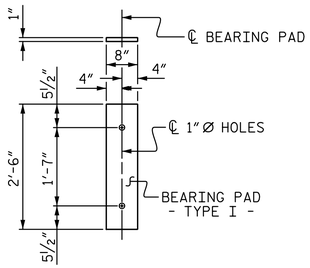
Docusign Envelope ID: 0D1FFB6B-517E-4E1D-A8B6-E577F9430D69

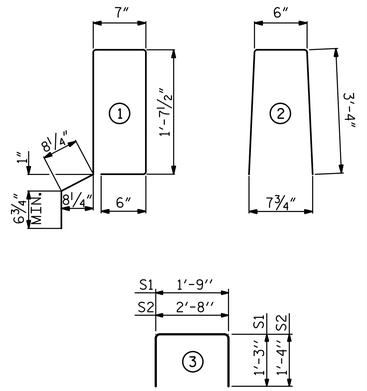


FIXED END
(TYPE I - 66 REQ'D)

BILL OF MATERIAL FOR ONE 45' CORED SLAB UNIT (ALL TYPES)

				TYPE IV		TYPE III		TYPE II		TYPE I	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH		LENGTH	WEIGHT
B5	4	#4	STR	23'-3"	62	23'-3"	62	23'-3"	62	23'-3"	62
S1	8	#5	3	4'-3"	35	4'-3"	35	4'-3"	35	4'-3"	35
S2	94	#4	3	5'-4"	335	5'-4"	335	5'-4"	335	5'-4"	335
✱ S3	54	#5	1	5'-7"	314	5'-7"	314				
REINFORCING STEEL			LBS.		432		432		432		432
✱EPOXY COATED REINFORCING STEEL			LBS.		314		314				
6500 P.S.I. CONCRETE			CU. YDS.		6.5		6.5		8.0		6.5
0.6" Ø L.R. STRANDS			No.		13		13		13		13

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

NOTES

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL CAST WITH THE CORED SLAB SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS.

RECESSES FOR TRANSVERSE STRANDS SHALL BE GROUTED AFTER THE TENSIONING OF THE STRANDS.

THE 2½"Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

THE BACKER RODS SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

WHEN CORED SLABS ARE CAST, AN INTERNAL HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS. AT LEAST SIX WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

ALL REINFORCING STEEL IN THE VERTICAL CONCRETE BARRIER RAIL SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE CORED SLAB UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

GROOVED CONTRACTION JOINTS, ½" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

FLAME CUTTING OF THE TRANSVERSE POST-TENSIONING STRAND IS NOT ALLOWED.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN THE REQUIRED STRENGTH SHOWN IN THE "CONCRETE RELEASE STRENGTH" TABLE.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE PERMITTED THREADED INSERTS ARE DETAILED AS AN OPTION FOR THE CONTRACTOR TO ATTACH FALSEWORK AND FORMWORK DURING CONSTRUCTION.

THE PERMITTED THREADED INSERTS IN THE EXTERIOR UNITS SHALL BE SIZED BY THE CONTRACTOR, SPACED AT 4'-0" CENTERS AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS. STAINLESS STEEL THREADED INSERTS MAY BE USED AS AN ALTERNATE.

THE PERMITTED THREADED INSERTS SHALL BE GROUTED BY THE CONTRACTOR IMMEDIATELY FOLLOWING REMOVAL OF THE FALSEWORK.

THE COST OF THE PERMITTED THREADED INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT

45' UNITS		ASPHALT OVERLAY THICKNESS			RAIL HEIGHT		
		℄ BRG. 1	@ MID-SPAN	℄ BRG. 2	℄ BRG. 1	@ MID-SPAN	℄ BRG. 2
SPAN 1	LEFT	4"	3¾"	4½"	3'-10"	3'-9¾"	3'-10½"
	RIGHT	5⅜"	3⁹⁄₁₆"	4½"	3'-11⅜"	3'-9⁹⁄₁₆"	3'-10½"
SPAN 2	LEFT	4½"	3⅞"	4½"	3'-10½"	3'-9⅞"	3'-10½"
	RIGHT	4½"	3⅞"	4½"	3'-10½"	3'-9⅞"	3'-10½"
SPAN 3	LEFT	4½"	1⅞"	3½"	3'-10½"	3'-7⅞"	3'-9½"
	RIGHT	4½"	2⁹⁄₁₆"	7⅜"	3'-10½"	3'-8⁹⁄₁₆"	4'-1⅜"

DEAD LOAD DEFLECTION AND CAMBER

	3'-0" x 1'-9"
45' CORED SLAB UNIT	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	¾" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD✱✱	⅛" ↓
FINAL CAMBER	⅝" ↑

✱✱ INCLUDES FUTURE WEARING SURFACE AND CONCRETE BARRIER RAILS

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL

BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	45' UNIT					
✱B12	40	120	#5	STR	22'-1"	2763
✱ S4	108	324	#5	2	7'-2"	2421
✱EPOXY COATED REINFORCING STEEL				LBS.		5184
CLASS AA CONCRETE				CU.YDS.		34.5
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		270.75

CORED SLABS REQUIRED

	45' UNIT	NUMBER	LENGTH	TOTAL LENGTH
STAGE 3 CONSTRUCTION	TYPE I	9	45'-0"	405'-0"
	TYPE II	3	45'-0"	135'-0"
	TYPE IV	3	45'-0"	135'-0"
	TOTAL	15	-	675'-0"
STAGE 5 CONSTRUCTION	TYPE I	1	45'-0"	45'-0"
	TYPE III	3	45'-0"	135'-0"
	TOTAL	4	-	180'-0"
TOTAL REQUIRED		19	-	855'-0"

NOTE: TOTAL NUMBER OF NEW CORED SLAB UNITS = 19, DOES NOT INCLUDE EXISTING UNITS.

CONCRETE RELEASE STRENGTH

UNIT	PSI
45'	4900

VERTICAL CONCRETE BARRIER RAIL SECTION

SECTION T-T
AT OPEN JOINT AT BENT
(THIS IS TO BE USED WHERE FOAM JOINT IS NOT USED)

ELEVATION AT EXPANSION JOINTS

SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)

END VIEW

SIDE VIEW

END OF RAIL DETAILS

GRADE 270 STRANDS

	0.6" Ø L.R.
AREA (SQUARE INCHES)	0.217
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950

PROJECT NO. DF18314.2045332

HENDERSON COUNTY

STATION: 13+70.81 -L-

SHEET 5 OF 5

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 052672 MATTHEW R. ACOSTA
4/13/2026

RS&H

RS&H Architects-Engineers-Planners, Inc.
8521 Six Forks Road, Suite 400
Raleigh, NC 27615
919-926-4100 FAX 919-846-9080
www.rsandh.com
North Carolina License Nos. 50073 · F-0493 · C-28

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			32

DRAWN BY : J. SCACCA DATE : 01/2025
CHECKED BY : M. ACOSTA DATE : 01/2025
DESIGN ENGINEER OF RECORD: M. ACOSTA DATE : 03/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

3/11/2026
\\rsandh.com\files\Projects\NCDOT\10034734005_Henderson_55\03.00 Project Execution\03.04 Design\Structures\CAD\401_035_DF18314.2045332_SMU_CS5_S-18_440055.dgn
AcostaM