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MONTGOMERY COUNTY  
DEPARTMENT OF TRANSPORTATION

# REPLACEMENT OF BRIDGE NO. M-0056 REDLAND ROAD OVER MILL CREEK

C. I. P. PROJECT NO. 509132

RELATED REQUIRED PERMITS					
IT IS THE RESPONSIBILITY OF PERMITTEE/OWNER OF THIS SITE TO OBTAIN ALL REQUIRED PERMITS PRIOR TO ISSUANCE OF THE APPROVED SEDIMENT CONTROL PERMIT					
TYPE OF PERMIT	REQD	NOT REQD	PERMIT #	EXPIRATION DATE	WORK RESTRICTION DATES
MCDPS Floodplain District	X				
WATERWAYS/WETLAND(S):					
a. Corps of Engineers	X				
b. MDE	X				
c. MDE Water Quality Certification		X			
MDE Dam Safety		X			
* DPS Roadside Trees Protection Plan	X		MCDOT BLANKET PERMIT NO. 361405	Approval Date	
N.P.D.E.S. NOTICE OF INTENT	X				DATE FILED
TOW WORK (Required Post Construction)		X			
OTHERS:					
DPS Erosion and Sediment Control	X				
MNCPPC Permit	X				
* A copy of the Roadside Trees Protection Plan must be delivered to the sediment control inspector at the preconstruction meeting.					

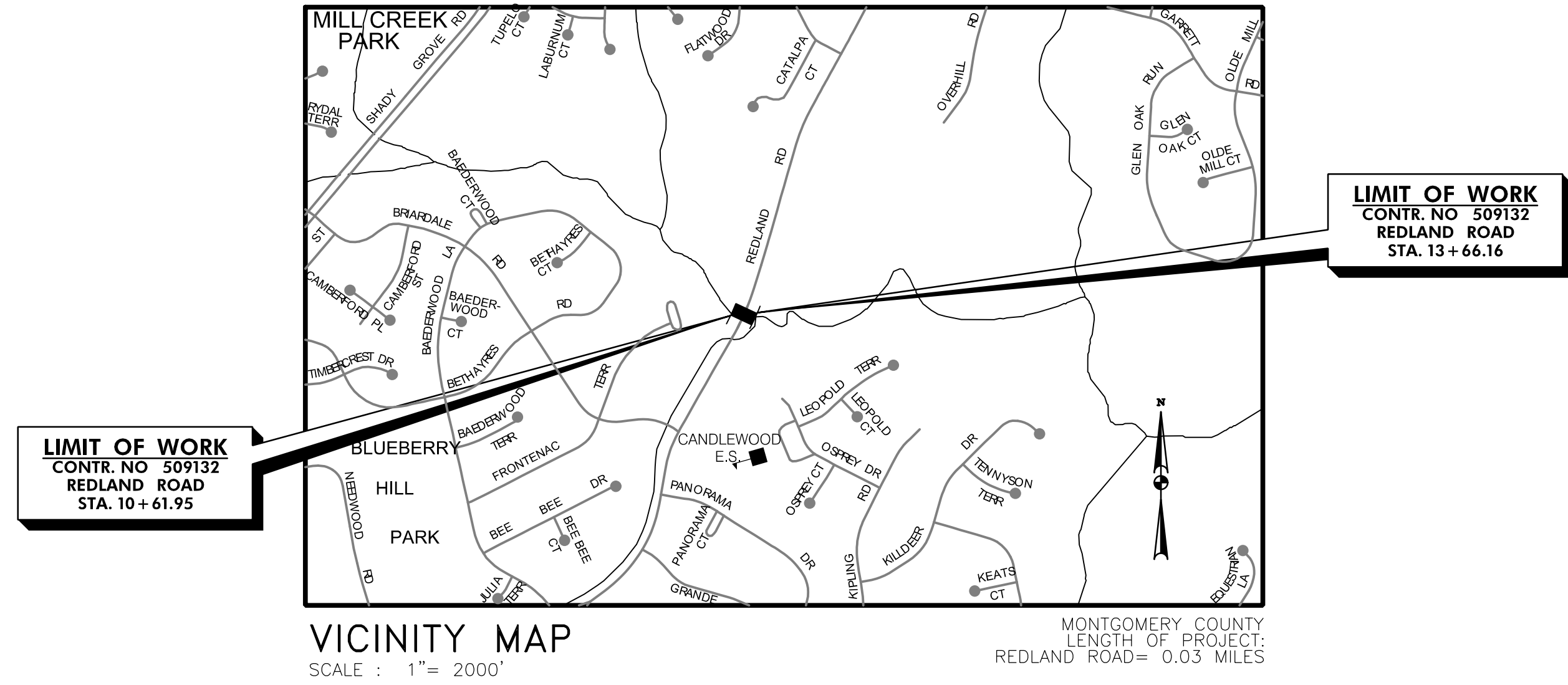
### DRAINAGE STATEMENT

I understand that DPS approval of this sediment control/stormwater management plan is for demonstrated compliance with required environmental runoff treatment standards. This DPS sediment control/stormwater management plan approval does not relieve me of professional responsibility. I have analyzed the proposed design for sediment control permit no. \_\_\_\_\_ and hereby certify that, based upon my background, training and experience, I have determined that the proposed improvements shown on this plan meet relevant laws and regulations. I further acknowledge that I have analyzed the post development drainage patterns for this project from the standpoint of my responsibilities under current Maryland Law and have determined that if permission is required from adjacent property owners, I have obtained it and have made copies of those permissions available to DPS.

\_\_\_\_\_  
Engineer's Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Printed Name



### SEQUENCE OF CONSTRUCTION

1. SEE SHEET 17 FOR THE EROSION AND SEDIMENT CONTROL SEQUENCE OF CONSTRUCTION.

### GENERAL NOTES

- ALL CONSTRUCTION SHALL BE DONE IN ACCORDANCE WITH THE LATEST EDITION OF THE STANDARD SPECIFICATIONS OF THE MARYLAND STATE HIGHWAY ADMINISTRATION JULY 2023, MONTGOMERY COUNTY, AND MNCPPC.
- INFORMATION CONCERNING UNDERGROUND UTILITIES WAS OBTAINED FROM AVAILABLE RECORDS, BUT THE CONTRACTOR MUST DETERMINE THE EXACT LOCATIONS AND ELEVATIONS OF THE LINES BY DIGGING TEST PITS BY HAND AT ALL UTILITY CROSSINGS, WELL IN ADVANCE OF TRENCHING. IF CLEARANCES ARE LESS THAN SHOWN OR SIX (6) INCHES, WHICHEVER IS LESS, CONTACT MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION'S PROJECT INSPECTOR AND THE APPROPRIATE UTILITY OWNER BEFORE PROCEEDING WITH CONSTRUCTION.
- REPAIRS TO UTILITIES OR PROPERTY DAMAGE AS A RESULT OF THE CONTRACTOR'S NEGLIGENCE OR METHOD OF OPERATION MUST BE MADE AT THE CONTRACTOR'S EXPENSE BEFORE PROCEEDING WITH CONSTRUCTION.
- CALL "MISS UTILITY" AT 1-800-257-7777 FORTY-EIGHT (48) HOURS PRIOR TO BEGINNING EXCAVATION TO DETERMINE THE EXACT LOCATION OF EXISTING UTILITIES.
- CLEARING IS TO BE LIMITED TO THE "LIMIT OF GRADING" AS SHOWN ON THE PLANS.
- ALL GRADING SHALL BE DONE IN SUCH A MANNER AS TO PROVIDE POSITIVE DRAINAGE.
- ALL DISTURBED AREAS TO BE SEED AND MULCHED UNLESS OTHERWISE NOTED.
- THE CONTRACTOR SHALL OBTAIN A ROADSIDE TREE PERMIT FOR ANY MAINTENANCE, TREATMENT, PLANTING, REMOVAL, OR ROOT CUTTING ON TREES WITHIN THE PUBLIC RIGHT OF WAY. PERMIT REQUIREMENTS MAY BE OBTAINED FROM THE DEPARTMENT OF NATURAL RESOURCES, MARYLAND FOREST, PARK AND WILDLIFE SERVICE, TELEPHONE 301-854-6060.
- THE PERMITTEE SHALL REFER TO THE ATTACHED TEMPORARY TRAFFIC CONTROL PLAN (TTCP) DRAWINGS TO SELECT THE APPROPRIATE WORK ZONE TEMPORARY TRAFFIC CONTROLS FOR EACH PHASE OF CONSTRUCTION. WORK ZONE SITUATIONS WHICH ARE NOT ADDRESSED IN THE ATTACHED TTCP SHALL CONFORM TO THE GUIDELINES SET FORTH IN SECTION 6 OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS (MUTCD), MOST RECENT EDITION.
- FOR CONSTRUCTION, ALL HORIZONTAL AND VERTICAL CONTROLS SHALL BE NAD 83 (2007) AND NAVD 88 DATUM.

### OWNER'S/DEVELOPER'S CERTIFICATION

I/We hereby certify that all clearing, grading, construction, and or development will be done pursuant to this plan and that any responsible personnel involved in the construction project will have a Certificate of Attendance at a Department of Natural Resources approved training program for the control of sediment and erosion before beginning the project.

\_\_\_\_\_  
DATE

TIMOTHY H. CUPPLES, P.E.  
CHIEF, DIVISION OF TRANSPORTATION ENGINEERING

### DESIGN CERTIFICATION

I hereby certify that this plan has been prepared in accordance with the "2011 Maryland Standards and Specification for Soil Erosion and Sediment Control," Montgomery County Department of Permitting Services Executive Regulations 5-90, 7-02AM and 36-90, and Montgomery County Department of Public Works and Transportation "Storm Drain Design Criteria" dated August 1988.

\_\_\_\_\_  
DATE

MICHAEL MERCADO, P.E.  
MERCADO CONSULTANTS, INC.

### CERTIFICATION OF THE QUANTITIES

I hereby certify that the estimated total yards of excavation and fill as shown on this plan has been computed to XX cubic yards of excavation, XX cubic yards of fill and the total area to be disturbed as shown on these plans has been determined to be 37,631 square feet.

\_\_\_\_\_  
SIGNATURE

MICHAEL MERCADO, P.E.  
PRINTED NAME AND TITLE

\_\_\_\_\_  
DATE

38931  
REGISTRATION NUMBER

## 60% SUBMITTAL AUGUST 2023

TECHNICAL REVIEW OF SEDIMENT CONTROL	ADMINISTRATIVE REVIEW	DPS APPROVAL OF A SEDIMENT CONTROL OR STORMWATER MANAGEMENT PLAN IS FOR DEMONSTRATED COMPLIANCE WITH MINIMUM ENVIRONMENTAL RUNOFF TREATMENT STANDARDS AND DOES NOT CREATE OR IMPLY ANY RIGHT TO DIVERT OR CONCENTRATE RUNOFF ONTO ANY ADJACENT PROPERTY WITHOUT THAT PROPERTY OWNER'S PERMISSION. IT DOES NOT RELIEVE THE DESIGN ENGINEER OR OTHER RESPONSIBLE PERSON OF PROFESSIONAL LIABILITY OR ETHICAL RESPONSIBILITY FOR THE ADEQUACY OF THE DRAINAGE DESIGN AS IT AFFECTS UPHILL OR DOWNHILL PROPERTIES.
REVIEWED _____ DATE _____	REVIEWED _____ DATE _____	
TECHNICAL REVIEW OF STORMWATER MANAGEMENT	SMALL LOT DRAINAGE APPROVAL	N/A: <input checked="" type="checkbox"/> OR _____
REVIEWED _____ DATE _____	REVIEWED _____ DATE _____	NO SWM SM. FILE NO. STORMWATER MANAGEMENT
MCDPS APPROVAL OF THIS PLAN WILL EXPIRE TWO YEARS FROM THE DATE OF APPROVAL IF THE PROJECT HAS NOT STARTED.	NOTE: MCDPS APPROVAL DOES NOT NEGATE THE NEED FOR A MCDPS ACCESS PERMIT.	
MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION DIVISION OF TRANSPORTATION ENGINEERING GAITHERSBURG, MARYLAND		REPLACEMENT OF BRIDGE NO. M-0056 REDLAND ROAD OVER MILL CREEK
RECOMMENDED FOR APPROVAL		
Chief, Design Section	_____ DATE _____	TITLE SHEET
Chief, Division of Transportation Engineering	_____ DATE _____	
Designed by : MMW	Drawn by : NL	Checked by : MMW
SCALE : AS SHOWN		DATE : AUGUST, 2023
Project No. : 509132		SHEET 1 of 26

TREE CANOPY REQUIREMENTS TABLE		
To be completed by the consultant and placed on the first sheet of the Sediment Control / Stormwater Management plan set for all projects.		
Exempt: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If exempt under Section 55-5 of the Code, please check the applicable exemption category below.		
Total Property Area	Total Disturbed Area	
1,140,483 square feet	37,631 square feet	
Shade Trees Required	Shade Trees Proposed to be Planted	
15	4	
Fee in Lieu (Trees Required - Trees Planted) x \$250	\$ 2,750	
Required Number of Shade Trees		
Area (sq. ft.) of the Limits of Disturbance	Number of Shade Trees Required	
FROM TO		
1 6,000	3	
6,001 8,000	6	
8,001 12,000	9	
12,001 14,000	12	
14,001 40,000	15	
If the square footage of the limits of disturbance is more than 40,000, then the number of shade trees required must be calculated using the following formula:		
(Number of Square Feet in Limits of Disturbance ÷ 40,000) × 15		
EXEMPTION CATEGORIES:		
<input type="checkbox"/> 55-5(a) any activity that is subject to Article II of Chapter 22A;	<input type="checkbox"/> 55-5(b) any stream restoration project if the person performing the work has obtained all necessary permits;	
<input type="checkbox"/> 55-5(b) any commercial logging or timber harvesting operation with an approved exemption from Article II of Chapter 22A;	<input type="checkbox"/> 55-5(i) cutting or clearing any tree to comply with applicable provisions of any federal, state, or local law governing safety of dams;	
<input type="checkbox"/> 55-5(f) any activity conducted by the County Parks Department;	<input type="checkbox"/> OTHER: Specify per Section 55-5 of the Code.	
<input type="checkbox"/> 55-5(g) routine or emergency maintenance of an existing stormwater management facility, including an existing access road, if the person performing the		

NO.	REVISION	DATE	BY

PROFESSIONAL CERTIFICATION:

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.

LICENSE NO: 38931 EXPIRATION DATE: 12-22-2023



# ABBREVIATIONS

AASHTO ..... American Association of State Highway Transportation Officials	HDWL ..... Headwall	RW or RW... Right of Way
ADT.....Average Daily Traffic	HERCP.....Horizontal Elliptical Reinforced Concrete Pipe	RCP ..... Reinforced Concrete Pipe
AHD.....Ahead	HP.....High Point	RCPP.....Reinforced Concrete Pressure Pipe
APPROX.....Approximate	IN.....Inch	R.Q.D. ....Rock Quality Designation
BL or BL.....Baseline	I.S.T.....Inlet Sediment Trap	R.M. ....Rootmat
BK .....Back /Book	INV.....Invert	S .....South
BIT.....Bituminous	J.B.....Junction Box	SAN.....Sanitary Sewer
B.C.....Bituminous Concrete	K.....Rate of Vertical Curvature	SB or SB ....Southbound
B.M.....Bench Mark	L.....Length	S.D.....Storm Drain
BOT.....Bottom	LF.....Linear Feet	S.D.D.....Surface Drain Ditch
C.C.....Center of Curve	L.L.....Liquid Limit	S.E.....Super Elevation
CAP.....Corrugated Aluminum Pipe	LP.....Low Point	SF.....Silt Fence
CAPA.....Corrugated Aluminum Pipe Arch	L.P.....Light Pole	SF.....Square Feet
CATV.....Cable Television	LT.....Left	SHT.....Sheet
C.B.R.....California Bearing Ratio	MAC.....Macadam	SPP.....Structural Steel Plate Pipe
CL or CL.....Centerline	M.C.....Moisture Content	SPPA.....Structural Steel Plate Pipe Arch
CL.....Class	MAX.....Maximum	S.P.T.....Standard Penetration Testing
CLF.....Chainlink Fence	M.D.D.....Maximum Dry Content	SRP.....Steel Spiral Rib Pipe – Aluminized Type 2
CMP.....Corrugated Metal Pipe	MOD.....Modified	SRPA.....Steel Spiral Rib Pipe Arch – Aluminized Type 2
C.O.....Cleanout	MIN.....Minimum	SSD.....Stopping Sight Distance
COMB.....Combination	N.....North	SSF.....Super Silt Fence
CONC.....Concrete	NB.....Northbound	STD.....Standard
CONSTR.....Construction	NE.....Northeast	STA.....Station
COR.....Corner	N.P.....Non-Plastic	SO.....Single Opening
CORR.....Correction	O.C.....On Center	SY.....Square Yards
CPP-S.....Corrugated Polyethylene Pipe – Type 'S'	OHE.....Overhead Electric	SWM.....Stormwater Management
CSP.....Corrugated Steel Pipe – Aluminized Type 2	O.M.....Optimum Moisture	T.....Tangent
CSPA.....Corrugated Steel Pipe Arch – Aluminized Type 2	PAV T.....Pavement	T.....Telephone
DC.....Degree of Curve	PC.....Point of Curvature	T.C.....Top of Cover
D.H.V.....Design Hourly Volume	PCC.....Point of Compound Curvature	T.C.E.....Temporary Construction Easement
D.I.....Drop Inlet	PC.....Point of Crown	T.G.....Top of Grate
DIA.....Diameter	PGE.....Profile Grade Elevation	T or TL.....Traverse Line
D.O.....Double Opening	P.G.E.....Profile Ground Elevation	T.M.....Top of Manhole
E.....East	P.G.L.....Profile Ground Line	TRAV.....Traverse
E.....Electric	PR.....Point of Rotation	TS.....Temporary Swale
E.....External Distance	P.I.....Plasticity Index	T.S.....Top of Slab
EA.....Each	PI.....Point of Intersection	T.S.....Topsoil
EB.....Eastbound	POC.....Point On Curve	TYP.....Typical
ELEV.....Elevation	POT.....Point On Tangent	U.D.....Under Drain
ES.....End Section	PPWP.....Polyvinyl Chloride Profile Wall Pipe	U.G.....Underground
EX or EXIST.....Existing	PROP.....Proposed	U.P.....Utility Pole
FT.....Feet	PRC.....Point of Reverse Curve	USDA.....United States Department of Agriculture
F or FL.....Flowline	PT.....Point	VCL.....Vertical Clearance
F.B.D.....Flat Bottom Ditch	PT.....Point of Tangency	V.C.L.....Vertical Curve Length
F.H.....Fire Hydrant	PVC.....Point of Vertical Curve	W.....Water
FWD.....Forward	PVC.....Polyvinyl Chloride	W.....West
G.....Gas	PVI.....Point of Vertical Intersection	WB.....Westbound
G.V.....Gas Valve	PVRC.....Point of Vertical Reverse Curve	WB.....Wetland Buffer
H.B.....Handbox	PVT.....Point of Vertical Tangency	W.M.....Water Meter
HDPE.....High Density Polyethylene	R.....Radius	W.S.....Wrapped Steel
	R.F.....Rock Fragments	WUS.....Waters of the United States
	RT.....Right	W.V.....Water Valve

# SOILS LEGEND

A-3 SAND	A-2-7 CLAYEY SAND	A-7-4 SILTY CLAY
A-2 SAND & FINES	A-7-2 SANDY CLAY	A-7 CLAY
A-2-4 SILTY SAND	A-4 SILT	A-6 COLLOIDAL CLAY
A-4-2 SANDY SILT	A-4-7 CLAYEY SILT	A-5 MICA, DIATOMS

PLAN LOCATION OF SOIL BORINGS  
 BORING TARGETS AND PROFILES SCALE:  
 HORIZONTAL - NONE  
 VERTICAL - SEE PROFILE SHEETS

AO-ABOVE OPTIMUM SAT-SATURATED LIQ-LIQUEFIED  
 LL-LIQUID LIMIT (%)  
 PI-PLASTICITY INDEX (%)  
 NP-NON-PLASTIC  
 OMC-OPTIMUM MOISTURE CONTENT (%)  
 USC-UNIFIED SOIL CLASSIFICATION  
 USDA-UNITED STATES DEPARTMENT OF AGRICULTURE CLASSIFICATION  
 TS-TOPSOIL  
 RM-ROOT MAT  
 BC-BITUMINOUS CONCRETE  
 SB-STONE BASE  
 PCC-PORTLAND CEMENT CONCRETE  
 W/GR-WITH GRAVEL  
 W/RF-WITH ROCK FRAGMENTS

NOTES: SOIL SYMBOLS DENOTE MSMT CLASSIFICATIONS

ALL DIMENSIONS, DEPTHS AND ELEVATIONS ARE NOTED IN FEET

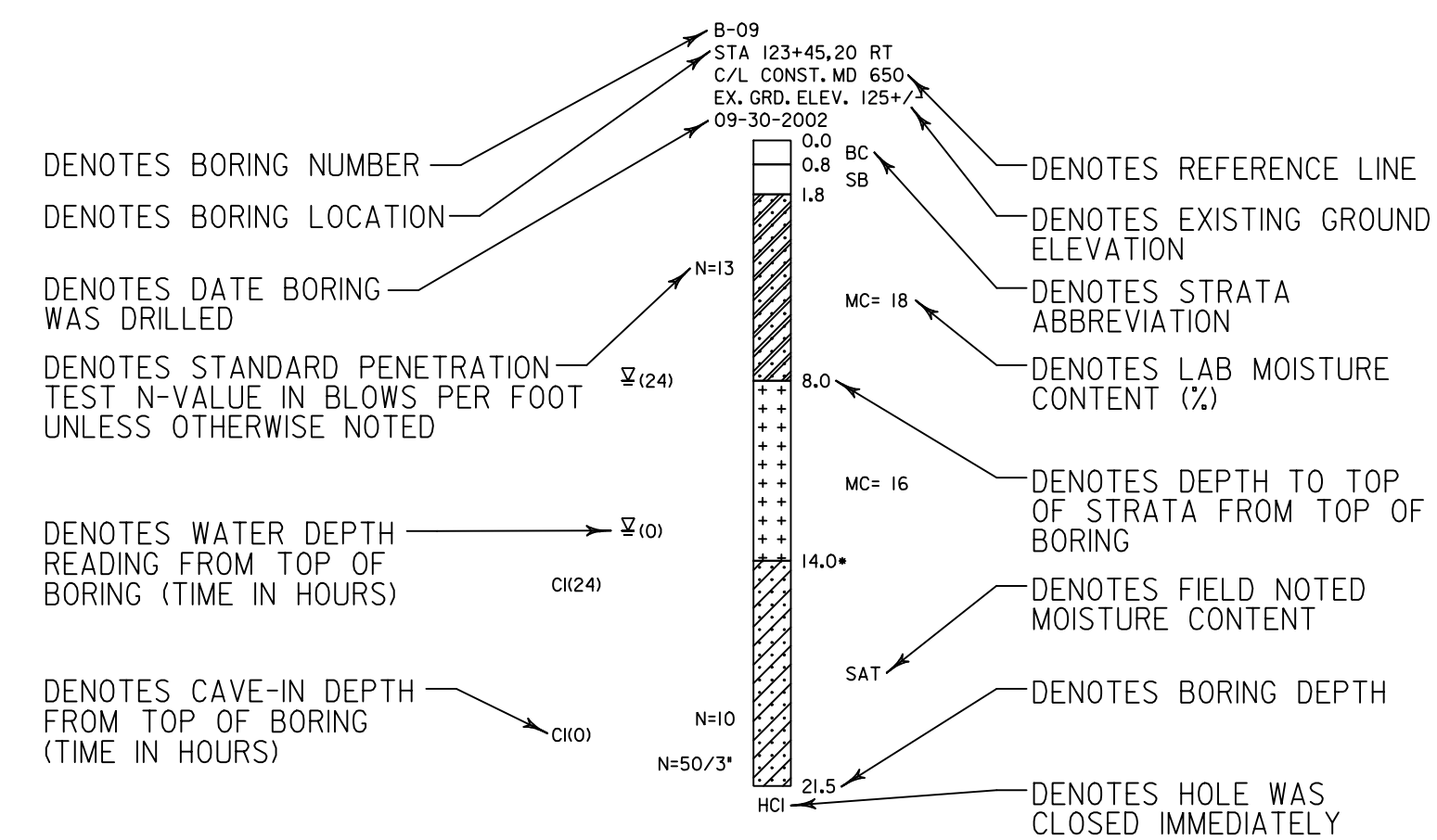
AN ASTERISK AT THE TOP DEPTH OF STRATA INDICATES THAT STRATA WAS VISUALLY CLASSIFIED BY DRILLER

MDD & OMC PER A.A.S.H.T.O. DESIGNATION T-180

N PER A.A.S.H.T.O. DESIGNATION T-206

UNLESS OTHERWISE NOTED ON PLANS, ALL SOIL SURVEY BORINGS FOR ROADWAY CONSTRUCTION WERE LEFT OPEN FOR 24 HOURS WITH NO EXCESS MOISTURE OR FREE WATER ENCOUNTERED DURING TIME OF SOIL SURVEY (09/2000 TO 06/2002)

# SOIL BORING PROFILE EXAMPLE



SOILS TEST DATA								
BORING NUMBER	SAMPLE DEPTH	LL	PI	USDA	USC	MDD	OMC	REMARKS
B-09	1.8 - 8.0	18	NP	Sandy Loam	-	-	-	with Gravel
B-09	8.0 - 14.0	41	22	Silty Clay Loam	CL	121	12	-

# CONVENTIONAL SIGNS (SAMPLES)

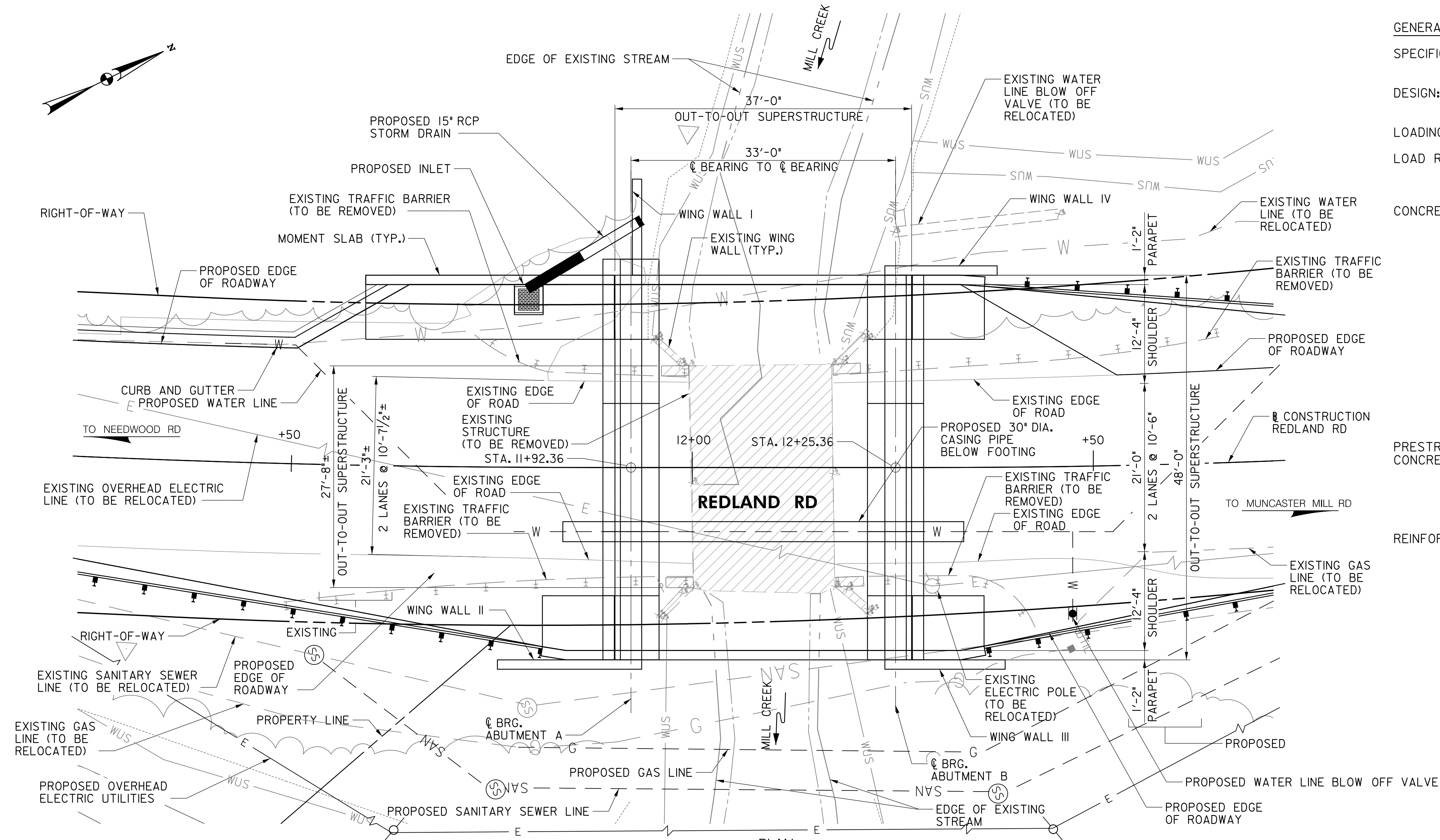
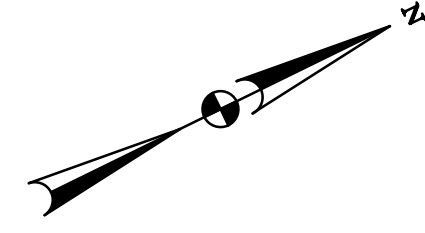
PROPOSED MEDIAN BARRIER		EXISTING 100 YEAR FLOODPLAIN BOUNDARY	
ELECTRICAL HAND BOX - SIGNALS		PROPOSED 100 YEAR FLOODPLAIN BOUNDARY	
FLOW LINE		WETLAND BOUNDARY	
STATE, COUNTY OR CITY LINES		PROPOSED PIPE / CULVERT	
PROPOSED TRAFFIC BARRIER W-BEAM		EXISTING PIPE / CULVERT	
EXISTING TRAFFIC BARRIER W-BEAM		EXISTING DROP INLET	
PROPOSED FENCE LINE		UTILITY POLE	
EXISTING FENCE LINE		EXISTING WATER	
PROPOSED CURB AND GUTTER		EXISTING SANITARY SEWER	
R/W LINE		EXISTING ELECTRIC	
TEMPORARY CONSTRUCTION EASEMENT		EXISTING OVERHEAD ELECTRIC	
EXISTING ROADWAY		EXISTING FIBER OPTIC	
BASE LINE OR SURVEY LINE		EXISTING TELEPHONE	
FIRE HYDRANT		WETLAND	
HISTORIC BOUNDARY		WETLAND BUFFER	
PARK BOUNDARY		WATERS OF THE U.S.	
WATER LINE		HEDGE / TREE LINE	
OVERHEAD ELECTRIC		BUSH / TREE	
TRAFFIC BARRIER		CONIFEROUS TREE	
		GROUND ELEVATION	
		GRADE ELEVATION	
		PIPE TO BE REMOVED	
		PIPE TO BE ABANDONED	
		DIRECTION OF TRAFFIC FLOW	



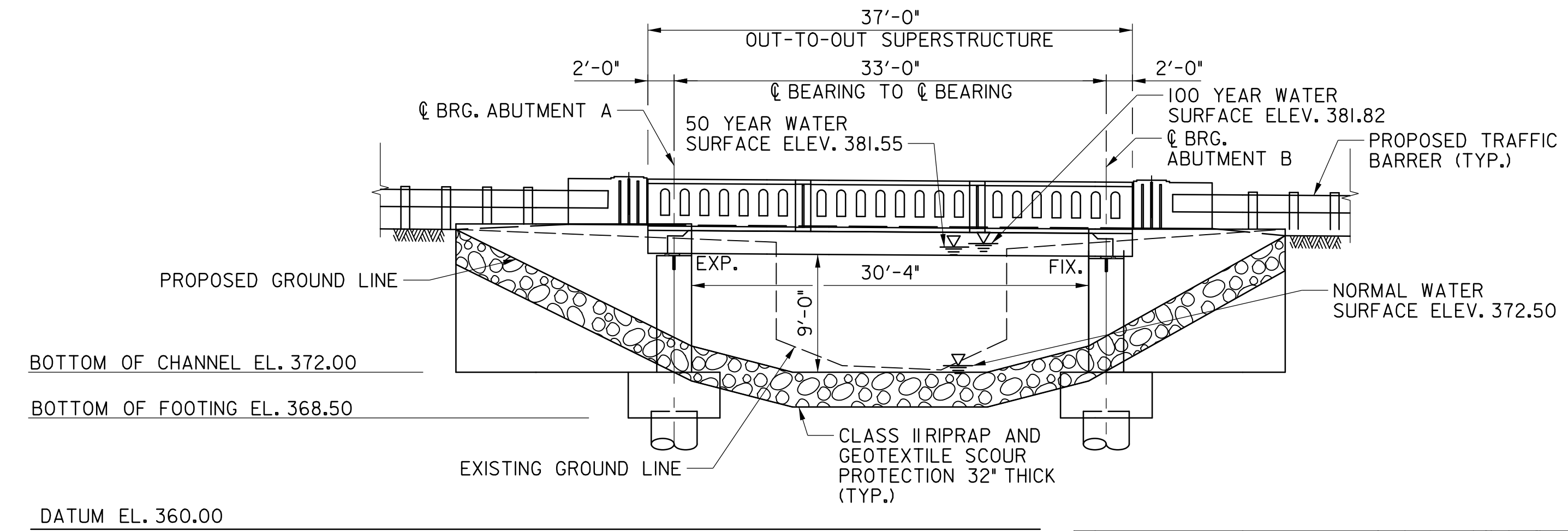
NO.	REVISION	DATE	BY

MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION DIVISION OF TRANSPORTATION ENGINEERING GAITHERSBURG, MARYLAND	
RECOMMENDED FOR APPROVAL	
Chief, Design Section	Date
APPROVED	
Chief, Division of Transportation Engineering	Date
Designed by: ZK	Drawn by: NL
Checked by: MM	

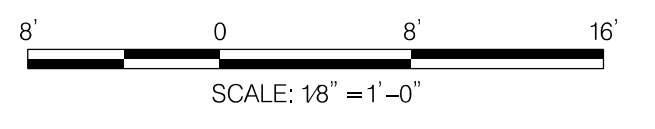
REPLACEMENT OF BRIDGE NO. M-0056 REDLAND ROAD OVER MILL CREEK	
NOTES AND ABBREVIATIONS	
SCALE : NONE	DATE : AUGUST, 2023
Project No. : 509132	SHEET 2 of 26



PLAN  
SCALE: 1/8" = 1'-0"



ELEVATION  
SCALE: 1/8" = 1'-0"



NOTES:  
1. EXISTING STRUCTURE TO BE REMOVED TO A MINIMUM OF 1'-0" BELOW FINISHED GRADE.

**GENERAL NOTES:**

**SPECIFICATIONS:** MDT SHA STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, DATED JULY 2023.

**DESIGN:** AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS 9TH EDITION, DATED 2020

**LOADING:** HL-93 WITH PROVISIONS FOR FUTURE 2" WEARING SURFACE

**LOAD RESTRICTIONS:** THERE ARE RESTRICTIONS FOR PLACING EQUIPMENT AND MATERIALS ON EXISTING AND NEW STRUCTURES. REFER TO SECTION TC 6.14.

**CONCRETE:** CONCRETE COMPRESSIVE STRENGTH FOR DESIGN SHALL BE:  
f'c = 3000 psi FOR ELEMENTS USING MIX NO. 3 AND MIX NO. 4  
f'c = 4000 psi FOR ELEMENTS USING MIX NO. 6

ALL CONCRETE FOR BRIDGE PARAPETS AND, MOMENT SLABS SHALL BE MIX NO. 6 (4500 PSI) CONTAINING SYNTHETIC FIBERS (SEE SECTION 902.15).

ALL CONCRETE FOR DRILLED SHAFTS SHALL BE MIX NO. 4 (3500 PSI).

ALL CONCRETE FOR SUPERSTRUCTURE OVERLAYS SHALL BE MIX NO. 8 CONCRETE (4000 PSI) CONTAINING SYNTHETIC FIBERS (SEE SECTION 902.15).

ALL OTHER CONCRETE EXCEPT PRESTRESSED CONCRETE SHALL BE MIX NO. 3 (3500 psi)

**PRESTRESSED CONCRETE:** CONCRETE COMPRESSIVE STRENGTH FOR DESIGN SHALL BE f'c = 7000 psi. WHILE THE MINIMUM COMPRESSIVE STRENGTH AT TRANSFER SHALL BE f'ci = 5950 psi

ALL PRESTRESSED CONCRETE SHALL BE SELF-CONSOLIDATING WITH A 28-DAY COMPRESSIVE STRENGTH OF f'c = 8000 psi.

**REINFORCING STEEL:** REINFORCING STEEL SHALL CONFORM TO ASTM A 615 GRADE 60, WITH A YIELD STRENGTH FOR DESIGN OF fy = 60,000 psi

ALL SPLICES, NOT SHOWN, SHALL BE LAPPED AS PER BAR LAP CHARTS.

REINFORCING STEEL SHALL BE EPOXY COATED WHEN NOTED WITH EP IN THE PLANS.

MINIMUM CLEAR COVER FOR REINFORCING STEEL SHALL BE 2" EXCEPT FOR THE FOLLOWING LOCATIONS:

LOCATION	CLEAR COVER
FOOTING - BOTTOM AND SIDES BOTTOM OF PRESTRESSED CONCRETE SLABS	3 IN
TOP OF SUPERSTRUCTURE OVERLAY	2 1/2 IN

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

**PRETENSIONING STEEL:** PRETENSIONING STEEL SHALL CONSIST OF 1/2" DIAMETER 7-WIRE BRIGHT LOW RELAXATION STRANDS CONFORMING TO THE REQUIREMENTS OF M 203 GRADE 270. EACH STRAND SHALL BE PRESTRESSED TO 31,000 lb (0.75 fpu), HAVE AN ULTIMATE STRENGTH OF 41,300 lb (fpu) AND A YIELD STRENGTH OF 37,200 lb (0.90 fpu).

**EXISTING STRUCTURES:** ALL DIMENSIONS AFFECTED BY THE GEOMETRY AND/OR LOCATION OF THE STRUCTURES: EXISTING STRUCTURE SHALL BE CHECKED IN THE FIELD BY THE CONTRACTOR BEFORE ANY MATERIAL IS ORDERED OR FABRICATED OR CONSTRUCTION BEGINS.

MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION DIVISION OF TRANSPORTATION ENGINEERING GAITHERSBURG, MARYLAND			
RECOMMENDED FOR APPROVAL			
Chief, Design Section	Date		
APPROVED			
Chief, Division of Transportation Engineering	Date		
Designed by: KW	Drawn by: KW	Checked by: MM	

REPLACEMENT OF BRIDGE NO. M-0056  
REDLAND ROAD OVER MILL CREEK

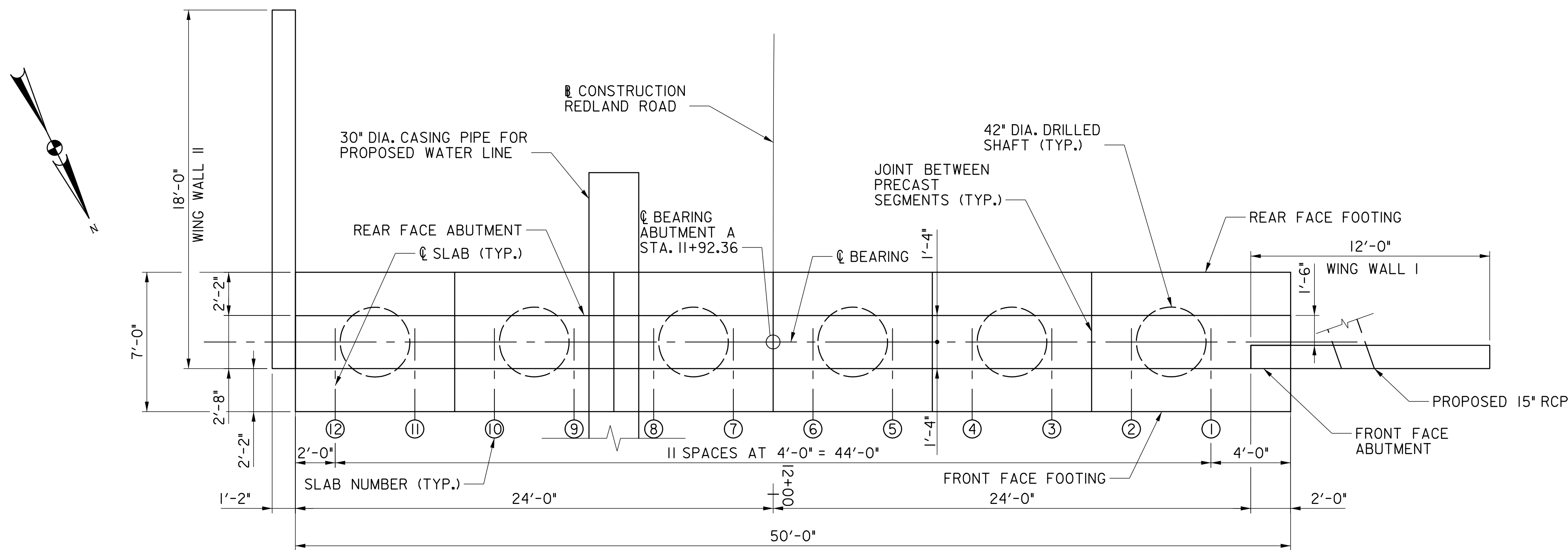
GENERAL PLAN AND ELEVATION

SCALE: 1/8" = 1'-0" DATE: AUGUST, 2023

Project No.: 509132 SHEET 3 of 26



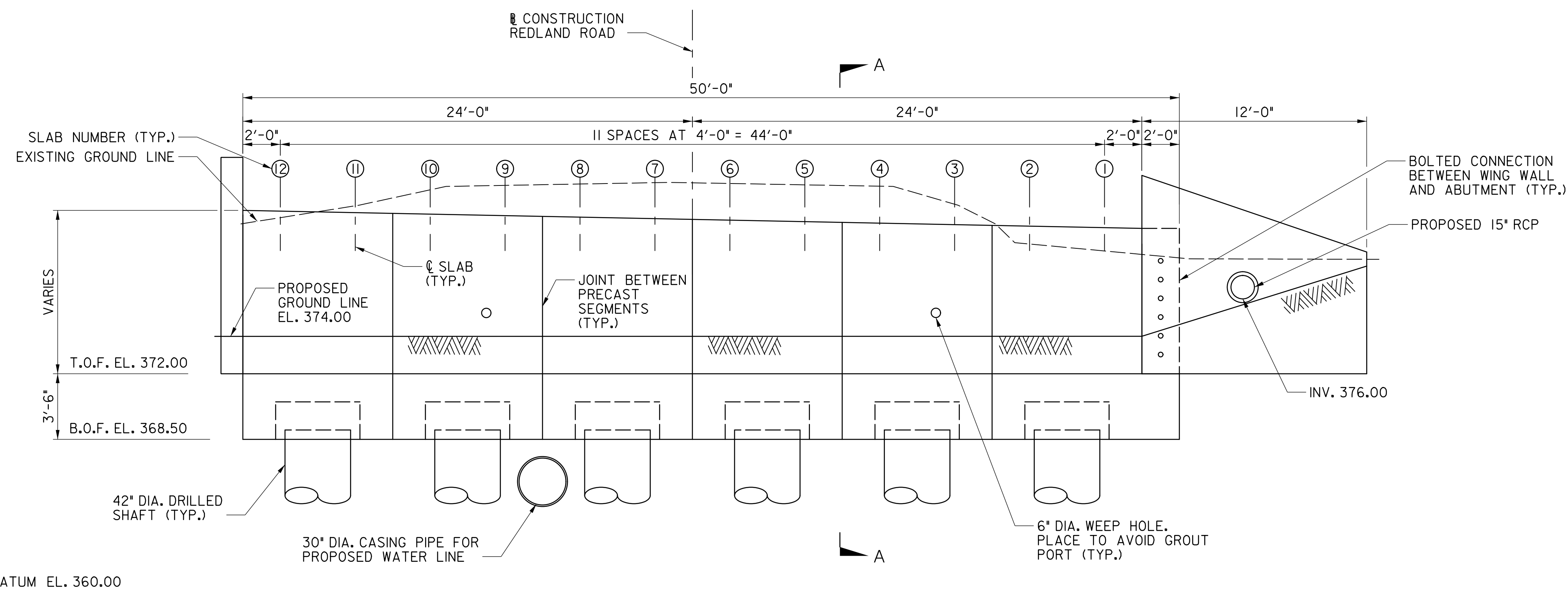
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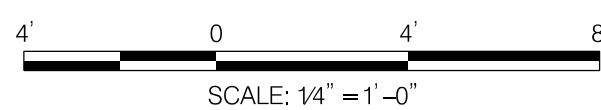
ABUTMENT A PLAN  
SCALE: 1/4" = 1'-0"

**NOTES:**

1. ABUTMENT TO BE PRECAST IN SECTIONS AS SHOWN.
2. FOR SECTION A-A, SEE SHEET 6.
3. IT IS ANTICIPATED THAT EXCAVATION THROUGH ROCK WILL BE REQUIRED TO CONSTRUCT THE ABUTMENTS AND FOUNDATIONS. IN PARTICULAR, IT IS ANTICIPATED THAT ROCK WILL BE ENCOUNTERED AT THE WEST END OF ABUTMENT A. ROCK MAY ALSO BE PRESENT AT OTHER LOCATIONS DURING EXCAVATION. PLEASE REFER TO THE GEOTECHNICAL REPORT PROVIDED WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL SUBMIT A WORK PLAN OUTLINING THE PROCESS TO REMOVE THE ROCK PRIOR TO ANY EXCAVATION IN ROCK. ROCK IS DEFINED AS COMPETANT ROCK AS PER SPECIAL PROVISION SECTION 412. BLASTING OR THE USE OF EXPLOSIVES FOR REMOVAL OF ROCK IS PROHIBITED. MEASUREMENT AND PAYMENT FOR REMOVAL OF ROCK WILL BE PAID SEPERATELY UNDER THE REMOVAL OF ROCK PAY ITEM.



ABUTMENT A ELEVATION  
SCALE: 1/4" = 1'-0"



NO.	REVISION	DATE	BY

MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION DIVISION OF TRANSPORTATION ENGINEERING GAITHERSBURG, MARYLAND	
RECOMMENDED FOR APPROVAL	
Chief, Design Section	Date
APPROVED	
Chief, Division of Transportation Engineering	Date
Designed by : ZK	Drawn by : KW
Checked by : MM	

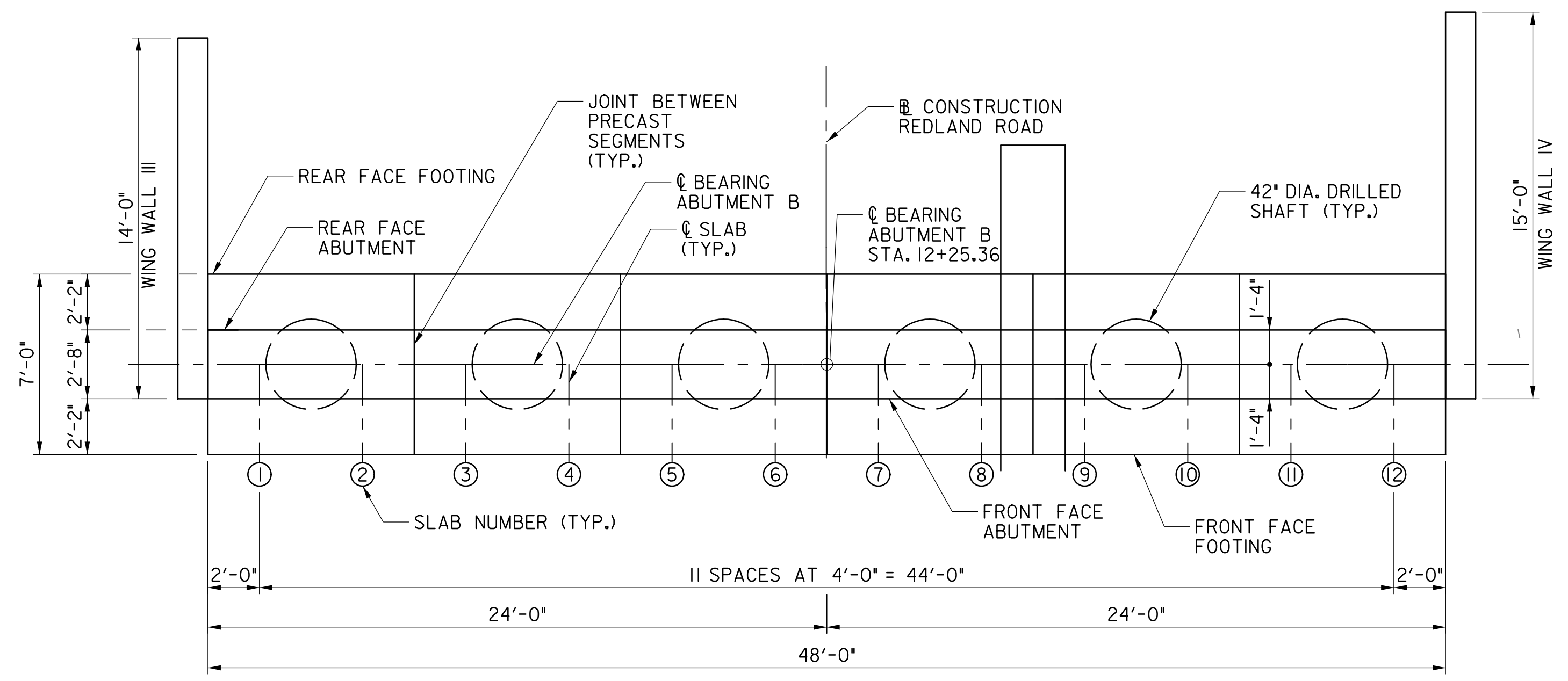
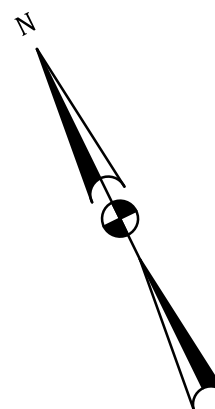
REPLACEMENT OF BRIDGE NO. M-0056  
REDLAND ROAD OVER MILL CREEK

ABUTMENT A  
PLAN AND ELEVATION

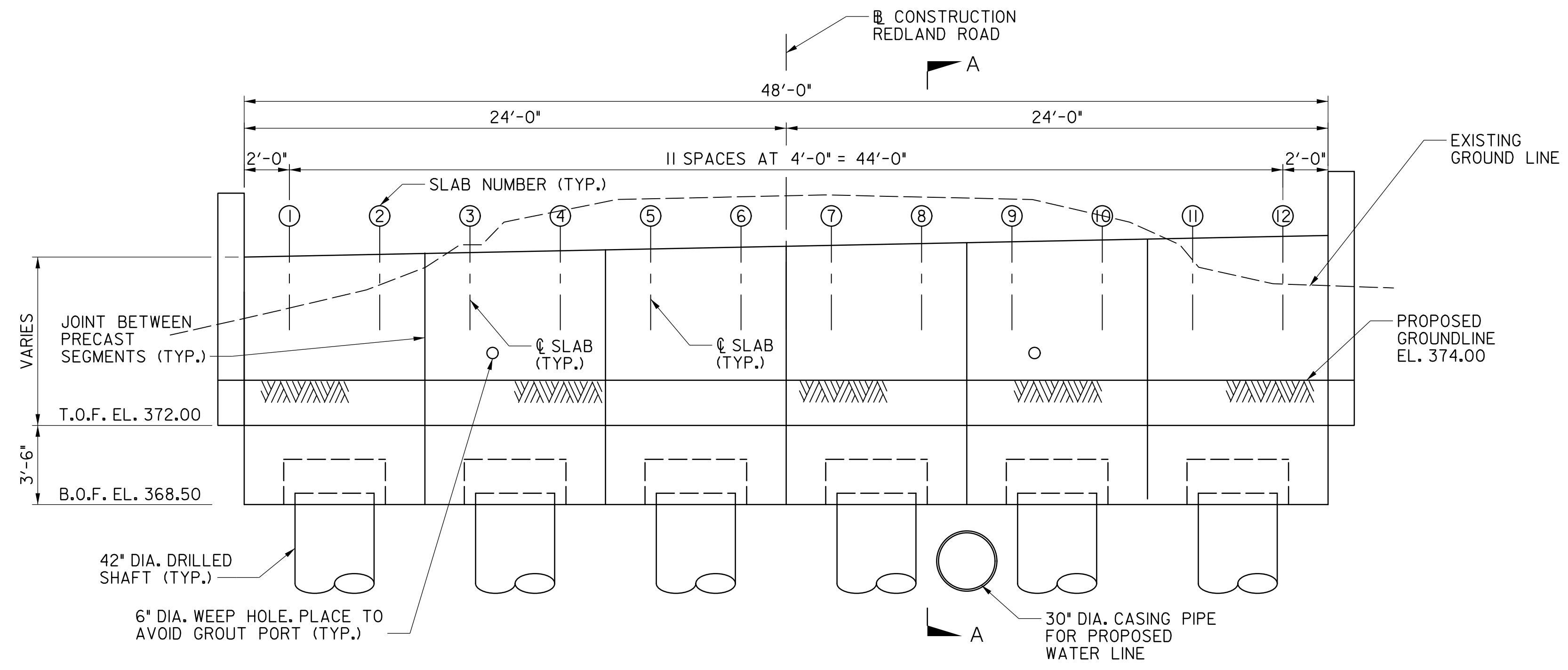
SCALE : 1/4" = 1' - 0" DATE : AUGUST, 2023

Project No. : 509132 SHEET 4 of 26





**ABUTMENT B PLAN**  
SCALE: 1/4" = 1'-0"

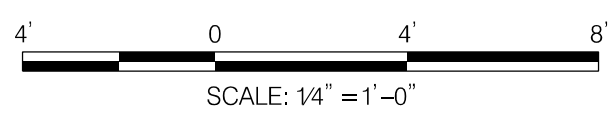


**ABUTMENT B ELEVATION**  
SCALE: 1/4" = 1'-0"

DATUM EL. 360.00

**NOTES:**

1. PRECAST ABUTMENTS TO BE MANUFACTURED IN SECTIONS AS DEPICTED.
2. FOR SECTION A-A, SEE SHEET 6.



NO.	REVISION	DATE	BY

MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION DIVISION OF TRANSPORTATION ENGINEERING GAITHERSBURG, MARYLAND	
RECOMMENDED FOR APPROVAL	
Chief, Design Section APPROVED	Date
Chief, Division of Transportation Engineering	Date
Designed by : ZK	Drawn by : KW Checked by : MM

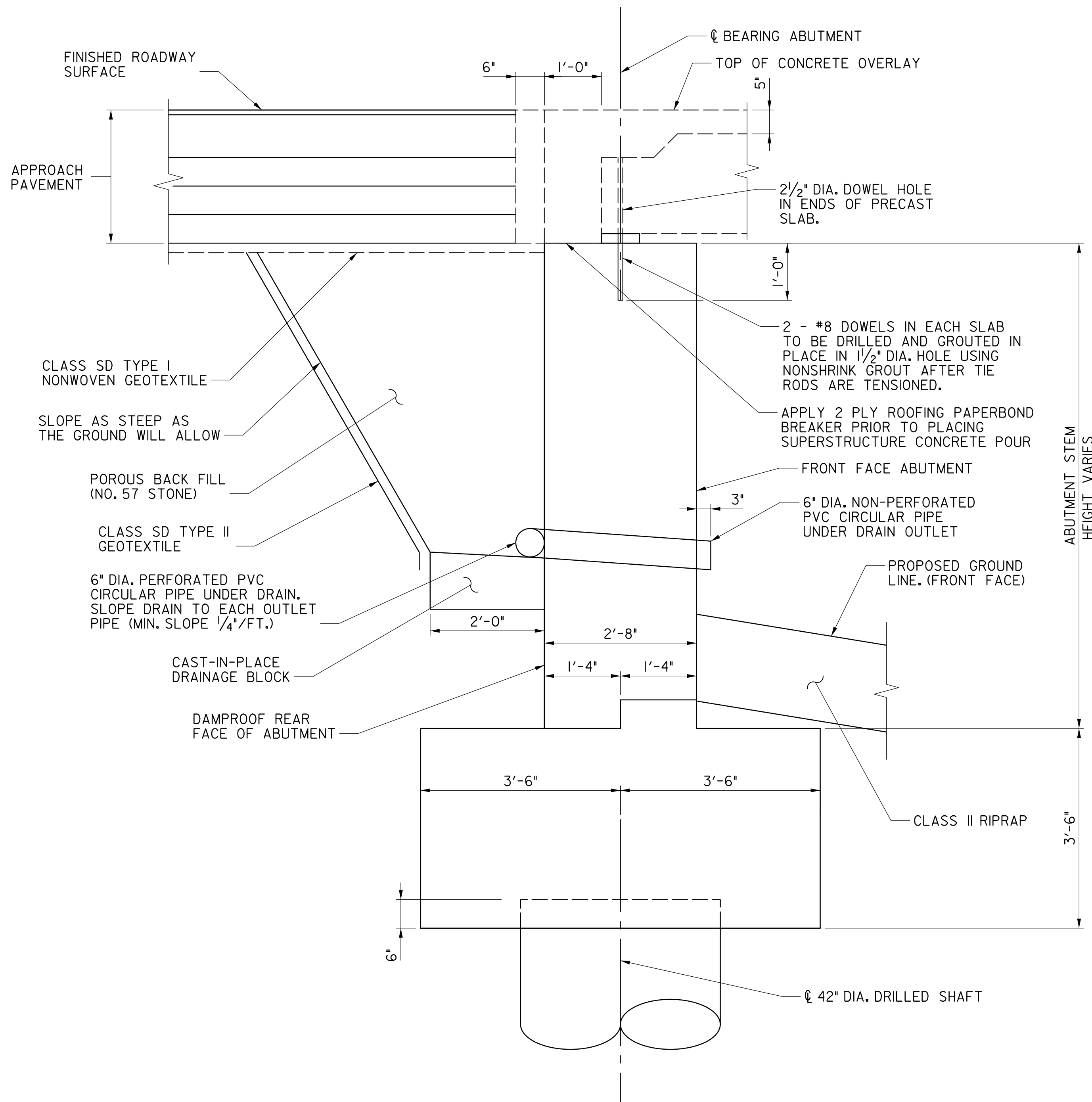
REPLACEMENT OF BRIDGE NO. M-0056  
REDLAND ROAD OVER MILL CREEK

**ABUTMENT B  
PLAN AND ELEVATION**

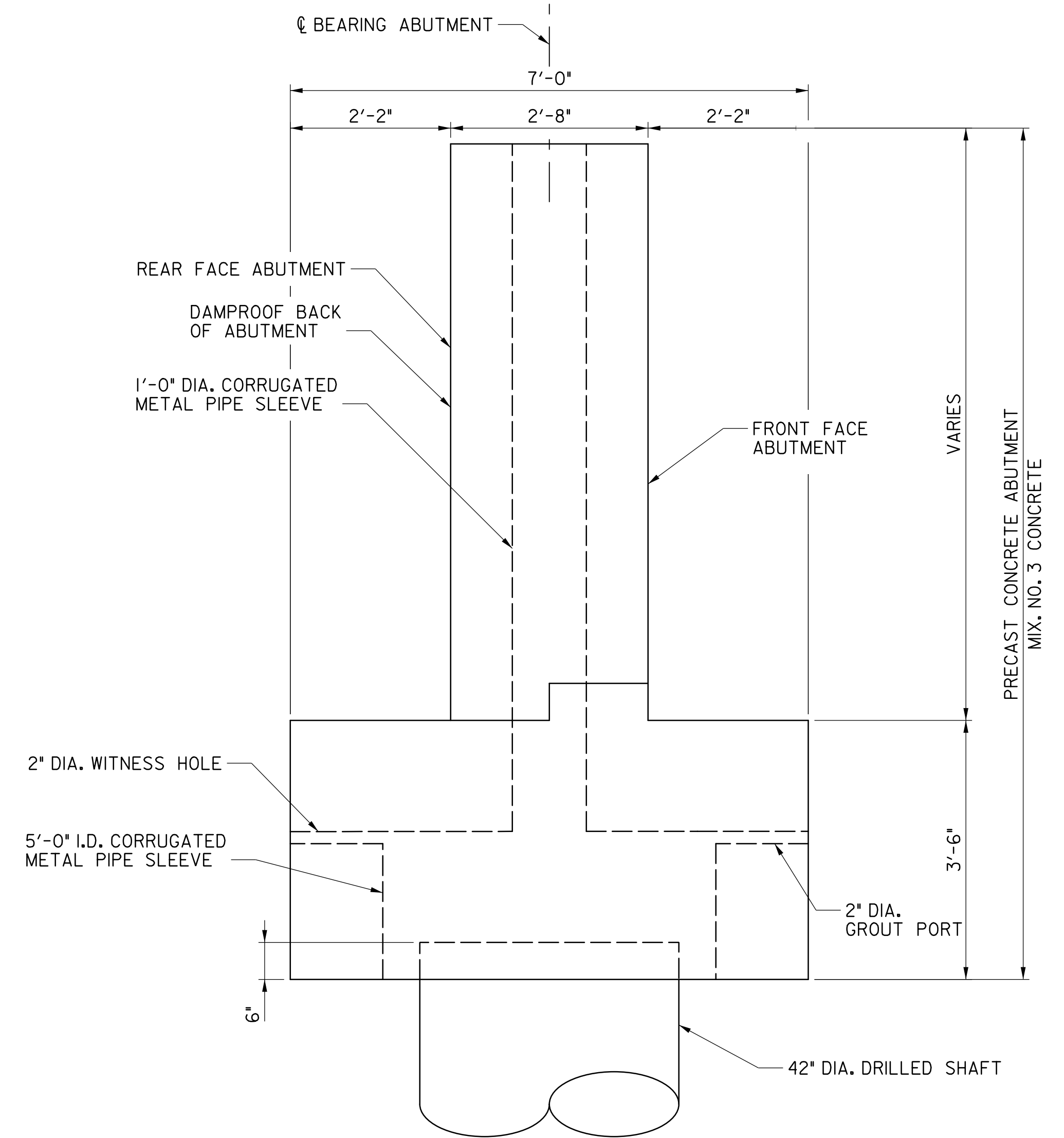
SCALE : 1/4" = 1' - 0"    DATE : AUGUST, 2023

Project No. : 509132    SHEET 5 of 26

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SECTION A-A  
SCALE: 3/4" = 1'-0"



SECTION A-A  
PRECAST DETAILS  
SCALE: 3/4" = 1'-0"



NOTES:

1. ALL ELASTOMERIC BEARING PADS SHALL BE PLACED WITH AN EPOXY ADHESIVE IN ACCORDANCE WITH 432.03.04. ADHESIVE SHALL BE ON THE BOTTOM OF THE PAD.
2. END DIAPHRAGM AND OVERLAY ARE TO BE PLACED IN CONTINUOUS POUR.



NO.	REVISION	DATE	BY

MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION DIVISION OF TRANSPORTATION ENGINEERING GAITHERSBURG, MARYLAND	
RECOMMENDED FOR APPROVAL	
Chief, Design Section	Date
APPROVED	
Chief, Division of Transportation Engineering	Date
Designed by: <u>KW</u>	Drawn by: <u>KW</u> Checked by: <u>MWM</u>

REPLACEMENT OF BRIDGE NO. M-0056  
REDLAND ROAD OVER MILL CREEK

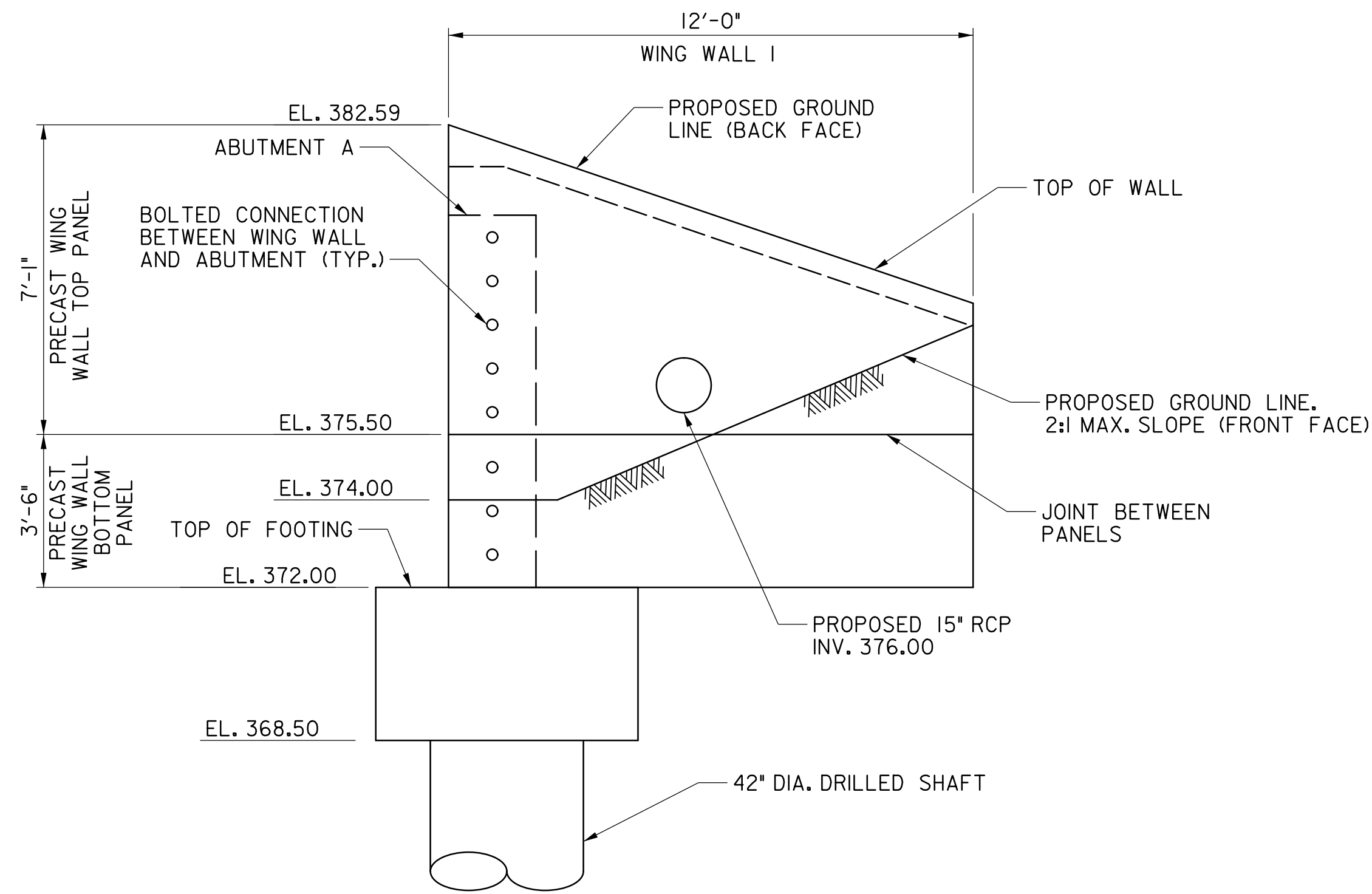
ABUTMENT TYPICAL SECTION

SCALE : 3/4" = 1' - 0" DATE : AUGUST, 2023

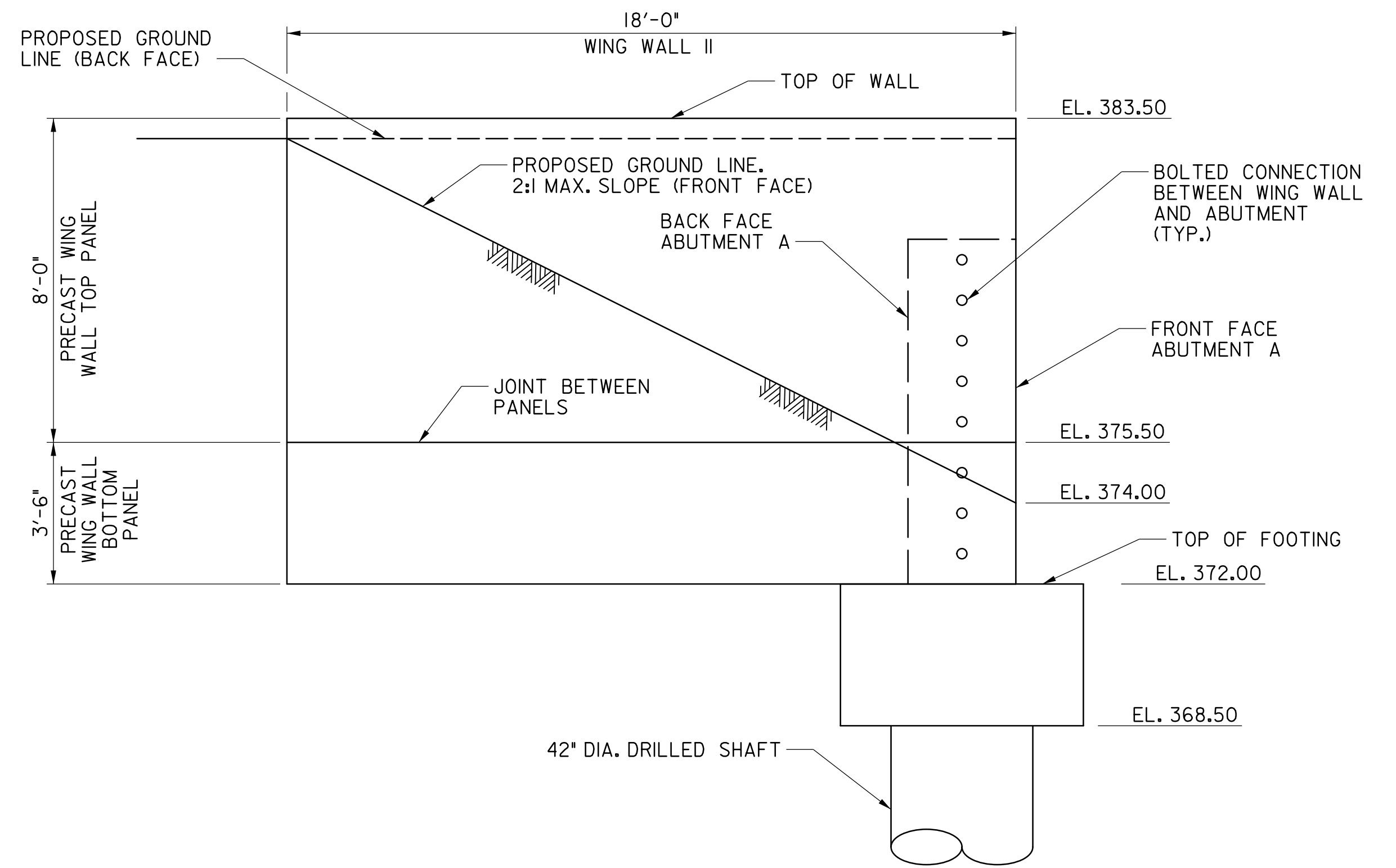
Project No. : 509132 SHEET 6 of 26

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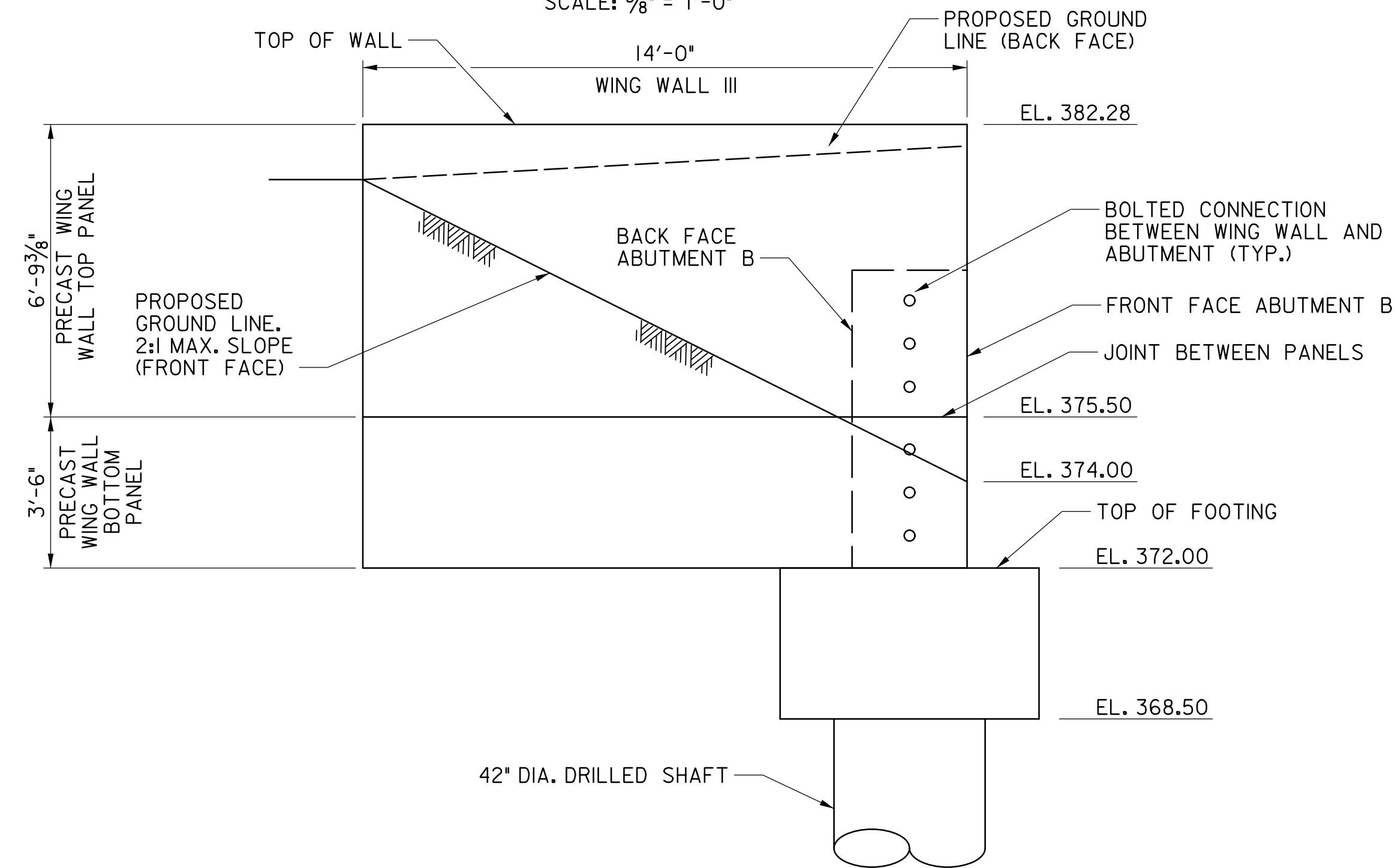




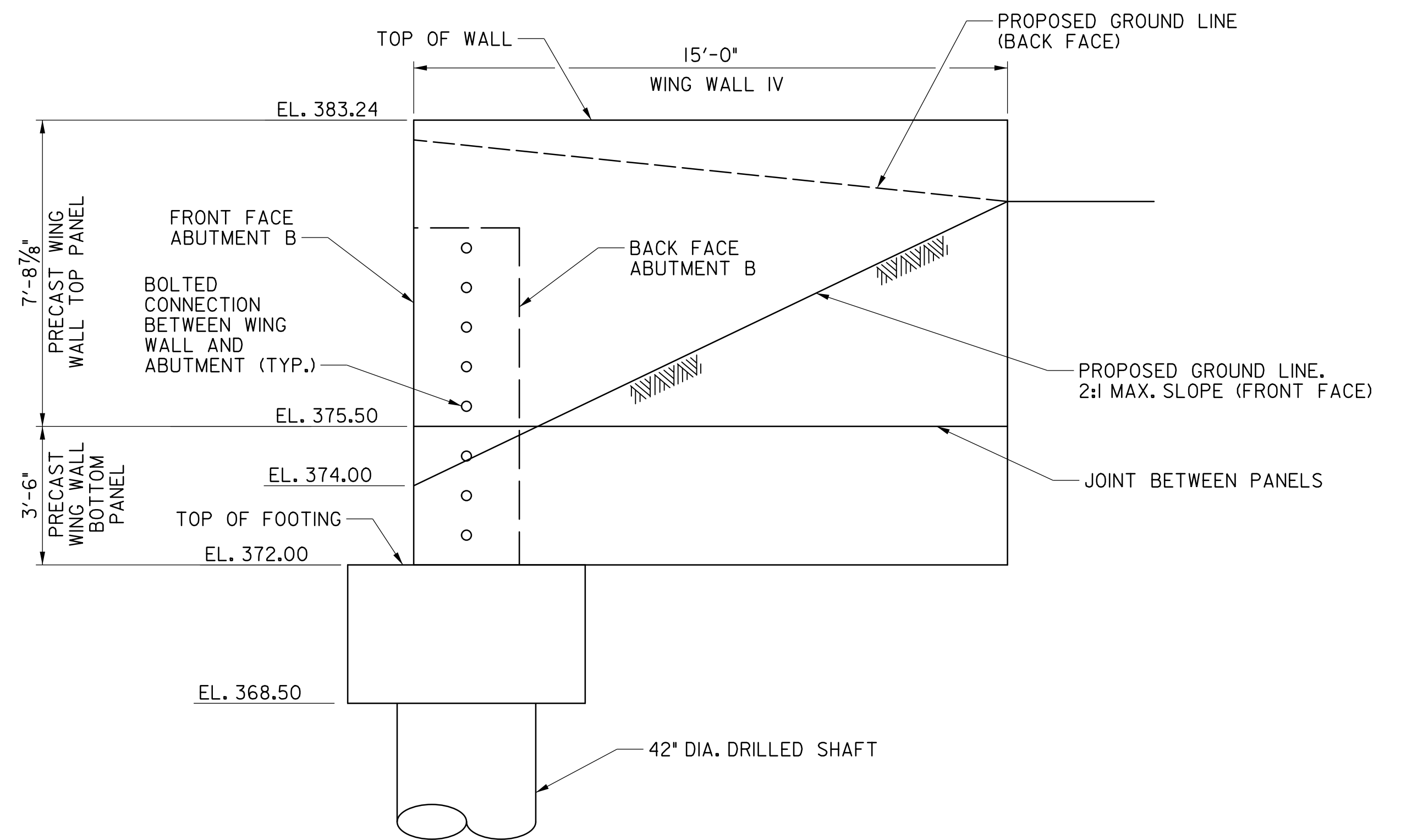
WING WALL I  
SCALE: 3/8" = 1'-0"



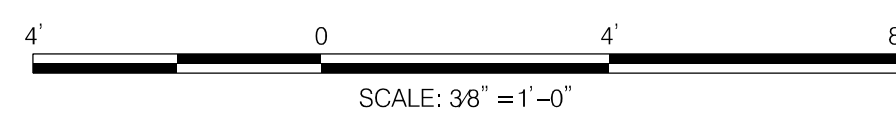
WING WALL II  
SCALE: 3/8" = 1'-0"



WING WALL III  
SCALE: 3/8" = 1'-0"



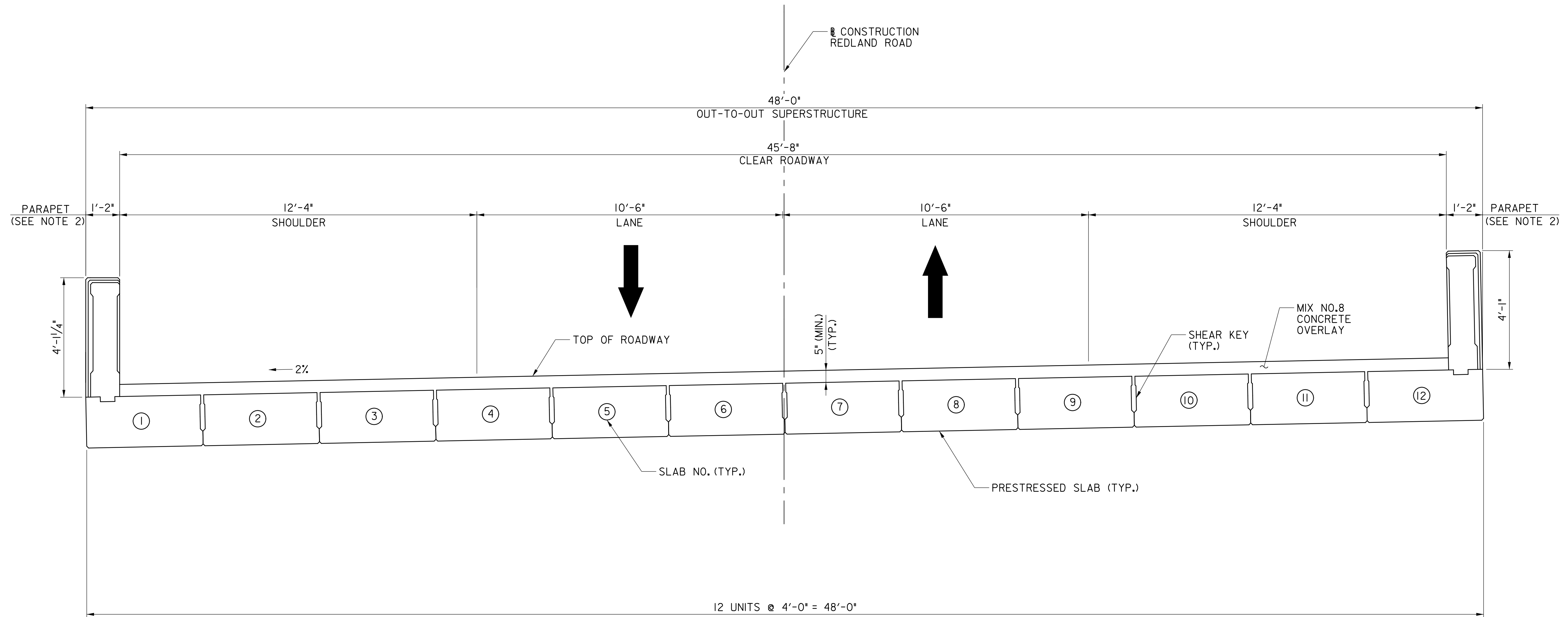
WING WALL IV  
SCALE: 3/8" = 1'-0"



NO.	REVISION	DATE	BY

MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION DIVISION OF TRANSPORTATION ENGINEERING GAITHERSBURG, MARYLAND	
RECOMMENDED FOR APPROVAL	
Chief, Design Section	Date
APPROVED	
Chief, Division of Transportation Engineering	Date
Designed by: <u>KW</u>	Drawn by: <u>KW</u> Checked by: <u>MM</u>

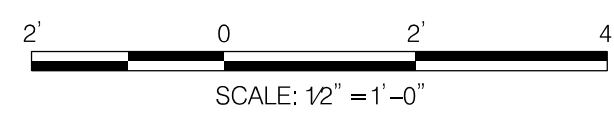
REPLACEMENT OF BRIDGE NO. M-0056 REDLAND ROAD OVER MILL CREEK	
WING WALL ELEVATIONS	
SCALE: 3/8" = 1'-0"	DATE: AUGUST, 2023
Project No.: <u>509132</u>	SHEET <u>7</u> of <u>26</u>



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

NOTES:

1. THE CONCRETE OVERLAY SHALL BE PLACED IN A CONTINUOUS POUR.
2. PARAPET SHALL FOLLOW TXDOT RAILING TYPE C4II (TL-2).



NO.	REVISION	DATE	BY

MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION DIVISION OF TRANSPORTATION ENGINEERING GAITHERSBURG, MARYLAND	
RECOMMENDED FOR APPROVAL	
Chief, Design Section	Date
APPROVED	
Chief, Division of Transportation Engineering	Date
Designed by : ZK	Drawn by : ZK
Checked by : MM	

REPLACEMENT OF BRIDGE NO. M-0056  
REDLAND ROAD OVER MILL CREEK

SUPERSTRUCTURE TYPICAL SECTION

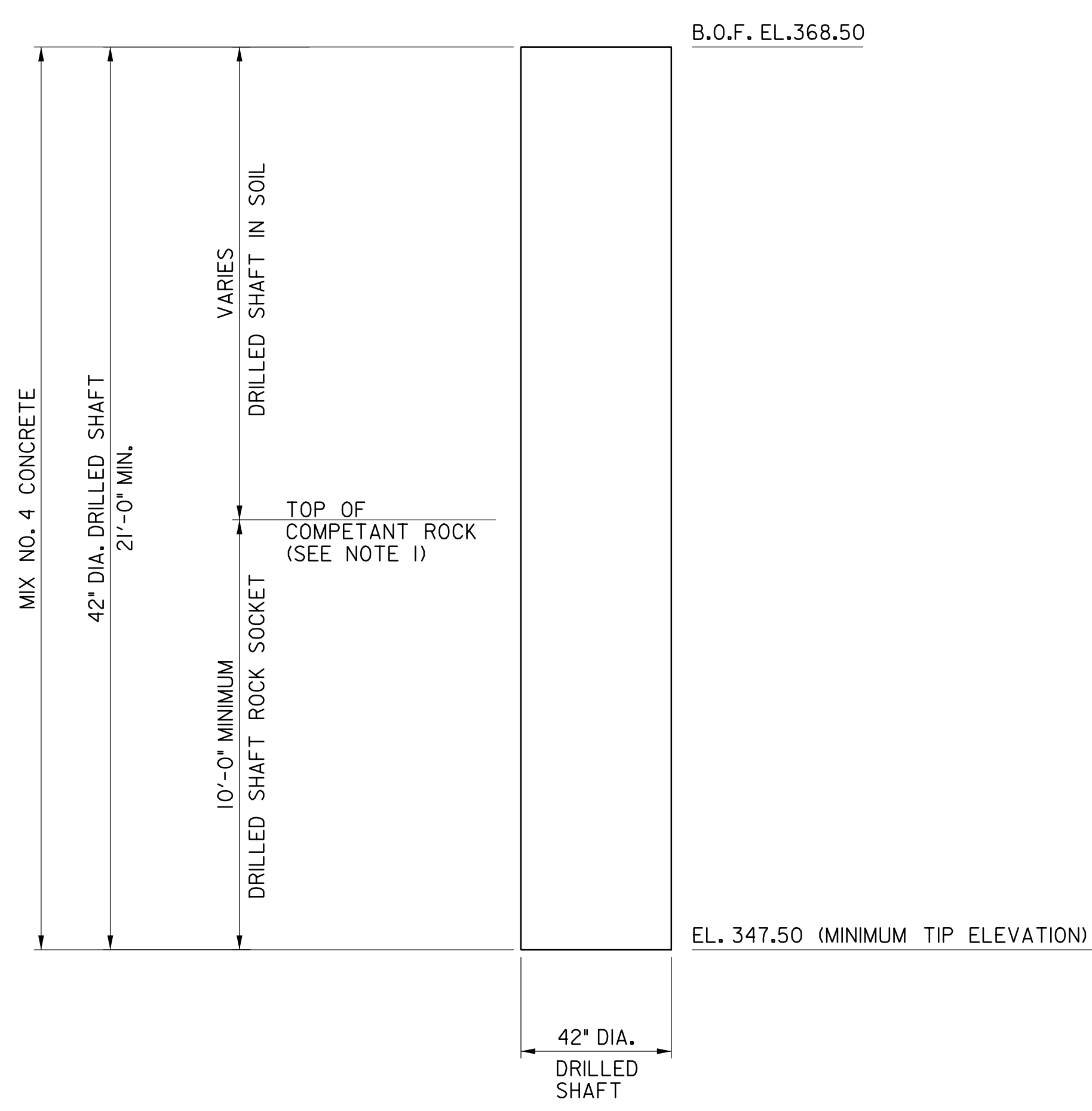
SCALE : 1/2" = 1' - 0" DATE : AUGUST, 2023

Project No. : 509132 SHEET 8 of 26

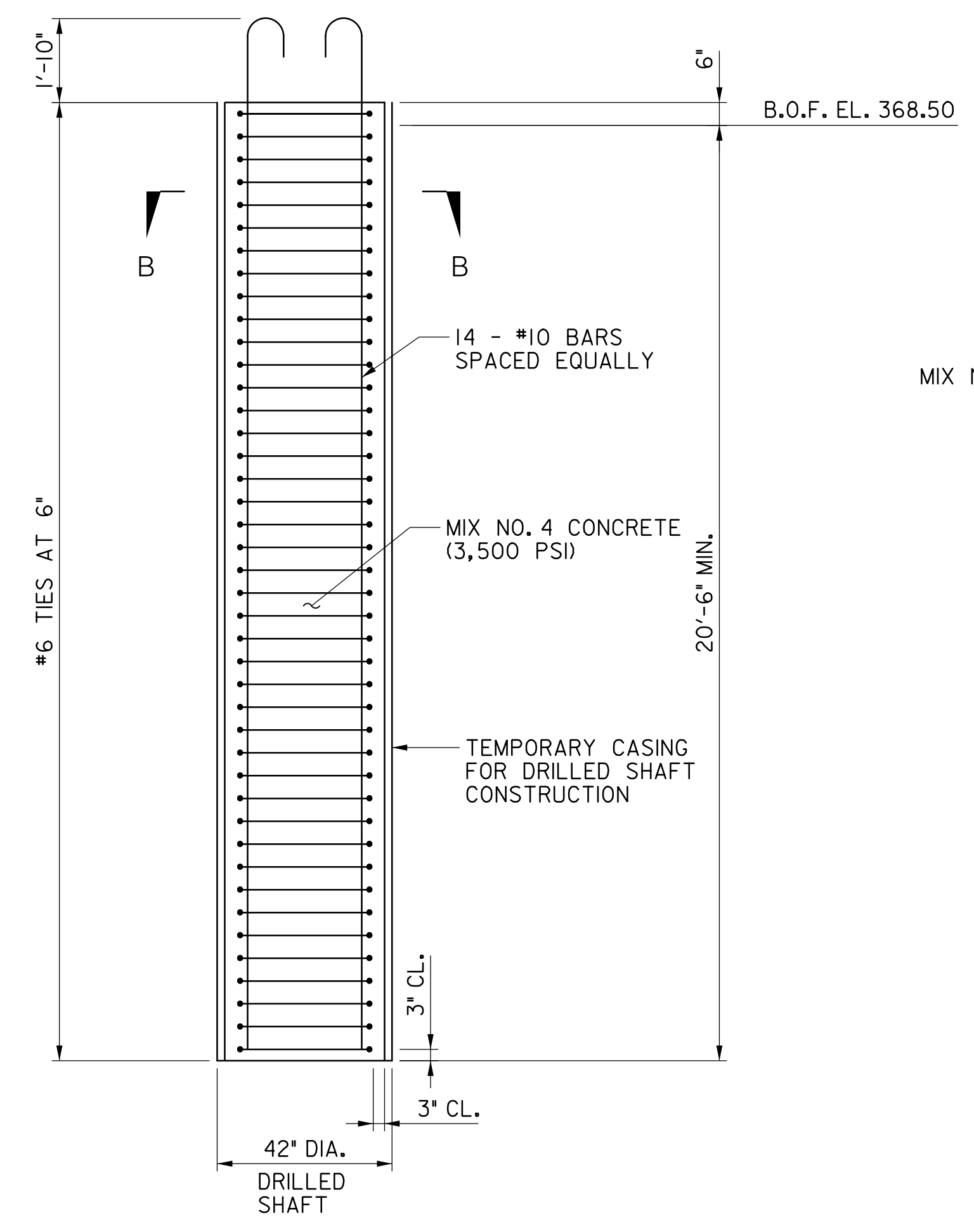
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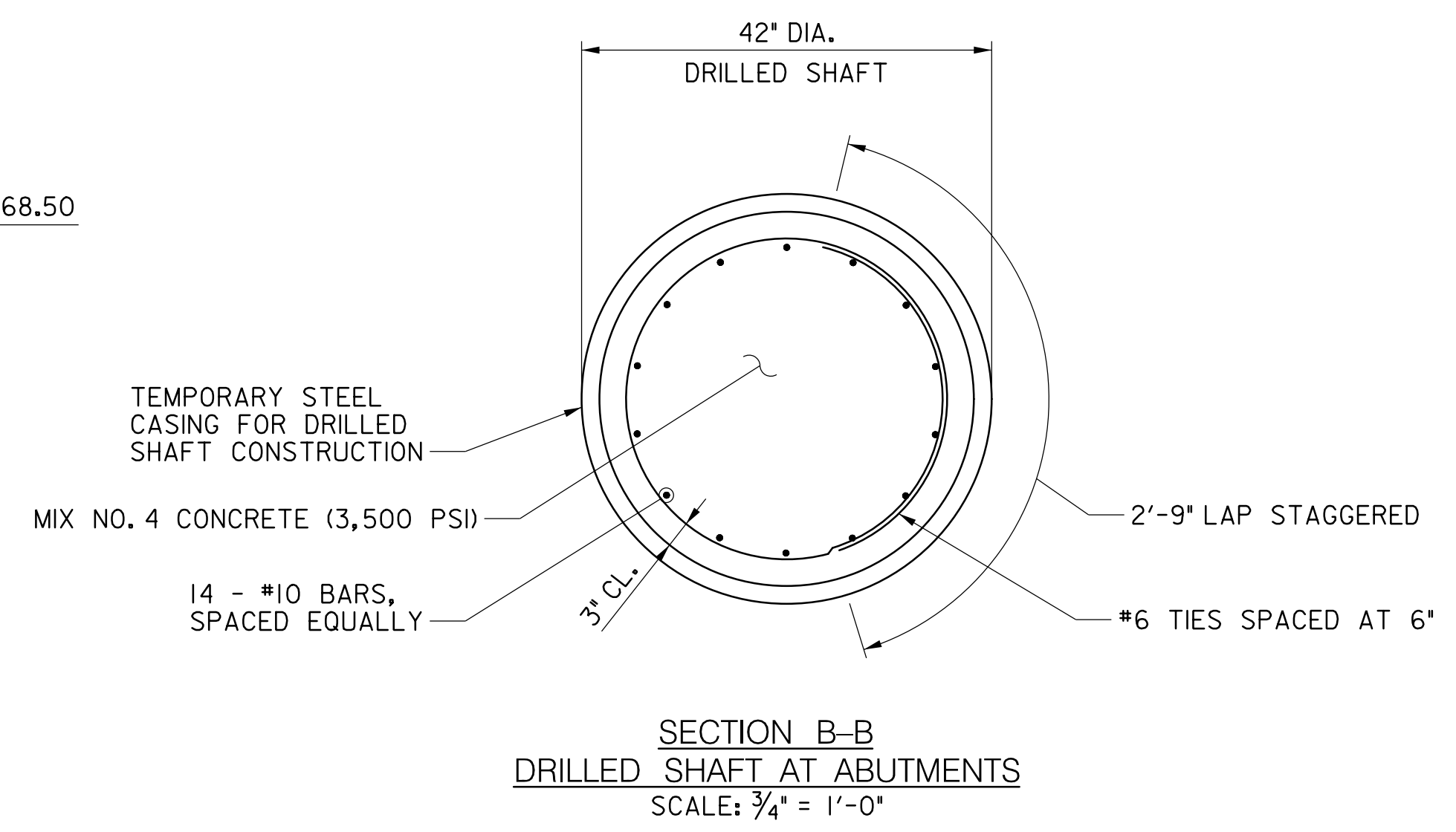
8/3/2023 5:36:29 PM P:\Projects\1908\1908.8 Redland Road\10 CADD\Structures\BIBR-DE00\_Redland Rd.dgn



**DRILLED SHAFT ELEVATION**  
 SCALE: 3/8" = 1'-0"

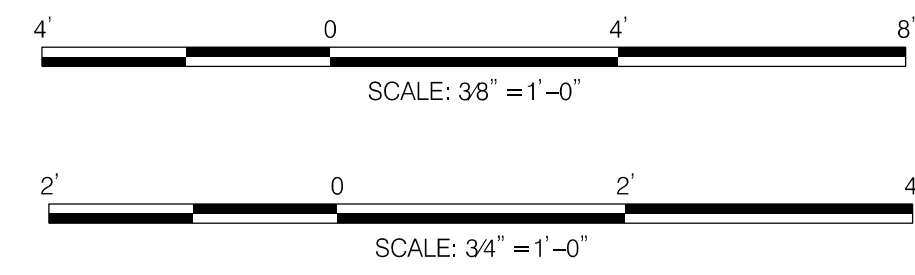


**DRILLED SHAFT DETAIL**  
 SCALE: 3/8" = 1'-0"



**SECTION B-B**  
**DRILLED SHAFT AT ABUTMENTS**  
 SCALE: 3/4" = 1'-0"

- NOTES:**
- FOR DEFINITION OF COMPETANT ROCK, SEE SPECIAL PROVISION 412.
  - FOR DRILLED SHAFT REINFORCING CAGE CLEARANCE SPACING DEVICES, SEE DETAIL NO. FND-PF-504 ON DRAWING NO. XX.
  - ALL DRILLED SHAFTS SHALL BE INSTALLED WITH A 10'-0" MINIMUM ROCK SOCKET IN COMPETANT ROCK. THE CONTRACTOR SHALL INSTALL DRILLED SHAFTS TO AT LEAST EL. 347.50, WHICH MAY REQUIRE LONGER THAN A 10'-0" ROCK SOCKET. THE LENGTH OF EACH DRILLED SHAFT SHALL BE AT LEAST 21'-0" MEASURED FROM THE BOTTOM OF FOOTING (B.O.F.). THE LENGTH OF EACH DRILLED SHAFT MAY BE LONGER THAN 21'-0" DEPENDING ON THE DEPTH OF COMPETANT ROCK. THE CONTRACTOR SHALL SUBMIT THE ACTUAL DEPTH OF COMPETANT ROCK AND BOTTOM OF DRILLED SHAFT ELEVATION FOR EACH DRILLED SHAFT TO THE COUNTY FOR APPROVAL PRIOR TO POURING THE DRILLED SHAFT CONCRETE.



NO.	REVISION	DATE	BY

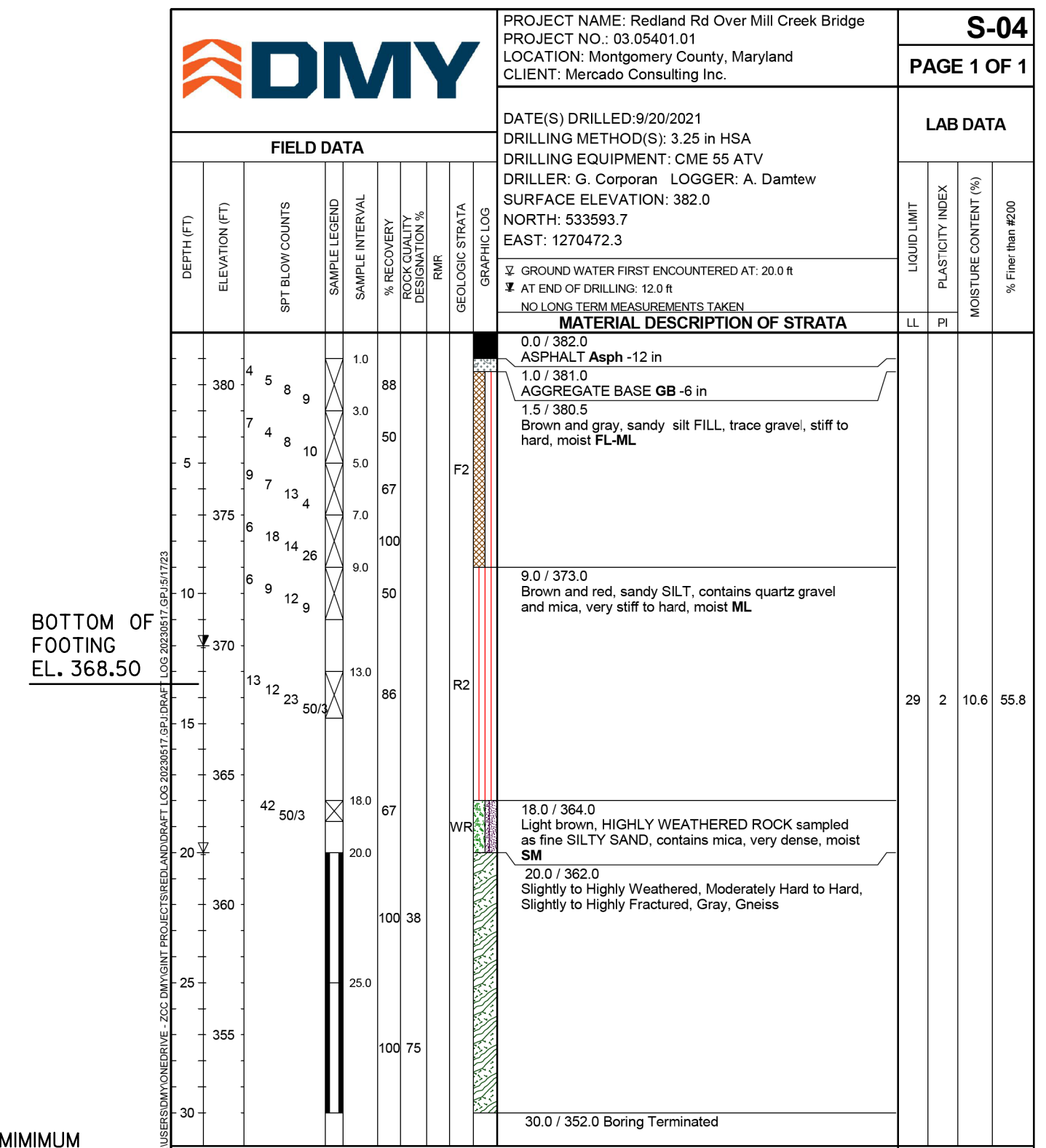
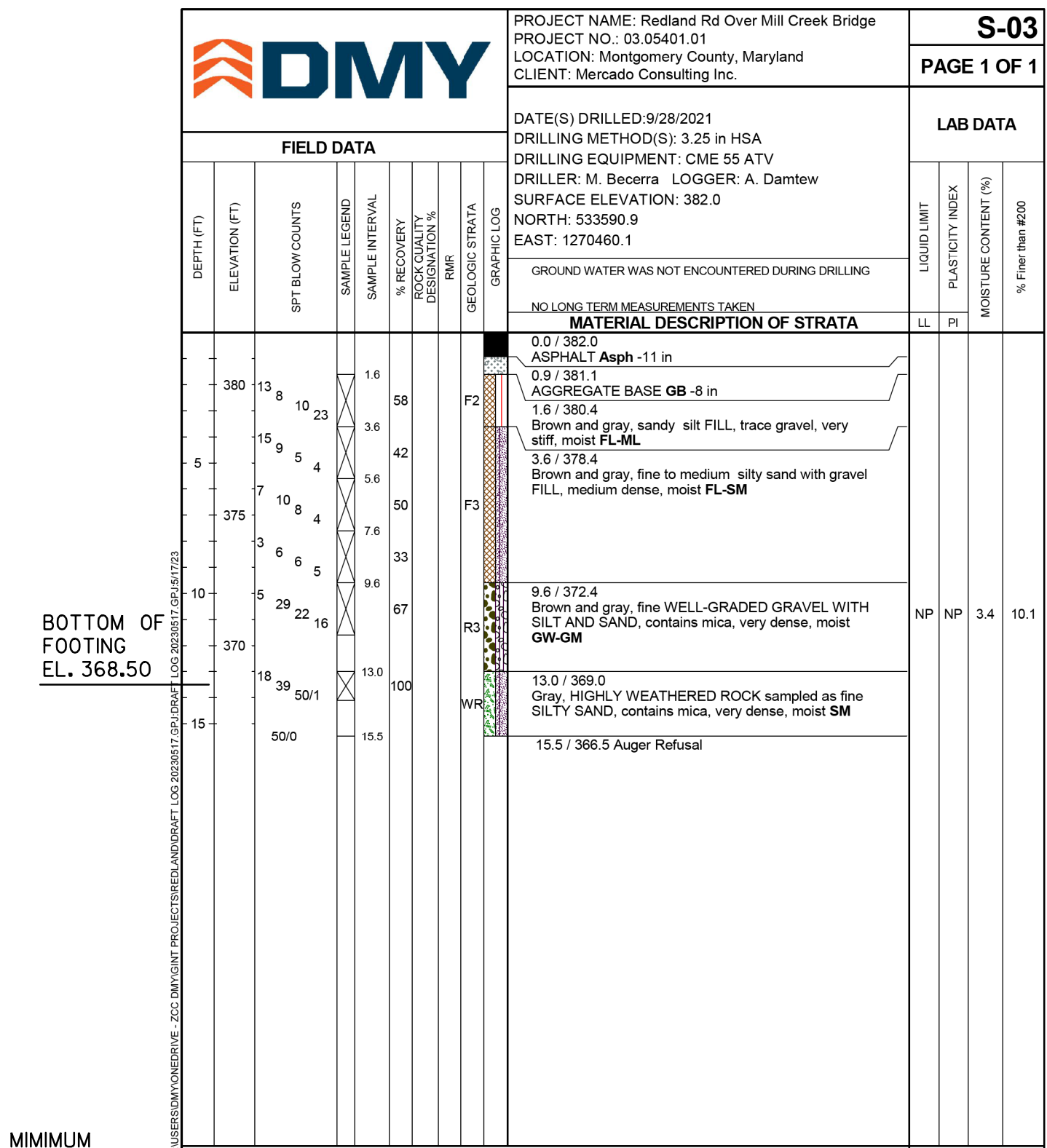
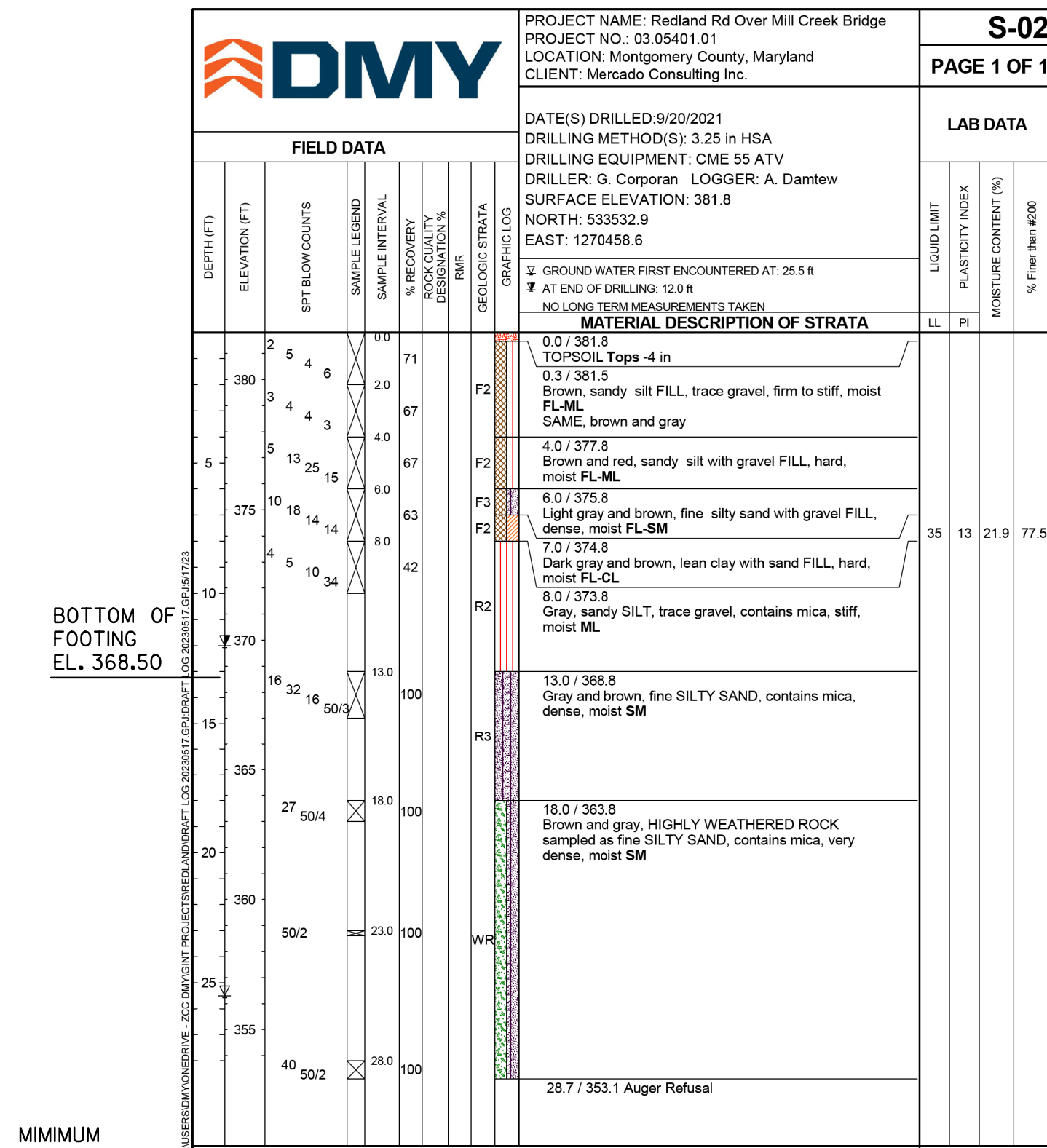
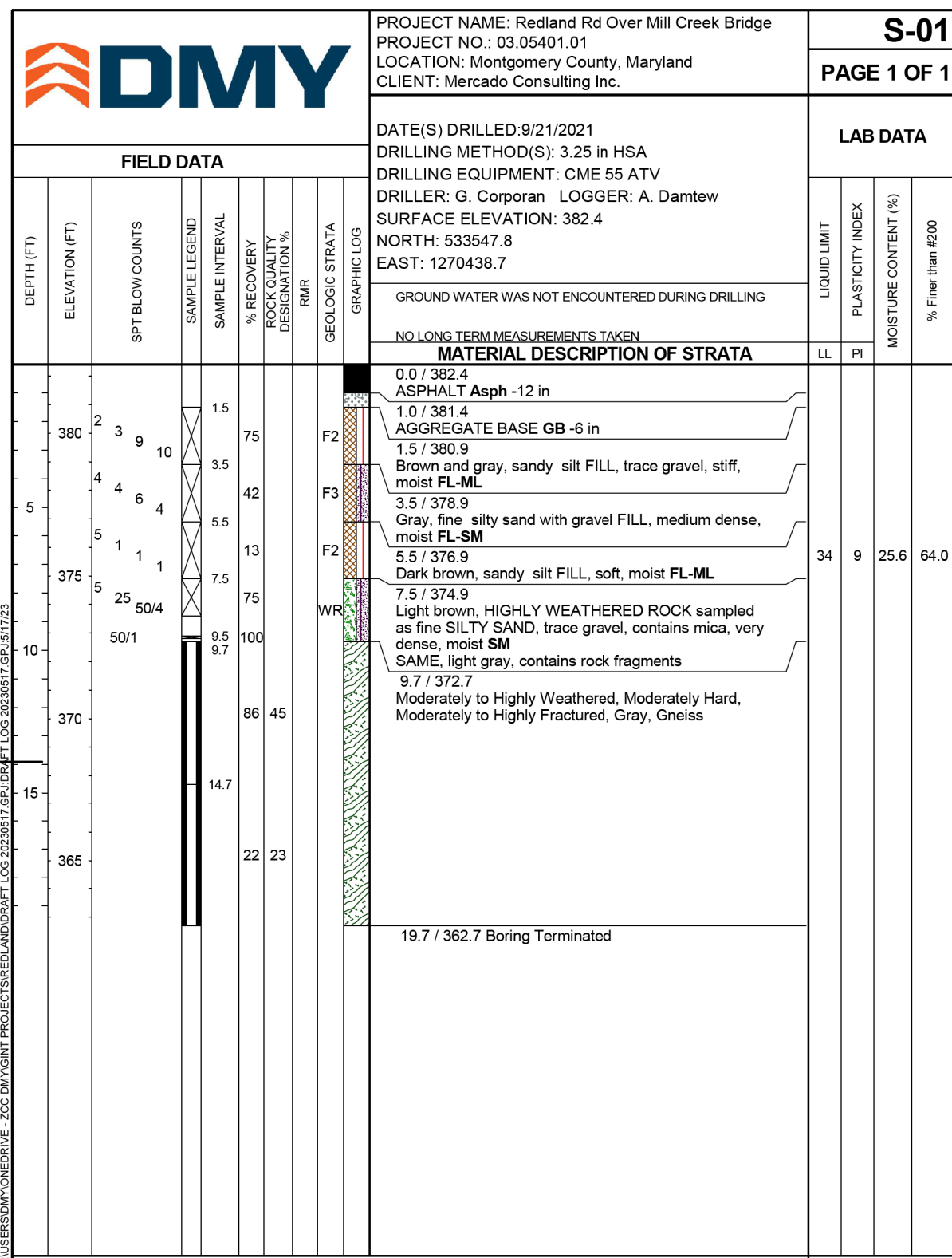
MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION DIVISION OF TRANSPORTATION ENGINEERING GAITHERSBURG, MARYLAND	
RECOMMENDED FOR APPROVAL	
Chief, Design Section APPROVED	Date
Chief, Division of Transportation Engineering	Date
Designed by : <u>KW</u>	Drawn by : <u>KW</u>
Checked by : <u>MM</u>	

REPLACEMENT OF BRIDGE NO. M-0056  
 REDLAND ROAD OVER MILL CREEK

**DRILLED SHAFT DETAILS**

SCALE : AS SHOWN      DATE : AUGUST, 2023

Project No. : 509132      SHEET 9 of 26



REMARKS: Surface elevation are provided by the Client. Auger refusal at 9.7ft.

MINIMUM BOTTOM OF DRILLED SHAFT EL. 347.50

REMARKS: Surface elevation are provided by the Client. Cave-in depth = 16ft.

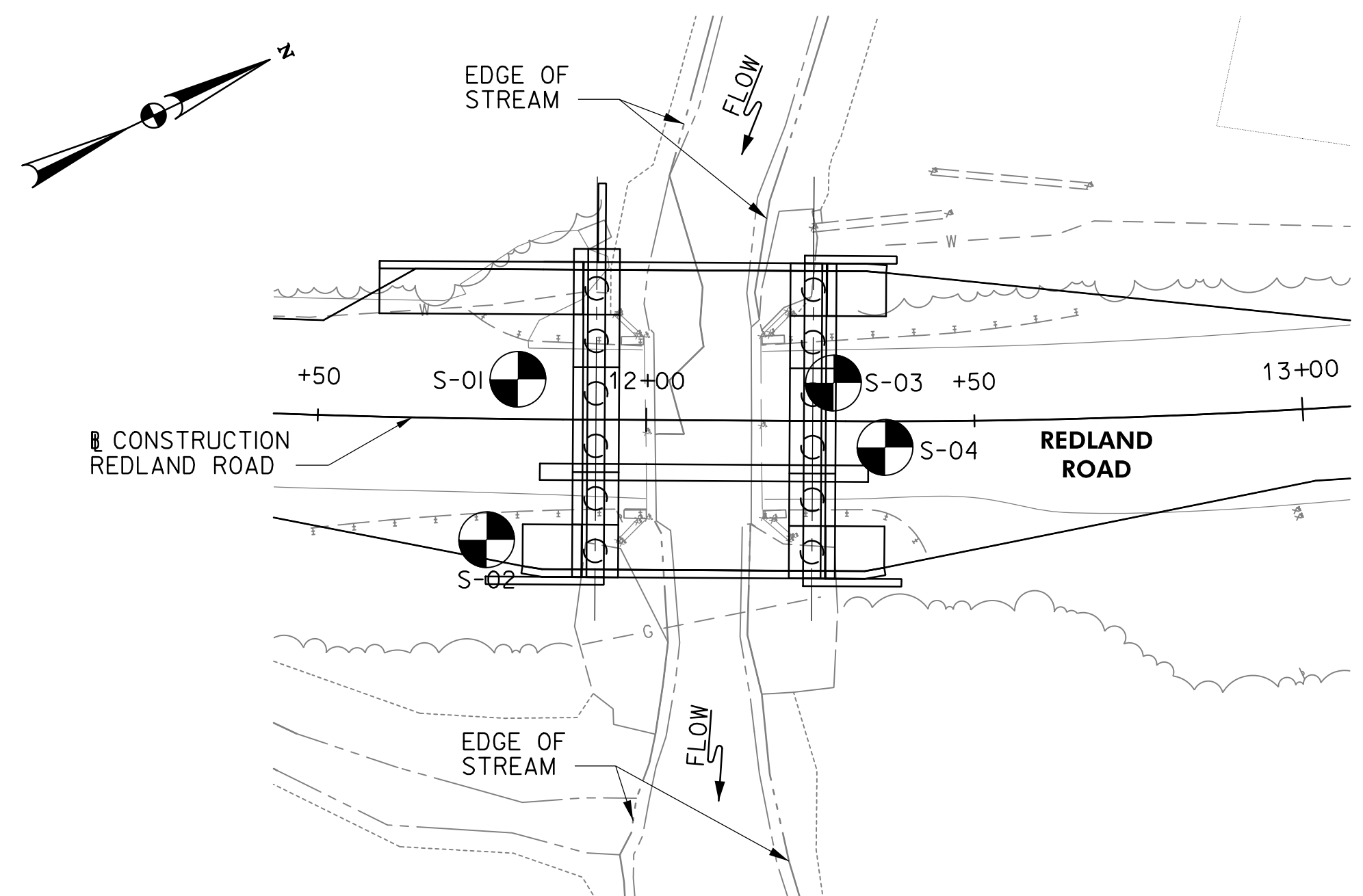
MINIMUM BOTTOM OF DRILLED SHAFT EL. 347.50

REMARKS: Surface elevation are provided by the Client. Auger Refusal at 15.5ft.

MINIMUM BOTTOM OF DRILLED SHAFT EL. 347.50

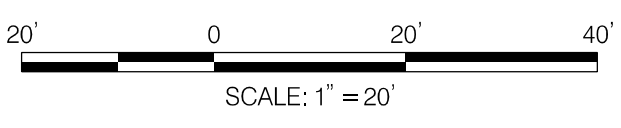
REMARKS: Surface elevation are provided by the Client. Cave-in depth at 16ft.

MINIMUM BOTTOM OF DRILLED SHAFT EL. 347.50



BORING AND DRIVE TEST LOCATION PLAN  
SCALE: 1" = 20'-0"

- NOTES:
1. THE BORINGS AND DRIVE TESTS WERE TAKEN BETWEEN SEPTEMBER 20, 2021 AND SEPTEMBER 28, 2021 BY DMY ENGINEERING CONSULTANTS, INC.
  2. THE BORING LOG SOIL SYMBOLS REFLECT ONLY MAJOR CONSTITUENTS, FOR MORE COMPLETE SOIL CHARACTERISTICS REFER TO SOIL DESCRIPTIVE TEXT.
  3. N= BLOWS ON A 2 INCH OD SPLIT BARREL SAMPLING SPOON BY 140 LB. DRIVE-WEIGHT FALLING 30 INCHES INDICATING SUCCESSIVE 6 INCH INCREMENTS OF PENETRATION. IN LIEU OF BLOWS PER FOOT, PENETRATION LESS THAN 6 INCHES ARE INDICATED BY 50 BLOWS OVER THE NEAREST INCH.
  4. BORING AND SAMPLING CONFORM TO AASHTO DESIGNATIONS T-206, T-225 AND T-306.
  5. SOIL HAS BEEN CLASSIFIED VISUALLY BY THE DRILLER.
  6. THE INFORMATION PROVIDED IN THE BORING LOGS IS TRUE AND ACCURATE SOLELY FOR THE SPECIFIC LOCATIONS FOR WHICH BORINGS WERE DRILLED AND SOIL PROPERTIES WERE ANALYZED. THE BORING LOGS ARE PRESENTED FOR INFORMATIONAL PURPOSES ONLY.



NO.	REVISION	DATE	BY

MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION  
DIVISION OF TRANSPORTATION ENGINEERING  
GAITHERSBURG, MARYLAND

RECOMMENDED FOR APPROVAL

Chief, Design Section \_\_\_\_\_ Date \_\_\_\_\_

APPROVED

Chief, Division of Transportation Engineering \_\_\_\_\_ Date \_\_\_\_\_

Designed by: ZK Drawn by: NL Checked by: MM

REPLACEMENT OF BRIDGE NO. M-0056  
REDLAND ROAD OVER MILL CREEK

BORING LOGS AND DRIVE TEST

SCALE: 1" = 20'-0" DATE: AUGUST, 2023

Project No.: 509132 SHEET 10 of 26



09-00790642  
MIKE MCCULLOUGH &  
TRACY MCCULLOUGH  
L. 39305 F. 231  
BLOCK 6, LOT 10  
PLAT 7585

09-00789767  
ANTHONY P. DWYER &  
VIRGINIA L. DOWNES  
L. 6183 F. 436  
BLOCK 6, LOT 11  
PLAT 7585

09-00773170  
MARYLAND-NATIONAL CAPITAL  
PARK AND PLANNING COMMISSION  
L. 4074 F. 154

09-02064332  
MARYLAND-NATIONAL CAPITAL  
PARK AND PLANNING COMMISSION  
L. 5660 F. 297

09-00051588  
MARYLAND-NATIONAL CAPITAL  
PARK AND PLANNING COMMISSION  
L. 3096 F. 218

09-00117920  
MARYLAND-NATIONAL CAPITAL  
PARK & PLANNING COMMISSION  
L. 3296 F. 318

**ROADWAY LEGEND**

- FULL DEPTH
- FINE MILL AND RESURFACE
- REMOVAL
- GRASS SHOULDER
- PROPERTY LINE
- CURB AND GUTTER
- TRAFFIC BARRIER W-BEAM

**TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURE**

- 1 EA REDLAND ROAD - STA. 11+81, RT
- 1 EA REDLAND ROAD - STA. 12+36, RT
- 1 EA REDLAND ROAD - STA. 12+37, LT

**TRAFFIC BARRIER W-BEAM ONE-SIDED END TREATMENT (TYPE C)**

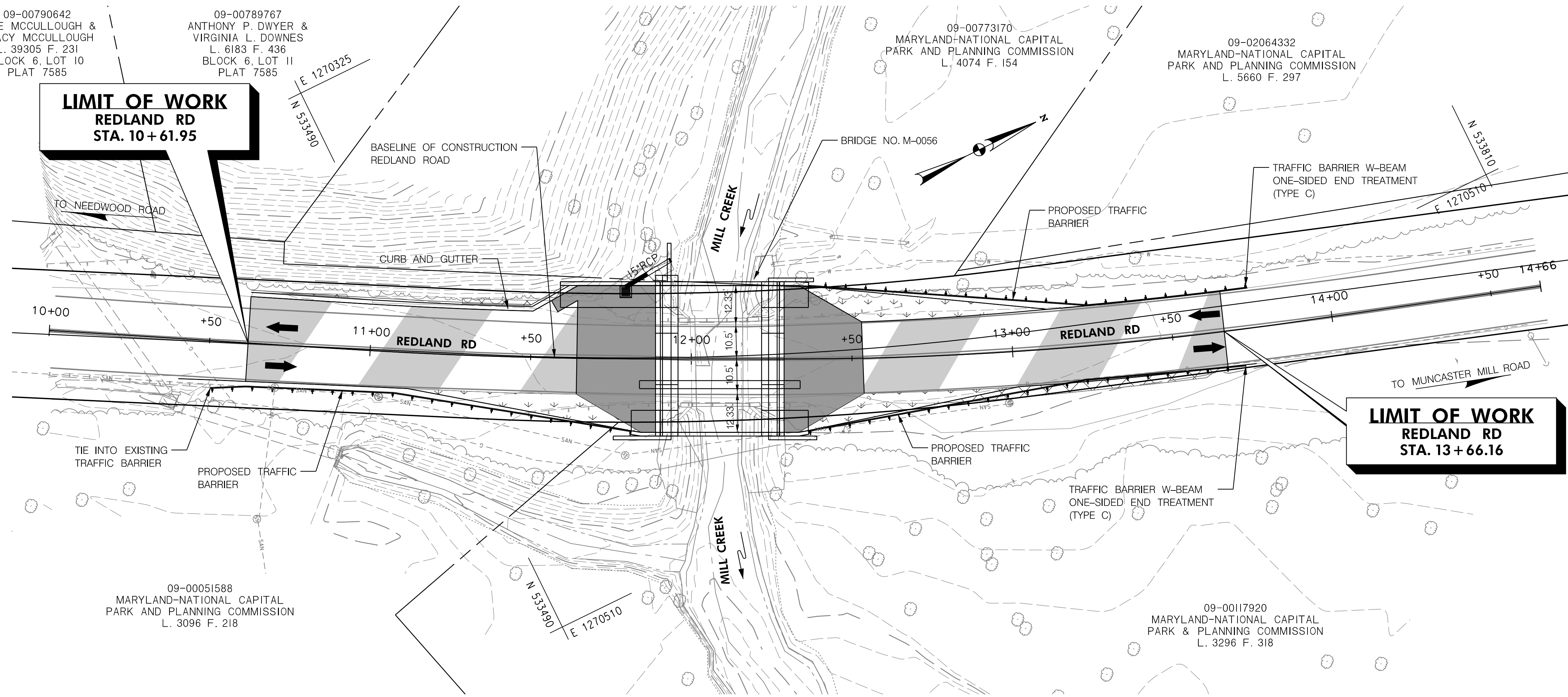
- 1 EA REDLAND ROAD - STA. 13+75, LT
- 1 EA REDLAND ROAD - STA. 13+72, RT

**TRAFFIC BARRIER W BEAM 8 FOOT POST**

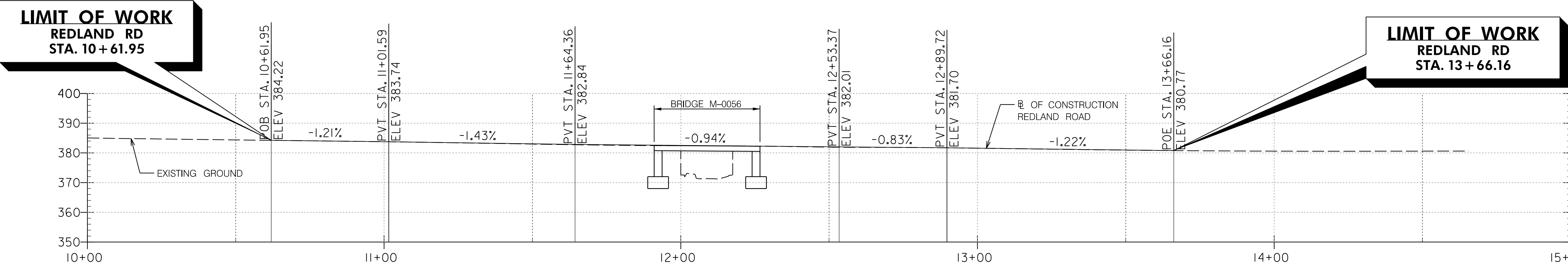
- 132 LF REDLAND ROAD - STA. 10+51 TO 11+81, RT
- 88 LF REDLAND ROAD - STA. 12+36 TO 13+22, RT
- 87 LF REDLAND ROAD - STA. 12+37 TO 13+25, LT

**TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH**

- 101 LF REDLAND ROAD - STA. 10+62 TO 11+64, LT



REDLAND ROAD PLAN  
SCALE: 1" = 20'



REDLAND ROAD PROFILE  
SCALE: H: 1" = 20'  
V: 1" = 20'

15 INCH REINFORCED CONCRETE PIPE, CLASS IV	
17	LF REDLAND ROAD - STA. 11+79 TO 11+94, LT
SINGLE WR INLET-MINIMUM DEPTH	
1	EA REDLAND ROAD - STA. 11+79, LT



NO.	REVISION	DATE	BY

MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION  
DIVISION OF TRANSPORTATION ENGINEERING  
GAITHERSBURG, MARYLAND

RECOMMENDED FOR APPROVAL

Chief, Design Section \_\_\_\_\_ Date \_\_\_\_\_  
APPROVED

Chief, Division of Transportation Engineering \_\_\_\_\_ Date \_\_\_\_\_

Designed by: EL Drawn by: EL Checked by: MM

REPLACEMENT OF BRIDGE NO. M-0056  
REDLAND ROAD OVER MILL CREEK

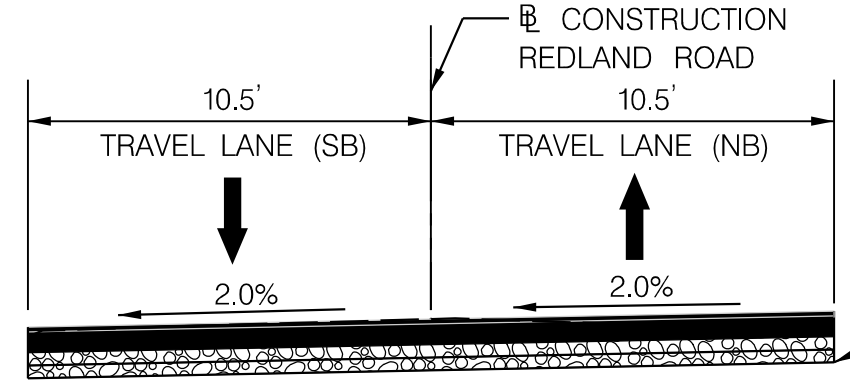
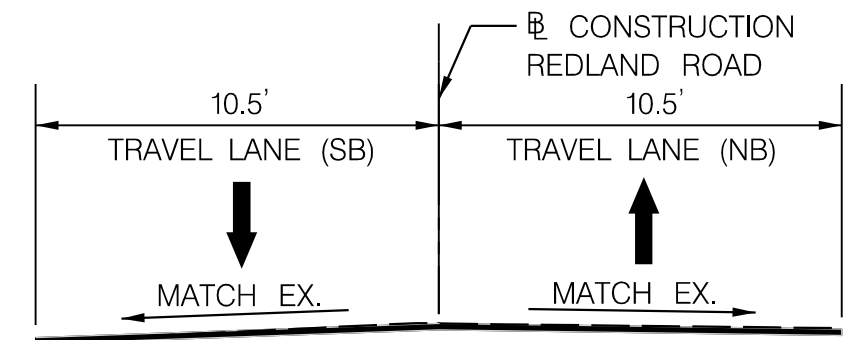
ROADWAY PLAN AND PROFILE

SCALE: 1" = 20' DATE: AUGUST, 2023

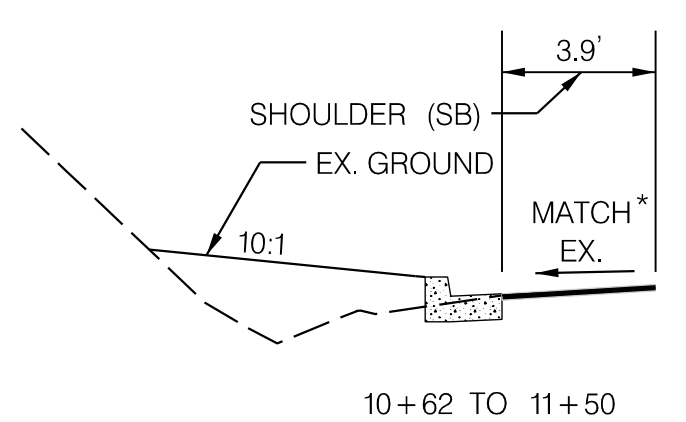
Project No.: 509132 SHEET 11 of 26

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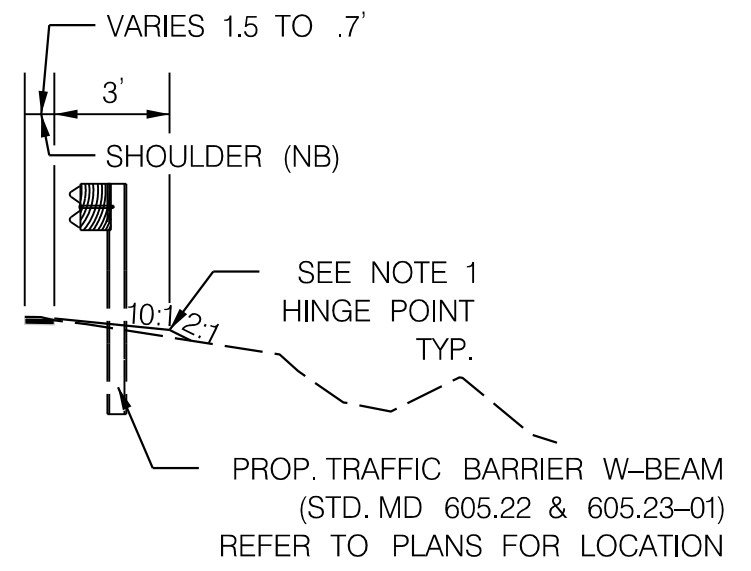
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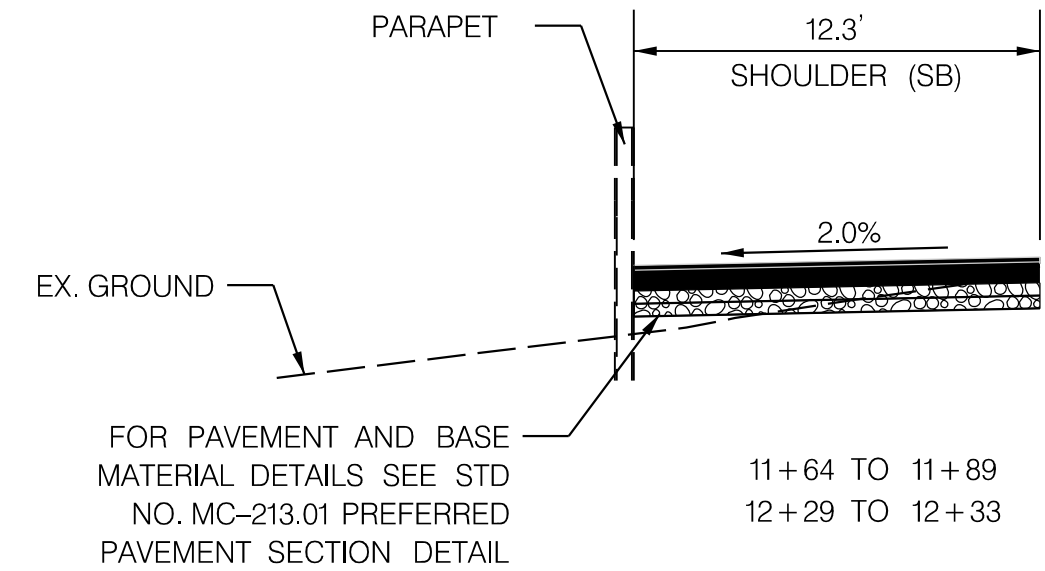
FOR PAVEMENT AND BASE MATERIAL DETAILS SEE STD NO. MC-213.01 PREFERRED PAVEMENT SECTION DETAIL



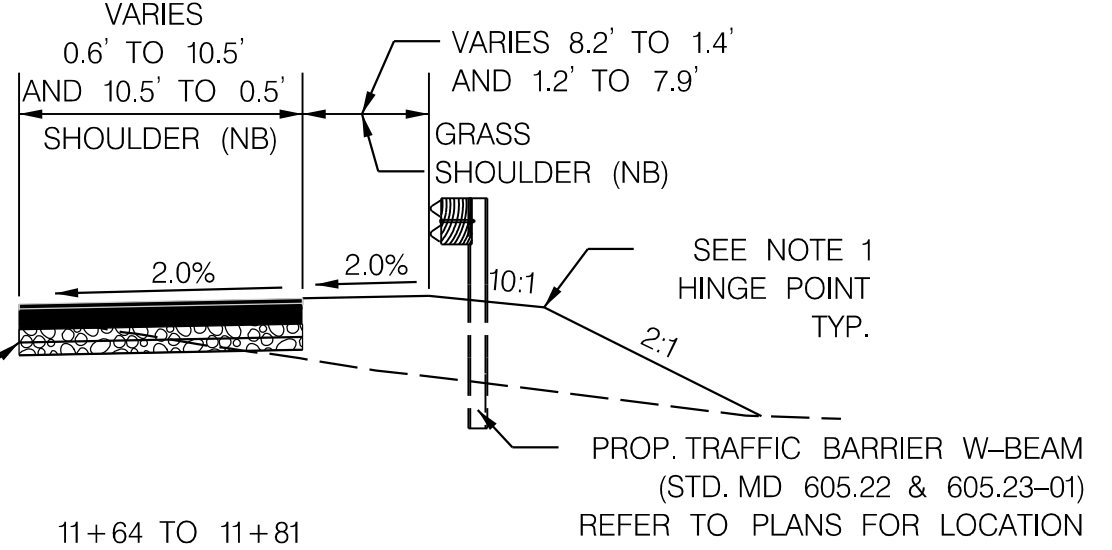
10+62 TO 11+50



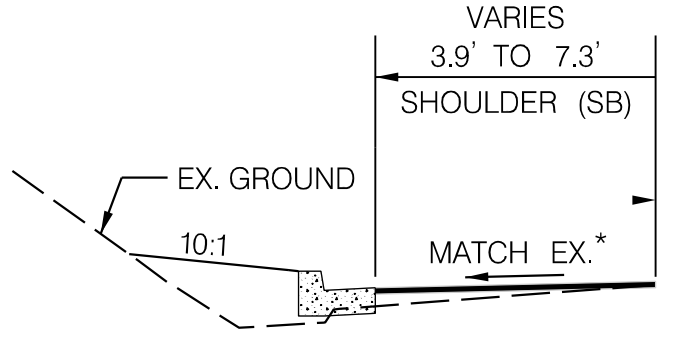
10+62 TO 11+12



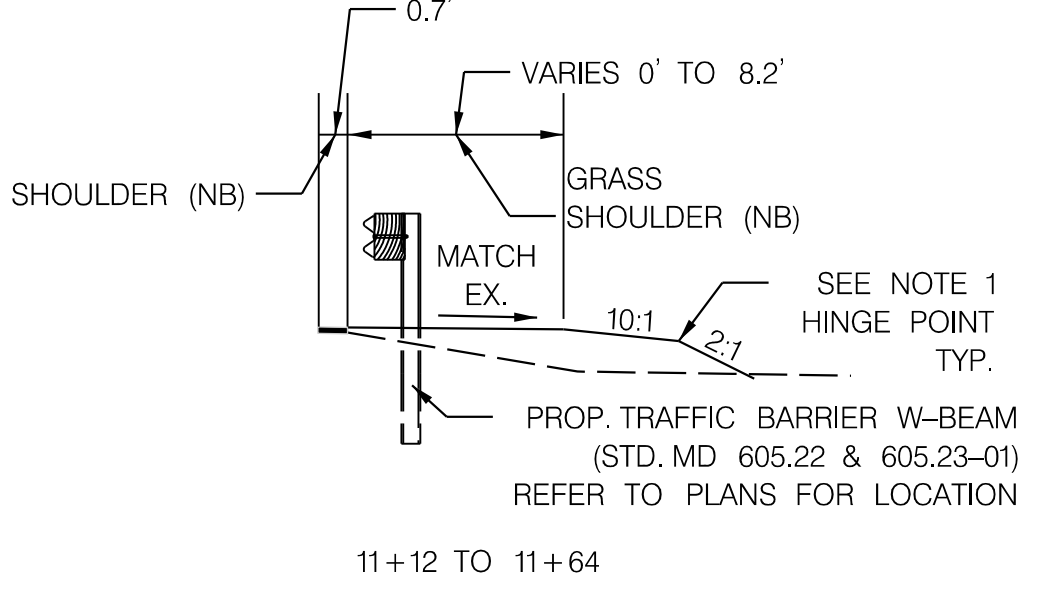
11+64 TO 11+89  
12+29 TO 12+33



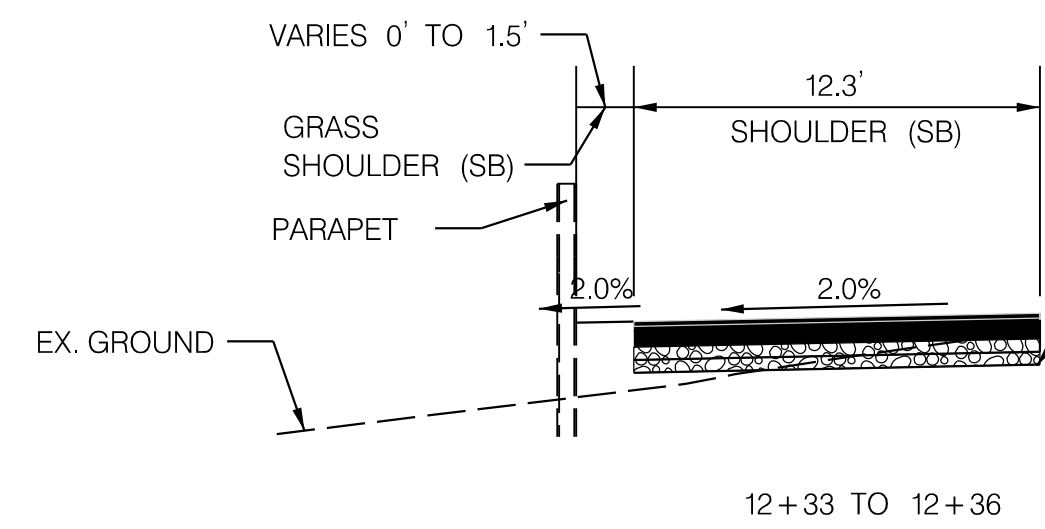
11+64 TO 11+81  
12+36 TO 12+53



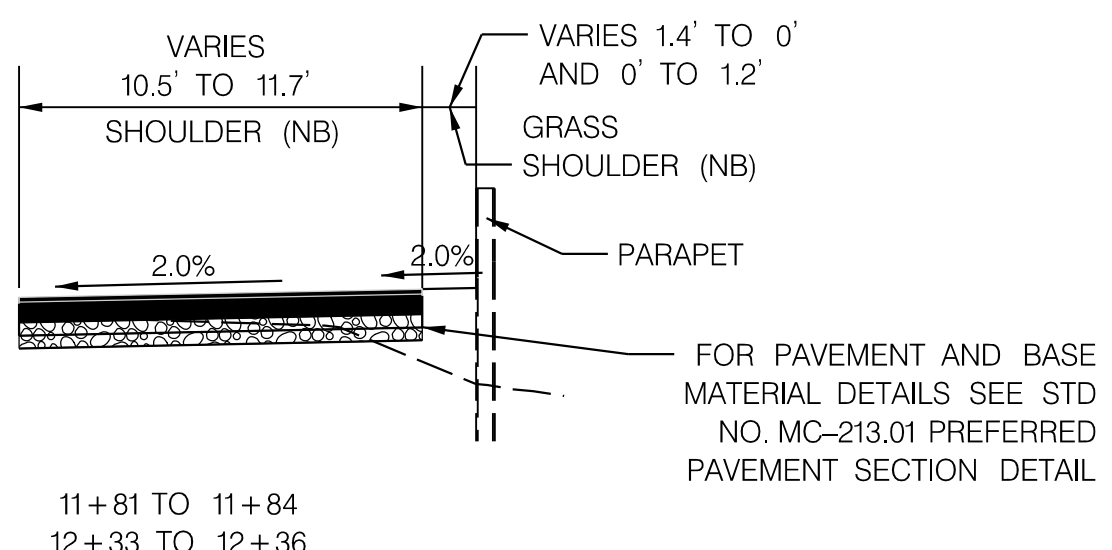
11+50 TO 11+56



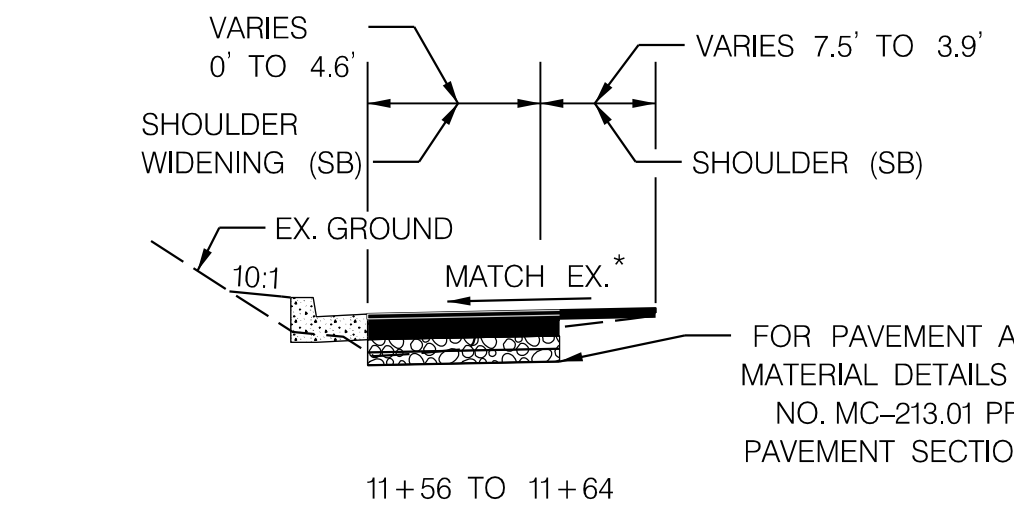
11+12 TO 11+64



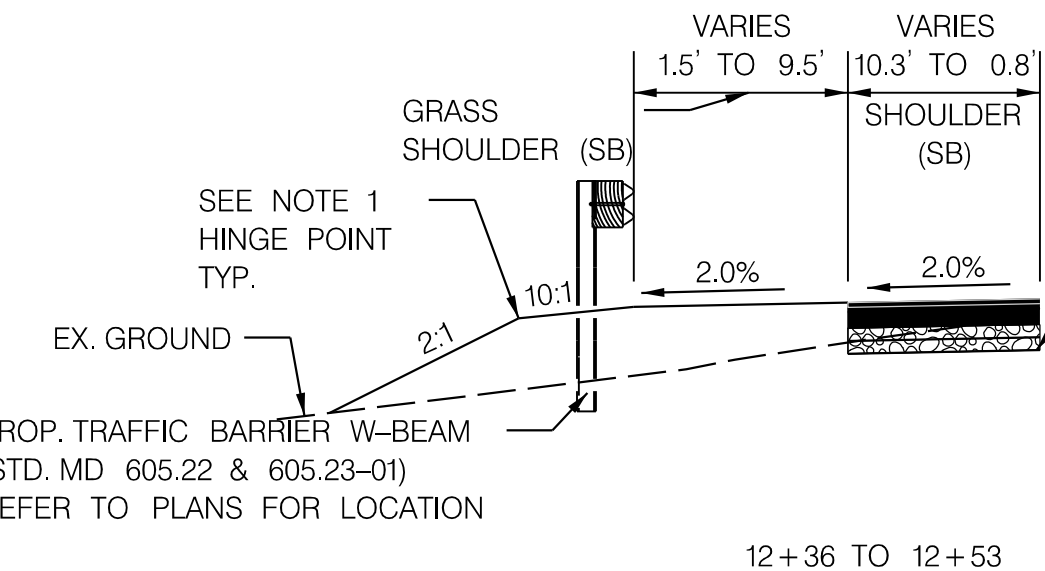
12+33 TO 12+36



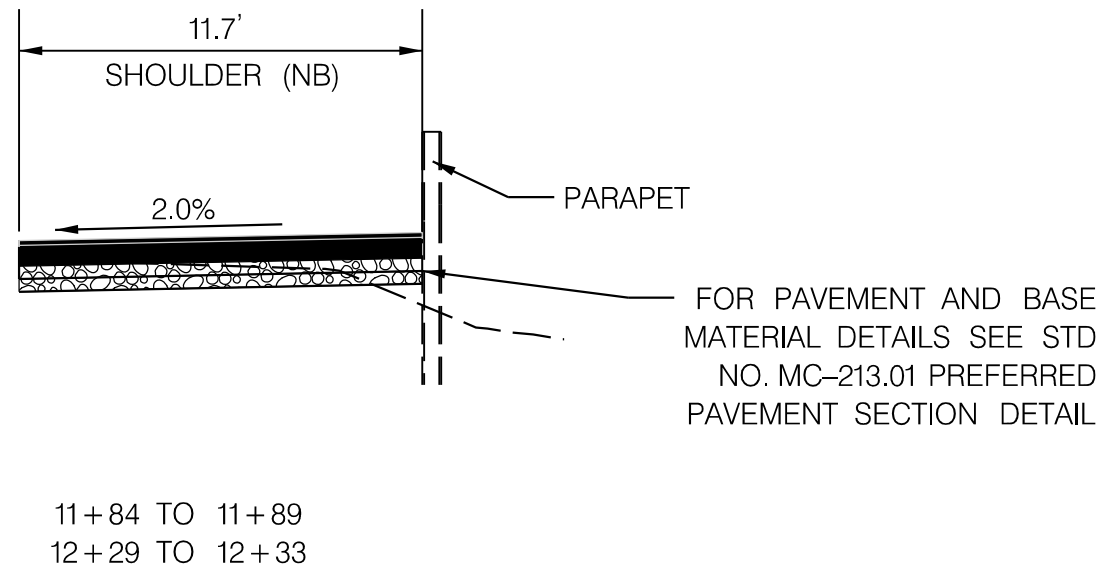
11+81 TO 11+84  
12+33 TO 12+36



11+56 TO 11+64



12+36 TO 12+53

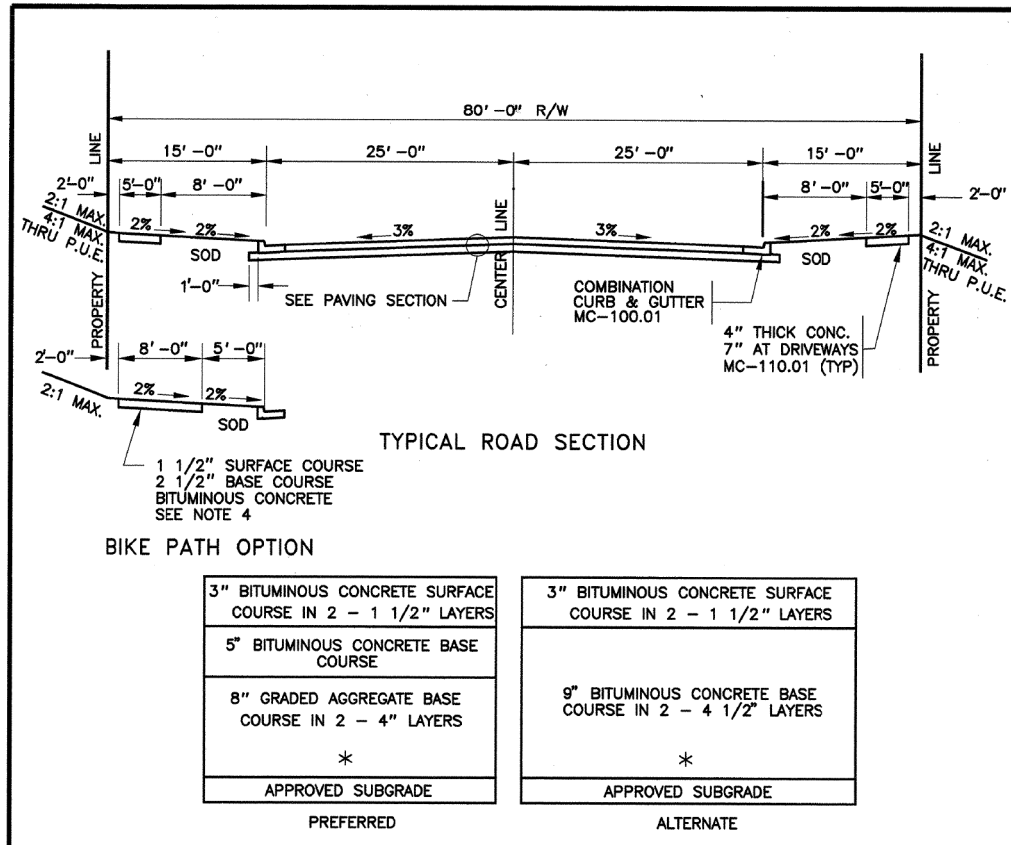


11+84 TO 11+89  
12+29 TO 12+33

\*SHOULDER CROSS SLOPE TO BE NO MORE THAN 10% MAX

MILL AND OVERLAY  
NORMAL TYPICAL SECTION  
10+62 TO 11+64  
SCALE 1" = 5'-0"

FULL DEPTH  
SUPERELEVATION SECTION  
11+64 TO 11+89  
12+29 TO 12+53  
SCALE 1" = 5'-0"



- \* SUBGRADE DRAINS REQUIRED SEE MC-925.01
- GENERAL NOTES
- REFER TO MARYLAND STATE HIGHWAY ADMINISTRATION SPECIFICATIONS FOR MATERIALS AND METHODS OF CONSTRUCTION.
  - SEE STANDARD NO. MC-811.01 - METHODS OF GRADING SIDE SLOPES.
  - TOP OF CURB ELEVATION = CENTERLINE ELEVATION - 0.34' (FOR 6" CURB HEIGHT).
  - BIKE PATH WILL BE REQUIRED ONLY IF SPECIFIED IN MASTER PLAN.
  - WHEN A TRAFFIC BARRIER IS WARRANTED INCREASE THE RIGHT OF WAY TO ALLOW THE TRAFFIC BARRIER TO BE PLACED OUTSIDE OF THE SIDEWALK.

APPROVED	JAN 5/96	DATE	
MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION		ARTERIAL ROAD	
STANDARD NO. MC-213.01			

NOTES:

- FULL DEPTH SAWCUT WILL NOT BE MEASURED BUT WILL BE INCIDENTAL TO CLASS I EXCAVATION PAY ITEM.



NO.	REVISION	DATE	BY

MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION  
DIVISION OF TRANSPORTATION ENGINEERING  
GAITHERSBURG, MARYLAND

RECOMMENDED FOR APPROVAL	
Chief, Design Section	Date
APPROVED	
Chief, Division of Transportation Engineering	Date
Designed by: EL	Drawn by: EL
Checked by: MMW	

REPLACEMENT OF BRIDGE NO. M-0056  
REDLAND ROAD OVER MILL CREEK

ROADWAY TYPICAL SECTIONS

SCALE : 1" = 5'-0"      DATE : AUGUST, 2023  
Project No. : 509132      SHEET 12 of 26



8/3/2023  
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**GENERAL NOTES:**

1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH MCDOT'S MONTGOMERY COUNTY WORK ZONE TRAFFIC CONTROL STANDARDS BOOK (JULY 2012), THE 2011 EDITION OF THE MD MUTCD, AND THIS PLAN.
2. NO WORK IS TO BEGIN UNTIL ALL ADVANCE WARNING SIGNS AND BARRIERS ARE IN PLACE AND OPERATIONAL.
3. PORTABLE VARIABLE MESSAGE SIGN(S) MESSAGES MAY BE MODIFIED AS DIRECTED BY THE ENGINEER. ALL PROPOSED PVMS SHALL BE PLACED ACCORDING TO TCP-100.02.
4. ALL DETOUR SIGNS SHALL BE FULLY COVERED WITH AN OPAQUE BLACK MATERIAL WHEN DETOUR IS NOT IN USE, AS APPROVED BY THE ENGINEER.
5. ALL STANDARD REGULATORY AND WARNING SIGNS USED FOR MAINTENANCE OF TRAFFIC SHALL CONFORM TO THE MARYLAND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MD MUTCD 2011) AS WELL AS THE MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION'S STANDARD SIGN BOOK - STANDARD SIGNS - 2009 REVISION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FOLLOWING THE LATEST EDITIONS AND SUPPLEMENTS.
6. ALL REGULATORY SIGNING IN PLACE PRIOR TO CONSTRUCTION SHALL BE MAINTAINED OPERATIONAL THROUGHOUT THE DURATION OF CONSTRUCTION.
7. INGRESS AND EGRESS TO ADJACENT PRIVATE PROPERTIES SHALL BE MAINTAINED AT ALL TIMES.
8. A CERTIFIED TRAFFIC CONTROL MANAGER SHALL BE AVAILABLE ON SITE AT ALL TIMES DURING CONSTRUCTION ACTIVITIES.

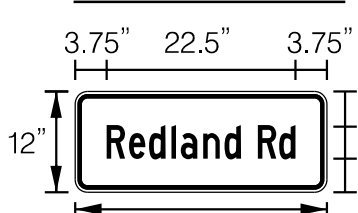
**DETOUR PLAN NOTES:**

1. THE SIGNS DEPICTED ALONG THE DETOUR ROUTE HAVE BEEN PLACED IN APPROXIMATE LOCATIONS. PRIOR TO PLACING SIGNS IN THE FIELD, THE CONTRACTOR SHALL MEET WITH THE ENGINEER AND DETERMINE THE EXACT LOCATION FOR SIGN PLACEMENT.
  2. PVMS PLACEMENT AND MESSAGE MUST BE APPROVED BY THE FOLLOWING:  
 MCDOT DIVISION OF TRAFFIC ENGINEER AND OPERATIONS: PVMS PLACED ON AIRPARK ROAD, MIDCOUNTY HIGHWAY, SHADY GROVE ROAD, REDLAND ROAD, AND CRABBS BRANCH WAY.  
 DISTRICT 3 TRAFFIC: PVMS PLACED ON MD 115 (MUNCASTER MILL ROAD).
  3. THE CONTRACTOR SHALL NOTIFY COUNTY AND CITY EMERGENCY SERVICES, COUNTY OFFICE OF HIGHWAY OPERATIONS, AND THE COUNTY DIVISION OF FIRE AND RESCUE SERVICES 72 HOURS PRIOR TO IMPLEMENTING THIS PLAN. THE COUNTY WILL ISSUE A PRESS RELEASE TO THE MEDIA, EMS, AND THE GENERAL PUBLIC.
- A. MONTGOMERY COUNTY, DIVISION OF TRAFFIC AND ENGINEERING OPERATIONS: 240-777-8778  
 B. MONTGOMERY COUNTY TRANSPORTATION SYSTEMS ENGINEERING TEAM MANAGER: 240-777-8778  
 C. MONTGOMERY COUNTY TRANSIT: 240-777-5800  
 D. MONTGOMERY COUNTY PUBLIC SCHOOLS, LOCAL DEPOT MANAGER: 240-740-6210  
 E. MONTGOMERY COUNTY FIRE & RESCUE, LOCAL FIRE DEPARTMENT CAPTAIN: 240-773-4728  
 F. MONTGOMERY COUNTY DEPARTMENT OF PERMITTING SERVICES, PERMIT INSPECTION SECTION: 240-777-6300  
 G. MONTGOMERY COUNTY EMERGENCY OPERATIONS CENTER: 311  
 H. REGIONAL SERVICE CENTER (RSC), DIRECTOR: LUISA CARDONA, 240-777-8101  
 I. ASSISTANT DISTRICT ENGINEER-TRAFFIC, MDT STATE HIGHWAY ADMINISTRATION:  
 a. DISTRICT 3: JOSEPH MOGES, 301-513-7472

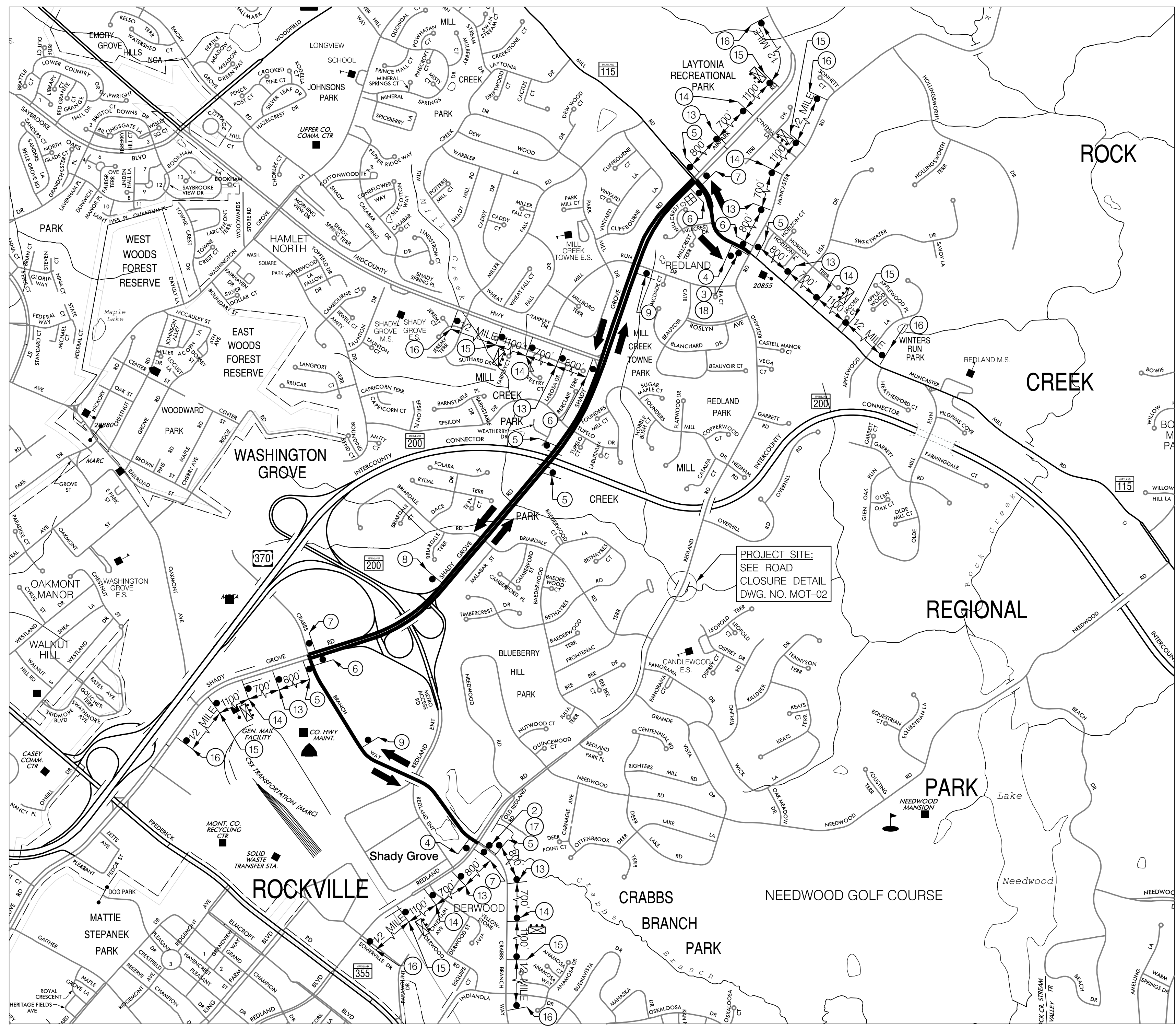
**DETOUR PLAN SIGN LEGEND**

1		R11-2 48" x 30" (10 SF) BLACK/WHITE	10		W20-3 48" x 48" (16 SF) BLACK/ORANGE	14		W20-2 48" x 48" (16 SF) BLACK/ORANGE
2		M4-10(L) 48" x 18" (6 SF) BLACK/ORANGE			M4-9(1) 30" x 12" (2.5 SF) BLACK/WHITE			M4-9(1) 30" x 12" (2.5 SF) BLACK/WHITE
3		M4-10(R) 48" x 18" (6 SF) BLACK/ORANGE			W20-3 48" x 48" (16 SF) BLACK/ORANGE			W20-3 48" x 48" (16 SF) BLACK/ORANGE
4		M4-8a(1) 36" x 24" (6 SF) BLACK/ORANGE			M4-9(1) 30" x 12" (2.5 SF) BLACK/WHITE			M4-9(1) 30" x 12" (2.5 SF) BLACK/WHITE
5		M4-9(1) 30" x 12" (2.5 SF) BLACK/WHITE			M4-9(1) 30" x 12" (2.5 SF) BLACK/WHITE			R11-3a 60" x 30" (12.5 SF) WHITE/BLACK
6		M4-9(1) 30" x 24" (5 SF) BLACK/WHITE			M4-9(1) 30" x 12" (2.5 SF) BLACK/WHITE			R11-3a 60" x 30" (12.5 SF) WHITE/BLACK
7		M4-9(1) 30" x 24" (5 SF) BLACK/WHITE			M4-9(1) 30" x 12" (2.5 SF) BLACK/WHITE			
8		M4-9(1) 30" x 12" (2.5 SF) BLACK/WHITE			M4-9(1) 30" x 24" (5 SF) BLACK/WHITE			
9		M4-9(1) 30" x 12" (2.5 SF) BLACK/WHITE			M4-9(1) 30" x 24" (5 SF) BLACK/WHITE			

**SIGN DETAIL**



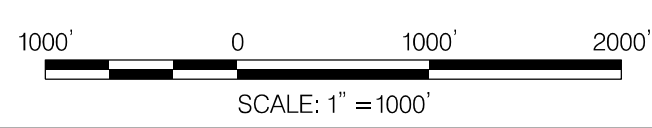
MT-01



**PVMS MESSAGE:**

PHASE I REDLAND ROAD CLOSED	PHASE I REDLAND ROAD CLOSED
PHASE II ON OR ABOUT XX-XX	PHASE II FOLLOW DETOUR
*PRIOR CONSTRUCTION	*DURING CONSTRUCTION

NO.	REVISION	DATE	BY



**MOT LEGEND**

	DETOUR ROUTE
	TEMPORARY TRAFFIC SIGN
	PVMS
	DIRECTION OF TRAFFIC



MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION  
 DIVISION OF TRANSPORTATION ENGINEERING  
 GAITHERSBURG, MARYLAND

RECOMMENDED FOR APPROVAL

Chief, Design Section \_\_\_\_\_ Date \_\_\_\_\_

APPROVED

Chief, Division of Transportation Engineering \_\_\_\_\_ Date \_\_\_\_\_

Designed by: EL Drawn by: EL Checked by: MM

REPLACEMENT OF BRIDGE NO. M-0056  
 REDLAND ROAD OVER MILL CREEK

DETOUR PLAN

SCALE: 1" = 1000' DATE: AUGUST, 2023

Project No.: 509132 SHEET 13 of 26



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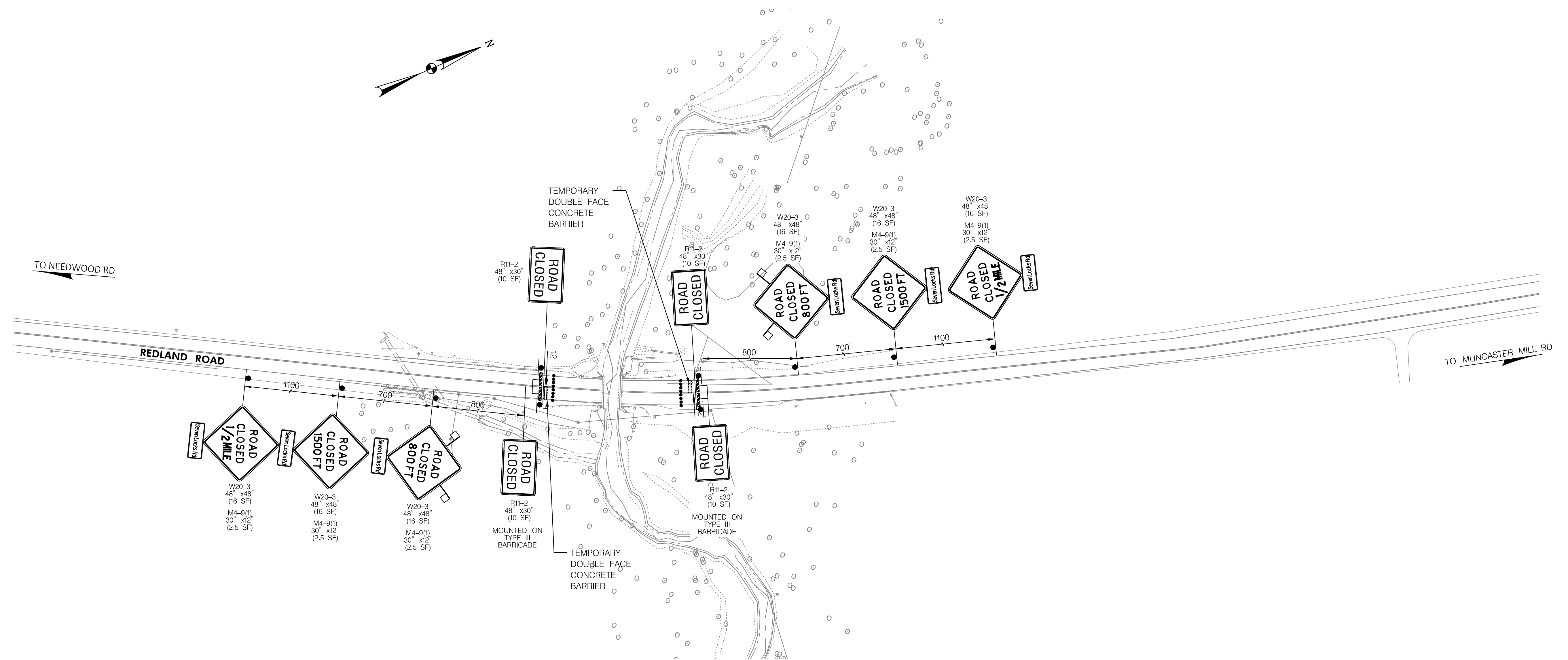


**MOT LEGEND**

	TYPE III BARRICADE
	TEMPORARY TRAFFIC SIGN
	DRUM
	TEMPORARY DOUBLE FACE CONCRETE BARRIER



NO.	REVISION	DATE	BY



MT-02

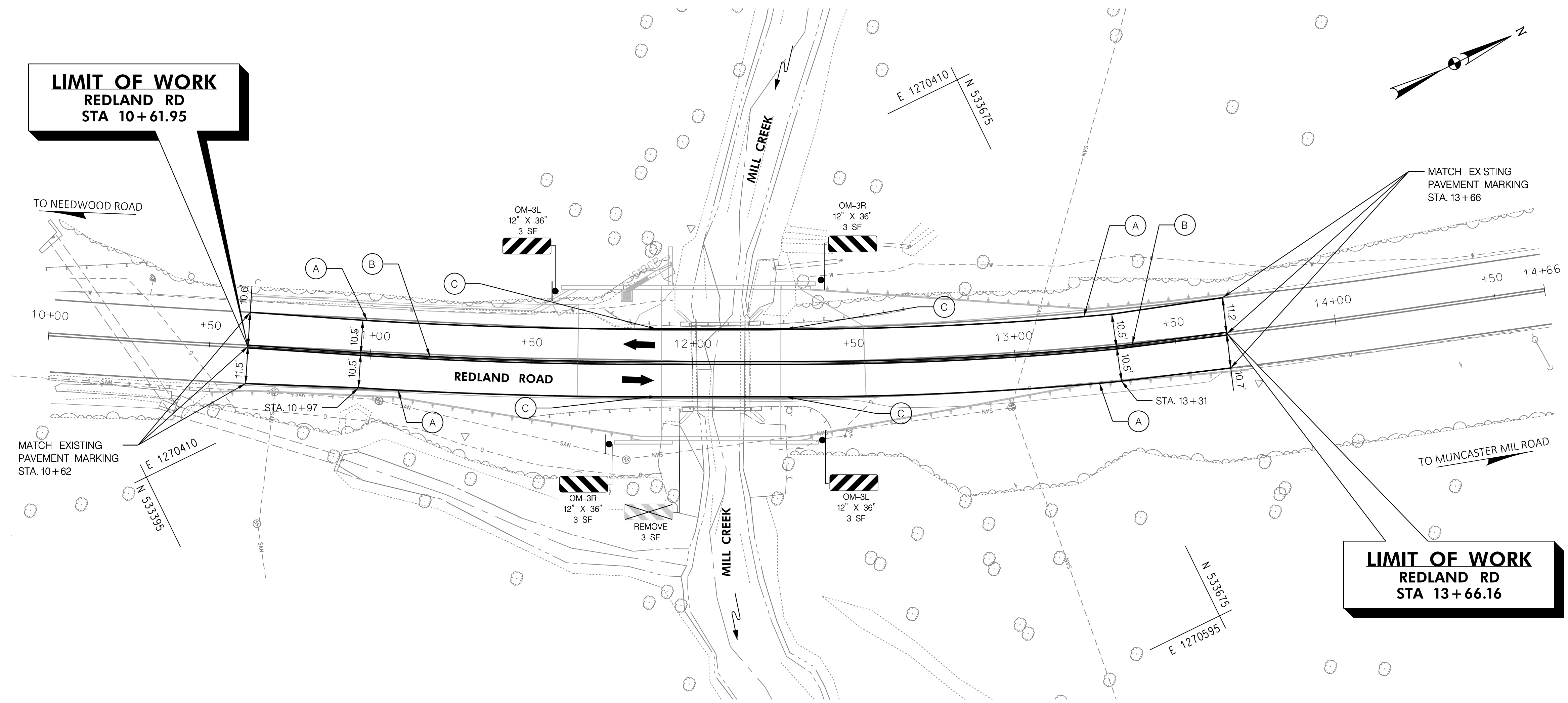
MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION DIVISION OF TRANSPORTATION ENGINEERING GAITHERSBURG, MARYLAND	
RECOMMENDED FOR APPROVAL	
Chief, Design Section	Date
APPROVED	
Chief, Division of Transportation Engineering	Date
Designed by : <u>EL</u>	Drawn by : <u>EL</u> Checked by : <u>MM</u>

REPLACEMENT OF BRIDGE NO. M-0056  
REDLAND ROAD OVER MILL CREEK

ROAD CLOSURE DETAIL

SCALE : 1" = 50'      DATE : AUGUST, 2023

Project No. : 509132      SHEET 14 of 26



**GENERAL NOTES**

1. ALL PAVEMENT MARKINGS SHALL BE INSTALLED IN ACCORDANCE WITH MDOT SHA STANDARDS.
2. PAVEMENT MARKING LANE WIDTHS ARE MEASURED FROM THE CENTER OF PAVEMENT MARKING TO CENTER OF PAVEMENT MARKING.
3. ALL EXISTING PAVEMENT MARKINGS SHALL REMAIN UNLESS NOTED ON THE PLAN.
4. ALL MATERIALS REMOVED BY THE CONTRACTOR SHALL BECOME PROPERTY OF THE CONTRACTOR UPON COMPLETION OF THE WORK.
5. PAVEMENT MARKINGS SHALL BE INSTALLED PER THIS PLAN ONCE THE FINAL ROADWAY COURSE IS COMPLETE UNLESS NOTED OTHERWISE.

**SIGNING AND PAVEMENT MARKING LEGEND**

- Ⓐ 5 INCH WHITE THERMOPLASTIC PAVEMENT MARKING (SOLID)
- Ⓑ 5 INCH YELLOW THERMOPLASTIC PAVEMENT MARKING (DOUBLE SOLID)
- Ⓒ 5 INCH WHITE CONTRAST PAVEMENT MARKING TAPE (SOLID)
- Ⓓ 5 INCH YELLOW CONTRAST PAVEMENT MARKING TAPE (DOUBLE SOLID)



NO.	REVISION	DATE	BY

MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION  
DIVISION OF TRANSPORTATION ENGINEERING  
GAITHERSBURG, MARYLAND

RECOMMENDED FOR APPROVAL

Chief, Design Section \_\_\_\_\_ Date \_\_\_\_\_  
APPROVED

Chief, Division of Transportation Engineering \_\_\_\_\_ Date \_\_\_\_\_

Designed by : EL Drawn by : EL Checked by : MM

REPLACEMENT OF BRIDGE NO. M-0056  
REDLAND ROAD OVER MILL CREEK

SIGNING AND MARKING PLAN

SCALE : 1" = 20' DATE : AUGUST, 2023

Project No. : 509132 SHEET 15 of 26





**SEQUENCE OF CONSTRUCTION:**

- I. PRIOR TO CLEARING TREES, INSTALLING SEDIMENT CONTROL MEASURES, OR GRADING, A PRECONSTRUCTION MEETING MUST BE CONDUCTED ON-SITE WITH THE MONTGOMERY COUNTY DEPARTMENT OF PERMITTING SERVICES (MCDPS) SEDIMENT CONTROL INSPECTOR (240) 777-0311 (48 HOURS NOTICE) AND THE MNCPPC, PLANNING DEPARTMENT, PLANS ENFORCEMENT INSPECTOR (301) 495-4550 (48 HOURS NOTICE), THE OWNERS REPRESENTATIVE, AND THE SITE ENGINEER. IN ORDER FOR THE MEETING TO OCCUR, THE APPLICANT MUST PROVIDE ONE PAPER SET OF APPROVED SEDIMENT CONTROL PLANS TO MCDPS SEDIMENT CONTROL INSPECTOR AT THE PRECONSTRUCTION MEETING. IF NO PLANS ARE PROVIDED, THE MEETING SHALL NOT OCCUR AND WILL NEED TO BE RESCHEDULED PRIOR TO COMMENCING ANY WORK.
2. THE LIMITS OF DISTURBANCE MUST BE FIELD MARKED PRIOR TO CLEARING OF TREES, INSTALLATION OF SEDIMENT CONTROL MEASURES, CONSTRUCTION, OR OTHER LAND DISTURBING ACTIVITIES.
3. THE PERMITTEE MUST OBTAIN WRITTEN APPROVAL FROM THE MNCPPC INSPECTOR, CERTIFYING THAT THE LIMITS OF DISTURBANCE AND TREE PROTECTION MEASURES ARE CORRECTLY MARKED AND INSTALLED PRIOR TO COMMENCING ANY CLEARING.
4. CLEAR AND GRADE FOR INSTALLATION OF SEDIMENT CONTROL DEVICES.
5. INSTALL SEDIMENT CONTROL DEVICES. TRAPS AND BASINS SHALL BE CONSTRUCTED PRIOR TO CONSTRUCTION OF ANY EARTH DIKES THAT CONVEY DRAINAGE TO A TRAP AND/OR BASIN.
6. ONCE THE SEDIMENT CONTROL DEVICES ARE INSTALLED, THE PERMITTEE MUST OBTAIN WRITTEN APPROVAL FROM THE MCDPS INSPECTOR AND MNCPPC BEFORE PROCEEDING WITH ANY ADDITIONAL CLEARING, GRUBBING OR GRADING.
7. ESTABLISH STREAM DIVERSION.
8. REMOVE EXISTING BRIDGE AND RELOCATE UTILITIES.
9. CONSTRUCT NEW BRIDGE.
10. PERFORM STREAM RESTORATION STARTING FROM THE UPSTREAM END OF MILL CREEK AND WORKING DOWNSTREAM. RELOCATE THE STREAM DIVERSION PUMP AROUND PRACTICE TO THE MINIMUM AREA NEEDED TO PERFORM WORK.
- II. ALL SEDIMENT CONTROL DEVICES SHALL REMAIN IN PLACE UNTIL THE CONSTRUCTION AREA IS STABILIZED INCLUDING VEGETATIVE ESTABLISHMENT. UPON STABILIZATION OF THE SITE AND WITH WRITTEN APPROVAL FROM THE MCDPS INSPECTOR, REMOVE SEDIMENT CONTROL MEASURES AND STABILIZE THOSE AREAS DISTURBED BY THE DEVICES.



NO.	REVISION	DATE	BY

MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION  
DIVISION OF TRANSPORTATION ENGINEERING  
GAITHERSBURG, MARYLAND

RECOMMENDED FOR APPROVAL

Chief, Design Section \_\_\_\_\_ Date \_\_\_\_\_  
APPROVED

Chief, Division of Transportation Engineering \_\_\_\_\_ Date \_\_\_\_\_

Designed by :   KW   Drawn by :   KW   Checked by :   MM  

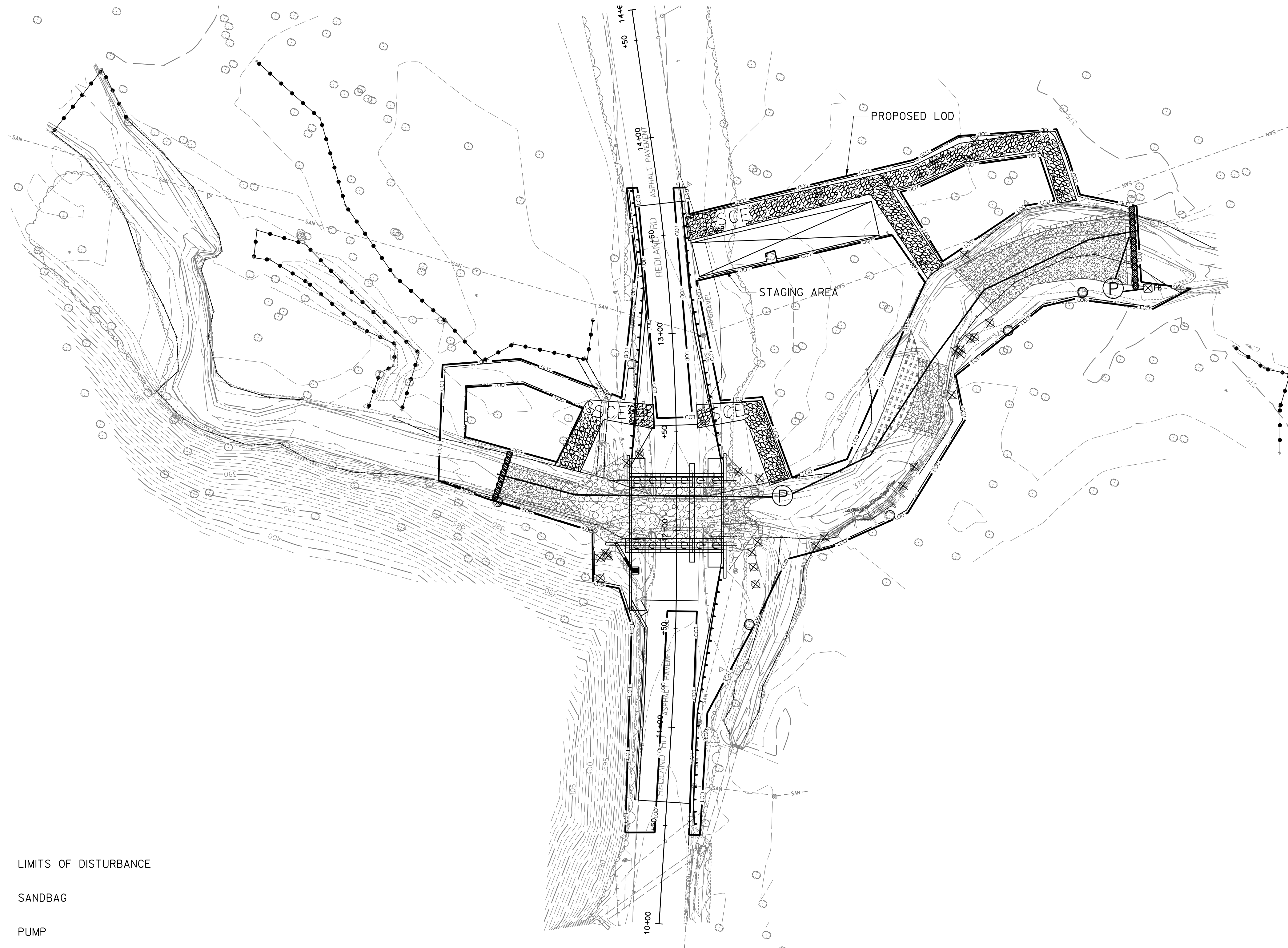
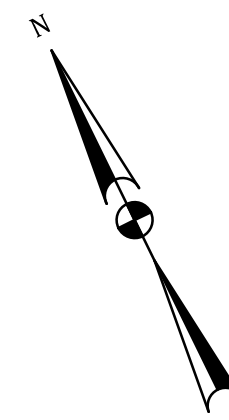
REPLACEMENT OF BRIDGE NO. M-0056  
REDLAND ROAD OVER MILL CREEK

SEQUENCE OF CONSTRUCTION







SCALE : NONE DATE : AUGUST, 2023

Project No. : 509132 SHEET 17 of 26

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**LEGEND:**

-  LIMITS OF DISTURBANCE
-  SANDBAG
-  PUMP
-  FILTER BAG
-  STABILIZED CONSTRUCTION ENTRANCE
-  TREE REMOVAL

PLAN  
 SCALE: 1" = 30'



NO.	REVISION	DATE	BY

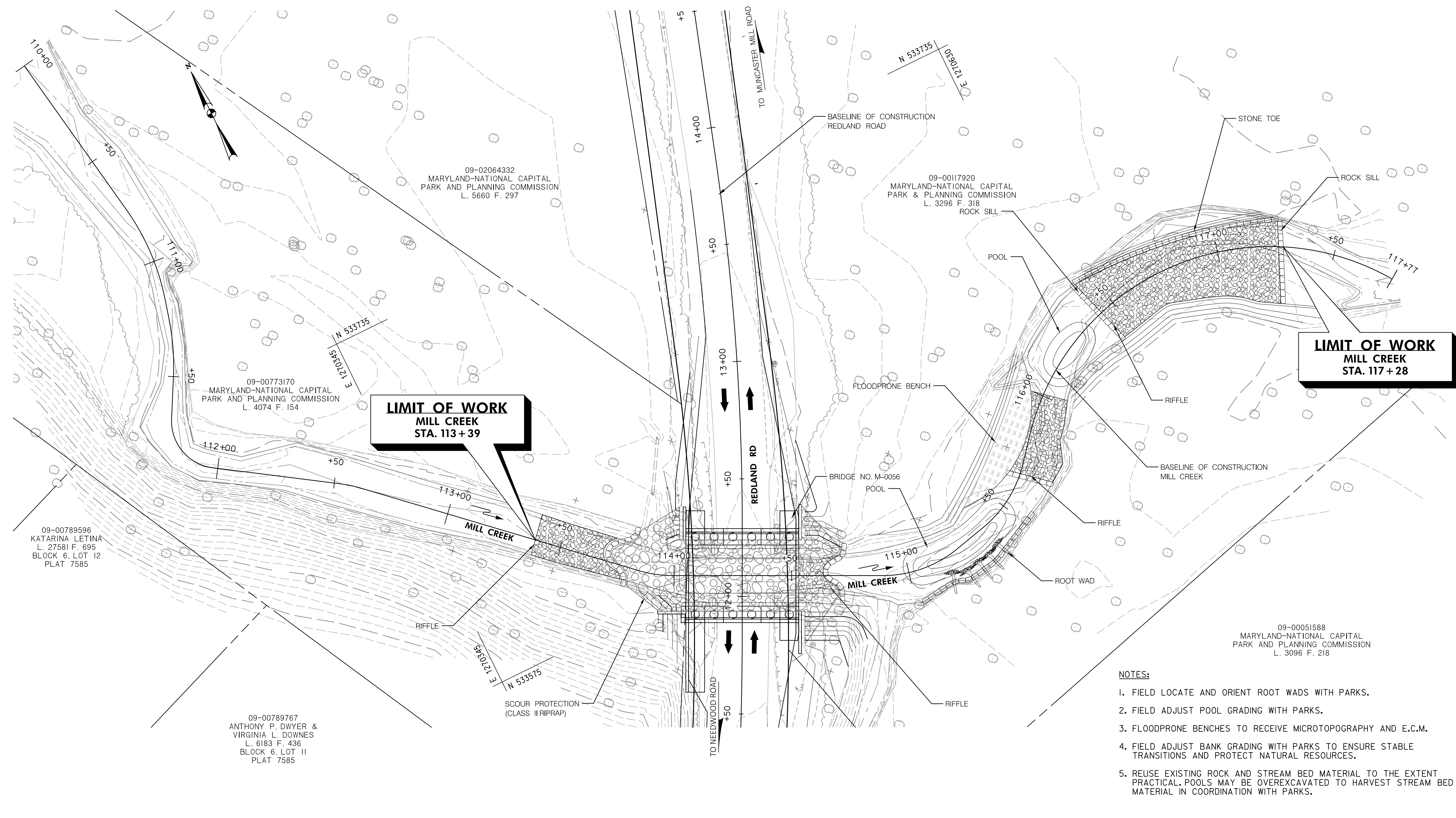
MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION DIVISION OF TRANSPORTATION ENGINEERING GAITHERSBURG, MARYLAND	
RECOMMENDED FOR APPROVAL	
Chief, Design Section APPROVED	Date
Chief, Division of Transportation Engineering	Date
Designed by : <u>KW</u>	Drawn by : <u>NM</u> Checked by : <u>MWM</u>

**REPLACEMENT OF BRIDGE NO. M-0056  
 REDLAND ROAD OVER MILL CREEK  
 EROSION AND SEDIMENT  
 CONTROL PLAN**

SCALE : 1" = 30'      DATE : AUGUST, 2023  
 Project No. : 509132      SHEET 18 of 26



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- NOTES:**
1. FIELD LOCATE AND ORIENT ROOT WADS WITH PARKS.
  2. FIELD ADJUST POOL GRADING WITH PARKS.
  3. FLOODPRONE BENCHES TO RECEIVE MICROTOPOGRAPHY AND E.C.M.
  4. FIELD ADJUST BANK GRADING WITH PARKS TO ENSURE STABLE TRANSITIONS AND PROTECT NATURAL RESOURCES.
  5. REUSE EXISTING ROCK AND STREAM BED MATERIAL TO THE EXTENT PRACTICAL. POOLS MAY BE OVEREXCAVATED TO HARVEST STREAM BED MATERIAL IN COORDINATION WITH PARKS.



NO.	REVISION	DATE	BY

MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION DIVISION OF TRANSPORTATION ENGINEERING GAITHERSBURG, MARYLAND	
RECOMMENDED FOR APPROVAL	
Chief, Design Section	Date
APPROVED	
Chief, Division of Transportation Engineering	Date
Designed by : EL	Drawn by : EL
Checked by : MM	

REPLACEMENT OF BRIDGE NO. M-0056  
REDLAND ROAD OVER MILL CREEK

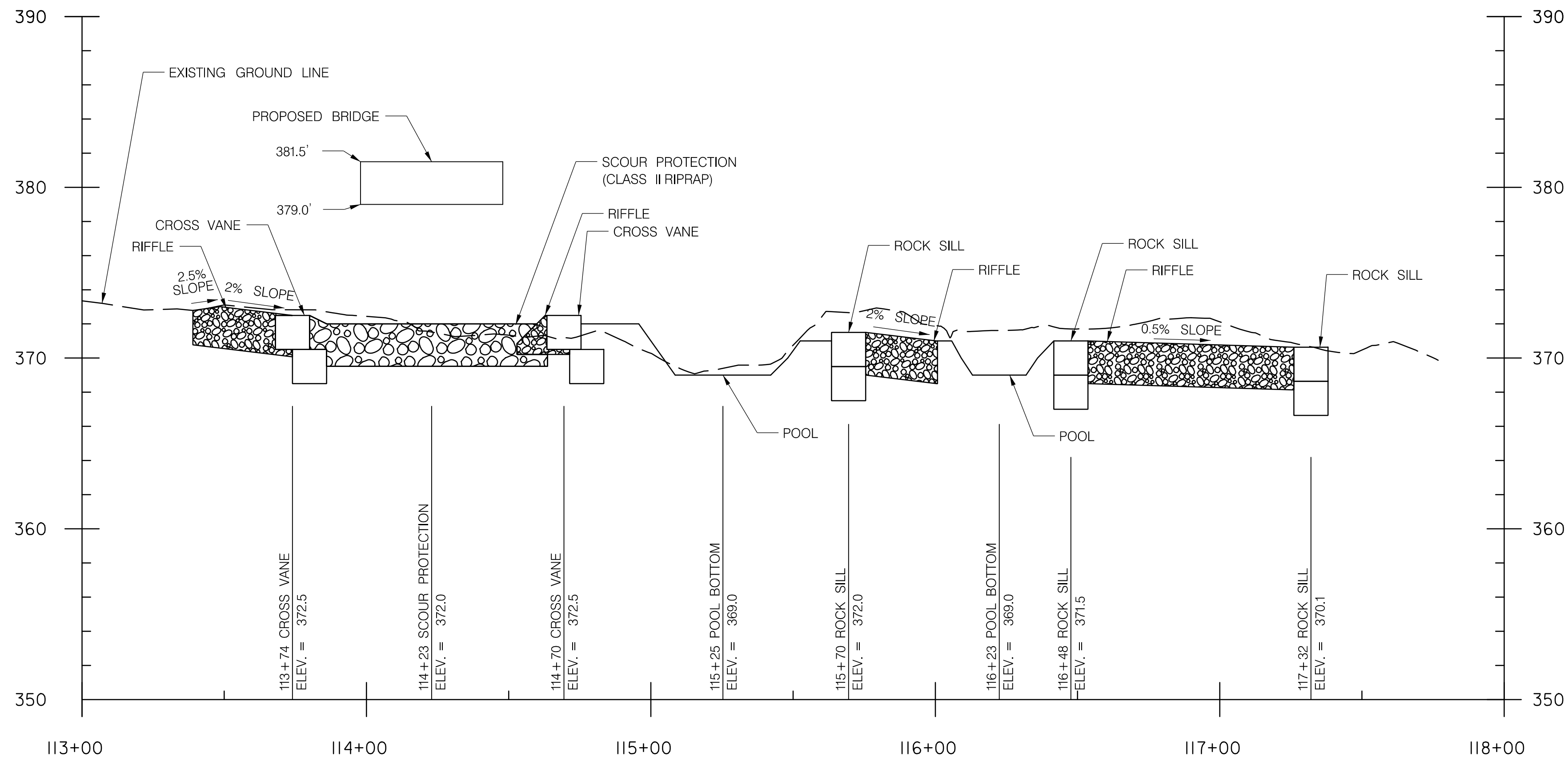
STREAM RESTORATION PLAN

SCALE : 1" = 20'

DATE : AUGUST, 2023

Project No. : 509132

SHEET 19 of 26



STREAM PROFILE  
 SCALE: H: 1" = 30'-0"  
 V: 1" = 5'-0"

- NOTES:
1. ROOTWADS AND AQUATIC HABITAT NOT SHOWN FOR CLARITY.
  2. FIELD ADJUST POOL GRADING WITH M-NCPPC.

MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION DIVISION OF TRANSPORTATION ENGINEERING GAITHERSBURG, MARYLAND	
RECOMMENDED FOR APPROVAL	
Chief, Design Section	Date
APPROVED	
Chief, Division of Transportation Engineering	Date
Designed by : <u>EL</u>	Drawn by : <u>EL</u> Checked by : <u>KW</u>

REPLACEMENT OF BRIDGE NO. M-0056  
 REDLAND ROAD OVER MILL CREEK

STREAM RESTORATION PROFILE

SCALE : AS SHOWN      DATE : AUGUST, 2023

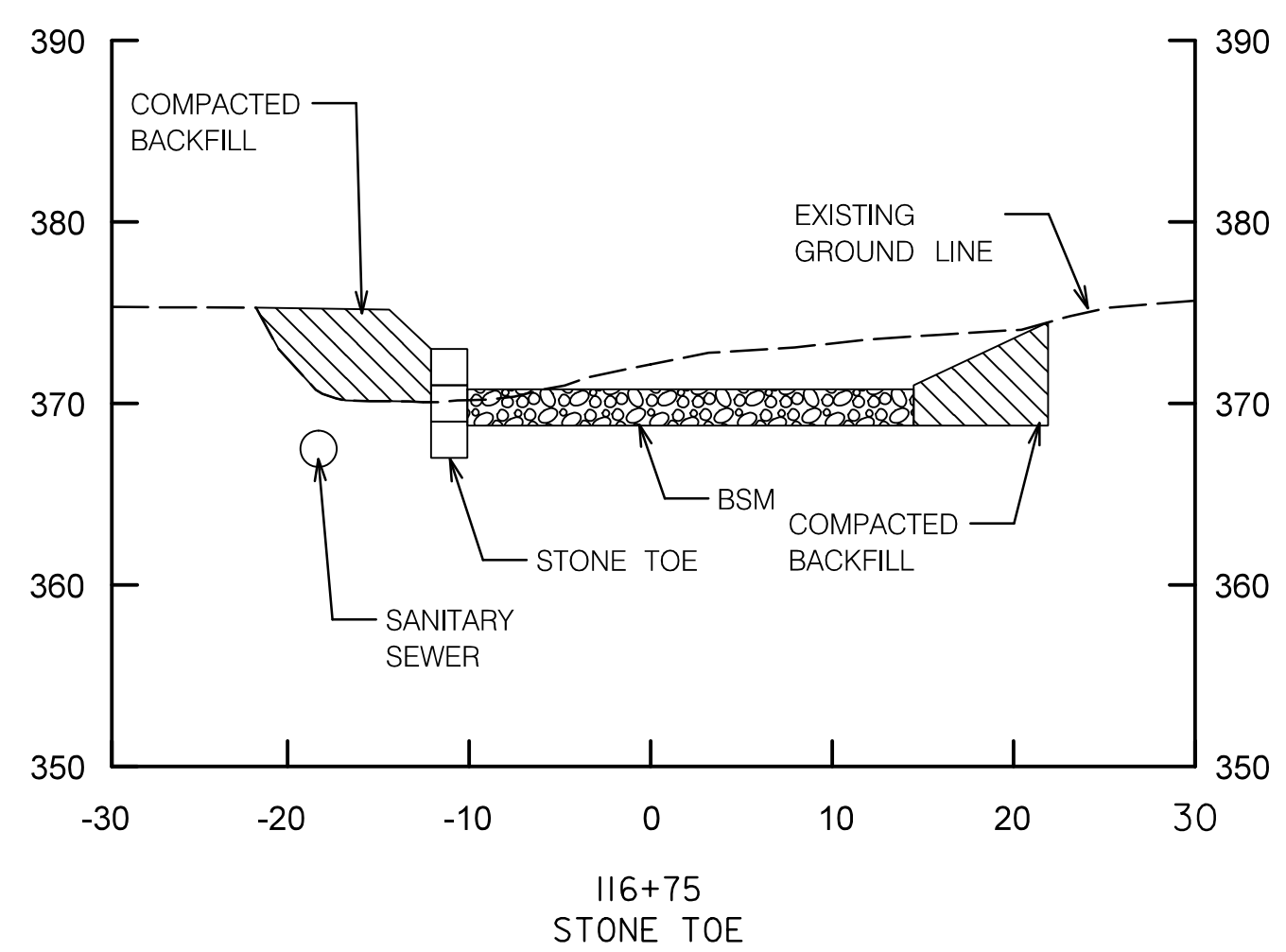
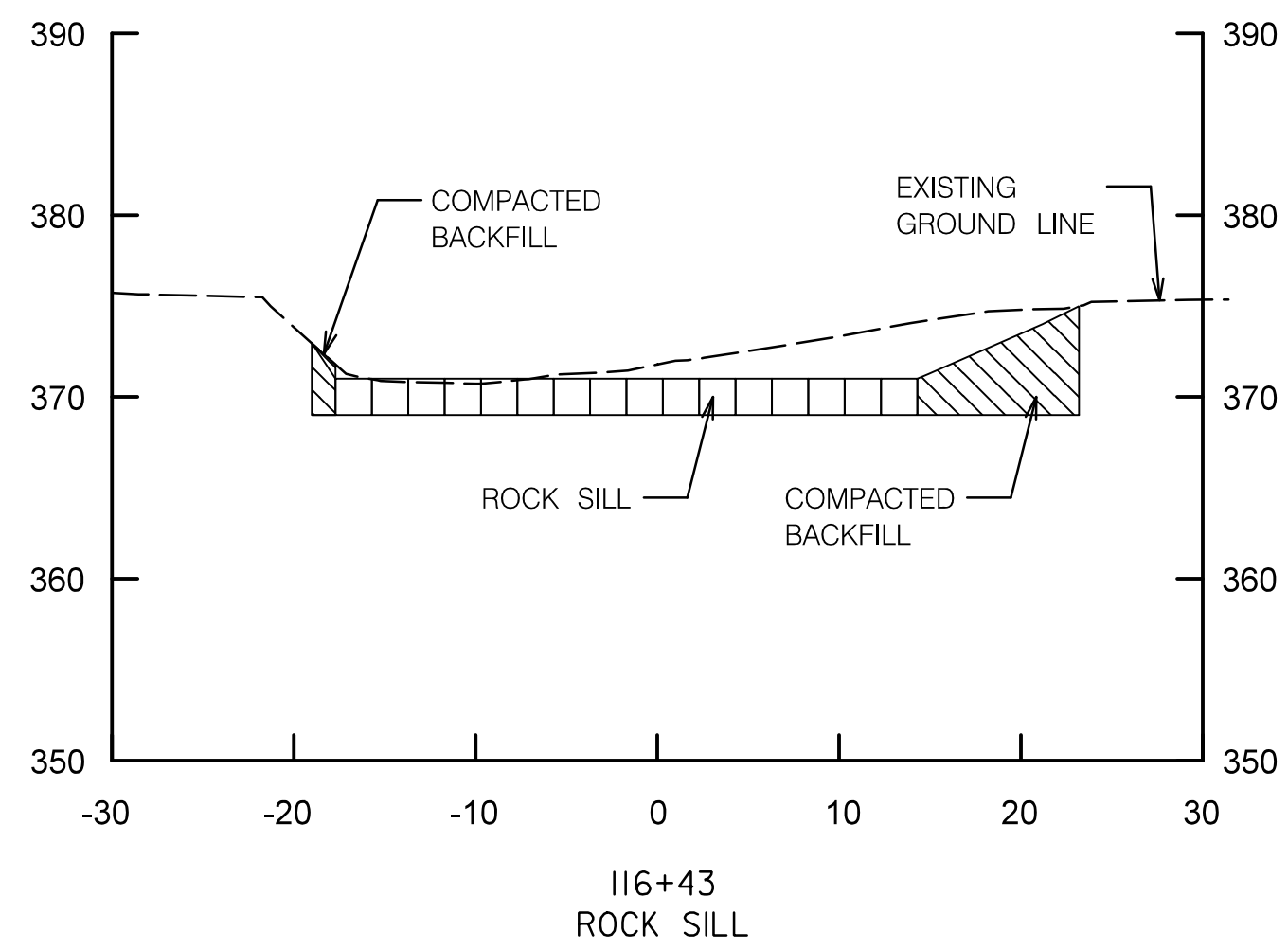
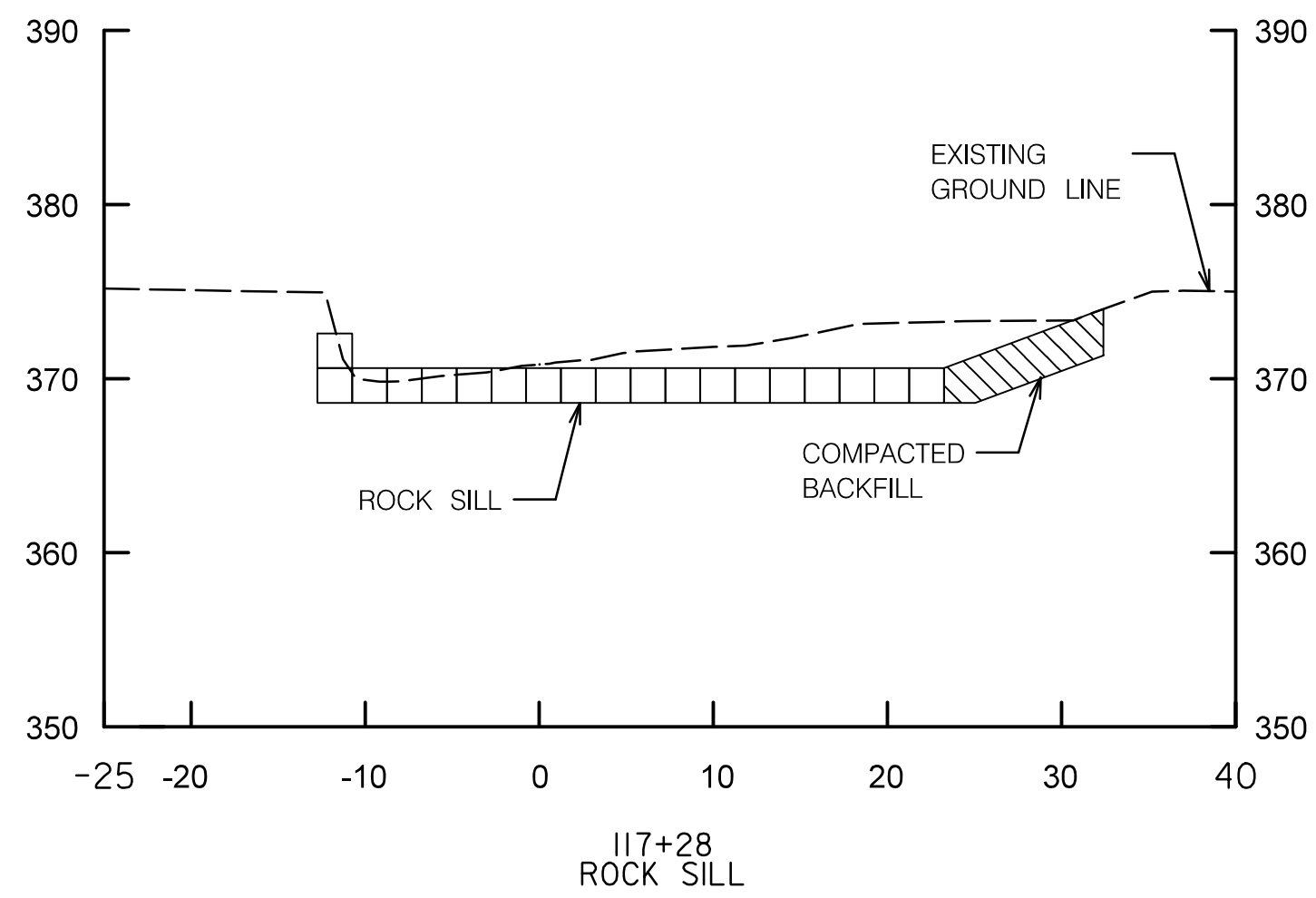
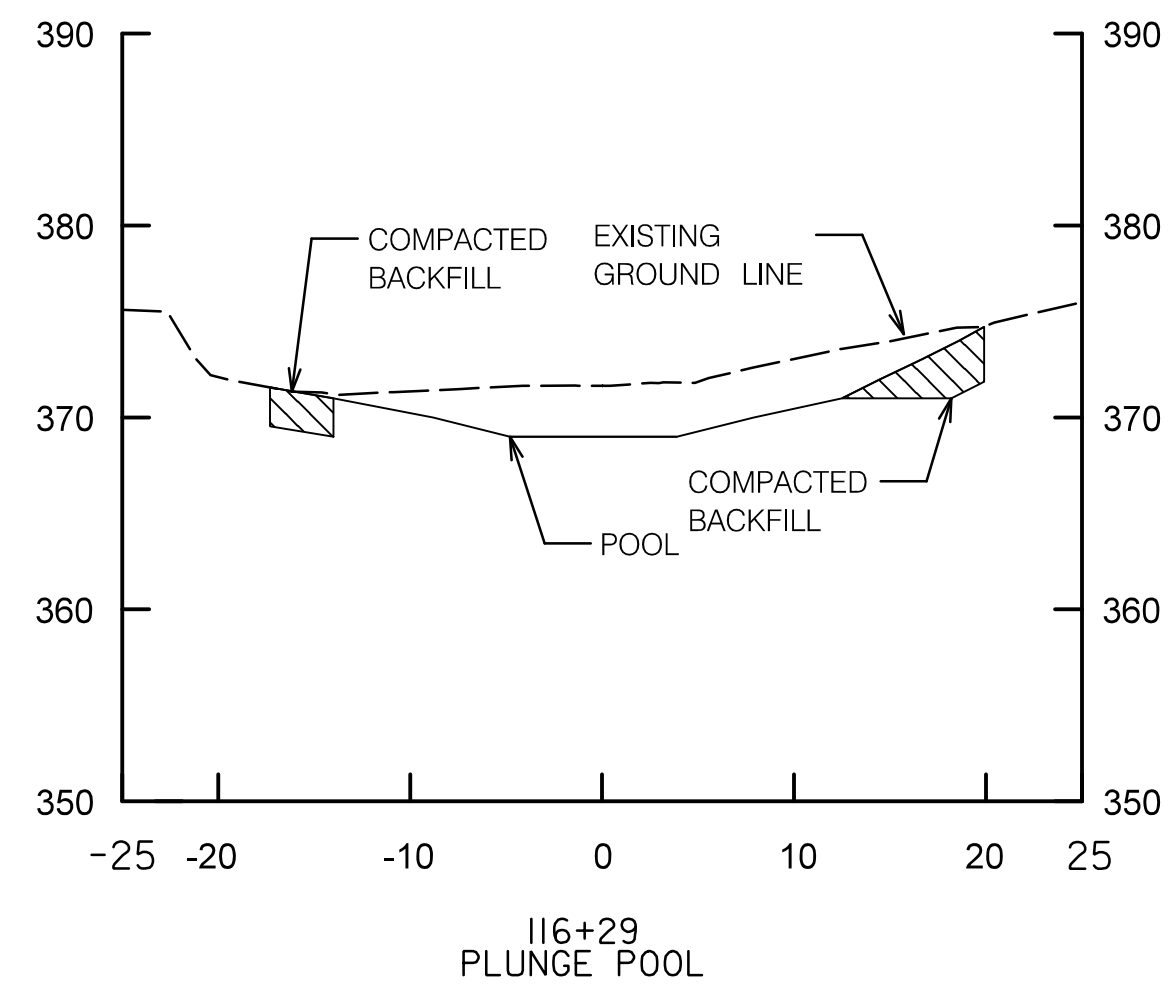
Project No. : 509132      SHEET 20 of 26



NO.	REVISION	DATE	BY







MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION  
DIVISION OF TRANSPORTATION ENGINEERING  
GAITHERSBURG, MARYLAND

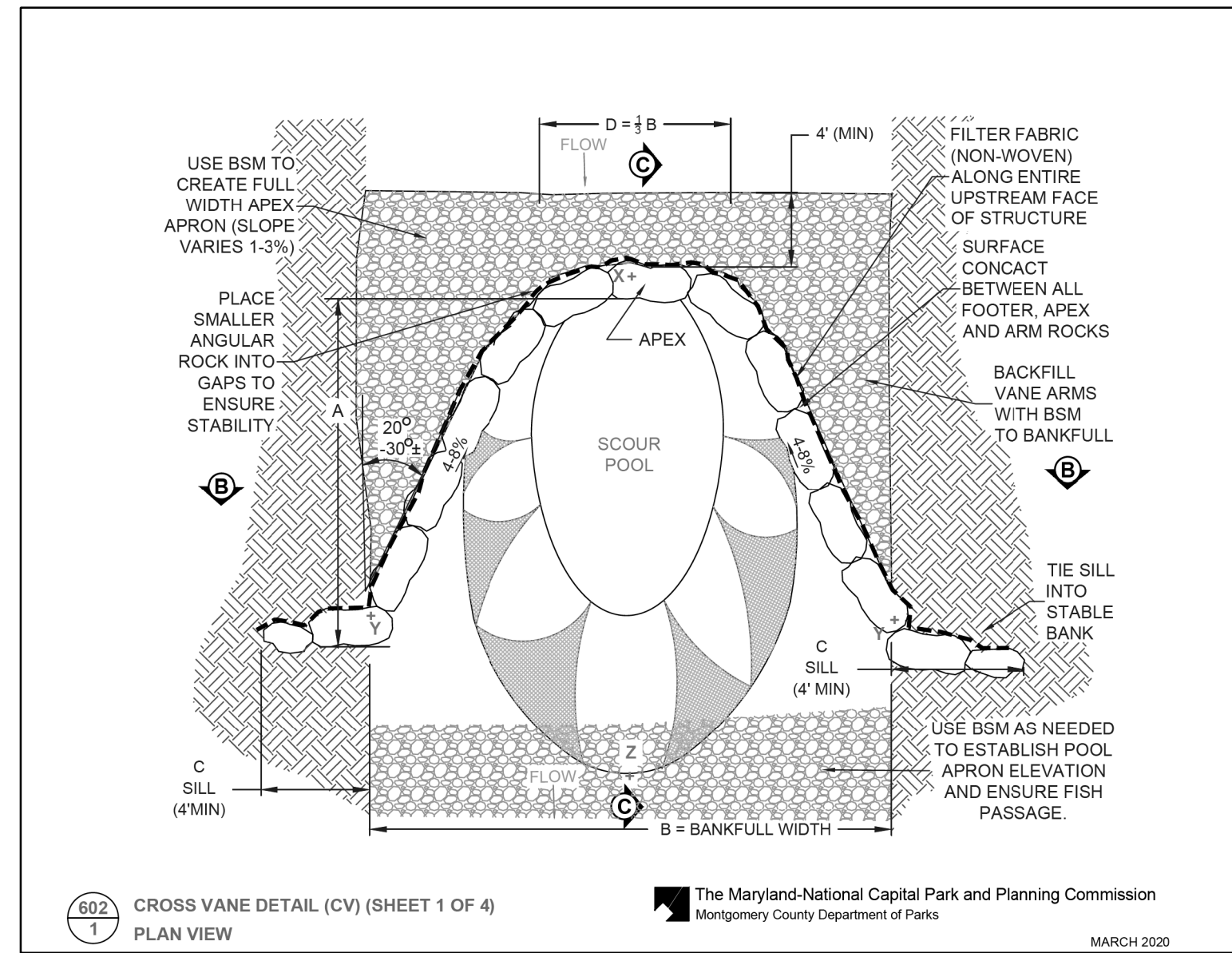
RECOMMENDED FOR APPROVAL  
 Chief, Design Section \_\_\_\_\_ Date \_\_\_\_\_  
 APPROVED  
 Chief, Division of Transportation Engineering \_\_\_\_\_ Date \_\_\_\_\_  
 Designed by : EL Drawn by : EL Checked by : KW

REPLACEMENT OF BRIDGE NO. M-0056  
REDLAND ROAD OVER MILL CREEK  
 STREAM RESTORATION  
CROSS SECTIONS - 2  
 SCALE : 1" = 10' DATE : AUGUST, 2023  
 Project No. : 509753 SHEET 22 of 26

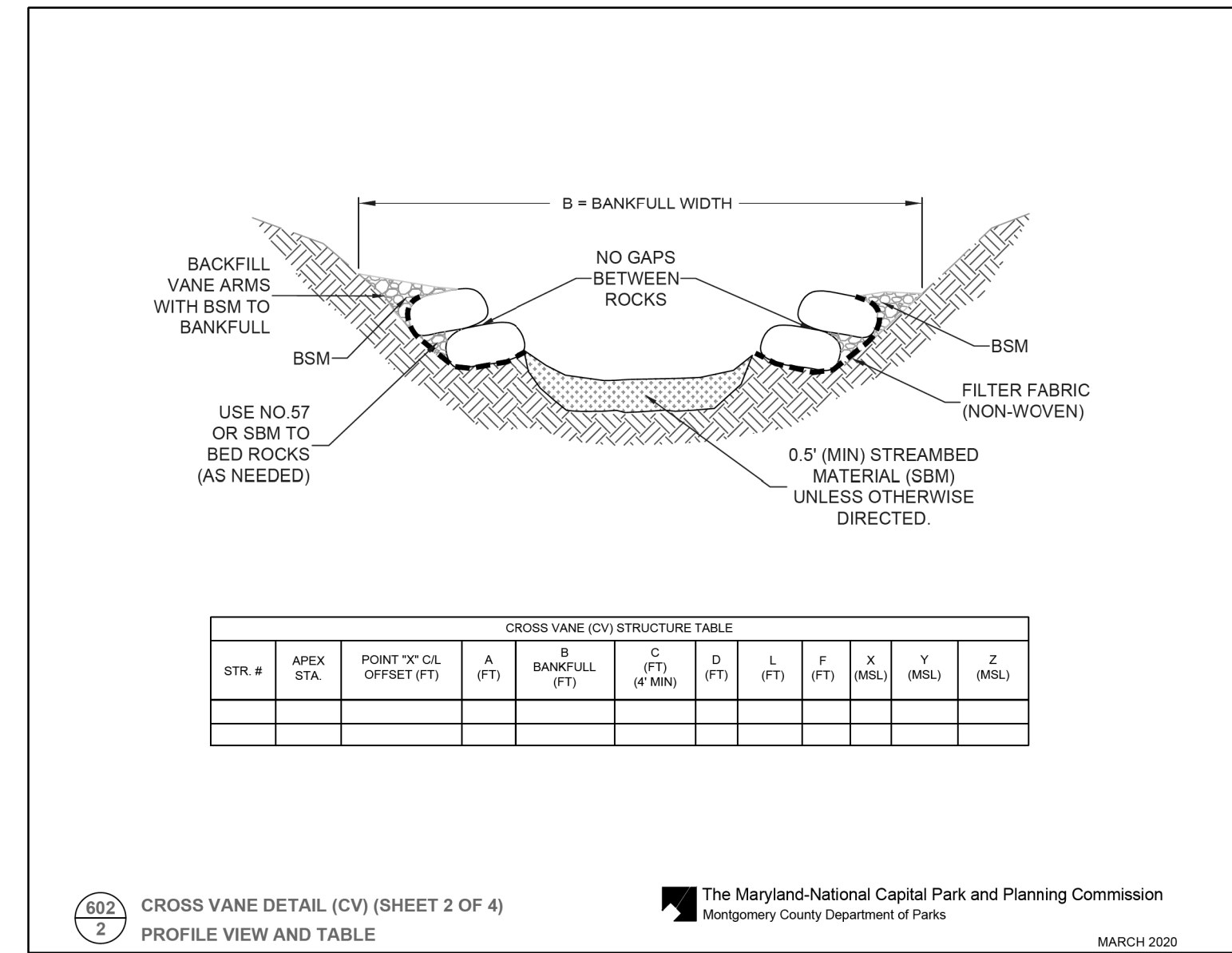


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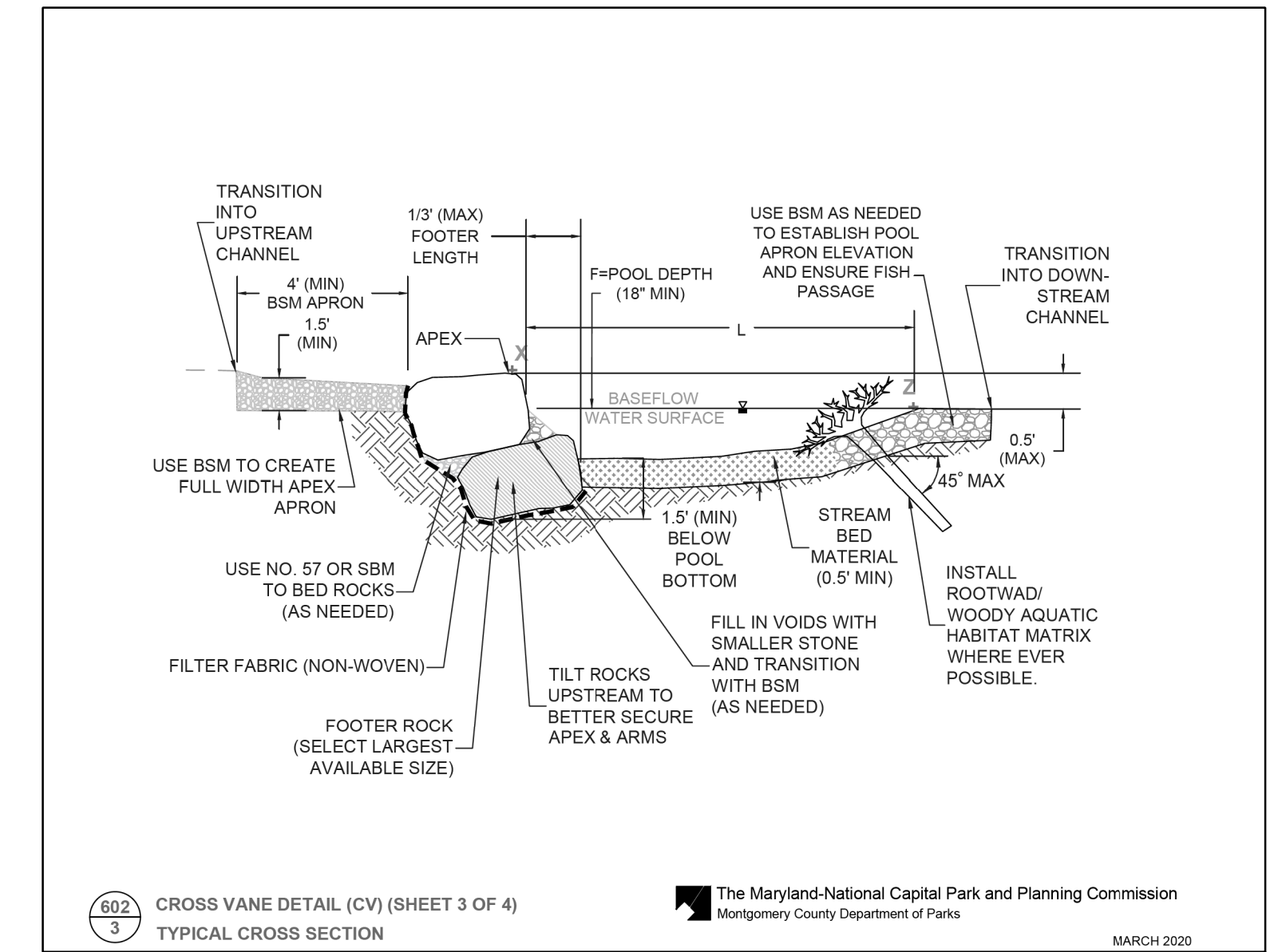
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602 1 CROSS VANE DETAIL (CV) (SHEET 1 OF 4) PLAN VIEW  
The Maryland-National Capital Park and Planning Commission  
Montgomery County Department of Parks  
MARCH 2020



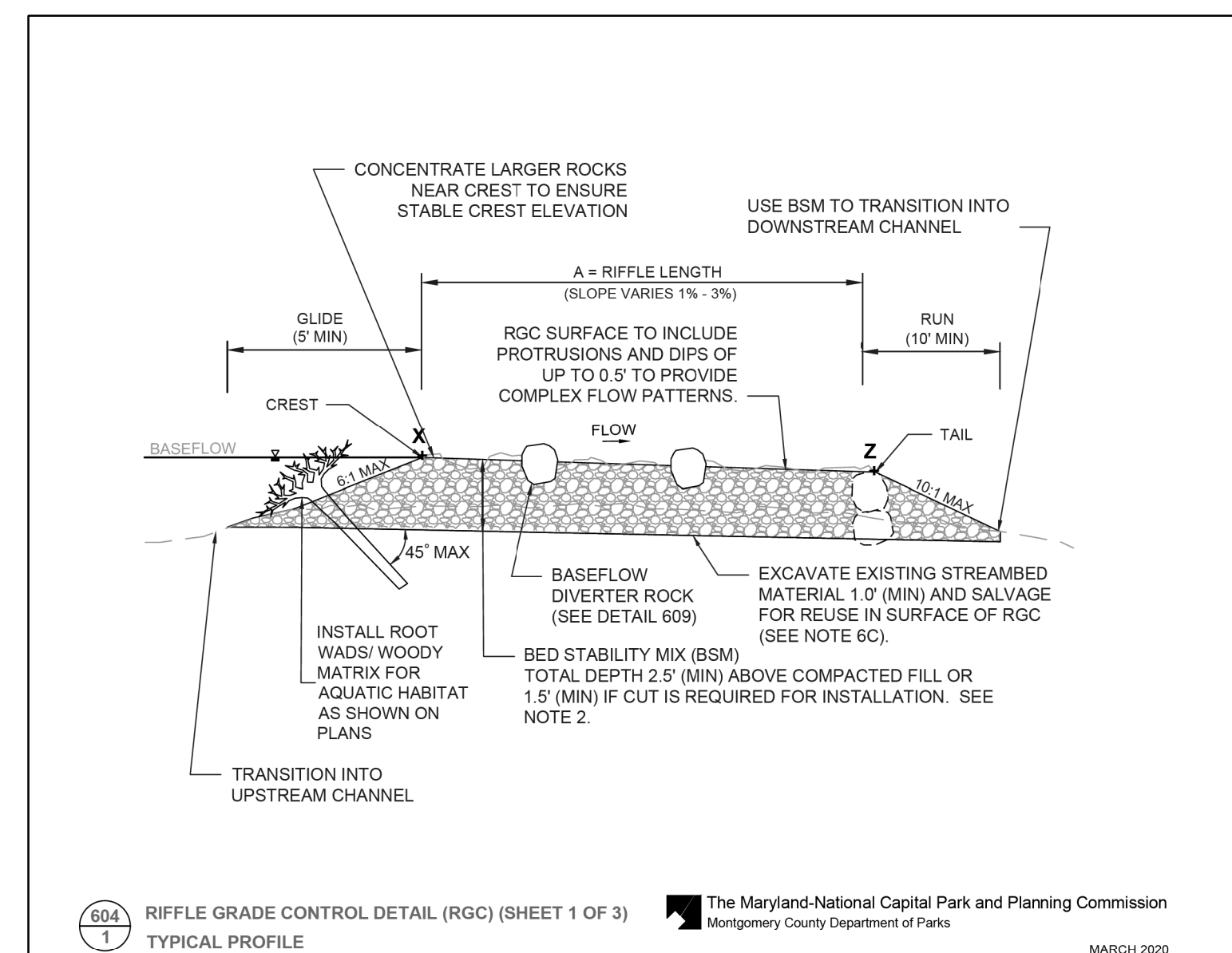
602 2 CROSS VANE DETAIL (CV) (SHEET 2 OF 4) PROFILE VIEW AND TABLE  
The Maryland-National Capital Park and Planning Commission  
Montgomery County Department of Parks  
MARCH 2020



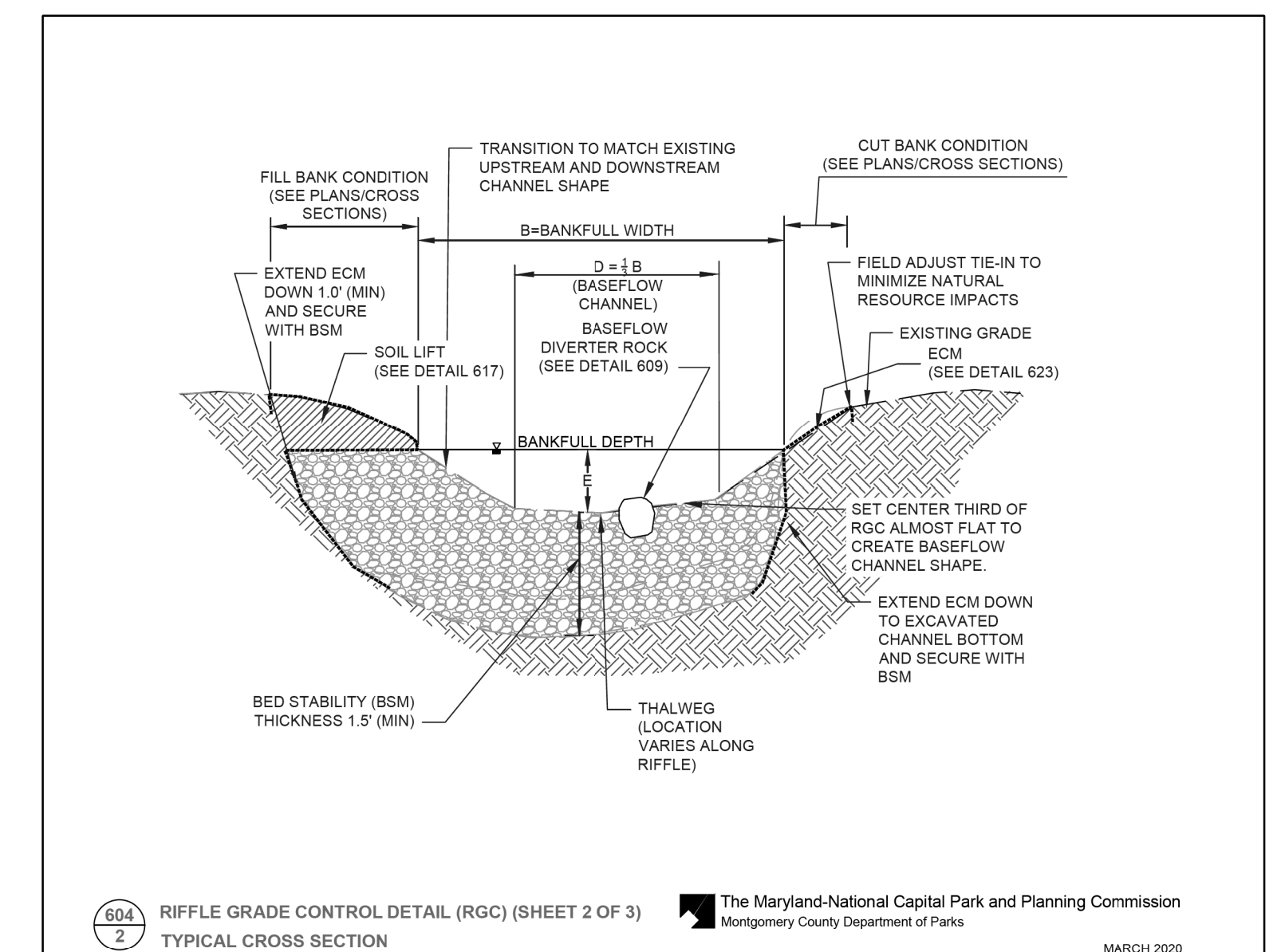
602 3 CROSS VANE DETAIL (CV) (SHEET 3 OF 4) TYPICAL CROSS SECTION  
The Maryland-National Capital Park and Planning Commission  
Montgomery County Department of Parks  
MARCH 2020

- NOTES:**
- CONTRACTOR SHALL LAY OUT CRITICAL POINTS OF STRUCTURE TO REVIEW WITH CONSTRUCTION MANAGER PRIOR TO CONSTRUCTION. ALL DIMENSIONS AND ELEVATIONS SHALL BE FIELD ADJUSTED IN COORDINATION WITH THE CONSTRUCTION MANAGER TO ENSURE PROPER ORIENTATION, STABLE INSTALLATION, FISH PASSAGE, AND SMOOTH TIE-IN TO ADJACENT FEATURES.
  - IMPORTED ROCKS SHALL BE IMBRICATED WITH RECTANGULAR BLOCK SHAPE. APPROPRIATELY SIZED SALVAGED ROCK CAN BE UTILIZED WITH APPROVAL FROM CONSTRUCTION MANAGER.
  - ELEVATION "Y" SHALL BE APPROXIMATELY BANKFULL DEPTH ABOVE ELEVATION "X". IN ALL CASES, ELEVATION "Y" SHALL BE AT LEAST 0.5' ABOVE ELEVATION "X" (SEE STRUCTURE TABLE FOR ACTUAL ELEVATION DIFFERENCE).
  - STATION REFERENCE POINT "X" IS LOCATED AT CHANNEL CENTERLINE UNLESS OTHERWISE SPECIFIED ON PLANS.
  - FOOTER ROCKS NOT SHOWN IN PLAN VIEW FOR CLARITY. FOOTER ROCKS SHALL UTILIZE LARGEST MATERIAL AVAILABLE. FOOTER ROCKS SHALL BE PLACED SO TOP SURFACE ANGLES TO THE UPSTREAM/OUTSIDE EDGE OF STRUCTURE IN ORDER TO BETTER ALLOW FOR SECURE PLACEMENT OF TOP ROCKS.
  - STONE PLACEMENT SHALL BE FIELD ADJUSTED TO CREATE ARCHED SHAPE WITH ABUNDANT SURFACE CONTACT BETWEEN ALL STONES TO ENSURE STONE WILL REMAIN IN PLACE OVER FULL RANGE OF FLOW CONDITIONS.
  - TIE IN SILLS SHALL EXTEND 4' MINIMUM INTO STABLE CHANNEL BANK.
  - PLACE FILTER FABRIC (NON-WOVEN) ON UPSTREAM SIDE OF VANE. FABRIC SHALL COVER THE UPSTREAM FACE OF THE ENTIRE STRUCTURE. ENSURE FILTER FABRIC (NON-WOVEN) IS SECURED BY SETTING IT UNDERNEATH THE FOOTER ROCKS, WRAPPING IT ALL THE WAY UP AROUND THE TOP ROCKS, AND SECURING IT USING BSM ON THE UPSTREAM FACE TO HOLD IT IN PLACE.
  - ROCKS SHALL BE TIGHT FITTING WITH NO VOIDSPACES ALONG APEX AND VANE ARMS. PLACE SMALLER ANGULAR STONE IN ANY REMAINING SPACES TO ESTABLISH SURFACE FLOW AND INTERCONNECTION OF ROCKS.
  - STREAMBED MATERIAL TO BE SALVAGED FROM EXISTING CHANNEL, AND ONLY FURNISHED AS NECESSARY. IF SITE DOES NOT PROVIDE ENOUGH SALVAGED MATERIAL, FURNISHED STREAMBED MATERIAL SHALL BE BURIED AND SALVAGED MATERIAL RESERVED FOR SURFACE LAYER.
  - NUMBER OF VANE ROCKS SHOWN FOR GRAPHICAL PURPOSES ONLY. ACTUAL NUMBER OF ROCKS FOR THE STRUCTURE SHALL DEPEND ON ROCK SIZE AND STREAM WIDTH.
  - BACKFILL UPSTREAM SIDES OF APEX AND VANE ARMS WITH BSM.
  - NO SINGLE DROP FROM STRUCTURE APEX TO THE NEXT STRUCTURE APEX AND/OR RIFLE CREST SHALL EXCEED 0.5'. ANY EXCEPTIONS MUST BE APPROVED BY CONSTRUCTION MANAGER.
  - COMPLETED STRUCTURE WILL HAVE FLOW OVER THE APEX DURING BASEFLOW CONDITIONS WITH CONSISTENT ARM SLOPES UP FROM THE APEX TO A STABLE SILL. TIE-IN AT BANKFULL INTO EXISTING GROUND.
  - STONE OF SERPENTINE ORIGIN IS NOT PERMITTED.

602 4 CROSS VANE DETAIL (CV) (SHEET 4 OF 4) NOTES  
The Maryland-National Capital Park and Planning Commission  
Montgomery County Department of Parks  
MARCH 2020



604 1 RIFLE GRADE CONTROL DETAIL (RGC) (SHEET 1 OF 3) TYPICAL PROFILE  
The Maryland-National Capital Park and Planning Commission  
Montgomery County Department of Parks  
MARCH 2020



604 2 RIFLE GRADE CONTROL DETAIL (RGC) (SHEET 2 OF 3) TYPICAL CROSS SECTION  
The Maryland-National Capital Park and Planning Commission  
Montgomery County Department of Parks  
MARCH 2020

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NO.	REVISION	DATE	BY

MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION  
DIVISION OF TRANSPORTATION ENGINEERING  
GAITHERSBURG, MARYLAND

RECOMMENDED FOR APPROVAL

Chief, Design Section \_\_\_\_\_ Date \_\_\_\_\_  
APPROVED

Chief, Division of Transportation Engineering \_\_\_\_\_ Date \_\_\_\_\_

Designed by: KW Drawn by: NL Checked by: MM

REPLACEMENT OF BRIDGE NO. M-0056  
REDLAND ROAD OVER MILL CREEK

STREAM RESTORATION DETAILS - 1

SCALE : NONE DATE : AUGUST, 2023

Project No. : 509132 SHEET 23 of 26



STR #	CREST STA	A (FT)	SLOPE	B BANKFULL WIDTH (FT)	D (FT)	E BANKFULL DEPTH (FT)	X (MSL)	Z (MSL)	BED STABILITY MIX TYPE

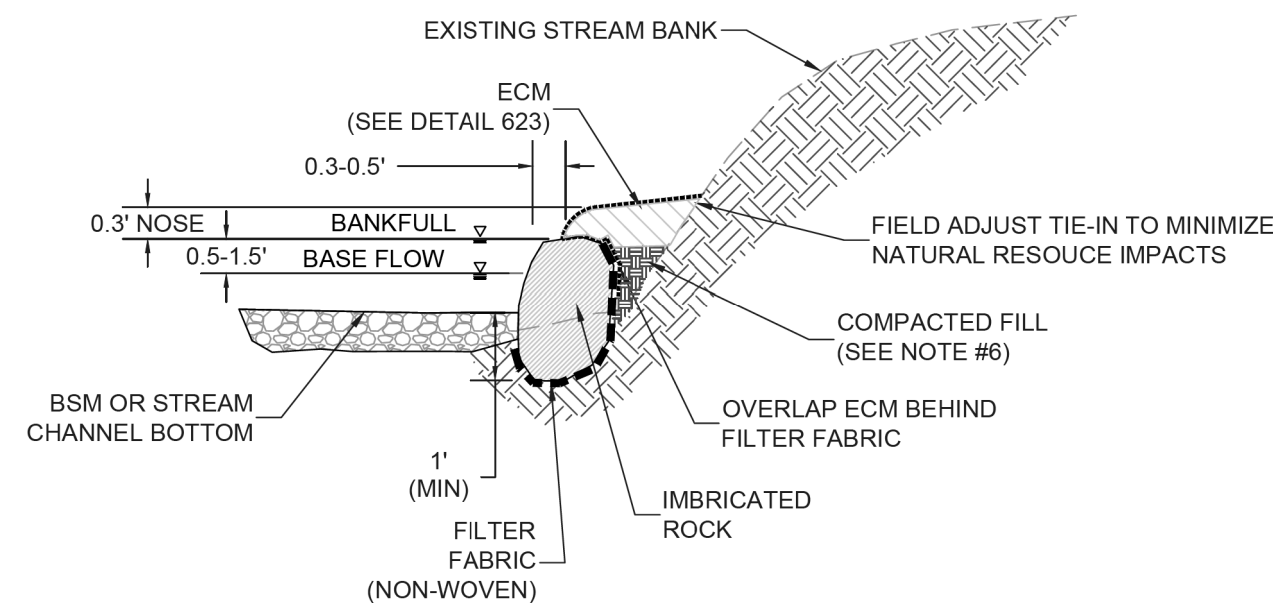
**RGC NOTES:**

- CONTRACTOR SHALL LAY OUT CRITICAL POINTS OF STRUCTURE TO REVIEW WITH CONSTRUCTION MANAGER PRIOR TO CONSTRUCTION. ALL DIMENSIONS AND ELEVATIONS SHALL BE FIELD ADJUSTED IN COORDINATION WITH THE CONSTRUCTION MANAGER TO ENSURE PROPER ORIENTATION, STABLE INSTALLATION, FISH PASSAGE, AND SMOOTH TIE-IN TO ADJACENT FEATURES.
- WHERE EXISTING CHANNEL SPACES ARE BELOW THICKNESS OF RGC, BACKFILL WITH COMMON BORROW AND COMPACT UP TO 2' BELOW FINISHED GRADE. USE BSM AND/OR APPROVED SALVAGED MATERIAL FOR THE TOP 2' OF RGC.
- SATISFACTORY SOIL TYPES FOR COMPACTED FILL INCLUDE ASTM D 2487 SOIL CLASSIFICATION GROUPS GW, GP, GM, SW, SP AND SM OR A COMBINATION OF THESE SOIL GROUPS. SOIL SHALL BE FREE OF DEBRIS, WASTE, FROZEN MATERIALS, AND OTHER DELETERIOUS MATTER.
- INSTALL AND COMPACT BSM IN LIFTS NOT TO EXCEED 15'.
- SET LARGEST (CLASS III, AS APPLICABLE) MATERIAL CONCENTRATED NEAR THE RIFLE CREST AND TAIL TO HOLD GRADE.
- SUCCESSFUL INSTALLATION ENTAILS:
  - SET LARGEST MATERIAL FIRST IN A CHECKERBOARD PATTERN. FINAL TOP ELEVATIONS OF LARGE BOULDERS SHALL BE 0.5' +/- FROM FINISHED THALWEG IN ORDER TO PROVIDE FLOW VARIETY THROUGHOUT THE RIFLE. BOULDERS TO BE AT LEAST 2/3 BURIED - REFER TO BASEFLOW DIVERTER ROCK DETAIL 609 AS APPLICABLE (FOR BANKFULL WIDTHS 15' ONLY).
  - USE NEXT SIZE CLASS (CLASS I) STONE TO BACKFILL VOIDS BETWEEN LARGEST STONES.
  - WASH STREAMED MATERIAL AND/OR BANK-RUN GRAVEL INTO EACH LIFT TO FILL ROCK VOIDS AND ENSURE SURFACE FLOW. RESERVE SALVAGED NATIVE STREAMED MATERIAL TO BE USED IN UPPERMOST LIFT.
- ENSURE MATERIAL LOCKS TOGETHER AND CREATES STABLE TRANSITIONS INTO SURROUNDING FEATURES.
- SHAPE CHANNEL BED TO FORM A BASEFLOW CHANNEL APPROXIMATELY 1/3 BANKFULL WIDTH AND THALWEG. USE BSM TO SLOPE SIDES UP TO MEET ADJACENT BANKS AT BANKFULL.
- COMPLETED STRUCTURE MUST HAVE SURFACE FINISH DURING BASEFLOW CONDITIONS WITH STABLE SILL TIE-INS AT BANKFULL AND TO UPSTREAM AND DOWNSTREAM CHANNEL.
- STONE OF SERPENTINE ORIGIN IS NOT PERMITTED.



RIFLE GRADE CONTROL DETAIL (RGC) (SHEET 3 OF 3)  
TABLE AND NOTES

The Maryland-National Capital Park and Planning Commission  
Montgomery County Department of Parks  
MARCH 2020



SINGLE BOULDER TOE DETAIL (SBT) (SHEET 1 OF 2)  
TYPICAL SECTION

The Maryland-National Capital Park and Planning Commission  
Montgomery County Department of Parks  
MARCH 2020

STR #	POINT "X" CL OFFSET (FT)	US STA	US TOP OF ROCK ELEV. (X) (MSL)	US THALWEG INVERT (MSL)	D/S STA	D/S TOP OF ROCK ELEV. (X) (MSL)	D/S THALWEG INVERT (MSL)

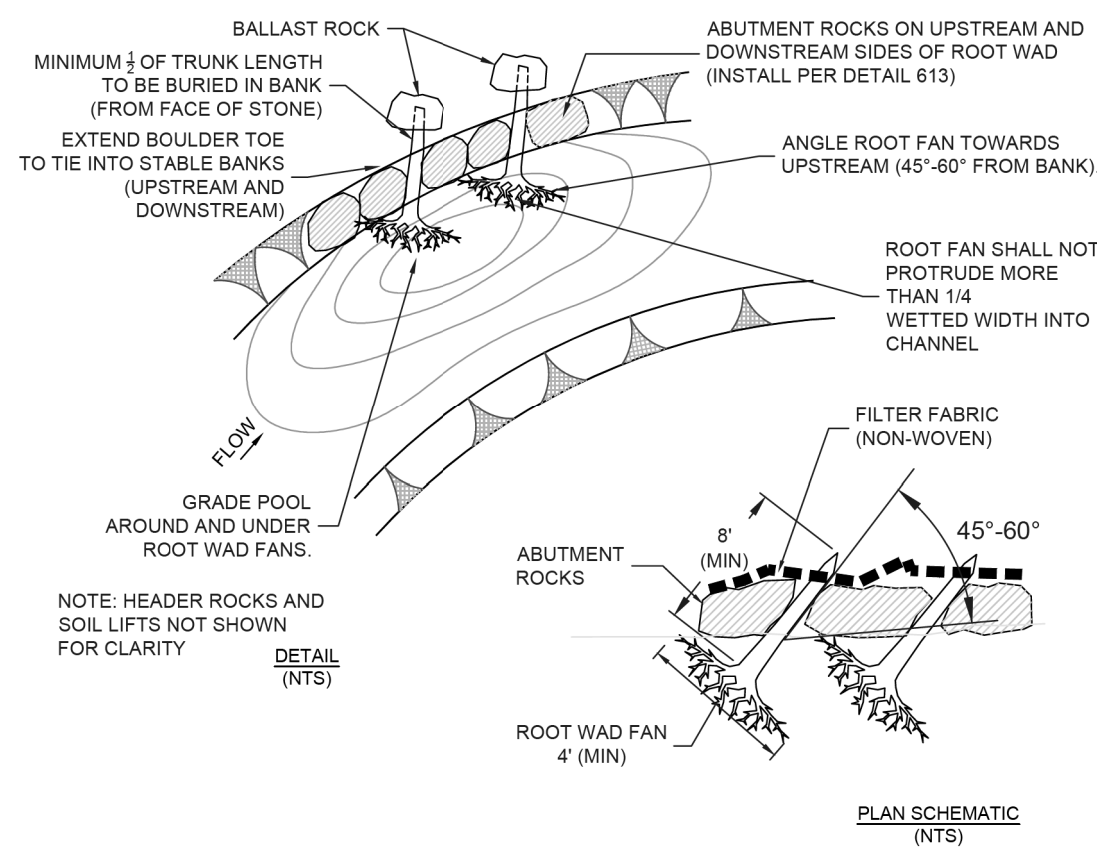
**SBT NOTES:**

- CONTRACTOR SHALL LAY OUT CRITICAL POINTS OF STRUCTURE TO REVIEW WITH CONSTRUCTION MANAGER PRIOR TO CONSTRUCTION. ALL DIMENSIONS AND ELEVATIONS SHALL BE FIELD ADJUSTED IN COORDINATION WITH THE CONSTRUCTION MANAGER TO ENSURE PROPER ORIENTATION, STABLE INSTALLATION, AND SMOOTH TIE-IN TO ADJACENT FEATURES.
- IMPORTED ROCKS SHALL BE IMBRICATED WITH RECTANGULAR BLOCK SHAPE. APPROPRIATELY SIZED SALVAGED ROCK CAN BE UTILIZED WITH APPROVAL FROM CONSTRUCTION MANAGER.
- NUMBER OF ROCKS SHOWN FOR GRAPHICAL PURPOSES ONLY. ACTUAL NUMBER OF ROCKS FOR THE STRUCTURE SHALL DEPEND ON ROCK SIZE AND BANKFULL DEPTH.
- SATISFACTORY SOIL TYPES FOR COMPACTED FILL INCLUDE ASTM D 2487 SOIL CLASSIFICATION GROUPS GW, GP, GM, SW, SP AND SM OR A COMBINATION OF THESE SOIL GROUPS. SOIL SHALL BE FREE OF DEBRIS, WASTE, FROZEN MATERIALS, AND OTHER DELETERIOUS MATTER.
- SELECT SMALLER THINNER ROCKS WHERE TOE CROSSES TREES, MANHOLES, OR OTHER IMPEDIMENTS TO MINIMIZE CROSS SECTION ENROACHMENT.
- AT UTILITY CROSSINGS, FIELD ADJUST FOOTER SPACING AND INSTALL BRIDGING ROCKS TO PROTECT PIPE. (DETAIL 618)
- FILTER FABRIC (NON-WOVEN) SHALL BE PLACED UNDER STONES AND WRAPPED AROUND BACK OF STRUCTURE. ECM (FOR BANK TREATMENT ABOVE STONE TOE) SHALL BE LAYERED BEHIND FILTER FABRIC WHERE THEY OVERLAP.
- STONE OF SERPENTINE ORIGIN IS NOT PERMITTED.



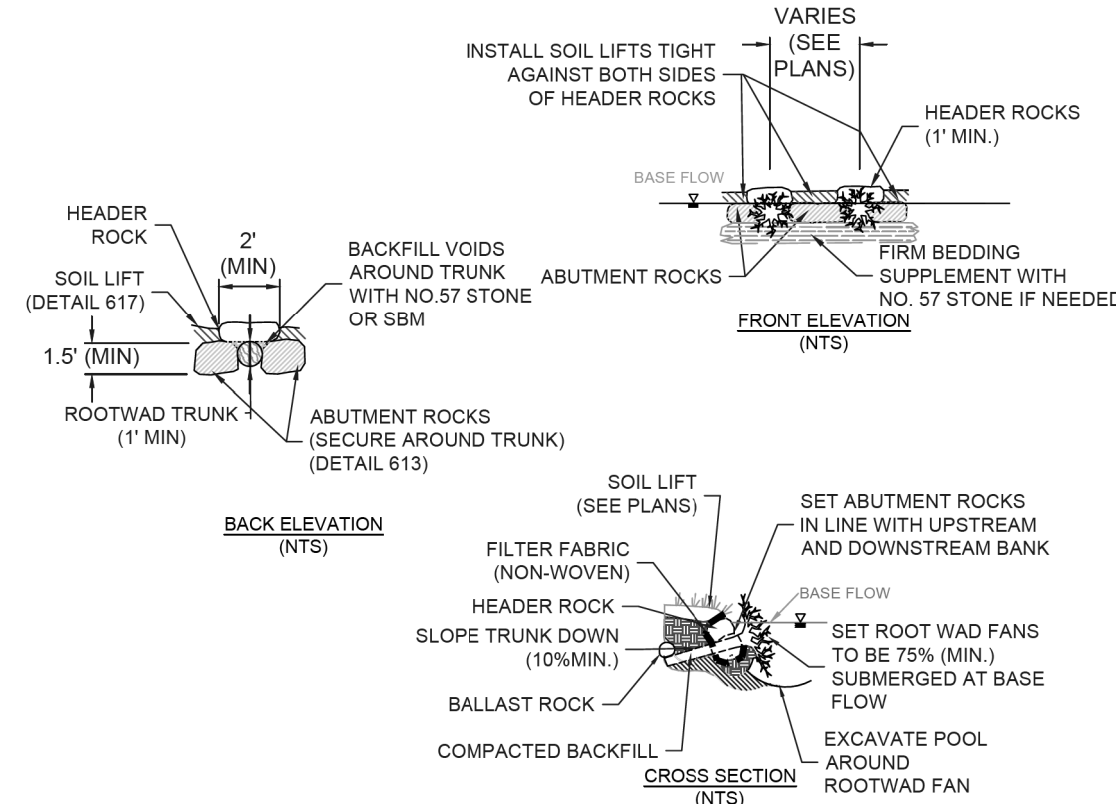
SINGLE BOULDER TOE DETAIL (SBT) (SHEET 2 OF 2)  
NOTES

The Maryland-National Capital Park and Planning Commission  
Montgomery County Department of Parks  
MARCH 2020



ROOT WAD (RW) (SHEET 1 OF 3)  
PLAN VIEW

The Maryland-National Capital Park and Planning Commission  
Montgomery County Department of Parks  
MARCH 2020



ROOT WAD DETAIL (RW) (SHEET 2 OF 3)

The Maryland-National Capital Park and Planning Commission  
Montgomery County Department of Parks  
MARCH 2020

STR #	UPSTREAM STATION AND BANK	DOWNSTREAM STATION AND BANK	EST # OF ROOT BALLS (TO BE ADJUSTED IN THE FIELD W/ CONSTRUCTION MANAGER)

**RW NOTES:**

- CONTRACTOR SHALL LAY OUT CRITICAL POINTS OF STRUCTURE TO REVIEW WITH CONSTRUCTION MANAGER PRIOR TO CONSTRUCTION. ALL DIMENSIONS AND ELEVATIONS SHALL BE FIELD ADJUSTED IN COORDINATION WITH THE CONSTRUCTION MANAGER TO ENSURE PROPER ORIENTATION, STABLE INSTALLATION, AND SMOOTH TIE-IN TO ADJACENT FEATURES.
- IMPORTED ROCKS SHALL BE IMBRICATED WITH RECTANGULAR BLOCK SHAPE. APPROPRIATELY SIZED SALVAGED ROCK CAN BE UTILIZED WITH APPROVAL FROM CONSTRUCTION MANAGER.
- STONES TO BE ROTATED SLIGHTLY UPSTREAM (SUCH THAT SURFACE FOR TOP ROCK TO REST ON TILT UPSTREAM) TO MINIMIZE POTENTIAL MOVEMENT.
- WHEN EXCAVATING FOR ROOT WAD PLACEMENT DIG THE POOL AROUND THE FAN DEEPER TO ALLOW STABLE INSTALLATION WITH FAN INTACT.
- USE INTACT HARDWOOD TREES. ACTUAL TREES TO BE APPROVED BY CONSTRUCTION MANAGER PRIOR TO INSTALLATION.
- COMPACT EXCAVATION AREAS AND STABILIZE WITH ECM. SATISFACTORY SOIL TYPES FOR COMPACTED FILL INCLUDE ASTM D 2487 SOIL CLASSIFICATION GROUPS GW, GP, GM, SW, SP AND SM OR A COMBINATION OF THESE SOIL GROUPS. SOIL SHALL BE FREE OF DEBRIS, WASTE, FROZEN MATERIALS, AND OTHER DELETERIOUS MATTER. ADDITIONALLY, 0.2 TOPSOIL/COMPOST MIX SHALL BE FREE OF STICKS, DEBRIS, WEEDS, AND ROCKS. MATTING SHALL BE ROOT MAT TO BE APPROVED EQUAL, WHICH IS 100% BIOGRADABLE. MATTING CONTAINING MONOFILAMENT AND/OR PLASTICS OF ANY KIND ARE NOT PERMITTED.
- IF ROOT WAD SHAPE IS ELLIPTICAL, LONGER SIDE SHALL BE PLACED HORIZONTALLY.
- REFER TO PLANS FOR APPROXIMATE ROOT WAD LOCATIONS. ACTUAL INSTALLATION LOCATIONS AND EXTENTS TO BE FIELD ADJUSTED WITH CONSTRUCTION MANAGER BASED ON FIELD CONDITIONS.
- POOL WIDTHS IN ROOT WAD LOCATIONS EXCEED BANKFULL WIDTH IN ORDER TO AVOID CREATING A CHANNEL CONSTRUCTION. REFER TO PLANS FOR POOL WIDTH AND FIELD ADJUST WITH CONSTRUCTION MANAGER.
- STABILIZE DISTURBED AREA WITH NATIVE RIPARIAN SEED MIX AND WEED FREE STRAW MULCH. APPLY ECM AS DIRECTED BY CONSTRUCTION MANAGER.
- STONE WITH SERPENTINE ORIGIN IS NOT PERMITTED.



ROOT WAD DETAIL (RW) (SHEET 3 OF 3)  
TABLE AND NOTES

The Maryland-National Capital Park and Planning Commission  
Montgomery County Department of Parks  
MARCH 2020

MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION  
DIVISION OF TRANSPORTATION ENGINEERING  
GAITHERSBURG, MARYLAND

RECOMMENDED FOR APPROVAL

Chief, Design Section \_\_\_\_\_ Date \_\_\_\_\_  
APPROVED

Chief, Division of Transportation Engineering \_\_\_\_\_ Date \_\_\_\_\_

Designed by : KW Drawn by : NL Checked by : MM

REPLACEMENT OF BRIDGE NO. M-0056  
REDLAND ROAD OVER MILL CREEK

STREAM RESTORATION DETAILS - 2

SCALE : NONE DATE : AUGUST, 2023

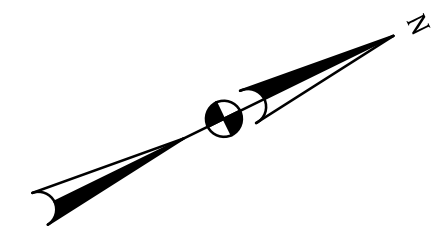
Project No. : 509132 SHEET 24 of 26

NO.	REVISION	DATE	BY

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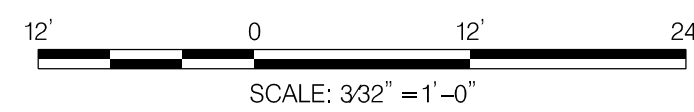






SURVEY TRAVERSE			
PT.	NORTHING	EASTING	ELEVATION
MERI00	533717.7932	1270535.4792	379.89
MERI50	533489.3932	1270441.9807	382.08
MERI53	533580.6875	1270414.9460	377.79

PLAN  
SCALE: 3/32" = 1'-0"



NO.	REVISION	DATE	BY

MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION  
DIVISION OF TRANSPORTATION ENGINEERING  
GAITHERSBURG, MARYLAND

RECOMMENDED FOR APPROVAL

Chief, Design Section \_\_\_\_\_ Date \_\_\_\_\_  
APPROVED

Chief, Division of Transportation Engineering \_\_\_\_\_ Date \_\_\_\_\_

Designed by : MM Drawn by : NL Checked by : MM

REPLACEMENT OF BRIDGE NO. M-0056  
REDLAND ROAD OVER MILL CREEK

SURVEY DATA

SCALE : 3/32" = 1'-0" DATE : AUGUST, 2023

Project No. : 509132 SHEET 26 of 26

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