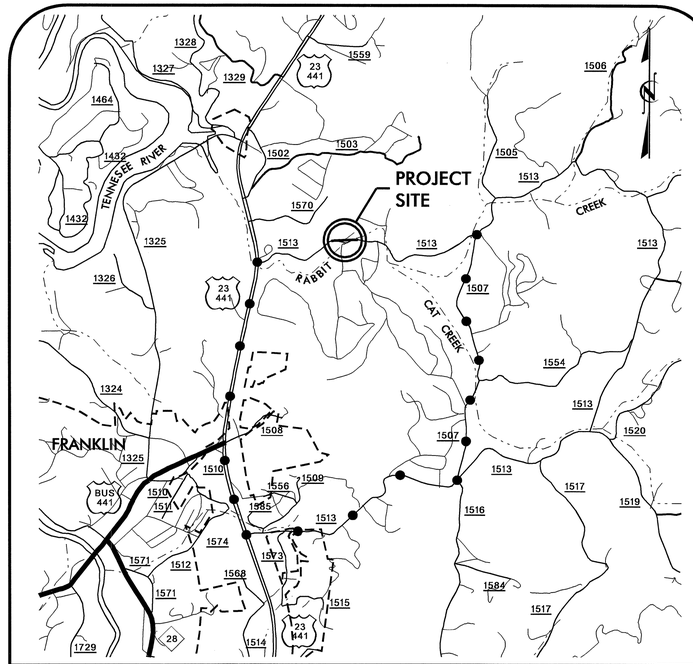
**TIP PROJECT: B–4179**

**CONTRACT: C202035**

**CULVERT & WALL**




# VICINITY MAP

DETOUR ROUTE

NEAREST SHIPPING POINT: DILLSBORO ON SOUTHERN RR APPROX.
20 MILES FROM PROJECT

STATE OF NORTH CAROLINA

DIVISION OF HIGHWAYS

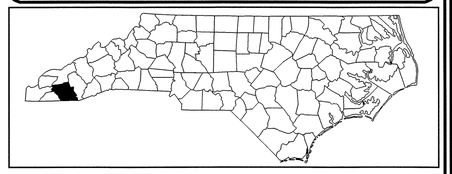
# *MACON COUNTY*

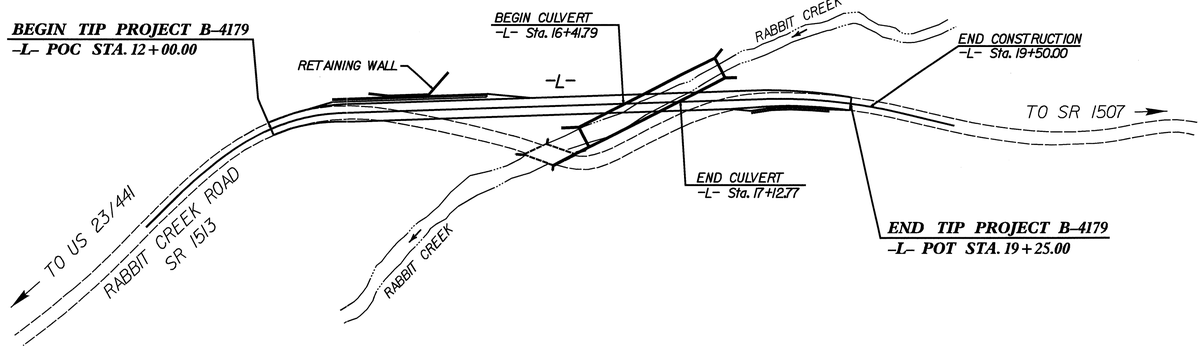
***LOCATION: BRIDGE #65 OVER RABBIT CREEK ON SR 1513 (RABBIT CREEK ROAD)***

***TYPE OF WORK: GRADING, DRAINAGE, PAVING, CULVERT AND WALL***

| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|
| N.C. | B–4179 | | |

| STATE PROJ. NO. | F. A. PROJ. NO. | DESCRIPTION |
|---|---|---|
| 33526.1.1 | BRZ–1513(2) | PE |
| 33526.2.2 | BRZ–1513(2) | R/W & UTIL. |
| 33526.3.1 | BRZ–1513(3) | CONST. |






STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

***DESIGN DATA***

| | | |
|---|---|---|
| ADT 2008 | = | 935 |
| ADT 2028 | = | 1600 |
| DHV | = | 10 % |
| D | = | 60 % |
| T | = | 3 % * |
| V | = | 35 MPH |

* (TTST 1% + DUAL 2%)

***PROJECT LENGTH***

LENGTH ROADWAY TIP PROJECT B–4179 = 0.124 MILES

LENGTH STRUCTURE TIP PROJECT B–4179 = 0.013 MILES

TOTAL LENGTH OF PROJECT B–4179 = 0.137 MILES

*Prepared In the Office of:*

***DIVISION OF HIGHWAYS***

*2006 STANDARD SPECIFICATIONS*

*LETTING DATE :*

DECEMBER 16, 2008

N.N. BULLOCK, P.E.
*PROJECT ENGINEER*

A.K. PASCHAL, P.E.
*PROJECT DESIGN ENGINEER*

***STRUCTURE DESIGN UNIT***
*1000 BIRCH RIDGE DR.*
*RALEIGH, N.C. 27610*

***DIVISION OF HIGHWAYS***
***STATE OF NORTH CAROLINA***

P.E.
*STATE DESIGN ENGINEER*

***DEPARTMENT OF TRANSPORTATION***
***FEDERAL HIGHWAY ADMINISTRATION***

*APPROVED*
*DIVISION ADMINISTRATOR* *DATE*

31-OCT-2008 14:03
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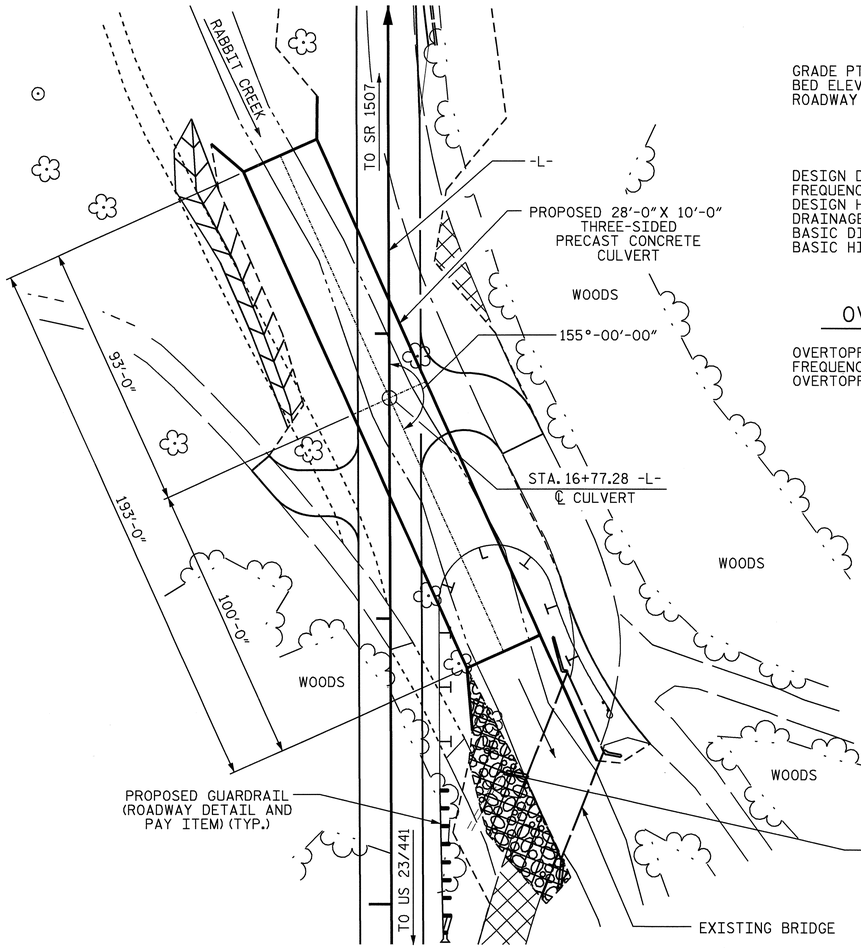
kpaschal

BENCH MARK #1: RAILROAD SPIKE SET IN UTILITY POLE STA.16+43.19 -L-, 38.77 FT. RIGHT EL. 2032.84




FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

## GRADE DATA

| | |
|---|---|
| GRADE PT. EL. @ STA. 16+77.00 -L- | = 2035.45 |
| BED ELEVATION @ STA. 16+77.00 -L- | = 2021.94 |
| ROADWAY SLOPES | = VARIES |

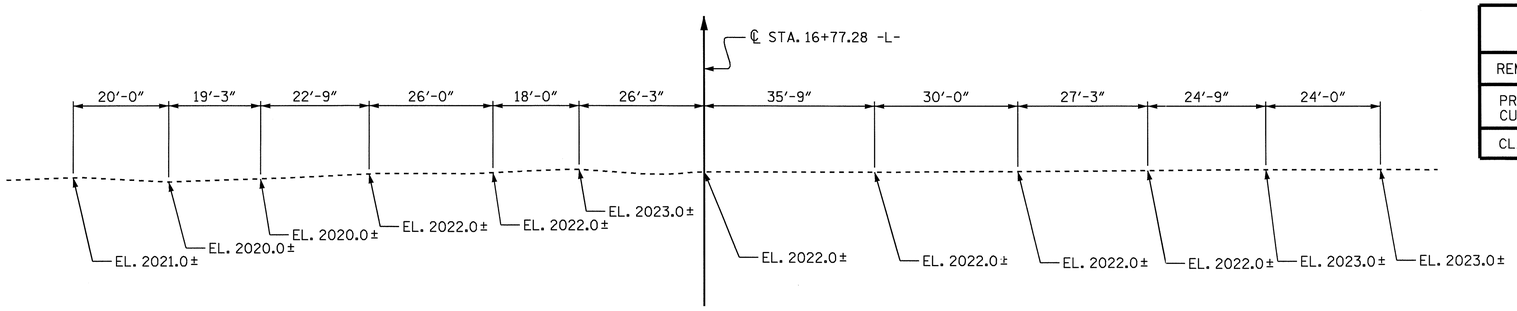
## HYDRAULIC DATA

| | |
|---|---|
| DESIGN DISCHARGE | = 1900 C.F.S. |
| FREQUENCY OF DESIGN FLOOD | = 25 Yrs. |
| DESIGN HIGH WATER ELEVATION | = 2034.06 |
| DRAINAGE AREA | = 8.8 Sq.Mi. |
| BASIC DISCHARGE (Q100) | = 2900 C.F.S. |
| BASIC HIGH WATER ELEVATION | = 2036.61 |

## OVERTOPPING FLOOD DATA

| | |
|---|---|
| OVERTOPPING DISCHARGE | = 2400 C.F.S. |
| FREQUENCY OF OVERTOPPING FLOOD | = 50 Yrs. |
| OVERTOPPING FLOOD ELEVATION | = 2035.39 |

## LOCATION SKETCH




## PROFILE ALONG ℄ CULVERT

## NOTES

ASSUMED LIVE LOAD ---------- HS20-44 OR ALTERNATE LOADING.

MAXIMUM DESIGN FILL ---------- 4.11 FT.

FOR OTHER DESIGN DATA AND NOTES SEE STANDARD NOTE SHEET.

THE EXISTING STRUCTURE CONSISTING OF 1 SPAN @ 41'-0", TIMBER DECK ON I BEAMS AND A CLEAR ROADWAY WIDTH OF 21'-3" ON A SUBSTRUCTURE CONSISTING OF END BENTS WITH YOUNT MASONRY ABUTMENTS LOCATED AT THE SITE OF THE PROPOSED STRUCTURE SHALL BE REMOVED. SEE SPECIAL PROVISIONS.

THE RESIDENT ENGINEER SHALL CHECK THE LENGTH OF CULVERT BEFORE STAKING IT OUT TO MAKE CERTAIN THAT IT WILL PROPERLY TAKE CARE OF THE FILL.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

THE REQUIRED BEARING CAPACITY OF THE SPREAD FOOTINGS IS 4 TSF. THE REQUIRED BEARING CAPACITY SHALL BE VERIFIED.

THE BOTTOM OF FOOTING ELEVATION MAY BE LOWERED IN ORDER TO SATISFY BEARING CAPACITY OR MINIMUM ROCK EMBEDMENT REQUIREMENTS.

TO PROVIDE PROTECTION FROM POSSIBLE SCOUR, THE FOOTINGS SHALL NOT BE CONSTRUCTED AT AN ELEVATION HIGHER THAN SHOWN ON THE PLANS.

PIER SCOUR PROTECTION SHALL BE REQUIRED. RIP RAP SHALL NOT BE PLACED ABOVE THE STREAM BED.

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH HEC 18 "EVALUATING SCOUR AT BRIDGES", MAY, 2001.

THE SCOUR CRITICAL ELEVATION IS THE AS BUILT BOTTOM OF FOOTING ELEVATION. THE SCOUR CRITICAL ELEVATIONS ARE FOR USE BY MAINTENANCE FORCES TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

FOR BLASTING ADJACENT TO HIGHWAY STRUCTURES, SEE STANDARD SPECIFICATION ARTICLE 410-12.

FOR PRECAST REINFORCED CONCRETE THREE-SIDED CULVERT, SEE SPECIAL PROVISIONS.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 16+77.28 -L-."

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.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVSIONS.

FOR CULVERT DIVERSION DETAILS AND PAY ITEM, SEE EROSION CONTROL PLANS.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLE OF EACH SIZE BAR USED. THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPLICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE, PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS.

NO PRECAST WING OR HEADWALL OPTION WILL BE ALLOWED.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LEFT OUTLET WING WILL BE PARALLEL WITH THE CULVERT WALL AND LONGER THAN THE OTHER THREE WINGS.

F. A. PROJECT NO. BRZ-1513(3)

## TOTAL STRUCTURE QUANTITES

| | |
|---|---|
| REMOVAL OF EXISTING STRUCTURE ---------- | LUMP SUM |
| PRECAST REINFORCED CONCRETE THREE-SIDED CULVERT @ STA. 16+77.28 -L- ---------- | LUMP SUM |
| CLASS A CONCRETE ---------- | 161.1 C.Y. |

PROJECT NO. B-4179

MACON COUNTY

STATION: 16+77.28 -L-

SHEET 1 OF 4 REPLACES BRIDGE NO. 65

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

# PRECAST REINFORCED CONCRETE THREE-SIDED CULVERT

NORTH CAROLINA PROFESSIONAL SEAL 12929 ENGINEER NORMAN NEBLETT BULLOCK, JR.
10/31/08

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER TIMOTHY KEITH PASCHAL
10/31/08

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

DRAWN BY : M. G. SHAIKH DATE : 9/09/08
CHECKED BY : O. PUIGCERVER DATE : 9/22/08

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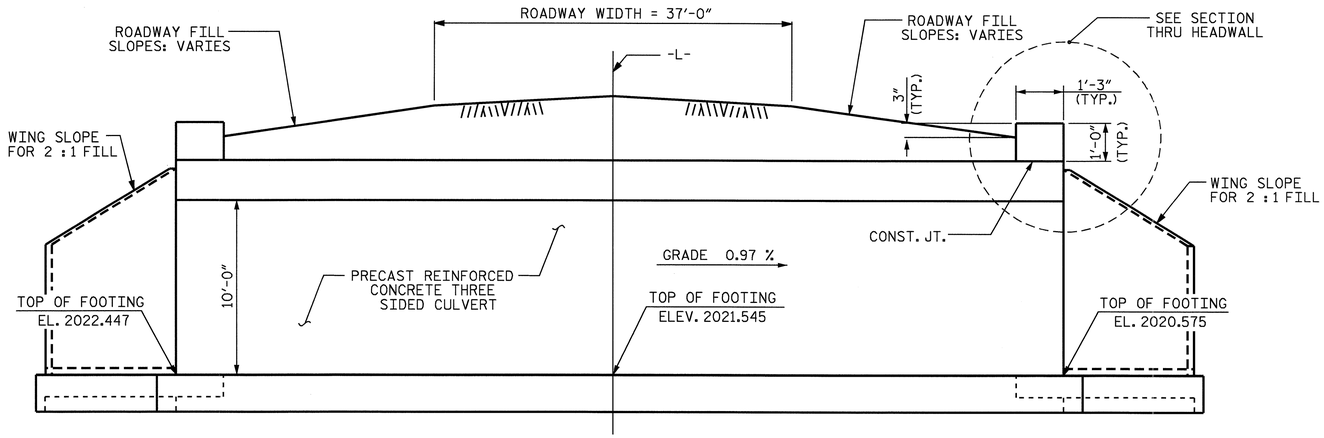
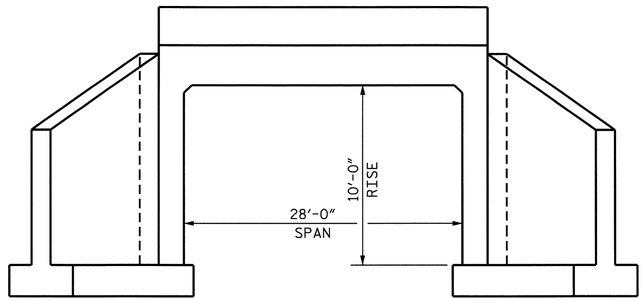
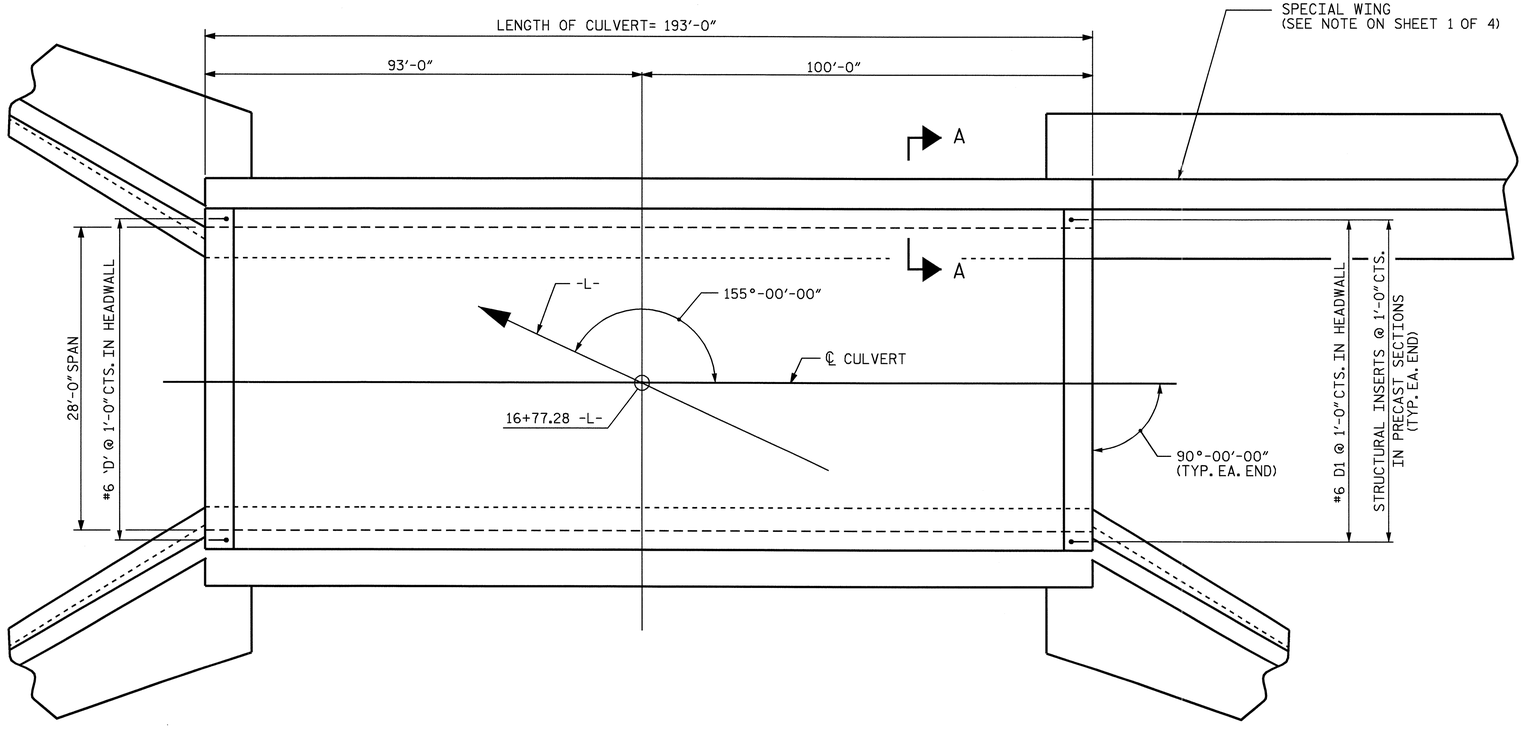
kpaschal




## CULVERT SECTION NORMAL TO ROADWAY

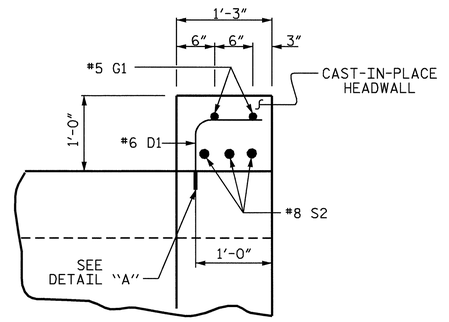



## END ELEVATION

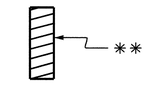



## PLAN FOR PRECAST THREE-SIDED CULVERT

NOTE : SEE SHEET 3 OF 4 FOR SECTION A-A




## SECTION THRU HEADWALL

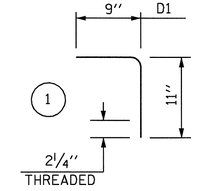



## DETAIL A

** RICHMOND STRUCTURAL CONNECTION INSERTS ¾'' TYPE EC-2, 2 STRUT OR EQUAL; LENGTH = 4 ½'', INSERT WIDTH = 2'', DIA. = ¾''. NO. REQUIRED 70

| BAR SCHEDULE | | | | | |
|---|---|---|---|---|---|
| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
| D1 | 60 | 6 | 1 | 1'-8" | 150 |
| | | | | | |
| G1 | 4 | 5 | STR | 29'-8" | 124 |
| | | | | | |
| S2 | 6 | 8 | STR | 29'-8" | 475 |
| | | | | | |
| TOTAL | | | | LBS. | 868 |

## BAR TYPE




PROJECT NO. B-4179

MACON COUNTY

STATION: 16+77.28 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

# PRECAST REINFORCED CONCRETE THREE-SIDED CULVERT

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER C. KEITH PASCHAL

10/31/08

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

DRAWN BY : M. G. SHAIKH DATE : 9-08-08
CHECKED BY : O. PUIGCERVER DATE : 9-22-08

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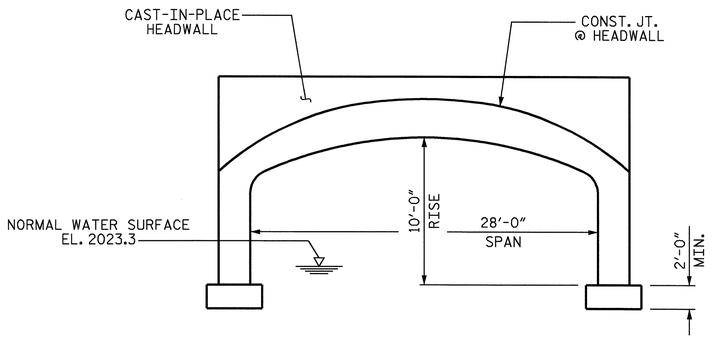
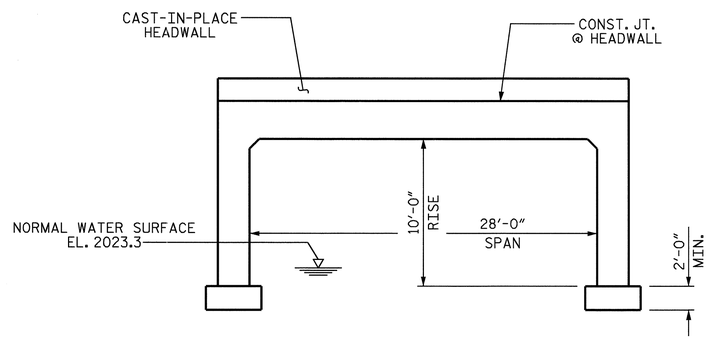
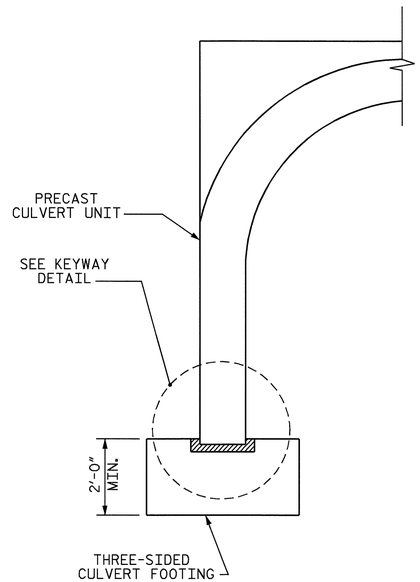



ARCH ALTERNATIVE



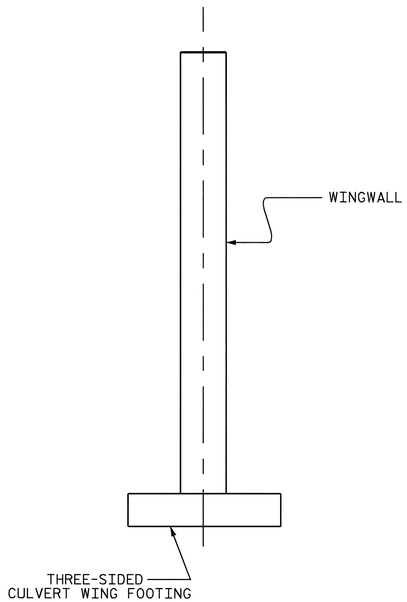

FLAT TOPPED ALTERNATIVE

# RIGHT ANGLE SECTION OF PRECAST CONCRETE THREE-SIDED CULVERT

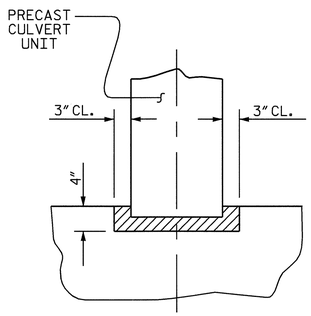



## SECTION A-A

FOOTING REINFORCEMENT NOT SHOWN
CONTRACTOR SHALL PROVIDE REINFORCEMENT DETAIL.




## SECTION THRU WING WALL




## KEYWAY DETAIL

PROJECT NO. B-4179
MACON COUNTY
STATION: 16+77.28 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

# PRECAST REINFORCED CONCRETE THREE-SIDED CULVERT

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

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER KEITH PASCHAL
10/31/08

DRAWN BY : M. G. SHAIKH DATE : 9/10/08
CHECKED BY : O. PUIGCERVER DATE : 9/22/08

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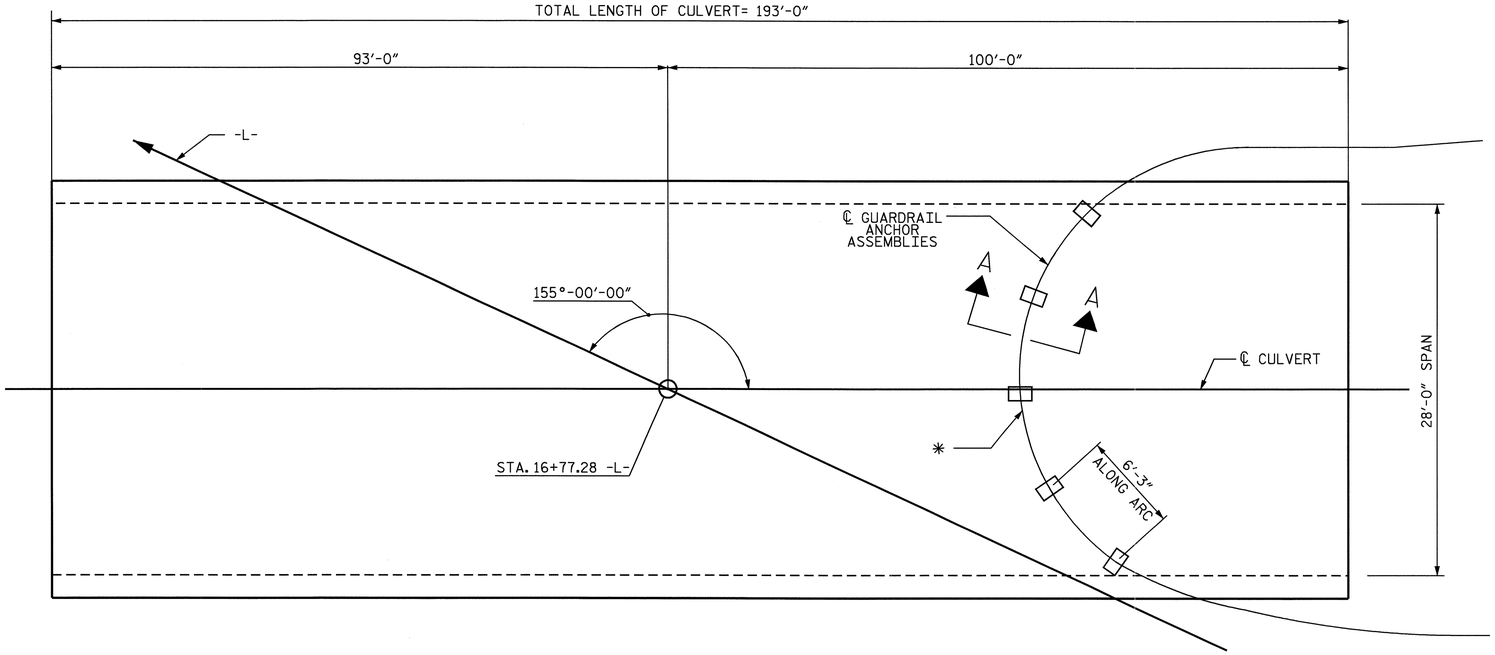
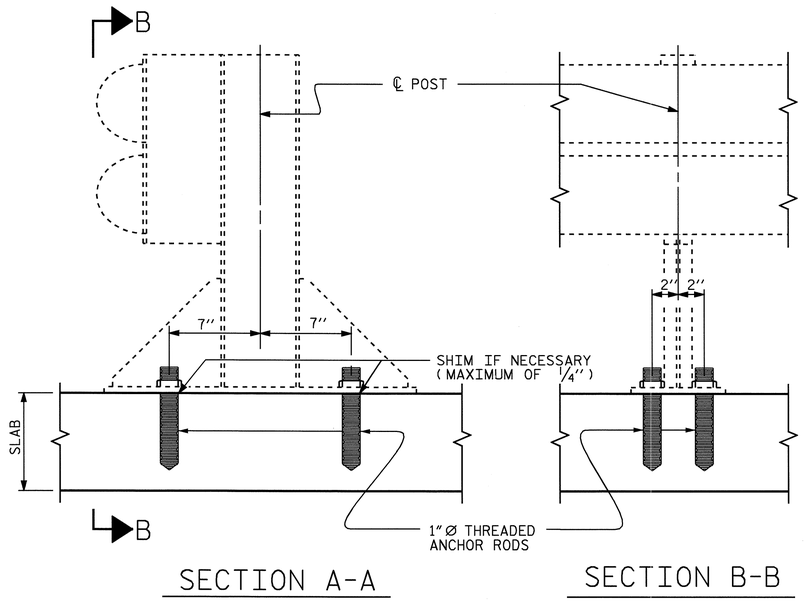
kpaschal




## PLAN

SHOWING : GUARDRAIL ANCHOR ASSEMBLY SPACING
GUARDRAIL POST AND THREADED ANCHOR RODS
MUST CLEAR ALL JOINTS OF PRECAST CONCRETE
CULVERT UNITS.

* GUARDRAIL LOCATION TO BE FURNISHED BY THE ENGINEER IN THE FIELD




SECTION A-A

SECTION B-B

## NOTES

ANCHOR BOLTS, NUTS, AND WASHERS, SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND SHALL BE GALVANIZED.

PAYMENT FOR GUARDRAIL, POSTS, AND POST BASE PLATES IS INCLUDED IN ROADWAY PAY ITEMS.

THE CONTRACTOR SHALL USE ADHESIVELY ANCHORED ANCHOR BOLTS FOR ALL GUARDRAIL ATTACHMENTS. LEVEL TWO FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 1" Ø BOLT IS 21.8 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS.

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER KEITH PASCHAL
10/31/08

PROJECT NO. B-4179
MACON COUNTY
STATION: 16+77.28 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

# ANCHORAGE DETAILS FOR GUARDRAIL ANCHOR ASSEMBLY FOR THREE SIDED CULVERT

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

| | | | |
|---|---|---|---|
| ASSEMBLED BY : M. G. SHAIKH | DATE : 9-10-08 | | |
| CHECKED BY : O. PUIGCERVER | DATE : 9-22-08 | | |
| DRAWN BY : FCJ 6/88 | REV. 7/10/01 | LES/RDR | |
| CHECKED BY : ARB 6/88 | REV. 5/7/03 | RWW/JTE | |
| | REV. 5/1/06 | TLA/GM | |

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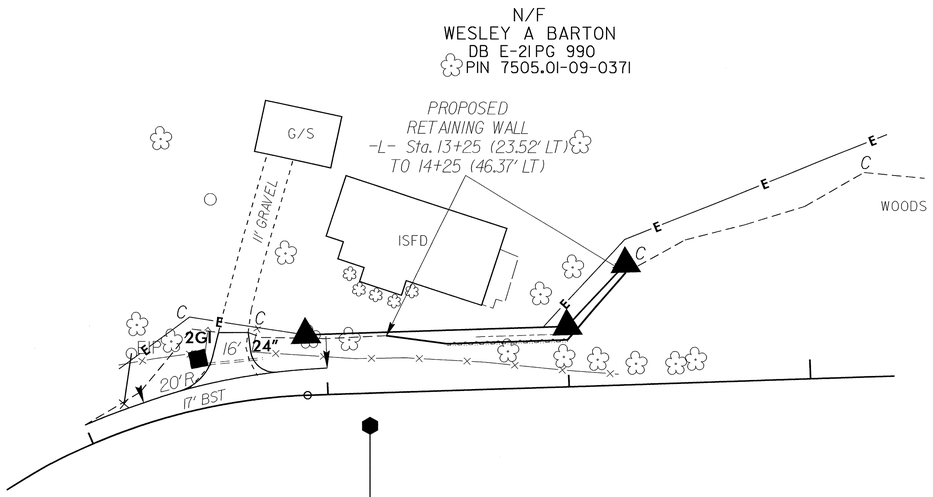
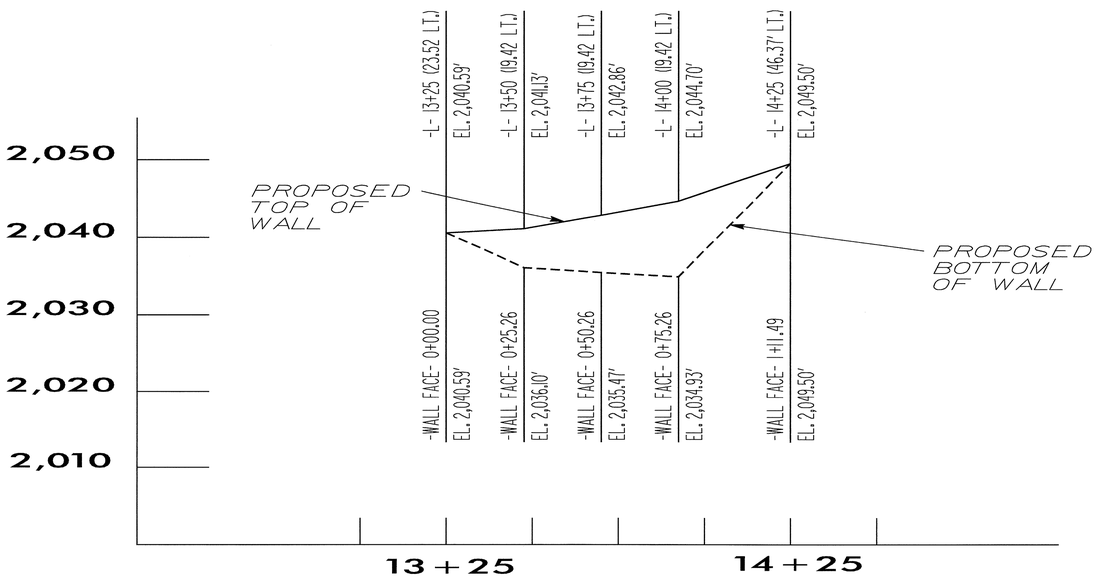
kpaschal

# LOCATION SKETCH




-BL- PINC Sta. 8+87.02 (GPS-B4179-102)
-L- Sta. 13+17.00 (13.40' RT)




***RETAINING WALL ENVELOPE***
***-L- STA. 13+25.00 (23.52' LT) TO 14+25.00 (46.37' LT)***

| TOTAL BILL OF MATERIAL | |
|---|---|
| SOLDIER PILE RETAINING WALLS AT STA. 13+25 TO 14+25 -L- | 610 SQ. FEET |

| GEOTECHNICAL ENGINEER | ENGINEER |
|---|---|
| NORTH CAROLINA PROFESSIONAL SEAL 29869 ENGINEER SHANE C CLARK | |
| SIGNATURE 9/9/8 DATE | SIGNATURE DATE |

| | |
|---|---|
| PREPARED BY: E.J.S. | DATE: 04/08 |
| REVIEWED BY: S.C.C. | DATE: 9/08 |

***GEOTECHNICAL ENGINEERING UNIT***
☐ ***EASTERN REGIONAL OFFICE***
☒ ***WESTERN REGIONAL OFFICE***

***STATE OF NORTH CAROLINA***
***DEPARTMENT OF TRANSPORTATION***
***RALEIGH***

***PROJECT NO.:*** B-4179
MACON ***COUNTY***
***STATION:*** 13+25 TO 14+25 -L-
SHEET 1 OF 2

# SOLDIER PILE RETAINING WALL

| REVISIONS | | | | | | SHEET NO. |
|---|---|---|---|---|---|---|
| NO. | BY | DATE | NO. | BY | DATE | W-1 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 2 |

| GEOTECHNICAL ENGINEER | ENGINEER |
|---|---|
| NORTH CAROLINA PROFESSIONAL SEAL 29869 ENGINEER SHANE C CLARK<br>SIGNATURE 5/9/08 DATE | SIGNATURE DATE |

## NOTES

FOR SOLDIER PILE RETAINING WALLS, SEE SOLDIER PILE RETAINING WALLS PROVISION.

FOR GUARDRAIL, SEE ROADWAY PLANS AND SECTION 862 OF THE STANDARD SPECIFICATIONS.

FOR SINGLE FACED PRECAST CONCRETE BARRIER, SEE ROADWAY PLANS AND SECTION 857 OF THE STANDARD SPECIFICATIONS.

PILE EXCAVATION IS REQUIRED TO INSTALL H PILES FOR RETAINING WALL.

USE A SOLDIER PILE RETAINING WALL WITH PRECAST CONCRETE PANELS FOR RETAINING WALL.

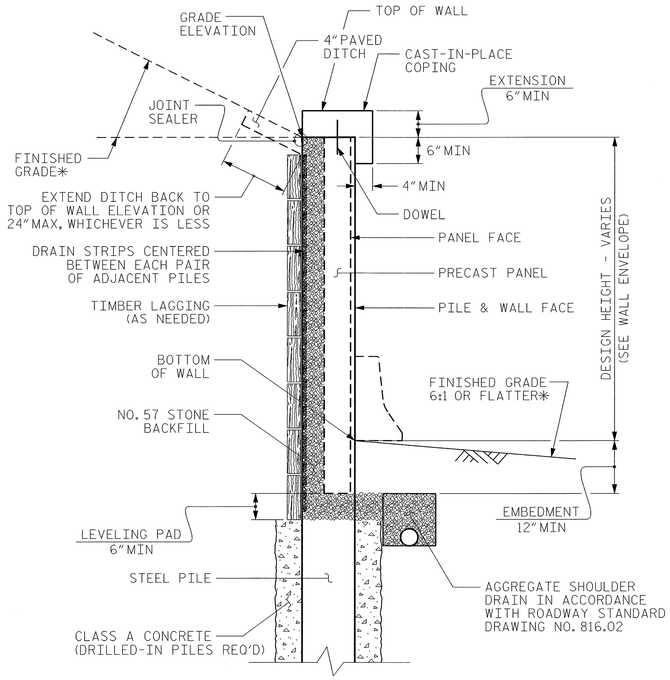
PAINT PILES FOR RETAINING WALL.

BEFORE BEGINNING SOLDIER PILE WALL DESIGN FOR RETAINING WALL, SURVEY EXISTING GROUND ELEVATIONS SHOWN ON THE WALL PROFILE VIEW (WALL ENVELOPE) AND SUBMIT A REVISED WALL ENVELOPE FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THIS ENVELOPE IS ACCEPTED.

DESIGN RETAINING WALL FOR WALL HEIGHTS EQUAL TO THE DESIGN HEIGHT (DIFFERENCE BETWEEN GRADE ELEVATION AND BOTTOM OF WALL ELEVATION) PLUS EMBEDMENT (DIFFERENCE BETWEEN BOTTOM OF WALL ELEVATION AND TOP OF LEVELING PAD ELEVATION).

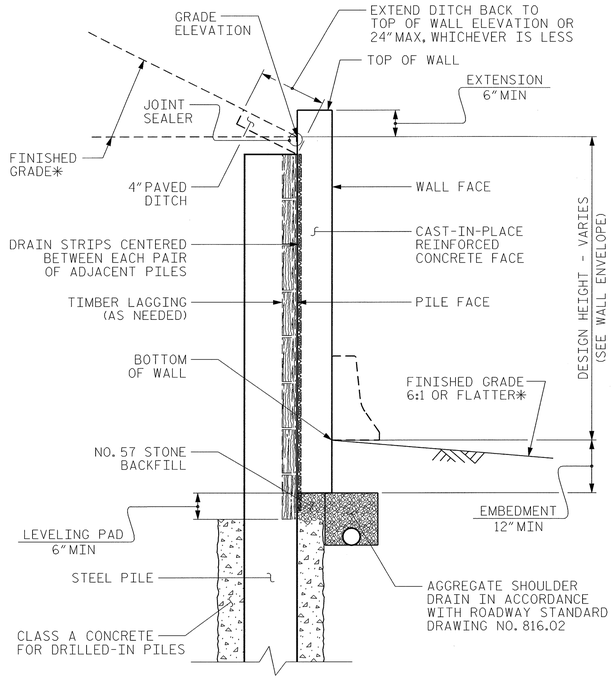
DESIGN RETAINING WALL FOR THE FOLLOWING:
1) MINIMUM SERVICE LIFE = 75 YEARS
2) IN-SITU ASSUMED MATERIAL PARAMETERS:
UNIT WEIGHT, gamma = 120 PCF
FRICTION ANGLE, phi = 30 DEGREES
COHESION, c = 0 PSF

"TEMPORARY SHORING FOR WALL CONSTRUCTION" MAY BE REQUIRED FOR RETAINING WALL. FOR TEMPORARY SHORING FOR WALL CONSTRUCTION, SUBMIT WORKING DRAWINGS AND DESIGN CALCULATIONS WITH THE SOLDIER PILE WALL DESIGN SUBMITTAL AND DESIGN AND CONSTRUCT THE SHORING IN ACCORDANCE WITH THE TEMPORARY SHORING PROVISION. NO SEPARATE PAYMENT WILL BE MADE FOR TEMPORARY SHORING FOR WALL CONSTRUCTION. PAYMENT WILL BE CONSIDERED INCIDENTAL TO THE COST OF THE RETAINING WALL.




## PRECAST PANEL TYPICAL SECTION

*SEE ROADWAY TYPICAL SECTIONS FOR FINISHED GRADE DETAILS.




## CAST-IN-PLACE FACE TYPICAL SECTION

*SEE ROADWAY TYPICAL SECTIONS FOR FINISHED GRADE DETAILS.

| | |
|---|---|
| PREPARED BY: EJS | DATE: 8/08 |
| REVIEWED BY: SCC | DATE: 9/08 |

***PROJECT NO.:*** B-4179

MACON ***COUNTY***

***STATION:*** 12+25 TO 14+25 -L-

SHEET 2 OF 2

***GEOTECHNICAL ENGINEERING UNIT***

☐ ***EASTERN REGIONAL OFFICE***
☐ ***WESTERN REGIONAL OFFICE***
■ ***CONTRACT OFFICE***

***STATE OF NORTH CAROLINA***
***DEPARTMENT OF TRANSPORTATION***
***RALEIGH***

# SOLDIER PILE RETAINING WALL TYPICAL SECTION AND NOTES

| REVISIONS | | | | | | SHEET NO. |
|---|---|---|---|---|---|---|
| NO. | BY | DATE | NO. | BY | DATE | W-2 |
| 1 | - | - | 3 | - | - | TOTAL SHEETS |
| 2 | - | - | 4 | - | - | 2 |

# 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 2002 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; CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP; AND CLASS S SHALL BE USED FOR UNDERWATER FOOTING SEALS.

## 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 WITH THE EXCEPTION OF #2 BARS WHICH MAY BE FABRICATED FROM COLD DRAWN STEEL WIRE. 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.

PLACEMENT OF BEAM OR GIRDER MEMBERS ON TRUCKS FOR HAULING SHALL BE DONE IN COMPLIANCE WITH LIMITS SHOWN ON SKETCHES PROVIDED TO THE MATERIALS AND TEST UNIT APPROVED BY THE STRUCTURE DESIGN UNIT DATED MAY 8, 1991. THESE SKETCHES PRIMARILY LIMIT THE UNSUPPORTED CANTILEVER LENGTH OF MEMBERS. WHEN THE CONTRACTOR WISHES TO PLACE MEMBERS ON TRUCKS NOT IN ACCORDANCE WITH THESE LIMITS, TO SHIP BY RAIL, TO ATTACH SHIPPING RESTRAINTS TO THE MEMBERS OR TO INVERT MEMBERS, HE SHALL SUBMIT A SKETCH FOR APPROVAL PRIOR TO SHIPPING. SEE ALSO ARTICLE 1072-11.

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.

REV. 6-16-95 EEM W/ RGW REV. 6-27-02 RWW W/ JTE
REV. 9-16-99 RWW W/ LLES

ENGLISH

JANUARY, 1990

STD. NO. SN