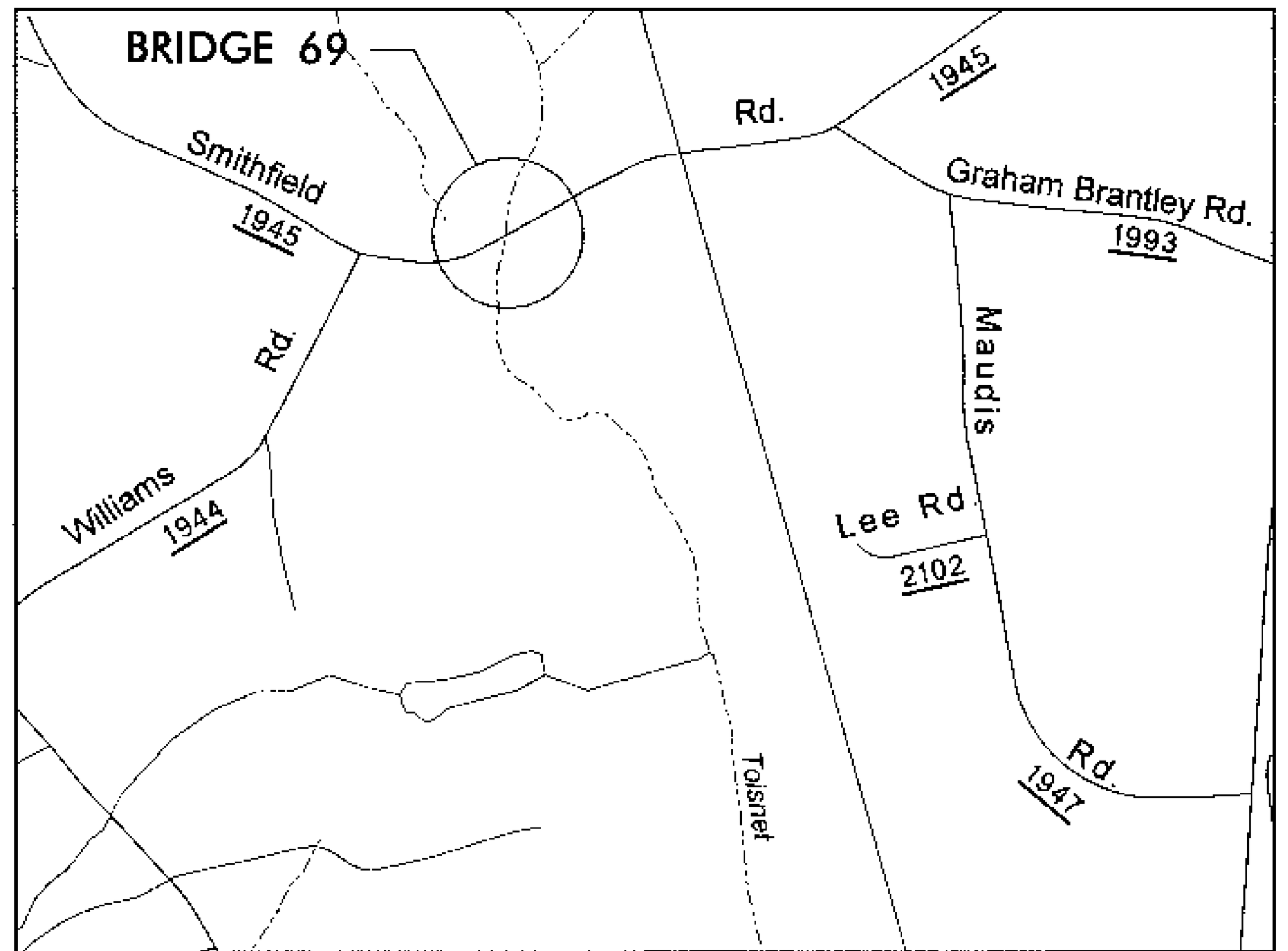
WBS: 33789.3.STI TIP PROJECT: B-4589

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4589		

STATE PROJECT NO.	F.A. PROJ. NO.	DESCRIPTION
33789.1.1	BRZ-1945 (2)	P.E.
33789.3.STI	STM-1945	CONST.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

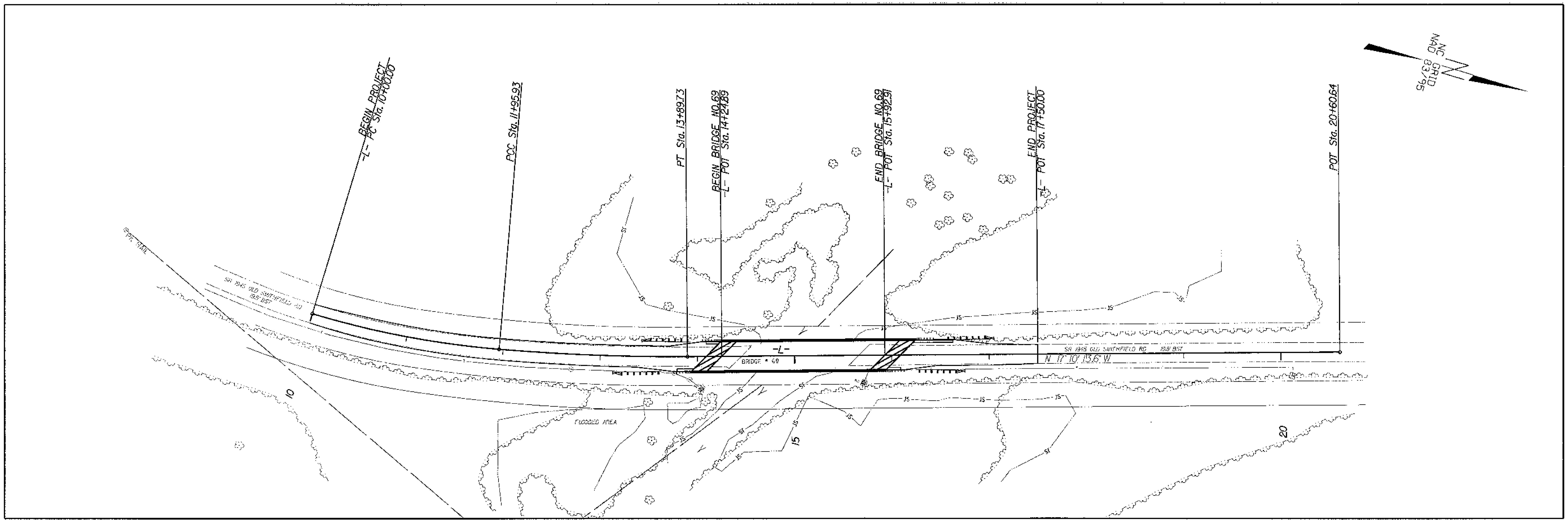
NASH COUNTY



VICINITY MAP
(NOT TO SCALE)

LOCATION: SR 1945 BRIDGE NO. 69 OVER TOISNOT SWAMP

TYPE OF WORK: BRIDGE REPLACEMENT WITH PRE-STRESSED CONCRETE CORED SLAB SUPERSTRUCTURE ON STEEL PILE END BENTS AND INTERIOR BENTS AND ROADWAY APPROACHES



GRAPHIC SCALES

DESIGN DATA

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT = 0.110 MILE

LENGTH STRUCTURE TIP PROJECT = 0.032 MILE

TOTAL LENGTH TIP PROJECT = 0.142 MILE

Prepared In the Office of:
Stantec Consulting Services Inc.

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:

LETTING DATE:

JOSEPH KELVINGTON, PE
PROJECT ENGINEER

BRYON PALMER, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE:

SEAL 033719

ROADWAY DESIGN ENGINEER

SIGNATURE:

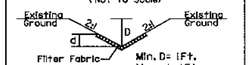
SEAL 28434

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER P.E.

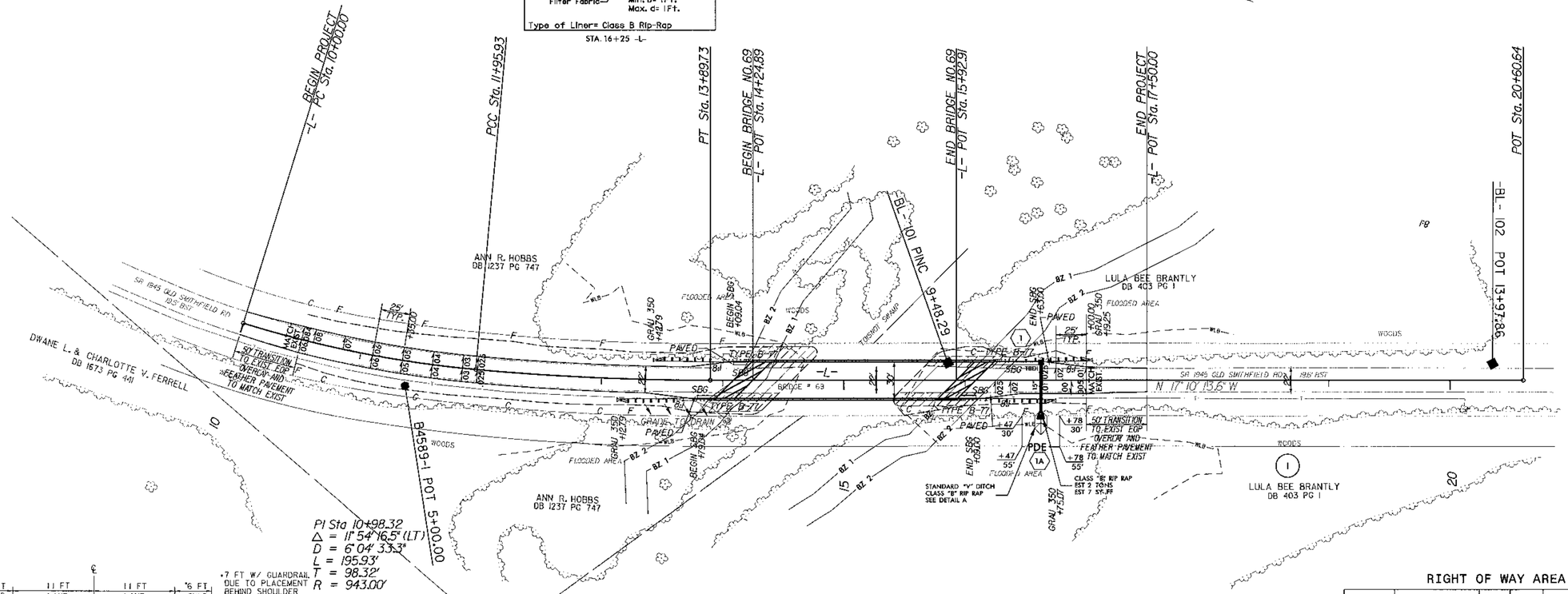
STRUCTURE No.	LOCATION	TYPE AND STANDARD	GRATE STANDARD	RIM ELEV.	INVERT IN ELEV.	INVERT OUT ELEV.
1	16+62.5	DI 840.36	840.37	161.28	-	158.28
1A	16+62.5	OUTLET	-	-	158.1	-

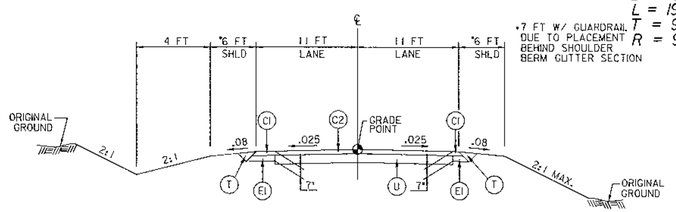
DETAIL A
STANDARD "V" DITCH
(Not to Scale)



Type of Liner= Class B Rip-Rap

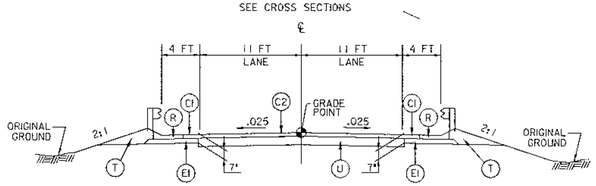
STA. 16+25 -L-





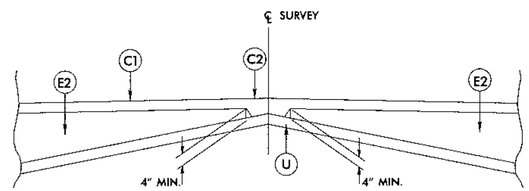
ROADWAY TYPICAL SECTION

SEE CROSS SECTIONS



ROADWAY TYPICAL SECTION

SEE CROSS SECTIONS



Detail Showing Method of Wedging

PAVEMENT SCHEDULE			
C1	3" SURFACE COURSE, TYPE SF9.5A, IN EACH OF 2 LIFTS	R	SHOULDER BERM GUTTER
C2	VARIABLE DEPTH SURFACE COURSE, TYPE SF9.5A (SEE WEDGING DETAIL)	T	EARTH MATERIAL.
E1	4" BASE COURSE, TYPE B25.0B	U	EXISTING PAVEMENT.
E2	VARIABLE DEPTH BASE COURSE, TYPE B25.0B (SEE WEDGING DETAIL)		

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4589-1" WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 753867.451(ft) EASTING: 2287277.771(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99991863 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4589-1" TO -L- STATION 10+00 IS 143.1126(ft) AT S 3°57'36.8" W ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

RIGHT OF WAY AREA DATA

PARCEL NO.	PROPERTY OWNER	TOTAL ACRE.	AREA TAKEN	AREA REMAINING	CONSTR. EASEMENT	PERMANENT DRAINAGE EASEMENT
1	LULA BEE BRANTLY	-	0	-	-	789 SF (.018 AC.)

PROJECT NO. 33789.3.ST1 (B-4589)

NASH COUNTY

STATION: 15+08.93 -L-

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www.stantec.com

DRAWN BY : B. A. H. KUGLER DATE : 05-02-08

CHECKED BY : J. T. KELVINGTON DATE : 05-02-08

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 033719 ENGINEER BRIAN A. MAZOCH

ROADWAY ENGINEER

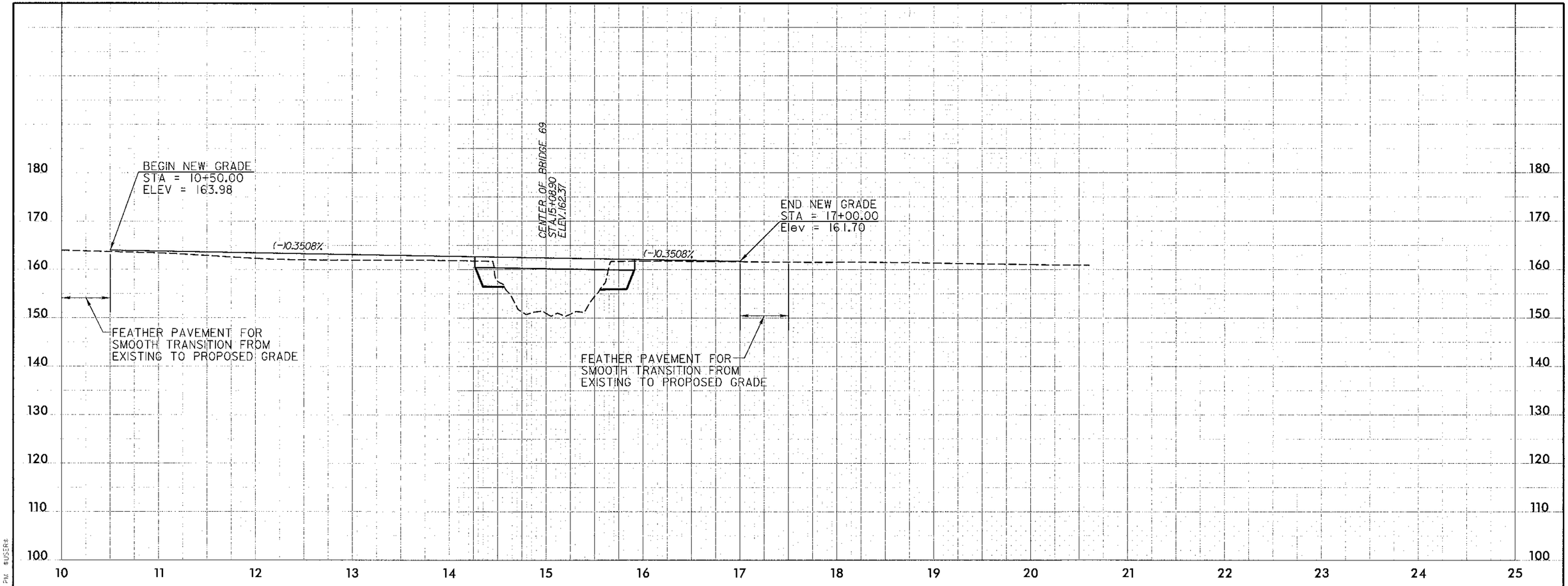
NORTH CAROLINA PROFESSIONAL SEAL 28434 ENGINEER BYRON M. PALMER

7-16-09

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE NO. 69 ON SR 1945 OVER TOISNOT SWAMP

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	R-1
1			3			TOTAL SHEETS
2			4			2



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PROJECT NO. 33789.3.ST1 (B-4589)

NASH COUNTY

STATION: 15+08.93 -L-

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 033719 ENGINEER BRIAN A. MAZIOCHI

ROADWAY ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 28434 ENGINEER BRION M. PALMER

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE NO. 69 ON SR 1945
OVER TOISNOT SWAMP

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	R-2
1			3			TOTAL SHEETS
2			4			2

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DRAWN BY : B. A. H. KUGLER DATE : 05-02-08

CHECKED BY : J. T. KELVINGTON DATE : 05-02-08

STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS	A.A.S.H.T.O. (CURRENT)
LIVE LOAD	SEE PLANS
IMPACT ALLOWANCE	SEE A.A.S.H.T.O.
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 A.A.S.H.T.O.
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 2006 "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 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1-1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 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 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.

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

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 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 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 EQUIVALENT 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.

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 1/16 INCH 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.

ENGLISH

JANUARY, 1990

STD. NO. SN

REV. 6-16-95 EEM W/ RGW REV. 5-7-03 RWW W/ JTE
REV. 8-16-99 RWW W/ LES REV. 5-1-06 TLA W/ GM

7/14/2009
U:\171000735\transportation\design\Structures\Drawing\4589_SN.dgn
jhennekes

BENCH MARK

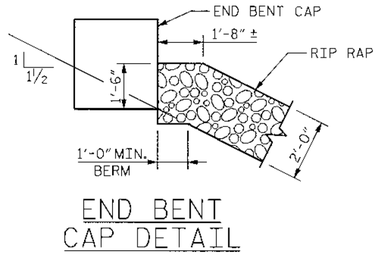
BM #2: -BL-, STA. 9+24.32 O/S
49.25' RIGHT

(-)0.3508%

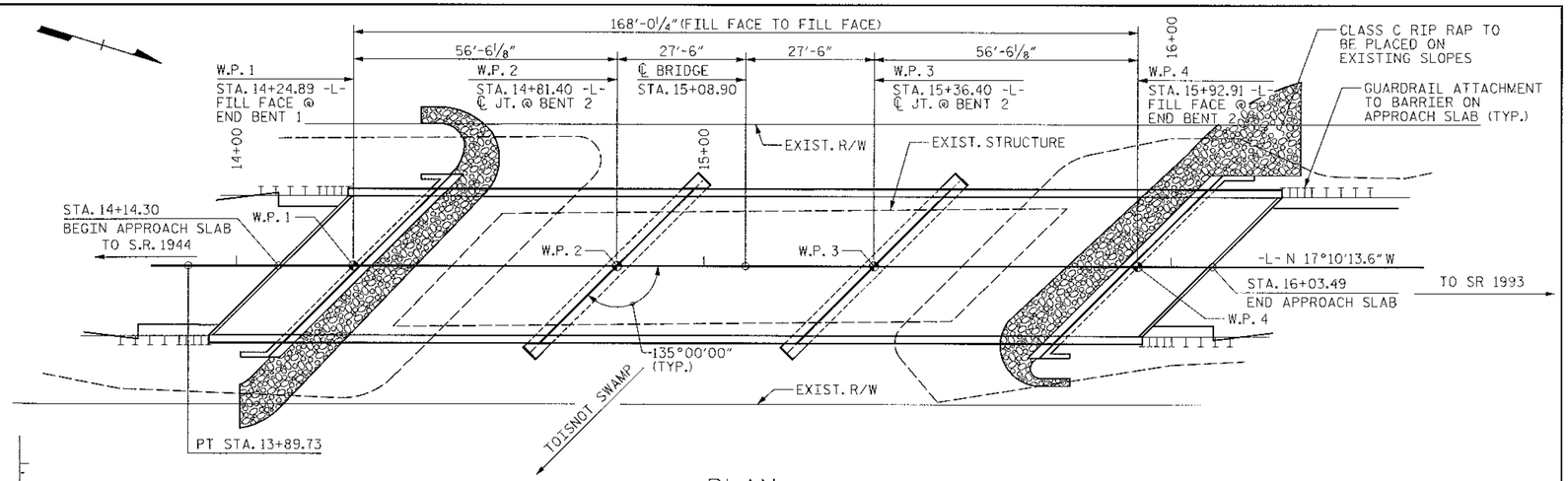
PI = 10+50.00
EL = 163.98'

PI = 17+00.00
EL = 161.70'

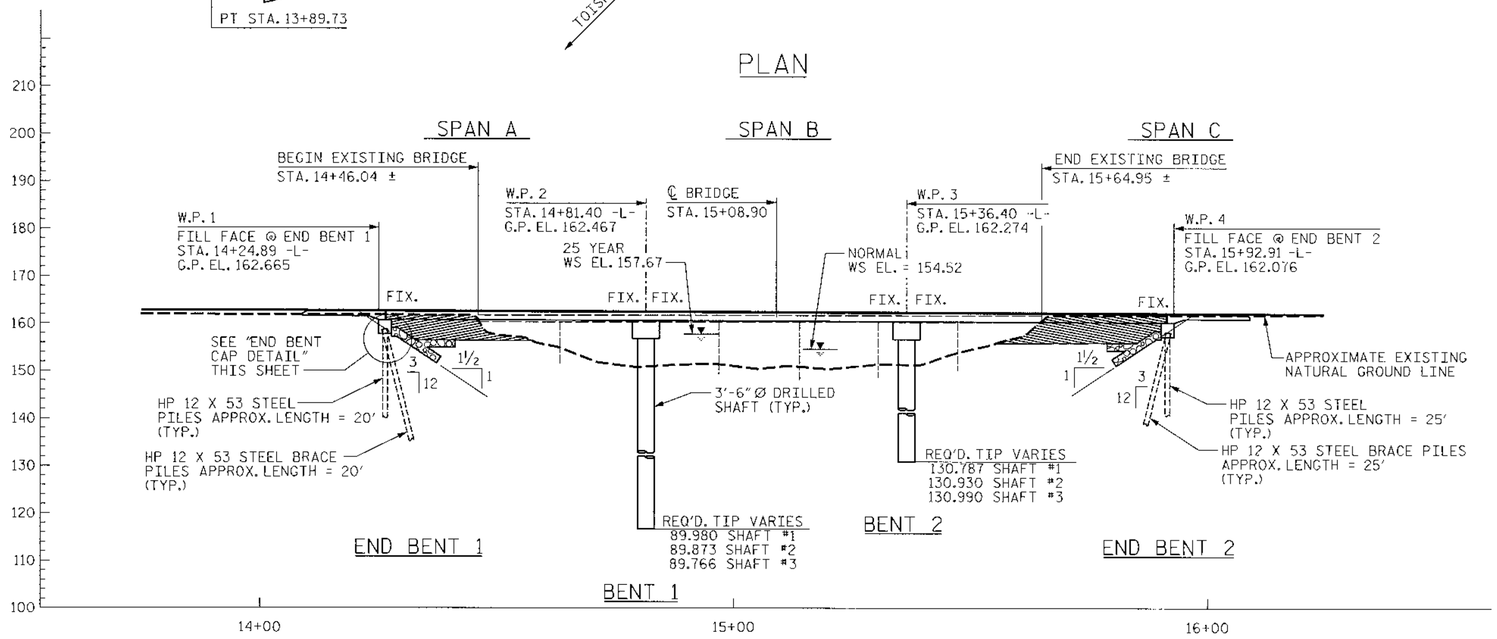
GRADE LINE PROFILE



END BENT
CAP DETAIL



PLAN



ELEVATION

EXISTING BRIDGE INFORMATION

- 6 SPANS: @ 20'-0" +/-
- TOTAL BRIDGE LENGTH = 120'-0" +/-
- 24'-0" +/- CLEAR ROADWAY
- CAST IN PLACE CONCRETE DECK W/ ASPHALT WEARING SURFACE SUPPORTED ON TIMBER BEAMS
- TIMBER CAPS ON TIMBER PILES @ INTERIOR BENTS
- TIMBER CAPS ON TIMBER PILES W/ TIMBER BUILKHEADS @ END BENTS
- ENTIRE STRUCTURE TO BE REMOVED

PROJECT NO. 33789.3.ST1

NASH COUNTY

STATION: 15+08.90 -L-

REPLACES BRIDGE NO. 69

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE NO. 69 ON SR 1945 OVER TOISNOT SWAMP BETWEEN SR 1944 AND SR 1993

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DRAWN BY : J. L. HENNEKES DATE : 10-01-08
CHECKED BY : J. T. KELVINGTON DATE : 10-01-08

NORTH CAROLINA PROFESSIONAL SEAL 13406 ENGINEER J. T. KELVINGTON

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1
1			3			TOTAL SHEETS
2			4			12

NOTES:

1. ASSUMED LIVE LOAD = HS20 OR ALTERNATE LOADING, EXCEPT THAT CORED SLAB UNITS HAVE BEEN DESIGNED FOR HS25.
2. THIS BRIDGE HAS BEEN DESIGNED BY THE STRENGTH DESIGN METHOD AS SPECIFIED IN AASHTO STANDARD SPECIFICATIONS.
3. THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO STANDARD SPECIFICATIONS FOR SEISMIC DESIGN OF HIGHWAY BRIDGES FOR SEISMIC PERFORMANCE CATEGORY A.
4. FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
5. FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
6. REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.
7. THE MATERIAL SHOWN IN THE HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 20 FT. EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE MEASURED AND PAID FOR AT THE CONTRACT UNIT PRICE PER CUBIC YARD FOR UNCLASSIFIED STRUCTURE EXCAVATION.
8. THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.
9. ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.
10. HYDRAULIC DESIGN DATA
    - DESIGN DISCHARGE 1799 CFS.
    - FREQUENCY OF DESIGN FLOOD 25 YEARS
    - DESIGN HIGH WATER ELEVATION 157.67
    - DRAINAGE AREA 22.9 SQ. MI.
    - BASIC DISCHARGE(Q100) 2754 CFS.
    - BASIC HIGH WATER ELEVATION 158.77
11. OVERTOPPING FLOOD DATA
    - OVERTOPPING DISCHARGE 3750 CFS.
    - FREQUENCY OF OVERTOPPING FLOOD >100 YRS.
    - OVERTOPPING FLOOD ELEVATION 160.73
12. THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH HEC 18,"EVALUATING SCOUR AT BRIDGES", MAY, 2001.
13. FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.
14. FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
15. FOR CONSTRUCTION OF SUPERSTRUCTURE, SEE SPECIAL PROVISIONS.
16. FOR CONSTRUCTION OF SUBSTRUCTURE, SEE SPECIAL PROVISIONS.
17. FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.
18. FOR DRILLED PIERS, SEE DRILLED PIER SPECIAL PROVISIONS.
19. DRILLED PIERS AT BENTS NO. 1 AND 2 ARE DESIGNED FOR BOTH SKIN FRICTION AND END BEARING. CHECK FIELD CONDITIONS FOR THE REQUIRED END BEARING CAPACITY OF 30 TSF FOR BENTS NO. 1 AND 2.
20. DRILLED PIERS AT BENT 1 AND BENT 2 ARE DESIGNED FOR AN APPLIED LOAD OF 250 TONS EACH AT THE TOP OF THE COLUMN.
21. PERMANENT STEEL CASING IS REQUIRED FOR DRILLED PIERS AT BENTS NO. 1 AND 2. DO NOT EXTEND THE CASING BELOW ELEVATIONS 138 FT AND 143 FT, RESPECTIVELY, WITHOUT PRIOR APPROVAL FROM THE ENGINEER.
22. INSTALL DRILLED PIERS AT BENTS NO. 1 AND 2 THAT EXTEND TO ELEVATIONS NO HIGHER THAN 90 FT AND 131 FT, RESPECTIVELY, SATISFY THE REQUIRED END BEARING CAPACITY, AND HAVE A MINIMUM PENETRATION OF 1 FT. AND 12 FT. INTO WEATHERED ROCK AT BENTS NO. 1 AND 2 RESPECTIVELY.
23. THE SCOUR CRITICAL ELEVATIONS FOR BENT 1 AND BENT 2 ARE ELEV. 137 AND ELEV. 143 RESPECTIVELY. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.
24. SID INSPECTIONS MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SID INSPECTIONS. SEE DRILLED PIERS SPECIAL PROVISION.
25. CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR THE DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR CSL TESTING. SEE CROSS HOLE SONIC LOGGING SPECIAL PROVISION.
26. DRIVE PILES FOR END BENT 1 AND END BENT 2 TO A REQUIRED BEARING CAPACITY OF 120 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF 2.
27. THE ALLOWABLE BEARING CAPACITY FOR PILES AT END BENT 1 AND END BENT 2 IS 60 TONS PER PILE.
28. SPT TESTING IS REQUIRED FOR DRILLED PIERS AT BENT NO. 1.
29. CONTRACTOR IS ADVISED OF THE POTENTIAL FOR CONFLICT BETWEEN DRILLED PIERS AT BENT 1 AND EXISTING INTERIOR BENT PILES. IN THE EVENT THAT EXCAVATION FOR DRILLED PIERS CONFLICT WITH EXISTING PILES, CONTRACTOR SHALL COMPLETELY REMOVE EXISTING BENT PILES DIRECTLY AFFECTED BY PIER EXCVATIONS AND AT THE DIRECTION OF THE ENGINEER. HOLES THAT DO NOT FALL COMPLETELY WITHIN THE FOOTPRINT OF THE PIER EXCAVATION SHALL BE BACKFILLED WITH CLEAN SAND AND COMPACTED AT 2 FOOT INTERVALS ONCE ABOVE THE WATER TABLE. ALL OTHER EXISTING PILES NOT AFFECTED BY SHAFT EXCAVATIONS SHALL BE REMOVED IN ACCORDANCE WITH THE SPECIFICATIONS. NO SEPARATE COMPENSATION OR PAYMENT SHALL BE MADE FOR THIS WORK. ALL COSTS FOR EQUIPMENT, LABOR AND MATERIALS REQUIRED FOR REMOVAL OF EXISTING PILES AND BACKFILLED HOLES SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR REMOVAL OF EXISTING STRUCTURE AT STATION 15+08.90.
30. PLAIN RIP RAP (2'-0" THICK)
    - END BENT 1 QTY. = 146 TONS
    - END BENT 2 QTY. = 143 TONS
31. THE COST OF THE FILTER FABRIC SHALL BE INCLUDED IN THE CONTRACT PRICE BID FOR PLAIN RIP RAP CLASS II.

Stantec

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NASH COUNTY

STATION: 15+08.90 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

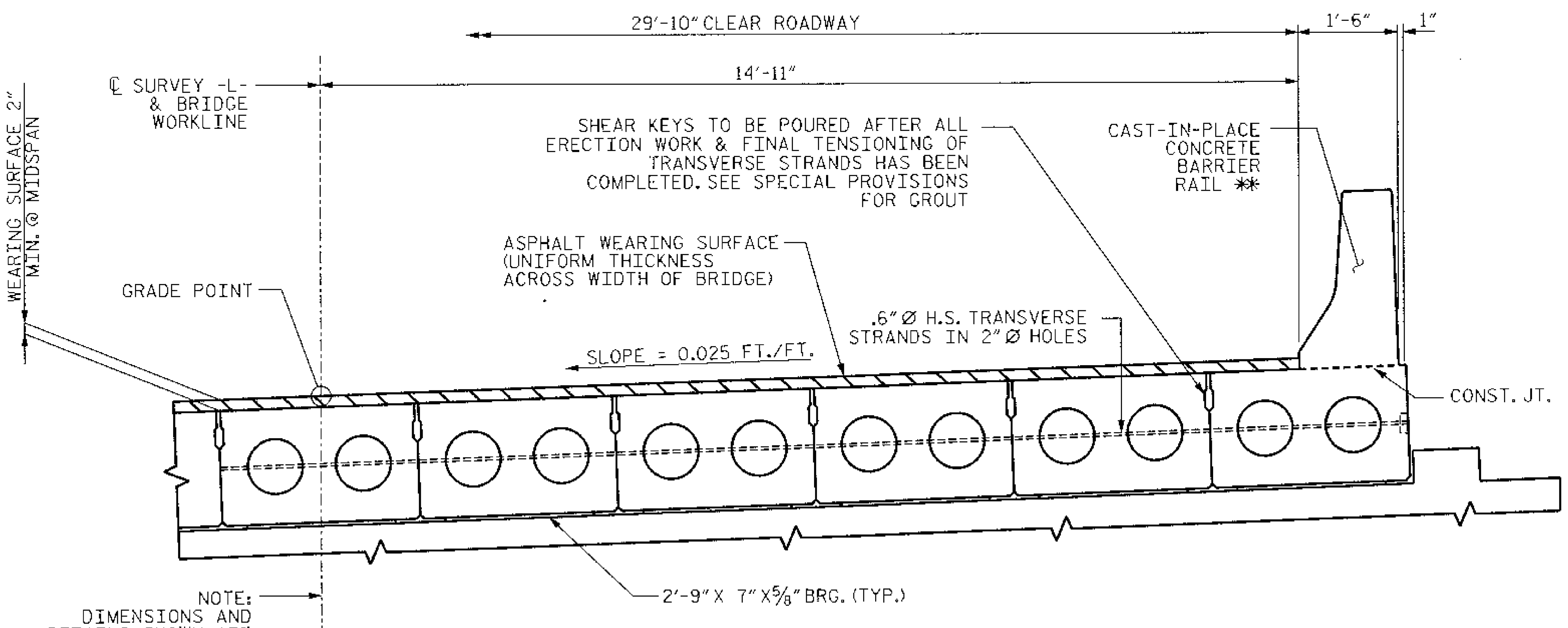
GENERAL NOTES

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 13406 JOSEPH T. KELVINGTON
Joseph T. Kelvington 8/31/09

REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

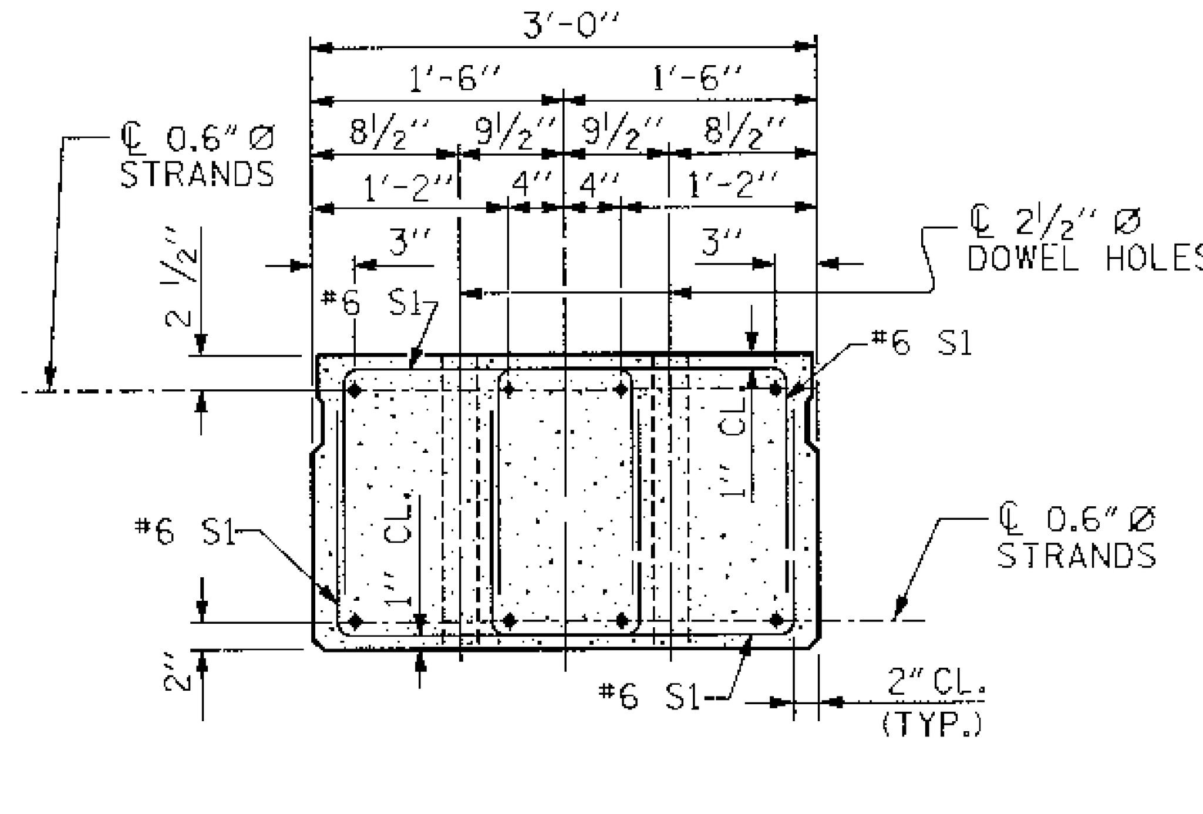
SHEET NO. S2

TOTAL SHEETS 12



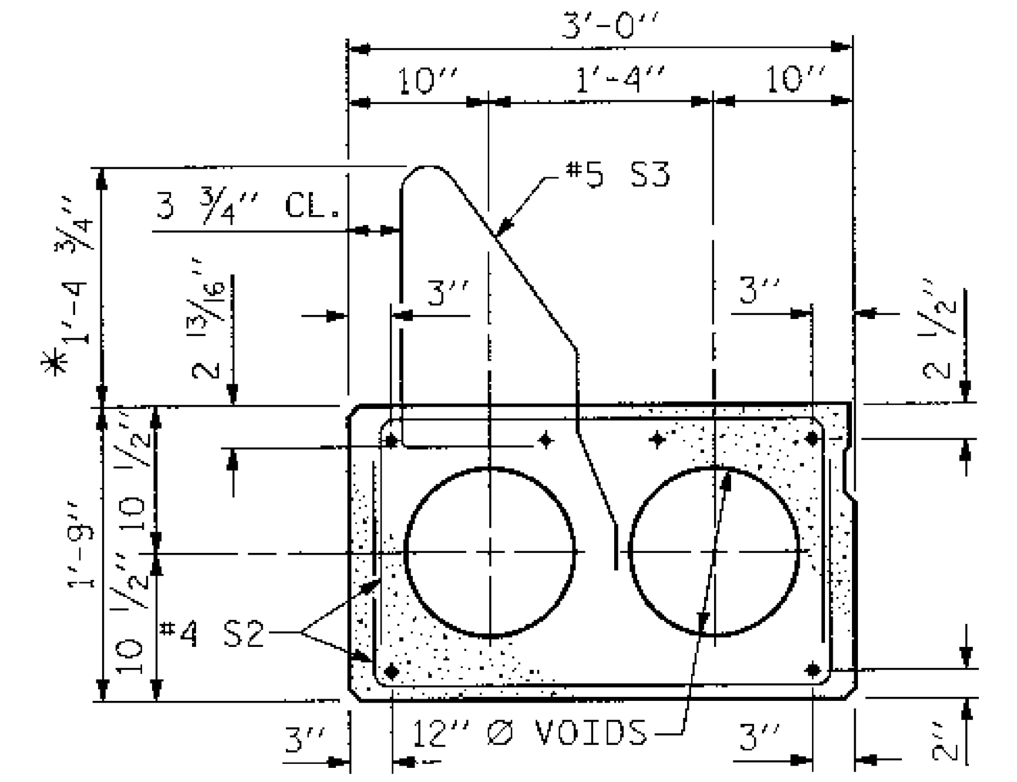
TYPICAL HALF SECTION

** NOTE: FOR CONCRETE BARRIER RAIL DETAILS, SEE SHT. S4



END ELEVATION

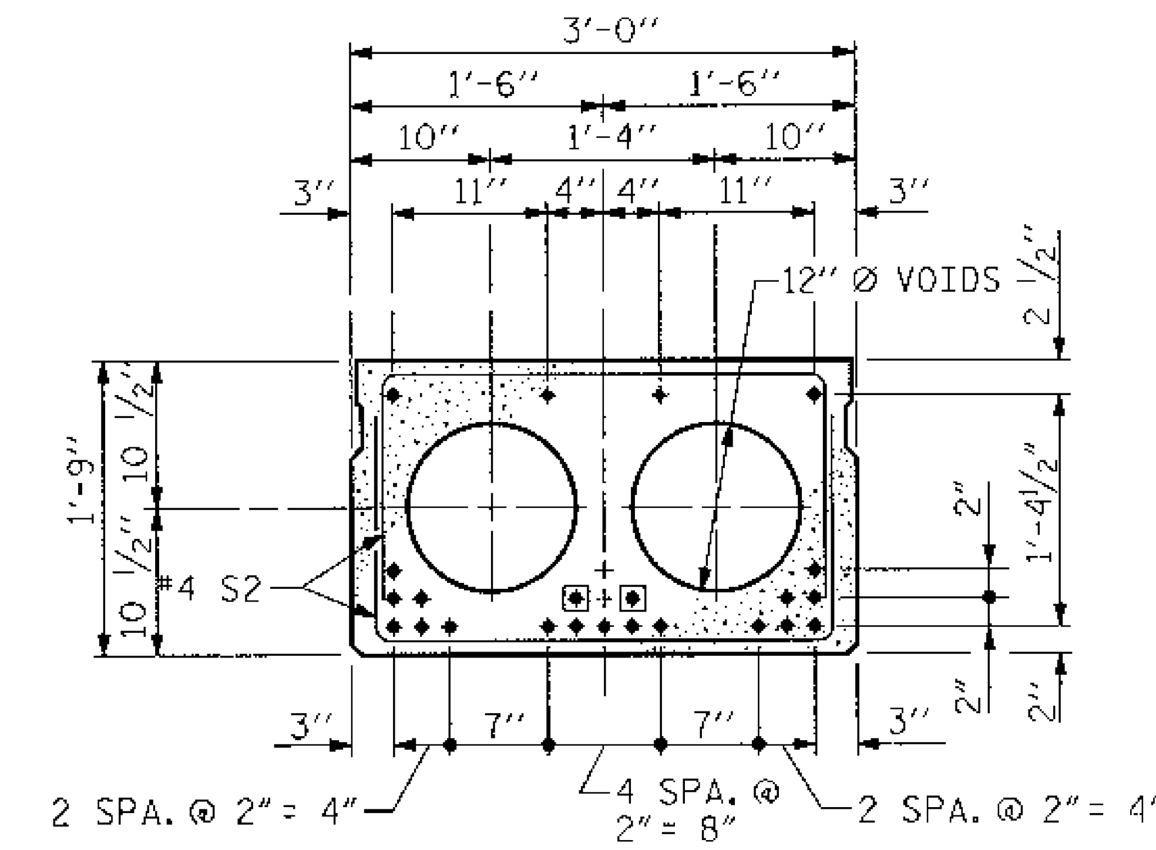
SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.) INTERERIOR SLAB SECTION SHOWN-EXTERIOR SLAB SECTION SIMILAR EXCEPT SHEAR KEY LOCATION.



EXTERIOR SLAB SECTION

(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)

* BASED ON 2" ASPHALT- ADJUST AS NECESSARY

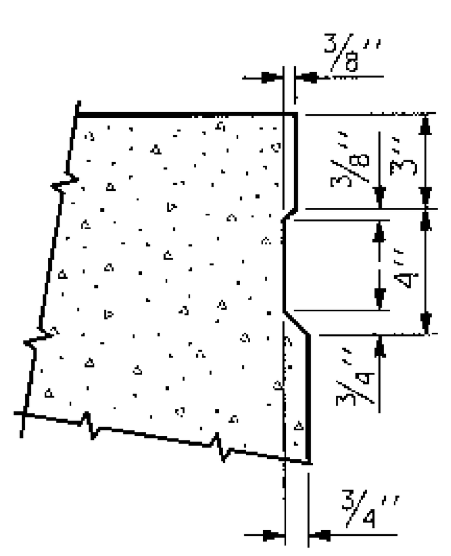


INTERIOR SLAB SECTION

6/10 " Ø LOW RELAXATION STRAND LAYOUT

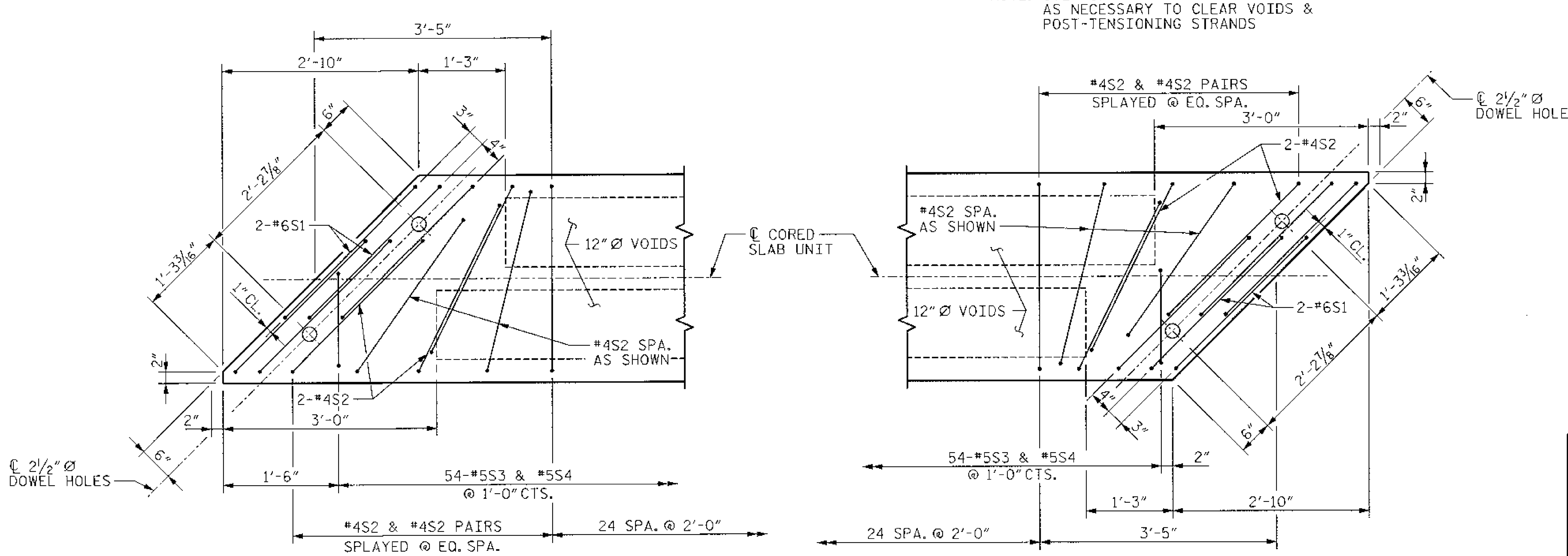
▣ DENOTES BOND SHALL BE BROKEN ON STRANDS FOR A DISTANCE OF 2'-0" FROM EACH END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS ARTICLE 1078-7

NOTE: STIRRUPS MAY BE REPOSITIONED SLIGHTLY AS NECESSARY TO CLEAR VOIDS & POST-TENSIONING STRANDS



SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.



PART PLAN EXTERIOR SECTION

NOTE: RIGHT SIDE UNIT SHOWN. LEFT SIDE UNIT TYPICAL.

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.

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

THE 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH GROUT.

THE 2" Ø BACKER ROD SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

WHEN CORED SLABS ARE CAST, A POSITIVE HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS. THIS SYSTEM SHALL BE DESIGNED TO BE LEFT IN PLACE UNTIL THE CONCRETE HAS REACHED RELEASE STRENGTH. AT LEAST THREE 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.

THE TOP SURFACE OF THE CORED SLAB UNITS SHALL HAVE A 3/8" RAKED FINISH.

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 6000 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS 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.

VERTICAL GROOVED CONTRACTION JOINTS, 1/2" 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 VERTICAL 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.

THE MINIMUM 28 DAY COMPRESSIVE STRENGTH OF CONCRETE FOR THE CORED SLAB UNIT SHALL NOT BE LESS THAN 8000 PSI.

PROJECT NO. 33789.3.ST1

NASH COUNTY

STATION: 15+08.90 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PRESTRESSED CONCRETE CORED SLAB DETAILS

NORTH CAROLINA SEAL 13406 ENGINEER JOSEPH T. KELVINGTON

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1			3				TOTAL SHEETS
2			4				12

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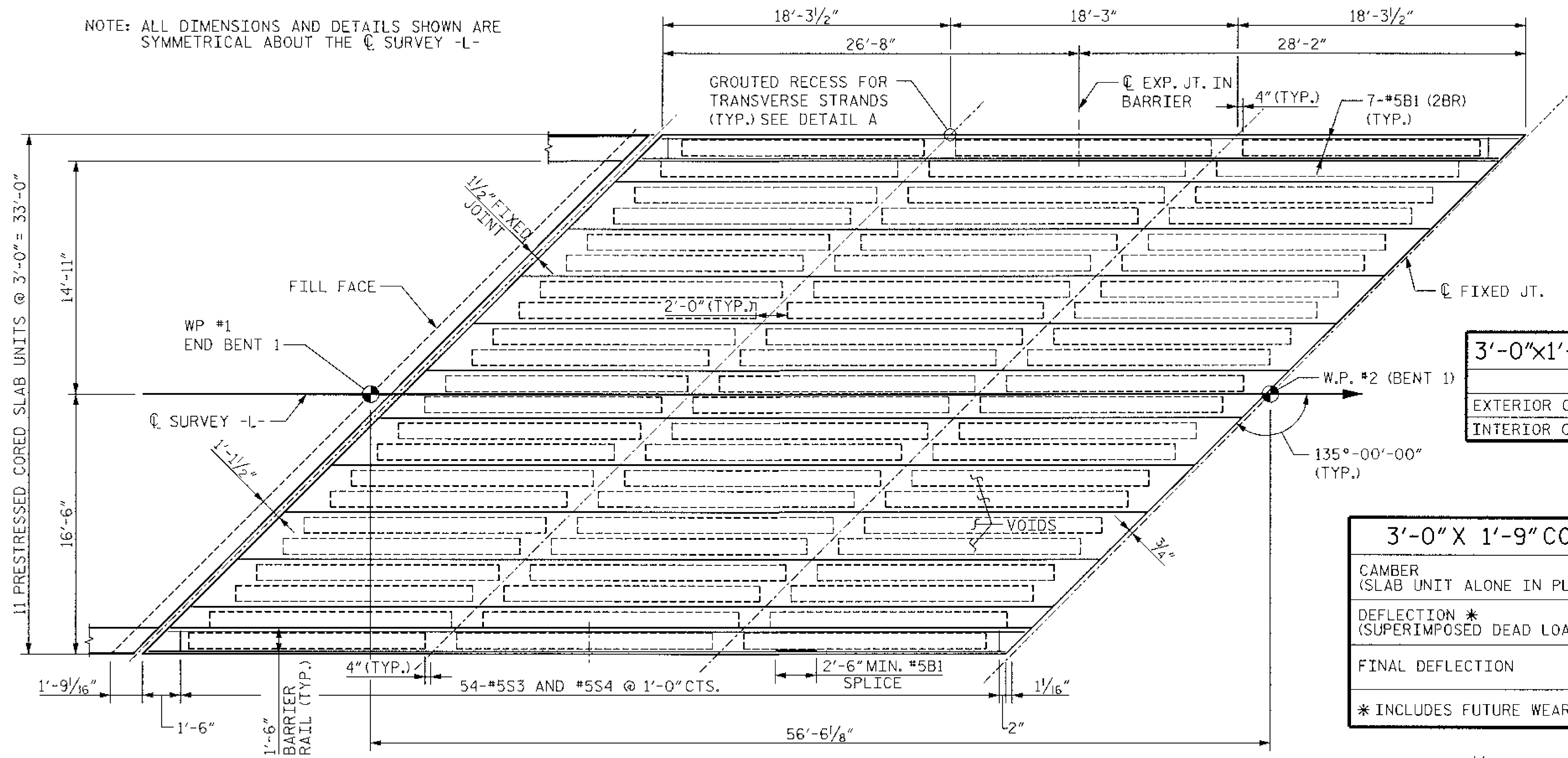
DRAWN BY : B. J. ELLIOT DATE : 10-01-08
CHECKED BY : T. R. DUDECK DATE : 10-01-08

NOTE: ALL DIMENSIONS AND DETAILS SHOWN ARE SYMMETRICAL ABOUT THE ℄ SURVEY -L-



55'-0" PLAN OF SPAN

SPAN "A" SHOWN ALL OTHERS SIMILAR

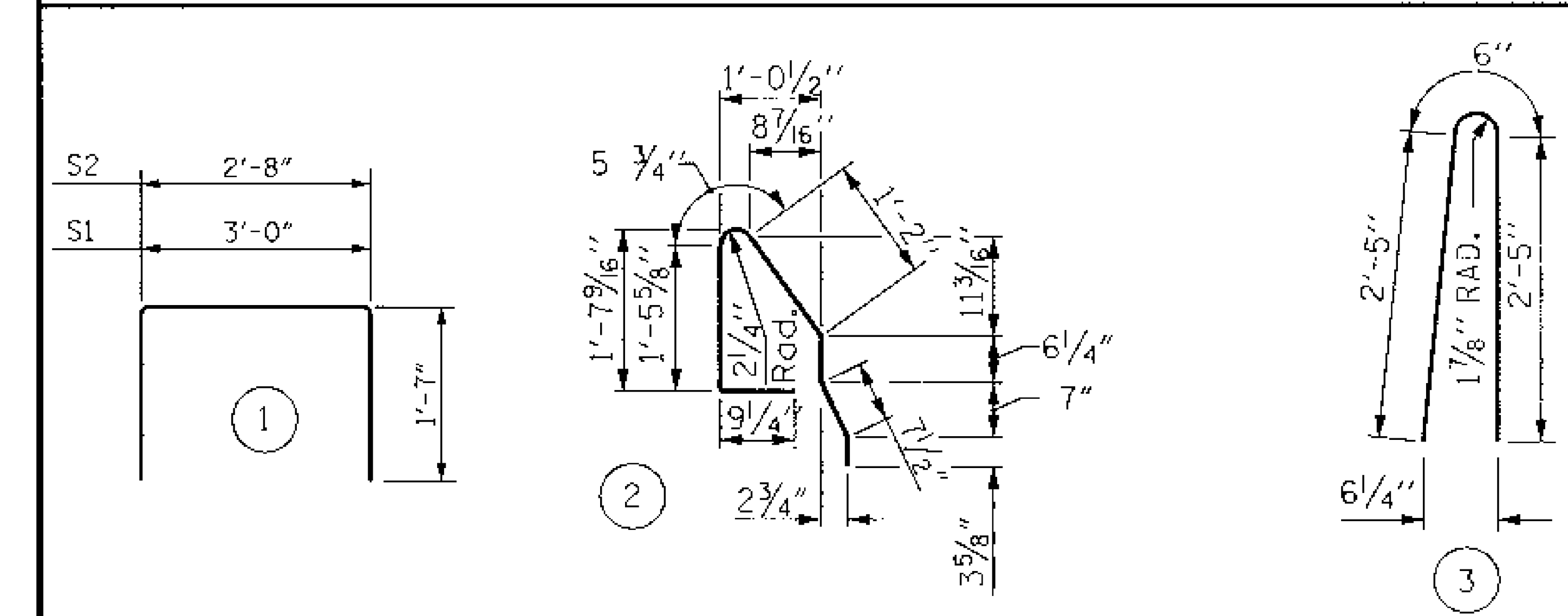
GRADE 270 STRANDS	
	0.6" Ø L.R.
AREA (SQUARE INCHES)	0.217
ULTIMATE STRENGTH (LBS. PER STRAND)	58,590
APPLIED PRESTRESS (LBS. PER STRAND)	43,940

3'-0"x1'-9" CORED SLABS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	6	54'-10"	329'-0"
INTERIOR C.S.	27	54'-10"	1480'-6"

3'-0" X 1'-9" CORED SLAB UNIT	SPANS A-C 54'-10"
CAMBER (SLAB UNIT ALONE IN PLACE)	2¹⁄₁₆" ↑
DEFLECTION * (SUPERIMPOSED DEAD LOAD)	⁷⁄₁₆" ↓
FINAL DEFLECTION	1⅝" ↑

* INCLUDES FUTURE WEARING SURFACE

BAR TYPES



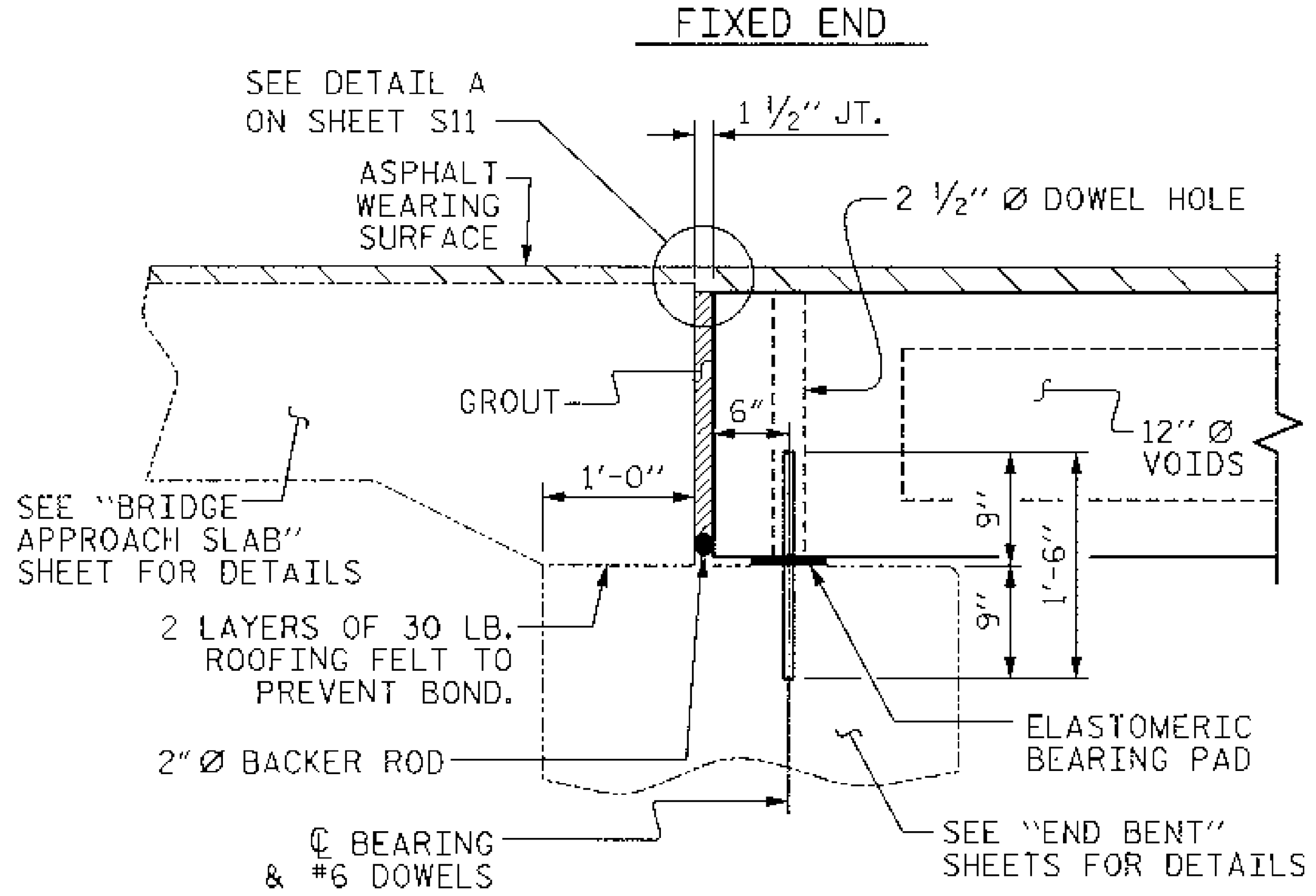
BILL OF MATERIAL FOR ONE 50' CORED SLAB SECTION

BAR	SIZE	TYPE	LENGTH	EXTERIOR UNIT NUMBER	EXTERIOR UNIT WEIGHT	INTERIOR UNIT NUMBER	INTERIOR UNIT WEIGHT
S1	#6	1	6'-2"	8	74	8	74
S2	#4	1	5'-10"	37	144	37	144
*S3	#5	2	5'-4"	54	300	—	—
REINFORCING STEEL LBS.					218		218
* EPOXY COATED REINFORCING STEEL LBS.					300		0
8,000 P.S.I. CONCRETE CU. YDS.					8.1		8.1
0.6" Ø L.R. STRANDS NO.					23		23

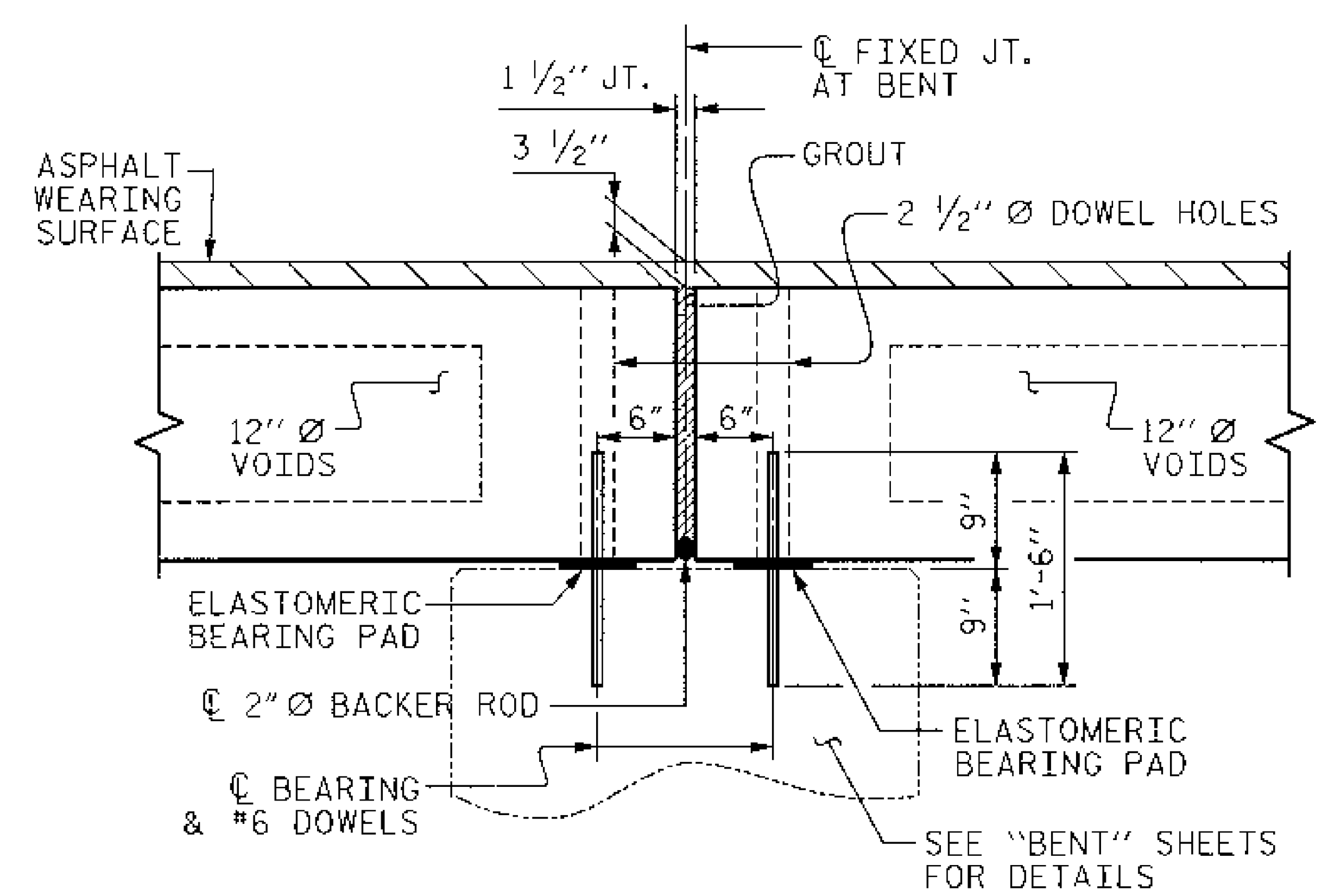
BILL OF MATERIAL FOR CONCRETE BARRIER RAIL ON CORED SLABS

BAR	BARS PER SPAN SPAN A	SPAN B	SPAN C	TOTAL NUMBER	SIZE	TYPE	LENGTH	WEIGHT
* S4	108	108	108	324	#5	3	5'-4"	1802
* B1	56	56	56	168	#5	STR.	14'-11"	2614

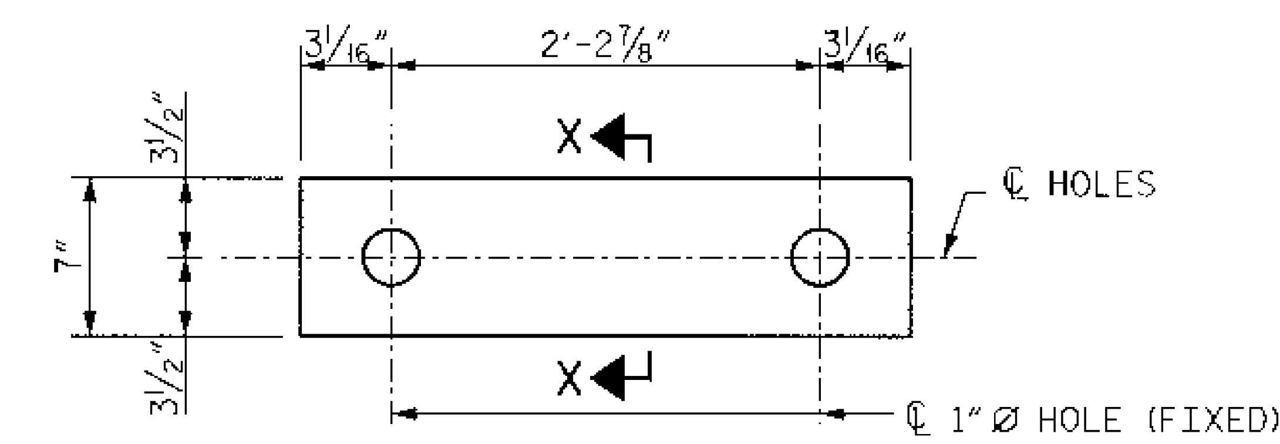
* EPOXY COATED REINFORCING STEEL LBS. = 4416
CLASS AA CONCRETE CU. YDS. = 36.1
TOTAL LIN. FT. OF CONCRETE BARRIER RAIL = 329.7



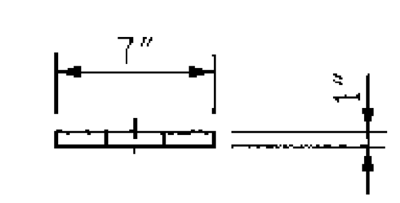
SECTION AT END BENT



SECTION AT BENT 1 & 2



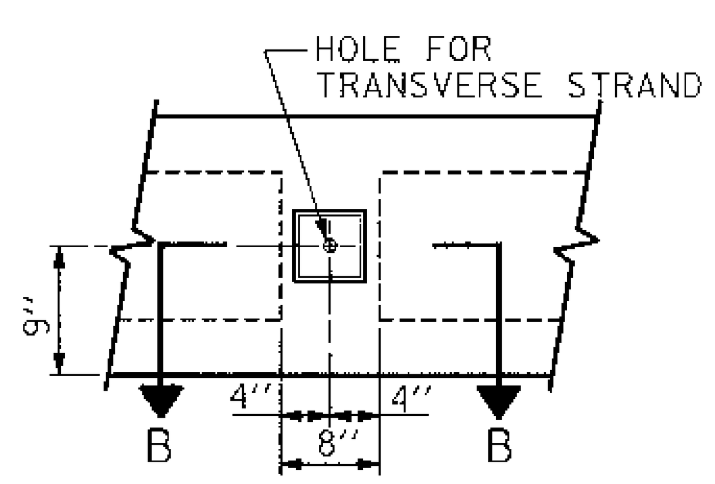
PLAN



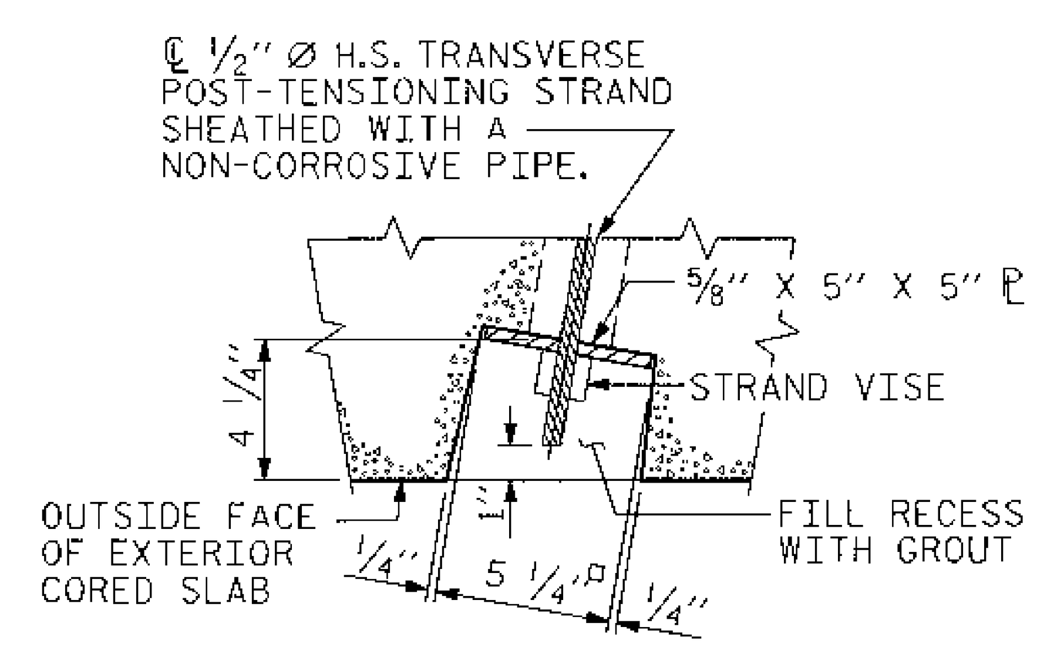
SECTION X-X

NOTE: DUROMETER HARDNESS OF 60 IS REQUIRED FOR ALL ELASTOMERIC BEARINGS

ELASTOMERIC BEARING DETAILS



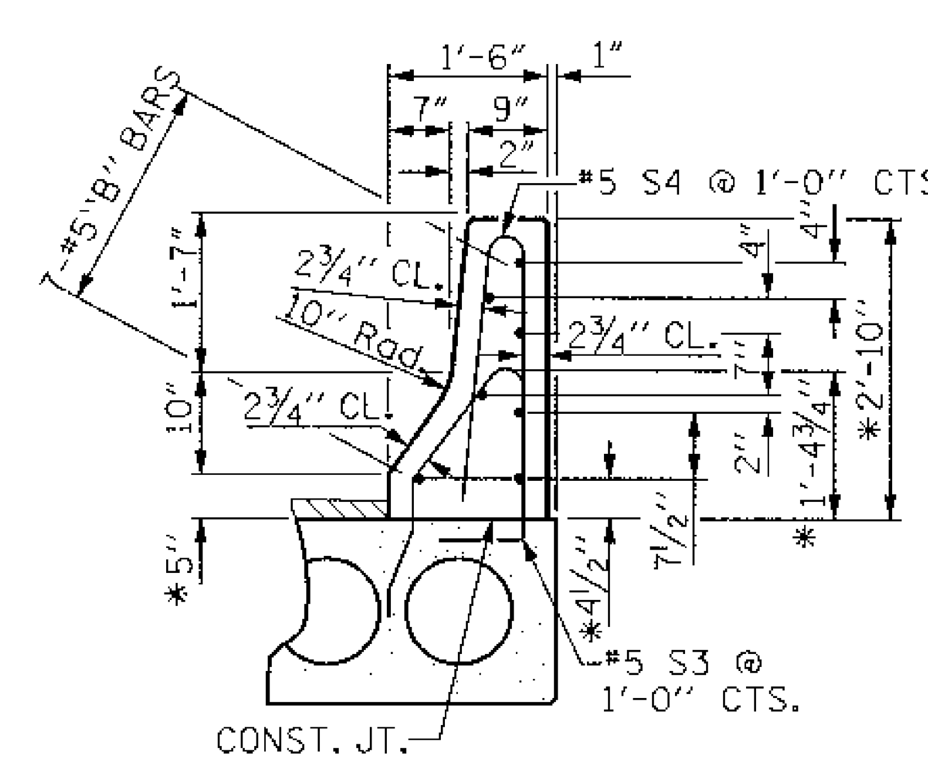
ELEVATION VIEW



SECTION B-B

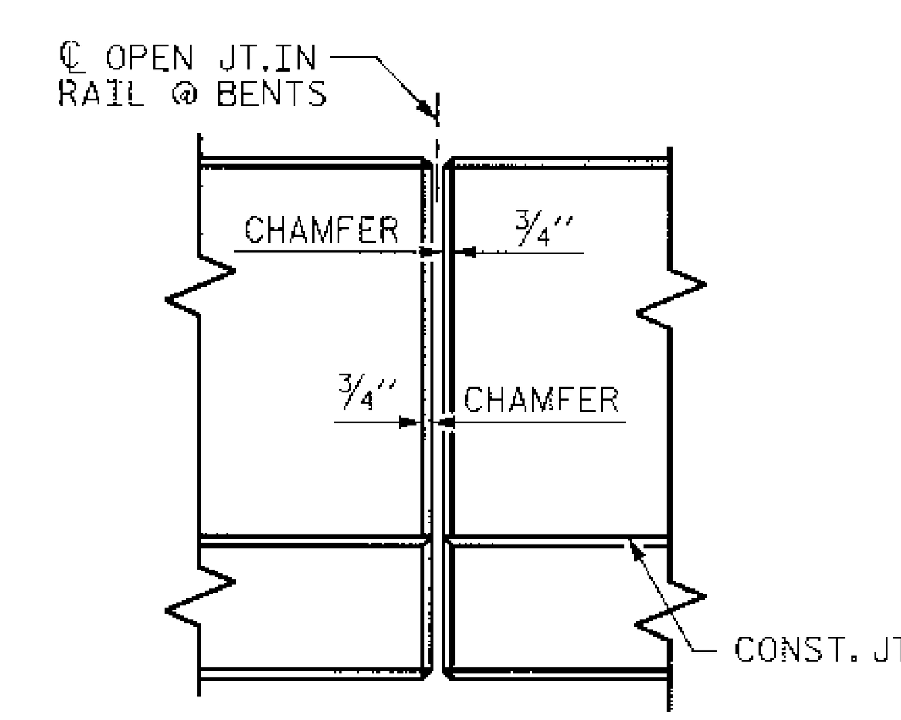
DETAIL A

GROUTED RECESS AT END OF POST-TENSIONED STRAND CORED SLABS



SECTION THRU RAIL

* BASED ON 2" MIN. WEARING SURFACE @ BARRIER FACE @ MID-SPAN



ELEVATION AT EXPANSION JOINTS

BARRIER RAIL DETAILS

PROJECT NO. 33789.3.ST1
NASH COUNTY
STATION: 15+08.90 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PRESTRESSED CORED SLAB
55' SPAN

SEAL 13406 ENGINEER JOSEPH T. KELVINGTON

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
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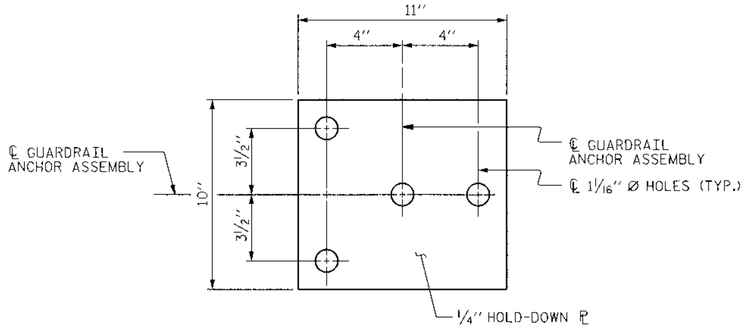
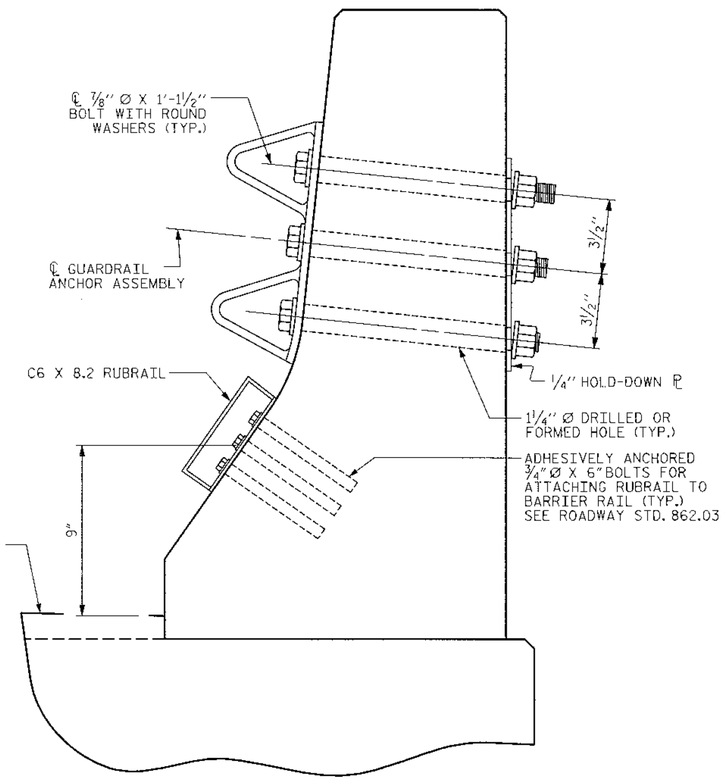
CHECKED BY : T. R. DUDECK DATE : 10-01-08

u:\NCDOT\trans\design\structures\drawings\4585_CS_2.dgn 6/3/2009 2:05:40 PM #LSER$



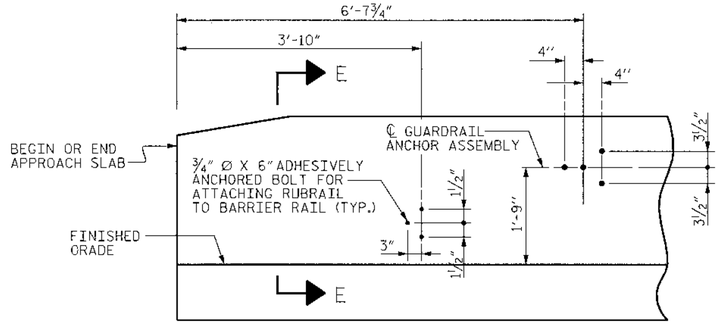
PLAN



SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS

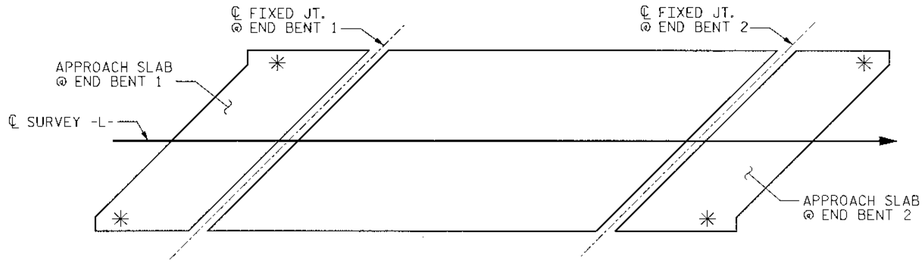
✳ 9"DIMENSION IS FROM TOP OF RIDING SURFACE.
FOR BOX BEAM & CORED SLAB ADJUST DIMENSION FOR WEARING SURFACE.



ELEVATION

FOR LOCATION OF RUBRAIL, SEE ROADWAY STD. 862.03

NOTE: ALL DIMENSIONS SHOWN ARE MEASURED ALONG THE TRAFFIC FACE OF THE BARRIER.



SKETCH SHOWING POINTS OF ATTACHMENTS

✳ INDICATES POINT OF ATTACHMENT

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 4 - 7/8" Ø BOLTS WITH NUTS AND WASHERS, RUBRAIL, AND ADHESIVELY ANCHORED BOLTS.

THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY WITH BOLTS, NUTS, AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE LUMP SUM CONTRACT PRICE BID FOR BRIDGE APPROACH SLABS.

THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 3/4" Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS. SEE ROADWAY STANDARD 862.03 FOR DETAILS AND LOCATION OF THE RUBRAIL.

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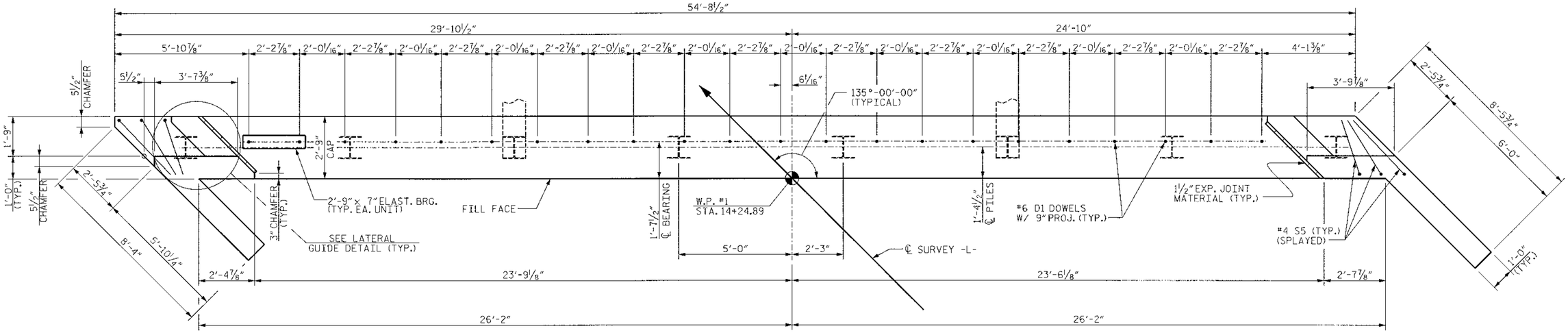
CHECKED BY : J. T. KELVINGTON DATE : 10-01-08

PROJECT NO. 33789.3.ST1
NASH COUNTY
STATION: 15+08.90 -L-

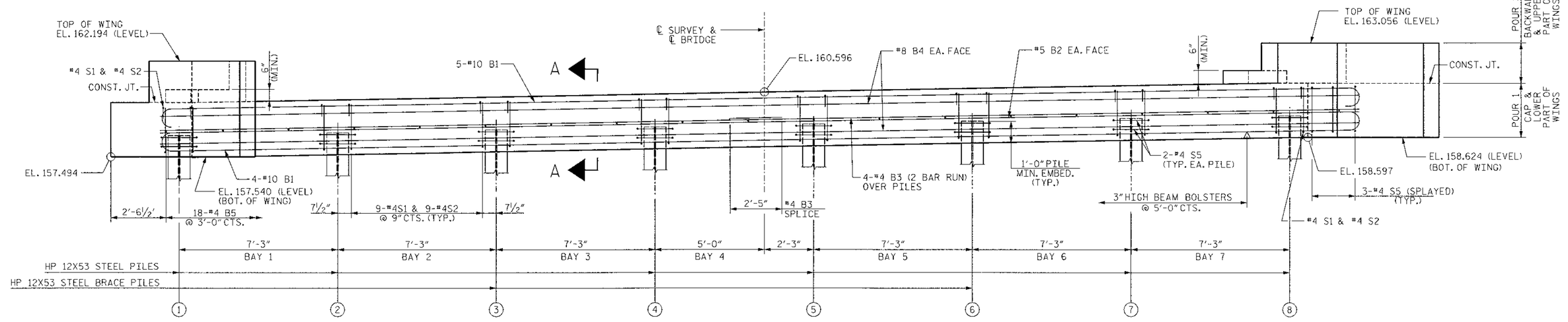
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE NO. 65 ON SR 1001
OVER TOISNOT SWAMP

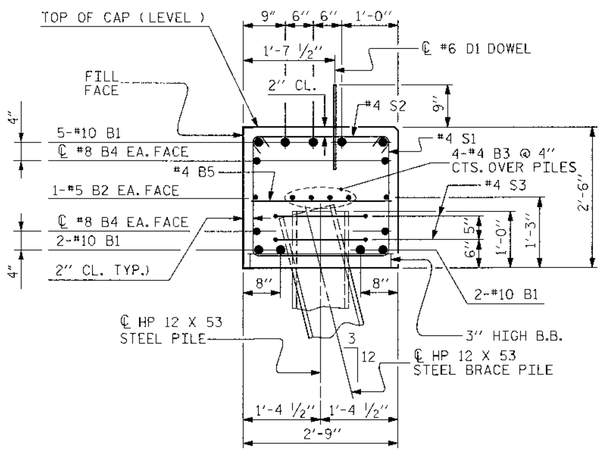
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S5
1			3			TOTAL SHEETS
2			4			12



PLAN



ELEVATION



SECTION A-A

TOP OF PILE ELEVATIONS	
1	158.557
2	158.703
3	158.849
4	158.995
5	159.141
6	159.287
7	159.434
8	159.580

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #6 D1 DOWELS.

FOR PILE SPLICE DETAILS, SEE SHT. S7.

FOR WING WALL DETAILS, SEE SHT. S7.

PROJECT NO. 33789.3.ST1

NASH COUNTY

STATION: 15+08.90 -L-

STATE OF NORTH CAROLINA
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RALEIGH

SUBSTRUCTURE END BENT 1

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CHECKED BY : T. R. DUDECK DATE : 10-01-08

SEAL 13406 ENGINEER JOSEPH T. KELVINGTON NORTH CAROLINA PROFESSIONAL ENGINEER SEAL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S6
1			3			TOTAL SHEETS
2			4			12

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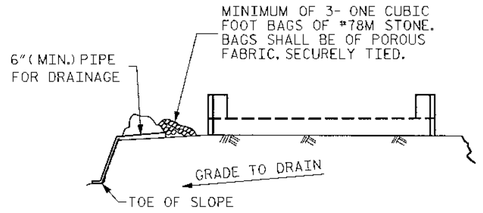
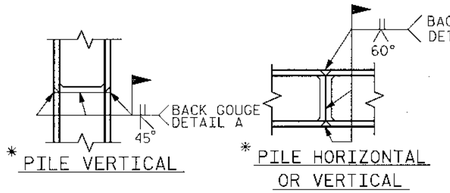


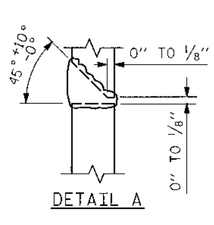
BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

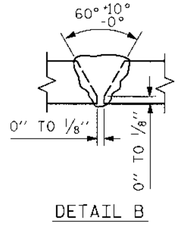
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

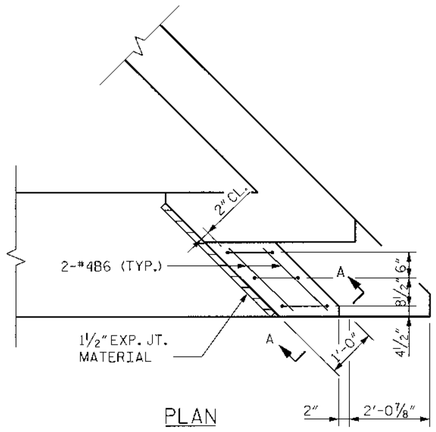




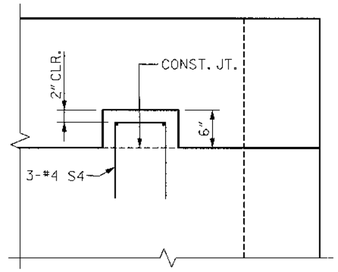


PILE SPLICE DETAILS

*POSITION OF PILE DURING WELDING.

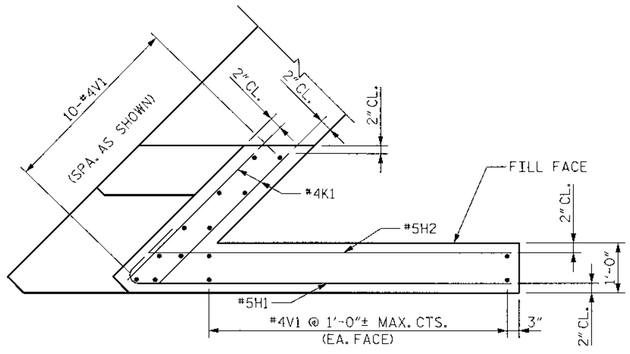


PLAN



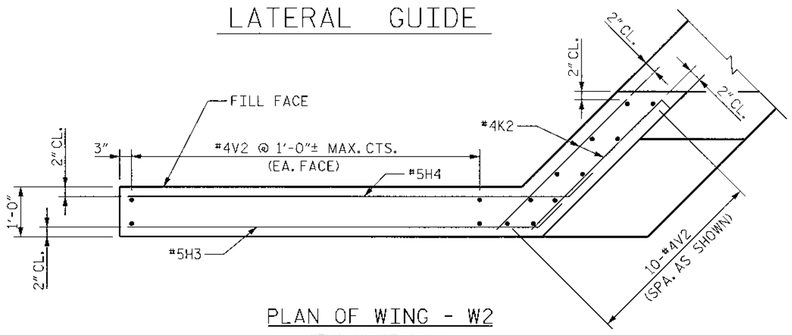
SECTION A-A

LATERAL GUIDE



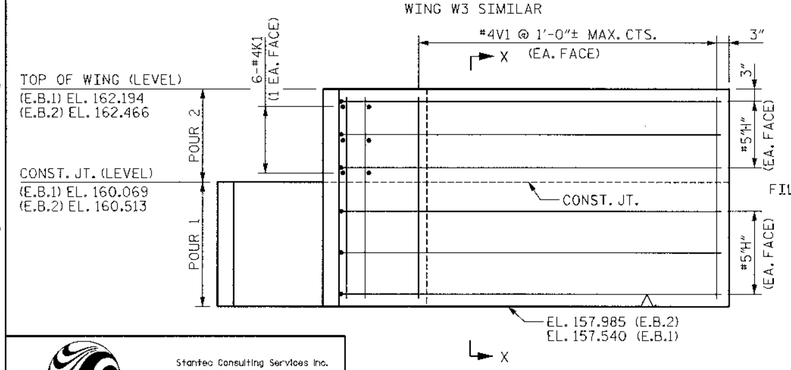
PLAN OF WING - W1

WING W3 SIMILAR



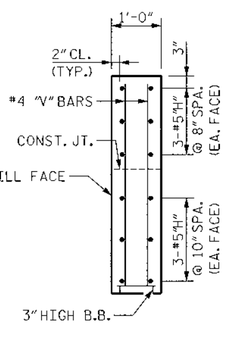
PLAN OF WING - W2

WING W4 SIMILAR

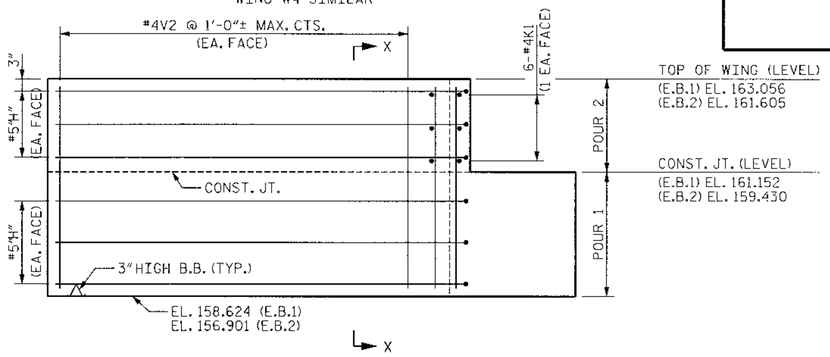


ELEVATION OF WING - W1

WING W3 SIMILAR



SECTION X-X



ELEVATION OF WING - W2

WING W4 SIMILAR

BILL OF MATERIAL
END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	9	10	1	57'-2"	2214
B2	2	5	STR.	54'-1"	113
B3	8	4	STR.	28'-1"	150
B4	4	8	STR.	53'-7"	572
B5	18	4	STR.	2'-5"	29
B6	4	4	STR.	1'-11"	5
D1	22	6	STR.	1'-6"	50
H1	6	5	2	6'-10"	43
H2	6	5	2	6'-3"	39
H3	6	5	7	6'-8"	42
H4	6	5	7	7'-3"	45
K1	6	4	STR.	3'-4"	13
K2	6	4	STR.	3'-6"	14
S1	65	4	3	7'-5"	322
S2	65	4	4	3'-2"	137
S3	16	4	5	6'-8"	71
S4	6	4	6	3'-11"	16
S5	6	4	6	7'-2"	29
V1	20	4	STR.	4'-3"	57
V2	20	4	STR.	4'-1"	55

REINFORCING STEEL LBS. 4,016

CLASS A CONCRETE:
POUR #1 CAP & LOWER PART OF WINGS CU. YDS. 14.9
POUR #2 BACKWALL & UPPER WINGS CU.YDS. 1.4
TOTAL CU. YDS. 16.3

HP 12 X 53 STEEL PILES
NO. 8 LIN. FT. 160

BILL OF MATERIAL
END BENT 2

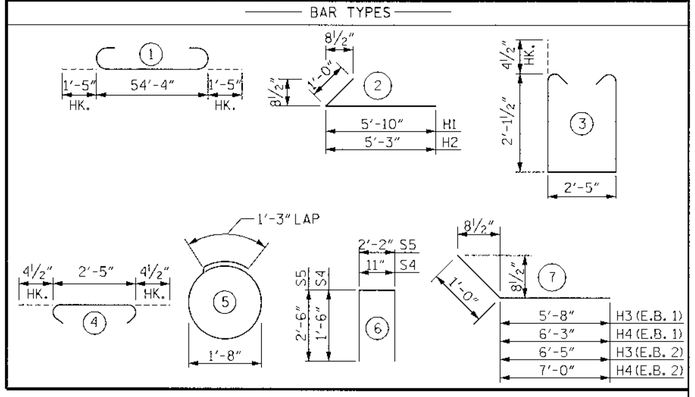
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	9	10	1	57'-2"	2214
B2	2	5	STR.	54'-1"	113
B3	8	4	STR.	28'-1"	150
B4	4	8	STR.	53'-7"	572
B5	18	4	STR.	2'-5"	29
B6	4	4	STR.	1'-11"	5
D1	22	6	STR.	1'-6"	50
H1	6	5	2	6'-10"	43
H2	6	5	2	6'-3"	39
H3	6	5	7	7'-5"	46
H4	6	5	7	8'-0"	50
K1	6	4	STR.	3'-4"	13
K2	6	4	STR.	3'-6"	14
S1	65	4	3	7'-5"	322
S2	65	4	4	3'-2"	137
S3	16	4	5	6'-8"	71
S4	6	4	6	3'-11"	16
S5	6	4	6	7'-2"	29
V1	20	4	STR.	4'-2"	56
V2	22	4	STR.	4'-4"	64

REINFORCING STEEL LBS. 4,033

CLASS A CONCRETE:
POUR #1 CAP & LOWER PART OF WINGS CU. YDS. 15.0
POUR #2 BACKWALL & UPPER WINGS CU.YDS. 1.5
TOTAL CU. YDS. 16.5

HP 12 X 53 STEEL PILES
NO. 8 LIN. FT. 200

BAR TYPES



PROJECT NO. 33789.3.ST1

NASH COUNTY

STATION: 15+08.90 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE END BENT DETAILS

Stantec Consulting Services Inc.
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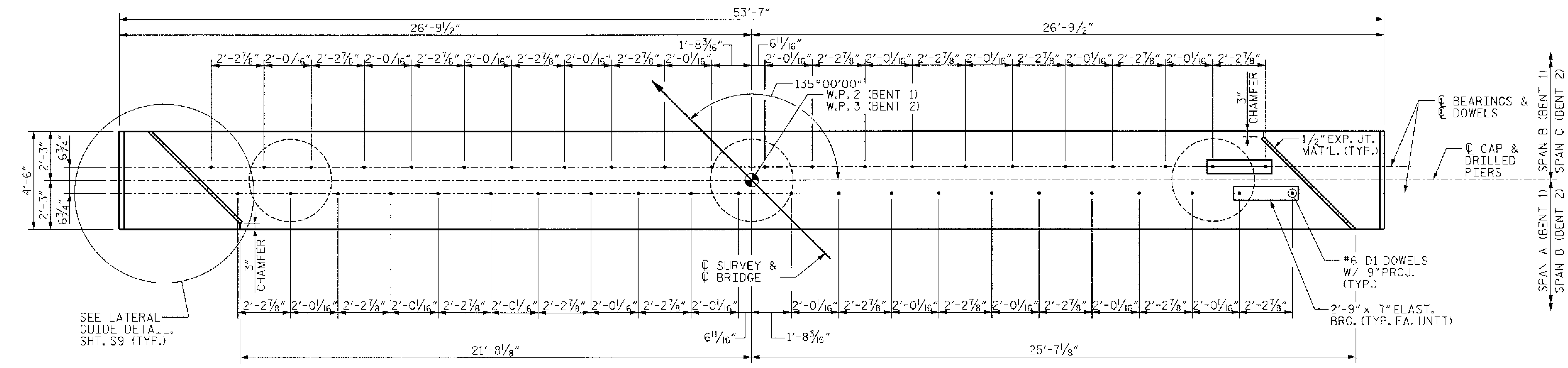
DRAWN BY : B. J. ELLIOT DATE : 10-01-08
CHECKED BY : T. R. DUDECK DATE : 10-01-08

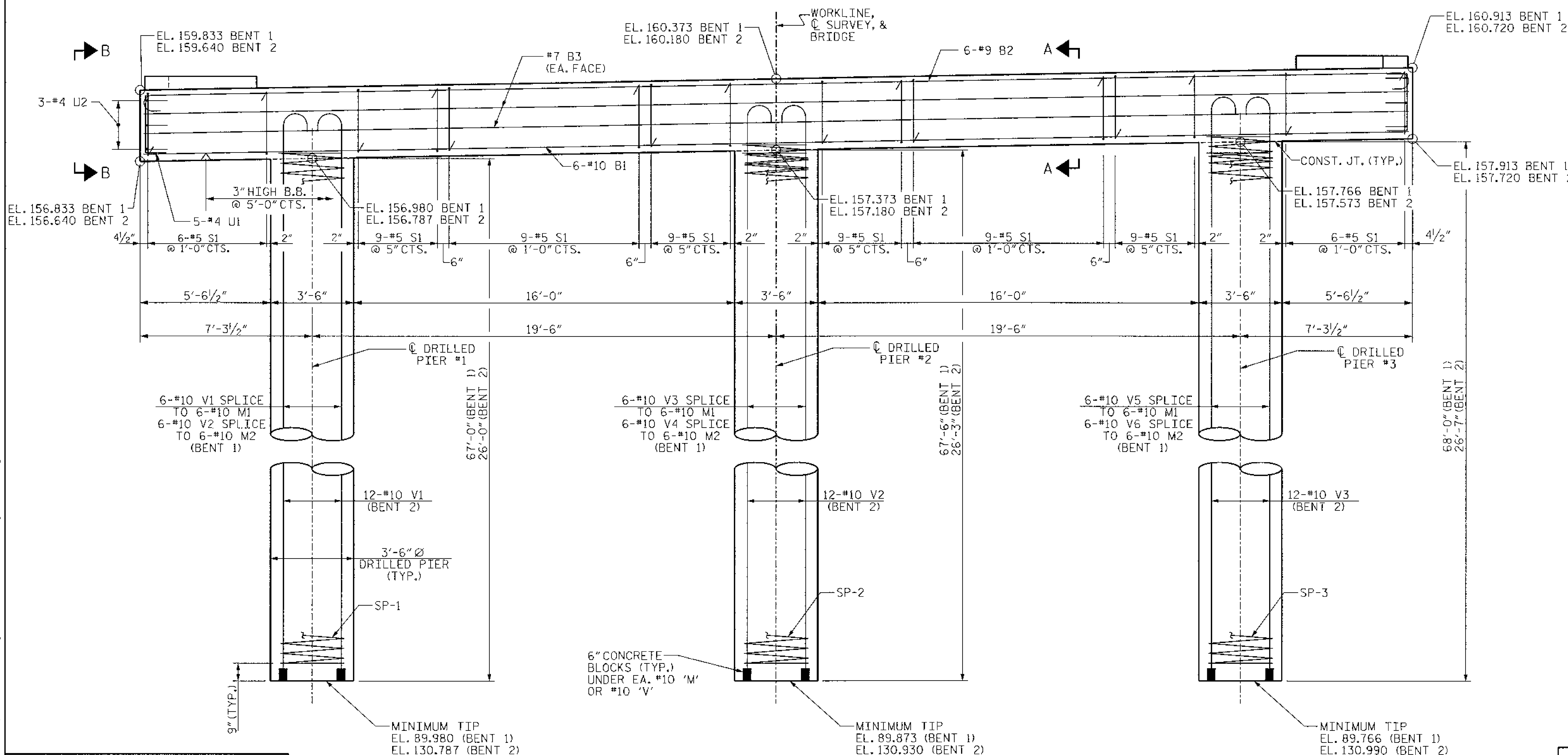
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 13406 JOSEPH KELVINGTON

REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

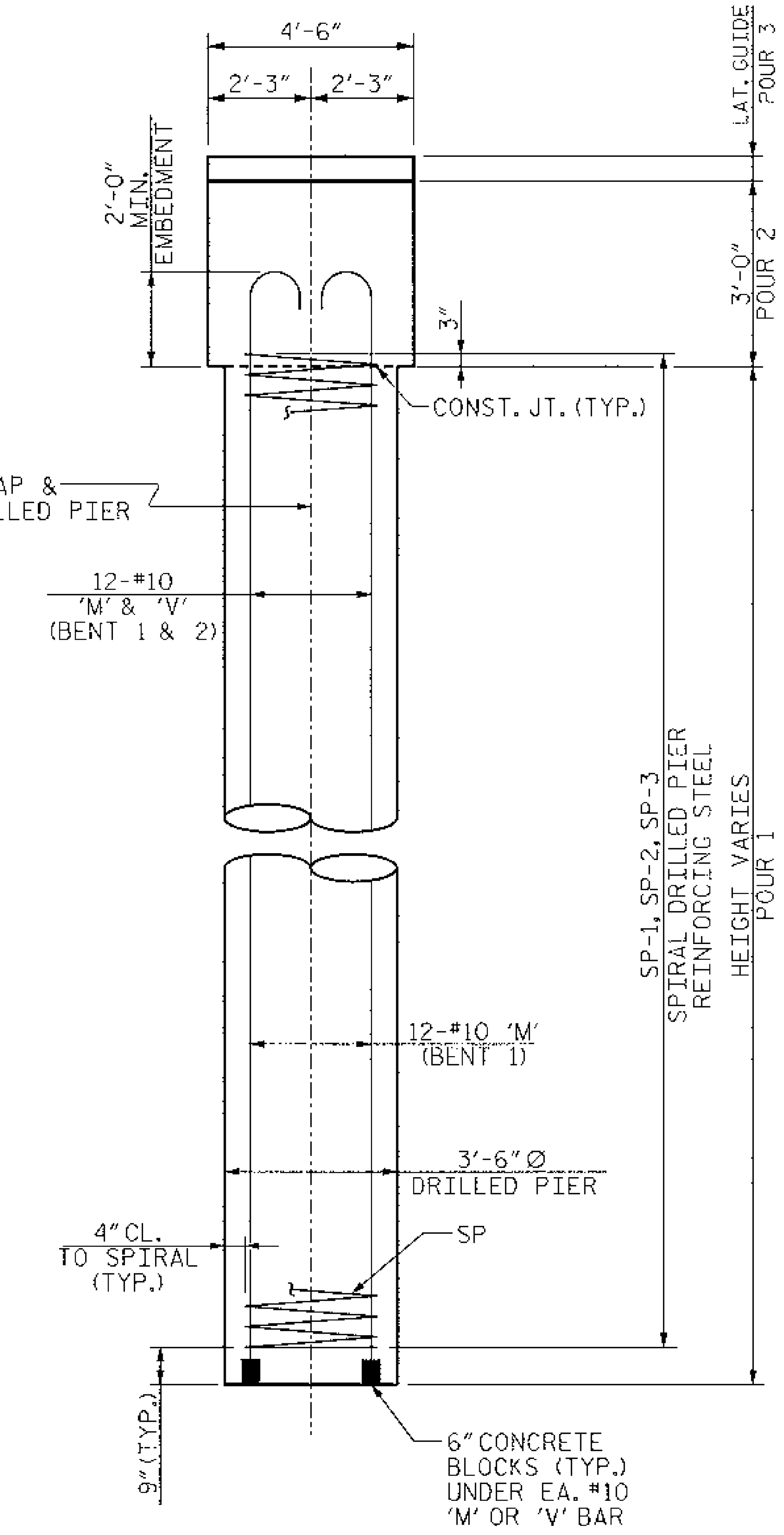
SHEET NO. S7
TOTAL SHEETS 12



PLAN



ELEVATION



END ELEVATION

NOTE: INVERT ALTERNATE STIRRUPS AS SHOWN.

BENT 1 #10 M AND #10 V BARS SHALL BE JOINED WITH MECHANICAL COUPLERS. SEE SHT. S9 FOR DETAILS

PROJECT NO. 33789.3.ST1

NASH COUNTY

STATION: 15+08.90 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENTS 1 & 2

SEAL 13406 — NORTH CAROLINA — PROFESSIONAL ENGINEER — JOSEPH T. KEVINGTON

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S8
1			3			TOTAL SHEETS
2			4			12

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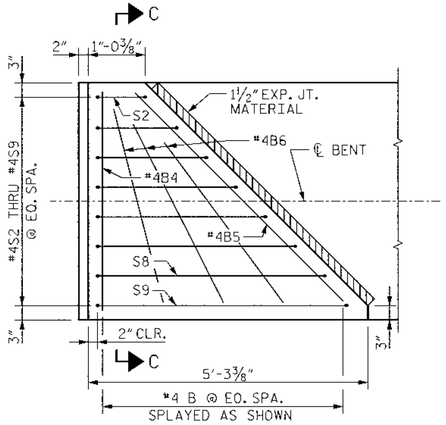
DRAWN BY: J. L. HENNEKES DATE: 10-01-08
CHECKED BY: T. R. DUDECK DATE: 10-01-08



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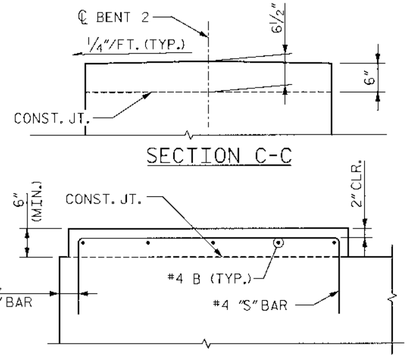
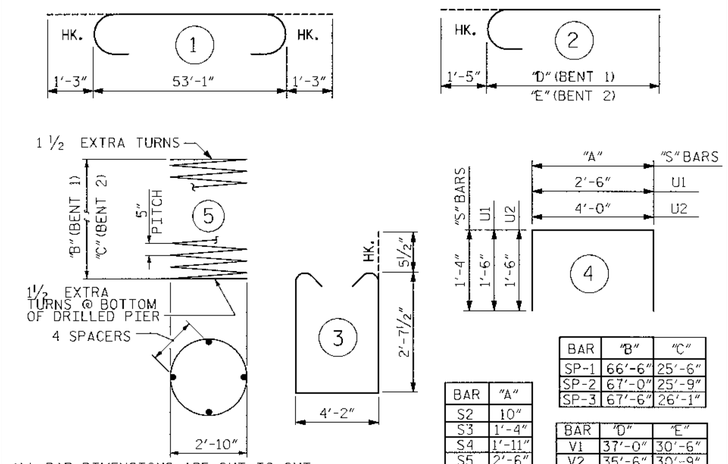


ELEVATION

LATERAL GUIDE

BAR TYPES



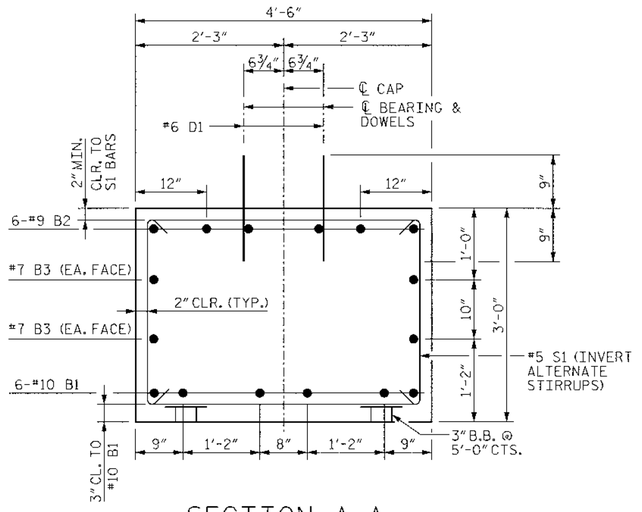
ALL BAR DIMENSIONS ARE OUT TO OUT.

BAR	"A"
S2	10"
S3	1'-4"
S4	1'-11"
S5	2'-6"
S6	3'-1"
S7	3'-8"
S8	4'-3"
S9	4'-10"

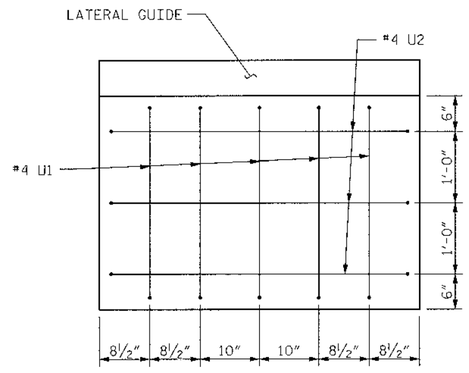
BAR	"B"	"C"
SP-1	66'-6"	25'-6"
SP-2	67'-0"	25'-9"
SP-3	67'-6"	26'-1"

BAR	"D"	"E"
V1	37'-0"	30'-6"
V2	35'-6"	30'-9"
V3	37'-6"	31'-1"
V4	36'-0"	-
V5	38'-0"	-
V6	36'-6"	-

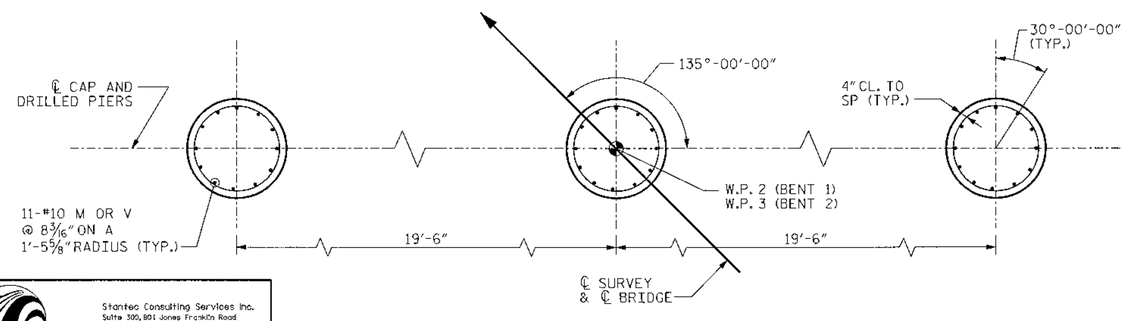
** THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.



SECTION A-A



VIEW B-B
(TYP. EA. END)



PLAN OF DRILLED PIERS

REINFORCING STEEL AND DIMENSIONS ARE TYPICAL FOR ALL DRILLED PIERS

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #6D1 DOWELS.

HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.

SPLICING THE LONGITUDINAL BARS IN THE DRILLED PIER WILL NOT BE PERMITTED EXCEPT AS NOTED IN THE PLANS.

USE OF LAP SPLICES IN LONGITUDINAL REINFORCEMENT WILL NOT BE PERMITTED.

MECHANICAL COUPLERS SHALL BE USED TO JOIN THE LONGITUDINAL DRILLED PIER REINFORCING STEEL IN EACH COLUMN AT BENT 1 AS SHOWN IN THE PLANS. THE HEIGHT OF THE COUPLERS SHALL BE STAGGERED ON ALTERNATING BARS BY 1'-6" AND THE DRILLED PIER "M" REINFORCING STEEL BARS MAY BE CUT AS REQUIRED. SEE SECTION 425-5(B) OF THE STANDARD SPECIFICATIONS FOR MECHANICAL BUTT SPLICING OF REINFORCING STEEL. NO SEPARATE PAYMENT FOR MECHANICAL BUTT SPLICING OF REINFORCING STEEL WILL BE MADE. ALL COSTS FOR MATERIAL, EQUIPMENT, AND LABOR SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR CONSTRUCTION OF SUBSTRUCTURE.

NO SEPARATE PAYMENT SHALL BE MADE FOR ANY ADDITIONAL STEEL REQUIRED IN CONSTRUCTION OF DRILLED PIER AS THIS IS CONSIDERED INCIDENTAL TO THE LINEAR FOOT PRICE FOR DRILLED PIER.

BILL OF MATERIAL BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#10	STR	53'-1"	1,371
B2	6	#9	1	55'-7"	1,134
B3	4	#7	STR	53'-1"	434
B4	2	#4	STR	4'-2"	6
B5	2	#4	STR	5'-5"	7
B6	6	#4	STR	4'-5"	18
D1	44	#6	STR	1'-6"	99
M1	18	#10	STR	34'-6"	2,672
M2	18	#10	STR	36'-0"	2,788
S1	66	#5	3	10'-4"	711
S2	2	#4	4	3'-6"	5
S3	2	#4	4	4'-0"	5
S4	2	#4	4	4'-7"	6
S5	2	#4	4	5'-2"	7
S6	2	#4	4	5'-9"	8
S7	2	#4	4	6'-4"	8
S8	2	#4	4	6'-11"	9
S9	2	#4	4	7'-6"	10
U1	10	#4	4	5'-6"	37
U2	6	#4	4	7'-0"	28
V1	6	#10	2	38'-5"	992
V2	6	#10	2	36'-11"	953
V3	6	#10	2	38'-11"	1,005
V4	6	#10	2	37'-5"	966
V5	6	#10	2	39'-5"	1,018
V6	6	#10	2	37'-11"	979

REINFORCING STEEL				LBS.	15,276
SP-1	1	5	**	1422'-4"	1,483
SP-2	1	5	**	1432'-10"	1,494
SP-3	1	5	**	1443'-4"	1,505
SPIRAL COLUMN REINF. STEEL				LBS.	4,482

CLASS A CONCRETE BREAKDOWN:		
POUR #2 CAP	CU. YDS.	26.8
POUR #3 LATERAL GUIDE	CU. YDS.	0.6
TOTAL CLASS A CONCRETE	CU. YDS.	27.4
DRILLED PIER CONCRETE BREAKDOWN:		
POUR #1 DRILLED PIERS	CU. YDS.	72.0
3'-6" Ø DRILLED PIERS NOT IN SOIL	LIN. FT.	15.0
3'-6" Ø DRILLED PIERS IN SOIL	LIN. FT.	187.5
CSL TUBES	810.0	LIN. FT.
PERMANENT STEEL CASING FOR 3'-6" Ø DRILLED PIER	58.1	LIN. FT.
SPT TESTING	EA.	3

BILL OF MATERIAL BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#10	STR	53'-1"	1,371
B2	6	#9	1	55'-7"	1,134
B3	4	#7	STR	53'-1"	434
B4	2	#4	STR	4'-2"	6
B5	2	#4	STR	5'-5"	7
B6	6	#4	STR	4'-5"	18
D1	44	#6	STR	1'-6"	99
S1	66	#5	3	10'-4"	711
S2	2	#4	4	3'-6"	5
S3	2	#4	4	4'-0"	5
S4	2	#4	4	4'-7"	6
S5	2	#4	4	5'-2"	7
S6	2	#4	4	5'-9"	8
S7	2	#4	4	6'-4"	8
S8	2	#4	4	6'-11"	9
S9	2	#4	4	7'-6"	10
U1	10	#4	4	5'-6"	37
U2	6	#4	4	7'-0"	28
V1	12	#10	2	31'-11"	1,648
V2	12	#10	2	32'-2"	1,661
V3	12	#10	2	32'-6"	1,678

REINFORCING STEEL				LBS.	8,890
SP-1	1	5	**	561'-7"	586
SP-2	1	5	**	566'-10"	591
SP-3	1	5	**	573'-10"	599
SPIRAL COLUMN REINF. STEEL				LBS.	1,776

CLASS A CONCRETE BREAKDOWN:		
POUR #2 CAP	CU. YDS.	26.8
POUR #3 LATERAL GUIDE	CU. YDS.	0.6
TOTAL CLASS A CONCRETE	CU. YDS.	27.4
DRILLED PIER CONCRETE BREAKDOWN:		
POUR #1 DRILLED PIERS	CU. YDS.	28.0
3'-6" Ø DRILLED PIERS NOT IN SOIL	LIN. FT.	18.0
3'-6" Ø DRILLED PIERS IN SOIL	LIN. FT.	60.8
CSL TUBES	315.2	LIN. FT.
PERMANENT STEEL CASING FOR 3'-6" Ø DRILLED PIER	42.6	LIN. FT.

PROJECT NO. 33789.3.ST1

NASH COUNTY

STATION: 15+08.90 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE INTERIOR BENT DETAILS

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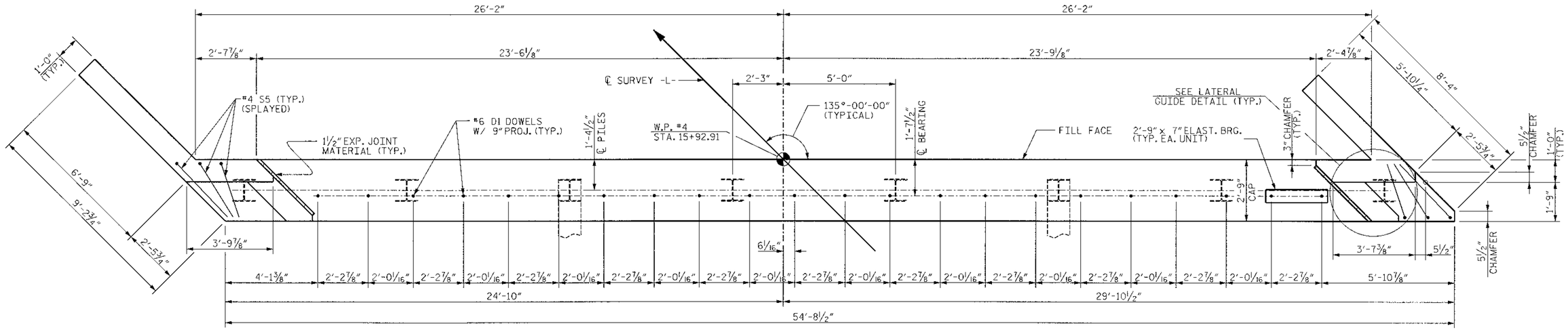
DRAWN BY : B. J. ELLIOT DATE : 10-01-08
CHECKED BY : T. R. DUDECK DATE : 10-01-08

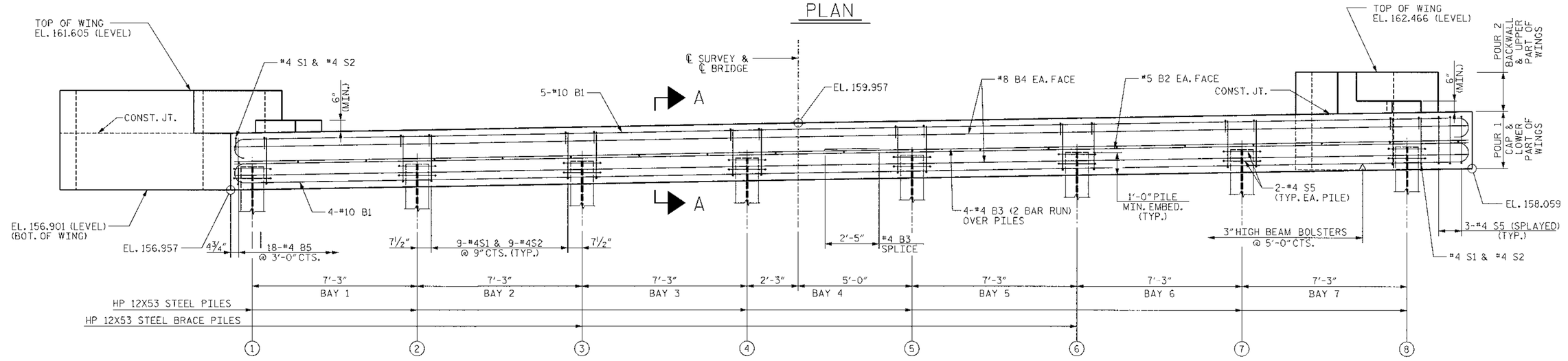
NORTH CAROLINA SEAL 13406 ENGINEER JOSEPH T. KELVINGTON

REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

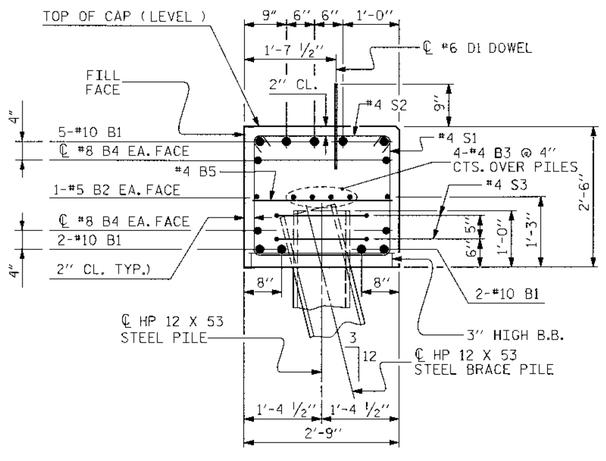
SHEET NO. S9
TOTAL SHEETS 12



PLAN



ELEVATION



SECTION A-A

TOP OF PILE ELEVATIONS	
1	157.973
2	158.119
3	158.266
4	158.412
5	158.558
6	158.704
7	158.850
8	158.996

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #6 D1 DOWELS.

FOR PILE SPLICE DETAILS, SEE SHT. S7.

FOR WING WALL DETAILS, SEE SHT. S7.

PROJECT NO. 33789.3.ST1

NASH COUNTY

STATION: 15+08.90 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
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SUBSTRUCTURE END BENT 2

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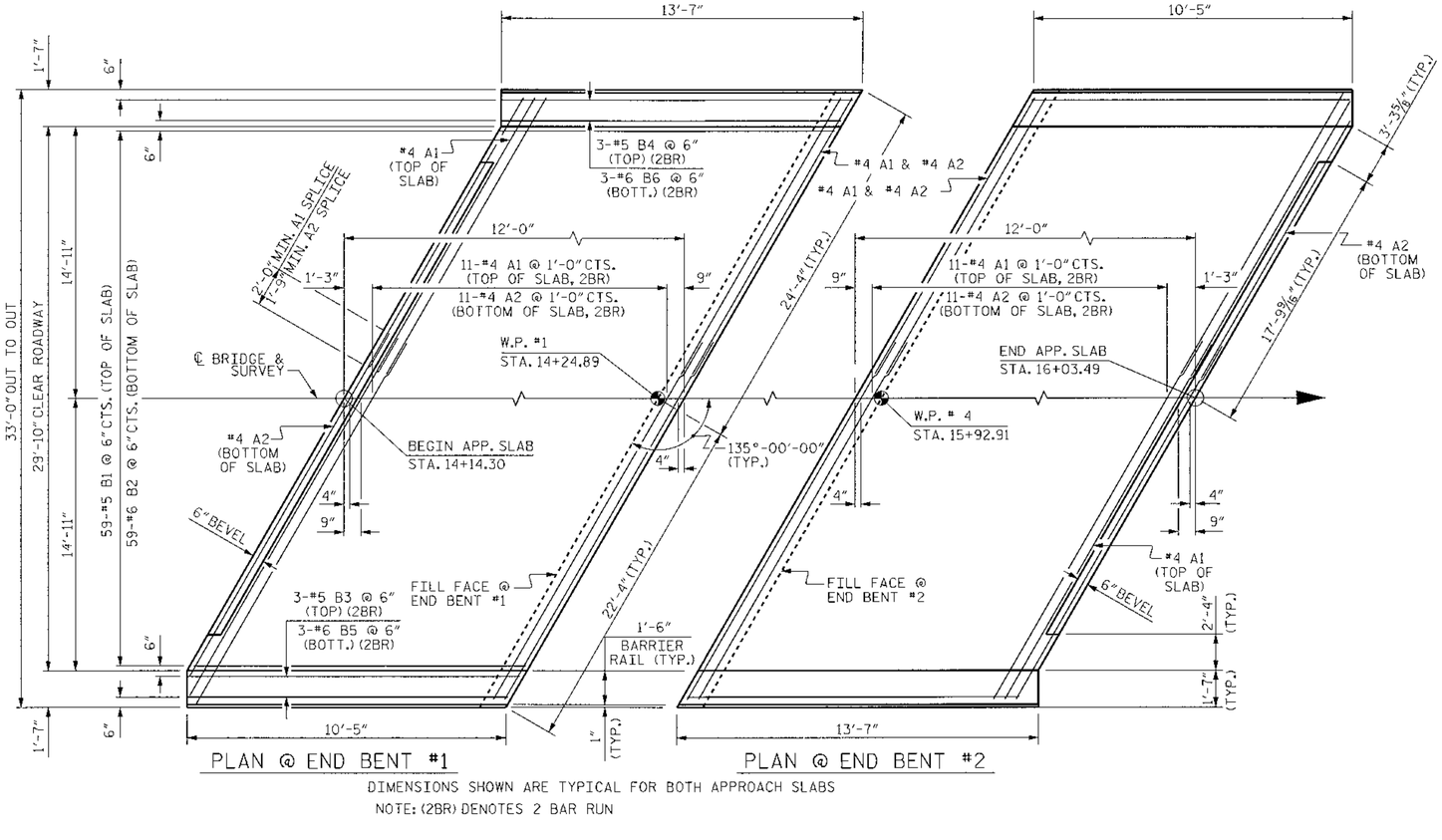
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S10
1			3			TOTAL SHEETS
2			4			12

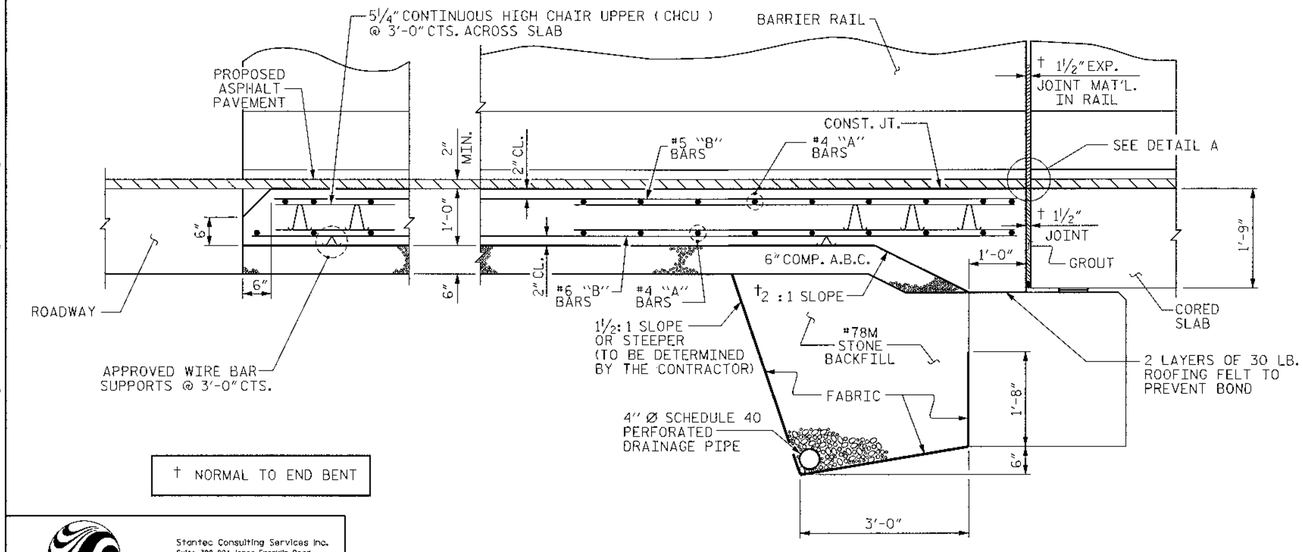


PLAN @ END BENT #1

PLAN @ END BENT #2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

NOTE: (2BR) DENOTES 2 BAR RUN



† NORMAL TO END BENT

SECTION THRU SLAB

NOTES

THE COST OF THE BARRIER RAIL ON THE APPROACH SLAB SHALL BE INCLUDED IN THE LUMP SUM CONTRACT PRICE BID FOR BRIDGE APPROACH SLABS.

FOR REINFORCED BRIDGE APPROACH FILL INCLUDING FABRIC, IMPERMEABLE GEOMEMBRANE, 4" Ø DRAINAGE PIPE, #78M STONE, AND SELECT MATERIAL, SEE ROADWAY PLANS.

APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.

FABRIC SHALL BE TYPE 1 ENGINEERING FABRIC IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

#78M STONE BACKFILL (CLASS V SELECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

#78M STONE BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

FOR THE 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE.

THE 6" COMP. A.B.C. SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB AND SHALL EXTEND 1'-0" OUTSIDE OF EACH EDGE OF THE APPROACH SLAB.

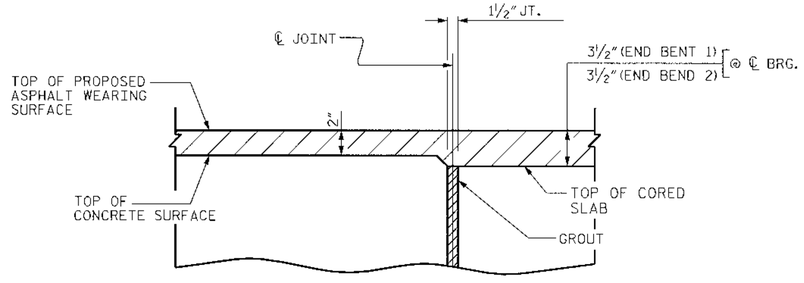
THE CONTRACTOR MAY USE 4" TYPE B-25.0B ASPHALT CONCRETE BASE COURSE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE BASE COURSE SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB, AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB.

THE CONTRACTOR MAY USE 5" CLASS "A" CONCRETE BASE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE CONCRETE BASE SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB, AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB. THE CONCRETE SHALL BE FINISHED TO A SMOOTH SURFACE AND A LAYER OF 30 LB ROOFING FELT SHALL BE PLACED BETWEEN THE CONCRETE BASE AND THE APPROACH SLAB TO PREVENT BOND. THE APPROACH SLAB SHALL NOT BE CAST UNTIL THE CONCRETE BASE HAS REACHED AN AGE OF THREE CURING DAYS.

FOR JOINT DETAILS, SEE "PRESTRESSED CONCRETE CORED SLAB" SHEETS.

THE JOINT AT THE END BENT SHALL BE GROUTED AS SOON AS PRACTICAL AFTER THE CONSTRUCTION OF THE APPROACH SLABS.

APPROACH SLAB GROOVING IS NOT REQUIRED.



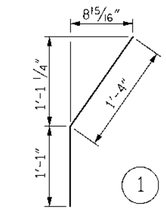
DETAIL A

BILL OF MATERIAL

FOR ONE APPROACH SLAB (2 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	26	#4	STR	24'-1"	418
A2	26	#4	STR	24'-0"	417
* B1	59	#5	STR	11'-6"	708
B2	59	#6	STR	11'-6"	1019
* B3	22	#5	STR	7'-0"	161
* B4	22	#5	STR	7'-8"	176
B5	6	#6	STR	7'-1"	64
B6	6	#6	STR	7'-8"	69
* S1	40	#5	STR	3'-8"	153
* S2	24	#5	1	2'-5"	60
* S3	8	#5	STR	3'-4"	28
REINFORCING STEEL				LBS.	1569
* EPOXY COATED REINFORCING STEEL				LBS.	1704
CLASS AA CONCRETE BREAKDOWN					
POUR 1 SLAB				C. Y.	17.5
POUR 2 RAIL				C. Y.	2.6
CLASS AA CONCRETE				C. Y.	20.1

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

PROJECT NO. 33789.3.ST1

NASH COUNTY

STATION: 15+08.90 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB

Stantec

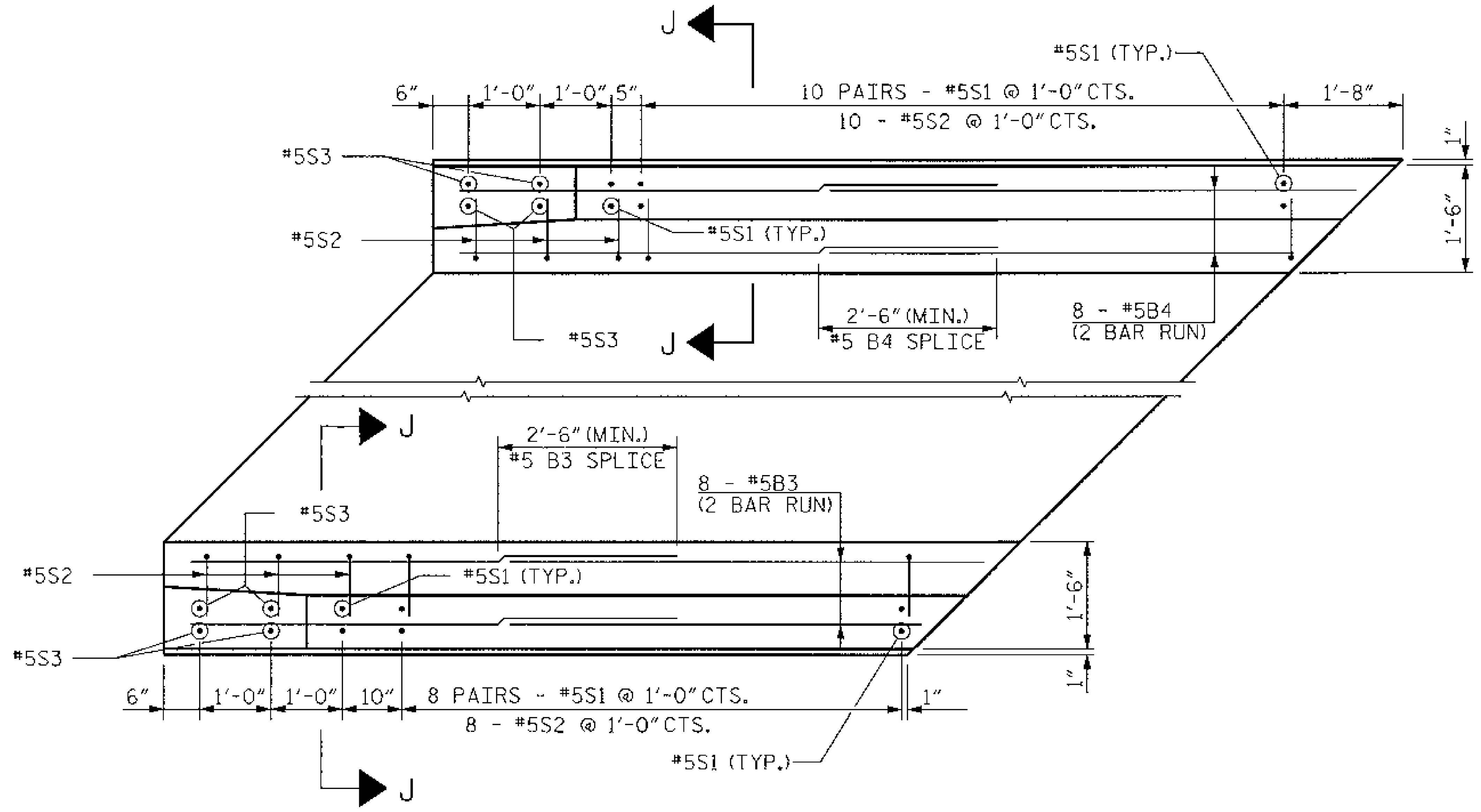
Stantec Consulting Services Inc.
Suite 300, 801 Jones Franklin Road
Raleigh, NC
27606
Tel. 919.851.6866
Fax. 919.851.7024
www.stantec.com

DRAWN BY : B. J. ELLIOT DATE : 10-01-08

CHECKED BY : T. R. DUDECK DATE : 10-01-08

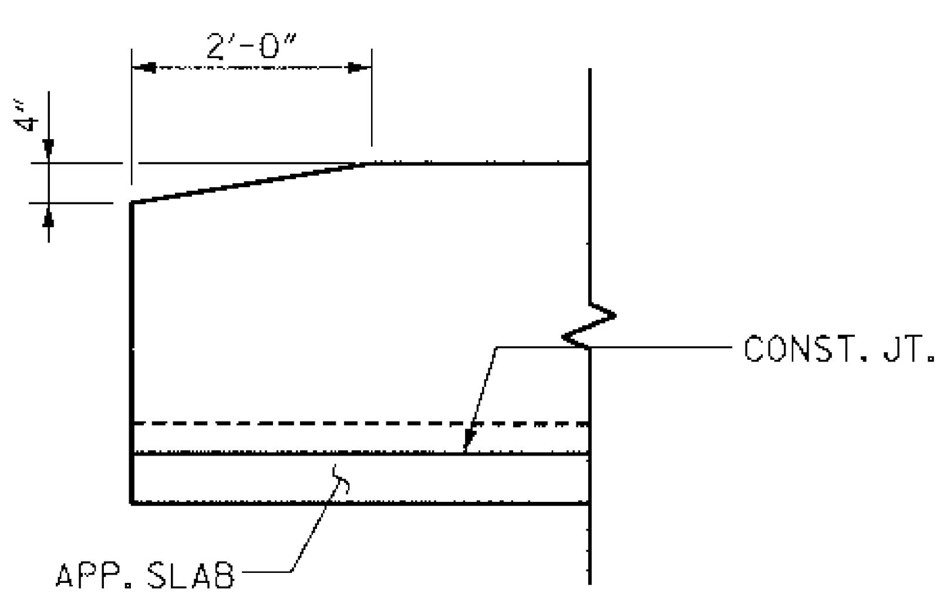
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 13406 JOSEPH T. KELVINGTON

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S11
1			3			TOTAL SHEETS
2			4			12

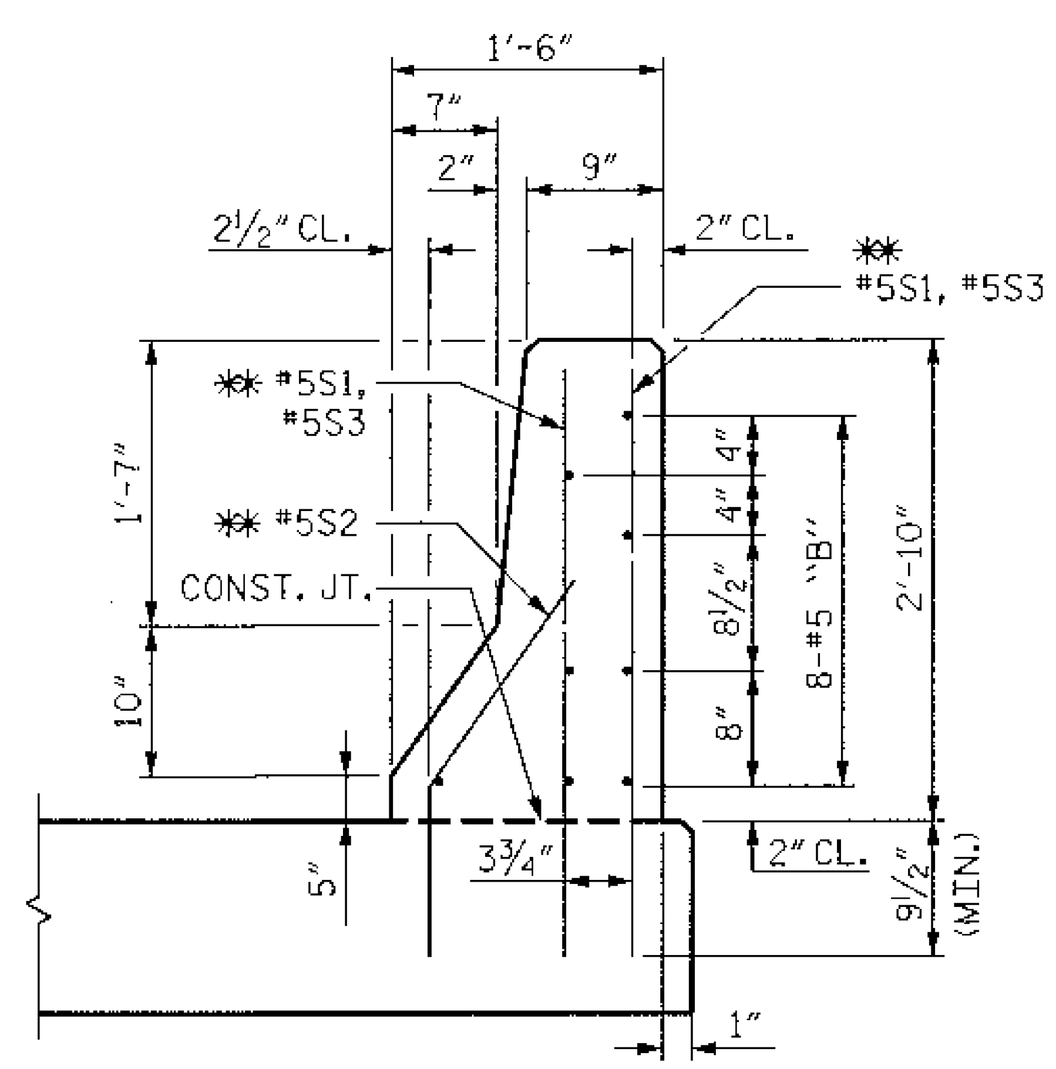


BARRIER RAIL PLAN

APPROACH SLAB 1 SHOWN
APPROACH SLAB 2 SIMILAR



BARRIER RAIL END ELEVATION

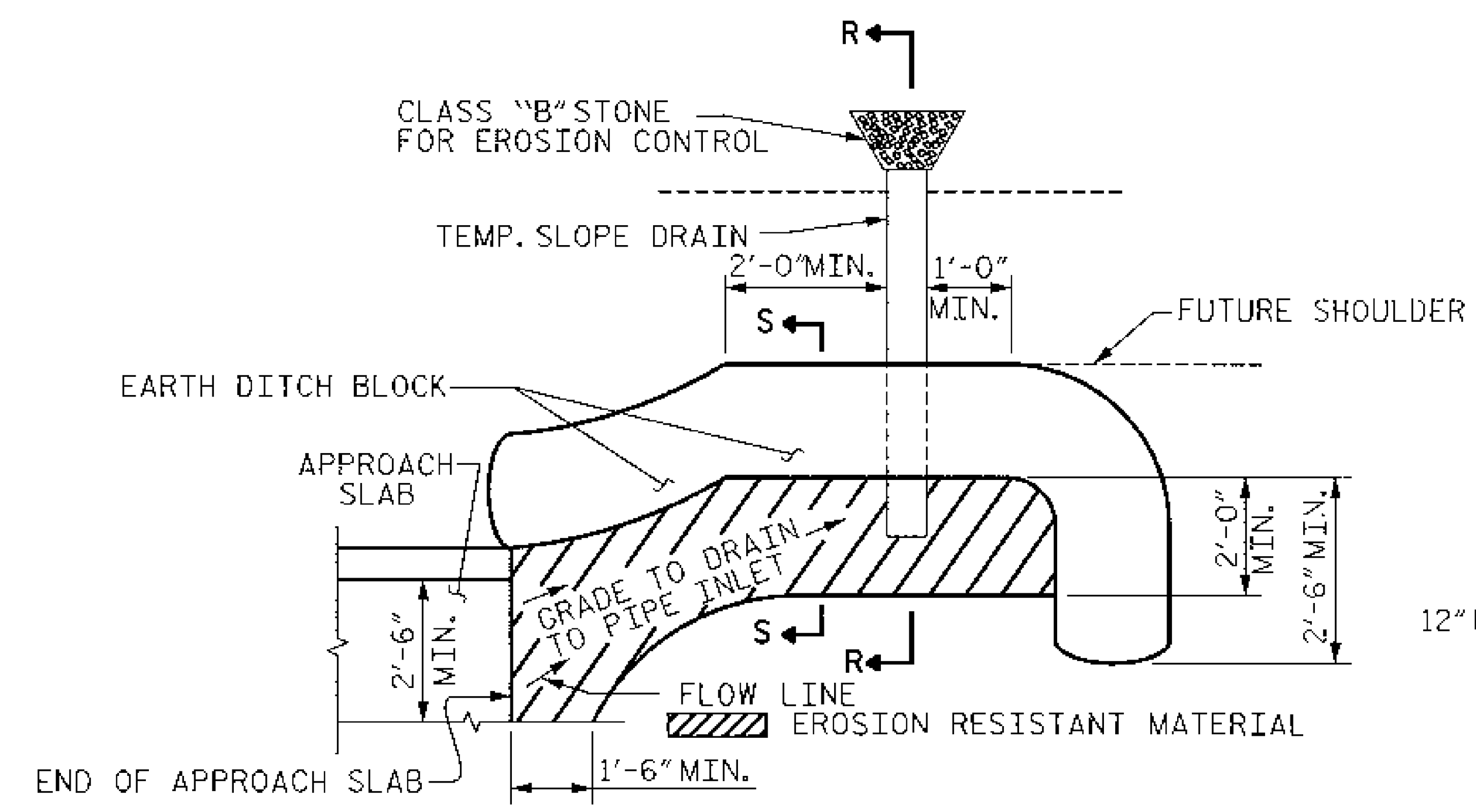


SECTION J-J

** ADHESIVELY ANCHORED

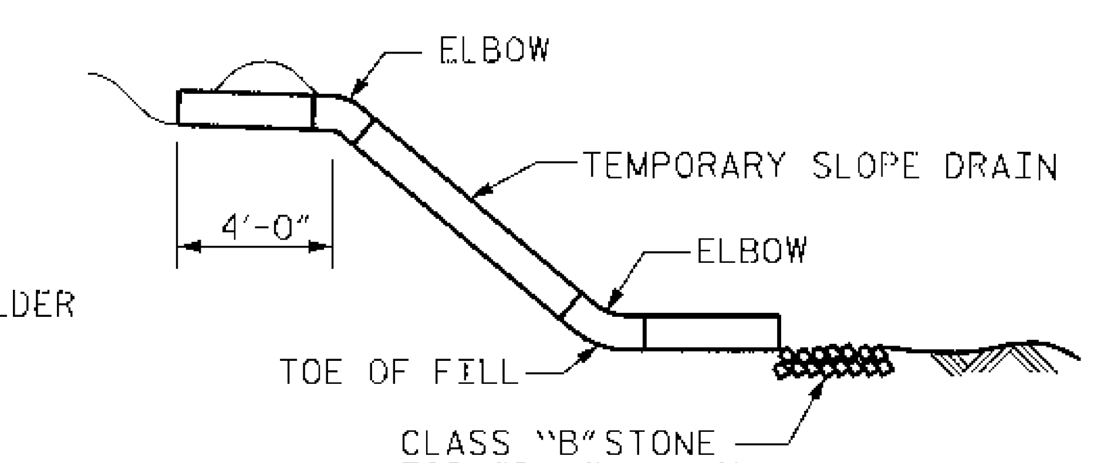
NOTES

THE #5 S1, #5 S2, AND #5 S3 BARS SHALL BE INSTALLED, WHERE NOTED ON THE PLANS, USING AN ADHESIVE ANCHORING SYSTEM. THE YIELD LOAD FOR THE #5 S1 AND #5 S3 BARS IS 18.6 KIPS. FIELD TESTING FOR THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

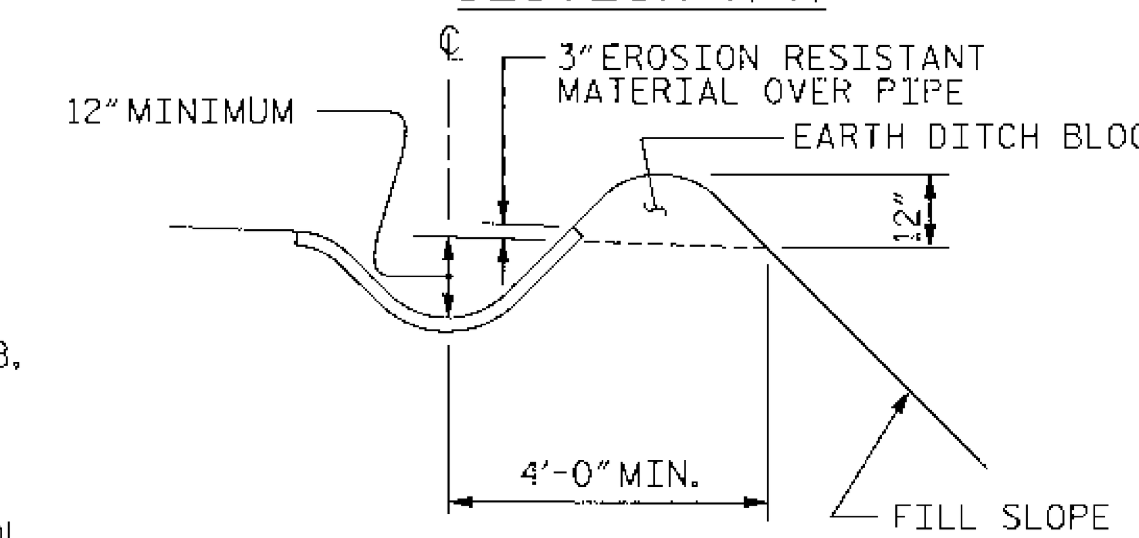


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 2" DEPTH, 2) EROSION CONTROL MAT, OR 3) CONCRETE, AS DIRECTED BY THE ENGINEER. THE SLOPE DRAIN SHALL CONSIST OF A NON-PERFORATED TEMPORARY DRAINAGE PIPE, 12 INCHES IN DIAMETER.

PLAN VIEW

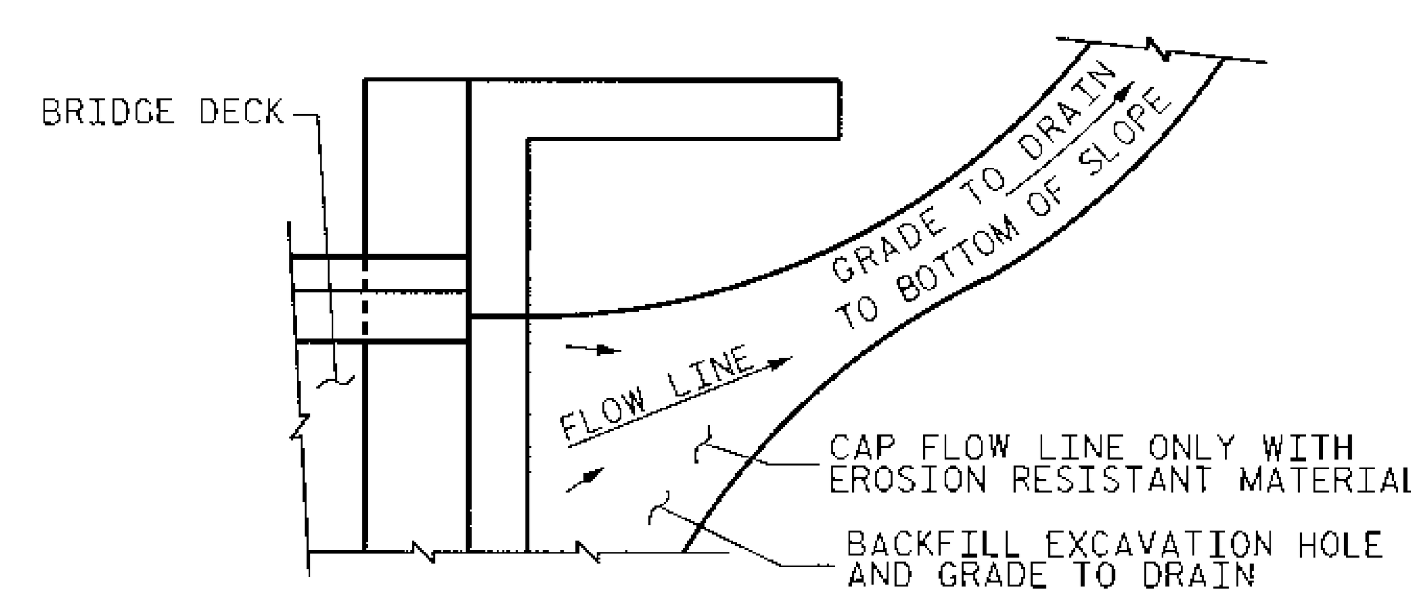


SECTION R-R



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS



NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT TO THE STRUCTURE. THE CONTRACTOR WILL BE REQUIRED TO REMOVE THESE MATERIALS PRIOR TO CONSTRUCTION OF THE APPROACH SLAB.

TEMPORARY DRAINAGE DETAIL

PROJECT NO. 33789.3.ST1
NASH COUNTY
STATION: 15+08.90 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 13406 ENGINEER JOSEPH T. KELVINGTON

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S12
1			3			TOTAL SHEETS
2			4			12

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DRAWN BY : B. J. ELLIOT DATE : 10-01-08
CHECKED BY : T. R. DUDECK DATE : 10-01-08

u:\170007351\transportation\design\structures\drawing\4589_AS_2.dgn 7/15/2009 1:58:33 AM SUSEH$


PROJ. REFERENCE NO.
B-4589
SHEET NO.
X-1
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162.91
0.044
2:1
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162.017
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S.S. 163.810
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11+25.00
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S.S. 159.939
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S.S. 160.380
162.552
10+75.00
S.S. 160.719
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163.70
0.060
S.S. 163.136
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163.84
10+25.00
163.99
10+00.00

8/25/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4589	X-5

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170 160 150

161.56

17+25.00

S.S. 161.354 | 0.010 | 161.59 | 0.005 | S.S. 160.740

17+00.00

S.S. 160.776 | 0.020 | 161.62 | 0.005 | S.S. 160.733

16+75.00

S.S. 160.989 | 0.025 | 161.68 | 0.015 | S.S. 160.611

16+50.00

S.S. 160.835 | 0.025 | 161.73 | 0.025 | S.S. 160.76

16+25.00

0.025 | 161.71 | 0.025 | S.S. 160.747

16+00.00

8/26/2008
d:\roadway\sc\b4589_cs_xsl.dgn
bpaler

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PROJ. REFERENCE NO.
B-4589
SHEET NO.
X-4
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15+50.00
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0.025
15+25.00
150.78
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0.025
15+00.00
150.95
0.025
0.025
14+75.00
151.25
0.025
0.025
14+50.00
151.56
0.025
0.025
170
160
150
140
150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

PROJ. REFERENCE NO.
B-4589
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S.S. 160.460
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0.025
0.025
161.94
S.S. 159.806
S.S. 161.411
13+25.00
0.025
0.025
161.93
S.S. 159.607
S.S. 161.398
8/23/99
8/26/2008

PROJ. REFERENCE NO.	SHEET NO.
B-4589	X-2


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S.S. 161.786
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S.S. 158.996
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161.97
S.S. 162.166
161.256
S.S. 159.186
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0.025 0.025
162.02
S.S. 162.278
161.343
S.S. 159.178
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S.S. 162.004
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S.S. 158.300
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162.31
S.S. 162.194
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S.S. 158.397
11+75.00
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162.59
S.S. 162.812
161.760
S.S. 158.808
2:1
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180 170 160 150

8/23/19

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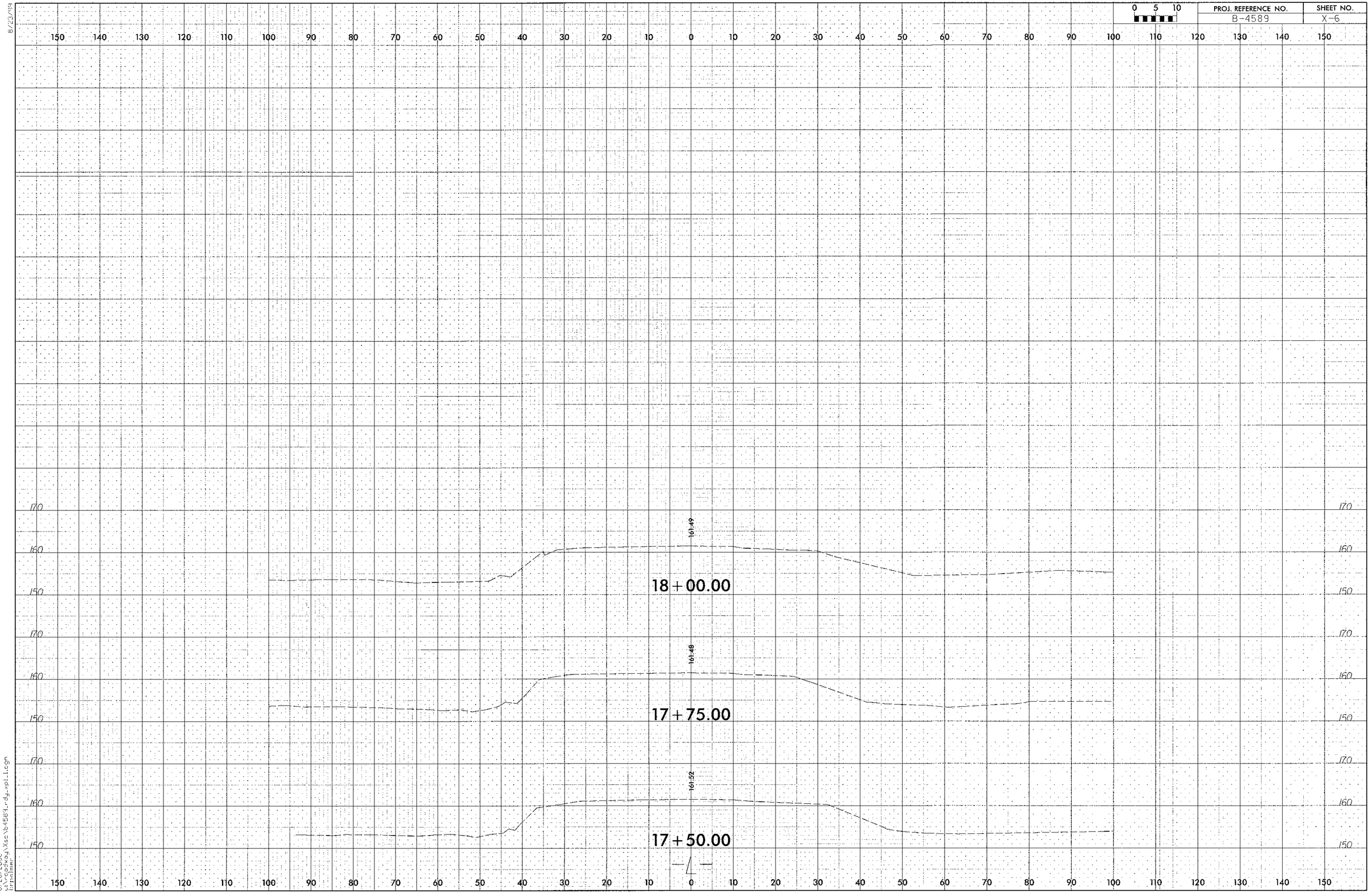
	B-4589	X-6



8/25/2008
c:\projects\xsc\b4589_rdy_xpl.dgn
tirpalmer

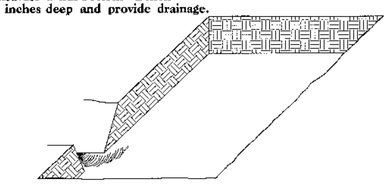
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4589	RF-1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	

PLANTING DETAILS

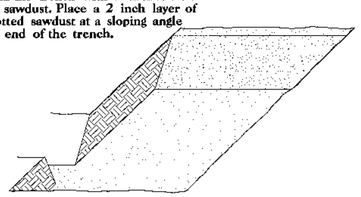
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

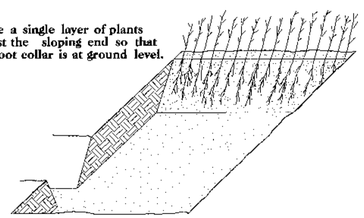
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



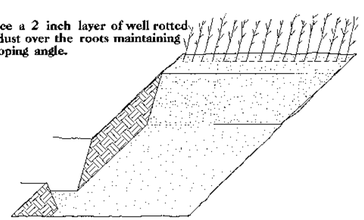
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



4. Place a single layer of plants against the sloping end so that the root collar is at ground level.

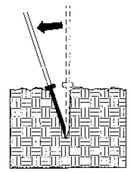


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

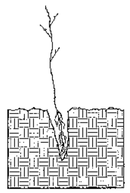


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

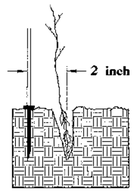
DIBBLE PLANTING METHOD USING THE KBC PLANTING BAR



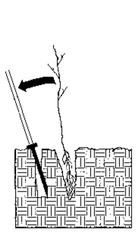
1. Insert planting bar as shown and pull handle toward planter.



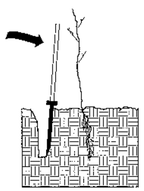
2. Remove planting bar and place seedling at correct depth.



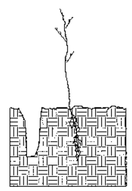
3. Insert planting bar 2 inches toward planter from seedling.



4. Pull handle of bar toward planter, firming soil at bottom.



5. Push handle forward firming soil at top.



6. Leave compaction hole open. Water thoroughly.

PLANTING NOTES:

PLANTING BAG
During planting, seedlings shall be kept in a moist canvas bag or similar container to prevent the root systems from drying.

KBC PLANTING BAR
Planting bar shall have a blade with a triangular cross section, and shall be 12 inches long, 4 inches wide and 1 inch thick at center.

ROOT PRUNING
All seedlings shall be root pruned, if necessary, so that no roots extend more than 10 inches below the root collar.

REFORESTATION

☐ TREE REFORESTATION SHALL BE PLANTED 6 FT. TO 10 FT. ON CENTER, RANDOM SPACING, AVERAGING 8 FT. ON CENTER, APPROXIMATELY 680 PLANTS PER ACRE.

REFORESTATION

MIXTURE, TYPE, SIZE, AND FURNISH SHALL CONFORM TO THE FOLLOWING:

25%	LIRIODENDRON TULIPIFERA	TULIP POPLAR	12 in – 18 in BR
25%	PLATANUS OCCIDENTALIS	SYCAMORE	12 in – 18 in BR
25%	FRAXINUS PENNSYLVANICA	GREEN ASH	12 in – 18 in BR
25%	BETULA NIGRA	RIVER BIRCH	12 in – 18 in BR

REFORESTATION DETAIL SHEET

N.C.D.O.T. - ROADSIDE ENVIRONMENTAL UNIT

EROSION CONTROL PLAN

Std. #	Description	Symbol
1605.01	Temporary Silt Fence	
1630.05	Temporary Diversion	TD
1630.06	Special Stilling Basin	
1632.03	Rock Inlet Sediment Trap Type C	
1633.01	Temporary Rock Silt Check Type-A	
1634.02	Temporary Rock Sediment Dam Type-B	

NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.

ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.

ROADSIDE ENVIRONMENTAL UNIT
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

2006 STANDARD SPECIFICATIONS

PROJECT NO. 33789.3.ST1 (B-4589)

NASH COUNTY

STATION: 15+08.93 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE NO. 69 ON SR 1945
OVER TOISNOT SWAMP

REVISIONS							SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:		EC-1
1			3				TOTAL SHEETS
2			4				5

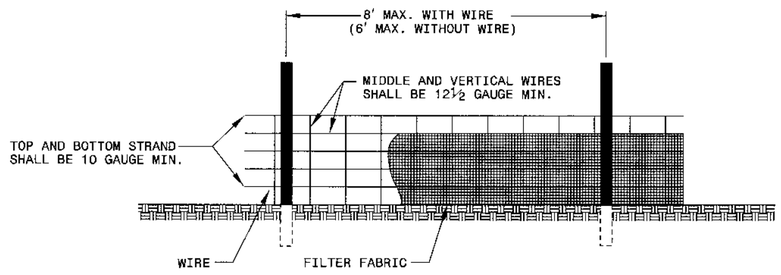
EROSION CONTROL PLAN

Stantec Consulting Services Inc.
Suite 300, 801 Jones Franklin Road
Raleigh, NC
27606
Tel. 919.851.6866
Fax. 919.851.7024
www.stantec.com

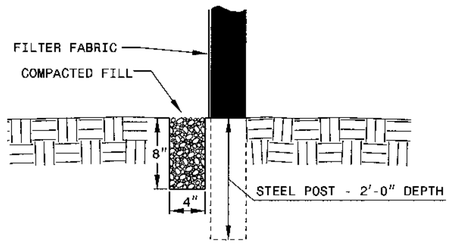
DRAWN BY : B. A. H. KUGLER DATE : 05-02-08
CHECKED BY : J. T. KELVINGTON DATE : 05-02-08

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

ENGLISH STANDARD DRAWING FOR
TEMPORARY SILT FENCE



NOTES
USE WIRE A MINIMUM OF 32" IN WIDTH AND WITH A MINIMUM OF 6 LINE WIRES WITH 12" STAY SPACING.
USE FILTER FABRIC A MINIMUM OF 36" IN WIDTH AND FASTEN ADEQUATELY TO THE WIRE AS DIRECTED BY THE ENGINEER.
PROVIDE 5'-0" STEEL POST OF THE SELF-FASTENER ANGLE STEEL TYPE.



EXTENSION OF FABRIC AND WIRE INTO TRENCH

SHEET 1 OF 1
1605.01

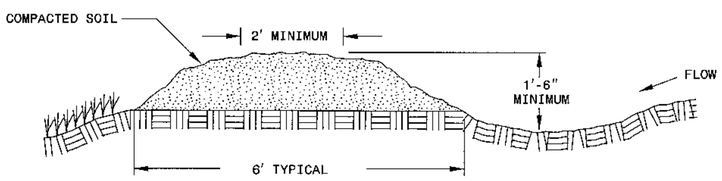
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR
TEMPORARY SILT FENCE

SHEET 1 OF 1
1605.01

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

ENGLISH STANDARD DRAWING FOR
TEMPORARY DIVERSION



CROSS SECTIONAL VIEW

SHEET 1 OF 1
1630.05

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

ENGLISH STANDARD DRAWING FOR
TEMPORARY DIVERSION

SHEET 1 OF 1
1630.05

PROJECT NO. 33789.3.ST1 (B-4589)
NASH COUNTY
STATION: 15+08.93 -L-

NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.

ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.

ROADSIDE ENVIRONMENTAL UNIT
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

2006 STANDARD SPECIFICATIONS

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE NO. 69 ON SR 1945
OVER TOISNOT SWAMP

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	EC-2
1			3			TOTAL SHEETS
2			4			5

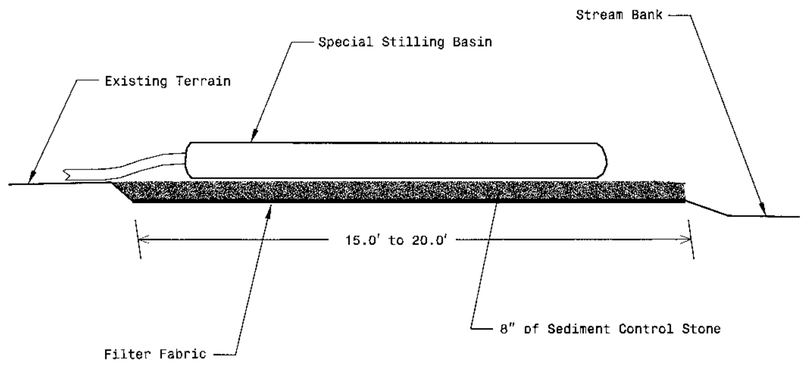
EROSION CONTROL PLAN

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

7-06

ENGLISH STANDARD DRAWING FOR

SPECIAL STILLING BASIN



Note: Provide Stabilized Outlet to Streambank
Not To Scale

SHEET 1 OF 1
1630.06

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

7-06

ENGLISH STANDARD DRAWING FOR

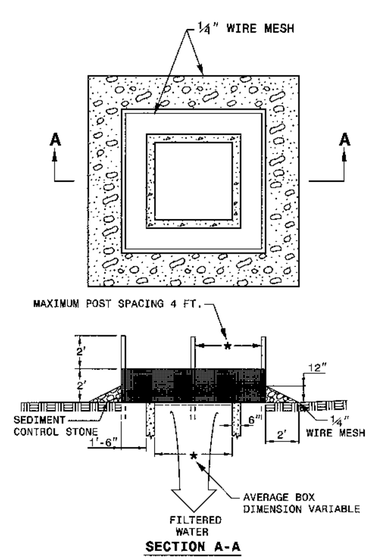
SPECIAL STILLING BASIN

SHEET 1 OF 1
1630.06

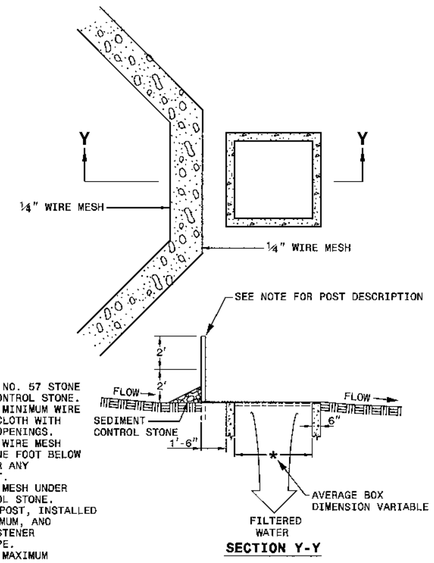
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR

ROCK INLET SEDIMENT TRAP TYPE 'C'



NOTE
USE NO. 5 OR NO. 57 STONE FOR SEDIMENT CONTROL STONE.
USE 24 GAUGE MINIMUM WIRE MESH HARDWARE CLOTH WITH 1/4 INCH MESH OPENINGS.
PLACE TOP OF WIRE MESH A MINIMUM OF ONE FOOT BELOW THE SHOULDER OR ANY DIVERSION POINT.
INSTALL WIRE MESH UNDER SEDIMENT CONTROL STONE.
USE 5' STEEL POST, INSTALLED 1.5' DEEP MINIMUM, AND OF THE SELF-FASTENER ANGLE STEEL TYPE.
SPACE POST A MAXIMUM OF 4'.



MULTI-DIRECTIONAL FLOW

SINGLE-DIRECTIONAL FLOW

SHEET 1 OF 1
1632.03

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

ENGLISH STANDARD DRAWING FOR

ROCK INLET SEDIMENT TRAP TYPE 'C'

SHEET 1 OF 1
1632.03

PROJECT NO. 33789.3.ST1 (B-4589)

NASH COUNTY

STATION: 15+08.93 -L-

NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.

ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.

ROADSIDE ENVIRONMENTAL UNIT
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

2006 STANDARD SPECIFICATIONS

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE NO. 69 ON SR 1945
OVER TOISNOT SWAMP

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	EC-3
1			3			TOTAL SHEETS
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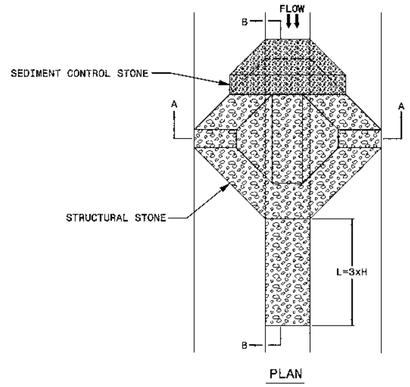
EROSION CONTROL PLAN

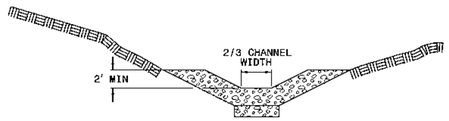
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR
TEMPORARY ROCK SILT CHECK TYPE 'A'

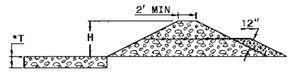
SHEET 1 OF 1
1633.01



PLAN



SECTION A-A



SECTION B-B

*T = 12" MIN., 18" MAX.

NOTE
USE CLASS 'B' EROSION CONTROL STONE FOR STRUCTURAL STONE.
USE NO. 5 OR NO. 57 STONE FOR SEDIMENT CONTROL STONE.

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ENGLISH STANDARD DRAWING FOR
TEMPORARY ROCK SILT CHECK TYPE 'A'

SHEET 1 OF 1
1633.01

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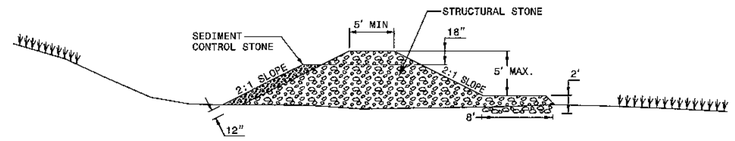
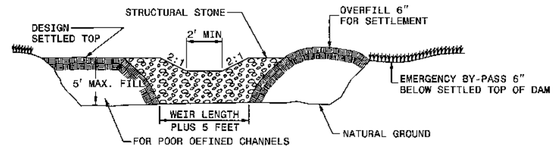
RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR
TEMPORARY ROCK SEDIMENT DAM TYPE 'B'

SHEET 1 OF 1
1634.02



PROFILE SECTION



CROSS SECTION

DRAINAGE AREA (ACRES)	WEIR LENGTH (FT)
1	4.0
2	6.0
3	8.0
4	10.0
5	12.0

NOTES:
USE CLASS 'B' EROSION CONTROL STONE FOR STRUCTURAL STONE.
USE NO. 5 OR NO. 57 STONE FOR SEDIMENT CONTROL STONE.
DIKE MAY EXTEND ALONG MORE THAN ONE SIDE OF THE TRAP AREA. PROVIDE A TOTAL SEDIMENT STORAGE VOLUME OF 1800± CUBIC FEET PER ACRE OF DISTURBED AREA. SOME OF THE REQUIRED VOLUME MAY BE PROVIDED BY OTHER UP OR DOWNSTREAM CONTROLS.
AN UNDERLAY OF STRUCTURAL STONE WITH FILTER FABRIC MAY BE REQUIRED BY THE ENGINEER.

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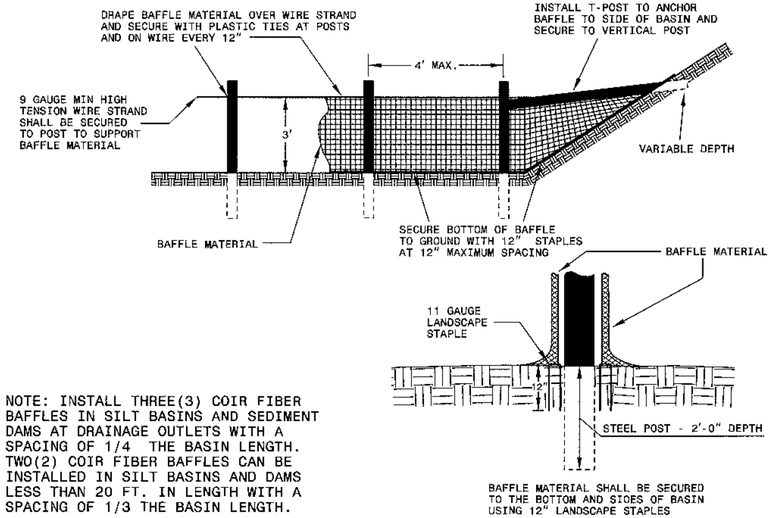
ENGLISH STANDARD DRAWING FOR
TEMPORARY ROCK SEDIMENT DAM TYPE 'B'

SHEET 1 OF 1
1634.02

COIR FIBER BAFFLE DETAIL



NOTE: INSTALL THREE(3) COIR FIBER BAFFLES IN SILT BASINS AND SEDIMENT DAMS AT DRAINAGE OUTLETS WITH A SPACING OF 1/4 THE BASIN LENGTH. TWO(2) COIR FIBER BAFFLES CAN BE INSTALLED IN SILT BASINS AND DAMS LESS THAN 20 FT. IN LENGTH WITH A SPACING OF 1/3 THE BASIN LENGTH.

Reforestation:

Reforestation will be planted within interchanges and along the outside borders of the road, and in other areas as directed. Reforestation is not shown on the plan sheets. See the Reforestation Detail Sheet.

All non-maintained riparian buffers impacted by the placement of temporary fill or clearing activities shall be restored to the preconstruction contours and revegetated with native woody species.

The entire Reforestation operation shall comply with the requirements of Section 1670 of the Standard Specifications.

Reforestation shall be bare root seedlings 12"-18" tall.

Reforestation shall be shall be planted as soon as practical following permanent Seeding and Mulching. The seedlings shall be planted in a 16-foot wide swath adjacent to mowing pattern line, or as directed.

Root dip: The roots of reforestation seedlings shall be coated with a slurry of water, and either a fine clay (kaolin) or a superabsorbent that is designated as a bare root dip. The type, mixture ratio, method of application, and the time of application shall be submitted to the Engineer for approval.

With the approval of the Engineer, seedlings may be coated before delivery to the job or at the time of planting, but at no time shall the roots of the seedlings be allowed to dry out. The roots shall be moistened immediately prior to planting.

Seasonal Limitations: Reforestation shall be planted from November 15 through March 15.

Payment for Reforestation will be included in the contract bid price for Lump Sum for Erosion Control.

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2006 STANDARD SPECIFICATIONS

PROJECT NO. 33789.3.ST1 (B-4589)

NASH COUNTY

STATION: 15+08.93 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE NO. 69 ON SR 1945
OVER TOISNOT SWAMP

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
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EROSION CONTROL PLAN

COIR FIBER BAFFLE:

Description

Furnish material, install and maintain coir fiber baffles according to the details in the plans or in locations as directed. Coir Fiber Baffles shall be installed in silt basins and sediment dams at drainage outlets. Work includes providing all materials, placing, securing, excavating and backfilling of Coir Fiber Baffles.

Materials

(A) Coir Fiber Mat

Matting: Provide matting to meet the following requirements:

100% coconut fiber (coir) twine woven into high strength matrix
Thickness – 0.30 in. minimum
Tensile Strength 1348 x 626 lb/ft minimum
Elongation 34% x 38% maximum
Flexibility (mg–cm) 65030 x 29590
Flow Velocity Observed 11 ft/sec
Weight 20 oz/SY
Size 6.6 x 164 ft (120 SY)
"C" Factor 0.002
Open Area (measured) 50%

(B) Staples

Provide staples made of 0.125 in. diameter new steel wire formed into a u shape not less than 12" in length with a throat of 1" in width.

(C) Posts

Steel posts shall be at least 5 ft. in length, approximately 1 3/8" wide measured parallel to the fence, and have a minimum weight of 1.25 lb/ft of length. The post shall be equipped with an anchor plate having a minimum area of 14.0 square inches, and shall be of the self-fastener angle steel type to have a means of retaining wire and coir fiber mat in the desired position without displacement.

(D) Wire

Provide 9–gauge high–tension wire strand of variable lengths.

Construction Methods

Place the coir fiber baffles immediately upon excavation of basins. Install three (3) baffles in basins with a spacing of one fourth (1/4) the basin length and according to the detail sheets. Two (2) coir fiber baffles shall be installed in basins less than 20 ft. in length with a spacing of one third (1/3) the basin length.

Steel posts shall be placed at a depth of 2 ft. below the basin surface, with a maximum spacing of 4 ft. Attach an 9–gauge high tension wire strand to the steel posts at a height of 3 ft. with plastic ties or wire fasteners. Install a steel post into side of the basin at a variable depth and a height of 3 ft. from the bottom of the basin to anchor coir fiber mat. Secure anchor post to the upright steel post in basin with wire fasteners.

The coir fiber mat shall be draped over the wire strand to a minimum of 3 ft. of material on each side of the strand. Secure the coir fiber mat to the wire strand with plastic ties or wire fasteners. Place staples across the matting at ends and junctions approximately 1 ft. apart at the bottom and side slopes of basin. Overlap matting at least 6" where 2 or more widths of matting are installed side by side.

Refer to details in the plan sheets. The Engineer may require adjustments in the stapling requirements to fit individual site conditions.

Measurement and Payment

Payment for Coir Fiber Baffles will be included in the contract bid price for Lump Sum for Erosion Control. Such price and payment will be full compensation for all work covered by this section, including, but not limited to, furnishing all materials, labor, equipment and incidentals necessary to install the coir fiber baffles.

Environmentally Sensitive Areas:

This project is located in an "Environmentally Sensitive Area." This designation requires special procedures to be used for clearing and grubbing, temporary stream crossings, and grading operations within the area identified on the plans. This also requires special procedures to be used for seeding and mulching and staged seeding within the project.

Clearing and Grubbing:

In areas identified on the erosion control plans as "Environmentally Sensitive Areas", the Contractor may perform clearing operations, but not grubbing operations until immediately prior to beginning grading operations as described in Section 200, Article 200–1, in the Standard Specifications. The "Environmentally Sensitive Area" shall be defined as a 50 foot buffer zone on both sides of the stream (or depression), measured from top of streambank, (or center of depression). Only clearing operations (not grubbing) shall be allowed in this buffer zone until immediately prior to beginning grading operations. Erosion control devices shall be installed immediately following the clearing operation.

Grading:

Once grading operations begin in identified "Environmentally Sensitive Areas", work will progress in a continuous manner until complete. All construction within these areas must progress in a continuous manner such that each phase is complete and areas permanently stabilized prior to beginning of next phase. Failure on the part of the Contractor to complete any phase of construction in a continuous manner in "Environmentally Sensitive Areas" as specified will be just cause for the Engineer to direct the suspension of work in accordance with Section 108–7 of the Standard Specifications.

Temporary Stream Crossings:

Any crossing of streams within the limits of this project must be accomplished in accordance with Section 107–13(b) of the Standard Specifications.

Seeding and Mulching:

Seeding and mulching shall be performed in accordance with Section 1660 of the Standard Specifications and vegetative cover sufficient to restrain erosion shall be installed immediately following grade establishment.

Seeding and mulching shall be performed on the areas disturbed by construction immediately following final grade establishment. No appreciable time shall lapse into the contract time without stabilization of slopes, ditches and other areas within the "Environmentally Sensitive Areas" as indicated on the erosion control plans.

Stage Seeding:

The work covered by this section shall consist of the establishment of a vegetative cover on cut and fill slopes as grading progresses. Seeding and mulching shall be done in stages on cut and fill slopes which are greater than 20 feet in height measured along the slope, or greater than 2 acres in area. Each stage shall not exceed the limits stated above.

All work described above will be paid for at the contract price for "Lump Sum for Erosion Control" established in the contract for the work involved. Additional payments will not be made for the requirements of this section as the cost for this work should be included in the contract price for "Lump Sum for Erosion Control" for the work involved.

Special Stilling Basin(s):

The work covered by this section consists of furnishing, placing, and removing a special stilling basin(s) as directed by the Engineer. The special stilling basin(s) shall be used to filter pumped water during the drilled pier operation, footing excavation, and/or culvert or pipe construction.

The filter fabric shall meet the requirements of Section 1056 for Type 2 Fabric.

Sediment control stone shall meet the requirements of Section 1005 and shall be clean of dirt and debris. Install stone according to the detail shown on the plans.

The special stilling basin(s) shall be a water permeable fabric bag that traps sand, silt, and fines as sediment laden water is pumped into it. This device shall be constructed such that it is portable and can be used adjacent to the drilled pier operation, footing excavation, and/or culvert or pipe construction.

The special stilling basin(s) shall be a bag constructed to a minimum size of 10' x 15' made from a nonwoven fabric. It shall have a sewn–in 8 in. (maximum) spout for receiving pump discharge. The bag seams shall be sewn with a double needle machine using a high strength thread. The seams shall have a minimum wide width strength as follows:

Test Method	Minimum Specifications
ASTM D–4884	60 lb/in

The fabric used to construct the bag shall be stabilized to provide resistance to ultra–violet degradation and meet the following specifications for flow rates, strength, and permeability:

Property	Test Method	Units	Min. Specifications
Weight	ASTM D–3776	oz/yd	8.0
Grab tensile	ASTM D–4632	lb	200.0
Puncture	ASTM D–4833	lb	130.0
Flow rate	ASTM D–4491	gal/min/sf	80.0
Permittivity	ASTM D–4991	1/sec	1.2
UV Resistance	ASTM D–4355	%	70.0

The Contractor shall install the special stilling basin in accordance with the details in the plans and at locations as directed by the Engineer.

The special stilling basin(s) shall be placed so the incoming water flows into and through the bag without causing erosion. The neck or spout of the bag shall be tied off tightly to stop the water from flowing out of the bag without going through the walls.

The special stilling basin(s) shall be replaced and disposed of when it is 3/4 full of sediment or when it is impractical for the bag to filter the sediment out at a reasonable flow rate. Prior approval from the Engineer must be received before removal and replacement.

The Contractor shall be responsible for providing a sufficient quantity of bags to contain silt from pumped effluent during the drilled pier operation, footing excavation, and/or culvert or pipe construction.

The quantity of sediment control stone, filter fabric for drainage, and special stilling basin(s) as measured above will be paid for at contract price for "Lump Sum for Erosion Control". Such price and payment will be full compensation for all work covered by this provision, including but not limited to, furnishing all materials, placing and maintaining the special stilling basin(s), and removal and disposal of silt accumulations and bag.

SAFETY FENCE:

Description

Safety Fence shall consist of furnishing, installing and maintaining polyethylene or polypropylene fence along the outside riparian buffer, wetland, or water boundary located within the construction corridor to mark the areas that have been approved to infringe within the buffer, wetland or water. The fence shall be installed prior to any land disturbing activities.

Materials

Polyethylene or polypropylene fence shall be a highly visible preconstructed safety fence approved by the Engineer.

Either wood posts or steel posts may be used. Wood posts shall be nominal 2" x 4" or 4" x 4" lengths as required, structural light framing, grade No. 2, Southern Pine. Steel posts shall be at least 5 ft. in length, approximately 1 3/8" wide measured parallel to the fence, and have a minimum weight of 1.25 lb./ft. of length. The steel post shall be equipped with an anchor plate having a minimum area of 14 square inches.

Construction Methods

No additional clearing and grubbing is anticipated for the installation of this fence; however, if any clearing and grubbing is required, it will be the minimum required for the installation of the safety fence. Such clearing shall include satisfactory removal and disposal of all trees, brush, stumps and other objectionable material.

The fence shall be erected to conform to the general contour of the ground. When determined necessary, minor grading along the fence line shall be performed to meet this requirement provided no obstructions to proper drainage are created.

Posts shall be set and maintained in a vertical position and may be hand set or set with a post driver. If hand set, all backfill material shall be thoroughly tamped. Wood posts may be sharpened to a dull point if power driven. Posts damaged by power driving shall be removed and replaced prior to final acceptance. The tops of all wood posts shall be cut at a 30–degree angle. The wood posts may, at the option of the Contractor, be cut at this angle either before or after the posts are erected.

The fence fabric shall be attached to the wood posts with one 2" galvanized wire staple across each cable or to the steel posts with wire or other acceptable means.

The Contractor shall be required to maintain the safety fence in a satisfactory condition for the duration of the project as determined by the Engineer.

Measurement and Payment

Safety Fence will be paid for at the contract price for "Lump Sum for Erosion Control". Such payment will be full compensation including but not limited to clearing and grading, furnishing and installing fence fabric with necessary posts and post bracing, staples, tie wires, tools, equipment and incidentals necessary to complete this work.

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