STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED HIGHWAY EROSION CONTROL

WAKE COUNTY

LOCATION: TIMBER DRIVE EAST EXTENSION (SR 2812)
FROM NC 50 TO WHITE OAK ROAD (SR 2547) IN GARNER

TYPE OF WORK: GRADING, DRAINAGE, WIDENING, PAVING, CURB & GUTTER, STRUCTURES, AND SIGNALS

Prepared in the Office of:
ROADSIDE ENVIRONMENTAL UNIT
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

2006 STANDARD SPECIFICATIONS
TEMPORARY ROCK SILT CHECK TYPE 'B' DETAIL

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%.
COIR FIBER BAFFLE DETAIL

DRAPE BAFFLE MATERIAL OVER WIRE STRAND AND SECURE WITH PLASTIC TIES AT POSTS AND ON WIRE EVERY 12"

INSTALL T-POST TO ANCHOR BAFFLE TO SIDE OF BASIN AND SECURE TO VERTICAL POST

9 GAUGE MIN HIGH TENSION WIRE STRAND SHALL BE SECURED TO POST TO SUPPORT BAFFLE MATERIAL

SECURE BOTTOM OF BAFFLE TO GROUND WITH 12" STAPLES AT 12" MAXIMUM SPACING

NOTES:

1. INSTALL THREE(3) COIR FIBER BAFFLES IN SILT BASINS AND SEDIMENT DAMS AT DRAINAGE OUTLETS WITH A SPACING OF 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 1/3 THE BASIN LENGTH.

3. TOP HEIGHT OF COIR FIBER BAFFLES SHALL NOT BE BELOW BASE OF EMERGENCY SPILLWAY ELEVATION.

11 GAUGE LANDSCAPE STAPLE

STEEL POST - 2'-0" DEPTH

BAFFLE MATERIAL SHALL BE SECURED TO THE BOTTOM AND SIDES OF BASIN USING 12" LANDSCAPE STAPLES
SKIMMER BASIN WITH BAFFLES DETAIL

NOTES
1. SEED AND PLACE MATTING FOR EROSION CONTROL ON INTERIOR AND EXTERIOR SIDESLOPES.
2. LIMIT EARTH DIKE HEIGHT TO 5 FT.
3. FOR BASIN DEPTH OF 3 FT. THE MINIMUM BASIN WIDTH SHALL BE 9 FT.
4. DETERMINE EMERGENCY SPILLWAY LENGTH (FT.) USING Q/0.8, WHERE Q IS FLOW RATE (CFS) INTO BASIN.
5. PLASTIC SLOPE DRAIN PIPE AT INLET OF BASIN MAY BE REPLACED BY FILTER FABRIC AS DIRECTED.
6. FILTER FABRIC FOR EMERGENCY SPILLWAY SHALL BE ONE CONTINUOUS PIECE OF MATERIAL OR OVERLAPPED 18" (MIN.) AS SHOWN.

FILTER FABRIC

STEEL POSTS

PLASTIC SLOPE DRAIN PIPE (12IN.)

TEMPORARY OR PERMANENT DITCH

NOT TO SCALE

NOTE OPTIONS

COIR FIBER MAT

ANCHOR OPTIONS

2" x 2" (nominal) WOODEN STAKE

#10 STEEL REINFORCEMENT BAR
1. SEED AND PLACE MATING FOR EROSION CONTROL ON INTERIOR AND EXTERIOR SIDESLOPES OF BASINS.
2. LIMIT HEIGHT OF EARTH DIKES TO 5 FT.
3. ADDITIONAL MODIFIED SILT BASINS TYPE 'B' MAY BE NEEDED DEPENDING ON SLOPE.
4. FOR BASIN DEPTHS OF 3 FT, THE MINIMUM BASIN WIDTHS SHALL BE 9 FT.
5. DETERMINE EMERGENCY SPILLWAY LENGTHS (FT) USING Q/0.8, WHERE Q IS FLOW RATE (CFS) INTO UPPER BASIN.
6. FILTER FABRIC FOR EMERGENCY SPILLWAYS SHALL BE ONE CONTINUOUS PIECE OF MATERIAL OR OVERLAPPED 18" (MIN.) AS SHOWN.
SILT BASIN 'B' DETAIL

PLAN

ELEVATION

TOP OF DITCH SLOPE

BASE OF DITCH FOR -V- DITCH

BASE OF DITCH FOR FLAT BOTTOM DITCH

TOP OF DITCH SLOPE

BASE OF DITCH FOR -V- DITCH

LENGTH IN FEET EQUALS TWICE THE WIDTH

BASE OF DITCH FLOW LINE

MINIMUM

BASE OF DITCH FLOW LINE
COIR FIBER WATTLE DETAIL

NOTES:

USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) 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 1631 OF THE STANDARD SPECIFICATIONS.

USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) WATTLE.

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

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INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.
COIR FIBER WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL

NOTES:

USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) 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.

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 1631 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.

COIR FIBER WATTLE

STAKES

PAM

STAPLES

INSET A

INSET B

INSET C

TOP VIEW

FLOW

MATTING

PAM

STAKES

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

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

PAM
(3.5 OZ.)

SECTION B-B

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

SECTION A-A

See Inset A

12"

2' MIN

2/3 CHANNEL WIDTH

EXCELSIOR MATTING

CLASS B STONE

EXCELSIOR MATTING

CLASS B STONE
MATTING INSTALLATION DETAIL

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.
## Soil Stabilization Summary Sheet

### Matting for Erosion Control

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<th>LINE</th>
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<th>TO STATION</th>
<th>SIDE</th>
<th>ESTIMATE (SY)</th>
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<td>20+50</td>
<td>21+00</td>
<td>RT</td>
<td>255</td>
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<td>4</td>
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<td>28+25</td>
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**Subtotal** 705

**Subtotal** 185

### Additional PSRM to be Installed

*Directed by the Engineer*

**Total** 22935

**Total** 23640

### Permanent Soil Reinforcement Mat

<table>
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<th>CONST SHEET NO.</th>
<th>LINE</th>
<th>FROM STATION</th>
<th>TO STATION</th>
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**Subtotal** 185

**Additional PSRM to be Installed** 260

**Total** 445

**Total** 500
NOTE:
PLACE TEMPORARY ROCK SELENANT DAM TYPE B
AND TEMPORARY ROCK Silt CHOKES TYPE A AT
DRAINAGE OUTLETS.

CLAYING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 5A

MATCHLINE (SEE SHEET 5)

NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE B
DRAINAGE OUTLETS.
AND TEMPORARY ROCK SILT CHECKS TYPE A AT
CONSTRUCTION SHEET 5A

EROSION CONTROL FOR
CLEARING AND GRUBBING
RO = 144'

PROPOSED GATE FOR
NAD 83/95
BASIN ACCESS

COATED CHAIN LINK FENCE
PROP. BLACK VINYL

48" W x W

Type of Liner = COIR FIBER MATTING
DDE = 50 CY
FROM STA. 31+46.30 TO STA. 32+81.50 LT.

D =
D =
D =

RM =
RM =
RM =

FRO - Y - STA . 23 + 60 TO
STA . 23 + 75 .68 LT.

36" CLR IC P

270

254
268

36" RISER

EXTENDED DRY DETENTION BASIN DETAILS
NOTE: SEE SHEETS 2-E THRU 2-G FOR

253 6" CLR IC P

DDE = 111 CY
EST. 75 TONS
EST. 95 SY FABRIC

CLASS 'B' RIP RAP
SEE SHEET 2-H
ENERGY DISSIPATOR BASIN

+05.00 -L-
+60.00 -L-
+60.00 -L-
+25.00 -L-
670.00'
710.00'
490.00'
470.00'
280

+44.62 -L-
+09.52 -L-
270

4.0 inch Skimmer
with 3.25 inch
Orifice Diameter
ID: SA1 SW

1 FOOT ABOVE THE BOTTOM OF THE BASIN.
ATTACH SKIMMER TO RISER A MINIMUM OF
SKIMMER BASIN DURING CONSTRUCTION.
UTILIZE EXTENDED DRY DENTENTION BASIN AS
CLASS B RIP RAP = 96 TONS, FF = 236 SY
SEE SHEET 13 FOR "L" PROFILE

CLASS B RIP RAP = 14 TONS, FF = 34 SY
FROM "L" STA. 43+50 TO STA. 44+00 RT.
MIN. 1' TUCK
WITH FILTER FABRIC

b = 3 Ft.
d = 1 Ft.
2:1
T T E
Natural
FILL SLO
TOE PROTECTION
DETAIL H

B = 4.5 Ft.

C O A T E D CHAIN LINK FENCE

205.00'
200.00'
150.00'
100.00'
50.00'
0

0.02
C/A FENCE
MATCH LINE "L" STA. 37+00 (SEE SHEET 5)

320
32
G R
1'/Ft.
Slope
Fill
A A

ATTACH SKIMMER TO RISER A MINIMUM OF
SKIMMER BASIN DURING CONSTRUCTION.
UTILIZE EXTENDED DRY DENTENTION BASIN AS
basin not shown

Rip Rap in
b = 2.0 Ft.
Square Preformed
Max. d = 1.0 Ft.
Min. D = 1.0 Ft.
-L- STA. 37+00 RT.
NOTE: PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B AND TEMPORARY ROCK SEDIMENT DAMS TYPE - A AT DRAINAGE OUTLETS.

CLEARING AND GRUBBING: DESIGN CONTROL FOR CONSTRUCTION SHEET 11.

SHEET NO. PROJECT REFERENCE NO.
U-4703

NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B DRAINAGE OUTLETS. AND TEMPORARY ROCK SILT CHECKS TYPE - A AT CONSTRUCTION SHEET 11.

EROSION CONTROL FOR CLEARING AND GRUBBING.

PI STA 34+94.62

D = 170.00'
T = 85.03'
R = 2,650.00'

SE = SEE PLANS

PI STA 37+90.87

D = 422.25'
T = 211.28'
R = 4,500.00'

SE = SEE PLANS

SEE SHEET 17 FOR -Y2- PROFILE

NOTE: SEE PAVEMENT MARKING PLANS FOR THE CURB RAMP STATIONING.

SEE SHEET 17 FOR -Y2- PROFILE

5' ON C SW ALK

40
35

30.00

END CONSTRUCTION

50'

EXIST.

-END RESURFACING-

-Y2- STA. 37+50.00

20'

-WCR

-Y2- PC STA. 34+09.59

-Y2- PCC STA. 35+79.59

-Y2- PT STA. 40+01.84

-Y2- POT STA. 43+00.59

-Y2- STA. 33+30.00

LT.

-NAD 83 / 95

+00.00 -Y2-

+50.00 -Y2-

73.00'

+00.00 -Y2-

60.00'

70.00'

+00.00 -Y2-

60.00'

100.00'

9

21

24 " C & G

24 " C & G

24 " C & G

P /A BST

28' BST

60' ON C

C ISKD C

35' BST

S

15" RCP

15" RCP

S 2547 W H T E O A K 73' BST

C ONC

S

15" RCP

18" RCP

18" RCP

C ONC

60" CONC

60" ON C

18" C&G

18" C&G

C ONC

C ONC

15" RCP

15" RCP

S

18" RCP

S

CB

CB

18" C&G

18" C&G

C ONC

C ONC

S 547 W H T E O A K

CB

CB

73' BST

C ONC

C ONC

S

18" RCP

18" RCP

C ONC

C ONC

S

C ONC

C ONC

EST. 3 TONS W/ FILTER FABRIC

CB RIP RAP

DITCH CLEANOUT

ID 11.1 CG

ID 9.4 CG (rev)

4 ft. weir Orifice Diameter with 0.375 inch 1.5 inch Skimmer

34 x 12 x 3

NOTE: SEE PAVEMENT MARKING PLANS FOR THE CURB RAMP STATIONING.
PROPOSED GATE FOR
NA D 83 / 95
BASIN ACCESS

COATED CHAIN LINK FENCE
PROP. BLACK VINYL

48 " W W

36 " C L  IV  R C P

Type of Liner= COIR FIBER MATTING

DDE = 50 CY

FROM STA. 31+46.30 TO STA. 32+81.50 LT.

3 C Y

RM

= 13 SY

36 " C L  IV  R C P

270

270

274

268

3 6 " C L  IV  R C P

EST. 114 SY

FABRIC

EST. 59 TONS

CLASS 'I' RIP RAP

SEE SHEET 2-H

ENERGY DISSIPATOR BASIN

+05.00 -L-

+60.00 -L-

450.00'

+25.00 -L-

670.00'

710.00'

490.00'

470.00'

2

4

1 FOOT ABOVE THE BOTTOM OF THE BASIN.

ATTACH SKIMMER TO RISER A MINIMUM OF

SKIMMER BASIN DURING CONSTRUCTION.

UTILIZE EXTENDED DRY DETENTION BASIN AS

ID 5A.1 SW

Orifice Diameter

ID 5A.1 SW

4.0 inch Skimmer

with 3.25 inch

Orifice Diameter

ID 5A.1 SW
See Sheet 14 for L-profile.
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. Bedfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at one end of the trench.
4. Place a single layer of plants against the planting bar so that the root collar is at ground level.
5. Place a 2 inch layer of well rotted sawdust over the root systems from drying.
6. Repeat layers of plants and sawdust as necessary and water thoroughly.

DIBBLE PLANTING METHOD USING THE KBC PLANTING BAR
1. Insert planting bar to desired depth and handle toward planter.
2. Remove planting bar and insert seedling at correct depth.
3. Insert planting bar 2 inches toward planter from seedling.

PLANTING NOTES:

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

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

ROOT PRUNING
All seedlings shall be root pruned, if necessary, so that no roots extend more than 18 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 980 PLANTS PER ACRE.

REFORESTATION DETAIL SHEET
NC DOT: ROADSIDE ENVIRONMENTAL UNIT
PLANTING DETAILS

LIVE STAKES PLANTING DETAIL

BAREROOT PLANTING DETAIL

DIBBLE PLANTING METHOD USING THE KBC PLANTING BAR

PLANTING NOTES:

STREAMBANK REFORESTATION TYPICAL

STREAMBANK REFORESTATION

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

TYPE 1
50% CORNUS AMOMUM
50% SALIX SIGRA

TYPE 2
25% FRAXINUS PENNSYLVANICA
25% PLATANUS OCCIDENTALIS
25% LIRODENDRON TULIPIFERA
25% QUERCUS PHELLOS

STREAMBANK REFORESTATION SHALL BE PLANTED 3 FT. TO 5 FT. ON CENTER, RANDOM SPACING, AVERAGING 4 FT. ON CENTER, APPROXIMATELY 2724 PLANTS PER ACRE.

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

NOTE: TYPE 1 AND TYPE 2 STREAMBANK REFORESTATION SHALL BE PAID FOR AS "STREAMBANK REFORESTATION"
**Plan View**

- **Direction of Flow**
- **Anchor Trench on 1' Centers**
- **Anchor Overlap on 1' Centers**
- **Anchor Trench on 1' Centers**
- **Anchor Trench on 1' Centers**
- **6" Overlay (Min)**

**Typical Cross Section**

- **Coir Fiber Matting**
- **Anchors on 3' Centers**
- **Extend Matting to NWSEL**
- **Stream Bed**
- **Backfill**
- **Floodplain/Existing Ground**
- **Anchors on 1' Centers in Trench**
- **Matting Shall Be Placed in Trench and Backfilled**
- **Anchors on 1' Centers**

**Anchor Options**

- **2" x 2" (nominal) Wooden Stake**
- **#10 Steel Reinforcement Bar**
- **Staple**

**Coir Fiber Matting Detail**

Not to Scale