



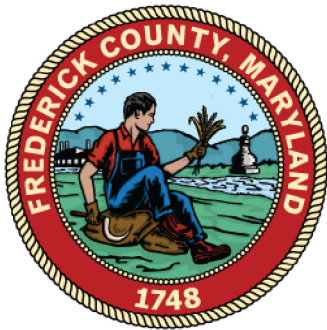
ABBREVIATIONS

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	RCCP .....	Reinforced Concrete Pressure Pipe
APPROX.....	Approximate	IN .....	Inch	R.Q.D. ....	Rock Quality Designation
℄ 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 .....	K Inlet	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	SE .....	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
℄ 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 –
CMP.....	Corrugated Metal Pipe	MOD.....	Modified		Aluminized Type 2
C.O. ....	Cleanout	MIN.....	Minimum	SRPA .....	Steel Spiral Rib Pipe Arch –
COMB.....	Combination	N.....	North		Aluminized Type 2
CONC.....	Concrete	NB .....	Northbound	SSD .....	Stopping Sight Distance
CONSTR. ....	Construction	NE .....	Northeast	SSF .....	Super Silt Fence
COR.....	Corner	N.P. ....	Non–Plastic	STD. ....	Standard
CORR.....	Correction	O.C. ....	On Center	STA. ....	Station
CPP–S .....	Corrugated Polyethylene Pipe – Type ‘S’	OHE .....	Overhead Electric	SO. ....	Single Opening
CSP .....	Corrugated Steel Pipe – Aluminized Type 2	O.M. ....	Optimum Moisture	SY .....	Square Yards
CSPA .....	Corrugated Steel Pipe Arch –	PAV’ T.....	Pavement	SWM.....	Stormwater Management
	Aluminized Type 2	PC .....	Point of Curvature	T .....	Tangent
DC.....	Degree of Curve	PCC .....	Point of Compound Curvature	T .....	Telephone
D.H.V.....	Design Hourly Volume	P.C .....	Point of Crown	T.C. ....	Top of Cover
D.I. ....	Drop Inlet	P/GE .....	Profile Grade Elevation	T.G. ....	Top of Grate
DIA.....	Diameter	P.G.E.....	Profile Ground Elevation	T or TL .....	Traverse Line
D.O.....	Double Opening	P.G.L.....	Profile Grade Line	T.M. ....	Top of Manhole
E .....	East	P/GL .....	Profile Ground Line	TRAV.....	Traverse
E .....	Electric	P/R .....	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
F or FL.....	Flowline	PT .....	Point		of Agriculture
F.B.D. ....	Flat Bottom Ditch	PT .....	Point of Tangency	VCL .....	Vertical Clearance
F.H. ....	Fire Hydrant	PVC .....	Point of Vertical Curve	V.C.L.....	Vertical Curve Length
FWD.....	Forward	PVC .....	Polyvinyl Chloride	W .....	Water
G .....	Gas	PVI .....	Point of Vertical Intersection	W .....	West
G.V.....	Gas Valve	PVRC .....	Point of Vertical Reverse Curve	WB .....	Westbound
H.B.....	Handbox	PVT .....	Point of Vertical Tangency	WB.....	Wetland Buffer
HDPE .....	High Density Polyethethylene	R .....	Radius	W.M.....	Water Meter
		R.F. ....	Rock Fragments	W.S. ....	Wrapped Steel
		RT .....	Right	WUS .....	Waters of the United States
				W.V. ....	Water Valve

CONVENTIONAL SIGNS

PROPOSED MEDIAN BARRIER .....		PROPOSED PIPE /CULVERT .....	
ELECTRICAL HAND BOX – SIGNALS .....		EXISTING PIPE /CULVERT .....	
FLOW LINE .....		EXISTING DROP INLET .....	
STATE,COUNTY OR CITY LINES .....		UTILITY POLE .....	
PROPOSED TRAFFIC BARRIER .....		WETLAND .....	
EXISTING TRAFFIC BARRIER .....		WETLAND BUFFER .....	
PROPOSED FENCE LINE .....		WATERS OF THE U.S. ....	
EXISTING FENCE LINE .....		HEDGE /TREE LINE .....	
PROPOSED RIGHT OF WAY LINE .....		BUSH /TREE .....	
EXISTING RIGHT OF WAY LINE .....		CONIFEROUS TREE .....	
EXISTING ROADWAY .....		GROUND ELEVATION .....	
RAILROAD .....		GRADE ELEVATION .....	
BASE LINE OR SURVEY LINE .....			
FIRE HYDRANT .....			
HISTORIC BOUNDARY .....			
WATERS OF THE U.S. ....			
BENCH MARK .....			
BASELINE OF CONSTRUCTION .....			

SHEET AB-01



BRIDGE REPLACEMENT  
PRESTRESSED CONCRETE BEAM  
BRIDGE NO.F05-22  
ON HORNETS NEST ROAD  
OVER FRIENDS CREEK

ABBREVIATIONS AND LEGEND

SCALE AS-NOTED ADVERTISED DATE N/A CONTRACT NO. RFP 16-019A

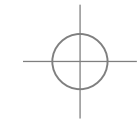
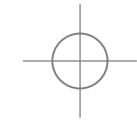
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DRAWN BY TDK LOGMILE XXXX – XXXX  
CHECKED BY KAR

SHEET NO. 2 OF 43



A. MORTON THOMAS AND ASSOCIATES, INC.  
901 DULANEY VALLEY ROAD, SUITE 710  
TOWSON, MD 21204





BY: jpiro

PLOTTED: Friday, March 26, 2021 AT 04:20 PM

TRAVERSE POINTS			
POINT NO.	NORTH	EAST	ELEVATION
T-1	746742.6680	1201977.9390	607.04
T-2	747180.0860	1201937.9900	588.08
T-3	747296.4670	1201771.2880	589.97
T-4	746960.8120	1202023.1150	590.81

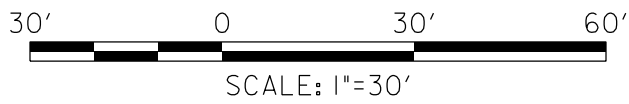
BENCHMARKS			
POINT NO.	NORTH	EAST	ELEVATION
BM-1	747002.5272	1201947.6822	594.00
BM-2	747285.2740	1201963.0430	598.41

BASELINE CONTROL COORDINATES						
BASELINE	CURVE	POINT NO.	STATION	NORTH	EAST	BEARING
HORNETS NEST RD	C-1	POB	0+00.00	746846.69	1201968.63	
		PC	0+10.00	746856.45	1201966.45	
		PI	0+41.16	746886.86	1201959.64	
		CC		746643.72	1201015.96	
	C-2	PT	0+72.31	746916.77	1201950.91	N 12° -36' -56" W
		PC	1+47.51	746988.96	1201929.82	
		PI	2+07.70	747046.74	1201912.95	
		CC		747053.72	1202151.56	
	C-3	PT	2+65.28	747105.41	1201926.42	N 16° -16' -51" W
		PC	3+78.65	747215.90	1201951.78	
		PI	4+12.79	747249.18	1201959.42	
	C-4	CC		747182.79	1202096.03	
		PCC	4+45.76	747275.75	1201980.87	
		PI	4+70.19	747294.76	1201996.22	
		CC		747215.13	1202055.96	
		PT	4+93.62	747304.18	1202018.76	N 12° -55' -46" E

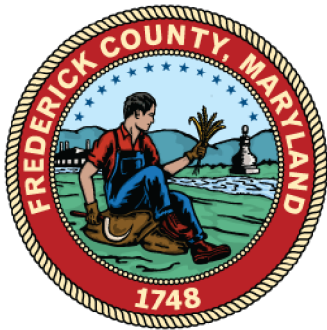
**LIMIT OF WORK**  
HORNETS NEST RD  
STA. 0 + 62.31

**LIMIT OF WORK**  
HORNETS NEST RD  
STA. 4 + 75.00

CURVE DATA						
CURVE	DELTA	Dc	RADIUS	TANGENT	LENGTH	EXTERNAL
C-1	3° 39' 54.92"	5° 52' 57.0848"	974.00'	31.1644'	62.3075'	0.4984'
C-2	29° 12' 36.85"	24° 48' 12.1239"	231.00'	60.1930'	117.7672'	7.7136'
C-3	25° 58' 52.65"	38° 42' 48.1123"	148.00'	34.1430'	67.1119'	3.8873'
C-4	28° 25' 08.21"	59° 22' 25.9132"	96.50'	24.4352'	47.8644'	3.0456'



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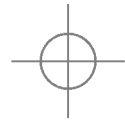
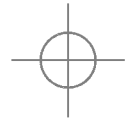


BRIDGE REPLACEMENT  
PRESTRESSED CONCRETE BEAM  
BRIDGE NO. F05-22  
ON HORNETS NEST ROAD  
OVER FRIENDS CREEK

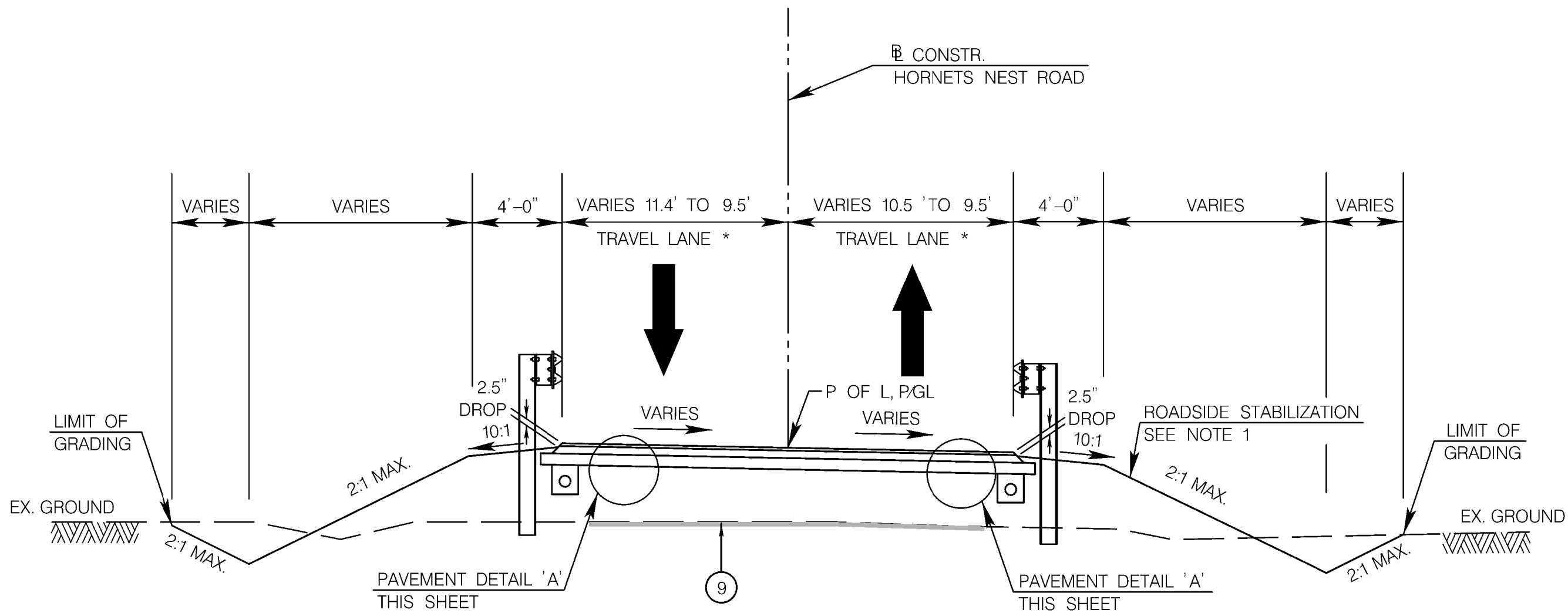
**GEOMETRIC LAYOUT**

SCALE AS-NOTED ADVERTISED DATE NA CONTRACT NO. RFP 16-019A

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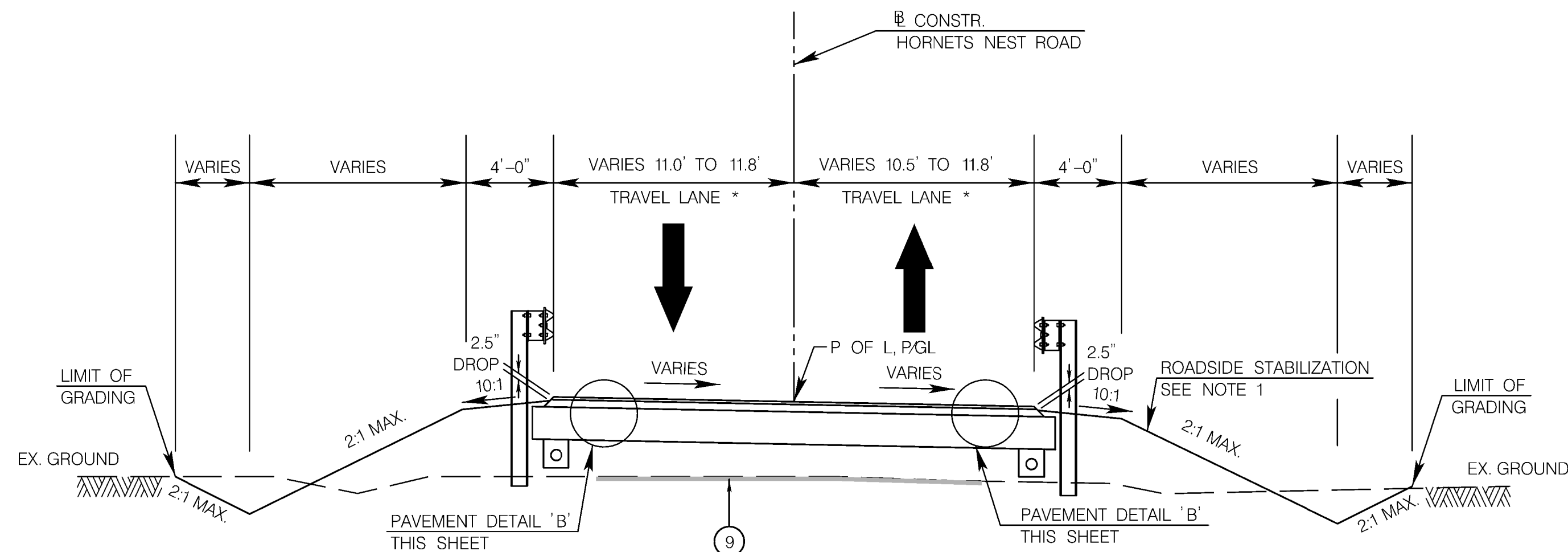
BY: smcevilly -



**HORNETS NEST ROAD**  
**FULL DEPTH PAVEMENT TYPICAL SECTION - NORTH OF BRIDGE**

STA. 3+62.74 TO STA. 4+65.00

\* SEE LANE WIDTH TRANSITION CHART THIS SHEET

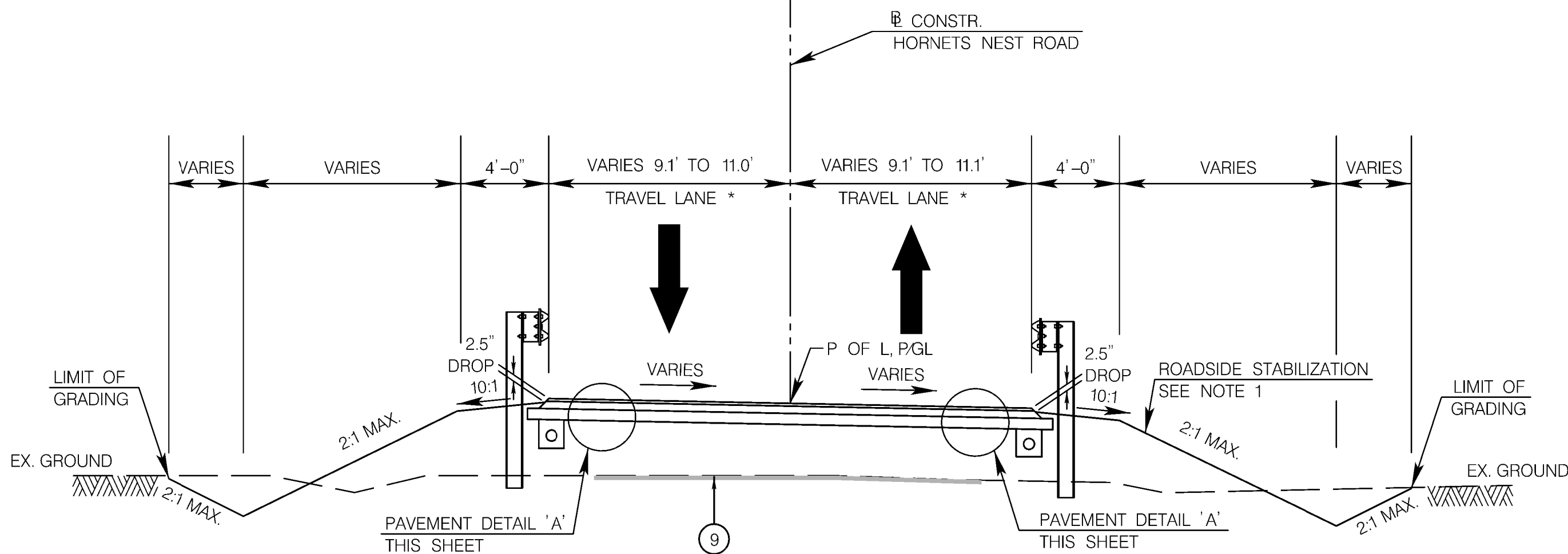


**HORNETS NEST ROAD**  
**FULL DEPTH PAVEMENT TYPICAL SECTION - BRIDGE APPROACHES**

STA. 2+47.54 TO STA. 2+77.54

STA. 3+32.74 TO STA. 3+62.74

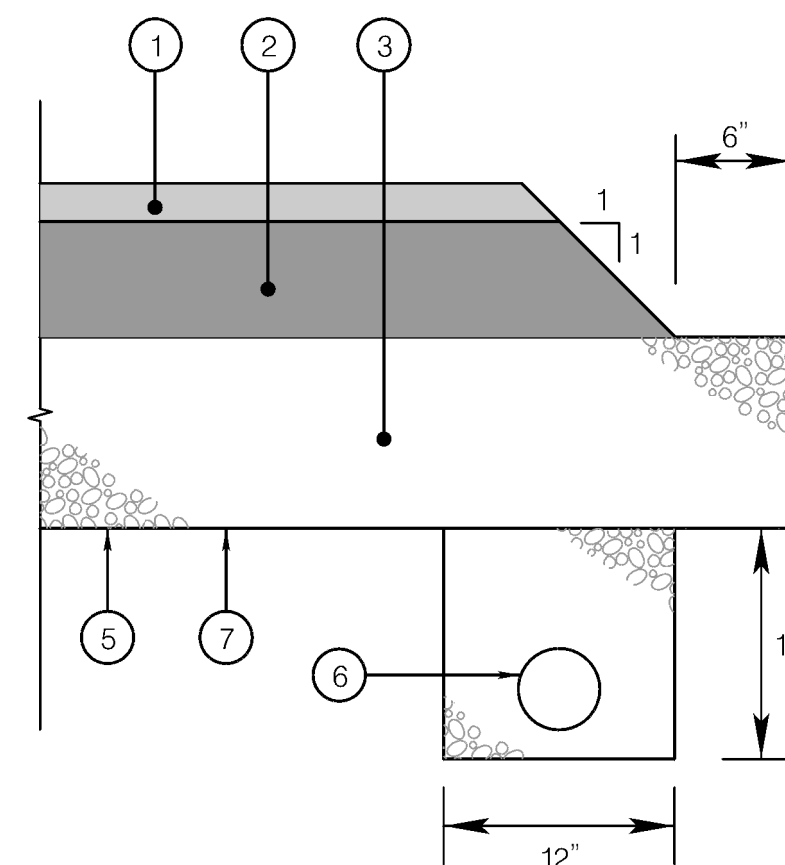
\* SEE LANE WIDTH TRANSITION CHART THIS SHEET



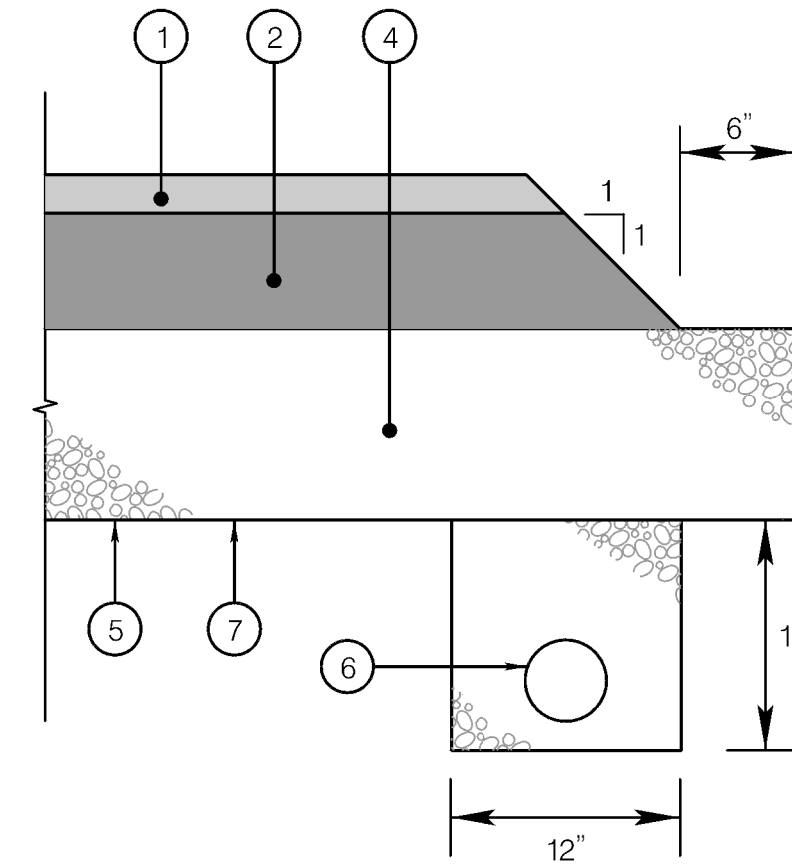
**HORNETS NEST ROAD**  
**FULL DEPTH PAVEMENT TYPICAL SECTION - SOUTH OF BRIDGE**

STA. 0+72.31 TO STA. 2+47.54

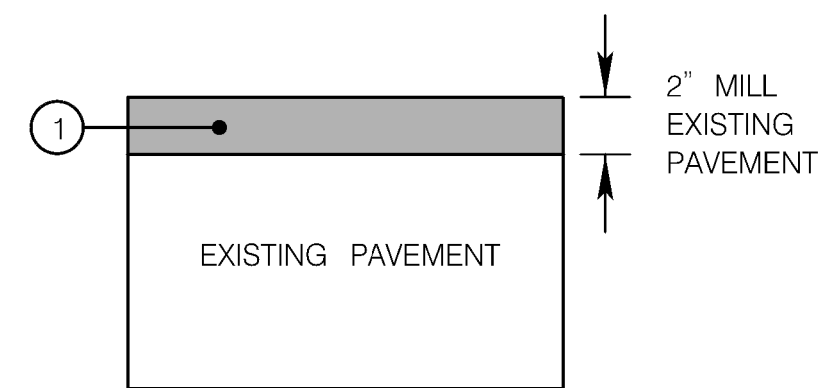
\* SEE LANE WIDTH TRANSITION CHART THIS SHEET



**PAVEMENT DETAIL 'A'**  
FULL DEPTH CONSTRUCTION  
NOT TO SCALE



**PAVEMENT DETAIL 'B'**  
FULL DEPTH CONSTRUCTION  
BRIDGE APPROACHES  
NOT TO SCALE



**PAVEMENT DETAIL 'C'**  
PAVEMENT MILLING  
& RESURFACING  
NOT TO SCALE

#### TYPICAL SECTION NOTES

- ROADSIDE STABILIZATION:
  - PLACE 4" TOPSOIL AND PERFORM TURFGRASS ESTABLISHMENT ON ALL DISTURBED ROADSIDE AND SLOPE AREAS FLATTER THAN 2:1.
  - PLACE 2" TOPSOIL AND PERFORM TURFGRASS ESTABLISHMENT WITH TYPE A SOIL STABILIZATION MATTING ON 2:1 SLOPES OR GREATER PER MD-389.06 AND MD-389.07.
- FOR BRIDGE TYPICAL SECTIONS, PLEASE REFER TO DWG. S-14, SHEET XX, OF THIS PLAN SET.
- FOR LOCATIONS OF GUARDRAIL, PLEASE REFER TO DWG. PS-01, SHEET X, OF THIS PLAN SET.

#### PAVEMENT LEGEND

- 2" SUPERPAVE ASPHALT MIX 9.5MM FOR SURFACE, PG 64S-22, LEVEL 2
- 4" SUPERPAVE ASPHALT MIX 19.0MM FOR BASE, PG 64S-22, LEVEL 2 (ONE 4" LIFT)
- 6" BASE COURSE USING GRADED AGGREGATE BASE
- 24" BASE COURSE USING GRADED AGGREGATE BASE
- LIMIT OF CLASS 1 EXCAVATION
- 6" PERFORATED CIRCULAR PIPE LONGITUDINAL UNDERDRAIN AS PER STANDARD MD 387-11
- TOP OF SUBGRADE
- 1" MILLING OF EXISTING PAVEMENT

#### PAVEMENT DETAIL NOTES

- IF NECESSARY, USE HOT MIX ASPHALT SUPERPAVE 9.5MM FOR WEDGE/LEVEL, PG64-22, LEVEL 2. (1" MIN., 2" MAX. LIFT).
- UNDERDRAIN SHALL BE WRAPPED IN CLASS SD TYPE II GEOTEXTILE ON SIDES AND BOTTOM ONLY. SEE PLAN SHEET, PS-01, FOR SPECIFIC LOCATIONS. MOVE LONGITUDINAL UNDERDRAIN AS DIRECTED BY THE ENGINEER IF CONFLICT WITH ANY W-BEAM. POST. PLACEMENT OF LONGITUDINAL UNDERDRAINS SHALL BE IN CONFORMANCE WITH SECTION 306 OF THE MDSHA'S "STANDARDS SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS" DATED 2017 AND PAGE 35 OF THE FREDERICK COUNTY SUPPLEMENT TO THE 2000 MARYLAND STORMWATER DESIGN MANUAL, VOLUMES I & II. ALL LONGITUDINAL UNDERDRAINS SHALL BE OUTLETTED AT LOW POINTS.
- CONTRACTOR SHALL SAW CUT THROUGH EXISTING ASPHALT PAVEMENT ONLY. ONLY EXCAVATE EXISTING ROADWAY AS REQUIRED TO INSTALL PROPOSED PAVEMENT. PAYMENT FOR SAW CUTS WILL NOT BE MEASURED BUT WILL BE CONSIDERED INCIDENTAL TO ROADWAY EXCAVATION.

SUPERELEVATION CHART			
STATION	LEFT LANE	RIGHT LANE	DESCRIPTION
0+72.31	-1.0%	0.0%	MEET EXISTING
0+87.81	0.0%	-1.0%	END RUNOUT
1+03.31	1.0%	-2.0%	BEGIN 2% RIGHT
1+18.81	2.0%	-2.0%	END 2% RIGHT
1+80.81	6.0%	-6.0%	BEGIN FULL SUPER
2+32.28	6.0%	-6.0%	END FULL SUPER
2+65.28	4.0%	-4.0%	BEGIN 4% SUPER FOR BRIDGE
3+50.00	4.0%	-4.0%	END 4% SUPER FOR BRIDGE
4+00.53	7.26%	-7.26%	BEGIN LEFT TRANSITION TO EXIST.
4+39.90	4.72%	-9.8%	END RIGHT TRANSITION TO EXIST.
4+65.00	3.1%	-9.8%	END LEFT TRANSITION TO EXIST.

LANE WIDTH TRANSITION CHART			
STATION	LEFT LANE	RIGHT LANE	DESCRIPTION
0+72.31	9.1'	9.1'	MEET EXISTING
1+02.31	11'	11'	FULL WIDTH
2+43.09	-	11'	BEGIN RIGHT LANE TRANS.
2+56.88	11'	-	BEGIN LEFT LANE TRANS.
2+69.17	-	11.8'	END RIGHT LANE TRANS. AT BRIDGE
2+83.75	11.8'	-	END LEFT LANE TRANS. AT BRIDGE
3+26.49	-	11.8'	BEGIN TRANS. RIGHT LANE LEAVE BRIDGE
3+41.17	11.8'	-	BEGIN TRANS. LEFT LANE LEAVE BRIDGE
3+78.65	-	10.0'	END RIGHT LANE TRANS.
4+39.90	10.0'	-	END LEFT LANE TRANS.
4+45.76	10.0'	10.0'	BEGIN LEFT/RIGHT TRANS. TO EXIST.
4+65.00	9.5'	9.5'	MEET EXISTING

SHEET TS-01



BRIDGE REPLACEMENT  
PRESTRESSED CONCRETE BEAM  
BRIDGE NO. F05-22  
ON HORNETS NEST ROAD  
OVER FRIENDS CREEK

#### TYP. SECTIONS & PAVEMENT DETAILS

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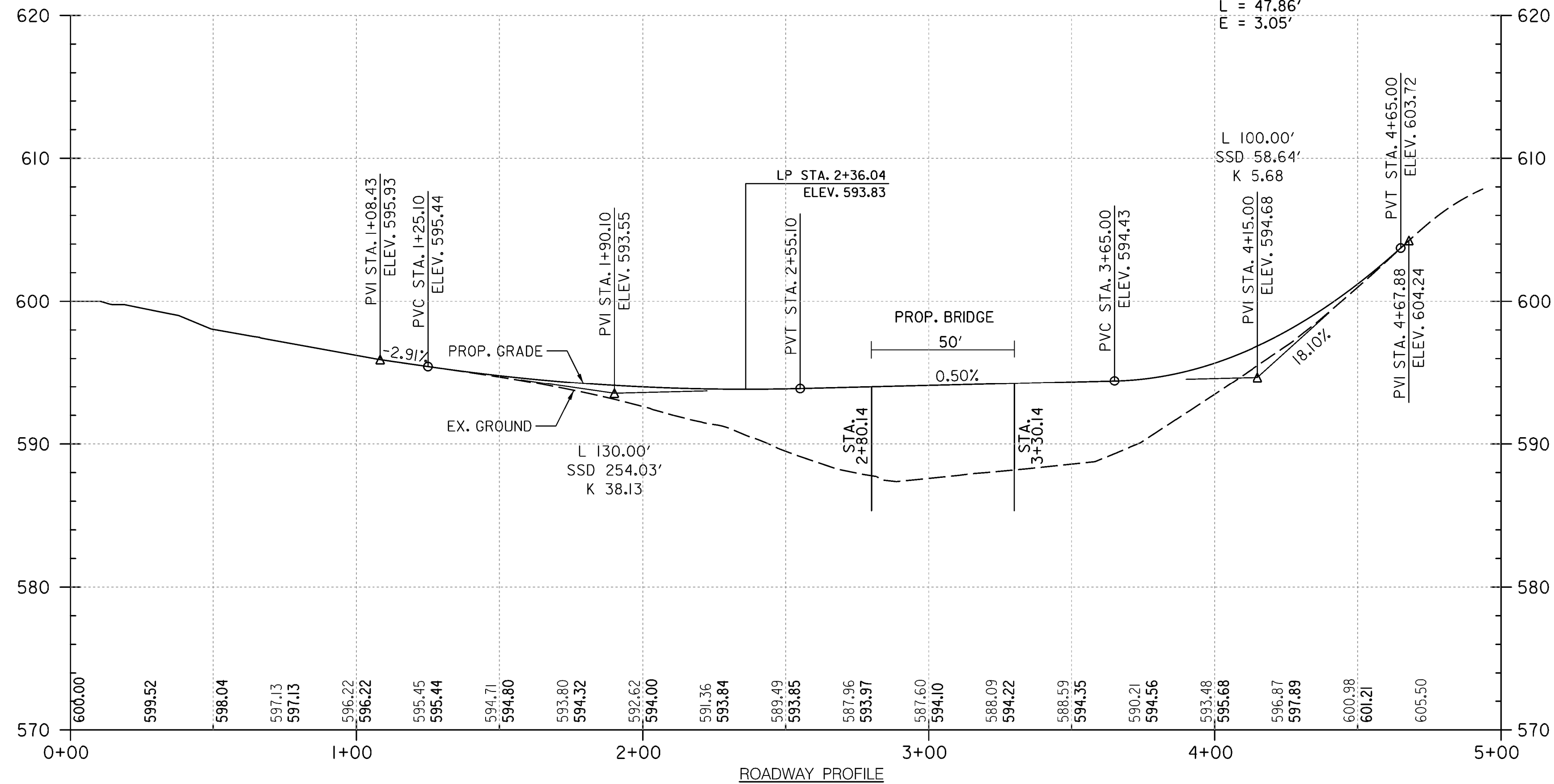
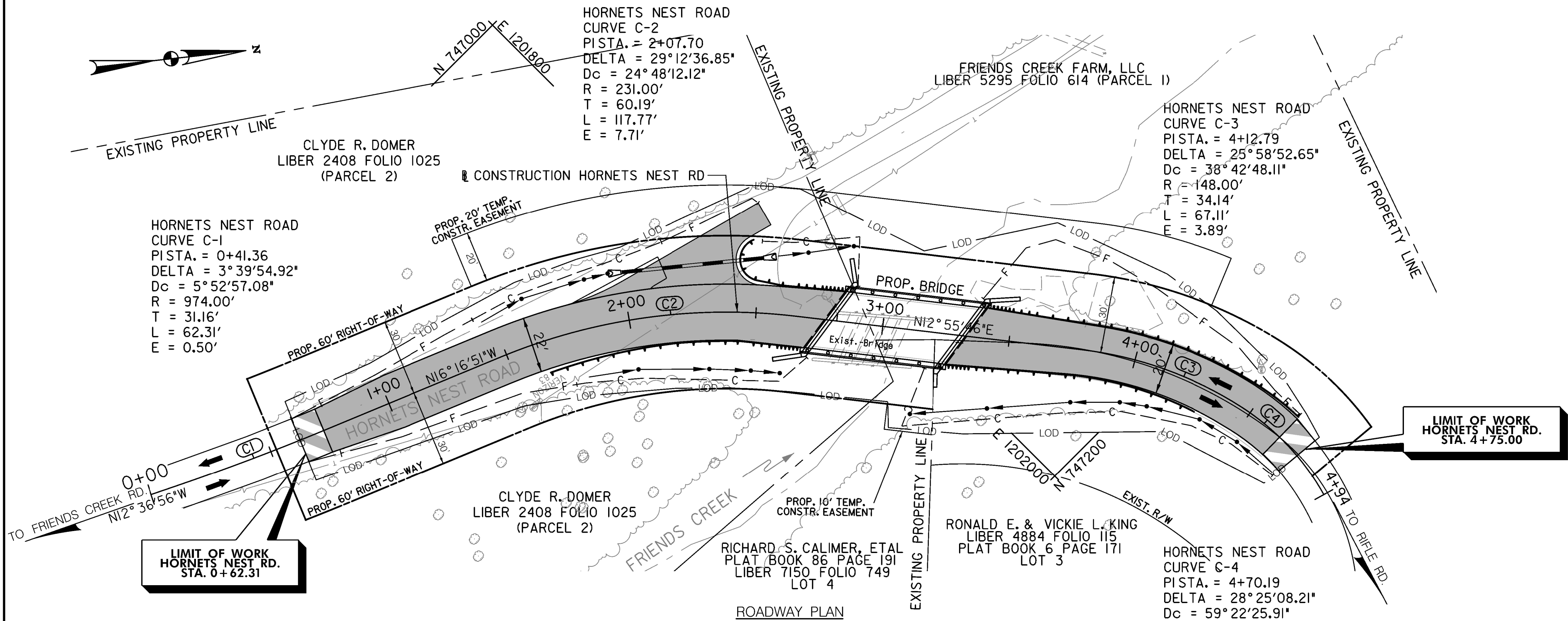
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SHEET NO. 4 OF 43

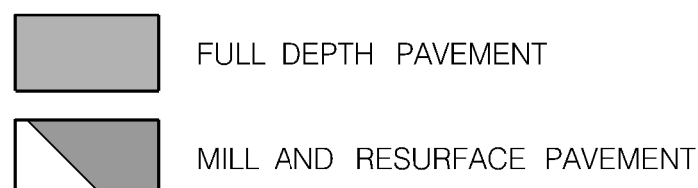
**AMT**

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TOWSON, MD 21204





ROADWAY LEGEND



- LOD LIMIT OF DISTURBANCE
- PROPOSED UNDERDRAIN
- WETLAND
- WATERS OF THE U.S.
- DITCH FLOW LINE

HORIZONTAL



VERTICAL



LOCATIONS OF EXISTING UTILITIES ARE SHOWN ONLY AS NOTIFICATION TO THE CONTRACTOR OF THE PRESENCE OF UNDERGROUND UTILITIES. FREDERICK COUNTY AND THE DESIGN ENGINEER DO NOT WARRANT OR GUARANTEE CORRECTNESS OR COMPLETENESS OF INFORMATION SHOWN. CONTRACTOR IS RESPONSIBLE FOR CONTACTING MISS UTILITY AT 1-800-257-7777 FOR VERIFYING EXISTING AND LOCATION OF ALL UTILITIES PRIOR TO BEGINNING WORK. ANY DAMAGE TO EXISTING UTILITIES DUE TO THE CONTRACTOR'S OPERATION SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE.

TRAFFIC BARRIER W-BEAM, 8 FOOT POST (MD 605.22 & MD 605.31)

25 LF	STA. 2+18, 11' RT. TO STA. 2+43, 11' RT.
25 LF	STA. 3+51, 11' RT. TO STA. 3+76, 10' RT.
50 LF	STA. 3+67, 11' LT. TO STA. 4+17, 10' LT.

TRAFFIC BARRIER THRIE BEAM ANCHORAGE  
AT VERTICAL FACE (MD 605.41)

1 EA	STA. 2+43, 11' RT. TO STA. 2+67, 12' RT.
1 EA	STA. 2+60, 11' LT. TO STA. 2+84, 12' LT.
1 EA	STA. 3+27, 12' RT. TO STA. 3+51, 11' RT.
1 EA	STA. 3+43, 12' LT. TO STA. 3+67, 11' LT.

TRAFFIC BARRIER W-BEAM ONE-SIDED PARALLEL END TREATMENT  
(TYPE C) (MD 605.03)

1 EA	STA. 2+18, 11' RT.
1 EA	STA. 3+76, 10' RT.
1 EA	STA. 4+17, 10' LT.

TRAFFIC BARRIER W-BEAM RADIUS END TREATMENT (TYPE L)  
(MD 605.13)

1 EA	STA. 2+60, 11' LT.
------	--------------------

STORM DRAIN STRUCTURE SCHEDULE

STRUCTURE ID	STATION	OFFSET	STANDARD	TYPE
ES-1	2+00	19' LT	MD 368.01	15' CONC. END SECTION
ES-2	2+52	22' LT	MD 368.01	15' CONC. END SECTION

STORM DRAIN PIPE SCHEDULE

FROM	TO	TYPE	SIZE	LENGTH	INV. IN	INV. OUT
ES-1	ES-2	RCP	15'	56'	592.15	589.50

SHEET PS-01



BRIDGE REPLACEMENT  
PRESTRESSED CONCRETE BEAM  
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ROADWAY PLAN & PROFILE

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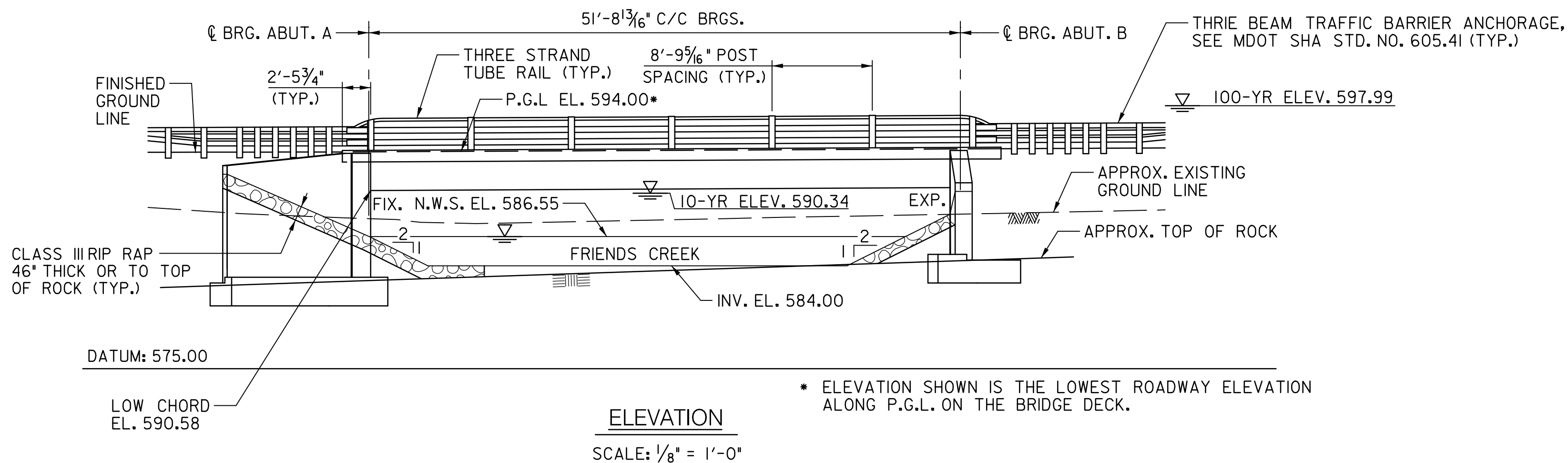
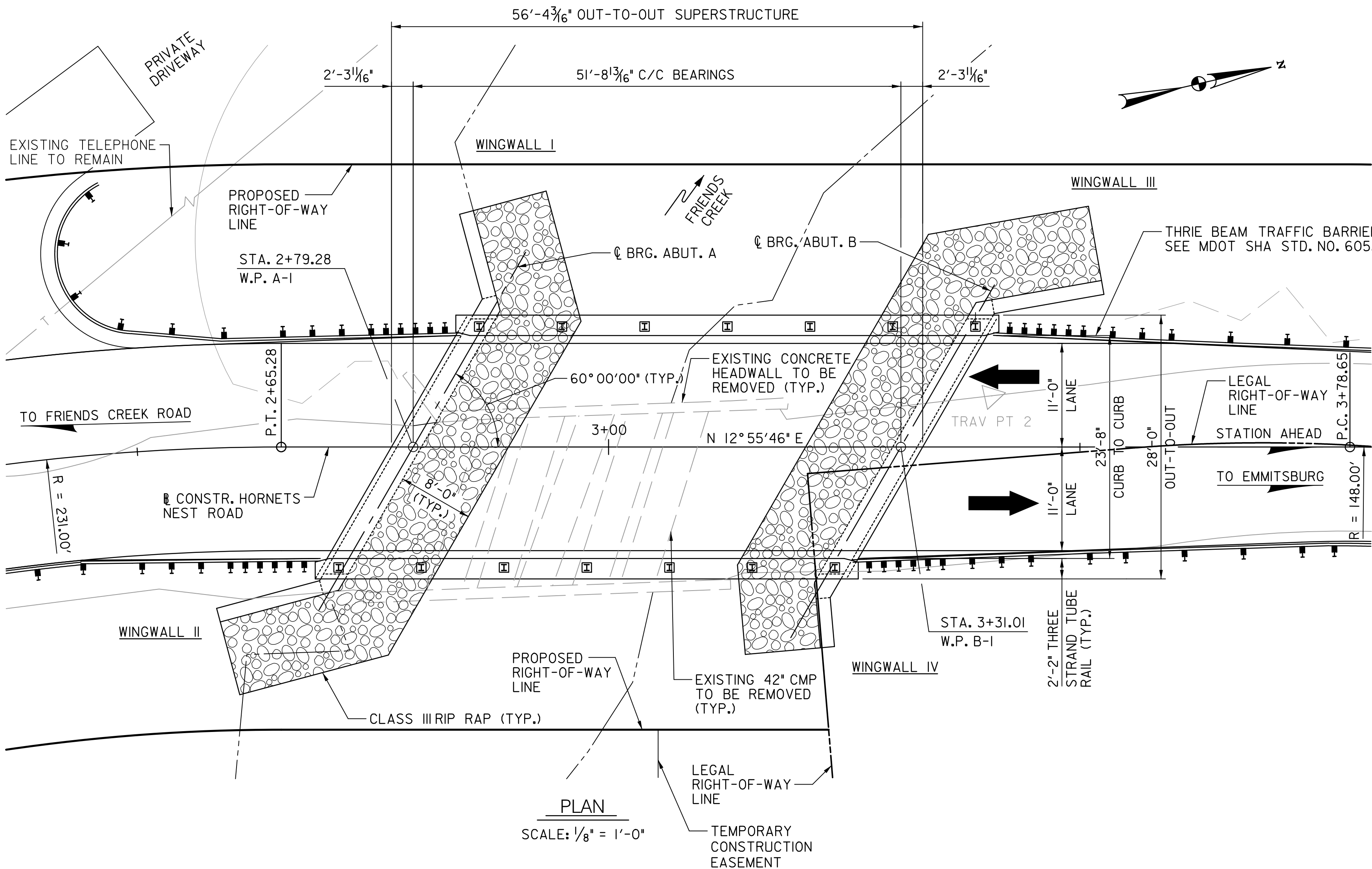
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SHEET NO. 5 OF 43

AMT

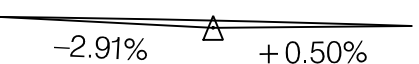
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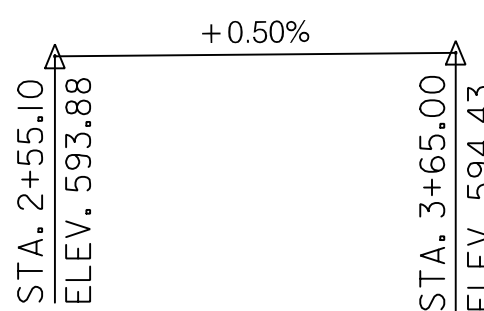


VERTICAL CURVE DATA -  
HORNETS NEST ROAD

P.V.I. STA. 1+90.10  
ELEV. = 593.55  
V.C.L. = 130.00'  
CORR. = +0.55'  
S/E = VARIES  
DES. SPEED = 25 MPH



VERTICAL GRADE DATA -  
HORNETS NEST ROAD



VERTICAL CURVE DATA -  
HORNETS NEST ROAD

P.V.I. STA. 4+15.00  
ELEV. = 594.68  
V.C.L. = 100.00'  
CORR. = +2.20'  
S/E = VARIES  
DES. SPEED = 25 MPH



- GENERAL NOTES**
- SPECIFICATIONS: MDOT SHA STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, DATED JULY 2019.
- DESIGN: AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, DATED 2017.
- LOADING: HL-93
- LOAD RESTRICTIONS: THERE ARE RESTRICTIONS FOR PLACING EQUIPMENT AND MATERIALS ON EXISTING AND NEW STRUCTURE(S). REFER TO SECTION TC 6.14.
- CONCRETE: CONCRETE COMPRESSIVE STRENGTH FOR DESIGN SHALL BE:  
f'c = 3,000 PSI FOR ELEMENTS USING MIX NO. 3  
f'c = 4,000 PSI FOR ELEMENTS USING MIX NO. 6
- ALL CONCRETE FOR SUPERSTRUCTURE OVERLAY AND END PORTION OF SLAB SHALL BE MIX NO. 8 CONCRETE (4,000 PSI) CONTAINING SYNTHETIC FIBERS (SEE SECTION 902.15).
- ALL CONCRETE FOR CURBS SHALL BE MIX NO. 6 (4,500 PSI) CONTAINING SYNTHETIC FIBERS (SEE SECTION 902.15).
- ALL OTHER STRUCTURE CONCRETE EXCEPT PRESTRESSED CONCRETE SHALL BE MIX NO. 3 (3,500 PSI).
- PRESTRESSED CONCRETE: CONCRETE COMPRESSIVE STRENGTH FOR DESIGN SHALL BE f'c = 7,000 PSI. WHILE THE MINIMUM COMPRESSIVE STRENGTH AT TRANSFER SHALL BE f'ci = 5,950 PSI.
- ALL PRESTRESSED CONCRETE SHALL BE SELF-CONSOLIDATING WITH A 28-DAY COMPRESSIVE STRENGTH OF f'c = 8,000 PSI.
- REINFORCING STEEL: REINFORCING STEEL SHALL CONFORM TO ASTM A615 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 AN EP IN THE PLANS.
- THE FOLLOWING REINFORCEMENT SHALL BE EPOXY COATED:  
ABUTMENT BRIDGE SEATS  
CURBS  
PRESTRESSED CONCRETE SLABS  
CONCRETE OVERLAY
- MINIMUM CLEAR COVER FOR REINFORCING STEEL SHALL BE 2" EXCEPT FOR THE FOLLOWING LOCATIONS:
- | LOCATION   | CLEAR COVER |
|--|-------------|
| BOTTOM AND SIDES OF ALL FOOTINGS.<br>BOTTOM OF PRESTRESSED CONCRETE SLABS. | 3 IN.       |
- FOR TIES AND STIRRUPS, STANDARD ACBENDING TOLERANCES ARE MODIFIED TO PLUS (+) ZERO INCHES, MINUS (-) NORMAL ACBENDING 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 PRETENSIONED 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 STRUCTURE(S): EXISTING STRUCTURE(S) SHALL BE CHECKED IN THE FIELD BY THE CONTRACTOR BEFORE ANY MATERIAL IS ORDERED OR FABRICATED OR CONSTRUCTION BEGINS.

HORIZONTAL CURVE DATA -  
HORNETS NEST ROAD

P.I. STA. = 2+07.70  
Δ = 29°12'37" RT.  
D = 24°48'12"  
R = 231.00'  
T = 60.19'  
L = 117.77'  
E = 7.71'  
S/E = VARIES  
DES. SPEED = 25 MPH

HORIZONTAL CURVE DATA -  
HORNETS NEST ROAD

P.T. STA. 2+65.28 TO P.C. STA. 3+78.65  
N 12°55'46" E

HORIZONTAL CURVE DATA -  
HORNETS NEST ROAD

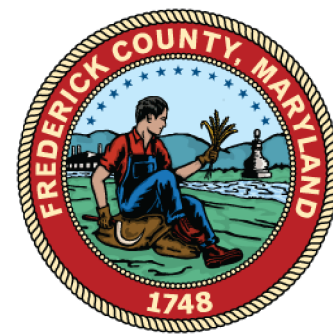
P.I. STA. = 4+12.79  
Δ = 25°58'53" RT.  
D = 38°42'48"  
R = 148.00'  
T = 34.14'  
L = 67.11'  
E = 3.89'  
S/E = VARIES  
DES. SPEED = 25 MPH

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.

MD LICENSE NO. \_\_\_\_\_ EXPIRATION DATE: \_\_\_\_\_

**AMT**

A. MORTON THOMAS AND ASSOCIATES, INC.  
901 DULANEY VALLEY ROAD, SUITE 710  
TOWSON, MD 21204



BRIDGE REPLACEMENT  
PRESTRESSED CONCRETE BEAM  
BRIDGE NO. F05-22  
ON HORNETS NEST ROAD  
OVER FRIENDS CREEK

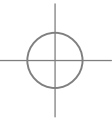
GENERAL PLAN AND ELEVATION

SCALE: AS-NOTED ADVERTISED DATE: N/A CONTRACT NO.: RFP 16-019A

DESIGNED BY: GCD COUNTY: FREDERICK  
DRAWN BY: JRM LOGMILE: XXXX - XXXX  
CHECKED BY: KAR

SHEET NO. 6 OF 43





BY: jpiro -

## HYDROLOGIC DATA

I. SOURCE: GISHYDRO  
PREPARED BY: ☐ SHA ☒ CONSULTANT: AMT DATE: JULY 2019  
FILE LOCATION: FREDERICK COUNTY

II. DRAINAGE AREA: ACRES 7,872 SQUARE MILES 12.3

### III. METHOD(S) OF ANALYSIS:

USGS GAGE DATA ANALYSIS  
o GAGING STATION NO. \_\_\_\_\_  
o LOCATION \_\_\_\_\_  
o DRAINAGE AREA \_\_\_\_\_  
o YEARS OF CONTINUOUS RECORD \_\_\_\_\_  
USGS REGRESSION EQUATIONS  
REFERENCE \_\_\_\_\_  
☒ NRCS TR - 20 METHOD - VERSION USED (DATE) WINTR20-3.20  
o RCN (EXISTING-HOMOGENEOUS WATERSHED) <sup>1</sup> 64  
o RCN (ULTIMATE HOMOGENEOUS WATERSHED) <sup>1</sup> 69  
o T<sub>c</sub> (HOMOGENEOUS WATERSHED) <sup>1</sup> 4.63 (HRS)  
FEMA BASE FLOOD (100-YEAR) DISCHARGE N/A (CFS) METHOD USED BY FEMA \_\_\_\_\_  
OTHER (DESCRIBE) \_\_\_\_\_

HAS FLOOD ROUTING BEEN USED IN DETERMINING FLOOD DISCHARGES? YES \_\_\_\_\_ NO ☒  
METHOD SELECTED \_\_\_\_\_

### IV. COMPUTED FLOOD DISCHARGES

RETURN PERIOD (YEARS)	FLOOD DISCHARGE (CFS)	
	BASED ON EXISTING WATERSHED DEVELOPMENT	BASED ON ULTIMATE WATERSHED DEVELOPMENT
2	882.30	882.30
10	2128.90	2128.90
25	--	--
50	4173.80	4173.80
100	5408.90	5408.90
500	--	--

### V. HISTORIC FLOODS

YEAR	MAGNITUDE (CFS)	HIGH WATER ELEVATION	WHERE MEASURED	SOURCE OF DATA

### VI. STREAM MORPHOLOGY

STREAM TYPE \_\_\_\_\_ VALLEY TYPE \_\_\_\_\_

STREAM BED MATERIAL:  
DESCRIPTION \_\_\_\_\_ D16 \_\_\_\_\_ D50 \_\_\_\_\_ D84 \_\_\_\_\_

BANK FULL CHARACTERISTICS:  
Q \_\_\_\_\_ AREA \_\_\_\_\_ WIDTH \_\_\_\_\_ DEPTH \_\_\_\_\_  
SLOPE \_\_\_\_\_ MANNINGS "n" VALUE \_\_\_\_\_ SINUOSITY \_\_\_\_\_

### VII. TIDAL FLOWS

100-YEAR STORM TIDE ELEVATION (FT) \_\_\_\_\_ MAXIMUM DISCHARGE (CFS) \_\_\_\_\_  
500-YEAR STORM TIDE ELEVATION (FT) \_\_\_\_\_ MAXIMUM DISACHRGE (CFS) \_\_\_\_\_  
SOURCE OF INFORMATION \_\_\_\_\_

DESIGN DISCHARGE \_\_\_\_\_ (CFS) RETURN PERIOD \_\_\_\_\_ YEARS TIDAL PERIOD (HRS) \_\_\_\_\_  
HOW DETERMINED? (EXPLAIN) \_\_\_\_\_  
WATER SURFACE-ELEVATION FOR DESIGN CONDITION (FT)  
(IF TIDAL FLOW GOVERNS HYDRAULIC DESIGN) \_\_\_\_\_

### VII. COMMENTS: NOAA ATLAS 14 RAINFALL DATA WAS APPLIED

## HYDRAULIC DATA

I. SOURCE: AMT & ASSOCIATES/HEC-RAS ANALYSIS  
PREPARED BY: ☐ SHA ☒ CONSULTANT: AMT DATE: JULY 2019  
FILE LOCATION: FREDERICK COUNTY ITEM 71 RATING<sup>2</sup> \_\_\_\_\_  
METHOD(S) OF ANALYSIS: HEC-RAS VERSION 5.07

### II. HYDRAULIC DATA

FLOW CONDITIONS <sup>3</sup>	CHANNEL CROSS-SECTION	STRUCTURE WATERWAY AREA (SF)	ENERGY SLOPE	WATER SURFACE ELEVATION	CHANNEL <sup>5</sup>				LEFT OVERBANK LOOKING DOWNSTREAM <sup>5</sup>				RIGHT OVERBANK LOOKING DOWNSTREAM <sup>5</sup>				DISCHARGE OVER ROAD
					Q (CFS)	W (FT)	V (FPS)	D (FT)	Q	W	V	D	Q	W	V	D	
DESIGN <sup>0</sup> DESCRIBE <u>10-YEAR</u> <u>Q<sub>10</sub> = 2128.9 CFS</u>	APPROACH <sup>8</sup> (DESCRIBE LO- CATION BELOW (322.8))	280.90	0.516%	590.48	2128.9	69.87	7.58	5.64	---	---	---	---	0.02	0.68	0.24	0.13	N/A
	UPSTREAM AT STRUCTURE	318.3	0.307%	590.34	2128.9	76.07	6.67	6.01	---	---	---	---	---	40.40	---	---	
	DOWNSTREAM AT STRUCTURE	230.49	0.778%	587.49	2128.9	71.50	9.24	6.03	---	---	---	---	---	---	---	---	N/A
DESIGN <sup>0</sup> DESCRIBE <u>100-YEAR</u> <u>Q<sub>100</sub> = 5408.9 CFS</u>	APPROACH <sup>8</sup> (DESCRIBE LO- CATION BELOW (322.8))	1610.97	0.73%	597.98	4692.97	71.98	5.73	13.14	647.18	179.02	0.91	3.98	68.75	20.47	0.87	3.88	N/A
	UPSTREAM AT STRUCTURE	1797.08	0.065%	597.97	4640.66	77.82	5.35	13.64	575.97	176.21	0.84	3.88	192.27	70.30	0.78	3.50	
	DOWNSTREAM AT STRUCTURE	375.83	0.098%	590.01	5408.9	72.88	14.39	8.55	---	4.32	---	---	---	29.77	---	---	N/A
DESIGN <sup>0</sup> DESCRIBE <u>50-YEAR</u> <u>Q<sub>50</sub> = 4173.8 CFS</u>	APPROACH <sup>8</sup> (DESCRIBE LO- CATION BELOW (322.8))	737.27	0.191%	594.43	4058.42	71.98	7.19	9.59	93.66	136.25	0.62	1.10	21.72	11.11	0.93	2.11	N/A
	UPSTREAM AT STRUCTURE	703.83	0.192%	594.33	4114.30	77.82	7.04	10.0	58.38	134.42	0.52	0.83	1.12	61.08	0.15	0.13	
	DOWNSTREAM AT STRUCTURE	332.09	0.885%	589.25	4173.80	72.72	12.57	7.79	---	---	---	0.30	---	25.95	---	---	N/A

### III. BRIDGE SCOUR DATA

#### A. SCOUR EVALUATION STUDY TITLE: HORNETS NEST BRIDGE SCOUR ANALYSIS

PREPARED BY: ☐ SHA ☒ CONSULTANT: AMT DATE: FEB 2020  
FILE LOCATION: FREDERICK COUNTY ITEM 113 RATING<sup>2</sup> \_\_\_\_\_

#### B. SCOUR ESTIMATES:

	DESIGN CONDITIONS (DESCRIBE SPECIAL CONDITIONS SUCH AS OVERTOPPING, LOW TAILWATER, INFLUENCE OF CONFLUENCES, ETC.)	FLOOD DISCHARGE RETURN PERIOD (YEARS)	MAGNITUDE (CFS)	LONG TERM DEGRADATION / AGGRADATION (FT)	CONTRACTION <sup>9</sup> SCOUR DEPTH (LOOKING DOWNSTREAM) (FT)			CHANNEL BED LOAD (DESCRIBE)	TYPE OF SCOUR (LIVE BED/CLEAR WATER)
					LT OVERBANK	MAIN CHANNEL	RT OVERBANK		
DESIGN FLOOD FOR SCOUR		10-YR	2128.90			0.20			LIVE BED
CHECK FLOOD FOR SCOUR		100-YR	5408.90			13.86			CLEAR WATER
OTHER									
TOTAL SCOUR: ESTIMATED TOTAL SCOUR AT SUBSTRUCTURE/ CHANNEL ELEMENTS (INCLUDES LONG TERM DEGRADATION/AGGRADATION PLUS CONTRACTION SCOUR, PLUS LOCAL SCOUR)									
LOCATION OF CHANNEL OR SUBSTRUCTURE ELEMENT				ELEVATION OF BOTTOM OF STREAM CHANNEL BED OR SCOUR HOLE (FT)			SCOUR COUNTER MEASURES		
				DESIGN FLOOD	CHECK FLOOD		<input type="checkbox"/> EXISTING	<input checked="" type="checkbox"/> NEW	
CHANNEL THALWEG				584.13	570.47		USE CLASS III RIPRAP W/ BLANKET THICKNESS OF 46"		
ABUTMENT A EAST				568.22	552.88				
ABUTMENT B WEST				573.31	557.65				
PIER NO.									
PIER NO.									
PIER NO.									
PIER NO.									
PIER NO.									
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PIER NO.									
PIER NO.									

#### NOTES:

BLANK SPACES INDICATE THAT DATA IS NOT AVAILABLE OR IS NOT APPLICABLE

1. PARAMETERS COMPUTED ASSUMING THE WATERSHED IS HOMOGENEOUS WITHOUT SUBDIVISIONS

2. ITEM 71 RATING AND ITEM 113 RATING; REFER TO THE OBD GUIDE FOR COMPLETING THE S&A INPUT FORMS.

3. RECORD FLOW CONDITIONS USED IN ANALYSIS; DISCHARGE (Q), TAILWATER CONDITION AND HOW SELECTED, ETC. (FOR DEPRESSED CULVERTS, INDICATE UNDER COMMENTS THE ASSUMPTIONS MADE AS TO WHETHER SEDIMENT WILL REMAIN DURING FLOODS)

4. FOR CULVERTS, USE THESE THREE COLUMNS TO RECORD:  
o DEPTH OF FLOW AT CULVERT INLET AND OUTLET  
o WATER-SURFACE ELEVATION AT CULVERT INLET AND OUTLET  
o ENERGY SLOPE FOR CULVERT BARREL

5. SYMBOLS USED:  
Q = FLOW OR DISCHARGE (CFS)  
W = CHANNEL WIDTH OR FLOODPLAIN WIDTH (FT)  
V = FLOW VELOCITY (FPS)  
D = DEPTH OF FLOW (FT)

6. FOR CULVERTS, RECORD OUTLET VELOCITY HERE

7. FOR CULVERTS , RECORD TAILWATER DEPTH HERE

8. APPROACH SECTION SHOULD BE SELECTED AS PER GUIDANCE IN ABS-COURLERS MANUAL

9. ENTER CONTRACTION SCOUR DEPTHS ONLY (APPROXIMATE LINE 12) IN ABS-COURLERS OUTPUT)  
- NOT ABUTMENT SCOUR

10. IF SCOUR RESISTENT BEDROCK CONTROLS SCOUR, ENTER BEDROCK ELEVATION AND NOTE THIS CONDITION UNDER COMMENTS

11. RECORD INCIPENT OVERTOPPING DISCHARGE (Q) AND RECURRENCE INTERVAL

12. RECORD CLEARANCE BETWEEN WATER SURFACE ELEVATION AND LOW CHORD FOR DESIGN DISCHARGE

13. RECORD TOTAL FLOW AREA UNDER STRUCTURE (DOWNSTREAM END) FOR 100 & 500 YEAR FLOODS

14. FOR BRIDGES:  
ENTER TYPE, SPAN LENGTH AND MAXIMUM VERTICAL CLEARANCE

15. FOR CULVERTS, DESCRIBE TYPE OF INLET/OUTLET AND EROSION PROTECTION

16. COMPOSITE "N" VALUE OF STRUCTURE

**AMT**

A. MORTON THOMAS AND ASSOCIATES, INC.  
901 DULANEY VALLEY ROAD, SUITE 710  
TOWSON, MD 21204

### IV. ROADWAY AND STRUCTURE DATA

ITEM	EXISTING STRUCTURE	PROPOSED STRUCTURE
NAME OF WATERWAY	FRIENDS CREEK	
DATE BUILT	N/A	TO BE BUILT
OVERTOPPING ELEVATION	588	594.59
OVERTOPPING LOCATION (DESCRIBE)	BRIDGE	25' LEFT OF CL BRIDGE
INCIPENT OVERTOPPING FLOW CONDITION (OVERTOPPING Q < 100 YR FLOOD)	247.84 CFS	4,250
FREEBOARD <sup>12</sup>	0	0.73
TOTAL STRUCTURE WATERWAY AREA <sup>13</sup>	57.5	357.44
STRUCTURE DESCRIPTION <sup>14</sup>	4 CELL CULVERT	PCSB BRIDGE (CONC. SLAB)
INLET TREATMENT <sup>15</sup>	--	CL RIPRAP AT ABUTMENTS
OUTLET TREATMENT <sup>15</sup>	--	CL RIPRAP AT ABUTMENTS
MANNINGS "N" VALUE <sup>16</sup>	0.035	0.035

### V. SURVEY BOOK NUMBERS

REFERENCE DATUM FOR ELEVATIONS NAVD 88

### VI. FLOOD PLAIN MANAGEMENT DATA

DATE OF FLOOD INSURANCE STUDY N/A COMMUNITY PANEL NO. \_\_\_\_\_

PROJECT LOCATION (CHECK BELOW):

☒ BEYOND FEMA PROGRAM LIMITS (NOT IN "A" HAZARD ZONE)

\_\_\_\_\_ FEMA HAZARD ZONE "A"; NO BASE FLOOD ELEVATIONS ESTABLISHED

\_\_\_\_\_ FEMA HAZARD ZONE "A"; BASE FLOOD ELEVATIONS ESTABLISHED

REGULATORY FLOODWAY \_\_\_\_\_ YES ☒ NO  
MAXIMUM CHANGE IN WATER SURFACE ELEVATION UPSTREAM OF  
BRIDGE DUE TO HIGHWAY PROJECT (MAX. BACKWATER) \_\_\_\_\_ FT.

LOCATION OF MAX. BACKWATER FROM  
UPSTREAM FACE OF BRIDGE 985 FT.

DESCRIBE TYPE OF STUDY DONE TO DETERMINE CONSISTENCY

WITH NFIP STANDARDS \_\_\_\_\_

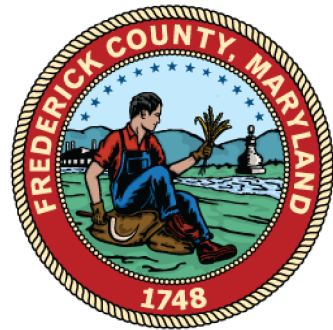
DATE COMMUNITY ACKNOWLEDGEMENT FORM ISSUED: \_\_\_\_\_

IS THE PROJECT CONSISTENT WITH THE CODE OF FEDERAL REGULATIONS,  
PART 650 A, LOCATION AND HYDRAULIC DESIGN OF ENCROACHMENTS ON  
FLOOD PLAINS (23 CFR 650 A). Y/N N/A

IS THE PROJECT CONSISTENT WITH THE ANNOTATED  
CODE OF MARYLAND (COMAR 08.05.03)? Y/N YES

### VII. COMMENTS:

SHEET S-02



BRIDGE REPLACEMENT  
PRESTRESSED CONCRETE BEAM  
BRIDGE NO. F05-22  
ON HORNETS NEST ROAD  
OVER FRIENDS CREEK

## HYDROLOGIC AND HYDRAULIC DATA

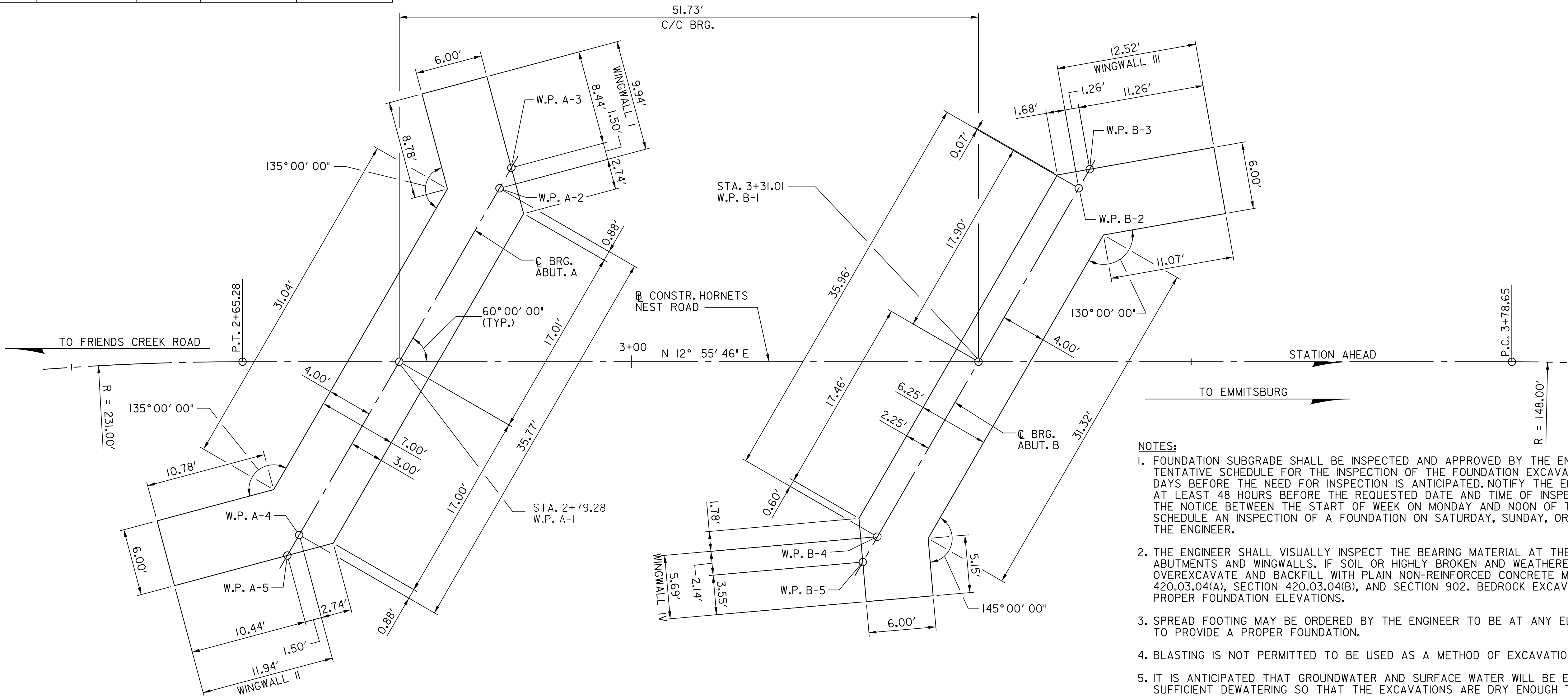
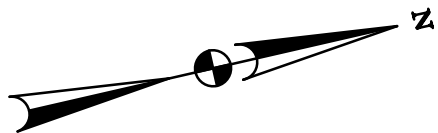
SCALE AS NOTED ADVERTISED DATE NA CONTRACT NO. RFP 16-019A

DESIGNED BY XXX COUNTY FREDERICK  
DRAWN BY JRM LOGMILE XXXX - XXXX  
CHECKED BY XXX

SHEET NO. 7 OF 43



WORKING POINT	STATION	OFFSET	NORTHING	EASTING
A-1	2+79.28	0.00'	747119.0511	1201929.5481
A-2	2+88.22	15.49' LT	747131.2364	1201916.4486
A-3	2+89.28	17.33' LT	747132.6812	1201914.8954
A-4	2+70.34	15.48' RT	747106.8773	1201942.6351
A-5	2+69.28	17.32' RT	747105.4325	1201944.1884
B-1	3+31.01	0.00'	747169.4715	1201941.1233
B-2	3+39.96	15.51' LT	747181.6659	1201928.0141
B-3	3+40.94	17.20' LT	747182.9996	1201926.5803
B-4	3+21.98	15.64' RT	747157.1703	1201954.3473
B-5	3+20.67	17.91' RT	747155.3891	1201956.2621



- NOTES:**
- FOUNDATION SUBGRADE SHALL BE INSPECTED AND APPROVED BY THE ENGINEER. NOTIFY THE ENGINEER OF A TENTATIVE SCHEDULE FOR THE INSPECTION OF THE FOUNDATION EXCAVATION AT LEAST SEVEN (7) CALENDAR DAYS BEFORE THE NEED FOR INSPECTION IS ANTICIPATED. NOTIFY THE ENGINEER OF A FIRM DATE AND TIME AT LEAST 48 HOURS BEFORE THE REQUESTED DATE AND TIME OF INSPECTION OF AN EXCAVATION, BUT GIVE THE NOTICE BETWEEN THE START OF WEEK ON MONDAY AND NOON OF THE FOLLOWING FRIDAY. DO NOT SCHEDULE AN INSPECTION OF A FOUNDATION ON SATURDAY, SUNDAY, OR HOLIDAYS WITHOUT THE APPROVAL OF THE ENGINEER.
  - THE ENGINEER SHALL VISUALLY INSPECT THE BEARING MATERIAL AT THE BOTTOM OF FOOTING ELEVATION FOR ABUTMENTS AND WINGWALLS. IF SOIL OR HIGHLY BROKEN AND WEATHERED BEDROCK IS ENCOUNTERED, OVEREXCAVATE AND BACKFILL WITH PLAIN NON-REINFORCED CONCRETE MIX NO. 1 IN ACCORDANCE WITH SECTION 420.03.04(A), SECTION 420.03.04(B), AND SECTION 902. BEDROCK EXCAVATION IS ANTICIPATED TO ACHIEVE THE PROPER FOUNDATION ELEVATIONS.
  - SPREAD FOOTING MAY BE ORDERED BY THE ENGINEER TO BE AT ANY ELEVATION OF ANY DIMENSION NECESSARY TO PROVIDE A PROPER FOUNDATION.
  - BLASTING IS NOT PERMITTED TO BE USED AS A METHOD OF EXCAVATION.
  - IT IS ANTICIPATED THAT GROUNDWATER AND SURFACE WATER WILL BE ENCOUNTERED IN THE EXCAVATION. PROVIDE SUFFICIENT DEWATERING SO THAT THE EXCAVATIONS ARE DRY ENOUGH TO BE INSPECTED BY THE ENGINEER.
  - THE CONTRACTOR IS RESPONSIBLE FOR THE STABILITY OF ALL TEMPORARY EXCAVATION SLOPES. DIRECT SURFACE RUNOFF AWAY FROM THE EXCAVATION. PERFORM ALL EXCAVATIONS IN ACCORDANCE WITH OSHA REQUIREMENTS.
  - THE MAXIMUM FACTORED BEARING RESISTANCE SHALL BE LIMITED TO 13.50 KSF.
  - ALL ANGLES ARE 90° 00' 00\"/>

**GEOMETRIC AND FOOTING LAYOUT**

SCALE: 3/16" = 1'-0"

**HORIZONTAL CURVE DATA-**

**HORNETS NEST ROAD**

P.I. STA. = 2+07.70  
Δ = 29° 12' 37" RT.  
D = 24° 48' 12"  
R = 231.00'  
T = 60.19'  
L = 117.77'  
E = 7.71'  
S/E = VARIES  
DES. SPEED = 25 MPH

**HORIZONTAL CURVE DATA-**

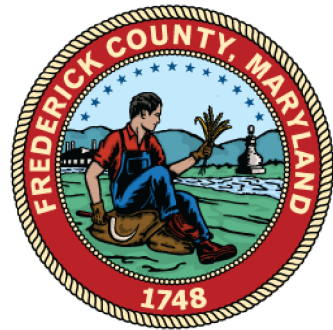
**HORNETS NEST ROAD**

P.T. STA. 2+65.28 TO P.C. STA. 3+78.65  
N 12° 55' 46" E

**HORIZONTAL CURVE DATA-**

**HORNETS NEST ROAD**

P.I. STA. = 4+12.79  
Δ = 25° 58' 53" RT.  
D = 38° 42' 48"  
R = 148.00'  
T = 34.14'  
L = 67.11'  
E = 3.89'  
S/E = VARIES  
DES. SPEED = 25 MPH



BRIDGE REPLACEMENT  
PRESTRESSED CONCRETE BEAM  
BRIDGE NO. F05-22  
ON HORNETS NEST ROAD  
OVER FRIENDS CREEK

**GEOMETRIC AND FOOTING LAYOUT**

SCALE AS-NOTED ADVERTISED DATE N/A CONTRACT NO. RFP 16-019A

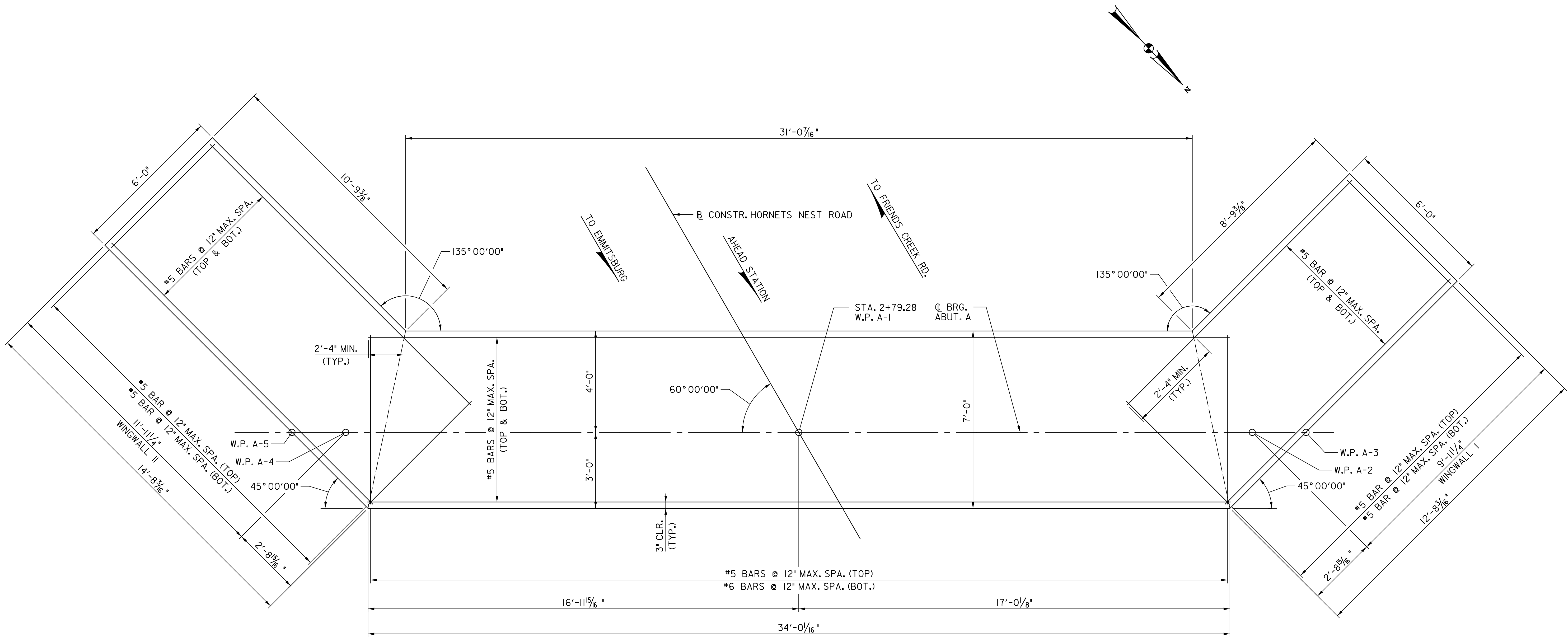
DESIGNED BY GCD COUNTY FREDERICK  
DRAWN BY JRM LOGMILE XXXX - XXXX  
CHECKED BY KAR



A. MORTON THOMAS AND ASSOCIATES, INC.  
901 DULANEY VALLEY ROAD, SUITE 710  
TOWSON, MD 21204

BY: jpiro -

PLOTTED: Friday, March 26, 2021 AT 04:21 PM



REINFORCEMENT PLAN - ABUTMENT A

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

NOTES:

- ALL ANGLES ARE 90° 00' 00" UNLESS NOTED OTHERWISE.
- FOR WORK POINTS AND COORDINATES, SEE SHEET S-03.
- FOR FOUNDATION NOTES, SEE SHEET S-03.

SHEET S-04



BRIDGE REPLACEMENT  
PRESTRESSED CONCRETE BEAM  
BRIDGE NO. F05-22  
ON HORNETS NEST ROAD  
OVER FRIENDS CREEK

ABUTMENT A - REINFORCEMENT PLAN

SCALE AS-NOTED ADVERTISED DATE NA CONTRACT NO. RFP 16-019A

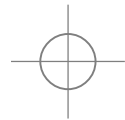
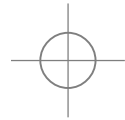
DESIGNED BY GCD COUNTY FREDERICK  
DRAWN BY JRM LOGMILE XXXX - XXXX  
CHECKED BY KAR

SHEET NO. 9 OF 43

**AMT**

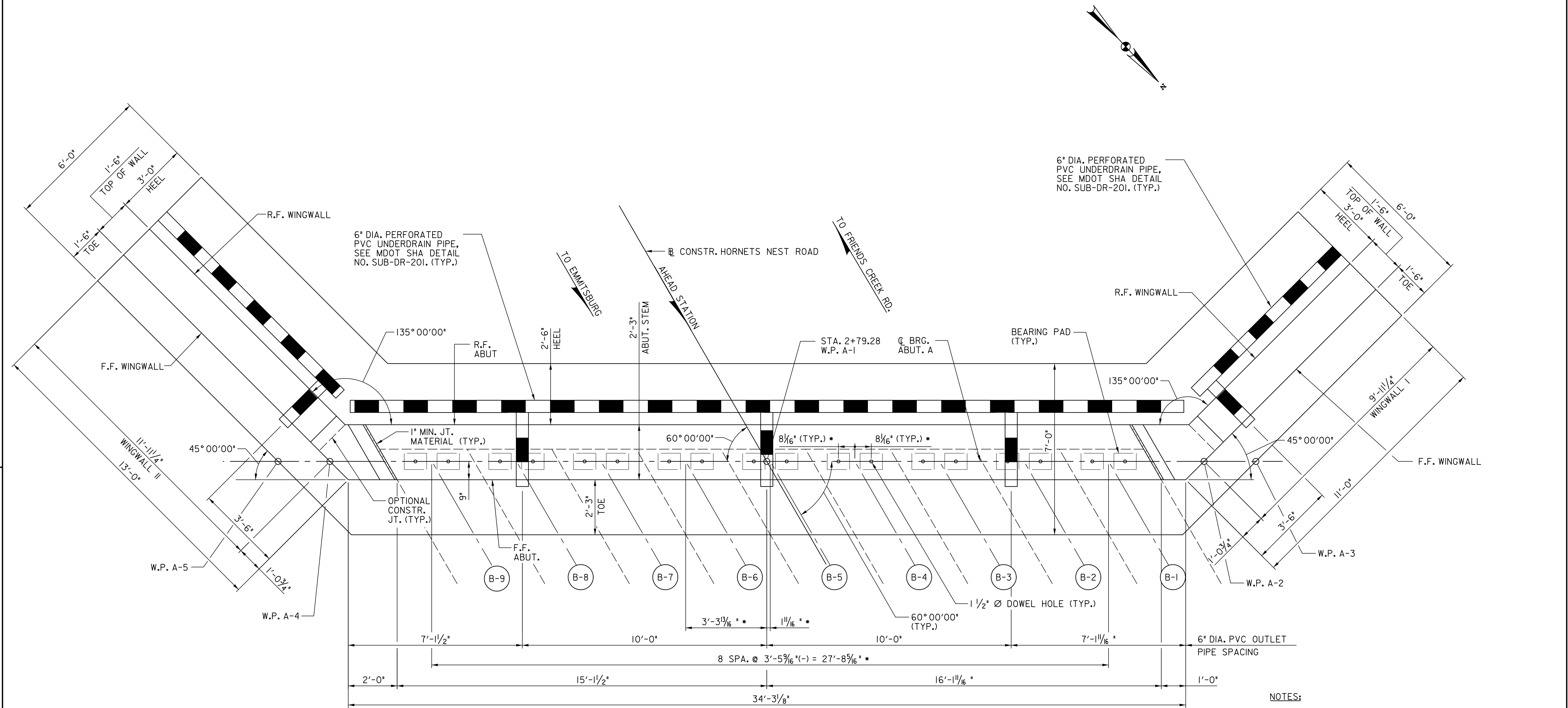
A. MORTON THOMAS AND ASSOCIATES, INC.  
901 DULANEY VALLEY ROAD, SUITE 710  
TOWSON, MD 21204





BY: jpiro -

PLOTTED: Friday, March 26, 2021 AT 04:21 PM

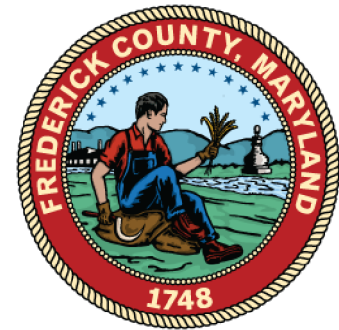


PLAN - ABUTMENT A  
SCALE: 1/2" = 1'-0"

\* MEASURED ALONG THE ABUTMENT SEAT

- NOTES:
- FOR WINGWALL DETAILS, SEE SHEETS S-08 & S-09.
  - FOR WORK POINTS AND COORDINATES, SEE SHEET S-03.

SHEET S-05



BRIDGE REPLACEMENT  
PRESTRESSED CONCRETE BEAM  
BRIDGE NO. F05-22  
ON HORNETS NEST ROAD  
OVER FRIENDS CREEK

ABUTMENT A - PLAN

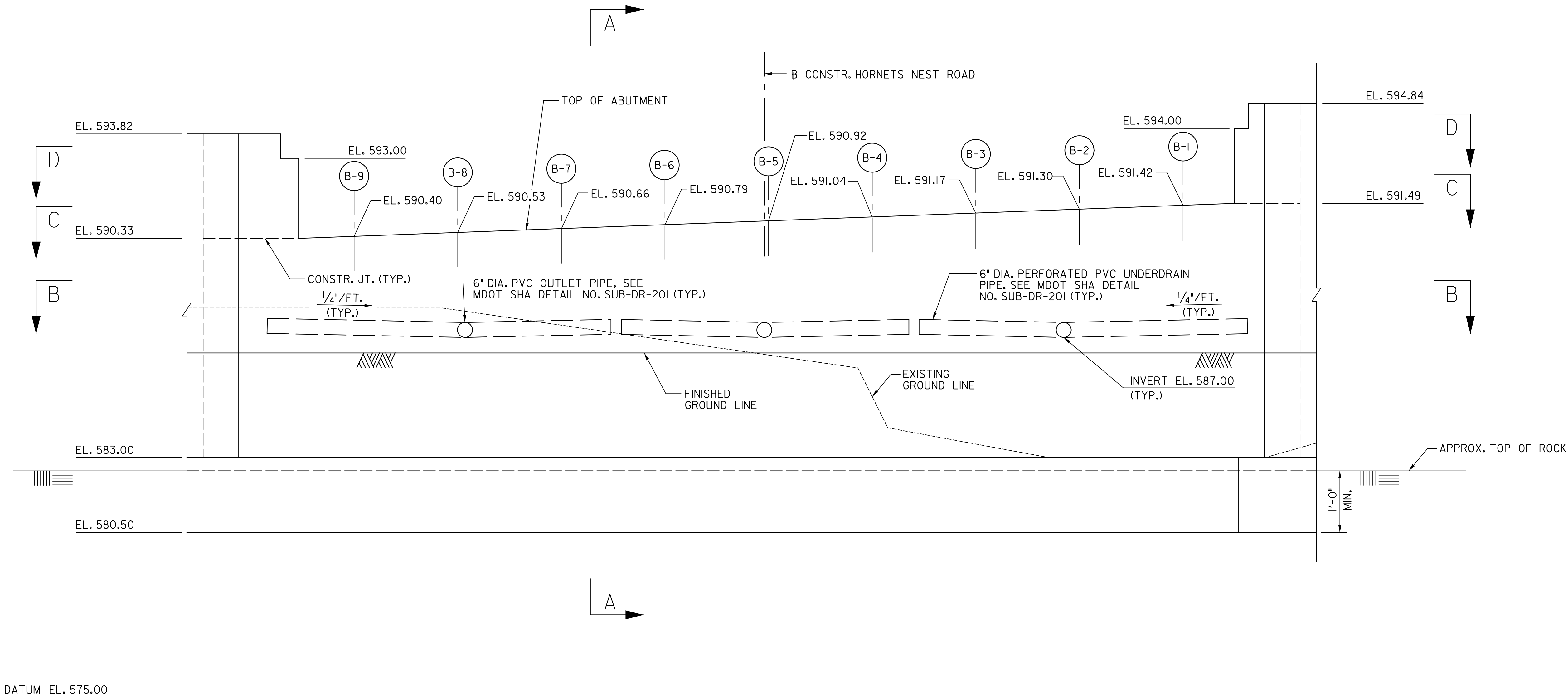
SCALE AS-NOTED ADVERTISED DATE N/A CONTRACT NO. RFP 16-019A

DESIGNED BY GCD COUNTY FREDERICK  
DRAWN BY JRM LOGMILE XXXX - XXXX  
CHECKED BY KAR

SHEET NO. 10 OF 43

**AMT**  
A. MORTON THOMAS AND ASSOCIATES, INC.  
901 DULANEY VALLEY ROAD, SUITE 710  
TOWSON, MD 21204



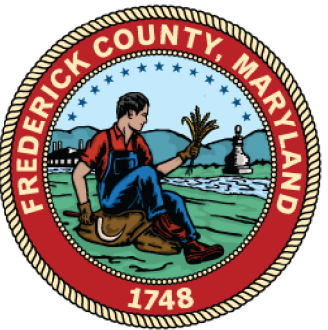


DATUM EL. 575.00

ELEVATION – ABUTMENT A  
SCALE: 1/2" = 1'-0"

- NOTES:**
1. FOR SECTION A-A, B-B, C-C, & D-D SEE SHEET S-07.
  2. FOR WINGWALL DETAILS, SEE SHEET S-08 & S-09.
  3. CORNERBLOCKS ABOVE THE BEAM SEAT ELEVATIONS SHALL BE PLACED AFTER THE PLACEMENT OF THE SLAB BEAMS.

SHEET S-06



BRIDGE REPLACEMENT  
PRESTRESSED CONCRETE BEAM  
BRIDGE NO. F05-22  
ON HORNETS NEST ROAD  
OVER FRIENDS CREEK

**ABUTMENT A – ELEVATION**

SCALE AS-NOTED ADVERTISED DATE N/A CONTRACT NO. RFP 16-019A

DESIGNED BY GCD COUNTY FREDERICK  
DRAWN BY JRM LOGMILE XXXX – XXXX  
CHECKED BY KAR

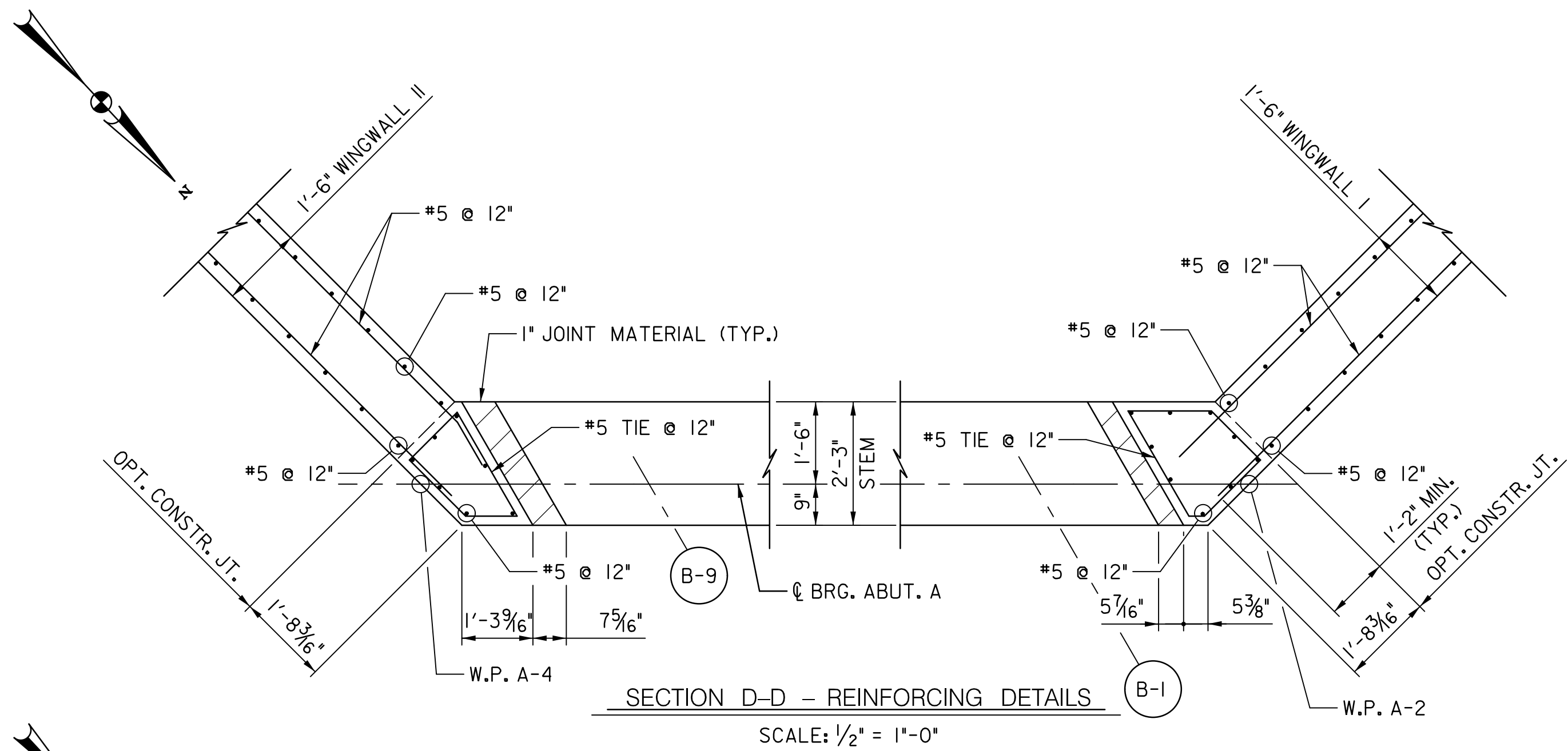


A. MORTON THOMAS AND ASSOCIATES, INC.  
901 DULANEY VALLEY ROAD, SUITE 710  
TOWSON, MD 21204

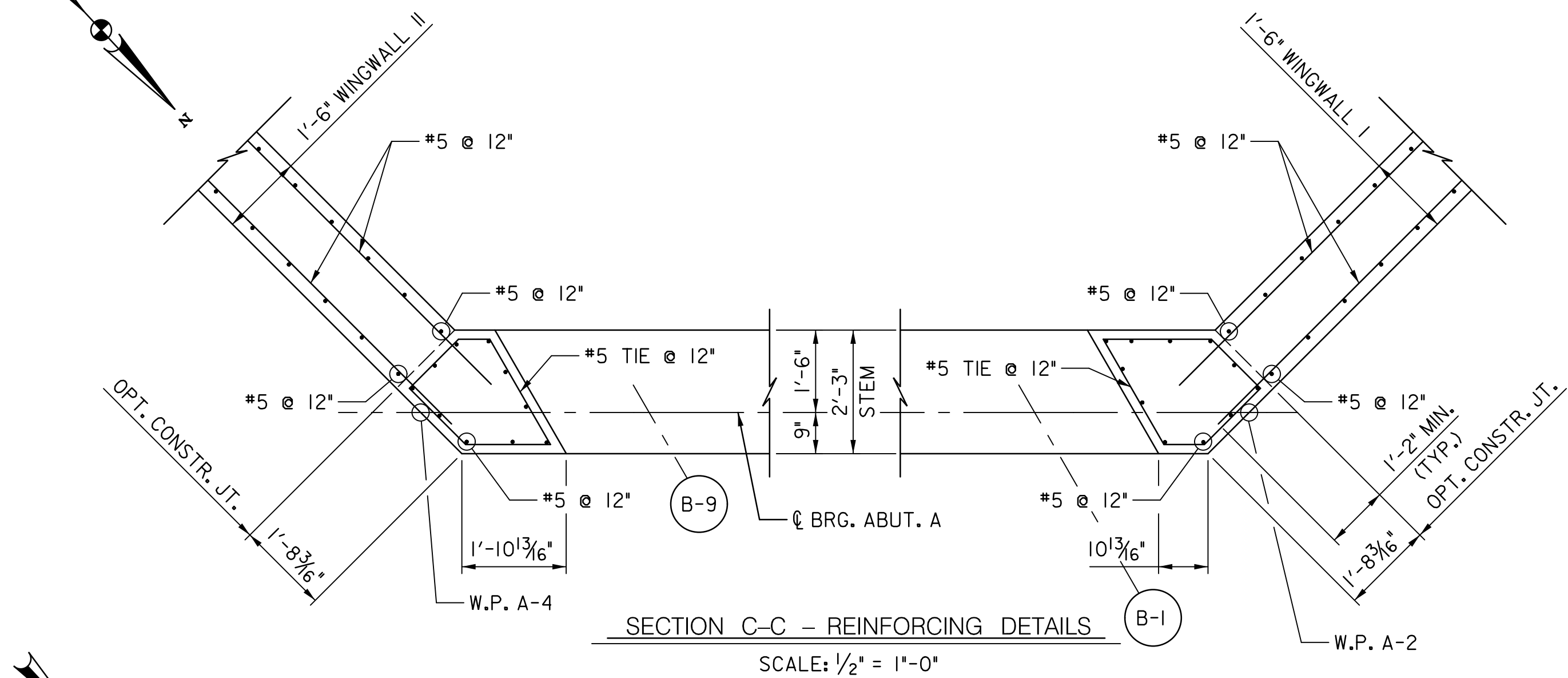
SHEET NO. 11 OF 43

BY: jpiro -

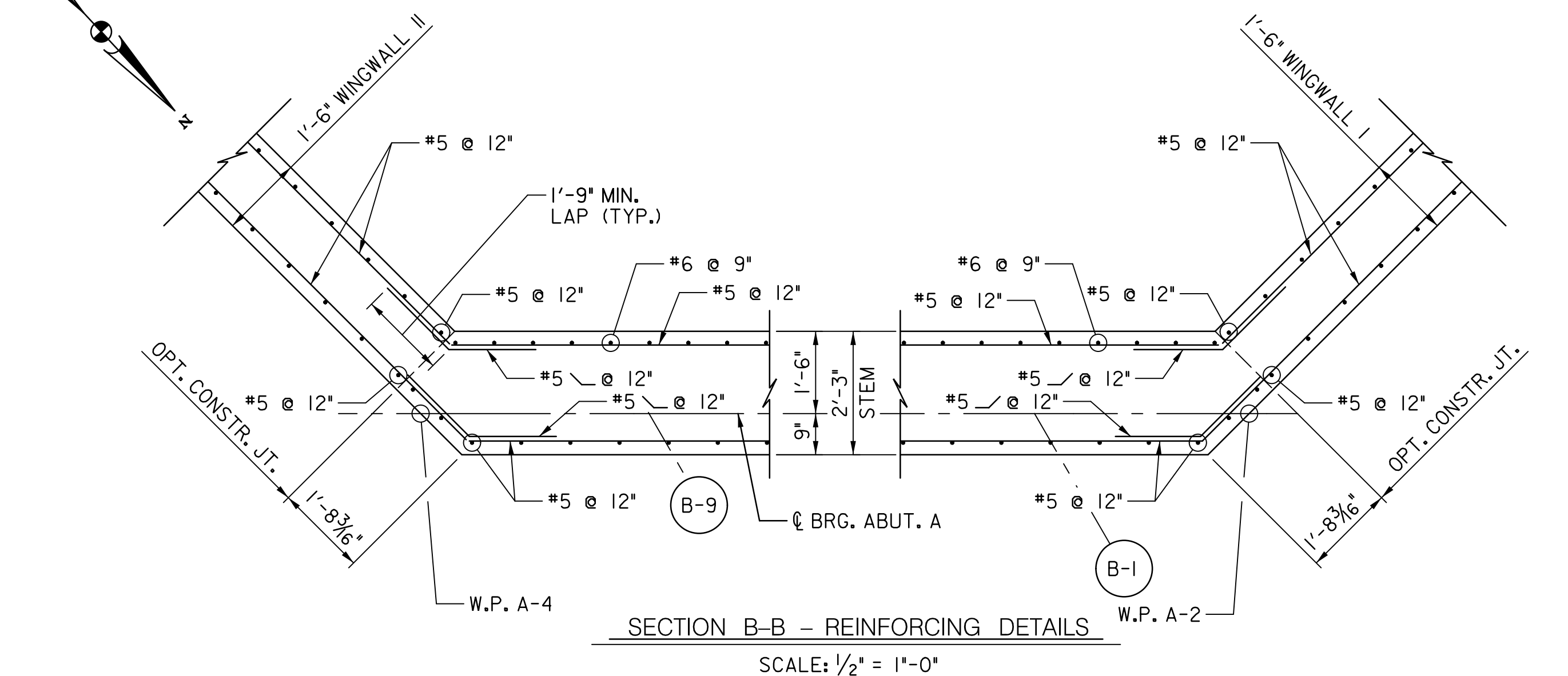
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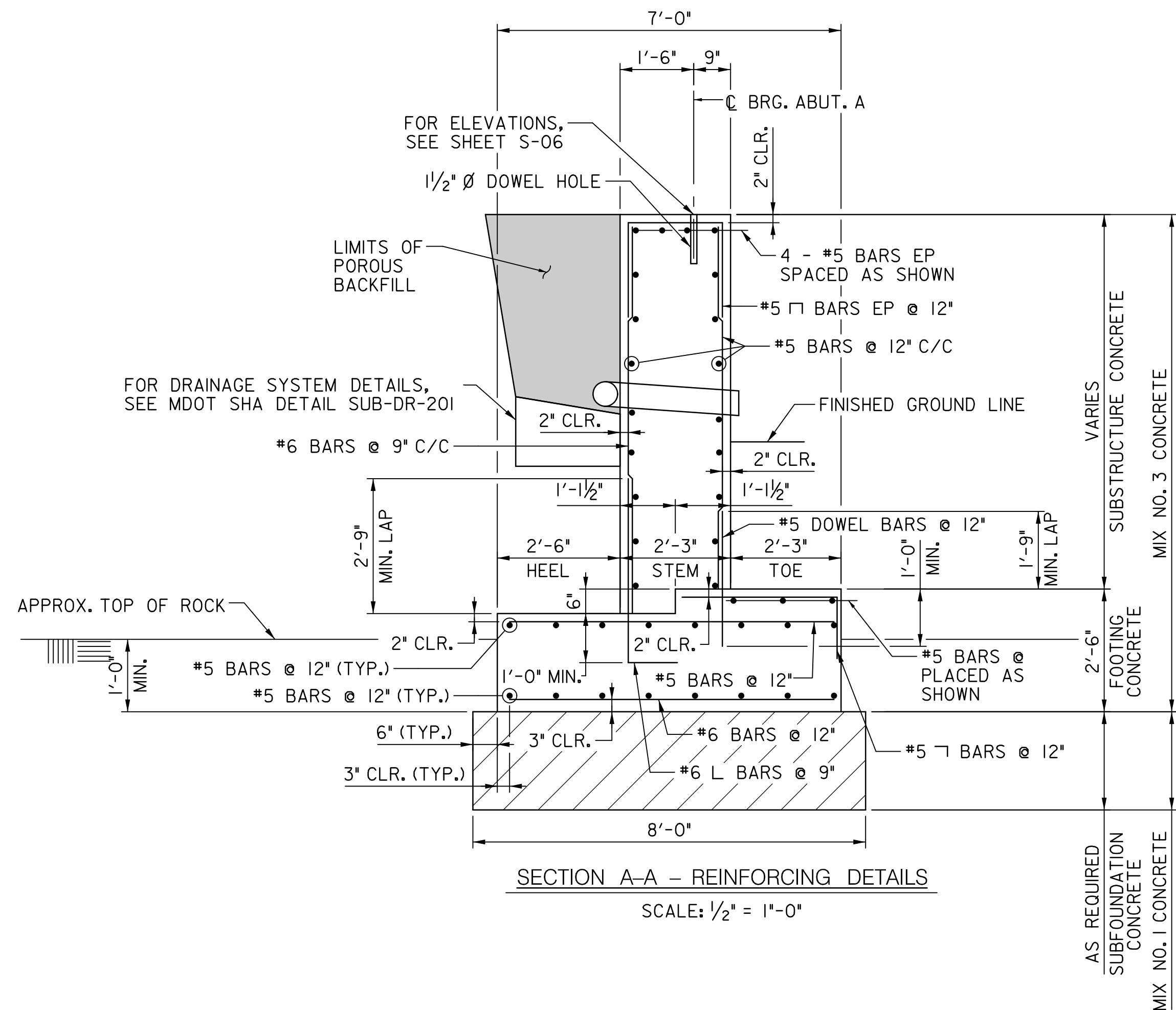
SECTION D-D - REINFORCING DETAILS  
SCALE: 1/2" = 1'-0"



SECTION C-C - REINFORCING DETAILS  
SCALE: 1/2" = 1'-0"



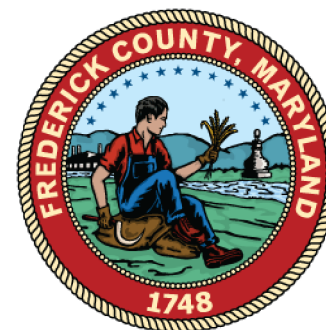
SECTION B-B - REINFORCING DETAILS  
SCALE: 1/2" = 1'-0"



SECTION A-A - REINFORCING DETAILS  
SCALE: 1/2" = 1'-0"

- NOTES:
1. FOR THE LOCATION OF SECTION A-A, B-B, C-C, & D-D SEE SHEET S-05.
  2. AT THE CONTRACTOR'S OPTION THE DOWEL AND STEM BAR MAY BE PLACED AS A CONTINUOUS BAR. NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR THIS OPTION.
  3. HOOK LENGTH FOR #6 BARS SHALL BE 1'-0".
  4. EP DENOTES EPOXY COATED.
  5. SUPERSTRUCTURE OMITTED FOR CLARITY. FOR ADDITIONAL DETAILS, SEE MDOT SHA DETAIL NO. SUP-SLAB-601.
  6. ALL ELASTOMERIC BEARING PADS SHALL BE PLACED WITH AN EPOXY ADHESIVE IN ACCORDANCE WITH SECTION 432.03.04. THE ADHESIVE SHALL BE APPLIED ON THE BOTTOM AND TOP OF THE PAD. ALL ELASTOMERIC BEARING PADS SHALL BE IN PLACE PRIOR TO THE PLACEMENT OF THE EPOXY PROTECTIVE COATING OF THE ABUTMENT.
  7. PLACE 2 PLY WATERPROOFING MEMBRANCE ON THE EARTH SIDE OF ALL CONSTRUCTION JOINTS WITH EARTH ON ONE SIDE AND AIR ON THE OTHER.
  8. FOR FOUNDATION NOTES, SEE SHEET S-03

SHEET S-07



BRIDGE REPLACEMENT  
PRESTRESSED CONCRETE BEAM  
BRIDGE NO. F05-22  
ON HORNETS NEST ROAD  
OVER FRIENDS CREEK

## ABUTMENT A - SECTIONS

SCALE: AS-NOTED ADVERTISED DATE: N/A CONTRACT NO.: RFP 16-019A

DESIGNED BY: JSL COUNTY: FREDERICK  
DRAWN BY: JRM LOGMILE: XXXX - XXXX  
CHECKED BY: GCD

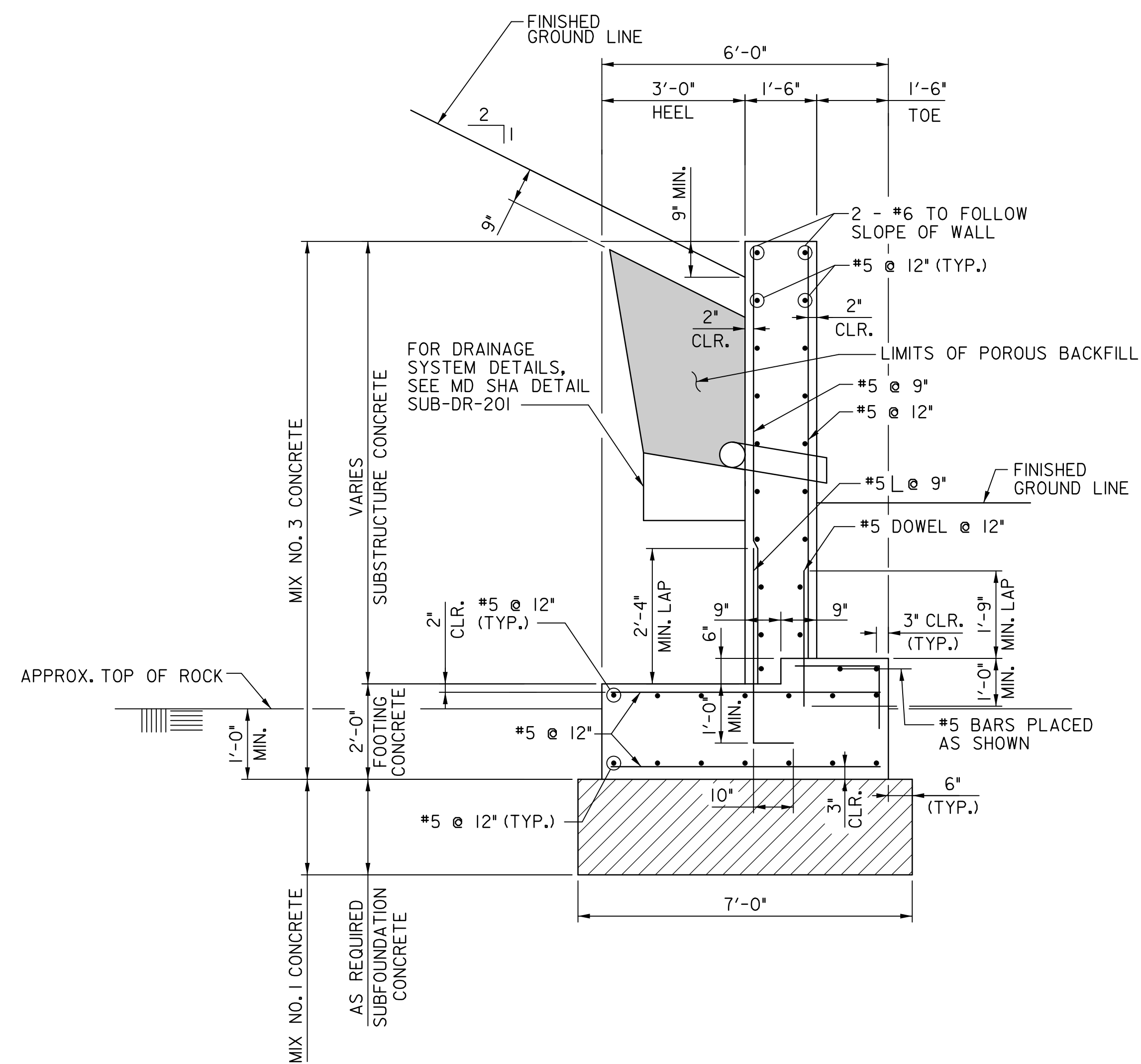
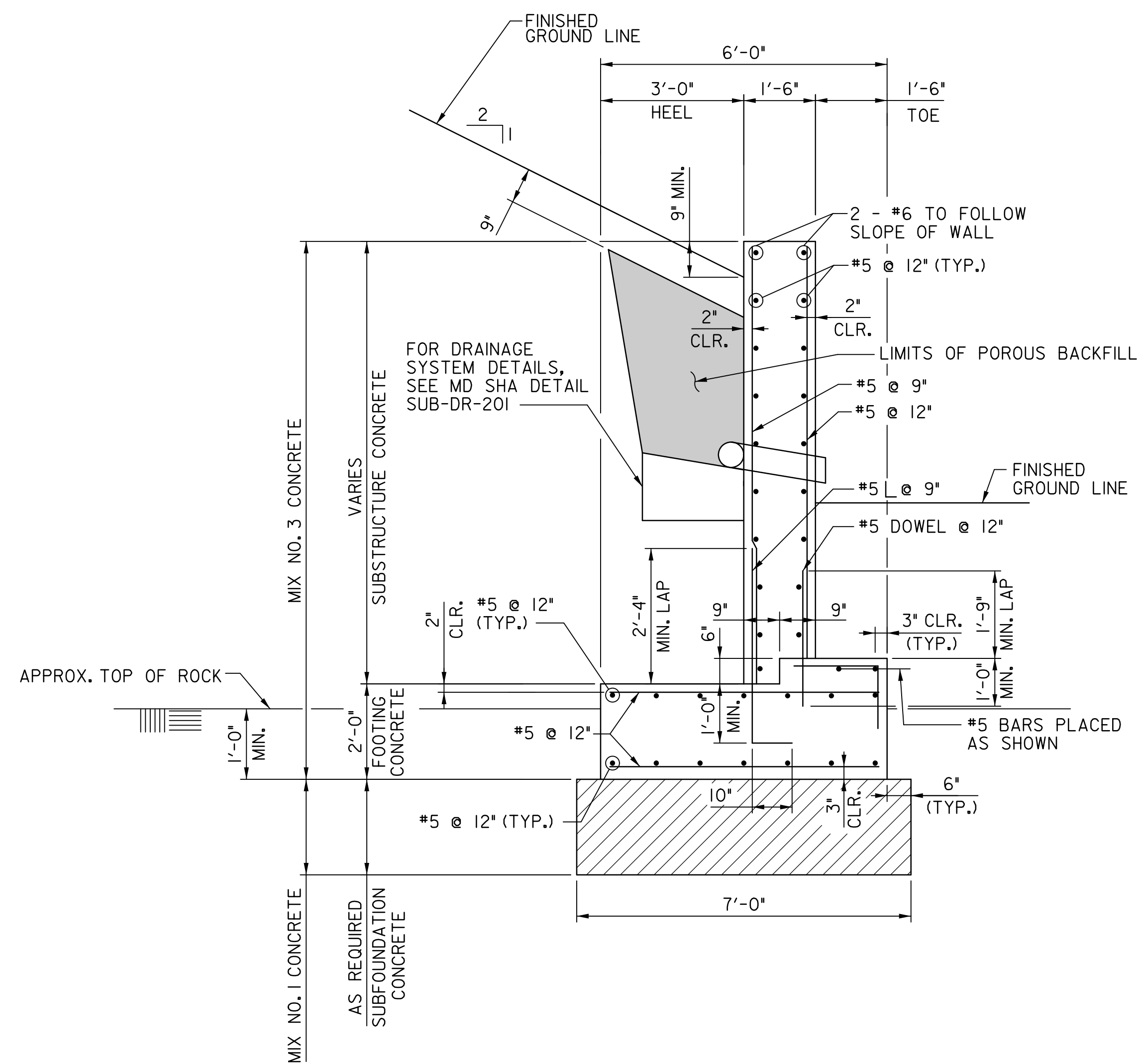
SHEET NO. 12 OF 43

**AMT**

A. MORTON THOMAS AND ASSOCIATES, INC.  
901 DULANEY VALLEY ROAD, SUITE 710  
TOWSON, MD 21204

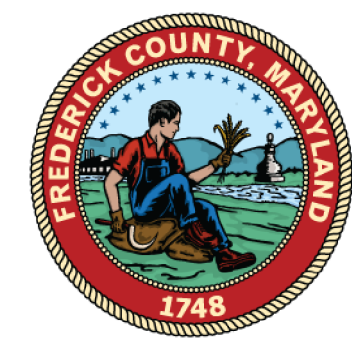






- NOTES:**
1. FOR LOCATION OF SECTION E-E & F-F, SEE SHEET S-08.
  2. AT CONTRACTOR'S OPTION THE DOWEL AND STEM BAR MAYBE PLACED AS A CONTINUOUS BAR. NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR THIS OPTION.
  3. HOOK LENGTH FOR #5 BARS SHALL BE 10".
  4. FOR FOUNDATION NOTES, SEE SHEET S-03.

SHEET S-09



BRIDGE REPLACEMENT  
PRESTRESSED CONCRETE BEAM  
BRIDGE NO. F05-22  
ON HORNETS NEST ROAD  
OVER FRIENDS CREEK

### ABUTMENT A – WINGWALL SECTIONS

SCALE AS-NOTED ADVERTISED DATE NA CONTRACT NO. RFP 16-019A

DESIGNED BY LDL COUNTY FREDERICK  
DRAWN BY JRM LOGMILE XXXX - XXXX  
CHECKED BY GCD

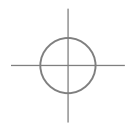
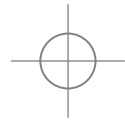
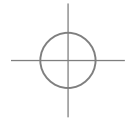
SHEET NO. 14 OF 43

# AMT

A. MORTON THOMAS AND ASSOCIATES, INC.  
901 DULANEY VALLEY ROAD, SUITE 710  
TOWSON, MD 21204

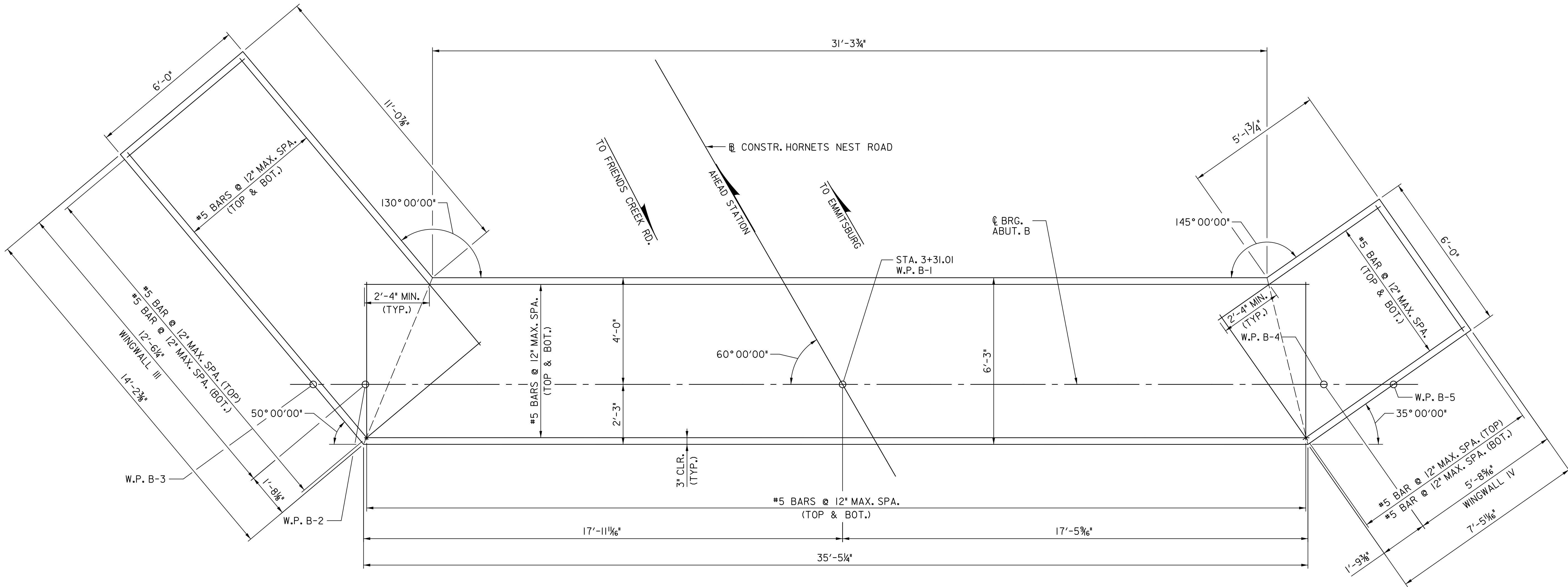
BY: jpiro -

PLOTTED: Friday, March 26, 2021 AT 04:21 PM



BY: jpiro -

PLOTTED: Friday, March 26, 2021 AT 04:21 PM



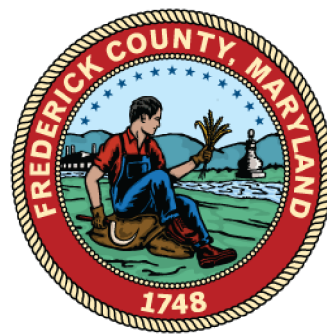
# REINFORCEMENT PLAN - ABUTMENT B

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

## NOTES:

1. ALL ANGLES ARE 90°00'00" UNLESS NOTED OTHERWISE.
2. FOR WORK POINTS AND COORDINATES, SEE SHEET S-03.
3. FOR FOUNDATION NOTES, SEE SHEET S-03.

SHEET S-10



BRIDGE REPLACEMENT  
PRESTRESSED CONCRETE BEAM  
BRIDGE NO. F05-22  
ON HORNETS NEST ROAD  
OVER FRIENDS CREEK

## ABUTMENT B - REINFORCEMENT PLAN

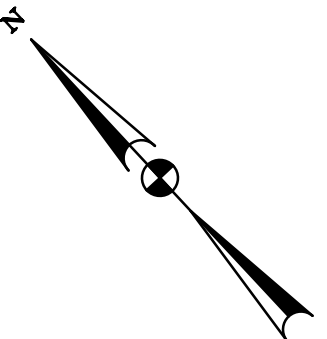
SCALE AS-NOTED ADVERTISED DATE N/A CONTRACT NO. RFP 16-019A

DESIGNED BY GCD COUNTY FREDERICK  
DRAWN BY JRM LOGMILE XXXX - XXXX  
CHECKED BY KAR

SHEET NO. 15 OF 43

**AMT**

A. MORTON THOMAS AND ASSOCIATES, INC.  
901 DULANEY VALLEY ROAD, SUITE 710  
TOWSON, MD 21204

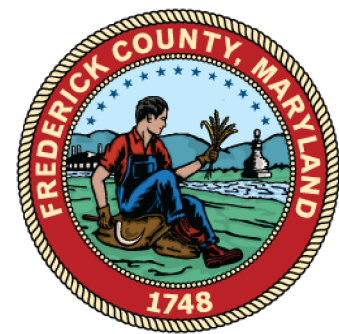


1. FOR WINGWALL DETAILS, SEE SHEETS S-14 & S-15.
2. FOR WORK POINTS AND COORDINATES, SEE SHEET S-03.

PLAN - ABUTMENT B

---

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



BRIDGE REPLACEMENT  
PRESTRESSED CONCRETE BEAM  
BRIDGE NO. F05-22  
ON HORNETS NEST ROAD  
OVER FRIENDS CREEK

### ABUTMENT B – PLAN

SCALE AS-NOTED ADVERTISED DATE NA CONTRACT NO. RFP 16-019A

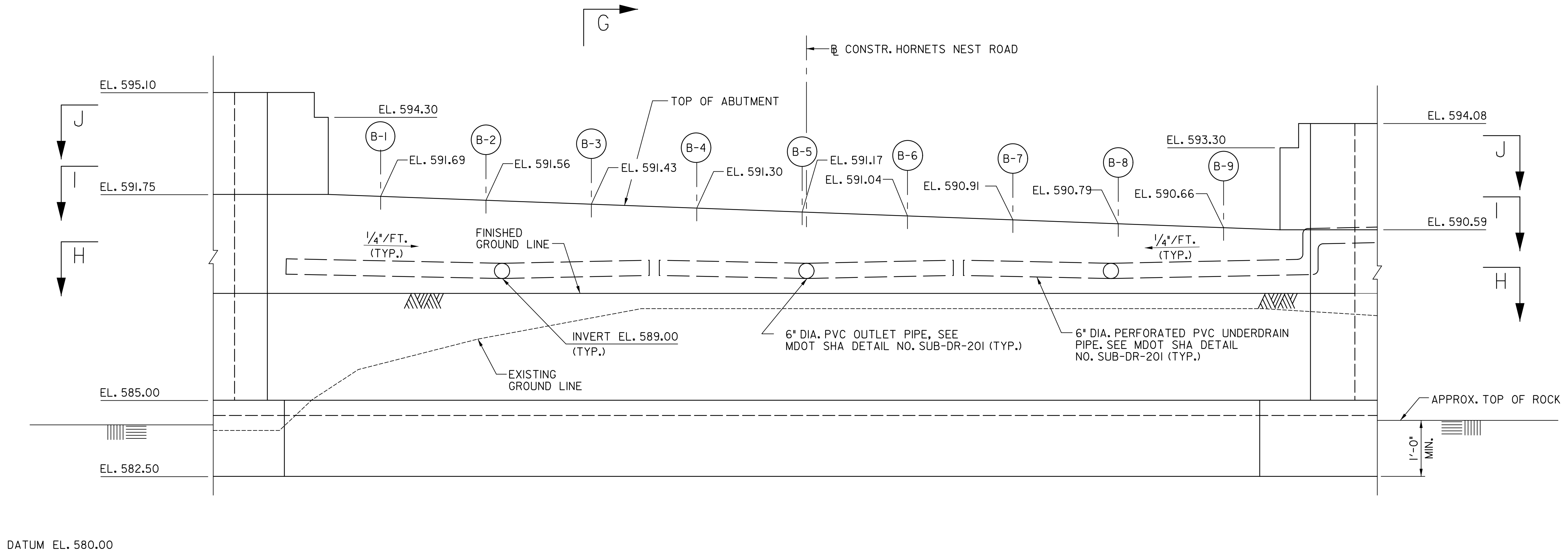
DESIGNED BY GCD COUNTY FREDERICK  
DRAWN BY JRM LOGMILE XXXX - XXXX  
CHECKED BY KAR

SHEET NO. 16 OF 43



A. MORTON THOMAS AND ASSOCIATES, INC.  
901 DULANEY VALLEY ROAD, SUITE 710  
TOWSON, MD 21204

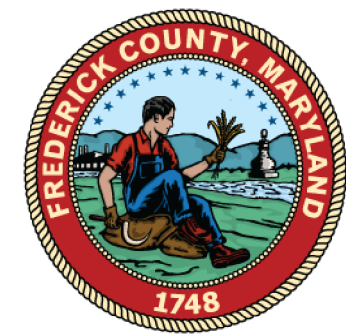




ELEVATION - ABUTMENT B  
SCALE: 1/2" = 1'-0"

- NOTES:**
1. FOR SECTION G-G, H-H, I-I, & J-J SEE SHEET S-13.
  2. FOR WINGWALL DETAILS, SEE SHEETS S-14 & S-15.
  3. CORNERBLOCKS ABOVE THE BEAM SEAT ELEVATIONS SHALL BE PLACED AFTER THE PLACEMENT OF THE SLAB BEAMS.

SHEET S-12



BRIDGE REPLACEMENT  
PRESTRESSED CONCRETE BEAM  
BRIDGE NO. F05-22  
ON HORNETS NEST ROAD  
OVER FRIENDS CREEK

**ABUTMENT B - ELEVATION**

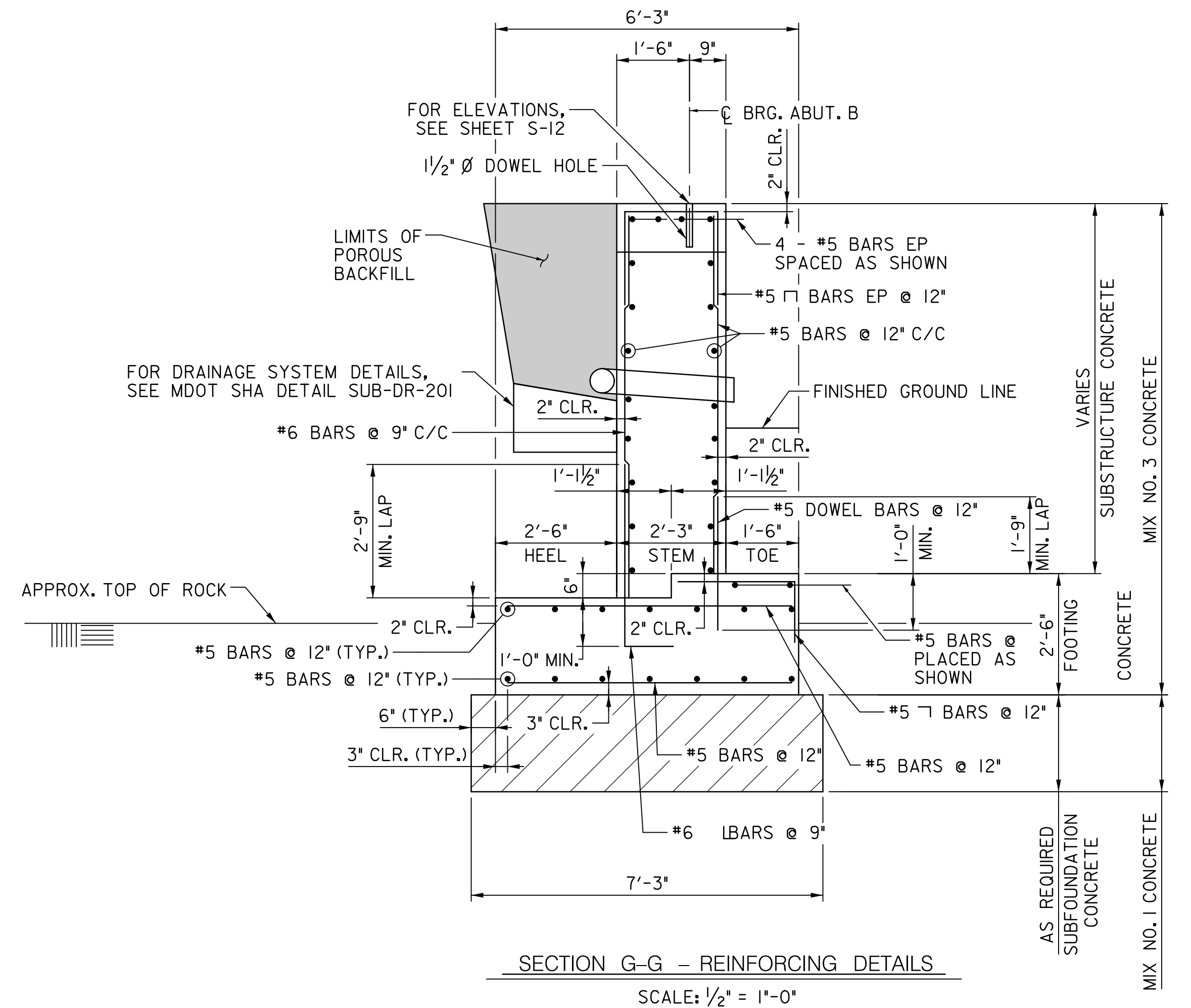
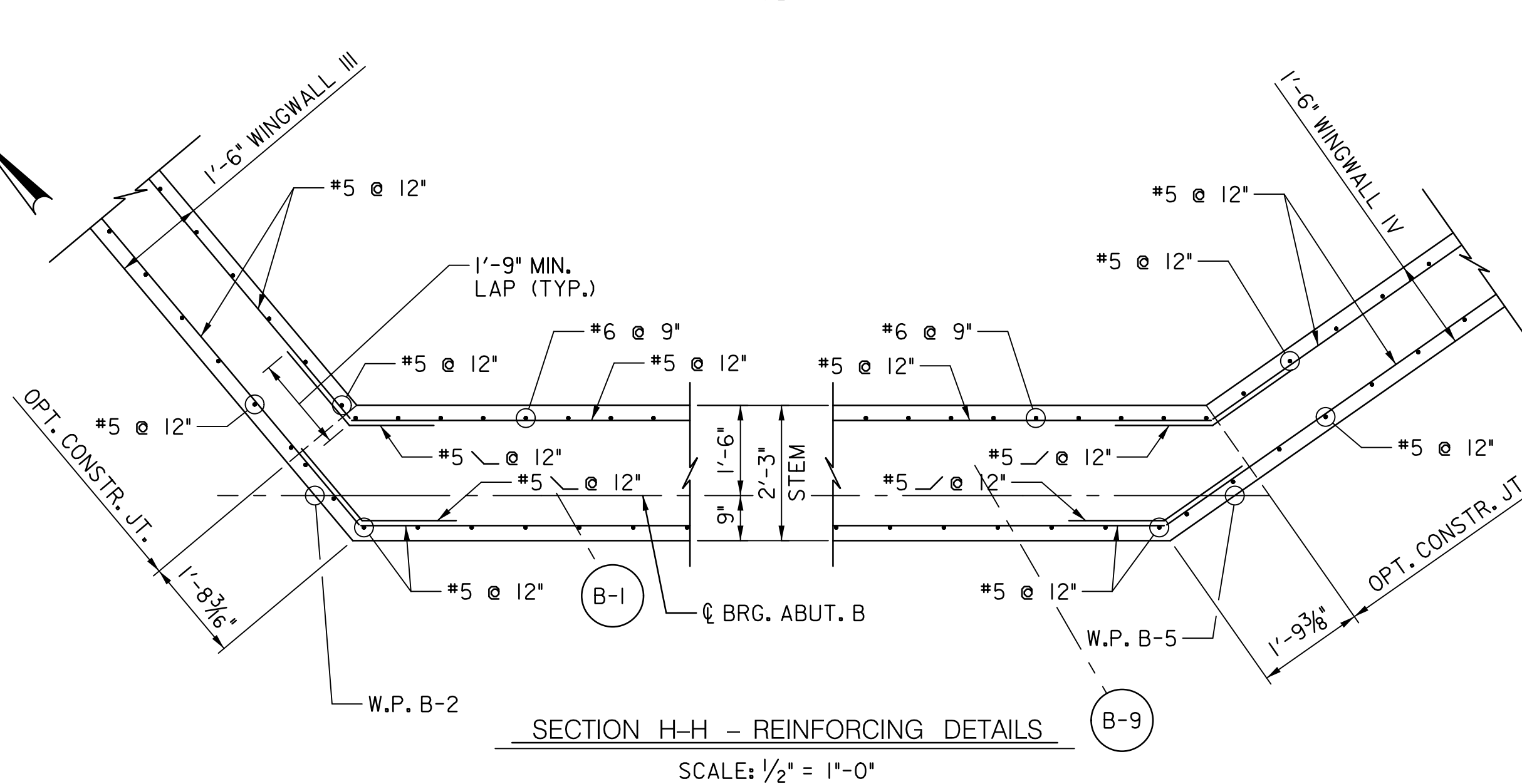
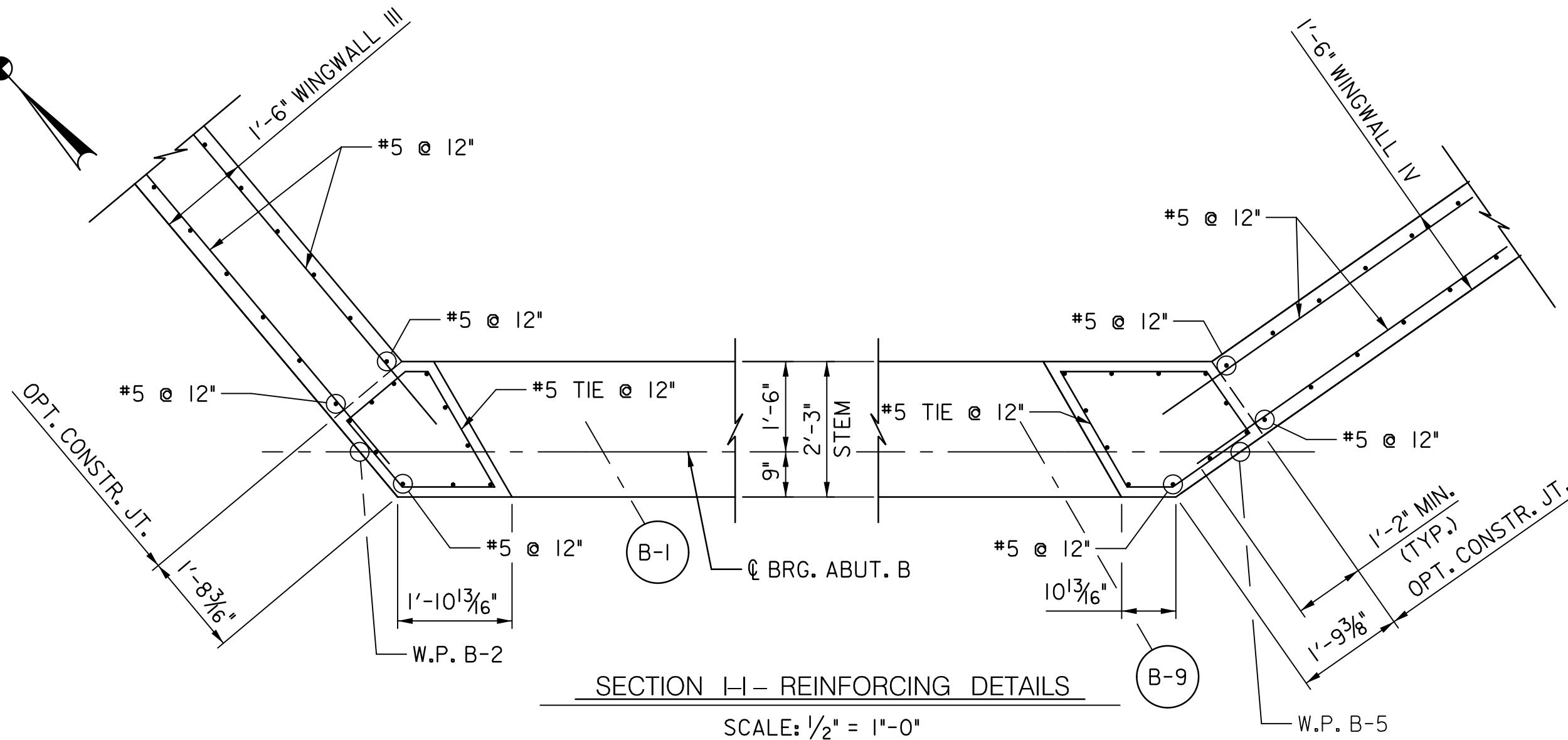
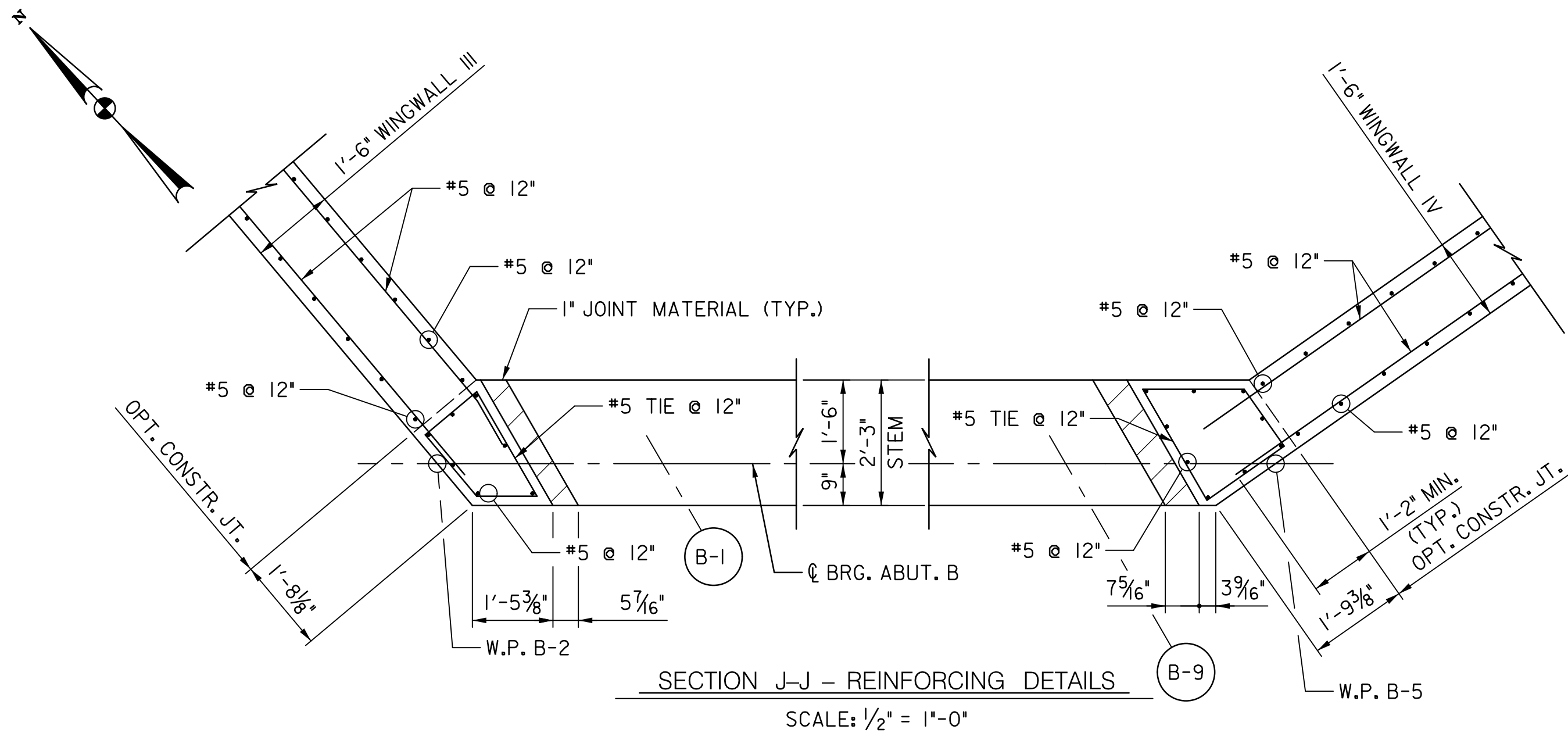
SCALE AS-NOTED ADVERTISED DATE N/A CONTRACT NO. RFP 16-019A

DESIGNED BY GCD COUNTY FREDERICK  
DRAWN BY JRM LOGMILE XXXX - XXXX  
CHECKED BY KAR

SHEET NO. 17 OF 43

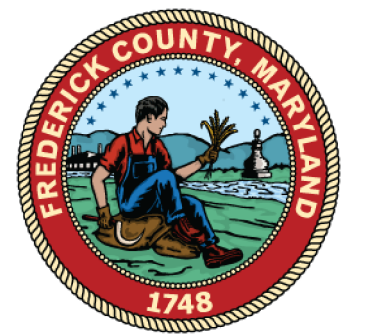
**AMT**

A. MORTON THOMAS AND ASSOCIATES, INC.  
901 DULANEY VALLEY ROAD, SUITE 710  
TOWSON, MD 21204



- NOTES:
- FOR THE LOCATION OF SECTION G-G, H-H, I-I, & J-J SEE SHEET S-12.
  - AT THE CONTRACTOR'S OPTION THE DOWEL AND STEM BAR MAY BE PLACED AS A CONTINUOUS BAR. NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR THIS OPTION.
  - HOOK LENGTH FOR #6 BARS SHALL BE 1'-0".
  - EP DENOTES EPOXY COATED.
  - SUPERSTRUCTURE OMITTED FOR CLARITY. FOR ADDITIONAL DETAILS, SEE MDOT SHA DETAIL NO. SUP-SLAB-601.
  - ALL ELASTOMERIC BEARING PADS SHALL BE PLACED WITH AN EPOXY ADHESIVE IN ACCORDANCE WITH SECTION 43.03.04. THE ADHESIVE SHALL BE APPLIED ON THE BOTTOM AND TOP OF THE PAD. ALL ELASTOMERIC BEARING PADS SHALL BE IN PLACE PRIOR TO THE PLACEMENT OF THE EPOXY PROTECTIVE COATING OF THE ABUTMENT.
  - FOR FOUNDATION NOTES, SEE SHEET S-03.

SHEET S-13



BRIDGE REPLACEMENT  
PRESTRESSED CONCRETE BEAM  
BRIDGE NO. F05-22  
ON HORNETS NEST ROAD  
OVER FRIENDS CREEK

## ABUTMENT B - SECTIONS

SCALE: AS-NOTED ADVERTISED DATE: N/A CONTRACT NO.: RFP 16-019A

DESIGNED BY: JSL COUNTY: FREDERICK  
DRAWN BY: JRM LOGMILE: XXXX - XXXX  
CHECKED BY: GCD

SHEET NO. 18 OF 43

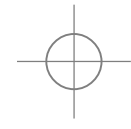
**AMT**

A. MORTON THOMAS AND ASSOCIATES, INC.  
901 DULANEY VALLEY ROAD, SUITE 710  
TOWSON, MD 21204

BY: jpiro -

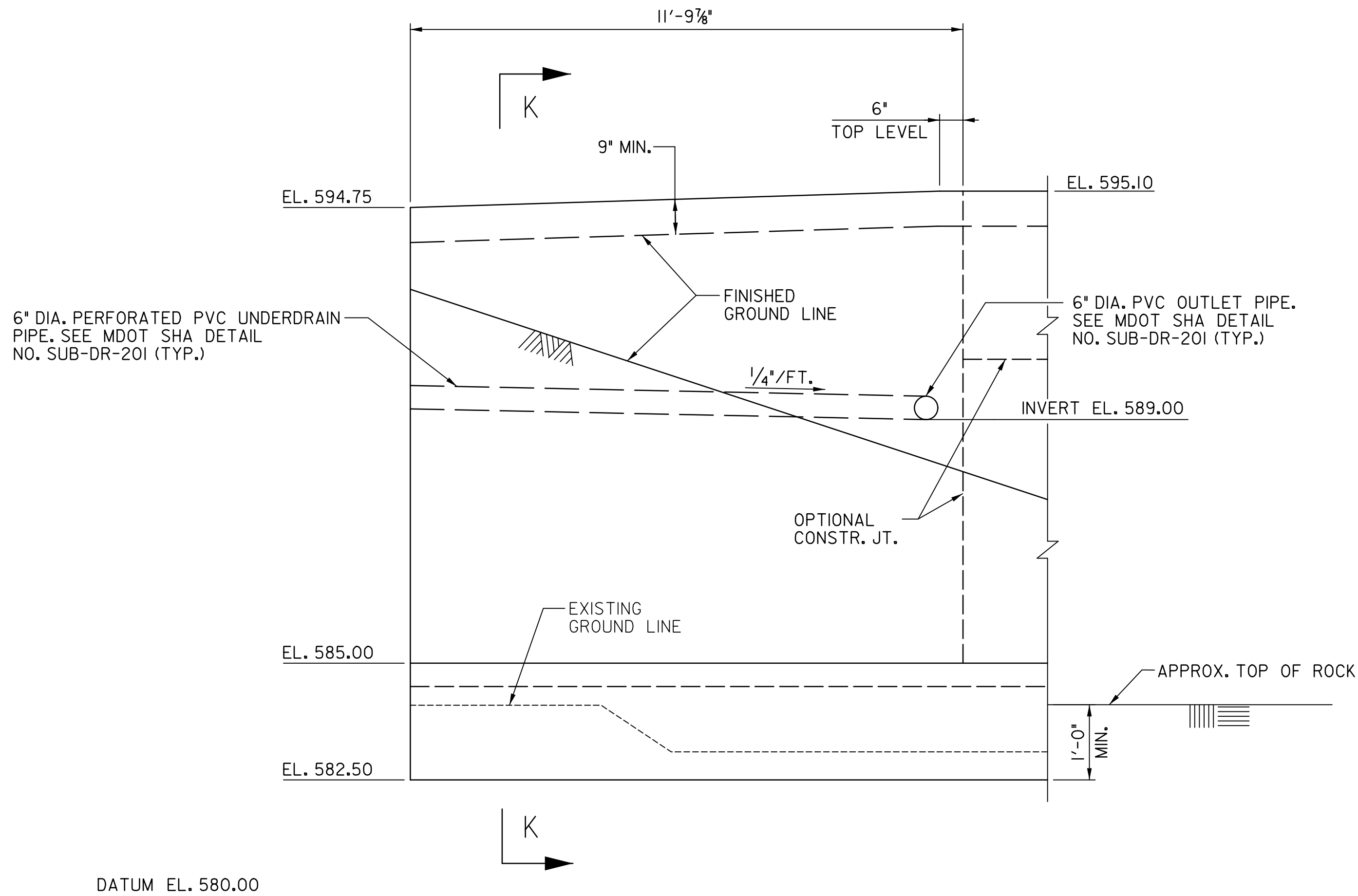
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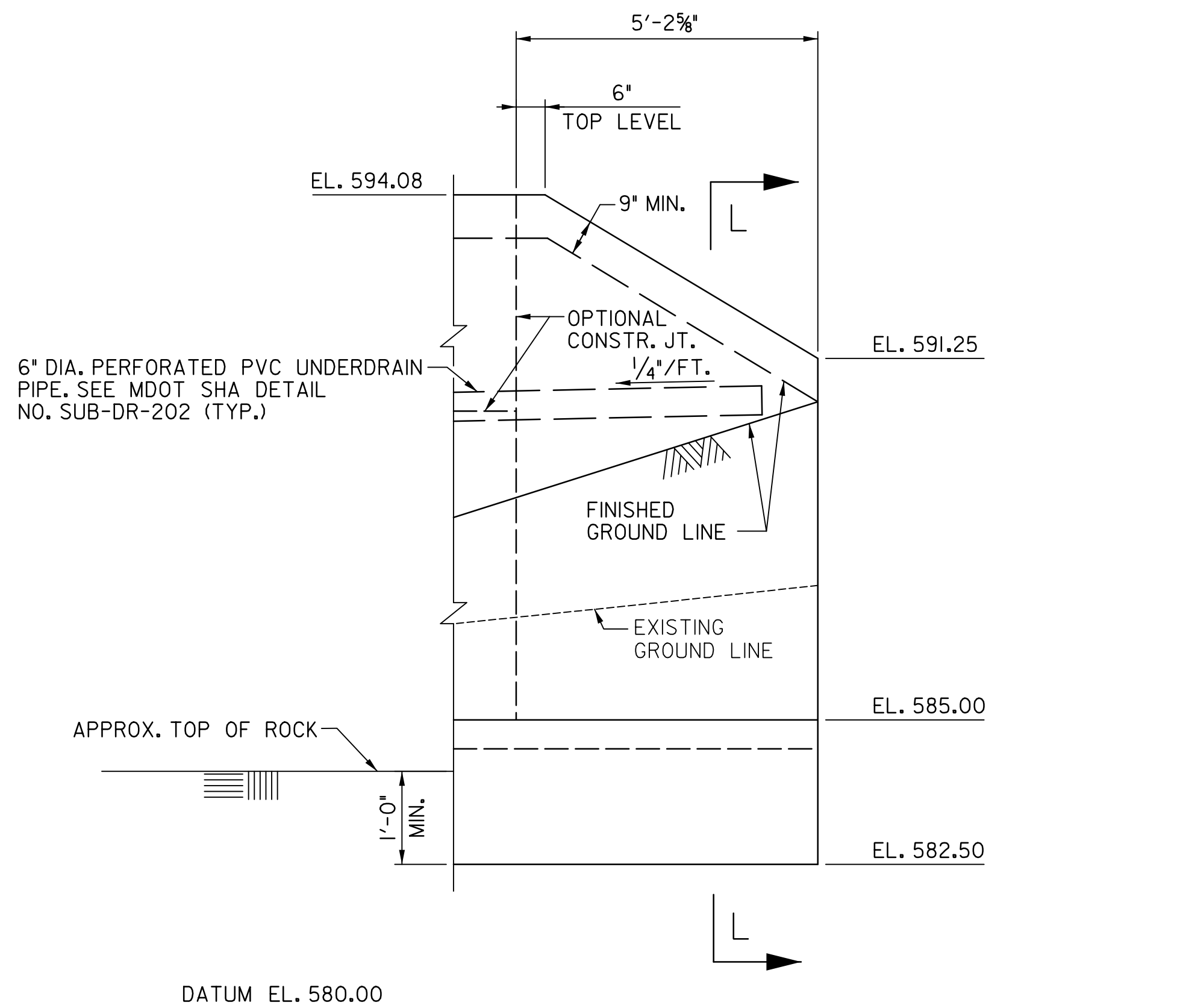


BY: jpiro -

PLOTTED: Friday, March 26, 2021 AT 04:21 PM



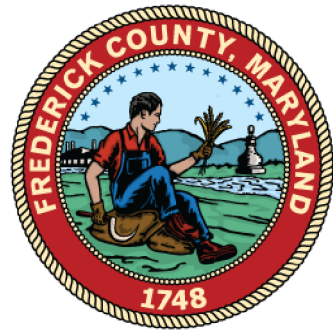
ELEVATION - WINGWALL III  
SCALE: 1/2" = 1'-0"



ELEVATION - WINGWALL IV  
SCALE: 1/2" = 1'-0"

NOTES:  
1. FOR SECTIONS K-K AND L-L, SEE SHEET S-15.

SHEET S-14



BRIDGE REPLACEMENT  
PRESTRESSED CONCRETE BEAM  
BRIDGE NO. F05-22  
ON HORNETS NEST ROAD  
OVER FRIENDS CREEK

**ABUTMENT B - WINGWALL ELEVATIONS**

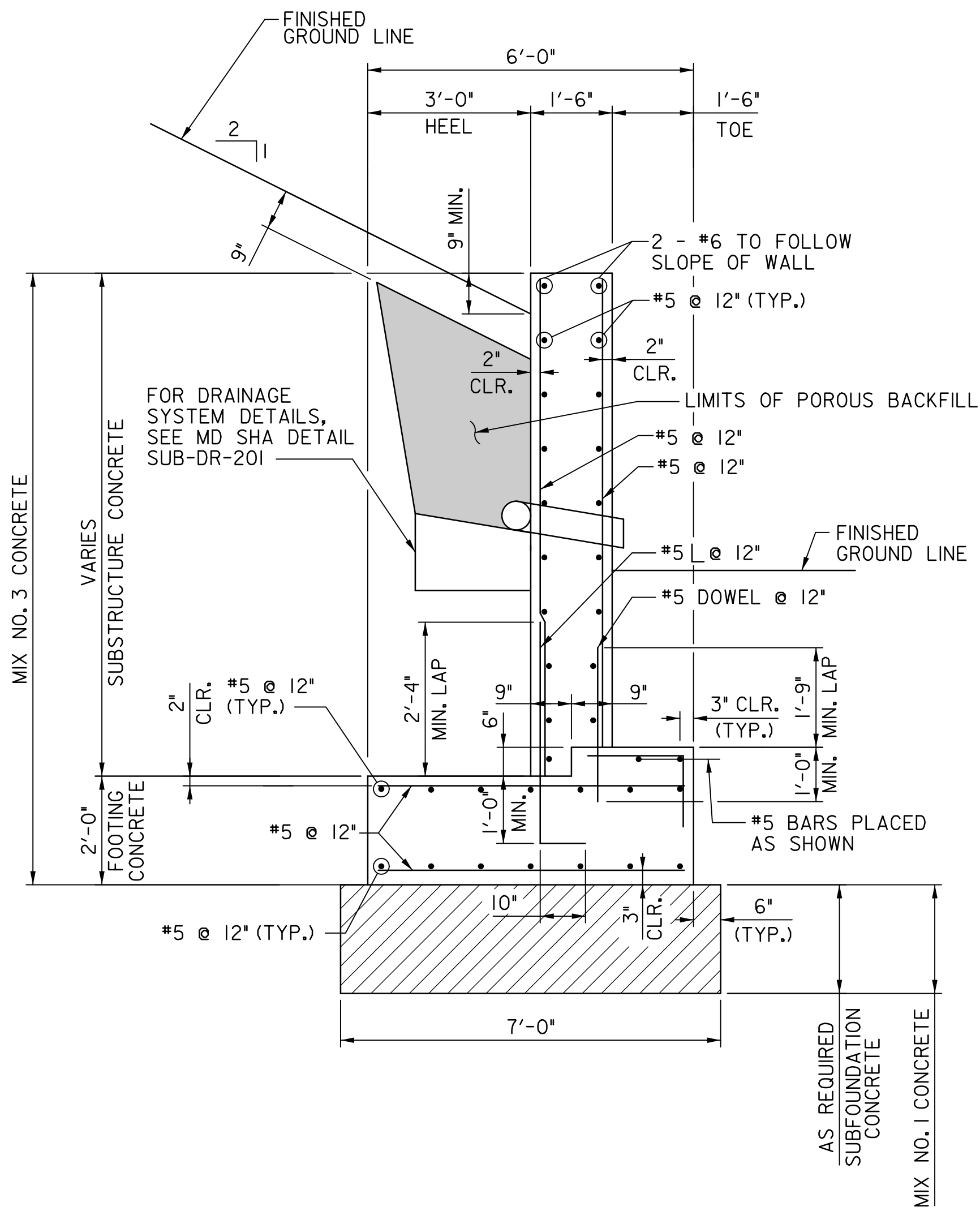
SCALE AS NOTED ADVERTISED DATE N/A CONTRACT NO. RFP 16-019A

DESIGNED BY GCD COUNTY FREDERICK  
DRAWN BY JRM LOGMILE XXXX - XXXX  
CHECKED BY KAR

SHEET NO. 19 OF 43

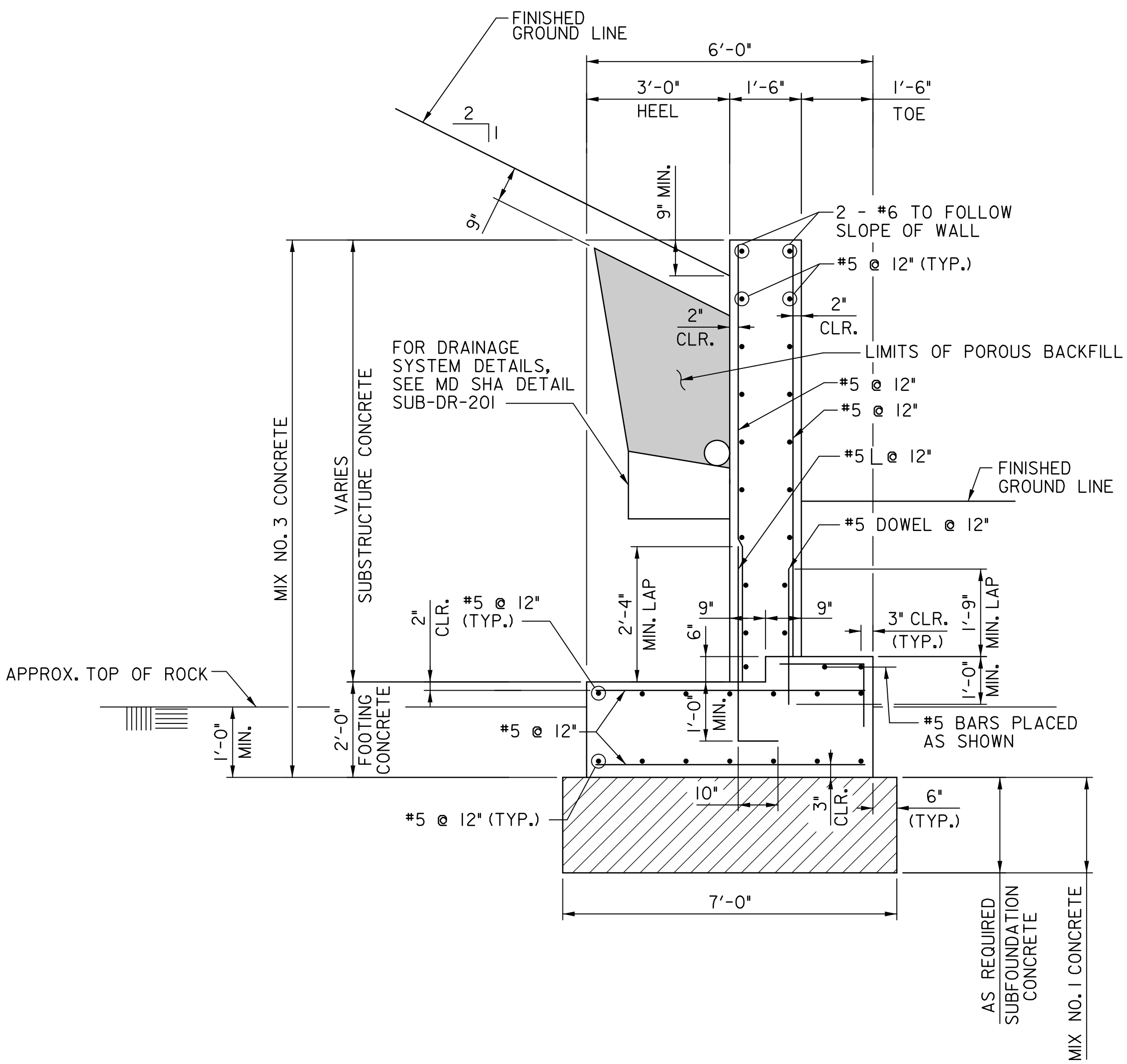
**AMT**

A. MORTON THOMAS AND ASSOCIATES, INC.  
901 DULANEY VALLEY ROAD, SUITE 710  
TOWSON, MD 21204



SECTION K-K – REINFORCING DETAILS

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

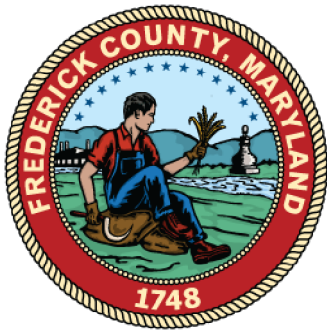


SECTION L-L – REINFORCING DETAILS

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

- NOTES:
1. FOR LOCATION OF SECTION K-K & L-L, SEE SHEET S-14.
  2. AT THE CONTRACTOR'S OPTION THE DOWEL AND STEM BAR MAY BE PLACED AS A CONTINUOUS BAR. NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR THIS OPTION.
  3. HOOK LENGTH FOR #5 BARS SHALL BE 10".
  4. FOR FOUNDATION NOTES, SEE SHEET S-03.

SHEET S-15



BRIDGE REPLACEMENT  
PRESTRESSED CONCRETE BEAM  
BRIDGE NO. F05-22  
ON HORNETS NEST ROAD  
OVER FRIENDS CREEK

ABUTMENT B – WINGWALL SECTIONS

SCALE AS NOTED ADVERTISED DATE NA CONTRACT NO. RFP 16-019A

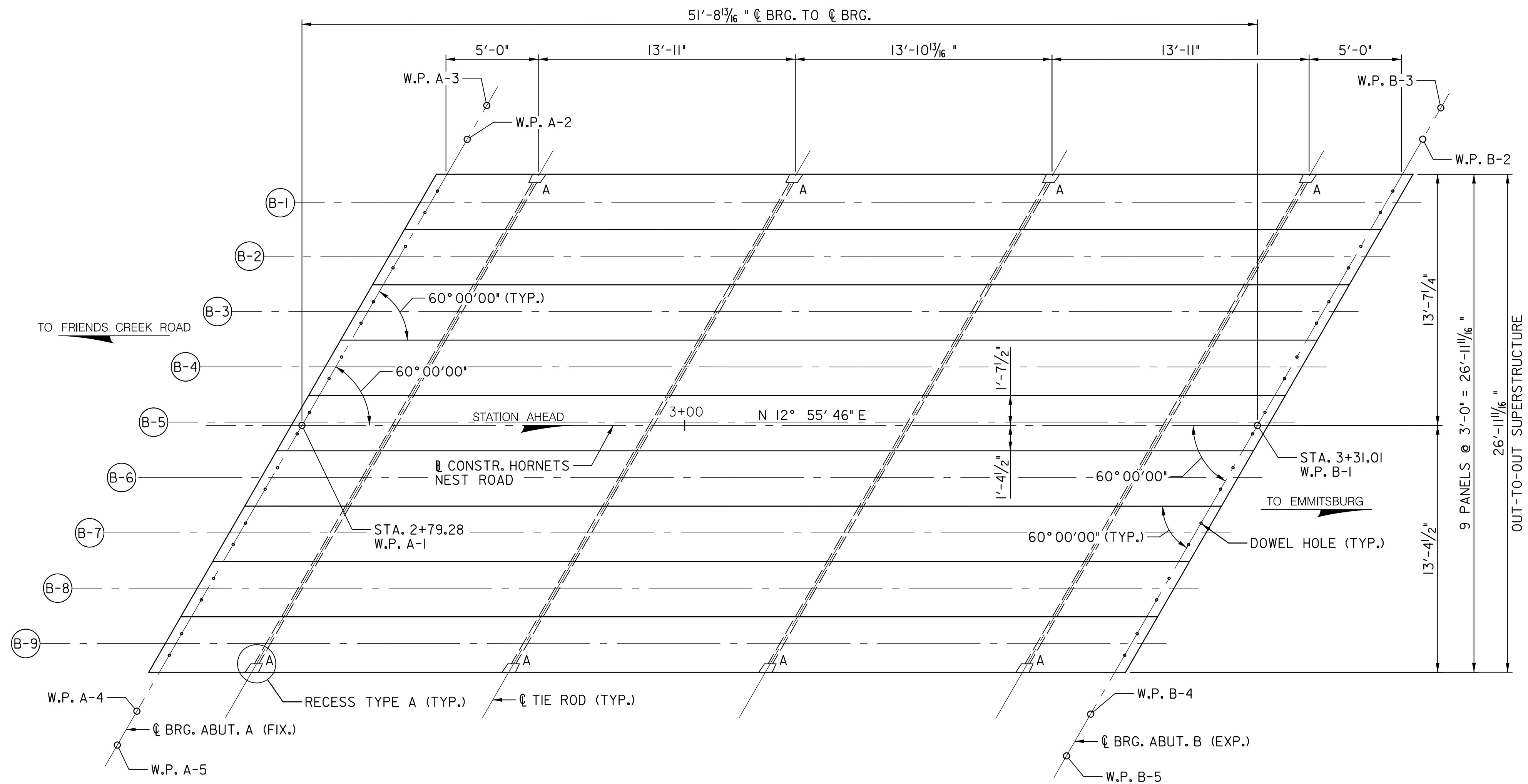
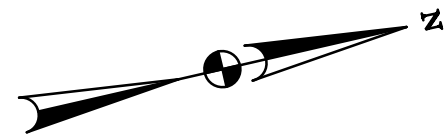
DESIGNED BY LDL COUNTY FREDERICK  
DRAWN BY JRM LOGMILE XXXX - XXXX  
CHECKED BY GCD

SHEET NO. 20 OF 43

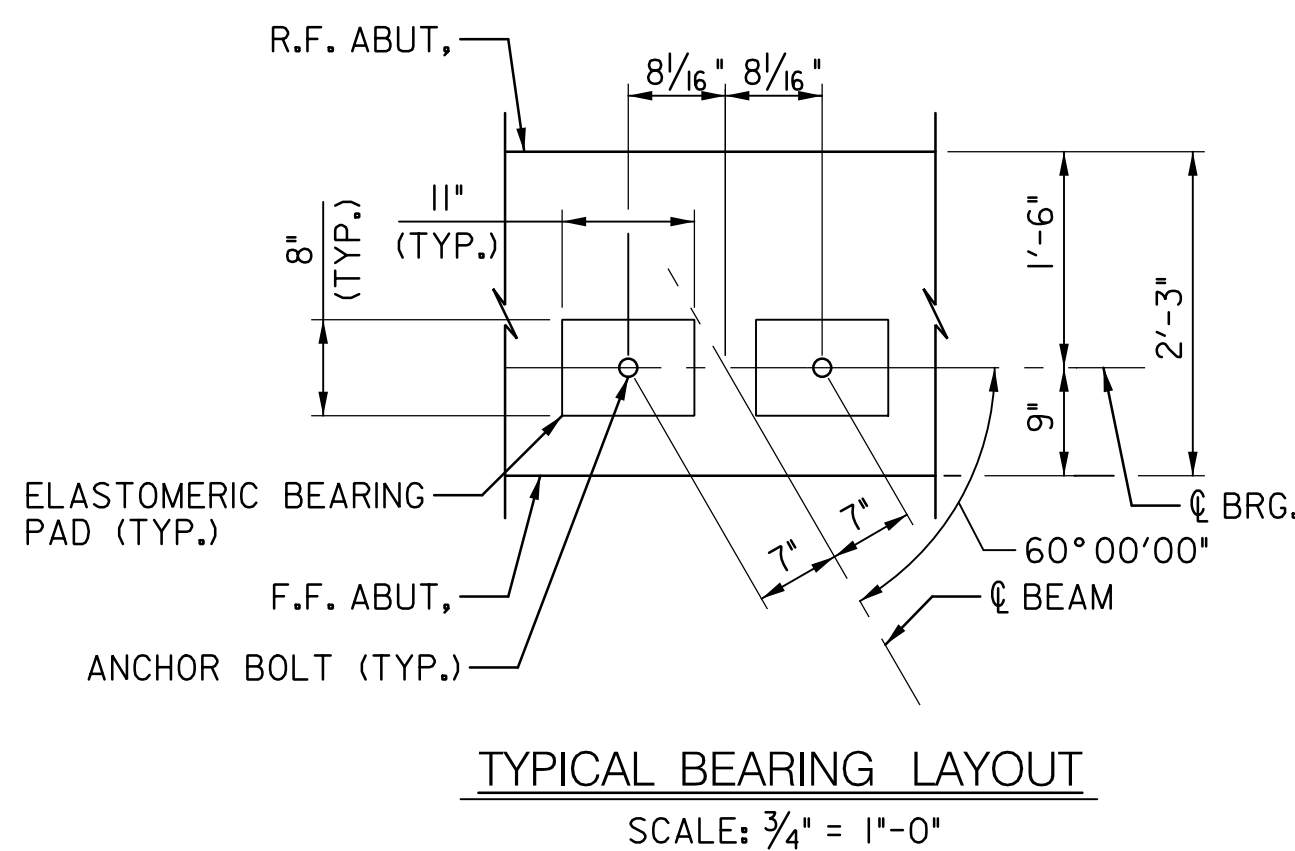


A. MORTON THOMAS AND ASSOCIATES, INC.  
901 DULANEY VALLEY ROAD, SUITE 710  
TOWSON, MD 21204

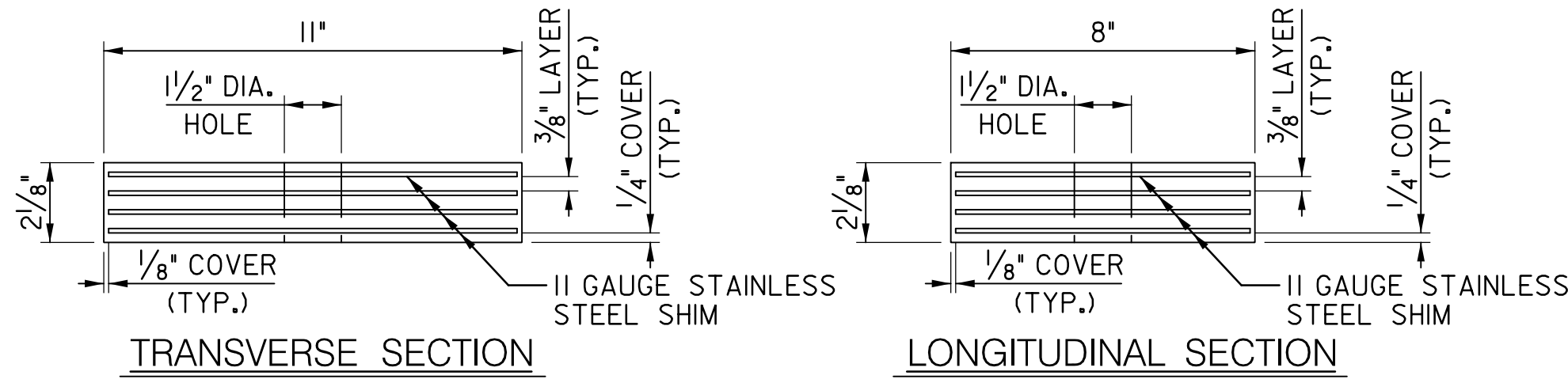




FRAMING PLAN  
SCALE: 1/4" = 1'-0"



TYPICAL BEARING LAYOUT  
SCALE: 3/4" = 1'-0"

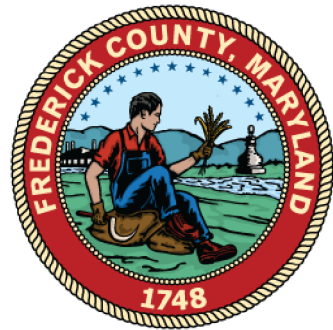


ELASTOMERIC BEARING PADS  
SCALE: 3" = 1'-0"

ELASTOMERIC BEARING PADS			
MAX. DL REACTION (KIPS)	MAX. LL REACTION (KIPS)	NO. OF PADS PER BEAM	TOTAL PADS REQUIRED
54.62	41.32	4	36

NOTES:

1. FOR TYPE A RECESS DETAIL, SEE MDOT SHA DET. NO. SUP-SLAB-401.
2. FOR BEAM DETAILS SEE SHEETS S-17 & S-18.
3. ALL DIMENSIONS ARE MEASURED AT THE BOTTOM OF THE BEAMS.
4. THE CONTRACTOR WILL BE ALLOWED TO PLACE EQUIPMENT ON THE SLAB UNITS PRIOR TO PLACING THE CONCRETE OVERLAY PROVIDED THAT ALL SLAB UNITS FOR A STAGE OF CONSTRUCTION ARE IN PLACE AND THE TIE RODS ARE TENSIONED AND THE JOINTS HAVE BEEN GROUTED FOR A MINIMUM PERIOD OF TWO DAYS.
5. BEARING LOADS PROVIDED ARE LOAD COMBINATION SERVICE I.
6. ELASTOMERIC BEARING SHALL BE 60 DUROMETER HARDNESS.



BRIDGE REPLACEMENT  
PRESTRESSED CONCRETE BEAM  
BRIDGE NO. F05-22  
ON HORNETS NEST ROAD  
OVER FRIENDS CREEK

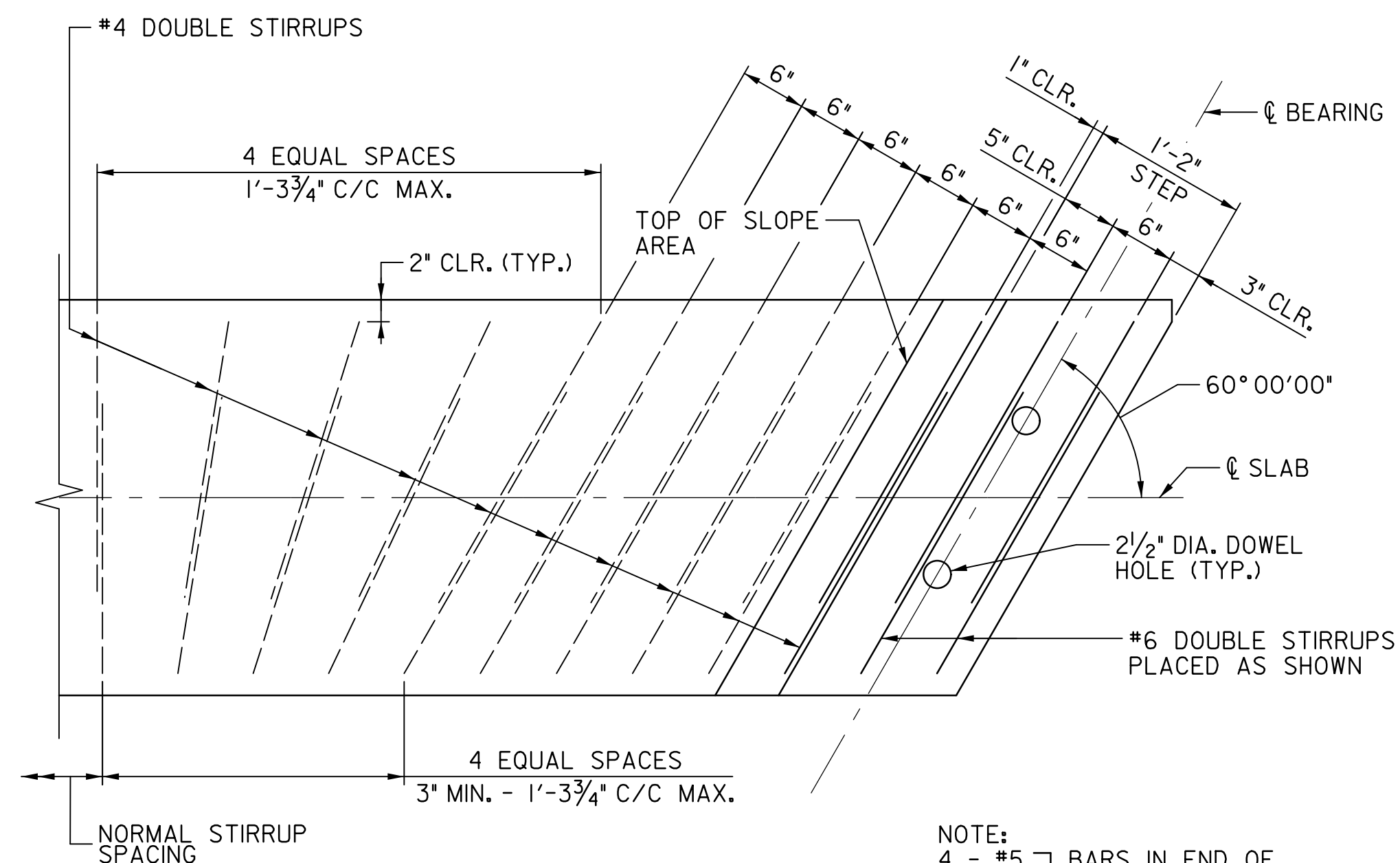
FRAMING PLAN

SCALE AS-NOTED ADVERTISED DATE N/A CONTRACT NO. RFP 16-019A

DESIGNED BY GCD COUNTY FREDERICK  
DRAWN BY JAP LOGMILE XXXX - XXXX  
CHECKED BY KAR

SHEET NO. 21 OF 43

**AMT**  
A. MORTON THOMAS AND ASSOCIATES, INC.  
901 DULANEY VALLEY ROAD, SUITE 710  
TOWSON, MD 21204



BEAM END DETAIL

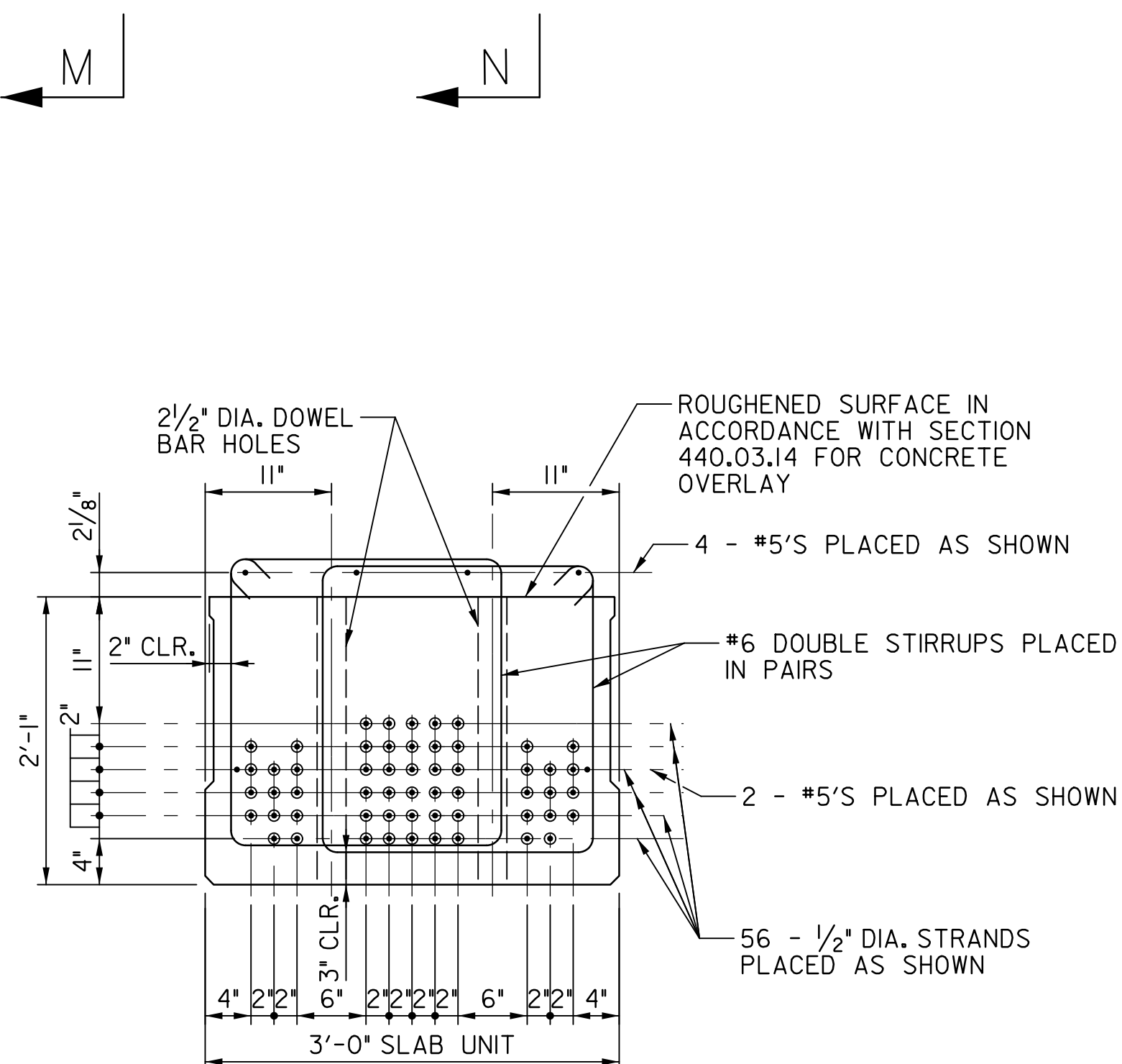
ABUTMENT B END SHOWN, ABUTMENT A  
END SIMILAR ON OPPOSITE HAND.

NOTE:  
4 - #5  $\nabla$  BARS IN END OF  
SLAB NOT SHOWN FOR CLARITY.

NOTE TO FABRICATOR:  
END OF STIRRUPS SPACING MUST BE  
LAID OUT TO DETERMINE SPACING.

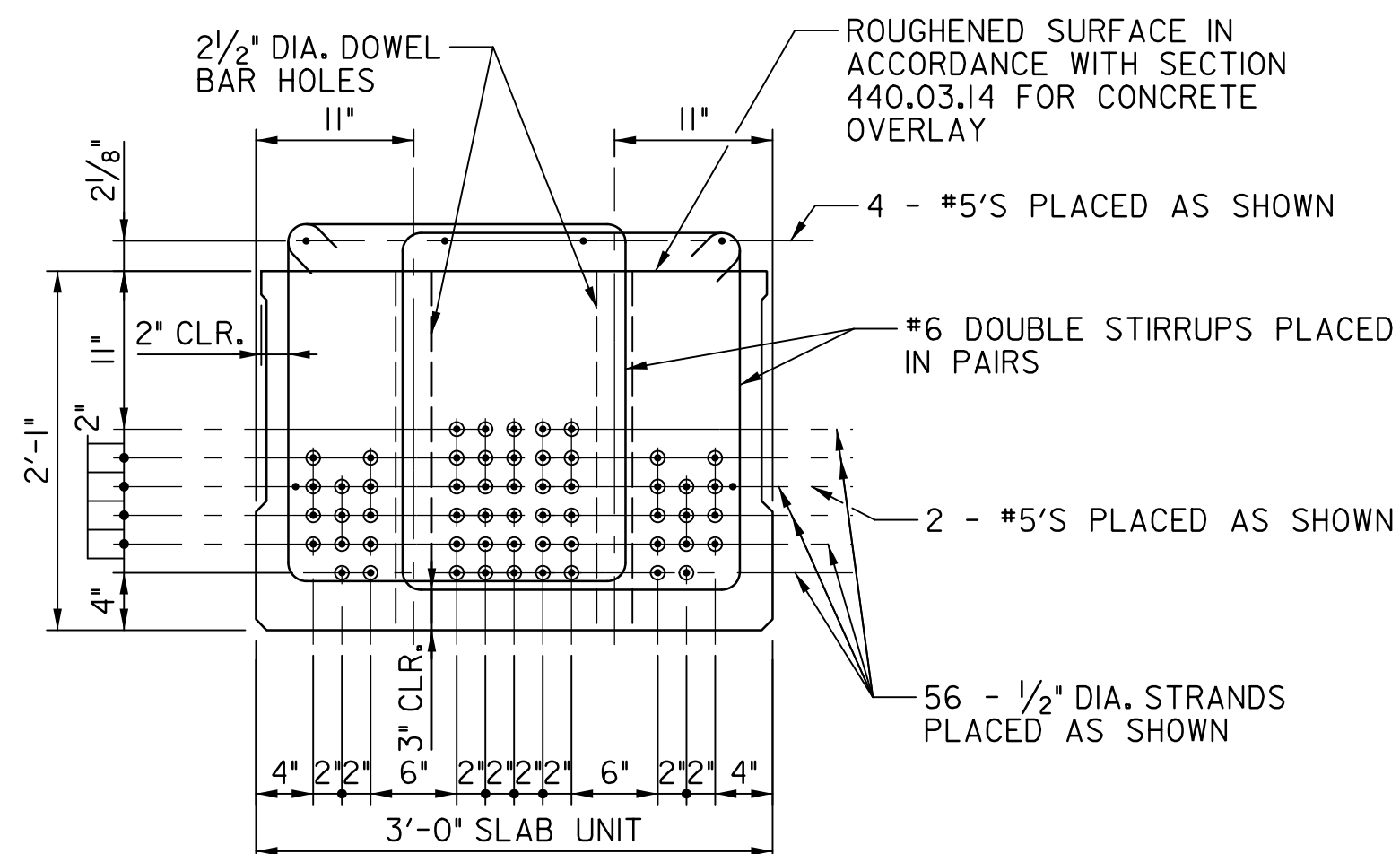
1. EXTREME CARE SHALL BE USED IN LOCATING TIE ROD HOLES DURING THE CASTING OPERATION. THE CONTRACTOR SHALL ASSEMBLE THE SLAB UNITS FOR THE ENTIRE BRIDGE WIDTH AT THE CASTING PLANT TO ENSURE THAT THERE IS NO HOLE MISALIGNMENT OF THE TIE ROD HOLE(S) PRIOR TO SHIPPING THE SLAB UNITS. ANY MISALIGNMENT OF THE TIE ROD HOLE(S) WILL BE CAUSE FOR REJECTION OF THE SLAB UNIT(S). NO DRILLING OR CORING OF THE SLAB UNITS WILL BE PERMITTED.
2. ADJUST CURB REBAR AND STIRRUP SPACING AS NECESSARY TO AVOID TIE ROD HOLES AND RAILING ANCHOR BLOTS (IF APPLICABLE).
3. ALL REINFORCING STEEL TO BE EPOXY COATED.
4. SLAB UNIT LENGTHS IN THE CASTING BED SHALL BE DETERMINED AND DEPICTED IN THE SHOP DRAWINGS TO COMPENSATE FOR GRADE SHORTENING DUE TO THE PRESTRESS EFFECT.
5. THE TOP SURFACE OF ALL SLAB UNITS SHALL BE ROUGH FINISHED TO A FULL AMPLITUDE OF 1/4" AND SCRUBBED TRANSVERSELY WITH A COARSE WIRE BRUSH TO REMOVE ALL LAITANCE AND TO PRODUCE A ROUGHENED SURFACE FOR BONDING WITH THE CONCRETE OVERLAY.
6. NO CLEAR COVER LESS THAN SHOWN ON THESE PLANS WILL BE ACCEPTED.
7. FOR CAMBER DIAGRAM AND VALUES, SEE SHEET S-19.
8. FOR TIE-ROD SPACING, SEE SHEET S-16.

SHEET S-17



SECTION N-N

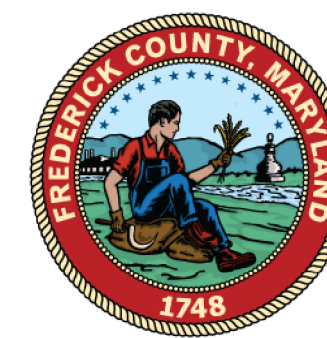
SCALE: 1" = 1'-0"



SECTION N-N

SCALE: 1" = 1'-0"

NOTE:  
ANY MISPLACED DOWEL BAR  
HOLES OR TIE ROD HOLES WILL  
BE CAUSE FOR REJECTION OF  
THE PRECAST SLAB UNIT.



BRIDGE REPLACEMENT  
PRESTRESSED CONCRETE BEAM  
BRIDGE NO. F05-22  
ON HORNETS NEST ROAD  
OVER FRIENDS CREEK

## INTERIOR PRECAST SLAB PANEL DETAILS

SCALE AS-NOTED ADVERTISED DATE NA CONTRACT NO. RFP 16-019A

DESIGNED BY GCD COUNTY FREDERICK

DRAWN BY JAP LOGMILE XXXX - XXXX

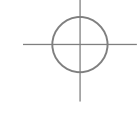
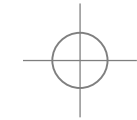
CHECKED BY KAR

SHEET NO. 22 OF 43

# AMT

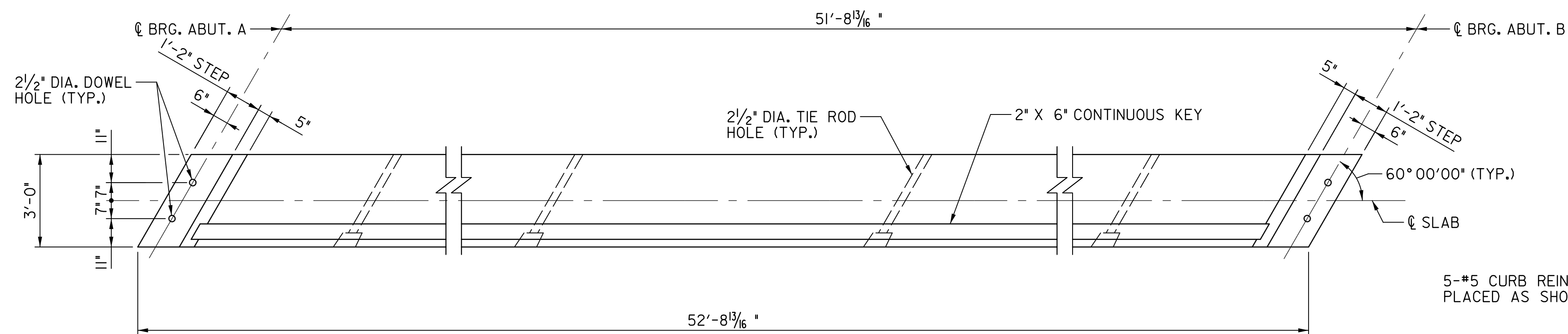
A. MORTON THOMAS AND ASSOCIATES, INC.  
901 DULANEY VALLEY ROAD, SUITE 710  
TOWSON, MD 21204



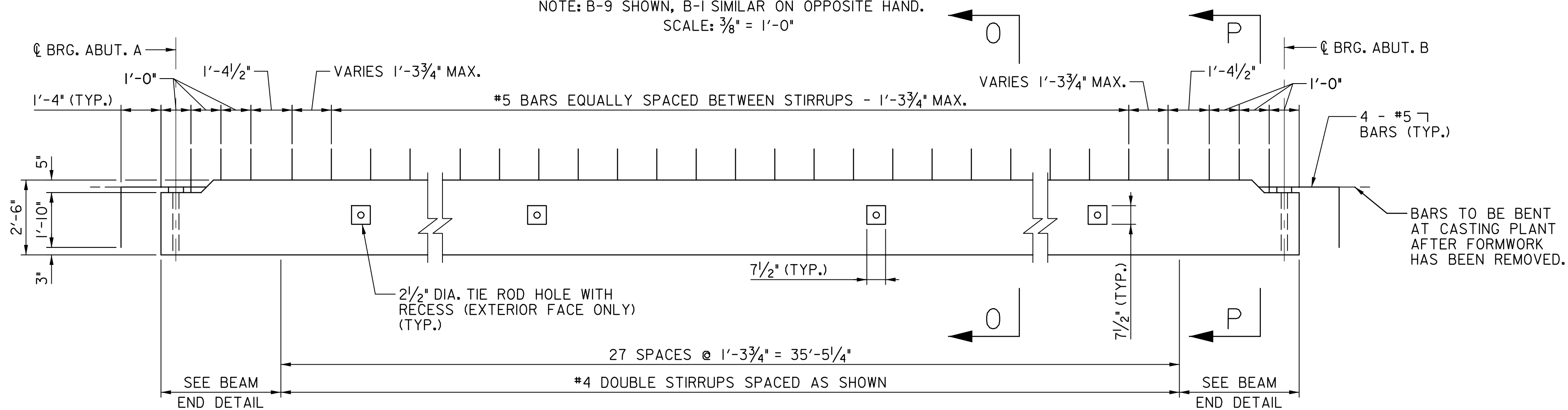


BY: jpiro -

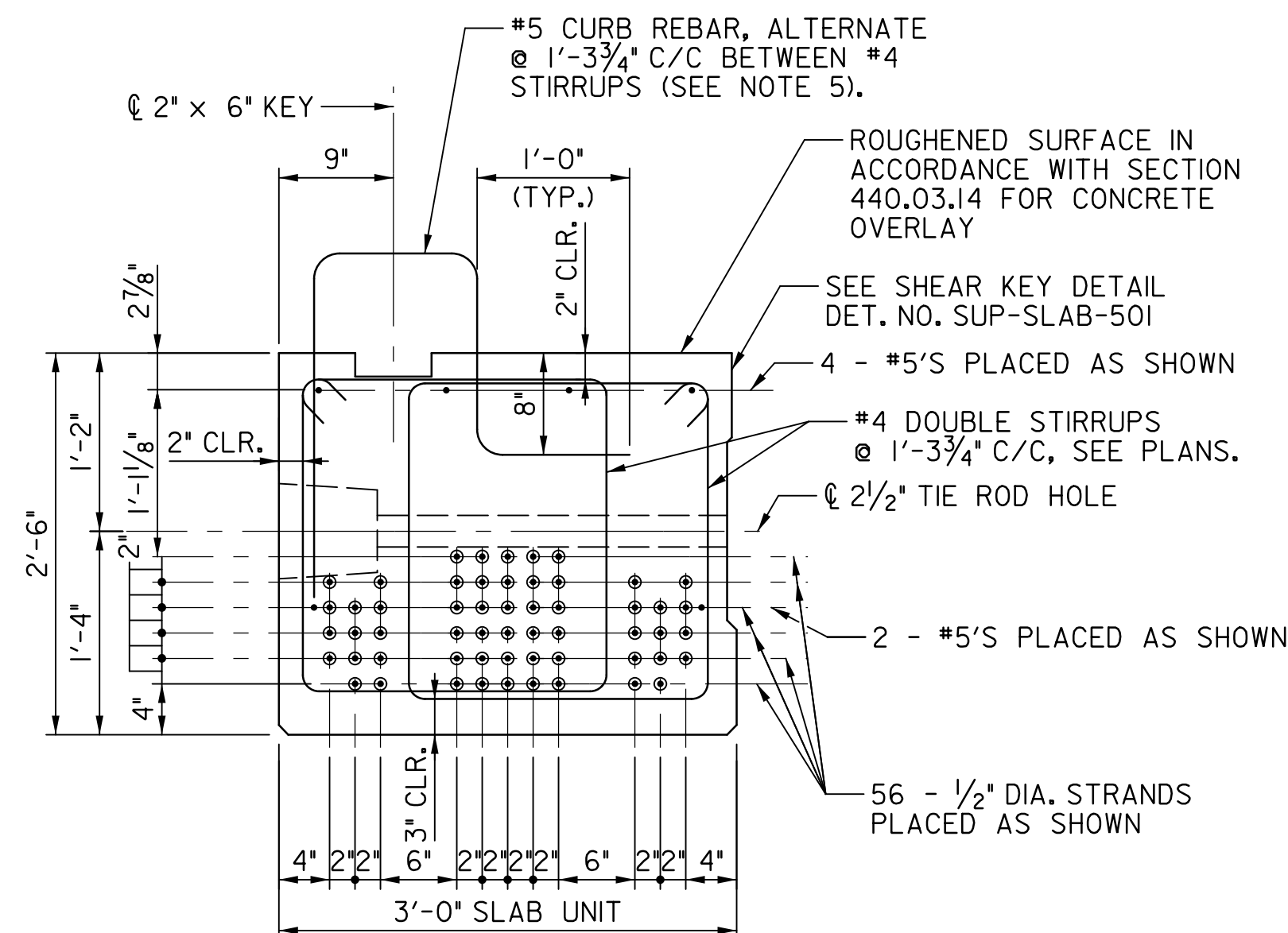
PLOTTED: Friday, March 26, 2021 AT 04:22 PM



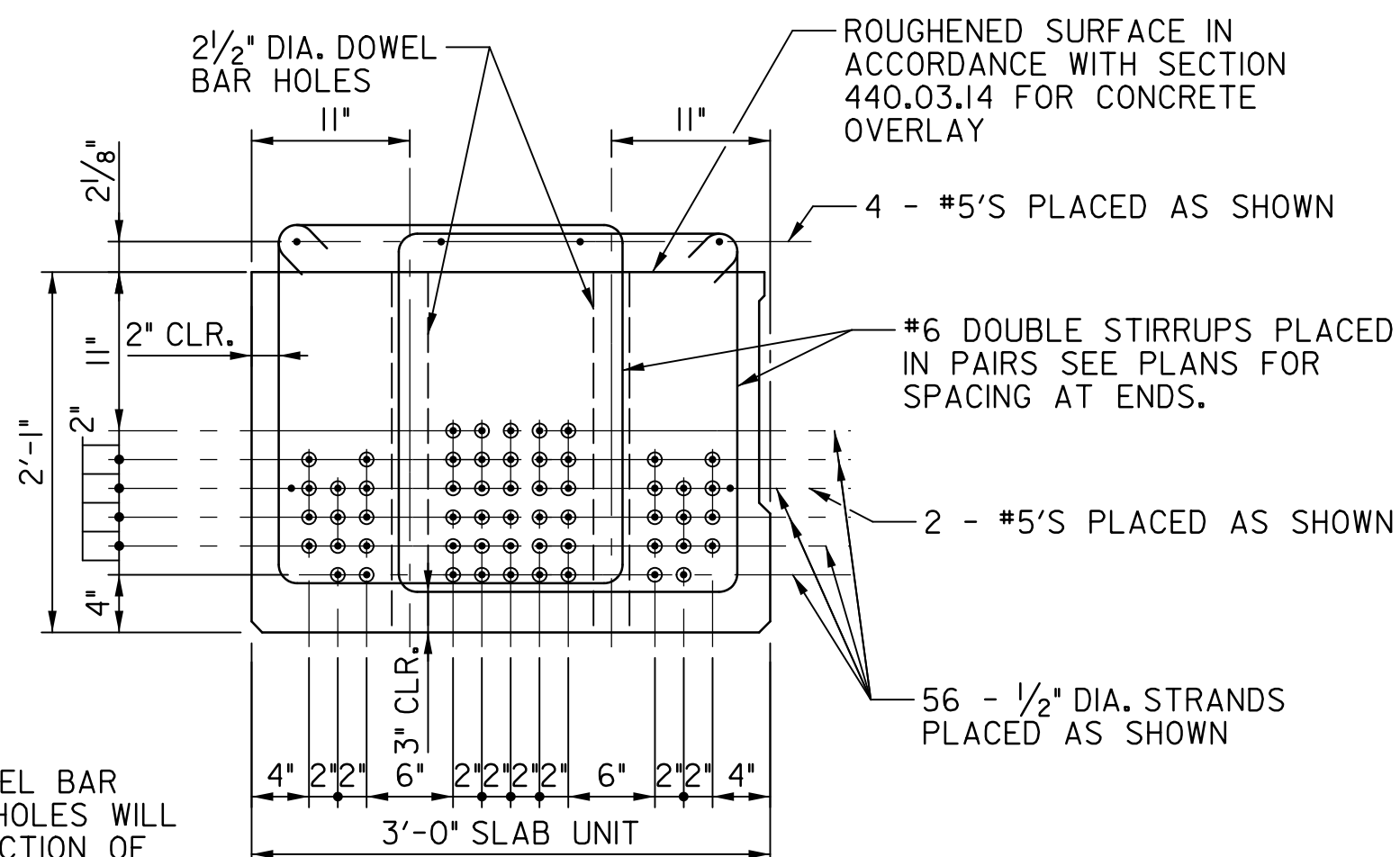
**PLAN - EXTERIOR SLAB**  
NOTE: B-9 SHOWN, B-I SIMILAR ON OPPOSITE HAND.  
SCALE:  $\frac{3}{8}$ " = 1'-0"



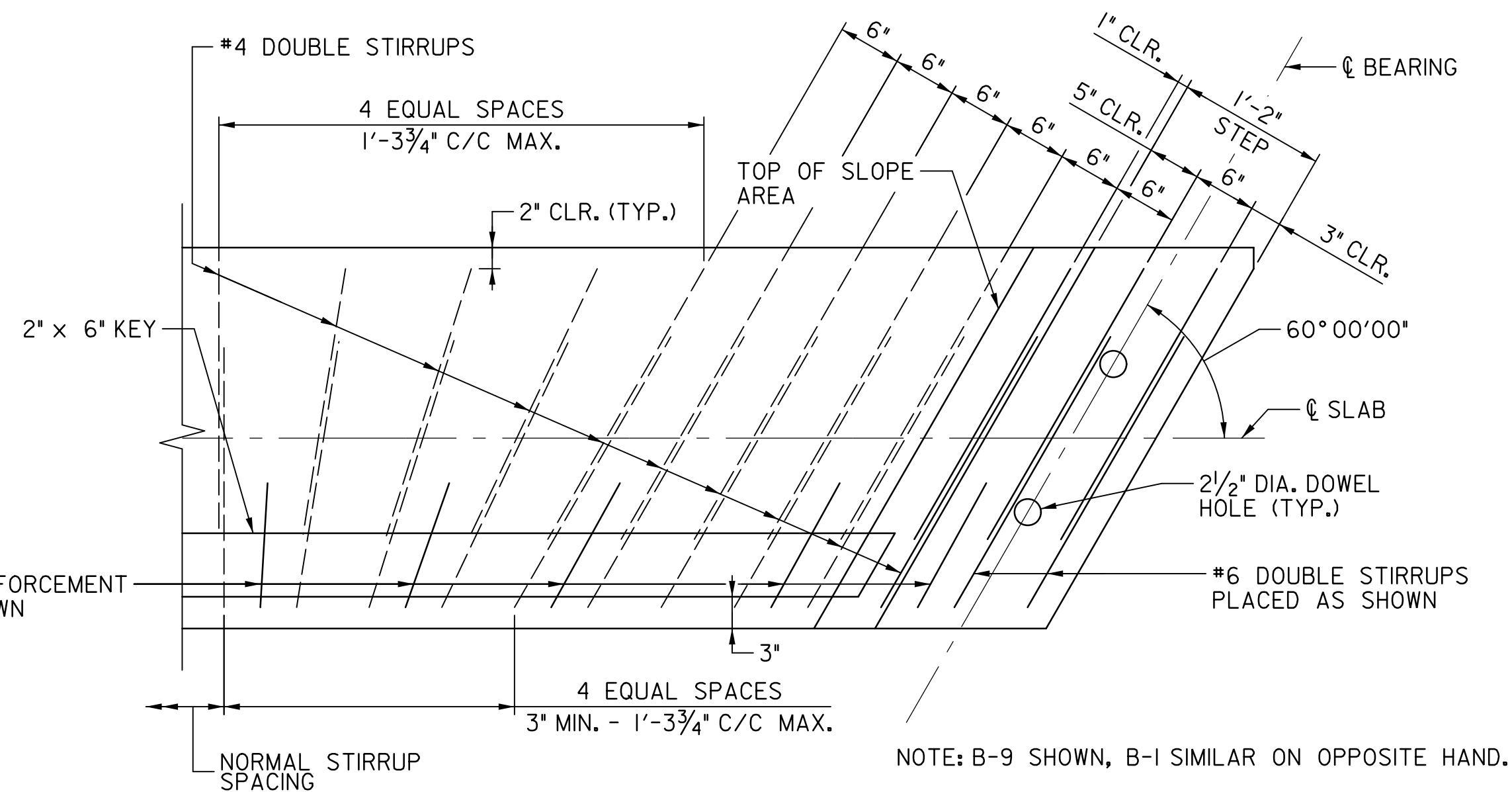
**ELEVATION - EXTERIOR SLAB**  
SCALE:  $\frac{3}{8}$ " = 1'-0"



**SECTION O-O**  
NOTE: B-9 SHOWN, B-I SIMILAR ON OPPOSITE HAND.  
SCALE: 1" = 1'-0"



**SECTION P-P**  
NOTE: B-9 SHOWN, B-I SIMILAR ON OPPOSITE HAND.  
SCALE: 1" = 1'-0"



**BEAM END DETAIL**  
ABUTMENT B END SHOWN, ABUTMENT A  
END SIMILAR ON OPPOSITE HAND.  
SCALE: 1" = 1'-0"

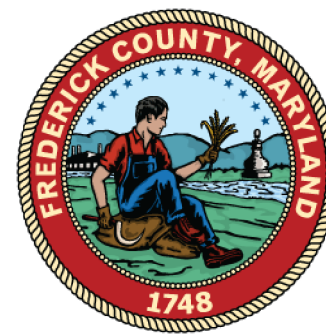
NOTE:  
4 - #5  $\neg$  BARS IN END OF  
SLAB NOT SHOWN FOR CLARITY.

NOTE TO FABRICATOR:  
END OF STIRRUPS SPACING MUST BE  
LAID OUT TO DETERMINE SPACING.

**NOTES:**

- EXTREME CARE SHALL BE USED IN LOCATING TIE ROD HOLES DURING THE CASTING OPERATION. THE CONTRACTOR SHALL ASSEMBLE THE SLAB UNITS FOR THE ENTIRE BRIDGE WIDTH AT THE CASTING PLANT TO ENSURE THAT THERE IS NO HOLE MISALIGNMENT OF THE TIE ROD HOLE(S) PRIOR TO SHIPPING THE SLAB UNITS. ANY MISALIGNMENT OF THE TIE ROD HOLE(S) WILL BE CAUSE FOR REJECTION OF THE SLAB UNIT(S). NO DRILLING OR CORING OF THE SLAB UNITS WILL BE PERMITTED.
- ADJUST CURB REBAR AND STIRRUP SPACING AS NEEDED TO AVOID TIE ROD HOLES AND RAILING ANCHOR BLOTS (IF APPLICABLE).
- ALL REINFORCING STEEL TO BE EPOXY COATED.
- SLAB UNIT LENGTHS IN THE CASTING BED SHALL BE DETERMINED AND DEPICTED IN THE SHOP DRAWINGS TO COMPENSATE FOR GRADE SHORTENING DUE TO THE PRESTRESS EFFECT.
- FOR LOCATION OF CURB REINFORCEMENT AND ANCHOR BOLTS AND PLATES TO BE CAST IN SLAB FOR RAILING, SEE MDOT SHA DET. NO. SUP-TB(TR)-301.
- THE TOP SURFACE OF ALL SLAB UNITS SHALL BE ROUGH FINISHED TO A FULL AMPLITUDE OF  $\frac{1}{4}$ " AND SCRUBBED TRANSVERSELY WITH A COARSE WIRE BRUSH TO REMOVE ALL LAITANCE AND TO PRODUCE A ROUGHENED SURFACE FOR BONDING WITH THE CONCRETE OVERLAY.
- NO CLEAR COVER LESS THAN THAN SHOWN ON THESE PLANS WILL BE ACCEPTED.
- FOR CAMBER DIAGRAM AND VALUES, SEE SHEET S-19.
- FOR TIE-ROD SPACING, SEE SHEET S-16.

SHEET S-18



BRIDGE REPLACEMENT  
PRESTRESSED CONCRETE BEAM  
BRIDGE NO. F05-22  
ON HORNETS NEST ROAD  
OVER FRIENDS CREEK

**EXTERIOR PRECAST SLAB PANEL DETAILS**

SCALE: AS NOTED ADVERTISED DATE: N/A CONTRACT NO.: RFP 16-019A

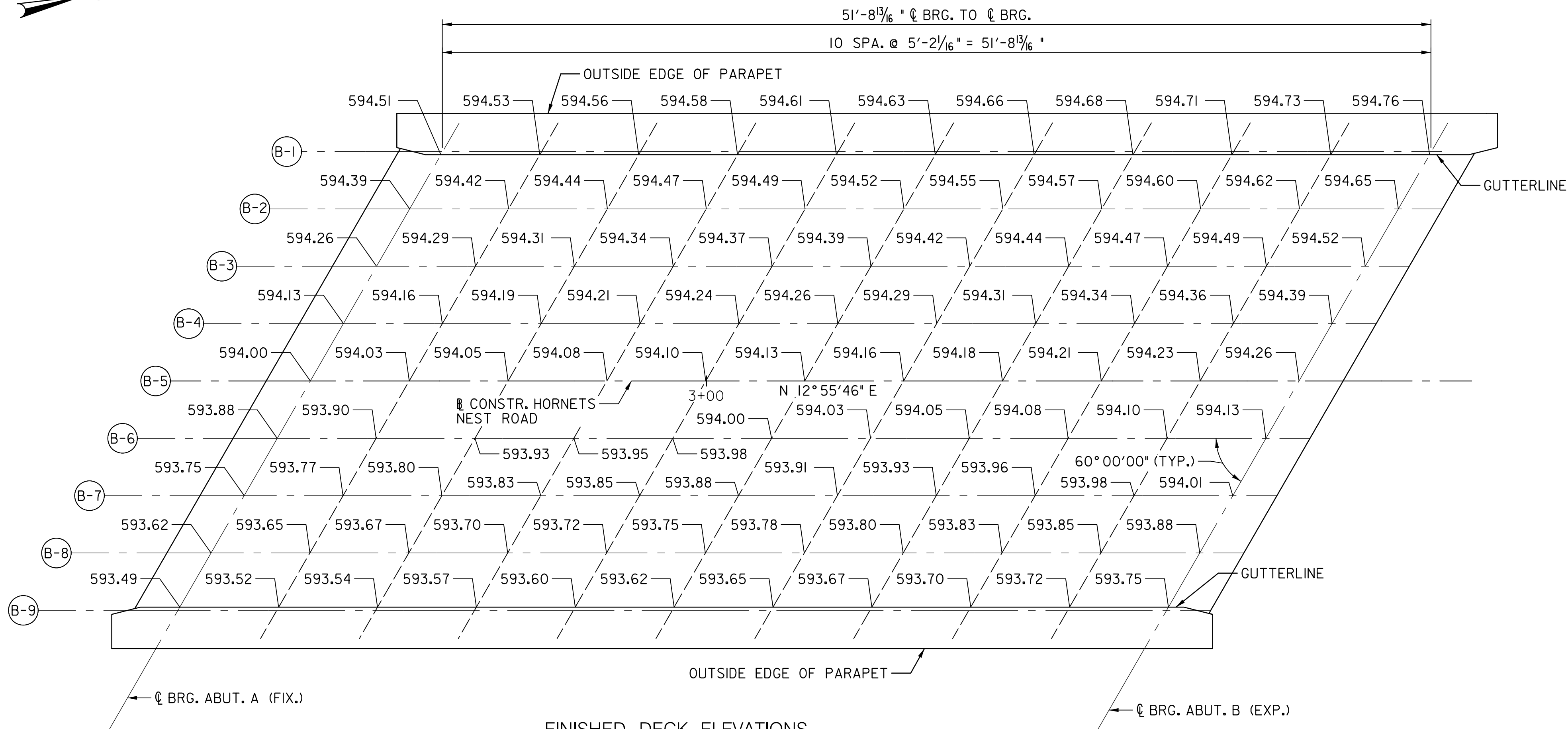
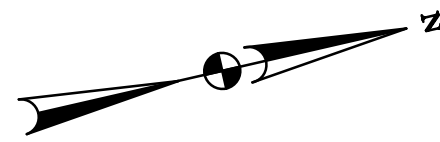
DESIGNED BY: GCD COUNTY: FREDERICK  
DRAWN BY: JAP LOGMILE: XXXX - XXXX  
CHECKED BY: KAR

SHEET NO. 23 OF 43

**AMT**

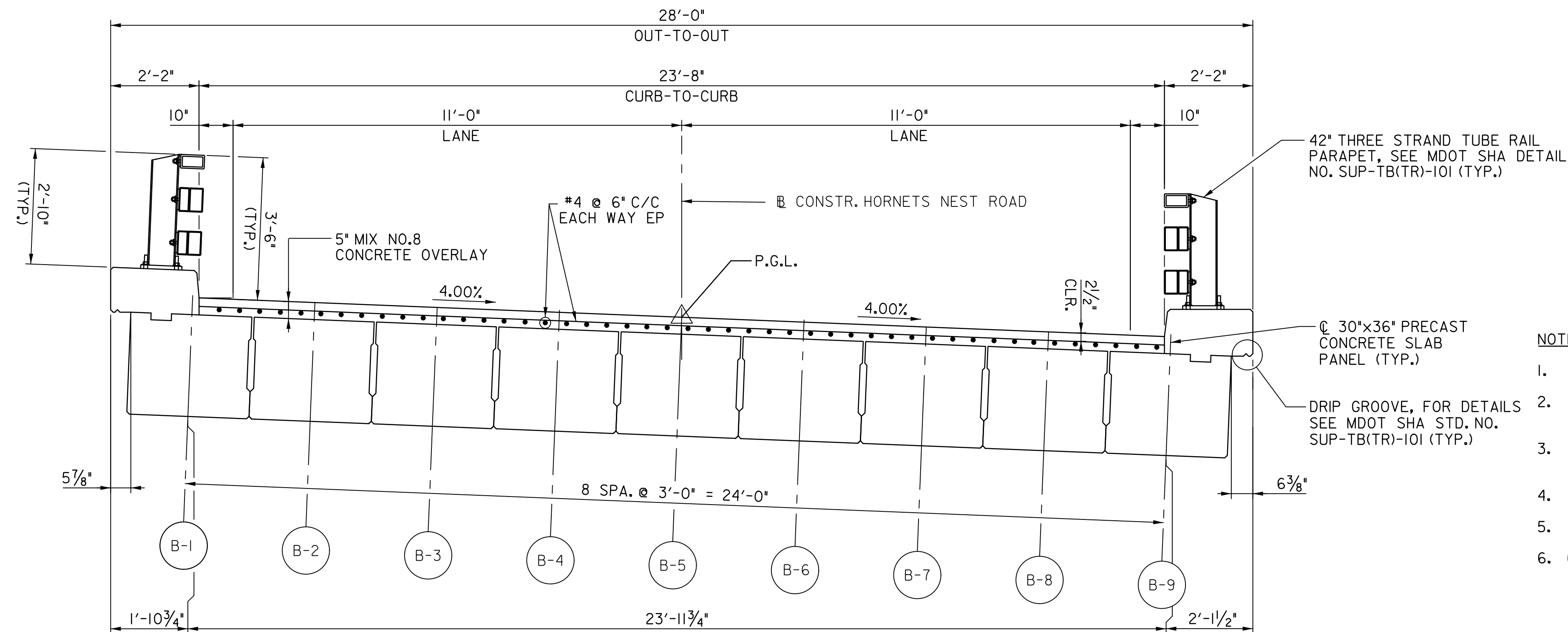
A. MORTON THOMAS AND ASSOCIATES, INC.  
901 DULANEY VALLEY ROAD, SUITE 710  
TOWSON, MD 21204



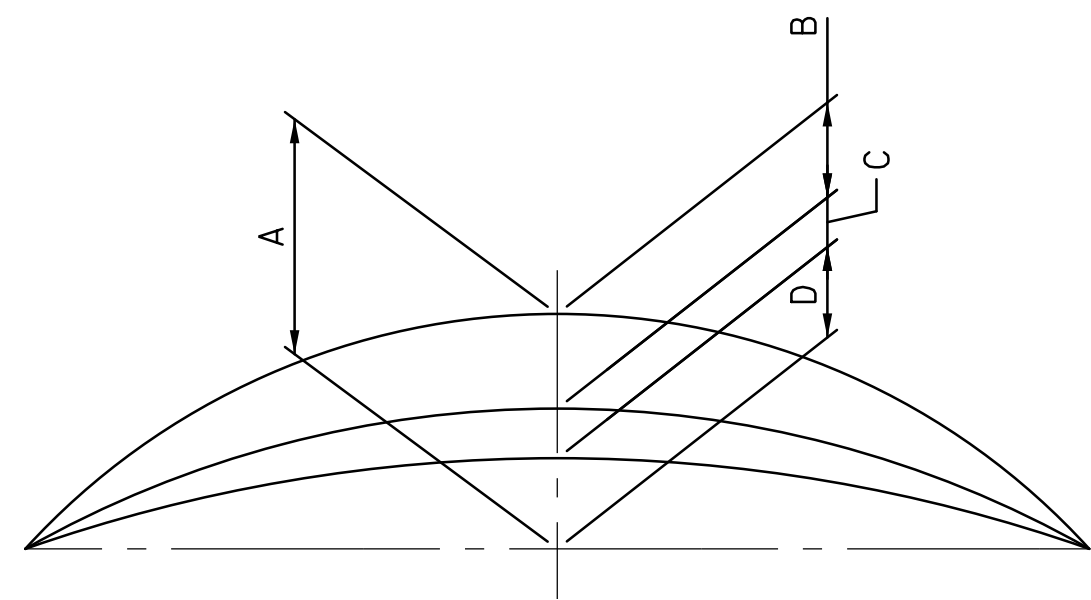


NOTE: FINISHED DECK ELEVATIONS SHOWN ARE TOP OF PROPOSED CONCRETE OVERLAY.

**FINISHED DECK ELEVATIONS**  
SCALE: 1/4" = 1'-0"



**TYPICAL SECTION**  
LOOKING STATION AHEAD  
SCALE: 1/2" = 1'-0"



**CAMBER DIAGRAM**  
SCALE: NOT TO SCALE

PRECAST CONCRETE SLAB PANELS I-9			
A	B	C	D
2 7/16"	1 1/16"	1/2"	1"

**CAMBER NOTES:**

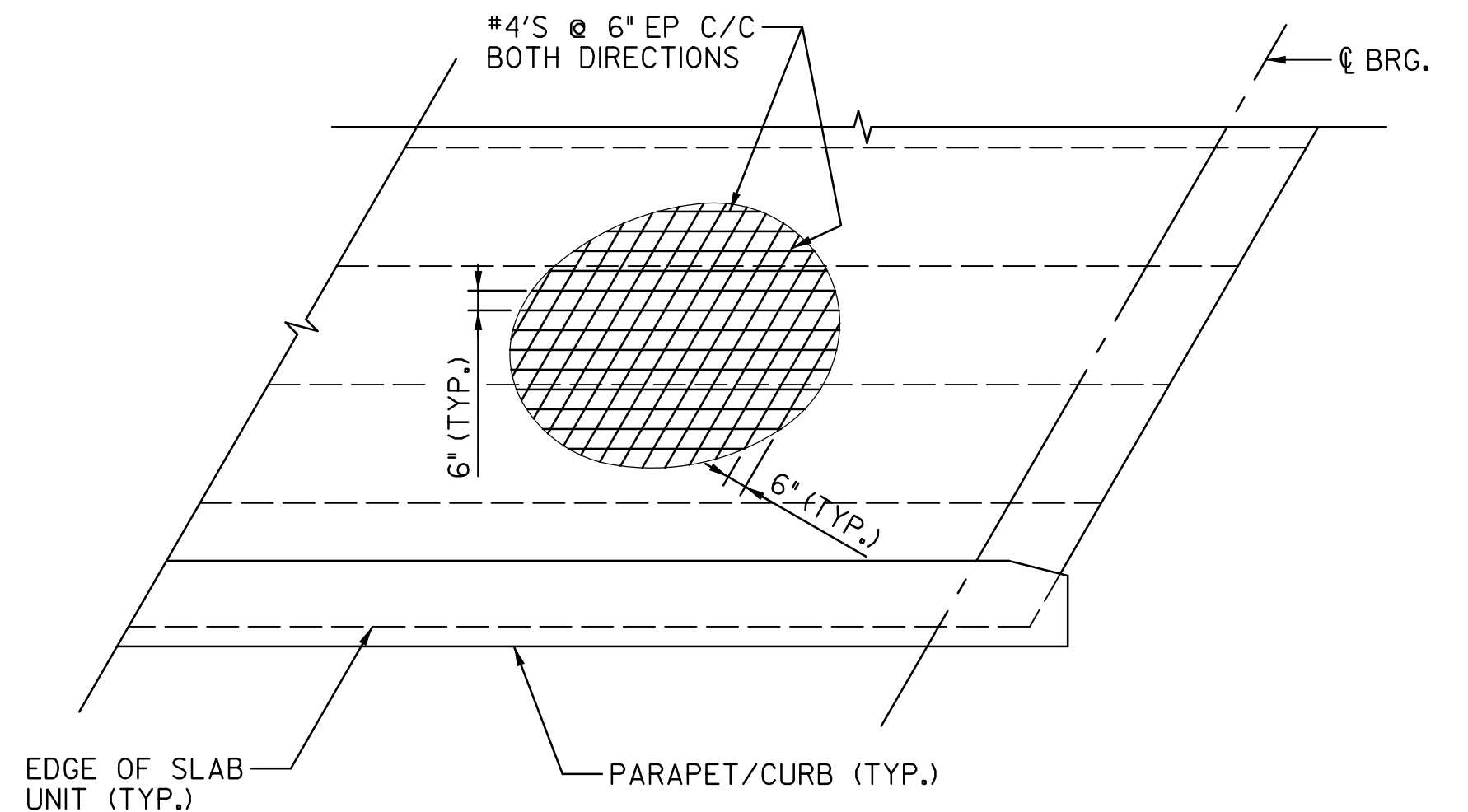
CAMBER DUE TO PRESTRESS PLUS SLAB LOAD TO BE CHECKED IN THE FIELD.

THE THICKNESS OF THE CONCRETE OVERLAY SHALL BE VARIED TO COMPENSATE FOR ANY INACCURACIES IN THE CAMBER OF SLAB.

PRESTRESS CAMBER AND DEAD LOAD DEFLECTION DATA SHOWN IS THEORETICAL AND MAY VARY WITH CONCRETE STRENGTH, VARIABLE PRESTRESSING CONDITIONS AND PRESTRESS LOSSES.

CAMBER IN SLABS WILL INCREASE DUE TO CONCRETE CREEP DURING STORAGE. PRECAUTIONS SHALL BE TAKEN BY LOADING OR OTHER MEANS TO PREVENT ADDITIONAL CAMBER FROM DEVELOPING DURING STORAGE OF PRESTRESSD SLABS.

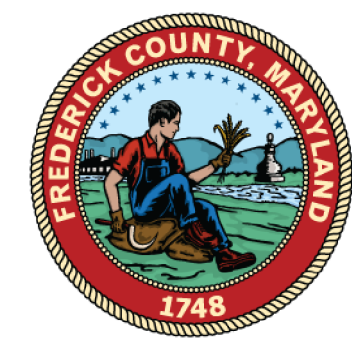
- A = ESTIMATED CAMBER DUE TO PRESTRESS
- B = DEFLECTION DUE TO DEAD LOAD OF PRESTRESSED SLABS
- C = DEFLECTION DUE TO DEAD LOAD OF CAST-IN-PLACE CONCRETE OVERLAY, CURBS AND RAILING
- D = NET FINAL CAMBER



**PARTIAL DECK OVERLAY PLAN**  
SCALE: 1/4" = 1'-0"

**NOTES:**

- EP DENOTES EPOXY COATED.
- NO SPECIAL POURING SEQUENCE IS REQUIRED FOR THIS STRUCTURE.
- THREE STRAND TUBE RAIL SHALL BE BUILT PERPENDICULAR TO THE TOP OF ROADWAY ON THE HIGH SIDE.
- FOR VERTICAL CURVE DATA SEE SHEET S-01.
- FOR SUPERELEVATION TRANSITION DATA SEE SHEET TS-01.
- CONCRETE OVERLAY SHALL BE PLACED IN ONE CONTINUOUS POUR.



BRIDGE REPLACEMENT  
PRESTRESSED CONCRETE BEAM  
BRIDGE NO. F05-22  
ON HORNETS NEST ROAD  
OVER FRIENDS CREEK

**SUPERSTRUCTURE DETAILS**

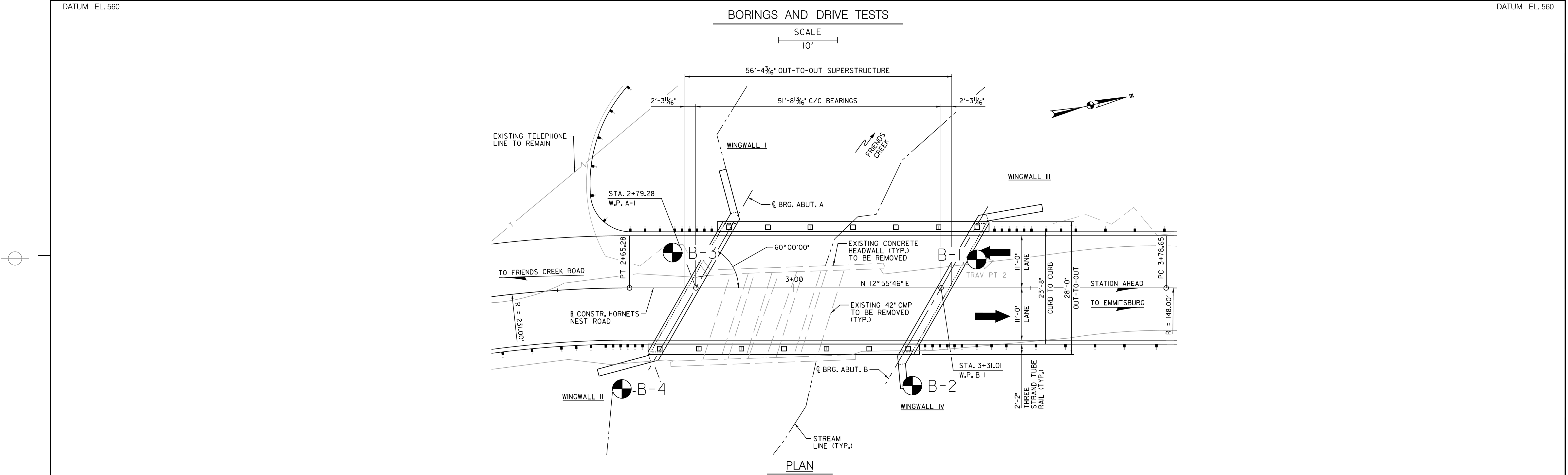
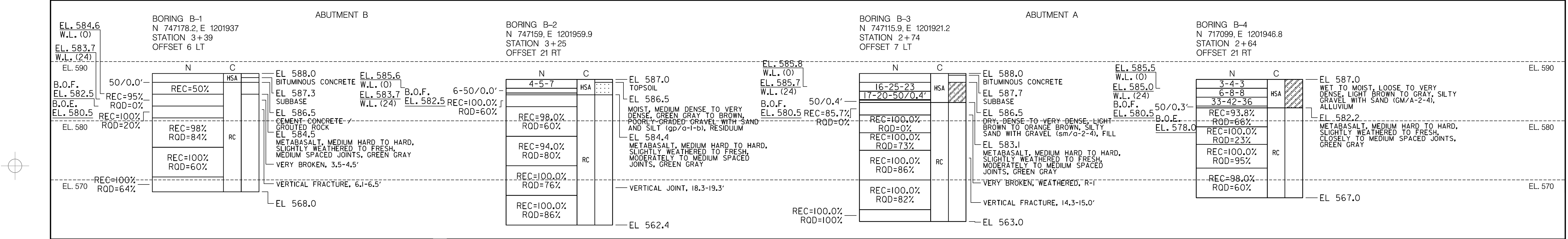
SCALE: AS-NOTED ADVERTISED DATE: N/A CONTRACT NO.: RFP 16-019A

DESIGNED BY: GCD COUNTY: FREDERICK  
DRAWN BY: JRM LOGMILE: XXXX - XXXX  
CHECKED BY: KAR

SHEET NO. 24 OF 43

**AMT**  
A. MORTON THOMAS AND ASSOCIATES, INC.  
901 DULANEY VALLEY ROAD, SUITE 710  
TOWSON, MD 21204

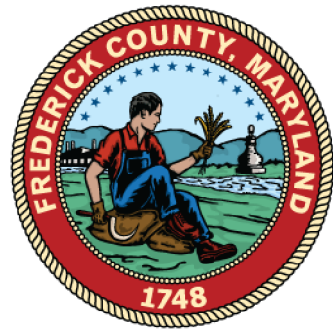




GENERAL NOTES

- THE BORINGS AND DRIVE TESTS WERE TAKEN IN DECEMBER 2018 BY CGC GEOSERVICES, INC.
- THE SOIL SYMBOLS REFLECT ONLY THE MAJOR SOIL CONSTITUENT. FOR MORE COMPLETE SOIL CHARACTERISTIC REFER TO THE SOIL DESCRIPTIVE TEXT.
- THE FIELD BORING LOGS RECORD SAMPLE SPOON RECOVERY. THE LOGS ARE AVAILABLE UPON REQUEST. THE MATERIAL RECOVERED FROM THE SITE INVESTIGATION IS AVAILABLE FOR REVIEW. CONTACT THE FIELD EXPLORATIONS DIVISION AT 1-866-926-8501.
- N = BLOWS ON A 2-INCH INSIDE DIAMETER SPLIT-BARREL SAMPLING SPOON BY 140-POUND DRIVE-WEIGHT FALLING 30 INCHES INDICATING SUCCESSIVE 6-INCH INCREMENTS OF PENETRATION IN LIEU OF BLOWS PER FOOT. PENETRATIONS LESS THAN 6 INCHES ARE INDICATED BY 50 BLOWS OVER THE NEAREST TENTH OF A FOOT.
- REC = ROCK CORE RECOVERY, RQD = ROCK QUALITY DESIGNATION. THE CORE BARREL TYPE = NO 3.0 INCH OUTSIDE DIAMETER GIVING A 1-7/8 INCH CORE DIAMETER.
- ROCK PENETRATED BY A SPLIT-BARREL SAMPLER IS NON-COREABLE ROCK.
- W.L. = WATER LEVEL READING. THE FIGURE IN PARENTHESIS INDICATES THE READING IN HOURS AFTER COMPLETION OF THE BORING.
- B.O.F. = BOTTOM OF FOOTING ELEVATION IN FEET
- B.O.E. = BOTTOM OF OVER EXCAVATION ELEVATION IN FEET
- BORINGS AND SAMPLINGS CONFORM TO AASHTO DESIGNATIONS T-206, T-225, AND T-306.
- THE SOIL AND ROCK HAS BEEN CLASSIFIED VISUALLY BY AN ENGINEER DURING THE DRILLING OPERATIONS WITH LAB CLASSIFICATION TESTING PERFORMED ON SELECTED SOIL SAMPLES.

SHEET S-20

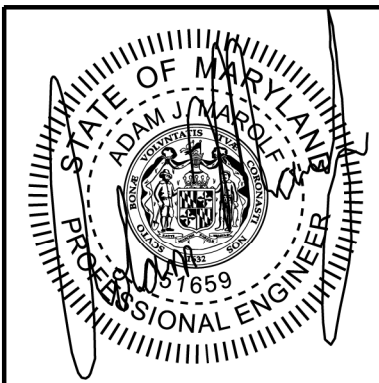


BRIDGE REPLACEMENT  
PRESTRESSED CONCRETE BEAM  
BRIDGE NO. F05-22  
ON HORNETS NEST ROAD  
OVER FRIENDS CREEK

BORING AND DRIVE TESTS

SCALE AS NOTED ADVERTISED DATE NA CONTRACT NO. RFP 16-019A

DESIGNED BY AJM COUNTY FREDERICK  
DRAWN BY RJE LOGMILE XXXX - XXXX  
CHECKED BY SCS



**AMERICAN GEOTECHNICAL & ENVIRONMENTAL SERVICES, INC.**  
1000 First Avenue  
Suite 403  
King of Prussia, PA 19406  
(610) 354-0333 Fax (610) 354-9333

SHEET NO. 25 OF 43



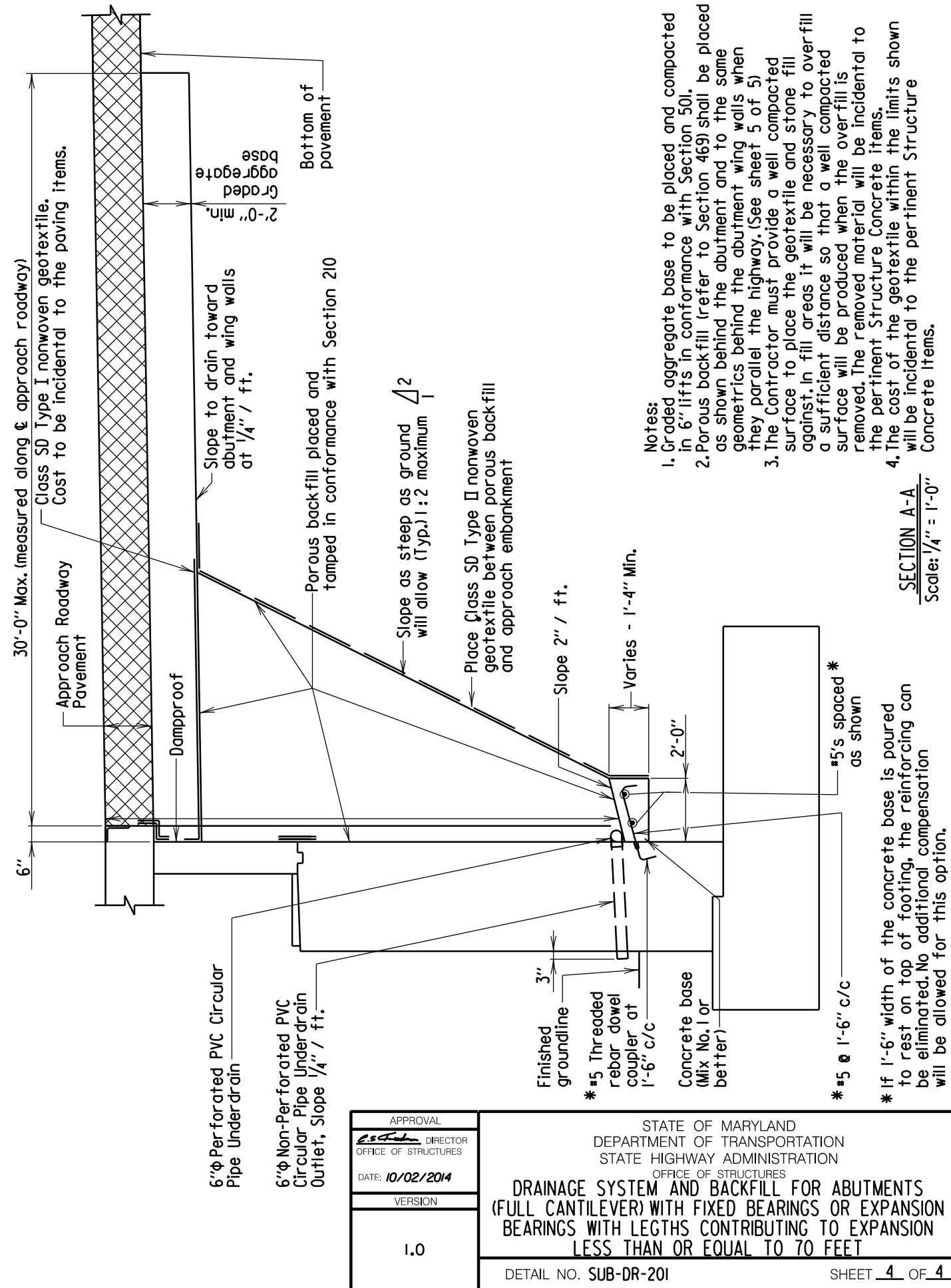
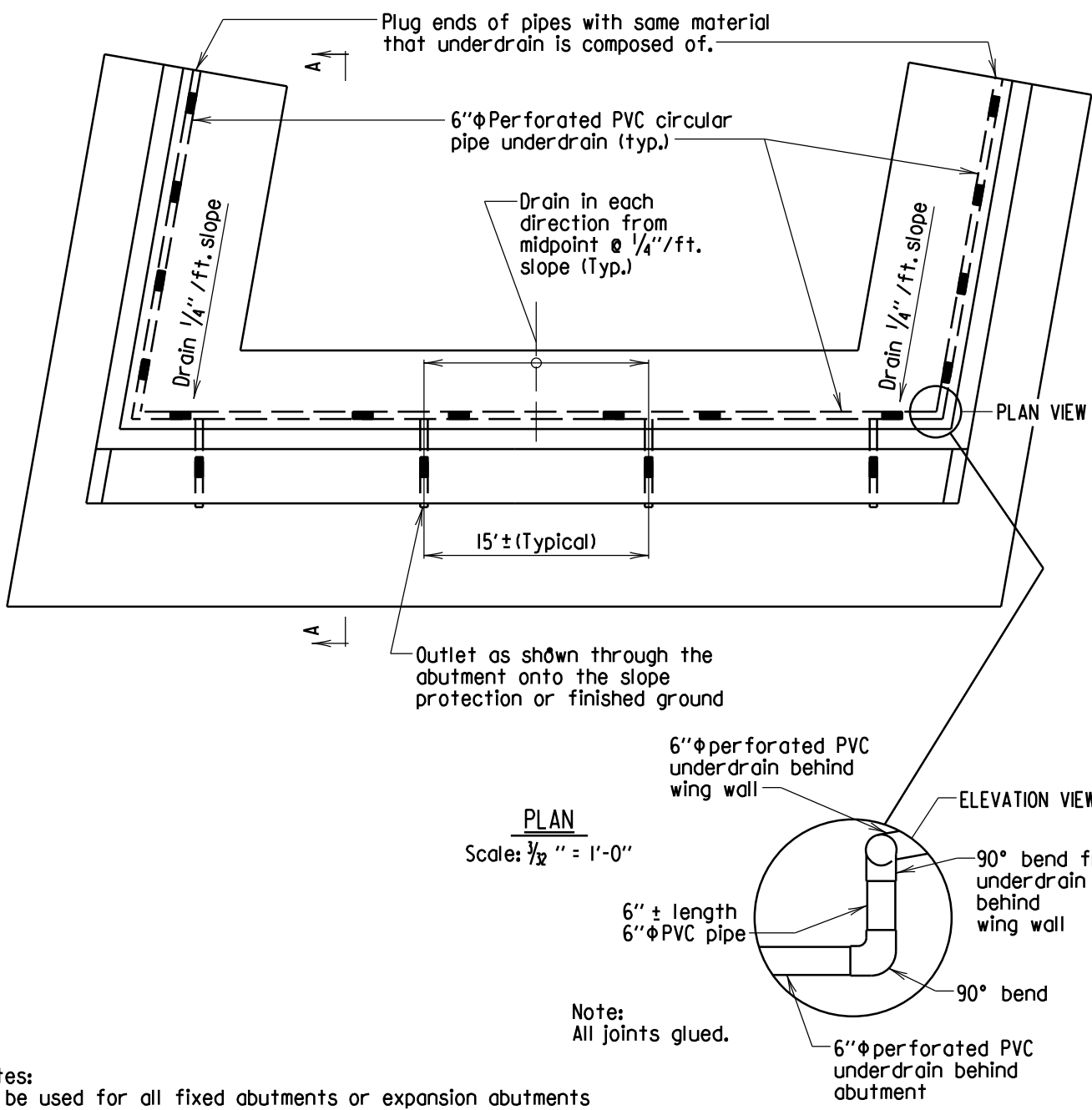


BY: Jiacchetti

- Notes:
- To be used for all fixed abutments or expansion abutments with lengths contributing to expansion less than or equal to 70 feet.
  - Minimum slope of Pipe Underdrain Outlets is  $\frac{1}{4}''/\text{ft.}$
  - For Section A-A see Sheet No. 2, 3 or 4
  - The drainage system behind each wing wall can be connected to the drainage system behind the abutment using 2 - 90° bends and a short length of pipe. This will necessitate the drainage system behind the wing wall be slightly higher.
  - For wing walls over 15 ft. long, the drainage system behind them may be independent of the drainage system behind the abutment. They can be outletted directly through the wing wall.
  - The cost of the PVC underdrains complete in place will be incidental to the Substructure Concrete item.
  - For section through wing wall, see Detail No. SUB-DR-203.

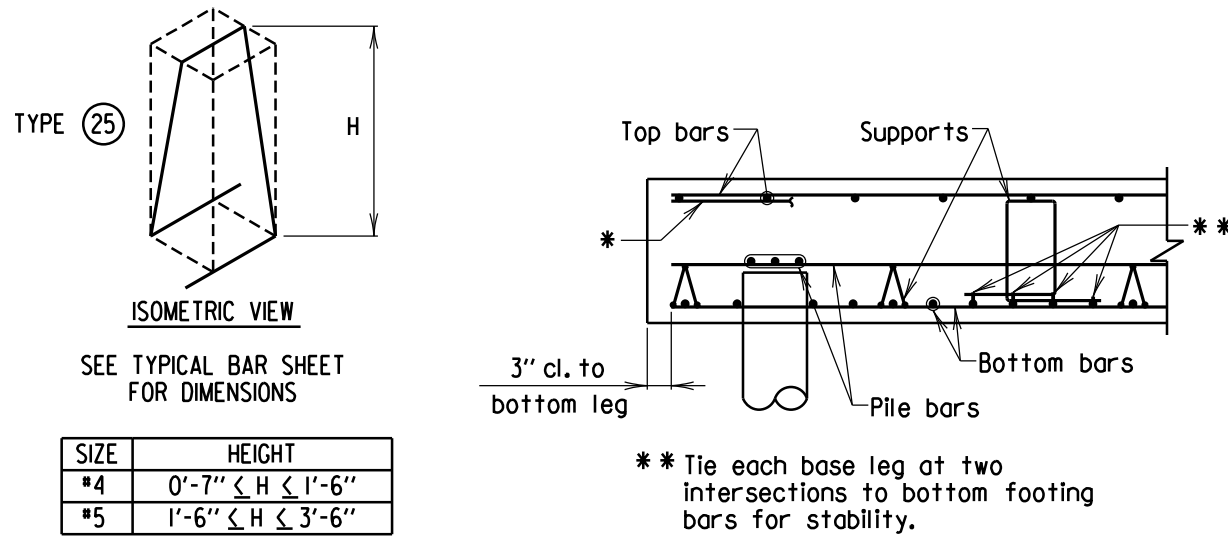
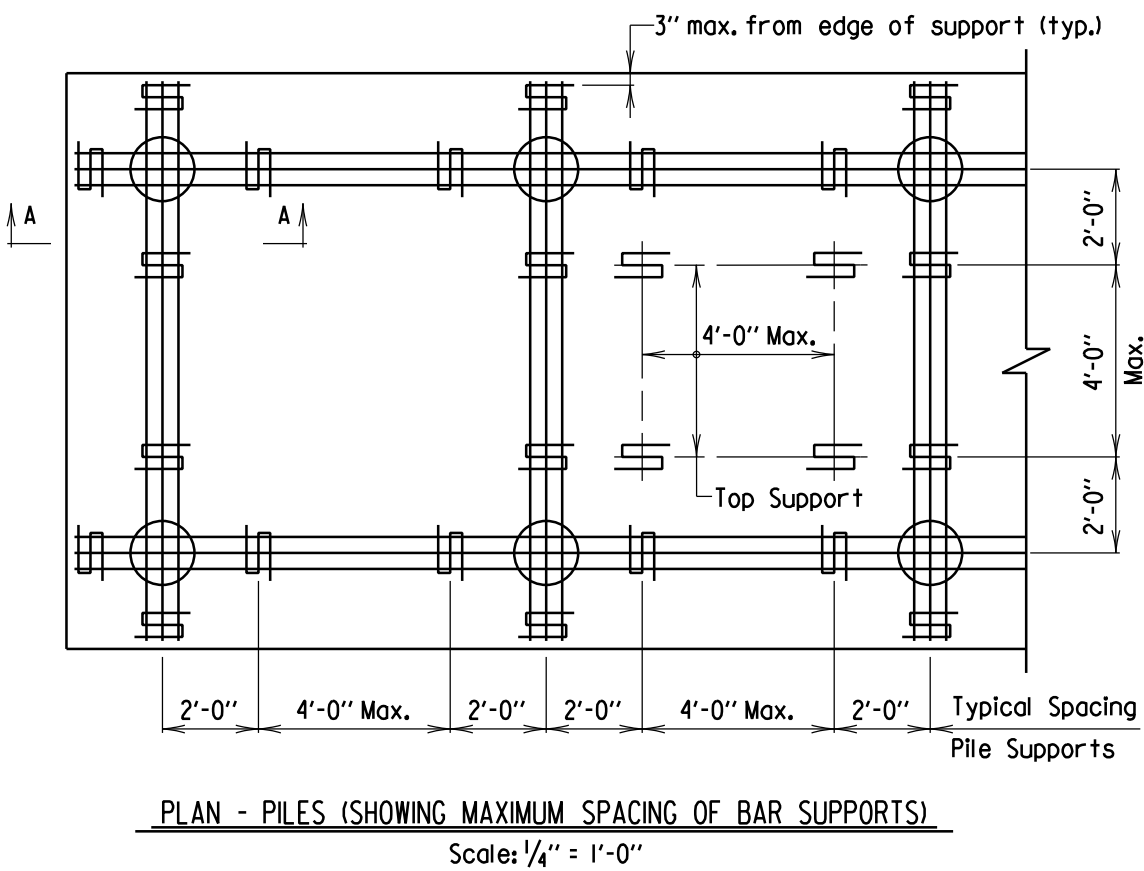
APPROVAL	STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES
DATE: 10/02/2014	
VERSION	
1.0	
DRAINAGE SYSTEM AND BACKFILL FOR ABUTMENTS WITH FIXED BEARINGS OR EXPANSION BEARINGS WITH LENGTHS CONTRIBUTING TO EXPANSION LESS THAN OR EQUAL TO 70 FEET	
DETAIL NO. SUB-DR-201	SHEET 1 OF 4

SUBSTRUCTURE - DRAINAGE



SUBSTRUCTURE - DRAINAGE

APPROVAL	STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES
DATE: 10/02/2014	
VERSION	
1.0	
DRAINAGE SYSTEM AND BACKFILL FOR ABUTMENTS (FULL CANTILEVER) WITH FIXED BEARINGS OR EXPANSION BEARINGS WITH LENGTHS CONTRIBUTING TO EXPANSION LESS THAN OR EQUAL TO 70 FEET	
DETAIL NO. SUB-DR-201	SHEET 4 OF 4



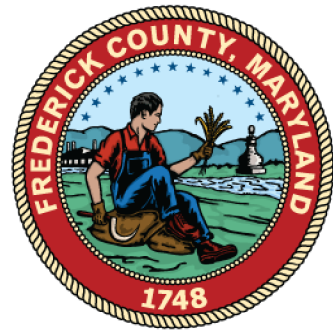
DIMENSIONS AND QUANTITIES TO BE SUPPLIED BY CONTRACTOR

APPROVAL	STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES
DATE: 03/07/1991	
VERSION	
1.0	
REINFORCING BAR FOOTING SUPPORT SYSTEM	
DETAIL NO. FND-PF-202	SHEET 1 OF 1

FOUNDATION - PILES

\* Top bar cannot be dropped to act as a support bar. If support bar is required, separate #5 bars are to be used.

SHEET S-21



BRIDGE REPLACEMENT  
PRESTRESSED CONCRETE BEAM  
BRIDGE NO. F05-22  
ON HORNETS NEST ROAD  
OVER FRIENDS CREEK

## STANDARD DETAILS

SCALE AS SHOWN ADVERTISED DATE NA CONTRACT NO. RFP 16-019A

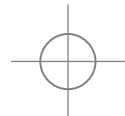
DESIGNED BY SHA COUNTY FREDERICK  
DRAWN BY SHA LOGMILE XXXX - XXXX  
CHECKED BY

SHEET NO. 26 OF 43

# AMT

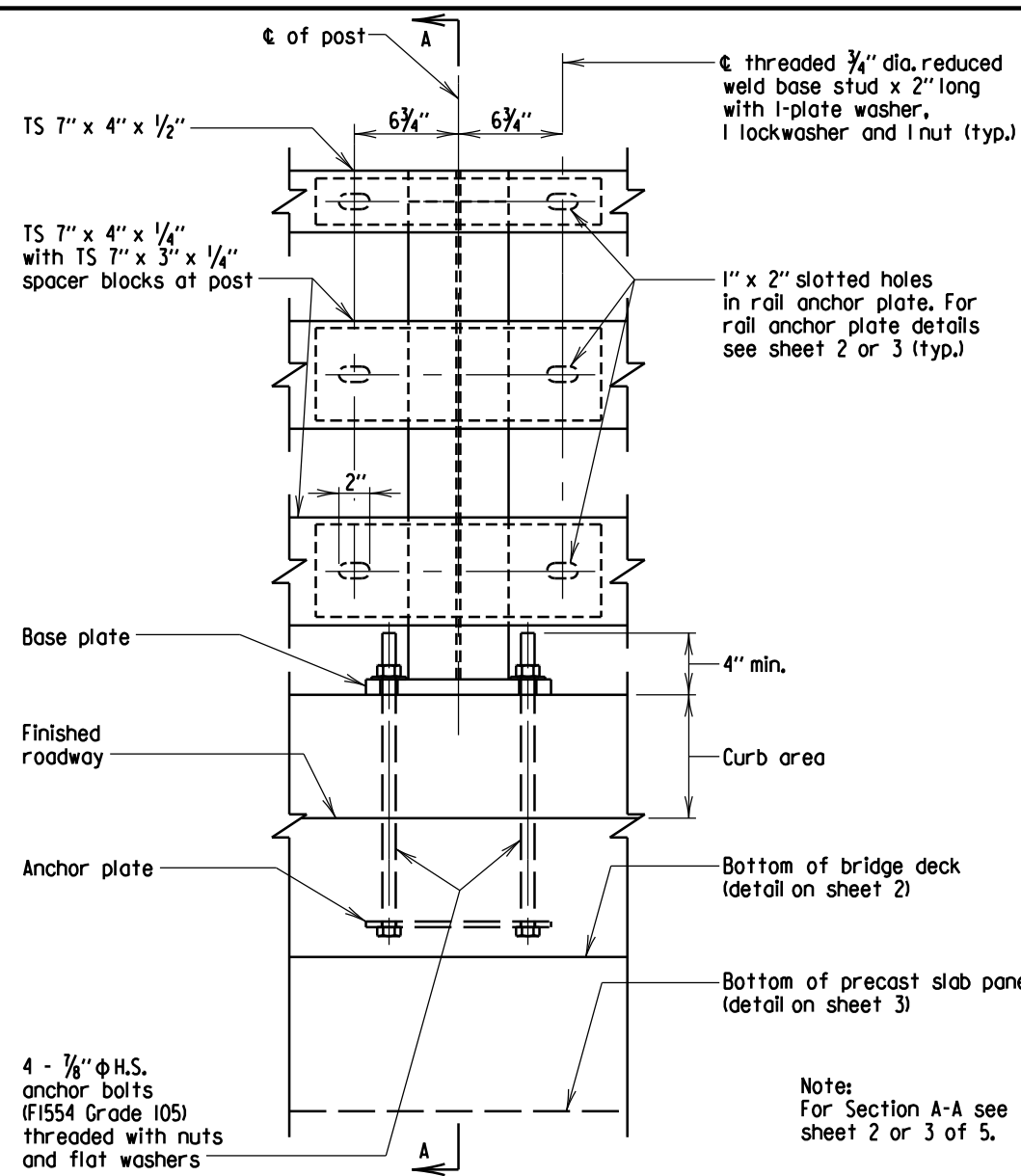
A. MORTON THOMAS AND ASSOCIATES, INC.  
901 DULANEY VALLEY ROAD, SUITE 710  
TOWSON, MD 21204





BY: Jiacchetti

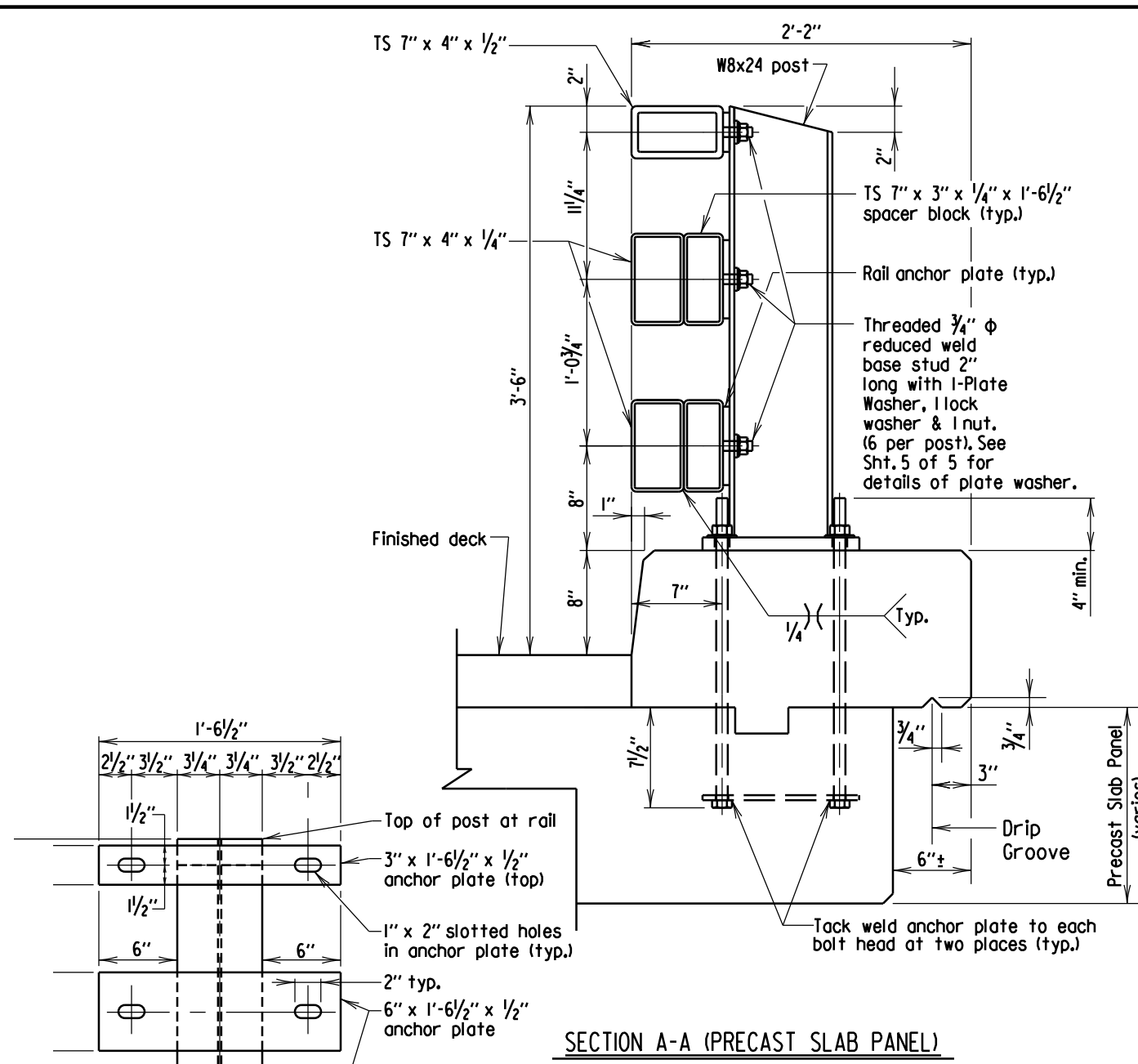
PLOTTED: Wednesday, November 18, 2020 AT 08:32 AM



- GENERAL NOTES:**
1. All railings shall be fabricated and erected as indicated on the Plans.
  2. Rails shall be parallel to the grade of the roadway. Rail sections shall be attached to as many posts as possible, but not less than two.
  3. The center line of any splice and/or expansion joint shall be located at least 2'-0" away from center line of a post except where indicated otherwise on Plans. Expansion and/or splice joints for each strand of three strand railing shall be placed in the same location and in the same panel.
  4. Rail elements shall be structural tubing in accordance with ASTM A500 Grade B, A618 or A501.
  5. Steel posts and plates shall conform to ASTM A36 unless otherwise noted.
  6. Posts shall be set perpendicular to top of curb. For post spacing see Plans (Maximum 10'-0" Spacing).
  7. All structural steel including fasteners shall be hot-dip galvanized as per ASTM A-123 after fabrication, except as noted. All anchor plates shall be attached before galvanizing.
  8. In setting anchor bolts be sure enough threads are exposed so that nuts can be completely attached (4" min.).

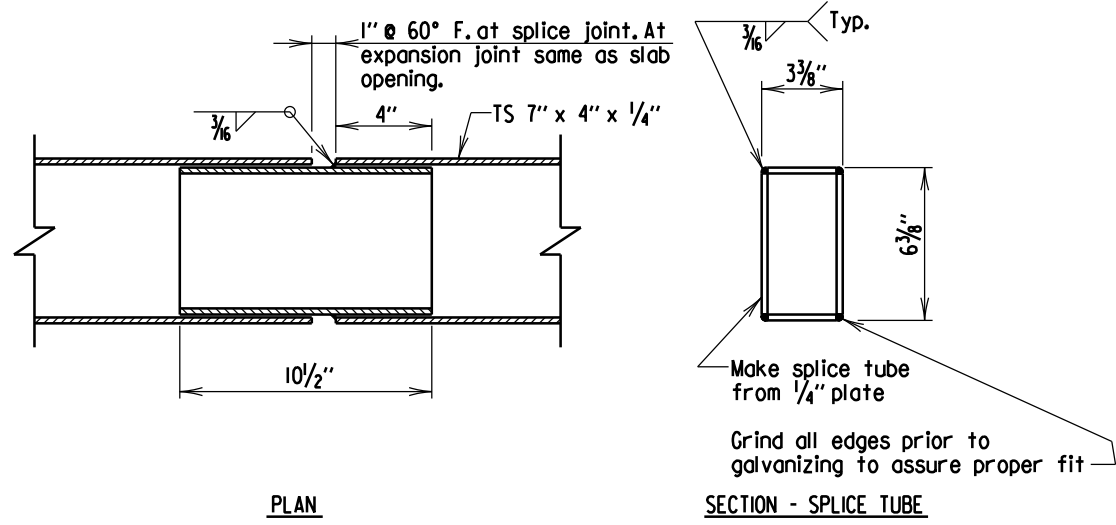
#### MASH COMPLIANT TL-4 BRIDGE RAILING

APPROVAL 2 OFFICE OF STRUCTURES DATE 04/28/2020	STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES
VERSION 1.03	THREE STRAND STRUCTURAL TUBE RAIL CURB MOUNTED - ELEVATION
DETAIL NO. SUP-TB(TRI)-101	SHEET 1 OF 5



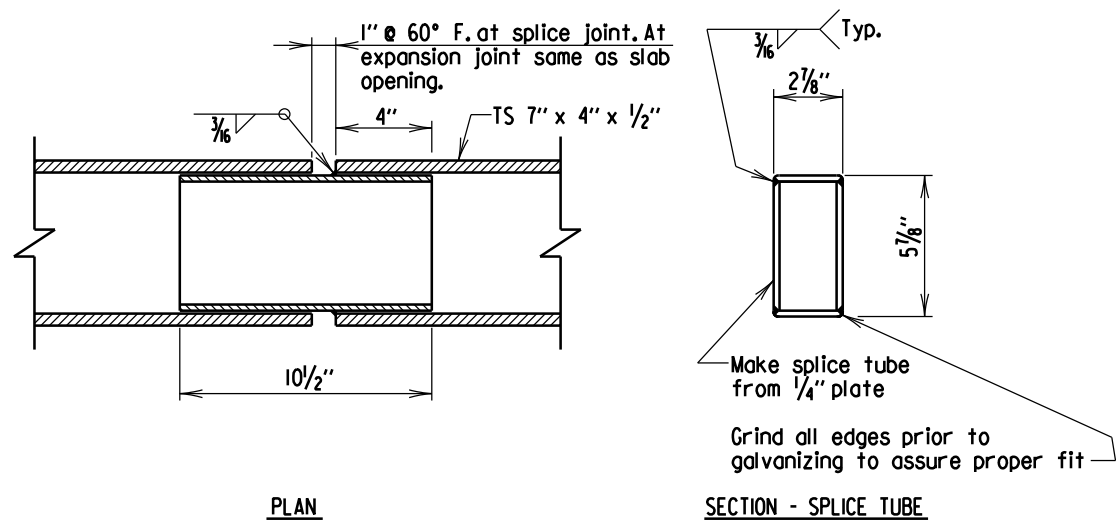
#### MASH COMPLIANT TL-4 BRIDGE RAILING

APPROVAL 2 OFFICE OF STRUCTURES DATE 04/28/2020	STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES
VERSION 1.03	THREE STRAND STRUCTURAL TUBE RAIL CURB MOUNTED - DETAILS PRECAST SLAB PANEL MOUNTED
DETAIL NO. SUP-TB(TRI)-101	SHEET 3 OF 5



#### RAIL SPLICE DETAILS (TS 7" x 4" x 1/4")

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



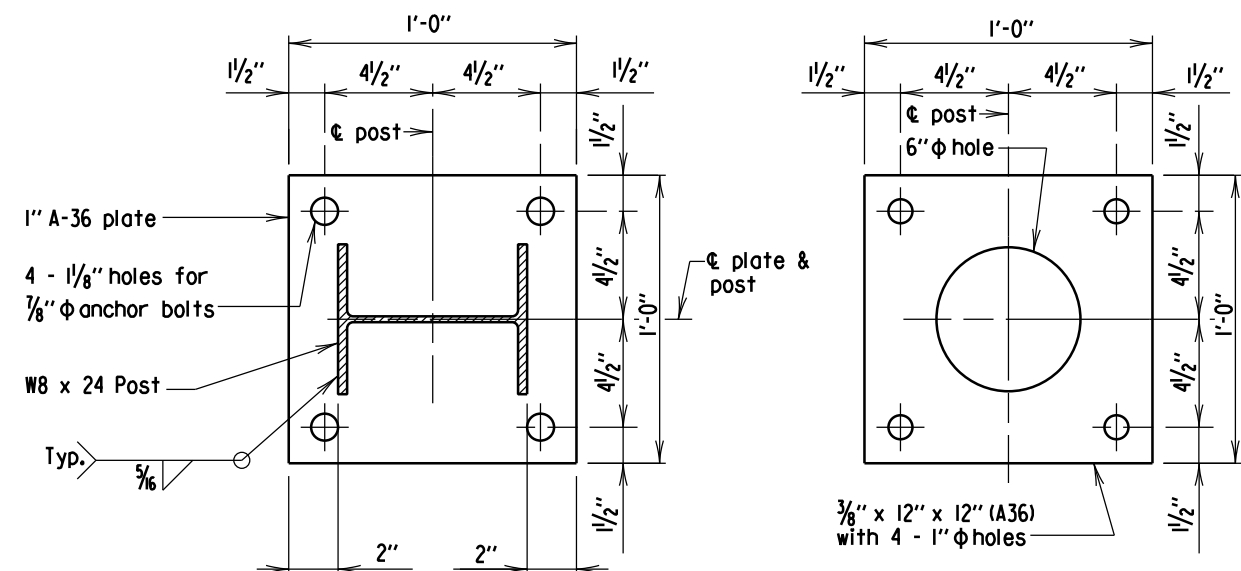
#### RAIL SPLICE DETAILS (TS 7" x 4" x 1/2")

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

#### MASH COMPLIANT TL-4 BRIDGE RAILING

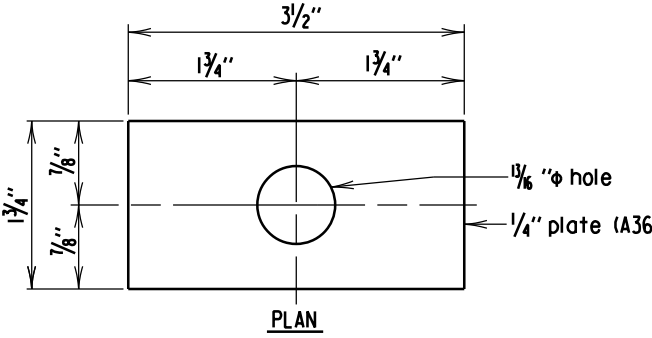
APPROVAL 2 OFFICE OF STRUCTURES DATE 04/28/2020	STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES
VERSION 1.03	THREE STRAND STRUCTURAL TUBE RAIL CURB MOUNTED - DETAILS
DETAIL NO. SUP-TB(TRI)-101	SHEET 4 OF 5

Note:  
Position washers to completely cover slotted hole.



#### BASE PLATE DETAIL

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

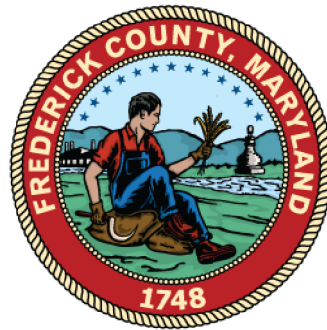


#### PLATE WASHER

Scale: 6" = 1'-0"

#### MASH COMPLIANT TL-4 BRIDGE RAILING

APPROVAL 2 OFFICE OF STRUCTURES DATE 04/28/2020	STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES
VERSION 1.03	THREE STRAND STRUCTURAL TUBE RAIL CURB MOUNTED - DETAILS
DETAIL NO. SUP-TB(TRI)-101	SHEET 5 OF 5



BRIDGE REPLACEMENT  
PRESTRESSED CONCRETE BEAM  
BRIDGE NO. F05-22  
ON HORNETS NEST ROAD  
OVER FRIENDS CREEK

#### STANDARD DETAILS

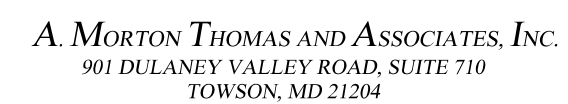
SCALE AS SHOWN ADVERTISED DATE N/A CONTRACT NO. RFP 16-019A

DESIGNED BY SHA COUNTY FREDERICK  
DRAWN BY SHA LOGMILE XXXX - XXXX  
CHECKED BY

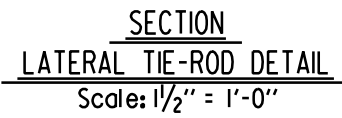
**AMT**  
A. MORTON THOMAS AND ASSOCIATES, INC.  
901 DULANEY VALLEY ROAD, SUITE 710  
TOWSON, MD 21204

SHEET NO. 27 OF 43


SHEET S-22




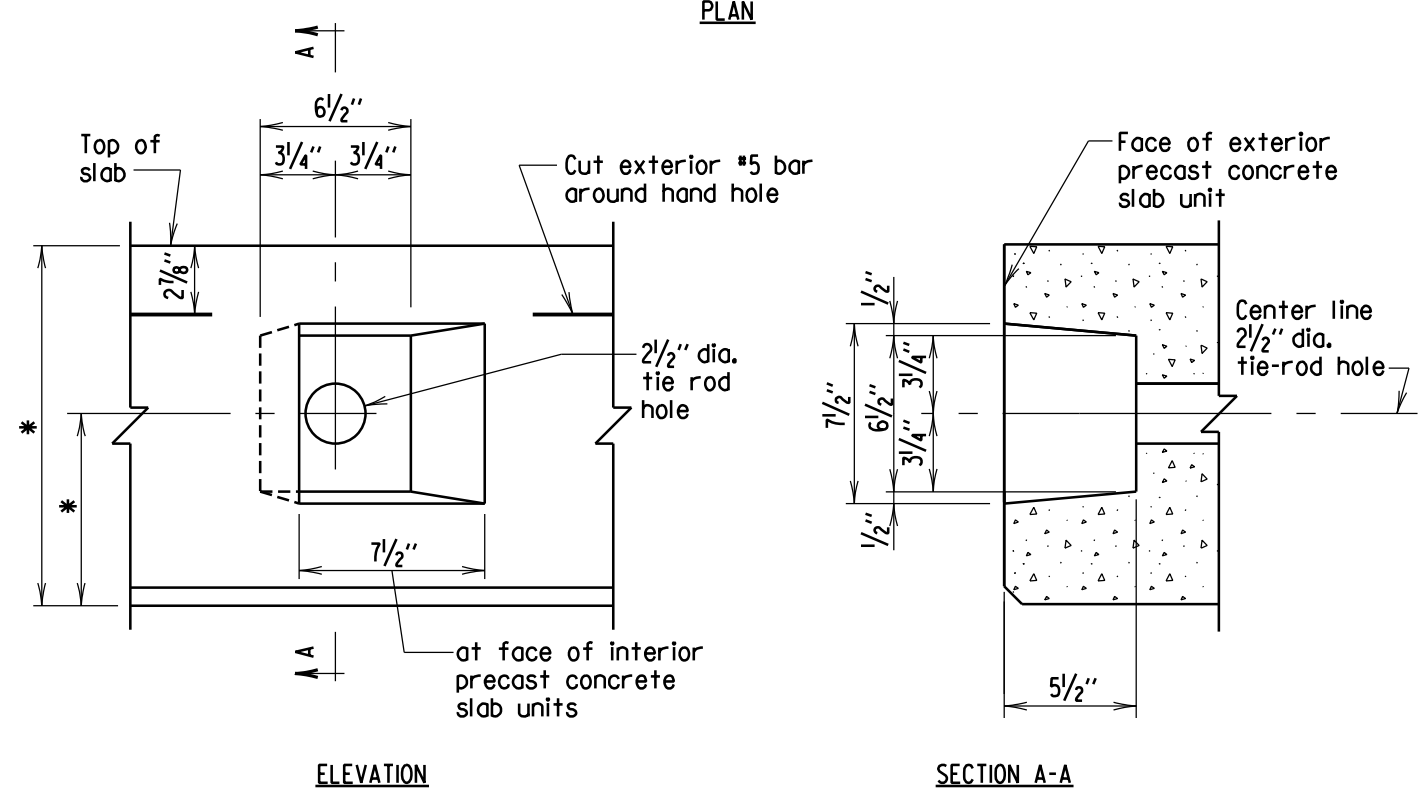




Rod Diameter (inches)	Initial Tension Force (lb)	Final Tension Force (lb)	Plate Hole Diameter (inches)	Minimum Root Area through threads (in <sup>2</sup> )
1 1/4	20 000	120 000	1 5/8	0.91

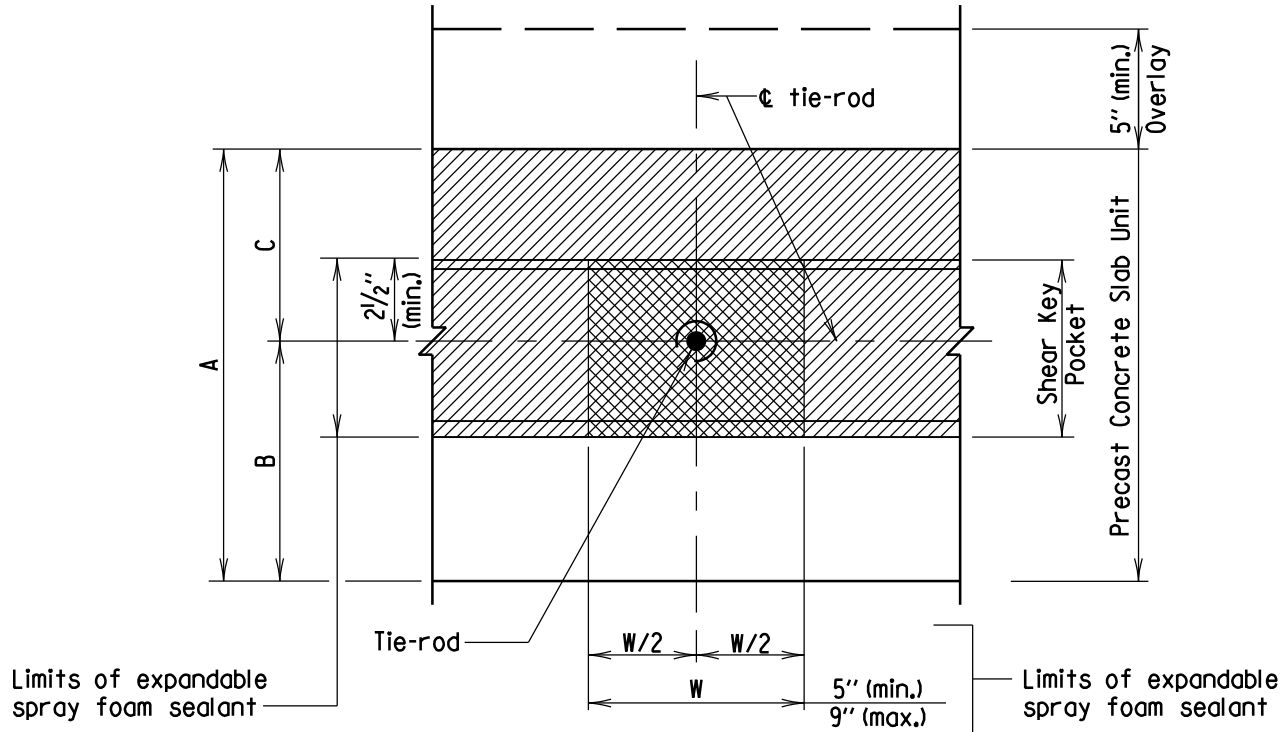
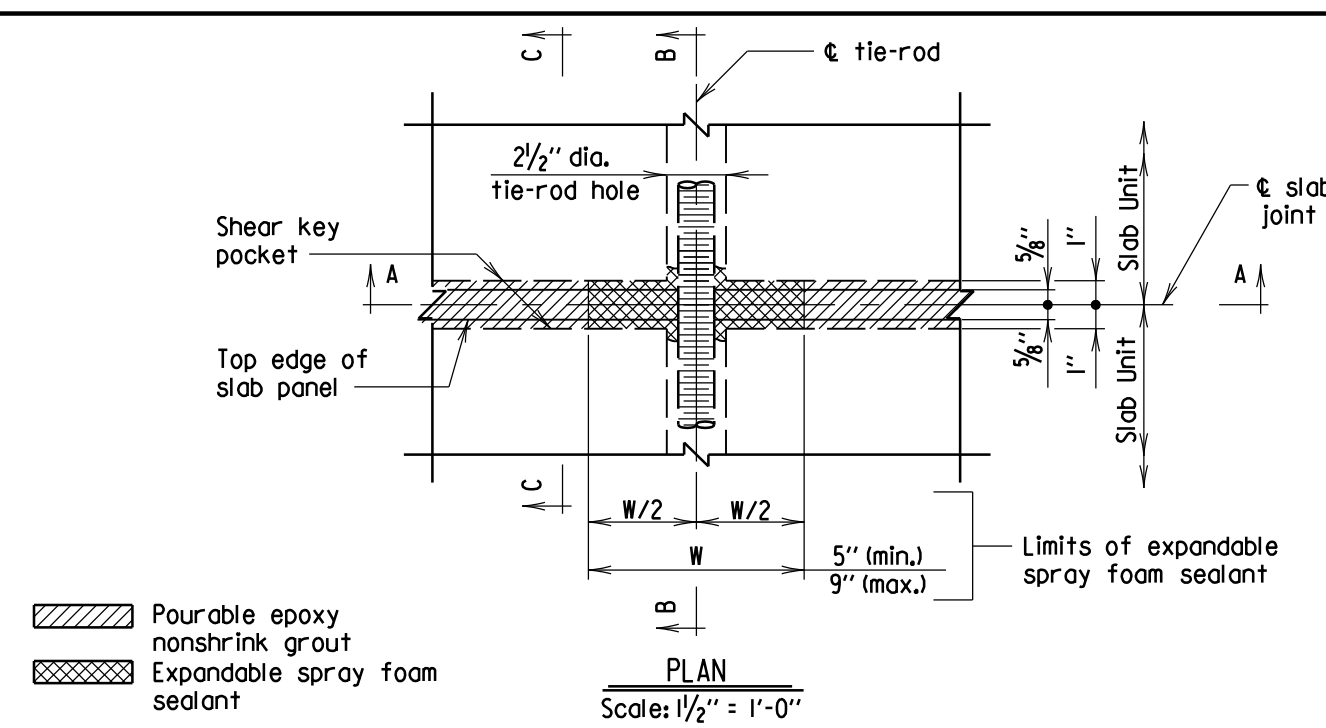
APPROVAL  DIRECTOR OFFICE OF STRUCTURES DATE: 07/15/2019	STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES	PRECAST CONCRETE SLAB UNITS TIE-ROD DETAILS
VERSION		
2.0		
DETAIL NO. SUP-SLAB-401	SHEET 1 OF 3	

APPROVAL  DIRECTOR OFFICE OF STRUCTURES DATE: <u>07/15/2019</u> VERSION:	STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES  PRECAST CONCRETE SLAB UNITS TIE-ROD DETAILS TYPE A
2.0	DETAIL NO. SUP-SLAB-401  SHEET <u>2</u> OF <u>3</u>




TIE-ROD RECESS DETAILS - TYPE A  
Scale:  $1\frac{1}{2}'' = 1'-0''$

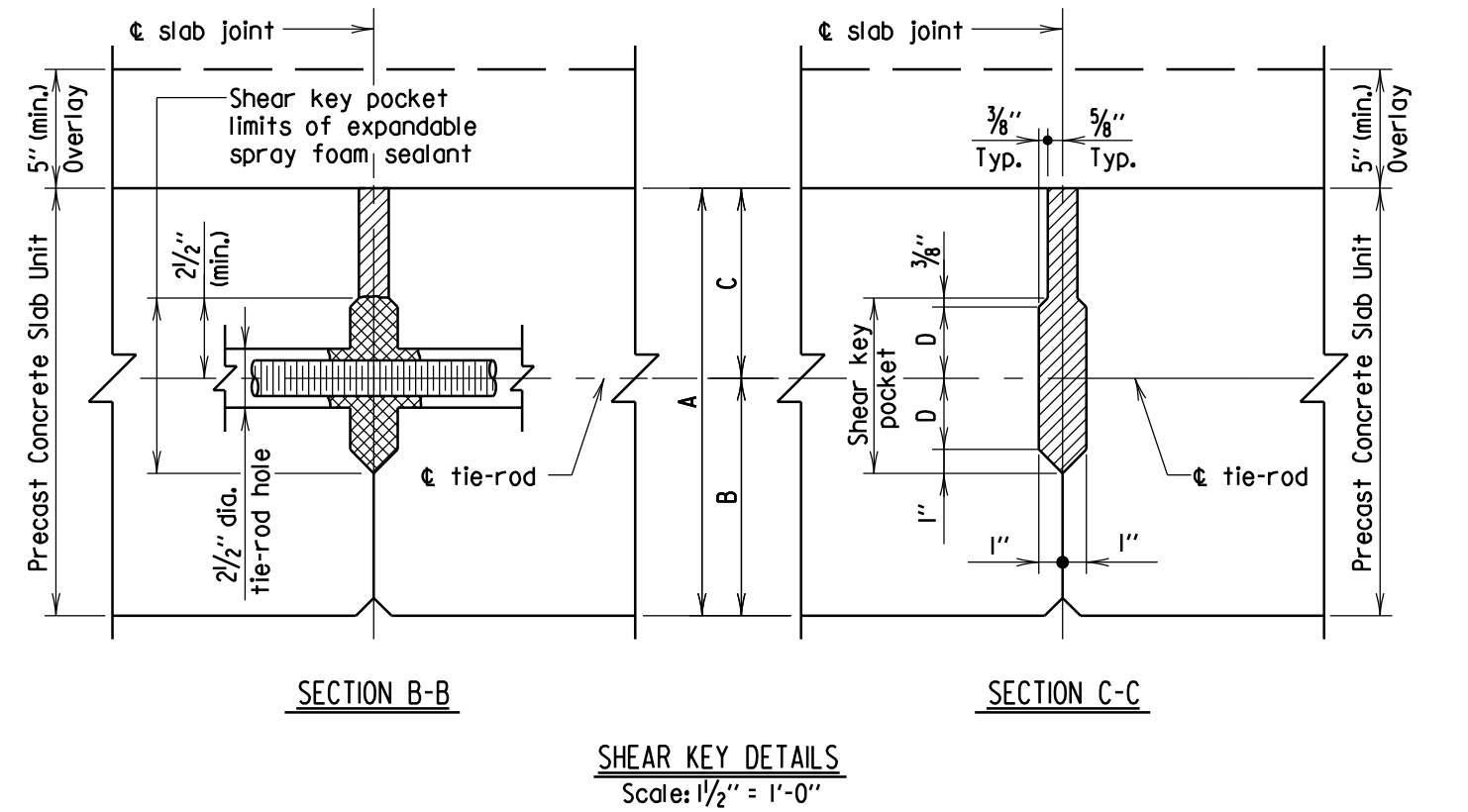
\* See precast concrete slab units details for dimensions.



SECTION A-A  
Scale: 1 1/2" = 1'-0"

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

APPROVAL  DIRECTOR OFFICE OF STRUCTURES DATE <u>04/03/2020</u>	STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES  PRECAST CONCRETE SLAB UNITS SHEAR KEY DETAILS	PRECAST CONCRETE SLAB UNITS SHEAR KEY DETAILS
VERSION  I.02	DETAIL NO. <u>SUP-SLAB-501</u>	




SHEAR KEY DETAILS  
Scale: 1 1/2" = 1'-0"

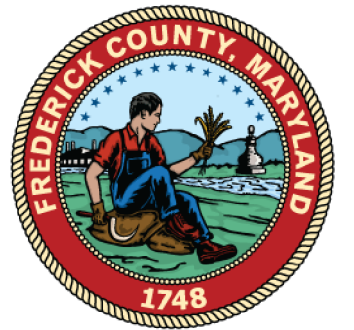
 Pourable epoxy  
nonshrink grout

 Expandable spray foam  
sealant

Precast Concrete Slab Panel	A	B	C	D
Simple Span 20'-0" or less	1'-6"	10"	8"	3"
Simple Span greater than 20'-0" to 25'-0"	1'-6"	10"	8"	3"
Simple Span greater than 25'-0" to 30'-0"	1'-6"	10"	8"	3"
Simple Span greater than 30'-0" to 35'-0"	1'-9"	1'-0"	9"	5"
Simple Span greater than 35'-0" to 40'-0"	2'-0"	1'-2"	10"	5"
Simple Span greater than 40'-0" to 45'-0"	2'-0"	1'-2"	10"	5"
Simple Span greater than 45'-0" to 50'-0"	2'-3"	1'-4"	11"	7"
Simple Span greater than 50'-0" to 55'-0"	2'-6"	1'-4"	1'-2"	7"

APPROVAL	STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES  PRECAST CONCRETE SLAB UNITS SHEAR KEY DETAILS	PRECAST STRUCTURE SLABS
2  DIRECTOR OFFICE OF STRUCTURES DATE 04/03/2020		
VERSION		
I.02  DETAIL NO. SUP-SLAB-501		

SHEET S-24



BRIDGE REPLACEMENT  
PRESTRESSED CONCRETE BEAM  
BRIDGE NO. F05-22  
ON HORNETS NEST ROAD  
OVER FRIENDS CREEK

## STANDARD DETAILS

SCALE AS SHOWN ADVERTISED DATE NA CONTRACT NO. RFP 16-019A

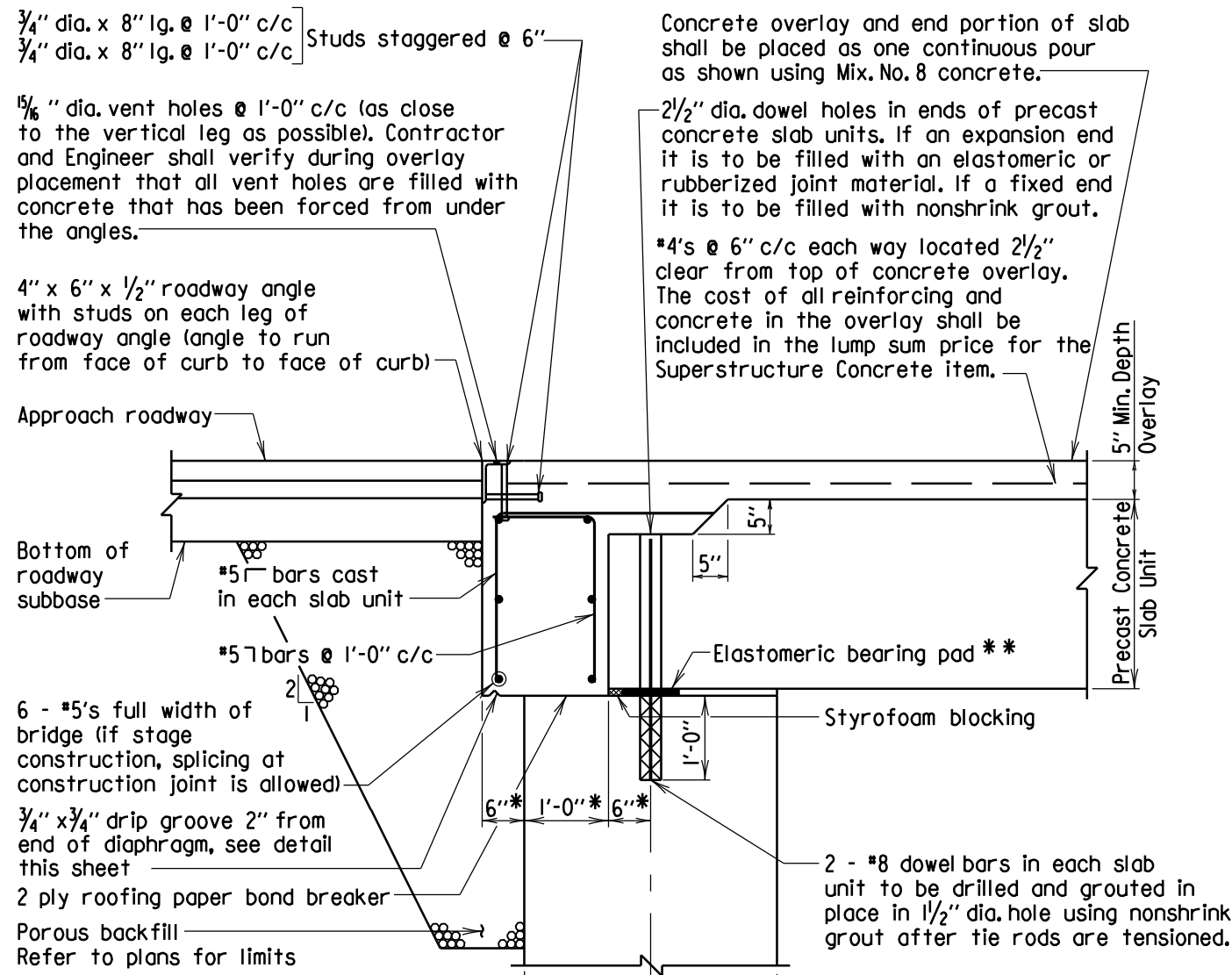
DESIGNED BY SHA COUNTY FREDERICK  
DRAWN BY SHA LOGMILE XXXX - XXXX  
CHECKED BY \_\_\_\_\_

SHEET NO. 29 OF 43

**AMT**

A. MORTON THOMAS AND ASSOCIATES, INC.  
901 DULANEY VALLEY ROAD, SUITE 710  
TOWSON, MD 21204





**ABUTMENT - SECTION**  
Scale: 1/2" = 1'-0"

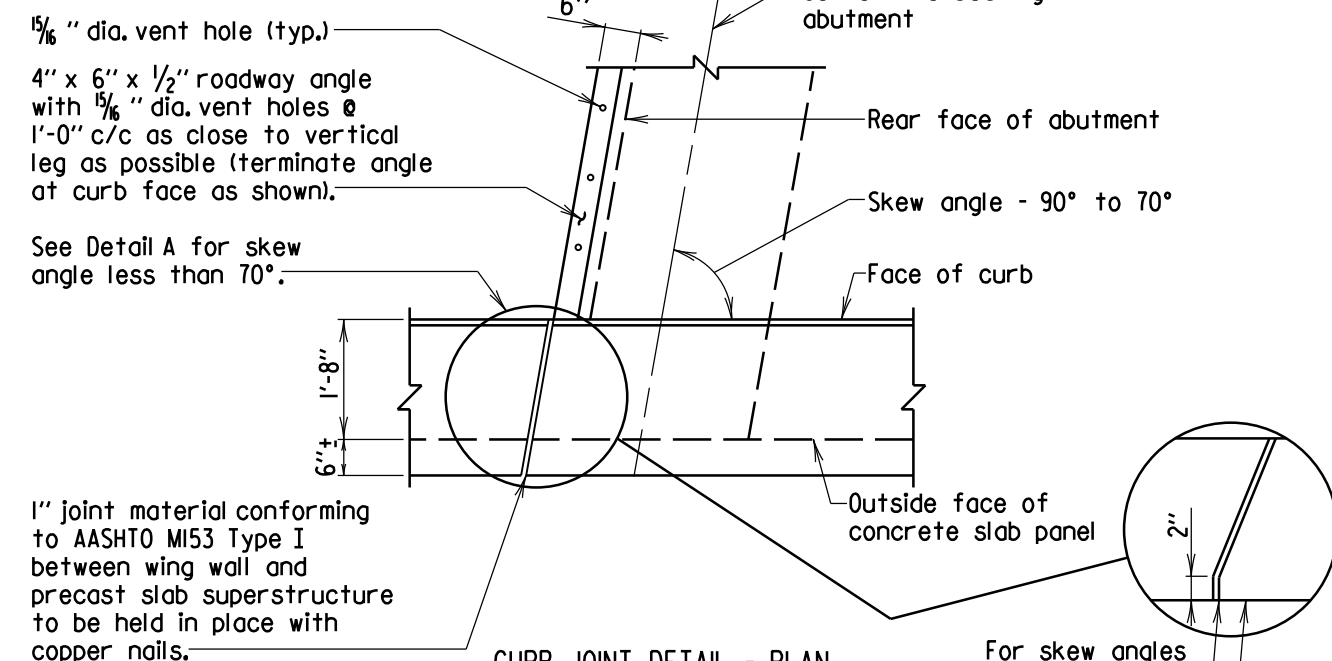
\* Measured perpendicular to centerline of bearing.  
\*\* All elastomeric bearing pads shall be placed with an epoxy adhesive in accordance with Section 432.03.04.

**DRIP GROOVE DETAIL**  
Scale: 3" = 1'-0"

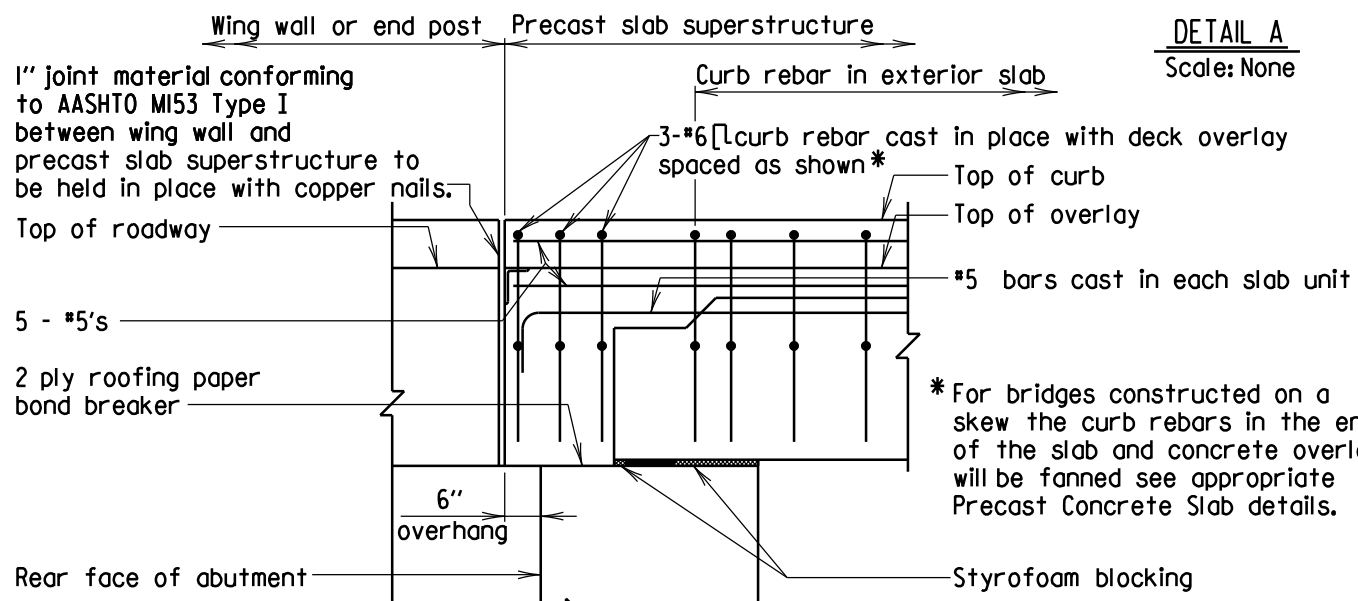
- Notes:  
1. All reinforcing steel to be epoxy coated.  
2. All nonshrink grout shall conform to 902.II(C).

APPROVAL	STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES
DATE: 12/18/2019	
VERSION	
2.0	
DETAIL NO. SUP-SLAB-601	SHEET 1 OF 1

SUPERSTRUCTURE SLABS



**CURB JOINT DETAIL - PLAN**  
Scale: 3/8" = 1'-0"

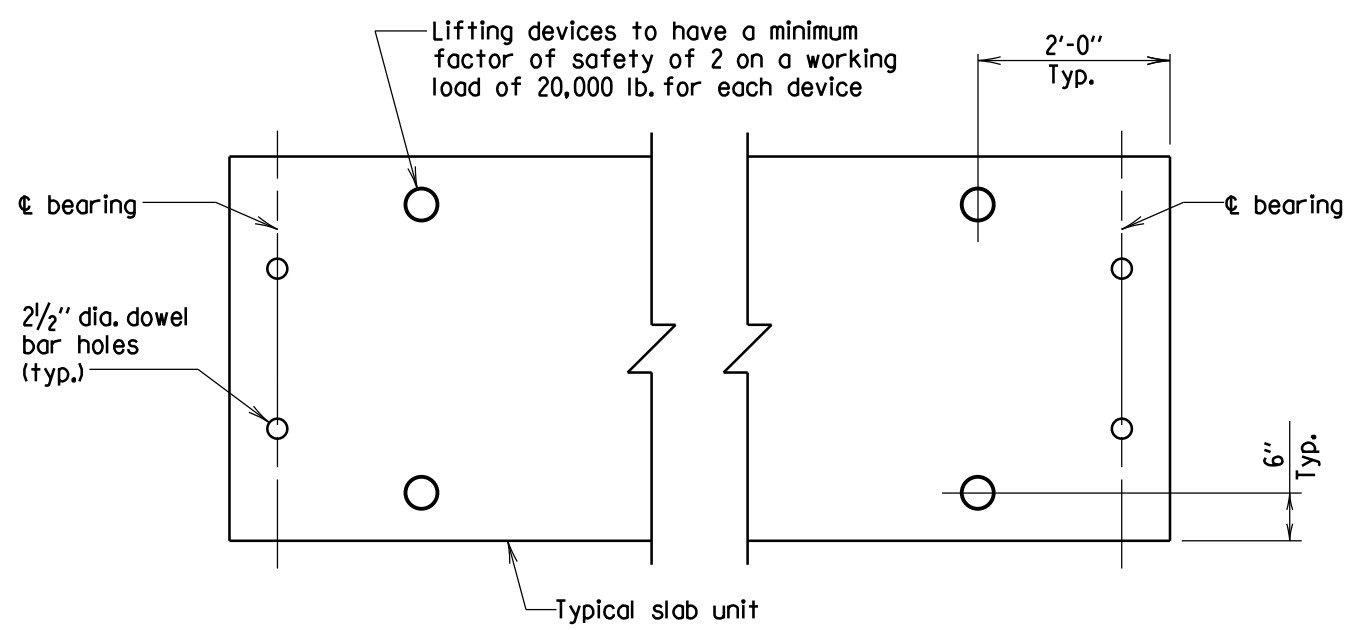


**CURB JOINT DETAIL - ELEVATION**  
Scale: 3/8" = 1'-0"

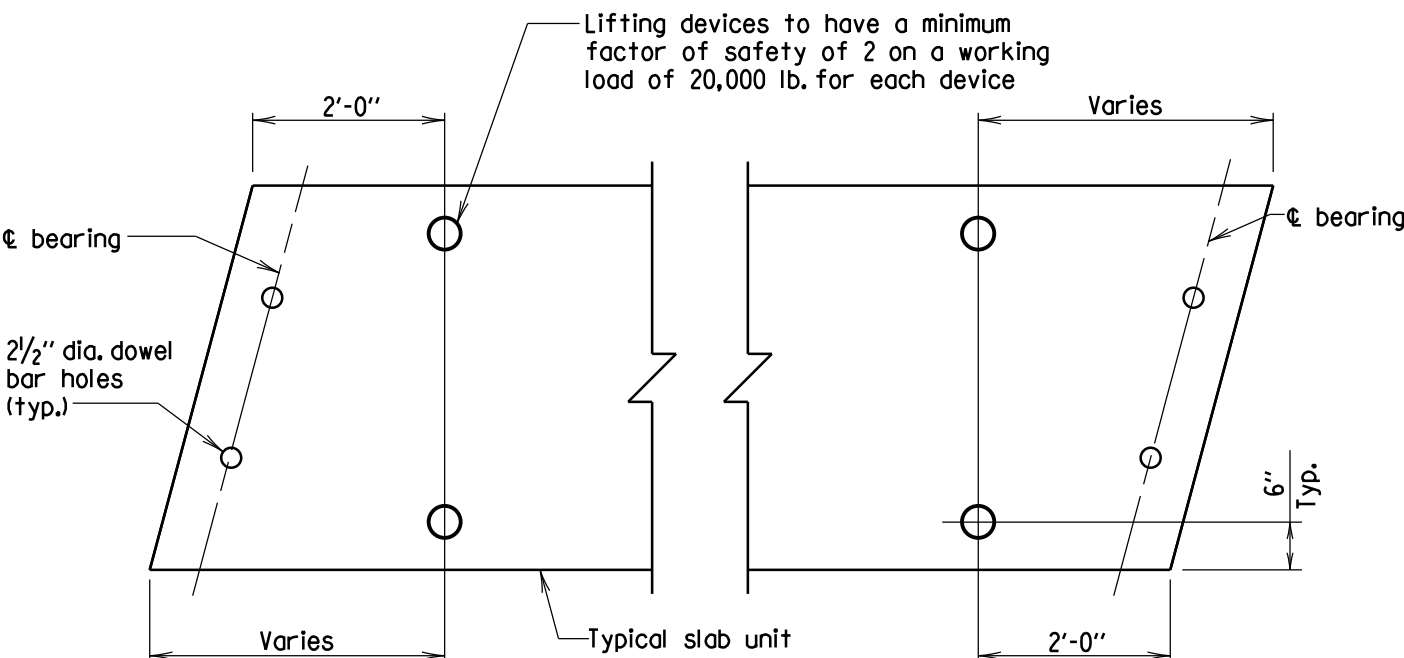
- Notes:  
1. All reinforcing steel to be epoxy coated.  
2. Rolling not shown for clarity.  
3. Double stirrups, longitudinal reinforcing steel and prestressing strands not shown for clarity.  
4. For additional curb reinforcing details see Det. No. SUP-TB(TR)-301.

APPROVAL	STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES
DATE: 02/15/2017	
VERSION	
1.0	
DETAIL NO. SUP-SLAB-602	SHEET 1 OF 1

SUPERSTRUCTURE SLABS



**LIFTING DEVICES LOCATION (90° PANELS) - PLAN VIEW**  
Scale: 1/2" = 1'-0"

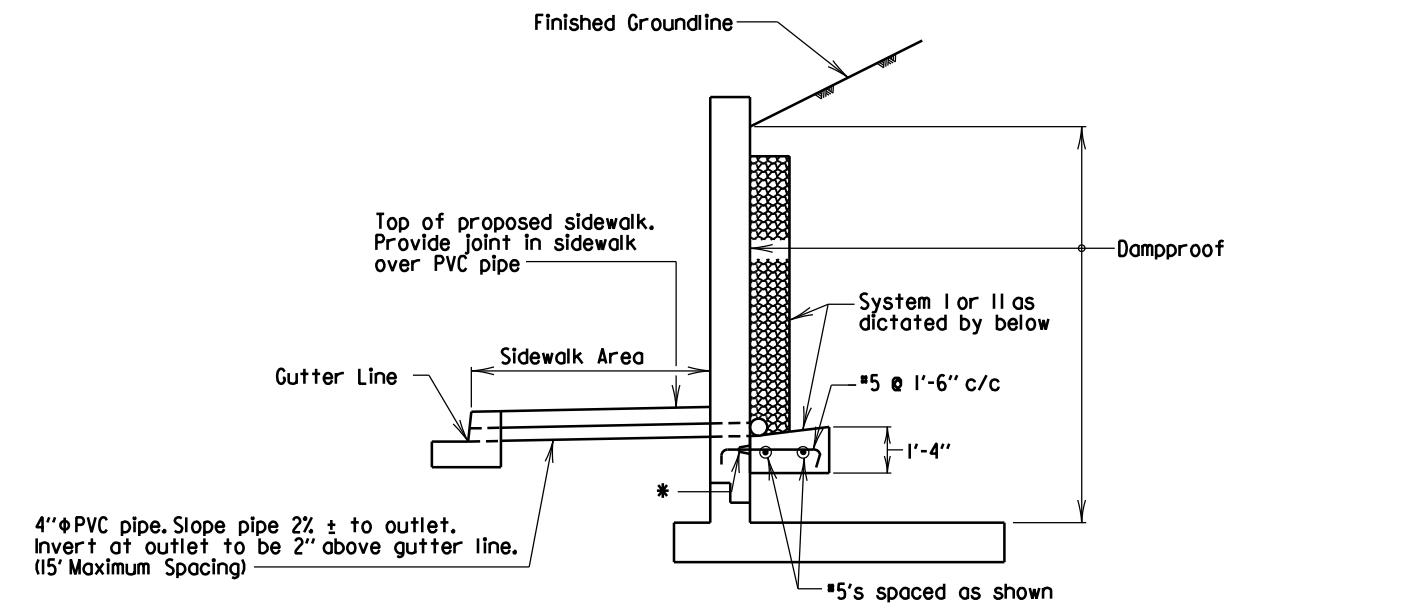


**LIFTING DEVICES LOCATION (SKEWED PANELS) - PLAN VIEW**  
Scale: 1/2" = 1'-0"

- Notes:  
1. If prestressing strands are used for the lifting device, they shall be cut flush with the slab surface and epoxy coated prior to placing the overlay.  
2. Lifting device working load of 20,000 lb. is satisfactory for all slab panels up to and including those 4' wide & 55' span length.  
3. The exact location of the lifting device may be altered to avoid all prestressing strands, stirrups, mild reinforcing steel, tie rods, and rolling anchorage as long as the specified clear cover is maintained.  
4. The Contractor shall show the type and location of the lifting inserts. The Contractor shall ensure that the lifting devices have the safe working capacity to lift the slab panels into position during erection, without overstressing the panels.

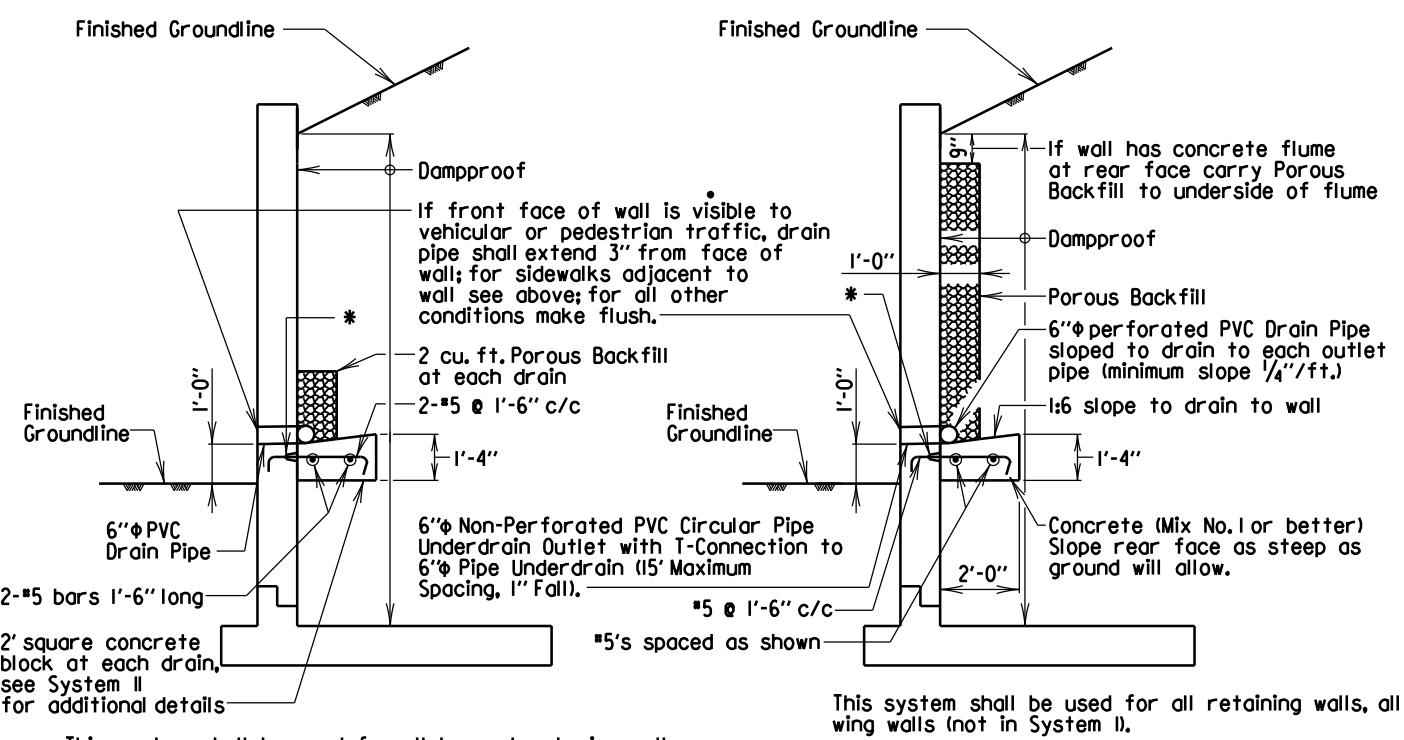
APPROVAL	STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES
DATE: 08/15/2019	
VERSION	
1.01	
DETAIL NO. SUP-SLAB-801	SHEET 1 OF 1

SUPERSTRUCTURE SLABS



**DRAIN AT SIDEWALK**  
Scale: None

\* \*5 Threaded Rebar Dowel Coupler at 1'-6" c/c.



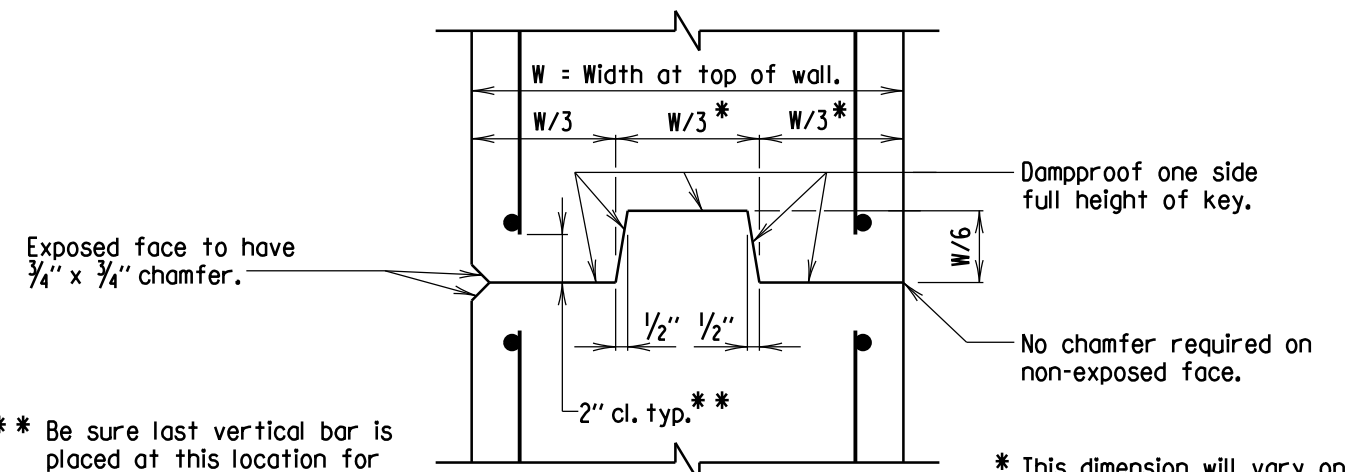
**SYSTEM II**  
Scale: None

- Notes:  
1. Exact elevation of drain to be determined by Engineer in field.  
2. Porous backfill refer to Section 469.  
3. Use this detail for bridges with wing walls that are not parallel to the highway. For bridges with wing walls parallel to the highway see Detail No. SUP-RW-203 sheet 5 of 5 for details.

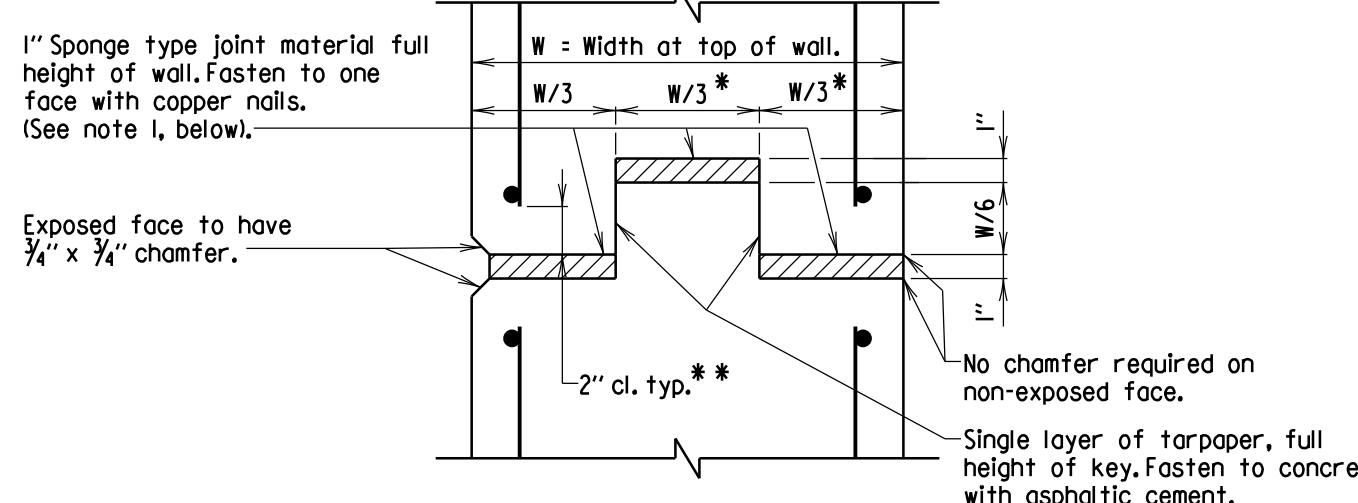
**SYSTEM I**  
Scale: None

APPROVAL	STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES
DATE: 01/22/2001	
VERSION	
1.0	
DETAIL NO. RW-301	SHEET 1 OF 1

RETAINING WALLS



**SECTION STEM CONTRACTION JOINT**  
Scale: 1/2" = 1'-0"

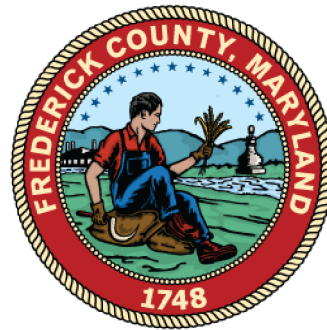


**SECTION STEM EXPANSION JOINT**  
Scale: 1/2" = 1'-0"

- Notes:  
1. Joint locations shall be as shown on contract drawing. If no locations are given concrete retaining walls shall have contraction joints a maximum of every 30'-0" and expansion joints, with 1" sponge type material (see 911.02), a maximum of every 90'-0".  
2. Stop key 9" below top of wall.  
3. Reinforcing steel shall not pass through contraction or expansion joint.  
4. For battered walls, with stems greater than 12 feet height, key dimensions noted thus \*\*, shall be based on wall thickness at mid height.  
5. All keys are nominal size.  
6. Only place contraction and expansion joints in stems (no joint in footer).

APPROVAL	STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES
DATE: 05/04/2006	
VERSION	
1.0	
DETAIL NO. RW-401	SHEET 1 OF 1

RETAINING WALLS



BRIDGE REPLACEMENT  
PRESTRESSED CONCRETE BEAM  
BRIDGE NO. F05-22  
ON HORNETS NEST ROAD  
OVER FRIENDS CREEK

## STANDARD DETAILS

SCALE AS SHOWN ADVERTISED DATE NA CONTRACT NO. RFP 16-019A

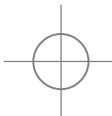
DESIGNED BY SHA COUNTY FREDERICK  
DRAWN BY SHA LOGMILE XXXX - XXXX  
CHECKED BY

**AMT**

A. MORTON THOMAS AND ASSOCIATES, INC.  
901 DULANEY VALLEY ROAD, SUITE 710  
TOWSON, MD 21204

SHEET NO. 30 OF 43





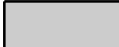
BY: jiacchetti

LOCATION CATEGORY A						
BAR SIZE	CENTER TO CENTER SPACING					
	3"	4"		5"	≥ 6"	
#4	1'-10"	2'-5"	1'-10"	2'-2"	1'-10"	2'-2"
#5	2'-5"	3'-1"	2'-4"	3'-0"	2'-4"	2'-9"
#6	3'-5"	4'-5"	2'-9"	3'-7"	2'-9"	3'-7"
#7	4'-8"	6'-1"	3'-6"	4'-7"	3'-2"	4'-2"
#8	6'-1"	7'-11"	4'-7"	5'-11"	3'-8"	4'-9"
#9	7'-8"	10'-0"	5'-9"	7'-6"	4'-8"	5'-11"
#10	-	-	7'-4"	9'-6"	5'-10"	7'-3"
#11	-	-	9'-0"	11'-9"	7'-2"	8'-8"

Location Category A - Bars in horizontal layers in top of pour with 12" or more of concrete below them such as in footings, pier caps, etc.

LOCATION CATEGORY B						
BAR SIZE	CENTER TO CENTER SPACING					
	3"	4"		5"	≥ 6"	
#4	1'-5"	2'-1"	1'-5"	1'-8"	1'-5"	1'-8"
#5	1'-10"	2'-9"	1'-9"	2'-8"	1'-9"	2'-11"
#6	2'-8"	3'-11"	2'-1"	3'-2"	2'-1"	3'-2"
#7	3'-7"	5'-4"	2'-8"	4'-0"	2'-6"	3'-8"
#8	4'-8"	7'-0"	3'-6"	5'-3"	2'-10"	4'-2"
#9	5'-11"	8'-10"	4'-5"	6'-8"	3'-7"	5'-2"
#10	-	-	5'-8"	8'-5"	4'-3"	6'-5"
#11	-	-	6'-11"	10'-4"	5'-2"	7'-8"

Location Category B - All bars not in Location Category A.

 = Non-epoxy coated  = Epoxy coated

Note:

- When development length is not specified on the Plans, the above dimensions shall be used.
- These development lengths do not apply when bar is in lightweight concrete. Greater lengths are required for this material.
- These development lengths only apply where the General Notes indicate Reinforcing Steel Design,  $f_y = 60$  ksi, and Concrete Design,  $f'_c = 3000$  psi.
- These development lengths assume cover of 2". Greater development lengths will be required for cover less than 2".
- The Excess Reinforcement Factor was assumed to be 1.0 when calculating these dimensions.
- Atr was assumed to be 0 when calculating the Reinforcement Confinement Factor.
- If depth of member does not allow bar development length indicated in Location Categories A and B; then hooks shall be added to all bars not conforming, as per D, E, and F per Det.No. REBAR-DL-201.


APPROVAL	STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES
DATE: 03/21/2017	
VERSION	
1.0	DEVELOPMENT LENGTH DIMENSIONS FOR GRADE 60 REINFORCING STEEL IN MIX NO.3 (3500 P.S.I.) CONCRETE
DETAIL NO. REBAR-DL-101 SHEET <u>1</u> OF <u>1</u>	

LOCATION CATEGORY A						
BAR SIZE	CENTER TO CENTER SPACING					
	3"	4"	5"	≥ 6"		
#4	2'-5"	3'-1"	2'-5"	2'-10"	2'-5"	2'-10"
#5	3'-1"	4'-0"	3'-0"	3'-10"	3'-0"	3'-7"
#6	4'-5"	5'-9"	3'-7"	4'-8"	3'-7"	4'-8"
#7	6'-0"	7'-10"	4'-6"	5'-11"	4'-2"	5'-5"
#8	7'-10"	10'-3"	5'-11"	7'-8"	4'-9"	6'-2"
#9	10'-0"	13'-0"	7'-6"	9'-9"	6'-0"	7'-8"
#10	-	-	9'-6"	12'-5"	7'-7"	9'-5"
#11	-	-	11'-8"	15'-3"	9'-4"	11'-4"

Location Category A - Bars in horizontal layers in top of pour with 12" or more of concrete below them such as in footings, pier caps, etc.

LOCATION CATEGORY B						
BAR SIZE	CENTER TO CENTER SPACING					
	3"	4"	5"	≥ 6"		
#4	1'-10"	2'-9"	1'-10"	2'-2"	1'-10"	2'-2"
#5	2'-5"	3'-7"	2'-4"	3'-5"	2'-4"	2'-9"
#6	3'-5"	5'-1"	2'-9"	4'-1"	2'-9"	4'-1"
#7	4'-8"	6'-11"	3'-6"	5'-3"	3'-2"	4'-9"
#8	6'-1"	9'-1"	4'-7"	6'-10"	3'-8"	5'-5"
#9	7'-8"	11'-6"	5'-9"	8'-8"	4'-8"	6'-9"
#10	-	-	7'-4"	10'-11"	5'-10"	8'-4"
#11	-	-	9'-0"	13'-6"	7'-2"	10'-0"

Location Category B - All bars not in Location Category A.

 = Non-epoxy coated  = Epoxy coated

Note:

- When bar lap is not specified on the Plans, the above dimensions shall be used.
- These bar laps do not apply when bar is in lightweight concrete. Greater lengths are required for this material.
- These bar laps only apply where the General Notes indicate Reinforcing Steel Design,  $f_y = 60$  ksi, and Concrete Design,  $f'_c = 3000$  psi.
- These bar laps assume cover of 2". Greater lap lengths will be required for cover less than 2".
- These bar laps are Class B splices in Det.No.REBAR-DL-101, Class B splices are 1.3 times the development length.
- Class A splices may be used when (a) the area of reinforcement provided is at least twice that required by analysis over the entire length of the lap splice and (b) one-half or less of the total reinforcement is spliced within the required lap splice length. Class A splices are 1.0 times the development length.

APPROVAL	STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES
DATE: 03/21/2017	
VERSION	
1.0	BAR LAP DIMENSIONS FOR GRADE 60 REINFORCING STEEL IN MIX NO.3 (3500 P.S.I.) CONCRETE
DETAIL NO. REBAR-BL-101 SHEET <u>1</u> OF <u>1</u>	

LOCATION CATEGORY A						
BAR SIZE	CENTER TO CENTER SPACING					
	3"	4"	5"	≥ 6"		
#4	1'-7"	2'-1"	1'-7"	1'-11"	1'-7"	1'-11"
#5	2'-1"	2'-8"	2'-0"	2'-7"	2'-0"	2'-5"
#6	3'-0"	3'-10"	2'-5"	3'-1"	2'-5"	3'-1"
#7	4'-0"	5'-3"	3'-0"	3'-11"	2'-9"	3'-7"
#8	5'-3"	6'-10"	3'-11"	5'-2"	3'-2"	4'-1"
#9	6'-8"	8'-8"	5'-0"	6'-6"	4'-0"	5'-3"
#10	-	-	6'-4"	8'-3"	5'-1"	6'-7"
#11	-	-	7'-10"	10'-2"	6'-3"	7'-6"

Location Category A - Bars in horizontal layers in top of pour with 12" or more of concrete below them such as in footings, pier caps, etc.

LOCATION CATEGORY B						
BAR SIZE	CENTER TO CENTER SPACING					
	3"	4"	5"	≥ 6"		
#4	1'-3"	1'-10"	1'-3"	1'-6"	1'-3"	1'-6"
#5	1'-7"	2'-5"	1'-6"	2'-3"	1'-6"	1'-10"
#6	2'-3"	3'-5"	1'-10"	2'-9"	1'-10"	2'-9"
#7	3'-1"	4'-8"	2'-4"	3'-6"	2'-2"	3'-2"
#8	4'-0"	6'-0"	3'-0"	4'-6"	2'-5"	3'-8"
#9	5'-2"	7'-8"	3'-10"	5'-9"	3'-1"	4'-7"
#10	-	-	4'-11"	7'-4"	3'-11"	5'-10"
#11	-	-	6'-0"	9'-0"	4'-10"	7'-2"

Location Category B - All bars not in Location Category A.

 = Non-epoxy coated  = Epoxy coated

Note:

- When development length is not specified on the Plans, the above dimensions shall be used.
- These development lengths do not apply when bar is in lightweight concrete. Greater lengths are required for this material.
- These development lengths only apply where the General Notes indicate Reinforcing Steel Design,  $f_y = 60$  ksi, and Concrete Design,  $f'_c = 4000$  psi.
- These development lengths assume cover of 2". Greater development lengths will be required for cover less than 2".
- The Excess Reinforcement Factor was assumed to be 1.0 when calculating these dimensions.
- Atr was assumed to be 0 when calculating the Reinforcement Confinement Factor.
- If depth of member does not allow bar development length indicated in Location Categories A and B; then hooks shall be added to all bars not conforming, as per D, E, and F per Det.No. REBAR-DL-203.

APPROVAL	STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES
DATE: 03/21/2017	
VERSION	
1.0	DEVELOPMENT LENGTH DIMENSIONS FOR GRADE 60 REINFORCING STEEL IN MIX NO.6 (4500 P.S.I.) CONCRETE
DETAIL NO. REBAR-DL-103 SHEET <u>1</u> OF <u>1</u>	

LOCATION CATEGORY A						
BAR SIZE	CENTER TO CENTER SPACING					
	3"	4"	5"	≥ 6"		
#4	2'-1"	2'-8"	2'-1"	2'-6"	2'-1"	2'-6"
#5	2'-8"	3'-6"	2'-7"	3'-4"	2'-7"	3'-1"
#6	3'-10"	5'-0"	3'-1"	4'-0"	3'-1"	4'-0"
#7	5'-3"	6'-10"	3'-11"	5'-1"	3'-7"	4'-8"
#8	6'-10"	8'-11"	5'-1"	6'-8"	4'-1"	5'-4"
#9	8'-8"	11'-3"	6'-6"	8'-6"	5'-2"	6'-7"
#10	-	-	8'-3"	10'-9"	6'-7"	8'-2"
#11	-	-	10'-1"	13'-3"	8'-1"	9'-9"

Location Category A - Bars in horizontal layers in top of pour with 12" or more of concrete below them such as in footings, pier caps, etc.

LOCATION CATEGORY B						
BAR SIZE	CENTER TO CENTER SPACING					
	3"	4"	5"	≥ 6"		
#4	1'-7"	2'-5"	1'-7"	1'-11"	1'-7"	1'-11"
#5	2'-1"	3'-1"	2'-0"	3'-0"	2'-0"	2'-5"
#6	3'-0"	4'-5"	2'-5"	3'-7"	2'-5"	3'-7"
#7	4'-0"	6'-0"	3'-1"	4'-6"	4'-2"	4'-2"
#8	5'-3"	7'-10"	3'-11"	5'-11"	3'-2"	4'-9"
#9	6'-8"	10'-0"	5'-0"	7'-6"	4'-0"	5'-10"
#10	-	-	6'-4"	9'-6"	5'-1"	7'-2"
#11	-	-	7'-10"	11'-8"	6'-3"	8'-8"

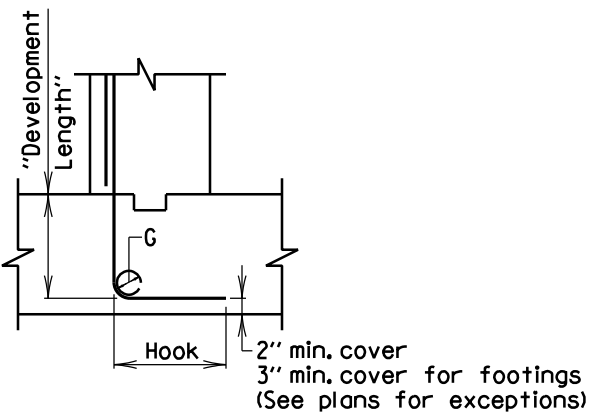
Location Category B - All bars not in Location Category A.

 = Non-epoxy coated  = Epoxy coated

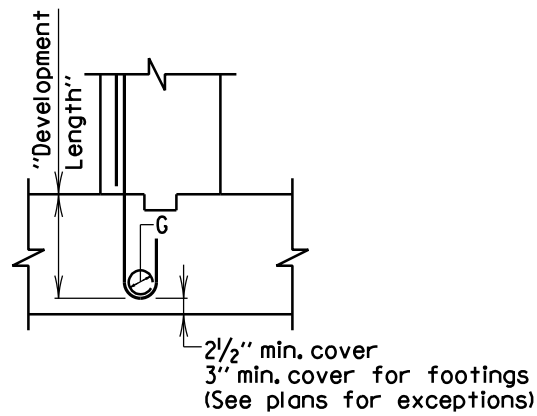
Note:

- When bar lap is not specified on the Plans, the above dimensions shall be used.
- These bar laps do not apply when bar is in lightweight concrete. Greater lengths are required for this material.
- These bar laps only apply where the General Notes indicate Reinforcing Steel Design,  $f_y = 60$  ksi, and Concrete Design,  $f'_c = 4000$  psi.
- These bar laps assume cover of 2". Greater lap lengths will be required for cover less than 2".
- These bar laps are Class B splices in Det.No.REBAR-DL-103, Class B splices are 1.3 times the development length.
- Class A splices may be used when (a) the area of reinforcement provided is at least twice that required by analysis over the entire length of the lap splice and (b) one-half or less of the total reinforcement is spliced within the required lap splice length. Class A splices are 1.0 times the development length.

APPROVAL	STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES
DATE: 03/21/2017	
VERSION	
1.0	BAR LAP DIMENSIONS FOR GRADE 60 REINFORCING STEEL IN MIX NO.6 (4500 P.S.I.) CONCRETE
DETAIL NO. REBAR-BL-103 SHEET <u>1</u> OF <u>1</u>	



STANDARD 90° HOOK



STANDARD 180° HOOK

BAR SIZE	LOCATION CATEGORY			
	D	E	F	
#4	8"	11"	9"	
#5	10"	1'-2"	11"	
#6	1'-0"	1'-5"	1'-2"	
#7	1'-2"	1'-8"	1'-4"	
#8	1'-4"	1'-10"	1'-6"	
#9	1'-6"	2'-1"	1'-8"	
#10	1'-8"	2'-4"	1'-11"	
#11	1'-10"	2'-7"	2'-1"	

Note:  
For Hook Dimensions and Bends,  
see Detail No.REBAR-BB-102.

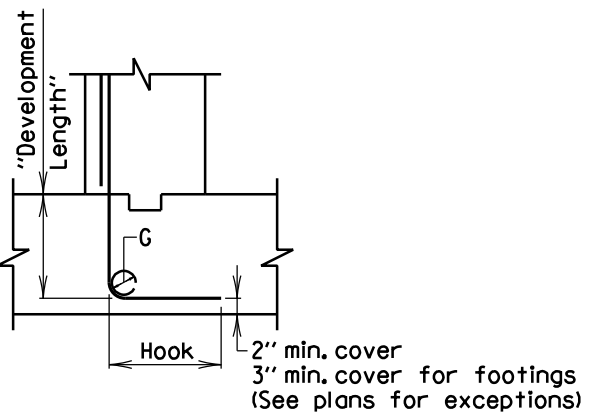
• LOCATION CATEGORY:

- D- All bars terminating with a standard 180°hook with side cover (normal to plane of hook)not less than 2/3",and for 90°deg.hook.cover on bar extension beyond hook not less than 2".  
E- All bars not in Category D.  
F- All bars with hook enclosed vertically or horizontally within ties or stirrup-ties spaced along the full development length not greater than 3d where d is the diameter of the hooked bar.

Note:

- When development length is not specified on the Plans, the above dimensions shall be used.
- These development lengths do not apply when bar is in lightweight concrete or any other strength of concrete.
- These development lengths only apply where the General Notes indicate Reinforcing Steel Design,  $f_y = 60$  ksi, and Concrete Design,  $f'_c = 3000$  psi.
- If depth of member does not allow bar development length indicated in Categories A, B, and C;Detail No. REBAR-DL-101; then hook shall be added to all bars not conforming, as per D,E & F.

APPROVAL	STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES
DATE: 05/10/2011	
VERSION	
1.0	DEVELOPMENT LENGTH DIMENSIONS OF HOOKED BARS FOR GRADE 60 REINFORCING STEEL IN MIX NO.3 (3500 P.S.I.) CONCRETE NON-EPOXY COATED REINFORCING
DETAIL NO. REBAR-DL-201 SHEET <u>1</u> OF <u>1</u>	



STANDARD 90° HOOK

BAR SIZE	LOCATION CATEGORY			
	D	E	F	
#4	7"	10"	8"	
#5	9"	1'-0"	10"	
#6	10"	1'-3"	1'-0"	
#7	1'-0"	1'-5"	1'-2"	
#8	1'-2"	1'-7"	1'-4"	
#9	1'-4"	1'-10"	1'-6"	
#10	1'-5"	2'-1"	1'-8"	
#11	1'-7"	2'-3"	1'-10"	

Note:  
For Hook Dimensions and Bends,  
see Detail No.REBAR-BB-102.

• LOCATION CATEGORY:

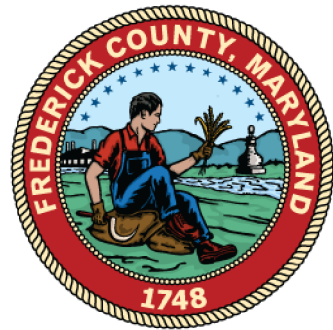
- D- All bars terminating with a standard 180°hook with side cover (normal to plane of hook)not less than 2/3",and for 90°deg.hook.cover on bar extension beyond hook not less than 2".  
E- All bars not in Category D.  
F- All bars with hook enclosed vertically or horizontally within ties or stirrup-ties spaced along the full development length not greater than 3d where d is the diameter of the hooked bar.

Note:

- When development length is not specified on the Plans, the above dimensions shall be used.
- These development lengths do not apply when bar is in lightweight concrete or any other strength of concrete.
- These development lengths only apply where the General Notes indicate Reinforcing Steel Design,  $f_y = 60$  ksi, and Concrete Design,  $f'_c = 4000$  psi.
- If depth of member does not allow bar development length indicated in Categories A, B, and C;Detail No. REBAR-DL-103; then hook shall be added to all bars not conforming, as per D,E & F.

APPROVAL	STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES
DATE: 05/10/2011	
VERSION	
1.0	DEVELOPMENT LENGTH DIMENSIONS OF HOOKED BARS FOR GRADE 60 REINFORCING STEEL IN MIX NO.6 (4500 P.S.I.) CONCRETE NON-EPOXY COATED REINFORCING
DETAIL NO. REBAR-DL-203 SHEET <u>1</u> OF <u>1</u>	

SHEET S-26



BRIDGE REPLACEMENT  
PRESTRESSED CONCRETE BEAM  
BRIDGE NO.F05-22  
ON HORNETS NEST ROAD  
OVER FRIENDS CREEK

## STANDARD DETAILS

SCALE AS SHOWN ADVERTISED DATE NA CONTRACT NO. RFP 16-019A

DESIGNED BY SHA COUNTY FREDERICK

DRAWN BY SHA LOGMILE XXXX - XXXX

CHECKED BY

**AMT**

A. MORTON THOMAS AND ASSOCIATES, INC.  
901 DULANEY VALLEY ROAD, SUITE 710  
TOWSON, MD 21204

SHEET NO. 31 OF 43

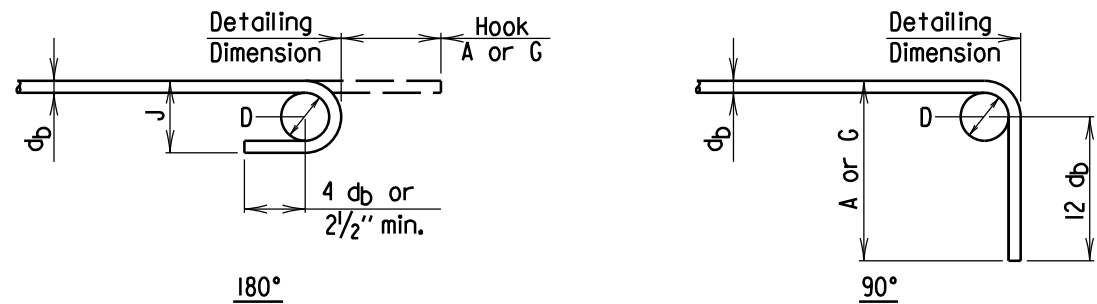




BY: Jacchetti

HOOKS  
TABLE I  
REFERENCES

1. ACI Types I thru 26
2. SHA Standard Pin Bending
3. SHA Radius Bending



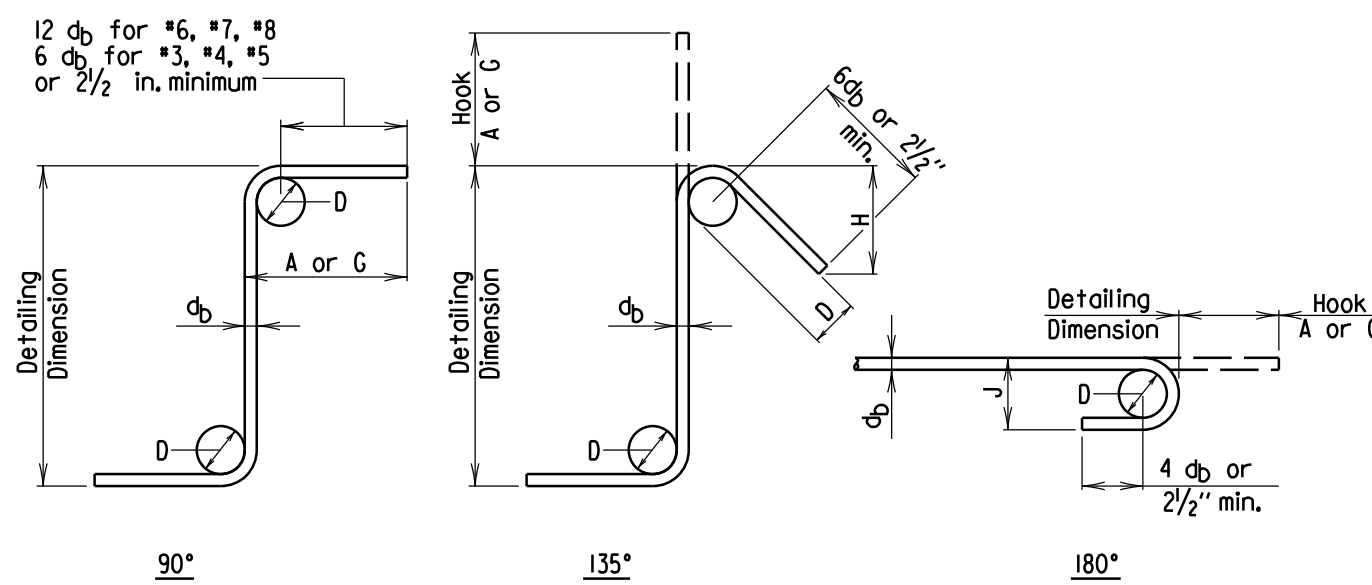
RECOMMENDED END HOOKS, ALL GRADES				
BAR SIZE	Finished bend diameter		180 - deg hook	
	D, in.	A or G in	J, in.	A or G in
#3	2/4	5	3	6
#4	3	6	4	8
#5	3 3/4	7	5	10
#6	4 1/2	8	6	1-0
#7	5 1/4	10	7	1-2
#8	6	11	8	1-4
#9	9/2	1-3	11 3/4	1-7
#10	10 1/4	1-5	1-11/4	1-10
#11	12	1-7	1-2 3/4	2-0
#14	18 1/4	2-3	1-9 1/4	2-7
#18	24	3-0	2-4 1/2	3-5

HOOKS  
TABLE II  
REFERENCES

1. ACI Types SI thru SII
2. ACI Types TI thru T8
3. SHA Ties and Stirrups

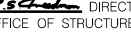
(Note: Tie and stirrup types supplied in sizes #3-#8)

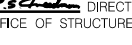
STIRRUP AND TIE HOOKS

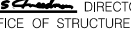


STIRRUP AND TIE HOOK DIMENSIONS, in.				
BAR SIZE	D, in.	90 - deg hook	135 - deg hook	180 - deg hook
#3	1 1/2	4	4	2 1/2
#4	2	4 1/2	4 1/2	3
#5	2 1/2	6	5 1/2	3 3/4
#6	4 1/2	1-0	7 3/4	4 1/2
#7	5 1/4	1-2	9	5 1/4
#8	6	1-4	10 1/4	6

RECOMMENDED END HOOKS, ALL GRADES				
BAR SIZE	Finished bend diameter		180 - deg hook	
	D, in.	A or G in	J, in.	A or G in
#3	2/4	5	3	6
#4	3	6	4	8
#5	3 3/4	7	5	10
#6	4 1/2	8	6	1-0
#7	5 1/4	10	7	1-2
#8	6	11	8	1-4

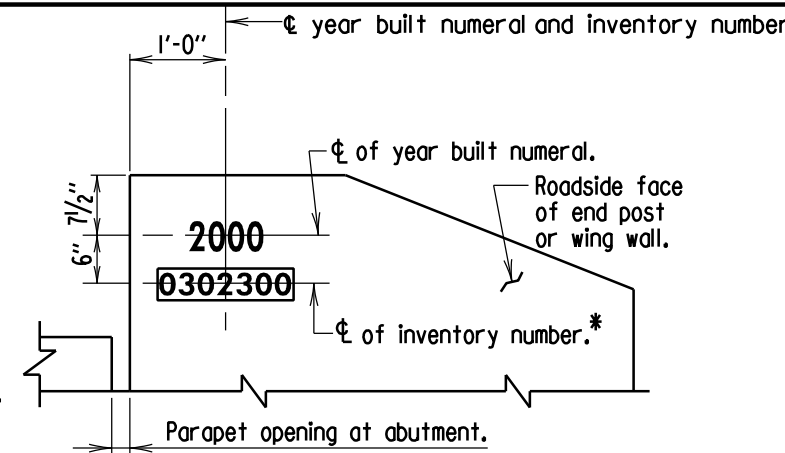
APPROVAL  DIRECTOR OFFICE OF STRUCTURES DATE: 11/11/1991 VERSION	STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES	REINFORCING STEEL HOOK TABLES AND DIAGRAMMS	REBAR BAR BENDS
1.0		DETAIL NO. REBAR-BB-102	SHEET 1 OF 2

APPROVAL  DIRECTOR OFFICE OF STRUCTURES DATE: 11/11/1991 VERSION	STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES	REINFORCING STEEL HOOK TABLES AND DIAGRAMMS	REBAR BAR BENDS
1.0		DETAIL NO. REBAR-BB-102	SHEET 2 OF 2

APPROVAL  DIRECTOR OFFICE OF STRUCTURES DATE: 10/11/2013 VERSION	STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES	LOCATION OF YEAR BUILT MARKING AND STRUCTURE INVENTORY NUMBER ON BRIDGES	STRUCTURE INVENTORY
1.0		DETAIL NO. SI-101	SHEET 1 OF 1

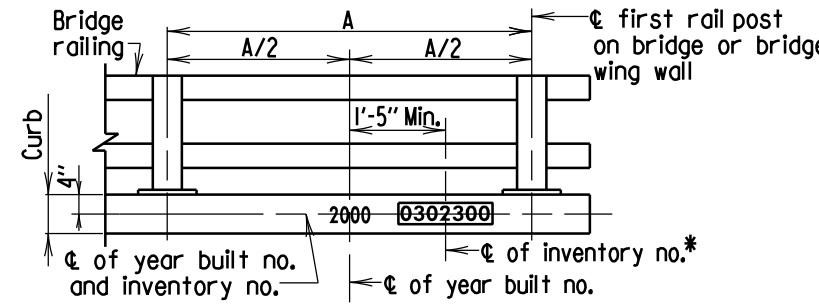
- Notes:
1. For existing structures, where a year built is shown on the structure and structure is to be rehabilitated, the marking should read 1942/2000 (old year first - new year).
  2. For existing structures with no year built contact the Office of Structures for old year.
  3. For Year Built Numerals refer to Detail No. SI-201.

\* Black numbers 3" high on a painted white background, (5" x 17").

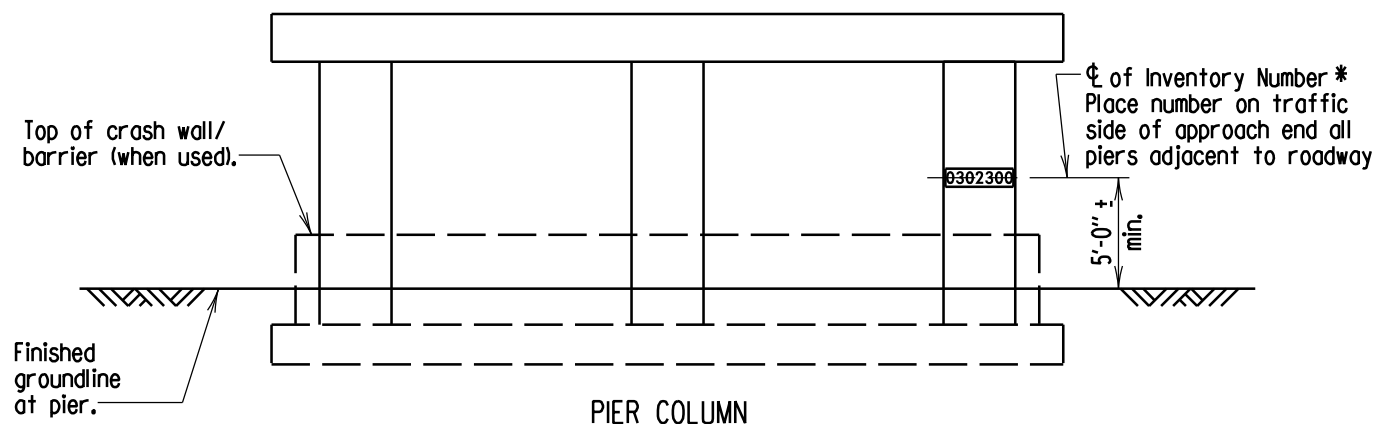


BRIDGES WITH PARAPET

Location: Dual Bridges-Each Approach End (Outside Shoulder).  
Single Bridge - Approach End - North or East corner.  
Where bridge has a concrete parapet and no definitive end post, place year built marking and structure inventory number on face of parapet as close to center line of bearing at abutment as practical.

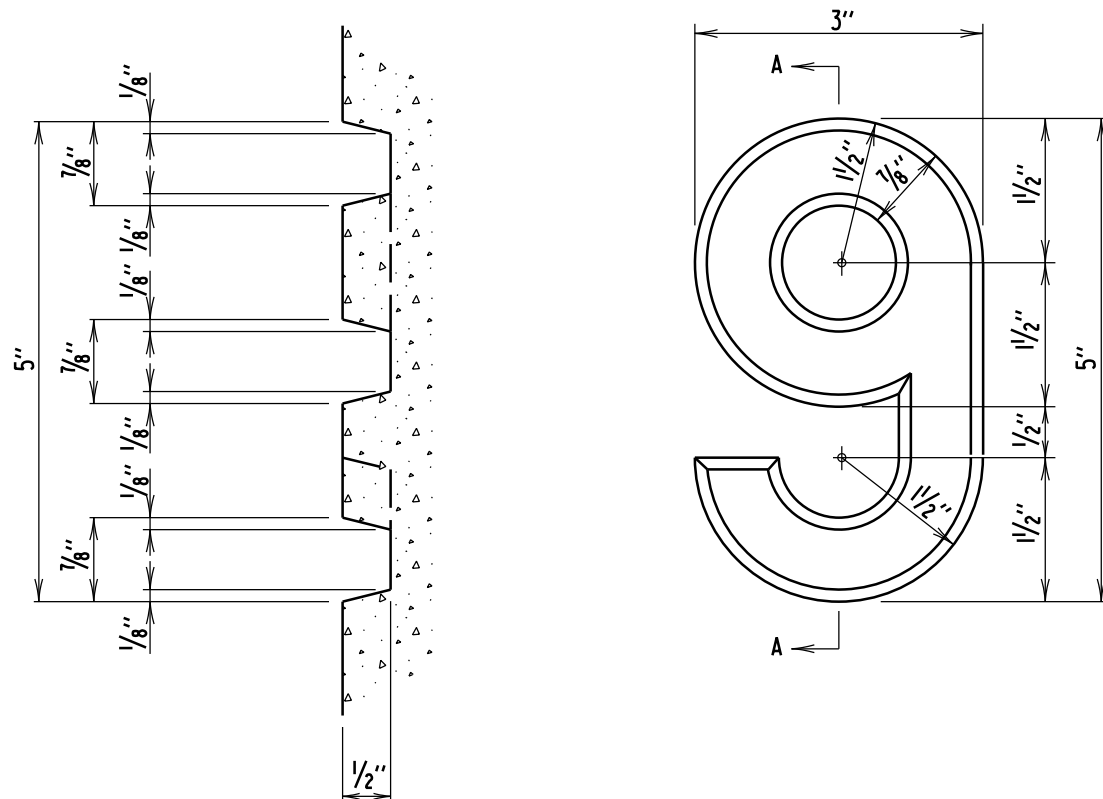
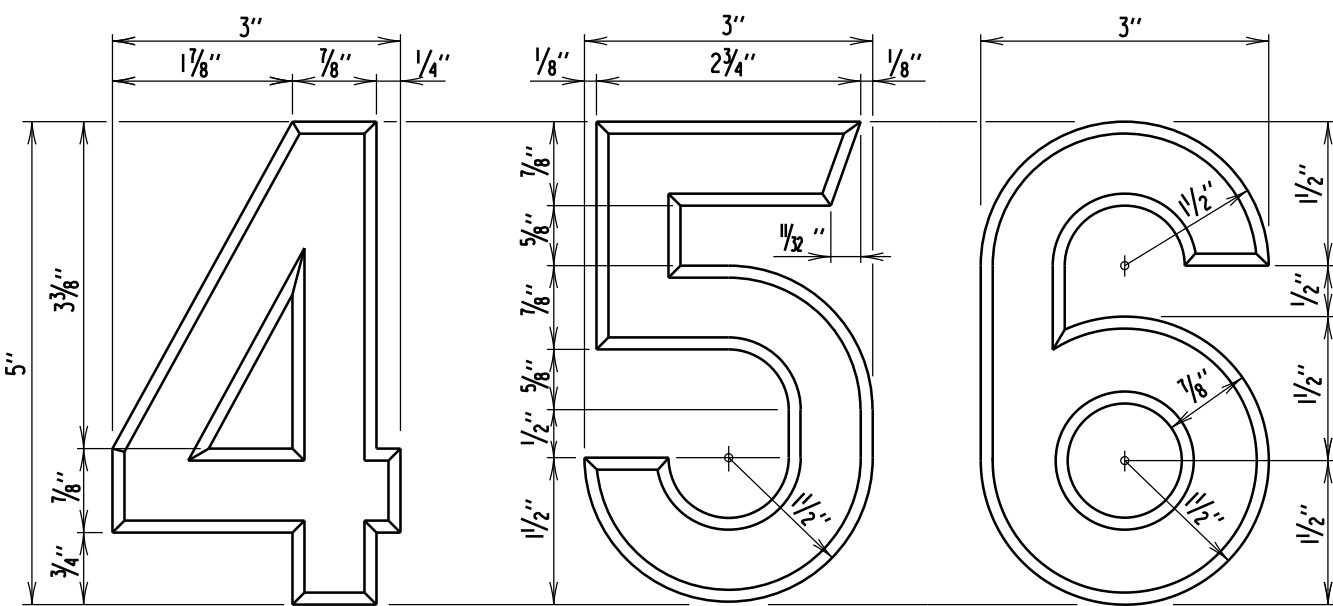
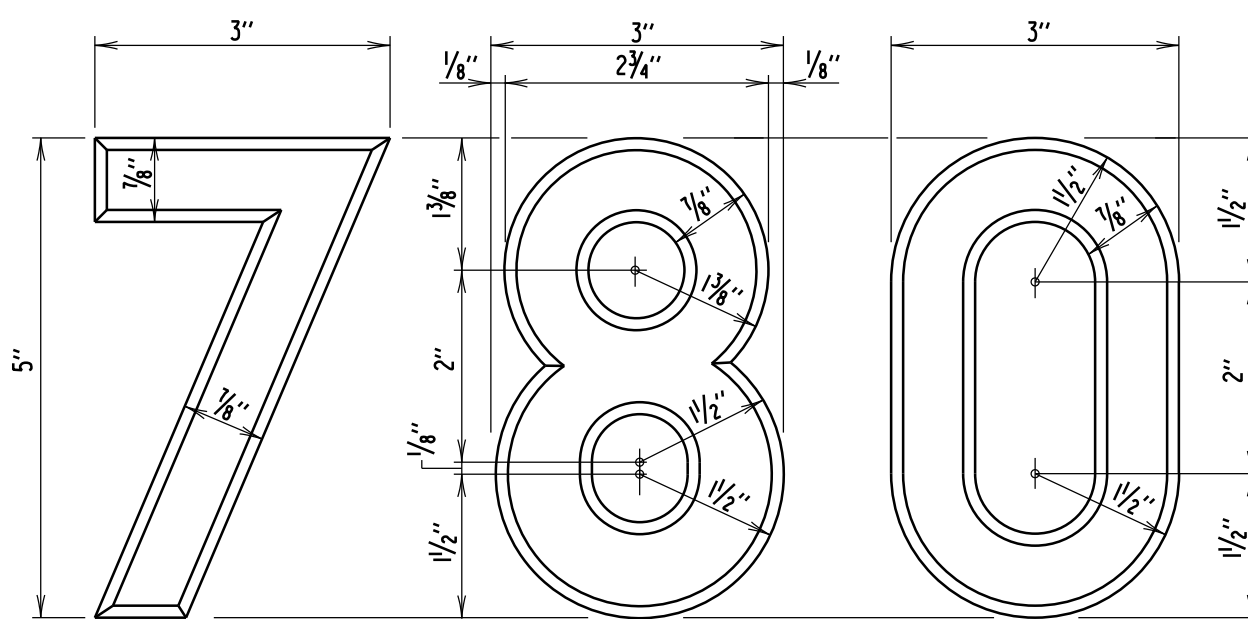
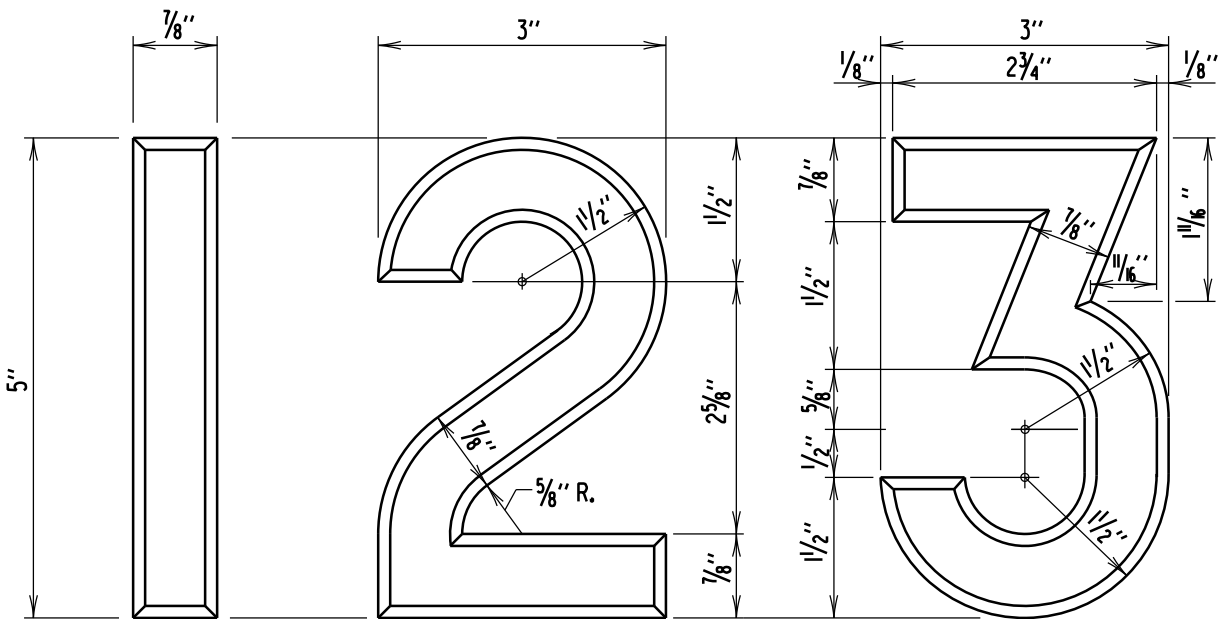


BRIDGES WITH RAILING AND NO PARAPETS




PIER COLUMN  
ONLY ON ROAD OVER ROAD BRIDGES


\* Black numbers 3" high on a painted white background, (5" x 17").

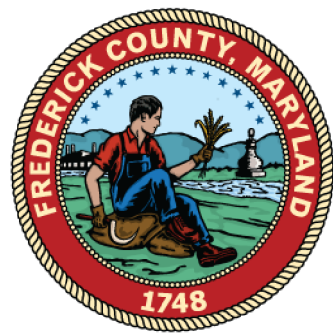


SECTION A-A

APPROVAL  DIRECTOR OFFICE OF STRUCTURES DATE: 11/15/2019 VERSION	STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES	NUMERALS FOR YEAR BUILT MARKING ON STRUCTURES	STRUCTURE INVENTORY
1.01		DETAIL NO. SI-201	SHEET 1 OF 2

Note:  
Year built numerals to be indented into concrete (unpainted) - as indicated on Detail Nos. SI-101, SI-103 and SI-104.

APPROVAL  DIRECTOR OFFICE OF STRUCTURES DATE: 11/15/2019 VERSION	STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES	NUMERALS FOR YEAR BUILT MARKING ON STRUCTURES	STRUCTURE INVENTORY
1.01		DETAIL NO. SI-201	SHEET 2 OF 2



BRIDGE REPLACEMENT  
PRESTRESSED CONCRETE BEAM  
BRIDGE NO. F05-22  
ON HORNETS NEST ROAD  
OVER FRIENDS CREEK

STANDARD DETAILS

SCALE AS SHOWN ADVERTISED DATE NA CONTRACT NO. RFP 16-019A

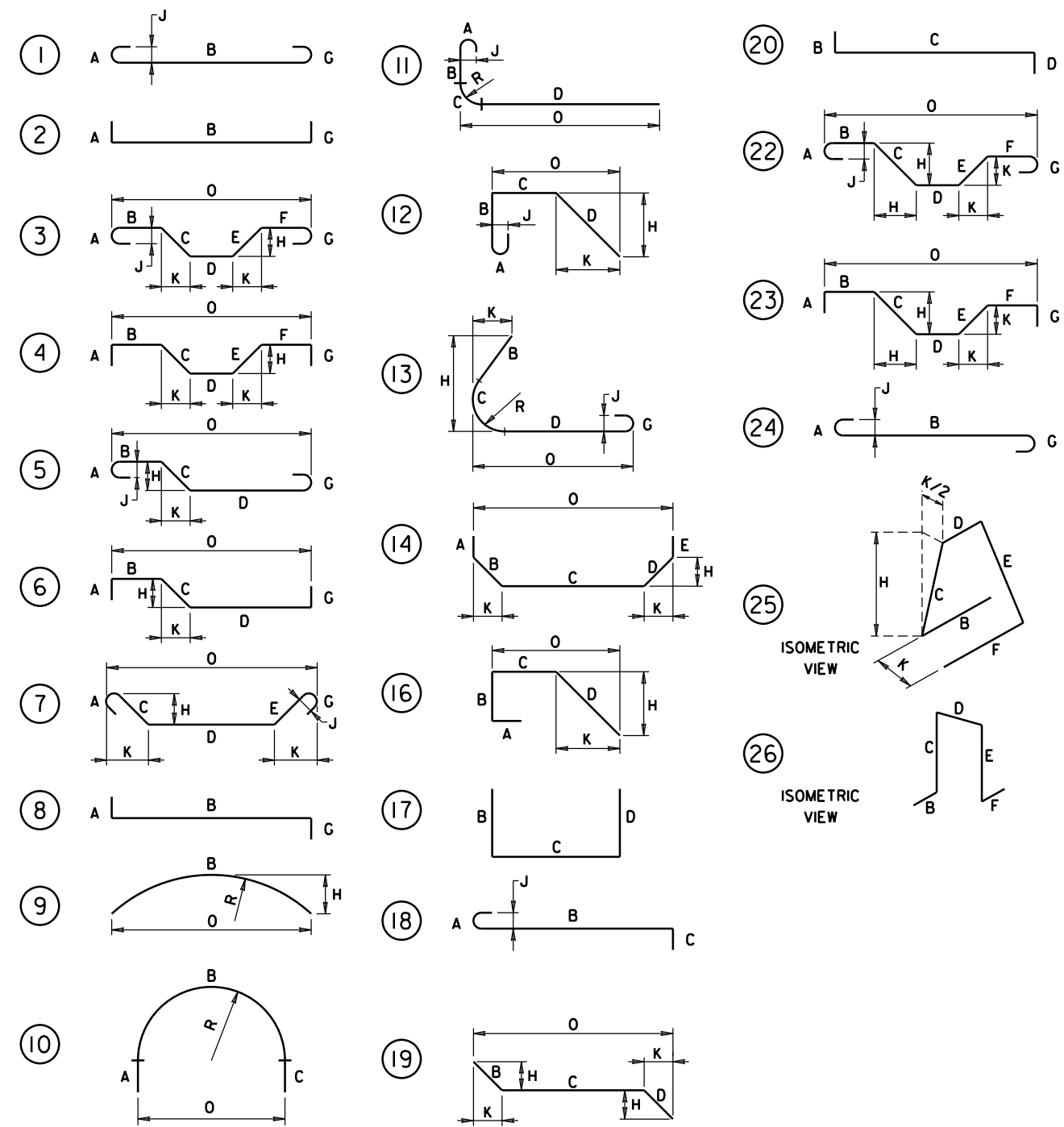
DESIGNED BY SHA COUNTY FREDERICK  
DRAWN BY SHA LOGMILE XXXX - XXXX  
CHECKED BY

**AMT**

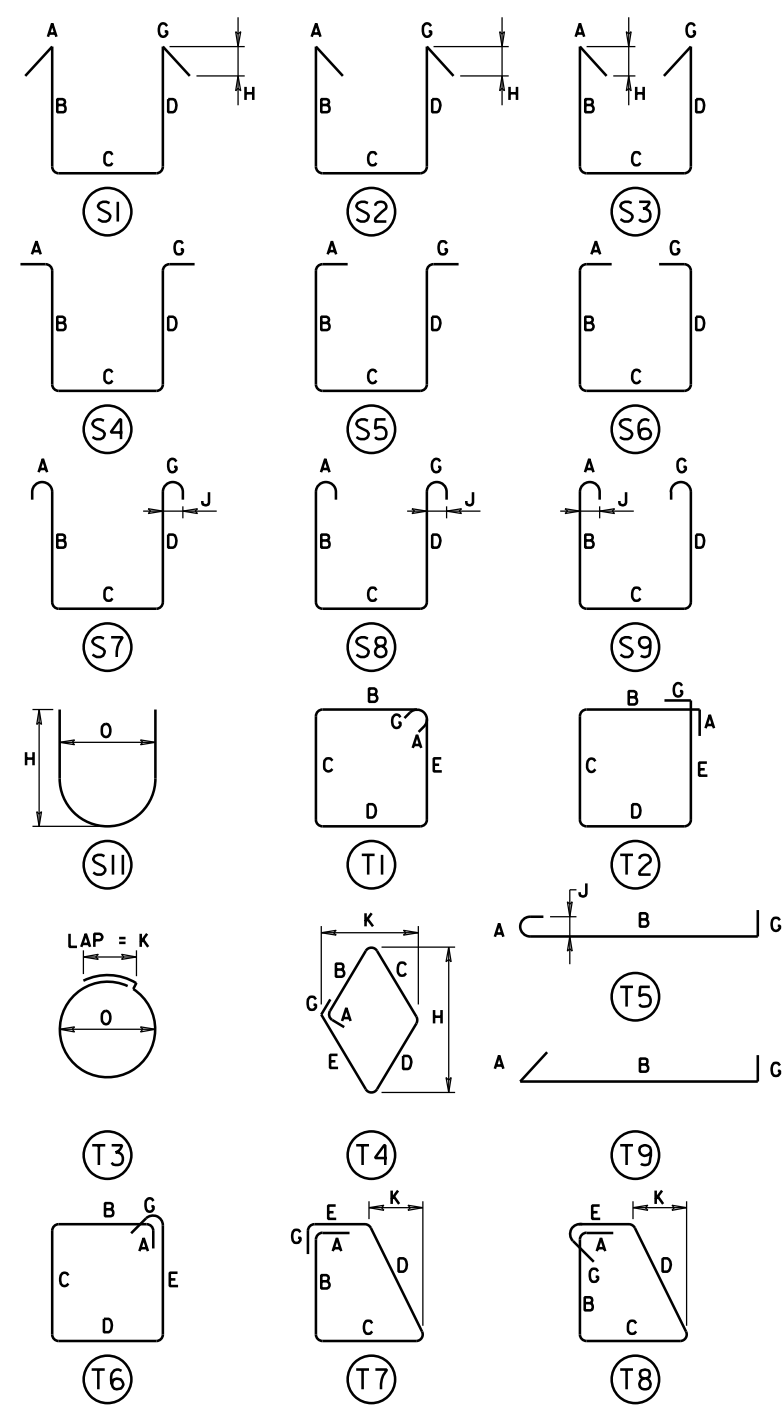
A. MORTON THOMAS AND ASSOCIATES, INC.  
901 DULANEY VALLEY ROAD, SUITE 710  
TOWSON, MD 21204



## ACI TYPICAL BAR BENDS



STANDARD PIN BENDING

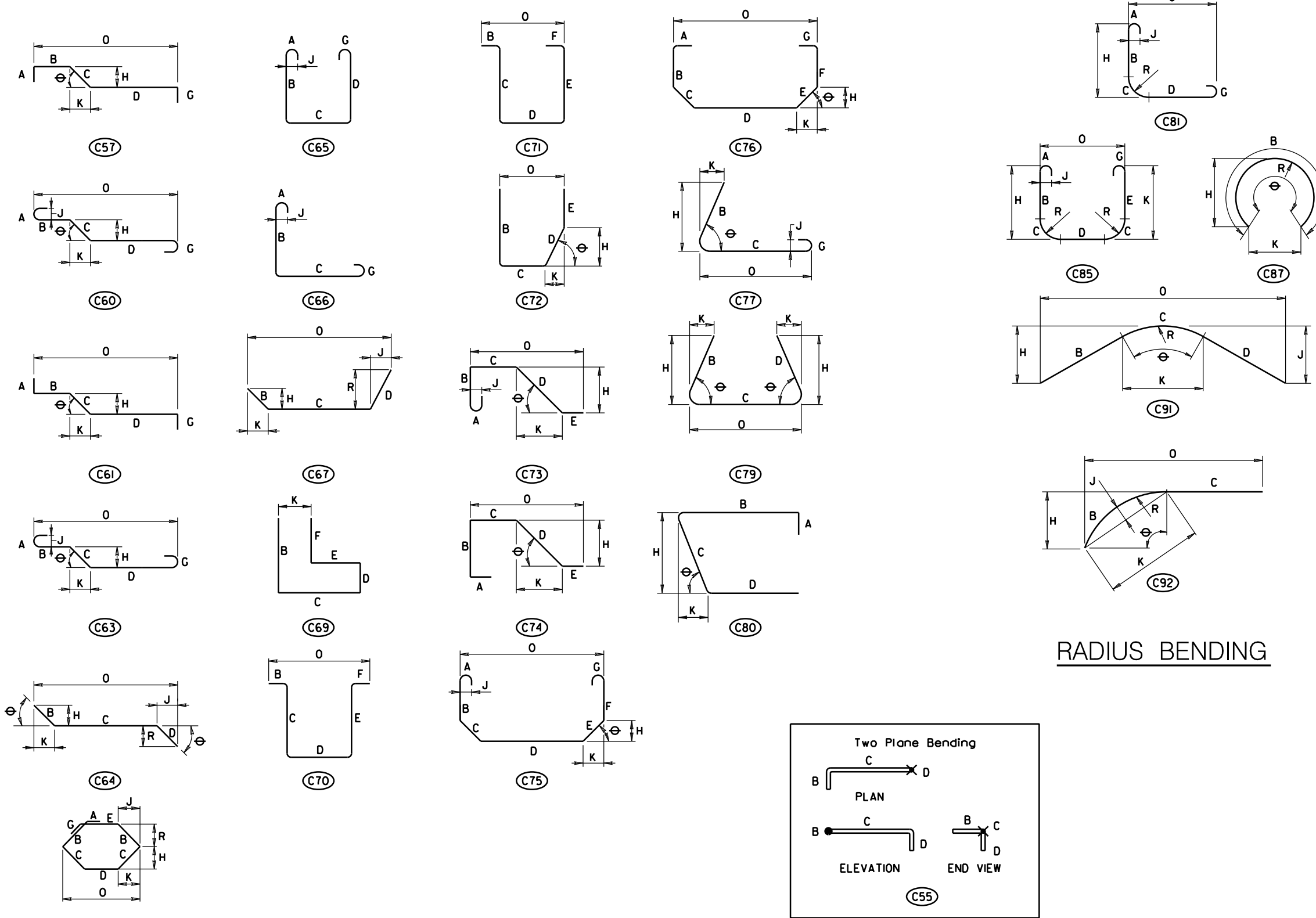


NOTE TO FABRICATOR

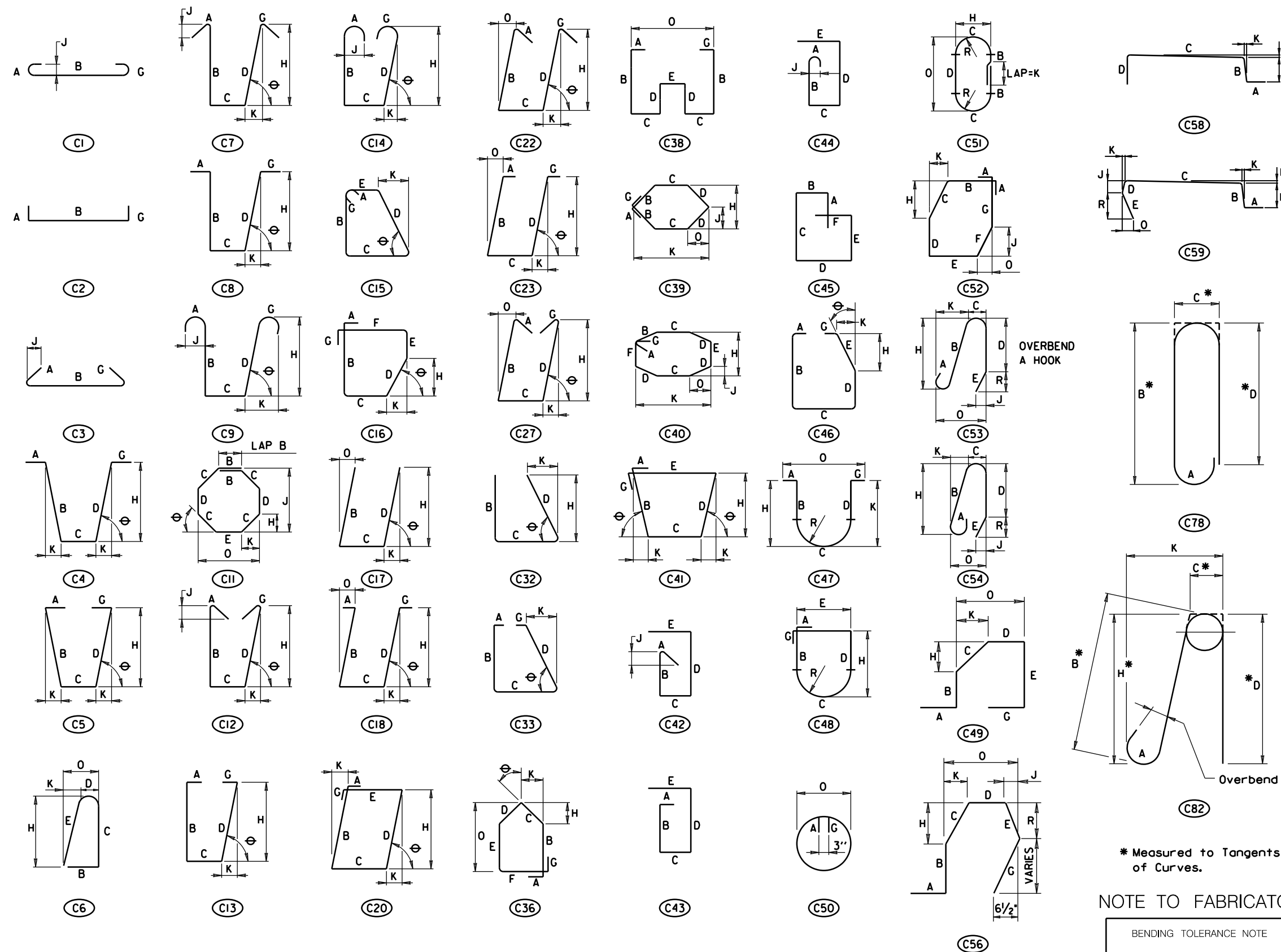
BENDING TOLERANCE NOTE  
TIES AND STIRRUPS SHALL BE BENT WITH A PLUS ZERO INCH (+0") MINUS (-) NORMAL ACI BENDING TOLERANCES

TIES AND STIRRUPS

## SHA TYPICAL BAR BENDS

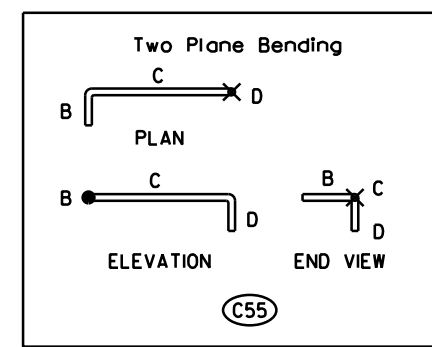


STANDARD PIN BENDING



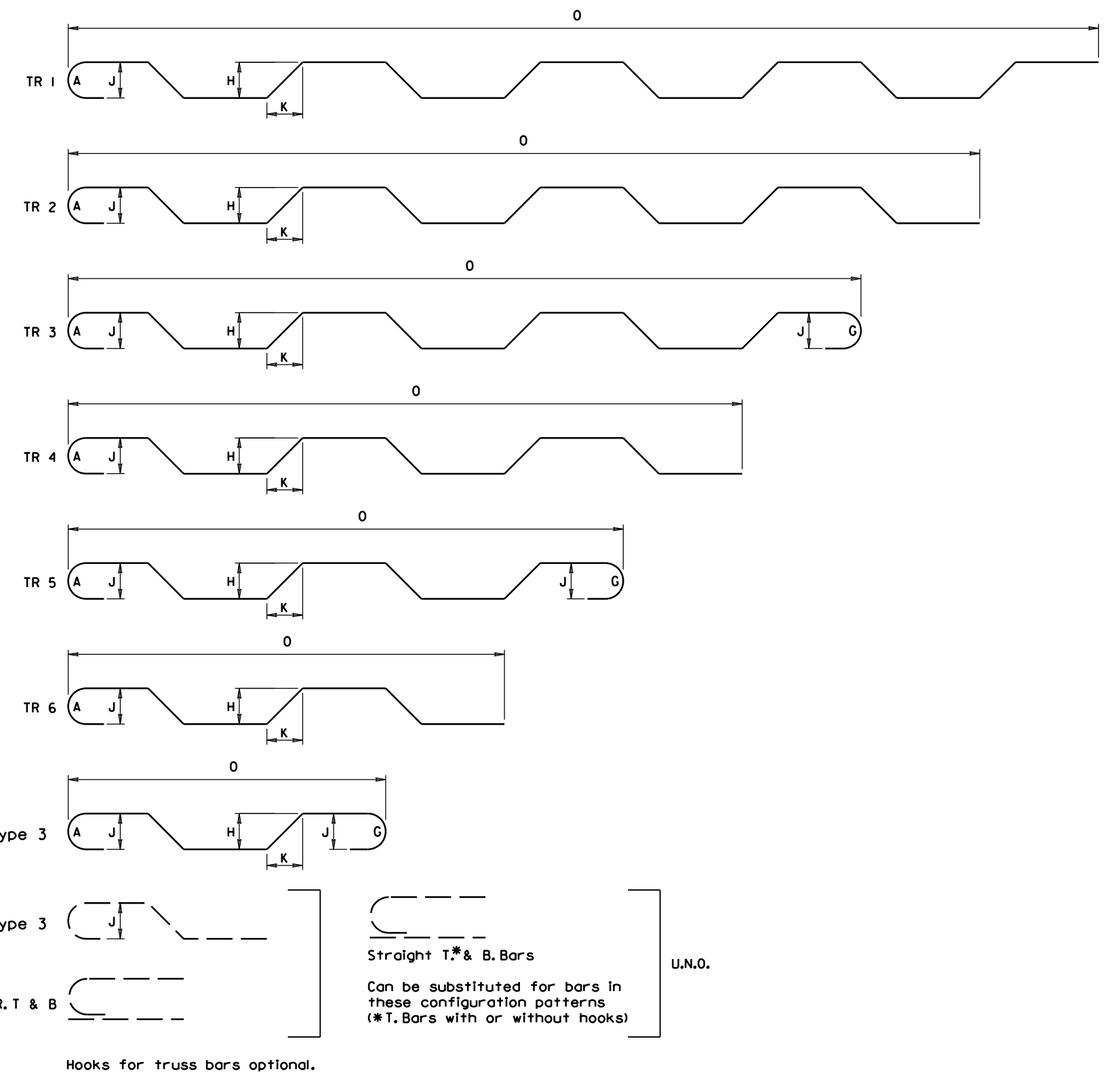
TIES AND STIRRUPS

RADIUS BENDING

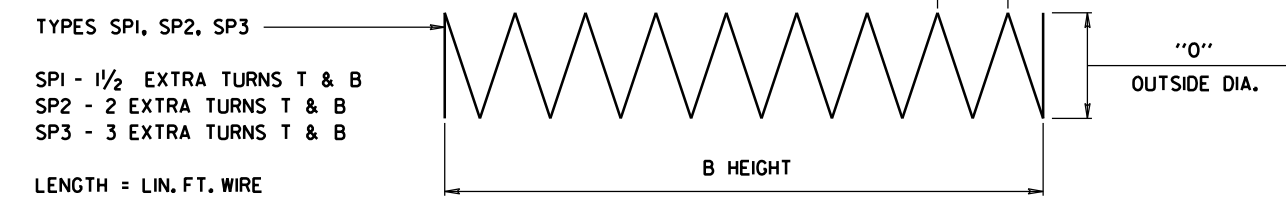


NOTE TO FABRICATOR

BENDING TOLERANCE NOTE  
TIES AND STIRRUPS SHALL BE BENT WITH A PLUS ZERO INCH (+0") MINUS (-) NORMAL ACI BENDING TOLERANCES

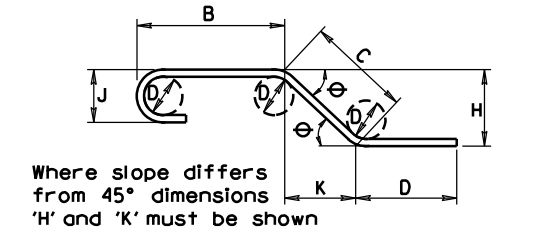


TRUSS BAR CONFIGURATION



SPRINGS

Unless otherwise noted diameter D is the same for all bends and hooks on a bar

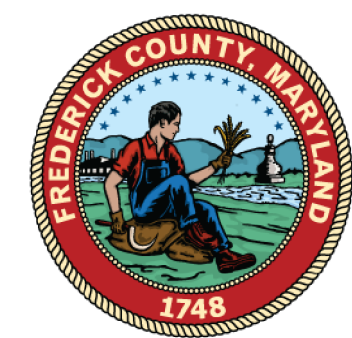


ENLARGED VIEW SHOWING BAR BENDING DETAILS

- Notes:
1. All dimensions are out to out of bar or to tangent points for 135° and 180° hooks.
  2. 'J' dimensions on 180° hooks to be shown only where necessary to restrict hook size. Otherwise standard hooks are to be used.
  3. Where 'J' is not shown, 'J' will be kept equal to or less than 'H' on truss bars. Where 'J' can exceed 'H' it should be shown.
  4. 'H' dimension on stirrups to be shown where necessary to fit within concrete.
  5. Where bars are to be bent more accurately than standard bending tolerances, bending dimensions which require closer fabrication should have limits indicated.

GENERAL NOTES

SHEET S-28



OFFICE OF STRUCTURES  
BRIDGE REPLACEMENT  
PRESTRESSED CONCRETE BEAM  
BRIDGE NO. F05-22  
ON HORNETS NEST ROAD  
OVER FRIENDS CREEK

## STANDARD DETAILS

SCALE AS SHOWN ADVERTISED DATE NA CONTRACT NO. RFP 16-019A  
DESIGNED BY SHA COUNTY FREDERICK  
DRAWN BY SHA LOGMILE XXXX - XXXX  
CHECKED BY

SHEET NO. 33 OF 43

**AMT**

A. MORTON THOMAS AND ASSOCIATES, INC.  
901 DULANEY VALLEY ROAD, SUITE 710  
TOWSON, MD 21204

# EROSION AND SEDIMENT CONTROL – GENERAL NOTES

## STANDARD SYMBOLS

### FREDERICK COUNTY STANDARD SEDIMENT & EROSION CONTROL NOTES

- ALL EROSION/SEDIMENT CONTROL MEASURES SHALL COMPLY WITH THE "MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL" AS APPROVED BY THE COUNTY.
  - ALL DISTURBED AREAS NOT UNDER ACTIVE GRADING TO BE SEEDED WITHIN 7 DAYS OF INITIAL GRADING. FOR TEMPORARY SEEDING SPECIFICATIONS SEE SECTION B1, "2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL" PUBLISHED JOINTLY BY WATER MANAGEMENT ADMINISTRATION, SOIL CONSERVATION SERVICE AND STATE SOIL CONSERVATION COMMITTEE.
  - ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AT THE INITIATION OF GRADING.
  - ALL STORM DRAIN AND SANITARY SEWER LINES NOT IN PAVED AREAS AND NOT SUBJECT TO ACTIVE GRADING ARE TO BE MULCHED & SEEDED WITHIN 7 DAYS OF INITIAL BACKFILL.
  - ELECTRIC POWER, TELEPHONE AND GAS LINES NOT IN ACTIVE GRADING AREAS ARE TO BE COMPACTED, SEEDED AND MULCHED WITHIN 7 DAYS AFTER INITIAL BACKFILL.
  - ALL EARTH BERMS AND SEDIMENT DAMS ARE TO BE MULCHED AND SEEDED (SEE SECTION B OF ABOVE REFERENCE) WITHIN 7 DAYS AFTER GRADING. ALL SOIL STOCKPILES ARE TO BE MULCHED AND SEEDED WITHIN 7 DAYS.
  - DURING CONSTRUCTION, ALL SEDIMENT CONTROL STRUCTURES WILL BE INSPECTED AFTER EACH RAINFALL AND REPAIRED IF NECESSARY. SEDIMENT TO BE REMOVED TO A SUITABLE DISPOSAL AREA AND STABILIZED WITH PERMANENT VEGETATIVE COVER. (SEE SECTION B OF "2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL" PUBLISHED JOINTLY BY WATER MANAGEMENT ADMINISTRATION, SOIL CONSERVATION SERVICE, AND STATE SOIL CONSERVATION COMMITTEE.).
  - CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ALL SEDIMENT EROSION CONTROL MEASURES UNTIL DISTURBED AREAS ARE STABILIZED.
  - AFTER FINE GRADING, ALL DISTURBED AREAS ARE TO BE PERMANENTLY MULCHED AND SEEDED (SEE SECTION B).
  - NO SLOPE SHALL BE GREATER THAN 2:1.
  - 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 (7) DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS WHICH ARE SHOWN ON THE PLAN AND AREA CURRENTLY BEING USED FOR MATERIAL STORAGE OR FOR THOSE AREAS ON WHICH ACTUAL CONSTRUCTION ACTIVITIES ARE CURRENTLY BEING PERFORMED. MAINTENANCE SHALL BE PERFORMED AS NECESSARY TO ENSURE THAT STABILIZED AREAS CONTINUOUSLY MEET THE APPROPRIATE REQUIREMENTS OF THE "2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL".
  - ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED IN CONTINUOUS COMPLIANCE WITH THE LATEST VERSION OF THE MARYLAND STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL.
  - ALL UTILITIES, SUCH AS; STORM DRAIN, PUBLIC WATER, SANITARY SEWER, ELECTRIC POWER, TELEPHONE, CABLE AND GAS LINES, THAT ARE NOT IN PAVED AREAS AND ARE NOT UNDERGOING ACTIVE GRADING SHALL BE TEMPORARILY OR PERMANENTLY STABILIZED WITHIN 3 DAYS OF INITIAL DISTURBANCE.
  - THE OWNER DEVELOPER OR THEIR DESIGNATE IS RESPONSIBLE FOR CONDUCTING ROUTINE MAINTENANCE. THE SITE AND CONTROLS SHOULD BE INSPECTED WEEKLY AND THE NEXT DAY AFTER EACH RAIN EVENT\*\*. ANY ACCUMULATED SEDIMENT SHALL BE REMOVED AND DISPOSED OF IN A SUITABLE AREA AND SHALL BE TEMPORARILY OR PERMANENTLY STABILIZED.
- \*\*ANY PROJECT THAT HAS A STATE ISSUED N.O.I. PERMIT DOCUMENT EACH INSPECTION AND MAINTAIN AN INSPECTION LOG (PLEASE SEE NOI FOR DETAILS).

### NOTES FOR UTILITY WORK

- DISTURBANCE OUTSIDE THE LIMIT OF DISTURBANCE CANNOT EXCEED 5,000 SQUARE FEET.
- PLACE ALL EXCAVATED MATERIAL ON THE HIGH SIDE OF THE TRENCH.
- ONLY COMPLETE AS MUCH WORK AS CAN BE DONE IN ONE DAY SO BACKFILLING, FINAL GRADING, SEEDING, AND MULCHING CAN OCCUR.
- ANY SEDIMENT CONTROL MEASURES DISTURBED BY CONSTRUCTION SHALL BE REPAIRED THE SAME DAY.

### NOTES FOR SECONDARY UTILITY WORK

- DISTURBANCE FROM SECONDARY UTILITIES SUCH AS PHONE, CABLE, ELECTRIC CABLE, T.V. CABLE, ETC. SHALL BE THE SUBCONTRACTORS RESPONSIBILITY. THE WORK AREA SHALL BE RETURNED TO EXISTING GRADE. SEED AND MULCH THE DISTURBED AREA FROM THE INSTALLATION OR RELOCATION OF ANY LINES OR CONDUIT.
- THE SUBCONTRACTORS SHALL BE RESPONSIBLE FOR THE REINSTALLATION OR REPAIR OF ANY SILT FENCE OR SEDIMENT CONTROLS MEASURES THAT WERE DAMAGED OR MOVED DURING THE INSTALLATION OR RELOCATION OF ANY LINES OR CONDUIT.

### TREE PROTECTION NOTES

- THE CONTRACTOR SHALL NOT REMOVE OR INTENTIONALLY DAMAGE ANY TREES NOT MARKED FOR REMOVAL.
- THE CONTRACTOR SHALL AVOID AND MINIMIZE PASSAGE OF HEAVY CONSTRUCTION EQUIPMENT WITHIN THE TREE DRIP LINE.
- THE CONTRACTOR SHALL FINE GRADE AROUND TREES WITH SMALL EQUIPMENT OR HAND GRADE ONLY.
- THE CONTRACTOR SHALL INSTALL TREE PROTECTION FENCING AND PLANKING AS REQUIRED BY THE COUNTY INSPECTOR.
- ALL TREES WITHIN THE LIMIT OF DISTURBANCE NOT DESIGNATED FOR REMOVAL SHALL BE PROTECTED AS PER THE TREE PROTECTION AND PLANNING DETAILS. TREE PLANKING SHALL BE UTILIZED FOR TREES THAT ARE DIRECTLY ADJACENT TO OR HAVE THE POTENTIAL TO BE DAMAGED BY MACHINERY THAT IS IN CLOSE OPERATION. TREE PROTECTION FENCING SHALL BE USED FOR TREES WHERE THERE IS NECESSARY ROOM TO AVOID DURING CONSTRUCTION.

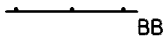
AT-GRADE INLET PROTECTION



ROCK OUTLET PROTECTION II



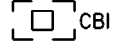
BAFFLE BOARDS



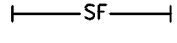
ROCK OUTLET PROTECTION III



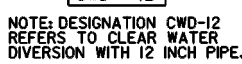
CATCH BASIN INSERT



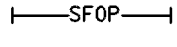
SILT FENCE



CLEAR WATER DIVERSION PIPE



SILT FENCE ON PAVEMENT



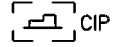
COMBINATION INLET PROTECTION



SOD



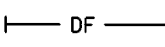
CURB INLET PROTECTION



STABILIZED CONSTRUCTION ENTRANCE



DIVERSION FENCE



STANDARD INLET PROTECTION



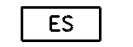
EARTH DIKE



STOCKPILE AREA



EMERGENCY SPILLWAY



STONE CHECK DAM



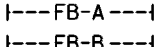
FILTER BAG



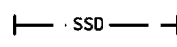
STONE/RIPRAP OUTLET SEDIMENT TRAP ST II



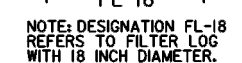
FILTER BERM



SUBSURFACE DRAINS



FILTER LOG



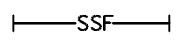
SUMP PIT



GABION INFLOW PROTECTION



SUPER SILT FENCE



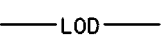
GABION INLET PROTECTION



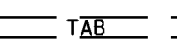
TEMPORARY ACCESS CULVERT



LIMIT OF DISTURBANCE



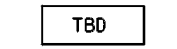
TEMPORARY ASPHALT BERM



MEDIAN INLET PROTECTION



TEMPORARY BARRIER DIVERSION



MEDIAN SUMP INLET PROTECTION



TEMPORARY GABION OUTLET STRUCTURE



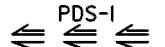
MOUNTABLE BERM



TEMPORARY SOIL STABILIZATION MATTING-TYPE A



PERIMETER DIKE/SWALE



TEMPORARY SOIL STABILIZATION MATTING-TYPE E



PERMANENT SOIL STABILIZATION MATTING-TYPE B



TEMPORARY SOIL STABILIZATION MATTING-TYPE D



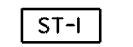
PERMANENT SOIL STABILIZATION MATTING-TYPE C



TEMPORARY STONE OUTLET STRUCTURE



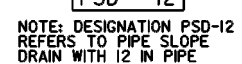
PIPE OUTLET SEDIMENT TRAP ST I



TEMPORARY SWALE



PIPE SLOPE DRAIN



WASH RACK OPTION



PLUNGE POOL



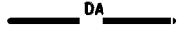
CHESAPEAKE BAY CRITICAL AREA



PORTABLE SEDIMENT TANK



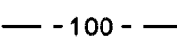
DRAINAGE BOUNDARY



REMOVABLE PUMPING STATION



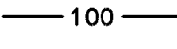
EXISTING CONTOURS



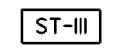
RIPRAP INFLOW PROTECTION



PROPOSED CONTOURS



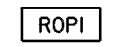
RIPRAP OUTLET SEDIMENT TRAP ST III



TREE PROTECTION FENCE



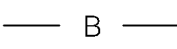
ROCK OUTLET PROTECTION I



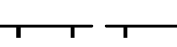
WETLAND



WETLAND BUFFER



100-YEAR FLOODPLAIN



### DESIGN CERTIFICATION

I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH THE MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, THE 2000 MARYLAND STORMWATER MANUAL, VOLUMES I & II, INCLUDING SUPPLEMENTS. THE ENVIRONMENT ARTICLE SECTIONS 4-101 THROUGH 116 AND SECTIONS 4-201 AND 215, AND THE CODE OF MARYLAND REGULATIONS (COMAR) 26.17.01 AND COMAR 26.17.02 FOR EROSION AND SEDIMENT CONTROL AND STORMWATER MANAGEMENT, RESPECTIVELY.

NAME

SIGNATURE

MARYLAND REGISTRATION NUMBER.  
P.E., R.L.S. OR R.L.A. (circle)

DATE

\*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. \_\_\_\_\_, EXPIRATION DATE: \_\_\_\_\_.\*

## SEQUENCE OF CONSTRUCTION

THE CONTRACTOR SHALL NOTIFY FREDERICK COUNTY ENVIRONMENTAL COMPLIANCE SECTION (301-600-3507) TWO (2) WEEKS PRIOR TO THE START OF CONSTRUCTION FOR AN ON-SITE REVIEW OF PROPOSED SEDIMENT AND EROSION CONTROL MEASURES. NOTIFY MDE COMPLIANCE PROGRAM SEVEN (7) DAYS BEFORE ANY LAND DISTURBING ACTIVITY IS CONDUCTED AND HOLD A PRE-CONSTRUCTION MEETING BETWEEN PROJECT REPRESENTATIVES AND REPRESENTATIVES OF FREDERICK COUNTY.

- DETOUR TRAFFIC AS SHOWN ON MAINTENANCE OF TRAFFIC PLANS AND AS PER MDOT SHA STANDARDS.
- ALL DISTURBED AREAS SHALL BE STABILIZED AT THE END OF EACH WORK DAY, UNLESS DIRECTED TO AN MDE APPROVED SEDIMENT CONTROL DEVICE, AS SHOWN ON THE PLANS.

### PHASE 1

- ESTABLISH THE LOD.
- INSTALL PERIMETER CONTROLS (SILT FENCE) PRIOR TO BEGINNING ANY WORK. PLACE SCES AS SHOWN FOR PHASE 1.
- INSTALL SANDBAG DIVERSION A OR B AS SHOWN ON PLANS.
- WITH WRITTEN APPROVAL FROM THE MDE INSPECTOR, REMOVE CULVERTS AND HEADWALLS WITHIN THE LIMITS AS SHOWN IN PHASE 1 BEHIND SANDBAG DIVERSION A OR B. ONCE REMOVAL OF CULVERTS BEHIND SANDBAG DIVERSION A OR B IS COMPLETE AND STREAMBED IS STABILIZED, INSTALL OTHER SANDBAG DIVERSION (A OR B) AND REMOVE REMAINING CULVERTS AND HEADWALLS AND STABILIZE STREAMBED. CONTRACTOR SHALL ENSURE THAT SEDIMENT AND DEBRIS IS NOT RELEASED INTO STREAM DURING CULVERT REMOVAL.

### PHASE 2

- ESTABLISH THE LOD.
- WITH WRITTEN APPROVAL FROM THE COUNTY, WORKING FROM UPSTREAM TO DOWNSTREAM, PLACE PHASE 2 STREAM DIVERSION (BARRIER /SANDBAGS) AS SHOWN ON SHEETS ES-02 AND ES-03.
- EXCAVATE FOR WINGWALL FOOTINGS AND ABUTMENTS. ALL WORK SHALL BE BEHIND THE PHASE 2 STREAM DIVERSION (BARRIER /SANDBAGS) DURING THIS PHASE.
- FORM, TIE REBAR, POUR CONCRETE FOR FOOTINGS AND ABUTMENTS.
- CURE CONCRETE FOR A MINIMUM OF SEVEN (7) DAYS. (SHA 420.03.08.)
- PLACE RIPRAP IN REMAINING AREAS.
- WITH WRITTEN APPROVAL FROM THE MDE INSPECTOR, WORKING FROM DOWNSTREAM TO UPSTREAM, REMOVE PHASE 2 STREAM DIVERSION (BARRIER /SANDBAGS).
- COMPLETE INSTALLATION OF BRIDGE SLAB BEAMS, CONCRETE OVERLAY, AND PARAPETS.
- MILL EXISTING PAVEMENT AS SHOWN ON SHEET TS-01 AND CONSTRUCT ROADWAY EMBANKMENTS AND DRAINAGE FEATURES. ACCESS TO DRIVEWAY ON SOUTH SIDE OF BRIDGE SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION.
- FINALIZE ROADWAY GRADING, MILL EXISTING PAVEMENT AT NORTH AND SOUTH TIE-INS, CONSTRUCT FULL DEPTH PAVEMENT, PLACE SURFACE COURSE, AND INSTALL TRAFFIC BARRIER.
- UPON COMPLETION OF THE CONSTRUCTION, PERMANENTLY STABILIZE AREAS WITH TOPSOIL AND TURFGRASS ESTABLISHMENT.
- APPLY PAVEMENT MARKINGS.

SHEET EN-01



BRIDGE REPLACEMENT  
PRESTRESSED CONCRETE BEAM  
BRIDGE NO. F05-22  
ON HORNETS NEST ROAD  
OVER FRIENDS CREEK

## EROSION AND SEDIMENT CONTROL NOTES

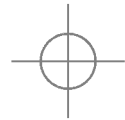
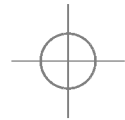
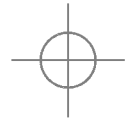
SCALE \_\_\_\_\_ ADVERTISED DATE \_\_\_\_\_ NA \_\_\_\_\_ CONTRACT NO. \_\_\_\_\_ RFP 16-019A \_\_\_\_\_

DESIGNED BY \_\_\_\_\_ SRM \_\_\_\_\_ COUNTY \_\_\_\_\_ FREDERICK  
DRAWN BY \_\_\_\_\_ SRM \_\_\_\_\_ LOGMILE \_\_\_\_\_ XXXX - XXXX  
CHECKED BY \_\_\_\_\_ KAR \_\_\_\_\_

SHEET NO. 34 OF 43

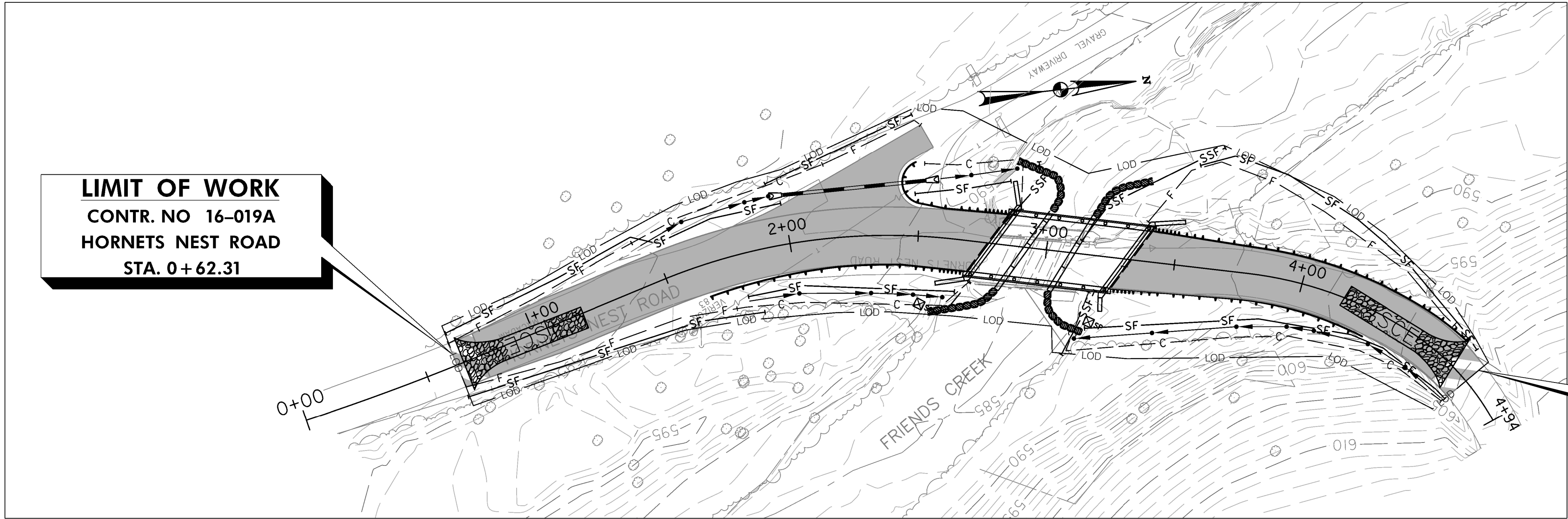






BY: snceville -

PLOTTED: Tuesday, March 30, 2021 AT 10:53 AM



**LIMIT OF WORK**  
CONTR. NO 16-019A  
HORNETS NEST ROAD  
STA. 0+62.31

**LIMIT OF WORK**  
CONTR. NO 16-019A  
HORNETS NEST ROAD  
STA. 4+75.00

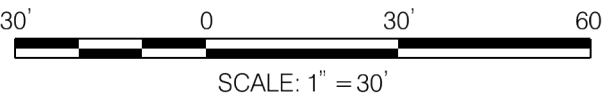
SANDBAG DIKE
20 LF - STA. 2+80 TO 2+90, LT. 26 LF - STA. 2+60 TO 2+80, RT. 30 LF - STA. 3+12 TO 3+34, LT. 24 LF - STA. 3+05 TO 3+20, RT.

TEMPORARY TRAFFIC BARRIER
33 LF - STA. 2+82 TO 2+94 33 LF - STA. 3+02 TO 3+12

SUMP PIT
1 EA - STA. 2+55, RT. 1 EA - STA. 3+20, RT.

LIMIT OF DISTURBANCE			
STATION	OFFSET (FT.)	STATION	OFFSET (FT.)
0+63	16.3 LT	4+75	16.8 RT
0+99	17.4 LT	4+22	22.9 RT
1+62	25.5 LT	3+36	38.2 RT
1+85	27.5 LY	3+07	39.2 RT
2+01	28.9 LT	3+05	29.1 RT
2+47	50.1 LT	2+66	29.7 RT
2+62	49.9 LT	2+39	29.6 RT
3+13	31.3 LT	2+16	28.9 RT
3+64	48.4 LT	1+76	25.4 RT
4+03	35.9 LT	1+49	21.3 RT
4+22	28.8 LT	0+62	16.9 RT
4+51	19.5 LT		
4+75	11.4 LT		

EROSION AND SEDIMENT CONTROL PLAN - PHASE 2




NOTE: PHASE 1 EROSION AND SEDIMENT CONTROL MEASURES TO REMAIN IN PLACE DURING PHASE 2 CONSTRUCTION.

SHEET ES-02

FREDERICK SOIL CONSERVATION DISTRICT

Approved By \_\_\_\_\_ District Manager

Date \_\_\_\_\_



**A. MORTON THOMAS AND ASSOCIATES, INC.**  
901 DULANEY VALLEY ROAD, SUITE 710  
TOWSON, MD 21204



BRIDGE REPLACEMENT  
PRESTRESSED CONCRETE BEAM  
BRIDGE NO. F05-22  
ON HORNETS NEST ROAD  
OVER FRIENDS CREEK

**EROSION & SEDIMENT CONTROL**

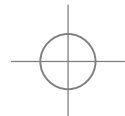
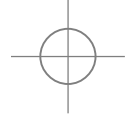
SCALE AS-NOTED ADVERTISED DATE NA CONTRACT NO. RFP 16-019A

DESIGNED BY SRM COUNTY FREDERICK

DRAWN BY SRM LOGMILE XXXX - XXXX

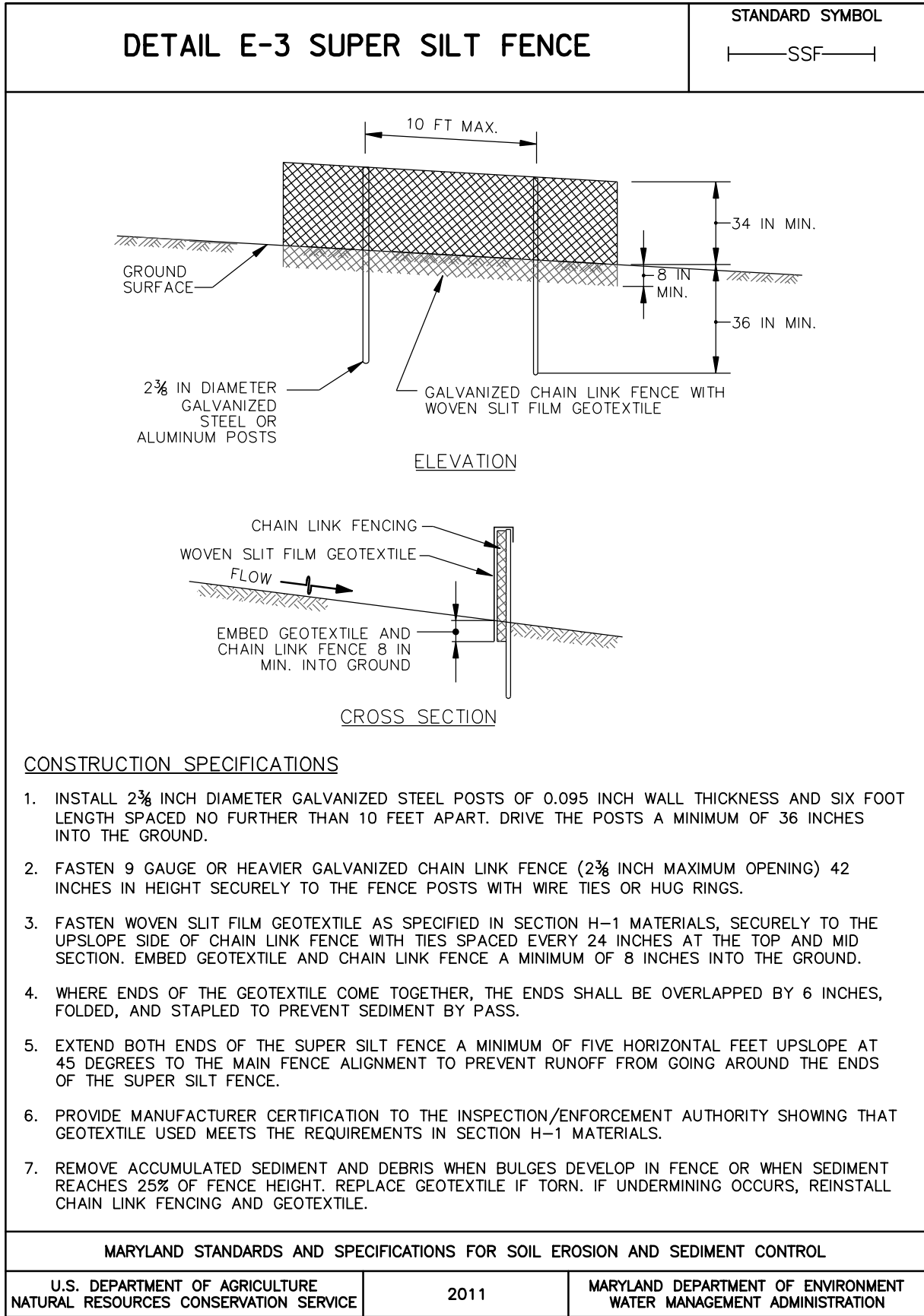
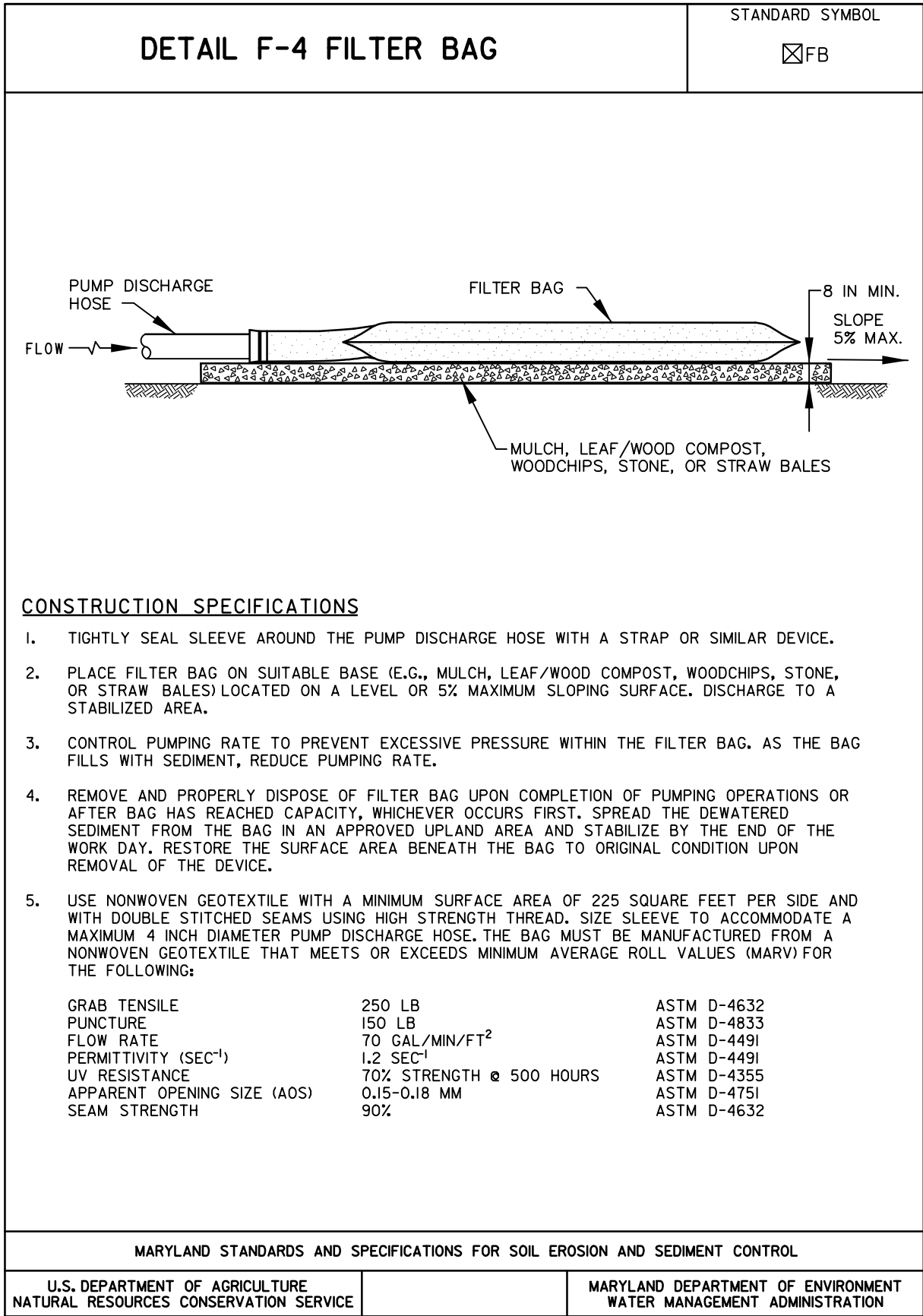
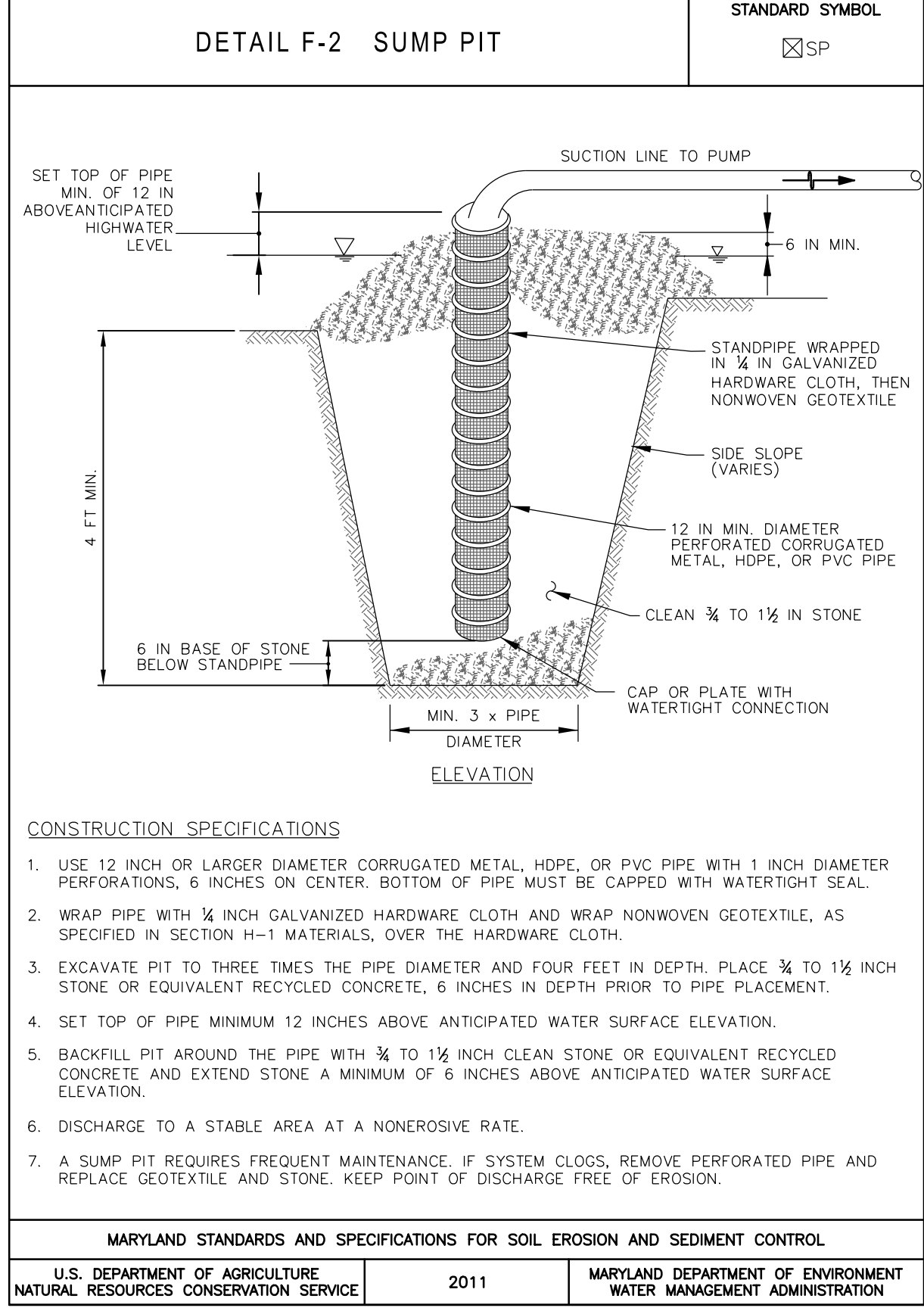
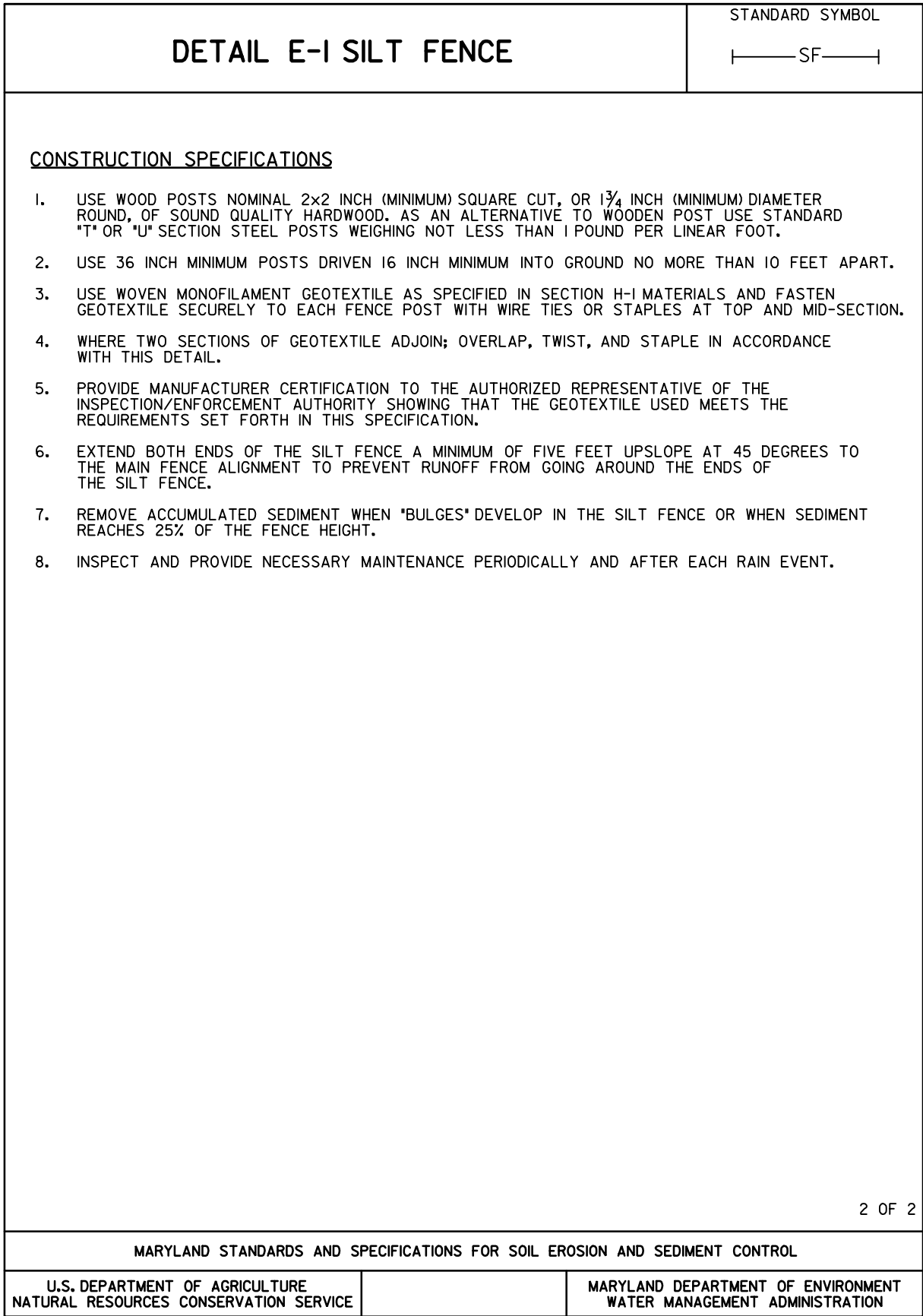
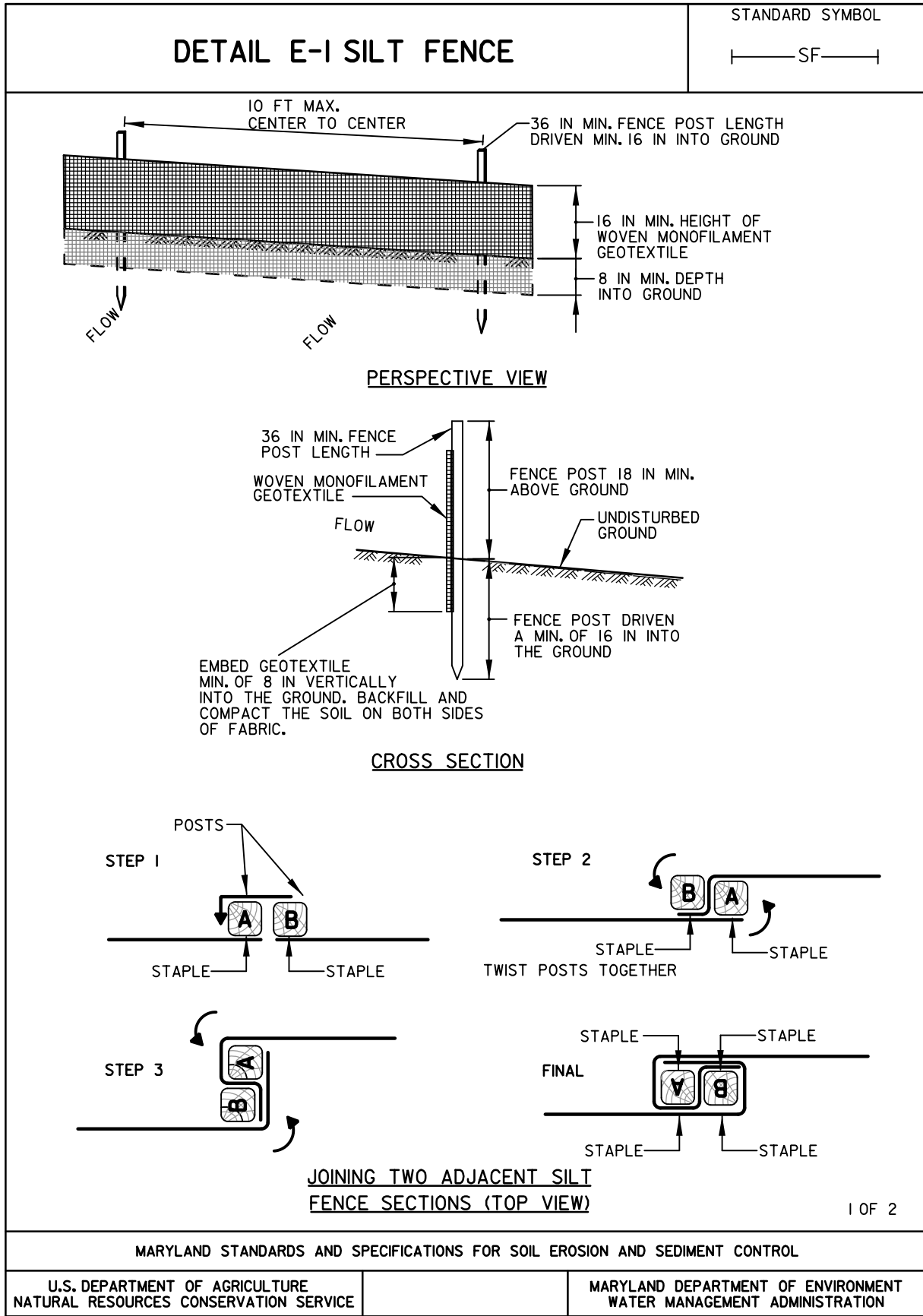
CHECKED BY KAR





BY: jpiro

PLOTTED: Friday, March 26, 2021 AT 04:23 PM



#### STREAM DIVERSION NOTES

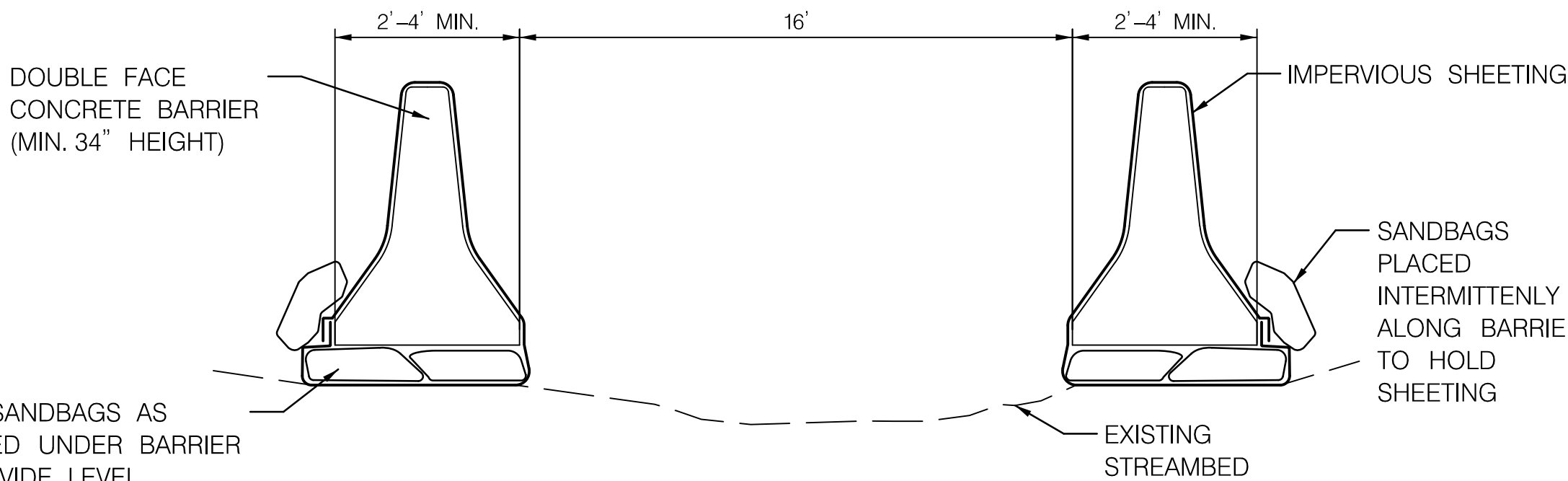
THE COST OF THE STREAM DIVERSION (INCLUDING STREAM DIVERSION PUMPS, DEWATERING PUMPS, DEWATERING BAGS, SANDBAGS, SHEETING, TEMPORARY TRAFFIC BARRIER, BOG TURTLE PROTECTION, ETC.) IS CONSIDERED INCIDENTAL TO "MAINTENANCE OF STREAM FLOW" PAY ITEM.

AN INITIAL BASE COURSE OF SAND BAGS SHALL BE PLACED ON THE EXISTING STREAM BED AS SHOWN TO PROVIDE A LEVEL AREA TO PLACE THE BARRIER.

THE IMPERVIOUS LINER SHALL BE PLACED IN CONJUNCTION WITH THE BARRIER AS SHOWN.

THE DIVERSION SHALL BE INSPECTED AND REPAIRED AS NEEDED IMMEDIATELY AFTER EACH STORM EVENT.

THE DIVERSION MUST BE PLACED DURING ALLOWABLE IN-STREAM WORK DATES.



PLACE SANDBAGS AS REQUIRED UNDER BARRIER TO PROVIDE LEVEL SURFACE AND MINIMUM HEIGHT

#### STREAM DIVERSION DEVICE – TYPICAL SECTION

NOT TO SCALE

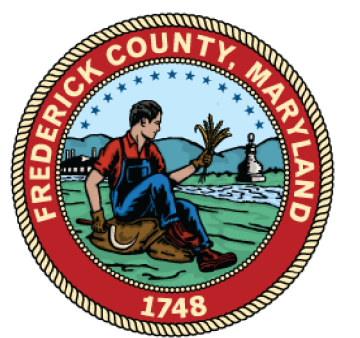
FREDERICK SOIL CONSERVATION DISTRICT

Approved By \_\_\_\_\_ District Manager

Date \_\_\_\_\_

**AMT**

A. MORTON THOMAS AND ASSOCIATES, INC.  
901 DULANEY VALLEY ROAD, SUITE 710  
TOWSON, MD 21204



BRIDGE REPLACEMENT  
PRESTRESSED CONCRETE BEAM  
BRIDGE NO. F05-22  
ON HORNETS NEST ROAD  
OVER FRIENDS CREEK

#### EROSION & SEDIMENT CONTROL PLAN

SCALE AS NOTED ADVERTISED DATE NA CONTRACT NO. RFP 16-019A

DESIGNED BY SRM COUNTY FREDERICK





DRAWN BY SRM LOGMILE XXXX - XXXX

CHECKED BY KAR

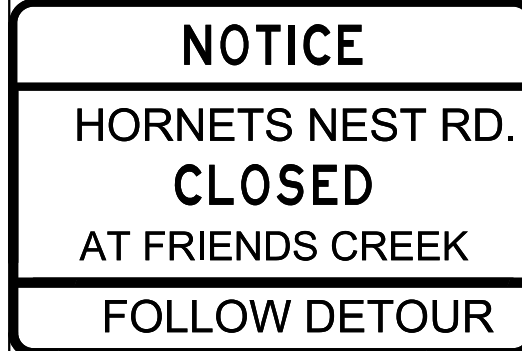
SHEET NO. 37 OF 43



SIGN SCHEDULE

(A)		W20-3(1) 48" x 48" 16.0 SF	BK/FO
(B)		W20-3(1) 48" x 48" 16.0 SF	BK/FO
(C)		W20-3(1) 48" x 48" 16.0 SF	BK/FO
(D)		W20-3(1) 48" x 48" 16.0 SF	BK/FO

(E)		R11-2(6) 78" x 68" 36.83 SF	BK/W
-----	---	-----------------------------------	------

(F)		R11-2(6) (MOD.) 78" x 84" 45.5 SF	BK/W BK/FO
-----	--	---	---------------


(G)		M4-9(1) 30" x 12" 2.5 SF	BK/W
-----	---	--------------------------------	------


(H)		M4-9L 30" x 24" 5.0 SF	BK/FO
-----	---	------------------------------	-------

(I)		M4-9R 30" x 24" 5.0 SF	BK/FO
-----	---	------------------------------	-------

(J)		M4-9L (MOD.) 30" x 24" 5.0 SF	BK/FO
-----	---	-------------------------------------	-------

(K)		M4-9R (MOD.) 30" x 24" 5.0 SF	BK/FO
-----	---	-------------------------------------	-------

(L)		M4-9 30" x 24" 5.0 SF	BK/FO
-----	---	-----------------------------	-------

(M)		M4-8a 24" x 18" 3.0 SF	BK/FO
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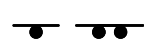


(N)		M4-10R 48" x 18" 6.0 SF	BK/FO
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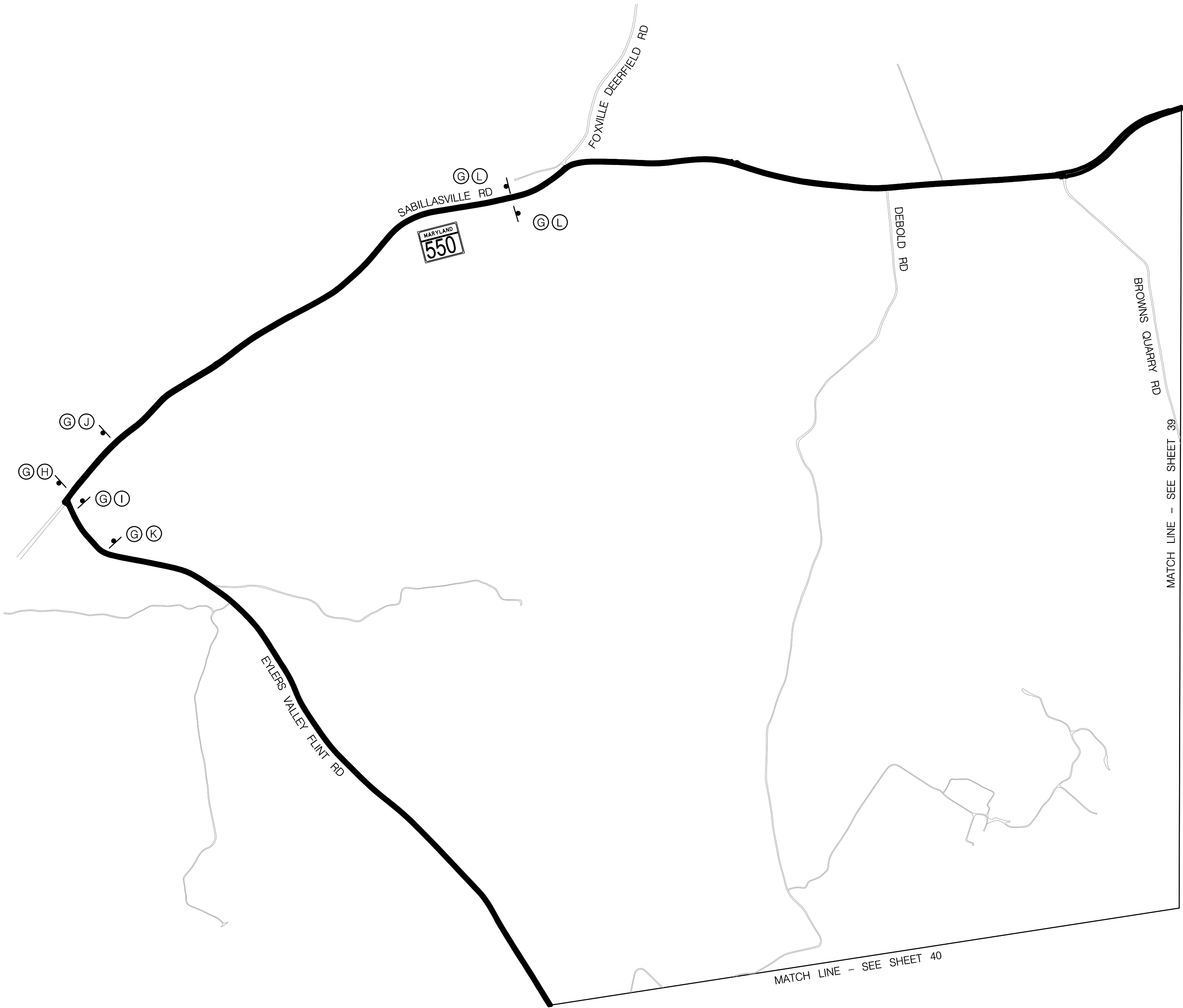
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(P)		R11-2 48" x 30" 10.0 SF	BK/W
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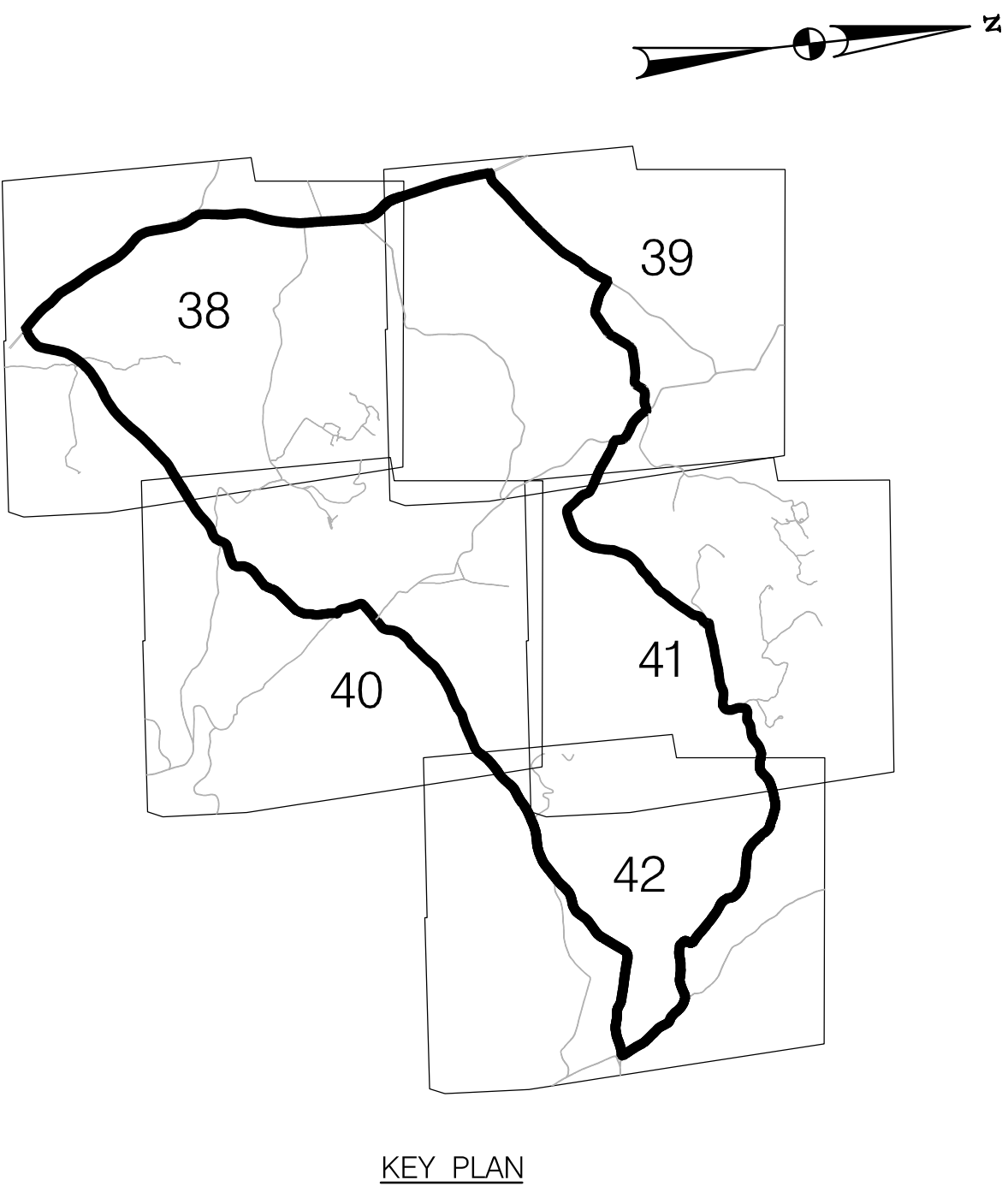
(R)		R11-3a 60" x 30" 12.5 SF	BK/W
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LEGEND

	TEMPORARY SIGN
	TYPE III BARRICADE
	DETOUR ROUTE
BK/FO	BLACK ON FLUORESCENT ORANGE
BK/FY	BLACK ON FLUORESCENT YELLOW
BK/W	BLACK ON WHITE

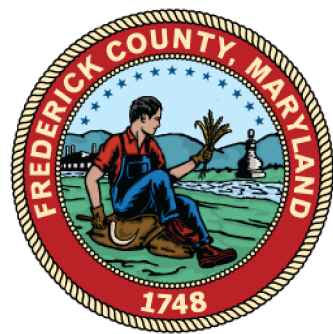


HORNETS NEST ROAD - DETOUR PLAN  
SCALE: NOT TO SCALE



KEY PLAN

SHEET MT-01



BRIDGE REPLACEMENT  
PRESTRESSED CONCRETE BEAM  
BRIDGE NO. F05-22  
ON HORNETS NEST ROAD  
OVER FRIENDS CREEK

DETOUR PLAN

SCALE AS NOTED ADVERTISED DATE N/A CONTRACT NO. RFP 16-019A

DESIGNED BY SRM COUNTY FREDERICK  
DRAWN BY JAP LOGMILE XXXX - XXXX  
CHECKED BY KAR

SHEET NO. 38 OF 43

**AMT**

A. MORTON THOMAS AND ASSOCIATES, INC.  
901 DULANEY VALLEY ROAD, SUITE 710  
TOWSON, MD 21204

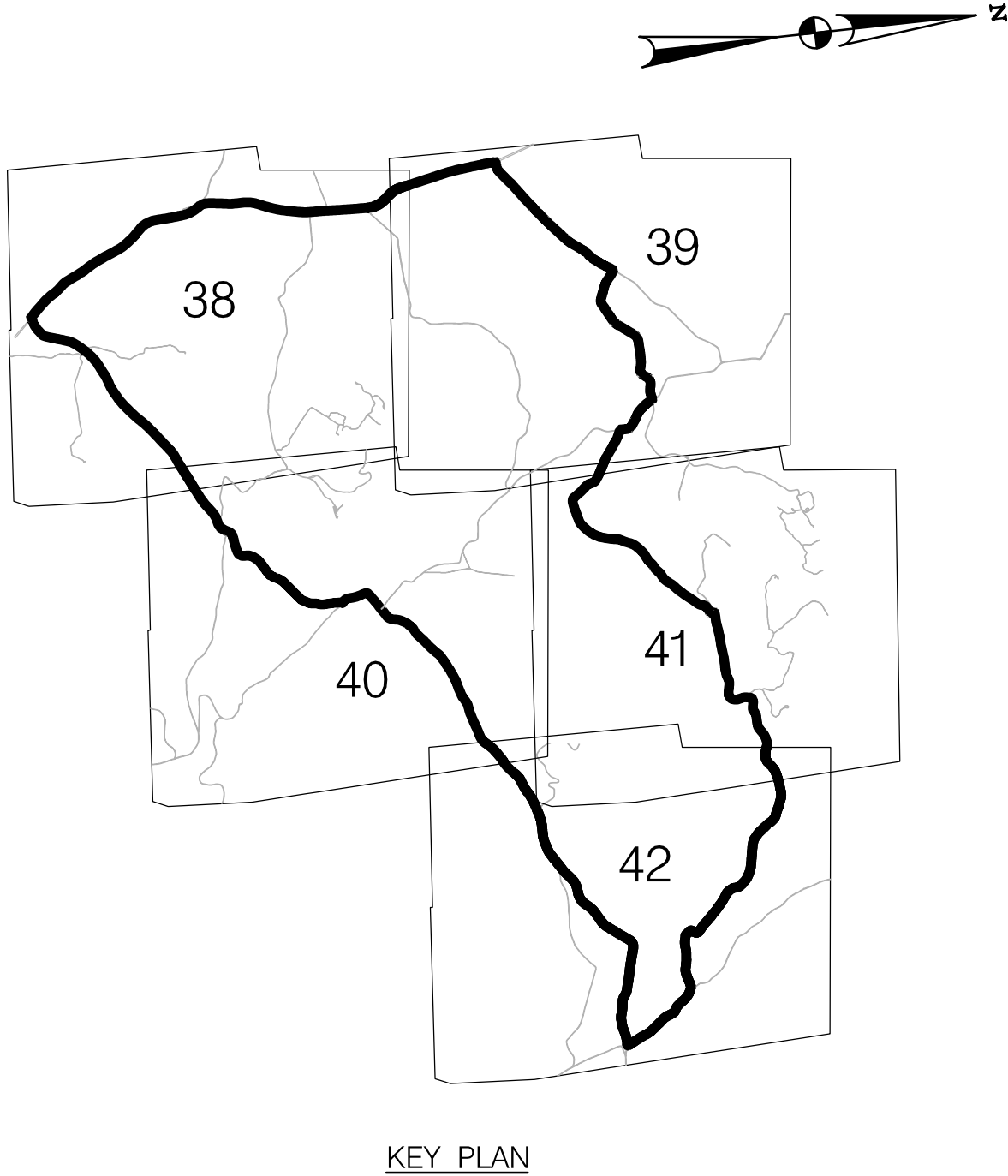
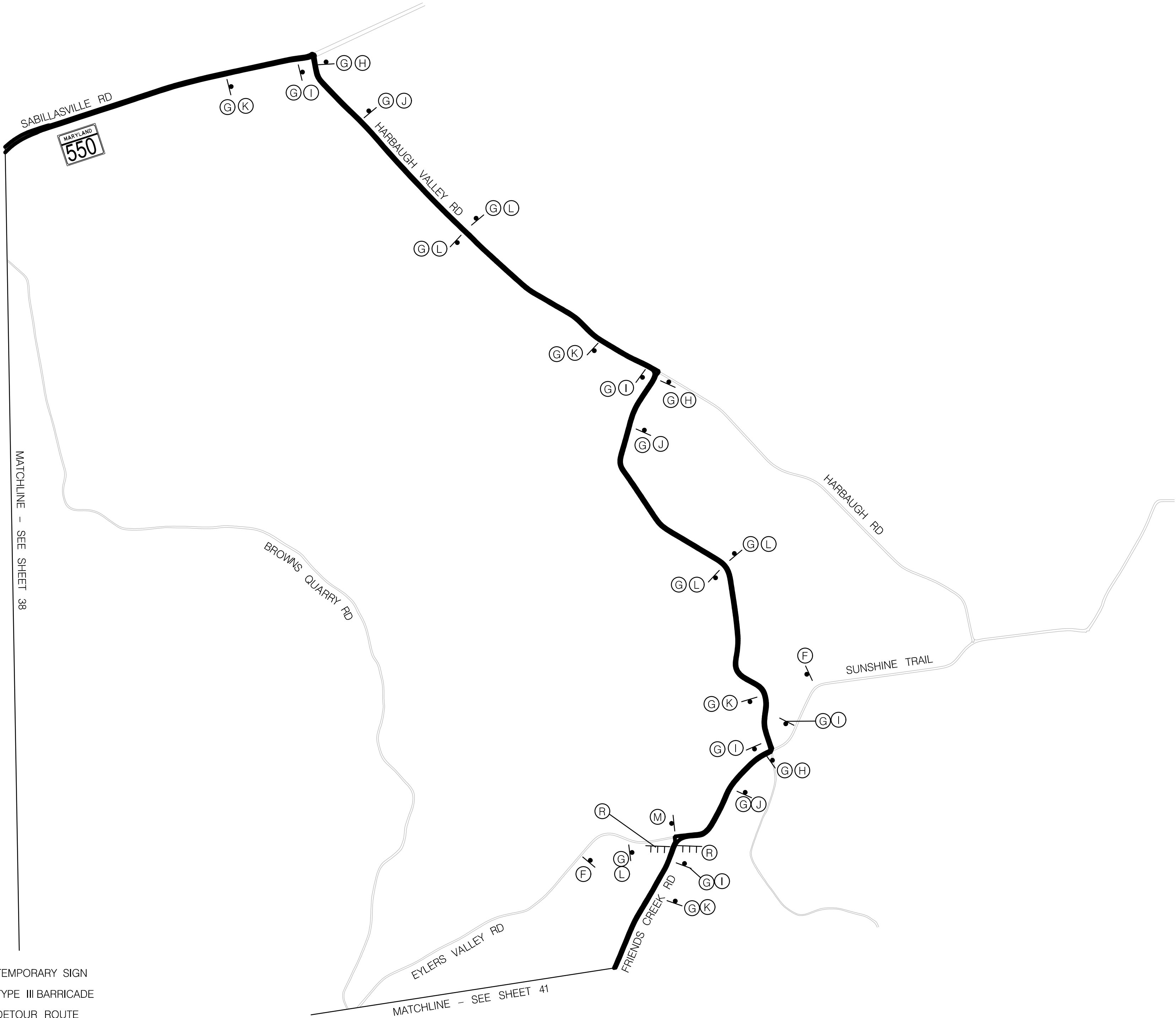


SIGN SCHEDULE

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B		W20-3(1) 48" x 48" 16.0 SF	BK/FO
C		W20-3(1) 48" x 48" 16.0 SF	BK/FO
D		W20-3(1) 48" x 48" 16.0 SF	BK/FO
E	<div>NOTICE THIS BRIDGE TO BE CLOSED ON OR ABOUTXX/XX/XX</div>	R11-2(6) 78" x 68" 36.83 SF	BK/FY BK/W
F	<div>NOTICE HORNETS NEST RD CLOSED AT FRIENDS CREEK FOLLOW DETOUR</div>	R11-2(6) (MOD.) 78" x 84" 45.5 SF	BK/FY BK/W BK/FO
G	<div>Hornets Nest Rd</div>	M4-9(1) 30" x 12" 2.5 SF	BK/W
H		M4-9L 30" x 24" 5.0 SF	BK/FO
I		M4-9R 30" x 24" 5.0 SF	BK/FO
J		M4-9L (MOD.) 30" x 24" 5.0 SF	BK/FO
K		M4-9R (MOD.) 30" x 24" 5.0 SF	BK/FO
L		M4-9 30" x 24" 5.0 SF	BK/FO
M	<div>END DETOUR</div>	M4-8a 24" x 18" 3.0 SF	BK/FO
N		M4-10R 48" x 18" 6.0 SF	BK/FO
W		M4-10L 48" x 18" 6.0 SF	BK/FO
P	<div>ROAD CLOSED</div>	R11-2 48" x 30" 10.0 SF	BK/W
R	<div>ROAD CLOSED 2 MILES AHEAD LOCAL TRAFFIC ONLY</div>	R11-3a 60" x 30" 12.5 SF	BK/W

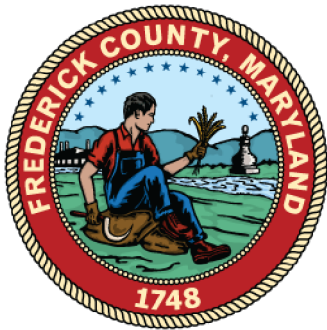
LEGEND

	TEMPORARY SIGN
	TYPE III BARRICADE
	DETOUR ROUTE
BK/FO	BLACK ON FLUORESCENT ORANGE
BK/FY	BLACK ON FLUORESCENT YELLOW
BK/W	BLACK ON WHITE



KEY PLAN

SHEET MT-02



BRIDGE REPLACEMENT  
PRESTRESSED CONCRETE BEAM  
BRIDGE NO. F05-22  
ON HORNETS NEST ROAD  
OVER FRIENDS CREEK

DETOUR PLAN

SCALE AS-NOTED ADVERTISED DATE N/A CONTRACT NO. RFP 16-019A

DESIGNED BY SRM COUNTY FREDERICK  
DRAWN BY JAP LOGMILE XXXX - XXXX  
CHECKED BY KAR

SHEET NO. 39 OF 43



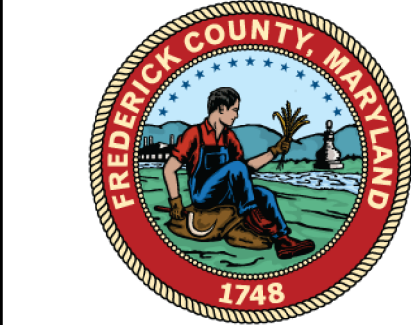
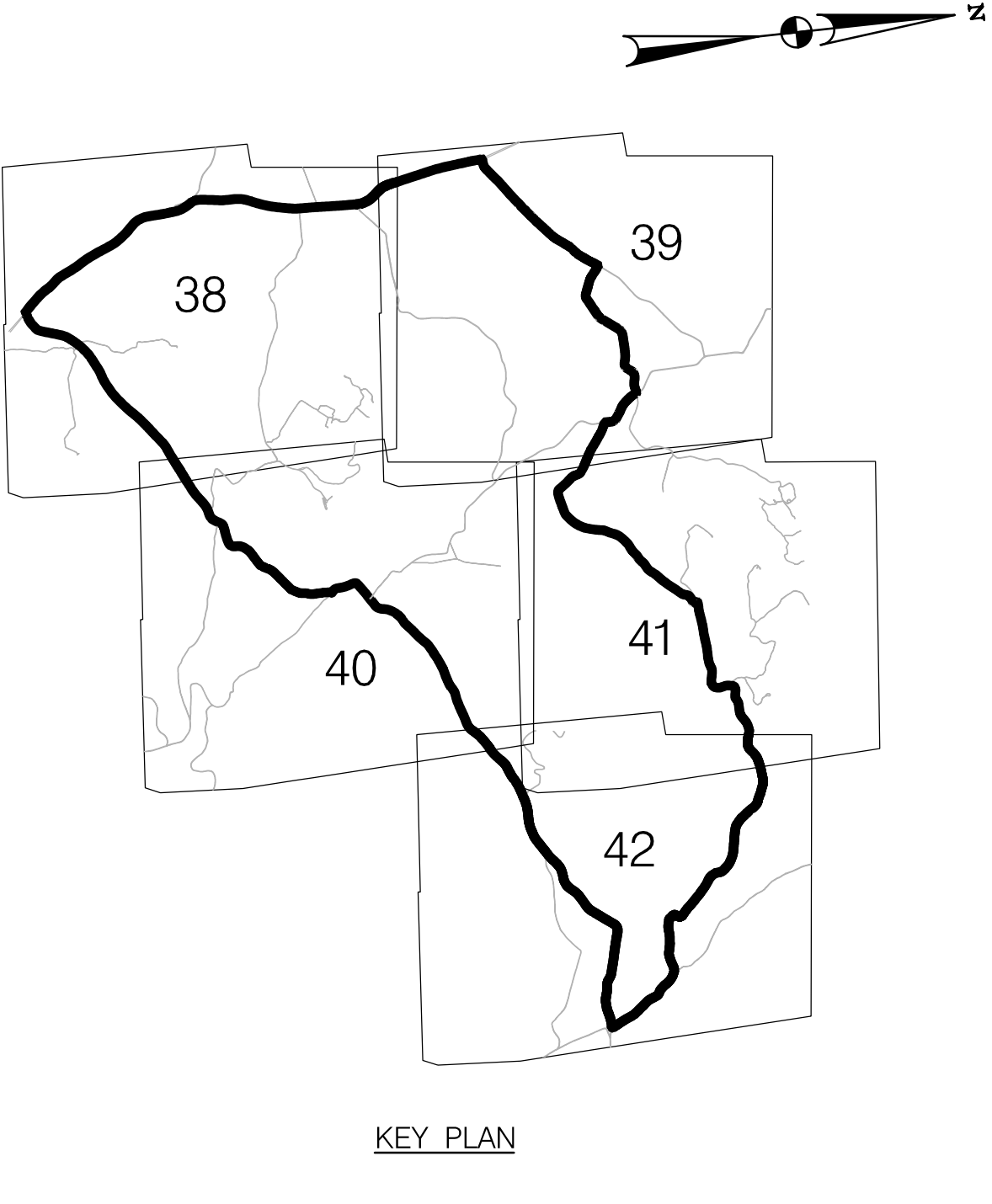
A. MORTON THOMAS AND ASSOCIATES, INC.  
901 DULANEY VALLEY ROAD, SUITE 710  
TOWSON, MD 21204

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E	<div>NOTICE THIS BRIDGE TO BE CLOSED ON OR ABOUTXX/XX/XX</div>	R11-2(6) 78" x 68" 36.83 SF	BK/FY BK/W
F	<div>NOTICE HORNETS NEST RD. CLOSED AT FRIENDS CREEK FOLLOW DETOUR</div>	R11-2(6) (MOD.) 78" x 84" 45.5 SF	BK/FY BK/W BK/FO
G	<div>Hornets Nest Rd</div>	M4-9(1) 30" x 12" 2.5 SF	BK/W
H		M4-9L 30" x 24" 5.0 SF	BK/FO
I		M4-9R 30" x 24" 5.0 SF	BK/FO
J		M4-9L (MOD.) 30" x 24" 5.0 SF	BK/FO
K		M4-9R (MOD.) 30" x 24" 5.0 SF	BK/FO
L		M4-9 30" x 24" 5.0 SF	BK/FO
M	<div>END DETOUR</div>	M4-8a 24" x 18" 3.0 SF	BK/FO
N		M4-10R 48" x 18" 6.0 SF	BK/FO
W		M4-10L 48" x 18" 6.0 SF	BK/FO
P	<div>ROAD CLOSED</div>	R11-2 48" x 30" 10.0 SF	BK/W
R	<div>ROAD CLOSED 2 MILES AHEAD LOCAL TRAFFIC ONLY</div>	R11-3a 60" x 30" 12.5 SF	BK/W
<div>LEGEND</div> <div> TEMPORARY SIGN</div> <div> TYPE III BARRICADE</div> <div> DETOUR ROUTE</div> <div>BK/FO    BLACK ON FLUORESCENT ORANGE</div> <div>BK/FY    BLACK ON FLUORESCENT YELLOW</div> <div>BK/W    BLACK ON WHITE</div>			



HORNETS NEST ROAD – DETOUR PLAN  
SCALE: NOT TO SCALE



BRIDGE REPLACEMENT  
PRESTRESSED CONCRETE BEAM  
BRIDGE NO. F05-22  
ON HORNETS NEST ROAD  
OVER FRIENDS CREEK

DETOUR PLAN

SCALE AS-NOTED ADVERTISED DATE N/A CONTRACT NO. RFP 16-019A





DESIGNED BY SRM COUNTY FREDERICK  
DRAWN BY JAP LOGMILE XXXX - XXXX  
CHECKED BY KAR



A. MORTON THOMAS AND ASSOCIATES, INC.  
901 DULANEY VALLEY ROAD, SUITE 710  
TOWSON, MD 21204






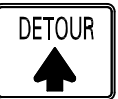







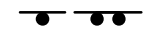
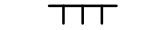

SIGN SCHEDULE

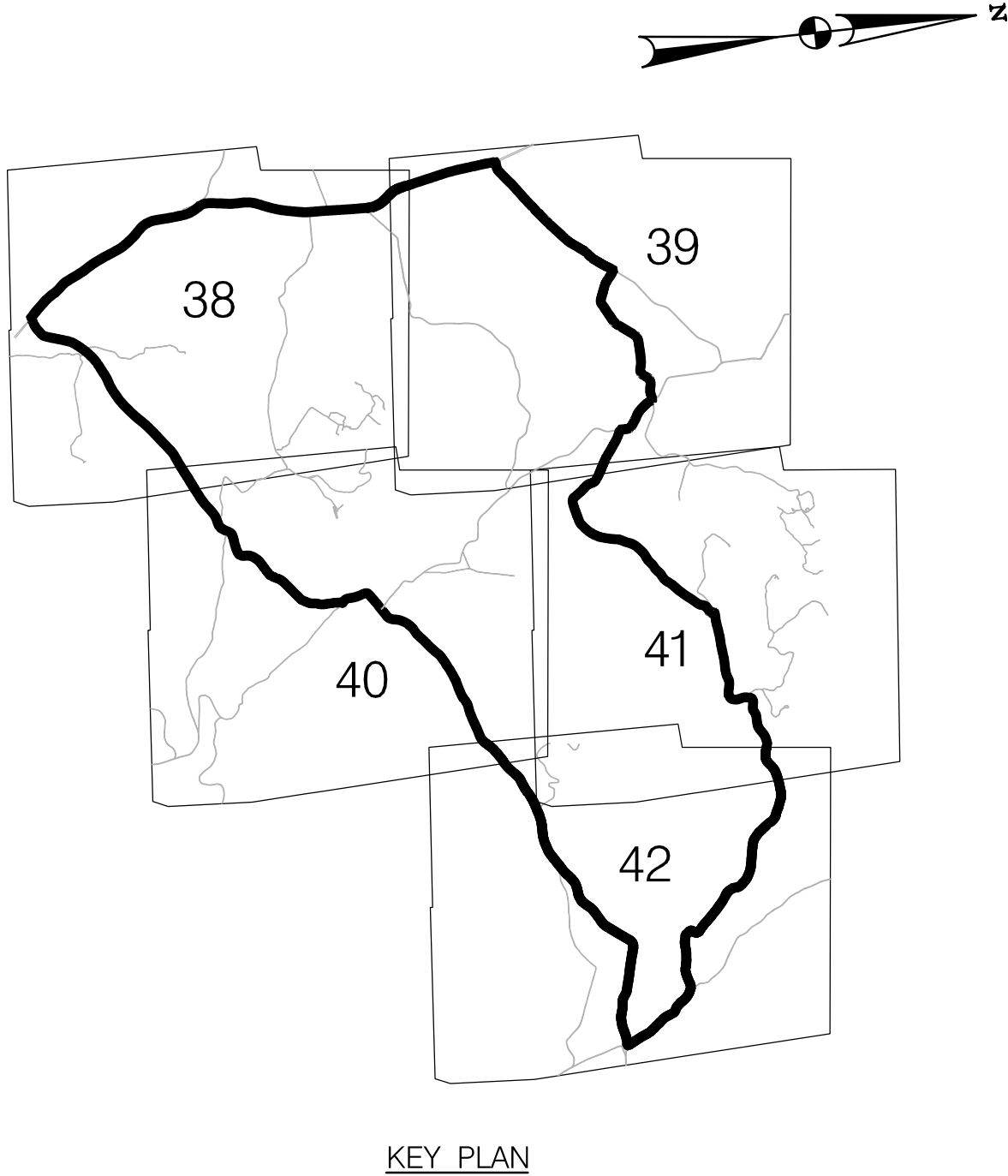
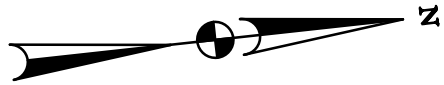
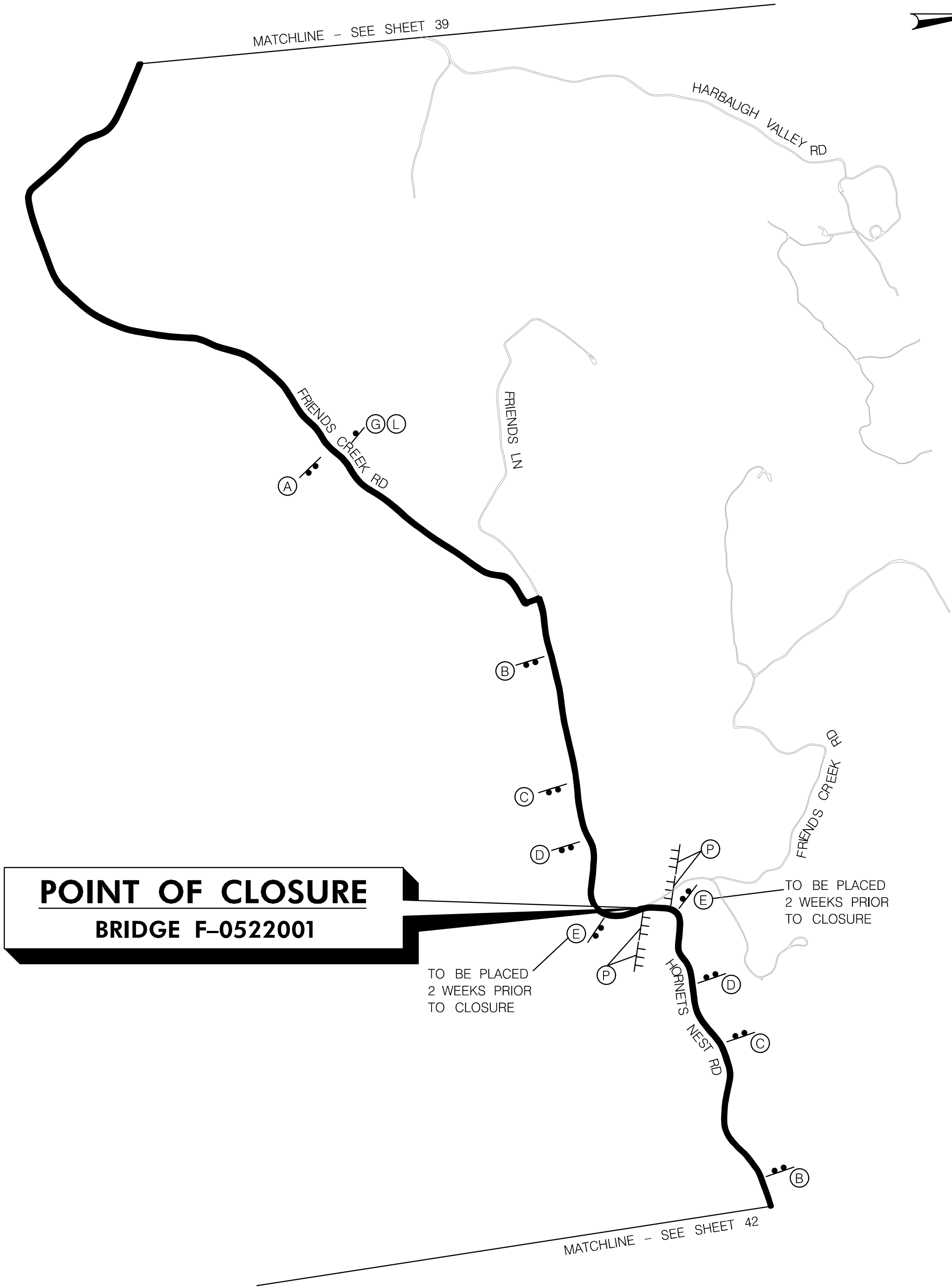
(A)		W20-3(1) 48" x 48" 16.0 SF	BK/FO
(B)		W20-3(1) 48" x 48" 16.0 SF	BK/FO
(C)		W20-3(1) 48" x 48" 16.0 SF	BK/FO
(D)		W20-3(1) 48" x 48" 16.0 SF	BK/FO

(E)		R11-2(6) 78" x 68" 36.83 SF	BK/FY BK/W
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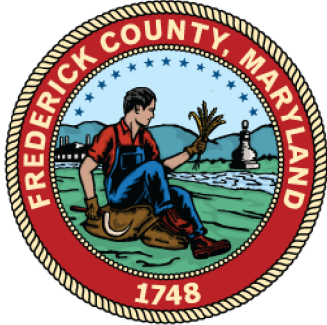
(F)		R11-2(6) (MOD.) 78" x 84" 45.5 SF	BK/FY BK/W BK/FO
-----	---	---	------------------------

(G)		M4-9(1) 30" x 12" 2.5 SF	BK/W
(H)		M4-9L 30" x 24" 5.0 SF	BK/FO
(I)		M4-9R 30" x 24" 5.0 SF	BK/FO
(J)		M4-9L (MOD.) 30" x 24" 5.0 SF	BK/FO
(K)		M4-9R (MOD.) 30" x 24" 5.0 SF	BK/FO
(L)		M4-9 30" x 24" 5.0 SF	BK/FO
(M)		M4-8a 24" x 18" 3.0 SF	BK/FO
(N)		M4-10R 48" x 18" 6.0 SF	BK/FO
(W)		M4-10L 48" x 18" 6.0 SF	BK/FO
(P)		R11-2 48" x 30" 10.0 SF	BK/W
(R)		R11-3a 60" x 30" 12.5 SF	BK/W

LEGEND	
	TEMPORARY SIGN
	TYPE III BARRICADE
	DETOUR ROUTE
BK/FO	BLACK ON FLUORESCENT ORANGE
BK/FY	BLACK ON FLUORESCENT YELLOW
BK/W	BLACK ON WHITE



SHEET MT-04



BRIDGE REPLACEMENT  
PRESTRESSED CONCRETE BEAM  
BRIDGE NO. F05-22  
ON HORNETS NEST ROAD  
OVER FRIENDS CREEK

DETOUR PLAN

SCALE AS-NOTED ADVERTISED DATE N/A CONTRACT NO. RFP 16-019A












DESIGNED BY SRM COUNTY FREDERICK  
DRAWN BY JAP LOGMILE XXXX - XXXX  
CHECKED BY KAR

SHEET NO. 41 OF 43

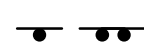


**AMT**  
A. MORTON THOMAS AND ASSOCIATES, INC.  
901 DULANEY VALLEY ROAD, SUITE 710  
TOWSON, MD 21204

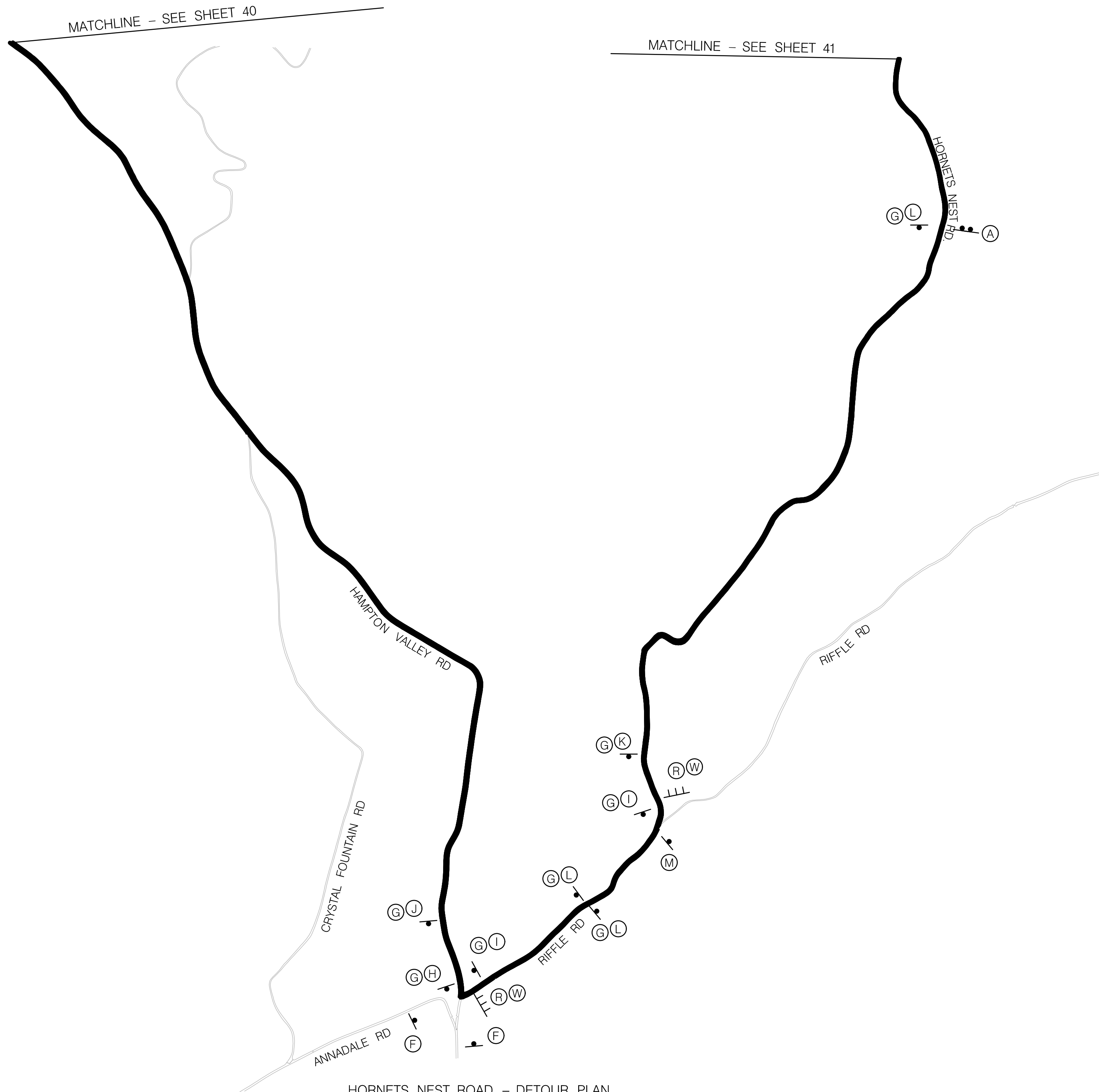
BY: jpiro -

SIGN SCHEDULE

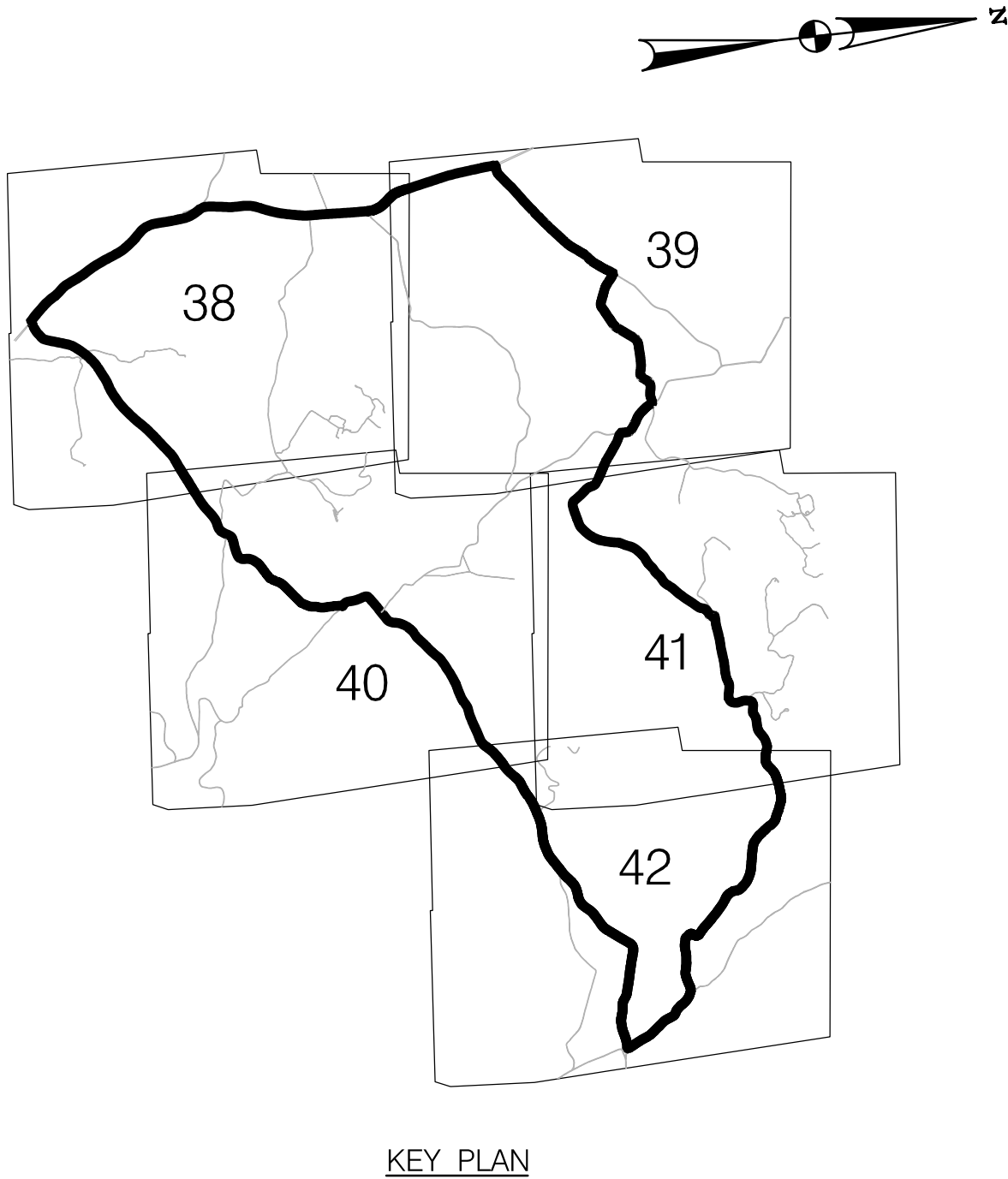
A		W20-3(1) 48" x 48" 16.0 SF	BK/FO
B		W20-3(1) 48" x 48" 16.0 SF	BK/FO
C		W20-3(1) 48" x 48" 16.0 SF	BK/FO
D		W20-3(1) 48" x 48" 16.0 SF	BK/FO
E	<div>NOTICE THIS BRIDGE TO BE CLOSED ON OR ABOUT XX/XX/XX</div>	R11-2(6) 78" x 68" 36.83 SF	BK/FY BK/W
F	<div>NOTICE HORNETS NEST RD. CLOSED AT FRIENDS CREEK FOLLOW DETOUR</div>	R11-2(6) (MOD.) 78" x 84" 45.5 SF	BK/FY BK/W BK/FO
G	<div>Hornets Nest Rd</div>	M4-9(1) 30" x 12" 2.5 SF	BK/W
H		M4-9L 30" x 24" 5.0 SF	BK/FO
I		M4-9R 30" x 24" 5.0 SF	BK/FO
J		M4-9L (MOD.) 30" x 24" 5.0 SF	BK/FO
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M	<div>END DETOUR</div>	M4-8a 24" x 18" 3.0 SF	BK/FO
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P	<div>ROAD CLOSED</div>	R11-2 48" x 30" 10.0 SF	BK/W
R	<div>ROAD CLOSED 2 MILES AHEAD LOCAL TRAFFIC ONLY</div>	R11-3a 60" x 30" 12.5 SF	BK/W

LEGEND

	TEMPORARY SIGN
	TYPE III BARRICADE
	DETOUR ROUTE
BK/FO	BLACK ON FLUORESCENT ORANGE
BK/FY	BLACK ON FLUORESCENT YELLOW
BK/W	BLACK ON WHITE

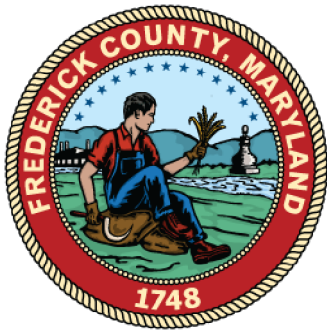


HORNETS NEST ROAD - DETOUR PLAN  
SCALE: NOT TO SCALE



KEY PLAN

SHEET MT-05



BRIDGE REPLACEMENT  
PRESTRESSED CONCRETE BEAM  
BRIDGE NO. F05-22  
ON HORNETS NEST ROAD  
OVER FRIENDS CREEK

DETOUR PLAN

SCALE AS-NOTED ADVERTISED DATE N/A CONTRACT NO. RFP 16-019A

DESIGNED BY SRM COUNTY FREDERICK  
DRAWN BY JAP LOGMILE XXXX - XXXX  
CHECKED BY KAR

SHEET NO. 42 OF 43

**AMT**

A. MORTON THOMAS AND ASSOCIATES, INC.  
901 DULANEY VALLEY ROAD, SUITE 710  
TOWSON, MD 21204



TRAFFIC CONTROL NOTES

- ALL STANDARD, REGULATORY, AND WARNING SIGNS USED FOR MAINTENANCE OF TRAFFIC SHALL BE IN ACCORDANCE WITH THE MARYLAND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MDMUTCD), LATEST EDITION, AND MARYLAND EDITION OF THE STANDARD HIGHWAY SIGNS MANUAL.
- ALL TEMPORARY TRAFFIC SIGNS SHALL BE INSTALLED IN ACCORDANCE TO MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 104.08, AND NCHRP 350.
- ALL BARRICADES AND OTHER TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH THE MARYLAND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MDMUTCD), LATEST EDITION, AND MARYLAND EDITION OF THE STANDARD HIGHWAY SIGNS MANUAL.
- ALL TEMPORARY SIGNS SHALL BE PLACED SO THAT THEY DO NOT OBSTRUCT EXISTING TRAFFIC CONTROL DEVICES.
- ANY CORRECTIONS, MODIFICATIONS, OR ADDITIONS TO THIS PLAN MUST BE APPROVED BY THE FIELD ENGINEER.
- MISS UTILITY MUST BE NOTIFIED PRIOR TO PLACEMENT OF SIGNING.
- FREDERICK COUNTY AND/OR STATE HIGHWAY ADMINISTRATION RESERVES THE RIGHT TO MODIFY OR ADJUST THIS PLAN TO FIT SITE CONDITIONS AT ANY TIME.
- SIGN INSTALLATION SHALL NOT LAST ANY LONGER THAN 15 MINUTES PER LOCATION. IF LONGER THAN 15 MINUTES, APPROPRIATE TRAFFIC CONTROL AND PERMITS MUST BE USED.
- CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ALL TRAFFIC CONTROL DEVICES. AT ANY TIME THE CONTRACTOR DOES NOT MAKE NECESSARY REPAIRS WITHIN 24 HOURS OF NOTIFICATION, APPROPRIATE WORK TIME REDUCTION AND/OR FINES MAY BE APPLIED.
- ALL SIGNS SHALL CONFORM TO CURRENT STATE HIGHWAY ADMINISTRATION MATERIAL AND REFLECTIVITY REQUIREMENTS.
- ALL DRIVEWAY ENTRANCES MUST BE MAINTAINED AT ALL TIMES.
- FLAGGING FOR SINGLE LANE OPERATION, WHEN REQUIRED FOR BARRIER PLACEMENT, MATERIAL DELIVERY AND OTHER CONSTRUCTION OPERATIONS, SHALL BE IN ACCORDANCE WITH STATE HIGHWAY ADMINISTRATION STANDARD 104.02-10. FLAGGING WILL BE PERMITTED DURING OFF-PEAK PERIODS: 9:00 AM TO 2:00 PM.
- THE R11-2(6) "NOTICE" SIGNS ("F") SHALL BE INSTALLED 2 WEEKS PRIOR TO THE BRIDGE CLOSURE/DETOUR IMPLEMENTATION. IF CLOSURE DOES NOT TAKE PLACE WITHIN 1 WEEK OF THE DATE STATED ON SIGN, THE DATE MUST BE CHANGED TO REFLECT CORRECT CLOSURE DATE AT NO COST TO FREDERICK COUNTY.
- CONTRACTOR SHALL INSTALL TEMPORARY F-SHAPE CONCRETE BARRIER A MINIMUM OF 100 LINEAR FEET BEHIND THE TYPE III BARRICADES AT THE POINT OF CLOSURE TO PREVENT ERRANT VEHICLES FROM ENTERING THE WORK AREA. ACCESS FOR CONSTRUCTION VEHICLES SHALL BE MAINTAINED AROUND THE BARRIER. TYPE III BARRICADES, AT THE ROADWAY CLOSURE ONLY, SHALL EXTEND FROM EDGE OF PAVING TO EDGE OF PAVING TO COMPLETELY CLOSE THE ROAD TO PUBLIC TRAFFIC. CONTRACTOR SHALL PLACE PRECAST TEMPORARY CONCRETE BARRIER BEHIND TYPE III BARRICADES AND AT A 30 DEGREE ANGLE TO THE CENTERLINE OF ROADWAY.
- FIELD ENGINEER SHALL DETERMINE EXACT PLACEMENT OF THE TYPE III BARRICADES.
- SIGNS "I" AND "J" ARE TO BE PLACED WITH 50 FEET OF THE INTERSECTION AND SIGNS "K" AND "L" ARE TO BE PLACED WITHIN 200 FEET TO 800 FEET OF THE INTERSECTION.
- ALL DETOUR SIGNING SHALL BE REMOVED UPON OPENING TO TRAFFIC.

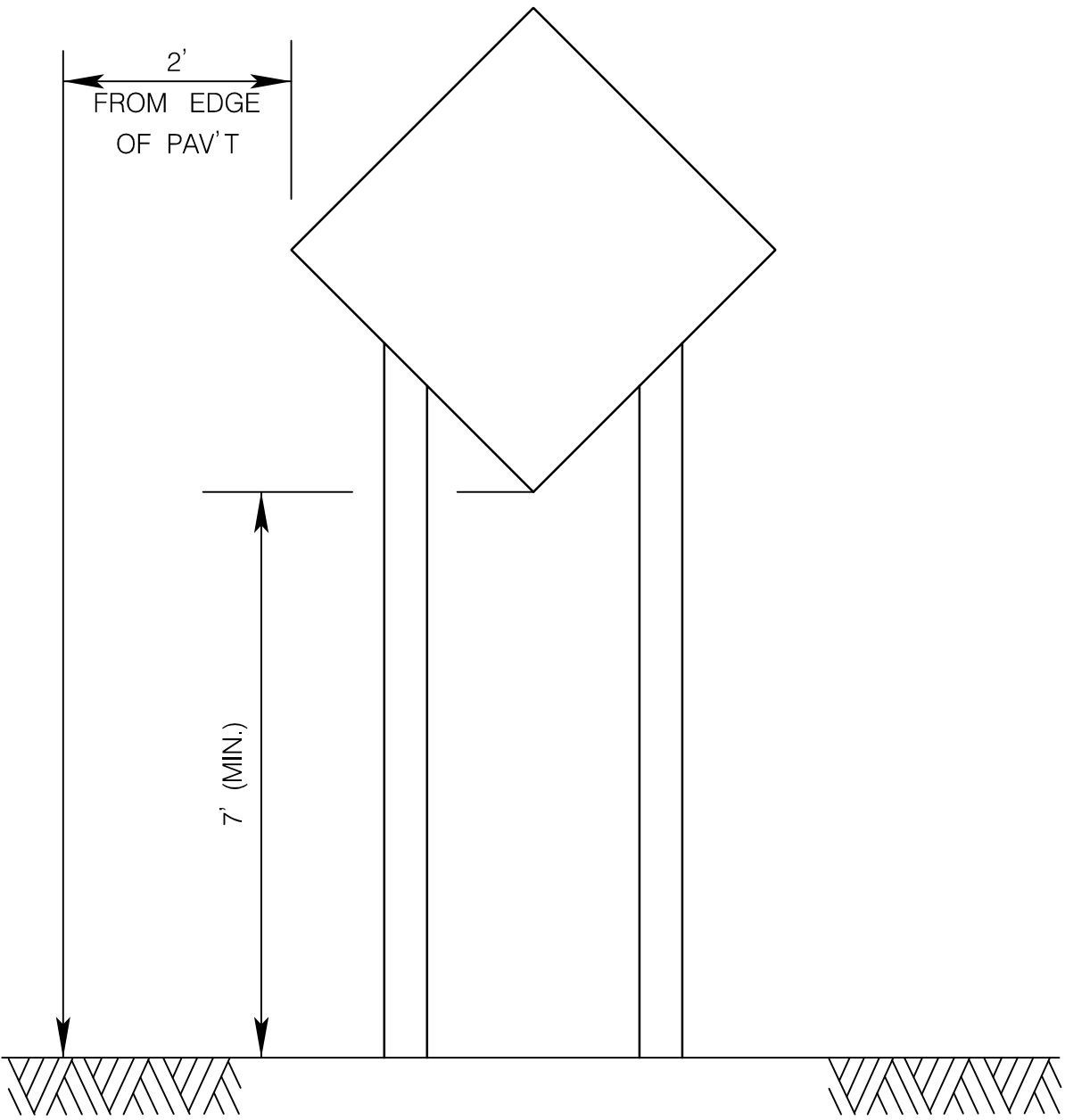
DETOUR CONTACT LIST

THE CONTRACTOR MUST NOTIFY THE FOLLOWING AGENCIES AT LEAST TWO WEEKS IN ADVANCE OF THE DETOUR. CONTACT ENGINEER FOR A CURRENT LIST OF CONTACT NAMES, PHONE NUMBERS AND EMAIL ADDRESSES:

Frederick County Emergency Communications Center	301-600-1603
Frederick County Public Schools Transportation Services	301-644-5376
Frederick County Fire and Rescue Services Division	301-600-1780
Maryland State Police	301-644-4150
Frederick County Sheriff's Office	301-600-3049
Frederick County Dept. of Engineering and Constr. Management	301-600-2928
Frederick County Public Information Office	301-600-1315
Frederick County Office of Highway Operations	301-600-3353
MDOT SHA District 7 Maintenance	301-624-8100
MDOT SHA District 7 Traffic Division	301-624-8100

THE CONTRACTOR MUST NOTIFY THE FOLLOWING AGENCIES TWO HOURS PRIOR TO THE DETOUR AND IMMEDIATELY AFTER THE DETOUR IS REMOVED:

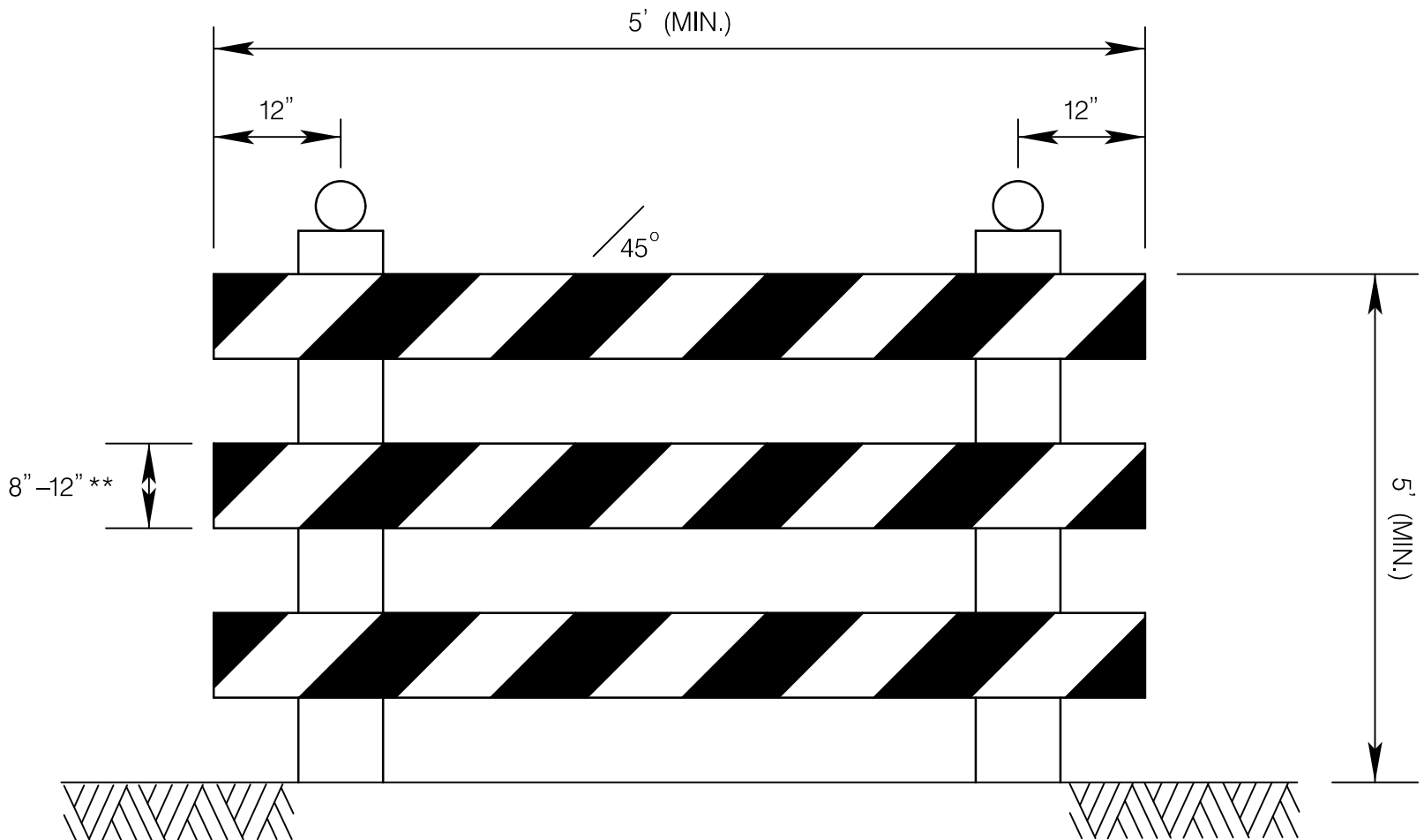
Frederick County Emergency Operations Center	301-600-1603
Statewide Operations Center	1-800-543-2515



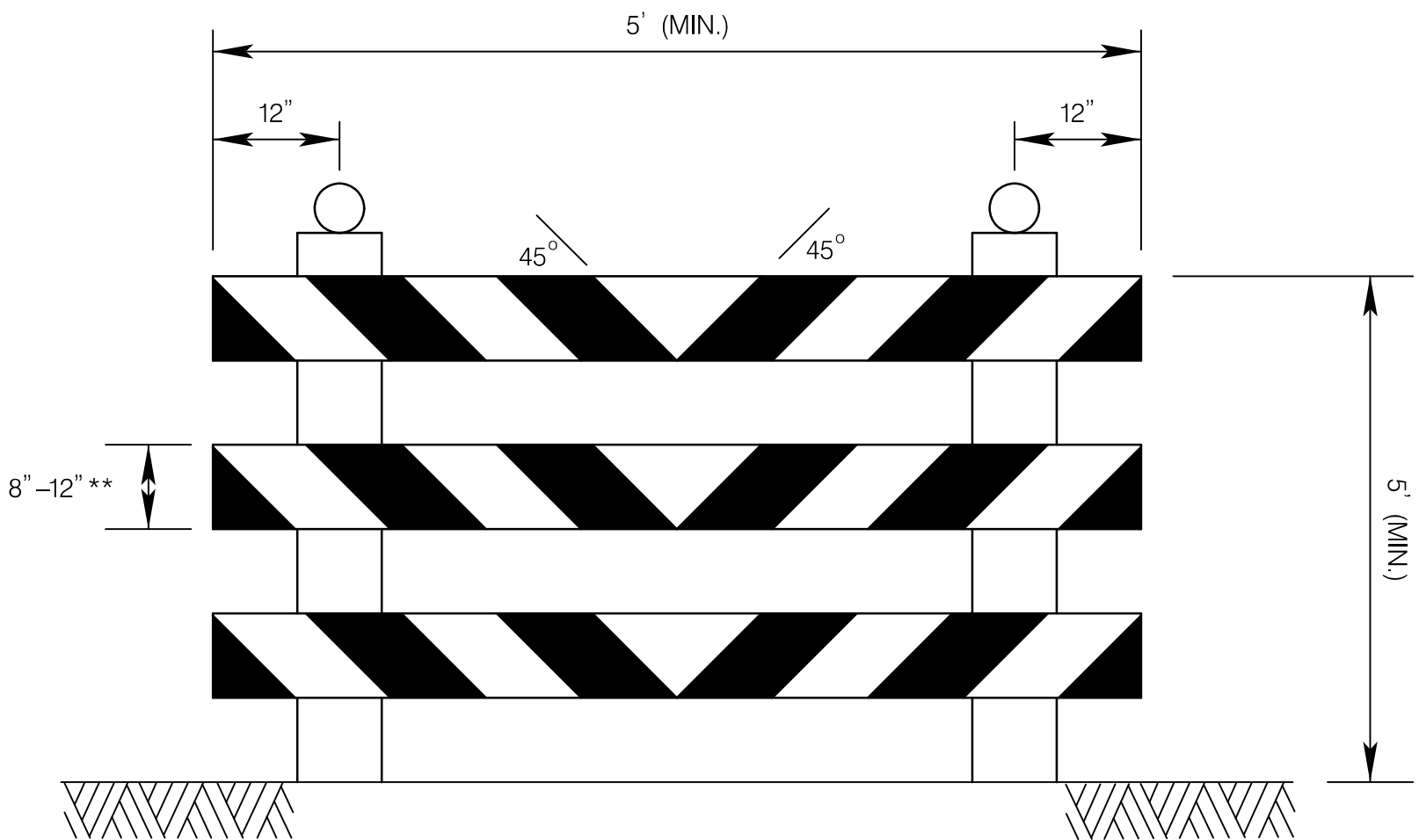
ROADSIDE SIGNS

SEE MD. STD. 104.01-17 A&B FOR ADDITIONAL DETAILS.

TEMPORARY TRAFFIC CONTROL TYPICAL APPLICATION  
ROADSIDE SIGN /SIGN SUPPORT PLACEMENT



TYPE III BARRICADE \*\*\*



TYPE III BARRICADE AT STRUCTURE \*\*\*

DETAIL OF TYPE III BARRICADES

NOTES

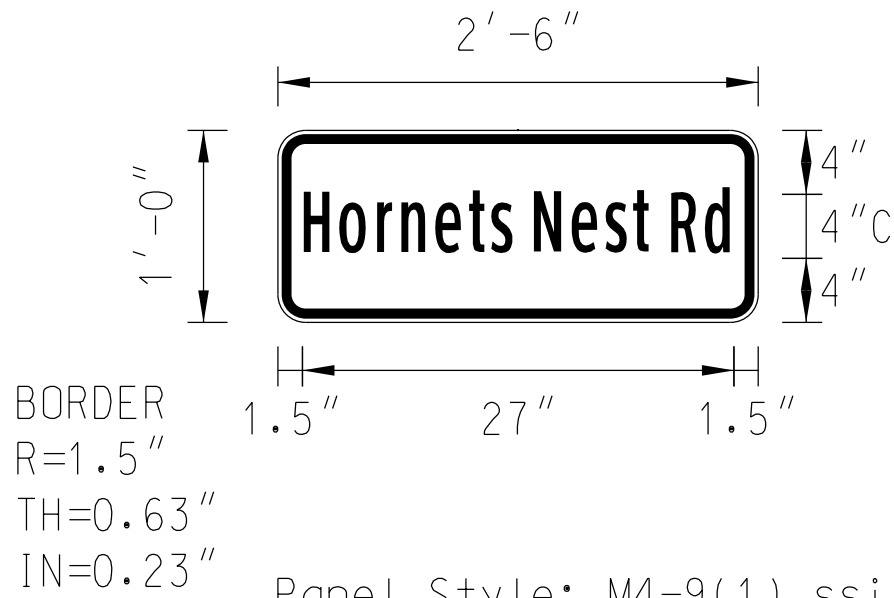
- \* WARNING LIGHTS
- \*\* NOMINAL LUMBER DIMENSIONS ARE SATISFACTORY FOR BARRICADE RAIL WIDTH DIMENSIONS
- \*\*\* RAIL STRIPE WIDTHS SHALL BE 6 INCHES.

THE SIDES OF BARRICADES FACING TRAFFIC SHALL HAVE RETROREFLECTIVE RAIL FACES.

SIGN DETAIL

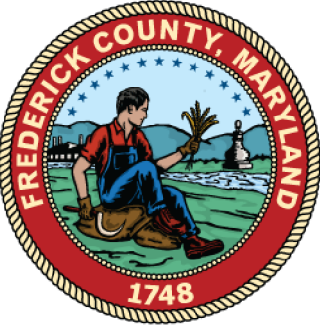
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M4-9(1) SIGN DETAIL



SIGN NUMBER	M4-9(1)
WIDTH x HGHT.	2'-6" x 1'-0"
BORDER WIDTH	0.63"
CORNER RADIUS	1.5"
MOUNTING	Ground
BACKGROUND	TYPE: Reflective
	COLOR: White
LEGEND/BORDER	TYPE: Reflective
	COLOR: Black/Black

Panel Style: M4-9(1).ssi  
Dimensions are in inches, tenths  
Letter locations are panel edge to lower left corner



BRIDGE REPLACEMENT  
PRESTRESSED CONCRETE BEAM  
BRIDGE NO. F05-22  
ON HORNETS NEST ROAD  
OVER FRIENDS CREEK

SHEET MT-06

SCALE AS-NOTED ADVERTISED DATE NA CONTRACT NO. RFP 16-019A

DESIGNED BY SRM COUNTY FREDERICK  
DRAWN BY JAP LOGMILE XXXX - XXXX  
CHECKED BY KAR

AMT

A. MORTON THOMAS AND ASSOCIATES, INC.  
901 DULANEY VALLEY ROAD, SUITE 710  
TOWSON, MD 21204

SHEET NO. 43 OF 43