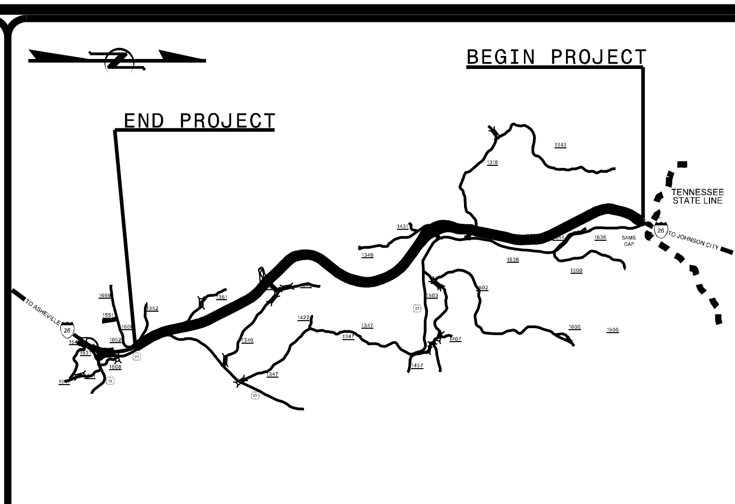
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5831B	1	16

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
53037.1.2	5303701	PE
53037.3.3	5303701	CONST.

TIP PROJECT: I-5831B

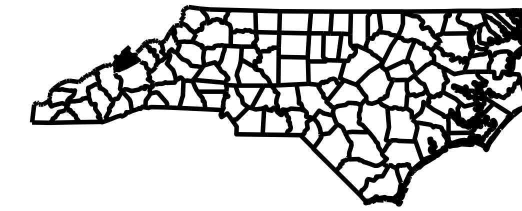


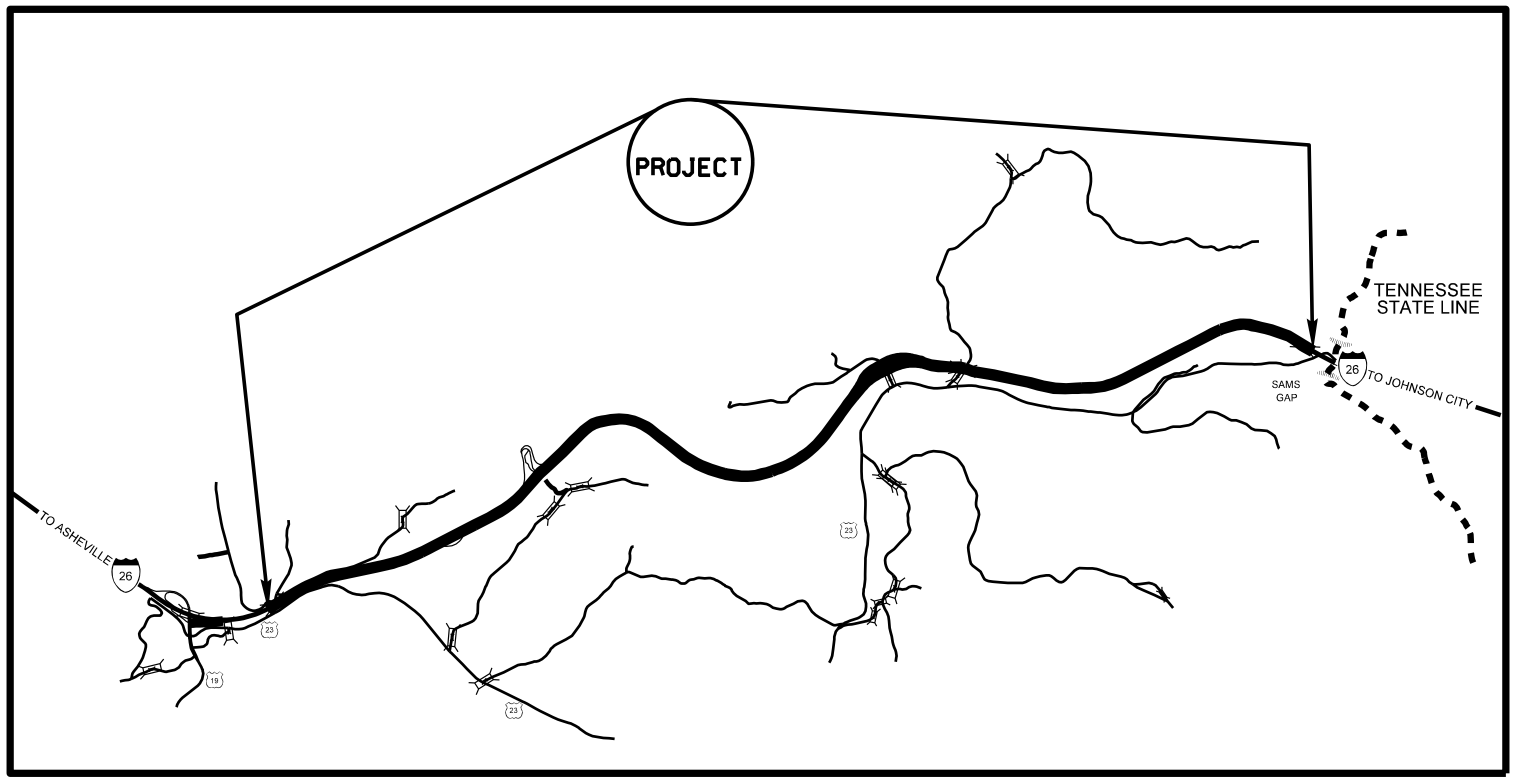
VICINITY MAP

MADISON COUNTY

LOCATION: *I-26 FROM TENNESSEE STATE LINE MM 0.10 TO MM 8.45*

TYPE OF WORK: **DIAMOND GRINDING, ROLLER COMPACTED CONCRETE SHOULDERS AND GUARDRAIL**





CONTRACT:

2024 ROADWAY ENGLISH STANDARD DRAWINGS

See Sheet 2 for Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N.C., Dated January, 2024 are applicable to this project and by reference hereby are considered a part of these plans:

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT I-5831B = 8.320 MI

TOTAL LENGTH OF TIP PROJECT I-5831B = 8.320 MI

Prepared in the Office of:

DIVISION OF HIGHWAYS

1000 Birch Ridge Dr., Raleigh NC, 27610

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:

LETTING DATE:
DEC 16, 2025

CHRIS DEYTON, PE
PROJECT ENGINEER

GRAHAM MARIE ATKINSON
PROJECT DESIGN ENGINEER

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

09/08/99

$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
[illegible]	2

ROADWAY DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
2	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
3 THRU 4	VICINITY MAPS
5 THRU 6	TYPICALS
7 THRU 11	DETAILS
12 THRU 17	SUMMARY OF QUANTITIES

GENERAL NOTES:

2024 SPECIFICATIONS
EFFECTIVE: 01-16-2024
REVISED:

DIAMOND GRINDING:

SHOULDER CONSTRUCTION:

ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. 560.01 AND 560.02 PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

GUARDRAIL:

THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER PRIOR TO ORDERING GUARDRAIL MATERIAL.

SUBSURFACE PLANS:

NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE
NONE

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

EFF. 01-16-2024
REV.

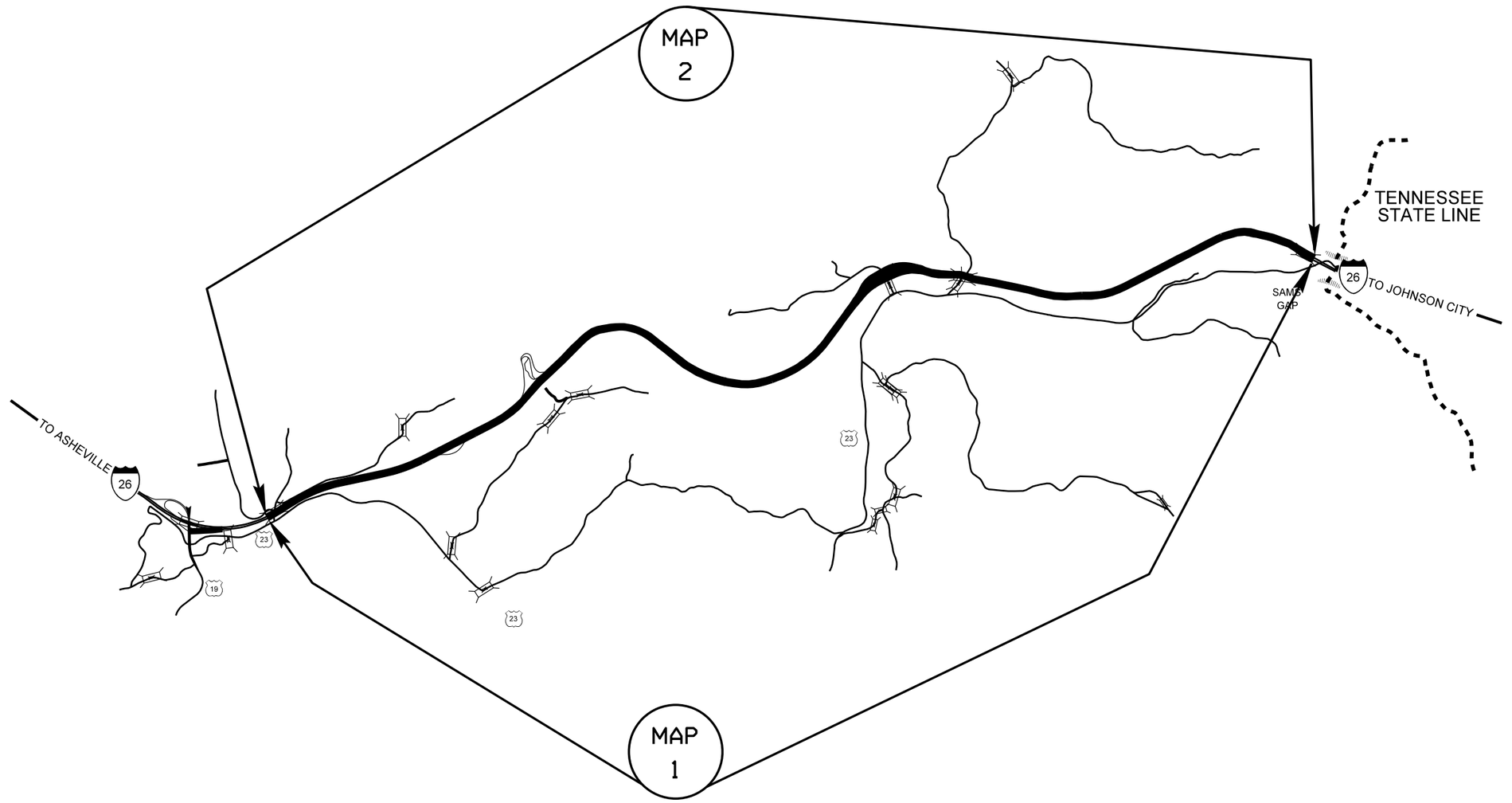
2024 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2024 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 8 - INCIDENTALS	
300.01	Method of Pipe Installation (Use Details in Lieu of Standards for Sheets 1 and 2 OF 2)
300.02	Method of Pipe Installation
560.01	Method of Shoulder Construction
560.02	Method of Shoulder Construction
720.01	Concrete Shoulder Milled Rumble Strips
720.02	Limits of Concrete Shoulder Rumble Strips
840.00	Concrete Base Pad for Drainage Structures
840.22	Drop Inlet Frame and Grates
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.37	Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
840.45	Precast Drainage Structures
840.46	Traffic Bearing Precast Drainage Structure
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
846.02	Drop Inlet Installation in Expressway Gutter
862.01	Guardrail Placement(Use Details in Lieu of Standards for Sheets 6, OF 15)
862.02	Guardrail Installation (Use Details in Lieu of Standards for Sheet 5 of 9)
862.03	Structure Anchor Units(Use Details in Lieu of Standards for Sheets 6 of 9)
862.04	Anchoring End of Guardrail

$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$

PROJECT NO.	SHEET NO.
I-5831B	3

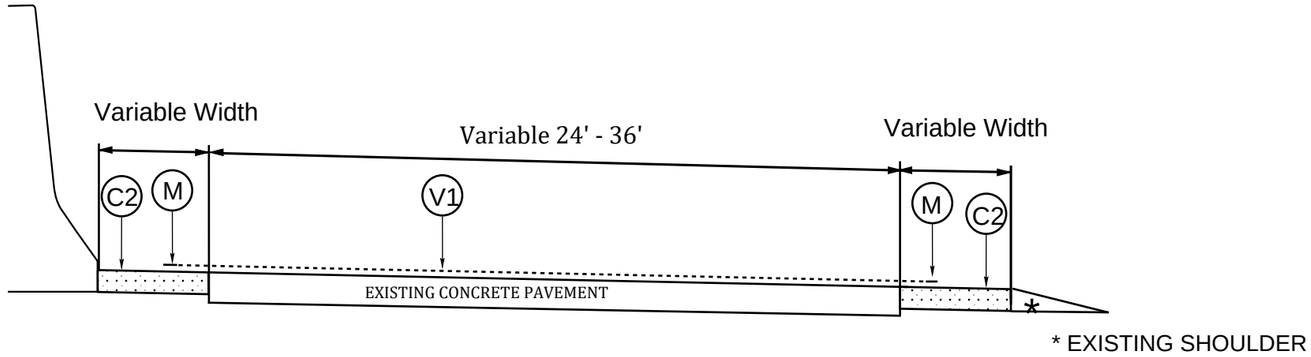


MADISON COUNTY

PROJECT NO.	SHEET NO.
I-5831B	4

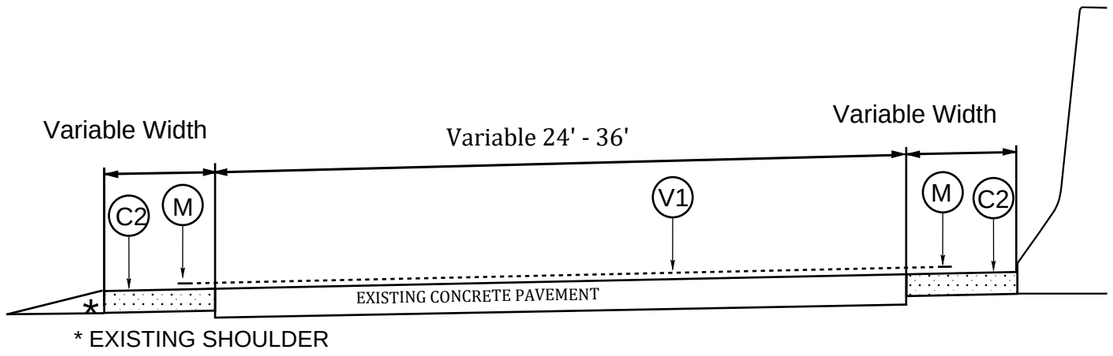
MADISON COUNTY

PROJECT NO.	SHEET NO.
I-5831B	5



* EXISTING SHOULDER

TYPICAL SECTION #1

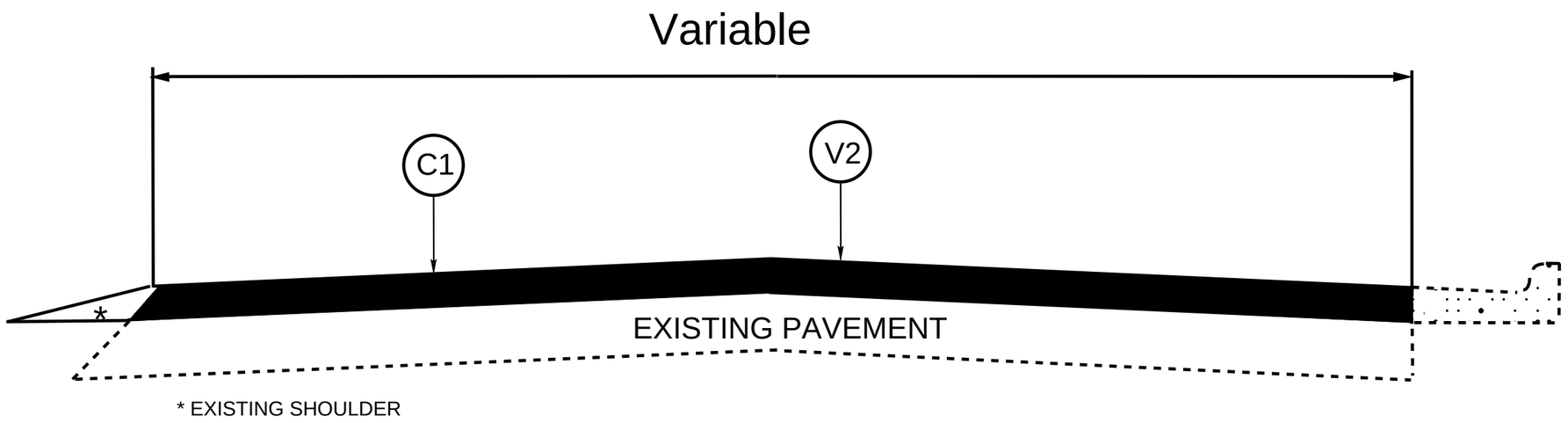


* EXISTING SHOULDER

TYPICAL SECTION #2

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1-1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YARD
C2	8" ROLLER COMPACTED CONCRETE SHOULDERS
V1	DIAMOND GRIND
V2	MILLING ASPHALT PAVEMENT 1-1/2" DEPTH
M	MILLED RUMBLE STRIPS

PROJECT NO.	SHEET NO.
I-5831B	6

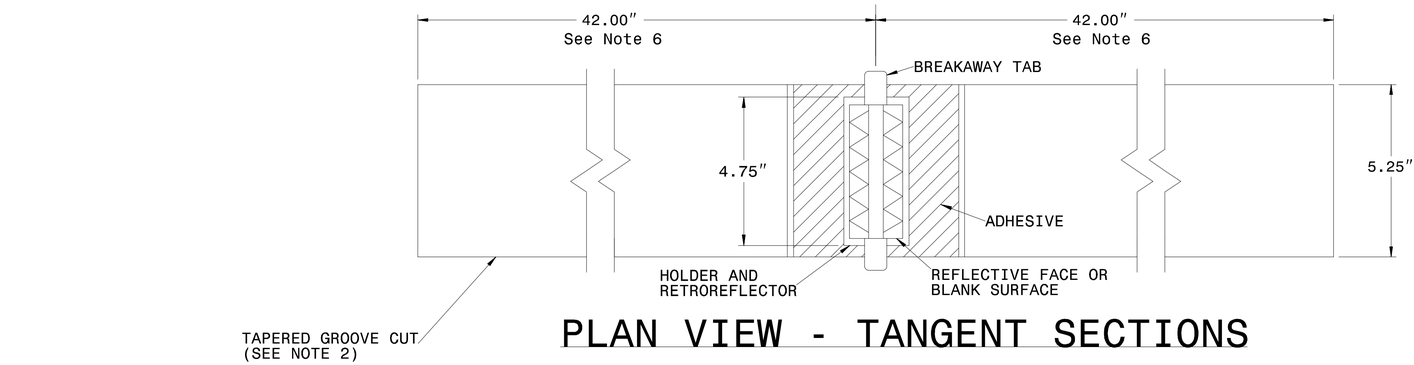


TYPICAL SECTION #3

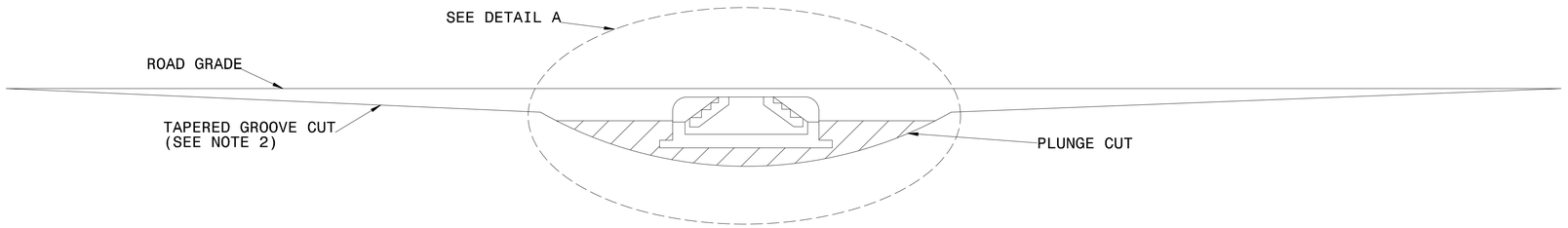
PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1-1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YARD
C2	8" ROLLER COMPACTED CONCRETE SHOULDERS
V1	DIAMOND GRIND
V2	MILLING ASPHALT PAVEMENT 1-1/2" DEPTH
M	MILLED RUMBLE STRIPS

Docusign Envelope ID: F88FBF80-D2BD-48DD-BBEF-88EEA70C3718

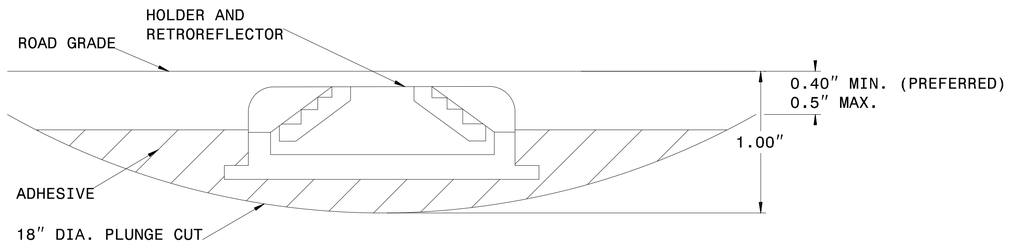
PROJECT REFERENCE NO.	SHEET NO.
I-5831B	7



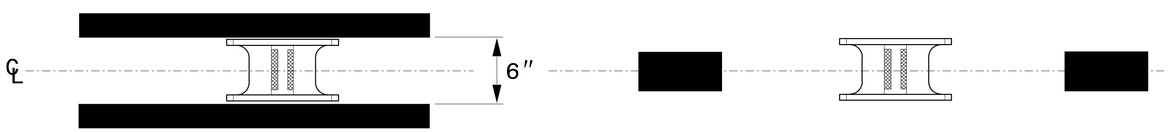
PLAN VIEW - TANGENT SECTIONS



PROFILE VIEW



DETAIL A



MARKER SPACING

NOTES:

1. ALL GROOVE EDGES SHALL BE AT LEAST 2 INCHES FROM ANY SEAM OR PAVEMENT JOINT
2. GROOVE CUTS MAY BE TAPERED OR BEVELED. TAPERED CUTS SHALL START AT ROAD LEVEL ON EACH END AND TAPER AT A FIXED RATE AS SHOWN ON THE PROFILE VIEW. BEVELED GROOVE CUTS SHALL BE 0.5″ MAXIMUM DEPTH (0.4″ PREFERRED), AND SHALL BE 0.4″ MINIMUM DEPTH AT BOTH ENDS OF THE PLUNGE CUT.
3. GROOVE AND PLUNGE CUT SHALL BE CLEAN AND DRY PRIOR TO PLACEMENT OF ADHESIVE.
4. THE EPOXY ADHESIVE SHALL BE THOROUGHLY MIXED UNTIL IT IS UNIFORM IN COLOR, AND APPLIED IN COLOR, AND APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
5. MARKER SHALL BE INSTALLED AS PER MANUFACTURER'S INSTALLATION INSTRUCTIONS WITH THE BREAKWAY TABS RESTING ON THE PAVEMENT SURFACE. THE EPOXY SHALL BE FILLED TO THE LEVEL OF THE TOP OF THE MARKER HOLDER. EPOXY SHALL NOT TOUCH THE RETROREFELCTOR.
6. TOTAL GROOVE LENGTH MAY BE SHORTENED TO 54″ ON SHARP CURVES IF APPROVED BY THE ENGINEER. GROOVES SHALL NOT OVERLAP WITH LOOP DETECTOR WIRES.

CONTRACTS STANDARDS
AND DEVELOPMENT UNIT
Office 919-707-8950 FAX 919-250-4119

DETAIL OF INLAID CRADLE MARKER

ORIGINAL BY: rgwatson DATE: 02-06-2024
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

PROJECT NO.	SHEET NO.
I-5831B	

SUMMARY OF QUANTITIES

											0241000000-E	0314000000-E	0318000000-E	0321000000-E	1297000000-E	1523000000-E	1575000000-E	1735000000-E	1737000000-E	1881000000-E	1891000000-E	1925000000-E
PROJECT NO	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	LENGTH	WIDTH	BEGIN MP	END MP	8" TRENCHING FOR SHOULDER CONSTRUCTION	SELECT MATERIAL, CLASS IV	FOUNDATION CONDITIONING MATERIAL, MINOR STRUCTURES	FOUNDATION CONDITIONING GEOTEXTILE	MILLING ASPHALT PAVEMENT, 1-1/2" DEPTH	ASPHALT CONC SURFACE COURSE, TYPE S9.5C	ASPHALT BINDER FOR PLANT MIX	REPAIR OF JOINTED CONCRETE PAVEMENT SLABS	PATCHING CONCRETE PAVEMENT SPALLS	JOINT CONSTRUCTION, REPAIR AND SEALING	DIAMOND GRINDING PCC PAVEMENT	MILLED RUMBLE STRIPS (CONCRETE SHOULDERS) 16"
							MI	FT			SY	TON	TON	SY	SY	TON	TON	SY	SF	LF	SY	LF
I-5831B	1	I-26 WEST BOUND LANE	FROM STATE LINE +0.10 TO HIGGINS BRANCH ROAD BRIDGE	2	3	MD	8.32	36	0.1	8.42	89,045.00	25	10.00	20.00				3	1,200	288,095.00	228,394.00	85,385.00
I-5831B	2	I-26 EAST BOUND LANE	FROM HIGGINS BRANCH ROAD BRIDGE TO STATE LINE -0.11	1	3	MD	8.32	36	4.19	12.51	85,164.00	25	10.00	20.00				3	1,200	285,000.00	219,826.00	84,426.00
I-5831B	3	I-26 W EXIT 3 OFF RAMP	FROM I-26 WEST TO US HIGHWAY 23	3	1		0.15	30	0.13	0.28					2,836	256	15					
I-5831B	4	I-26 W EXIT 3 ON RAMP	FROM US HIGHWAY 23 TO I-26 WEST	3	1		0.18	31	0.01	0.19					3,434	310	18					
I-5831B	5	I-26 E EXIT 3 OFF RAMP	FROM I-26 EAST TO US HIGHWAY 23	3	1		0.23	26	0.07	0.3					3,496	315	19					
I-5831B	6	I-26 E EXIT 3 ON RAMP	FROM US HIGHWAY 23 TO I-26 EAST		1		0.23	26	0.01	0.23					3,467	313	18					
TOTAL FOR PROJ NO. C005831B							**17.43**				**174,209.00**	**50**	**20.00**	**40.00**	**13,233**	**1,194**	**70**	**6**	**2,400**	**573,095.00**	**448,220.00**	**169,811.00**
GRAND TOTAL																						
							17.43				**174,209.00**	**50**	**20.00**	**40.00**	**13,233**	**1,194**	**70**	**6**	**2,400**	**573,095.00**	**448,220.00**	**169,811.00**

											2365000000-N	2407000000-N	2473000000-N			2738000000-E			2752000000-E		2752000000-E	3001000000-N	3030000000-E	3045000000-E
PROJECT NO	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	LENGTH	WIDTH	BEGIN MP	END MP	FRAME WITH TWO GRATES, STD 840.22	STEEL FRAME WITH TWO GRATES, STD 840.37	DRAINAGE STRUCTURE CLEAN OUT	MASONRY DRAINAGE STRUCTURE REPAIR	REMOVE AND REPLACE CONCRETE APRON	ROLLER COMPACTED CONCRETE	REMOVE AND REPLACE 4" CONCRETE PAVED DITCH	REMOVE AND REPLACE CONCRETE ISLAND	REMOVE AND REPLACE CONCRETE EXPRESSWAY GUTTER	REMOVE AND REPLACE CONCRETE SHOULDER BERM GUTTER	REMOVE AND REPLACE 8" X 6" CURB	IMPACT ATTENUATOR UNIT, TYPE TL-3	STEEL BEAM GUARDRAIL	STEEL BEAM GUARDRAIL, SHOP CURVED
							MI	FT			EA	EA	EA	EA	EA	SY	SY	SY	LF	LF	LF	EA	LF	LF
I-5831B	1	I-26 WEST BOUND LANE	FROM STATE LINE +0.10 TO HIGGINS BRANCH ROAD BRIDGE	2	3	MD	8.32	36	0.1	8.42	3.00	5.00	8.00	8.00	8.00	89,045.00	84.00	133.00	150	150	17.00	2.00	20,337.00	
I-5831B	2	I-26 EAST BOUND LANE	FROM HIGGINS BRANCH ROAD BRIDGE TO STATE LINE -0.11	1	3	MD	8.32	36	4.19	12.51	4.00	5.00	7.00	9.00	9.00	85,164.00			150	150	16.00		32,408.00	50.00
I-5831B	3	I-26 W EXIT 3 OFF RAMP	FROM I-26 WEST TO US HIGHWAY 23	3	1		0.15	30	0.13	0.28														
I-5831B	4	I-26 W EXIT 3 ON RAMP	FROM US HIGHWAY 23 TO I-26 WEST	3	1		0.18	31	0.01	0.19														
I-5831B	5	I-26 E EXIT 3 OFF RAMP	FROM I-26 EAST TO US HIGHWAY 23	3	1		0.23	26	0.07	0.3														
I-5831B	6	I-26 E EXIT 3 ON RAMP	FROM US HIGHWAY 23 TO I-26 EAST		1		0.23	26	0.01	0.23														
TOTAL FOR PROJ NO. C005831B							**17.43**				**7.00**	**10.00**	**15.00**	**17.00**	**17.00**	**174,209.00**	**84.00**	**133.00**	**300**	**300**	**33.00**	**2.00**	**52,745.00**	**50.00**
GRAND TOTAL																								
							17.43				**7.00**	**10.00**	**15.00**	**17.00**	**17.00**	**174,209.00**	**84.00**	**133.00**	**300**	**300**	**33.00**	**2.00**	**52,745.00**	**50.00**

***NOTE: ALL MAPS, COUNTY = MADISON, FINAL SURFACE TESTING REQUIRED = YES.**

PROJECT NO.	SHEET NO.
I-5831B	

SUMMARY OF QUANTITIES

											3210000000-N	3215000000-N	3287000000-N	3319000000-N	3649000000-E	4600000000-N				4650000000-N	4895000000-N	6000000000-E	6012000000-E	6018000000-E
PROJECT NO	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	LENGTH	WIDTH	BEGIN MP	END MP	GUARDRAIL END UNITS, TYPE CAT-1	GUARDRAIL ANCHOR UNITS, TYPE III	GUARDRAIL END UNITS, TYPE TL-3	GUARDRAIL ANCHOR UNITS, TYPE B-83	RIP RAP, CLASS B	SINGLE LANE CLOSURE	DOUBLE LANE CLOSURE	CONNECTED LANE CLOSURE SYSTEM	RAMP /LOOP TRAFFIC CONTROL	TEMPORARY RAISED PAVEMENT MARKERS (CRYSTAL / RED)	INLAID CRADLE MARKERS (CRYSTAL / RED)	TEMPORARY SILT FENCE	SEDIMENT CONTROL STONE	SEED FOR TEMPORARY SEEDING
							MI	FT			EA	EA	EA	EA	TON	EA	EA	EA	EA	EA	EA	LF	TON	LB
I-5831B	1	I-26 WEST BOUND LANE	FROM STATE LINE +0.10 TO HIGGINS BRANCH ROAD BRIDGE	2	3	MD	8.32	36	0.1	8.42	16.00	6.00	21.00	8.00	12	58	58	58		1,052	1,052	200	15	100
I-5831B	2	I-26 EAST BOUND LANE	FROM HIGGINS BRANCH ROAD BRIDGE TO STATE LINE -0.11	1	3	MD	8.32	36	4.19	12.51	9.00	6.00	12.00	4.00	12	58	58	58		1,051	1,051	200	15	100
I-5831B	3	I-26 W EXIT 3 OFF RAMP	FROM I-26 WEST TO US HIGHWAY 23	3	1		0.15	30	0.13	0.28									2					
I-5831B	4	I-26 W EXIT 3 ON RAMP	FROM US HIGHWAY 23 TO I-26 WEST	3	1		0.18	31	0.01	0.19									2					
I-5831B	5	I-26 E EXIT 3 OFF RAMP	FROM I-26 EAST TO US HIGHWAY 23	3	1		0.23	26	0.07	0.3									2					
I-5831B	6	I-26 E EXIT 3 ON RAMP	FROM US HIGHWAY 23 TO I-26 EAST		1		0.23	26	0.01	0.23									2					
TOTAL FOR PROJ NO. C005831B							**17.43**				**25.00**	**12.00**	**33.00**	**12.00**	**24**	**116**	**116**	**116**	**8**	**2,103**	**2,103**	**400**	**30**	**200**
GRAND TOTAL							**17.43**				**25.00**	**12.00**	**33.00**	**12.00**	**24**	**116**	**116**	**116**	**8**	**2,103**	**2,103**	**400**	**30**	**200**

											6021000000-E	6030000000-E	6036000000-E	6042000000-E	6071010000-E	6084000000-E	6117000000-N	6117500000-N	6132000000-N	7444000000-E	7456100000-E
PROJECT NO	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	LENGTH	WIDTH	BEGIN MP	END MP	FERTILIZER FOR TEMPORARY SEEDING	SILT EXCAVATION	MATTING FOR EROSION CONTROL	1/4" HARDWARE CLOTH	WATTLE	SEEDING & MULTCHING	RESPONSE FOR EROSION CONTROL	CONCRETE WASHOUT STRUCTURE	PREFABRICATED CONCRETE WASHOUT	INDUCTIVE LOOP SAWCUT	LEAD-IN CABLE (14-2)
							MI	FT			TON	CY	SY	LF	LF	ACR	EA	EA	EA	LF	LF
I-5831B	1	I-26 WEST BOUND LANE	FROM STATE LINE +0.10 TO HIGGINS BRANCH ROAD BRIDGE	2	3	MD	8.32	36	0.1	8.42	1	25	150	30	48	2	5	2	2	204	20
I-5831B	2	I-26 EAST BOUND LANE	FROM HIGGINS BRANCH ROAD BRIDGE TO STATE LINE -0.11	1	3	MD	8.32	36	4.19	12.51		25	150	30	48	2	5	2	2		20
I-5831B	3	I-26 W EXIT 3 OFF RAMP	FROM I-26 WEST TO US HIGHWAY 23	3	1		0.15	30	0.13	0.28											
I-5831B	4	I-26 W EXIT 3 ON RAMP	FROM US HIGHWAY 23 TO I-26 WEST	3	1		0.18	31	0.01	0.19											
I-5831B	5	I-26 E EXIT 3 OFF RAMP	FROM I-26 EAST TO US HIGHWAY 23	3	1		0.23	26	0.07	0.3											
I-5831B	6	I-26 E EXIT 3 ON RAMP	FROM US HIGHWAY 23 TO I-26 EAST		1		0.23	26	0.01	0.23											
TOTAL FOR PROJ NO. C005831B							**17.43**				**1**	**50**	**300**	**60**	**96**	**4**	**10**	**4**	**4**	**204**	**40**
GRAND TOTAL							**17.43**				**1**	**50**	**300**	**60**	**96**	**4**	**10**	**4**	**4**	**204**	**40**

***NOTE: ALL MAPS, COUNTY = MADISON, FINAL SURFACE TESTING REQUIRED = YES.**

PROJECT NO.	SHEET NO.
I-5831B	

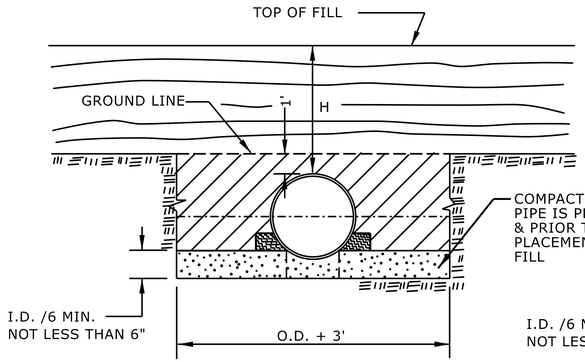
THERMOPLASTIC AND PAINT QUANTITIES

											4400000000-E	4423000000-N	4434000000-N	4510000000-N	4709000000-E	4815000000-E		4825000000-E	4835000000-E	4840000000-N				4845000000-N
PROJECT NO	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	LENGTH	WIDTH	BEGIN MP	END MP	WORK ZONE SIGNS (STATIONARY)	WORK ZONE DIGITAL SPEED LIMIT SIGNS	SEQUENTIAL FLASHING WARNING LIGHTS	LAW ENFORCEMENT	THERMOPLASTIC PAVEMENT MARKING LINES (24", 90 MILS) WHITE STOP BAR	PAINT PAVEMENT MARKING LINES (6") WHITE	PAINT PAVEMENT MARKING LINES (6") YELLOW	PAINT PAVEMENT MARKING LINES (12") YELLOW	PAINT PAVEMENT MARKING LINES (24") WHITE	PAINT PAVEMENT MARKING CHARACTER (ONLY)	PAINT PAVEMENT MARKING CHARACTER (TRUCKS)	PAINT PAVEMENT MARKING CHARACTER (LANE)	PAINT PAVEMENT MARKING CHARACTER (THIS)	PAINT PAVEMENT MARKING SYMBOL MERGE ARROW
							MI	FT			SF	EA	EA	HR	LF	LF	LF	LF	LF	EA	EA	EA	EA	EA
I-5831B	1	I-26 WEST BOUND LANE	FROM STATE LINE +0.10 TO HIGGINS BRANCH ROAD BRIDGE	2	3	MD	8.32	36	0.1	8.42	160	2	58	40		66,808	45,253	6,575						12
I-5831B	2	I-26 EAST BOUND LANE	FROM HIGGINS BRANCH ROAD BRIDGE TO STATE LINE -0.11	1	3	MD	8.32	36	4.19	12.51	160	2	58	40		65,650	44,028	2,888		4	6	4	4	6
I-5831B	3	I-26 W EXIT 3 OFF RAMP	FROM I-26 WEST TO US HIGHWAY 23	3	1		0.15	30	0.13	0.28					18	851	851		18					
I-5831B	4	I-26 W EXIT 3 ON RAMP	FROM US HIGHWAY 23 TO I-26 WEST	3	1		0.18	31	0.01	0.19						997	997							
I-5831B	5	I-26 E EXIT 3 OFF RAMP	FROM I-26 EAST TO US HIGHWAY 23	3	1		0.23	26	0.07	0.3						1,210	1,210							
I-5831B	6	I-26 E EXIT 3 ON RAMP	FROM US HIGHWAY 23 TO I-26 EAST		1		0.23	26	0.01	0.23						1,200	1,200							
TOTAL FOR PROJ NO. C005831B							**17.43**				**320**	**4**	**116**	**80**	**18**	**136,716**	**93,539**	**9,463**	**18**	**4**	**6**	**4**	**4**	**18**
																230,255				**18**				
GRAND TOTAL							**17.43**				**320**	**4**	**116**	**80**	**18**	**136,716**	**93,539**	**9,463**	**18**	**4**	**6**	**4**	**4**	**18**
																230,255				**18**				

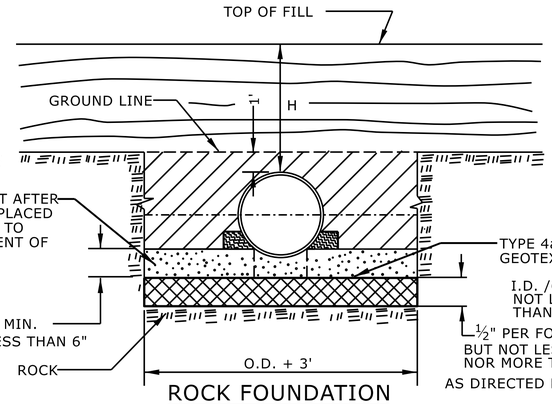
											4855000000-E	4865000000-E	4875000000-N	4890000000-E				4895000000-N					2759000000-N		
PROJECT NO	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	LENGTH	WIDTH	BEGIN MP	END MP	REMOVAL OF PAVEMENT MARKING LINES (6")	REMOVAL OF PAVEMENT MARKING LINES (12")	REMOVAL OF PAVEMENT MARKING SYMBOLS & CHARACTERS	INTEGRATED MULITPOLYMER PAVEMENT MARKING LINES 6" (90 MILS) (WHITE)	INLAID INTEGRATED MULITPOLYMER PAVEMENT MARKING LINES 6" (90 MILS) (WHITE)	INLAID INTEGRATED MULITPOLYMER PAVEMENT MARKING LINES 6" (90 MILS) (YELLOW)	INLAID INTEGRATED MULITPOLYMER PAVEMENT MARKING LINES 12" (90 MILS) (YELLOW)	INTEGRATED MULITPOLYMER PAVEMENT MARKING SYMBOLS (90 MILS) MERGE ARROWS	INTEGRATED MULITPOLYMER PAVEMENT MARKING CHARACTERS (90 MILS) TRUCKS	INTEGRATED MULITPOLYMER PAVEMENT MARKING CHARACTERS (90 MILS) LANE	INTEGRATED MULITPOLYMER PAVEMENT MARKING CHARACTERS (90 MILS) ONLY	INTEGRATED MULITPOLYMER PAVEMENT MARKING CHARACTERS (90 MILS) THIS	BARRIER WALL DELINEATORS (TOP MOUNT DOUBLE YELLOW)	BARRIER WALL DELINEATORS (SIDE MOUNT DOUBLE WHITE)	BARRIER WALL DELINEATORS (SIDE MOUNT DOUBLE YELLOW)
							MI	FT			LF	LF	EA	LF	LF	LF	LF	EA	EA	EA	EA	EA	EA	EA	EA
I-5831B	1	I-26 WEST BOUND LANE	FROM STATE LINE +0.10 TO HIGGINS BRANCH ROAD BRIDGE	2	3	MD	8.32	36	0.1	8.42	112,061	6,575	12	22,720	44,088	45,253	6,575	12					562	192	33
I-5831B	2	I-26 EAST BOUND LANE	FROM HIGGINS BRANCH ROAD BRIDGE TO STATE LINE -0.11	1	3	MD	8.32	36	4.19	12.51	109,678	2,888	20	21,510	44,140	44,028	2,888	6	6	4	4	4		192	33
I-5831B	3	I-26 W EXIT 3 OFF RAMP	FROM I-26 WEST TO US HIGHWAY 23	3	1		0.15	30	0.13	0.28					851	851									
I-5831B	4	I-26 W EXIT 3 ON RAMP	FROM US HIGHWAY 23 TO I-26 WEST	3	1		0.18	31	0.01	0.19					997	997									
I-5831B	5	I-26 E EXIT 3 OFF RAMP	FROM I-26 EAST TO US HIGHWAY 23	3	1		0.23	26	0.07	0.3					1,210	1,210									
I-5831B	6	I-26 E EXIT 3 ON RAMP	FROM US HIGHWAY 23 TO I-26 EAST		1		0.23	26	0.01	0.23					1,200	1,200									
TOTAL FOR PROJ NO. C005831B							**17.43**				**221,739**	**9,463**	**32**	**44,230**	**92,486**	**93,539**	**9,463**	**18**	**6**	**4**	**4**	**4**	**562**	**384**	**66**
															186,025					**18**			**1,012**	
GRAND TOTAL							**17.43**				**221,739**	**9,463**	**32**	**44,230**	**92,486**	**93,539**	**9,463**	**18**	**6**	**4**	**4**	**4**	**562**	**384**	**66**
															186,025					**18**			**1,012**	

***NOTE: ALL MAPS, COUNTY = MADISON, FINAL SURFACE TESTING REQUIRED = YES.**

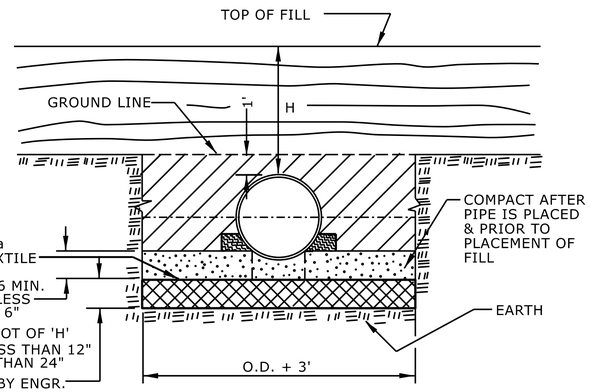
PROJECT REFERENCE NO.	SHEET NO.
I-5831B	11



NORMAL EARTH FOUNDATION

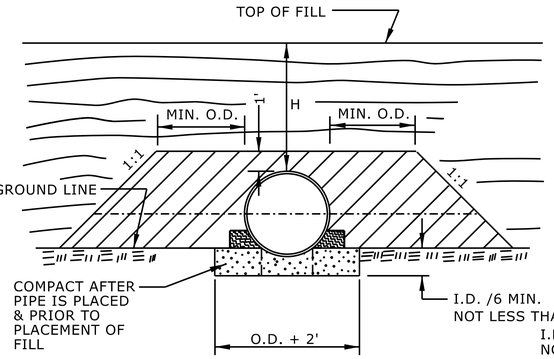


ROCK FOUNDATION

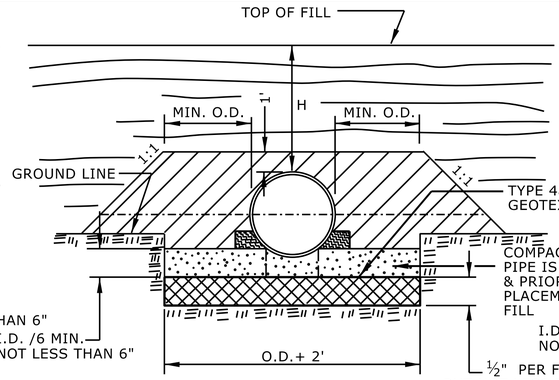


UNSUITABLE MATERIAL FOUNDATION

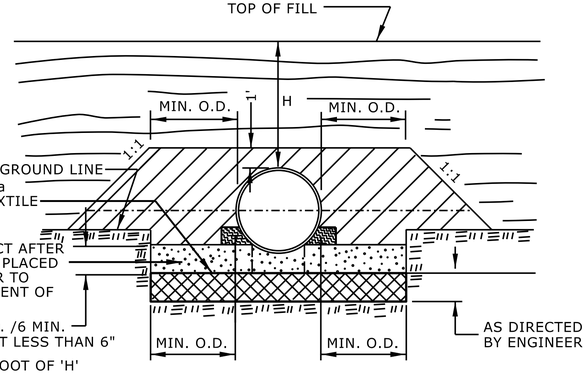
PIPE IN TRENCH



NORMAL EARTH FOUNDATION



ROCK FOUNDATION



UNSUITABLE MATERIAL FOUNDATION

PIPE ABOVE GROUND

GENERAL NOTES:

I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.

O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.

H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

APPROVED SUITABLE LOCAL MATERIAL.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.

LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

REFER TO NCDOT PIPE MATERIAL SELECTION GUIDE AND STANDARD SPECIFICATIONS FOR ALLOWABLE PIPE FILL HEIGHTS AND PIPE SPECIFICATIONS.

SPRINGLINE OF PIPE

SELECT BACKFILL MATERIAL CLASS III OR CLASS II, TYPE 1 ABOVE AND BELOW SPRINGLINE.

UNDISTURBED EARTH MATERIAL

SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH TYPE IV GEOTEXTILE AS DIRECTED BY THE ENGINEER.

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

ROADWAY DETAIL DRAWING FOR

METHOD OF PIPE INSTALLATION

FLEXIBLE PIPE

SHEET 1 OF 2

300.01

NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HARKER

11/12/2025

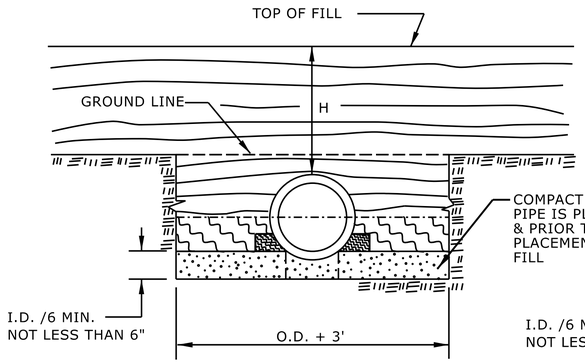
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

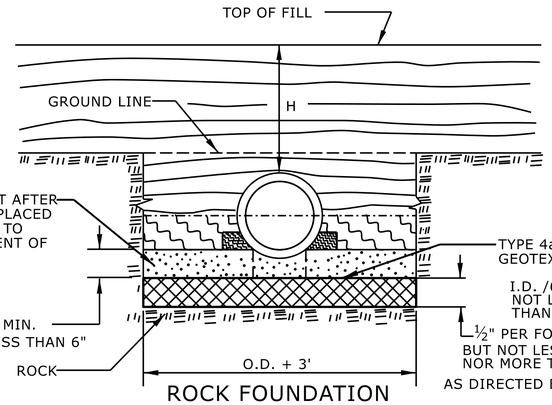
SEE TITLE BLOCK

ORIGINAL BY: S.CALHOUN DATE: 7-25-2024
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: _____

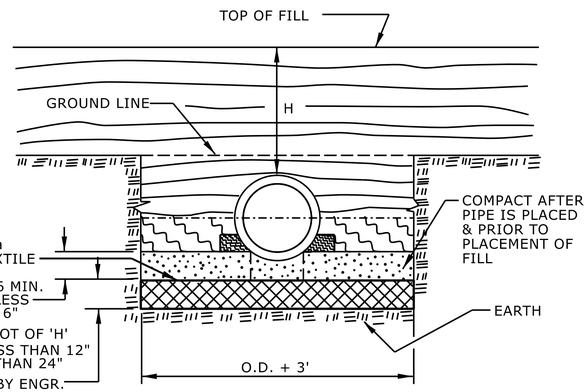
PROJECT REFERENCE NO.	SHEET NO.
I-5831B	12



NORMAL EARTH FOUNDATION

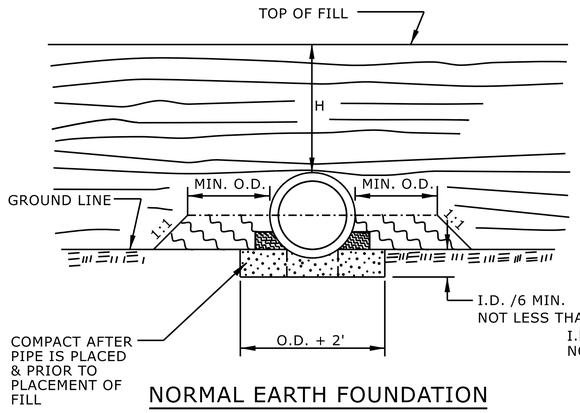


ROCK FOUNDATION

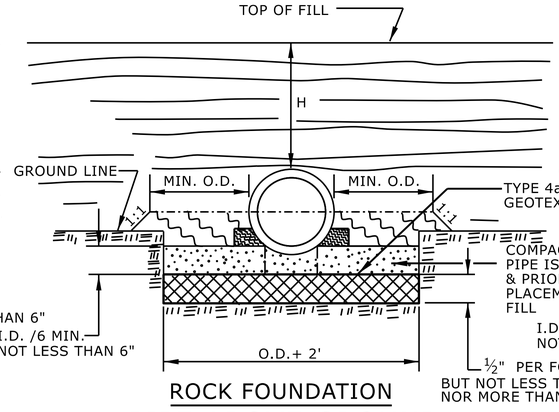


UNSUITABLE MATERIAL FOUNDATION

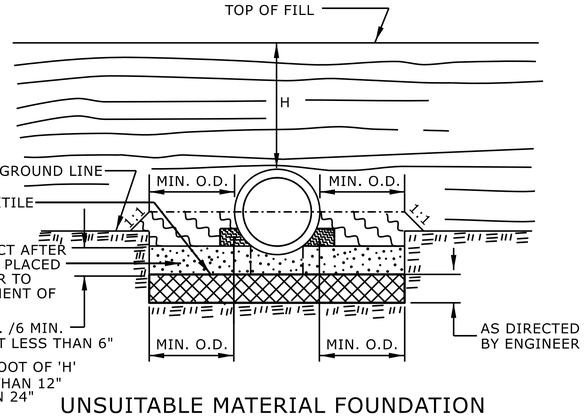
PIPE IN TRENCH



NORMAL EARTH FOUNDATION



ROCK FOUNDATION



UNSUITABLE MATERIAL FOUNDATION

PIPE ABOVE GROUND

GENERAL NOTES:

I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.

O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.

H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

APPROVED SUITABLE LOCAL MATERIAL.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.

LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

REFER TO NCDOT PIPE MATERIAL SELECTION GUIDE AND STANDARD SPECIFICATIONS FOR ALLOWABLE PIPE FILL HEIGHTS AND PIPE SPECIFICATIONS.

SPRINGLINE OF PIPE

SELECT BACKFILL MATERIAL CLASS III OR CLASS II, BELOW SPRINGLINE.

UNDISTURBED EARTH MATERIAL

SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH TYPE IV GEOTEXTILE AS DIRECTED BY THE ENGINEER.

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

ROADWAY DETAIL DRAWING FOR

METHOD OF PIPE INSTALLATION

RIGID PIPE

SHEET 2 OF 2

300.01

NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKER
Signed by: Nicole M. Hacker
11/12/2025

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ORIGINAL BY: S.CALHOUN DATE: 7-25-2024
MODIFIED BY: _____ DATE: _____
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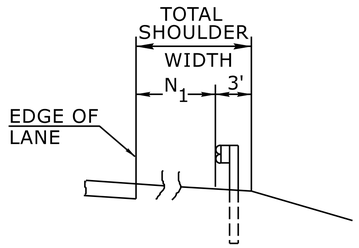
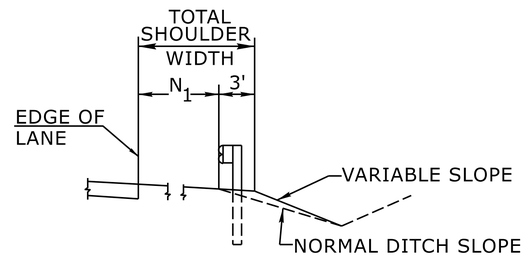
FILE SPEC.: _____

PROJECT REFERENCE NO.	SHEET NO.
I-5831B	13

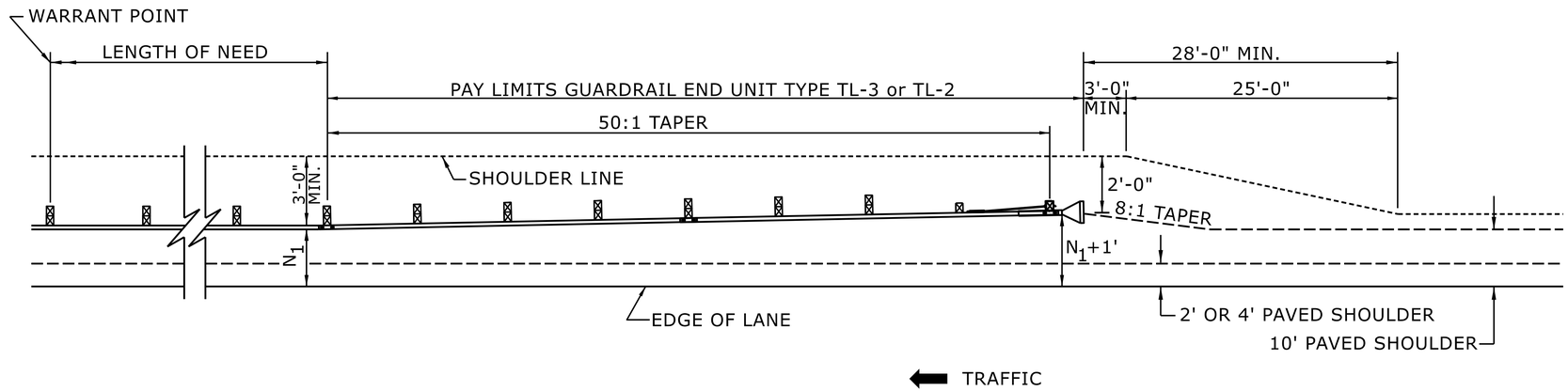


FILL SECTION



CUT SECTION

"N_1"= DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL WHERE GUARDRAIL IS PARALLEL TO LANE.



FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3
FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2

DETAIL OF BEGINNING OF GUARDRAIL IN CUT OR FILL SECTION

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 6 OF 15

862D01

NORTH CAROLINA PROFESSIONAL SEAL 030144 ENGINEER NICOLE M. HARKER
11/12/2025

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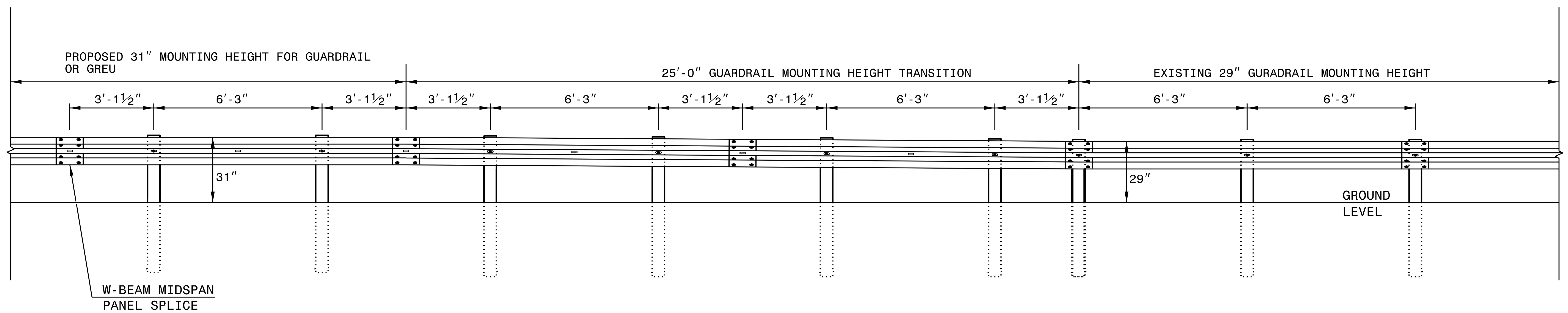
SEE TITLE BLOCK

ORIGINAL BY: S.CALHOUN DATE: 7-25-2024
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

NOTE: IF EXISTING GUARDRAIL IS LOWER THAN 29″, USE AN ADDITIONAL 12′-6″ LONG SECTION OF GUARDRAIL, FOR EVERY 1″ OF HEIGHT DIFFERENCE, TO TRANSITION FROM EXISTING GUARDRAIL TO PROPOSED 31″ GUARDRAIL.



ELEVATION VIEW

TRANSITION FROM 29″ TO 31″ W-BEAM GUARDRAIL MOUNTING HEIGHT

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

ROADWAY DETAIL DRAWING FOR

GUARDRAIL INSTALLATION

SHEET 5 OF 9

862D02

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 033144 NICOLE M. HACKLER
11/12/2025

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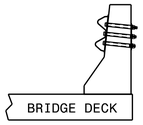
SEE TITLE BLOCK

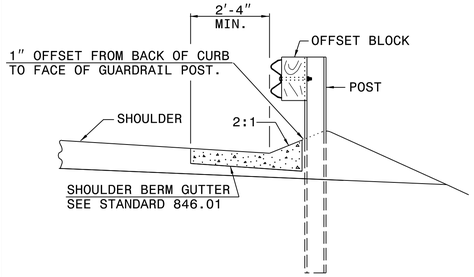
ORIGINAL BY: K. Aldridge DATE: 02-25
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

05-FEB-2025 07:53
U:\Special Details Revisions\862D02 Detail\862D02.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
I-5831B	15

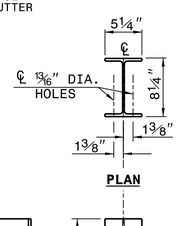


SECTION A-A

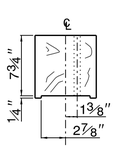


SEE STANDARD 846.04 FOR DRAINAGE INSTALLATION IN SHOULDER BERM GUTTER

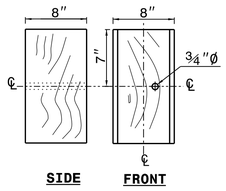
SECTION B-B



PLAN

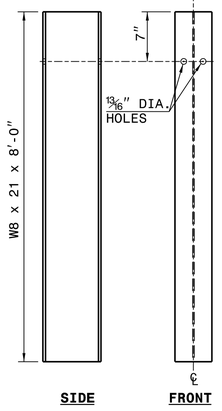


PLAN



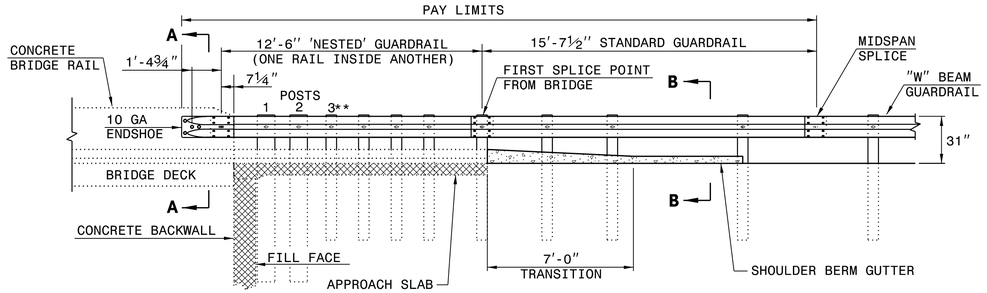
SIDE **FRONT**

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



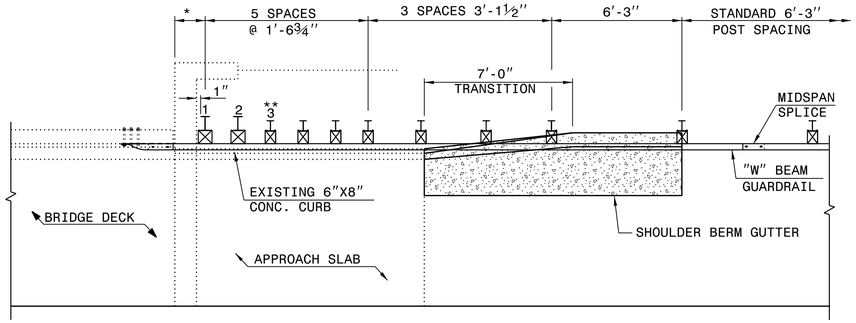
SIDE **FRONT**

"W8 X 21 X 8'-0" STEEL POST

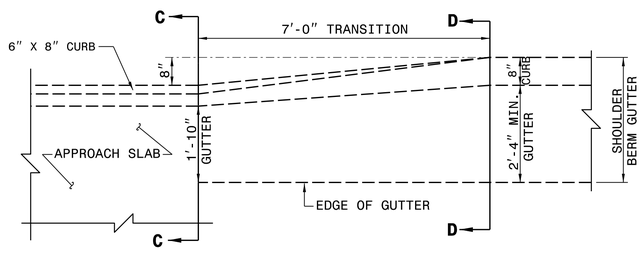


ELEVATION VIEW

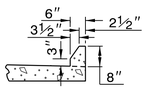
NOTE:
**ELIMINATE POST 3 AND SHIFT POSTS 1 & 2 ON SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11½" IF CONCRETE BACKWALL IS NOT PRESENT.
-MEASURE GUARDRAIL HEIGHT FROM THE TOP 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.
-SHOULDER BERM GUTTER IS REQUIRED IF NO CURBING EXISTS THROUGH ANCHOR UNIT PAY LIMITS.
-ANCHOR THE W-BEAM END SHOE USING A 4 BOLT HOLD DOWN PLATE AS SHOWN IN STANDARD 862.04



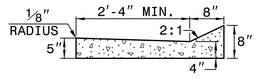
PLAN VIEW



TRANSITION APPROACH SLAB CURB TO SHOULDER BERM GUTTER



SECTION C-C APPROACH SLAB CURB



SECTION D-D SHOULDER BERM GUTTER

GUARDRAIL ANCHOR UNIT TYPE B-83

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

ROADWAY DETAIL DRAWING FOR

STRUCTURE ANCHOR UNITS

GUARDRAIL ANCHOR UNIT TYPE B-83

SHEET 6 OF 9

862D03

NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M HICKLER
Nicole M Hickler
11/12/2025

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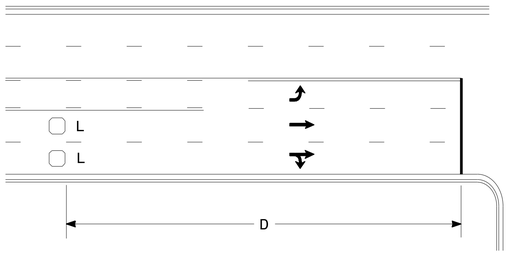
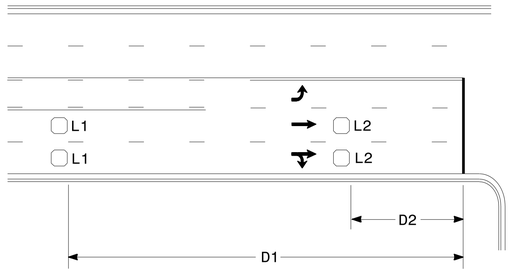
ORIGINAL BY: K. Aldridge DATE: 06-02-2025
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

PROJECT REFERENCE NO.	SHEET NO.

High Speed Detection
(≥40 mph)



OR



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

L = 6ft X 6ft
Wired separately

Volume Density Operation

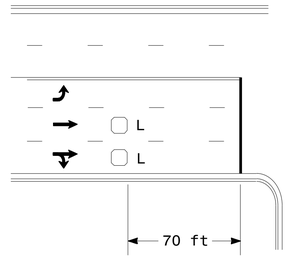
Speed Limit mph	D1 ft	D2 ft
40	250	80
45	300	90
50	355	100
55	420	110

L1 = 6ft X 6ft
Wired in series

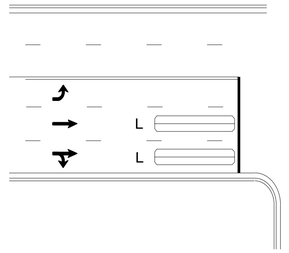
L2 = 6ft X 6ft
Wired in series

"Stretch" Operation

Low Speed Detection
(≤35 mph)



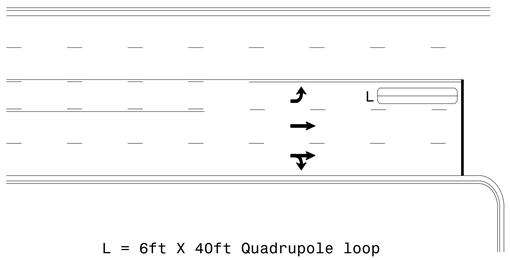
OR



L = 6ft X 6ft
Wired in series

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

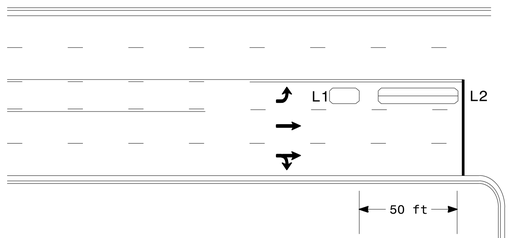
Left Turn Lane Detection



L = 6ft X 40ft Quadrupole loop

Presence Loop Detection

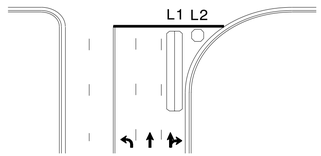
OR



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

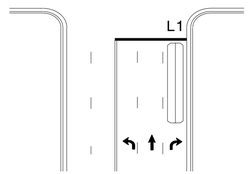
Queue Loop Detection

Right Turn Lane Detection

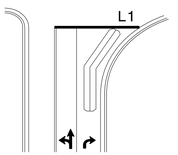


Shared Lane/
Wide Radius Turn

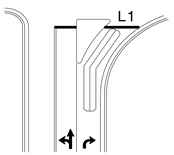
L1 = 6ft X 40ft Quadrupole loop
L2 = 6ft X 6ft [Minimum] Presence loop
Wired separately



Standard Turn

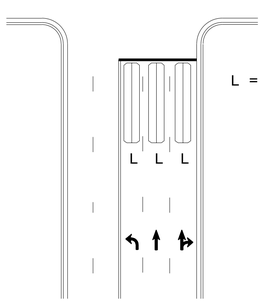


Wide Radius Turn



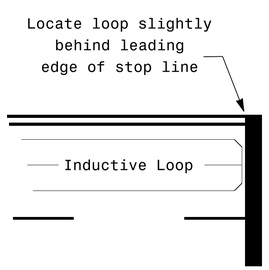
Channelized Turn

Side Street Detection



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

Presence Loop Placement at Stop Lines



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

Prepared in the Offices of:
Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signal Design Section
750 N.Greenfield Pkwy,Garner,NC 27529

Typical Signal Loop Locations

PLAN DATE: September 2020	REVIEWED BY: JPG
PREPARED BY: PLA	REVIEWED BY:

SCALE
N/A

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 029904 ENGINEER JASON P. GALLOWAY

DocuSigned by:
Jason P. Galloway
F700EA7048184 1D...
9/8/2020
DATE

SIG. INVENTORY NO.

09-SEP-2020 11:54
S:\#TSG\Traffic Signals\Signal Design Section\Eastern Region\Loop Typical\loop typical2015.dgn
jgalloway