This electronic collection of documents is provided for the convenience of the user and is Not a Certified Document –

The documents contained herein were originally issued and sealed by the individuals whose names and license numbers appear on each page, on the dates appearing with their signature on that page.
This file or an individual page shall not be considered a certified document.

PROJECT REFERENCE NO.	SHEET NO.
U-2519BA	2G-2

GEOTECHNICAL ENGINEER

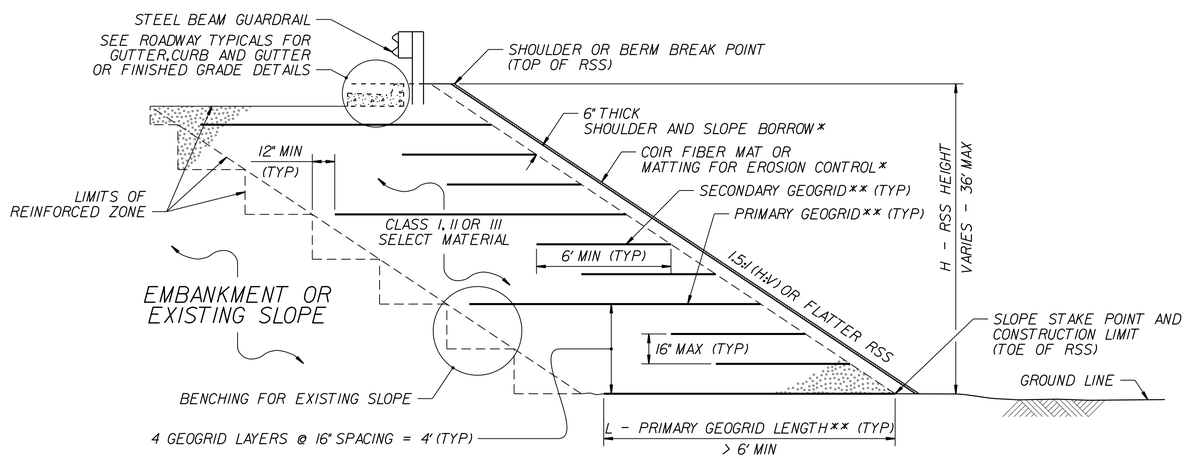
NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

DocuSigned by: Scott A. Hidden 02/24/2022
F760CAEB96FC4D3...
SIGNATURE DATE

ENGINEER

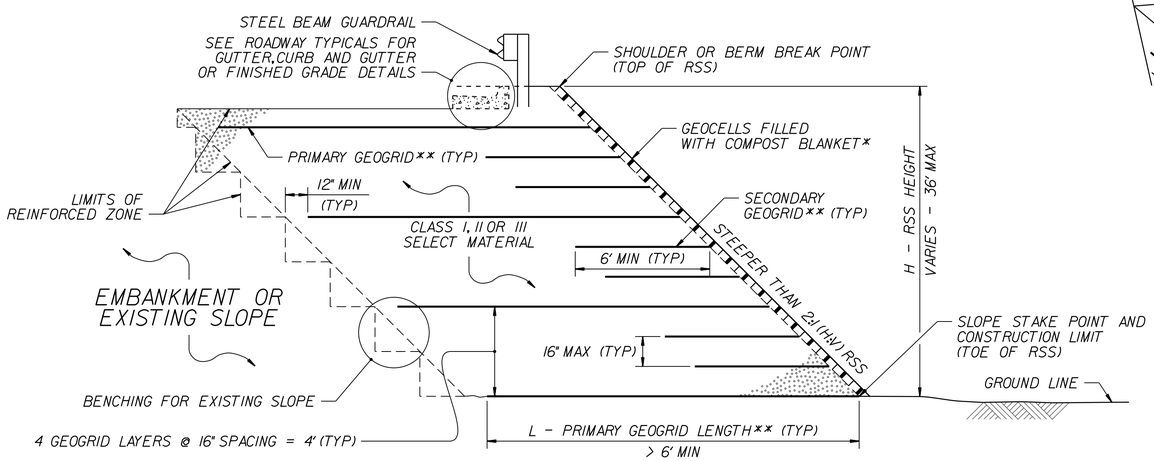
SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



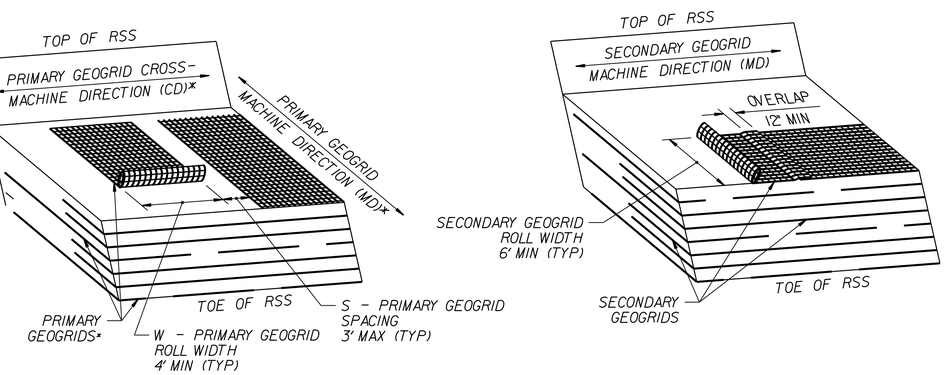
MATTING WITH SHOULDER AND SLOPE BORROW

*SEE NOTES 3 AND 10 ON SHEET 2.



GEOCELLS WITH COMPOST BLANKET

*SEE NOTES 3 AND 10 ON SHEET 2.



GEOGRID PLACEMENT DETAILS

(% COVERAGE = $\frac{W}{W+S}$ x 100 $\geq$ 75%)

*SEE NOTE 8 ON SHEET 2. DO NOT OVERLAP PRIMARY GEOGRIDS IN ANY DIRECTION.

STANDARD REINFORCED SOIL SLOPE (RSS)

**SEE TABLES ON SHEET 2 AND GEOGRID PLACEMENT DETAILS. IF RSS ANGLE IS 2:1 (H:V) OR FLATTER, REPLACE PRIMARY GEOGRID WITH SECONDARY GEOGRID PLACED AS SHOWN IN THE GEOGRID PLACEMENT DETAILS.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1802.01

STANDARD REINFORCED SOIL SLOPE (RSS) WITH HIGH GROUNDWATER
SHEET 1 OF 2

DATE: 12-17-19

PROJECT REFERENCE NO.	SHEET NO.
U-2519BA	2G-3

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

DocuSigned by: Scott A. Hidden 02/24/2022
F760CAEB96FC4D3...
SIGNATURE DATE

ENGINEER

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

H (FT)	0 - < 12		12 - 24		> 24 - 36	
SELECT MATERIAL CLASS	I	II OR III	I	II OR III	I	II OR III
1:1 TO < 1.5:1 (H:V) RSS	900	500	1200	900	1800	1200
1.5:1 TO 1.75:1 (H:V) RSS	500	500	900	500	1400	1000
> 1.75:1 TO < 2:1 (H:V) RSS	500	500	600	500	1000	800

MINIMUM REQUIRED PRIMARY GEOGRID LONG-TERM DESIGN STRENGTH (LTDS, LB/FT) IN MACHINE DIRECTION (MD)

(LTDS IS BASED ON 100% COVERAGE FOR PRIMARY GEOGRID. SEE NOTE 8 FOR LESS THAN 100% COVERAGE.)

NOTES:

1. SEE EROSION CONTROL AND ROADWAY PLANS AND SUMMARY SHEETS FOR REINFORCED SOIL SLOPE (RSS) AND SLOPE EROSION CONTROL LOCATIONS.

2. FOR STANDARD REINFORCED SOIL SLOPES, SEE REINFORCED SOIL SLOPES PROVISION. FOR STEEL BEAM GUARDRAIL, SEE SECTION 862 OF THE STANDARD SPECIFICATIONS.

3. FOR SHOULDER AND SLOPE BORROW, SEE ARTICLE 1019-2 OF THE STANDARD SPECIFICATIONS. FOR GEOCELLS, SEE CELLULAR CONFINEMENT SYSTEMS PROVISION. FOR COIR FIBER MAT, MATTING FOR EROSION CONTROL AND COMPOST BLANKET, SEE EROSION CONTROL PROVISIONS, SECTION 1631 OF THE STANDARD SPECIFICATIONS AND ROADWAY STANDARD DRAWING NO. 1631.01.

4. STANDARD RSS ARE BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
   UNIT WEIGHT, γ = 120 PCF
   FRICTION ANGLE, ϕ = 30 DEGREES
   COHESION, c = 0 PSF

5. DO NOT USE STANDARD RSS IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE OR GROUNDWATER OR FLOOD ELEVATION IS ABOVE TOE OF RSS.

6. DO NOT USE STANDARD RSS WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS BELOW RSS.

7. PRIMARY GEOGRIDS ARE APPROVED FOR LTDS FOR A 75-YEAR DESIGN LIFE IN THE MD BASED ON MATERIAL TYPE. THE LIST OF APPROVED GEOGRIDS WITH DESIGN STRENGTHS IS AVAILABLE FROM: connect.ncdot.gov/resources/Geological/Pages/Products.aspx
   DEFINE MATERIAL TYPE FROM THE WEBSITE ABOVE FOR SELECT MATERIAL AS FOLLOWS:

MATERIAL TYPE	SELECT MATERIAL
BORROW	CLASS I SELECT MATERIAL
FINE AGGREGATE	CLASS II OR III SELECT MATERIAL

8. FOR PRIMARY GEOGRIDS WITH 100% COVERAGE, PLACE PRIMARY GEOGRIDS SO GEOGRIDS ARE ADJACENT TO EACH OTHER IN THE CD. FOR PRIMARY GEOGRIDS WITH 75% TO LESS THAN 100% COVERAGE,

   MINIMUM REQUIRED PRIMARY GEOGRID LTDS = LTDS BASED ON 100% COVERAGE x (W + S) / W

   SEE TABLE FOR LTDS BASED ON 100% COVERAGE AND GEOGRID PLACEMENT DETAILS FOR PRIMARY GEOGRID ROLL WIDTH (W) AND SPACING (S). FOR PRIMARY GEOGRIDS WITH LESS THAN 100% COVERAGE, STAGGER PRIMARY GEOGRIDS SO GEOGRIDS ARE CENTERED OVER GAPS IN THE PRIMARY GEOGRID LAYER BELOW. DO NOT USE LESS THAN 75% COVERAGE FOR PRIMARY GEOGRIDS.

9. DO NOT PLACE ANY GEOGRIDS UNTIL EXCAVATION DIMENSIONS AND IN-SITU MATERIAL ARE APPROVED.

10. FOR SLOPE EROSION CONTROL, USE GEOCELLS OR MATTING ON SLOPE FACES OF RSS AS FOLLOWS:

RSS ANGLE	SLOPE EROSION CONTROL
1:1 TO < 1.5:1 (H:V)	GEOCELLS WITH COMPOST BLANKET
1.5:1 TO < 2:1 (H:V)	GEOCELLS WITH COMPOST BLANKET OR COIR FIBER MAT WITH SHOULDER AND SLOPE BORROW*
2:1 (H:V) OR FLATTER	MATTING FOR EROSION CONTROL WITH SHOULDER AND SLOPE BORROW

*SEE REINFORCED SOIL SLOPES AND SLOPE EROSION CONTROL SUMMARY TABLE IN THE ROADWAY SUMMARY SHEETS FOR SLOPE EROSION CONTROL ON SLOPE FACES OF RSS 1.5:1 (H:V) TO STEEPER THAN 2:1.

H (FT)	0 - < 12		12 - 24		> 24 - 36	
SELECT MATERIAL CLASS	I	II OR III	I	II OR III	I	II OR III
1:1 TO < 1.5:1 (H:V) RSS	1.25	1.20	1.15	1.10	1.10	1.00
1.5:1 TO 1.75:1 (H:V) RSS	1.10	1.00	0.95	0.90	0.90	0.85
> 1.75:1 TO < 2:1 (H:V) RSS	1.00	0.85	0.80	0.75	0.75	0.70

PRIMARY GEOGRID LENGTH / RSS HEIGHT (L / H) RATIO (L > 6' MIN)

(IF L ≤ 6', USE SECONDARY GEOGRID INSTEAD OF PRIMARY GEOGRID.)

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1802.01

STANDARD
REINFORCED SOIL SLOPE (RSS)
WITH HIGH GROUNDWATER
SHEET 2 OF 2

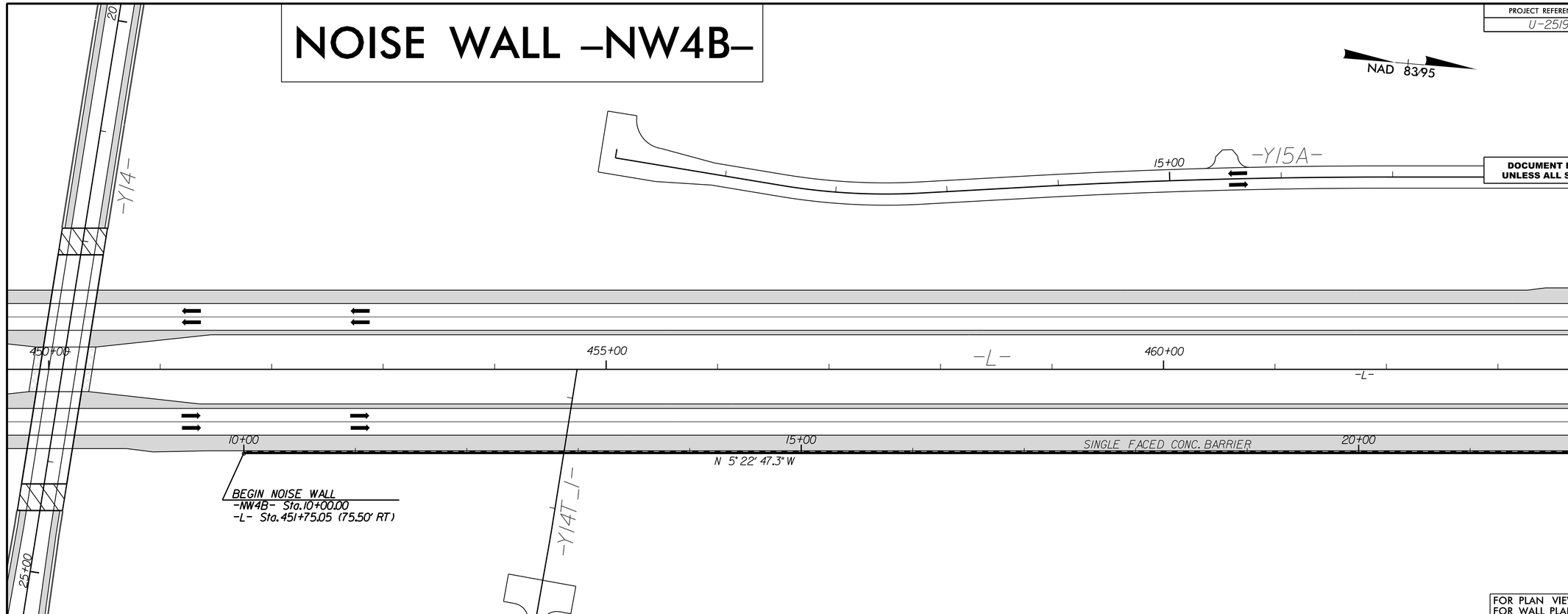
DATE: 12-17-19

NOISE WALL –NW4B–

PROJECT REFERENCE NO.	SHEET NO.
U-2519BA	2N-1

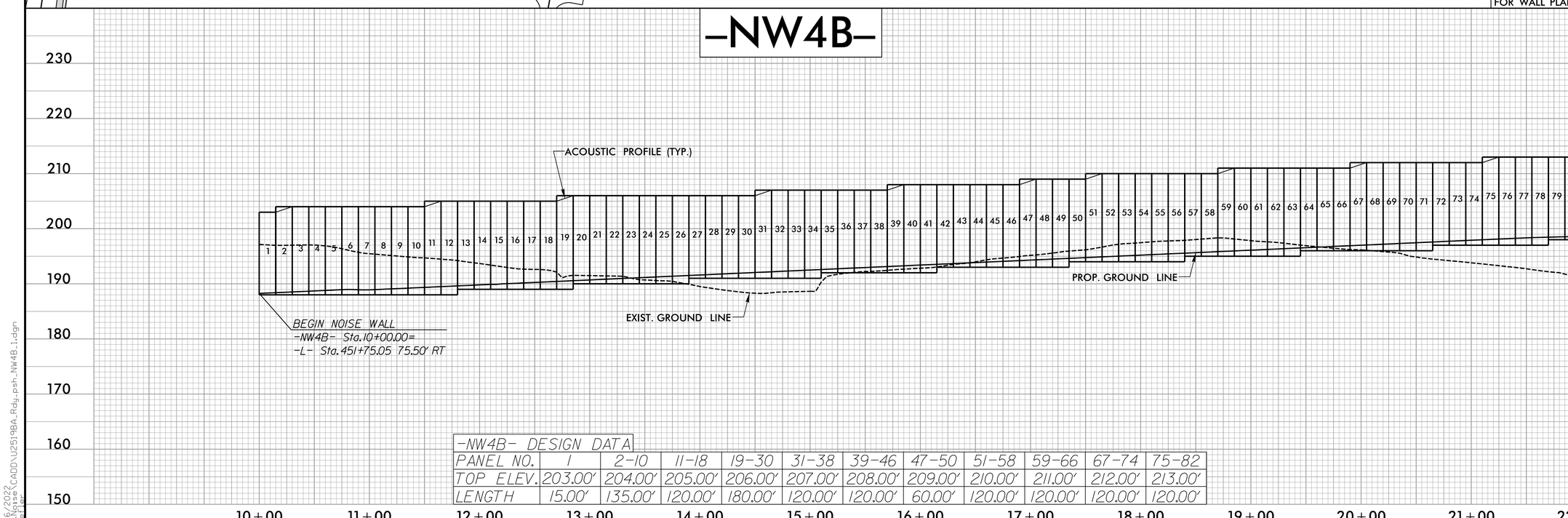
NOISE & AIR ENGINEER
3/17/2022
NORTH CAROLINA PROFESSIONAL SEAL 21122 ENGINEER MICHAEL T. MERRITT
DocuSigned by: MICHAEL T. MERRITT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



FOR PLAN VIEW SEE SHTS. 13 & 14
FOR WALL PLANS SEE SHTS. W-1 TO W-3

–NW4B–



-NW4B- DESIGN DATA											
PANEL NO.	1	2-10	11-18	19-30	31-38	39-46	47-50	51-58	59-66	67-74	75-82
TOP ELEV.	203.00'	204.00'	205.00'	206.00'	207.00'	208.00'	209.00'	210.00'	211.00'	212.00'	213.00'
LENGTH	15.00'	135.00'	120.00'	180.00'	120.00'	120.00'	60.00'	120.00'	120.00'	120.00'	120.00'

3/16/2022
R:\Noise\CADD\U2519BA_Rdy_psh_NW4B_1.dgn
Bentley

NOISE WALL –NW4B–

PROJECT REFERENCE NO.	SHEET NO.
U-2519BA	2N-2

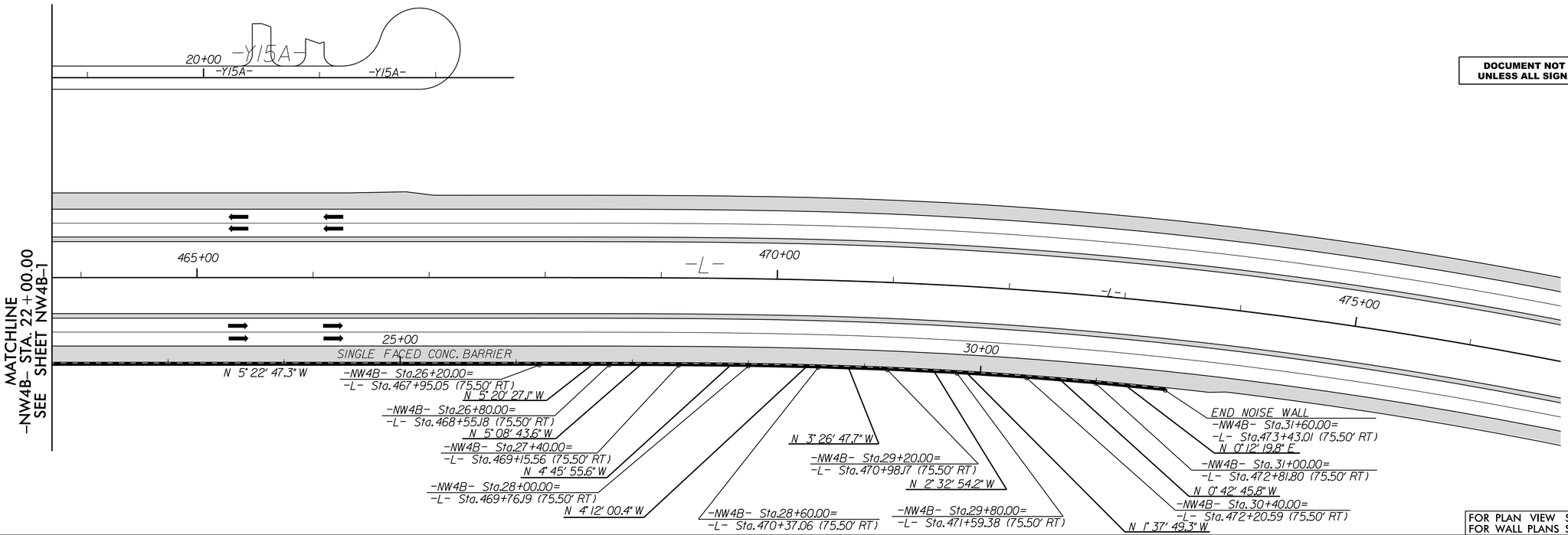
NOISE & AIR ENGINEER
3/17/2022

NORTH CAROLINA PROFESSIONAL SEAL 21122 ENGINEER MICHAEL T. MERRITT

DocuSigned by: MICHAEL T. MERRITT

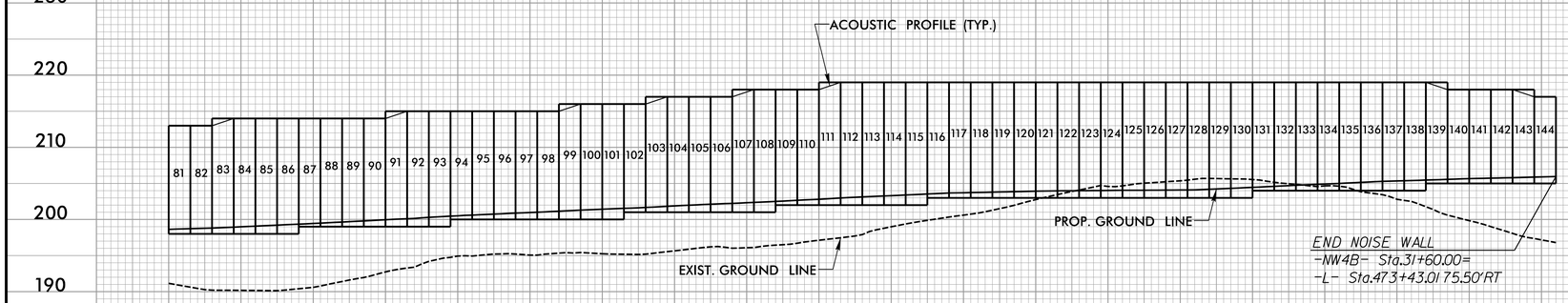
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/95



FOR PLAN VIEW SEE SHTS. 14 & 15
FOR WALL PLANS SEE SHTS. W-1 TO W-3

–NW4B–



–NW4B– DESIGN DATA

PANEL NO.	83-90	91-98	99-102	103-106	107-110	111-139	140-143	144
TOP ELEV.	214.00'	215.00'	216.00'	217.00'	218.00'	219.00'	218.00'	217.00'
LENGTH	120.00'	120.00'	60.00'	60.00'	60.00'	435.00'	60.00'	15.00'

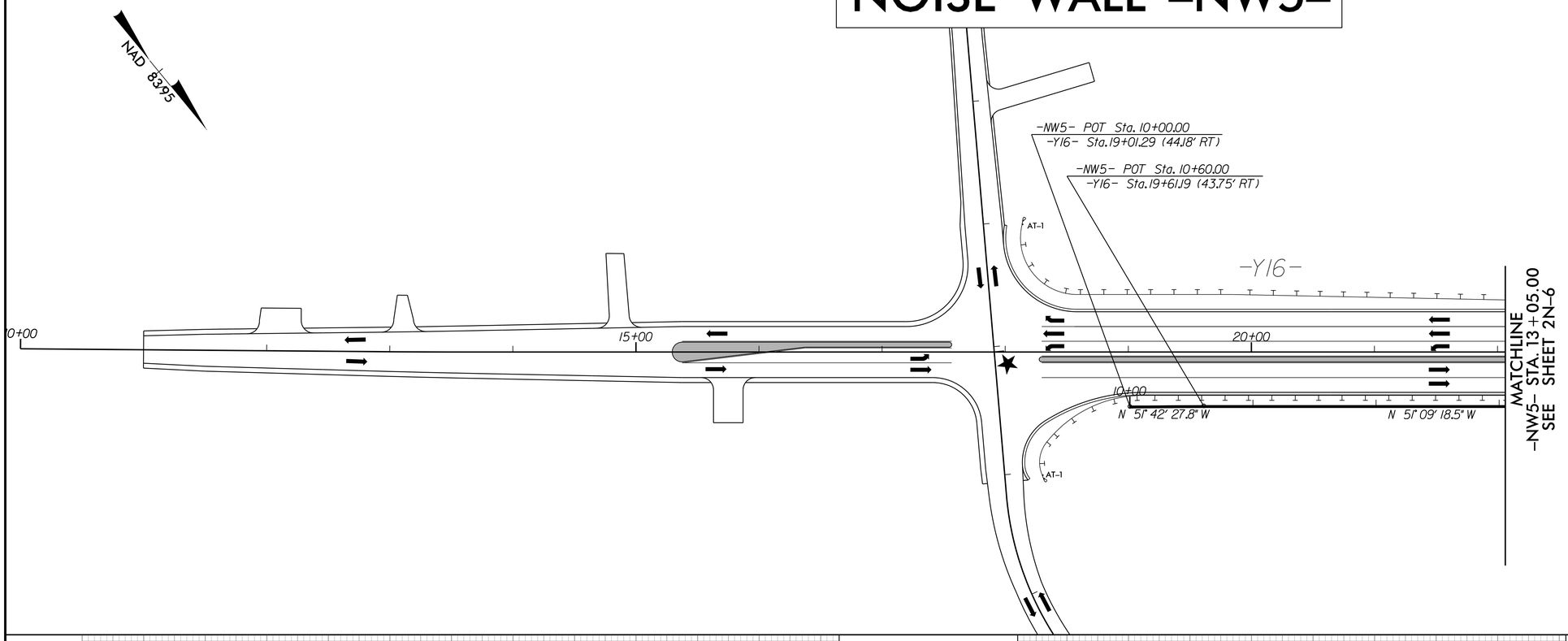
3/16/2022
R:\Noise\CADD\U2519BA_Rdy_psh_NW4B_2.dgn
mergeNoise

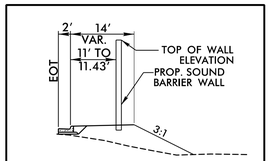
PROJECT REFERENCE NO.	SHEET NO.
U-2519BA	2N-3

NOISE & AIR ENGINEER
3/17/2022
NORTH CAROLINA PROFESSIONAL SEAL 21122 ENGINEER MICHAEL T. MERRITT
DocuSigned by: MICHAEL T. MERRITT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NOISE WALL -NW5-

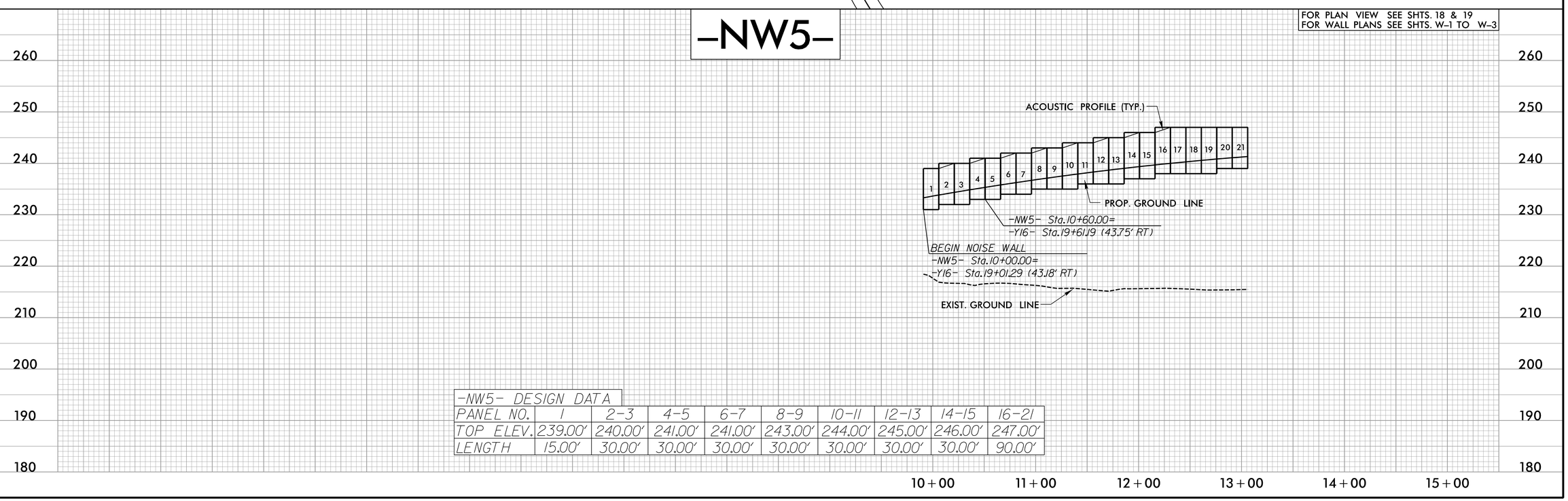




ELEVATION LOCATIONS
N.T.S.

FOR PLAN VIEW SEE SHTS. 18 & 19
FOR WALL PLANS SEE SHTS. W-1 TO W-3

-NW5-



-NW5- DESIGN DATA

PANEL NO.	1	2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-21
TOP ELEV.	239.00'	240.00'	241.00'	241.00'	243.00'	244.00'	245.00'	246.00'	247.00'
LENGTH	15.00'	30.00'	30.00'	30.00'	30.00'	30.00'	30.00'	30.00'	90.00'

3/16/2022
R:\Noise\CADD\U2519BA_Rdy_psh_NW5_1.dgn
mgeiger

PROJECT REFERENCE NO.	SHEET NO.
U-2519BA	2N-4

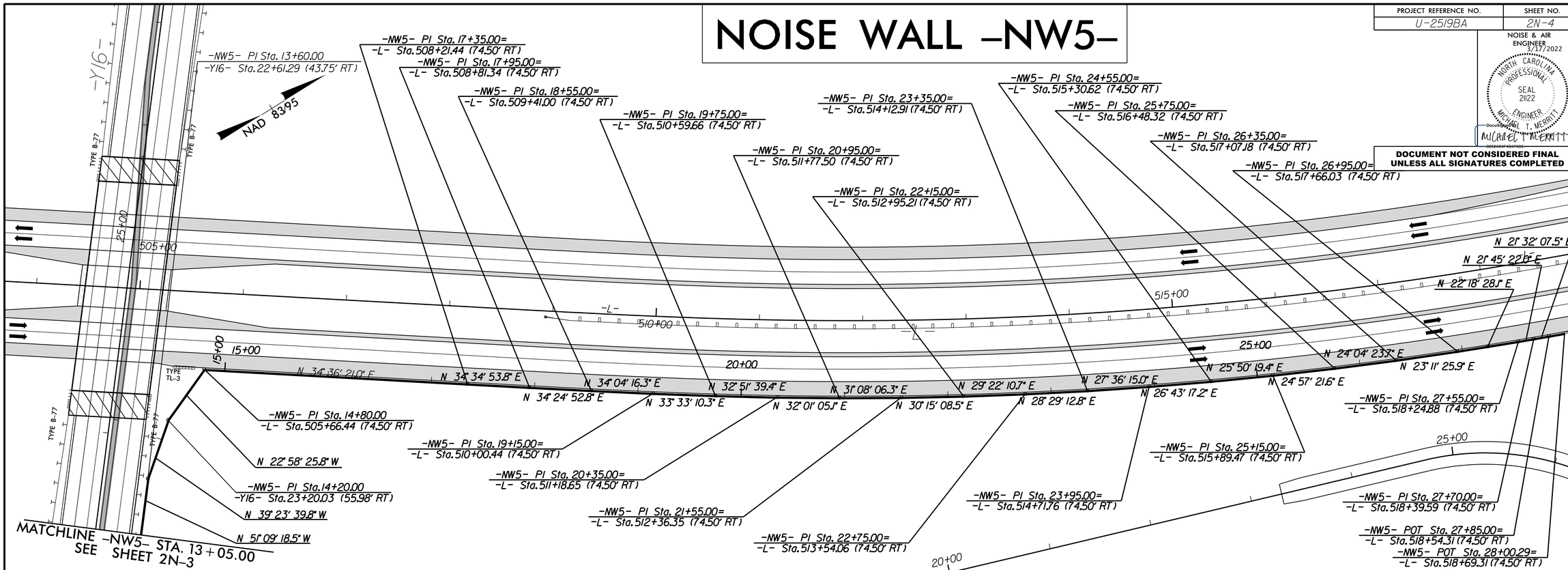
NOISE & AIR ENGINEER
3/17/2022

NORTH CAROLINA PROFESSIONAL SEAL 21122 ENGINEER MICHAEL T. MERRITT

DocuSigned by: MICHAEL T. MERRITT

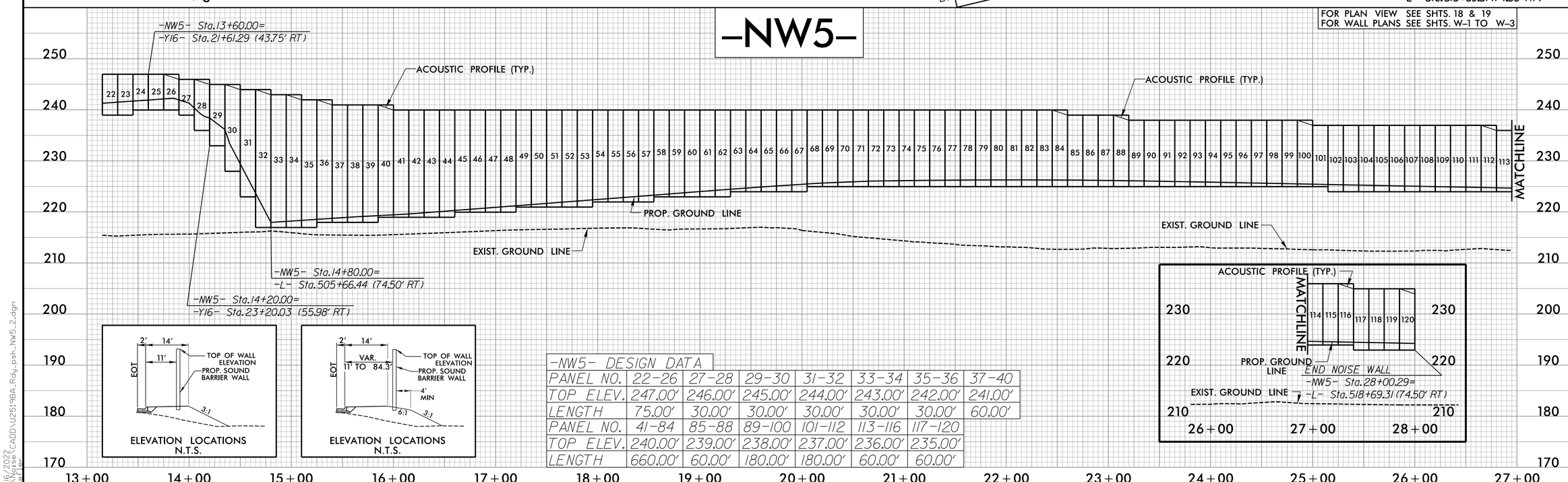
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NOISE WALL -NW5-



FOR PLAN VIEW SEE SHTS. 18 & 19
FOR WALL PLANS SEE SHTS. W-1 TO W-3

-NW5-



ELEVATION LOCATIONS
N.T.S.

ELEVATION LOCATIONS
N.T.S.

-NW5- DESIGN DATA

PANEL NO.	22-26	27-28	29-30	31-32	33-34	35-36	37-40
TOP ELEV.	247.00'	246.00'	245.00'	244.00'	243.00'	242.00'	241.00'
LENGTH	75.00'	30.00'	30.00'	30.00'	30.00'	30.00'	60.00'
PANEL NO.	41-84	85-88	89-100	101-112	113-116	117-120	
TOP ELEV.	240.00'	239.00'	238.00'	237.00'	236.00'	235.00'	
LENGTH	660.00'	60.00'	180.00'	180.00'	60.00'	60.00'	

3/16/2022
R:\Noise\CADD\U2519BA_Rdy_psh_NW5_2.dgn
mpeter

PROJECT REFERENCE NO.	SHEET NO.
U-2519BA	3B-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

IN CUBIC YARDS

CHAIN	BEGINNING STATION	ENDING STATION	UNCL. EXCA. C.Y.	UNDERCUT C.Y.	EMBANK. +% C.Y.	BORROW C.Y.	WASTE C.Y.
SUMMARY 1							
-Y13DET-	1+00.00	31+00.00	4,883		4,526		357
-Y13DET-	31+00.00	37+70.33	3,657		205		3,452
-Y13RPB_XOVER-	10+65.00	13+03.87	609		155		454
-Y13RPC_XOVER-	10+80.21	11+94.25	205				205
-Y14DET-	10+00.00	31+37.74	4,458		6,068	1,610	
-Y16DET-	10+00.00	39+96.17	1,341		6,204	4,863	
-Y15-	10+05.00	10+88.59	27		63	36	
SUBTOTAL			**15,180**		**17,220**	**6,508**	**4,468**
SUMMARY 2							
-L-	320+00.00	350+00.00	3,900	1,199	364,659	361,747	2,187
-Y13RPB-	17+05.82	41+01.43	32,618		23,399		9,219
-Y13RPC-	15+92.71	28+80.21	10,627		11,894	1,267	
-Y13-	13+90.00	43+50.00	7,122		30,751	23,629	
-Y13-	43+50.00	45+09.11			14,519	14,519	
-Y13-	47+70.11	77+83.00	4,944		39,904	34,960	
-Y13-	77+50.00	77+83.00	21		4		17
-Y13B-	10+10.06	20+73.91	3,640		2,791		849
-Y13E-	10+32.78	12+00.000	8		438	430	
-Y13F-	10+32.750	11+35.000	80		74		6
-Y13G_REV-	10+07.32	13+49.68	1,452		18		1,435
-Y13H-	10+70.00	12+05.01	3		165	162	
-Y13I-	10+20.84	13+96.21	427		20		407
-Y13J-	10+10.12	12+84.00	102				102
-Y13T_1-	10+58.48	11+28.53	91				91
-Y13CUL_1-	13+74.51	14+72.27	161				161
-Y13CUL_2-	11+16.99	24+54.63	232		59		173
-Y13CUL_3-	12+00.46	12+99.08	102		28		75
SUBTOTAL			**65,530**	**1,199**	**488,720**	**436,713**	**14,722**
SUMMARY 3							
-L-	350+00.00	380+00.00	178,925	13,692	47,098		145,520
-L-	380+00.00	396+48.35	125,886	8,770	61,788		72,869
-Y13RPA-	16+45.81	28+57.05	10,066	485	10,601	715	665
-Y13RPD-	14+31.41	35+12.46	9,909		9,715		194
SUBTOTAL			**324,786**	**22,947**	**129,201**	**715**	**219,247**
SUMMARY 4							
-L-	399+98.47	425+00.00	6,821		257,280	250,459	
SUBTOTAL			**6,821**		**257,280**	**250,459**	
SUMMARY 5							
-L-	425+00.00	450+00.00	119,470	2,685	53,449		68,706
-Y14-	10+42.44	22+12.56	3,287		28,750	25,463	
-Y14-	24+20.56	32+58.07	530		20,393	19,863	
-Y14A-	10+18.00	11+25.00	38		193	155	
-Y14B-	10+18.01	11+70.00	174		504	330	
SUBTOTAL			**123,499**	**2,685**	**103,288**	**45,810**	**68,706**
SUMMARY 6							
-L-	450+00.00	477+50.00	28,387	3,144	77,320	51,562	5,773
-Y15A-	10+00.00	22+21.19	2,900	772	2,599	561	1,634
-Y14T_1-	11+84.60	12+34.60	126				126
SUBTOTAL			**31,413**	**3,916**	**79,919**	**52,123**	**7,533**

CHAIN	BEGINNING STATION	ENDING STATION	UNCL. EXCA. C.Y.	UNDERCUT C.Y.	EMBANK. +% C.Y.	BORROW C.Y.	WASTE C.Y.
SUMMARY 7							
-L-	477+50.00	505+00.00	39,267	10,761	45,475	13,794	18,347
-Y16-	11+00.00	23+39.38	34		94,579	94,545	
-Y16-	25+43.39	30+39.83			73,655	73,655	
-Y16_REV-	30+39.83	45+20.00	621		21,935	21,314	
-Y16A-	11+00.000	22+71.510	1,622		7,679	6,057	
SUBTOTAL			**41,544**	**10,761**	**243,323**	**209,365**	**18,347**
SUMMARY 8							
-L-	505+00.00	519+00.00	230	500	91,040	90,860	550
-Y16B-	10+32.78	15+00.00	47		7,439	7,392	
-Y16B-	23+50.000	33+10.12	750		948	198	
-Y16C-	10+50.00	14+00.00	220		105		115
SUBTOTAL			**1,247**	**500**	**99,531**	**98,449**	**665**
SHEET TOTALS			**610,020**	**42,008**	**1,418,481**	**1,100,141**	**333,688**
LOSS DUE TO CLEARING AND GRUBBING			**-40,000**			**40,000**	
MATERIAL FOR SHOULDER CONSTRUCTION					**49,750**	**49,750**	
ADDITIONAL UNDERCUT				**15,400**	**19,250**	**19,250**	**15,400**
EARTH WASTE IN LIEU OF BORROW						**-217,457**	**-217,457**
DETOUR REMOVAL							**15,153**
PROJECT TOTAL			**570,020**	**57,408**	**1,487,481**	**991,684**	**146,784**
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT						**49,584**	
U-2519BA GRAND TOTAL			**570,020**	**57,408**		**1,041,268**	
U-2519BA SAY			**570,020**	**57,410**		**1,041,270**	
U-2519BB SAY			**235,600**	**22,100**		**487,150**	
GRAND TOTAL			**805,620**	**79,510**		**1,528,420**	

DRAINAGE DITCH EXCAVATION
U-2519BA = 37,210 CY
U-2519BB = 2,050 CY
GRAND TOTAL = 39,260 CY

Note: Earthwork quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

PAVEMENT STRUCTURE VOLUME
U-2519BA = 39,690 CY
U-2519BB = 52,700 CY
GRAND TOTAL = 93,090 CY

CONTINGENCY CLASS IV SUBGRADE STABILIZATION
U-2519BA = 1,000 TONS
U-2519BB = 1,000 TONS
GRAND TOTAL = 2,000 TONS

CONTINGENCY SHALLOW UNDERCUT
U-2519BA = 500 CY
U-2519BB = 500 CY
GRAND TOTAL = 1,000 CY

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

8/17/99
3/17/2022
R:\Roadway\Proj\U2519BA_Rdy_psh03B_1.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-2519BA	3B-2

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WOVEN WIRE 47" FENCE SUMMARY

IN LINEAR FEET

STATION TO STATION	LT. OR RT.	A FABRIC L.F.	B END BRACE	C CORNER BRACE	D LINE BRACE	E 4" POSTS	F 5" POSTS
L 319+34.15 TO 330+47.31	RT.	1,100.22	2	1	3	70	16
L 330+52.57 TO 337+50.00	RT.	689.00	1	1	2	43	11
Y13RPC 10+05.06 TO 17+89.54	RT.	763.34	1	1	3	47	14
Y13RPC 17+96.54 TO 28+24.38	RT.	1,079.17	1	2	3	68	17
Y13 56+56.00 TO 68+80.00	RT.	1,170.83	1	1	5	73	20
Y13 66+12.00 TO 56+00.00	LT	1,058.96	1	1	4	66	17
Y13RPD 34+94.51 TO 13+42.39	LT	2,235.36		5	8	138	39
L 374+56.22 TO 396+62.09	RT.	2,201.87	1	1	7	143	26
L 399+99.55 TO 442+29.78	RT	4,247.10	2	5	13	272	58
L 442+36.46 TO 449+75.65	RT	774.21	2	2	2	47	16
L 450+16.16 TO 473+93.09	RT	2,403.17	2	2	8	153	34
L 474+00.00 TO 504+53.66	RT	3,002.11	2	2	9	194	37
L 505+07.39 TO 519+02.60	RT	1,440.45	2	1	4	93	19
L 319+34.15 TO 335+00.00	LT.	1,596.63	1		5	105	17
Y14 25+18.87 TO 27+85.00	RT.	271.24	1			18	2
Y14 27+85.00 TO 24+47.73	RT.	344.46	1		1	22	5
Y16 18+50.00 TO 22+77.93	LT	428.83	1		2	26	8
Y16 18+80.00 TO 23+03.80	RT	428.40	1		2	26	8
Y13RPB 10+00.00 TO 40+87.27	LT.	3,176.18		1	12	206	39
Y13 34+70.00 TO 26+40.00	RT	869.47	1		3	56	11
Y13 27+50.00 TO 34+90.00	LT	734.25	1		3	46	11
Y13RPA 27+92.55 TO 10+05.06	RT	1,751.48		1	6	114	21
L 381+98.21 TO 395+96.48	LT	1,569.85	1	1	5	101	20
L 399+05.05 TO 450+08.43	LT.	5,389.96	2	8	15	345	73
L 450+48.92 TO 504+69.03	LT	5,575.94	2	6	17	358	73
L 505+21.17 TO 518+75.65	LT	1,356.08	2	2	4	85	22
Y14 14+90.00 TO 21+66.46	RT	684.27	1		2	45	8
Y14 15+60.00 TO 21+23.29	LT	564.47	1		2	36	8
Y16 25+79.18 TO 32+36.00	LT	666.29	1		2	43	8
Y16 26+02.24 TO 32+70.00	RT	666.96	1		2	43	8
U-2519BA SUBTOTALS:		48,240.55				3,082	666
U-2519BA SAY:		48,250				3,085	670
U-2519BB SAY:		14,400				910	240
GRAND TOTAL:		62,650				3,995	910

GUIDERAIL SUMMARY

IN LINEAR FEET

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH SINGLE FACE	LENGTH DOUBLE FACE	ANCHORS INTERMEDIATE	ANCHORS TERMINAL	REMARKS
L	320+00.00	355+00.00	MED	3500.00		2	2	
L	363+95.49	395+96.90	MED.	3201.41		2	2	
L	399+83.95	446+03.24	MED.	4619.3		4	2	
L	454+43.39	500+51.38	MED.	4607.99		2	2	
L	508+92.29	519+00.00	MED.	1007.71		0	2	
			U-2519BA TOTAL	16936.40		10	10	
			SUBTRACT TERMINAL END UNITS	200.00				
			U-2519BA SAY	16,740		10	10	(10 ADDITIONAL POSTS)
			U-2519BB SAY	7,200		2	8	(15 ADDITIONAL POSTS)
			GRAND TOTAL	23,940		12	18	(25 ADDITIONAL POSTS)

SHOULDER BERM GUTTER SUMMARY

IN LINEAR FEET

LINE	STATION	STATION	LENGTH
Y13 RT	42+50.00	45+12.03	264
Y13 LT	44+00.00	44+59.04	59
Y13 RT	48+19.33	49+00.00	81
Y13 LT	47+68.27	50+50.00	282
Y14 LT	18+60.00	21+85.58	326
Y14 RT	18+60.00	21+91.22	331
Y14 RT	24+47.49	26+95.00	248
Y14 LT	24+41.91	26+95.00	253
Y13RPB LT	19+50.00	23+55.00	399
L LT	320+00.00	322+15.00	214
L LT	395+50.00	395+94.57	45
L LT	435+00.00	443+90.00	890
L RT	320+00.00	334+10.00	1400
L RT	393+85.66	396+41.27	249
L RT	400+22.40	401+49.99	124
L RT	407+00.00	412+25.00	510
L RT	440+50.00	443+10.00	260
		U-2519BA TOTAL:	5,935
		U-2519BA SAY:	5,940
		U-2519BB SAY:	530
		GRAND TOTAL:	6,470

5.5" MODIFIED SHOULDER BERM GUTTER SUMMARY

IN LINEAR FEET

LINE	Station	Station	LENGTH
Y13RPB LT	19+50.00	23+55.00	399
		U-2519BA TOTAL:	400
		U-2519BB TOTAL:	0
		GRAND TOTAL:	400

6" MODIFIED SHOULDER BERM GUTTER SUMMARY

IN LINEAR FEET

LINE	Station	Station	LENGTH
L LT	320+00.00	322+15.00	214
L RT	320+00.00	334+10.00	1,400
L RT	393+85.00	396+41.27	249
L MED LT	395+50.00	395+94.57	45
L RT	400+22.41	401+53.00	124
LRT	407+00.00	412+25.00	510
L LT	435+00.00	443+90.00	890
L RT	440+50.00	443+10.00	260
		U-2519BA TOTAL:	3,700
		U-2519BB TOTAL:	0
		GRAND TOTAL:	3,700

2'-9" CURB AND GUTTER SUMMARY

IN LINEAR FEET

LINE	Station	Station	LENGTH
Y13 LT MED	56+51.78	58+69.05	217
		U-2519BA TOTAL:	220
		U-2519BB TOTAL:	450
		GRAND TOTAL:	670

PAVEMENT REMOVAL SUMMARY

IN SQUARE YARDS

SURVEY LINE	Station	Station	LOCATION LT/RT/CL	ASPHALT REMOVAL
Y13	27+00.00	32+76.22	CL	1726.06
Y13	44+77.59	48+08.74	CL	981.08
Y13	54+00.00	56+26.61	CL	1268.49
Y13CUL_1	14+71.00	15+44.00	CL	315.17
Y13CUL_2	10+11.94	11+16.99	CL	272.20
Y13CUL_3	12+99.00	14+11.00	CL	291.74
Y16DET	34+70.00	35+30.00	LT	175.56
Y14	21+86.00	24+46.75	CL	636.08
Y14	30+00.00	30+50.00	CL	122.90
Y14A	10+68.32	11+17.40	LT	14.12
Y14A	10+68.32	11+17.40	RT	15.69
Y14A	10+27.00	11+19.00	CL	45.04
Y15	10+05.00	10+75.00	CL	224.82
Y16	13+00.00	13+50.00	CL	122.29
Y16	35+50.00	36+00.00	CL	138.26
Y16A	14+27.13	22+80.00	LT	1667.97
Y16B	10+46.00	14+53.82	LT	685.84
DETOUR REMOVAL				
Y13DET	01+04.23	12+44.38	CL	1620.74
Y13DET	12+44.38	34+98.27	CL	6511.24
Y13DET	34+98.27	37+70.33	CL	304.28
Y14DET	10+00.00	12+88.86	CL	262.21
Y14DET	12+88.86	29+45.00	CL	4416.37
Y14DET	29+45.00	31+37.74	CL	181.77
Y15DET	10+57.00	10+88.59	CL	142.17
Y15DET	11+24.09	11+72.22	CL	214.23
Y16 DET	10+00.00	12+64.84	CL	297.49
Y16 DET	12+64.84	26+50.00	CL	4001.57
Y16 DET	26+50.00	36+07.34	CL	3569.47
Y16 DET	36+07.34	37+78.74	CL	495.16
Y16 DET	37+78.74	39+96.17	CL	237.25
Y16DET	34+80.00	35+30.00	LT	175.56
	U-2519BA TOTAL:			31,133
	U-2519BA SAY:			31,140
	U-2519BB TOTAL:			8,550
	GRAND TOTAL:			39,690

PAVEMENT BREAKING SUMMARY

IN SQUARE YARDS

SURVEY LINE	Station	Station	LOCATION LT/RT/CL	ASPHALT REMOVAL
Y13	32+76.22	44+77.59	CL	3862.96
Y13	48+08.74	54+00.00	CL	1761.06
Y14	13+00.00	21+86.00	CL	2161.10
Y14	24+46.75	30+00.00	CL	1360.73
Y15	10+75.00	11+24.38	CL	183.51
Y16	12+50.00	23+12.40	CL	2641.84
Y16	25+69.54	35+50.00	CL	3767.13
	U-2519BA TOTAL:			15,738
	U-2519BA SAY:			15,740
	U-2519BB TOTAL:			2,800
	GRAND TOTAL:			18,540

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

2/25/2022
R:\Roadway\Proj\U2519BA_Rdy_psh03B_2.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-2519BA	3B-3

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUARDRAIL SUMMARY

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL WIDTH	FLARE LENGTH		W		ANCHORS									IMPACT ATTENUATOR TYPE TL-3		SINGLE FACED CONCRETE BARRIER	REMOVE EXISTING GUARDRAIL	REMOVE & STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	XI	GREU TL-3	MEDIA N TL-3	XIII	CAT-1	B-77	TYPE III	AT-1	G	NG				
L	320+00.00	334+72.73	RT	1462.50			320+00	334+50	14'	17'										1									TIE TO GUARDRAIL ON U-2519AB
L	393+34.15	396+59.66	RT	322.88			396+42.46		12' - 14'	15' - 17'	50		1				1				1								
L	393+43.78	396+45.28	RT MED	297.88			396+45.28		5.97' - 21.11'	8.97' - 24.11'	275		15				1				1								
L	399+99.55	401+62.48	RT	162.50				400+24.15	12' - 14'	15' - 17'										1	1								
L	406+13.53	412+31.20	RT	600.00			407+50	412+00	14'	17'	50		1				1			1									
L	439+90.00	443+15.00	RT	331.25			441+00	443+00	14'	17'	50		1				1			1									
L	450+93.81	451+75.05	RT	81.25			451+75.05		14'	17'	50		1				1				1								
L	473+42.96	473+81.23	RT	37.50				473+42.96	14'	17'										1	1								
L	505+36.23	505+57.23	RT																						1				
L	518+69.31	519+00.00	RT	32.28				51869.31	14'	17'											1								TIE TO GUARDRAIL ON U-2519BB
L	320+00.00	337+96.03	LT	1812.50			336+50	320+00	14'	17'	50		1				1												TIE TO GUARDRAIL ON U-2519AB
L	390+67.75	395+96.48	LT	543.75				391+00	12' - 14'	15' - 17'										1	1								
L	395+37.26	396+19.37	LT MED	87.50				396+19.37	12'	15'										1	1								
L	399+35.57	402+31.20	LT MED	297.88			399+35.57		12' - 27.22'	15' - 30.22'	275.00		16				1				1								
L	399+05.05	420+89.67	LT	2247.88			419+00		12' - 14'	15' - 17'	50		1				1				1								
L	434+90.00	444+40.00	LT	950.00			442+00	435+00	14'	17'	50		1				1			1									
L	463+42.50	466+80.00	LT	337.50			465+50	463+50	14'	17'	50		1				1			1									
Y13	19+30.13	19+84.71	RT	54.60																			2						
Y13	29+06.52	29+47.76	LT	40.60																			2						
Y13	43+92.00	44+77.61	LT	87.50				44+77.61	11.5'	14.5'										1		1							
Y13	47+40.19	51+08.00	LT	368.75			50+50		11.5'	14.5'	50		1				1					1							
Y13	41+88.43	45+40.59	RT	356.25			4540.59		11.5'	14.5'	50		1				1					1							
Y13	48+00.46	49+15.80	RT	125.00				48+00.46	11.5'	14.5'										1		1							
Y13CUL_1	14+85.00		LT & RT	29.6																			2						
Y13CUL_2	11+13.00		LT & RT	29.6																			2						
Y13CUL_3	13+10.00		LT & RT	29.6																			2						
Y14	18+00.00	22+09.28	LT	412.50			22+09.38	19+00.00	8'	11'		50		1			1				1								
Y14	18+00.00	22+15.57	RT	418.75			19+00.00	22+15.66	8'	11'	50		1				1				1								
Y14	24+17.37	27+50.00	LT	337.50			26+50	24+17.37	8'	11'	50		1				1				1								
Y14	24+23.75	27+53.00	RT	331.25			26+50	26+50	8'	11'		50		1			1				1								
Y14T_1	12+36.50		LT & RT	29.60																			2						
Y16B/Y16	18+27.96	23+41.96	RT	437.13	120															1	1								
Y16	25+45.97	35+26.71	RT	960.88	12.5							50		1			1				1								
Y16	18+12.45	23+36.40	LT	485.13	84							50		1						1	1								
Y16	25+40.41	32+38.55	LT	708.88							50		1				1				1								
Y13RPB	19+38.70	24+14.21	LT	468.75			22+50	19+50	14'	17'	50		1				1			1									
Y13RPC/Y13	24+75.63	55+65.00	RT	450			28+47.96		24.5	11'	50		1				1			1									
L	451+75.05	473+42.96	RT																							2160.1			
L	505+57.23	518+54.31	RT																							1314			
			SHEET TOTALS	15766.88	216.50										0.00	0.00	20.00	0.00	0.00	15.00	18.00	4.00	12.00	0.00	1.00	3474.1			

LESS ANCHOR DEDUCTIONS

	QUANTITY	LF PER EA	TOTAL LF
GREU TL-3	20	50	1000
CAT-1	15	6.25	93.75
TYPE III	4	18.75	75
TYPE B-77	18	22.875	411.75
ATTENUATOR	1	50	50
AT-1	12	6.25	75

U-2519BA TOTAL (LF)	**14,061.38**	**216.50**																						
U-2519BA SAY (LF)	**14,062.5**	**225**	**(ADDITIONAL 10 GUARDRAIL POSTS)**	20	0	0	15	18	4	12	0	1	3480											
U-2519BB SAY (LF)	**3,150**	**0**	**(ADDITIONAL 15 GUARDRAIL POSTS)**	13	0	0	9	5	4	4	0	0	320											
GRAND TOTAL (LF)	**17,212.5**	**225**	**(ADDITIONAL 25 GUARDRAIL POSTS)**	33	0	0	24	23	8	16	0	1	3800											

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

8/17/99
7/10/2022
R:\Roadway\Proj\U2519BA_Rdy_psh038_3.dgn

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
U-2519BA	3D-1

COMPUTED BY: CJP DATE: 1/19/2022

CHECKED BY: ASB DATE: 2/24/2022

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Information Purposes only and should be verified by the contractor for project construction stakeout. See "Standard Specifications for Roads and Structures, Section 300-5."

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

STATION	LOCATION (LT, RT, OR CL)'	STRUCTURE NO.		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	C.S.P.								R.C. PIPE CLASS III							
SIZE								6"	15"	18"	24"	30"	36"	42"	48"	12"	15"	18"	24"	30"	36"	42"	48"
THICKNESS OR GAUGE		FROM	TO					.064	.064	.064	.064	.064	.079	.109	.109								
DETOURS																							
-Y13DET- 8+38.71	RT	EX-D02																					
-Y13DET- 8+38.71	RT	EX-D02	D-20		176.5	176.3																	
-Y13DET- 8+38.73	LT	D-20																32					
-Y13DET- 8+38.73	LT	D-20	D-21		176.3	175.3																	
-Y13DET- 16+50.00	RT	D-01																					
-Y13DET- 16+50.00	RT	D-01	D-02		174.7	174.4													72				
-Y13DET- 30+50.00	RT	D-03																					
-Y13DET- 30+50.00	RT	D-03	D-04		170.0	169.5													88				
-Y13DET- 34+72.68	LT	D-07																					
-Y13DET- 34+72.68	LT	D-07	D-08		166.8	165.9													44				
-Y13DET- 34+71.72	RT	D-08																					
-Y13DET- 34+71.72	RT	D-08	EX-D01		165.9	164.7																	
-Y13DET- 36+15.00	LT	D-05																					
-Y13DET- 36+15.00	LT	D-05	D-06		167.9	167.1												52					
-Y14DET- 13+96.77	RT	D-19																					
-Y14DET- 19+20.00	LT	D-09																					
-Y14DET- 19+20.00	LT	D-09	D-10		190.3	190.1														80			
-Y14DET- 28+70.00	LT	D-17		198.9																			
-Y14DET- 28+70.00	LT	D-17	D-18		196.9	195.8											172						
-Y16DET- 18+87.89	LT	D-22																					
-Y16DET- 21+17.36	LT	D-13																					
-Y16DET- 21+17.36	LT	D-13	D-14		213.9	213.7																	
-Y16DET- 31+50.00	RT	D-15																					
-Y16DET- 31+50.00	RT	D-15	D-16		215.5	215.3																	
- Y13DET- 34+71.72	RT	D-25			170.4	170.1												104					
-Y13DET- 2+16.84	LT	D-24																					
-Y13DET- 3+43.06	LT	D-23																					
SHEET TOTALS																	172	188	204	80			

STATION	R.C. PIPE CLASS IV								R.C. PIPE CLASS V								SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC)				49"x33" CAA Structural PlatePipe Arch, 0.109 Thick	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS	
SIZE	12"	15"	18"	24"	30"	36"	42"	48"	12"	15"	18"	24"	30"	36"	42"	48"	15"	18"	24"	30"		R.C.P.	C.S.P.
DETOURS																							
-Y13DET- 8+38.71																							
-Y13DET- 8+38.71																							
-Y13DET- 8+38.73																							
-Y13DET- 8+38.73																							
-Y13DET- 16+50.00																							
-Y13DET- 16+50.00																							
-Y13DET- 30+50.00																							
-Y13DET- 30+50.00																							
-Y13DET- 34+72.68																							
-Y13DET- 34+72.68																							
-Y13DET- 34+71.72																							
-Y13DET- 34+71.72																							
-Y13DET- 36+15.00																							
-Y13DET- 36+15.00																							
-Y14DET- 13+96.77																		32					
-Y14DET- 19+20.00																							
-Y14DET- 19+20.00																							
-Y14DET- 28+70.00																							
-Y14DET- 28+70.00																							
-Y16DET- 18+87.89																	56						
-Y16DET- 21+17.36																							
-Y16DET- 21+17.36				72																			
-Y16DET- 31+50.00																							
-Y16DET- 31+50.00			80																				
- Y13DET- 34+71.72																							
-Y13DET- 2+16.84																	32						
-Y13DET- 3+43.06																	24						
SHEET TOTALS			80	72													112	32					

STATION	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	LIN. FT. B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. (W.S. FLAT) FRAME WITH TWO FLAT GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME WITH TWO GRATES STD. 840.24	G.D.I. (N.S. FLAT) FR. WITH TWO FLAT GRATES. STD. 840.29	J.B. STD. 840.31 OR 840.32	TBJB STD. 840.34	T.B.D.I. STD. 840.35	M.H. FRAME AND COVER STD. 840.54	SPRING BOX STD. 840.41	ADJUST DI	CONVERT TB JB TO CB	BERM DRAINAGE OUTLET STD. 850.11 (PER EACH)	OTCB STD. 840.04 OR STD. 840.05	FLOWABLE FILL (CY)	C.S. ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
DETOURS																																	
-Y13DET- 8+38.71																																	
-Y13DET- 8+38.71																																	
-Y13DET- 8+38.73																															0.4465		
-Y13DET- 8+38.73																																28	
-Y13DET- 16+50.00																																	
-Y13DET- 16+50.00																																72	
-Y13DET- 30+50.00																																	
-Y13DET- 30+50.00																																88	
-Y13DET- 34+72.68																																	
-Y13DET- 34+72.68																																44	
-Y13DET- 34+71.72																															0.5526		
-Y13DET- 34+71.72																																	
-Y13DET- 36+15.00																																	
-Y13DET- 36+15.00																																52	
-Y14DET- 13+96.77																																32	
-Y14DET- 19+20.00																																	
-Y14DET- 19+20.00																																80	
-Y14DET- 28+70.00	1													1			1																
-Y14DET- 28+70.00																																172	
-Y16DET- 18+87.89																																56	
-Y16DET- 21+17.36																																	
-Y16DET- 21+17.36																																72	
-Y16DET- 31+50.00																																	
-Y16DET- 31+50.00																																80	
- Y13DET- 34+71.72																																	
-Y13DET- 2+16.84																																32	
-Y13DET- 3+43.06																																24	
SHEET TOTALS	1													1			1												Varying @ Sizes		0.9991	832	

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I.(N.S.)	(NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

3/23/2022 R:\Hydraulics\CADD\PSH\Redlines\U2519BA_Hyd_Drain_Summ.dgn ahefler

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
U-2519BA	3D-2

COMPUTED BY: CJP DATE: 1/19/2022
CHECKED BY: ASB DATE: 2/24/2022

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Information Purposes only and should be verified by the contractor for project construction stakeout. See "Standard Specifications for Roads and Structures, Section 300-5."

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

STATION (SIZE / THICKNESS OR GAUGE)	LOCATION (LT, RT, OR CL)'	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	C.S.P. 6" .064	C.S.P. 15" .064	C.S.P. 18" .064	C.S.P. 24" .064	C.S.P. 30" .064	C.S.P. 36" .079	C.S.P. 42" .109	C.S.P. 48" .109
SHEET 4															
- L- 322+00.00	LT	401		187.9											
- L- 322+00.00	LT	401	402		185.1	182.6									
- L- 322+00.00	CL	402		185.3											
- L- 322+00.00	CL	402	403		182.6	182.2									
- L- 322+00.00	RT	403		187.9											
- L- 322+00.00	RT	403	404		182.2	174.3			44						
- L- 327+50.00	CL	406		182.2											
- L- 327+50.00	CL	406	407		179.5	172.8									
SHEET 5															
- L- 334+00.00	CL	501		178.0											
- L- 334+00.00	CL	501	502		175.3	174.7									
- L- 333+88.00	RT	503		180.1											
- L- 333+88.00	RT	503	502		175.8	174.7									
- L- 334+00.00	RT	502		180.0											
- L- 334+00.00	RT	502	504		174.4	160.1				72					
- L- 341+00.00	CL	505		173.8											
- L- 341+00.00	CL	505	506		171.1	168.1									
- L- 341+00.00	RT	506		170.9											
- L- 341+00.00	RT	506	507		168.1	167.1									
- L- 339+00.00	CL	513		175.3											
- L- 339+00.00	CL	513	507		172.6	167.1									
- L- 339+00.00	RT	507		173.2											
- L- 339+00.00	RT	507	508		166.9	164.6									
- Y13RPC- 15+92.57	RT	509		167.5											
- Y13RPC- 15+92.57	RT	509	512		164.8	159.2									
- L- 347+00.00	RT	511		163.0											
- L- 347+00.00	RT	511	512		157.9	157.4									
- Y13RPB- 23+03.00	RT	701		166.0											
- Y13RPB- 23+03.00	RT	701	702		158.5	156.0									
SHEET TOTALS									44	72					

STATION	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS V 12"	15"	18"	24"	30"	36"	42"	48"
SHEET 4																								
- L- 322+00.00																								
- L- 322+00.00		72																						
- L- 322+00.00																								
- L- 322+00.00		72																						
- L- 322+00.00																								
- L- 322+00.00																								
- L- 327+50.00																								
- L- 327+50.00		128																						
SHEET 5																								
- L- 334+00.00																								
- L- 334+00.00		72																						
- L- 333+88.00																								
- L- 333+88.00		8																						
- L- 334+00.00																								
- L- 334+00.00																								
- L- 341+00.00																								
- L- 341+00.00		116																						
- L- 341+00.00																								
- L- 341+00.00		196																						
- L- 339+00.00																								
- L- 339+00.00		112																						
- L- 339+00.00																								
- L- 339+00.00			104																					
- Y13RPC- 15+92.57																								
- Y13RPC- 15+92.57		236																						
- L- 347+00.00																								
- L- 347+00.00						136																		
- Y13RPB- 23+03.00																								
- Y13RPB- 23+03.00						76																		
SHEET TOTALS		1012	104			212																		

STATION	SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) 15"	18"	24"	30"	49"x33" CAA Structural PlatePipe Arch, 0.109 Thick	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G
SHEET 4														
- L- 322+00.00								1						
- L- 322+00.00														
- L- 322+00.00								1						
- L- 322+00.00														
- L- 322+00.00								1	0.7					
- L- 322+00.00														
- L- 327+50.00								1						
- L- 327+50.00														
SHEET 5														
- L- 334+00.00								1						
- L- 334+00.00														
- L- 333+88.00								1						
- L- 333+88.00														
- L- 334+00.00								1	0.6					
- L- 334+00.00														
- L- 341+00.00								1						
- L- 341+00.00														
- L- 341+00.00								1						
- L- 341+00.00														
- L- 339+00.00								1						
- L- 339+00.00														
- L- 339+00.00								1	1.3					
- L- 339+00.00														
- Y13RPC- 15+92.57								1						
- Y13RPC- 15+92.57														
- L- 347+00.00						3.40								
- L- 347+00.00														
- Y13RPB- 23+03.00						3.40								
- Y13RPB- 23+03.00														
SHEET TOTALS						6.80		12	2.60					

STATION	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. (W.S. FLAT) FRAME WITH TWO FLAT GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME WITH TWO GRATES STD. 840.24	G.D.I. (N.S. FLAT) FR. WITH TWO FLAT GRATES. STD. 840.29	J.B. STD. 840.31 OR 840.32	TBJB STD. 840.34	T.B.D.I. STD. 840.35	M.H. FRAME AND COVER STD. 840.54	SPRING BOX STD. 840.41	ADJUST DI	CONVERT TB JB TO CB	BERM DRAINAGE OUTLET STD. 850.11 (PER EACH)	OTCB STD. 840.04 OR STD. 840.05	FLOWABLE FILL (CY)	C.S. ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
SHEET 4																										
- L- 322+00.00						1		1																		
- L- 322+00.00																										
- L- 322+00.00						1			1																	
- L- 322+00.00																										
- L- 322+00.00						1		1																		
- L- 322+00.00																						2 @ 15"				
- L- 327+50.00						1			1																	
- L- 327+50.00																										
SHEET 5																										
- L- 334+00.00						1			1																	
- L- 334+00.00																										
- L- 333+88.00						1		1																		
- L- 333+88.00																										
- L- 334+00.00						1		1																		
- L- 334+00.00																						2 @ 18"				
- L- 341+00.00						1			1																	
- L- 341+00.00																										
- L- 341+00.00						1			1																	
- L- 341+00.00																										
- L- 339+00.00						1			1																	
- L- 339+00.00																										
- L- 339+00.00						1			1																	
- L- 339+00.00																										
- Y13RPC- 15+92.57						1			1																	
- Y13RPC- 15+92.57																										
- L- 347+00.00																										
- L- 347+00.00																										
- Y13RPB- 23+03.00																										
- Y13RPB- 23+03.00																										
SHEET TOTALS						12		4	8													4 @ Varying Sizes				

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I.(N.S.)	(NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

3/23/2022
R:\Hydraulics\CADD\PSH\Redlines\U2519BA_Hyd_Drain_Summ.dgn
aheffler

COMPUTED BY: CJP DATE: 1/19/2022
CHECKED BY: ASB DATE: 2/24/2022

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Information Purposes only and should be verified by the contractor for project construction stakeout. See "Standard Specifications for Roads and Structures, Section 300-5."

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

STATION	LOCATION (LT, RT, OR CL)'	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	C.S.P. 6" .064	C.S.P. 15" .064	C.S.P. 18" .064	C.S.P. 24" .064	C.S.P. 30" .064	C.S.P. 36" .079	C.S.P. 42" .109	C.S.P. 48" .109
SHEET 6															
- Y13RPC- 20+50.00	RT	606		163.3											
- Y13RPC- 20+50.00	RT	606	607		160.3	159.3									
- Y13RPC- 20+05.00	LT	607		164.5											
- Y13RPC- 20+05.00	LT	607	608		159.3	158.0									
- L- 347+50.00	CL	627		170.2											
- L- 347+50.00	CL	627	628		167.4	158.1									
- L- 354+00.00	LT	612		180.0											
- L- 354+00.00	LT	612	601		173.0	162.2				48					
- L- 354+00.00	LT	601		165.2											
- L- 354+00.00	LT	601	602		161.7	161.2									
- L- 354+00.00	RT	603		166.5											
- L- 354+00.00	RT	603	602		163.8	162.0									
- L- 354+00.00	CL	602		166.0											
- L- 354+00.00	CL	602	604		160.7	159.8									
- L- 350+50.00	CL	604		168.1											
- L- 350+50.00	CL	604	605		159.8	159.2									
- L- 373+30.00	LT	626			146.0	144.5									
- Y13RPD- 22+50.00	RT	632		170.1											
- Y13RPD- 22+50.00	RT	632	633		167.3	159.0			64						
- Y13RPD- 22+50.00	LT	630		168.5											
- Y13RPD- 22+50.00	LT	630	631		165.8	164.9									
- Y13RPD- 16+15.00		634			151.0	150.5									
- L- 355+50.00	RT	614		166.1											
- L- 355+50.00	RT	614	615		163.3	163.0									
- L- 356+50.00	RT	615		167.6											
- L- 356+50.00	RT	615	641		163.0	162.7									
- L- 356+50.00	RT	641		167.2											
- L- 356+50.00	RT	641	640		162.7	162.5									
- L- 356+50.00	LT	640		167.5											
- L- 356+50.00	LT	640	616		162.5	161.5									
- L- 356+50.00	LT	616		164.2											
- L- 356+50.00	LT	616	617		161.5	160.7									
- L- 358+00.00	LT	617		165.5											
- L- 358+00.00	LT	617	619		160.7	159.0									
- L- 361+50.00	LT	619		163.3											
- L- 361+50.00	LT	619	620		158.8	154.4									
- L- 364+50.00	CL	629		159.7											
- L- 364+50.00	CL	629	620		156.7	154.4									
- L- 364+50.00	LT	620		158.6											
- L- 364+50.00	LT	620	625		153.9	150.4									
SHEET TOTALS									64	48					

STATION	FROM	TO	R.C. PIPE CLASS III 12"	III 15"	III 18"	III 24"	III 30"	III 36"	III 42"	III 48"	R.C. PIPE CLASS IV 12"	IV 15"	IV 18"	IV 24"	IV 30"	IV 36"	IV 42"	IV 48"
- Y13RPC- 20+50.00	606																	
- Y13RPC- 20+50.00	606	607			92													
- Y13RPC- 20+05.00	607																	
- Y13RPC- 20+05.00	607	608			72													
- L- 347+50.00	627																	
- L- 347+50.00	627	628		152														
- L- 354+00.00	612																	
- L- 354+00.00	612	601																
- L- 354+00.00	601																	
- L- 354+00.00	601	602				92												
- L- 354+00.00	603																	
- L- 354+00.00	603	602		92														
- L- 354+00.00	602																	
- L- 354+00.00	602	604					348											
- L- 350+50.00	604																	
- L- 350+50.00	604	605					132											
- L- 373+30.00	626							144										
- Y13RPD- 22+50.00	632																	
- Y13RPD- 22+50.00	632	633																
- Y13RPD- 22+50.00	630																	
- Y13RPD- 22+50.00	630	631		52														
- Y13RPD- 16+15.00	634														100			
- L- 355+50.00	614																	
- L- 355+50.00	614	615		104														
- L- 356+50.00	615																	
- L- 356+50.00	615	641		64														
- L- 356+50.00	641																	
- L- 356+50.00	641	640		40														
- L- 356+50.00	640																	
- L- 356+50.00	640	616		68														
- L- 356+50.00	616																	
- L- 356+50.00	616	617		152														
- L- 358+00.00	617																	
- L- 358+00.00	617	619		348														
- L- 361+50.00	619																	
- L- 361+50.00	619	620			300													
- L- 364+50.00	629																	
- L- 364+50.00	629	620			92													
- L- 364+50.00	620																	
- L- 364+50.00	620	625				348												
SHEET TOTALS				1072	556	440	480	144							100			

STATION	FROM	TO	R.C. PIPE CLASS V 12"	V 15"	V 18"	V 24"	V 30"	V 36"	V 42"	V 48"	SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) 15"	18"	24"	30"	49"x33" CAA Structural PlatePipe Arch, 0.109 Thick	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN
- Y13RPC- 20+50.00	606																	1								
- Y13RPC- 20+50.00	606	607																								
- Y13RPC- 20+05.00	607																	1	0.19							
- Y13RPC- 20+05.00	607	608																								
- L- 347+50.00	627																	1								
- L- 347+50.00	627	628																								
- L- 354+00.00	612																									
- L- 354+00.00	612	601																								
- L- 354+00.00	601																	1								
- L- 354+00.00	601	602																								
- L- 354+00.00	603																	1								
- L- 354+00.00	603	602																								
- L- 354+00.00	602																	1	0.32							
- L- 354+00.00	602	604																								
- L- 350+50.00	604																	1	3.37							
- L- 350+50.00	604	605																								
- L- 373+30.00	626															3.40										
- Y13RPD- 22+50.00	632																	1								
- Y13RPD- 22+50.00	632	633																								
- Y13RPD- 22+50.00	630																	1								
- Y13RPD- 22+50.00	630	631																								
- Y13RPD- 16+15.00	634																									
- L- 355+50.00	614																	1								
- L- 355+50.00	614	615																								
- L- 356+50.00	615																	1								
- L- 356+50.00	615	641																								
- L- 356+50.00	641																	1								
- L- 356+50.00	641	640																								
- L- 356+50.00	640																	1	0.10							
- L- 356+50.00	640	616																								
- L- 356+50.00	616																	1								
- L- 356+50.00	616	617																								
- L- 358+00.00	617																	1								
- L- 358+00.00	617	619																								
- L- 361+50.00	619																	1								
- L- 361+50.00	619	620																								
- L- 364+50.00	629																	1								
- L- 364+50.00	629	620																								
- L- 364+50.00	620																	1								
- L- 364+50.00	620	625																								
SHEET TOTALS																3.4		18	3.98							

STATION	FROM	TO	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. (W.S. FLAT) FRAME WITH TWO FLAT GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME WITH TWO GRATES STD. 840.24	G.D.I. (N.S. FLAT) FR. WITH TWO FLAT GRATES. STD. 840.29	J.B. STD. 840.31 OR 840.32	TBJB STD. 840.34	T.B.D.I. STD. 840.35	M.H. FRAME AND COVER STD. 840.54	SPRING BOX STD. 840.41	ADJUST DI	CONVERT TB JB TO CB	BERM DRAINAGE OUTLET STD. 850.11 (PER EACH)	OTCB STD. 840.04 OR STD. 840.05	FLOWABLE FILL (CY)	C.S. ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
- Y13RPC- 20+50.00	606					1			1																	
- Y13RPC- 20+50.00	606	607																								
- Y13RPC- 20+05.00	607					1			1																	
- Y13RPC- 20+05.00	607	608																								
- L- 347+50.00	627					1			1																	
- L- 347+50.00	627	628																								
- L- 354+00.00	612																		1							
- L- 354+00.00	612	601																				2 @ 18"				
- L- 354+00.00	601					1			1																	
- L- 354+00.00	601	602																								
- L- 354+00.00	603					1			1																	
- L- 354+00.00	603	602																								
- L- 354+00.00	602				1				1																	
- L- 354+00.00	602	604																								
- L- 350+50.00	604				1				1																	
- L- 350+50.00	604	605																								
- L- 373+30.00	626																									
- Y13RPD- 22+50.00	632					1			1																	
- Y13RPD- 22+50.00	632	633																				2 @ 15"				
- Y13RPD- 22+50.00	630					1			1																	
- Y13RPD- 22+50.00	630	631																								
- Y13RPD- 16+15.00	634																									
- L- 355+50.00	614					1			1																	
- L- 355+50.00	614	615																								
- L- 356+50.00	615					1			1																	
- L- 356+50.00	615	641																								
- L- 356+50.00	641					1			1																	
- L- 356+50.00	641	640																								
- L- 356+50.00	640					1			1																	
- L- 356+50.00	640	616																								
- L- 356+50.00	616					1			1																	
- L- 356+50.00	616	617																								
- L- 358+00.00	617					1			1																	
- L- 358+00.00	617	619																								
- L- 361+50.00	619					1			1																	
- L- 361+50.00	619	620																								
- L- 364+50.00	629					1			1																	
- L- 364+50.00	629	620																								
- L- 364+50.00	620				1				1																	
- L- 364+50.00	620	625																								
SHEET TOTALS					3	15			18										1			4 @ Varying Sizes				

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I.(N.S.)	(NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

6/2/99
3/23/2022
R:\Hydraulics\CADD\PSH\Redlines\U2519BA_Hyd_Drain_Summ.dgn
ahefler

COMPUTED BY: CJP DATE: 1/19/2022
CHECKED BY: ASB DATE: 2/24/2022

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Information Purposes only and should be verified by the contractor for project construction stakeout. See "Standard Specifications for Roads and Structures, Section 300-5."

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

STATION	LOCATION (LT, RT, OR CL)'	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	C.S.P. 6" (.064)	C.S.P. 15" (.064)	C.S.P. 18" (.064)	C.S.P. 24" (.064)	C.S.P. 30" (.064)	C.S.P. 36" (.079)	C.S.P. 42" (.109)	C.S.P. 48" (.109)	R.C. PIPE CLASS III 12"	R.C. PIPE CLASS III 15"	R.C. PIPE CLASS III 18"	R.C. PIPE CLASS III 24"	R.C. PIPE CLASS III 30"	R.C. PIPE CLASS III 36"	R.C. PIPE CLASS III 42"	R.C. PIPE CLASS III 48"
SHEET 6 (CONT.)																							
- L- 368+00.00	CL	622		156.0																			
- L- 368+00.00	CL	622	625		153.3	151.2											92						
- L- 368+00.00	LT	625		155.2																			
- L- 368+00.00	LT	625	621		149.9	148.7														392			
- L- 371+50.00	CL	639		153.4																			
- L- 371+50.00	CL	639	623		150.7	150.4											44						
- L- 371+91.25	CL	623		153.2																			
- L- 371+91.25	CL	623	621		150.2	149.7												92					
- L- 371+91.25	LT	621		154.4																			
- L- 371+91.25	LT	621	624		148.2	146.8															64		
- Y13- 48+85.00	RT	685		191.5																			
- Y13- 48+85.00	RT	685	636		188.7	188.5																	
- Y13- 48+98.00	RT	636		191.2																			
- Y13- 48+98.00	RT	636	635		188.5	184.4																	
- Y13- 50+48.00	LT	638		187.9																			
- Y13- 50+48.00	LT	638	635		185.1	184.4																	
- Y13- 49+00.00	LT	635		191.2																			
- Y13- 49+00.00	LT	635	637		184.4	179.2			40														
- Y13RPD- 31+00.00	RT	654		172.7																			
- Y13RPD- 31+00.00	RT	654	650		170.0	168.6											272						
- Y13- 53+70.00	LT	648		174.5																			
- Y13- 53+70.00	LT	648	650		172.6	168.6											92						
- Y13RPD- 33+77.54	RT	650		171.6																			
- Y13RPD- 33+77.54	RT	650	651		168.4	167.7												80					
- Y13RPD- 33+77.54	LT	651		172.8																			
- Y13RPD- 33+77.54	LT	651	652		167.7	166.1												148					
- Y13- 55+18.14	LT	652		174.0																			
- Y13- 55+18.14	LT	652	653		166.1	165.9													76				
- Y13- 55+94.00	LT	653		173.7																			
- Y13- 55+94.00	LT	653	683		165.9	165.8													24				
- Y13- 56+17.00	LT	683		173.7																			
- Y13- 56+17.00	LT	683	655		165.8	165.1													144				
- Y13- 58+24.42	LT	662	661		164.9	164.7															72		
- Y13- 56+73.00	LT	682		173.3																			
- Y13- 56+73.00	LT	682	684		170.3	169.9											88						
- Y13- 57+60.00	LT	684		172.9																			
- Y13- 57+60.00	LT	684	657		169.9	169.3											32						
- Y13- 57+91.78	LT	657		172.3																			
- Y13- 57+91.78	LT	657	661		169.3	169.0											36						
SHEET TOTALS									40								656	320	244	392	136		

STATION	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS V 12"	15"	18"	24"	30"	36"	42"	48"	SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) 15"	18"	24"	30"	49"x33" CAA Structural PlatePipe Arch, 0.109 Thick	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.
SHEET 6 (CONT.)																							
- L- 368+00.00																							
- L- 368+00.00																							
- L- 368+00.00																							
- L- 368+00.00																							
- L- 371+50.00																							
- L- 371+50.00																							
- L- 371+91.25																							
- L- 371+91.25																							
- L- 371+91.25																							
- L- 371+91.25																							
- Y13- 48+85.00																							
- Y13- 48+85.00										16													
- Y13- 48+98.00																							
- Y13- 48+98.00										96													
- Y13- 50+48.00																							
- Y13- 50+48.00										148													
- Y13- 49+00.00																							
- Y13- 49+00.00																							
- Y13RPD- 31+00.00																							
- Y13RPD- 31+00.00																							
- Y13- 53+70.00																							
- Y13- 53+70.00																							
- Y13RPD- 33+77.54																							
- Y13RPD- 33+77.54																							
- Y13RPD- 33+77.54																							
- Y13RPD- 33+77.54																							
- Y13- 55+18.14																							
- Y13- 55+18.14																							
- Y13- 55+94.00																							
- Y13- 55+94.00																							
- Y13- 56+17.00																							
- Y13- 56+17.00																							
- Y13- 58+24.42																						3.40	
- Y13- 56+73.00																							
- Y13- 56+73.00																							
- Y13- 57+60.00																							
- Y13- 57+60.00																							
- Y13- 57+91.78																							
- Y13- 57+91.78																							
SHEET TOTALS										260												3.40	

STATION	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. (W.S. FLAT) FRAME WITH TWO FLAT GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME WITH TWO GRATES STD. 840.24	G.D.I. (N.S. FLAT) FR. WITH TWO FLAT GRATES. STD. 840.29	J.B. STD. 840.31 OR 840.32	TBJB STD. 840.34	T.B.D.I. STD. 840.35	M.H. FRAME AND COVER STD. 840.54	SPRING BOX STD. 840.41	ADJUST DI	CONVERT TB JB TO CB	BERM DRAINAGE OUTLET STD. 850.11 (PER EACH)	OTCB STD. 840.04 OR STD. 840.05	FLOWABLE FILL (CY)	C.S. ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
SHEET 6 (CONT.)																																	
- L- 368+00.00	1												1			1																	
- L- 368+00.00																																	
- L- 368+00.00	1	0.25										1				1																	
- L- 368+00.00																																	
- L- 371+50.00	1												1			1																	
- L- 371+50.00																																	
- L- 371+91.25	1												1			1																	
- L- 371+91.25																																	
- L- 371+91.25	1	1.16										1				1																	
- L- 371+91.25																																	
- Y13- 48+85.00	1												1		1																		
- Y13- 48+85.00																																	
- Y13- 48+98.00	1												1		1																		
- Y13- 48+98.00																																	
- Y13- 50+48.00	1												1		1																		
- Y13- 50+48.00																																	
- Y13- 49+00.00	1	1.81											1		1																		
- Y13- 49+00.00																													2 @ 15"				
- Y13RPD- 31+00.00	1												1			1																	
- Y13RPD- 31+00.00																																	
- Y13- 53+70.00	1													1		1																	
- Y13- 53+70.00																																	
- Y13RPD- 33+77.54	1												1			1																	
- Y13RPD- 33+77.54																																	
- Y13RPD- 33+77.54	1	0.10											1			1																	
- Y13RPD- 33+77.54																																	
- Y13- 55+18.14	1	0.10		1			1																										
- Y13- 55+18.14																																	
- Y13- 55+94.00	1	2.80		1			1																										
- Y13- 55+94.00																																	
- Y13- 56+17.00	1	2.90		1			1																										
- Y13- 56+17.00																																	
- Y13- 58+24.42																												5.8		##			
- Y13- 56+73.00	1			1		1																											
- Y13- 56+73.00																																	
- Y13- 57+60.00	1			1		1																											
- Y13- 57+60.00																																	
- Y13- 57+91.78	1	0.10		1	1																												
- Y13- 57+91.78																																	
SHEET TOTALS	19	9.22		6	1	2	3					2	10	1	4	9												5.8	2 @ Varying Sizes	1			

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I.(N.S.)	(NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

6/2/99
3/23/2022
R:\Hydraulics\CADD\PSH\Redlines\U2519BA_Hyd_Drain_Summ.dgn
aheffler

COMPUTED BY: CJP DATE: 1/19/2022

CHECKED BY: ASB DATE: 2/24/2022

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
U-2519BA	3D-5

Note: Invert Elevations indicated are for Information Purposes only and should be verified by the contractor for project construction stakeout. See "Standard Specifications for Roads and Structures, Section 300-5."

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT, RT, OR CL)'	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	C.S.P. 12" .064	C.S.P. 15" .064	C.S.P. 18" .064	C.S.P. 24" .064	C.S.P. 30" .064	C.S.P. 36" .079	C.S.P. 42" .109	C.S.P. 48" .109
SHEET 6 (CONT.)															
- Y13- 60+75.00	RT	690		175.4											
- Y13- 60+75.00	RT	690	660		172.2	170.3									
- Y13- 59+36.00	RT	660		173.5											
- Y13- 59+36.00	RT	660	691		170.3	170.2									
- Y13- 59+36.00	LT	691		174.0											
- Y13- 59+36.00	LT	691	661		170.2	166.4									
- Y13- 58+25.25	LT	661		172.9											
- Y13- 58+25.25	LT	661	668		164.7	164.5									
- Y13- 57+00.00	RT	686		172.1											
- Y13- 57+00.00	RT	686	687		169.1	168.8									
- Y13- 57+91.78	RT	687		171.8											
- Y13- 57+91.78	RT	687	688		168.8	167.3									
- Y13- 60+85.68	RT	680		174.1											
- Y13- 60+85.68	RT	680	681		168.0	164.6									
- Y13- 59+16.04	RT	681		170.3											
- Y13- 59+16.04	RT	681	688		164.6	164.0									
- Y13- 58+26.78	RT	688		171.3											
- Y13CUL_2- 11+28.79	LT	663			171.0	169.8									
- Y13CUL_2- 11+28.79	LT	664													
- Y13CUL_2- 11+28.79	LT	665													
- Y13- 44+00.00	LT	610		191.7											
- Y13- 44+00.00	LT	610	609		189.0	188.5									
- Y13- 44+00.00	RT	609		191.7											
- Y13- 44+00.00	RT	609	613		188.5	185.9									
- Y13- 42+50.00	RT	613		188.6											
- Y13- 42+50.00	RT	613	611		185.9	176.0			60						
SHEET TOTALS									60						

STATION	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"
SHEET 6 (CONT.)																
- Y13- 60+75.00																
- Y13- 60+75.00		136														
- Y13- 59+36.00																
- Y13- 59+36.00		12														
- Y13- 59+36.00																
- Y13- 59+36.00		108														
- Y13- 58+25.25																
- Y13- 58+25.25						44										
- Y13- 57+00.00																
- Y13- 57+00.00		92														
- Y13- 57+91.78																
- Y13- 57+91.78		32														
- Y13- 60+85.68																
- Y13- 60+85.68								168								
- Y13- 59+16.04																
- Y13- 59+16.04								96								
- Y13- 58+26.78																
- Y13CUL_2- 11+28.79																
- Y13CUL_2- 11+28.79																
- Y13CUL_2- 11+28.79																
- Y13- 44+00.00																
- Y13- 44+00.00																
- Y13- 44+00.00																
- Y13- 44+00.00																
- Y13- 42+50.00																
- Y13- 42+50.00																
SHEET TOTALS		380				44		264								

STATION	R.C. PIPE CLASS V 12"	15"	18"	24"	30"	36"	42"	48"	SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) 15"	18"	24"	30"	49"x33" CAA Structural PlatePipe Arch, 0.109 Thick
SHEET 6 (CONT.)													
- Y13- 60+75.00													
- Y13- 60+75.00													
- Y13- 59+36.00													
- Y13- 59+36.00													
- Y13- 59+36.00													
- Y13- 59+36.00													
- Y13- 58+25.25													
- Y13- 58+25.25													
- Y13- 57+00.00													
- Y13- 57+00.00													
- Y13- 57+91.78													
- Y13- 57+91.78													
- Y13- 60+85.68													
- Y13- 60+85.68													
- Y13- 59+16.04													
- Y13- 59+16.04													
- Y13- 58+26.78													
- Y13CUL_2- 11+28.79										116			
- Y13CUL_2- 11+28.79												36	
- Y13CUL_2- 11+28.79												52	
- Y13- 44+00.00													
- Y13- 44+00.00		92											
- Y13- 44+00.00													
- Y13- 44+00.00		148											
- Y13- 42+50.00													
- Y13- 42+50.00													
SHEET TOTALS		240								116		88	

STATION	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN
SHEET 6 (CONT.)											
- Y13- 60+75.00			1								
- Y13- 60+75.00											
- Y13- 59+36.00			1								
- Y13- 59+36.00											
- Y13- 59+36.00			1								
- Y13- 59+36.00											
- Y13- 58+25.25			1	3.2		1			1		
- Y13- 58+25.25											
- Y13- 57+00.00			1			1		1			
- Y13- 57+00.00											
- Y13- 57+91.78			1			1		1			
- Y13- 57+91.78											
- Y13- 60+85.68			1	1.1		1			1		
- Y13- 60+85.68											
- Y13- 59+16.04			1	0.8		1	1				
- Y13- 59+16.04											
- Y13- 58+26.78			1	2.3		1	1				
- Y13CUL_2- 11+28.79											
- Y13CUL_2- 11+28.79											
- Y13CUL_2- 11+28.79											
- Y13- 44+00.00			1								
- Y13- 44+00.00											
- Y13- 44+00.00			1								
- Y13- 44+00.00											
- Y13- 42+50.00			1								
- Y13- 42+50.00											
SHEET TOTALS			12	7.41		6	2	2	2		

STATION	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. (W.S. FLAT) FRAME WITH TWO FLAT GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME WITH TWO GRATES STD. 840.24	G.D.I. (N.S. FLAT) FR. WITH TWO FLAT GRATES. STD. 840.29	J.B. STD. 840.31 OR 840.32	TBJB STD. 840.34	T.B.D.I. STD. 840.35	M.H. FRAME AND COVER STD. 840.54	SPRING BOX STD. 840.41	ADJUST DI	CONVERT TB JB TO CB	BERM DRAINAGE OUTLET STD. 850.11 (PER EACH)	OTCB STD. 840.04 OR STD. 840.05	FLOWABLE FILL (CY)
SHEET 6 (CONT.)																			
- Y13- 60+75.00	1	1																	
- Y13- 60+75.00																			
- Y13- 59+36.00	1	1																	
- Y13- 59+36.00																			
- Y13- 59+36.00	1	1																	
- Y13- 59+36.00																			
- Y13- 58+25.25																			
- Y13- 58+25.25																			
- Y13- 57+00.00																			
- Y13- 57+00.00																			
- Y13- 57+91.78																			
- Y13- 57+91.78																			
- Y13- 60+85.68																			
- Y13- 60+85.68																			
- Y13- 59+16.04																			
- Y13- 59+16.04																			
- Y13- 58+26.78																			
- Y13CUL_2- 11+28.79																			
- Y13CUL_2- 11+28.79																			
- Y13CUL_2- 11+28.79																			
- Y13- 44+00.00				1		1													
- Y13- 44+00.00																			
- Y13- 44+00.00				1		1													
- Y13- 44+00.00																			
- Y13- 42+50.00				1		1													
- Y13- 42+50.00																			
SHEET TOTALS	3	3		3		3													

STATION	C.S. ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
- Y13- 42+50.00	2 @ 15"				
SHEET TOTALS	2 @ Varying Sizes				

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I.(N.S.)	(NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

6/2/99
3/23/2022
R:\Hydraulics\CADD\PSH\Redlines\U2519BA_Hyd_Drain_Summ.dgn
aheffler

COMPUTED BY: CJP	DATE: 1/19/2022
CHECKED BY: ASB	DATE: 2/24/2022

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
U-2519BA	3D-6

Note: Invert Elevations indicated are for Information Purposes only and should be verified by the contractor for project construction stakeout. See "Standard Specifications for Roads and Structures, Section 300-5."

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

STATION / SIZE	LOCATION (LT, RT, OR CL)'	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	C.S.P. 6"	C.S.P. 15"	C.S.P. 18"	C.S.P. 24"	C.S.P. 30"	C.S.P. 36"	C.S.P. 42"	C.S.P. 48"	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"
THICKNESS OR GAUGE								.064	.064	.064	.064	.064	.079	.109	.109								
SHEET 7																							
-Y13CUL_1- 14+56.43	LT	717																					
-Y13CUL_1- 13+86.74	RT	716																					
- Y13- 32+70.00	RT	714		181.1																			
- Y13- 32+70.00	RT	714	713		178.0	177.9																	
- Y13- 32+55.00	RT	713		181.1																			
- Y13- 32+55.00	RT	713	712		177.9	177.7																	
- Y13- 32+25.00	RT	712		181.1																			
- Y13- 32+25.00	RT	712	2206		177.7	175.9																	
SHEET 22																							
- Y13- 28+00.00	RT	2201		182.6																			
- Y13- 28+00.00	RT	2201	2202		179.4	178.3																	
- Y13- 29+10.00	RT	2202		181.4																			
- Y13- 29+10.00	RT	2202	2203		178.3	177.7																	
- Y13- 29+90.00	RT	2203		180.9																			
- Y13- 29+90.00	RT	2203	2204		177.7	177.3																	
- Y13- 30+69.98	RT	2204		180.7																			
- Y13- 30+69.98	RT	2204	2205		177.3	177.1																	
- Y13- 31+25.00	RT	2205		180.8																			
- Y13- 31+25.00	RT	2205	2206		177.1	175.9																	
- Y13- 31+66.47	RT	2211		183.0																			
- Y13- 31+66.47	RT	2211	2206		175.0	174.7														68			
- Y13- 31+66.47	RT	2206		180.9																			
- Y13- 31+66.47	RT	2206	2210		174.7	174.2																	
-Y13- 20+59.95	LT	2215																					
- Y13- 24+02.00	LT	2212		183.2																			
- Y13- 24+02.00	LT	2212	2213		180.0	179.2																	
-Y13- 27+19.75	LT	2216																					
-Y13I- 12+12.09	LT	2217																					
-Y13I- 13+66.57		2214			176.1	175.9																	
SHEET 20																							
- Y13B- 12+17.00		2001			168.3	168.0														72			
- Y13B- 20+00.00		2002			158.0	154.8																	
- Y13B- 17+15.00		2003			164.8	164.6																	
SHEET TOTALS																				140			

STATION	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS V 12"	15"	18"	24"	30"	36"	42"	48"	SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) 15"	18"	24"	30"	49"x33" CAA Structural PlatePipe Arch, 0.109 Thick	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.
SHEET 7																							
-Y13CUL_1- 14+56.43																	32						
-Y13CUL_1- 13+86.74																	24						
- Y13- 32+70.00																							
- Y13- 32+70.00		16																					
- Y13- 32+55.00																							
- Y13- 32+55.00		32																					
- Y13- 32+25.00																							
- Y13- 32+25.00		60																					
SHEET 22																							
- Y13- 28+00.00																							
- Y13- 28+00.00		112																					
- Y13- 29+10.00																							
- Y13- 29+10.00		84																					
- Y13- 29+90.00																							
- Y13- 29+90.00		84																					
- Y13- 30+69.98																							
- Y13- 30+69.98		56																					
- Y13- 31+25.00																							
- Y13- 31+25.00		44																					
- Y13- 31+66.47																							
- Y13- 31+66.47																							
- Y13- 31+66.47																							
- Y13- 31+66.47					72																		
-Y13- 20+59.95																	32						
- Y13- 24+02.00																							
- Y13- 24+02.00										48													
-Y13- 27+19.75																	36						
-Y13I- 12+12.09																	28						
-Y13I- 13+66.57			52																				
SHEET 20																							
- Y13B- 12+17.00																							
- Y13B- 20+00.00			84																				
- Y13B- 17+15.00			56																				
SHEET TOTALS		488	192		72					48							152						

STATION	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. (W.S. FLAT) FRAME WITH TWO FLAT GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME WITH TWO GRATES STD. 840.24	G.D.I. (N.S. FLAT) FR. WITH TWO FLAT GRATES. STD. 840.29	J.B. STD. 840.31 OR 840.32	TBJB STD. 840.34	T.B.D.I. STD. 840.35	M.H. FRAME AND COVER STD. 840.54	SPRING BOX STD. 840.41	ADJUST DI	CONVERT TB JB TO CB	BERM DRAINAGE OUTLET STD. 850.11 (PER EACH)	OTCB STD. 840.04 OR STD. 840.05	FLOWABLE FILL (CY)	C.S. ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
SHEET 7																																	
-Y13CUL_1- 14+56.43																																	
-Y13CUL_1- 13+86.74																																	
- Y13- 32+70.00	1							1		1	1																						
- Y13- 32+70.00																																	
- Y13- 32+55.00	1							1		1	1																						
- Y13- 32+55.00																																	
- Y13- 32+25.00	1							1		1	1																						
- Y13- 32+25.00																																40	
SHEET 22																																	
- Y13- 28+00.00	1							1		1	1																						
- Y13- 28+00.00																																	
- Y13- 29+10.00	1							1		1	1																						
- Y13- 29+10.00																																	
- Y13- 29+90.00	1							1		1	1																						
- Y13- 29+90.00																																	
- Y13- 30+69.98	1							1		1	1																						
- Y13- 30+69.98																																	
- Y13- 31+25.00	1							1		1	1																						
- Y13- 31+25.00																																	
- Y13- 31+66.47																																	
- Y13- 31+66.47																																	
- Y13- 31+66.47	1	1.36						1		1	1																						
- Y13- 31+66.47																																	
-Y13- 20+59.95																																	
- Y13- 24+02.00	1							1		1	1																						
- Y13- 24+02.00																																	
-Y13- 27+19.75																																	
-Y13I- 12+12.09																																	
-Y13I- 13+66.57																																	
SHEET 20																																	
- Y13B- 12+17.00																																	
- Y13B- 20+00.00																																	
- Y13B- 17+15.00																																	
SHEET TOTALS	10	1.36						10		10	10																		Varying @ Sizes			40	

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I.(N.S.)	(NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

6/2/99
3/23/2022
R:\Hydraulics\CADD\PSH\Redlines\U2519BA_Hyd_Drain_Summ.dgn
aheffler

COMPUTED BY: CJP	DATE: 1/19/2022
CHECKED BY: ASB	DATE: 2/24/2022

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
U-2519BA	3D-7

Note: Invert Elevations indicated are for Information Purposes only and should be verified by the contractor for project construction stakeout. See "Standard Specifications for Roads and Structures, Section 300-5."

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

STATION	LOCATION (LT, RT, OR CL)'	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL
SHEET 23							
- Y13- 69+99.71	LT	2311	2310		174.5	172.6	
- Y13F- 10+50.00	RT	2310		178.5			
- Y13F- 10+50.00	RT	2310	2312		172.6	172.4	
- Y13F- 11+00.00	LT	2325	2312		175.5	174.7	
- Y13- 69+28.06	LT	2312		178.6			
- Y13- 69+28.06	LT	2312	2313		172.4	172.2	
- Y13- 69+96.00	LT	2314		179.8			
- Y13- 69+96.00	LT	2314	2313		176.7	174.5	
- Y13- 69+28.46	RT	2313		179.7			
- Y13- 69+28.46	RT	2313	2318		172.2	172.1	
- Y13- 69+50.00	RT	2317	2318		175.2	174.5	
- Y13- 69+28.58	RT	2318		178.6			
- Y13- 69+28.58	RT	2318	2319		172.1	171.7	
- Y13- 67+95.00	RT	2319		178.2			
- Y13- 67+95.00	RT	2319	2320		171.7	169.9	
- Y13- 67+04.95	RT	2320		175.7			
- Y13- 67+04.95	RT	2320	2335		169.9	169.8	
- Y13G_REV- 13+12.58	RT	2335		176.8			
- Y13G_REV- 13+12.58	RT	2335	2336		169.8	169.7	
- Y13G_REV- 13+12.58	LT	2336		177.0			
- Y13G_REV- 13+12.58	LT	2336	2326		169.7	169.5	
- Y13- 65+90.00	RT	2326		177.1			
- Y13- 65+90.00	RT	2326	2322		169.5	169.2	
- Y13- 65+00.00	RT	2322		176.8			
- Y13- 65+00.00	RT	2322	2321		169.2	168.5	
- Y13- 62+50.00	RT	2321		175.9			
- Y13- 62+50.00	RT	2321	680		168.5	168.0	
- Y13- 67+56.00	RT	2323		179.1			
- Y13- 67+56.00	RT	2323	2303		175.9	175.6	
- Y13- 66+81.65	LT	2338		179.2			
- Y13- 66+81.65	LT	2338	2303		176.1	175.6	
- Y13- 66+81.65	RT	2303		178.7			
- Y13- 66+81.65	RT	2303	2337		175.6	175.2	
- Y13- 65+50.00	RT	2337		178.4			
- Y13- 65+50.00	RT	2337	2315		175.2	175.1	
- Y13- 65+50.00	LT	2315		178.9			
- Y13- 65+50.00	LT	2315	2302		175.1	174.8	
- Y13- 64+25.00	LT	2302		178.5			
- Y13- 64+25.00	LT	2302	2305		174.8	174.4	
- Y13- 63+24.15	LT	2305		178.2			
- Y13- 63+24.15	LT	2305	2301		174.4	173.9	
- Y13- 62+20.65	RT	2301		177.1			
- Y13- 62+20.65	RT	2301	690		173.9	172.2	
SHEET TOTALS							

STATION	C.S.P. 6" .064	C.S.P. 15" .064	C.S.P. 18" .064	C.S.P. 24" .064	C.S.P. 30" .064	C.S.P. 36" .079	C.S.P. 42" .109	C.S.P. 48" .109	R.C. PIPE CLASS III 12"	CLASS III 15"	CLASS III 18"	CLASS III 24"	CLASS III 30"	CLASS III 36"	CLASS III 42"	CLASS III 48"	R.C. PIPE CLASS IV 12"	CLASS IV 15"	CLASS IV 18"	CLASS IV 24"	CLASS IV 30"	CLASS IV 36"	CLASS IV 42"	CLASS IV 48"	R.C. PIPE CLASS V 12"	CLASS V 15"	CLASS V 18"	CLASS V 24"	CLASS V 30"	CLASS V 36"	CLASS V 42"	CLASS V 48"	SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) 15"	SIDE DRAIN 18"	SIDE DRAIN 24"	SIDE DRAIN 30"	49"x33" CAA Structural PlatePipe Arch, 0.109 Thick
SHEET 23																																					
- Y13- 69+99.71															20																						
- Y13F- 10+50.00																																					
- Y13F- 10+50.00															60																						
- Y13F- 11+00.00																		52																			
- Y13- 69+28.06																																					
- Y13- 69+28.06															52																						
- Y13- 69+96.00																																					
- Y13- 69+96.00										68																											
- Y13- 69+28.46																																					
- Y13- 69+28.46															36																						
- Y13- 69+50.00												36																									
- Y13- 69+28.58																																					
- Y13- 69+28.58																136																					
- Y13- 67+95.00																																					
- Y13- 67+95.00																88																					
- Y13- 67+04.95																																					
- Y13- 67+04.95																48																					
- Y13G_REV- 13+12.58																																					
- Y13G_REV- 13+12.58																32																					
- Y13G_REV- 13+12.58																																					
- Y13G_REV- 13+12.58																56																					
- Y13- 65+90.00																																					
- Y13- 65+90.00																88																					
- Y13- 65+00.00																																					
- Y13- 65+00.00																248																					
- Y13- 62+50.00																																					
- Y13- 62+50.00																160																					
- Y13- 67+56.00																																					
- Y13- 67+56.00										72																											
- Y13- 66+81.65																																					
- Y13- 66+81.65										12																											
- Y13- 66+81.65																																					
- Y13- 66+81.65										132																											
- Y13- 65+50.00																																					
- Y13- 65+50.00										12																											
- Y13- 65+50.00																																					
- Y13- 65+50.00										124																											
- Y13- 64+25.00																																					
- Y13- 64+25.00										100																											
- Y13- 63+24.15																																					
- Y13- 63+24.15										108																											
- Y13- 62+20.65																																					
- Y13- 62+20.65										144																											
SHEET TOTALS										772		36			168	856		52																			

STATION	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	ENDWALLS C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	LIN. FT. B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CONCRETE TRANSITIONAL SECTION CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. (W.S. FLAT) FRAME WITH TWO FLAT GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME WITH TWO GRATES STD. 840.24	G.D.I. (N.S. FLAT) FR. WITH TWO FLAT GRATES. STD. 840.29	J.B. STD. 840.31 OR 840.32	TBJB STD. 840.34	T.B.D.I. STD. 840.35	M.H. FRAME AND COVER STD. 840.54	SPRING BOX STD. 840.41	ADJUST DI	CONVERT TB JB TO CB	BERM DRAINAGE OUTLET STD. 850.11 (PER EACH)	OTCB STD. 840.04 OR STD. 840.05	FLOWABLE FILL (CY)	C.S. ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
SHEET 23																																			
- Y13- 69+99.71	4.5																																		
- Y13F- 10+50.00			1	0.9																	1			1											
- Y13F- 10+50.00																																		58	
- Y13F- 11+00.00																																			
- Y13- 69+28.06			1	1.2		1	1																												
- Y13- 69+28.06																																			
- Y13- 69+96.00			1									1	1																						
- Y13- 69+96.00																																			
- Y13- 69+28.46			1	2.4								1	1																						
- Y13- 69+28.46																																			
- Y13- 69+50.00																																			
- Y13- 69+28.58			1	1.5		1			1																										
- Y13- 69+28.58																																			
- Y13- 67+95.00			1	1.5		1			1																										
- Y13- 67+95.00																																			
- Y13- 67+04.95			1	0.8		1			1																										
- Y13- 67+04.95																																			
- Y13G_REV- 13+12.58			1	2.1		1			1																										
- Y13G_REV- 13+12.58																																			
- Y13G_REV- 13+12.58			1	2.3		1		1																											
- Y13G_REV- 13+12.58																																			
- Y13- 65+90.00			1	2.6		1			1																										
- Y13- 65+90.00																																			
- Y13- 65+00.00			1	2.6		1			1																										
- Y13- 65+00.00																																			
- Y13- 62+50.00			1	2.4		1			1																										
- Y13- 62+50.00																																			
- Y13- 67+56.00			1									1	1																						
- Y13- 67+56.00																																			
- Y13- 66+81.65			1									1	1																						
- Y13- 66+81.65																																		89	
- Y13- 66+81.65			1									1	1																						
- Y13- 66+81.65																																			
- Y13- 65+50.00			1									1	1																						
- Y13- 65+50.00																																			
- Y13- 65+50.00			1									1	1																						
- Y13- 65+50.00																																			
- Y13- 64+25.00			1									1	1																						
- Y13- 64+25.00																																			
- Y13- 63+24.15			1									1	1																						
- Y13- 63+24.15																																			
- Y13- 62+20.65			1									1	1																						
- Y13- 62+20.65																																			
SHEET TOTALS	4.5		20	20.13		9	1	1	7			10	10								1			1							Varying @ Sizes			147	

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I.(N.S.)	(NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

COMPUTED BY:	CJP	DATE:	1/19/2022
CHECKED BY:	ASB	DATE:	2/24/2022

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
U-2519BA	3D-8

Note: Invert Elevations indicated are for Information Purposes only and should be verified by the contractor for project construction stakeout. See "Standard Specifications for Roads and Structures, Section 300-5."

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

STATION	LOCATION (LT, RT, OR CL)'	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL
SHEET 23 (CONT.)							
- Y13G_REV- 10+10.75	RT	2307			171.7	171.4	
- Y13- 65+90.00	RT	2330					
- Y13- 65+90.00	RT	2331					
- Y13- 65+90.00	RT	2332					
- Y13- 65+90.00	RT	2333					
- Y13- 65+90.00	RT	2334					
SHEET 24							
-Y13- 75+52.47	LT	2401					
-Y13- 78+25.72	LT	2402					
-Y13- 74+43.09	RT	2403					
-Y13- 75+33.79	RT	2404					
-Y13- 76+85.42	RT	2405					
SHEET TOTALS							

STATION	C.S.P. 12"	C.S.P. 15"	C.S.P. 18"	C.S.P. 24"	C.S.P. 30"	C.S.P. 36"	C.S.P. 42"	C.S.P. 48"	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS V 12"	15"	18"	24"	30"	36"	42"	48"	SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) 15"	18"	24"	30"
THICKNESS OR GAUGE	.064	.064	.064	.064	.064	.079	.109	.109																												
SHEET 23 (CONT.)																																				
- Y13G_REV- 10+10.75																													92							
- Y13- 65+90.00 (2330)																																	32			
- Y13- 65+90.00 (2331)																																				24
- Y13- 65+90.00 (2332)																																				40
- Y13- 65+90.00 (2333)																																	24			
- Y13- 65+90.00 (2334)																																	20			
SHEET 24																																				
-Y13- 75+52.47																																			44	
-Y13- 78+25.72																																	48			
-Y13- 74+43.09																																	60			
-Y13- 75+33.79																																	48			
-Y13- 76+85.42																																	44			
SHEET TOTALS																													92				276		44	64

STATION	49"x33" CAA Structural PlatePipe Arch, 0.109 Thick	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. (W.S. FLAT) FRAME WITH TWO FLAT GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME WITH TWO GRATES STD. 840.24	G.D.I. (N.S. FLAT) FR. WITH TWO FLAT GRATES. STD. 840.29	J.B. STD. 840.31 OR 840.32	TBJB STD. 840.34	T.B.D.I. STD. 840.35	M.H. FRAME AND COVER STD. 840.54	SPRING BOX STD. 840.41	ADJUST DI	CONVERT TB JB TO CB	BERM DRAINAGE OUTLET STD. 850.11 (PER EACH)	OTCB STD. 840.04 OR STD. 840.05	FLOWABLE FILL (CY)	C.S. ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
SHEET 23 (CONT.)																																						
- Y13- 65+90.00 (2334)																																					20	
SHEET 24																																						
-Y13- 75+52.47																																					25	
-Y13- 78+25.72																																					25	
SHEET TOTALS																																		@ Varying Sizes			70	

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I.(N.S.)	(NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

6/2/99
3/23/2022
R:\Hydraulics\CADD\PSH\Redlines\U2519BA_Hyd_Drain_Summ.dgn
aheffler

COMPUTED BY: CJP		DATE:	1/19/2022
CHECKED BY: ASB		DATE:	2/24/2022

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Information Purposes only and should be verified by the contractor for project construction stakeout. See "Standard Specifications for Roads and Structures, Section 300-5."

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

STATION	LOCATION (LT, RT, OR CL)'	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL
SHEET 7							
- Y13RPA- 22+50.00	LT	710		160.7			
- Y13RPA- 22+50.00	LT	710	711		157.9	155.0	
- Y13RPB- 23+50.00	LT	704		164.1			
- Y13RPB- 23+50.00	LT	704	705		161.4	158.8	
- Y13RPB- 24+50.00	LT	706		161.0			
- Y13RPB- 24+50.00	LT	706	715		158.2	156.2	
SHEET 8							
- L- 423+79.45	RT	816		156.7			
- L- 423+79.45	RT	816	813		154.0	151.9	
- L- 420+87.45	RT	813		154.6			
- L- 420+87.45	RT	813	814		151.9	149.6	
- L- 380+00.00	CL	817		157.9			
- L- 380+00.00	CL	817	818		155.1	153.1	
- L- 380+00.00	LT	818		155.9			
- L- 380+00.00	LT	818	819		153.1	149.0	
- L- 385+00.00	LT	801		162.3			
- L- 385+00.00	LT	801	803		160.4	156.0	
- L- 385+00.00	RT	802		158.2			
- L- 385+00.00	RT	802	803		156.6	156.3	
- L- 385+00.00	CL	803		161.3			
- L- 385+00.00	CL	803	804		155.7	154.5	
- L- 387+50.00	RT	805		159.8			
- L- 387+50.00	RT	805	804		157.0	154.7	
- L- 387+50.00	CL	804		162.9			
- L- 387+50.00	CL	804	901		154.0	153.1	
- L- 390+50.00	RT	911		161.6			
- L- 390+50.00	RT	911	901		158.8	153.8	
- L- 390+50.00	CL	901		164.7			
- L- 390+50.00	CL	901	902		152.6	152.1	
SHEET TOTALS							

C.S.P. and R.C. PIPE CLASS III (SIZE / THICKNESS OR GAUGE)

STATION	FROM	TO	C.S.P. 6" .064	15" .064	18" .064	24" .064	30" .064	36" .079	42" .109	48" .109	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"
- Y13RPA- 22+50.00	710	711										56						
- Y13RPB- 24+50.00	706	715										60						
- L- 423+79.45	816	813										292						
- L- 420+87.45	813	814										56						
- L- 380+00.00	817	818										112						
- L- 380+00.00	818	819										60						
- L- 385+00.00	801	803										92						
- L- 385+00.00	802	803										100						
- L- 385+00.00	803	804											248					
- L- 387+50.00	805	804										92						
- L- 387+50.00	804	901												300				
- L- 390+50.00	911	901										92						
- L- 390+50.00	901	902													132			
SHEET TOTALS												1012	248	300	132			

R.C. PIPE CLASS IV, R.C. PIPE CLASS V, SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC), 49"x33" CAA Structural PlatePipe Arch, 0.109 Thick

STATION	FROM	TO	CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	CLASS V 12"	15"	18"	24"	30"	36"	42"	48"	SIDE DRAIN 15"	18"	24"	30"	49"x33" ARCH
- Y13RPB- 23+50.00	704	705										88											
SHEET TOTALS												88											

STATION	STRUCTURE NO.	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN
- Y13RPA- 22+50.00	710			1								
- Y13RPB- 23+50.00	704			1								
- Y13RPB- 24+50.00	706			1								
- L- 423+79.45	816			1								
- L- 420+87.45	813			1								
- L- 380+00.00	817			1								
- L- 380+00.00	818			1								
- L- 385+00.00	801			1								
- L- 385+00.00	802			1								
- L- 385+00.00	803			1	0.57							
- L- 387+50.00	805			1								
- L- 387+50.00	804			1	3.94							
- L- 390+50.00	911			1								
- L- 390+50.00	901			1	5.00	2.13						
SHEET TOTALS				14	9.51	2.13						

STATION	STRUCTURE NO.	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. (W.S. FLAT) FRAME WITH TWO FLAT GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME WITH TWO GRATES STD. 840.24	G.D.I. (N.S. FLAT) FR. WITH TWO FLAT GRATES. STD. 840.29	J.B. STD. 840.31 OR 840.32	TBJB STD. 840.34	T.B.D.I. STD. 840.35	M.H. FRAME AND COVER STD. 840.54	SPRING BOX STD. 840.41	ADJUST DI	CONVERT TB JB TO CB	BERM DRAINAGE OUTLET STD. 850.11 (PER EACH)	OTCB STD. 840.04 OR STD. 840.05	FLOWABLE FILL (CY)
- Y13RPA- 22+50.00	710				1			1												
- Y13RPB- 23+50.00	704				1		1													
- Y13RPB- 24+50.00	706				1			1												
- L- 423+79.45	816				1			1												
- L- 420+87.45	813				1			1												
- L- 380+00.00	817				1			1												
- L- 380+00.00	818				1			1												
- L- 385+00.00	801					1		1												
- L- 385+00.00	802					1		1												
- L- 385+00.00	803				1			1												
- L- 387+50.00	805				1			1												
- L- 387+50.00	804			1				1												
- L- 390+50.00	911				1			1												
- L- 390+50.00	901			1				1												
SHEET TOTALS				2	10	2	1	13												

STATION	C.S. ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
SHEET TOTALS	Varying @ Sizes				

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I.(N.S.)	(NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

6/2/99
3/23/2022
R:\Hydraulics\CADD\PSH\Redlines\U2519BA_Hyd_Drain_Summ.dgn
aheffler

PROJECT REFERENCE NO.	SHEET NO.
U-2519BA	3D-10

COMPUTED BY: CJP DATE: 1/19/2022

CHECKED BY: ASB DATE: 2/24/2022

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Information Purposes only and should be verified by the contractor for project construction stakeout. See "Standard Specifications for Roads and Structures, Section 300-5."

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

Station	Location (LT, RT, or CL)	Structure No. From	Structure No. To	Top Elevation	Invert Elevation	Invert Elevation	Slope Critical	C.S.P. 6"	C.S.P. 15"	C.S.P. 18"	C.S.P. 24"	C.S.P. 30"	C.S.P. 36"	C.S.P. 42"	C.S.P. 48"
Thickness or Gauge								.064	.064	.064	.064	.064	.079	.109	.109
SHEET 9															
- L- 395+70.00	LT	903		169.6											
- L- 395+70.00	LT	903	904		166.4	166.3									
- L- 395+58.00	LT	904		169.5											
- L- 395+58.00	LT	904	906		166.3	162.3									
- L- 394+00.00	RT	905		166.9											
- L- 394+00.00	RT	905	906		163.7	161.9									
- L- 395+58.00	RT	906		167.8											
- L- 395+58.00	RT	906	907		161.9	145.3			56						
- L- 400+00.00	CL	908		171.0											
- L- 400+00.00	CL	908	909		168.1	167.5									
- L- 400+50.00	RT	909		170.7											
- L- 400+50.00	RT	909	910		167.5	146.2			88						
SHEET 10															
- L- 405+00.00	CL	1002		172.5											
- L- 405+00.00	CL	1002	1001		169.5	168.5									
- L- 403+50.00	CL	1001		171.5											
- L- 403+50.00	CL	1001	1009		168.5	164.9									
- L- 407+12.00	RT	1003		174.6											
- L- 407+12.00	RT	1003	1004		170.2	169.1									
- L- 407+00.00	RT	1004		174.5											
- L- 407+00.00	RT	1004	1005		169.1	160.1			56						
- L- 408+21.65	RT	1006		163.0											
- L- 408+21.65	RT	1006	1007		154.2	145.8									
- L- 409+19.05	LT	1007		150.2											
- L- 409+19.05	LT	1007	1008		143.6	143.5									
- L- 411+50.00	RT	1010		165.0											
- L- 411+50.00	RT	1010	1011		159.5	142.2									
- L- 411+50.00	LT	1011		146.6											
- L- 411+50.00	LT	1011	1012		141.2	141.2									
SHEET TOTALS									200						

Station	R.C. Pipe Class III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. Pipe Class IV 12"	15"	18"	24"	30"	36"	42"	48"
SHEET 9																
- L- 395+70.00																
- L- 395+70.00		12														
- L- 395+58.00																
- L- 395+58.00										100						
- L- 394+00.00																
- L- 394+00.00		12														
- L- 395+58.00																
- L- 395+58.00																
- L- 400+00.00																
- L- 400+00.00										88						
- L- 400+50.00																
- L- 400+50.00																
SHEET 10																
- L- 405+00.00																
- L- 405+00.00			152													
- L- 403+50.00																
- L- 403+50.00			148													
- L- 407+12.00																
- L- 407+12.00		8														
- L- 407+00.00																
- L- 407+00.00																
- L- 408+21.65																
- L- 408+21.65												312				
- L- 409+19.05																
- L- 409+19.05				20												
- L- 411+50.00																
- L- 411+50.00																
- L- 411+50.00																
- L- 411+50.00																
SHEET TOTALS		32	300	20						188		312				

Station	R.C. Pipe Class V 12"	15"	18"	24"	30"	36"	42"	48"	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) 15"	18"	24"	30"	49"x33" CAA Structural PlatePipe Arch, 0.109 Thick	Endwalls (Std. 838.01 or Std. 838.11 (unless noted otherwise)) Cu. Yards R.C.P.	C.S.P.
SHEET 9															
- L- 395+70.00															
- L- 395+70.00															
- L- 395+58.00															
- L- 395+58.00															
- L- 394+00.00															
- L- 394+00.00															
- L- 395+58.00															
- L- 395+58.00															
- L- 400+00.00															
- L- 400+00.00															
- L- 400+50.00															
- L- 400+50.00															
SHEET 10															
- L- 405+00.00															
- L- 405+00.00															
- L- 403+50.00															
- L- 403+50.00															
- L- 407+12.00															
- L- 407+12.00															
- L- 407+00.00															
- L- 407+00.00															
- L- 408+21.65															
- L- 408+21.65															
- L- 409+19.05															
- L- 409+19.05															
- L- 411+50.00															
- L- 411+50.00				292											
- L- 411+50.00															
- L- 411+50.00				20											
SHEET TOTALS				312											

Station	Quantities for Drainage Structures: Per Each (0' thru 5.0')	*Total L.F. for pay quantity shall be Col. 'A' + (1.3 X Col. 'B') Lin. Ft. A: 5.0' thru 10.0'	B: 10.0' and above	C.B. Std. 840.01 or Std. 840.02	Frame, Grates, and Hood Standard 840.03 Type of Grate E	F	G	Concrete Transitional Section: Drop Inlet	Catch Basin	D.I. Std. 840.14 or Std. 840.15	D.I. Frame and Grate Std. 840.16	G.D.I. Type "A" Std. 840.17 or 840.26	G.D.I. Type "B" Std. 840.18 or 840.27	G.D.I. Type "D" Std. 840.19 or 840.28	G.D.I. (W.S. Flat) Frame with Two Flat Grates Std. 840.20	G.D.I. (W.S. Sag) Frame with Two Grates Std. 840.22	G.D.I. (N.S. Sag) Frame with Two Grates Std. 840.24	G.D.I. (N.S. Flat) Fr. with Two Flat Grates. Std. 840.29	J.B. Std. 840.31 or 840.32	TBJB Std. 840.34	T.B.D.I. Std. 840.35	M.H. Frame and Cover Std. 840.54	Spring Box Std. 840.41	Adjust DI	Convert TB JB to CB	Berm Drainage Outlet Std. 850.11 (Per Each)	OTCB Std. 840.04 or Std. 840.05	Flowable Fill (CY)
SHEET 9																												
- L- 395+70.00	1												1		1													
- L- 395+70.00																												
- L- 395+58.00	1												1		1													
- L- 395+58.00																												
- L- 394+00.00	1												1		1													
- L- 394+00.00																												
- L- 395+58.00	1	0.96											1		1													
- L- 395+58.00																												
- L- 400+00.00	1												1			1												
- L- 400+00.00																												
- L- 400+50.00	1												1		1													
- L- 400+50.00																												
SHEET 10																												
- L- 405+00.00	1												1			1												
- L- 405+00.00																												
- L- 403+50.00	1												1			1												
- L- 403+50.00																												
- L- 407+12.00	1												1		1													
- L- 407+12.00																												
- L- 407+00.00	1	0.40											1		1													
- L- 407+00.00																												
- L- 408+21.65																												
- L- 408+21.65																												
- L- 409+19.05	1	1.61																	1			1						
- L- 409+19.05																												
- L- 411+50.00																												
- L- 411+50.00																												
- L- 411+50.00	1	0.36																	1			1						
- L- 411+50.00																												
SHEET TOTALS	12	3.33											10		7	3			2			2						

Station	C.S. Elbows No. & Size	Conc. & Brick Pipe Plug, C.Y. Std. 840.71	Conc. Collars Cl. "B" C.Y. Std. 840.72	Pipe Removal Lin. Ft.	Remarks
SHEET 9					
- L- 395+70.00					
- L- 395+70.00					
- L- 395+58.00					
- L- 395+58.00					
- L- 394+00.00					
- L- 394+00.00					
- L- 395+58.00					
- L- 395+58.00	2 @ 15"				
- L- 400+00.00					
- L- 400+00.00					
- L- 400+50.00					
- L- 400+50.00	2 @ 15"				
SHEET 10					
- L- 405+00.00					
- L- 405+00.00					
- L- 403+50.00					
- L- 403+50.00					
- L- 407+12.00					
- L- 407+12.00					
- L- 407+00.00					
- L- 407+00.00	2 @ 15"				
- L- 408+21.65					
- L- 408+21.65					
- L- 409+19.05					
- L- 409+19.05					
- L- 411+50.00					
- L- 411+50.00					
- L- 411+50.00					
- L- 411+50.00					
SHEET TOTALS	6 @ Varying Sizes				

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I.(N.S.)	(NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

6/2/99
3/23/2022
R:\Hydraulics\CADD\PSH\Redlines\U2519BA_Hyd_Drain_Summ.dgn
aheffler

COMPUTED BY: CJP	DATE: 1/19/2022
CHECKED BY: ASB	DATE: 2/24/2022

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
U-2519BA	3D-11

Note: Invert Elevations indicated are for Information Purposes only and should be verified by the contractor for project construction stakeout. See "Standard Specifications for Roads and Structures, Section 300-5."

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

| STATION | LOCATION (LT, RT, OR CL)* | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | SLOPE CRITICAL | C.S.P. 6" .064 | C.S.P. 15" .064 | C.S.P. 18" .064 | C.S.P. 24" .064 | C.S.P. 30" .064 | C.S.P. 36" .079 | C.S.P. 42" .109 | C.S.P. 48" .109 | R.C. PIPE CLASS III 12" | R.C. PIPE CLASS III 15" | R.C. PIPE CLASS III 18" | R.C. PIPE CLASS III 24" | R.C. PIPE CLASS III 30" | R.C. PIPE CLASS III 36" | R.C. PIPE CLASS III 42" | R.C. PIPE CLASS III 48" | R.C. PIPE CLASS IV 12" | R.C. PIPE CLASS IV 15" | R.C. PIPE CLASS IV 18" | R.C. PIPE CLASS IV 24" | R.C. PIPE CLASS IV 30" | R.C. PIPE CLASS IV 36" | R.C. PIPE CLASS IV 42" | R.C. PIPE CLASS IV 48" | R.C. PIPE CLASS V 12" | R.C. PIPE CLASS V 15" | R.C. PIPE CLASS V 18" | R.C. PIPE CLASS V 24" | R.C. PIPE CLASS V 30" | R.C. PIPE CLASS V 36" | R.C. PIPE CLASS V 42" | R.C. PIPE CLASS V 48" | SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) 15" | SIDE DRAIN PIPE 18" | SIDE DRAIN PIPE 24" | SIDE DRAIN PIPE 30" | 49"x33" CAA Structural PlatePipe Arch, 0.109 Thick | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P. | ENDWALLS CU. YARDS C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. "A" + (1.3 X COL. "B") PER EACH (0' THRU 5.0') | LIN. FT. A 5.0' THRU 10.0' | LIN. FT. B 10.0' AND ABOVE | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E | TYPE OF GRATE F | TYPE OF GRATE G | CONCRETE TRANSITIONAL SECTION DROP INLET | CONCRETE TRANSITIONAL SECTION CATCH BASIN | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATE STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR 840.26 | G.D.I. TYPE "B" STD. 840.18 OR 840.27 | G.D.I. TYPE "D" STD. 840.19 OR 840.28 | G.D.I. (W.S. FLAT) FRAME WITH TWO FLAT GRATES STD. 840.20 | G.D.I. (W.S. SAG) FRAME WITH TWO GRATES STD. 840.22 | G.D.I. (N.S. SAG) FRAME WITH TWO GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FR. WITH TWO FLAT GRATES STD. 840.29 | J.B. STD. 840.31 OR 840.32 | TB.JB STD. 840.34 | T.B.D.I. STD. 840.35 | M.H. FRAME AND COVER STD. 840.54 | SPRING BOX STD. 840.41 | ADJUST DI | CONVERT TB.JB TO CB | BERM DRAINAGE OUTLET STD. 850.11 (PER EACH) | OTCB STD. 840.04 OR STD. 840.05 | FLOWABLE FILL. (CY) | C.S. ELBOWS NO. & SIZE | CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71 | CONC. COLLARS CL. "B" C.Y. STD. 840.72 | PIPE REMOVAL LIN. FT. | REMARKS |
|---|---|---

PROJECT REFERENCE NO.	SHEET NO.
U-2519BA	3D-12

COMPUTED BY: CJP DATE: 1/19/2022

CHECKED BY: ASB DATE: 2/24/2022

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Information Purposes only and should be verified by the contractor for project construction stakeout. See "Standard Specifications for Roads and Structures, Section 300-5."

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

| STATION | LOCATION (LT, RT, OR CL) | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | SLOPE CRITICAL | C.S.P. 6" .064 | C.S.P. 15" .064 | C.S.P. 18" .064 | C.S.P. 24" .064 | C.S.P. 30" .064 | C.S.P. 36" .079 | C.S.P. 42" .109 | C.S.P. 48" .109 | R.C. PIPE CLASS III 12" | R.C. PIPE CLASS III 15" | R.C. PIPE CLASS III 18" | R.C. PIPE CLASS III 24" | R.C. PIPE CLASS III 30" | R.C. PIPE CLASS III 36" | R.C. PIPE CLASS III 42" | R.C. PIPE CLASS III 48" | R.C. PIPE CLASS IV 12" | R.C. PIPE CLASS IV 15" | R.C. PIPE CLASS IV 18" | R.C. PIPE CLASS IV 24" | R.C. PIPE CLASS IV 30" | R.C. PIPE CLASS IV 36" | R.C. PIPE CLASS IV 42" | R.C. PIPE CLASS IV 48" | R.C. PIPE CLASS V 12" | R.C. PIPE CLASS V 15" | R.C. PIPE CLASS V 18" | R.C. PIPE CLASS V 24" | R.C. PIPE CLASS V 30" | R.C. PIPE CLASS V 36" | R.C. PIPE CLASS V 42" | R.C. PIPE CLASS V 48" | SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) 15" | SIDE DRAIN PIPE 18" | SIDE DRAIN PIPE 24" | SIDE DRAIN PIPE 30" | 49"x33" CAA Structural PlatePipe Arch, 0.109 Thick | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P. | ENDWALLS CU. YARDS C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0') | QUANTITIES FOR DRAINAGE STRUCTURES 5.0' THRU 10.0' | QUANTITIES FOR DRAINAGE STRUCTURES 10.0' AND ABOVE | *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. "A" +(1.3 X COL. "B") LIN. FT. A | *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. "A" +(1.3 X COL. "B") LIN. FT. B | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE F | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE G | CONCRETE TRANSITIONAL SECTION DROP INLET | CONCRETE TRANSITIONAL SECTION CATCH BASIN | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATE STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR 840.26 | G.D.I. TYPE "B" STD. 840.18 OR 840.27 | G.D.I. TYPE "D" STD. 840.19 OR 840.28 | G.D.I. (W.S. FLAT) FRAME WITH TWO FLAT GRATES STD. 840.20 | G.D.I. (W.S. SAG) FRAME WITH TWO GRATES STD. 840.22 | G.D.I. (N.S. SAG) FRAME WITH TWO GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FR. WITH TWO FLAT GRATES. STD. 840.29 | J.B. STD. 840.31 OR 840.32 | TB.B STD. 840.34 | T.B.D.I. STD. 840.35 | M.H. FRAME AND COVER STD. 840.54 | SPRING BOX STD. 840.41 | ADJUST DI | CONVERT TB.JB TO CB | BERM DRAINAGE OUTLET STD. 859.11 (PER EACH) | OTCB STD. 840.04 OR STD. 840.05 | FLOWABLE FILL (CY) | C.S. ELBOWS NO. & SIZE | CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71 | CONC. COLLARS CL. "B" C.Y. STD. 840.72 | PIPE REMOVAL LIN. FT. | REMARKS |
|---|---|---

COMPUTED BY: CJP	DATE: 1/19/2022
CHECKED BY: ASB	DATE: 2/24/2022

PROJECT REFERENCE NO.	SHEET NO.
U-2519BA	3D-13

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Information Purposes only and should be verified by the contractor for project construction stakeout. See "Standard Specifications for Roads and Structures, Section 300-5."

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

| STATION | LOCATION (LT, RT, OR CL) | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | SLOPE CRITICAL | C.S.P. 6" .064 | C.S.P. 15" .064 | C.S.P. 18" .064 | C.S.P. 24" .064 | C.S.P. 30" .064 | C.S.P. 36" .079 | C.S.P. 42" .109 | C.S.P. 48" .109 | R.C. PIPE CLASS III 12" | R.C. PIPE CLASS III 15" | R.C. PIPE CLASS III 18" | R.C. PIPE CLASS III 24" | R.C. PIPE CLASS III 30" | R.C. PIPE CLASS III 36" | R.C. PIPE CLASS III 42" | R.C. PIPE CLASS III 48" | R.C. PIPE CLASS IV 12" | R.C. PIPE CLASS IV 15" | R.C. PIPE CLASS IV 18" | R.C. PIPE CLASS IV 24" | R.C. PIPE CLASS IV 30" | R.C. PIPE CLASS IV 36" | R.C. PIPE CLASS IV 42" | R.C. PIPE CLASS IV 48" | R.C. PIPE CLASS V 12" | R.C. PIPE CLASS V 15" | R.C. PIPE CLASS V 18" | R.C. PIPE CLASS V 24" | R.C. PIPE CLASS V 30" | R.C. PIPE CLASS V 36" | R.C. PIPE CLASS V 42" | R.C. PIPE CLASS V 48" | SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) 15" | SIDE DRAIN PIPE 18" | SIDE DRAIN PIPE 24" | SIDE DRAIN PIPE 30" | 49"x33" CAA Structural PlatePipe Arch, 0.109 Thick | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P. | ENDWALLS CU. YARDS C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') PER EACH (0' THRU 5.0') | LIN. FT. A 5.0' THRU 10.0' | LIN. FT. B 10.0' AND ABOVE | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E | TYPE OF GRATE F | TYPE OF GRATE G | CONCRETE TRANSITIONAL SECTION DROP INLET | CONCRETE TRANSITIONAL SECTION CATCH BASIN | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATE STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR 840.26 | G.D.I. TYPE "B" STD. 840.18 OR 840.27 | G.D.I. TYPE "D" STD. 840.19 OR 840.28 | G.D.I. (W.S. FLAT) FRAME WITH TWO FLAT GRATES STD. 840.20 | G.D.I. (W.S. SAG) FRAME WITH TWO GRATES STD. 840.22 | G.D.I. (N.S. SAG) FRAME WITH TWO GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FR. WITH TWO FLAT GRATES STD. 840.29 | G.D.I. (N.S. FLAT) FR. WITH TWO FLAT GRATES STD. 840.32 | J.B. STD. 840.31 OR 840.32 | TBJB STD. 840.34 | T.B.D.I. STD. 840.35 | M.H. FRAME AND COVER STD. 840.54 | SPRING BOX STD. 840.41 | ADJUST DI | CONVERT TB JB TO CB | BERM DRAINAGE OUTLET STD. 850.11 (PER EACH) | OTCB STD. 840.04 OR STD. 840.05 | FLOWABLE FILL (CY) | C.S. ELBOWS NO. & SIZE | CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71 | CONC. COLLARS CL. "B" C.Y. STD. 840.72 | PIPE REMOVAL LIN. FT. | REMARKS |
|---|---|---

PROJECT REFERENCE NO.	SHEET NO.
U-2519BA	3D-14

COMPUTED BY: CJP DATE: 1/19/2022
CHECKED BY: ASB DATE: 2/24/2022

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Information Purposes only and should be verified by the contractor for project construction stakeout. See "Standard Specifications for Roads and Structures, Section 300-5."

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

| STATION | LOCATION (LT, RT, OR CL)' | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | SLOPE CRITICAL | C.S.P. 6" .064 | C.S.P. 15" .064 | C.S.P. 18" .064 | C.S.P. 24" .064 | C.S.P. 30" .064 | C.S.P. 36" .079 | C.S.P. 42" .109 | C.S.P. 48" .109 | R.C. PIPE CLASS III 12" | R.C. PIPE CLASS III 15" | R.C. PIPE CLASS III 18" | R.C. PIPE CLASS III 24" | R.C. PIPE CLASS III 30" | R.C. PIPE CLASS III 36" | R.C. PIPE CLASS III 42" | R.C. PIPE CLASS III 48" | R.C. PIPE CLASS IV 12" | R.C. PIPE CLASS IV 15" | R.C. PIPE CLASS IV 18" | R.C. PIPE CLASS IV 24" | R.C. PIPE CLASS IV 30" | R.C. PIPE CLASS IV 36" | R.C. PIPE CLASS IV 42" | R.C. PIPE CLASS IV 48" | R.C. PIPE CLASS V 12" | R.C. PIPE CLASS V 15" | R.C. PIPE CLASS V 18" | R.C. PIPE CLASS V 24" | R.C. PIPE CLASS V 30" | R.C. PIPE CLASS V 36" | R.C. PIPE CLASS V 42" | R.C. PIPE CLASS V 48" | SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) 15" | SIDE DRAIN PIPE 18" | SIDE DRAIN PIPE 24" | SIDE DRAIN PIPE 30" | 49"x33" CAA Structural PlatePipe Arch, 0.109 Thick | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P. | ENDWALLS CU. YARDS C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES "TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B')" PER EACH (0' THRU 5.0') | LIN. FT. A 5.0' THRU 10.0' | LIN. FT. B 10.0' AND ABOVE | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E | FRAME, GRATES, AND HOOD TYPE OF GRATE F | FRAME, GRATES, AND HOOD TYPE OF GRATE G | CONCRETE TRANSITIONAL SECTION DROP INLET | CONCRETE TRANSITIONAL SECTION CATCH BASIN | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATE STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR 840.26 | G.D.I. TYPE "B" STD. 840.18 OR 840.27 | G.D.I. TYPE "D" STD. 840.19 OR 840.28 | G.D.I. (W.S. FLAT) FRAME WITH TWO FLAT GRATES STD. 840.20 | G.D.I. (W.S. SAG) FRAME WITH TWO GRATES STD. 840.22 | G.D.I. (N.S. SAG) FRAME WITH TWO GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FR. WITH TWO FLAT GRATES. STD. 840.29 | J.B. STD. 840.31 OR 840.32 | TB.JB STD. 840.34 | T.B.D.I. STD. 840.35 | M.H. FRAME AND COVER STD. 840.54 | SPRING BOX STD. 840.41 | ADJUST DI | CONVERT TB.JB TO CB | BERM DRAINAGE OUTLET STD. 850.11 (PER EACH) | OTCB STD. 840.04 OR STD. 840.05 | FLOWABLE FILL. (CY) | C.S. ELBOWS NO. & SIZE | CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71 | CONC. COLLARS CL. "B" C.Y. STD. 840.72 | PIPE REMOVAL LIN. FT. | REMARKS |
|---|---|---

PROJECT REFERENCE NO.	SHEET NO.
U-2519BA	3D-15

COMPUTED BY: CJP DATE: 1/19/2022

CHECKED BY: ASB DATE: 2/24/2022

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Information Purposes only and should be verified by the contractor for project construction stakeout. See "Standard Specifications for Roads and Structures, Section 300-5."

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

| STATION | LOCATION (LT, RT, OR CL) | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | SLOPE CRITICAL | C.S.P. 6" .064 | C.S.P. 15" .064 | C.S.P. 18" .064 | C.S.P. 24" .064 | C.S.P. 30" .064 | C.S.P. 36" .079 | C.S.P. 42" .109 | C.S.P. 48" .109 | R.C. PIPE CLASS III 12" | R.C. PIPE CLASS III 15" | R.C. PIPE CLASS III 18" | R.C. PIPE CLASS III 24" | R.C. PIPE CLASS III 30" | R.C. PIPE CLASS III 36" | R.C. PIPE CLASS III 42" | R.C. PIPE CLASS III 48" | R.C. PIPE CLASS IV 12" | R.C. PIPE CLASS IV 15" | R.C. PIPE CLASS IV 18" | R.C. PIPE CLASS IV 24" | R.C. PIPE CLASS IV 30" | R.C. PIPE CLASS IV 36" | R.C. PIPE CLASS IV 42" | R.C. PIPE CLASS IV 48" | R.C. PIPE CLASS V 12" | R.C. PIPE CLASS V 15" | R.C. PIPE CLASS V 18" | R.C. PIPE CLASS V 24" | R.C. PIPE CLASS V 30" | R.C. PIPE CLASS V 36" | R.C. PIPE CLASS V 42" | R.C. PIPE CLASS V 48" | SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) 15" | SIDE DRAIN PIPE 18" | SIDE DRAIN PIPE 24" | SIDE DRAIN PIPE 30" | 48"x33" CAA Structural PlatePipe Arch, 0.109 Thick | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P. | ENDWALLS CU. YARDS C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0') | QUANTITIES FOR DRAINAGE STRUCTURES LIN. FT. A 5.0' THRU 10.0' | QUANTITIES FOR DRAINAGE STRUCTURES LIN. FT. B 10.0' AND ABOVE | "TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE F | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE G | CONCRETE TRANSITIONAL SECTION DROP INLET | CONCRETE TRANSITIONAL SECTION CATCH BASIN | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATE STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR 840.26 | G.D.I. TYPE "B" STD. 840.18 OR 840.27 | G.D.I. TYPE "D" STD. 840.19 OR 840.28 | G.D.I. (W.S. FLAT) FRAME WITH TWO FLAT GRATES STD. 840.20 | G.D.I. (W.S. SAG) FRAME WITH TWO GRATES STD. 840.22 | G.D.I. (N.S. SAG) FRAME WITH TWO GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FR. WITH TWO FLAT GRATES. STD. 840.29 | J.B. STD. 840.31 OR 840.32 | TB/JB STD. 840.34 | T.B.D.I. STD. 840.35 | M.H. FRAME AND COVER STD. 840.54 | SPRING BOX STD. 840.41 | ADJUST DI | CONVERT TB JB TO CB | BERM DRAINAGE OUTLET STD. 850.11 (PER EACH) | OTCB STD. 840.04 OR STD. 840.05 | FLOWABLE FILL (CY) | C.S. ELBOWS NO. & SIZE | CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71 | CONC. COLLARS CL. "B" C.Y. STD. 840.72 | PIPE REMOVAL LIN. FT. | REMARKS |
|---|---|---

COMPUTED BY: CJP	DATE: 1/19/2022
CHECKED BY: ASB	DATE: 2/24/2022

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
U-2519BA	3D-16

Note: Invert Elevations indicated are for Information Purposes only and should be verified by the contractor for project construction stakeout. See "Standard Specifications for Roads and Structures, Section 300-5."

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

| STATION / SIZE / THICKNESS OR GAUGE | LOCATION (LT, RT, OR CL)' | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | SLOPE CRITICAL | C.S.P. 6" .064 | C.S.P. 15" .064 | C.S.P. 18" .064 | C.S.P. 24" .064 | C.S.P. 30" .064 | C.S.P. 36" .079 | C.S.P. 42" .109 | C.S.P. 48" .109 | R.C. PIPE CLASS III 12" | R.C. PIPE CLASS III 15" | R.C. PIPE CLASS III 18" | R.C. PIPE CLASS III 24" | R.C. PIPE CLASS III 30" | R.C. PIPE CLASS III 36" | R.C. PIPE CLASS III 42" | R.C. PIPE CLASS III 48" | R.C. PIPE CLASS IV 12" | R.C. PIPE CLASS IV 15" | R.C. PIPE CLASS IV 18" | R.C. PIPE CLASS IV 24" | R.C. PIPE CLASS IV 30" | R.C. PIPE CLASS IV 36" | R.C. PIPE CLASS IV 42" | R.C. PIPE CLASS IV 48" | R.C. PIPE CLASS V 12" | R.C. PIPE CLASS V 15" | R.C. PIPE CLASS V 18" | R.C. PIPE CLASS V 24" | R.C. PIPE CLASS V 30" | R.C. PIPE CLASS V 36" | R.C. PIPE CLASS V 42" | R.C. PIPE CLASS V 48" | SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) 15" | SIDE DRAIN PIPE 18" | SIDE DRAIN PIPE 24" | SIDE DRAIN PIPE 30" | 49"x33" CAA Structural PlatePipe Arch, 0.109 Thick | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P. | ENDWALLS CU. YARDS C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0') | QUANTITIES FOR DRAINAGE STRUCTURES LIN. FT. A 5.0' THRU 10.0' | QUANTITIES FOR DRAINAGE STRUCTURES LIN. FT. B 10.0' AND ABOVE | *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' * (1.3 X COL. 'B') | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE F | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE G | CONCRETE TRANSITIONAL SECTION DROP INLET | CONCRETE TRANSITIONAL SECTION CATCH BASIN | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATE STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR 840.26 | G.D.I. TYPE "B" STD. 840.18 OR 840.27 | G.D.I. TYPE "D" STD. 840.19 OR 840.28 | G.D.I. (W.S. FLAT) FRAME WITH TWO FLAT GRATES STD. 840.20 | G.D.I. (W.S. SAG) FRAME WITH TWO GRATES STD. 840.22 | G.D.I. (N.S. SAG) FRAME WITH TWO GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FR. WITH TWO FLAT GRATES. STD. 840.29 | J.B. STD. 840.31 OR 840.32 | TBJB STD. 840.34 | T.B.D.I. STD. 840.35 | M.H. FRAME AND COVER STD. 840.54 | SPRING BOX STD. 840.41 | ADJUST DI | CONVERT TB JB TO CB | BERM DRAINAGE OUTLET STD. 850.11 (PER EACH) | OTCB STD. 840.04 OR STD. 840.05 | FLOWABLE FILL (CY) | C.S. ELBOWS NO. & SIZE | CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71 | CONC. COLLARS CL. "B" C.Y. STD. 840.72 | PIPE REMOVAL LIN. FT. | REMARKS |
|---|---|---

COMPUTED BY: CJP	DATE: 1/19/2022
CHECKED BY: ASB	DATE: 2/24/2022

PROJECT REFERENCE NO.	SHEET NO.
U-2519BA	3D-17

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Information Purposes only and should be verified by the contractor for project construction stakeout. See "Standard Specifications for Roads and Structures, Section 300-5."

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

| STATION | LOCATION (LT, RT, OR CL)' | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | SLOPE CRITICAL | C.S.P. 12" .064 | C.S.P. 15" .064 | C.S.P. 18" .064 | C.S.P. 24" .064 | C.S.P. 30" .064 | C.S.P. 36" .079 | C.S.P. 42" .109 | C.S.P. 48" .109 | R.C. PIPE CLASS III 12" | R.C. PIPE CLASS III 15" | R.C. PIPE CLASS III 18" | R.C. PIPE CLASS III 24" | R.C. PIPE CLASS III 30" | R.C. PIPE CLASS III 36" | R.C. PIPE CLASS III 42" | R.C. PIPE CLASS III 48" | R.C. PIPE CLASS IV 12" | R.C. PIPE CLASS IV 15" | R.C. PIPE CLASS IV 18" | R.C. PIPE CLASS IV 24" | R.C. PIPE CLASS IV 30" | R.C. PIPE CLASS IV 36" | R.C. PIPE CLASS IV 42" | R.C. PIPE CLASS IV 48" | R.C. PIPE CLASS V 12" | R.C. PIPE CLASS V 15" | R.C. PIPE CLASS V 18" | R.C. PIPE CLASS V 24" | R.C. PIPE CLASS V 30" | R.C. PIPE CLASS V 36" | R.C. PIPE CLASS V 42" | R.C. PIPE CLASS V 48" | SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) 15" | SIDE DRAIN PIPE 18" | SIDE DRAIN PIPE 24" | SIDE DRAIN PIPE 30" | 49"x33" CAA Structural PlatePipe Arch, 0.109 Thick | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P. | ENDWALLS CU. YARDS C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0') | LIN. FT. 5.0' THRU 10.0' A | LIN. FT. 10.0' AND ABOVE B | *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. "A" + (1.3 X COL. "B") | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE F | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE G | CONCRETE TRANSITIONAL SECTION DROP INLET | CONCRETE TRANSITIONAL SECTION CATCH BASIN | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATE STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR 840.26 | G.D.I. TYPE "B" STD. 840.18 OR 840.27 | G.D.I. TYPE "D" STD. 840.19 OR 840.28 | G.D.I. (W.S. FLAT) FRAME WITH TWO FLAT GRATES STD. 840.20 | G.D.I. (W.S. SAG) FRAME WITH TWO GRATES STD. 840.22 | G.D.I. (N.S. SAG) FRAME WITH TWO GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FR. WITH TWO FLAT GRATES. STD. 840.29 | J.B. STD. 840.31 OR 840.32 | TB.JB STD. 840.34 | T.B.D.I. STD. 840.35 | M.H. FRAME AND COVER STD. 840.54 | SPRING BOX STD. 840.41 | ADJUST DI | CONVERT TB.JB TO CB | BERM DRAINAGE OUTLET STD. 859.11 (PER EACH) | OTCB STD. 840.04 OR STD. 840.05 | FLOWABLE FILL (CY) | C.S. ELBOWS NO. & SIZE | CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71 | CONC. COLLARS CL. "B" C.Y. STD. 840.72 | PIPE REMOVAL LIN. FT. | REMARKS |
|---|---|---

PROJECT REFERENCE NO.	SHEET NO.
U-2519BA	3D-18

COMPUTED BY: CJP DATE: 1/19/2022
CHECKED BY: ASB DATE: 2/24/2022

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Information Purposes only and should be verified by the contractor for project construction stakeout. See "Standard Specifications for Roads and Structures, Section 300-5."

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

| STATION | LOCATION (LT, RT, OR CL)* | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | SLOPE CRITICAL | C.S.P. 6" | C.S.P. 15" | C.S.P. 18" | C.S.P. 24" | C.S.P. 30" | C.S.P. 36" | C.S.P. 42" | C.S.P. 48" | R.C. PIPE CLASS III 12" | R.C. PIPE CLASS III 15" | R.C. PIPE CLASS III 18" | R.C. PIPE CLASS III 24" | R.C. PIPE CLASS III 30" | R.C. PIPE CLASS III 36" | R.C. PIPE CLASS III 42" | R.C. PIPE CLASS III 48" | R.C. PIPE CLASS IV 12" | R.C. PIPE CLASS IV 15" | R.C. PIPE CLASS IV 18" | R.C. PIPE CLASS IV 24" | R.C. PIPE CLASS IV 30" | R.C. PIPE CLASS IV 36" | R.C. PIPE CLASS IV 42" | R.C. PIPE CLASS IV 48" | R.C. PIPE CLASS V 12" | R.C. PIPE CLASS V 15" | R.C. PIPE CLASS V 18" | R.C. PIPE CLASS V 24" | R.C. PIPE CLASS V 30" | R.C. PIPE CLASS V 36" | R.C. PIPE CLASS V 42" | R.C. PIPE CLASS V 48" | SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) 15" | SIDE DRAIN PIPE 18" | SIDE DRAIN PIPE 24" | SIDE DRAIN PIPE 30" | SIDE DRAIN PIPE 36" | SIDE DRAIN PIPE 48" | 49"x33" CAA Structural Plate/Pipe Arch, 0.109 Thick | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P. | ENDWALLS CU. YARDS C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0') | LIN. FT. 5.0' THRU 10.0' | LIN. FT. 10.0' AND ABOVE | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE F | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE G | CONCRETE TRANSITIONAL SECTION DROP INLET | CONCRETE TRANSITIONAL SECTION CATCH BASIN | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATE STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR 840.26 | G.D.I. TYPE "B" STD. 840.18 OR 840.27 | G.D.I. TYPE "D" STD. 840.19 OR 840.28 | G.D.I. (W.S. FLAT) FRAME WITH TWO FLAT GRATES STD. 840.20 | G.D.I. (W.S. SAG) FRAME WITH TWO GRATES STD. 840.22 | G.D.I. (W.S. SAG) FRAME WITH GRATE STD. 840.22 | G.D.I. (N.S. SAG) FRAME WITH TWO GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FR. WITH TWO FLAT GRATES. STD. 840.29 | J.B. STD. 840.31 OR 840.32 | T.B.J.B. STD. 840.34 | T.B.D.I. STD. 840.35 | M.H. FRAME AND COVER STD. 840.54 | SPRING BOX STD. 840.41 | ADJUST DI | CONVERT TB JB TO CB | BERM DRAINAGE OUTLET STD. 850.11 (PER EACH) | OTCB STD. 840.04 OR STD. 840.05 | FLOWABLE FILL. (CY) | C.S. ELBOWS NO. & SIZE | CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71 | CONC. COLLARS CL. "B" C.Y. STD. 840.72 | PIPE REMOVAL LIN FT. | REMARKS |
|---|---|---

COMPUTED BY:	CJP	DATE:	1/19/2022
CHECKED BY:	ASB	DATE:	2/24/2022

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
U-2519BA	3D-19

Note: Invert Elevations indicated are for Information Purposes only and should be verified by the contractor for project construction stakeout. See "Standard Specifications for Roads and Structures, Section 300-5."

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 54" & OVER)

| STATION | LOCATION (LT, RT, OR CL)' | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | SLOPE CRITICAL | CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 54" .109 | 60" .138 | 66" .168 | 72" .138 | 72" .168 | 78" .138 | 60" .168 | 60" .138 | 66" .168 | BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) 54" .138 | 54" .168 | 60" .138 | 60" .168 | 66" .138 | 66" .168 | 72" .139 | 72" .168 | CLASS IV R.C. PIPE (UNLESS NOTED OTHERWISE) 54" | 60" | 66" | 72" | 72" | 78" | 60" | 60" | 66" | PIPE AS NOTED | | | | REINFORCED ENDWALLS WITH R.C. - C.Y. | REINFORCED ENDWALLS WITH C.S. - C.Y. | MASONRY DRAINAGE STRUCTURES CUBIC YARDS | C.B. STD. 840.01 OR 840.02 | FRAMES, GRATES & HOOD STANDARD 840.03 TYPE OF GRATE E | F | G | | CONCRETE TRANSITIONAL SECTION DROP INLET | CATCH BASIN | OTCB STD. 840.04 OR STD. 840.05 | J.B. STD. 840.31 OR 840.32 | M.H. FRAME AND COVER STD. 840.54 | G.D.I. TYPE "A" STD. 840.17 OR 840.26 | G.D.I. (WS. FLAT) FRAME WITH TWO FLAT GRATES STD. 840.20 | G.D.I. (WS. SAG) FRAME WITH TWO GRATES STD. 840.22 | REINF. CONC. FLARED END SECTIONS NO. & SIZE | CORR. STEEL FLARED END SECTIONS NO. & Size | CORR. STEEL ELBOWS NO. & SIZE | CONC. COLLARS CL. "B" C.Y. STD. 840.72 | | PIPE REMOVAL LIN. FT. | REMARKS |
|---|---|---|---

SUMMARY OF SUBSURFACE DRAINAGE

LINE	Station	Station	Location	Drain Type*	LF
-L-	352+00	372+00	LT/RT/CL	SD	6000
-L-	379+00	391+50	LT/RT/CL	SD	3750
-L-	440+00	455+50	LT/RT/CL	SD	4650
CONTINGENCY					6100
				U-2519BA TOTAL LF:	20,500
				U-2519BB TOTAL LF:	6,250
				GRAND TOTAL:	26,750

*UD = Underdrain
*BD = Blind Drain
*SD = Subsurface Drain
*For Subsurface Drainage, see Subsurface Drainage (SP).

SUMMARY OF AGGREGATE SUBGRADE /STABILIZATION

LINE	Station	Station	Aggregate Type* ASU(1/2)/ AST	Aggregate Thickness INCHES [8" for ASU(2)]	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
CONTINGENCY			ASU(1)	12	500	1,000	1,500		
		U-2519BA TOTAL CY/TONS/SY:			500	1000**	1500**	0	0
		U-2519BB TOTAL CY/TONS/SY:			500	1,000	1500**	0	0
			GRAND TOTAL:		1,000	2,000	3,000	0	0

*ASU(1/2) = Aggregate Subgrade (Type 1 or 2)
*AST = Aggregate Stabilization
**Total tons of "Class IV Subgrade Stabilization" and total square yards of "Geotextile for Soil Stabilization" are only the estimated quantities for ASU(1/2)/AST and may only represent a portion of the subgrade stabilization and geotextile quantities shown in the Item Sheets of the Proposal.

SUMMARY OF GEOTEXTILE FOR SOIL STABILIZATION FOR EMBANKMENT STABILITY

LINE	Station *	Station *	Location LT/RT	SY
L	328+25.00	344+25.00	RT/LT	6,775
L	344+75.00	349+75.00		6,775
L	373+50.00	379+75.00		6,775
L	440+75.00	443+25.00	LT/RT	6,775
Y13RPA	12+25.00	22+00.00		6,000
Y13RPB	20+20.00	22+60.00		6,000
Y13RPC	17+75.00	18+50.00		6,000
U-2519BA CONTINGENCY				10,000
U-2519BA TOTAL SY:				55,100
U-2519BB CONTINGENCY TOTAL SY:				20,000
GRAND TOTAL SY:				75,100 **

*Geotextile for Soil Stabilization maybe needed in the locations listed above.
**Geotextile for Soil Stabilization quantities for Undercut Excavation for embankment and subgrade are not included.

SUMMARY OF REINFORCED SOIL SLOPES

LINE	Beginning Slope	Approx. Station	Ending Slope	Approx. Station	Location LT/RT	SY
L	2.5:1	394+25.00	2:1	396+50.00	RT	960
				U-2519BA TOTAL SY:		960
				U-2519BB TOTAL SY:		0
				GRAND TOTAL SY:		960

SUMMARY OF EMBANKMENT WAITING PERIODS

LINE	Station	Station	MONTHS
-Y16-	23+39.38	25+43.38	1
		U-2519BA:	1
		U-2519BB:	N/A

SUMMARY OF RIP–RAP CLASS B – LIMESTONE

LINE	Approx. Station	Approx. Station	CONTINGENCY TON
L	352+00.00	372+00.00	3,700
L	379+00.00	391+50.00	3,650
L	440+00.00	455+50.00	3,650
U-2519BA CONTINGENCY TOTAL SY:			11,000
U-2519BB TOTAL SY:			0
CONTINGENCY GRAND TOTAL SY:			11,000*

*Special provision Rip Rap, Class B Limestone to be used when acidic groundwater is found in foundational cut locations.

SUMMARY OF BRIDGE WAITING PERIODS

Bridge Description	End Bent/ Bent No.	MONTHS
Structure #4 - Bridge No. 451 on Stoney Point Rd. (-Y16-) over -L-	1 & 2	1
	U-2519BA:	1
	U-2519BB:	N/A

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

8/17/99
6/7/2022
R:\Roadway\Proj\U2519BA_Rdy_psh03G_1.dgn
default

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1	4A	Freddie McLean
2	4A, 5	Peggy Lane
3	4, 4A, 5	Barbara Johnson
4	5, 6, 7	Robert Mangum
5	5, 6, 7, 20	NCDOT
6	5	Carolyn Ratley
7	5	Carolyn Tedder
8	5, 6	Daniel M. Jackson
9	6	Barbara Ratley
10	6, 7	Nannie Johnson
11	6	Nannie Johnson
12	6	Nannie Johnson
13	6	Peartree Ventures, LLC
14	6	Camden Glen Development: Lot #5
15	6	John Barefoot
16	6, 7	Dale Miller
17	6, 7	James Hardee
18	6, 7	Freddie McLean
19	26	Deborah Anders
20	6	Camden Glen Development: Lot #6
21	6, 7	Robert Bundy
22	6, 7	NCDOT
23	6	Camden Glen Development: Lot #7
24	6	Camden Glen Development
25	6, 7	Bobby Bundy
26		Deleted
27	6, 7, 8	Shirley Barefoot
28	7, 20	Gladys McGill
29		Deleted
30	7, 20	Coreen McLean
31	7, 20	David McLean
32	7, 20	Doris McGill
33	7, 20	Martenell Goonry
34	7, 20	Gladys McLean Simmons
35	7	Divon Smith
36	7	James Sheckels
37	7, 22	Robert Rotan
38	7,22	Earnest Barefoot
39	7, 22	Ricky Barefoot
40	7, 22	Earnest Barefoot
41	7, 8	Flinttrell Hamilton
42	7	Clayton McLean Heirs
43	7	Sarah Bundy
44	9,10	Johnny Beasley
45	9	UNKNOWN
46	9, 10	Stephen Brancalasso
47	9,10,11,12,13,26	Vera King
48	12, 13, 25	Vera King
49	13	Lucretia Gilbert
50	13	NCDOT
51	13	NCDOT
52	13, 25	Norbert Williams
53	13	Norbert Williams
54	13, 14	NCDOT
55	13	NCDOT
56	13, 14	Chadwick Martin
57	13, 26	Megan Marie Pekol-Evans
58	14	Ronald Fisher
59	14	Andrew McMillian
60		Deleted

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
61	14	Jonathan Clubb
62	14	Shelby Steward
63	14	Jacquelyn Jones
64	14	Mark Boahn
65	14	Jacquelyn Jones
66	14	Trace Investments, LLC
67	26	Joey Walker
68	14	David Ridley
69	14	Linda McMillan
70	14, 15	Mitchel Delane Koonce
71	14, 15	Alexander Pate
72	15	EDN Ventures, LLC
73	15	Michael Huggins
74	15	John Johnson
75	15	Lydia Johnson
76	15, 16	Nancy Newton
77	16	Dayne Crumpler
78	16, 17	Robert Capps
79	17, 18, 29	Donald Lindsay
80	18, 19	NCDOT - formaly Donald Carmichael Lindsay
81	18, 28	William Paul
82	18	Chad Vnyovich
83	18	Kimbery Ramsey
84	18	Kenneth Brady
85	18	Alexander Spence
86	18, 19	Gillis Deveopment Corp. Inc.
87	17, 29	Frantcy Diegue
88	19, 30	NCDOT - formerly Gertude Godwin
89	20	Richard Bruton
90, 90Z	29	Deron Norwood
91	6	Camden Glenn Development
92	9	Camden Glenn Development LLC
93		Deleted
94		Deleted
95		Deleted
96		Deleted
97		Deleted
98	20	Kimbery Siecinski
99	20	Aqua North Carolina
100	20	Delmar Munro
101	20	Carpet One of Fayetteville, Inc. - No Claim
102	21	Kenneth Brown
103	21	William Uhrig
104	21	William Spalding
105	21	Shawn D. Jackson
106	21	Emily Logan
107	21, 22	Veron Holmes
108	22	David Woods
109	29	Pacific Union Financial
110	22	Aqna North Carolina
111	22	Christopher Ostapiej
112	22	Stacy Carver
113	22	Ernest Barefoot
114	22	Whispering Pines Free Will Baptist Church
115	22	Luther Porter
116	6, 23	Sandra Case
117	6, 23	UNKNOWN
118	6, 23	Peartree Ventures, LLC
119	6	Gwen Elken
120	6	Lourdes Villaman

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

5/28/99
2/8/2022
R:\Roadway\Proj\U2519BA_Rdy_psh03P-1.dgn
jthomas

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
121Z	6 & 23	Donna Wiedand
122	23	Robert Thorne
123	23	Edwin Ashby
124	23	Mark Apperson
125	23	Wendy Souza
126	23	William Priest
127	23	Mark Connors
128	23	Sean Perry
129	23	Herber Brunson
130	23	Karla Sessoms
131	23	Frank Wilson
132	23	James Pearson
133		Deleted
134	23	Larry Dixon
135	23	Jamesena Melyin
136	23	Richard Smith
137	23	LA Thanh
138	23	LA Thanh
139	23	Elsie Dixon
140	23, 24	Gary Parker
141	24	Larry Dixon
142	24	Shannon Marshall
143	24	Laverne Rudder
144	24	Evelyn McDougald
145	24	Caroina Telephone & Telegraph Co.
146	24	Jesus First Christian Church
147	24	Antonio Gerald
148	24	Cumberland Co.
149	25	Vera King
150	25	Nilsa Vazuez
151	25	Tosado Codero
152	25	Robert Myers
153	25	Clara Lee Buck
154	25	Belton Jones
155	25	Grant Alleyne
156	25	Deleted
157	25	W. R. King
158	25	Cindy Blackmon
159	25	Lucretia King Gilbert
160	26	Ehab Shakir
161	26	Milton Gilbert
162	26	James Baker
163	26	Albert Jarman
164	30	Marvin Lindsay Barbour
165	27	Glenn Dunn
166	27, 28	Janice Melton
167	27, 28	Clyde Owen
168	18, 28	Ronald Howell
169	18, 28	William Maiden
170	28	Ala Hito
171	25	Rick Nunnery
172	27	Gilberto Grafals
173	28	Piedmont Natural Gas Incorporated
174	28	Samuel Mitchell
175	28	Cora Castro
176	28	NCDOT
177	18, 28	John Delgado
178	28	William Paul
179	28	Edward Tighe
180	28	Jody Erickson

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
181	28	Hasan Hatto
182	28	Barbara Jackson
183	29	Floyd Properties & Development
184	29	Edwin Stray
185	29	Anthoy Galvano
186	29	Brenda Matthews
187	29	Trudy Matthews
188	29	Douglas Krieger
189	29	Curtis Mitchell
190	29	Douglas Krieger
191	29	Sugin Mendenhall
192	29	Avy Jane Lee
193	29	Wayne Dadetto
194	29	Christian and Najla Cash
195		Deleted
196	30	George Jones
197	30	Dan Clifford
198	29	Westhaven HOA
199	29	Westhaven HOA
200	29	Floyd Properties & Development
201	6	Homer Gee
202		Deleted
203	30	Floyd Properties & Development
204	26	No Claim
205	19, 30	Stacy & Alise Harrison
206		Deleted
207		Deleted
208	8, 21, 22	Camden Glen Delelopment, LLC
209	8, 9	Camden Glen Delelopment, LLC
210	8	NCDOT
48A	25	Vera King
57A	14	David Maldonado
57B	26	Angela Poston
79A	18, 29	Donald Lindsay
205A	30	Weston & Lisa Goring
87A	29	H&H Constructors Inc.
14A	6	Camden Glenn Development
33A	7	Deleted
87B	17 & 18	Samuel L. Hayes, Jr.
184Z	29	Edwin Stray
185Z	29	Anthoy Galvano

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

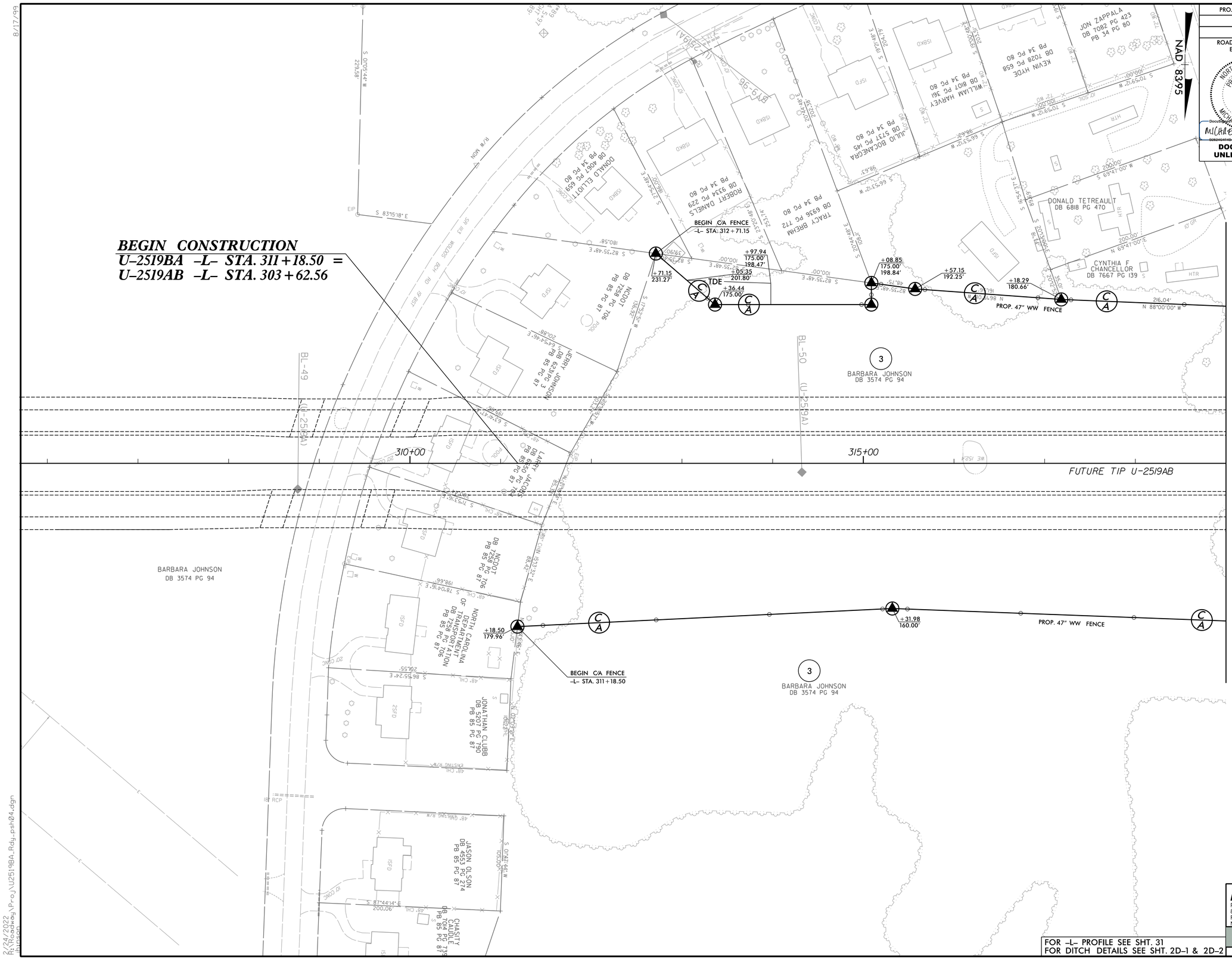
5/28/99
2/8/2022
R:\Roadway\Proj\U2519BA_Rdy_psh03P-2.dgn
jhinson

PROJECT REFERENCE NO.	SHEET NO.
U-2519BA	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
7/17/2022	7/16/2022

NORTH CAROLINA PROFESSIONAL SEAL 21122 ENGINEER MICHAEL T. MERRITT

NORTH CAROLINA PROFESSIONAL SEAL 33184 ENGINEER JEFFREY W. MEADOR

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



FOR -L- PROFILE SEE SHT. 31
FOR DITCH DETAILS SEE SHT. 2D-1 & 2D-2

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

8/17/99

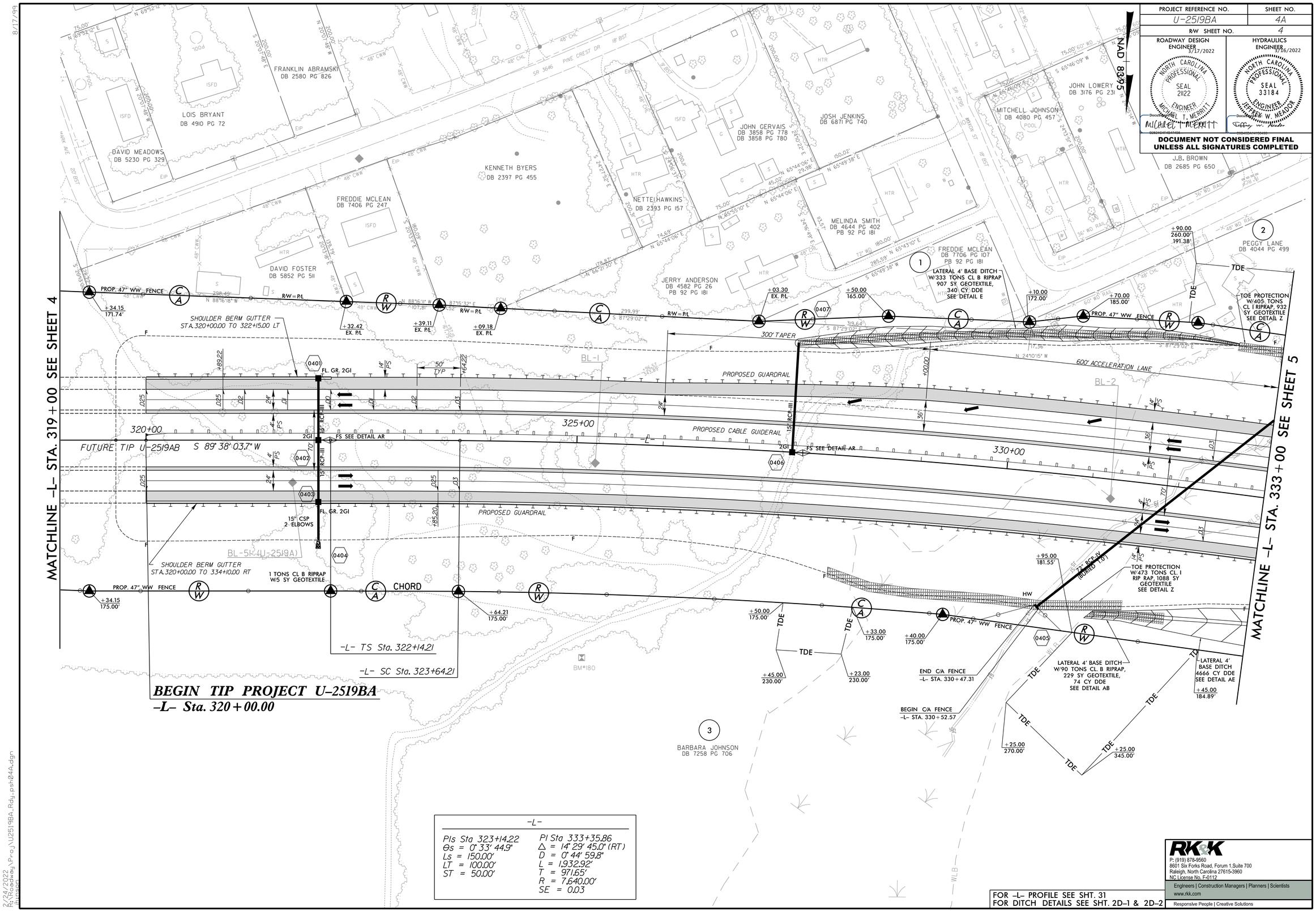
7/24/2022
R:\Roadway\Proj\U2519BA_Rdy_psh04.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-2519BA	4A
R/W SHEET NO.	4

ROADWAY DESIGN ENGINEER 7/17/2022 — NORTH CAROLINA PROFESSIONAL SEAL 21122 ENGINEER MICHAEL T. MERRITT

HYDRAULICS ENGINEER 7/16/2022 — NORTH CAROLINA PROFESSIONAL SEAL 33184 ENGINEER JEFFREY W. MEADOR

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



-L-	
PIs Sta 323+14.22	PI Sta 333+35.86
Θs = 0° 33' 44.9"	Δ = 14° 29' 45.0" (RT)
Ls = 150.00'	D = 0° 44' 59.8"
LT = 100.00'	L = 1,932.92'
ST = 50.00'	T = 971.65'
	R = 7,640.00'
	SE = 0.03

FOR -L- PROFILE SEE SHT. 31
FOR DITCH DETAILS SEE SHT. 2D-1 & 2D-2

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

8/17/99

7/24/2022
R:\Roadway\Proj\U2519BA_Rdy_pst04A.dgn

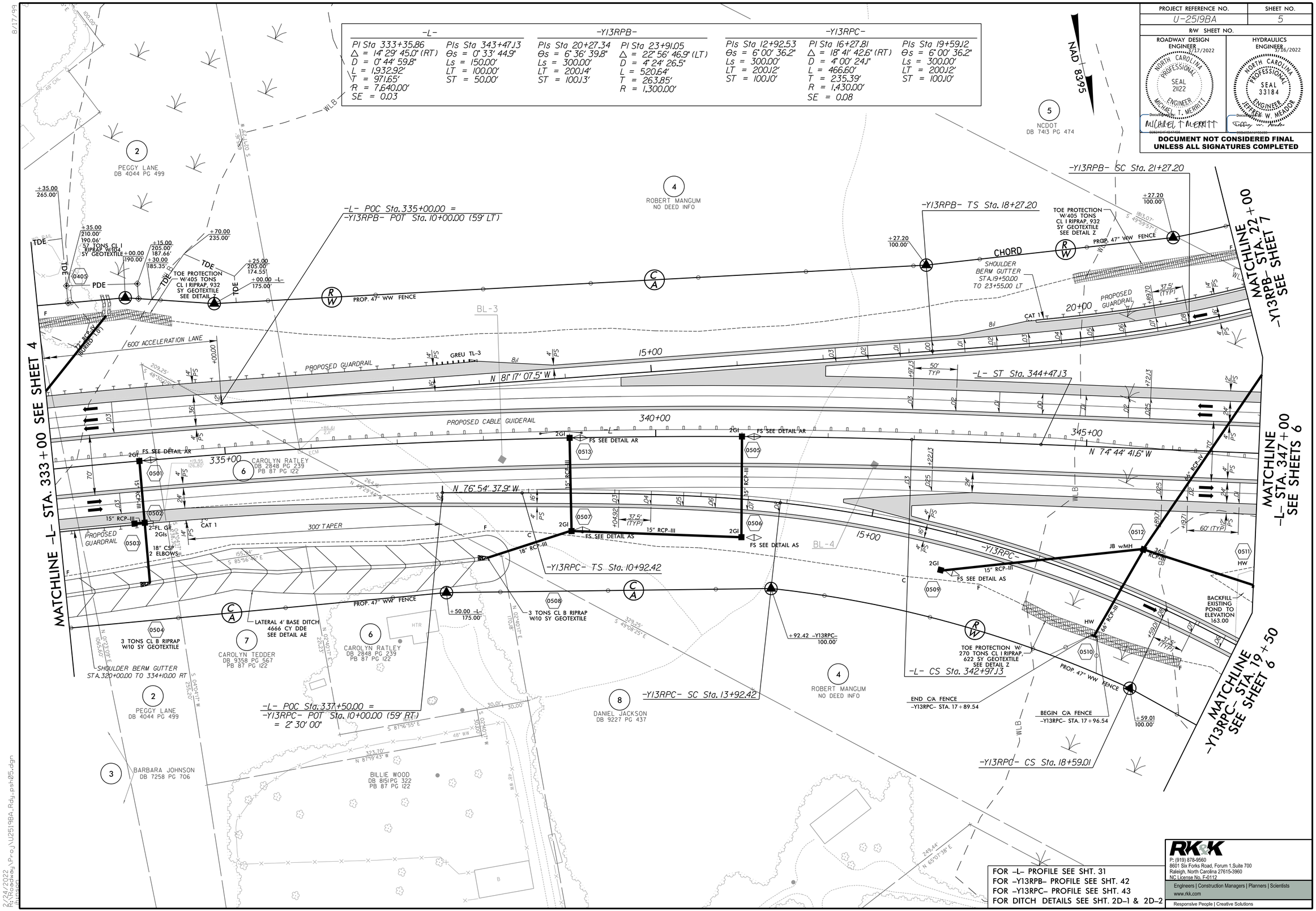
PROJECT REFERENCE NO.	SHEET NO.
U-2519BA	5
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER 8/17/2022
NORTH CAROLINA PROFESSIONAL SEAL 21122 ENGINEER MICHAEL T. MERRITT
DocuSigned by: MICHAEL T MERRITT

HYDRAULICS ENGINEER 8/16/2022
NORTH CAROLINA PROFESSIONAL SEAL 33184 ENGINEER JEFFREY W. MEADOR
DocuSigned by:

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L-		-Y13RPB-		-Y13RPC-	
PI Sta 333+35.86	PIs Sta 343+47.13	PIs Sta 20+27.34	PI Sta 23+91.05	PIs Sta 12+92.53	PI Sta 16+27.81	PIs Sta 19+59.12
Δ = 14° 29' 45.0" (RT)	Θs = 0° 33' 44.9"	Θs = 6° 36' 39.8"	Δ = 22° 56' 46.9" (LT)	Θs = 6° 00' 36.2"	Δ = 18° 41' 42.6" (RT)	Θs = 6° 00' 36.2"
D = 0° 44' 59.8"	Ls = 150.00'	Ls = 300.00'	D = 4° 24' 26.5"	Ls = 300.00'	D = 4° 00' 24.1"	Ls = 300.00'
L = 1,932.92'	LT = 100.00'	LT = 200.14'	L = 520.64'	LT = 200.12'	L = 466.60'	LT = 200.12'
T = 971.65'	ST = 50.00'	ST = 100.13'	T = 263.85'	ST = 100.10'	T = 235.39'	ST = 100.10'
R = 7,640.00'			R = 1,300.00'		R = 1,430.00'	
SE = 0.03					SE = 0.08	



FOR -L- PROFILE SEE SHT. 31
FOR -Y13RPB- PROFILE SEE SHT. 42
FOR -Y13RPC- PROFILE SEE SHT. 43
FOR DITCH DETAILS SEE SHT. 2D-1 & 2D-2

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

8/17/99
8/24/2022
H:\Roadway\Proj\U2519BA_Rdy_psh05.dgn