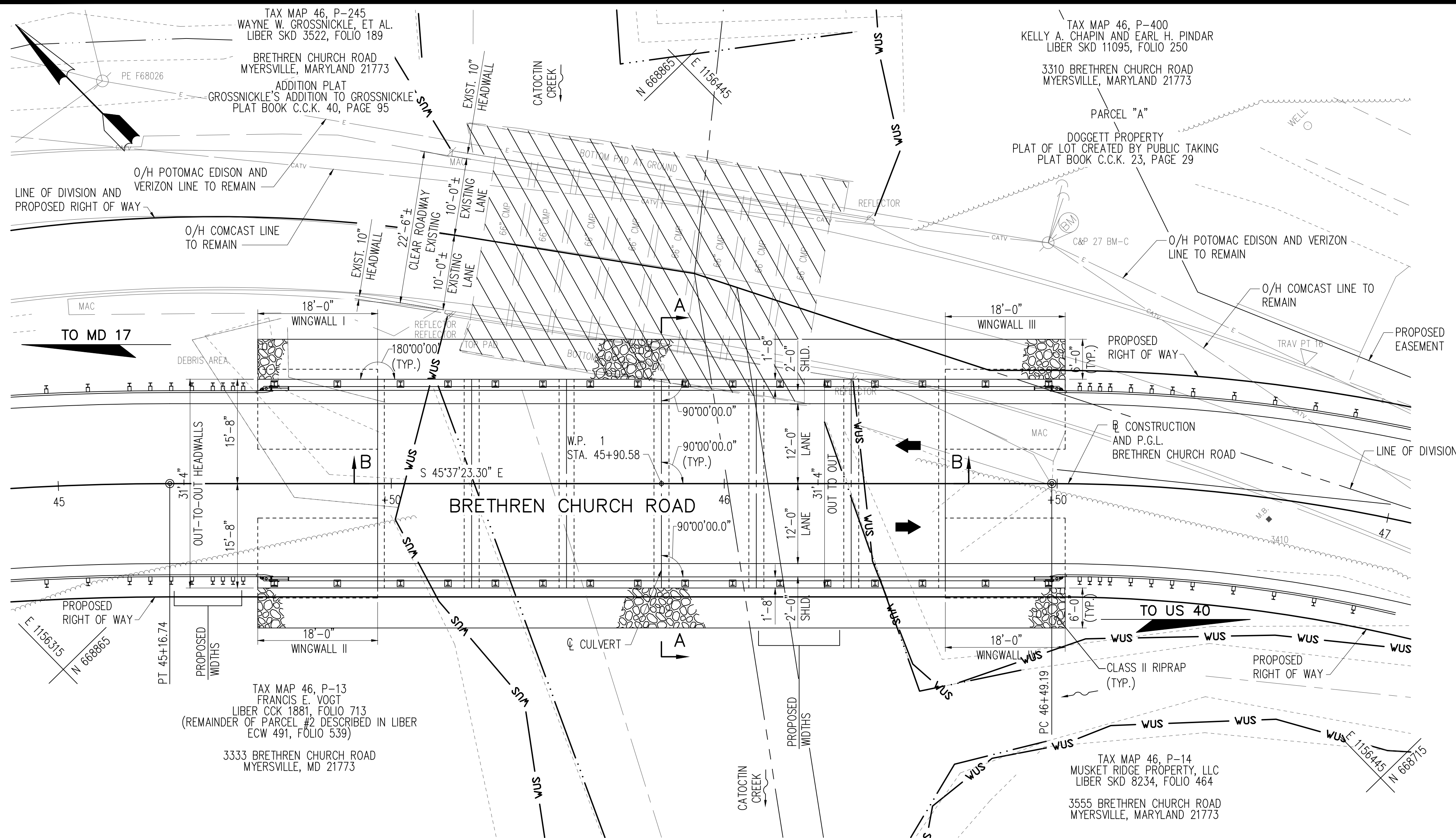
**REPLACEMENT OF BRIDGE NO. F-16-14
ON BRETHREN CHURCH ROAD
OVER CATOCTIN CREEK**

MAINTENANCE OF STREAM FLOW

DATE: FEBRUARY 2021SCALE: 1" = 10'

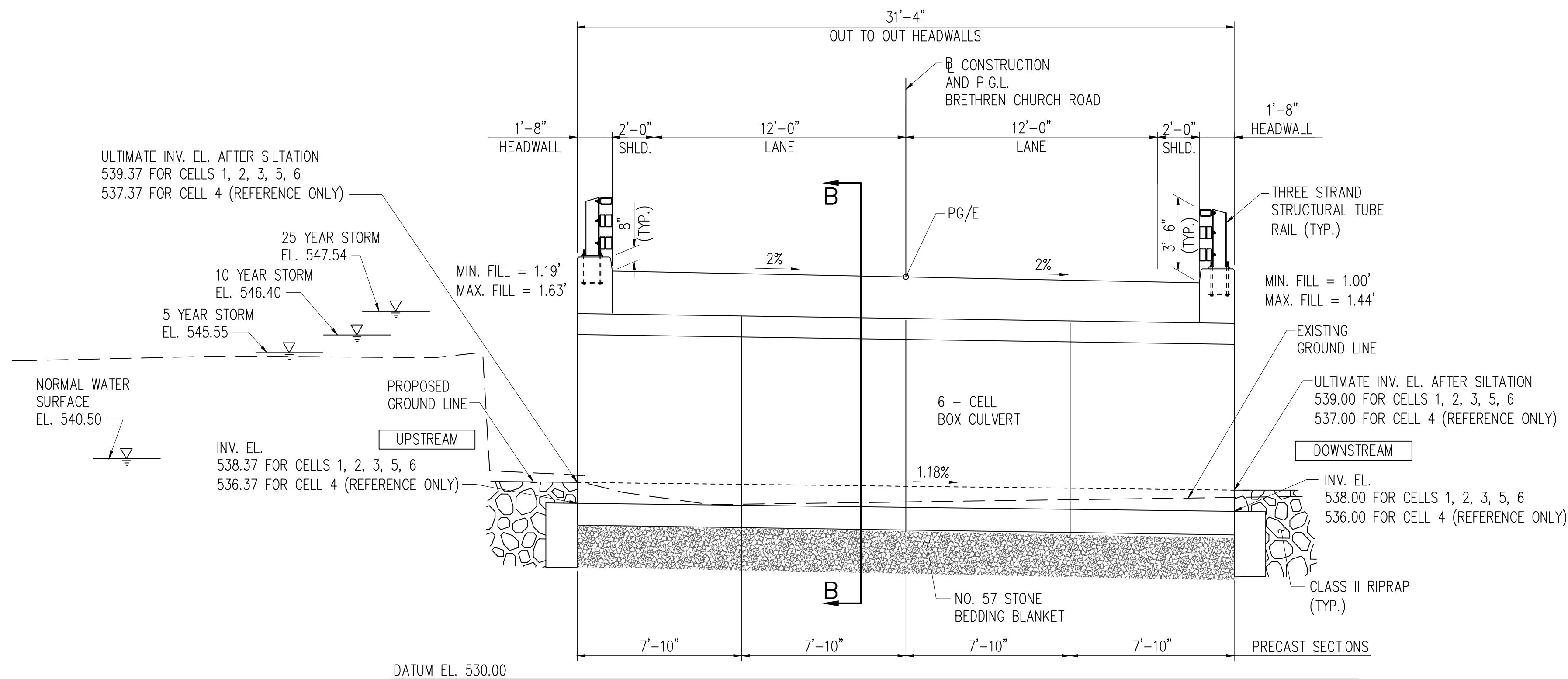
PROJECT NO. DWG. 8 OF 26

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0.00 2/2/20 10:44



PLAN

SCALE: 1" = 10'-0"



LONGITUDINAL SECTION A-A (ALONG ϕ CULVERT)

SCALE: 1/4" = 1'-0"

GENERAL NOTES

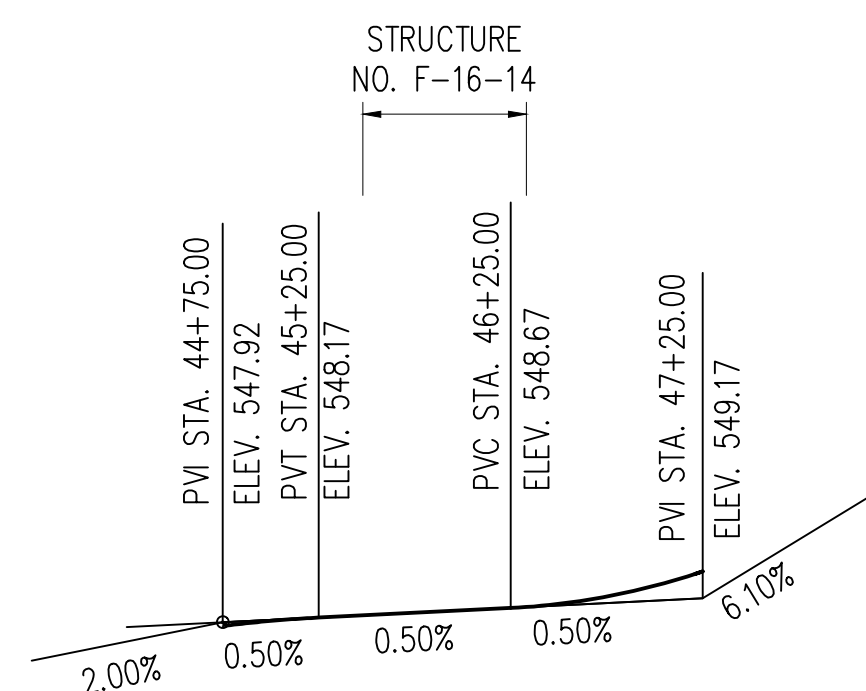
- SPECIFICATIONS: MDOT SHA STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, DATED JULY 2020.
- DESIGN: AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, DATED 2020.
- LOADING: HL-93
- LOAD RESTRICTIONS: THERE ARE RESTRICTIONS FOR PLACING EQUIPMENT AND MATERIALS ON EXISTING AND NEW STRUCTURE(S). REFER TO SECTION TC 6.14.
- CONCRETE: CONCRETE COMPRESSIVE STRENGTH FOR DESIGN SHALL BE:
 f'_c = 3,000 PSI FOR ELEMENTS USING MIX NO. 3.
 f'_c = 4,000 PSI FOR ELEMENTS USING MIX NO. 6.
- REINFORCING STEEL: MINIMUM COMPRESSIVE STRENGTH FOR PRECAST CULVERT AT THE AGE OF 28 DAYS SHALL BE 5000 PSI. THE HEADWALLS SHALL BE MIX NO. 6 (4,500 PSI). ALL OTHER CONCRETE SHALL BE MIX NO. 3 (3,500 PSI).
- ALL SPLICES NOT SHOWN, SHALL BE LAPPED AS PER BAR LAP CHARTS.
- REINFORCING STEEL SHALL BE EPOXY COATED WHEN NOTED WITH AN EP IN THE PLANS.
- MINIMUM CLEAR COVER FOR REINFORCING STEEL SHALL BE 2" EXCEPT FOR THE FOLLOWING LOCATIONS:

LOCATION	CLEAR COVER
BOTTOM AND SIDES OF ALL FOOTINGS	3 IN.

FOR TIES AND STIRRUPS, STANDARD ACI BENDING TOLERANCES ARE MODIFIED TO PLUS (+) ZERO INCHES, MINUS (-) NORMAL ACI BENDING TOLERANCES.

CONSTRUCTION NOTES:

- EXISTING STRUCTURES: EXISTING STRUCTURE TO BE TOTALLY REMOVED.
EXISTING STRUCTURE SHOWN IN LONG DASHED LINES.
- ALL DIMENSIONS AFFECTED BY THE GEOMETRY AND/OR LOCATION OF THE STRUCTURE(S): EXISTING STRUCTURE(S) SHALL BE CHECKED IN THE FIELD BY THE CONTRACTOR BEFORE ANY MATERIAL IS ORDERED OR FABRICATED OR CONSTRUCTION BEGINS.
- CULVERT/PIPE COVER: NO CONSTRUCTION EQUIPMENT SHALL BE PERMITTED TO PASS OVER THE CULVERT/PIPE UNTIL ALL COMPACTED FILL HAS BEEN PLACED OVER THE CULVERT.



VERTICAL PROFILE

SCALE: 1" = 100' HORIZ.
1" = 20' VERT.

CROSS REFERENCE NOTES

- FOR ALIGNMENT DATA, SEE SHEET GS-1.
- FOR TYPICAL SECTION B-B, SEE SHEET S-4.

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S-1

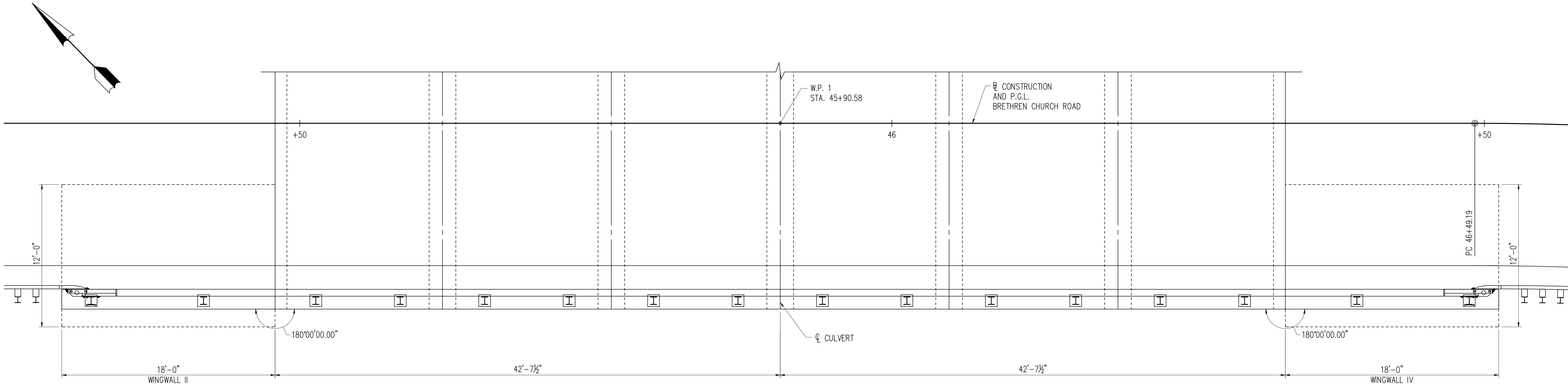
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FREDERICK COUNTY, MARYLAND

**REPLACEMENT OF BRIDGE NO. F-16-14
ON BRETHREN CHURCH ROAD
OVER CATOCTIN CREEK**

GENERAL PLAN AND SECTION
DATE: FEBRUARY 2021
SCALE: AS SHOWN

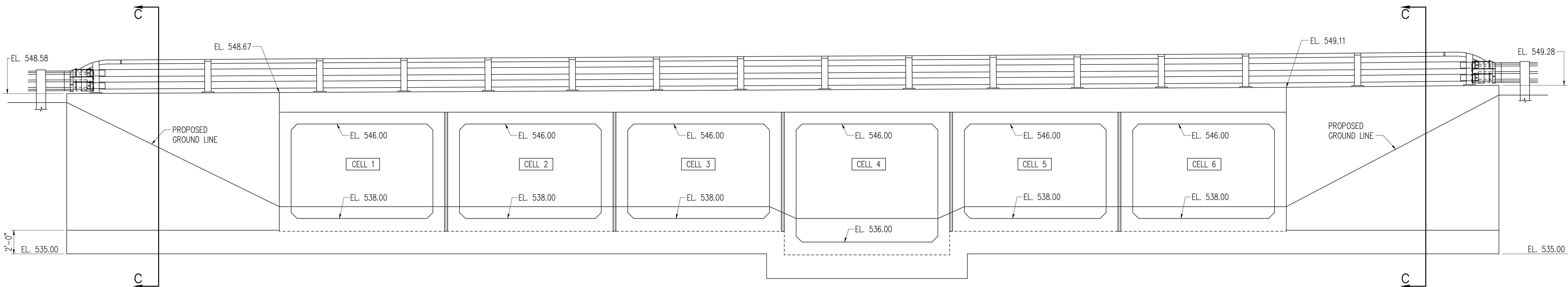
PROJECT NO. DWG. 9 OF 26

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10/25/2022 10:42:10 AM



PLAN — DOWNSTREAM HEADWALL

SCALE: ¼" = 1'-0"



ELEVATION — DOWNSTREAM HEADWALL

SCALE: ¼" = 1'-0"

CROSS REFERENCE NOTES

1. FOR TYPICAL SECTION C-C, SEE SHEET S-4.

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**REPLACEMENT OF BRIDGE NO. F-16-14
ON BRETHREN CHURCH ROAD
OVER CATOCTIN CREEK
PLAN AND ELEVATION
DOWNSTREAM HEADWALL**

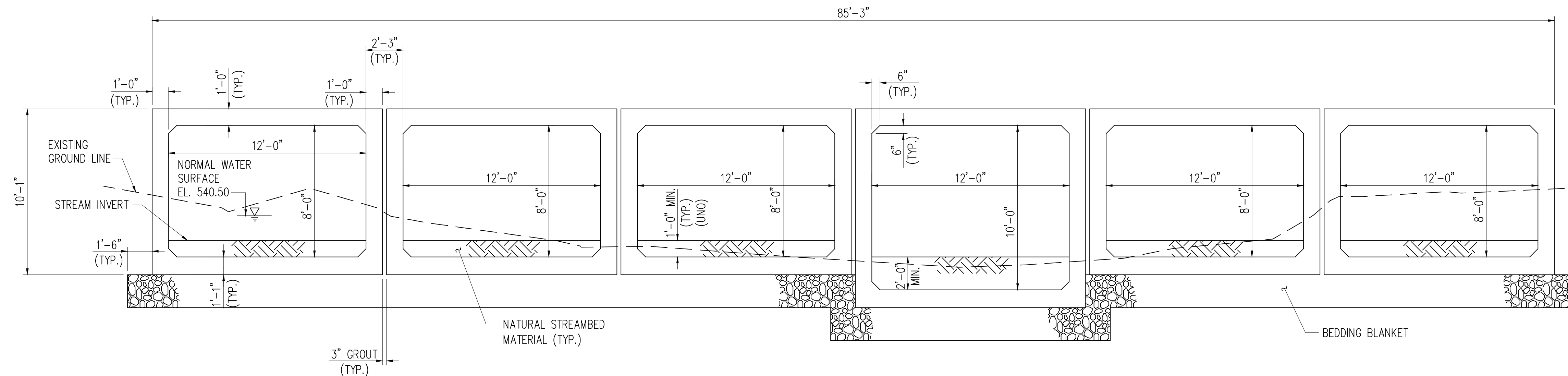
DATE: FEBRUARY 2021

SCALE: 1/4"=1'-0"

PROJECT NO.

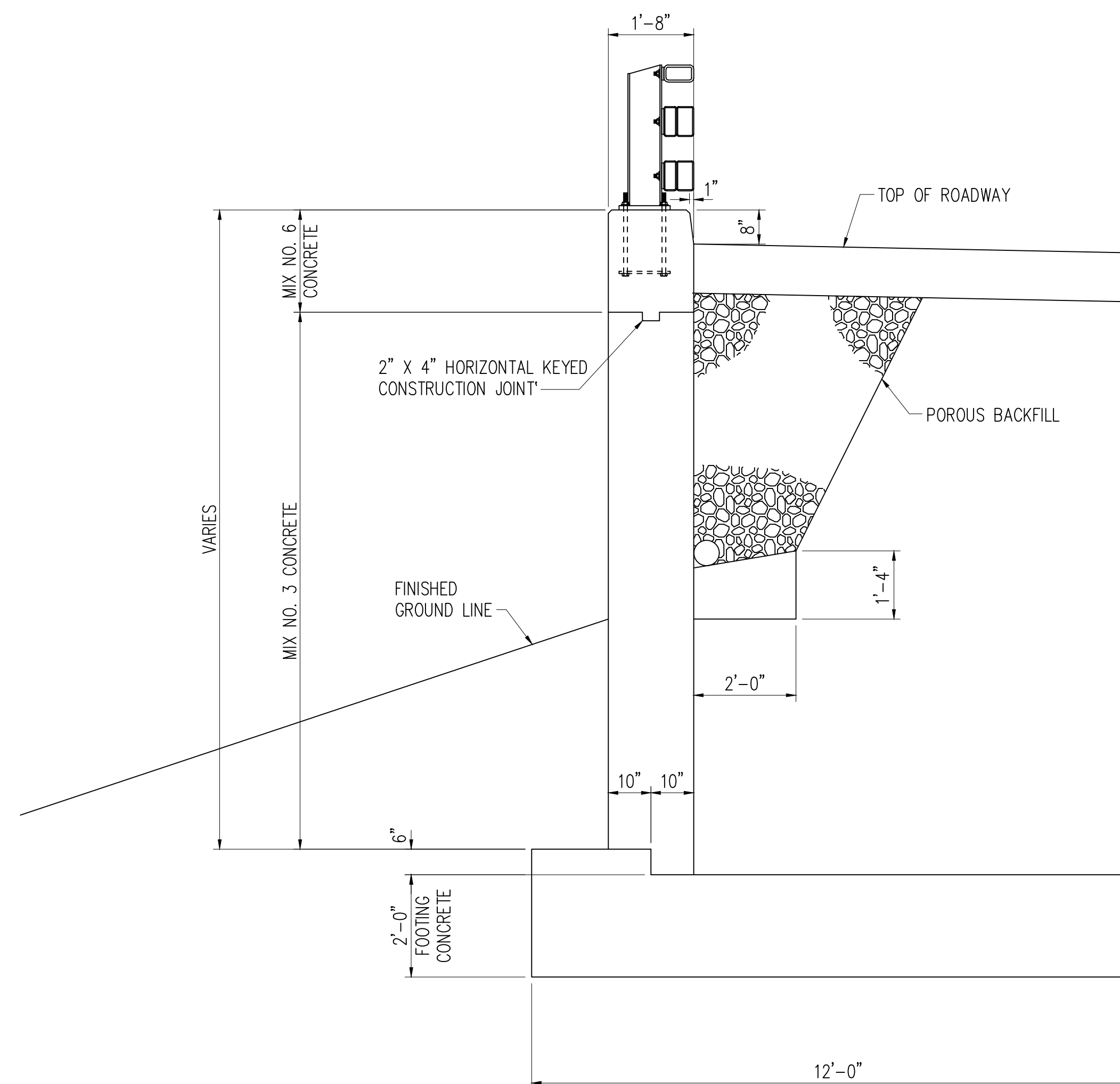
DWG. 11 OF 26

S-3



TYPICAL SECTION B-B - CULVERT

SCALE: 1/4" = 1'-0"



TYPICAL SECTION C-C - WINGWALL

SCALE: 1/2" = 1'-0"

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S-4	
FREDERICK COUNTY, MARYLAND DIVISION OF PUBLIC WORKS DEPARTMENT OF ENGINEERING AND CONSTRUCTION MANAGEMENT OFFICE OF TRANSPORTATION ENGINEERING FREDERICK COUNTY, MARYLAND	
REPLACEMENT OF BRIDGE NO. F-16-14 ON BRETHERN CHURCH ROAD OVER CATOCTIN CREEK	
TYPICAL SECTIONS	
DATE: FEBRUARY 2021	SCALE: AS SHOWN
PROJECT NO.	DWG. 12 OF 26

SUMMARY OF EARTHWORK

STATION		CUT	EMBANKMENT	TOP SOIL (6")		UNSUITABLE MATERIAL		CLASS 2	CUT ADJUSTED	CUT DENSIFIED 85%	REMARKS
FROM	TO	C.Y.	C.Y.	CUT	FILL	CUT	FILL	C.Y.			
PS-01											
BRETHREN CHURCH RD.											
42+00	48+50	785	1424	0	0	119	263	0	666	566	

CLASS I EXCAVATION

CUT	785 CY	
PLUS TOPSOIL REMOVED UNDER FILL	0 CY	
PLUS UNSUITABLE REMOVED UNDER FILL	263 CY	
TOTAL CLASS I EXCAVATION	1,048 CY	SAY 1,050 CY

EXCAVATION AVAILABLE FOR EMBANKMENT

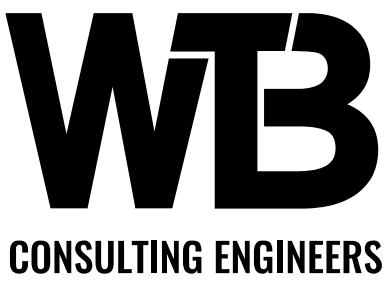
TOTAL CLASS I EXCAVATION	1,048 CY
MINUS:	
TOPSOIL REMOVED IN CUT	0 CY
TOPSOIL REMOVED UNDER FILL	0 CY
UNSUITABLE REMOVED IN CUT	119 CY
UNSUITABLE REMOVED UNDER FILL	263 CY
CUT ADJUSTED	666 CY
CUT DENSIFIED (85%)	566 CY
TOTAL EXCAVATION AVAILABLE FOR EMBANKMENT	566 CY

EMBANKMENT REQUIRED

EMBANKMENT	1,424 CY
PLUS: REFILL FOR TOPSOIL REMOVED UNDER FILL	0 CY
REFILL FOR UNSUITABLE REMOVED UNDER FILL	263 CY
REFILL FOR REMOVAL OF EXISTING PAVEMENT	65 CY
TOTAL EMBANKMENT REQUIRED	1,752 CY
EXCAVATION AVAILABLE FOR EMBANKMENT	566 CY
BORROW REQUIRED	1,186 CY
BORROW DENSIFICATION (85%)	178 CY
TOTAL BORROW	1,364 CY

BY: JMW -
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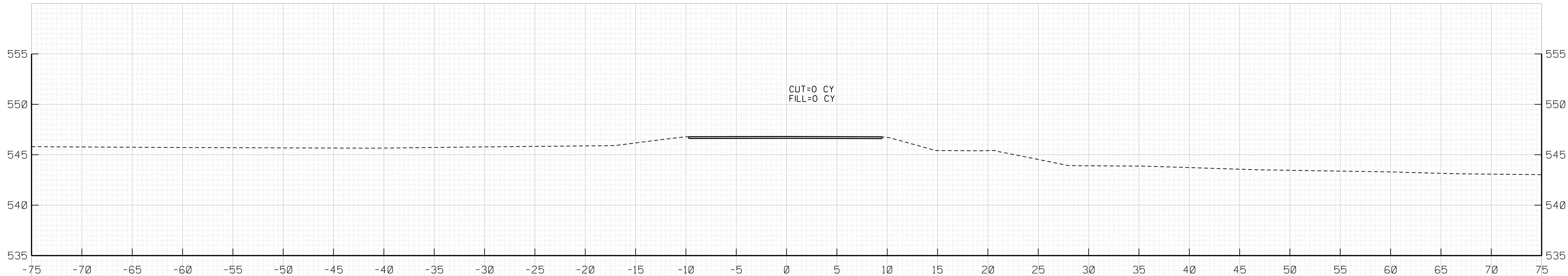
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**REPLACEMENT OF BRIDGE NO. F-16-14
ON BRETHREN CHURCH ROAD
OVER CATOCTIN CREEK**

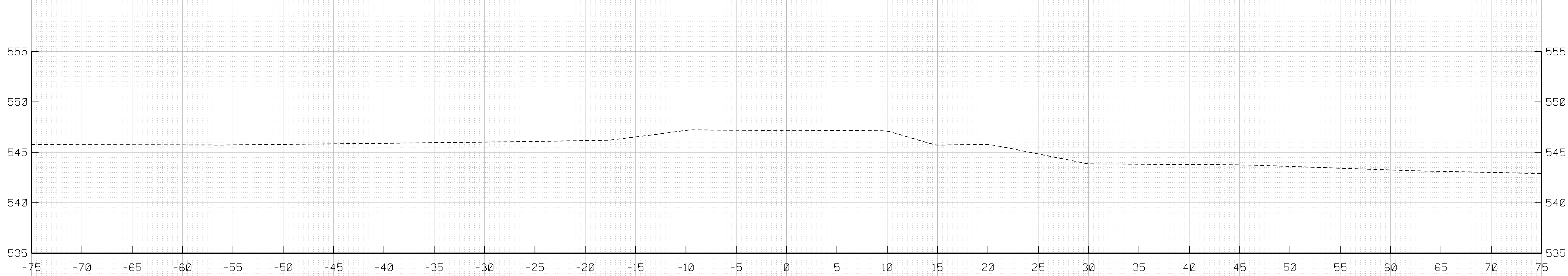
SUMMARY OF EARTHWORK

DATE: FEBRUARY 2021	SCALE: NONE
PROJECT NO.	DWG. 13 OF 26

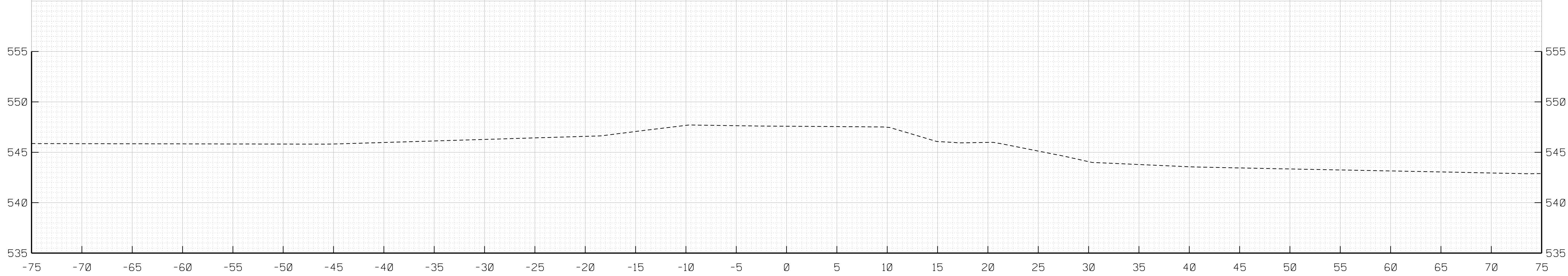
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42+00



41+75



41+50

CS-01

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FREDERICK COUNTY, MARYLAND

**REPLACEMENT OF BRIDGE NO. F-16-14
ON BRETHREN CHURCH ROAD
OVER CATOCTIN CREEK**

CROSS SECTIONS

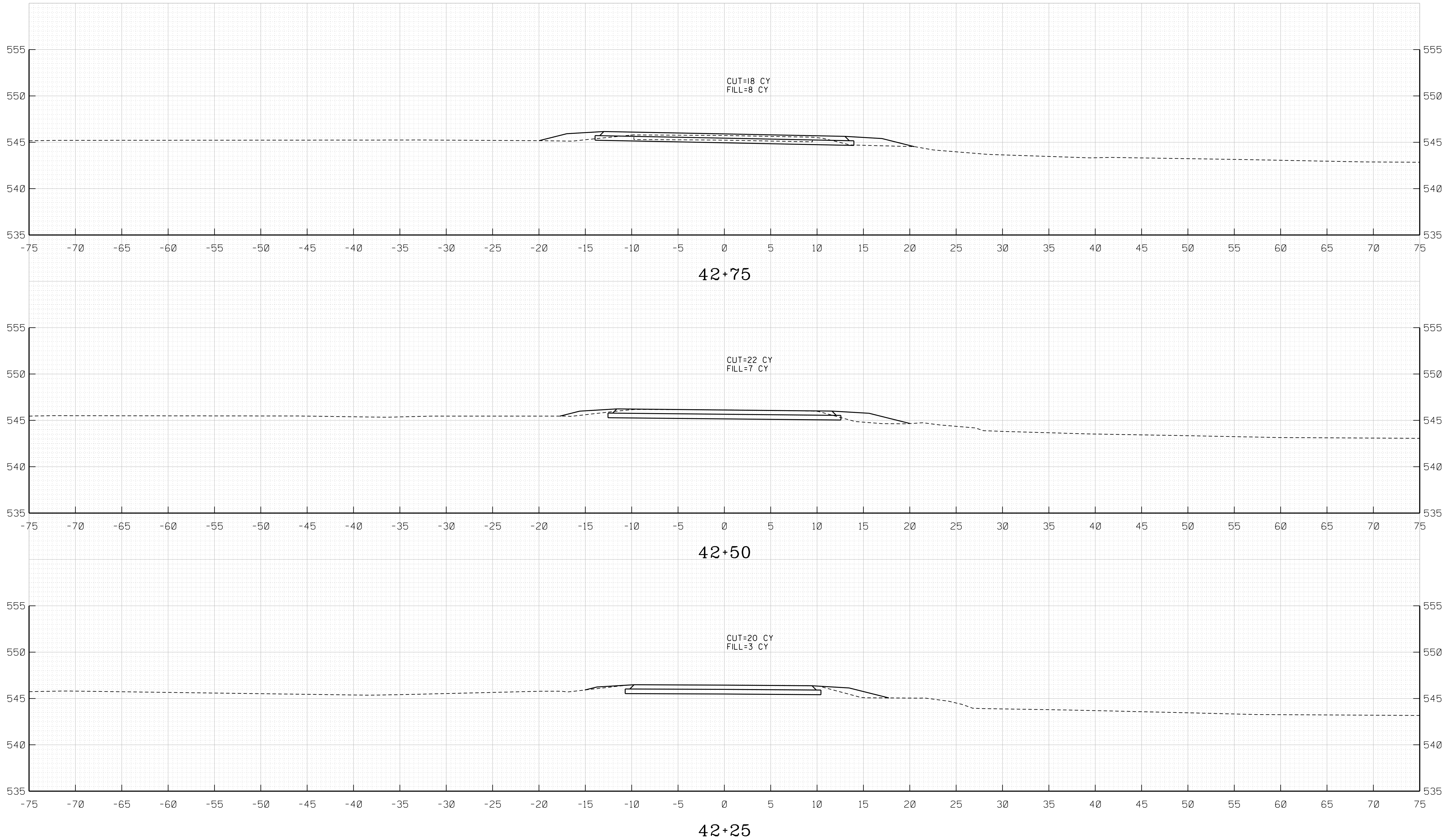
DATE: FEBRUARY 2021 SCALE: 1" = 5'

PROJECT NO. DWG. 14 OF 26

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CS-02

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FREDERICK COUNTY, MARYLAND

**REPLACEMENT OF BRIDGE NO. F-16-14
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OVER CATOCTIN CREEK**

CROSS SECTIONS

DATE: FEBRUARY 2021 SCALE: 1" = 5'

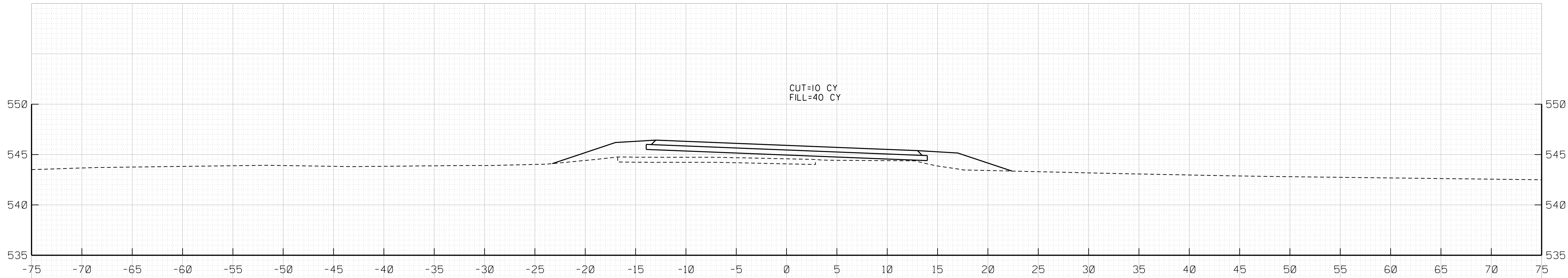
PROJECT NO. DWG. 15 OF 26

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OWINGS MILLS, MD

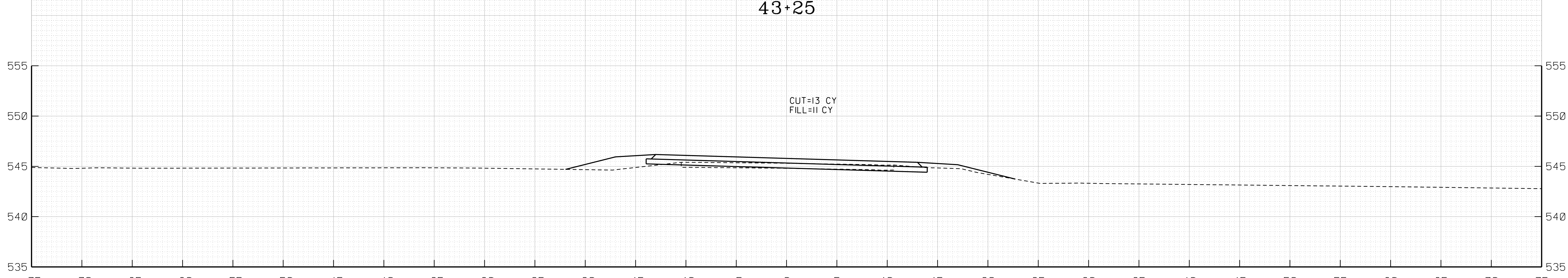
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43+50



43+25



43+00

CS-03

FREDERICK COUNTY, MARYLAND
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OFFICE OF TRANSPORTATION ENGINEERING
FREDERICK COUNTY, MARYLAND

**REPLACEMENT OF BRIDGE NO. F-16-14
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OVER CATOCTIN CREEK**

CROSS SECTIONS

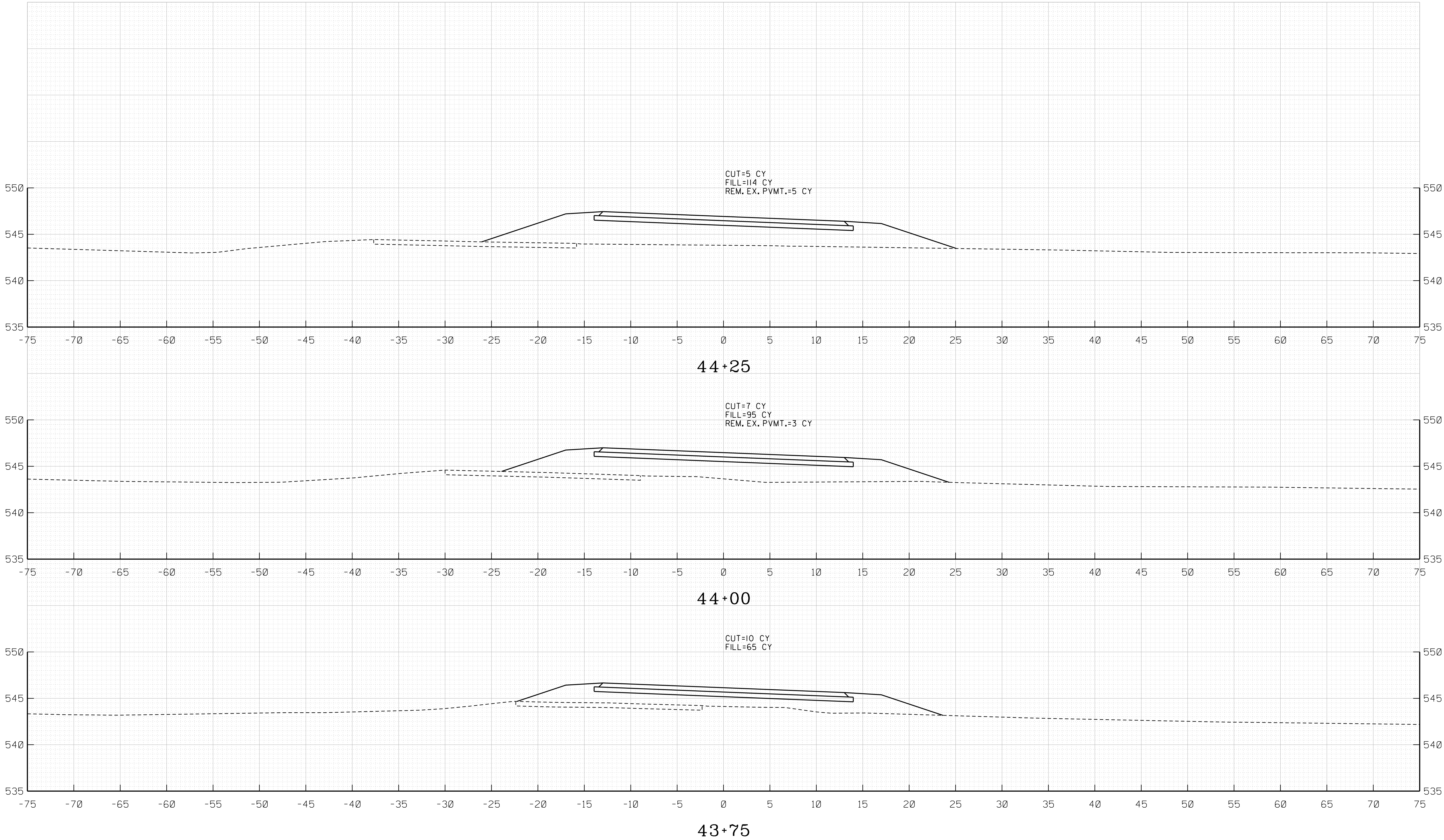
DATE: FEBRUARY 2021 SCALE: 1" = 5'

PROJECT NO. DWG. 16 OF 26

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CS-04

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FREDERICK COUNTY, MARYLAND

**REPLACEMENT OF BRIDGE NO. F-16-14
ON BRETHERN CHURCH ROAD
OVER CATOCTIN CREEK**

CROSS SECTIONS

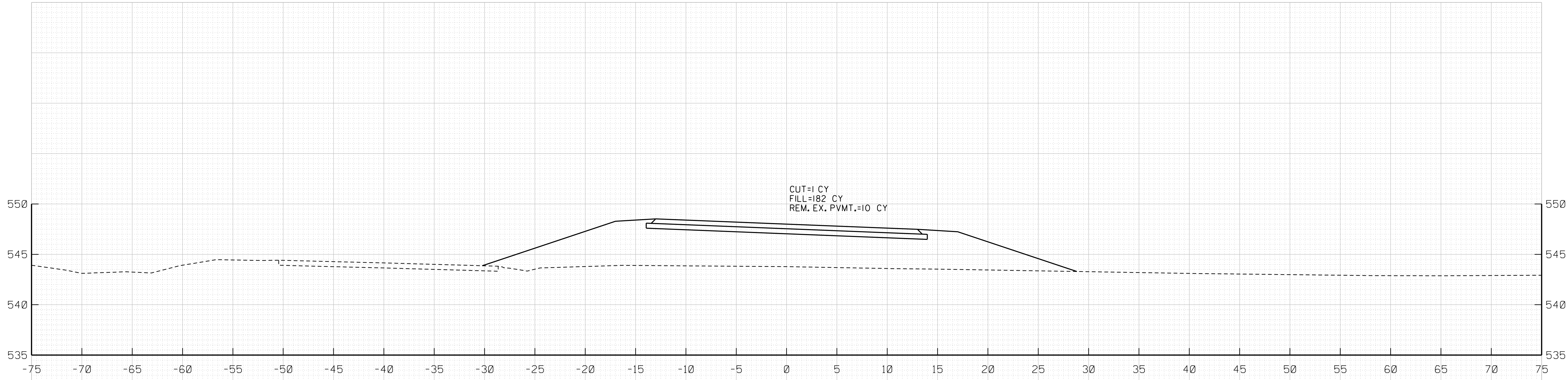
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PROJECT NO. DWG. 17 OF 26

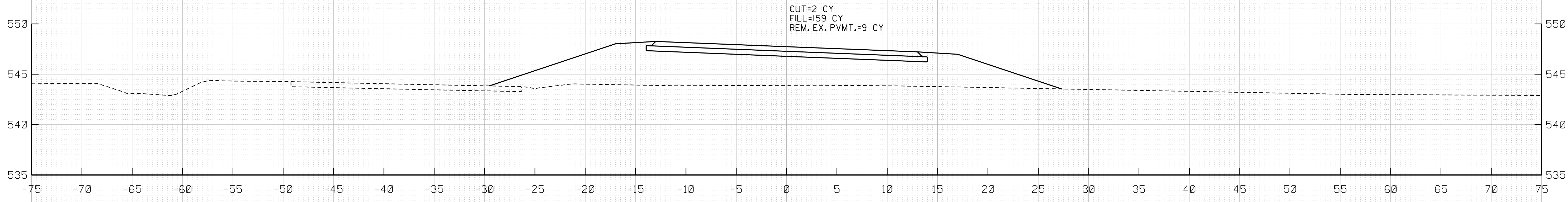
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LICENSE NO. 24828
EXPIRATION DATE: 02-25-2022

WB
CONSULTING ENGINEERS | THE
WILSON T. BALLARD CO.
OWINGS MILLS, MD

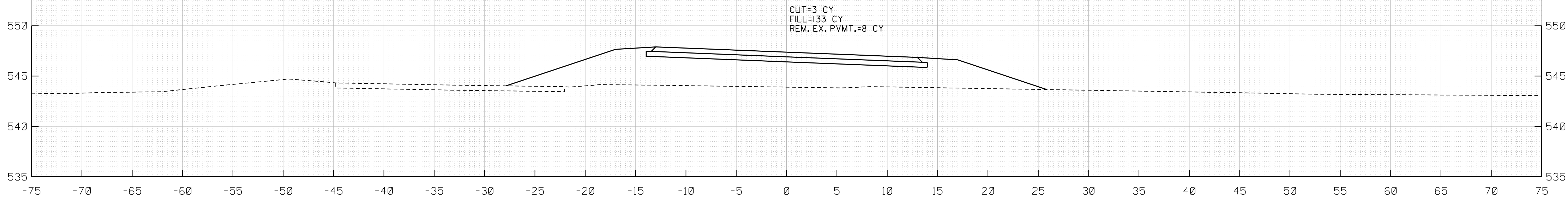
BY: JWW -
PLOTED: Tuesday, February 09, 2021 AT 01:06 PM
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45+00



44+75



44+50

CS-05

FREDERICK COUNTY, MARYLAND
DIVISION OF PUBLIC WORKS
DEPARTMENT OF ENGINEERING AND CONSTRUCTION MANAGEMENT
OFFICE OF TRANSPORTATION ENGINEERING
FREDERICK COUNTY, MARYLAND

**REPLACEMENT OF BRIDGE NO. F-16-14
ON BRETHREN CHURCH ROAD
OVER CATOCTIN CREEK**

CROSS SECTIONS

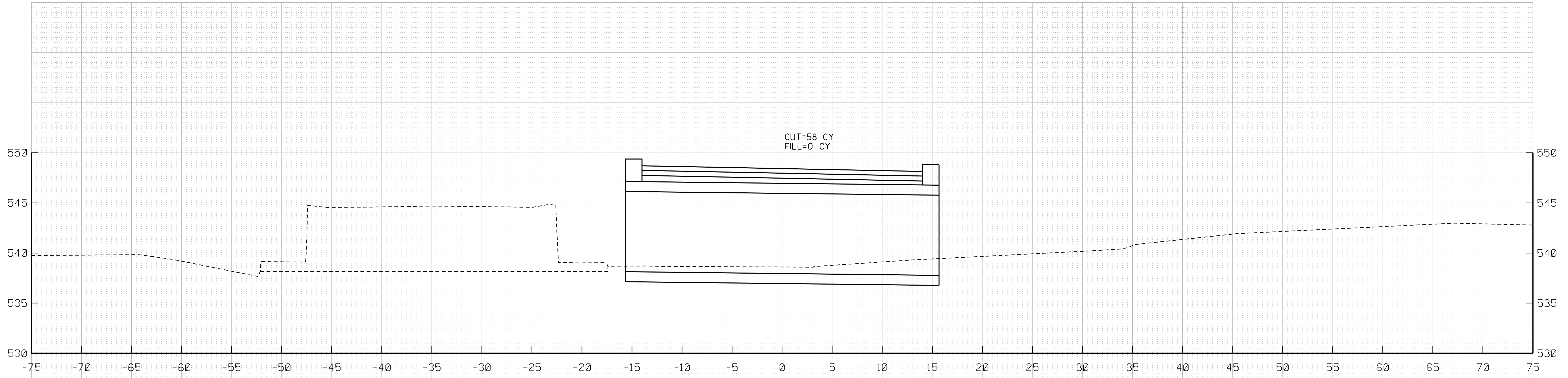
DATE: FEBRUARY 2021 SCALE: 1" = 5'

PROJECT NO. DWG. 18 OF 26

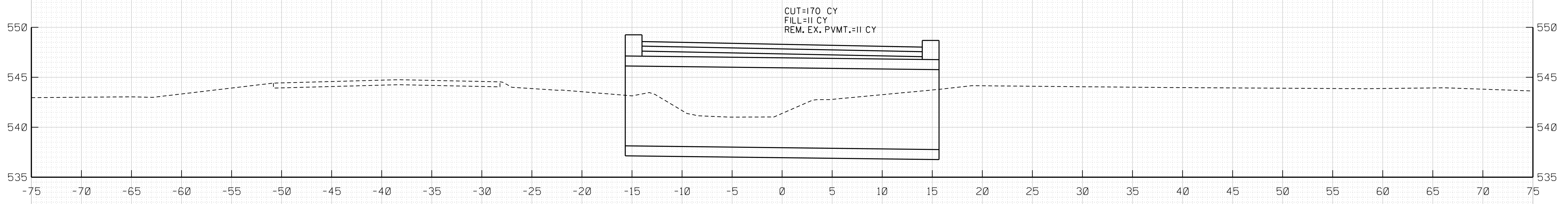
PROFESSIONAL CERTIFICATION.
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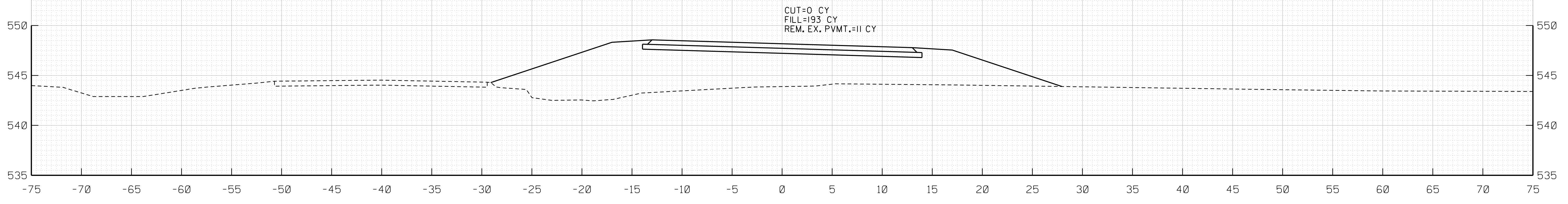
BY: JWW -
PLOTED: Tuesday, February 09, 2021 AT 01:07 PM
FILE: USSTR-1002813-Brethren\Design_Files\WHC-A14-Brethren.dgn



45+75



45+50



45+25

CS-06

FREDERICK COUNTY, MARYLAND
DIVISION OF PUBLIC WORKS
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OFFICE OF TRANSPORTATION ENGINEERING
FREDERICK COUNTY, MARYLAND

**REPLACEMENT OF BRIDGE NO. F-16-14
ON BRETHERN CHURCH ROAD
OVER CATOCTIN CREEK**

CROSS SECTIONS

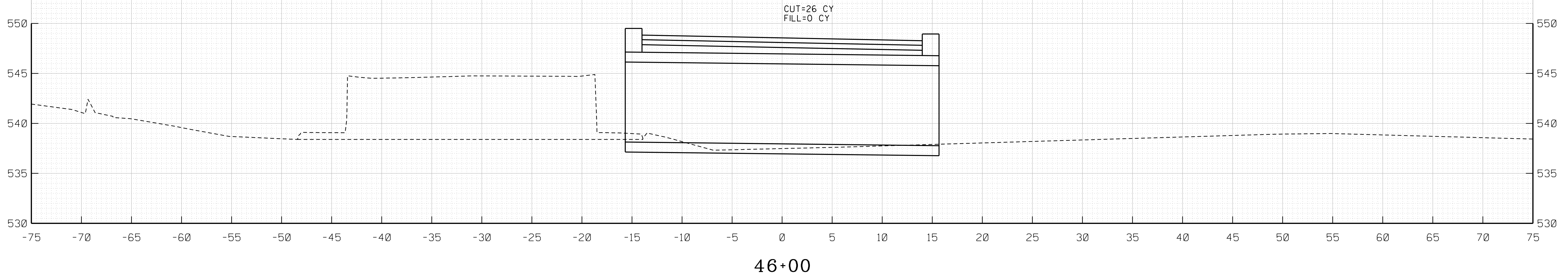
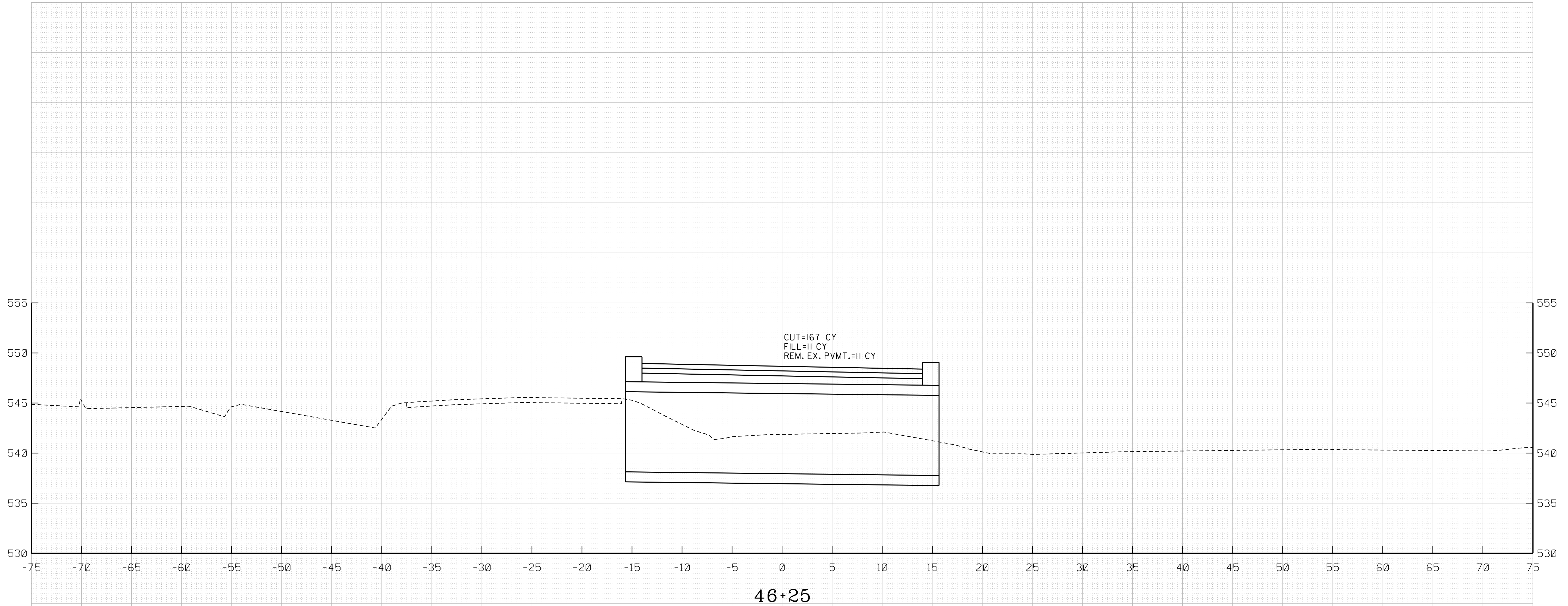
DATE: FEBRUARY 2021 SCALE: 1" = 5'

PROJECT NO. DWG. 19 OF 26

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CS-07

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**REPLACEMENT OF BRIDGE NO. F-16-14
ON BRETHREN CHURCH ROAD
OVER CATOCTIN CREEK**

CROSS SECTIONS

DATE: FEBRUARY 2021

SCALE: 1" = 5'

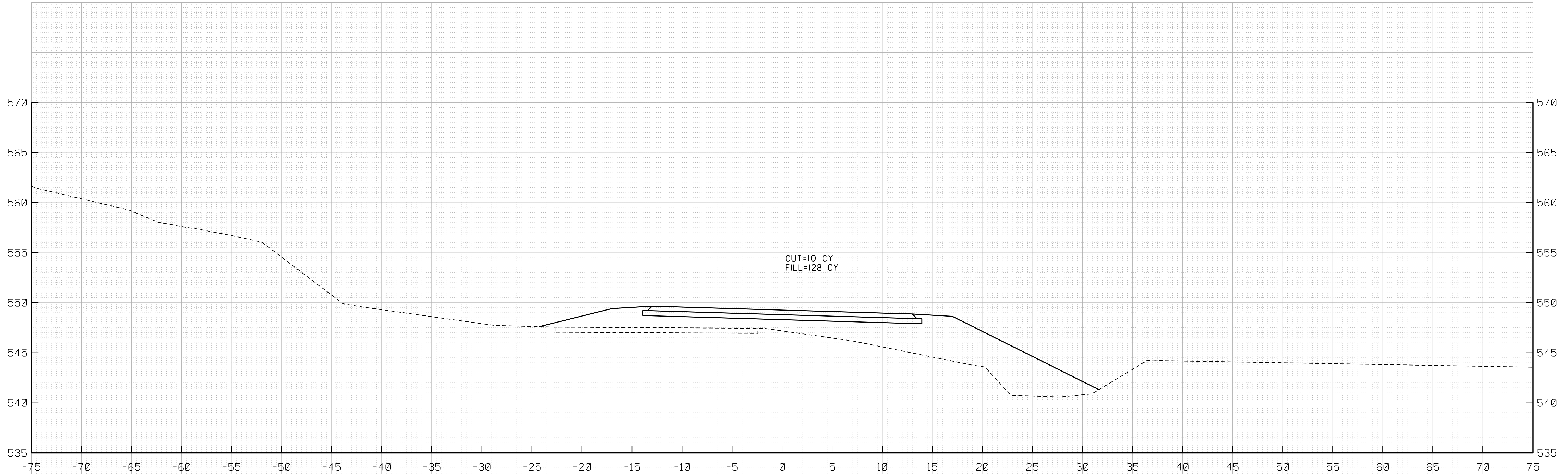
PROJECT NO.

DWG. 20 OF 26

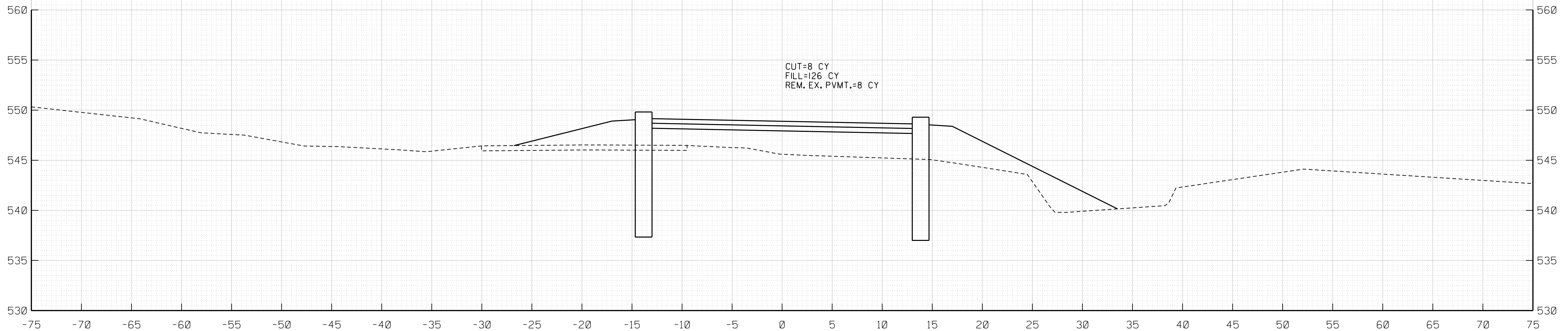
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BY: JMW -
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46+75



46+50

CS-08

FREDERICK COUNTY, MARYLAND
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FREDERICK COUNTY, MARYLAND

**REPLACEMENT OF BRIDGE NO. F-16-14
ON BRETHERN CHURCH ROAD
OVER CATOCTIN CREEK**

CROSS SECTIONS

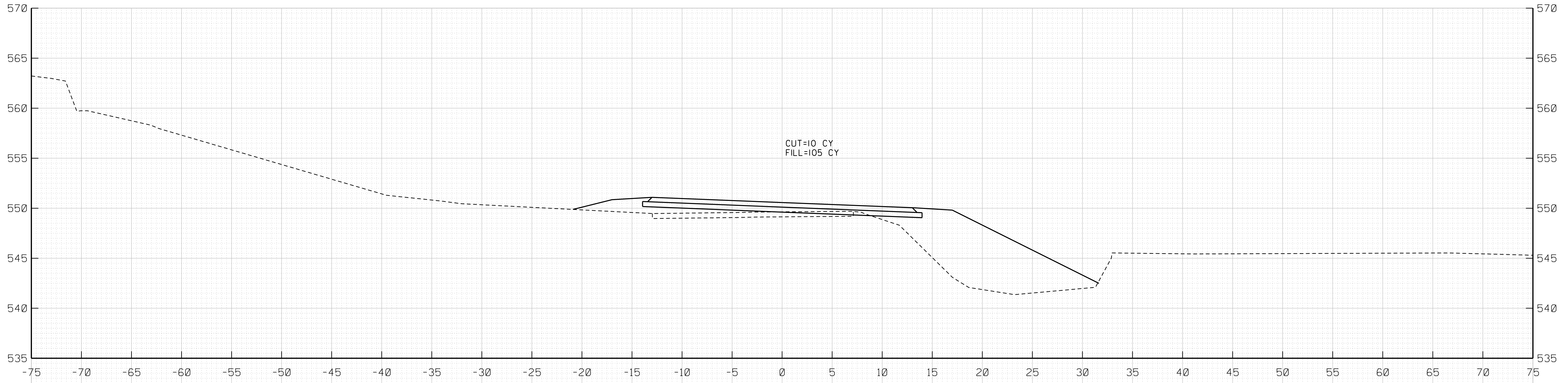
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PROJECT NO. DWG. 21 OF 26

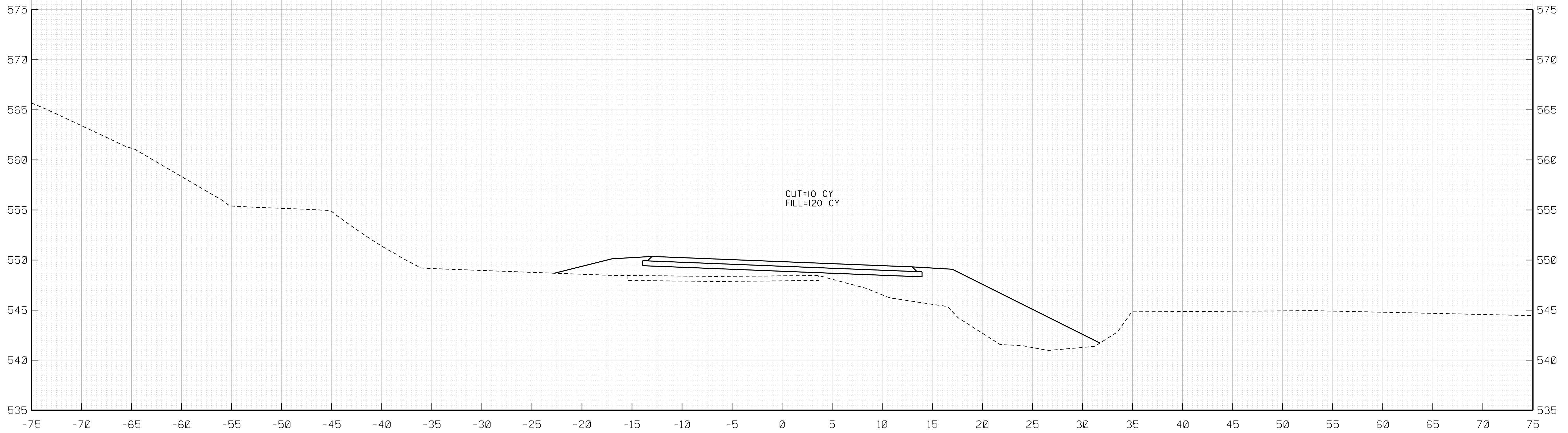
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BY: JJW -
PLOTED: Tuesday, February 09, 2021 AT 01:08 PM
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47+25



47+00

CS-09

FREDERICK COUNTY, MARYLAND
DIVISION OF PUBLIC WORKS
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FREDERICK COUNTY, MARYLAND

**REPLACEMENT OF BRIDGE NO. F-16-14
ON BRETHERN CHURCH ROAD
OVER CATOCTIN CREEK**

CROSS SECTIONS

DATE: FEBRUARY 2021

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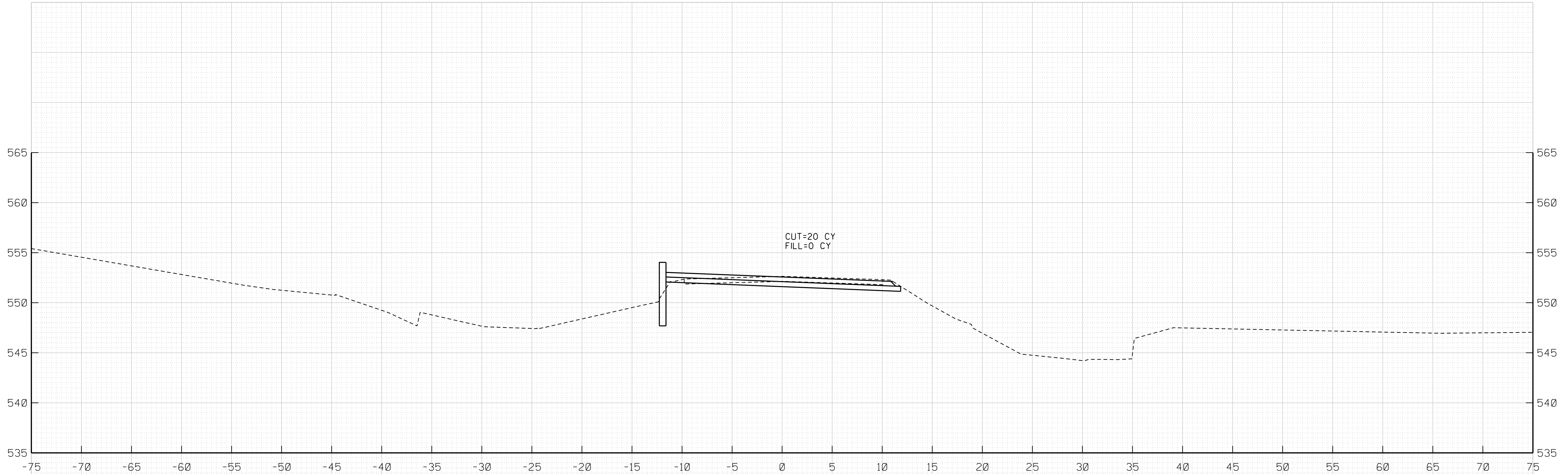
PROJECT NO.

DWG. 22 OF 26

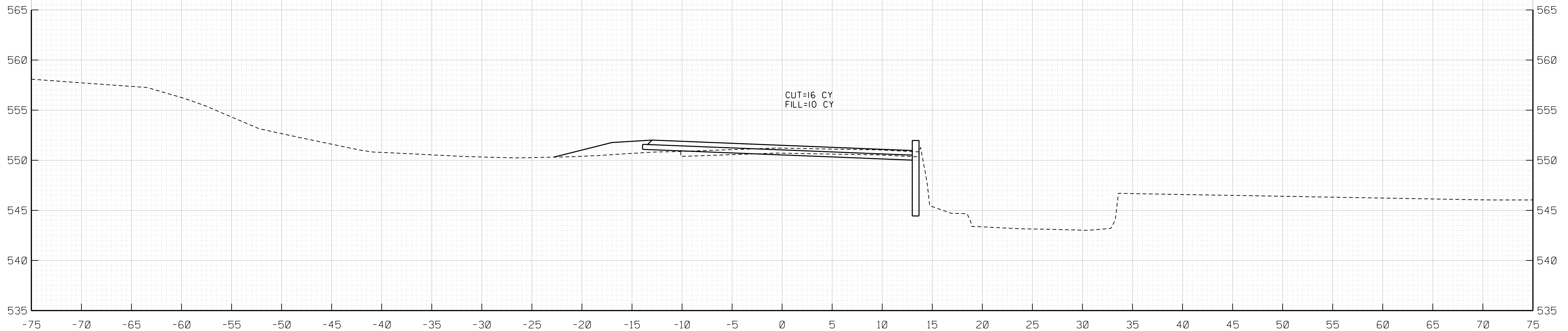
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47+75



47+50

CS-10

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OVER CATOCTIN CREEK**

CROSS SECTIONS

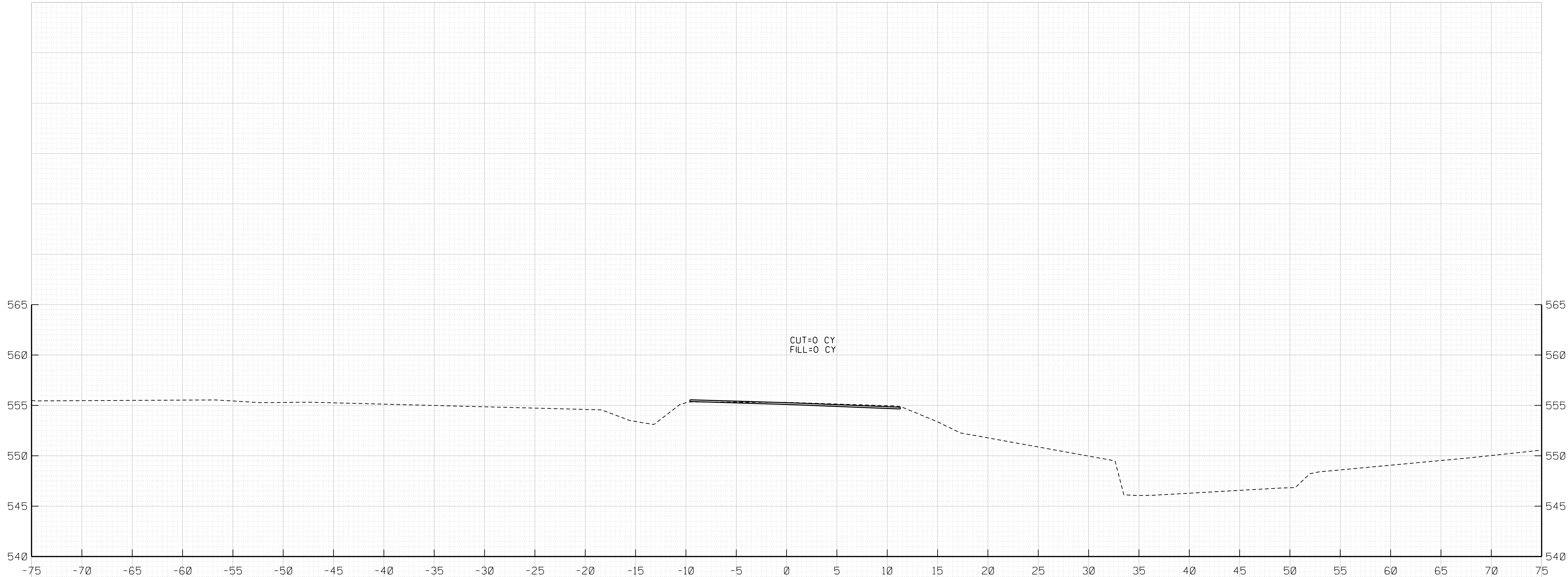
DATE: FEBRUARY 2021 SCALE: 1" = 5'

PROJECT NO. DWG. 23 OF 26

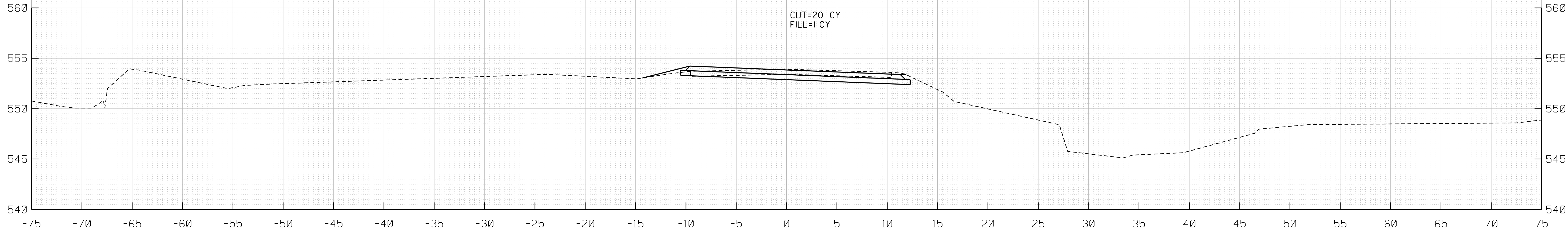
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48+25



48+00

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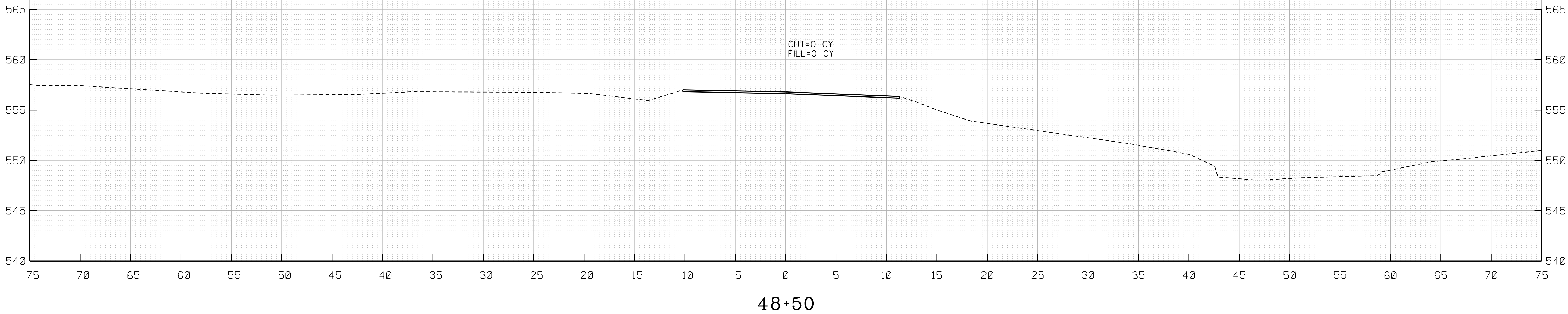
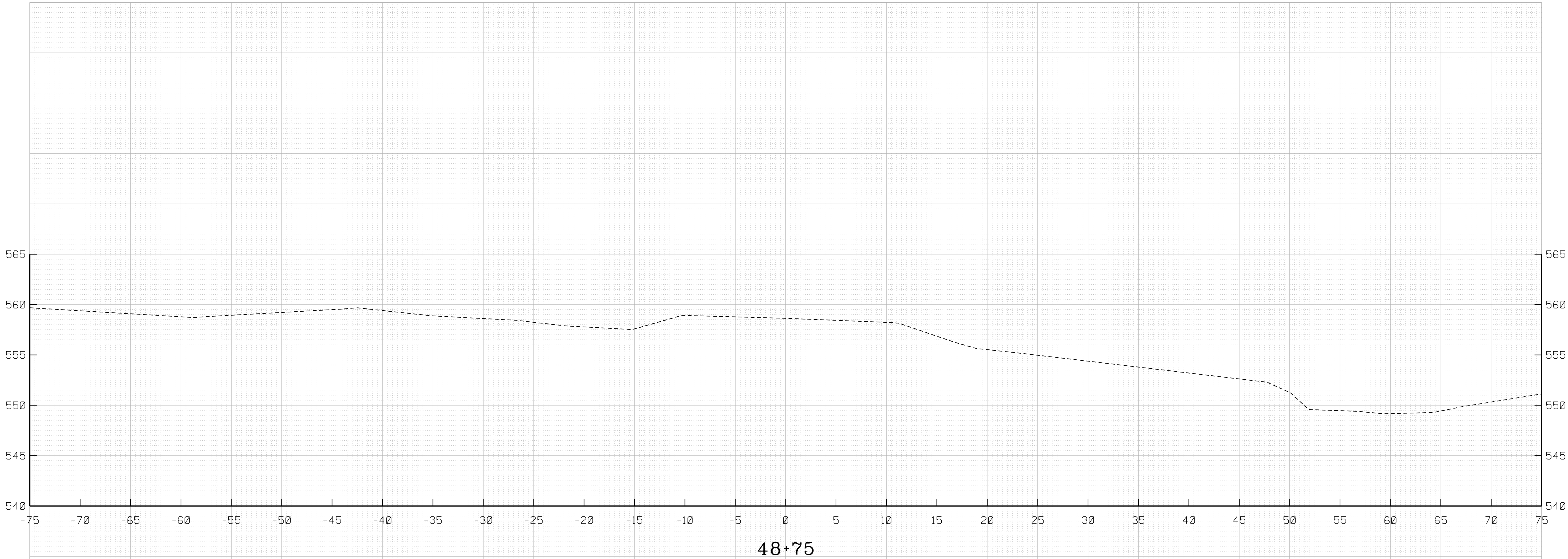
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**REPLACEMENT OF BRIDGE NO. F-16-14
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CROSS SECTIONS

DATE: FEBRUARY 2021 SCALE: 1" = 5'
PROJECT NO. DWG. 24 OF 26

BY: JWW -
PLOTED: Tuesday, February 09, 2021 AT 01:08 PM
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CS-12

FREDERICK COUNTY, MARYLAND
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CROSS SECTIONS

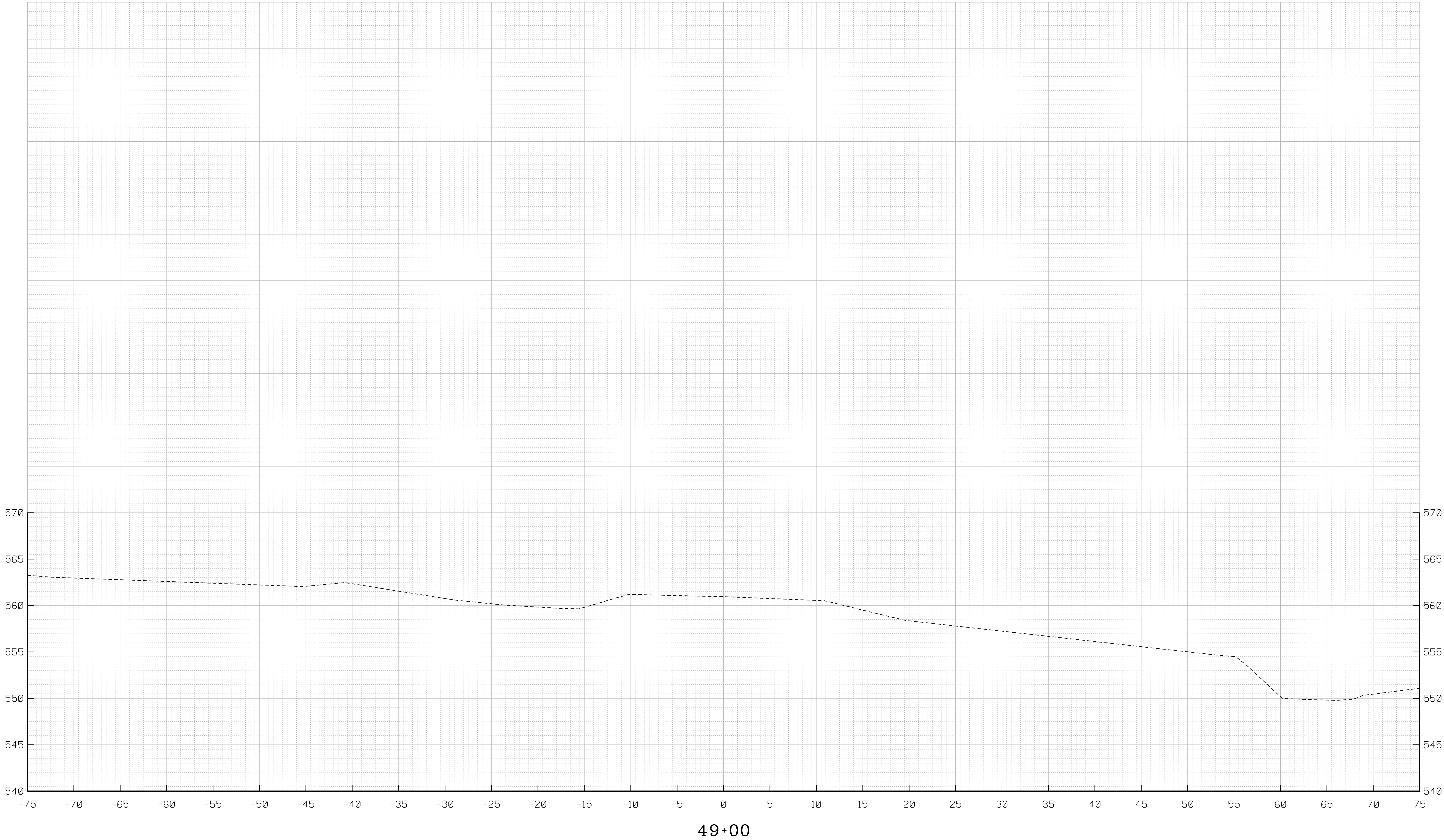
DATE: FEBRUARY 2021 SCALE: 1" = 5'

PROJECT NO. DWG. 25 OF 26

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49+00

CS-13

FREDERICK COUNTY, MARYLAND
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CROSS SECTIONS

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PROJECT NO. DWG. 26 OF 26

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