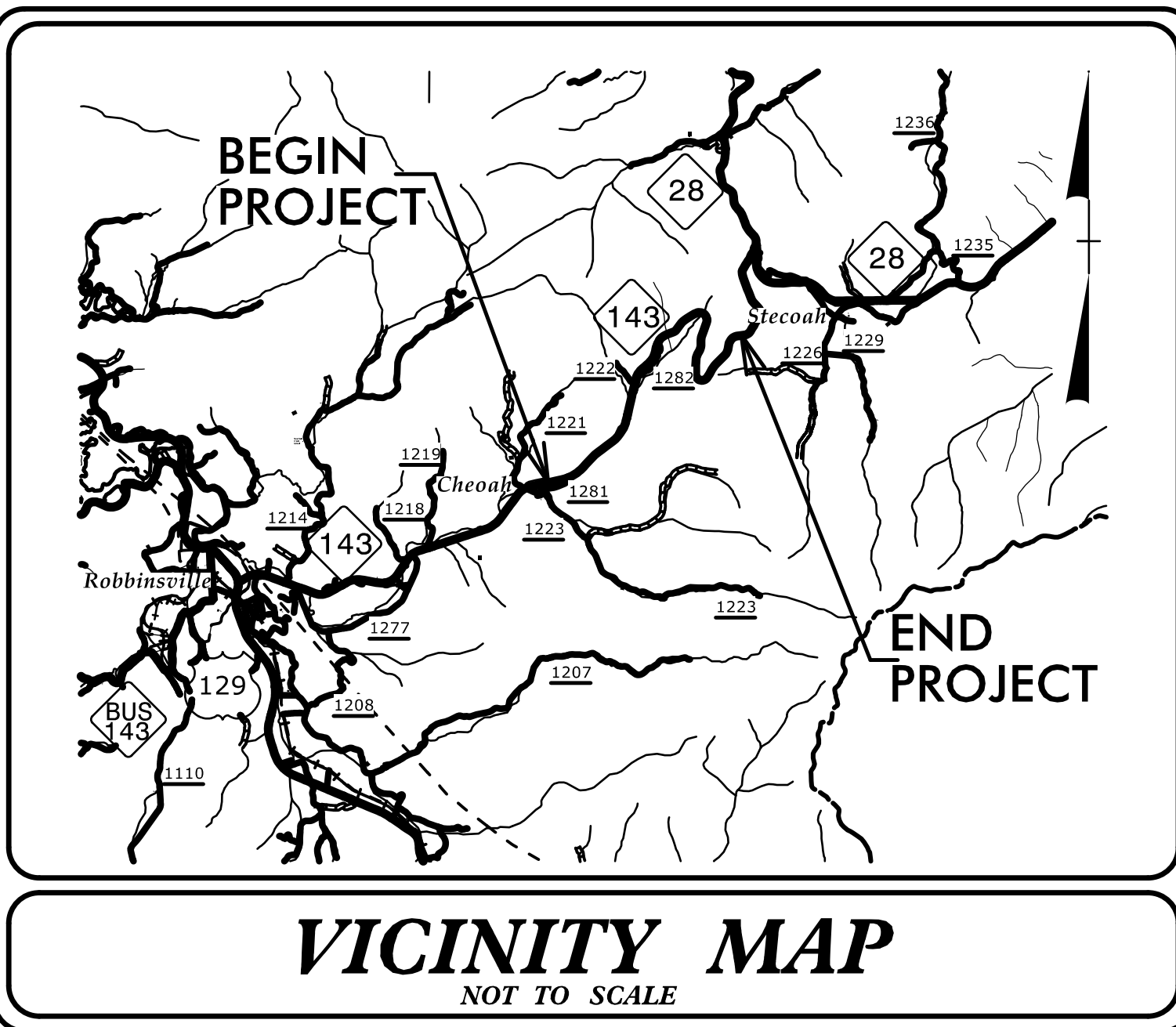


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TIP PROJECT: A-0009CB

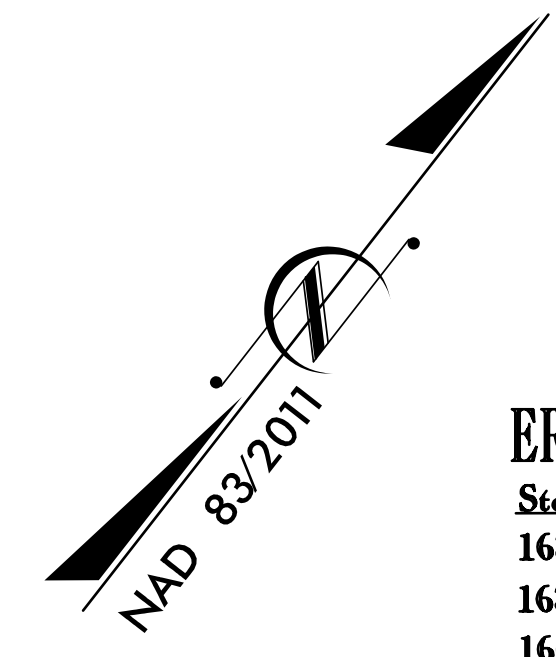


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

GRAHAM COUNTY

LOCATION: UPGRADE NC 143 FROM SR 1223 (BEECH CREEK RD) TO 0.5 MILES NORTH OF APPALACHIAN TRAIL

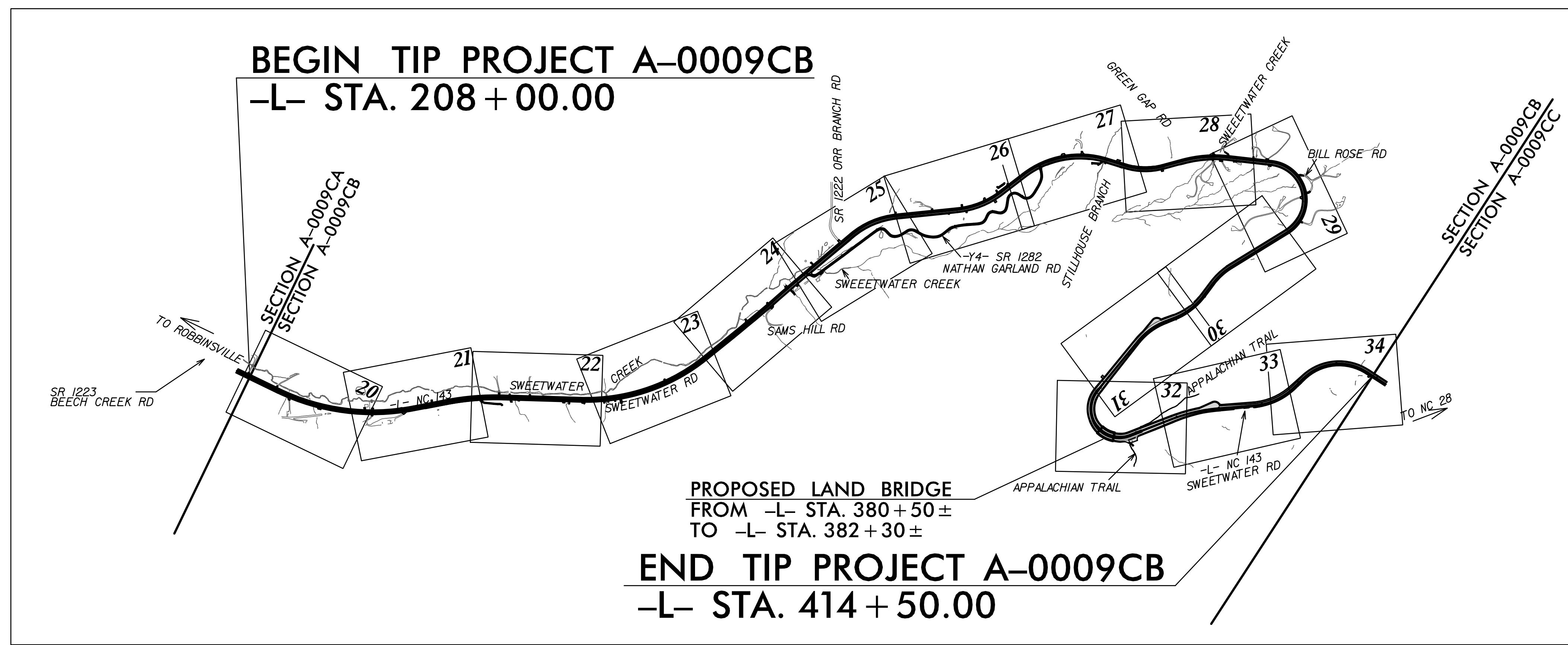
TYPE OF WORK: GRADING, PAVING, DRAINAGE, RETAINING WALLS, AND STRUCTURE



STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	A-0009CB	EC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
32572.1.14	APD-0074(178)	PE	
32572.1.14	APD-0074(178)	ROW, UTIL.	
32572.1.14	APD-0074(178)	CONST.	

EROSION AND SEDIMENT CONTROL MEASURES

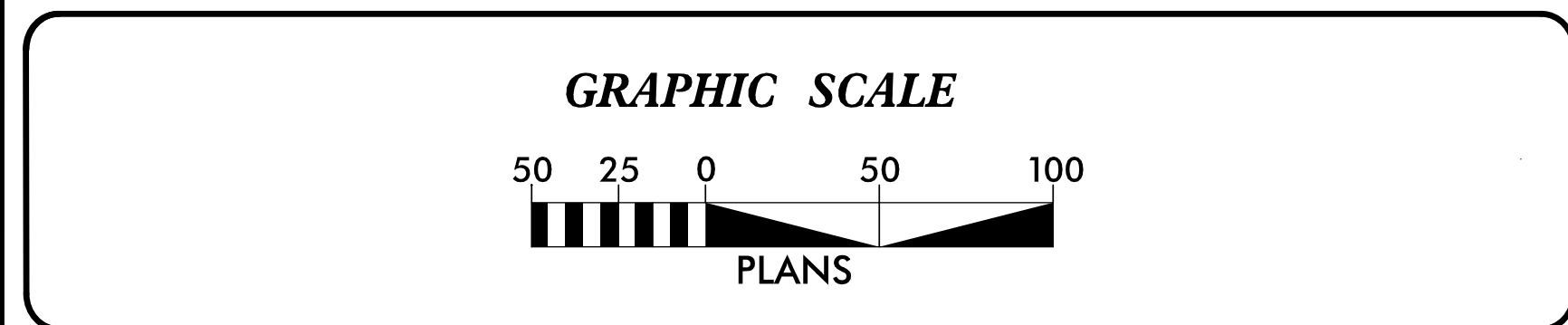
Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	TD
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	III III III
1606.01	Special Sediment Control Fence	△△△△△
1622.01	Temporary Berms and Slope Drains	— TD —
1630.02	Silt Basin Type B	▨
1633.01	Temporary Rock Silt Check Type-A	⊗
	Temporary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



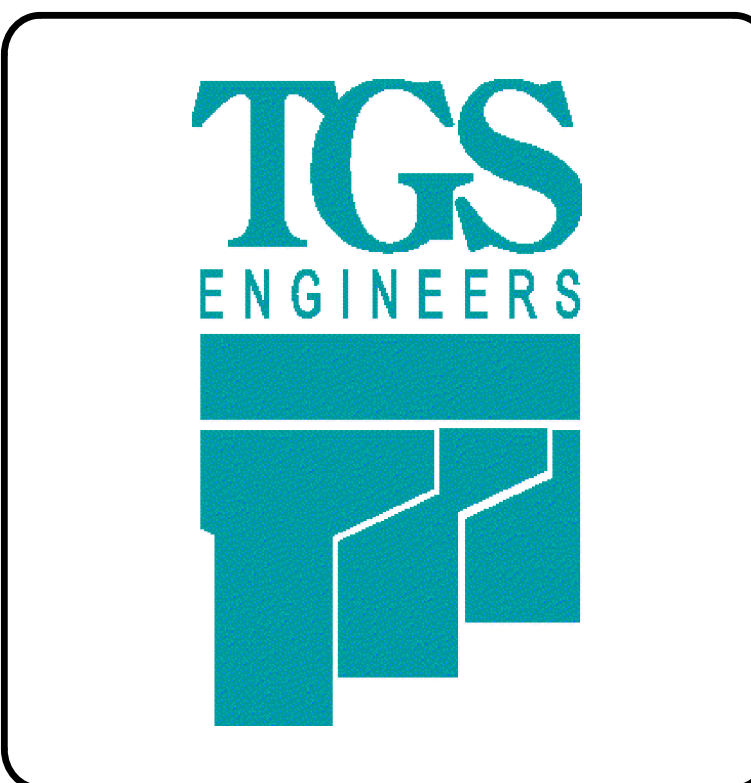
THIS PROJECT CONTAINS EROSION CONTROL PLANS FOR CLEARING AND GRUBBING PHASE OF CONSTRUCTION.

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.

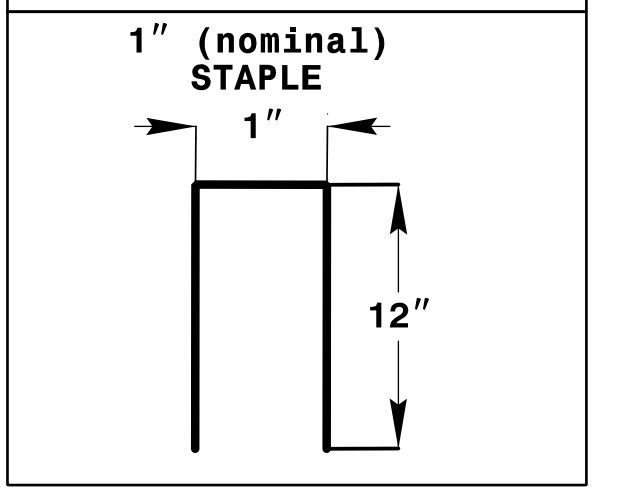
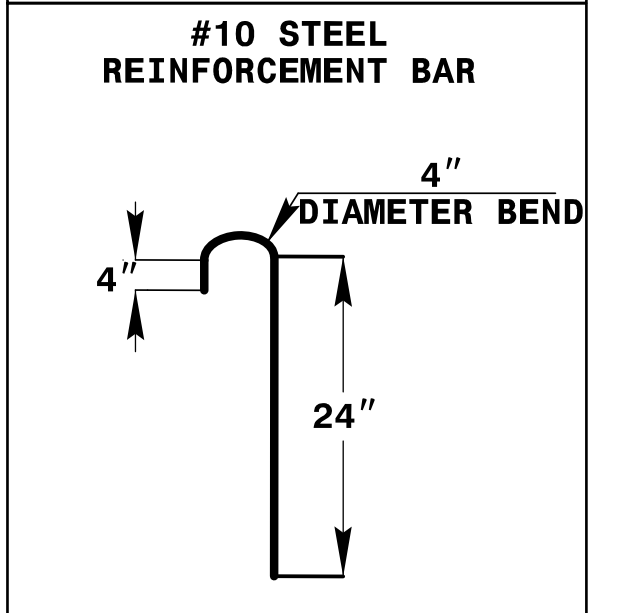
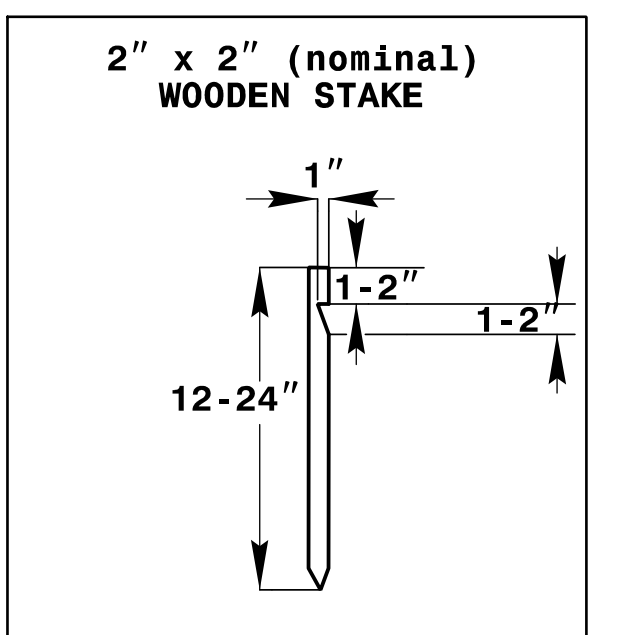
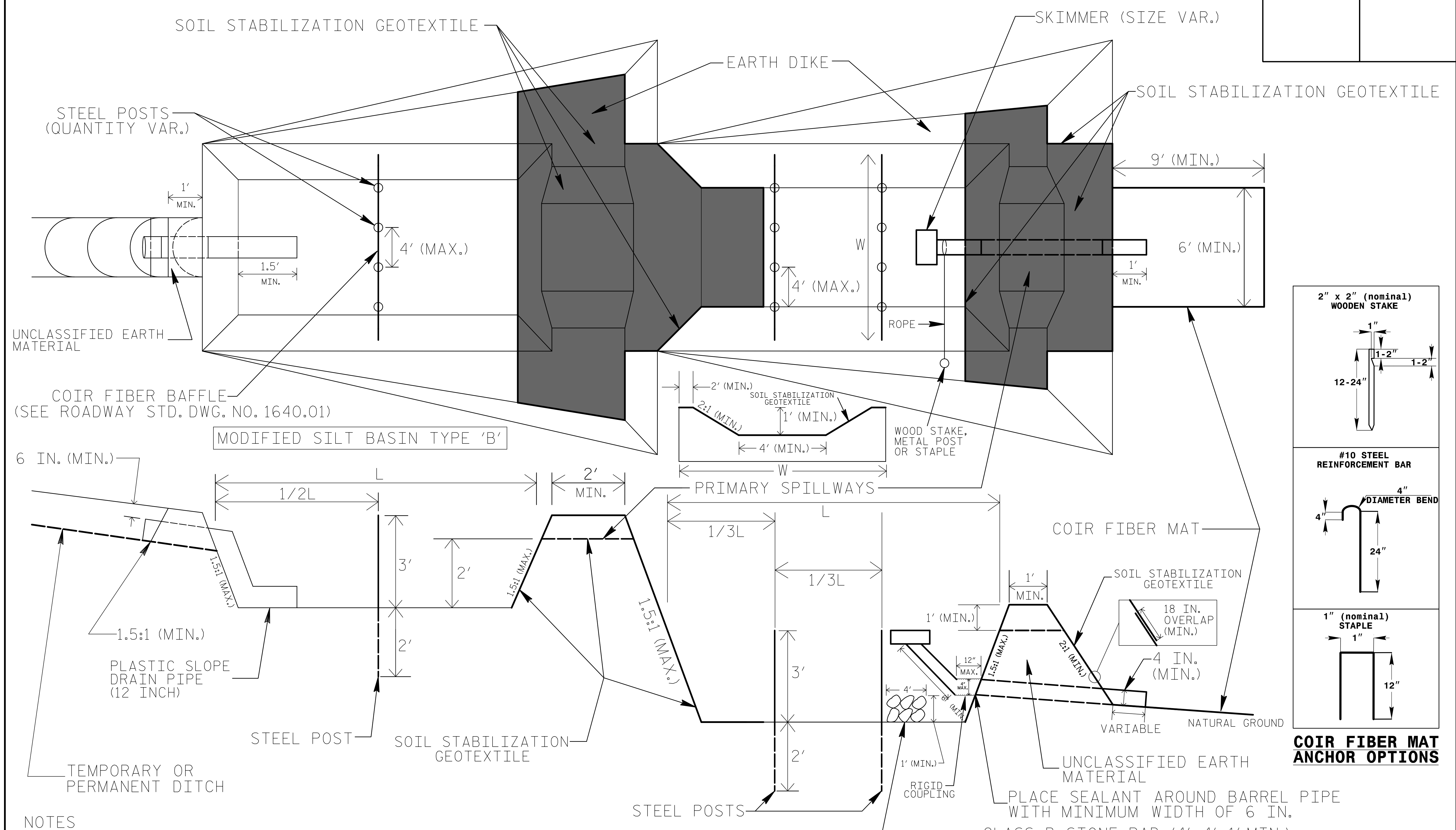
Roadway Standard Drawings

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. <i>A-0009CB</i>	SHEET NO. <i>EC-2A</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

TIERED SKIMMER BASIN DETAIL



COIR FIBER MAT ANCHOR OPTIONS

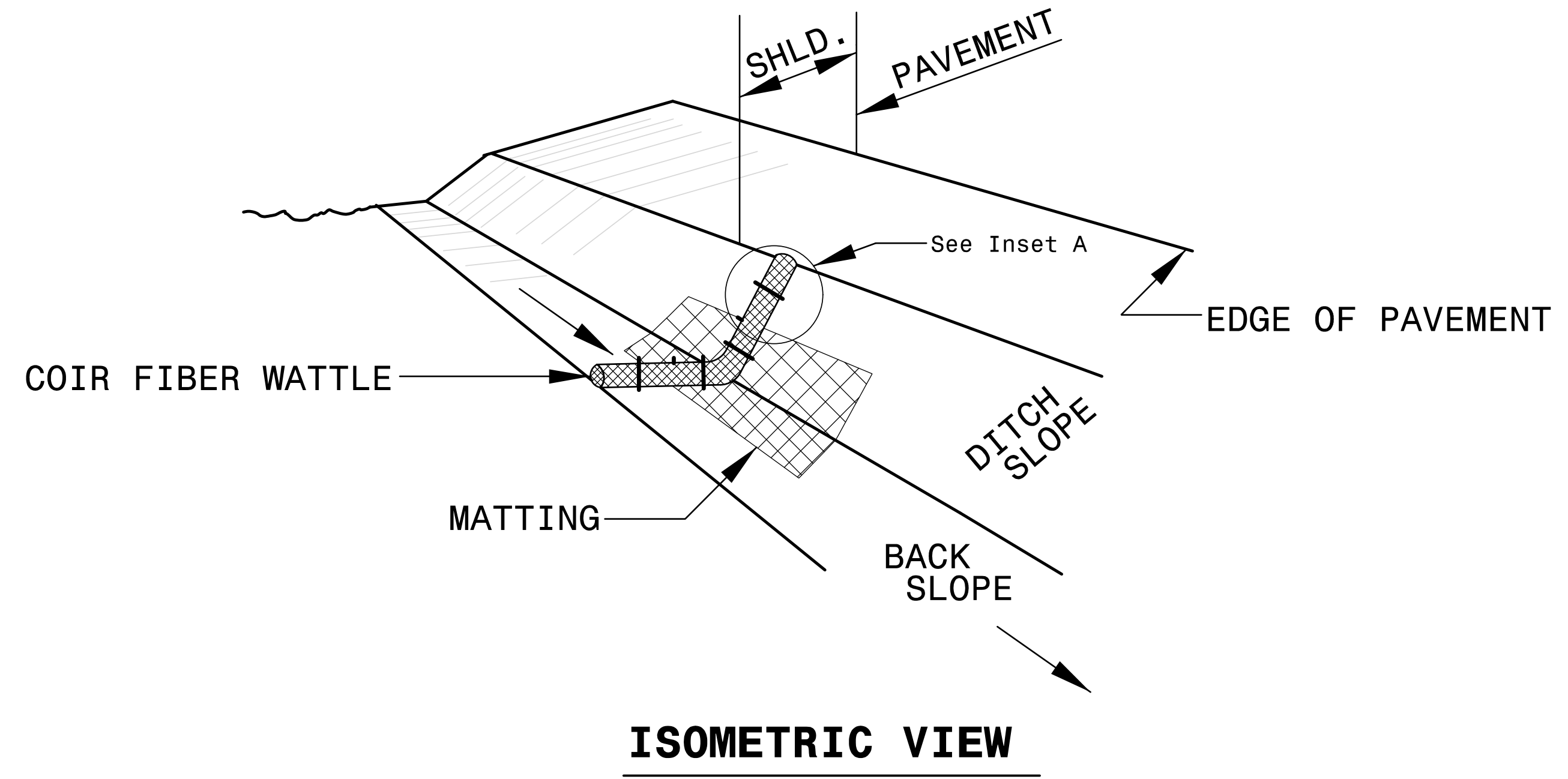
NOTES

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

COIR FIBER WATTLE DETAIL



NOTES:

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

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

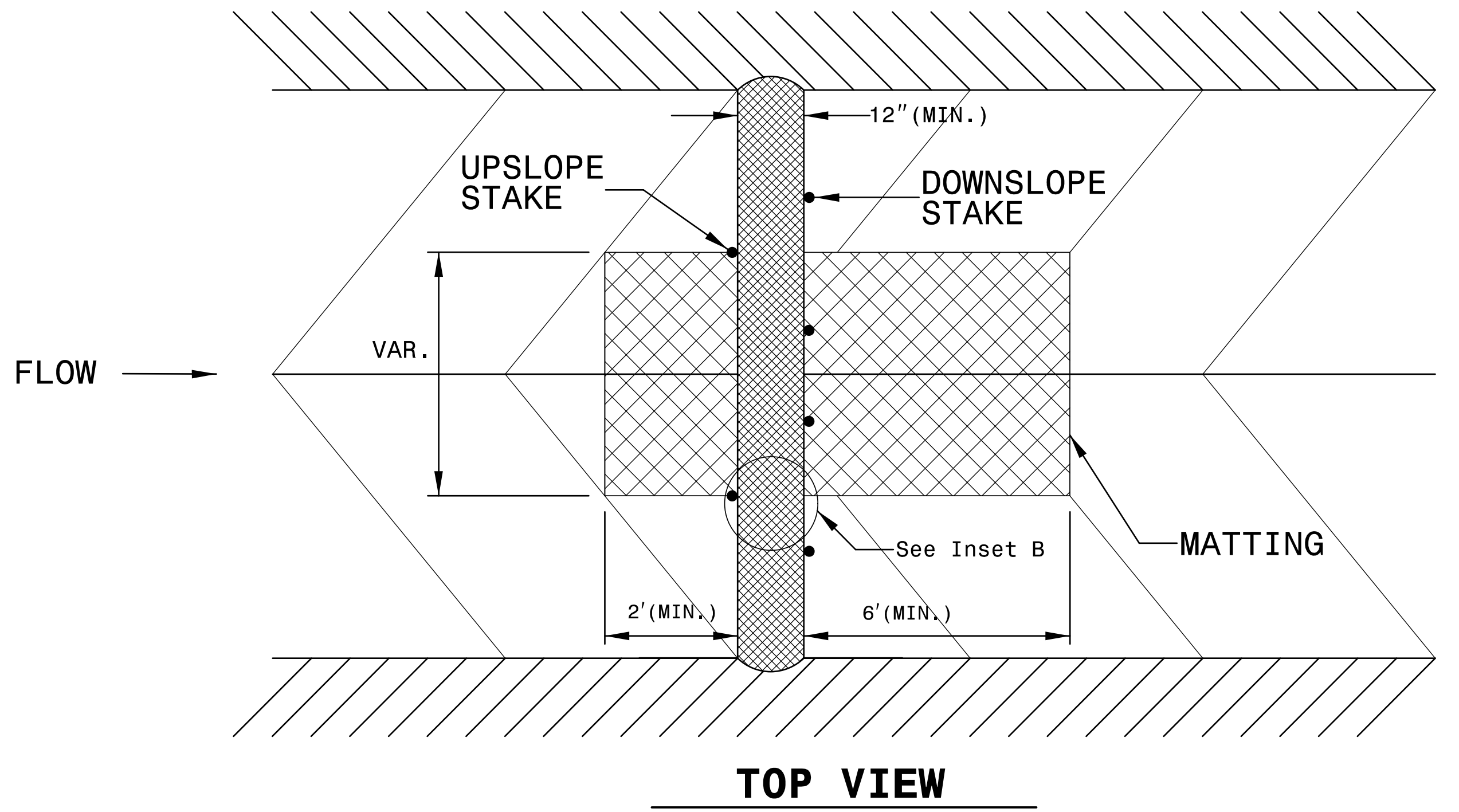
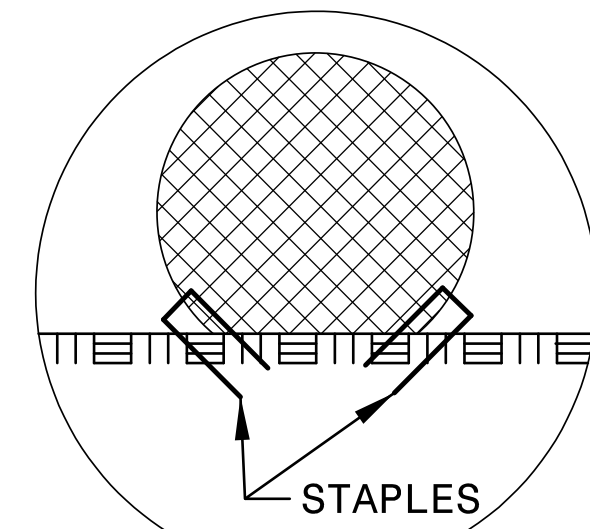
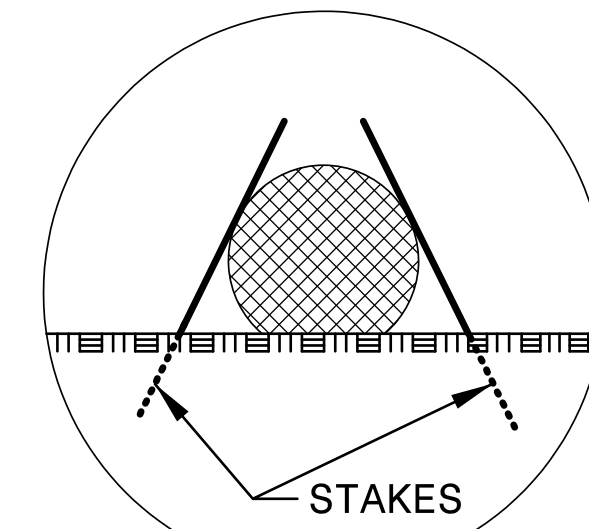
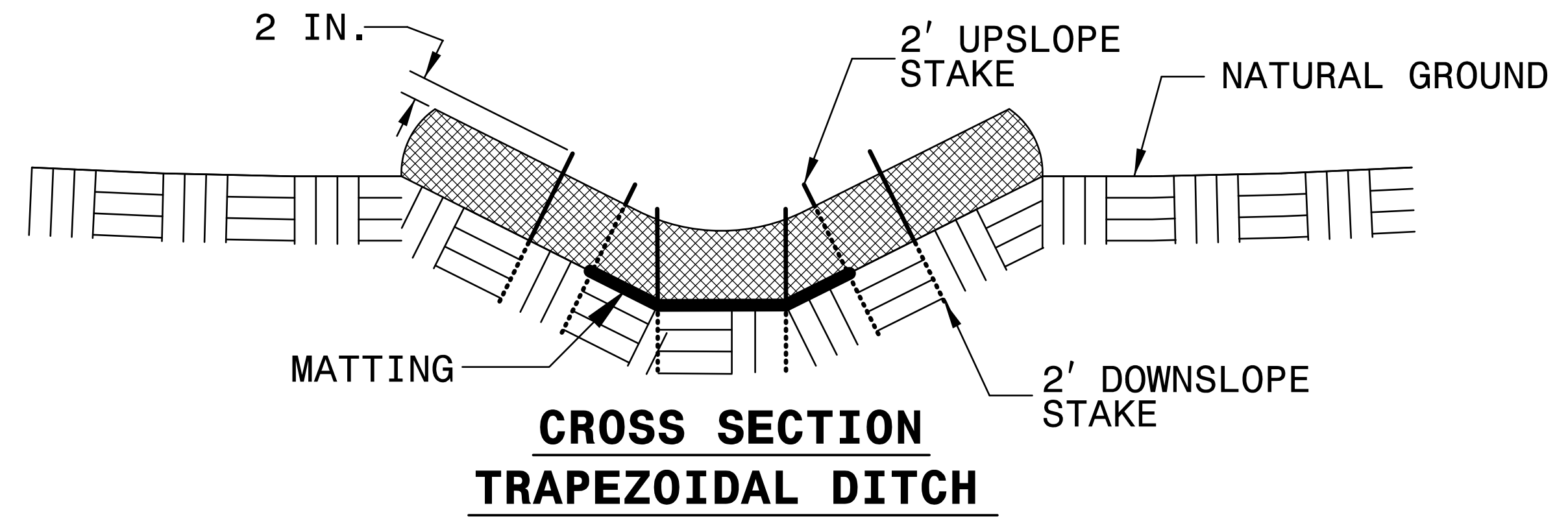
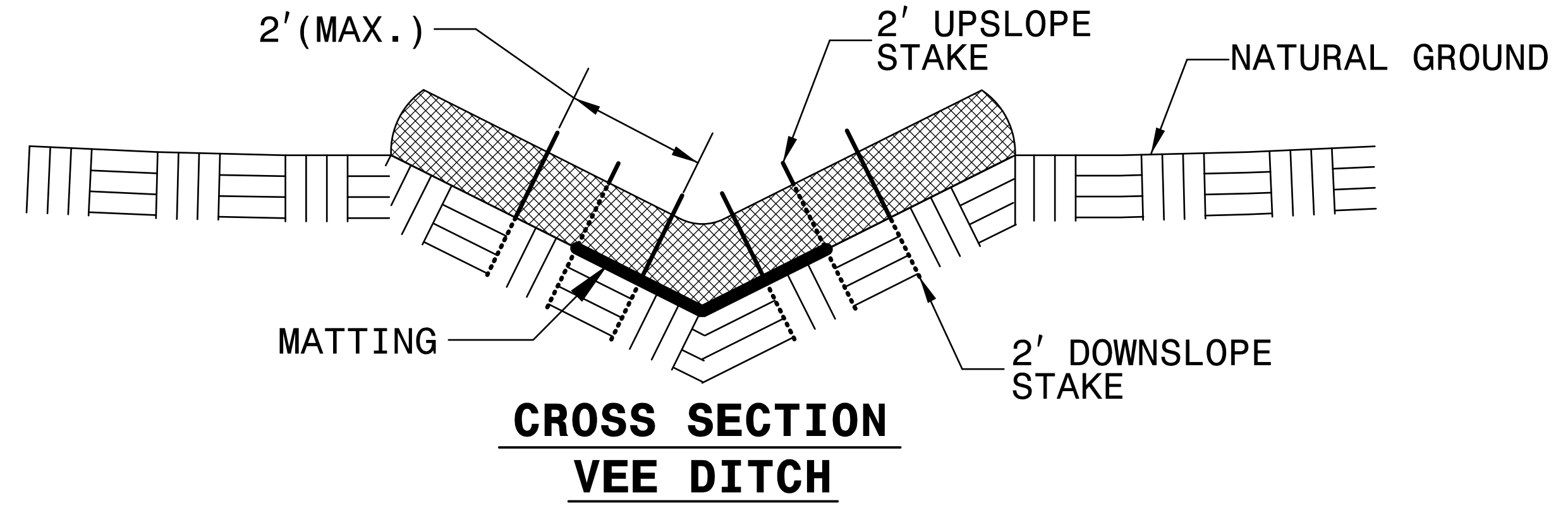
ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

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

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

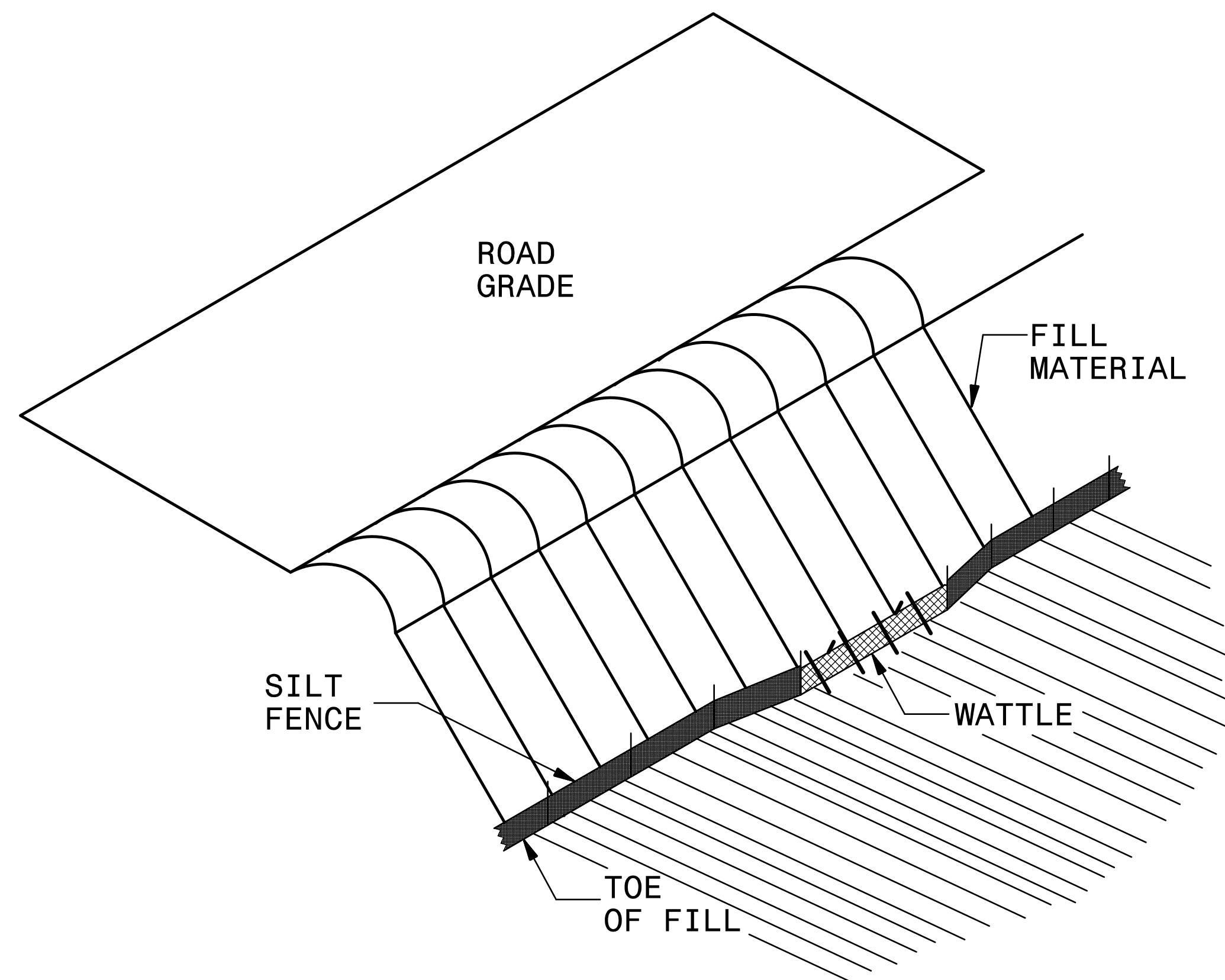
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

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

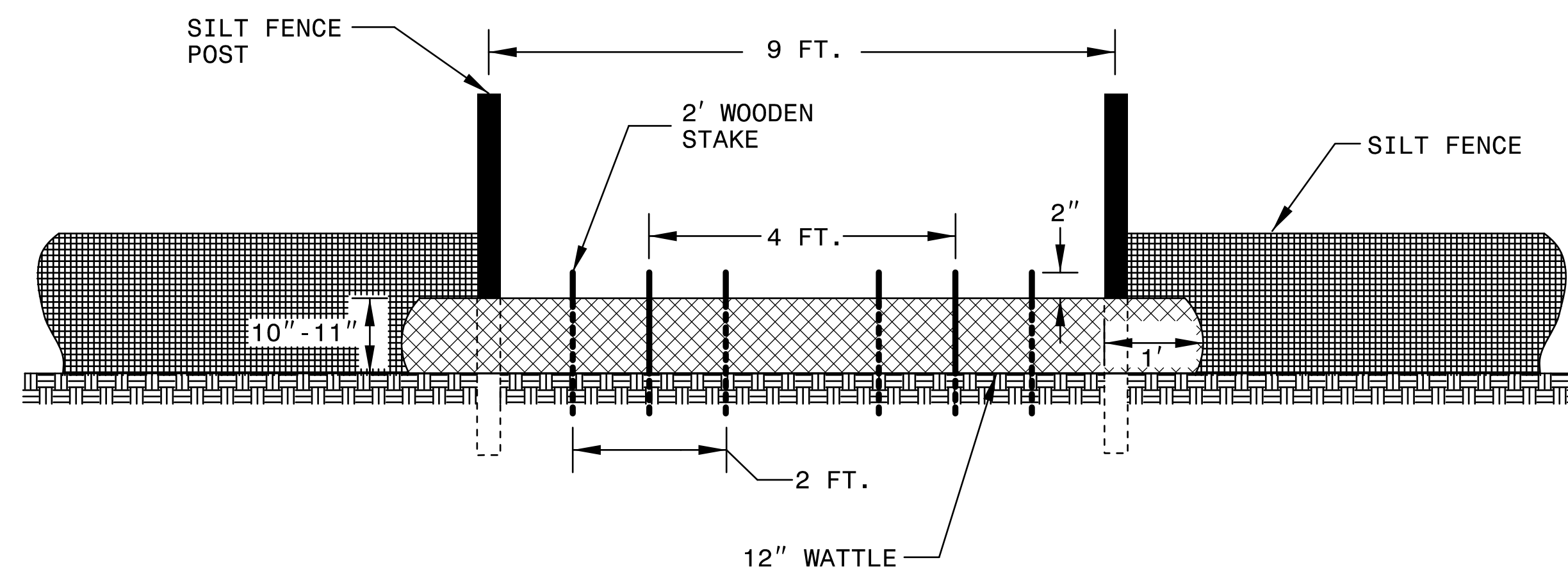


PROJECT REFERENCE NO. <i>A-0009CB</i>	SHEET NO. <i>EC-2C</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SILT FENCE COIR FIBER WATTLE BREAK DETAIL



ISOMETRIC VIEW

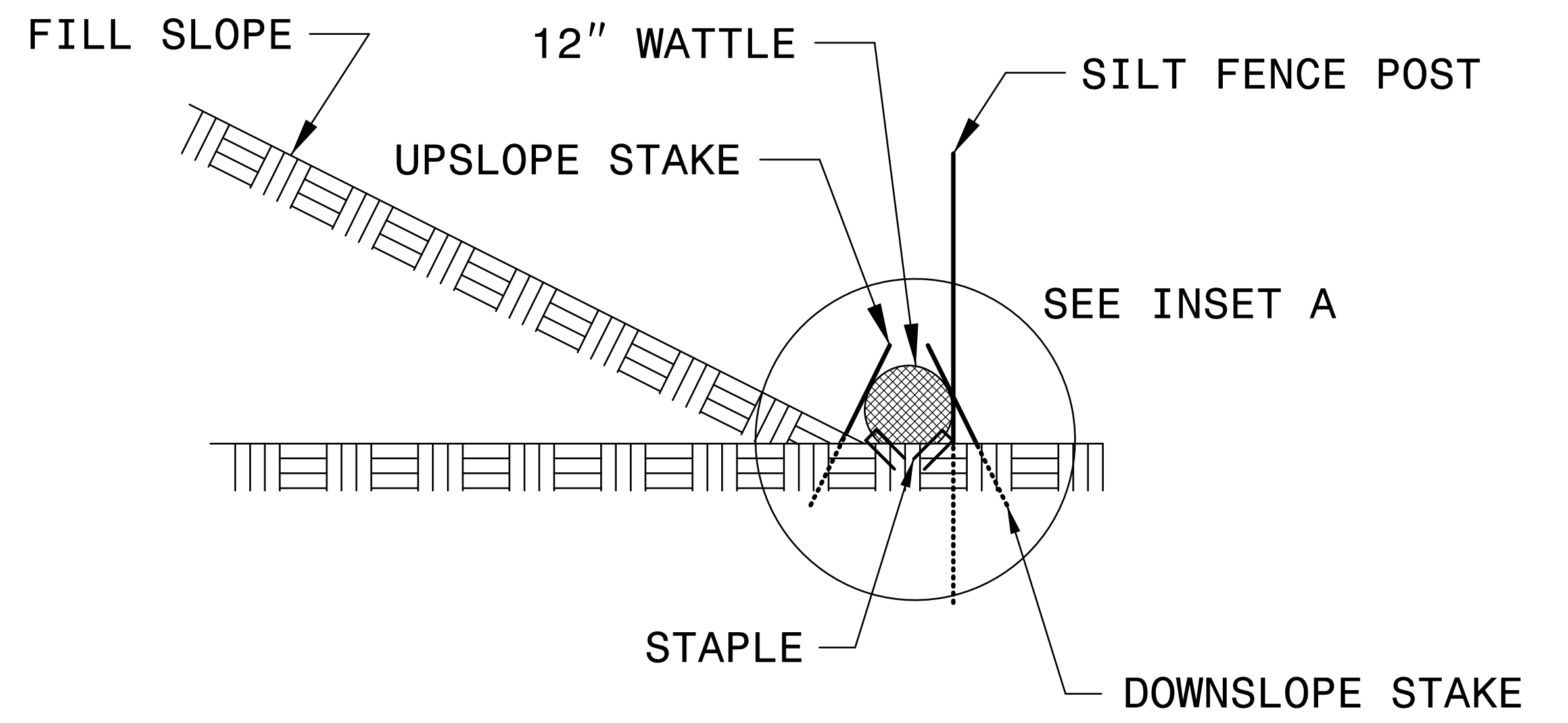
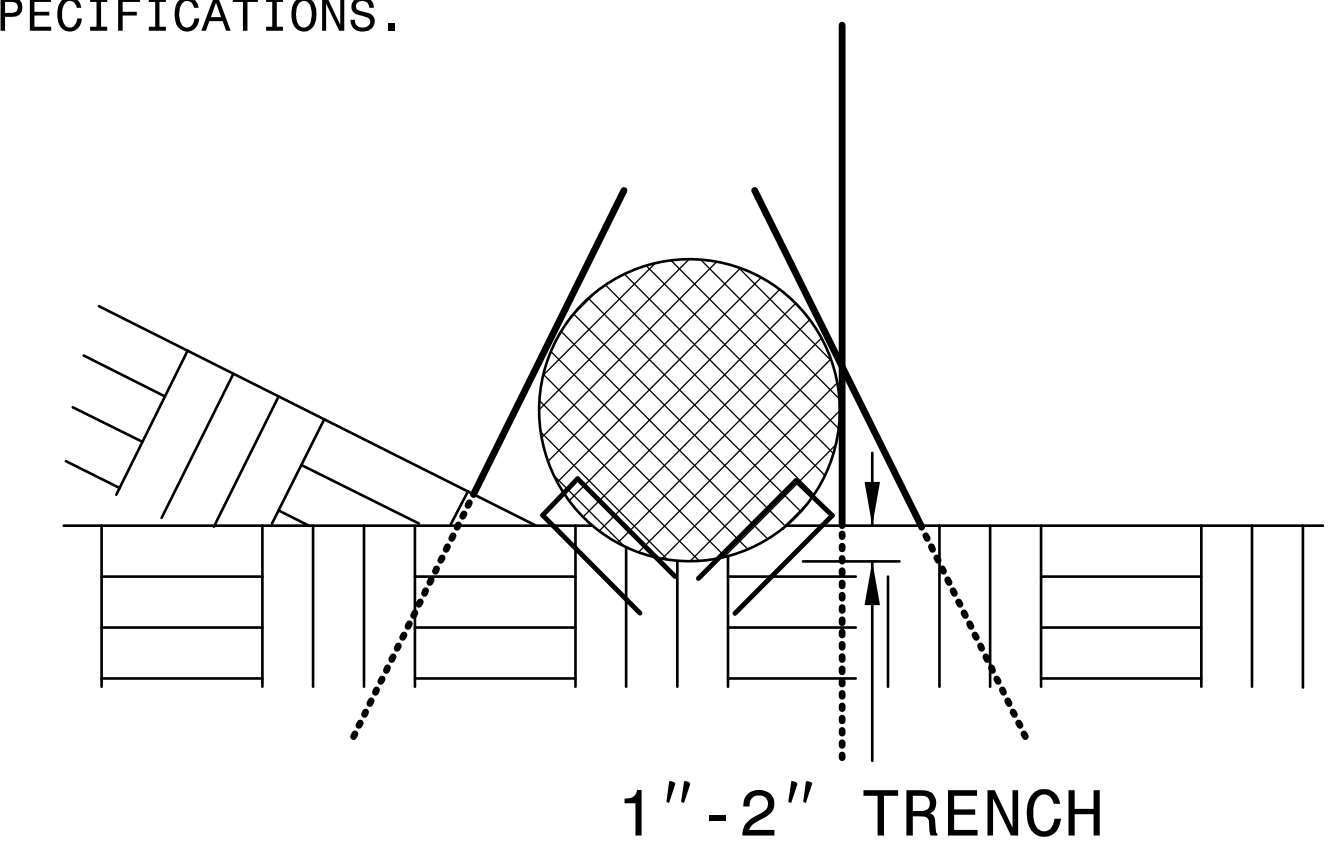


VIEW FROM SLOPE

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.

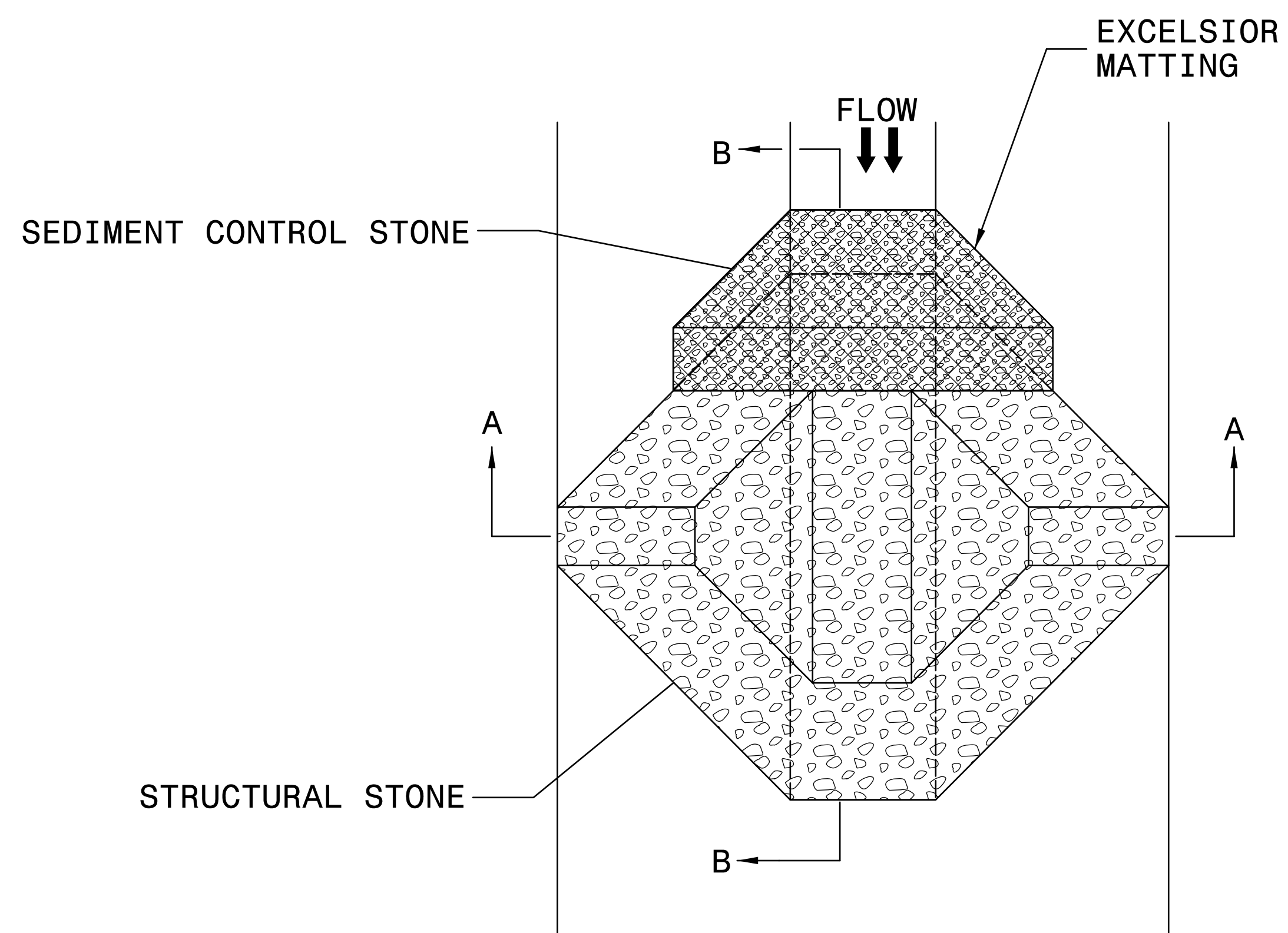
INSET A



SIDE VIEW

PROJECT REFERENCE NO. A-0009CB	SHEET NO. EC-2D
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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



PLAN

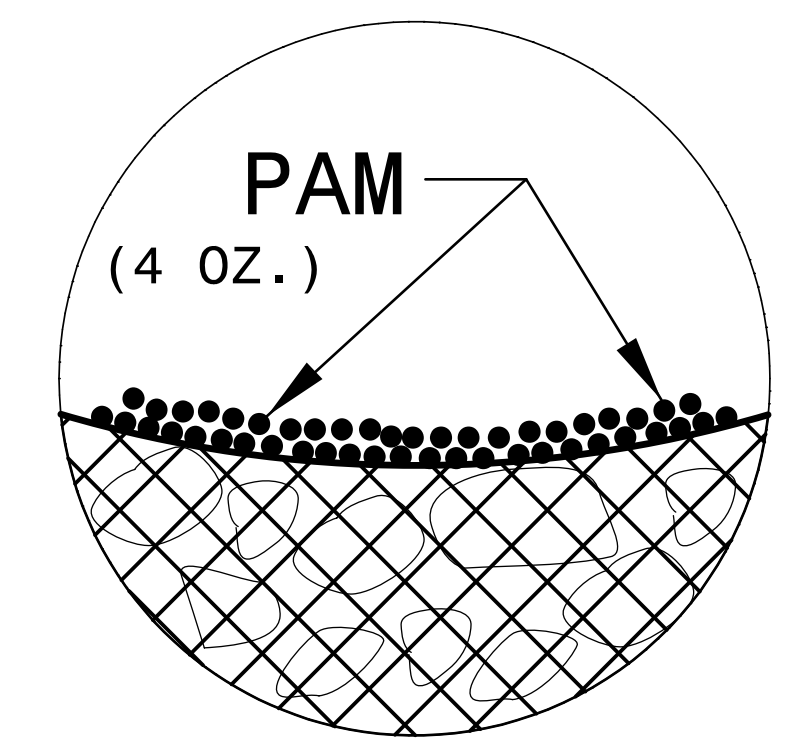
NOTES:

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

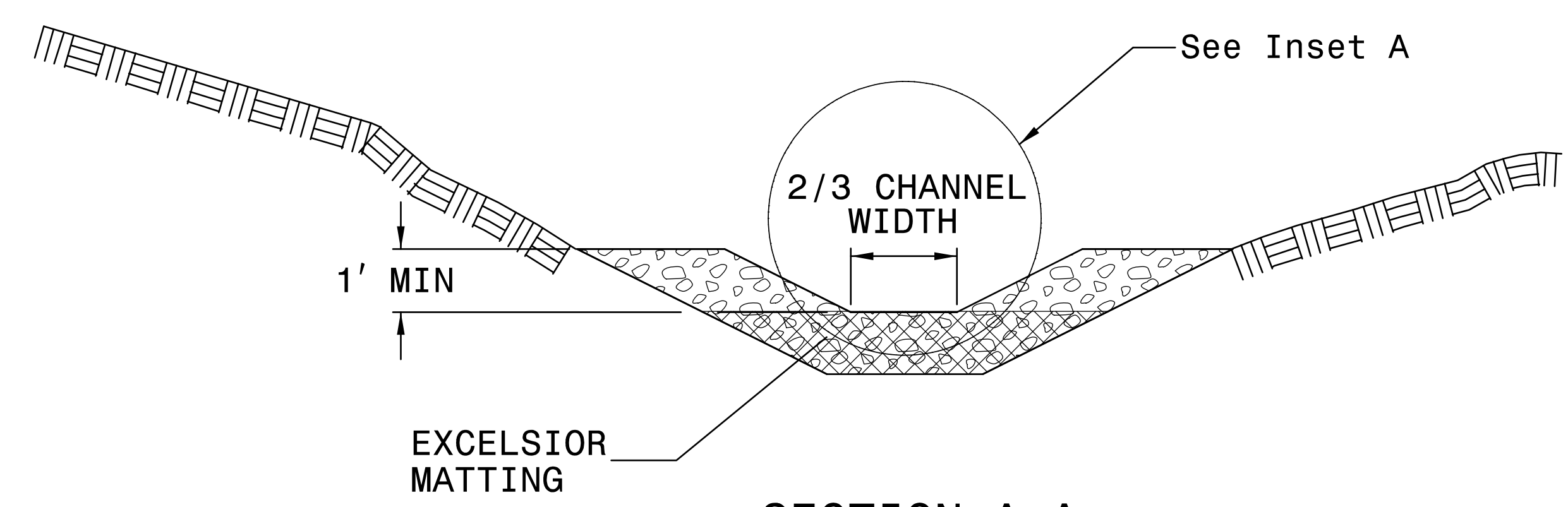
USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

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.

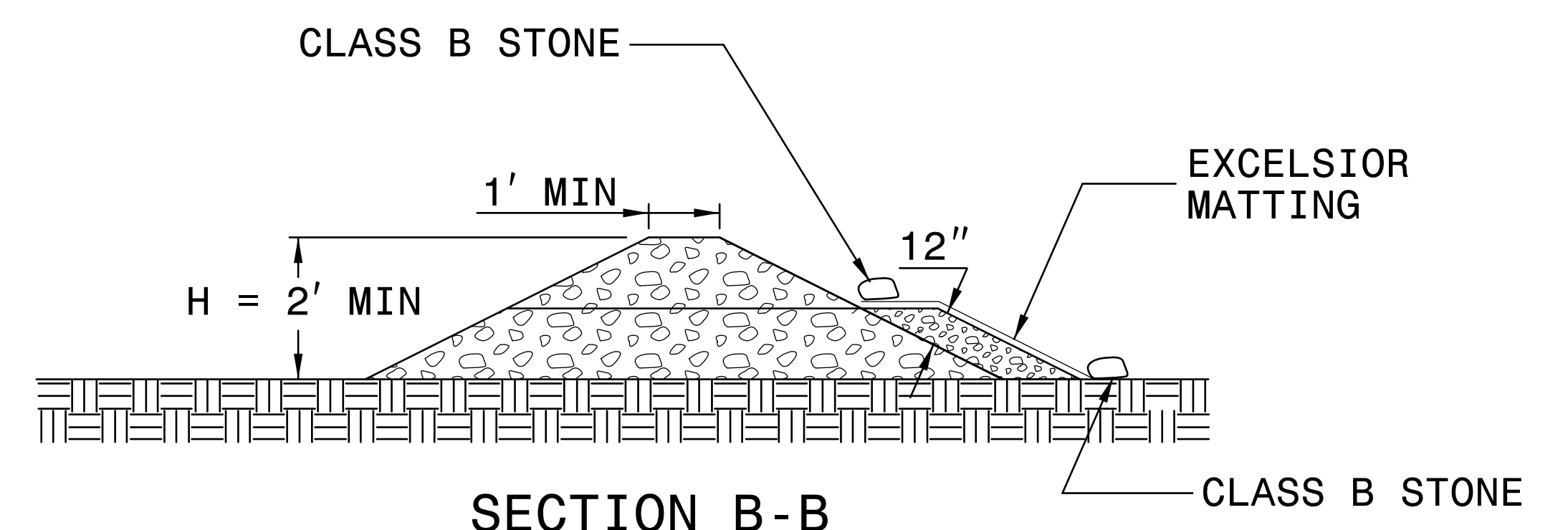
INITIALLY APPLY 4 OUNCES OF POLYACRYLAMIDE (PAM) TO TOP OF MATTING SECTION AND AFTER EVERY RAINFALL EVENT THAT EQUALS OR EXCEEDS 0.50 INCHES.



INSET A



SECTION A-A



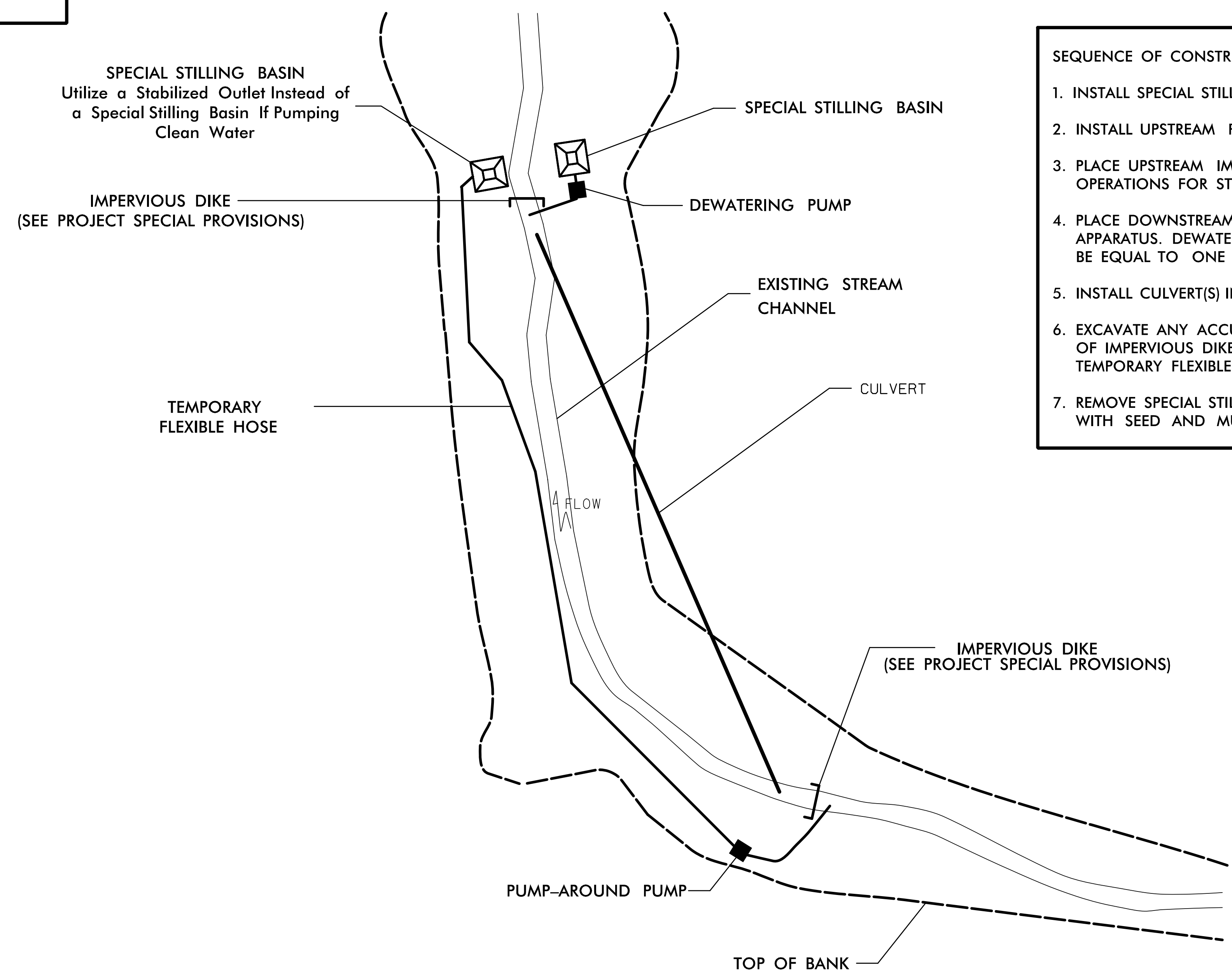
SECTION B-B

NOT TO SCALE

PROJECT REFERENCE NO. <i>A-0009CB</i>	SHEET NO. <i>EC-2E</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-0009CB	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					
20	L	208+50	209+50	LT	306
20	L	210+50	211+00	LT	131
21	L	227+50	229+50	LT	443
21	L	232+00	233+00	LT	155
21	L	235+00	236+00	LT	135
22	L	236+00	238+50	RT	646
22	L	242+00	244+50	RT	603
23	L	252+50	262+00	RT	14,330
23	L	262+00	263+00	RT	259
24	L	263+00	264+50	RT	366
24	L	272+50	274+50	RT	676
25	L	278+50	278+95	LT	109
25	L	279+05	283+00	LT	1,394
25	L	283+18	285+95	LT	3,346
25	L	289+00	290+00	LT	279
25	L	290+50	290+75	LT	86
25	L	288+50	289+50	RT	624
25	L	290+25	292+00	RT	583
26	L	292+50	295+00	RT	1,056
26	L	295+50	296+00	RT	69
26	L	299+50	300+00	RT	164
26	L	302+00	302+60	RT	184
26	L	293+50	294+00	LT	82
26	L	295+00	297+00	LT	1,432
26	L	299+00	300+50	LT	694
26	L	303+00	303+50	LT	148
27	L	306+00	310+50	LT	4,003
27	L	305+50	307+50	RT	974
27	L	309+00	315+00	RT	4,249


CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
SLOPE MATTING					
29	L	333+30	334+50	RT	460
29	L	336+50	337+50	RT	252
29	L	335+50	338+50	LT	2,304
29	L	339+50	340+50	LT	268
30	L	351+50	352+00	LT	90
31	L	370+50	371+00	LT	107
31	L	388+50	389+00	RT	87
SLOPE MATTING SUBTOTAL					41,094
DITCHLINE MATTING					
20	L	219+00	221+00	LT	350
21	L	221+00	221+50	LT	35
21	L	223+50	226+00	LT	405
22	L	236+00	238+85	RT	400
22	L	240+50	244+50	RT	560
22	L	246+50	247+00	RT	85
22	L	247+50	249+00	RT	105
23	L	250+50	250+89	RT	30
23	L	252+00	262+00	RT	1,400
23	L	262+00	263+00	RT	135
24	L	263+00	267+00	RT	560
24	L	268+00	269+00	RT	105
24	L	267+00	267+50	RT	70
24	L	272+50	275+00	RT	350
DITCHLINE MATTING SUBTOTAL					4,590

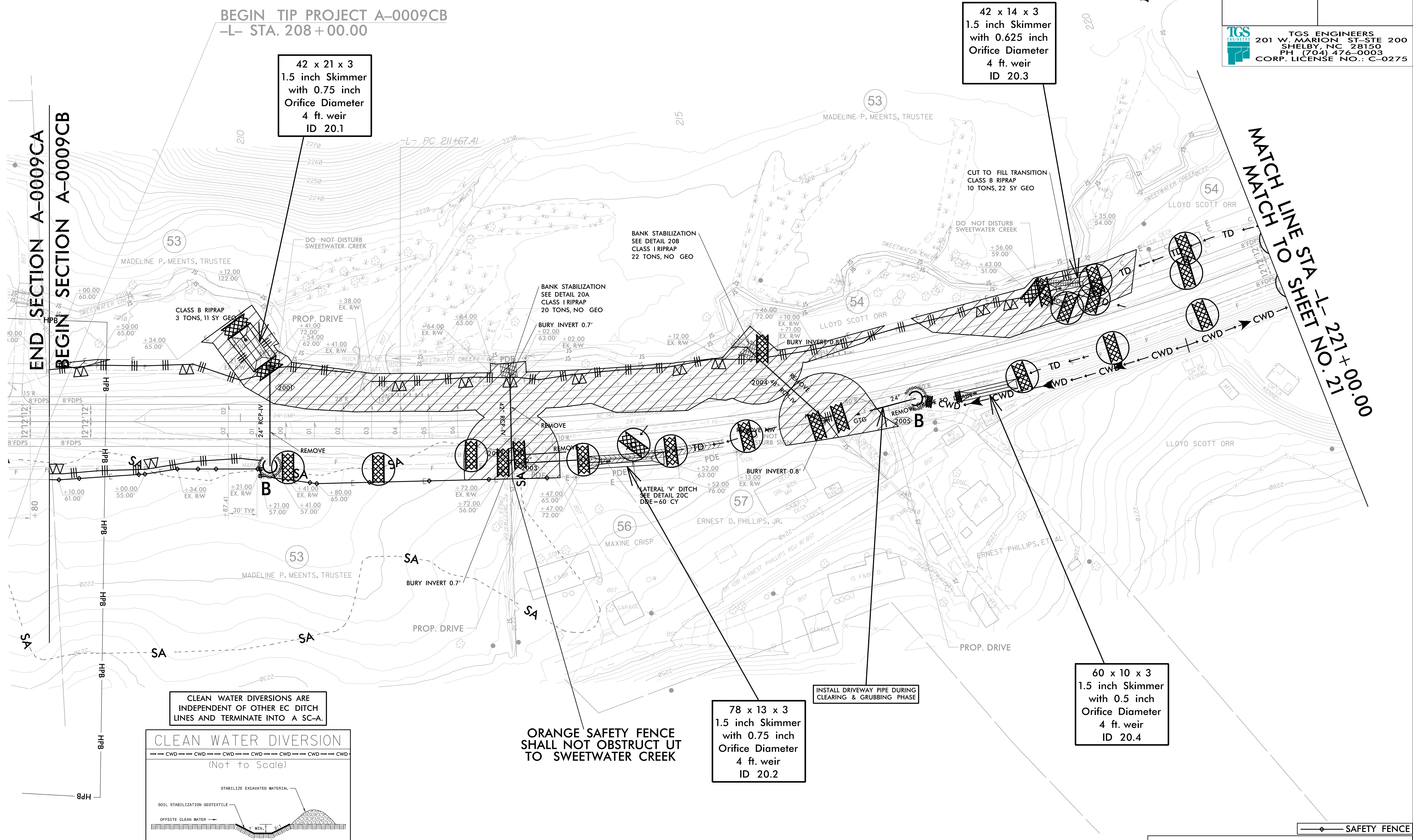
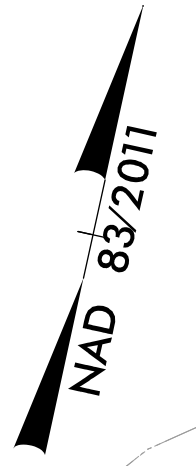
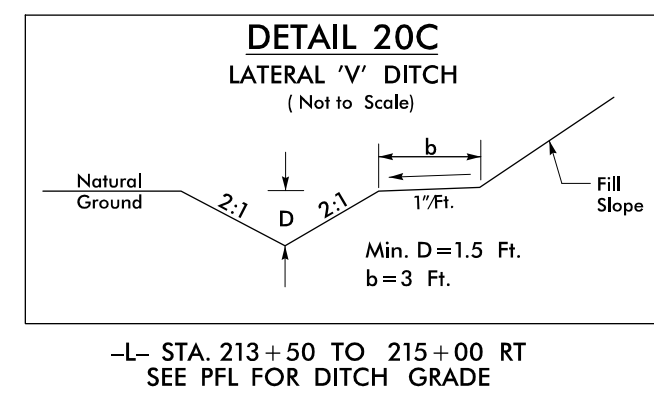
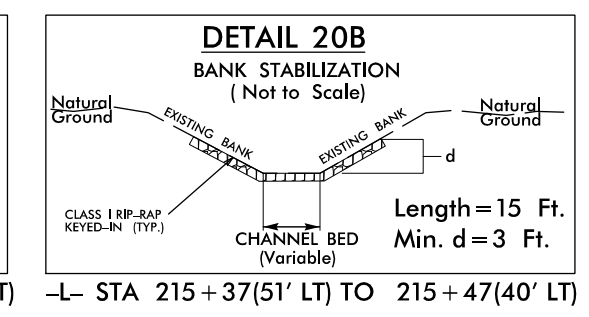
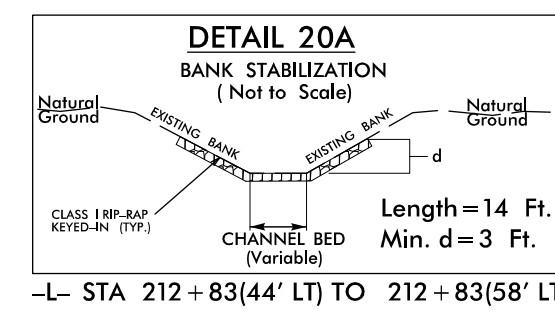
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO. <i>A-0009CB</i>	SHEET NO. <i>EC-3B</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.

PROJECT REFERENCE NO. A-0009CB	SHEET NO. EC-04/CONST.20
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	

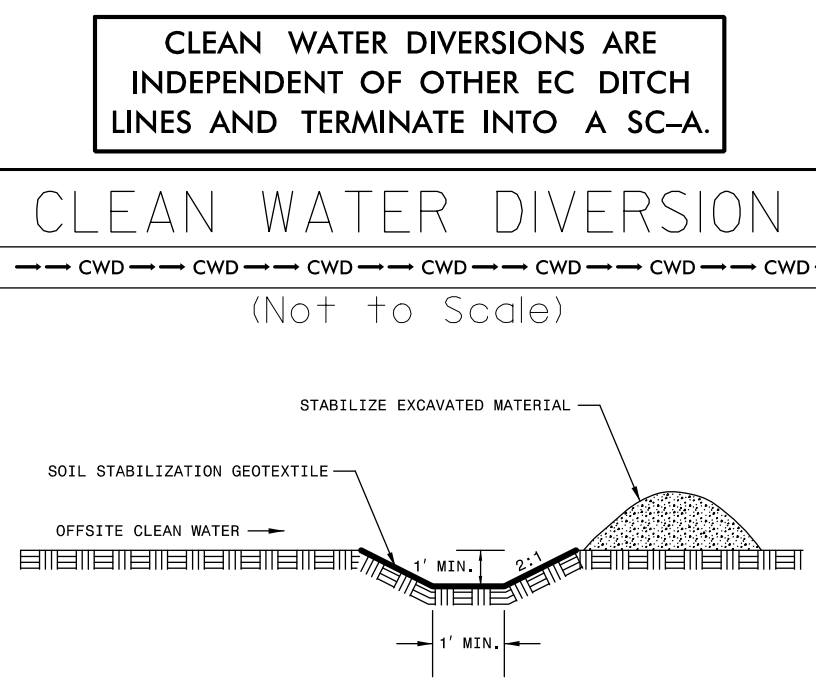


42 x 21 x 3
1.5 inch Skimmer
with 0.75 inch
Orifice Diameter
4 ft. weir
ID 20.1

42 x 14 x 3
1.5 inch Skimmer
with 0.625 inch
Orifice Diameter
4 ft. weir
ID 20.3

60 x 10 x 3
1.5 inch Skimmer
with 0.5 inch
Orifice Diameter
4 ft. weir
ID 20.4

78 x 13 x 3
1.5 inch Skimmer
with 0.75 inch
Orifice Diameter
4 ft. weir
ID 20.2




ORANGE SAFETY FENCE SHALL NOT OBSTRUCT UT TO SWEETWATER CREEK

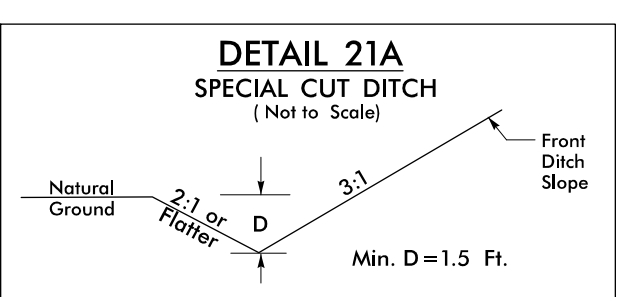
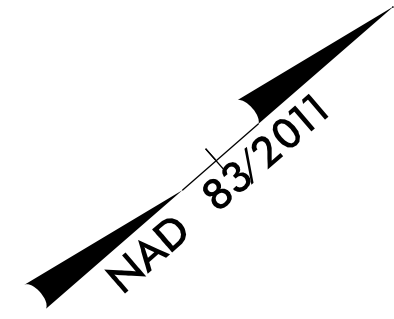
CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 20

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.

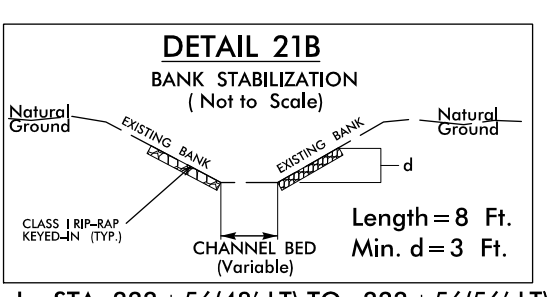
NOTE: PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B AND TEMPORARY ROCK SILT CHECKS TYPE - A AT DRAINAGE OUTLETS.



PROJECT REFERENCE NO.	SHEET NO.
A-0009CB	EC-05/CONST.21
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	



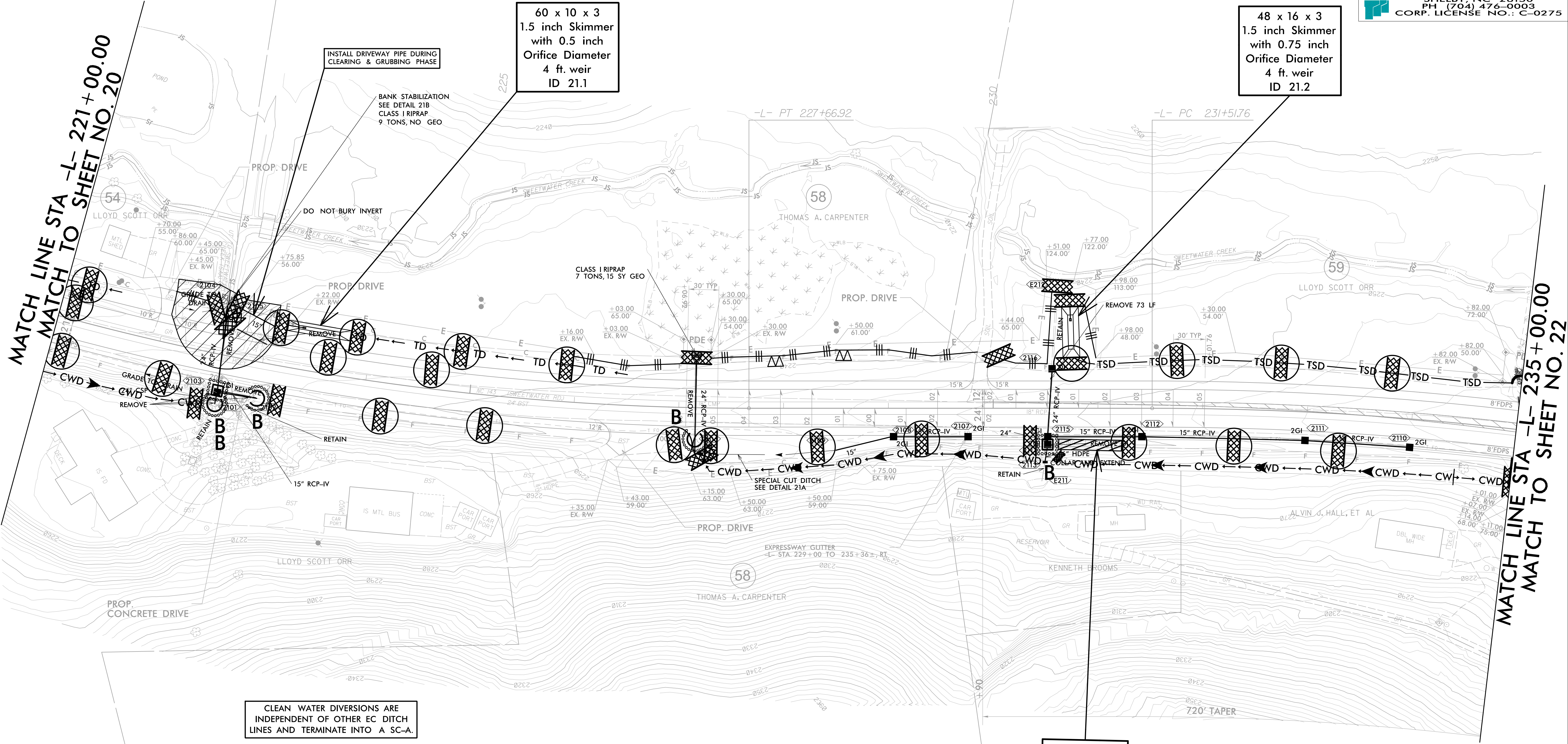
-L- STA 227+16 TO 228+50 RT
SEE PFL FOR DITCH GRADES



-L- STA 222+56(48' LT) TO 222+56(56' LT)

MATCH LINE STA -L- 221+00.00
MATCH TO SHEET NO. 20

MATCH LINE STA -L- 235+00.00
MATCH TO SHEET NO. 22

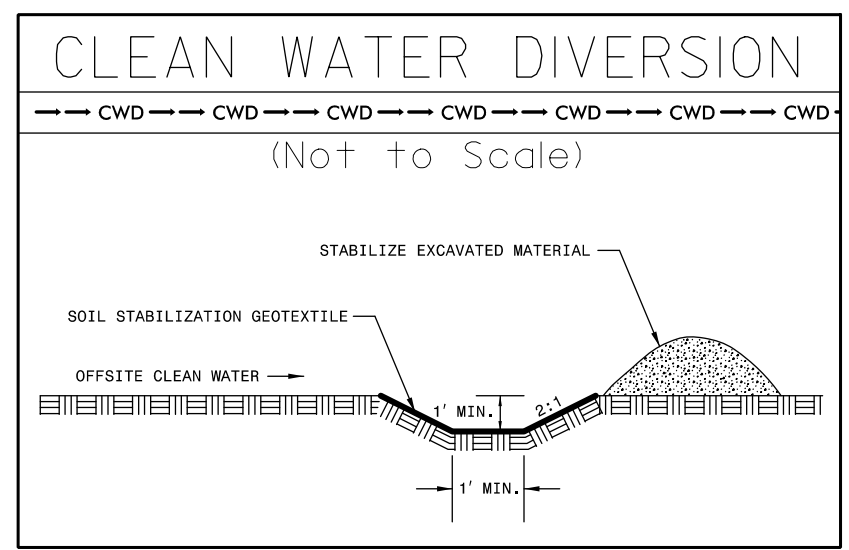


60 x 10 x 3
1.5 inch Skimmer
with 0.5 inch
Orifice Diameter
4 ft. weir
ID 21.1

48 x 16 x 3
1.5 inch Skimmer
with 0.75 inch
Orifice Diameter
4 ft. weir
ID 21.2

60 x 10 x 3
ID 21.3

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



CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 21

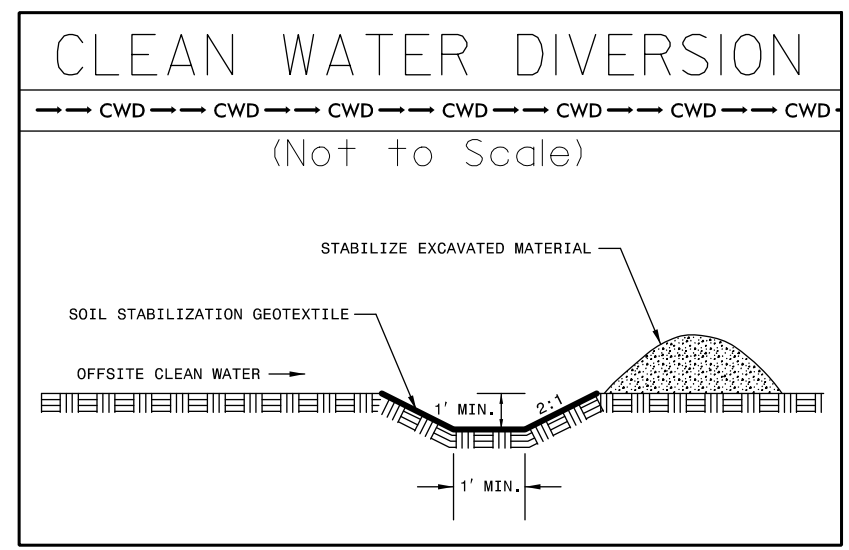
NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B
AND TEMPORARY ROCK SILT CHECKS TYPE - A AT
DRAINAGE OUTLETS.

 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.

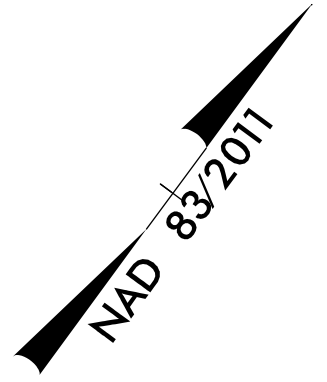
-L- CURVE DATA

PI Sta 234+84.86	PI Sta 255+20.12
$\Delta = 12^\circ 40' 17.1''$ (RT)	$\Delta = 40^\circ 44' 05.0''$ (LT)
$D = 1^\circ 54' 35.5''$	$D = 2^\circ 36' 15.7''$
$L = 663.47'$	$L = 1,564.10'$
$T = 333.10'$	$T = 816.75'$
$R = 3,000.00'$	$R = 2,200.00'$
$SE = 0.05$	$SE = 0.07$
$DS = 60$ MPH	$DS = 60$ MPH



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.



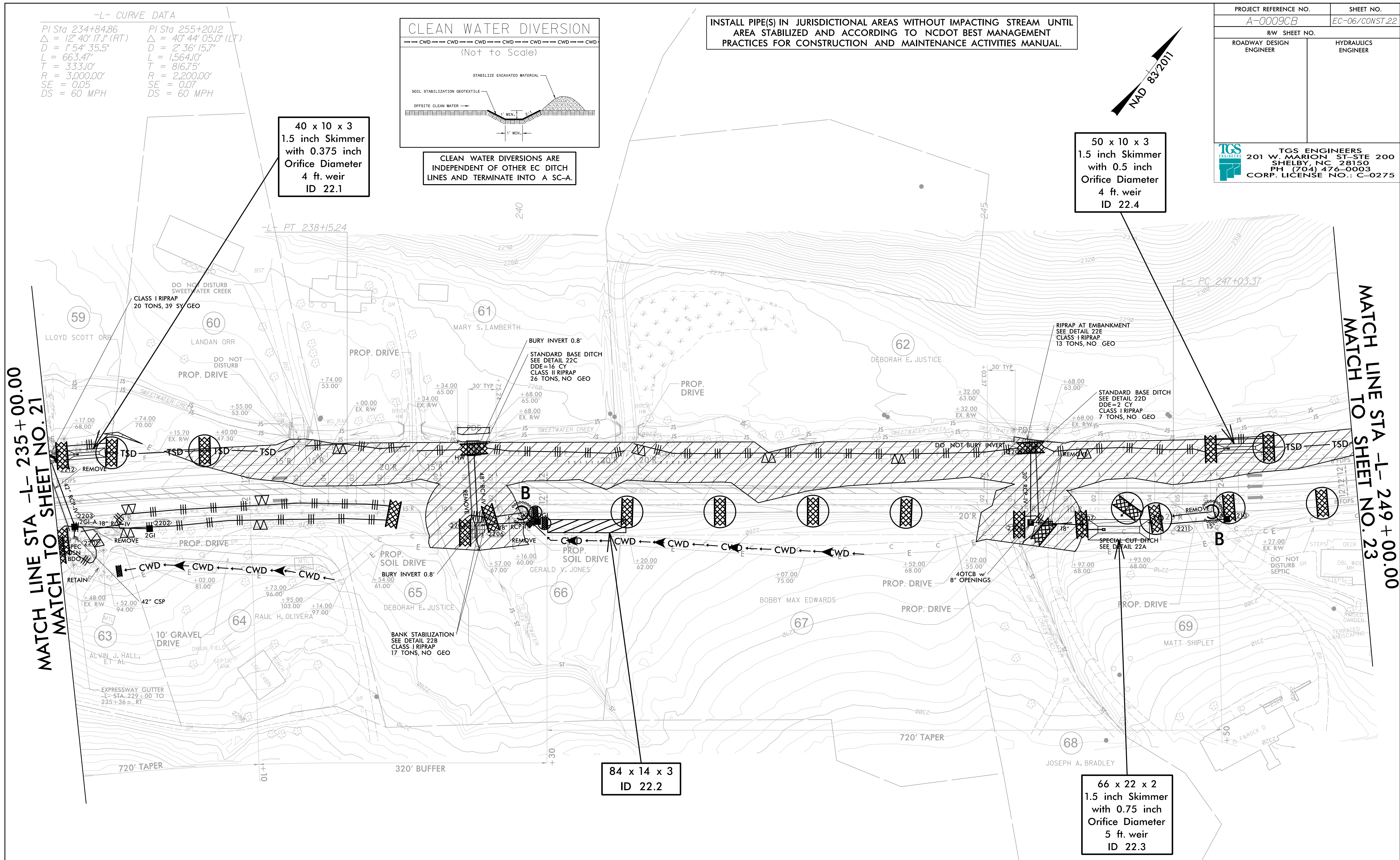
PROJECT REFERENCE NO. A-0009CB	SHEET NO. EC-06/CONST.22
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
TGS ENGINEERS 201 W. MARION ST-STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	

40 x 10 x 3
1.5 inch Skimmer
with 0.375 inch
Orifice Diameter
4 ft. weir
ID 22.1

50 x 10 x 3
1.5 inch Skimmer
with 0.5 inch
Orifice Diameter
4 ft. weir
ID 22.4

MATCH LINE STA -L- 235+00.00
MATCH TO SHEET NO. 21

MATCH LINE STA -L- 249+00.00
MATCH TO SHEET NO. 23



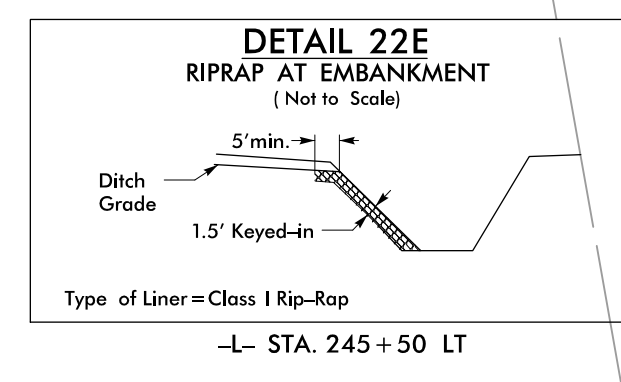
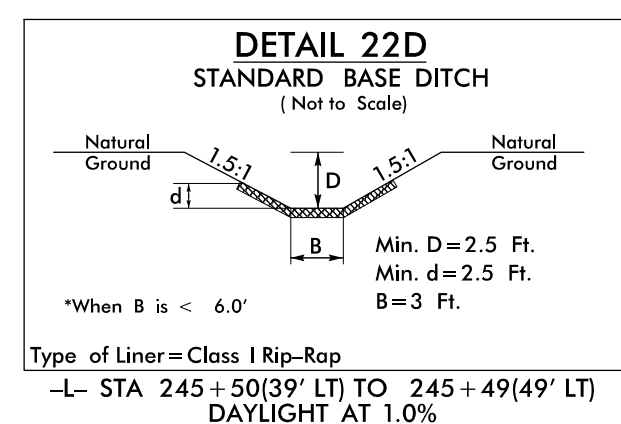
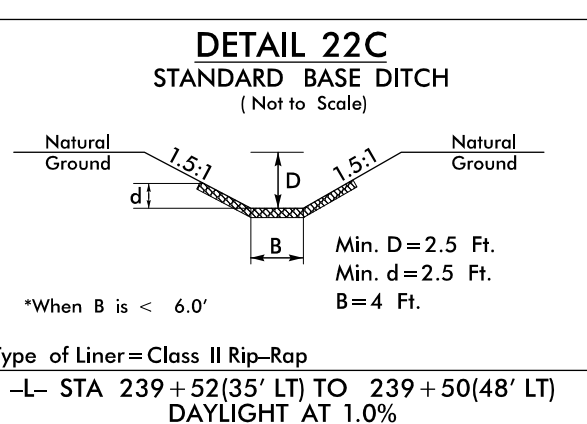
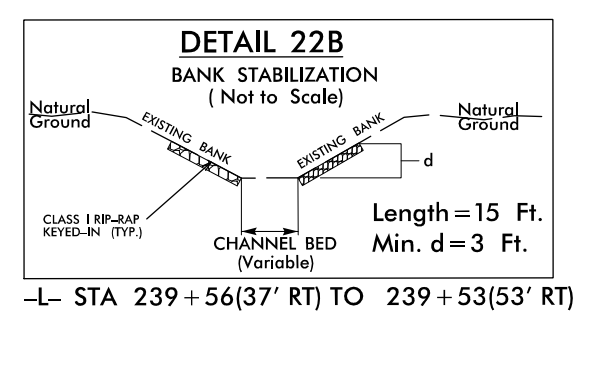
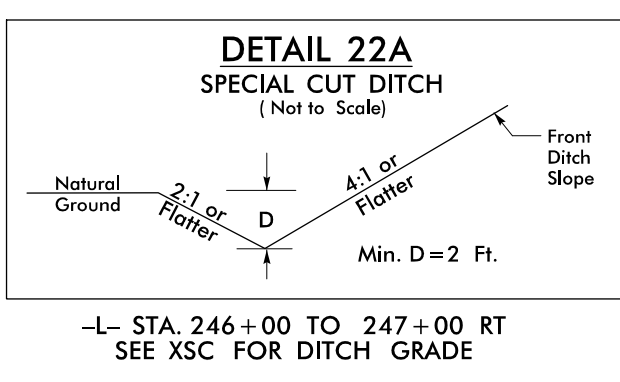
84 x 14 x 3
ID 22.2


66 x 22 x 2
1.5 inch Skimmer
with 0.75 inch
Orifice Diameter
5 ft. weir
ID 22.3

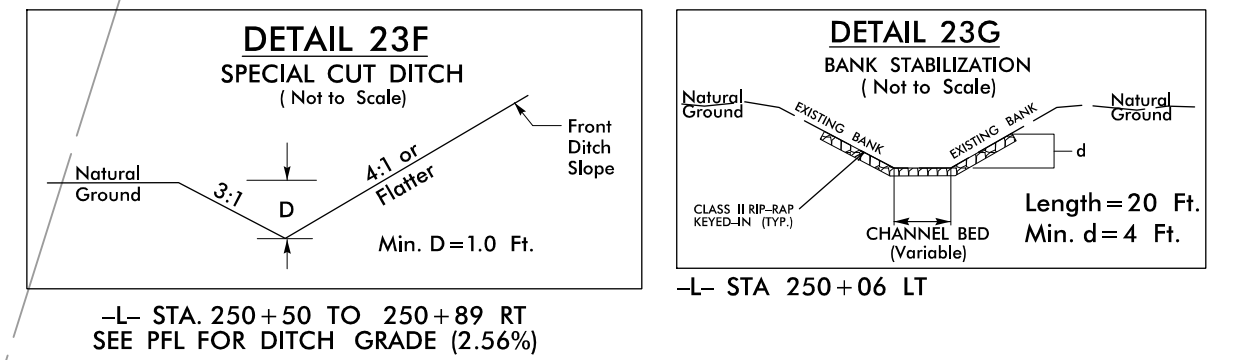
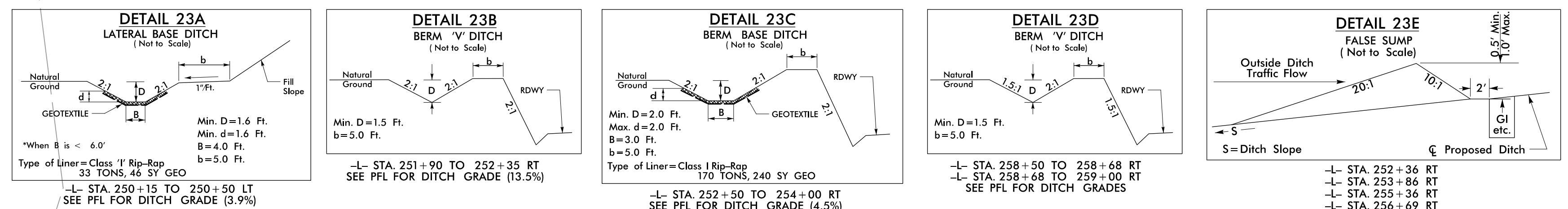
CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 22

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

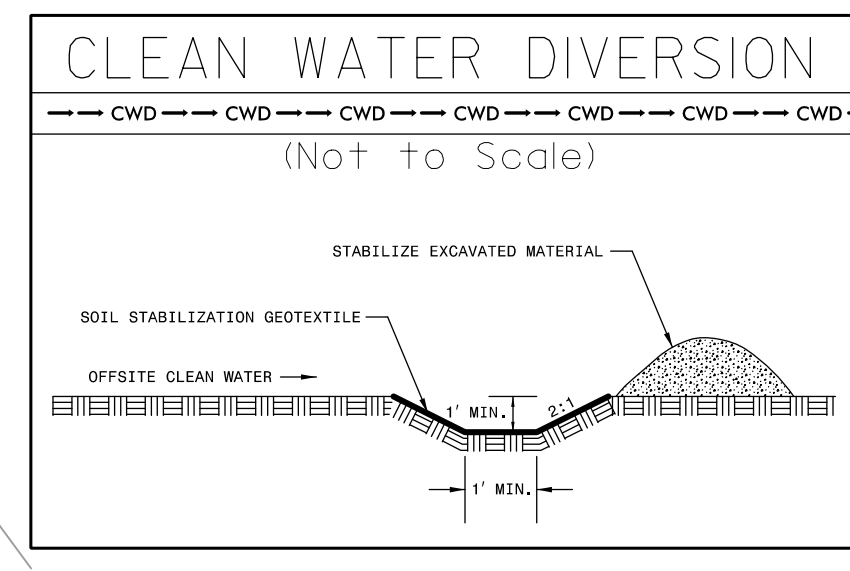
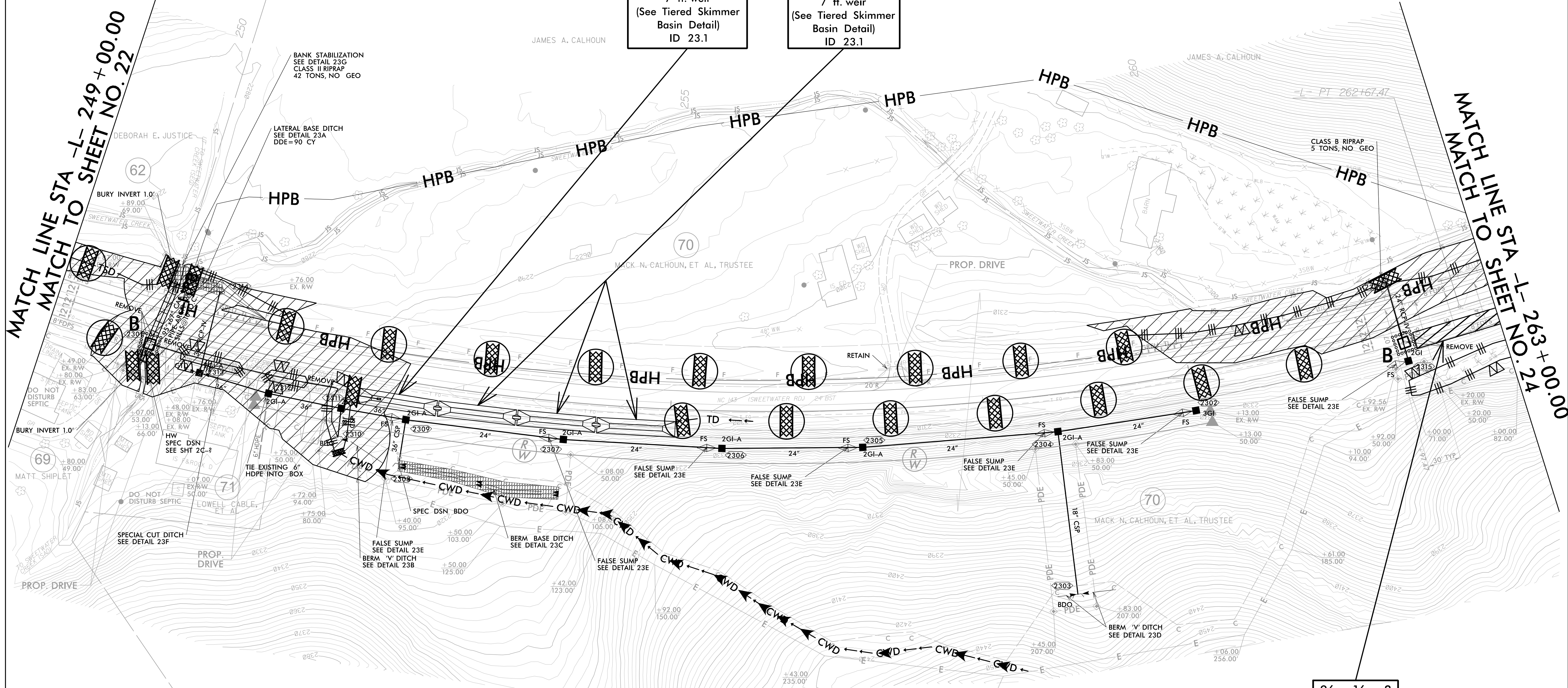


PROJECT REFERENCE NO. A-0009CB	SHEET NO. EC-07/CONST.23
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
 TGS ENGINEERS 201 W. MARION ST-STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	



75 x 15 x 2
1.5 inch Skimmer
with 0.625 inch
Orifice Diameter
7 ft. weir
(See Tiered Skimmer
Basin Detail)
ID 23.1

Modified Silt Basin
Type 'B'
75 x 15 x 2
7 ft. weir
(See Tiered Skimmer
Basin Detail)
ID 23.1



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

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 23

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

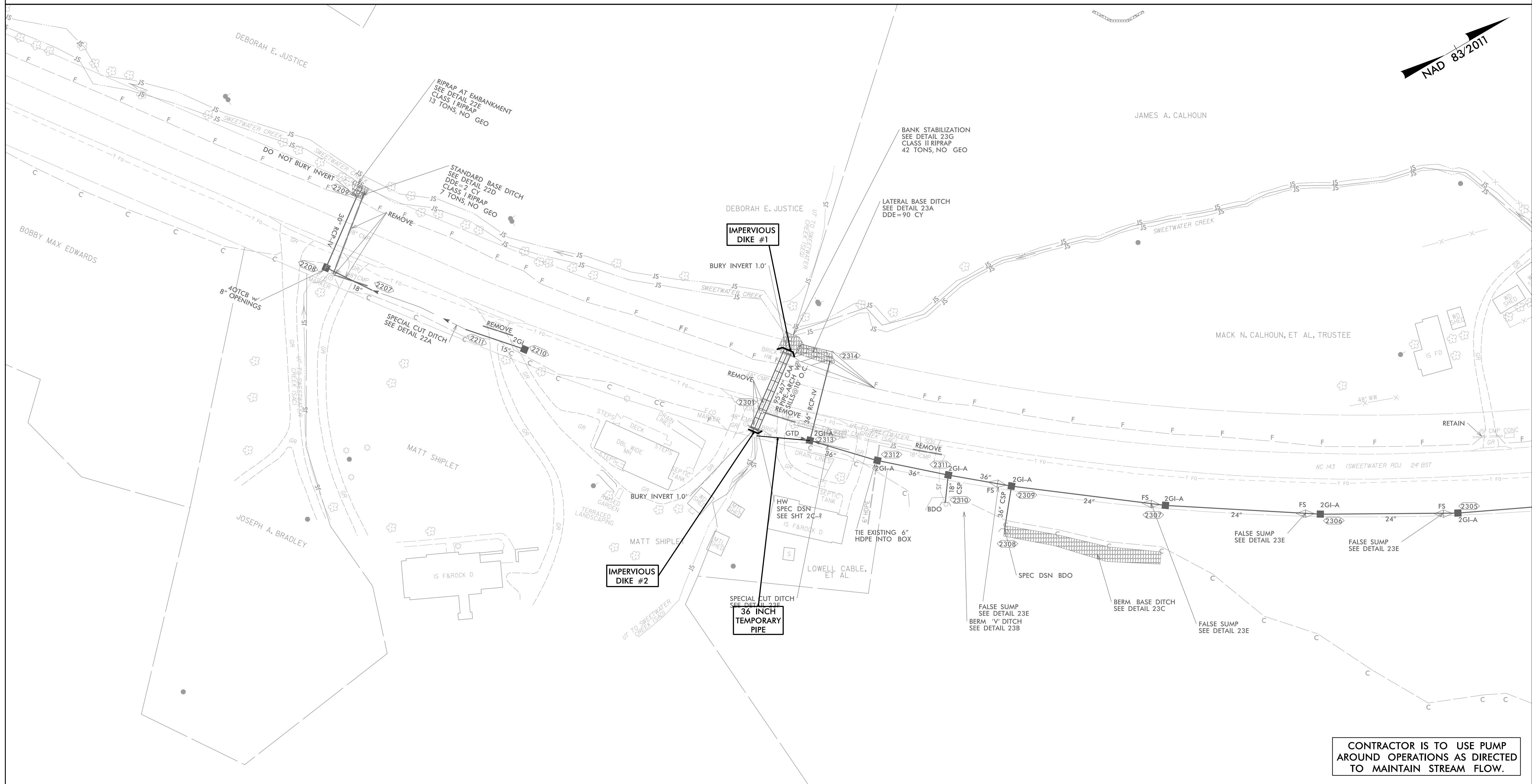
96 x 16 x 2
ID 23.3

PROJECT REFERENCE NO.	SHEET NO.
A-0009CB	EC-07A/CONST.23
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

CULVERT CONSTRUCTION SEQUENCE STA. 250+00 -L-

1. INSTALL PROPOSED DRAINAGE DITCH FROM -L- STA. 250+15 LT TO -L- STA. 251+00 LT. SEE DETAIL 23A.
2. INSTALL PROPOSED 2GI-A #2313 AND PROPOSED 36" RCP-IV FROM #2313 TO #2314.
3. INSTALL 36" TEMPORARY PIPE AS SHOWN.
4. INSTALL IMPERVIOUS DIKES #1 & #2, SHIFTING FLOW INTO TEMPORARY PIPE.
5. DEWATER WORK SITE AS NEEDED INTO SPECIAL STILLING BASIN(S).

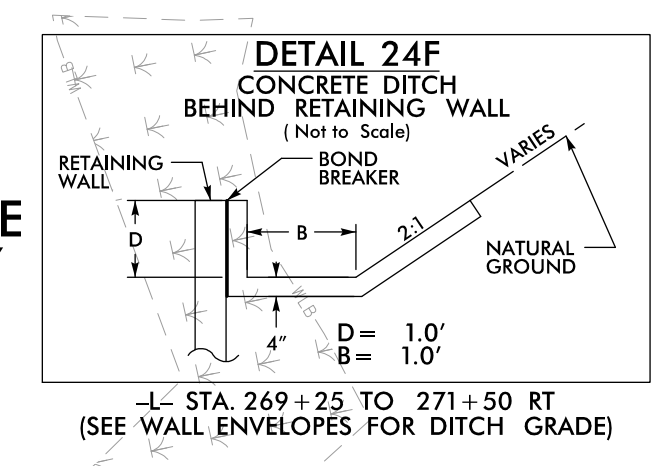
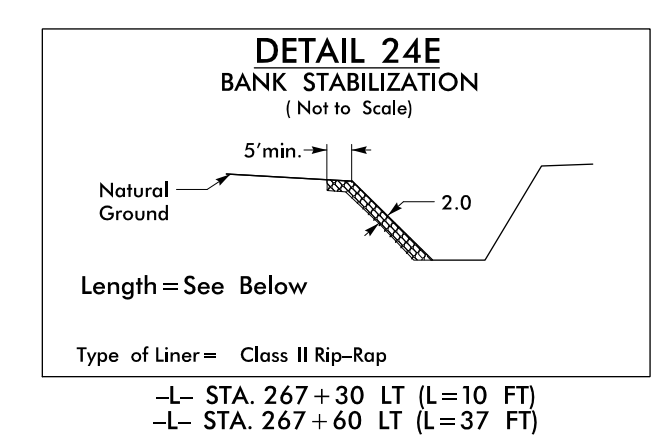
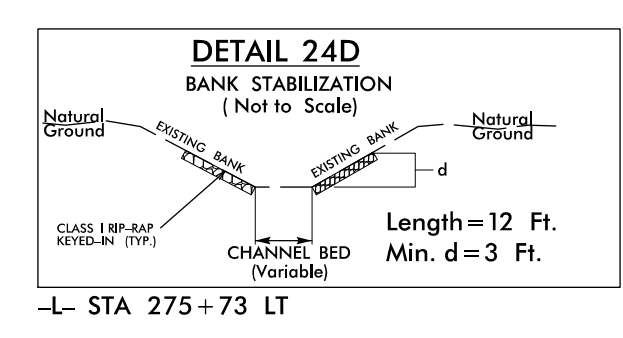
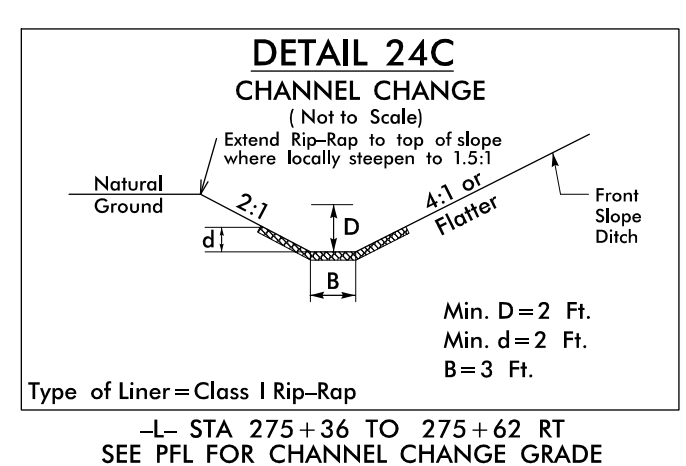
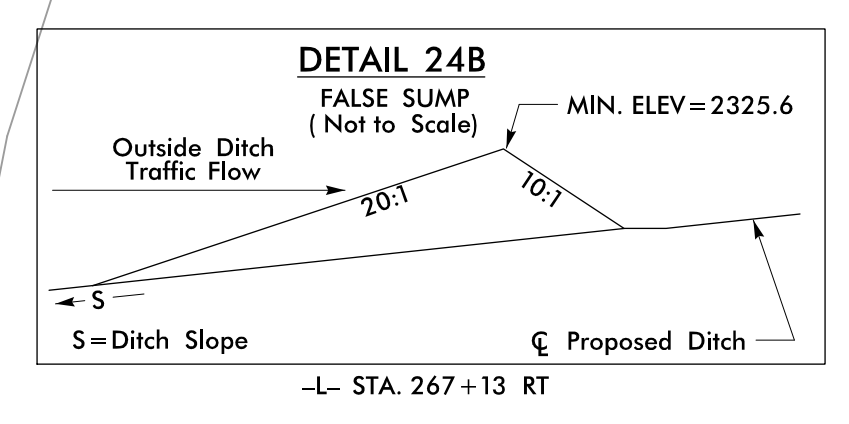
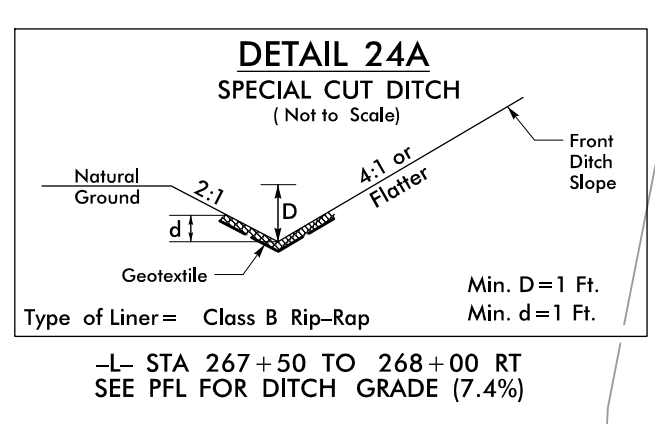
6. REMOVE EXISTING 48" CMP.
7. CONSTRUCT 95"X67" CAA PIPE-ARCH WITH SILLS AT 10' O.C.
8. REMOVE 36" TEMPORARY PIPE AND IMPERVIOUS DIKES #1 & #2.
9. SHIFT FLOW INTO NEWLY CONSTRUCTED 95"X67" CAA PIPE-ARCH AND REESTABLISH STREAM.



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

-L- CURVE DATA

PI Sta 269+61.11	PI Sta 274+37.73
$\Delta = 2' 50'' 08.0'' (LT)$	$\Delta = 1' 42'' 58.4'' (RT)$
$D = 0' 28' 38.9''$	$D = 0' 28' 38.9''$
$L = 593.88'$	$L = 359.44'$
$T = 297.00'$	$T = 179.74'$
$R = 12,000.00'$	$R = 12,000.00'$
SE = NC	SE = NC
DS = 60 MPH	DS = 60 MPH



PROJECT REFERENCE NO.	SHEET NO.
A-0009CB	EC-08/CONST.24
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	

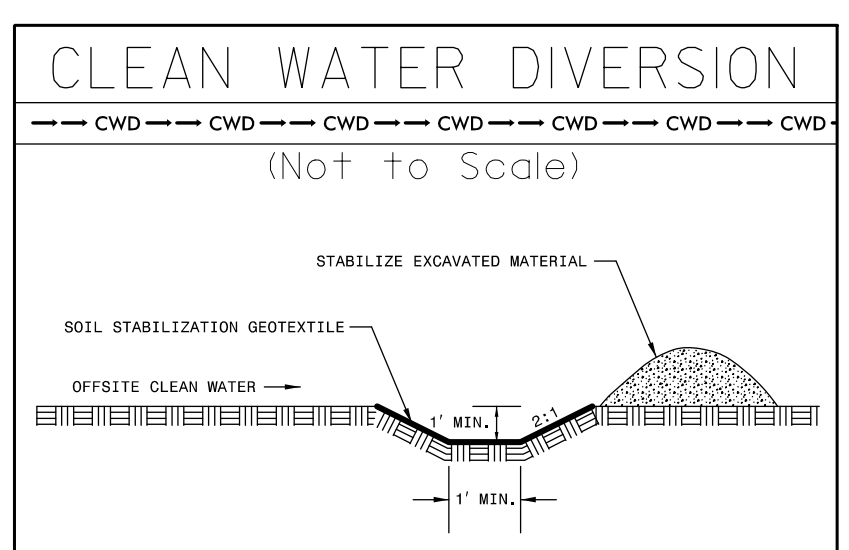
MATCH LINE STA -L- 263+00.00
MATCH TO SHEET NO. 23

MATCH LINE STA -L- 277+00.00
MATCH TO SHEET NO. 25

50 x 10 x 3
1.5 inch Skimmer
with 0.5 inch
Orifice Diameter
4 ft. weir
ID 24.1

60 x 15 x 3
1.5 inch Skimmer
with 0.75 inch
Orifice Diameter
4 ft. weir
ID 24.3

72 x 12 x 2
1.5 inch Skimmer
with 0.5 inch
Orifice Diameter
4 ft. weir
ID 24.2



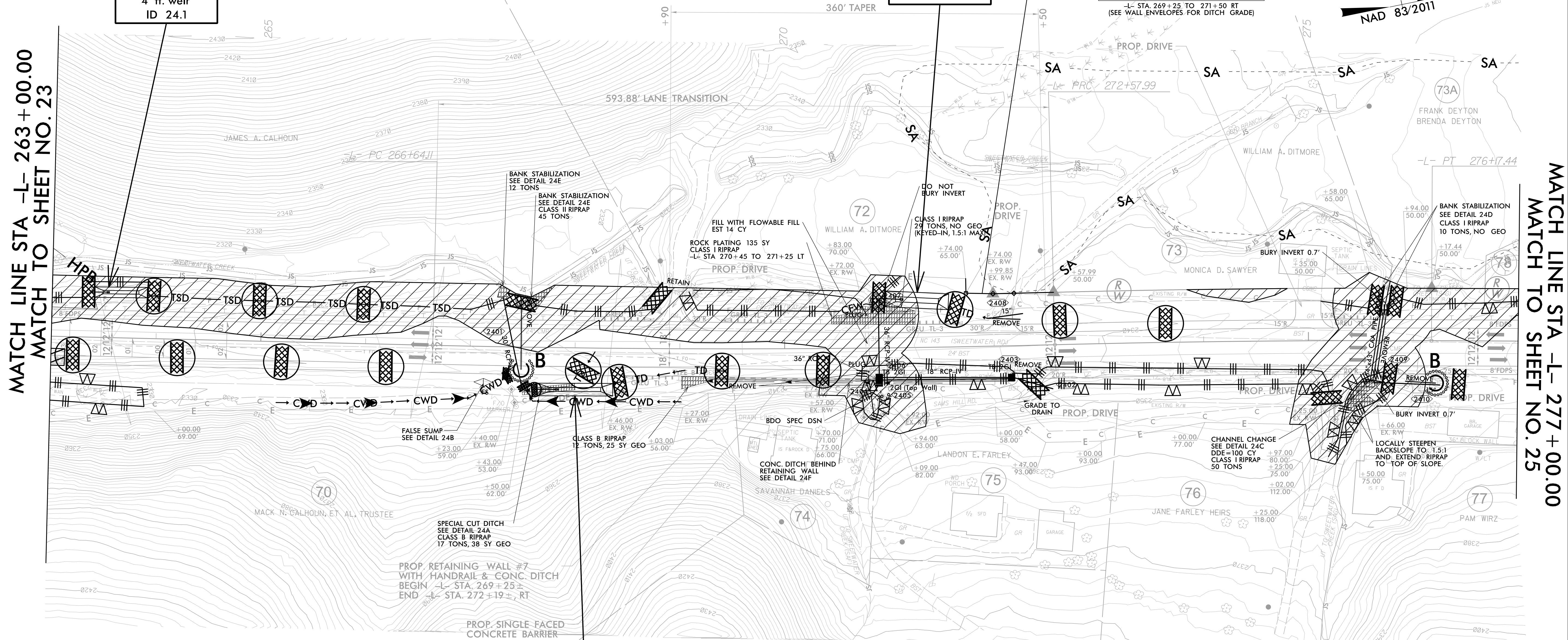
CLEAN WATER DIVERSIONS ARE INDEPENDENT OF OTHER EC DITCH LINES AND TERMINATE INTO A SC-A.

SAFETY FENCE
CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 24

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

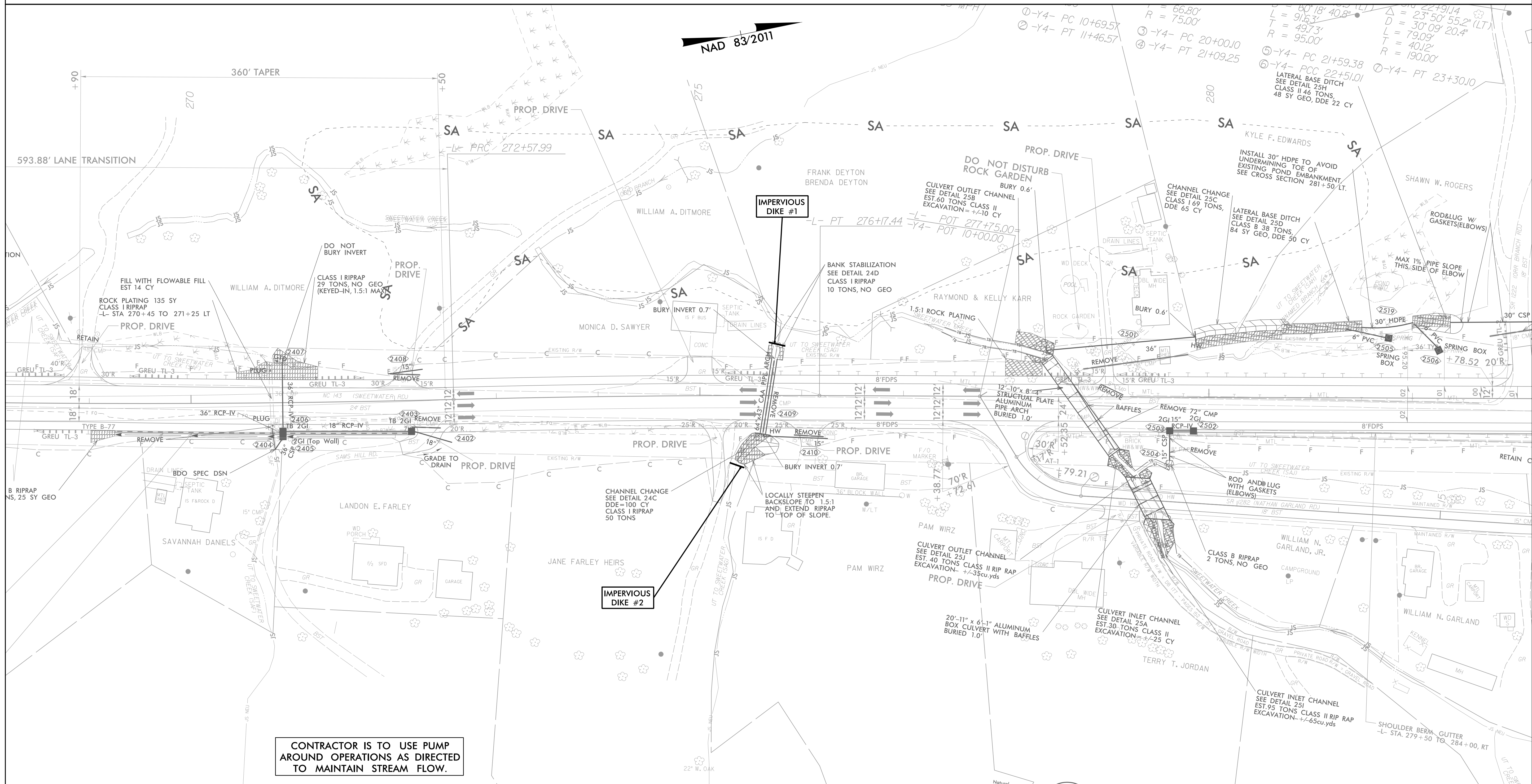
INSTALL PIPE(S) IN JURISDICTIONAL AREAS WITHOUT IMPACTING STREAM UNTIL AREA STABILIZED AND ACCORDING TO NCDOT BEST MANAGEMENT PRACTICES FOR CONSTRUCTION AND MAINTENANCE ACTIVITIES MANUAL.

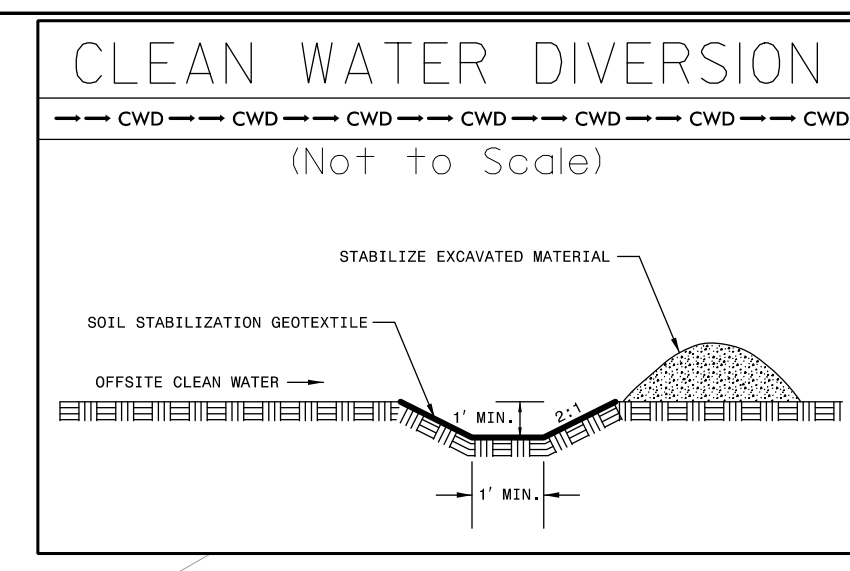


PROJECT REFERENCE NO.	SHEET NO.
A-0009CB	EC-08A/CONST.24
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

CULVERT CONSTRUCTION SEQUENCE STA. 275+68 -L-

1. INSTALL IMPERVIOUS DIKES #1 & #2 AND BEGIN PUMP AROUND OPERATION.
2. DEWATER WORK SITE AS NEEDED INTO SPECIAL STILLING BASIN(S).
3. REMOVE EXISTING 24" CMP.
4. CONSTRUCT 64"x43" CAA PIPE-ARCH.
5. STOP PUMP AROUND OPERATION.
6. REMOVE IMPERVIOUS DIKES #1 & #2 AND REESTABLISH STREAM.

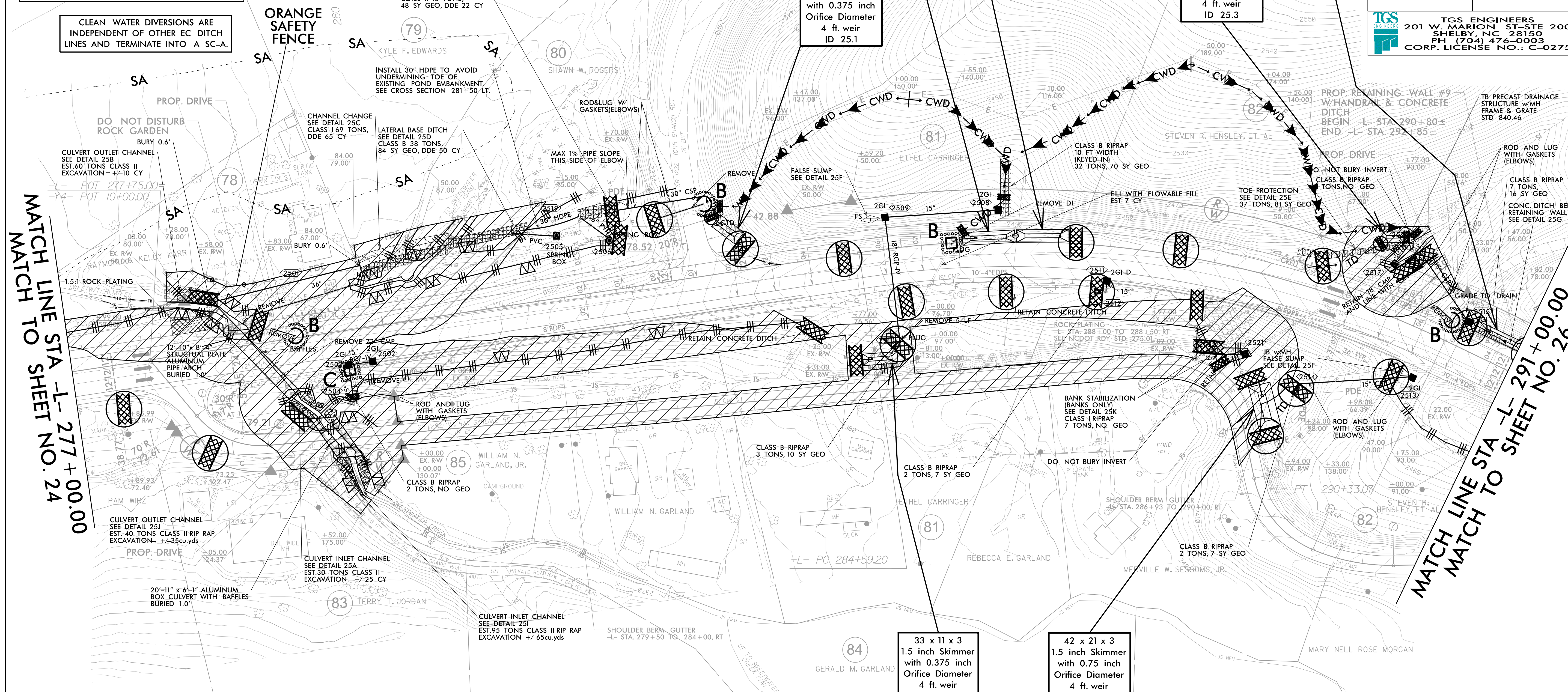




CLEAN WATER DIVERSIONS ARE INDEPENDENT OF OTHER EC DITCH LINES AND TERMINATE INTO A SC-A.

-Y4- CURVE DATA

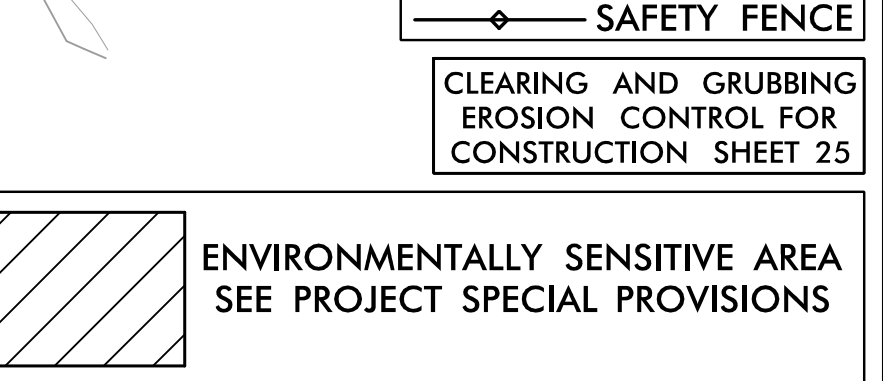
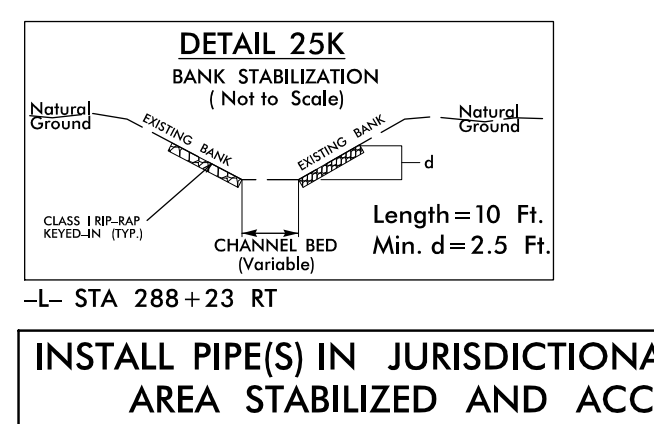
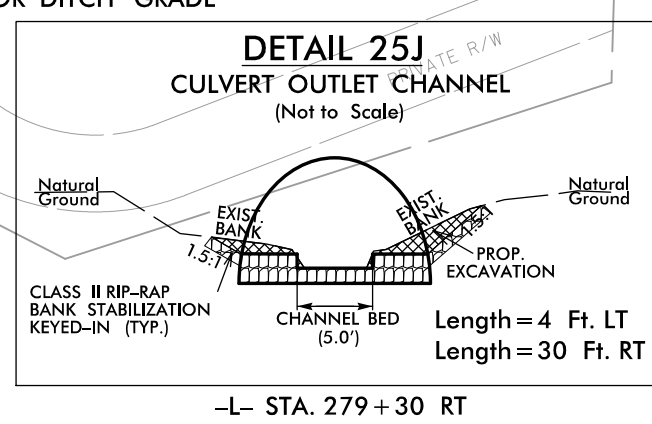
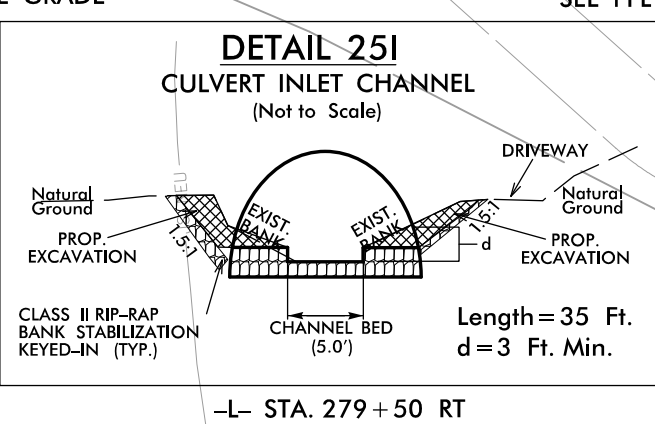
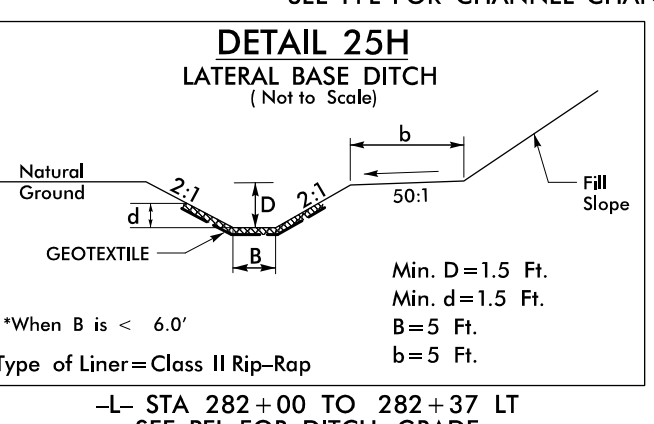
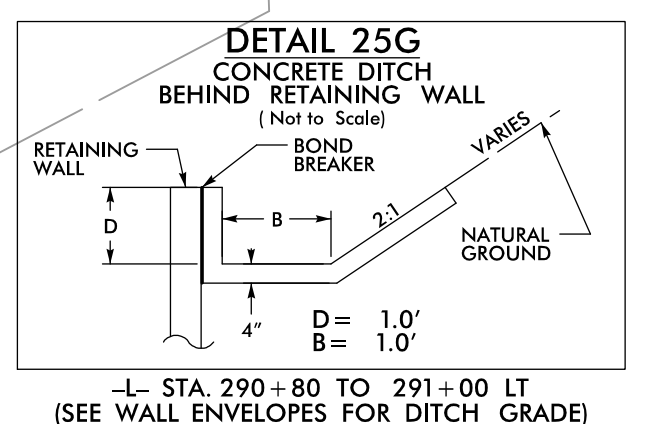
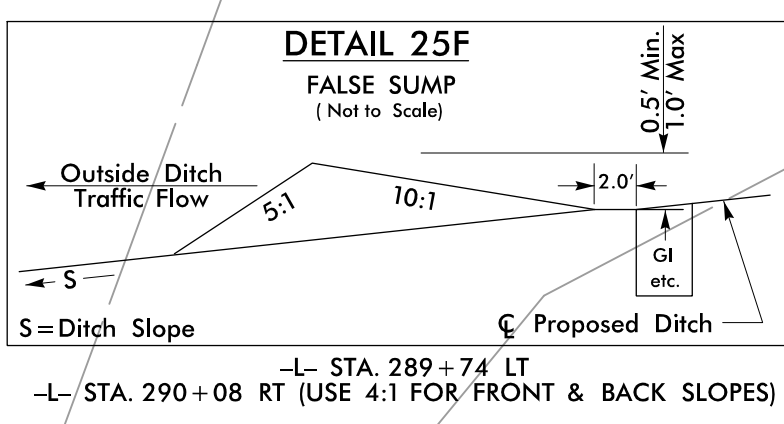
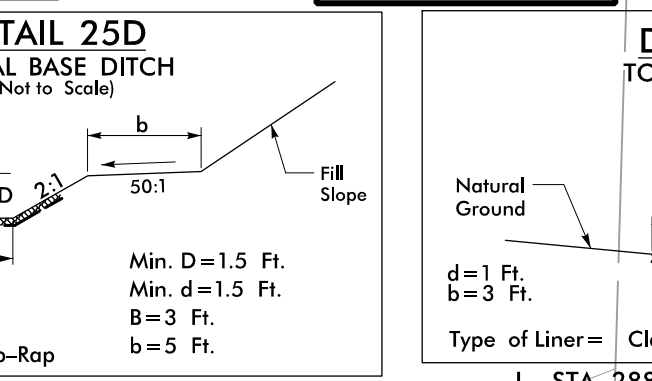
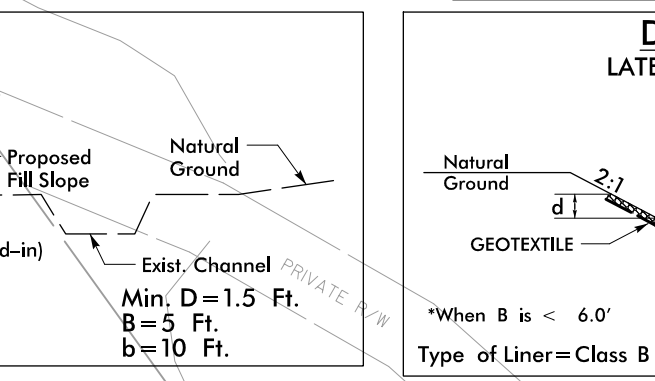
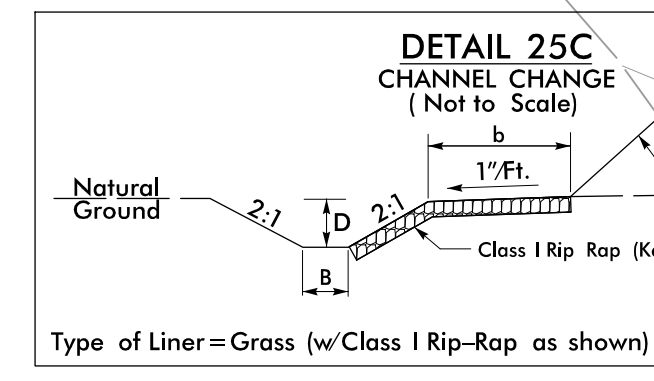
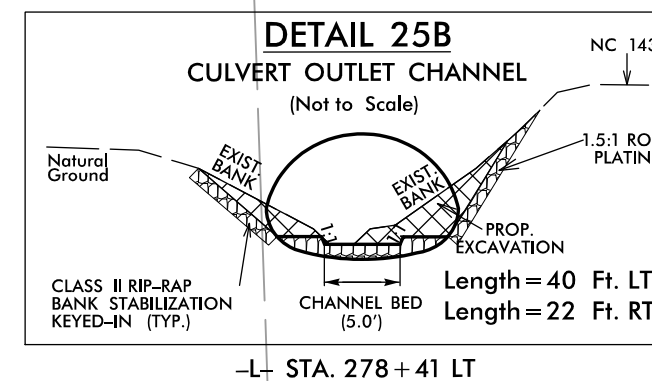
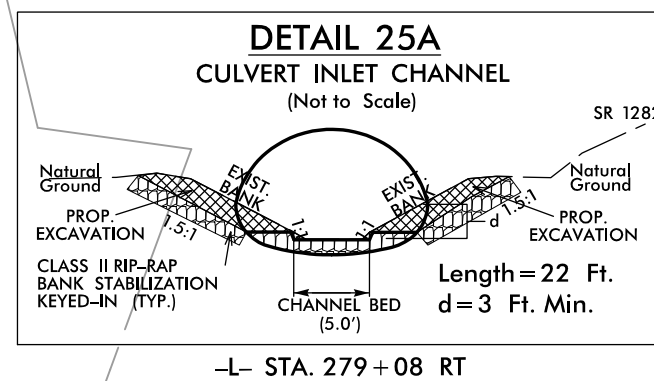
Station	Curve Type	Delta	Diameter	Length	Tangent	Radius
PI Sta 20+66.90	PC 20+00.10	83° 23' 00.0" (RT)	76' 23" 39.7"	109.15'	66.80'	75.00'
PI Sta 22+09.11	PC 21+59.38	55° 15' 43.9" (LT)	80' 18' 40.8"	91.63'	49.73'	95.00'
PI Sta 22+91.14	PT 23+30.10	23° 50' 55.2" (LT)	30' 09' 20.4"	79.09'	40.12'	190.00'



MATCH LINE STA -L- 277+00.00
MATCH LINE TO SHEET NO. 24

MATCH LINE STA -L- 291+00.00
MATCH LINE TO SHEET NO. 26

PROJECT REFERENCE NO. A-0009CB	SHEET NO. EC-09/CONST.25
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	



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.

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.

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 26

-L- CURVE DATA
PI Sta 300+23.36
Δ = 31° 41' 09.8" (LT)
D = 5' 43' 46.5"
L = 553.03'
T = 283.78'
R = 1,000.00'
SE = 0.08
DS = 55 MPH

PI Sta 24+49.98
Δ = 62° 22' 39.1" (RT)
D = 60' 18' 40.8"
L = 103.43'
T = 57.51'
R = 95.00'

PI Sta 26+47.22
Δ = 33° 21' 29.8" (LT)
D = 19' 05' 54.9"
L = 175.19'
T = 90.11'
R = 300.00'

PI Sta 27+92.98
Δ = 36° 32' 32.0" (LT)
D = 31' 08' 20.4"
L = 117.35'
T = 60.75'
R = 184.00'

PI Sta 29+58.22
Δ = 28° 20' 20.0" (RT)
D = 21' 42' 10.6"
L = 130.58'
T = 66.65'
R = 264.00'

PI Sta 30+89.80
Δ = 7° 44' 28.4" (RT)
D = 5' 43' 46.5"
L = 135.11'
T = 67.66'
R = 184.00'

PI Sta 33+31.35
Δ = 59° 32' 46.6" (LT)
D = 57' 17' 44.8"
L = 103.93'
T = 57.21'
R = 100.00'

PI Sta 34+83.66
Δ = 76° 08' 00.0" (RT)
D = 86' 48' 42.4"
L = 87.70'
T = 51.69'
R = 66.00'

PI Sta 36+39.74
Δ = 84° 11' 34.2" (LT)
D = 76' 23' 39.7"
L = 110.21'
T = 67.76'
R = 75.00'

PI Sta 37+06.50
Δ = 10° 12' 57.1" (LT)
D = 21' 03' 52.6"
L = 48.50'
T = 24.31'
R = 272.00'

PI Sta 39+22.11
Δ = 116° 14' 31.4" (RT)
D = 71' 37' 11.0"
L = 109.29'
T = 162.63'
R = 80.00'

PI Sta 40+76.38
Δ = 78° 16' 33.1" (LT)
D = 71' 37' 11.0"
L = 109.29'
T = 65.10'
R = 80.00'

① -Y4- PC 23+92.47
② -Y4- PT 24+95.90

③ -Y4- PC 25+57.05
④ -Y4- PCC 27+32.23
⑤ -Y4- PT 28+49.59

⑥ -Y4- PC 28+91.56
⑦ -Y4- PCC 30+22.14
⑧ -Y4- PT 31+57.25

⑨ -Y4- PC 32+74.14
⑩ -Y4- PT 33+78.07

⑪ -Y4- PC 34+31.98
⑫ -Y4- PT 35+19.68

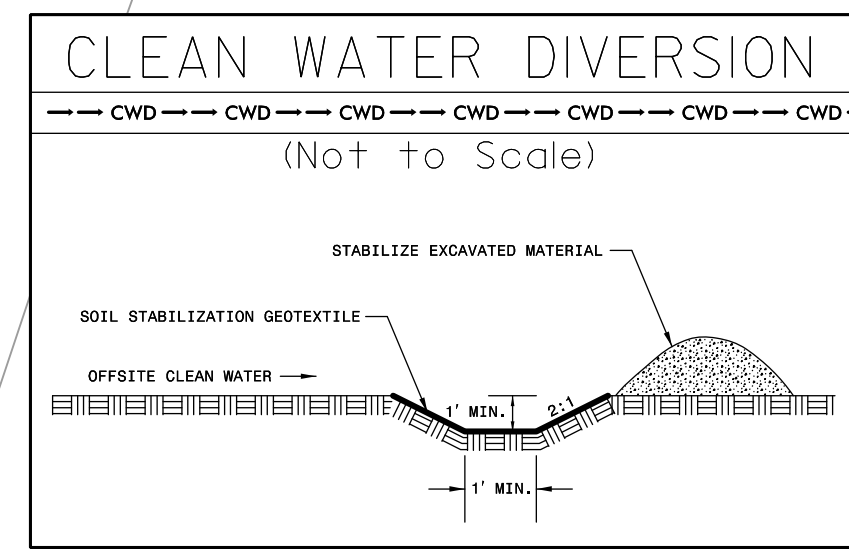
⑬ -Y4- PC 35+71.98
⑭ -Y4- PCC 36+82.19
⑮ -Y4- PT 37+30.68

⑯ -Y4- PC 37+93.48
⑰ -Y4- PT 39+55.79

54 x 14 x 3
1.5 inch Skimmer
with 0.625 inch
Orifice Diameter
4 ft. weir
ID 26.1

54 x 18 x 3
1.5 inch Skimmer
with 1.25 inch
Orifice Diameter
10 ft. weir
(See Tiered Skimmer
Basin Detail)
ID 26.2

Modified Silt Basin
Type 'B'
54 x 18 x 3
10 ft. weir
(See Tiered Skimmer
Basin Detail)
ID 26.2

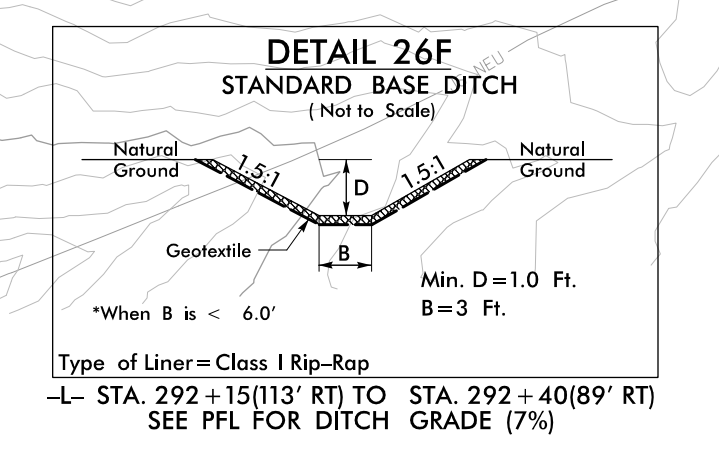
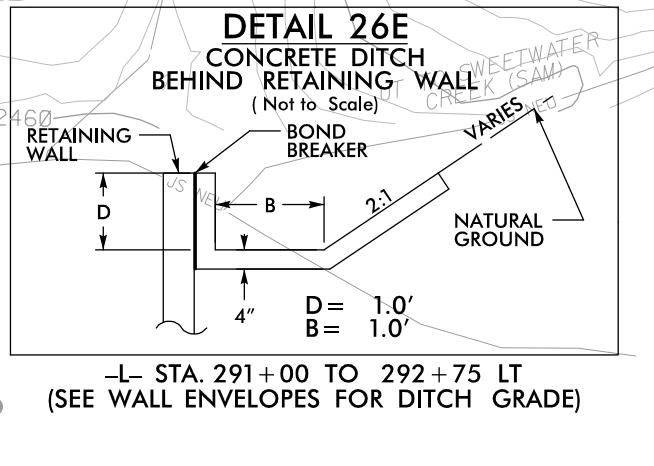
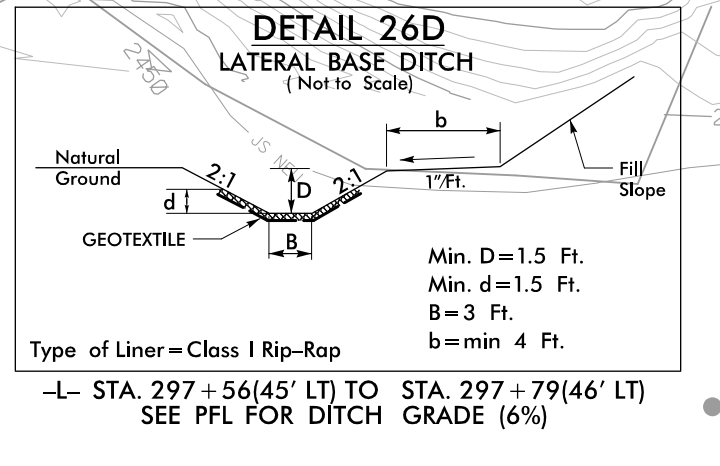
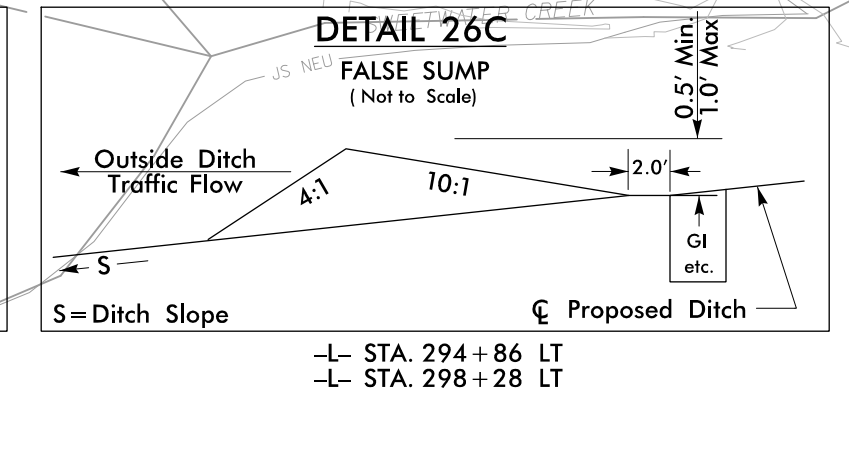
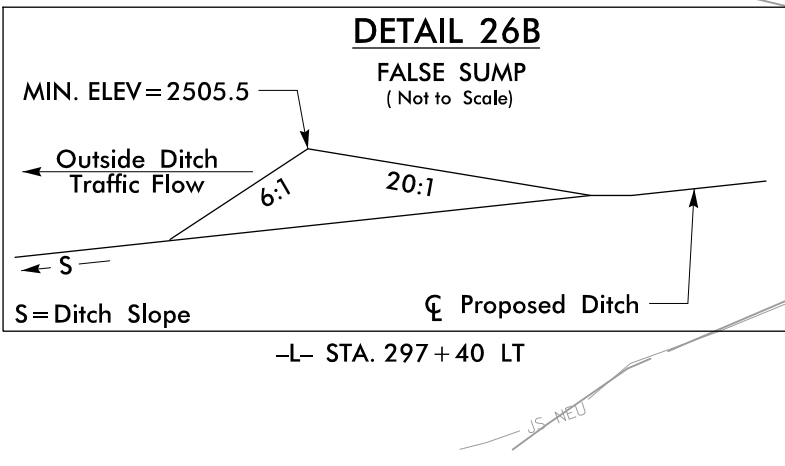
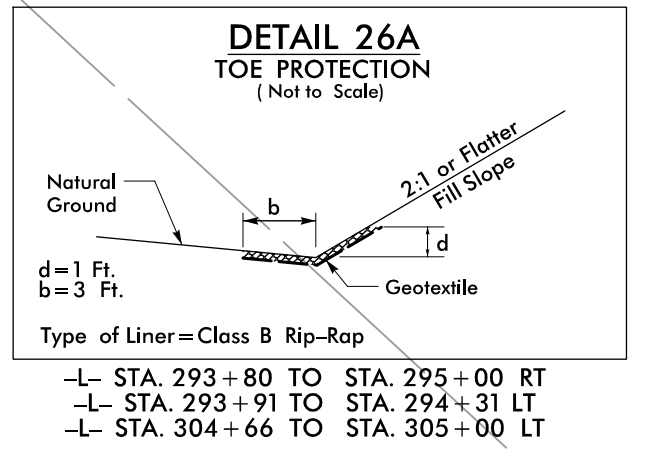
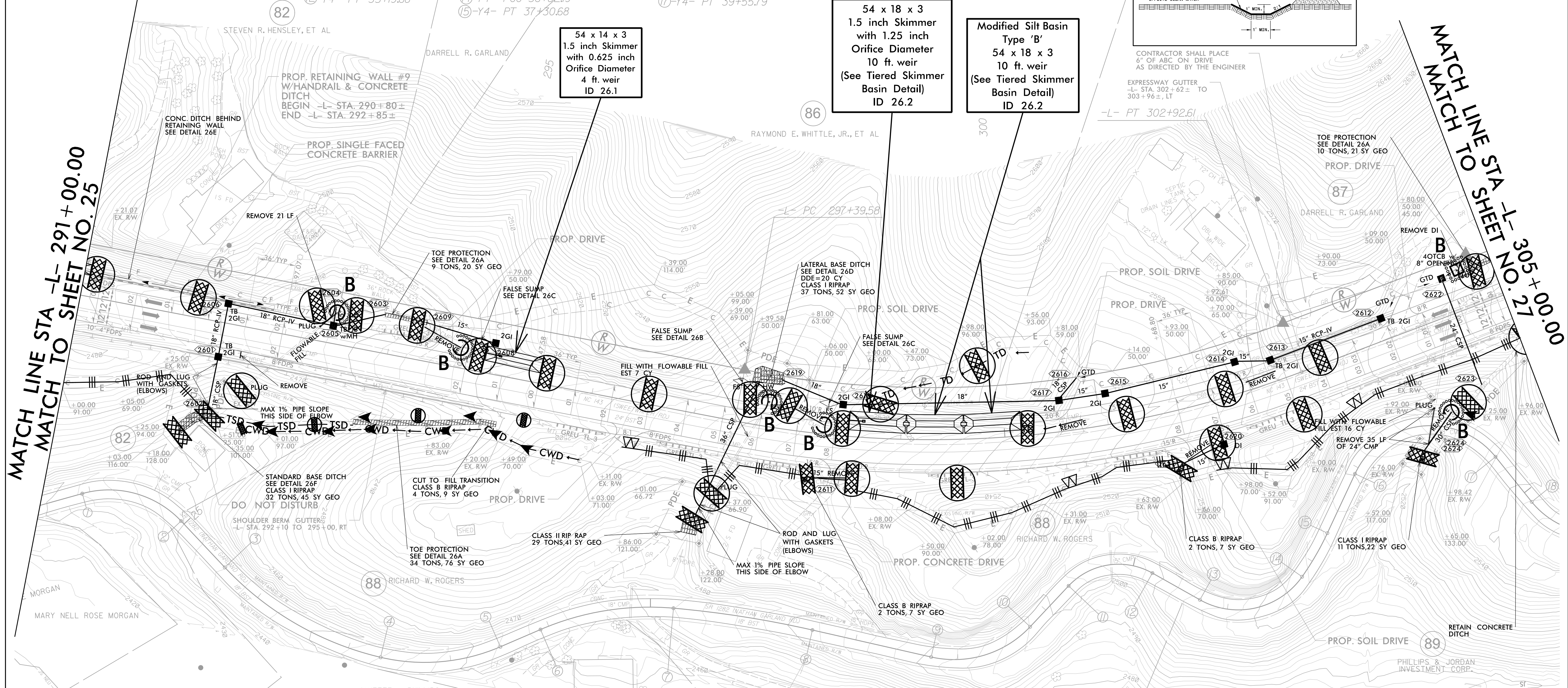


CLEAN WATER DIVERSIONS ARE INDEPENDENT OF OTHER EC DITCH LINES AND TERMINATE INTO A SC-A.

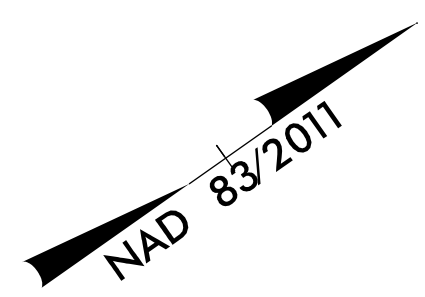
CONTRACTOR SHALL PLACE 6" OF ABC ON DRIVE AS DIRECTED BY THE ENGINEER

EXPRESSWAY CUTTER
-L- STA. 302+62± TO 303+96±, LT

TOE PROTECTION
SEE DETAIL 26A
10 TONS, 21 SY GEO



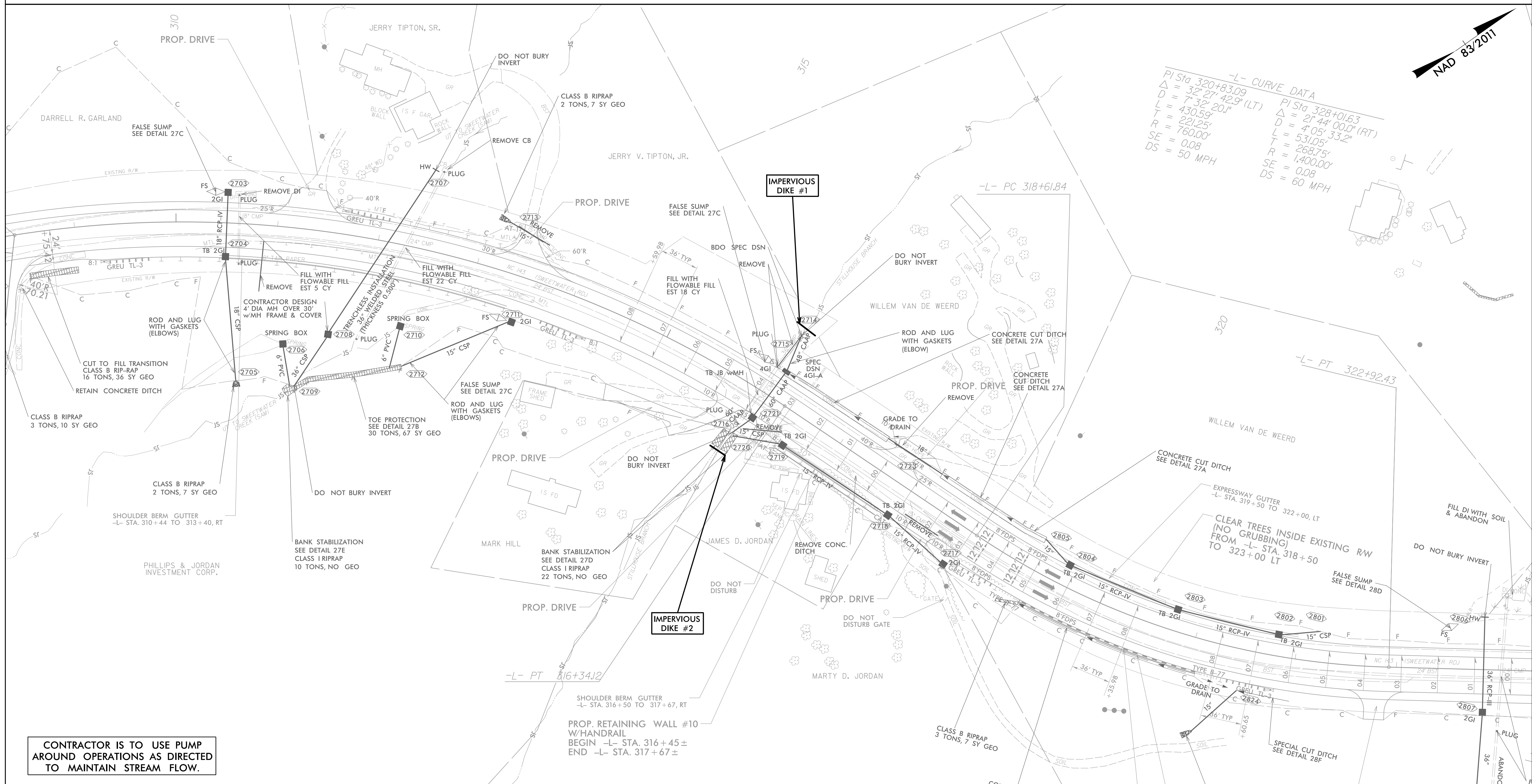
PROJECT REFERENCE NO.	SHEET NO.
A-0009CB	EC-10/CONST.26
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
TGS ENGINEERS 201 W. MARION ST. STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	



PROJECT REFERENCE NO.	SHEET NO.
A-0009CB	EC-IIA/CONST.27
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PIPE CONSTRUCTION SEQUENCE STA. 316+15 -L-

1. INSTALL JUNCTION BOX WITH MANHOLE #2721, DROP INLET #2715, AND PROPOSED 60" RCP-IV FROM DRAINAGE ITEM #2715 TO #2721.
2. INSTALL IMPERVIOUS DIKES #1 & #2 AND START PUMPING FROM UPSTREAM OF IMPERVIOUS DIKE #1 TO BOX #2715, THROUGH NEWLY CONSTRUCTED 60" RCP-IV, AND FROM BOX #2721 TO DOWNSTREAM OF IMPERVIOUS DIKE #2.
3. DEWATER WORK SITE AS NEEDED INTO SPECIAL STILLING BASIN(S).
4. INSTALL 48" CSP FROM #2714 TO #2715 AND 60" PIPE FROM #2721 TO #2716.
5. REMOVE EXISTING 36" CMP AND EXISTING DROP INLET.
6. REMOVE IMPERVIOUS DIKES AND STOP PUMP AROUND, SHIFTING FLOW INTO NEWLY CONSTRUCTED PIPE SYSTEM.
7. REESTABLISH STREAM ACCORDING TO CONST. PLANS.



-L- CURVE DATA

PI Sta 320+83.09	PI Sta 328+01.63
$\Delta = 32^{\circ}27'42.9"$ (LT)	$\Delta = 21^{\circ}44'00.0"$ (RT)
$D = 7^{\circ}32'20.1"$	$D = 4^{\circ}05'33.2"$
$L = 430.59'$	$L = 531.05'$
$T = 221.25'$	$T = 268.75'$
$R = 760.00'$	$R = 1,400.00'$
$SE = 0.08$	$SE = 0.08$
$DS = 50$ MPH	$DS = 60$ MPH

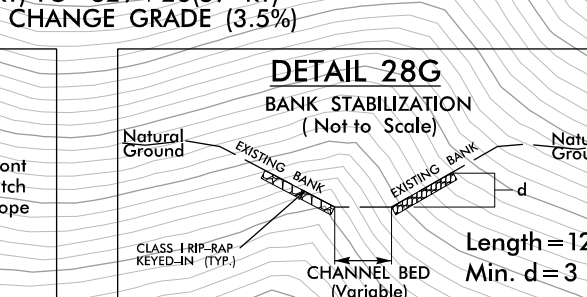
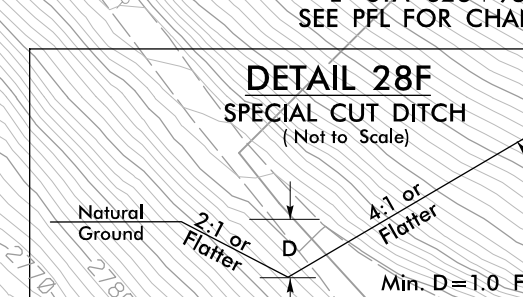
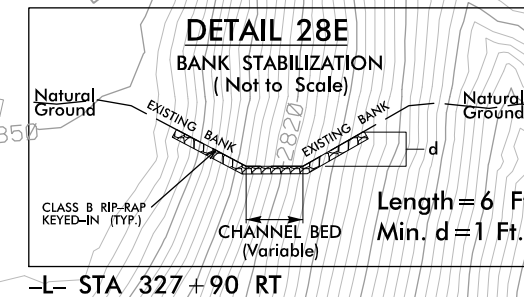
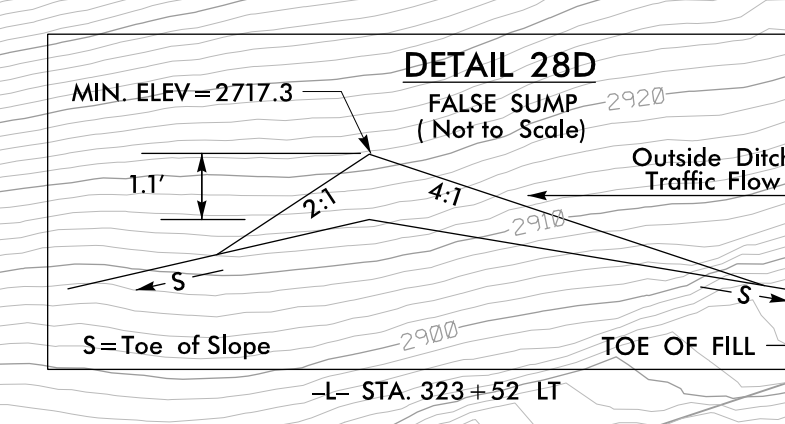
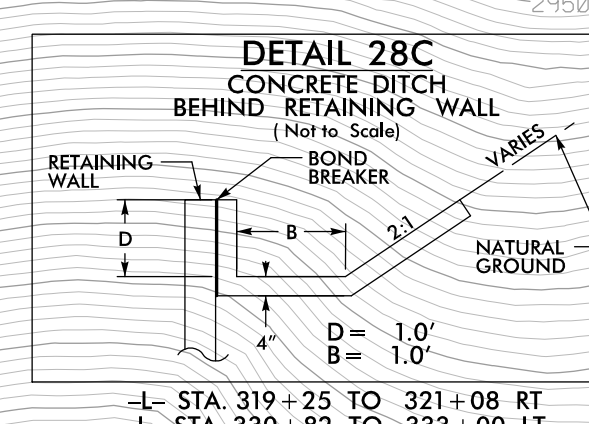
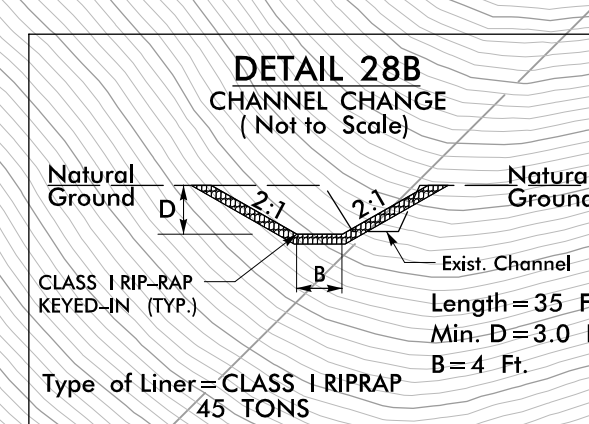
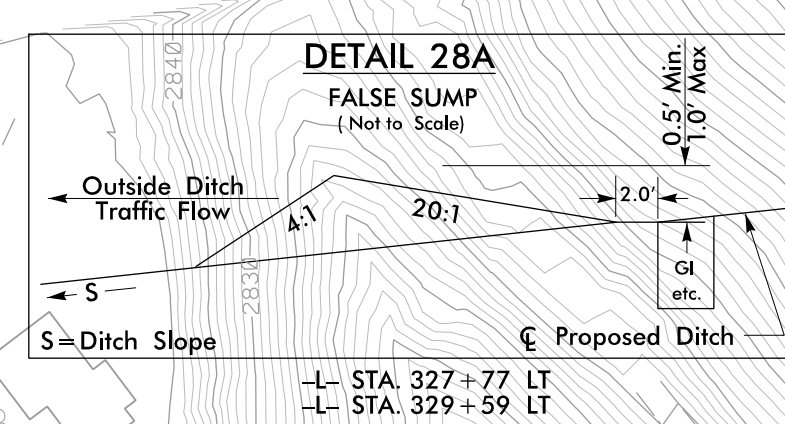
CONTRACTOR IS TO USE PUMP AROUND OPERATIONS AS DIRECTED TO MAINTAIN STREAM FLOW.

PROP. RETAINING WALL #10 W/HANDRAIL
 BEGIN -L- STA. 316+45 ±
 END -L- STA. 317+67 ±

-L- CURVE DATA

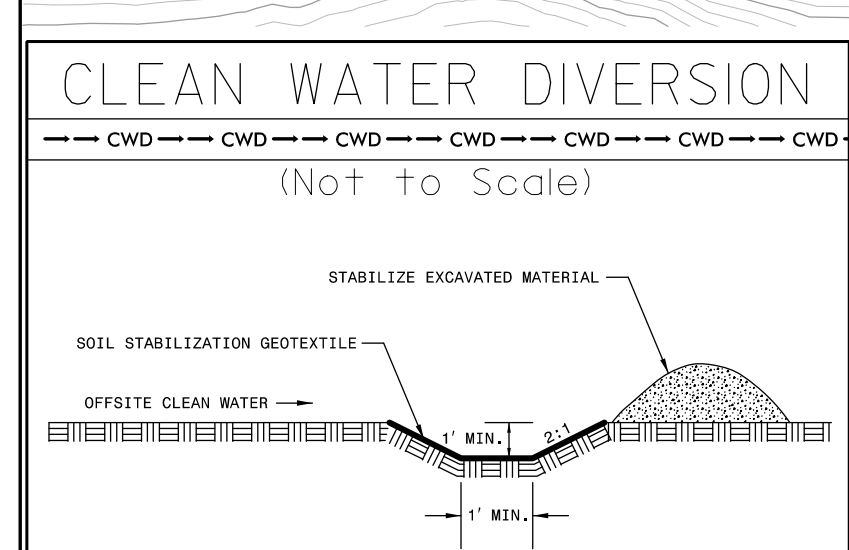
PI Sta 320+83.09	PI Sta 328+01.63
$\Delta = 32^{\circ}27'42.9"$ (LT)	$\Delta = 21^{\circ}44'00.0"$ (RT)
$D = 732^{\circ}20.1'$	$D = 4^{\circ}05'33.2'$
$L = 430.59'$	$L = 531.05'$
$T = 221.25'$	$T = 268.75'$
$R = 760.00'$	$R = 1,400.00'$
$SE = 0.08$	$SE = 0.08$
$DS = 50$ MPH	$DS = 60$ MPH

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



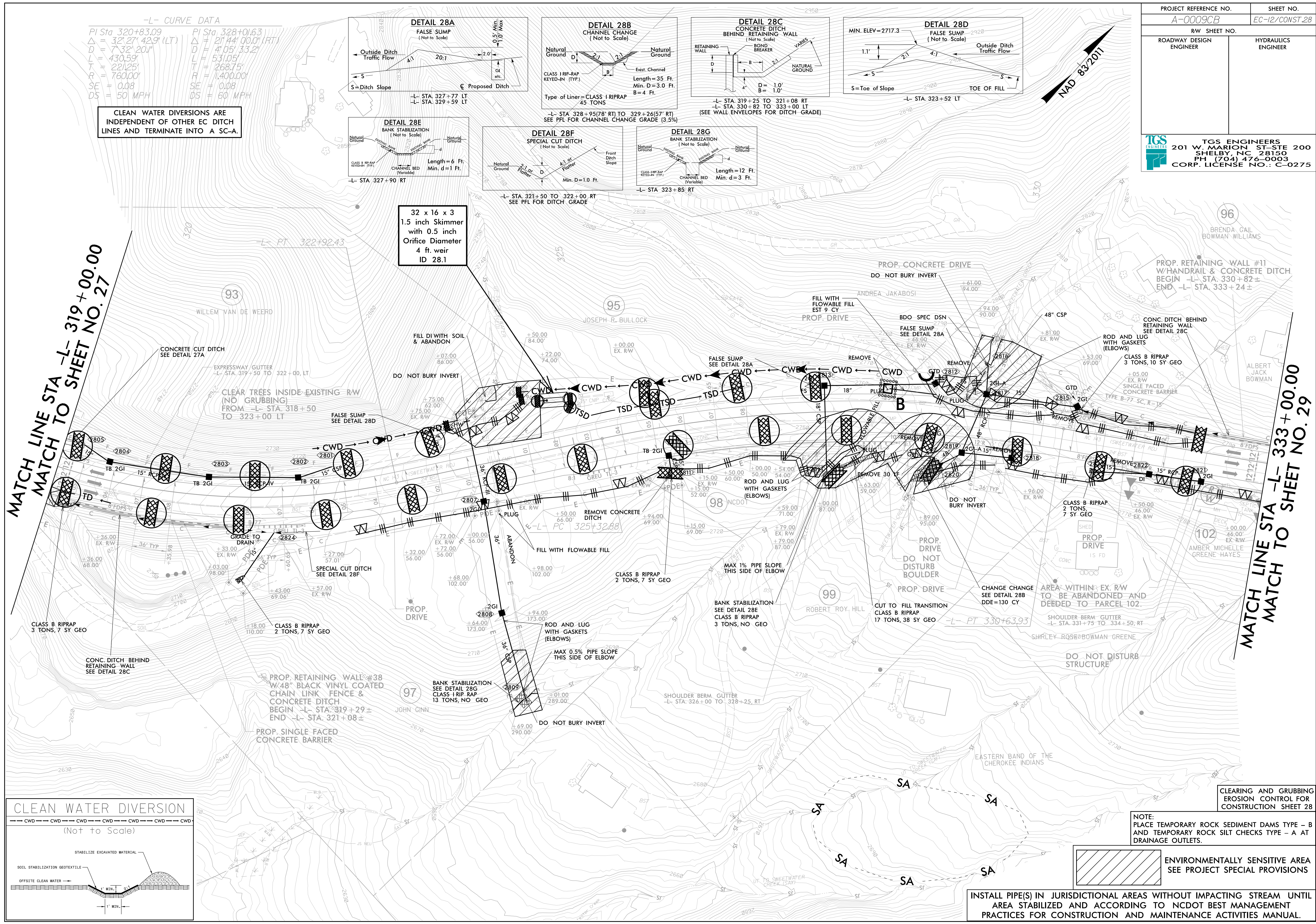
MATCH LINE STA -L- 319+00.00
MATCH TO SHEET NO. 27

MATCH LINE STA -L- 333+00.00
MATCH TO SHEET NO. 29



32 x 16 x 3
1.5 inch Skimmer
with 0.5 inch
Orifice Diameter
4 ft. weir
ID 28.1


PROJECT REFERENCE NO. A-0009CB	SHEET NO. EC-12/CONST.28
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	

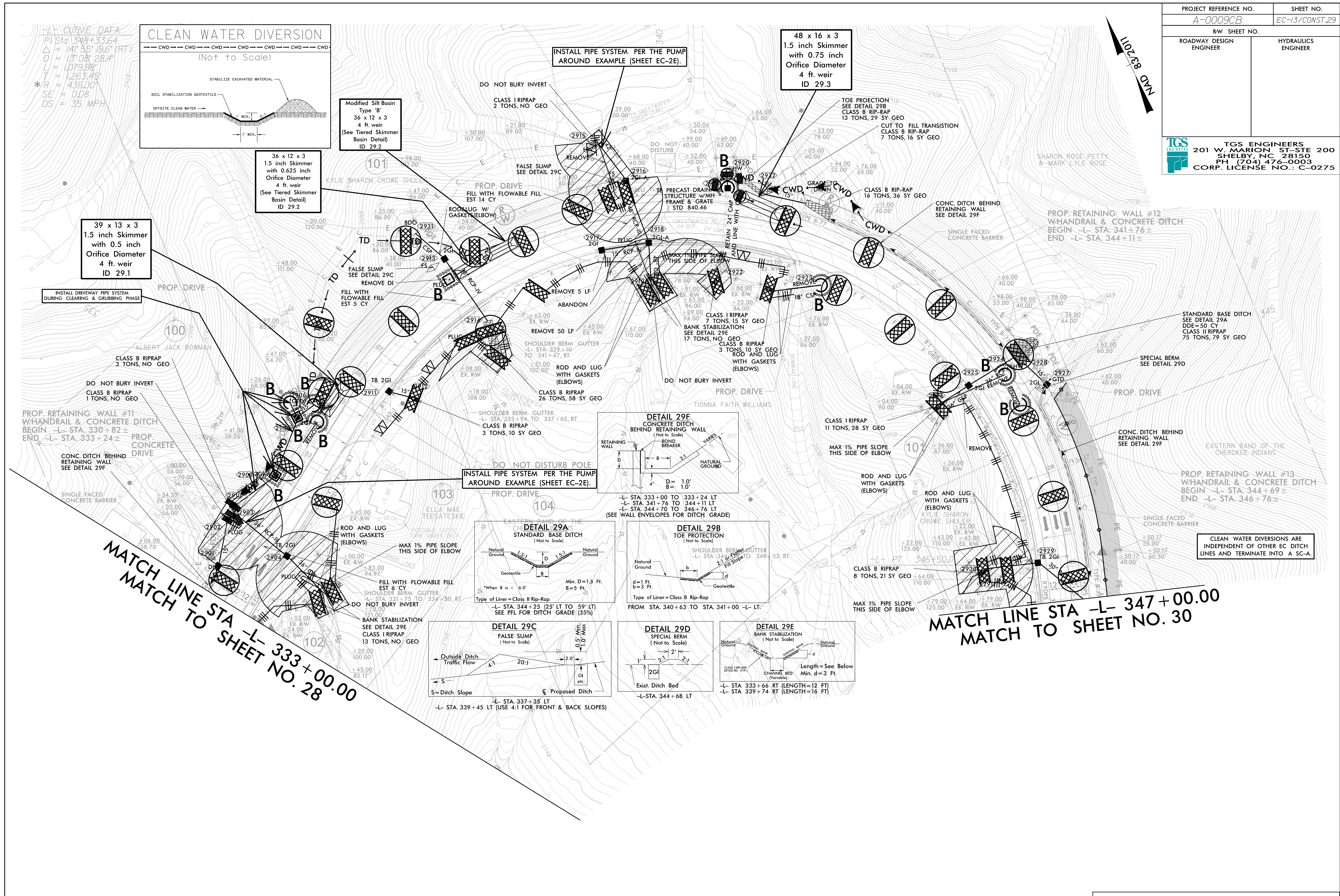


NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B
AND TEMPORARY ROCK SILT CHECKS TYPE - A AT
DRAINAGE OUTLETS.


ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

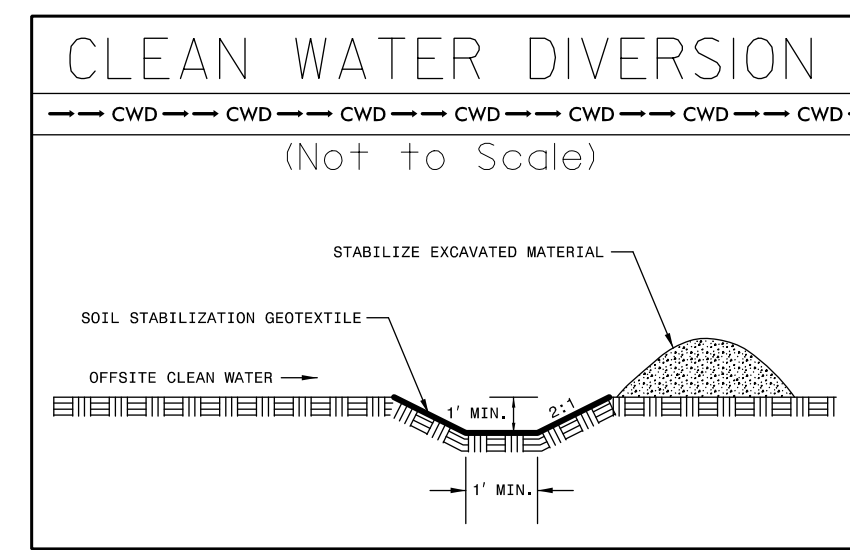
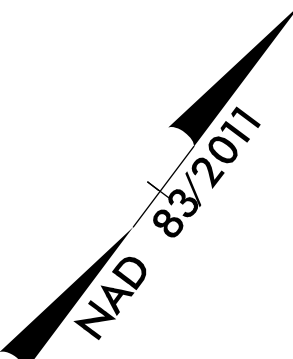
INSTALL PIPE(S) IN JURISDICTIONAL AREAS WITHOUT IMPACTING STREAM UNTIL AREA STABILIZED AND ACCORDING TO NCDOT BEST MANAGEMENT PRACTICES FOR CONSTRUCTION AND MAINTENANCE ACTIVITIES MANUAL.

PROJECT REFERENCE NO.	SHEET NO.
A-0009CB	EC-13/CONST.29
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	

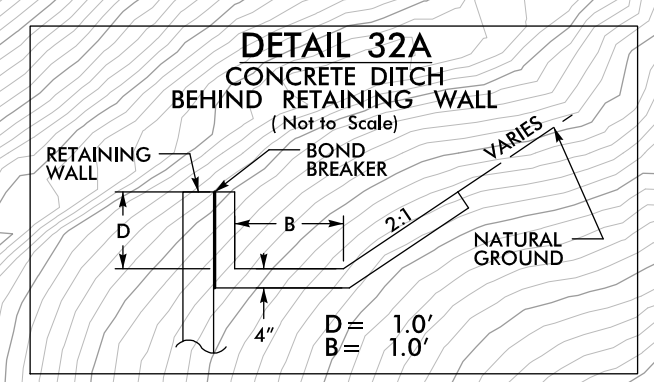


 MINIMIZE CLEARING AND GRUBBING  SAFETY FENCE	 CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 29	INSTALL PIPE(S) IN JURISDICTIONAL AREAS WITHOUT IMPACTING STREAM UNTIL AREA STABILIZED AND ACCORDING TO NCDOT BEST MANAGEMENT PRACTICES FOR CONSTRUCTION AND MAINTENANCE ACTIVITIES MANUAL.	NOTE: PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B AND TEMPORARY ROCK SILT CHECKS TYPE - A AT DRAINAGE OUTLETS.	 ENVIRONMENTALLY SENSITIVE AREA SEE PROJECT SPECIAL PROVISIONS
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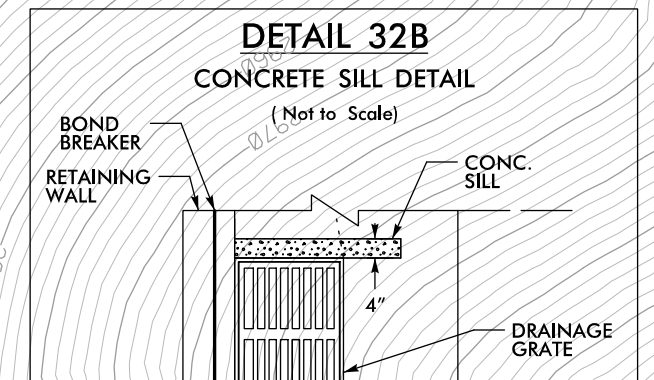
PROJECT REFERENCE NO.	SHEET NO.
A-0009CB	EC-16/CONST.32
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
 TGS ENGINEERS 201 W. MARION ST. STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	



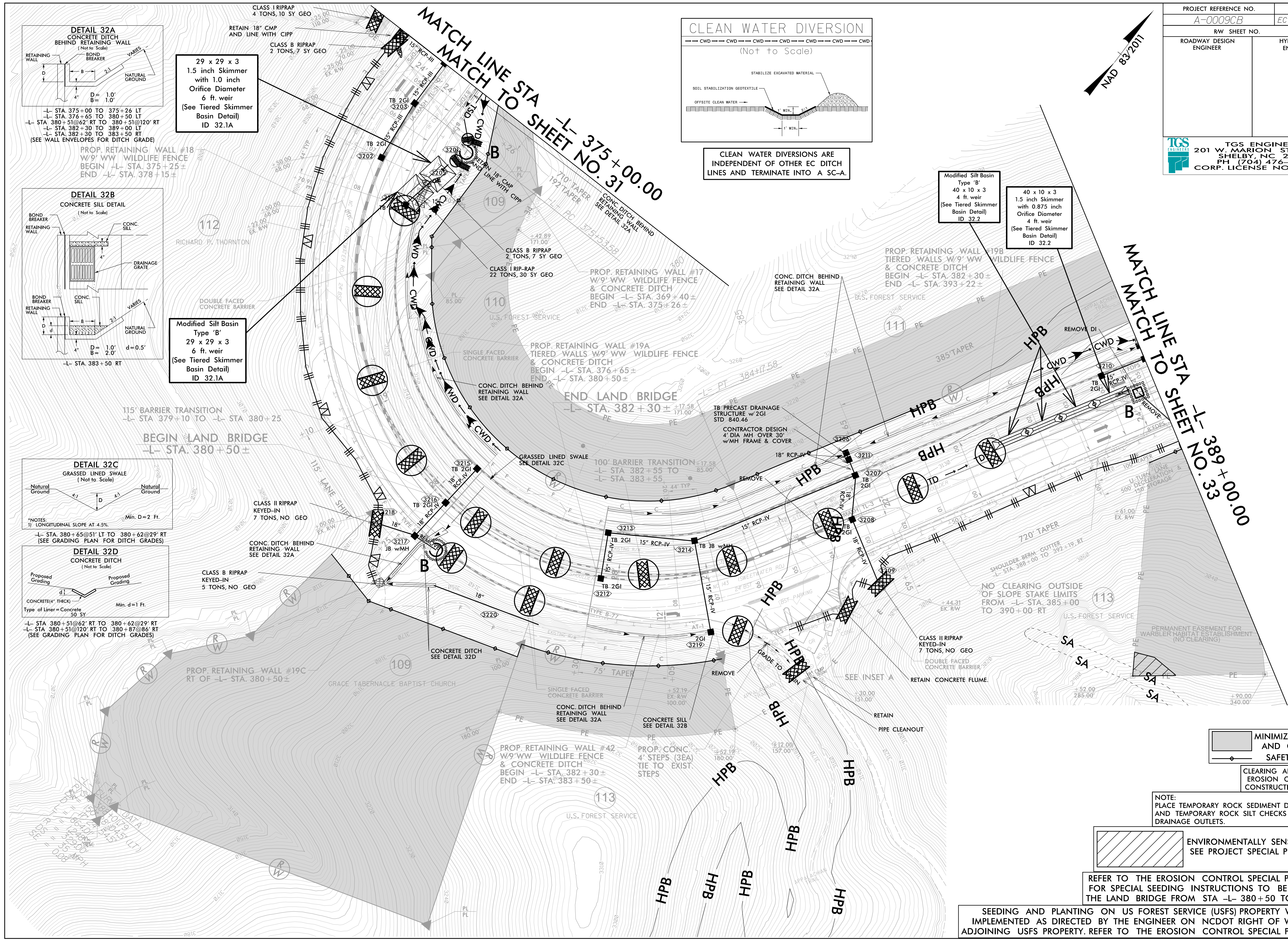
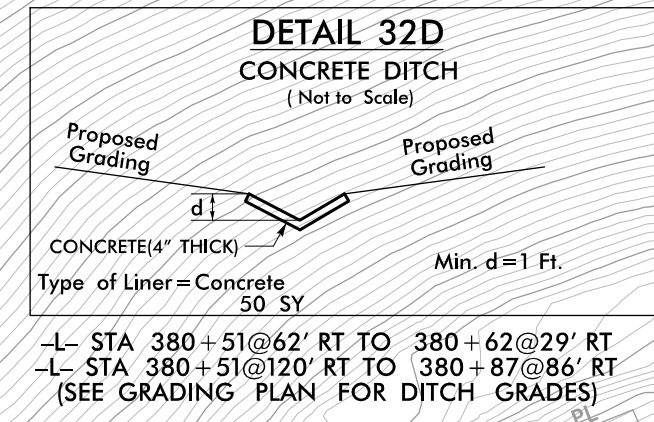
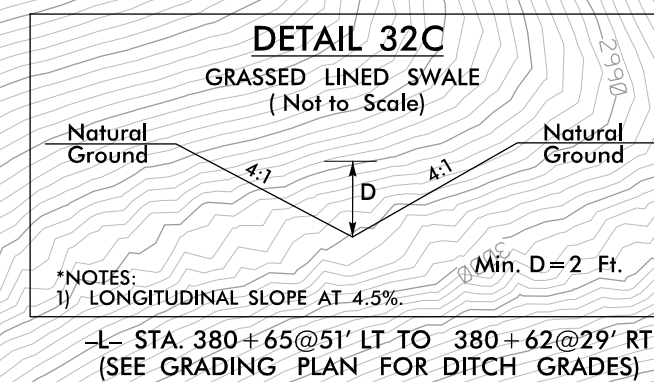
CLEAN WATER DIVERSIONS ARE INDEPENDENT OF OTHER EC DITCH LINES AND TERMINATE INTO A SC-A.



29 x 29 x 3
1.5 inch Skimmer with 1.0 inch Orifice Diameter
6 ft. weir
(See Tiered Skimmer Basin Detail)
ID 32.1A



Modified Silt Basin Type 'B'
29 x 29 x 3
1.5 inch Skimmer with 0.875 inch Orifice Diameter
4 ft. weir
(See Tiered Skimmer Basin Detail)
ID 32.2



MINIMIZE CLEARING AND GRUBBING
SAFETY FENCE


CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 32

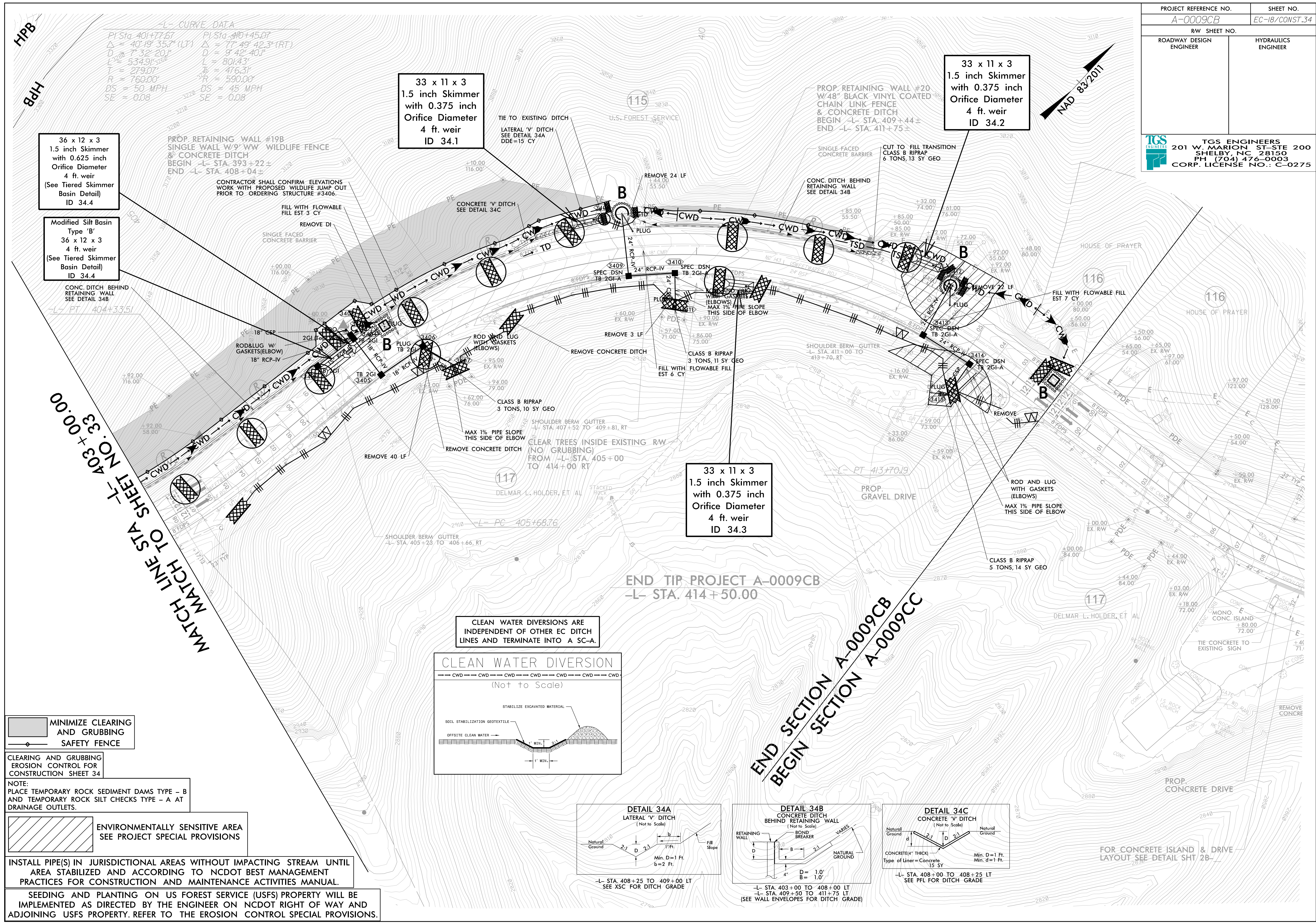
NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B AND TEMPORARY ROCK SILT CHECKS TYPE - A AT DRAINAGE OUTLETS.

ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

REFER TO THE EROSION CONTROL SPECIAL PROVISIONS FOR SPECIAL SEEDING INSTRUCTIONS TO BE USED ON THE LAND BRIDGE FROM STA -L- 380+50 TO 382+30.

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.

PROJECT REFERENCE NO.	SHEET NO.
A-0009CB	EC-18/CONST.34
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. 401+77.67	PI Sta. 410+45.07
$\Delta = 40' 18" 35.7"$ (LT)	$\Delta = 77' 49" 42.3"$ (RT)
$D_{\text{curve}} = 7' 32" 20.1"$	$D = 9' 42" 40.1"$
$L_{\text{curve}} = 534.91'$	$L = 801.43'$
$T = 279.07'$	$T = 476.31'$
$R = 760.00'$	$R = 590.00'$
$DS = 50 \text{ MPH}$	$DS = 45 \text{ MPH}$
$SE = 0.08$	$SE = 0.08$

36 x 12 x 3
1.5 inch Skimmer
with 0.625 inch
Orifice Diameter
4 ft. weir
(See Tiered Skimmer
Basin Detail)
ID 34.4

Modified Silt Basin
Type 'B'
36 x 12 x 3
4 ft. weir
(See Tiered Skimmer
Basin Detail)
ID 34.4

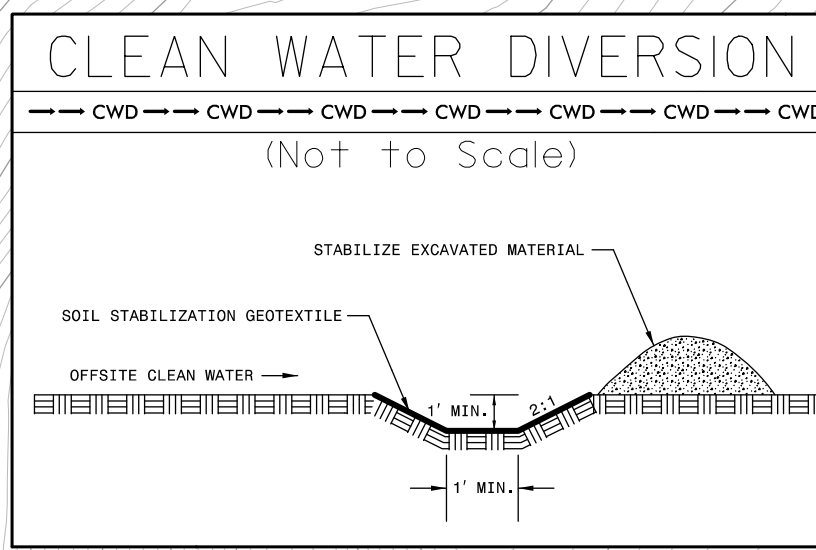
33 x 11 x 3
1.5 inch Skimmer
with 0.375 inch
Orifice Diameter
4 ft. weir
ID 34.1

33 x 11 x 3
1.5 inch Skimmer
with 0.375 inch
Orifice Diameter
4 ft. weir
ID 34.2

33 x 11 x 3
1.5 inch Skimmer
with 0.375 inch
Orifice Diameter
4 ft. weir
ID 34.3

MATCH LINE STA 403+00.00
TO SHEET NO. A-0009CC

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



 MINIMIZE CLEARING
AND GRUBBING

 SAFETY FENCE

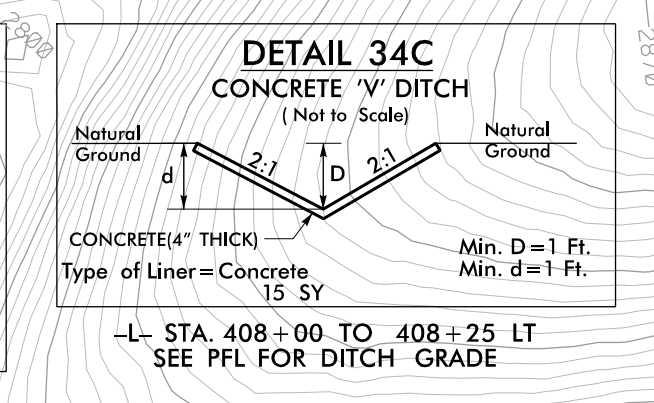
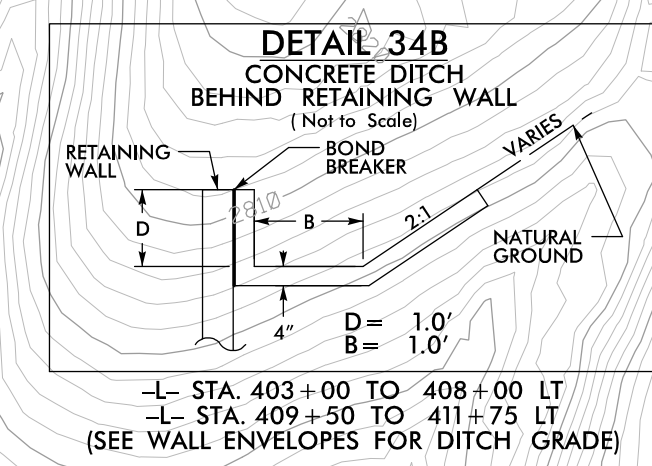
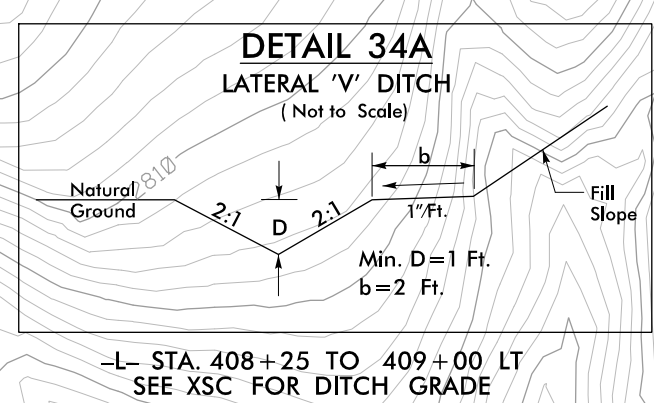
CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 34

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.

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 CONCRETE ISLAND & DRIVE
LAYOUT SEE DETAIL SHT 2B