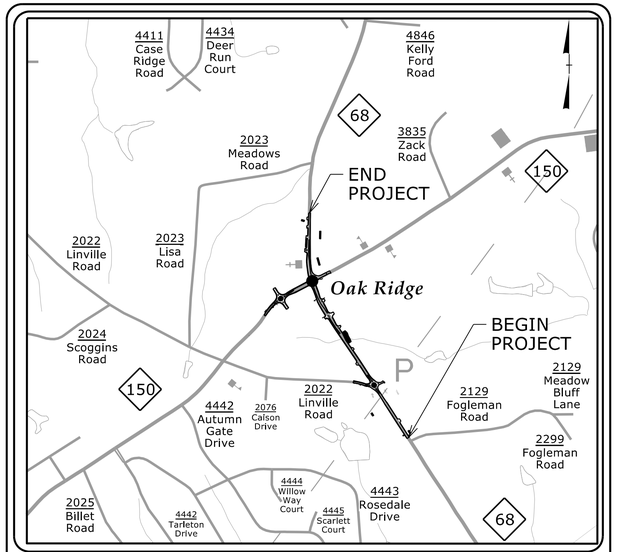
TIP PROJECT: R-5725



VICINITY MAP

NOT TO SCALE

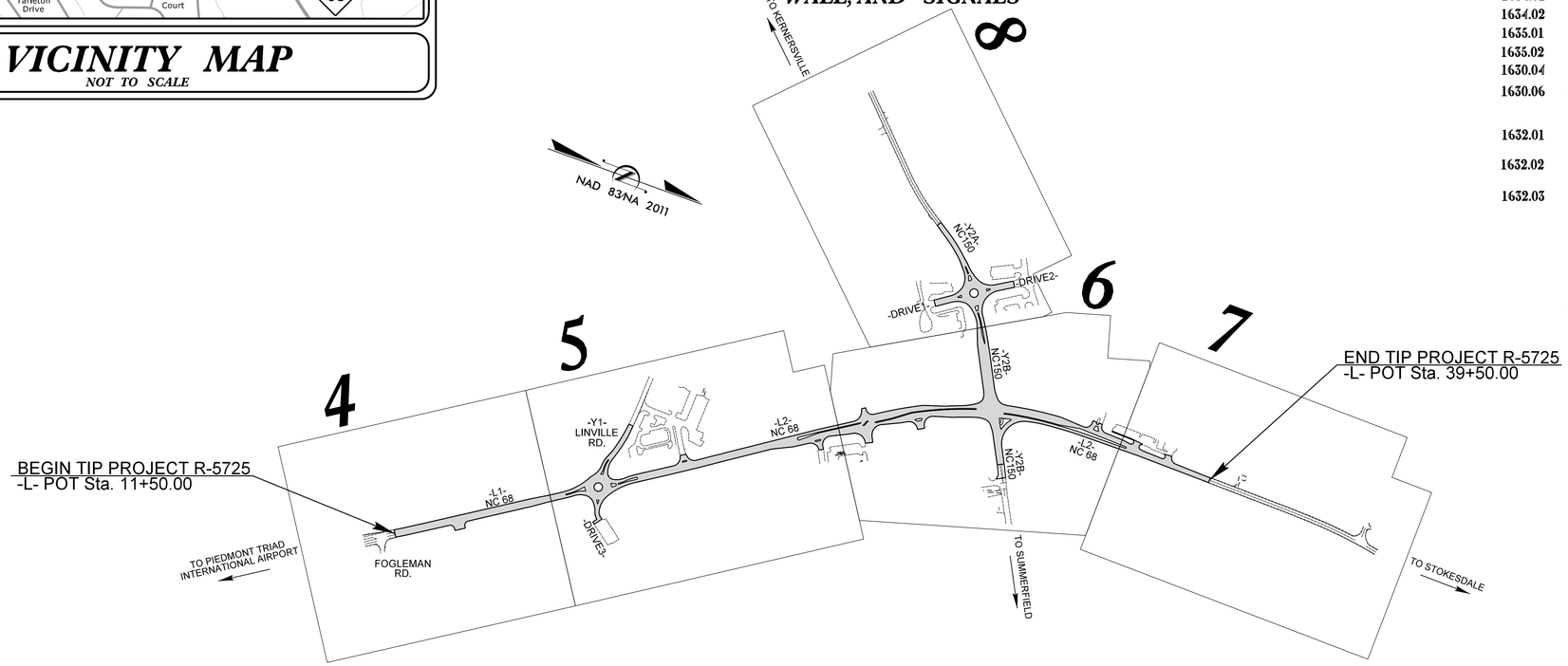
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

GUILFORD COUNTY

LOCATION: INTERSECTION IMPROVEMENTS ALONG NC 68 AND NC 150 IN OAK RIDGE.

TYPE OF WORK: DRAINAGE, GRADING, PAVING, RETAINING WALL, AND SIGNALS



STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-5725	EC-1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
50474.1.1	N/A	P.E.
50474.2.1	N/A	RIGHT-OF-WAY
50474.2.2	N/A	UTILITIES
50474.3.1	N/A	CONSTRUCTION

EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	TSD
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1622.01	Temporary Berms and Slope Drains	
1630.02	Silt Basin Type B	
1633.01	Temporary Rock Silt Check Type-A	
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	
1633.02	Temporary Rock Silt Check Type-B	
	Wattle / Coir Fiber Wattle	EW CFW
	Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)	
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	
1635.02	Rock Pipe Inlet Sediment Trap Type-B	
1630.04	Stilling Basin	
1630.06	Special Stilling Basin	
	Rock Inlet Sediment Trap:	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C
	Skimmer Basin	
	Tiered Skimmer Basin	
	Infiltration Basin	
	Safety Fence	SF

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

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT

Refer To E. C. Special Provisions for Special Considerations.

GRAPHIC SCALE

50 25 0 50 100

PLANS

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE APPLICABLE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE APRIL 1, 2019 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF WATER RESOURCES.

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Prepared in the Office of:

STEWART

223 S WEST ST, SUITE 1100
RALEIGH, NC 27603

Designed by:

MICHAEL BURNS, PE ***3875***

NAME *LEVEL III CERTIFICATION NO.*

Roadway Standard Drawings

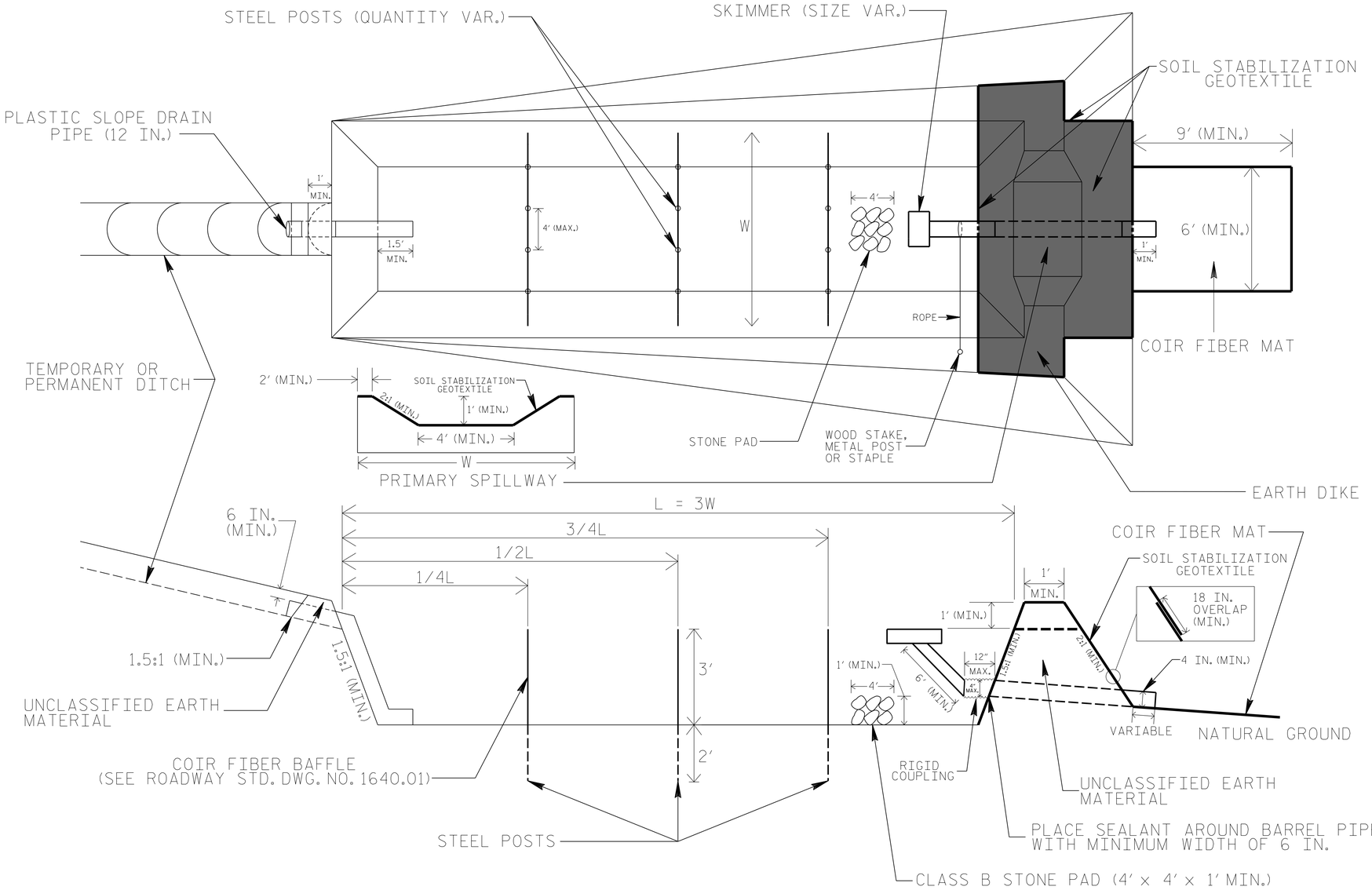
The following roadway english standards as appear in "Roadway Standard Drawings"– Roadway Design Unit – N. C. Department of Transportation – Raleigh, N. C., dated January 2018 and the latest revison thereto are applicable to this project and by reference hereby are considered a part of these plans.

1605.01	Temporary Silt Fence	1633.02	Temporary Rock Silt Check Type B
1606.01	Special Sediment Control Fence	1635.02	Rock Pipe Inlet Sediment Trap Type B
1607.01	Gravel Construction Entrance	1640.01	Coir Fiber Baffle
1622.01	Temporary Berms and Slope Drains		
1630.03	Temporary Silt Ditch		
1630.06	Special Stilling Basin		
1631.01	Matting Installation		
1632.01	Rock Inlet Sediment Trap Type A		
1632.02	Rock Inlet Sediment Trap Type B		
1632.03	Rock Inlet Sediment Trap Type C		
1633.01	Temporary Rock Silt Check Type A		

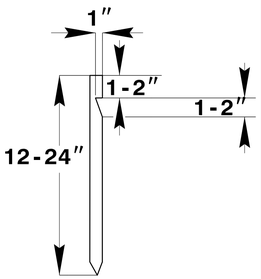
4/19/2023
USER: kdesign \r5725_EC_tsh.dgn
PW: Workspace

PROJECT REFERENCE NO.	SHEET NO.
R-5725	EC-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

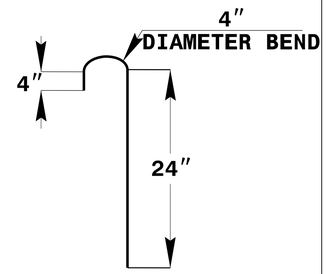
SKIMMER BASIN WITH BAFFLES DETAIL



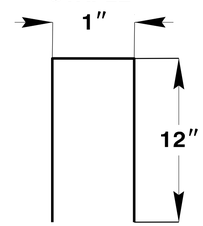
2" x 2" (nominal) WOODEN STAKE



#10 STEEL REINFORCEMENT BAR



1" (nominal) STAPLE



COIR FIBER MAT ANCHOR OPTIONS

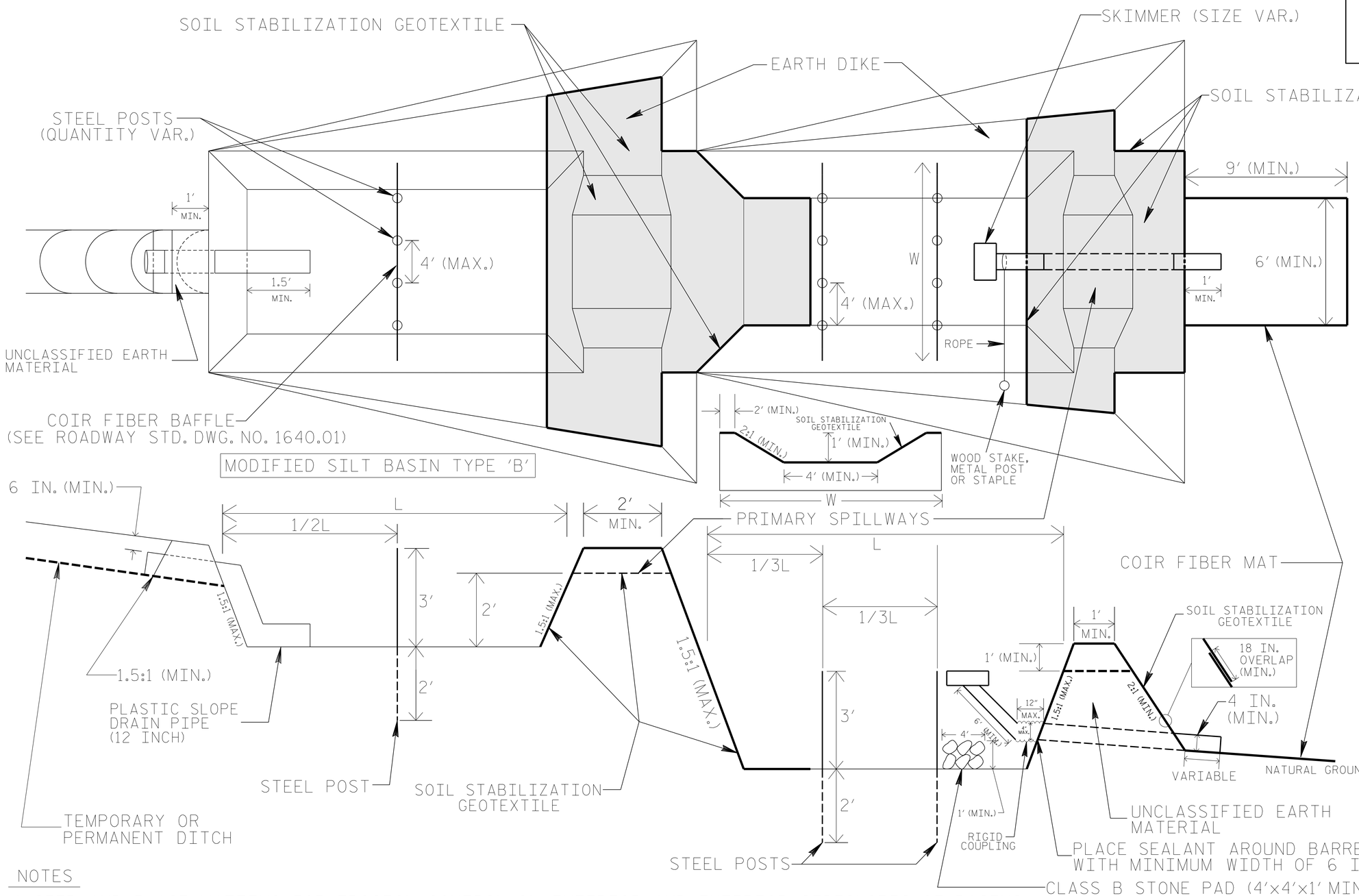
NOTES

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.).

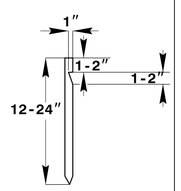
NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
R-5725	EC-2A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

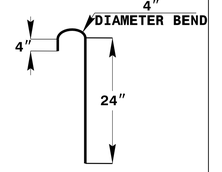
TIERED SKIMMER BASIN DETAIL



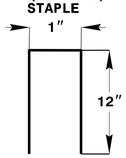
2″ x 2″ (nominal) WOODEN STAKE



#10 STEEL REINFORCEMENT BAR



1″ (nominal) STAPLE



COIR FIBER MAT ANCHOR OPTIONS

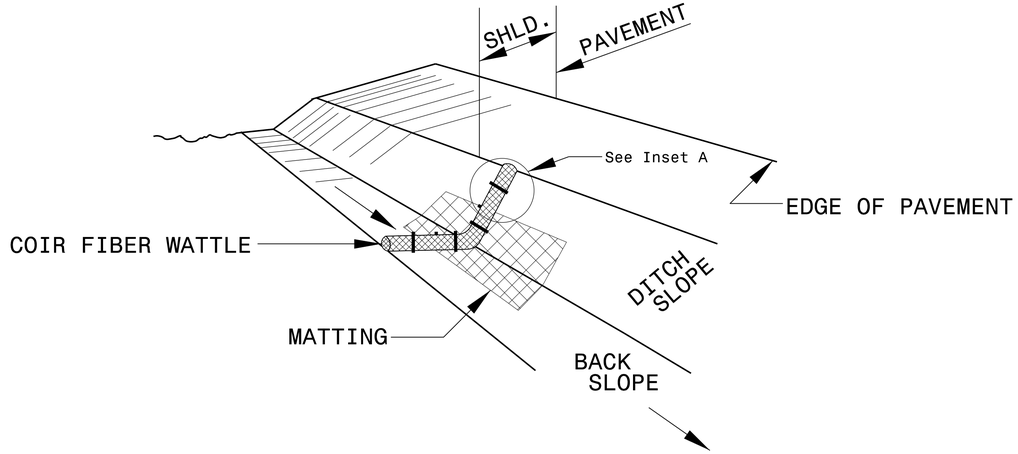
NOTES

1. SEED AND PLACE MATTING FOR EROSION CONTROL ON INTERIOR AND EXTERIOR SIDESLOPES 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 3FT., THE MINIMUM BASIN WIDTHS SHALL BE 9 FT.
5. DETERMINE PRIMARY SPILLWAY WEIR LENGTHS (FT.) USING Q/0.8, WHERE Q IS FLOW RATE (CFS) INTO UPPER BASIN.
6. SOIL STABILIZATION GEOTEXTILE FOR PRIMARY SPILLWAYS SHALL BE ONE CONTINUOUS PIECE OF MATERIAL OR OVERLAPPED 18 IN. (MIN.).

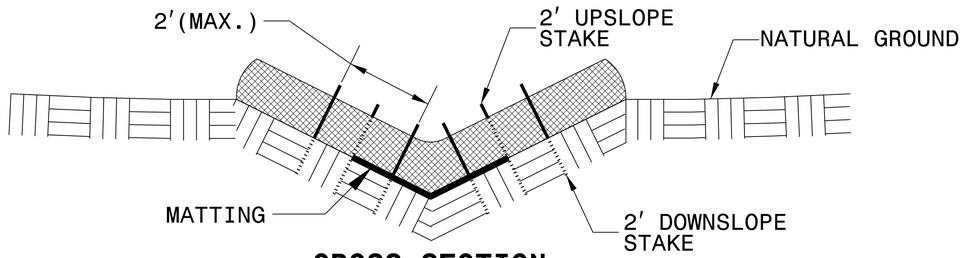
NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
R-5725	EC-2B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

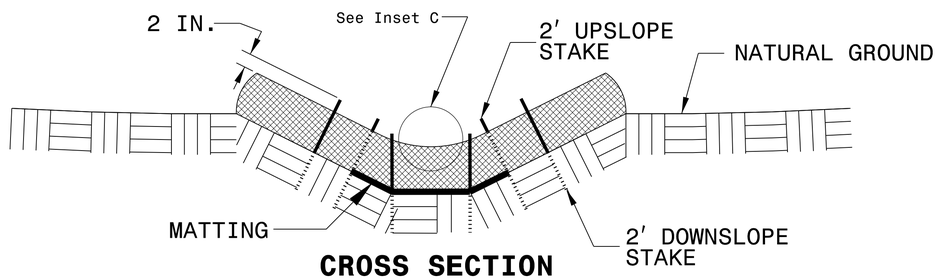
COIR FIBER WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL



ISOMETRIC VIEW



CROSS SECTION VEE DITCH



CROSS SECTION TRAPEZOIDAL DITCH

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.

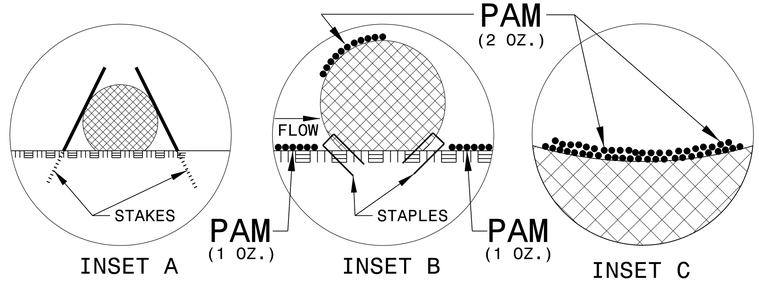
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

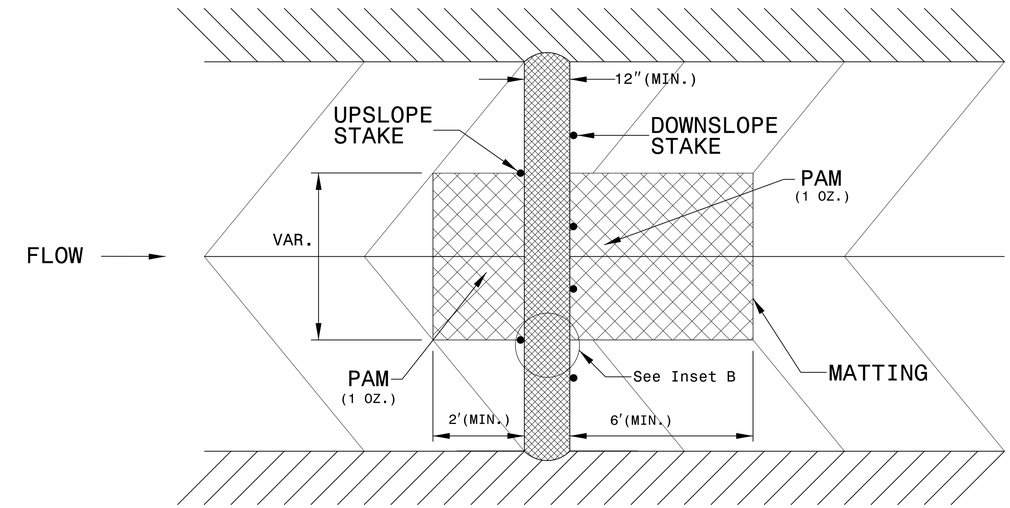
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.

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.

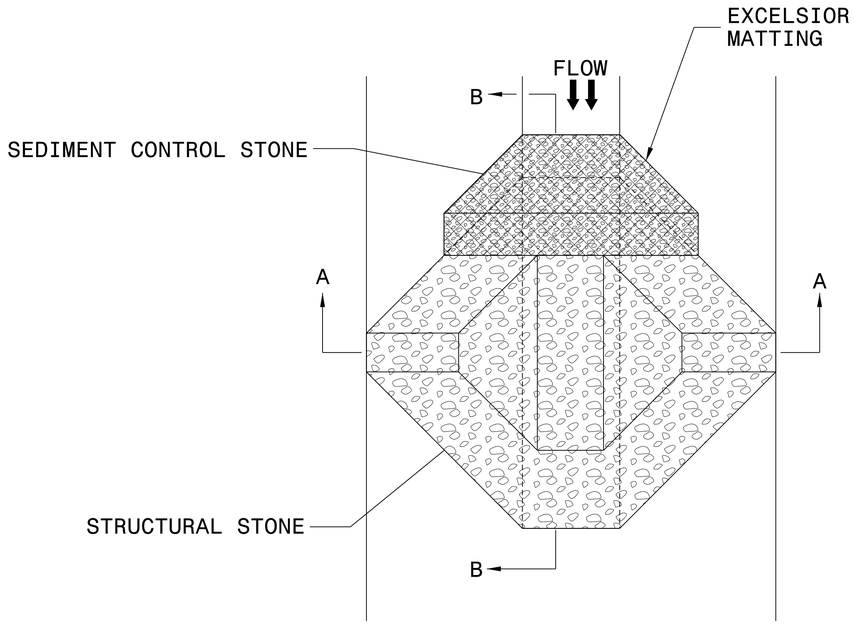




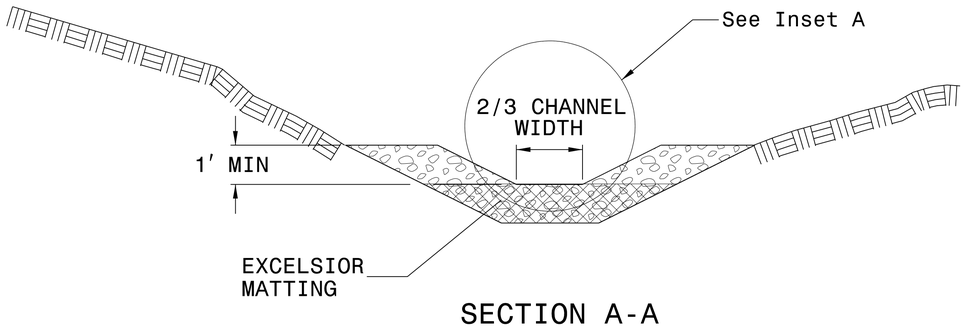
TOP VIEW

PROJECT REFERENCE NO.	SHEET NO.
R-5725	EC-2C
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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



PLAN



SECTION A-A

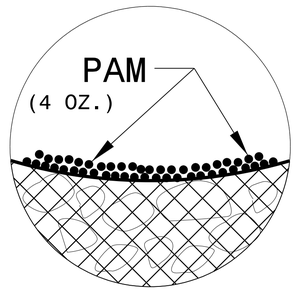
NOTES:

INSTALL TEMPORARY ROCK SILT CHECK TYPE A IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1633.01.

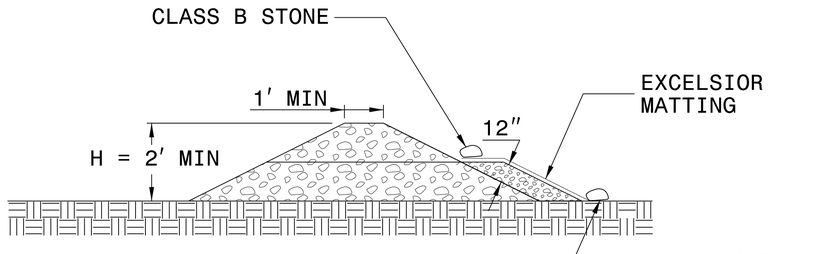
USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

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



INSET A



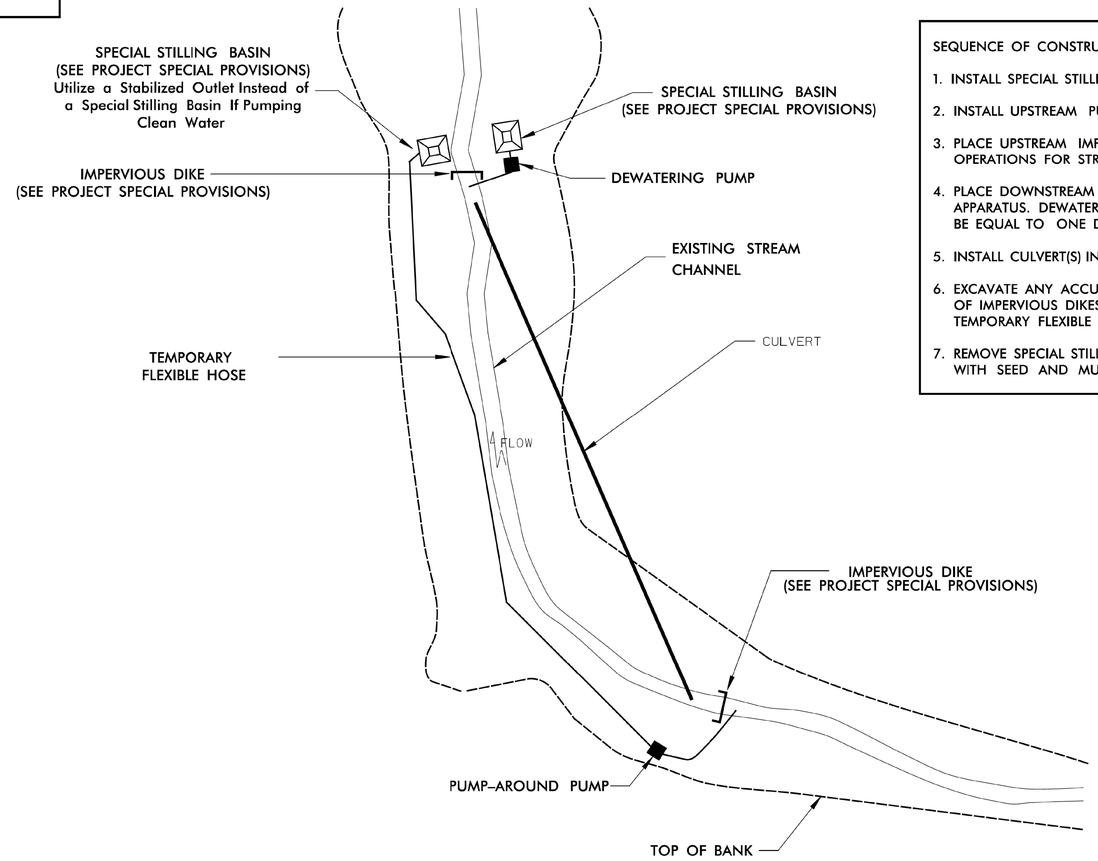
SECTION B-B

NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
R-5725	EC-2D
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

EXAMPLE OF PUMP–AROUND OPERATION

NOTES:
1) All excavation shall be performed in only dry or isolated areas of the work zone.
2) Impervious dikes are to be used to isolate work from stream flow when necessary.
3) Maintenance of stream flow operations shall be incidental to the work. This includes polyethylene sheeting, diversion pipes, pumps and hoses.
4) Pumps and hoses shall be of sufficient size to dewater the work area.



SEQUENCE OF CONSTRUCTION FOR TYPICAL WORK AREA

1. INSTALL SPECIAL STILLING BASIN(S).
2. INSTALL UPSTREAM PUMP AND TEMPORARY FLEXIBLE HOSE.
3. PLACE UPSTREAM IMPERVIOUS DIKE AND BEGIN PUMPING OPERATIONS FOR STREAM DIVERSION.
4. PLACE DOWNSTREAM IMPERVIOUS DIKE AND PUMPING APPARATUS. DEWATER ENTRAPPED AREA. AREA TO BE DEWATERED SHALL BE EQUAL TO ONE DAY'S WORK.
5. INSTALL CULVERT(S) IN ACCORDANCE WITH THE PLANS.
6. EXCAVATE ANY ACCUMULATED SILT AND DEWATER BEFORE REMOVAL OF IMPERVIOUS DIKES. REMOVE IMPERVIOUS DIKES, PUMPS, AND TEMPORARY FLEXIBLE HOSE. (DOWNSTREAM IMPERVIOUS DIKES FIRST).
7. REMOVE SPECIAL STILLING BASIN(S) AND BACKFILL. STABILIZE DISTURBED AREA WITH SEED AND MULCH.

PROJECT REFERENCE NO.	SHEET NO.
R-5725	EC-3
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION SUMMARY SHEET

MATTING FOR EROSION CONTROL (EXCELSIOR)

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L1-	11+28	13+00	LT	200
4	-L1-	18+00	18+39	LT	50
			SUBTOTAL		250
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					0
				TOTAL	250

MATTING FOR EROSION CONTROL (STRAW)

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	
4	-L1-	12+50	16+00	LT	405
4	-L1-	16+00	17+00	LT	120
4	-L1-	17+00	18+31	LT	110
4	-L1-	17+94	18+31	LT	55
			SUBTOTAL		940
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					11,410
				TOTAL	12,350
				SAY	12,350

PERMANENT SOIL REINFORCEMENT MAT

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L1-	17+25	18+39	RT	95
4	-L1-	18+39	18+50	RT	10
			SUBTOTAL		105
		ADDITIONAL PSRM TO BE INSTALLED			0
				TOTAL	105
				SAY	105

PROJECT REFERENCE NO.	SHEET NO.
R-5725	EC-3A

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 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND HQW ZONES.

PROJECT REFERENCE NO.	SHEET NO.
R-5725	EC-4/CONST.4
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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VHB Engineering NC, P.C. (C-3705), 940 Main Campus Drive, Suite 500, Raleigh, NC 27606

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

NAD 83/95

DETAIL 1
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground; 2:1; D; 4:1 or Flatter; Front Ditch Slope; Min. D=1.5 Ft.

FROM STA. 11+28 TO STA. 13+00 –L1– RT
FROM STA. 12+50 TO STA. 17+00 –L1– LT
FROM STA. 18+00 TO STA. 18+39 –L1– RT

DETAIL 2
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Natural Ground; 2:1; D; 2:1 or Flatter; Fill Slope; Min. D=1.5 Ft.

FROM STA. 17+00 TO STA. 18+32 –L1– LT
FROM STA. 18+39 TO STA. 18+50 –L1– RT

DETAIL 3
BERM 'V' DITCH
(Not to Scale)
Natural Ground; 2:1; D; 2:1; b; RDWY; 4:1
Min. D=1.5 Ft.
b=5 Ft.

FROM STA. 17+25 TO STA. 18+39 –L1– RT

DETAIL 4
STANDARD BASE DITCH
(Not to Scale)
Natural Ground; 2:1; D; 2:1; Natural Ground; d; Geotextile; B
Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
B= 2.0 Ft.
*When B is < 6.0'
Type of Liner= Class B Rip Rap

FROM STA. 18+27 TO 18+39 –L1– RT

DETAIL 5
STANDARD BASE DITCH
(Not to Scale)
Natural Ground; 2:1; D; 2:1; Natural Ground; B
Min. D=2 Ft.
B=3 Ft.

FROM STA. 17+94 TO STA. 18+32 –L1– LT

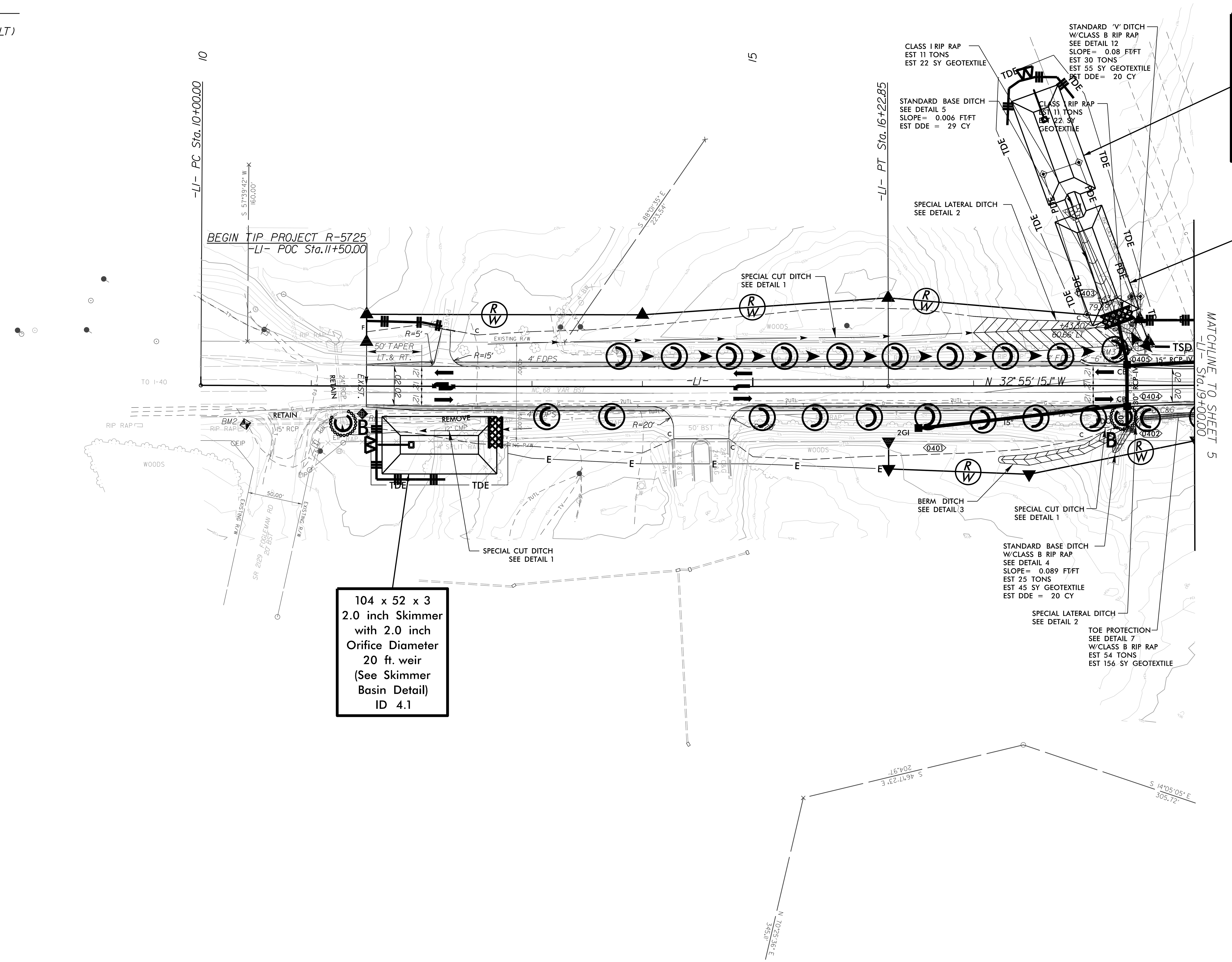
DETAIL 7
TOE PROTECTION
(Not to Scale)
NATURAL GROUND; d; 4:1; FILL SLOPE; GEOTEXTILE
d=1.5 Ft.
Type of Liner=Class B Rip Rap

FROM STA. 18+50 TO STA. 20+00 –L1– RT

DETAIL 12
STANDARD 'V' DITCH
(Not to Scale)
Natural Ground; 2:1; D; 2:1; Natural Ground; d; Geotextile
Min. D= 1.0 Ft.
Max. d= 1.0 Ft.
Type of Liner= Class B Rip Rap

FROM STA. 18+31 TO STA. 18+64 –L1– LT

–L1–
PI Sta 13+11.43
Δ = 0° 29' 23.8" (LT)
D = 0° 04' 43.2"
L = 622.85'
T = 311.43'
R = 72,838.42'
S_e = NC
Runoff = 60'



CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 4

5/14/99

3/7/2023
..\Design\R5725_EC_CG_psh04.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-5725	EC-5/CONST.5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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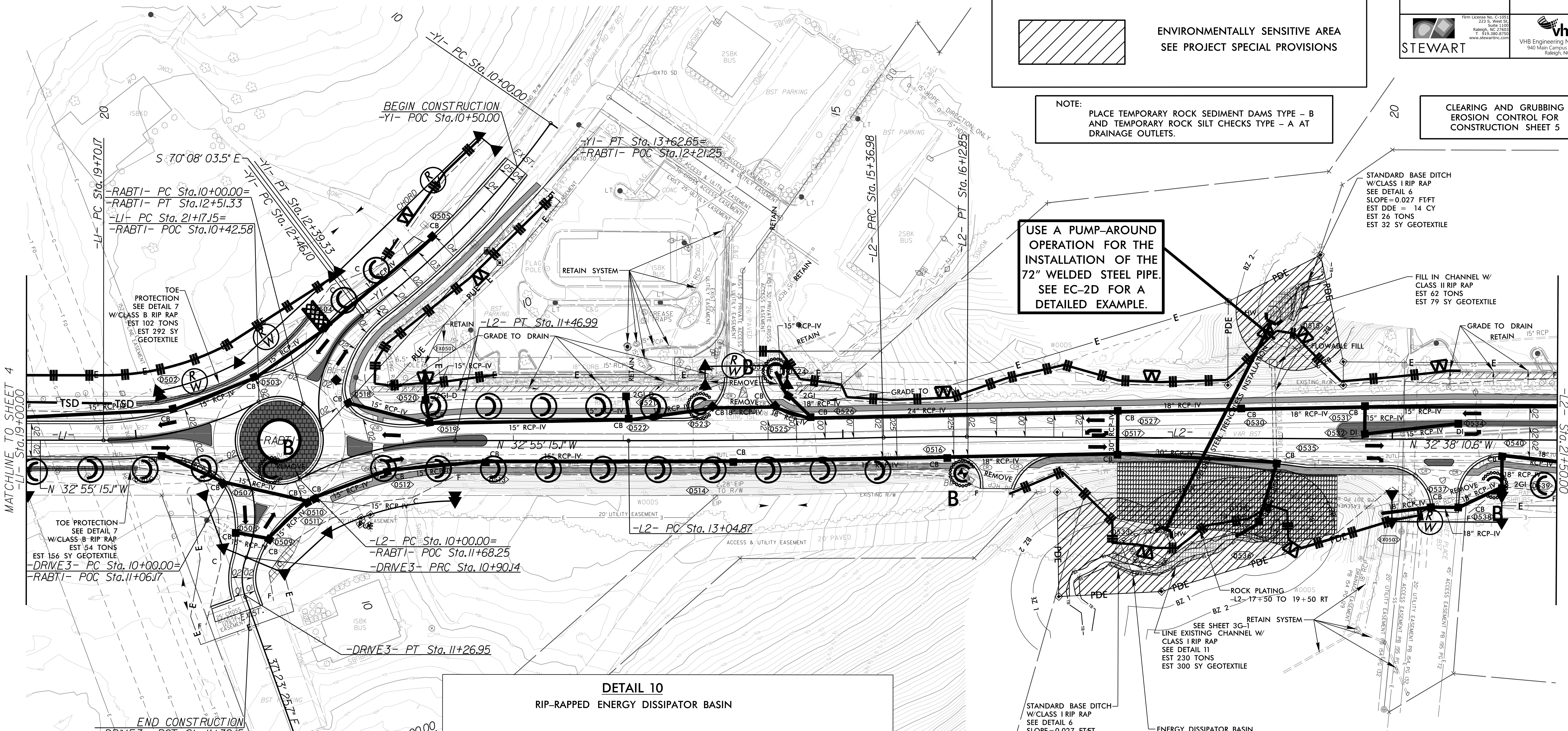
vhb — VHB Engineering NC, P.C. (C-3705), 940 Main Campus Drive, Suite 500, Raleigh, NC 27606

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 5

-L1-	-RABT1-	-L2-			-Y1-		-DRIVE3-	
PI Sta 20+45.17	PI Sta 10+00.00	PI Sta 10+75.00	PI Sta 14+20.93	PI Sta 15+74.92	PI Sta 11+20.59	PI Sta 13+12.01	PI Sta 10+48.39	PI Sta 11+09.43
Δ = 28° 04' 21.0" (LT)	Δ = 360° 00' 00.0" (LT)	Δ = 28° 04' 21.0" (RT)	Δ = 1° 32' 26.8" (LT)	Δ = 1° 49' 31.3" (RT)	Δ = 17° 21' 04.4" (RT)	Δ = 66° 46' 49.4" (LT)	Δ = 51° 38' 57.3" (RT)	Δ = 42° 10' 38.1" (LT)
D = 19° 05' 54.9"	D = 143° 14' 22.0"	D = 19° 05' 54.9"	D = 0° 39' 49.7"	D = 2° 24' 22.1"	D = 7° 15' 00.0"	D = 57° 17' 44.8"	D = 57° 17' 44.8"	D = 114° 35' 29.6"
L = 146.99'	L = 251.33'	L = 146.99'	L = 232.11'	L = 75.86'	L = 239.33'	L = 116.55'	L = 90.14'	L = 36.81'
T = 75.00'	T = 0.00'	T = 75.00'	T = 116.06'	T = 37.93'	T = 120.59'	T = 65.91'	T = 48.39'	T = 19.28'
R = 300.00'	R = 40.00'	R = 300.00'	R = 8,631.32'	R = 2,381.22'	R = 790.29'	R = 100.00'	R = 100.00'	R = 50.00'
V_D = 30 MPH		V_D = 30 MPH	S_e = NC		S_e = 4%	V_D = 20 MPH	V_D = 20 MPH	V_D = 15 MPH
			Runoff = 60'		Runoff = 84'			

ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

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



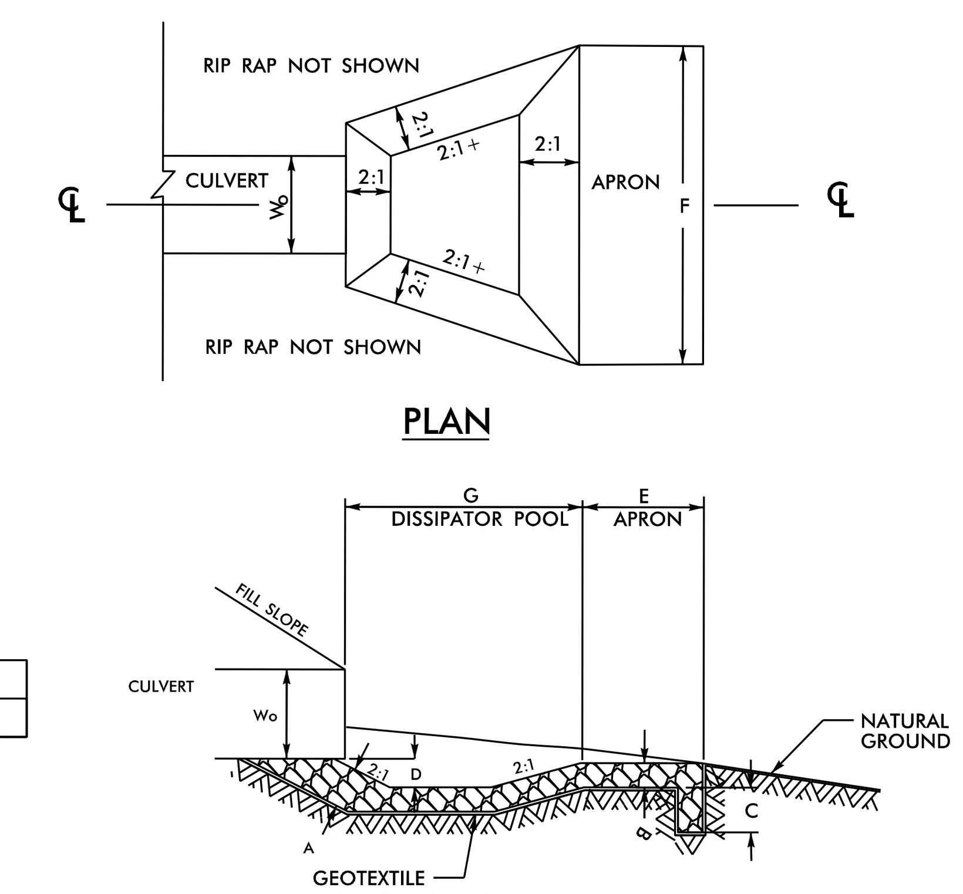
NAD 83/95
MATCHLINE TO SHEET 4 -L1- Sta.19+00.00
MATCHLINE TO SHEET 6 -L2- Sta.21+50.00
BEGIN CONSTRUCTION -Y1- POC Sta.10+50.00
-Y1- PC Sta.10+00.00
S 70° 08' 03.5" E
-RABT1- PC Sta.10+00.00=
-RABT1- PT Sta.12+51.33
-L1- PC Sta.21+17.15=
-RABT1- POC Sta.10+42.58
-L1- PC Sta.19+70.17
-Y1- PC Sta.12+46.10
-Y1- PT Sta.12+39.33
-Y1- PT Sta.13+62.65=
-RABT1- POC Sta.12+21.25
-L2- PT Sta.11+46.99
-L2- PRC Sta.15+36.98
-L2- PT Sta.16+12.85
-L2- PC Sta.10+00.00=
-RABT1- POC Sta.11+68.25
-DRIVE3- PRC Sta.10+90.14
-L2- PC Sta.13+04.87
-DRIVE3- PC Sta.10+00.00=
-RABT1- POC Sta.11+06.17
-DRIVE3- PT Sta.11+26.95
END CONSTRUCTION -DRIVE3- POT Sta.11+39.15
POT Sta.13+00.00
N 32° 55' 15.1" W
N 32° 38' 10.6" W
N 37° 23' 25.7" E
TOE PROTECTION SEE DETAIL 7 W/CLASS B RIP RAP EST 102 TONS EST 292 SY GEOTEXTILE
TOE PROTECTION SEE DETAIL 7 W/CLASS B RIP RAP EST 54 TONS EST 156 SY GEOTEXTILE
RETAIN SYSTEM
GRADE TO DRAIN
USE A PUMP-AROUND OPERATION FOR THE INSTALLATION OF THE 72" WELDED STEEL PIPE. SEE EC-2D FOR A DETAILED EXAMPLE.
STANDARD BASE DITCH W/CLASS I RIP RAP SEE DETAIL 6 SLOPE=0.027 FT/FT EST DDE = 14 CY EST 26 TONS EST 32 SY GEOTEXTILE
FILL IN CHANNEL W/ CLASS II RIP RAP EST 62 TONS EST 79 SY GEOTEXTILE
FLOWABLE FILL
ROCK PLATING -L2- 17+50 TO 19+50 RT
SEE SHEET 3G-1
LINE EXISTING CHANNEL W/ CLASS I RIP RAP SEE DETAIL 11 EST 230 TONS EST 300 SY GEOTEXTILE
STANDARD BASE DITCH W/CLASS I RIP RAP SEE DETAIL 6 SLOPE=0.027 FT/FT EST DDE = 25 CY EST 26 TONS EST 42 SY GEOTEXTILE
ENERGY DISSIPATOR BASIN W/CLASS II RIP RAP SEE DETAIL 10 EST 80 TONS EST 100 SY GEOTEXTILE
15" RCP-IV
18" RCP-IV
24" RCP-IV
30" RCP-IV
REMOVE
WOODS
20' UTILITY EASEMENT
ACCESS & UTILITY EASEMENT
EXISTING R/W

DETAIL 10

RIP-RAPPED ENERGY DISSIPATOR BASIN

DIM. (ft)	RIP RAP BASIN # 1
A	2.0'
B	2.0'
C	3.0'
D	2.0'
E	6.0'
F	22.0'
G	18.0'

ALL DIMENSIONS APPROXIMATE

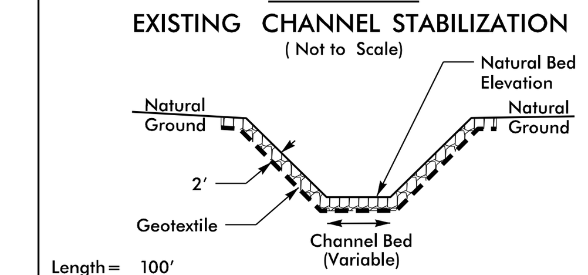


BASIN #	LOCATION (AT OUTLET)
1	L2 17+95 RT

7/08

DETAIL 11

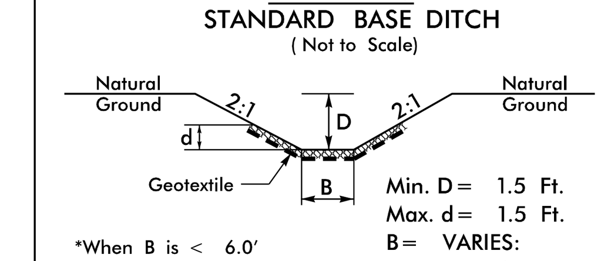
EXISTING CHANNEL STABILIZATION (Not to Scale)



FROM STA. 17+75 TO 18+88 -L2- RT

DETAIL 6

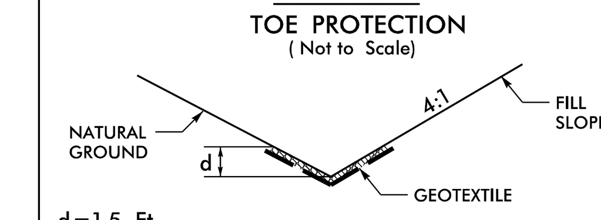
STANDARD BASE DITCH (Not to Scale)



FROM STA. 17+45 TO STA. 17+58 -L2- RT
FROM STA. 18+89 TO STA. 19+23 -L2- LT

DETAIL 7

TOE PROTECTION (Not to Scale)



FROM STA. 20+00 -L1- LT TO STA. 12+74 -Y1- RT
FROM STA. 18+50 -L1- LT TO STA. 20+00 -L1- RT

3/7/2023
R5725_EC_CG_psh05.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-5725	EC-6/CONST.6
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

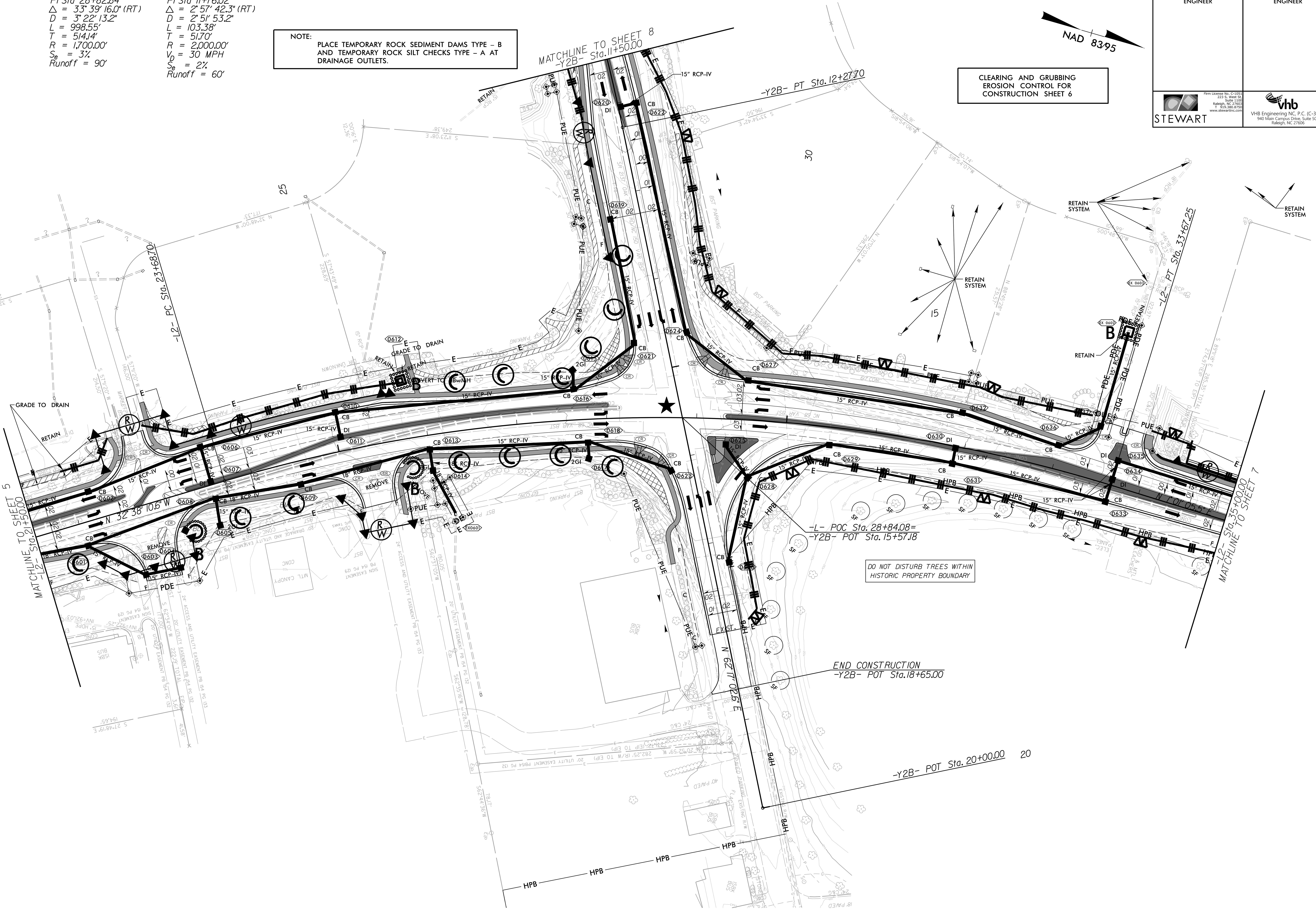
STEWART — Firm License No. C-1051, 223 S. West St., Suite 1100, Raleigh, NC 27603, T 919.380.8750, www.stewartinc.com

vhb — VHB Engineering NC, P.C. (C-3705), 940 Main Campus Drive, Suite 500, Raleigh, NC 27606

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 6

-L2-	-Y2B-
PI Sta 28+82.84	PI Sta 11+76.02
Δ = 33° 39' 16.0" (RT)	Δ = 2° 57' 42.3" (RT)
D = 3° 22' 13.2"	D = 2° 51' 53.2"
L = 998.55'	L = 103.38'
T = 514.14'	T = 51.70'
R = 1,700.00'	R = 2,000.00'
S_e = 3%	V_D = 30 MPH
Runoff = 90'	S_e = 2%
	Runoff = 60'

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



PROJECT REFERENCE NO.	SHEET NO.
R-5725	EC-7/CONST.7
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

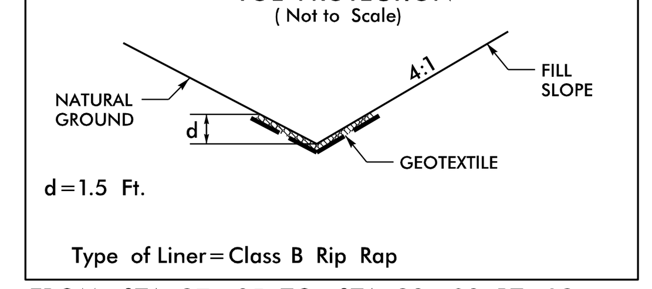
STEWART
Firm License No. C-1051
223 S. West St,
Suite 1100
Raleigh, NC 27603
T 919.380.8750
www.stewartinc.com

vhb
VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
Raleigh, NC 27606

-L2-
PI Sta 46+37.53
Δ = 12° 33' 51.4" (RT)
D = 2° 40' 12.0"
L = 470.57'
T = 236.23'
R = 2,145.91'
S_e = Exist.

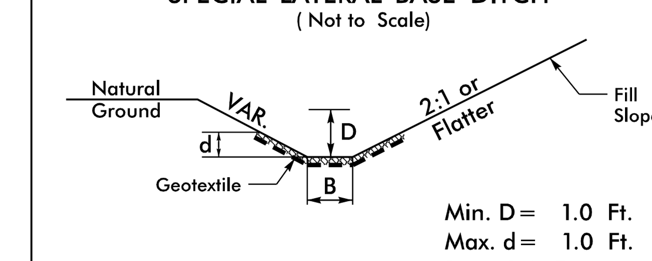
NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE – B AND TEMPORARY ROCK SILT CHECKS TYPE – A AT DRAINAGE OUTLETS.

DETAIL 7
TOE PROTECTION
(Not to Scale)



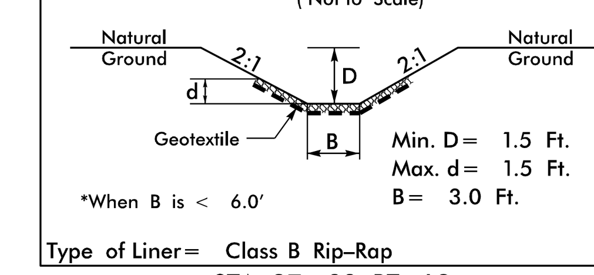
FROM STA. 37+95 TO STA. 39+09 RT -L2-

DETAIL 8
SPECIAL LATERAL BASE DITCH
(Not to Scale)



FROM STA. 37+00 TO STA. 37+88 RT -L2-

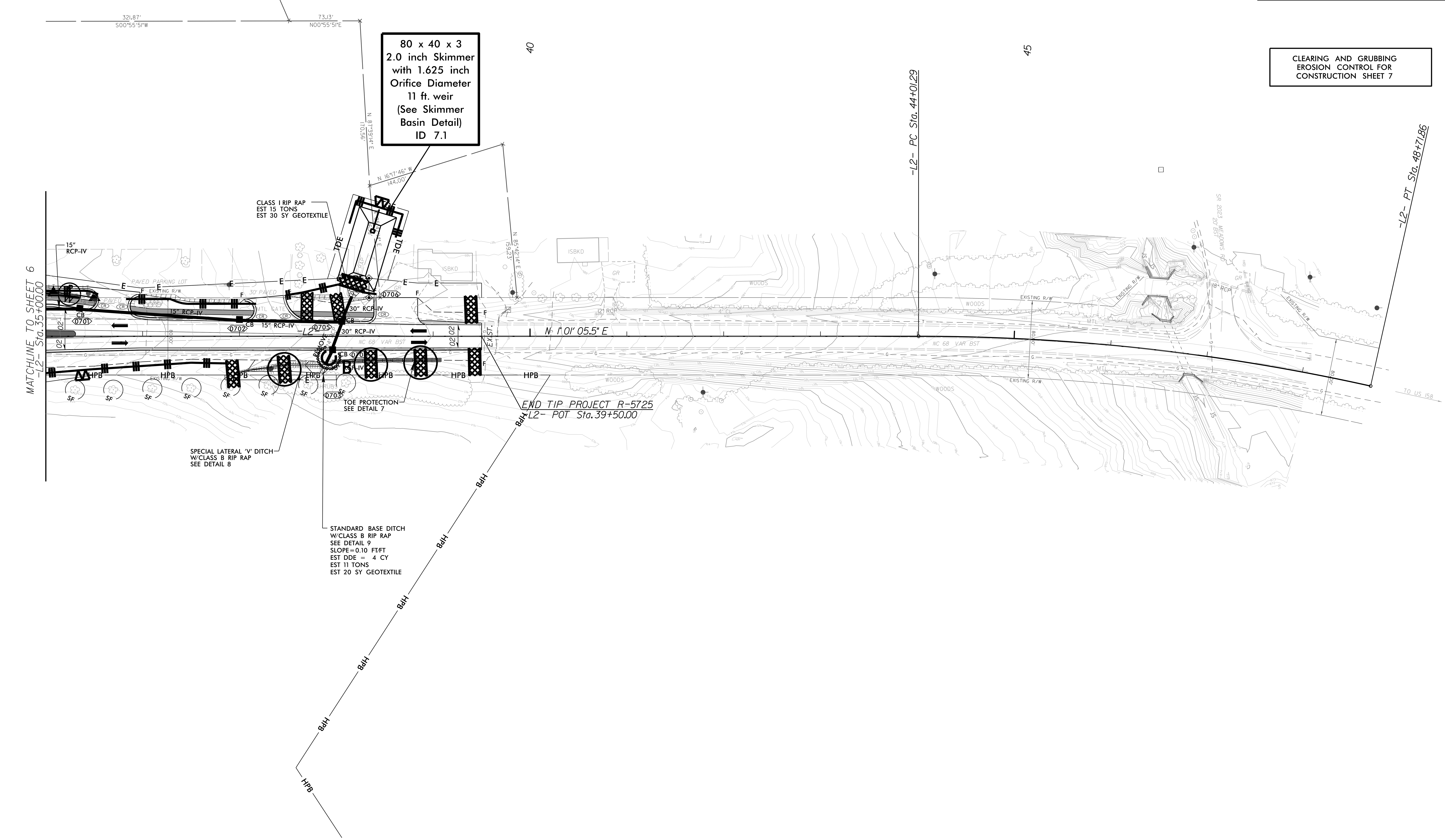
DETAIL 9
STANDARD BASE DITCH
(Not to Scale)



STA. 37+88 RT -L2-

NAD 83/95

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 7



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5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-5725	EC-8/CONST.8
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

STEWART
Firm License No. C-1051
223 S. West St.
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www.stewartinc.com

vhb
VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
Raleigh, NC 27606

-Y2A-
PI Sta 13+79.58
Δ = 12° 08' 44.0" (LT)
D = 6° 01' 52.1"
L = 201.38'
T = 101.07'
R = 950.00'
S_e = Exist.

-Y2A-
PI Sta 17+07.68
Δ = 14° 57' 51.5" (RT)
D = 8° 11' 06.4"
L = 182.82'
T = 91.93'
R = 700.00'
V_D = 30 MPH
S_e = 3%
Runoff = 60'

-Y2A-
PI Sta 18+51.28
Δ = 29° 31' 43.6" (LT)
D = 28° 38' 52.4"
L = 103.07'
T = 52.71'
R = 200.00'
V_D = 25 MPH

-RABT2-
PI Sta 10+00.00
Δ = 360° 00' 00.0" (LT)
D = 143° 14' 22.0"
L = 251.33'
T = 0.00'
R = 40.00'

-DRIVE1-
PI Sta 11+34.07
Δ = 46° 02' 11.1" (LT)
D = 57° 17' 44.8"
L = 80.35'
T = 42.49'
R = 100.00'
V_D = 20 MPH

-DRIVE2-
PI Sta 10+40.49
Δ = 44° 05' 26.3" (RT)
D = 57° 17' 44.8"
L = 76.95'
T = 40.49'
R = 100.00'
V_D = 20 MPH

-Y2B-
PI Sta 10+64.24
Δ = 35° 36' 48.8" (RT)
D = 28° 38' 52.4"
L = 124.31'
T = 64.24'
R = 200.00'
V_D = 25 MPH

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 8

NOTE:
UTILIZE FABRIC INSERT INLET PROTECTION DEVICES AS DIRECTED IN LIEU OF ROCK INLET SEDIMENT TRAP C TO AVOID IMPOUNDING OF RUNOFF ON ROADWAYS OPEN TO TRAFFIC.

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

NAD 83/95

-Y2A- POT Sta. 10+00.00

-Y2A- PC Sta. 12+78.51

-Y2A- PT Sta. 14+79.89

-Y2A- PC Sta. 16+19.74

-DRIVE1- PC Sta. 10+91.59

-Y2A- PT Sta. 19+01.64=
-RABT2- POC Sta. 12+38.20

-RABT2- PC Sta. 10+00.00=
-RABT2- PT Sta. 12+51.33

-DRIVE1- PT Sta. 11+71.94=
-RABT2- POC Sta. 11+79.94

-Y2A- PC Sta. 11+24.31

BEGIN CONSTRUCTION
-DRIVE1- POT Sta. 9+90.00
S 31° 42' 07.6" E

BEGIN CONSTRUCTION
-Y2A- POT Sta. 15+50.00

CLASS B RIP RAP
EST 2 TONS
EST 7 SY GEOTEXTILE

PRC Sta. 17+98.57

-DRIVE2- PC Sta. 10+00.00=
-RABT2- POC Sta. 10+54.91

-DRIVE2- PT Sta. 10+76.95

-Y2B- PC Sta. 10+00.00=
-RABT2- POC Sta. 11+09.11

-DRIVE2- POT Sta. 11+95.53
S 34° 33' 25.4" E

END CONSTRUCTION
-DRIVE2- POT Sta. 11+70.00

RABT2

MATCHLINE TO SHEET EC-9/CONST.9

N 45° 30' 45.4" E

N 33° 22' 01.4" E

N 45°30'45" E 117.07'

N 43°01'06" E 115.50'

S 51°00'00" E 141.22'

N 65°26'55" E 105.78'

S 56°26'19" W 162.13'

S 56°28'17" E 36.37'

RETAIN SYSTEM

PUE

3/1/2023
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USER:mhamons

5/14/99

NOTE:
UTILIZE FABRIC INSERT INLET PROTECTION DEVICES AS DIRECTED IN LIEU OF ROCK INLET SEDIMENT TRAP C TO AVOID IMPOUNDING OF RUNOFF ON ROADWAYS OPEN TO TRAFFIC.

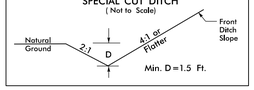
NAD 83\95

PROJECT REFERENCE NO.	SHEET NO.
R-5725	EC-9/CONST.4
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

STEWART
Firm License No. C-1051
223 S. West St.
Suite 1100
Raleigh, NC 27603
T 919.380.8750
www.stewartinc.com

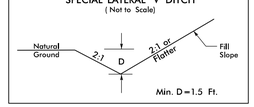
vhb
VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
Raleigh, NC 27606

DETAIL 1
SPECIAL CUT DITCH
(Not to Scale)



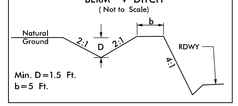
FROM STA. 11+28 TO STA. 13+00 –L1– RT
FROM STA. 12+50 TO STA. 17+00 –L1– LT
FROM STA. 18+00 TO STA. 18+39 –L1– RT

DETAIL 2
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



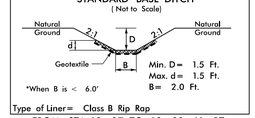
FROM STA. 17+00 TO STA. 18+32 –L1– LT
FROM STA. 18+39 TO STA. 18+50 –L1– RT

DETAIL 3
BERM 'V' DITCH
(Not to Scale)



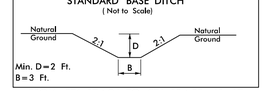
FROM STA. 17+25 TO STA. 18+39 –L1– RT

DETAIL 4
STANDARD BASE DITCH
(Not to Scale)



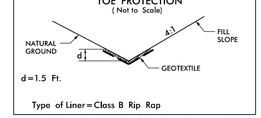
Type of Liner= Class B Rip Rap
FROM STA. 18+27 TO 18+39 –L1– RT

DETAIL 5
STANDARD BASE DITCH
(Not to Scale)



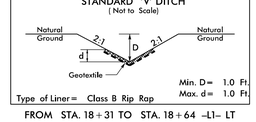
FROM STA. 17+94 TO STA. 18+32 –L1– LT

DETAIL 7
TOE PROTECTION
(Not to Scale)



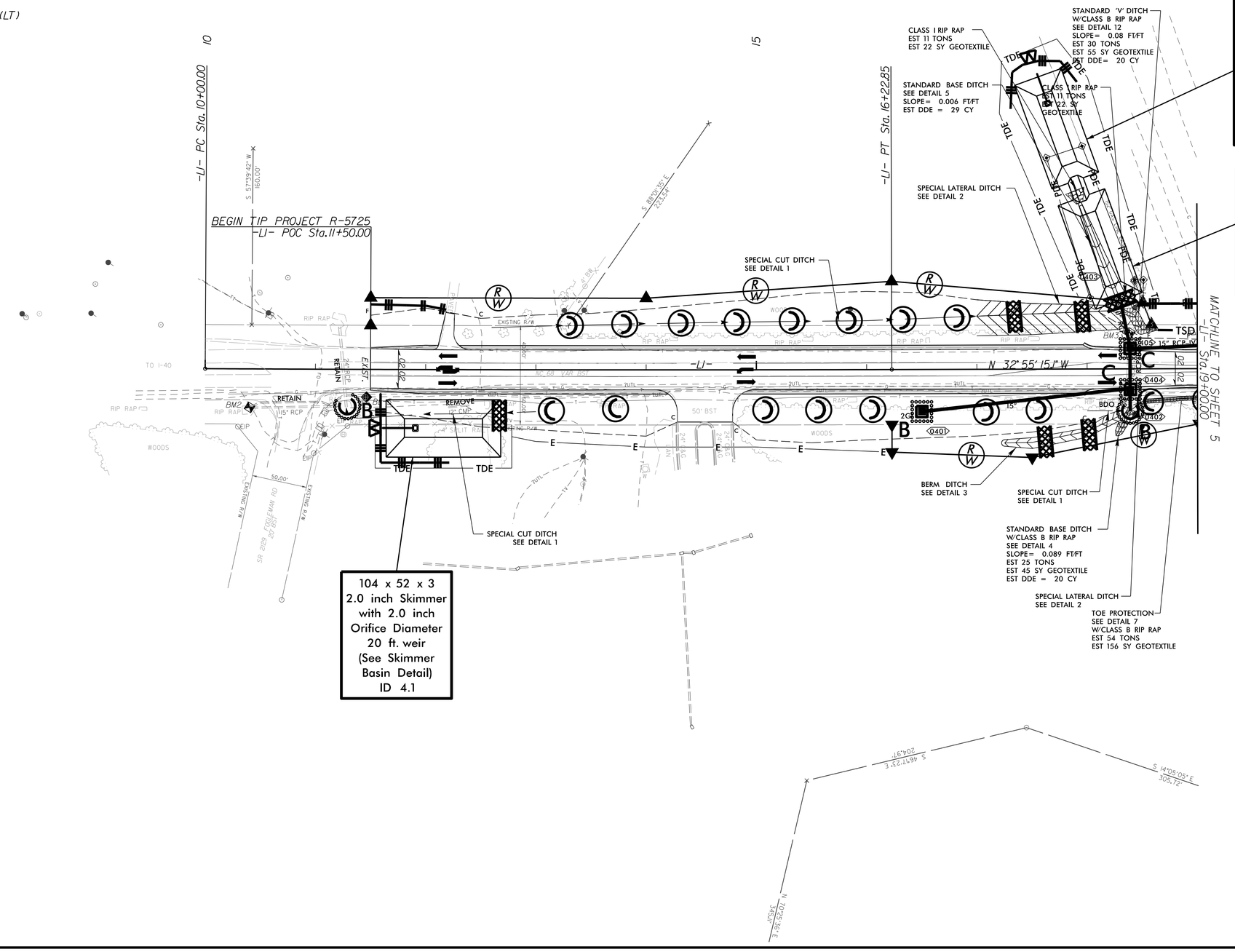
Type of Liner=Class B Rip Rap
FROM STA. 18+50 TO STA. 20+00 –L1– RT

DETAIL 12
STANDARD 'V' DITCH
(Not to Scale)



Type of Liner= Class B Rip Rap
FROM STA. 18+31 TO STA. 18+64 –L1– LT

–L1–
PI Sta 13+11.43
△ = 0° 29' 23.8" (LT)
D = 0° 04' 43.2"
L = 622.85'
T = 311.43'
R = 72,838.42'
S_e = NC
Runoff = 60'



100 x 45 x 3
2.5 inch Skimmer
with 2.25 inch
Orifice Diameter
25 ft. weir
(See Tiered Skimmer
Basin Detail)
ID 4.2

Modified Silt Basin
Type 'B'
100 x 45 x 3
25 ft. weir
(See Tiered Skimmer
Basin Detail)
ID 4.2

104 x 52 x 3
2.0 inch Skimmer
with 2.0 inch
Orifice Diameter
20 ft. weir
(See Skimmer
Basin Detail)
ID 4.1

3/7/2023
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mlsellers

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-5725	EC-10/CONST.5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

STEWART
Firm License No. C-1051
223 S. West St.
Suite 1100
Raleigh, NC 27603
T 919.380.8750
www.stewartinc.com

vhb
VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
Raleigh, NC 27606

-LI-
PI Sta 20+45.17
Δ = 28° 04' 21.0" (LT)
D = 19° 05' 54.9"
L = 146.99'
T = 75.00'
R = 300.00'
V_D = 30 MPH

-RABT1-
PI Sta 10+00.00
Δ = 360° 00' 00.0" (LT)
D = 143° 14' 22.0"
L = 251.33'
T = 0.00'
R = 40.00'

-L2-
PI Sta 10+75.00
Δ = 28° 04' 21.0" (RT)
D = 19° 05' 54.9"
L = 146.99'
T = 75.00'
R = 300.00'
V_D = 30 MPH

PI Sta 14+20.93
Δ = 1° 32' 26.8" (LT)
D = 0° 39' 49.7"
L = 232.11'
T = 116.06'
R = 8,631.32'
S_e = NC
Runoff = 60'

PI Sta 15+74.92
Δ = 1° 49' 31.3" (RT)
D = 2° 24' 22.1"
L = 75.86'
T = 37.93'
R = 2,381.22'

-YI-
PI Sta 11+20.59
Δ = 17° 21' 04.4" (RT)
D = 7° 15' 00.0"
L = 239.33'
T = 120.59'
R = 790.29'
S_e = 4%
Runoff = 84'

PI Sta 13+12.01
Δ = 66° 46' 49.4" (LT)
D = 57° 17' 44.8"
L = 116.55'
T = 65.91'
R = 100.00'
V_D = 20 MPH

-DRIVE3-
PI Sta 10+48.39
Δ = 51° 38' 57.3" (RT)
D = 57° 17' 44.8"
L = 90.14'
T = 48.39'
R = 100.00'
V_D = 20 MPH

PI Sta 11+09.43
Δ = 42° 10' 38.1" (LT)
D = 114° 35' 29.6"
L = 36.81'
T = 19.28'
R = 50.00'
V_D = 15 MPH

NAD 83/95

NOTE:
UTILIZE FABRIC INSERT INLET PROTECTION DEVICES AS DIRECTED IN LIEU OF ROCK INLET SEDIMENT TRAP C TO AVOID IMPOUNDING OF RUNOFF ON ROADWAYS OPEN TO TRAFFIC.

-YI- PC Sta. 10+00.00
BEGIN CONSTRUCTION
-YI- POC Sta.10+50.00
-YI- PT Sta. 13+62.65=
-RABT1- POC Sta.12+21.25
-L2- PRC Sta. 15+36.98
-L2- PT Sta. 16+12.85
-LI- PC Sta. 19+70.17
S 70° 08' 03.5" E
-YI- PT Sta. 12+39.33
-RABT1- PC Sta.10+00.00=
-RABT1- PT Sta.12+51.33
-LI- PC Sta. 21+17.15=
-RABT1- POC Sta.10+42.58
-L2- PT Sta. 11+46.99
-L2- PC Sta. 10+00.00=
-RABT1- POC Sta.11+68.25
-DRIVE3- PRC Sta. 10+90.14
-L2- PC Sta. 13+04.87
-DRIVE3- PC Sta. 10+00.00=
-RABT1- POC Sta.11+06.17
-DRIVE3- PT Sta. 11+26.95
END CONSTRUCTION
-DRIVE3- POT Sta.11+39.15
POT Sta. 13+00.00
N 32° 55' 15.1" W
N 32° 55' 15.1" W
N 32° 38' 10.6" W
N 37° 23' 25.1" E
MATCHLINE TO SHEET 4 -LI- Sta.19+00.00
MATCHLINE TO SHEET 6 -L2- Sta.12+45.00

TOE PROTECTION SEE DETAIL 7 W/CLASS B RIP RAP EST 102 TONS EST 292 SY GEOTEXTILE

TOE PROTECTION SEE DETAIL 7 W/CLASS B RIP RAP EST 54 TONS EST 156 SY GEOTEXTILE.

RETAIN SYSTEM

STANDARD BASE DITCH W/CLASS I RIP RAP SEE DETAIL 6 SLOPE = 0.027 FT/FT EST DDE = 14 CY EST 26 TONS EST 32 SY GEOTEXTILE

FILL IN CHANNEL W/ CLASS II RIP RAP EST 62 TONS EST 79 SY GEOTEXTILE

GRADE TO DRAIN

FLOWABLE FILL

ROCK PLATING -L2- 17+50 TO 19+50 RT

RETAIN SYSTEM SEE SHEET 3G-1

LINE EXISTING CHANNEL W/ CLASS I RIP RAP SEE DETAIL 11 EST 230 TONS EST 300 SY GEOTEXTILE

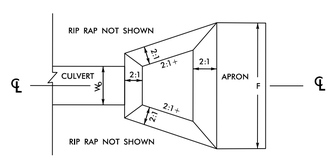
STANDARD BASE DITCH W/CLASS I RIP RAP SEE DETAIL 6 SLOPE = 0.027 FT/FT EST DDE = 25 CY EST 26 TONS EST 42 SY GEOTEXTILE

ENERGY DISSIPATOR BASIN W/CLASS II RIP RAP SEE DETAIL 10 EST 80 TONS EST 100 SY GEOTEXTILE

DETAIL 10
RIP-RAPPED ENERGY DISSIPATOR BASIN

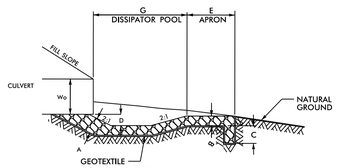
DIM. (ft)	RIP RAP BASIN # 1
A	2.0'
B	2.0'
C	3.0'
D	2.0'
E	6.0'
F	22.0'
G	18.0'

ALL DIMENSIONS APPROXIMATE



PLAN

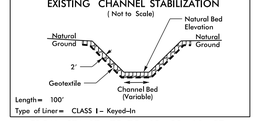
BASIN #	LOCATION (AT OUTLET)
1	L2 17+95 RT



℄ SECTION

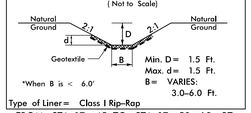
7/08

DETAIL 11
EXISTING CHANNEL STABILIZATION
(Not to Scale)



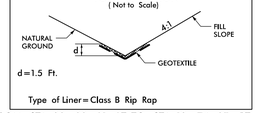
FROM STA. 17+75 TO 18+88 -L2- RT

DETAIL 6
STANDARD BASE DITCH
(Not to Scale)



FROM STA. 17+45 TO STA. 17+58 -L2- RT
FROM STA. 18+89 TO STA. 19+23 -L2- LT

DETAIL 7
TOE PROTECTION
(Not to Scale)



FROM STA. 20+00 -LI- LT TO STA. 12+74 -YI- RT
FROM STA. 18+50 -LI- LT TO STA. 20+00 -LI- RT

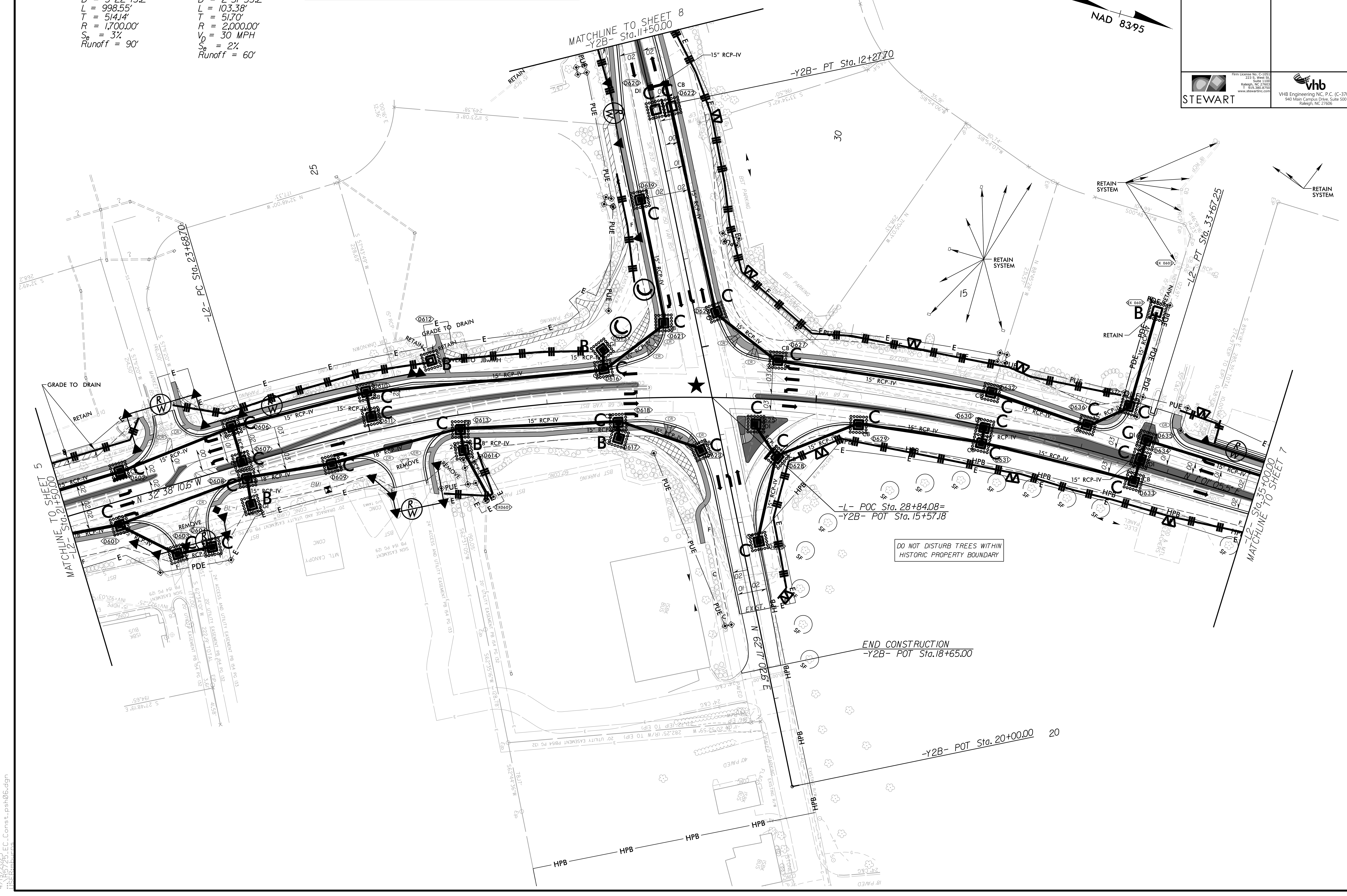
-L2-	-Y2B-
PI Sta 28+82.84	PI Sta 11+76.02
Δ = 33° 39′ 16.0″ (RT)	Δ = 2° 57′ 42.3″ (RT)
D = 3° 22′ 13.2″	D = 2° 51′ 53.2″
L = 998.55′	L = 103.38′
T = 514.14′	T = 51.70′
R = 1,700.00′	R = 2,000.00′
S_e = 3%	V_D = 30 MPH
Runoff = 90′	S_e = 2%
	Runoff = 60′

NOTE:
UTILIZE FABRIC INSERT INLET PROTECTION DEVICES AS DIRECTED IN LIEU OF ROCK INLET SEDIMENT TRAP C TO AVOID IMPOUNDING OF RUNOFF ON ROADWAYS OPEN TO TRAFFIC.

PROJECT REFERENCE NO.	SHEET NO.
R-5725	EC-II/CONST.6
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

STEWART
Firm License No. C-1051
223 S. West St,
Suite 1100
Raleigh, NC 27603
T 919.380.8750
www.stewartinc.com

vhb
VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
Raleigh, NC 27606



PROJECT REFERENCE NO.	SHEET NO.
R-5725	EC-12/CONST.7
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

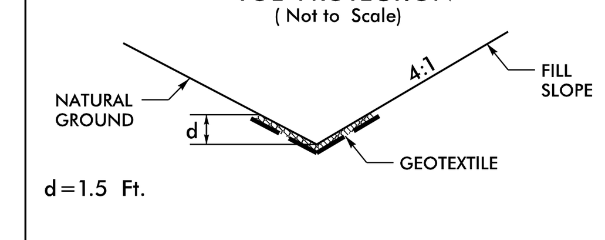
STEWART
Firm License No. C-1051, 223 S. West St., Suite 1100, Raleigh, NC 27603, T 919.380.8750, www.stewartinc.com

vhb
VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
Raleigh, NC 27606

-L2-
PI Sta 46+37.53
Δ = 12° 33' 51.4" (RT)
D = 2° 40' 12.0"
L = 470.57'
T = 236.23'
R = 2,145.91'
S_e = Exist.

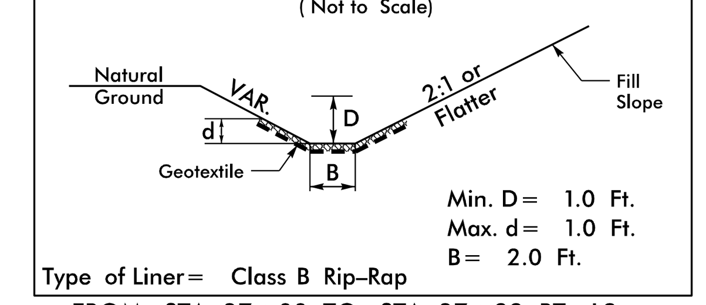
NOTE:
UTILIZE FABRIC INSERT INLET PROTECTION DEVICES AS DIRECTED IN LIEU OF ROCK INLET SEDIMENT TRAP C TO AVOID IMPOUNDING OF RUNOFF ON ROADWAYS OPEN TO TRAFFIC.

DETAIL 7
TOE PROTECTION
(Not to Scale)



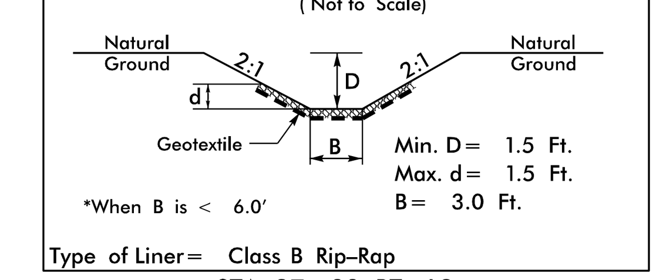
FROM STA. 37+95 TO STA. 39+09 RT -L2-

DETAIL 8
SPECIAL LATERAL BASE DITCH
(Not to Scale)



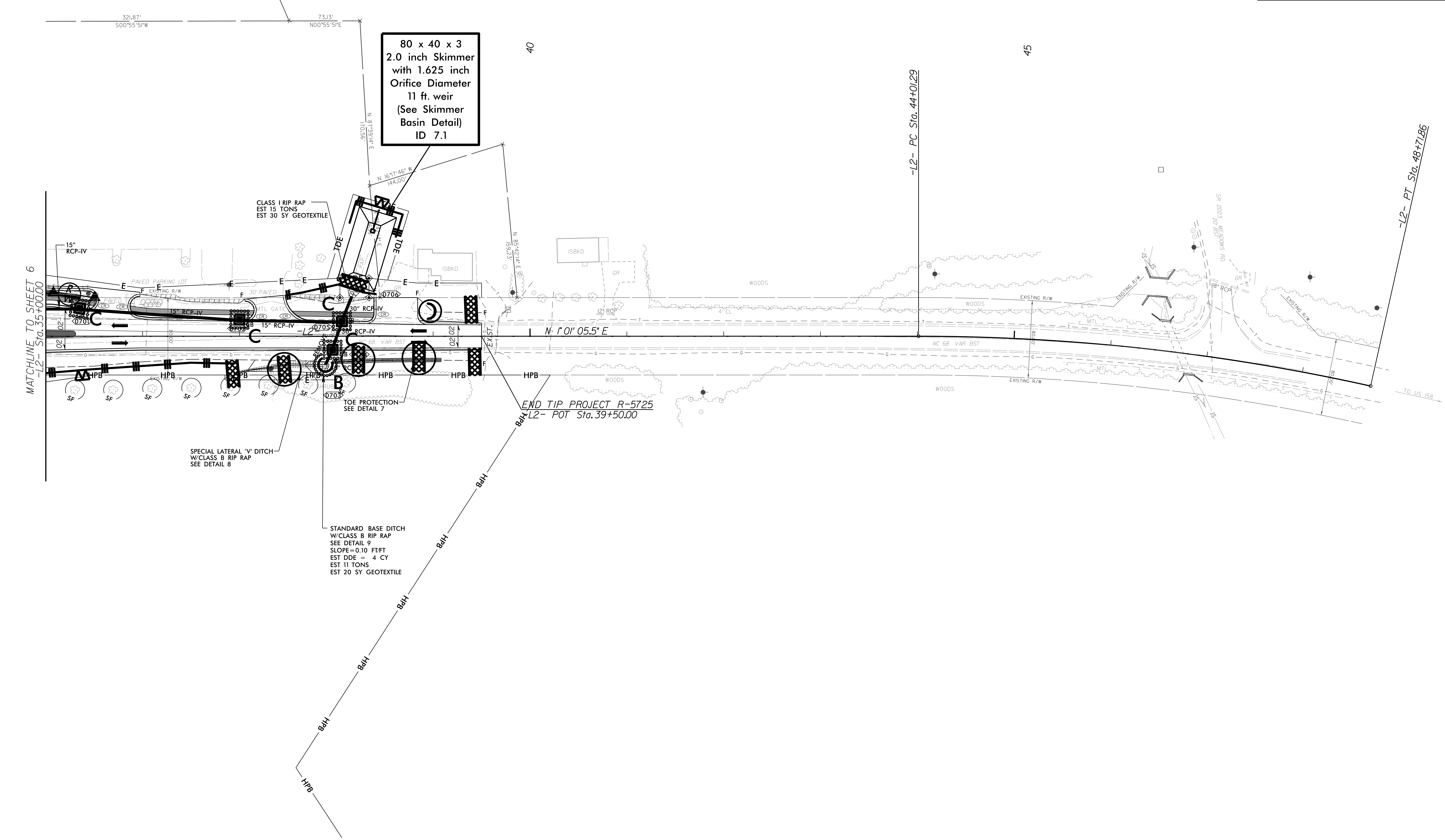
FROM STA. 37+00 TO STA. 37+88 RT -L2-

DETAIL 9
STANDARD BASE DITCH
(Not to Scale)



STA. 37+88 RT -L2-

NAD 83/95



5/14/99

4/19/2023
R5725_EC_Const_psh07.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-5725	EC-13/CONST.8
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

STEWART — Firm License No. C-1051, 223 S. West St., Suite 1100, Raleigh, NC 27603, T 919.380.8750, www.stewartinc.com

vhb — VHB Engineering NC, P.C. (C-3705), 940 Main Campus Drive, Suite 500, Raleigh, NC 27606

-Y2A-

PI Sta 13+79.58	PI Sta 17+07.68	PI Sta 18+51.28
Δ = 12° 08′ 44.0″ (LT)	Δ = 14° 57′ 51.5″ (RT)	Δ = 29° 31′ 43.6″ (LT)
D = 6° 01′ 52.1″	D = 8° 11′ 06.4″	D = 28° 38′ 52.4″
L = 201.38′	L = 182.82′	L = 103.07′
T = 101.07′	T = 91.93′	T = 52.71′
R = 950.00′	R = 700.00′	R = 200.00′
S_e = Exist.	V_D = 30 MPH	V_D = 25 MPH
	S_e = 3%	
	Runoff = 60′	

-RABT2-	-DRIVE1-	-DRIVE2-	-Y2B-
PI Sta 10+00.00	PI Sta 11+34.07	PI Sta 10+40.49	PI Sta 10+64.24
Δ = 360° 00′ 00.0″ (LT)	Δ = 46° 02′ 11.1″ (LT)	Δ = 44° 05′ 26.3″ (RT)	Δ = 35° 36′ 48.8″ (RT)
D = 143° 14′ 22.0″	D = 57° 17′ 44.8″	D = 57° 17′ 44.8″	D = 28° 38′ 52.4″
L = 251.33′	L = 80.35′	L = 76.95′	L = 124.31′
T = 0.00′	T = 42.49′	T = 40.49′	T = 64.24′
R = 40.00′	R = 100.00′	R = 100.00′	R = 200.00′
	V_D = 20 MPH	V_D = 20 MPH	V_D = 25 MPH

NOTE: UTILIZE FABRIC INSERT INLET PROTECTION DEVICES AS DIRECTED IN LIEU OF ROCK INLET SEDIMENT TRAP C TO AVOID IMPOUNDING OF RUNOFF ON ROADWAYS OPEN TO TRAFFIC.