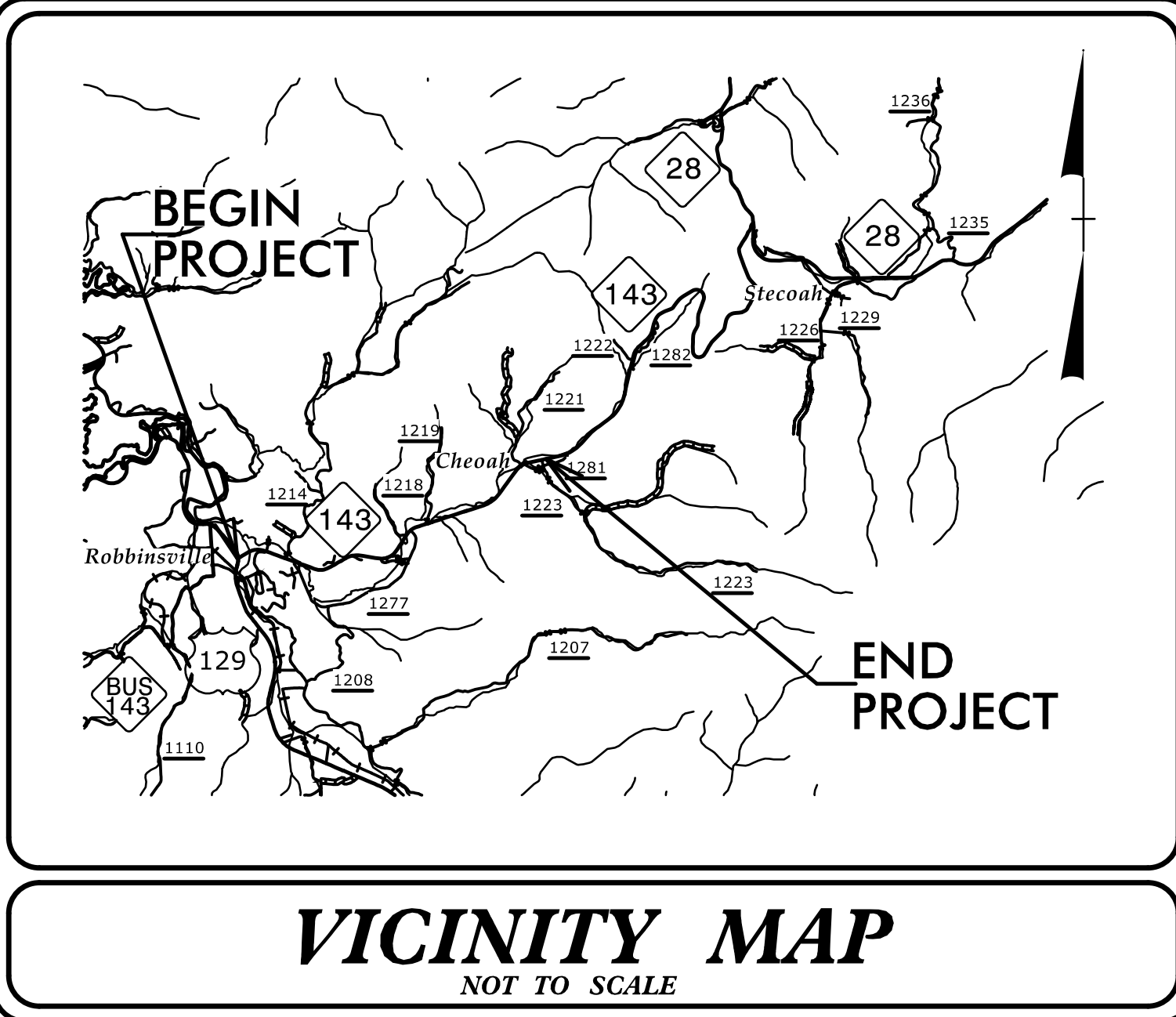


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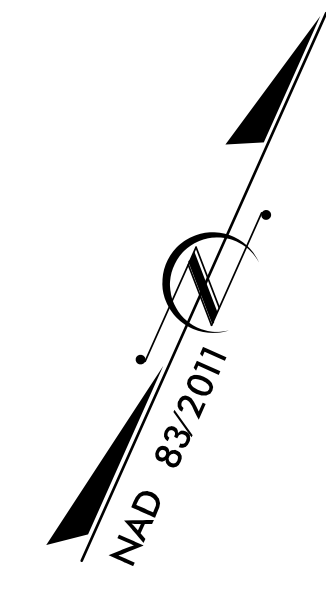
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TIP PROJECT: A-0009CA



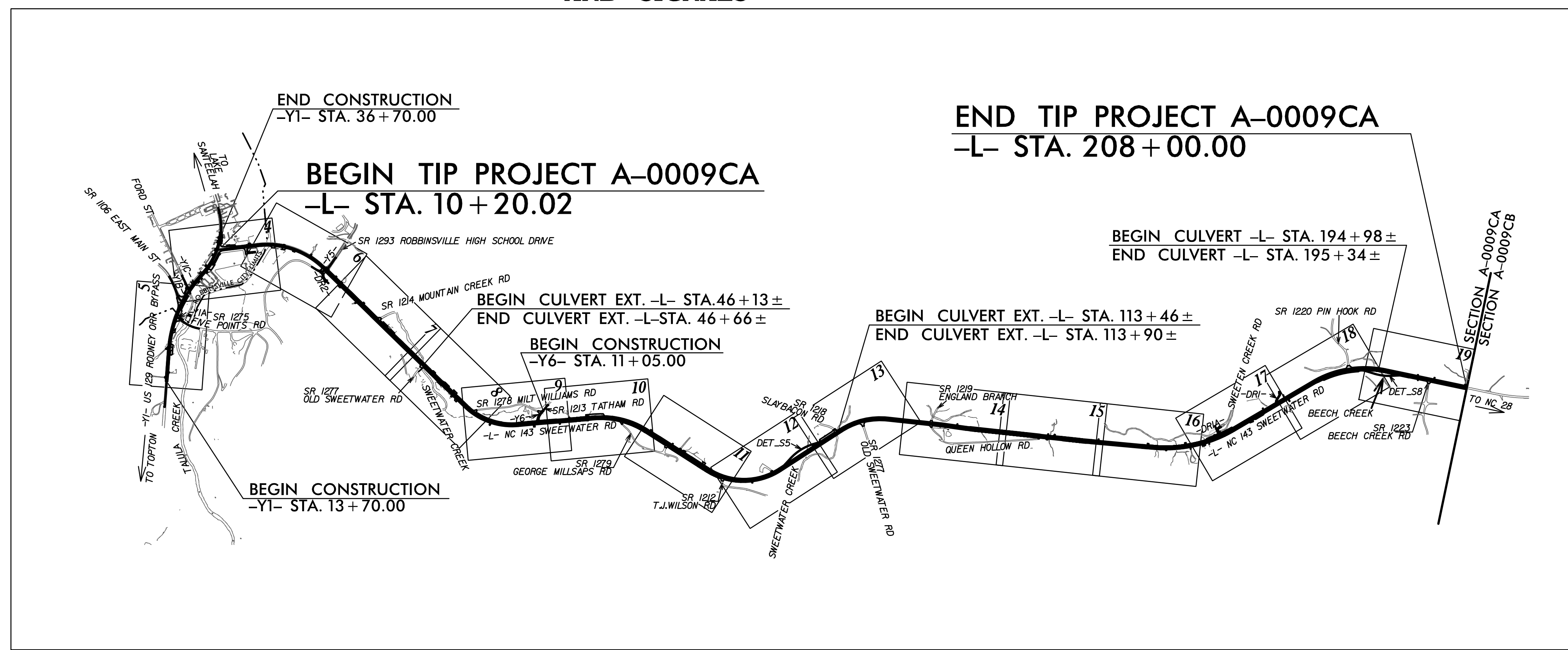
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL
GRAHAM COUNTY
LOCATION: UPGRADE US 129 FROM SOUTH OF SR 1275 (FIVE POINTS ROAD) TO NC 143 AND UPGRADE NC 143 FROM US 129 TO SR 1223 (BEECH CREEK ROAD)
TYPE OF WORK: GRADING, PAVING, DRAINAGE, CULVERTS, RETAINING WALLS, AND SIGNALS



STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	A-0009CA	EC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
32572.1.13	APD-0074(178)	PE	
32572.2.13	APD-0074(178)	ROW, UTIL.	
32572.3.13	APD-0074(178)	CONST.	

EROSION AND SEDIMENT CONTROL MEASURES

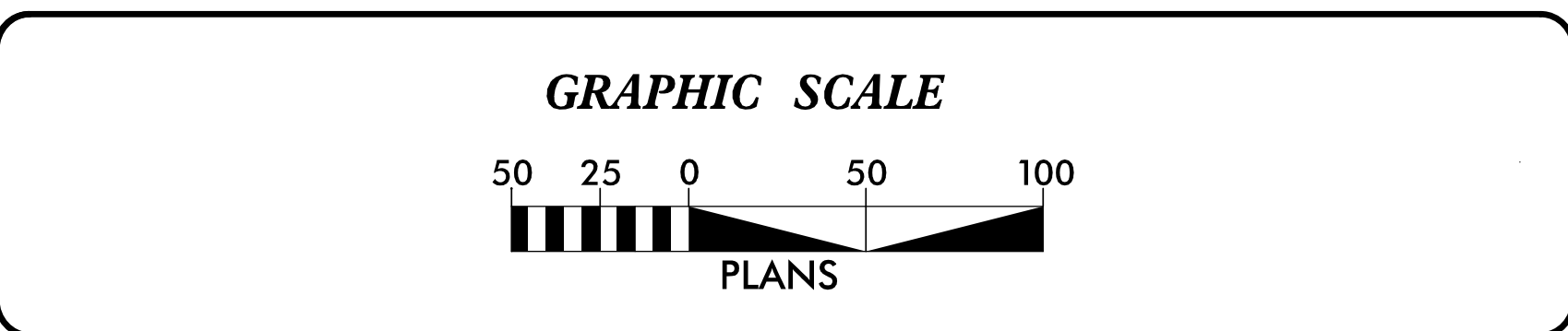
Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	TD
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	TSF
1606.01	Special Sediment Control Fence	SSCF
1622.01	Temporary Berms and Slope Drains	TBSD
1630.02	Silt Basin Type B	SB
1633.01	Temporary Rock Silt Check Type-A	TRSCA
	Temporary Rock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



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 200706
SHELBY, NC 28150

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

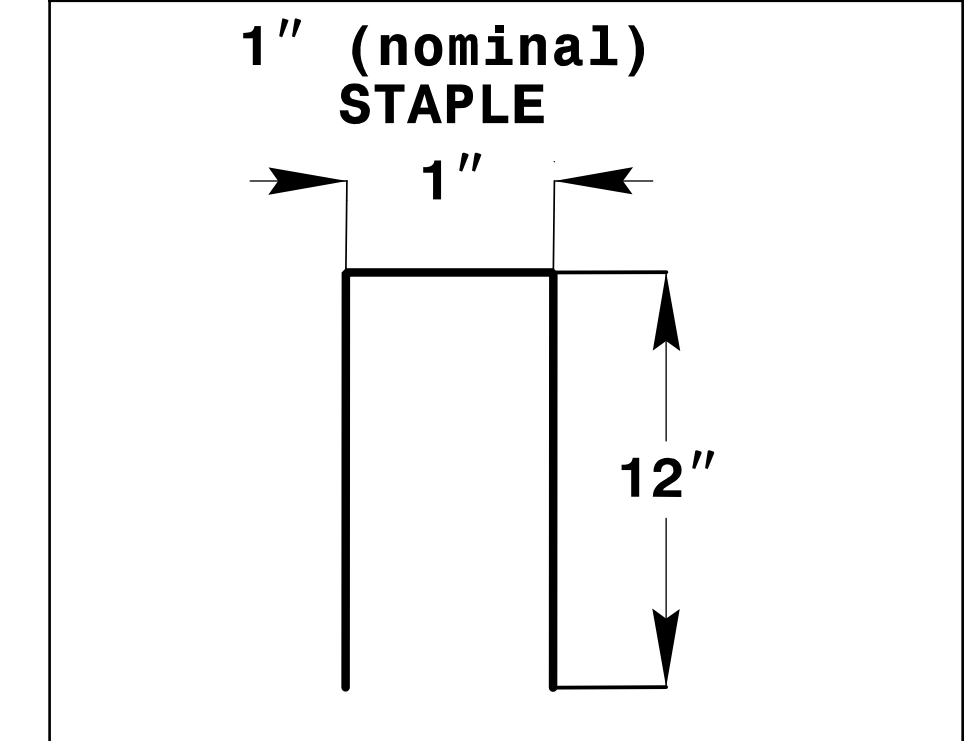
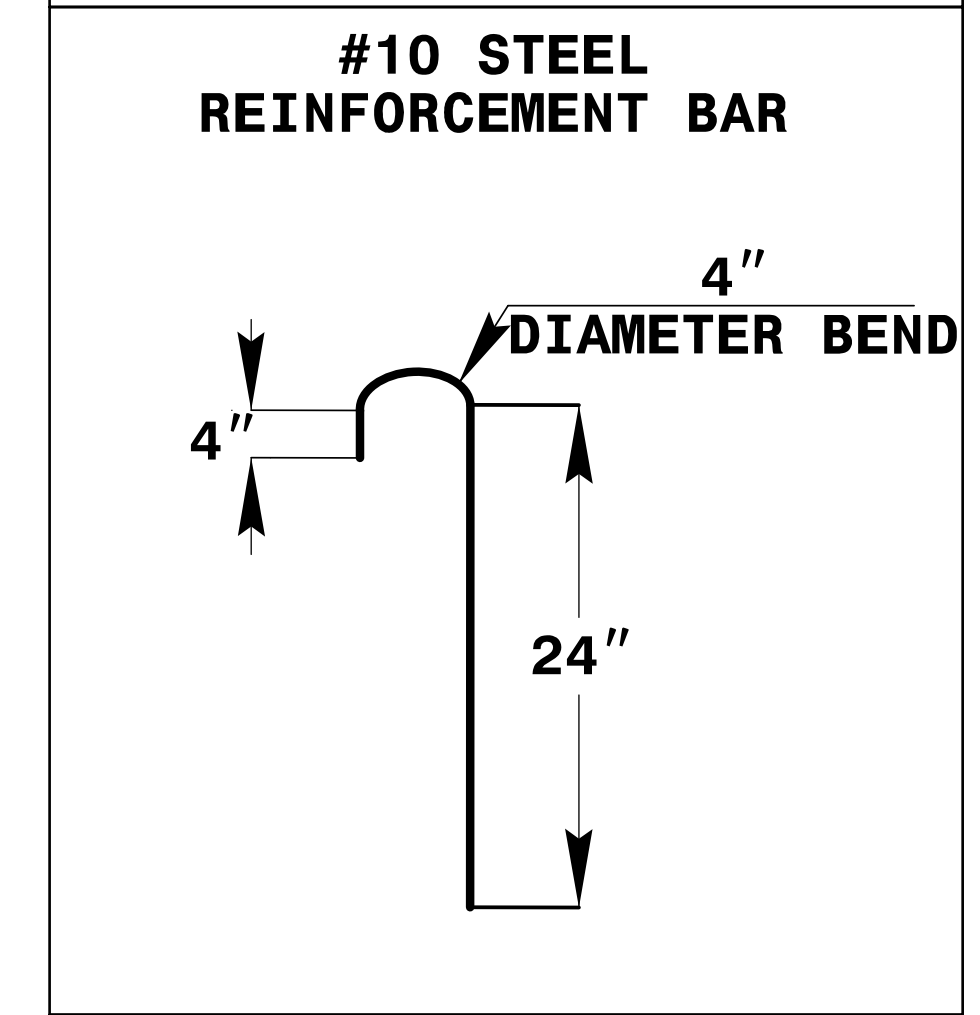
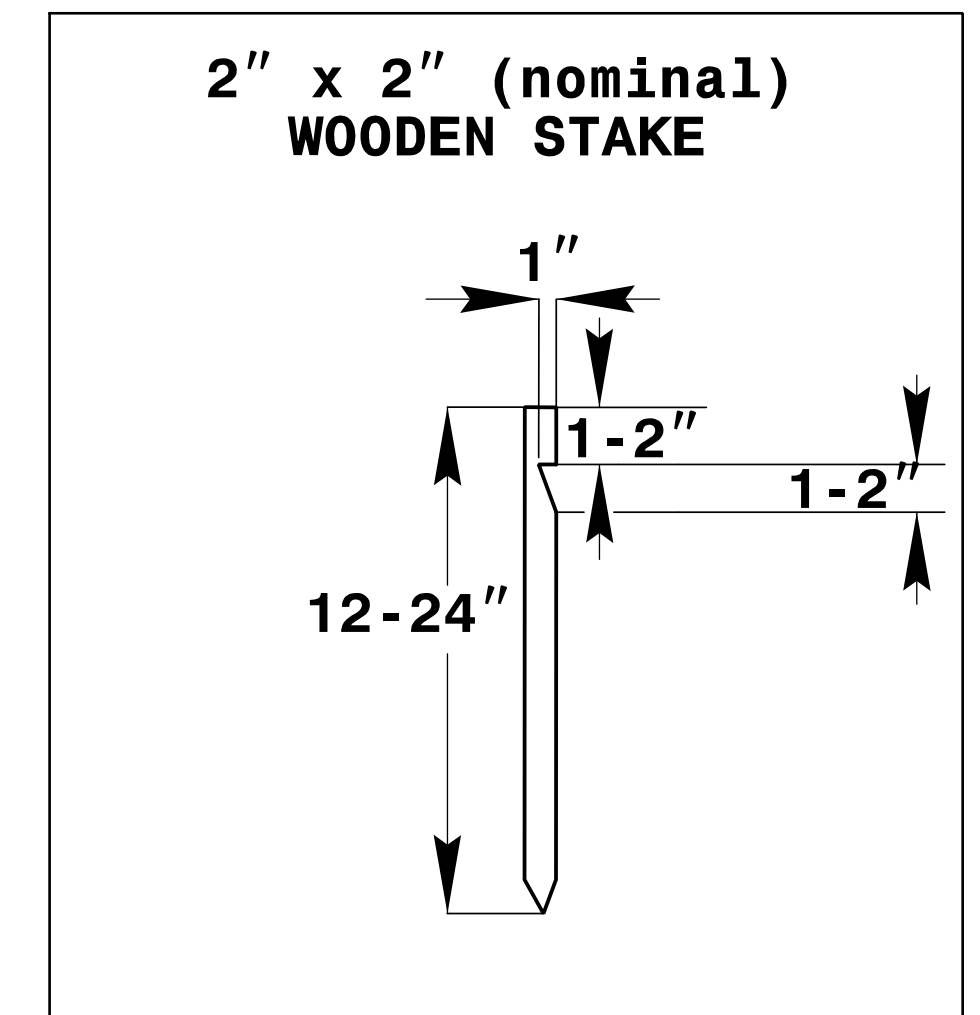
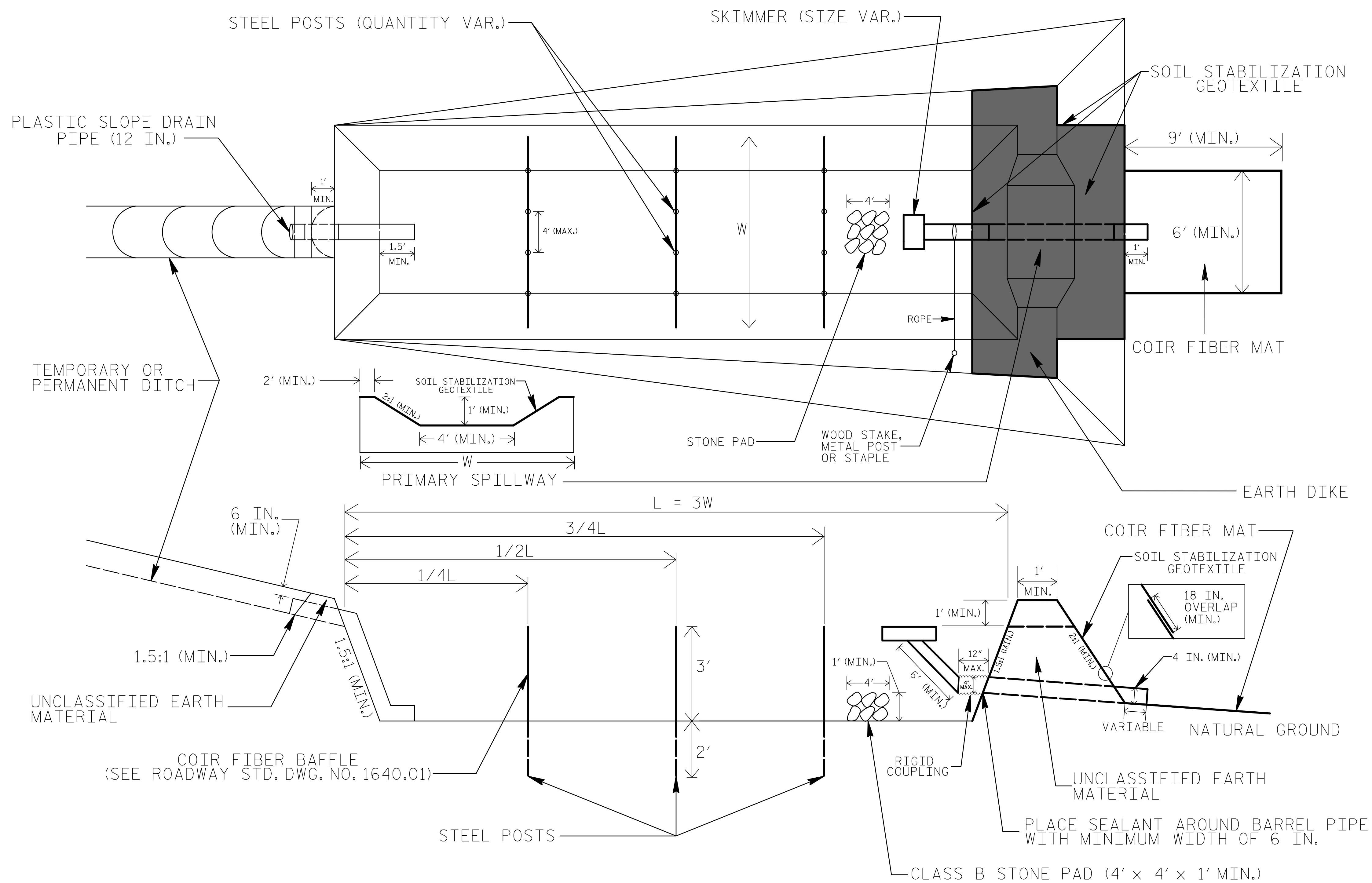
Roadway Standard Drawings

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

SKIMMER BASIN WITH BAFFLES DETAIL



COIR FIBER MAT ANCHOR OPTIONS

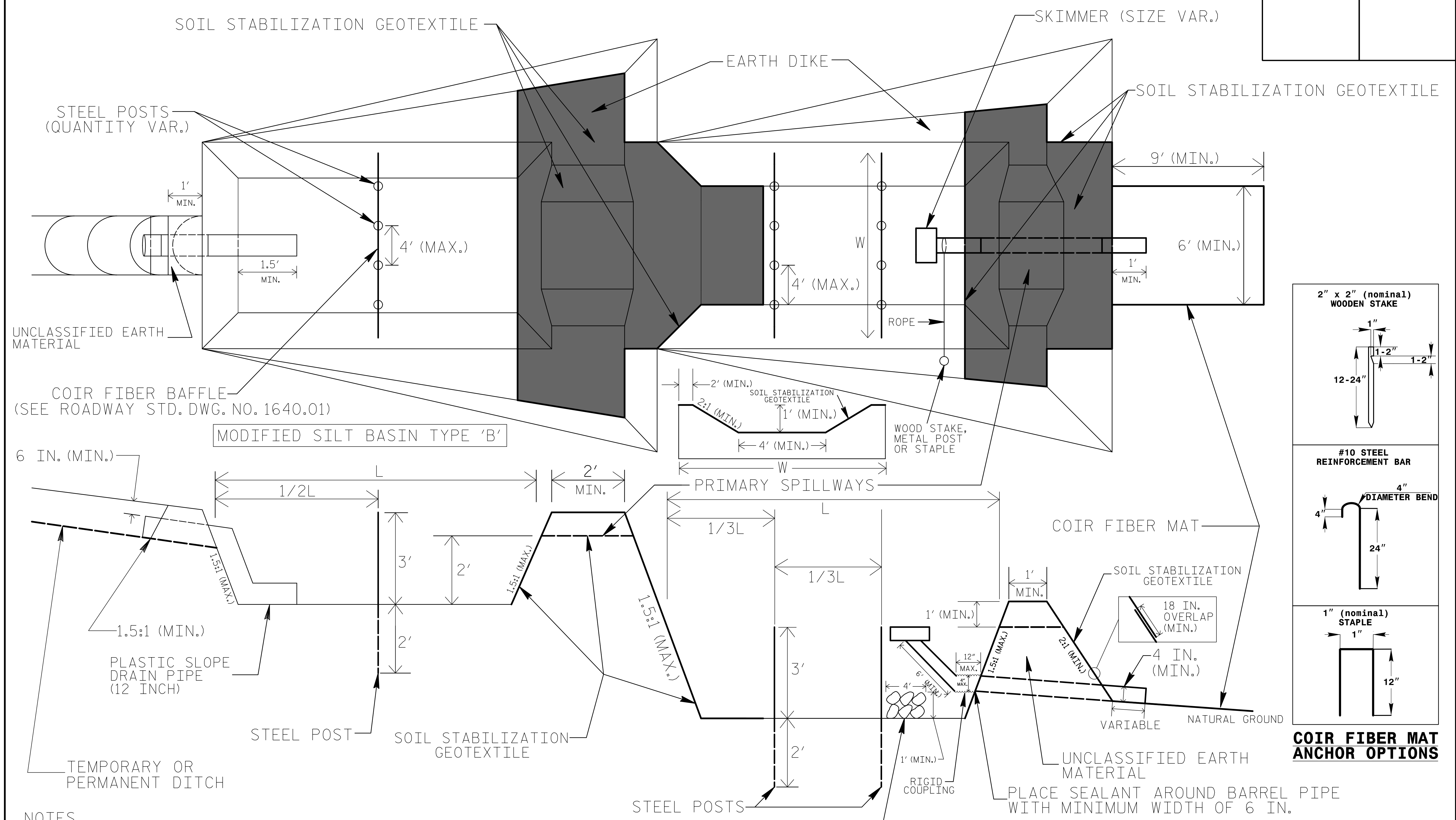
NOTES

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

TIERED SKIMMER BASIN DETAIL



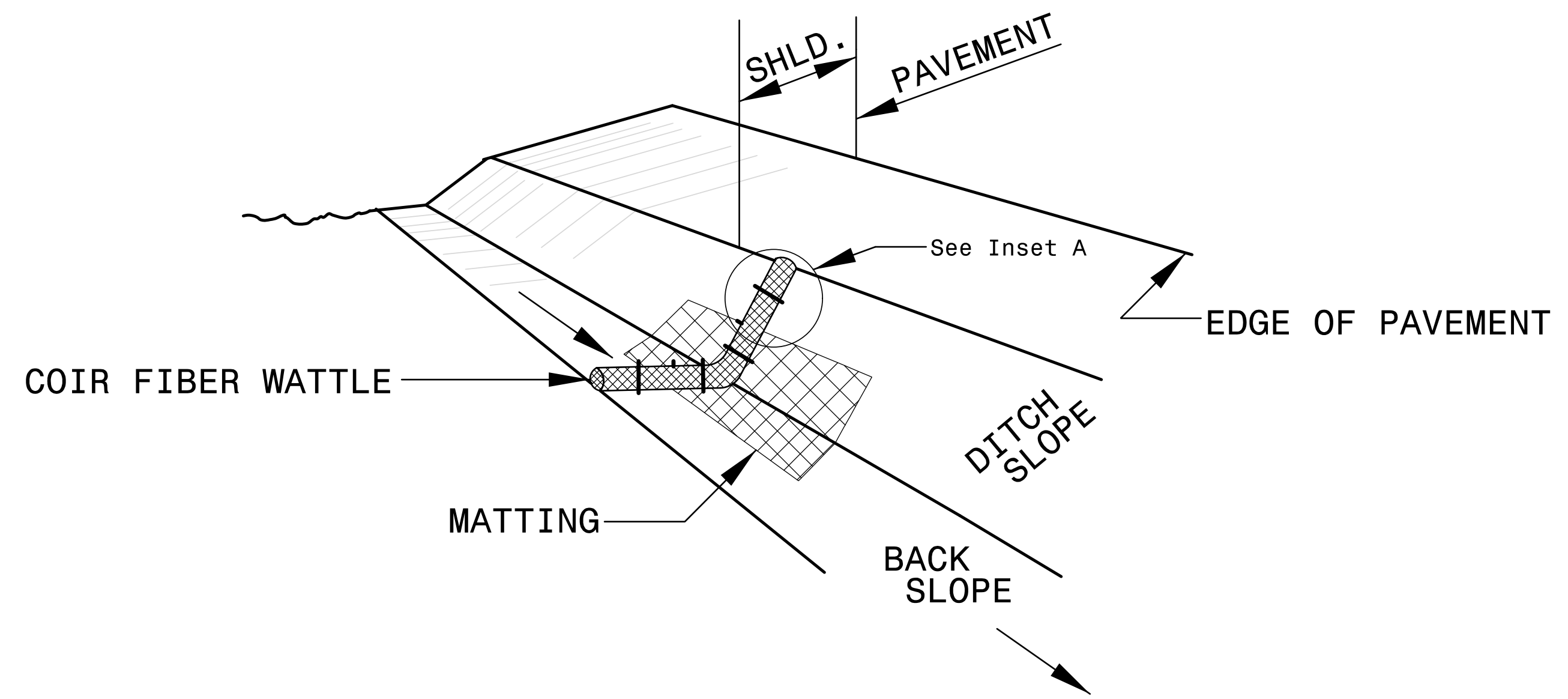
NOTES

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.).

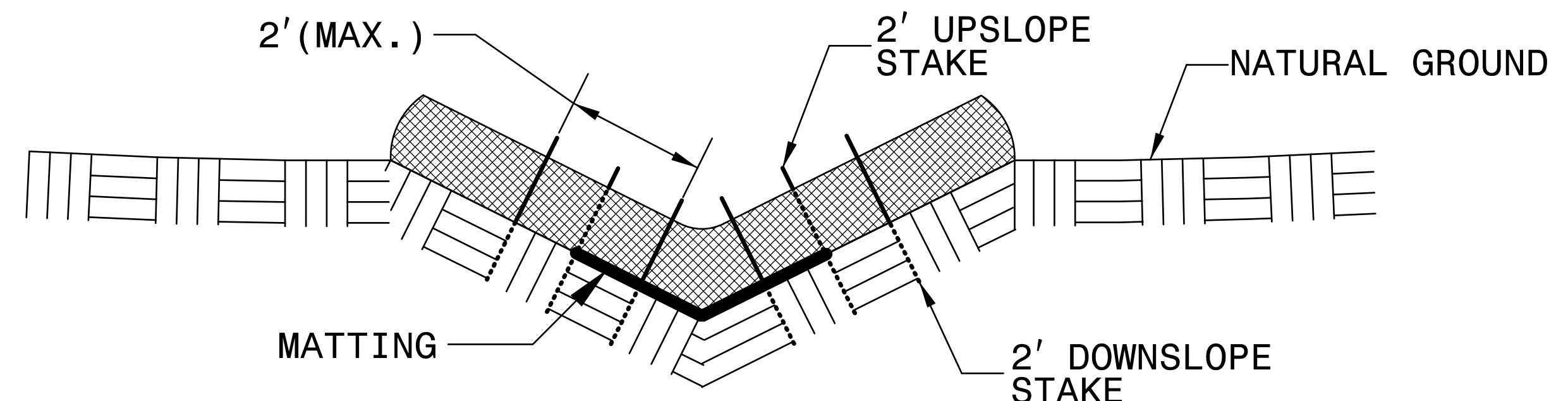
NOT TO SCALE

PROJECT REFERENCE NO. A-0009CA		SHEET NO. EC-2B	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	

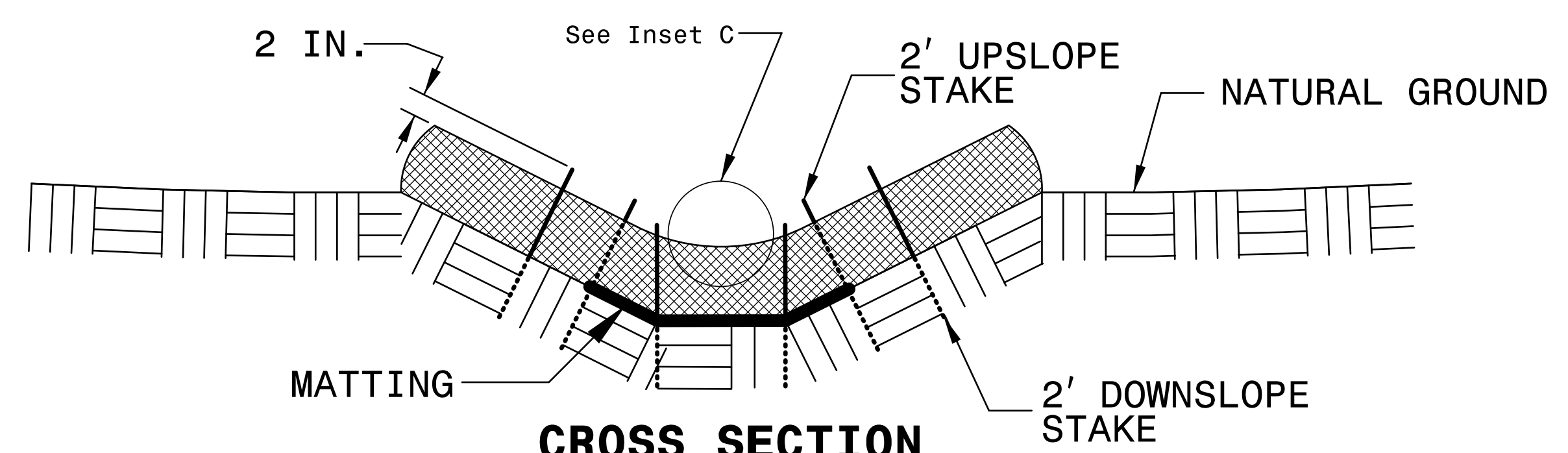
COIR FIBER WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL



ISOMETRIC VIEW



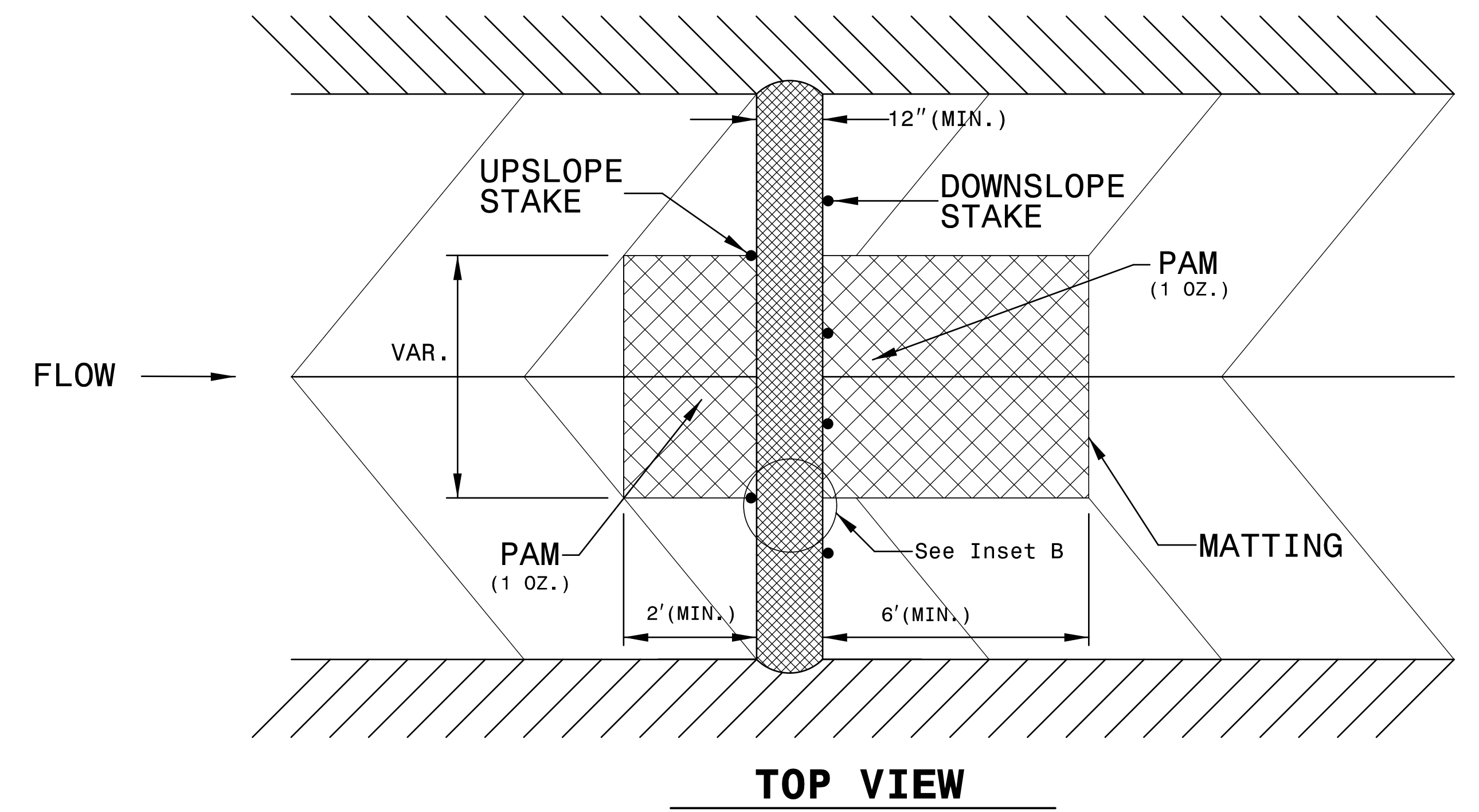
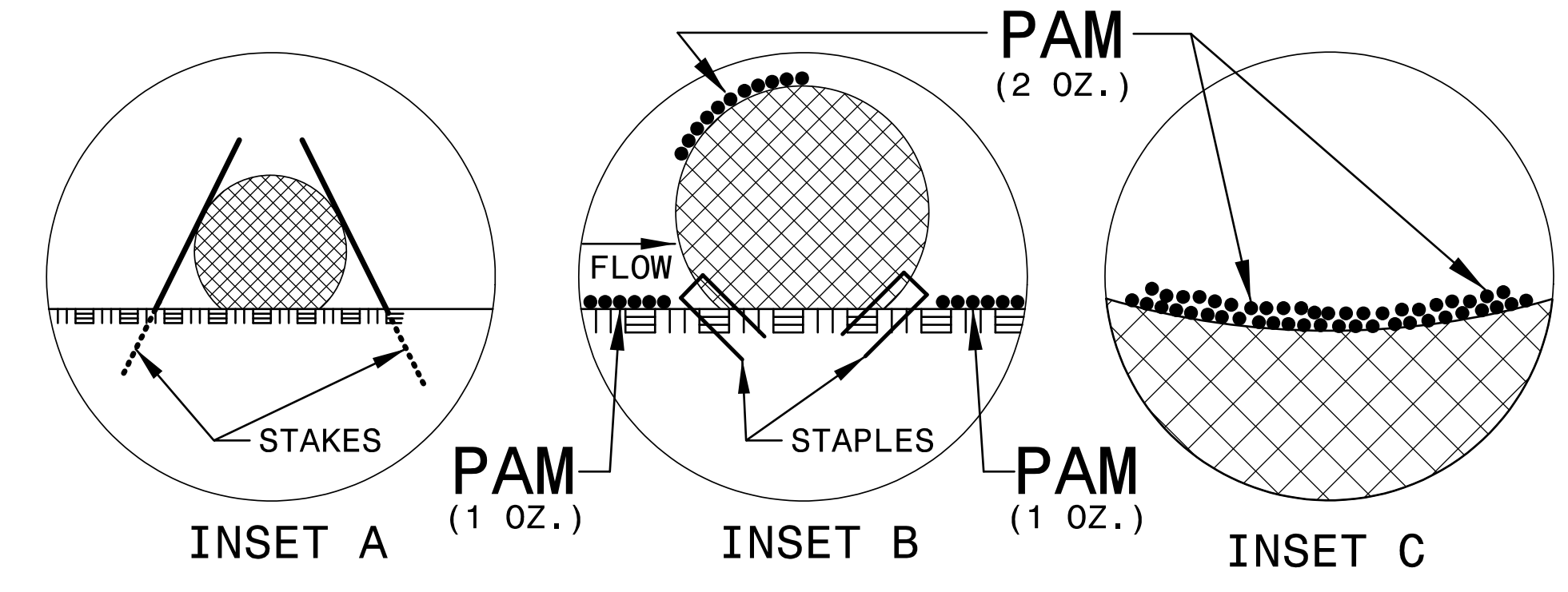
CROSS SECTION VEE DITCH



CROSS SECTION TRAPEZOIDAL DITCH

NOTES:

- USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) WATTLE.
- USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.
- ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.
- INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.
- PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.
- INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.
- INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.
- PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH WATTLE.
- INITIALLY APPLY 2 OUNCES OF ANIONIC OR NEUTRALLY CHARGED PAM OVER WATTLE WHERE WATER WILL FLOW AND 1 OUNCE OF PAM ON MATTING ON EACH SIDE OF WATTLE. REAPPLY PAM AFTER EVERY RAINFALL EVENT THAT IS EQUAL TO OR EXCEEDS 0.50 IN.



TOP VIEW

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

SILT FENCE COIR FIBER WATTLE BREAK DETAIL

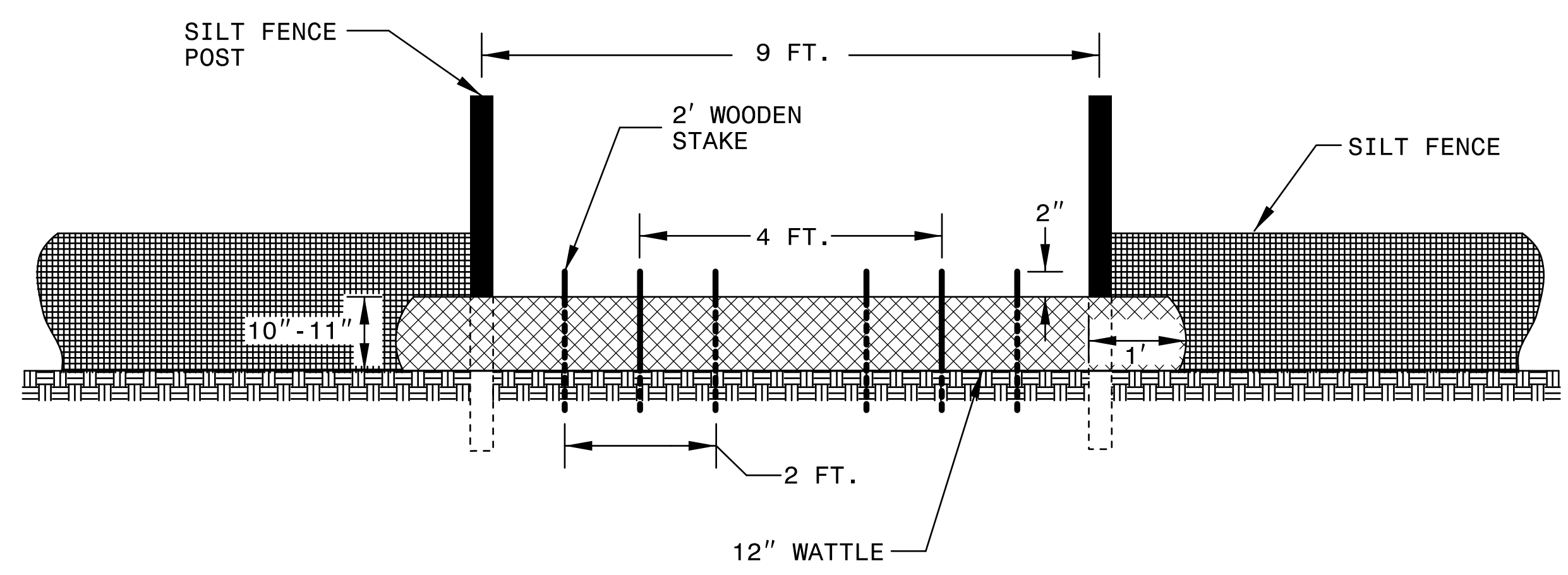
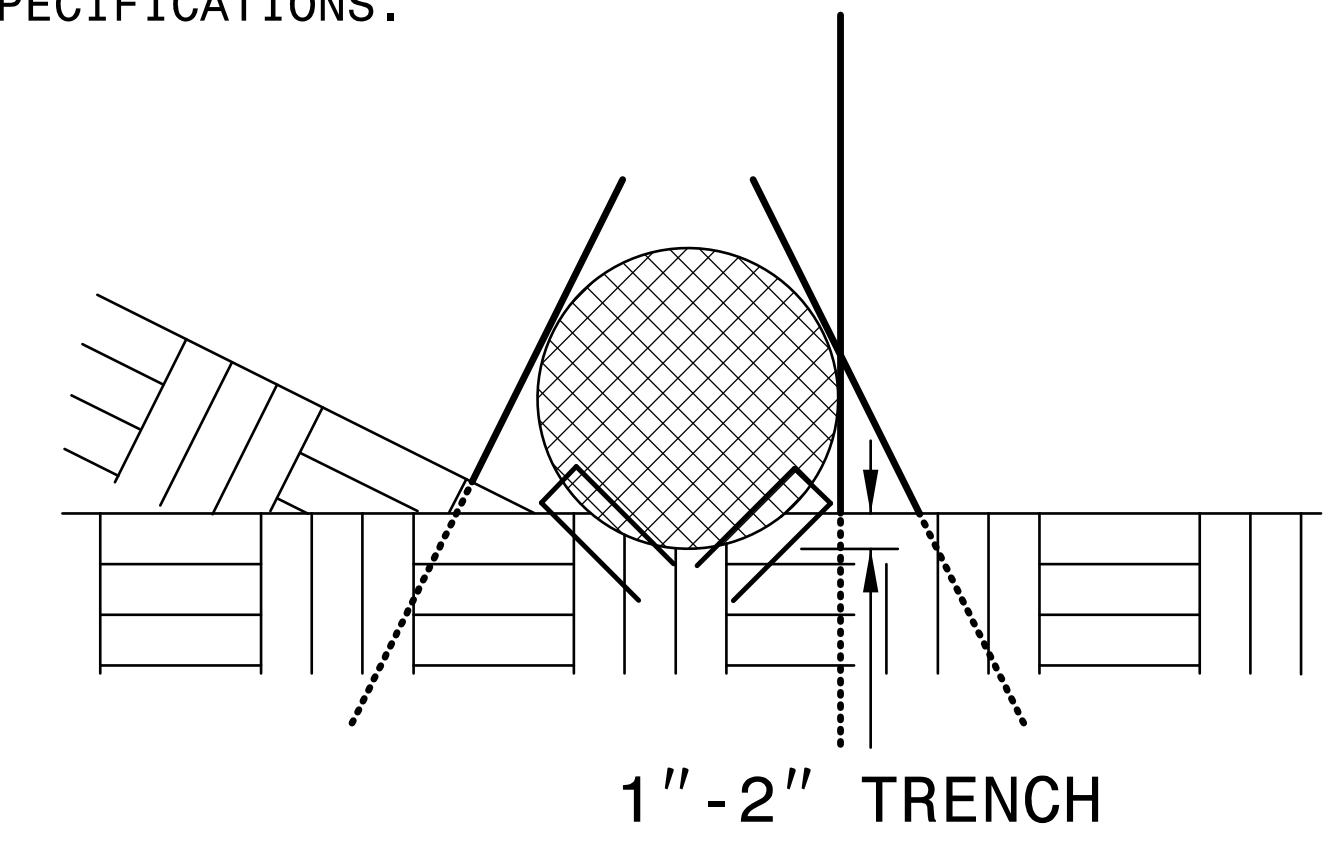


ISOMETRIC VIEW

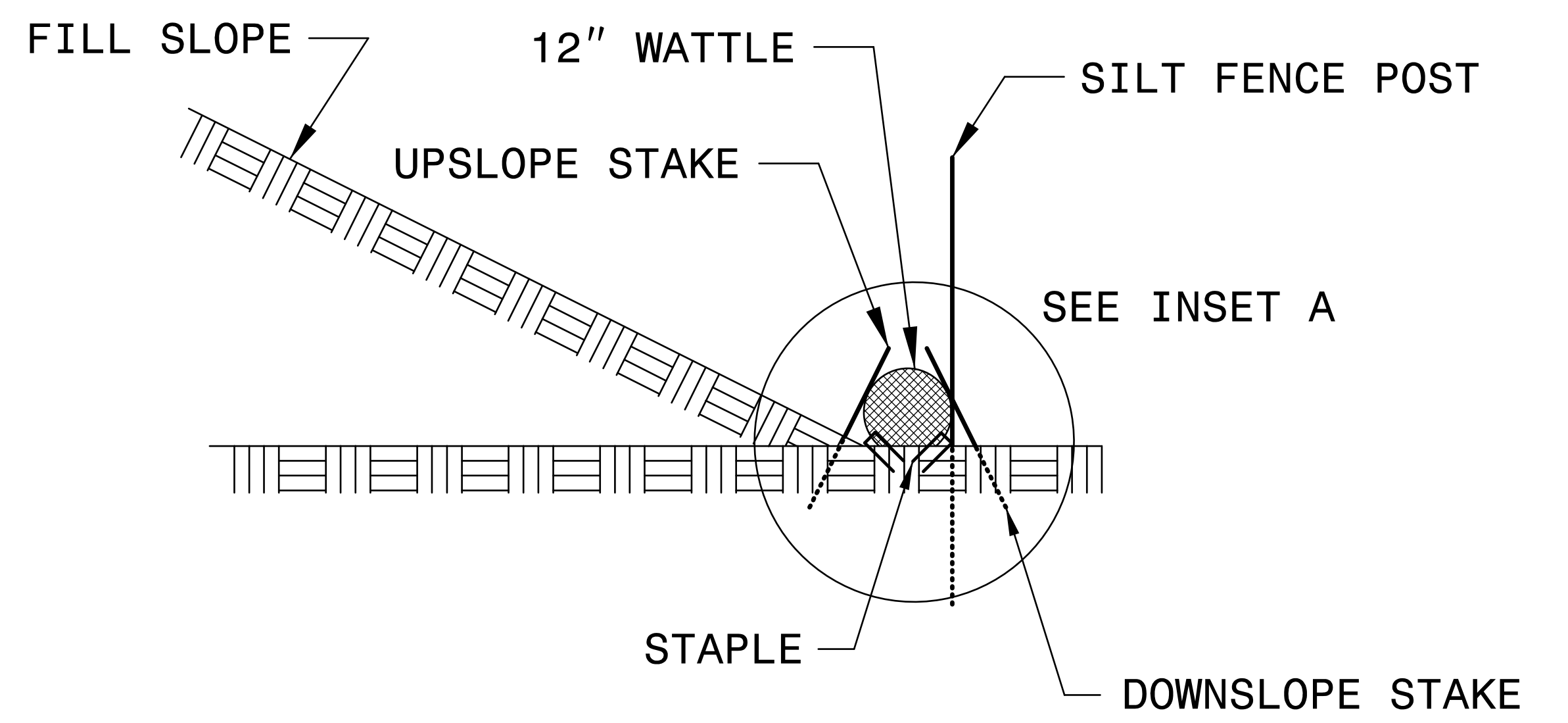
NOTES:

- 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



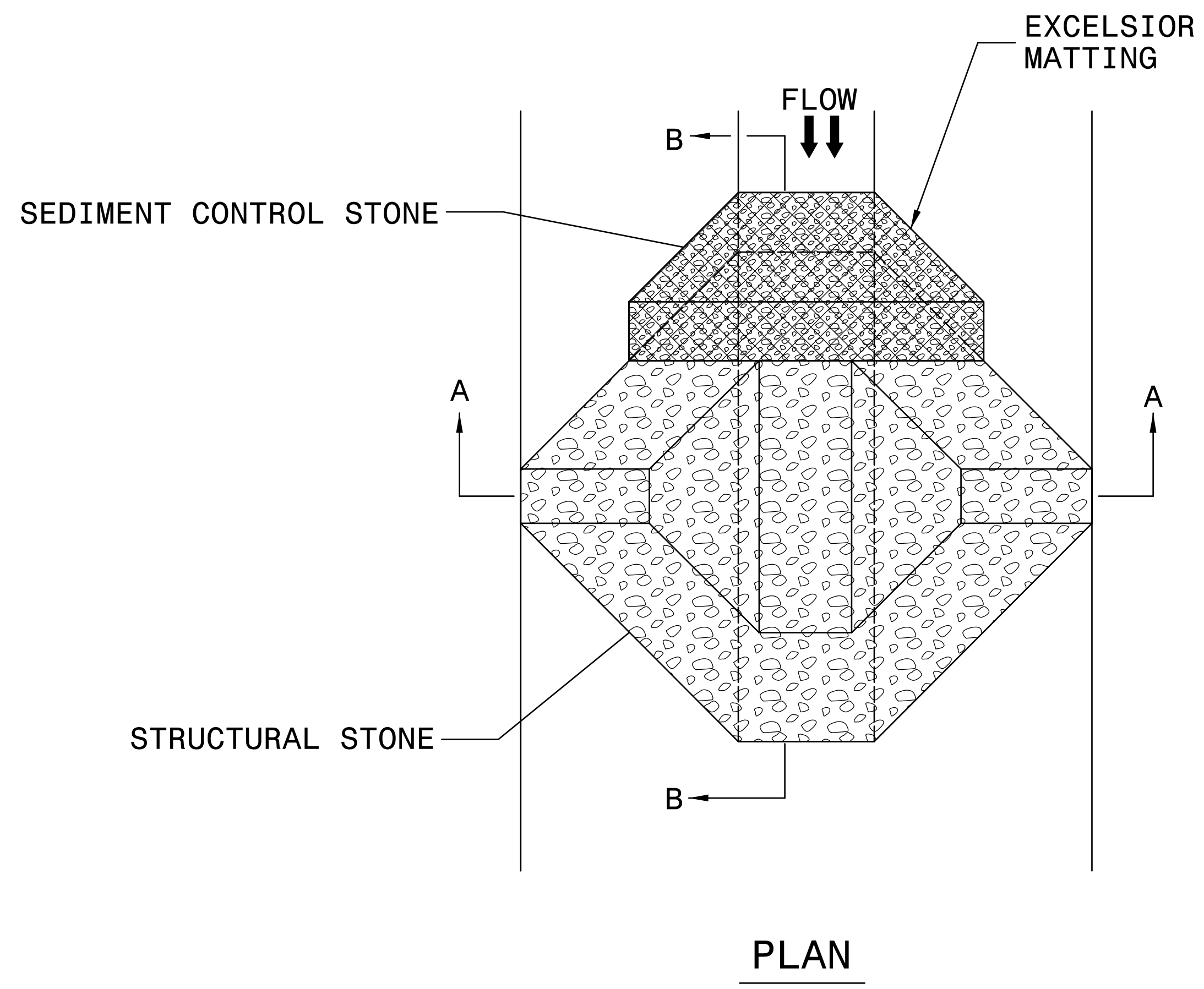
VIEW FROM SLOPE



SIDE VIEW

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

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



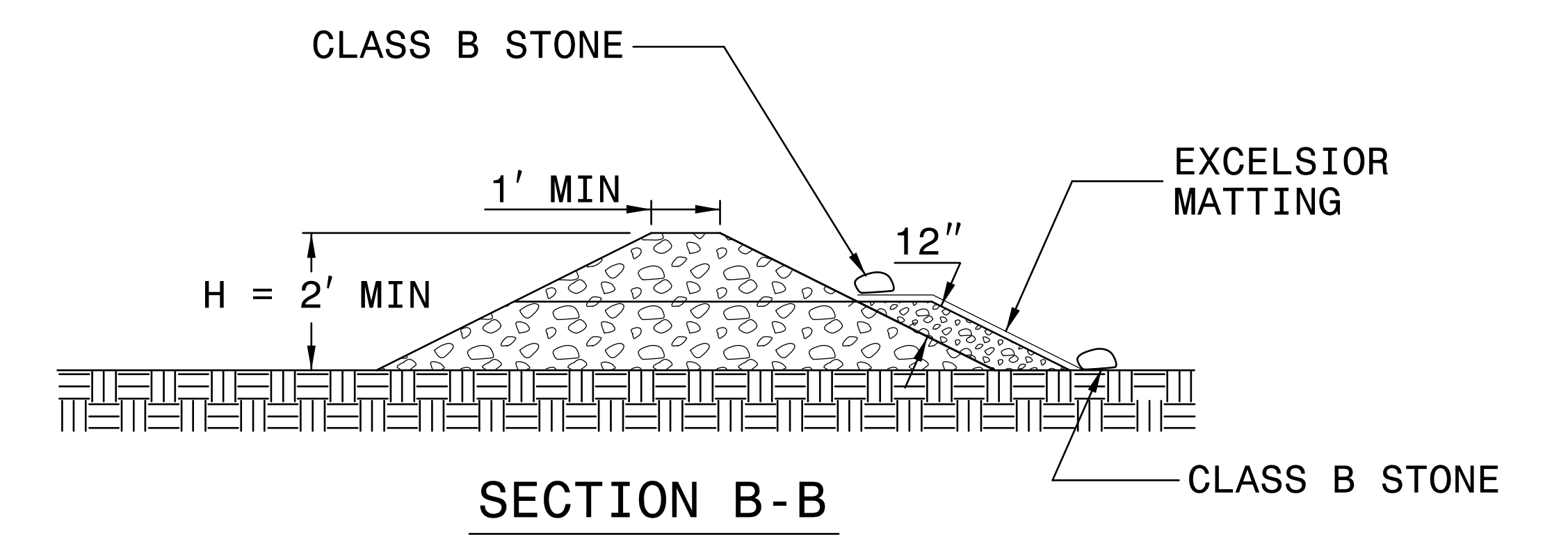
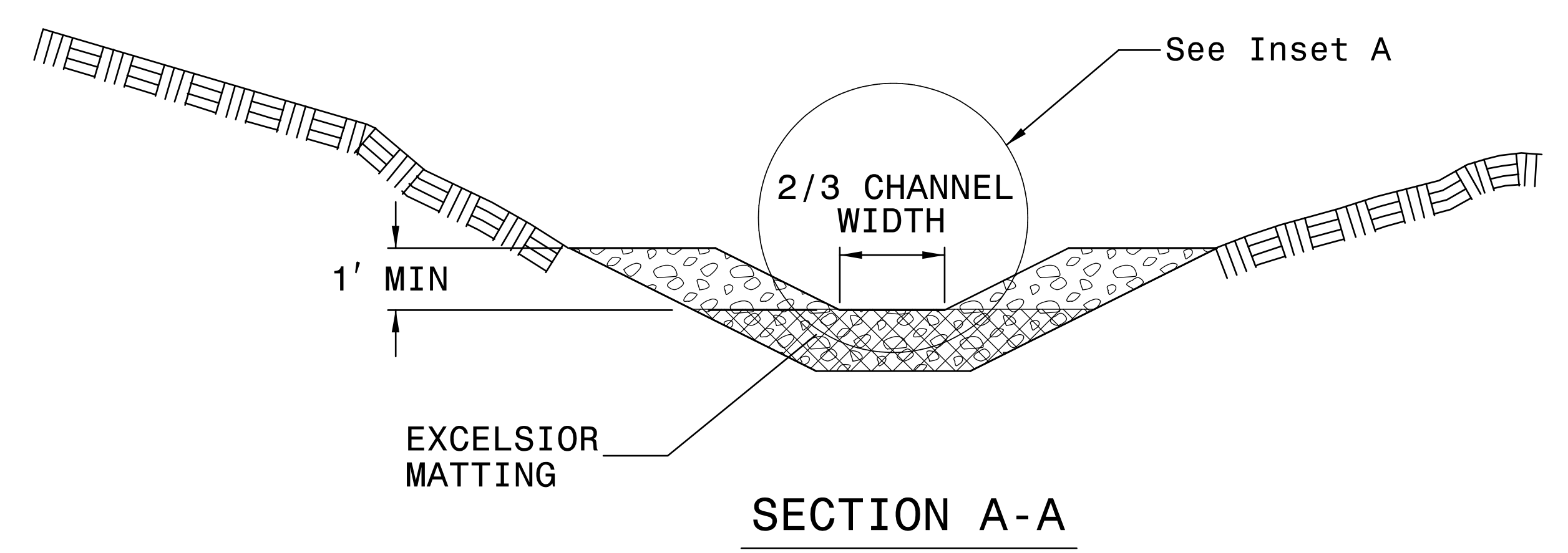
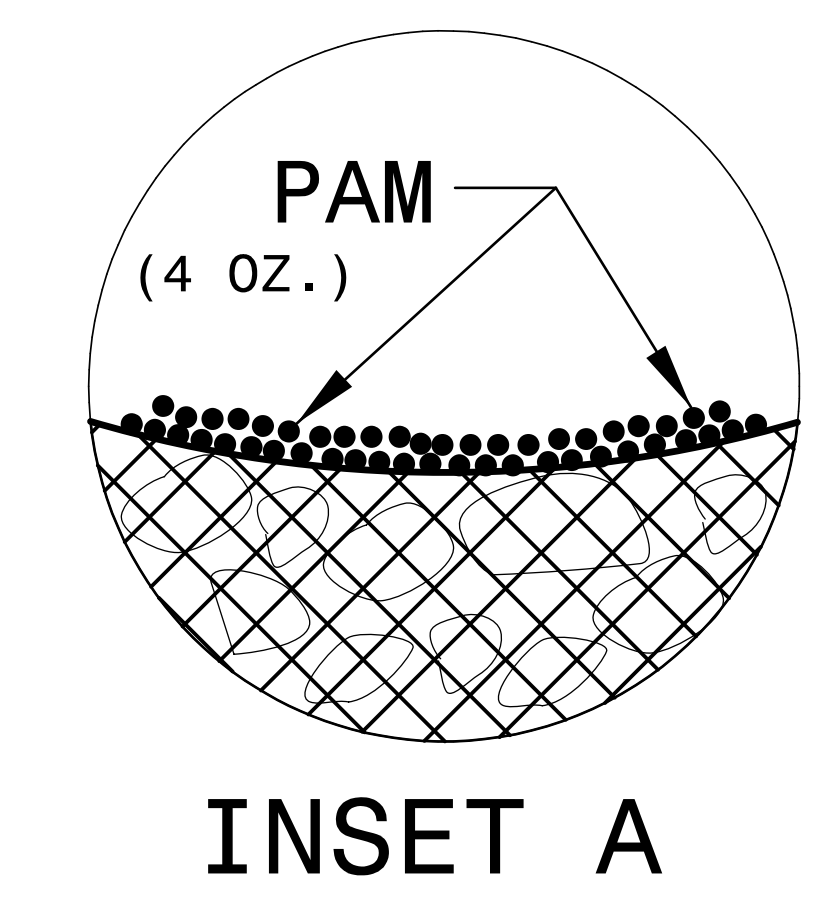
NOTES:

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.

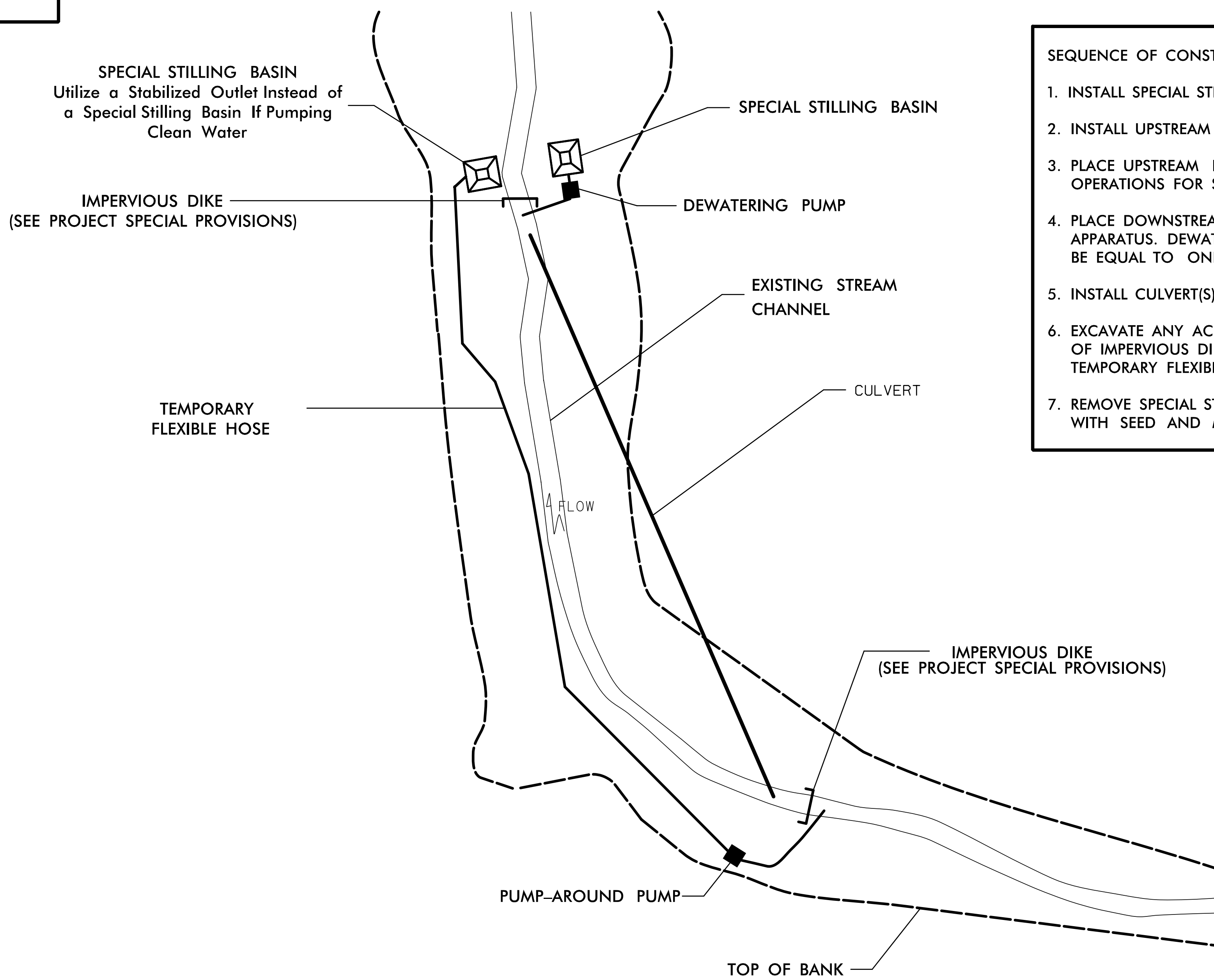


NOT TO SCALE

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

EXAMPLE OF PUMP-AROUND OPERATION

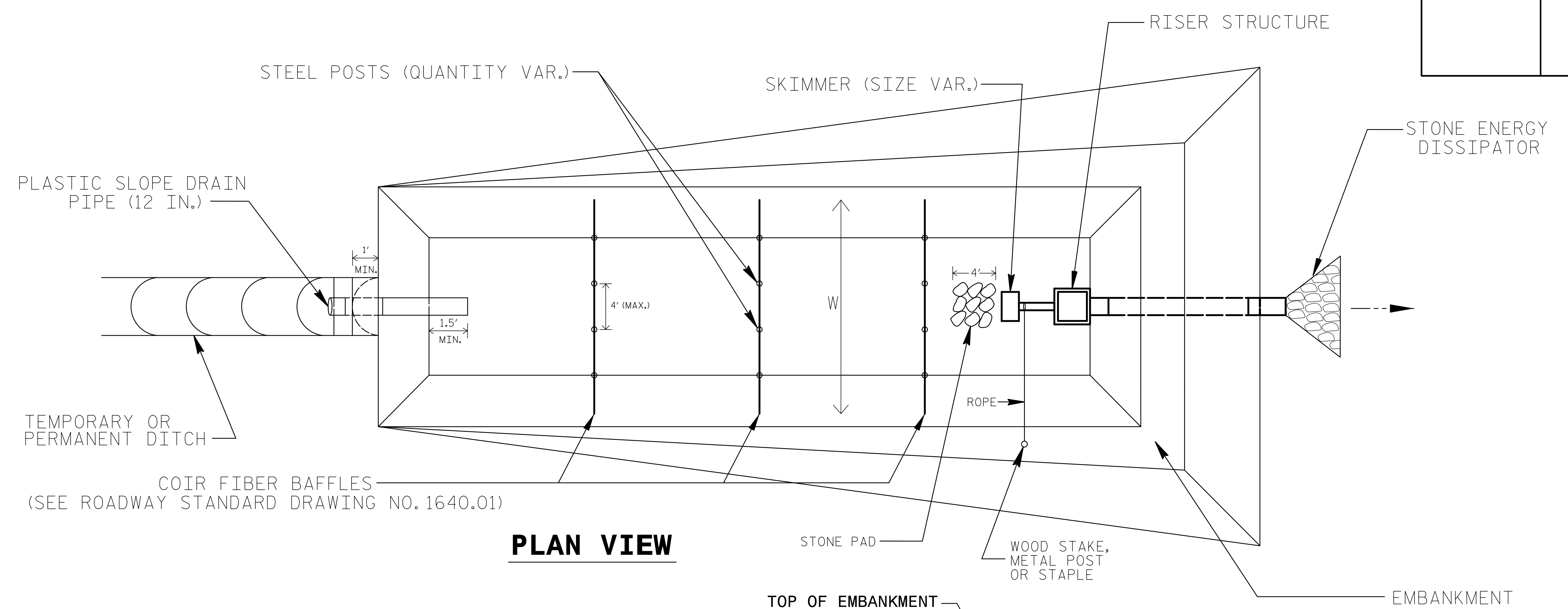
- NOTES:
- 1) All excavation shall be performed in only dry or isolated areas of the work zone.
 - 2) Impervious dikes are to be used to isolate work from stream flow when necessary.
 - 3) Maintenance of stream flow operations shall be incidental to the work. This includes polyethylene sheeting, diversion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



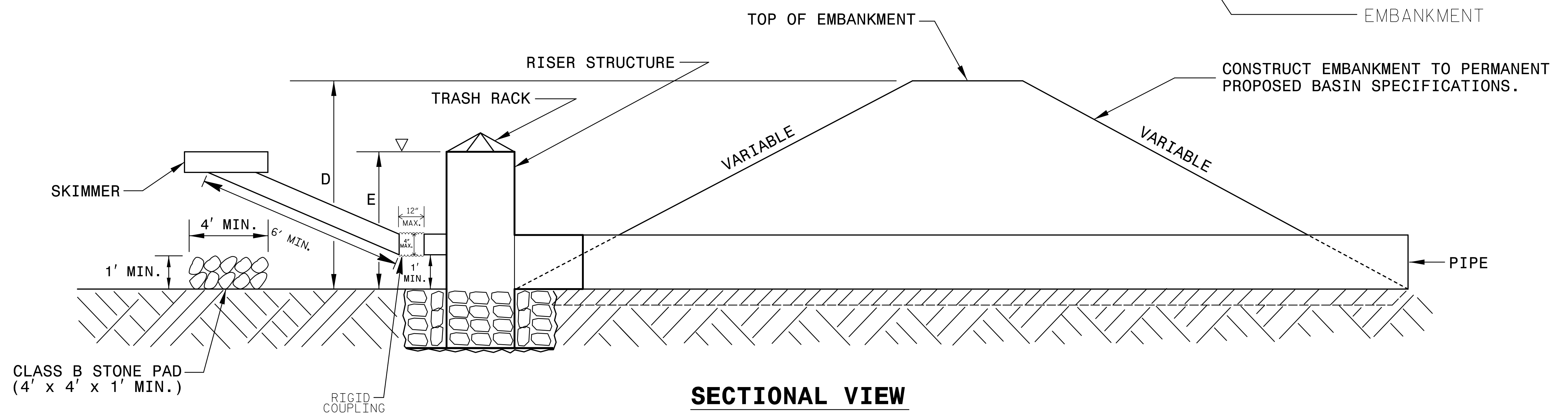
- SEQUENCE OF CONSTRUCTION FOR TYPICAL WORK AREA
1. INSTALL SPECIAL STILLING BASIN(S).
 2. INSTALL UPSTREAM PUMP AND TEMPORARY FLEXIBLE HOSE.
 3. PLACE UPSTREAM IMPERVIOUS DIKE AND BEGIN PUMPING OPERATIONS FOR STREAM DIVERSION.
 4. PLACE DOWNSTREAM IMPERVIOUS DIKE AND PUMPING APPARATUS. DEWATER ENTRAPPED 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.

PROJECT REFERENCE NO. A-0009CA	SHEET NO. EC-2F
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

STORMWATER BASIN WITH SKIMMER



PLAN VIEW



SECTIONAL VIEW

NOTES

1. SEED AND PLACE MATTING FOR EROSION CONTROL ON INTERIOR AND EXTERIOR SIDESLOPES.
2. INSTALL A MINIMUM OF 3 COIR FIBER BAFFLES IN ACCORDANCE WITH ROADWAY STD. DRAWING 1640.01.
3. INSTALL SKIMMER AND COUPLING TO RISER STRUCTURE OR DIRECTLY INTO EMBANKMENT 1 FT. FROM BOTTOM OF BASIN.
4. THE ARM PIPE SHALL HAVE A MINIMUM LENGTH OF 6 FT. BETWEEN THE SKIMMER AND COUPLING.
5. PLASTIC SLOPE DRAIN PIPE AT INLET OF BASIN MAY BE REPLACED BY FILTRATION GEOTEXTILE AS DIRECTED.
6. THE DIFFERENCE BETWEEN LENGTHS "D" AND "E" REPRESENT THE FREEBOARD AND SHOULD BE 1 FT. MINIMUM.

NOT TO SCALE

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

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

SOIL STABILIZATION SUMMARY SHEET

SLOPE MATTING FOR EROSION CONTROL

SLOPE MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
SLOPE MATTING					
4	L	12+50	14+50	LT	259
4	L	12+50	13+70	RT	144
4	L	15+00	16+00	LT	209
5	YI	14+25	15+00	RT	137
5	YI	15+50	17+50	RT	328
5	YI	16+00	18+00	LT	214
5	YI	19+00	20+00	LT	301
5	YI	19+25	20+75	RT	235
6	L	16+00	18+00	LT	502
7	L	31+00	33+75	LT	1,237
7	L	34+50	37+00	LT	1,094
7	L	38+50	39+50	RT	157
8	L	46+00	47+50	LT	287
8	L	54+00	56+00	RT	408
9	L	58+00	58+50	RT	123
9	L	60+00	64+00	RT	3,210
9	L	64+50	65+50	LT	363
9	L	64+50	65+50	RT	217
9	L	66+00	67+00	RT	234
9	L	66+50	68+00	LT	463
10	L	70+00	71+00	RT	579
10	L	71+00	73+00	LT	1,273
10	L	72+00	72+50	RT	172
10	L	73+50	78+00	RT	4,327
10	L	79+00	81+00	RT	736
10	L	80+00	81+00	LT	487
10	L	81+50	82+00	RT	158
11	L	82+00	84+50	RT	1,597
11	L	83+00	84+50	LT	381

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
SLOPE MATTING					
11	L	85+50	86+00	LT	153
11	L	86+00	94+50	RT	6,336
11	L	92+00	96+00	LT	1,302
12	L	103+50	104+50	LT	197
12	L	102+50	105+00	RT	1,162
13	L	114+00	119+50	LT	1,613
13	L	120+50	123+50	LT	947
14	L	131+00	133+00	RT	473
14	L	134+00	138+00	RT	1,193
14	L	134+50	138+00	LT	1,314
15	L	138+00	142+50	LT	2,102
15	L	138+00	142+50	RT	1,208
15	L	146+00	151+70	LT	2,521
15	L	147+50	149+50	RT	368
15	L	145+00	147+00	RT	413
16	L	156+50	158+90	LT	692
16	L	159+10	164+40	LT	1,409
16	L	164+60	166+00	LT	494
16	L	152+00	157+50	RT	2,488
17	L	166+00	168+00	LT	691
17	L	168+50	171+50	RT	440
17	L	171+50	172+50	RT	166
17	L	171+50	176+00	LT	1,924
17	L	177+05	178+50	LT	422
17	L	179+50	180+00	LT	104
17	DRIA	10+75	12+25	LT	358
17	DRIA	10+75	12+25	RT	336
17	DR1	11+00	11+50	RT	141
18	L	180+00	180+50	LT	211

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

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION SUMMARY SHEET

EXCELSIOR DITCHLINE MATTING


CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)	CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
DITCHLINE EXCELSIOR MATTING											
6	L	27+00	27+50	RT	55						
6	DR2	10+42	11+50	LT	55						
6	DR2	10+27	11+50	RT	65						
7	L	31+50	32+68	RT	125						
10	L	68+50	70+50	LT	140						
10	L	69+50	71+00	RT	200						
10	L	73+50	78+00	RT	590						
10	L	81+50	82+00	RT	70						
11	L	92+00	94+00	LT	280						
11	L	95+50	96+00	RT	85						
12	L	96+00	100+50	LT	630						
12	L	96+00	99+00	RT	315						
12	L	100+00	102+00	RT	280						
14	L	131+50	132+00	LT	35						
16	L	165+50	166+00	RT	55						
18	L	186+00	186+50	RT	35						
		<u>EXCELSIOR MATTING SUBTOTAL</u>				3,015					
		SLOPE MATTING SUBTOTAL				57,710					
		DITCHLINE MATTING SUBTOTAL				3,425					
		EXCELSIOR MATTING SUBTOTAL				3,015					
	MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					145,000					
				<u>TOTAL</u>	209,150						
				SAY	209,150						

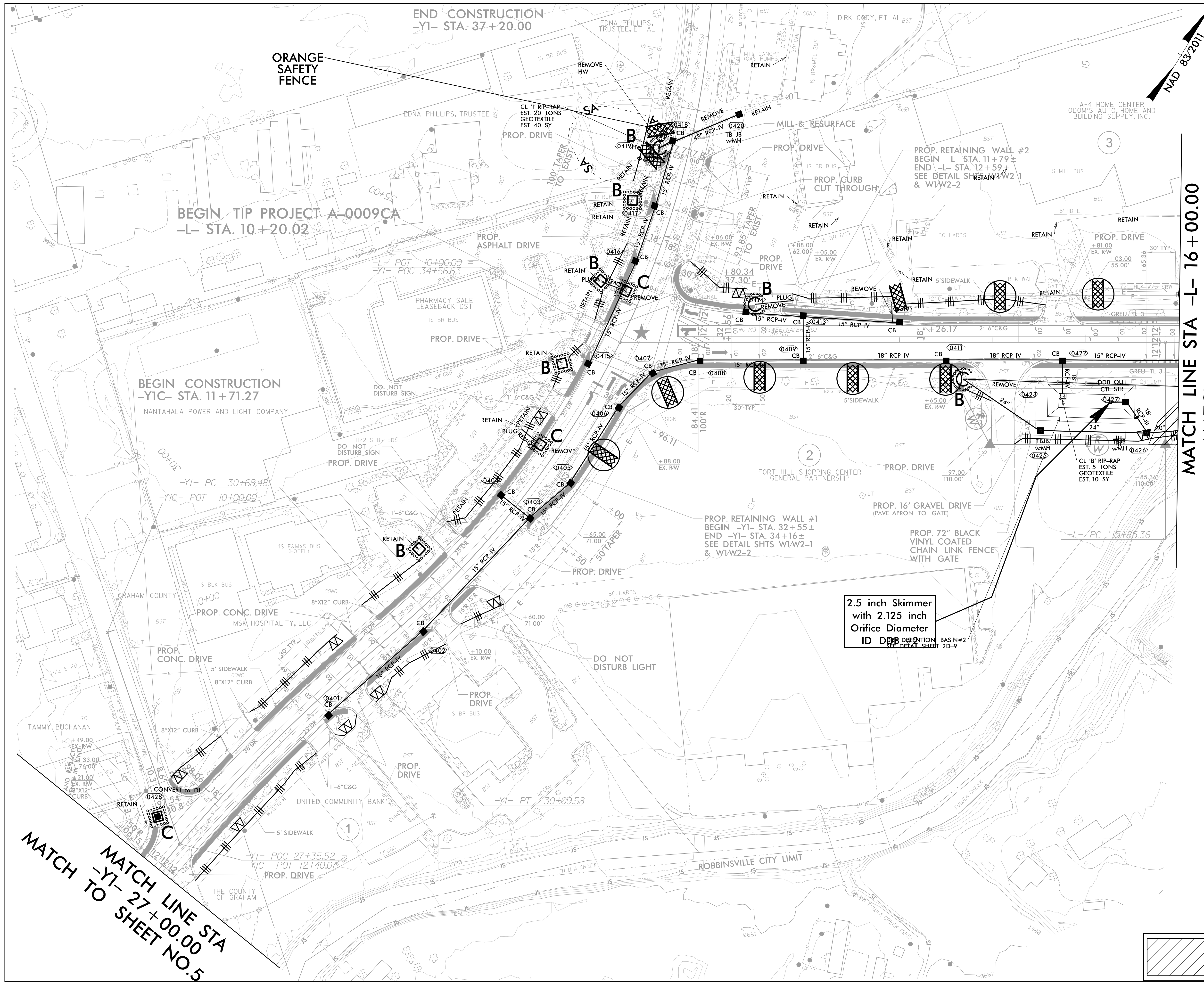
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO. <i>A-0009CA</i>	SHEET NO. <i>EC-3C</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.		SHEET NO.	
A-0009CA		EC-04/CONST.4	
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- 16 + 00.00
 MATCH TO SHEET NO.6

MATCH LINE STA -Y1- 27 + 00.00
 MATCH TO SHEET NO.5

2.5 inch Skimmer
 with 2.125 inch
 Orifice Diameter
 ID **DDB** DETENTION BASIN #2
SEE DETAIL SHEET 2D-9

 SAFETY FENCE


UTILIZE DRY DETENTION BASIN AS SKIMMER BASIN DURING CONSTRUCTION.

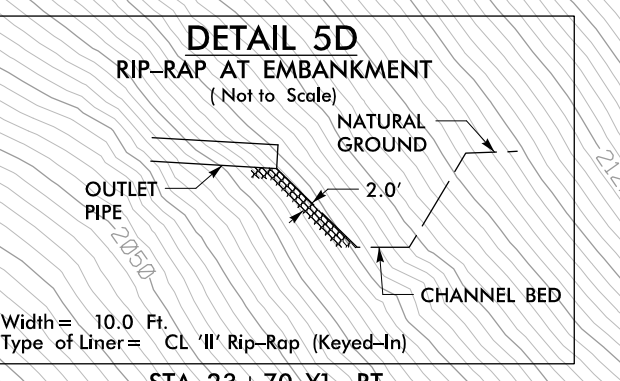
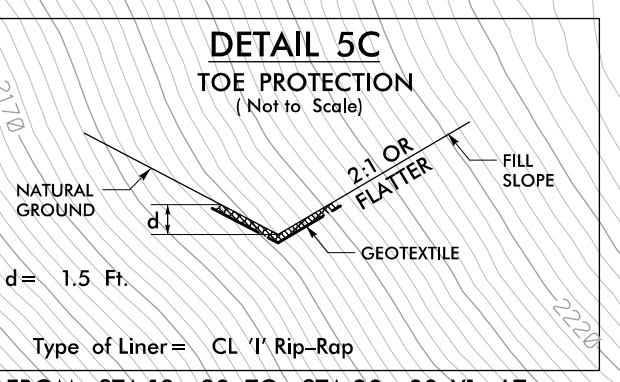
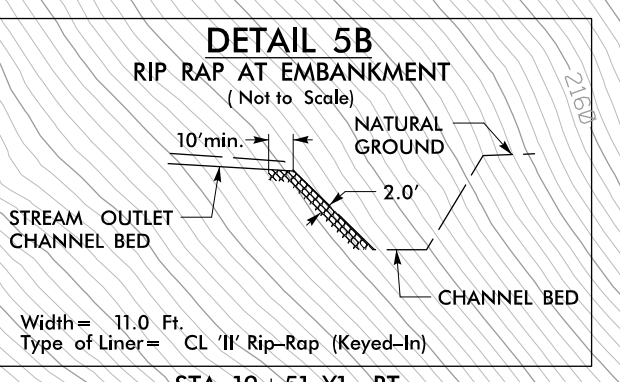
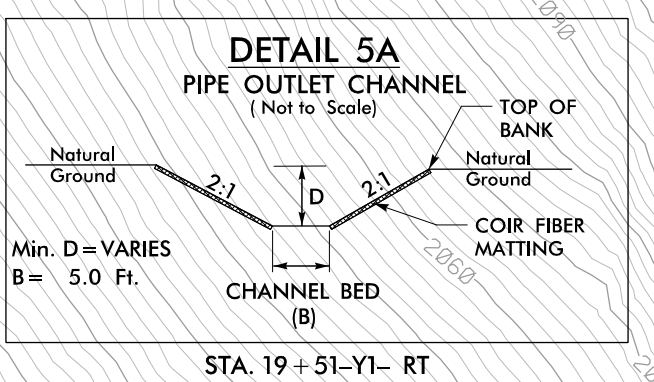
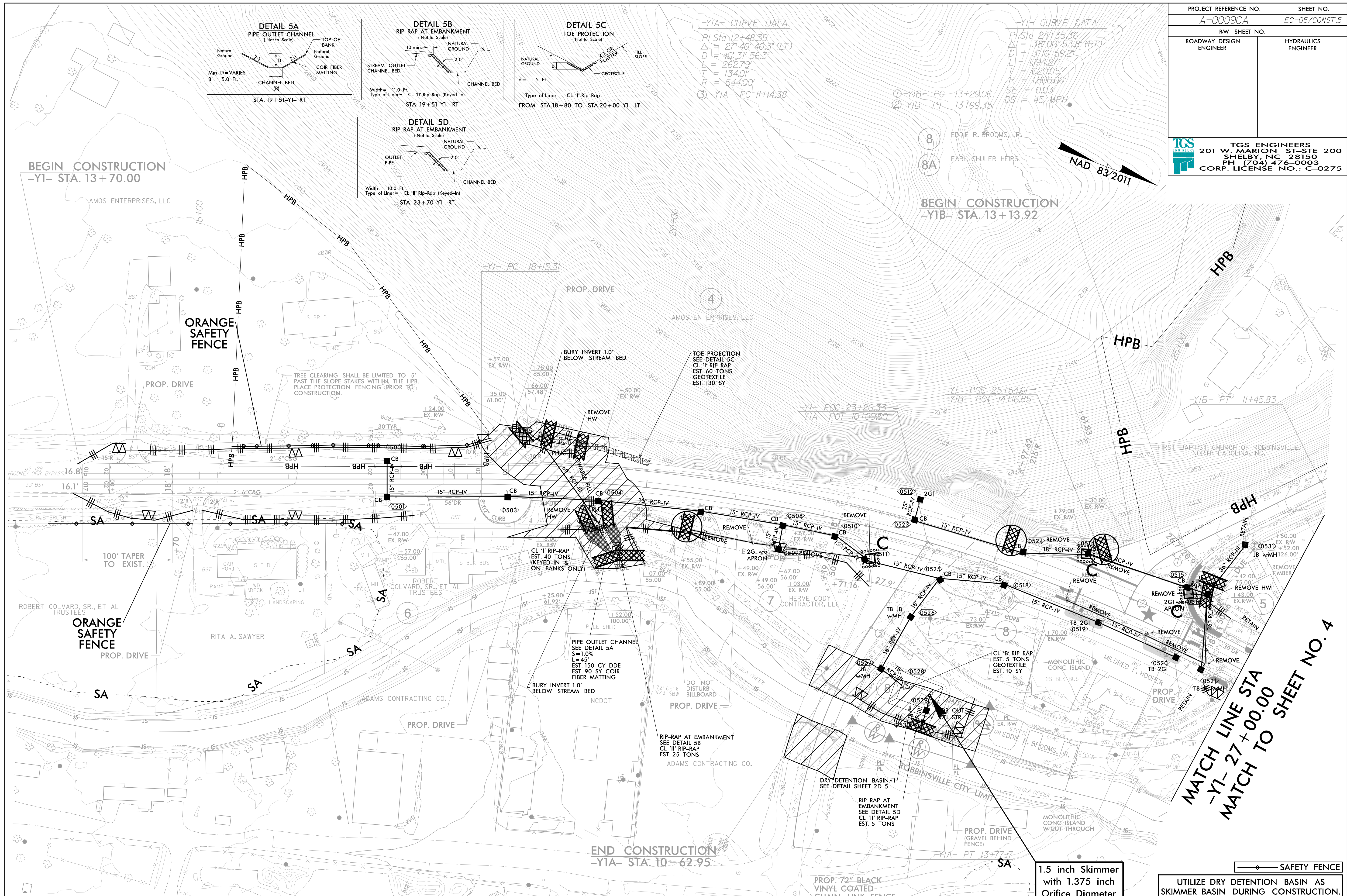
IN LIEU OF ROCK INLET SEDIMENT TRAP TYPE C, UTILIZE FABRIC INSERT INLET PROTECTION DEVICES IN AREAS WHERE WATER MAY POND ON ROAD OPEN TO LIVE TRAFFIC.

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 4

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

 ENVIRONMENTALLY SENSITIVE AREA
 SEE PROJECT SPECIAL PROVISIONS

PROJECT REFERENCE NO. A-0009CA		SHEET NO. EC-05/CONST.5	
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			



-Y1A- CURVE DATA
PI Sta 12+48.39
 $\Delta = 27^\circ 40' 40.3\" (LT)$
 $D = 40.31' 56.3\"$
 $L = 262.79'$
 $T = 134.01'$
 $R = 544.00'$
③ -Y1A- PC 11+4.38

-Y1- CURVE DATA
PI Sta 24+35.56
 $\Delta = 38^\circ 00' 53.8\" (RT)$
 $D = 31' 0\" 59.2\"$
 $L = 1194.27'$
 $T = 620.05'$
 $R = 1,800.00'$
 $SE = 0.03$
 $DS = 45' MPH$
① -Y1B- PC 13+29.06
② -Y1B- PT 13+99.35


 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.

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 5

1.5 inch Skimmer
with 1.375 inch
Orifice Diameter
ID DDB #1

 SAFETY FENCE
UTILIZE DRY DETENTION BASIN AS
SKIMMER BASIN DURING CONSTRUCTION.

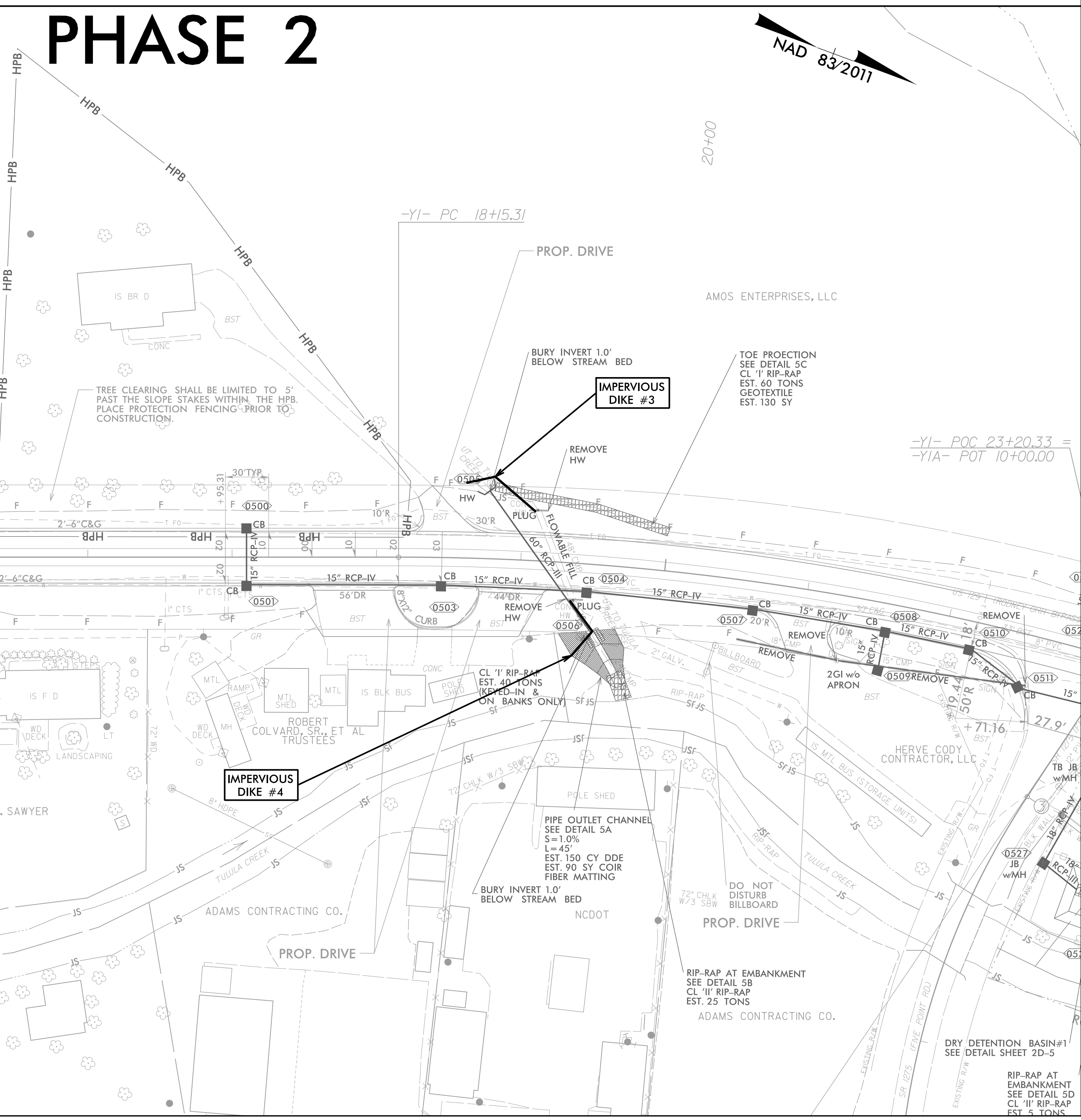
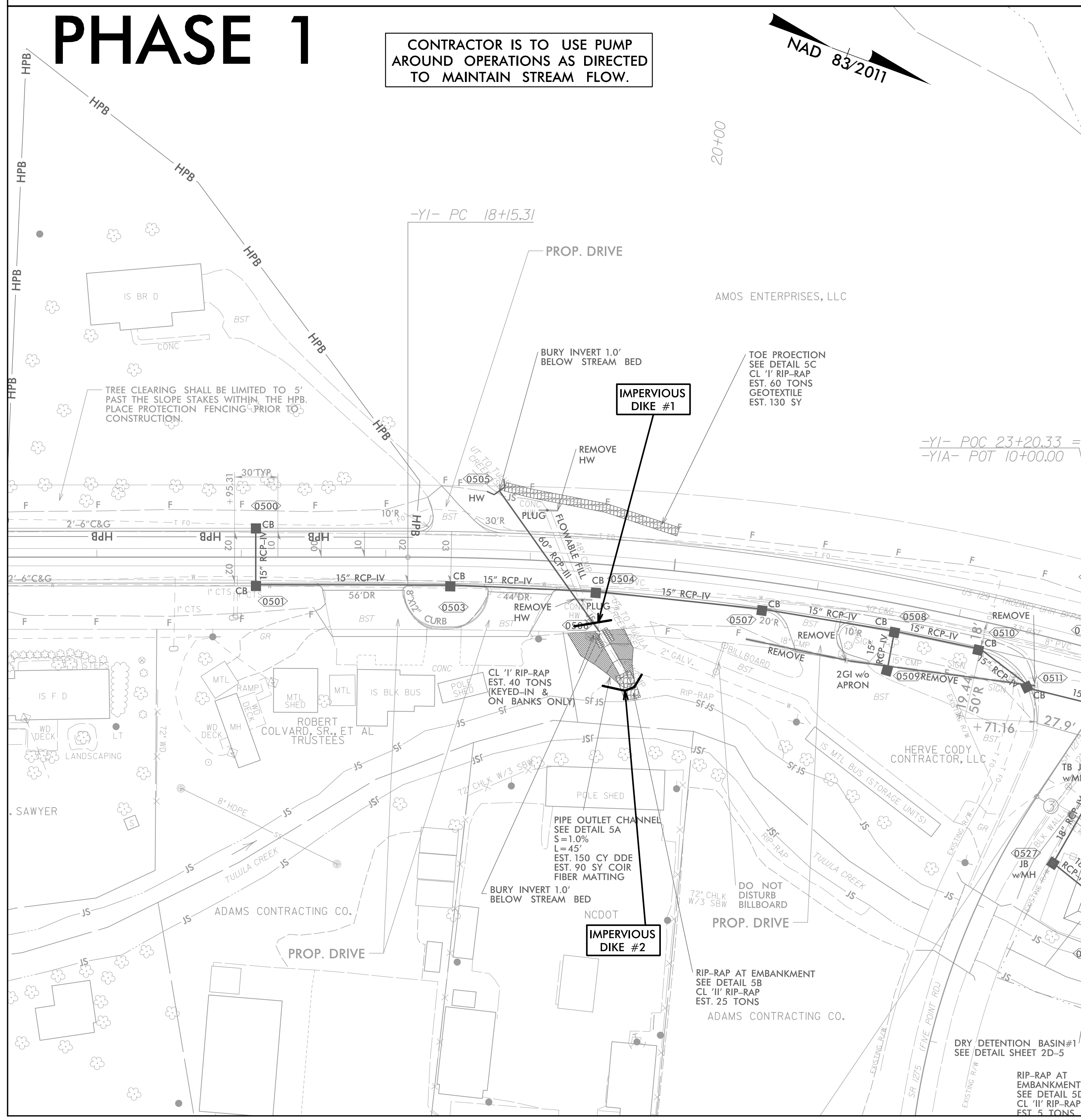
MATCH LINE STA
-Y1- 27+00.00
MATCH TO SHEET NO. 4


PROJECT REFERENCE NO.	SHEET NO.
A-0009CA	EC-05A/CONST.5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PIPE CONSTRUCTION SEQUENCE STA. 19+13 -Y1-

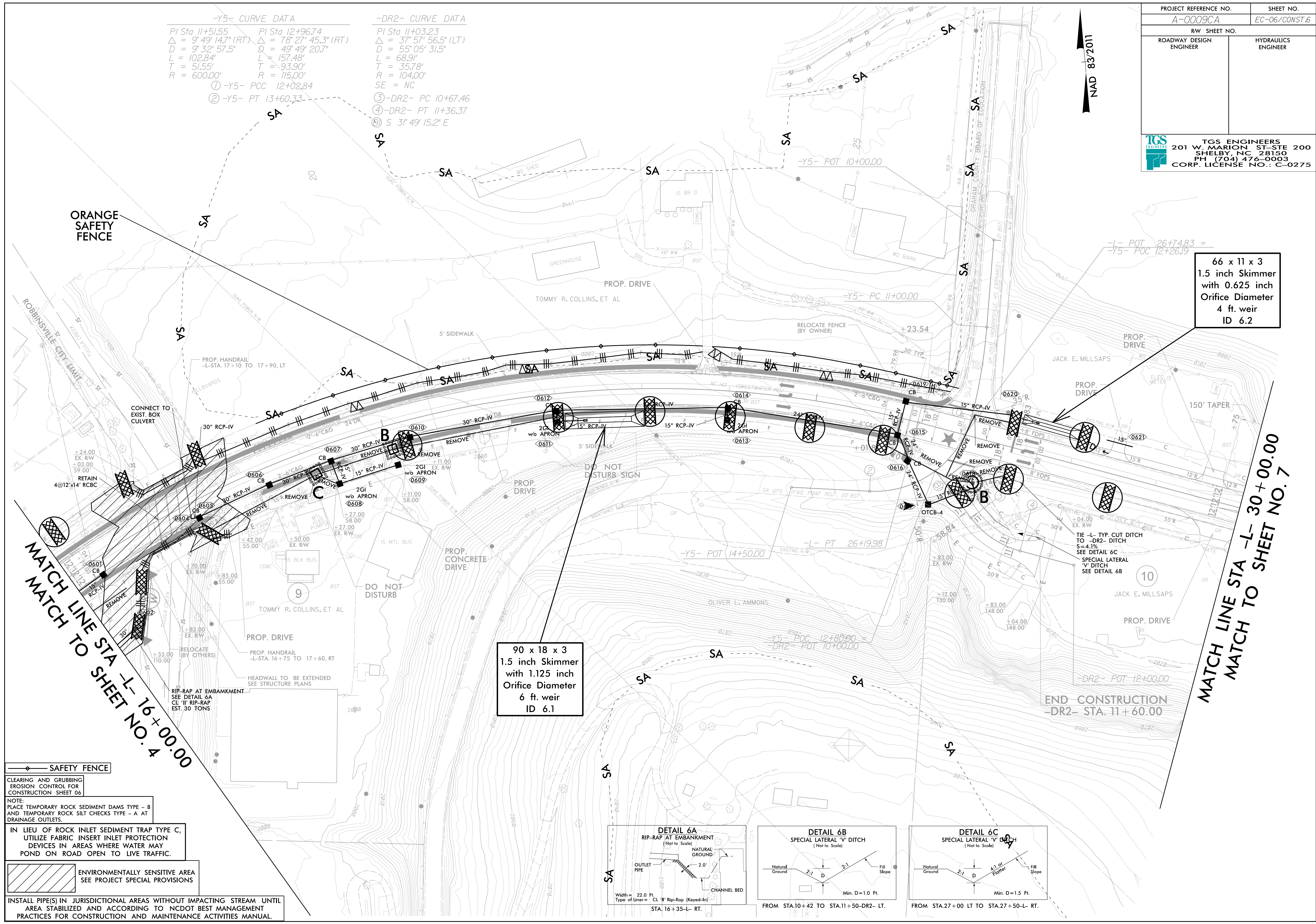
1. INSTALL IMPERVIOUS DIKES #1 & #2 AND BEGIN PUMP AROUND OPERATION.
2. DEWATER WORK SITE AS NEEDED INTO SPECIAL STILLING BASIN(S).
3. REMOVE EXISTING 24" CMP AND CONSTRUCT PIPE OUTLET CHANNEL.
4. STOP PUMP AROUND OPERATION, REMOVE IMPERVIOUS DIKES #1 AND #2, AND RESTORE FLOW IN PIPE OUTLET CHANNEL.

5. INSTALL IMPERVIOUS DIKES #3 AND #4 AND PUMP THROUGH EXISTING 48" AS NEEDED.
6. REMOVE CONCRETE HEADWALL ON EXISTING 48" CMP.
7. INSTALL PROPOSED 60" RCP-III BY SHIFTING TRAFFIC ACCORDING TO TRAFFIC CONTROL PLANS.
8. REMOVE IMPERVIOUS DIKES #3 AND #4 AND REESTABLISH STREAM.
9. PLUG AND FILL EXISTING 48" CMP.



PROJECT REFERENCE NO.		SHEET NO.	
A-0009CA		EC-06/CONST.6	
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			

-Y5- CURVE DATA		-DR2- CURVE DATA	
PI Sta 11+51.55	PI Sta 12+96.74	PI Sta 11+03.23	
$\Delta = 9^{\circ} 49' 14.7''$ (RT)	$\Delta = 78^{\circ} 27' 45.3''$ (RT)	$\Delta = 37^{\circ} 57' 56.5''$ (LT)	
D = 9° 32' 57.5"	D = 49° 49' 20.7"	D = 55° 05' 31.5"	
L = 102.84'	L = 157.48'	L = 68.91'	
T = 51.55'	T = 93.90'	T = 35.78'	
R = 600.00'	R = 115.00'	R = 104.00'	
① -Y5- PCC 12+02.84		③ -DR2- PC 10+67.46	
② -Y5- PT 13+60.33		④ -DR2- PT 11+36.37	
		⑤ S 31° 49' 15.2" E	
		SE = NC	



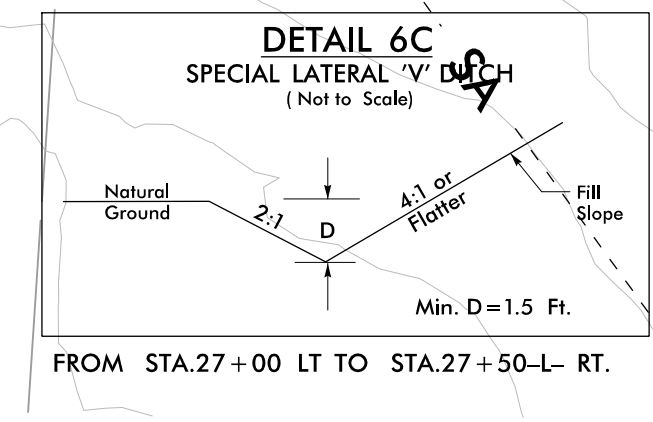
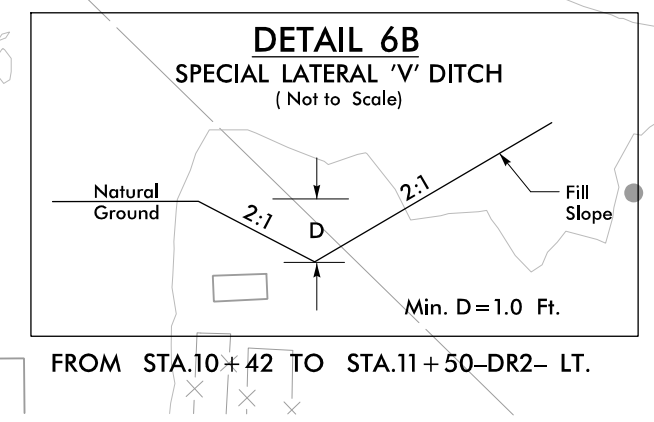
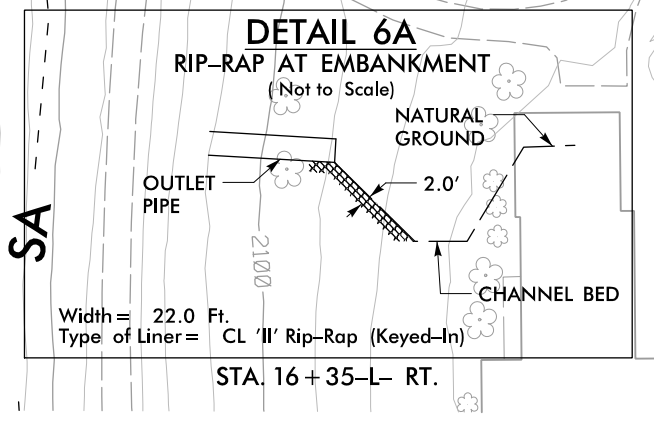
66 x 11 x 3
 1.5 inch Skimmer
 with 0.625 inch
 Orifice Diameter
 4 ft. weir
 ID 6.2

90 x 18 x 3
 1.5 inch Skimmer
 with 1.125 inch
 Orifice Diameter
 6 ft. weir
 ID 6.1

MATCH LINE STA -L- 16+00.00
 MATCH TO SHEET NO. 4

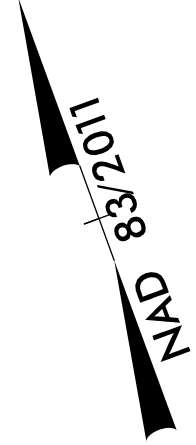
MATCH LINE STA -L- 30+00.00
 MATCH TO SHEET NO. 7

- SAFETY FENCE
- CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 06
- NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B
AND TEMPORARY ROCK SILT CHECKS TYPE - A AT
DRAINAGE OUTLETS.
- 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.
- 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.



END CONSTRUCTION
 -DR2- STA. 11+60.00

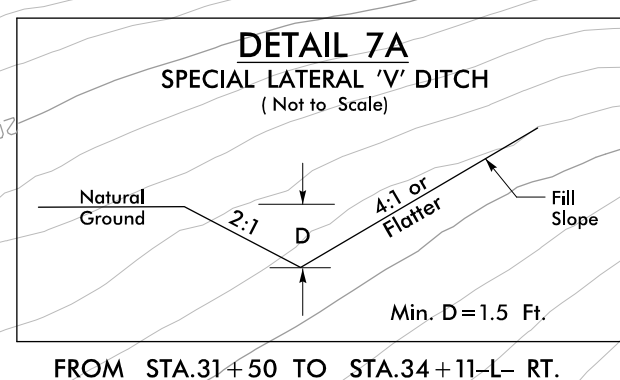
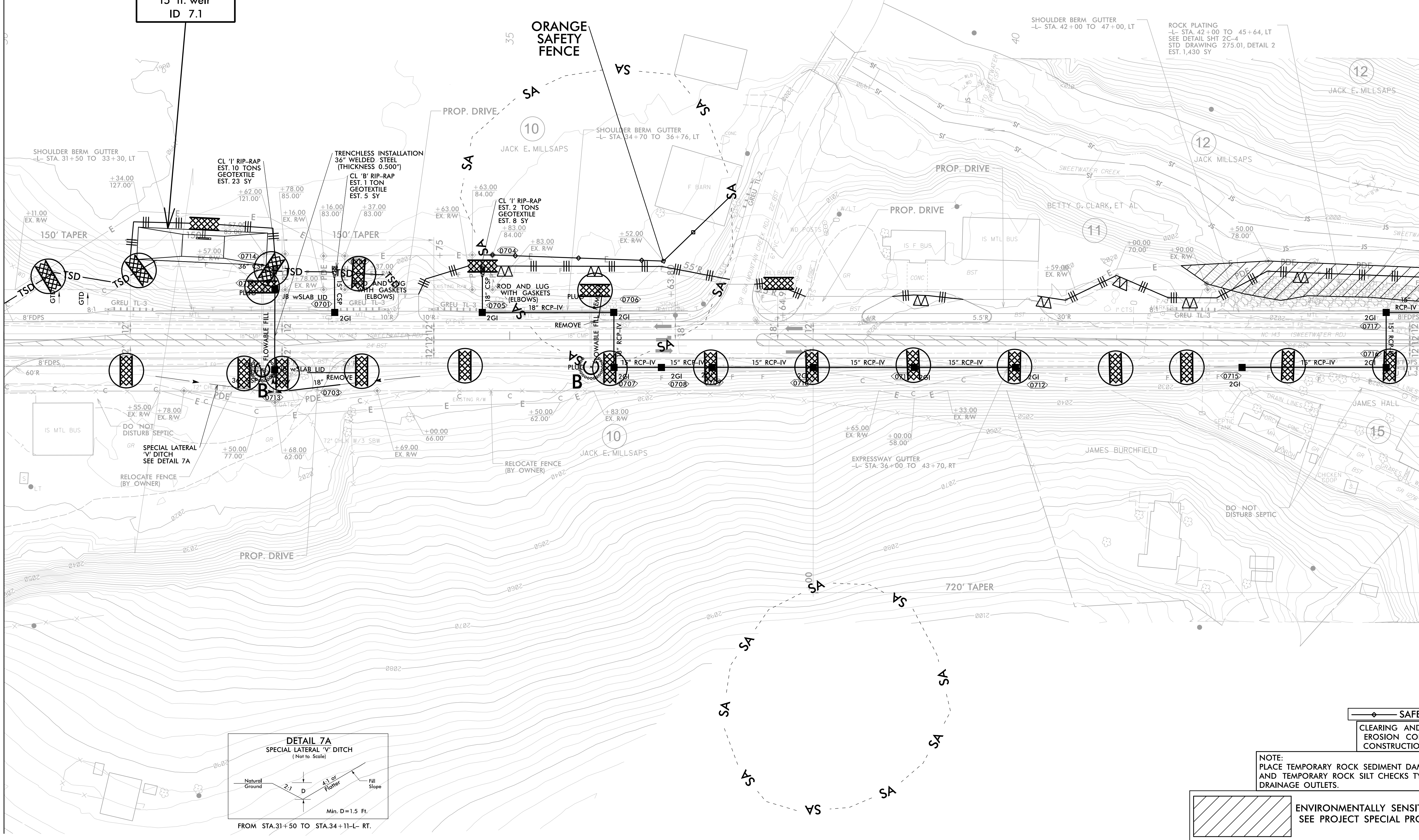
PROJECT REFERENCE NO.		SHEET NO.	
A-0009CA		EC-07/CONST.7	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
TGS ENGINEERS		TGS ENGINEERS	
201 W. MARION ST. STE 200		SHELBY, NC 28150	
PH (704) 476-0003		CORP. LICENSE NO.: C-0275	



128 x 32 x 3
2 inch Skimmer
with 1.75 inch
Orifice Diameter
15 ft. weir
ID 7.1

MATCH LINE STA -L- 30+00.00
MATCH TO SHEET NO.6

MATCH LINE STA -L- 44+00.00
MATCH TO SHEET NO.8




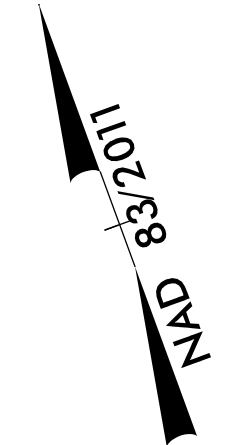
SA SAFETY FENCE
CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 7

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

ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

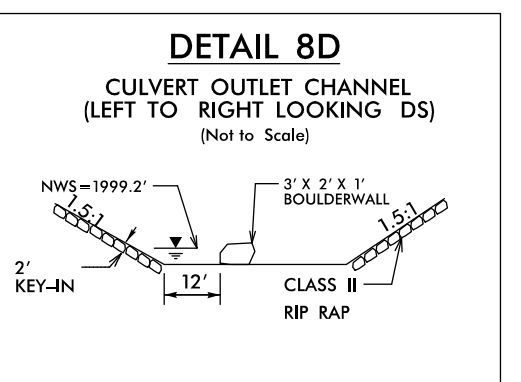
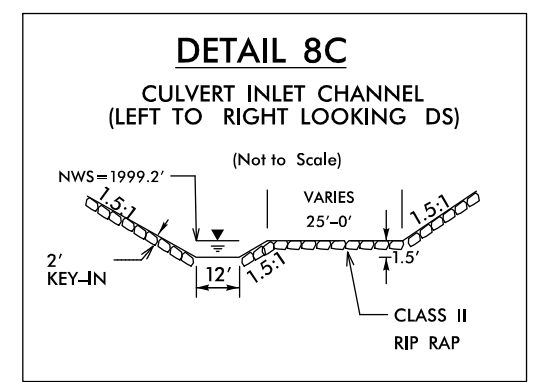
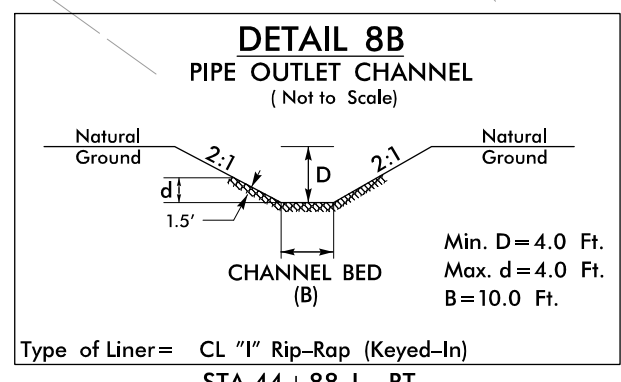
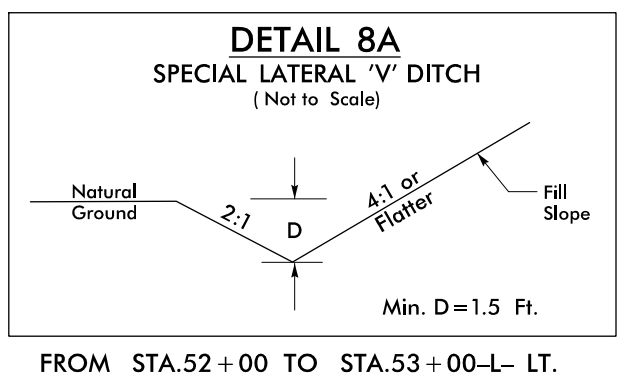
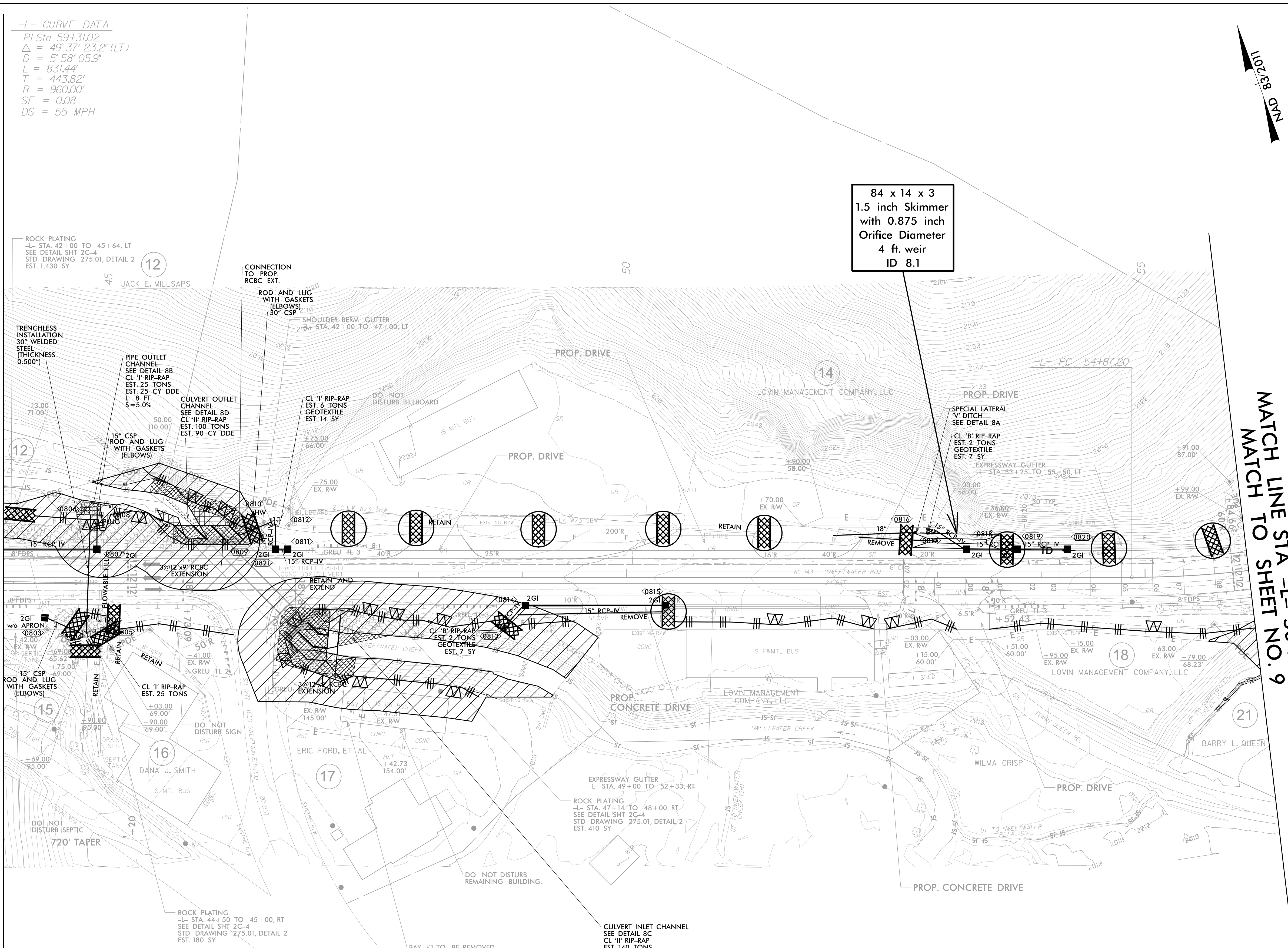
-L- CURVE DATA
PI Sta 59+31.02
 $\Delta = 49^{\circ} 37' 23.2''$ (LT)
D = 5' 58" 05.9"
L = 831.44'
T = 443.82'
R = 960.00'
SE = 0.08
DS = 55 MPH

PROJECT REFERENCE NO. A-0009CA		SHEET NO. EC-08/CONST.B	
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- 44+00.00
MATCH TO SHEET NO. 7

MATCH LINE STA -L- 56+00.00
MATCH TO SHEET NO. 9



CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 8

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

 ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

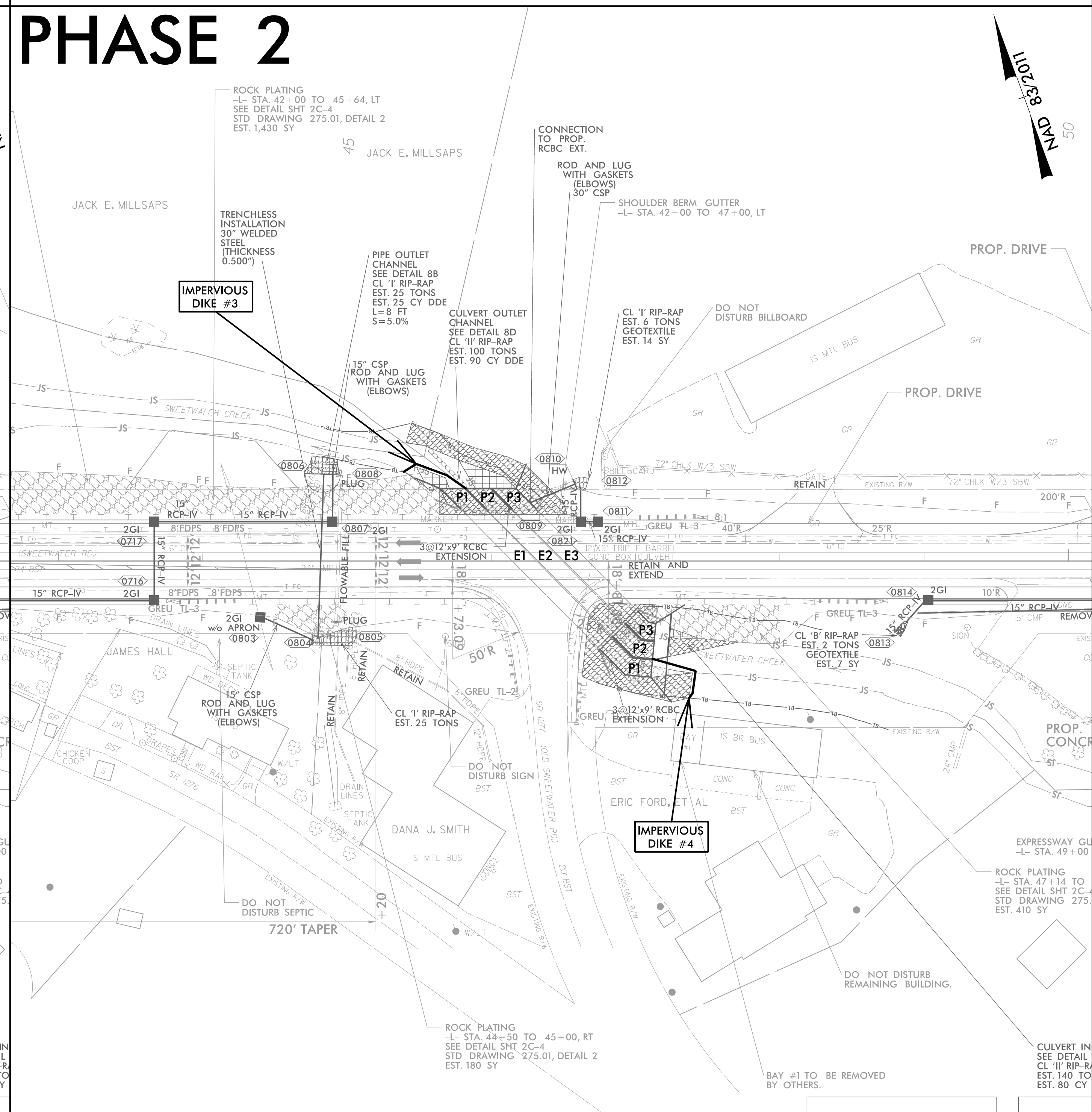
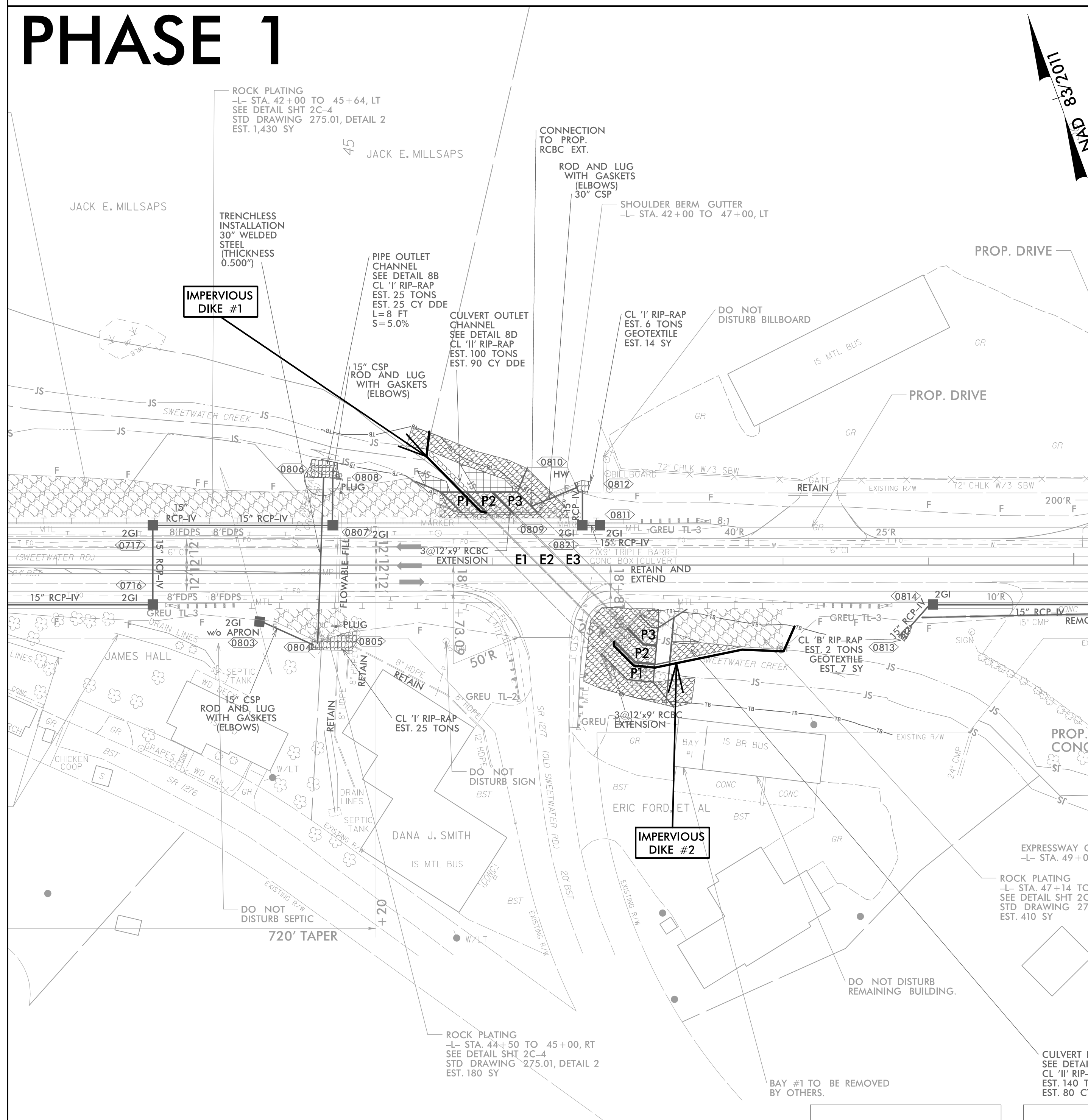
INSTALL PIPE(S) IN JURISDICTIONAL AREAS WITHOUT IMPACTING STREAM UNTIL
AREA STABILIZED AND ACCORDING TO NCDOT BEST MANAGEMENT
PRACTICES FOR CONSTRUCTION AND MAINTENANCE ACTIVITIES MANUAL.

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

CULVERT CONSTRUCTION SEQUENCE STA. 46 + 41 -L-

1. INSTALL IMPERVIOUS DIKES #1 & #2 AND DIRECT FLOW THROUGH EXISTING RCBC E1.
2. DEWATER WORK SITE AS NEEDED INTO SPECIAL STILLING BASIN(S).
3. CONSTRUCT 12'X9' RCBC EXTENSIONS P2 & P3.
4. REMOVE EXISTING SILTED MATERIAL FROM RCBC E2 AND E3.
5. REMOVE IMPERVIOUS DIKES #1 & #2.

6. INSTALL IMPERVIOUS DIKES #3 & 4 AND DIRECT FLOW THROUGH NEW P2 & P3 EXTENSIONS.
7. CONSTRUCT 12'X9' RCBC EXTENSION P1.
8. UPON COMPLETION OF P1 CULVERT EXTENSION, REMOVE IMPERVIOUS DIKES #3 & #4.

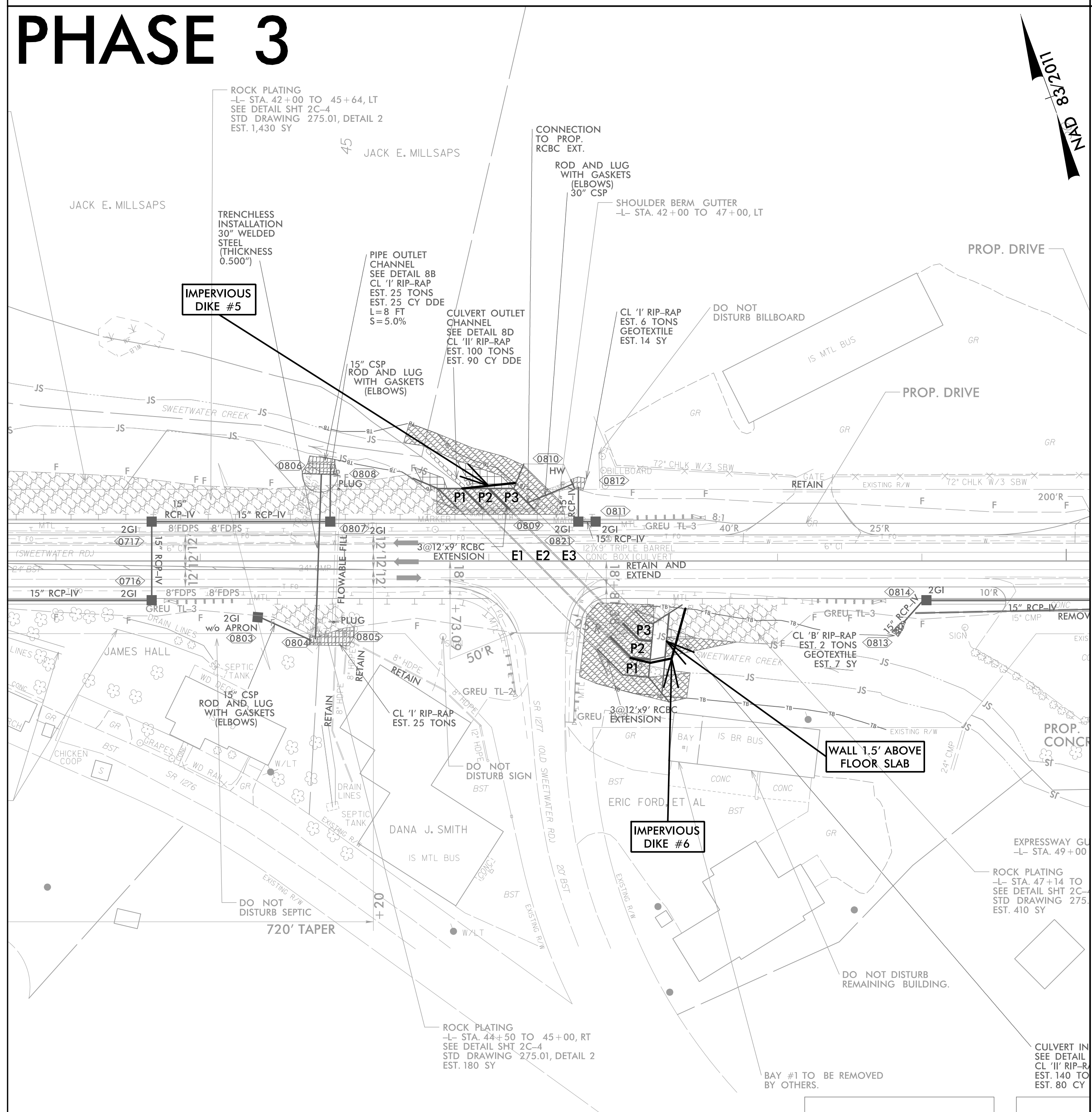


PROJECT REFERENCE NO.	SHEET NO.
A-0009CA	EC-08B/CONST.8
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

CULVERT CONSTRUCTION SEQUENCE STA. 46 + 41 -L-

9. INSTALL IMPERVIOUS DIKES #5 & #6 AND DIRECT FLOW THROUGH NEW EXTENSION P1.
10. CONSTRUCT WALL 1.5 FT ABOVE FLOOR SLAB ACCORDING TO STRUCTURE PLANS.
11. REMOVE IMPERVIOUS DIKES #5 & #6 AND REESTABLISH STREAM ACCORDING TO CONST. PLANS.

PHASE 3

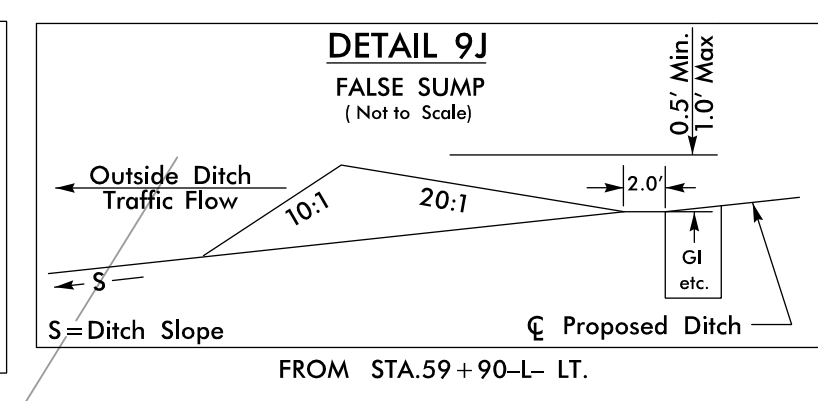
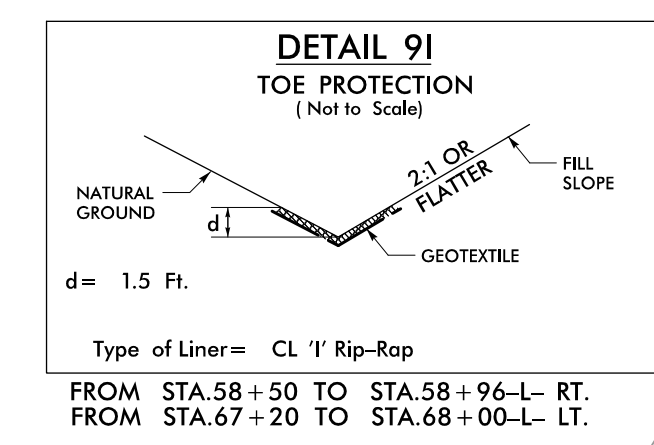
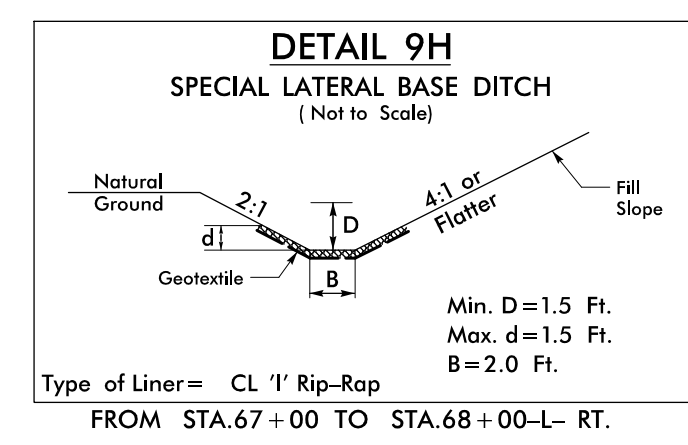
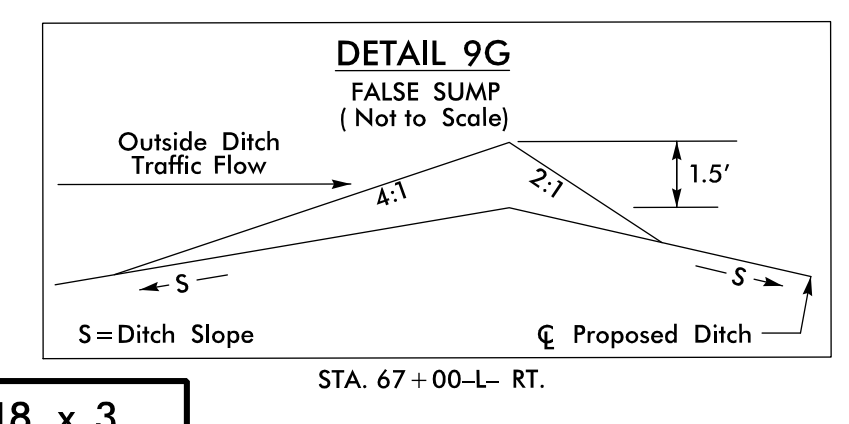


INSTALL PIPE(S) IN JURISDICTIONAL AREAS WITHOUT IMPACTING STREAM UNTIL AREA STABILIZED AND ACCORDING TO NCDOT BEST MANAGEMENT PRACTICES FOR CONSTRUCTION AND MAINTENANCE ACTIVITIES MANUAL.

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.

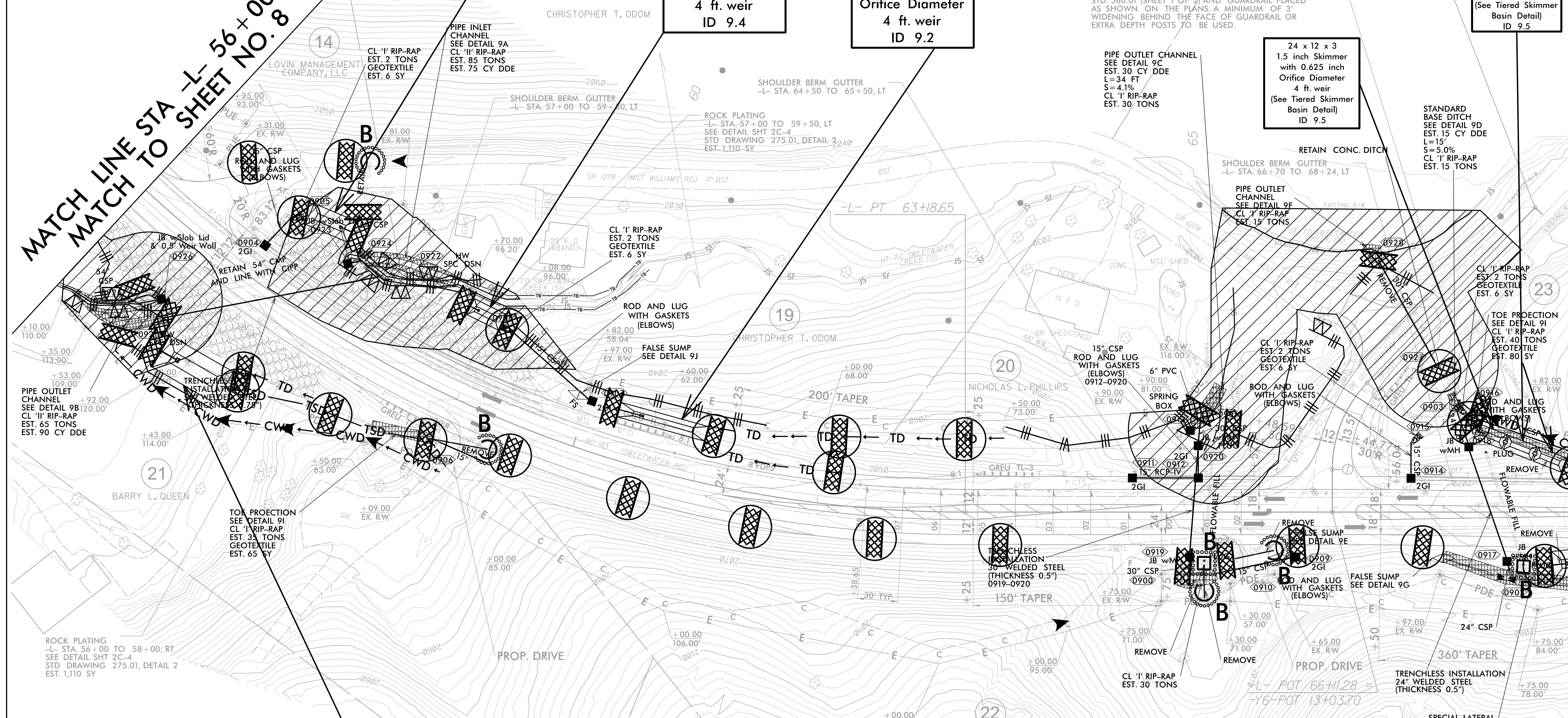
CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 9



PROJECT REFERENCE NO.	SHEET NO.
A-0009CA	EC-09/CONST.9
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- 56+00.00
MATCH TO SHEET NO. 8



36 x 18 x 3
1.5 inch Skimmer
with 0.625 inch
Orifice Diameter
4 ft. weir
ID 9.3

28 x 14 x 3
1.5 inch Skimmer
with 0.375 inch
Orifice Diameter
4 ft. weir
ID 9.4

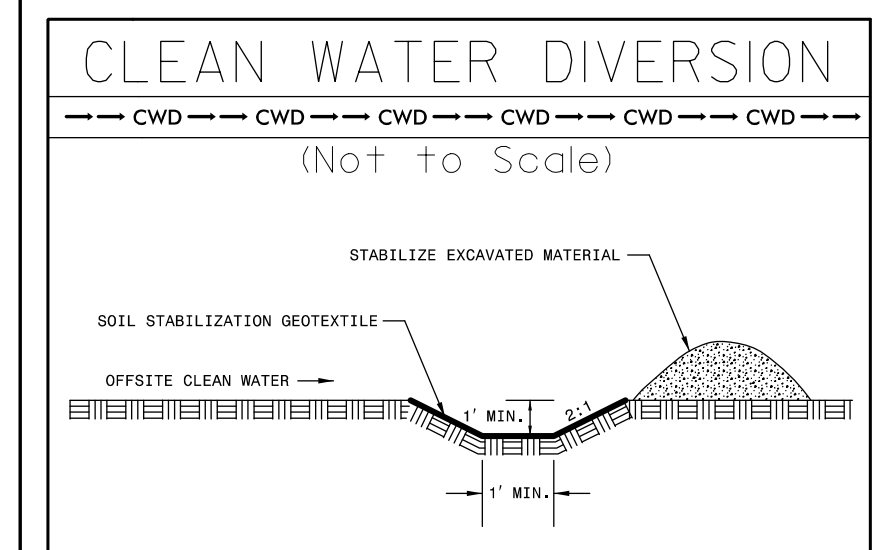
72 x 12 x 3
1.5 inch Skimmer
with 0.75 inch
Orifice Diameter
4 ft. weir
ID 9.2

BEGIN CONSTRUCTION
-Y6- STA. 11+05.00

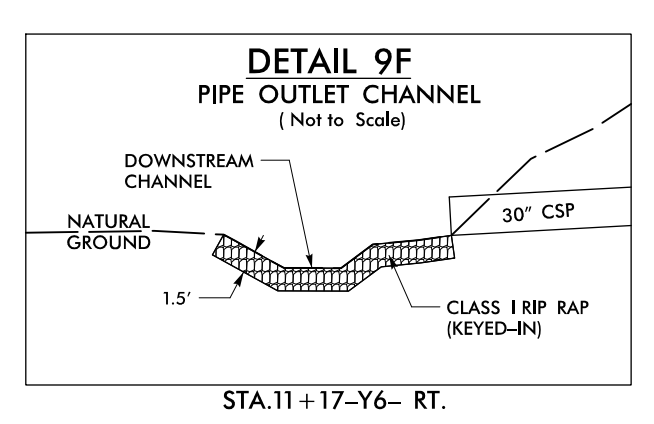
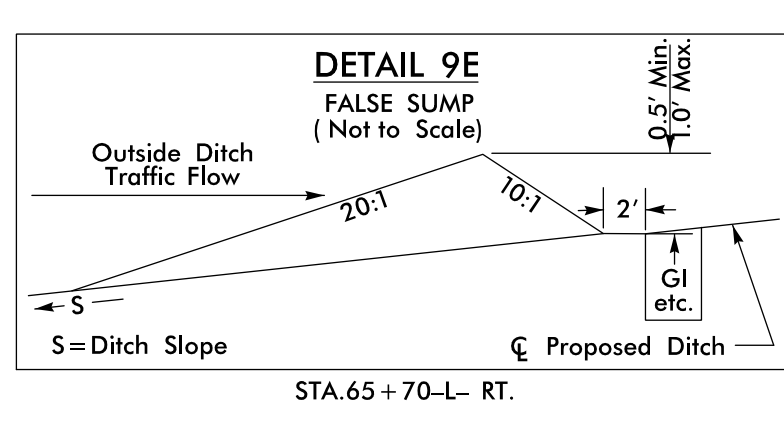
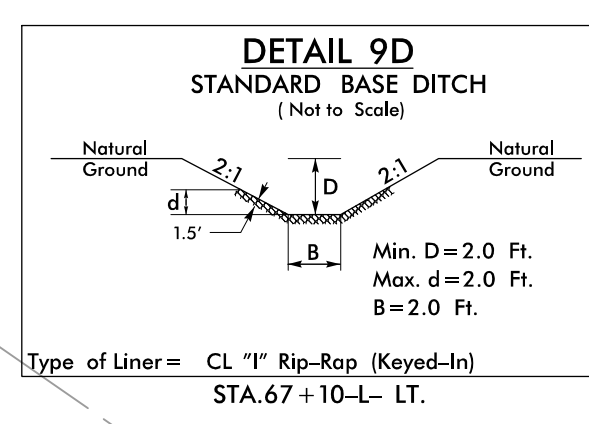
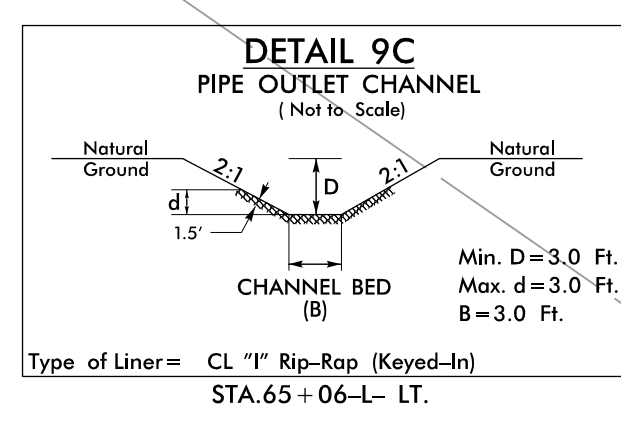
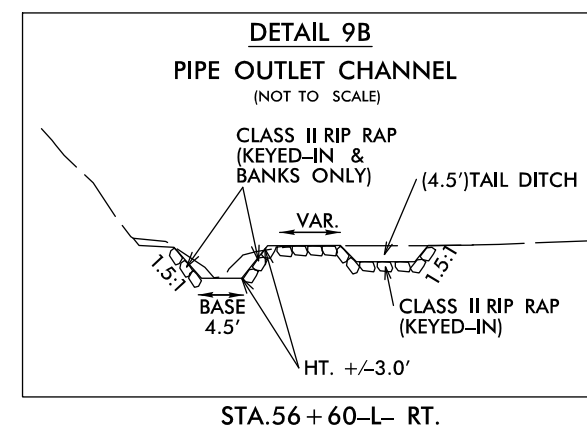
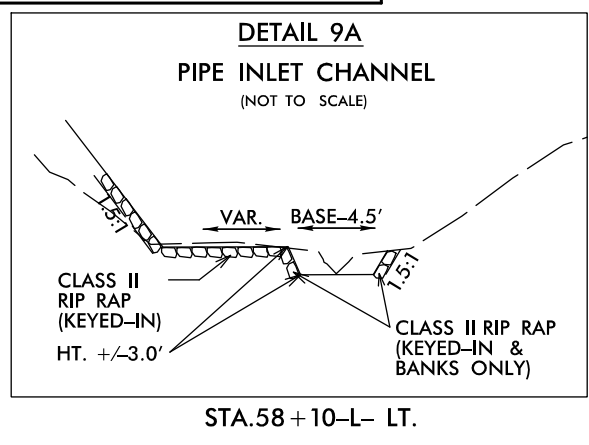
NOTE: -Y6- TO BE RESURFACED WITH 1 1/2" S9.5B. SHOULDER SHALL BE CONSTRUCTED USING NCDOT STD. 560.01 (SHEET 1 OF 2) AND GUARDRAIL PLACED AS SHOWN ON THE PLANS A MINIMUM OF 3' WIDENING BEHIND THE FACE OF GUARDRAIL OR EXTRA DEPTH TO BE USED.

Modified Silt Basin
Type 'B'
24 x 12 x 3
4 ft. weir
(See Tiered Skimmer Basin Detail)
ID 9.5

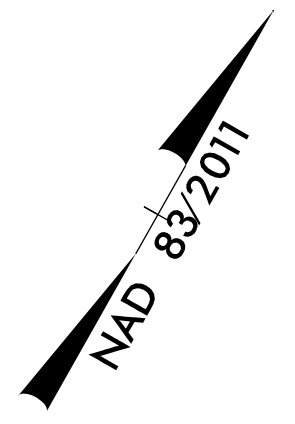
24 x 12 x 3
1.5 inch Skimmer
with 0.625 inch
Orifice Diameter
4 ft. weir
(See Tiered Skimmer Basin Detail)
ID 9.5



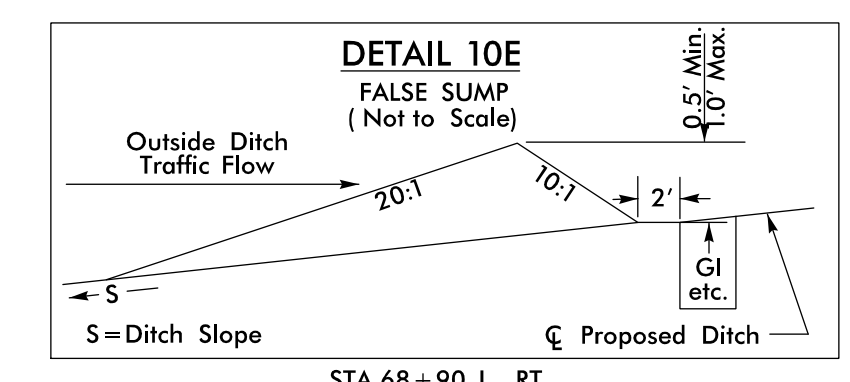
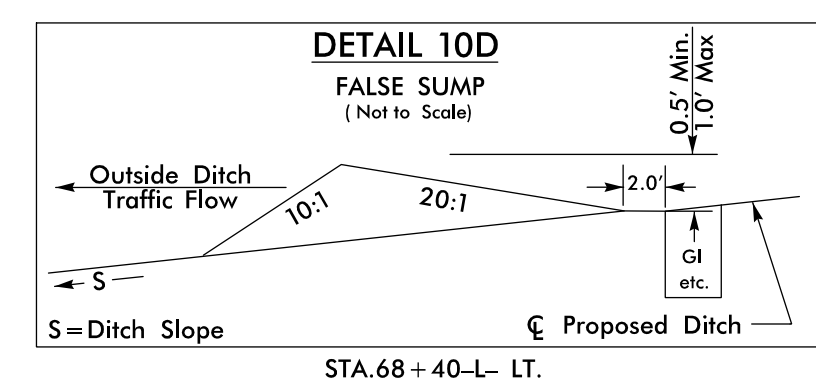
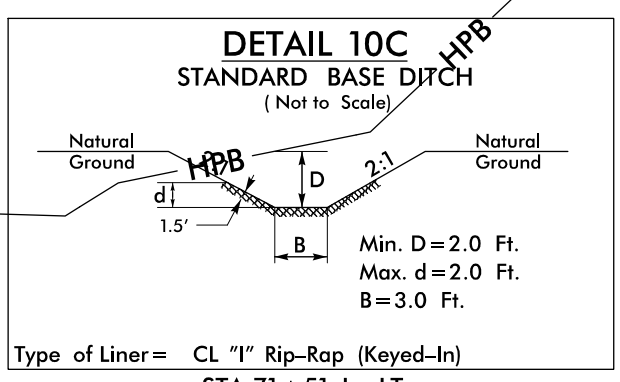
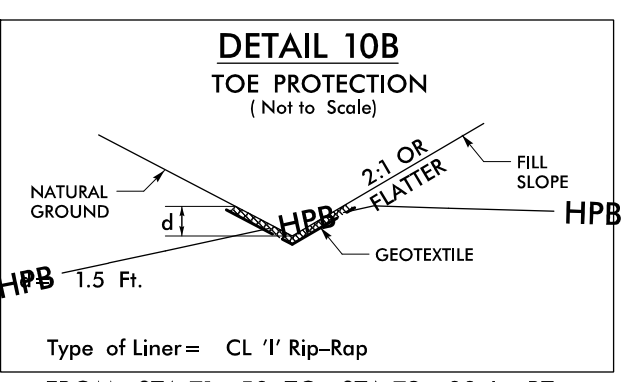
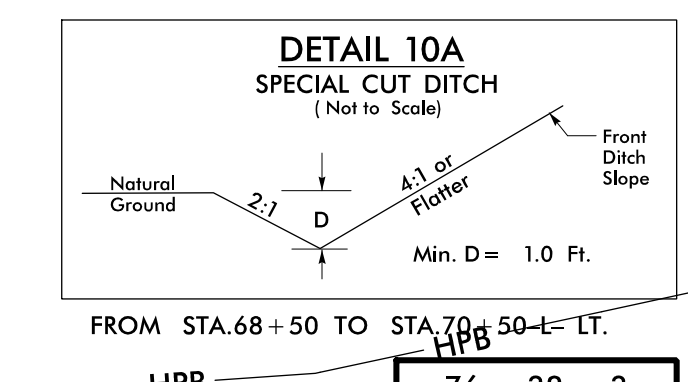
58 x 29 x 3
1.5 inch Skimmer
with 1.25 inch
Orifice Diameter
6 ft. weir
ID 9.1



MATCH LINE STA -L- 68+00.00
MATCH TO SHEET NO. 10

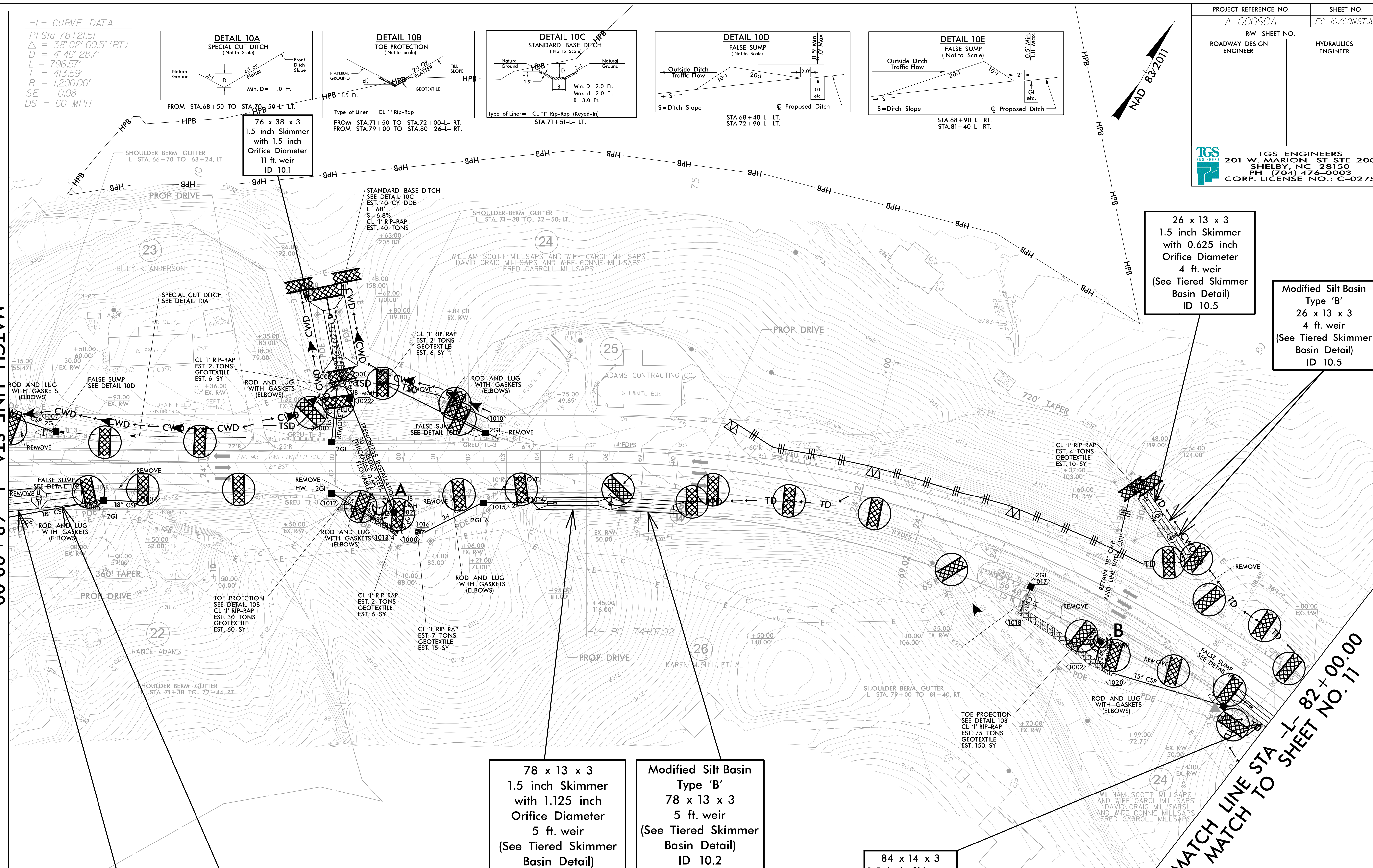


-L- CURVE DATA
 PI Sta 78+21.51
 $\Delta = 38^{\circ} 02' 00.5" (RT)$
 $D = 4' 46" 28.7"$
 $L = 796.57'$
 $T = 413.59'$
 $R = 1,200.00'$
 $SE = 0.08$
 $DS = 60 \text{ MPH}$



PROJECT REFERENCE NO. A-0009CA	SHEET NO. EC-10/CONST.10
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- 68+00.00
MATCH TO SHEET NO. 9



44 x 22 x 3
 1.5 inch Skimmer
 with 1.125 inch
 Orifice Diameter
 7 ft. weir
 (See Tiered Skimmer
 Basin Detail)
 ID 10.4

Modified Silt Basin
 Type 'B'
 44 x 22 x 3
 7 ft. weir
 (See Tiered Skimmer
 Basin Detail)
 ID 10.4

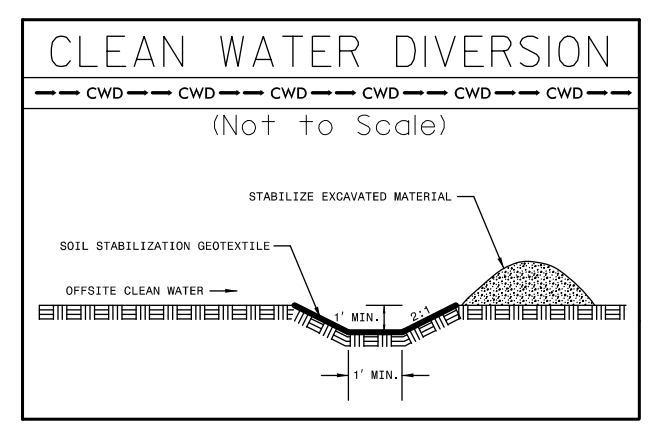
78 x 13 x 3
 1.5 inch Skimmer
 with 1.125 inch
 Orifice Diameter
 5 ft. weir
 (See Tiered Skimmer
 Basin Detail)
 ID 10.2

Modified Silt Basin
 Type 'B'
 78 x 13 x 3
 5 ft. weir
 (See Tiered Skimmer
 Basin Detail)
 ID 10.2

84 x 14 x 3
 1.5 inch Skimmer
 with 0.875 inch
 Orifice Diameter
 4 ft. weir
 ID 10.3

26 x 13 x 3
 1.5 inch Skimmer
 with 0.625 inch
 Orifice Diameter
 4 ft. weir
 (See Tiered Skimmer
 Basin Detail)
 ID 10.5


Modified Silt Basin
 Type 'B'
 26 x 13 x 3
 4 ft. weir
 (See Tiered Skimmer
 Basin Detail)
 ID 10.5

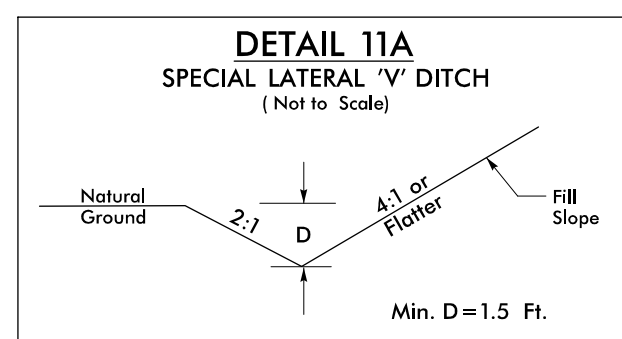


MATCH LINE STA -L- 82+00.00
MATCH TO SHEET NO. 11

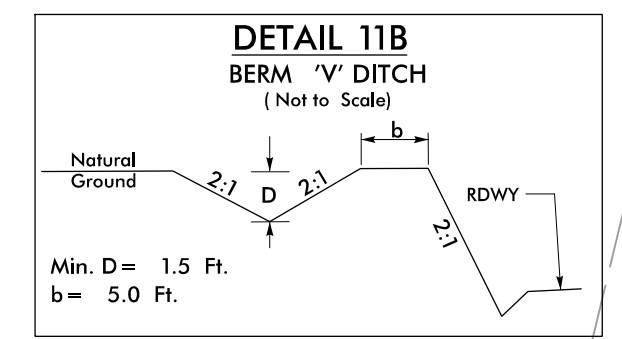
CLEARING AND GRUBBING
 EROSION CONTROL FOR
 CONSTRUCTION SHEET 10

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

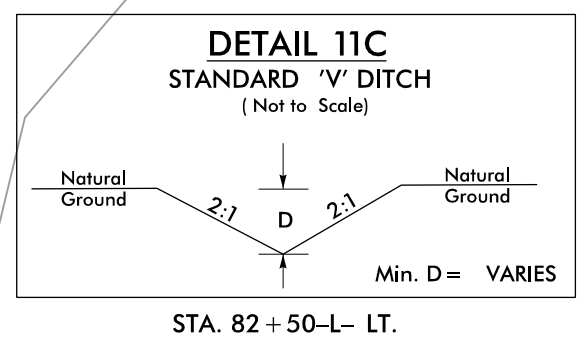
PROJECT REFERENCE NO.	SHEET NO.
A-0009CA	EC-11/CONST/11
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
 TGS ENGINEERS 201 W. MARION ST-STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	



FROM STA.87+00 TO STA.87+50-L- LT.
FROM STA.88+62 TO STA.89+50-L- LT.



FROM STA.91+95 TO STA.92+50-L- LT.
FROM STA.93+85 TO STA.96+00-L- LT.

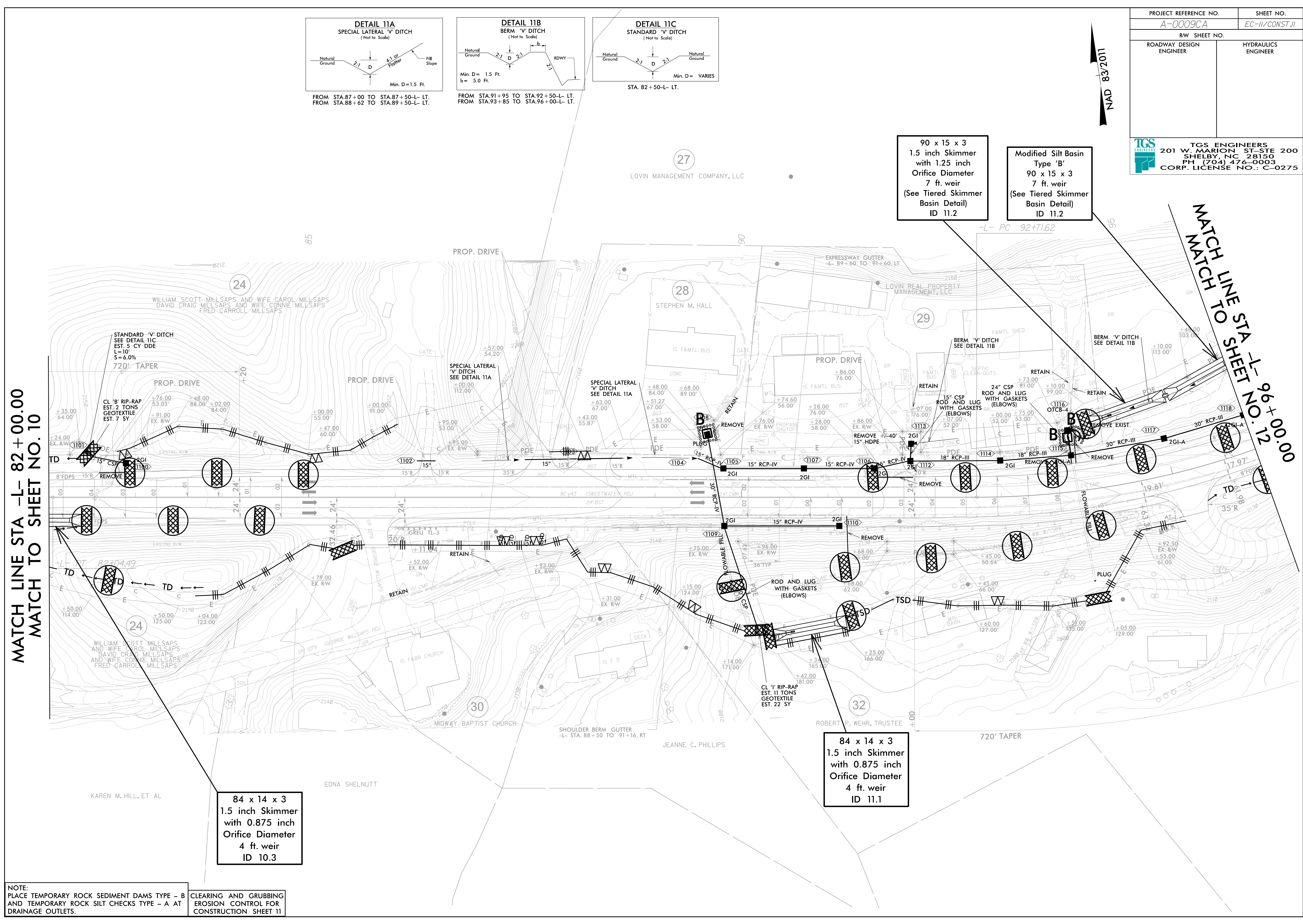


STA. 82 + 50-L- LT.

NAD 83/2011

MATCH LINE STA -L- 82+00.00
MATCH TO SHEET NO.10

MATCH LINE TO SHEET -L- 96+00.00
SHEET NO.12



90 x 15 x 3
1.5 inch Skimmer
with 1.25 inch
Orifice Diameter
7 ft. weir
(See Tiered Skimmer
Basin Detail)
ID 11.2

Modified Silt Basin
Type 'B'
90 x 15 x 3
7 ft. weir
(See Tiered Skimmer
Basin Detail)
ID 11.2

84 x 14 x 3
1.5 inch Skimmer
with 0.875 inch
Orifice Diameter
4 ft. weir
ID 11.1

84 x 14 x 3
1.5 inch Skimmer
with 0.875 inch
Orifice Diameter
4 ft. weir
ID 10.3

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

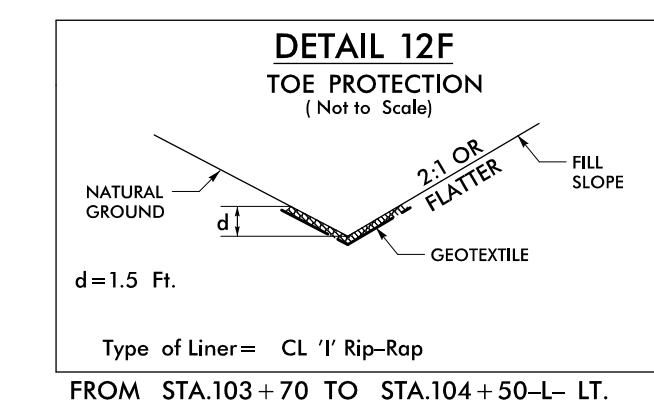
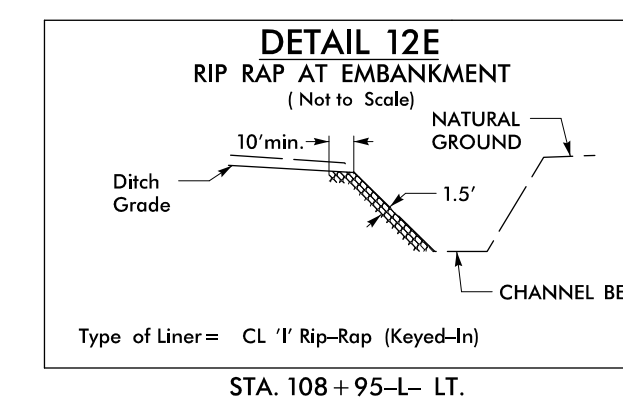
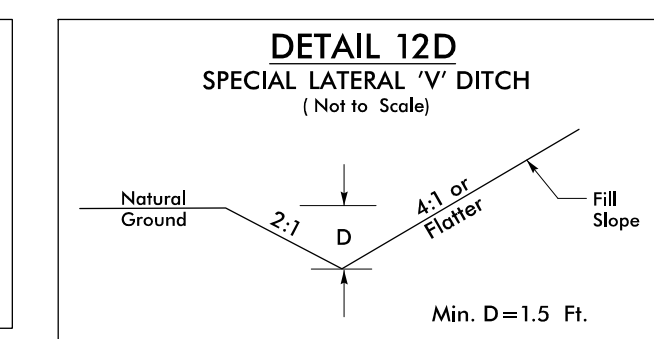
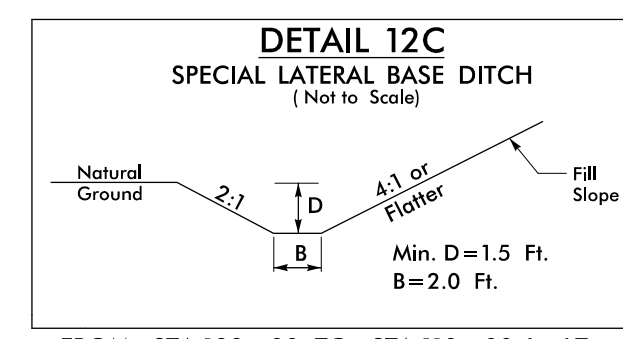
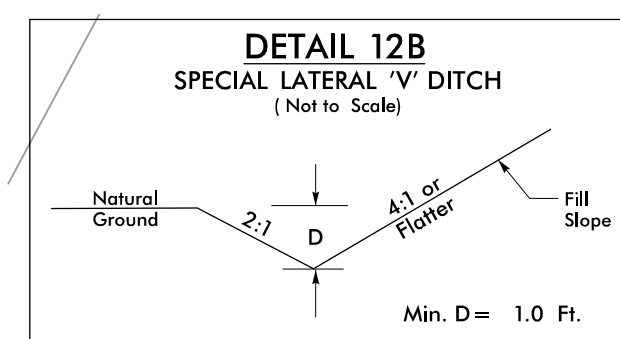
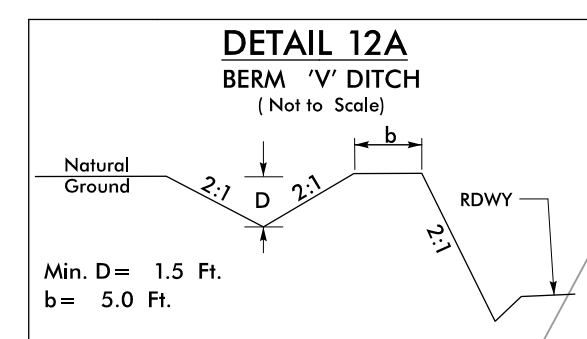
CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 11

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 12



PROJECT REFERENCE NO.	SHEET NO.
A-0009CA	EC-12/CONST.12
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- 96+00.00
MATCH TO SHEET NO. 11

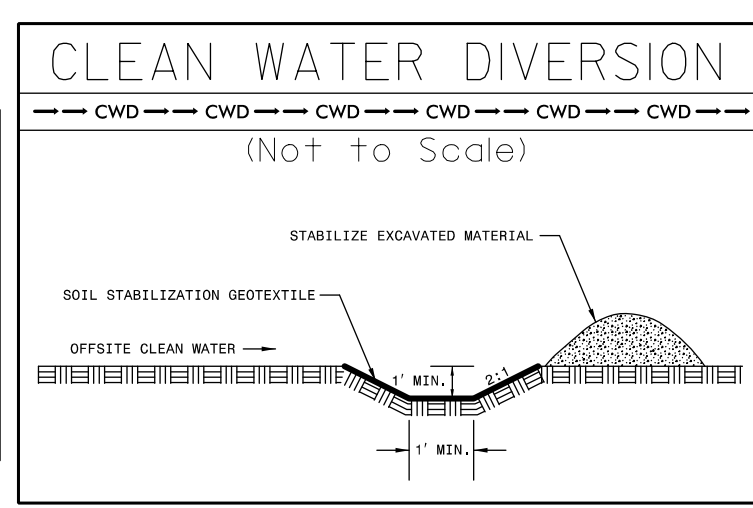
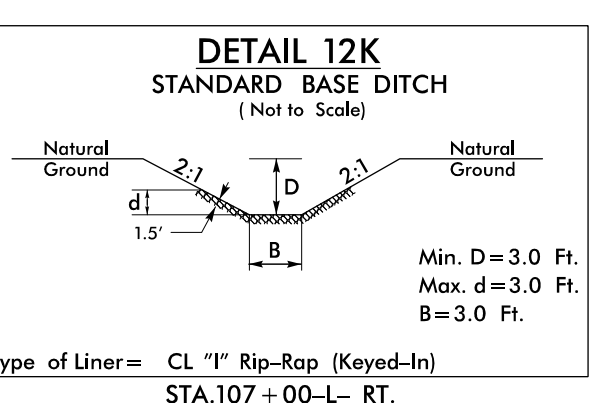
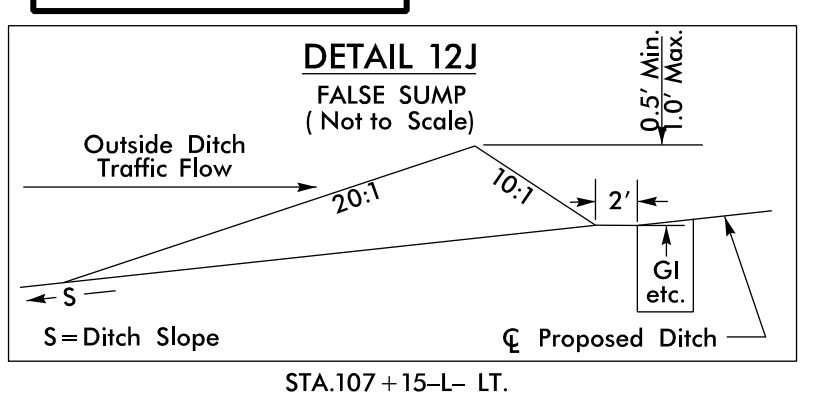
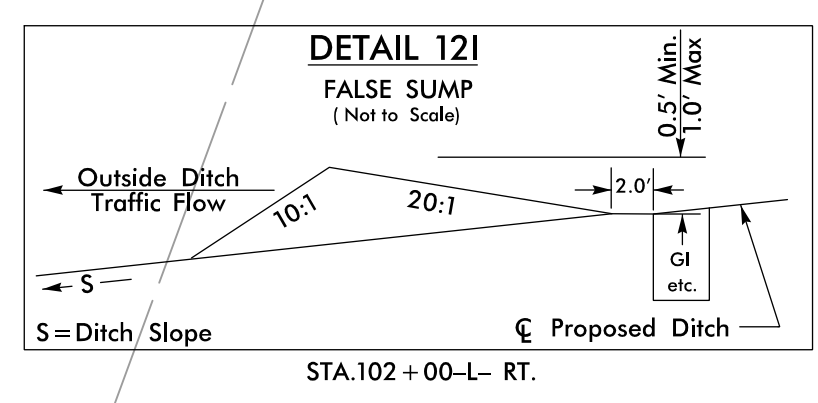
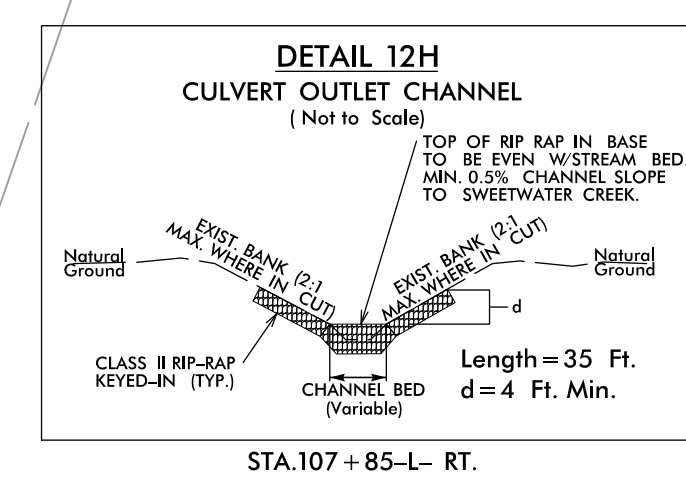
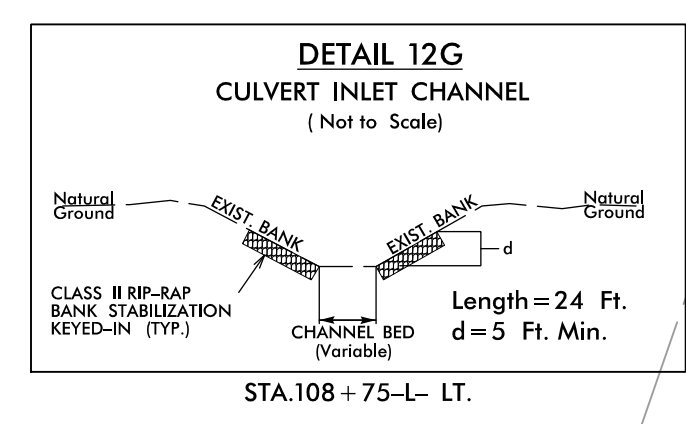
50 x 10 x 3
1.5 inch Skimmer
with 0.5 inch
Orifice Diameter
4 ft. weir
ID 12.7

78 x 13 x 3
1.5 inch Skimmer
with 0.75 inch
Orifice Diameter
4 ft. weir
ID 12.2

35 x 175 x 3
2.5 inch Skimmer
with 2.125 inch
Orifice Diameter
22 ft. weir
ID 12.1

50 x 10 x 3
1.5 inch Skimmer
with 0.5 inch
Orifice Diameter
4 ft. weir
ID 12.4

50 x 10 x 3
1.5 inch Skimmer
with 0.5 inch
Orifice Diameter
4 ft. weir
ID 12.6



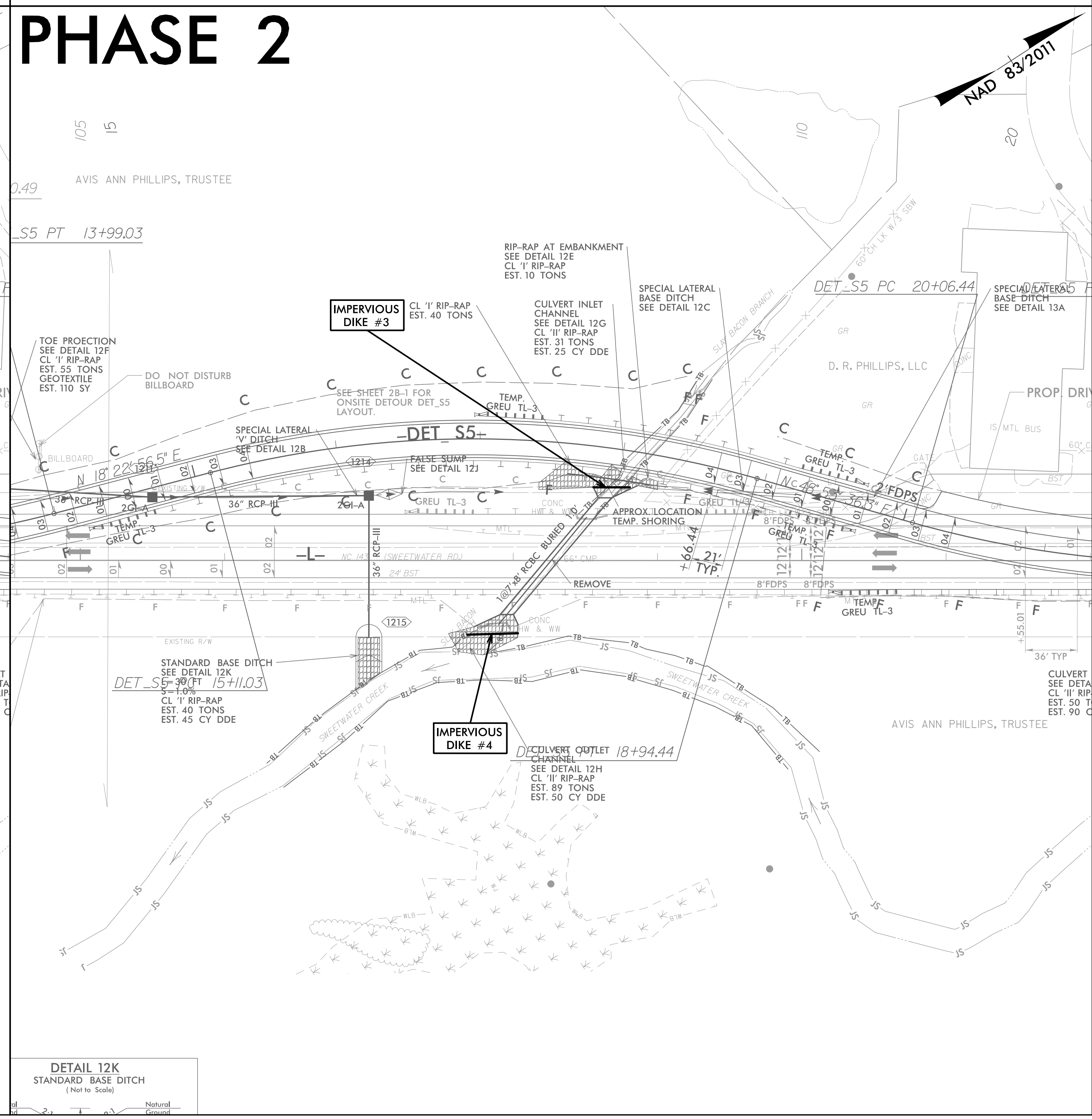
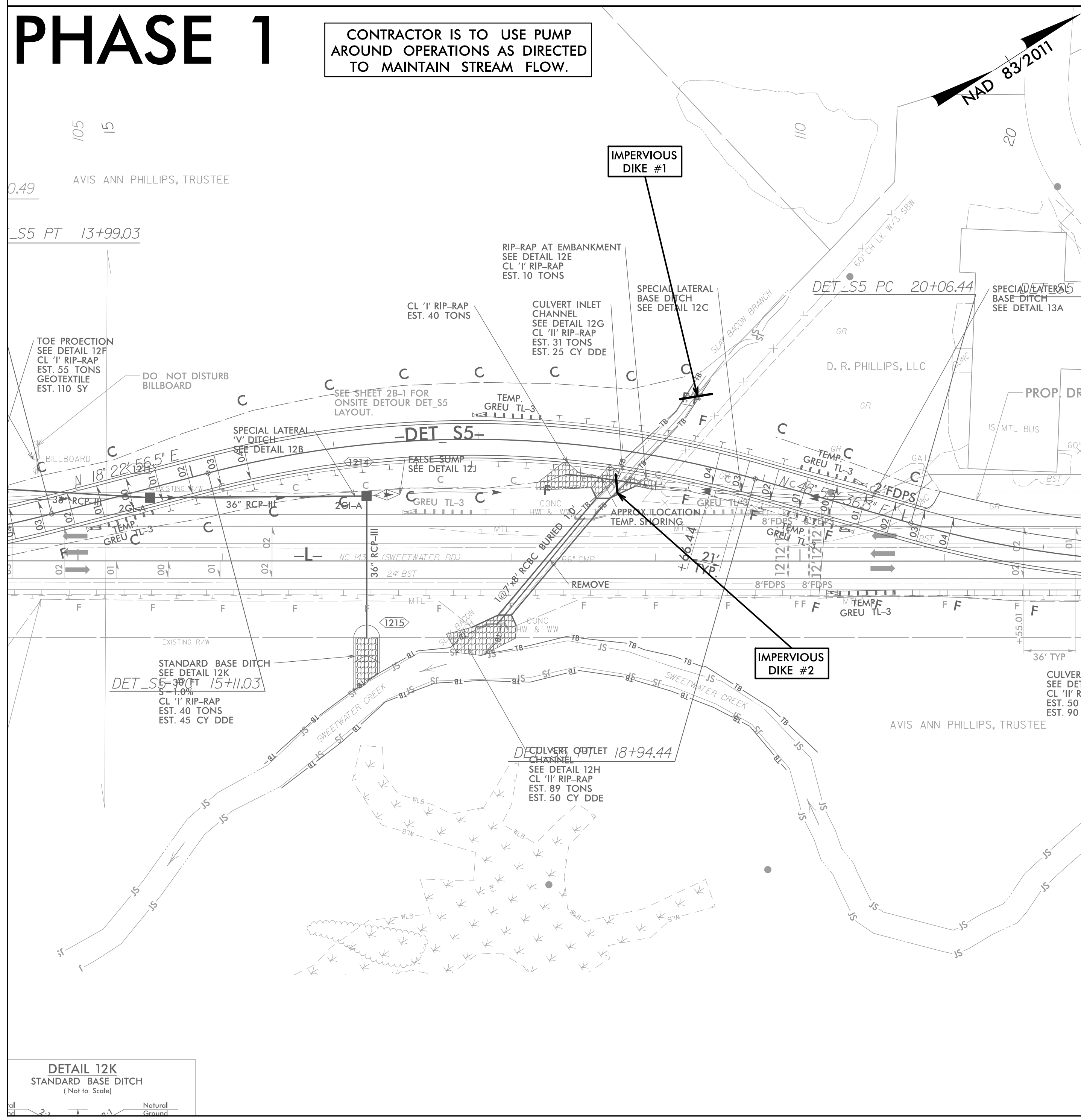
MATCH LINE STA L- 110+00.00
MATCH TO SHEET NO. 13

PROJECT REFERENCE NO.	SHEET NO.
A-0009CA	EC-12A/CONST J2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

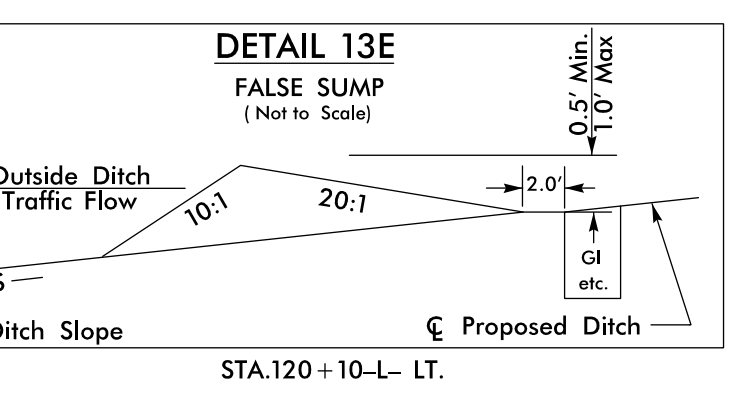
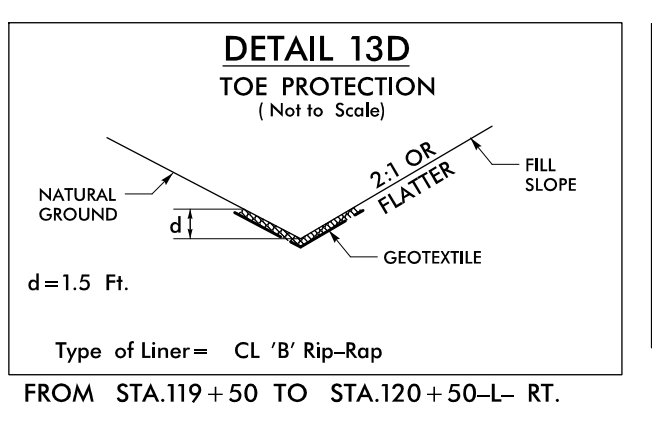
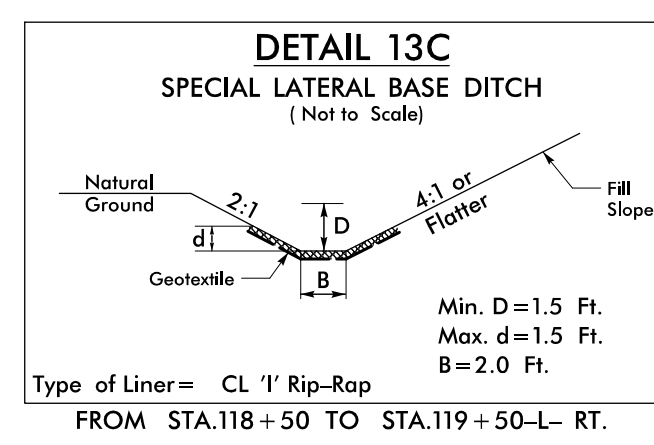
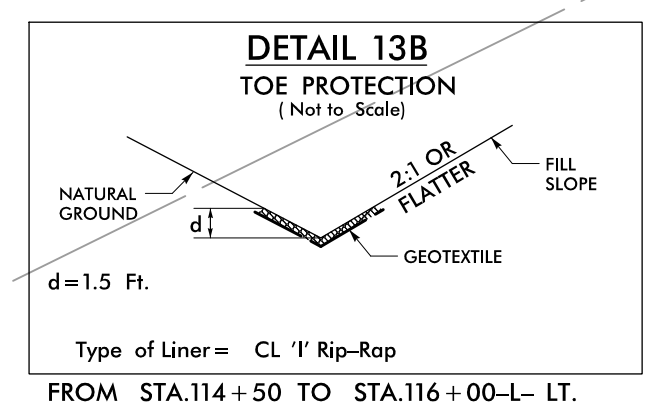
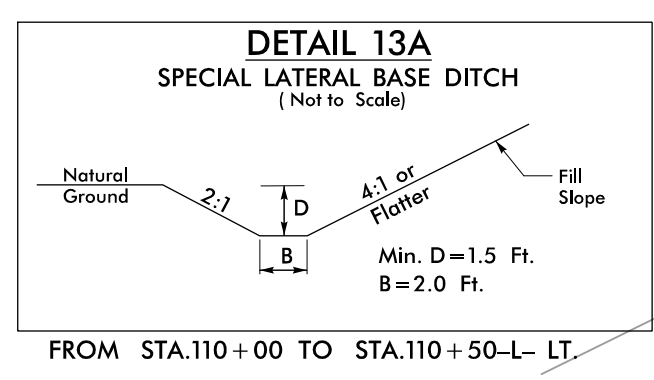
CULVERT CONSTRUCTION SEQUENCE STA. 108+27 -L-

1. INSTALL IMPERVIOUS DIKES #1 & #2 AND BEGIN PUMP AROUND.
2. DEWATER WORK SITE AS NEEDED INTO SPECIAL STILLING BASIN(S).
3. INSTALL TEMPORARY 66" PIPE.
4. REMOVE IMPERVIOUS DIKES #1 & #2, STOP PUMP AROUND, AND RESTORE FLOW THROUGH TEMPORARY 66" PIPE.
5. COMPLETE DETOUR ROADWAY AND DIVERT TRAFFIC. SEE EC-21/CONST. 2B-2 FOR DETOUR FINAL GRADE EROSION CONTROL.

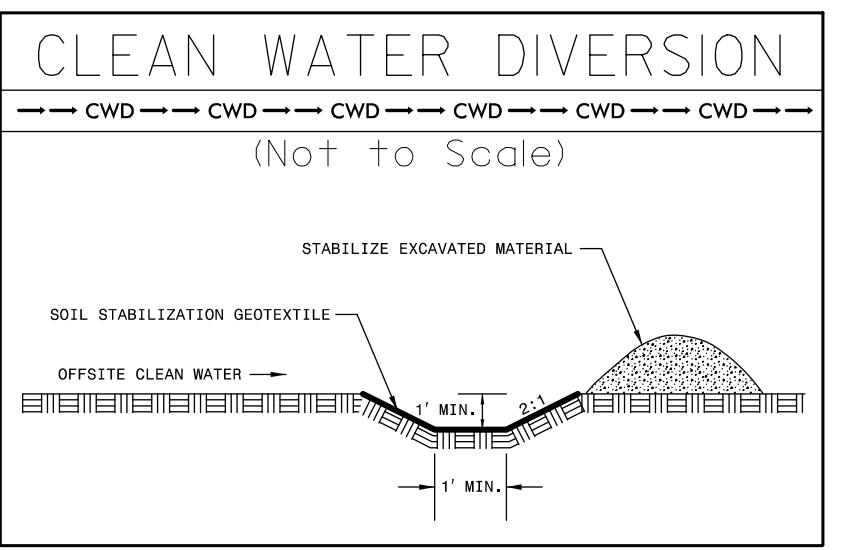
6. INSTALL IMPERVIOUS DIKES #3 & #4 AND BEGIN PUMP AROUND.
7. REMOVE EXISTING 66" CMP AND CONSTRUCT PROPOSED 7'X8' RCBC.
9. REMOVE IMPERVIOUS DIKES #3 & #4, STOP PUMP AROUND, AND RESTORE FLOW THROUGH NEW 7'X8' RCBC.
10. COMPLETE ROADWAY AND SHIFT TRAFFIC FROM DETOUR.
11. REMOVE DETOUR ROADWAY AND TEMPORARY 66" PIPE.



-L- CURVE DATA
PI Sta 117+87.67
 $\Delta = 39^{\circ} 02' 13.1''$ (RT)
D = 5' 30" 33.2"
L = 708.58'
T = 368.66'
R = 1,040.00'
SE = 0.08
DS = 55 MPH



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



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.

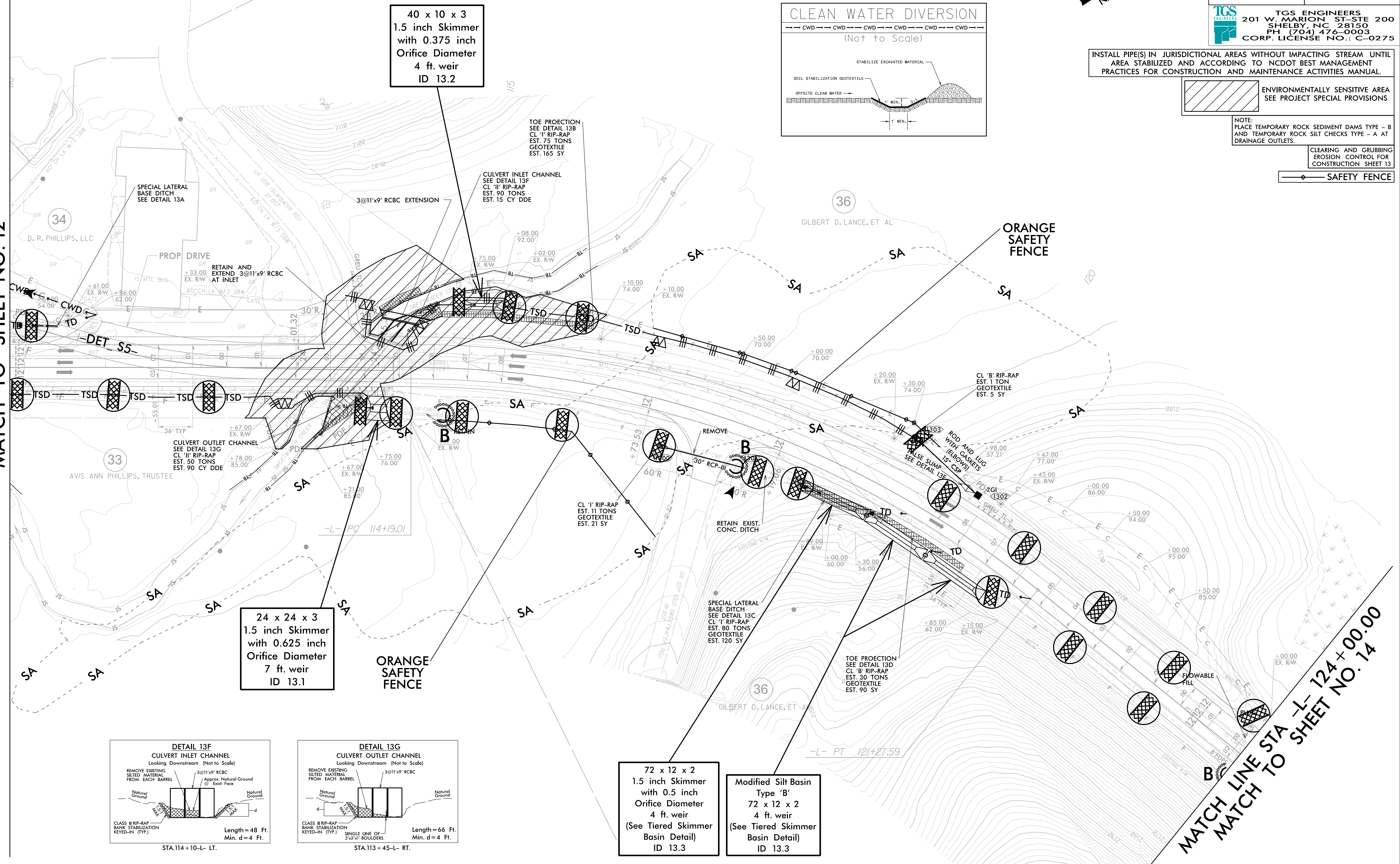
ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

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 13

SAFETY FENCE

MATCH LINE STA -L- 110+00.00
MATCH TO SHEET NO. 12

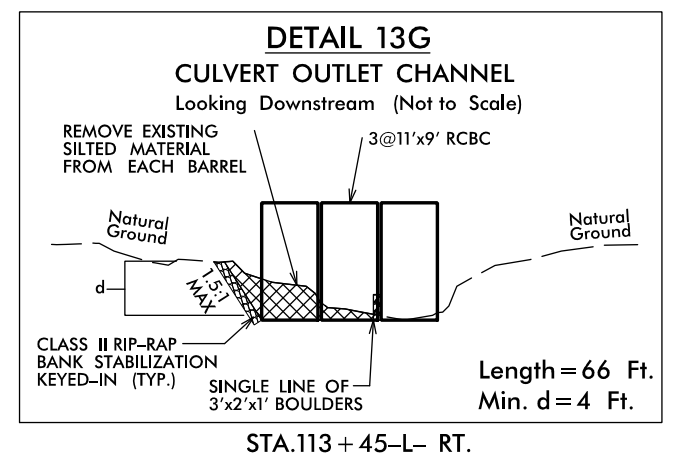
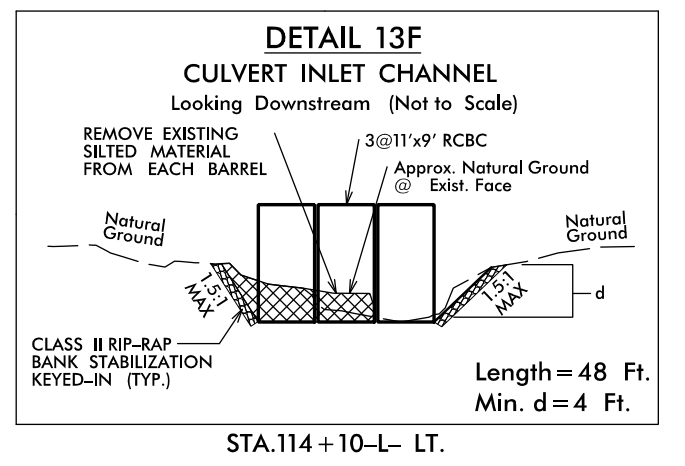


40 x 10 x 3
1.5 inch Skimmer
with 0.375 inch
Orifice Diameter
4 ft. weir
ID 13.2

24 x 24 x 3
1.5 inch Skimmer
with 0.625 inch
Orifice Diameter
7 ft. weir
ID 13.1

72 x 12 x 2
1.5 inch Skimmer
with 0.5 inch
Orifice Diameter
4 ft. weir
(See Tiered Skimmer
Basin Detail)
ID 13.3

Modified Silt Basin
Type 'B'
72 x 12 x 2
4 ft. weir
(See Tiered Skimmer
Basin Detail)
ID 13.3



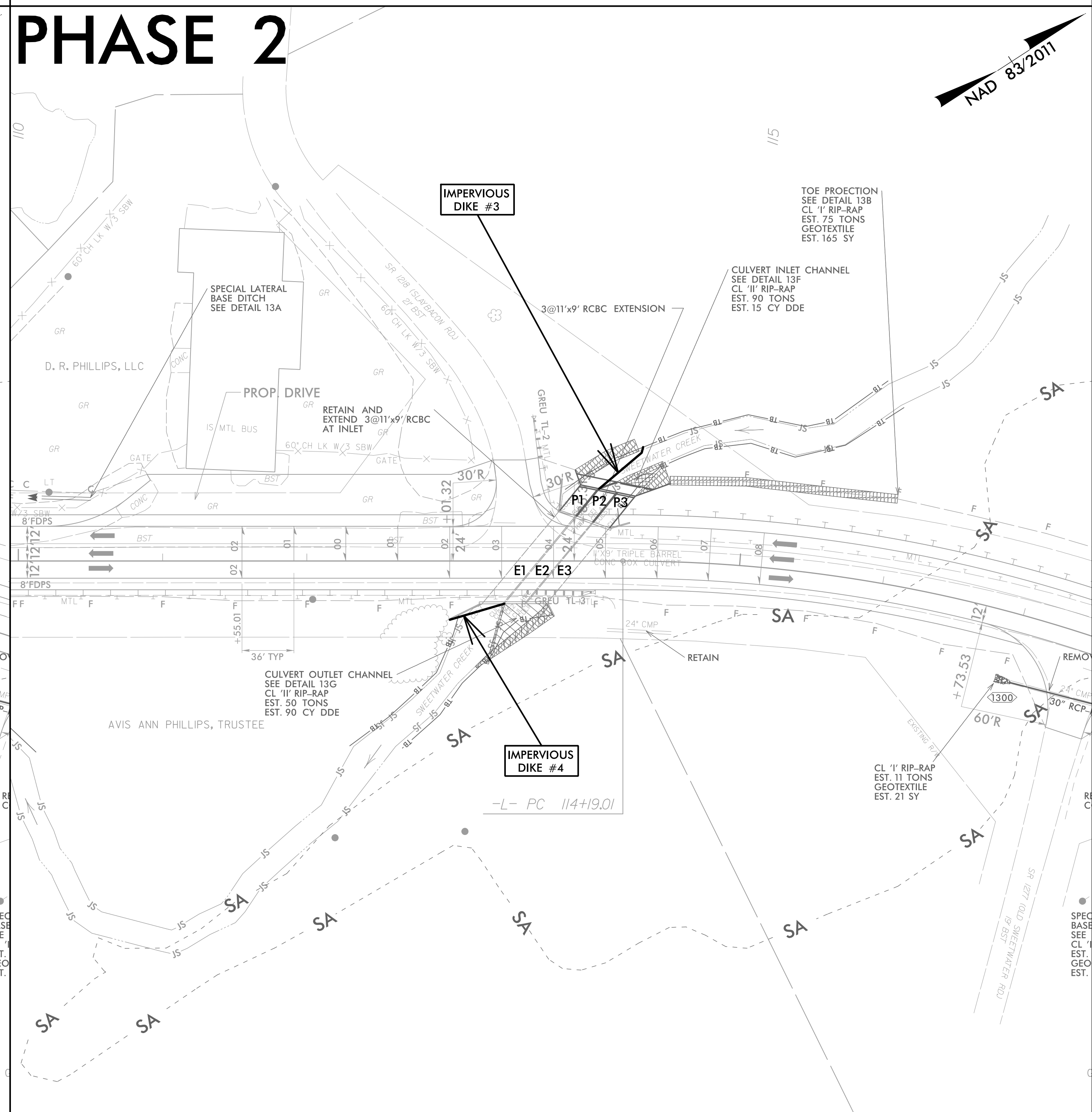
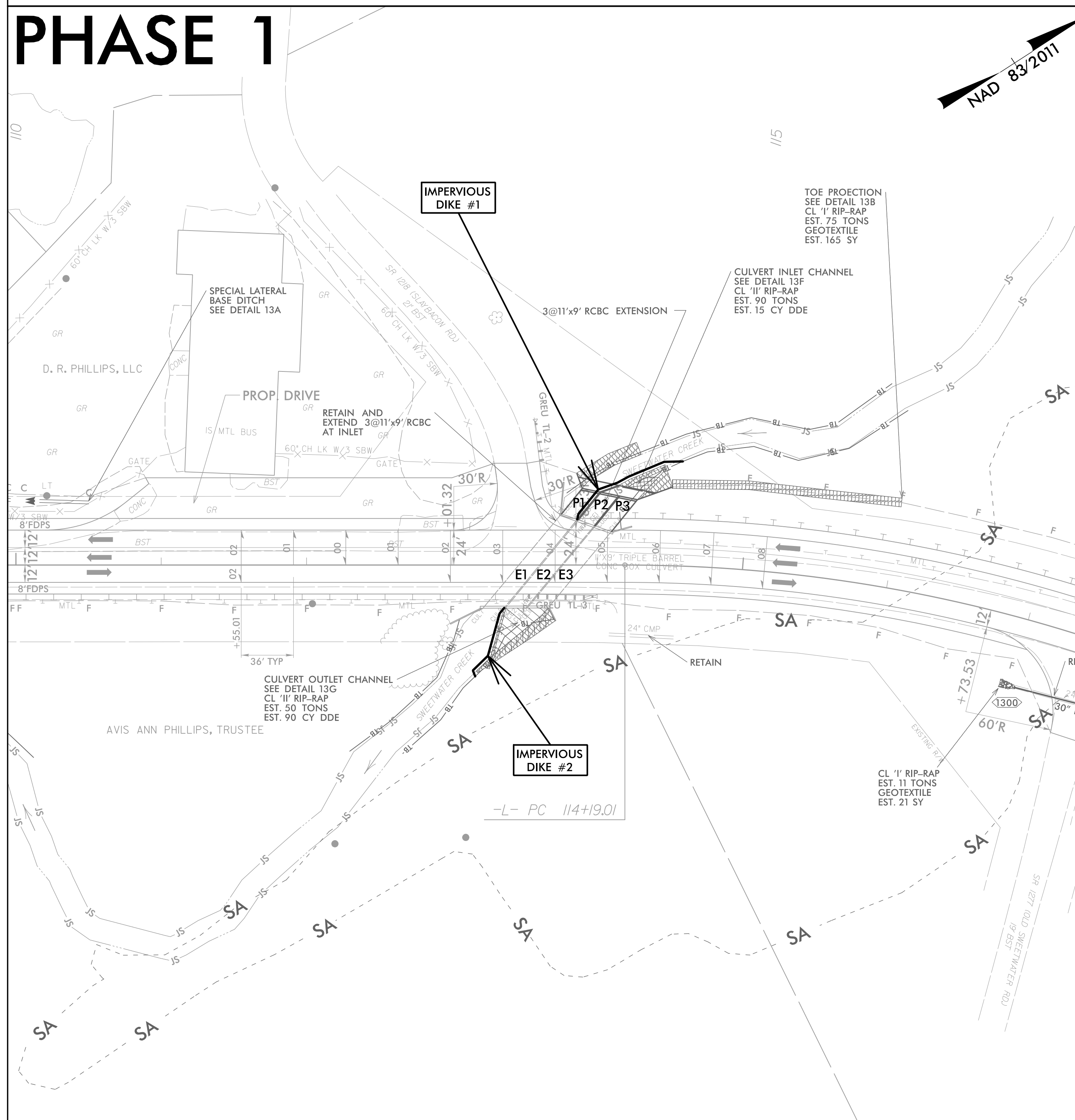
MATCH LINE STA -L- 124+00.00
MATCH TO SHEET NO. 14

PROJECT REFERENCE NO.	SHEET NO.
A-0009CA	EC-13A/CONST J3
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

CULVERT CONSTRUCTION SEQUENCE STA. 113+69 -L-

1. INSTALL IMPERVIOUS DIKES #1 & #2 AND DIRECT FLOW THROUGH EXISTING RCBC E1.
2. DEWATER WORK SITE AS NEEDED INTO SPECIAL STILLING BASIN(S).
3. REMOVE EXISTING SILTED MATERIAL FROM RCBC E2 & E3.
4. CONSTRUCT 12'X9' RCBC EXTENSIONS P2 & P3.
5. REMOVE IMPERVIOUS DIKES #1 & #2.

6. INSTALL IMPERVIOUS DIKES #3 & #4 AND DIRECT FLOW THROUGH NEW P2 & P3 EXTENSIONS.
7. CONSTRUCT 12'X9' RCBC EXTENSION P1.
8. UPON COMPLETION OF P1 CULVERT EXTENSION, REMOVE IMPERVIOUS DIKES #3 & #4.

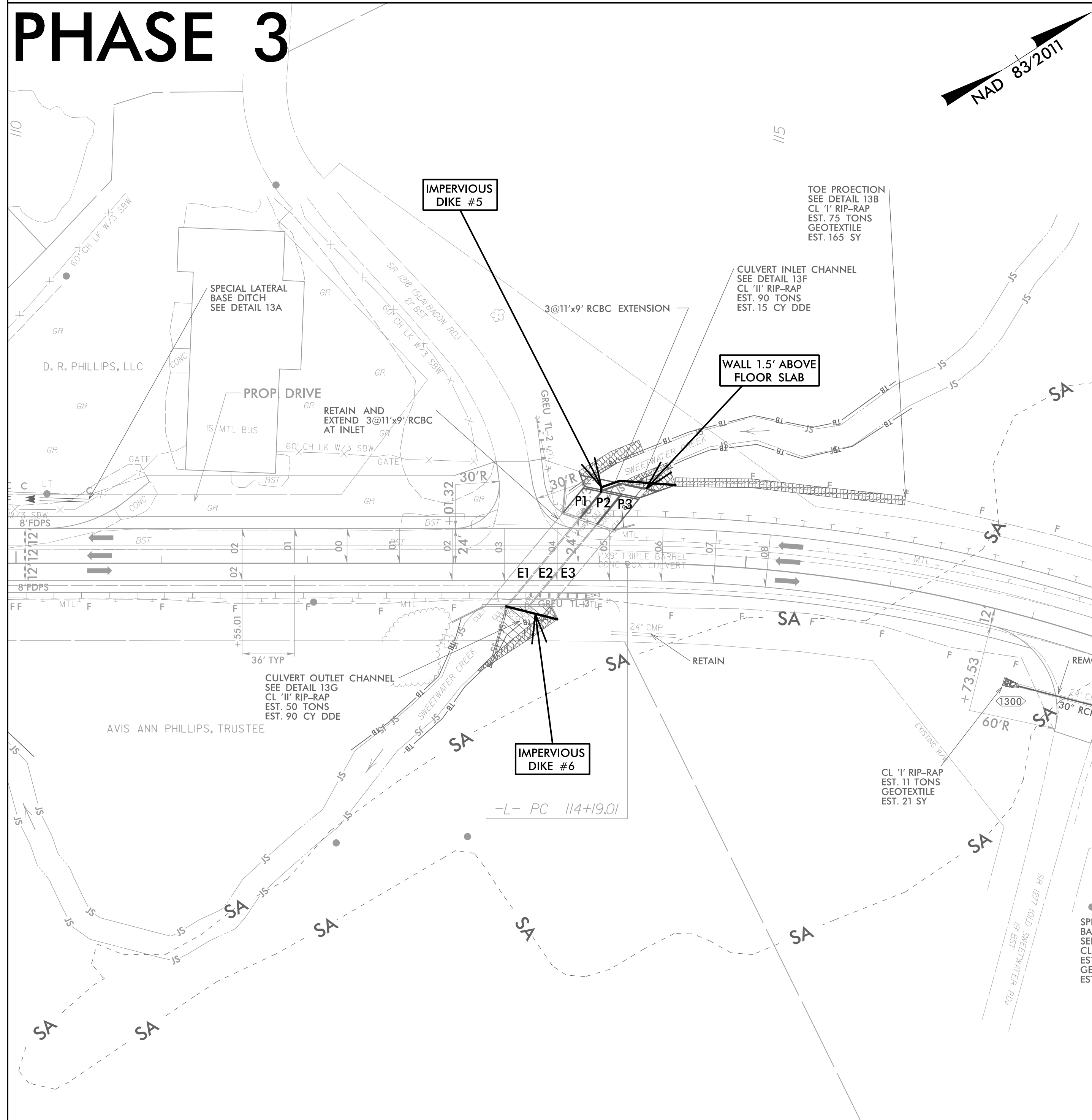



PROJECT REFERENCE NO. A-0009CA	SHEET NO. EC-13B/CONST.13
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

CULVERT CONSTRUCTION SEQUENCE STA. 113+69 -L-

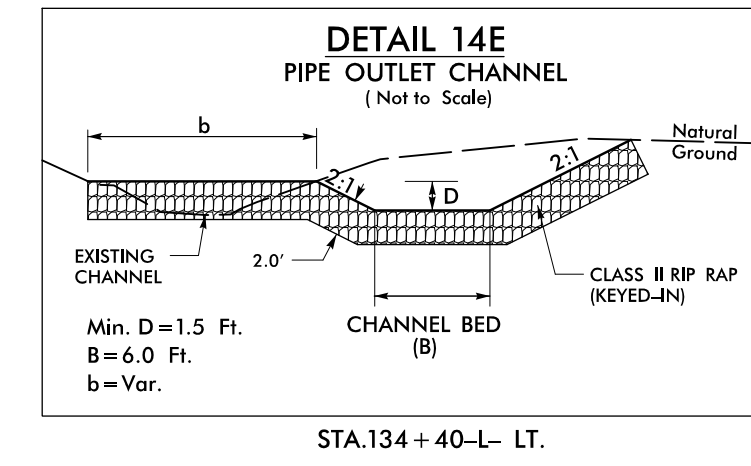
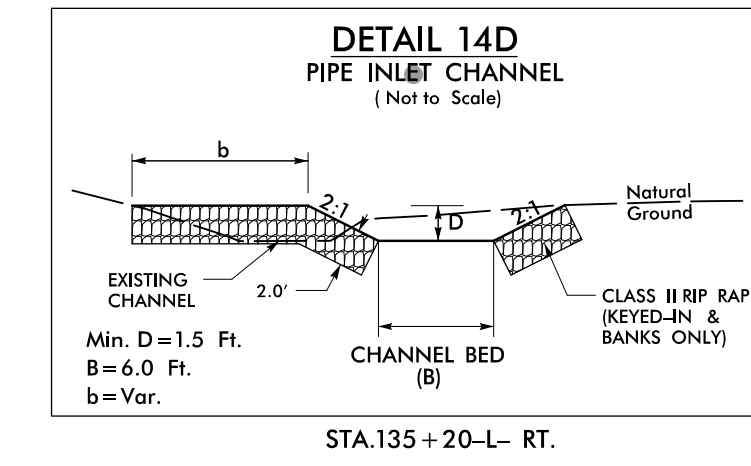
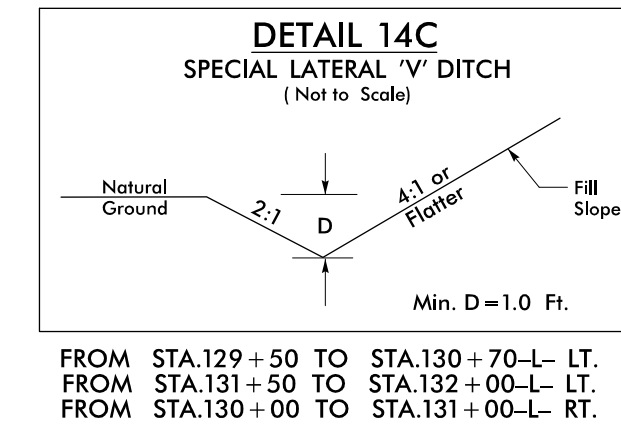
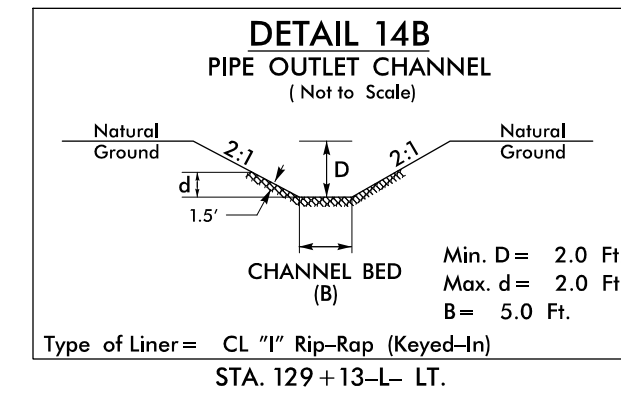
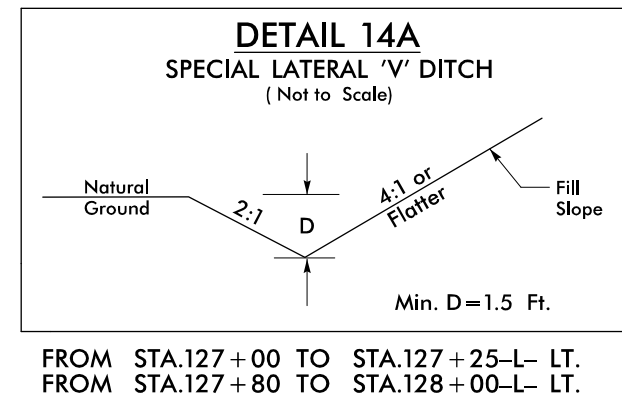
9. INSTALL IMPERVIOUS DIKES #5 & #6 AND DIRECT FLOW THROUGH NEW P1 EXTENSION.
10. CONSTRUCT WALL 1.5 FT ABOVE FLOOR SLAB ACCORDING TO STRUCTURE PLANS.
11. REMOVE IMPERVIOUS DIKES #5 & #6 AND REESTABLISH STREAM ACCORDING TO CONST. PLANS.

PHASE 3



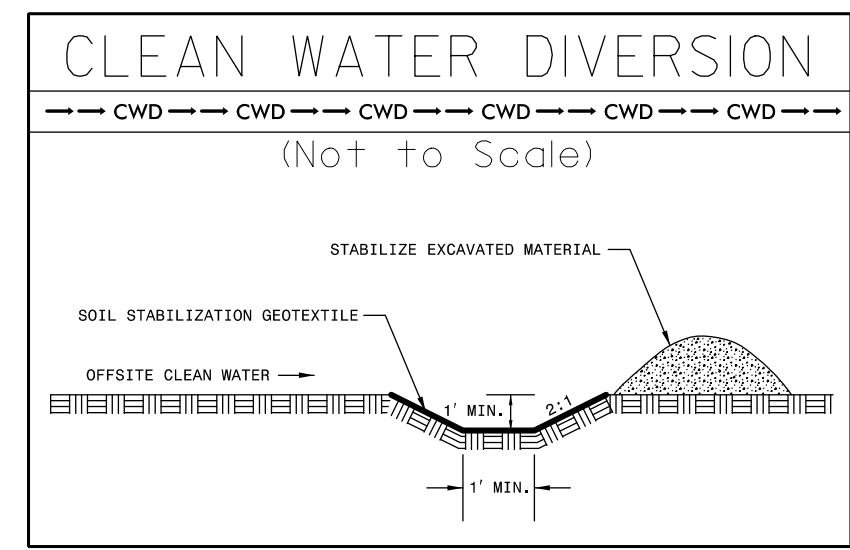
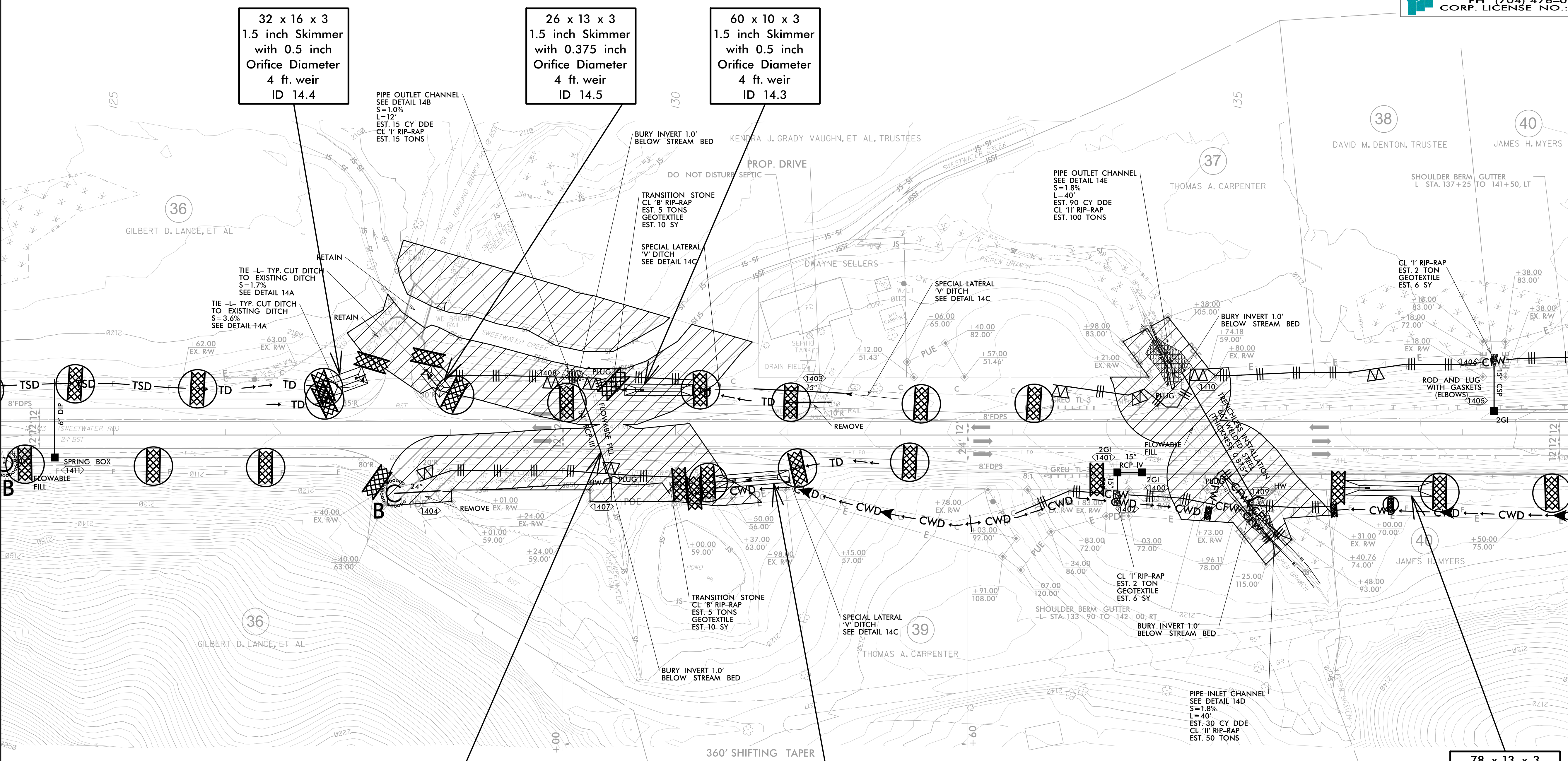
PROJECT REFERENCE NO. A-0009CA	SHEET NO. EC-14/CONST.14
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
 TGS ENGINEERS 201 W. MARION ST. STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	

NAD 83 2017



MATCH LINE STA -L- 124+00.00
MATCH TO SHEET NO. 13

MATCH LINE STA -L- 138+00.00
MATCH TO SHEET NO. 15



INSTALL PIPE PER THE PUMP AROUND EXAMPLE (SHEET EC-2E)

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 14

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

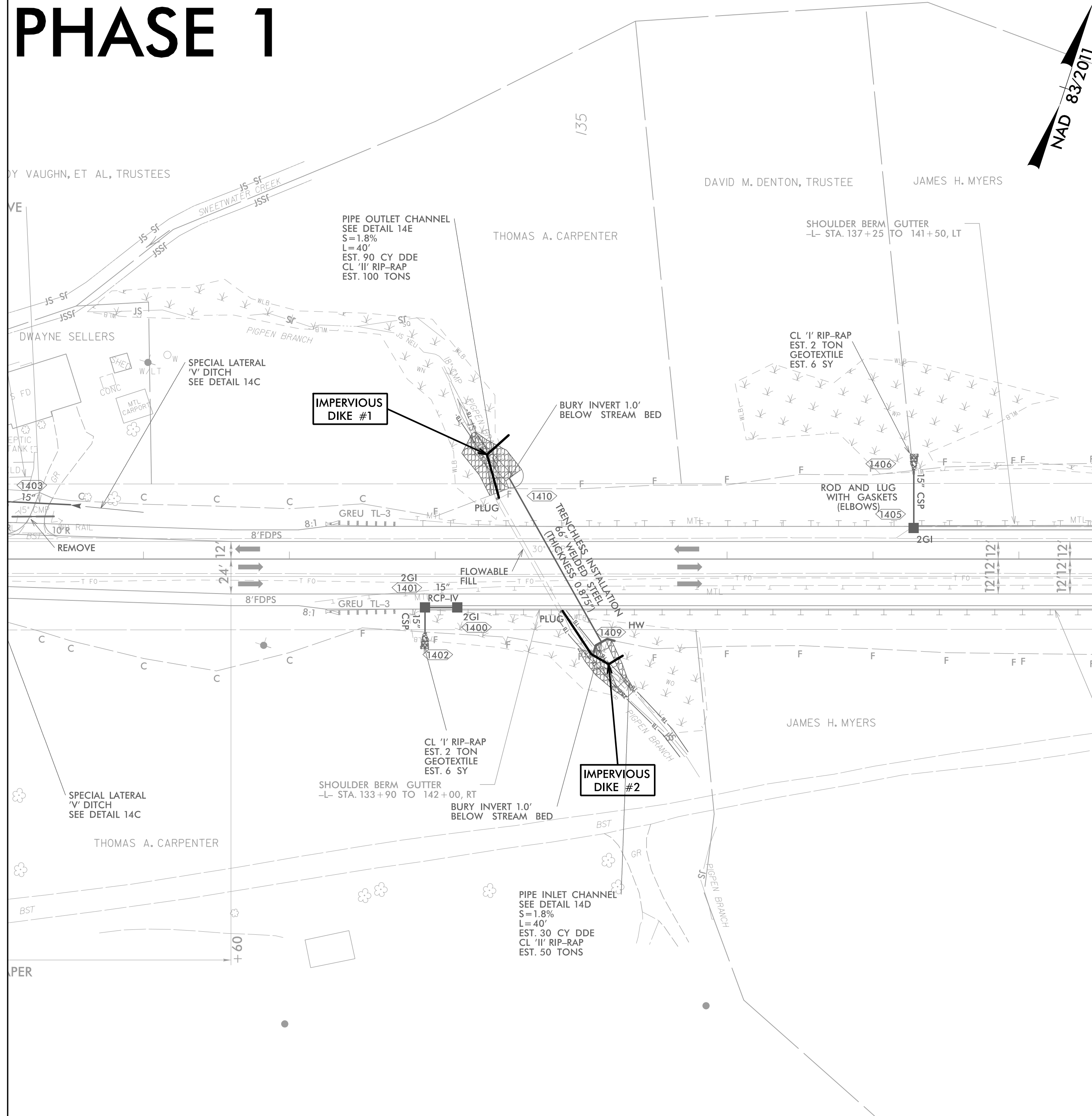
PROJECT REFERENCE NO.	SHEET NO.
A-0009CA	EC-14A/CONST.14
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PIPE CONSTRUCTION SEQUENCE STA. 134+82 -L-

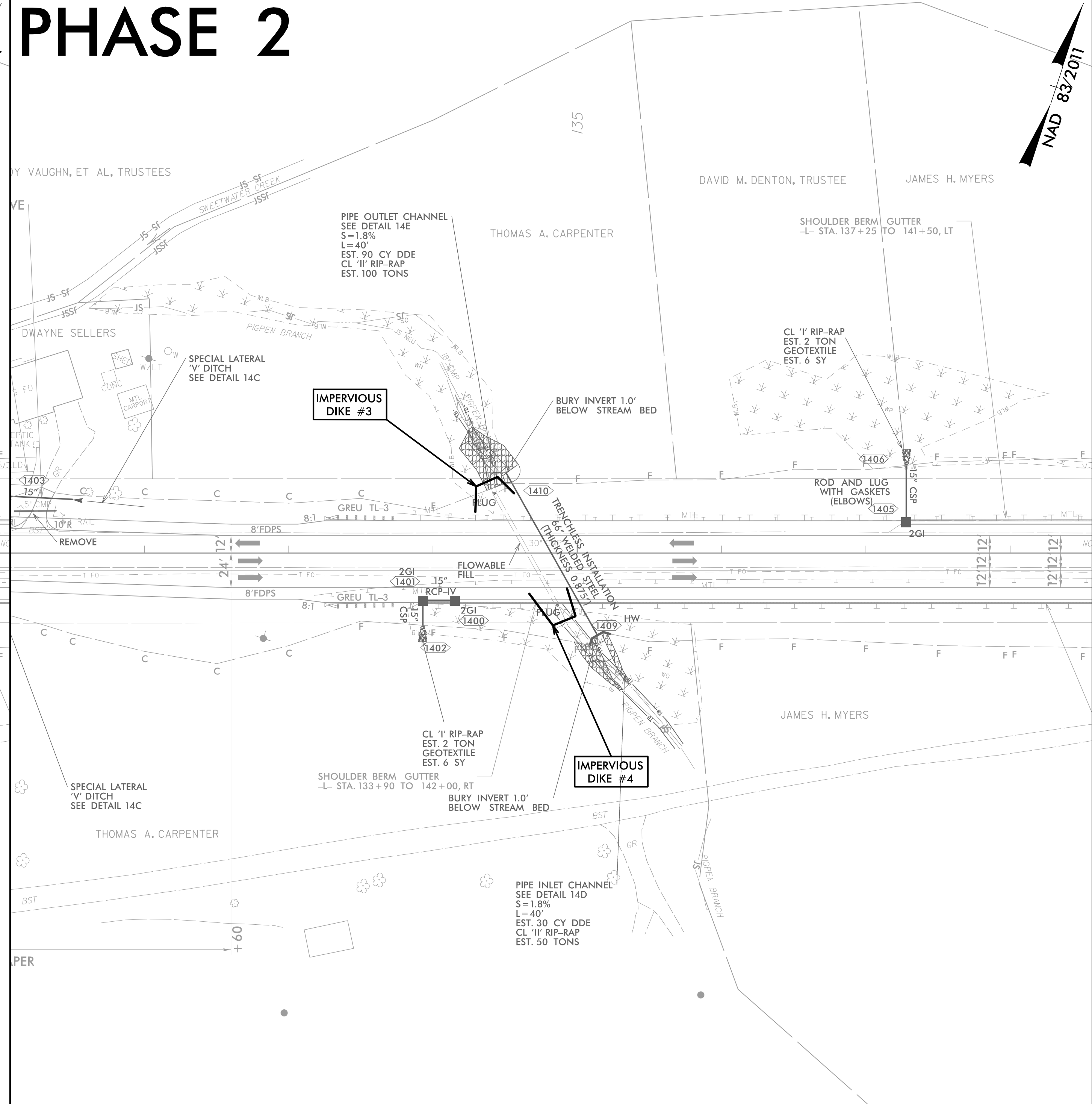
1. INSTALL IMPERVIOUS DIKES #1 & #2, MAINTAINING FLOW THROUGH EXISTING 30" CMP.
2. DEWATER WORK SITE AS NEEDED INTO SPECIAL STILLING BASIN(S).
3. INSTALL 66" WELDED STEEL PIPE USING TRENCHLESS INSTALLATION.
4. REMOVE IMPERVIOUS DIKES #1 & #2.

5. INSTALL IMPERVIOUS DIKES #3 & #4, SHIFTING FLOW INTO NEW 66" PIPE.
6. PLUG AND FILL EXISTING 30" CMP.
7. REMOVE IMPERVIOUS DIKES #3 & #4.
8. COMPLETE ANY NECESSARY INLET/OUTLET CHANNEL IMPROVEMENTS AND REESTABLISH STREAM ACCORDING TO CONST. PLANS.

PHASE 1

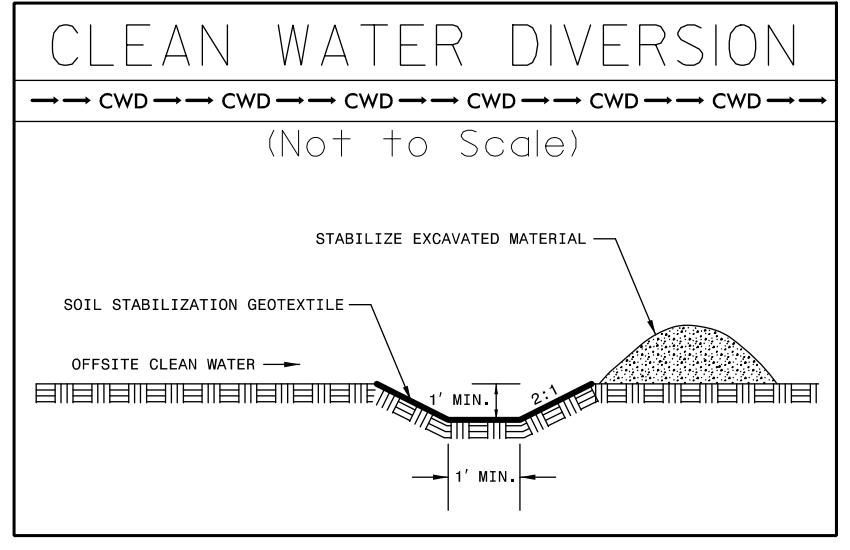
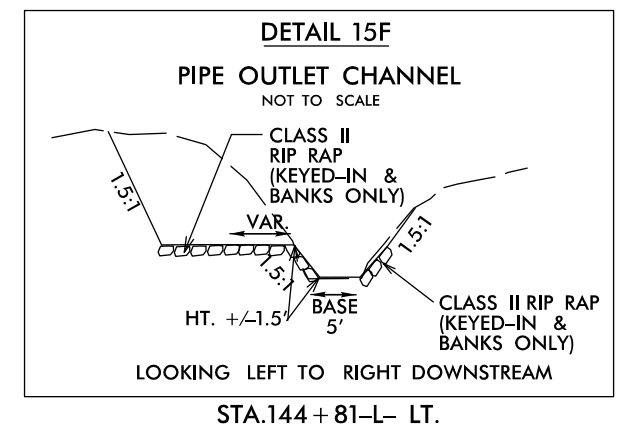
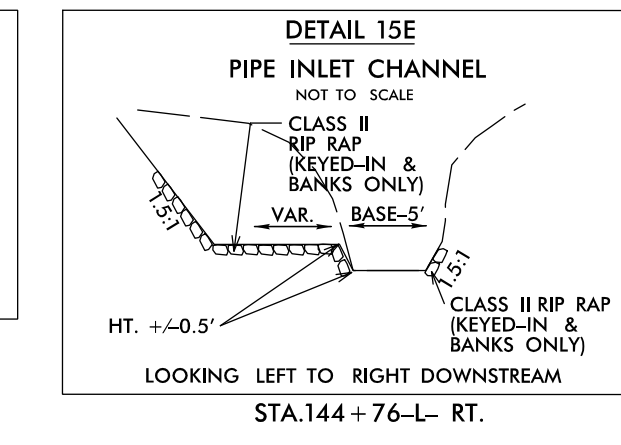
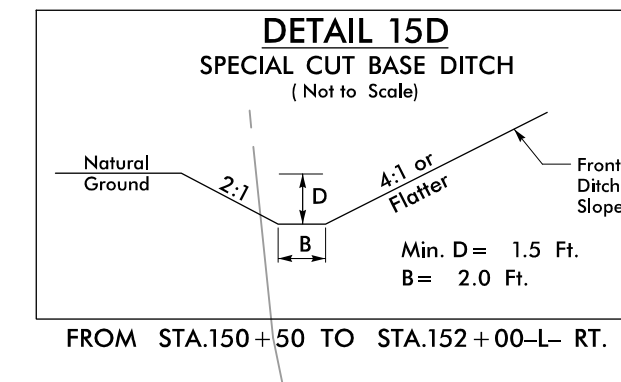
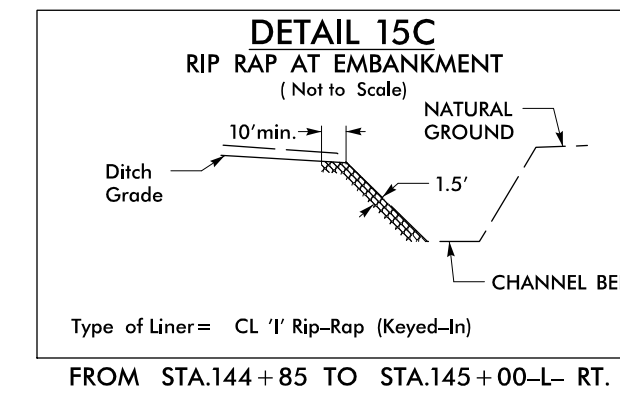
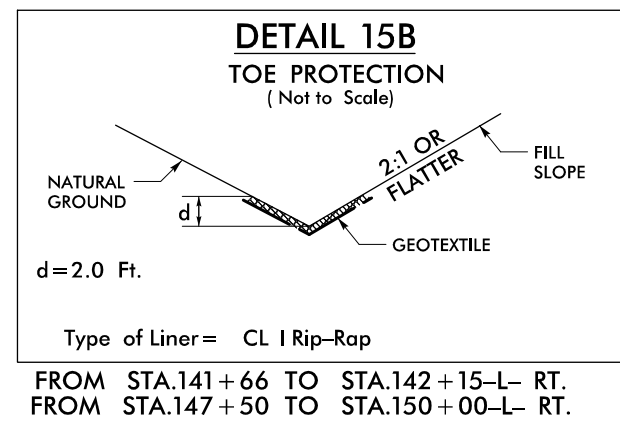
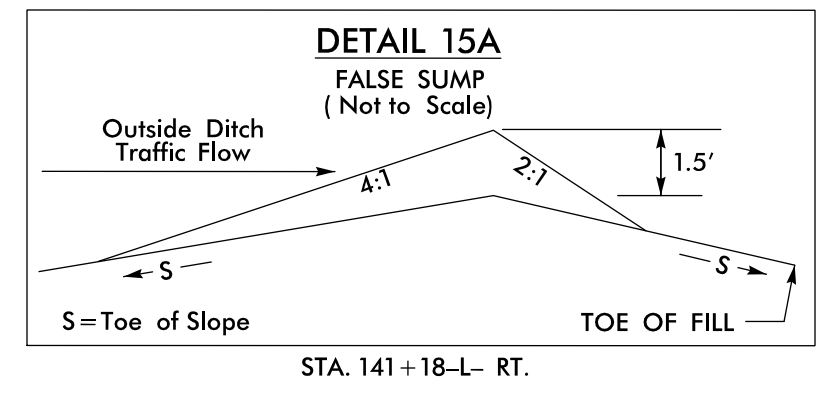


PHASE 2



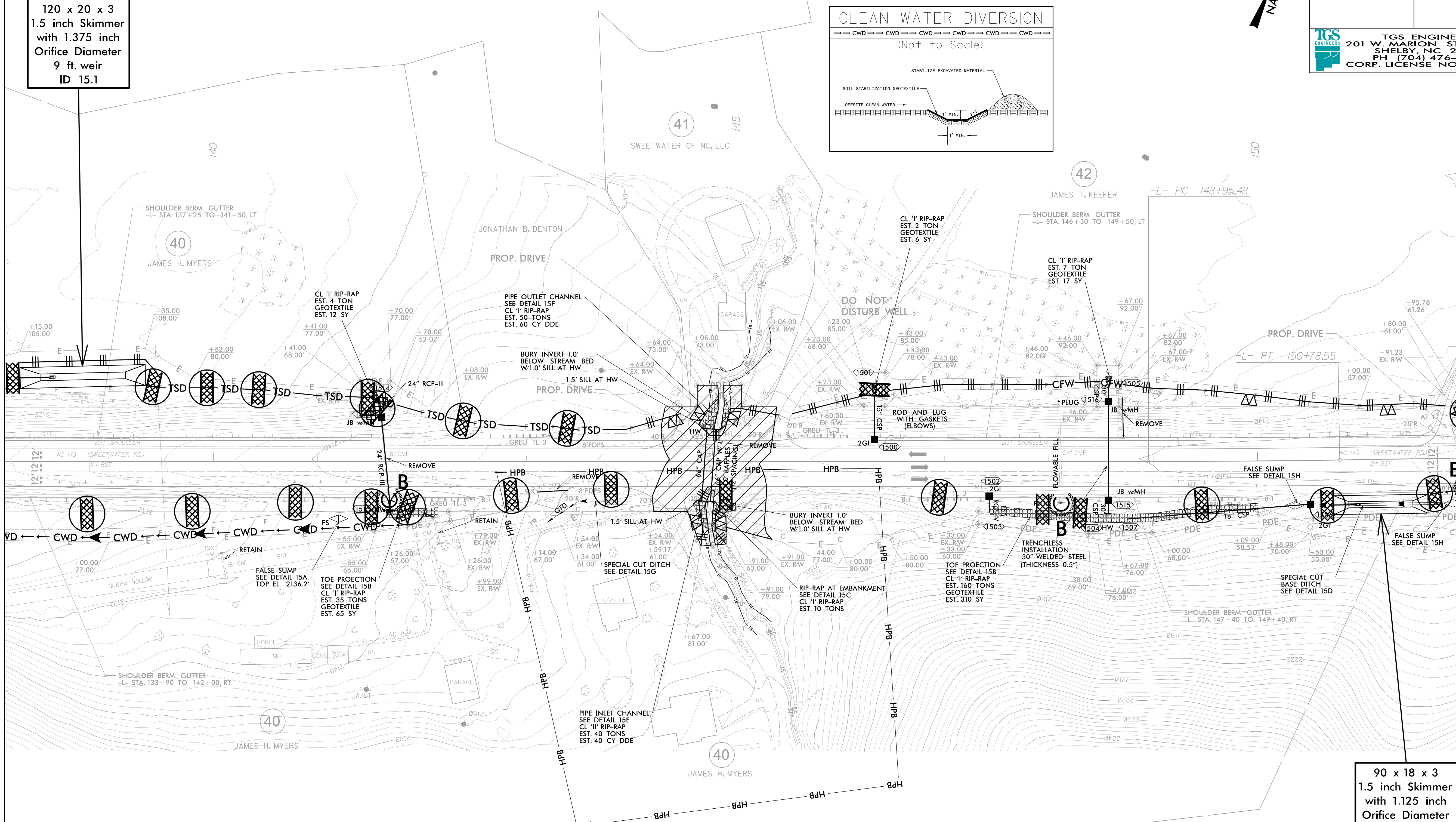
PROJECT REFERENCE NO.	SHEET NO.
A-0009CA	EC-15/CONST.15
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
TGS ENGINEERS 201 W. MARION ST-STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	

-L- CURVE DATA
 PI Sta 149+87.02
 $\Delta = 0^{\circ} 52' 26.7''$ (LT)
 $D = 0^{\circ} 28' 38.9''$
 $L = 183.07'$
 $T = 91.54'$
 $R = 12,000.00'$
 $SE = NC$
 $DS = 60$ MPH



MATCH LINE STA -L- 138+00.00
 MATCH TO SHEET NO. 14

MATCH LINE STA -L- 152+00.00
 MATCH TO SHEET NO. 16



120 x 20 x 3
 1.5 inch Skimmer
 with 1.375 inch
 Orifice Diameter
 9 ft. weir
 ID 15.1

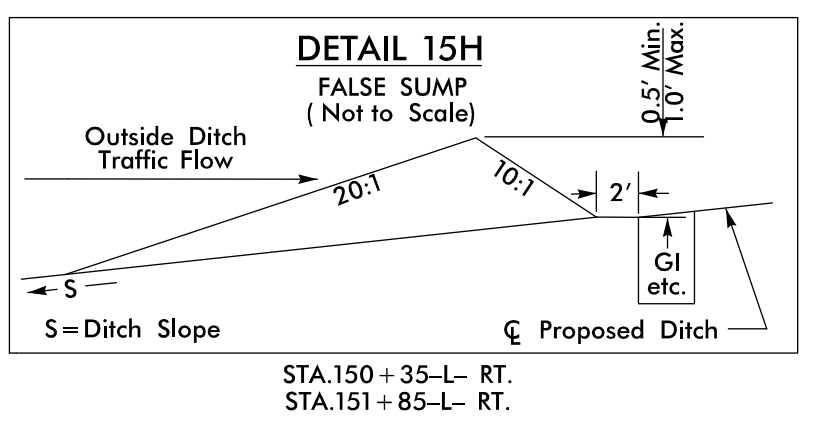
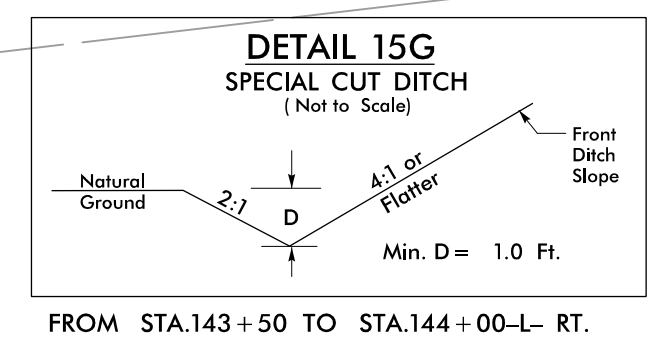
90 x 18 x 3
 1.5 inch Skimmer
 with 1.125 inch
 Orifice Diameter
 6 ft. weir
 ID 15.2

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.

CLEARING AND GRUBBING
 EROSION CONTROL FOR
 CONSTRUCTION SHEET 15

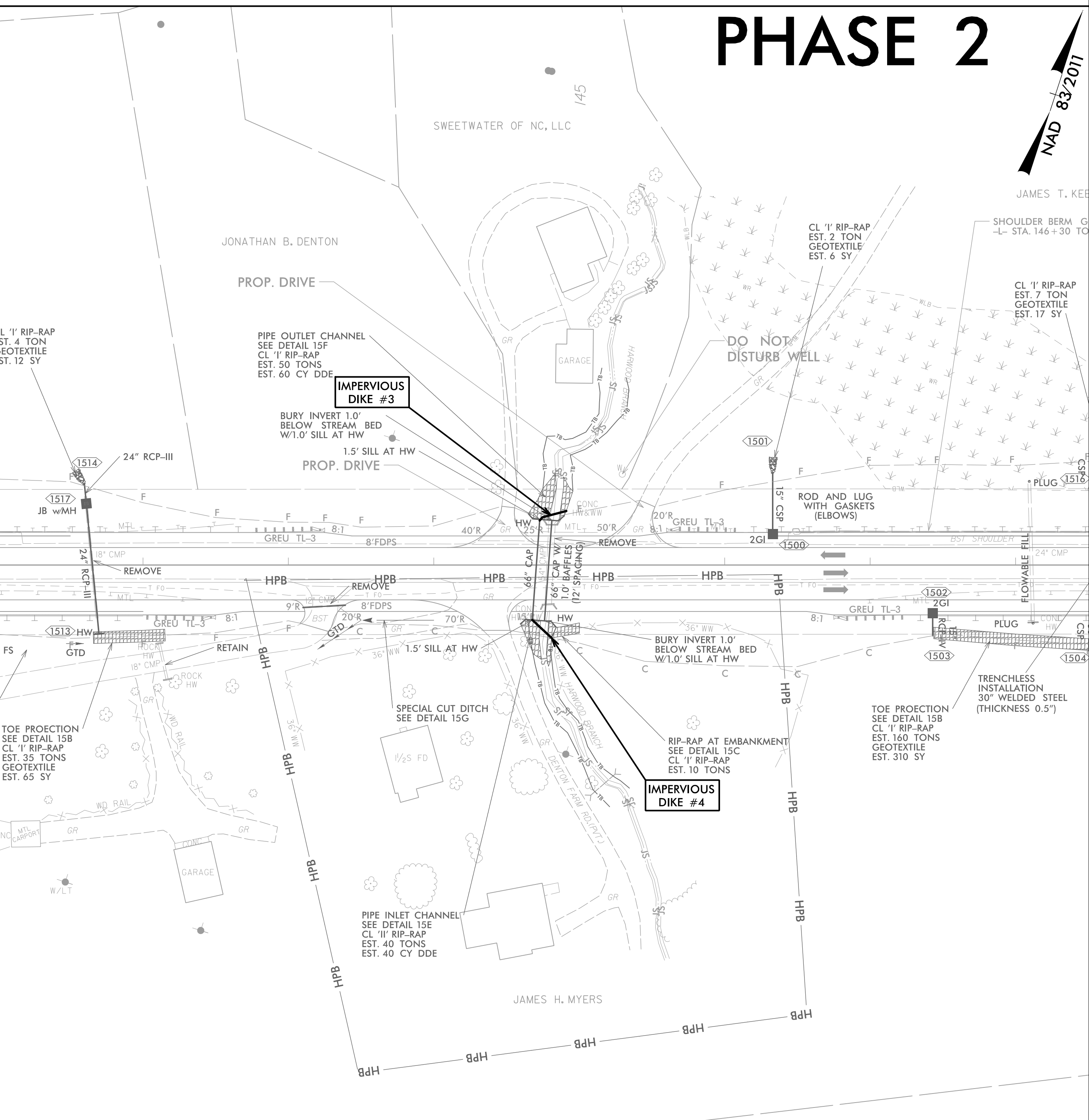
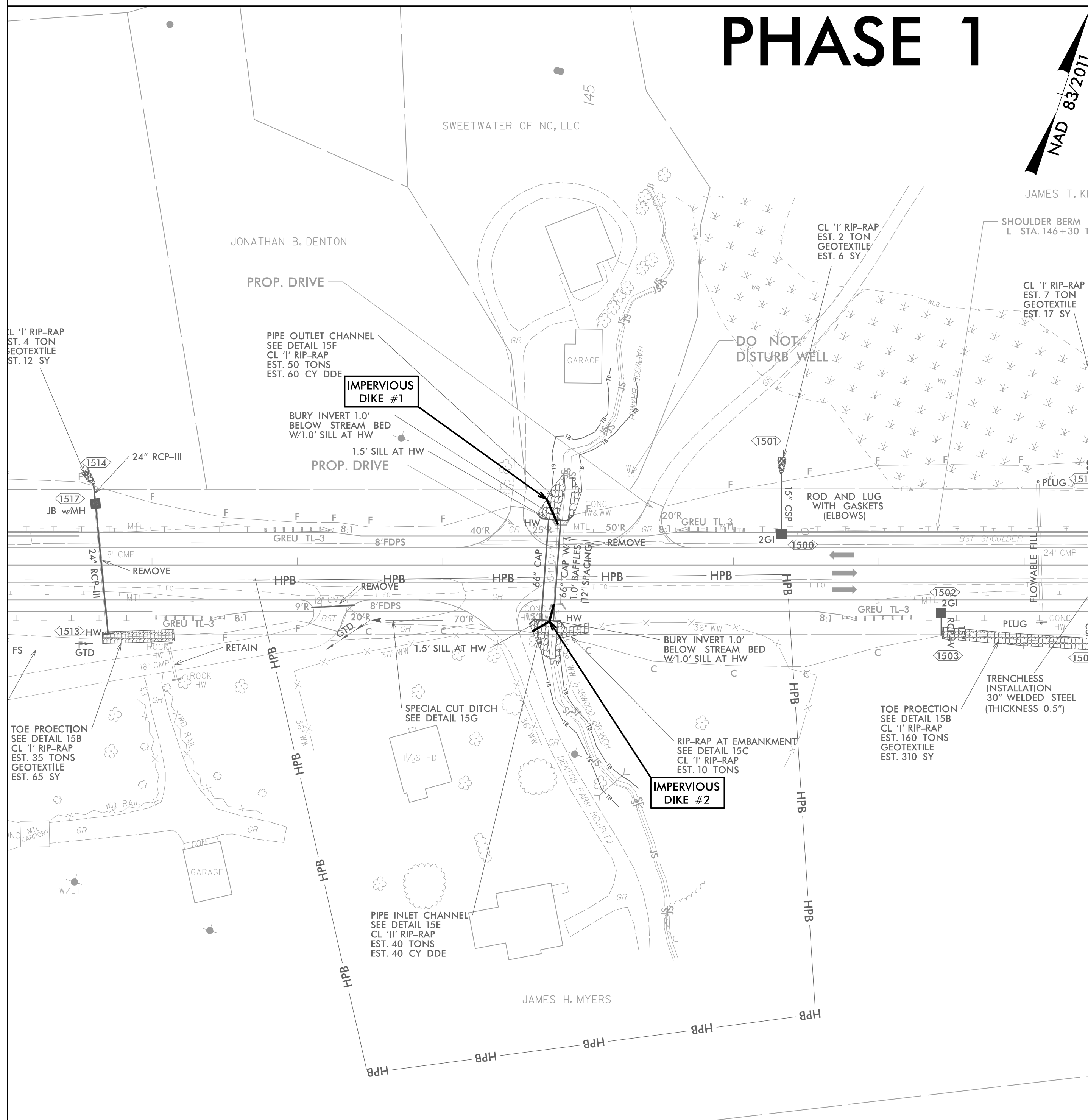


PROJECT REFERENCE NO.	SHEET NO.
A-0009CA	EC-15A/CONST J5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

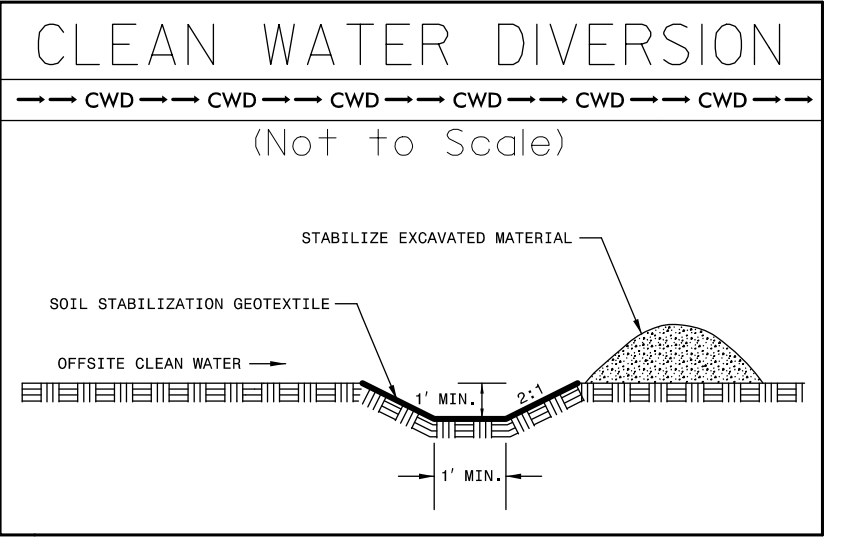
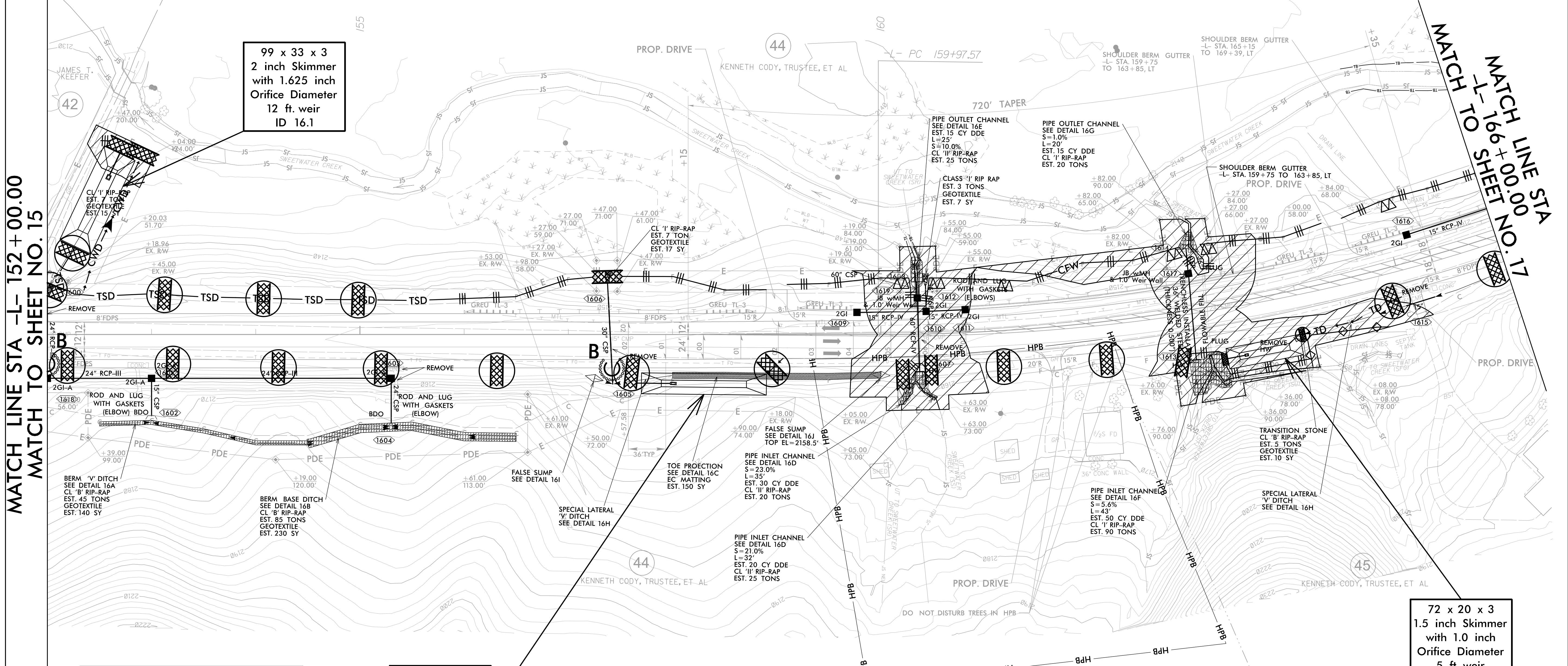
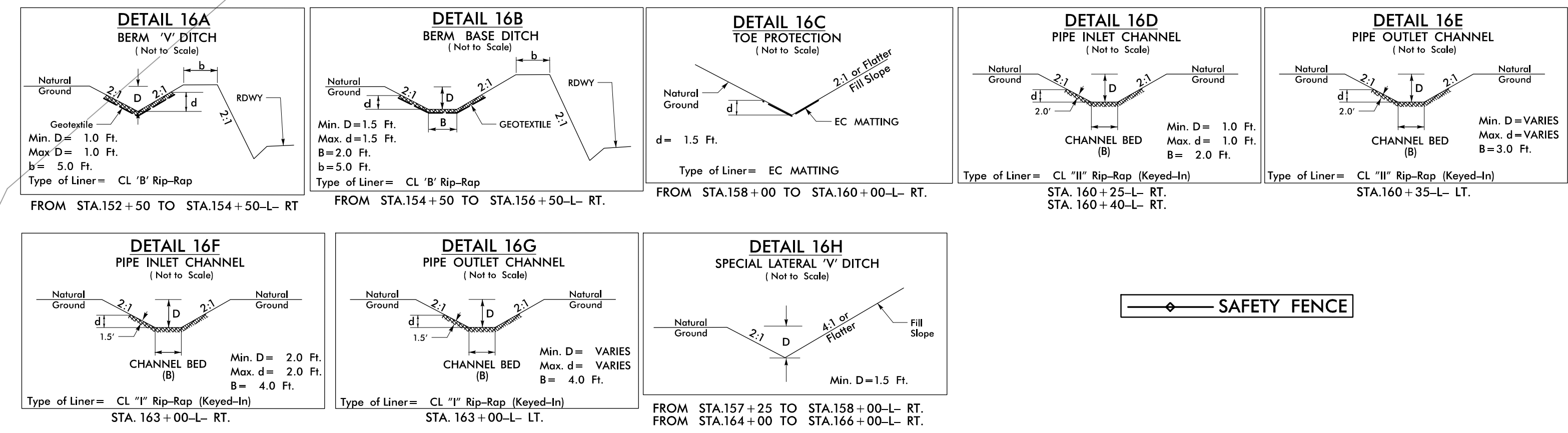
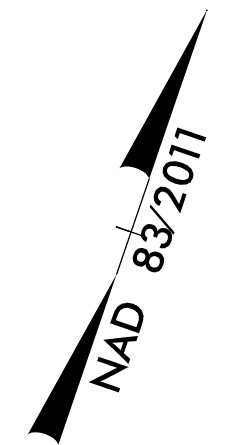
CULVERT CONSTRUCTION SEQUENCE STA. 144+75 -L-

1. INSTALL IMPERVIOUS DIKES #1 & #2 TO DIRECT FLOW THROUGH EXISTING 54" CMP.
2. DEWATER WORK SITE AS NEEDED INTO SPECIAL STILLING BASIN(S).
3. CONSTRUCT WESTERMOST 66" CAP.
4. REMOVE IMPERVIOUS DIKES #1 & #2.

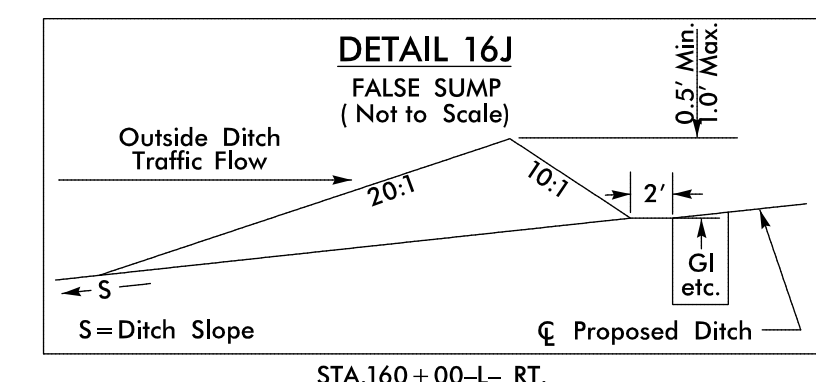
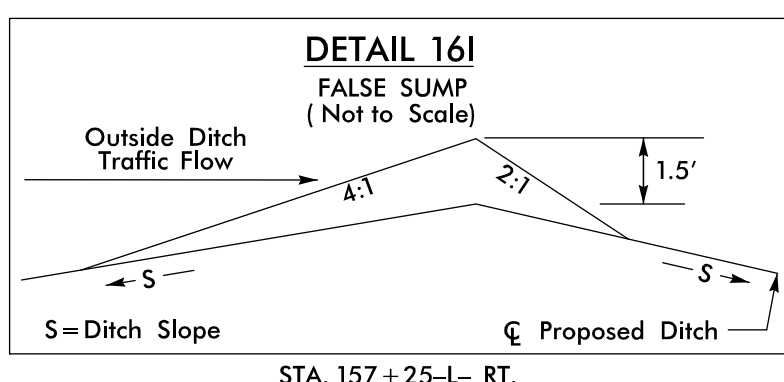
5. INSTALL IMPERVIOUS DIKES #3 & #4 AND DIRECT FLOW THROUGH NEWLY CONSTRUCTED 66" CAP.
6. REMOVE EXISTING 54" CMP.
7. CONSTRUCT EASTERNMOST 66" CAP AND COMPLETE HEADWALLS.
8. REMOVE IMPERVIOUS DIKES #3 & #4 AND REESTABLISH STREAM.



PROJECT REFERENCE NO.	SHEET NO.
A-0009CA	EC-16/CONST16
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	



**120 x 20 x 3
1.5 inch Skimmer
with 1.375 inch
Orifice Diameter
9 ft. weir
ID 16.4**



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

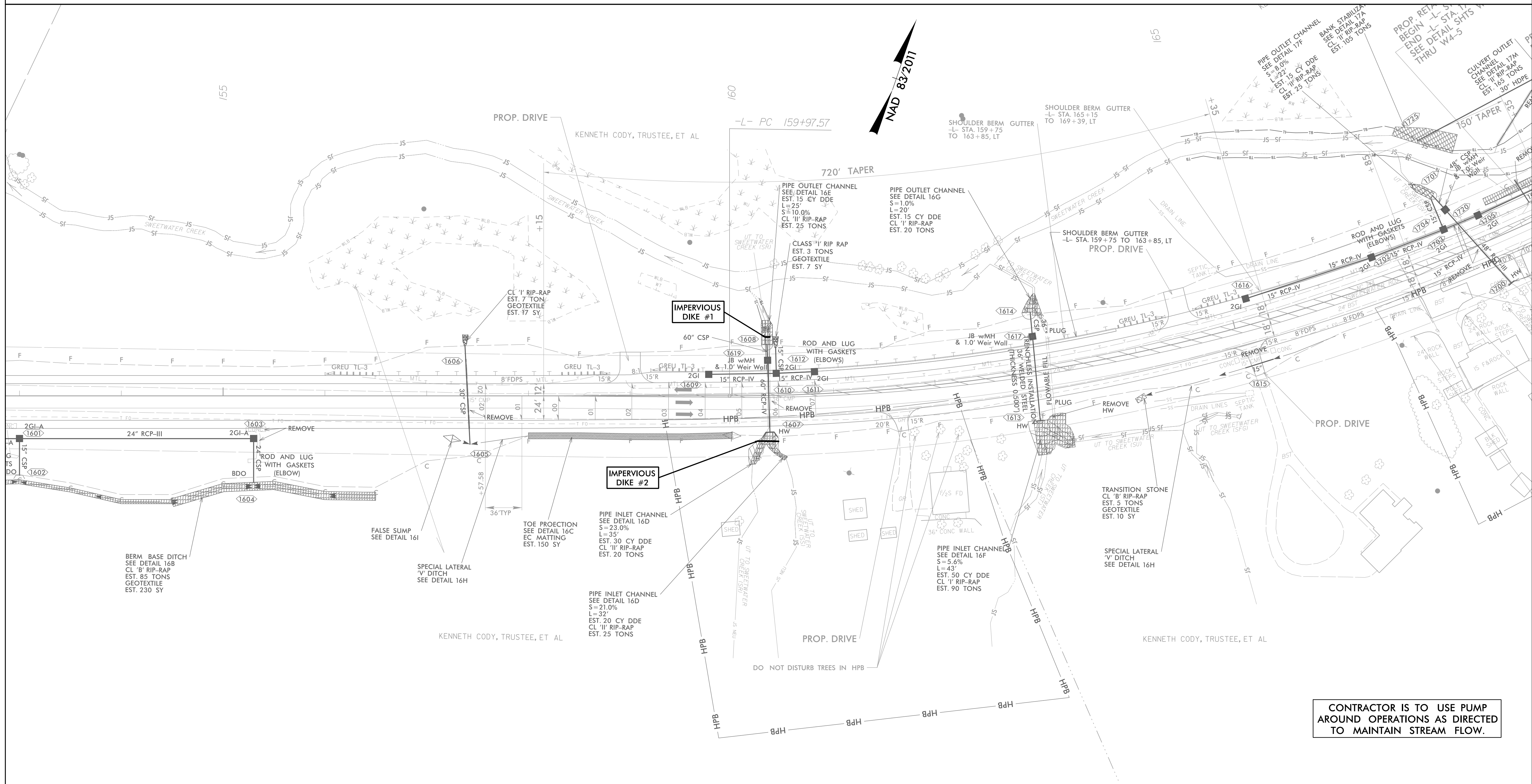
INSTALL PIPE(S) IN JURISDICTIONAL AREAS WITHOUT IMPACTING STREAM UNTIL AREA STABILIZED AND ACCORDING TO NCDOT BEST MANAGEMENT PRACTICES FOR CONSTRUCTION AND MAINTENANCE ACTIVITIES MANUAL.

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 16

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

PIPE CONSTRUCTION SEQUENCE STA. 160+36 -L-

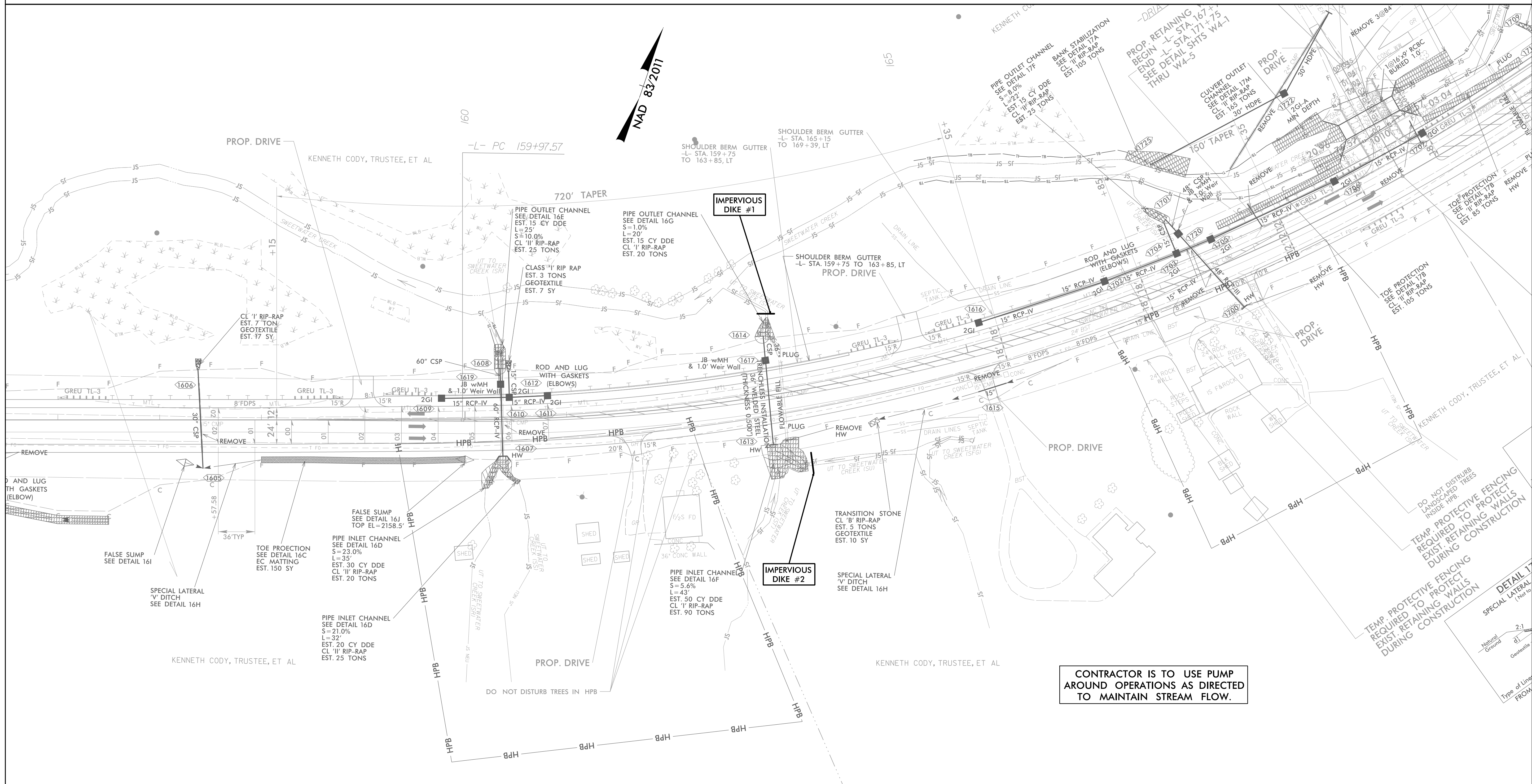
1. INSTALL IMPERVIOUS DIKES #1 & #2.
2. BEGIN PUMPING WATER INTO EXISTING DITCHLINE FLOWING TO EXISTING 15" CMP AT APPROX. -L- STA 157+40.
3. DEWATER WORK SITE AS NEEDED INTO SPECIAL STILLING BASIN(S).
4. REMOVE EXISTING 36" CMP.
5. CONSTRUCT 60" RCP-IV (WITH JUNCTION BOX) FROM 1607 TO 1608.
6. STOP PUMP AROUND OPERATION.
7. REMOVE IMPERVIOUS DIKES #1 & #2 AND REESTABLISH STREAM.



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

PIPE CONSTRUCTION SEQUENCE STA. 163+00 -L-

1. INSTALL IMPERVIOUS DIKES #1 & #2 AND BEGING PUMP AROUND.
2. DEWATER WORK SITE AS NEEDED INTO SPECIAL STILLING BASIN(S).
3. INSTALL 36" WELDED STEEL PIPE VIA TRENCHLESS INSTALLATION.
4. CONSTRUCT INLET AND OUTLET CHANNEL IMPROVEMENTS.
5. STOP PUMP AROUND OPERATION, REMOVE IMPERVIOUS DIKES #1 & #2, AND REESTABLISH STREAM.
6. PLUG AND FILL EXISTING 24" CMP.



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

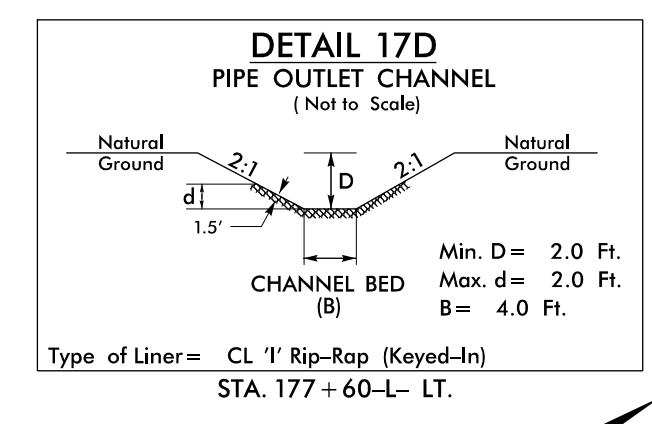
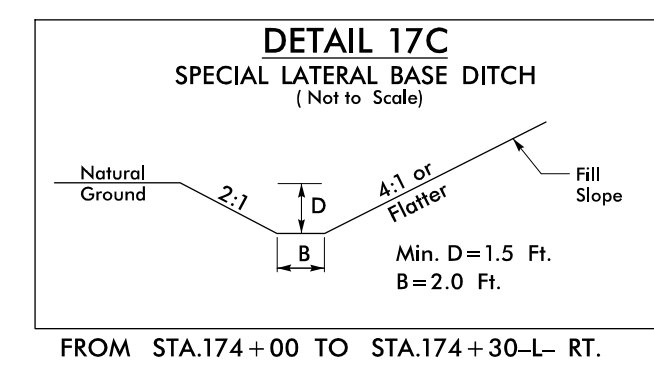
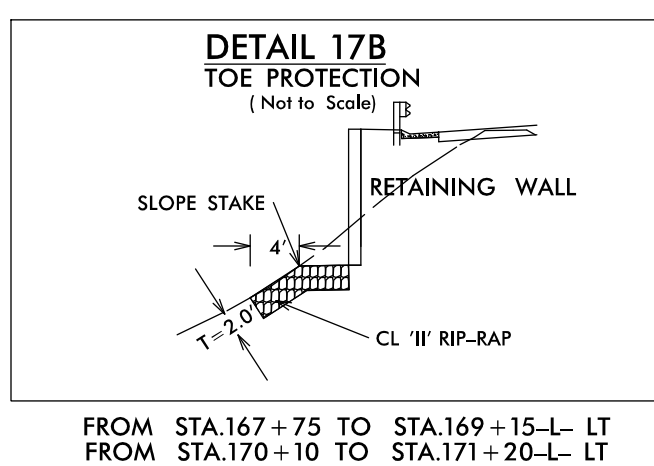
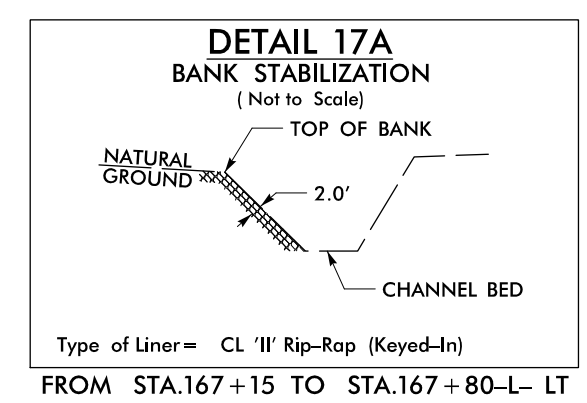
DO NOT DISTURB LANDSCAPED TREES INSIDE HPB.
 TEMP. PROTECTIVE FENCING REQUIRED TO PROTECT EXIST RETAINING WALLS DURING CONSTRUCTION
 TEMP. PROTECTIVE FENCING REQUIRED TO PROTECT EXIST RETAINING WALLS DURING CONSTRUCTION
 DETAIL 1
 SPECIAL LATERAL (Not to Scale)
 2:1
 Natural Ground
 Geotextile
 Type of Line FROM

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.

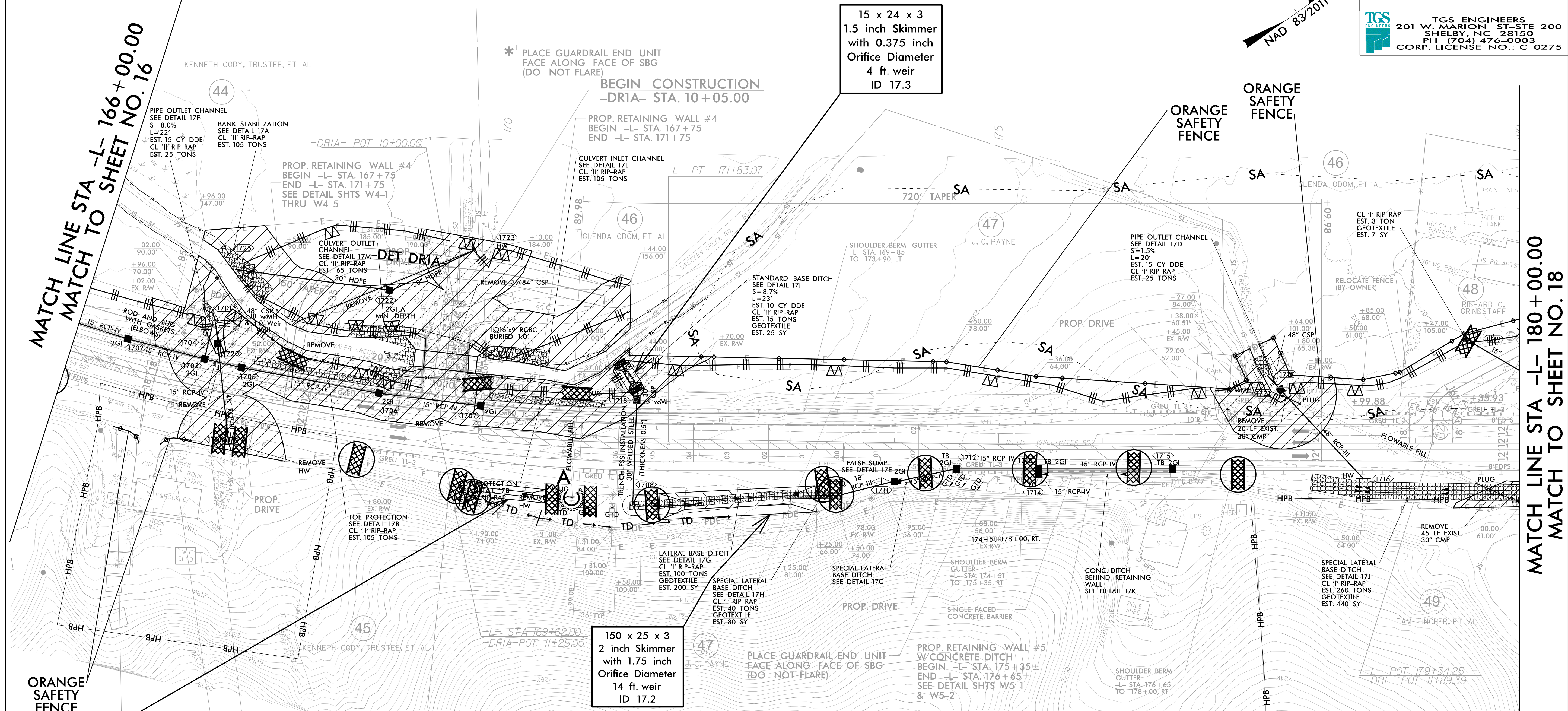
ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

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 17

SAFETY FENCE



PROJECT REFERENCE NO. A-0009CA	SHEET NO. EC-17/CONST.17
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- 166+00.00
MATCH TO SHEET NO. 16

MATCH LINE STA -L- 180+00.00
MATCH TO SHEET NO. 18

78 x 13 x 3
1.5 inch Skimmer
with 0.75 inch
Orifice Diameter
4 ft. weir
ID 17.1

150 x 25 x 3
2 inch Skimmer
with 1.75 inch
Orifice Diameter
14 ft. weir
ID 17.2

15 x 24 x 3
1.5 inch Skimmer
with 0.375 inch
Orifice Diameter
4 ft. weir
ID 17.3

