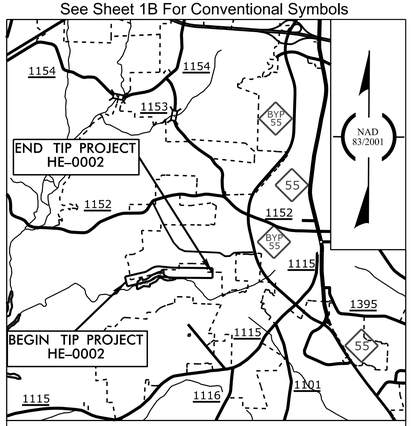
09/08/99

TIP PROJECT: HE-0002

CONTRACT: C204898

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols



VICINITY MAP (NTS)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

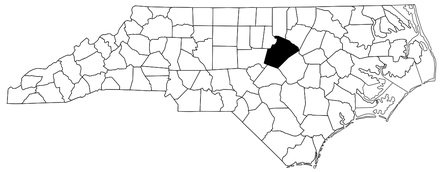
WAKE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	HE-0002	1	

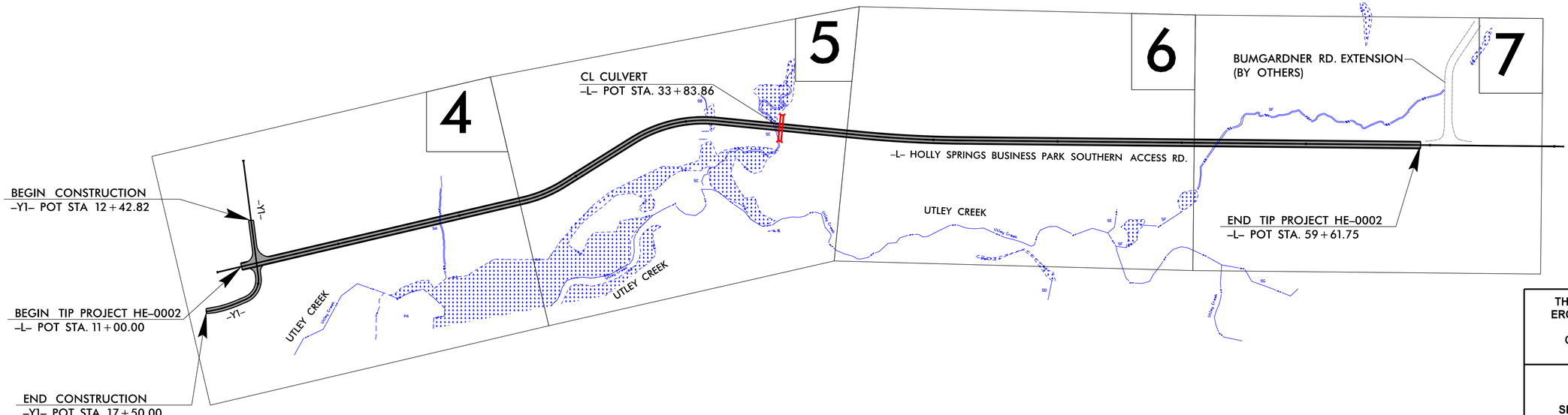
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
49745.1.1	N/A	PE
49745.2.1	N/A	R/W
49745.2.2	N/A	UTIL.
49745.3.1	N/A	CONST.

LOCATION: *HOLLY SPRINGS BUSINESS PARK SOUTHERN ACCESS ROAD FROM FUJI DIOSYNTH BIOTECHNOLOGIES PROPERTY & SEWER PUMP STATION TO 110 FEET WEST OF THE BUMGARDNER ROAD EXTENSION INTERSECTION*

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



NAD 83/2001



THIS PROJECT CONTAINS EROSION CONTROL PLANS FOR CLEARING AND GRUBBING PHASE OF CONSTRUCTION.

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

GRAPHIC SCALE

50 25 0 50 100
PLANS

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL STORMWATER CONSTRUCTION PERMIT ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF ENERGY, MINERAL, AND LAND RESOURCES.

CDM Smith

Prepared In the Office of:

CDM SMITH
5400 Glenwood Avenue
Suite 400
Raleigh, NC 27612-3228
NC COA No. F-1255

Designed by:

HEATHER HARKENRIDER, P.E. *3281*
NAME *LEVEL III CERTIFICATION NO.*

Roadway Standard Drawings

The "Roadway Standard Drawings"- Roadway Design Unit - N. C. Department of Transportation - Raleigh, N. C., dated January 2024 and the latest revision thereto are applicable to this project and by reference hereby are considered a part of these plans.

PROJECT REFERENCE NO.	SHEET NO.
HE-0002	EC-02
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

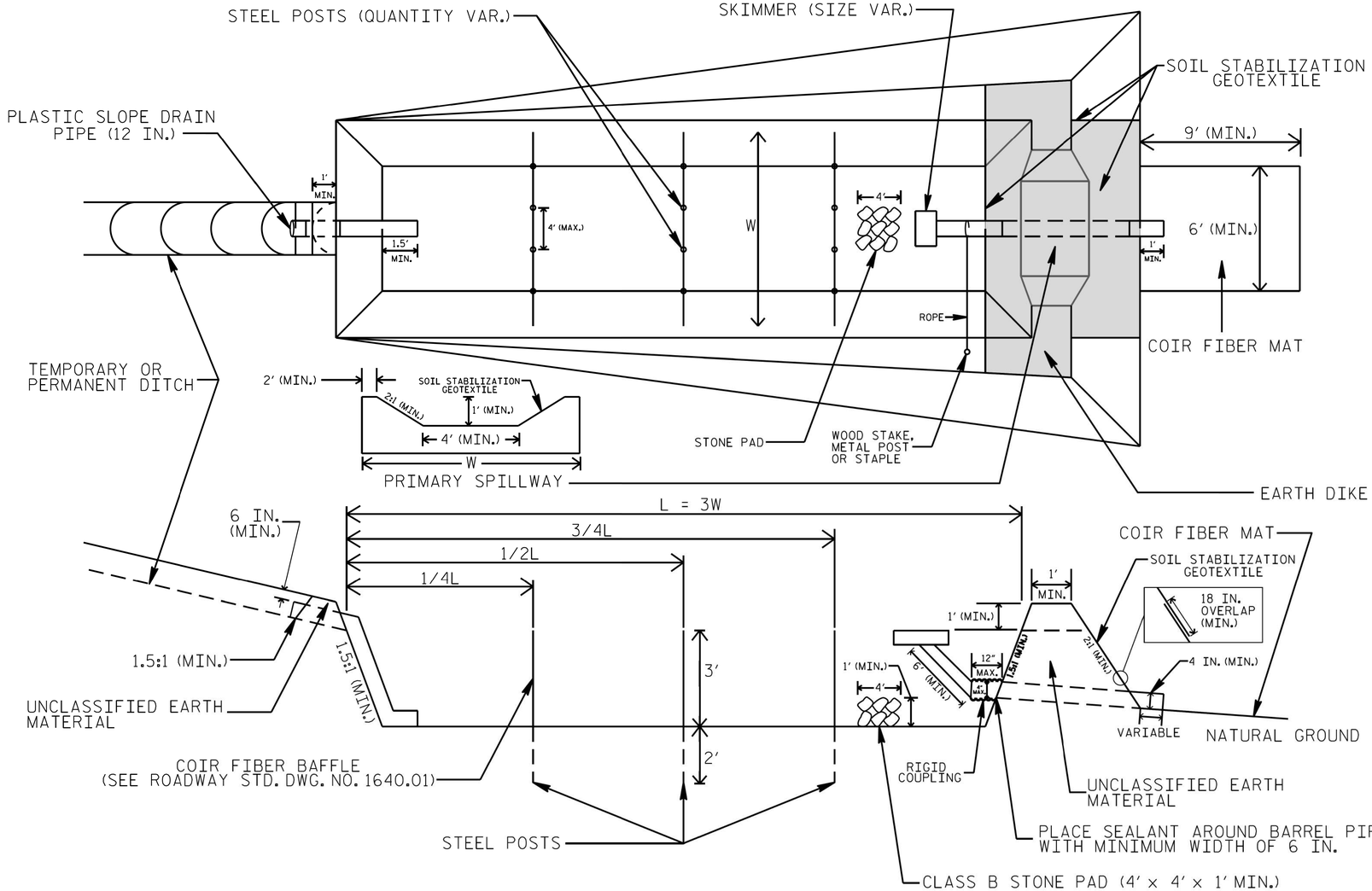
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

EROSION & SEDIMENT CONTROL LEGEND

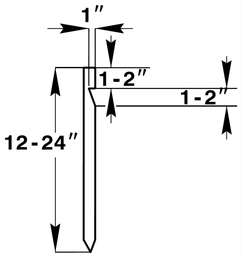
Std. #	Description	Symbol
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1622.01	Temporary Berms and Slope Drains	
1630.02	Silt Basin Type B	
1630.03	Temporary Silt Ditch	TSD
1630.04	Stilling Basin	
1630.05	Temporary Diversion	TD
1630.06	Special Stilling Basin	
1630.07	Skimmer Basin	
1630.08	Tiered Skimmer Basin	
1630.09	Earthen Dam with Skimmer	
	Infiltration Basin	
	Rock Inlet Sediment Trap:	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C

Std. #	Description	Symbol
1633.01	Temporary Rock Silt Check Type A	
1633.02	Temporary Rock Silt Check Type B	
1633.03	Temporary Rock Silt Check Type A with Excelsior Matting and Flocculant	
1634.01	Temporary Rock Sediment Dam Type A	
1634.02	Temporary Rock Sediment Dam Type B	
1635.01	Rock Pipe Inlet Sediment Trap Type A	A
1635.02	Rock Pipe Inlet Sediment Trap Type B	B
1636.01	Excelsior Wattle Check	
1636.01	Excelsior Wattle Check with Flocculant	
1636.01	Coir Fiber Wattle Check	
1636.01	Coir Fiber Wattle Check with Flocculant	
1636.02	Silt Fence Excelsior Wattle Break	EW
	Silt Fence Coir Fiber Wattle Break	CFW
1636.03	Excelsior Wattle Barrier	—EW—EW—EW—
1636.03	Coir Fiber Wattle Barrier	—CFW—CFW—CFW—

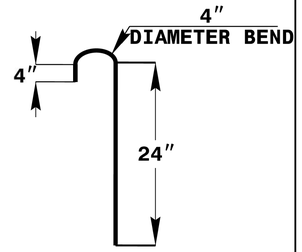
SKIMMER BASIN WITH BAFFLES DETAIL



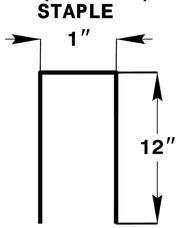
2" x 2" (nominal) WOODEN STAKE



#10 STEEL REINFORCEMENT BAR



1" (nominal) STAPLE



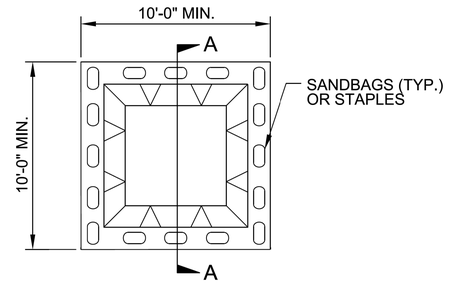
COIR FIBER MAT ANCHOR OPTIONS

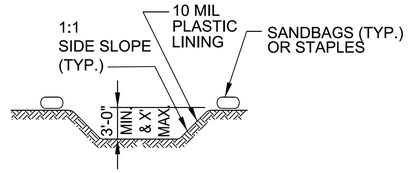
NOTES

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 PRIMARY SPILLWAY WEIR 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 FILTRATION GEOTEXTILE OR TARP AS DIRECTED.
6. SOIL STABILIZATION GEOTEXTILE FOR PRIMARY SPILLWAY SHALL BE ONE CONTINUOUS PIECE OF MATERIAL OR OVERLAPPED 18 IN. (MIN.).

NOT TO SCALE

ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER





SECTION A-A

PLAN

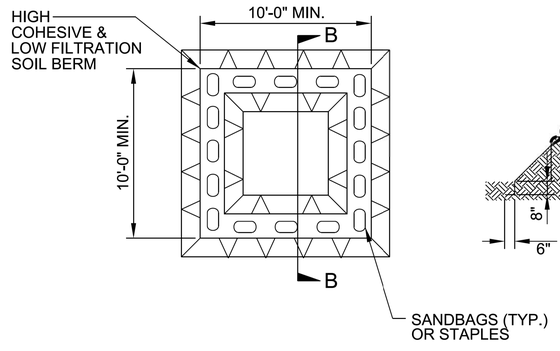
NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

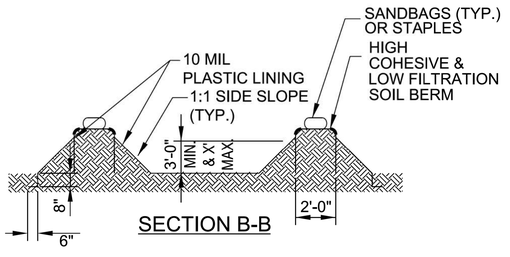
2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY.

3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARY MARKED WITH SIGNAGE NOTING DEVICE.

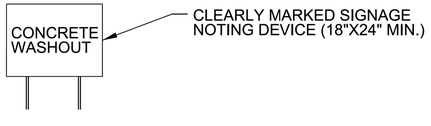
BELOW GRADE WASHOUT STRUCTURE

NOT TO SCALE





SECTION B-B



PLAN

NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.

3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARY MARKED WITH SIGNAGE NOTING DEVICE.

ABOVE GRADE WASHOUT STRUCTURE

NOT TO SCALE

5/26/20

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
DITCH DETAILS

HE-0002
4RDI | 2D-1

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
WAKE COUNTY

DIVISION 5

HYDRAULICS ENGINEER

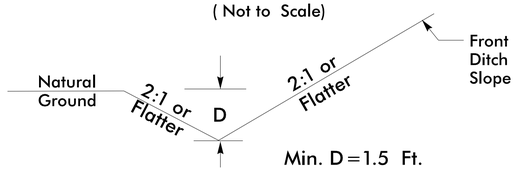
NORTH CAROLINA PROFESSIONAL SEAL 026306 ENGINEER ANA M. PASSMAN

PREPARED BY

CDM Smith
CDM Smith Inc
1400 Glenwood Avenue
Suite 400
Raleigh, NC 27612-3228
NC COA No. F-1255

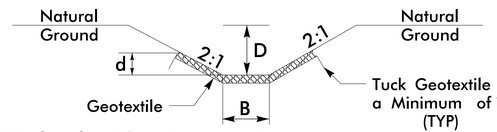
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)



FROM –L– STA. 12 + 00 TO STA. 12 + 30 LT
–L– STA. 54 + 00 TO STA. 57 + 00 LT
–Y1– STA. 13 + 25 TO STA. 13 + 79 LT

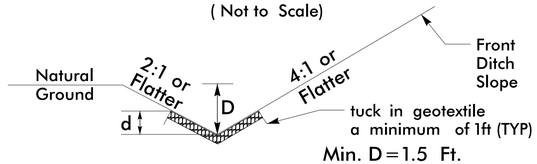
DETAIL C
STANDARD BASE DITCH
(Not to Scale)



Detail Applies When B is < 6.0'
for Class 1 and 2 Rip–Rap;
And All Widths for Class B Rip–Rap
Min. D = 2 Ft.
d = 2 Ft.
B = 3 Ft.
Type of Liner = Class 1 Rip–Rap, Keyed–In

FROM –Y1– STA. 13 + 25 RT TO STA. 15 + 79 RT

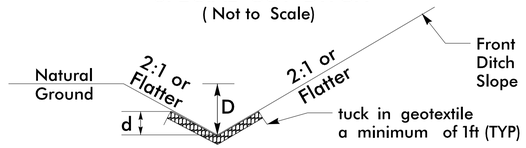
DETAIL E
STANDARD CUT DITCH
(Not to Scale)



Min. D = 1.5 Ft.
Max. d = 1.0 Ft.
Type of Liner = Class 'B' Rip–Rap

FROM –L– STA. 12 + 30 TO STA. 14 + 50 LT

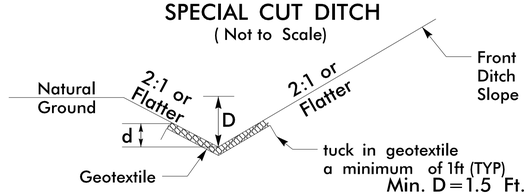
DETAIL A–A
SPECIAL CUT DITCH
(Not to Scale)



Min. D = 1.5 Ft.
Max d = 1.0 Ft.
Type of Liner = Class 'B' Rip–Rap

FROM –L– STA. 38 + 50 TO STA. 40 + 00 LT

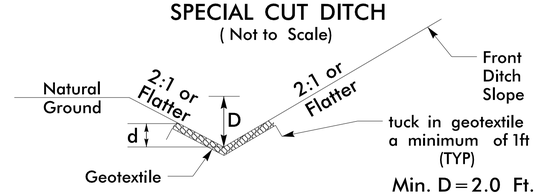
DETAIL A–B
SPECIAL CUT DITCH
(Not to Scale)



Min. D = 1.5 Ft.
Max. d = 1.0 Ft.
Type of Liner = Class 'B' Rip–Rap

FROM –L– STA. 24 + 50 TO STA. 25 + 50 LT
–L– STA. 50 + 00 TO STA. 51 + 00 LT

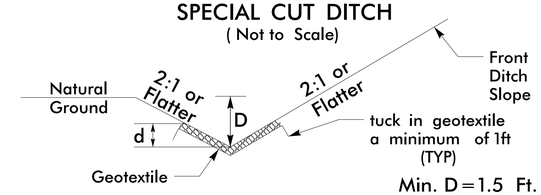
DETAIL A–C
SPECIAL CUT DITCH
(Not to Scale)



Min. D = 2.0 Ft.
Max. d = 1.5 Ft.
Type of Liner = Class 1 Rip–Rap

FROM –L– STA. 46 + 50 TO STA. 48 + 00 LT
–L– STA. 53 + 00 TO 53 + 50 LT

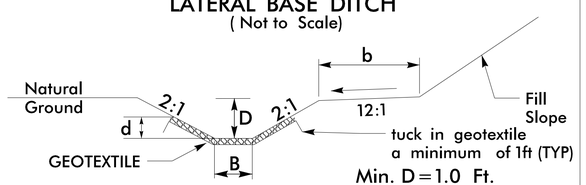
DETAIL A–D
SPECIAL CUT DITCH
(Not to Scale)



Min. D = 1.5 Ft.
Max. d = 1.0 Ft.
Type of Liner = Class 1 Rip–Rap

FROM –L– STA. 30 + 00 TO STA. 30 + 79 LT
–L– STA. 35 + 00 TO STA. 36 + 50 LT

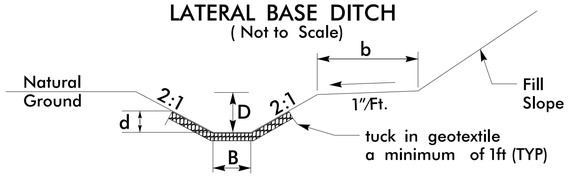
DETAIL D–B
LATERAL BASE DITCH
(Not to Scale)



Min. D = 1.0 Ft.
Max. d = 1.0 Ft.
B = 2.0 Ft.
b = 2.0 Ft.
*When B is < 6.0'
Type of Liner = Class 'B' Rip–Rap

FROM –L– STA. 18 + 00 TO STA. 19 + 21 LT
–L– STA. 19 + 43 TO STA. 21 + 00 LT
–L– STA. 51 + 00 TO STA. 51 + 50 RT
–L– STA. 51 + 50 TO STA. 52 + 18 LT

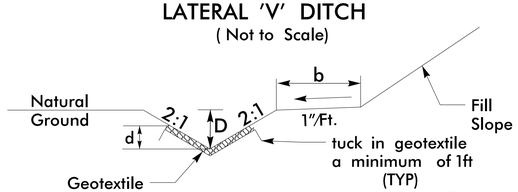
DETAIL D–D
LATERAL BASE DITCH
(Not to Scale)



Min. D = 1.5 Ft.
Max. d = 1.0 Ft.
B = 2.0 Ft.
b = VARIES Ft.
Type of Liner = Class 'B' Rip–Rap

FROM –L– STA. 37 + 71 TO STA. 38 + 50 LT

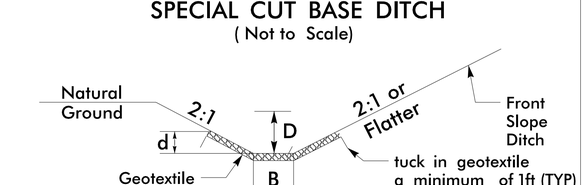
DETAIL F–B
LATERAL 'V' DITCH
(Not to Scale)



Min. D = 1.5 Ft.
Max. d = 1.0 Ft.
b = VARIES
Type of Liner = Class 'B' Rip–Rap

FROM –L– STA. 51 + 00 TO STA. 51 + 50 LT

DETAIL A–E
SPECIAL CUT BASE DITCH
(Not to Scale)



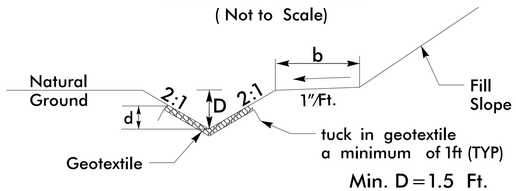
Min. D = 1.5 Ft.
Max. d = 1.0 Ft.
B = 2.0 Ft.
Type of Liner = Class 'B' Rip–Rap

FROM –L– STA. 51 + 50 TO STA. 53 + 50 RT

5/26/20

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
DITCH DETAILS

DETAIL F–C
LATERAL 'V' DITCH
(Not to Scale)

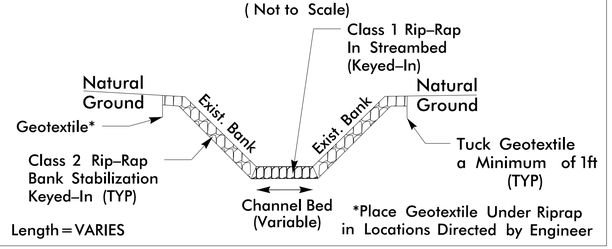


Min. D = 1.5 Ft.
Max. d = 1.0 Ft.
b = Varies

Type of Liner = Class 1 Rip–Rap

FROM –L– STA. 33 + 84 TO STA. 35 + 00 LT
–L– STA. 48 + 00 TO STA. 48 + 85 LT
–L– STA. 52 + 26 TO STA. 53 + 00 LT

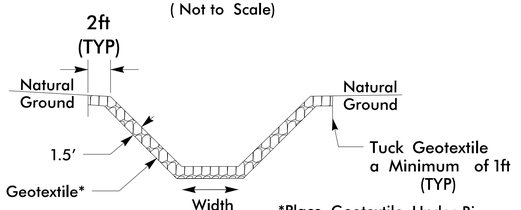
DETAIL U
INLET/OUTLET CHANNEL IMPROVEMENTS
(Not to Scale)



Length = VARIES

–L– STA. 19 + 25 LT/RT
–L– STA. 33 + 84 LT/RT
–L– STA. 51 + 60 LT/RT

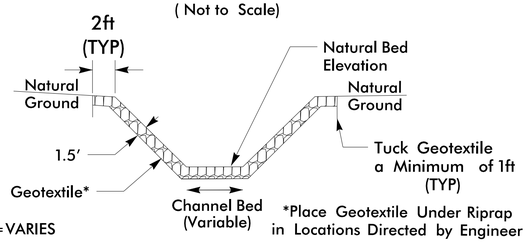
DETAIL R
PIPE STABILIZATION
(Not to Scale)



Length = VARIES
Type of Liner = Class 1 Rip–Rap – Keyed–In

–L– STA. 27 + 75 LT/RT
–L– STA. 48 + 25 RT

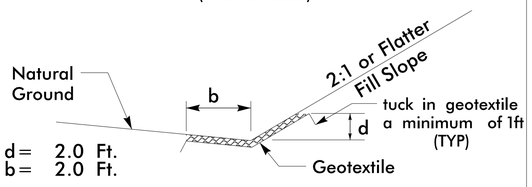
DETAIL S
PIPE CHANNEL STABILIZATION
(Not to Scale)



Length = VARIES
Type of Liner = Class 1 Rip–Rap – Keyed–In

–L– STA. 30 + 79 LT

DETAIL T
TOE PROTECTION
(Not to Scale)

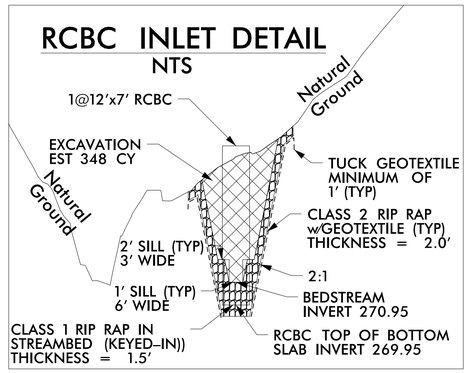


d = 2.0 Ft.
b = 2.0 Ft.

Type of Liner = Class 'B' Rip–Rap

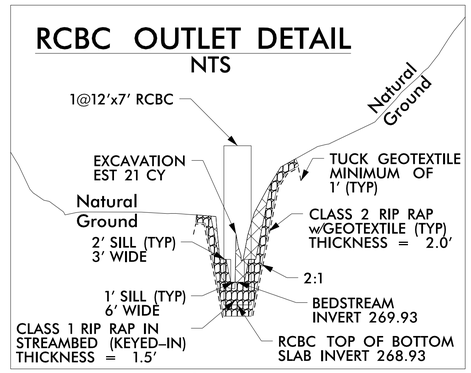
FROM –L– STA. 18 + 48 TO STA. 19 + 10 RT
–L– STA. 19 + 29 TO STA. 20 + 95 RT
–L– STA. 27 + 47 TO STA. 27 + 78 LT
–L– STA. 27 + 88 TO STA. 28 + 07 LT
–L– STA. 30 + 38 TO STA. 30 + 87 RT
–L– STA. 31 + 03 TO STA. 31 + 50 RT
–L– STA. 30 + 91 TO STA. 32 + 27 LT
–L– STA. 32 + 62 TO STA. 33 + 71 RT
–L– STA. 32 + 77 TO STA. 33 + 71 LT
–L– STA. 33 + 96 TO STA. 36 + 44 RT
–L– STA. 37 + 00 TO STA. 37 + 73 LT
–L– STA. 48 + 27 TO STA. 49 + 42 RT
–L– STA. 48 + 88 TO STA. 49 + 52 LT
–Y1– STA. 12 + 53 TO STA. 13 + 25 RT
–Y1– STA. 14 + 85 TO STA. 15 + 71 RT
–Y1– STA. 15 + 87 TO STA. 16 + 20 RT
–Y1– STA. 14 + 65 TO STA. 15 + 80 LT
–Y1– STA. 15 + 88 TO STA. 17 + 50 LT

RCBC INLET DETAIL
NTS



–L– STA. 33 + 84 LT

RCBC OUTLET DETAIL
NTS

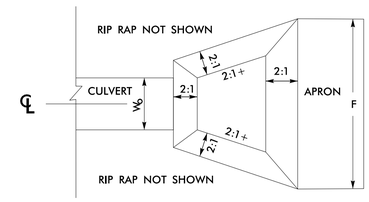


–L– STA. 33 + 84 RT

DETAIL Z
RIP–RAPPED ENERGY DISSIPATOR BASIN

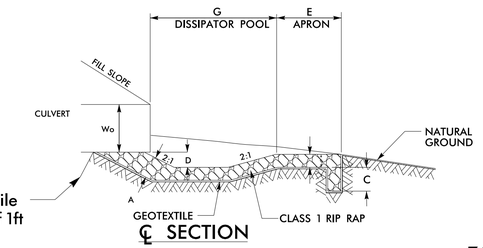
DIM. (ft)	RIP RAP BASIN #1		
	1		
A	3.5'		
B	2.3'		
C	4.5'		
D	1.0'		
E	5.0'		
F	18'		
G	12'		

ALL DIMENSIONS APPROXIMATE



PLAN

BASIN #	LOCATION (AT OUTLET)
1	15 + 83 –Y1– LT (STR# 0401)



℄ SECTION

7/08

HE-0002
4RD1 | 2D-2

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
WAKE COUNTY

DIVISION 5

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 026306 ENGINEER ANA M. PASSMAN

PREPARED BY

CDM Smith
CDM Smith Inc
5400 Glenwood Avenue
Suite 400
Raleigh, NC 27612-3228
NC COA No. F-1255

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION SUMMARY SHEET

MATTING FOR EROSION CONTROL (SLOPES)

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L-	18+50	20+00	RT	566
5	-L-	24+50	25+50	LT	424
5	-L-	32+50	35+00	LT	902
5	-L-	32+50	34+50	RT	1,008
5	-L-	34+50	35+50	RT	457
6	-L-	36+50	41+50	RT	3,324
6	-L-	41+00	43+50	LT	850
6	-L-	43+50	44+50	RT	503
6	-L-	47+00	49+00	RT	1,062
7	-L-	50+00	53+50	RT	1,751
7	-L-	50+50	52+50	LT	693
7	-L-	53+50	57+50	RT	3,579
7	-L-	54+50	56+50	LT	1,187
			SUBTOTAL		16,306

MATTING FOR EROSION CONTROL (DITCHES)

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
DITCH MATTING					
4	-L-	14+50	15+50	LT	225
4	-L-	16+00	18+00	LT	385
4	-L-	21+00	22+00	LT	195
4	-Y1-	12+50	13+25	LT	70
5	-L-	22+50	24+50	LT	385
5	-L-	25+50	27+00	LT	290
5	-L-	28+10	30+00	LT	370
7	-L-	53+50	54+00	LT	115
7	-L-	53+00	59+62	RT	1,435
			SUBTOTAL (SLOPES):		16,306
			SUBTOTAL (DITCHES):		3,470
			SUBTOTAL:		19,776
	MISCELLANEOUS	MATTING TO BE INSTALLED:			9,595
			TOTAL:		29,371

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

SITE DESCRIPTION	STABILIZATION TIME	TIMEFRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 TO 4:1	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH WITH SLOPES STEEPER THAN 4:1. 7 DAYS FOR PERIMETER DIKES, SWALES, DITCHES PERIMETER SLOPES, AND HQW ZONES
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	7 DAYS FOR PERIMETER DIKES, SWALES, DITCHES PERIMETER SLOPES, AND HQW ZONES

5/26/20

CUR DATA -Y1-	CUR DATA -Y1-
PIc 16+81.56	PIc 15+38.54
Δc = 14°04'17.8" (RT)	Δc = 74°20'29.7" (RT)
D = 11°27'33.0"	D = 66°37'22.8"
Lc = 122.80	Lc = 111.59
Tc = 61.71	Tc = 65.21
R = 500	R = 86
e = NC	e = NC
RO = N/A	RO = N/A
DS = 40 mph	DS = 25 mph

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

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 4

NOTE:
PLACEMENT AND QUANTITIY OF EROSION CONTROL DEVICES SHOWN ON THESE PLANS MAY BE MODIFIED AS NEEDED IN ORDER TO MAINTAIN COMPLIANCE WITH ALL APPLICABLE REGULATIONS.

Place Matting for Erosion Control in Temporary Ditches and Diversions.

NAD 83/2001

FUJIFILM DIOSYNTH BIOTECHNOLOGIES HOLDINGS DELAWAR DB 18879 PG 1689

SEQIRUS INC DB 16104 PG 1384

BEGIN CONST -Y1- POT STA 12+42.82

TOE PROTECTION SEE DETAIL T SHEET 2D-2 13 TONS CLASS 'B' RIP RAP 70 SY GEOTEXTILE

DITCH DETAIL G SEE SHEET 2D-1 277 TONS CLASS 1 RIP RAP 327 SY GEOTEXTILE DDE=349CY

DITCH DETAIL A SEE SHEET 2D-1

-L- POT STA 11+62.18 =
-Y1- POT STA 14+16.17

STANDARD DITCH DETAIL E SEE SHEET 2D-1 22 TONS CLASS 'B' RIPRAP 98 SY GEOTEXTILE

SEE DETAIL U SHEET 2D-2 CLASS 1 RIP RAP 7 TONS COUNTERSUNK IN STREAMED CLASS 2 RIP RAP 52 TONS BANK STABILIZATION 60 SY GEOTEXTILE, DDE=32 CY

DITCH DETAIL D-B SEE SHEET 2D-1 34 TONS CLASS 'B' RIP RAP 76 SY GEOTEXTILE DDE=67 CY

DITCH DETAIL D-B SEE SHEET 2D-1 40 TONS CLASS 'B' RIP RAP 90 SY GEOTEXTILE DDE=81 CY

60' ACCESS EASEMENT DB 1990 PG 160

BEGIN TIP PROJECT HE-0002
-L- POT STA. 11+00.00

Y1- S18°50'49.0"W

S67°01'31.1"W

S07°18'58.6"E

-L-
N76°47'14.2"E

TOE PROTECTION SEE DETAIL T SHEET 2D-2 16 TONS CLASS 'B' RIP RAP 86 SY GEOTEXTILE

TOE PROTECTION SEE DETAIL T SHEET 2D-2 20 TONS CLASS 'B' RIP RAP 155 SY GEOTEXTILE

TOE PROTECTION SEE DETAIL T SHEET 2D-2 10 TONS CLASS 'B' RIP RAP 56 SY GEOTEXTILE

TOE PROTECTION SEE DETAIL T SHEET 2D-2 29 TONS CLASS 'B' RIP RAP 161 SY GEOTEXTILE

SEE DETAIL U SHEET 2D-2 CLASS 1 RIP 6 TONS COUNTERSUNK IN STREAM CLASS 2 RIP RAP 50 TONS BANK STABILIZATION 55 SY GEOTEXTILE, DDE=2

END CONST -Y1- POT STA 17+50.00

RIP-RAPPED ENERGY DISSIPATOR BASIN SEE SHEET 2D-2, DETAIL Z 40 TONS CLASS 1 RIP RAP 60 SY GEOTEXTILE

Utley Creek

100 YEAR FEMA FLOODPLAIN

CHAINLINK FENCE

GREU TL-2

54" RCP-III (BURIED 0.9')

36" RCP-IV

24" RCP-III

66 x 33 x 3
1.5 inch Skimmer
with 1.25 inch
Orifice Diameter
5 ft. weir
ID 4.3

40 x 20 x 3
1.5 inch Skimmer
with 0.75 inch
Orifice Diameter
4 ft. weir
ID 4.6

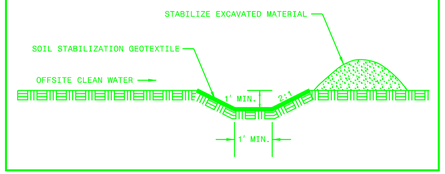
30 x 15 x 3
1.5 inch Skimmer
with 0.50 inch
Orifice Diameter
4 ft. weir
ID 4.7

34 x 17 x 3
1.5 inch Skimmer
with 0.625 inch
Orifice Diameter
4 ft. weir
ID 4.9

CLEAN WATER DIVERSION

CWD CWD CWD CWD CWD CWD

(Not to Scale)



DUKE ENERGY PROGRESS INC DB 15289 PG 2437

MATCH LINE -L- STA 22+50.00 SEE SHEET - 005

REVISIONS

HE-0002
4RDI | FC-04/CONST.004

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
WAKE COUNTY

DIVISION 5

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PREPARED BY

CDM Smith
CDM Smith Inc.
5400 Glenwood Avenue
Suite 400
Raleigh, NC 27612-3228
NC COA No. F-1255

5/26/20

CUR DATA -L-
PIc 23+55.98
Δc = 18°49'44.1" (LT)
D = 10°44'58.8"
Lc = 175.16
Tc = 88.38
R = 533
e = 0.04
RO = 84'
DS = 40 mph

CUR DATA -L-
PIc 29+53.31
Δc = 37°39'11.8" (RT)
D = 10°44'58.8"
Lc = 350.27
Tc = 181.72
R = 533
e = 0.04
RO = 84'
DS = 40 mph

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

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 5

NOTE:
PLACEMENT AND QUANTITIY OF EROSION CONTROL DEVICES SHOWN ON THESE PLANS MAY BE MODIFIED AS NEEDED IN ORDER TO MAINTAIN COMPLIANCE WITH ALL APPLICABLE REGULATIONS.

Place Matting for Erosion Control in Temporary Ditches and Diversions.

NOTE:
UTILIZE TEMPORARY SEDIMENT BASIN OR SPECIAL STILLING BASIN(S) AS STILLING BASIN WHERE APPLICABLE.

MATCH LINE -L- STA 22+50.00 SEE SHEET - 004

MATCH LINE -L- STA 36+50.00 SEE SHEET - 006

56 x 28 x 3
1.5 inch Skimmer
with 1.125 inch
Orifice Diameter
4 ft. weir
ID 5.1

38 x 19 x 3
1.5 inch Skimmer
with 0.625 inch
Orifice Diameter
4 ft. weir
ID 5.3 CG

28 x 14 x 3
ID 5.4

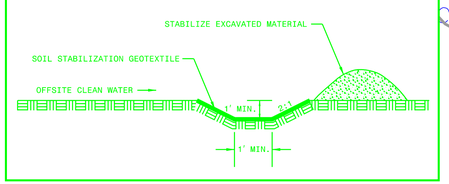
30 x 15 x 3
1.5 inch Skimmer
with 0.5 inch
Orifice Diameter
4 ft. weir
ID 5.5

22 x 11 x 3
1.5 inch Skimmer
with 0.25 inch
Orifice Diameter
4 ft. weir
ID 5.9

24 x 12 x 3
1.5 inch Skimmer
with 0.375 inch
Orifice Diameter
4 ft. weir
ID 5.6

36 x 18 x 3
1.5 inch Skimmer
with 0.625 inch
Orifice Diameter
4 ft. weir
ID 5.7

CLEAN WATER DIVERSION
CWD CWD CWD CWD CWD CWD
(Not to Scale)



SEQIRUS INC
DB 16104 PG 1384

DUKE ENERGY PROGRESS INC
DB 15289 PG 2437

100 YEAR FEMA FLOODPLAIN

Utley Creek

NAD 83/2001

HE-0002
4RDI | FC-05/CONST.005

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
WAKE COUNTY

DIVISION 5

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

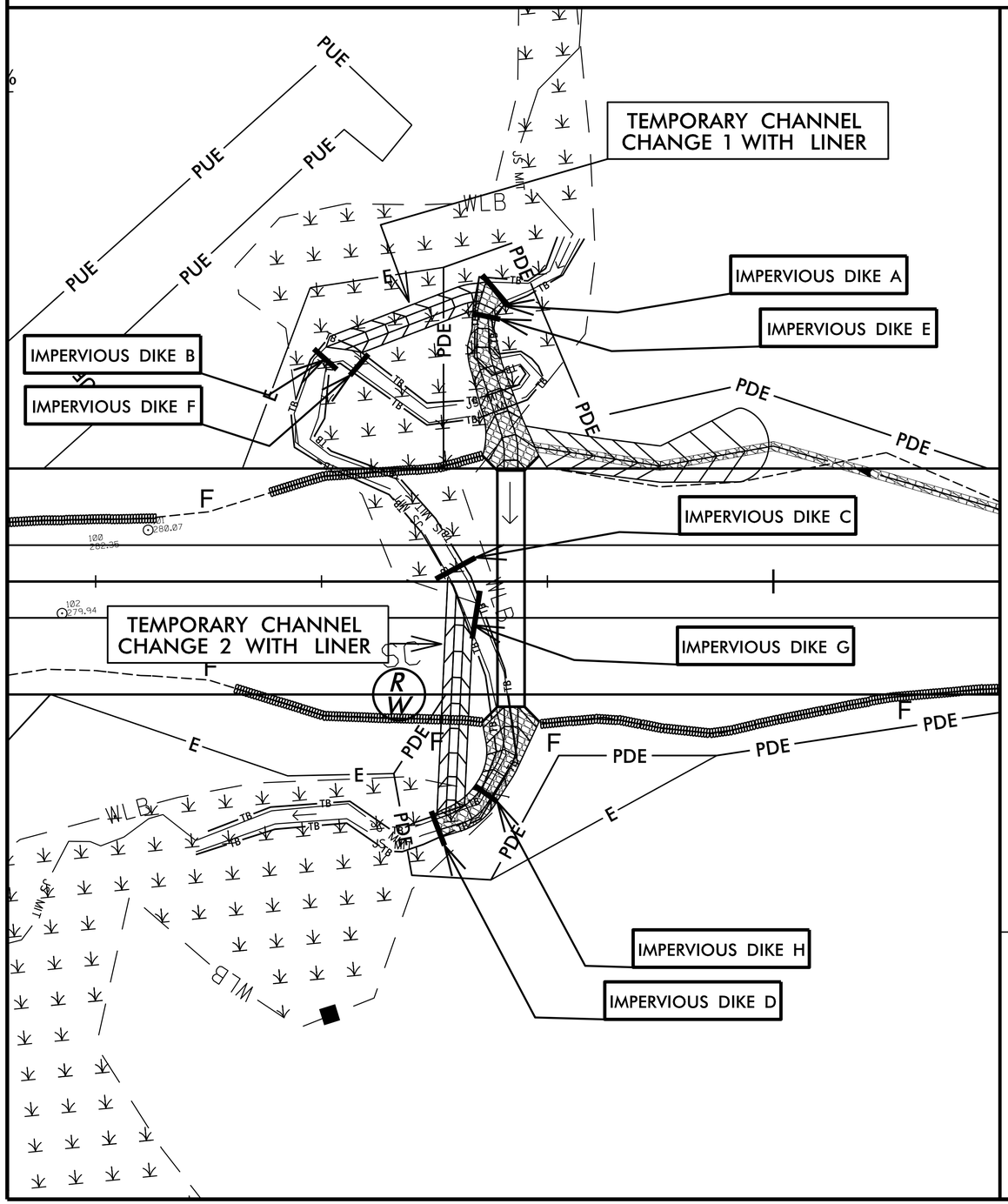
PREPARED BY

CDM Smith Inc.
5400 Glenwood Avenue
Suite 400
Raleigh, NC 27612-3228
NC COA No. F-1255

REVISIONS

CULVERT CONSTRUCTION SEQUENCE STA. 33+84 –L–

PROJECT REFERENCE NO.	SHEET NO.
HE-0002	EC-05A/CONST.05
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



PHASE 1

1. INSTALL SPECIAL STILLING BASINS FOR DEWATERING WORK AREAS.

2. INSTALL IMPERVIOUS DIKES A,B,C, AND D AND UTILIZE PUMP AROUND OPERATIONS TO CONSTRUCT TEMPORARY CHANNEL CHANGES 1 AND 2 WITH LINER (4FT BASE, 2FT DEEP, 2:1 SIDE SLOPES) AND INSTALL CLASS I RIPRAP BETWEEN IMPERVIOUS DIKES A AND E, AS WELL AS BETWEEN IMPERVIOUS DIKES H AND D. SEE DETAIL X.

3. INSTALL IMPERVIOUS DIKES E, F, G, AND H AND REMOVE IMPERVIOUS DIKES A, B, C, AND D AND PUMP AROUND TO DIVERT FLOW INTO TEMPORARY CHANNEL CHANGES 1 AND 2.

PHASE 2

1. CONSTRUCT PROPOSED CULVERT AND REMAINING INLET/OUTLET CHANNEL IMPROVEMENTS UTILIZING SPECIAL STILLING BASINS TO DEWATER WORK AREA AS NEEDED.

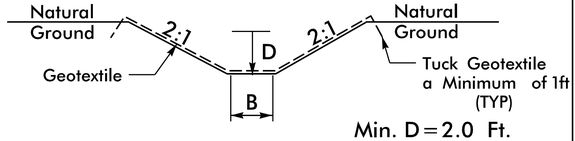
2. REINSTALL IMPERVIOUS DIKES A AND D AND UTILIZE PUMP AROUND OPERATIONS TO DIVERT FLOW THROUGH PROPOSED CULVERT. REMOVE TEMPORARY CHANNEL CHANGES 1 AND 2 WITH LINER AND FINALIZE CONSTRUCTION OF INLET/OUTLET CHANNEL IMPROVEMENTS.

3. REMOVE ALL IMPERVIOUS DIKES AND SPECIAL STILLING BASINS AND ALLOW FLOW THROUGH CULVERT.

DETAIL X

TEMPORARY DIVERSION DITCH

(Not to Scale)



Min. D = 2.0 Ft.

B = 4.0 Ft.

5/26/20

CUR DATA -L-
PIc 39+04.26
Δc = 05°02'07.3" (LT)
D = 01°12'04.2"
Lc = 419.20
Tc = 209.74
R = 4,770
e = NC
RO = N/A
DS = 40 mph

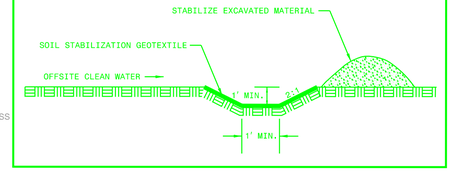
NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B AND TEMPORARY ROCK SILT CHECKS TYPE - A AT DRAINAGE OUTLETS.

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 6

NOTE:
PLACEMENT AND QUANTITIY OF EROSION CONTROL DEVICES SHOWN ON THESE PLANS MAY BE MODIFIED AS NEEDED IN ORDER TO MAINTAIN COMPLIANCE WITH ALL APPLICABLE REGULATIONS.

Place Matting for Erosion Control in Temporary Ditches and Diversions.

CLEAN WATER DIVERSION
CWD CWD CWD CWD CWD CWD
(Not to Scale)



NAD 83/2001

10 SEQIRUS INC DB 16104 PG 1384

11 DUKE ENERGY PROGRESS DB 15289 PG 2437

7 SEQIRUS INC DB 16104 PG 1384

MATCH LINE -L- STA 36+50.00 SEE SHEET - 005

MATCH LINE -L- STA 50+50.00 SEE SHEET - 007

38 x 19 x 3
1.5 inch Skimmer
with 0.625 inch
Orifice Diameter
4 ft. weir
ID 6.7

CWD AREA
4.70 AC

DITCH DETAIL D-D
SEE SHEET 2D-1
13 TONS
CLASS 'B' RIPRAP
47 SY GEOTEXTILE
DDE=39 CY

DITCH DETAIL A-A
SEE SHEET 2D-1
15 TONS
CLASS 'B' RIPRAP
67 SY GEOTEXTILE

DITCH DETAIL A-C
SEE SHEET 2D-1
107 TONS
CLASS 1 RIP RAP
162 SY GEOTEXTILE

DITCH DETAIL F-C
SEE SHEET 2D-2
36 TONS
CLASS 1 RIP RAP
82 SY GEOTEXTILE
DDE=114 CY

DITCH DETAIL A-B
SEE SHEET 2D-1

TOE PROTECTION
SEE DETAIL T SHEET 2D-2
14 TONS CLASS 'B' RIP RAP
80 SY GEOTEXTILE

TOE PROTECTION
SEE DETAIL T SHEET 2D-2
12 TONS CLASS 'B' RIP RAP
67 SY GEOTEXTILE

TOE PROTECTION
SEE DETAIL T SHEET 2D-2
21 TONS CLASS 'B' RIP RAP
117 SY GEOTEXTILE

NCDOT STD. 876.02
3 TONS
CLASS 'B' RIP RAP
14 SY GEOTEXTILE

28 x 10 x 3
4 ft. weir
ID 6.1 CG

28 x 12 x 3
4 ft. weir
ID 6.2 CG

44 x 20 x 3
4 ft. weir
ID 6.3

40 x 20 x 3
4 ft. weir
ID 6.4

36 x 16 x 3
4 ft. weir
ID 6.5

24" RCP-III

36" RCP-III

100 YEAR FEMA FLOODPLAIN

Utley Creek

WF SE SF WL SF

HE-0002
4RDI | FD-DR/CONST.DGG

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
WAKE COUNTY

DIVISION 5

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PREPARED BY

CDM Smith Inc.
5400 Glenwood Avenue
Suite 400
Raleigh, NC 27612-3228
NC COA No. F-1255

REVISIONS

5/26/20

MATCH LINE -L- STA 50+50.00 SEE SHEET - 006

NOTE:
PLACEMENT AND QUANTITIY OF EROSION CONTROL DEVICES SHOWN ON THESE PLANS MAY BE MODIFIED AS NEEDED IN ORDER TO MAINTAIN COMPLIANCE WITH ALL APPLICABLE REGULATIONS.

Place Matting for Erosion Control in Temporary Ditches and Diversions.

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

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 7

32 x 16 x 3
1.5 inch Skimmer
with 0.5 inch
Orifice Diameter
4 ft. weir
ID 7.3

36 x 18 x 3
1.5 inch Skimmer
with 0.625 inch
Orifice Diameter
4 ft. weir
ID 7.4

48 x 24 x 3
1.5 inch Skimmer
with 0.875 inch
Orifice Diameter
4 ft. weir
ID 7.2

14 x 28 x 3
1.5 inch Skimmer
with 0.375 inch
Orifice Diameter
4 ft. weir
ID 7.1

7 SEQIRUS INC DB 16104 PG 1384

5 301 GREEN OAKS LLC DB 19087 PG 1093

8 TOWN OF HOLLY SPRINGS DB 18267 PG 2717

BUMGARDNER ROAD (BY OTHERS)

BM4

BL-13 BL-14 BL-15 BL-16

RETAIN PIPE

RETAIN SYSTEM

DITCH DETAIL A-B SEE SHEET 2D-1 21 TONS CLASS 'B' RIP RAP 69 SY GEOTEXTILE

DITCH DETAIL D-B SEE SHEET 2D-1 26 TONS CLASS 'B' RIP RAP 75 SY GEOTEXTILE DDE=33 CY

DITCH DETAIL F-B SEE SHEET 2D-1 11 TONS CLASS 'B' RIP RAP 36 SY GEOTEXTILE DDE=37 CY

DITCH DETAIL F-C SEE SHEET 2D-2 27 TONS CLASS 1 RIP RAP 49 SY GEOTEXTILE DDE=77 CY

DITCH DETAIL A-C SEE SHEET 2D-1 18 TONS CLASS 1 RIP RAP 36 SY GEOTEXTILE

DITCH DETAIL A SEE SHEET 2D-1

DITCH DETAIL D-B SEE SHEET 2D-1 14 TONS CLASS 'B' RIP RAP 42 SY GEOTEXTILE DDE=64 CY

DITCH DETAIL A-E SEE SHEET 2D-1 70 TONS CLASS 'B' RIP RAP 200 SY GEOTEXTILE

SEE DETAIL U SHEET 2D-2 CLASS 1 RIP RAP 14 TONS COUNTERSUNK IN STREAMBED CLASS 2 RIP RAP 73 TONS BANK STABILIZATION 85 SY GEOTEXTILE DDE=87 CY

CLASS 'B' RIPRAP 1 TONS 5 SY GEOTEXTILE (DAYLIGHT DITCH)

20' ACCESS EASEMENT FOR DUKE ENERGY BM2020 PG 2233

60" RCP-IV (BURIED 1.0')

S89°25'25.2"E

-L-

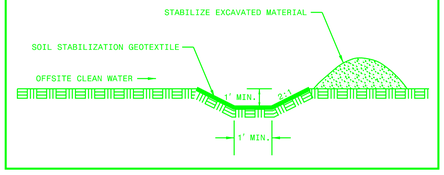
END TIP PROJECT HE-0002
-L- POT STA. 59+61.75

100 YEAR FEMA FLOODPLAIN

CLEAN WATER DIVERSION

CWD CWD CWD CWD CWD CWD

(Not to Scale)



HE-0002

4RD1 | FD-07/ CONST.007

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
WAKE COUNTY

DIVISION 5

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

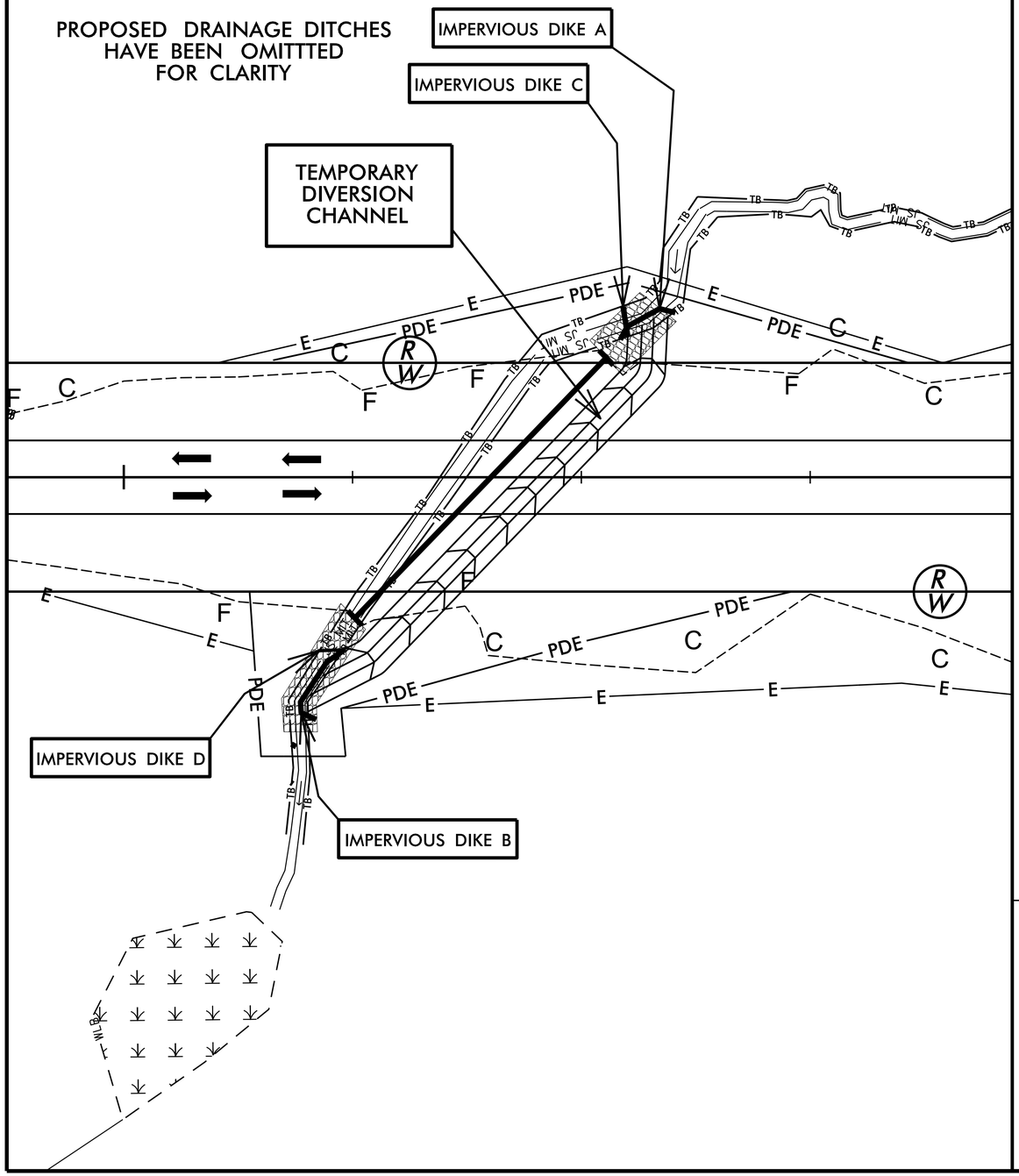
PREPARED BY

CDM Smith Inc.
5400 Glenwood Avenue
Suite 400
Raleigh, NC 27612-3228
NC COA No. F-1255

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
HE-0002	EC-07A/CONST.07
R/W SHEET NO.	

CULVERT CONSTRUCTION SEQUENCE STA. 51+60.50 –L–



1. INSTALL IMPERVIOUS DIKES A AND B AND CONSTRUCT TEMPORARY CHANNEL CHANGE WITH LINER (4 FT BASE, 2 FT DEEP, 2:1 SIDE SLOPES). SEE DETAIL X.

2. INSTALL IMPERVIOUS DIKES C AND D AND REMOVE IMPERVIOUS DIKES A AND B TO DIVERT FLOW THROUGH TEMPORARY CHANNEL.

3. INSTALL SPECIAL STILLING BASINS AS NEEDED FOR DEWATERING WORK AREA.

4. INSTALL PROPOSED 60" RCP.

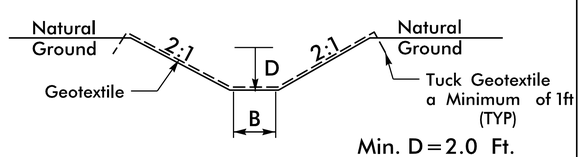
5. UTILIZE IMPERVIOUS DIKES AND PUMP AROUND OPERATIONS AS NEEDED TO REMOVE TEMPORARY CHANNEL CHANGE WITH LINER AND CONSTRUCT INLET/OUTLET CHANNEL IMPROVEMENTS.

6. REMOVE ALL IMPERVIOUS DIKES AND ALLOW FLOW THROUGH 60" RCP.

DETAIL X

TEMPORARY DIVERSION DITCH

(Not to Scale)



Min. D=2.0 Ft.

B=4.0 Ft.

5/26/20

CUR DATA -Y1-	CUR DATA -Y1-
PIc 16+81.56	PIc 15+38.54
Δc = 14°04'17.8" (RT)	Δc = 74°20'29.7" (RT)
D = 11°27'33.0"	D = 66°37'22.8"
Lc = 122.80	Lc = 111.59
Tc = 61.71	Tc = 65.21
R = 500	R = 86
e = NC	e = NC
RO = N/A	RO = N/A
DS = 40 mph	DS = 25 mph

NOTE:
PLACEMENT AND QUANTITIY OF EROSION CONTROL DEVICES SHOWN ON THESE PLANS MAY BE MODIFIED AS NEEDED IN ORDER TO MAINTAIN COMPLIANCE WITH ALL APPLICABLE REGULATIONS.

Place Matting for Erosion Control in Temporary Ditches and Diversions.

NAD 83/2001

-Y1- START 10+00.00

FUJIFILM DIOSYNTH BIOTECHNOLOGIES HOLDINGS DELAWAR
DB 18879 PG 1689

SEQIRUS INC
DB 16104 PG 1384

BEGIN CONST -Y1-
POT STA 12+42.82

TOE PROTECTION
SEE DETAIL T SHEET 2D-2
13 TONS CLASS 'B' RIP RAP
70 SY GEOTEXTILE

DITCH DETAIL C
SEE SHEET 2D-1
277 TONS CLASS 1 RIP RAP
327 SY GEOTEXTILE
DDE=349CY

26 x 12 x 3
ID 4.2

26 x 13 x 3
ID 4.1

50 x 25 x 3
ID 4.5

-L- POT STA 11+62.18 =
-Y1- POT STA 14+16.17

-L- START 10+00.00

BEGIN TIP PROJECT HE-0002
-L- POT STA. 11+00.00

END CONST -Y1-
POT STA 17+50.00

-Y1- PT 17+42.65

-Y1- PC 16+19.85

-Y1- PC 14+73.33

TOE PROTECTION
SEE DETAIL T SHEET 2D-2
16 TONS CLASS 'B' RIP RAP
86 SY GEOTEXTILE

TOE PROTECTION
SEE DETAIL T SHEET 2D-2
20 TONS CLASS 'B' RIP RAP
155 SY GEOTEXTILE

TOE PROTECTION
SEE DETAIL T SHEET 2D-2
28 TONS CLASS 'B' RIP RAP
165 SY GEOTEXTILE

RIP-RAPPED ENERGY
DISSIPATOR BASIN
SEE SHEET 2D-2 DETAIL Z
40 TONS CLASS 1 RIP RAP
60 SY GEOTEXTILE

22 TONS
CLASS 'B' RIPRAP
98 SY GEOTEXTILE

SEE DETAIL U
SHEET 2D-2
CLASS 1 RIP RAP 7 TONS
COUNTERSUNK IN STREAMED,
CLASS 2 RIP RAP 52 TONS
BANK STABILIZATION,
60 SY GEOTEXTILE, DDE=32 CY

DITCH DETAIL D-B
SEE SHEET 2D-1
34 TONS
CLASS 'B' RIP RAP
76 SY GEOTEXTILE
DDE=67 CY

DITCH DETAIL D-B
SEE SHEET 2D-1
40 TONS
CLASS 'B' RIP RAP
90 SY GEOTEXTILE
DDE=81 CY

TOE PROTECTION
SEE DETAIL T SHEET 2D-2
10 TONS CLASS 'B' RIP RAP
56 SY GEOTEXTILE

TOE PROTECTION
SEE DETAIL T SHEET 2D-2
29 TONS CLASS 'B' RIP RAP
161 SY GEOTEXTILE

40 x 20 x 3
1.5 inch Skimmer
with 0.75 inch
Orifice Diameter
4 ft. weir
ID 4.6

66 x 33 x 3
1.5 inch Skimmer
with 1.25 inch
Orifice Diameter
5 ft. weir
ID 4.3

30 x 15 x 3
1.5 inch Skimmer
with 0.50 inch
Orifice Diameter
4 ft. weir
ID 4.7

34 x 17 x 3
1.5 inch Skimmer
with 0.625 inch
Orifice Diameter
4 ft. weir
ID 4.9

CLEAN WATER DIVERSION
CWD CWD CWD CWD CWD CWD
(Not to Scale)

STABILIZE EXCAVATED MATERIAL
SOIL STABILIZATION GEOTEXTILE
OFFSITE CLEAN WATER
1' MIN.
2:1
1' MIN.

100 YEAR FEMA FLOODPLAIN

Utley Creek

60' ACCESS EASEMENT
DB 1990 PG 160

DUKE ENERGY PROGRESS INC
DB 15289 PG 2437

MATCH LINE -L- STA 22+50.00 SEE SHEET - 005

REVISIONS

HE-0002
4RDI | FC-09/CONST.004

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
WAKE COUNTY

DIVISION 5

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PREPARED BY

CDM Smith Inc.
5400 Glenwood Avenue
Suite 400
Raleigh, NC 27612-3228
NC COA No. F-1255

5/26/20

CUR DATA -L-
PIc 23+55.98
Δc = 18°49'44.1" (LT)
D = 10°44'58.8"
Lc = 175.16
Tc = 88.38
R = 533
e = 0.04
RO = 84'
DS = 40 mph

CUR DATA -L-
PIc 29+53.31
Δc = 37°39'11.8" (RT)
D = 10°44'58.8"
Lc = 350.27
Tc = 181.72
R = 533
e = 0.04
RO = 84'
DS = 40 mph

NOTE:
PLACEMENT AND QUANTITIY OF EROSION CONTROL DEVICES SHOWN ON THESE PLANS MAY BE MODIFIED AS NEEDED IN ORDER TO MAINTAIN COMPLIANCE WITH ALL APPLICABLE REGULATIONS.

Place Matting for Erosion Control in Temporary Ditches and Diversions.

NOTE:
UTILIZE TEMPORARY SEDIMENT BASIN OR SPECIAL STILLING BASIN(S) AS STILLING BASIN WHERE APPLICABLE.

28 x 14 x 3
1.5 inch Skimmer
with 1.0 inch
Orifice Diameter
5 ft. weir
ID 5.2 F

24 x 12 x 3
1.5 inch Skimmer
with 0.25 inch
Orifice Diameter
4 ft. weir
ID 5.8 F

28 x 14 x 3
ID 5.4

30 x 15 x 3
1.5 inch Skimmer
with 0.5 inch
Orifice Diameter
4 ft. weir
ID 5.5

24 x 12 x 3
1.5 inch Skimmer
with 0.375 inch
Orifice Diameter
4 ft. weir
ID 5.6

38 x 19 x 3
1.5 inch Skimmer
with 0.625 inch
Orifice Diameter
4 ft. weir
ID 5.3 CG

56 x 28 x 3
1.5 inch Skimmer
with 1.125 inch
Orifice Diameter
4 ft. weir
ID 5.1

22 x 11 x 3
1.5 inch Skimmer
with 0.25 inch
Orifice Diameter
4 ft. weir
ID 5.9

36 x 18 x 3
1.5 inch Skimmer
with 0.625 inch
Orifice Diameter
4 ft. weir
ID 5.7

CLEAN WATER DIVERSION
CWD CWD CWD CWD CWD CWD
(Not to Scale)
STABILIZE EXCAVATED MATERIAL
SOIL STABILIZATION GEOTEXTILE
OFFSITE CLEAN WATER
1' MIN.
2:1
1' MIN.

MATCH LINE -L- STA 22+50.00 SEE SHEET - 004

MATCH LINE -L- STA 36+50.00 SEE SHEET - 006

10 SEQIRUS INC DB 16104 PG 1384

11 DUKE ENERGY PROGRESS INC DB 15289 PG 2437

100 YEAR FEMA FLOODPLAIN

Utley Creek

HE-0002
4RDI | FC-019/CONST-005
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
WAKE COUNTY
DIVISION 5
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PREPARED BY
CDM Smith Inc.
5400 Glenwood Avenue
Suite 400
Raleigh, NC 27612-3228
NC COA No. F-1255
REVISIONS

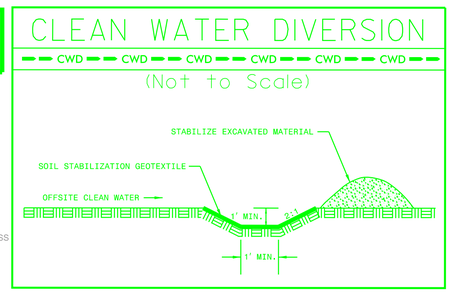
5/26/20

CUR DATA -L-
PIc 39+04.26
Δc = 05°02'07.3" (LT)
D = 01°12'04.2"
Lc = 419.20
Tc = 209.74
R = 4,770
e = NC
RO = N/A
DS = 40 mph

NOTE:
PLACEMENT AND QUANTITIY OF EROSION CONTROL DEVICES SHOWN ON THESE PLANS MAY BE MODIFIED AS NEEDED IN ORDER TO MAINTAIN COMPLIANCE WITH ALL APPLICABLE REGULATIONS.

Place Matting for Erosion Control in Temporary Ditches and Diversions.

CLEAN WATER DIVERSION
(Not to Scale)



NAD 83/2001

10 SEQIRUS INC DB 16104 PG 1384

11 DUKE ENERGY PROGRESS DB 15289 PG 2437

7 SEQIRUS INC DB 16104 PG 1384

20 x 10 x 3
ID 6.6

38 x 19 x 3
1.5 inch Skimmer
with 0.625 inch
Orifice Diameter
4 ft. weir
ID 6.7

CWD AREA
4.70 AC

44 x 20 x 3
4 ft. weir
ID 6.3

40 x 20 x 3
4 ft. weir
ID 6.4

36 x 16 x 3
4 ft. weir
ID 6.5

MATCH LINE -L- STA 36+50.00 SEE SHEET - 005

MATCH LINE -L- STA 50+50.00 SEE SHEET - 007

-L-

24" RCP-III

36" RCP-III

100 YEAR FEMA FLOODPLAIN

Utley Creek

WF

WL

SE

SF

JS MIT

HE-0002
4RDI | FC-10/CONST.006

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
WAKE COUNTY

DIVISION 5

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PREPARED BY

CDM Smith Inc.
5400 Glenwood Avenue
Suite 400
Raleigh, NC 27612-3228
NC COA No. F-1255

REVISIONS

5/26/20

MATCH LINE -L- STA 50+50.00 SEE SHEET - 006

NOTE:
PLACEMENT AND QUANTITIY OF EROSION CONTROL DEVICES SHOWN ON THESE PLANS MAY BE MODIFIED AS NEEDED IN ORDER TO MAINTAIN COMPLIANCE WITH ALL APPLICABLE REGULATIONS.

Place Matting for Erosion Control in Temporary Ditches and Diversions.

32 x 16 x 3 1.5 inch Skimmer with 0.5 inch Orifice Diameter 4 ft. weir ID 7.3

36 x 18 x 3 1.5 inch Skimmer with 0.625 inch Orifice Diameter 4 ft. weir ID 7.4

48 x 24 x 3 1.5 inch Skimmer with 0.875 inch Orifice Diameter 4 ft. weir ID 7.2

14 x 28 x 3 1.5 inch Skimmer with 0.375 inch Orifice Diameter 4 ft. weir ID 7.1

7 SEQIRUS INC DB 16104 PG 1384

5 301 GREEN OAKS LLC DB 19087 PG 1093

8 TOWN OF HOLLY SPRINGS DB 18267 PG 2717

BUMGARDNER ROAD (BY OTHERS)

BM4

BL-16

BL-15

BL-14

BL-13

RETAIN PIPE

RETAIN SYSTEM

CLASS 'B' RIPRAP 1 TONS 5 SY GEOTEXTILE (DAYLIGHT DITCH)

SEE DETAIL U SHEET 2D-2 CLASS 1 RIP RAP 14 TONS COUNTERSUNK IN STREAMBED; CLASS 2 RIP RAP 73 TONS BANK STABILIZATION 85 SY GEOTEXTILE, DDE = 97 CY

DITCH DETAIL A-B SEE SHEET 2D-1 21 TONS CLASS 'B' RIP RAP 69 SY GEOTEXTILE

DITCH DETAIL D-B SEE SHEET 2D-1 26 TONS CLASS 'B' RIP RAP 75 SY GEOTEXTILE DDE = 33 CY

DITCH DETAIL F-B SEE SHEET 2D-1 11 TONS CLASS 'B' RIP RAP 36 SY GEOTEXTILE DDE = 37 CY

DITCH DETAIL F-C SEE SHEET 2D-2 27 TONS CLASS 1 RIP RAP 49 SY GEOTEXTILE DDE = 77 CY

DITCH DETAIL A-C SEE SHEET 2D-1 18 TONS CLASS 1 RIP RAP 36 SY GEOTEXTILE

DITCH DETAIL A SEE SHEET 2D-1

DITCH DETAIL D-B SEE SHEET 2D-1 14 TONS CLASS 'B' RIP RAP 42 SY GEOTEXTILE DDE = 64 CY

DITCH DETAIL A-E SEE SHEET 2D-1 70 TONS CLASS 'B' RIP RAP 200 SY GEOTEXTILE

+20.00 92.00 LT
+21.00 85.00 LT
+60.00 50.00 LT
+43.00 50.00 LT
+58.00 50.00 LT
+50.00 75.00 LT
+48.00 80.00 LT
+35.00 50.00 LT
+00.00 50.00 LT
+55.00 50.00 LT
+00.00 72.00 RT
+92.00 50.00 RT
+40.00 90.00 RT
+42.00 121.00 RT
+60.00 90.00 RT
+61.75 50.00 RT
+60.00 50.00 RT
+95.00 101.00 RT
+97.00 122.00 RT
+56.81 75.98 RT
+60.00 122.00 RT

60" RCP-IV (BURIED 1.0')
INV = 289.20
INV 312.50
GREU TL-2
-L- S89°25'25.2"E
PROP 100' ROW
12' 12'
55
60
75.00

CLEAN WATER DIVERSION

CWD CWD CWD CWD CWD CWD

(Not to Scale)

STABILIZE EXCAVATED MATERIAL
SOIL STABILIZATION GEOTEXTILE
OFFSITE CLEAN WATER
1' MIN.
1' MIN.

100 YEAR FEMA FLOODPLAIN

END TIP PROJECT HE-0002
-L- POT STA. 59+61.75

NAD 83/2001

HE-0002
4RDI | FR-IV/CONST.007

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
WAKE COUNTY

DIVISION 5

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PREPARED BY

CDM Smith Inc.
5400 Glenwood Avenue
Suite 400
Raleigh, NC 27612-3228
NC COA No. F-1255

REVISIONS