+



9/29/2023 X:\Raleigh\114-783.005D - B-5527 CE Update\05-CAD\B5527\Structures\DGN's\Final\402\_053\_B-5527\_SMU\_B2\_S2-27.dgn hbolinsky

	PROJECT NO. B-5527   SURRY COUNTY   STATION: 23+79.00 -LSB-   SHEET 2 OF 2 2				
SEAL 043835 043835 043845 043835 10/3/2023 10/3/2023 Marc A. LEBLANNI DocuSigned by: Marc A. LeBlanc	STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH SUBSTRUCTURE BENT NO. 2				
MENT NOT CONSIDERED FINAL S ALL SIGNATURES COMPLETED					
A. MORTON THOMAS AND ASSOCIATES INC.	REVISIONS SHEET NO.				
900 RIDGEFIELD DRIVE, SUITE 325 • RALEIGH, NC 27609 (919) 855-9989 • NC LICENSE NO. F-1049	NO. BY: DATE: NO. BY: DATE: S2-27				
WWW.AMTENGINEERING.COM	1 J TOTAL SHEETS				
	<b>2</b>   4   32				

9/29/2023 X:\Raleigh\114-783.005D - B-5527 CE Update\05-CAD\B5527\Structures\DGN's\Final\402\_055\_B-5527\_SMU\_E2\_S2-28.dgn hbolinsky





+

+

C BEARING – AND CAP



## NOTES

FOR SECTION A-A AND PARTIAL SECTION B-B, SEE SHEET 3 OF 3.

#4 D1 STIRRUP BARS MAY BE SHIFTED SLIGHTLY TO AVOID STIRRUPS IN CAP AND STEPS IN CAP.

SEE SUPERSTRUCTURE SHEETS FOR UPPER PART OF INTEGRAL END BENT DETAILS.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE CONCRETE BARRIER IS CAST IF SLIP FORMING IS USED.

THE TOP SURFACE OF THE END BENT CAP AND WINGS, EXCLUDING THE BEARING AREA AND EXPOSED AREA OUTSIDE OF CONCRETE DIAPHRAGMS, SHALL BE RAKED TO A DEPTH OF  $\frac{1}{4}$ ".



# INTEGRAL END BENT NO. 2

	REVISIONS						SHEET NO.
900 RIDGEFIELD DRIVE, SUITE 325 • RALEIGH, NC 27609	NO.	BY:	DATE:	NO.	BY:	DATE:	S2-28
WWW.AMTENGINEERING.COM	1			3			TOTAL SHEETS
	2			4			32

Marc A. LeBlanc



9/29/2023 X:\Raleigh\114-783.005D - B-5527 CE Update\05-CAD\B5527\Structures\DGN's\Final\402\_057\_B-5527\_SMU\_E2\_S2-29.dgn hbolinsky







+



BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETER-MINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

# **TEMPORARY DRAINAGE AT END BENT**



DRAWN BY :	HRB		DATE : _	12/22
CHECKED BY :	MAL		DATE : _	12/22
DESIGN ENGINEER OF	RECORD:	MAL	DATE : _	6/23

9/29/2023 X:\Raleigh\114-783.005D - B-5527 CE Update\05-CAD\B5527\Structures\DGN's\Final\402\_059\_B-5527\_SMU\_E2\_S2-30.dgn hbolinsky







PES	BILL OF MATERIAL					
	END BENT NO. 2					
1'-3'' LAP	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
	B1	4	#11	1	54'-1"	1149
	B2	6	#5	STR	50'-11"	319
	B3	4	#9	1	53'-5"	726
	B4	13	#4	STR	2'-11"	25
	B5	8	#4	STR	26'-8"	143
	B6	4	#4	STR	3'-8"	10
	D1	82	#4	STR	4'-3"	233
2 11	H1	76	#5	6	13'-0"	1030
	K1	44	#6	STR	2'-8"	176
	61	<b>F</b> 4				100
$\frac{9}{5}$ (5)	51	54	#4	2	11'-1"	400
	<u>S2</u>	54	#4	3	3'-10"	138
<u>¥</u> I I	53	28	#4	4	0-0	122
	111	2		5	6' 11"	14
	01	5	#4	ر ا	0-11	
	V1	64	#4	STR	8'-10"	378
	V2	64	#4	STR	8'-10"	378
	REINF	ORCIN	IG STE	EL	52	41 LBS.
	CLAS	S A CO	NCRET	Ē		
12'-2"	POL	JR #1				
	C	OLLAR	S, CAP	, AND		
	В	OTTO	4 OF W	INGS		30.3 CY
		JR #2			29	5 6 CV
						J.U CT
RE OUT TO OUT.	ΤΟΤΑ	L CLAS	SS A CC	NCRE1	Έ	35.9 CY

	PROJE( 	CT NO. SURP ON: 23	<u></u> RY B+7	B 79.0	-552 C( )0 -L	7 DUNTY .SB-
SEAL 043835 043835 043835 043835 043835 043835 043835 043835 043835 043835 043835 043835 00 00 00 00 00 00 00 00 00 00 00 00 00	DEPA	SUE SUE END	OF SST	NORTH CAR	URE	TION
MENT NOT CONSIDERED FINAL S ALL SIGNATURES COMPLETED		U			.5	
A. MORTON THOMAS AND ASSOCIATES, INC. 900 RIDGEFIELD DRIVE, SUITE 325 • RALEIGH, NC 27609 (919) 855-9989 • NC LICENSE NO. F-1049 WWW.AMTENGINEERING.COM	NO. BY: 1 2	REVIS	NO.	S BY:	DATE:	SHEET NO. S2-30 TOTAL SHEETS 32

+



9/29/2023 X:\Raleigh\114-783.005D - B-5527 CE Update\05-CAD\B5527\Structures\DGN's\Final\402\_061\_B-5527\_SMU\_RR\_S2-31.dgn hbolinsky

ESTIMATED QUANTITIES					
BRIDGE @ STA. 23+79.00 -LSB-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE			
	TONS	SQUARE YARDS			
END BENT 1	724	805			
END BENT 2	929	1,033			

+



9/29/2023 X:\Raleigh\114-783.005D - B-5527 CE Update\05-CAD\B5527\Structures\DGN's\Final\402\_063\_B-5527\_SMU\_AS\_S2-32.dgn hbolinsky

STD. NO. BAS5 (SHT 1)

### DESIGN DATA:

SPECIFICATIONS	AASHTO (CURRENT)
LIVE LOAD	SEE PLANS
IMPACT ALLOWANCE	SEE AASHTO
STRESS IN EXTREME FIBER OF STRUCTURAL STEEL - AASHTO M270 GRADE 36	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION - GRADE 60	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	SEE AASHTO
STRUCTURAL TIMBER - TREATED OR UNTREATED EXTREME FIBER STRESS	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	30 LBS. PER CU. FT. (MINIMUM)

## MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2024 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

## CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT: CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

### **CONCRETE CHAMFERS:**

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED  $\frac{3}{4}$ " WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO  $1\frac{1}{2}$ " RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A  $\frac{1}{4}$ " FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS, AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A  $\frac{1}{4}$ " RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

### **DOWELS:**

+

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION. VERTICAL CURVE ORDINATE. AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

## **REINFORCING STEEL:**

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

## STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE  $\frac{7}{8}$ "  $\oslash$  Shear studs for the  $\frac{3}{4}$ " Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 -  $\frac{7}{8}$ "  $\oslash$  STUDS FOR 4 -  $\frac{3}{4}$ "  $\oslash$  STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF  $\frac{7}{8}$ "  $\oslash$  STUDS ALONG THE BEAM AS SHOWN FOR  $\frac{3}{4}$ "  $\varnothing$  studs based on the ratio of 3 -  $\frac{7}{8}$ " $\varnothing$ STUDS FOR 4 -  $\frac{3}{4}$ " Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EOUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

# **STANDARD NOTES**

## ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY  $\frac{1}{16}$ " OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

## HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

### SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.