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STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2409C	EC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	

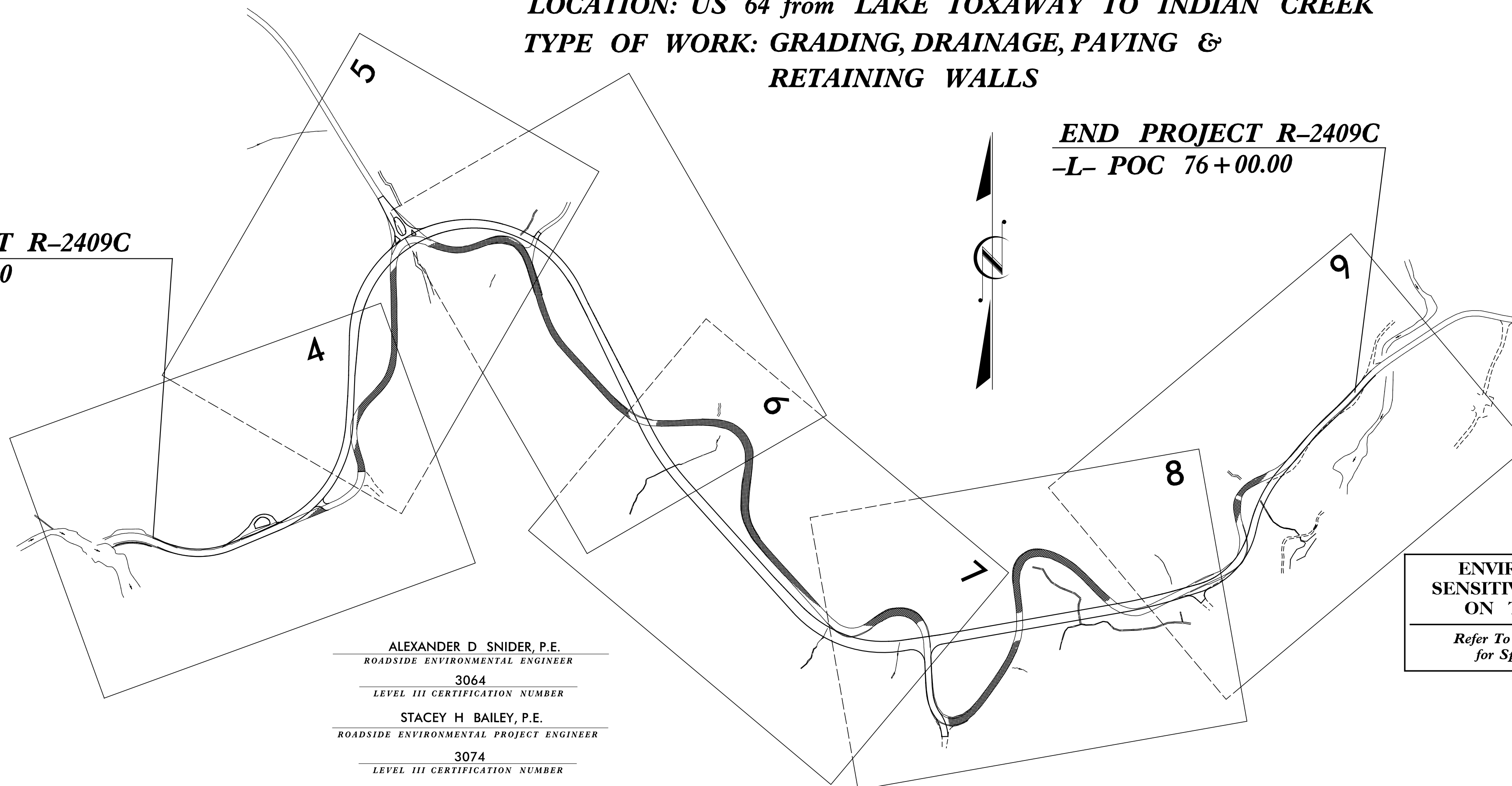
**TIP PROJECT: R-2409C**

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

**LOCATION: US 64 from LAKE TOXAWAY TO INDIAN CREEK**  
**TYPE OF WORK: GRADING, DRAINAGE, PAVING & RETAINING WALLS**

**BEGIN PROJECT R-2409C**  
**-L- POT 10+05.00**

**END PROJECT R-2409C**  
**-L- POC 76+00.00**



ALEXANDER D. SNIDER, P.E.  
ROADSIDE ENVIRONMENTAL ENGINEER  
3064  
LEVEL III CERTIFICATION NUMBER  
STACEY H. BAILEY, P.E.  
ROADSIDE ENVIRONMENTAL PROJECT ENGINEER  
3074  
LEVEL III CERTIFICATION NUMBER

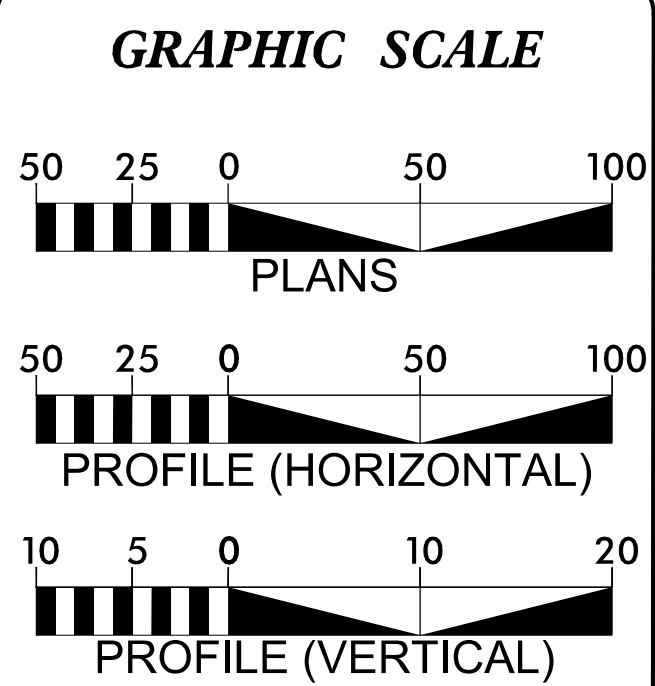
**EROSION AND SEDIMENT CONTROL MEASURES**

Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	TD
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	▲▲▲
1622.01	Temporary Berms and Slope Drains	—
1630.02	Silt Basin Type B	▧
1633.01	Temporary Rock Silt Check Type-A	▨
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	▨
1633.02	Temporary Rock Silt Check Type-B	▶
	Wattle / Coir Fiber Wattle	—
	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.*



ROADSIDE ENVIRONMENTAL UNIT  
DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

LEVEL III CERTIFIED BY:  
STACEY H. BAILEY, PE  
CERTIFICATION NUMBER: 3074  
ISSUED: JUNE 25, 2014

**THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 3, 2011 ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES DIVISION OF WATER QUALITY.**

Prepared In the Office of:  
**ICA ENGINEERING**  
5121 KINGDOM WAY  
SUITE 100  
RALEIGH, NC 27607  
919-851-6066  
NC LIC. NO. F-0258  
**2012 STANDARD SPECIFICATIONS**

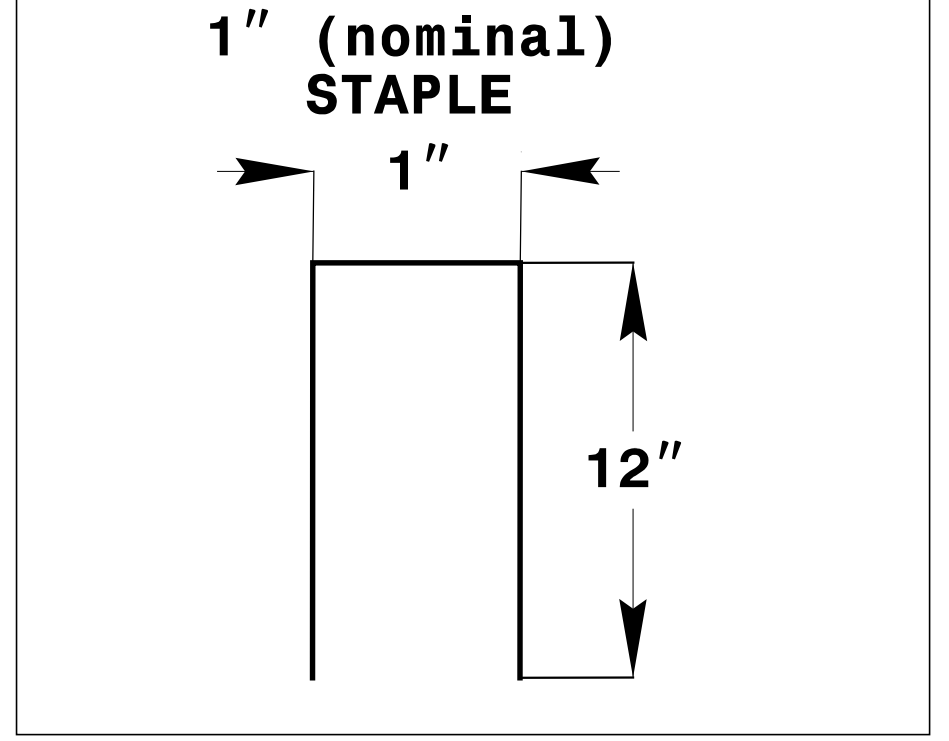
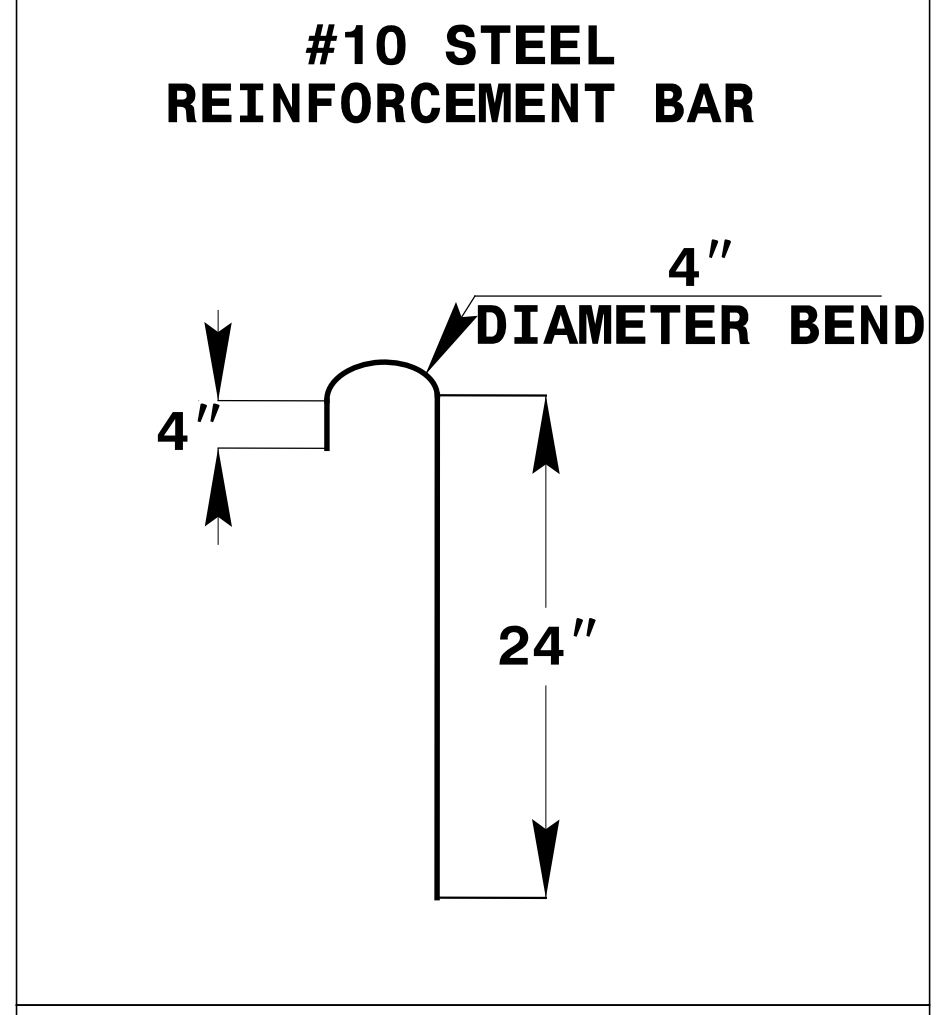
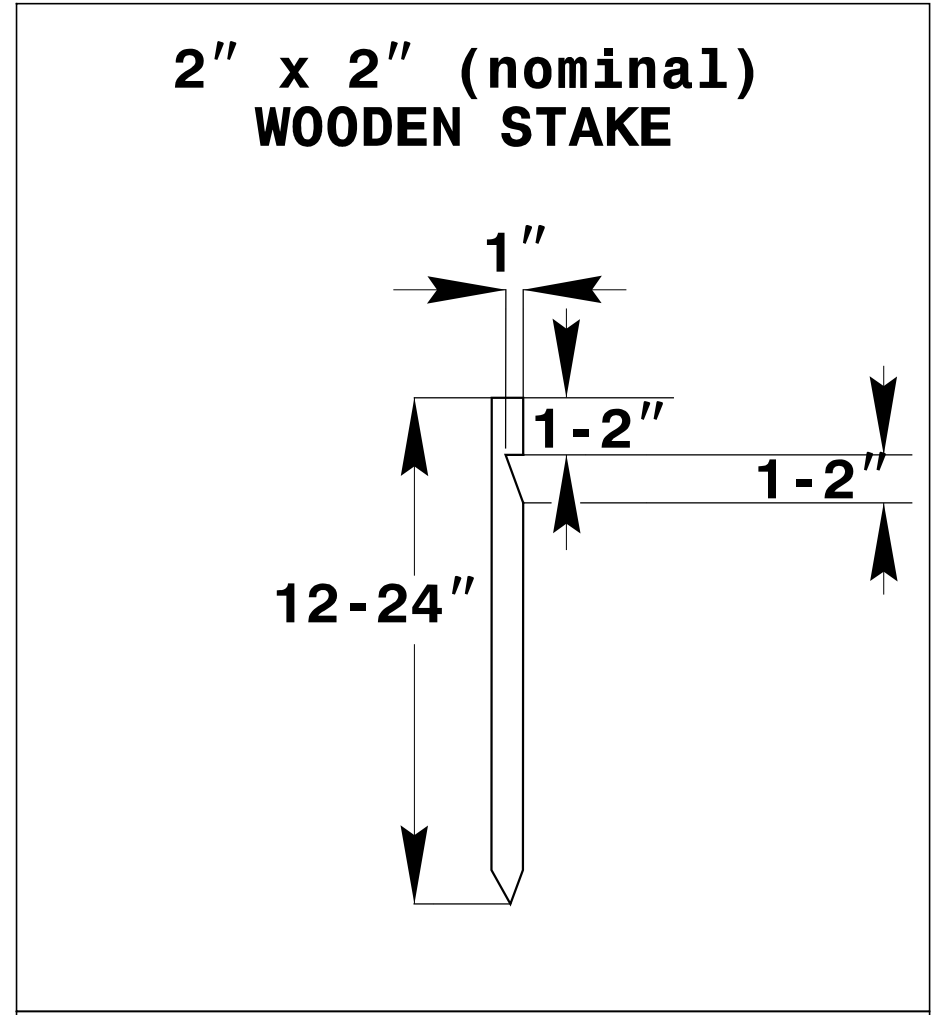
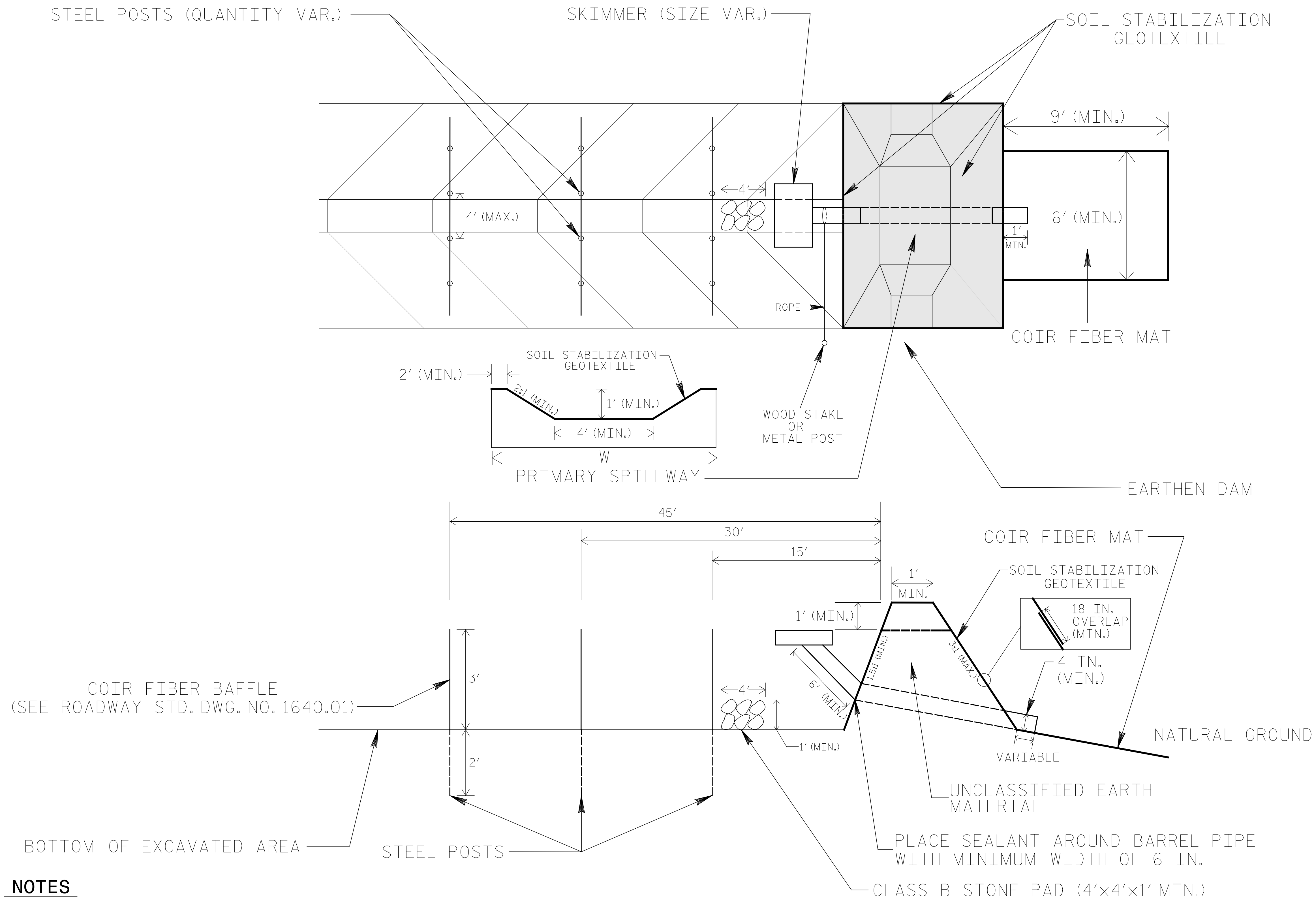
Highway Standard Drawings

The following roadway english standards as appear in "Roadway Standard Drawings"- Roadway Design Unit - N. C. Department of Transportation - Raleigh, N. C., dated January 2012 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	

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# EARTHEN DAM WITH SKIMMER



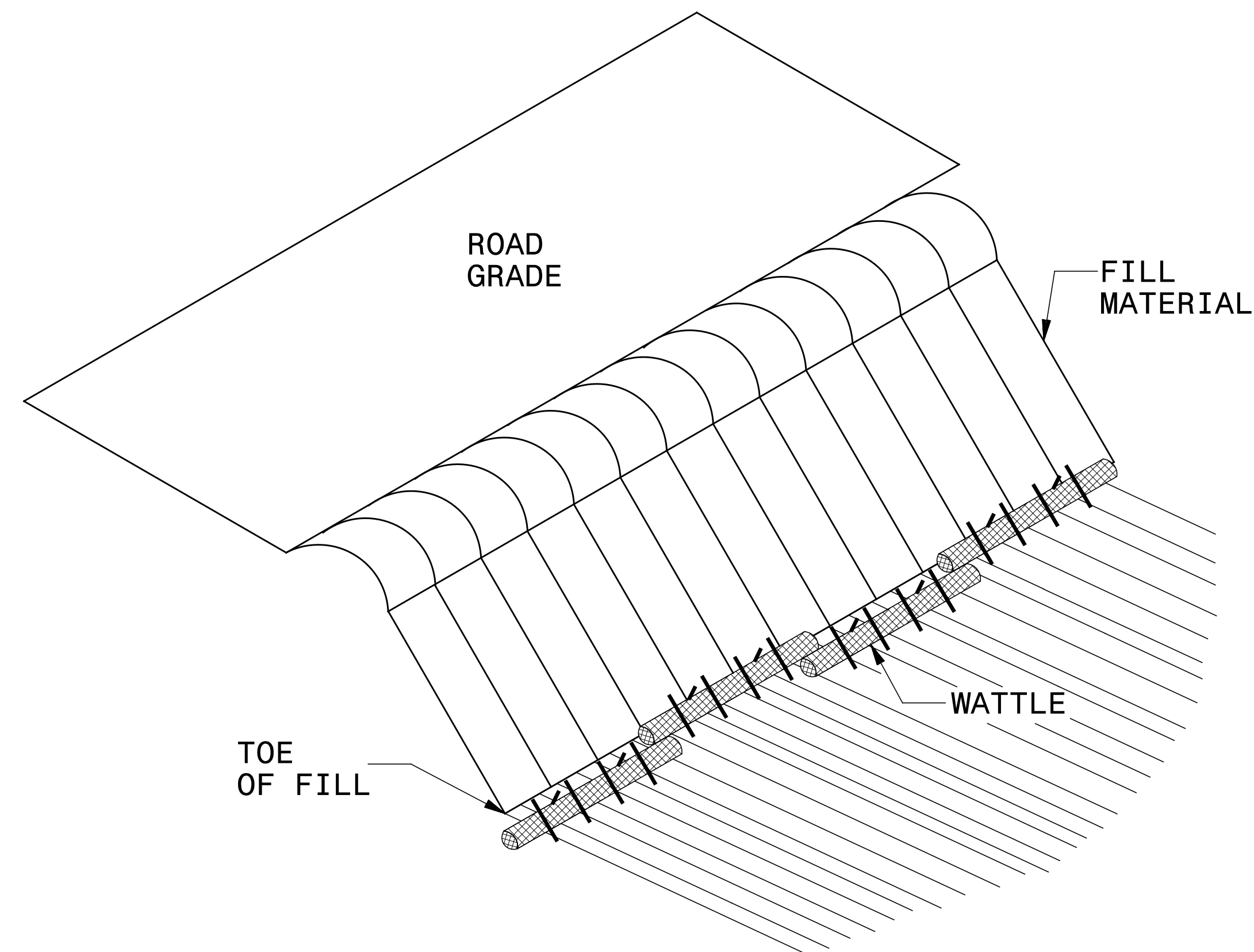
## COIR FIBER MAT ANCHOR OPTIONS

### NOTES

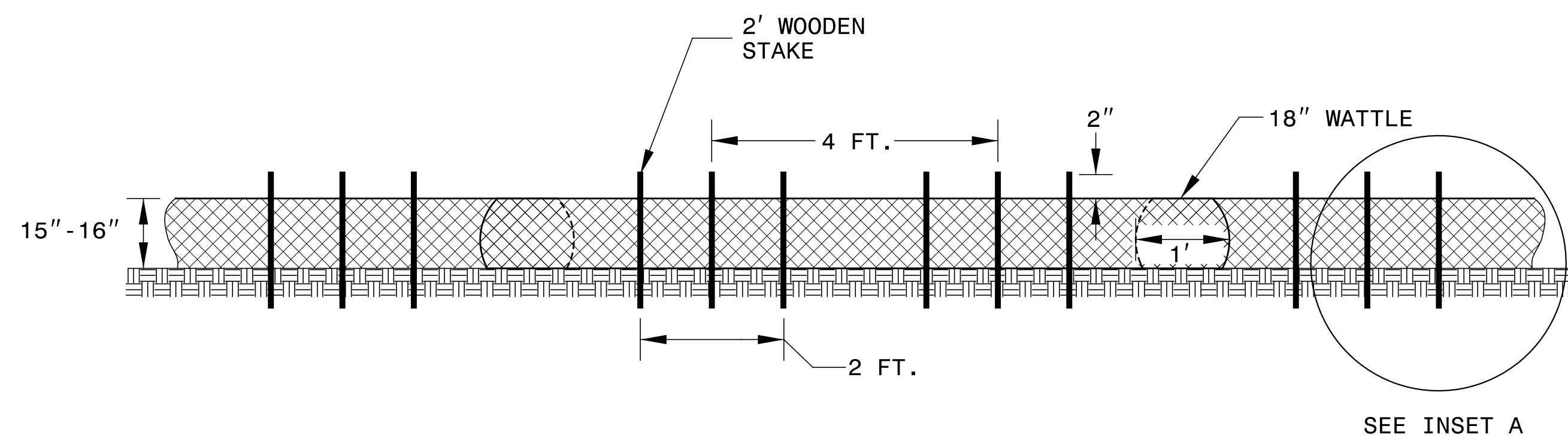
1. LIMIT EARTHEN DAM HEIGHT TO 5 FT.
2. DETERMINE PRIMARY SPILLWAY LENGTH (FT.) USING  $Q/0.4$ , WHERE Q IS FLOW RATE (CFS) INTO BASIN.
3. SOIL STABILIZATION GEOTEXTILE FOR PRIMARY SPILLWAY SHALL BE ONE CONTINUOUS PIECE OF MATERIAL OR OVERLAPPED 18 IN. (MIN.).

NOT TO SCALE

# WATTLE BARRIER DETAIL



**ISOMETRIC VIEW**



**FRONT VIEW**

**NOTES:**

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

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

DO NOT PLACE WATTLES ON TOE OF SLOPE.

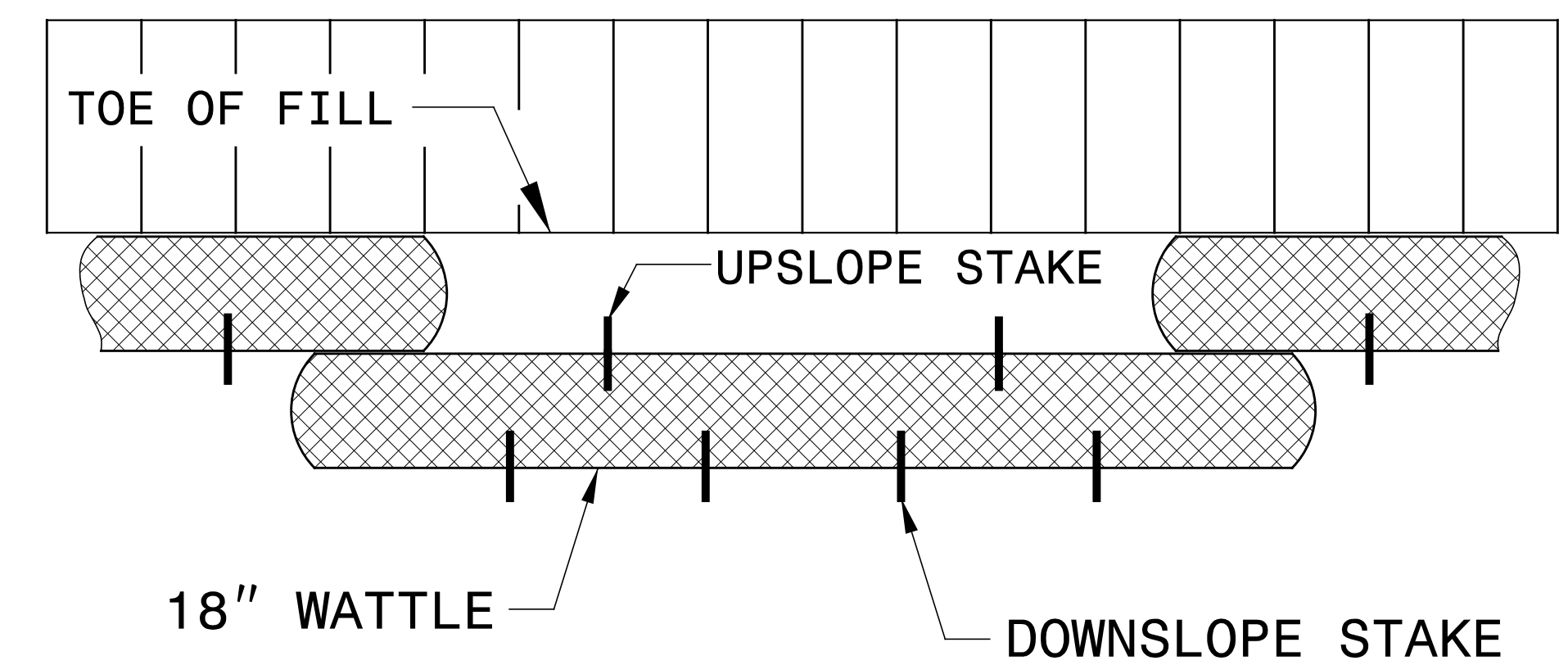
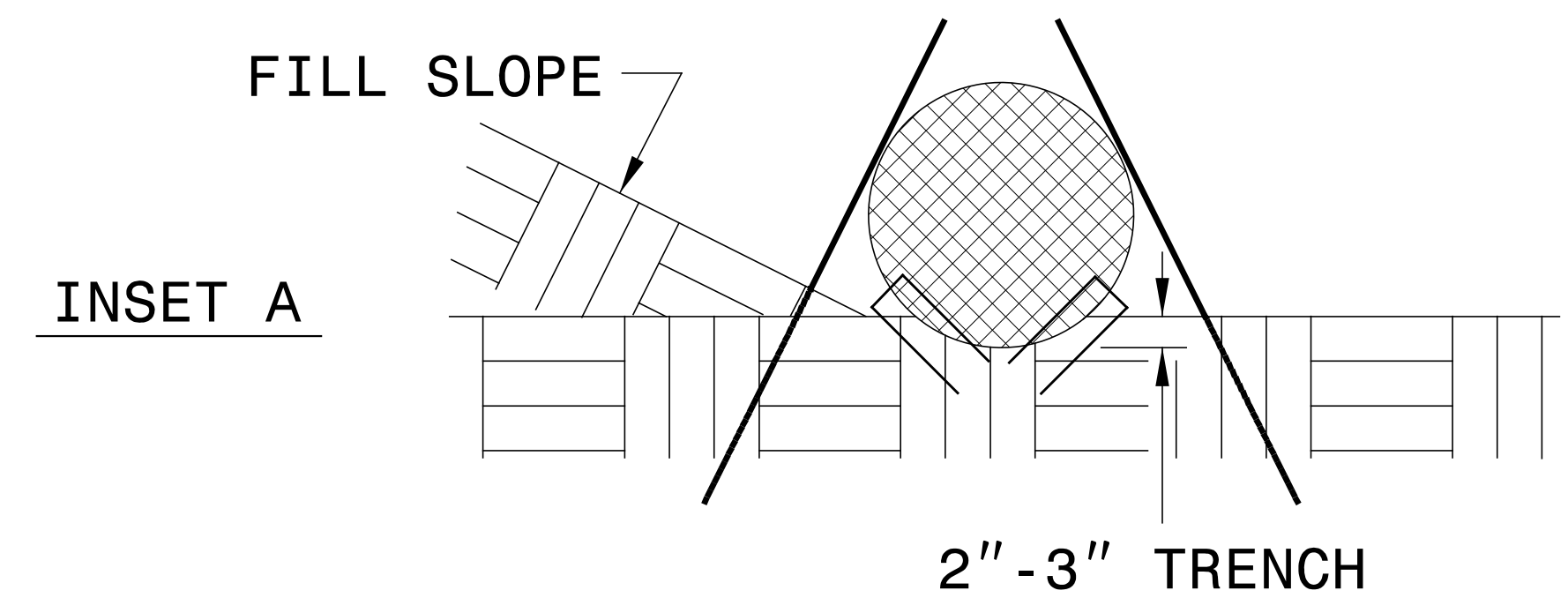
USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

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

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

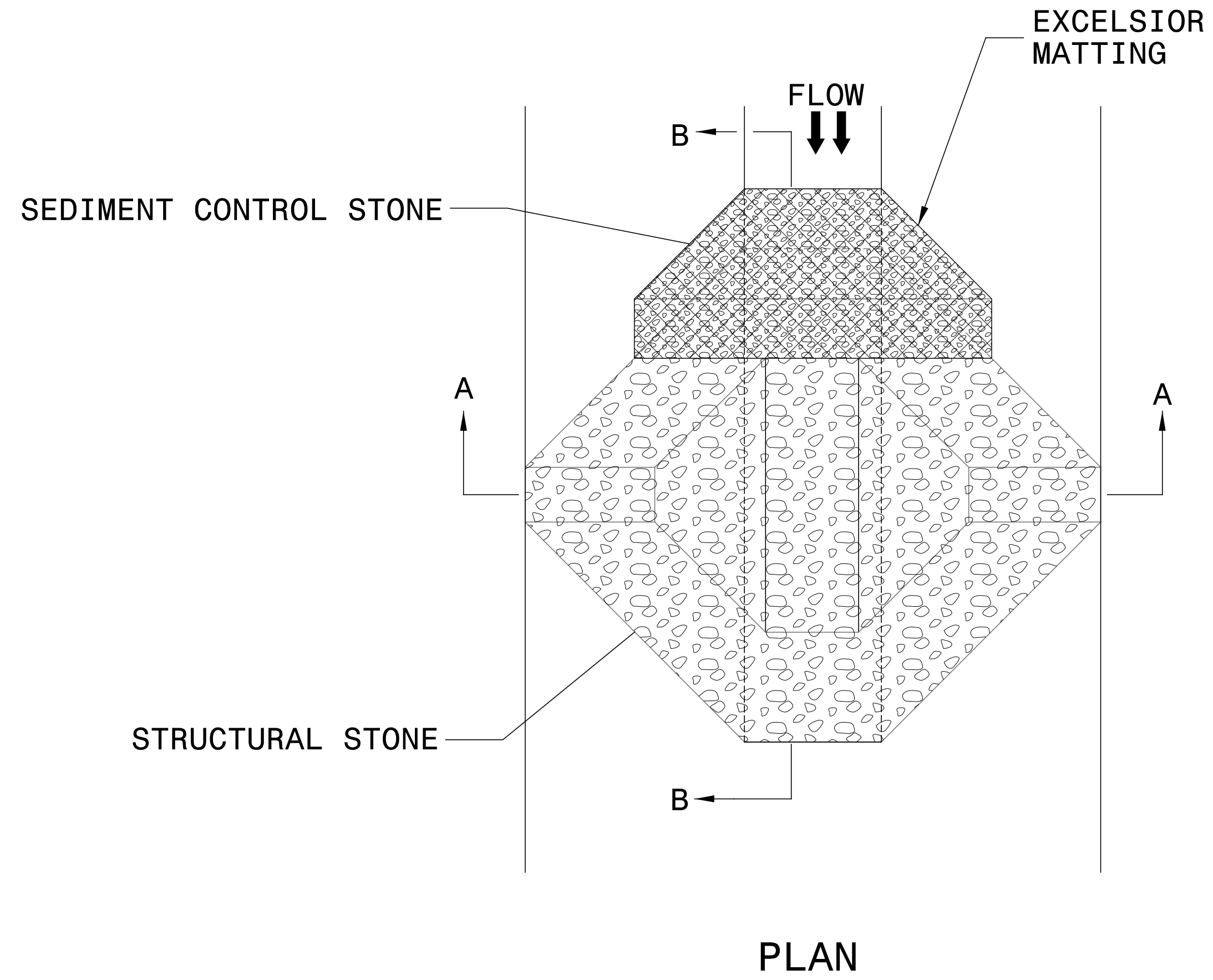
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

FOR BREAKS ALONG LARGE SLOPES, USE MAXIMUM SPACING OF 20 FT.



**TOP VIEW**

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



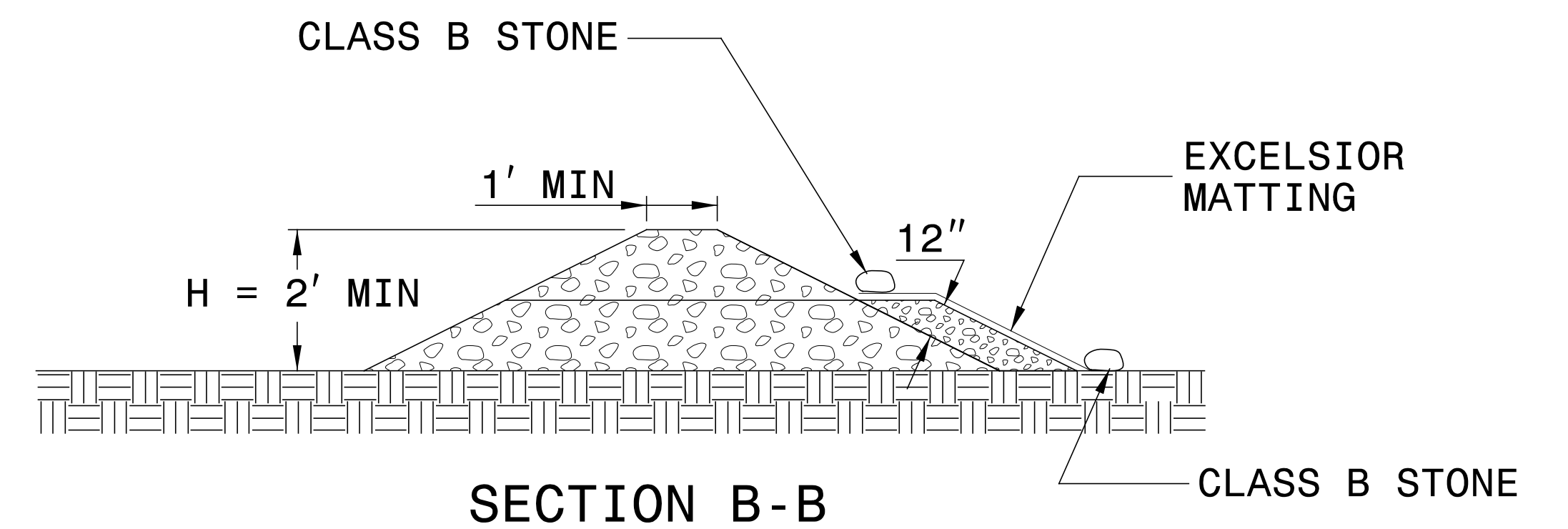
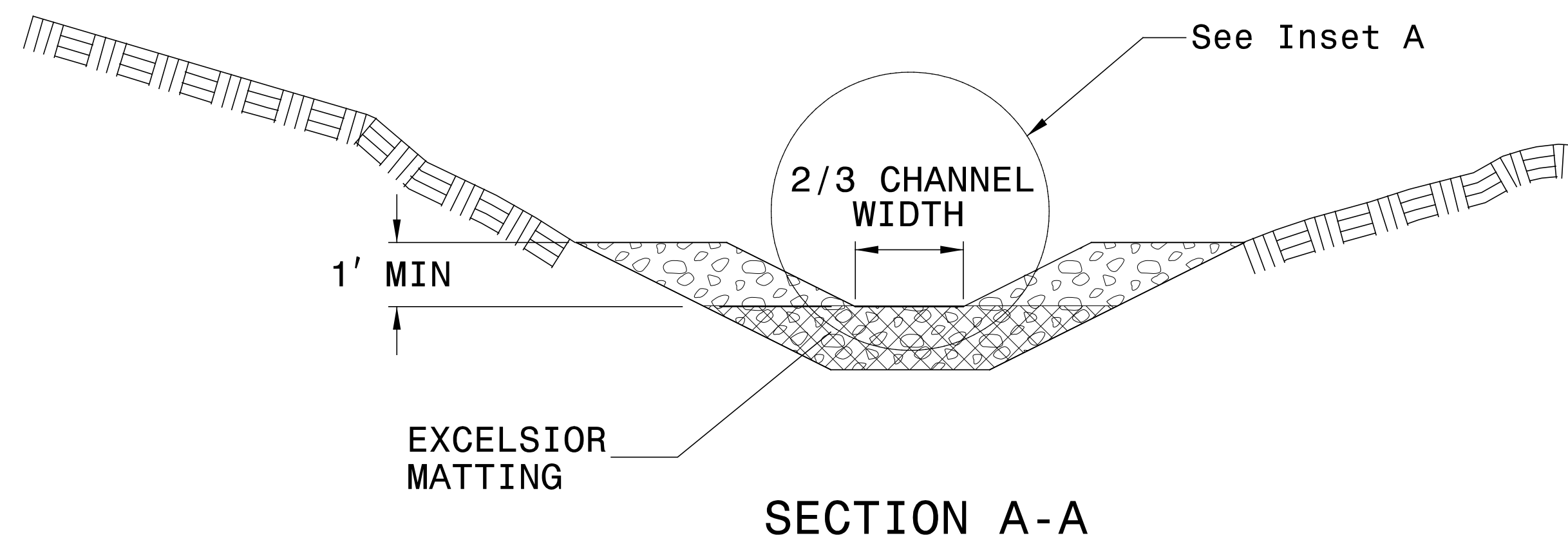
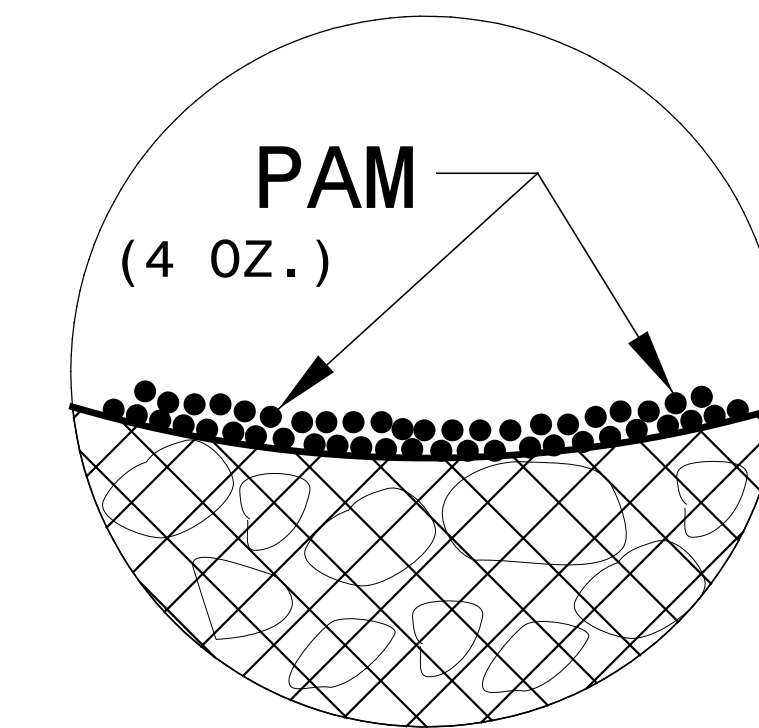
## NOTES:

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

DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

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## ***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.



8/17/99

NOTE:  
PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.

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

NOTE:  
CONTRACTOR SHALL PROVIDE GROUND COVER ON EXPOSED SLOPES WITHIN 7 CALENDAR DAYS, AFTER ANY PHASE OF GRADING

NOTE:  
ALL EROSION CONTROL DEVICES SHOWN ARE LOCATED WITHIN EXISTING RW OR EASEMENT

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 2D

 ENVIRONMENTALLY SENSITIVE AREA  
SEE PROJECT SPECIAL PROVISIONS

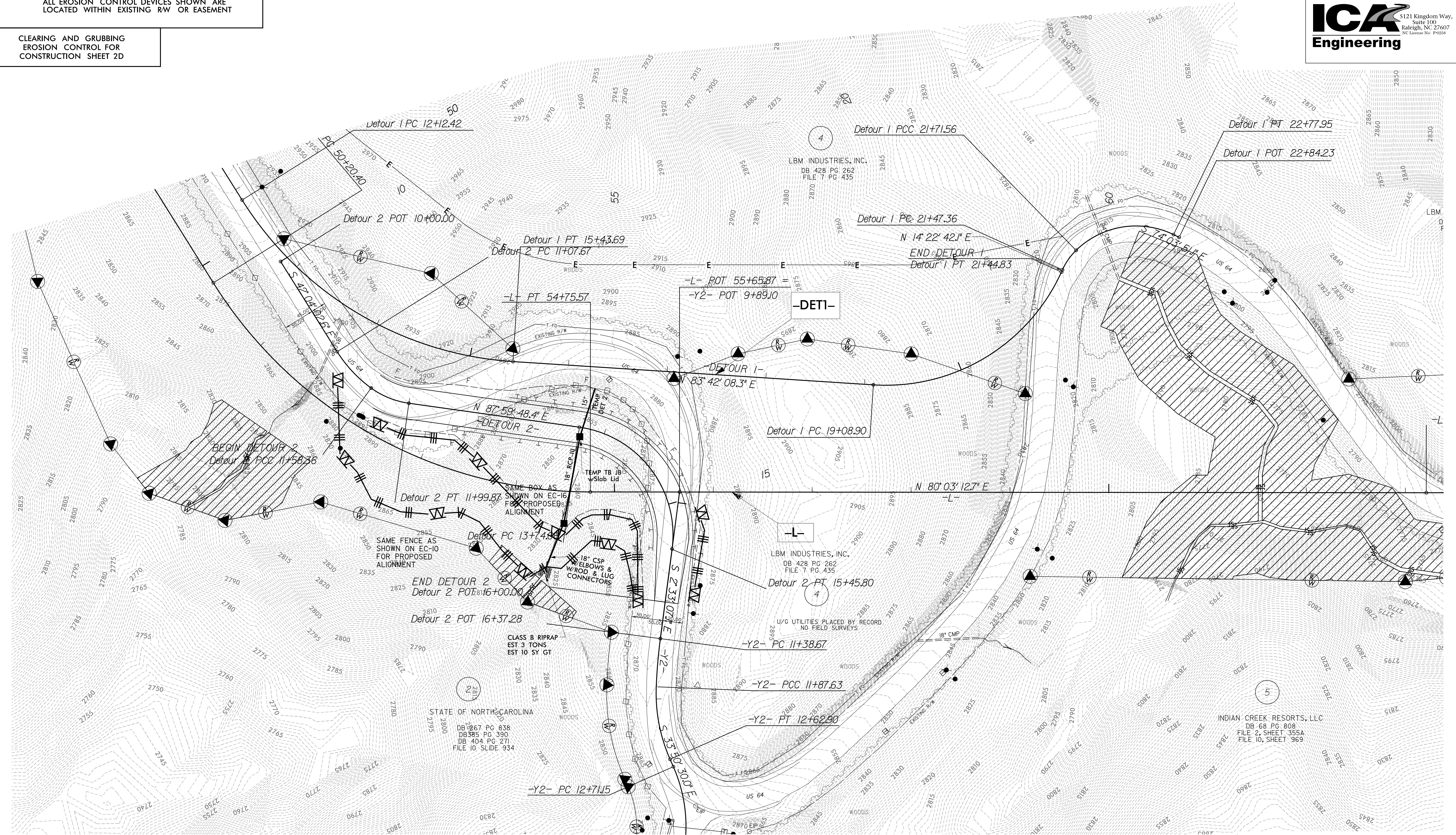
# -DETOUR 2-

PROJECT REFERENCE NO.	SHEET NO.
R-2409C	EC-4/CONST 2D
RW SHEET NO.	
ROADSIDE ENVIRONMENTAL PROJECT ENGINEER	

LEVEL III CERTIFIED BY:  
STACEY H. BAILEY, PE  
CERTIFICATION NUMBER: 3074  
ISSUED: JUNE 25, 2014



REVISIONS



6/25/2014  
Hydraulics, Erosion Control, cadd, R2409C, hyd, c&g, det2, pah04.dgn  
ICA ENGINEERING, INC.

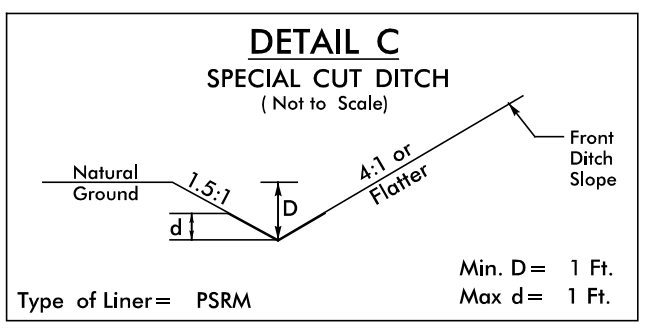
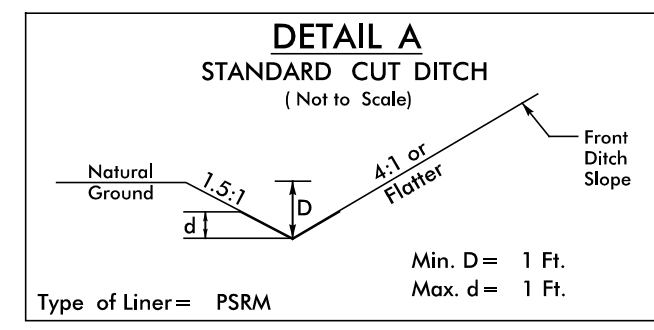
FOR -DETOUR 2- PROFILE SEE SHEET 17



# -DETOUR 1-

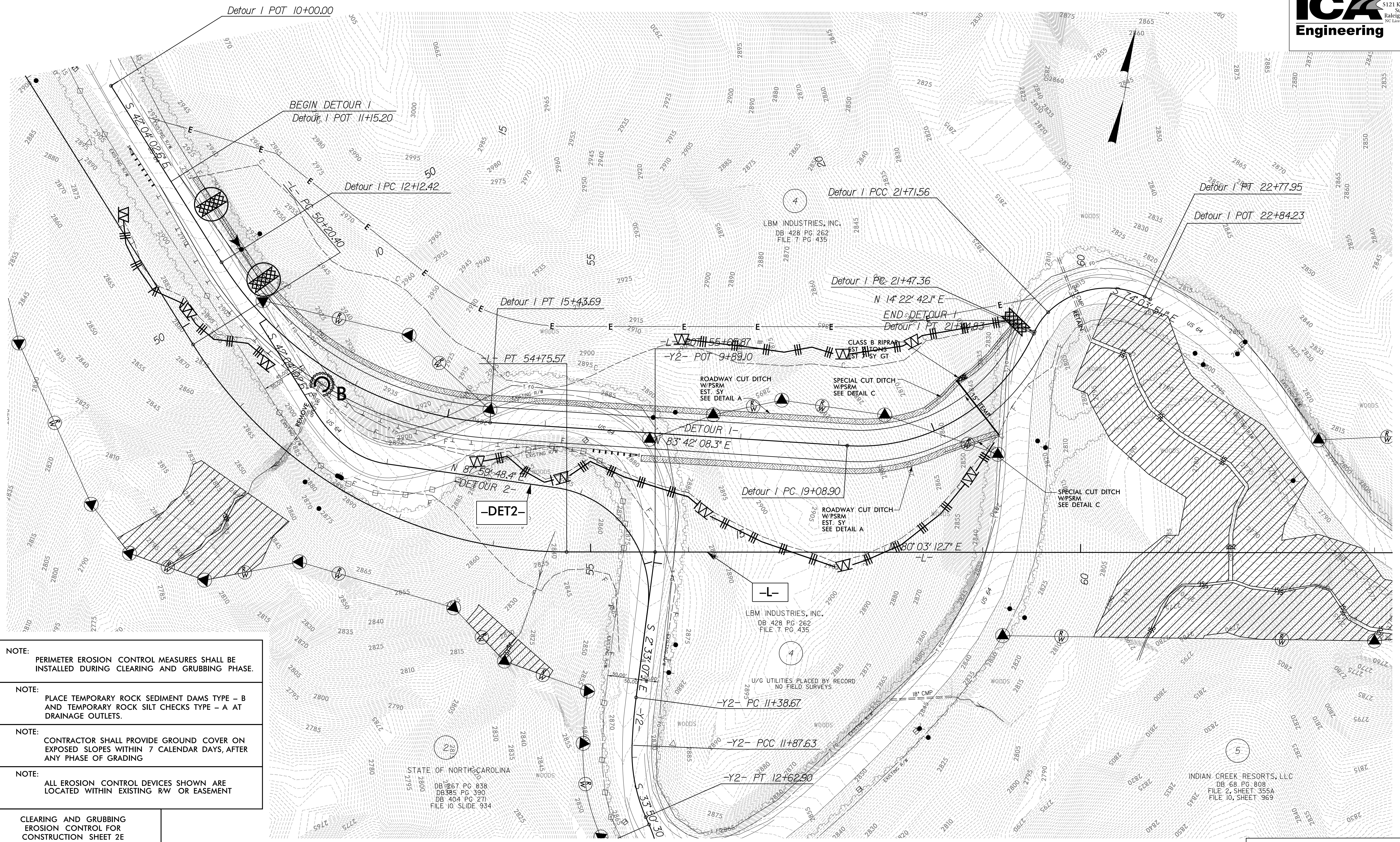


PROJECT REFERENCE NO. R-2409C	SHEET NO. EC-5/CONST2E
RW SHEET NO.	
ROADSIDE ENVIRONMENTAL PROJECT ENGINEER	
LEVEL III CERTIFIED BY: STACEY H. BAILEY, PE	
CERTIFICATION NUMBER: 3074	
ISSUED: JUNE 25, 2014	



FROM STA. 11+25 TO STA. 20+00 -DETI- LT  
FROM STA. 17+00 TO STA. 20+00 -DETI- RT

FROM STA. 20+00 TO STA. 21+50 -DETI- LT  
FROM STA. 20+00 TO STA. 20+50 -DETI- RT



- NOTE: PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.
- NOTE: PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B AND TEMPORARY ROCK SILT CHECKS TYPE - A AT DRAINAGE OUTLETS.
- NOTE: CONTRACTOR SHALL PROVIDE GROUND COVER ON EXPOSED SLOPES WITHIN 7 CALENDAR DAYS, AFTER ANY PHASE OF GRADING.
- NOTE: ALL EROSION CONTROL DEVICES SHOWN ARE LOCATED WITHIN EXISTING RW OR EASEMENT.

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 2E

FOR -DETOUR 1- PROFILE SEE SHEET 16

REVISIONS

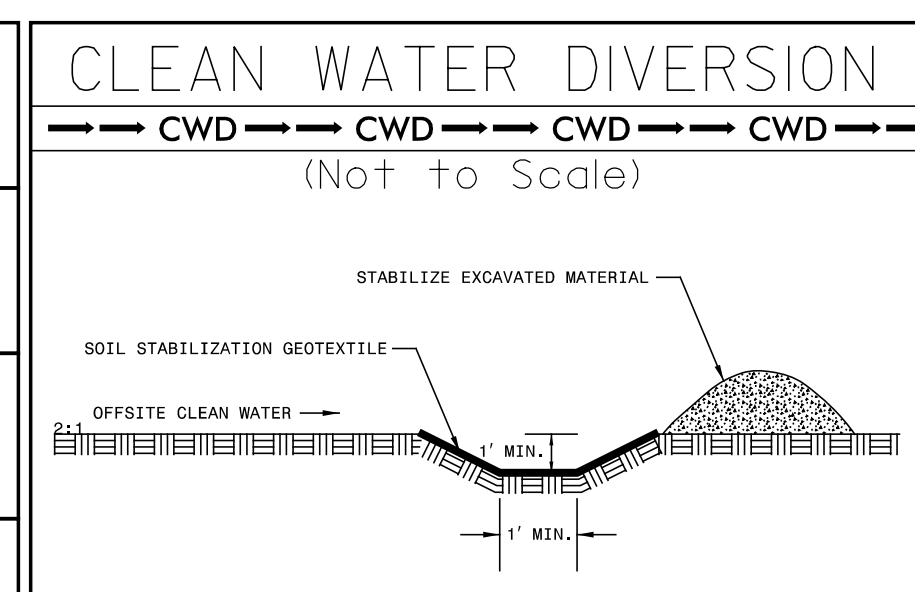
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 ICA ENGINEERING, INC. Control\cadd\1R2409C\_hyd\_c&g\_det1\_psh05.dgn

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

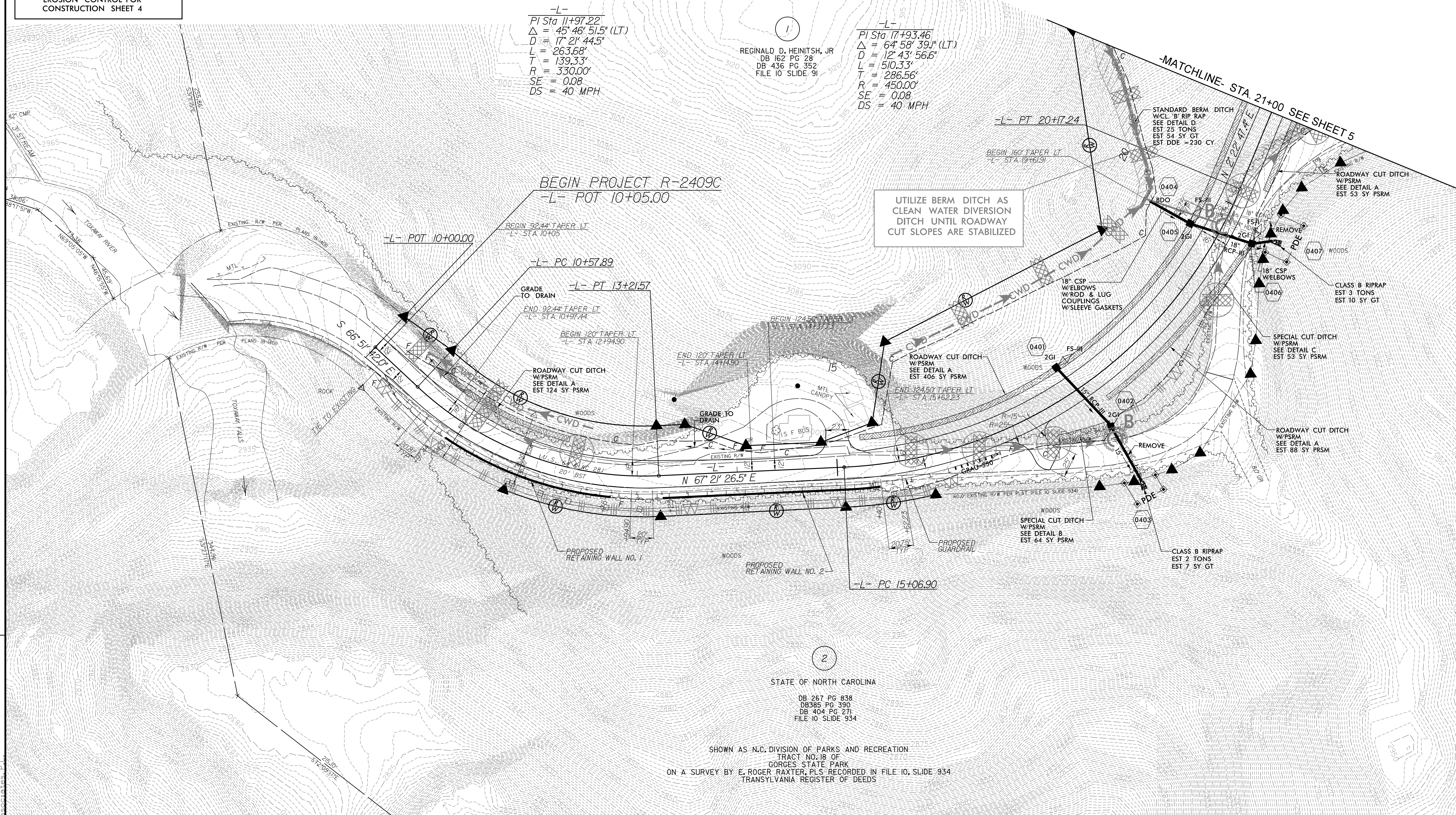
**NOTE:** CONTRACTOR SHALL PROVIDE GROUND COVER ON EXPOSED SLOPES WITHIN 7 CALENDAR DAYS, AFTER ANY PHASE OF GRADING

**NOTE:** ALL EROSION CONTROL DEVICES SHOWN ARE LOCATED WITHIN EXISTING RW OR EASEMENT



CLEARING AND GRUBBING  
 EROSION CONTROL FOR  
 CONSTRUCTION SHEET 4

REVISIONS



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 K & Associates, PLLC

FOR -L- PROFILE SEE SHEET 10

8.17.99  
 REVISIONS  
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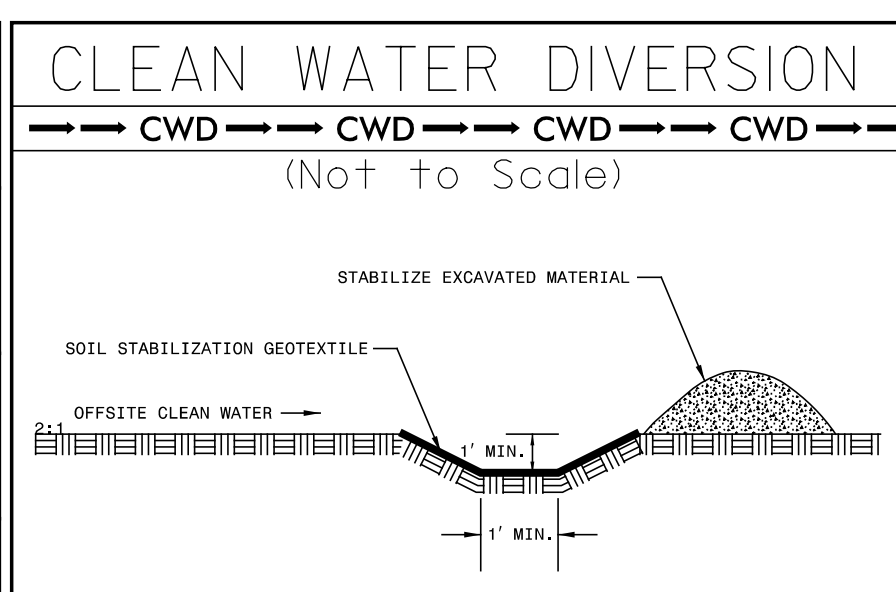
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NOTE: PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B AND TEMPORARY ROCK SILT CHECKS TYPE - A AT DRAINAGE OUTLETS.

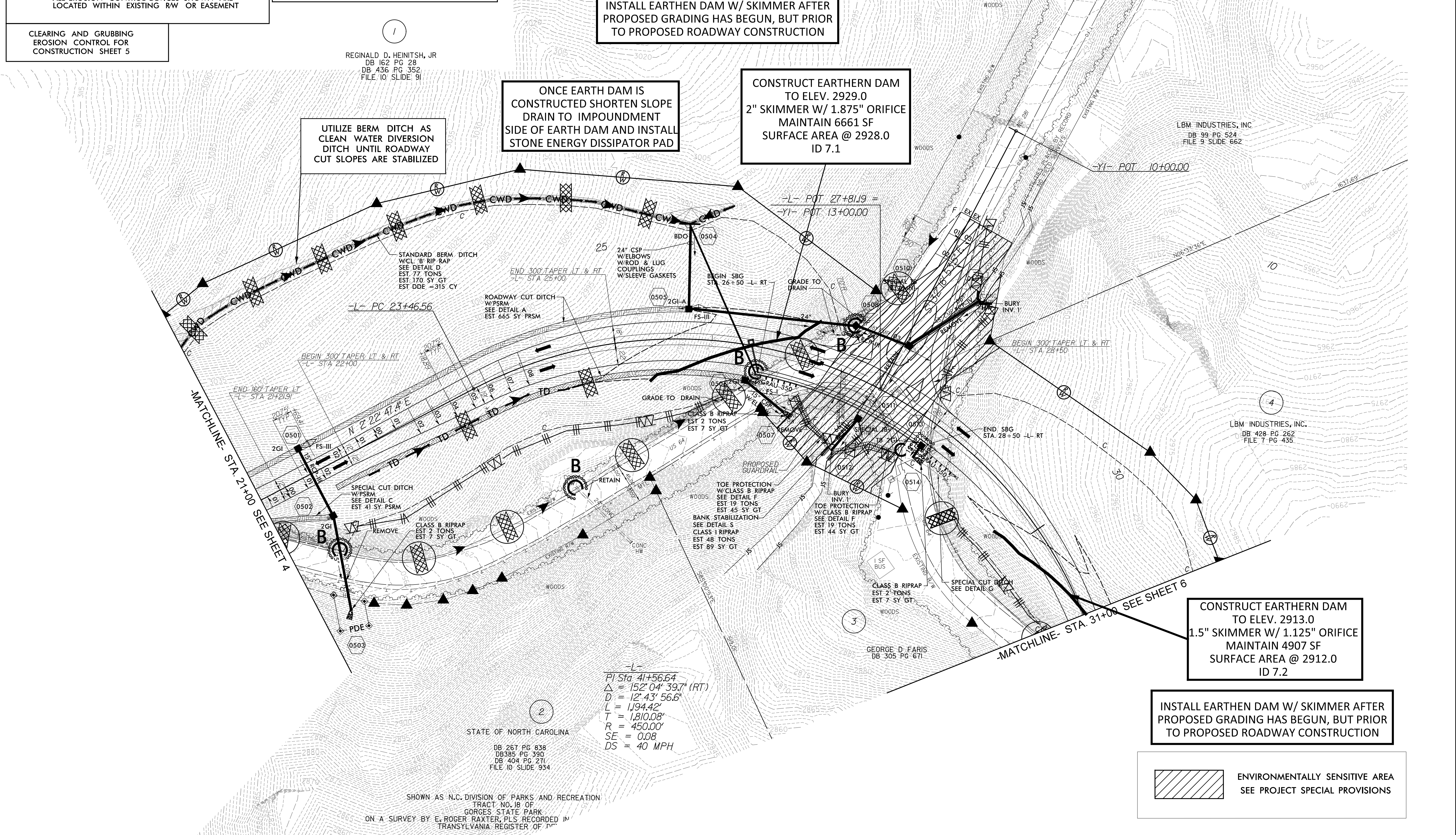
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CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 5



PROJECT REFERENCE NO.	SHEET NO.
R-2409C	EC-7/CONST5
RW SHEET NO.	
ROADSIDE ENVIRONMENTAL PROJECT ENGINEER	
LEVEL III CERTIFIED BY: STACEY H. BAILEY, PE CERTIFICATION NUMBER: 3074 ISSUED: JUNE 25, 2014	



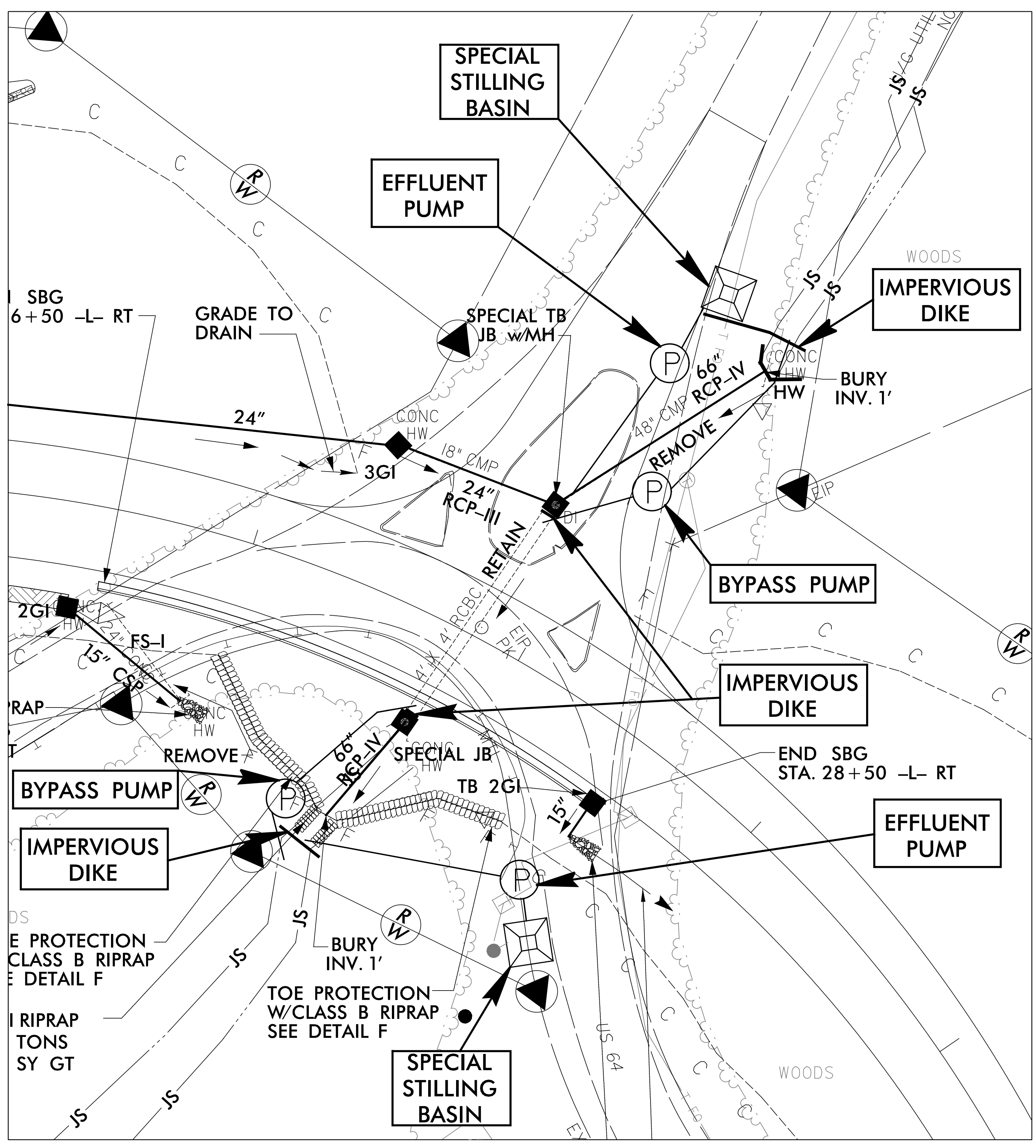
ENVIRONMENTALLY SENSITIVE AREA  
SEE PROJECT SPECIAL PROVISIONS

FOR -L- PROFILE SEE SHEET 11

8/17/99



PROJECT REFERENCE NO.	SHEET NO.
R-2409C	EC-7A/CONST5
RW SHEET NO.	
ROADSIDE ENVIRONMENTAL PROJECT ENGINEER	
LEVEL III CERTIFIED BY: STACEY H. BAILEY, PE CERTIFICATION NUMBER: 3074 ISSUED: JUNE 25, 2014	



### NOTES

1. IMPERVIOUS DIKES ARE TO BE USED TO ISOLATE WORK FROM STREAM FLOW AS NECESSARY.
2. ALL GRADED AREAS SHALL BE STABILIZED WITHIN 24 HOURS.
3. PUMPS AND HOSES SHALL BE SUFFICIENT SIZE TO DEWATER THE WORK AREA.
4. THE CONTRACTOR SHALL NOT PUMP SEDIMENT-LADEN WATER DIRECTLY INTO STREAM. FOR DEWATERING OF CULVERT SITES, THE CONTRACTOR SHALL FILTER SEDIMENT-LADEN WATER THROUGH SPECIAL STILLING BASINS.

### PIPE CONSTRUCTION SEQUENCE STA. 27+80 -L-

1. INSTALL SPECIAL STILLING BASIN ON DOWNSTREAM END OF CULVERT.
2. CONSTRUCT IMPERVIOUS DIKES DOWNSTREAM OF ROADWAY AND DIVERT FLOW WITH BYPASS PUMPING AROUND WORK AREA.
3. CONSTRUCT PROPOSED JB AND EXTEND THE EXISTING 4' X 4' CULVERT WITH PROPOSED 66" RCP-IV.
4. REMOVE DOWNSTREAM IMPERVIOUS DIKES AND ALLOW FLOW THROUGH 66" RCP-IV.
5. INSTALL SPECIAL STILLING BASIN ON UPSTREAM END OF CULVERT.
6. CONSTRUCT IMPERVIOUS DIKES UPSTREAM OF ROADWAY AND DIVERT FLOW WITH BYPASS PUMPING AROUND WORK AREA.
7. REMOVE EXISTING 48 CMP.
8. CONSTRUCT PROPOSED JB AND EXTEND THE EXISTING 4' X 4' CULVERT WITH PROPOSED 66" RCP-IV.
9. REMOVE UPSTREAM IMPERVIOUS DIKE AND ALLOW FLOW THROUGH 66" RCP-IV.
10. ENSURE ALL PUMPS, HOSES, AND SPECIAL STILLING BASINS ARE REMOVED.
11. COMPLETE ROADWAY.

REVISIONS

6/25/2014  
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ICA ENGINEERING, INC.

8/17/99

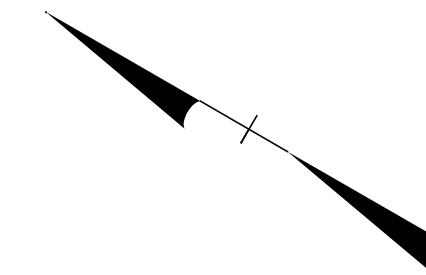
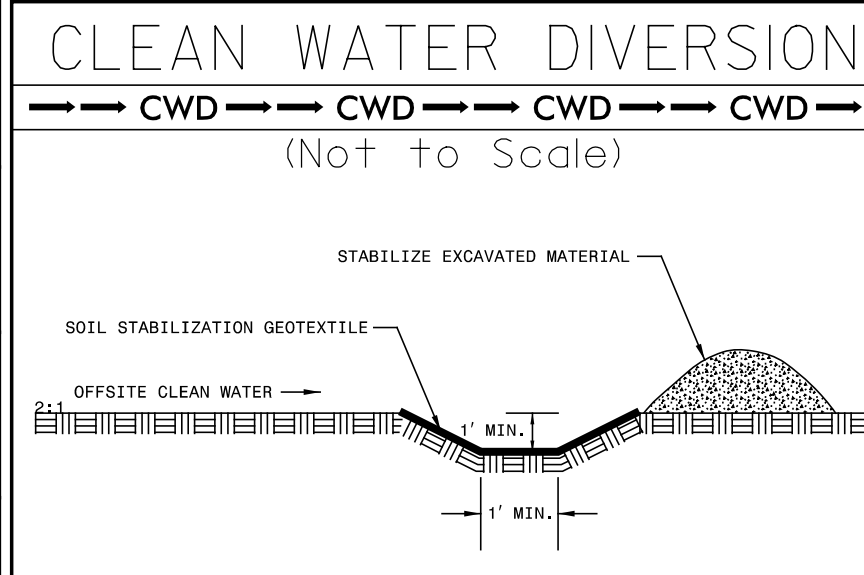
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NOTE: PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B AND TEMPORARY ROCK SILT CHECKS TYPE - A AT DRAINAGE OUTLETS.

NOTE: CONTRACTOR SHALL PROVIDE GROUND COVER ON EXPOSED SLOPES WITHIN 7 CALENDAR DAYS, AFTER ANY PHASE OF GRADING

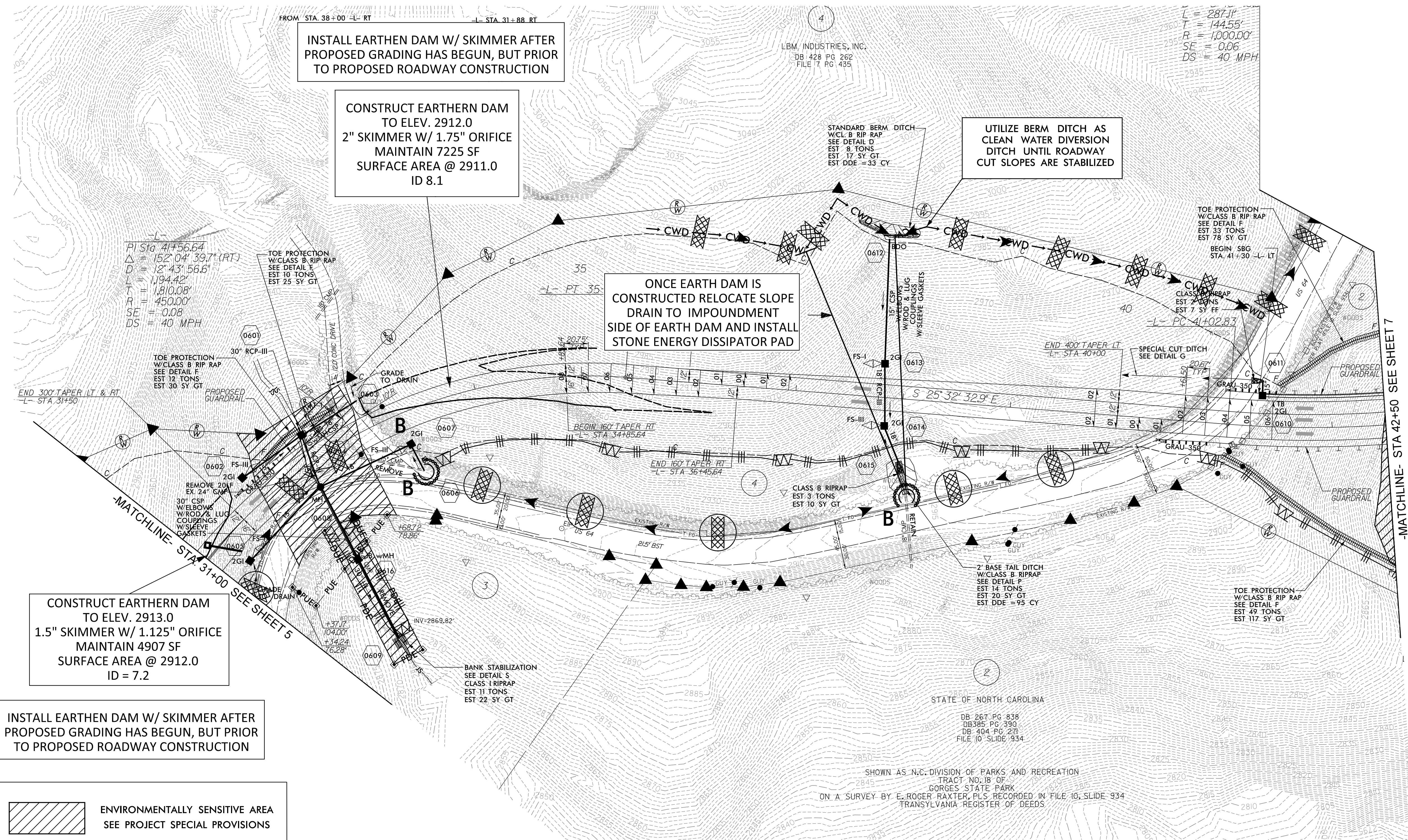
NOTE: ALL EROSION CONTROL DEVICES SHOWN ARE LOCATED WITHIN EXISTING RW OR EASEMENT

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 6



LEVEL III CERTIFIED BY:  
 STACEY H. BAILEY, PE  
 CERTIFICATION NUMBER: 3074  
 ISSUED: JUNE 25, 2014

REVISIONS



CONSTRUCT EARTHEN DAM TO ELEV. 2913.0 1.5" SKIMMER W/ 1.125" ORIFICE MAINTAIN 4907 SF SURFACE AREA @ 2912.0 ID = 7.2

INSTALL EARTHEN DAM W/ SKIMMER AFTER PROPOSED GRADING HAS BEGUN, BUT PRIOR TO PROPOSED ROADWAY CONSTRUCTION

ENVIRONMENTALLY SENSITIVE AREA SEE PROJECT SPECIAL PROVISIONS

FOR -L- PROFILE SEE SHEET 12

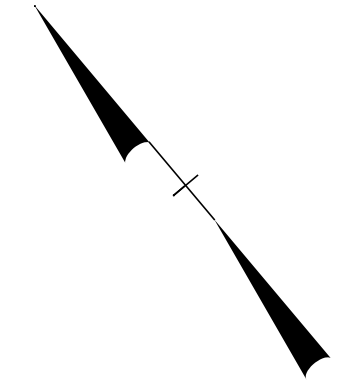
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 K. & Associates, P.C.

8/17/99

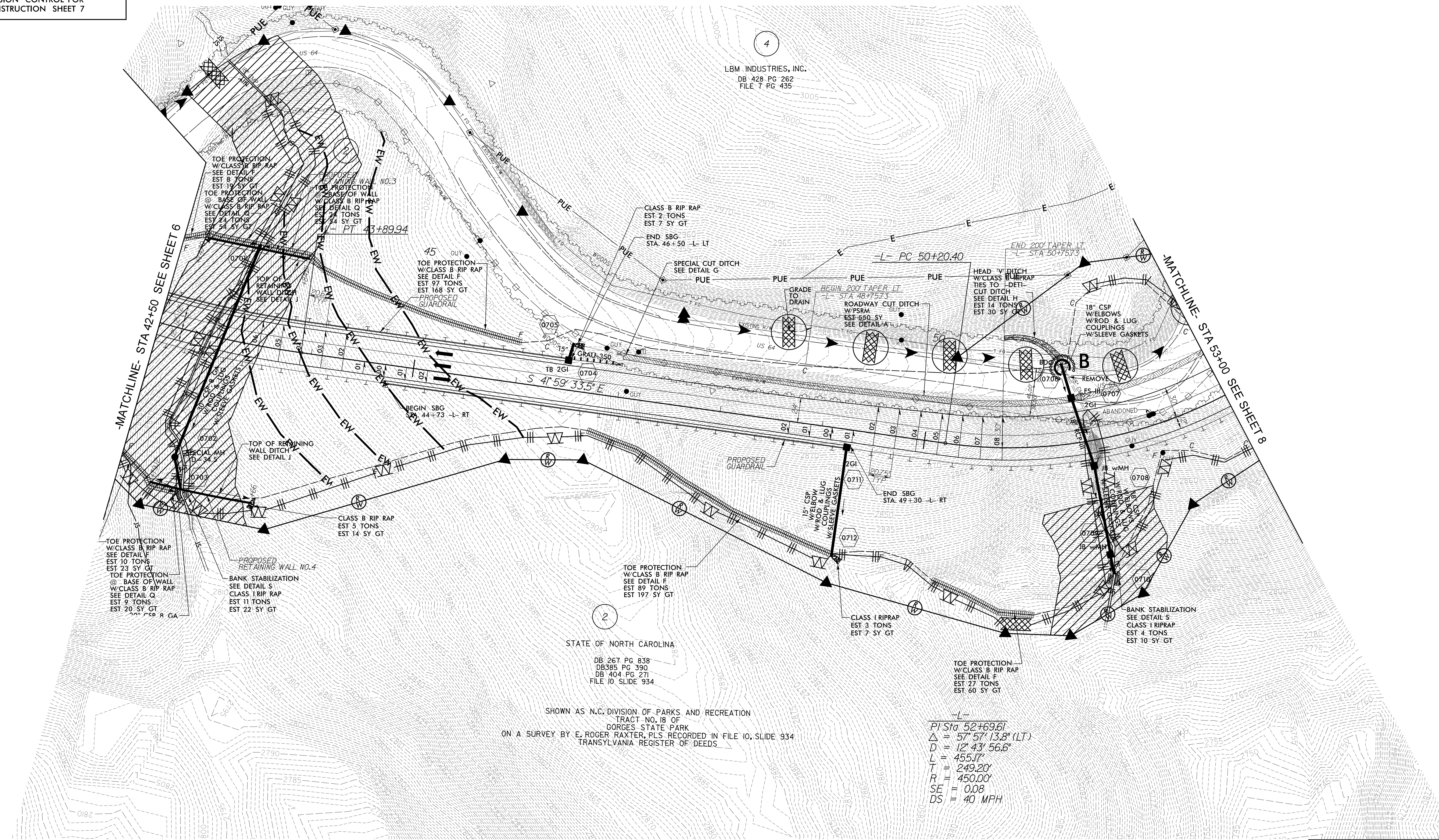
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CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 7

LEVEL III CERTIFIED BY:  
 STACEY H. BAILEY, PE  
 CERTIFICATION NUMBER: 3074  
 ISSUED: JUNE 25, 2014



REVISIONS



STATE OF NORTH CAROLINA  
 DB 267 PG 838  
 DB385 PG 390  
 DB 404 PG 271  
 FILE 10 SLIDE 934

SHOWN AS N.C. DIVISION OF PARKS AND RECREATION  
 TRACT NO. 18 OF  
 GORGES STATE PARK  
 ON A SURVEY BY E. ROGER RAXTER, PLS RECORDED IN FILE 10, SLIDE 934  
 TRANSYLVANIA REGISTER OF DEEDS

-L-  
 PI Sta 52+69.61  
 $\Delta = 57^{\circ} 57' 13.8''$  (LT)  
 D = 12' 43' 56.6"  
 L = 455.17'  
 R = 249.20'  
 SE = 0.08  
 DS = 40 MPH

FOR -L- PROFILE SEE SHEET 13

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 8/17/99  
 ICA Associates, Inc.

8.17.99

- NOTE:**  
PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.
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- NOTE:**  
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ALL EROSION CONTROL DEVICES SHOWN ARE LOCATED WITHIN EXISTING RW OR EASEMENT

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 8

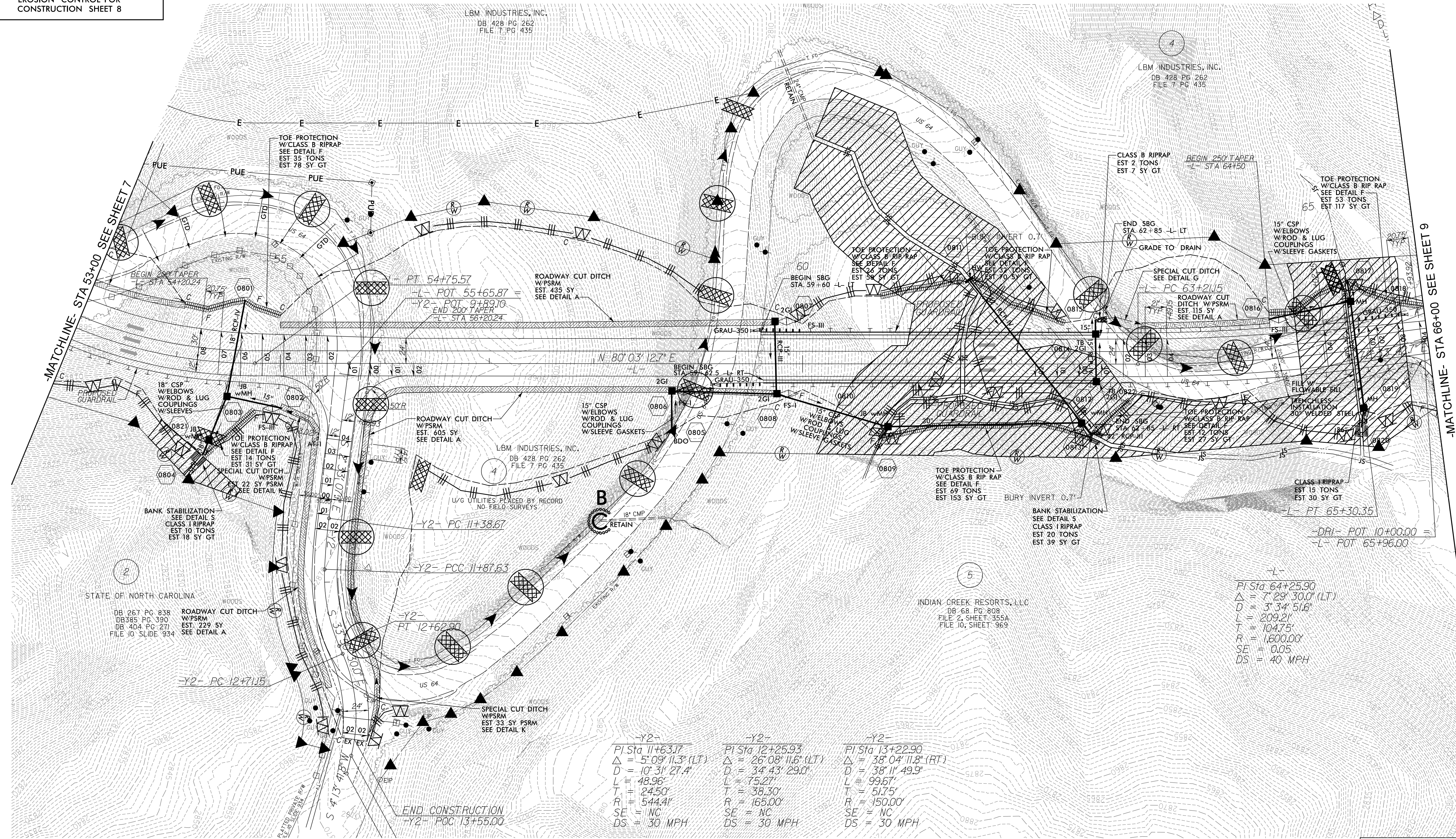
ENVIRONMENTALLY SENSITIVE AREA SEE PROJECT SPECIAL PROVISIONS



PROJECT REFERENCE NO. R-2409C SHEET NO. EC-10/CONST 8  
RW SHEET NO. ROADSIDE ENVIRONMENTAL PROJECT ENGINEER

LEVEL III CERTIFIED BY:  
STACEY H. BAILEY, PE  
CERTIFICATION NUMBER: 3074  
ISSUED: JUNE 25, 2014

REVISIONS



PI Sta 64+25.90  
Δ = 7°29'30.0" (LT)  
D = 3°34'51.6"  
L = 209.21'  
T = 104.75'  
R = 1,600.00'  
SE = 0.05  
DS = 40 MPH

FOR -L- PROFILE SEE SHEET 14  
FOR -Y2- PROFILE SEE SHEET 15

10/1/2015  
R:\Highways\EROSION Control\cadd\NR2409C\_hud\_e&g\_psh10.dgn  
K. & Associates

8/17/99

NOTE: PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.

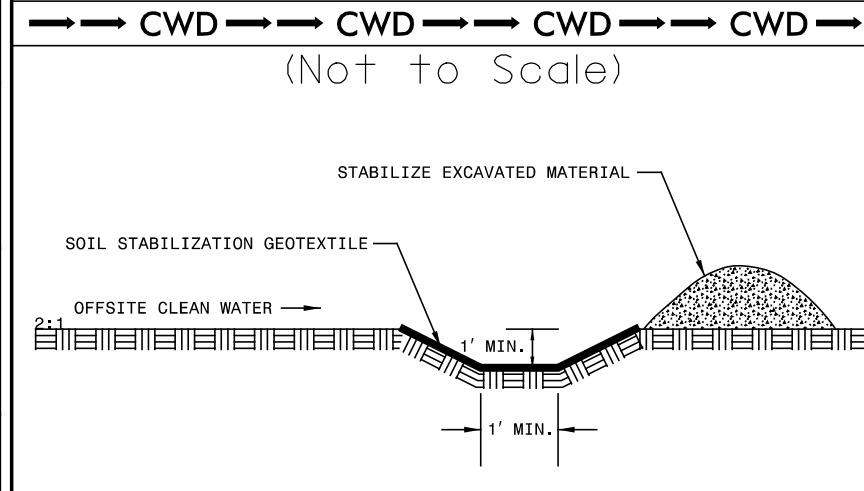
NOTE: PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B AND TEMPORARY ROCK SILT CHECKS TYPE - A AT DRAINAGE OUTLETS.

NOTE: CONTRACTOR SHALL PROVIDE GROUND COVER ON EXPOSED SLOPES WITHIN 7 CALENDAR DAYS, AFTER ANY PHASE OF GRADING

NOTE: ALL EROSION CONTROL DEVICES SHOWN ARE LOCATED WITHIN EXISTING RW OR EASEMENT

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 9

### CLEAN WATER DIVERSION

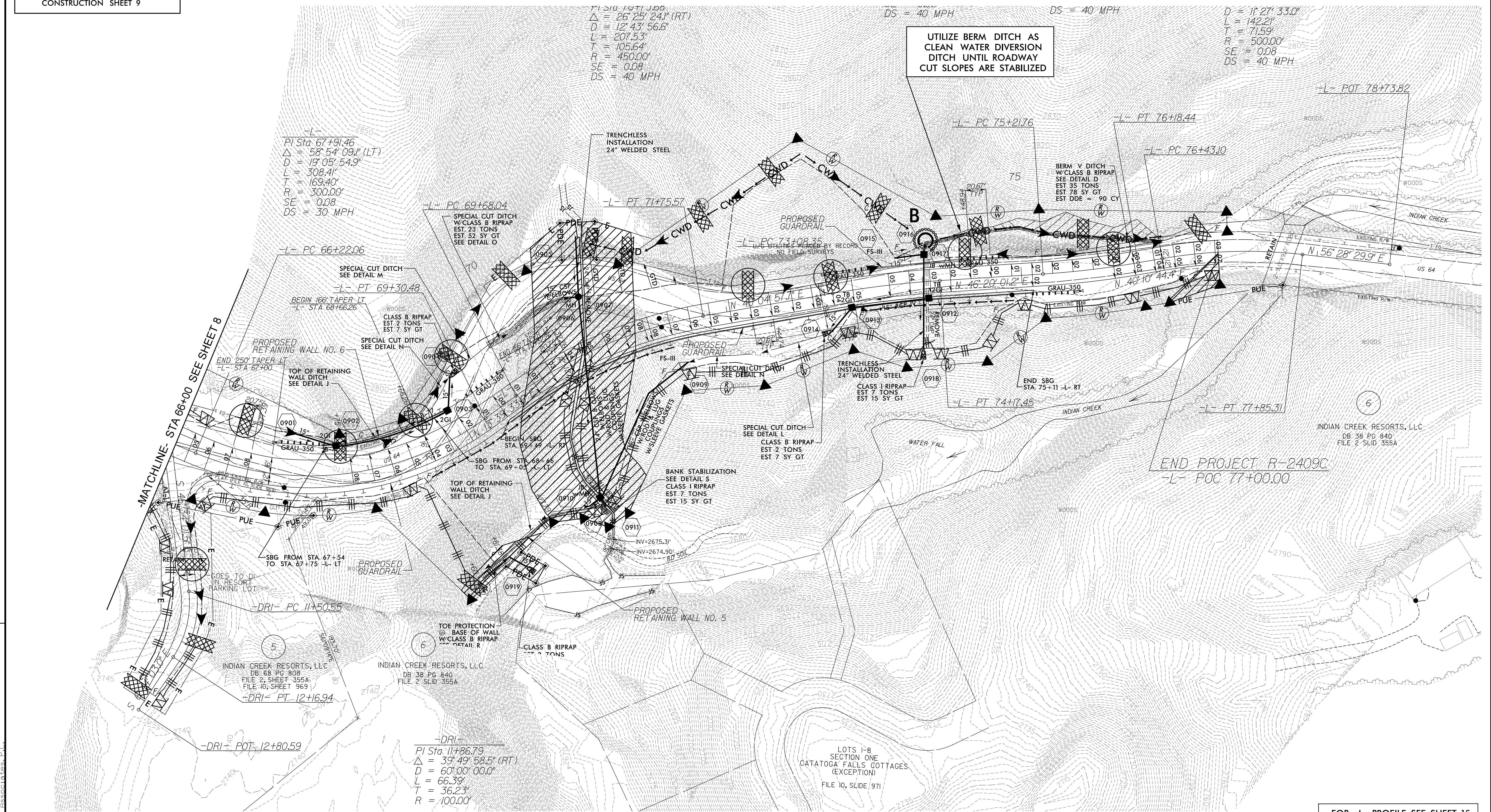


ENVIRONMENTALLY SENSITIVE AREA  
SEE PROJECT SPECIAL PROVISIONS



PROJECT REFERENCE NO.	SHEET NO.
R-2409C	EC-II/CONST9
RW SHEET NO.	
ROADSIDE ENVIRONMENTAL PROJECT ENGINEER	
LEVEL III CERTIFIED BY: STACEY H. BAILEY, PE CERTIFICATION NUMBER: 3074 ISSUED: APRIL 8, 2015	

REVISIONS



FOR -L- PROFILE SEE SHEET 15

IC:\V209E\RA\H\ra\ca\ca\Control\cadd\R2409C\_hyd\_c&g\_psh11.dgn



# -DETOUR 2-

PROJECT REFERENCE NO.	SHEET NO.
R-2409C	EC-12/CONST2D
RW SHEET NO.	
ROADSIDE ENVIRONMENTAL PROJECT ENGINEER	

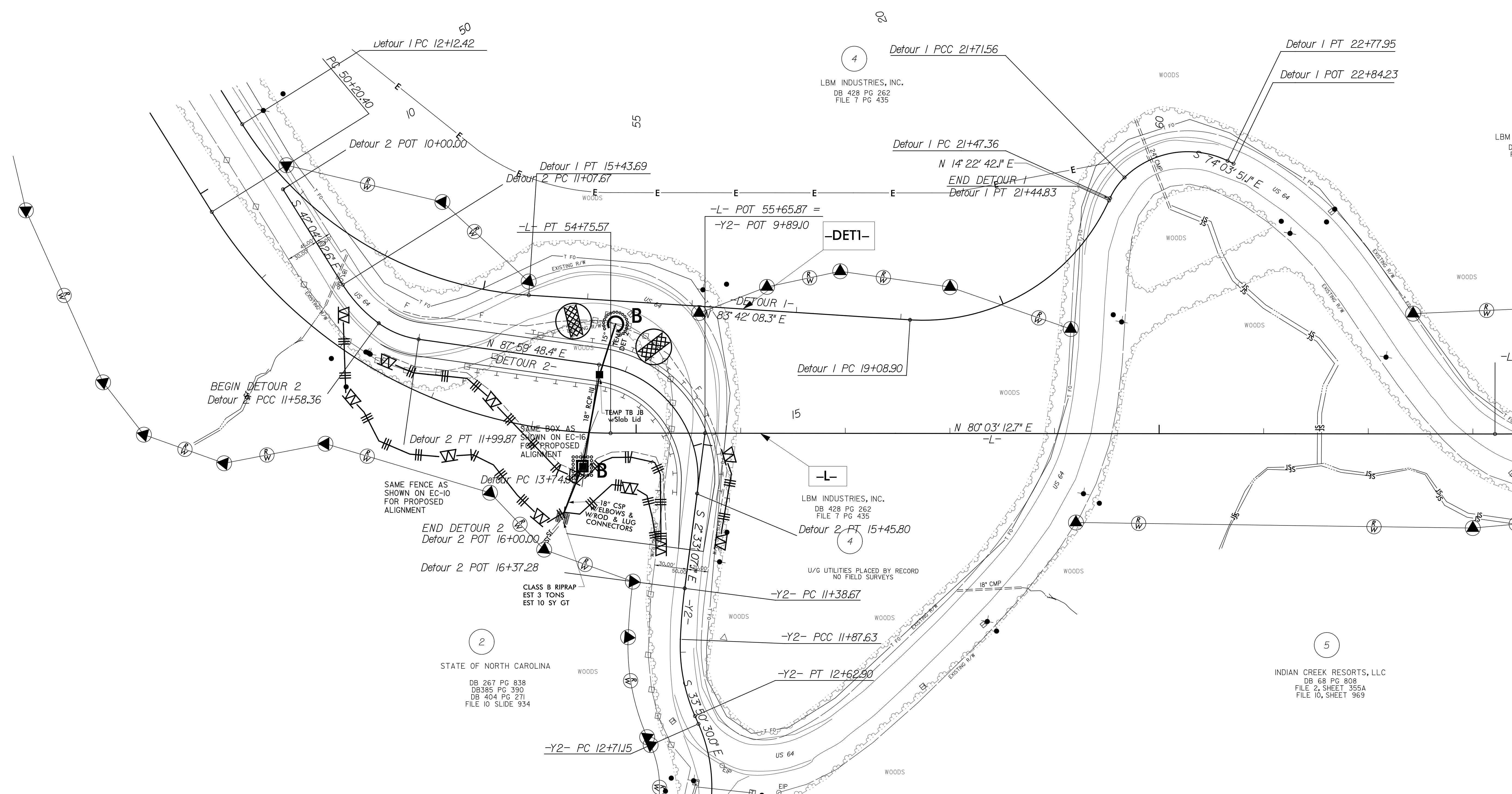
LEVEL III CERTIFIED BY:  
 STACEY H. BAILEY, PE  
 CERTIFICATION NUMBER: 3074  
 ISSUED: JUNE 25, 2014



- NOTE:**  
 PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.
- NOTE:**  
 PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B AND TEMPORARY ROCK SILT CHECKS TYPE - A AT DRAINAGE OUTLETS.
- NOTE:**  
 CONTRACTOR SHALL PROVIDE GROUND COVER ON EXPOSED SLOPES WITHIN 7 CALENDAR DAYS, AFTER ANY PHASE OF GRADING
- NOTE:**  
 ALL EROSION CONTROL DEVICES SHOWN ARE LOCATED WITHIN EXISTING RW OR EASEMENT

CLEARING AND GRUBBING  
 EROSION CONTROL FOR  
 CONSTRUCTION SHEET 2D

REVISIONS



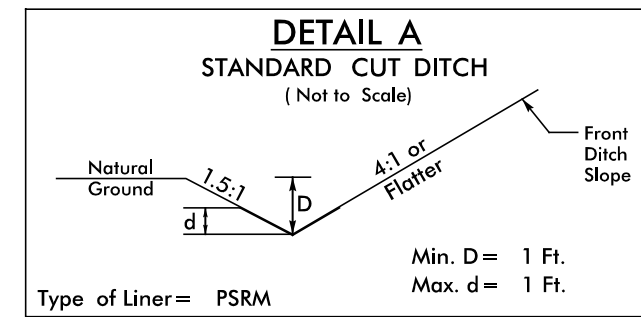
8/17/99  
 6/25/2014  
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 ICA ENGINEERING, INC.

FOR -DETOUR 2- PROFILE SEE SHEET 17

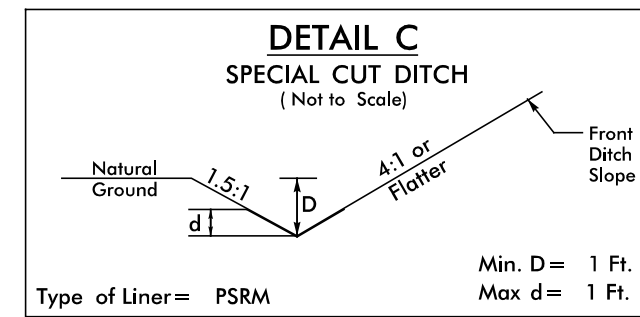
# -DETOUR 1-

PROJECT REFERENCE NO. R-2409C SHEET NO. EC-13/CONST 2E  
 RW SHEET NO.  
 ROADSIDE ENVIRONMENTAL PROJECT ENGINEER

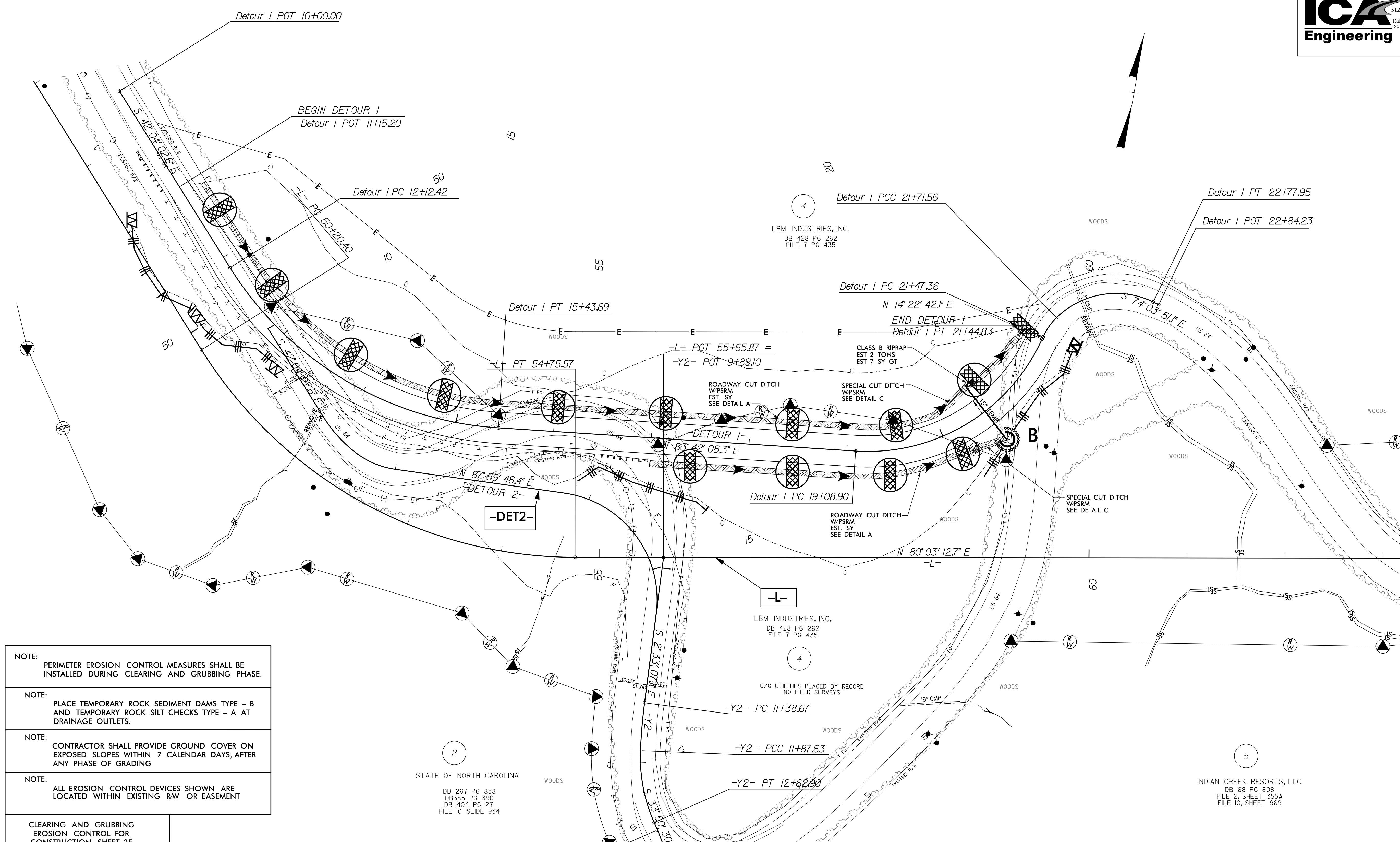
LEVEL III CERTIFIED BY:  
 STACEY H. BAILEY, PE  
 CERTIFICATION NUMBER: 3074  
 ISSUED: JUNE 25, 2014



FROM STA. 11+25 TO STA. 20+00 -DETI- LT  
 FROM STA. 17+00 TO STA. 20+00 -DETI- RT



FROM STA. 20+00 TO STA. 21+50 -DETI- LT  
 FROM STA. 20+00 TO STA. 20+50 -DETI- RT



- NOTE: PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.
- NOTE: PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B AND TEMPORARY ROCK SILT CHECKS TYPE - A AT DRAINAGE OUTLETS.
- NOTE: CONTRACTOR SHALL PROVIDE GROUND COVER ON EXPOSED SLOPES WITHIN 7 CALENDAR DAYS, AFTER ANY PHASE OF GRADING
- NOTE: ALL EROSION CONTROL DEVICES SHOWN ARE LOCATED WITHIN EXISTING RW OR EASEMENT

CLEARING AND GRUBBING  
 EROSION CONTROL FOR  
 CONSTRUCTION SHEET 2E

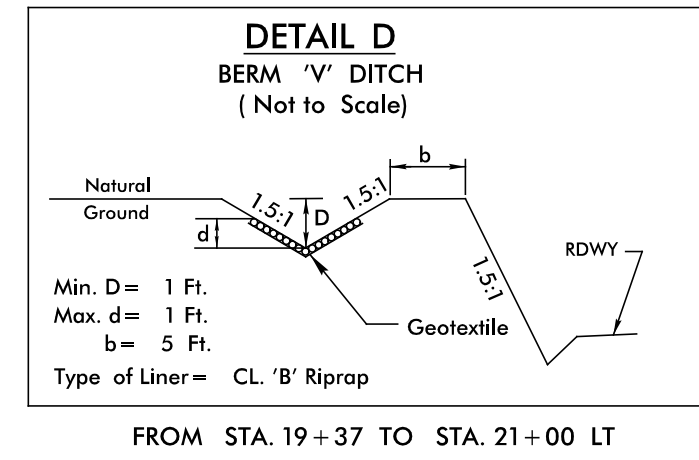
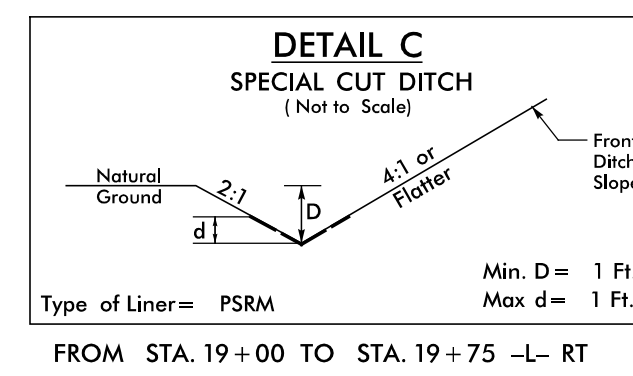
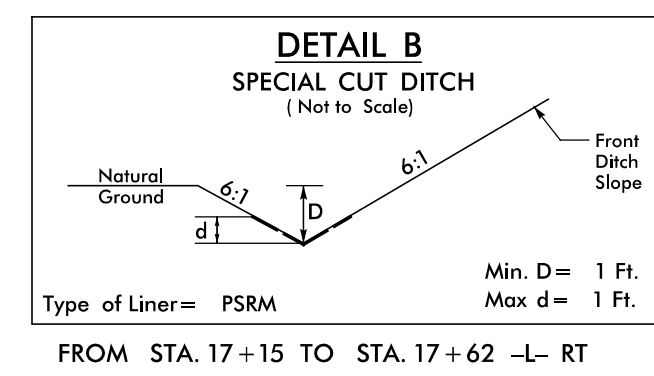
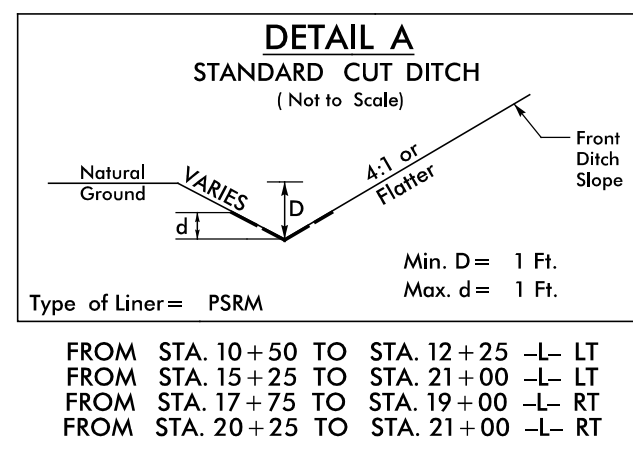
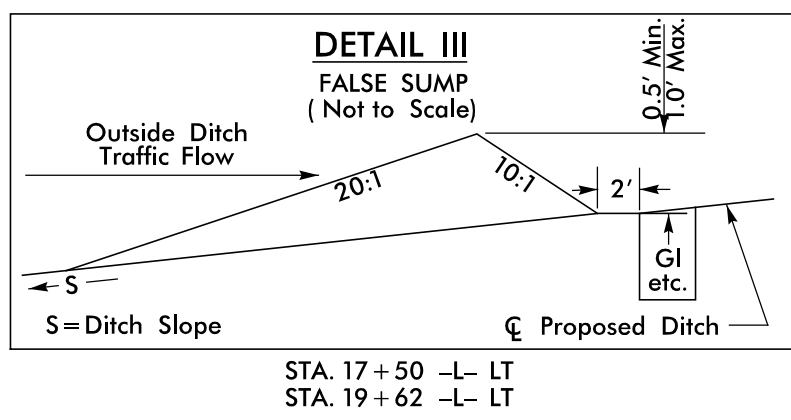
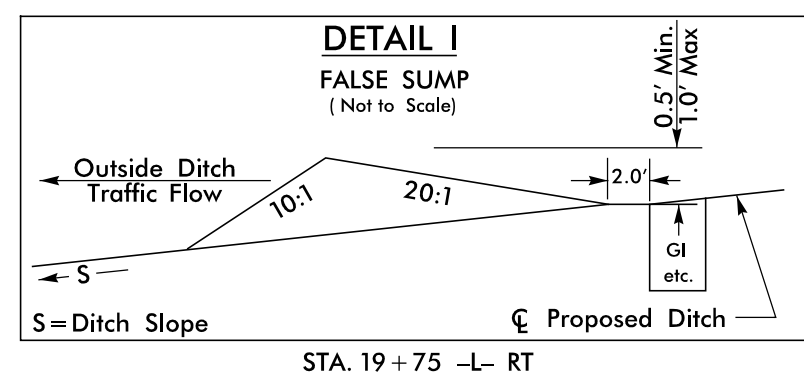
STATE OF NORTH CAROLINA  
 DB 267 PG 838  
 DB385 PG 390  
 DB 404 PG 271  
 FILE 10 SLIDE 934

INDIAN CREEK RESORTS, LLC  
 DB 68 PG 808  
 FILE 2, SHEET 355A  
 FILE 10, SHEET 969

FOR -DETOUR 1- PROFILE SEE SHEET 16

REVISIONS

8/17/99  
 6/25/2014  
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 ICA ENGINEERING, INC.

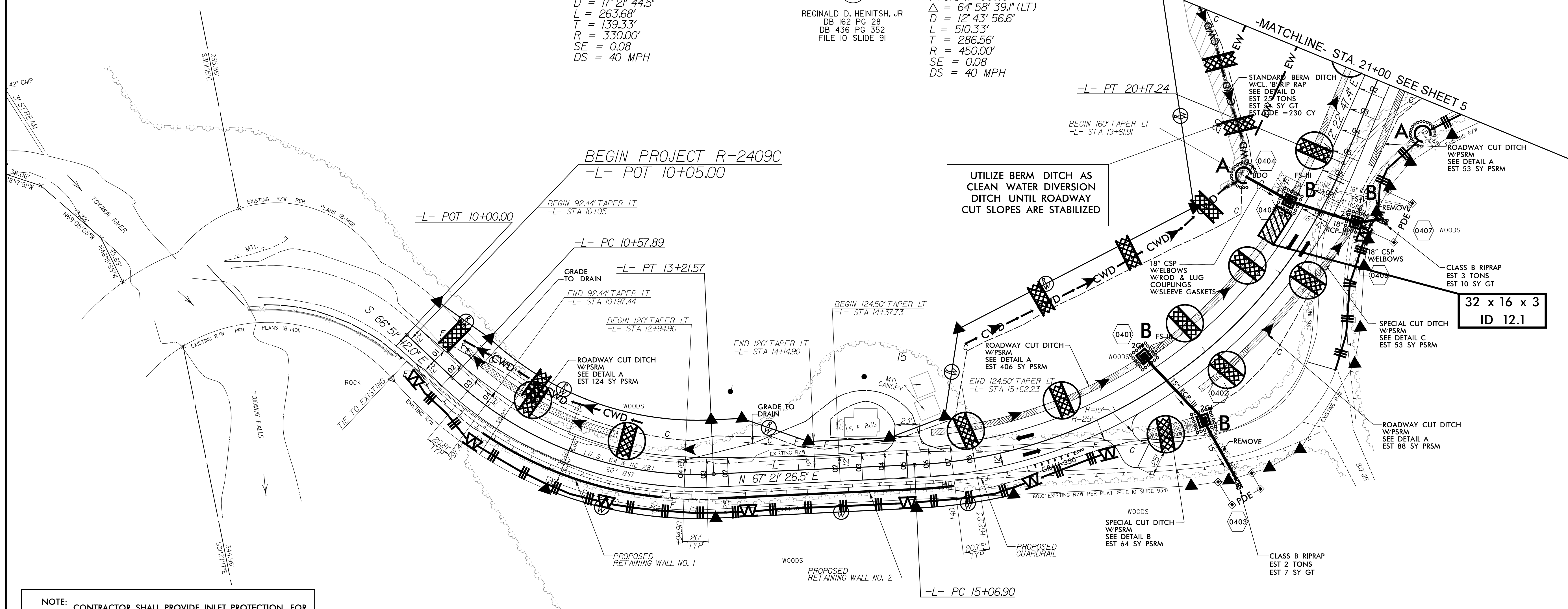


-L-  
 PI Sta 11+97.22  
 $\Delta = 45^\circ 46' 51.5''$  (LT)  
 $D = 17' 21' 44.5''$   
 $L = 263.68'$   
 $T = 139.33'$   
 $R = 330.00'$   
 $SE = 0.08$   
 $DS = 40$  MPH

1  
 REGINALD D. HEINITSH, JR  
 DB 162 PG 28  
 DB 436 PG 352  
 FILE 10 SLIDE 91

-L-  
 PI Sta 17+93.46  
 $\Delta = 64^\circ 58' 39.1''$  (LT)  
 $D = 12' 43' 56.6''$   
 $L = 510.33'$   
 $T = 286.56'$   
 $R = 450.00'$   
 $SE = 0.08$   
 $DS = 40$  MPH

REVISIONS



UTILIZE BERM DITCH AS CLEAN WATER DIVERSION DITCH UNTIL ROADWAY CUT SLOPES ARE STABILIZED

32 x 16 x 3  
 ID 12.1

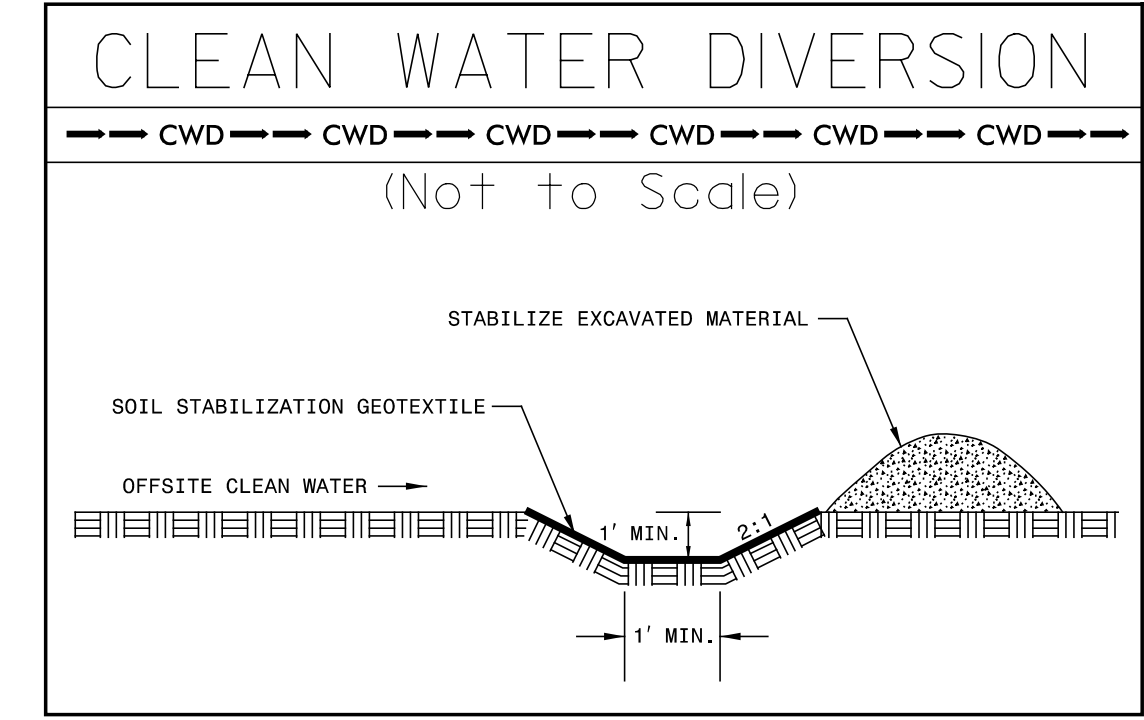
- NOTE: CONTRACTOR SHALL PROVIDE INLET PROTECTION FOR PARTIALLY INSTALLED STORM DRAIN. THIS MEASURE SHOULD BE INSTALLED AT THE END OF EACH WORKING DAY.
- NOTE: CONTRACTOR SHALL MAINTAIN ALL DEVICES AS PROJECT IS BROUGHT UP TO GRADE.
- NOTE: CONTRACTOR SHALL PROVIDE GROUND COVER ON EXPOSED SLOPES WITHIN 7 CALENDAR DAYS, AFTER ANY PHASE OF GRADING.
- NOTE: ALL EROSION CONTROL DEVICES SHOWN ARE LOCATED WITHIN EXISTING RW OR EASEMENT
- NOTE: INSTALL MATTING FOR EROSION CONTROL IN PROPOSED DITCH LINES EXCEPT WHERE PERMANENT LINERS ARE SPECIFIED ON THE PLANS OR DIRECTED OTHERWISE BY THE ENGINEER.

NOTE: INSTALL EROSION CONTROL MATTING ON ALL SLOPES 2:1 OR STEEPER

FINAL EROSION CONTROL FOR CONSTRUCTION SHEET 4

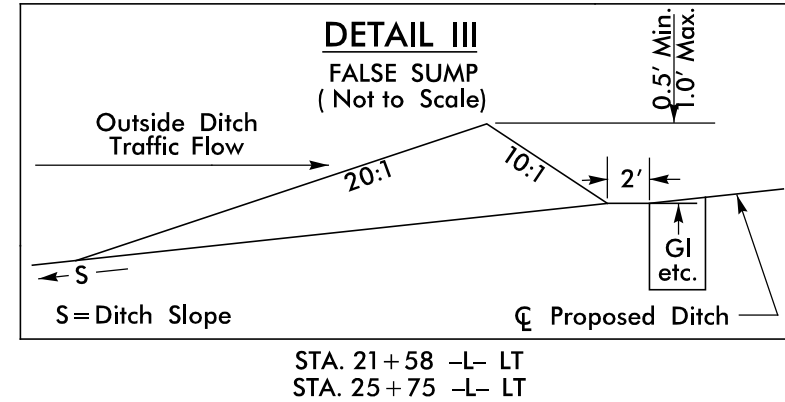
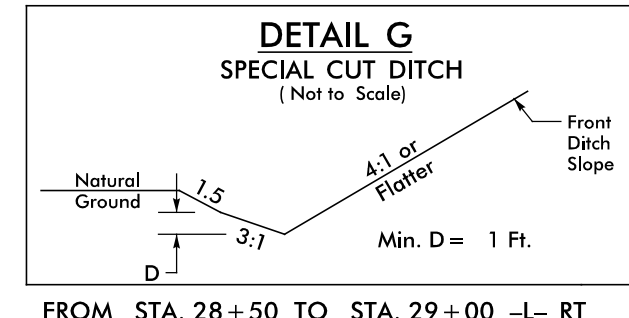
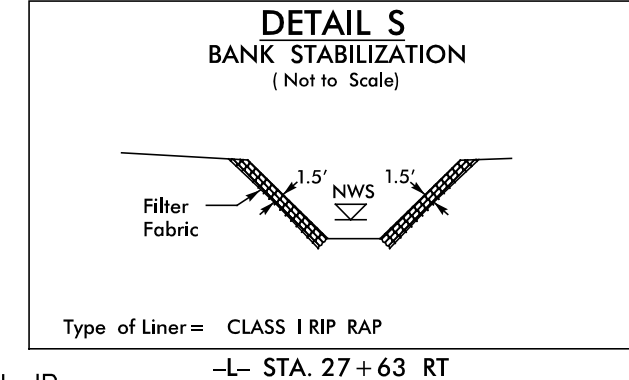
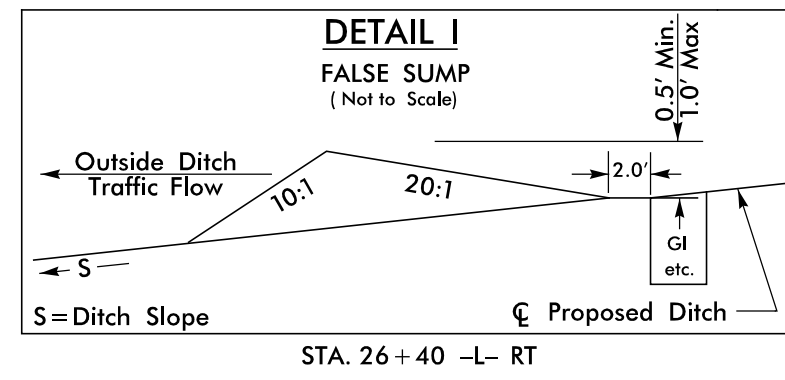
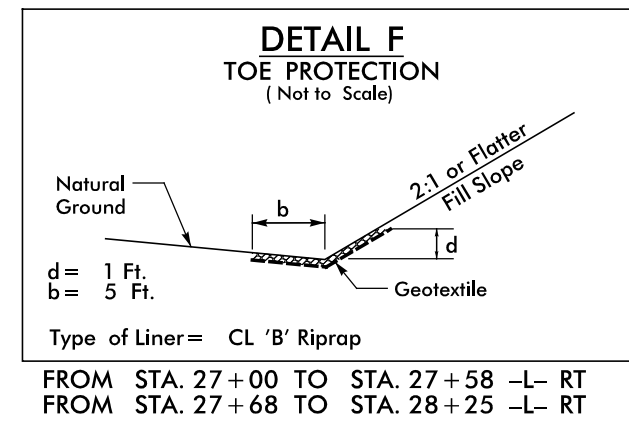
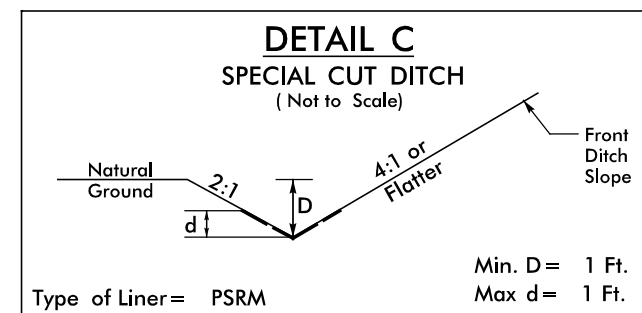
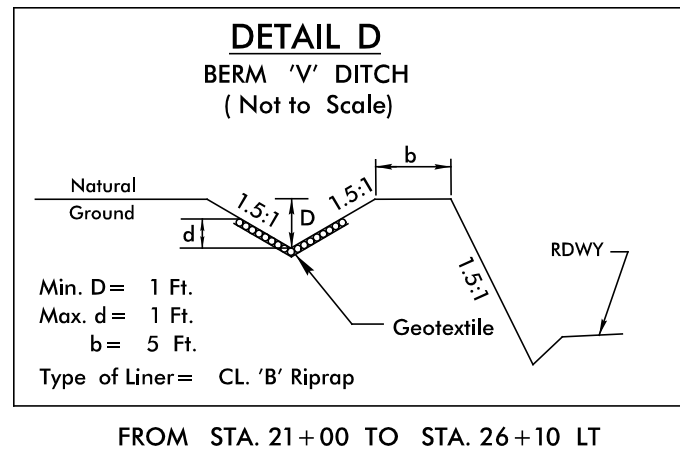
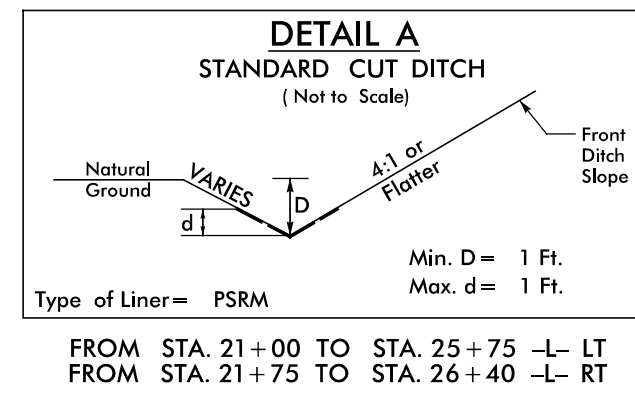
STATE OF NORTH CAROLINA  
 DB 267 PG 838  
 DB385 PG 390  
 DB 404 PG 271  
 FILE 10 SLIDE 934

SHOWN AS N.C. DIVISION OF PARKS AND RECREATION TRACT NO. 18 OF GORGES STATE PARK ON A SURVEY BY E. ROGER RAXTER, PLS RECORDED IN FILE 10, SLIDE 934 TRANSYLVANIA REGISTER OF DEEDS



FOR -L- PROFILE SEE SHEET 10

I:\1\2014\EC-14\Const4\EROSION CONTROL\ecadd\NR2409C\_hyd.f.mal.psh14.dgn  
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 I:\1\2014\EC-14\Const4\EROSION CONTROL\ecadd\NR2409C\_hyd.f.mal.psh14.dgn



- NOTE:** INSTALL EROSION CONTROL MATTING ON ALL SLOPES 2:1 OR STEEPER
- NOTE:** CONTRACTOR SHALL PROVIDE INLET PROTECTION FOR PARTIALLY INSTALLED STORM DRAIN. THIS MEASURE SHOULD BE INSTALLED AT THE END OF EACH WORKING DAY.
- NOTE:** CONTRACTOR SHALL MAINTAIN ALL DEVICES AS PROJECT IS BROUGHT UP TO GRADE.
- NOTE:** CONTRACTOR SHALL PROVIDE GROUND COVER ON EXPOSED SLOPES WITHIN 7 CALENDAR DAYS, AFTER ANY PHASE OF GRADING.
- NOTE:** ALL EROSION CONTROL DEVICES SHOWN ARE LOCATED WITHIN EXISTING RW OR EASEMENT
- NOTE:** INSTALL MATTING FOR EROSION CONTROL IN PROPOSED DITCH LINES EXCEPT WHERE PERMANENT LINERS ARE SPECIFIED ON THE PLANS OR DIRECTED OTHERWISE BY THE ENGINEER.
- FINAL EROSION CONTROL FOR CONSTRUCTION SHEET 5**

UTILIZE BERM DITCH AS CLEAN WATER DIVERSION DITCH UNTIL ROADWAY CUT SLOPES ARE STABILIZED

64 x 32 x 3  
ID 13.1

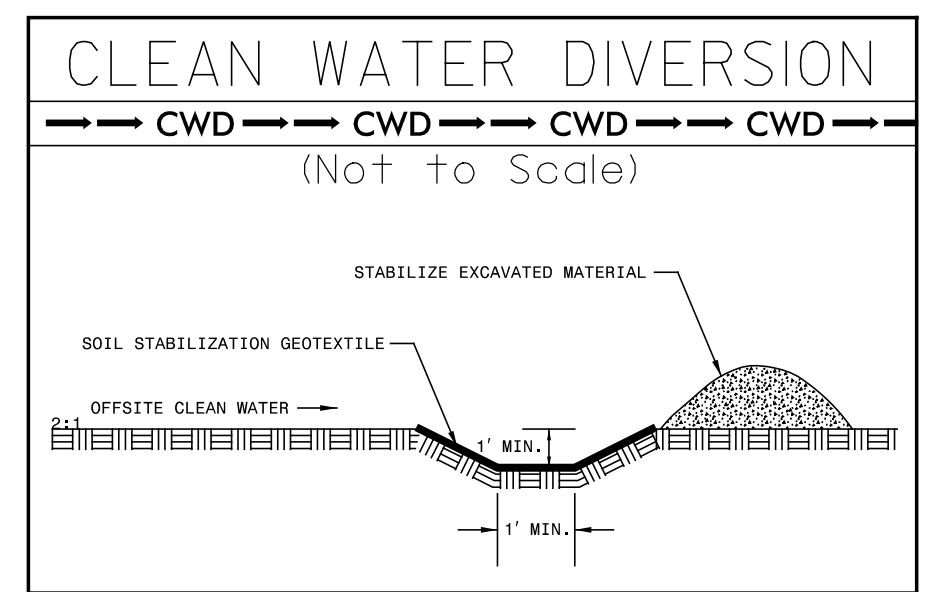
50 x 25 x 3  
ID 13.2

32 x 16 x 3  
ID 13.3

-L-  
PI Sta 41+56.64  
Δ = 152° 04' 39.7" (RT)  
D = 12' 43' 56.6"  
L = 1,194.42'  
T = 1,810.08'  
R = 450.00'  
SE = 0.08  
DS = 40 MPH

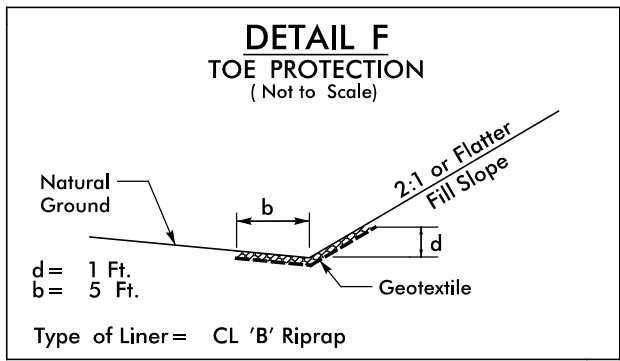
STATE OF NORTH CAROLINA  
DB 267 PG 838  
DB385 PG 390  
DB 404 PG 271  
FILE 10 SLIDE 934

SHOWN AS N.C. DIVISION OF PARKS AND RECREATION  
TRACT NO. 18 OF  
GORGE STATE PARK  
ON A SURVEY BY E. ROGER RAXTER, PLS. RECORDED IN  
TRANSYLVANIA REGISTER OF 17

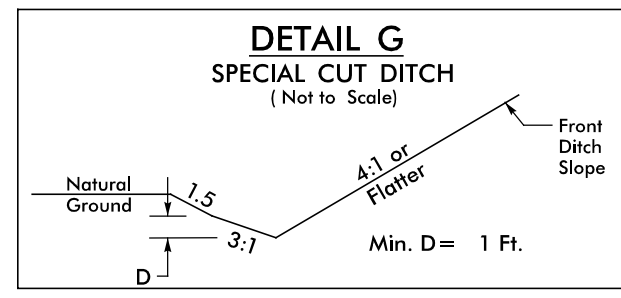


REVISIONS

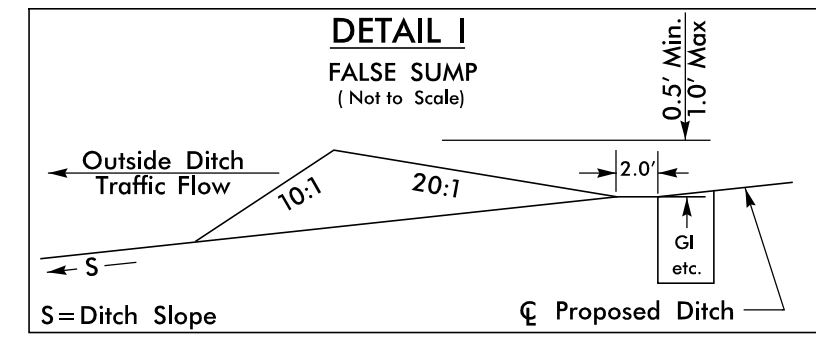
8/17/99  
10/1/2015  
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f.nal.psh15.dgn  
K. R. Associates, P.C.



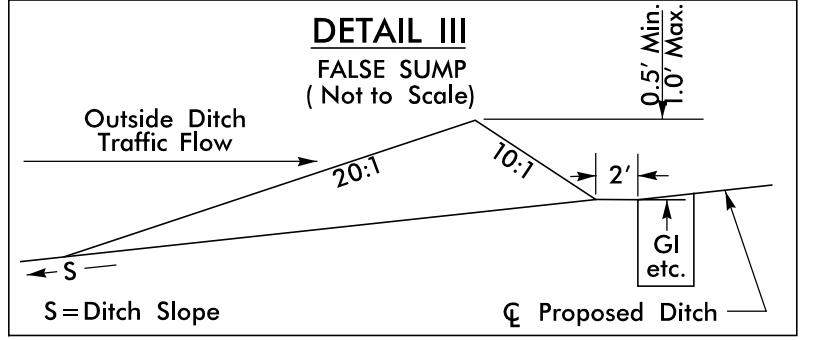
FROM STA. 32+00 TO STA. 32+38 -L- LT  
 FROM STA. 32+43 TO STA. 32+75 -L- LT  
 FROM STA. 41+00 TO STA. 42+50 -L- RT  
 FROM STA. 41+50 TO STA. 42+50 -L- LT



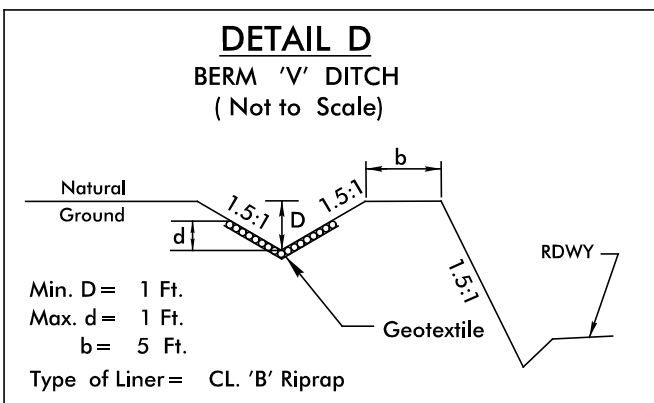
FROM STA. 40+00 TO STA. 41+34 -L- LT



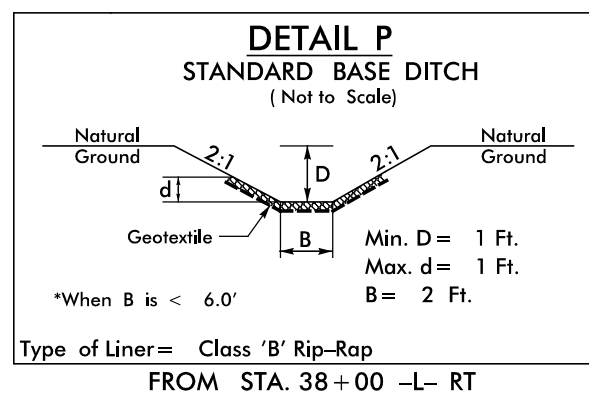
STA. 31+25 -L- RT  
 STA. 37+80 -L- LT



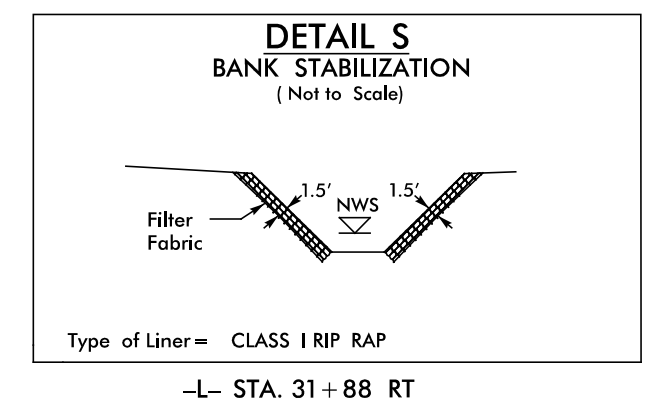
STA. 31+75 -L- LT  
 STA. 33+25 -L- RT  
 STA. 37+85 -L- LT



FROM STA. 37+50 TO STA. 38+00 LT



FROM STA. 38+00 -L- RT



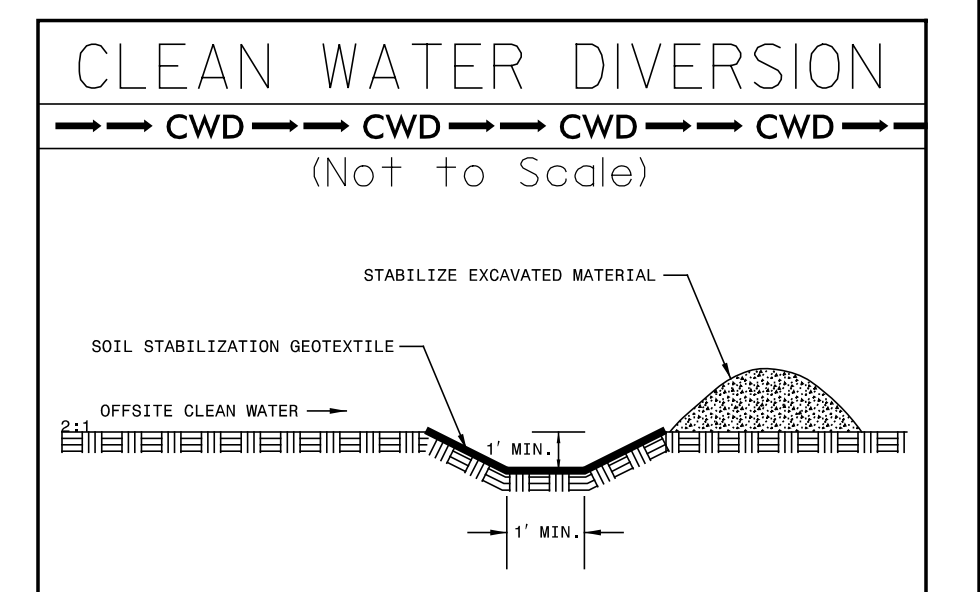
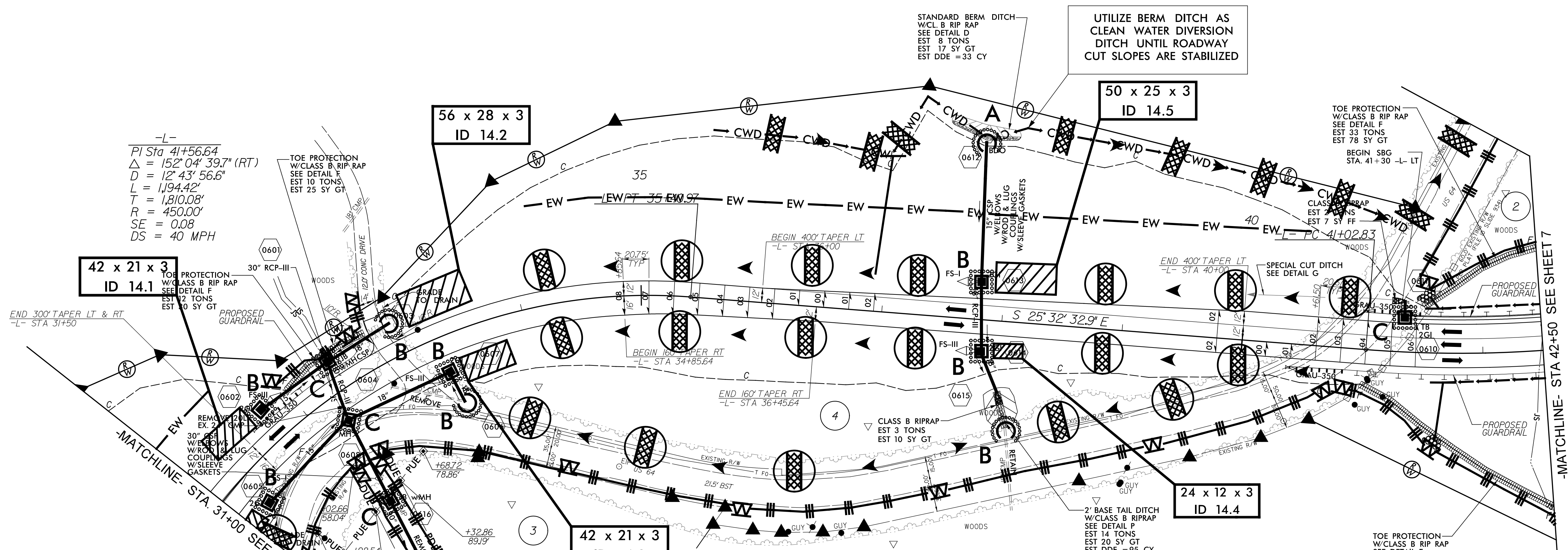
-L- STA. 31+88 RT

-L-  
 PI Sta 42+47.38  
 $\Delta = 16' 27'' 00.6'' (LT)$   
 $D = 5' 43'' 46.5''$   
 $L = 287.1'$   
 $T = 144.55'$   
 $R = 1,000.00'$   
 $SE = 0.06$   
 $DS = 40 MPH$

LBM INDUSTRIES, INC.  
 DB 428 PG 262  
 FILE 7 PG 435

- NOTE: CONTRACTOR SHALL PROVIDE INLET PROTECTION FOR PARTIALLY INSTALLED STORM DRAIN. THIS MEASURE SHOULD BE INSTALLED AT THE END OF EACH WORKING DAY.
- NOTE: CONTRACTOR SHALL MAINTAIN ALL DEVICES AS PROJECT IS BROUGHT UP TO GRADE.
- NOTE: CONTRACTOR SHALL PROVIDE GROUND COVER ON EXPOSED SLOPES WITHIN 7 CALENDAR DAYS, AFTER ANY PHASE OF GRADING.
- NOTE: ALL EROSION CONTROL DEVICES SHOWN ARE LOCATED WITHIN EXISTING RW OR EASEMENT
- NOTE: INSTALL MATTING FOR EROSION CONTROL IN PROPOSED DITCH LINES EXCEPT WHERE PERMANENT LINERS ARE SPECIFIED ON THE PLANS OR DIRECTED OTHERWISE BY THE ENGINEER.
- FINAL EROSION CONTROL FOR CONSTRUCTION SHEET 6

NOTE: INSTALL EROSION CONTROL MATTING ON ALL SLOPES 2:1 OR STEEPER



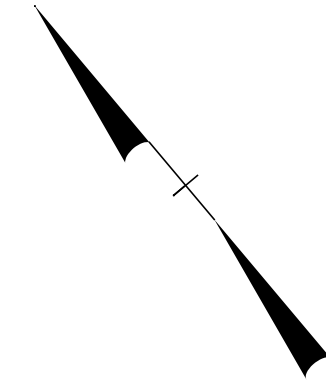
FOR -L- PROFILE SEE SHEET 12

STATE OF NORTH CAROLINA  
 DB 267 PG 838  
 DB385 PG. 390  
 DB 404 PG 271  
 FILE 10 SLIDE 934  
 SHOWN AS N.C. DIVISION OF PARKS AND RECREATION  
 TRACT NO. 18 OF  
 GORGES STATE PARK  
 ON A SURVEY BY E. ROGER RAXTER, PLS. RECORDED IN FILE 10, SLIDE 934  
 TRANSYLVANIA REGISTER OF DEEDS

REVISIONS

8/17/99  
 10/1/2015  
 R:\H\calcur's\Er\osign\_Contr\1\cadd\NR2409C\_hyd\_f.nal\_psh16.dgn  
 K. & Associates, P.C.

-L-  
 PI Sta 42+47.38  
 $\Delta = 16' 27'' 00.6''$  (LT)  
 $D = 5' 43'' 46.5''$   
 $L = 287.11'$   
 $T = 144.55'$   
 $R = 1,000.00'$   
 $SE = 0.06$   
 $DS = 40$  MPH



NOTE: INSTALL EROSION CONTROL MATTING ON ALL SLOPES 2:1 OR STEEPER

NOTE: CONTRACTOR SHALL PROVIDE INLET PROTECTION FOR PARTIALLY INSTALLED STORM DRAIN. THIS MEASURE SHOULD BE INSTALLED AT THE END OF EACH WORKING DAY.

NOTE: CONTRACTOR SHALL MAINTAIN ALL DEVICES AS PROJECT IS BROUGHT UP TO GRADE.

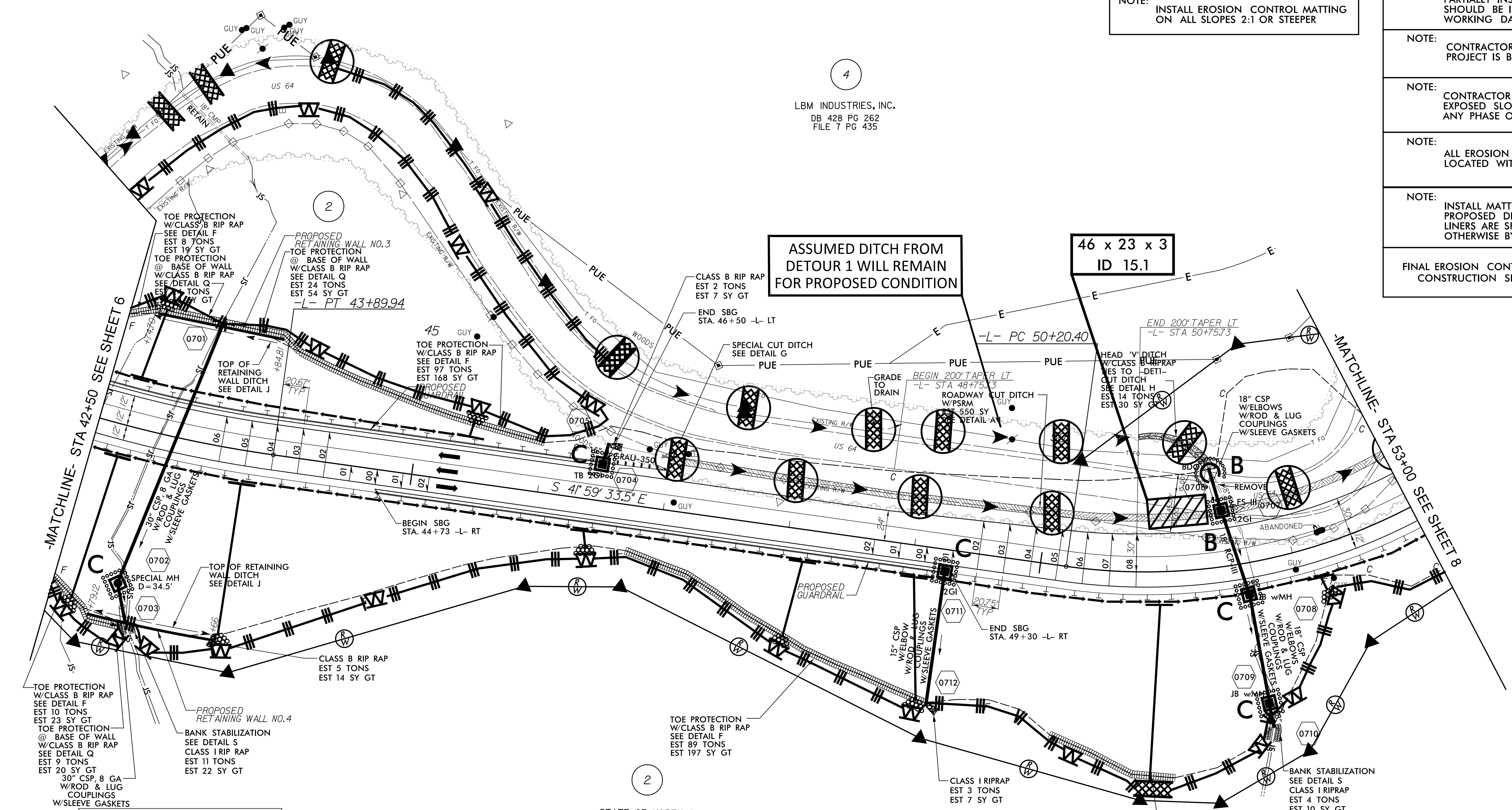
NOTE: CONTRACTOR SHALL PROVIDE GROUND COVER ON EXPOSED SLOPES WITHIN 7 CALENDAR DAYS, AFTER ANY PHASE OF GRADING.

NOTE: ALL EROSION CONTROL DEVICES SHOWN ARE LOCATED WITHIN EXISTING RW OR EASEMENT

NOTE: INSTALL MATTING FOR EROSION CONTROL IN PROPOSED DITCH LINES EXCEPT WHERE PERMANENT LINERS ARE SPECIFIED ON THE PLANS OR DIRECTED OTHERWISE BY THE ENGINEER.

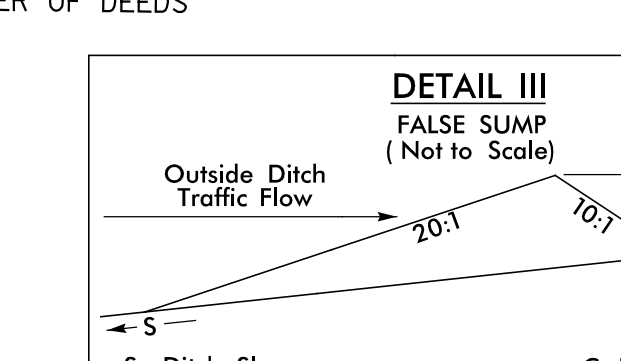
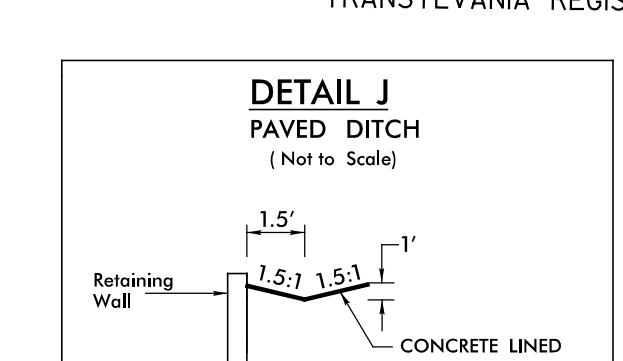
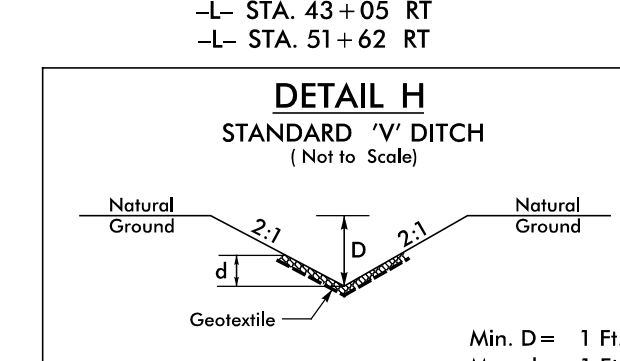
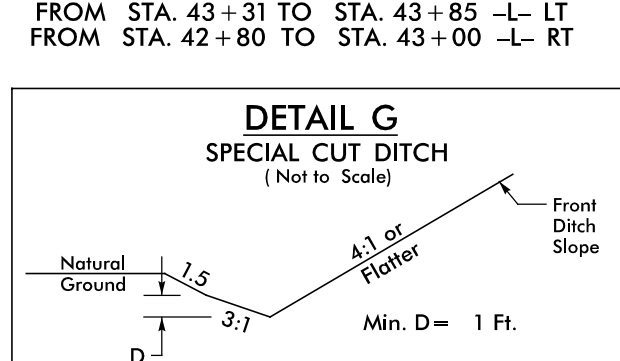
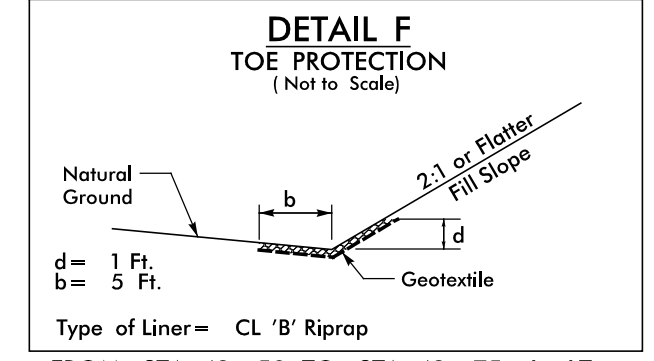
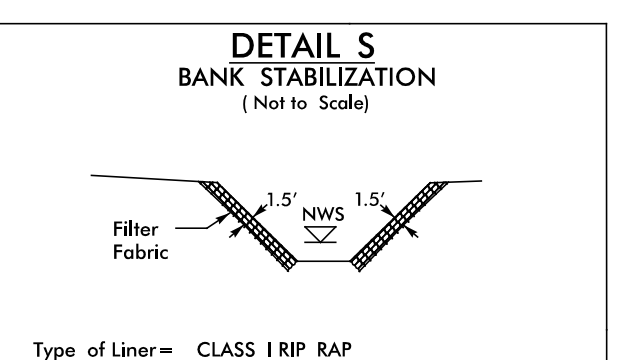
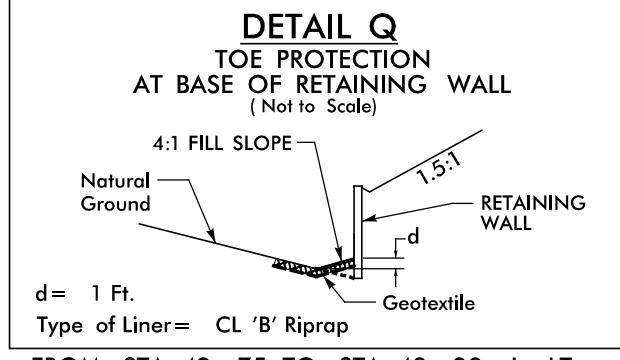
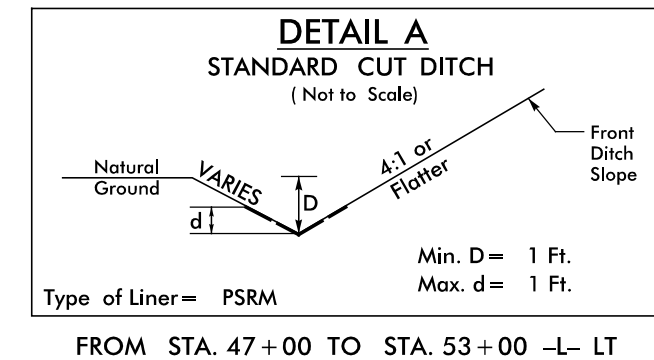
FINAL EROSION CONTROL FOR CONSTRUCTION SHEET 7

REVISIONS  
 8/17/99  
 10/1/2014  
 R:\Projects\2014\2409C\Control\cadd\NR2409C\_hyd\_f.mxd.psh17.dgn  
 K. & Associates, P.C.



ASSUMED DITCH FROM DETOUR 1 WILL REMAIN FOR PROPOSED CONDITION

46 x 23 x 3  
 ID 15.1



STATE OF NORTH CAROLINA  
 DB 267 PG 838  
 DB385 PG 390  
 DB 404 PG 271  
 FILE 10 SLIDE 934

SHOWN AS N.C. DIVISION OF PARKS AND RECREATION TRACT NO. 18 OF GORGES STATE PARK ON A SURVEY BY E. ROGER RAXTER, PLS RECORDED IN FILE 10, SLIDE 934 TRANSYLVANIA REGISTER OF DEEDS

-L-  
 PI Sta 52+69.61  
 $\Delta = 57' 57'' 13.8''$  (LT)  
 $D = 12' 43'' 56.6''$   
 $L = 455.17'$   
 $T = 249.20'$   
 $R = 450.00'$   
 $SE = 0.08$   
 $DS = 40$  MPH

FOR -L- PROFILE SEE SHEET 13

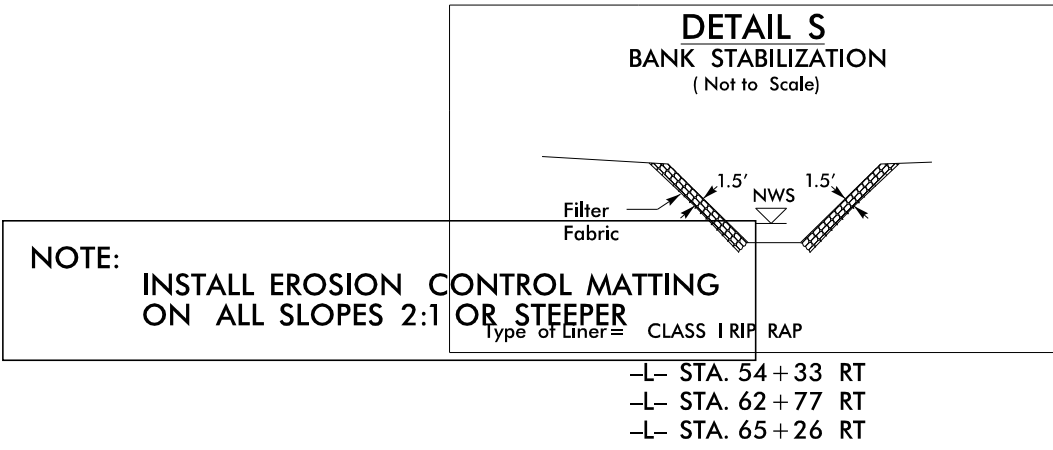
NOTE: CONTRACTOR SHALL PROVIDE INLET PROTECTION FOR PARTIALLY INSTALLED STORM DRAIN. THIS MEASURE SHOULD BE INSTALLED AT THE END OF EACH WORKING DAY.

NOTE: CONTRACTOR SHALL MAINTAIN ALL DEVICES AS PROJECT IS BROUGHT UP TO GRADE.

NOTE: CONTRACTOR SHALL PROVIDE GROUND COVER ON EXPOSED SLOPES WITHIN 7 CALENDAR DAYS, AFTER ANY PHASE OF GRADING.

NOTE: ALL EROSION CONTROL DEVICES SHOWN ARE LOCATED WITHIN EXISTING RW OR EASEMENT

NOTE: INSTALL MATTING FOR EROSION CONTROL IN PROPOSED DITCH LINES EXCEPT WHERE PERMANENT LINERS ARE SPECIFIED ON THE PLANS OR DIRECTED OTHERWISE BY THE ENGINEER.

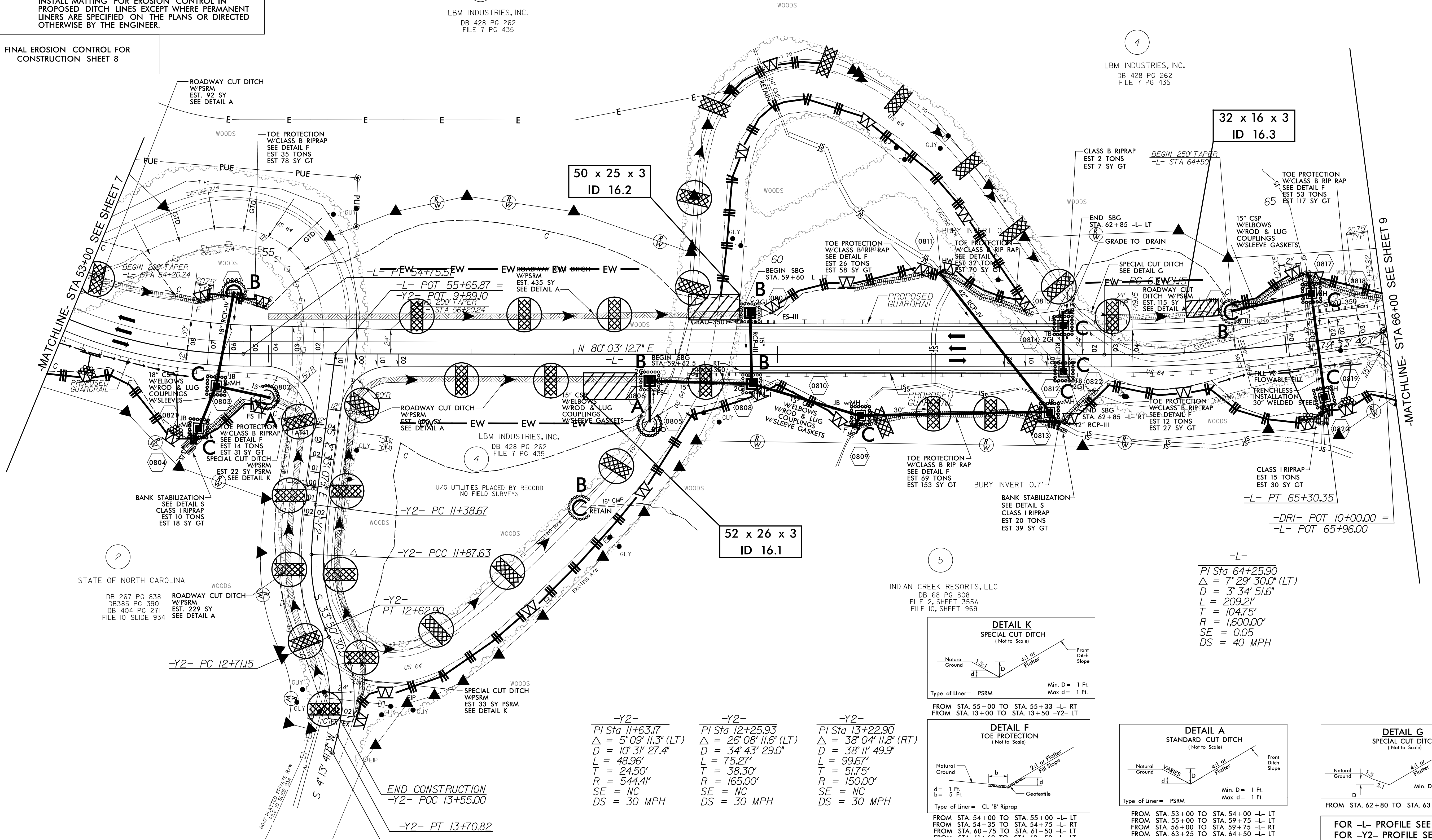


FINAL EROSION CONTROL FOR CONSTRUCTION SHEET 8

REVISIONS

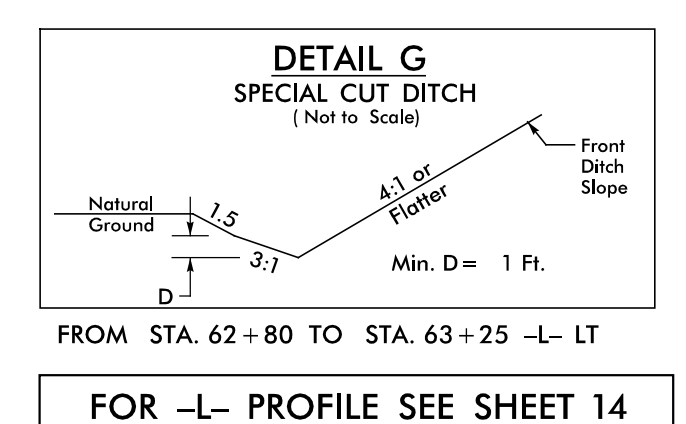
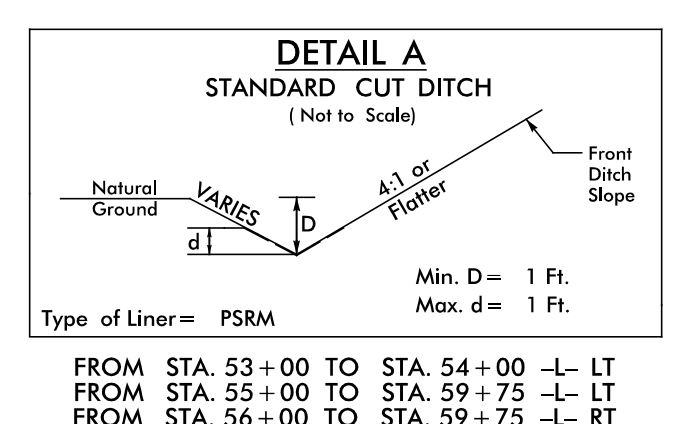
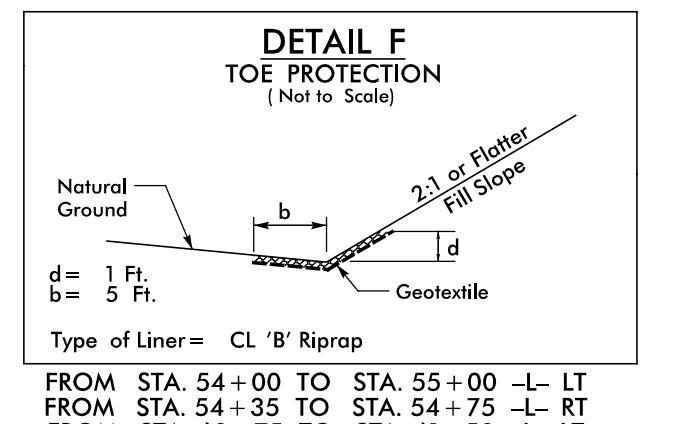
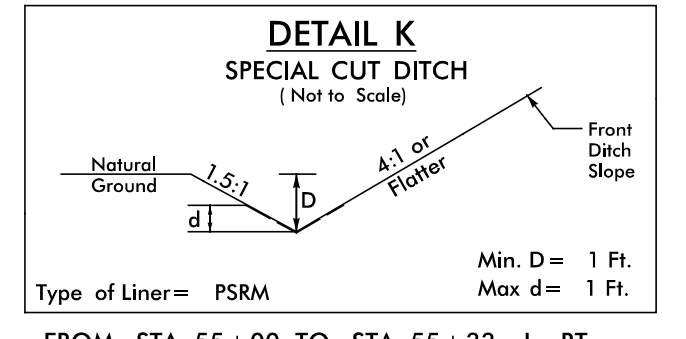
8/17/99

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STATE OF NORTH CAROLINA  
 DB 267 PG 838 ROADWAY CUT DITCH  
 DB 385 PG 390 W/PSRM  
 DB 404 PG 271 EST. 229 SY  
 FILE 10 SLIDE 934 SEE DETAIL A

-Y2- PI Sta 11+63.17 $\Delta = 5'09'' 11.3''$ (LT) D = 10'31' 27.4" L = 48.96' T = 24.50' R = 544.41' SE = NC DS = 30 MPH	-Y2- PI Sta 12+25.93 $\Delta = 26'08'' 11.6''$ (LT) D = 34'43' 29.0" L = 75.27' T = 38.30' R = 165.00' SE = NC DS = 30 MPH	-Y2- PI Sta 13+22.90 $\Delta = 38'04'' 11.8''$ (RT) D = 38'11' 49.9" L = 99.67' T = 51.75' R = 150.00' SE = NC DS = 30 MPH
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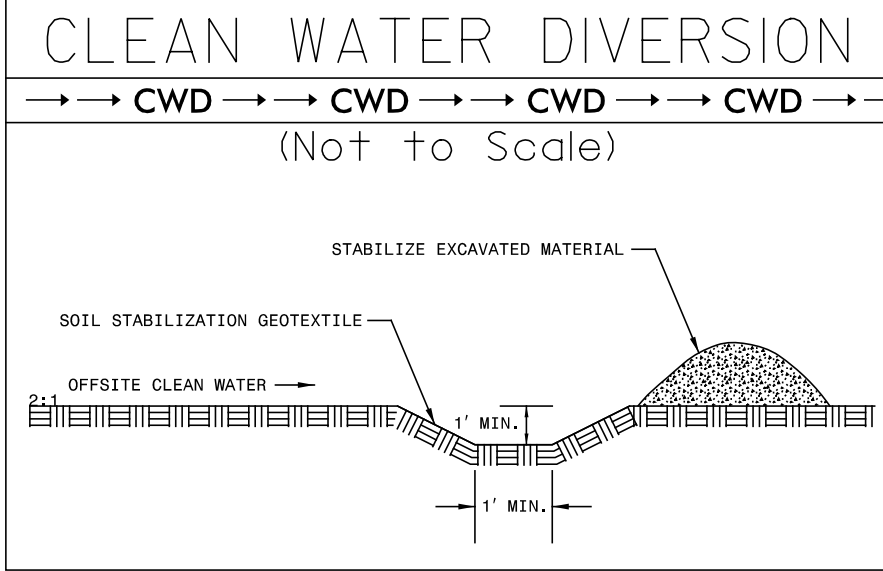
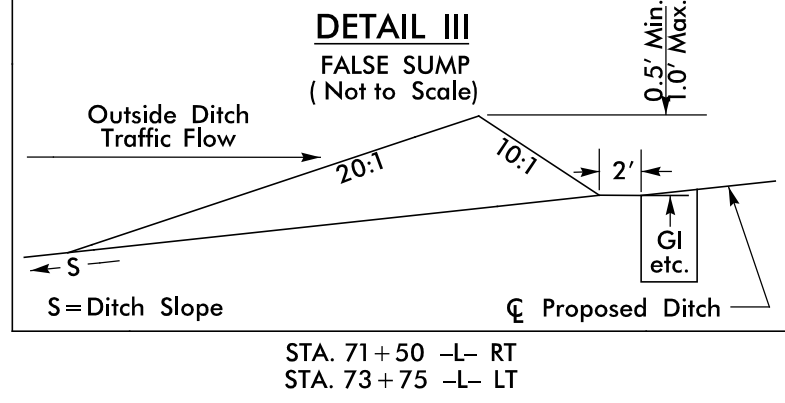
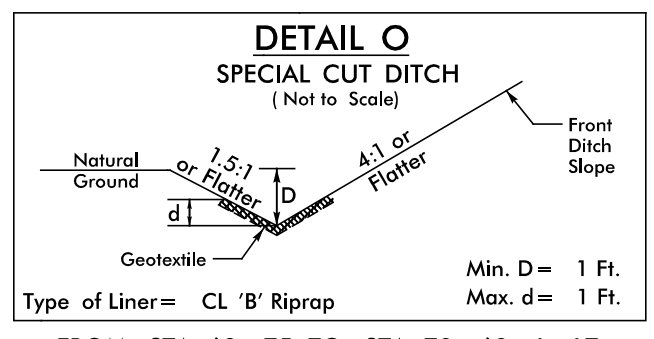
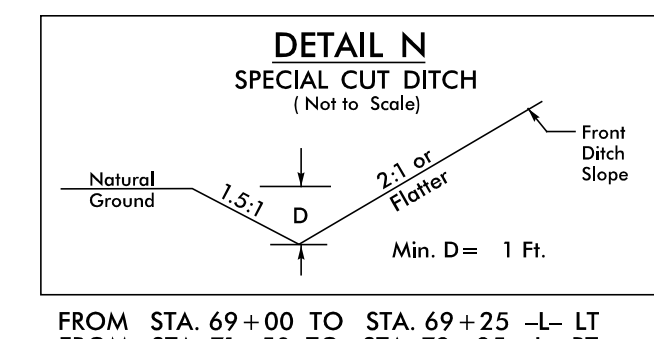
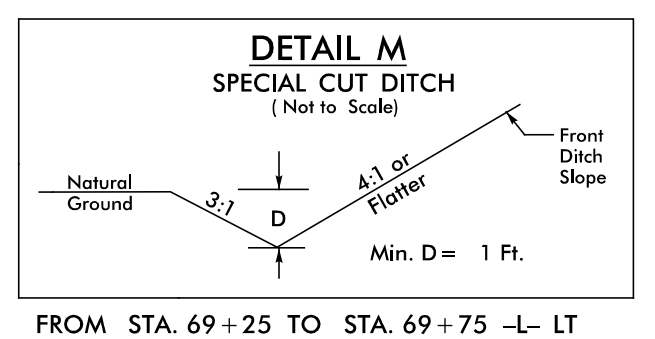
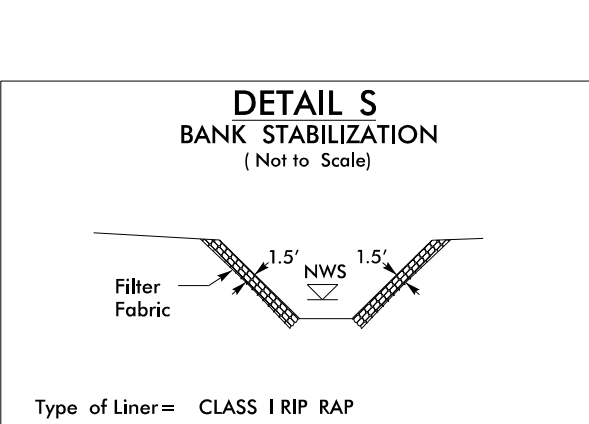
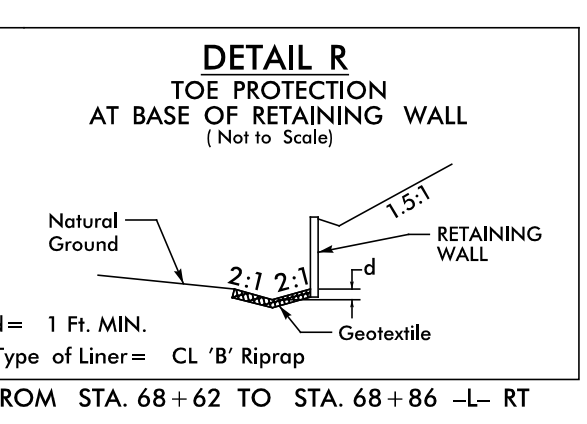
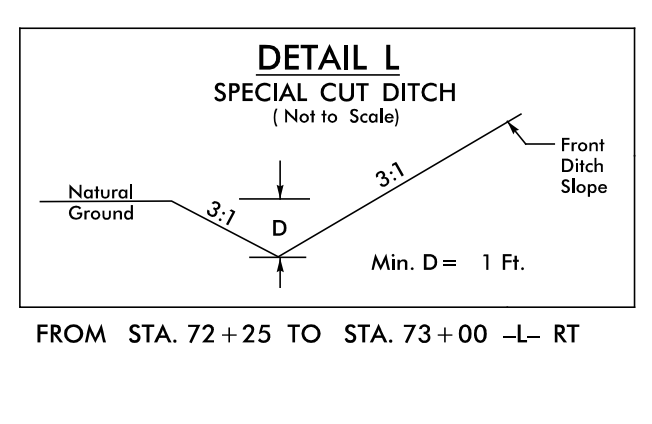
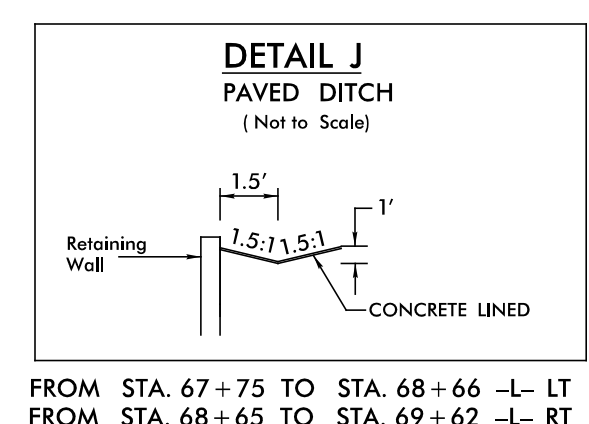
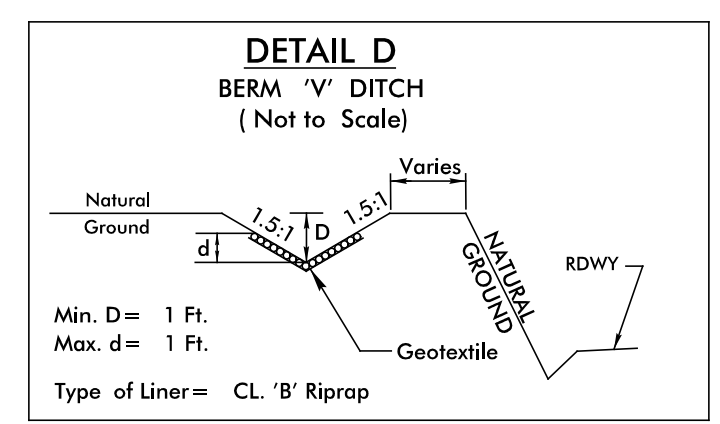
-L-  
 PI Sta 64+25.90  
 $\Delta = 7'29'' 30.0''$  (LT)  
 D = 3'34' 51.6"  
 L = 209.21'  
 T = 104.75'  
 R = 1,600.00'  
 SE = 0.05  
 DS = 40 MPH

FOR -L- PROFILE SEE SHEET 14  
 FOR -Y2- PROFILE SEE SHEET 15

8/17/99



PROJECT REFERENCE NO.	SHEET NO.
R-2409C	EC-19/CONST 9
RW SHEET NO.	
ROADSIDE ENVIRONMENTAL PROJECT ENGINEER	
LEVEL III CERTIFIED BY: STACEY H. BAILEY, PE CERTIFICATION NUMBER: 3074 ISSUED: APRIL 8, 2015	



-L-  
PI Sta 67+91.46  
Δ = 58° 54' 09.1" (LT)  
D = 19° 05' 54.9"  
L = 308.41'  
T = 169.40'  
R = 300.00'  
SE = 0.08  
DS = 30 MPH

-L-  
PI Sta 70+73.68  
Δ = 26° 25' 24.1" (RT)  
D = 12° 43' 56.6"  
L = 207.53'  
T = 105.64'  
R = 450.00'  
SE = 0.08  
DS = 40 MPH

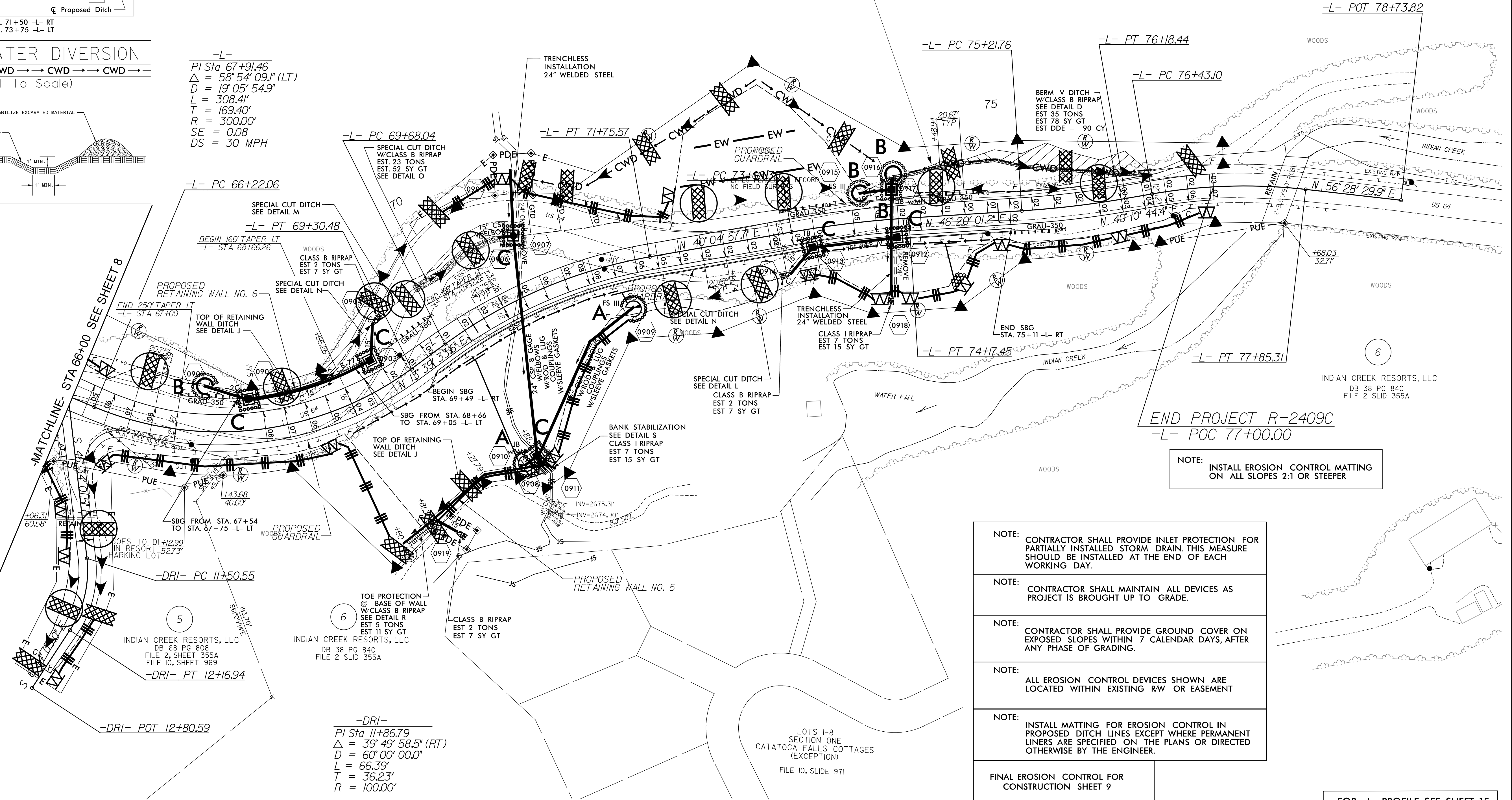
-L-  
PI Sta 73+62.95  
Δ = 6° 15' 03.5" (RT)  
D = 5° 43' 46.5"  
L = 109.10'  
T = 54.60'  
R = 1,000.00'  
SE = 0.06  
DS = 40 MPH

-L-  
PI Sta 75+70.15  
Δ = 6° 09' 16.9" (LT)  
D = 6° 21' 58.3"  
L = 96.68'  
T = 48.39'  
R = 900.00'  
SE = 0.06  
DS = 40 MPH

-L-  
PI Sta 77+4.69  
Δ = 16° 17' 45.5" (RT)  
D = 11° 27' 33.0"  
L = 142.21'  
T = 71.59'  
R = 500.00'  
SE = 0.08  
DS = 40 MPH

4  
LBM INDUSTRIES, INC.  
DB 428 PG 262  
FILE 7 PG 435

UTILIZE BERM DITCH AS  
CLEAN WATER DIVERSION  
DITCH UNTIL ROADWAY  
CUT SLOPES ARE STABILIZED



END PROJECT R-2409C  
-L- POC 77+00.00

NOTE:  
INSTALL EROSION CONTROL MATTING  
ON ALL SLOPES 2:1 OR STEEPER

- NOTE: CONTRACTOR SHALL PROVIDE INLET PROTECTION FOR PARTIALLY INSTALLED STORM DRAIN. THIS MEASURE SHOULD BE INSTALLED AT THE END OF EACH WORKING DAY.
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FINAL EROSION CONTROL FOR  
CONSTRUCTION SHEET 9

FOR -L- PROFILE SEE SHEET 15

REVISIONS

10/1/2015  
R:\Hcd\california\Erosion Control\ecoad\NR2409C\_hyd\_f.nal\_psh19.dgn  
K. R. Associates, P.C.