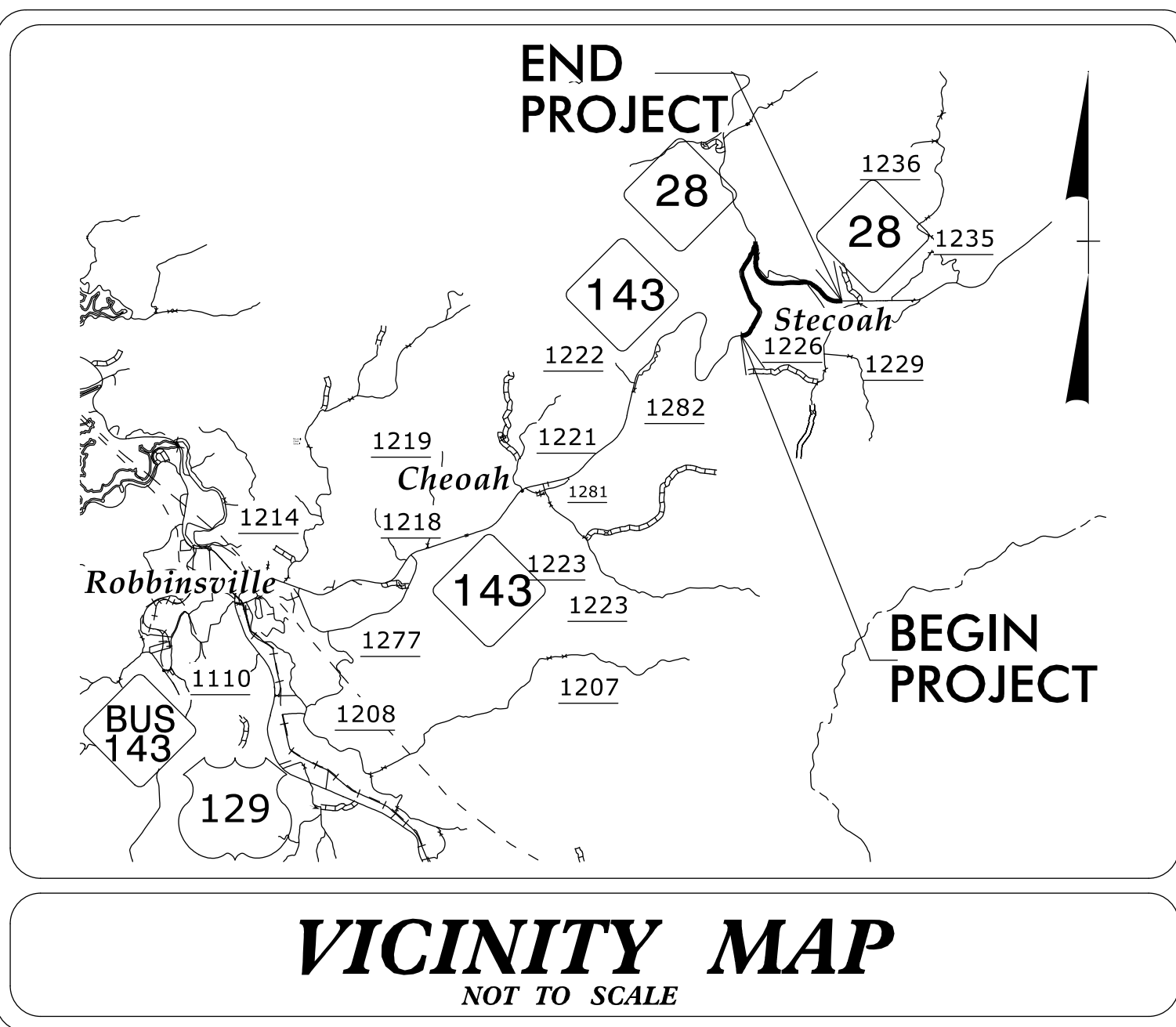
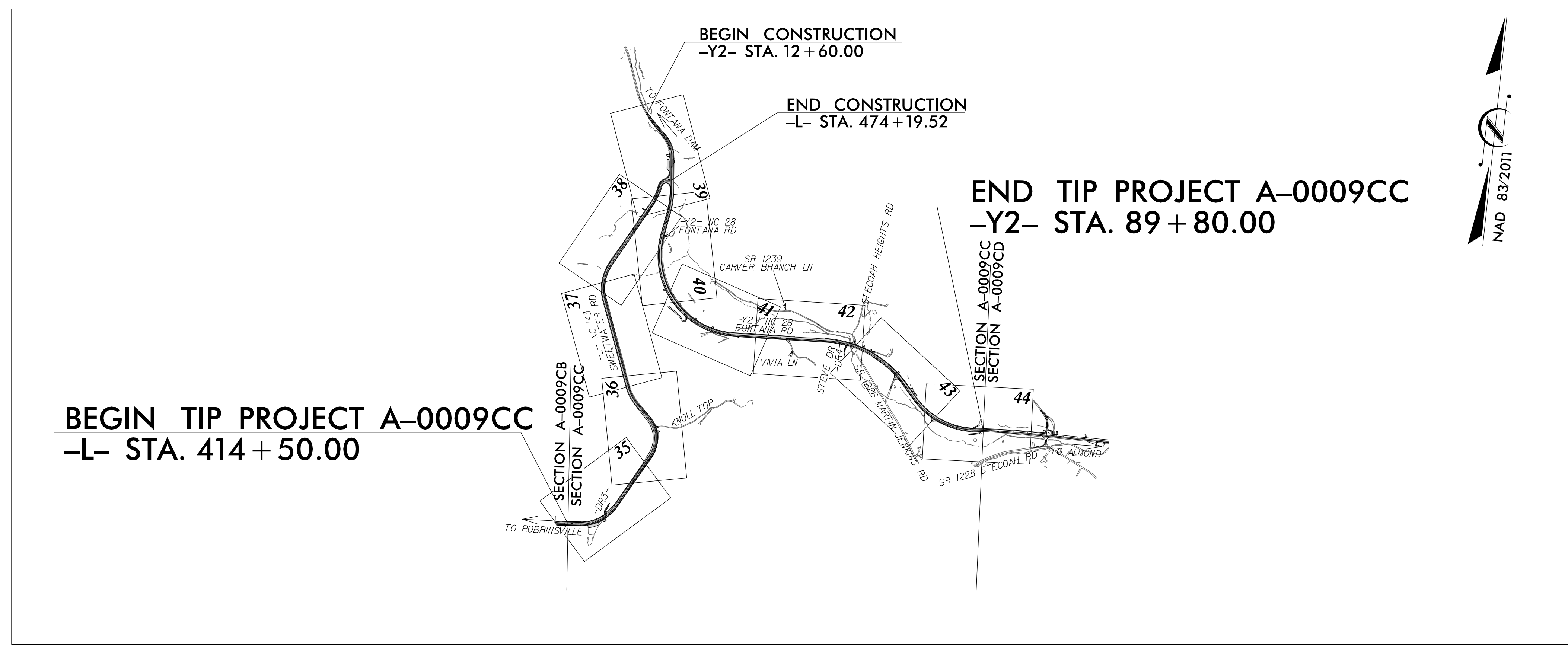


CONTRACT: C204812 TIP PROJECT: A-0009CC



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL
GRAHAM COUNTY
LOCATION: UPGRADE NC 143 FROM 0.5 MILES NORTH OF APPALACHIAN TRAIL TO NC 28. UPGRADE NC 28 FROM 0.2 MILES WEST OF NC 143 TO 0.2 MILES WEST OF SR 1228 (STECOAH RD)
TYPE OF WORK: GRADING, PAVING, DRAINAGE, CULVERTS, & RETAINING WALLS



STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	A-0009CC	EC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
32572.1.FS10	APD-0074(178)	PE	
32572.2.15	0143011	ROW	
32572.2.17	0143011	UTIL.	
32572.3.15	0143011	CONST.	

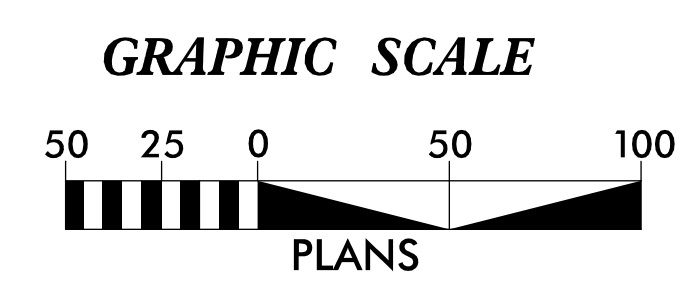
EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	TD
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	Silt Fence
1606.01	Special Sediment Control Fence	Special Fence
1622.01	Temporary Berms and Slope Drains	Berms and Drains
1630.02	Silt Basin Type B	Silt Basin B
1633.01	Temporary Rock Silt Check Type-A	Rock Silt Check A
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	Rock Silt Check A with PAM
1633.02	Temporary Rock Silt Check Type-B	Rock Silt Check B
	Wattle / Coir Fiber Wattle	Wattle
	Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)	Wattle with PAM
1634.01	Temporary Rock Sediment Dam Type-A	Rock Sediment Dam A
1634.02	Temporary Rock Sediment Dam Type-B	Rock Sediment Dam B
1635.01	Rock Pipe Inlet Sediment Trap Type-A	Rock Pipe Inlet A
1635.02	Rock Pipe Inlet Sediment Trap Type-B	Rock Pipe Inlet B
1630.04	Stilling Basin	Stilling Basin
1630.06	Special Stilling Basin	Special Stilling Basin
	Rock Inlet Sediment Trap:	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C
	Skimmer Basin	Skimmer Basin
	Tiered Skimmer Basin	Tiered Skimmer Basin
	Infiltration Basin	Infiltration Basin

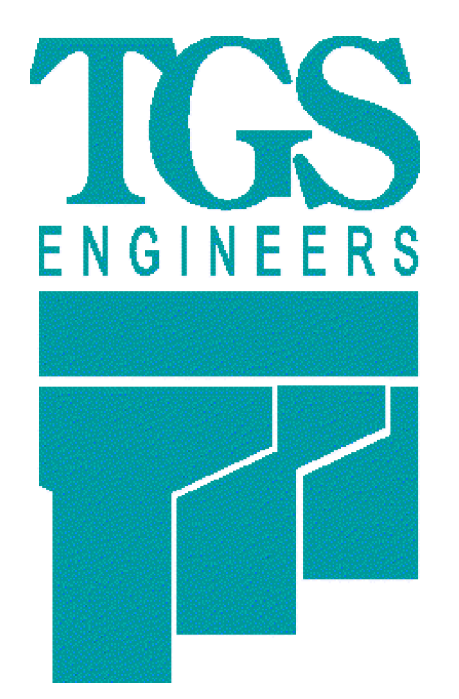
THIS PROJECT CONTAINS EROSION CONTROL PLANS FOR CLEARING AND GRUBBING PHASE OF CONSTRUCTION.

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.



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.



Prepared in the Office of:
TGS ENGINEERS
201 W. MARION ST-STE 200
SHELBY, NC 28150

Designed by:
Andrew H. Cochran, PE 3015
NAME LEVEL III CERTIFICATION NO.

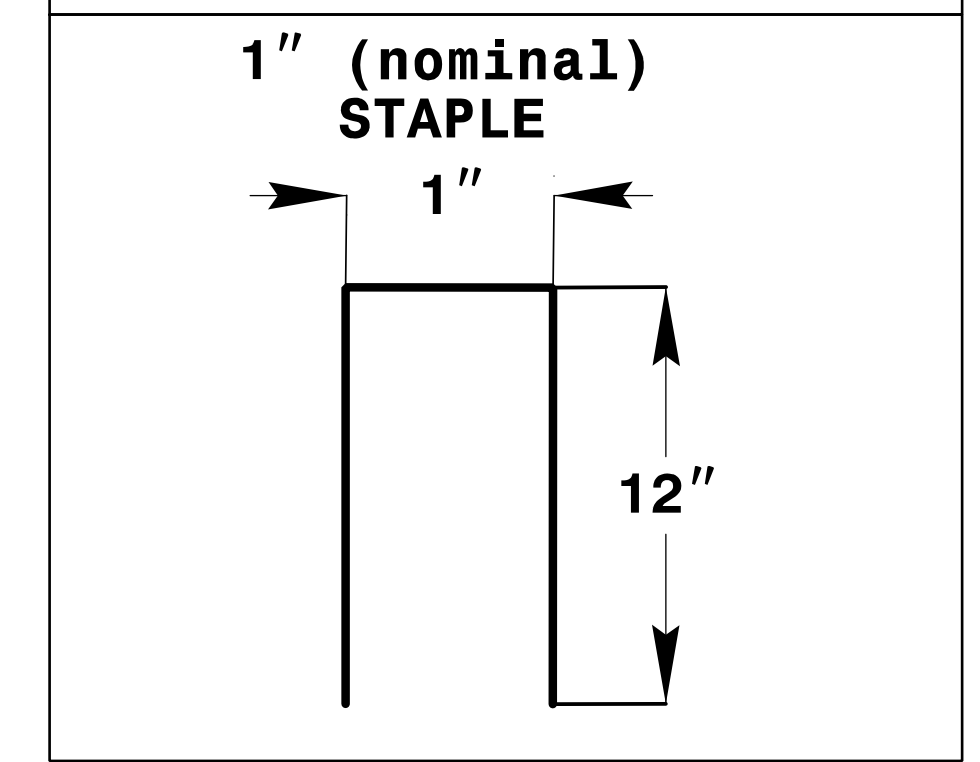
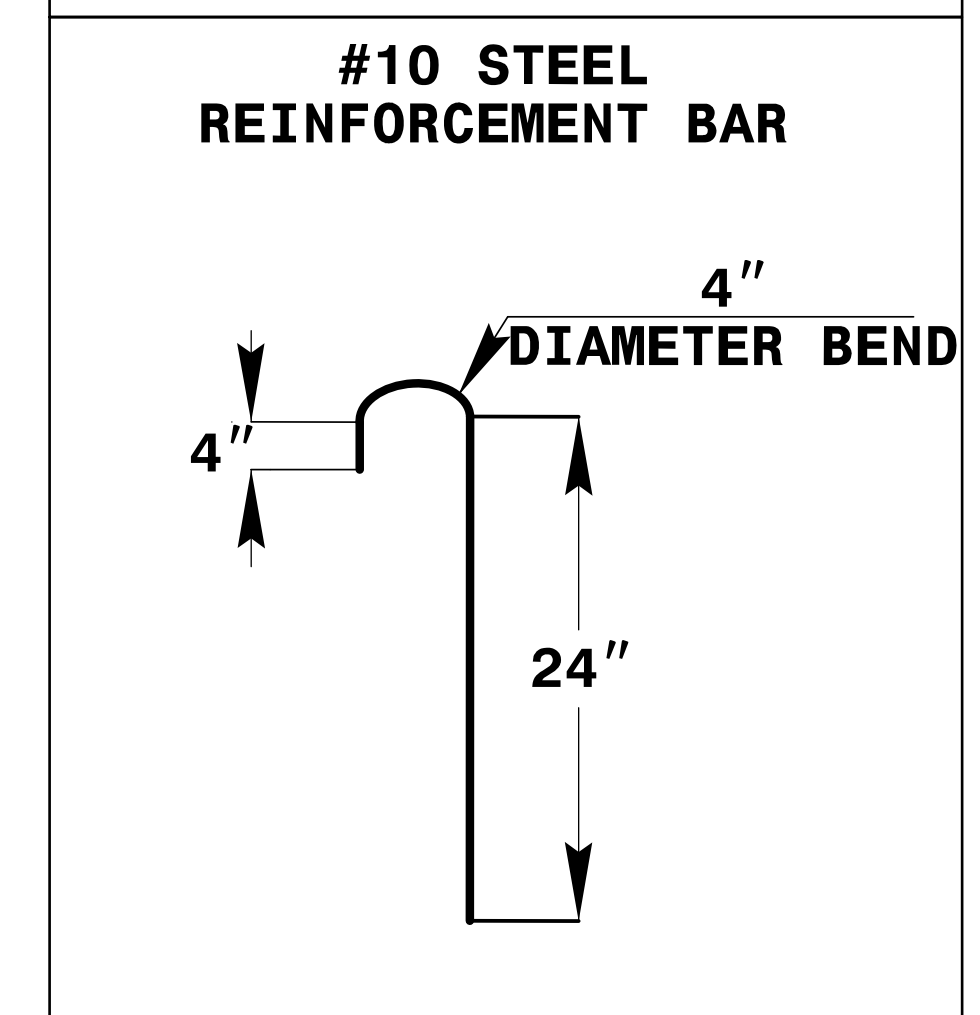
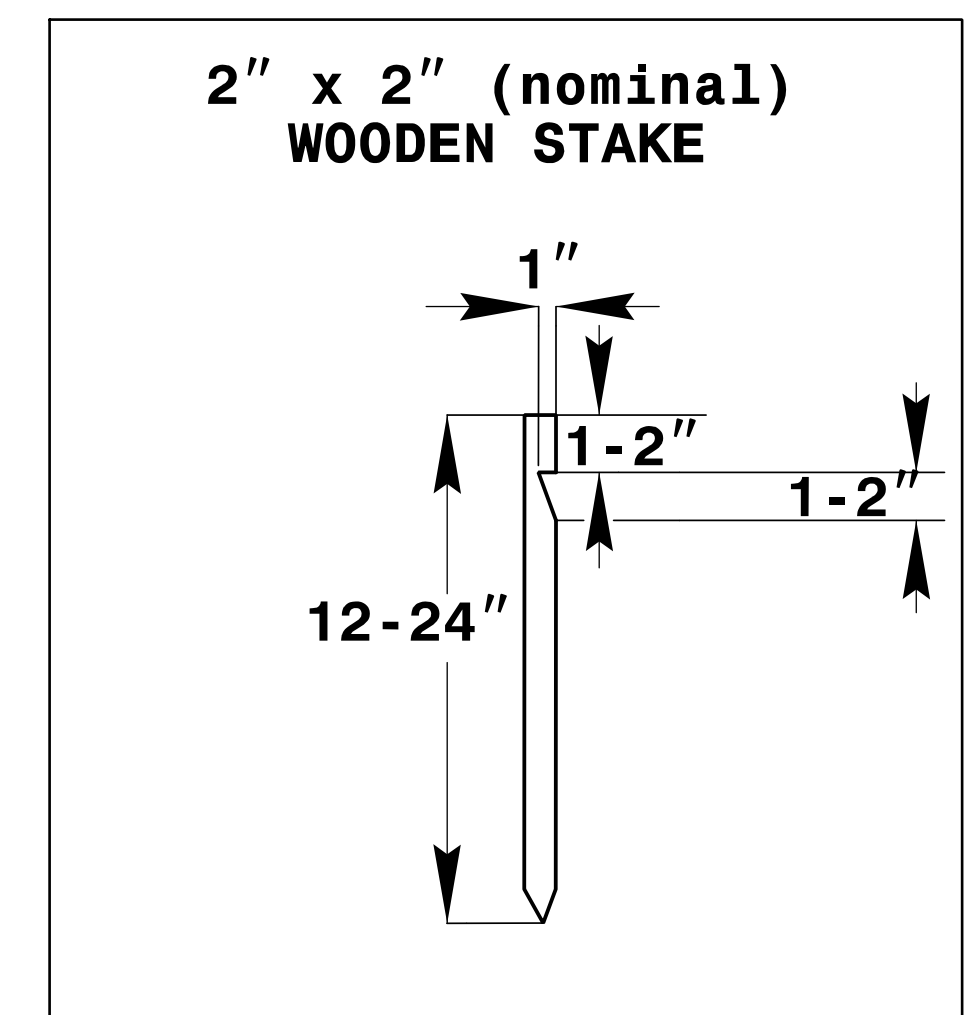
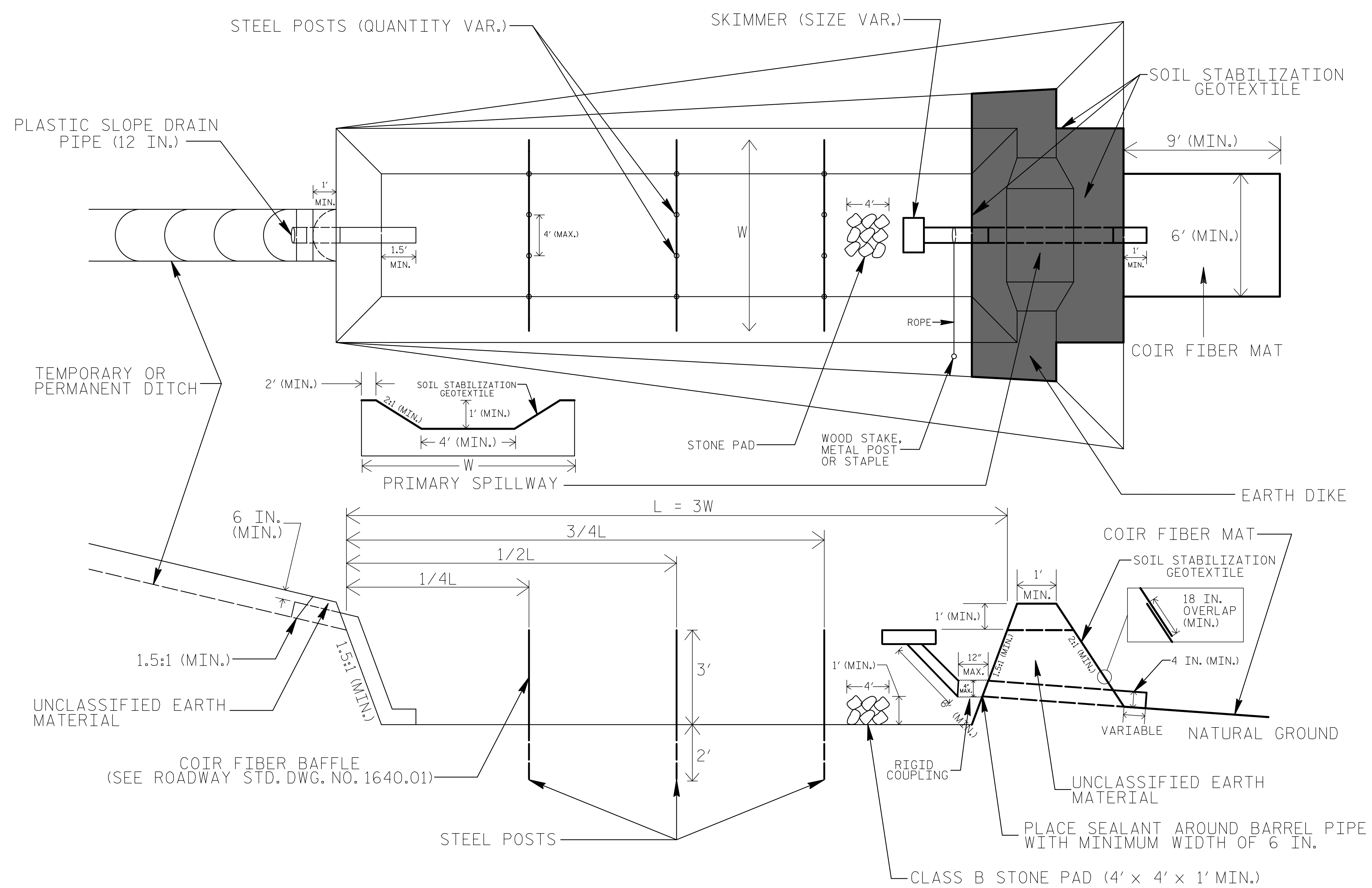
Roadway Standard Drawings

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 revision 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. A-0009CC	SHEET NO. EC-2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SKIMMER BASIN WITH BAFFLES DETAIL



COIR FIBER MAT ANCHOR OPTIONS

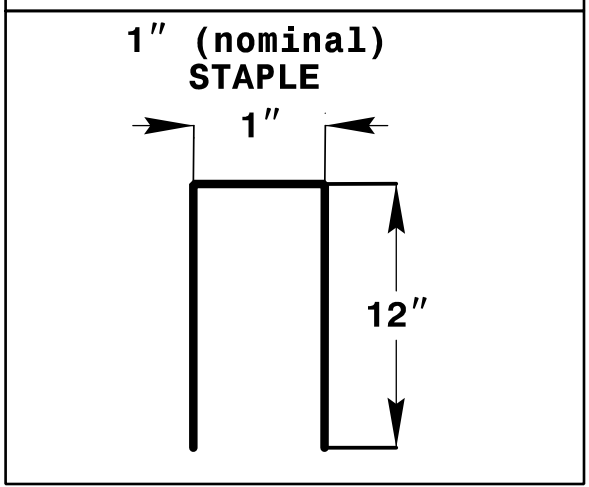
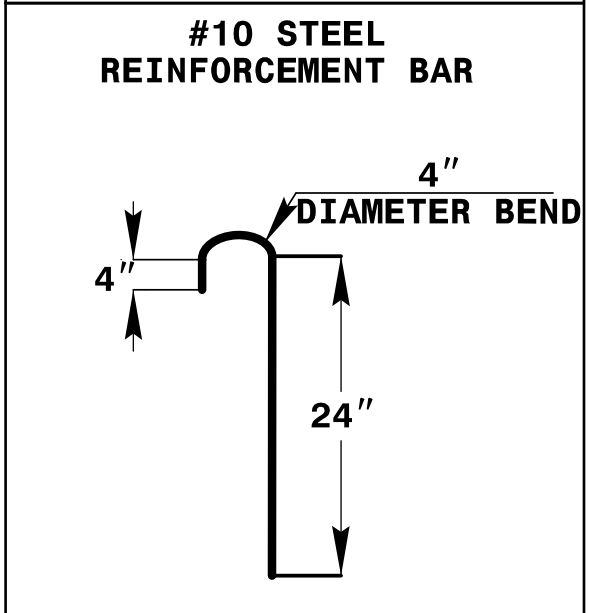
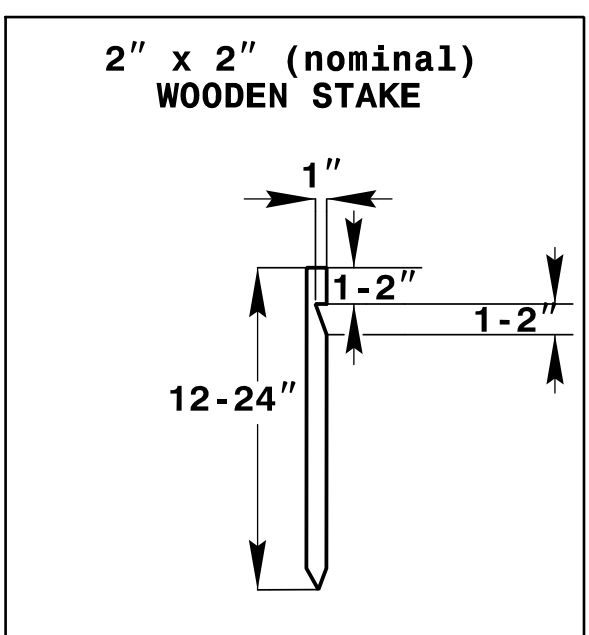
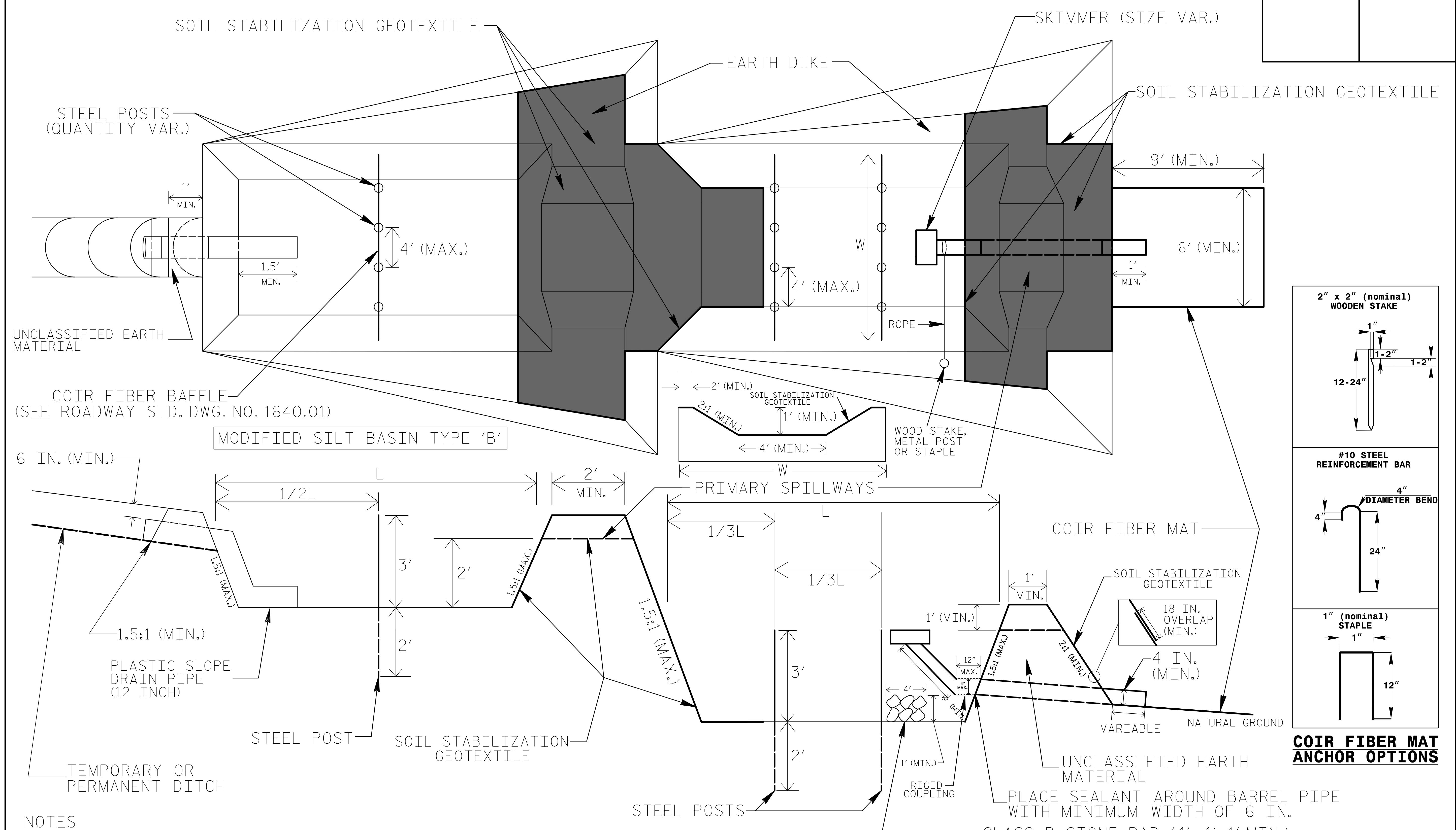
NOTES

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. A-0009CC	SHEET NO. EC-2A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

TIERED SKIMMER BASIN DETAIL



COIR FIBER MAT ANCHOR OPTIONS

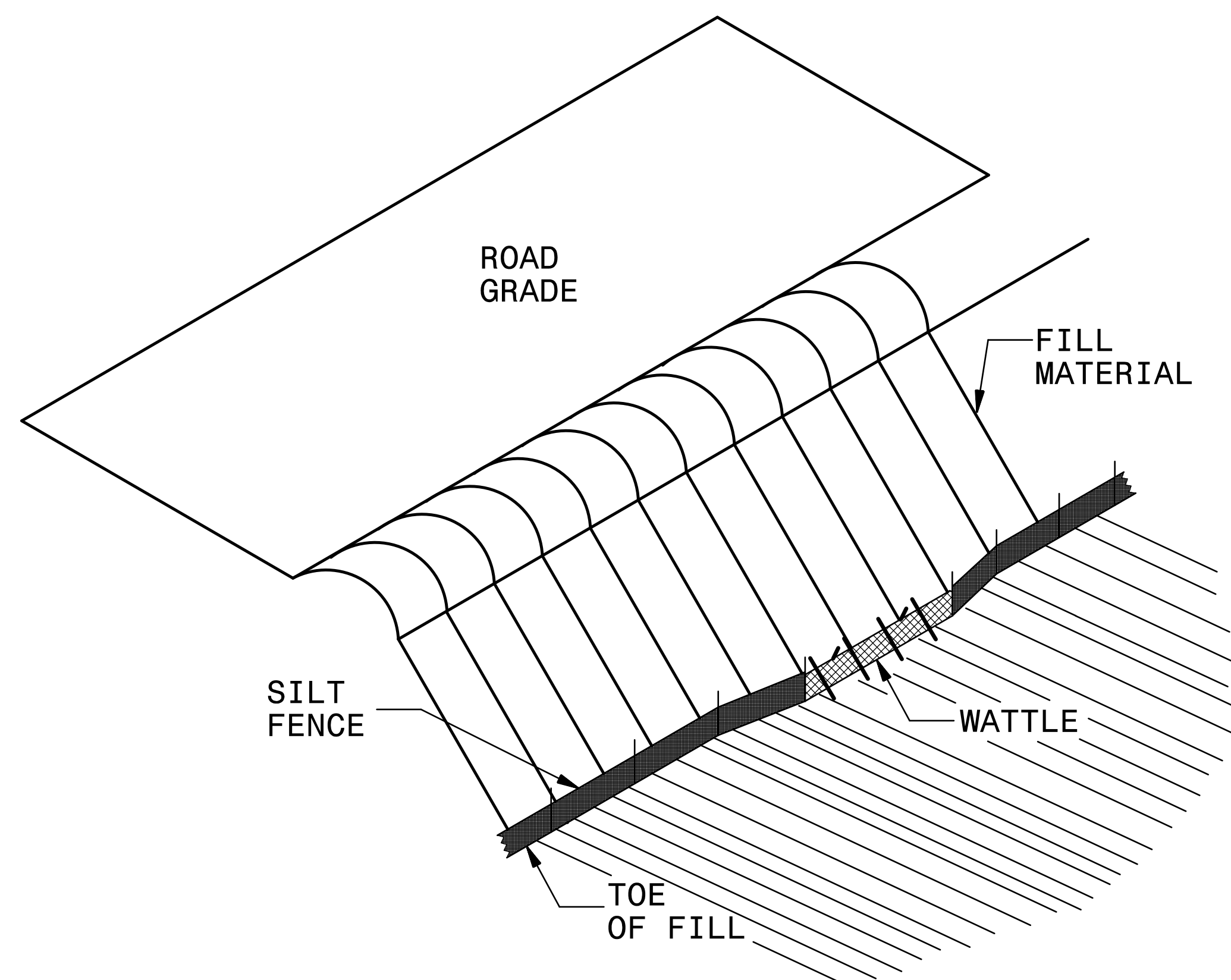
NOTES

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 WEIRLENGTHS (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.).

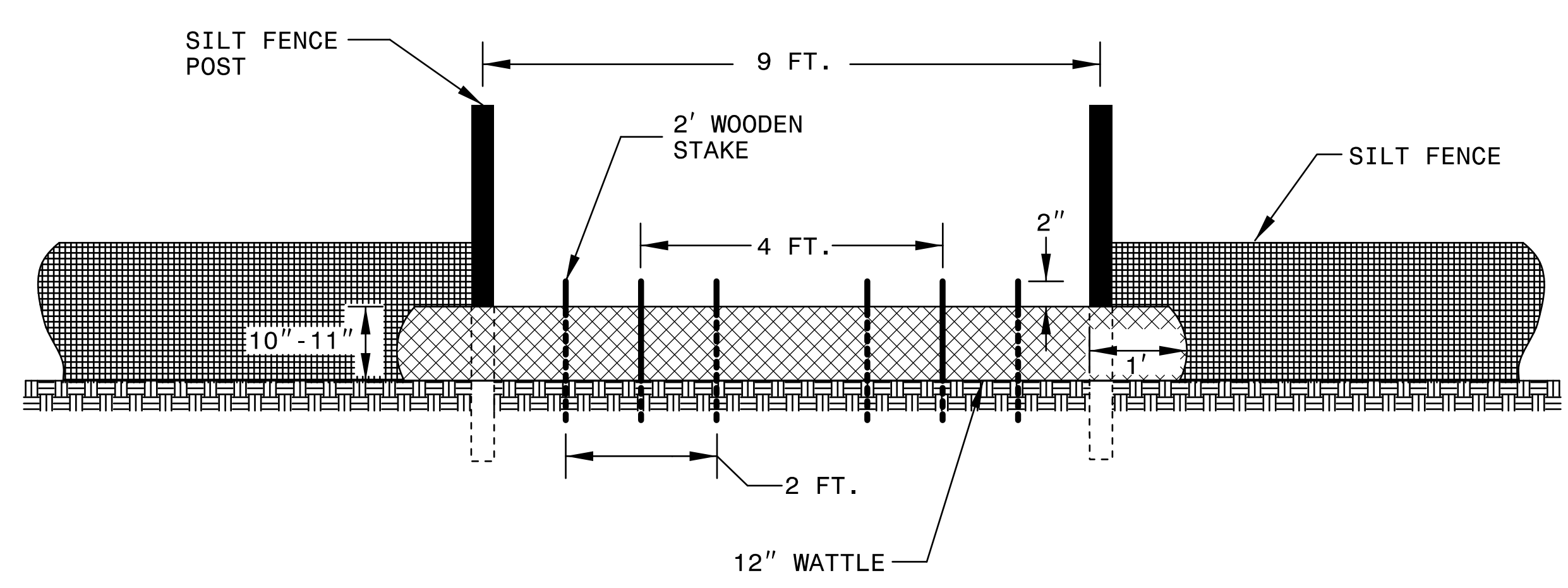
NOT TO SCALE

PROJECT REFERENCE NO. <i>A-0009CC</i>	SHEET NO. <i>EC-2B</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SILT FENCE COIR FIBER WATTLE BREAK DETAIL



ISOMETRIC VIEW

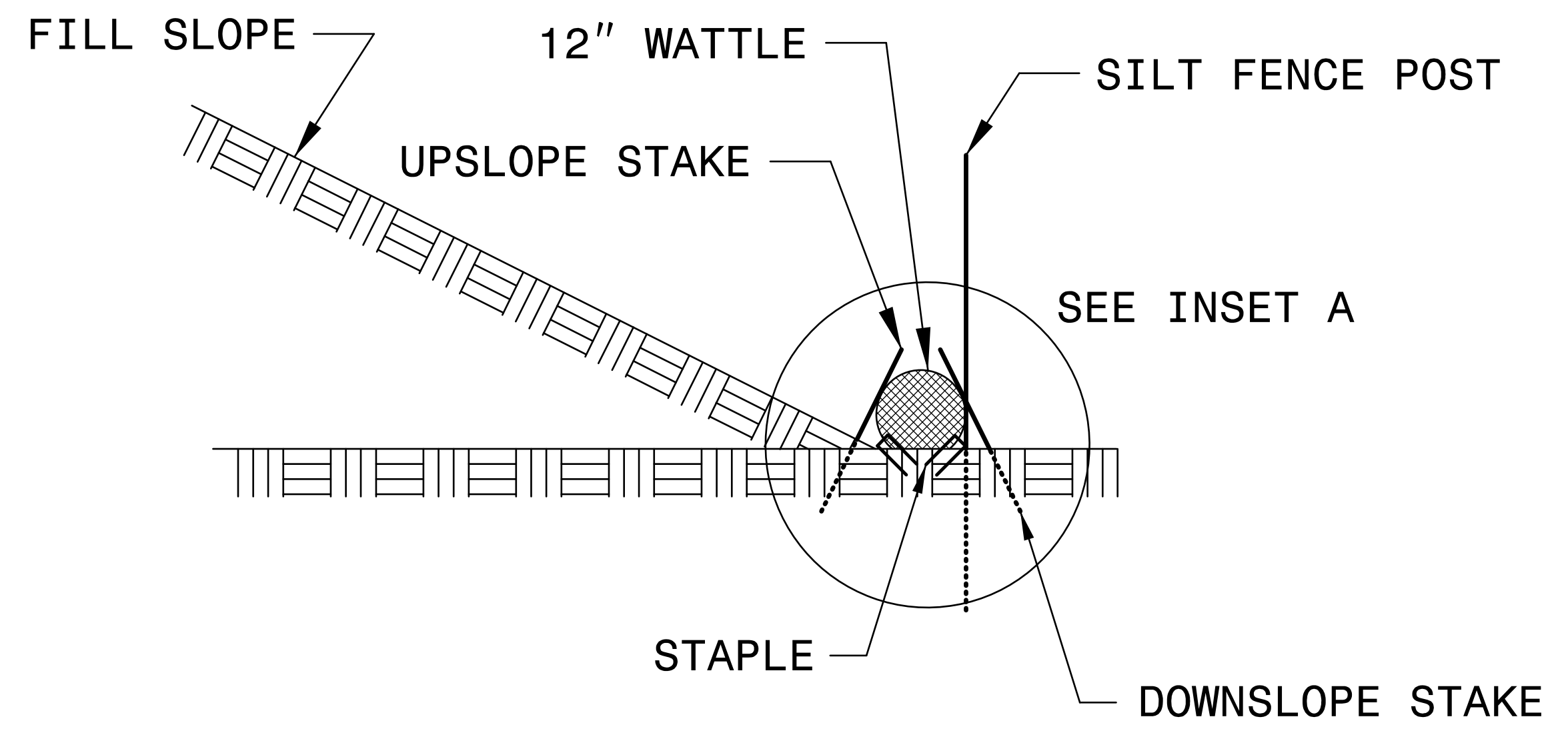
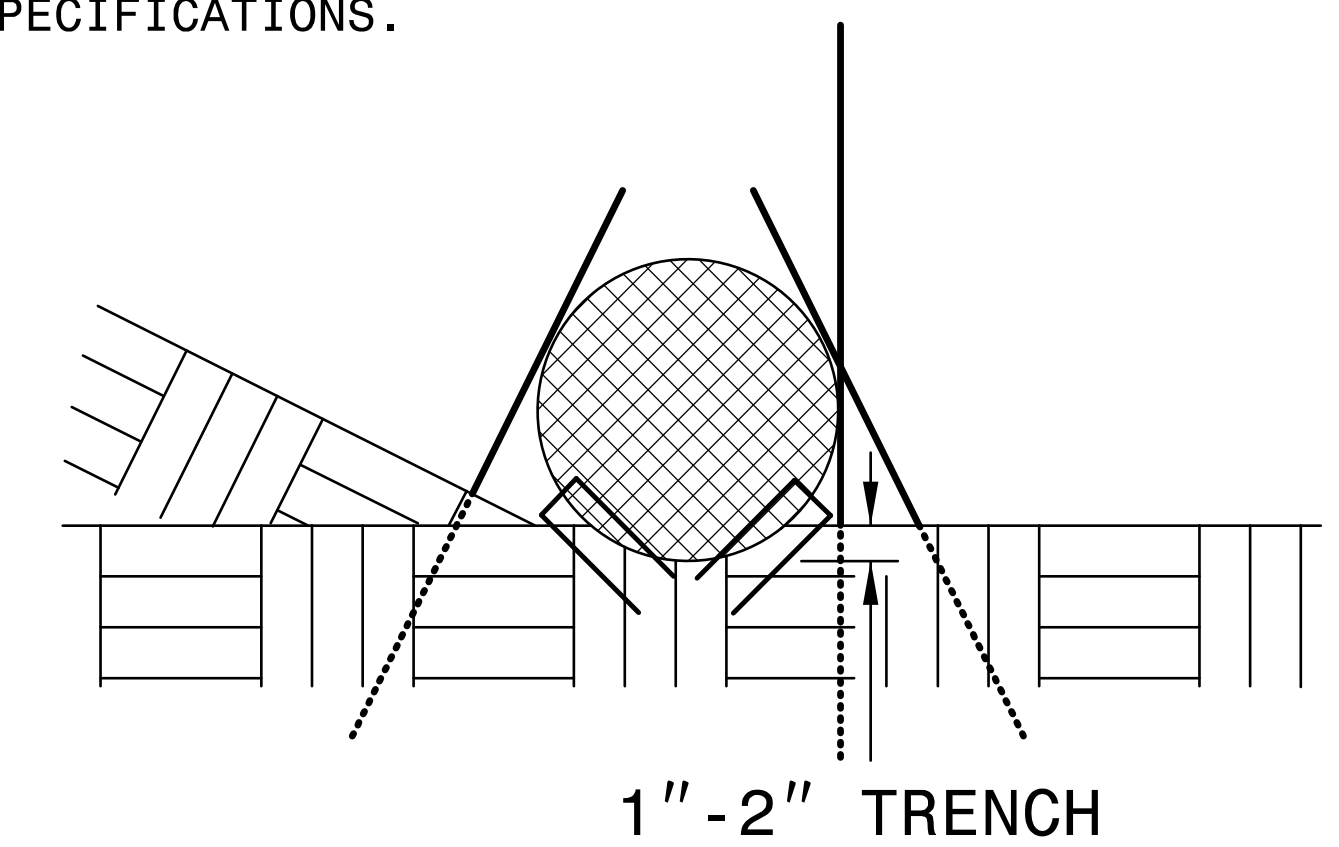


VIEW FROM SLOPE

NOTES:

- USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) WATTLE AND LENGTH OF 10 FT.
- EXCAVATE A 1 TO 2 INCH TRENCH FOR WATTLE TO BE PLACED.
- DO NOT PLACE WATTLE 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.
- WATTLE INSTALLATION CAN BE ON OUTSIDE OF THE SILT FENCE AS DIRECTED.
- INSTALL TEMPORARY SILT FENCE IN ACCORDANCE WITH SECTION 1605 OF THE STANDARD SPECIFICATIONS.

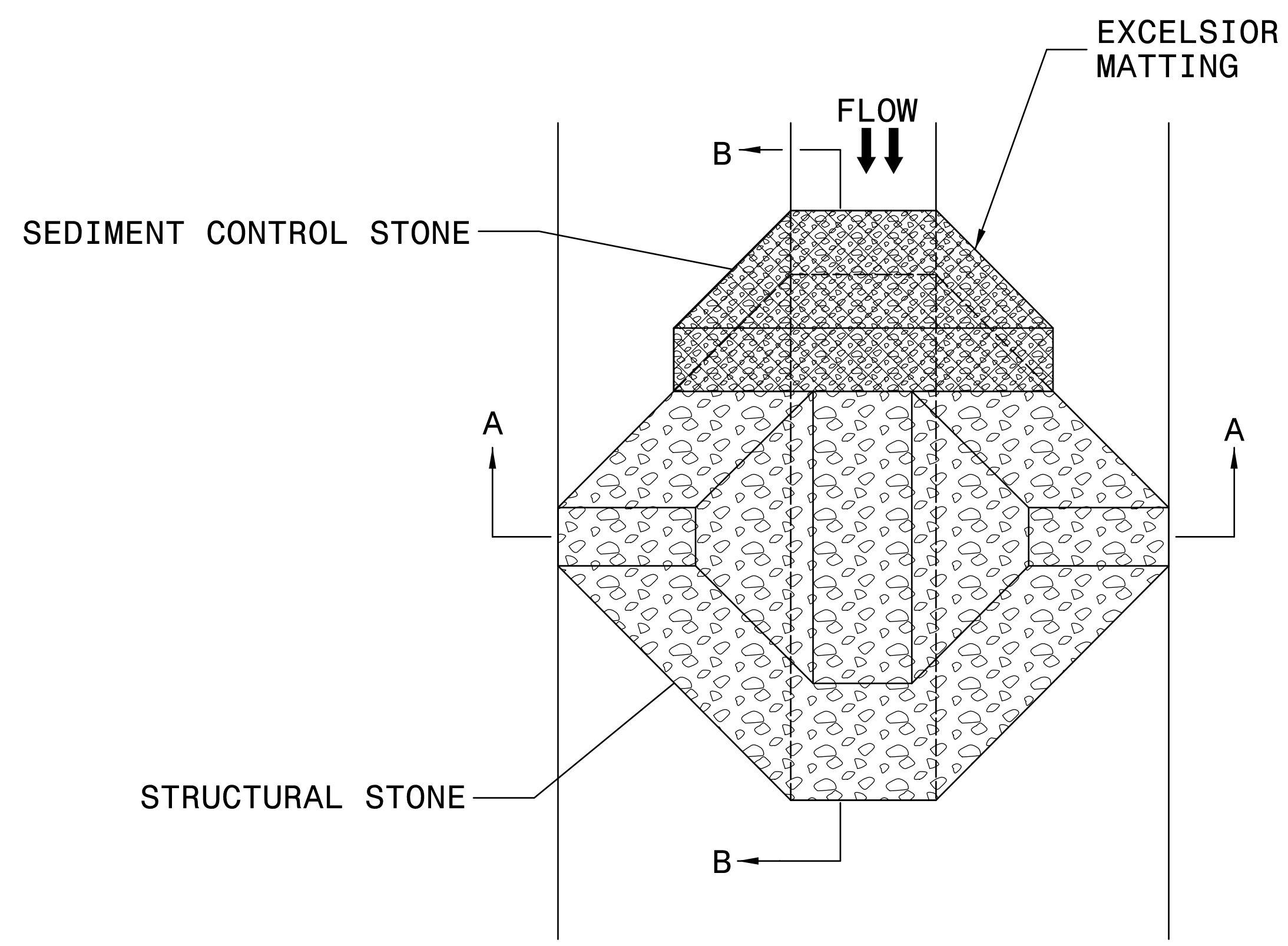
INSET A



SIDE VIEW

PROJECT REFERENCE NO. A-0009CC	SHEET NO. EC-2C
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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



PLAN

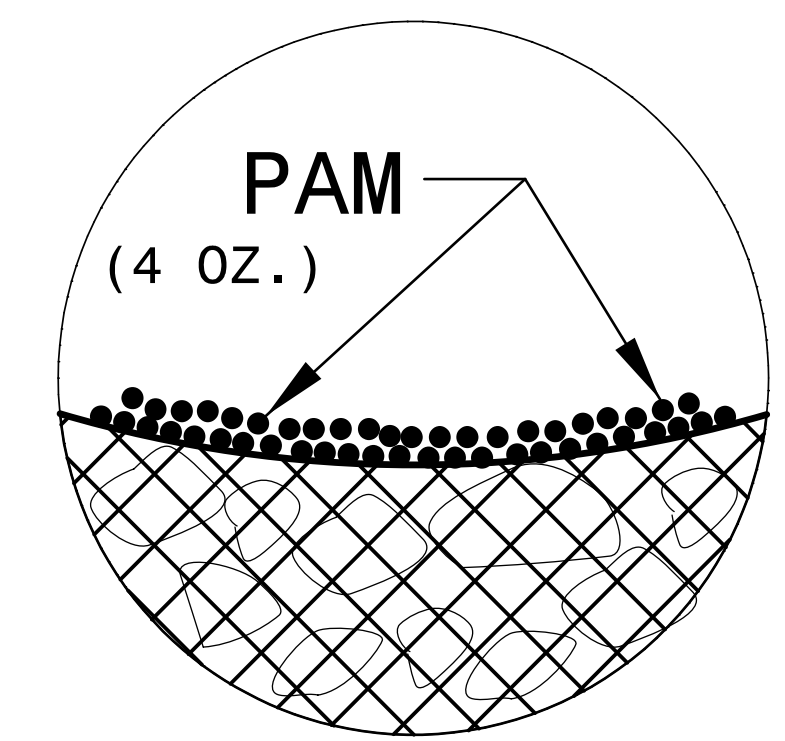
NOTES:

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

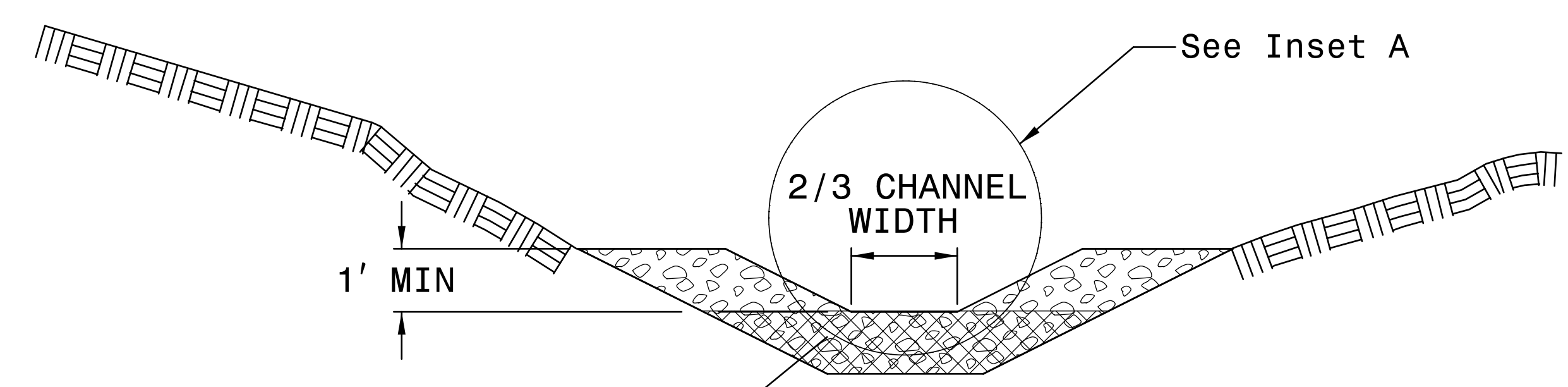
USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

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.

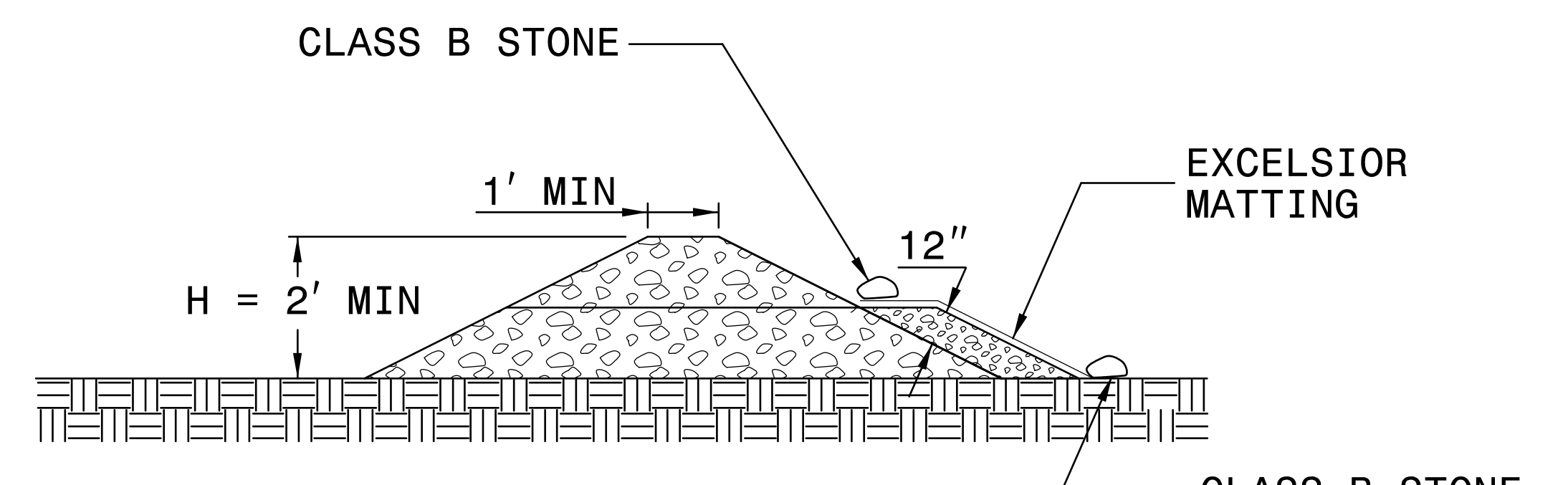
INITIALLY APPLY 4 OUNCES OF POLYACRYLAMIDE (PAM) TO TOP OF MATTING SECTION AND AFTER EVERY RAINFALL EVENT THAT EQUALS OR EXCEEDS 0.50 INCHES.



INSET A



SECTION A-A



SECTION B-B

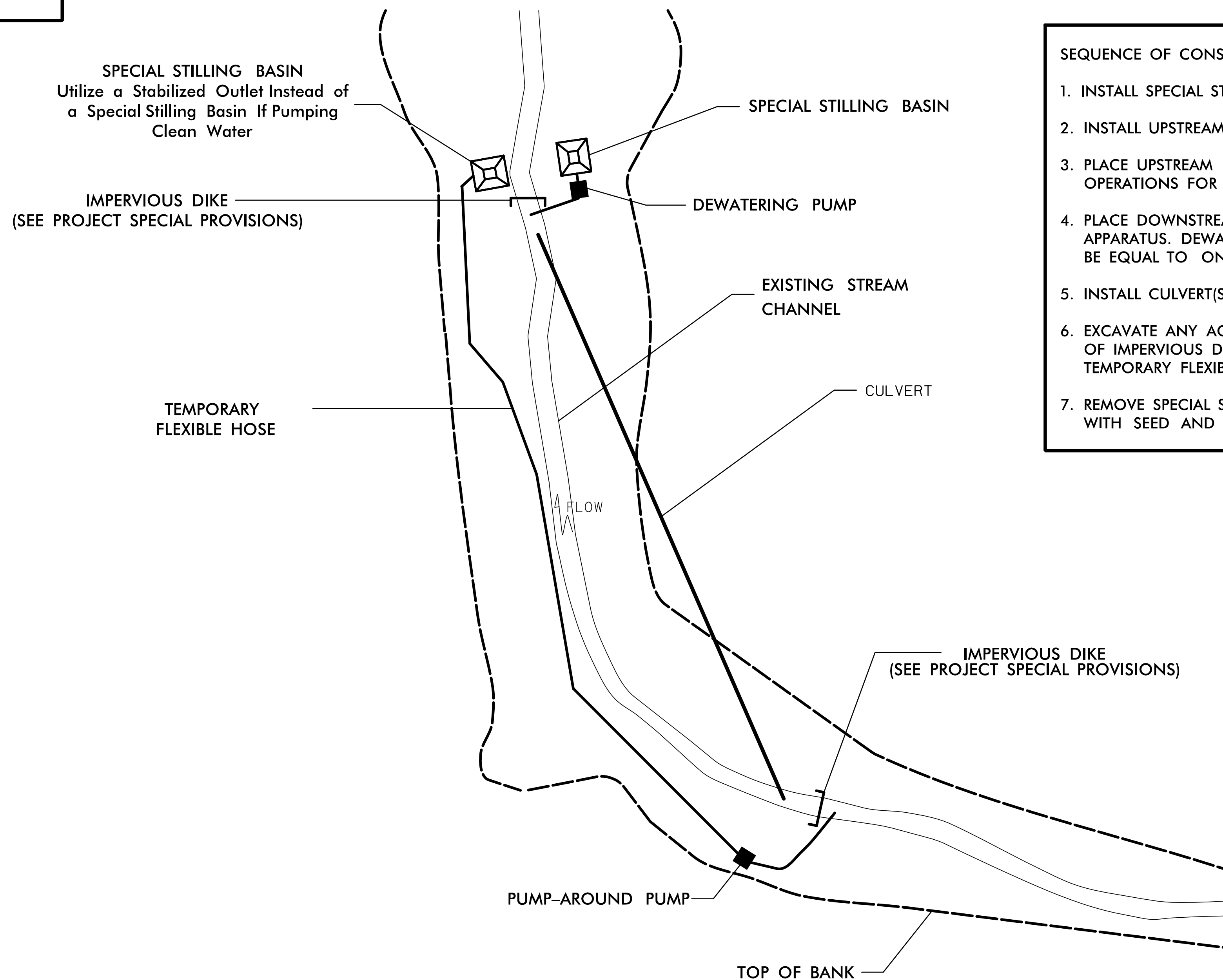
NOT TO SCALE

PROJECT REFERENCE NO. <i>A-0009CC</i>	SHEET NO. <i>EC-2D</i>
RW 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.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO. A-0009CC	SHEET NO. EC-3
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SOIL STABILIZATION SUMMARY SHEET

MATTING FOR EROSION CONTROL

MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
SLOPE MATTING					
35	L	415+00	419+50	LT	3,200
35	L	420+00	421+00	RT	507
37	L	442+50	446+00	LT	3,106
37	L	455+50	456+00	RT	100
39	L	471+50	473+50	RT	2,048
39	Y2	23+50	26+50	LT	3,727
40	Y2	27+50	28+00	RT	249
40	Y2	36+00	36+50	RT	125
41	Y2	48+00	53+25	LT	5,218
41	Y2	47+20	51+00	RT	1,417
42	Y2	55+00	59+50	LT	2,796
42	Y2	59+00	60+50	RT	746
43	Y2	66+50	70+00	RT	1,740
43	Y2	76+00	77+00	LT	275
44	Y2	85+00	89+80	RT	1,948
SLOPE MATTING SUBTOTAL					27,202
DITCHLINE MATTING					
39	Y2	21+00	22+50	LT	200
DITCHLINE MATTING SUBTOTAL					200
DITCHLINE EXCELSIOR MATTING					
35	L	419+50	414+50	LT	655
35	L	421+00	420+00	RT	140
35	L	427+00	426+00	RT	140
36	L	438+50	473+50	LT	140
37	L	446+50	443+00	LT	460
37	L	456+00	455+50	RT	70
38	L	456+50	456+00	RT	70

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
DITCHLINE EXCELSIOR MATTING *CONT.*					
38	L	461+50	458+00	LT	490
38	L	464+00	461+50	LT	175
38	L	468+00	464+00	LT	560
38	L	466+50	464+50	LT	140
39	L	473+50	471+50	RT	280
39	Y2	13+73	14+50	LT	60
39	Y2	18+80	19+50	LT	100
39	Y2	18+80	18+91	LT	10
40	Y2	26+00	27+00	RT	140
40	Y2	33+50	35+50	RT	265
40	Y2	38+50	35+50	RT	630
41	Y2	43+50	46+50	RT	395
41	Y2	45+00	47+00	LT	280
42	Y2	59+53	59+90	RT	20
43	Y2	71+00	74+00	RT	440
43	Y2	73+00	74+00	LT	135
DITCHLINE EXCELSIOR MATTING SUBTOTAL					5,795
SLOPE MATTING SUBTOTAL					
DITCHLINE MATTING SUBTOTAL					200
EXCELSIOR MATTING SUBTOTAL					5,795
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					104,005
TOTAL					137,202
SAY					137,202

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO. <i>A-00090C</i>	SHEET NO. <i>EC-3A</i>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SOIL STABILIZATION TIMEFRAMES

<i>SITE DESCRIPTION</i>	<i>STABILIZATION TIME</i>	<i>TIMEFRAME EXCEPTIONS</i>
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.

SEEDING AND PLANTING ON US FOREST SERVICE (USFS) PROPERTY WILL BE IMPLEMENTED AS DIRECTED BY THE ENGINEER ON NCDOT RIGHT OF WAY AND ADJOINING USFS PROPERTY. REFER TO THE EROSION CONTROL SPECIAL PROVISIONS.


INSTALL PIPE(S) IN JURISDICTIONAL AREAS WITHOUT IMPACTING STREAM UNTIL AREA STABILIZED AND ACCORDING TO NCDOT BEST MANAGEMENT PRACTICES FOR CONSTRUCTION AND MAINTENANCE ACTIVITIES MANUAL.

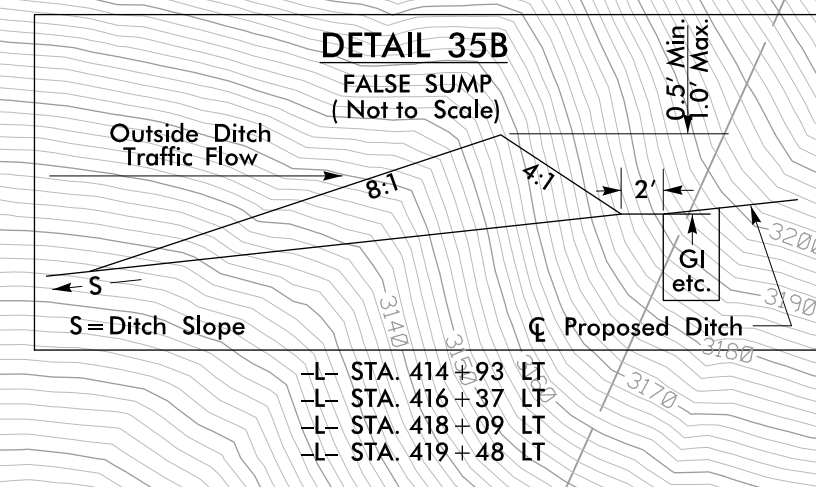
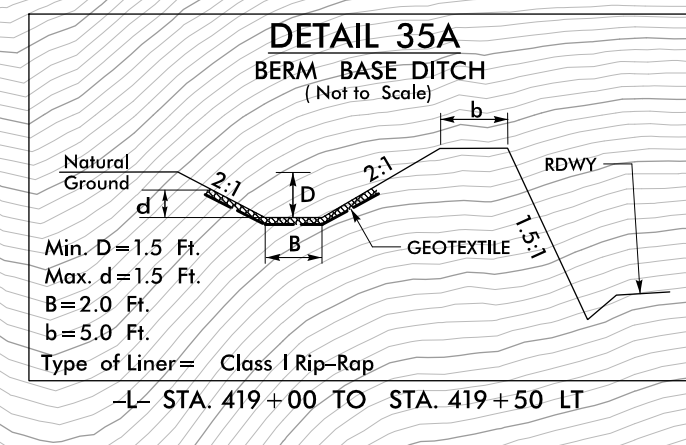
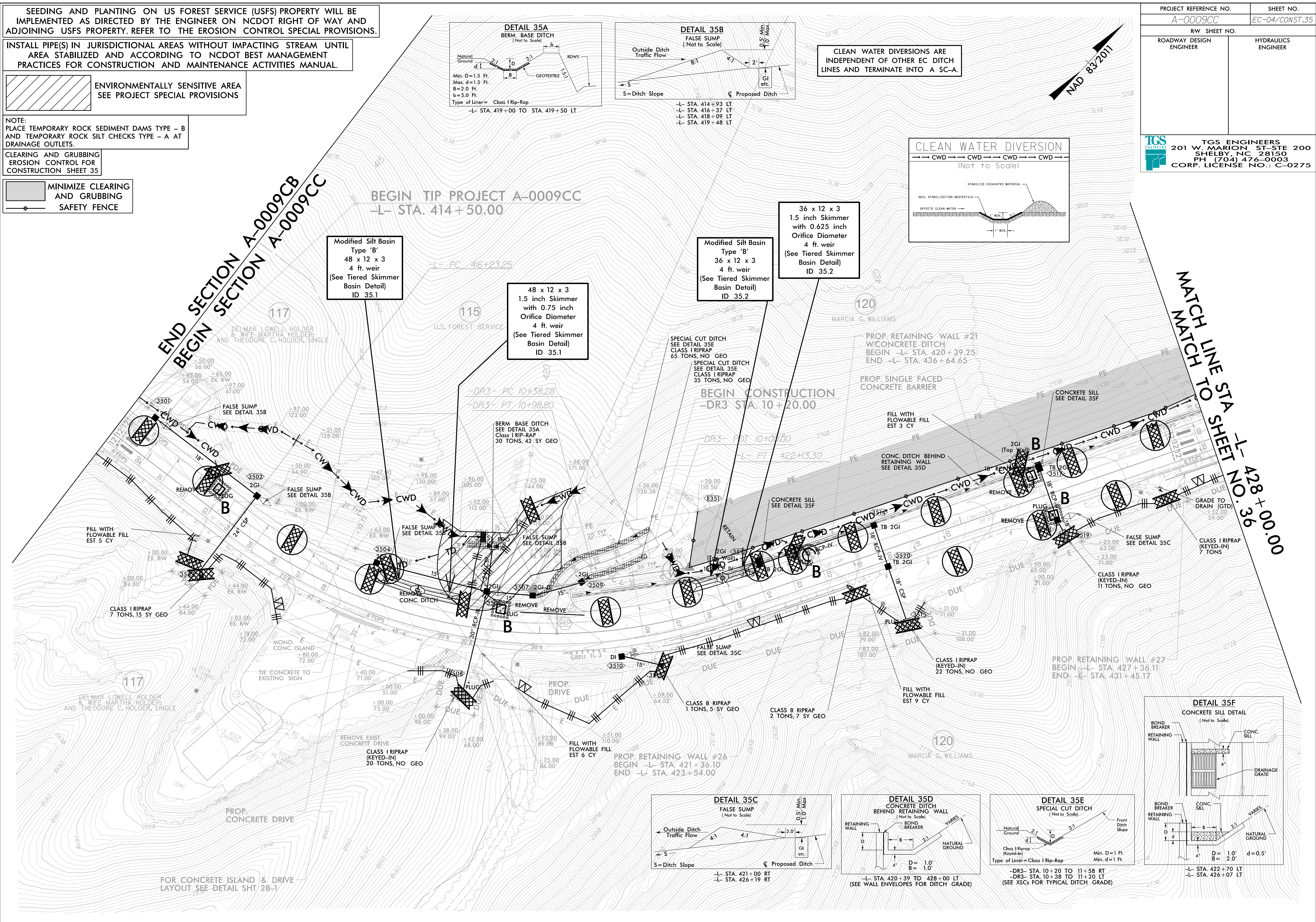
 ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

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

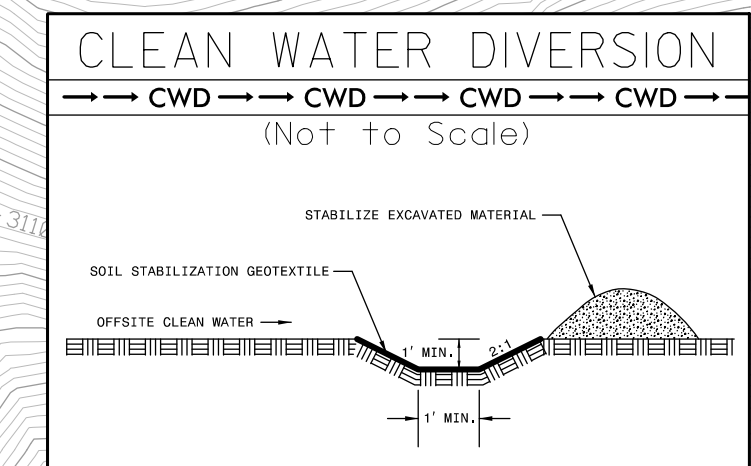
CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 35

 MINIMIZE CLEARING AND GRUBBING
 SAFETY FENCE

PROJECT REFERENCE NO.	SHEET NO.
A-0009CC	EC-04/CONST.35
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
 TGS ENGINEERS 201 W. MARION ST-STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	



CLEAN WATER DIVERSIONS ARE INDEPENDENT OF OTHER EC DITCH LINES AND TERMINATE INTO A SC-A.

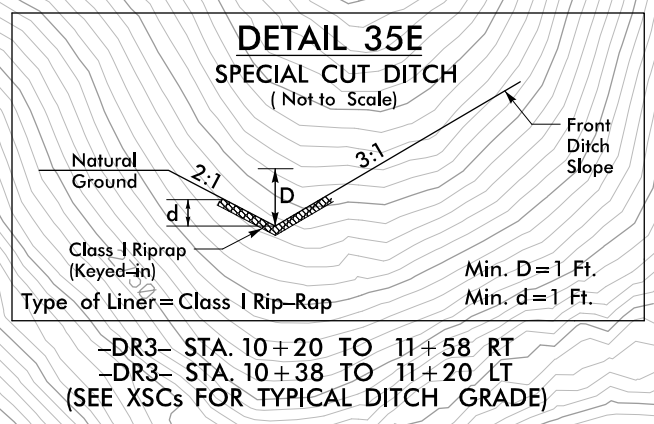
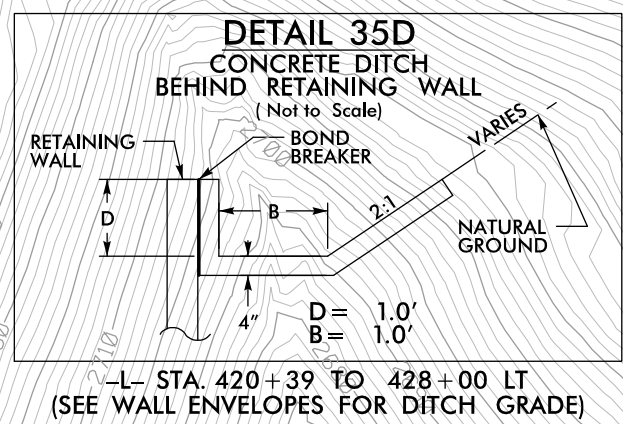
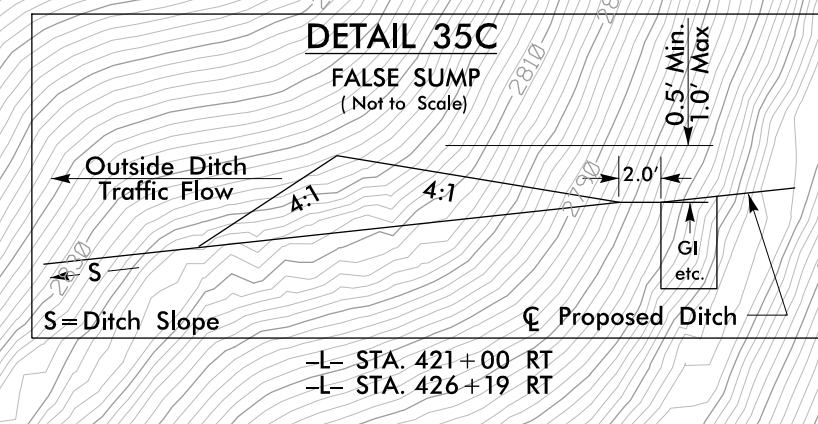
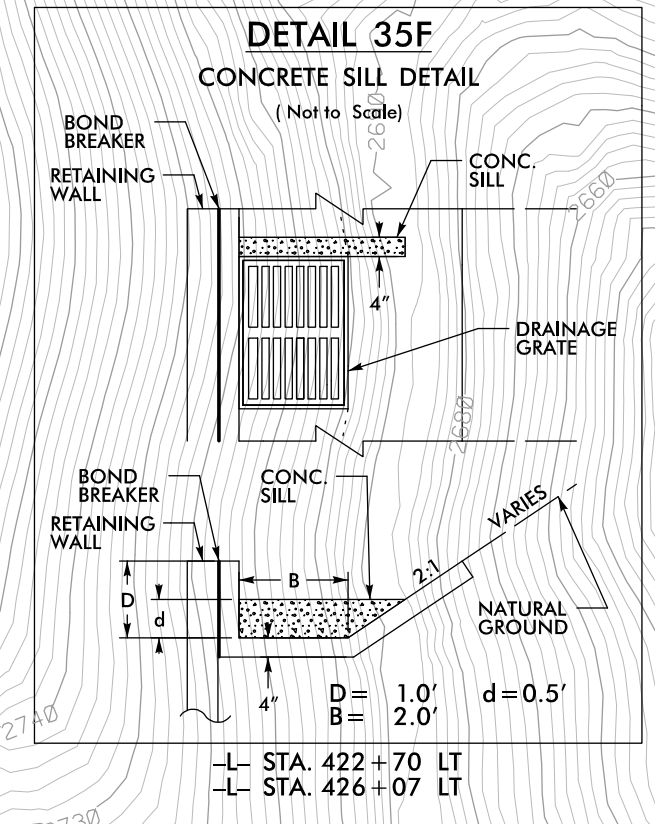


Modified Silt Basin
Type 'B'
48 x 12 x 3
4 ft. weir
(See Tiered Skimmer
Basin Detail)
ID 35.1

48 x 12 x 3
1.5 inch Skimmer
with 0.75 inch
Orifice Diameter
4 ft. weir
(See Tiered Skimmer
Basin Detail)
ID 35.1

Modified Silt Basin
Type 'B'
36 x 12 x 3
4 ft. weir
(See Tiered Skimmer
Basin Detail)
ID 35.2

36 x 12 x 3
1.5 inch Skimmer
with 0.625 inch
Orifice Diameter
4 ft. weir
(See Tiered Skimmer
Basin Detail)
ID 35.2



FOR CONCRETE ISLAND & DRIVE LAYOUT SEE DETAIL SHT 2B-1

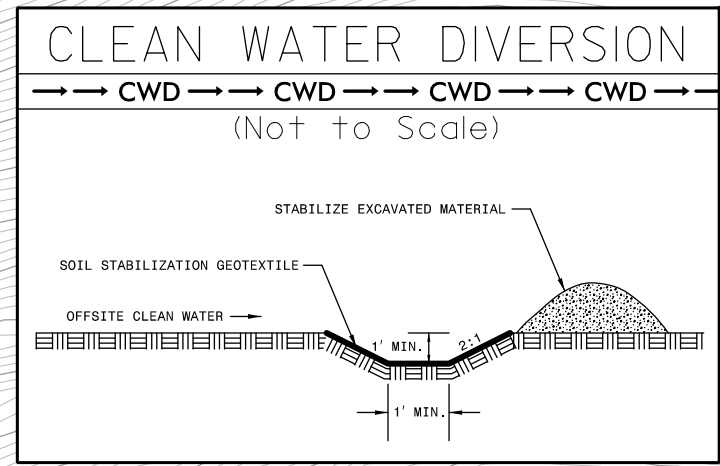
MATCH LINE TO SHEET NO. 36
-L- STA. 428+00.00

SEEDING AND PLANTING ON US FOREST SERVICE (USFS) PROPERTY WILL BE IMPLEMENTED AS DIRECTED BY THE ENGINEER ON NCDOT RIGHT OF WAY AND ADJOINING USFS PROPERTY. REFER TO THE EROSION CONTROL SPECIAL PROVISIONS.

IN LIEU OF ROCK INLET SEDIMENT TRAP TYPE C, UTILIZE FABRIC INSERT INLET PROTECTION DEVICES IN AREAS WHERE WATER MAY POND ON ROAD OPEN TO LIVE TRAFFIC.

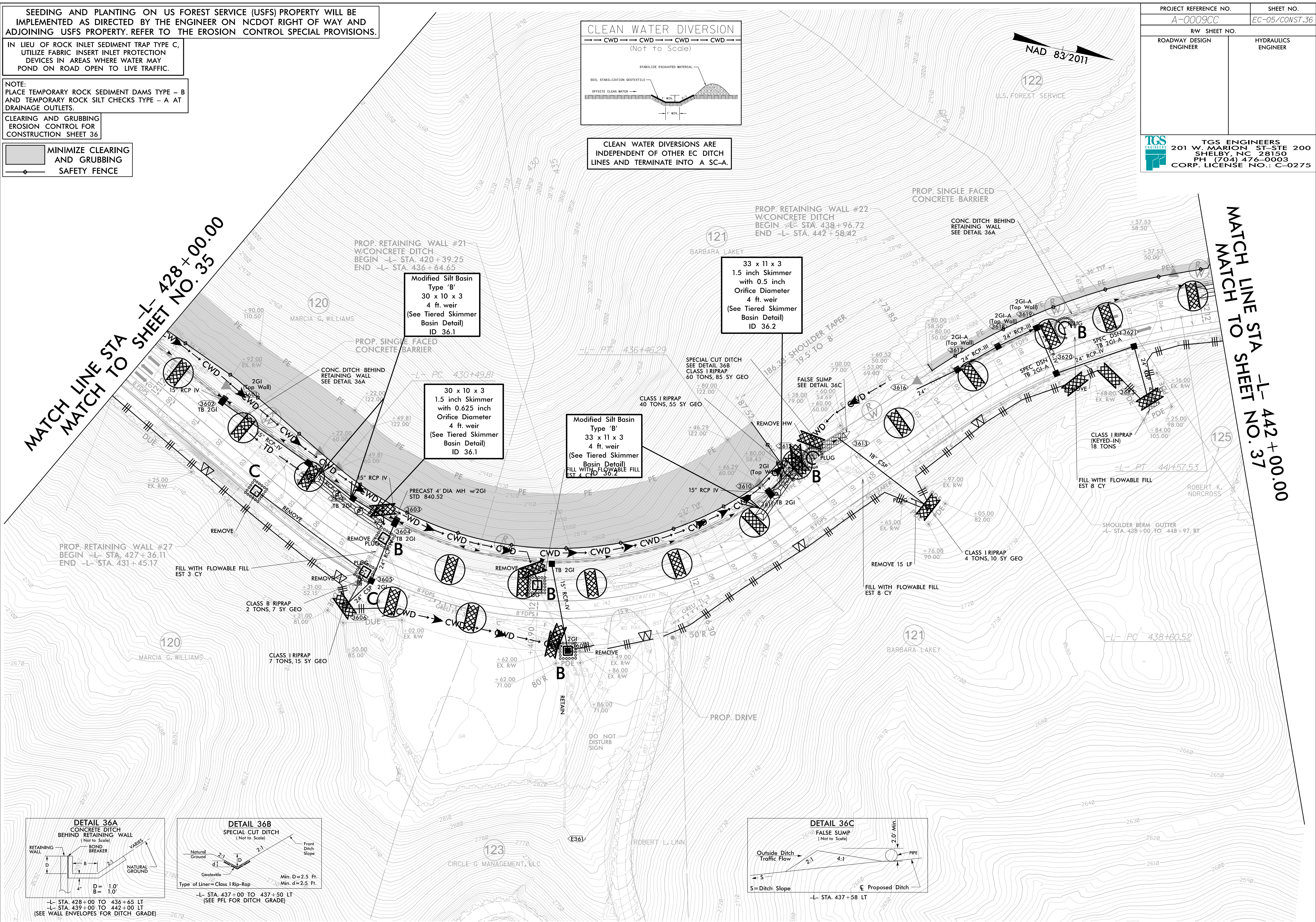
NOTE: PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B AND TEMPORARY ROCK SILT CHECKS TYPE - A AT DRAINAGE OUTLETS.

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 36



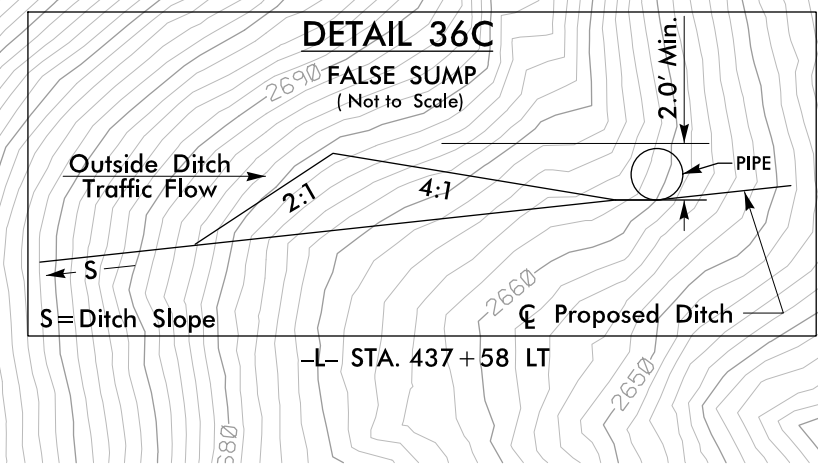
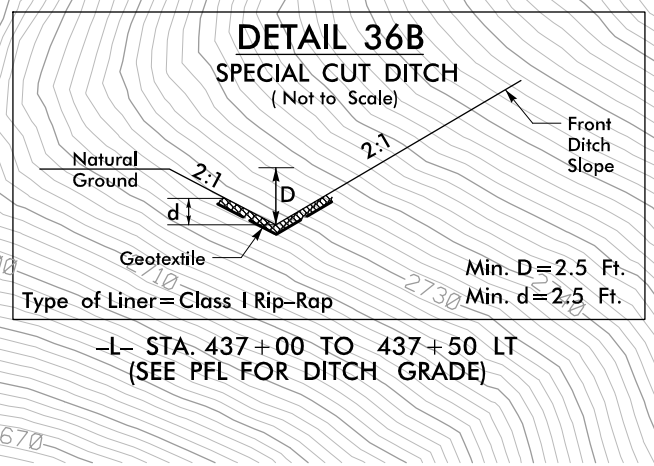
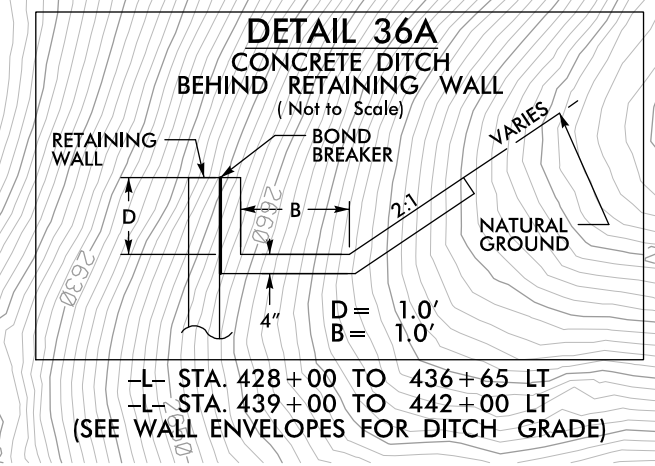
CLEAN WATER DIVERSIONS ARE INDEPENDENT OF OTHER EC DITCH LINES AND TERMINATE INTO A SC-A.


PROJECT REFERENCE NO.	SHEET NO.
A-0009CC	EC-05/CONST.36
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
TGS ENGINEERS 201 W. MARION ST-STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	



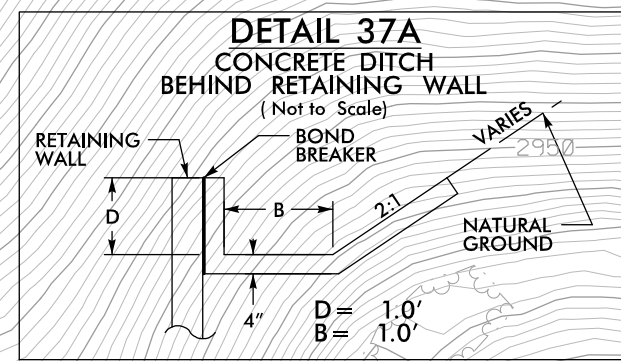
MATCH LINE STA -L- 428+00.00
MATCH TO SHEET NO. 35

MATCH LINE STA -L- 442+00.00
MATCH TO SHEET NO. 37

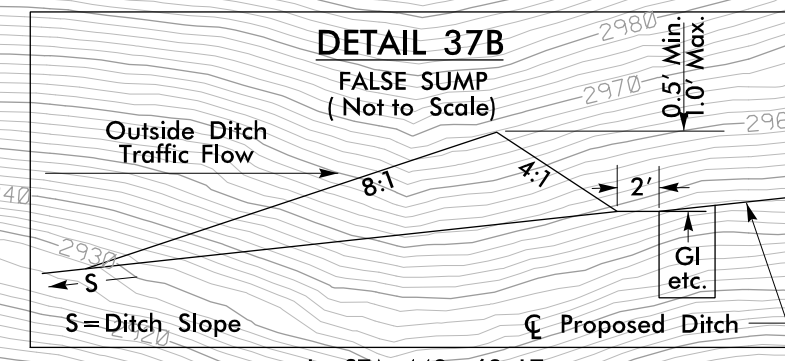


PROJECT REFERENCE NO.	SHEET NO.
A-0009CC	EC-06/CONST.37
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
 TGS ENGINEERS 201 W. MARION ST. STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	

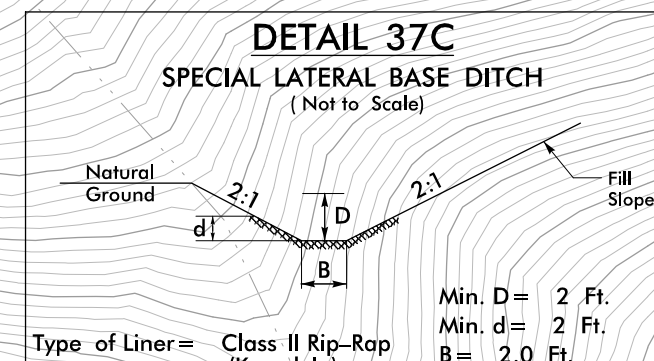
L-CURVE DATA
 PI STA 456+91.51
 $\Delta = 49^{\circ}15'00.2''$ (RT)
 $D = 9^{\circ}32'57.5''$
 $L = 515.75'$
 $T = 275.02'$
 $R = 600.00'$
 $SE = 6.08$
 $DS = 45$ MPH



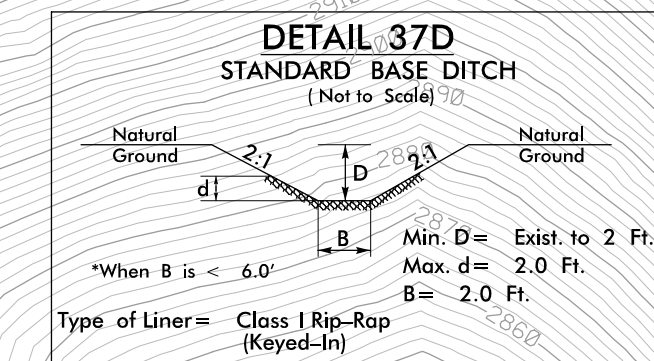
DETAIL 37A
 CONCRETE DITCH BEHIND RETAINING WALL
 (Not to Scale)
 -L- STA. 442+00 TO 442+50 LT
 -L- STA. 448+40 TO 452+25 LT
 -L- STA. 453+25 TO 456+00 LT
 (SEE WALL ENVELOPES FOR DITCH GRADE)



DETAIL 37B
 FALSE SUMP
 (Not to Scale)
 -L- STA. 443+62 LT
 -L- STA. 444+63 LT
 -L- STA. 446+64 LT



DETAIL 37C
 SPECIAL LATERAL BASE DITCH
 (Not to Scale)
 Type of Liner = Class II Rip-Rap (Keyed-In)
 -L- STA. 452+50 TO 453+00 LT

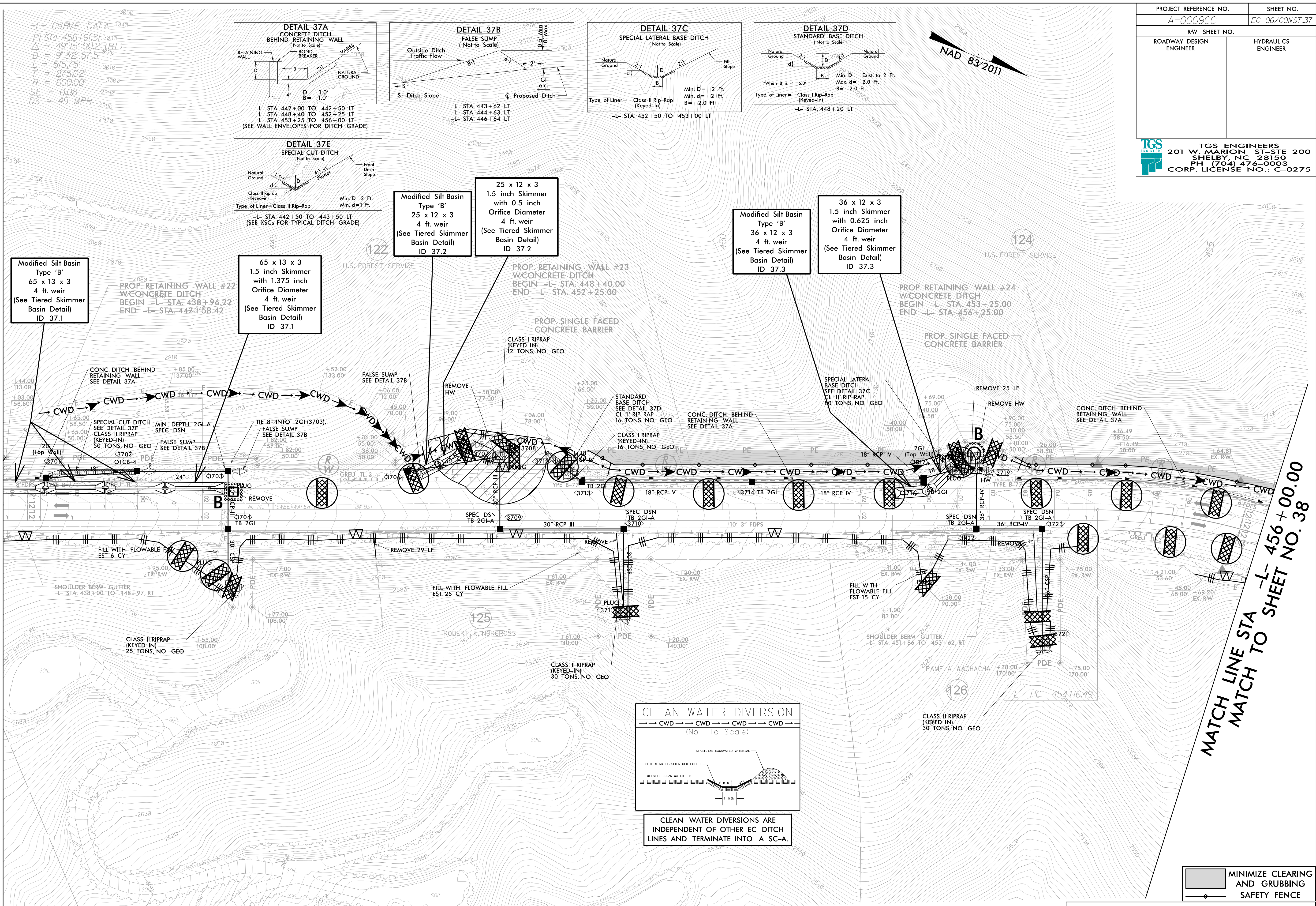


DETAIL 37D
 STANDARD BASE DITCH
 (Not to Scale)
 Type of Liner = Class I Rip-Rap (Keyed-In)
 -L- STA. 448+20 LT



MATCH LINE STA -L- 442+00.00
MATCH TO SHEET NO. 36

MATCH LINE STA -L- 456+00.00
MATCH TO SHEET NO. 38



Modified Silt Basin Type 'B'
 65 x 13 x 3
 4 ft. weir
 (See Tiered Skimmer Basin Detail)
 ID 37.1

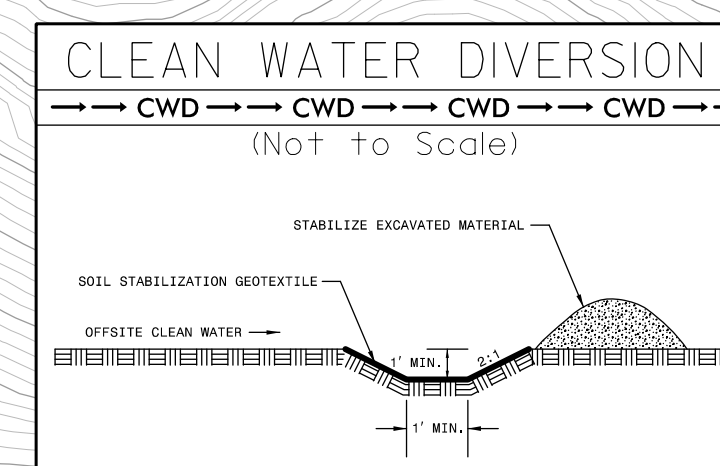
65 x 13 x 3
 1.5 inch Skimmer with 1.375 inch Orifice Diameter
 4 ft. weir
 (See Tiered Skimmer Basin Detail)
 ID 37.1

Modified Silt Basin Type 'B'
 25 x 12 x 3
 4 ft. weir
 (See Tiered Skimmer Basin Detail)
 ID 37.2

25 x 12 x 3
 1.5 inch Skimmer with 0.5 inch Orifice Diameter
 4 ft. weir
 (See Tiered Skimmer Basin Detail)
 ID 37.2

Modified Silt Basin Type 'B'
 36 x 12 x 3
 4 ft. weir
 (See Tiered Skimmer Basin Detail)
 ID 37.3

36 x 12 x 3
 1.5 inch Skimmer with 0.625 inch Orifice Diameter
 4 ft. weir
 (See Tiered Skimmer Basin Detail)
 ID 37.3



CLEAN WATER DIVERSIONS ARE INDEPENDENT OF OTHER EC DITCH LINES AND TERMINATE INTO A SC-A.

 MINIMIZE CLEARING AND GRUBBING
 SAFETY FENCE

SEEDING AND PLANTING ON US FOREST SERVICE (USFS) PROPERTY WILL BE IMPLEMENTED AS DIRECTED BY THE ENGINEER ON NCDOT RIGHT OF WAY AND ADJOINING USFS PROPERTY. REFER TO THE EROSION CONTROL SPECIAL PROVISIONS.

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 37

INSTALL PIPE(S) IN JURISDICTIONAL AREAS WITHOUT IMPACTING STREAM UNTIL AREA STABILIZED AND ACCORDING TO NCDOT BEST MANAGEMENT PRACTICES FOR CONSTRUCTION AND MAINTENANCE ACTIVITIES MANUAL.

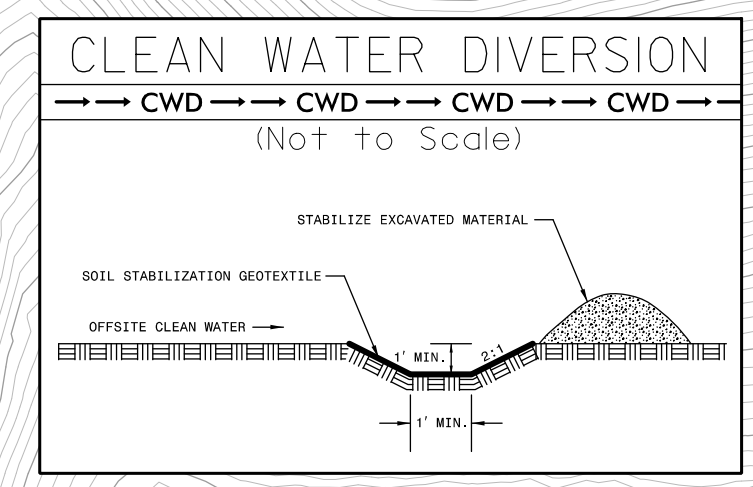
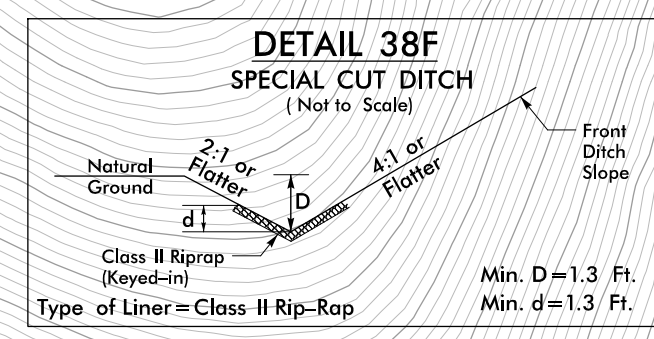
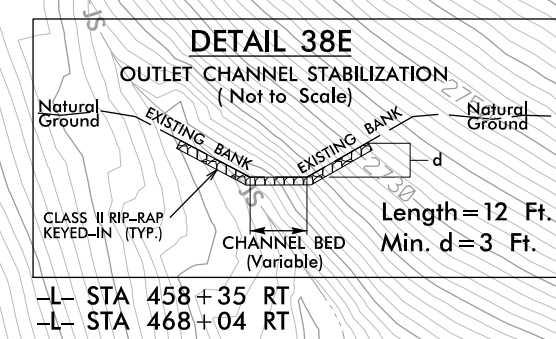
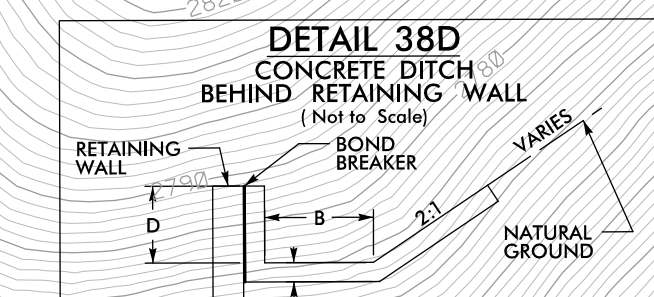
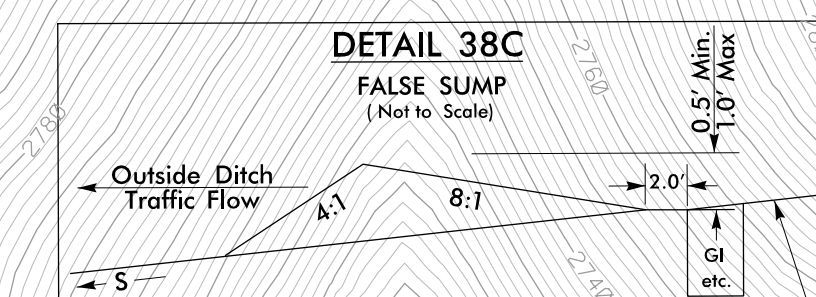
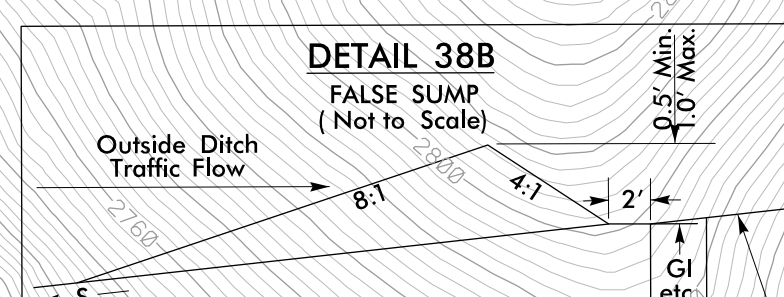
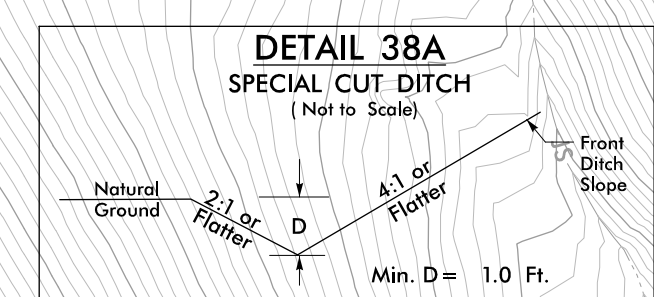
NOTE: PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B AND TEMPORARY ROCK SILT CHECKS TYPE - A AT DRAINAGE OUTLETS.

 ENVIRONMENTALLY SENSITIVE AREA
 SEE PROJECT SPECIAL PROVISIONS

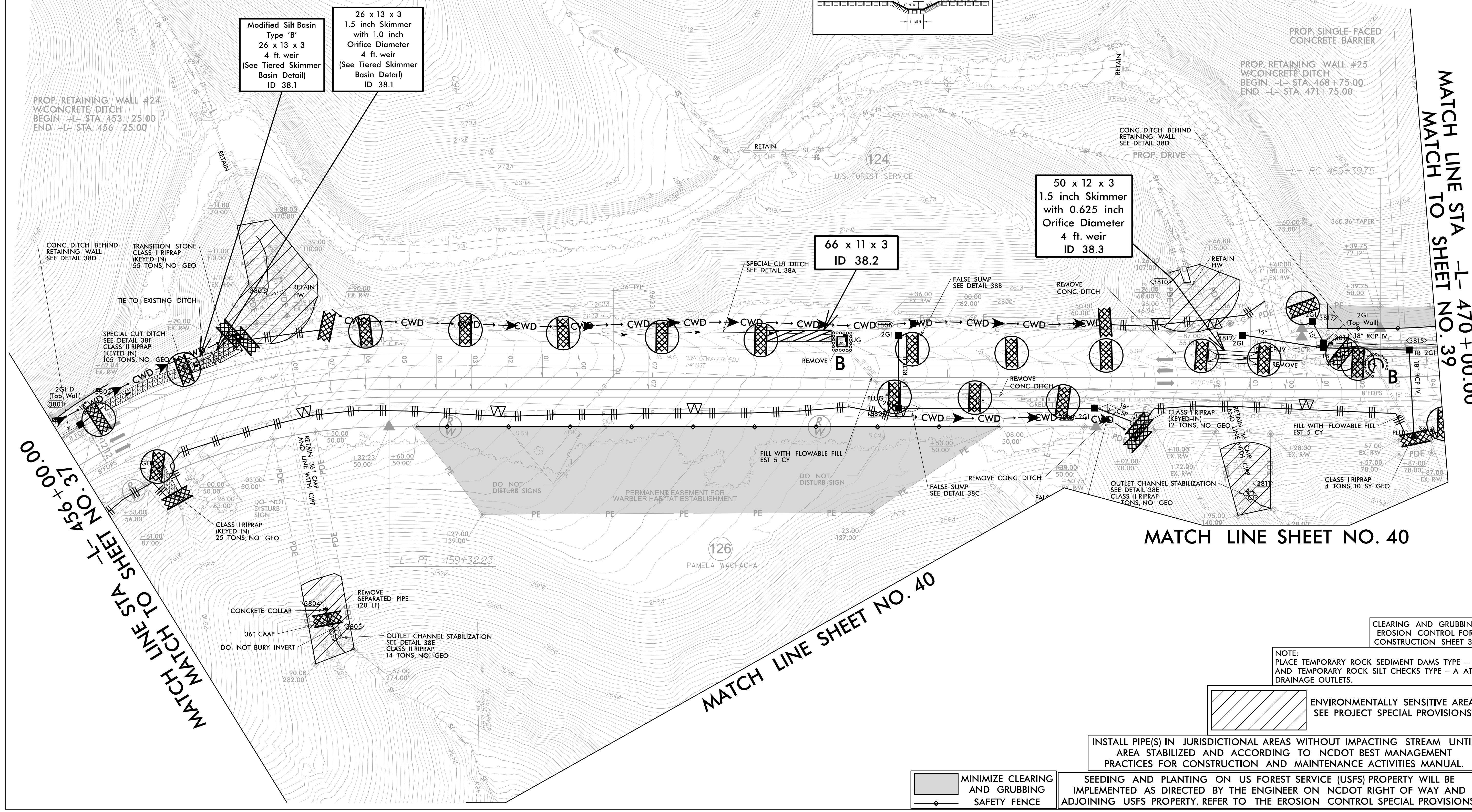
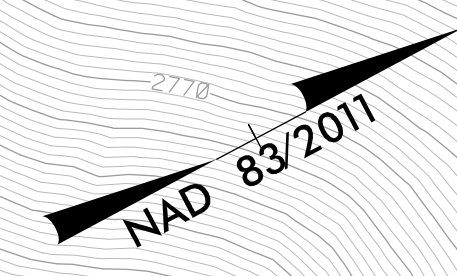
L-CURVE DATA

PI Sta 456+91.51	PI Sta 470+84.26
$\Delta = 49^{\circ}15'00.2''$ (RT)	$\Delta = 7^{\circ}32'55.6''$ (LT)
$D = 9^{\circ}32'57.5''$	$D = 7^{\circ}32'20.1''$
$L = 515.75'$	$L = 285.61'$
$T = 275.02'$	$T = 144.51'$
$R = 600.00'$	$R = 760.00'$
$SE = 0.08$	$SE = 0.04$
$DS = 45$ MPH	$DS = 45$ MPH

CLEAN WATER DIVERSIONS ARE INDEPENDENT OF OTHER EC DITCH LINES AND TERMINATE INTO A SC-A.



PROJECT REFERENCE NO.	SHEET NO.
A-0009CC	EC-07/CONST.38
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<p>TGS ENGINEERS 201 W. MARION ST-STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275</p>	



MATCH LINE STA 456+00.00
MATCH TO SHEET NO. 37

MATCH LINE STA 470+00.00
MATCH TO SHEET NO. 39

MATCH LINE SHEET NO. 40

MATCH LINE SHEET NO. 40

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

ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

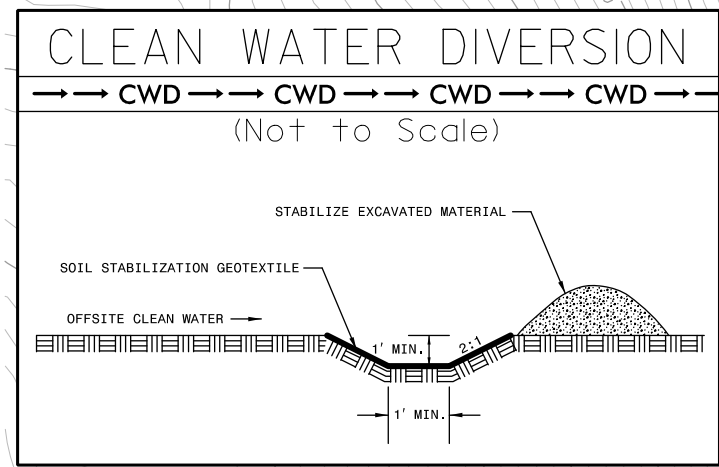
INSTALL PIPE(S) IN JURISDICTIONAL AREAS WITHOUT IMPACTING STREAM UNTIL AREA STABILIZED AND ACCORDING TO NCDOT BEST MANAGEMENT PRACTICES FOR CONSTRUCTION AND MAINTENANCE ACTIVITIES MANUAL.

MINIMIZE CLEARING AND GRUBBING
 SAFETY FENCE

SEEDING AND PLANTING ON US FOREST SERVICE (USFS) PROPERTY WILL BE IMPLEMENTED AS DIRECTED BY THE ENGINEER ON NCDOT RIGHT OF WAY AND ADJOINING USFS PROPERTY. REFER TO THE EROSION CONTROL SPECIAL PROVISIONS.

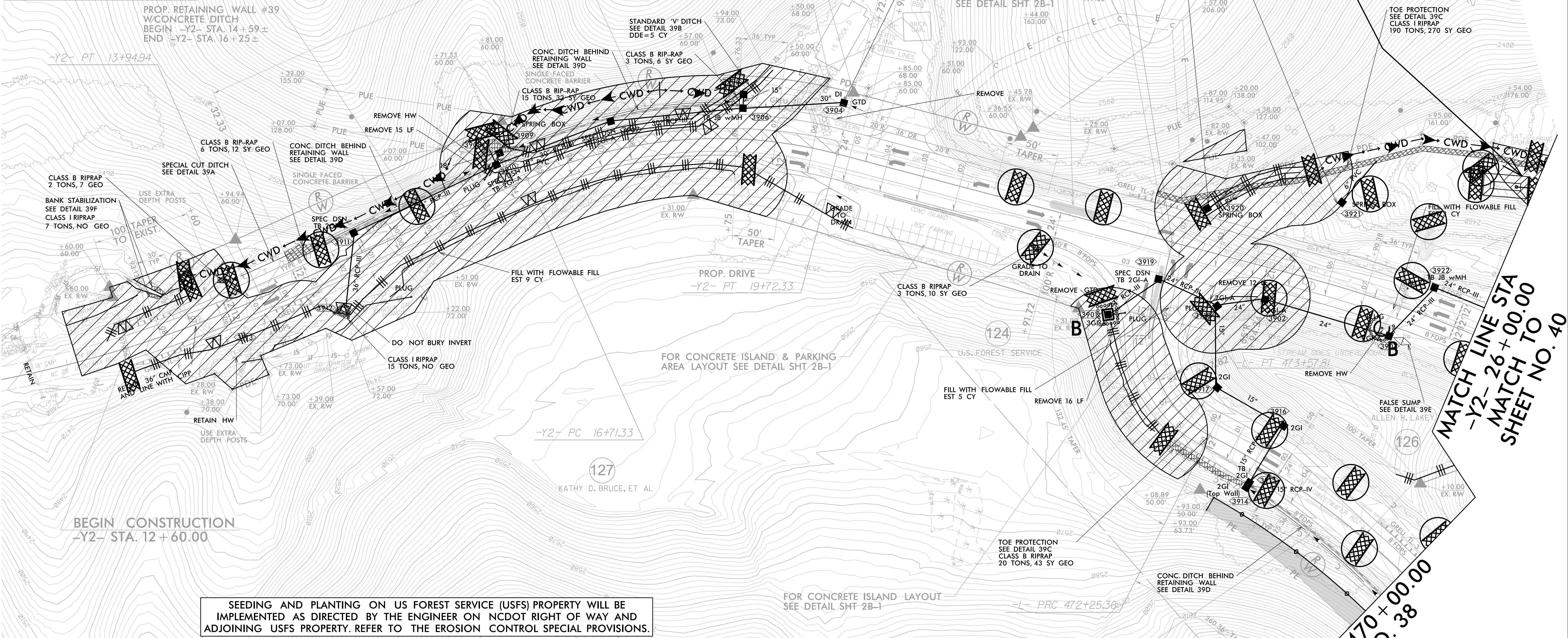
-Y2- CURVE DATA		-L- CURVE DATA	
PI Sta 11+99.45	$\Delta = 19' 44" 48.4" (LT)$	PI Sta 470+84.26	$\Delta = 21' 31" 55.6" (LT)$
$D = 5' 00" 00.0"$	$L = 301.00'$	PI Sta 473+03.33	$\Delta = 29' 53" 24.9" (RT)$
$T = 199.45'$	$R = 1145.92'$	$D = 7' 32" 20.1"$	$L = 285.61'$
$SE = 0.08$	$DS = 55 MPH$	$T = 144.51'$	$R = 100.00'$
		$SE = 0.04$	$DS = 45 MPH$
PI Sta 18+27.84	$\Delta = 38' 45" 19.5" (RT)$		
$D = 12' 52" 31.6"$	$L = 156.51'$		
$T = 114.51'$	$R = 1200.00'$		
$SE = 0.08$	$DS = 40 MPH$		
PI Sta 25+91.41	$\Delta = 15' 17" 06.5" (RT)$		
$D = 4' 46" 28.7"$	$L = 320.13'$		
$T = 161.02'$	$R = 1200.00'$		
$SE = 0.08$	$DS = 60 MPH$		
PI Sta 470+84.26	$\Delta = 21' 31" 55.6" (LT)$		
$D = 7' 32" 20.1"$	$L = 285.61'$		
$T = 144.51'$	$R = 100.00'$		
$SE = 0.04$	$DS = 45 MPH$		
PI Sta 473+03.33	$\Delta = 29' 53" 24.9" (RT)$		
$D = 7' 32" 20.1"$	$L = 285.61'$		
$T = 144.51'$	$R = 100.00'$		
$SE = 0.03$	$DS = 20 MPH$		

CLEAN WATER DIVERSIONS ARE INDEPENDENT OF OTHER EC DITCH LINES AND TERMINATE INTO A SC-A.

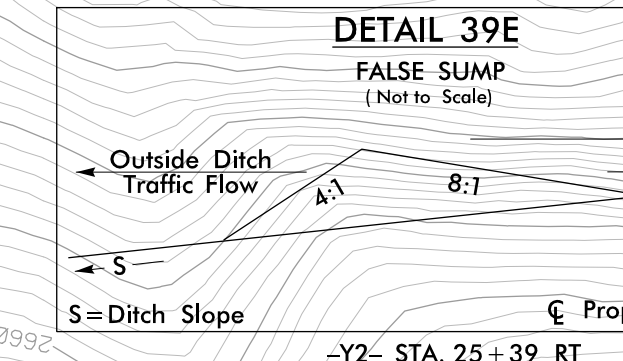
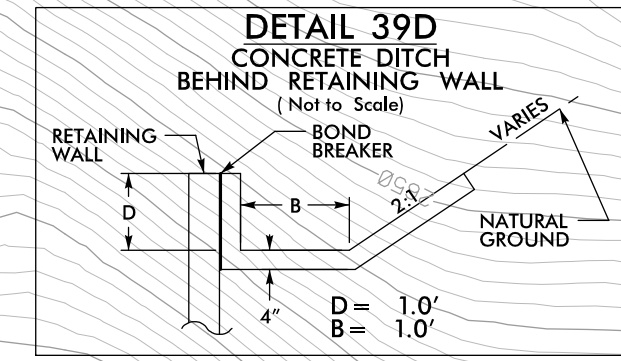
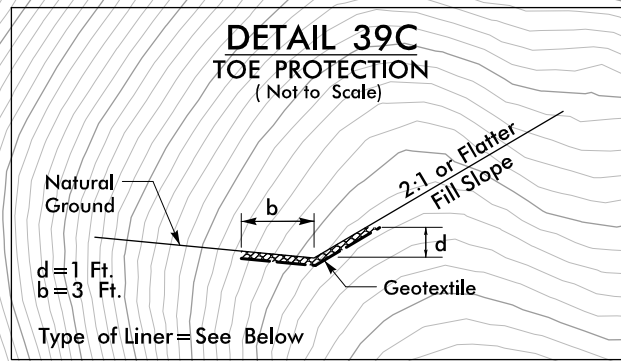
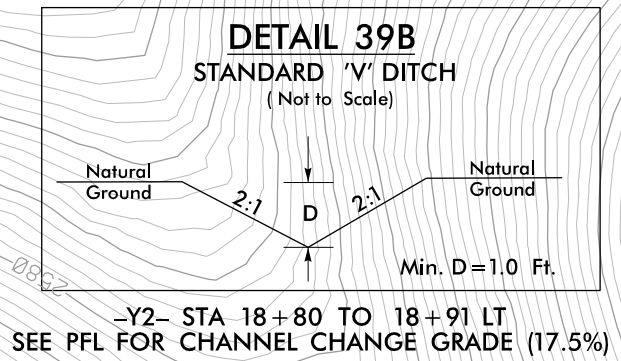
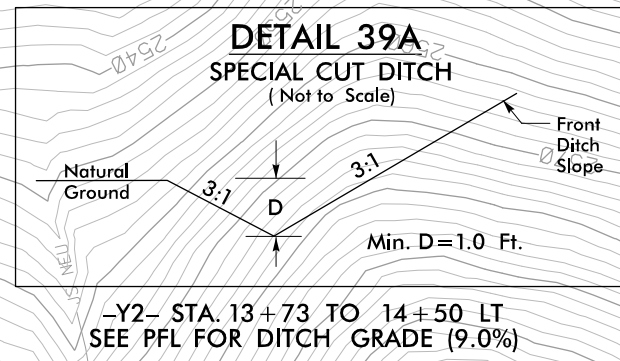


PROJECT REFERENCE NO. A-0009CC	SHEET NO. EC-08/CONST.39
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
TGS ENGINEERS 201 W. MARION ST. STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	

42 x 21 x 3
1.5 inch Skimmer
with 0.75 inch
Orifice Diameter
4 ft. weir
ID 39.1



SEEDING AND PLANTING ON US FOREST SERVICE (USFS) PROPERTY WILL BE IMPLEMENTED AS DIRECTED BY THE ENGINEER ON NCDOT RIGHT OF WAY AND ADJOINING USFS PROPERTY. REFER TO THE EROSION CONTROL SPECIAL PROVISIONS.



MATCH LINE STA -L- 470+00.00
MATCH TO SHEET NO. 38

MATCH LINE STA -Y2- 26+00.00
MATCH TO SHEET NO. 40

MINIMIZE CLEARING AND GRUBBING SAFETY FENCE

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 39

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.

INSTALL PIPE(S) IN JURISDICTIONAL AREAS WITHOUT IMPACTING STREAM UNTIL AREA STABILIZED AND ACCORDING TO NCDOT BEST MANAGEMENT PRACTICES FOR CONSTRUCTION AND MAINTENANCE ACTIVITIES MANUAL.

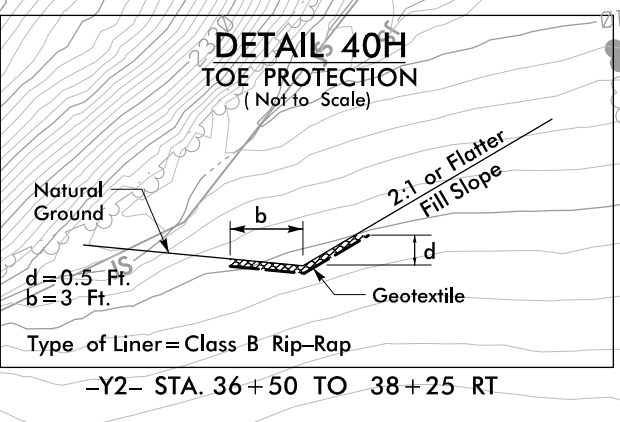
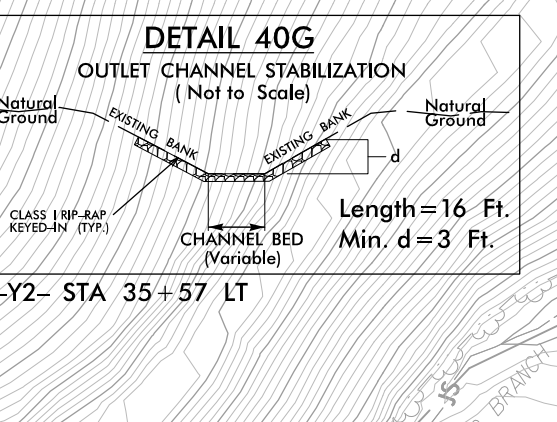
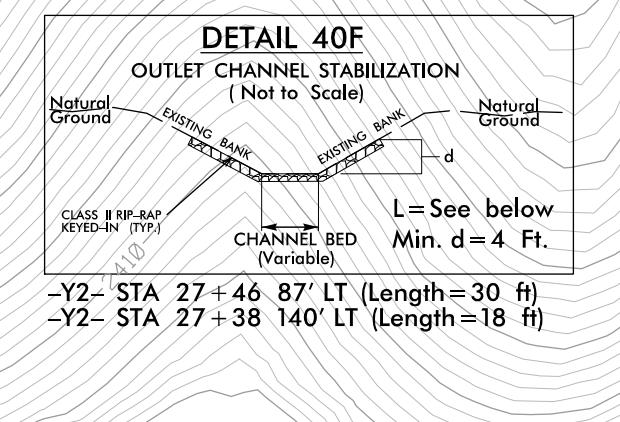
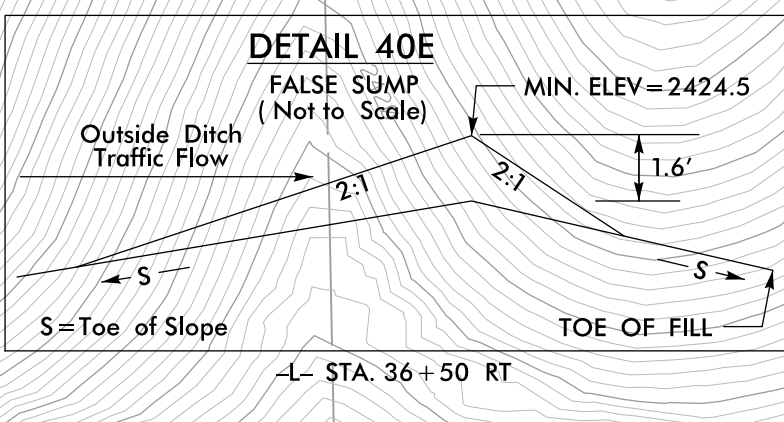
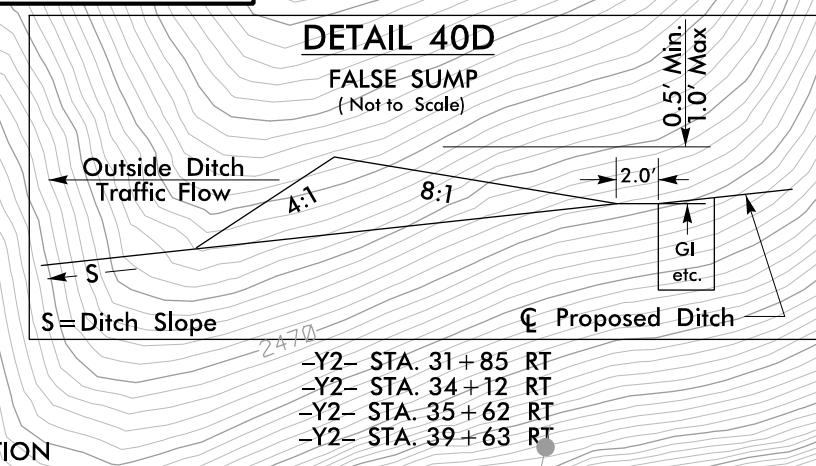
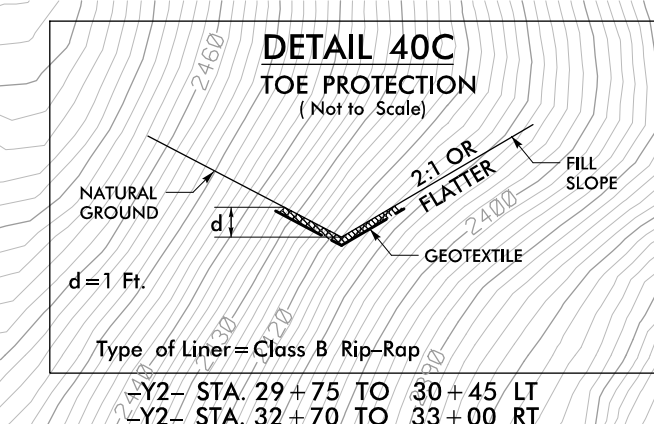
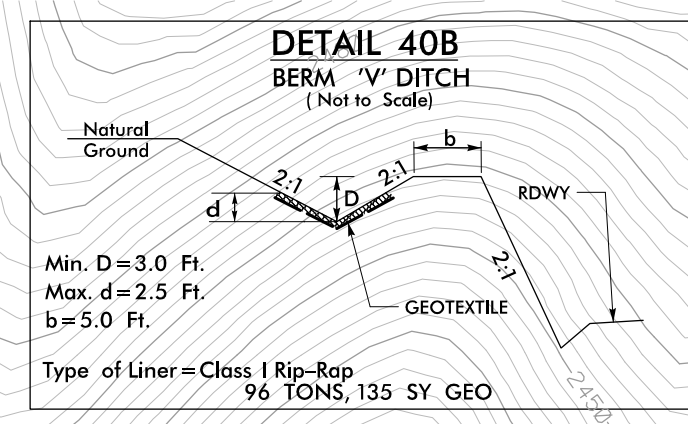
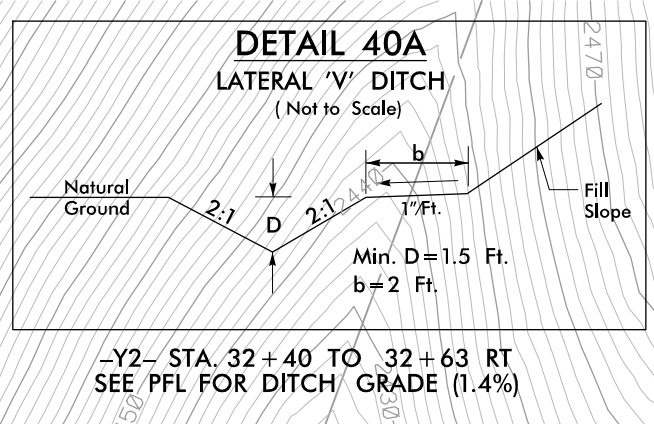
NAD 83/2011

PROJECT REFERENCE NO. A-0009CC	SHEET NO. EC-09/CONST.40
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

TGS ENGINEERS
201 W. MARION ST-STE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

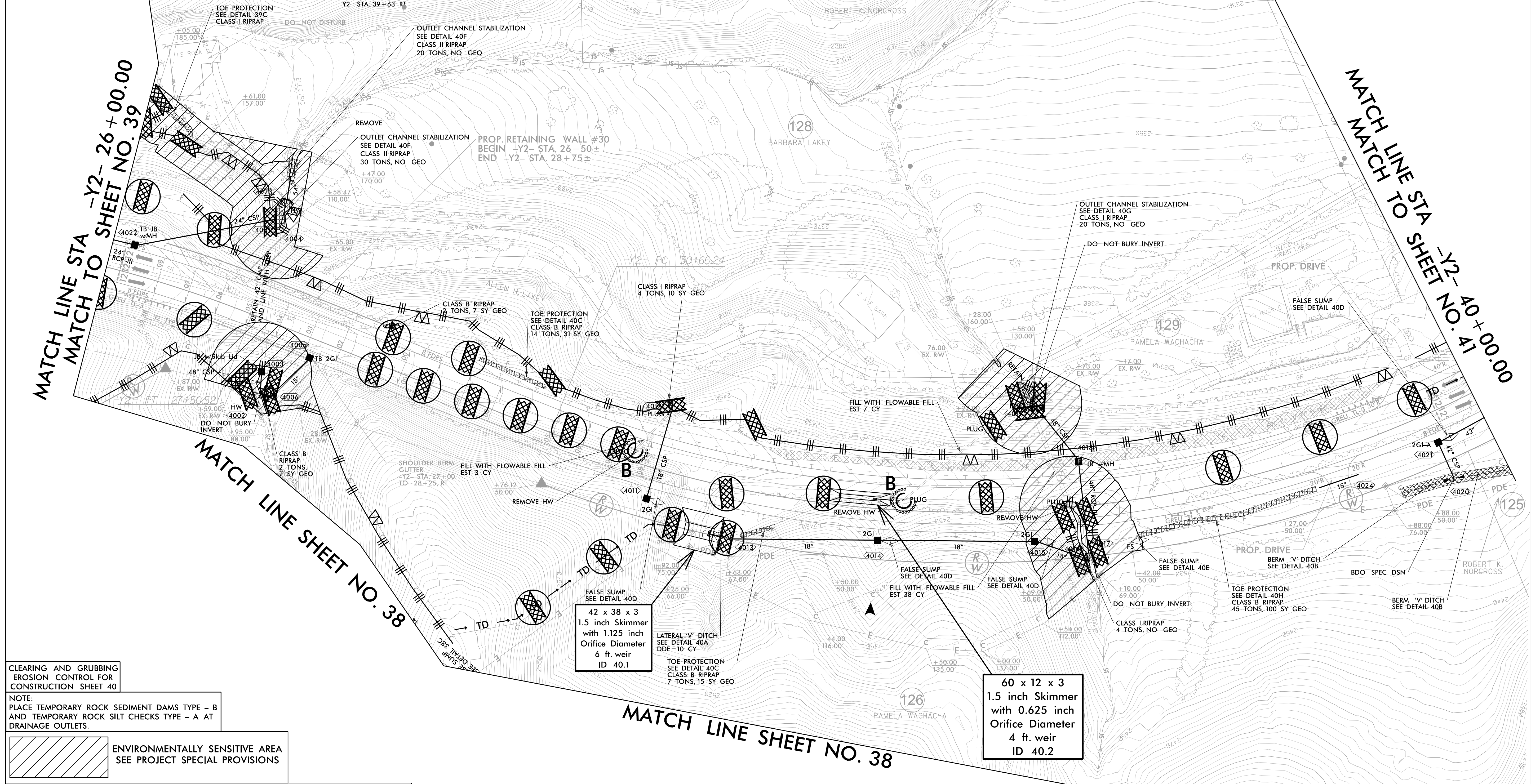
VERTICAL DATA
 PI Sta 25+91.41
 $\Delta = 15'17''06.51$ (RT)
 $D = 46'28.7''$
 $L = 320.3'$
 $T = 101.02'$
 $R = 1,200.00'$
 $SE = 0.08$
 $DS = 60$ MPH
 PI Sta 44+39.36
 $\Delta = 102'05''50.9$ (LT)
 $D = 5'09''42.4''$
 $L = 1,977.95'$
 $T = 1,373.12'$
 $R = 1,110.00'$
 $SE = 0.08$
 $DS = 55$ MPH

CLEAN WATER DIVERSIONS ARE INDEPENDENT OF OTHER EC DITCH LINES AND TERMINATE INTO A SC-A.



MATCH LINE STA -Y2- 26+00.00
MATCH TO SHEET NO. 39

MATCH LINE STA -Y2- 40+00.00
MATCH TO SHEET NO. 41



CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 40

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

ENVIRONMENTALLY SENSITIVE AREA SEE PROJECT SPECIAL PROVISIONS

INSTALL PIPE(S) IN JURISDICTIONAL AREAS WITHOUT IMPACTING STREAM UNTIL AREA STABILIZED AND ACCORDING TO NCDOT BEST MANAGEMENT PRACTICES FOR CONSTRUCTION AND MAINTENANCE ACTIVITIES MANUAL.

42 x 38 x 3
1.5 inch Skimmer
with 1.125 inch
Orifice Diameter
6 ft. weir
ID 40.1

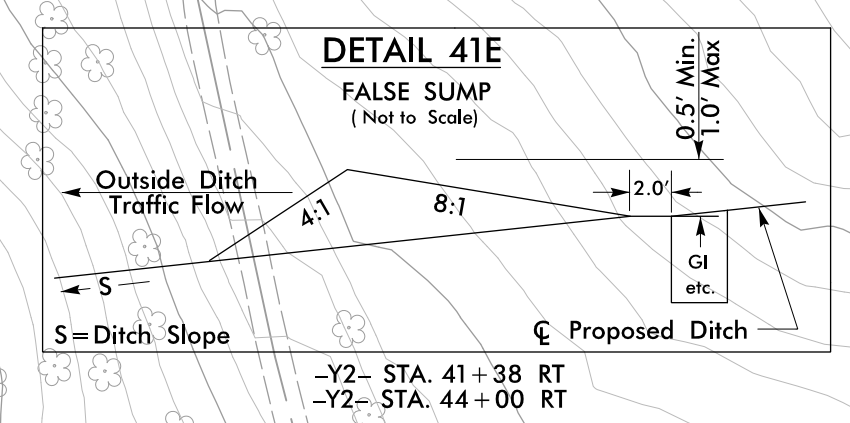
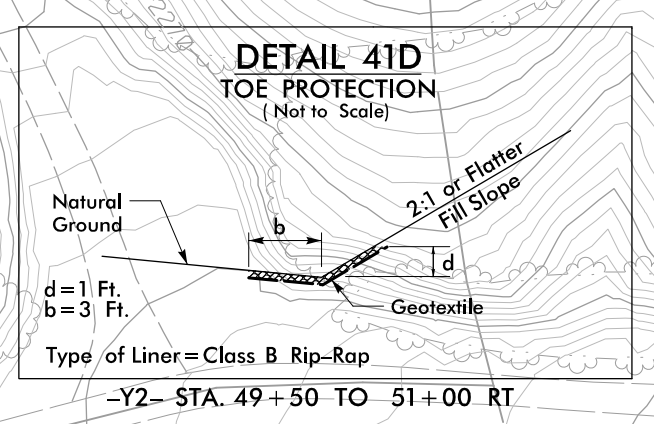
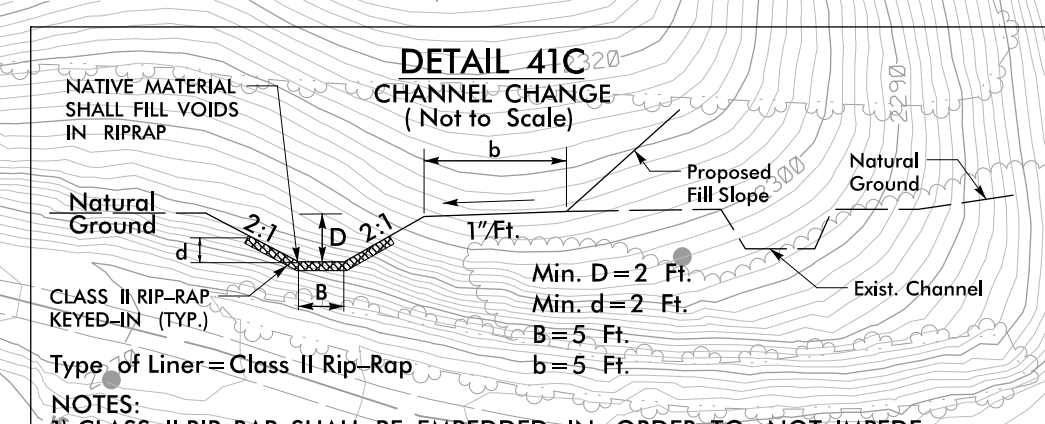
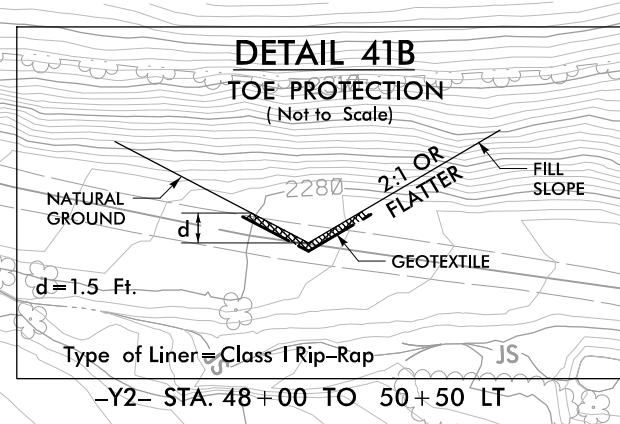
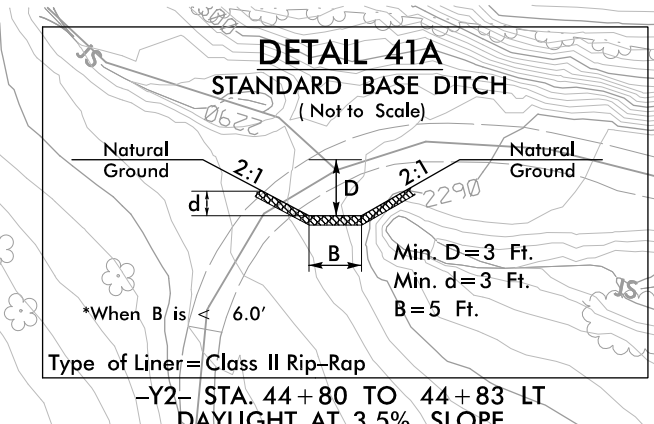
60 x 12 x 3
1.5 inch Skimmer
with 0.625 inch
Orifice Diameter
4 ft. weir
ID 40.2

INSTALL PIPE(S) IN JURISDICTIONAL AREAS WITHOUT IMPACTING STREAM UNTIL AREA STABILIZED AND ACCORDING TO NCDOT BEST MANAGEMENT PRACTICES FOR CONSTRUCTION AND MAINTENANCE ACTIVITIES MANUAL.

 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.

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 41



CLEAN WATER DIVERSIONS ARE INDEPENDENT OF OTHER EC DITCH LINES AND TERMINATE INTO A SC-A.

Modified Silt Basin Type 'B' 50 x 14 x 3 5 ft. weir (See Tiered Skimmer Basin Detail) ID 41.5

50 x 14 x 3 1.5 inch Skimmer with 0.875 inch Orifice Diameter 5 ft. weir (See Tiered Skimmer Basin Detail) ID 41.5

50 x 14 x 3 1.5 inch Skimmer with 0.625 inch Orifice Diameter 4 ft. weir ID 41.3

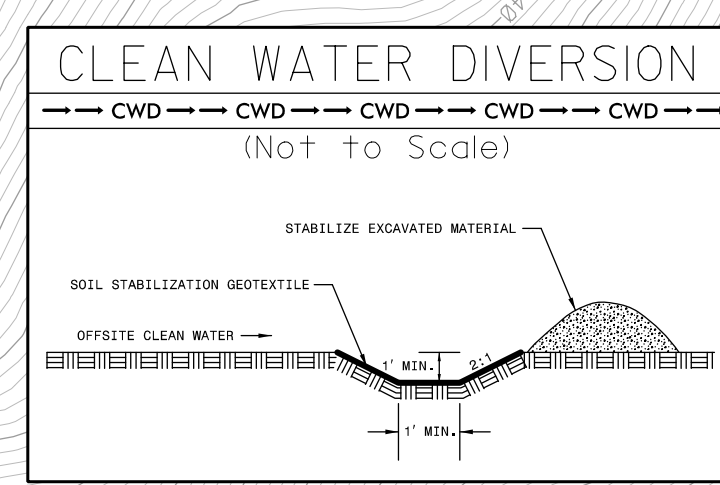
60 x 15 x 3 ID 41.2


Modified Silt Basin Type 'B' 60 x 15 x 3 7 ft. weir (See Tiered Skimmer Basin Detail) ID 41.1

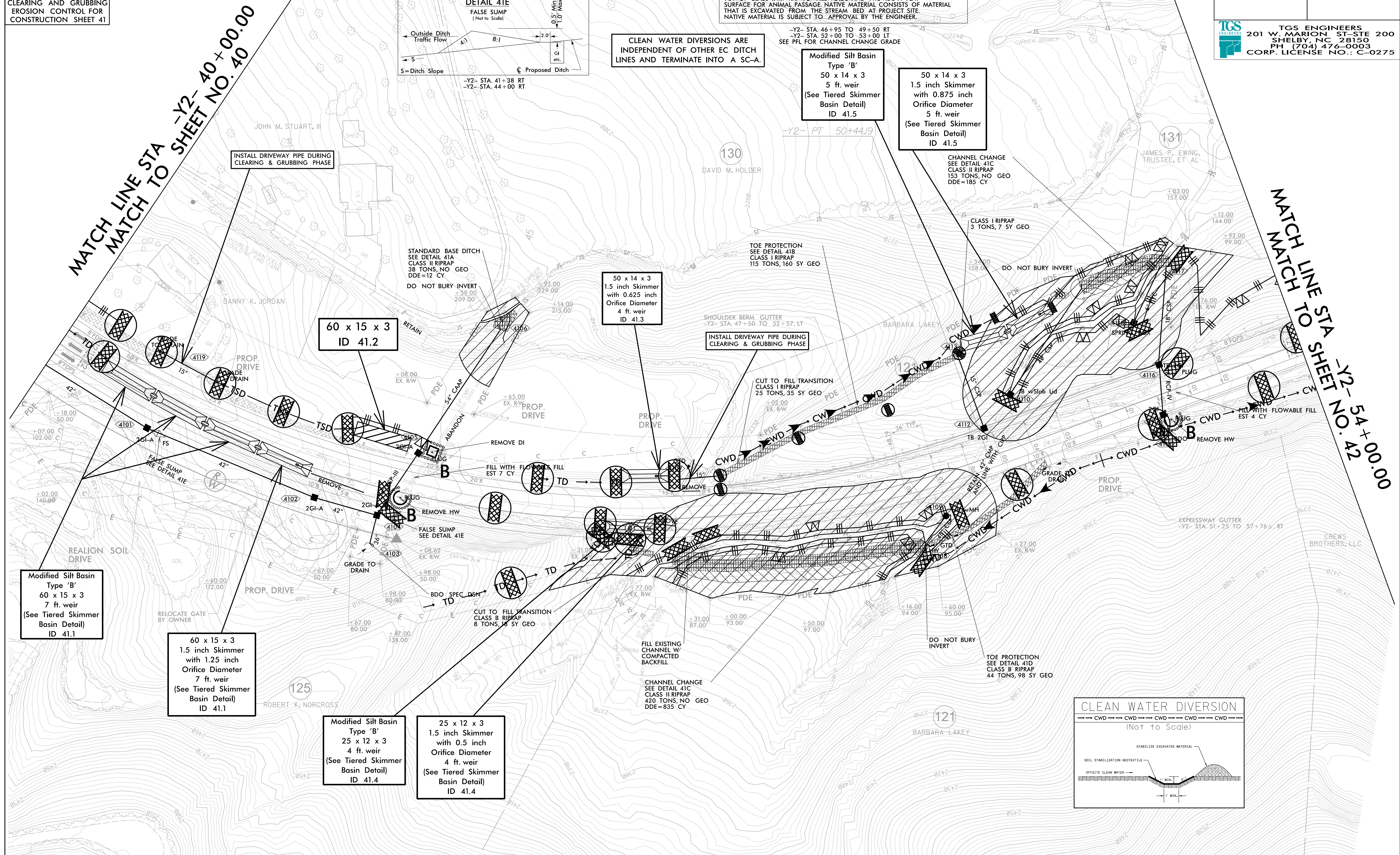
60 x 15 x 3 1.5 inch Skimmer with 1.25 inch Orifice Diameter 7 ft. weir (See Tiered Skimmer Basin Detail) ID 41.1

Modified Silt Basin Type 'B' 25 x 12 x 3 4 ft. weir (See Tiered Skimmer Basin Detail) ID 41.4

25 x 12 x 3 1.5 inch Skimmer with 0.5 inch Orifice Diameter 4 ft. weir (See Tiered Skimmer Basin Detail) ID 41.4



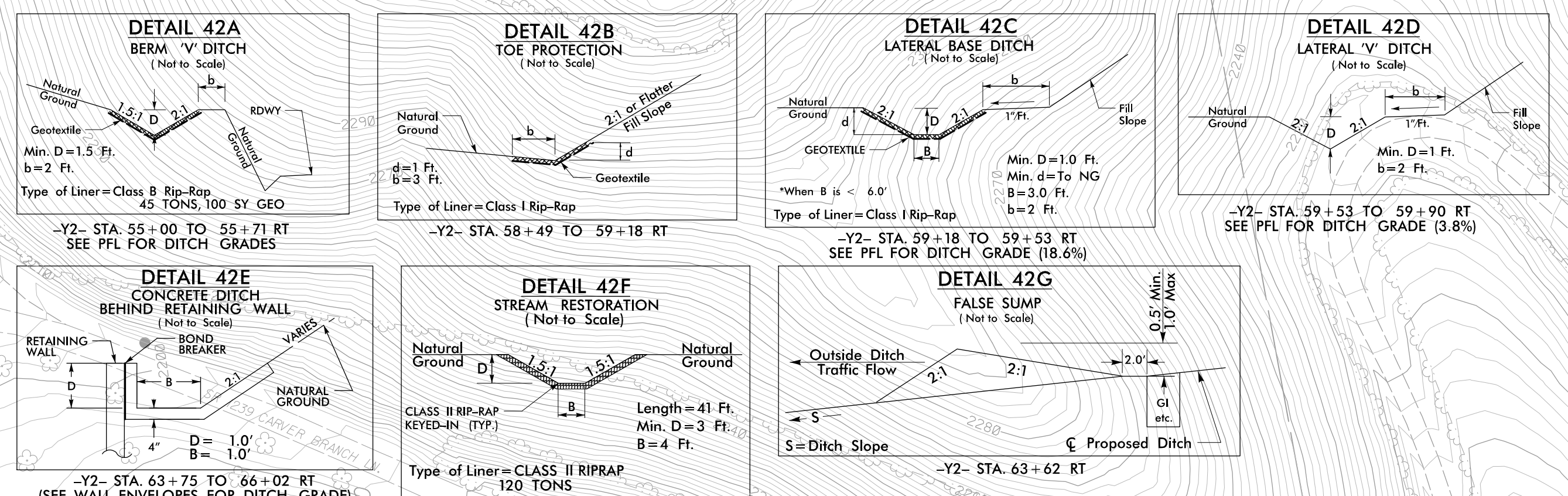
PROJECT REFERENCE NO.	SHEET NO.
A-0009CC	EC-10/CONST.41
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
 TGS ENGINEERS 201 W. MARION ST-STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	



PROJECT REFERENCE NO. A-0009CC		SHEET NO. EC-II/CONST.42	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
TGS ENGINEERS 201 W. MARION ST. STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275			

Y2- CURVE DATA
 PI Sta 70+28.18
 $\Delta = 50^\circ 56' 38.0"$ (RT)
 $D = 3^\circ 53' 51.6"$
 $L = 1307.03'$
 $T = 700.27'$
 $R = 1470.00'$
 $SE = 0.08$
 $DS = 60$ MPH

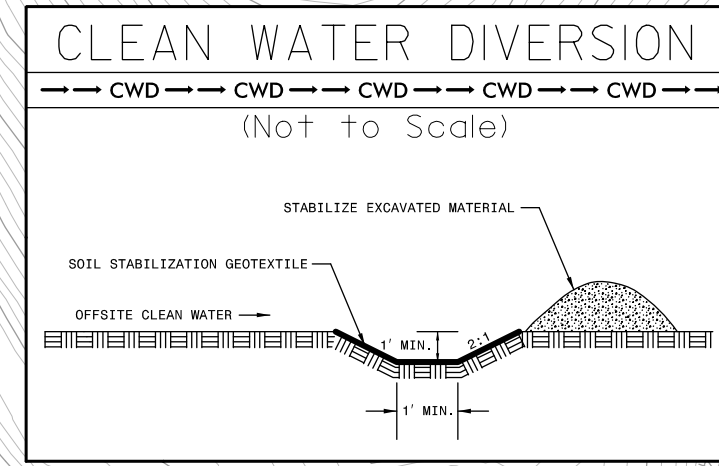
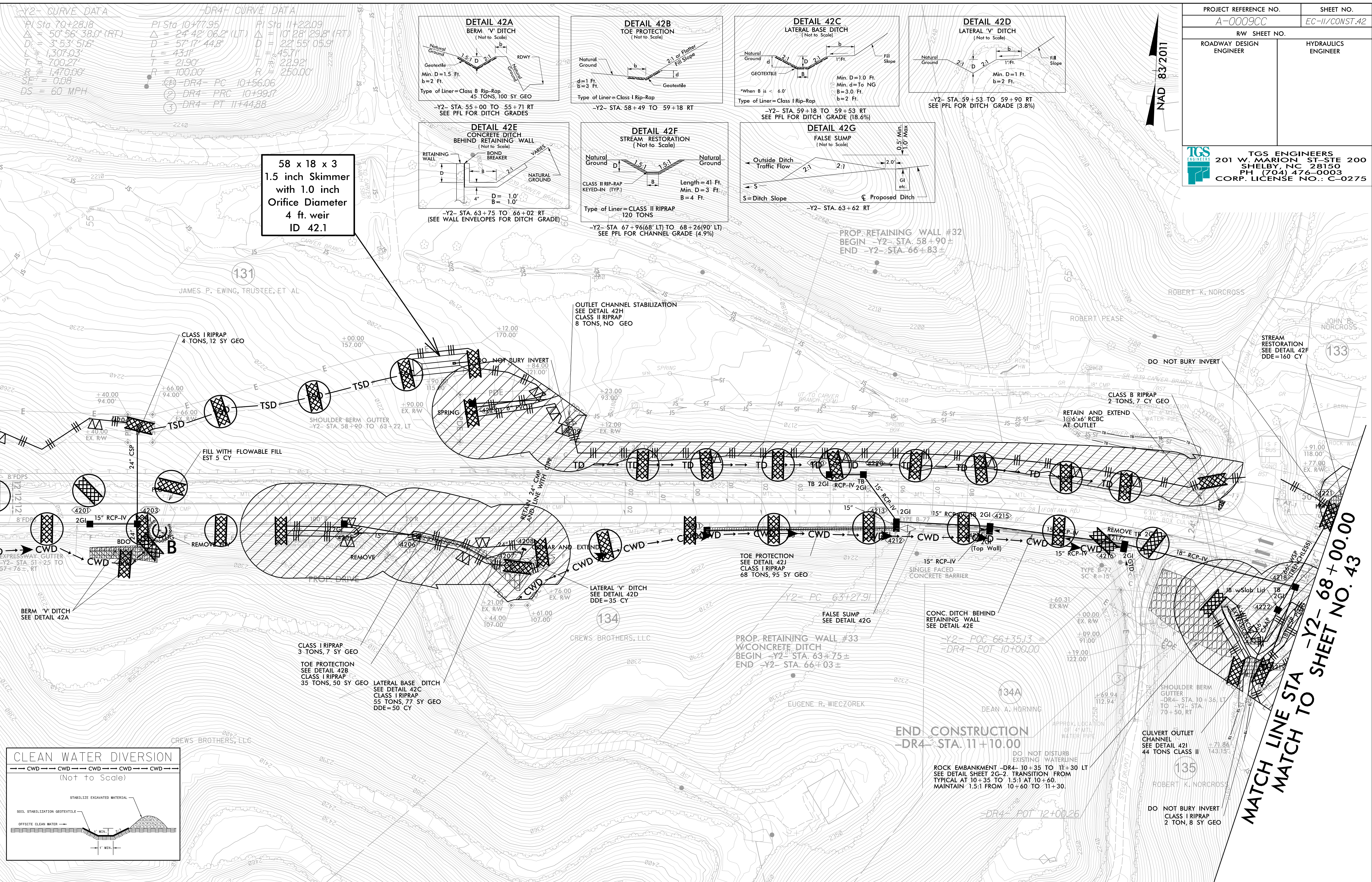
-DR4- CURVE DATA
 PI Sta 10+77.95
 $\Delta = 24^\circ 42' 06.2"$ (LT)
 $D = 57^\circ 17' 44.8"$
 $L = 431'$
 $T = 21.90'$
 $R = 100.00'$
 ① DR4-PC 10+56.06
 ② DR4-PRC 10+199.17
 ③ DR4-PT 11+44.88



58 x 18 x 3
 1.5 inch Skimmer
 with 1.0 inch
 Orifice Diameter
 4 ft. weir
 ID 42.1

MATCH LINE STA -Y2- 54+00.00
MATCH TO SHEET NO. 41

MATCH LINE STA -Y2- 68+00.00
MATCH TO SHEET NO. 43



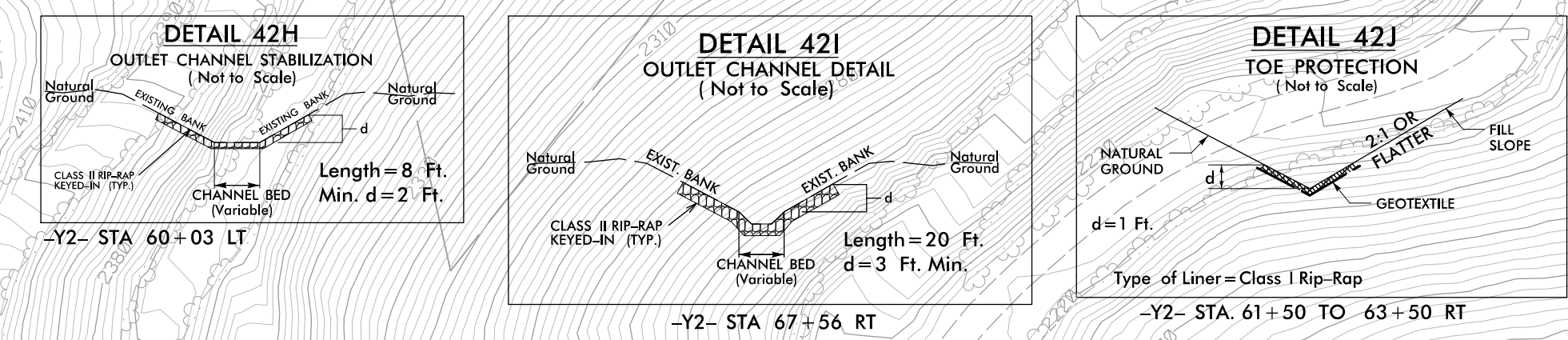
CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 42

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

ENVIRONMENTALLY SENSITIVE AREA
 SEE PROJECT SPECIAL PROVISIONS

CLEAN WATER DIVERSIONS ARE INDEPENDENT OF OTHER EC DITCH LINES AND TERMINATE INTO A SC-A.

INSTALL PIPE(S) IN JURISDICTIONAL AREAS WITHOUT IMPACTING STREAM UNTIL AREA STABILIZED AND ACCORDING TO NCDOT BEST MANAGEMENT PRACTICES FOR CONSTRUCTION AND MAINTENANCE ACTIVITIES MANUAL.

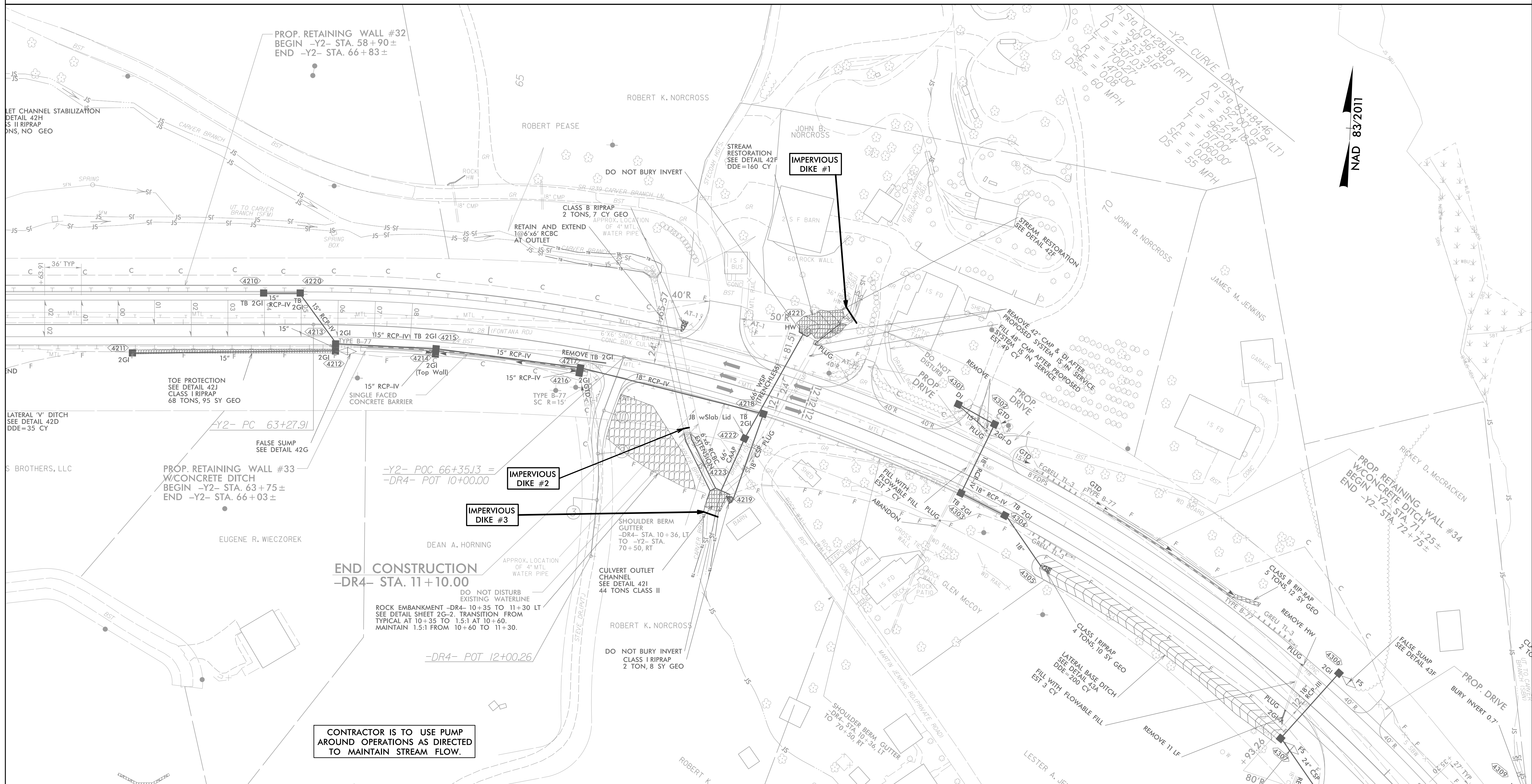


CULVERT CONSTRUCTION SEQUENCE STA. 66+85 -Y2- & PIPE CONSTRUCTION SEQUENCE STA. 67+82 -Y2-

PROJECT REFERENCE NO. A-0009CC	SHEET NO. EC-IIA/CONST.42
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

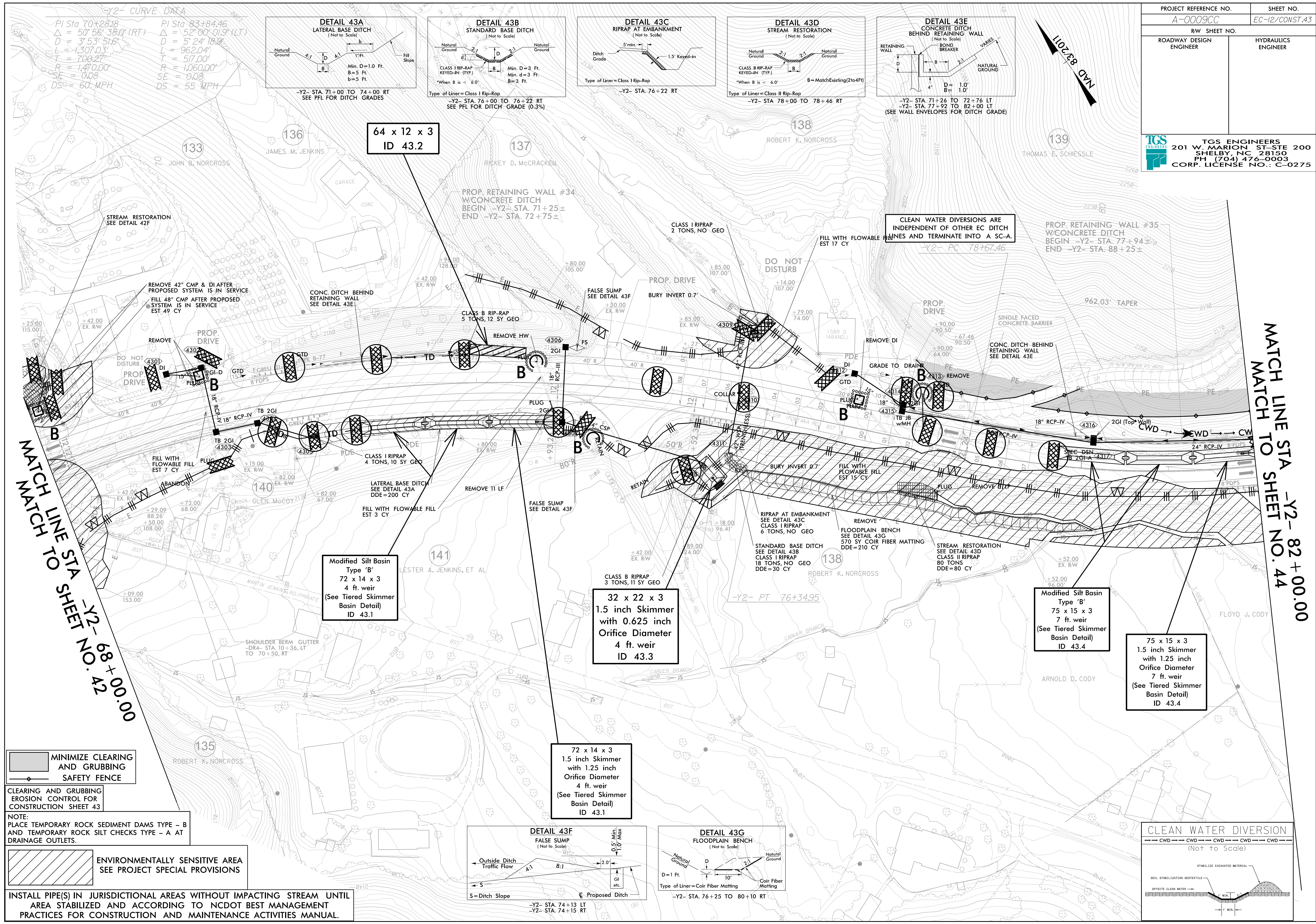
1. INSTALL 66" WSP VIA TRENCHLESS INSTALLION FROM DRAINAGE ITEM #4221 TO #4224.
2. INSTALL IMPERVIOUS DIKES #1, #2, & #3 AND BEGIN PUMP AROUND.
3. DEWATER WORK SITE AS NEEDED INTO SPECIAL STILLING BASIN(S).
4. INSTALL 6' X 6' RCBC EXTENSION.
5. INSTALL 66" CAAP FROM DRAINAGE ITEM #4224 TO #4222.
6. COMPLETE ANY NECESSARY INLET/OUTLET CHANNEL IMPROVEMENTS.
7. REMOVE IMPERVIOUS DIKES #1, #2, & #3.

8. REESTABLISH STREAM ACCORDING TO CONST. PLANS.
9. PLUG AND FILL EXISTING 48" CMP.



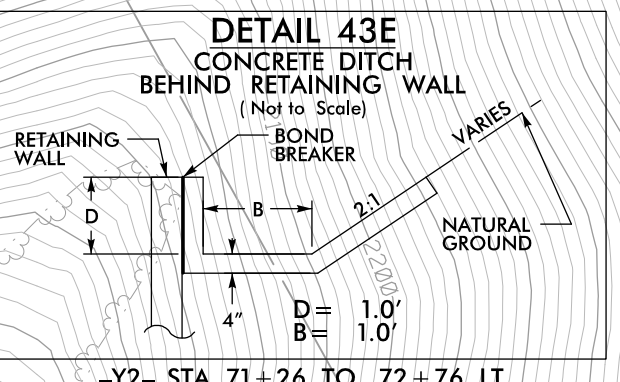
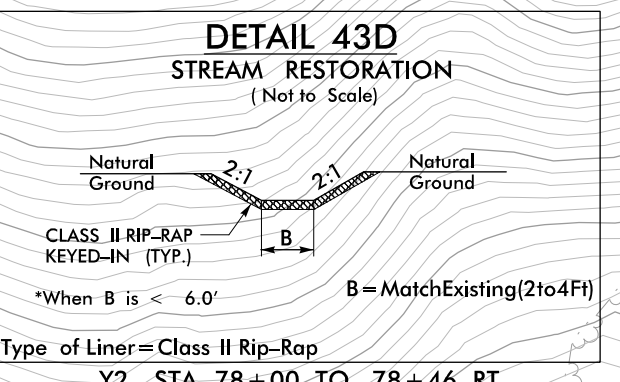
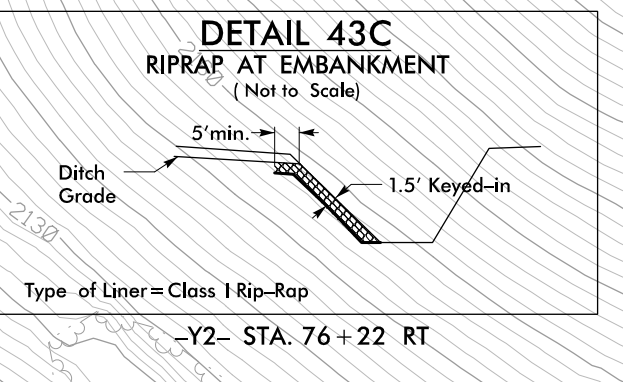
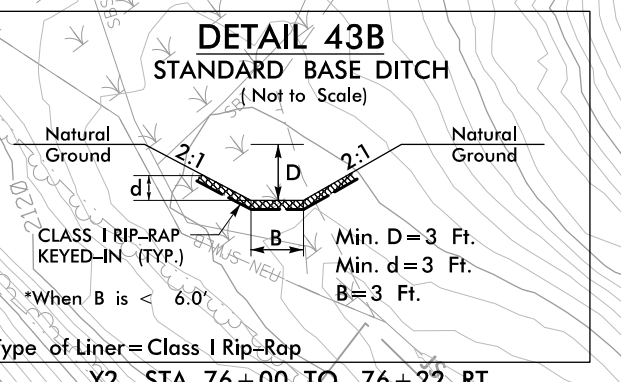
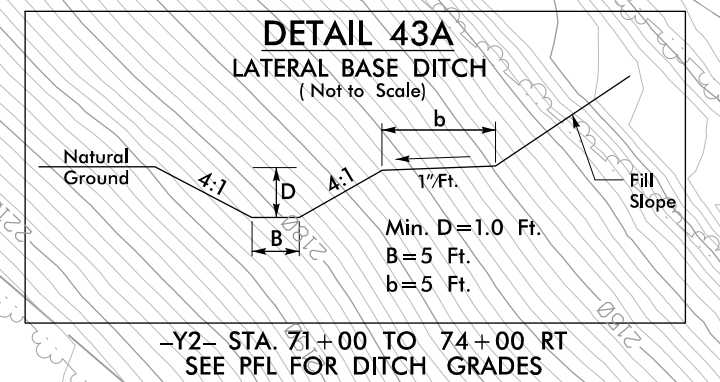
CONTRACTOR IS TO USE PUMP AROUND OPERATIONS AS DIRECTED TO MAINTAIN STREAM FLOW.

PROJECT REFERENCE NO.		SHEET NO.	
A-0009CC		EC-12/CONST.43	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
TGS ENGINEERS 201 W. MARION ST. STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275			



Y2- CURVE DATA

PI Sta 70+28.18	PI Sta 83+84.46
$\Delta = 50^\circ 56' 38.9" (RT)$	$\Delta = 52^\circ 00' 01.9" (LT)$
$D = 3' 53" 51.6"$	$D = 5' 24" 18.9"$
$L = 1,307.03'$	$L = 962.04'$
$T = 709.27'$	$T = 517.00'$
$R = 1,470.00'$	$R = 1,060.00'$
$SE = 0.08$	$SE = 0.08$
$DS = 60 \text{ MPH}$	$DS = 55 \text{ MPH}$



MINIMIZE CLEARING AND GRUBBING

SAFETY FENCE

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 43

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

ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

INSTALL PIPE(S) IN JURISDICTIONAL AREAS WITHOUT IMPACTING STREAM UNTIL AREA STABILIZED AND ACCORDING TO NCDOT BEST MANAGEMENT PRACTICES FOR CONSTRUCTION AND MAINTENANCE ACTIVITIES MANUAL.

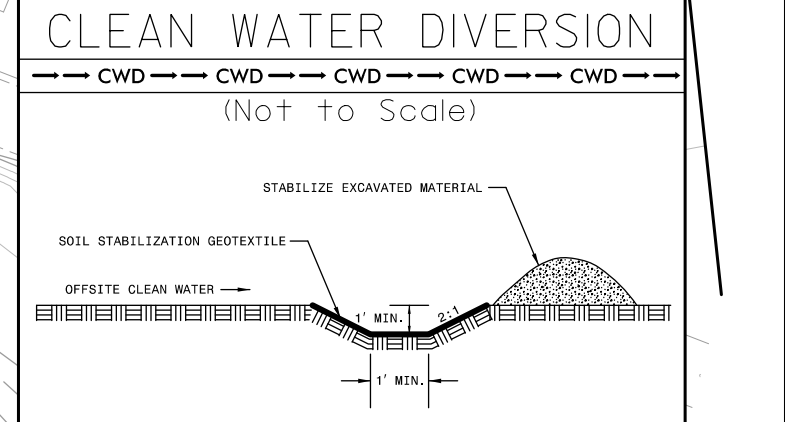
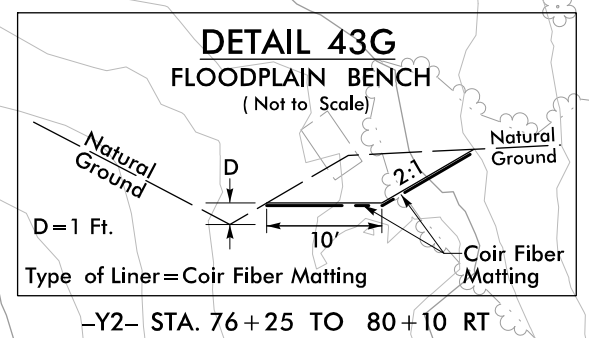
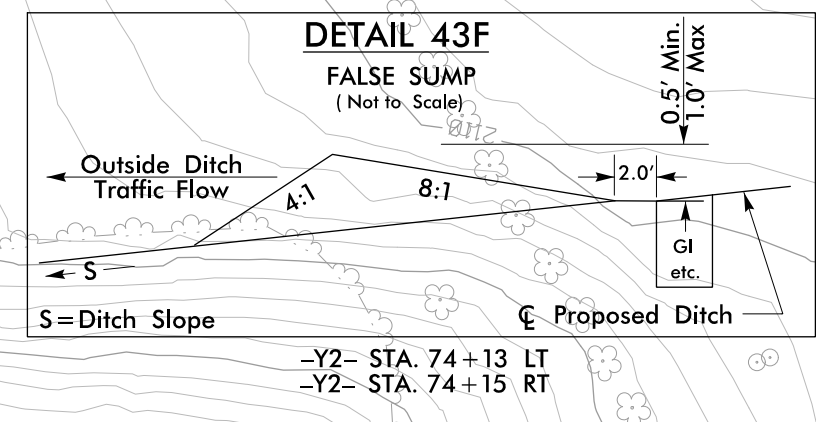
Modified Silt Basin
Type 'B'
72 x 14 x 3
4 ft. weir
(See Tiered Skimmer Basin Detail)
ID 43.1

32 x 22 x 3
1.5 inch Skimmer
with 0.625 inch Orifice Diameter
4 ft. weir
ID 43.3

72 x 14 x 3
1.5 inch Skimmer
with 1.25 inch Orifice Diameter
4 ft. weir
(See Tiered Skimmer Basin Detail)
ID 43.1

Modified Silt Basin
Type 'B'
75 x 15 x 3
7 ft. weir
(See Tiered Skimmer Basin Detail)
ID 43.4

75 x 15 x 3
1.5 inch Skimmer
with 1.25 inch Orifice Diameter
7 ft. weir
(See Tiered Skimmer Basin Detail)
ID 43.4



MATCH LINE TO SHEET NO. 44
 -Y2- STA. 82+00.00

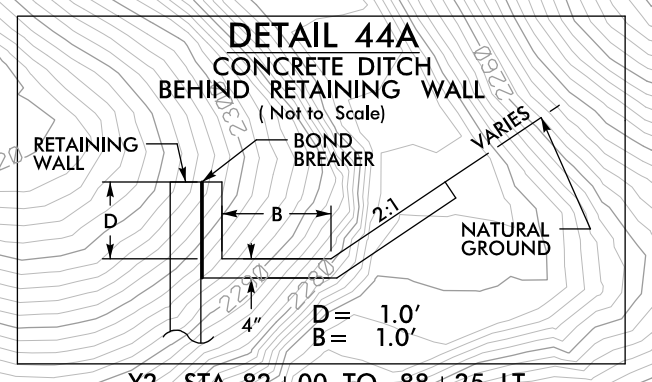
MATCH LINE TO SHEET NO. 42
 -Y2- STA. 68+00.00

ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

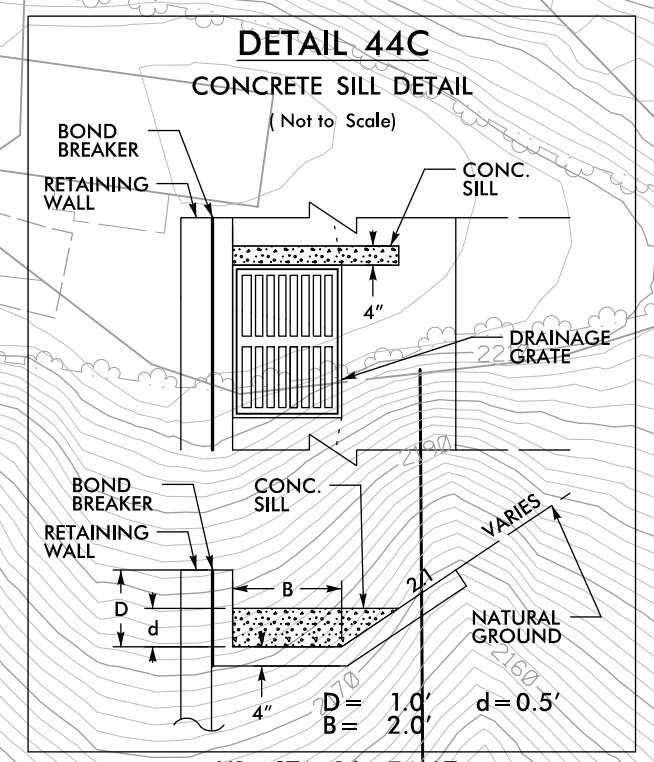
NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B
AND TEMPORARY ROCK SILT CHECKS TYPE - A AT
DRAINAGE OUTLETS.

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 44

MINIMIZE CLEARING
AND GRUBBING
SAFETY FENCE



-Y2- STA. 82+00 TO 88+25 LT
(SEE WALL ENVELOPES FOR DITCH GRADE)



-Y2- STA. 86+74 LT

PROJECT REFERENCE NO. A-0009CC	SHEET NO. EC-13/CONST.44
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
TGS ENGINEERS 201 W. MARION ST-STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	

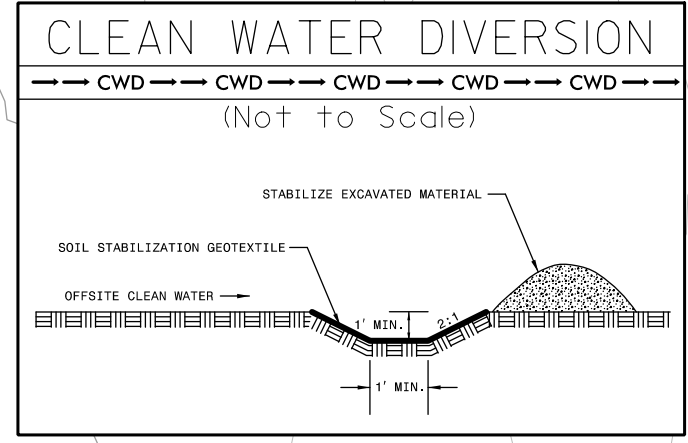
NAD 83/2011

MATCH LINE STA -Y2- 82+00.00
MATCH TO SHEET NO. 43

PROP. RETAINING WALL #35
W/CONCRETE DITCH
BEGIN -Y2- STA. 77+94±
END -Y2- STA. 88+25±

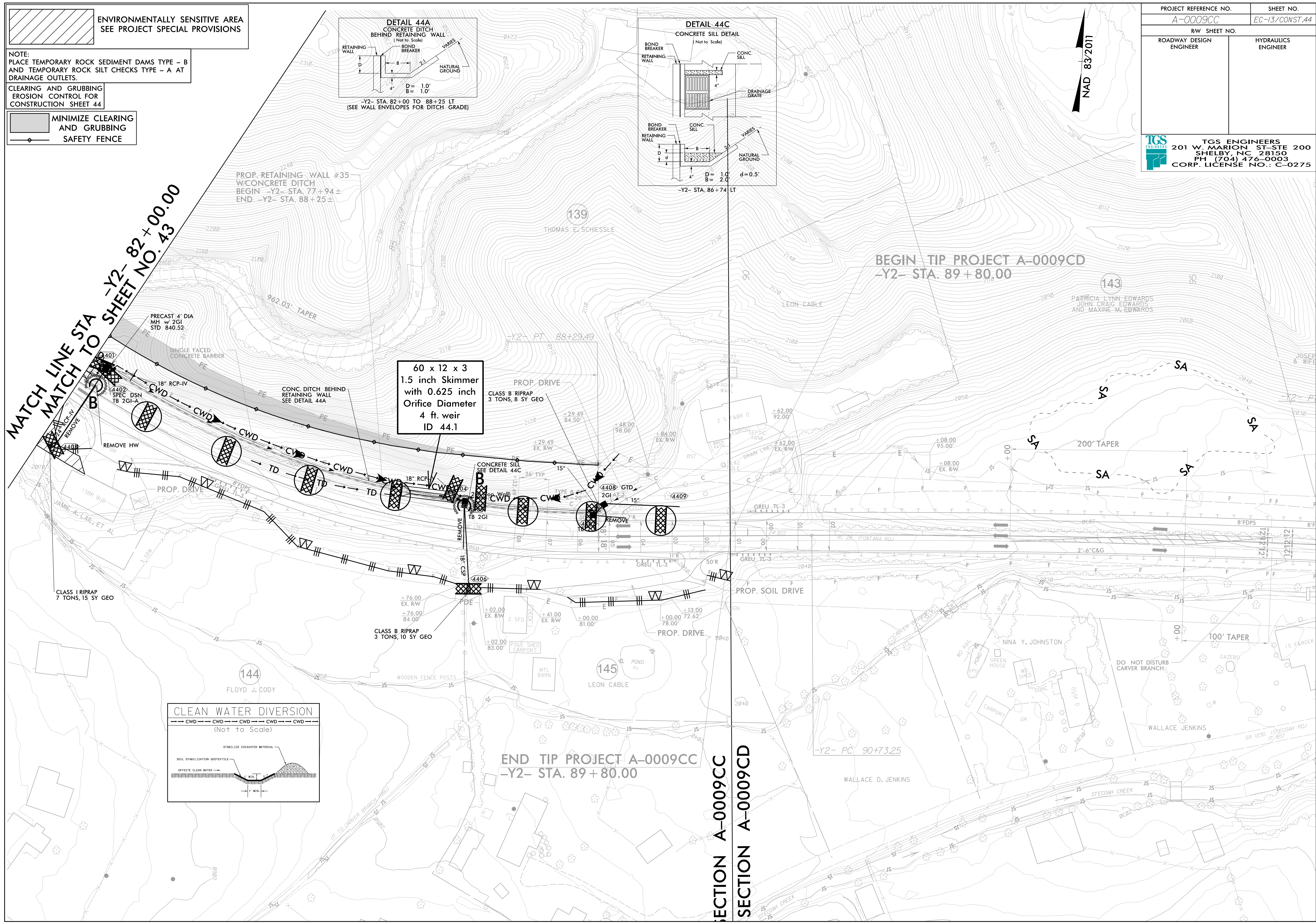
BEGIN TIP PROJECT A-0009CD
-Y2- STA. 89+80.00

60 x 12 x 3
1.5 inch Skimmer
with 0.625 inch
Orifice Diameter
4 ft. weir
ID 44.1



END TIP PROJECT A-0009CC
-Y2- STA. 89+80.00

SECTION A-0009CC
SECTION A-0009CD



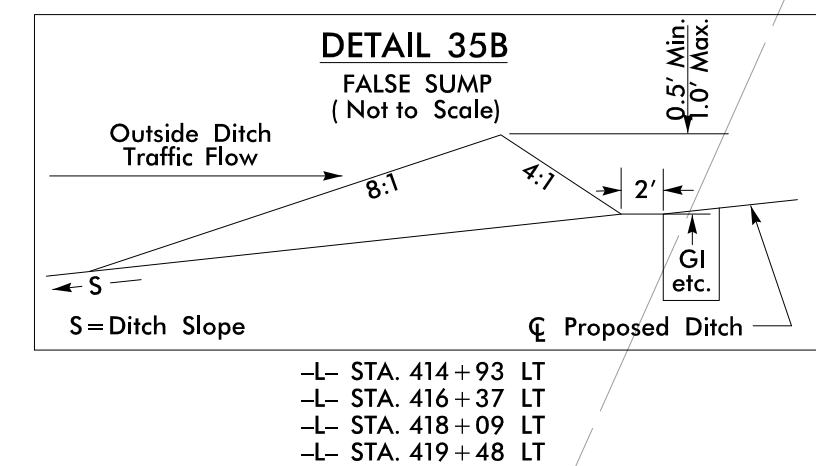
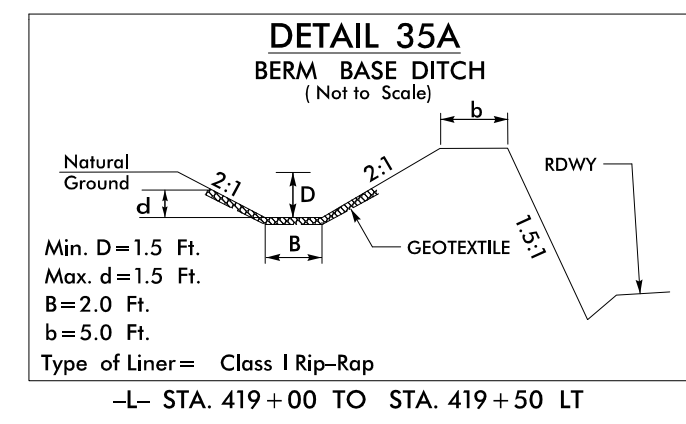
SEEDING AND PLANTING ON US FOREST SERVICE (USFS) PROPERTY WILL BE IMPLEMENTED AS DIRECTED BY THE ENGINEER ON NCDOT RIGHT OF WAY AND ADJOINING USFS PROPERTY. REFER TO THE EROSION CONTROL SPECIAL PROVISIONS.

For Slopes Excavated Greater Than 10 feet Install Matting for Erosion Control on Entire Slope as Work Allows.

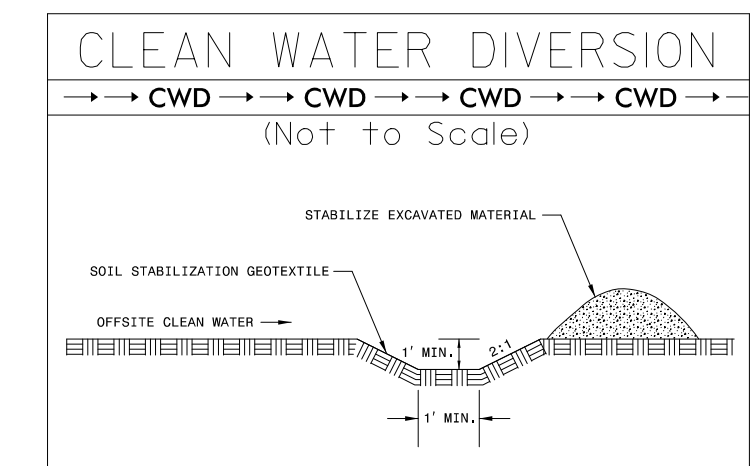
IN LIEU OF ROCK INLET SEDIMENT TRAP TYPE C, UTILIZE FABRIC INSERT INLET PROTECTION DEVICES IN AREAS WHERE WATER MAY POND ON ROAD OPEN TO LIVE TRAFFIC.

Place Matting for Erosion Control on Slopes Adjacent to Permitted Wetlands as Work Allows.

MINIMIZE CLEARING AND GRUBBING SAFETY FENCE

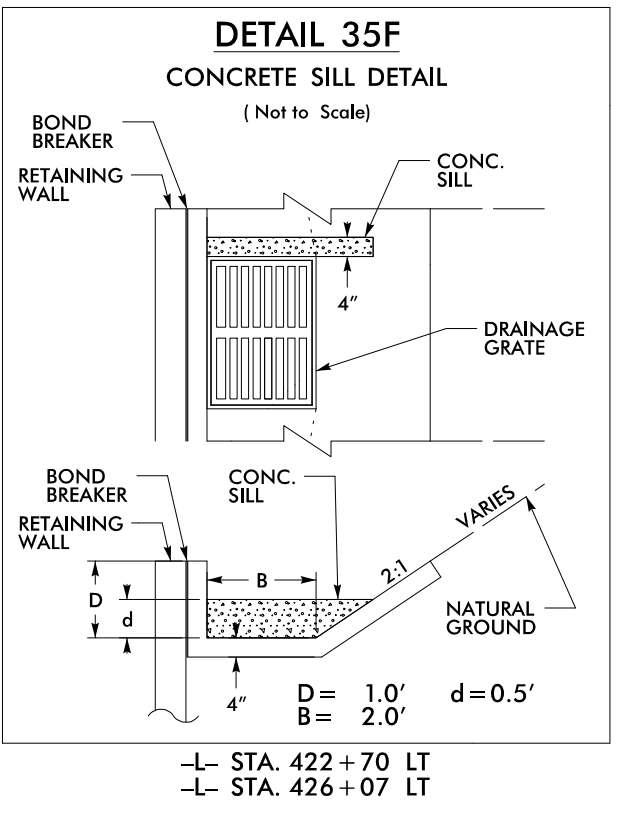
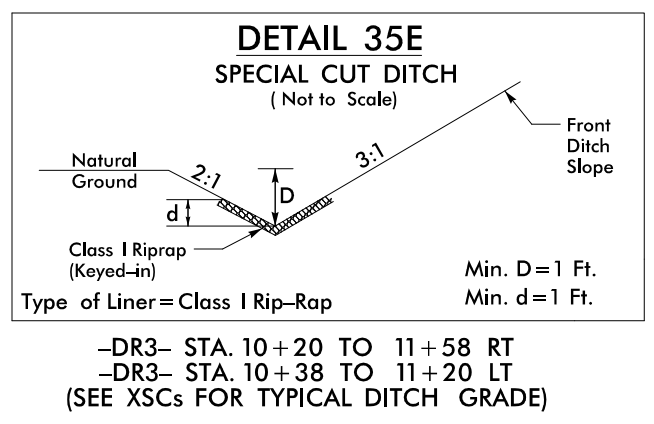
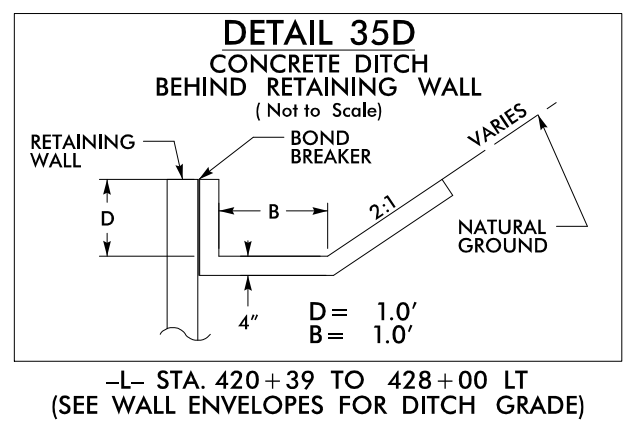
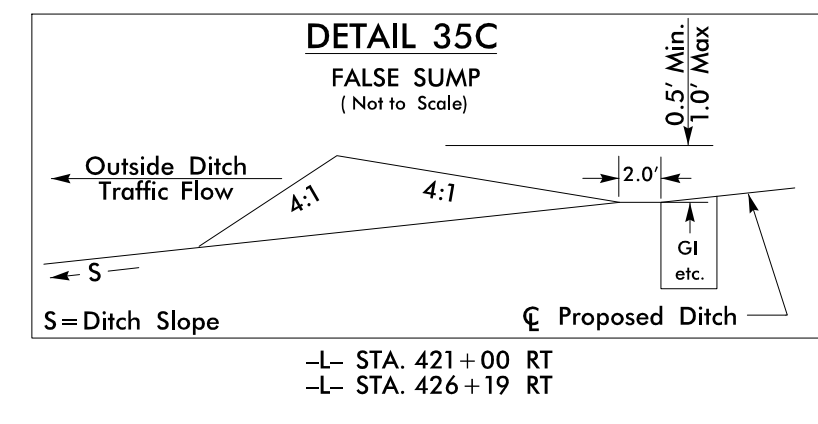
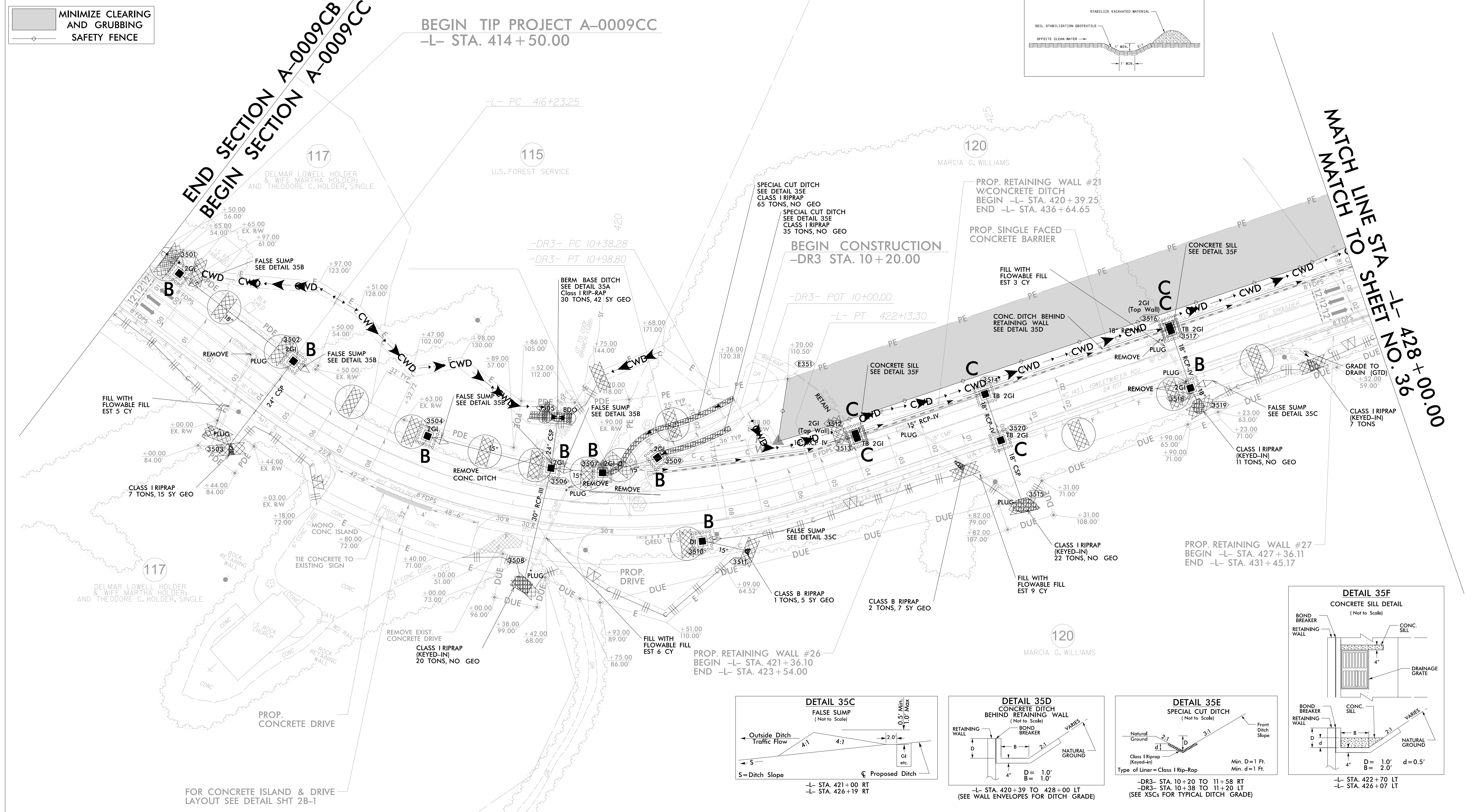


CLEAN WATER DIVERSIONS ARE INDEPENDENT OF OTHER EC DITCH LINES AND TERMINATE INTO A SC-A.



PROJECT REFERENCE NO. A-0009CC	SHEET NO. EC-14/CONST.35
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
TGS ENGINEERS 201 W. MARION ST-STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	

BEGIN TIP PROJECT A-0009CC
-L- STA. 414 + 50.00



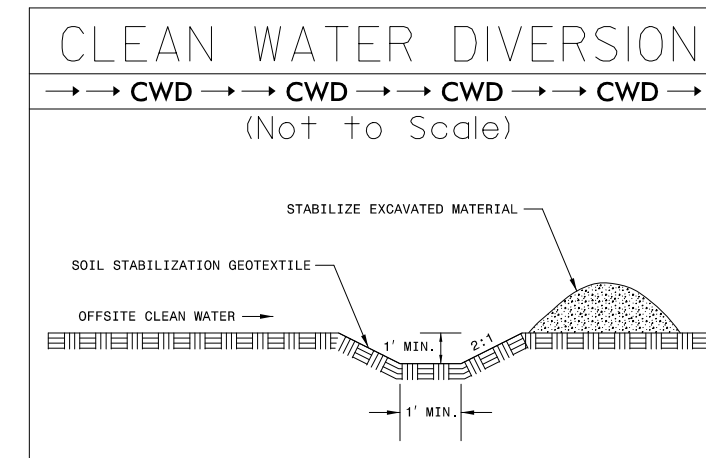
FOR CONCRETE ISLAND & DRIVE LAYOUT SEE DETAIL SHT 2B-1

SEEDING AND PLANTING ON US FOREST SERVICE (USFS) PROPERTY WILL BE IMPLEMENTED AS DIRECTED BY THE ENGINEER ON NCDOT RIGHT OF WAY AND ADJOINING USFS PROPERTY. REFER TO THE EROSION CONTROL SPECIAL PROVISIONS.

IN LIEU OF ROCK INLET SEDIMENT TRAP TYPE C, UTILIZE FABRIC INSERT INLET PROTECTION DEVICES IN AREAS WHERE WATER MAY POND ON ROAD OPEN TO LIVE TRAFFIC.

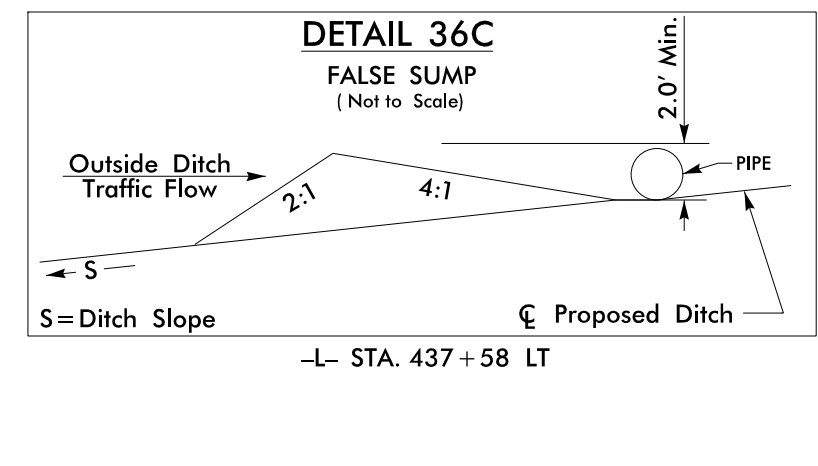
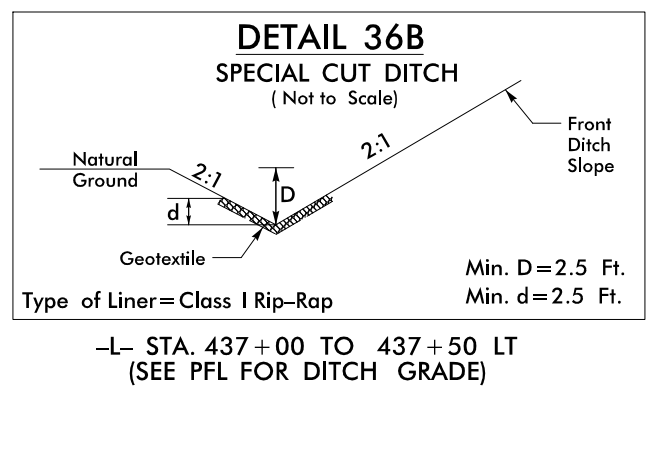
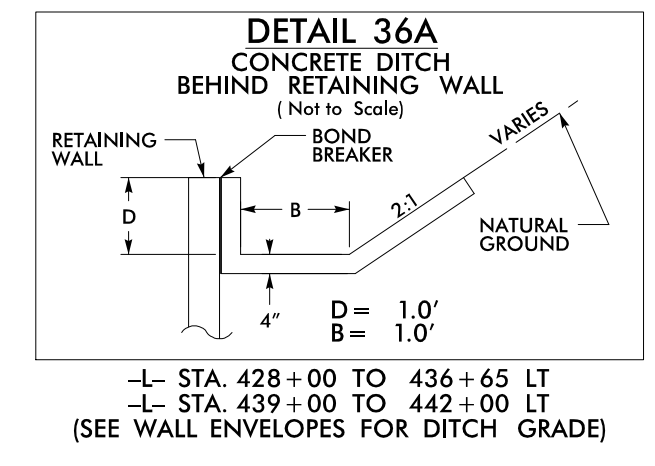
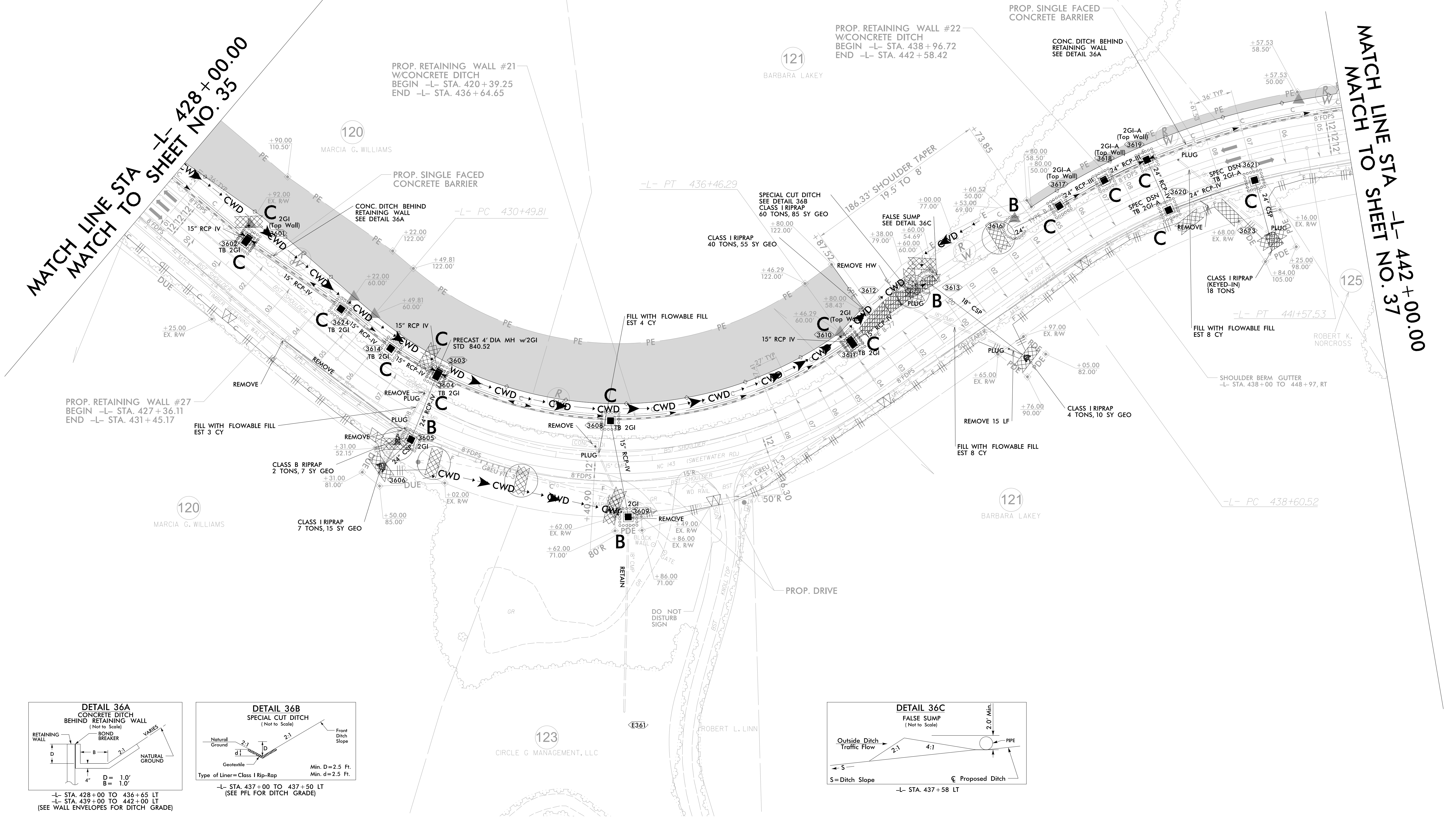
IN LIEU OF ROCK INLET SEDIMENT TRAP TYPE C, UTILIZE FABRIC INSERT INLET PROTECTION DEVICES IN AREAS WHERE WATER MAY POND ON ROAD OPEN TO LIVE TRAFFIC.

MINIMIZE CLEARING AND GRUBBING
SAFETY FENCE



CLEAN WATER DIVERSIONS ARE INDEPENDENT OF OTHER EC DITCH LINES AND TERMINATE INTO A SC-A.

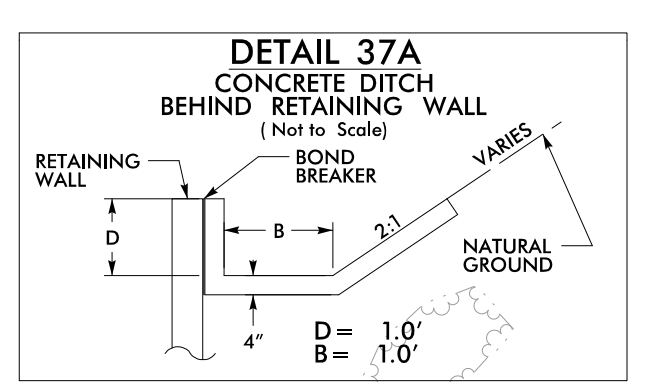
PROJECT REFERENCE NO.	SHEET NO.
A-0009CC	EC-15/CONST.36
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
TGS ENGINEERS 201 W. MARION ST-STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	



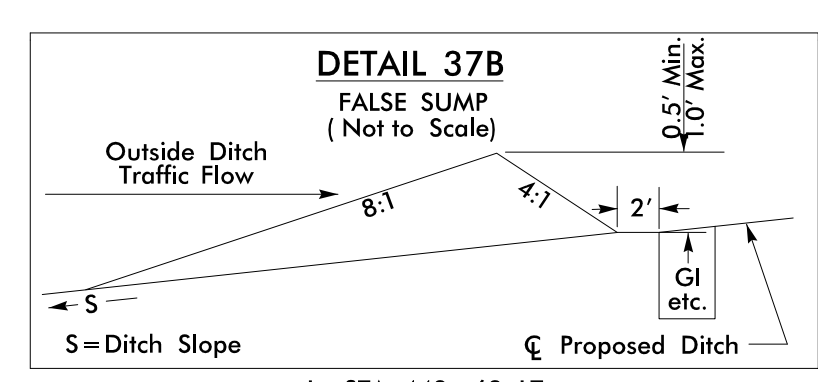
123 CIRCLE G MANAGEMENT, LLC



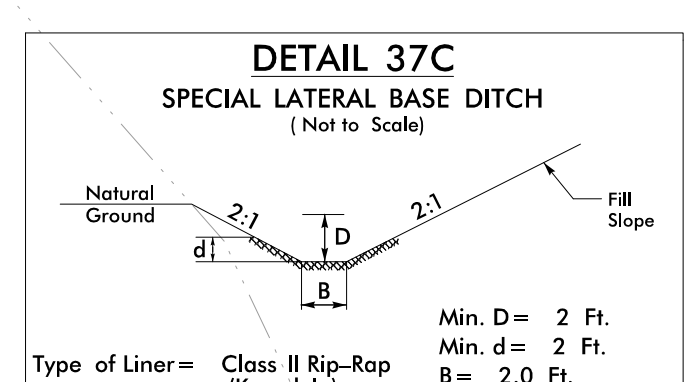
-L- CURVE DATA
 PI Sta 456+91.51
 $\Delta = 49^{\circ}15'00.2" (RT)$
 $D = 9^{\circ}32'57.5"$
 $L = 515.75'$
 $T = 275.02'$
 $R = 600.00'$
 $SE = 0.08$
 $DS = 45 MPH$



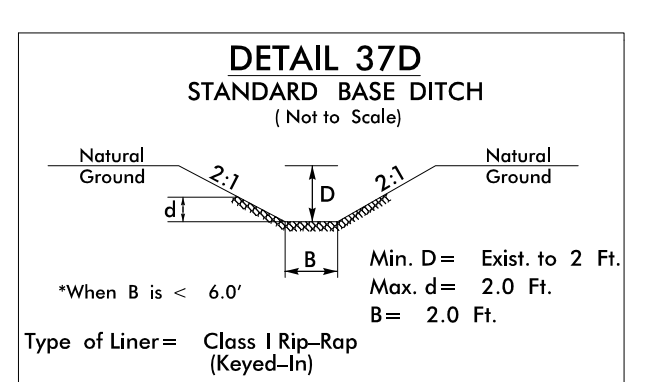
-L- STA. 442+00 TO 442+50 LT
 -L- STA. 448+40 TO 452+25 LT
 -L- STA. 453+25 TO 456+00 LT
 (SEE WALL ENVELOPES FOR DITCH GRADE)



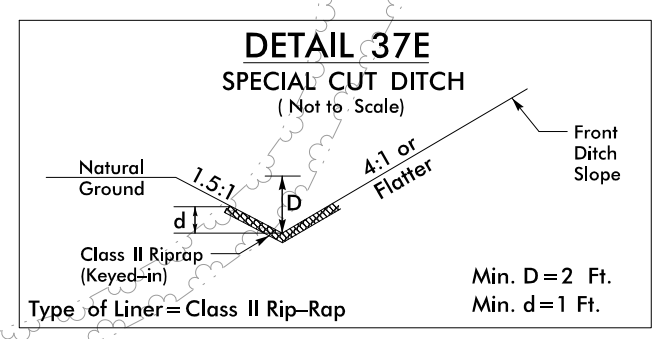
-L- STA. 443+62 LT
 -L- STA. 444+63 LT
 -L- STA. 446+64 LT



-L- STA. 452+50 TO 453+00 LT



-L- STA. 448+20 LT



-L- STA. 442+50 TO 443+50 LT
 (SEE XSCs FOR TYPICAL DITCH GRADE)

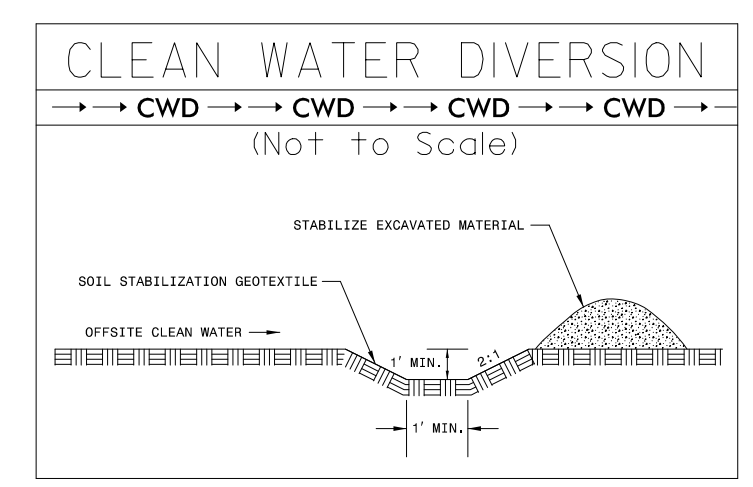
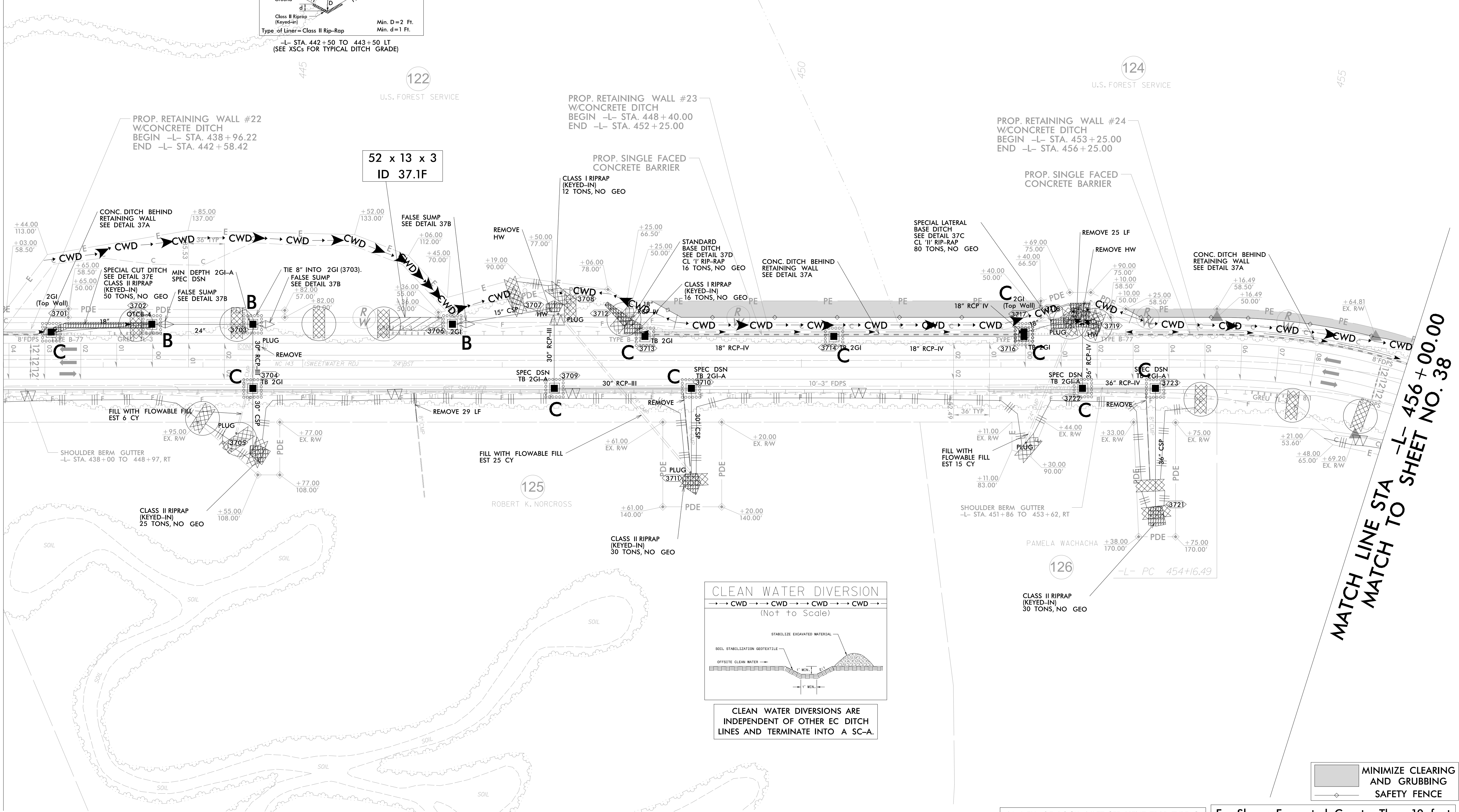


PROJECT REFERENCE NO. A-0009CC	SHEET NO. EC-16/CONST.37
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	

TGS ENGINEERS
 201 W. MARION ST-STE 200
 SHELBY, NC 28150
 PH (704) 476-0003
 CORP. LICENSE NO.: C-0275

MATCH LINE STA -L- 442+00.00
MATCH TO SHEET NO. 36

MATCH LINE STA -L- 456+00.00
MATCH TO SHEET NO. 38



CLEAN WATER DIVERSIONS ARE INDEPENDENT OF OTHER EC DITCH LINES AND TERMINATE INTO A SC-A.

MINIMIZE CLEARING AND GRUBBING
SAFETY FENCE

SEEDING AND PLANTING ON US FOREST SERVICE (USFS) PROPERTY WILL BE IMPLEMENTED AS DIRECTED BY THE ENGINEER ON NCDOT RIGHT OF WAY AND ADJOINING USFS PROPERTY. REFER TO THE EROSION CONTROL SPECIAL PROVISIONS.

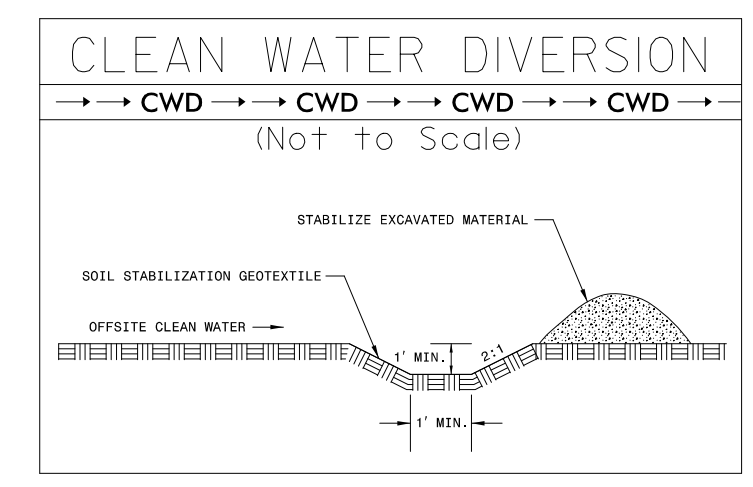
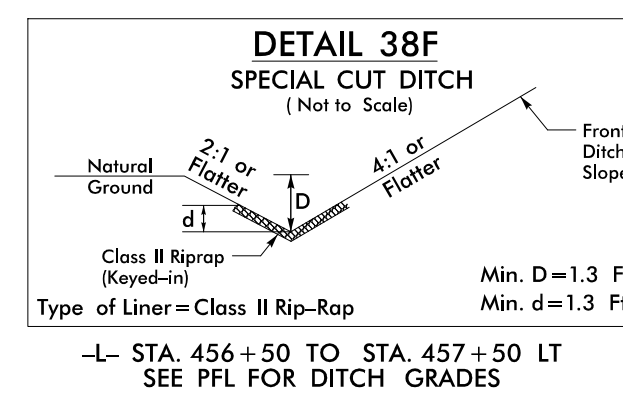
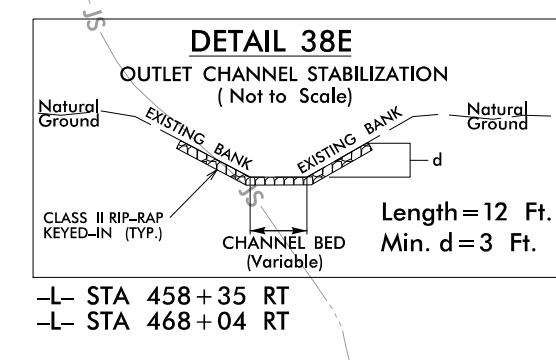
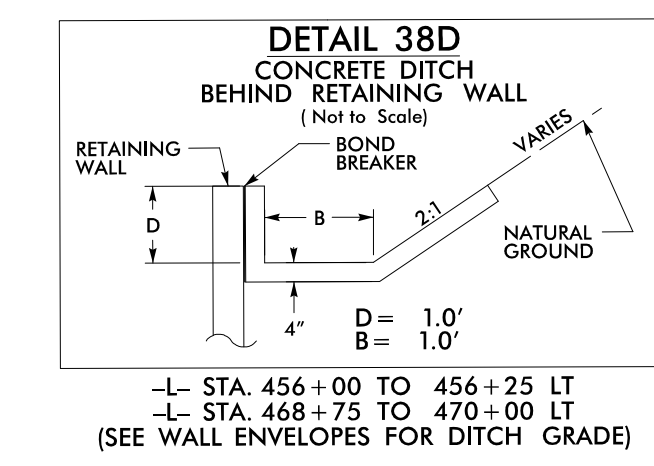
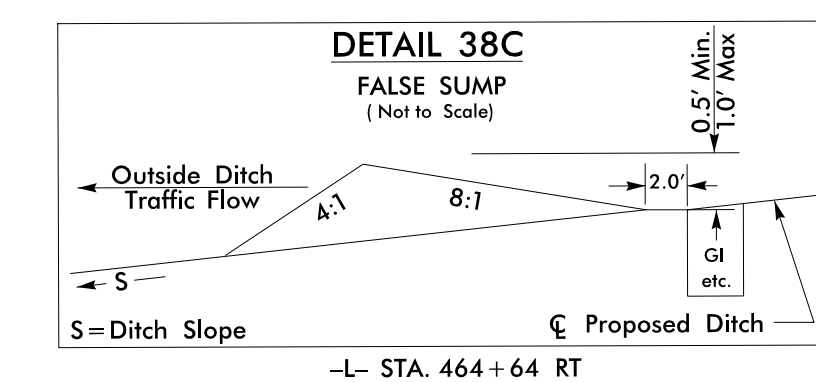
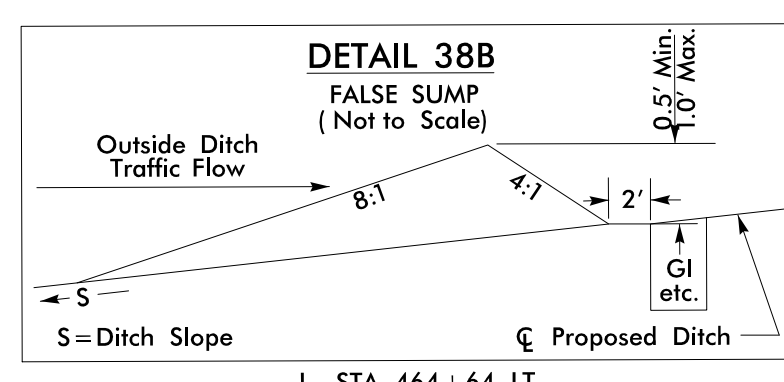
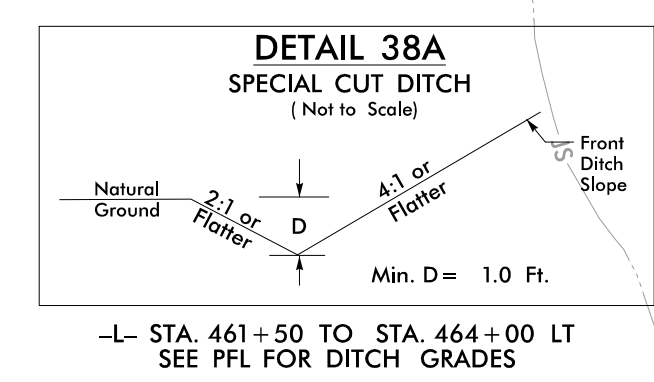
IN LIEU OF ROCK INLET SEDIMENT TRAP TYPE C, UTILIZE FABRIC INSERT INLET PROTECTION DEVICES IN AREAS WHERE WATER MAY POND ON ROAD OPEN TO LIVE TRAFFIC.

For Slopes Excavated Greater Than 10 feet Install Matting for Erosion Control on Entire Slope as Work Allows.

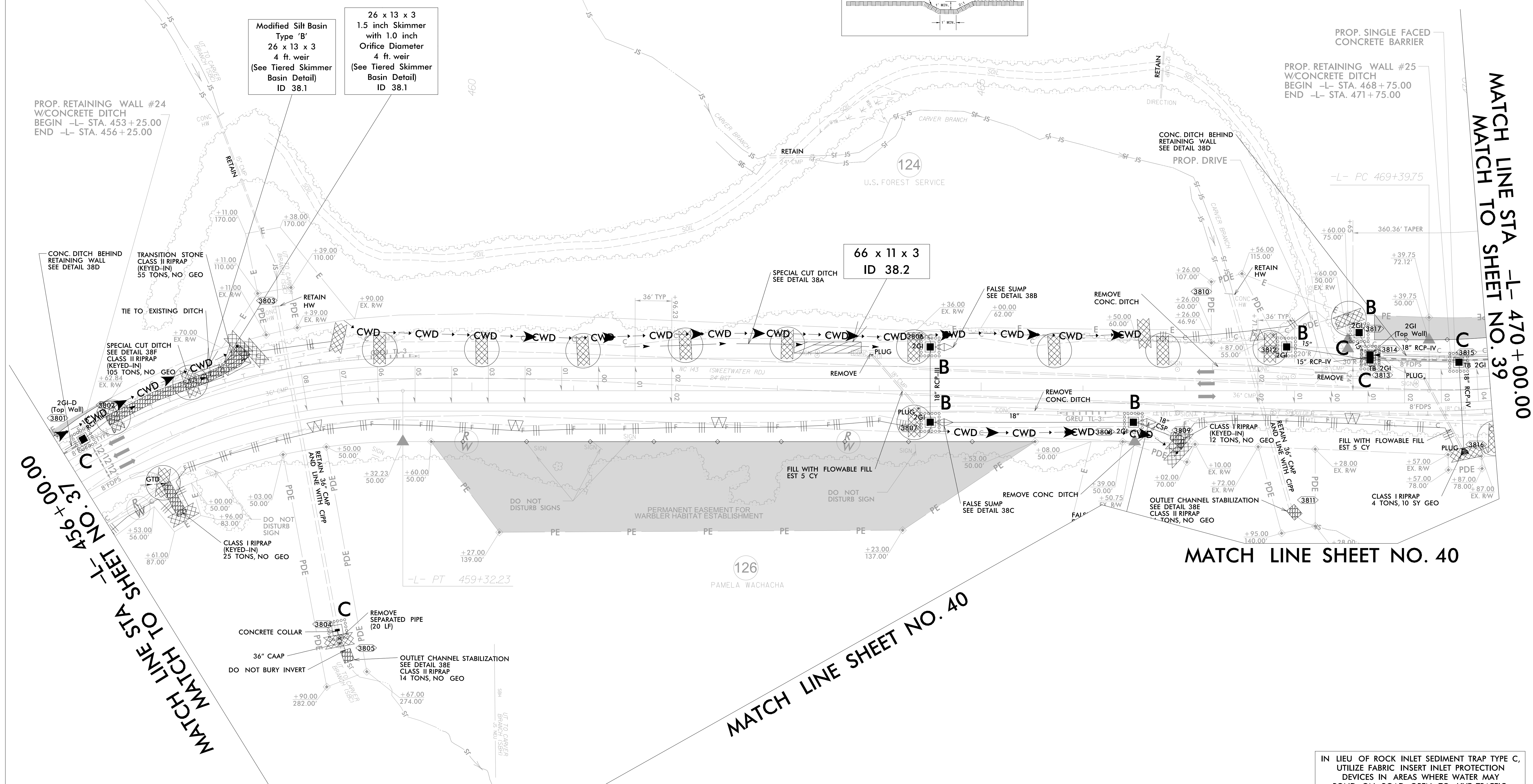
-L- CURVE DATA

PI Sta 456+91.51	PI Sta 470+84.26
$\Delta = 49^{\circ} 15' 00.2''$ (RT)	$\Delta = 21^{\circ} 31' 55.6''$ (LT)
$D = 9^{\circ} 32' 57.5''$	$D = 7^{\circ} 32' 20.1''$
$L = 515.75'$	$L = 285.61'$
$T = 275.02'$	$T = 144.51'$
$R = 600.00'$	$R = 760.00'$
$SE = 0.08$	$SE = 0.04$
$DS = 45$ MPH	$DS = 45$ MPH

CLEAN WATER DIVERSIONS ARE INDEPENDENT OF OTHER EC DITCH LINES AND TERMINATE INTO A SC-A.



PROJECT REFERENCE NO. A-0009CC	SHEET NO. EC-17/CONST.38
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
TGS ENGINEERS 201 W. MARION ST. STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	



MATCH LINE STA -L- 456+00.00
MATCH TO SHEET NO. 37

MATCH LINE STA -L- 470+00.00
MATCH TO SHEET NO. 39

MATCH LINE SHEET NO. 40

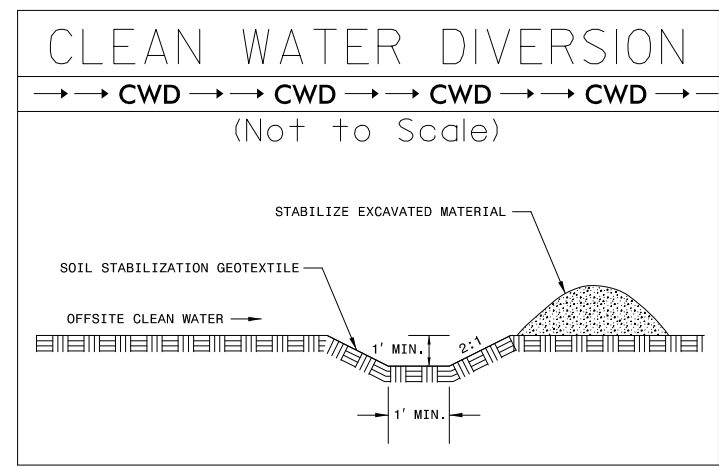
MATCH LINE SHEET NO. 40

MINIMIZE CLEARING AND GRUBBING
SAFETY FENCE

SEEDING AND PLANTING ON US FOREST SERVICE (USFS) PROPERTY WILL BE IMPLEMENTED AS DIRECTED BY THE ENGINEER ON NCDOT RIGHT OF WAY AND ADJOINING USFS PROPERTY. REFER TO THE EROSION CONTROL SPECIAL PROVISIONS.

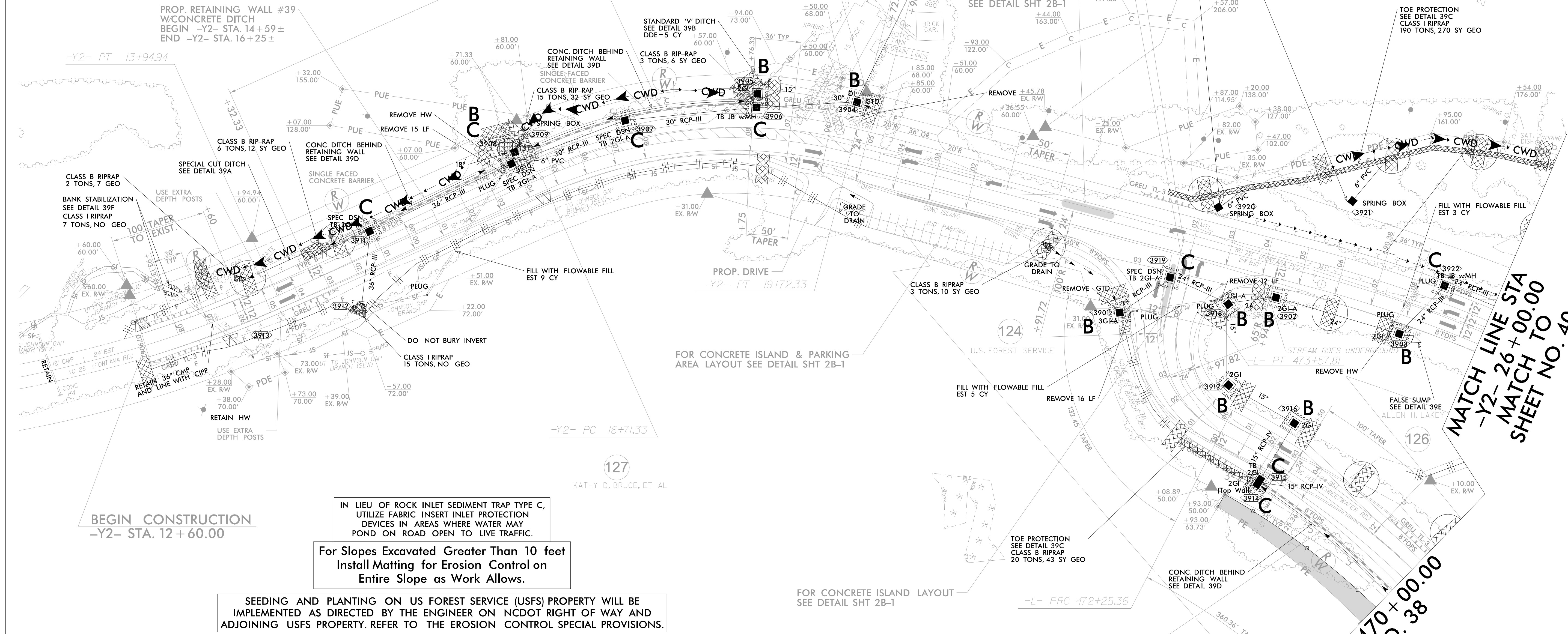
IN LIEU OF ROCK INLET SEDIMENT TRAP TYPE C, UTILIZE FABRIC INSERT INLET PROTECTION DEVICES IN AREAS WHERE WATER MAY POND ON ROAD OPEN TO LIVE TRAFFIC.

-Y2- CURVE DATA		-L- CURVE DATA	
PI Sta 11+99.45	PI Sta 18+27.84	PI Sta 25+91.41	PI Sta 470+84.26
$\Delta = 19^{\circ} 44' 48.4" (LT)$	$\Delta = 38^{\circ} 45' 19.5" (RT)$	$\Delta = 15^{\circ} 17' 06.5" (RT)$	$\Delta = 75^{\circ} 53' 24.9" (RT)$
$D = 5^{\circ} 00' 00.0"$	$D = 12^{\circ} 52' 31.8"$	$D = 4^{\circ} 46' 28.7"$	$D = 7^{\circ} 32' 20.1"$
$L = 394.94'$	$L = 301.00'$	$L = 320.13'$	$L = 285.61'$
$T = 199.45'$	$T = 156.51'$	$T = 161.02'$	$T = 144.51'$
$R = 1145.92'$	$R = 445.00'$	$R = 1200.00'$	$R = 760.00'$
$SE = 0.08$	$SE = 0.08$	$SE = 0.08$	$SE = 0.03$
$DS = 55 \text{ MPH}$	$DS = 40 \text{ MPH}$	$DS = 60 \text{ MPH}$	$DS = 45 \text{ MPH}$



CLEAN WATER DIVERSIONS ARE INDEPENDENT OF OTHER EC DITCH LINES AND TERMINATE INTO A SC-A.

PROJECT REFERENCE NO. A-0009CC	SHEET NO. EC-18/CONST.39
RW SHEET NO. ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
TGS ENGINEERS 201 W. MARION ST-STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	

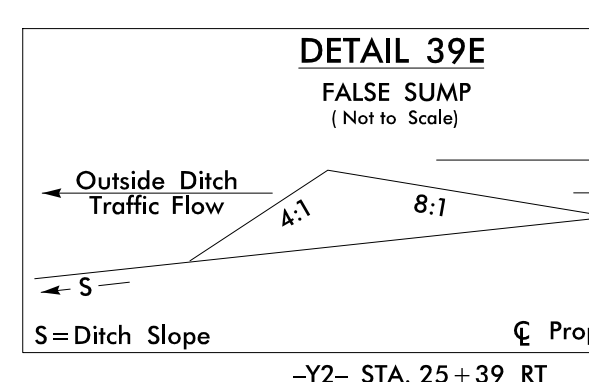
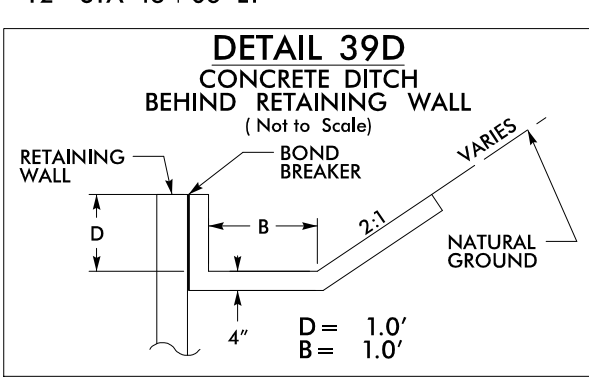
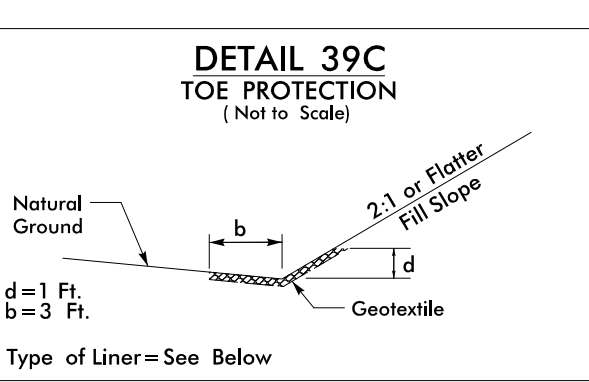
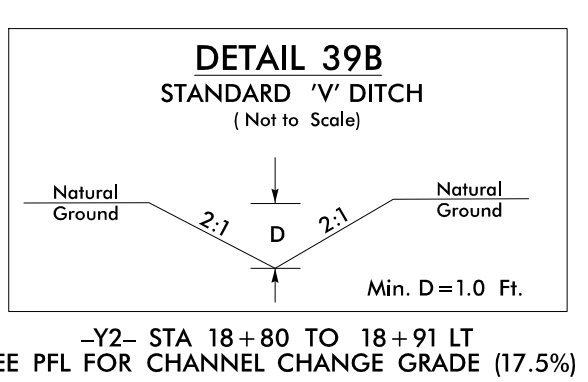
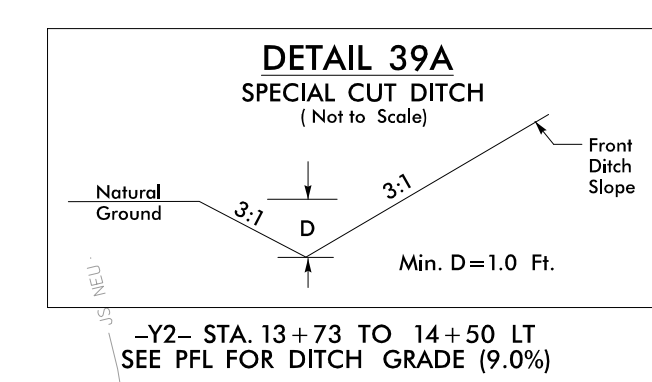


BEGIN CONSTRUCTION
-Y2- STA. 12+60.00

IN LIEU OF ROCK INLET SEDIMENT TRAP TYPE C, UTILIZE FABRIC INSERT INLET PROTECTION DEVICES IN AREAS WHERE WATER MAY POND ON ROAD OPEN TO LIVE TRAFFIC.

For Slopes Excavated Greater Than 10 feet Install Matting for Erosion Control on Entire Slope as Work Allows.

SEEDING AND PLANTING ON US FOREST SERVICE (USFS) PROPERTY WILL BE IMPLEMENTED AS DIRECTED BY THE ENGINEER ON NCDOT RIGHT OF WAY AND ADJOINING USFS PROPERTY. REFER TO THE EROSION CONTROL SPECIAL PROVISIONS.



MATCH LINE STA -Y2- 26+00.00
MATCH TO SHEET NO. 40

MATCH LINE STA -L- 470+00.00
MATCH TO SHEET NO. 38

MINIMIZE CLEARING AND GRUBBING
SAFETY FENCE

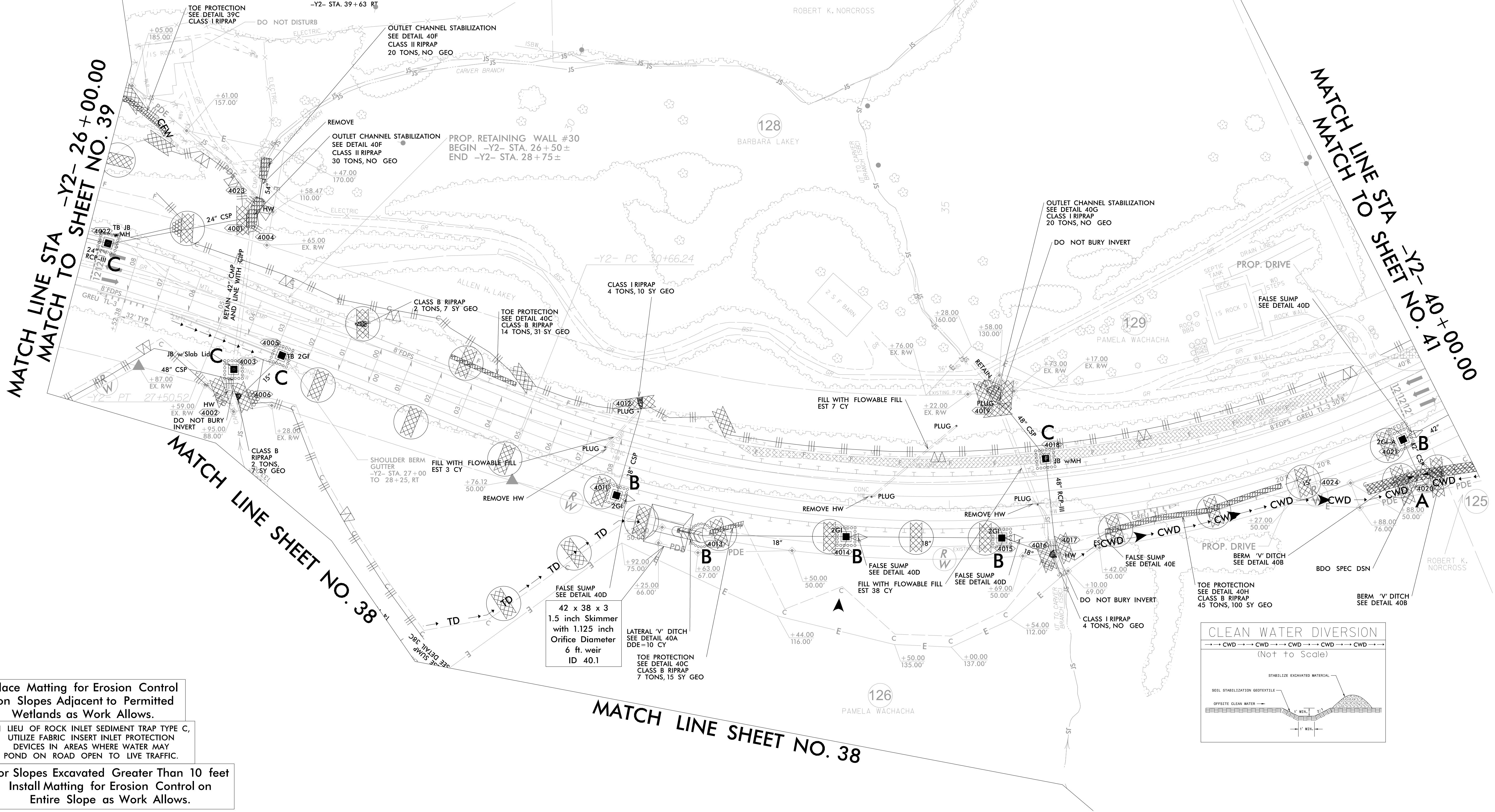
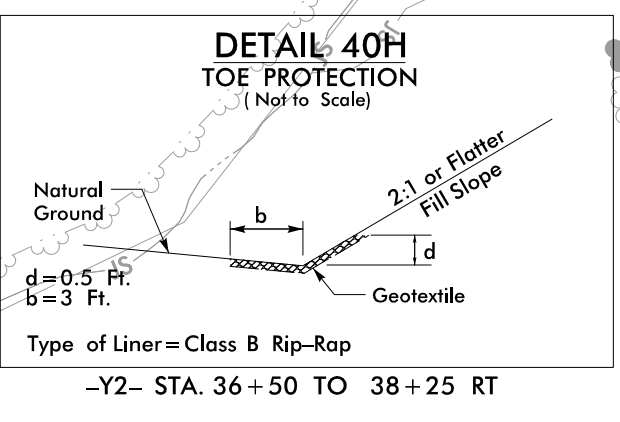
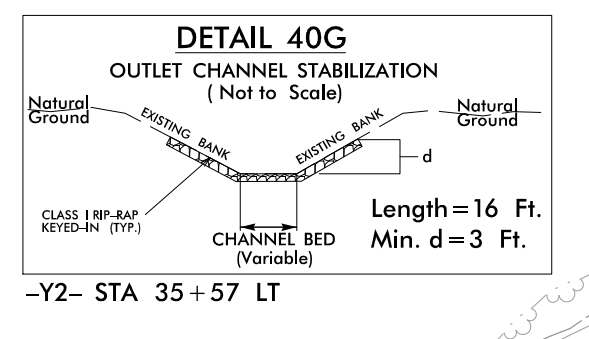
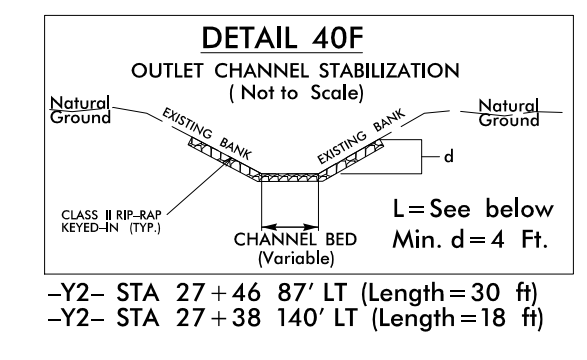
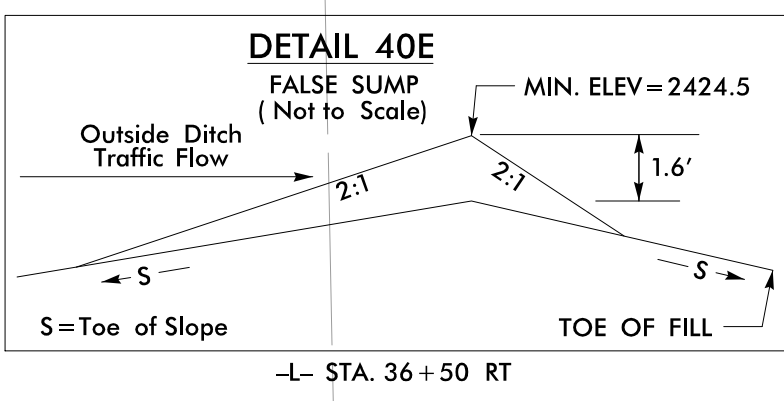
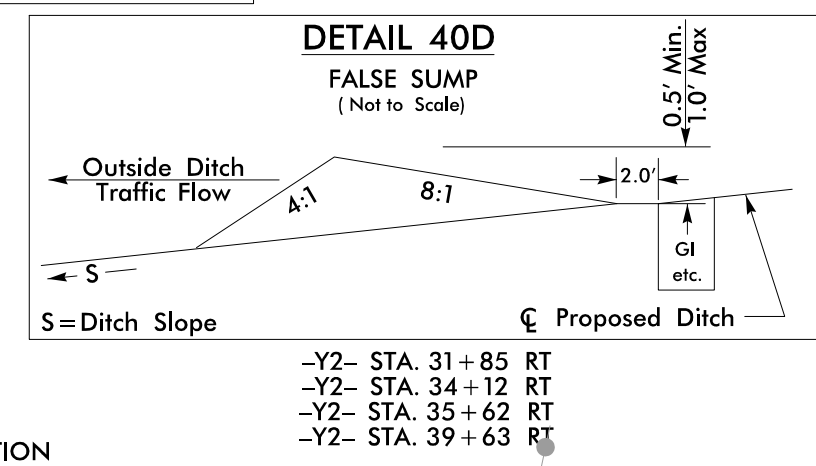
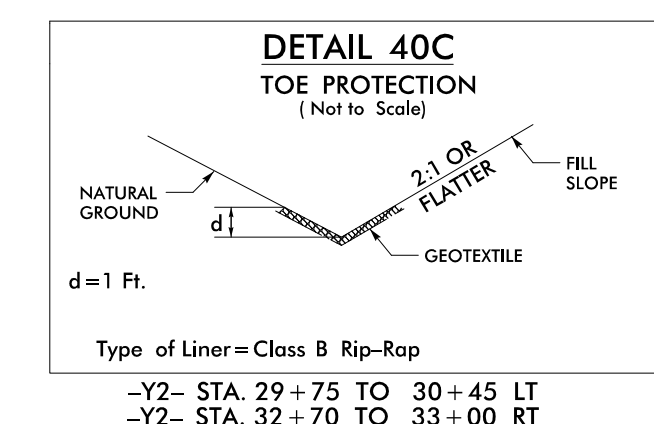
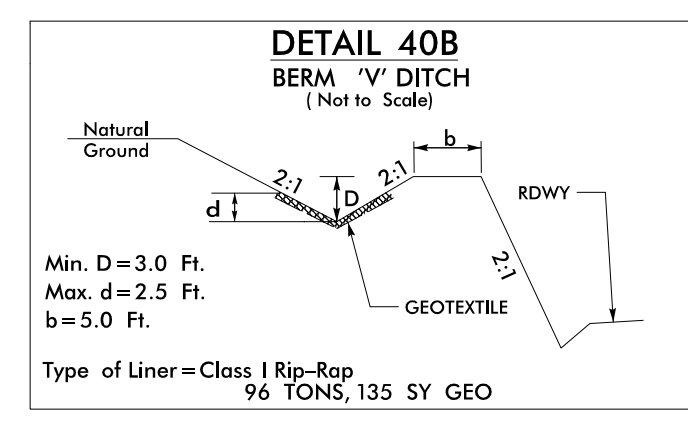
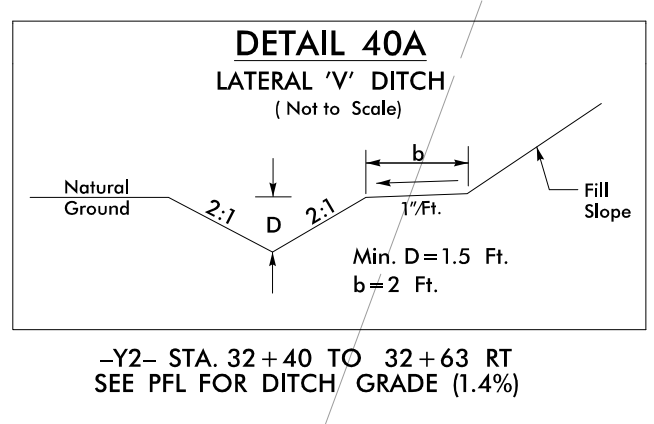
NAD 83 2011

PROJECT REFERENCE NO. A-0009CC	SHEET NO. EC-19/CONST.40
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
TGS ENGINEERS 201 W. MARION ST-STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	

1/2" CURVE DATA

PI Sta 25+91.41 Δ = 15°17'06.5" (RT) D = 4°46'28.7" L = 3201.3' T = 161.02' SE = 1,200.00' DS = 60 MPH	PI Sta 44+39.36 Δ = 102°05'50.9" (LT) D = 5°09'42.4" L = 1,977.95' T = 1,373.12' R = 1,110.00' SE = 0.08 DS = 55 MPH
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CLEAN WATER DIVERSIONS ARE INDEPENDENT OF OTHER EC DITCH LINES AND TERMINATE INTO A SC-A.



Place Matting for Erosion Control on Slopes Adjacent to Permitted Wetlands as Work Allows.

IN LIEU OF ROCK INLET SEDIMENT TRAP TYPE C, UTILIZE FABRIC INSERT INLET PROTECTION DEVICES IN AREAS WHERE WATER MAY POND ON ROAD OPEN TO LIVE TRAFFIC.

For Slopes Excavated Greater Than 10 feet Install Matting for Erosion Control on Entire Slope as Work Allows.

