

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

STANDARD SPECIFICATIONS BOOK, BOOK OF STANDARDS AND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD)

ALL WORK ON THIS PROJECT SHALL CONFORM TO THE MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION (MDOT SHA) SPECIFICATIONS ENTITLED "STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS" DATED JULY 2020 REVISION THEREOF OR ADDITIONS THERETO: THE SPECIAL PROVISIONS INCLUDED IN THE INVITATION FOR BIDS BOOK; THE ADMINISTRATION'S "BOOK OF STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES" AND THE LATEST ADOPTED MUTCD.

STANDARD STABILIZATION NOTE

FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES GREATER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1), AND SEVEN DAYS (7) AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.

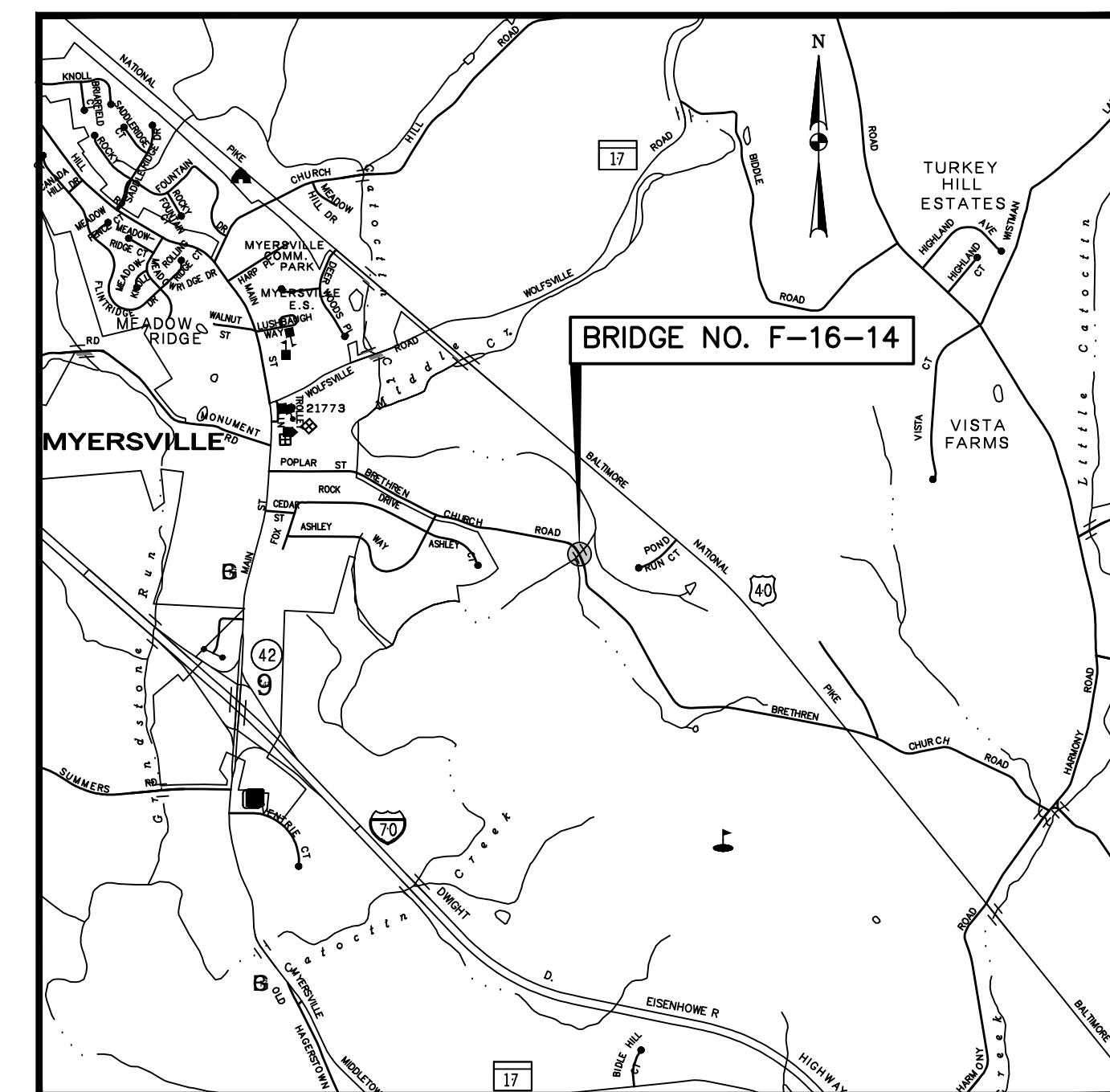
FREDERICK COUNTY, MARYLAND DEVELOPMENT REVIEW ENGINEERING

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



LOCATION MAP SCALE 1" = 2000'

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.

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
Internal Use Only
Development Review
File #
A/P #
Due 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

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.

FREDERICK COUNTY DIVISION OF
PUBLIC WORKS

DIRECTOR DATE

FREDERICK COUNTY OFFICE OF TRANSPORTATION ENGINEERING

CHIEF DATE

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

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SUPPLEMENT TO CONVENTIONAL SIGNS

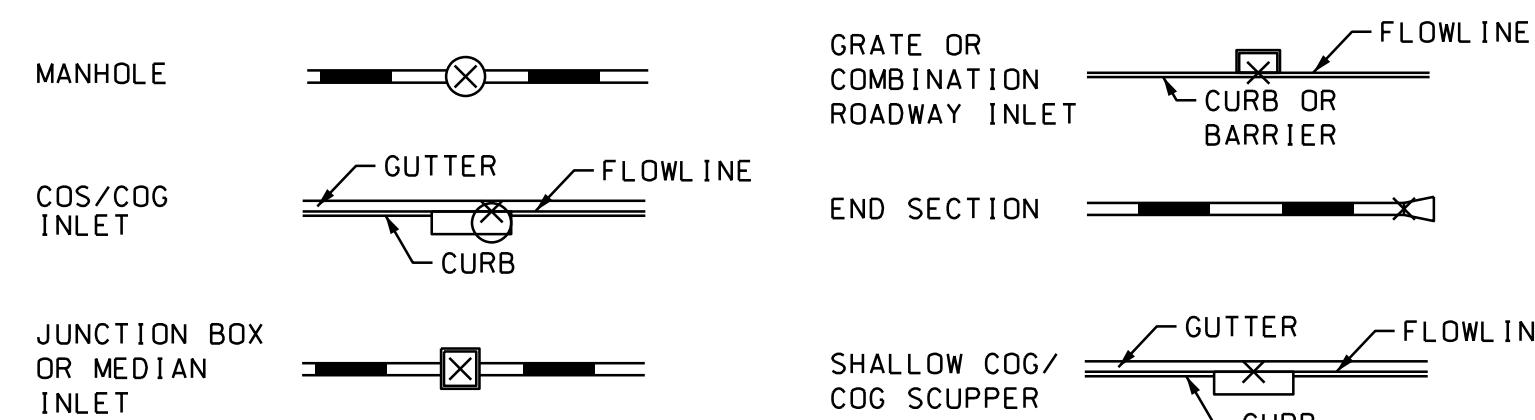
EXISTING CONSTRUCTION

PROPERTY LINE OR RIGHT OF WAY LINE	
EDGE OF ROADWAY PAVING	
CURB OR CURB AND GUTTER	
EXISTING GROUND CONTOURS (5')	
EXISTING GROUND CONTOURS (1')	
GRADING BREAKLINE	
FENCE	
EDGE OF WOODED AREAS	
TREE (FREE STANDING)	
WETLAND LIMITS	
STREAM THALWEG	
STREAM EDGE	
SIGN	
LIGHT POLE	
UTILITY POLE	
TRAFFIC BARRIER W-BEAM	
STORM DRAIN (> 12")	
STORM DRAIN (< 12")	
SANITARY	
WATER	
GAS	
ELECTRIC (UNDERGROUND)	
ELECTRIC (OVERHEAD)	
TELEPHONE (UNDERGROUND)	
TELEPHONE (OVERHEAD)	
METAL FENCE	
WOOD FENCE	

PROPOSED CONSTRUCTION

CONSTRUCTION	101	+50	102
TRAVERSE POINT			
BENCH MARK LOCATIONS			
RIGHT OF WAY LINE			
HOT MIX ASPHALT PAVEMENT			
RESURFACING OF EXISTING PAVEMENT			
TEMPORARY PAVEMENT CONSTRUCTION			
TRAFFIC BARRIER W-BEAM			
REMOVAL OF ITEM INDICATED (PIPE, INLET, ETC.)			
APPROXIMATE LIMITS OF CUT AND OR FILL			
EXISTING UTILITY TO BE ADJUSTED			
EXISTING UTILITY TO BE RELOCATED			
GRADING ELEVATION CONTOURS (5')			
GRADING ELEVATION CONTOURS (1')			
DITCHES (SDD, S.DIT, O.D.ID & SPEC. SDD)			
STORM DRAINS			
CONCRETE SIDEWALK / SIDEWALK RAMP			
LIMIT OF CUT			
LIMIT OF FILL			

DRAINAGE STRUCTURE STAKEOUT LOCATIONS



X DENOTES LOCATION OF STATION AND OFFSET POINT FOR INLETS AND OTHER STRUCTURES.

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 83RI.

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

BS SURVEY	BASE LINE OF SURVEY	HC	UTILITY HOUSE CONNECTION	SMH	SANITARY MANHOLE
BS CONSTR.	BASE LINE OF CONSTRUCTION	HP	HIGH POINT	SDMH	STORM DRAIN MANHOLE
BA	BELL ATLANTIC	INV	INVERT	SD	SIDE DITCH
BC	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	P	PROPERTY LINE	TMH	TELEPHONE MANHOLE
EMH	ELECTRIC MANHOLE	PGL	PROFILE GRADE LINE	T / OH	TELEPHONE LINE/OVERHEAD
EX	EXISTING	PGL	PROFILE OF GROUND LINE	TCP	TERRA COTTA PIPE
ES	PIPE CULVERT END SECTION	PR	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-1	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		

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

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

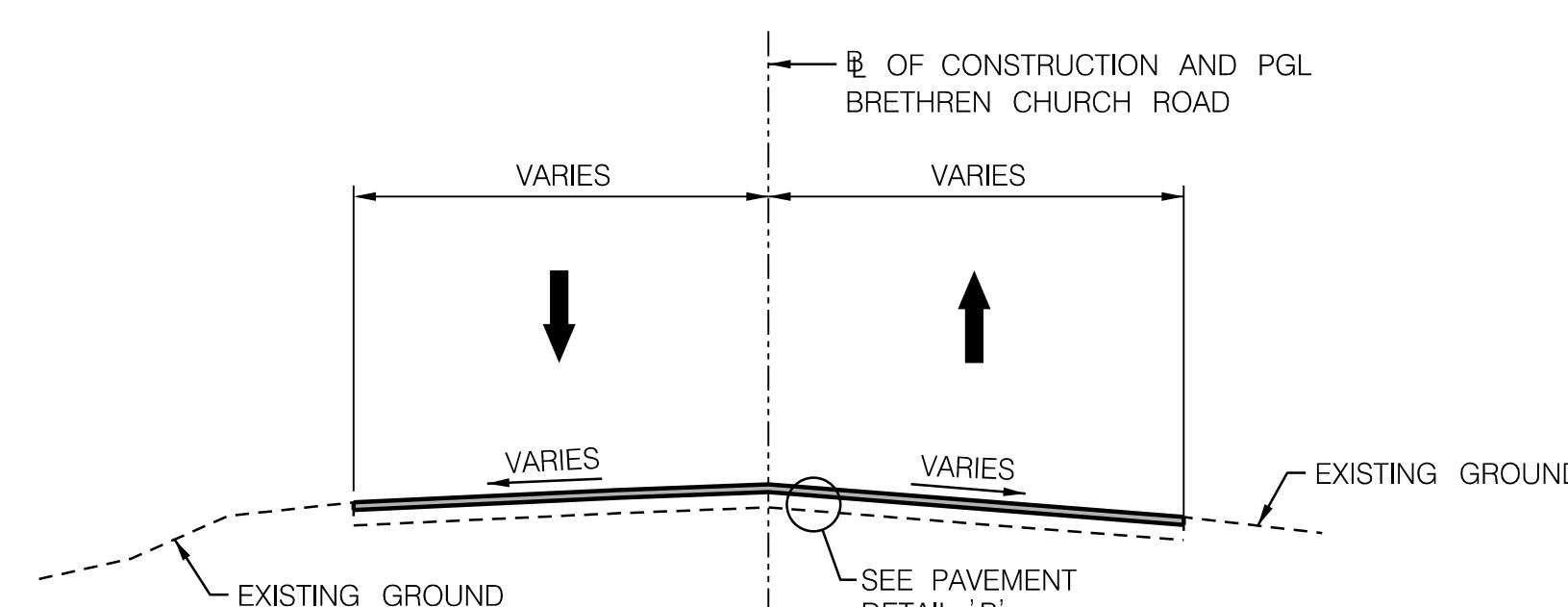
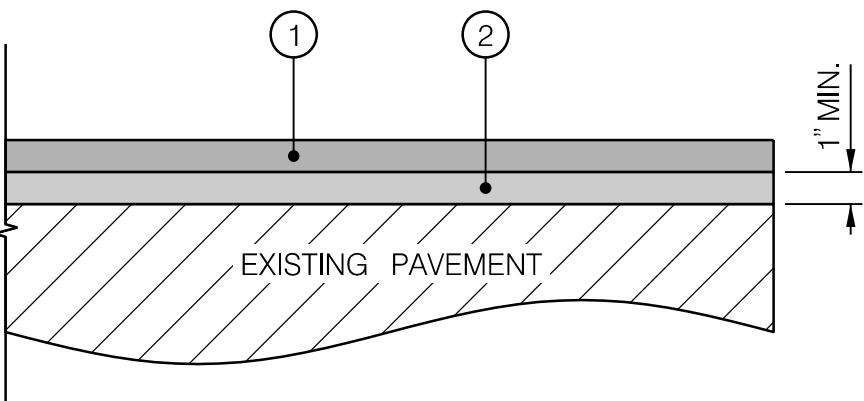
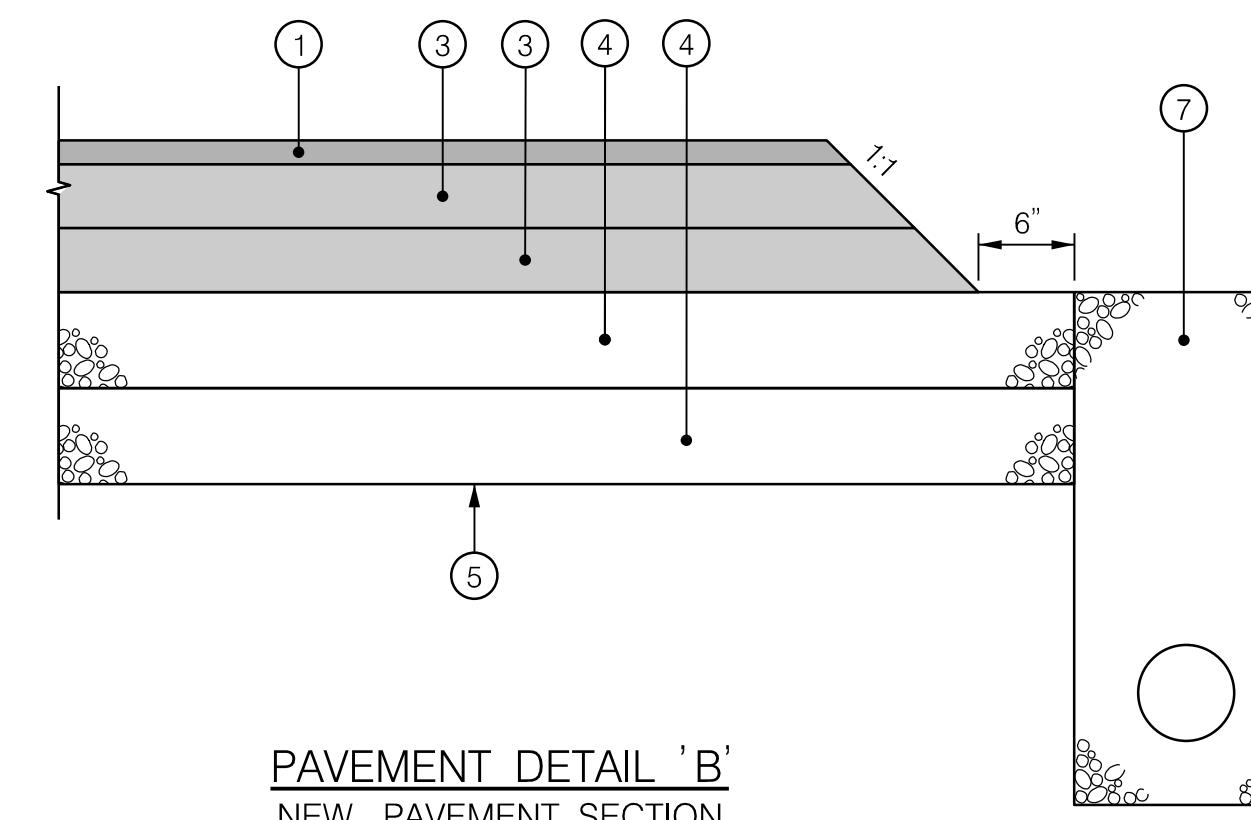
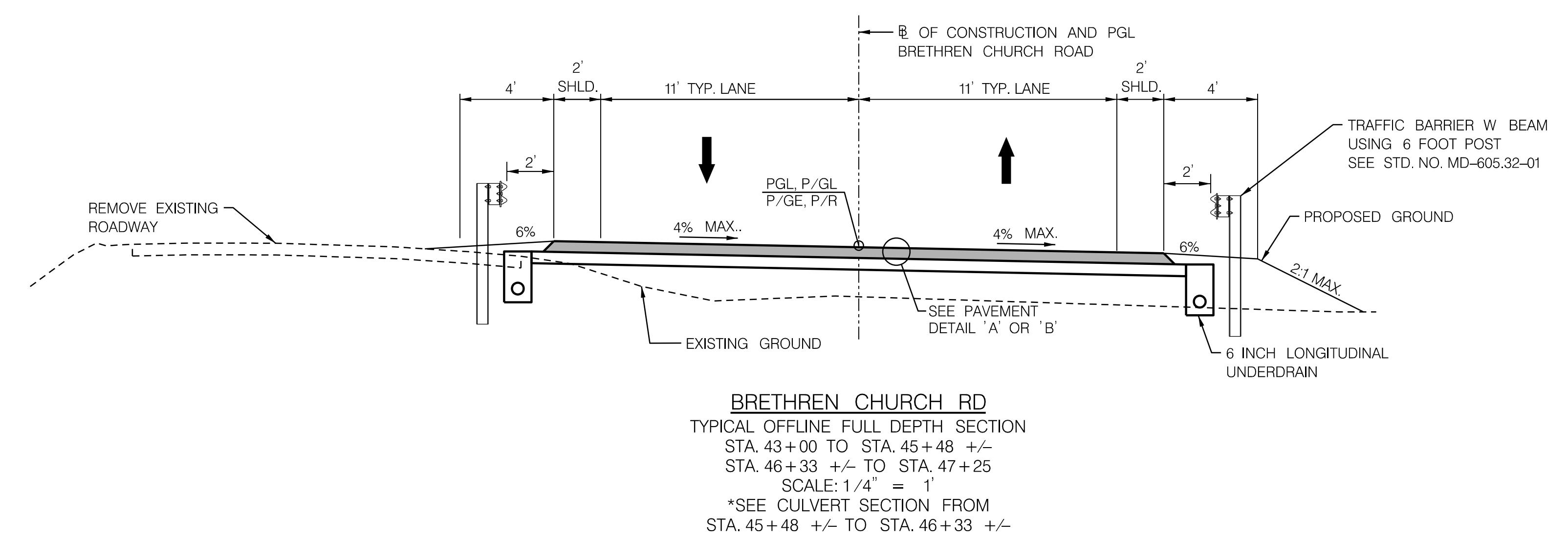
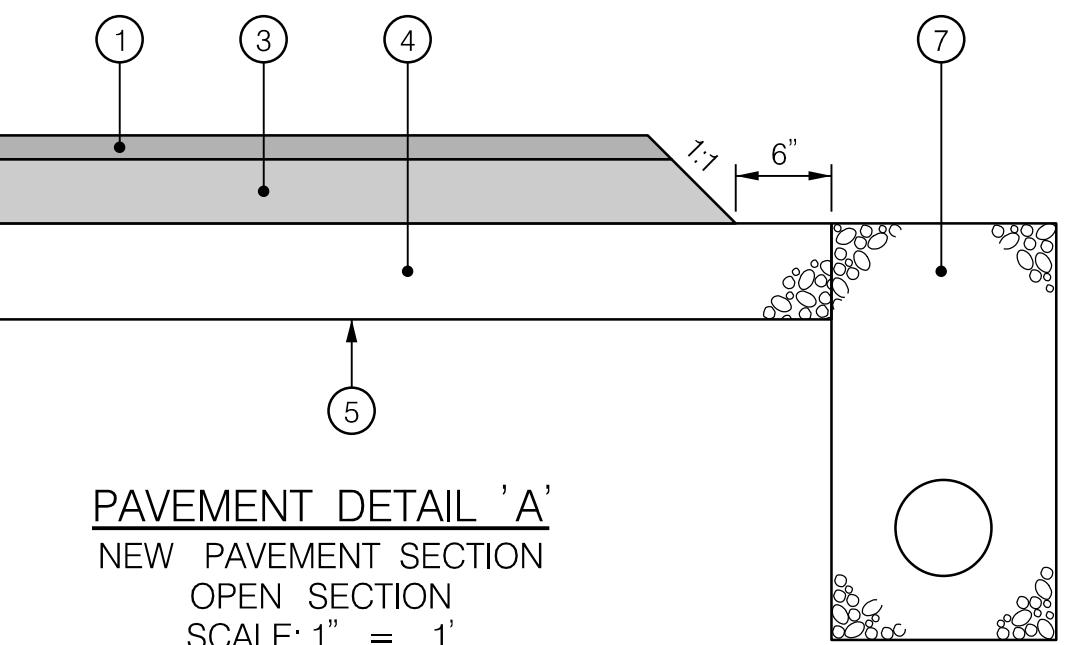
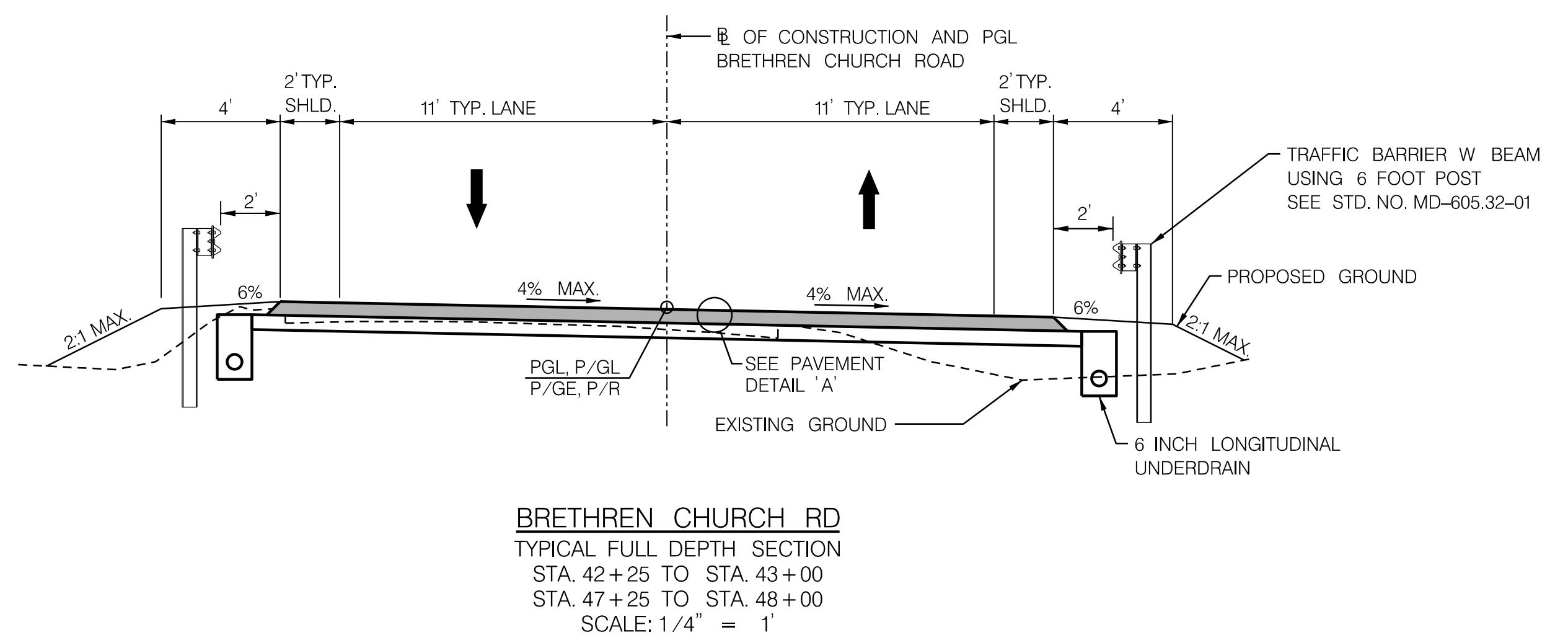
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PAVEMENT LEGEND

- (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 PAVEMNET AFTER 1" TO 2" OF FINE MILLING
- (7) 6 INCH LONGITUDINAL UNDERDRAIN (SHA STD. NO. 387.11)

NOTES:

1. 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)
2. 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.
3. PERFORM ALL RESURFACING AFTER PATCHING AND BASE WIDENING OPERATIONS ARE COMPLETED.
4. ALL FULL-DEPTH SAW CUTS FOR PAVEMENT REMOVAL SHALL BE INCIDENTAL TO THE RESPECTIVE PAY ITEM.
5. 6" MINIMUM THICKNESS FOR REMOVAL AND REPLACEMENT OF UNSUITABLE MATERIAL. USE GRADED AGGREGATE BASE FOR BACKFILL MATERIAL.



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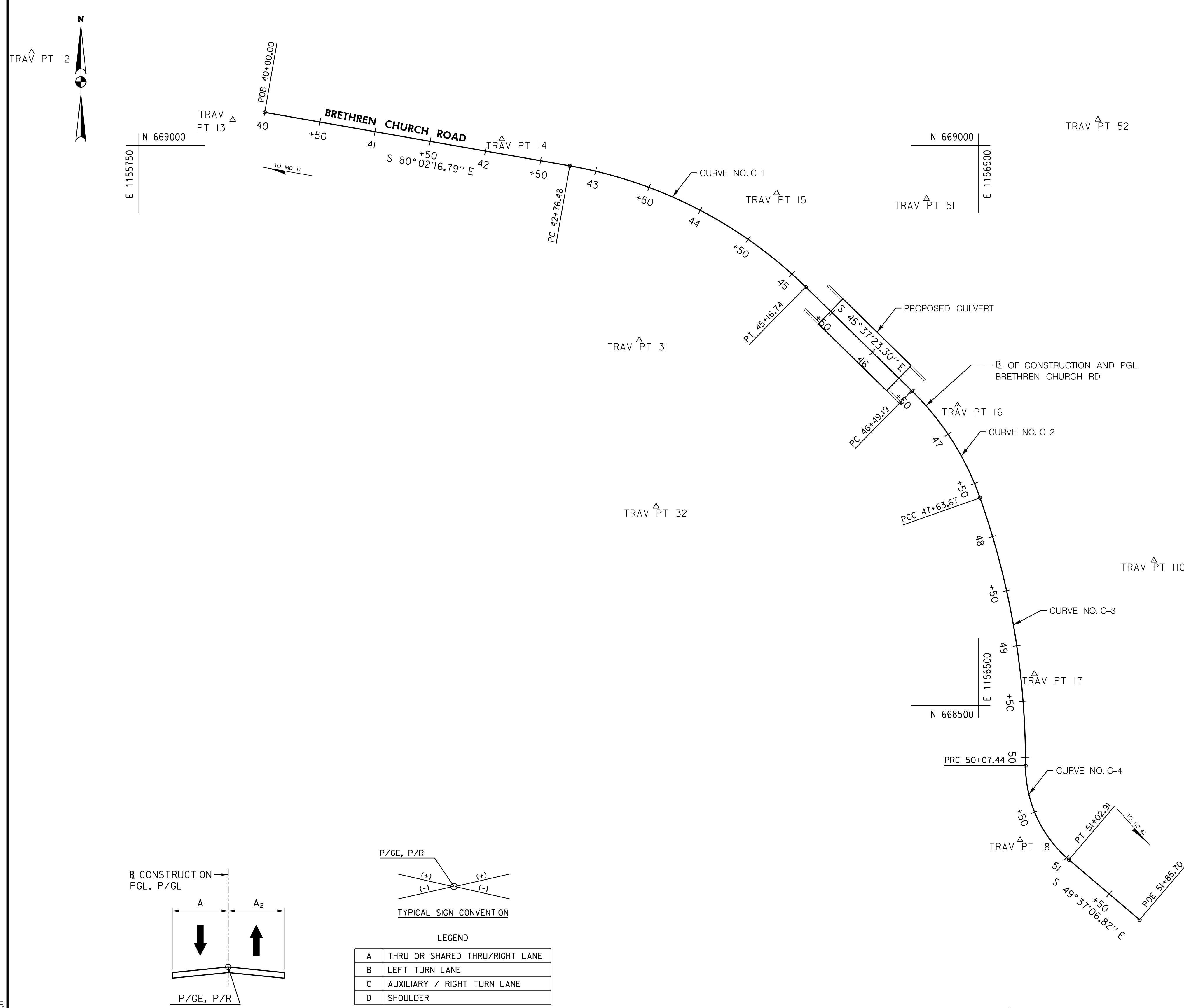
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FREDERICK COUNTY, MARYLAND
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OFFICE OF TRANSPORTATION ENGINEERING
FREDERICK COUNTY, MARYLAND

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

TYPICAL DETAIL

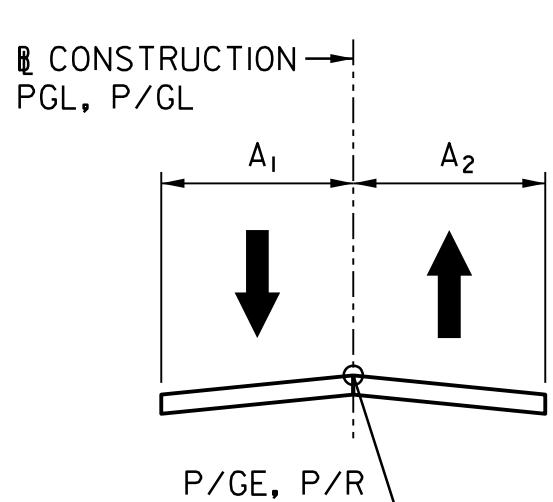
DATE: FEBRUARY 2021
SCALE: AS SHOWN
PROJECT NO. DWG. 3 OF 26



CURVE DATA						
CURVE NO.	STATION	DELTA	D _c	RADIUS	TANGENT	LENGTH
C-1	PC 42+76.48	34° 24' 53.50"	14° 19' 26.20"	400.00'	123.88'	240.26'
C-2	PC 46+49.19	26° 14' 13.16"	22° 55' 05.92"	250.00'	58.26'	114.48'
C-3	PCC 47+63.67	19° 29' 52.64"	7° 59' 55.46"	716.31'	123.07'	243.76'
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	POB 40+00.00	669029.6416	II5863.0641	
	PC 42+76.48	668981.8116	II56135.3787	
	PI 44+00.36	668960.3814	II56257.3885	
	CC	668587.8425	II56066.1807	
C-2	PT 45+16.74	668873.7446	II56345.9306	S 45° 37' 23.30" E
	PC 46+49.19	668781.1123	II56440.6000	
	PI 47+07.46	668740.3654	II56482.2430	
	CC	668602.4235	II56265.7563	
C-3	PCC 47+63.67	668685.4068	II56501.5820	S 19° 23' 10.14" E
	PI 48+86.75	668569.3132	II56542.4335	
	CC	668447.6398	II55825.8845	
	PRC 50+07.44	668446.2419	II56542.1933	S 0° 06' 42.51" W
C-4	PI 50+58.42	668395.2630	II56542.0939	
	CC	668446.0273	II56652.1931	
	PT 51+02.91	668362.2350	II56600.9271	S 49° 37' 06.82" E
	POE 51+85.70	668308.6003	II56643.9890	

TRAVERSE POINTS			
POINT NO.	NORTHING	EASTING	ELEVATION
TRAV I2	669083.3003	II5654.9136	566.84
TRAV I3	669023.0530	II5834.4738	550.78
TRAV I4	669005.8141	II56074.6161	546.33
TRAV I5	668957.5745	II56320.0061	544.71
TRAV I6	668767.9847	II56481.4782	547.86
TRAV I7	668528.1363	II56537.3335	563.47
TRAV I8	668379.8052	II56526.0426	582.77
TRAV 31	66826.2400	II56197.3262	542.47
TRAV 32	668677.6885	II56212.4504	542.57
TRAV 39	668226.8550	II56527.8983	596.03
TRAV 51	668952.4398	II56453.8346	545.98
TRAV 52	669023.1982	II56606.7748	545.45
TRAV 101	668629.4998	II56656.7040	561.69



P/GE, P/R
 (+) (-)
 (-) (+)

LEGEND

A	THRU OR SHARED THRU/RIGHT LANE
B	LEFT TURN LANE
C	AUXILIARY / RIGHT TURN LANE
D	SHOULDER

DS = 35MPH			
E MAX = 4%			
STATION	A ₁	A ₂	REMARKS
42+00	-0.0015	-.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

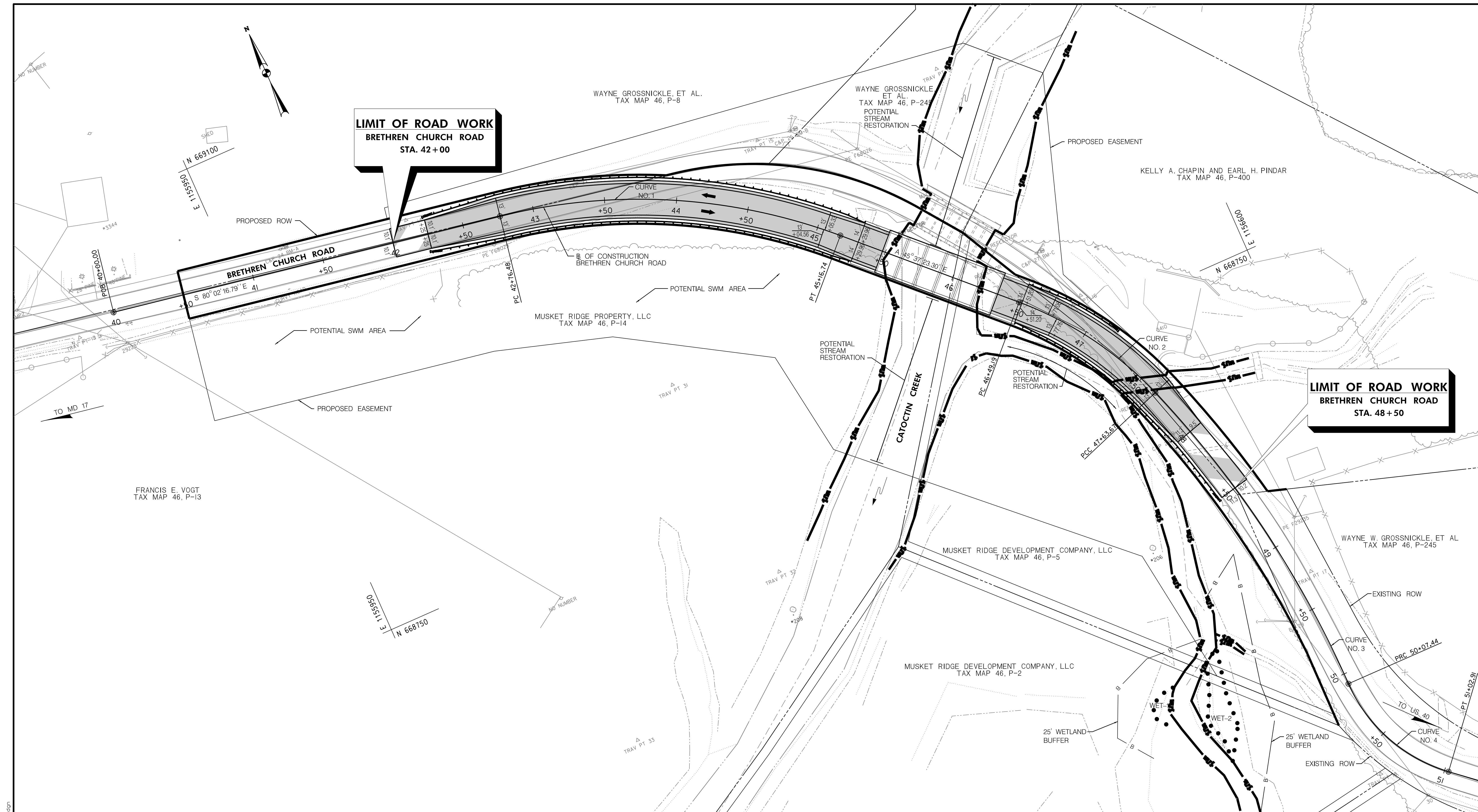
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 PROFESSIONAL ENGINEER UNDER THE
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 LICENSE NO. 24828
 EXPIRATION DATE: 02-25-2022

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

GS-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**

GEOMETRY SHEET

DATE: FEBRUARY 2021
 SCALE: 1"=50'
 PROJECT NO. DWG. 4 OF 26



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
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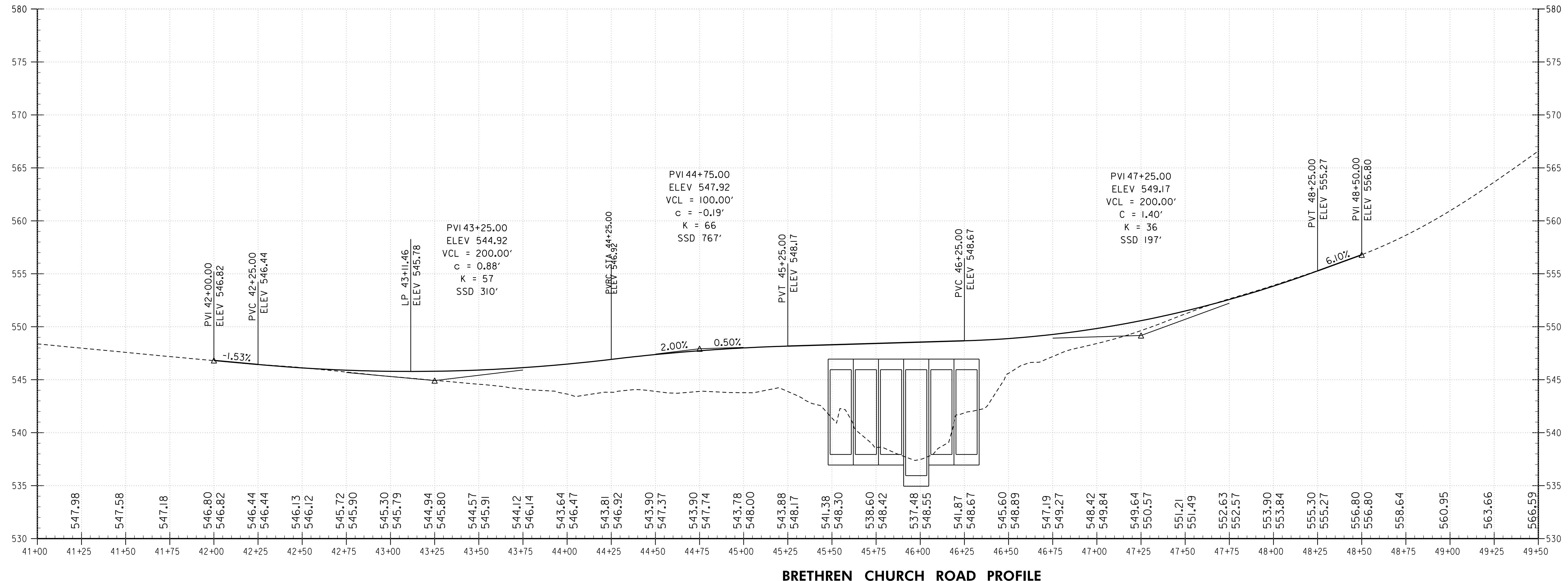
ROADWAY PLAN

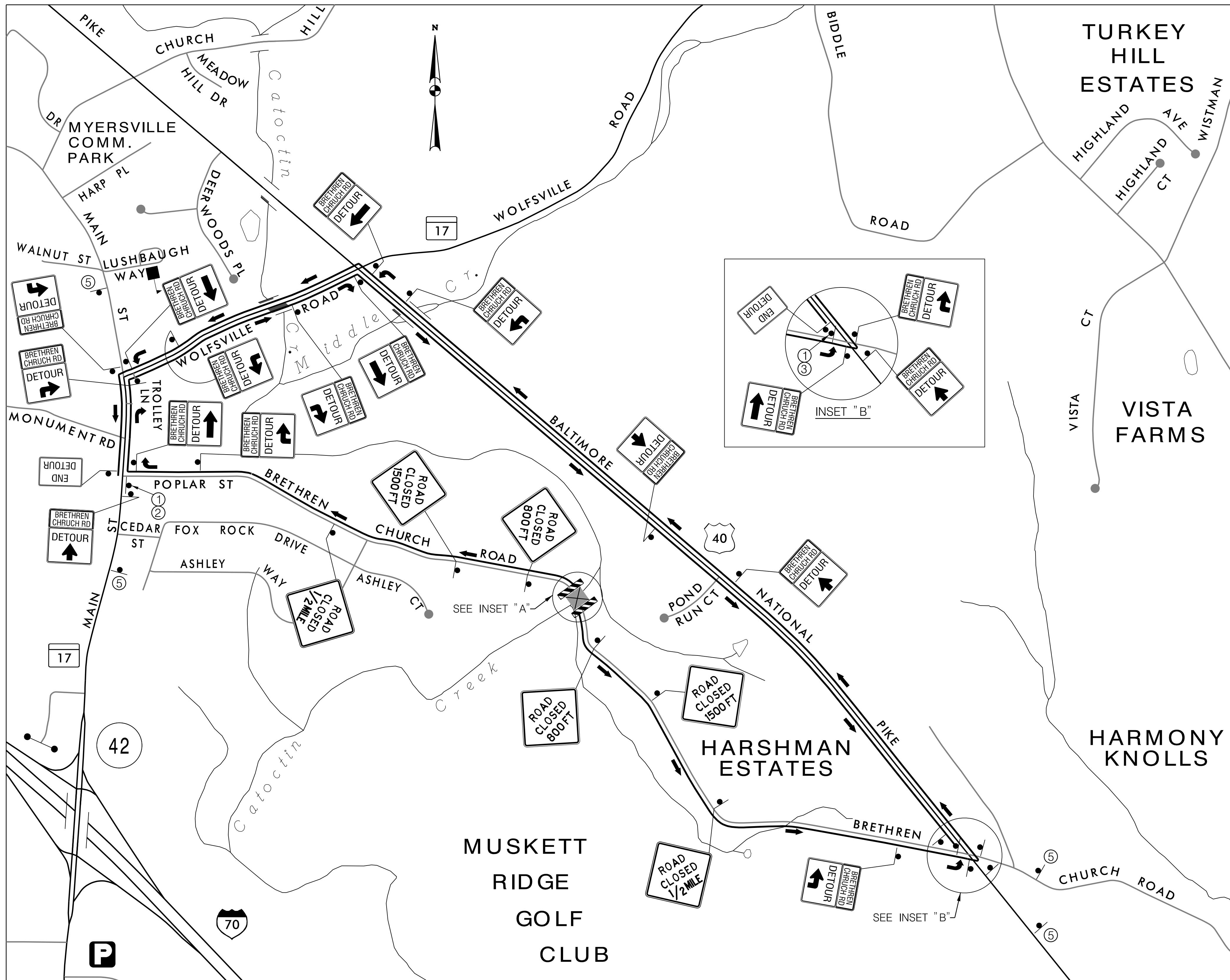
DATE: FEBRUARY 2021 SCALE: 1" = 30'

PROJECT NO. DWG. 5 OF 26

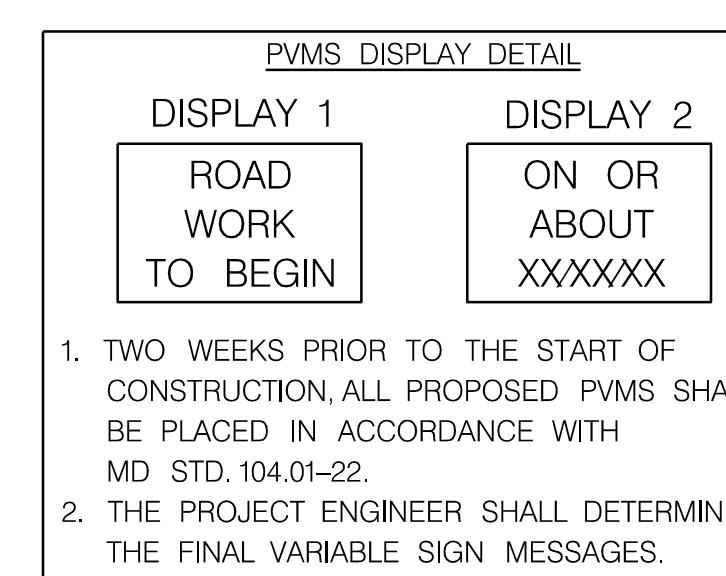
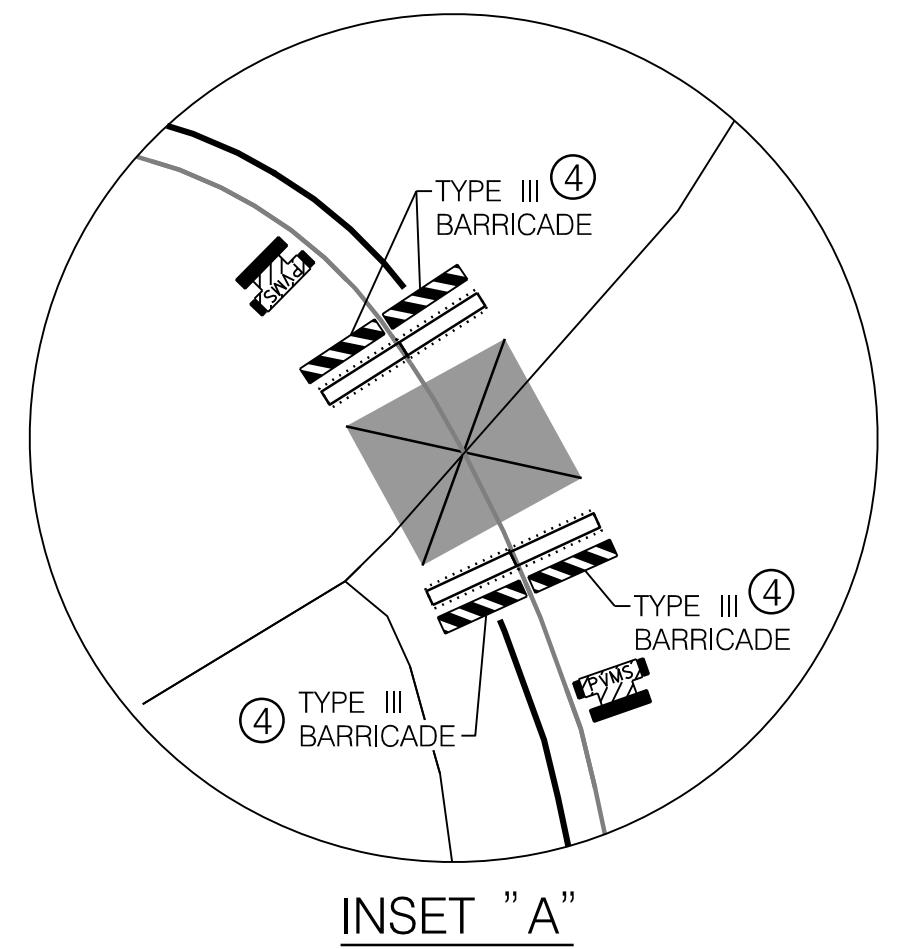
LEGEND		PROFESSIONAL CERTIFICATION.	
	PROPOSED FULL DEPTH ASPHALT PAVEMENT		CELLULAR CONFINEMENT ACCESS ROAD
	PROPOSED RESURFACING		RIPRAP FOR SLOPE OR CHANNEL PROTECTION
		<p>I CERTIFY THAT THIS DOCUMENT WAS PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 24828 EXPIRATION DATE: 02-25-2022</p>	

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





MAP SCALE: 1' = 500



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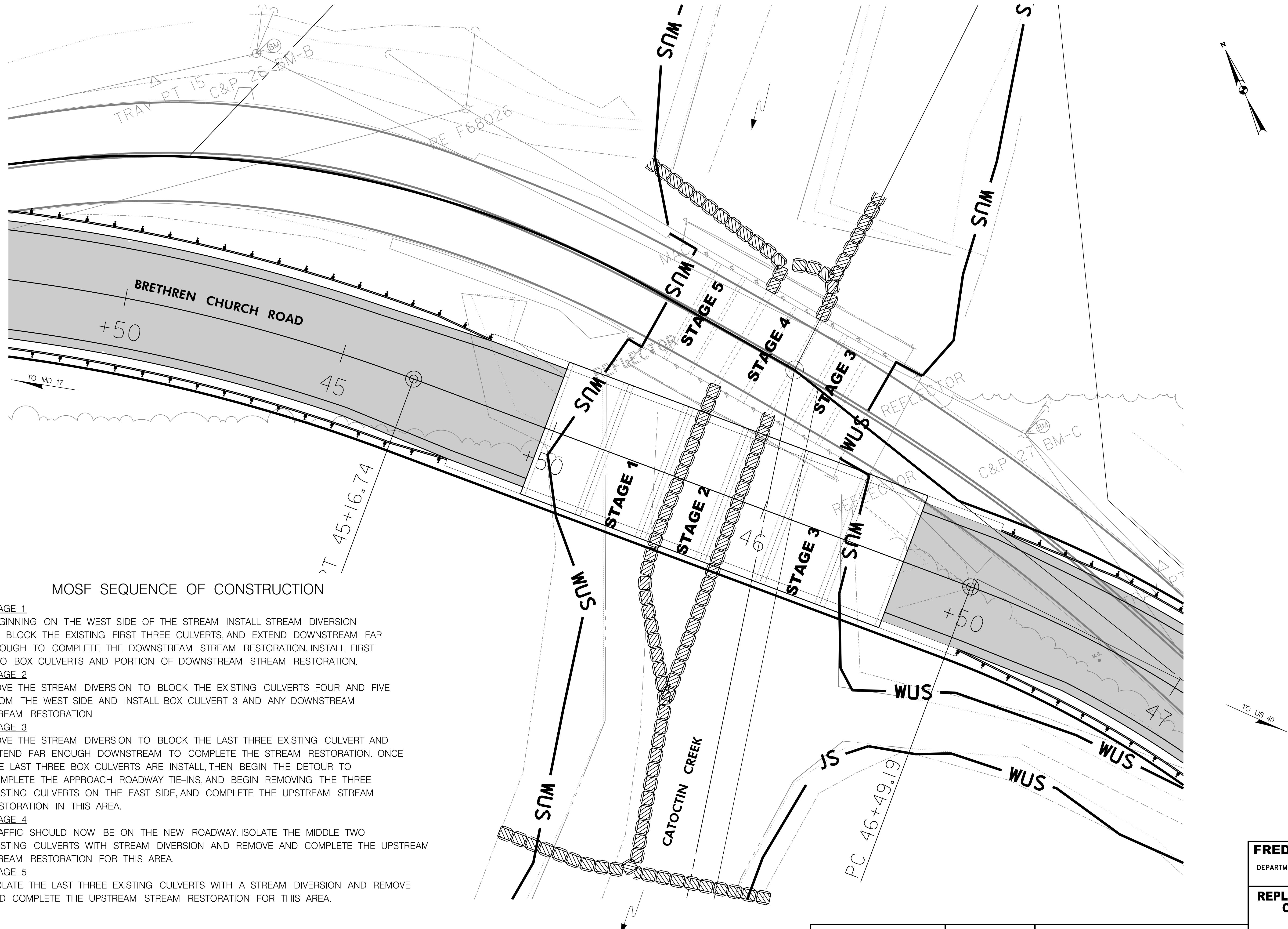
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OFFICE OF TRANSPORTATION ENGINEERING
FREDERICK COUNTY, MARYLAND

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

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 15TH TO APRIL 30TH INCLUSIVE.

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

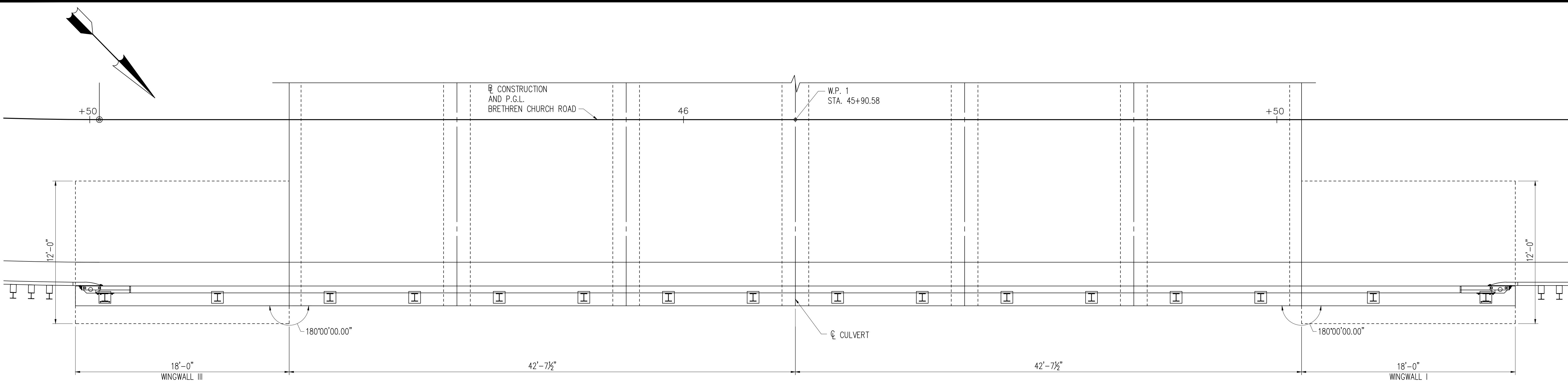
MAINTENANCE OF STREAM FLOW

January 2021

SCALE 1" = 10'

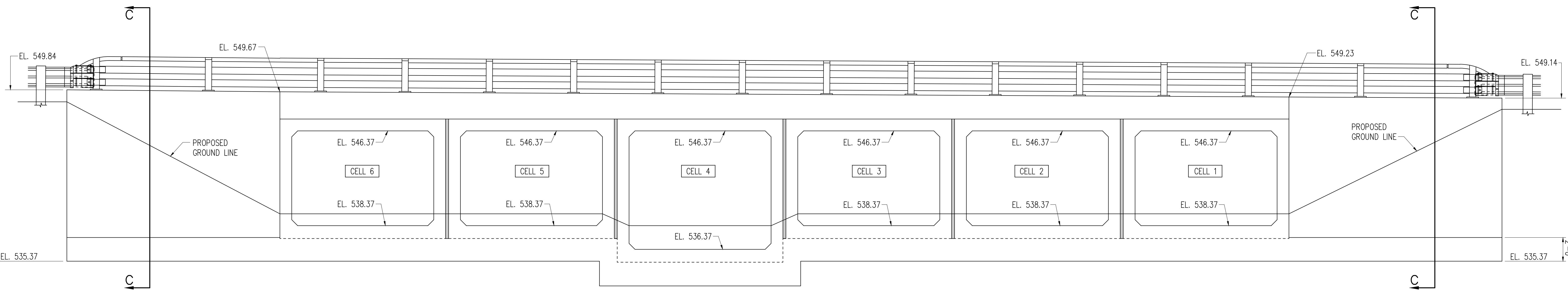
100

2010-07-22



PLAN – UPSTREAM HEADWALL

SCALE: $\frac{1}{4}'' = 1'-0''$



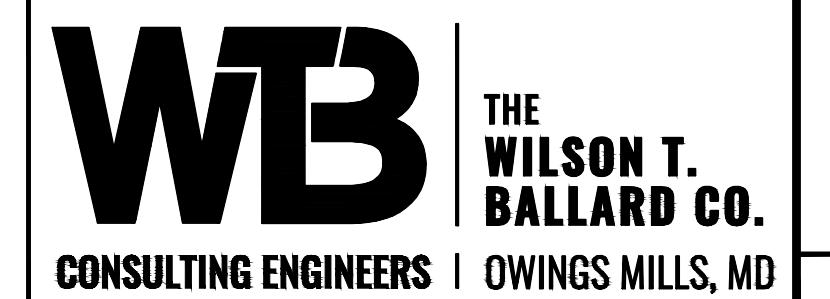
ELEVATION – UPSTREAM HEADWALL

SCALE: $\frac{1}{4}'' = 1'-0''$

CROSS REFERENCE NOTES

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

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LICENSE NO. 36070
EXPIRATION DATE: JUNE 29, 2022

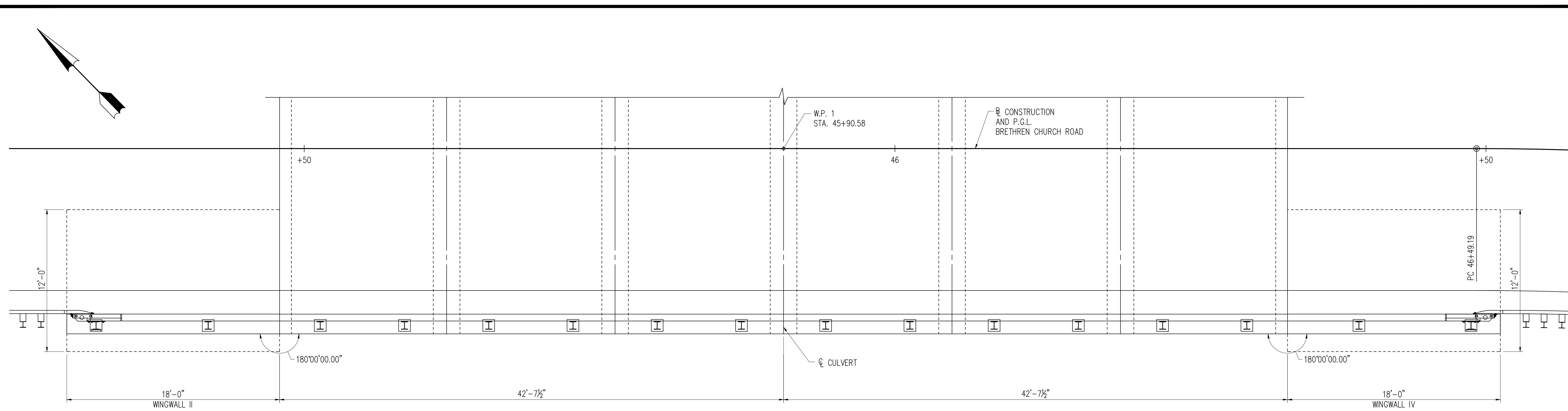


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**REPLACEMENT OF BRIDGE NO. F-16-14
ON BRETHREN CHURCH ROAD
OVER CATOCTIN CREEK
PLAN AND ELEVATION
UPSTREAM HEADWALL**

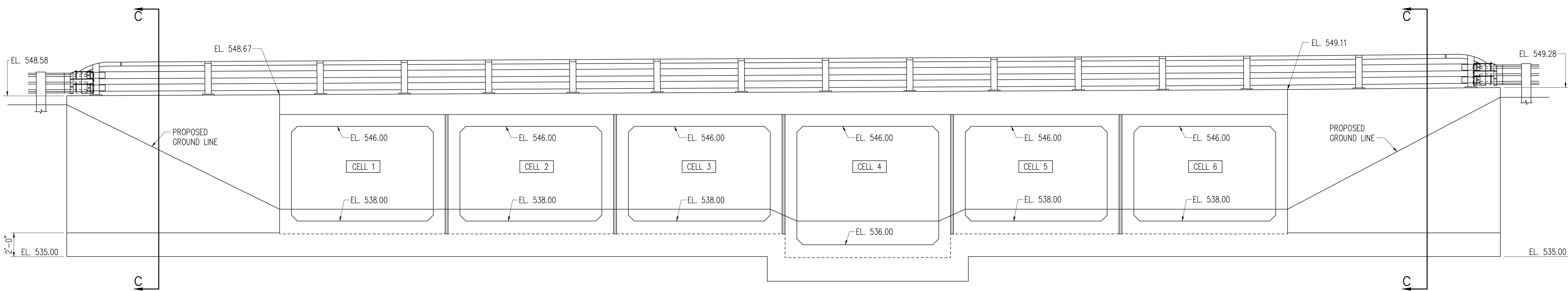
DATE: FEBRUARY 2021 SCALE: 1/4"=1'-0"

PROJECT NO. DWG. 10 OF 26



PLAN – DOWNSTREAM HEADWALL

SCALE: $\frac{1}{4}$ " = 1'-0"



ELEVATION – DOWNSTREAM HEADWALL

SCALE: $\frac{1}{4}$ " = 1'-0"

CROSS REFERENCE NOTES

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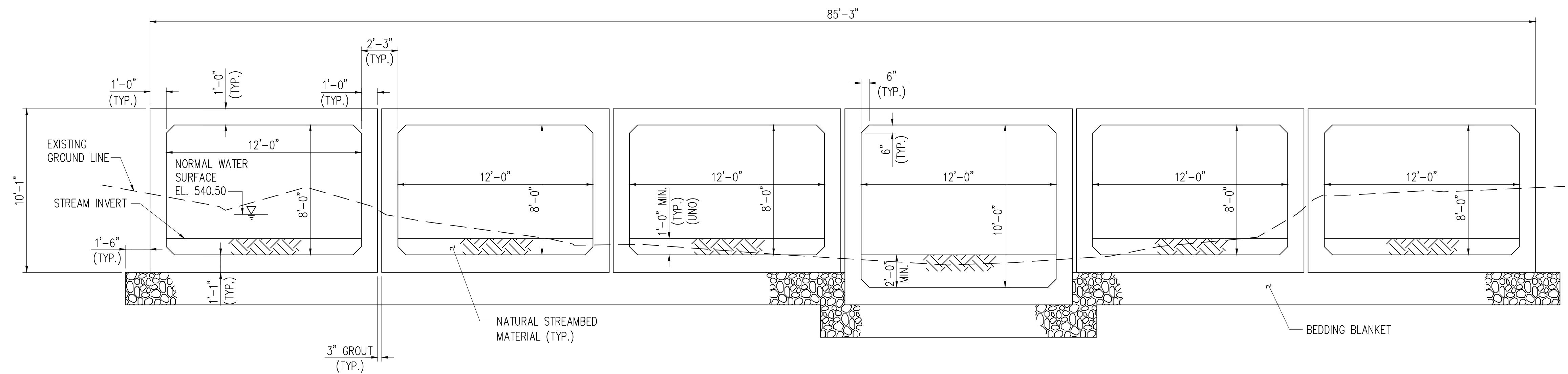
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**REPLACEMENT OF BRIDGE NO. F-16-14
ON BRETHREN CHURCH ROAD
OVER CATOCTIN CREEK
PLAN AND ELEVATION
DOWNSTREAM HEADWALL**

DATE: FEBRUARY 2021
SCALE: $\frac{1}{4}$ " = 1'-0"

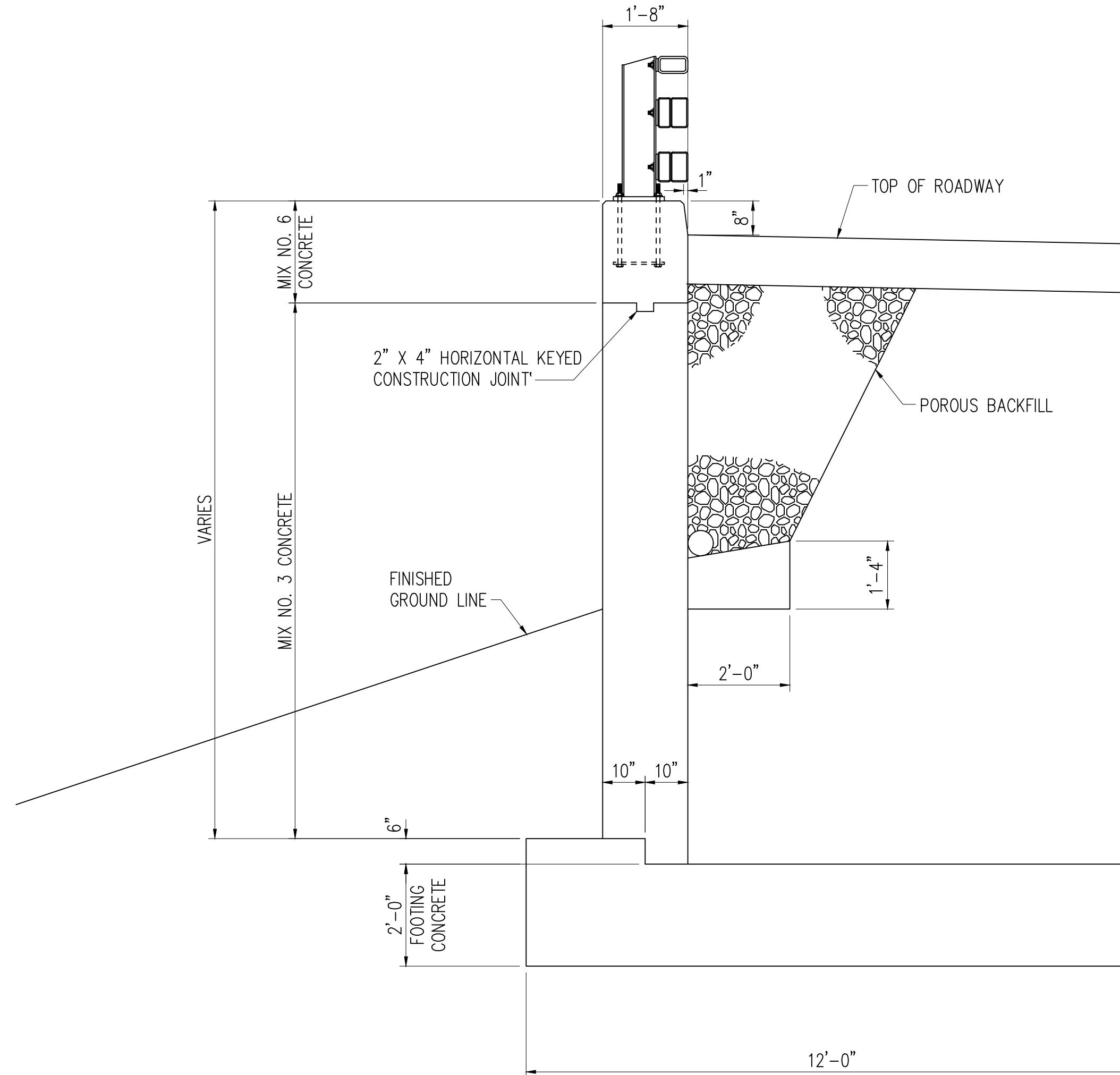
PROJECT NO.

DWG. 11 OF 26



TYPICAL SECTION B-B - CULVERT

SCALE: $\frac{1}{4}$ " = 1'-0"



TYPICAL SECTION C-C - WINGWALL

SCALE: $\frac{1}{2}$ " = 1'-0"

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**REPLACEMENT OF BRIDGE NO. F-16-14
ON BRETHREN 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

GT-1

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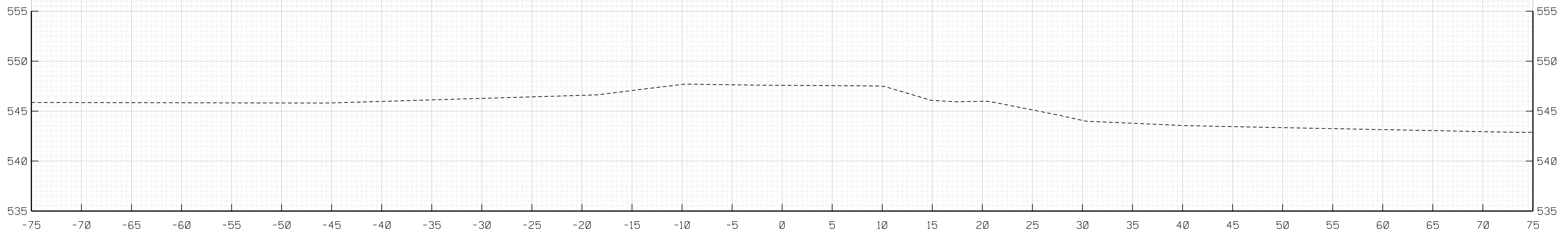
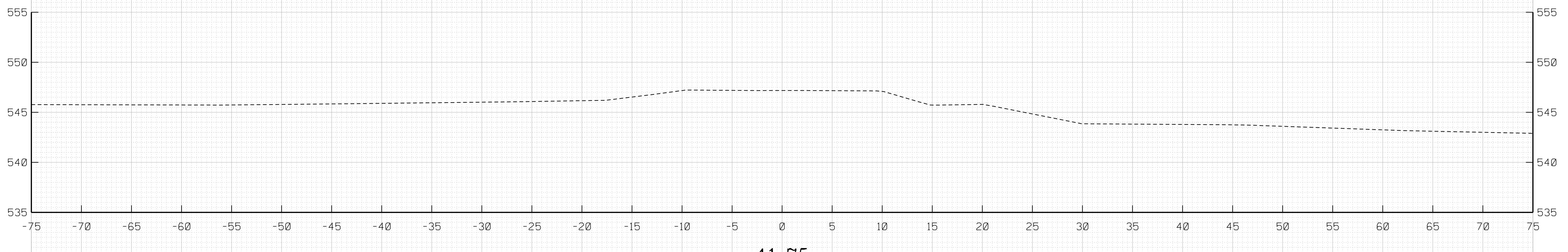
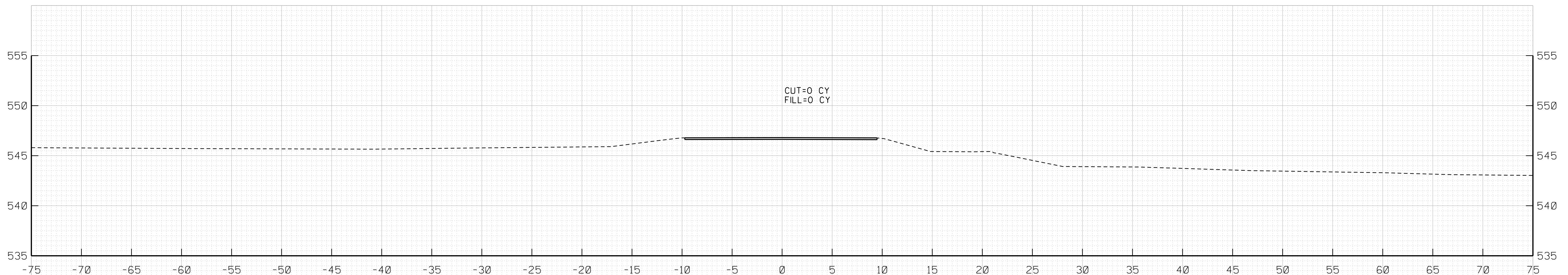
**REPLACEMENT OF BRIDGE NO. F-16-14
ON BRETHREN CHURCH ROAD
OVER CATOCTIN CREEK**

SUMMARY OF EARTHWORK

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

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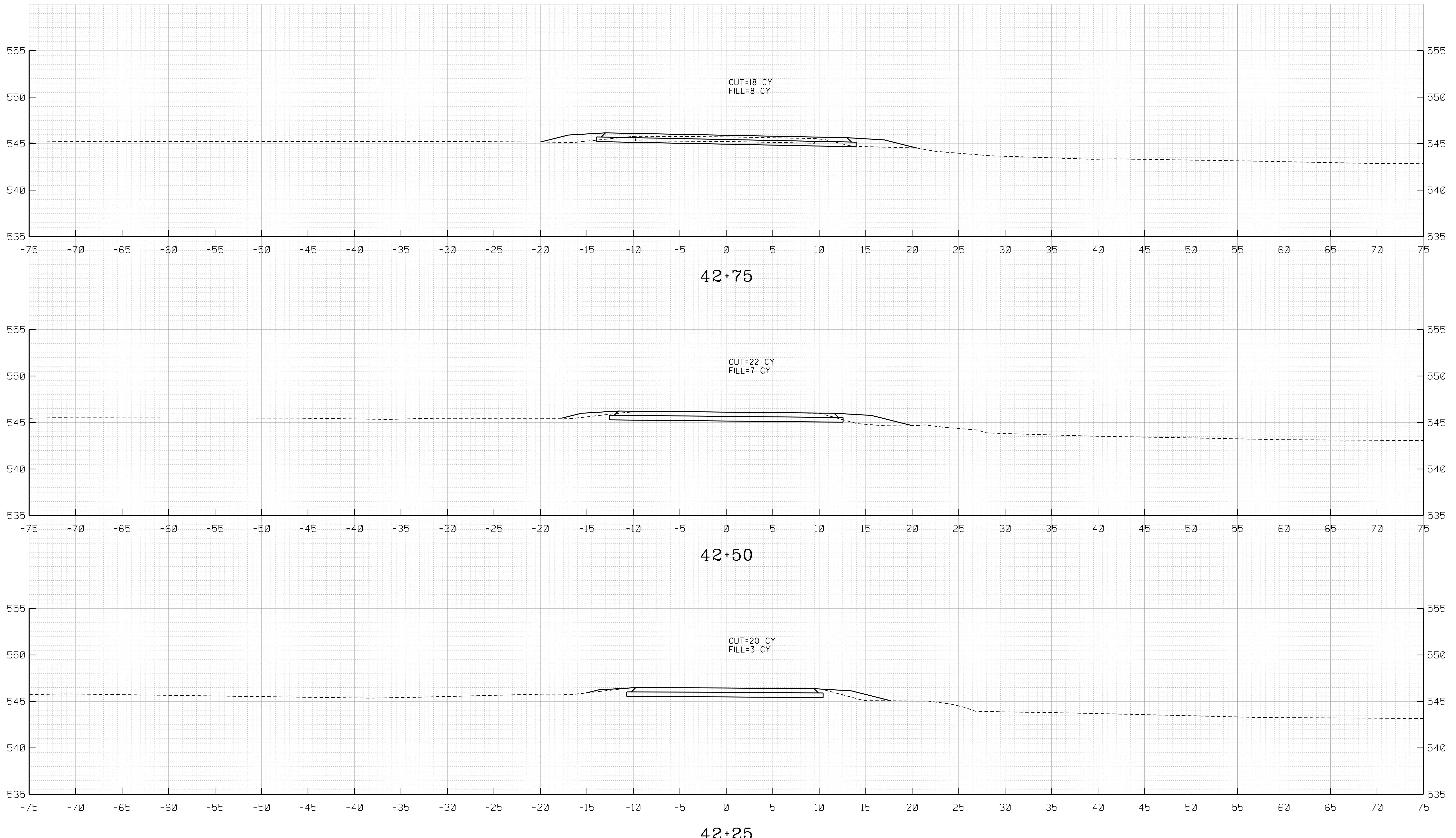
**REPLACEMENT OF BRIDGE NO. F-16-14
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CROSS SECTIONS

DATE: FEBRUARY 2021 SCALE: 1" = 5'
PROJECT NO. DWG. 14 OF 26

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

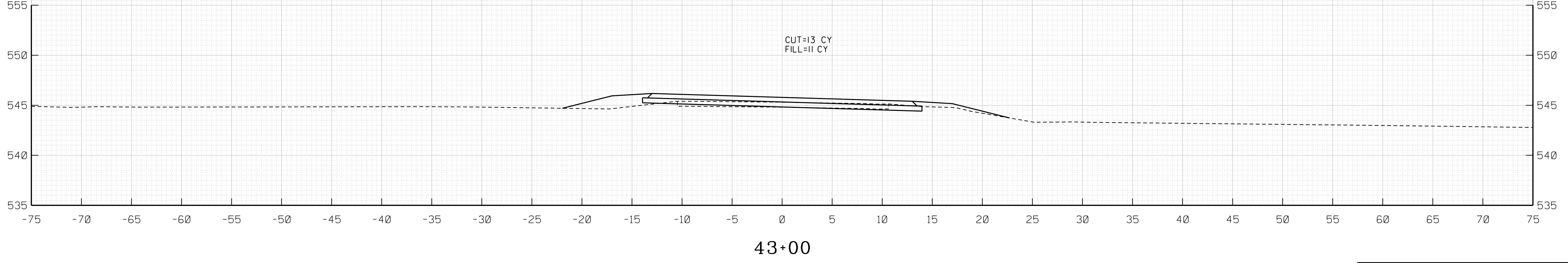
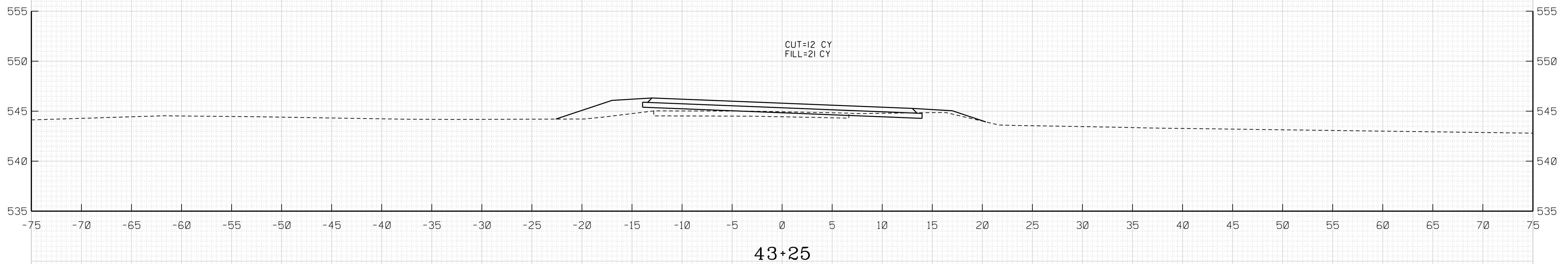
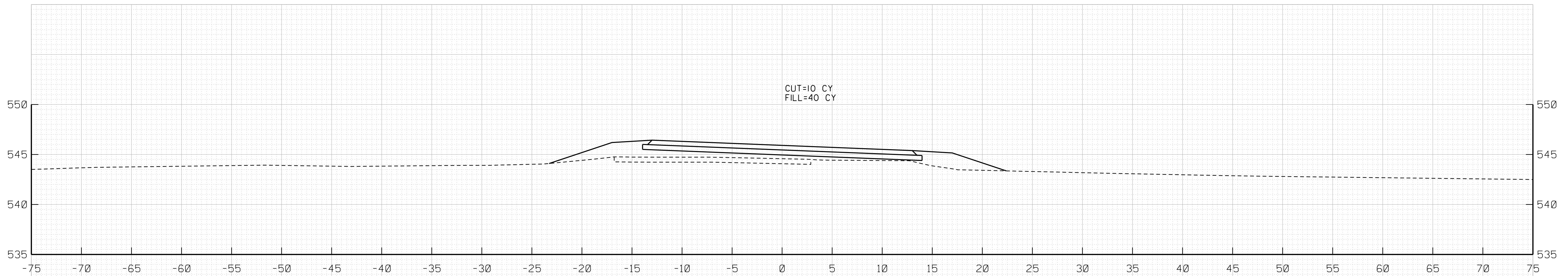
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DATE: FEBRUARY 2021 SCALE: 1" = 5'

PROJECT NO. DWG. 15 OF 26



CS-03

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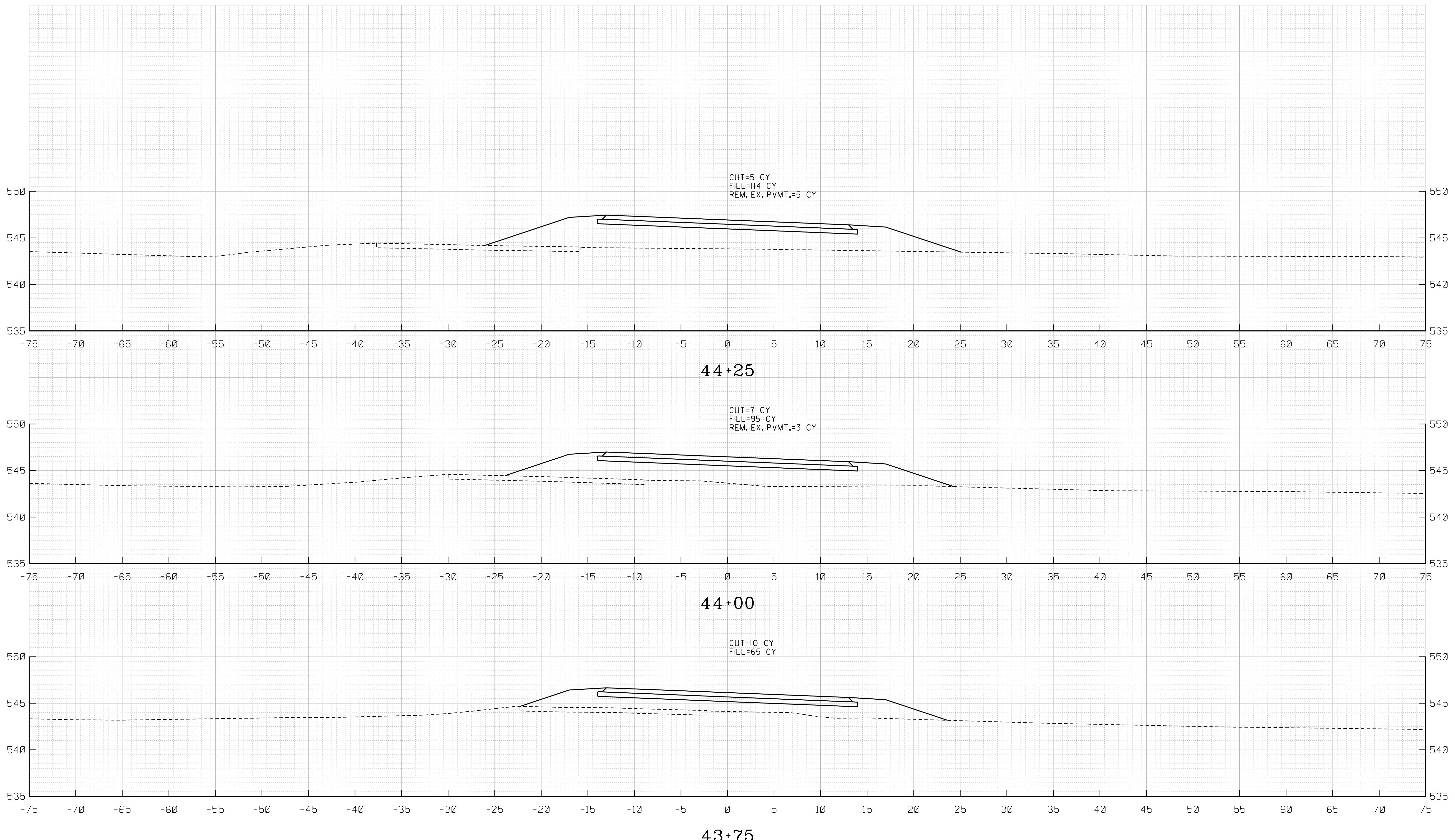
**REPLACEMENT OF BRIDGE NO. F-16-14
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CROSS SECTIONS

DATE: FEBRUARY 2021 SCALE: 1" = 5'
PROJECT NO. DWG. 16 OF 26

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43+75

CS-04

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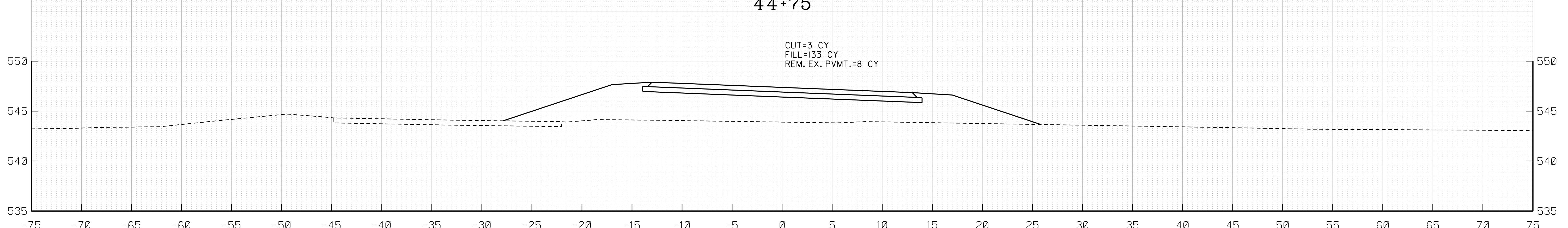
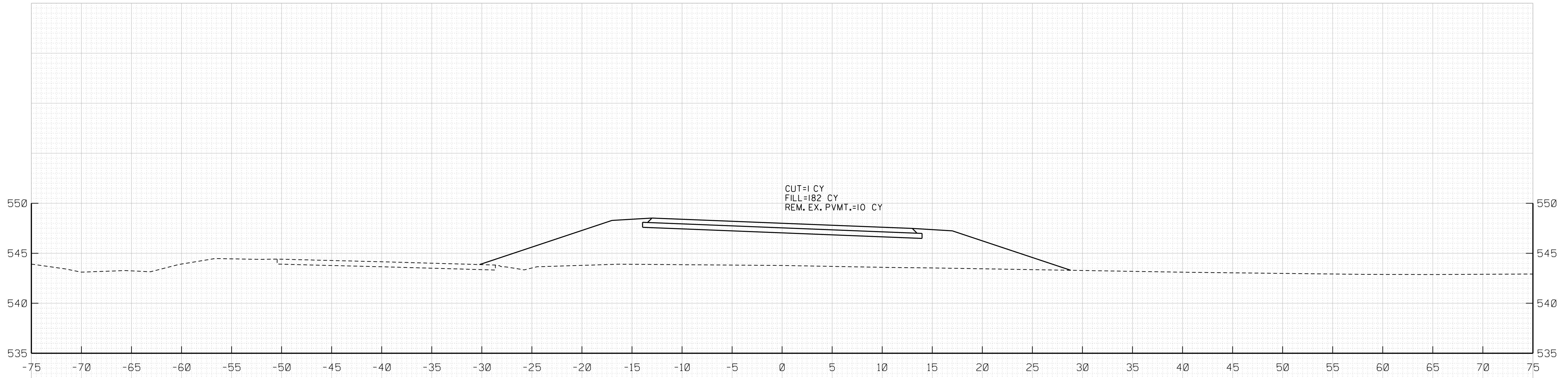
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**REPLACEMENT OF BRIDGE NO. F-16-14
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CROSS SECTIONS

DATE: FEBRUARY 2021
SCALE: 1" = 5'
PROJECT NO. DWG. 17 OF 26



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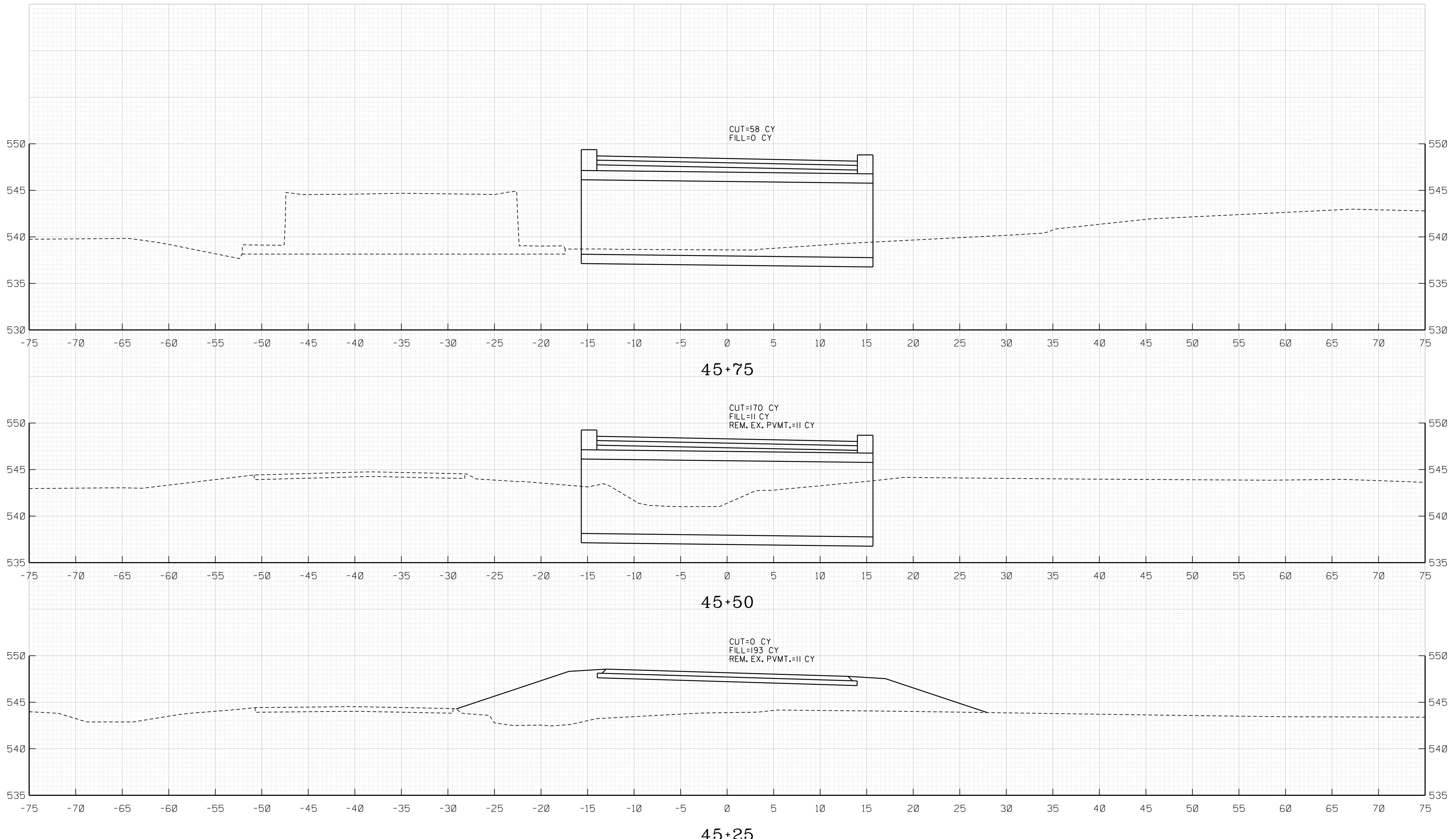
**REPLACEMENT OF BRIDGE NO. F-16-14
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CROSS SECTIONS

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DATE: FEBRUARY 2021
SCALE: 1" = 5'
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CS-06

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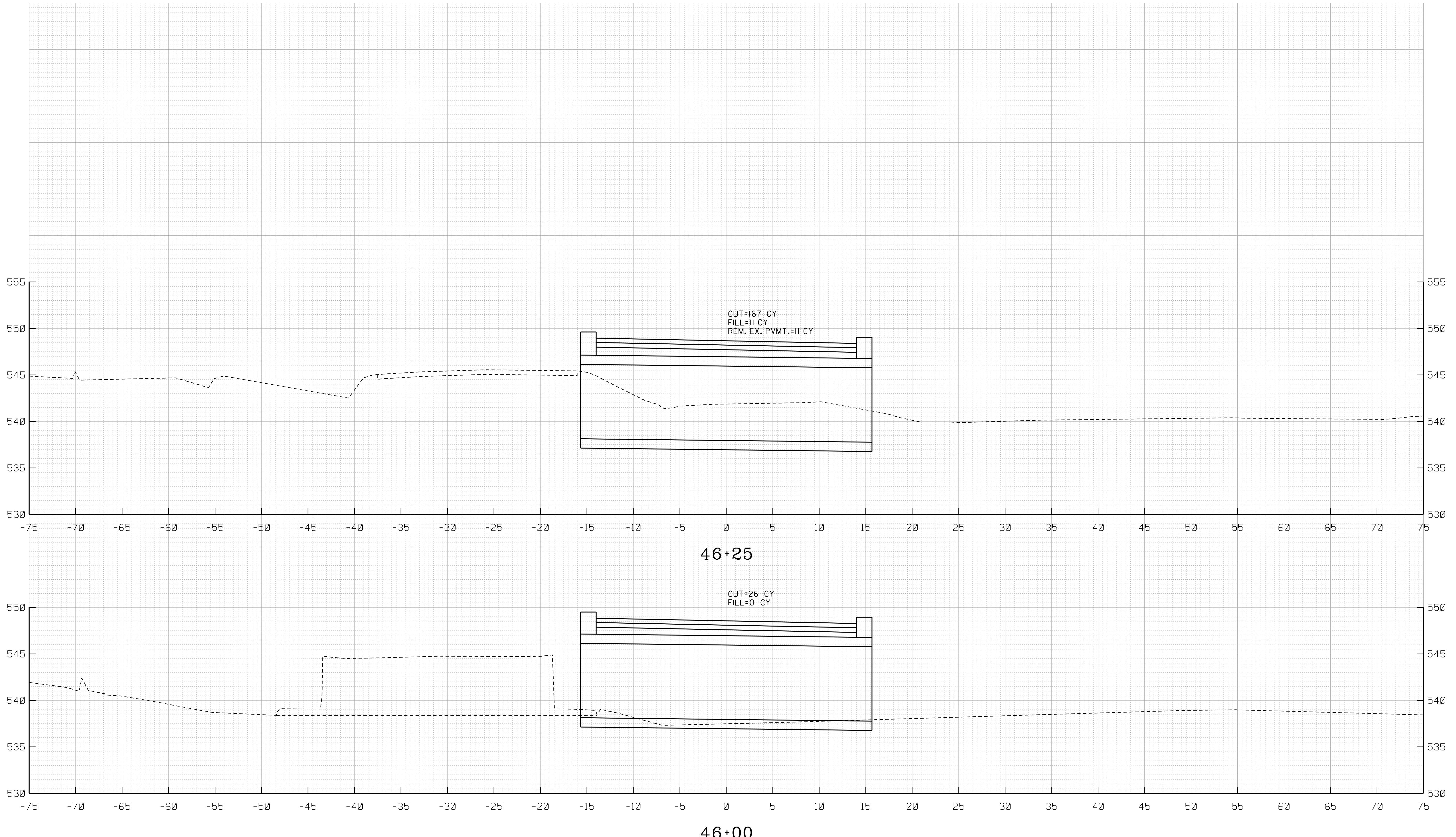
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PROJECT NO. DWG. 19 OF 26



CS-07

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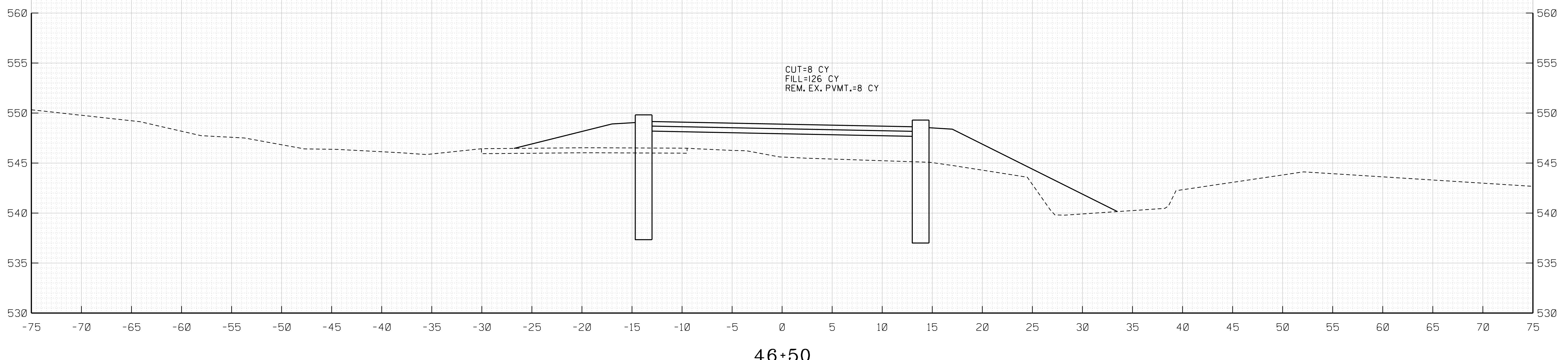
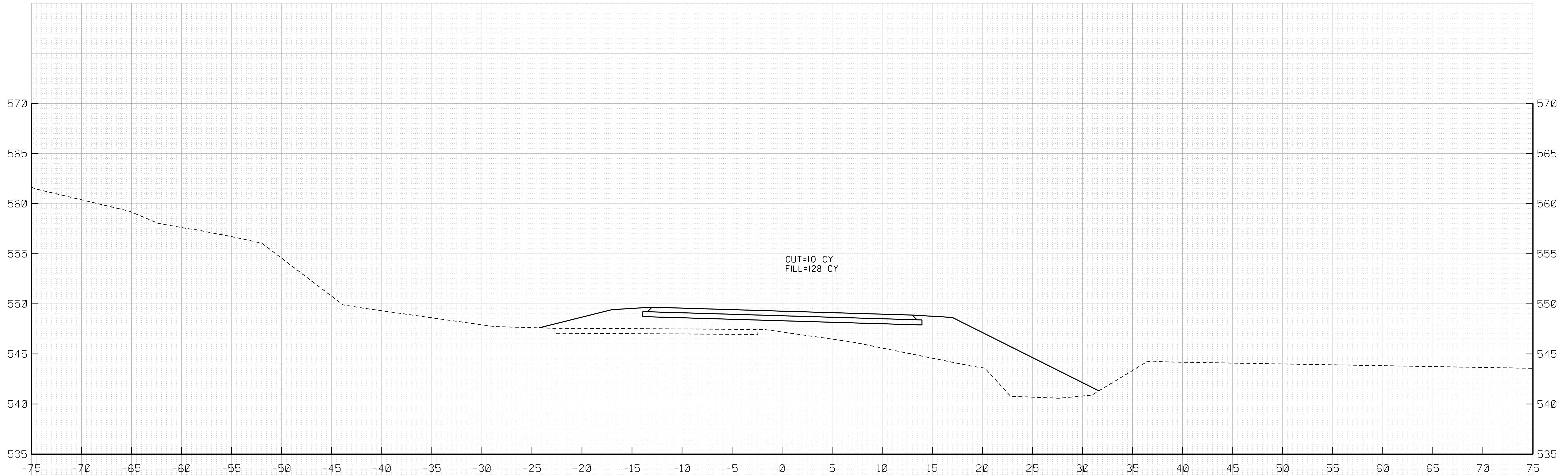
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DATE: FEBRUARY 2021 SCALE: 1" = 5'

PROJECT NO. DWG. 20 OF 26



CS-08

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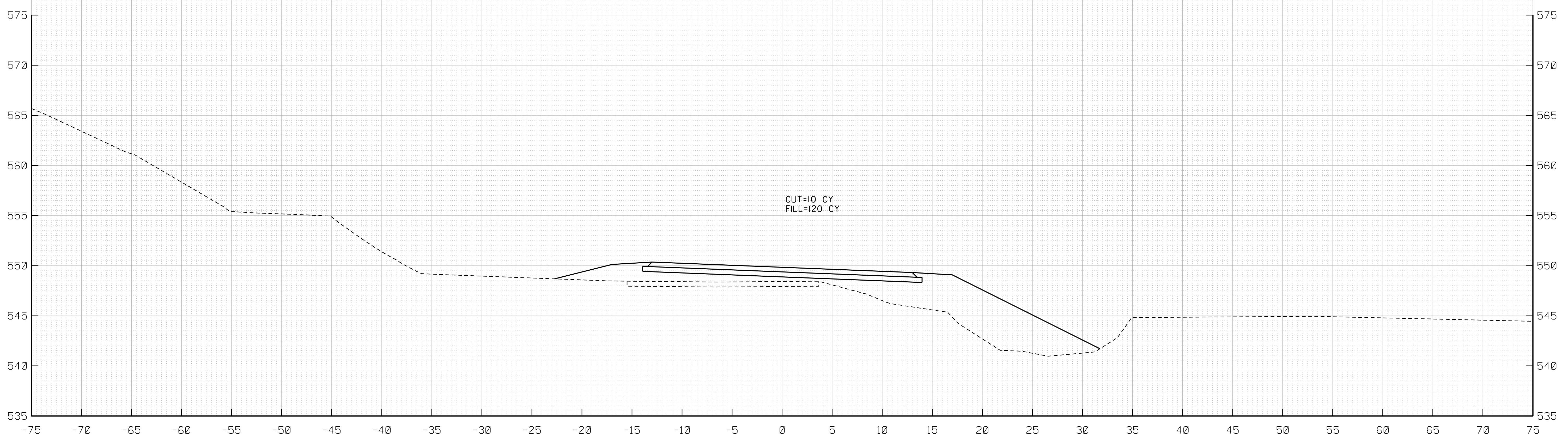
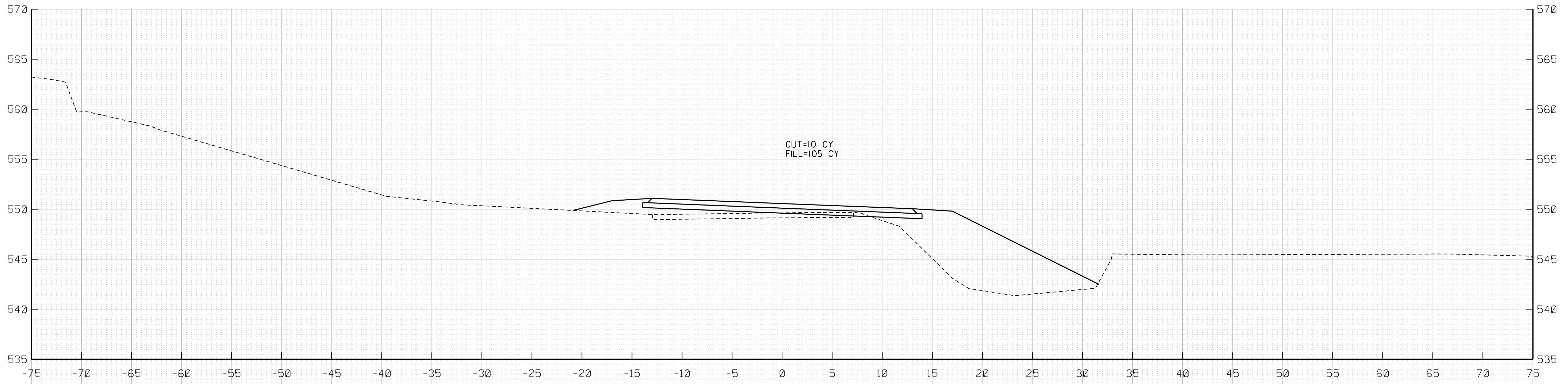
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DATE: FEBRUARY 2021 SCALE: 1" = 5'

PROJECT NO. DWG. 21 OF 26



CS-09

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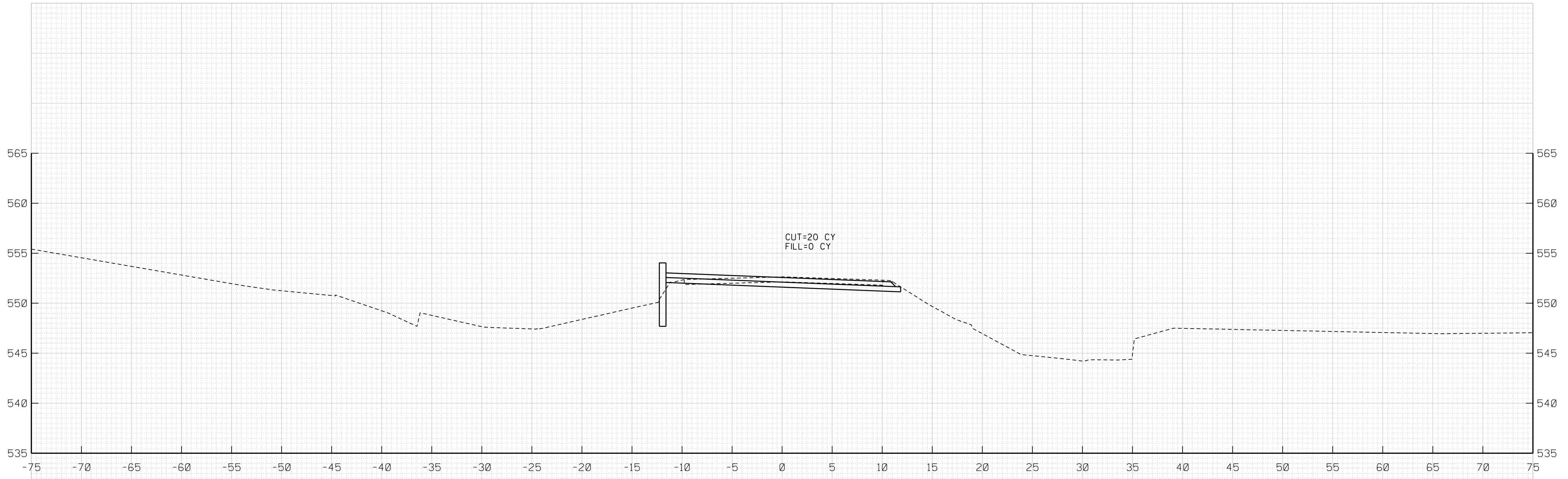
**REPLACEMENT OF BRIDGE NO. F-16-14
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OVER CATOCTIN CREEK**

CROSS SECTIONS

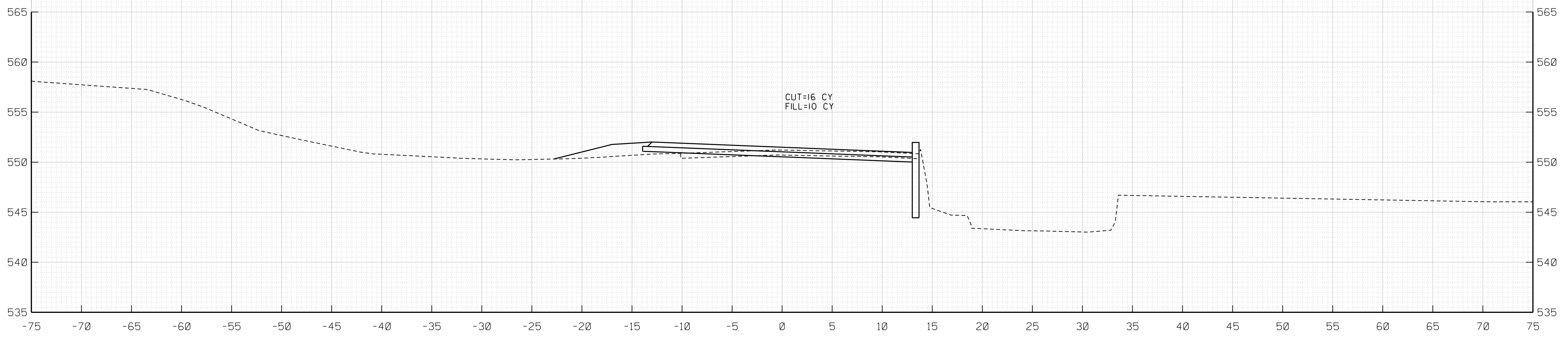
DATE: FEBRUARY 2021 SCALE: 1" = 5'
PROJECT NO. DWG. 22 OF 26

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47+75



47+50

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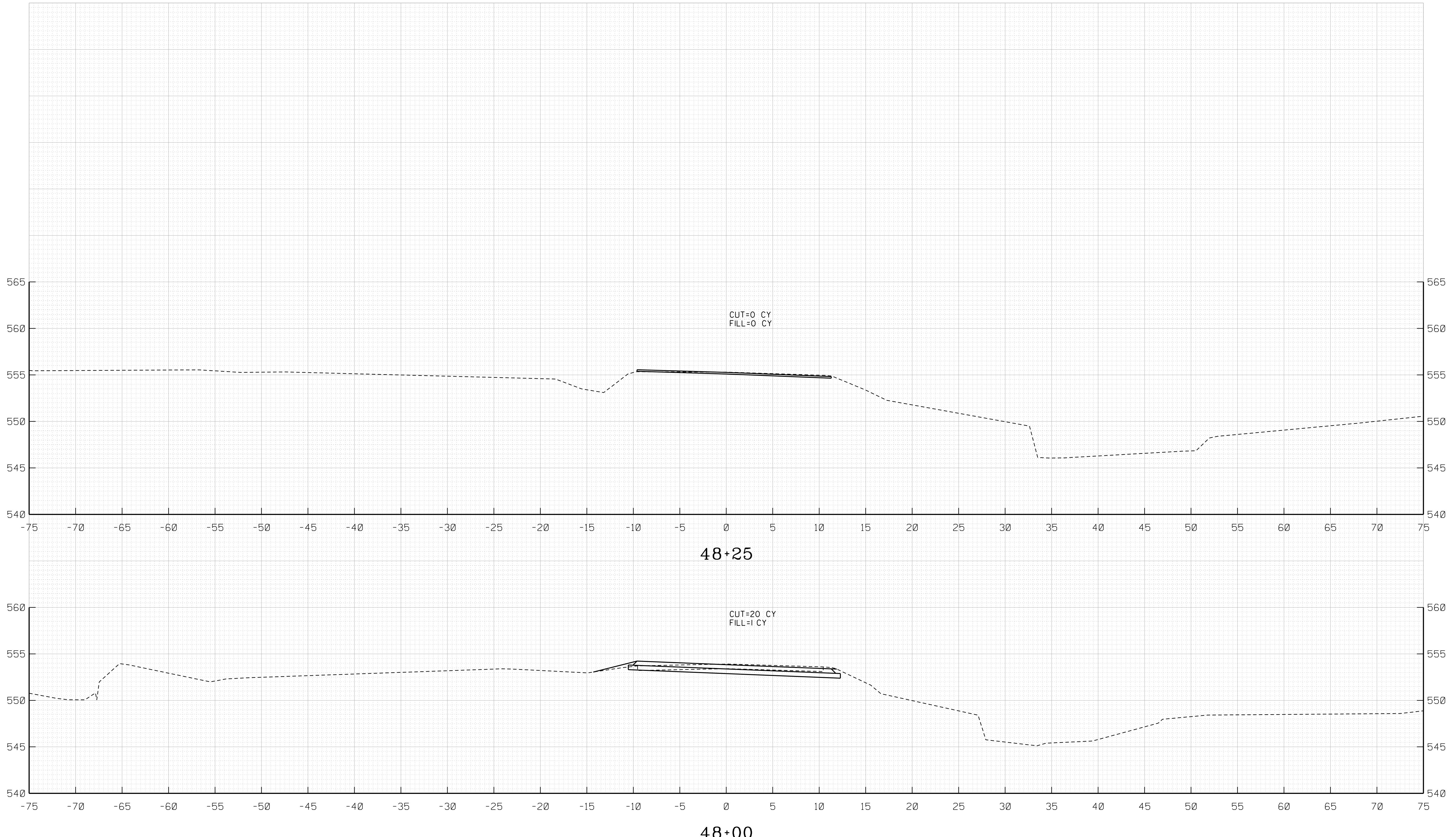
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DATE: FEBRUARY 2021 SCALE: 1" = 5'

PROJECT NO. DWG. 23 OF 26



CS-11

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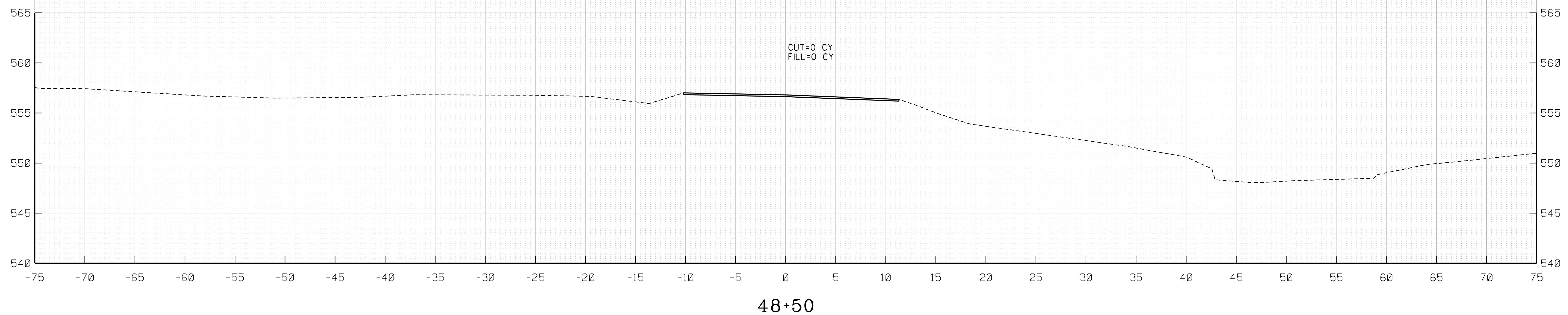
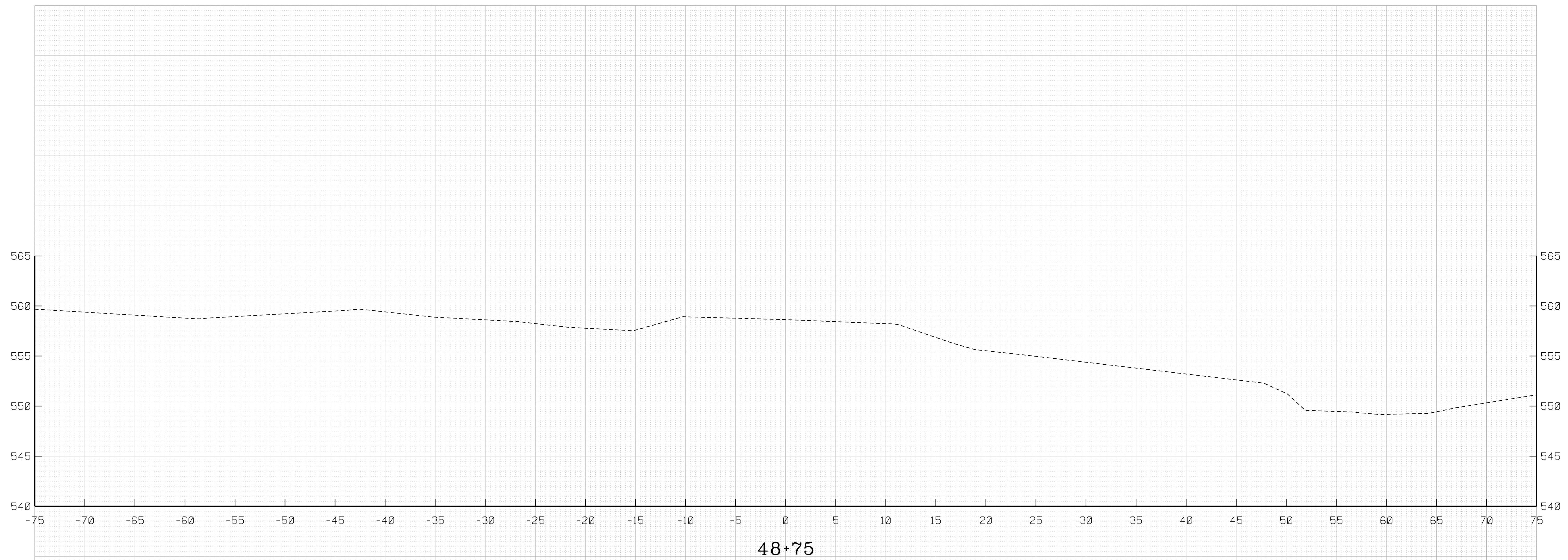
**REPLACEMENT OF BRIDGE NO. F-16-14
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CROSS SECTIONS

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

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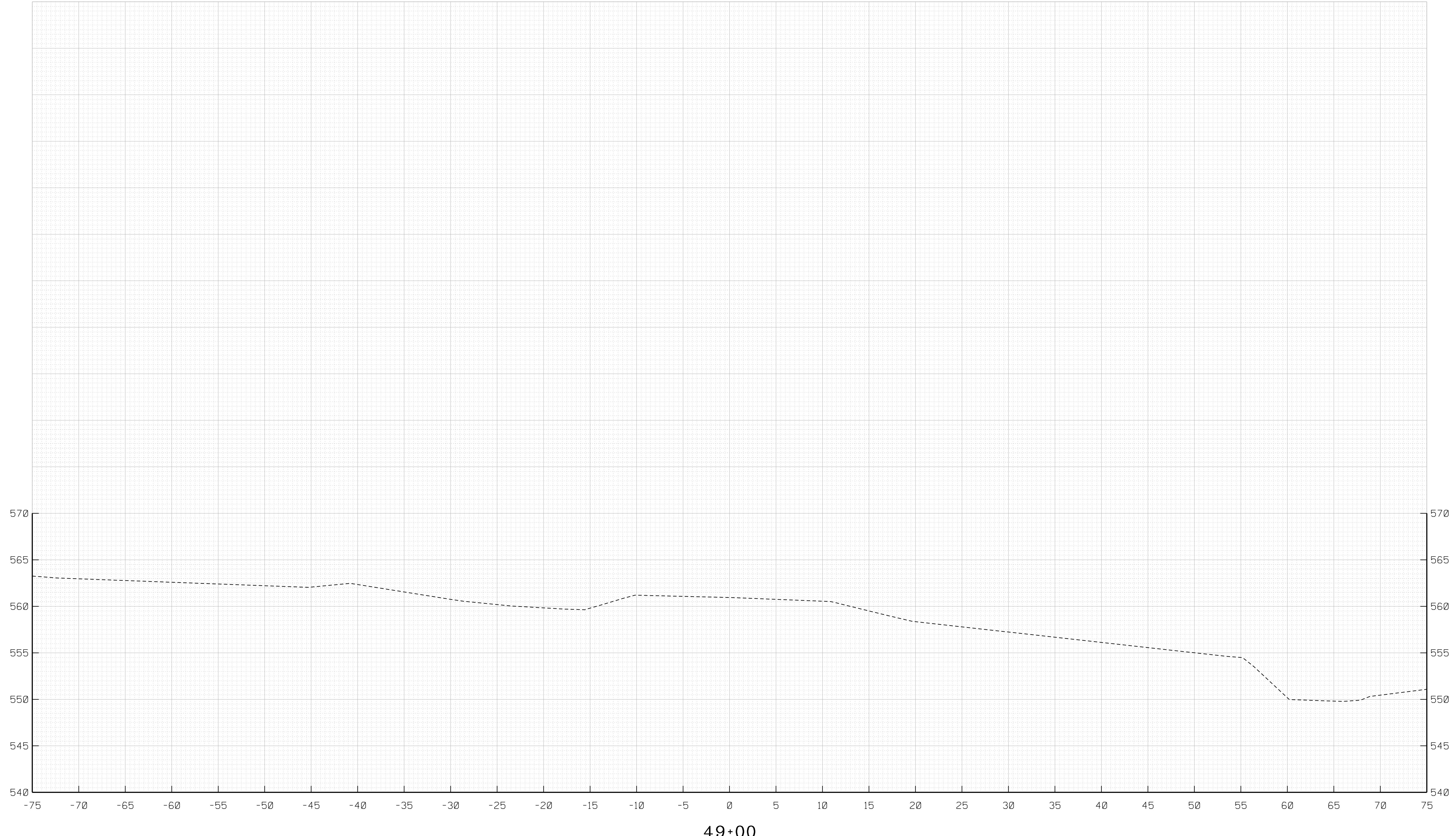
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DATE: FEBRUARY 2021 SCALE: 1" = 5'

PROJECT NO. DWG. 25 OF 26



49+00

CS-13

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. 26 OF 26

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