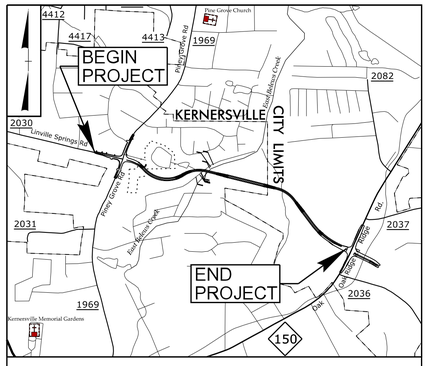
TIP PROJECT: U-6003

CONTRACT:



VICINITY MAP
(NOT TO SCALE)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

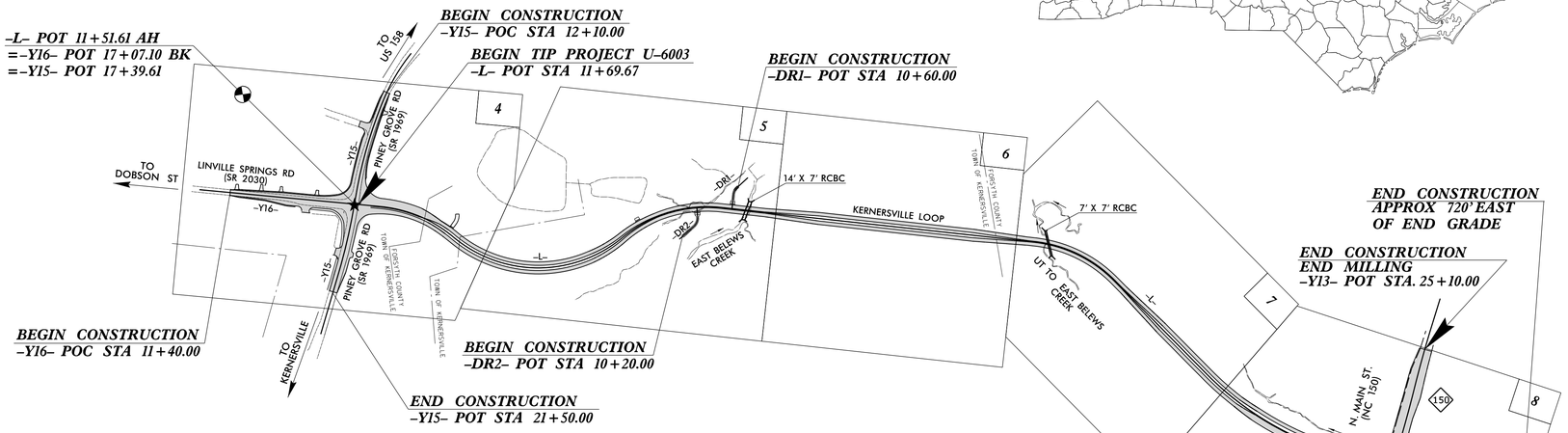
FORSYTH COUNTY

LOCATION: KERNERSVILLE – KERNERSVILLE LOOP
FROM SR 1969 (PINEY GROVE RD) TO NC 150
(N. MAIN ST.)

TYPE OF WORK: GRADING, PAVING, SIGNALS, DRAINAGE AND STRUCTURES

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-6003	EC-1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
47138.1.1	PE	
47138.2.1	RW/UTILS	
47138.3.1	CONST	



NAD 83/ NA 2011

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
	Clean Water Diversion	CWD
	Skimmer Basin	
	Tiered Skimmer Basin	
	Stilling Basin	
	Earthen Dam with Skimmer	

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

GRAPHIC SCALE

0 50
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.

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

PREPARED IN THE OFFICE OF:

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

2018 STANDARD SPECIFICATIONS

DESIGNED BY:

David R. Wagner II, PE ***4286***
NAME *LEVEL III CERTIFICATION NO.*

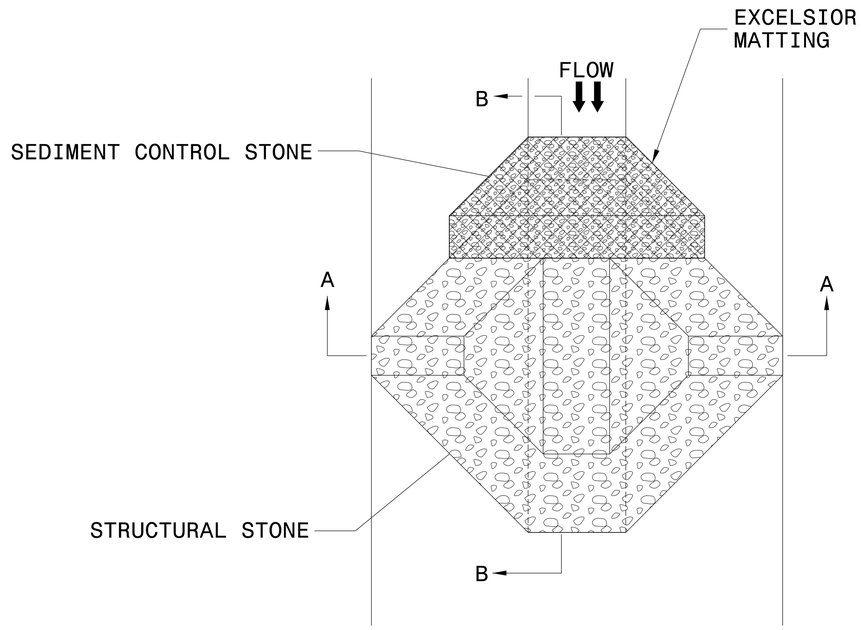
Roadway Standard Drawings

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.

1604.01	Railroad Erosion Control Detail	1632.01	Rock Inlet Sediment Trap Type A
1605.01	Temporary Silt Fence	1632.02	Rock Inlet Sediment Trap Type B
1606.01	Special Sediment Control Fence	1632.03	Rock Inlet Sediment Trap Type C
1607.01	Gravel Construction Entrance	1633.01	Temporary Rock Silt Check Type A
1622.01	Temporary Berms and Slope Drains	1633.02	Temporary Rock Silt Check Type B
1630.01	Riser Basin	1634.01	Temporary Rock Sediment Dam Type A
1630.02	Silt Basin Type B	1634.02	Temporary Rock Sediment Dam Type B
1630.03	Temporary Silt Ditch	1635.01	Rock Pipe Inlet Sediment Trap Type A
1630.04	Stilling Basin	1635.02	Rock Pipe Inlet Sediment Trap Type B
1630.05	Temporary Diversion	1640.01	Coir Fiber Baffle
1630.06	Special Stilling Basin	1645.01	Temporary Stream Crossing
1631.01	Matting Installation		

PROJECT REFERENCE NO.	SHEET NO.
U-6003	EC-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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



PLAN

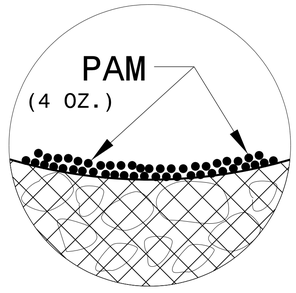
NOTES:

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

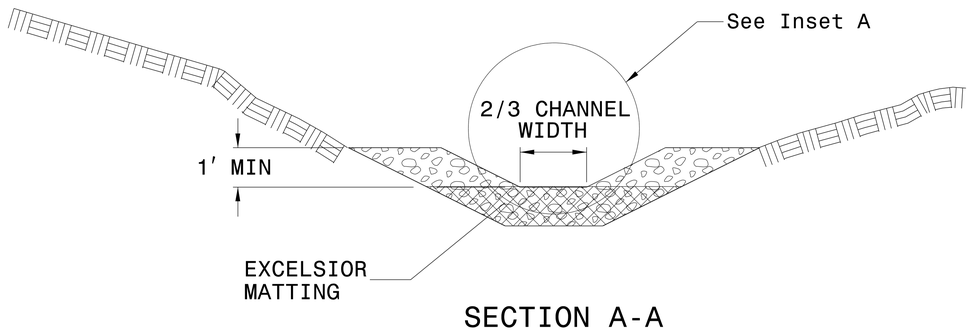
USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

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.

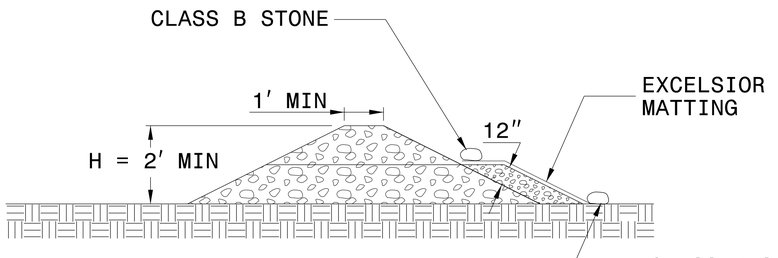
INITIALLY APPLY 4 OUNCES OF POLYACRYLAMIDE (PAM) TO TOP OF MATTING SECTION AND AFTER EVERY RAINFALL EVENT THAT EQUALS OR EXCEEDS 0.50 INCHES.



INSET A



SECTION A-A

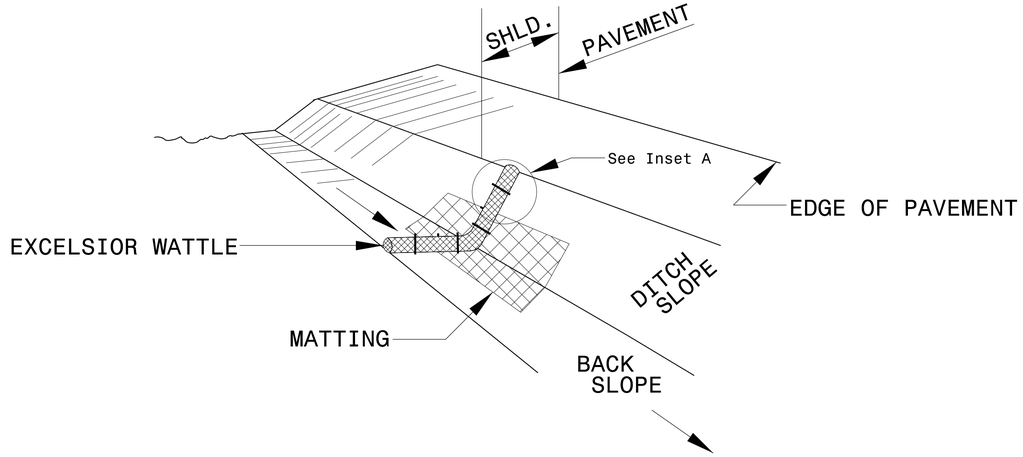


SECTION B-B

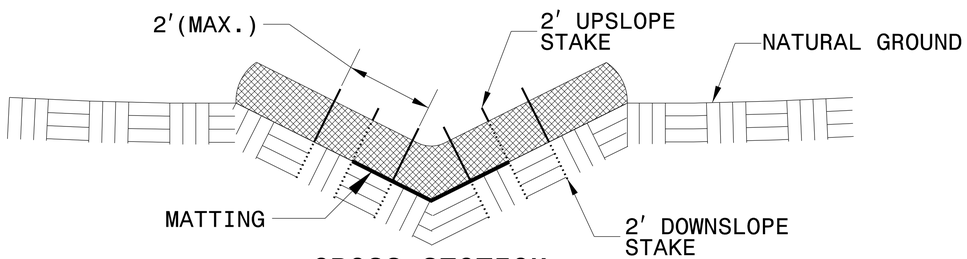
NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
U-6003	EC-2A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

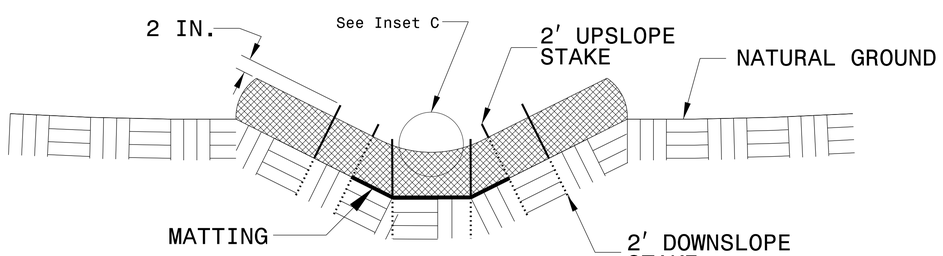
WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL



ISOMETRIC VIEW



CROSS SECTION VEE DITCH



CROSS SECTION TRAPEZOIDAL DITCH

NOTES:

USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE.

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

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

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

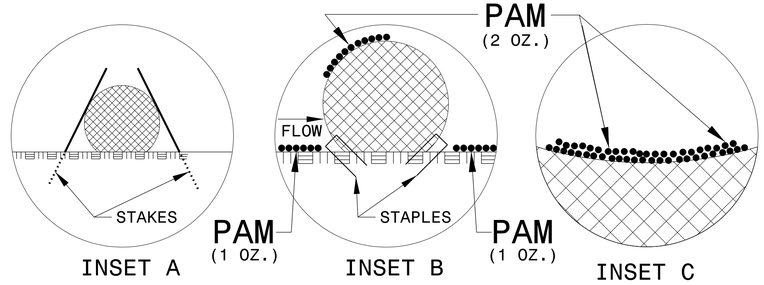
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

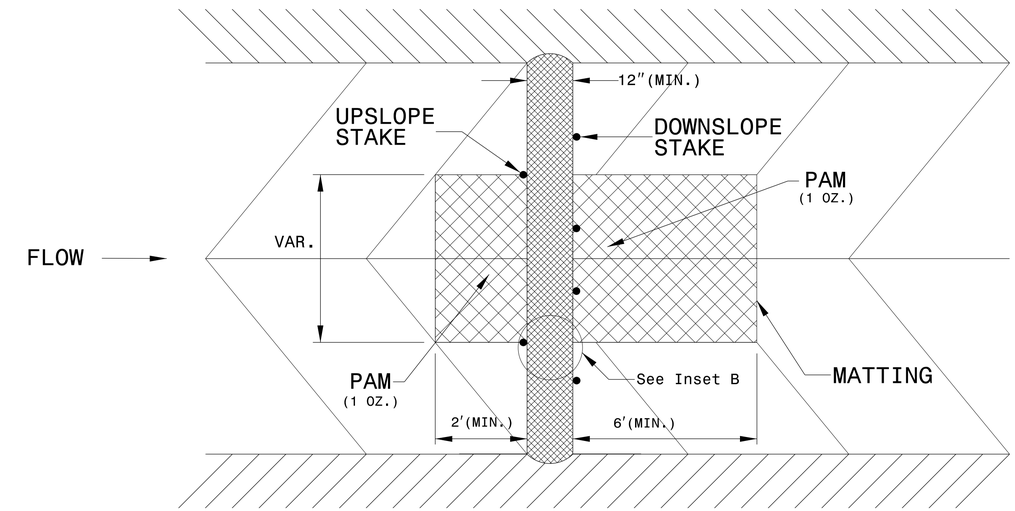
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

INSTALL MATTING IN ACCORDANCE WITH SECTION 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.

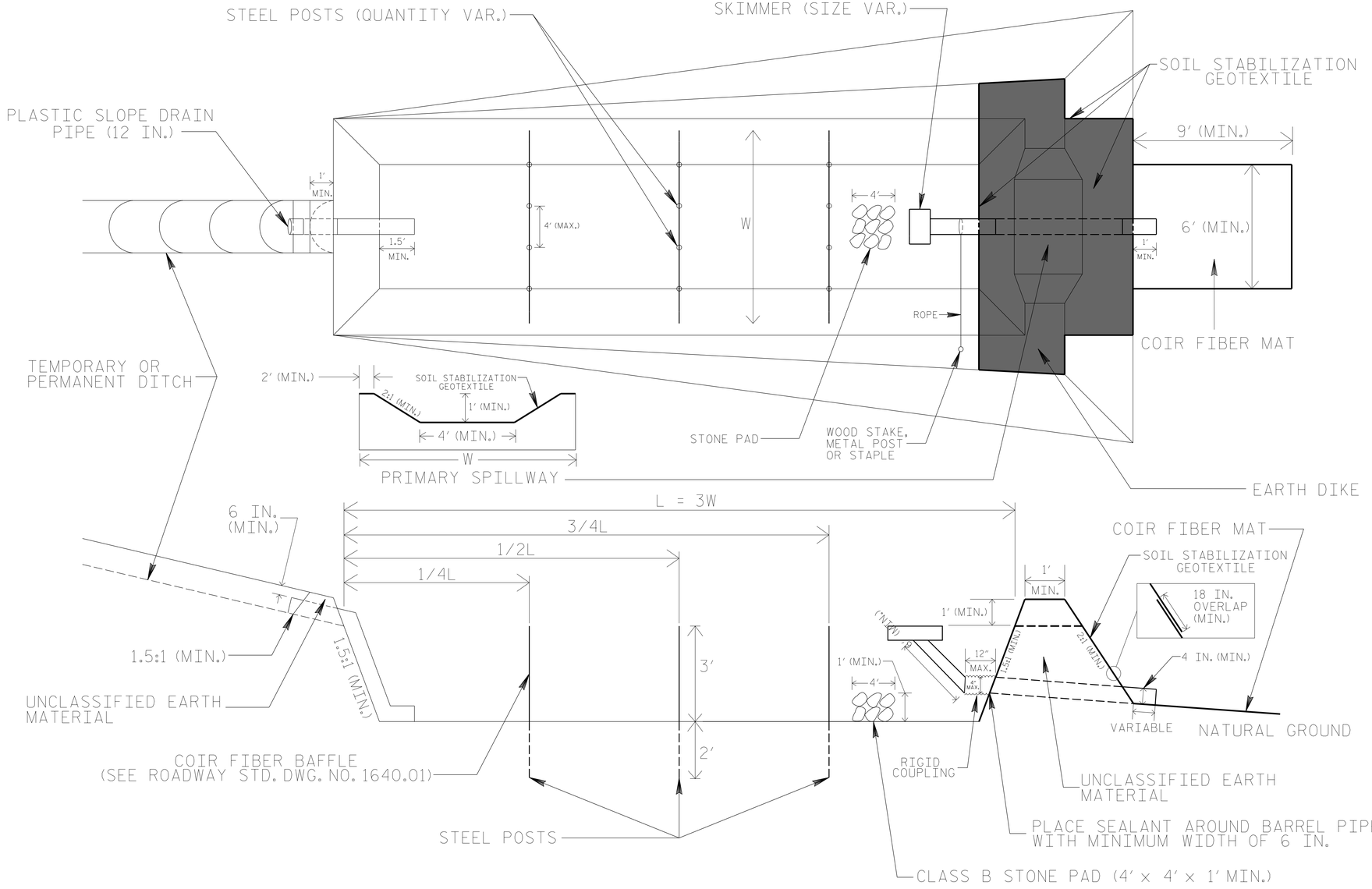




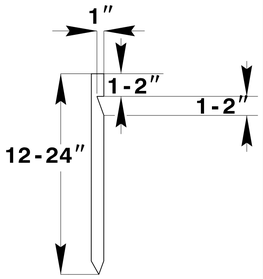
TOP VIEW

PROJECT REFERENCE NO.	SHEET NO.
U-6003	EC-2B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

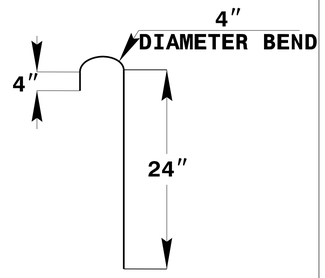
SKIMMER BASIN WITH BAFFLES DETAIL



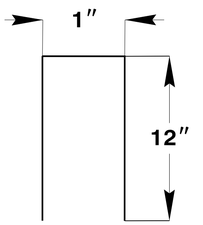
2" x 2" (nominal) WOODEN STAKE



#10 STEEL REINFORCEMENT BAR



1" (nominal) STAPLE



COIR FIBER MAT ANCHOR OPTIONS

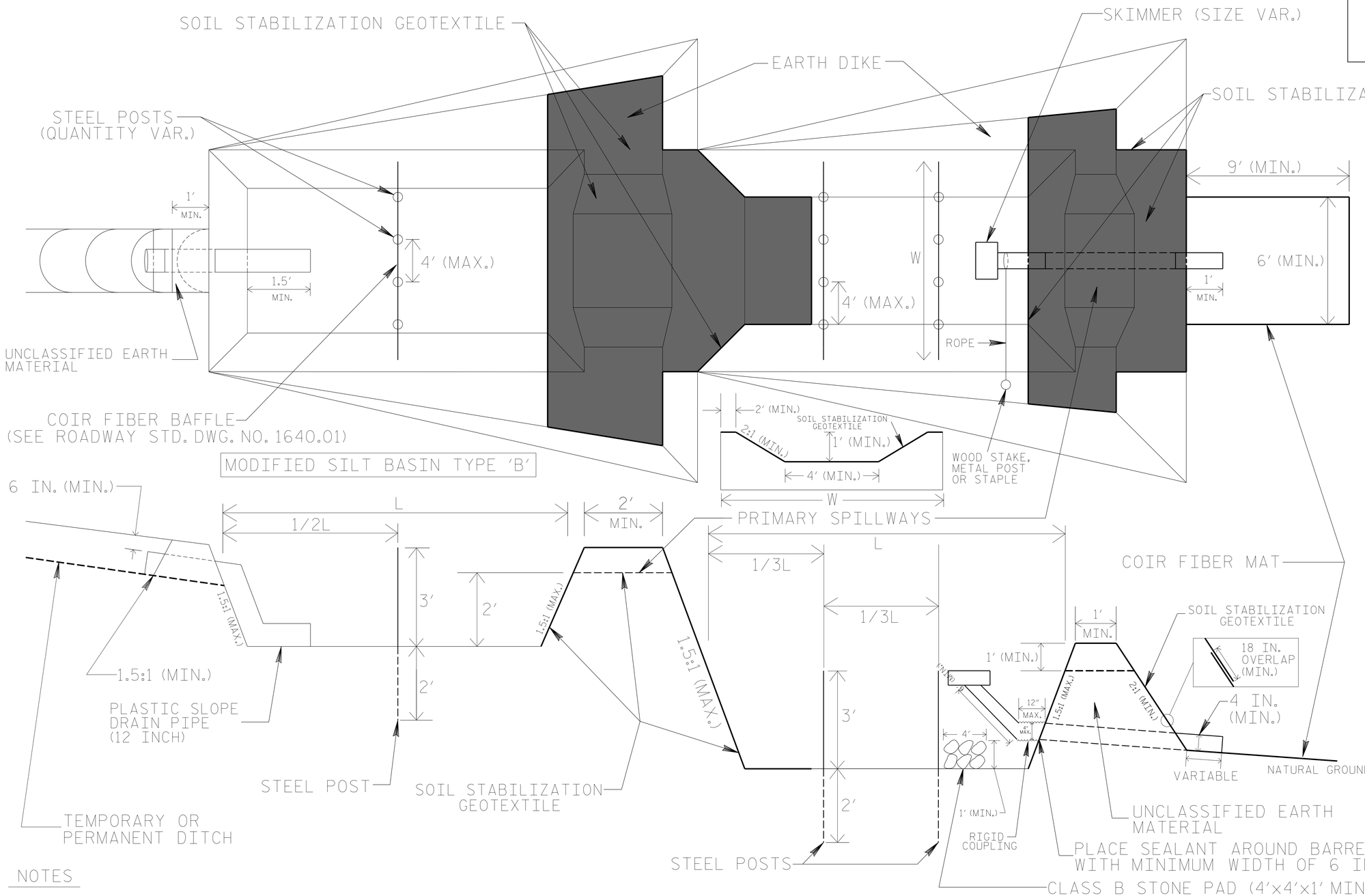
NOTES

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.).

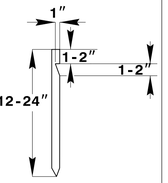
NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
U-6003	EC-2C
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

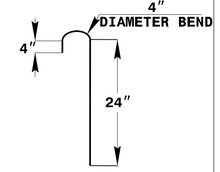
TIERED SKIMMER BASIN DETAIL



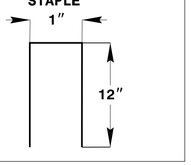
2" x 2" (nominal) WOODEN STAKE



#10 STEEL REINFORCEMENT BAR



1" (nominal) STAPLE



COIR FIBER MAT ANCHOR OPTIONS

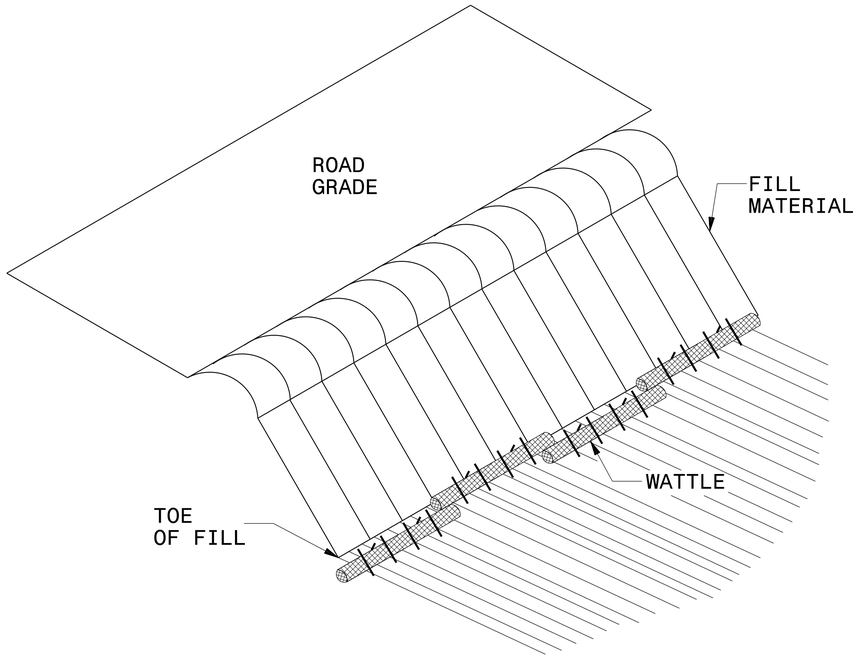
NOTES

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.
U-6003	EC-2D
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

WATTLE BARRIER DETAIL



ISOMETRIC VIEW

NOTES:

USE MINIMUM 18 IN. NOMINAL DIAMETER EXCELSIOR WATTLE AND LENGTH OF 10 FT.

EXCAVATE A 2 TO 3 INCH TRENCH FOR WATTLE TO BE PLACED.

DO NOT PLACE WATTLES ON TOE OF SLOPE.

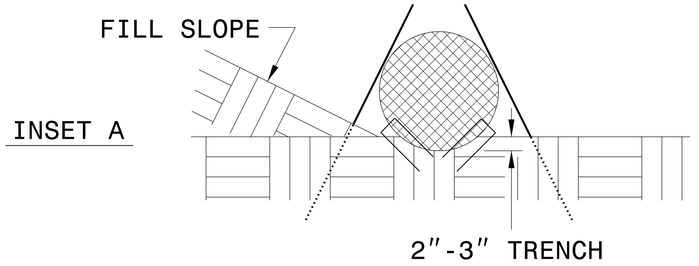
USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

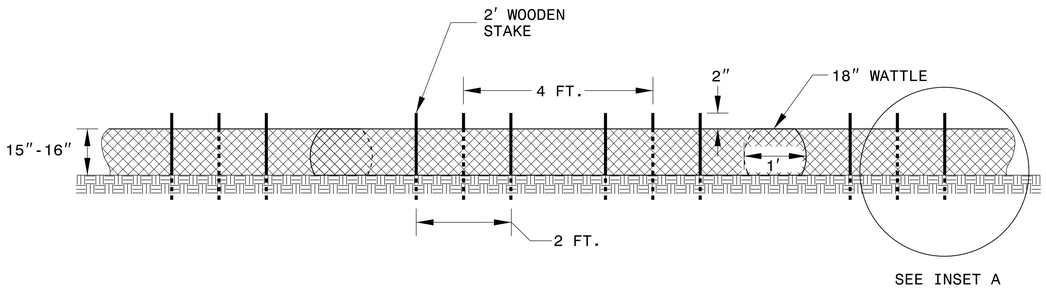
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO GROUND.

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

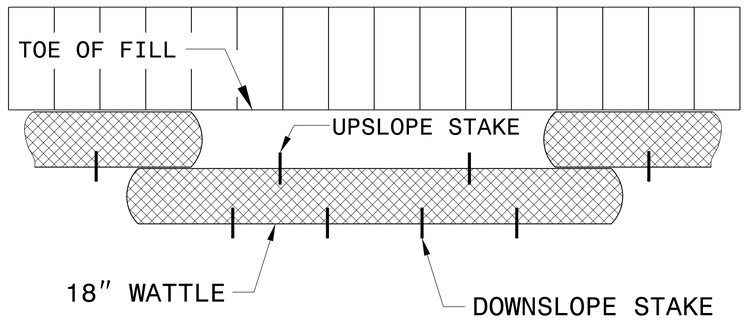
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

FOR BREAKS ALONG LARGE SLOPES, USE MAXIMUM SPACING OF 25 FT.





FRONT VIEW



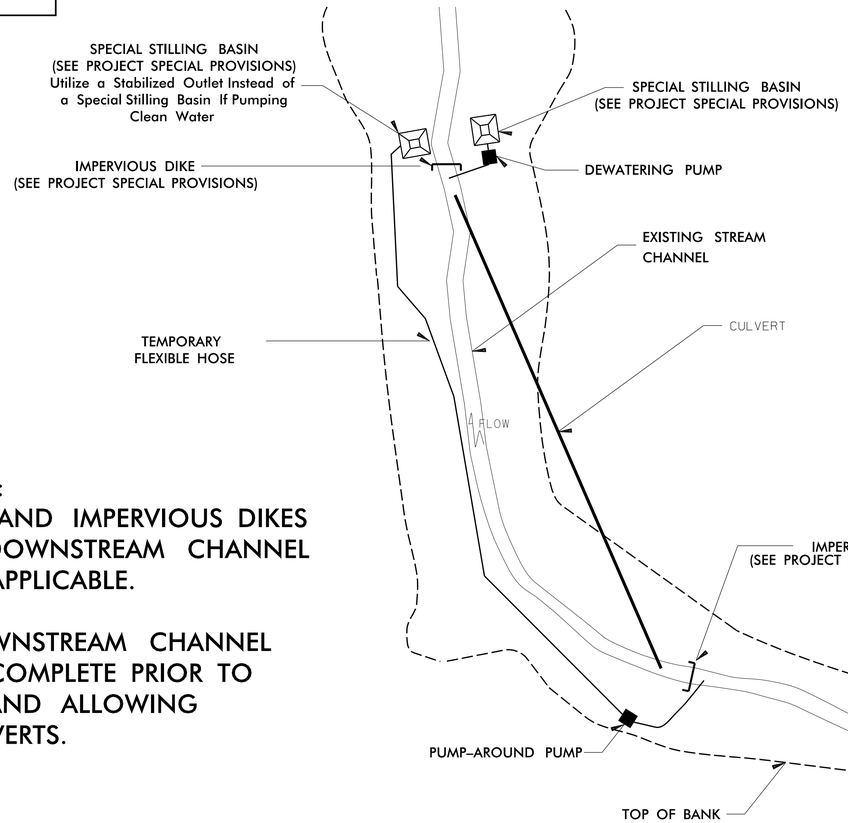
TOP VIEW

PROJECT REFERENCE NO.	SHEET NO.
U-6003	EC-2E
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

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, sand bags, steel sheeting, etc.
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.
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.

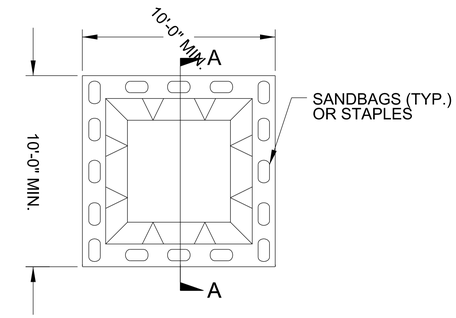
**ADDITIONAL PROJECT–SPECIFIC NOTES:

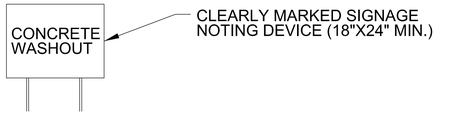
1) USE PUMP–AROUND OPERATION AND IMPERVIOUS DIKES TO COMPLETE UPSTREAM AND DOWNSTREAM CHANNEL IMPROVEMENTS/PROTECTIONS AS APPLICABLE.

2) ENSURE ALL UPSTREAM AND DOWNSTREAM CHANNEL IMPROVEMENT/PROTECTIONS ARE COMPLETE PRIOR TO REMOVAL OF IMPERVIOUS DIKES AND ALLOWING STREAM FLOW INTO NEW CULVERTS.

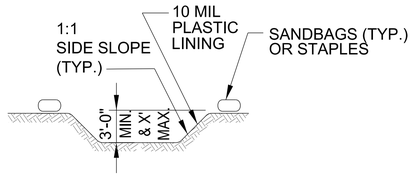
PROJECT REFERENCE NO.	SHEET NO.
U-6003	EC-2F
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER





PLAN



SECTION A-A

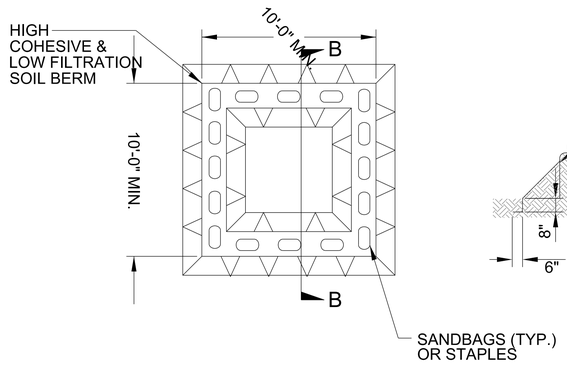
NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

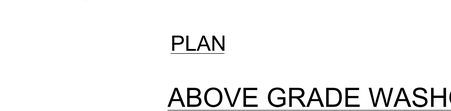
2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY.

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

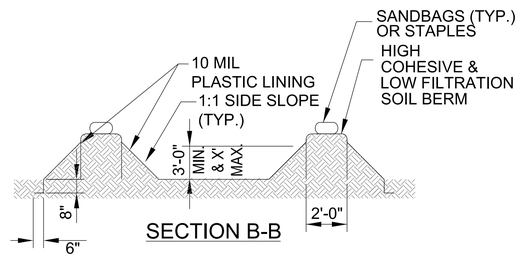
BELOW GRADE WASHOUT STRUCTURE

NOT TO SCALE





PLAN



SECTION B-B

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

PROJECT REFERENCE NO.	SHEET NO.
U-6003	EC-3
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION SUMMARY SHEET

MATTING FOR SLOPES

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
5	-L-	19+00	27+00	RT	4359
5	-L-	27+00	27+50	LT	153
5	-L-	30+50	31+00	RT	125
6	-L-	31+50	43+50	RT	7895
6	-L-	35+00	43+00	LT	3280
7	-L-	44+00	45+00	LT	341
7	-L-	44+50	45+00	RT	157
7	-L-	46+50	54+00	LT	3013
7	-L-	48+00	55+00	RT	2325
			SLOPE SUBTOTAL		21,648

MATTING IN DITCHES – STRAW

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-Y15-	12+10	13+61	RT	120
4	-Y15-	16+00	16+55	LT	45
4	-Y15-	14+13	16+82	RT	210
4	-Y16-	11+19	12+50	RT	135
4	-Y16-	11+84	13+00	LT	105
4	-Y16-	12+50	14+00	RT	150
4	-Y16-	14+00	14+50	RT	50
4	-Y16-	16+00	16+50	LT	40
5	-L-	20+95	22+00	LT	85
5	-L-	22+00	23+00	LT	80
5	-L-	26+10	26+50	RT	65
5	-L-	26+50	28+00	RT	260
6	-L-	38+72	40+15	RT	80
7	L	46+15	49+25	LT	170
8	-L-	59+40	61+00	RT	130
8	-L-	61+00	62+22	RT	100
		STRAW MATTING SUBTOTAL			1825

MATTING IN DITCHES – EXCELSIOR

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-Y16-	15+00	16+00	LT	80
6	-L-	35+50	38+72	RT	175
6	-L-	40+15	41+40	RT	70
8	-L-	55+40	55+75	RT	20
8	-L-	55+75	56+00	RT	15
8	-L-	56+00	56+70	RT	40
		EXCELSIOR MATTING SUBTOTAL			400

MATTING FOR SLOPES	SUBTOTAL		21,648
EXCELSIOR MATTING IN DITCHES	SUBTOTAL		400
STRAW MATTING IN DITCHES	SUBTOTAL		1825
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER			13,585
	TOTAL		37,458
	SAY		37,500

PROJECT REFERENCE NO.	SHEET NO.
U-6003	EC-3A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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 AND WITH SLOPES STEEPER THAN 4:1 - 7 DAYS FOR PERIMETER DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND HQW ZONES - 10 DAYS FOR THE FALLS LAKE WATERSHED
AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	- 7 DAYS FOR PERIMETER DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND HQW ZONES - 10 DAYS FOR THE FALLS LAKE WATERSHED UNLESS THERE IS ZERO SLOPE.

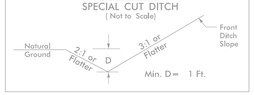
8/17/99

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 4

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

NOTE:
UTILIZE FABRIC INSERT INLET PROTECTION DEVICES IN LIEU OF ROCK INLET SEDIMENT TRAPS, TYPE–C AS DIRECTED BY ENGINEER.

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)



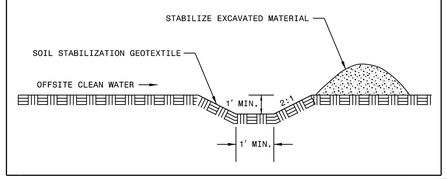
FROM STA. 15+00 TO STA. 16+50 –Y16– LT
FROM STA. 11+19 TO STA. 14+50 –Y16– RT
FROM STA. 12+10 TO STA. 13+61 –Y15– RT
FROM STA. 14+13 TO STA. 16+82 –Y15– RT
FROM STA. 16+00 TO STA. 16+55 –Y15– LT

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)

FROM STA. 11+84 TO STA. 15+00 –Y16– LT

FROM STA. 17+50 TO STA. 18+00 –L– LT

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



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555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
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PROJECT REFERENCE NO.	SHEET NO.
U-6003	EC-04/CONST.04
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

BEGIN CONSTRUCTION
–Y16– POT 11+40.00

–Y16– POT 10+00.00

BEGIN CONSTRUCTION
–Y15– POC 12+10.00

–Y15– PCC 12+44.37

–Y15– PT 16+86.22

–L– POT 11+51.61 LA=
–Y15– POT 17+39.61=
–Y16– POT 17+07.10 LB

BEGIN TIP PROJECT U–6003
–L– POT Sta 11+69.67

–Y15– PT 17+70.95

–Y15– PT 20+56.62

–L– PC 12+71.54

–L– PRC 16+35.00

END CONSTRUCTION
–Y15– POT 21+50.00

S 76° 57' 31.7" E

S 24° 01' 03.3" W

15+00

20+00

SPECIAL CUT DITCH SEE DETAIL 'A'

SPECIAL CUT DITCH SEE DETAIL 'B'

CLASS 'B' RIP RAP
EST. 3 TONS
10 SY GEO–TEXTILE

TOE PROTECTION
CLASS B RIP RAP
EST. 17 TONS
52 SY GEOTEXTILE
SEE DETAIL 'O'

30 x 92 x 3
1.5 inch Skimmer
with 1.5 inch
Orifice Diameter
11 ft. weir
ID 4.1

MATCHLINE –L– STA. 18+00
SEE SHEET 5

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8/9/2023
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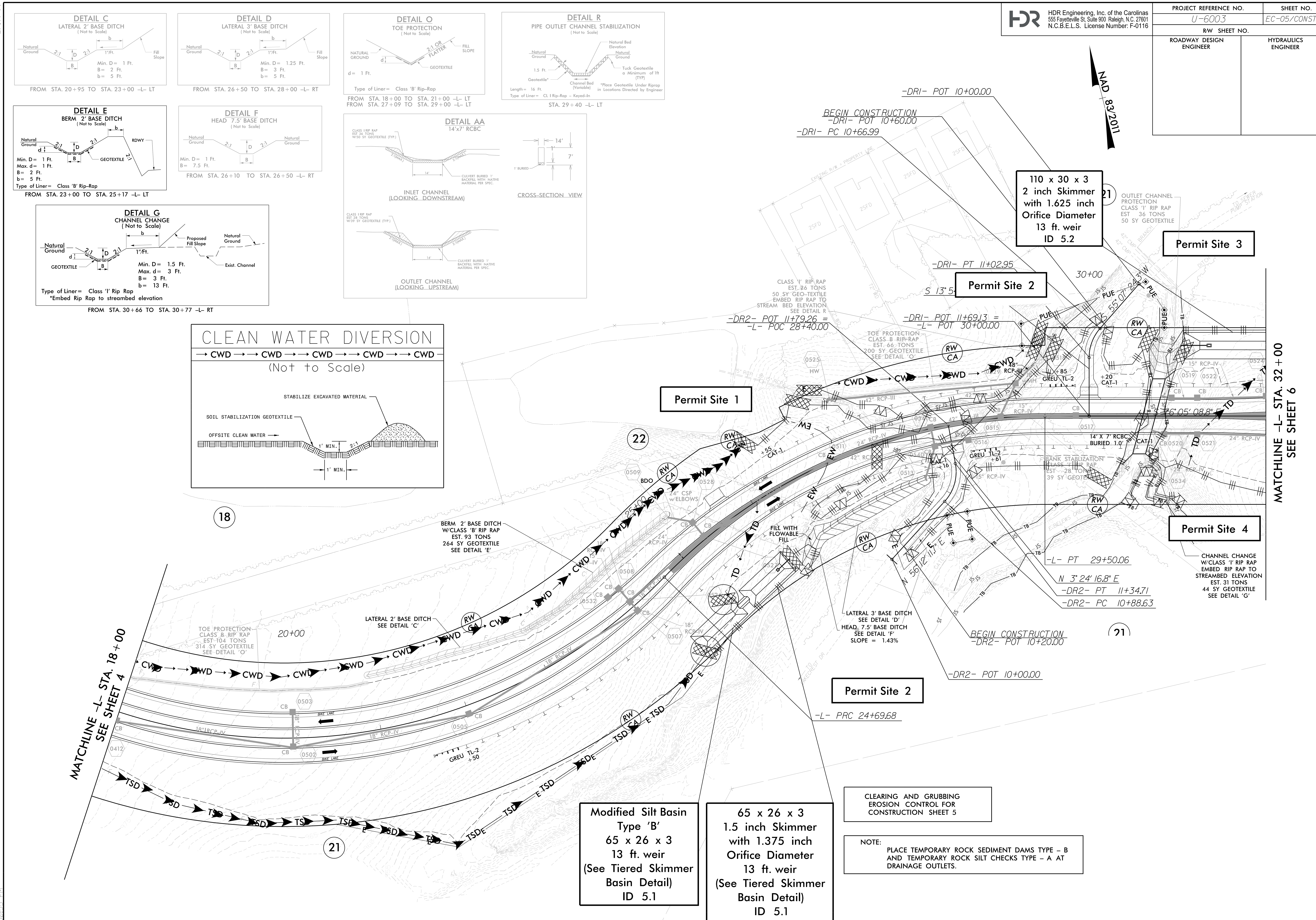
PROJECT REFERENCE NO.	SHEET NO.
U-6003	EC-05/CONST.05
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



DETAIL C
LATERAL 2' BASE DITCH
(Not to Scale)
Min. D= 1 Ft.
B= 2 Ft.
b= 5 Ft.
FROM STA. 20+95 TO STA. 23+00 -L- LT
DETAIL D
LATERAL 3' BASE DITCH
(Not to Scale)
Min. D= 1.25 Ft.
B= 3 Ft.
b= 5 Ft.
FROM STA. 26+50 TO STA. 28+00 -L- RT
DETAIL O
TOE PROTECTION
(Not to Scale)
d= 1 Ft.
Type of Liner= Class 'B' Rip-Rap
FROM STA. 18+00 TO STA. 21+00 -L- LT
FROM STA. 27+09 TO STA. 29+00 -L- LT
DETAIL R
PIPE OUTLET CHANNEL STABILIZATION
(Not to Scale)
STA. 29+40 -L- LT
DETAIL E
BERM 2' BASE DITCH
(Not to Scale)
Min. D= 1 Ft.
Max. d= 1 Ft.
B= 2 Ft.
b= 5 Ft.
Type of Liner= Class 'B' Rip-Rap
FROM STA. 23+00 TO STA. 25+17 -L- LT
DETAIL F
HEAD 7.5' BASE DITCH
(Not to Scale)
Min. D= 1 Ft.
B= 7.5 Ft.
FROM STA. 26+10 TO STA. 26+50 -L- RT
DETAIL AA
14'x7' RCBC
INLET CHANNEL (LOOKING DOWNSTREAM)
CROSS-SECTION VIEW
OUTLET CHANNEL (LOOKING UPSTREAM)
DETAIL G
CHANNEL CHANGE
(Not to Scale)
Min. D= 1.5 Ft.
Max. d= 3 Ft.
B= 3 Ft.
b= 13 Ft.
Type of Liner= Class 'I' Rip Rap
*Embed Rip Rap to streambed elevation
FROM STA. 30+66 TO STA. 30+77 -L- RT
CLEAN WATER DIVERSION
CWD → CWD → CWD → CWD → CWD
(Not to Scale)
STABILIZE EXCAVATED MATERIAL
SOIL STABILIZATION GEOTEXTILE
OFFSITE CLEAN WATER
1' MIN.
NAD 83/2011
-DRI- POT 10+00.00
BEGIN CONSTRUCTION -DRI- POT 10+60.00
-DRI- PC 10+66.99
110 x 30 x 3
2 inch Skimmer
with 1.625 inch
Orifice Diameter
13 ft. weir
ID 5.2
OUTLET CHANNEL PROTECTION CLASS 'I' RIP RAP EST 36 TONS 50 SY GEOTEXTILE
Permit Site 3
-DRI- PT 11+02.95
Permit Site 2
30+00
CLASS 'I' RIP RAP EST. 26 TONS 50 SY GEO-TEXTILE EMBED RIP RAP TO STREAM BED ELEVATION SEE DETAIL R
-DR2- POT 11+79.26 = -L- POC 28+40.00
-DRI- POT 11+69.13 = -L- POT 30+00.00
TOE PROTECTION CLASS B RIP-RAP EST. 66 TONS 200 SY GEOTEXTILE SEE DETAIL 'O'
Permit Site 1
14' X 7' RCBC BURIED 1.0'
BANK STABILIZATION CLASS 'I' RIP RAP EST 28 TONS 39 SY GEOTEXTILE
MATCHLINE -L- STA. 32+00 SEE SHEET 6
Permit Site 4
CHANNEL CHANGE W/CLASS 'I' RIP RAP EMBED RIP RAP TO STREAMBED ELEVATION EST. 31 TONS 44 SY GEOTEXTILE SEE DETAIL 'G'
-L- PT 29+50.06
N 3° 24' 16.8" E
-DR2- PT 11+34.71
-DR2- PC 10+88.63
BERM 2' BASE DITCH W/CLASS 'B' RIP RAP EST. 93 TONS 264 SY GEOTEXTILE SEE DETAIL 'E'
FILL WITH FLOWABLE FILL
LATERAL 3' BASE DITCH SEE DETAIL 'D'
HEAD 7.5' BASE DITCH SEE DETAIL 'F' SLOPE = 1.43%
BEGIN CONSTRUCTION -DR2- POT 10+20.00
-DR2- POT 10+00.00
LATERAL 2' BASE DITCH SEE DETAIL 'C'
TOE PROTECTION CLASS B RIP RAP EST 104 TONS 314 SY GEOTEXTILE SEE DETAIL 'O'
20+00
Permit Site 2
-L- PRC 24+69.68
MATCHLINE -L- STA. 18+00 SEE SHEET 4
GREU TL-2 +50
Modified Silt Basin
Type 'B'
65 x 26 x 3
13 ft. weir
(See Tiered Skimmer Basin Detail)
ID 5.1
65 x 26 x 3
1.5 inch Skimmer
with 1.375 inch
Orifice Diameter
13 ft. weir
(See Tiered Skimmer Basin Detail)
ID 5.1
CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 5
NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B
AND TEMPORARY ROCK SILT CHECKS TYPE - A AT
DRAINAGE OUTLETS.

PROJECT REFERENCE NO.	SHEET NO.
U-6003	EC-5A/CONST.5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

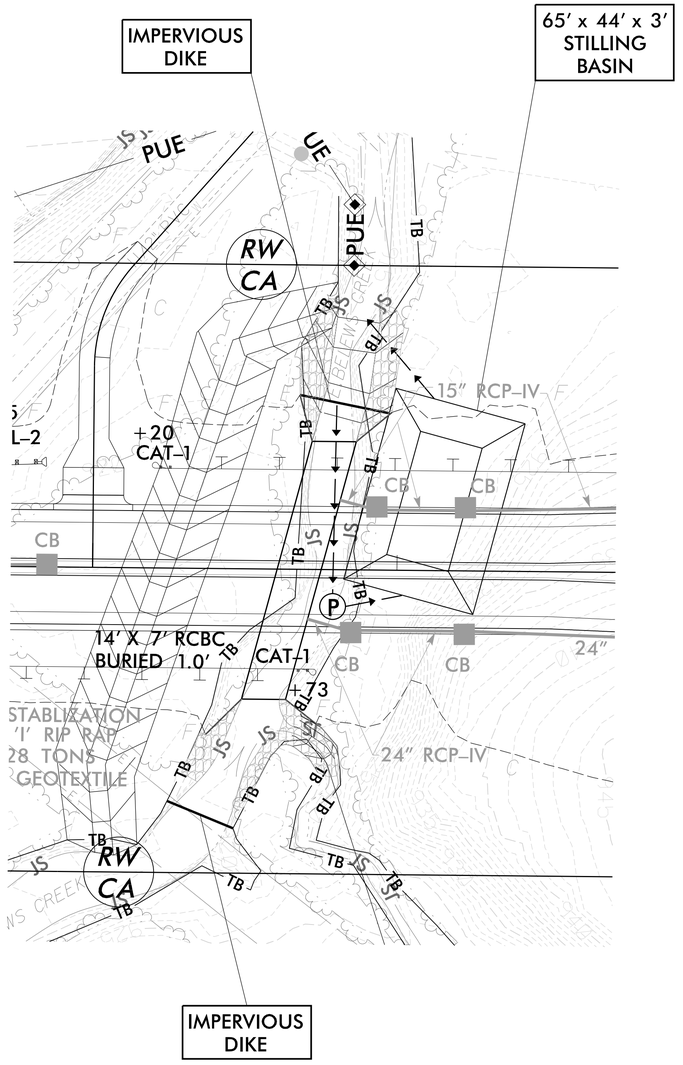
1 @ 14′ X 7′ RCBC CULVERT CONSTRUCTION SEQUENCE STA. 30+63 –L–

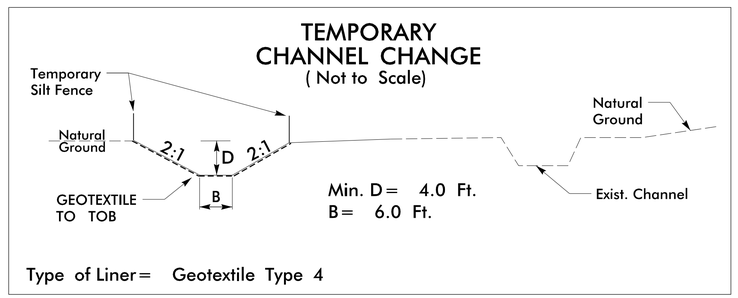
NAD 83/2011

NOT TO SCALE

PHASE I

1. CONSTRUCT 6′ BASE TEMPORARY CHANNEL CHANGE WITH LINER. SECURE INLET AND OUTLET OF CHANNEL FOR ENERGY DISSIPATION AS SHOWN.
2. UTILIZE SPECIAL STILLING BASIN(S), TEMPORARY DIKES AND BYPASS PUMP TO TIE TEMPORARY CHANNEL CHANGE INTO STREAM.
3. INSTALL IMPERVIOUS DIKES AS SHOWN TO DIRECT WATER FLOW AROUND THE WORK AREA INTO THE TEMPORARY CHANNEL CHANGE.
4. CONSTRUCT CULVERT USING STILLING BASIN AND PUMP TO DE–WATER THE WORK ZONE.
5. USE TEMPORARY DIKES AND BYPASS PUMPS TO COMPLETE INLET AND OUTLET CHANNEL PROTECTIONS. ENSURE THESE ARE COMPLETE PRIOR TO REMOVAL OF IMPERVIOUS DIKES AND RELEASE OF STREAM FLOW.
6. REMOVE IMPERVIOUS DIKES TO ESTABLISH FLOW THROUGH NEWLY CONSTRUCTED CULVERT.
7. REMOVE TEMPORARY CHANNEL CHANGE AND COMPLETE GRADING AND ROADWAY WORK.





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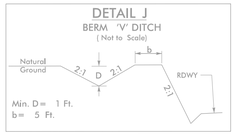
	U-6003	EC-06/CONST.06
	R/W SHEET NO.	
	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



FROM STA. 35+50 TO STA. 41+40 –L– RT

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 6

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

110 x 30 x 3
2 inch Skimmer
with 1.625 inch
Orifice Diameter
13 ft. weir
ID 5.2

64 x 32 x 3
1.5 inch Skimmer
with 1.25 inch
Orifice Diameter
8 ft. weir
ID 6.2

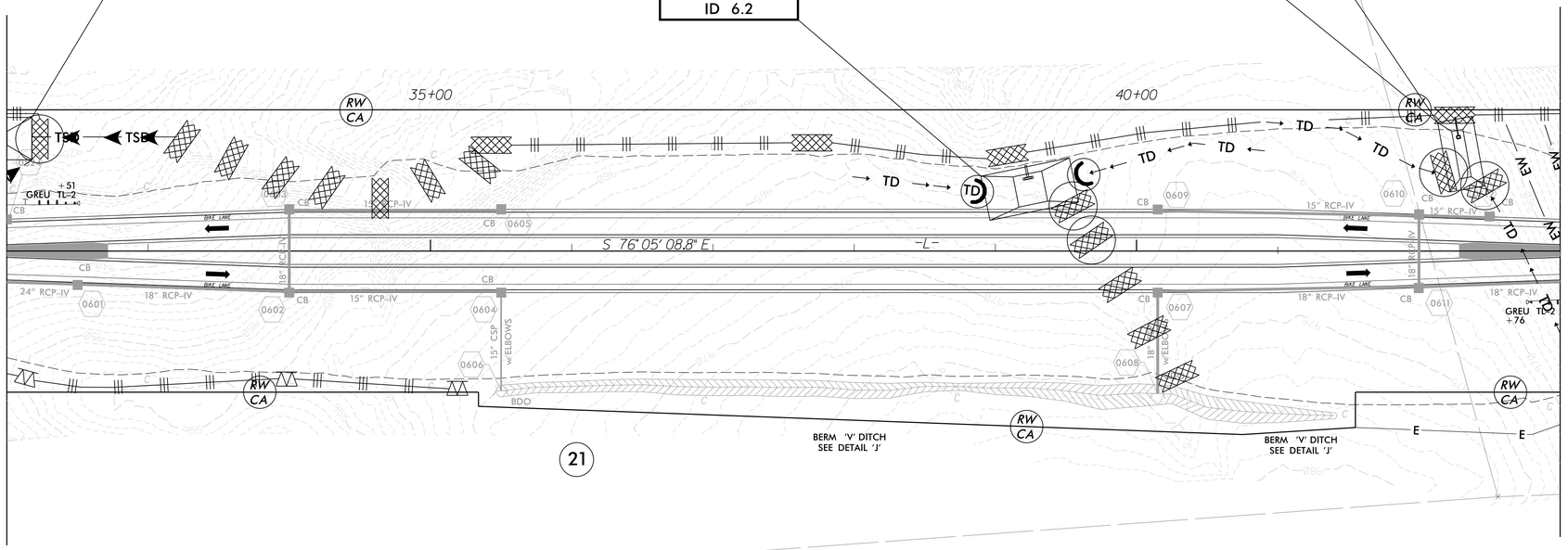
50 x 25 x 3
1.5 inch Skimmer
with 1.5 inch
Orifice Diameter
5 ft. weir
ID 6.1

21
ENSURE BASIN SKIMMER AND SPILLWAY OUTLET TO OUTSIDE OF THE TEMPORARY SILT FENCE

23

NAD 83/2011

MATCHLINE –L– STA. 32+00
SEE SHEET 5



MATCHLINE –L– STA. 43+00
SEE SHEET 7

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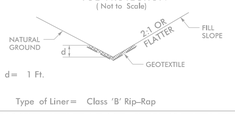
PROJECT REFERENCE NO.	SHEET NO.
U-6003	EC-07/CONST.07
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DETAIL O
TOE PROTECTION
(Not to Scale)

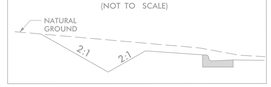


d= 1 Ft.

Type of Liner= Class 'B' Rip-Rap

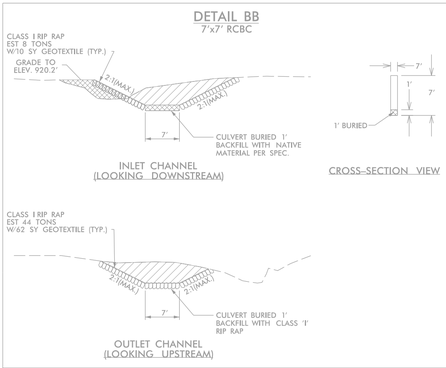
FROM STA. 43+75 TO STA. 44+05 –L– LT
FROM STA. 44+25 TO STA. 45+50 –L– LT
FROM STA. 44+10 TO STA. 44+63 –L– RT
FROM STA. 44+98 TO STA. 45+90 –L– RT

DETAIL P
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)

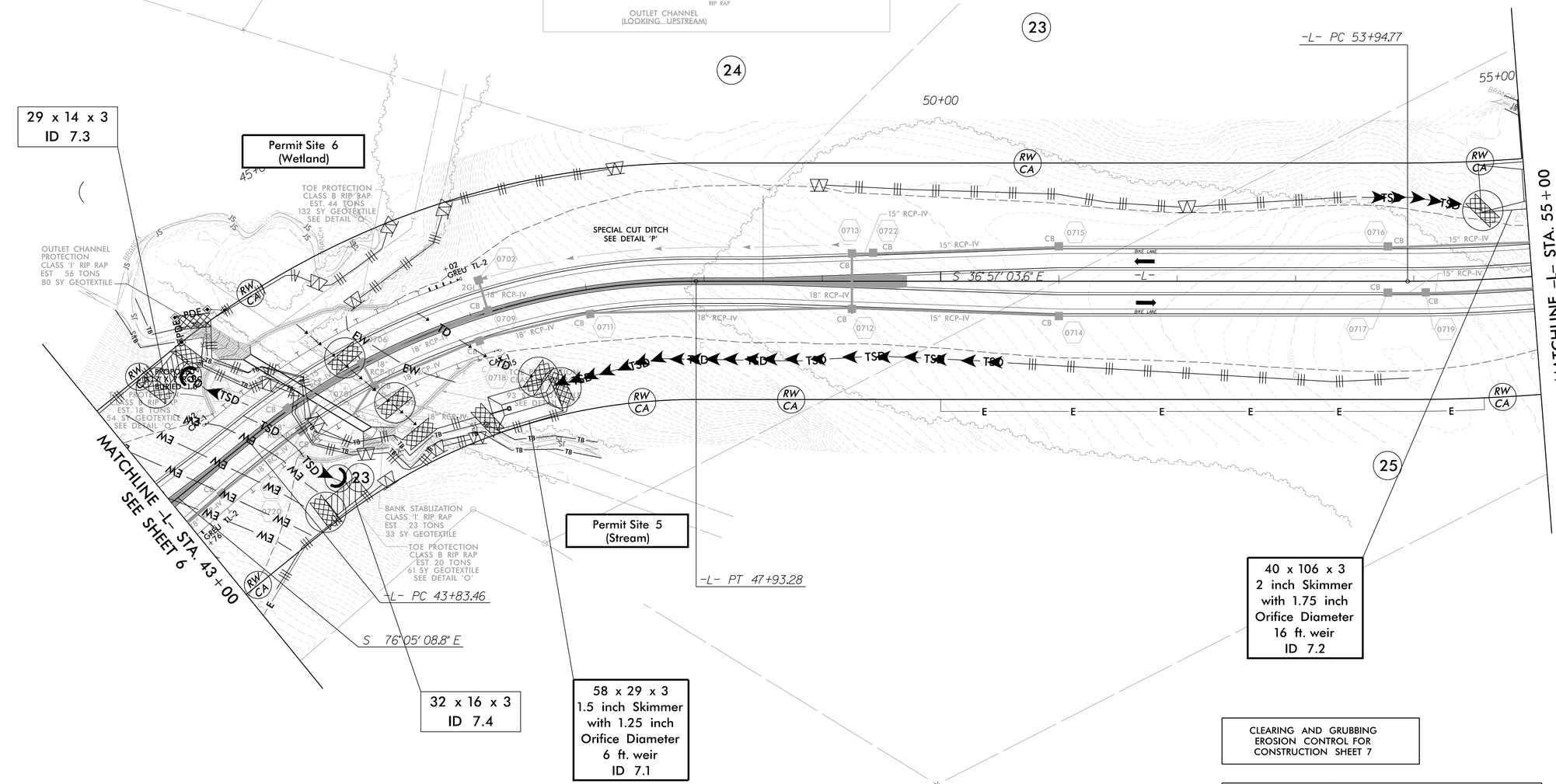


FROM STA. 46+15 TO STA. 49+25 –L– LT

DETAIL BB
7'x7' RCBC



NAD 83/2011



CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 7

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

8/9/2023
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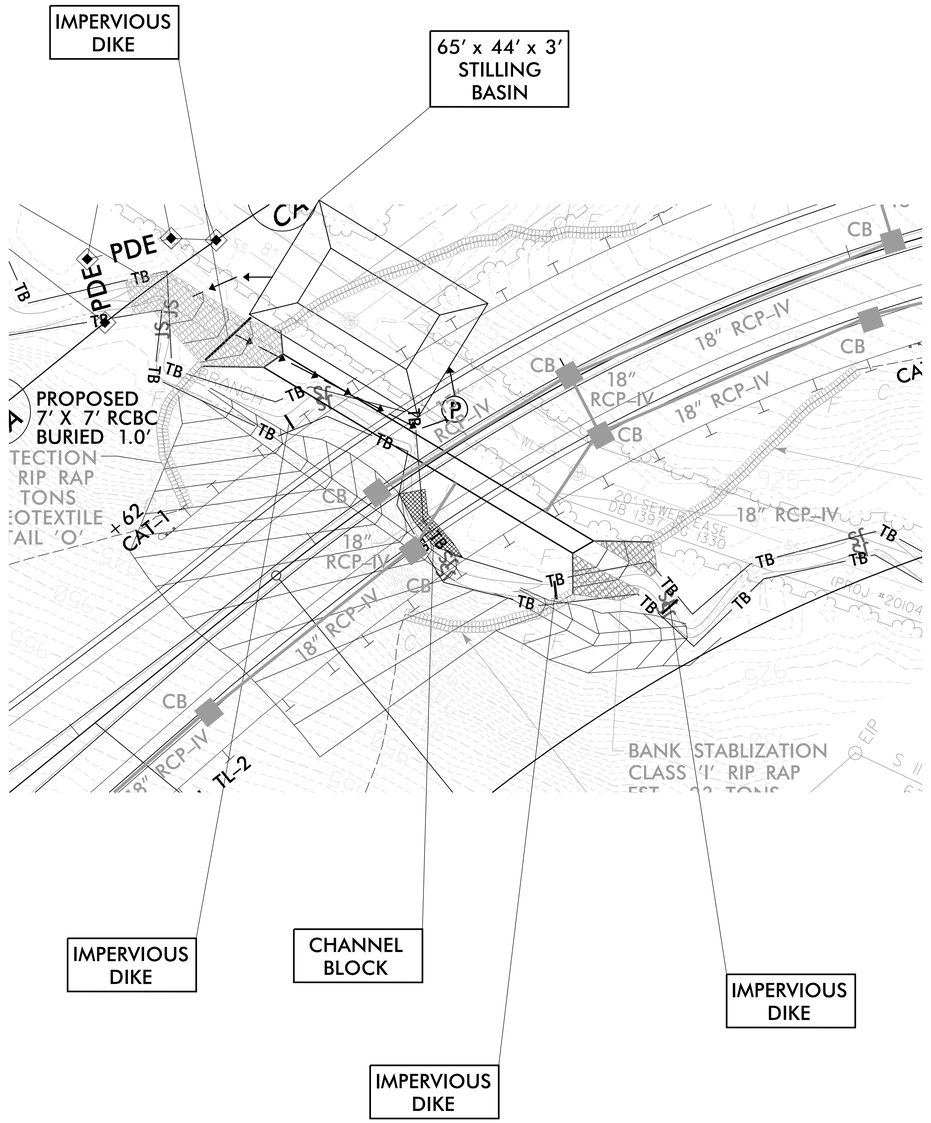
PROJECT REFERENCE NO.	SHEET NO.
U-6003	EC-7A/CONST.7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

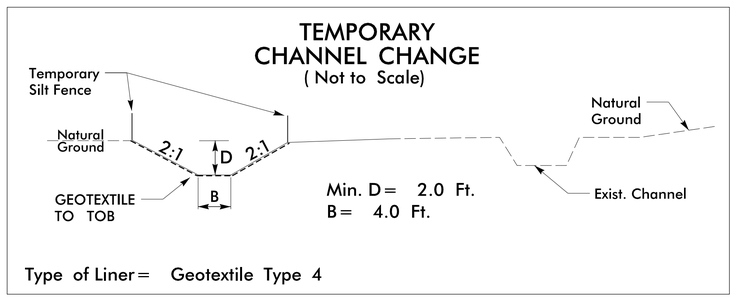
1 @ 7′ X 7′ RCBC CULVERT CONSTRUCTION SEQUENCE STA. 44+49 –L–

NAD 83/2011

NOT TO SCALE

1. CONSTRUCT 4′ BASE TEMPORARY CHANNEL CHANGE WITH LINER. SECURE INLET AND OUTLET OF CHANNEL FOR ENERGY DISSIPATION AS SHOWN.
2. UTILIZE SPECIAL STILLING BASIN(S), TEMPORARY DIKES AND BYPASS PUMP TO TIE TEMPORARY CHANNEL CHANGE INTO STREAM.
3. INSTALL IMPERVIOUS DIKES AND CHANNEL BLOCK AS SHOWN TO DIRECT WATER FLOW AROUND THE WORK AREA INTO THE TEMPORARY CHANNEL CHANGE.
4. CONSTRUCT CULVERT USING STILLING BASIN AND PUMP TO DE–WATER THE WORK ZONE.
5. USE TEMPORARY DIKES AND BYPASS PUMPS TO COMPLETE INLET AND OUTLET CHANNEL CONSTRUCTION.
6. REMOVE IMPERVIOUS DIKES TO ESTABLISH FLOW THROUGH NEWLY CONSTRUCTED CULVERT.
7. REMOVE TEMPORARY CHANNEL CHANGE AND COMPLETE GRADING AND ROADWAY WORK.





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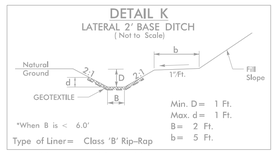
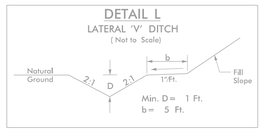
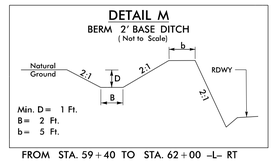
PROJECT REFERENCE NO.	SHEET NO.
U-6003	EC-08/CONST.08
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



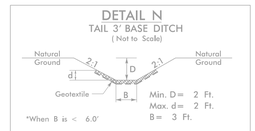
FROM STA. 56+70 TO STA. 57+50 –L– RT



FROM STA. 56+00 TO STA. 56+70 –L– RT

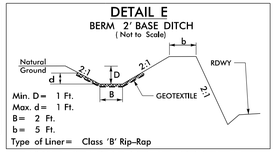


FROM STA. 59+40 TO STA. 62+00 –L– RT

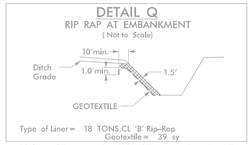


FROM STA. 55+10 TO STA. 55+24 –L– LT

40 x 106 x 3
2 inch Skimmer
with 1.75 inch
Orifice Diameter
16 ft. weir
ID 7.2



FROM STA. 57+50 TO STA. 59+40 –L– RT



FROM STA. 55+05 TO STA. 55+25 –L– LT

Permit Site 7

END 1.5" MILL & FILL
END CONSTRUCTION
-Y13- STA. 25+10.00

NAD 83/2011

RIP RAP AT EMBANKMENT
CLASS 'B' RIP RAP
EST. 18 TONS
39 SY GEOTEXTILE
SEE DETAIL 'Q'

25

TAIL 3' BASE DITCH
W/CLASS 'B' RIP RAP
EST. 69 TONS
147 SY GEOTEXTILE
SEE DETAIL 'N'
SLOPE = 0.86%

END TIP PROJECT U-6003
-L- POT Sta 62+49.70
TIE TO U-4734 (BY OTHERS)

-L- POT 63+49.25

-L- PT 60+43.31

55+00

60+00

SEE SHEET 7
MATCHLINE -L- STA. 55+00

LATERAL 'V' DITCH
SEE DETAIL 'L'

LATERAL 2' BASE DITCH
W/CLASS 'B' RIP RAP
EST. 38 TONS
108 SY GEOTEXTILE
SEE DETAIL 'K'

BERM 2' BASE DITCH
W/CLASS 'B' RIP RAP
EST. 97 TONS
274 SY GEOTEXTILE
SEE DETAIL 'E'

BERM 2' BASE DITCH
SEE DETAIL 'M'

S 64°04'28.0" E

N 24°25'37.6" E

BEGIN 1.5" MILL & FILL
BEGIN CONSTRUCTION
-Y13- STA. 14+70.69

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 8

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

26

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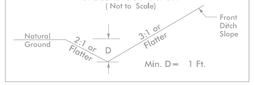
	U-6003	EC-09/CONST.04
	R/W SHEET NO.	
	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Place Matting for Erosion Control on Slope as Work Allows.
Sta. 13+00 to Sta. 16+50 –L– LT
Sta. 14+50 to Sta. 18+00 –L– RT

NOTE:
UTILIZE FABRIC INSERT INLET PROTECTION DEVICES IN LIEU OF ROCK INLET SEDIMENT TRAPS, TYPE–C AS DIRECTED BY ENGINEER.

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)



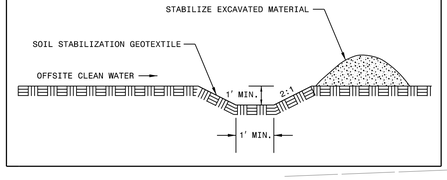
FROM STA. 15+00 TO STA. 16+50 –Y16– LT
FROM STA. 11+19 TO STA. 14+50 –Y16– RT
FROM STA. 12+10 TO STA. 13+61 –Y15– RT
FROM STA. 14+13 TO STA. 16+82 –Y15– RT
FROM STA. 16+00 TO STA. 16+55 –Y15– LT

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)

FROM STA. 11+84 TO STA. 15+00 –Y16– LT

FROM STA. 17+50 TO STA. 18+00 –L– LT

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



★ = 30 x 92 x 3 1.5 inch Skimmer with 1.5 inch Orifice Diameter 11 ft. weir ID 4.1

-Y16- POT 10+00.00

BEGIN CONSTRUCTION
-Y16- POT 11+40.00

TIE TO EXISTING DRAINAGE BOX

TIE TO EXISTING DITCH

TO DOBSON ST.

S 76° 57' 31.7" E

SPECIAL CUT DITCH SEE DETAIL 'A'

SPECIAL CUT DITCH SEE DETAIL 'B'

CLASS 'B' RIP RAP EST. 3 TONS 10 SY GEO-TEXTILE

-Y15- PT 17+70.95

-Y15- PT 20+56.62

S 24° 01' 03.3" W

END CONSTRUCTION
-Y15- POT 21+50.00

15+00

20+00

BEGIN CONSTRUCTION
-Y15- POC 12+10.00

-Y15- PCC 12+44.37

-Y15- PT 16+86.22

-L- POT 11+51.61 LA=
-Y15- POT 17+39.61=
-Y16- POT 17+07.10 LB

BEGIN TIP PROJECT U-6003
-L- POT Sta 11+69.67

TOE PROTECTION CLASS B RIP RAP EST. 17 TONS 52 SY GEOTEXTILE SEE DETAIL 'O'

-L- PC 12+71.54

-L- PRC 16+35.00

MATCHLINE -L- STA. 18+00
SEE SHEET 5

NAD 83/2011

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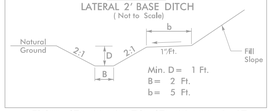
N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO.	SHEET NO.
U-6003	EC-10/CONST.05
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DETAIL C
LATERAL 2' BASE DITCH
(Not to Scale)



Min. D = 1 Ft.
B = 2 Ft.
b = 5 Ft.

FROM STA. 20+95 TO STA. 23+00 –L– LT

DETAIL D
LATERAL 3' BASE DITCH
(Not to Scale)

Min. D = 1.25 Ft.
B = 3 Ft.
b = 5 Ft.

FROM STA. 26+50 TO STA. 28+00 –L– RT

DETAIL O
TOE PROTECTION
(Not to Scale)

d = 1 Ft.

Type of Liner = Class 'B' Rip-Rap

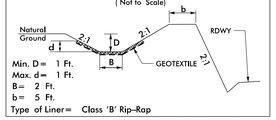
FROM STA. 18+00 TO STA. 21+00 –L– LT
FROM STA. 27+09 TO STA. 29+00 –L– LT

DETAIL R
PIPE OUTLET CHANNEL STABILIZATION
(Not to Scale)

Type of Liner = CL I Rip-Rap – Keyed-in

STA. 29+40 –L– LT

DETAIL E
BERM 2' BASE DITCH
(Not to Scale)



Min. D = 1 Ft.
Max. d = 1 Ft.
B = 2 Ft.
b = 5 Ft.
Type of Liner = Class 'B' Rip-Rap

FROM STA. 23+00 TO STA. 25+17 –L– LT

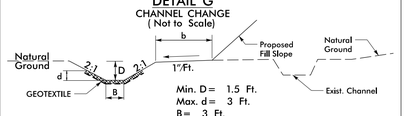
DETAIL F
HEAD 7.5' BASE DITCH
(Not to Scale)

Min. D = 1 Ft.
B = 7.5 Ft.

FROM STA. 26+10 TO STA. 26+50 –L– RT

DETAIL AA
14'x7' RCBC

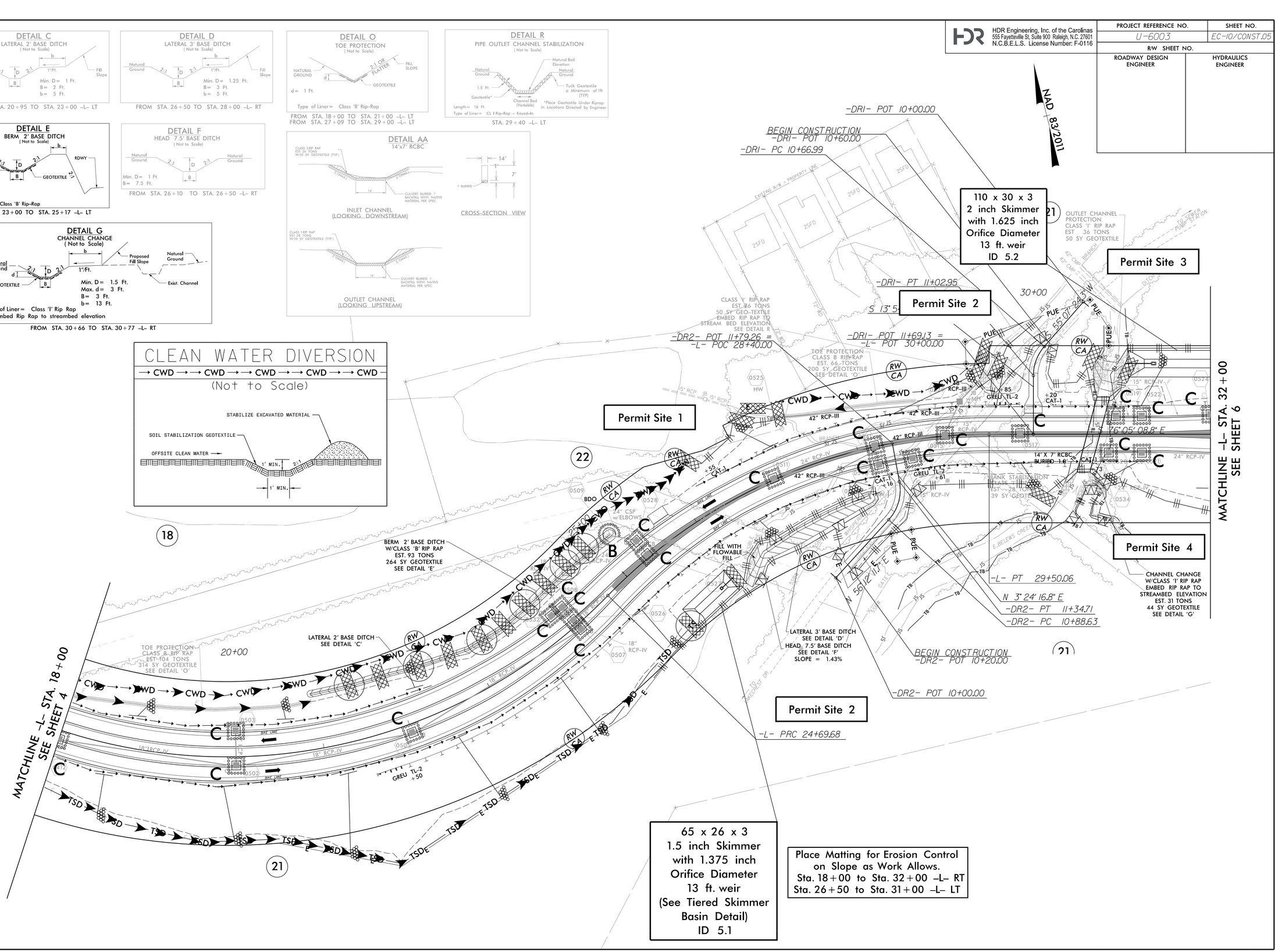
DETAIL G
CHANNEL CHANGE
(Not to Scale)



Min. D = 1.5 Ft.
Max. d = 3 Ft.
B = 3 Ft.
b = 13 Ft.
Type of Liner = Class 'I' Rip Rap
*Embed Rip Rap to streambed elevation

FROM STA. 30+66 TO STA. 30+77 –L– RT

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



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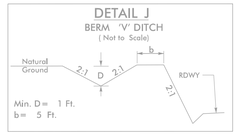
	U-6003	EC-II/CONST.06
	R/W SHEET NO.	
	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



FROM STA. 35+50 TO STA. 41+40 –L– RT

Place Matting for Erosion Control on Slope as Work Allows.
Sta. 32+00 to Sta. 43+00 –L– RT
Sta. 34+00 to Sta. 43+00 –L– LT

110 x 30 x 3
2 inch Skimmer
with 1.625 inch
Orifice Diameter
13 ft. weir
ID 5.2

NAD 83/2011

21

23

MATCHLINE –L– STA. 32+00
SEE SHEET 5

MATCHLINE –L– STA. 43+00
SEE SHEET 7

35+00

40+00

RW CA

TSB

GREU TL-2 +51

GREU TL-2 +76

S 76° 05' 08.8" E –L–

BIKE LANE

24" RCP–IV

18" RCP–IV

15" RCP–IV

15" RCP–IV

18" RCP–IV

18" RCP–IV

15" RCP–IV

15" RCP–IV

15" CSP w/ ELBOWS

15" CSP w/ ELBOWS

EW

C

A

E

BERM 'V' DITCH
SEE DETAIL 'J'

BERM 'V' DITCH
SEE DETAIL 'J'

21

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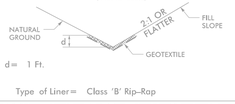
	U-6003	EC-12/CONST.07
	R/W SHEET NO.	
	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DETAIL O
TOE PROTECTION
(Not to Scale)

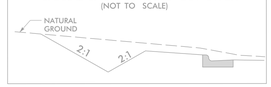


d= 1 Ft.

Type of Liner= Class 'B' Rip-Rap

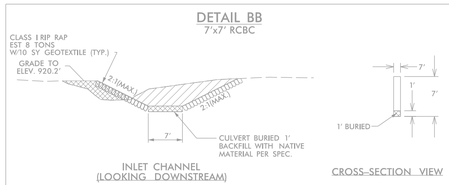
FROM STA. 43+75 TO STA. 44+05 –L– LT
FROM STA. 44+25 TO STA. 45+50 –L– LT
FROM STA. 44+10 TO STA. 44+63 –L– RT
FROM STA. 44+98 TO STA. 45+90 –L– RT

DETAIL P
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)

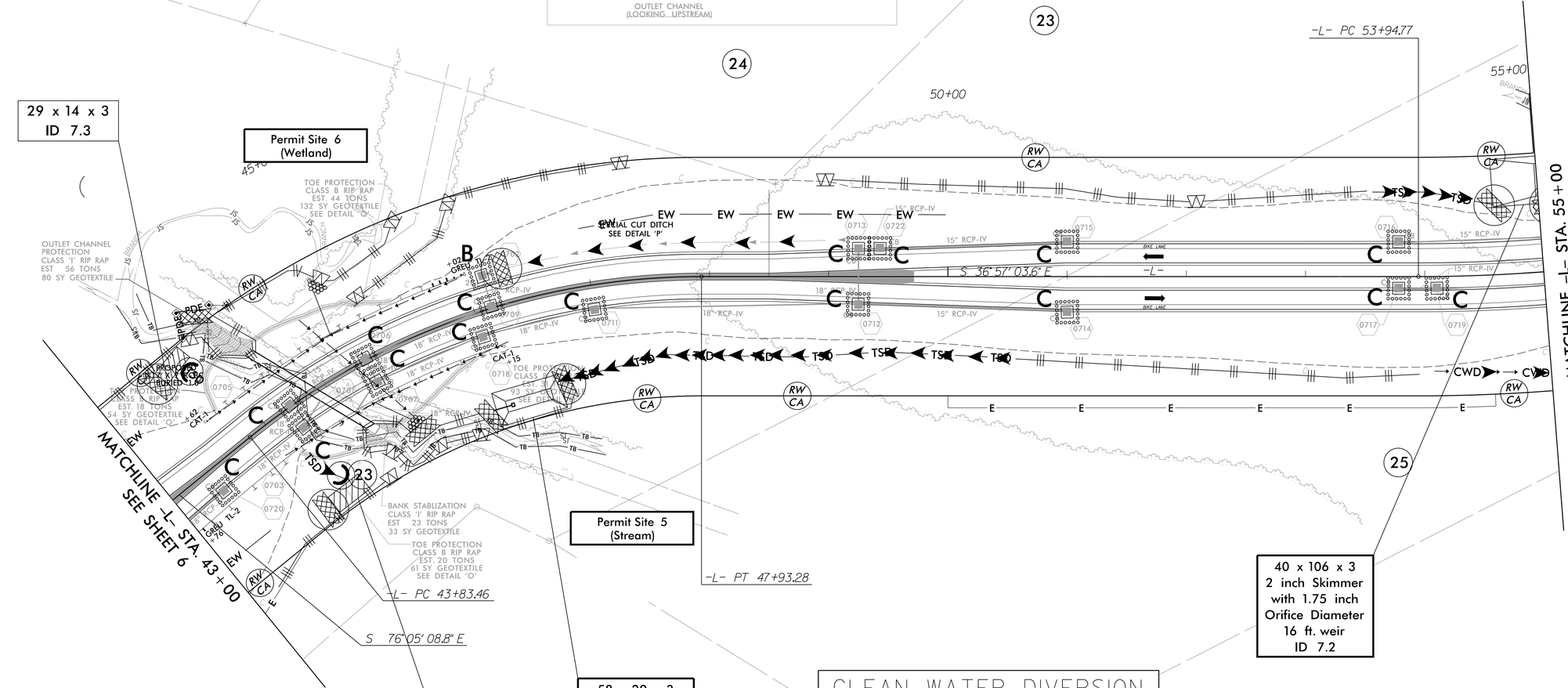


FROM STA. 46+15 TO STA. 49+25 –L– LT

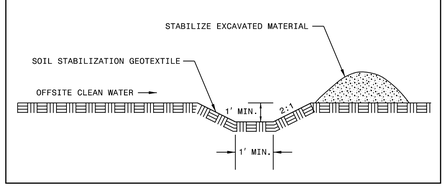
DETAIL BB
7'x7' RCBC



NAD 83/2011



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



Place Matting for Erosion Control
on Slope as Work Allows.
Sta. 43+00 to Sta. 55+00 –L– RT
Sta. 43+00 to Sta. 54+50 –L– LT

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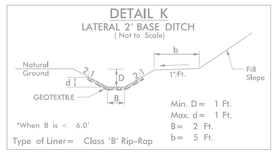
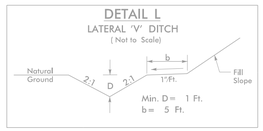
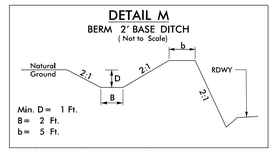
	U-6003	EC-13/CONST.08
	R/W SHEET NO.	
	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



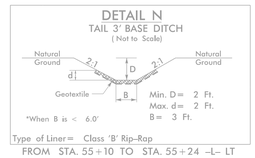
FROM STA. 56+70 TO STA. 57+50 –L– RT



FROM STA. 56+00 TO STA. 56+70 –L– RT

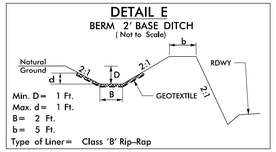


FROM STA. 59+40 TO STA. 62+00 –L– RT

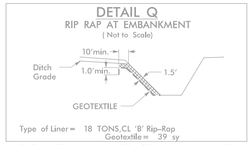


FROM STA. 55+10 TO STA. 55+24 –L– LT

40 x 106 x 3
2 inch Skimmer
with 1.75 inch
Orifice Diameter
16 ft. weir
ID 7.2



FROM STA. 57+50 TO STA. 59+40 –L– RT



FROM STA. 55+05 TO STA. 55+25 –L– LT

Permit Site 7

RIP RAP AT EMBANKMENT
CLASS 'B' RIP RAP
EST. 18 TONS
39 SY GEOTEXTILE
SEE DETAIL 'Q'

25

TAIL 3' BASE DITCH
W/CLASS 'B' RIP RAP
EST. 69 TONS
147 SY GEOTEXTILE
SEE DETAIL 'N'
SLOPE = 0.86%

END TIP PROJECT U–6003
–L– POT Sta 62+49.70
TIE TO U–4734 (BY OTHERS)

–L– POT 63+49.25

–L– PT 60+43.31

END 1.5" MILL & FILL
END CONSTRUCTION
–Y13– STA. 25+10.00

NAD 83/2011

SEE SHEET 7
MATCHLINE –L– STA. 55+00

55+00

60+00

LATERAL 'V' DITCH
SEE DETAIL 'L'

LATERAL 2' BASE DITCH
W/CLASS 'B' RIP RAP
EST. 38 TONS
108 SY GEOTEXTILE
SEE DETAIL 'K'

BERM 2' BASE DITCH
W/CLASS 'B' RIP RAP
EST. 97 TONS
274 SY GEOTEXTILE
SEE DETAIL 'E'

BERM 2' BASE DITCH
SEE DETAIL 'M'

S 64° 04' 28.0" E

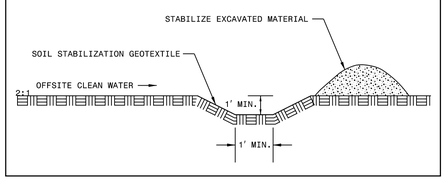
N 24° 25' 37.6" E

BEGIN 1.5" MILL & FILL
BEGIN CONSTRUCTION
–Y13– STA. 14+70.69

CLEAN WATER DIVERSION

→ CWD → → CWD → → CWD → → CWD → → CWD –

(Not to Scale)



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