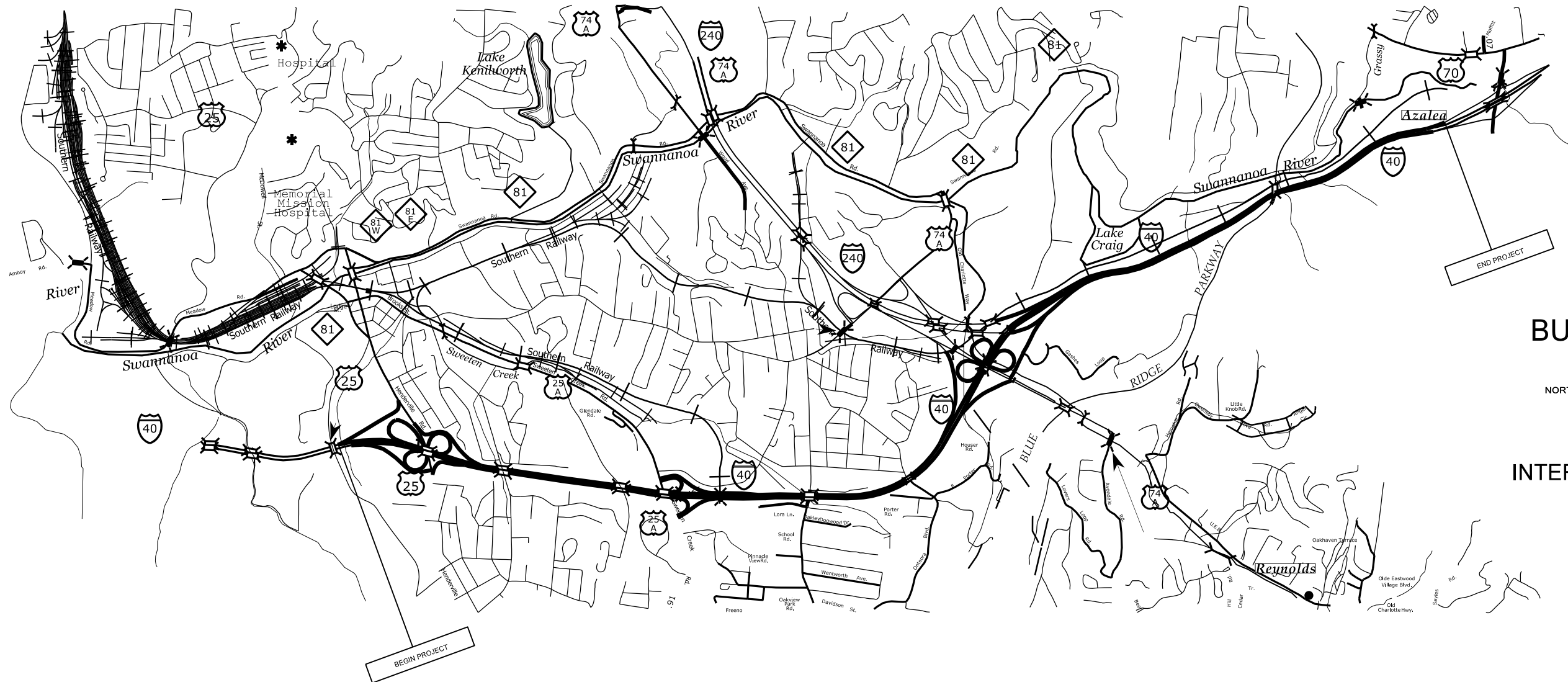


STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-6063	1	
F.A. PROJECT NO.			



ENLARGED MUNICIPAL AND SUBURBAN AREAS
BUNCOMBE COUNTY
 NORTH CAROLINA
PREPARED BY THE
 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS - DIVISION 13

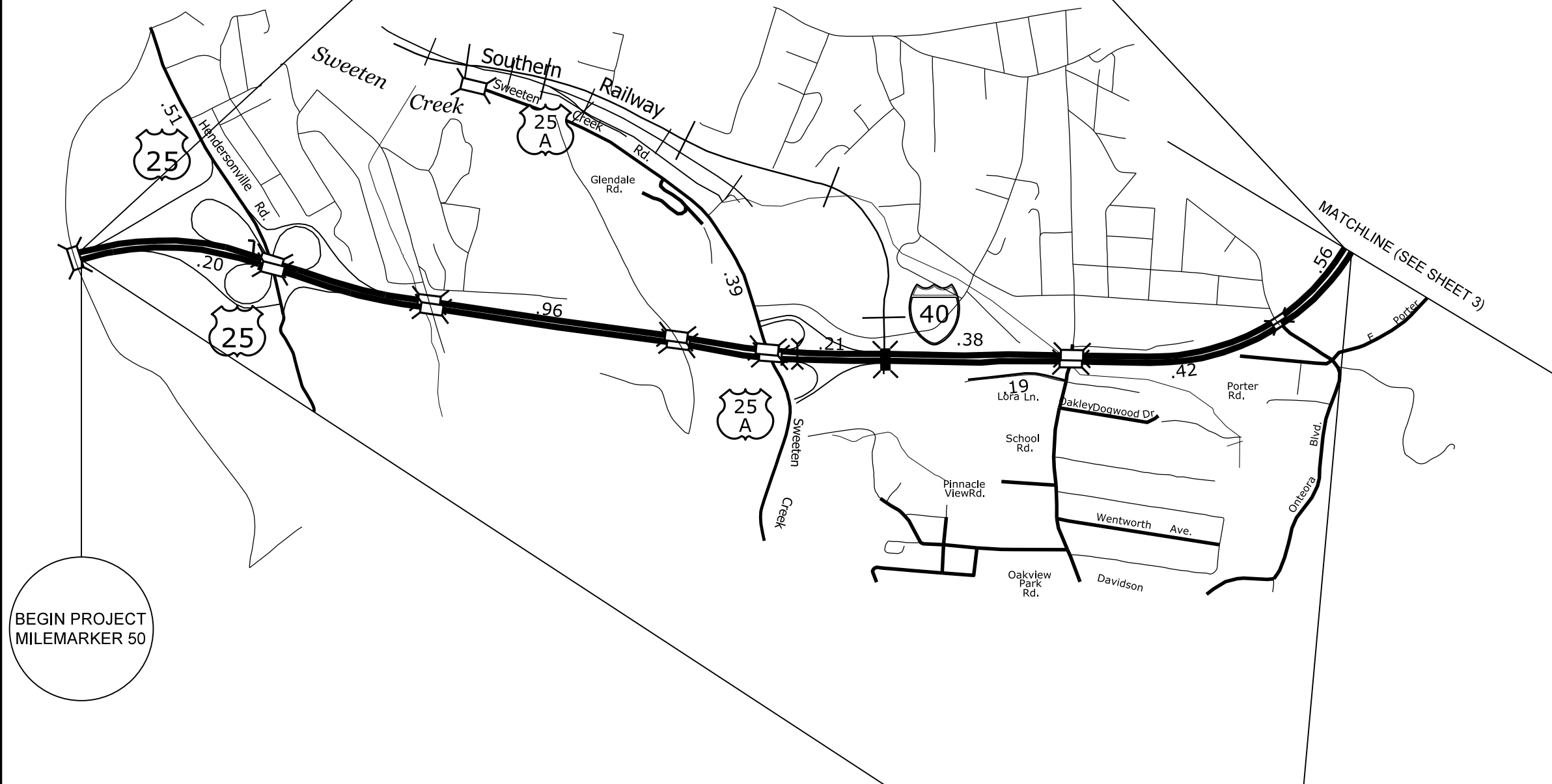
INTERSTATE 40 PROJECT LIMITS:

WBS # 48755.3.GVI

SCALE	-NA-		REVISIONS
DATE			
DWG. BY	MJ		
DESIGN BY	MW		
APPROVED			

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-6063	2	
F.A. PROJECT NO.			

MAP 1
I-40 WESTBOUND
FROM MILEMARKER 50 TO MILEMARKER 55



BEGIN PROJECT
MILEMARKER 50


MAP 2
I-40 EASTBOUND
FROM MILEMARKER 50 TO MILEMARKER 55



ENLARGED MUNICIPAL AND SUBURBAN AREAS
BUNCOMBE COUNTY
NORTH CAROLINA
PREPARED BY THE
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS - DIVISION 13

INTERSTATE 40 PROJECT LIMITS:
MAINLINE MAPS 1 AND 2

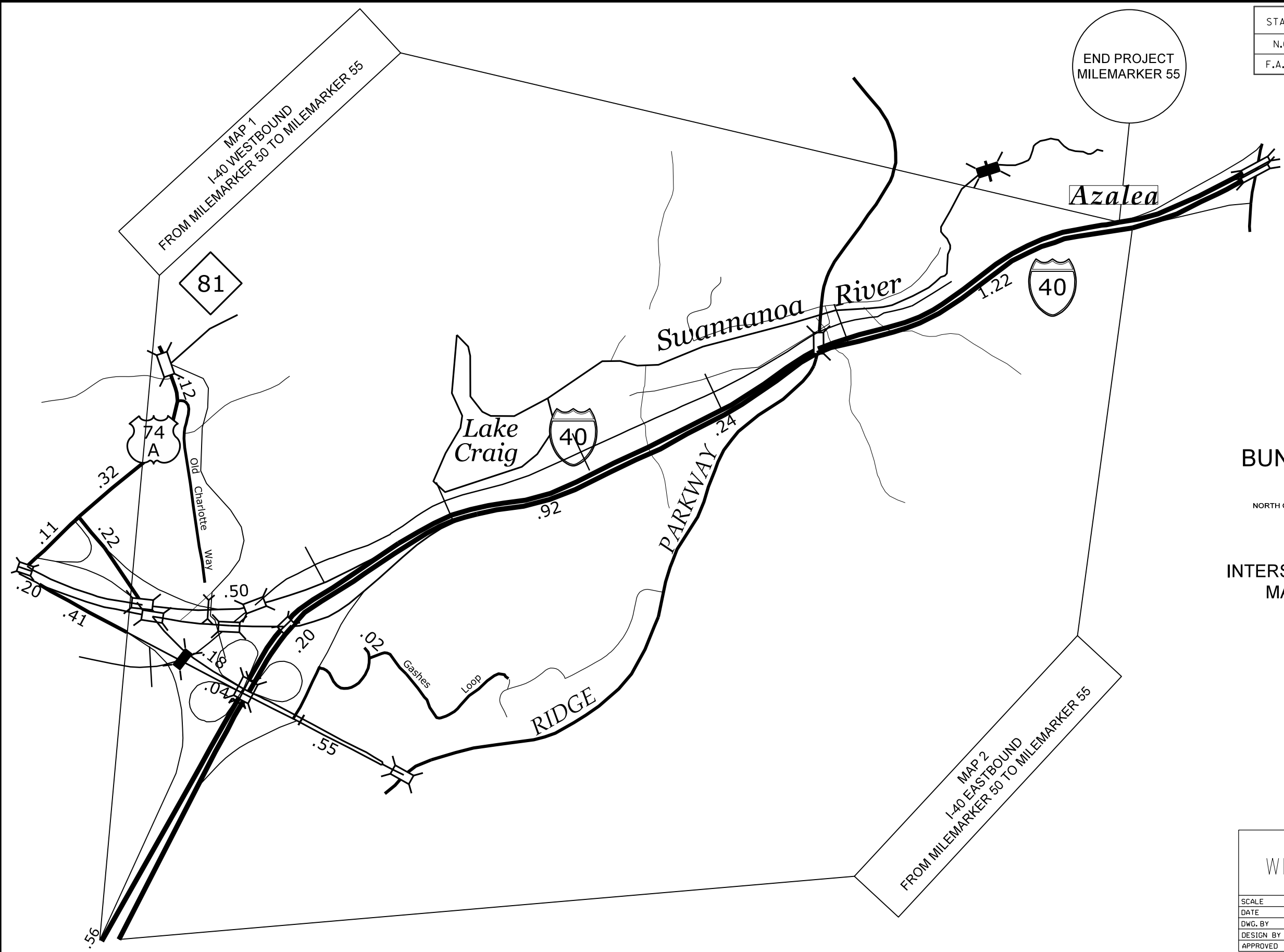
SCALE		-NA-	REVISIONS
DATE			
DWG. BY	MJ		
DESIGN BY	MW		
APPROVED			



WBS # 48755.3.GVI

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-6063	3	
F.A. PROJECT NO.			

END PROJECT
MILEMARKER 55



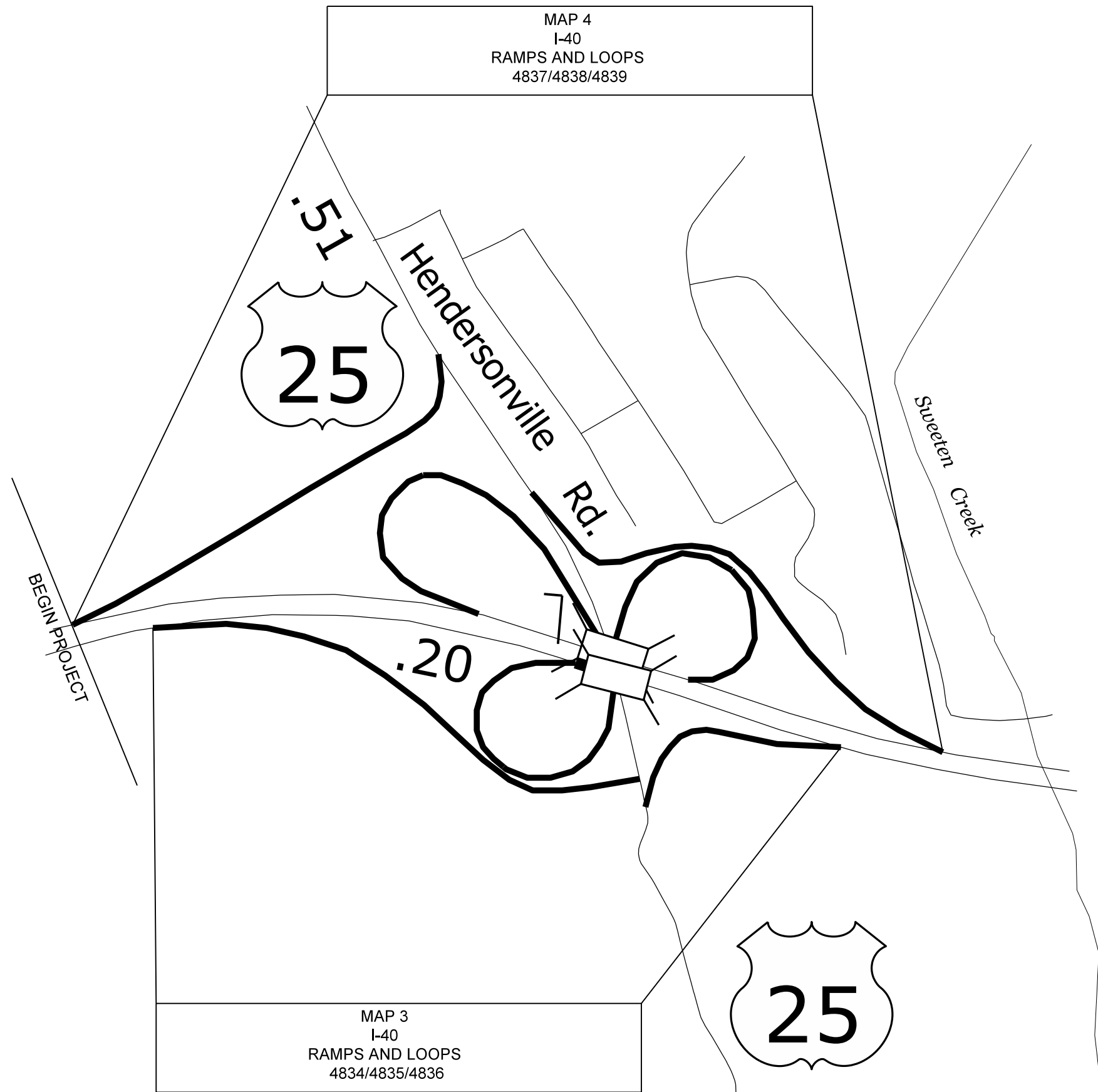
ENLARGED MUNICIPAL AND SUBURBAN AREAS
BUNCOMBE COUNTY
NORTH CAROLINA
PREPARED BY THE
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS - DIVISION 13

**INTERSTATE 40 PROJECT LIMITS:
MAINLINE MAPS 1 AND 2**

WBS # 48755.3.GVI

SCALE	-NA-		REVISIONS
DATE			
DWG. BY	MJ		
DESIGN BY	MW		
APPROVED			

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-6063	4	
F.A. PROJECT NO.			



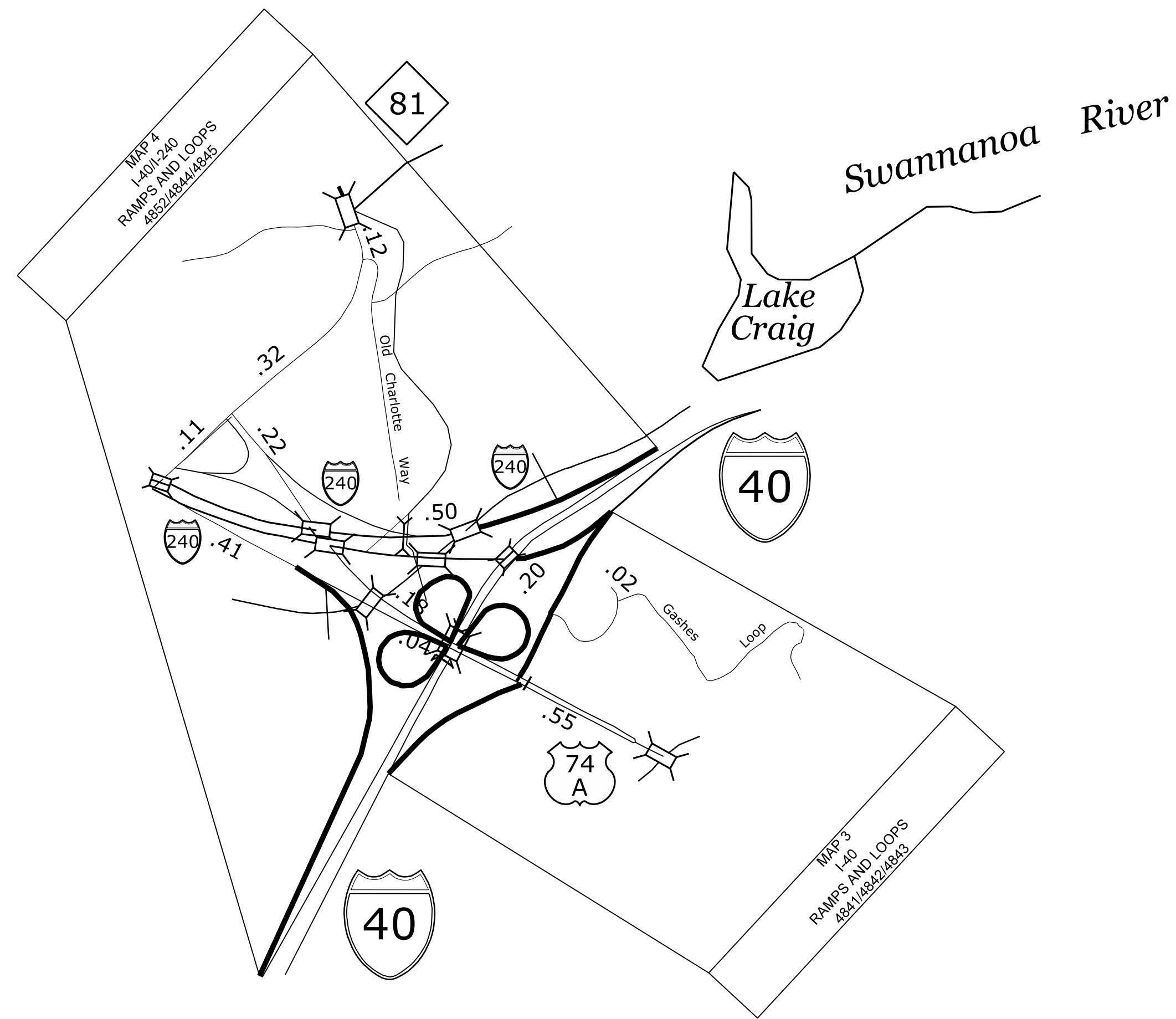
ENLARGED MUNICIPAL AND SUBURBAN AREAS
BUNCOMBE COUNTY
 NORTH CAROLINA
PREPARED BY THE
 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS - DIVISION 13

**INTERSTATE 40 PROJECT LIMITS:
 RAMP AND LOOPS
 4834/4835/4836/4837/4838/4839**

WBS # 48755.3.GVI		
SCALE	-NA-	REVISIONS
DATE		
DWG. BY	MJ	
DESIGN BY	MW	
APPROVED		



STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-6063	5	
F.A. PROJECT NO.			0040(097)



ENLARGED MUNICIPAL AND SUBURBAN AREAS

BUNCOMBE COUNTY

NORTH CAROLINA


PREPARED BY THE

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS - DIVISION 13

INTERSTATE 40 PROJECT LIMITS:
I-240 / RAMPS AND LOOPS
4841/4842/4843/4844/4845/4852

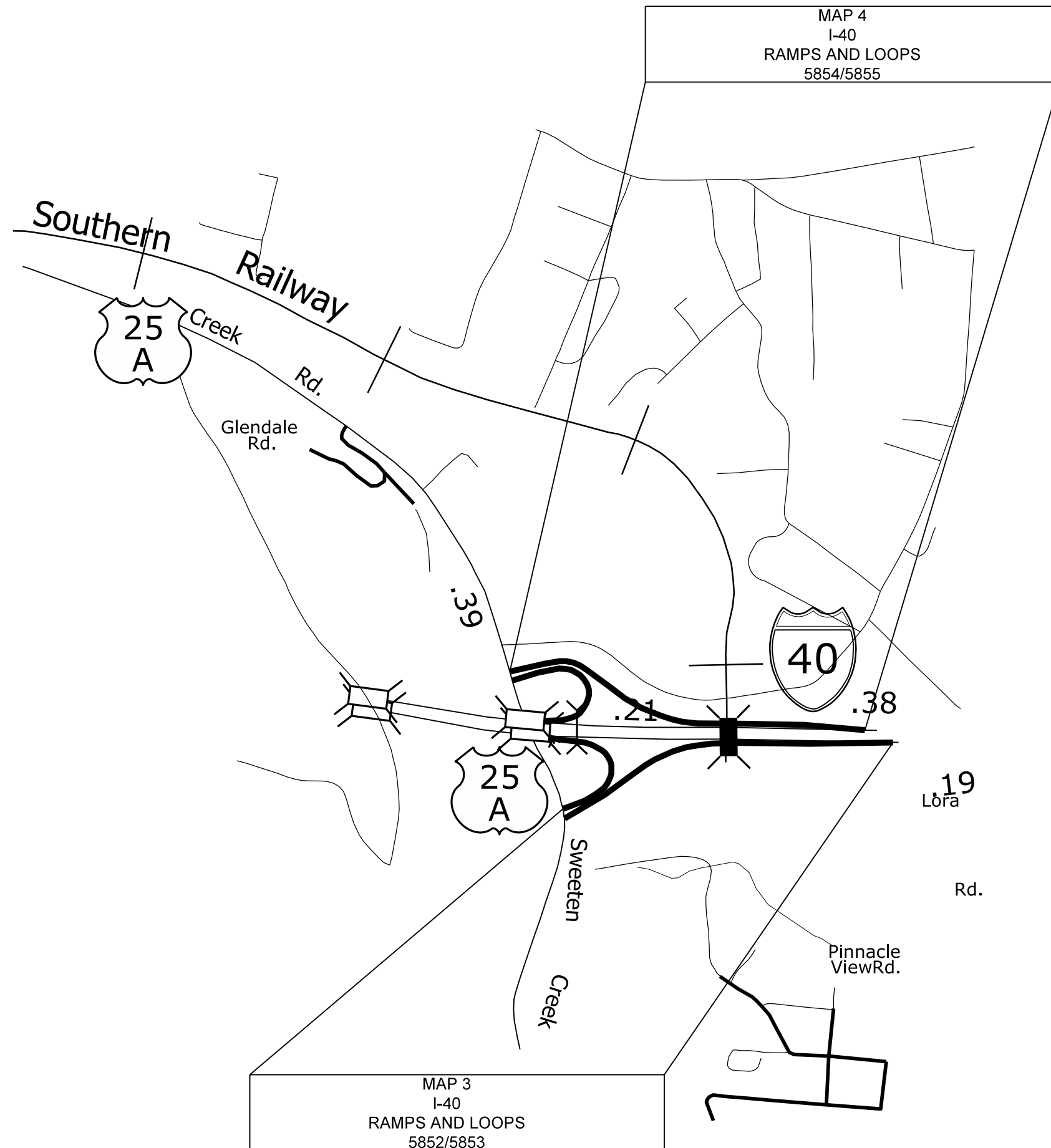
MAP 3
I-40
RAMPS AND LOOPS
4841/4842/4843

MAP 4
I-40/I-240
RAMPS AND LOOPS
4852/4844/4845

SCALE		-NA-		REVISIONS		
DATE						
DWG. BY		MJ				
DESIGN BY		MW				
APPROVED						

WBS # 48755.3.GVI

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-6063	6	
F.A. PROJECT NO.			



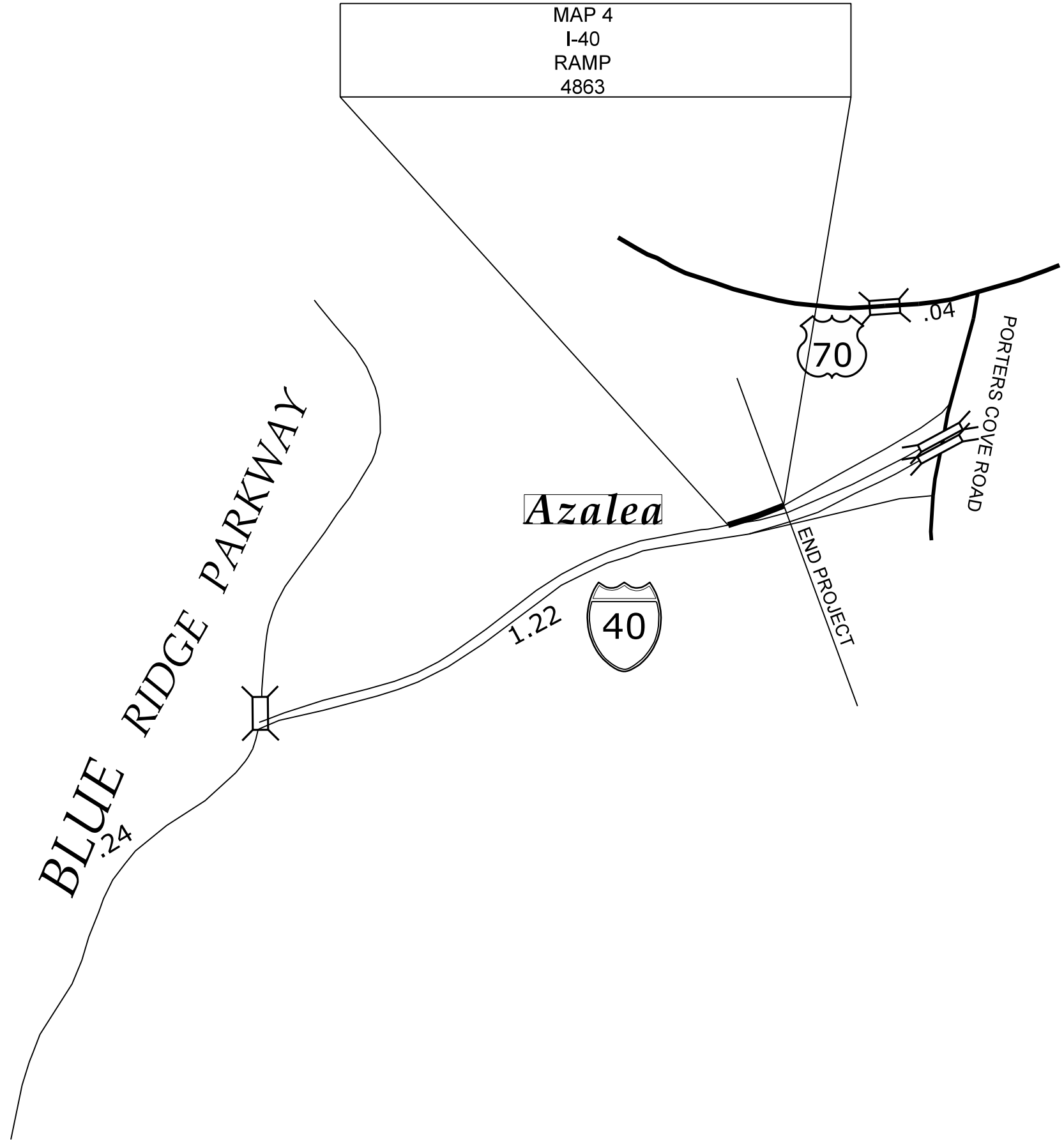
ENLARGED MUNICIPAL AND SUBURBAN AREAS
BUNCOMBE COUNTY
 NORTH CAROLINA
PREPARED BY THE
 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS - DIVISION 13

INTERSTATE 40 PROJECT LIMITS:
RAMPS AND LOOPS
5852/5853/5854/5855

WBS # 48755.3.GVI		
SCALE	-NA-	REVISIONS
DATE		
DWG. BY	MJ	
DESIGN BY	MW	
APPROVED		




STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	1-6063	7	
F.A. PROJECT NO.			



ENLARGED MUNICIPAL AND SUBURBAN AREAS
BUNCOMBE COUNTY
NORTH CAROLINA
PREPARED BY THE
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS - DIVISION 13

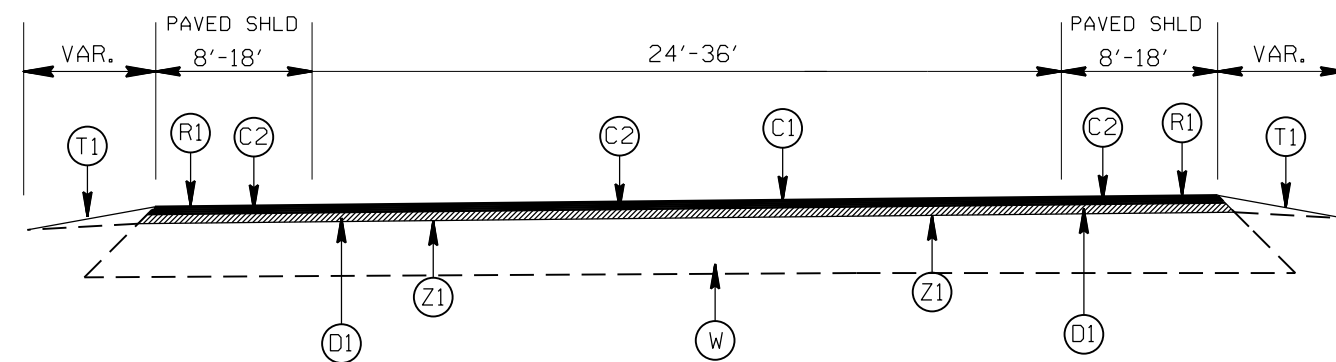
**INTERSTATE 40 PROJECT LIMITS:
RAMP 4863**

WBS # 48755.3.GVI

SCALE	-NA-		REVISIONS
DATE			
DWG. BY	MJ		
DESIGN BY	MW		
APPROVED			

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	1-6063	8	
F.A. PROJECT NO.			

PAVEMENT SCHEDULE



TYPICAL SECTION NO. 1
EAST AND WEST BOUND MAINLINE

(C1)	PROP. APPROX. 5/8" ULTRA-THIN BONDED WEARING COURSE, AT AN AVERAGE RATE OF 70 LBS. PER SQ. YD.
(C2)	PROP. APPROX. 3.0" ASPHALT CONC. SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LIFTS.
(C3)	PROP. APPROX. 2.0" ASPHALT CONC. SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.
(C4)	PROP. APPROX. 1.5" ASPHALT CONC. SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
(D1)	PROP. APPROX. 3.0" ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.
(D2)	PROP. VARIABLE DEPTH ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0C AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 2 1/2" IN DEPTH OR GREATER THAN 4" IN DEPTH.
(T1)	ASB SHOULDER MATERIAL
(R1)	RUMBLE STRIPS
(V1)	MILLING EXISTING ASPHALT, 1.5" DEPTH
(V2)	MILLING EXISTING ASPHALT, 2.0" DEPTH
(V3)	MILLING EXISTING CONCRETE, 2.0" DEPTH
(V4)	MILLING EXISTING ASPHALT PAVED SHOULDERS AT BRIDGES, 1.5" DEPTH
(V5)	MILLING EXISTING CONCRETE, 0- 2.0" DEPTH
(W)	EXISTING CRC
(U)	EXISTING ASPHALT PAVEMENT
(Z)	EXISTING CONCRETE PAVEMENT
(Z1)	MILLING EXISTING ULTRA-THIN BONDED WEARING SURFACE (FINE MILLING)

- * ULTRA-THIN BONDED WEARING COURSE SHALL EXTEND A MINIMUM OF 1 FOOT OUTSIDE OF LANE.
- * RUMBLE STRIPS SHALL BE LOCATED 1 FOOT OUTSIDE OF ULTRA-THIN BONDED WEARING COURSE ON EITHER SIDE.
- * NO BRIDGES WILL BE RESURFACED.

WBS # 48755.3.GVI

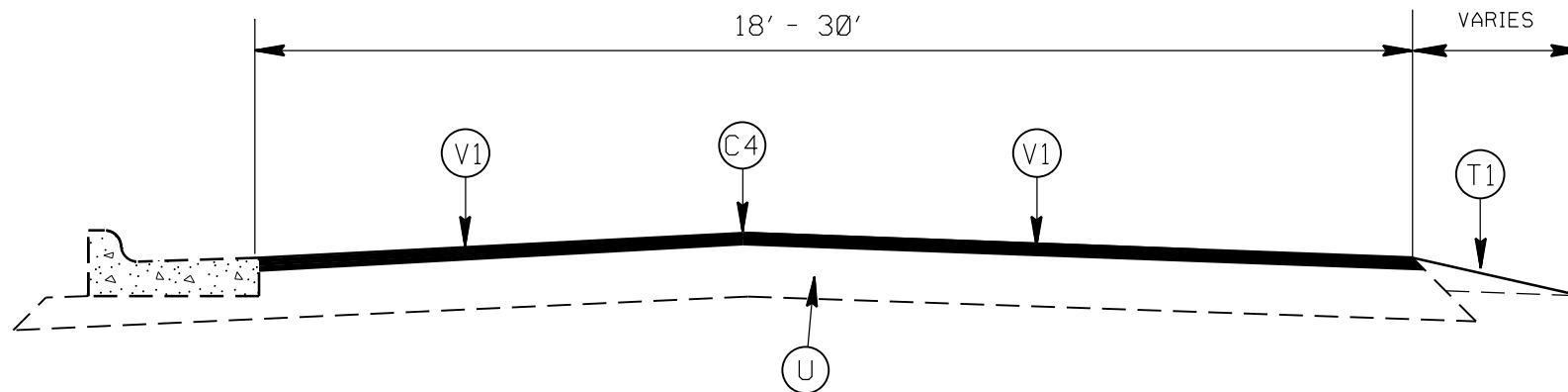
SCALE	-NA-		REVISIONS	
DATE				
DWG. BY	MJ			
DESIGN BY	MW			
APPROVED				

TYPICAL 2 IS OMITTED.

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	1-6063	9	
F.A. PROJECT NO.			

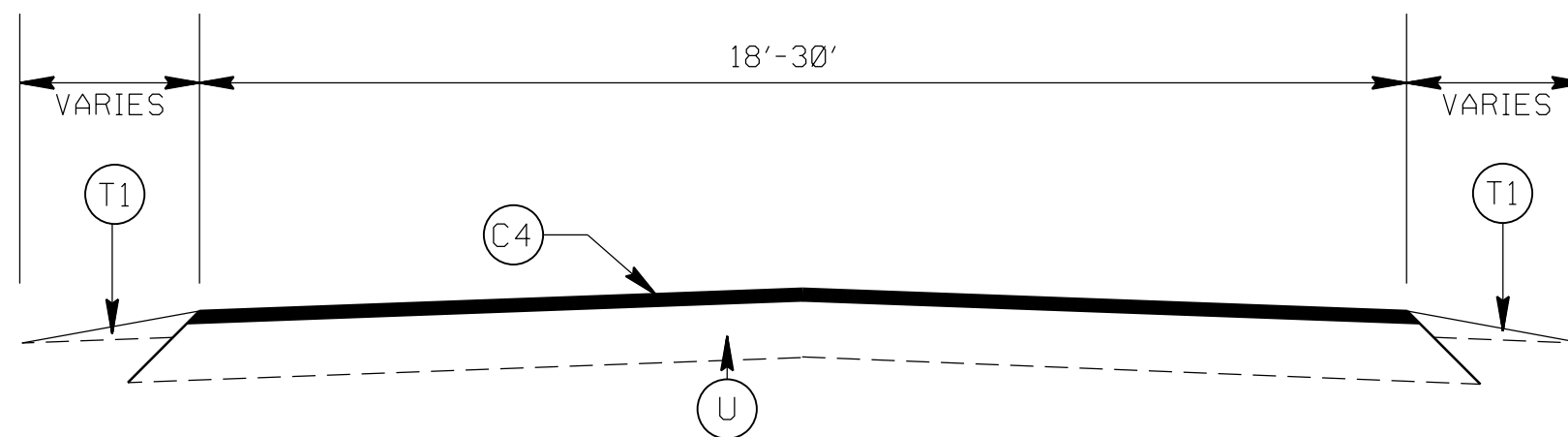
PAVEMENT SCHEDULE

(C1)	PROP. APPROX. 5/8" ULTRA-THIN BONDED WEARING COURSE, AT AN AVERAGE RATE OF 70 LBS. PER SQ. YD.
(C2)	PROP. APPROX. 3.0" ASPHALT CONC. SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LIFTS.
(C3)	PROP. APPROX. 2.0" ASPHALT CONC. SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.
(C4)	PROP. APPROX. 1.5" ASPHALT CONC. SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
(D1)	PROP. APPROX. 3.0" ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.
(D2)	PROP. VARIABLE DEPTH ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0C AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 2 1/2" IN DEPTH OR GREATER THAN 4" IN DEPTH.
(T1)	ASB SHOULDER MATERIAL
(R1)	RUMBLE STRIPS
(V1)	MILLING EXISTING ASPHALT, 1.5" DEPTH
(V2)	MILLING EXISTING ASPHALT, 2.0" DEPTH
(V3)	MILLING EXISTING CONCRETE, 2.0" DEPTH
(V4)	MILLING EXISTING ASPHALT PAVED SHOULDERS AT BRIDGES, 1.5" DEPTH
(V5)	MILLING EXISTING CONCRETE, 0- 2.0" DEPTH
(W)	EXISTING CRC
(U)	EXISTING ASPHALT PAVEMENT
(Z)	EXISTING CONCRETE PAVEMENT



TYPICAL SECTION NO. 3
RAMPS 5854/5855

On Ramp from SB Hendersonville Rd on to WB I-40



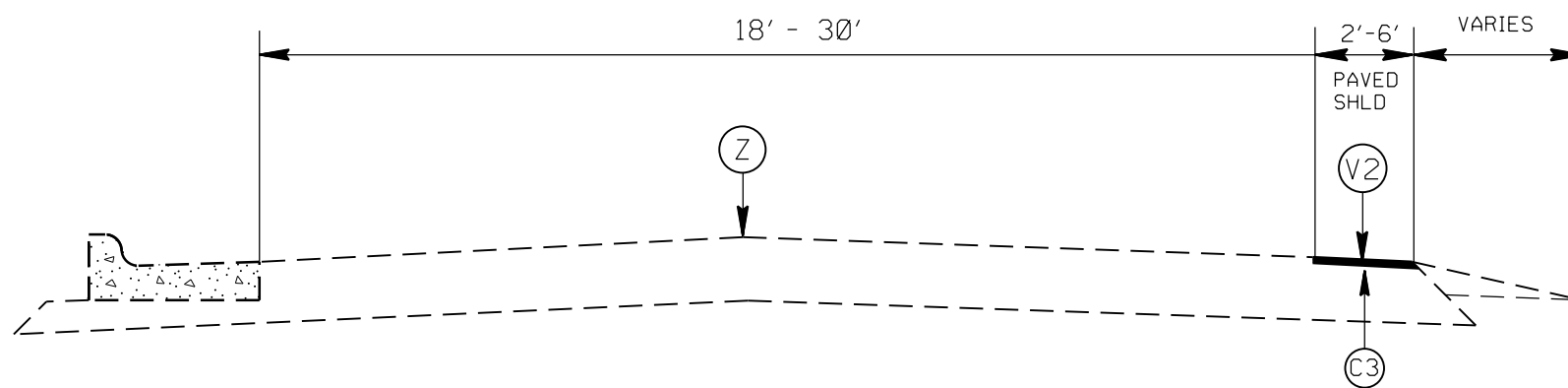
TYPICAL SECTION NO. 4
RAMPS I-240/5853/5855

On Ramp from SB Hendersonville Rd on to WB I-40

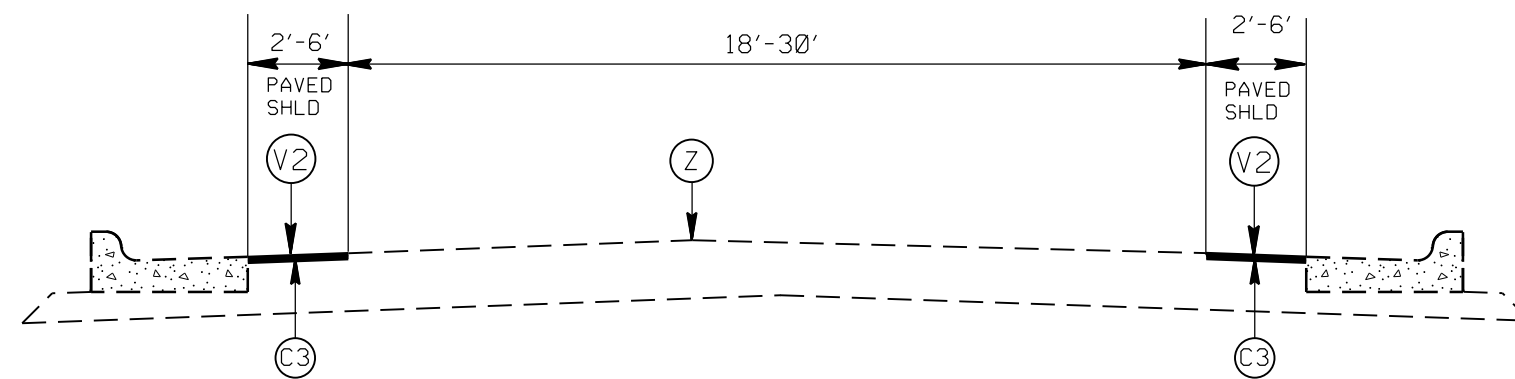
WBS # 48755.3.GVI

SCALE	-NA-		REVISIONS
DATE			
DWG. BY	MJ		
DESIGN BY	MW		
APPROVED			

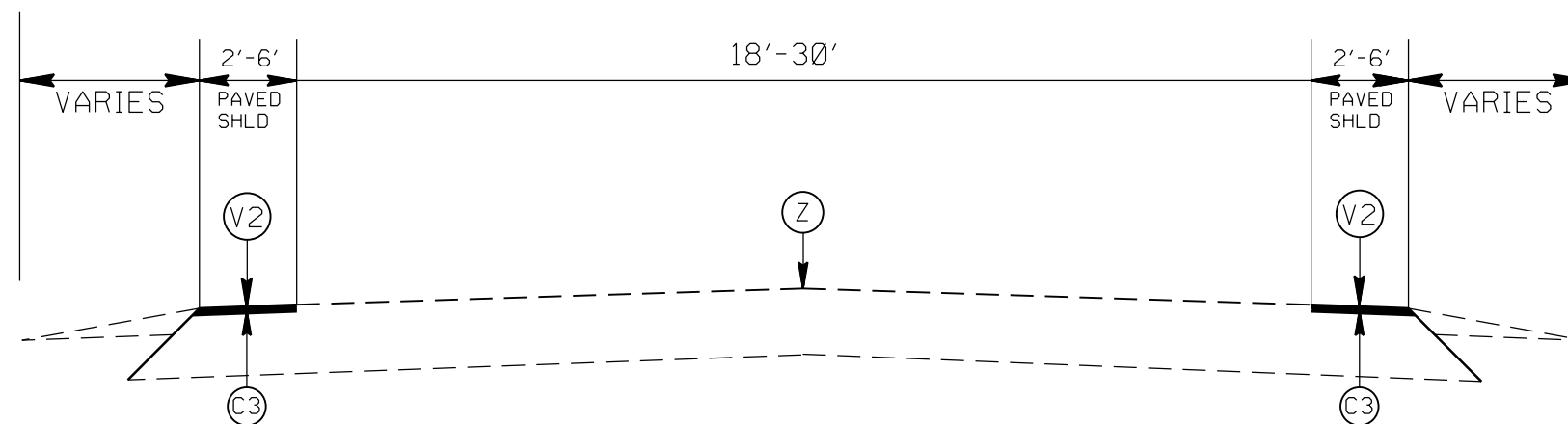
STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	1-6063	10	
F.A. PROJECT NO.			



TYPICAL SECTION NO. 5
RAMPS 4838/4839/4843/4844/4845



TYPICAL SECTION NO. 6
RAMPS 4836



TYPICAL SECTION NO. 7
RAMPS 4841/4842/4852/4837

PAVEMENT SCHEDULE

(C1)	PROP. APPROX. 5/8" ULTRA-THIN BONDED WEARING COURSE, AT AN AVERAGE RATE OF 70 LBS. PER SQ. YD.
(C2)	PROP. APPROX. 3.0" ASPHALT CONC. SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LIFTS.
(C3)	PROP. APPROX. 2.0" ASPHALT CONC. SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.
(C4)	PROP. APPROX. 1.5" ASPHALT CONC. SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
(D1)	PROP. APPROX. 3.0" ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.
(D2)	PROP. VARIABLE DEPTH ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0C AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 2 1/2" IN DEPTH OR GREATER THAN 4" IN DEPTH.
(T1)	ASB SHOULDER MATERIAL
(R1)	RUMBLE STRIPS
(V1)	MILLING EXISTING ASPHALT, 1.5" DEPTH
(V2)	MILLING EXISTING ASPHALT, 2.0" DEPTH
(V3)	MILLING EXISTING CONCRETE, 2.0" DEPTH
(V4)	MILLING EXISTING ASPHALT PAVED SHOULDERS AT BRIDGES, 1.5" DEPTH
(V5)	MILLING EXISTING CONCRETE, 0- 2.0" DEPTH
(W)	EXISTING CRC
(U)	EXISTING ASPHALT PAVEMENT
(Z)	EXISTING CONCRETE PAVEMENT

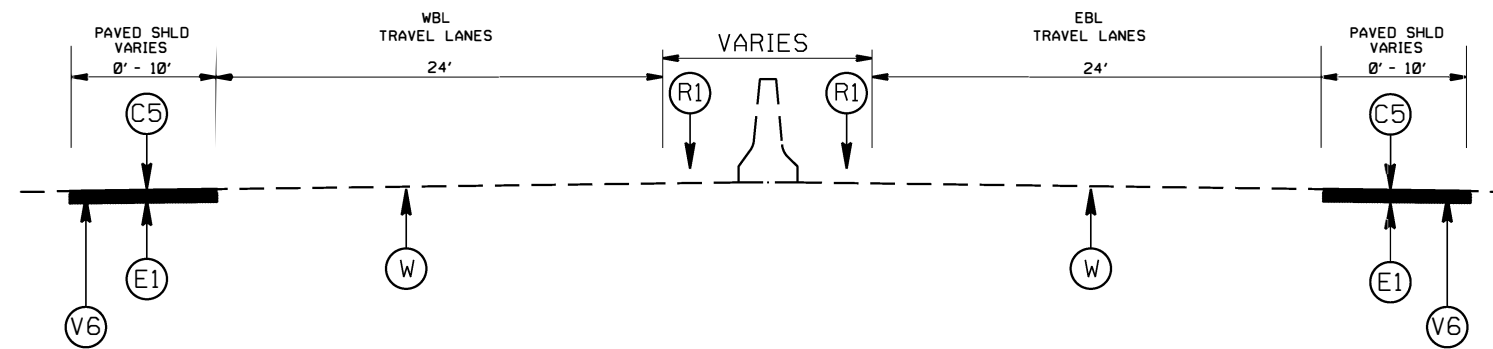
WBS # 48755.3.GVI

SCALE	-NA-		REVISIONS
DATE			
DWG. BY	MJ		
DESIGN BY	MW		
APPROVED			

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	1-6063	10A	
F.A. PROJECT NO.			

PAVEMENT SCHEDULE

(C1)	PROP. APPROX. 5/8" ULTRA-THIN BONDED WEARING COURSE, AT AN AVERAGE RATE OF 70 LBS. PER SQ. YD.
(C2)	PROP. APPROX. 3.0" ASPHALT CONC. SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LIFTS.
(C3)	PROP. APPROX. 2.0" ASPHALT CONC. SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.
(C4)	PROP. APPROX. 1.5" ASPHALT CONC. SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
(C5)	PROP. APPROX. 3.0" ASPHALT CONC. SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LIFTS.
(D1)	PROP. APPROX. 3.0" ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.
(D2)	PROP. VARIABLE DEPTH ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0C AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 2 1/2" IN DEPTH OR GREATER THAN 4" IN DEPTH.
(E1)	PROP. APPROX. 5.0" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
(T1)	SHOULDER RECONSTRUCTION
(R1)	RUMBLE STRIPS
(V1)	MILLING EXISTING ASPHALT, 1.5" DEPTH
(V2)	MILLING EXISTING ASPHALT, 2.0" DEPTH
(V3)	MILLING EXISTING CONCRETE, 2.0" DEPTH
(V4)	MILLING EXISTING ASPHALT PAVED SHOULDERS AT BRIDGES, 1.5" DEPTH
(V5)	MILLING EXISTING CONCRETE, 0- 2.0" DEPTH
(V6)	MILLING EXISTING PAVEMENT, 0- 10' WIDTH AT 8" DEPTH
(W)	EXISTING CRC
(U)	EXISTING ASPHALT PAVEMENT
(Z)	EXISTING CONCRETE PAVEMENT
(Z1)	DIAMOND GRINDING
(Z2)	MILLING EXISTING ULTRA-THIN BONDED WEARING SURFACE

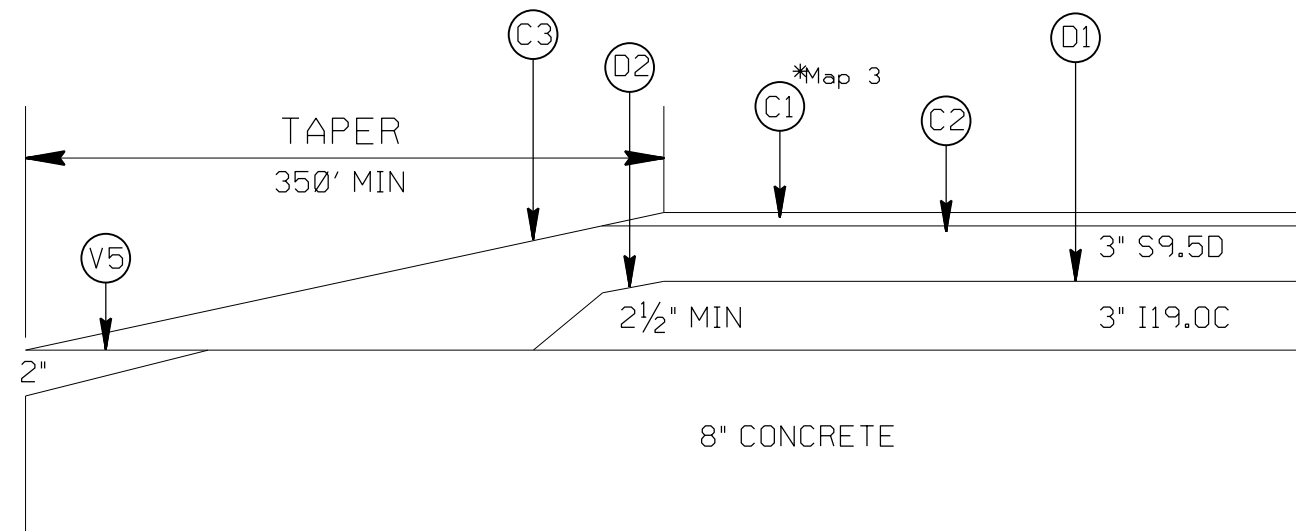


TYPICAL SECTION TRAFFIC SHIFT

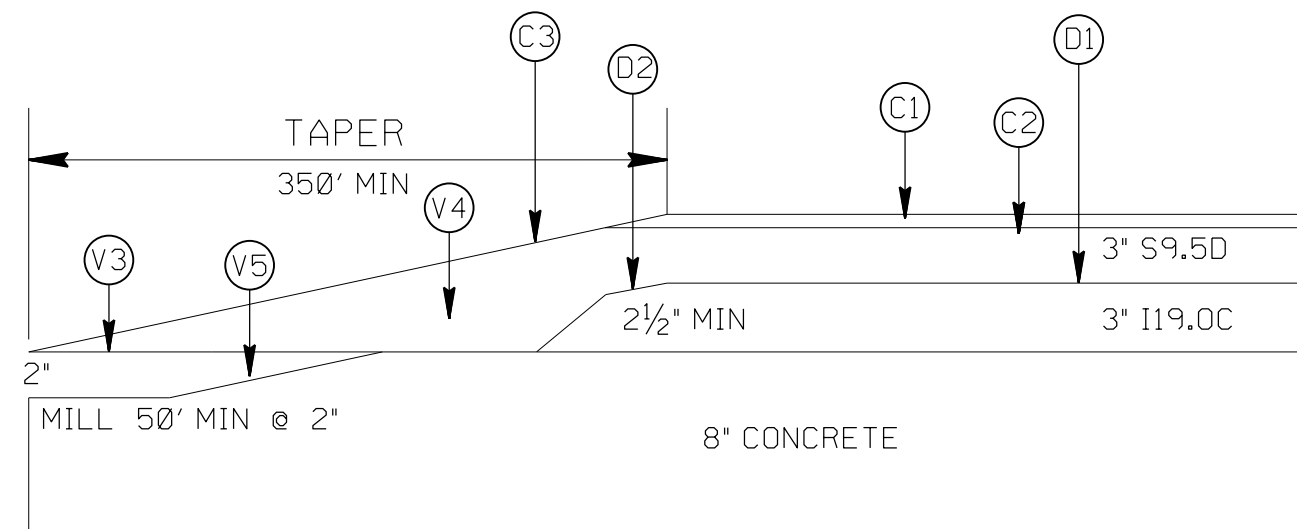
WBS # 48755.3.GVI

SCALE	-NA-		REVISIONS
DATE			
DWG. BY	MJ		
DESIGN BY	MW		
APPROVED			

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	1-6063	11	
F.A. PROJECT NO.			



TYPICAL SECTION NO. 8
TRANSITION TO RAMPS AND LOOPS



TYPICAL SECTION NO. 9
TRANSITION TO BRIDGE DECK

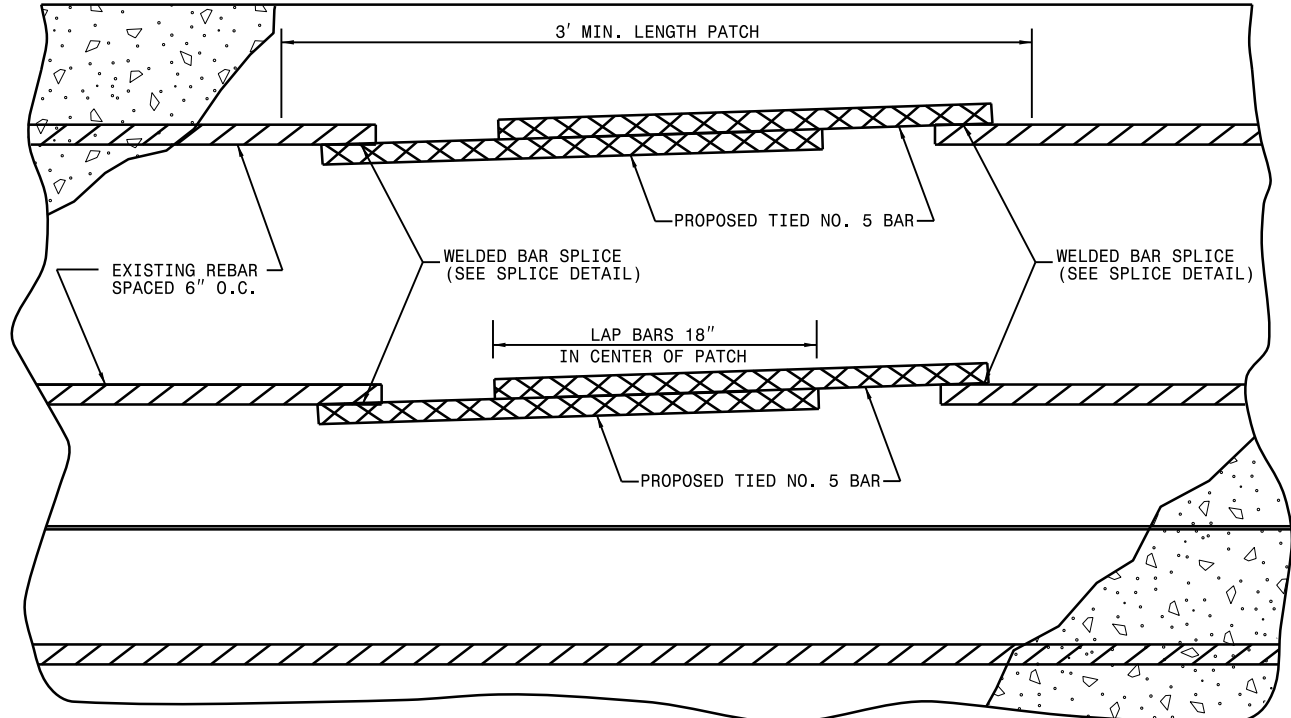
PAVEMENT SCHEDULE

(C1)	PROP. APPROX. 5/8" ULTRA-THIN BONDED WEARING COURSE, AT AN AVERAGE RATE OF 70 LBS. PER SQ. YD.
(C2)	PROP. APPROX. 3.0" ASPHALT CONC. SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LIFTS.
(C3)	PROP. APPROX. 2.0" ASPHALT CONC. SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.
(C4)	PROP. APPROX. 1.5" ASPHALT CONC. SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
(D1)	PROP. APPROX. 3.0" ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.
(D2)	PROP. VARIABLE DEPTH ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0C AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 2 1/2" IN DEPTH OR GREATER THAN 4" IN DEPTH.
(T1)	ASB SHOULDER MATERIAL
(R1)	RUMBLE STRIPS
(V1)	MILLING EXISTING ASPHALT, 1.5" DEPTH
(V2)	MILLING EXISTING ASPHALT, 2.0" DEPTH
(V3)	MILLING EXISTING CONCRETE, 2.0" DEPTH
(V4)	MILLING EXISTING ASPHALT PAVED SHOULDERS AT BRIDGES, 1.5" DEPTH
(V5)	MILLING EXISTING CONCRETE, 0- 2.0" DEPTH
(W)	EXISTING CRC
(U)	EXISTING ASPHALT PAVEMENT
(Z)	EXISTING CONCRETE PAVEMENT

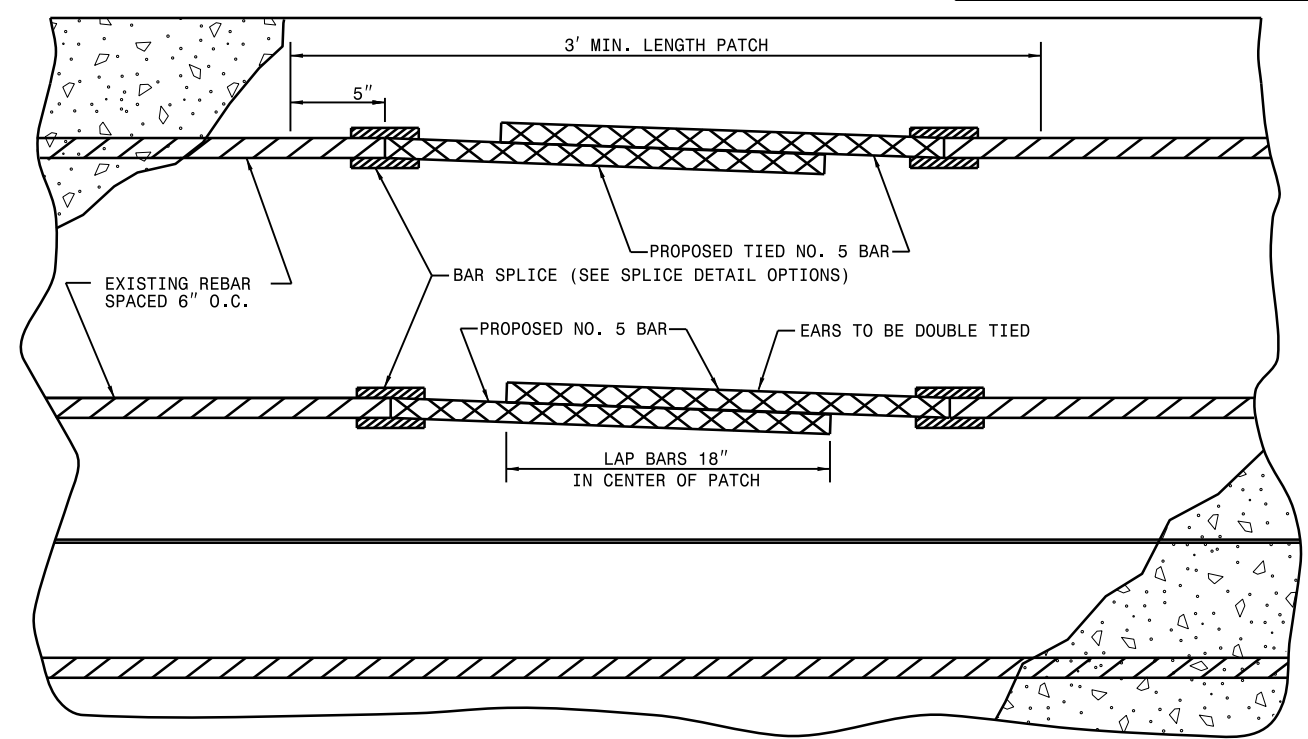
* ULTRA-THIN BONDED WEARING COURSE SHALL EXTEND A MINIMUM OF 1 FOOT OUTSIDE OF LANE.

WBS # 48755.3.GVI

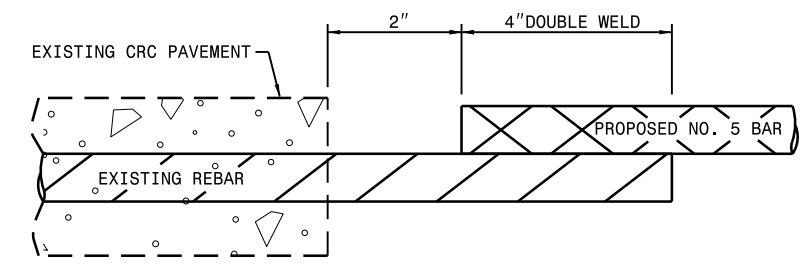
SCALE	-NA-		REVISIONS
DATE			
DWG. BY	MW		
DESIGN BY	MW		
APPROVED			



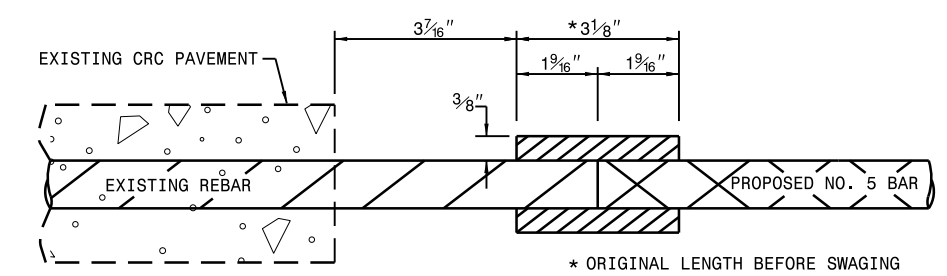
PLAN



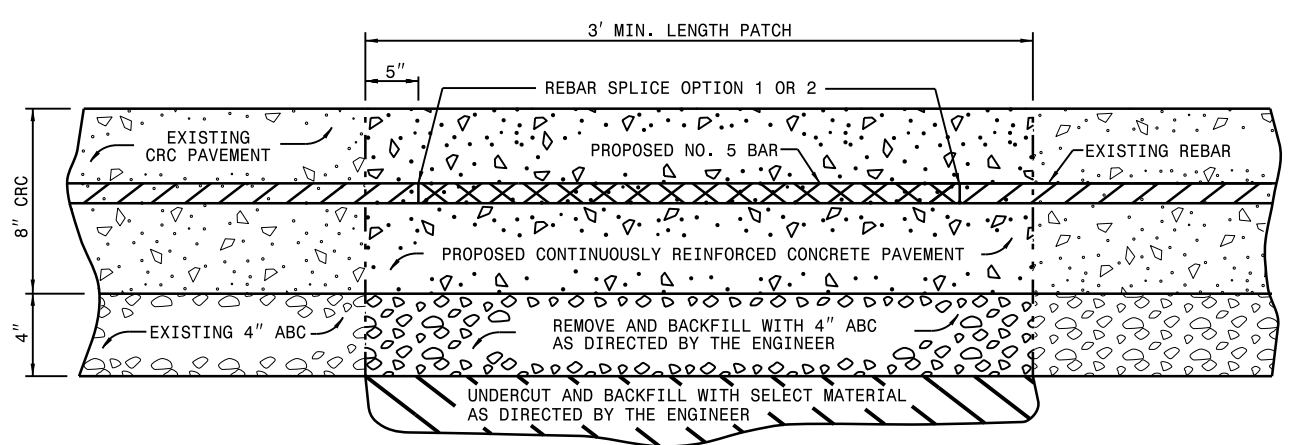
PLAN



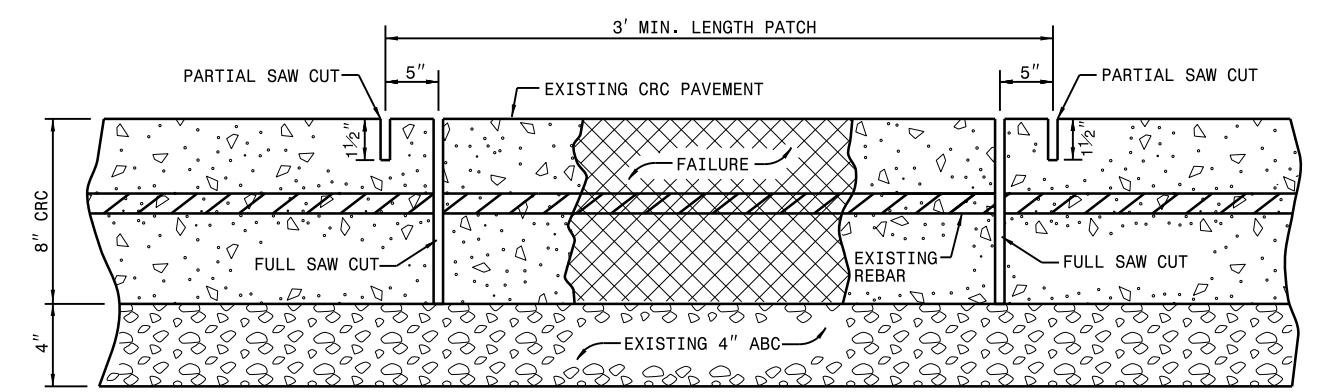
OPTION 1 - DETAIL OF WELDED SPLICE



OPTION 2 - DETAIL OF MECHANICAL SPLICE



DETAIL OF CONCRETE PAVEMENT REMOVAL AND REPLACEMENT



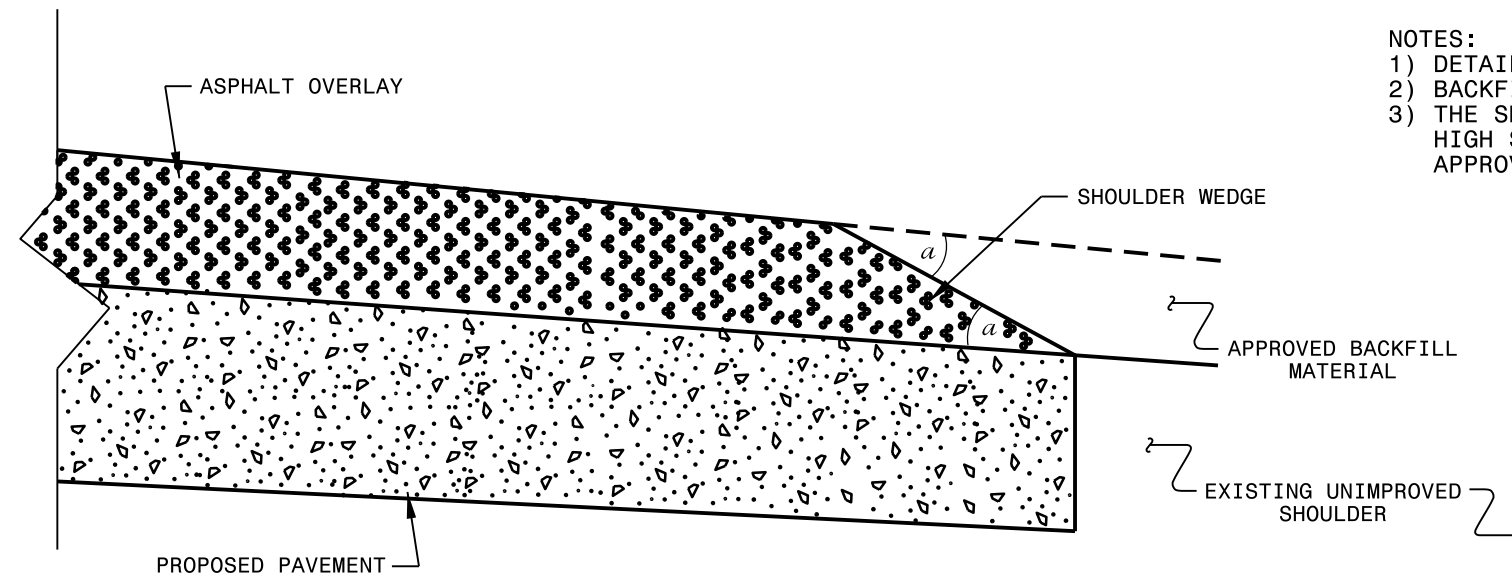
DETAIL OF SAW CUTS

PLACE BAR SUPPORTS ON 5' CENTERS FOR PATCHES GREATER THAN 10' IN LENGTH AND AT CENTER OF PATCH FOR REPAIRS LESS THAN 10'. HEIGHT OF SUPPORTS DETERMINED BY THE CONTRACTOR.

CONTRACT STANDARDS AND DEVELOPMENT UNIT	
Office 919-707-6950	FAX 919-250-4119
DETAIL FOR REPAIR OF CONTINUOUSLY REINFORCED CONCRETE PAVEMENT	
ORIGINAL BY: E.E. WARD	DATE: 4-98
MODIFIED BY: JSH	DATE: 6-13
CHECKED BY:	DATE:
FILE SPEC.: usr/details/stand/crcrepair.dgn	

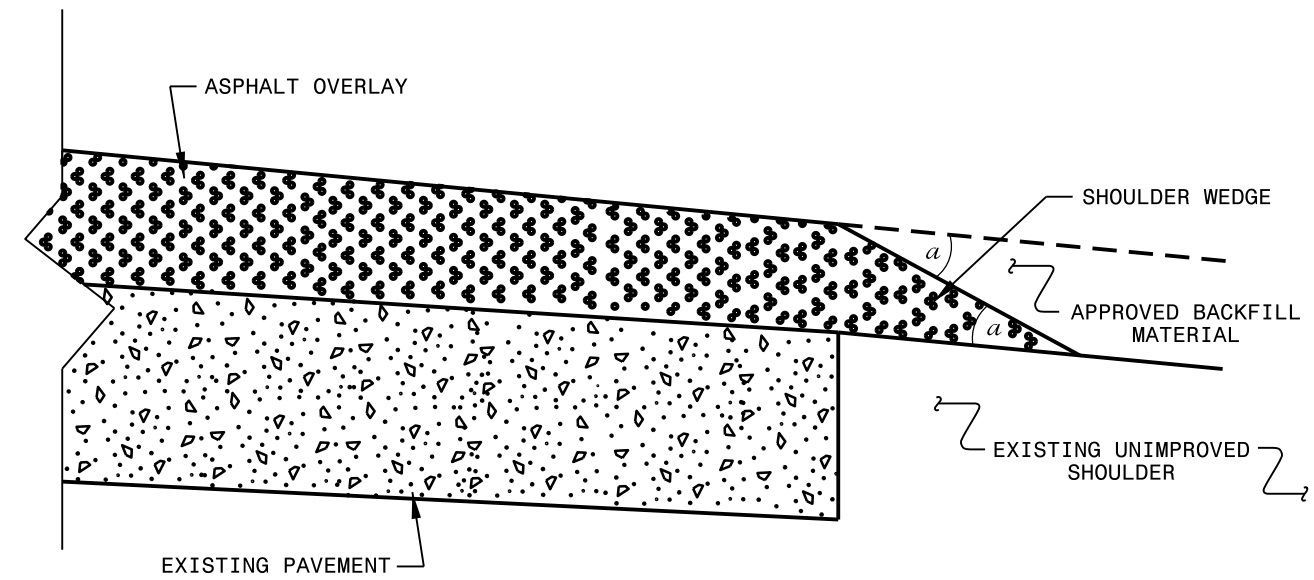
NOTES:

- 1) DETAIL DOES NOT APPLY TO OGAFB AND ULTRA-THIN BONDED WEARING COURSE.
- 2) BACKFILL SHOULDER WITH APPROVED MATERIAL.
- 3) THE SHOULDER WEDGE DEVICE MAY BE DISENGAGED AT PAVED DRIVEWAYS, SIDE STREETS, HIGH SHOULDERS, AND OTHER LOCATIONS NOT FEASIBLE TO CONSTRUCT AS APPROVED BY THE ENGINEER.



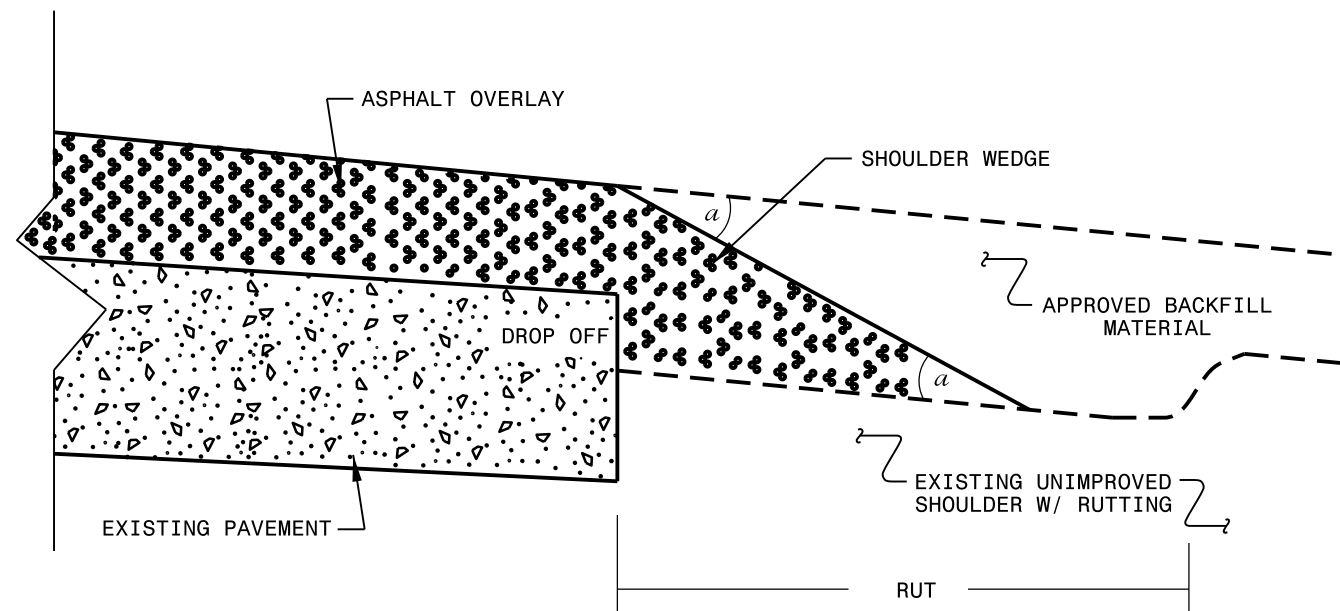
SHOULDER WEDGE DETAIL

(Resurfacing Projects w/ Widening or with Existing Paved Shoulder having no dropoffs)



SHOULDER WEDGE DETAIL

(Resurfacing Projects w/ NO Widening)



SHOULDER WEDGE DETAIL

(Resurfacing Adjacent to Rutted Shoulder)

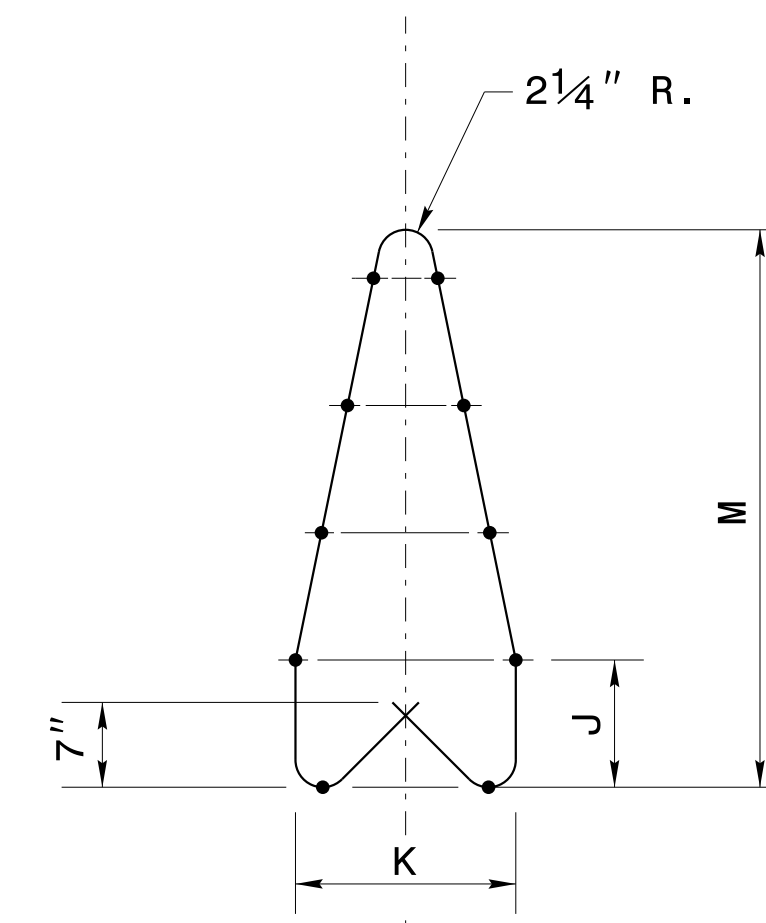
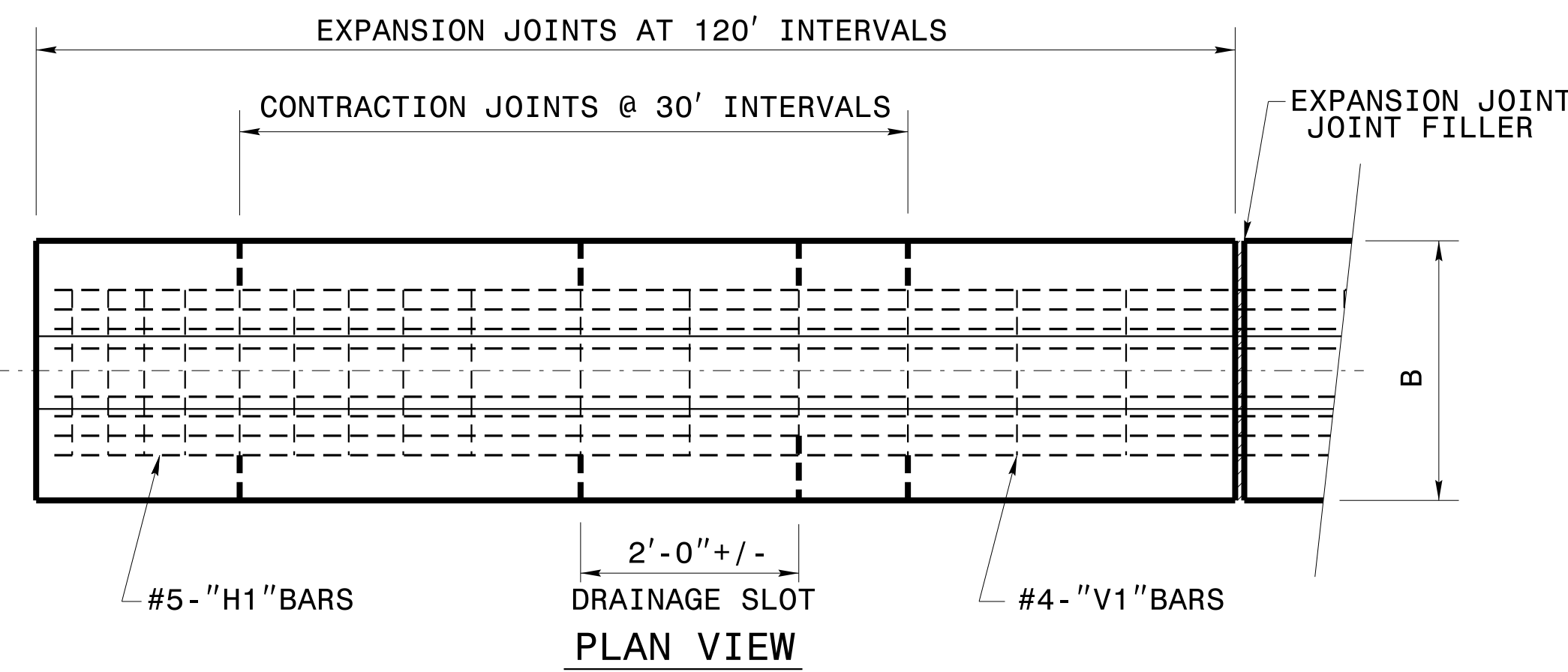
- SHOULDER WEDGE ANGLE = 30°

CONTRACT STANDARDS AND DEVELOPMENT UNIT		
Office 919-707-6950 FAX 919-250-4119		
SHOULDER WEDGE DETAILS		
ORIGINAL BY: T.SPELL	DATE: 7-19-11	
MODIFIED BY:	DATE: 2/2/16	
CHECKED BY:	DATE:	
FILE SPEC.: szusr/details/stand/shoulderwedgedetail.dgn		

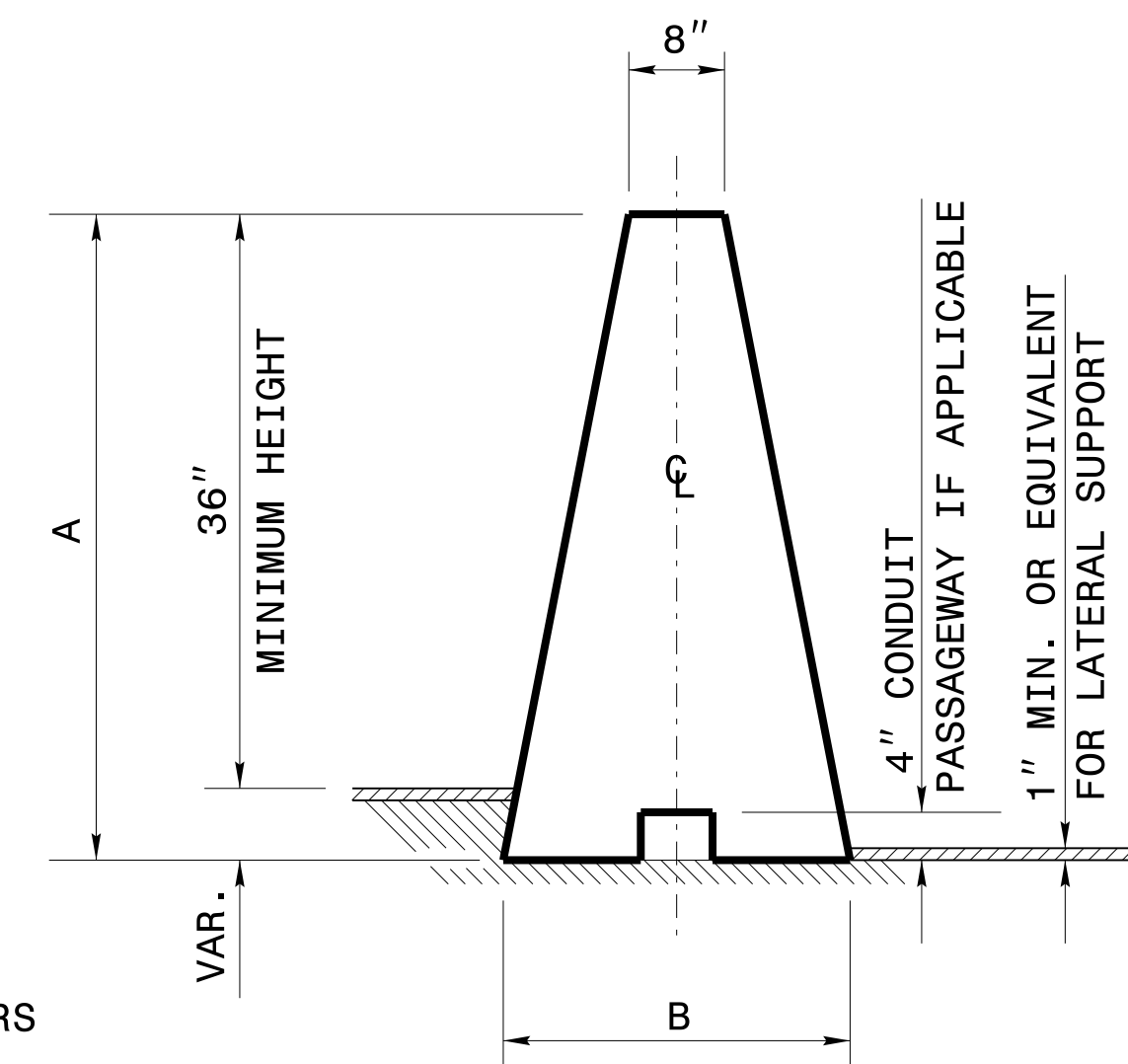
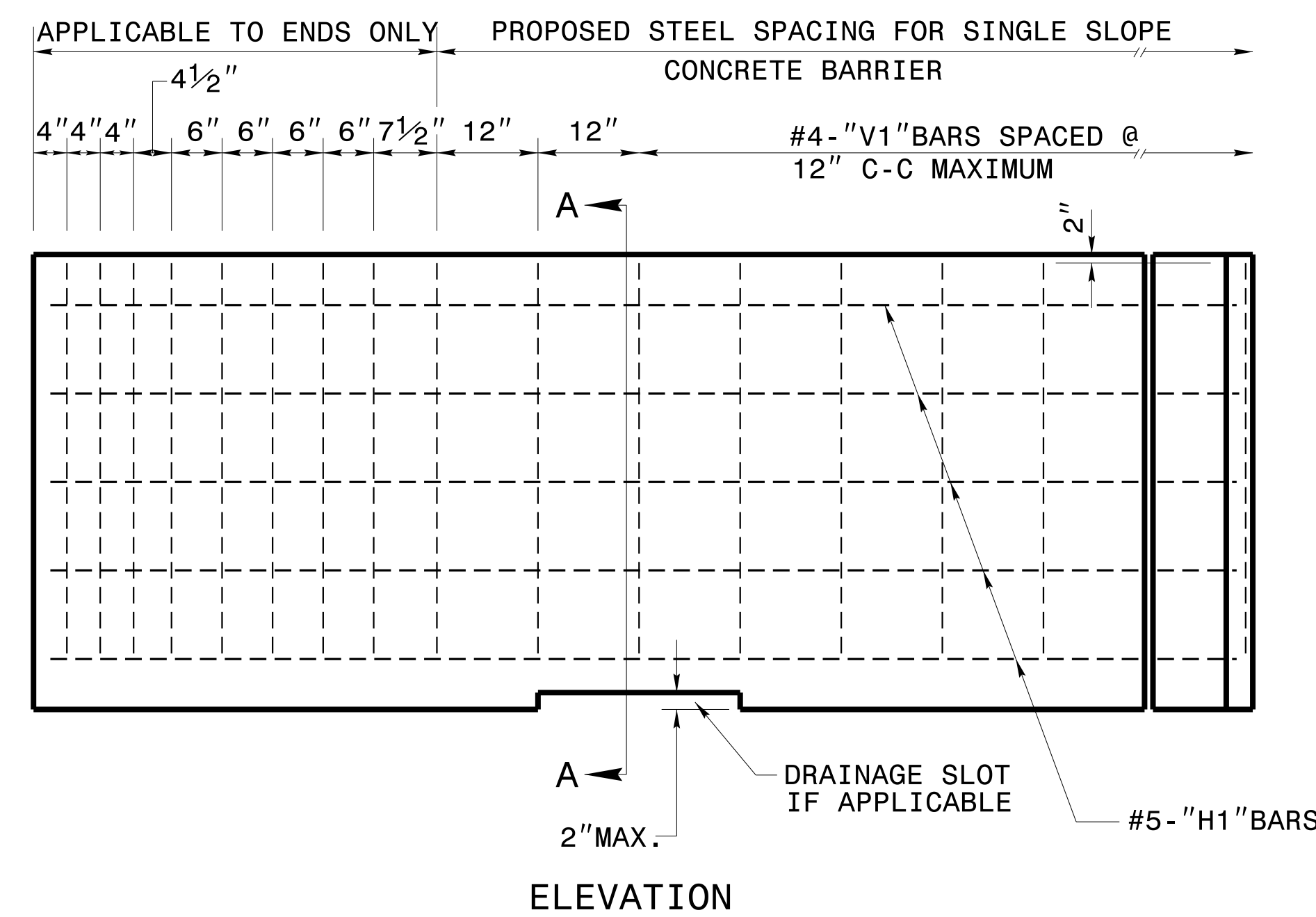
GENERAL NOTES:

- USE CLASS "AA" CONCRETE.
- MAINTAIN 2" OF COVER OVER ALL REBAR. CHAMFER TOP AND ENDS OF BARRIER 1/2 INCH.
- USE BAR SPLICE LENGTHS A MINIMUM OF 20 TIMES THE NORMAL DIAMETER OF THE BAR. ANY METHOD DEvised BY THE CONTRACTOR AND APPROVED BY THE ENGINEER THAT WILL ASSURE THE LONGITUDINAL ROADWAY STEEL WILL BE POSITIONED +/- 1/2 INCH AS DIMENSIONED WILL BE SATISFACTORY.

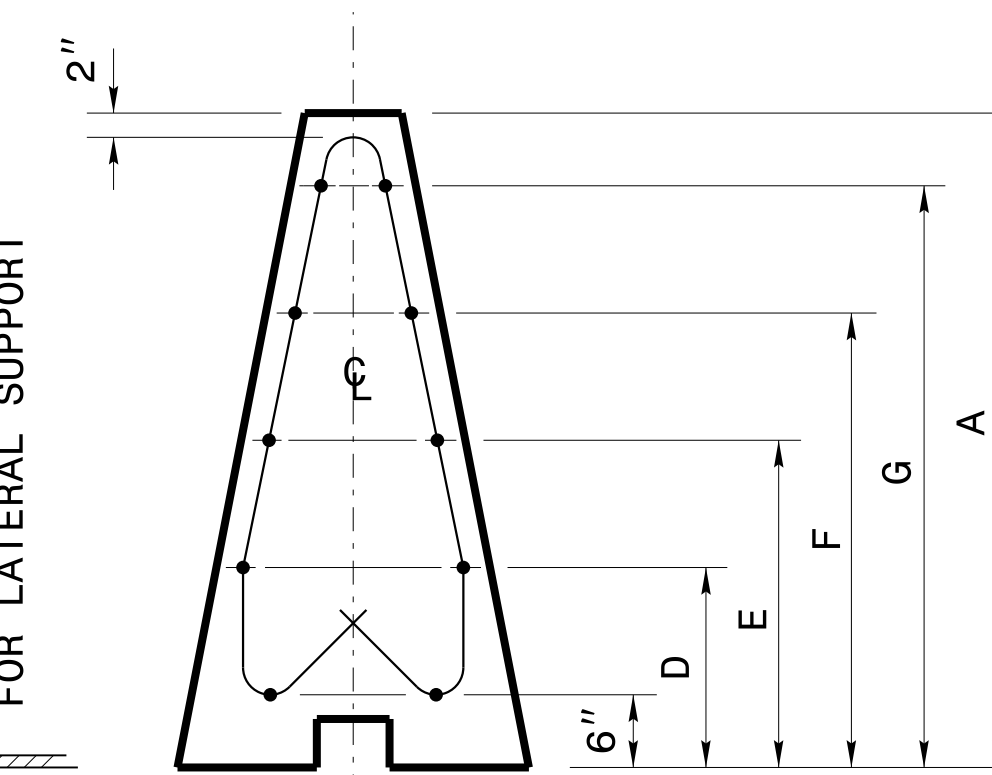
WELDED WIRE FABRIC MAY BE USED AS AN OPTION TO CONVENTIONAL REINFORCEMENT FOR CAST-IN-PLACE BARRIER. WELDED WIRE FABRIC SHALL BE MADE IN ACCORDANCE WITH ASTM A497. CONDUIT TO BE PROVIDED ONLY WHEN CALLED FOR ELSEWHERE IN THE PLANS. POSITION OF THE CONDUIT CONDUIT PASSAGEWAY MAY BE ADJUSTED TO FACILITATE CONSTRUCTION, SUBJECT TO APPROVAL BY THE ENGINEER.
- REFER TO ROADWAY STANDARD DRAWING NO.854.01 FOR EXPANSION AND CONTRACTION JOINT, FILLER AND OTHER SPECIFICATIONS.



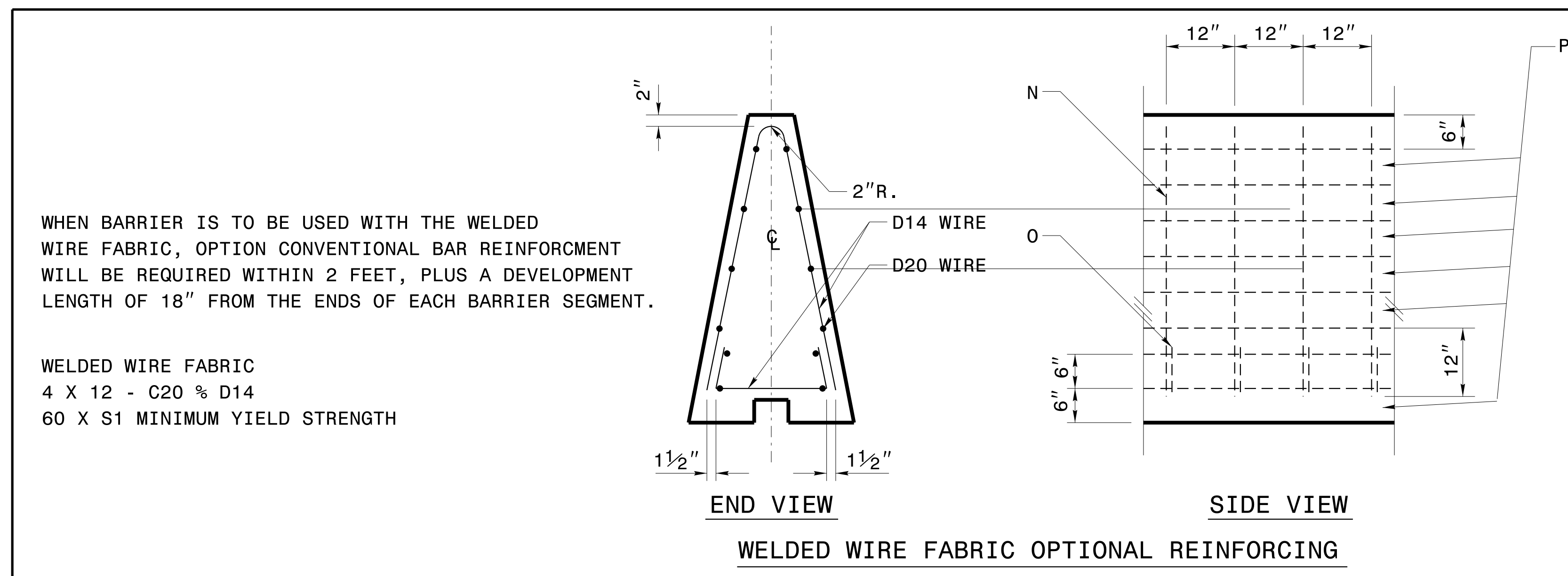
#4-'V1' BAR REINFORCING DETAIL



TYPICAL SECTION



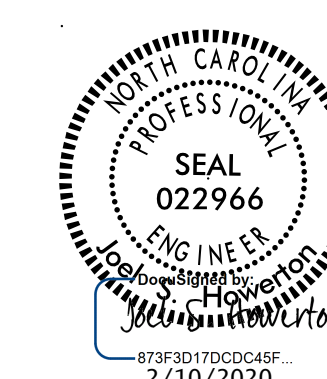
SECTION A-A



WHEN BARRIER IS TO BE USED WITH THE WELDED WIRE FABRIC, OPTION CONVENTIONAL BAR REINFORCEMENT WILL BE REQUIRED WITHIN 2 FEET, PLUS A DEVELOPMENT LENGTH OF 18" FROM THE ENDS OF EACH BARRIER SEGMENT.

WELDED WIRE FABRIC
4 X 12 - C20 % D14
60 X S1 MINIMUM YIELD STRENGTH

BARRIER HEIGHT (IN.)	DIMENSIONS											
	A	B	D	E	F	G	K	L	M	N	O	P
42"	42	24	13 1/2	21	28 1/2	36	15	9 1/4	36	72	28	4
48"	48	26 9/32	15	24	33	42	17 1/2	10 3/4	42	84	31 1/2	5
52"	54	28 9/16	16 1/2	27	37 1/2	48	19 1/2	12 1/4	48	96	34 3/4	6

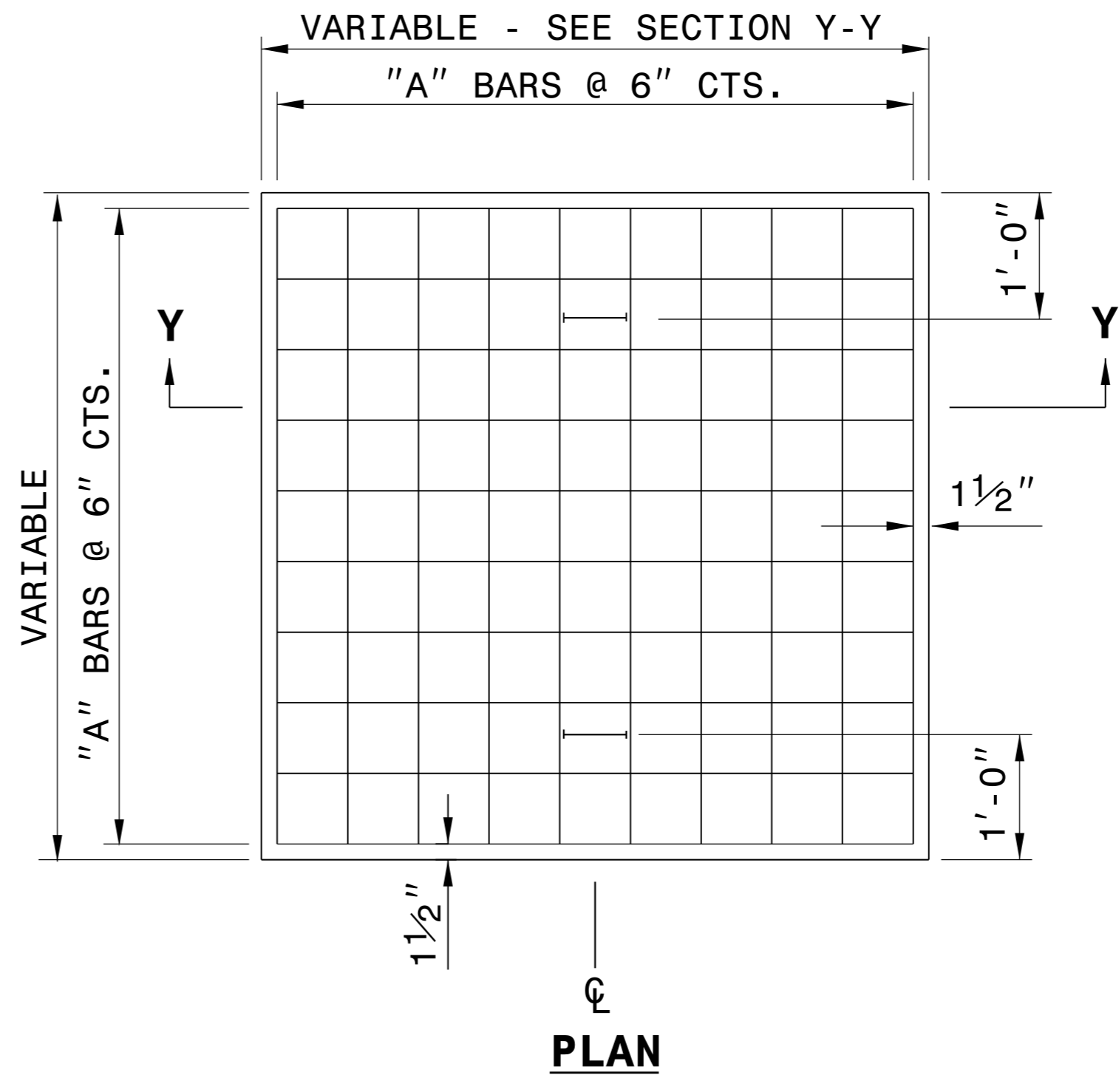
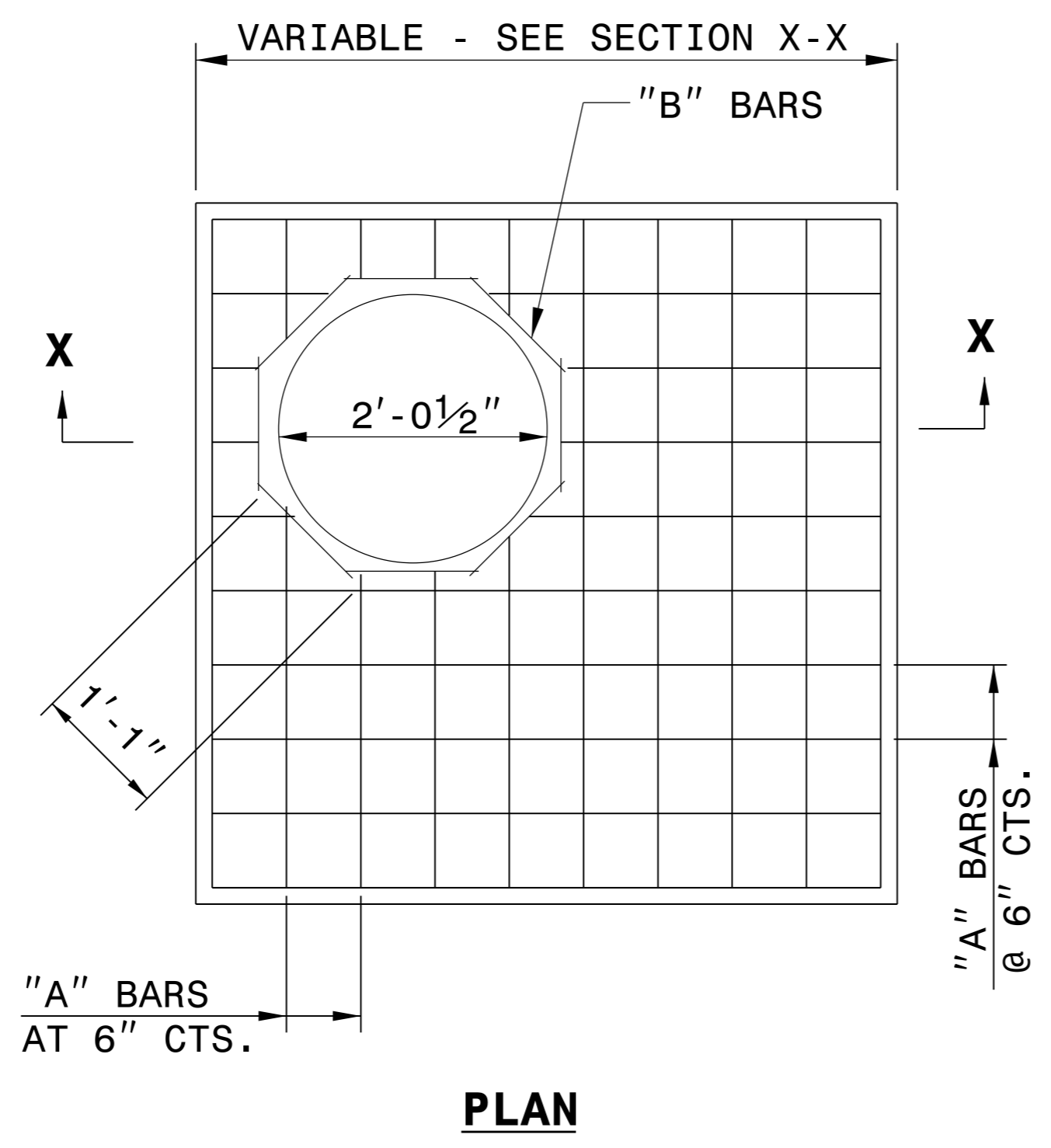
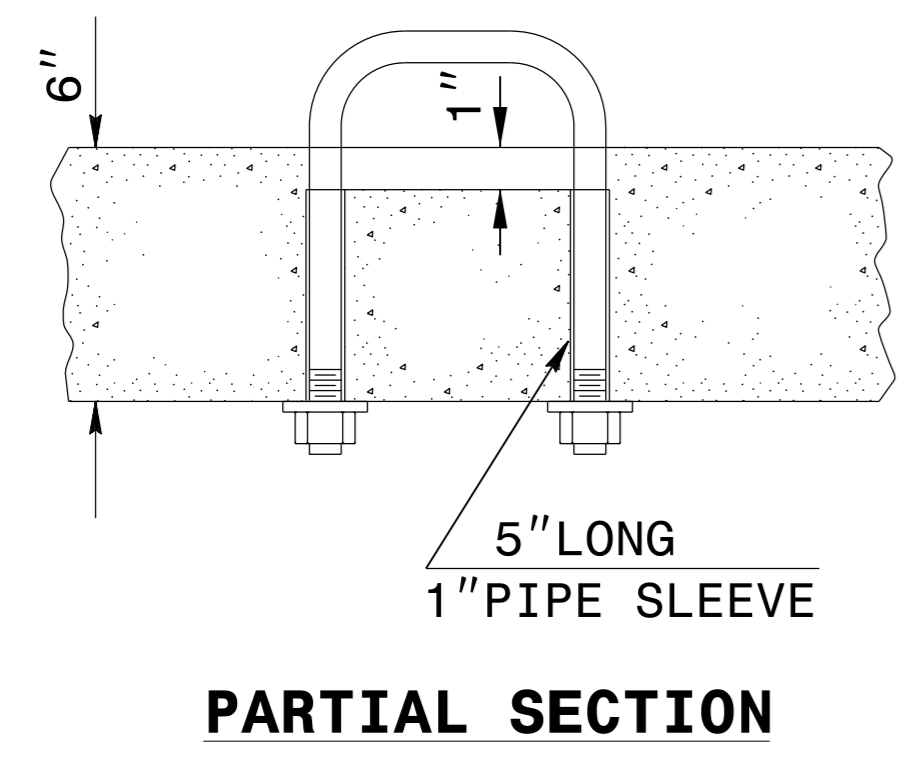


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

**CONTRACT SERVICES & DEVELOPMENT UNIT
STANDARDS AND SPECIAL DESIGN**
Office 919-707-6950 FAX 919-250-4119

**SINGLE SLOPE
CONCRETE BARRIER**

ORIGINAL BY: _____ DATE: _____
 MODIFIED BY: rnbritt DATE: 08-18-06
 CHECKED BY: _____ DATE: _____
 FILE SPEC.: details/rnbritt/english/guardrail/single slope concrete barrier.dgn

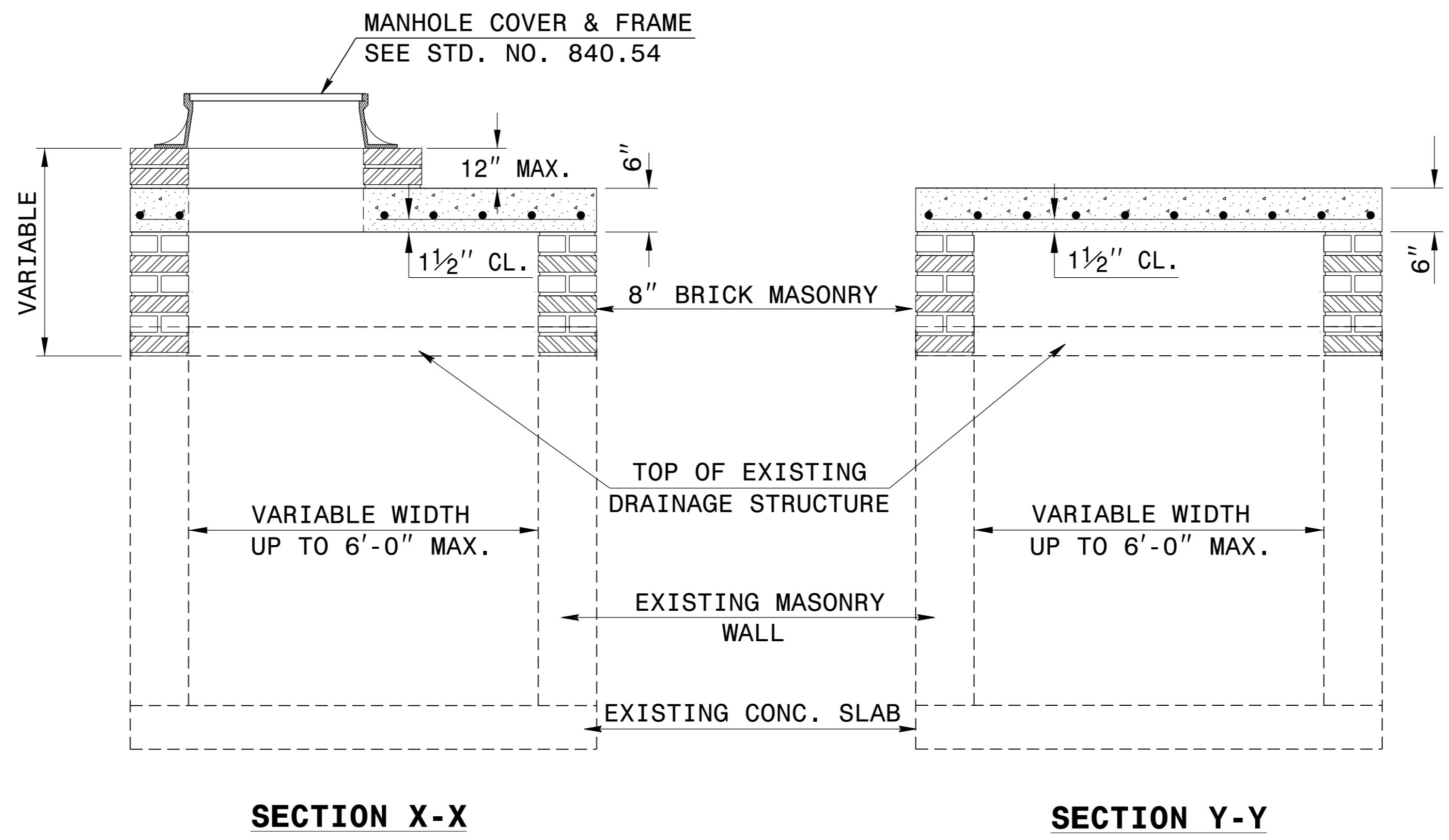
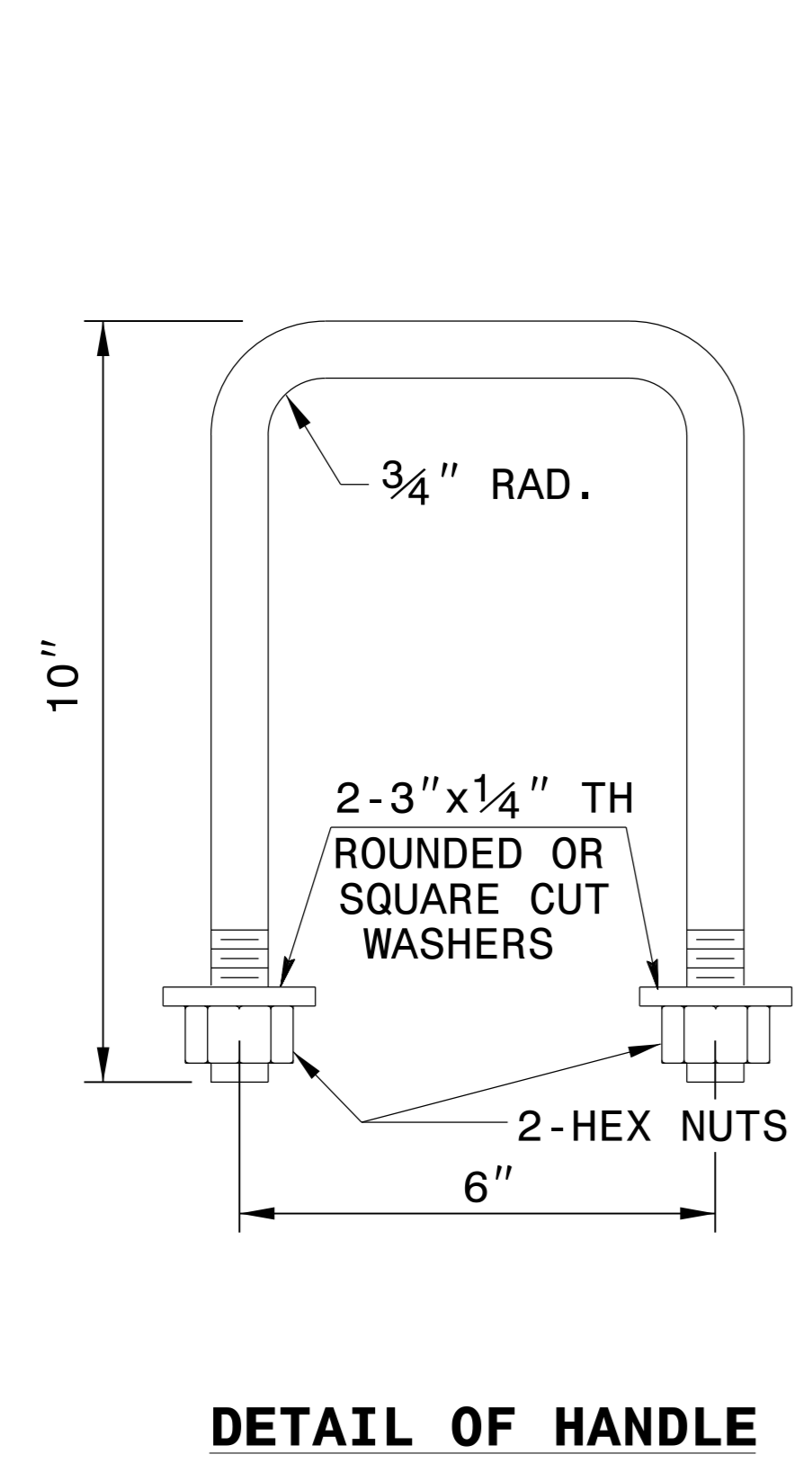


GENERAL NOTES:

CONSTRUCT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.

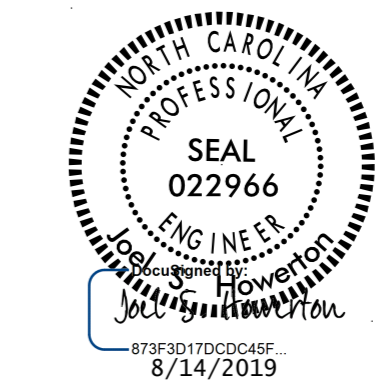
THE DIMENSIONS FOR THE EXISTING BOXES ARE APPROXIMATE AND MAY VARY SLIGHTLY.

DETAIL INTENDED FOR NON-TRAFFIC BEARING DRAINAGE STRUCTURES.



BILL OF MATERIALS				
REINFORCING STEEL				
CODE	SIZE	QTY.	LENGTH	REINF. STEEL LBS.
A	#4	20	4'-6"	60.12
B	#4	8	1'-1"	5.79
TOTAL				65.91 *
MASONRY				CU YDS
TOP SLAB CONCRETE CLASS "B"				.4326 *
BRICK MASONRY PER FT HT (MIN)				.4111

*** NOTE:**
 QUANTITIES BASED ON 3'-6" X 3'-6" DRAINAGE STRUCTURE. ADJUST QUANTITIES FOR LARGER STRUCTURES AND MANHOLE CONSTRUCTION.



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

**CONTRACT STANDARDS
AND DEVELOPMENT UNIT**
 Office 919-707-6950 FAX 919-250-4119

**DETAIL TO CONVERT EXISTING
DI, CB, OTCB or GI
TO JUNCTION BOX
(MANHOLE OPTIONAL)**

ORIGINAL BY: T.S.S.	DATE: NOV. 1997
MODIFIED BY: T.S.S.	DATE: FEB. 2000
CHECKED BY:	DATE:
FILE SPEC.: ds174:/usr/details/stand/boxtojbe.dgn	

11/14/2019 10:58:11 AM
 T.S.S.
 873F3D17DCD45F
 8/14/2019

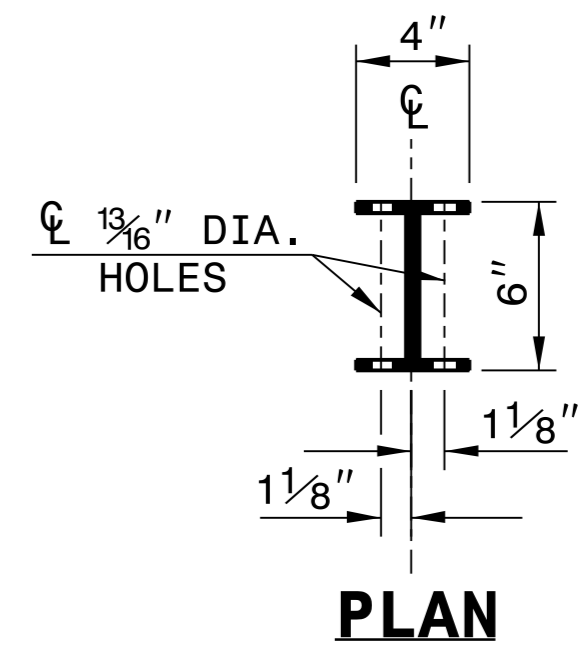
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02



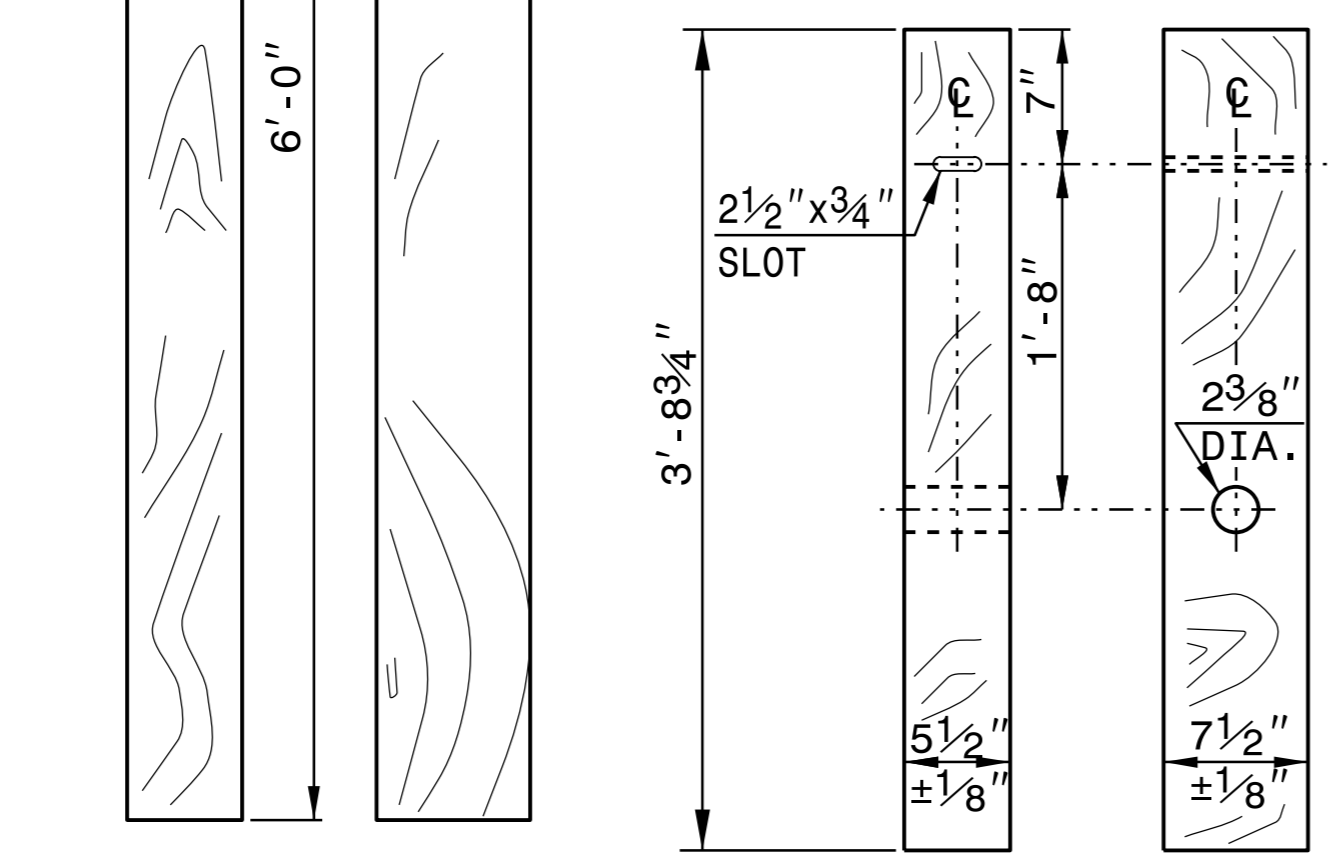
STANDARD W-BEAM GUARDRAIL



PLAN

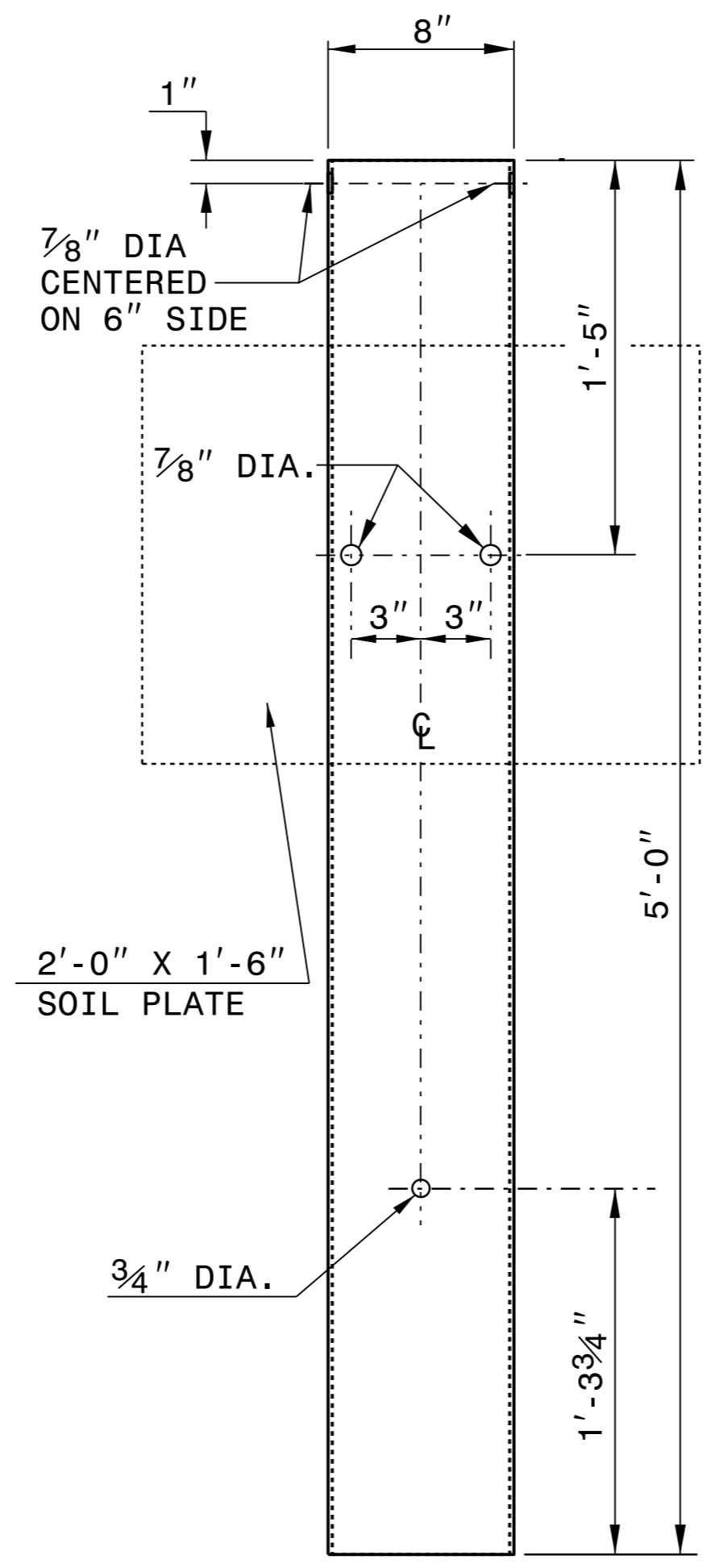


**WOOD OFFSET BLOCK
(FOR WOOD POSTS)**

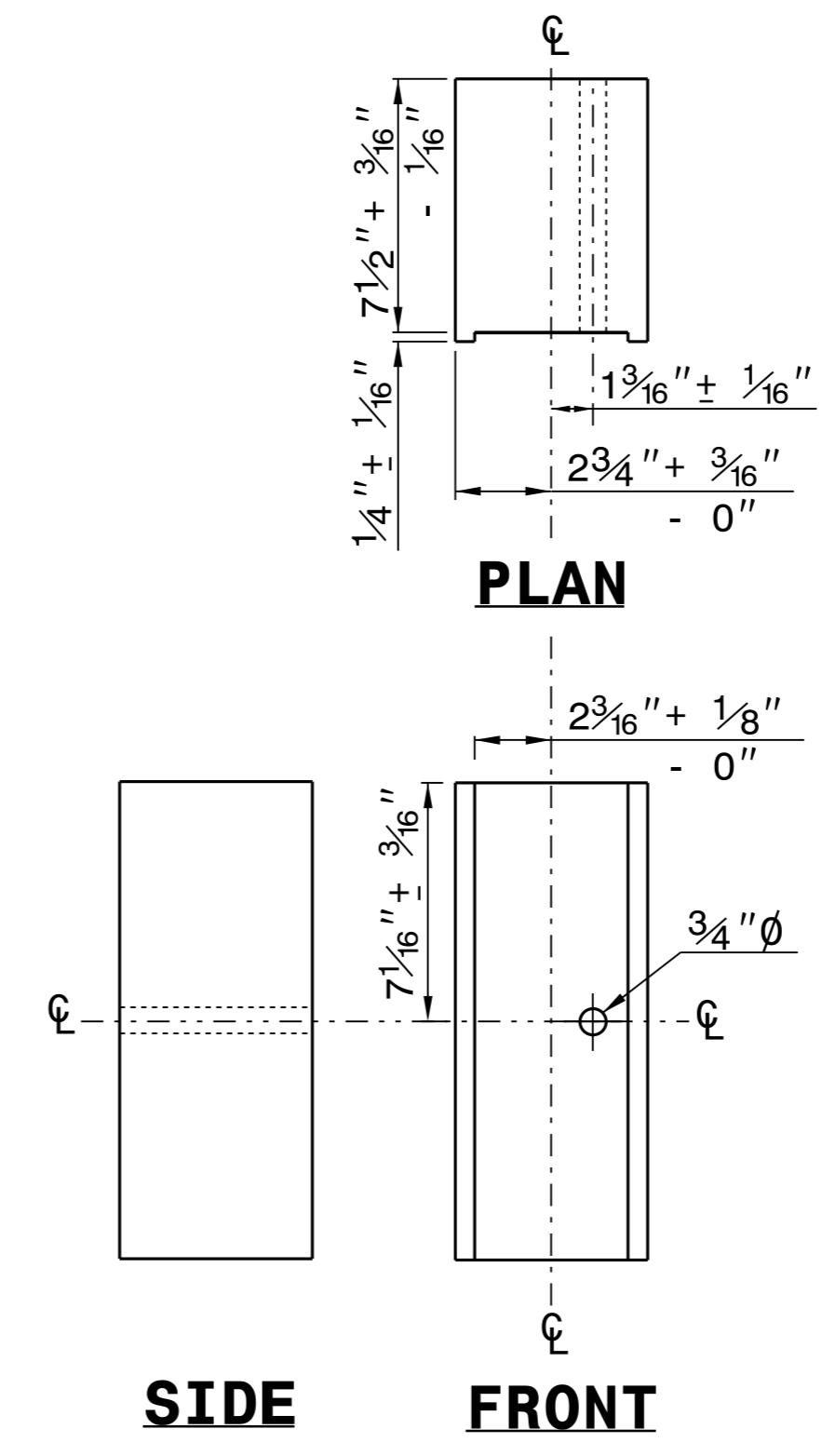


**STANDARD
LINE POST**

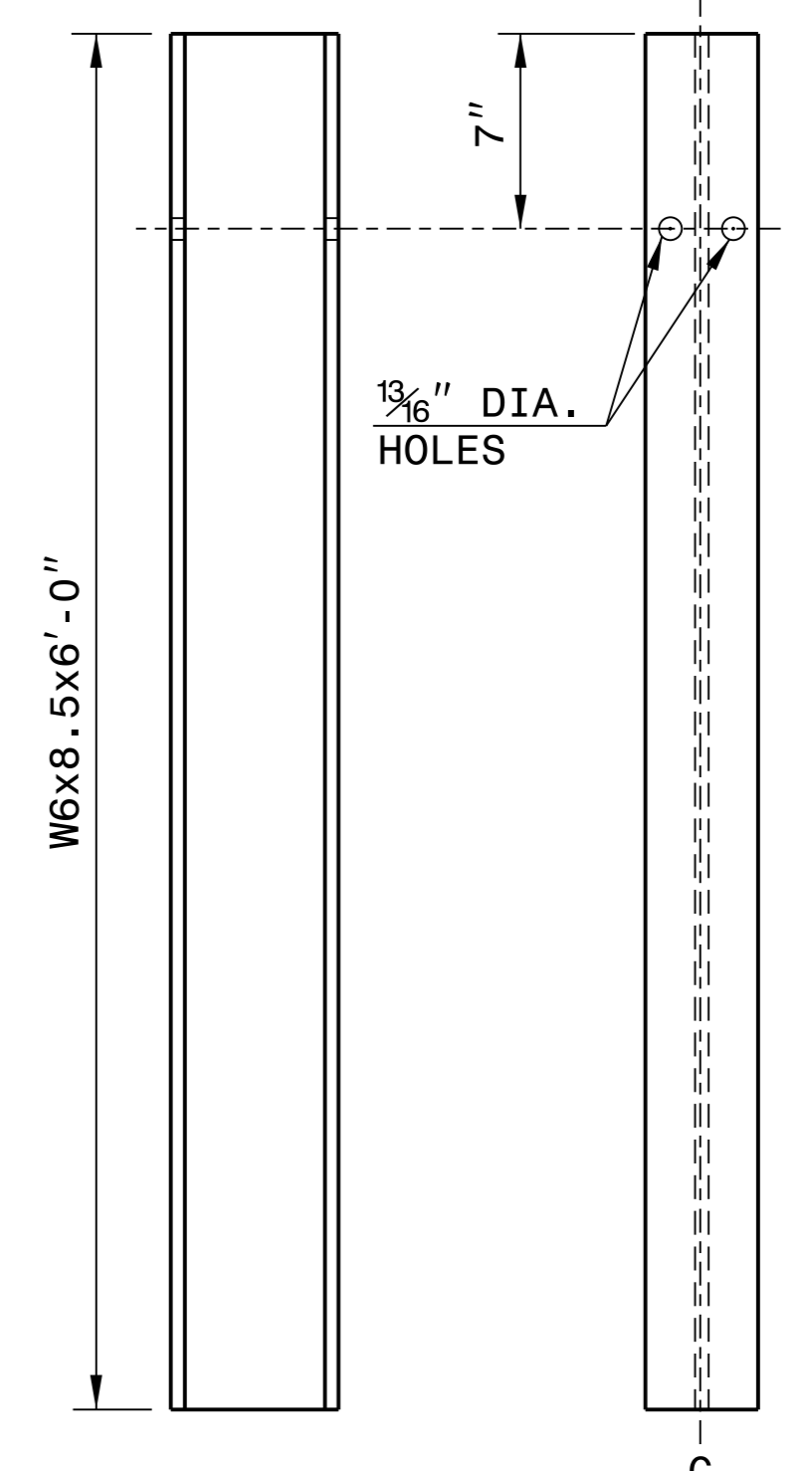
**SHORT WOOD
BREAKAWAY POST**



**STEEL TUBE
TS 6"x8"x0.1875"**



**ROUTED
OFFSET BLOCK**



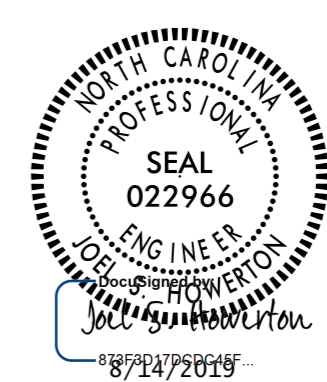
"W6" STEEL POST

SYSTEM PARTS

STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02



CONTRACTS STANDARDS
AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

ORIGINAL BY: J. HOWERTON DATE: 3-7-2018
MODIFIED BY: DATE: _____
CHECKED BY: DATE: _____
FILE SPEC.: _____

I4-DEC-2017 10:36
 S:\Contracts\Projects\Special Details\Standard Drawings\Division 8\08662d0301.dgn
 Jhowerton AT: USD-292595

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III
FOR ATTACHMENT TO RAIL ON BRIDGE

SHEET 1 OF 7
862D03

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III
FOR ATTACHMENT TO RAIL ON BRIDGE

NOTE:

- **POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
- *THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11 1/2" IF CONCRETE BACKWALL IS NOT PRESENT.
- SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
- MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
- LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
- SEE SHEET 3 FOR POST SECTIONS 1 THRU 9.

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO
RAIL ON BRIDGE - SUB REGIONAL TIER

SHEET 1 OF 7
862D03

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO
RAIL ON BRIDGE - SUB REGIONAL TIER

NOTE:

- **POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
- *THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11 1/2" IF CONCRETE BACKWALL IS NOT PRESENT.
- SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
- MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
- LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
- SEE SHEET 3 FOR POST SECTIONS 1 THRU 9.

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO
RAIL ON BRIDGE - SUB REGIONAL TIER

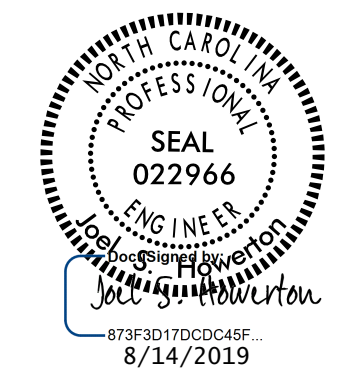
SHEET 2 OF 7
862D03

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO
RAIL ON BRIDGE - SUB REGIONAL TIER

NOTE:

- **POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
- *THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11 1/2" IF CONCRETE BACKWALL IS NOT PRESENT.
- SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
- MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
- LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
- SEE SHEET 3 FOR POST SECTIONS 1 THRU 9.



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

**CONTRACT STANDARDS
AND DEVELOPMENT UNIT**
Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

ORIGINAL BY: J. HOWERTON	DATE: 06-22-12
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC.:	

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

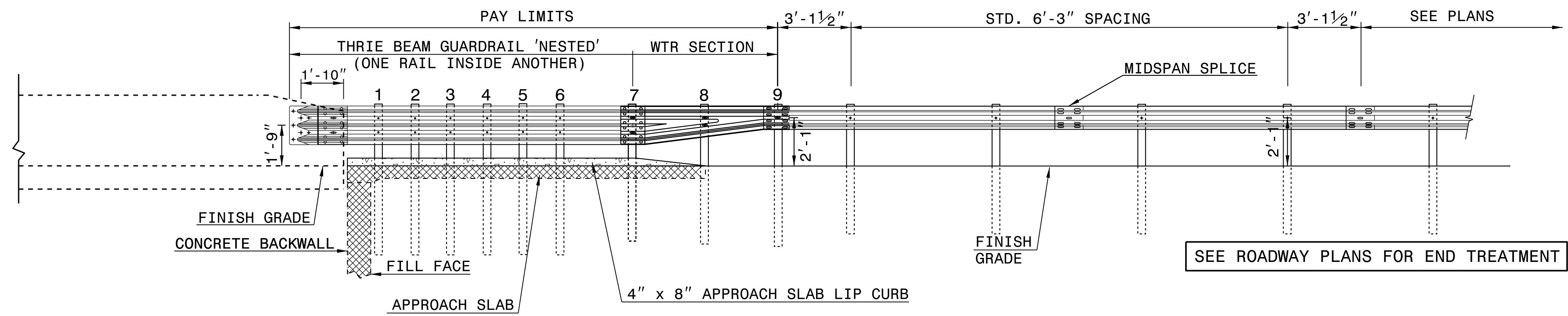
ENGLISH DETAIL DRAWING FOR TYPE III - SHOP CURVED STRUCTURE ANCHOR UNIT

SHEET 1 OF 1 TYPE III SC

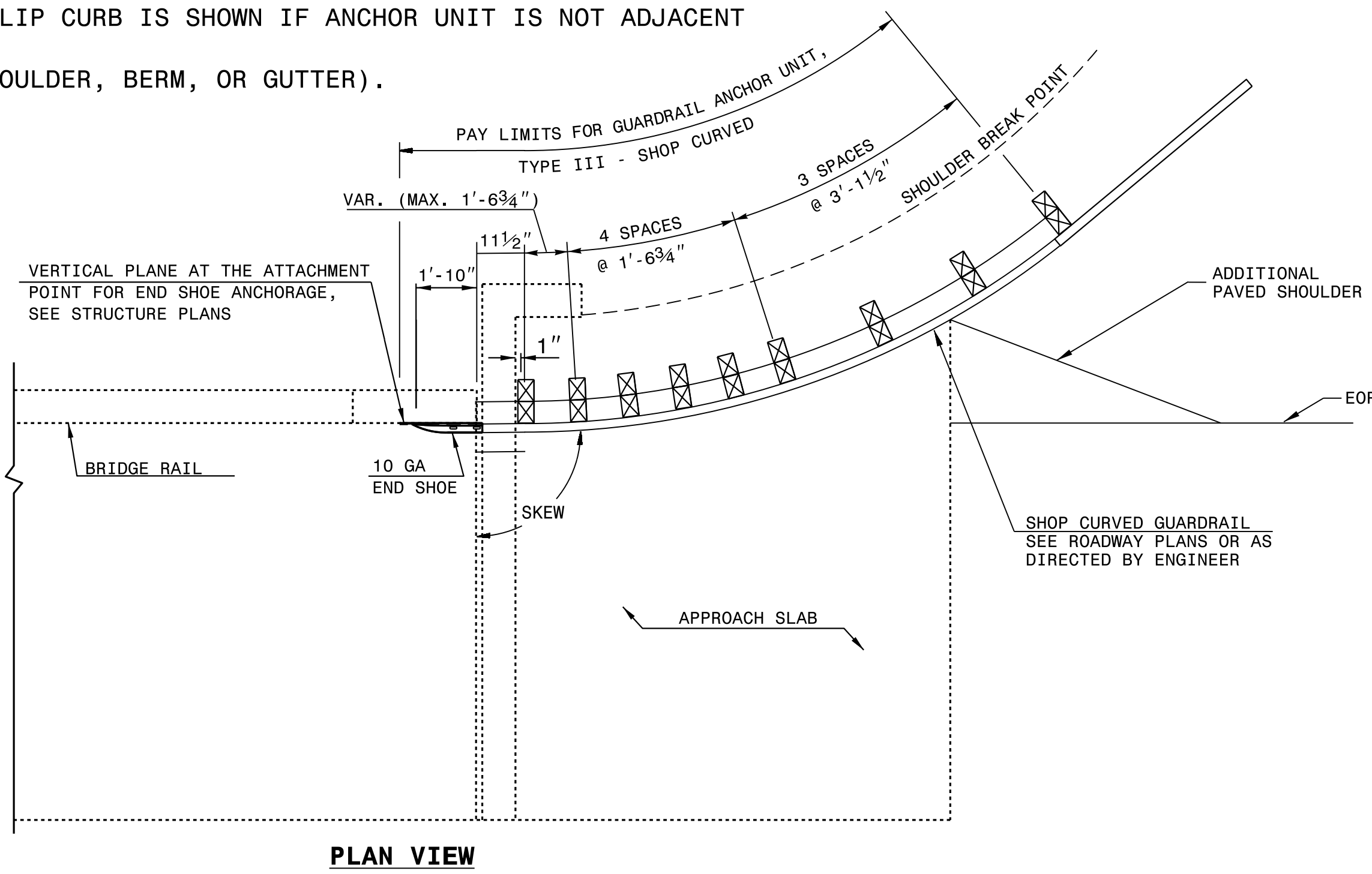
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR TYPE III - SHOP CURVED STRUCTURE ANCHOR UNIT

SHEET 1 OF 1 TYPE III SC



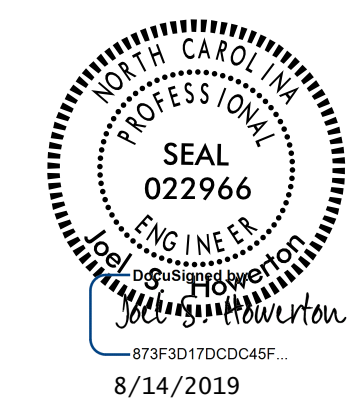
- NOTE:
- **POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
 - *THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11 1/2" IF CONCRETE BACKWALL IS NOT PRESENT.
 - SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
 - MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
 - USE NO STEEL POSTS WITHIN THE GUARDRAIL ANCHOR UNIT LIMITS.
 - LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
 - SEE STANDARD 862.03 SHEET 4 FOR POST SECTIONS 1 THRU 9.



GUARDRAIL ANCHOR UNIT, TYPE III - SHOP CURVED FOR ATTACHMENT TO RAIL ON BRIDGE

01-FEB-2018 09:49 S:\Contracts\Special Details\howerton\Guardrail\31 inch Guardrail\type_iii_sc.dgn Jhowerton AT CSD-292595

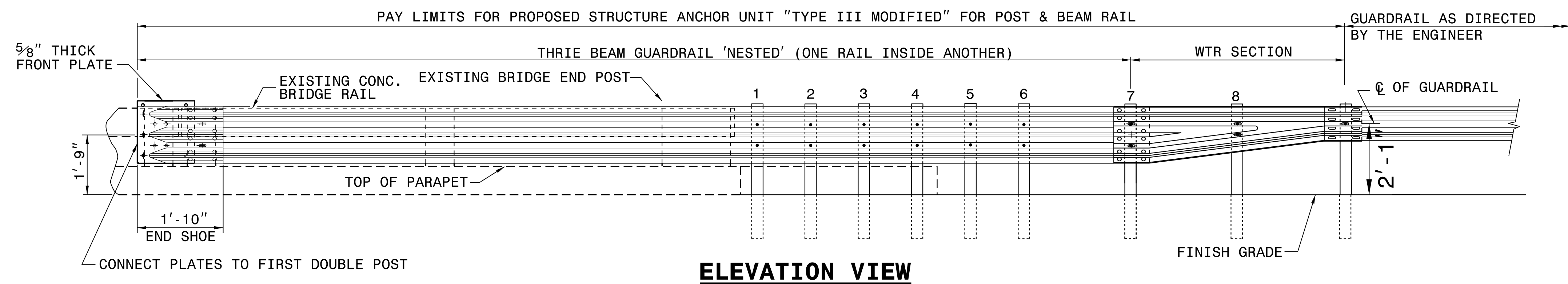
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



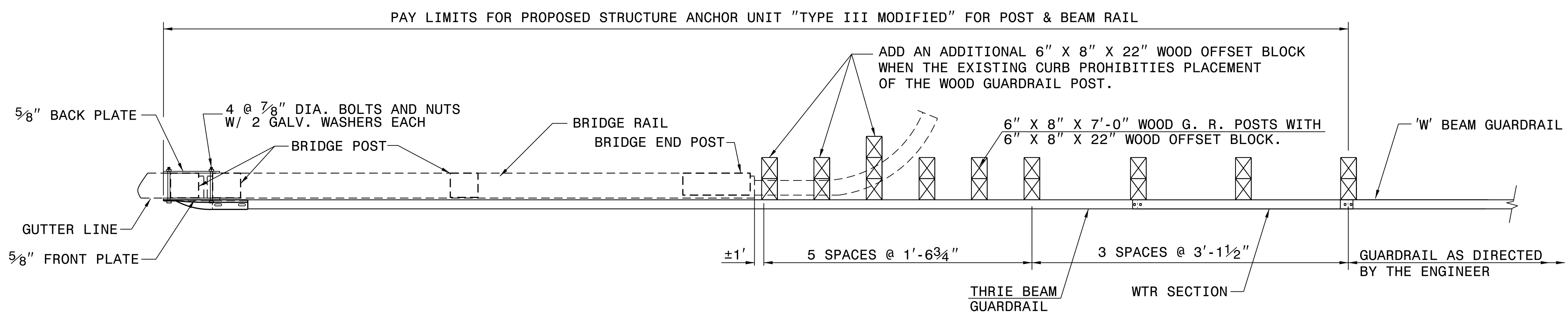
CONTRACT STANDARDS AND DEVELOPMENT UNIT Office 919-707-6950 FAX 919-250-4119

SEE PLATE FOR TITLE

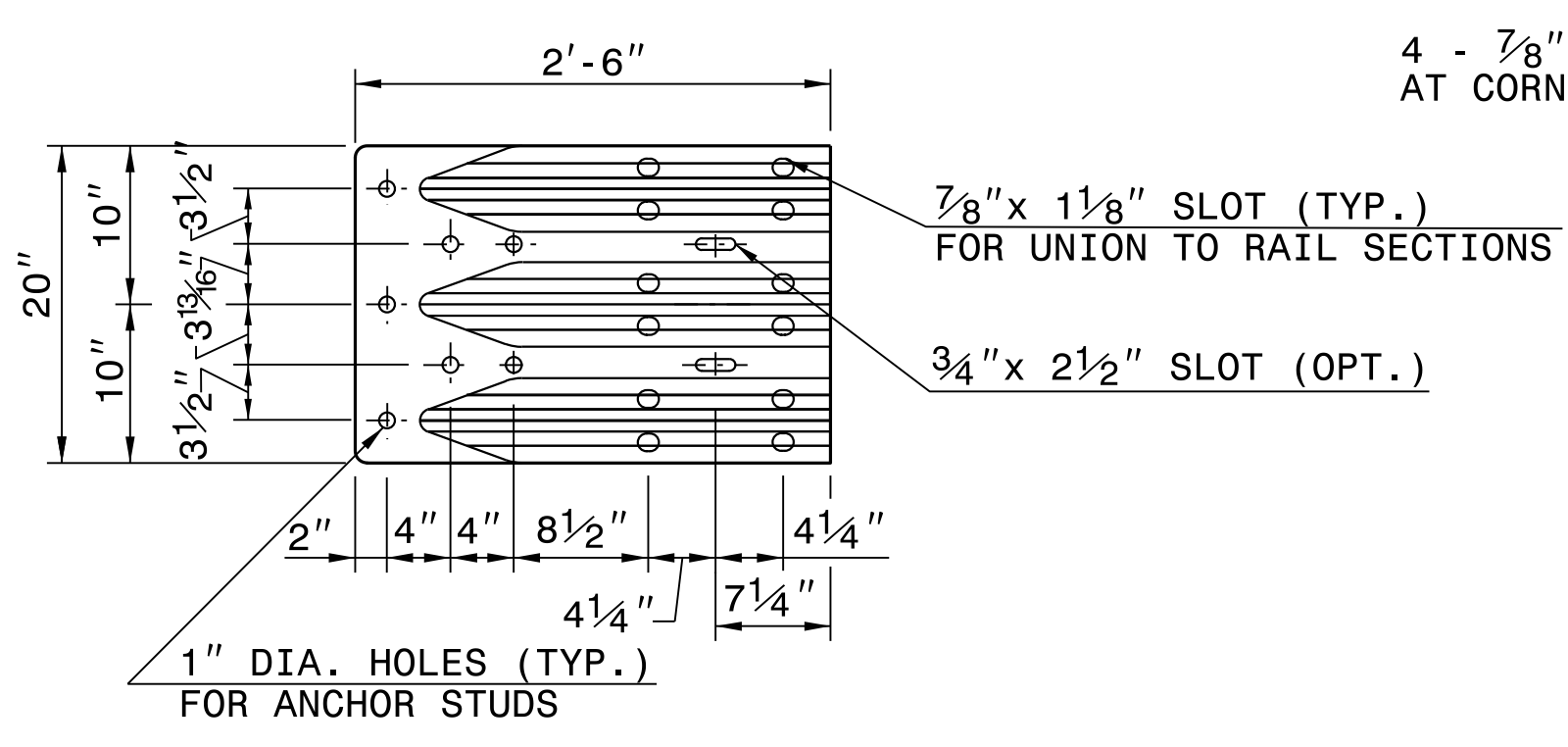
ORIGINAL BY: E.E.Ward DATE: 4-4-02
MODIFIED BY: T.S.Spell DATE: 2-01-18
CHECKED BY: DATE:
FILE SPEC.: Jhowerton\guardrail\31inchguardrail\typeiiiisc.dgn



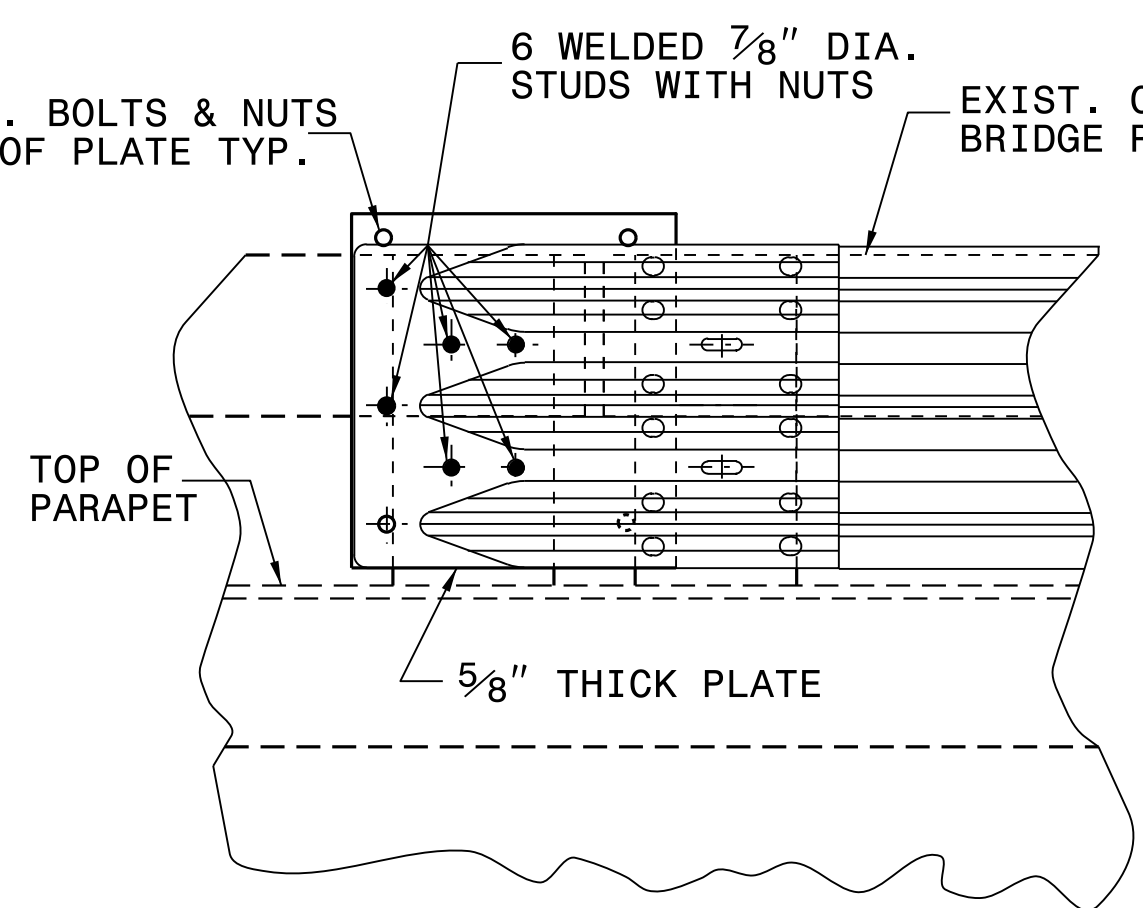
ELEVATION VIEW



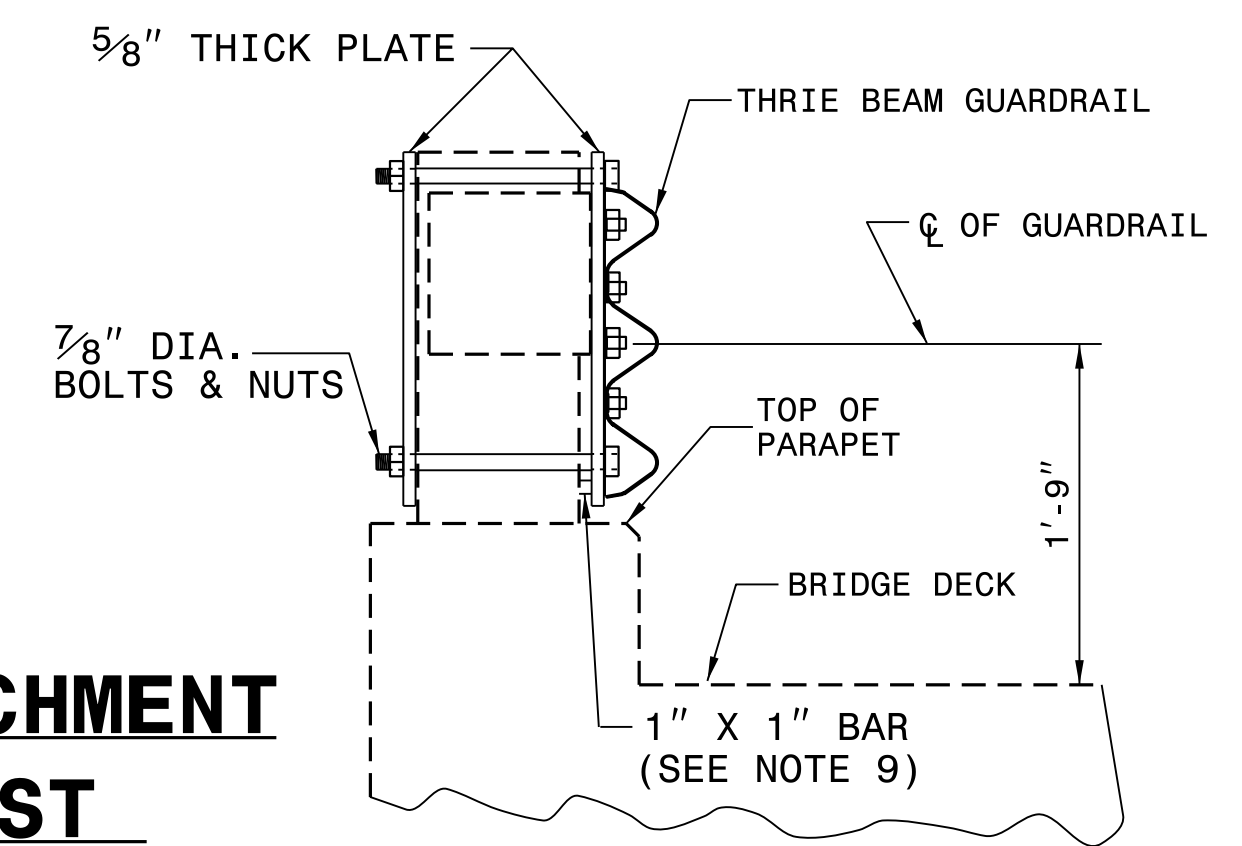
PLAN VIEW



END SHOE

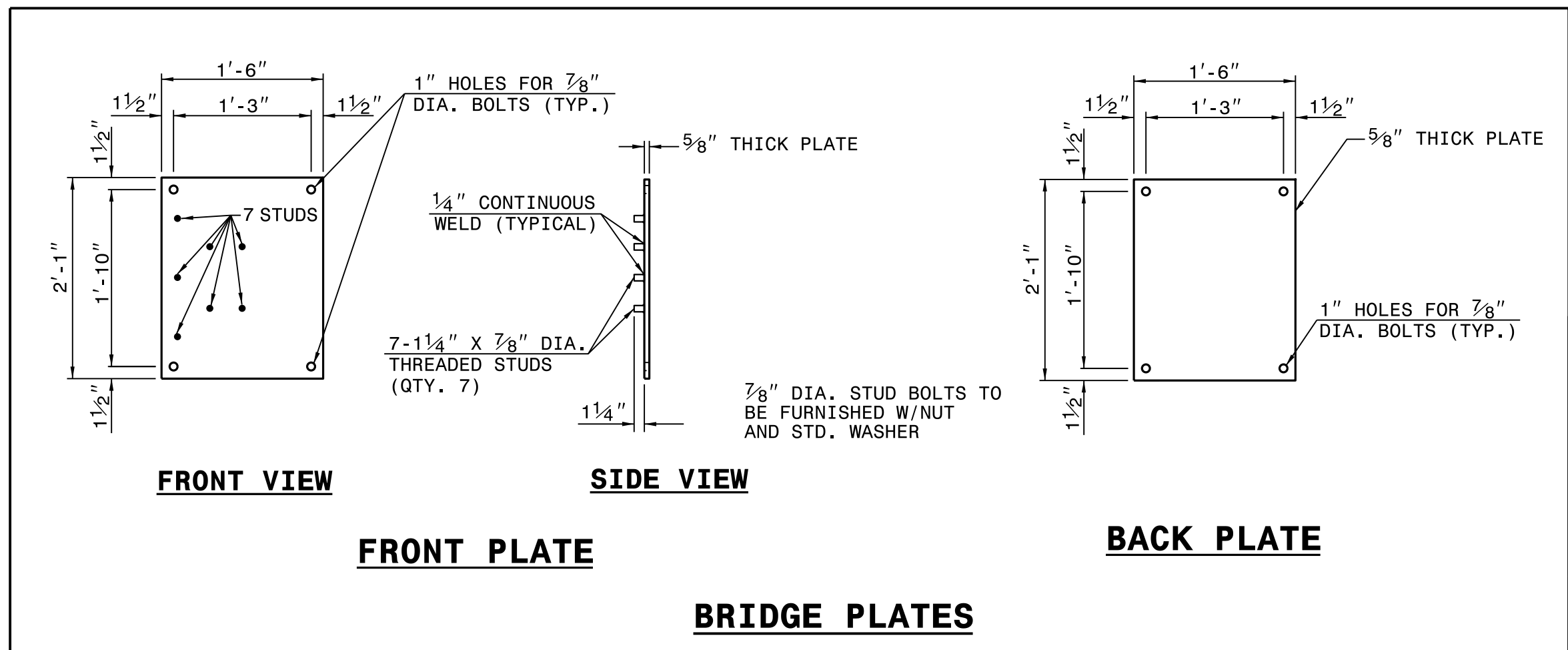


ELEVATION VIEW



SECTION VIEW

GUARDRAIL ATTACHMENT TO BRIDGE POST



FRONT VIEW

SIDE VIEW

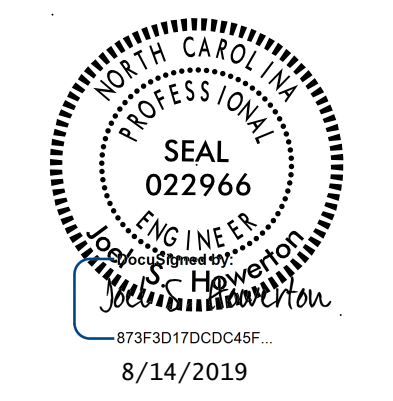
FRONT PLATE

BACK PLATE

BRIDGE PLATES

GENERAL NOTES:

1. USE NUTS, BOLTS, AND WASHERS CONFORMING TO THE REQUIREMENTS OF A.S.T.M. A-307 AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF STAND. SPECS.
2. TAP NUTS FOR THE 7/8" DIA. STUDS AND BOLTS AFTER GALVANIZING SEE A.S.T.M. A-563.
3. USE PLATES AND TUBES CONFORMING TO THE REQUIREMENTS OF A.S.T.M. A-36 AND GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH SECTION 1076 OF STAND. SPECS.
4. ADDITIONAL FIELD HOLES MAY BE DRILLED IN STEEL RAIL AS DIRECTED BY THE ENGINEER.
5. INSTALL FACE OF GUARDRAIL AS NEAR AS POSSIBLE TO PLUMB WITH THE PARAPET FACE AT BRIDGE END POST SPACER TUBE LOCATION BY USING STANDARD OR ALTERED SPACER TUBES OR A COMBINATION THEREOF OR AS DIRECTED BY THE ENGINEER. FOR VERY SMALL PARAPET WIDTHS, GUARDRAIL MAY BE INSTALLED AGAINST BRIDGE RAIL WITHOUT SPACER TUBES.
6. DO NOT DRILL BRIDGE RAIL IN ORDER TO INSTALL GUARDRAIL ANCHOR UNIT.
7. USE THIS DETAIL ONLY FOR BRIGES WITH POST AND BEAM TYPE RAIL.
8. ATTACH 1" X 1" BAR AND THREADED STUDS TO PLATE WITH 1/4" WELDS ALL AROUND.
9. 1" X 1" BAR MAY NOT BE NEEDED ON BRIDGE RAILS WHERE FACE OF RAIL DOES NOT PROJECT BEYOND FACE OF POST.
10. PROVIDE SHOP DRAWINGS OF THE PLATES TO THE ENGINEER FOR APPROVAL BEFORE FABRICATING THE PLATES.
11. LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
12. SEE ROADWAY STARDARD DRAWING 862.03 SHEET 3 FOR ADDITIONAL INFORMATION ON THE TYPE III ANCHOR UNIT



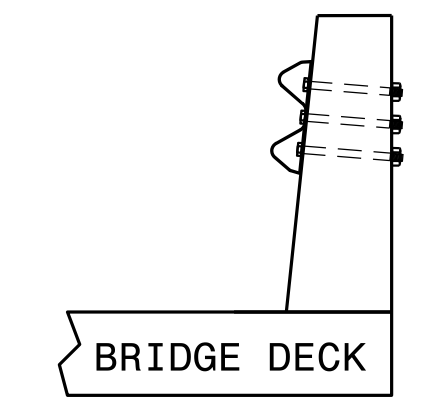
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

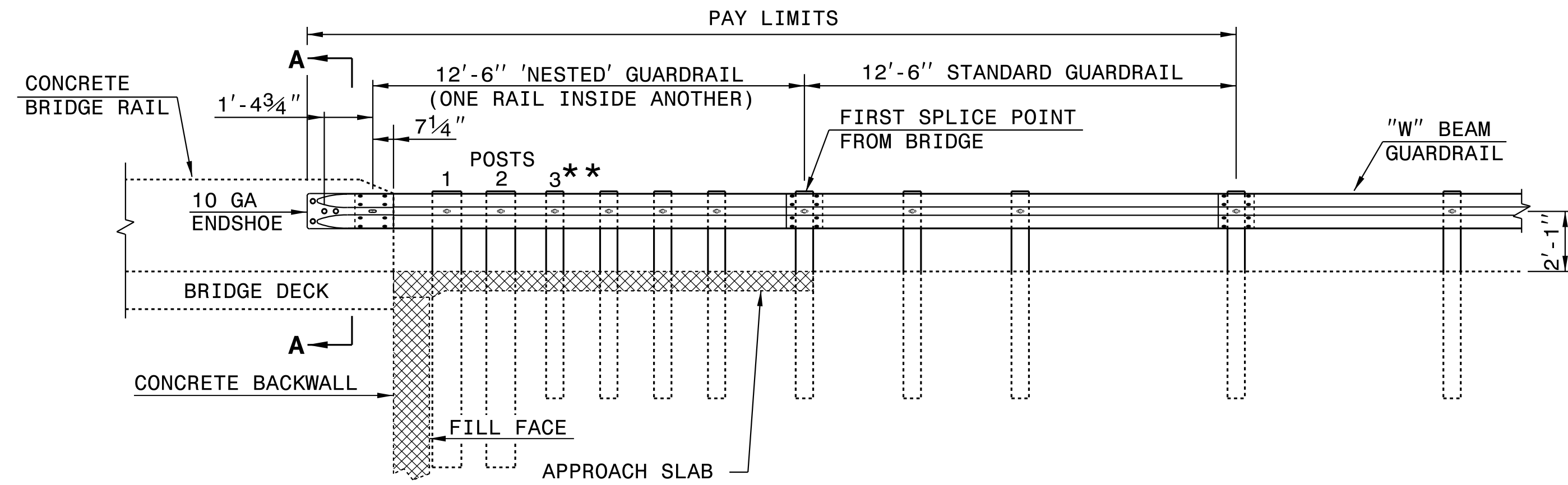
STRUCTURE ANCHOR UNIT TYPE III MODIFIED

ORIGINAL BY: C.O. CUEVAS DATE: 12-00
MODIFIED BY: JS HOWERTON DATE: 01-18
CHECKED BY: DATE:
FILE SPEC.: \usr\details\stand\bp\ii.dgn

24-JAN-2018 14:52 S:\Contracts\Special Details\vertical\usr\details\stand\bp_iii_orig\ii.dgn .jpower ton AT USD-292595



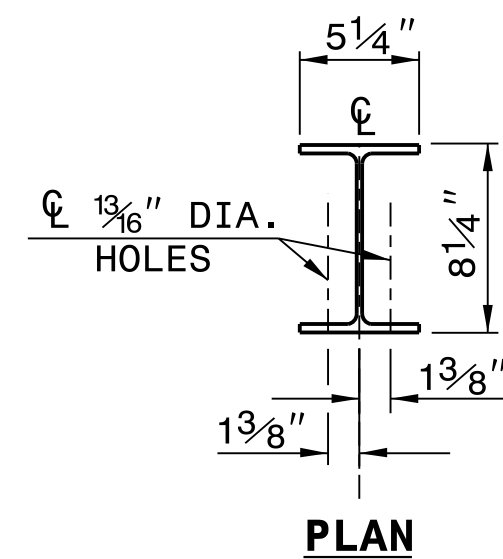
SECTION A-A



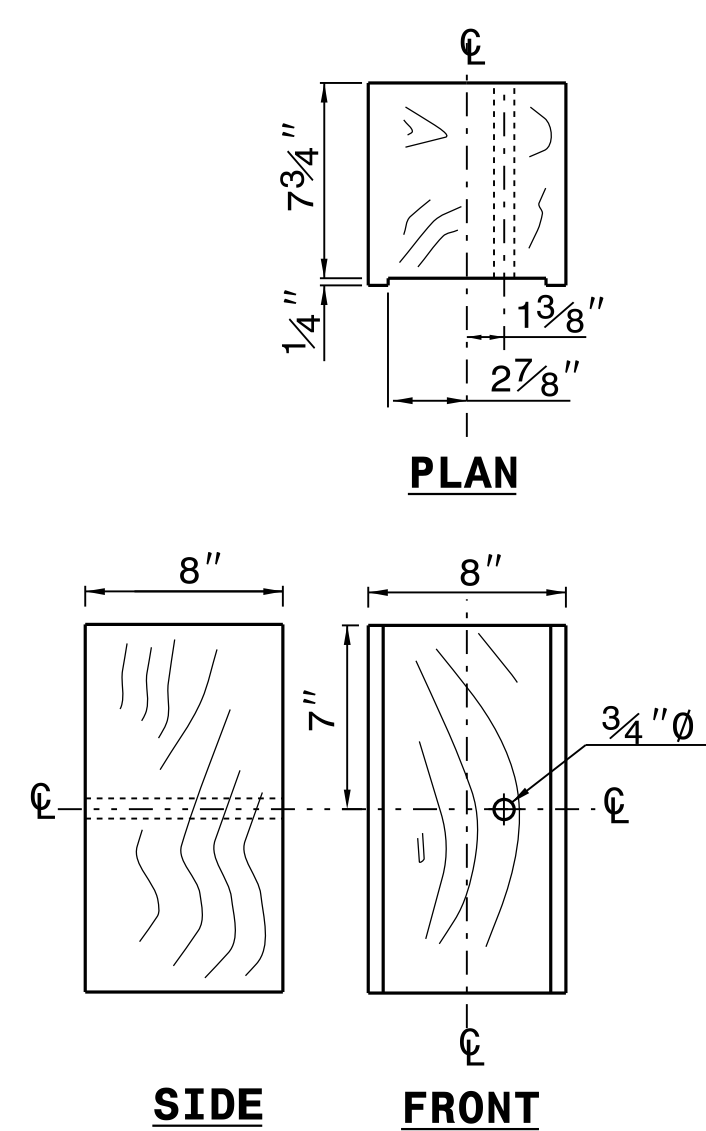
ELEVATION VIEW

NOTE:

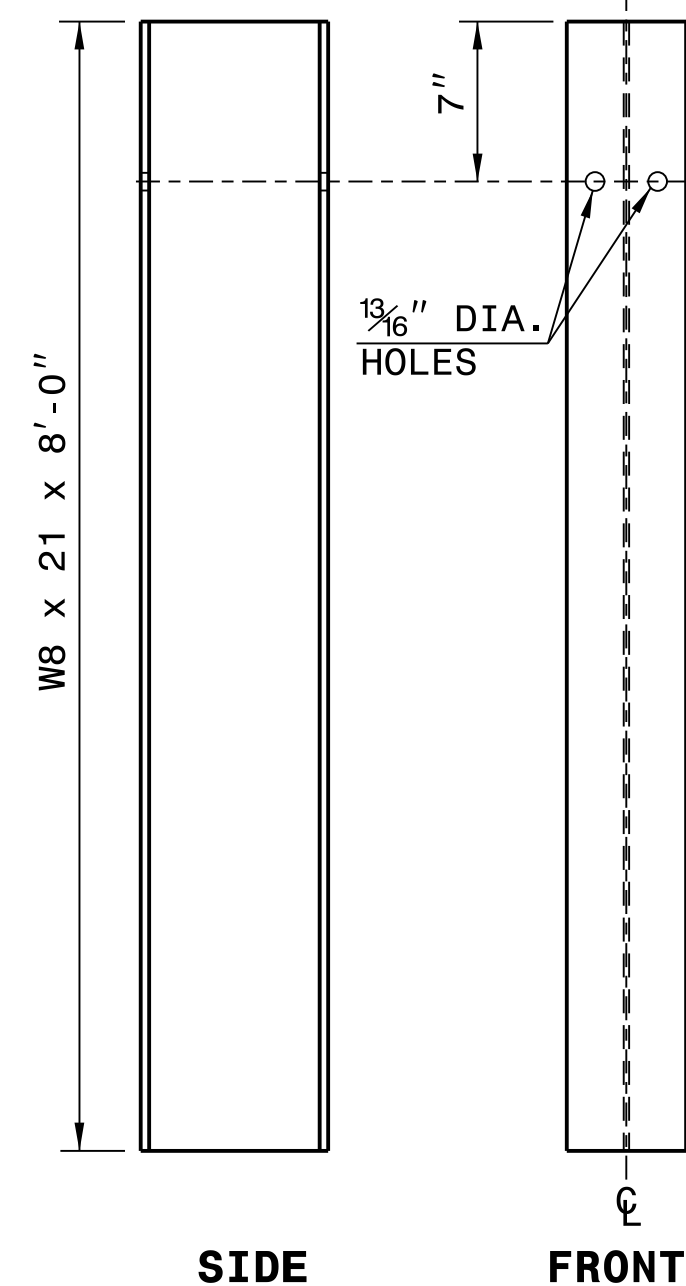
- **ELIMINATE POST 3 AND SHIFT POSTS 1 & 2 ON SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
- *THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11 1/2" IF CONCRETE BACKWALL IS NOT PRESENT.
- MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
- USE NO WOOD POSTS WITHIN THE GUARDRAIL ANCHOR UNIT LIMITS.
- LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
- POSTS 1 AND 2 TO BE W8 x 21 x 8'-0" LONG STEEL POST AND 8" x 8" x 14" WOOD ROUTED OFFSET BLOCK.



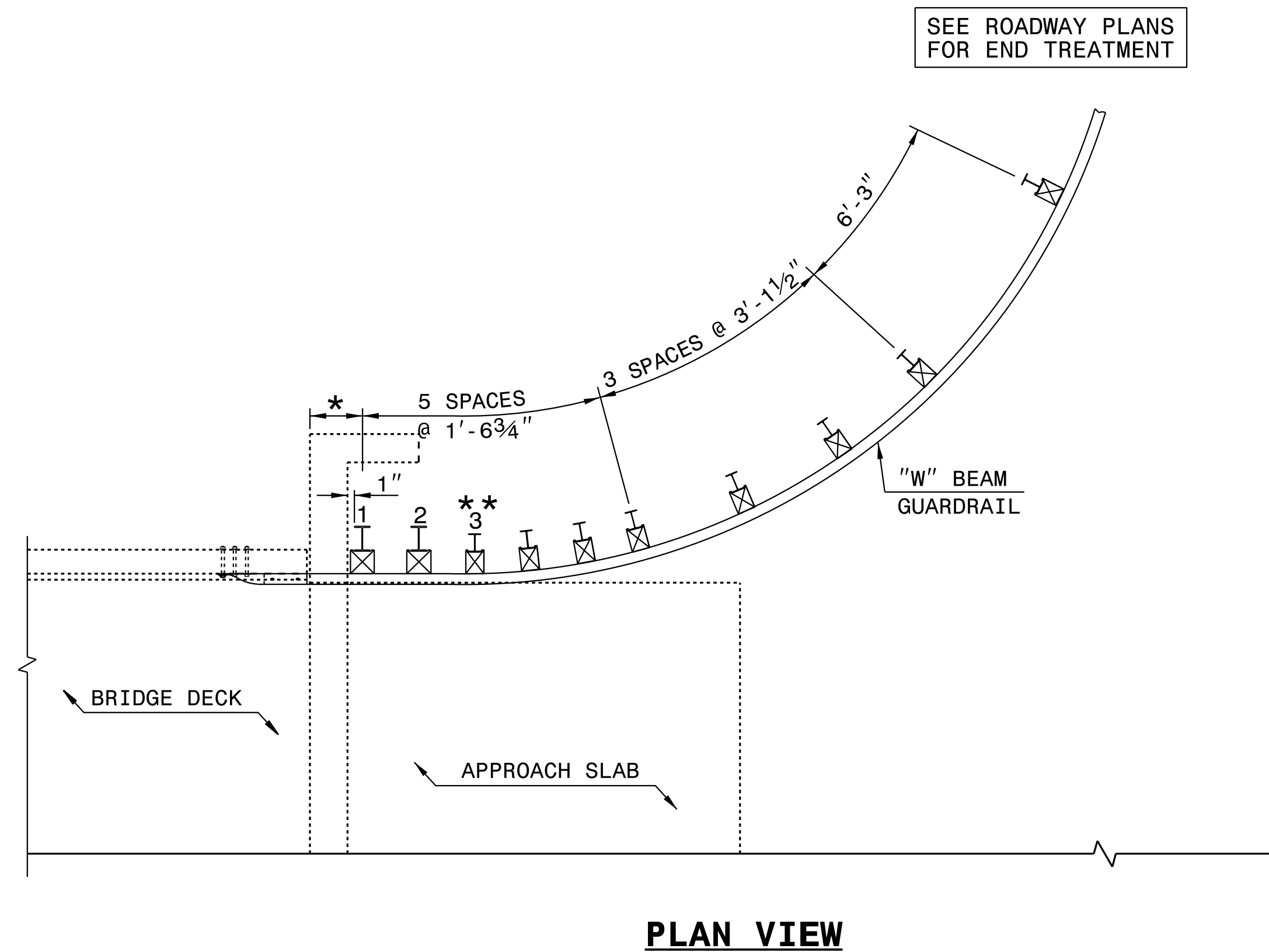
PLAN



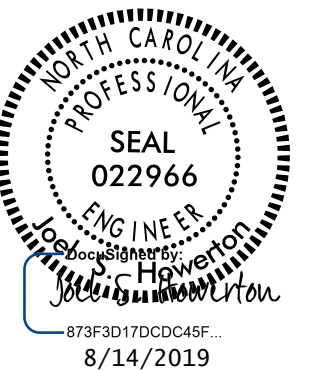
8" X 8" X 14" ROUTED WOOD OFFSET BLOCK



W8 X 21 X 8'-0" STEEL POST



PLAN VIEW



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

GUARDRAIL ANCHOR UNIT TYPE B-83 SHOP CURVED

ORIGINAL BY: E.E. WARD	DATE: 6-10-02
MODIFIED BY: E.E. WARD	DATE: 7-14-04
CHECKED BY:	DATE:
FILE SPEC.:	

STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

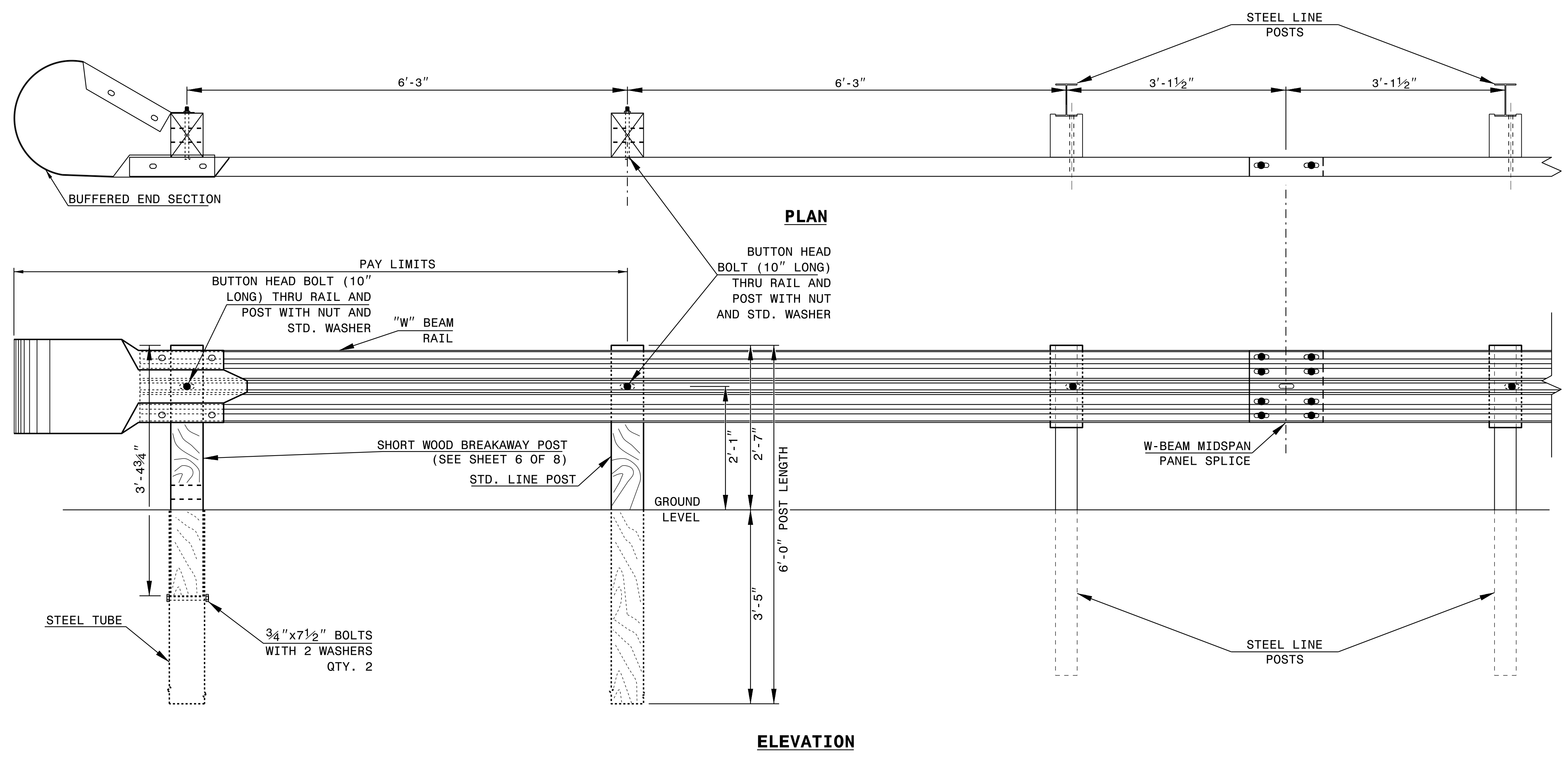
ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET OF

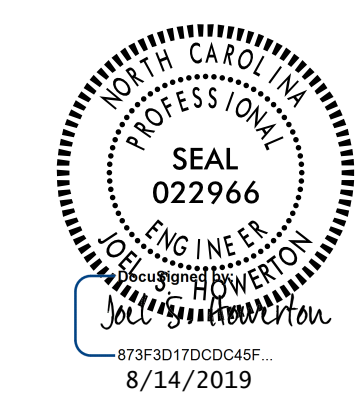
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET OF



TRAILING END UNIT ASSEMBLY
A.T. - 1 SYSTEM



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

CONTRACTS STANDARDS AND DEVELOPMENT UNIT	
Office 919-707-6950	FAX 919-250-4119
A.T. - 1 SYSTEM	
ORIGINAL BY: _____	DATE: _____
MODIFIED BY: _____	DATE: _____
CHECKED BY: _____	DATE: _____
FILE SPEC.: _____	

SUMMARY OF QUANTITIES

PROJECT NO	COUNT	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	FINAL SURFACE TESTING REQUIRED	WARM MIX ASPHALT REQUIRED	LENGTH	WIDTH	SUPPL. CLEARING & GRUBBING	UNDER-CUT EXCAVATION	BORROW	DDE	GEO-TEXTILE FOR SOIL STABILIZATION	6" SLOPE PROTECTION	SHALLOW UNDERCUT	CLASS IV SUB-GRADE STABILIZATION	AGGR. BASE COURSE FOR BACK-FILL	INC. STONE BASE	SHOULDER RECON.	ASB	1½" MILLING	2" MILLING	8" MILLING	INC. MILLING	
										MI	FT	ACR	CY	CY	CY	SY	SY	CY	TON	TONS	TONS	SMI	TON	SY	SY	SY	SY	
48755.3.GV1	Buncombe	1	I-40 West 55-50	From the ramp gore coming from Porter Cove to I-40 West to 300' West MM 50	1, 9	2	MD	NO	NO	4.861	24' to 60'	1.5	1,530	2,122	160	500	80	150	350	550	420	10	10,168	1,170		2,950	1,120	
		2	I-40 East 50 to 55	From 300' West of MM 50 to MM 55	1, 9	2	MD	NO	NO	4.861	24' to 60'	1.5	1,530	2,122	160	500	100	160	350	550	420	10	10,168	1,170		2,950	1,120	
		3	I-40 Eastbound	RAMPS AND LOOPS	3 thru 8	2	2WU	NO	NO	1.339	24				14								0.30	120	10,066	2,385		190
		4	I-40 Westbound	RAMPS AND LOOPS	3 thru 8	2	2WU	NO	NO	2.307	24				16								0.52	132	9,503	1,920		200
GRAND TOTAL FOR PROJ NO. I-6063										13.368		3	3,060	4,274	320	1,000	180	310	700	1,100	840	20.82	20,588	21,909	4,305	5,900	2,630	

FINE MILLING	BASE COURSE, B25.0C	INTERMEDIATE COURSE, I19.0C	SURFACE COURSE, S9.5D	ASPHALT BINDER FOR PLANT MIX	POLYMER MOD. ASPH. BINDER FOR PLANT MIX	PATCHING EXI. PAVEMENT	REPAIR OF JOINTED CONC PAVEMENT SLABS	ULTRA-THIN BONDED WEARING COURSE	MILLED RUMBLE STRIPS (ASPHALT CEMENT CONC)	JOINT CONST. REPAIR AND SEALING	8" CRC PAVEMENT REPAIR	MILLING CONC PAVEMENT 2"	MILLING CONC PAVEMENT 0"-2"	SHOULDER EDGE DRAIN	(SCHEDULE 40) 4 INCH PVC	FRAME W/ 2 GRATES, STD 840.16	FRAME W/ 2 GRATES, STD 840.20	FRAME W/ 2 GRATES, STD 840.22	FRAME W/ 2 GRATES, STD 840.24	FRAME W/ 2 GRATES, STD 840.29	FRAME W/ GRATE & HOOD, STD 840.03, TYPE E	FRAME W/ GRATE & HOOD, STD 840.03, TYPE F	FRAME W/ GRATE & HOOD, STD 840.03, TYPE G	FRAME W/ COVER, STD 840.54	STEEL FRAME W/ 2 GRATES, STD 840.37	CONC PAD FOR SH. DRAIN PIPE OUTLET	DRAINAGE STRUCTURE CLEANOUT	REM & REPL CONC APRON FOR DROP INLET	
SY	TONS	TONS	TONS	TONS	TONS	TONS	SY	TON	LF	LF	SY	SY	SY	LF	LF	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA
70,400	847	22,537	23,958	1,120	1,550	140		3,674	52,800		540	1,400	3,625	26,400	2,112	8	2	11	3	3	3	6	7	4	1	88	15	20	
70,400	847	23,033	24,333	1,144	1,573	140		3,729	52,800		500	1,400	3,625	26,400	2,112	8	3	11	4	4	4	6	7	5	1	88	15	45	
		685	1,576	33	97	190	30	145		1,400	30	2,093																	
		773	1,699	37	97	140	60			2,400		2,323																	
140,800	1,694	47,028	51,566	2,334	3,317	610	90	7,548	105,600	3,800	1,070	2,800	11,666	52,800	4,224	16	5	22	7	7	7	12	14	9	2	176	30	65	

REM. & REPL 2' 6" CURB & GUTTER	REM. & REPL 4" CONC PAVED DITCH	REM. & REPL CURB RAMPS	CONC BARRIER, SINGLE SLOPE DOUBLED FACED	ADJ. OF DROP INLETS	ADJ. OF MANHOLES	ADJ. OF METER OR VALVE BOXES	CONVERT EXI. DROP INLET TO JUNC. BOX	STEEL BEAM GUARDRAIL	STEEL BEAM GUARDRAIL, SHOP CURVED	STEEL BEAM GUARDRAIL, DOUBLE FACED	TRIPLE CORRUGATED STEEL BM GUARDRAIL	EXTRA LENGTH GUARDRAIL POST (8' STEEL)	ADDITIONAL GUARDRAIL POSTS	GRAU, TYPE B-83 SHOP CURVED	GRAU, TYPE III MODIFIED	GRAU, TYPE III SHOP CURVED	GREU, TYPE AT-1	GREU, TYPE CAT-1	GRAU, TYPE III	GREU, TYPE TL-3	GREU, TYPE TL-2	GRAU, TYPE B-77	GRAU, TYPE B-83	REM. EXI. GUARDRAIL	TEMP. GRAU, TYPE B-77	TEMP. GRAU, TYPE B-83	TEMP. GRAU, TYPE III	TEMP. GRAU, TYPE III MODIFIED
LF	SY	EA	LF	EA	EA	EA	EA	LF	LF	LF	LF	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA
3,807	4,385		1,050	33				31,610	90	230	70	8	20	1	2	1	1	44	2	5	1	3	4	23,470	6	2	4	1
2,963	4,575		1,050	32			1	31,611	100	230	75	8	25	1		1	1	44	3	5	1	3	2	23,470	6	2	4	1
987		2			4	3																						
862	190	2																										
8,619	9,150	4	2,100	65	4	3	1	63,221	190	460	145	16	45	2	2	2	2	88	5	10	2	6	6	46,940	12	4	8	2

TEMP. GREU, TYPE TL-2	TEMP. GREU, TYPE TL-3	RIP RAP, CLASS B	GEOTEXTILE FOR DRAINAGE	TEMP. SILT FENCE	STONE FOR EROS. CONTROL, CLASS B	SEDIMENT CONTROL STONE	TEMP. MULCHING	SEED FOR TEMP. SEEDING	FERTILIZER FOR TEMP. SEEDING	TEMP. SLOPE DRAINS	SAFETY FENCE	SILT EXCAVATION	MATTING FOR EC	1/4" HARDWARE CLOTH	WATTLE	POLY-ACRYLAMIDE (PAM)	SEED & MULCHING	MOWING	SEED FOR REPAIR SEEDING	FERTILIZER FOR REPAIR SEEDING	SEED FOR SUPPL. SEEDING	FERTILIZER TOP-DRESSING	SPECIALIZED HAND MOWING	RESPONSE FOR EC	CONC WASHOUT STRUCTURE	FABRIC INSERT INLET PROTECTION DEVICE	FABRIC INSERT INLET PROTECTION DEVICE CLEANOUT	INDUCTIVE LOOP
EA	EA	TON	SY	LF	TON	TON	ACR	LB	TON	LF	LF	CY	SY	LF	LF	LB	AC	ACR	LB	TON	LB	TON	MHR	EA	EA	EA	EA	EA
6		200	2,000	4,000	590	2,000	30	1,500	6	140	200	440	725	700	1,800	70	3.2	11	125	1	225	1.5	370	24	2	12	18	
4	2	200	2,000	4,200	600	2,280	30	1,500	6	140	200	440	725	780	2,000	78	3.2	11	125	1	225	1.5	370	24	2	12	18	
																	0.4											363
																	0.5											
10	2	400	4,000	8,200	1,190	4,280	60	3,000	12	280	400	880	1,450	1,480	3,800	148	7.3	22	250	2	450	3	740	48	4	24	36	363

PROJECT NO.	SHEET NO.	TOTAL NO.
I-6063	22	

THERMOPLASTIC AND PAINT QUANTITIES

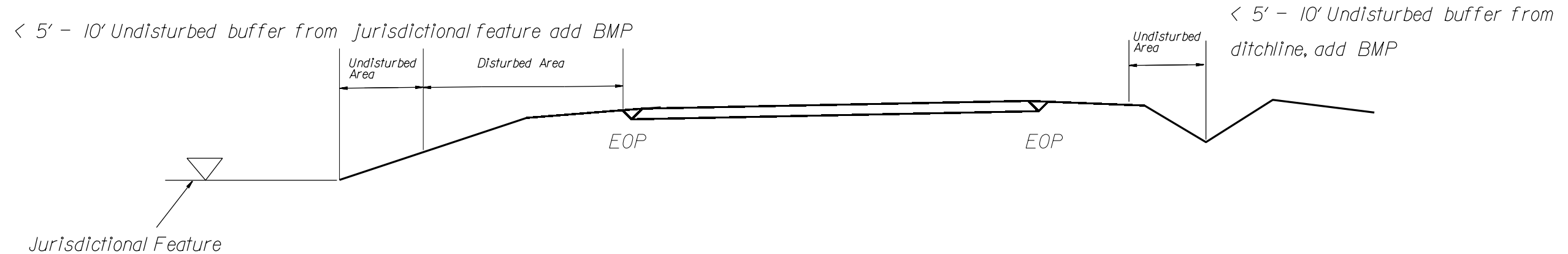
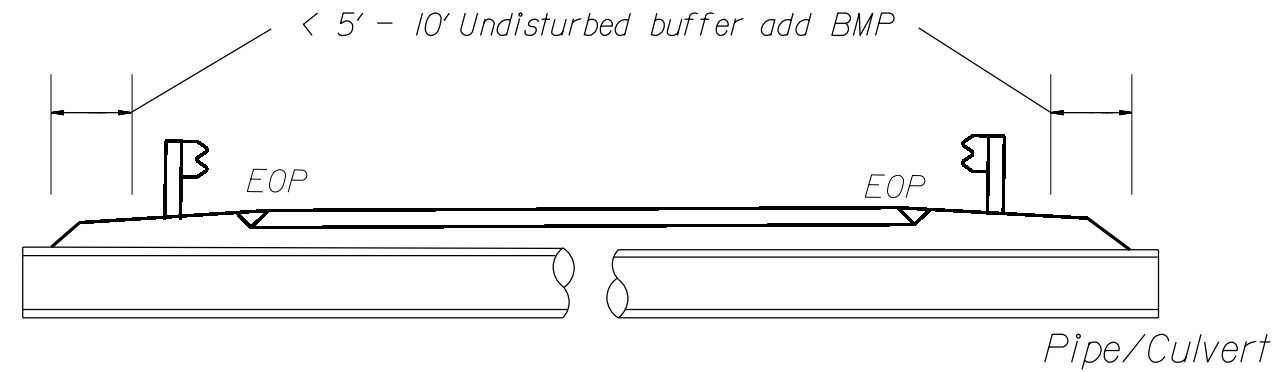
PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	LENGTH	WIDTH	4400000	4405000	44240000	443400000	445500000	446500000	44700000	448000000	4485000	45000000	451000000	46000000	46000000	4650..					
								MI	FT	SF	SF	EA	x	DAY	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA
48755.3.GV1	Buncombe	1	I-40	From the ramp gore coming from Porter Cove to I-40 West to 300' West MM 50	1, 9	2	MD	4.861	42	250	400	16	10	18	5	15	1	500	4,000	440	54		200					
				From 300' West of MM 50 to MM 55	1, 9	2	MD	4.861	42	260	410	16	10	18	5	15	1	520	4,000	440	58		220					
				I-40 East-bound RAMPS AND LOOPS	3 thru 8	2	2WU	1.339	24															31				
				I-40 West-bound RAMPS AND LOOPS	3 thru 8	2	2WU	2.307	24																34			
GRAND TOTAL FOR PROJ NO. I-6063								13.368		510	810	32	20	36	10	30	2	1,020	8,000	880	112	65	420					

47261100	4725000000-E			4775000000-E		481500000	482500000	483500000	4845000000-N			4847030000-E		484707000	4890000000	4890000000-E		4890000	48910000	489500000	490000000	5255..	
HEATED-IN-PLACE THERMO PLASTIC SYMBOL	THERMO PLASTIC ARROW 90 M	THERMO PLASTIC ARROW 90 M	MERGE LEFT ARROW 90M	COLD APPLIED PLASTIC PM LINES, TYPE 2 WHITE (6")	COLD APPLIED PLASTIC PM LINES, TYPE 2 YELLOW (6")	6" WHITE PAINT	12" WHITE PAINT	24" WHITE PAINT	PAINT PM SYMBOL	PAINT LT ARROW	PAINT RT ARROW	POLYUREA PM WHITE LINES (6", 20 MILS)	POLYUREA PM YELLOW LINES (6", 20 MILS)	POLYUREA PM LINES (12", 20 MILS)	COLD APPLIED PLASTIC PM LINES, TYPE II (9")	THERMO PLASTIC LINES (6", 90 MILS) HRM	THERMO PLASTIC LINES (6", 90 MILS) HRM	THERMO PLASTIC LINES (12", 90 MILS) WHITE HRM	24" X 90 M WHITE THERMO	NON-CAST IRON SNOWPLAWABLE MARKERS	PERMANENT RAISED PAVEMENT MARKERS	PORTABLE LIGHTING	
EA	EA	EA	EA	LF	LF	LF	LF	LF	EA	EA	EA	LF	LF	LF	LF	LF	LF	LF	LF	EA	EA	LS	
			11	715	720	237,600	10,010		11						300	26,550	33,000	4,575		865	105		
			22	715	720	238,450	10,644		19						300	27,310	34,140	5,145		886	105	*	
6						6,280						3,250	3,250	280		3,315	3,315						
	4	2				5,800		100		4	2	6,735	6,715	432		1,760	1,670		48				
6	4	2	33	1,430	1,440	488,130	20,654	100	30	4	2	9,985	9,965	712	600	58,935	72,125	9,720	48	1,751	210	1	
	39			2,870					36			19,950			131,060								

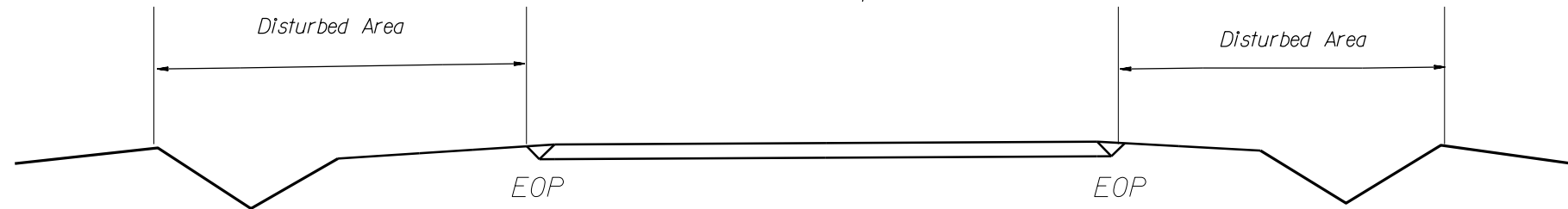
NOTES: Less than 5' - 10' undisturbed buffer from ROW, ditchline, water feature, or drainage inlet, add BMP.

BMP Options: Wattle, Silt Fence or Hardened Aggregate.

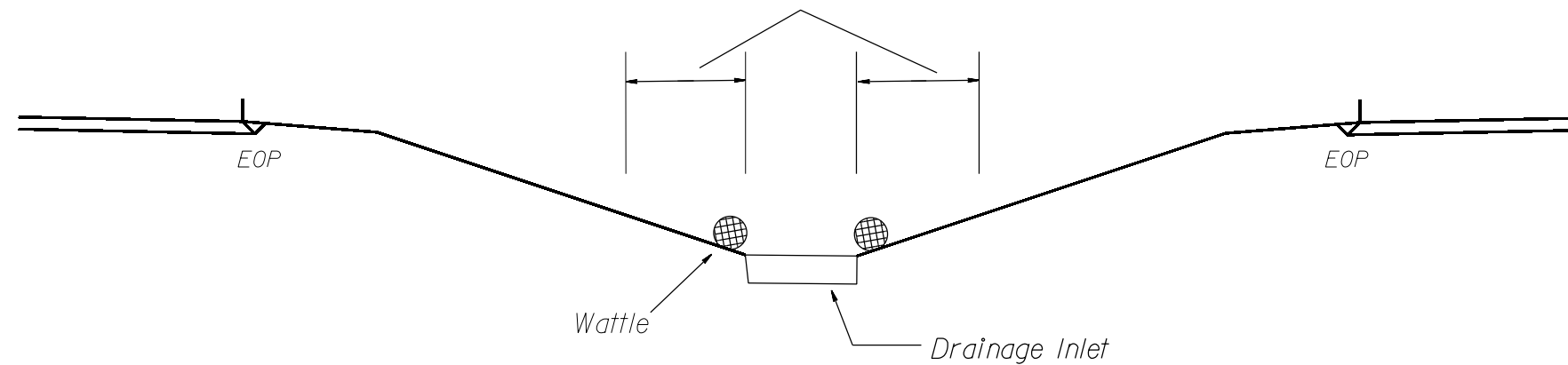
EROSION CONTROL DETAIL



Use BMP's if shoulders and/or frontslopes and/or ditchline and/or backslopes are disturbed

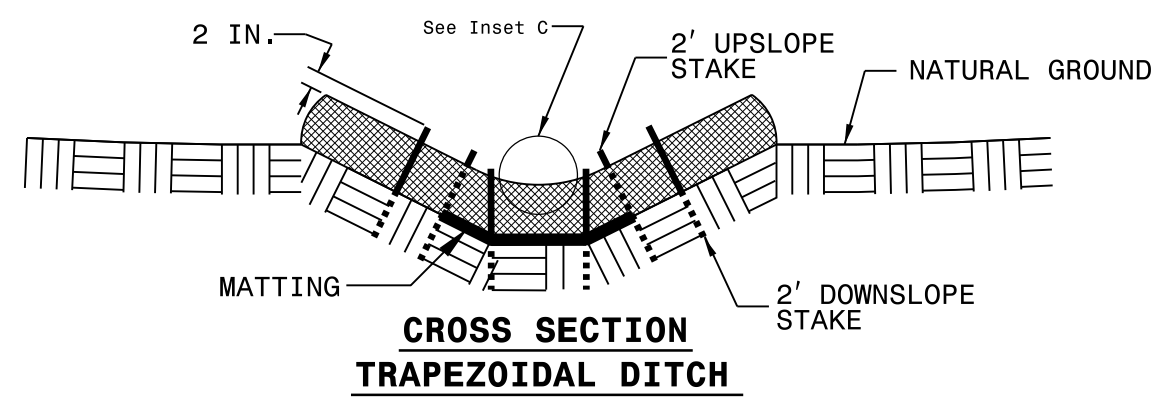
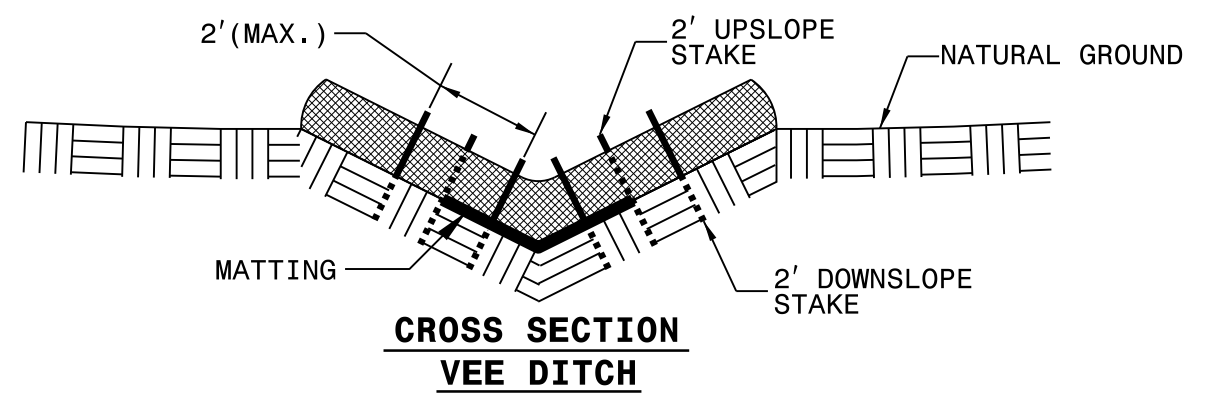
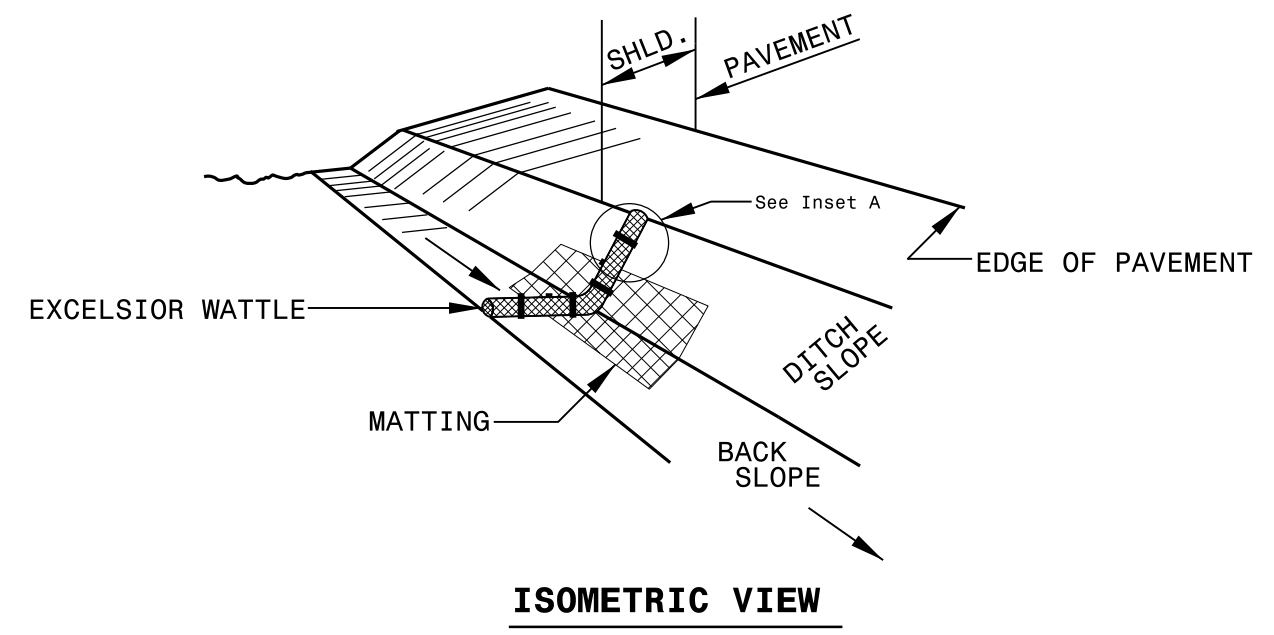


< 5' - 10' Undisturbed buffer from inlet, add wattle

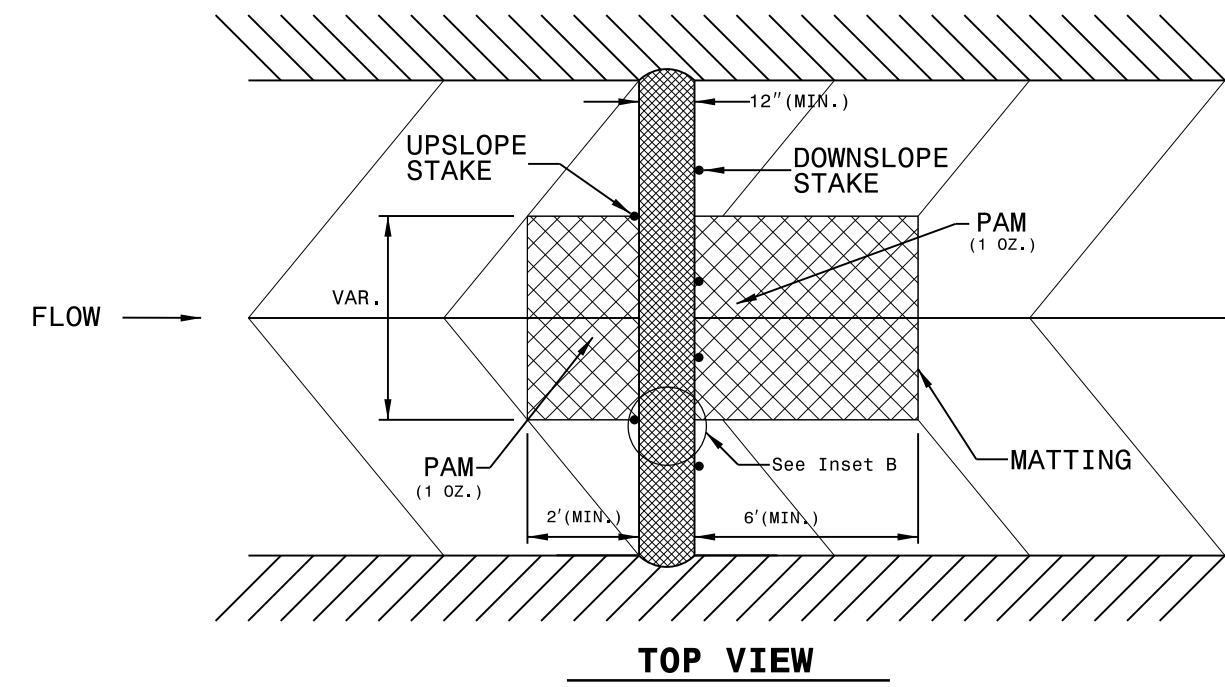
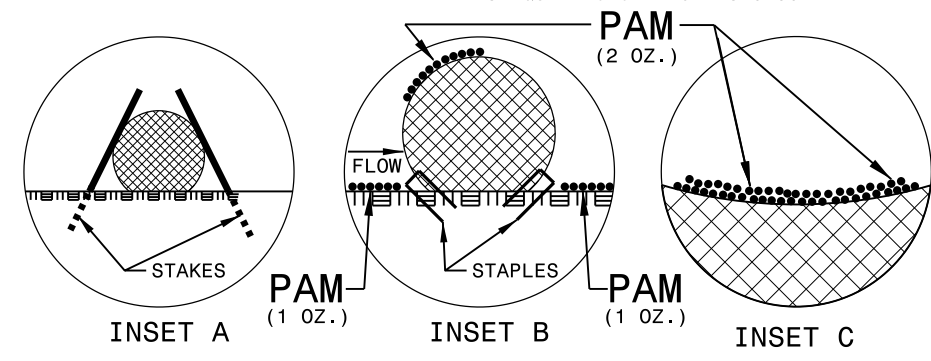


NOT TO SCALE

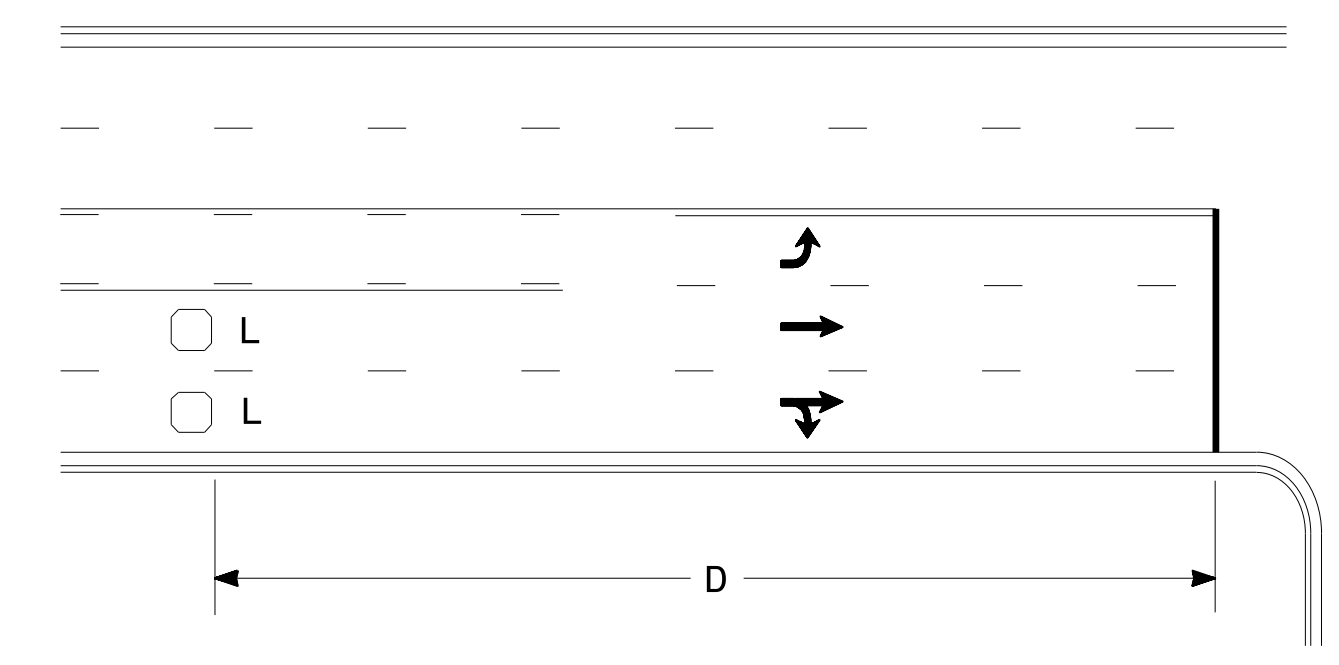
WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL



- NOTES:
- USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE.
 - USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.
 - ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.
 - INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.
 - PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.
 - INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.
 - INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.
 - PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH WATTLE.
 - INITIALLY APPLY 2 OUNCES OF ANIONIC OR NEUTRALLY CHARGED PAM OVER WATTLE WHERE WATER WILL FLOW AND 1 OUNCE OF PAM ON MATTING ON EACH SIDE OF WATTLE. REAPPLY PAM AFTER EVERY RAINFALL EVENT THAT IS EQUAL TO OR EXCEEDS 0.50 IN.



High Speed Detection (≥40 mph)

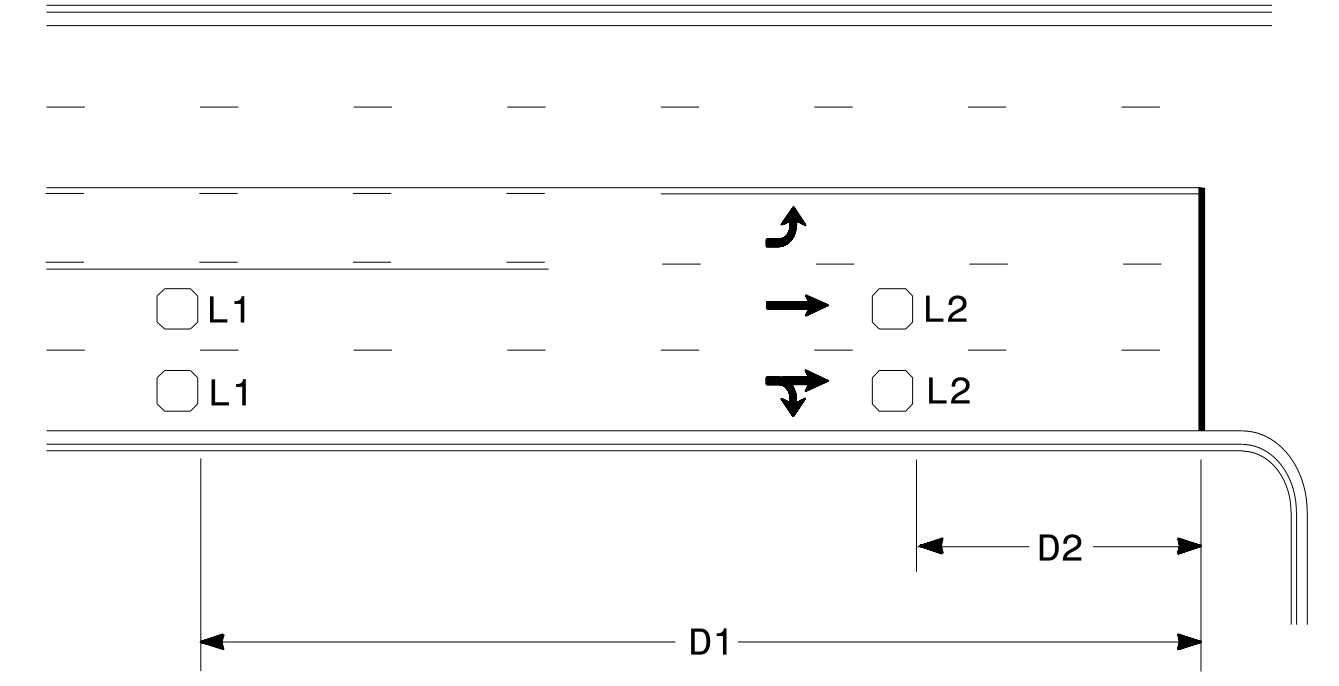


Speed Limit mph	D ft
40	250
45	300
50	355
55	420

L = 6ft X 6ft
Wired in series for TS1
Controllers
Wired separately for TS2,
170, and 2070L Controllers

Volume Density Operation

OR

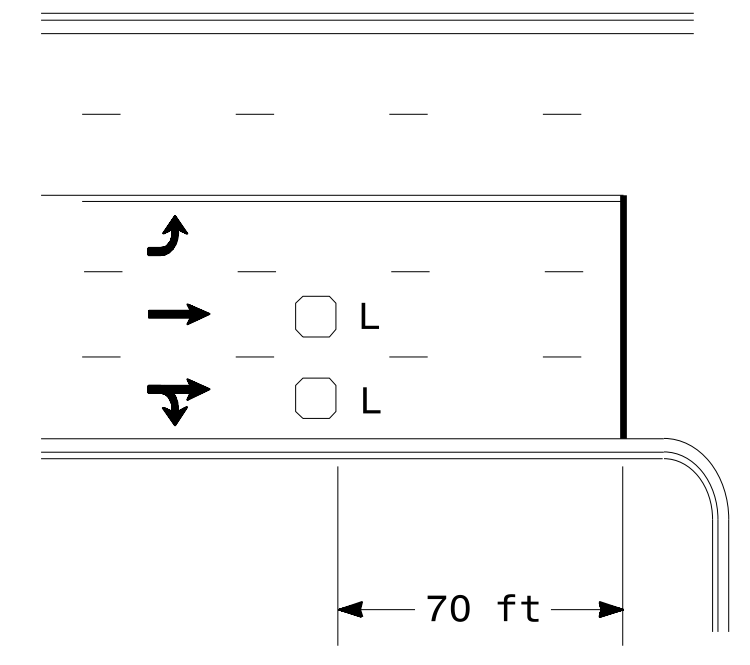


Speed Limit mph	D1 ft	D2 ft
40	250	80
45	300	90
50	355	100
55	420	110

L1 = 6ft X 6ft
Wired in series
L2 = 6ft X 6ft
Wired in series

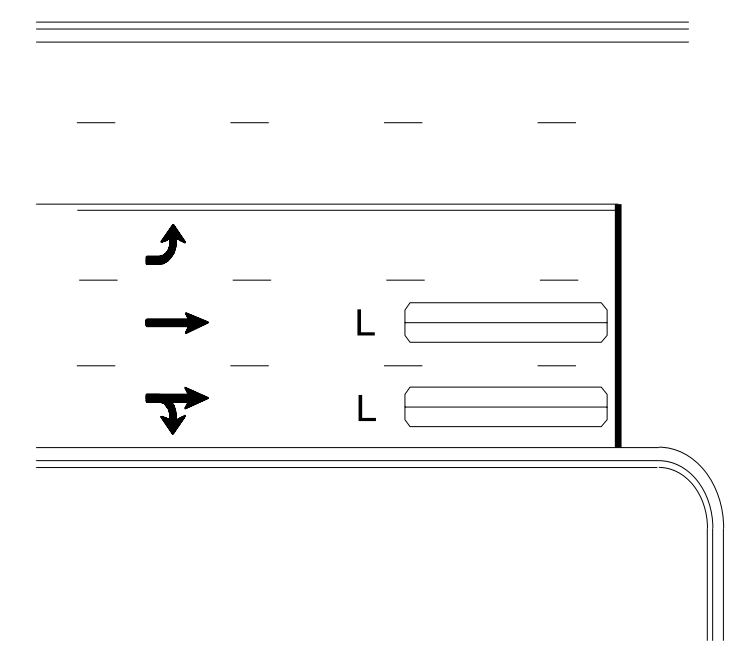
"Stretch" Operation

Low Speed Detection (≤35 mph)



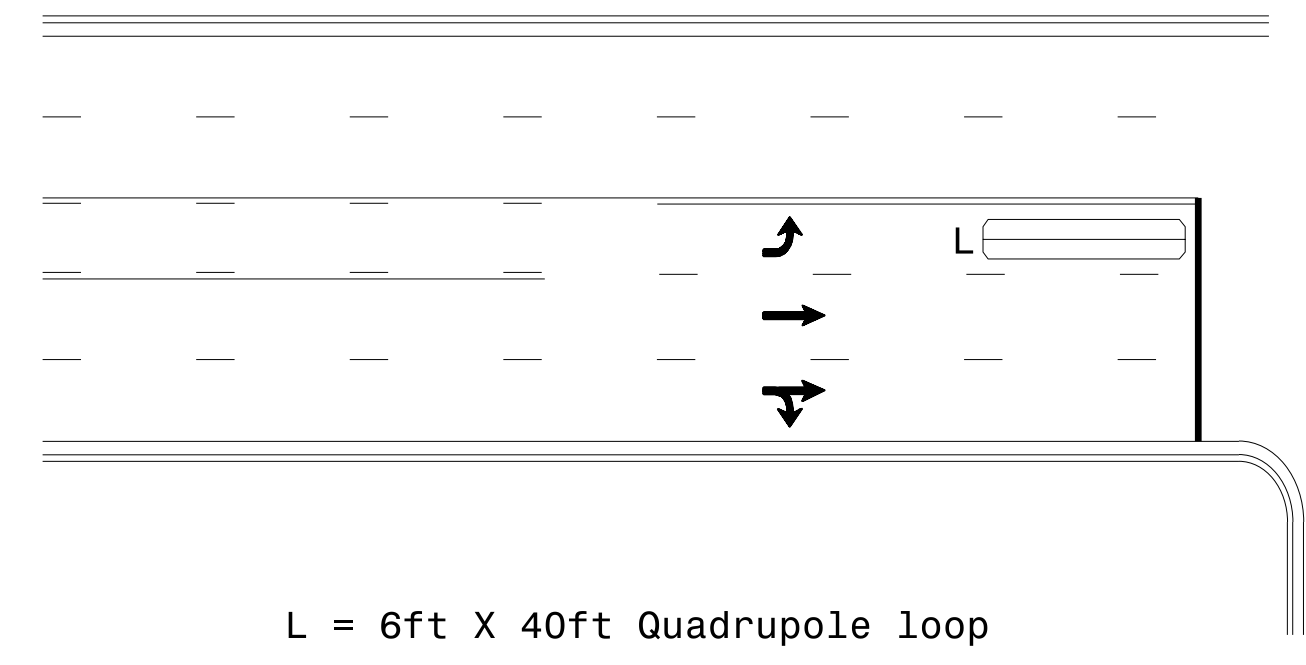
L = 6ft X 6ft
Wired in series

OR



L = 6ft X 40ft
Quadrupole loop, wired separately

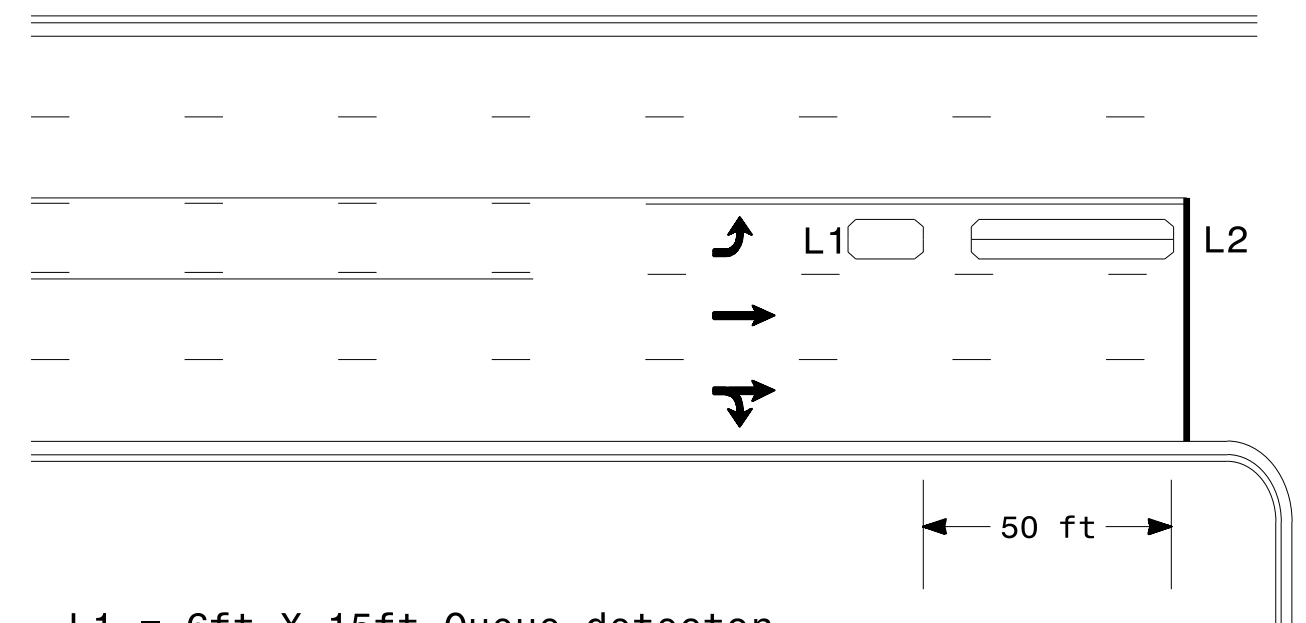
Left Turn Lane Detection



L = 6ft X 40ft Quadrupole loop

Presence Loop Detection

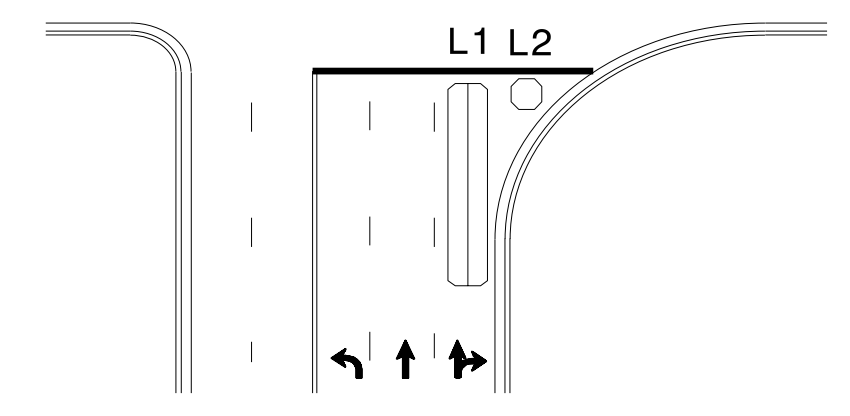
OR



L1 = 6ft X 15ft Queue detector
L2 = 6ft X 40ft Quadrupole loop

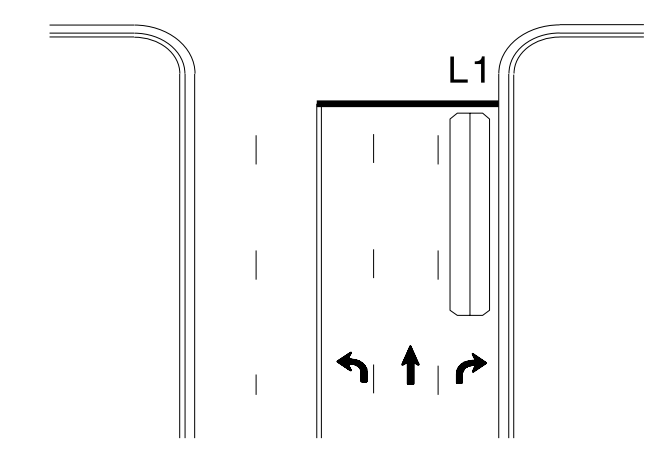
Queue Loop Detection

Right Turn Lane Detection

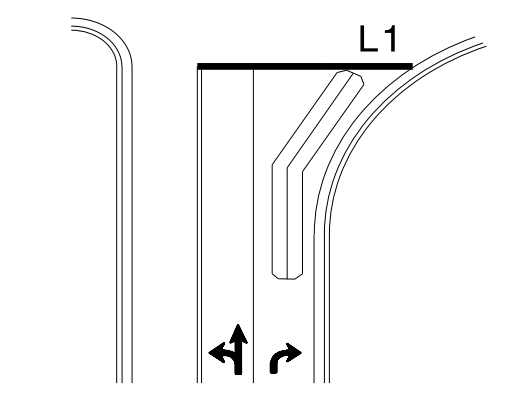


Shared Lane/
Wide Radius Turn

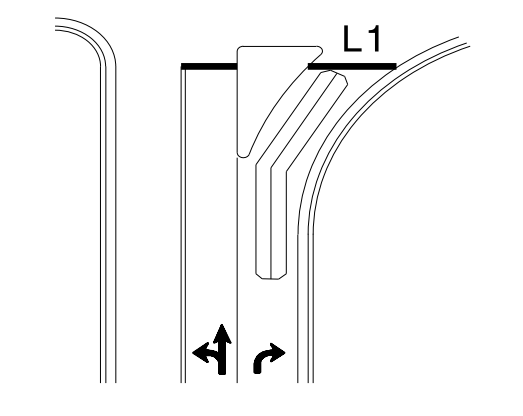
L1 = 6ft X 40ft Quadrupole loop
L2 = 6ft X 6ft [Minimum] Presence loop
Wired separately



Standard Turn

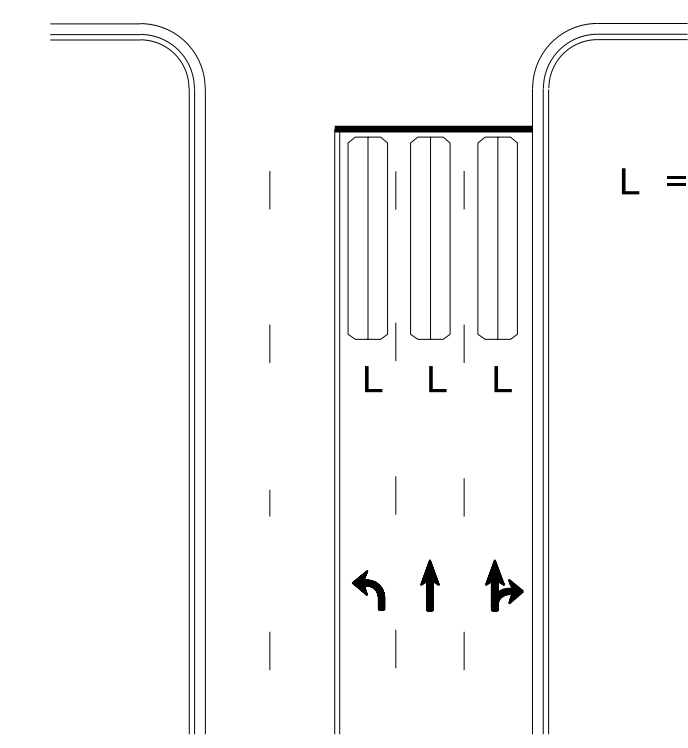


Wide Radius Turn



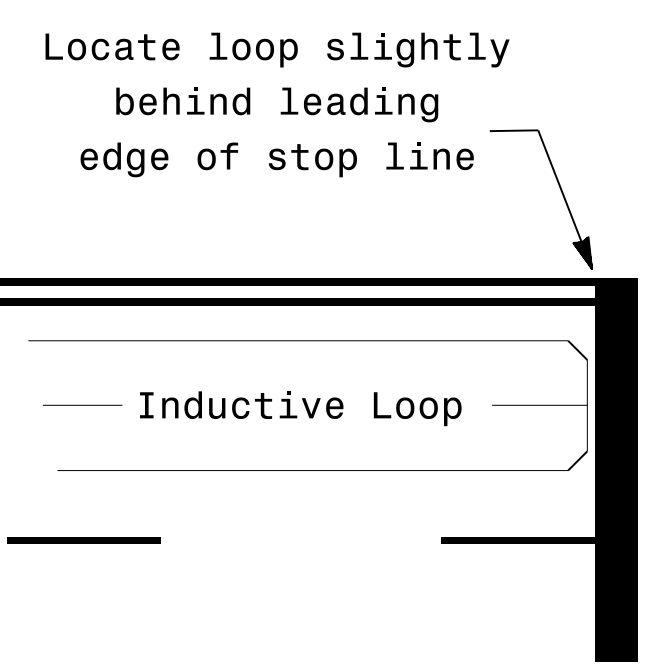
Channelized Turn

Side Street Detection



L = 6ft X 40ft
Quadrupole loop
Wired to separate
detectors/channels

Presence Loop Placement at Stop Lines



Locate loop slightly
behind leading
edge of stop line

Note:
Loop may be located in advance
of stop line under any of the
following conditions:
1) stop line is greater than 15'
from edge of intersecting
roadway
2) loop detects a permissive or
protected/permissive left turn
3) for an exclusive right turn
lane

Recommended Number of Turns

Single 6' X 6' loop
(when wired separately):

Length of Lead-in ft	Number of Turns
< 250	3
250-375	4
375-525	5
> 525	6

Quadrupole loops: Use 2-4-2 turns
6' X 15' Loops:
Lead-in < 150', use 2 turns
Lead-in > 150', use 3 turns

750 N. Greenfield Pkwy, Garner, NC 27529

Typical Signal Loop Locations

PLAN DATE: January 2015	REVIEWED BY: JPG
PREPARED BY: PLA	REVIEWED BY:
REVISIONS	INIT. DATE

SEAL
NORTH CAROLINA
PROFESSIONAL ENGINEER
PAMELA L. ALEXANDER
23489

DocuSigned by:
P. Alexander
1/30/2015 10:44:44 AM

3D:\AH\2015\12\319
 S:\ITS\AS\15\SIGNAL\Signal Design\Section\Eastern\Region\loop\yp\lca\2015.dgn
 pal alexander