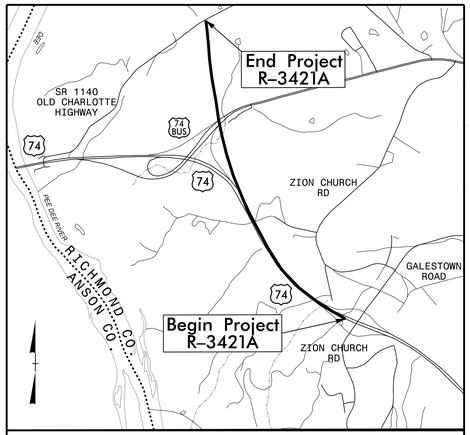
09/08/99

TIP PROJECT: R-3421A

CONTRACT: C204368

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

RICHMOND COUNTY

LOCATION: US I-73/74 BYPASS FROM US 74 BYPASS WEST OF ROCKINGHAM AT SR 1109 (ZION CHURCH RD.) INTERCHANGE TO 0.3 MILES SOUTH OF SR 1140 (OLD CHARLOTTE HWY.)

TYPE OF WORK: GRADING, DRAINAGE, PAVING, SIGNING, STRUCTURES, CULVERT, & RETAINING WALLS

Matting For Erosion Control

NAD 83/95

THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-3421A	EC-1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34542.1.FR4	HPPF-0220(75)	P.E.
34542.2.4	HPPF-0220(30)	RW, UTIL.
34542.3.FS4	HPPF-0220(30)	P.E.
34542.3.6	HPPF-0220(30)	CONST.

EROSION AND SEDIMENT CONTROL MEASURES

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

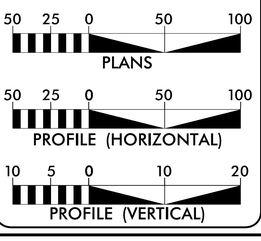
THIS PROJECT CONTAINS EROSION CONTROL PLANS FOR CLEARING AND GRUBBING PHASE OF CONSTRUCTION.

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.

GRAPHIC SCALES



THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE APRIL 1, 2019 ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES DIVISION OF WATER QUALITY.

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-3421A = 1.707 miles
LENGTH STRUCTURES TIP PROJECT R-3421A = 0.073 miles
TOTAL LENGTH OF TIP PROJECT R-3421A = 1.780 miles

(SB LANES WERE USED FOR LENGTH OF PROJECT)

Reviewed In the Office of:

ROADSIDE ENVIRONMENTAL UNIT

1 South Wilmington St.
Raleigh, NC 27611

Prepared In the Office of:

RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE, SUITE 350
RALEIGH, NORTH CAROLINA 27609
NC LICENSE NO. F-0112

FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JUNE 20, 2008

LETTING DATE: OCTOBER 15, 2019

MICHAEL T. MERRITT, PE
PROJECT ENGINEER
RK&K, LLP

SCOTT BLEVINS, P.E.
PROJECT DESIGN ENGINEER
RK&K, LLP

ROBERT B. HUSKEY, PE
EROSION CONTROL DESIGN ENGINEER NO.4943
RK&K, LLP

NCDOT CONTACT: GREGORY S. DAVIS, P.E.
DIVISION 8 PROJECT ENGINEER

Roadway Standard Drawings

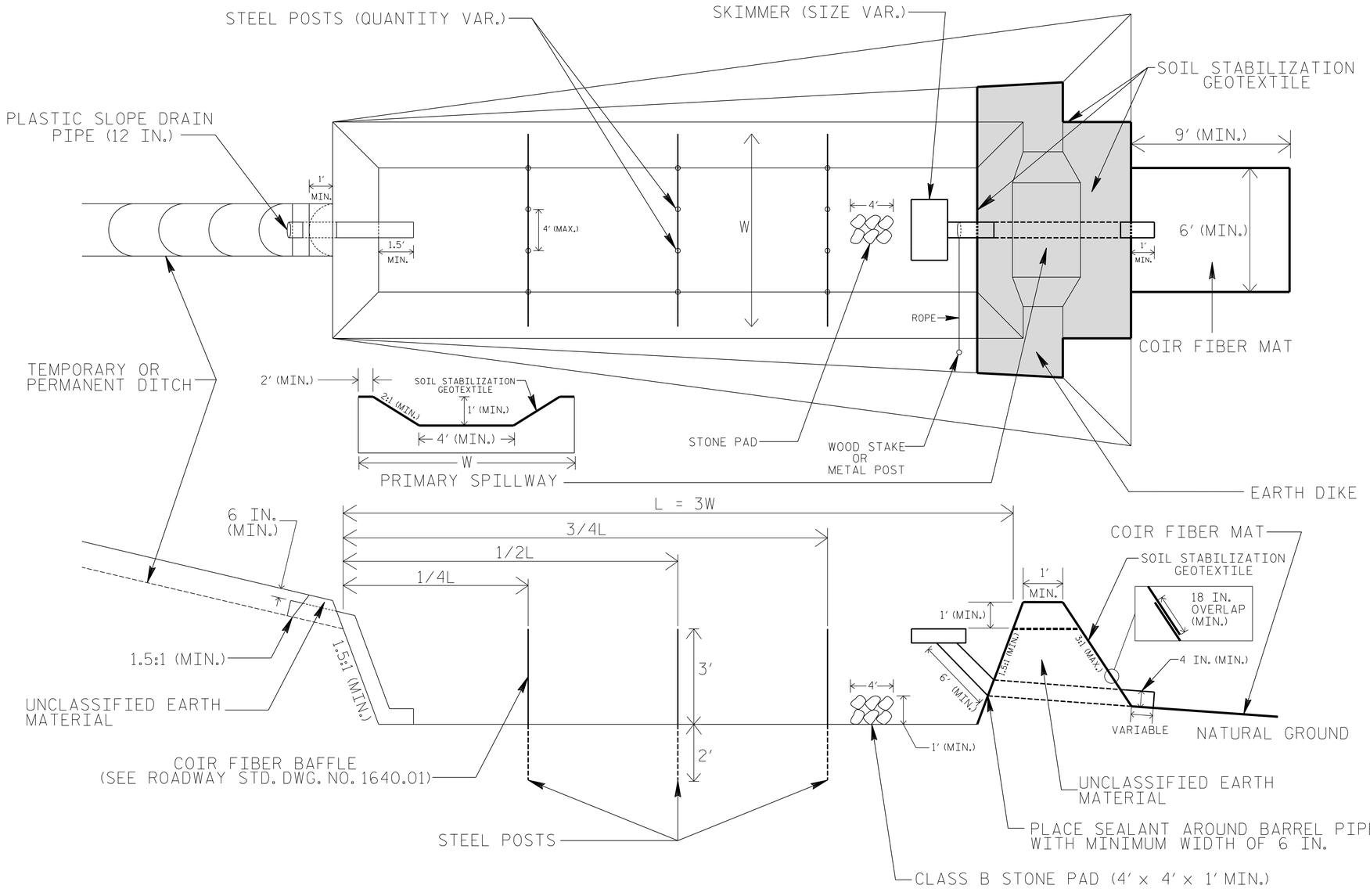
The following roadway english standards as appear in "Roadway Standard Drawings"- Roadway Design Unit - N. C. Department of Transportation - Raleigh, N. C., dated January 2012 and the latest revison thereto are applicable to this project and by reference hereby are considered a part of these plans.

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

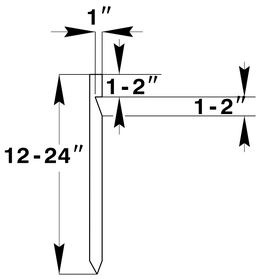
7/1/2019
R:\Hydraulics\CADD\PSH\Erosion Control\r3421a_EC_fsh.dgn
cpiper

PROJECT REFERENCE NO.	SHEET NO.
R-3421A	EC-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

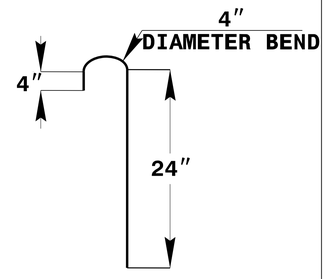
SKIMMER BASIN WITH BAFFLES DETAIL



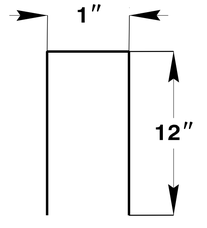
2" x 2" (nominal) WOODEN STAKE



#10 STEEL REINFORCEMENT BAR



1" (nominal) STAPLE



COIR FIBER MAT ANCHOR OPTIONS

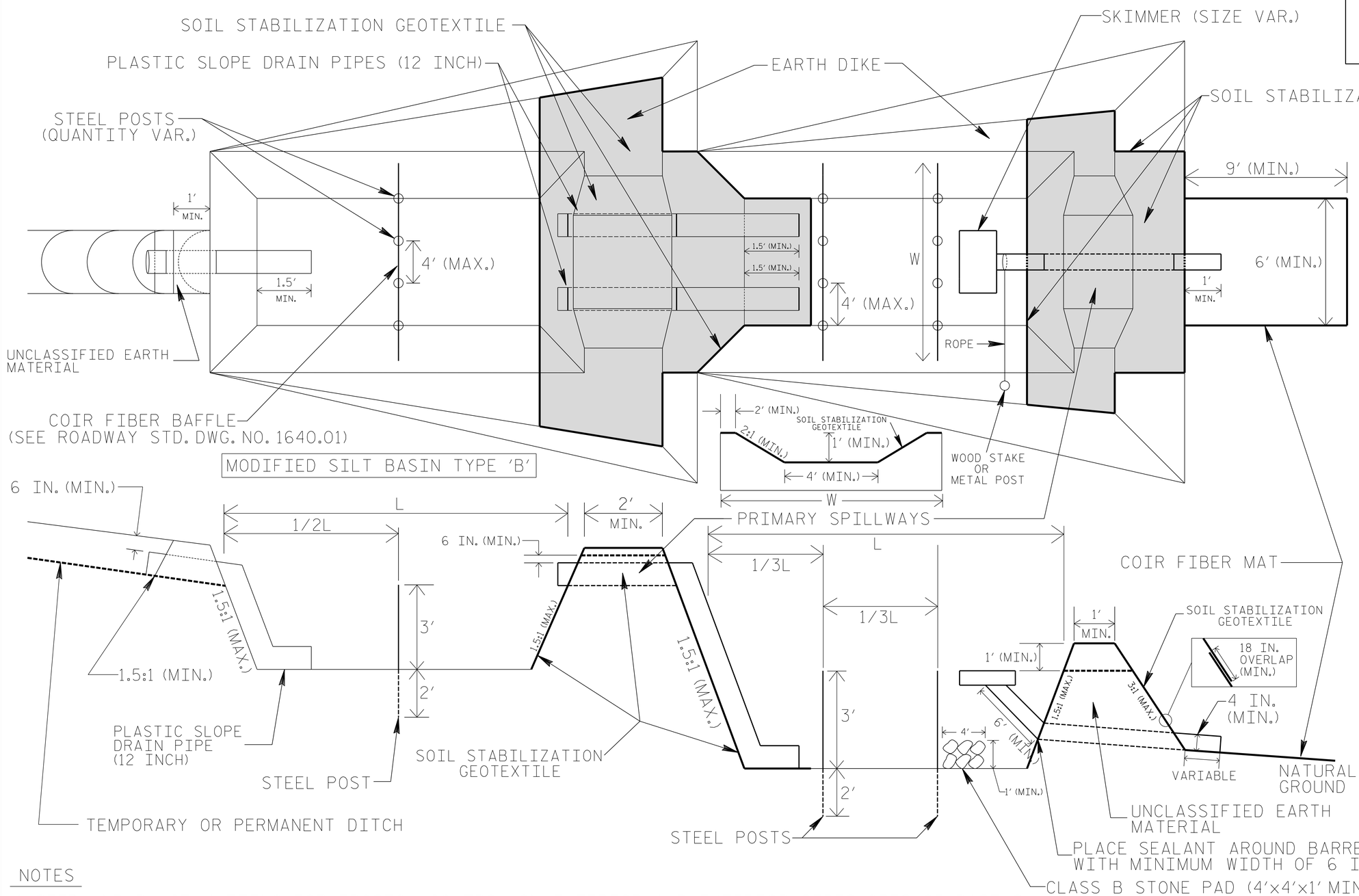
NOTES

1. SEED AND PLACE MATTING FOR EROSION CONTROL ON INTERIOR AND EXTERIOR SIDESLOPES.
2. LIMIT EARTH DIKE HEIGHT TO 5 FT.
3. FOR BASIN DEPTH OF 3 FT., THE MINIMUM BASIN WIDTH SHALL BE 9 FT.
4. DETERMINE PRIMARY SPILLWAY WEIR LENGTH (FT.) USING Q/0.4, WHERE Q IS FLOW RATE (CFS) INTO BASIN.
5. PLASTIC SLOPE DRAIN PIPE AT INLET OF BASIN MAY BE REPLACED BY FILTRATION GEOTEXTILE OR TARP AS DIRECTED.
6. SOIL STABILIZATION GEOTEXTILE FOR PRIMARY SPILLWAY SHALL BE ONE CONTINUOUS PIECE OF MATERIAL OR OVERLAPPED 18 IN. (MIN.).

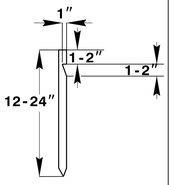
NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
R-3421A	EC-2A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

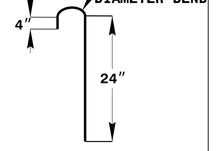
TIERED SKIMMER BASIN DETAIL



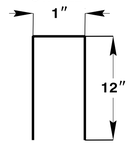
2" x 2" (nominal) WOODEN STAKE



#10 STEEL REINFORCEMENT BAR



1" (nominal) STAPLE



COIR FIBER MAT ANCHOR OPTIONS

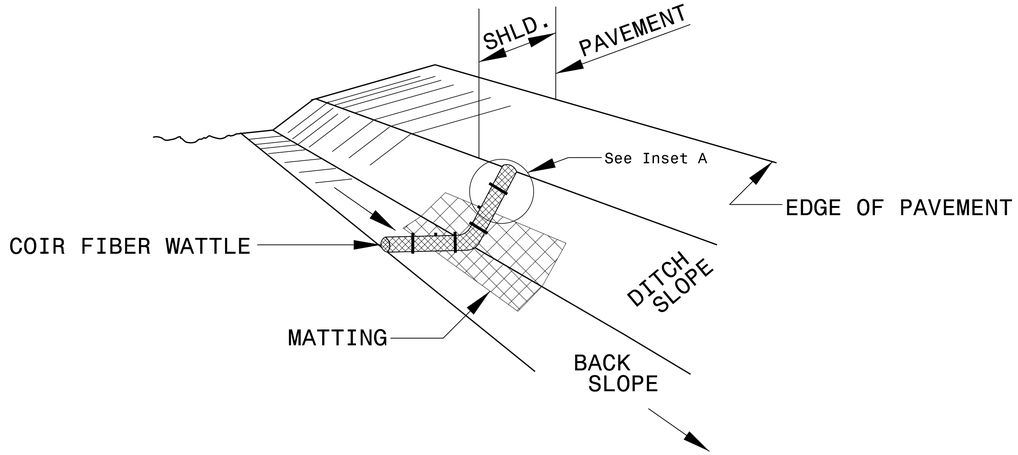
NOTES

1. SEED AND PLACE MATTING FOR EROSION CONTROL ON INTERIOR AND EXTERIOR SIDESLOPES OF BASINS.
2. LIMIT HEIGHT OF EARTH DIKES TO 5 FT.
3. ADDITIONAL MODIFIED SILT BASINS TYPE 'B' MAY BE NEEDED DEPENDING ON SLOPE.
4. FOR BASIN DEPTHS OF 3FT., THE MINIMUM BASIN WIDTHS SHALL BE 9 FT.
5. DETERMINE PRIMARY SPILLWAY LENGTHS (FT.) USING Q/0.4, WHERE Q IS FLOW RATE (CFS) INTO UPPER BASIN.
6. SOIL STABILIZATION GEOTEXTILE FOR PRIMARY SPILLWAYS SHALL BE ONE CONTINUOUS PIECE OF MATERIAL OR OVERLAPPED 18 IN. (MIN.).

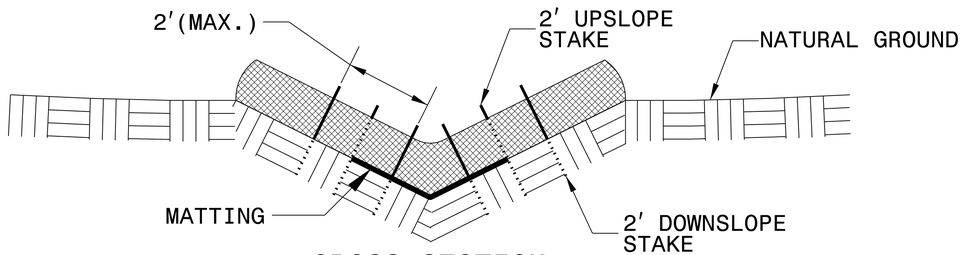
NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
R-3421A	EC-2B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

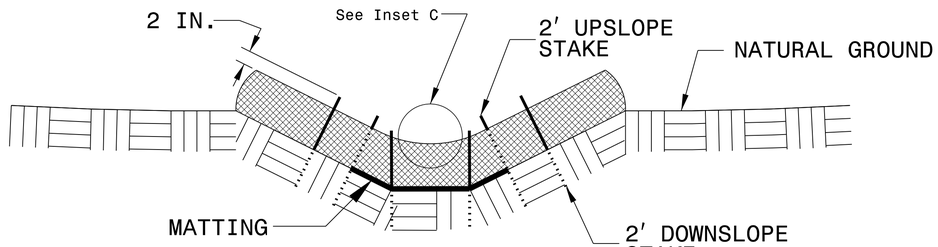
COIR FIBER WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL



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.

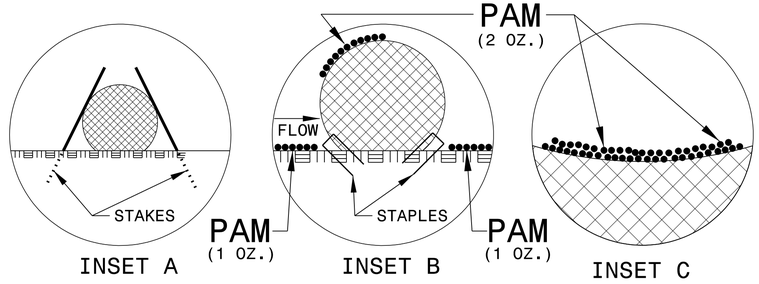
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

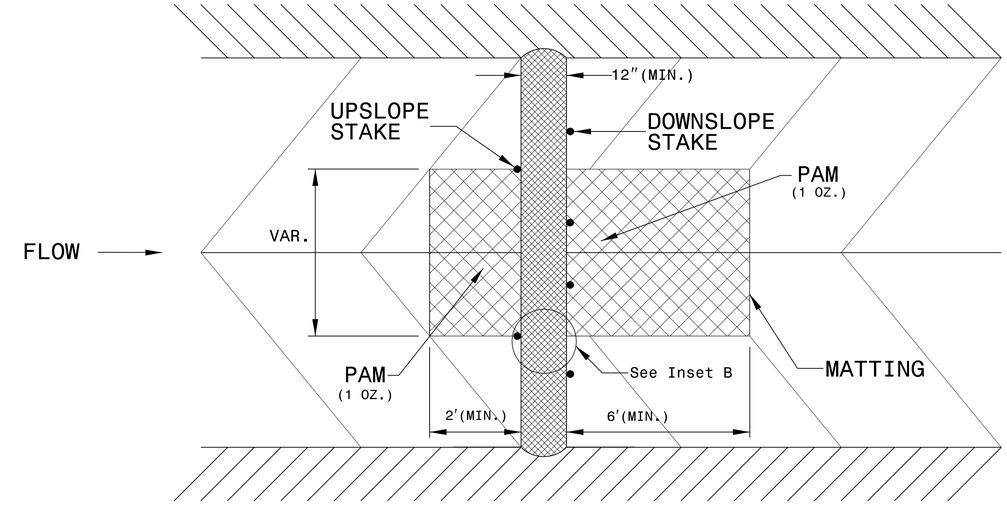
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

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.

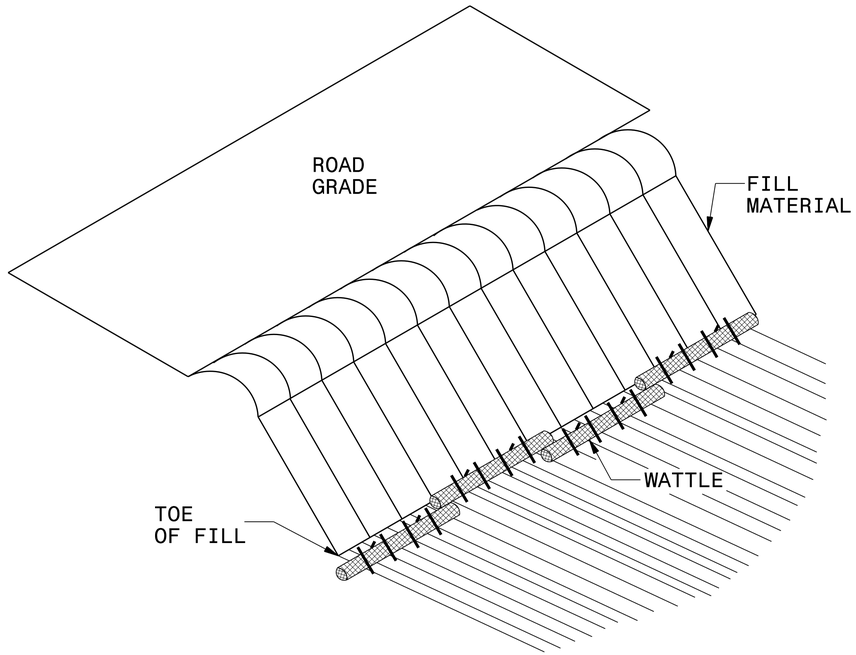




TOP VIEW

PROJECT REFERENCE NO.	SHEET NO.
R-3421A	EC-2C
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

WATTLE BARRIER DETAIL



ISOMETRIC VIEW

NOTES:

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

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

DO NOT PLACE WATTLES ON TOE OF SLOPE.

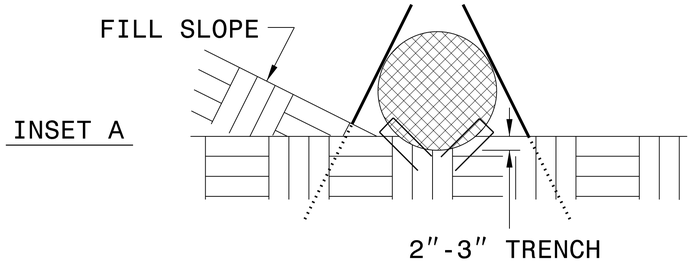
USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

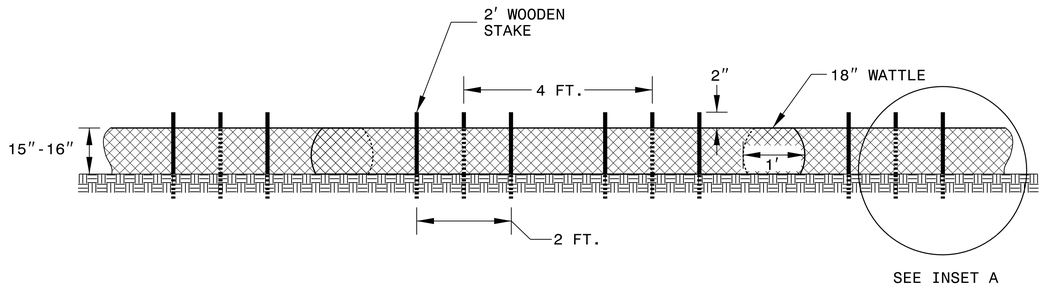
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO GROUND.

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

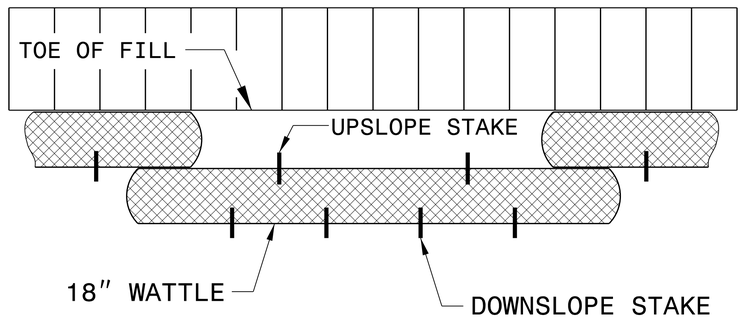
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

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





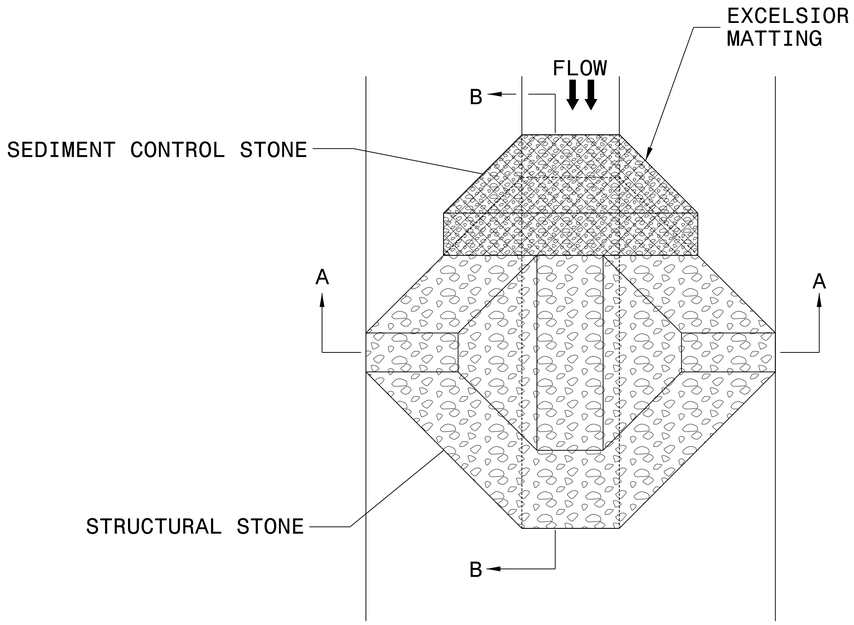
FRONT VIEW



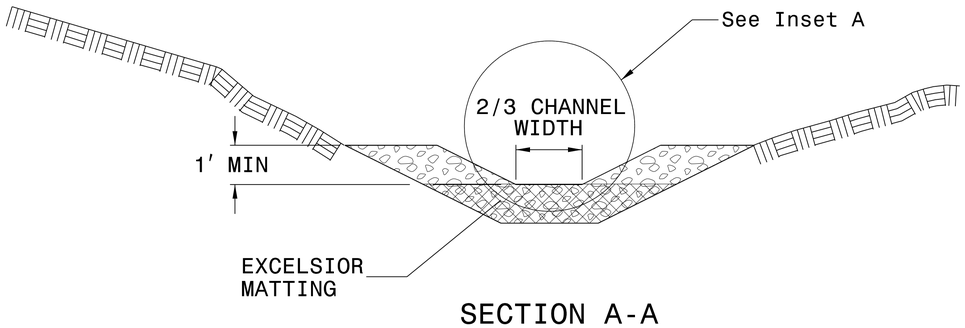
TOP VIEW

PROJECT REFERENCE NO.	SHEET NO.
R-3421A	EC-2D
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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



PLAN



SECTION A-A

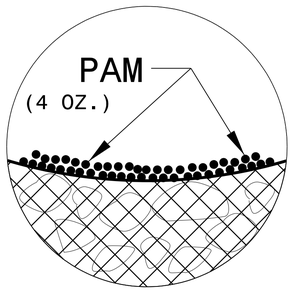
NOTES:

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

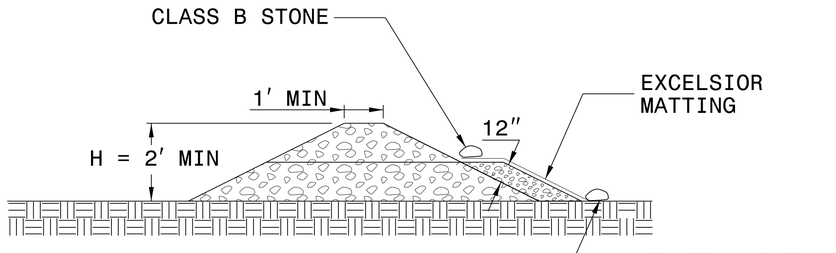
USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH ROCK SILT CHECK.

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



INSET A



SECTION B-B

NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
R-3421A	EC-3
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION SUMMARY SHEET

EROSION CONTROL MATTING IN DITCHES

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
5	US 74	45+00	50+00	RT	670
6	US 74	50+00	54+50	RT	605
6	US 74	52+50	55+00	LT	335
7	FLY	07+25	10+00	RT	370
7	FLY	10+00	12+50	RT	335
7	FLY	12+50	15+00	RT	335
7-8	FLY	15+00	17+50	RT	335
7-8	FLY	15+00	17+50	LT	335
7	I-73	73+87	77+28	RT	460
7-8	I-73	75+00	80+80	CL	1030
7-8	I-73	77+28	79+77	RT	335
7-8	I-73	77+50	80+60	LT	415
7	US 74	67+00	69+27	RT	305
7	US 74	69+00	70+25	RT	170
7	US 74	70+25	73+87	RT	485
8	FLY	17+50	20+00	RT	335
8	FLY	20+00	24+00	RT	540
8	I-73	79+11	81+50	RT	320
8	I-73	80+60	82+00	LT	190
8	I-73	80+80	85+50	CL	835
8	I-73	85+50	86+50	CL	180
8-9	I-73	89+50	95+00	CL	980
8-9	RPC	13+50	18+00	RT	605
9	I-73	95+00	100+43	CL	965
9-10	I-73	103+75	107+50	LT	425
9	L2 CONN	14+81	17+31	RT	335
9	L2 CONN	17+31	18+31	RT	135
9	L2 CONN	18+31	20+00	RT	230
9	L2 REV	15+68	18+27	LT	350
9	L2 REV	18+27	20+50	LT	300
				SUBTOTAL	13,245

EROSION CONTROL MATTING IN DITCHES

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
9	L2 REV	19+50	25+50	RT	805
9	L2 REV	23+00	25+00	LT	270
9-13	L2 RT	10+50	16+00	LT	740
9	L2 RT	12+00	14+00	RT	270
9	L2 RT	14+00	18+00	RT	540
9	L2 RT	16+00	18+00	LT	270
9	L2 RT	18+00	19+50	RT	205
9	RPA	07+00	13+65	RT	890
9-10	RPA	07+55	11+14	LT	405
9	RPA	11+14	13+25	LT	285
9	RPA	16+50	18+00	RT	205
9	RPA	18+00	19+34	RT	180
9	RPC	18+00	21+00	RT	405
9	RPC	21+00	22+50	RT	205
9	RPC	22+50	26+00	RT	470
9	RPC	26+00	28+00	RT	270
9-11	RPC	28+00	32+50	RT	605
10	I-73	107+50	110+00	CL	445
10	I-73	110+00	115+00	CL	890
10	I-73	110+50	115+00	LT	605
10	I-73	115+00	123+50	CL	1510
10	I-73	115+00	123+50	LT	1140
10	I-73	123+00	125+50	RT	285
10	I-73	123+50	127+00	CL	625
10	I-73	123+50	127+50	LT	540
10	I-73	125+00	126+50	LT	75
10	I-73	127+00	128+00	CL	180
10-11	RPD	05+00	09+50	LT	510
10-11	RPD	07+14	09+11	RT	265
10	RPD	09+11	10+00	RT	120
				SUBTOTAL	14,210

7/1/2019
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dpiper

PROJECT REFERENCE NO.	SHEET NO.
R-3421A	EC-3A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION SUMMARY SHEET

EROSION CONTROL MATTING IN DITCHES

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
11	L2 REV	29+50	33+31	LT	430
11	L2 REV	33+31	38+85	RT	745
11	L2 REV	33+31	35+15	LT	210
11	RPD	02+81	05+00	RT	295
11	RPD	05+00	07+14	RT	290
13	FLY	31+45	32+00	RT	75
13	FLY	31+50	34+78	LT	440
13	FLY	34+78	36+00	LT	165
14	L2 CONN	24+00	28+50	RT	605
14	L2 CONN	28+50	30+50	RT	280
14-15	US 74	116+00	119+50	RT	470
15	US 74	119+50	122+00	RT	335
15	US 74	122+00	124+00	RT	270
15	US 74	124+50	129+50	RT	670
16	US 74	140+50	145+50	RT	670
				SUBTOTAL	5,950

EROSION CONTROL MATTING ON SLOPES

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
6	US 74	55+00	56+50	RT	557
10	I-73	126+00	128+00	RT	738
11	RPC	29+00	35+00	LT	4493
11-12	RPC	33+00	41+50	RT	7491
12	L2 REV	40+50	44+50	LT	5110
14	US 74	113+00	115+50	RT	1908
15-16	US 74	130+00	136+50	RT	4610
			SUBTOTAL		24,907
			PROJECT	TOTAL	58,312
				SAY	60,000

7/1/2019
R:\Hydraulics\CADD\PSH\Erosion Control\r-3421a_EC_psh03.dgn
apiper

PROJECT REFERENCE NO.	SHEET NO.
R-3421A	EC-3B
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION SUMMARY SHEET

PERMANENT SOIL REINFORCEMENT MAT IN DITCHES

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
7	FLY	07+25	12+50	LT	705
7	FLY	12+50	15+00	LT	335
8	FLY	17+50	20+00	LT	335
8	FLY	20+00	22+00	LT	270
8-13	FLY	29+00	31+45	RT	330
8-9	I-73	89+00	95+00	RT	805
9-13	FLY	32+50	34+50	RT	270
9	RPA	13+65	16+50	RT	385
9	RPC	18+00	24+00	RT	300
9	RPC	19+50	22+00	LT	335
9	RPC	19+50	22+00	LT	335
9	RPC	22+00	26+00	LT	540
10	I-73	121+00	122+50	LT	75
10	I-73	124+00	125+00	LT	50
10	RPD	14+00	15+00	RT	135
10	RPD	15+00	18+00	RT	405
10	RPD	18+00	21+65	RT	490
11-12	L2	38+85	43+88	RT	675
11	L2 REV	35+15	36+30	LT	155
12	L2	44+50	49+45	RT	665
12	L2	49+45	53+00	RT	480
12	L2 REV	45+50	46+12	LT	85
15	US 74	122+50	124+00	RT	75
			PROJECT TOTAL		8,235
				SAY	8,500

7/1/2019
R:\Hydraulics\CADD\PSHs\Erosion Control\3421a_EC_psh03.dgn
dpiper

PROJECT REFERENCE NO.	SHEET NO.
R-3421A	EC-3C
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

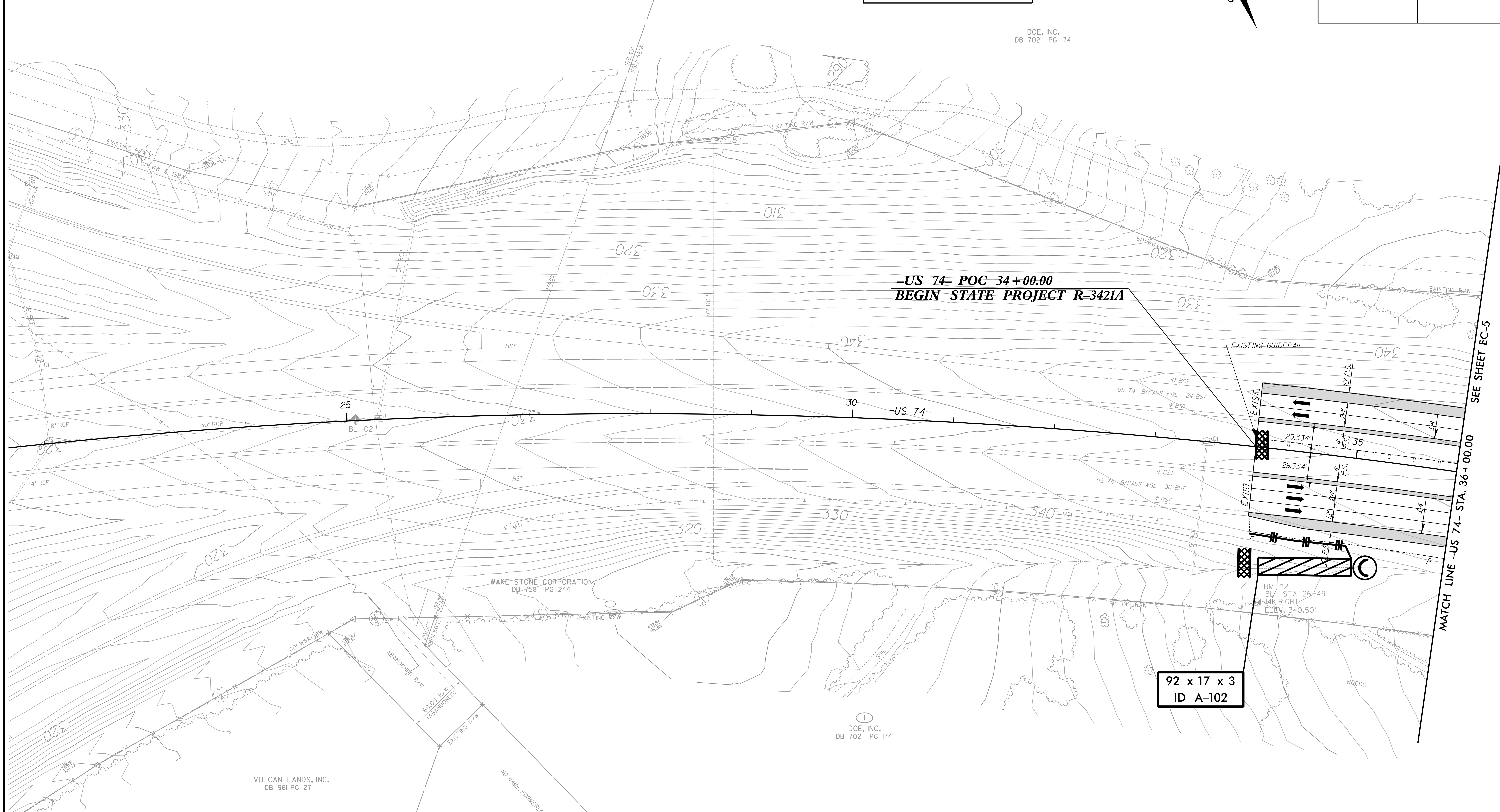
SOIL STABILIZATION TIMEFRAMES

SITE DESCRIPTION	STABILIZATION TIME	TIMEFRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 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.
R-3421A	EC-4/CONST.4
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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 4



-US 74-

PIs Sta 19+25.29	PI Sta 38+31.08	PIs Sta 56+26.08
Θs = 1° 38' 13.4"	Δ = 34° 44' 54.8" (RT)	Θs = 1° 38' 13.4"
Ls = 328.09	D = 0° 59' 52.5"	Ls = 328.08
ST = 109.37	L = 3,482.06	ST = 109.37
LT = 218.74	T = 1,796.43	LT = 218.73
	R = 5,741.46	
	S.E. = 0.04	

SEE SHEET NO. 18 FOR -US 74- PROFILE.

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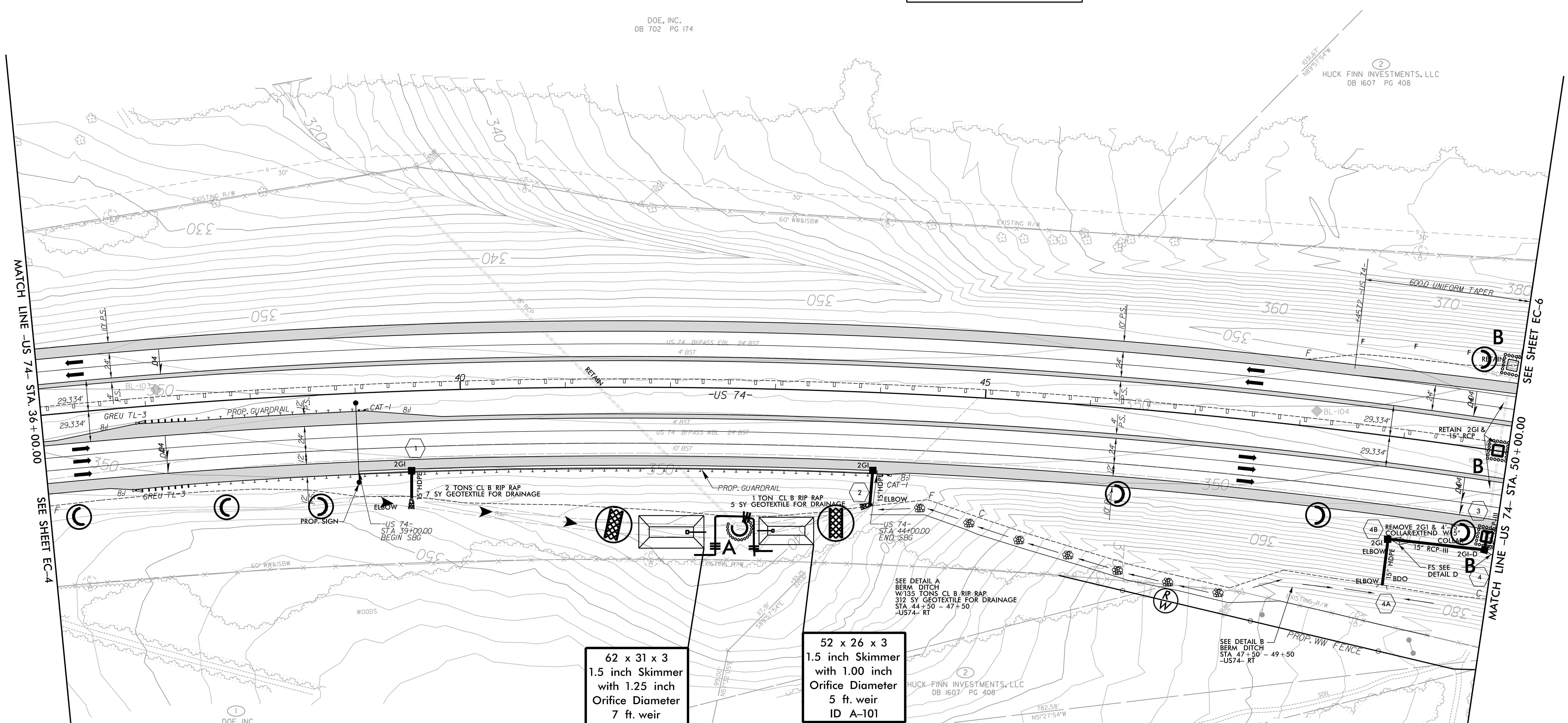
PROJECT REFERENCE NO.	SHEET NO.
R-3421A	EC-5/CONST.5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

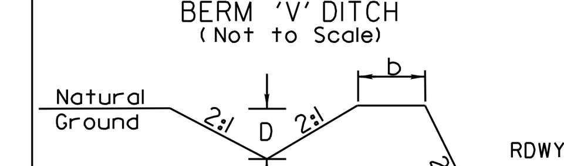
CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 5



62 x 31 x 3
1.5 inch Skimmer
with 1.25 inch
Orifice Diameter
7 ft. weir
ID A–100

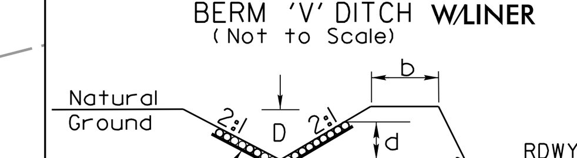
52 x 26 x 3
1.5 inch Skimmer
with 1.00 inch
Orifice Diameter
5 ft. weir
ID A–101

DETAIL B
BERM 'V' DITCH
(Not to Scale)



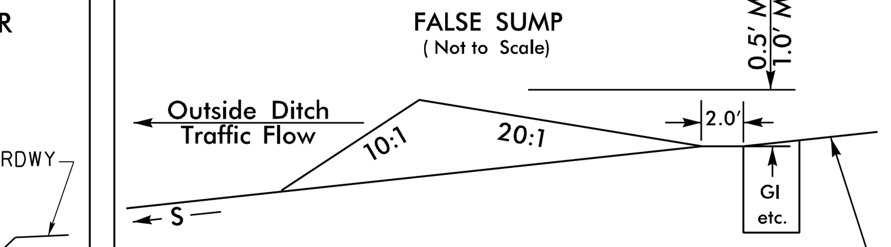
Min. D = 2.0 Ft.
b = 5.0 Ft.

DETAIL A
BERM 'V' DITCH W/LINER
(Not to Scale)



Min. D = 2.0 Ft. Max. d = 1.0'
b = 5.0 Ft.
Type of Liner = CL B RIP RAP

DETAIL D
FALSE SUMP
(Not to Scale)



-US 74-

PIs Sta 19+25.29	PI Sta 38+31.08	PIs Sta 56+26.08
Θs = 1° 38' 13.4"	Δ = 34° 44' 54.8" (RT)	Θs = 1° 38' 13.4"
Ls = 328.09	D = 0° 59'52.5"	Ls = 328.08
ST = 109.37	L = 3,482.06	ST = 109.37
LT = 218.74	T = 1,796.43	LT = 218.73
	R = 5,741.46	
	S.E.= 0.04	

SEE SHEET NO. 18 FOR -US 74- PROFILE.

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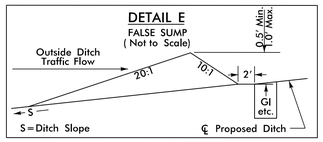
PROJECT REFERENCE NO.	SHEET NO.
R-3421A	EC-6/CONST.6
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

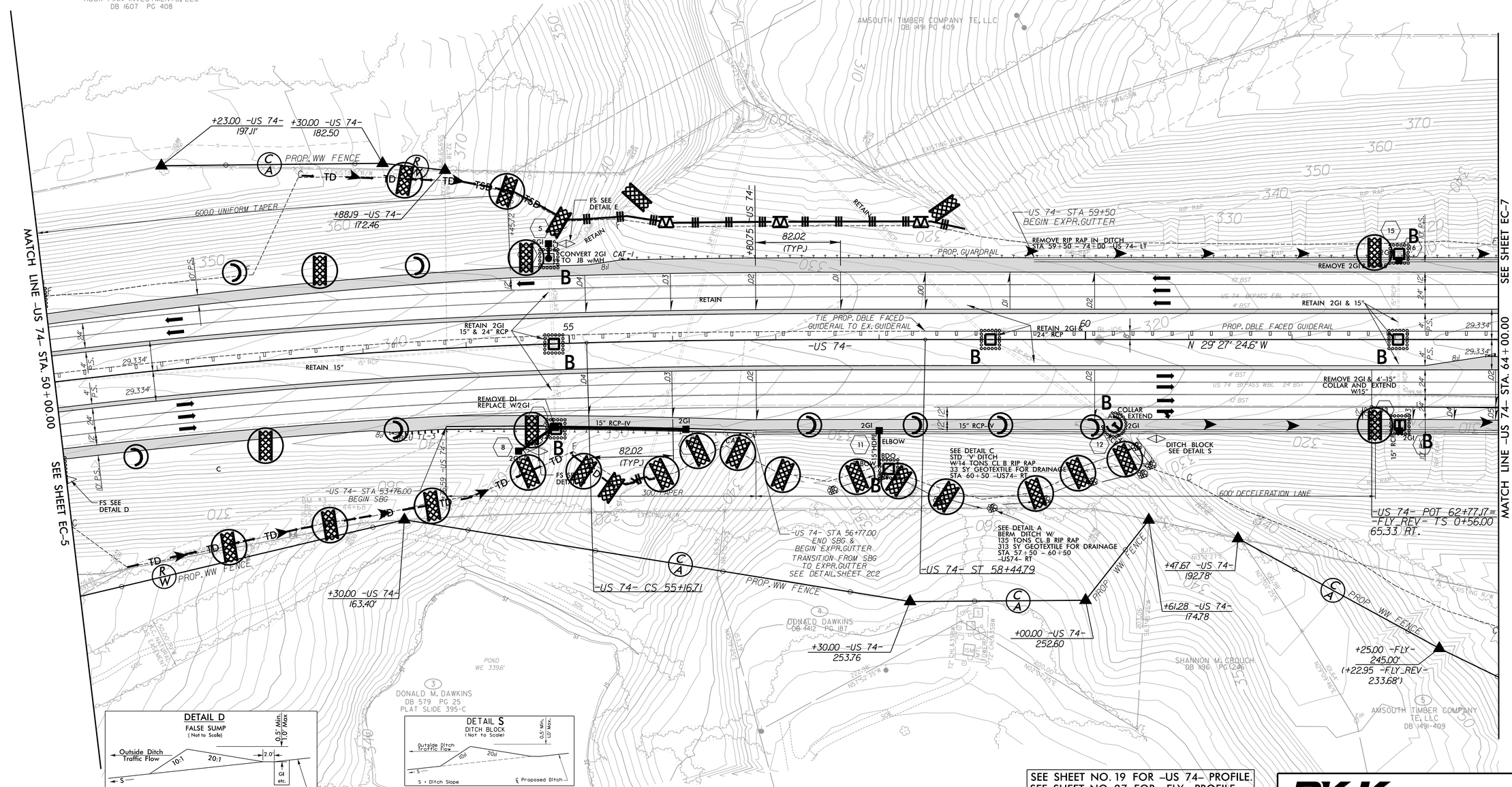
NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE – B AND TEMPORARY ROCK SILT CHECKS TYPE – A AT DRAINAGE OUTLETS.

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 6

NAD 83/95

DETAIL E
FALSE SUMP
(Not to Scale)

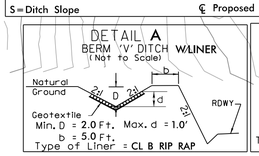




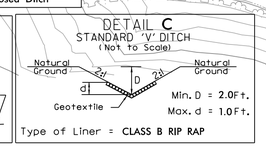
DETAIL D
FALSE SUMP
(Not to Scale)

DETAIL S
DITCH BLOCK
(Not to Scale)

DETAIL A
BERM "V" DITCH W/LINER
(Not to Scale)



DETAIL C
STANDARD "V" DITCH
(Not to Scale)



SEE SHEET NO. 19 FOR –US 74– PROFILE.
SEE SHEET NO. 27 FOR –FLY– PROFILE.

–US 74–

PIs Sta 19+25.29	PI Sta 38+31.08	PIs Sta 56+26.08
Θs = 1° 38' 13.4"	Δ = 34° 44' 54.8" (RT)	Θs = 1° 38' 13.4"
Ls = 328.09	D = 0° 59' 52.5"	Ls = 328.08
ST = 109.37	L = 3,482.06	ST = 109.37
LT = 218.74	T = 1,796.43	LT = 218.73
	R = 5,741.46	
	S.E. = 0.04	

–FLY REV–

PIs Sta 1+89.36	PI Sta 4+10.47	PIs Sta 6+30.89
Θs = 3° 08' 53.2"	Δ = 9° 42' 08.9" (RT)	Θs = 3° 08' 53.2"
Ls = 200.00'	D = 3° 08' 53.2"	Ls = 200.00'
LT = 133.35'	L = 308.20'	LT = 133.35'
ST = 66.69'	T = 154.47'	ST = 66.69'
	R = 1,820.00'	
	S.E. = 0.07	

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PROJECT REFERENCE NO.	SHEET NO.
R-3421A	EC-7/CONST.7
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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 7

NAD 83 95

SEE SHEET EC-6

MATCH LINE –US 74– STA. 64+00.00

MATCH LINE –US 74 EBL– STA. 78+00.01 SEE SHEET EC-8

MATCH LINE –I-73– STA. 78+00.00 SEE SHEET EC-8

MATCH LINE –FLY– STA. 16+11.95 SEE SHEET EC-8

–US 74–
Pls Sta 77+20.49
Θs = 3° 41' 47"
Ls = 360.00'
ST = 120.05'
LT = 240.05'

Pl Sta 91+42.64
Δ = 50° 02' 26.6" (LT)
D = 2° 03' 13.0"
L = 2,436.72'
T = 1,302.21'
R = 2,790.00'

–US 74 EBL–
Pls Sta 78+05.73
Θs = 2° 45' 00.7"
Ls = 240.00'
LT = 160.02'
ST = 80.02'

Pl Sta 83+77.69
Δ = 22° 15' 56.8" (LT)
D = 2° 17' 30.6"
L = 971.53'
T = 491.97'
R = 2,500.00'
S.E. = 0.08

I-73 POT 74+80.44 =
–US 74– TS 74+80.44
–US 74 EBL– POT 74+80.44 65.334 LT.
Δ = 2° 30' 00"

–US 74 EBL– TS 76+45.72

–FLY– SC 2+56.00

–FLY– STA 3+95 END EXPR.GUTTER

–FLY– CS 5+64.20

–FLY– ST 7+64.20 LB=
–FLY– POT 7+64.20 LA

–FLY– TS 10+92.51

–FLY– SC 13+32.51

–I-73– POT 77+28.94 =
–RPC– ST 2+47.14 53.33' RT.

–RPC–
Pls Sta 3+80.48
Θs = 1° 54' 35.5"
Ls = 200.00'
LT = 133.34'
ST = 66.67'

–FLY– REV–
Pls Sta 1+89.36
Θs = 3° 08' 53.2"
Ls = 200.00'
LT = 133.35'
ST = 66.69'

Pl Sta 4+10.47
Δ = 9° 42' 08.9" (RT)
D = 3° 08' 53.2"
L = 308.20'
T = 154.47'
R = 1,820.00'
S.E. = 0.07

Pls Sta 6+30.89
Θs = 3° 08' 53.2"
Ls = 200.00'
LT = 133.35'
ST = 66.69'

–FLY–
Pls Sta 12+52.55
Θs = 4° 11' 32.5"
Ls = 240.00'
LT = 160.04'
ST = 80.04'

Pl Sta 21+55.94
Δ = 53° 19' 18.0" (LT)
D = 3° 29' 37.1"
L = 1,526.25
T = 823.43'
R = 1,640.00'
S.E. = 0.08

117 x 35 x 3
2.0 inch Skimmer
with 1.75 inch
Orifice Diameter
16 ft. weir
ID A–149

60 x 30 x 3
1.5 inch Skimmer
with 1.25 inch
Orifice Diameter
7 ft. weir
ID A–151

DETAIL D
FALSE SUMP
(Not to Scale)
Outside Ditch Traffic Flow
10:1
20:1
2.0'
0.5' Min. 1.0' Max
GI etc.
S = Ditch Slope
℄ Proposed Ditch

SEE SHEET NO. 19 FOR –US 74– AND –I–73– PROFILE.
SEE SHEET NO. 24 FOR –US 74 EBL– PROFILE.
SEE SHEET NOS. 27 AND 28 FOR –FLY– PROFILE.
SEE SHEET NO. 33 FOR –RPC– PROFILE.

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PROJECT REFERENCE NO.	SHEET NO.
R-3421A	EC-8/CONST.8
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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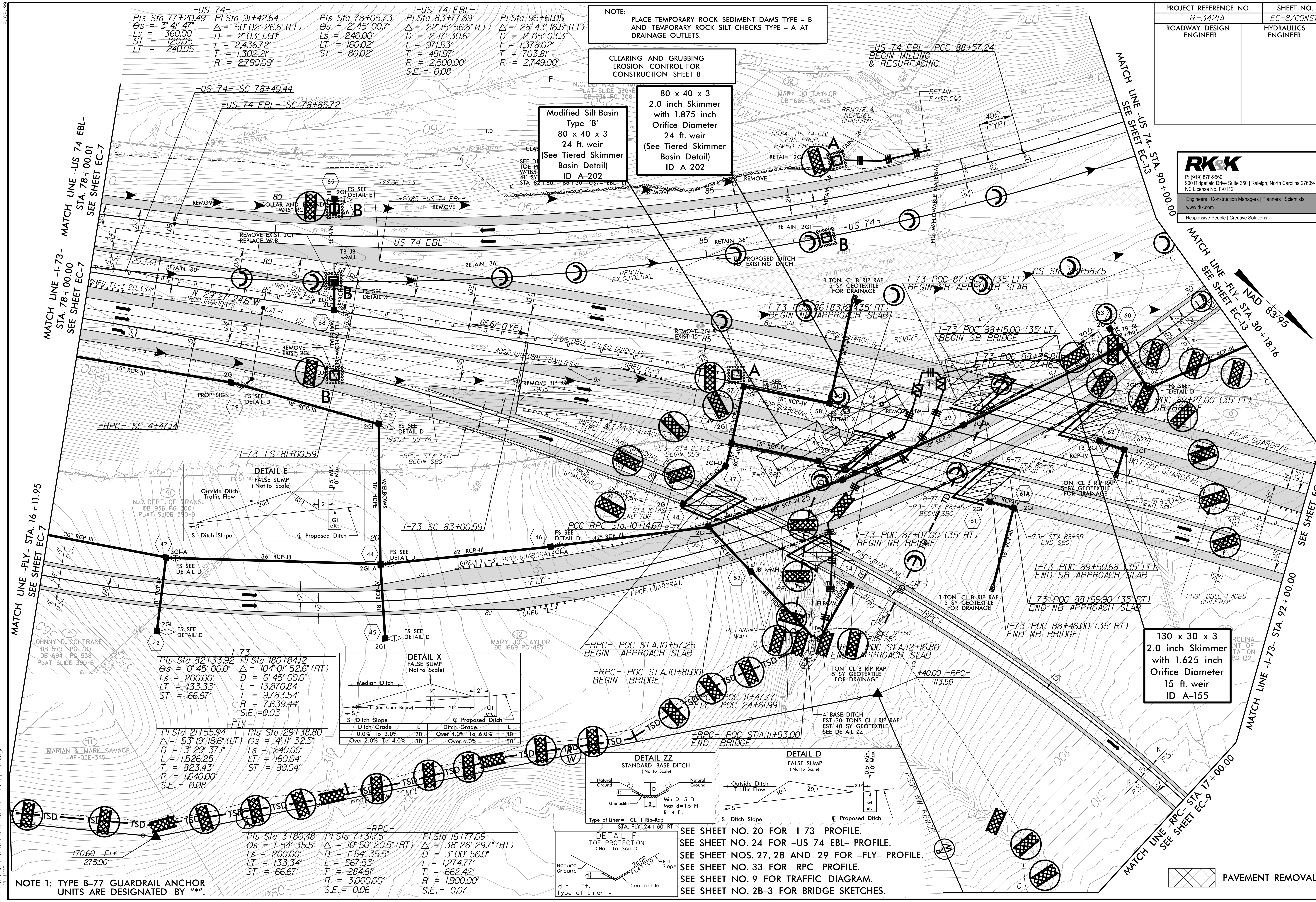
NOTE: PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE – B AND TEMPORARY ROCK SILT CHECKS TYPE – A AT DRAINAGE OUTLETS.

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 8



-I-73-

PI Sta 82+33.92
Θs = 0° 45' 00.0"
Ls = 200.00'
LT = 133.33'
ST = 66.67'

PI Sta 180+84.12
Δ = 104° 01' 52.6" (RT)
D = 0° 45' 00.0"
L = 13,870.84
T = 9,783.54'
R = 7,639.44'
S.E. = 0.03

-FLY-

PI Sta 21+55.94
Δ = 53° 19' 18.6" (LT)
D = 3° 29' 37.1"
L = 1,526.25
T = 823.43'
R = 1,640.00'
S.E. = 0.08

PI Sta 29+38.80
Θs = 4° 11' 32.5"
Ls = 240.00'
LT = 160.04'
ST = 80.04'

-RPC-

PI Sta 3+80.48
Θs = 1° 54' 35.5"
Ls = 200.00'
LT = 133.34'
ST = 66.67'

PI Sta 7+31.75
Δ = 10° 50' 20.5" (RT)
D = 1° 54' 35.5"
L = 567.53'
T = 284.61'
R = 3,000.00'
S.E. = 0.06

PI Sta 16+77.09
Δ = 38° 26' 29.7" (RT)
D = 3° 00' 56.0"
L = 1,274.77'
T = 662.42'
R = 1,900.00'
S.E. = 0.07

DETAIL X – Median Ditch

Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

SEE SHEET NO. 20 FOR -I-73- PROFILE.
SEE SHEET NO. 24 FOR -US 74 EBL- PROFILE.
SEE SHEET NOS. 27, 28 AND 29 FOR -FLY- PROFILE.
SEE SHEET NO. 33 FOR -RPC- PROFILE.
SEE SHEET NO. 9 FOR TRAFFIC DIAGRAM.
SEE SHEET NO. 2B-3 FOR BRIDGE SKETCHES.

NOTE 1: TYPE B-77 GUARDRAIL ANCHOR UNITS ARE DESIGNATED BY "*".

PAVEMENT REMOVAL

7/1/2019
\Hydraulics\CADD\PSH\Erosion Control\r3421a_EC_psh08.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-3421A	EC-9/CONST.9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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GRAPHIC SCALE
100 50 0 100 200
PLANS

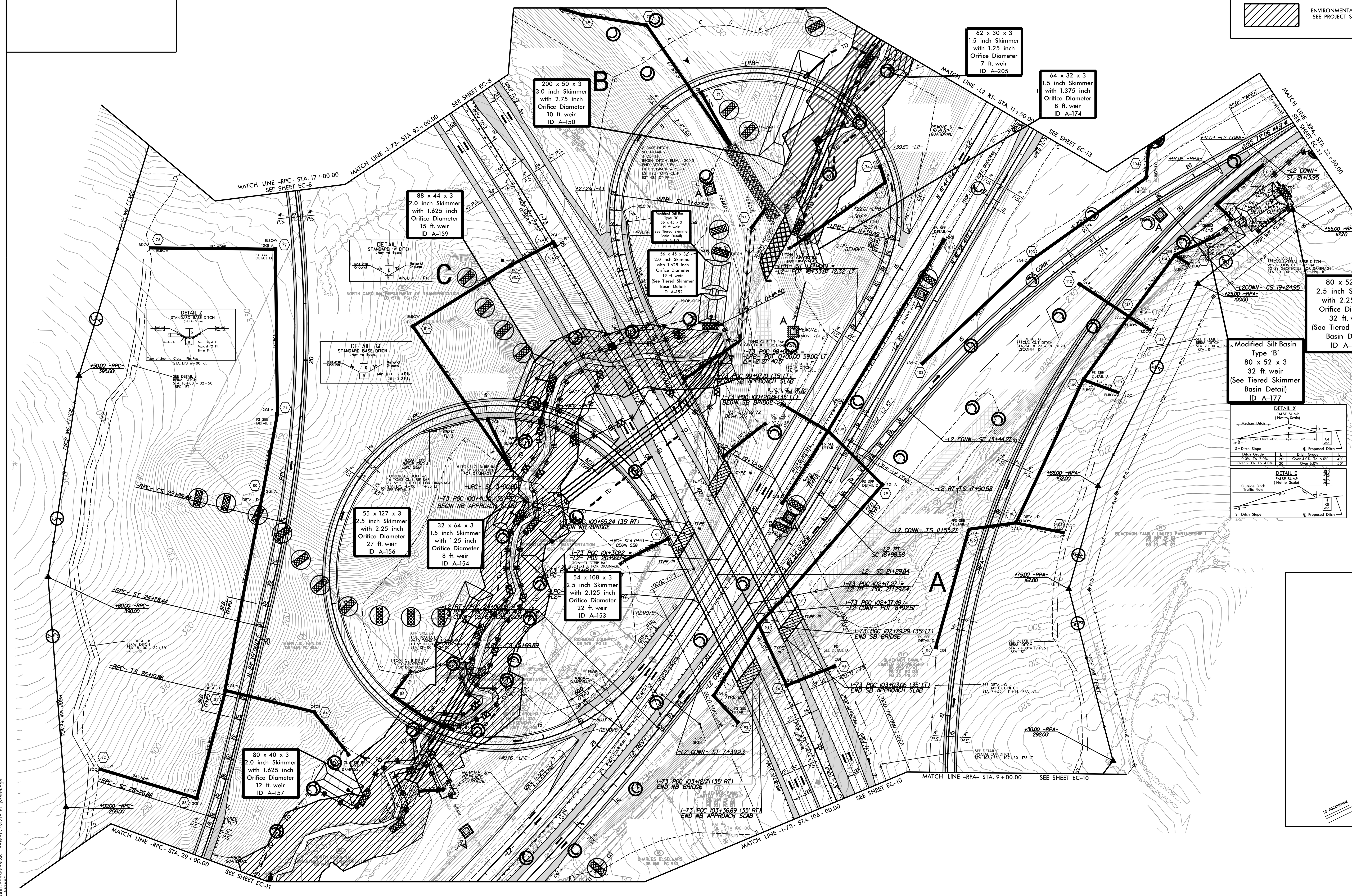
NAD 83/95

REVISIONS

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



-L2 RT-

PIs Sta 18+62.58	PI Sta 21+49.62
Θs = 0° 46′ 52.7″	Δ = 7° 15′ 17.5″ (RT)
Ls = 108.00′	D = 1° 26′ 48.7″
LT = 72.00′	L = 501.42′
ST = 36.00′	T = 251.05′
	R = 3,960.00′
	S.E. = 0.04

-L2 REV-

PI Sta 26+46.99
Δ = 7° 07′ 51.2″ (RT)
D = 1° 26′ 43.4″
L = 493.35′
T = 246.99′
R = 3,964.00′
S.E. = 0.04

-L2 CONN-

PIs Sta 6+67.23	PIs Sta 12+81.28	PI Sta 16+36.89	PIs Sta 19+87.96
Θs = 0° 46′ 44.2″	Θs = 2° 50′ 58.9″	Δ = 17° 30′ 39.1″ (RT)	Θs = 2° 50′ 59.0″
Ls = 108.00′	Ls = 189.00′	D = 3° 00′ 56.0″	Ls = 189.00′
LT = 72.00′	LT = 126.02′	L = 580.68′	LT = 126.02′
ST = 36.00′	ST = 63.01′	T = 292.62′	ST = 63.01′
		R = 1,900.00′	
		S.E. = 0.07	

-RPA-

PIs Sta 6+14.21	PI Sta 15+78.68	PIs Sta 23+38.59
Θs = 4° 54′ 39.8″	Δ = 64° 34′ 12.3″ (RT)	Θs = 4° 05′ 33.2″
Ls = 240.00′	D = 4° 05′ 33.2″	Ls = 200.00′
LT = 160.06′	L = 1,577.74	LT = 133.37′
ST = 80.06′	T = 884.53′	ST = 66.70′
	R = 1,400.00′	
	S.E. = 0.08	

-RPC-

PI Sta 16+77.09	PIs Sta 23+52.46	PIs Sta 27+54.90	PI Sta 34+08.41
Δ = 38° 26′ 29.7″ (RT)	Θs = 2° 50′ 59.0″	Θs = 4° 07′ 31.1″	Δ = 42° 22′ 57.6″ (RT)
D = 3° 00′ 56.0″	Ls = 189.00′	Ls = 216.00′	D = 3° 49′ 11.0″
L = 1,274.77′	LT = 126.02′	LT = 144.04′	L = 1,109.58′
T = 662.42′	ST = 63.01′	ST = 72.04′	T = 581.55′
R = 1,900.00′			R = 1,500.00′
S.E. = 0.07			S.E. = 0.08

-LPB-

PIs Sta 2+47.29	PI Sta 111+25.85	PIs Sta 11+98.51
Θs = 34° 02′ 01.3″	Δ = 182° 39′ 22.3″ (RT)	Θs = 20° 03′ 12.7″
Ls = 297.00′	D = 22° 55′ 05.9″	Ls = 175.00′
LT = 201.79′	L = 796.99′	LT = 117.42′
ST = 102.45′	T = 10,783.34′	ST = 59.02′
	R = 250.00′	
	S.E. = 0.08	

-LPC-

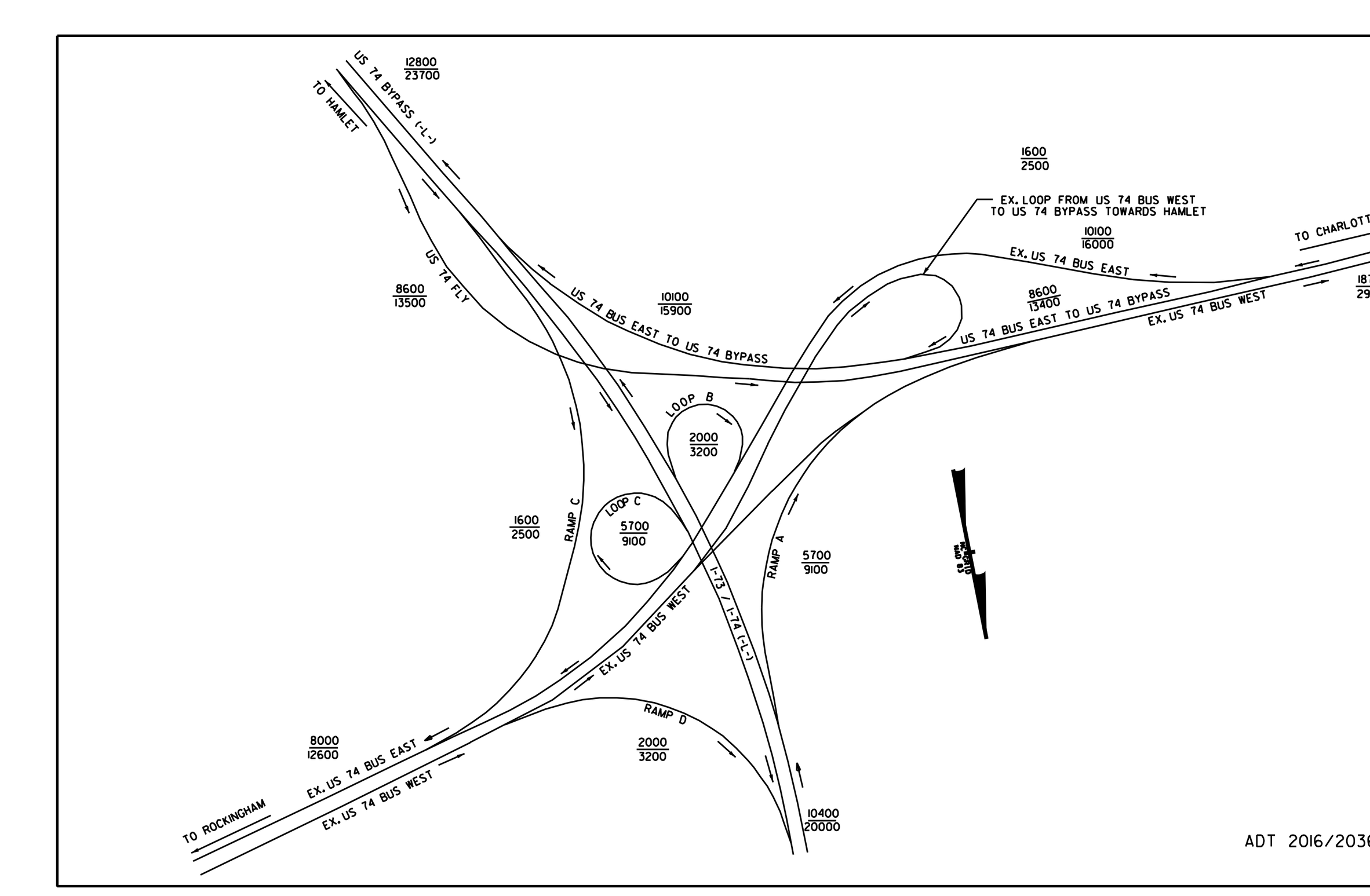
PIs Sta 1+99.20	PI Sta 7+94.09	PIs Sta 16+72.33
Θs = 1° 07′ 29.0″	Δ = 242° 31′ 48.8″ (LT)	Θs = 28° 38′ 52.4″
Θs = 28° 39′ 24.9″	D = 19° 05′ 54.9″	Ls = 300.00′
Ls = 300.00′	L = 1,269.89′	LT = 202.68′
LT = 199.20′	T = 494.09′	ST = 102.44′
ST = 106.55′	R = 300.00′	
	S.E. = 0.08	

I-73

PIs Sta 82+33.92	PI Sta 180+84.12
Θs = 0° 45′ 00.0″	Δ = 104° 01′ 52.6″ (RT)
Ls = 200.00′	D = 0° 45′ 00.0″
LT = 133.33′	L = 13,870.84′
ST = 66.67′	T = 9,783.54′
	R = 7,639.44′
	S.E. = 0.03

-L2-

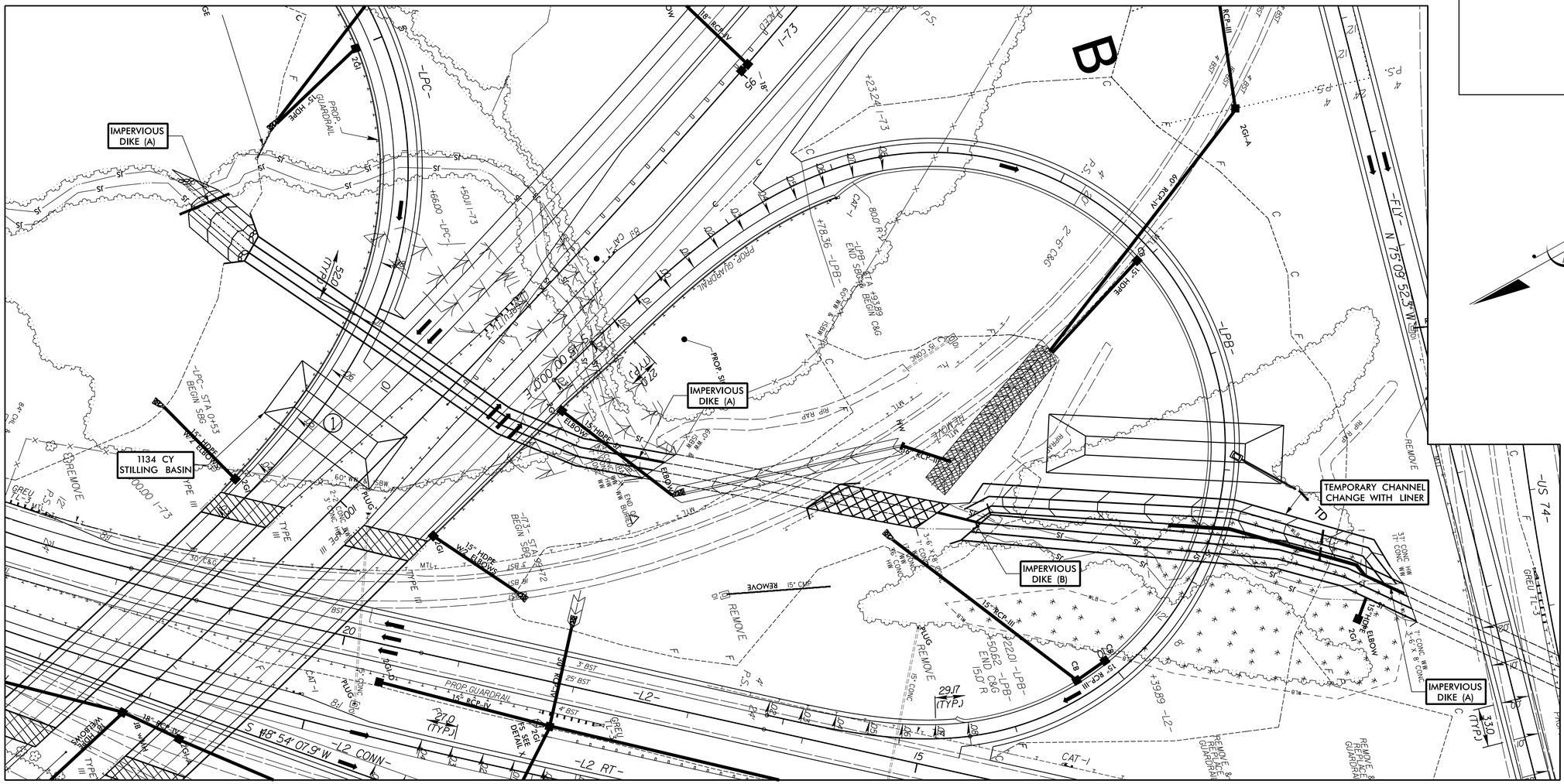
PIs Sta 20+64.23	PI Sta 25+47.48
Θs = 1° 41′ 44.2″	Δ = 14° 18′ 53.7″ (RT)
Ls = 196.85′	D = 1° 43′ 21.9″
LT = 131.24′	L = 830.93′
ST = 65.62′	T = 417.64′
	R = 3,325.83′



PAVEMENT REMOVAL

SEE SHEET NO. 21 FOR –I–73– PROFILE.
SEE SHEET NO. 31 FOR –RPA– PROFILE.
SEE SHEET NO. 34 FOR –RPC– PROFILE.
SEE SHEET NO. 36 FOR –LPB– PROFILE.
SEE SHEET NOS. 37 AND 38 FOR –LPC– PROFILE.
SEE SHEET NO. 39 FOR –L2 RT–/–L2 REV– PROFILE.
SEE SHEET NO. 41 FOR –L2 CONN– PROFILE.
SEE SHEET NO. 2B–3 FOR BRIDGE SKETCHES.

PROJECT REFERENCE NO.	SHEET NO.
R-3421A	EC-9A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

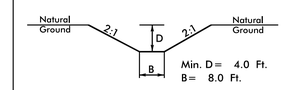


CULVERT CONSTRUCTION SEQUENCE –I–73– STA. 98+63
&
CULVERT CONSTRUCTION SEQUENCE –LPB– STA. 8+69

1. CONSTRUCT STILLING BASIN #1 WITH A MINIMUM CAPACITY OF 1134 C.Y.
2. UTILIZE SKIMMER BASIN A–150 AS A STILLING BASIN DURING CONSTRUCTION OF THE PROPOSED DOWNSTREAM CULVERT.
2. CONSTRUCT TEMPORARY CHANNEL CHANGE WITH LINER (8 FT BASE; 4.0 FT DEEP; 2:1 SIDE SLOPES).
3. CONSTRUCT IMPERVIOUS DIKES A & B.
4. DIVERT STREAM THROUGH TEMPORARY CHANNEL AND EASTERN BARREL OF BOTH EXISTING CULVERTS AS SHOWN ON PLAN.
5. CONSTRUCT THE FULL LENGTHS OF THE TWO WESTERN BARRELS, BOTH UPSTREAM AND DOWNSTREAM OF THE EXISTING CULVERT, INCLUDING BOTH WESTERN WINGWALLS. CONSTRUCT APPROXIMATELY 353' OF THE UPSTREAM EASTERN BARREL, 225' OF THE DOWNSTREAM EASTERN BARREL OF THE PROPOSED CULVERT. REMOVE TWO WESTERN BARRELS OF EXISTING CULVERT. CONSTRUCT WESTERN WINGWALL AT OUTLET OF EXISTING CULVERT AND CONSTRUCT PROPOSED CHANNELS TO TIE TO WESTERN BARRELS OF PROPOSED UP AND DOWN STREAM CULVERTS AND CONSTRUCT ROCK VANES IN PROPOSED CHANNEL AT UPSTREAM END AS SHOWN ON PLAN.

NOTE:
UTILIZE TEMPORARY SKIMMER BASINS AS STILLING BASIN WHERE APPLICABLE.

TEMPORARY CHANNEL CHANGE WITH LINER
(Not to Scale)



Type of Liner = Geotextile for Soil Stabilization, Type 4

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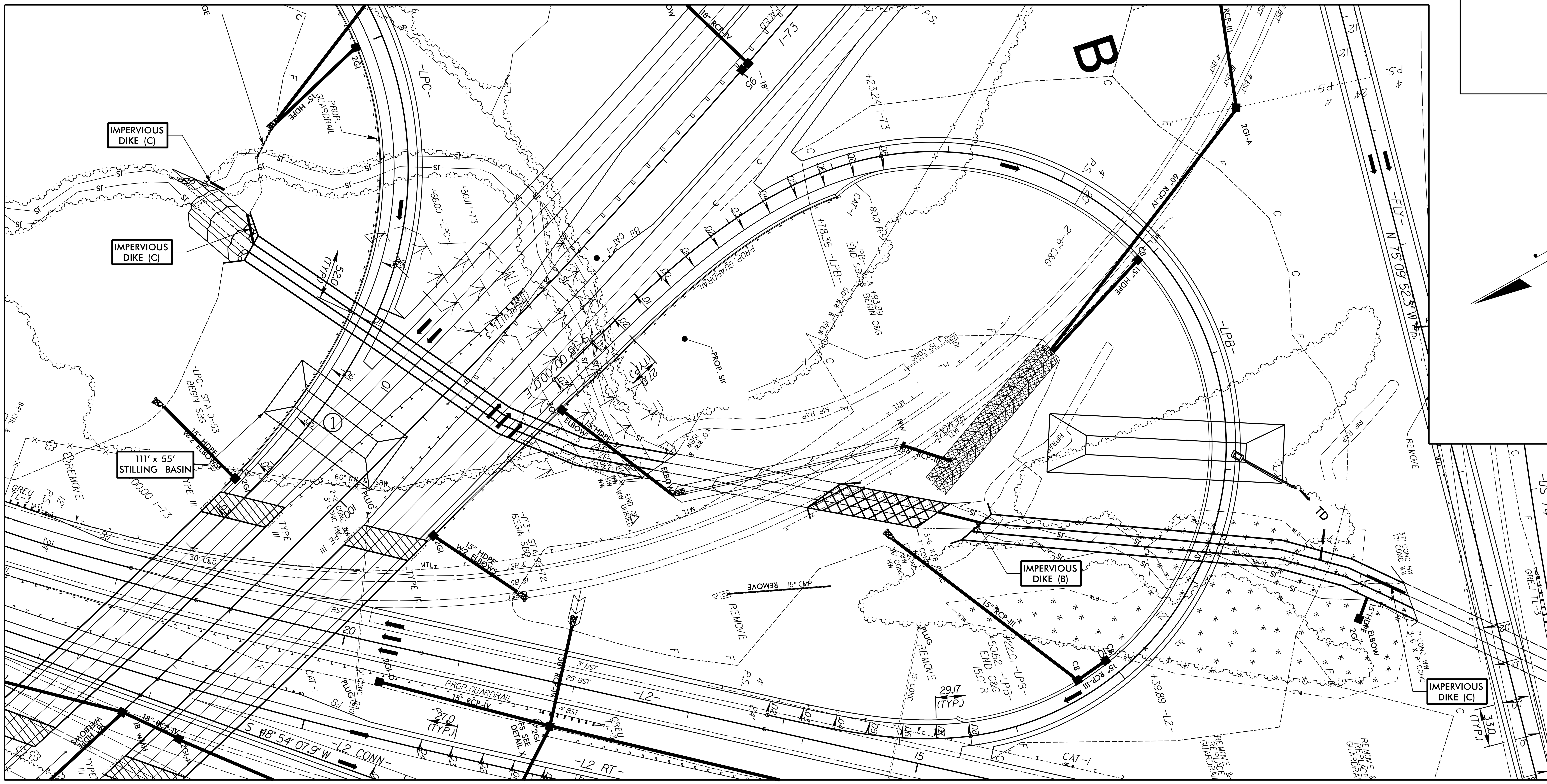
PROJECT REFERENCE NO.	SHEET NO.
R-3421A	EC-9B
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



NAD 83/95

CULVERT CONSTRUCTION SEQUENCE –I–73– STA. 98+63 & CULVERT CONSTRUCTION SEQUENCE –LPB– STA. 8+69

1. REMOVE IMPERVIOUS DIKES (A), MAINTAIN IMPERVIOUS DIKES (B) AND INSTALL IMPERVIOUS DIKES (C) AS SHOWN ON PLAN.
2. ABANDON TEMPORARY CHANNEL AND DIVERT STREAM THROUGH THE TWO WESTERN BARRELS OF BOTH THE PROPOSED AND THE EXISTING CULVERTS.
3. CONSTRUCT APPROXIMATELY 54' OF THE UPSTREAM EASTERN BARREL AND APPROXIMATELY 133' OF THE DOWNSTREAM EASTERN BARREL. REMOVE EASTERN BARREL OF EXISTING CULVERT, CONSTRUCT EASTERN HEADEWALL AT EXISTING CULVERT AND GRADE CHANNEL TO INLET OF DOWNSTREAM PROPOSED CULVERT.
4. REMOVE IMPERVIOUS ALL DIKES AND DIVERT STREAM THROUGH NEW CULVERT.
5. REMOVE STILLING BASINS.
6. CONSTRUCT ROADWAY FILL.

NOTE:
UTILIZE TEMPORARY SKIMMER BASINS AS STILLING BASIN WHERE APPLICABLE.

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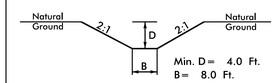
PROJECT REFERENCE NO.	SHEET NO.
R-3421A	EC-9C
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

CULVERT CONSTRUCTION SEQUENCE –LPC– STA. 13+11

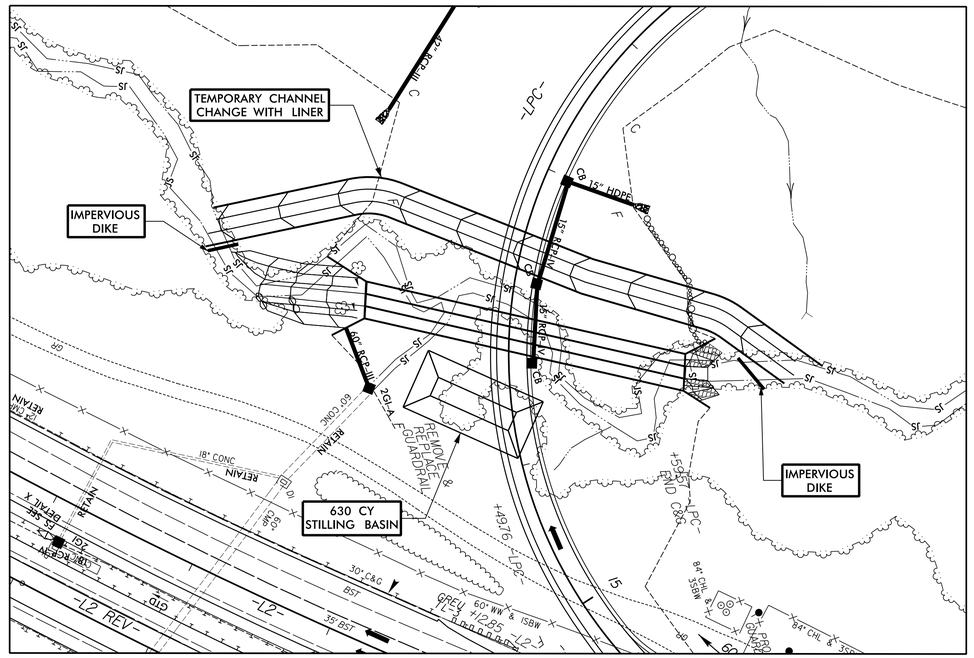
1. CONSTRUCT STILLING BASIN WITH A MINIMUM CAPACITY OF 630 C.Y.
2. CONSTRUCT TEMPORARY CHANNEL CHANGE WITH LINER (8 FT BASE; 4.0 FT DEEP; 2:1 SIDE SLOPES).
3. CONSTRUCT IMPERVIOUS DIKES.
4. DIVERT STREAM THROUGH TEMPORARY CHANNEL.
5. CONSTRUCT STREAM RELOCATION, PROPOSED CULVERT, ROCK SILLS, ROCK VANES AND CHANNEL IMPROVEMENTS.
6. REMOVE IMPERVIOUS DIKES AND DIVERT STREAM THROUGH NEW CULVERT.
7. REMOVE STILLING BASIN.
8. CONSTRUCT ROADWAY FILL.

TEMPORARY CHANNEL CHANGE WITH LINER
(Not to Scale)



Type of Liner = Geotextile for Soil Stabilization, Type 4

NAD 83/95



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PROJECT REFERENCE NO.	SHEET NO.
R-3421A	EC-10/CONST.10

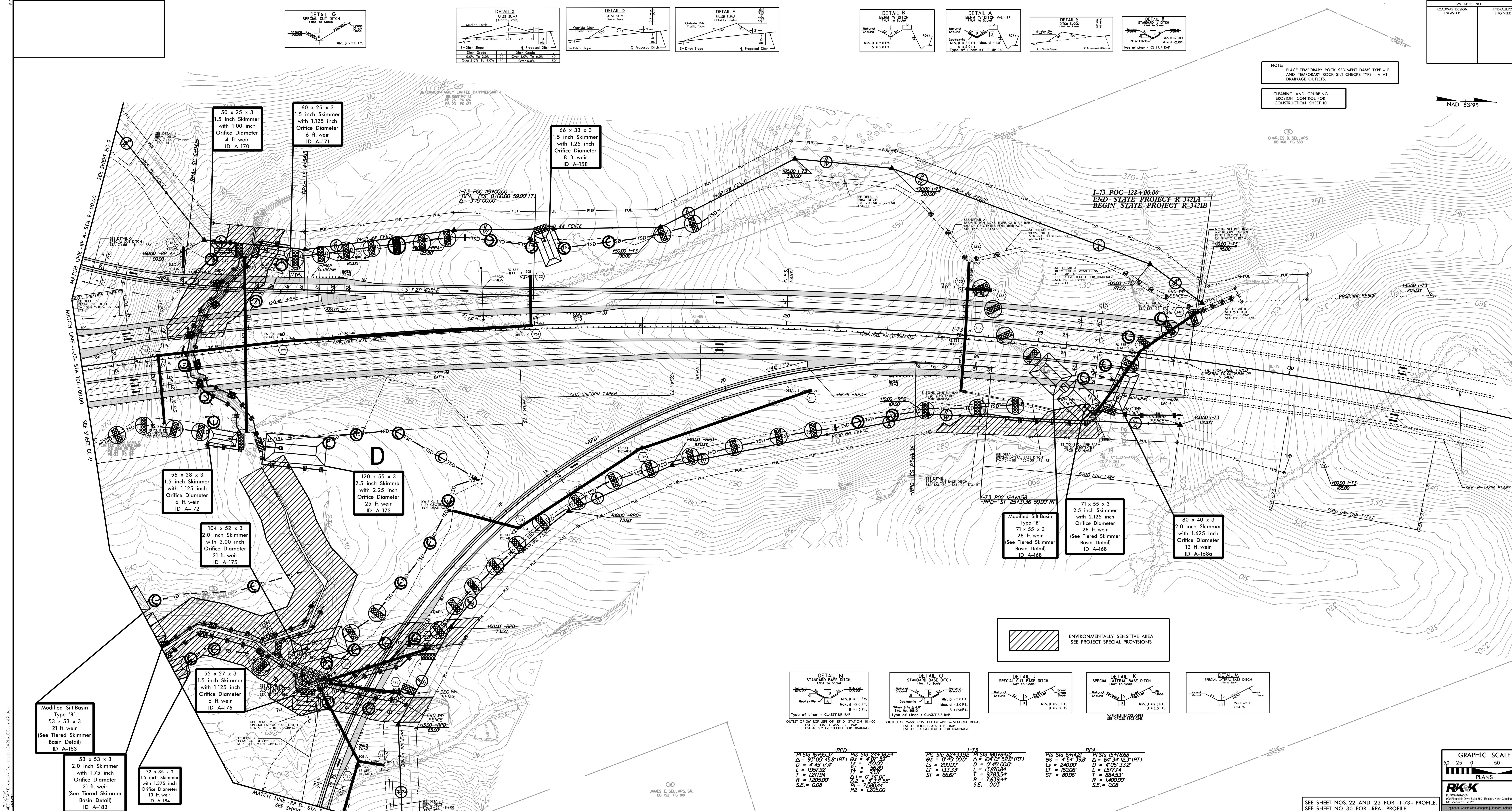
R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

REVISIONS

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 10



-RPD-

PI Sta 16+95.37	PIs Sta 24+38.24
Δ = 93° 05' 45.8" (RT)	θs = 4° 07' 59"
D = 4° 45' 17.4"	Ls = 150.00
L = 1,957.92	ST = 56.89
T = 1,271.94	LT = 93.17
R = 1,205.00'	Δ1 = 0° 34' 01"
S.E. = 0.08	Δ2 = 3° 33' 58"
	R1 = 7,580.44
	R2 = 1,205.00

I-73

PIs Sta 82+33.92	PI Sta 180+84.12
θs = 0° 45' 00.0"	Δ = 104° 01' 52.6" (RT)
Ls = 200.00'	D = 0° 45' 00.0"
LT = 133.33'	L = 13,870.84
ST = 66.67'	T = 9,783.54'
	R = 7,639.44'
	S.E. = 0.03

-RPA-

PIs Sta 6+14.21	PI Sta 15+78.68
θs = 4° 54' 39.8"	Δ = 64° 34' 12.3" (RT)
Ls = 240.00'	D = 4° 05' 33.2"
LT = 160.06'	L = 1,577.74
ST = 80.06'	T = 884.53'
	R = 1,400.00'
	S.E. = 0.08

SEE SHEET NOS. 22 AND 23 FOR -I-73- PROFILE.
SEE SHEET NO. 30 FOR -RPA- PROFILE.
SEE SHEET NO. 35 FOR -RPD- PROFILE.

GRAPHIC SCALE
50 25 0 50 100
PLANS

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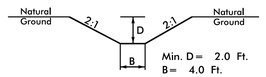
PROJECT REFERENCE NO.	SHEET NO.
R-3421A	EC-10A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NAD 83/95

CULVERT CONSTRUCTION SEQUENCE –RPD– STA. 9+25

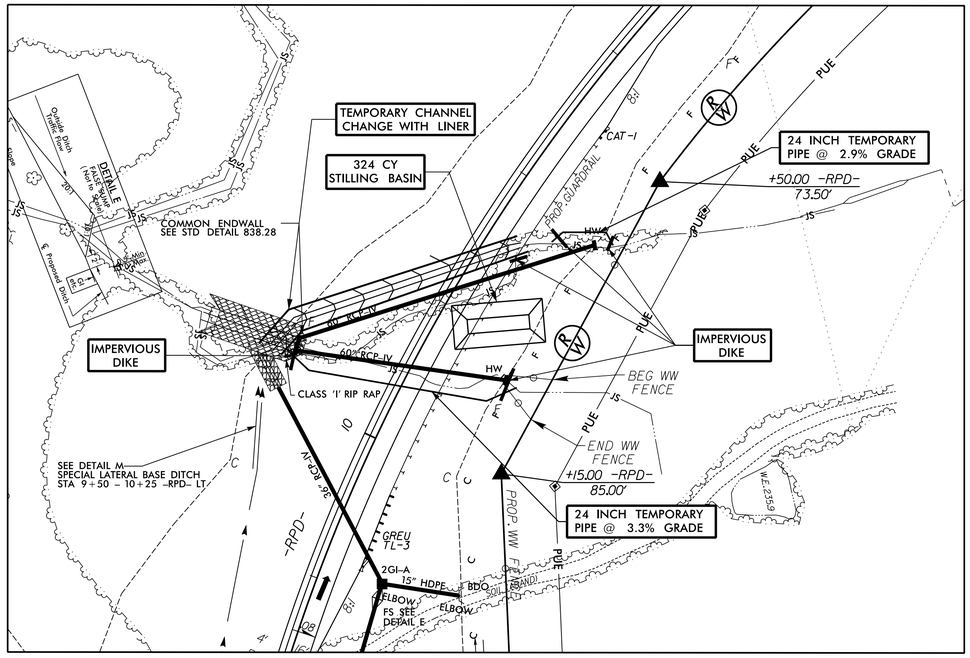
1. CONSTRUCT STILLING BASIN WITH A MINIMUM CAPACITY OF 324 C.Y.
2. CONSTRUCT TEMPORARY CHANNEL CHANGE WITH LINER (4 FT BASE; 2.0 FT DEEP; 2:1 SIDE SLOPES) AND INSTALL BOTH 24" TEMPORARY PIPES.
3. CONSTRUCT IMPERVIOUS DIKES AND DIVERT STREAMS THROUGH TEMPORARY CHANNEL AND TEMPORARY PIPES.
4. CONSTRUCT BOTH NEW 60" REINFORCED CONCRETE PIPES.
5. REMOVE IMPERVIOUS DIKES, TEMPORARY PIPES, TEMPORARY CHANNEL CHANGE AND DIVERT STREAMS THROUGH NEW REINFORCED CONCRETE PIPES.
6. REMOVE STILLING BASIN.
7. CONSTRUCT ROADWAY FILL.

TEMPORARY CHANNEL CHANGE WITH LINER
(Not to Scale)



Min. D = 2.0 Ft.
B = 4.0 Ft.

Type of Liner = Geotextile for Soil Stabilization, Type 4



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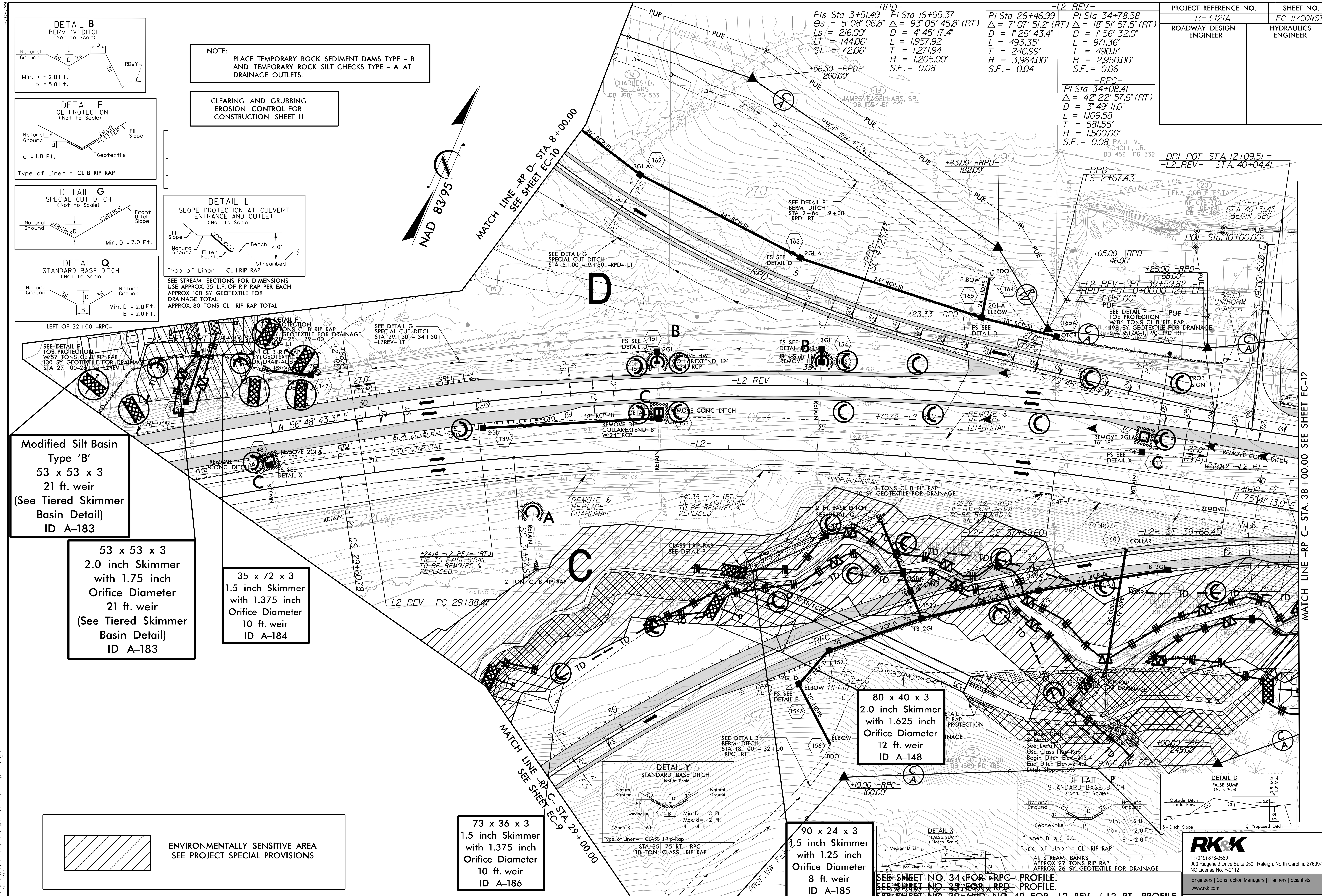
PROJECT REFERENCE NO. R-3421A
SHEET NO. EC-11/CONST.11
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
NOTE: PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B AND TEMPORARY ROCK SILT CHECKS TYPE - A AT DRAINAGE OUTLETS.
CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 11
NAD 83/95
DETAIL B
BERM 'V' DITCH
(Not to Scale)
Min. D = 2.0 Ft.
b = 5.0 Ft.
DETAIL F
TOE PROTECTION
(Not to Scale)
d = 1.0 Ft.
Type of Liner = CL B RIP RAP
DETAIL G
SPECIAL CUT DITCH
(Not to Scale)
Min. D = 2.0 Ft.
DETAIL Q
STANDARD BASE DITCH
(Not to Scale)
Min. D = 2.0 Ft.
B = 2.0 Ft.
LEFT OF 32+00 -RPC-
DETAIL L
SLOPE PROTECTION AT CULVERT ENTRANCE AND OUTLET
(Not to Scale)
Type of Liner = CL I RIP RAP
SEE STREAM SECTIONS FOR DIMENSIONS
USE APPROX. 35 L.F. OF RIP RAP PER EACH
APPROX 100 SY GEOTEXTILE FOR
APPROX. 80 TONS CL I RIP RAP TOTAL
-RPD-
PIs Sta 3+51.49
Θs = 5° 08' 06.8"
Ls = 216.00'
LT = 144.06'
ST = 72.06'
PI Sta 16+95.37
Δ = 93° 05' 45.8" (RT)
D = 4° 45' 17.4"
L = 1,957.92
T = 1,271.94
R = 1,205.00'
S.E. = 0.08
-L2 REV-
PI Sta 26+46.99
Δ = 7° 07' 51.2" (RT)
D = 1° 26' 43.4"
L = 493.35'
T = 246.99'
R = 3,964.00'
S.E. = 0.04
PI Sta 34+78.58
Δ = 18° 51' 57.5" (RT)
D = 1° 56' 32.0"
L = 971.36'
T = 490.11'
R = 2,950.00'
S.E. = 0.06
-RPC-
PI Sta 34+08.41
Δ = 42° 22' 57.6" (RT)
D = 3° 49' 11.0"
L = 1,109.58
T = 581.55'
R = 1,500.00'
S.E. = 0.08
-DRI-POT STA 12+09.51 = -L2 REV- STA 40+04.41
MATCH LINE -RP D- STA. 8+00.00 SEE SHEET EC-10
MATCH LINE -RP C- STA. 38+00.00 SEE SHEET EC-12
MATCH LINE -RP C- STA. 29+00.00 SEE SHEET EC-9
Modified Silt Basin Type 'B'
53 x 53 x 3
21 ft. weir
(See Tiered Skimmer Basin Detail)
ID A-183
53 x 53 x 3
2.0 inch Skimmer with 1.75 inch Orifice Diameter
21 ft. weir
(See Tiered Skimmer Basin Detail)
ID A-183
35 x 72 x 3
1.5 inch Skimmer with 1.375 inch Orifice Diameter
10 ft. weir
ID A-184
80 x 40 x 3
2.0 inch Skimmer with 1.625 inch Orifice Diameter
12 ft. weir
ID A-148
73 x 36 x 3
1.5 inch Skimmer with 1.375 inch Orifice Diameter
10 ft. weir
ID A-186
90 x 24 x 3
1.5 inch Skimmer with 1.25 inch Orifice Diameter
8 ft. weir
ID A-185
ENVIRONMENTALLY SENSITIVE AREA SEE PROJECT SPECIAL PROVISIONS
DETAIL Y
STANDARD BASE DITCH
(Not to Scale)
Type of Liner = CLASS I Rip-Rap
STA. 35+75 RT. -RPC-
10 TON CLASS I RIP-RAP
DETAIL X
FALSE SUMP
(Not to Scale)
DETAIL P
STANDARD BASE DITCH
(Not to Scale)
Min. D = 2.0 Ft.
Max. d = 2.0 Ft.
B = 2.0 Ft.
Type of Liner = CL I RIP RAP
AT STREAM BANKS
APPROX 27 TONS RIP RAP
APPROX 26 SY GEOTEXTILE FOR DRAINAGE
DETAIL D
FALSE SUMP
(Not to Scale)
SEE SHEET NO. 34 FOR -RPC- PROFILE.
SEE SHEET NO. 35 FOR -RPD- PROFILE.
SEE SHEET NO. 39 AND NO. 40 FOR -L2 REV- /-L2 RT- PROFILE.
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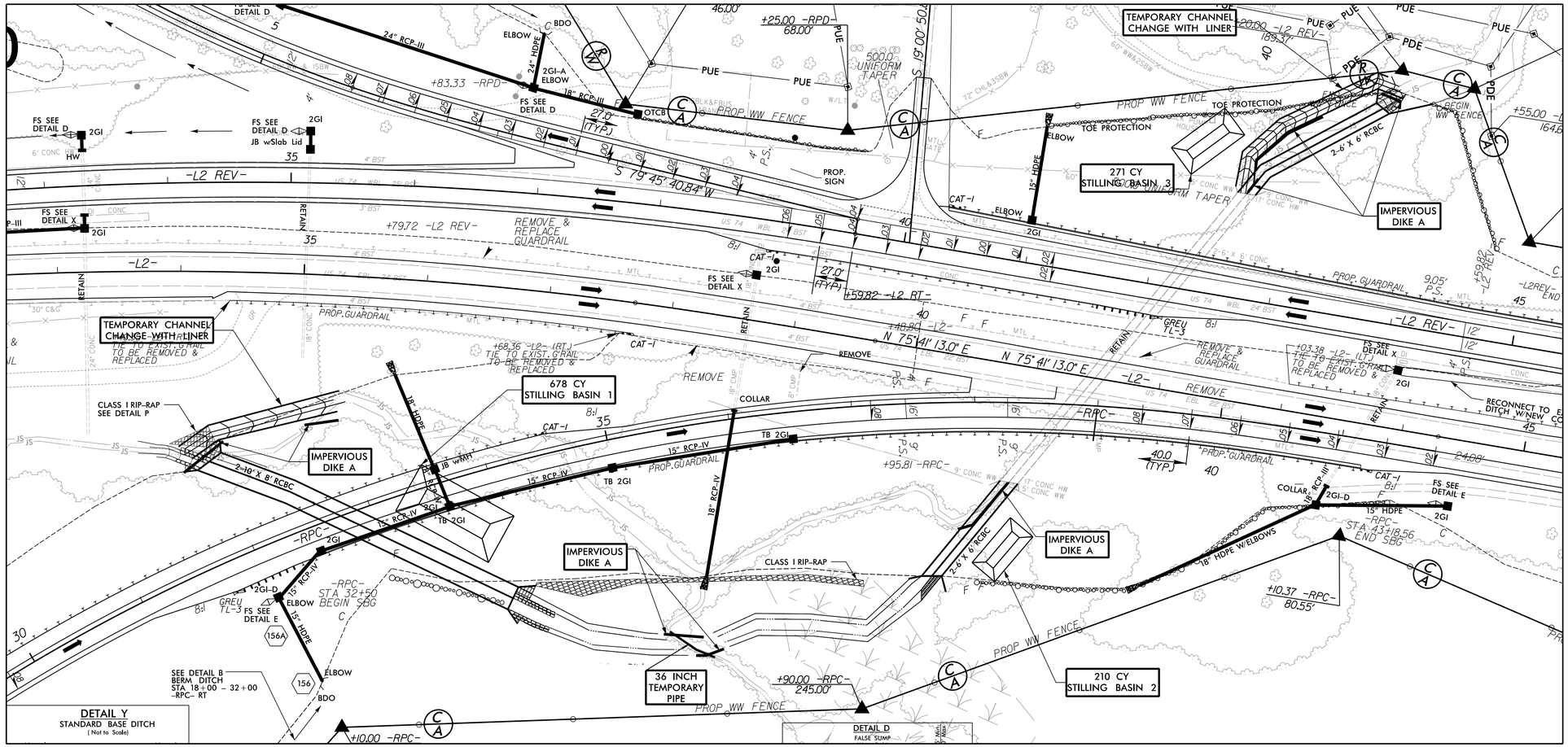
-L2 REV-
-L2-
-RPD-
-RPC-
N 56° 48' 43.31" E
S 79° 45' 46.84" W
N 75° 41' 13.0" E
-L2 REV- PC 29+88.47
-L2- CS 37+69.60
-L2- ST 39+66.45
-RPD- TS 2+07.43
-L2REV- STA 40+31.45 BEGIN SBG
POT Sta. 10+00.00
500.0 UNIFORM TAPER
CHARLES D. SELLARS
JAMES E. SELLARS, SR.
PAUL V. SCHOLL, JR.
LENA COBLE ESTATE
MARY JO TAYLOR

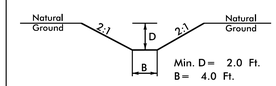
PROJECT REFERENCE NO.	SHEET NO.
R-3421A	EC-11A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



CULVERT CONSTRUCTION SEQUENCE –RPC– STA. 32+75 AND –L2– STA. 41+47

1. CONSTRUCT STILLING BASIN 1 WITH A MINIMUM CAPACITY OF 678 C.Y., STILLING BASIN 2 WITH A MINIMUM CAPACITY OF 210 C.Y. AND STILLING BASIN 3 WITH A MINIMUM CAPACITY OF 271 C.Y.
2. CONSTRUCT TEMPORARY CHANNEL CHANGE WITH LINER (4 FT BASE; 2.0 FT DEEP; 2:1 SIDE SLOPES) FOR –RPC– PROPOSED CULVERT & –L2– CULVERT EXTENSION.
3. CONSTRUCT IMPERVIOUS DIKES (A) FOR –RPC– PROPOSED CULVERT, AT BOTH ENDS OF –L2– CULVERT EXTENSION AND AT CHANNEL RELOCATION. INSTALL 36" TEMPORARY PIPE AT CHANNEL RELOCATION.
4. DIVERT STREAM THROUGH THE CHANNEL CHANGE AT –L2– CULVERT EXTENSION, THE WESTERN BARREL OF EXISTING CULVERT AND THROUGH TEMPORARY CHANNEL CHANGE AT –RPC– PROPOSED CULVERT.
5. CONSTRUCT THE ENTIRE LENGTH OF –RPC– PROPOSED CULVERT, INCLUDING THE WINGWALLS AND CHANNEL IMPROVEMENTS, ENTIRE LENGTH OF THE EASTERN BARREL AT INLET AND OUTLET ENDS, APPROXIMATELY 108 LF AT THE INLET END AND APPROXIMATELY 60 LF AT THE OUTLET END OF –L2REV– CULVERT.
6. CONSTRUCT ENTIRE LENGTH OF CHANNEL RELOCATION BETWEEN INLET END OF –RPC– CULVERT AND OUTLET END OF –L2– CULVERT EXTENSION.

TEMPORARY CHANNEL CHANGE WITH LINER
(Not to Scale)



Min. D = 2.0 Ft.
B = 4.0 Ft.

Type of Liner = Geotextile for Soil Stabilization, Type 4

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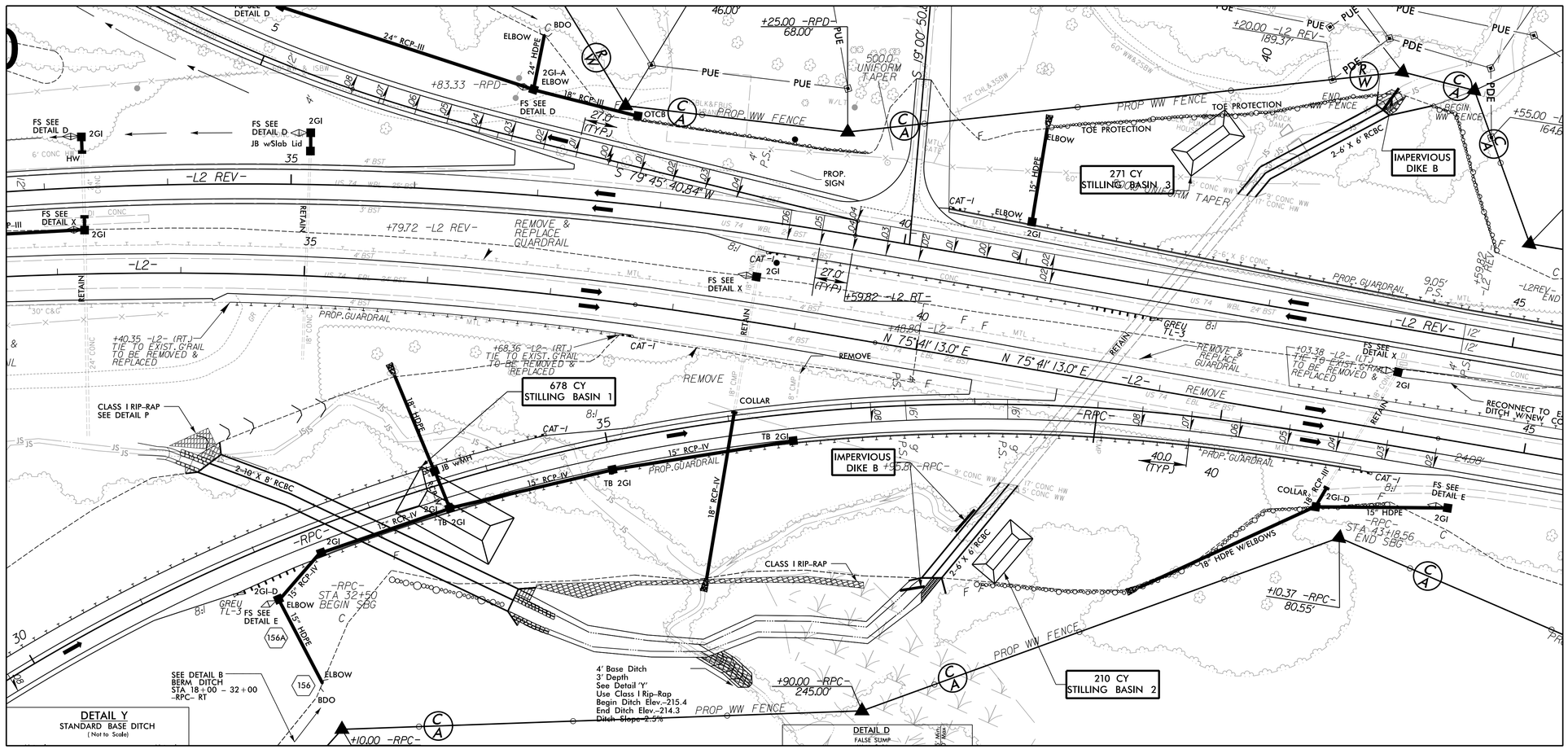
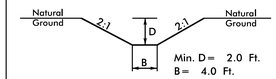
PROJECT REFERENCE NO.	SHEET NO.
R-3421A	EC-11B
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



CULVERT CONSTRUCTION SEQUENCE –RPC– STA. 32+75 AND –L2– STA. 41+47

1. CONSTRUCT IMPERVIOUS DIKES (B) AS SHOWN ON PLAN. REMOVE IMPERVIOUS DIKES (A) AND TEMPORARY PIPES FROM PHASE I.
2. DIVERT STREAM THROUGH NEW EASTERN BARREL AT INLET AND OUTLET END OF –L2– CULVERT EXTENSIONS, NEW RELOCATED STREAM, AND BOTH BARRELS OF NEW –RPC– CULVERTS. FILL IN BOTH TEMPORARY CHANNEL CHANGES.
3. CONSTRUCT REMAINING SECTIONS OF WESTERN BARRELS AT BOTH THE INLET AND OUTLET ENDS OF –L2– CULVERT EXTENSION. USING PUMP AROUND OPERATIONS, INSTALL RIP RAP ON EXISTING STREAM ENTERING STREAM RELOCATION CHANNEL SHOWN ON PLAN.
4. REMOVE IMPERVIOUS DIKES (B) AND ALLOW STREAM TO FLOW THROUGH BOTH BARRELS OF –L2 CULVERT EXTENSION.
5. REMOVE STILLING BASINS.
6. CONSTRUCT ROADWAY FILL.

TEMPORARY CHANNEL CHANGE WITH LINER
(Not to Scale)



Min. D = 2.0 Ft.
B = 4.0 Ft.

Type of Liner = Geotextile for Soil Stabilization, Type 4

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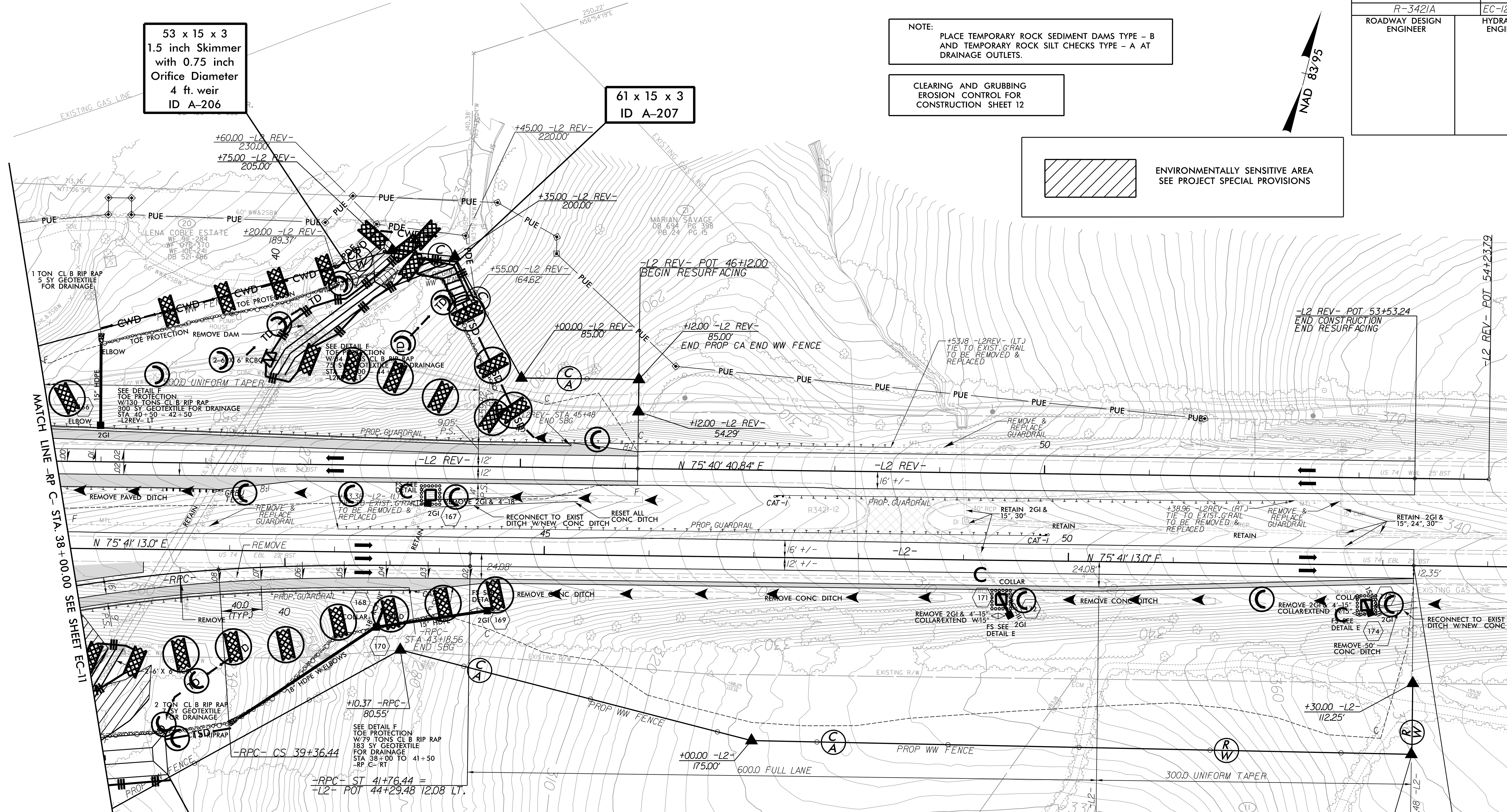
PROJECT REFERENCE NO.	SHEET NO.
R-3421A	EC-12/CONST.12
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

ENVIRONMENTALLY SENSITIVE AREA SEE PROJECT SPECIAL PROVISIONS



DETAIL F
TOE PROTECTION
(Not to Scale)

Natural Ground; d = 1.0 Ft.; 2:1 OR FLATTER; Fill Slope; Geotextile

Type of Liner = CL B RIP RAP

DETAIL X
FALSE SUMP
(Not to Scale)

Median Ditch; S = Ditch Slope; ℄ Proposed Ditch

Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

DETAIL E
FALSE SUMP
(Not to Scale)

Outside Ditch Traffic Flow; 20:1; 10:1; 0.5' Min. 1.0' Max.; S = Ditch Slope; ℄ Proposed Ditch

CLEAN WATER DIVERSION
(Not to Scale)

-RPC-

PI Sta 34+08.41
Δ = 42° 22' 57.6" (RT)
D = 3° 49' 11.0"
L = 1,109.58'
T = 581.55'
R = 1,500.00'
S.E. = 0.08

PIs Sta 40+16.49
θs = 4° 35' 01.2"
Ls = 240.00'
LT = 160.05'
ST = 80.05'

PAVEMENT REMOVAL

SEE SHEET NO. 34 FOR -RPC- PROFILE.
SEE SHEET NO. 40 FOR -L2 REV- PROFILE.

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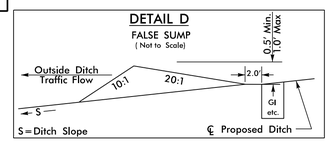
PROJECT REFERENCE NO.	SHEET NO.
R-3421A	EC-13/CONST.13
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

DETAIL D
FALSE SUMP
(Not to Scale)



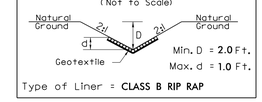
-FLY-
PIs Sta 12+52.55
Θs = 4° 11' 32.5"
Ls = 240.00'
LT = 160.04'
ST = 80.04'

-FLY-
PI Sta 21+55.94
Δ = 53° 19' 18.0" (LT)
D = 3° 29' 37.1"
L = 1,526.25
T = 823.43'
R = 1,640.00'
S.E. =0.08

-FLY-
PIs Sta 29+38.80
Θs = 4° 11' 32.5"
Ls = 240.00'
LT = 160.04'
ST = 80.04'

-FLY-
PIs Sta 39+53.39
Θs = 2° 20' 16.3"
Ls = 231.00'
LT = 154.01'
ST = 77.01'

DETAIL C
STANDARD 'V' DITCH
(Not to Scale)



Type of Liner = CLASS B RIP RAP

-US 74 EBL-
PI Sta 95+61.05
Δ = 28° 43' 16.5" (LT)
D = 2° 05' 03.3"
L = 1,378.02'
T = 703.81'
R = 2,749.00'
S.E. =0.08

-US 74-
PI Sta 91+42.64
Δ = 50° 02' 26.6" (LT)
D = 2° 03' 13.0"
L = 2,436.72'
T = 1,302.21'
R = 2,790.00'
S.E. =0.07

PIs Sta 104+35.15
Θs = 5° 24' 04.2"
Ls = 360.00
ST = 158.00
LT = 202.26
D 1 = 1° 42' 16.3"
D 2 = 3° 41' 47.9"
R1 = 6,050.00
R2 = 2,790.00

(10) ZEBULON AND MAYNIE GIBSON ESTATE
DB 231 PG 413

-US 74- POC 100+00.00 =
-US74EBL- POC 99+62.18 81.65 LT.
-FLY- ST 40+30.37 40.65 RT.
END CONSTRUCTION

MATCH LINE -US 74- STA. 90+00.00
SEE SHEET EC-8

MATCH LINE -FLY- STA. 30+18.16
SEE SHEET EC-8

MATCH LINE -L2 RT- STA. 11+50.00
SEE SHEET EC-9

MATCH LINE -US 74- STA. 103+00.00
SEE SHEET NO. EC-14

NAD 83/95

-US 74 BUS. LOOP-
END MILLING & RESURFACING

-US 74 BUS. EBL-
END MILLING & RESURFACING

-US 74 EBL-
PT Sta. 102+35.26

-US 74 BUS. LOOP-

-US 74 BUS. EBL

REMOVE & REPLACE GUARDRAIL

REMOVE EX. GUARDRAIL

RETAIN

-US 74 EBL-

-US 74-

TIE TO EXISTING DITCH

TS SEE DETAIL D

2GI

REMOVE 2GI

-FLY- ST Sta. 30+98.75

-FLY- N 75° 09' 00" E

REMOVE

GREU TL-3

REMOVE GUARDRAIL & ATTENUATOR

CAT-1

PROP. GUARDRAIL

TIE TO EXIST. DITCH

TS Sta. 37+99.37

-L2- POT 10+00.00
BEGIN RESURFACING

-L2 RT- POT 9+00.00

-L2 RT- POT 9+28.00

-L2 RT- POT 9+39.20
BEGIN RESURFACING

-L2 RT- POT 10+00.00
END RESURFACING

-FLY- ST 40+30.37
BEGIN RESURFACING

-US 74- CS 102+77.15

N 41° 44' 11.2" E

N 41° 38' 41.9" E

-L2 RT-

33.0 (TYP.)

TYPE B-83

TYPE B-83

'V' DITCH W/CLASS 'B' RIP RAP
SEE DETAIL "C"
APPROX. 25 TONS
APPROX. 50 S.Y. FF.

SEE SHEET NO. 29 FOR –FLY– PROFILE.
SEE SHEET NO. 39 FOR –L2 RT– PROFILE.

ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

PAVEMENT REMOVAL

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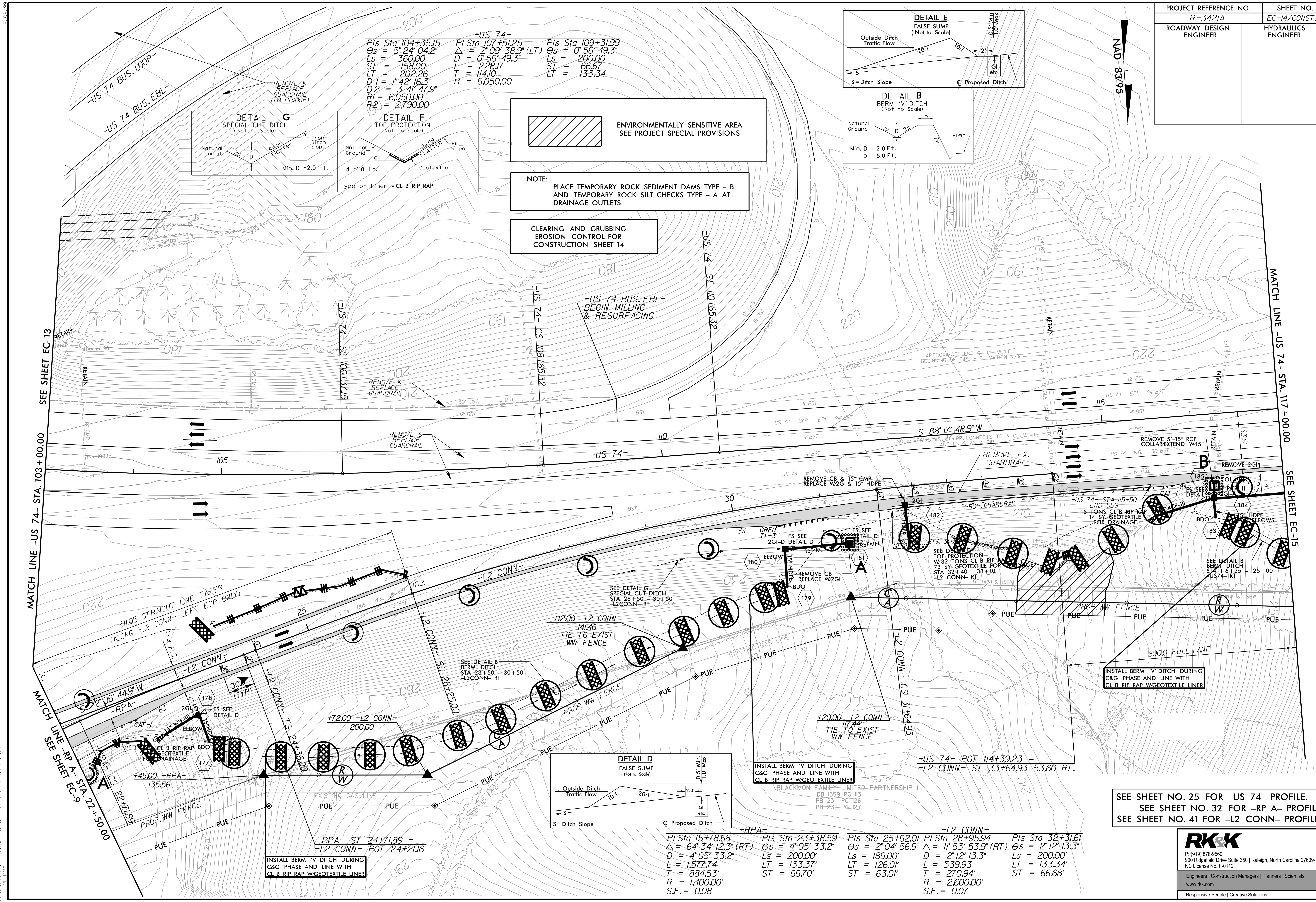
PROJECT REFERENCE NO.	SHEET NO.
R-3421A	EC-14/CONST.14
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NAD 83/95



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 14

-US 74-

PIs Sta 104+35.15	PI Sta 107+51.25	PIs Sta 109+31.99
Θs = 5° 24' 04.2"	Δ = 2° 09' 38.9" (LT)	Θs = 0° 56' 49.3"
Ls = 360.00	D = 0° 56' 49.3"	Ls = 200.00
ST = 158.00	L = 228.17	ST = 66.67
LT = 202.26	T = 114.10	LT = 133.34
D 1 = 1° 42' 16.3"	R = 6,050.00	
D 2 = 3° 41' 47.9"		
R1 = 6,050.00		
R2 = 2,790.00		

SEE SHEET NO. 25 FOR -US 74- PROFILE.
SEE SHEET NO. 32 FOR -RP A- PROFILE.
SEE SHEET NO. 41 FOR -L2 CONN- PROFILE.

-RPA-

PI Sta 15+78.68	PIs Sta 23+38.59
Δ = 64° 34' 12.3" (RT)	Θs = 4° 05' 33.2"
D = 4° 05' 33.2"	Ls = 200.00'
L = 1,577.74	LT = 133.37'
T = 884.53'	ST = 66.70'
R = 1,400.00'	
S.E. = 0.08	

-L2 CONN-

PIs Sta 25+62.01	PI Sta 28+95.94	PIs Sta 32+31.61
Θs = 2° 04' 56.9"	Δ = 11° 53' 53.9" (RT)	Θs = 2° 12' 13.3"
Ls = 189.00'	D = 2° 12' 13.3"	Ls = 200.00'
LT = 126.01'	L = 539.93	LT = 133.34'
ST = 63.01'	T = 270.94'	ST = 66.68'
	R = 2,600.00'	
	S.E. = 0.07	

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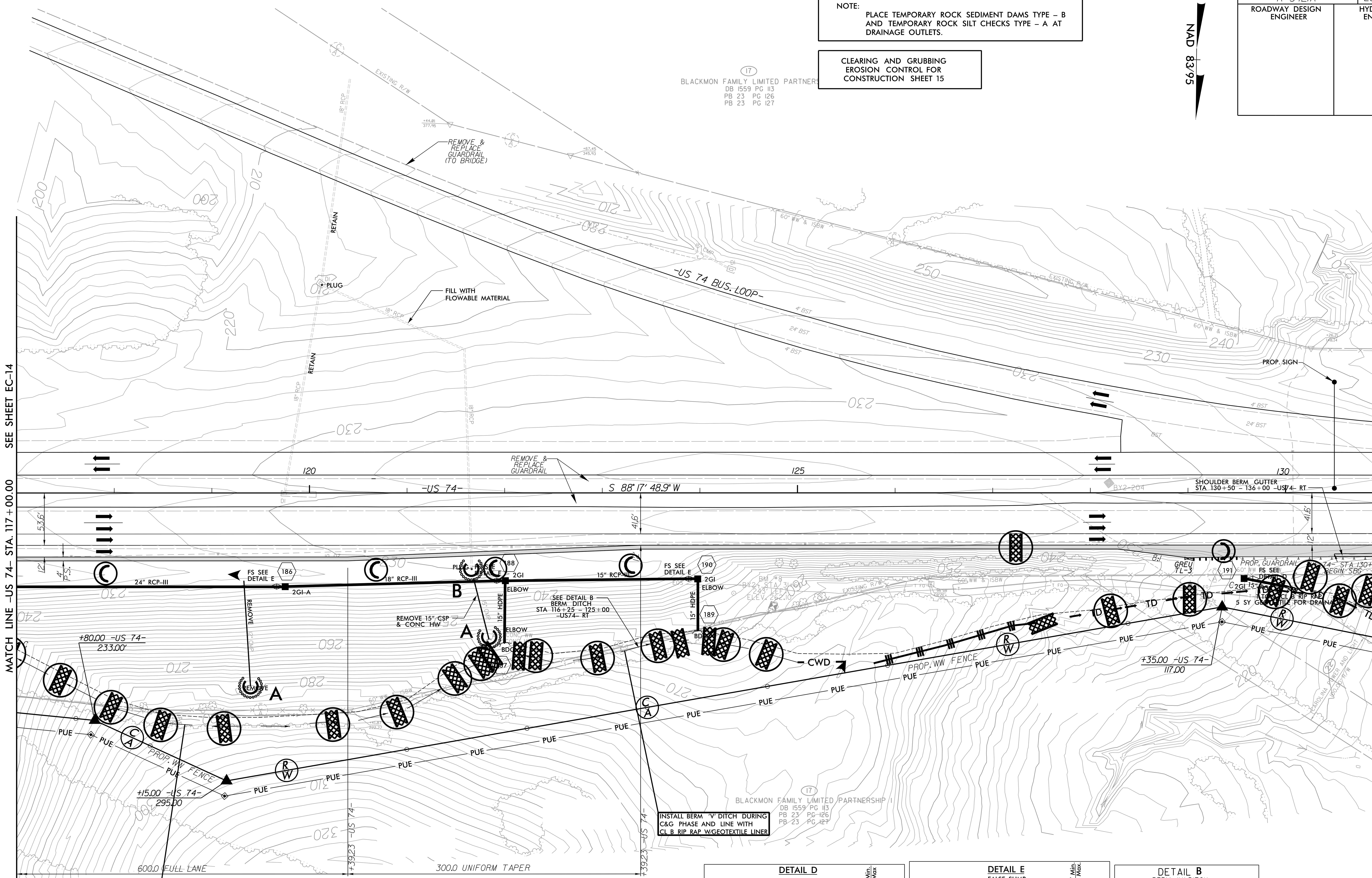
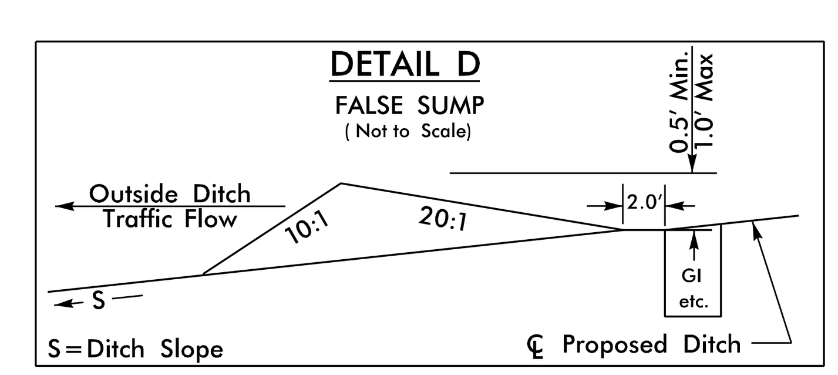
PROJECT REFERENCE NO.	SHEET NO.
R-3421A	EC-15/CONST.15
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

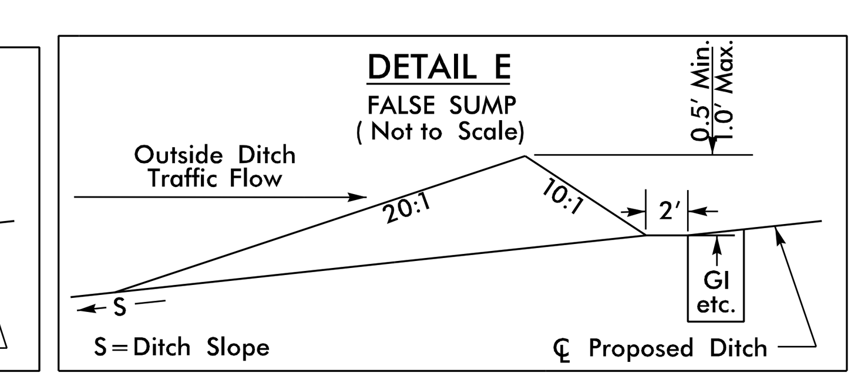
NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE – B AND TEMPORARY ROCK SILT CHECKS TYPE – A AT DRAINAGE OUTLETS.

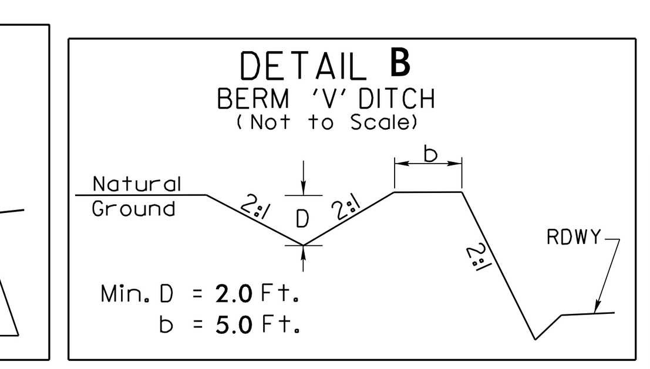
CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 15



INSTALL BERM 'V' DITCH DURING C&G PHASE AND LINE WITH CL B RIP RAP W/GEOTEXTILE LINER







SEE SHEET NO. 25 FOR -US 74- PROFILE.

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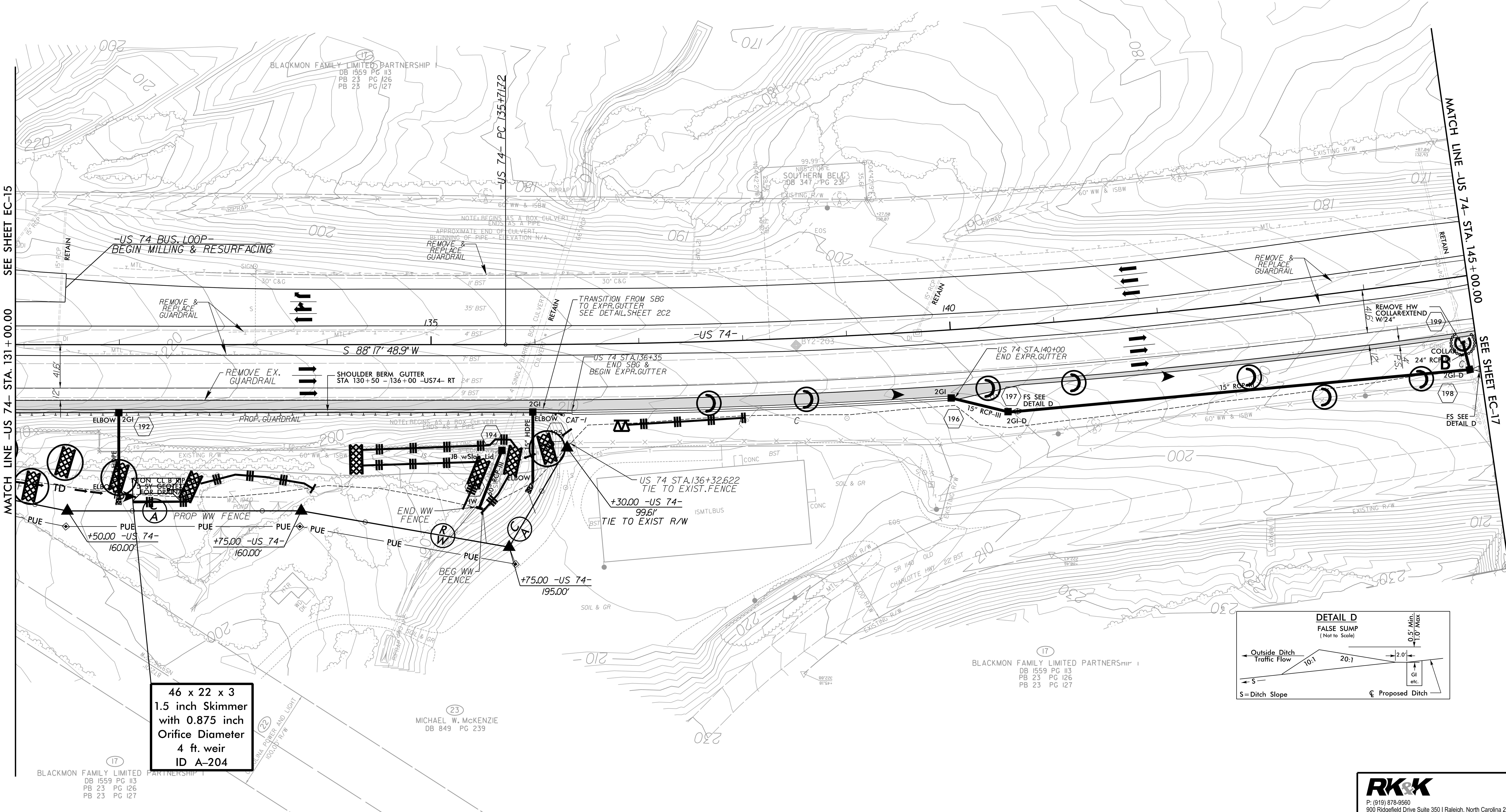
PROJECT REFERENCE NO.	SHEET NO.
R-3421A	EC-16/CONST.16
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

-US 74-
PI Sta 140+67.57
Δ = 8° 43' 28.9" (LT)
D = 0° 52' 53.3"
L = 989.786
T = 495.85
R = 6,500.00

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 16

NAD 83/95



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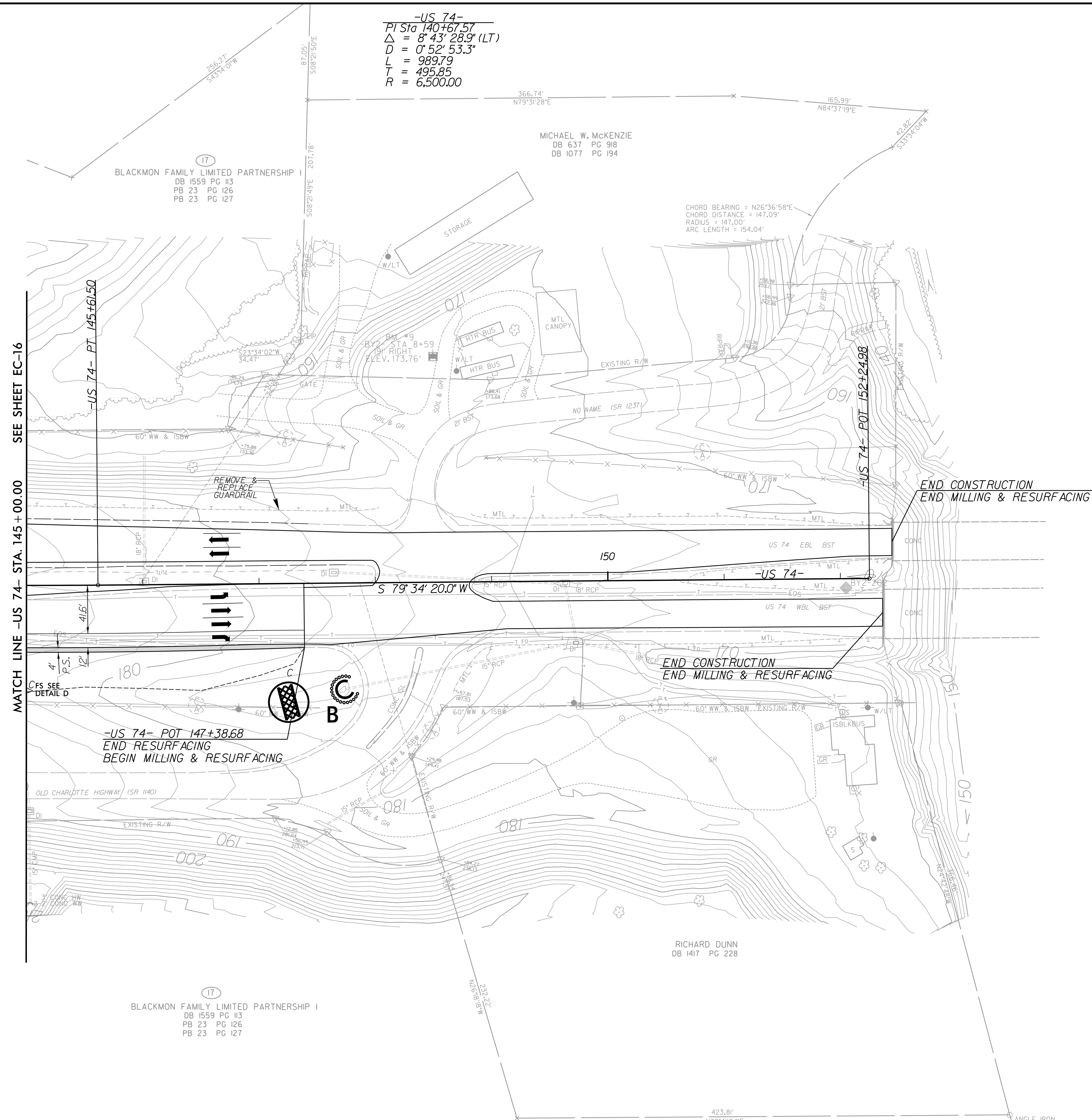
SEE SHEET NO. 26 FOR -US 74- PROFILE.

PROJECT REFERENCE NO.	SHEET NO.
R-3421A	EC-17/CONST.17
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NAD 83/95

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



SEE SHEET NO. 26 FOR -US 74- PROFILE.

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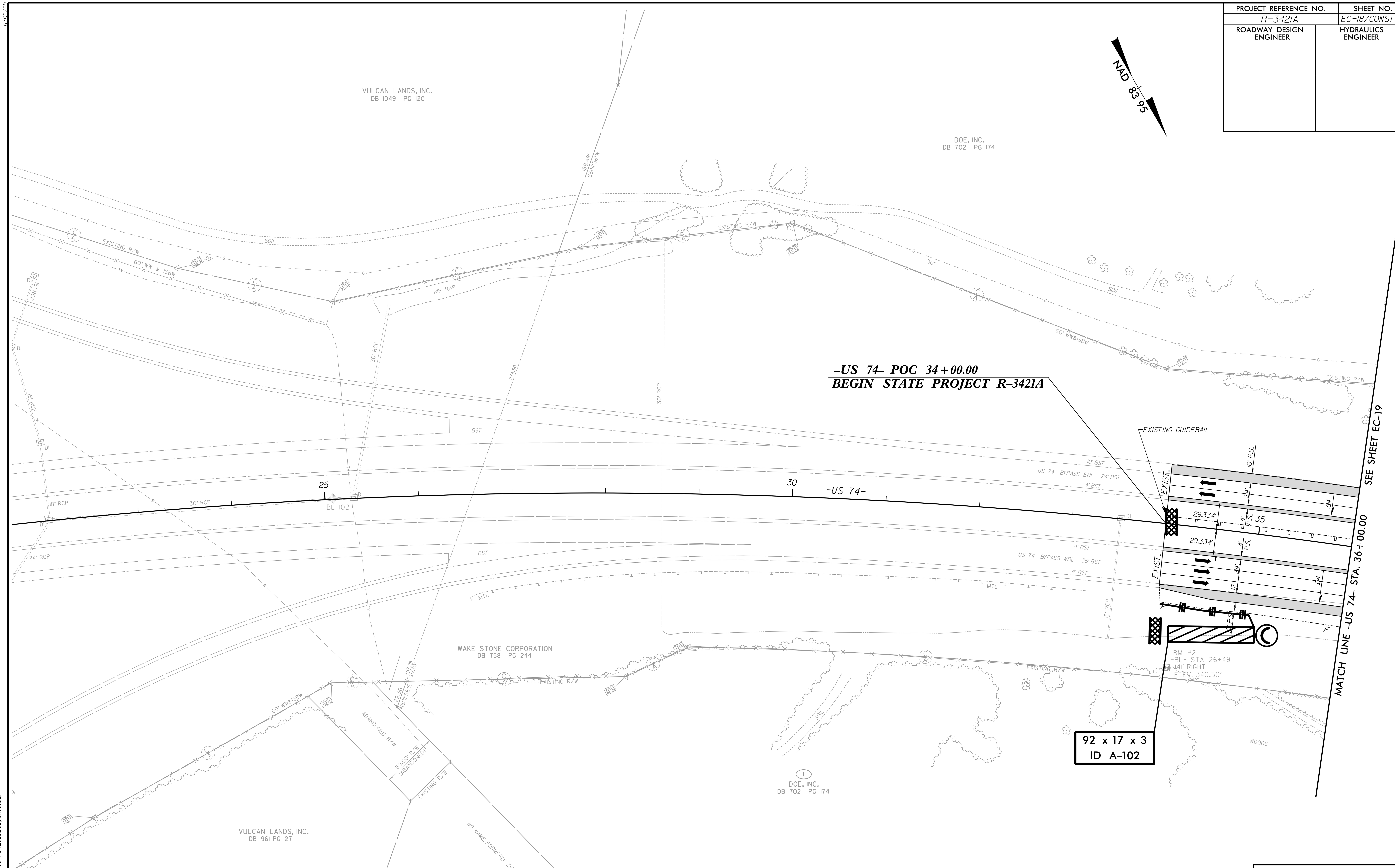
7/1/2019
...\Hydraulics\CADD\PSH\Erosion Control\r3421a_EC_psh17.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-3421A	EC-18/CONST.4
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



-US 74-

PIs Sta 19+25.29	PI Sta 38+31.08	PIs Sta 56+26.08
Θs = 1° 38' 13.4"	Δ = 34° 44' 54.8" (RT)	Θs = 1° 38' 13.4"
Ls = 328.09	D = 0° 59' 52.5"	Ls = 328.08
ST = 109.37	L = 3,482.06	ST = 109.37
LT = 218.74	T = 1,796.43	LT = 218.73
	R = 5,741.46	
	S.E. = 0.04	

SEE SHEET NO. 18 FOR -US 74- PROFILE.

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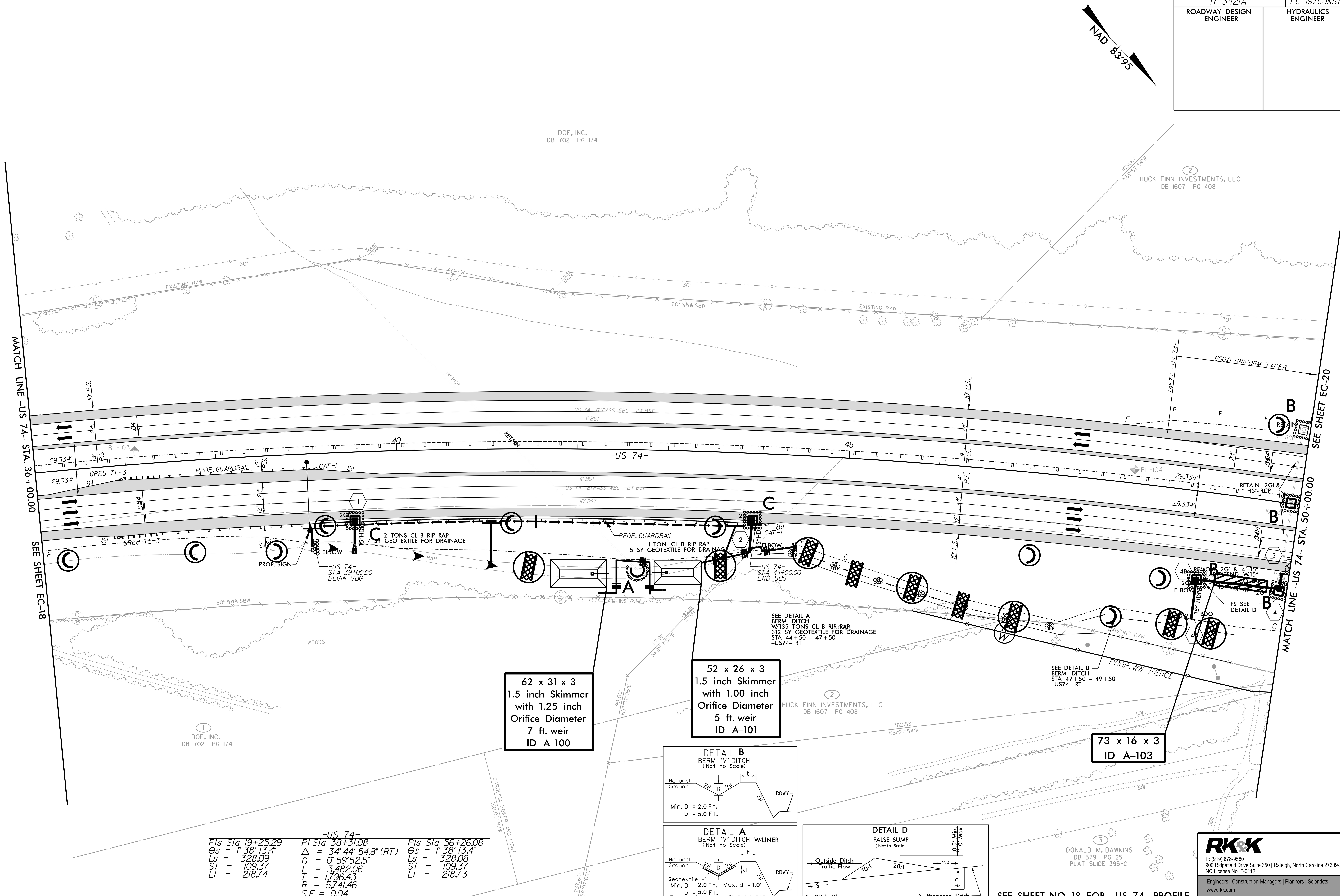
\Hydraulics\CADD\PSH\Erosion Control\r3421a_EC_psh18.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-3421A	EC-19/CONST.5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



-US 74-

PIs Sta 19+25.29	PI Sta 38+31.08	PIs Sta 56+26.08
Θs = 1° 38' 13.4"	Δ = 34° 44' 54.8" (RT)	Θs = 1° 38' 13.4"
Ls = 328.09	D = 0° 59' 52.5"	Ls = 328.08
ST = 109.37	L = 3,482.06	ST = 109.37
LT = 218.74	T = 1,796.43	LT = 218.73
	R = 5,741.46	
	S.E. = 0.04	

SEE SHEET NO. 18 FOR -US 74- PROFILE.

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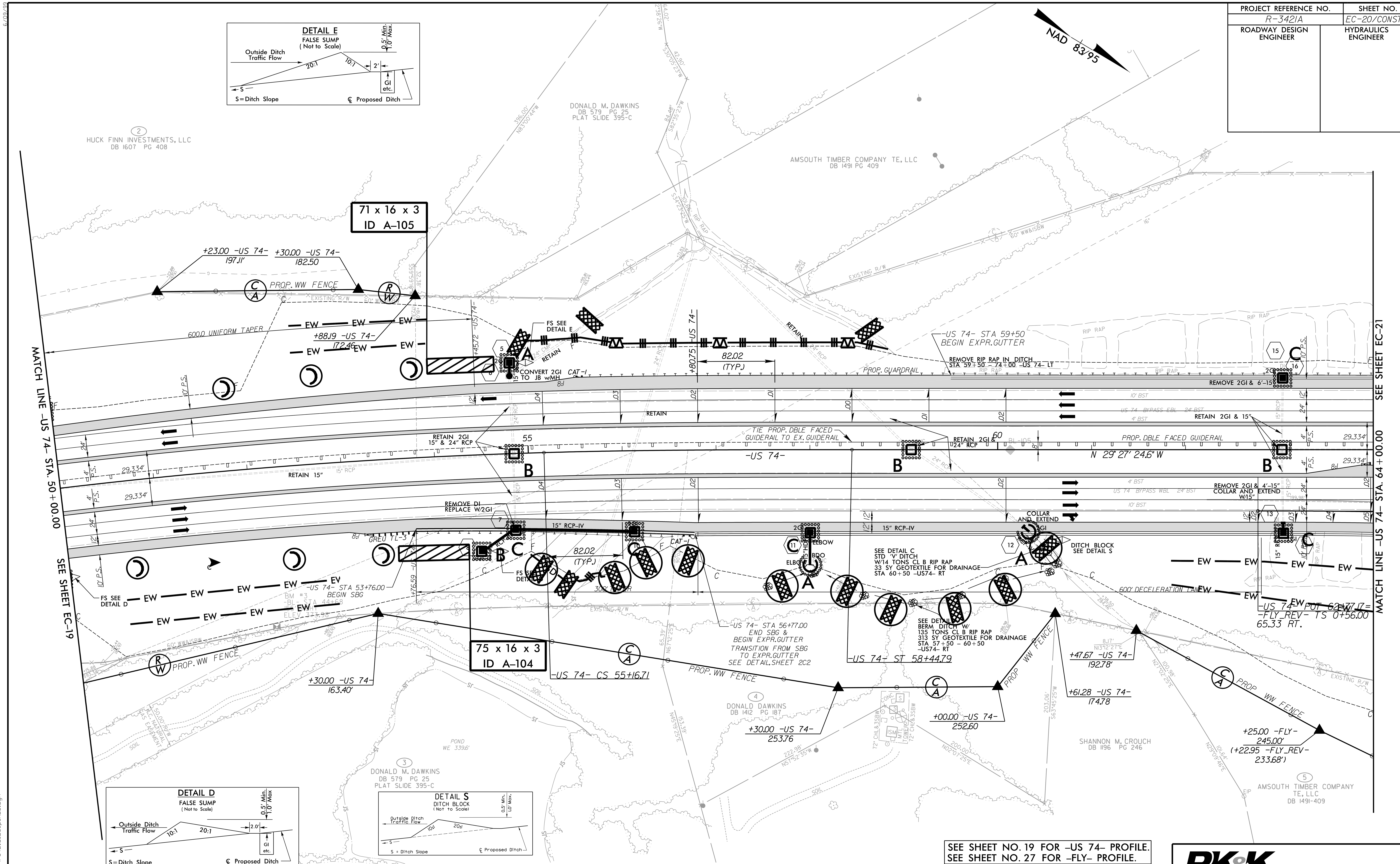
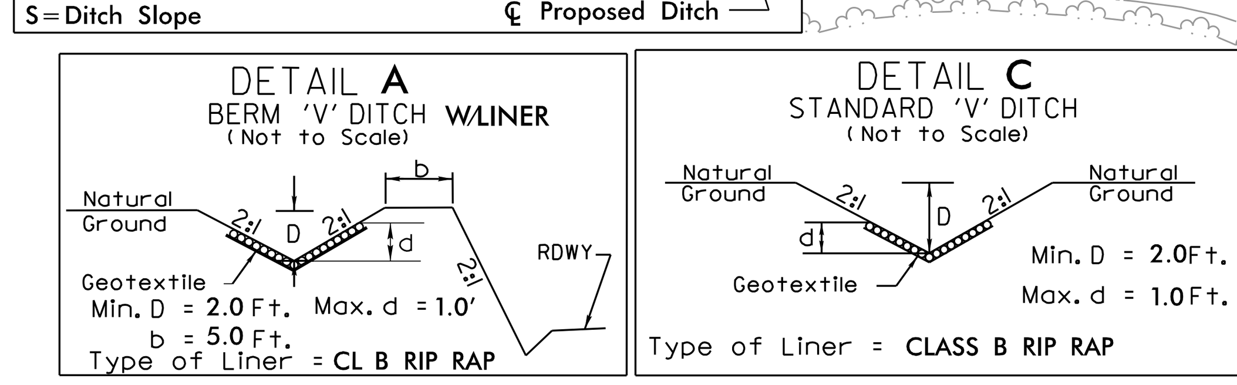
PROJECT REFERENCE NO.	SHEET NO.
R-3421A	EC-20/CONST.6
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER





SEE SHEET NO. 19 FOR -US 74- PROFILE.
SEE SHEET NO. 27 FOR -FLY- PROFILE.

-US 74-

PIs Sta 19+25.29	PI Sta 38+31.08	PIs Sta 56+26.08
Θs = 1° 38' 13.4"	Δ = 34° 44' 54.8" (RT)	Θs = 1° 38' 13.4"
Ls = 328.09	D = 0° 59' 52.5"	Ls = 328.08
ST = 109.37	L = 3,482.06	ST = 109.37
LT = 218.74	T = 1,796.43	LT = 218.73
	R = 5,741.46	
	S.E. = 0.04	

-FLY_REV-

PIs Sta 1+89.36	PI Sta 4+10.47	PIs Sta 6+30.89
Θs = 3° 08' 53.2"	Δ = 9° 42' 08.9" (RT)	Θs = 3° 08' 53.2"
Ls = 200.00'	D = 3° 08' 53.2"	Ls = 200.00'
LT = 133.35'	L = 308.20'	LT = 133.35'
ST = 66.69'	T = 154.47'	ST = 66.69'
	R = 1,820.00'	
	S.E. = 0.07	

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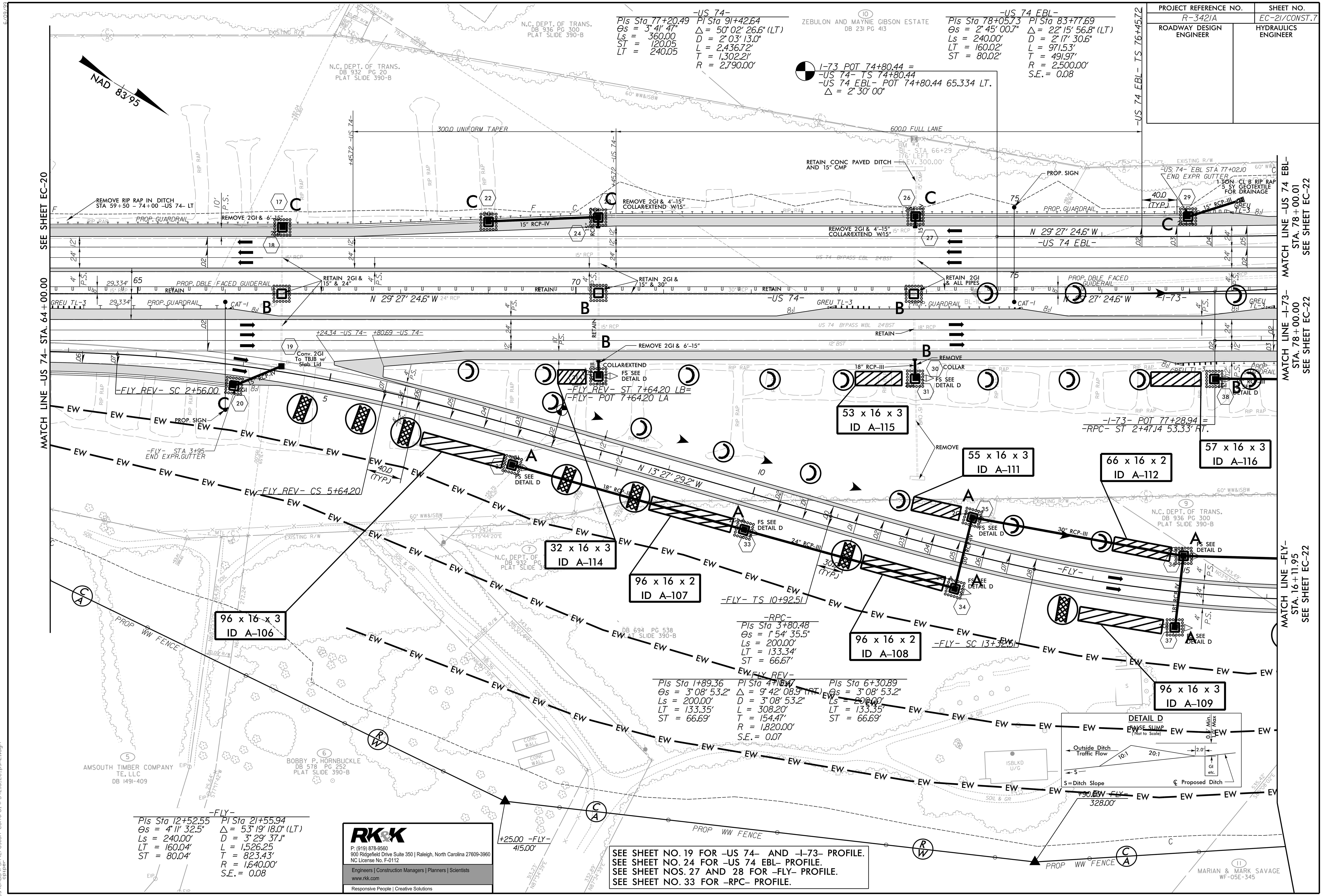
PROJECT REFERENCE NO.
R-3421A
SHEET NO.
EC-21/CONST.7
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
NAD 83/95
-US 74-
PIs Sta 77+20.49
Θs = 3° 41' 47"
Ls = 360.00
ST = 120.05
LT = 240.05
PI Sta 91+42.64
△ = 50° 02' 26.6" (LT)
D = 2° 03' 13.0"
L = 2,436.72'
T = 1,302.21'
R = 2,790.00'
-US 74 EBL-
PIs Sta 78+05.73
Θs = 2° 45' 00.7"
Ls = 240.00'
LT = 160.02'
ST = 80.02'
PI Sta 83+77.69
△ = 22° 15' 56.8" (LT)
D = 2° 17' 30.6"
L = 971.53'
T = 491.97'
R = 2,500.00'
S.E. = 0.08
-I-73- POT 74+80.44 =
-US 74- TS 74+80.44
-US 74 EBL- POT 74+80.44 65.334 LT.
△ = 2° 30' 00"
N.C. DEPT. OF TRANS. DB 936 PG 300 PLAT SLIDE 390-B
N.C. DEPT. OF TRANS. DB 932 PG 20 PLAT SLIDE 390-B
ZEBULON AND MAYNIE GIBSON ESTATE DB 231 PG 413
300.0 UNIFORM TAPER
600.0 FULL LANE
-US 74 EBL- TS 76+45.72
SEE SHEET EC-20
MATCH LINE -US 74- STA. 64+00.00
MATCH LINE -US 74 EBL- STA. 78+00.01 SEE SHEET EC-22
MATCH LINE -I-73- STA. 78+00.00 SEE SHEET EC-22
MATCH LINE -FLY- STA. 16+11.95 SEE SHEET EC-22
REMOVE RIP RAP IN DITCH STA 59+50 - 74+00 -US 74- LT
REMOVE 2GI & 6'-15"
REMOVE 2GI & 4'-15" COLLAR/EXTEND W/15"
RETAIN CONC PAVED DITCH AND 15" CMP
RETAIN 2GI & 15" & 24"
RETAIN 2GI & 15" & 30"
RETAIN 2GI & ALL PIPES
PROP. SIGN
PROP. GUARDRAIL
PROP. DBLE FACED GUIDERAIL
-US 74- EBL STA 77+02.0 END EXPR GUTTER
1 TON CL B RIP RAP 5 SY GEOTEXTILE FOR DRAINAGE
N 29° 27' 24.6" W
-US 74 EBL-
-US 74-
-I-73-
Conv. 2GI To TBJB w/ Stab. Lid
REMOVE 2GI & 6'-15"
COLLAR/EXTEND
FS SEE DETAIL D
-FLY REV- SC 2+56.00
-FLY REV- ST 7+64.20 LB=
-FLY- POT 7+64.20 LA
-FLY- STA 3+95 END EXPR.GUTTER
-FLY REV- CS 5+64.20
N 13° 27' 29.2" W
-I-73- POT 77+28.94 =
-RPC- ST 2+47.14 53.33' RT.
53 x 16 x 3 ID A-115
55 x 16 x 3 ID A-111
66 x 16 x 2 ID A-112
57 x 16 x 3 ID A-116
32 x 16 x 3 ID A-114
96 x 16 x 2 ID A-107
96 x 16 x 3 ID A-106
96 x 16 x 2 ID A-108
96 x 16 x 3 ID A-109
-FLY- TS 10+92.51
-FLY- SC 13+32.51
N.C. DEPT. OF TRANS. DB 936 PG 300 PLAT SLIDE 390-B
-RPC-
PIs Sta 3+80.48
Θs = 1° 54' 35.5"
Ls = 200.00'
LT = 133.34'
ST = 66.67'
-FLY REV-
PIs Sta 1+89.36
Θs = 3° 08' 53.2"
Ls = 200.00'
LT = 133.35'
ST = 66.69'
PI Sta 4+16.47
△ = 9° 42' 08.9" (RT)
D = 3° 08' 53.2"
L = 308.20'
T = 154.47'
R = 1,820.00'
S.E. = 0.07
PIs Sta 6+30.89
Θs = 3° 08' 53.2"
Ls = 200.00'
LT = 133.35'
ST = 66.69'
DETAIL D
FS SEE SUMP (Not to Scale)
Outside Ditch
Traffic Flow
S = Ditch Slope
℄ Proposed Ditch
PROP WW FENCE
AMSOUTH TIMBER COMPANY TE, LLC DB 1491-409
BOBBY P. HORNBUCKLE DB 578 PG 252 PLAT SLIDE 390-B
MARIAN & MARK SAVAGE WF-05E-345
-FLY-
PIs Sta 12+52.55
Θs = 4° 11' 32.5"
Ls = 240.00'
LT = 160.04'
ST = 80.04'
PI Sta 21+55.94
△ = 53° 19' 18.0" (LT)
D = 3° 29' 37.1"
L = 1,526.25
T = 823.43'
R = 1,640.00'
S.E. = 0.08
+25.00 -FLY- 415.00'
+90.00 -FLY- 328.00'
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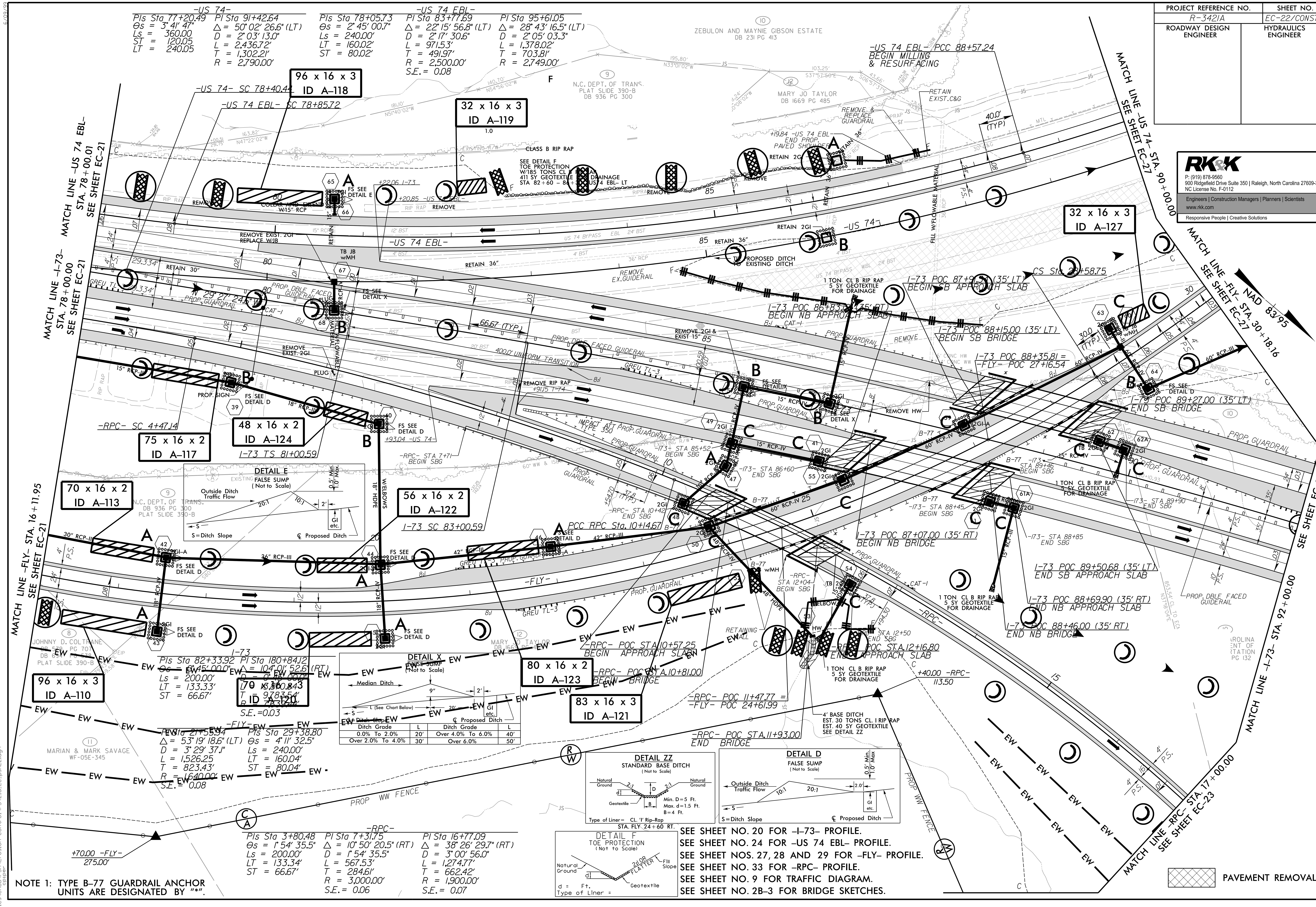
SEE SHEET NO. 19 FOR -US 74- AND -I-73- PROFILE.
SEE SHEET NO. 24 FOR -US 74 EBL- PROFILE.
SEE SHEET NOS. 27 AND 28 FOR -FLY- PROFILE.
SEE SHEET NO. 33 FOR -RPC- PROFILE.


PROJECT REFERENCE NO. R-3421A
SHEET NO. EC-22/CONST.8
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HYDRAULICS ENGINEER
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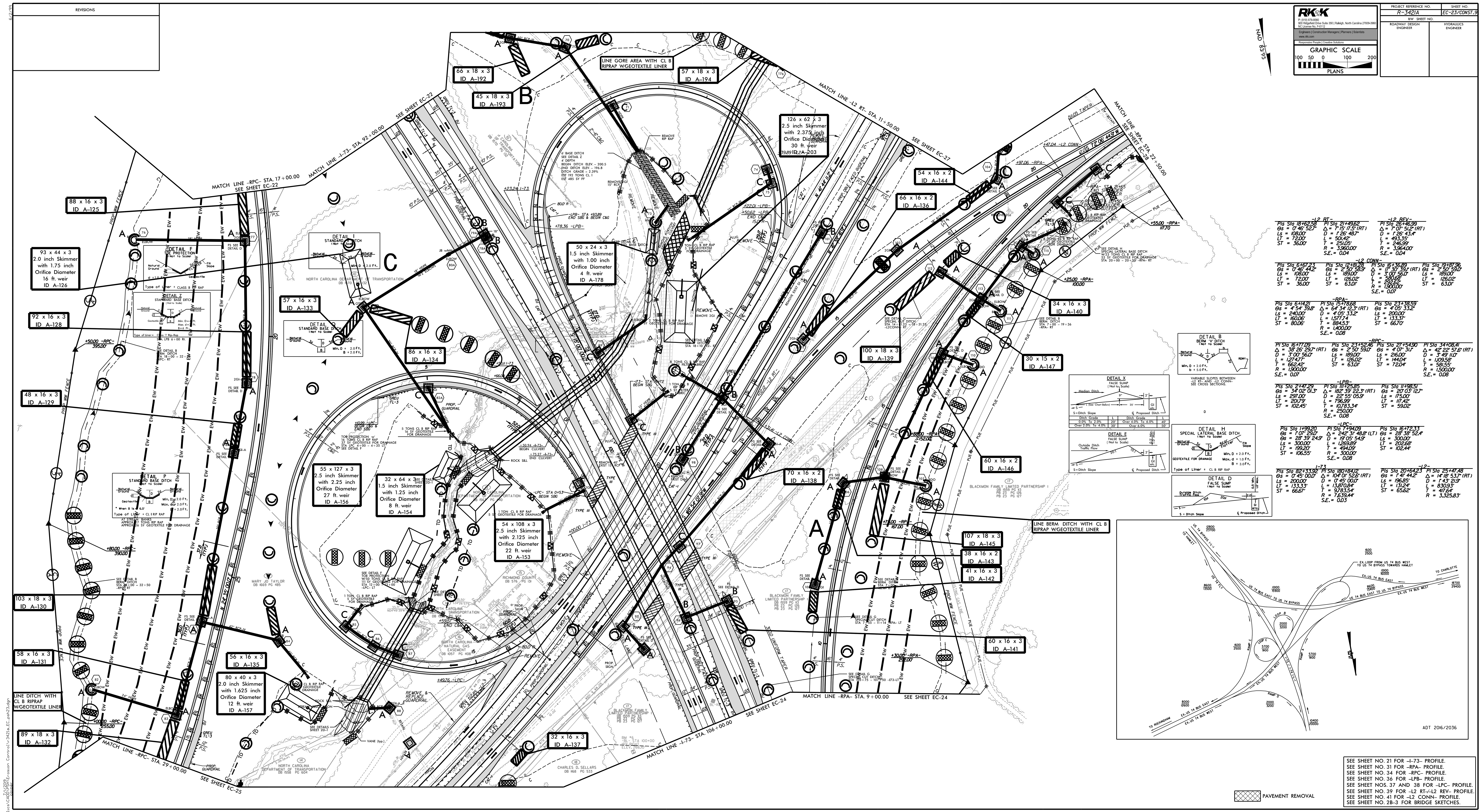
-US 74-
PI Sta 77+20.49
Θs = 3° 41' 47"
Ls = 360.00
ST = 120.05
LT = 240.05
PI Sta 91+42.64
Δ = 50° 02' 26.6" (LT)
D = 2° 03' 13.0"
L = 2,436.72'
T = 1,302.21'
R = 2,790.00'
-US 74 EBL-
PI Sta 78+05.73
Θs = 2° 45' 00.7"
Ls = 240.00'
LT = 160.02'
ST = 80.02'
PI Sta 83+77.69
Δ = 22° 15' 56.8" (LT)
D = 2° 17' 30.6"
L = 971.53'
T = 491.97'
R = 2,500.00'
S.E. = 0.08
PI Sta 95+61.05
Δ = 28° 43' 16.5" (LT)
D = 2° 05' 03.3"
L = 1,378.02'
T = 703.81'
R = 2,749.00'
ZEBULON AND MAYNIE GIBSON ESTATE DB 231 PG 413
N.C. DEPT. OF TRANS. PLAT SLIDE 390-B DB 936 PG 300
MARY JO TAYLOR DB 1669 PG 485
-US 74 EBL- PCC 88+57.24 BEGIN MILLING & RESURFACING
-US 74- SC 78+40.44
-US 74 EBL- SC 78+85.72
96 x 16 x 3 ID A-118
32 x 16 x 3 ID A-119
32 x 16 x 3 ID A-127
48 x 16 x 2 ID A-124
75 x 16 x 2 ID A-117
70 x 16 x 2 ID A-113
56 x 16 x 2 ID A-122
96 x 16 x 3 ID A-110
80 x 16 x 2 ID A-123
83 x 16 x 3 ID A-121
CLASS B RIP RAP
SEE DETAIL F TOE PROTECTION
MATCH LINE -US 74 EBL- STA. 78+00.01 SEE SHEET EC-21
MATCH LINE -I-73- STA. 78+00.00 SEE SHEET EC-21
MATCH LINE -FLY- STA. 16+11.95 SEE SHEET EC-21
MATCH LINE -US 74- STA. 90+00.00 SEE SHEET EC-27
MATCH LINE -FLY- STA. 30+18.16 SEE SHEET EC-27
MATCH LINE -I-73- STA. 92+00.00 SEE SHEET EC-23
MATCH LINE -RPC- STA. 17+00.00 SEE SHEET EC-23
NAD 83/95
-RPC- SC 4+47.14
I-73 TS 81+00.59
I-73 SC 83+00.59
PCC RPC Sta. 10+14.67
I-73 POC 86+83.72 (35' RT) BEGIN NB APPROACH SLAB
I-73 POC 87+9_._ (35' LT) BEGIN SB APPROACH SLAB
CS Sta 2_+58.75
I-73 POC 88+15.00 (35' LT) BEGIN SB BRIDGE
I-73 POC 88+35.81 = -FLY- POC 27+16.54
I-73 POC 89+27.00 (35' LT) END SB BRIDGE
I-73 POC 87+07.00 (35' RT) BEGIN NB BRIDGE
I-73 POC 89+50.68 (35' LT) END SB APPROACH SLAB
I-73 POC 88+69.90 (35' RT) END NB APPROACH SLAB
I-73 POC 88+46.00 (35' RT) END NB BRIDGE
-RPC- POC STA 10+57.25 BEGIN APPROACH SLAB
-RPC- POC STA 10+81.00 BEGIN BRIDGE
-RPC- POC STA 12+16.80 END APPROACH SLAB
-RPC- POC 11+47.77 = -FLY- POC 24+61.99
-RPC- POC STA 11+93.00 END BRIDGE
1 TON CL B RIP RAP 5 SY GEOTEXTILE FOR DRAINAGE
4' BASE DITCH EST. 30 TONS CL. I RIP RAP EST. 40 SY GEOTEXTILE SEE DETAIL ZZ
-I-73-
PI Sta 82+33.92
Θs = 4° 15' 00.0"
Ls = 200.00'
LT = 133.33'
ST = 66.67'
PI Sta 180+84.12
Δ = 104° 01' 52.6" (RT)
S.E. = 0.03
-FLY-
PI Sta 21+55.94
Δ = 53° 19' 18.6" (LT)
D = 3° 29' 37.1"
L = 1,526.25
T = 823.43'
R = 1,640.00'
S.E. = 0.08
PI Sta 29+38.80
Θs = 4° 11' 32.5"
Ls = 240.00'
LT = 160.04'
ST = 80.04'
-RPC-
PIs Sta 3+80.48
Θs = 1° 54' 35.5"
Ls = 200.00'
LT = 133.34'
ST = 66.67'
PI Sta 7+31.75
Δ = 10° 50' 20.5" (RT)
D = 1° 54' 35.5"
L = 567.53'
T = 284.61'
R = 3,000.00'
S.E. = 0.06
PI Sta 16+77.09
Δ = 38° 26' 29.7" (RT)
D = 3° 00' 56.0"
L = 1,274.77'
T = 662.42'
R = 1,900.00'
S.E. = 0.07
JOHNNY D. COLTRANE
MARIAN & MARK SAVAGE WF-05E-345
PROP WW FENCE
DETAIL E FALSE SUMP (Not to Scale)
DETAIL X FALSE SUMP (Not to Scale)
Ditch Slope | L | Ditch Grade | L
0.0% To 2.0% | 20' | Over 4.0% To 6.0% | 40'
Over 2.0% To 4.0% | 30' | Over 6.0% | 50'
DETAIL ZZ STANDARD BASE DITCH (Not to Scale)
Min. D = 5 Ft. Max. d = 1.5 Ft. B = 4 Ft.
Type of Liner = CL 'I' Rip-Rap
STA. FLY 24+60 RT.
DETAIL D FALSE SUMP (Not to Scale)
DETAIL F TOE PROTECTION (Not to Scale)
SEE SHEET NO. 20 FOR -I-73- PROFILE.
SEE SHEET NO. 24 FOR -US 74 EBL- PROFILE.
SEE SHEET NOS. 27, 28 AND 29 FOR -FLY- PROFILE.
SEE SHEET NO. 33 FOR -RPC- PROFILE.
SEE SHEET NO. 9 FOR TRAFFIC DIAGRAM.
SEE SHEET NO. 2B-3 FOR BRIDGE SKETCHES.
NOTE 1: TYPE B-77 GUARDRAIL ANCHOR UNITS ARE DESIGNATED BY "*".
PAVEMENT REMOVAL



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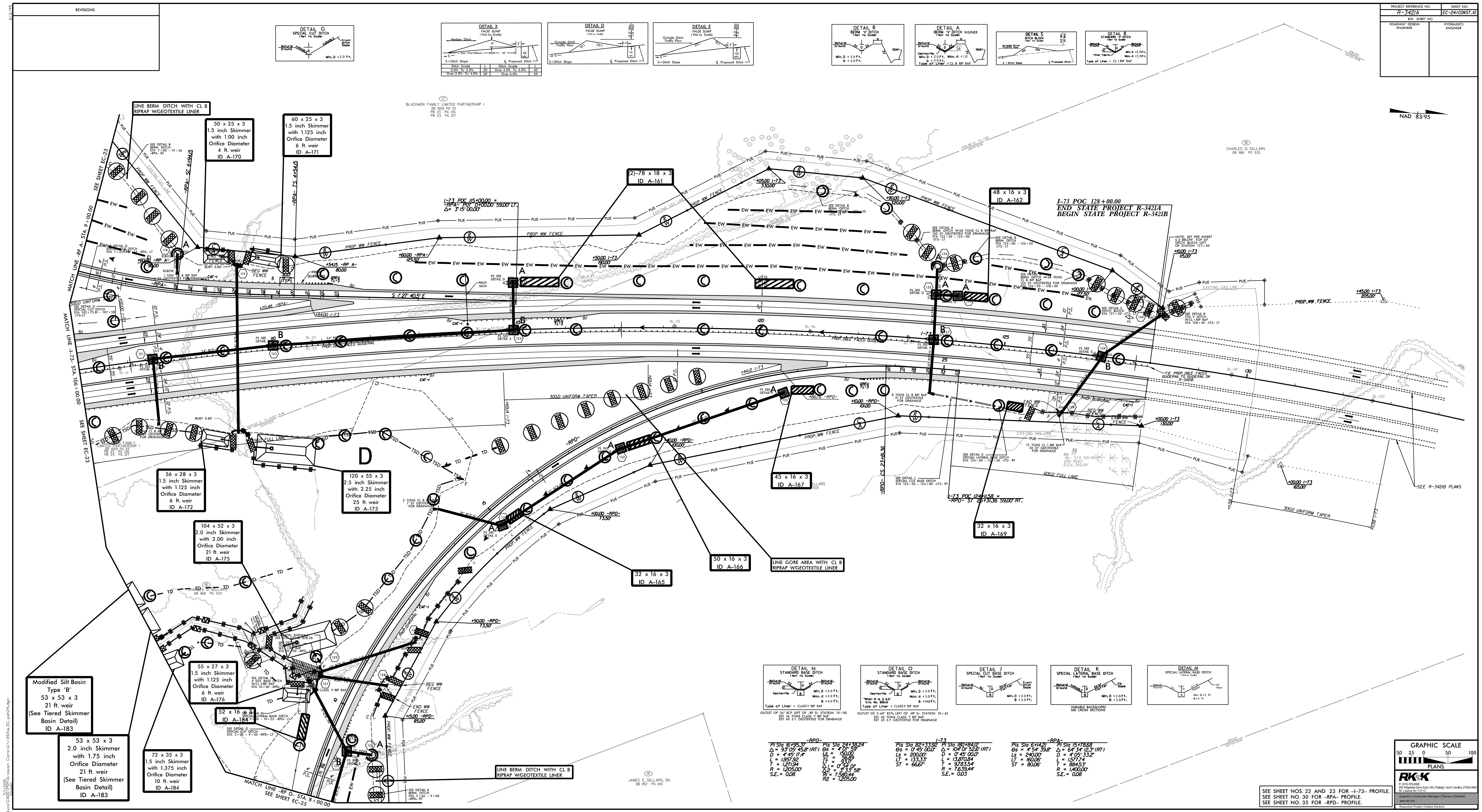
GRAPHIC SCALE
100 50 0 100 200
PLANS
NAD 83/95
PROJECT REFERENCE NO.
R-3421A
SHEET NO.
EC-23/CONST.9
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
MATCH LINE -RPC- STA. 17+00.00 SEE SHEET EC-22
MATCH LINE -I-73- STA. 92+00.00 SEE SHEET EC-22
MATCH LINE -L2 RT- STA. 11+50.00 SEE SHEET EC-27
MATCH LINE -RPA- STA. 22+50.00
MATCH LINE -RPA- STA. 9+00.00 SEE SHEET EC-24
MATCH LINE -I-73- STA. 106+00.00 SEE SHEET EC-24
MATCH LINE -RPC- STA. 29+00.00 SEE SHEET EC-25
LINE GORE AREA WITH CL B RIPRAP W/GEOTEXTILE LINER
66 x 18 x 3 ID A-192
45 x 18 x 3 ID A-193
57 x 18 x 3 ID A-194
126 x 62 x 3 2.5 inch Skimmer with 2.375 inch Orifice Diameter 30 ft. weir ID A-203
88 x 16 x 3 ID A-125
93 x 44 x 3 2.0 inch Skimmer with 1.75 inch Orifice Diameter 16 ft. weir ID A-126
92 x 16 x 3 ID A-128
48 x 16 x 3 ID A-129
103 x 18 x 3 ID A-130
58 x 16 x 3 ID A-131
LINE DITCH WITH CL B RIPRAP W/GEOTEXTILE LINER
89 x 18 x 3 ID A-132
57 x 16 x 3 ID A-133
86 x 16 x 3 ID A-134
50 x 24 x 3 1.5 inch Skimmer with 1.00 inch Orifice Diameter 4 ft. weir ID A-178
55 x 127 x 3 2.5 inch Skimmer with 2.25 inch Orifice Diameter 27 ft. weir ID A-156
32 x 64 x 3 1.5 inch Skimmer with 1.25 inch Orifice Diameter 8 ft. weir ID A-154
54 x 108 x 3 2.5 inch Skimmer with 2.125 inch Orifice Diameter 22 ft. weir ID A-153
56 x 16 x 3 ID A-135
80 x 40 x 3 2.0 inch Skimmer with 1.625 inch Orifice Diameter 12 ft. weir ID A-157
32 x 16 x 3 ID A-137
54 x 16 x 2 ID A-144
66 x 16 x 2 ID A-136
34 x 16 x 3 ID A-140
100 x 18 x 3 ID A-139
30 x 15 x 2 ID A-147
60 x 16 x 2 ID A-146
70 x 16 x 2 ID A-138
LINE BERM DITCH WITH CL B RIPRAP W/GEOTEXTILE LINER
107 x 18 x 3 ID A-145
38 x 16 x 2 ID A-143
41 x 16 x 3 ID A-142
60 x 16 x 3 ID A-141
DETAIL F
DETAIL Z STANDARD BASE DITCH
DETAIL P STANDARD BASE DITCH
DETAIL I STANDARD BASE DITCH
DETAIL B BERM 'V' DITCH
DETAIL X FALSE SUMP
DETAIL E FALSE SUMP
DETAIL H SPECIAL LATERAL BASE DITCH
DETAIL D FALSE SUMP
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
MARY JO TAYLOR
BLACKMON FAMILY LIMITED PARTNERSHIP
CHARLES D. SELLARS
RICHMOND COUNTY
ADT 2016/2036
PAVEMENT REMOVAL
SEE SHEET NO. 21 FOR -I-73- PROFILE.
SEE SHEET NO. 31 FOR -RPA- PROFILE.
SEE SHEET NO. 34 FOR -RPC- PROFILE.
SEE SHEET NO. 36 FOR -LPB- PROFILE.
SEE SHEET NOS. 37 AND 38 FOR -LPC- PROFILE.
SEE SHEET NO. 39 FOR -L2 RT-/-L2 REV- PROFILE.
SEE SHEET NO. 41 FOR -L2 CONN- PROFILE.
SEE SHEET NO. 2B-3 FOR BRIDGE SKETCHES.



PROJECT REFERENCE NO.
R-3421A
SHEET NO.
EC-24/CONST.10
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
REVISIONS
NAD 83/95
DETAIL G SPECIAL CUT DITCH (Not to Scale)
DETAIL X FALSE SUMP (Not to Scale)
DETAIL D FALSE SUMP
DETAIL E FALSE SUMP
DETAIL B BERM "V" DITCH (Not to Scale)
DETAIL A BERM "V" DITCH W/LINER
DETAIL S DITCH BLOCK
DETAIL R STANDARD "V" DITCH
BLACKMON FAMILY LIMITED PARTNERSHIP I
CHARLES D. SELLARS DB 968 PG 533
LINE BERM DITCH WITH CL B RIPRAP W/GEOTEXTILE LINER
50 x 25 x 3 1.5 inch Skimmer with 1.00 inch Orifice Diameter 4 ft. weir ID A-170
60 x 25 x 3 1.5 inch Skimmer with 1.125 inch Orifice Diameter 6 ft. weir ID A-171
(2)-78 x 18 x 3 ID A-161
48 x 16 x 3 ID A-162
I-73 POC 128+00.00
END STATE PROJECT R-3421A
BEGIN STATE PROJECT R-3421B
56 x 28 x 3 1.5 inch Skimmer with 1.125 inch Orifice Diameter 6 ft. weir ID A-172
120 x 55 x 3 2.5 inch Skimmer with 2.25 inch Orifice Diameter 25 ft. weir ID A-173
45 x 16 x 3 ID A-167
32 x 16 x 3 ID A-169
104 x 52 x 3 2.0 inch Skimmer with 2.00 inch Orifice Diameter 21 ft. weir ID A-175
50 x 16 x 3 ID A-166
LINE GORE AREA WITH CL B RIPRAP W/GEOTEXTILE LINER
32 x 16 x 3 ID A-165
55 x 27 x 3 1.5 inch Skimmer with 1.125 inch Orifice Diameter 6 ft. weir ID A-176
52 x 16 x 3 ID A-164
Modified Silt Basin Type 'B' 53 x 53 x 3 21 ft. weir (See Tiered Skimmer Basin Detail) ID A-183
53 x 53 x 3 2.0 inch Skimmer with 1.75 inch Orifice Diameter 21 ft. weir (See Tiered Skimmer Basin Detail) ID A-183
72 x 35 x 3 1.5 inch Skimmer with 1.375 inch Orifice Diameter 10 ft. weir ID A-184
LINE BERM DITCH WITH CL B RIPRAP W/GEOTEXTILE LINER
JAMES E. SELLARS, SR. DB 952 PG 001
MATCH LINE -RP A- STA 9+00.00 SEE SHEET EC-23
MATCH LINE -I-73- STA 106+00.00 SEE SHEET EC-23
MATCH LINE -RP D- STA 8+00.00 SEE SHEET EC-25
SEE R-3421B PLANS
DETAIL N STANDARD BASE DITCH (Not to Scale)
Min. D = 3.0 Ft. Max. d = 2.0 Ft. B = 4.0 Ft.
Type of Liner = CLASS'I' RIP RAP
OUTLET OF 36" RCP LEFT OF -RP D- STATION 10+00
EST. 36 TONS CLASS 'I' RIP RAP
EST. 40 S.Y. GEOTEXTILE FOR DRAINAGE
DETAIL O STANDARD BASE DITCH (Not to Scale)
Min. D = 3.0 Ft. Max. d = 3.0 Ft. B = VAR Ft.
*When B is ≥ 6.0' Std. No. 868.01
Type of Liner = CLASS'I' RIP RAP
OUTLET OF 2-60" RCPs LEFT OF -RP D- STATION 10+45
EST. 40 TONS CLASS 'I' RIP RAP
EST. 45 S.Y. GEOTEXTILE FOR DRAINAGE
DETAIL J SPECIAL CUT BASE DITCH (Not to Scale)
Min. D = 2.0 Ft. B = 2.0 Ft.
DETAIL K SPECIAL LATERAL BASE DITCH (Not to Scale)
Min. D = 2.0 Ft. B = 2.0 Ft.
VARIABLE BACKSLOPES SEE CROSS SECTIONS
DETAIL M SPECIAL LATERAL BASE DITCH (Not to Scale)
Min. D = 2 Ft. B = 3 Ft.
-RPD-
PI Sta 16+95.37 Δ = 93° 05' 45.8" (RT) D = 4° 45' 17.4" L = 1,957.92 T = 1,271.94 R = 1,205.00' S.E. = 0.08
PIs Sta 24+38.24 Θs = 4° 07' 59" Ls = 150.00 ST = 56.89 LT = 93.17 Δ1 = 0° 34' 01" Δ2 = 3° 33' 58" R1 = 7,580.44 R2 = 1,205.00
I-73
PIs Sta 82+33.92 Θs = 0° 45' 00.0" Ls = 200.00' LT = 133.33' ST = 66.67'
PI Sta 180+84.12 Δ = 104° 01' 52.6" (RT) D = 0° 45' 00.0" L = 13,870.84 T = 9,783.54' R = 7,639.44' S.E. = 0.03
-RPA-
PIs Sta 6+14.21 Θs = 4° 54' 39.8" Ls = 240.00' LT = 160.06' ST = 80.06'
PI Sta 15+78.68 Δ = 64° 34' 12.3" (RT) D = 4° 05' 33.2" L = 1,577.74 T = 884.53' R = 1,400.00' S.E. = 0.08
GRAPHIC SCALE 50 25 0 50 100 PLANS
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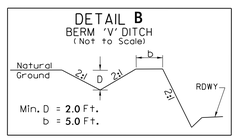
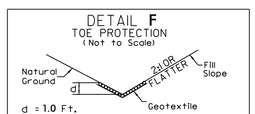
SEE SHEET NOS. 22 AND 23 FOR -I-73- PROFILE.
SEE SHEET NO. 30 FOR -RPA- PROFILE.
SEE SHEET NO. 35 FOR -RPD- PROFILE.

PROJECT REFERENCE NO.	SHEET NO.
R-3421A	EC-25/CONST.11
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

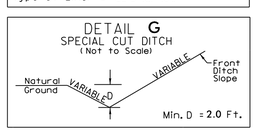
DETAIL B
BERM 'V' DITCH
(Not to Scale)



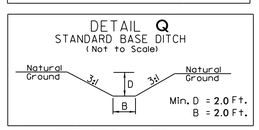
DETAIL F
TOE PROTECTION
(Not to Scale)



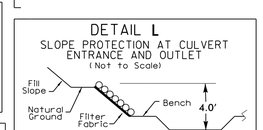
DETAIL G
SPECIAL CUT DITCH
(Not to Scale)



DETAIL Q
STANDARD BASE DITCH
(Not to Scale)



DETAIL L
SLOPE PROTECTION AT CULVERT ENTRANCE AND OUTLET
(Not to Scale)



SEE STREAM SECTIONS FOR DIMENSIONS
USE APPROX. 35 L.F. OF RIP RAP PER EACH
APPROX 100 SY GEOTEXTILE FOR
DRAINAGE TOTAL
APPROX. 80 TONS CL I RIP RAP TOTAL

NAD 83/95

MATCH LINE –RP D– STA. 8+00.00
SEE SHEET EC-24

MATCH LINE –RP C– STA. 29+00.00
SEE SHEET EC-23

MATCH LINE –RP C– STA. 38+00.00 SEE SHEET EC-26

Modified Silt Basin
Type 'B'
53 x 53 x 3
21 ft. weir
(See Tiered Skimmer
Basin Detail)
ID A–183

53 x 53 x 3
2.0 inch Skimmer
with 1.75 inch
Orifice Diameter
21 ft. weir
(See Tiered Skimmer
Basin Detail)
ID A–183

35 x 72 x 3
1.5 inch Skimmer
with 1.375 inch
Orifice Diameter
10 ft. weir
ID A–184

32 x 16 x 3
1.5 inch Skimmer
with 0.625 inch
Orifice Diameter
4 ft. weir
ID A–186a

90 x 24 x 3
1.5 inch Skimmer
with 1.25 inch
Orifice Diameter
8 ft. weir
ID A–185

56 x 16 x 3
ID A–179

35 x 16 x 3
ID A–182

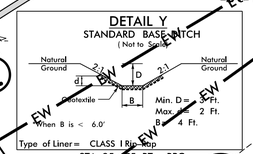
43 x 16 x 3
ID A–181

35 x 16 x 3
ID A–180

LINE BERM DITCH WITH CL B RIPRAP W/GEOTEXTILE LINER

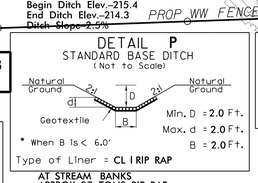
LINE BERM DITCH WITH CL B RIPRAP W/GEOTEXTILE LINER

DETAIL Y
STANDARD BASE DITCH
(Not to Scale)



STA. 35+75 RT. –RPC–
10 TON CLASS I RIP–RAP

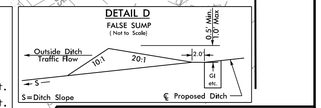
DETAIL P
STANDARD BASE DITCH
(Not to Scale)



AT STREAM BANKS
APPROX 27 TONS RIP RAP
APPROX 26 SY GEOTEXTILE FOR DRAINAGE

DETAIL X
FALSE SUMP
(Not to Scale)

DETAIL D
FALSE SUMP
(Not to Scale)



SEE SHEET NO. 34 FOR –RPC– PROFILE.
SEE SHEET NO. 35 FOR –RPD– PROFILE.
SEE SHEET NO. 39 AND NO. 40 FOR –L2 REV–/–L2 RT– PROFILE.

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PROJECT REFERENCE NO.	SHEET NO.
R-3421A	EC-26/CONST.12
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NAD 83/95

53 x 15 x 3
1.5 inch Skimmer
with 0.75 inch
Orifice Diameter
4 ft. weir
ID A-206

61 x 15 x 3
ID A-207

81 x 40 x 3
2.0 inch Skimmer
with 1.625 inch
Orifice Diameter
12 ft. weir
ID A-187

83 x 18 x 3
ID A-189

60 x 18 x 3
ID A-70

-L2 REV- POT 46+12.00
BEGIN RESURFACING

-L2 REV- POT 53+53.24
END CONSTRUCTION
END RESURFACING

-L2 REV- POT 54+23.79

-RPC- CS 39+36.44

-RPC- ST 41+76.44 =
-L2- POT 44+29.48 12.08 LT.

-RPC-
PI Sta 34+08.41
Δ = 42° 22' 57.6" (RT)
D = 3° 49' 11.0"
L = 1,109.58
T = 581.53'
R = 1,500.00'
S.E. = 0.08

-RPC-
PIs Sta 40+16.49
Θs = 4° 35' 01.2"
Ls = 240.00'
LT = 160.05'
ST = 80.05'

DETAIL F
TOE PROTECTION
(Not to Scale)

Natural Ground | d | 2:1 OR FLATTER | Fill Slope | Geotextile

d = 1.0 Ft.

Type of Liner = CL B RIP RAP

DETAIL X
FALSE SUMP
(Not to Scale)

Median Ditch

S = Ditch Slope ℄ Proposed Ditch

Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

DETAIL E
FALSE SUMP
(Not to Scale)

0.5' Min.
1.0' Max.

Outside Ditch Traffic Flow | 20:1 | 10:1 | 2' | GI etc.

S = Ditch Slope ℄ Proposed Ditch

CLEAN WATER DIVERSION
(Not to Scale)

CWD

STABILIZE EXCAVATED MATERIAL
SOIL STABILIZATION GEOTEXTILE
OFFSITE CLEAN WATER
NOTE: 4" MIN.

PAVEMENT REMOVAL

SEE SHEET NO. 34 FOR –RPC– PROFILE.
SEE SHEET NO. 40 FOR –L2 REV– PROFILE.

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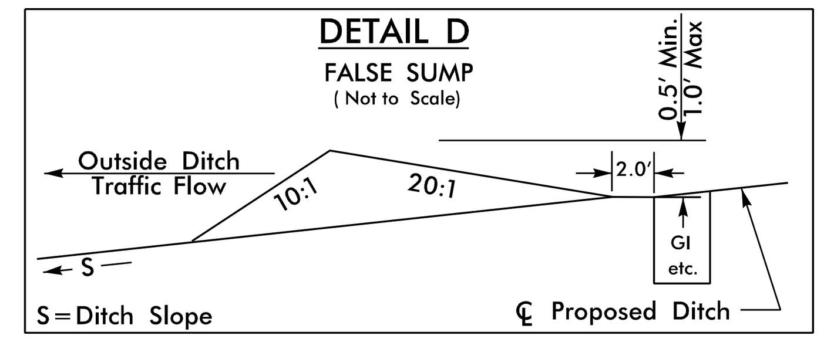
PROJECT REFERENCE NO.	SHEET NO.
R-3421A	EC-27/CONST.13
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



-FLY-

PIs Sta 12+52.55	PI Sta 21+55.94	PIs Sta 29+38.80
Θs = 4° 11' 32.5"	Δ = 53° 19' 18.0" (LT)	Θs = 4° 11' 32.5"
Ls = 240.00'	D = 3° 29' 37.1"	Ls = 240.00'
LT = 160.04'	L = 1,526.25	LT = 160.04'
ST = 80.04'	T = 823.43'	ST = 80.04'
	R = 1,640.00'	
	S.E. = 0.08	

-FLY-

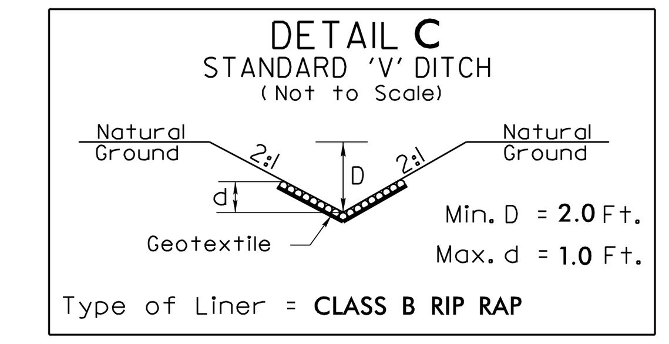
PIs Sta 39+53.39
Θs = 2° 20' 16.3"
Ls = 231.00'
LT = 154.01'
ST = 77.01'

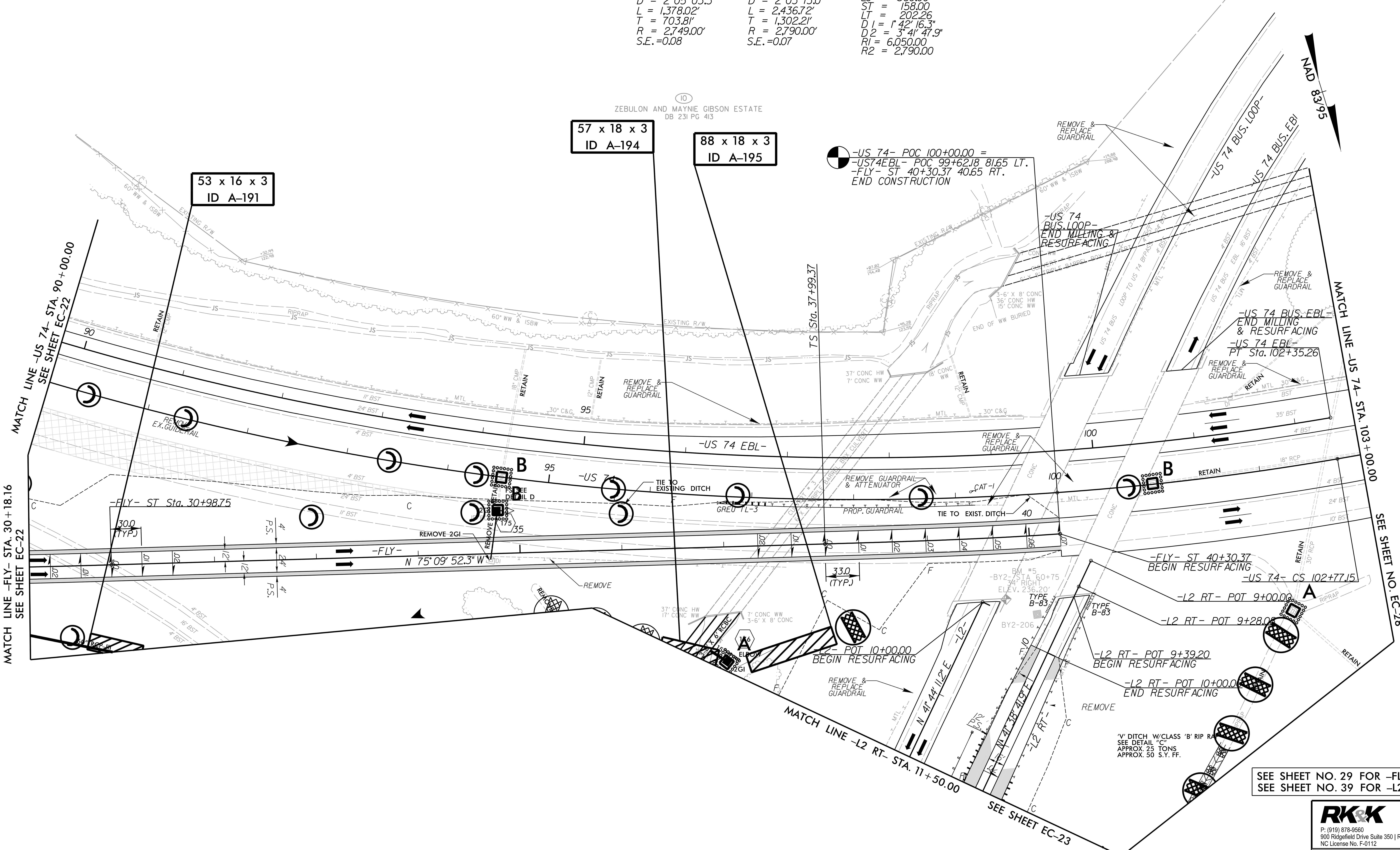
-US 74 EBL-

PI Sta 95+61.05
Δ = 28° 43' 16.5" (LT)
D = 2° 05' 03.3"
L = 1,378.02'
T = 703.81'
R = 2,749.00'
S.E. = 0.08

-US 74-

PI Sta 91+42.64	PIs Sta 104+35.15
Δ = 50° 02' 26.6" (LT)	Θs = 5° 24' 04.2"
D = 2° 03' 13.0"	Ls = 360.00
L = 2,436.72'	ST = 158.00
T = 1,302.21'	LT = 202.26
R = 2,790.00'	D1 = 1° 42' 16.3"
S.E. = 0.07	D2 = 3° 41' 47.9"
	R1 = 6,050.00
	R2 = 2,790.00





SEE SHEET NO. 29 FOR -FLY- PROFILE.
SEE SHEET NO. 39 FOR -L2 RT- PROFILE.

PAVEMENT REMOVAL

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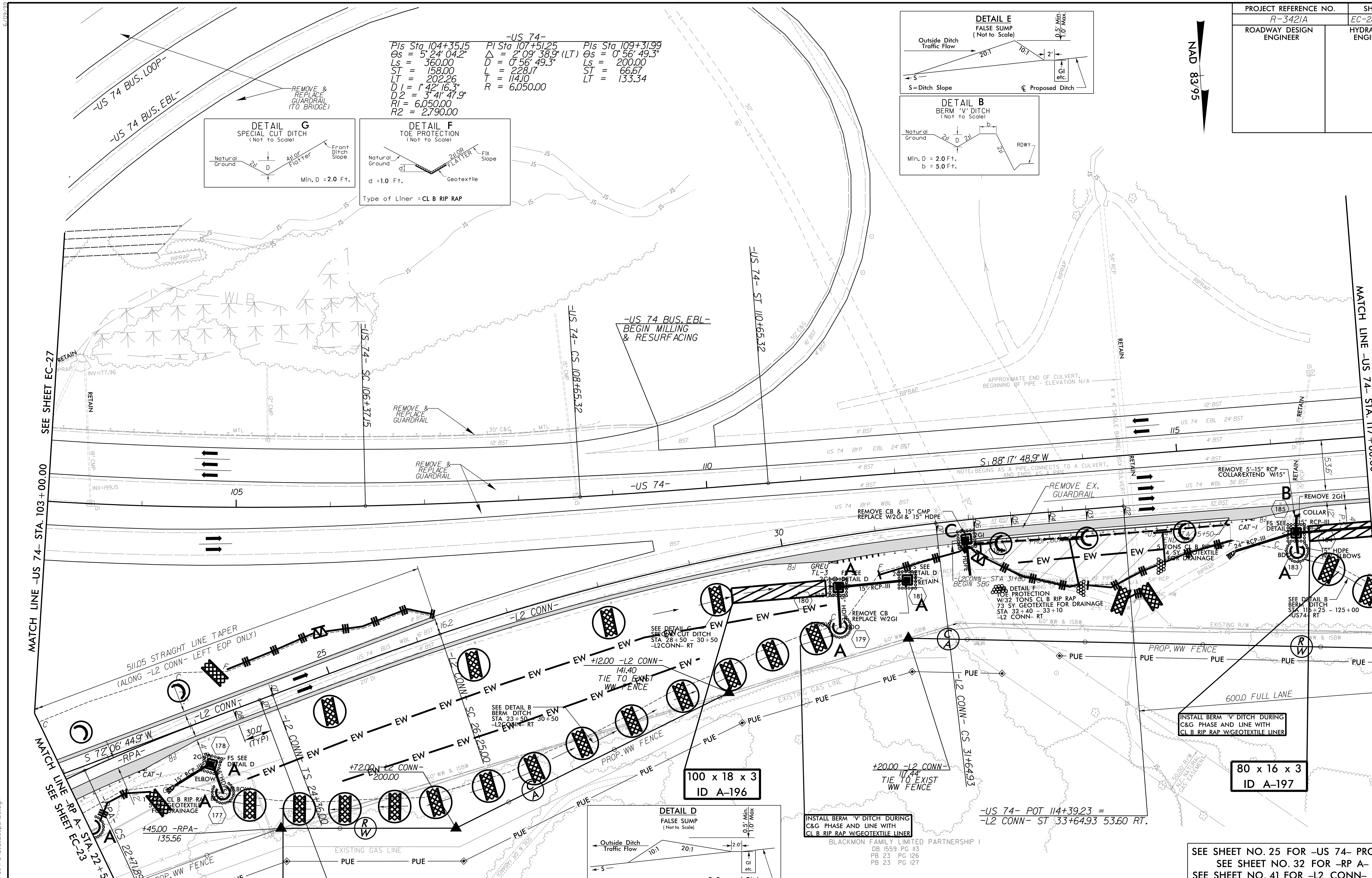
PROJECT REFERENCE NO.	SHEET NO.
R-3421A	EC-28/CONST.14
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NAD 83/95



INSTALL BERM 'V' DITCH DURING C&G PHASE AND LINE WITH CL B RIP RAP W/GEOTEXTILE LINER

-US 74-

PIs Sta 104+35.15	PI Sta 107+51.25	PIs Sta 109+31.99
Θs = 5° 24' 04.2"	Δ = 2° 09' 38.9" (LT)	Θs = 0° 56' 49.3"
Ls = 360.00	D = 0° 56' 49.3"	Ls = 200.00
ST = 158.00	L = 228.17	ST = 66.67
LT = 202.26	T = 114.10	LT = 133.34
D 1 = 1° 42' 16.3"	R = 6,050.00	
D 2 = 3° 41' 47.9"		
R1 = 6,050.00		
R2 = 2,790.00		

-RPA-

PI Sta 15+78.68	PIs Sta 23+38.59
Δ = 64° 34' 12.3" (RT)	Θs = 4° 05' 33.2"
D = 4° 05' 33.2"	Ls = 200.00'
L = 1,577.74	LT = 133.37'
T = 884.53'	ST = 66.70'
R = 1,400.00'	
S.E. = 0.08	

-L2 CONN-

PIs Sta 25+62.01	PI Sta 28+95.94	PIs Sta 32+31.61
Θs = 2° 04' 56.9"	Δ = 11° 53' 53.9" (RT)	Θs = 2° 12' 13.3"
Ls = 189.00'	D = 2° 12' 13.3"	Ls = 200.00'
LT = 126.01'	L = 539.93	LT = 133.34'
ST = 63.01'	T = 270.94'	ST = 66.68'
	R = 2,600.00'	
	S.E. = 0.07	

SEE SHEET NO. 25 FOR -US 74- PROFILE.
SEE SHEET NO. 32 FOR -RP A- PROFILE.
SEE SHEET NO. 41 FOR -L2 CONN- PROFILE.

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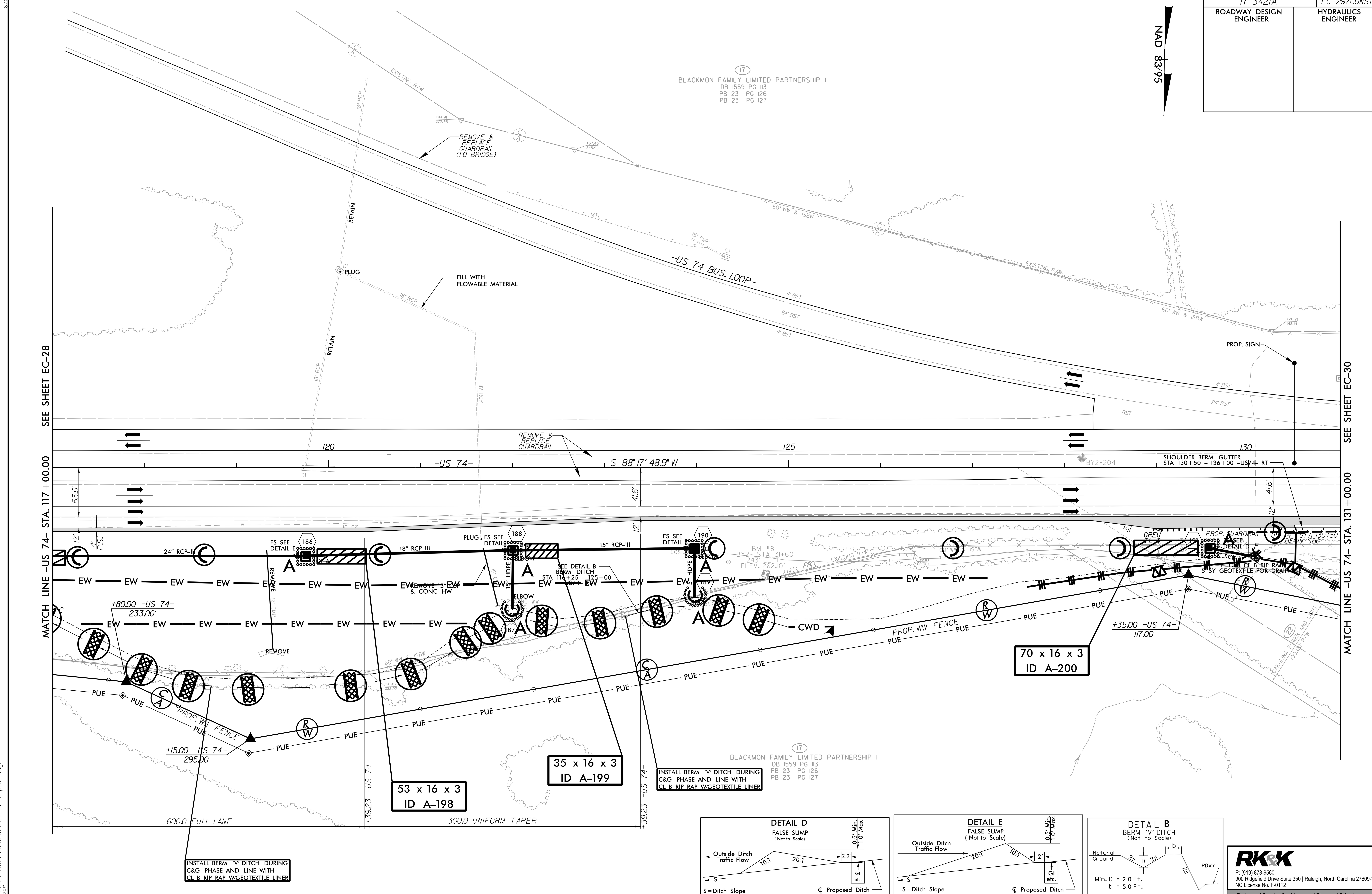
PROJECT REFERENCE NO.	SHEET NO.
R-3421A	EC-29/CONST.15
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



SEE SHEET NO. 25 FOR -US 74- PROFILE.

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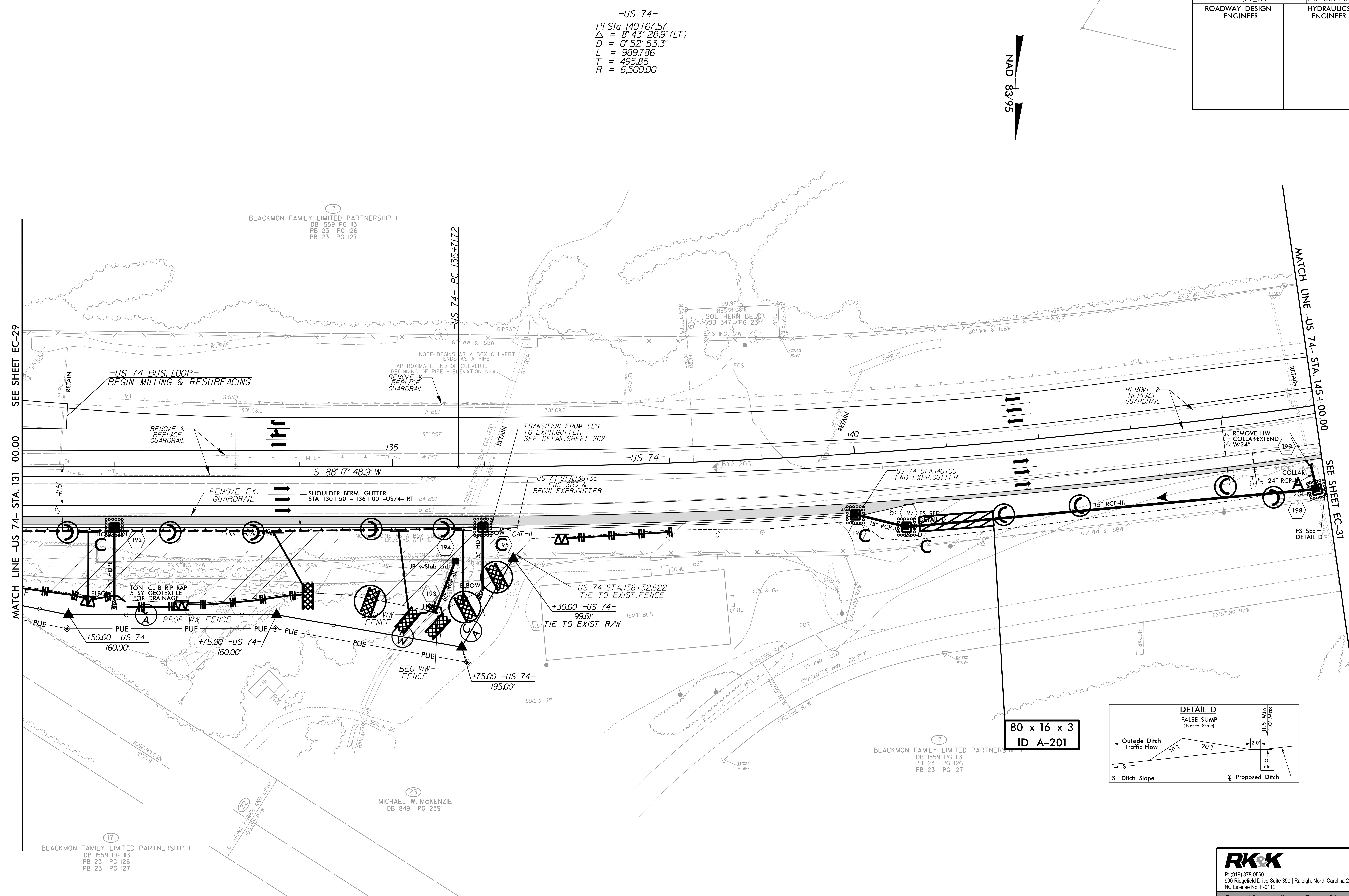
PROJECT REFERENCE NO.	SHEET NO.
R-3421A	EC-30/CONST.16
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



SEE SHEET NO. 26 FOR -US 74- PROFILE.

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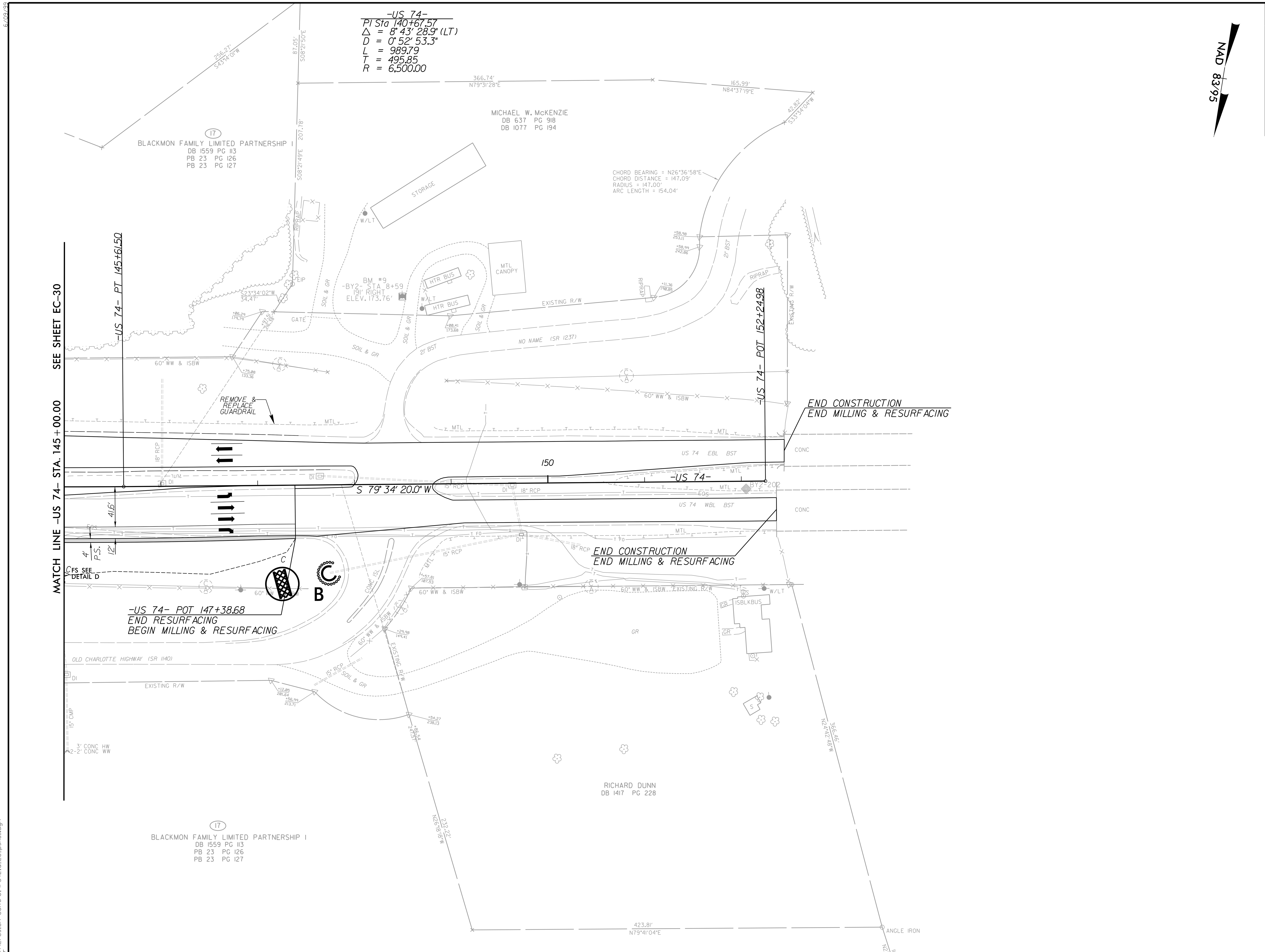
PROJECT REFERENCE NO.	SHEET NO.
R-3421A	EC-31/CONST.17
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



SEE SHEET NO. 26 FOR -US 74- PROFILE.

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