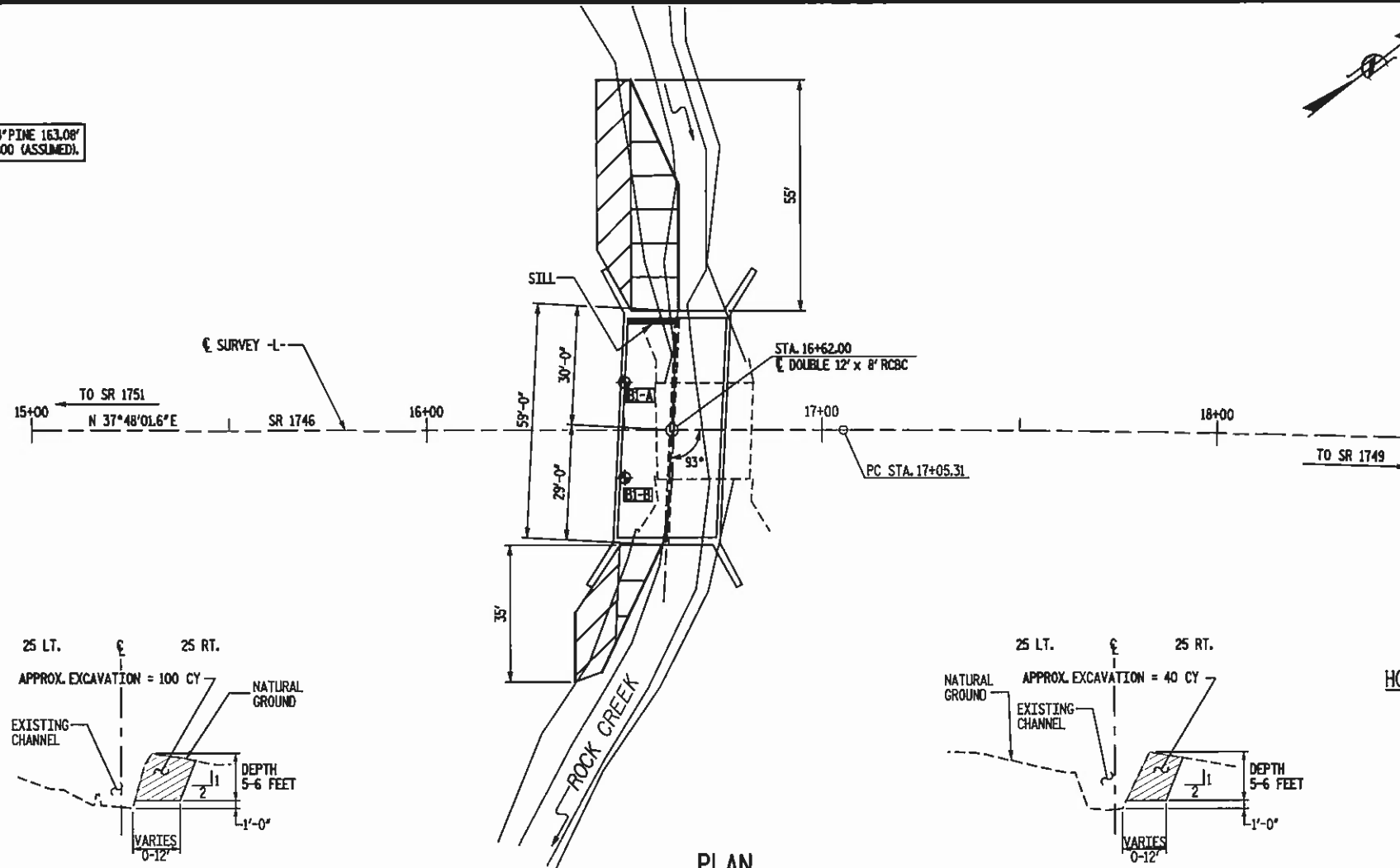


B.M. #1 - RR SPIKE SET IN BASE OF 13" PINE 163.08'  
RIGHT OF STA. 12+40.32 -L- ELEV. 100.00 (ASSUMED).



### INLET CHANNEL SECTION

(LOOKING DOWNSTREAM)  
SCALE: VERT. = 1" = 10'  
HORIZ. = 1" = 20' ±

### OUTLET CHANNEL SECTION

(LOOKING DOWNSTREAM)  
SCALE: VERT. = 1" = 10'  
HORIZ. = 1" = 20' ±

GRADE DATA  
P.I. 16+50.00  
EL. 93.400  
L = 352'

### HORIZONTAL CURVE DATA

PI STA. 17+98.65  
Δ = 2°19'58.3" (RT.)  
D = 1°15'00.0"  
L = 186.64'  
T = 93.33'  
R = 4,583.66'

### HYDRAULIC DATA

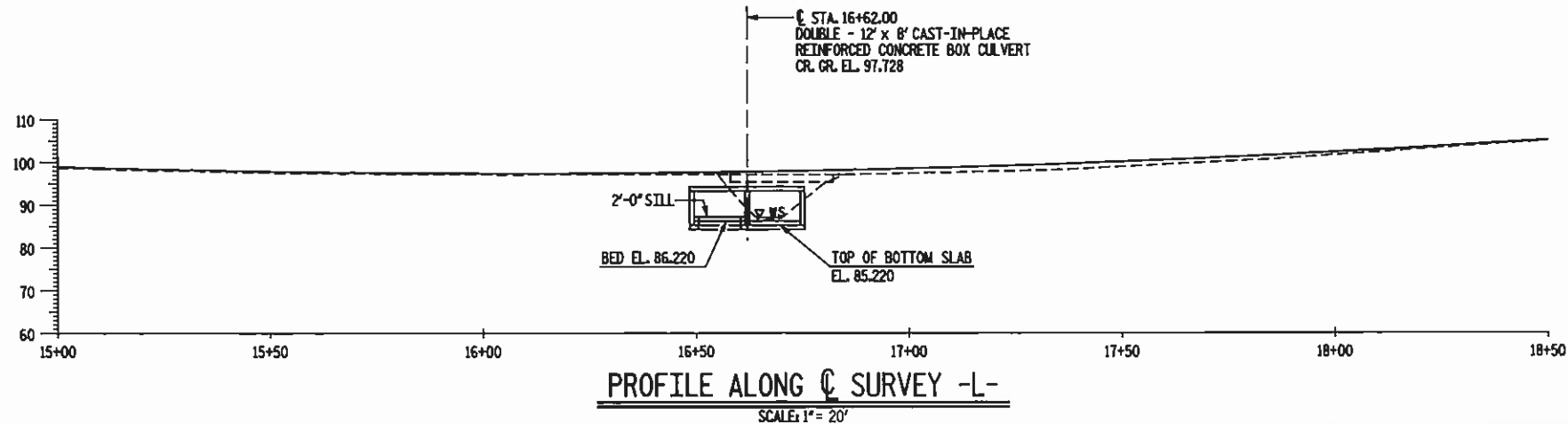
|                                      |         |          |
|--------------------------------------|---------|----------|
| DESIGN DISCHARGE                     | = 800   | CFS      |
| FREQUENCY OF DESIGN FLOOD            | = 25    | YRS      |
| DESIGN HIGH WATER ELEVATION          | = 93.36 | FT       |
| DRAINAGE AREA                        | = 2.31  | SQ MILES |
| BASIC DISCHARGE (Q <sub>base</sub> ) | = 1300  | CFS      |
| BASIC HIGH WATER ELEVATION           | = 95.42 | FT       |

### OVERTOPPING FLOOD DATA

|                                |         |     |
|--------------------------------|---------|-----|
| OVERTOPPING DISCHARGE          | = 1802  | CFS |
| FREQUENCY OF OVERTOPPING FLOOD | = 200+  | YRS |
| OVERTOPPING FLOOD ELEVATION    | = 97.18 | FT  |

### DESCRIPTION OF EXISTING STRUCTURE

1 SPAN @ 25'-6" STEEL PLANK FLOOR / 4" ASPHALT WEARING SURFACE ON I-BEAMS ON TIMBER CAPS / TIMBER POST AND SILL END BENTS; 23'-7" CLEAR ROADWAY WIDTH SHALL BE REMOVED.

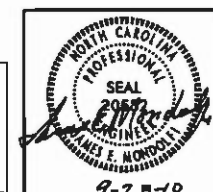


PROJECT NO. 42569  
COUNTY: CALDWELL  
STATION: 16+62.00  
REPLACES BRIDGE NO. 65

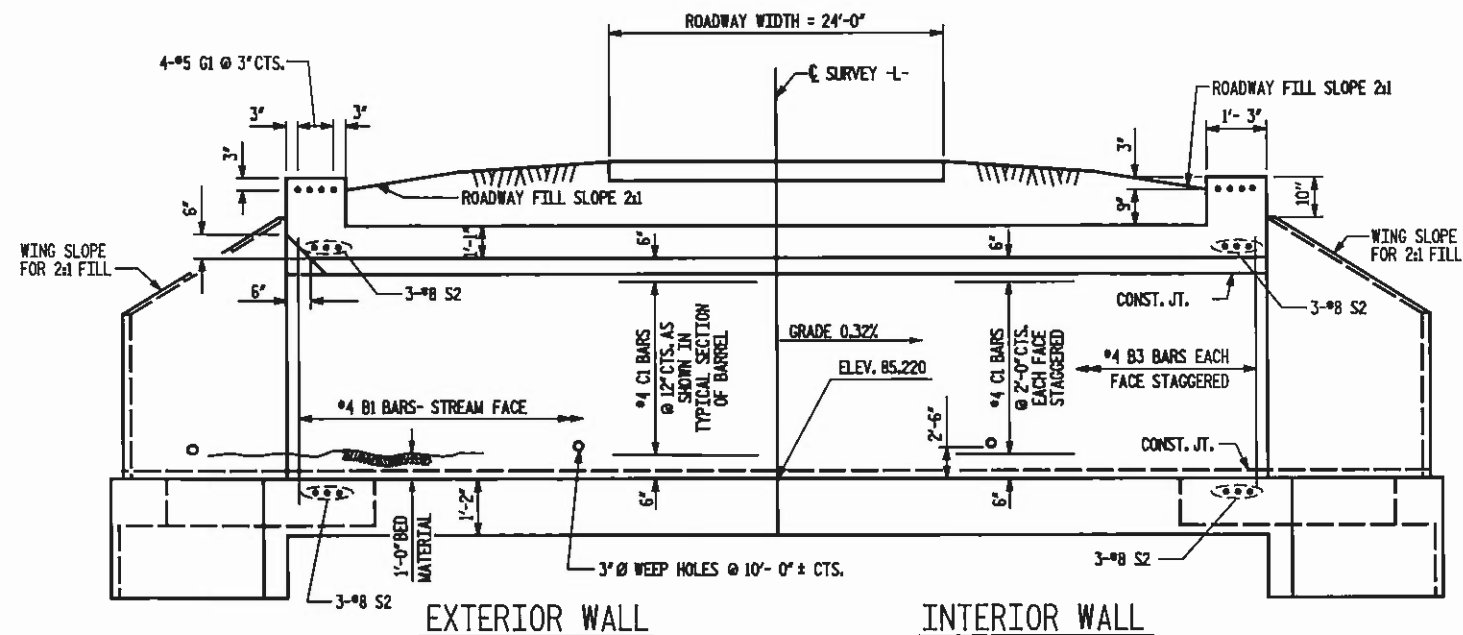
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

CULVERT ON SR 1746  
OVER ROCK CREEK

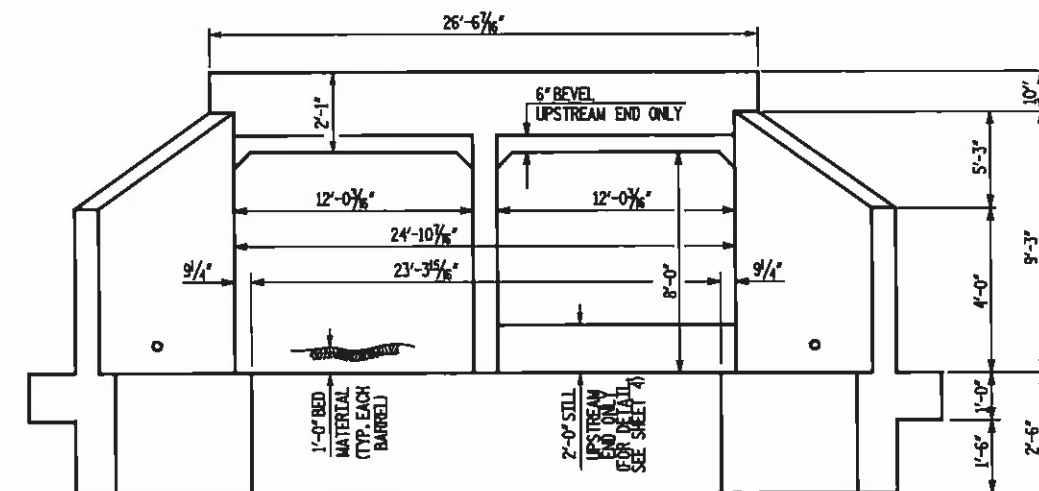
**Florence & Hutcheson**  
CONSULTING ENGINEERS  
5121 Kingdom Way, Suite 100 Raleigh, NC 27607  
NC License No. P 0218



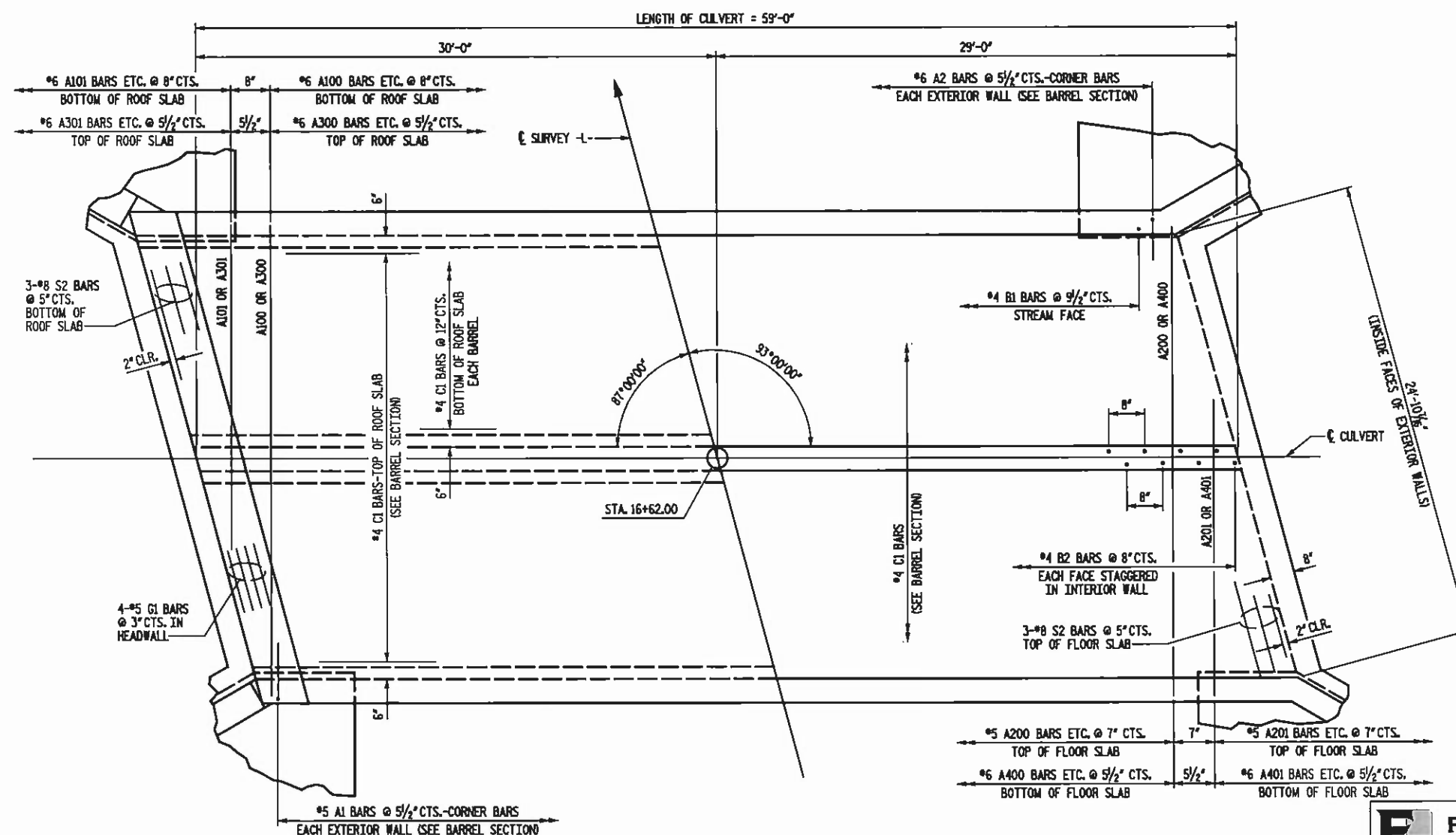
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|-----------|----|------|-----|----|------|--------------|
| NO.       | BY | DATE | NO. | BY | DATE |              |
| 1         |    |      | 3   |    |      | 1            |
| 2         |    |      | 4   |    |      | 15           |



CULVERT SECTION NORMAL TO ROADWAY

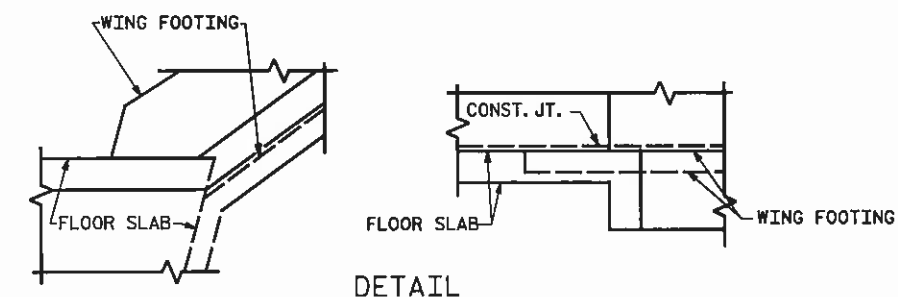


END ELEVATION

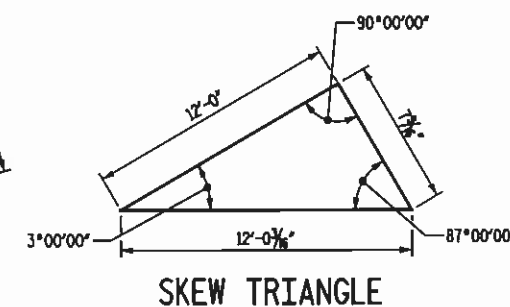


PART PLAN-ROOF SLAB

PART PLAN-FLOOR SLAB



CONNECTION OF WING FOOTING AND FLOOR SLAB WHEN SLAB IS THICKER THAN FOOTING



SKEW TRIANGLE

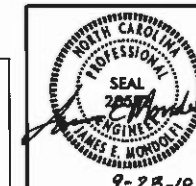
PROJECT NO. 42569  
COUNTY: CALDWELL  
STATION: 16 + 62.00  
REPLACES BRIDGE NO. 65

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

DOUBLE 12 FT. x 8 FT.  
CONCRETE BOX CULVERT  
93°00'00" SKEW

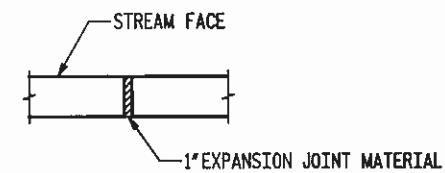
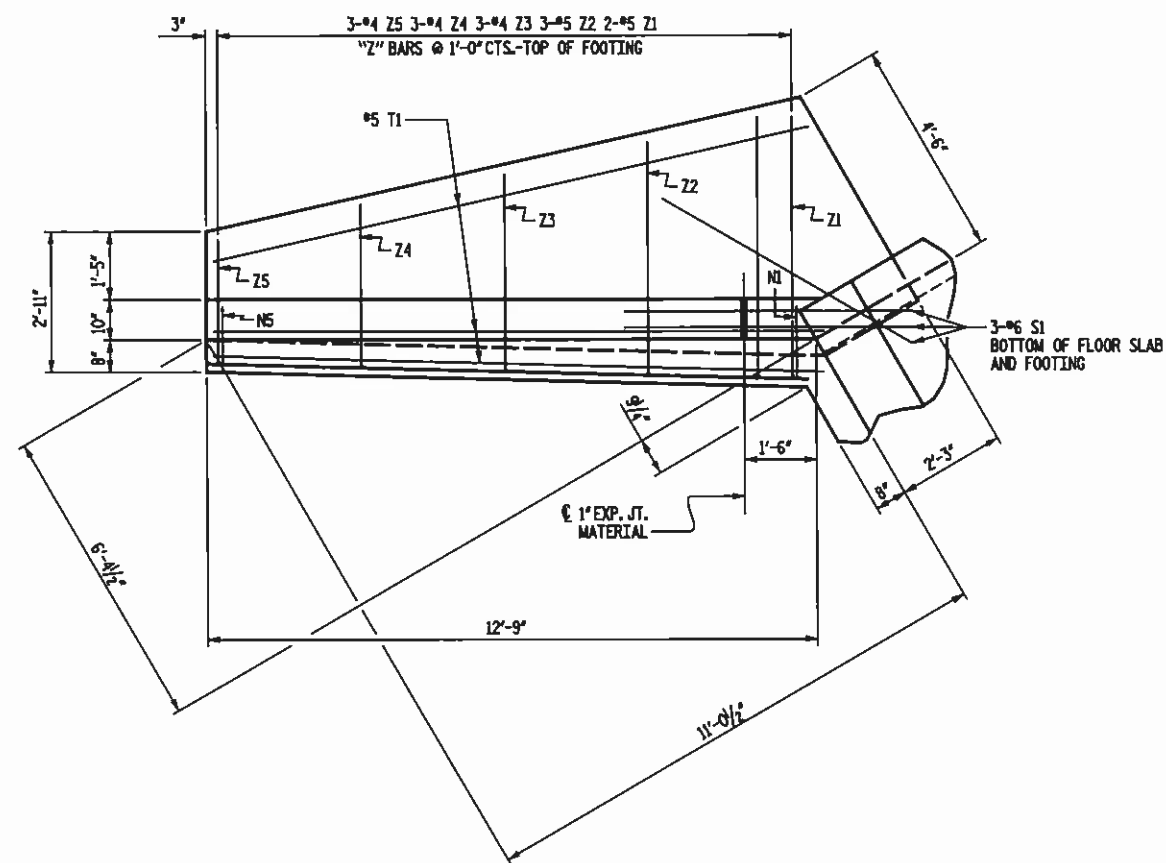
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|-----------|----|------|-----|----|------|-----------|
| NO.       | BY | DATE | NO. | BY | DATE |           |
| 1         |    |      | 3   |    |      | 2         |
| 2         |    |      | 4   |    |      | 15        |

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CONSULTING ENGINEERS  
5121 Kingston Way, Suite 100 Raleigh, NC 27607  
NCE License No. P-0258

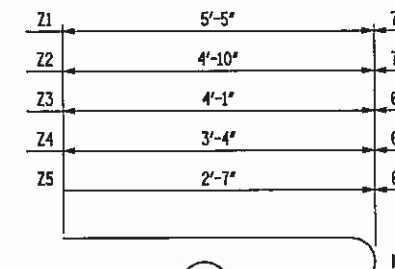
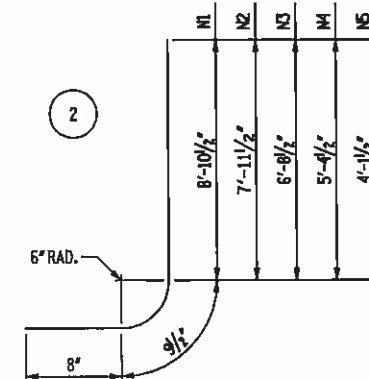
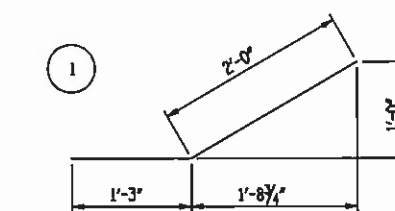


NOT TO SCALE

DRAWN BY: J.M. MORLEY DATE: JUNE 2009  
CHECKED BY: J.R. MONDOLFI DATE: JUNE 2009

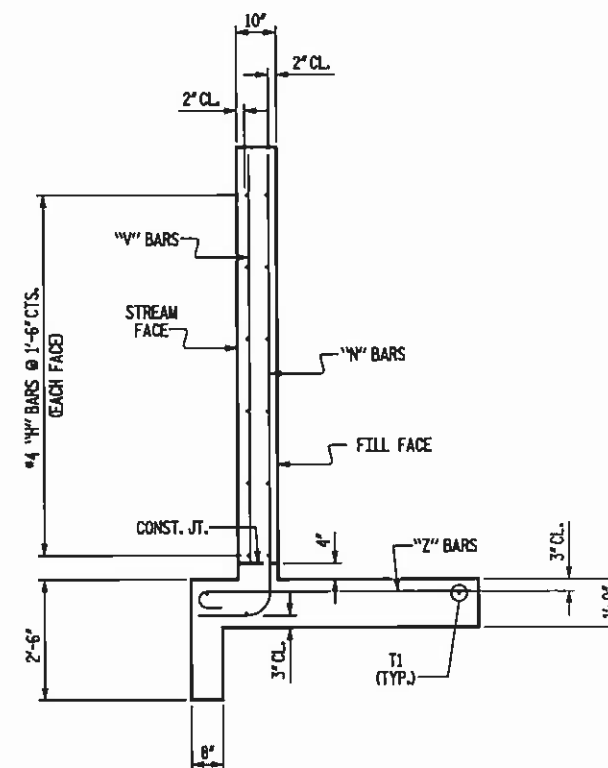
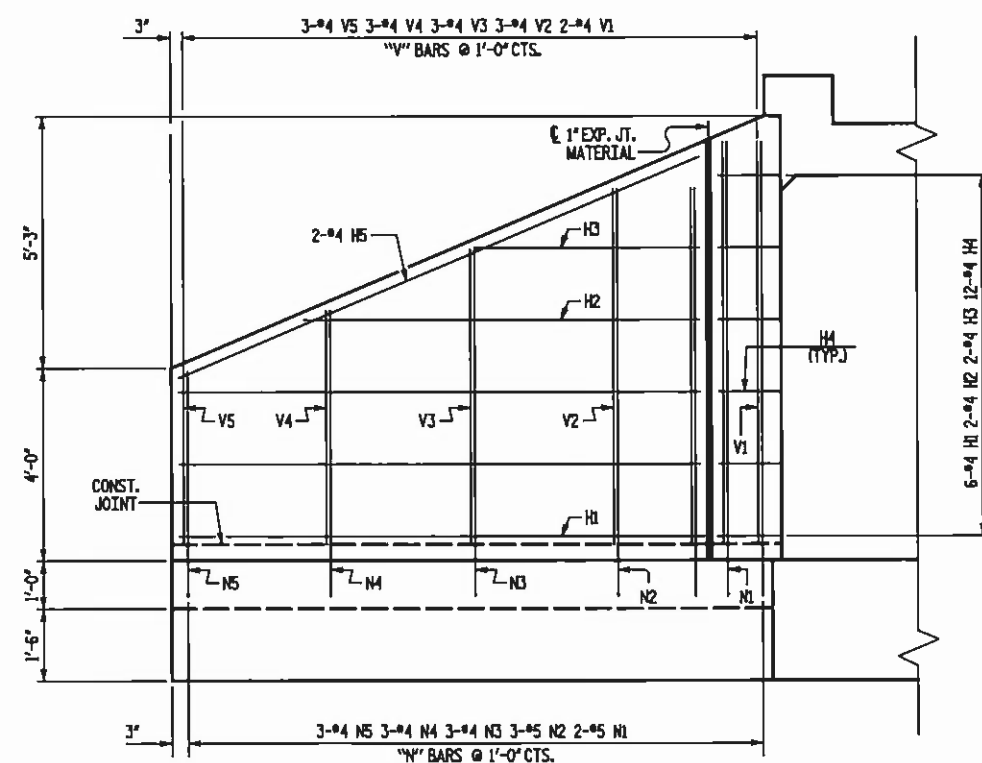


### EXPANSION JOINT DETAIL



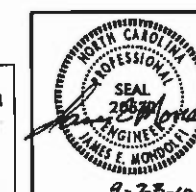
| BILL OF MATERIAL |     |      |      |         |        |
|------------------|-----|------|------|---------|--------|
| BAR              | NO. | SIZE | TYPE | LENGTH  | WEIGHT |
| H1               | 24  | Ø4   | STR  | 10'-10" | 174    |
| H2               | 8   | Ø4   | STR  | 8'-3"   | 44     |
| H3               | 8   | Ø4   | STR  | 4'-8"   | 25     |
| H4               | 48  | Ø4   | 1    | 3'-3"   | 104    |
| H5               | 8   | Ø4   | STR  | 11'-9"  | 63     |
|                  |     |      |      |         |        |
| N1               | 8   | Ø5   | 2    | 10'-4"  | 86     |
| N2               | 12  | Ø5   | 2    | 9'-5"   | 118    |
| N3               | 12  | Ø4   | 2    | 8'-2"   | 65     |
| N4               | 12  | Ø4   | 2    | 6'-10"  | 55     |
| N5               | 12  | Ø4   | 2    | 5'-7"   | 45     |
|                  |     |      |      |         |        |
| S1               | 12  | Ø6   | STR  | 6'-0"   | 108    |
|                  |     |      |      |         |        |
| T1               | 12  | Ø5   | STR  | 12'-9"  | 160    |
|                  |     |      |      |         |        |
| V1               | 8   | Ø4   | STR  | 8'-4"   | 45     |
| V2               | 12  | Ø4   | STR  | 7'-4"   | 59     |
| V3               | 12  | Ø4   | STR  | 6'-1"   | 49     |
| V4               | 12  | Ø4   | STR  | 4'-10"  | 39     |
| V5               | 12  | Ø4   | STR  | 3'-7"   | 29     |
|                  |     |      |      |         |        |
| Z1               | 8   | Ø5   | 3    | 6'-0"   | 50     |
| Z2               | 12  | Ø5   | 3    | 5'-5"   | 68     |
| Z3               | 12  | Ø4   | 3    | 4'-7"   | 37     |
| Z4               | 12  | Ø4   | 3    | 3'-10"  | 31     |
| Z5               | 12  | Ø4   | 3    | 3'-1"   | 25     |

|                                  |      |     |
|----------------------------------|------|-----|
| REINFORCING STEEL<br>FOR 4 WINGS | 1479 | LBS |
| CLASS A CONCRETE                 |      |     |
| 4 WINGS                          | 21.7 | CY  |
| 2 HEADWALLS                      | 2.5  | CY  |
| 2 END CURTAIN WALLS              | 2.9  | CY  |
| 1 STILL                          | 1.0  | CY  |
| TOTAL                            | 28.1 | CY  |



### TYPICAL WING SECTION

**NOT TO SCALE**

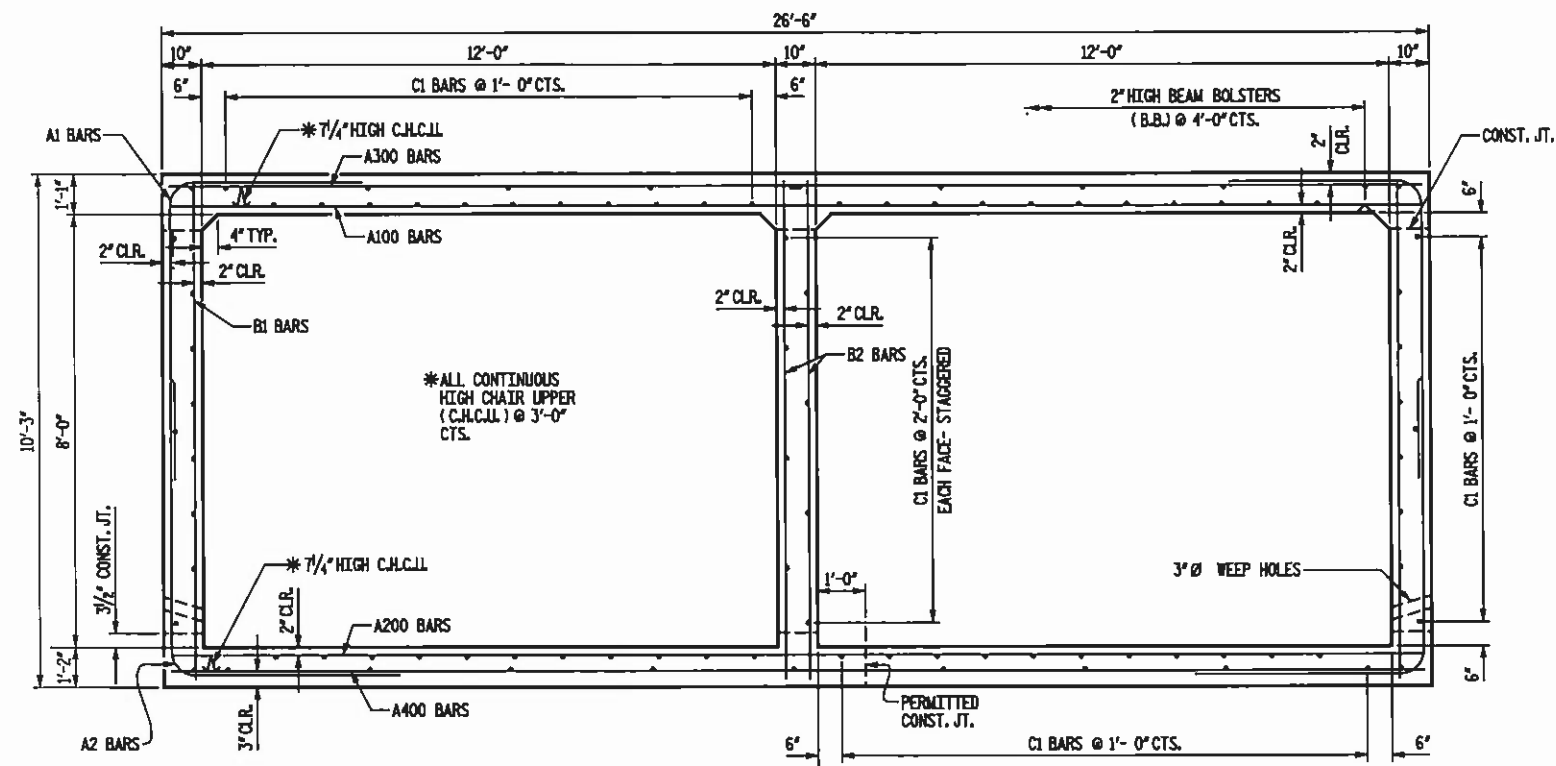


PROJECT NO. 42569  
COUNTY: CALDWELL  
STATION: 16 + 62.00  
REPLACES BRIDGE NO. 65

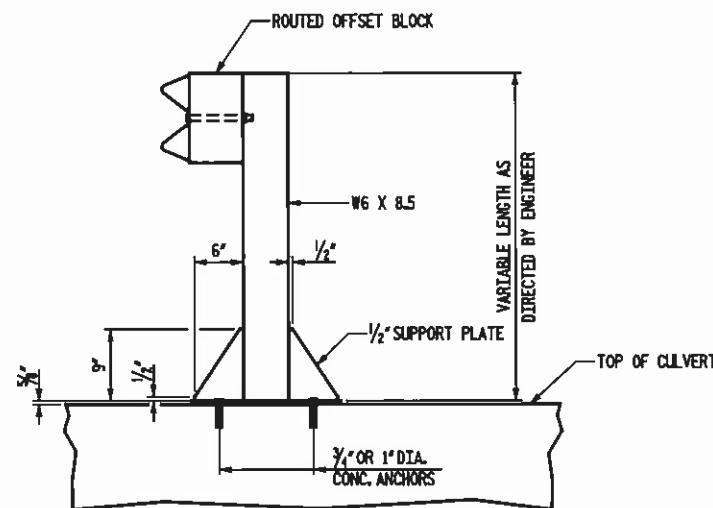
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

WINGS FOR  
CONCRETE BOX CULVERT  
H = 8'-0" SLOPE = 2:1  
93°00'00" SKEW

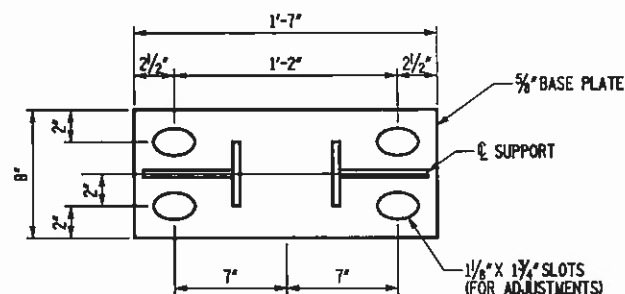
| REVISIONS |    |      |     |    |      | COUNT NO.    |
|-----------|----|------|-----|----|------|--------------|
| NO.       | BY | DATE | NO. | BY | DATE |              |
| 1         |    |      | 8   |    |      | TOTAL COUNTS |
| 2         |    |      | 4   |    |      | 15           |



**RIGHT ANGLE SECTION OF BARREL**  
THERE ARE 92 "C" BARS IN SECTION OF BARREL.



**ELEVATION**

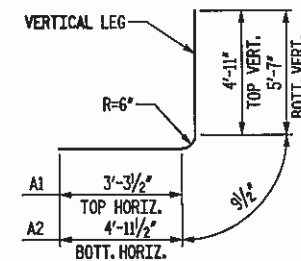


**PLAN**

**ANCHORAGE FOR GUARDRAIL**

### SPLICE LENGTH CHART

| BAR  | SIZE | SPLICE LENGTH |
|------|------|---------------|
| A200 | 5    | 1'-9"         |
| A400 | 6    | 2'-10"        |
| B1   | 4    | 1'-9"         |
| B3   | 4    | 1'-9"         |
| A1   | 5    | 1'-8"         |
| C1   | 4    | 1'-11"        |

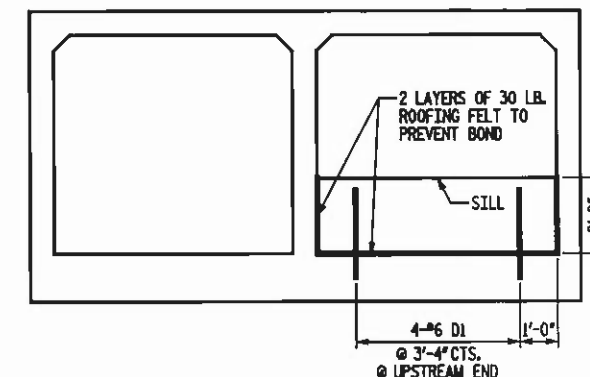


**BAR TYPE 6**  
BAR DIMENSIONS ARE OUT TO OUT

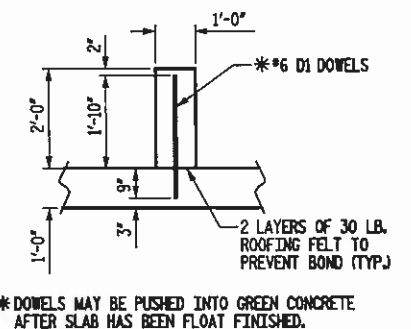
### REINFORCING STEEL BAR SCHEDULE

| LOCATION        | BAR  | NO.  | SIZE | TYPE | LENGTH | WEIGHT  | H LEG | V LEG      |
|-----------------|------|------|------|------|--------|---------|-------|------------|
| TOP SLAB POSV   | MAIN | A100 | 87   | 6    | STR    | 26'-1"  | 3408  |            |
| TOP SLAB POSV   | CUTS | A101 | 2    | 6    | STR    | 13'-4"  | 40    |            |
| BOT SLAB POSV   | MAIN | A200 | 93   | 5    | STR    | 26'-1"  | 2530  |            |
| BOT SLAB POSV   | CUTS | A201 | 2    | 5    | STR    | 14'-11" | 31    |            |
| TOP SLAB NEGV   | MAIN | A300 | 126  | 6    | STR    | 26'-1"  | 4936  |            |
| TOP SLAB NEGV   | CUTS | A301 | 4    | 6    | STR    | 8'-7"   | 52    |            |
| BOT SLAB NEGV   | MAIN | A400 | 126  | 6    | STR    | 26'-1"  | 4936  |            |
| BOT SLAB NEGV   | CUTS | A401 | 4    | 6    | STR    | 8'-7"   | 52    |            |
| CORNER (TOP)    |      | A1   | 258  | 5    | 6      | 9'-0"   | 2422  | 3'-3 1/2"  |
| CORNER (BOTTOM) |      | A2   | 258  | 6    | 6      | 11'-4"  | 4392  | 4'-11 1/2" |
| EXTWALL IN      |      | B1   | 178  | 4    | STR    | 9'-9"   | 1159  | 5'-7"      |
| INTWALL         |      | B2   | 178  | 4    | STR    | 9'-9"   | 1159  |            |
| LONGTD (C)      |      | C1   | 276  | 4    | STR    | 21'-0"  | 3872  |            |
| HEADWL (C)      |      | G1   | 8    | 5    | STR    | 26'-2"  | 218   |            |
| ENDS (C)        |      | S2   | 12   | 8    | STR    | 26'-2"  | 838   |            |
| SILL (C)        |      | D1   | 4    | 6    | STR    | 2'-7"   | 16    |            |

REINFORCING STEEL 30,061 LBS.



**ELEVATION**



**SECTION THROUGH SILL**

**CULVERT SILL DETAILS**

### TOTAL STRUCTURE QUANTITIES

|                                   |        |                  |
|-----------------------------------|--------|------------------|
| CLASS A CONCRETE                  |        |                  |
| BARREL @                          | 2.957  | CY/FT 174.5 C.Y. |
| WING ETC.                         | 28.1   | C.Y.             |
| TOTAL                             | 202.6  | C.Y.             |
| REINFORCING STEEL                 |        |                  |
| BARREL                            | 30,061 | LBS.             |
| WINGS ETC.                        | 1,479  | LBS.             |
| TOTAL                             | 31,540 | LBS.             |
| CULVERT EXCAVATION ----- LUMP SUM |        |                  |

PROJECT NO. 42569  
COUNTY: CALDWELL  
STATION: 16 + 62.00  
REPLACES BRIDGE NO. 65

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
BALDWIN

DOUBLE 12 FT. x 8 FT.  
CONCRETE BOX CULVERT  
93°00'00" SKEW

**Florence & Hutcheson**  
CONSULTING ENGINEERS  
5121 Elizabeth Way, Suite 100 Raleigh, NC 27607  
NC License No. P-0256

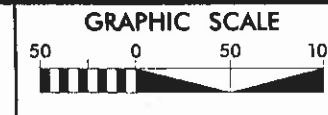
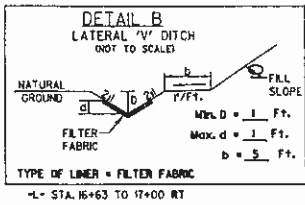
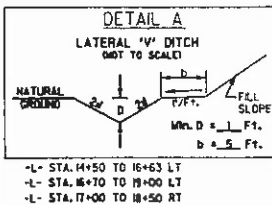
PROFESSIONAL  
SEAL  
20532  
JAMES E. MONROE  
9-25-10

| REVISIONS |    |      |     |    |      | REVISION NO. |
|-----------|----|------|-----|----|------|--------------|
| NO.       | BY | DATE | NO. | BY | DATE | 4            |
| 1         |    |      | 3   |    |      |              |
| 2         |    |      | 4   |    |      | 15           |

NOT TO SCALE

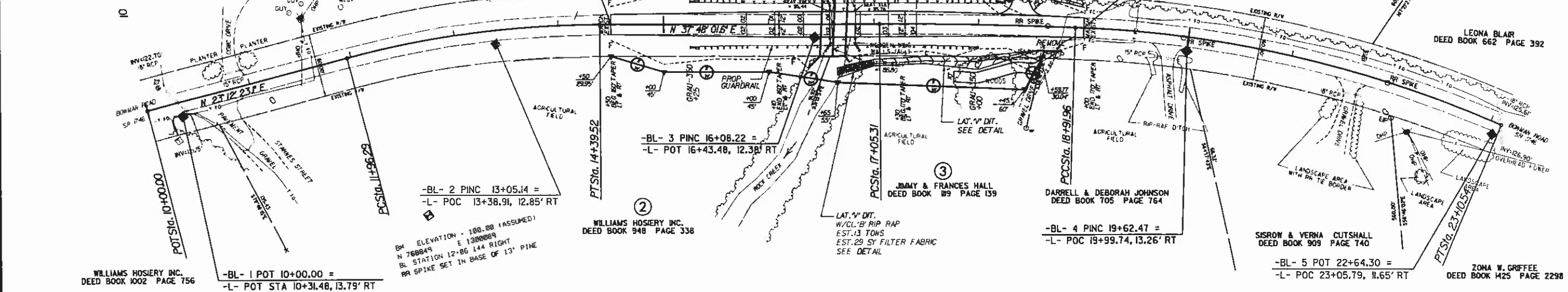
# DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY BGM ASSOCIATES FOR MONUMENT "BL-2" WITH ASSUMED NAD 83 STATE PLANE GRID COORDINATES OF NORTING: 7690000.00 (11) EASTING: 1300000.00 (11) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS NONE APPLIED THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "BL-2" TO L-STATION 14+50.00 IS N 28° 25' 49.0" E, 111.03' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS ASSUMED

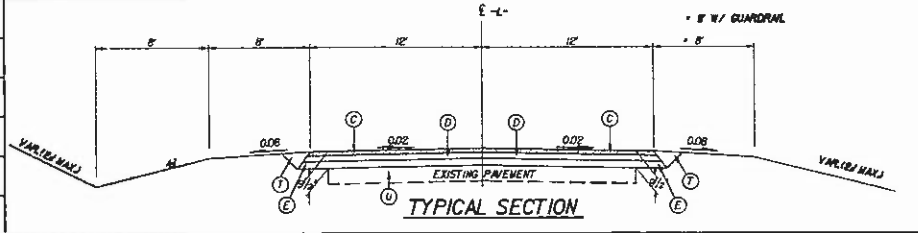


|                                  |  |                     |  |
|----------------------------------|--|---------------------|--|
| PROJECT REFERENCE NO.<br>BK-5118 |  | SHEET NO.           |  |
| RW SHEET NO.                     |  | HYDRAULICS ENGINEER |  |
| ROADWAY DESIGN ENGINEER          |  | SEAL 20253          |  |
| DAVID C. WALKER                  |  | KEVIN WILLIAMS      |  |
| 7-20-2010                        |  |                     |  |

| RIGHT OF WAY AREA DATA |                       |             |            |                      |                     |                  |
|------------------------|-----------------------|-------------|------------|----------------------|---------------------|------------------|
| PARCEL NO              | PROPERTY OWNERS NAME  | TOTAL ACRES | AREA TAKEN | AREA REMAINING RIGHT | AREA REMAINING LEFT | CONSTR. EASEMENT |
| 1                      | JOSEPH & GLENNE SIMS  | 0.13        |            |                      |                     |                  |
| 2                      | WILLIAMS HOSIERY INC. | 2.90        |            |                      |                     |                  |
| 3                      | JIMMY & FRANCES HALL  | 0.24        |            |                      |                     |                  |



| PAVEMENT SCHEDULE |                                        |
|-------------------|----------------------------------------|
| (C)               | 3" SURFACE COURSE, TYPE S9.5B          |
| (D)               | 2 1/2" INTERMEDIATE COURSE, TYPE H9.0B |
| (E)               | 4" BASE COURSE, TYPE B25.0B            |
| (T)               | EARTH MATERIAL                         |
| (U)               | EXISTING PAVEMENT                      |



BM # 1  
-L- STA. 12+40.32, 163.80' RT  
RR SPIKE SET IN BASE OF 13' PINE  
EL. 100.00 (ASSUMED)



PROJECT NO. 42569  
COUNTY: CALDWELL  
STATION: 16+62.00  
REPLACES BRIDGE NO. 65

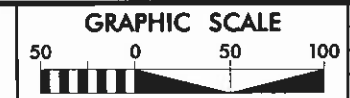
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BRIDGE NO. 65 ON SR 1746  
OVER ROCK CREEK

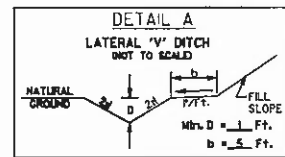
| REVISIONS |    |      |     | SHEET NO.    |      |
|-----------|----|------|-----|--------------|------|
| NO.       | BY | DATE | NO. | BY           | DATE |
| 1         |    |      | 3   |              |      |
| 2         |    |      | 4   |              |      |
|           |    |      |     | TOTAL SHEETS | 12   |

KO & ASSOCIATES, P.C.  
Consulting Engineers  
A Flannery & Hutchison, Inc. Company  
1317 ALPHEUS WAY SUITE 100 RALEIGH, NC 27601  
(919) 231-2881

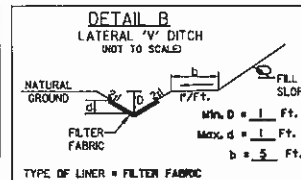
# EROSION CONTROL PLAN



|                         |                     |
|-------------------------|---------------------|
| PROJECT REFERENCE NO.   | SHEET NO.           |
| BK-5118                 | EC-1                |
| RW SHEET NO.            |                     |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

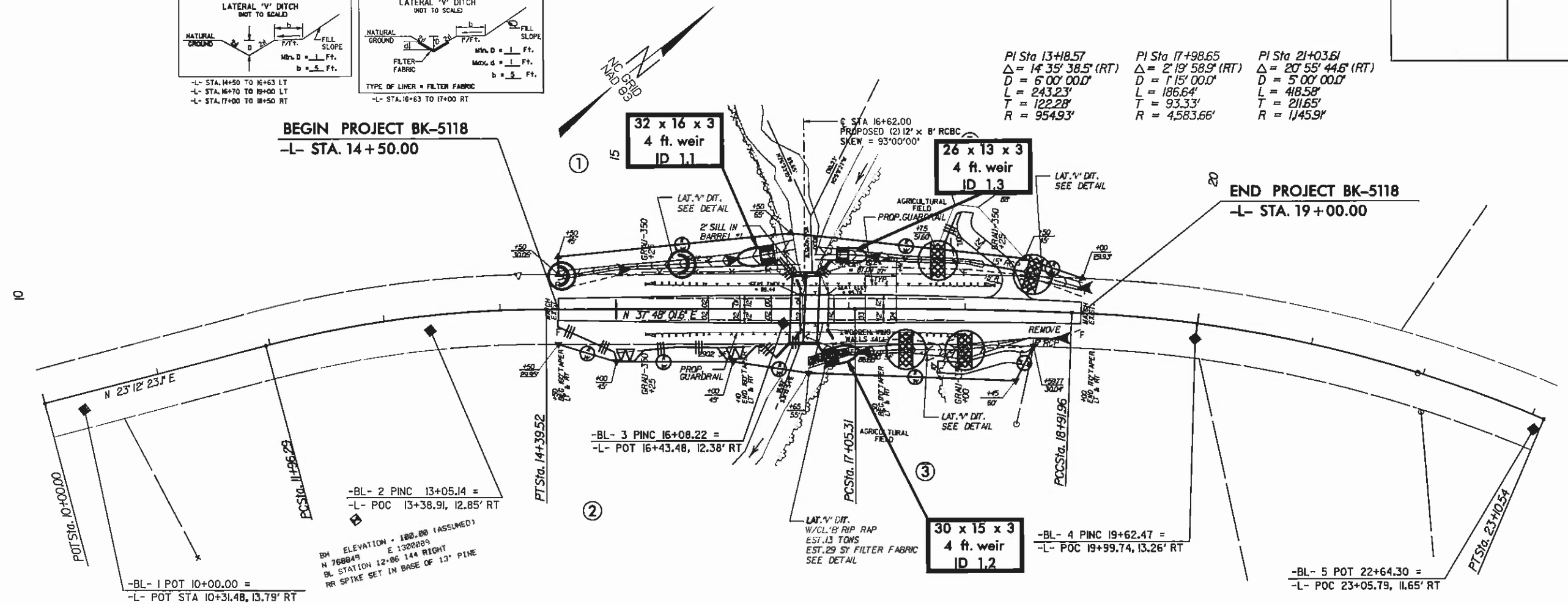


-L- STA. 14+50 TO 16+63 LT  
-L- STA. 16+70 TO 19+00 LT  
-L- STA. 17+00 TO 18+50 RT



TYPE OF LINER = FILTER FABRIC  
-L- STA. 16+63 TO 17+00 RT

BEGIN PROJECT BK-5118  
-L- STA. 14+50.00



PI Sta 13+18.57  
 $\Delta = 14' 35'' 38.5''$  (RT)  
 $D = 6' 00'' 00.0''$   
 $L = 243.23'$   
 $T = 122.28'$   
 $R = 954.93'$

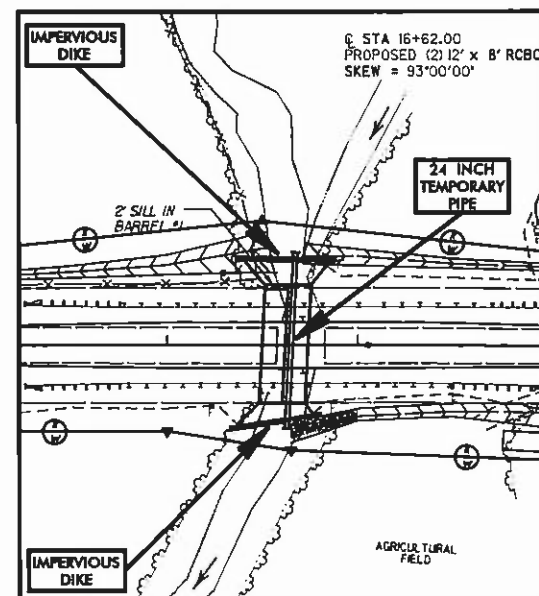
PI Sta 17+98.65  
 $\Delta = 2' 19'' 58.9''$  (RT)  
 $D = 1' 15'' 00.0''$   
 $L = 186.64'$   
 $T = 93.33'$   
 $R = 4,583.66'$

PI Sta 21+03.61  
 $\Delta = 20' 55'' 44.6''$  (RT)  
 $D = 5' 00'' 00.0''$   
 $L = 418.58'$   
 $T = 211.65'$   
 $R = 1,459.9'$

END PROJECT BK-5118  
-L- STA. 19+00.00

| Std. #  | Description                                                            | Symbol    |
|---------|------------------------------------------------------------------------|-----------|
| 1605.01 | Temporary Silt Fence                                                   |           |
| 1606.01 | Special Sediment Control Fence                                         |           |
| 1607.01 | Gravel Construction Entrance                                           |           |
| 1622.01 | Temporary Berms and Slope Drains                                       | — — — — — |
| 1630.06 | Special Stilling Basin                                                 |           |
| 1633.01 | Temporary Rock Silt Check Type-A                                       |           |
|         | Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM) |           |
|         | Temporary Rock Silt Check Type-B                                       |           |
|         | Wattle with Polyacrylamide (PAM)                                       |           |
| 1634.02 | Temporary Rock Sediment Dam Type-B                                     |           |

CULVERT CONSTRUCTION SEQUENCE (STA. 16+62)



CULVERT CONSTRUCTION SEQUENCE

1. UTILIZE SPECIAL STILLING BASIN(S) AS NEEDED THROUGHOUT CULVERT CONSTRUCTION.
2. CONSTRUCT IMPERVIOUS DIKES AND INSTALL 24 INCH TEMPORARY PIPE, DIVERTING FLOW.
3. CONSTRUCT CULVERT.
4. REMOVE IMPERVIOUS DIKES AND TEMPORARY PIPE, ALLOWING FLOW THROUGH CULVERT.
5. REMOVE ANY REMAINING SPECIAL STILLING BASIN(S), AND COMPLETE ROADWAY.

ROADSIDE ENVIRONMENTAL UNIT  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, NC  
2006 STANDARD SPECIFICATIONS

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.

PROJECT NO. 42569  
COUNTY: CALDWELL  
STATION: 16+62.00  
REPLACES BRIDGE NO. 65

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BRIDGE NO. 65 ON SR 1746  
OVER ROCK CREEK

EROSION CONTROL PLAN AND  
DETAILS ARE PROVIDED BY  
THE NCDOT ROADSIDE  
ENVIRONMENTAL UNIT

| REVISIONS       |    |      |     |      | SHEET NO. |
|-----------------|----|------|-----|------|-----------|
| NO.             | BY | DATE | NO. | DATE |           |
| 1               |    |      | 2   |      | 6         |
| 2               |    |      | 4   |      |           |
| TOTAL REVISIONS |    |      |     |      | 15        |

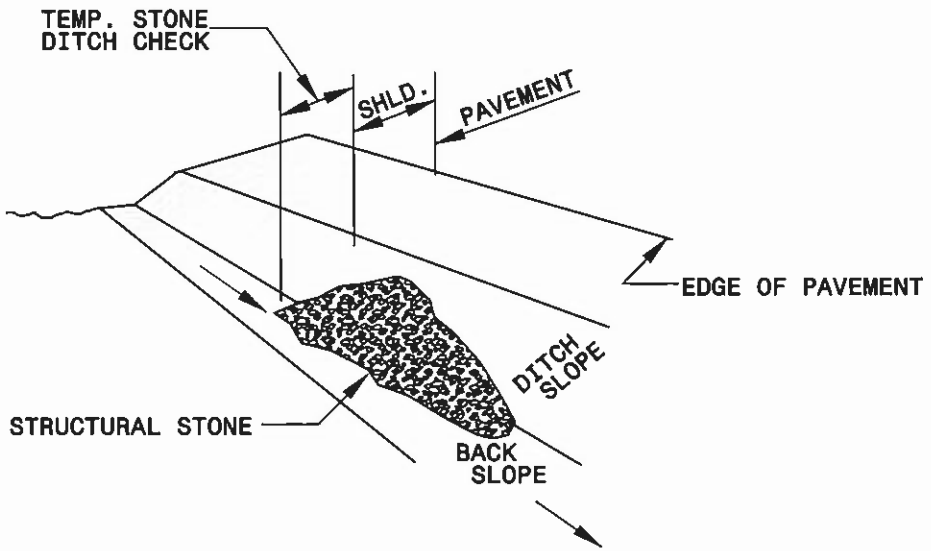


# EROSION CONTROL PLAN



|                         |                     |
|-------------------------|---------------------|
| PROJECT REFERENCE NO.   | SHEET NO.           |
| BK-5118                 | EC-2                |
| B/W SHEET NO.           |                     |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

## TEMPORARY ROCK SILT CHECK TYPE 'B' DETAIL

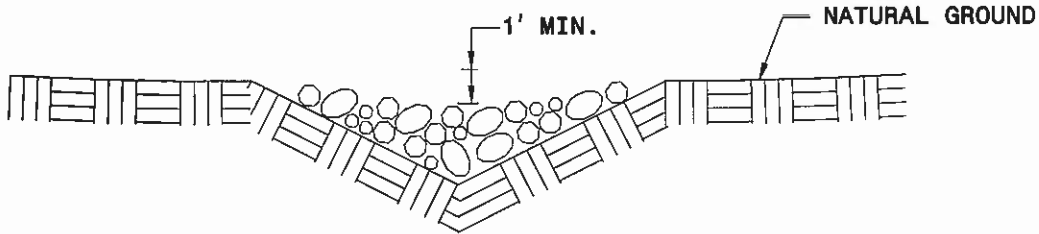


ISOMETRIC VIEW

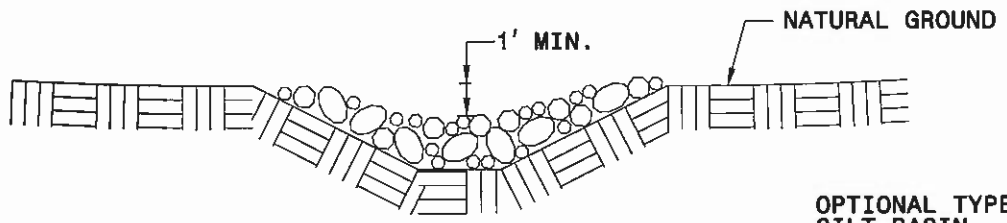
NOTES:

USE CLASS 'B' EROSION CONTROL STONE FOR STRUCTURAL STONE.

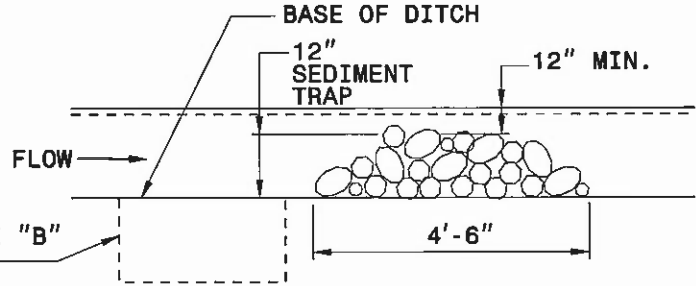
THE ENGINEER MAY DIRECT THE OPTION OF CLASS "A" STONE FOR SITES HAVING LESS THAN ONE (1) ACRE DRAINAGE AREA AND A DITCH GRADE LESS THAN 3%.



CROSS SECTION VEE DITCH



CROSS SECTION TRAPEZOIDAL DITCH



ELEVATION VIEW

ROADSIDE ENVIRONMENTAL UNIT  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, NC.  
2006 STANDARD SPECIFICATIONS

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

PROJECT NO. 42569  
COUNTY: CALDWELL  
STATION: 16+62.00  
REPLACES BRIDGE NO. 65

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BRIDGE NO. 65 ON SR 1746  
OVER ROCK CREEK

EROSION CONTROL PLAN AND  
DETAILS ARE PROVIDED BY  
THE NCDOT ROADSIDE  
ENVIRONMENTAL UNIT

| REVISIONS |    |      |     |    |      | SHEET NO.          |
|-----------|----|------|-----|----|------|--------------------|
| NO.       | BY | DATE | NO. | BY | DATE | 7                  |
| 1         |    |      | 3   |    |      | TOTAL SHEETS<br>15 |
| 2         |    |      | 4   |    |      |                    |

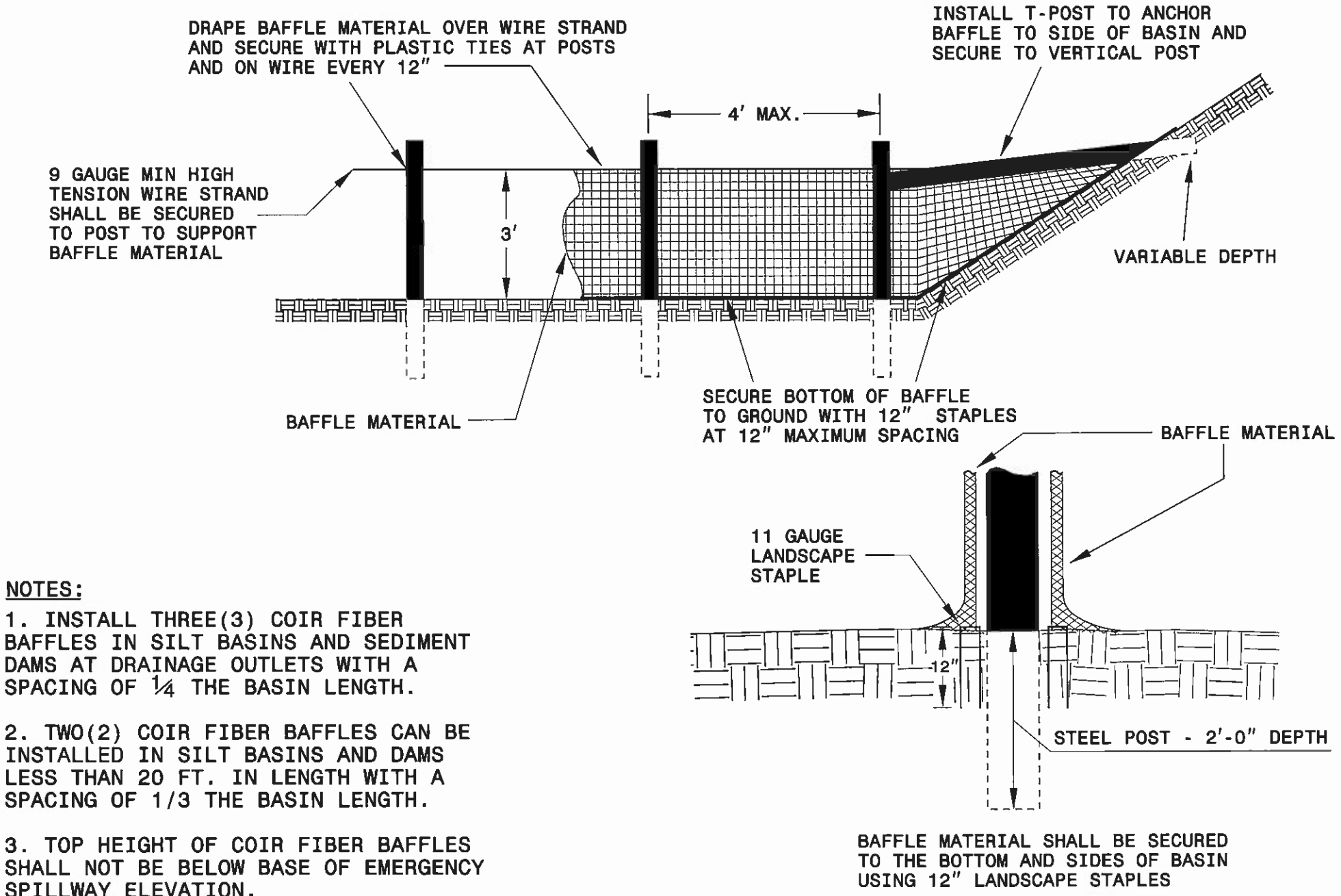


# EROSION CONTROL PLAN



|                         |                     |
|-------------------------|---------------------|
| PROJECT REFERENCE NO.   | SHEET NO.           |
| BK-5118                 | EC-3                |
| RDW SHEET NO.           |                     |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

## COIR FIBER BAFFLE DETAIL



- NOTES:**
1. INSTALL THREE(3) COIR FIBER BAFFLES IN SILT BASINS AND SEDIMENT DAMS AT DRAINAGE OUTLETS WITH A SPACING OF  $\frac{1}{4}$  THE BASIN LENGTH.
  2. TWO(2) COIR FIBER BAFFLES CAN BE INSTALLED IN SILT BASINS AND DAMS LESS THAN 20 FT. IN LENGTH WITH A SPACING OF  $\frac{1}{3}$  THE BASIN LENGTH.
  3. TOP HEIGHT OF COIR FIBER BAFFLES SHALL NOT BE BELOW BASE OF EMERGENCY SPILLWAY ELEVATION.

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2006 STANDARD SPECIFICATIONS

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

PROJECT NO. 42569  
COUNTY: CALDWELL  
STATION: 16+62.00  
REPLACES BRIDGE NO. 65

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BRIDGE NO. 65 ON SR 1746  
OVER ROCK CREEK

EROSION CONTROL PLAN AND  
DETAILS ARE PROVIDED BY  
THE NCDOT ROADSIDE  
ENVIRONMENTAL UNIT

| REVISIONS    |    |      |     |    |      | SHEET NO. |
|--------------|----|------|-----|----|------|-----------|
| NO.          | BY | DATE | NO. | BY | DATE |           |
| 1            |    |      | 3   |    |      | 8         |
| 2            |    |      | 4   |    |      |           |
| TOTAL SHEETS |    |      |     |    |      | 15        |

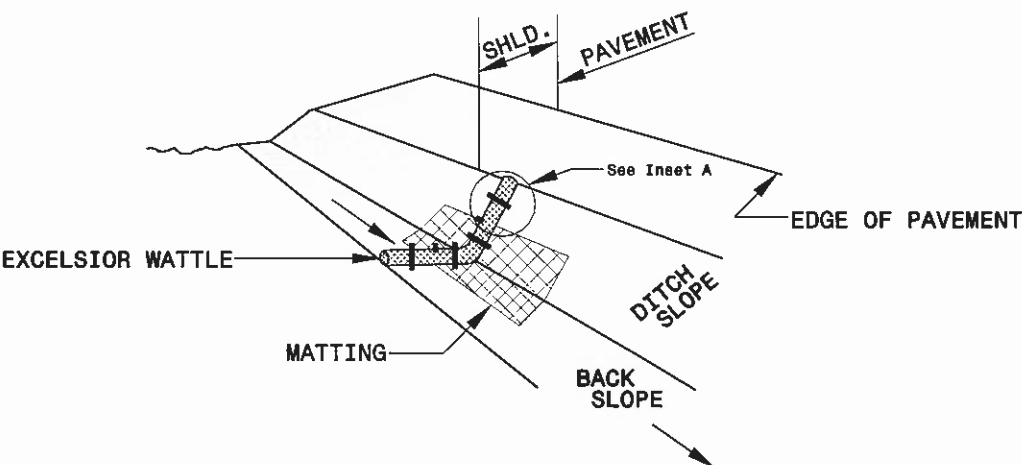


# EROSION CONTROL PLAN

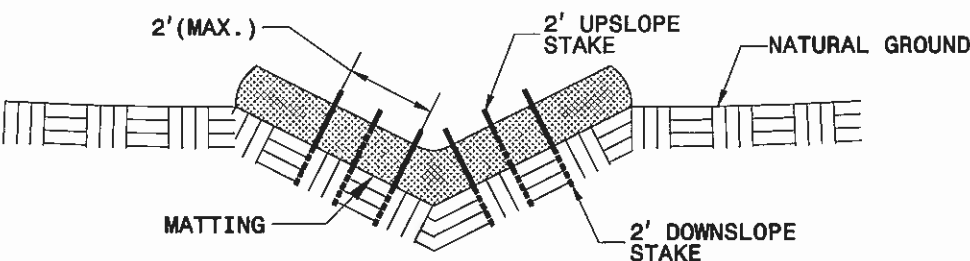


|                         |                     |
|-------------------------|---------------------|
| PROJECT REFERENCE NO.   | SHEET NO.           |
| BK-5118                 | EC-4                |
| RHW SHEET NO.           |                     |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

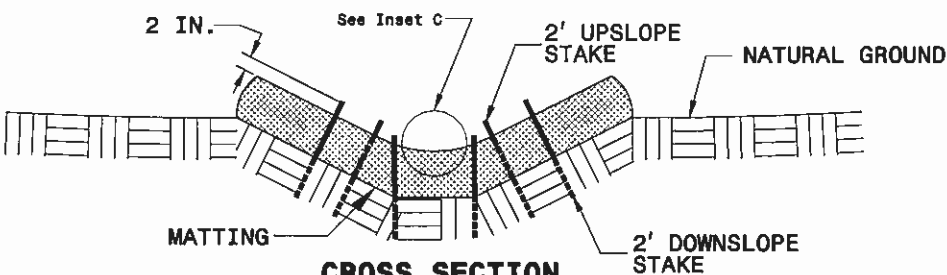
## WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL



ISOMETRIC VIEW



CROSS SECTION  
VEE DITCH



CROSS SECTION  
TRAPEZOIDAL DITCH

### NOTES:

USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE.

USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.

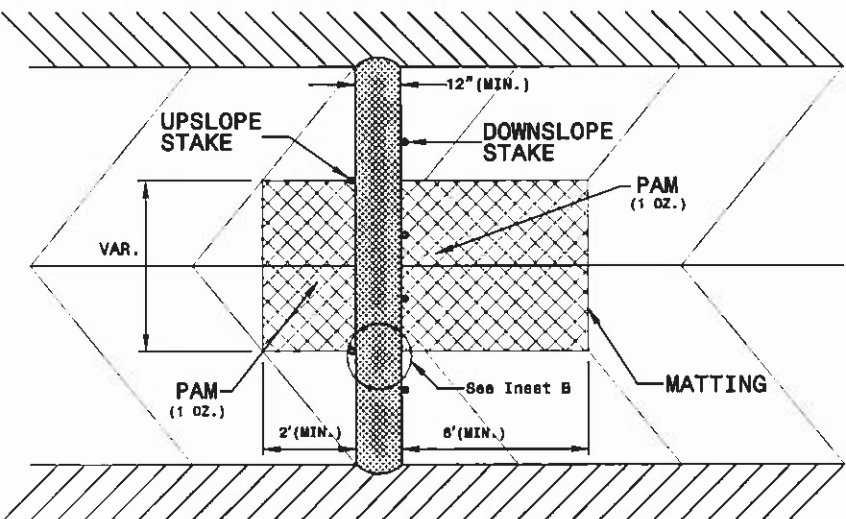
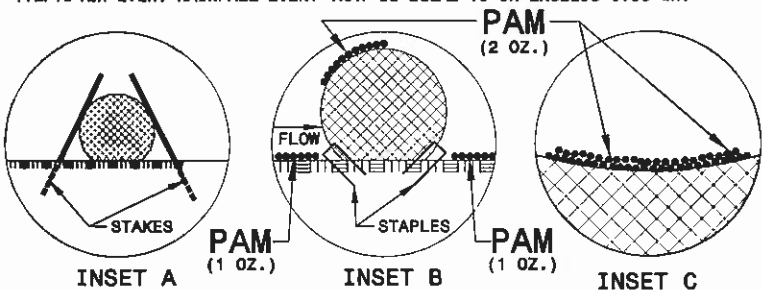
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

INSTALL MATTING IN ACCORDANCE WITH SECTION 1831 OF THE STANDARD SPECIFICATIONS.

PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH WATTLE.

INITIALLY APPLY 2 OUNCES OF ANIONIC OR NEUTRALLY CHARGED PAM OVER WATTLE WHERE WATER WILL FLOW AND 1 OUNCE OF PAM ON MATTING ON EACH SIDE OF WATTLE. REAPPLY PAM AFTER EVERY RAINFALL EVENT THAT IS EQUAL TO OR EXCEEDS 0.50 IN.



TOP VIEW

ROADSIDE ENVIRONMENTAL UNIT  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.  
2006 STANDARD SPECIFICATIONS

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REQUIRE PRIOR APPROVAL BY ENGINEER.

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

PROJECT NO. 42569  
COUNTY: CALDWELL  
STATION: 16+62.00  
REPLACES BRIDGE NO. 65

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BRIDGE NO. 65 ON SR 1746  
OVER ROCK CREEK

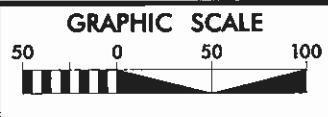
EROSION CONTROL PLAN AND  
DETAILS ARE PROVIDED BY  
THE NCDOT ROADSIDE  
ENVIRONMENTAL UNIT

| REVISIONS |    |      |     |    |      | REVISION NO. |
|-----------|----|------|-----|----|------|--------------|
| NO.       | BY | DATE | NO. | BY | DATE | 9            |
| 1         |    |      | 2   |    |      |              |
| 2         |    |      | 4   |    |      |              |

TOTAL SHEETS

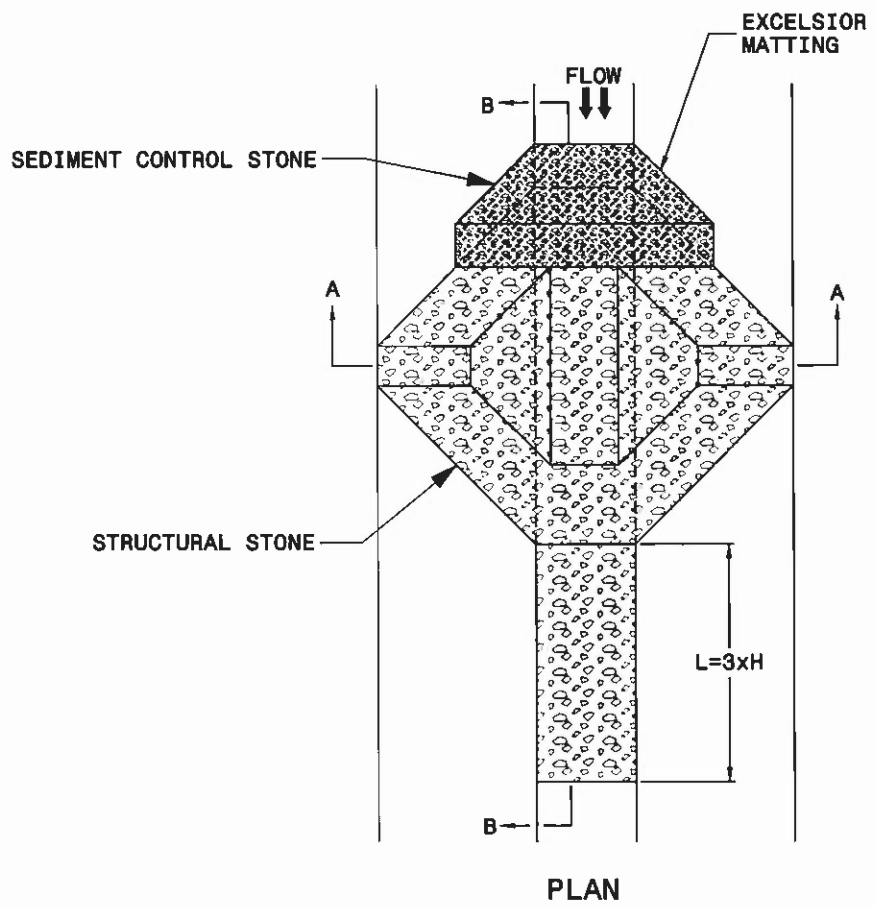
15

# EROSION CONTROL PLAN

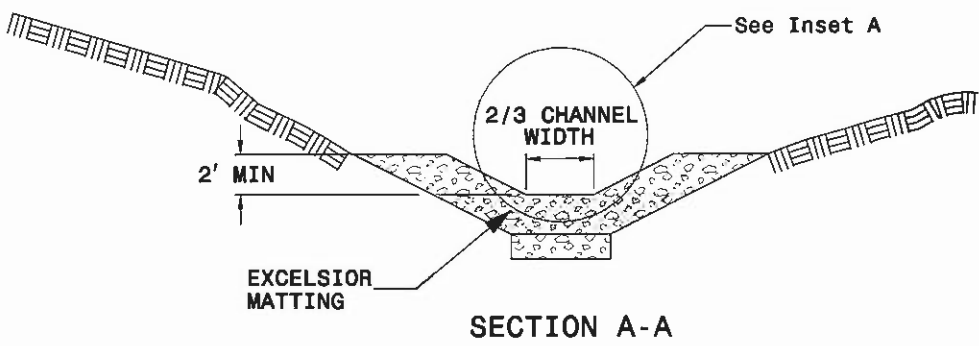


|                         |                     |
|-------------------------|---------------------|
| PROJECT REFERENCE NO.   | SHEET NO.           |
| BK-5118                 | EC-5                |
| RAW SHEET NO.           |                     |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

## TEMPORARY ROCK SILT CHECK TYPE 'A' WITH EXCELSIOR MATTING AND POLYACRYLAMIDE (PAM)



PLAN



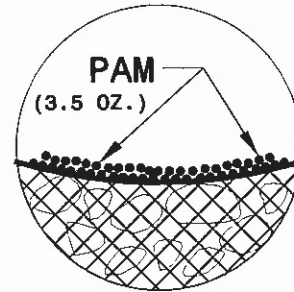
SECTION A-A

### NOTES

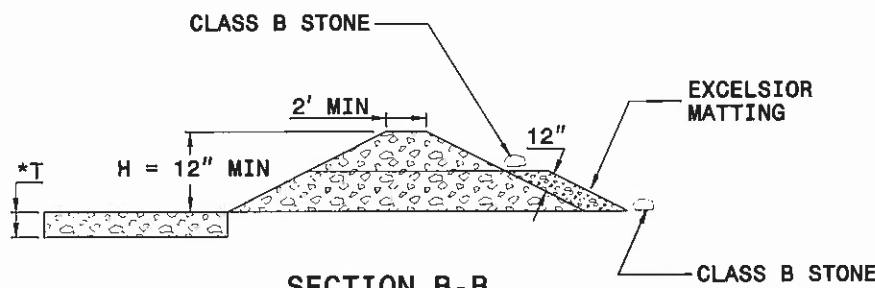
USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH ROCK SILT CHECK.

INITIALLY APPLY 3.5 OUNCES OF POLYACRYLAMIDE (PAM) TO TOP OF MATTING SECTION AND AFTER EVERY RAINFALL EVENT THAT EQUALS OR EXCEEDS 0.50 INCHES.



INSET A



SECTION B-B

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

NOT TO SCALE

ROADSIDE ENVIRONMENTAL UNIT  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, NC  
2006 STANDARD SPECIFICATIONS

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PROJECT NO. 42569  
COUNTY: CALDWELL  
STATION: 16+62.00  
REPLACES BRIDGE NO. 65

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

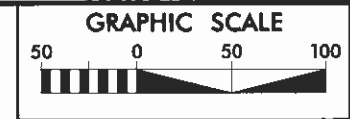
BRIDGE NO. 65 ON SR 1746  
OVER ROCK CREEK

EROSION CONTROL PLAN AND DETAILS ARE PROVIDED BY THE NCDOT ROADSIDE ENVIRONMENTAL UNIT

| REVISIONS |    |      |     |    |      | SHEET NO. |
|-----------|----|------|-----|----|------|-----------|
| NO.       | BY | DATE | NO. | BY | DATE |           |
| 1         |    |      | 3   |    |      | 10        |
| 2         |    |      | 4   |    |      | 15        |

# EROSION CONTROL PLAN

## MATTING INSTALLATION DETAIL

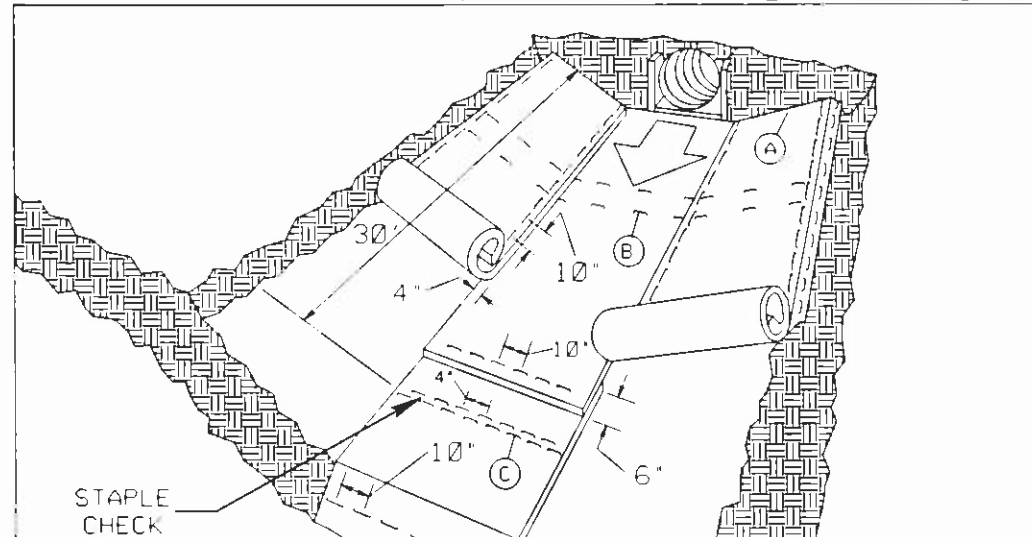


|                                          |                          |
|------------------------------------------|--------------------------|
| PROJECT REFERENCE NO.<br><b>BK-5118</b>  | SHEET NO.<br><b>EC-6</b> |
| R/W SHEET NO.<br>ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER      |

ROADSIDE ENVIRONMENTAL UNIT  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.  
2006 STANDARD SPECIFICATIONS

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**MATTING IN DITCHES**

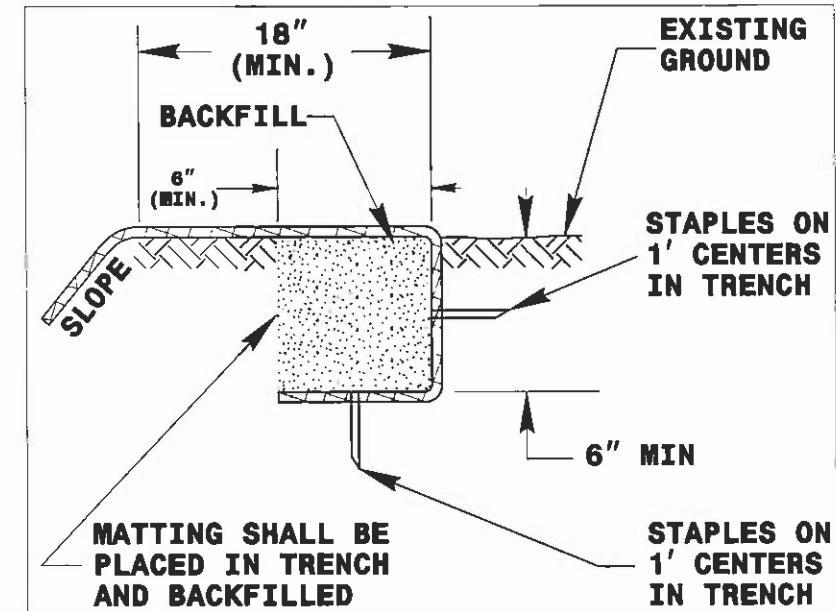
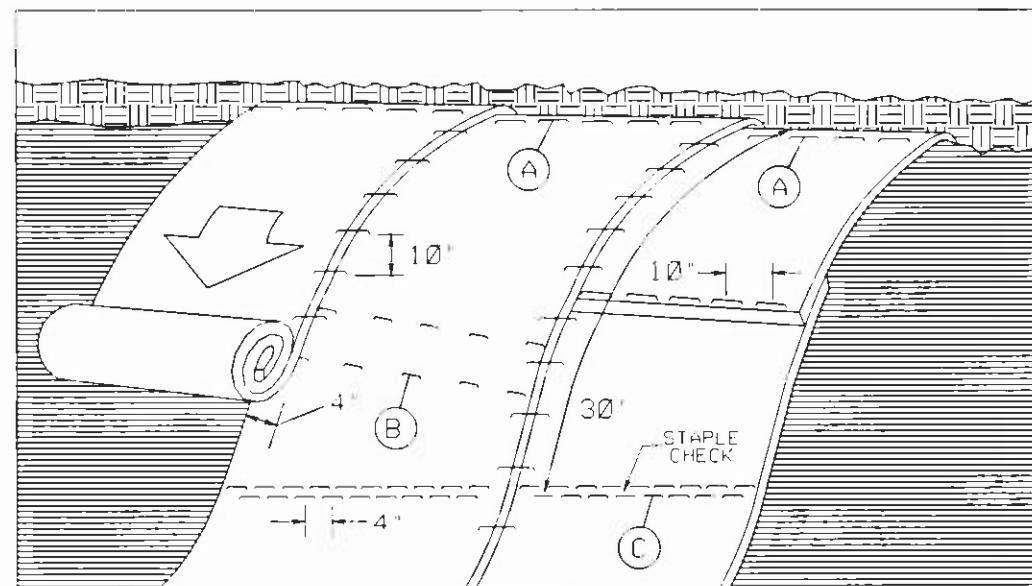


DIAGRAM (A)



**MATTING ON SLOPES**

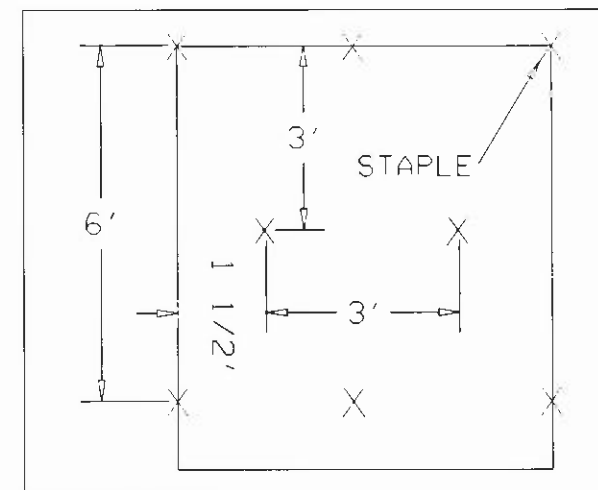


DIAGRAM (B)

STAPLE CHECK PATTERN

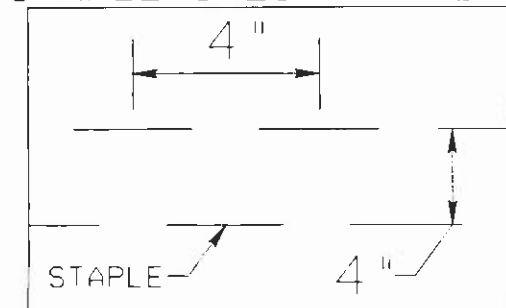


DIAGRAM (C)

**NOTES:**

THIS DETAIL APPLIES TO STRAW, EXCELSIOR, AND PERMANENT SOIL REINFORCEMENT MAT (PSRM) INSTALLATION.

STAPLES SHALL BE NO. 11 GAUGE STEEL WIRE FORMED INTO A "U" SHAPE WITH A MINIMUM THROAT WIDTH OF 1 INCH AND NOT LESS THAN 6 INCHES IN LENGTH.

NOT TO SCALE

PROJECT NO. 42569  
COUNTY: CALDWELL  
STATION: 16+62.00  
REPLACES BRIDGE NO. 65

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BRIDGE NO. 65 ON SR 1746  
OVER ROCK CREEK

EROSION CONTROL PLAN AND  
DETAILS ARE PROVIDED BY  
THE NCDOT ROADSIDE  
ENVIRONMENTAL UNIT

| REVISIONS |    |      |     |    |      | SHEET NO.<br><b>11</b>    |
|-----------|----|------|-----|----|------|---------------------------|
| NO.       | BY | DATE | NO. | BY | DATE |                           |
| 1         |    |      | 3   |    |      | TOTAL SHEETS<br><b>15</b> |
| 2         |    |      | 4   |    |      |                           |

7/2/2008  
8/14/2008  
P:\McM\01\JL\NC\Caldwell\65\MA110038\TrafficControl\TCP\TCDPL.dgn  
Florence & Hutcheson, Inc.

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS"-  
ROADWAY DESIGN UNIT-N.C. DEPARTMENT OF TRANSPORTATION-RALEIGH, N.C.,  
DATED JULY 2008 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE  
CONSIDERED A PART OF THESE PLANS:

| STD. NO. | TITLE                                           |
|----------|-------------------------------------------------|
| 1101.03  | TEMPORARY ROAD CLOSURES                         |
| 1101.04  | TEMPORARY SHOULDER CLOSURES                     |
| 1145.01  | BARRICADES                                      |
| 1205.01  | PAVEMENT MARKINGS - LINE TYPES & OFFSETS        |
| 1205.02  | PAVEMENT MARKINGS - 2 LANE & MULTILANE ROADWAYS |
| 1205.12  | PAVEMENT MARKINGS - BRIDGES                     |
| 1261.01  | GUARDRAIL & BARRIER DELINEATOR SPACING          |
| 1261.02  | GUARDRAIL & BARRIER DELINEATOR TYPES            |
| 1262.01  | GUARDRAIL END DELINEATION                       |

GENERAL NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL  
DRAWINGS, STANDARD DETAILS AND ROADWAY DETAILS ARE NOT ATTAINABLE  
TO MEET FIELD CONDITIONS OR RESULT IN DUPLICATE, OR UNDESIRED OVERLAPPING  
OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING  
OR REMOVAL OF DEVICES, AS DIRECTED BY THE ENGINEER.

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF  
THE CONSTRUCTION PROJECT, EXCEPT WHEN OTHERWISE NOTED IN THE PLAN,  
OR DIRECTED BY THE ENGINEER.

TRAFFIC PATTERN ALTERATIONS

- A) NOTIFY THE ENGINEER TWENTY ONE (21) CALENDAR DAYS PRIOR TO ANY TRAFFIC  
PATTERN ALTERATION.

SIGNING

- B) PROVIDE PERMANENT SIGNING.
- C) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY  
TRAFFIC PATTERN.

TRAFFIC CONTROL DEVICES

- D) PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED,  
OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.

PAVEMENT MARKINGS AND MARKERS

- E) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE  
AS FOLLOWS:

| ROAD NAME                  | MARKING |
|----------------------------|---------|
| 1. SR 1746<br>(BOWMAN RD.) | PAINT   |

- F) PLACE AT LEAST TWO APPLICATIONS OF PAINT PAVEMENT MARKINGS ON THE  
FINAL WEARING SURFACE ON NEW ASPHALT PAVEMENT. PLACE ADDITIONAL  
APPLICATIONS OF PAINT UPON SUFFICIENT DRYING TIME, AS DETERMINED BY  
THE ENGINEER.
- G) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING  
LINES.

LOCAL NOTES

- 1) CONTRACTOR TO MAINTAIN ACCESS TO ALL DRIVEWAYS, WITHIN THE PROJECT LIMITS,  
AT ALL TIMES.

PHASE I

- STEP 1: - USING ROADWAY STANDARD DRAWING NUMBER 1101.04, SHEET 1 OF 1, INSTALL ALL  
DETOUR SIGNING KEEPING SIGNS COVERED (SEE SHEET 13).

WORKING IN A CONTINUOUS MANNER, COMPLETE THE FOLLOWING WORK IN PHASE I, STEP 2.

- STEP 2: - USING ROADWAY STANDARD DRAWING NUMBER 1101.03, SHEET 1 OF 8, CLOSE  
SR 1746 (BOWMAN RD.) TO TRAFFIC, UNCOVER ALL DETOUR SIGNING AND SHIFT  
SIGNS AND SHIFT TRAFFIC TO DETOUR (SEE SHEET 13).

- STEP 3: - DISMANTLE AND REMOVE EXISTING BRIDGE NUMBER 65.

- STEP 4: - COMPLETE CONSTRUCTION OF PROPOSED STRUCTURE, APPROACH ROADWAY TIE-INS, AND  
ASSOCIATED ITEMS.

- STEP 5: - PLACE FINAL PAVEMENT MARKINGS (PAINT) ON SR 1746 (BOWMAN RD.).

WORKING IN A CONTINUOUS MANNER, COMPLETE THE FOLLOWING WORK IN PHASE I, STEP 6.

- STEP 6: - USING ROADWAY STANDARD DRAWING NUMBER 1101.04, SHEET 1 OF 1, REMOVE ALL  
DETOUR SIGNING, ALL TRAFFIC CONTROL DEVICES AND OPEN SR 1746 (BOWMAN RD.)  
TO TRAFFIC.

FINAL PAVT MARKING SCHEDULE

| SYMBOL | DESCRIPTION                  | QUANTITY<br>BREAKDOWN  | PAY ITEM   | TOTAL<br>QUANTITY |
|--------|------------------------------|------------------------|------------|-------------------|
|        |                              | PAVEMENT MARKING LINES |            |                   |
| PA     | WHITE EDGELINE 2X            | 1,800 LF               | PAINT (4") |                   |
| PI     | YELLOW DOUBLE CENTER LINE 2X | 1,800 LF               |            |                   |
|        |                              |                        | TOTAL      | 3,600 LF          |

PROJECT NO. 42569  
COUNTY: CALDWELL  
STATION: 16+62.00  
REPLACES BRIDGE NO. 65

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

CULVERT ON SR 1746  
OVER ROCK CREEK



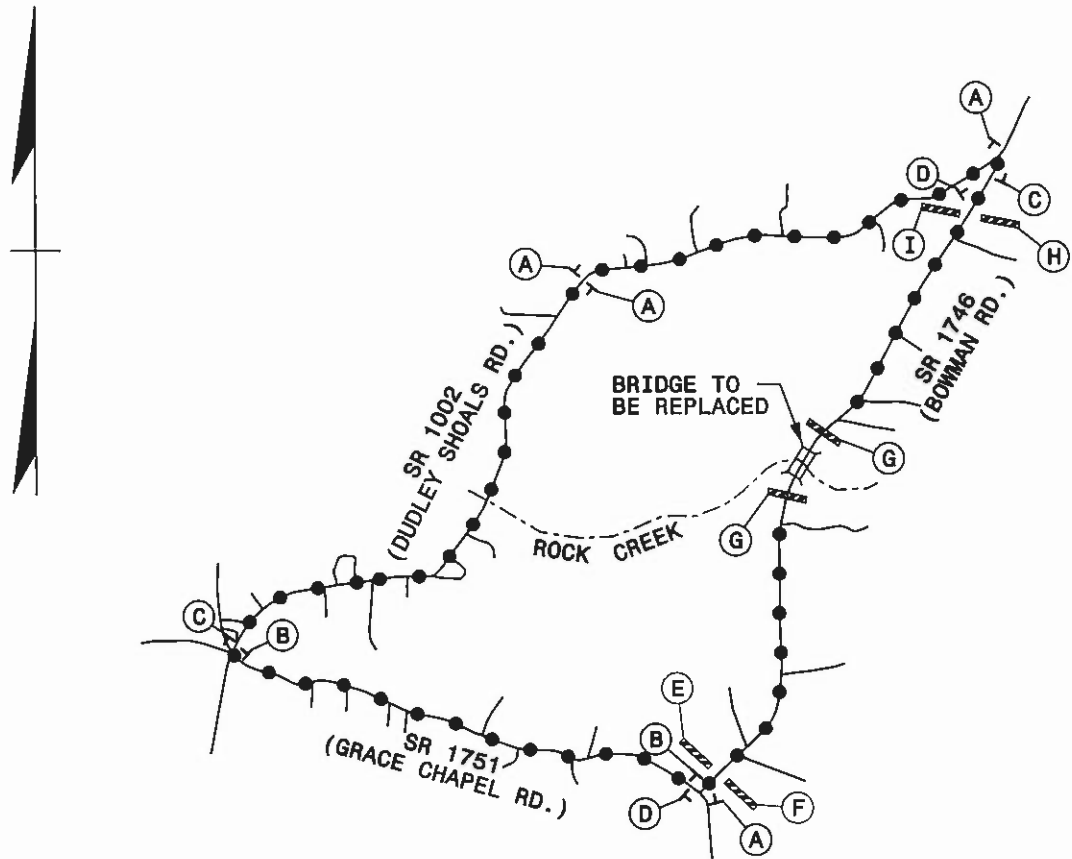
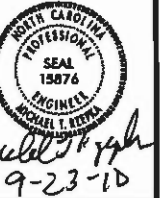
Florence & Hutcheson

CONSULTING ENGINEERS

5121 Kingsman Way, Suite 100 Raleigh, NC 27607

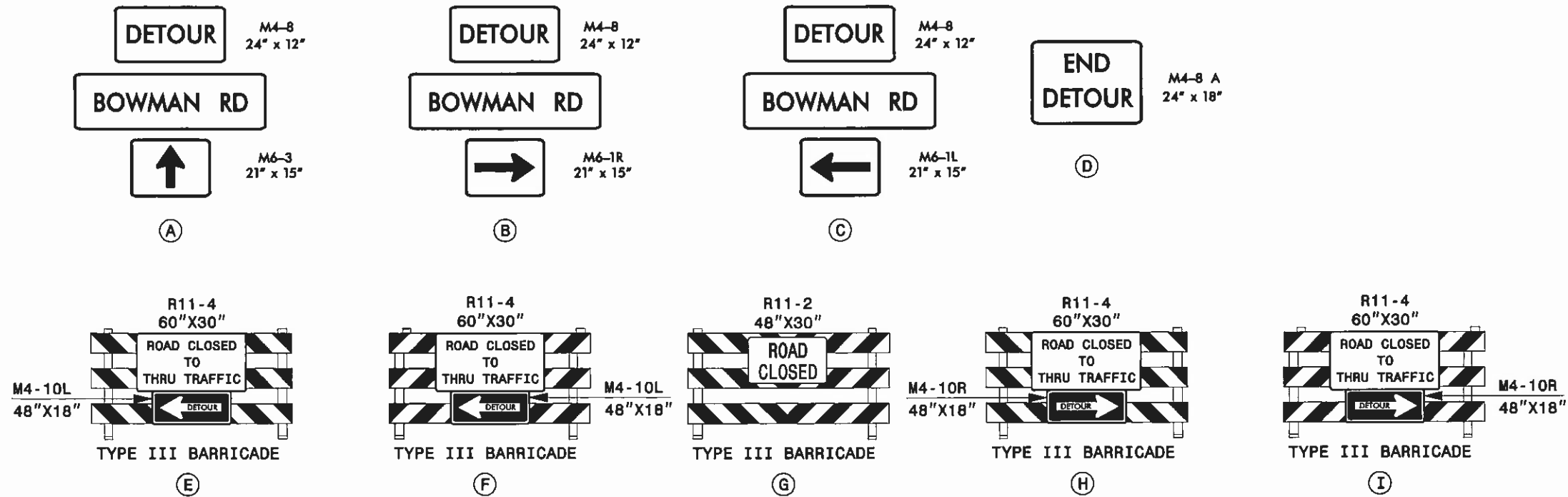
NC License No. F-0258

| REVISIONS |    |      |     |    |      | SHEET NO.          |
|-----------|----|------|-----|----|------|--------------------|
| NO.       | BY | DATE | NO. | BY | DATE | 12                 |
| 1         |    |      | 3   |    |      | TOTAL SHEETS<br>15 |
| 2         |    |      | 4   |    |      |                    |



|                                                                                     |              |                    |                  |                     |           |               |               |                  |
|-------------------------------------------------------------------------------------|--------------|--------------------|------------------|---------------------|-----------|---------------|---------------|------------------|
| SIGN NUMB:                                                                          | TYPE: B or D | BACKG COPY:        | COLOR: ORANGE    | DESIGN BY: BLM      | CK BY: 11 | STD #: 100    | DATE: 9/23/10 | VERTICAL SPACING |
| QUANTITY:                                                                           | 1            | MAJOR COPY SERIES: | D                | PROJECT ID: BK-6118 | DIV: 11   | DATE: 9/23/10 |               | INCHES [y] SPACE |
| SIGN WIDTH:                                                                         | 60 INCHES    |                    |                  |                     |           |               |               | 5.00             |
| HEIGHT:                                                                             | 18 INCHES    |                    |                  |                     |           |               |               | 6.00             |
| TOTAL AREA:(S.F.)                                                                   | 6.67         |                    |                  |                     |           |               |               | 11.0             |
| BORDR TYPE:                                                                         | FLUSH        |                    |                  |                     |           |               |               | 5.00             |
| RECESS:                                                                             | 0.00 INCHES  |                    |                  |                     |           |               |               | 0.00             |
| WIDTH:                                                                              | 0.75 INCHES  |                    |                  |                     |           |               |               | 0.00             |
| RADII:                                                                              | 9.00 INCHES  |                    |                  |                     |           |               |               | 0.00             |
| NO. Z BARS:                                                                         | #N/A         | VMB:               |                  |                     |           |               |               | 0.00             |
| LENGTH:                                                                             | #N/A         | INCHES             |                  |                     |           |               |               | 0.00             |
|                                                                                     |              | MAT'L:             | 0.125 " ALUMINUM |                     |           |               |               | 0.00             |
| USE NOTES: 1,4                                                                      |              |                    |                  |                     |           |               |               |                  |
| 1. Legend and border shall be direct applied Type III reflective sheeting.          |              |                    |                  |                     |           |               |               |                  |
| 2. Legend and border shall be direct applied Type I reflective sheeting.            |              |                    |                  |                     |           |               |               |                  |
| 3. Shields shall be Type III reflective sheeting on .032" aluminum and demountable. |              |                    |                  |                     |           |               |               |                  |
| 4. Background shall be Type III refl. sheeting.                                     |              |                    |                  |                     |           |               |               |                  |
| 5. Background shall be Type I refl. sheeting.                                       |              |                    |                  |                     |           |               |               |                  |
| 6. Center arrow(s) vertically on sign.                                              |              |                    |                  |                     |           |               |               |                  |
| TOTAL:                                                                              |              |                    |                  |                     |           |               |               | 16 0.00          |

| SIZE/  | SERIES      | LT MARGIN | SIGN COPY |       |       |       |       |       |       |       |       |       |      |      | RT MARGIN |      |
|--------|-------------|-----------|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|-----------|------|
| CHAR:  | 6.00 INCH   |           | B         | O     | W     | M     | A     | N     | R     | D     |       |       |      |      |           |      |
| TYPE:  | D           | 6.13      | 5.18      | 5.34  | 8.37  | 5.77  | 6.15  | 4.03  | 5.48  | 5.44  | 4.03  | 0.00  | 0.00 | 0.00 | 0.00      | 0.00 |
| #/LC:  | 0.00 INCH   | (x)       | 6.13      | 11.28 | 10.63 | 23.00 | 28.77 | 34.92 | 38.95 | 44.41 | 48.84 | 63.87 | 0.00 | 0.00 | 0.00      | 0.00 |
| SPCE:  | 1.00 FACTOR |           |           |       |       |       |       |       |       |       |       |       |      |      |           |      |
| LINE 1 |             |           | 0.00      | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00 | 0.00 | 0.00      | 8.13 |
|        |             |           | 0.00      | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00 | 0.00 | 0.00      | 0.00 |



PROJECT NO. 42569  
COUNTY: CALDWELL  
STATION: 16+62.00  
REPLACES BRIDGE NO. 65

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

CULVERT ON SR 1746  
OVER ROCK CREEK

**Florence & Hutcheson**  
CONSULTING ENGINEERS  
5131 Clayton Way, Suite 100 Raleigh, NC 27607  
NCLicense No. F-0288

| REVISIONS |    |      |     |    |      | SHEET NO. |
|-----------|----|------|-----|----|------|-----------|
| NO.       | BY | DATE | NO. | BY | DATE |           |
| 1         |    |      | 3   |    |      | 13        |
| 2         |    |      | 4   |    |      | 15        |

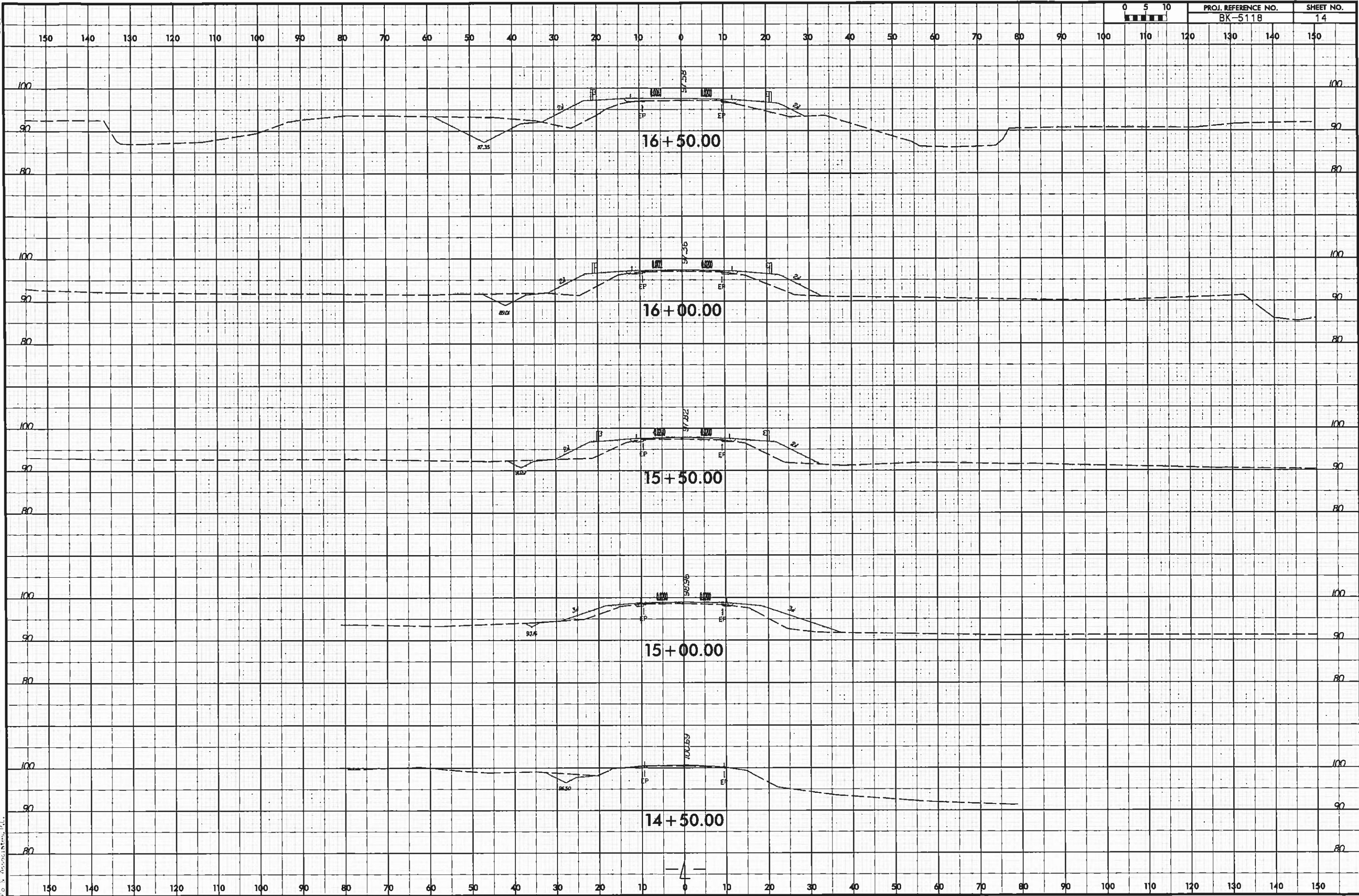


8/23/99

0 5 10  
1"=10'

PROJ. REFERENCE NO.  
BK-5118

SHEET NO.  
14



6-23/93

