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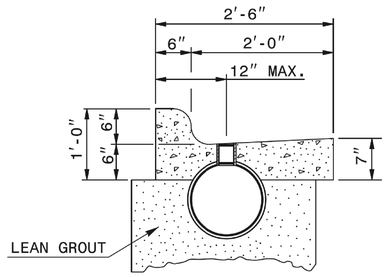
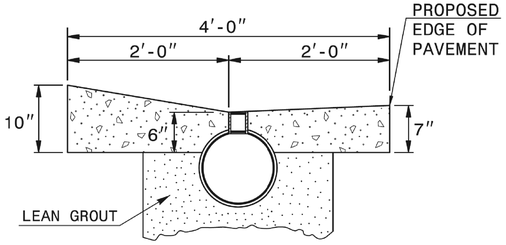
PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	2C-14



ALTERNATE NO.1



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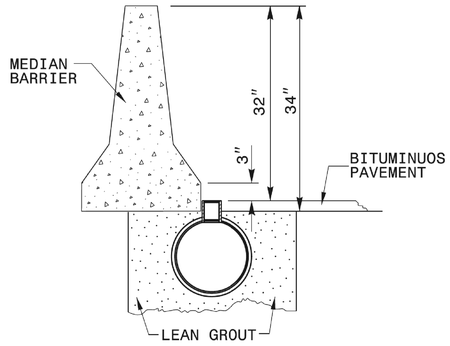

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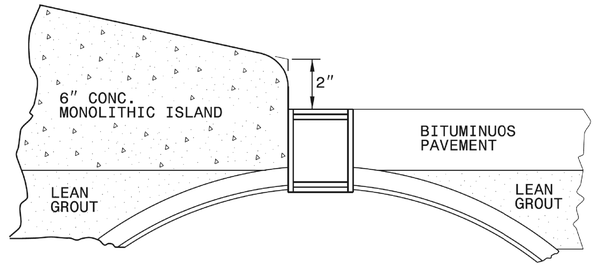

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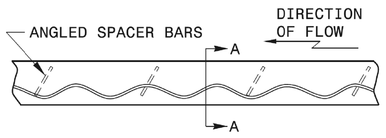
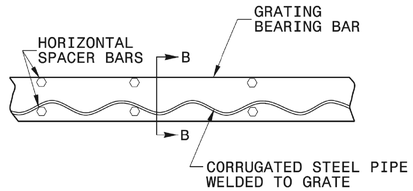
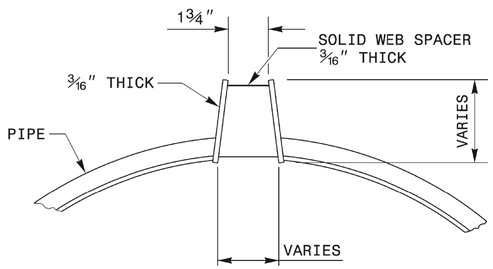
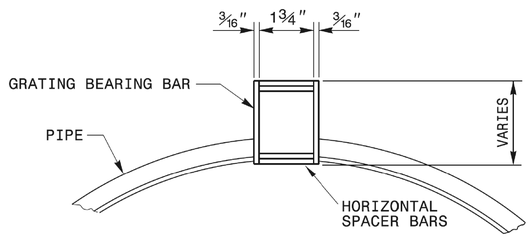




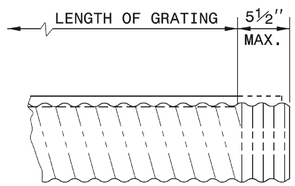


SECTION A-A

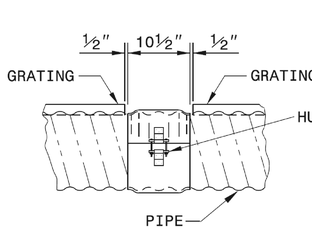


SECTION B-B

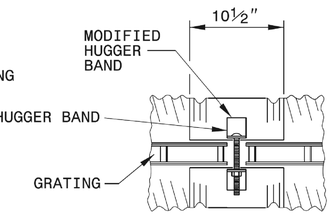
TYPICAL GRATE DETAILS



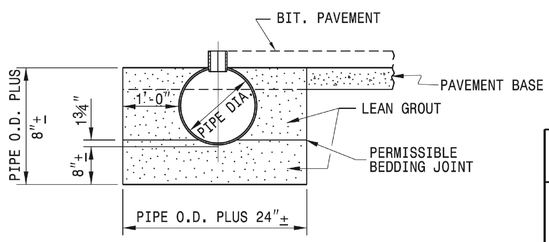
DETAIL AT END OF PIPE



TYPICAL COUPLING BAND



MODIFIED COUPLING BAND



SLOTTED DRAIN PIPE INSTALLATION

NOTES:

USE GRATE ASSEMBLIES FABRICATED FROM STRUCTURAL STEEL MEETING THE REQUIREMENTS OF ASTM A 570, GRADE 36 OR ASTM A 36.

HOT-DIP GALVANIZE GRATES AFTER FABRICATION TO MEET ASTM A123.

USE SLOTTED DRAIN PIPE THAT IS ADEQUATE FOR AASHTO H20 LOADING WHEN INSTALLED AS SHOWN.

USE SLOTTED DRAIN PIPE FABRICATED FROM ALUMINIZED CORRUGATED STEEL PIPE MEETING THE REQUIREMENTS OF AASHTO M274 TYPE 2.

NCDOT ALLOWS THE USE OF SIMILAR GRATE CONFIGURATIONS MEETING THE REQUIREMENTS OF THIS DETAIL, THE REQUIREMENTS OF THE SPECIAL PROVISIONS, AND THE APPROVAL OF THE ENGINEER.

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Jason S. Howerton
Digitally signed by:
7/18/2019

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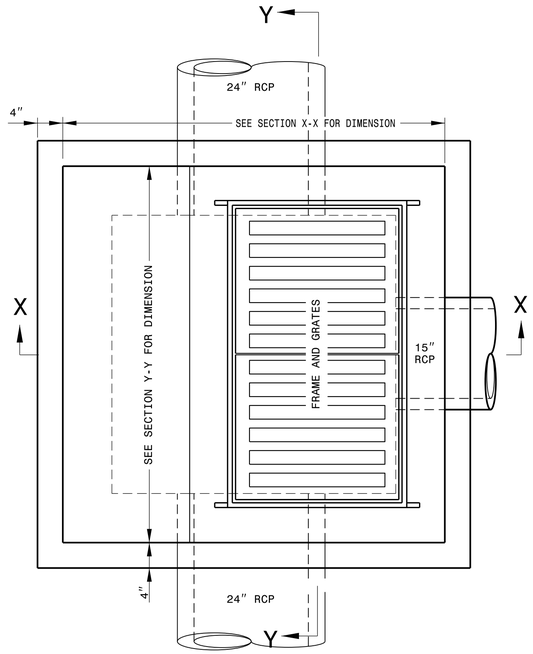
CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

DETAILS OF SLOTTED DRAIN 12″ THRU 36″ DIAMETER PIPE

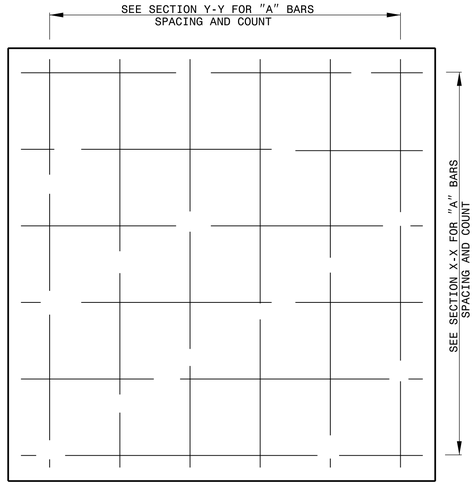
ORIGINAL BY: T.Spell DATE: 5-21-99
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: s:usr\details\stand\slottdrain.dgn

19-JUL-2016 07:40
S:\Contracts\Contracts\Special Details\tspell\details\stand\slottdrain.dgn
jhowerton AT CSD-242595

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	2C-15

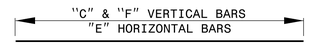


PLAN

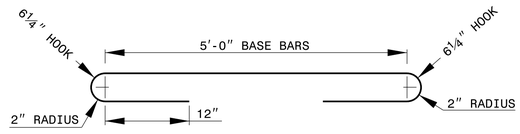


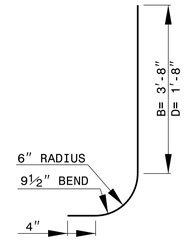
PLAN OF BASE

GENERAL NOTES:
-USE CLASS 'AA' CONCRETE FOR CAST IN PLACE CONCRETE BOX.
-USE CLASS 'M' CONCRETE IN THE WALL CAVITY FOR REINFORCED BRICK CONSTRUCTION AND CLASS 'AA' FOR THE FOOTING BASE.
-CHAMFER ALL EXPOSED CONCRETE CORNERS 1".
-USE FORMS TO CONSTRUCT THE BOTTOM SLAB.
-IF PIPES ARE SET IN THE BASE FOLLOW CONSTRUCTION PROCEDURES SHOWN BY STD. DWG. 840.00.
-PRECAST UNITS MADE OF CLASS 'AA' CONCRETE MAY BE USED IN LIEU OF BRICK MASONRY CONSTRUCTION.
-INCLUDE REINFORCING STEEL COST IN THE UNIT OR LINEAR FOOT BID PRICE FOR "MASONRY DRAINAGE STRUCTURE".
-REFERENCE STD. DWG. 840.25 FOR FRAME ANCHORAGE.
-CONCRETE BRICK, JUMBO BRICK AND 4" SOLID CONCRETE BLOCK WILL BE PERMITTED.
-CONCRETE FOR BRICK BOX REFER TO SECTION 832 OF THE STANDARD SPECIFICATIONS.
-PROVIDE GRATED DROP INLETS OVER 3'-6" DEEP WITH STEPS SPACED 12" ON CENTER AS DIRECTED BY STD. DWG. 840.66.
-FRAME AND GRATES ARE SEPARATE CONTRACT ITEMS.



STRAIGHT BARS

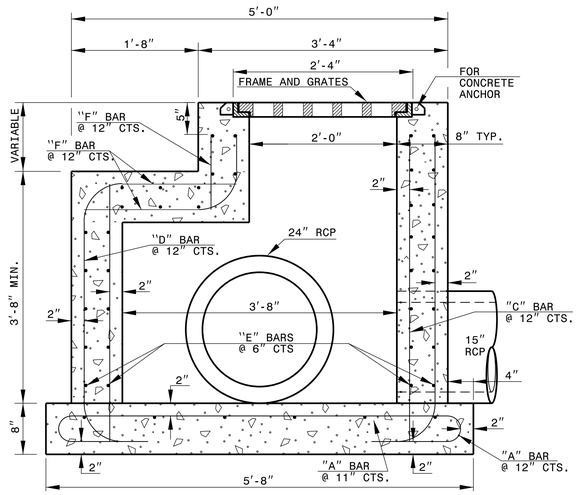




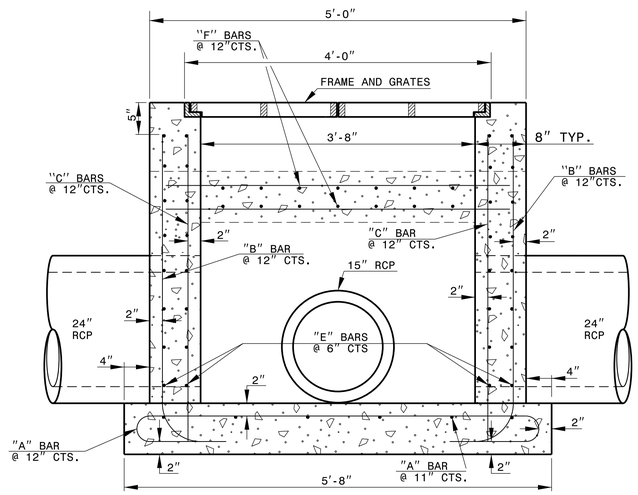
CORNER BARS

BASE BARS

"A" BARS



SECTION X-X



SECTION Y-Y

BILL OF MATERIALS

BAR	SIZE	LENGTH	QUANTITY	WEIGHT
A	#5	8'-0½"	12	100.6
B	#5	4'-9½"	20	99.6
C	#5	5'-6"	20	114.7
D	#5	2'-9½"	16	46.6
E	#5	4'-8"	68	331.0
F	#5	2'-0"	44	91.8
REINF. STEEL (TOTAL WEIGHT LBS.)				784.3
CONCRETE IN BASE CLASS 'AA' (CUBIC YARDS)				0.79
CONCRETE IN WALLS CLASS 'AA' (CUBIC YARDS)				2.30
CONCRETE TOTAL (CUBIC YARDS)				3.09
CONC. CUBIC YARDS IN WALL/FOOT OF HEIGHT				0.46
LBS. OF REINF. STEEL IN WALL/FOOT OF HEIGHT				128.9

* PIPE DEDUCTIONS AND INLET OPENING DEDUCTION HAVE BEEN MADE.

NOTES:
-HORIZONTAL AND VERTICAL DIMENSIONS MAY BE ADJUSTED AS THE FIELD CONDITIONS AND/OR ALTERNATE DESIGN REQUIRE.
-MAXIMUM HEIGHT FOR THIS STRUCTURE SHALL BE 20'-0".
-ALL ADJUSTMENTS ARE TO BE MADE AS DIRECTED BY THE ENGINEER.
-DEPTH OF STEEL GRATE WILL REQIURE DEEPER SEAT ALONG SHORT WALLS.

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HOWERTON
Signed by: E7EF3D17DCDC45F...
8/9/2019

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

TRAFFIC BEARING DROP INLET TYPE "A"

ORIGINAL BY: tsspell DATE: 7-15-08
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: s:tspell/details/840d35_a0011bb.dgn

V&M Vaughn & Melton Consulting Engineers, Inc. 1800E Associates Lane Charlotte, NC 28217 NC License No: F-1088
PARRISH & PARTNERS Parrish and Partners of North Carolina, PLLC 11325 N Community House Rd Suite 260 Charlotte, NC 28277 NC License No: P-1212

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	2D-1
R/W SHEET NO.	
HYDRAULICS ENGINEERS	

NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JON C. FORD 7/30/2019
NORTH CAROLINA PROFESSIONAL SEAL 035700 ENGINEER KEVIN P. HIGGINS Kevin P. Higgins 7/31/2019

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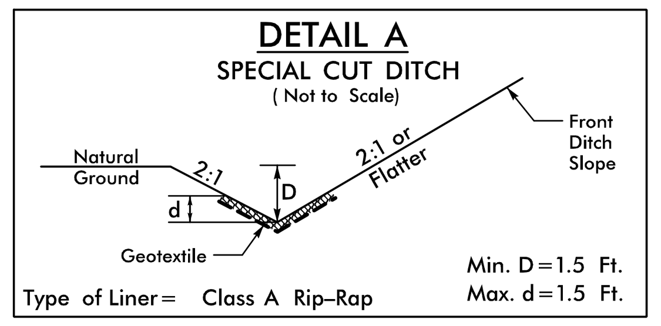
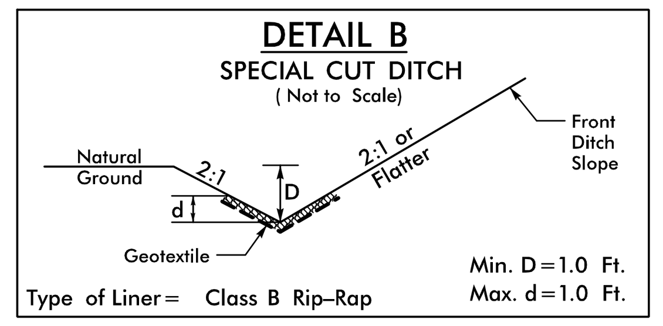
REVISIONS

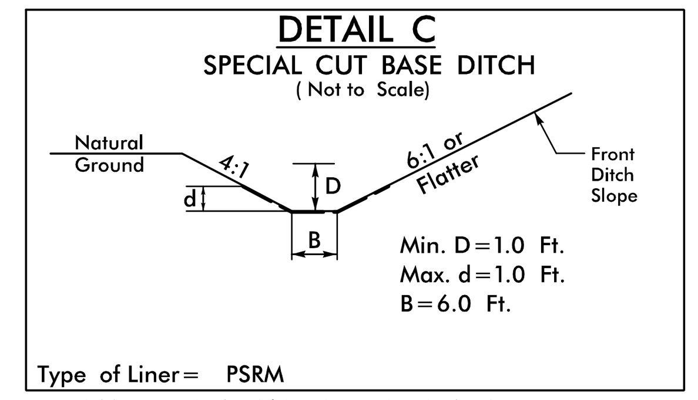
DITCH DETAILS



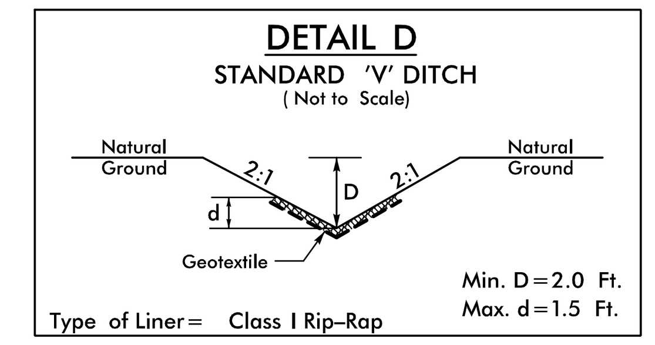
FROM –Y1RPD– STA. 12+00 TO STA. 14+00 LT



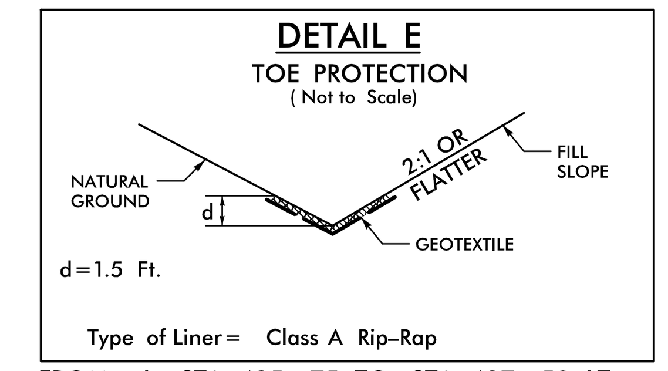
FROM –L– STA. 396+25 TO STA. 399+25 RT



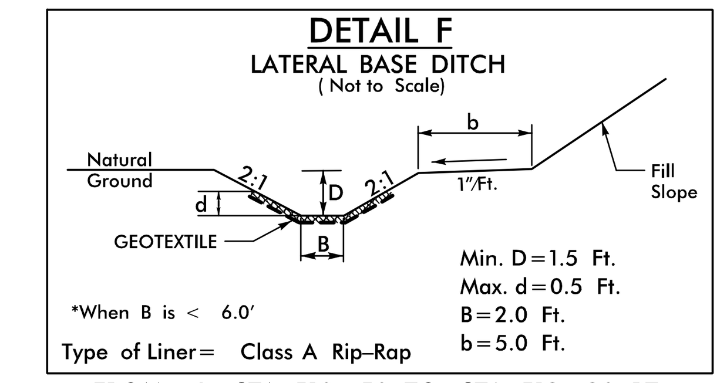
FROM –L– STA. 468+20 TO STA. 471+50 RT



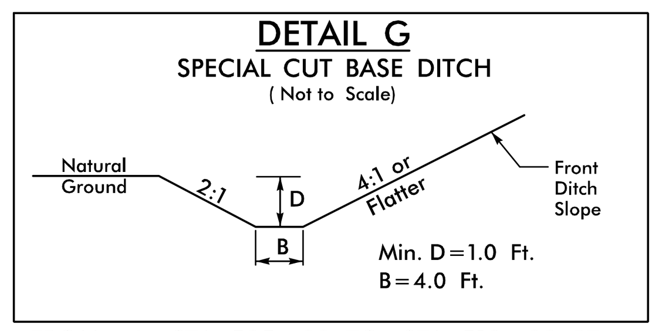
FROM –L– STA. 552+00 TO STA. 553+20 LT



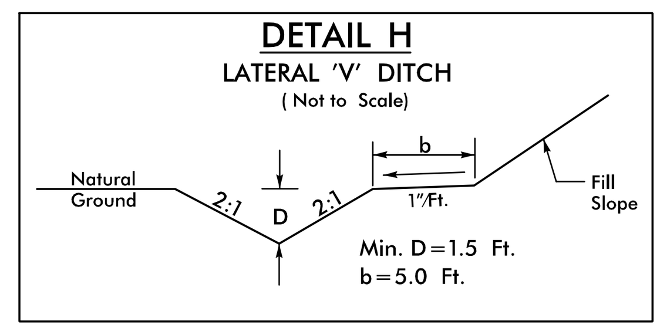
FROM –L– STA. 485+75 TO STA. 487+50 LT
FROM –L– STA. 492+70 TO STA. 494+00 LT



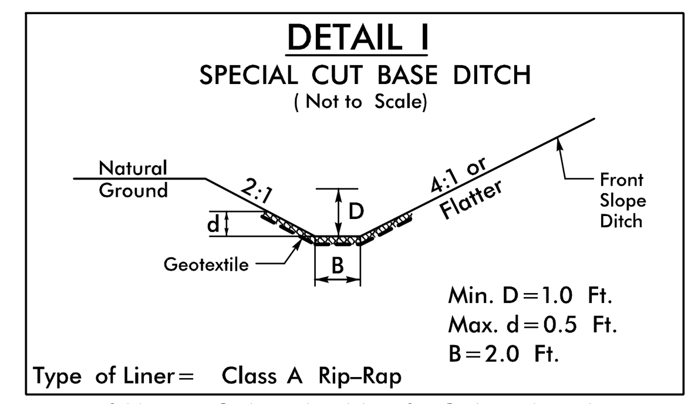
FROM –L– STA. 510+50 TO STA. 513+20 RT



FROM –L– STA. 505+00 TO STA. 510+00 RT



FROM –Y2– STA. 23+00 TO STA. 26+00 LT



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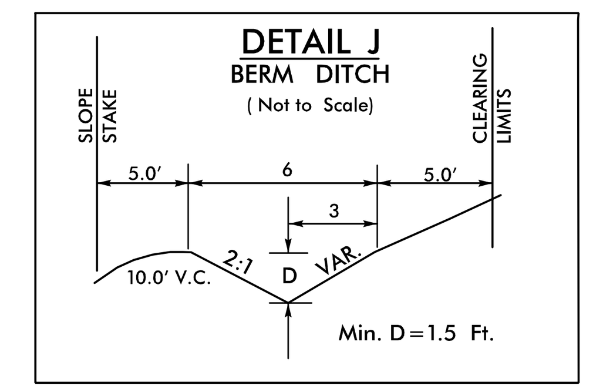
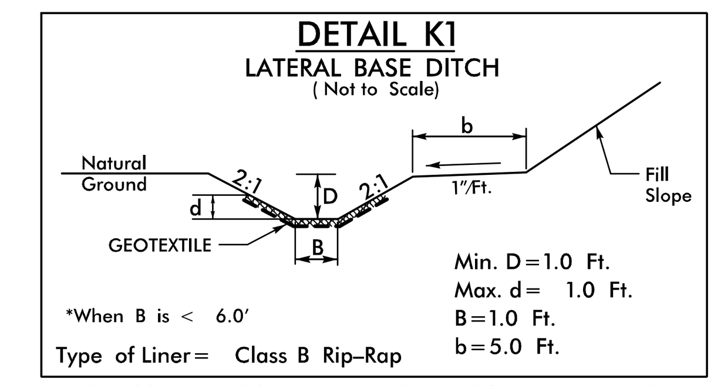


FROM –L– STA. 515+50 TO STA. 519+50 RT



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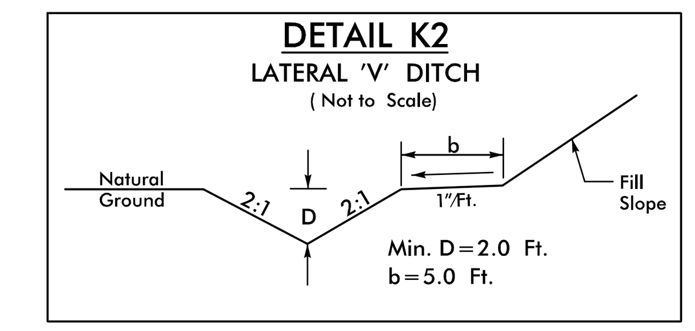
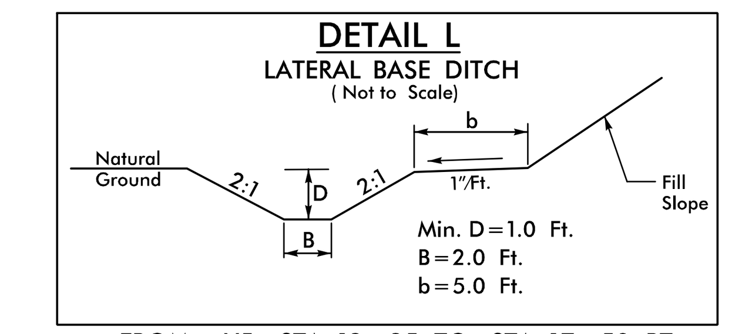
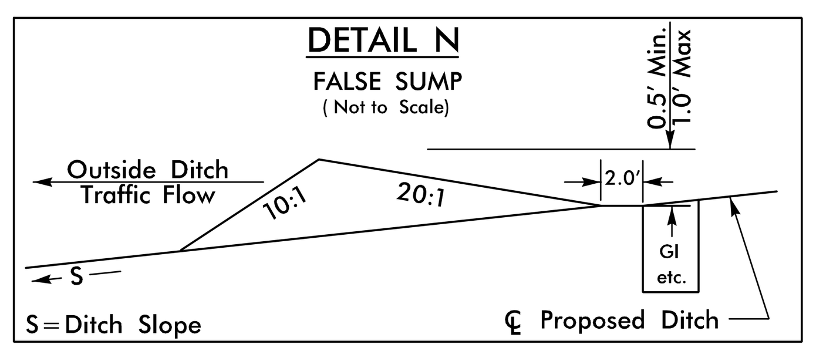


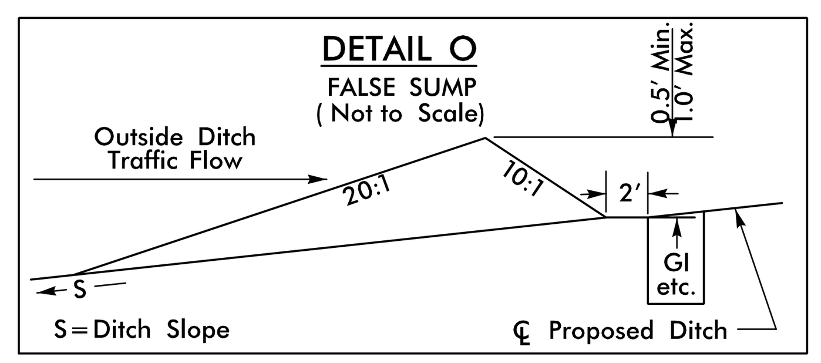
FROM –L– STA. 530+00 TO STA. 531+50 LT



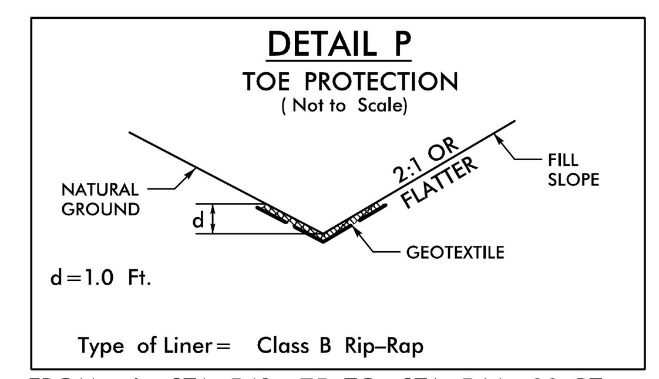
FROM –Y5– STA. 12+25 TO STA. 17+50 RT
FROM –Y5– STA. 20+65 TO STA. 22+35 RT
FROM –Y5– STA. 13+50 TO STA. 16+50 LT
FROM –Y5– STA. 28+00 TO STA. 30+50 LT
FROM –Y5– STA. 20+60 TO STA. 22+75 LT



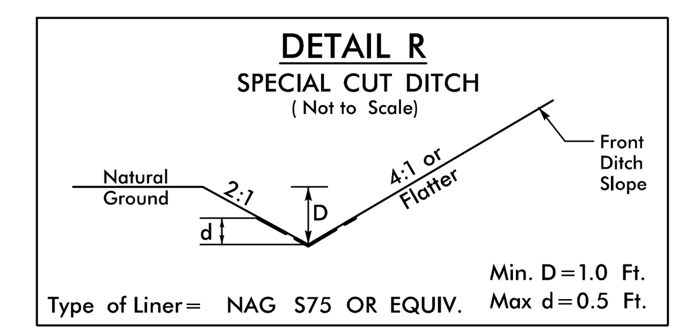
FROM STA. 407+70 TO STA. 407+85 RT
FROM STA. 437+50 TO STA. 437+65 LT
FROM STA. 437+60 TO STA. 437+75 LT
FROM STA. 468+15 TO STA. 468+30 RT
FROM STA. 471+55 TO STA. 471+70 RT
FROM STA. 474+75 TO STA. 474+90 RT
FROM STA. 475+92 TO STA. 476+07 RT
FROM STA. 519+50 TO STA. 519+65 RT
FROM STA. 577+80 TO STA. 577+95 RT
FROM STA. 581+20 TO STA. 581+35 RT
FROM STA. 585+00 TO STA. 585+15 RT



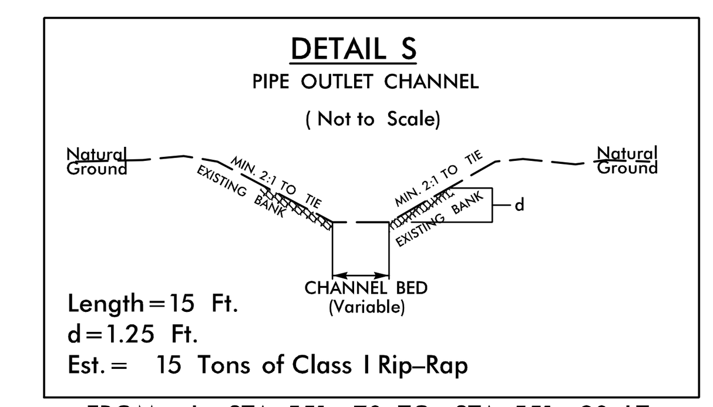
FROM STA. 410+75 TO STA. 410+90 LT
FROM STA. 429+10 TO STA. 429+25 RT
FROM STA. 418+10 TO STA. 418+25 LT
FROM STA. 434+40 TO STA. 434+55 RT
FROM STA. 438+35 TO STA. 438+50 RT
FROM STA. 475+98 TO STA. 476+13 LT
FROM STA. 483+90 TO STA. 484+05 LT
FROM STA. 538+35 TO STA. 538+50 RT
FROM STA. 546+80 TO STA. 546+95 RT
FROM STA. 581+20 TO STA. 581+35 LT
FROM STA. 582+75 TO STA. 582+90 LT



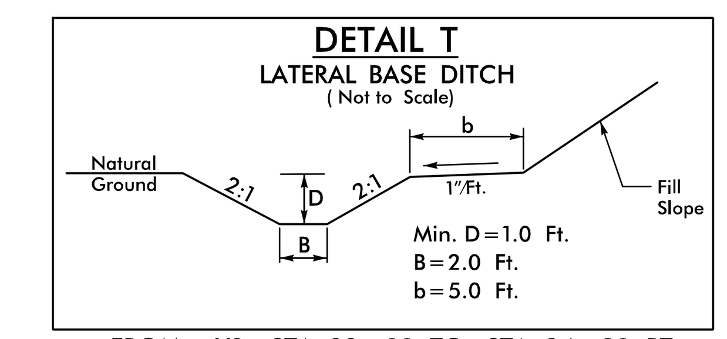
FROM –L– STA. 542+75 TO STA. 544+00 RT
FROM –L– STA. 545+25 TO STA. 546+50 RT
FROM –L– STA. 567+00 TO STA. 567+75 RT
FROM –L– STA. 573+90 TO STA. 575+00 RT
FROM –L– STA. 583+00 TO STA. 583+50 LT
FROM –Y5– STA. 17+50 TO STA. 17+75 RT
FROM –Y5– STA. 16+50 TO STA. 18+15 LT
FROM –Y5– STA. 20+60 TO STA. 22+75 LT



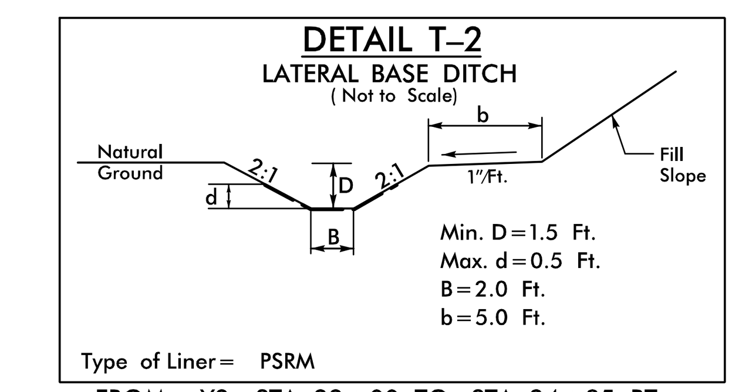
FROM –Y2– STA. 10+00 TO STA. 10+75 RT
FROM –Y2– STA. 29+00 TO STA. 30+00 RT



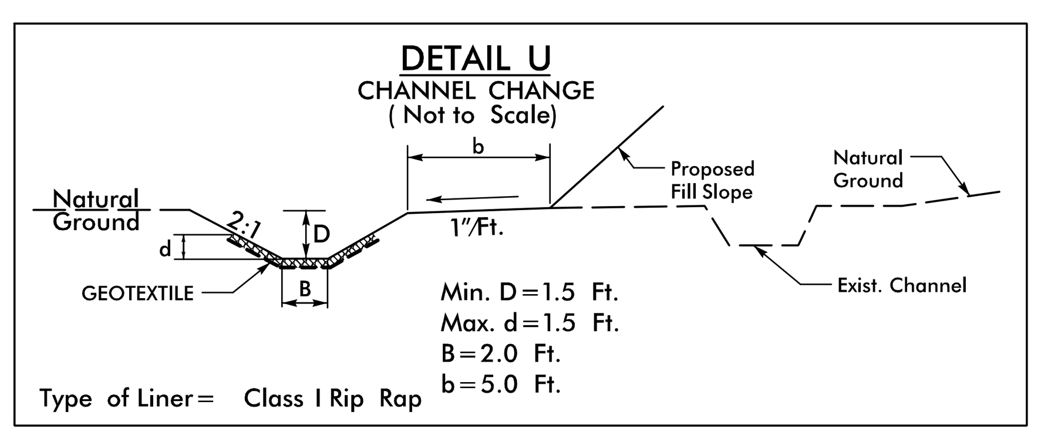
FROM –L– STA. 551+70 TO STA. 551+80 LT
FROM –L– STA. 389+50 TO STA. 389+60 RT
FROM –Y2– STA. 24+80 TO STA. 24+90 LT
FROM –L– STA. 456+60 TO STA. 456+70 LT
FROM –L– STA. 557+90 TO STA. 558+00 LT
FROM –L– STA. 572+70 TO STA. 572+80 LT



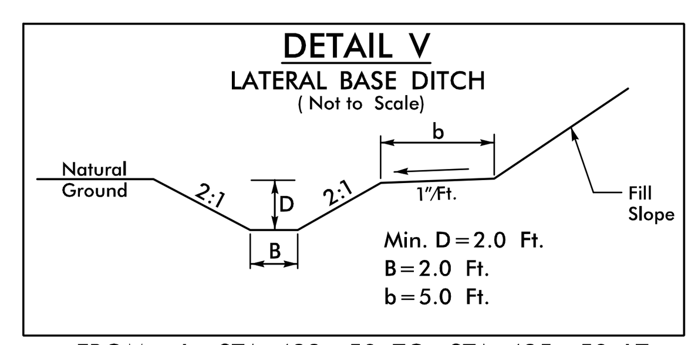
FROM –Y2– STA. 22+00 TO STA. 24+80 RT
FROM –Y2– STA. 17+25 TO STA. 20+00 LT
FROM –Y3– STA. 11+00 TO STA. 14+00 IT



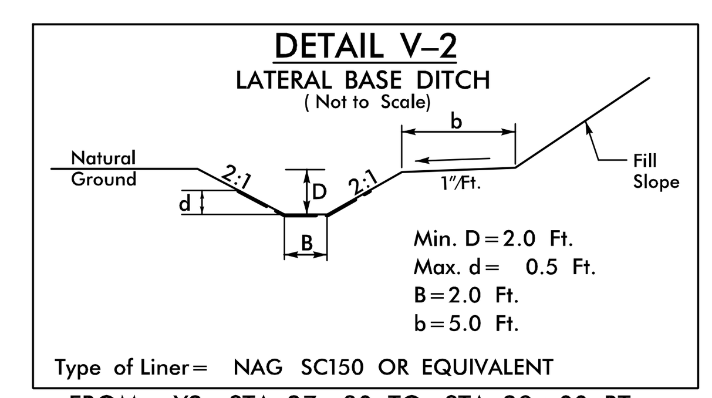
FROM –Y2– STA. 22+00 TO STA. 24+85 RT



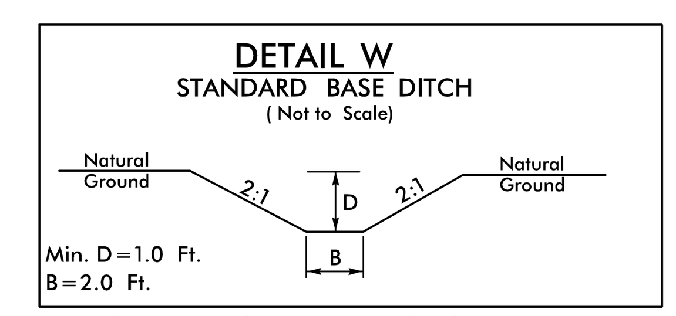
FROM –L– STA. 572+25 TO STA. 573+80 RT
FROM –L– STA. 583+75 TO STA. 585+00 LT



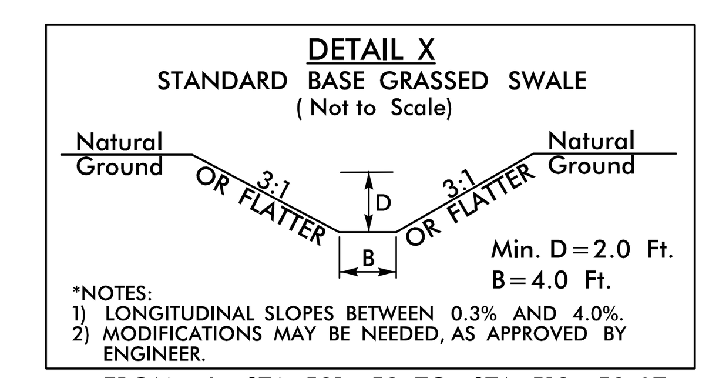
FROM –L– STA. 433+50 TO STA. 435+50 LT
FROM –Y2– STA. 27+30 TO STA. 29+00 RT



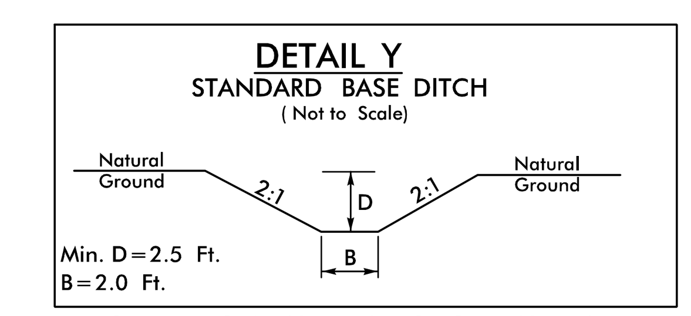
FROM –Y2– STA. 27+30 TO STA. 29+00 RT



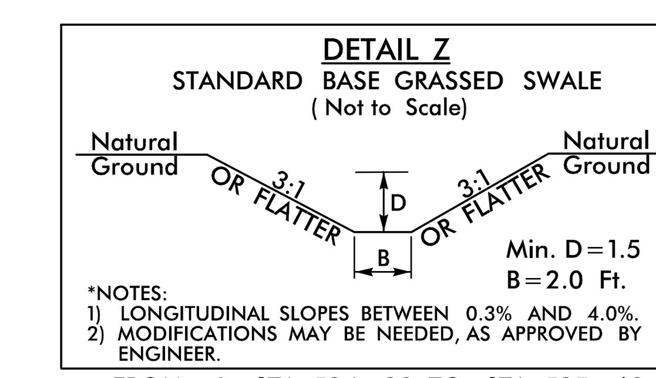
FROM –Y5– STA. 10+15 TO STA. 11+00 LT



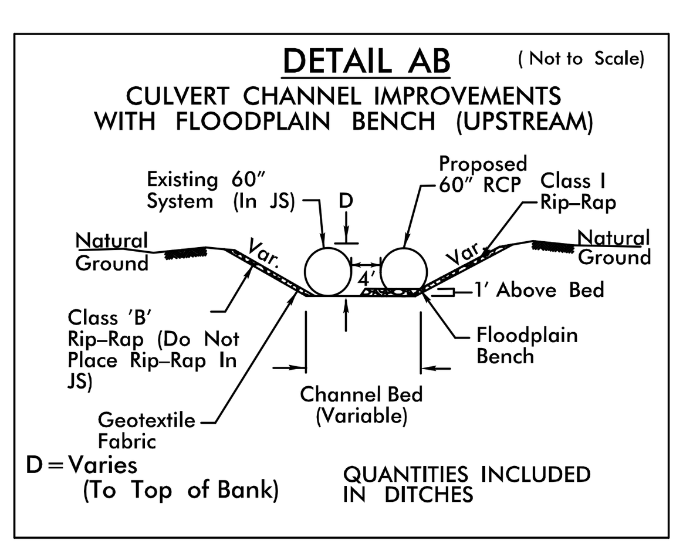
FROM –L– STA. 501+50 TO STA. 518+50 LT
FROM –L– STA. 513+00 TO STA. 518+50 LT

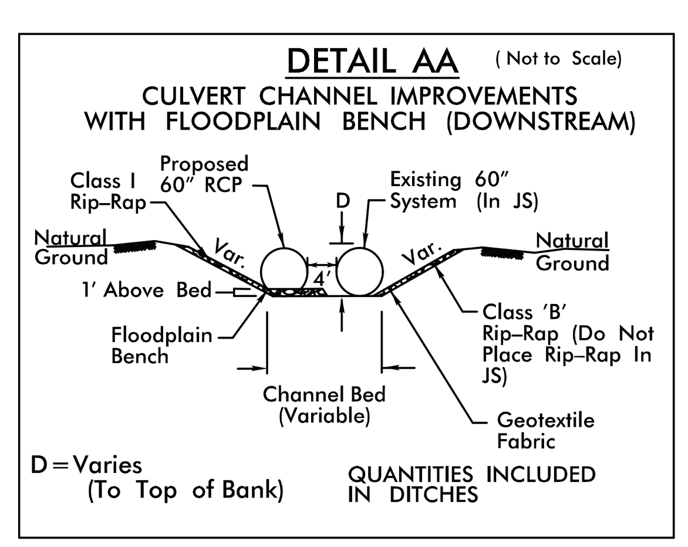


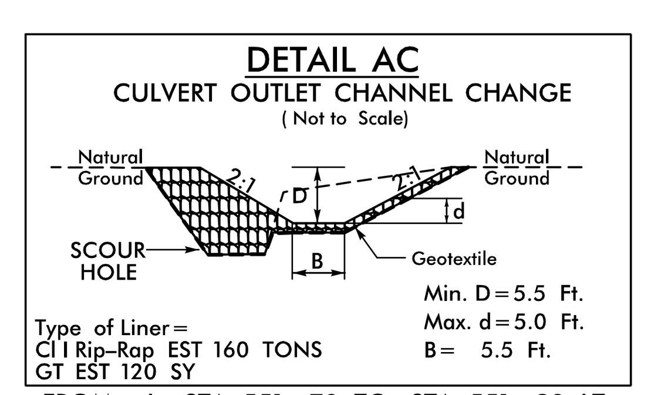
FROM –L– STA. 485+50 TO STA. 485+65 RT



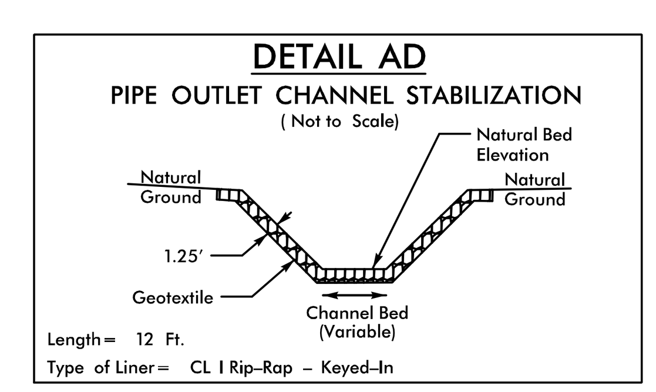
FROM –L– STA. 524+20 TO STA. 525+60 RT
FROM –L– STA. 524+75 TO STA. 526+05 LT



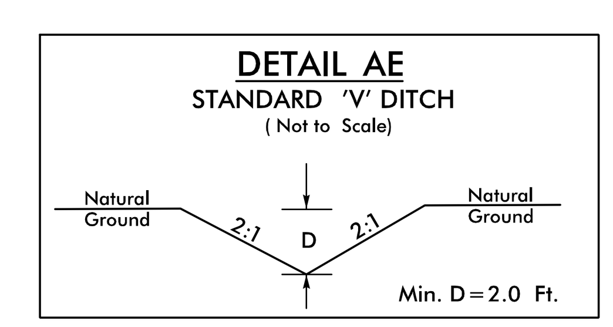




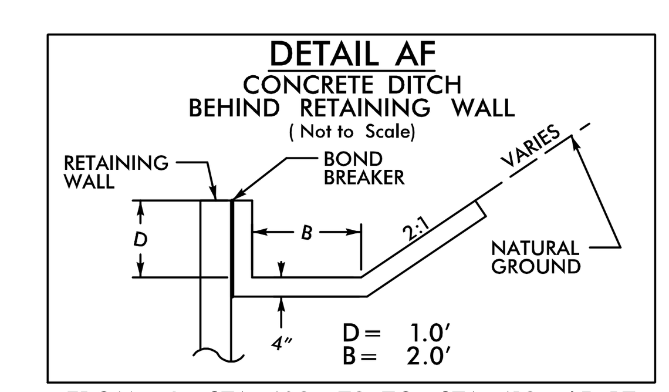
FROM –L– STA. 551+70 TO STA. 551+80 LT
–L– STA. 572+75 LT



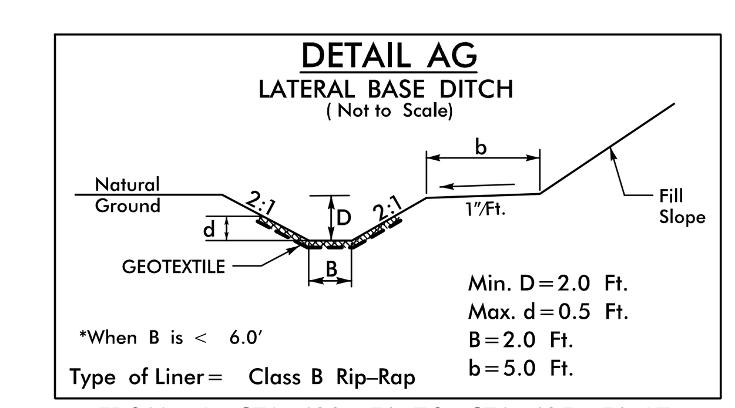
–L– STA. 558+02 LT



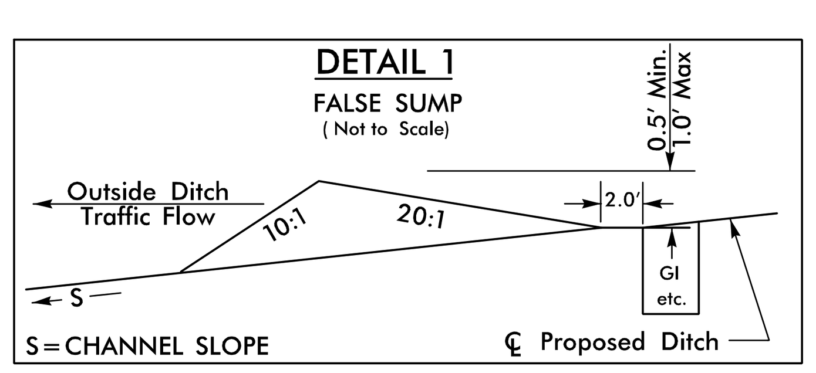
FROM –L– STA. 566+03 TO STA. 566+65 LT



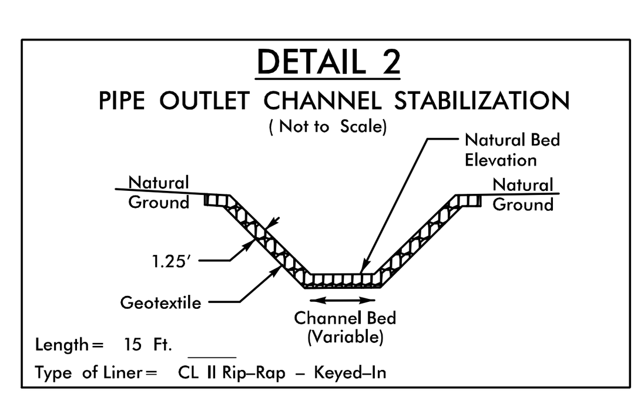
FROM –L– STA. 408+73 TO STA. 418+65 RT
FROM –L– STA. 424+14 TO STA. 429+13 RT
FROM –L– STA. 438+79 TO STA. 440+65 RT
FROM –L– STA. 437+77 TO STA. 439+51 LT
FROM –L– STA. 533+52 TO STA. 540+68 LT
FROM –L– STA. 539+30 TO STA. 541+29 RT
FROM –L– STA. 637+28 TO STA. 639+55 RT
FROM –L– STA. 638+98 TO STA. 640+91 LT



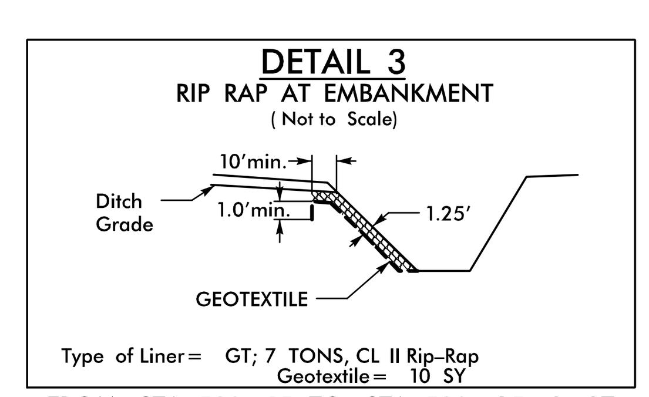
FROM –L– STA. 433+50 TO STA. 435+50 LT



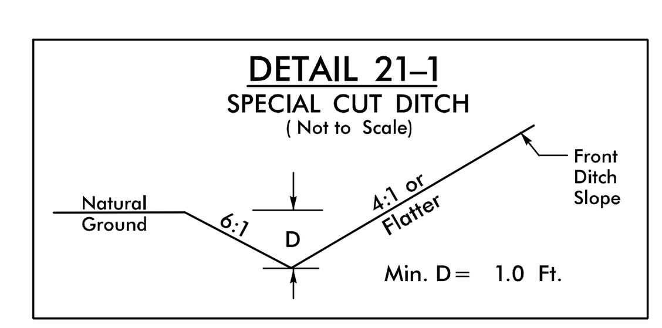
FROM STA. 595+97 TO STA. 596+29 LT
FROM STA 595+97 TO STA. 596+29 RT
FROM STA. 602+46 TO STA. 602+63 LT



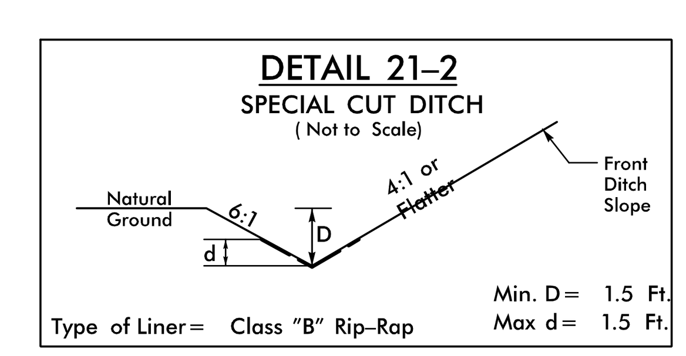
STA. 590+17 TO STA. 590+02



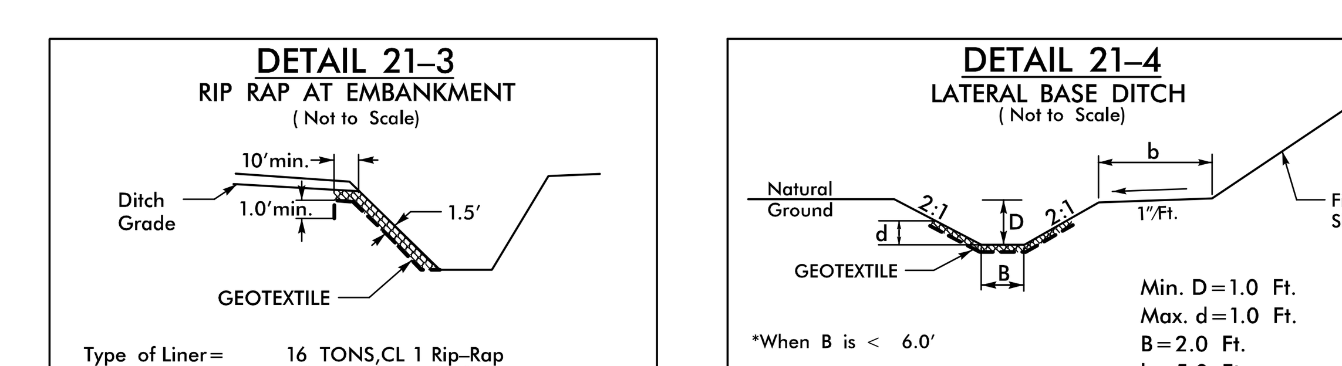
FROM STA. 590+15 TO STA. 590+35 –L– LT



FROM STA. 614+50 TO STA. 615+30 –L– LT



FROM STA. 615+30 to 616+00 –L– LT



FROM STA. 611+64 TO STA. 611+85 –L– RT

FROM STA. 611+75 TO STA. 613+50 –L– RT

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Parrish and Partners of North Carolina, PLLC 11325 N Community House Rd Suite 260 Charlotte, NC 28277 NC License No: P-1212

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	2D-2
R/W SHEET NO.	
HYDRAULICS ENGINEERS	

NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JON C. FORD 7/30/2019

NORTH CAROLINA PROFESSIONAL SEAL 035700 ENGINEER KEVIN P. HIGGINS Kevin P. Higgins 7/31/2019

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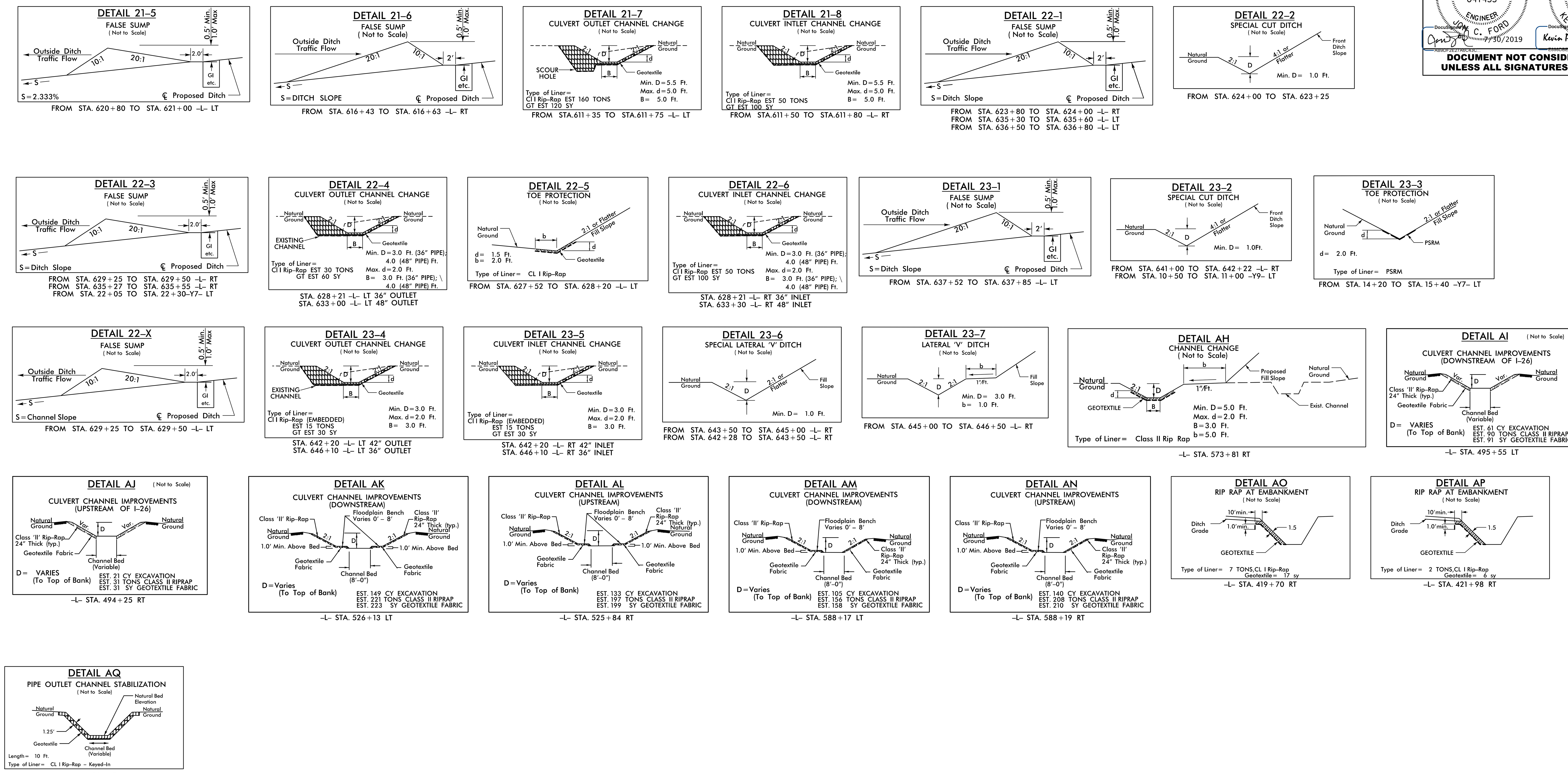
DITCH DETAILS


DETAIL 21-5
FALSE SUMP (Not to Scale)
Outside Ditch Traffic Flow
10:1
20:1
0.5' Min. 1.0' Max.
2.0'
GI etc.
S=2.333%
℄ Proposed Ditch
FROM STA. 620+80 TO STA. 621+00 -L- LT
DETAIL 21-6
FALSE SUMP (Not to Scale)
S=DITCH SLOPE
FROM STA. 616+43 TO STA. 616+63 -L- RT
DETAIL 21-7
CULVERT OUTLET CHANNEL CHANGE (Not to Scale)
SCOUR HOLE
Geotextile
Min. D=5.5 Ft. Max. d=5.0 Ft. B= 5.0 Ft.
Type of Liner= Cl I Rip-Rap EST 160 TONS GT EST 120 SY
FROM STA.611+35 TO STA.611+75 -L- LT
DETAIL 21-8
CULVERT INLET CHANNEL CHANGE (Not to Scale)
Min. D=5.5 Ft. Max. d=5.0 Ft. B= 5.0 Ft.
Type of Liner= Cl I Rip-Rap EST 50 TONS GT EST 100 SY
FROM STA.611+50 TO STA.611+80 -L- RT
DETAIL 22-1
FALSE SUMP (Not to Scale)
S=Ditch Slope
FROM STA. 623+80 TO STA. 624+00 -L- RT
FROM STA. 635+30 TO STA. 635+60 -L- LT
FROM STA. 636+50 TO STA. 636+80 -L- LT
DETAIL 22-2
SPECIAL CUT DITCH (Not to Scale)
Natural Ground
4:1 or Flatter
Front Ditch Slope
Min. D= 1.0 Ft.
FROM STA. 624+00 TO STA. 623+25
DETAIL 22-3
FALSE SUMP (Not to Scale)
S=Ditch Slope
FROM STA. 629+25 TO STA. 629+50 -L- RT
FROM STA. 635+27 TO STA. 635+55 -L- RT
FROM STA. 22+05 TO STA. 22+30-Y7- LT
DETAIL 22-4
CULVERT OUTLET CHANNEL CHANGE (Not to Scale)
EXISTING CHANNEL
Min. D=3.0 Ft. (36" PIPE); 4.0 (48" PIPE) Ft.
Max. d=2.0 Ft.
B= 3.0 Ft. (36" PIPE); 4.0 (48" PIPE) Ft.
Type of Liner= Cl I Rip-Rap EST 30 TONS GT EST 60 SY
STA. 628+21 -L- LT 36" OUTLET
STA. 633+00 -L- LT 48" OUTLET
DETAIL 22-5
TOE PROTECTION (Not to Scale)
2:1 or Flatter Fill Slope
d= 1.5 Ft. b= 2.0 Ft.
Type of Liner= CL I Rip-Rap
FROM STA. 627+52 TO STA. 628+20 -L- LT
DETAIL 22-6
CULVERT INLET CHANNEL CHANGE (Not to Scale)
Type of Liner= Cl I Rip-Rap EST 50 TONS GT EST 100 SY
STA. 628+21 -L- RT 36" INLET
STA. 633+30 -L- RT 48" INLET
DETAIL 23-1
FALSE SUMP (Not to Scale)
S=Ditch Slope
FROM STA. 637+52 TO STA. 637+85 -L- LT
DETAIL 23-2
SPECIAL CUT DITCH (Not to Scale)
Min. D= 1.0Ft.
FROM STA. 641+00 TO STA. 642+22 -L- RT
FROM STA. 10+50 TO STA. 11+00 -Y9- LT
DETAIL 23-3
TOE PROTECTION (Not to Scale)
PSRM
d= 2.0 Ft.
Type of Liner= PSRM
FROM STA. 14+20 TO STA. 15+40 -Y7- LT
DETAIL 22-X
FALSE SUMP (Not to Scale)
S=Channel Slope
FROM STA. 629+25 TO STA. 629+50 -L- LT
DETAIL 23-4
CULVERT OUTLET CHANNEL CHANGE (Not to Scale)
Min. D=3.0 Ft. Max. d=2.0 Ft. B= 3.0 Ft.
Type of Liner= Cl I Rip-Rap (EMBEDDED) EST 15 TONS GT EST 30 SY
STA. 642+20 -L- LT 42" OUTLET
STA. 646+10 -L- LT 36" OUTLET
DETAIL 23-5
CULVERT INLET CHANNEL CHANGE (Not to Scale)
Type of Liner= Cl I Rip-Rap (EMBEDDED) EST 15 TONS GT EST 30 SY
STA. 642+20 -L- RT 42" INLET
STA. 646+10 -L- RT 36" INLET
DETAIL 23-6
SPECIAL LATERAL 'V' DITCH (Not to Scale)
Min. D= 1.0 Ft.
FROM STA. 643+50 TO STA. 645+00 -L- RT
FROM STA. 642+28 TO STA. 643+50 -L- RT
DETAIL 23-7
LATERAL 'V' DITCH (Not to Scale)
Min. D= 3.0 Ft. b= 1.0 Ft.
FROM STA. 645+00 TO STA. 646+50 -L- RT
DETAIL AH
CHANNEL CHANGE (Not to Scale)
Proposed Fill Slope
Exist. Channel
GEOTEXTILE
Min. D=5.0 Ft. Max. d=2.0 Ft. B=3.0 Ft. b=5.0 Ft.
Type of Liner= Class II Rip Rap
-L- STA. 573+81 RT
DETAIL AI (Not to Scale)
CULVERT CHANNEL IMPROVEMENTS (DOWNSTREAM OF I-26)
Class 'II' Rip-Rap 24" Thick (typ.)
Geotextile Fabric
Channel Bed (Variable)
D= VARIES (To Top of Bank)
EST. 61 CY EXCAVATION
EST. 90 TONS CLASS II RIPRAP
EST. 91 SY GEOTEXTILE FABRIC
-L- STA. 495+55 LT
DETAIL AJ (Not to Scale)
CULVERT CHANNEL IMPROVEMENTS (UPSTREAM OF I-26)
D= VARIES (To Top of Bank)
EST. 21 CY EXCAVATION
EST. 31 TONS CLASS II RIPRAP
EST. 31 SY GEOTEXTILE FABRIC
-L- STA. 494+25 RT
DETAIL AK
CULVERT CHANNEL IMPROVEMENTS (DOWNSTREAM)
Floodplain Bench Varies 0' - 8'
1.0' Min. Above Bed
Channel Bed (8'-0")
D=Varies (To Top of Bank)
EST. 149 CY EXCAVATION
EST. 221 TONS CLASS II RIPRAP
EST. 223 SY GEOTEXTILE FABRIC
-L- STA. 526+13 LT
DETAIL AL
CULVERT CHANNEL IMPROVEMENTS (UPSTREAM)
EST. 133 CY EXCAVATION
EST. 197 TONS CLASS II RIPRAP
EST. 199 SY GEOTEXTILE FABRIC
-L- STA. 525+84 RT
DETAIL AM
CULVERT CHANNEL IMPROVEMENTS (DOWNSTREAM)
EST. 105 CY EXCAVATION
EST. 156 TONS CLASS II RIPRAP
EST. 158 SY GEOTEXTILE FABRIC
-L- STA. 588+17 LT
DETAIL AN
CULVERT CHANNEL IMPROVEMENTS (UPSTREAM)
EST. 140 CY EXCAVATION
EST. 208 TONS CLASS II RIPRAP
EST. 210 SY GEOTEXTILE FABRIC
-L- STA. 588+19 RT
DETAIL AO
RIP RAP AT EMBANKMENT (Not to Scale)
Ditch Grade
GEOTEXTILE
Type of Liner= 7 TONS,CL I Rip-Rap Geotextile= 17 sy
-L- STA. 419+70 RT
DETAIL AP
RIP RAP AT EMBANKMENT (Not to Scale)
Type of Liner= 2 TONS,CL I Rip-Rap Geotextile= 6 sy
-L- STA. 421+98 RT
DETAIL AQ
PIPE OUTLET CHANNEL STABILIZATION (Not to Scale)
Natural Bed Elevation
Channel Bed (Variable)
Length= 10 Ft.
Type of Liner= CL I Rip-Rap - Keyed-In
-L- STA. 456+25 LT

REVISIONS

PIPE DETAIL

NOT TO SCALE

GENERAL NOTES

USE 4000 PSI MINIMUM COMPRESSIVE STRENGTH CONCRETE.

DESIGN, FABRICATE AND ASSEMBLE PRECAST MANHOLE COMPONENTS IN ACCORDANCE WITH AASHTO M199.

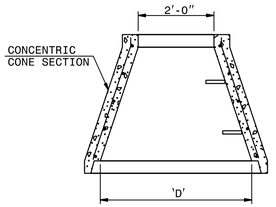
ASSEMBLE RISER AND GRADE RINGS WITH STEPS SPACED 16″ FROM THE TOP TO THE BOTTOM OF THE MANHOLE.

WHERE THE MANHOLE IS EXPOSED TO ROAD TRAFFIC, THE TOP OF THE MANHOLE IS TO BE FLUSH WITH THE GROUND. AT OTHER LOCATIONS IT SHOULD BE A MINIMUM OF 9″ ABOVE THE GROUND.

DEPTH OF FILL LIMITED TO 30′-0″ FROM FINSH GRADE TO TOP OF BOTTOM SLAB.

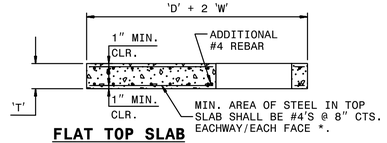
THE MIN. SLAB THICKNESS 'T' SHALL BE THE DIMENSION OF THE THINNEST PORTION OF THE TOP/BOTTOM SLAB.

* TOP MAT OF REINFORCEMENT MAY BE NEGLECTED IF TOP SLAB HAS A DISTINGUISHABLE TOP AND BOTTOM.



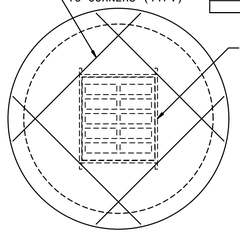
D	W	T	As
INTERNAL DIAMETER (FT.)	MIN. WALL THICKNESS (IN.)	MIN. TOP/BOTTOM SLAB THICKNESS (IN.)	MIN. CIRCUMFERENTIAL AREA OF STEEL PER VERTICAL FT. (SQ. IN.)
7	8.0	8	0.21
8	8.5	8	0.24
9	9.0	9	0.27

ALTERNATE CONE SECTION

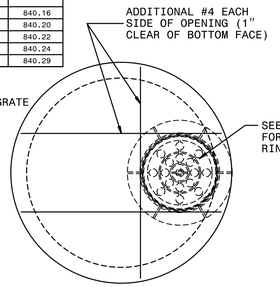


FLAT TOP SLAB

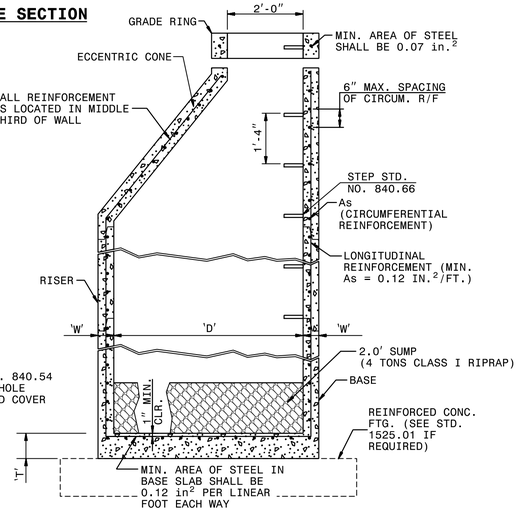
FRAME AND GRATES	STD. NO.
TRAFFIC BEARING	840.37
NONTRAFFIC BEARING:	840.16
	840.20
	840.22
	840.24
	840.29



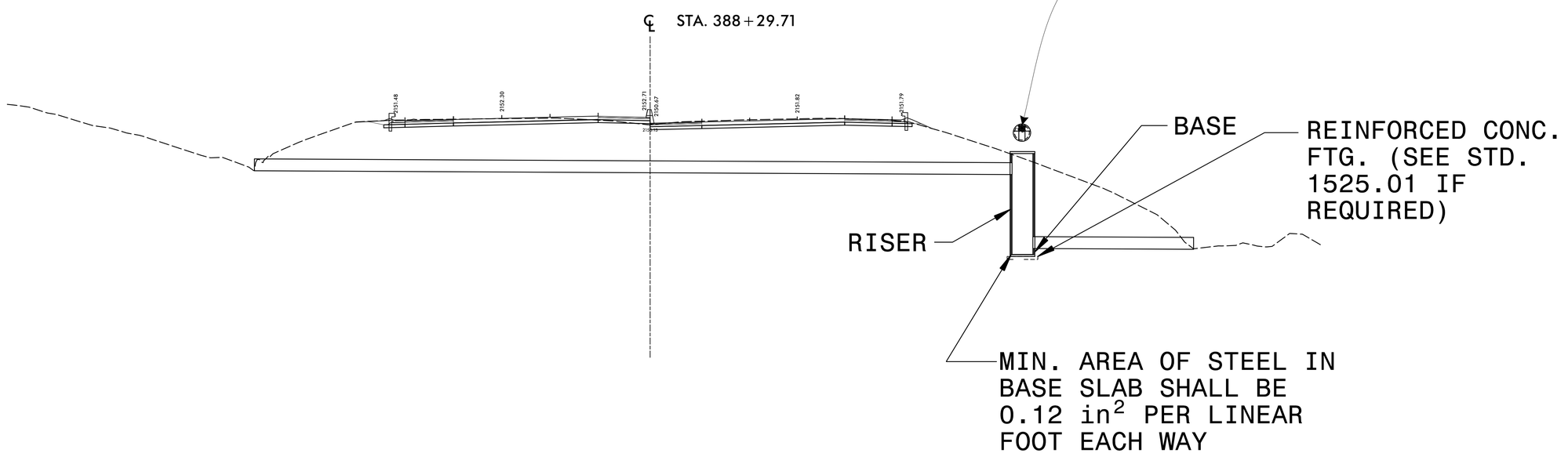
GRATED INLET OPTION



MANHOLE OPTION



TYPICAL MANHOLE SECTION



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NC License No: P-1212

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	2D-3
R/W SHEET NO.	

HYDRAULICS ENGINEERS

NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JON C. FORD
Jon C. Ford 7/30/2019

NORTH CAROLINA PROFESSIONAL SEAL 035700 ENGINEER KEVIN P. HIGGINS
Kevin P. Higgins 7/31/2019

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REVISIONS

30-JUL-2019 08:20
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mkirby AT
$$SCALE$$
$$ENVIRONMENT$$

PIPE DETAIL

NOT TO SCALE

GENERAL NOTES

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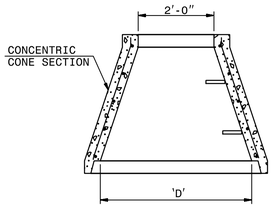

D	W	T	As
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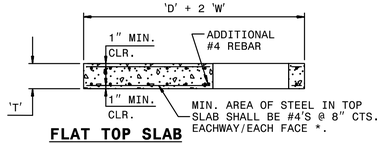
ALTERNATE CONE SECTION



FLAT TOP SLAB

FRAME AND GRATES	STD. NO.
TRAFFIC BEARING	840.37
NONTRAFFIC BEARING:	840.16
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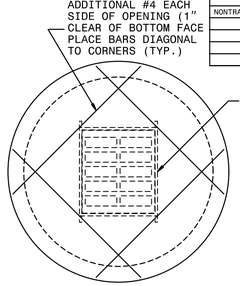
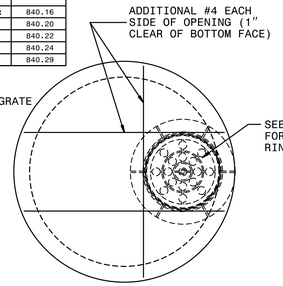
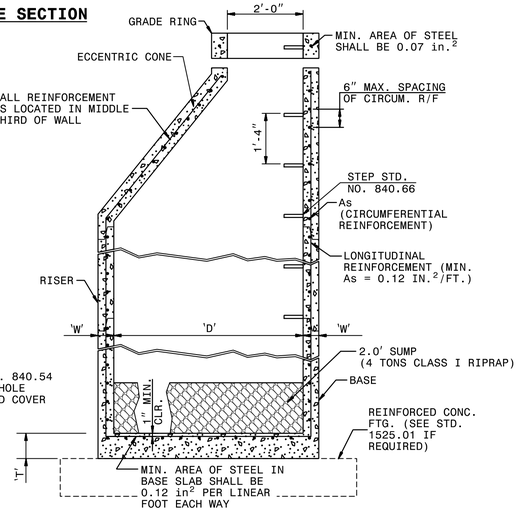


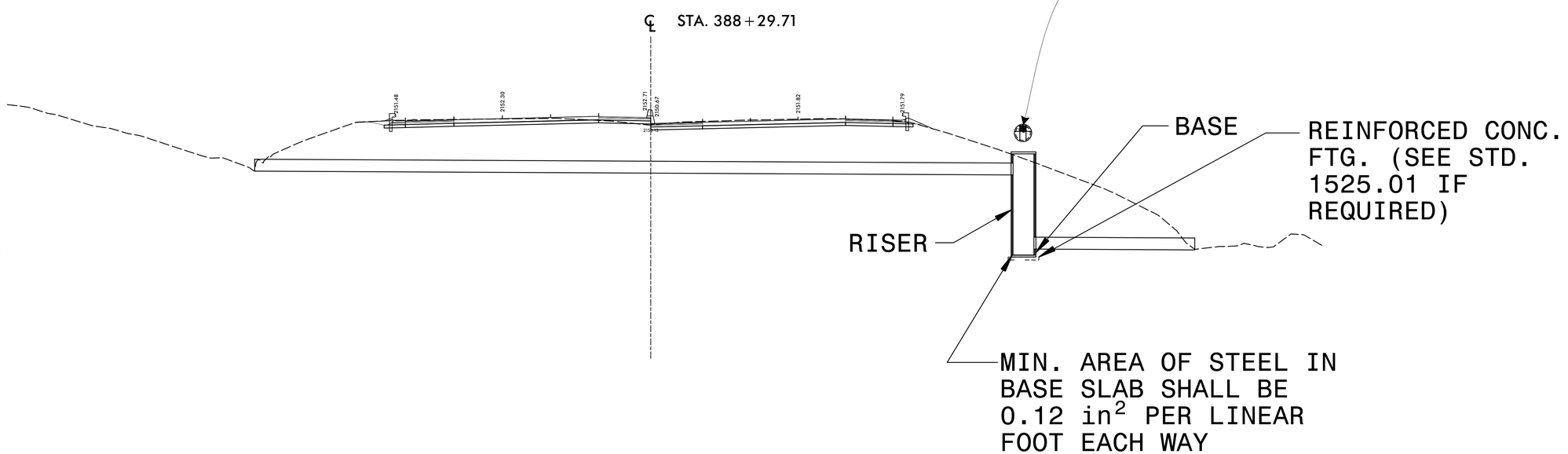
GRATED INLET OPTION



MANHOLE OPTION



TYPICAL MANHOLE SECTION



HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

Vaughn & Melton Consulting Engineers, Inc.
1800E Associates Lane
Charlotte, NC 28217
NC License No: F-1088

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	2D-3
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 047262 ENGINEER MATTHEW J. KIRBY

DocuSigned by: 7/12/2019

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JON C. FORD

DocuSigned by: 7/12/2019

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REVISIONS

12-JUL-2019 09:40
pw://pw-int.hntb.org:PWSED1v/Documents/Charlotte Projects/60645 - 14400 - 4700/I-4400 BB/Roadway/Proj/14400BB_RDY_DTL_2D-3.dgn
czimmowitch AT
$$SCALE$$
$$ENVIRONMENT$$

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB 34232	2G-1

GEOTECHNICAL ENGINEER — SEAL 027361, JODY KUHNE — 2/4/2019

ENGINEER

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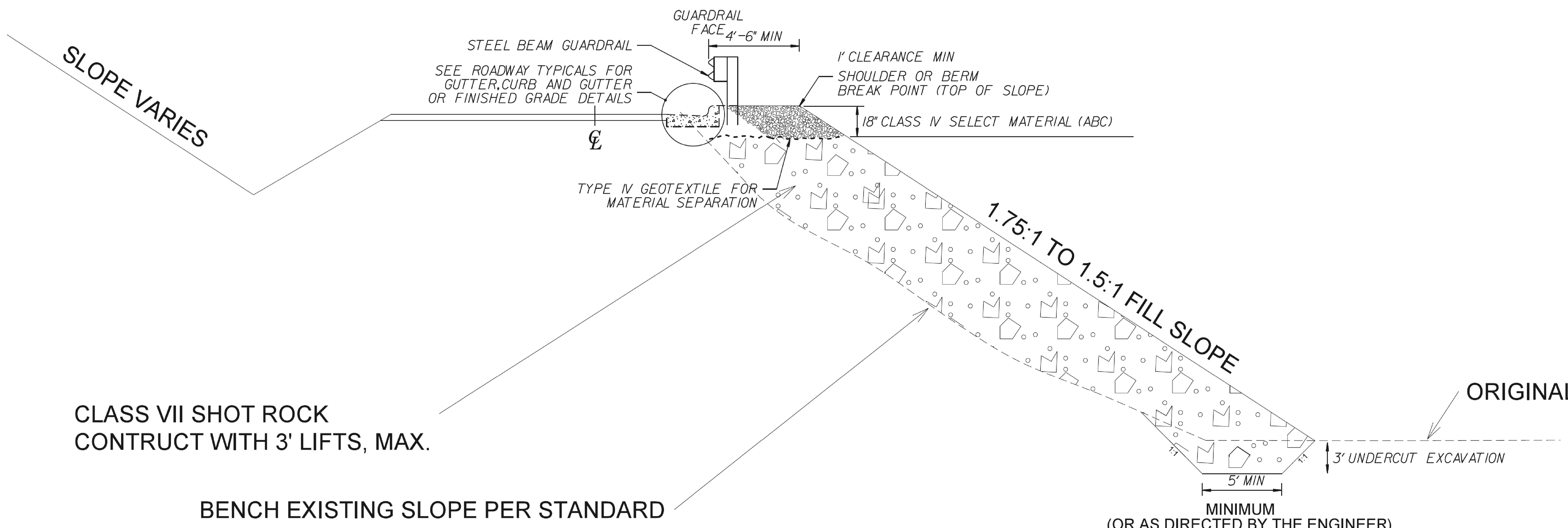
QUANTITY SUMMARY

STATION FROM	STATION TO	LINE	CLASS VII ROCK CUBIC YARDS
571+50	573+25	LT -L-	4,000
			TYPE IV GEOTEXTILE SQUARE YARDS
571+50	573+25	LT -L-	300

ROCK EMBANKMENT TYPICAL

N.T.S.



NOTES:

1) USE CLASS VII SHOT ROCK TO CONSTRUCT ALL FILLS WHICH ARE 1.5:1 (H:V) AS SHOWN ON PLANS
2) FILL VOIDS AT THE TOP OF FILL WITH CLASS IV SELECT MATERIAL (ABC) PRIOR TO CONSTRUCTION OF ROADWAY SUBGRADE
3) FOR TOE BENCHING, SEE SPECIAL PROVISION
4) CONSTRUCT WITH 3' LIFTS, MAX

DATE: 01-2019

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

ROCK EMBANKMENT

TYPICAL FOR FILL SLOPES
1.75:1 AND 1.5:1 (H:V)
AS SHOWN ON PLANS

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB 34232	2G-2

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 027361 ENGINEER JODY C. KLUTTZ

DocuSigned by: Jody C. Kluttz 2/4/2019
SIGNATURE DATE

ENGINEER

SIGNATURE DATE

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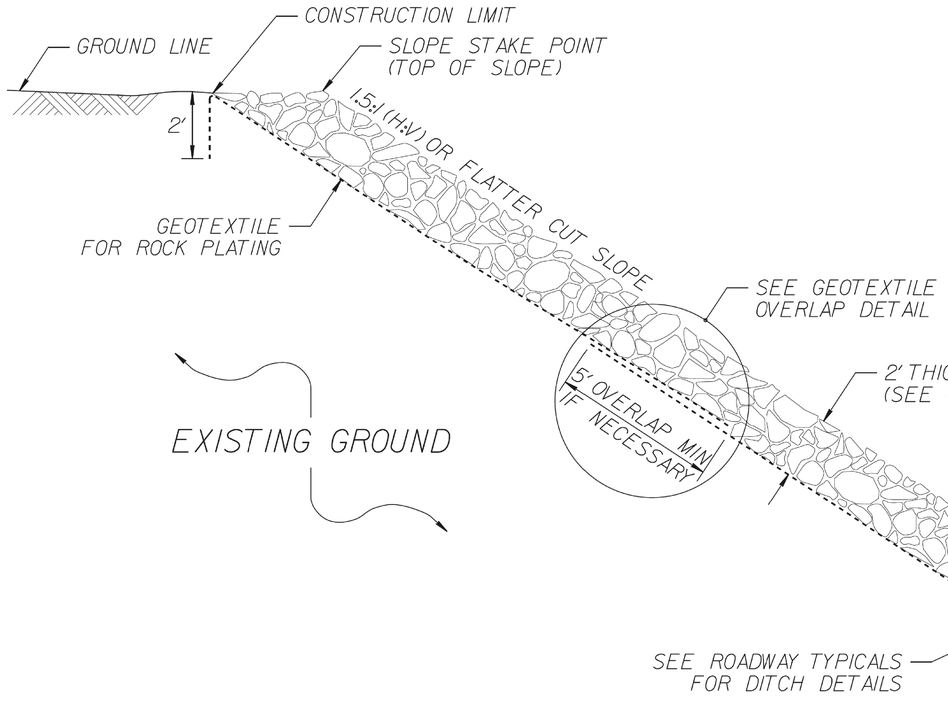
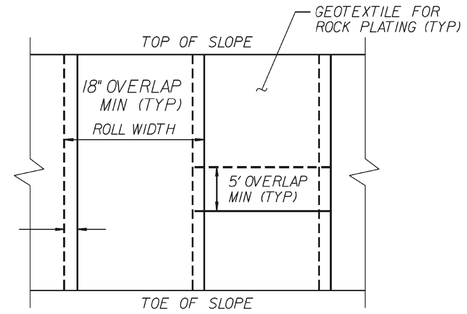
QUANTITY SUMMARY

STATION FROM	STATION TO	LINE	ROCK/GEOTEXTILE SQUARE YARDS
387+92	390+53	RT –L–	870
401+30	402+50	LT –L–	400
452+50	454+00	RT –L–	390
454+50	460+25	LT –L–	3,100
		TOTAL	4,760 YDS ^{2}



ROCK PLATING DETAIL NO. 3 – TYPICAL SECTION



GEOTEXTILE OVERLAP DETAIL
(PLAN VIEW)

NOTES:

1. SEE ROADWAY PLANS AND SUMMARY SHEETS FOR ROCK PLATING LOCATIONS.
2. FOR STANDARD ROCK PLATING, SEE SECTION 275 OF THE STANDARD SPECIFICATIONS.
3. USE CLASS 1, 2 OR B RIPRAP UNLESS REQUIRED OTHERWISE IN THE ROADWAY SUMMARY SHEETS.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1802.01

STANDARD
ROCK PLATING

DATE: 1-2019

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	2G-3

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029869 ENGINEER SHANE C. CLARK

DocuSigned by: Shane C. Clark 7/9/2019
SIGNATURE DATE

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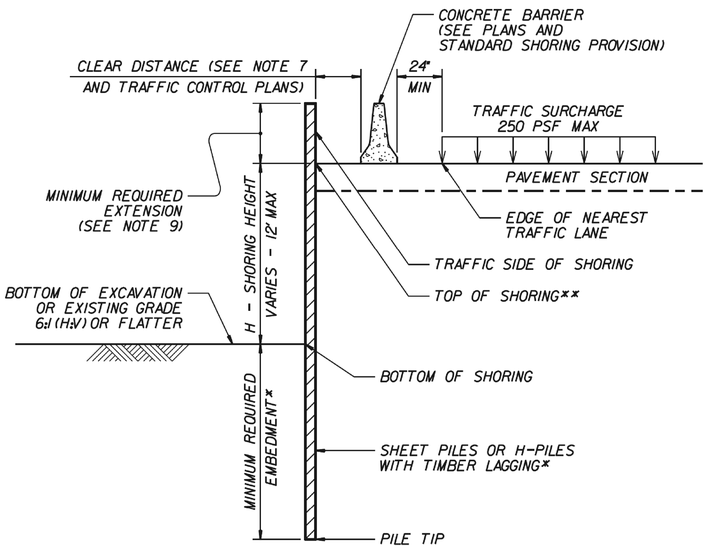
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN^3/FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)			MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN^3/FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)		
				HP 10x42	HP 12x53	HP 14x73			HP 10x42	HP 12x53	HP 14x73
GROUNDWATER ELEVATION BEWTEEN BOTTOM OF SHORING AND PILE TIP	< 6	11.5	4.5	11.5	11.5	11.5	16.0	12.0	13.0	13.0	13.0
	7	13.0	7.0	13.0	13.0	13.0	17.0	14.5	14.5	14.5	14.5
	8	15.0	10.0	--	15.0	15.0	18.0	17.0	--	15.5	15.5
	9	17.0	14.0	--	17.0	17.0	19.0	20.0	--	17.0	17.0
	10	18.5	19.5	--	--	18.5	20.0	23.5	--	--	18.5
	11	20.5	26.0	--	--	--	21.0	28.0	--	--	20.0
	12	22.5	33.0	--	--	--	22.0	33.0	--	--	21.5
GROUNDWATER ELEVATION BELOW PILE TIP	< 6	7.5	3.0	8.0	8.0	8.0	11.0	10.0	9.5	9.5	9.5
	7	8.5	4.5	9.5	9.5	9.5	12.0	12.0	10.5	10.5	10.5
	8	10.0	6.5	10.5	10.5	10.5	12.5	14.0	11.5	11.5	11.5
	9	11.0	9.5	--	12.0	12.0	13.5	16.5	--	12.5	12.5
	10	12.5	13.0	--	--	13.5	14.0	19.5	--	13.5	13.5
	11	13.5	17.0	--	--	14.5	15.0	22.5	--	--	14.5
	12	15.0	21.5	--	--	16.0	16.0	25.5	--	--	15.5

MINIMUM REQUIRED EMBEDMENT AND SECTION MODULUS

*DO NOT USE H-PILES WITH TIMBER LAGGING FOR GROUNDWATER CONDITION, SHORING HEIGHT AND H-PILE SIZE SHOWN IF MINIMUM REQUIRED EMBEDMENT IS "--".

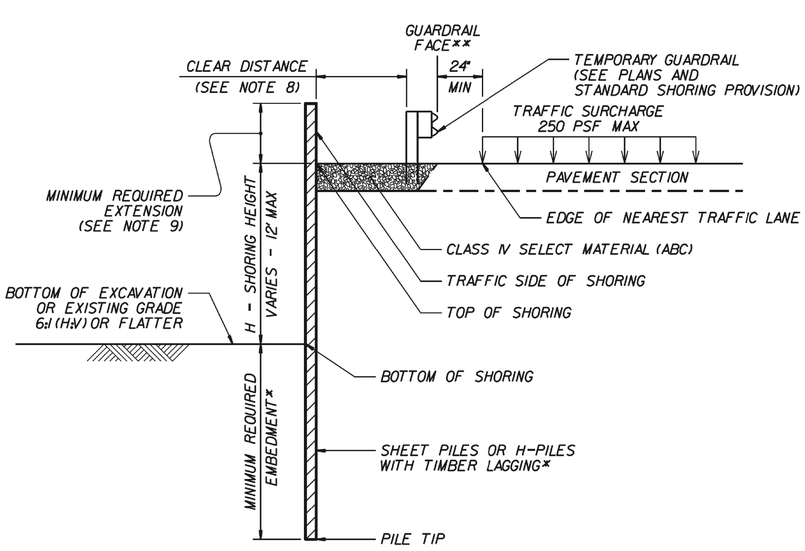
NOTES:

1. AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING AS NOTED IN THE PLANS.
2. FOR STANDARD TEMPORARY SHORING, SEE STANDARD SHORING PROVISION.
3. STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
   UNIT WEIGHT, γ = 120 PCF
   FRICTION ANGLE, ϕ = 30 DEGREES
   COHESION, c = 0 PSF
4. DO NOT USE STANDARD TEMPORARY SHORING IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
5. DO NOT USE STANDARD TEMPORARY SHORING WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS WITHIN THE EMBEDMENT DEPTH.
6. USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, USE "GROUNDWATER ELEVATION BETWEEN BOTTOM OF SHORING AND PILE TIP" FOR GROUNDWATER CONDITION. DO NOT USE STANDARD TEMPORARY SHORING IF GROUNDWATER IS ABOVE BOTTOM OF SHORING.
7. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN THE MINIMUM REQUIRED FOR CONCRETE BARRIER, SET BARRIER NEXT TO AND UP AGAINST TRAFFIC SIDE OF PILES AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
8. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN 4' FOR TEMPORARY GUARDRAIL, ATTACH GUARDRAIL TO TRAFFIC SIDE OF PILES AS SHOWN IN THE PLANS AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
9. MINIMUM REQUIRED EXTENSION IS 6" FOR "SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT" AND 32" FOR "SURCHARGE CASE WITH TRAFFIC IMPACT".
10. MINIMUM REQUIRED EMBEDMENT FOR H-PILES WITH TIMBER LAGGING IS BASED ON DRIVEN H-PILES AT MAXIMUM 6' SPACING. AT THE CONTRACTOR'S OPTION, EMBEDMENT DEPTHS MAY BE REDUCED BY 25% FOR DRILLED-IN H-PILES.
11. SUBMIT A "STANDARD TEMPORARY SHORING SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY SHORING CONSTRUCTION. UP TO 3 SHORING LOCATIONS MAY BE INCLUDED ON EACH FORM. STANDARD SHORING SELECTION FORMS ARE AVAILABLE FROM: connect.ncdot.gov/resources/Geological/Pages/Geotech_Forms_Details.aspx
12. CONTACT THE ENGINEER IF PILES DO NOT ATTAIN THE MINIMUM REQUIRED EMBEDMENT.



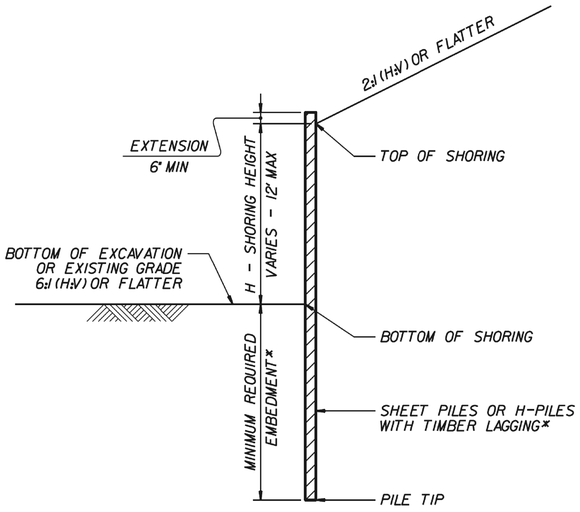
CONCRETE BARRIER

**TOP OF SHORING = EDGE OF PAVEMENT



TEMPORARY GUARDRAIL

**GUARDRAIL FACE = EDGE OF PAVEMENT



STANDARD TEMPORARY SHORING

(SLOPE CASE)
*SEE TABLE ABOVE.

STANDARD TEMPORARY SHORING

(SURCHARGE CASE)
*SEE TABLE ABOVE.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.01

STANDARD TEMPORARY SHORING

DATE: 11-19-13

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	2G-4

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029869 ENGINEER SHANE C. CLARK

DocuSigned by: Shane C. Clark 7/17/2019 SIGNATURE DATE

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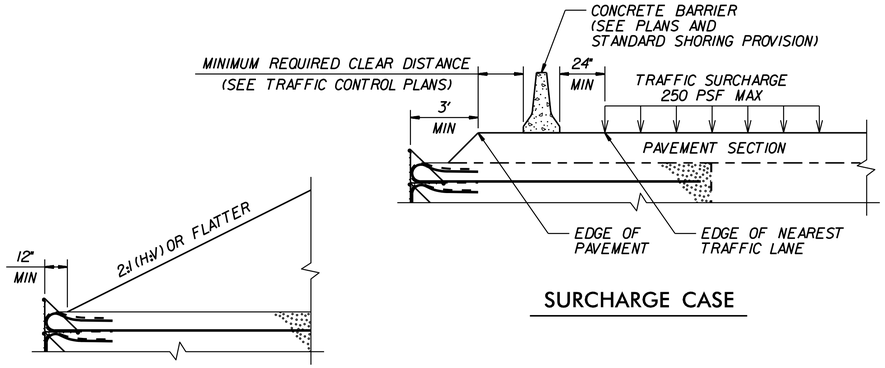
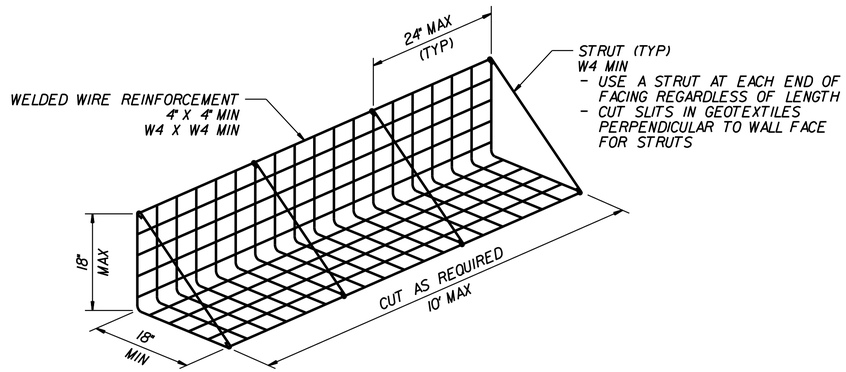
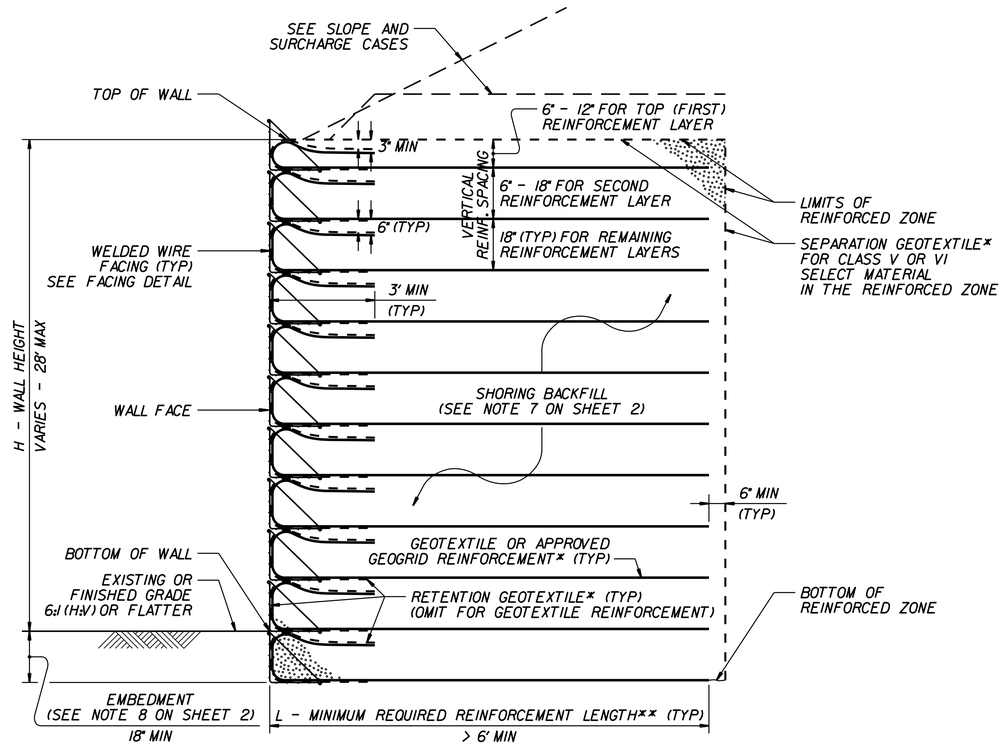


SURCHARGE CASE

SLOPE CASE

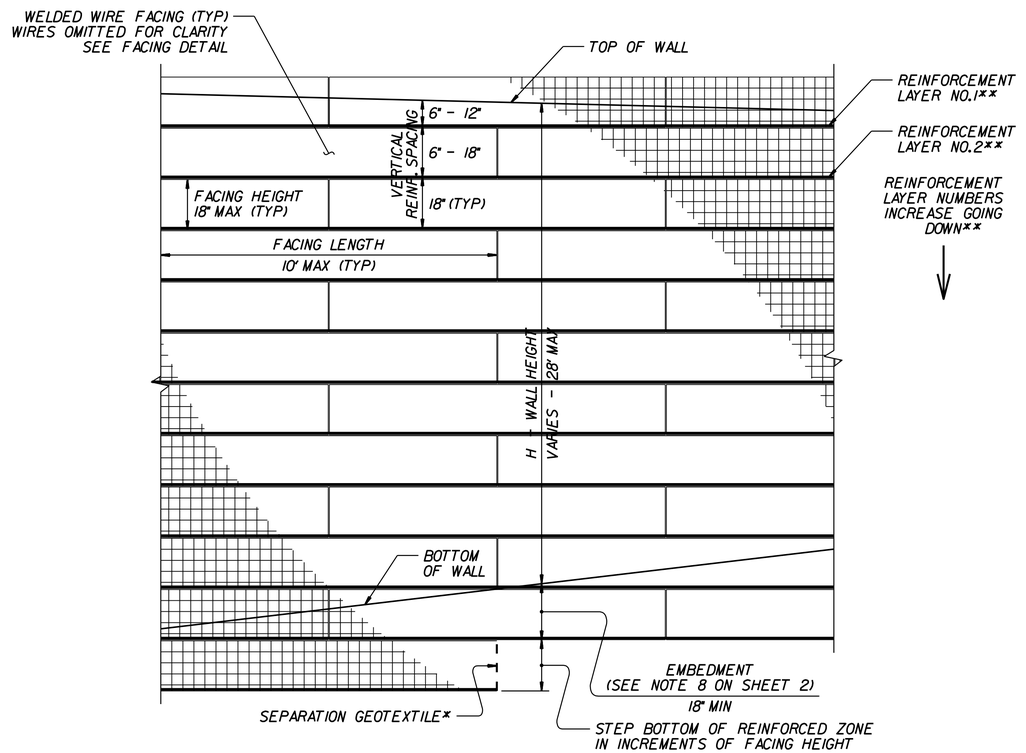


FACING DETAIL



STANDARD TEMPORARY WALL

(FOR STANDARD TEMPORARY WALLS ON STRUCTURES, SEE TEMPORARY WALL ON STRUCTURE DETAIL ON SHEET 2.)
*SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.
**SEE REINFORCEMENT TABLES ON SHEET 3.



STANDARD TEMPORARY WALL – PARTIAL ELEVATION

*SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.
**SEE REINFORCEMENT TABLES ON SHEET 3.

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL
ENGINEERING UNIT

STANDARD DETAIL NO. 1801.02

STANDARD
TEMPORARY WALL
SHEET 1 OF 3

DATE: 11-19-13

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	2G-5

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029869 ENGINEER SHANE C. CLARK

DocuSigned by: Shane C. Clark 7/17/2019
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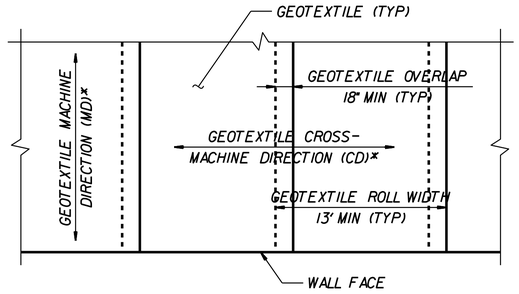
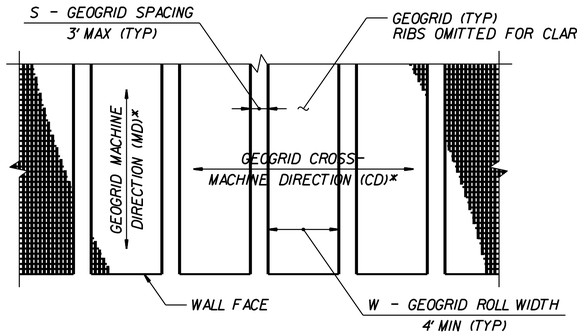


GEOTEXTILE PLACEMENT

(100% COVERAGE MIN FOR GEOTEXTILE REINFORCEMENT)

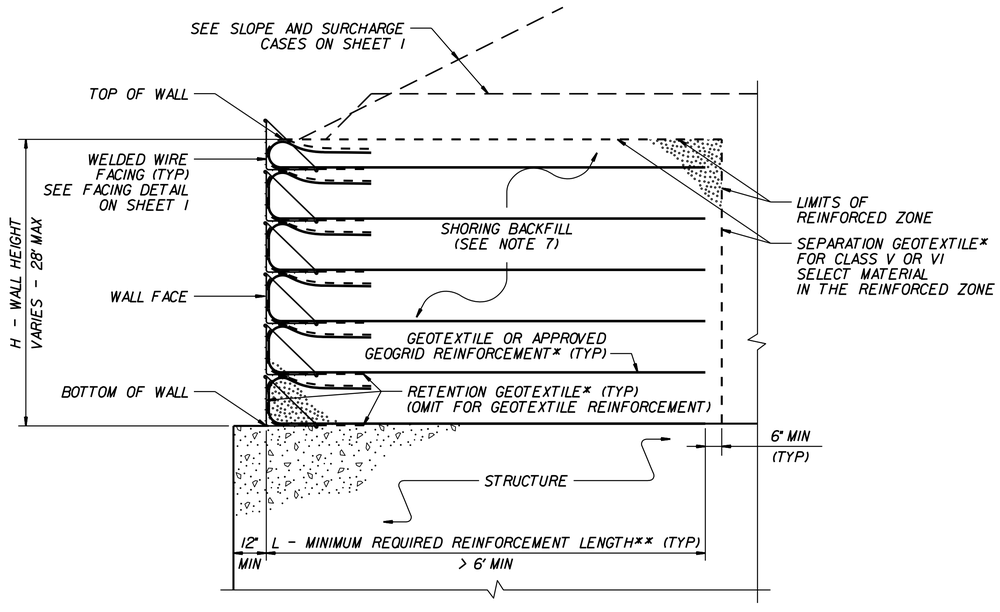


GEOGRID PLACEMENT

(80% COVERAGE MIN FOR GEOGRID REINFORCEMENT – $\frac{W}{W+S}$ x 100 $\geq$ 80%, SEE NOTE 11)

GEOSYNTHETIC PLACEMENT DETAILS

(PLAN VIEW)
*SEE NOTE 12.



TEMPORARY WALL ON STRUCTURE DETAIL

*SEE GEOSYNTHETIC PLACEMENT DETAILS.
**SEE REINFORCEMENT TABLES ON SHEET 3.

NOTES:

1. AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY WALLS AS NOTED IN THE PLANS.
2. FOR STANDARD TEMPORARY WALLS, SEE STANDARD SHORING PROVISION.
3. STANDARD TEMPORARY WALLS ARE BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
   UNIT WEIGHT, γ = 120 PCF
   FRICTION ANGLE, ϕ = 30 DEGREES
   COHESION, c = 0 PSF
4. DO NOT USE STANDARD TEMPORARY WALLS IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
5. DO NOT USE STANDARD TEMPORARY WALLS WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS BELOW TEMPORARY WALLS.
6. USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, ASSUME GROUNDWATER DEPTH IS LESS THAN 7' BELOW BOTTOM OF REINFORCED ZONE. DO NOT USE STANDARD TEMPORARY WALLS IF GROUNDWATER IS ABOVE BOTTOM OF REINFORCED ZONE.
7. DO NOT USE A-2-4 SOIL FOR STANDARD TEMPORARY WALLS AROUND CULVERTS OR IN THE REINFORCED ZONE OF STANDARD TEMPORARY WALLS FOR SLOPE CASES. DO NOT USE CLASS VI SELECT MATERIAL IN THE REINFORCED ZONE OF STANDARD TEMPORARY WALLS WITH GEOTEXTILE REINFORCEMENT.
8. EMBEDMENT IS NOT REQUIRED FOR STANDARD TEMPORARY WALLS ON STRUCTURES OR ROCK AS DETERMINED BY THE ENGINEER.
9. DO NOT USE MORE THAN 4 DIFFERENT REINFORCEMENT STRENGTHS FOR EACH STANDARD TEMPORARY WALL.
10. GEOGRIDS ARE TYPICALLY APPROVED FOR ULTIMATE TENSILE STRENGTHS IN THE MACHINE DIRECTION (MD) AND CROSS-MACHINE DIRECTION (CD) OR SHORT-TERM DESIGN STRENGTHS FOR A 3-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/Materials/Pages/Materials-Manual-by-Manual.aspx
    DEFINE MATERIAL TYPE FROM THE WEBSITE ABOVE FOR SHORING BACKFILL AS FOLLOWS:

MATERIAL TYPE	SHORING BACKFILL
BORROW	A-2-4 SOIL
FINE AGGREGATE	CLASS II, TYPE I OR CLASS III SELECT MATERIAL
COARSE AGGREGATE	CLASS V OR VI SELECT MATERIAL

    IF THE WEBSITE DOES NOT LIST A SHORT-TERM DESIGN STRENGTH FOR AN APPROVED GEOGRID, USE A SHORT-TERM DESIGN STRENGTH EQUAL TO THE ULTIMATE TENSILE STRENGTH DIVIDED BY 3.5 FOR THE GEOGRID REINFORCEMENT.
11. FOR GEOGRID REINFORCEMENT WITH LESS THAN 100% COVERAGE, STAGGER REINFORCEMENT SO GEOGRIDS ARE CENTERED OVER GAPS IN THE REINFORCEMENT LAYER BELOW.
12. AT THE CONTRACTOR'S OPTION, REINFORCEMENT MAY BE INSTALLED WITH THE MD PARALLEL TO THE WALL FACE IF BOTH OF THE FOLLOWING CONDITIONS OCCUR:
    - W (REINFORCEMENT ROLL WIDTH) $\geq$ (MINIMUM REQUIRED REINFORCEMENT LENGTH) + 4.5' AND
    - REINFORCEMENT STRENGTH IN CD $\geq$ MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD.
13. SUBMIT A "STANDARD TEMPORARY WALL SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY WALL CONSTRUCTION. STANDARD SHORING SELECTION FORMS ARE AVAILABLE FROM: connect.ncdot.gov/resources/Geological/Pages/Geotech_Forms_Details.aspx
14. DO NOT PLACE SHORING BACKFILL OR REINFORCEMENT UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.
15. FOR STANDARD TEMPORARY WALLS WITH PILE FOUNDATIONS IN THE REINFORCED ZONE, DRIVE PILES THROUGH REINFORCEMENT AFTER CONSTRUCTING TEMPORARY WALLS.
16. DO NOT SPLICE OR OVERLAP REINFORCEMENT SO SEAMS ARE PARALLEL TO THE WALL FACE.
17. CONTACT THE ENGINEER WHEN EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, PAVEMENTS, PIPES, INLETS OR UTILITIES WILL INTERFERE WITH REINFORCEMENT.
18. FOR STANDARD TEMPORARY WALLS WITH INTERIOR ANGLES LESS THAN 90 DEGREES, WRAP GEOSYNTHETICS AT ACUTE CORNERS AS DIRECTED BY THE ENGINEER.
19. FOR STANDARD TEMPORARY WALLS WITH TOP OF WALL WITHIN 5' OF FINISHED GRADE, REMOVE TOP FACING AND INCORPORATE TOP REINFORCEMENT LAYER INTO FILL WHEN PLACING FILL IN FRONT OF WALL.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.02

STANDARD TEMPORARY WALL
SHEET 2 OF 3

DATE: 11-19-13

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	2G-6

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029869 ENGINEER SHANE C. CLARK

DocuSigned by: Shane C. Clark 7/17/2019

TYPED/PRINTED NAME SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SLOPE OR SURCHARGE CASE	GROUNDWATER DEPTH BELOW BOTTOM OF REINFORCED ZONE (SEE NOTE 6 ON SHEET 2) (FT)	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)	H – WALL HEIGHT (FT)																								
			< 4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
SLOPE CASE	> 0	CLASS II,TYPE I, CLASS III,CLASS V OR CLASS VI SELECT MATERIAL	6	6	7	8	9	11	12	13	13	14	15	16	17	18	19	20	21	22	23	24	24	25	26	27	27
SURCHARGE CASE	> 0 TO 7 FOR H < 20' > 0 TO 10 FOR H ≥ 20'	ALL SHORING BACKFILL TYPES	6	7	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	17	17	18	19	19	20	21	22
	> 7 FOR H < 20' > 10 FOR H ≥ 20'	A-2-4 SOIL	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	16	17	18	18	19	20	20	21
		CLASS II,TYPE I OR CLASS III SELECT MATERIAL	6	6	7	7	8	8	9	10	10	11	11	12	12	13	14	15	15	16	16	17	17	18	18	19	20
		CLASS V OR CLASS VI SELECT MATERIAL	6	6	7	7	7	8	8	9	9	10	10	11	12	13	13	14	14	15	15	16	17	17	18	19	19

L – MINIMUM REQUIRED REINFORCEMENT LENGTH (FT)

(FOR ALL REINFORCEMENT TYPES)

REINFORCEMENT LAYER NUMBER*	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)				
	SLOPE CASE		SURCHARGE CASE		
	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL	A-2-4 SOIL	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL
1	2400	2400	2400	2400	2400
2	2400	2400	2400	2400	2400
3	2400	2400	2400	2400	2400
4	2400	2400	2500	2400	2400
5	2500	2400	3000	2400	2400
6	3000	2400	3500	2800	2400
7	3500	2700	4000	3200	2600
8	4000	3100	4500	3600	2900
9	4500	3500	5000	4000	3200
10	5000	3900	5500	4400	3500
11	5500	4300	6000	4800	3800
12	6000	4700	6500	5200	4100
13	6500	5100	7000	5600	4400
14	7000	5400	7500	6000	4700
15	7500	5800	8000	6400	5000
16	8000	6200	8500	6800	5300
17	8500	6600	9000	7200	5600
18	9000	7000	9500	7600	5900
19	9500	7400	10000	8000	6200
20	10000	7800	10500	8400	6500

GEOTEXTILE REINFORCEMENT
ULTIMATE TENSILE STRENGTH (LB/FT)

REINFORCEMENT LAYER NUMBER*	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)				
	SLOPE CASE		SURCHARGE CASE		
	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V OR CLASS VI SELECT MATERIAL	A-2-4 SOIL	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V OR CLASS VI SELECT MATERIAL
1	240	200	340	290	240
2	380	310	520	430	350
3	530	420	700	570	460
4	690	550	870	720	570
5	860	690	1050	860	680
6	1030	830	1220	1000	790
7	1200	970	1400	1150	900
8	1370	1110	1580	1290	1010
9	1550	1240	1750	1430	1120
10	1720	1380	1930	1580	1230
11	1890	1520	2100	1720	1340
12	2060	1660	2280	1860	1450
13	2240	1800	2450	2010	1560
14	2410	1940	2630	2150	1670
15	2580	2080	2800	2290	1780
16	2750	2220	2980	2440	1890
17	2930	2360	3160	2580	2000
18	3100	2500	3330	2720	2110
19	3270	2640	3510	2860	2220
20	3440	2780	3690	3000	2330

GEOGRID REINFORCEMENT
SHORT–TERM DESIGN STRENGTH (LB/FT)

(SEE NOTE 10 ON SHEET 2.)

WALL HEIGHT (H) + EMBEDMENT (FT)	NUMBER OF REINFORCEMENT LAYERS*
2.5 – 4	3
4 – 5.5	4
5.5 – 7	5
7 – 8.5	6
8.5 – 10	7
10 – 11.5	8
11.5 – 13	9
13 – 14.5	10
14.5 – 16	11
16 – 17.5	12
17.5 – 19	13
19 – 20.5	14
20.5 – 22	15
22 – 23.5	16
23.5 – 25	17
25 – 26.5	18
26.5 – 28	19
28 – 29.5	20

*BASED ON VERTICAL REINFORCEMENT SPACING SHOWN ON SHEET 1.

MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD

(SEE NOTE 9 ON SHEET 2.)
*SEE PARTIAL ELEVATION ON SHEET 1 FOR REINFORCEMENT LAYER NUMBERING.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.02

STANDARD TEMPORARY WALL SHEET 3 OF 3

DATE: 11-19-13

PLAN AND PROFILE OF NOISE WALL 4.1

0 50 100 150 200
HORIZ. SCALE IN FEET

0 10 20 30 40
VERT. SCALE IN FEET

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	2N-1

NORTH CAROLINA PROFESSIONAL SEAL 045953 ENGINEER HAROLD D. JORDAN, III

DocuSigned by:
Harold D. Jordan, III
-0893378AAA55482...
9/3/2019

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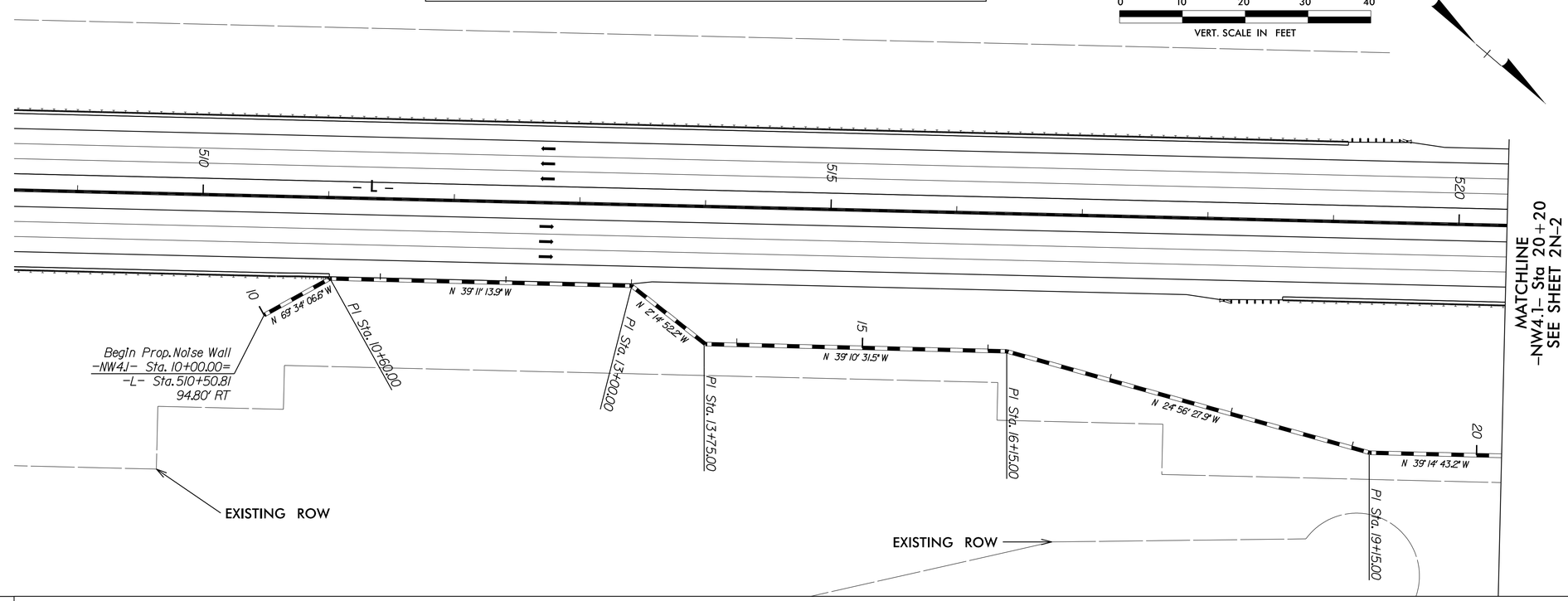
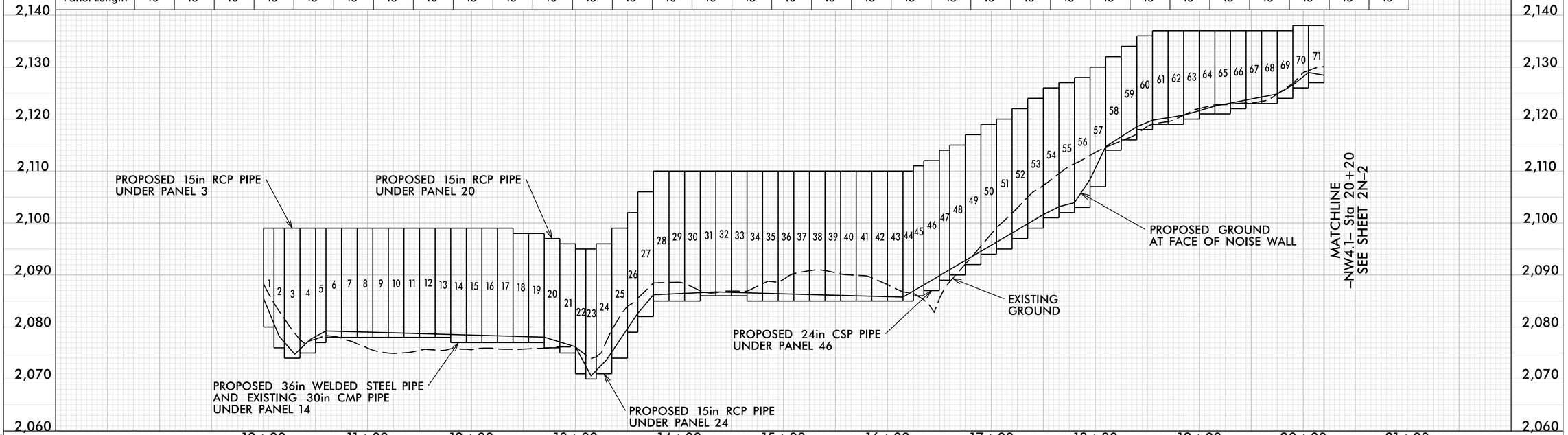


Noise Wall 4.1 Design Data																																	
Panel Number	1–2	3–4	5	6–17	18–19	20	21	22–23	24	25	26	27	28–43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61–69	70–71
Top Elevation	2,099	2,099	2,099	2,099	2,098	2,097	2,096	2,095	2,096	2,099	2,102	2,106	2,110	2,110	2,111	2,112	2,114	2,115	2,117	2,119	2,120	2,122	2,124	2,126	2,127	2,128	2,130	2,132	2,134	2,136	2,137	2,138
Panel Length	10′	15′	10′	15′	15′	15′	15′	10′	15′	15′	10′	15′	15′	10′	10′	15′	10′	15′	15′	15′	15	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′



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HNTB

PLAN AND PROFILE OF NOISE WALL 4.1

0 50 100 150 200
HORIZ. SCALE IN FEET

0 10 20 30 40
VERT. SCALE IN FEET

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Raleigh, North Carolina 27609
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PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	2N-2

NORTH CAROLINA PROFESSIONAL SEAL 045953 ENGINEER HAROLD D. JORDAN, III

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MATCHLINE –NW4.1– Sta 20+20 SEE SHEET 2N–1

MATCHLINE –NW4.1– Sta 30+10 SEE SHEET 2N–3

– L –

525

25

30

PI Sta. 24+10.00

N 80° 24' 50.7" W

N 39° 14' 43.2" W

PI Sta. 22+30.00

EXISTING ROW

N 39° 11' 20.3" W

N 14° 51' 06.7" W

PI Sta. 29+05.00

EXISTING ROW

Noise Wall 4.1 Design Data																											
Panel Number	72–76	77–80	81	82	83	84	85	86	87	88	89	90	91	92	93	94–95	96	97–106	107–108	109–118	119–135	136–137	138–139	140	141	142	143
Top Elevation	2,138	2,137	2,136	2,135	2,134	2,133	2,132	2,131	2,128	2,125	2,121	2,116	2,110	2,104	2,099	2,094	2,095	2,096	2,097	2,097	2,097	2,097	2,097	2,097	2,098	2,099	2,100
Panel Length	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	7′–6″	15′	10′	15′	10′	15′	15′	15′

PLAN AND PROFILE OF NOISE WALL 4.1

0 50 100 150 200
HORIZ. SCALE IN FEET

0 10 20 30 40
VERT. SCALE IN FEET

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Raleigh, North Carolina 27609
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PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	2N-3

NORTH CAROLINA PROFESSIONAL SEAL 045953 ENGINEER HAROLD D. JORDAN, III

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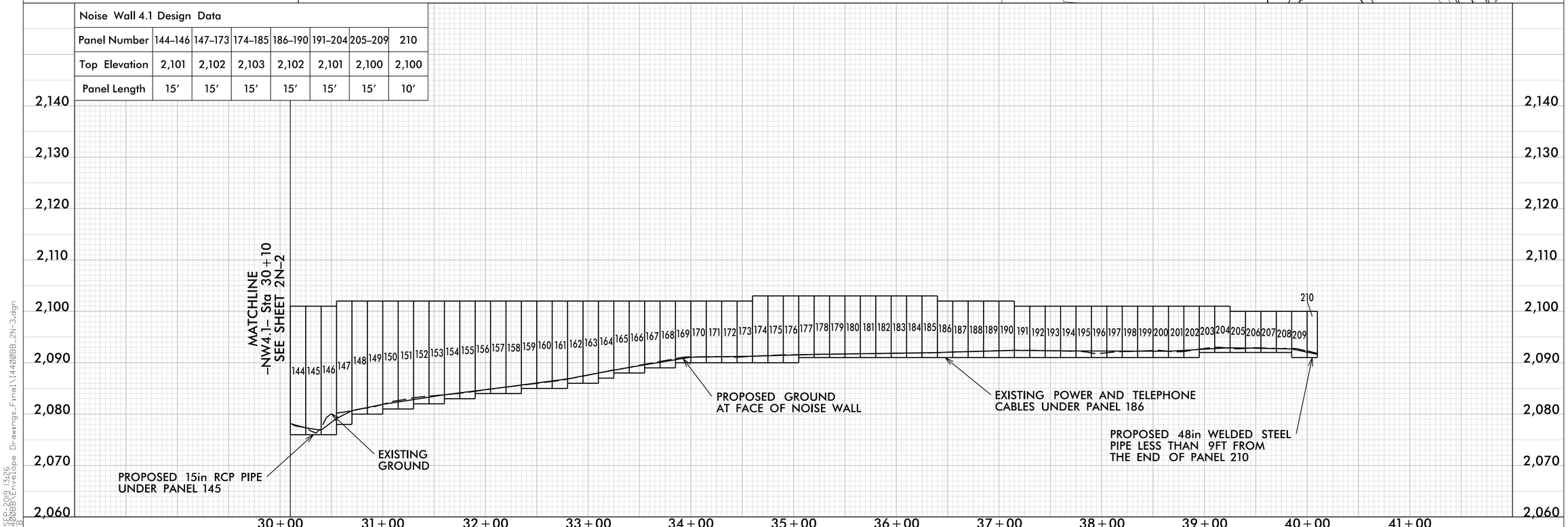
MATCHLINE
-NW4.1- Sta 30+10
SEE SHEET 2N-2

530 535 -L- 540 -Y5-

N 41° 11' 52.3" W
PI Sta. 30+40.00
N 39° 10' 31.5" W
35
EXISTING ROW
PI Sta. 36+55.00
N 39° 29' 40.8" W
EXISTING ROW
PI Sta. 38+65.00
N 41° 19' 54.6" W
40
End Prop. Noise Wall
-NW4.1- Sta. 40+10.00=
-L- Sta 539+66.98
118.47' RT
PROP ROW

Noise Wall 4.1 Design Data

Panel Number	144–146	147–173	174–185	186–190	191–204	205–209	210
Top Elevation	2,101	2,102	2,103	2,102	2,101	2,100	2,100
Panel Length	15′	15′	15′	15′	15′	15′	10′



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PLAN AND PROFILE OF NOISE WALL 4.2

0 50 100 150 200
HORIZ. SCALE IN FEET

0 10 20 30 40
VERT. SCALE IN FEET

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PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	2N-4

NORTH CAROLINA PROFESSIONAL SEAL 045953 ENGINEER HAROLD D. JORDAN, III

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9/3/2019

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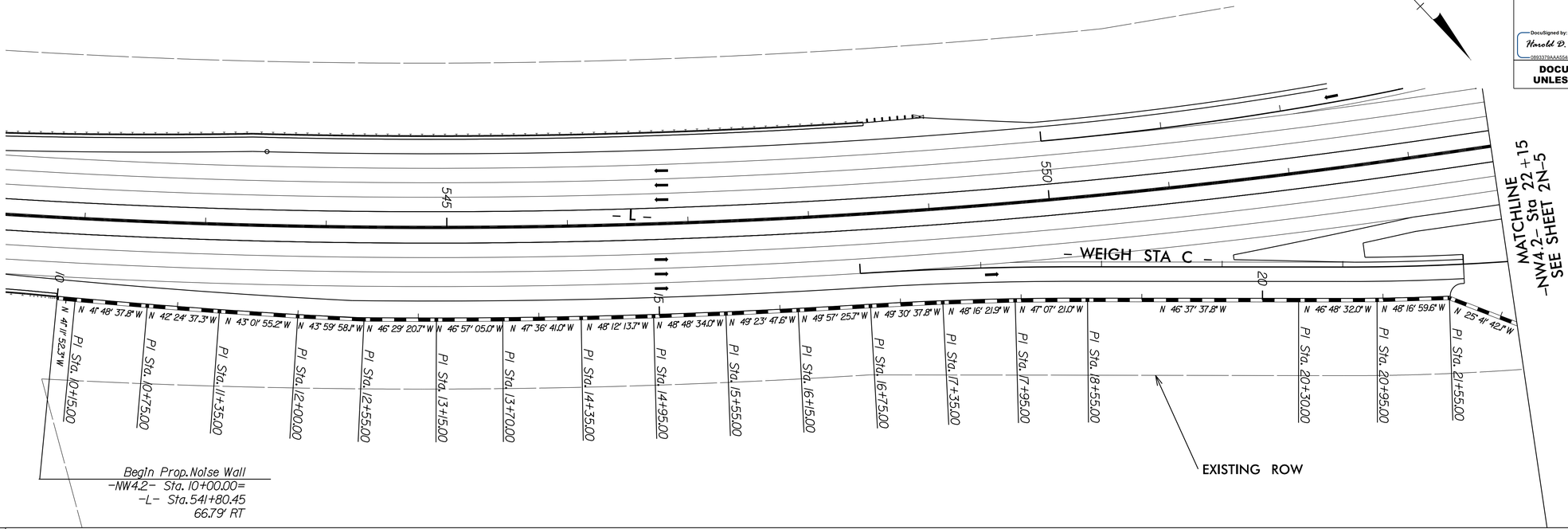
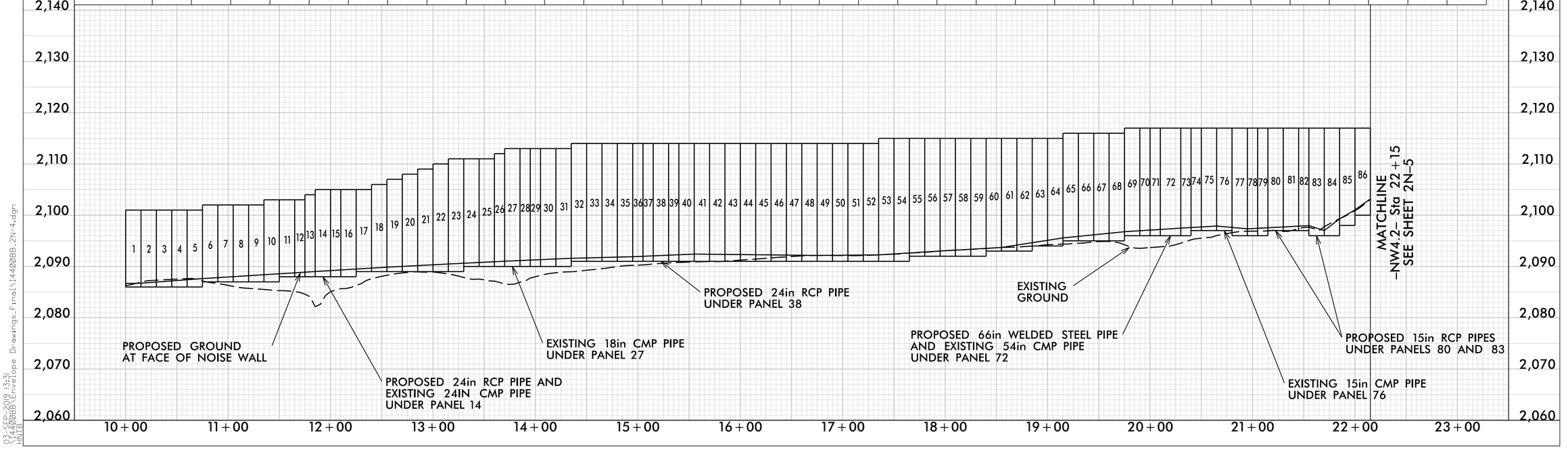


Noise Wall 4.2 Design Data

Panel Number	1–5	6–9	10–11	12	13	14	15	16–17	18	19	20	21	22	23–25	26	27	28–29	30–31	32–35	36–37	38	39	40–52	53–64	65–68	69	70–71	72	73–74	75–77	78–79	80–81	82	83–86
Top Elevation	2,101	2,102	2,103	2,103	2,104	2,105	2,105	2,105	2,106	2,107	2,108	2,109	2,110	2,111	2,112	2,113	2,113	2,113	2,114	2,114	2,114	2,114	2,114	2,115	2,116	2,117	2,117	2,117	2,117	2,117	2,117	2,117	2,117	2,117
Panel Length	15′	15′	15′	10′	10′	15′	10′	15′	15′	15′	15′	15′	15′	15′	10′	15′	10′	15′	15′	10′	15′	10′	15′	15′	15′	15′	10′	20′	10′	15′	10′	15′	10′	15′



PLAN AND PROFILE OF NOISE WALL 4.2

0 50 100 150 200
HORIZ. SCALE IN FEET

0 10 20 30 40
VERT. SCALE IN FEET

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PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	2N-5

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Harold D. Jordan, III
-0893378AAA55482
9/3/2019

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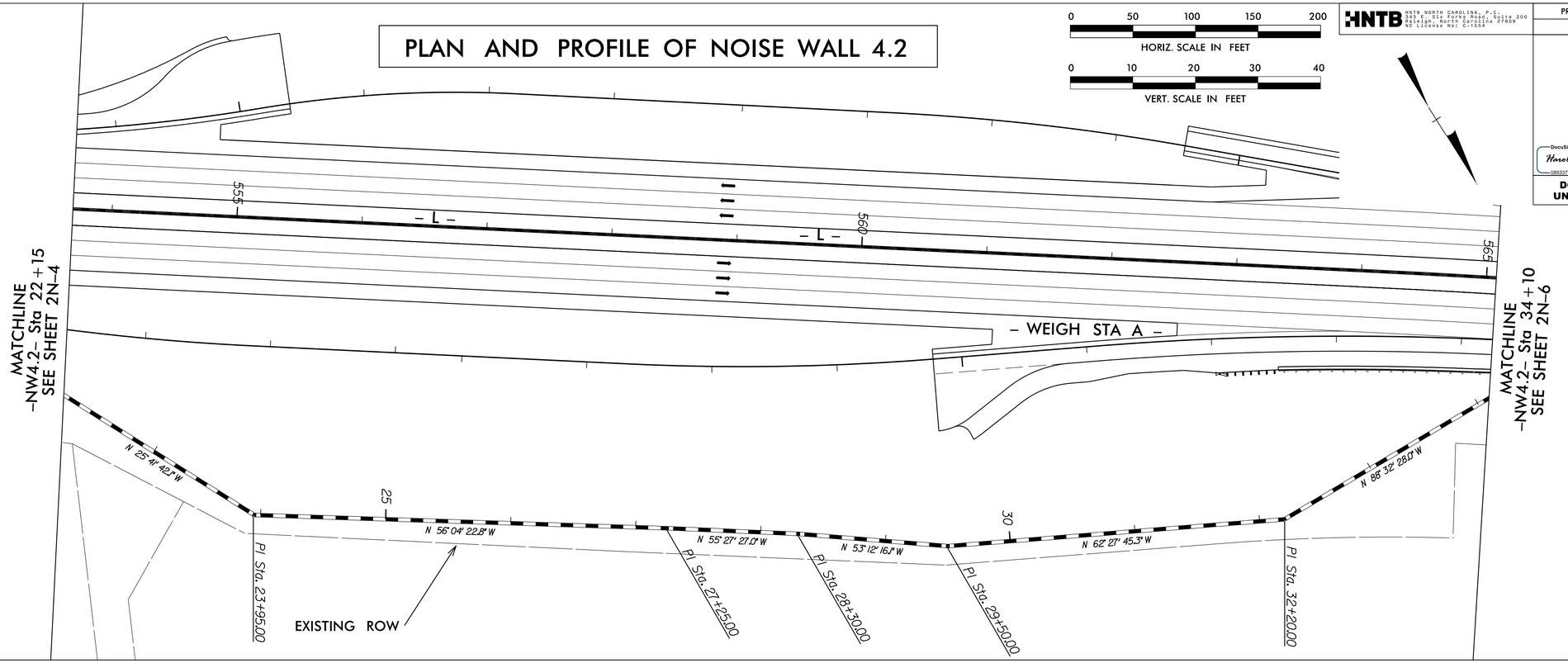
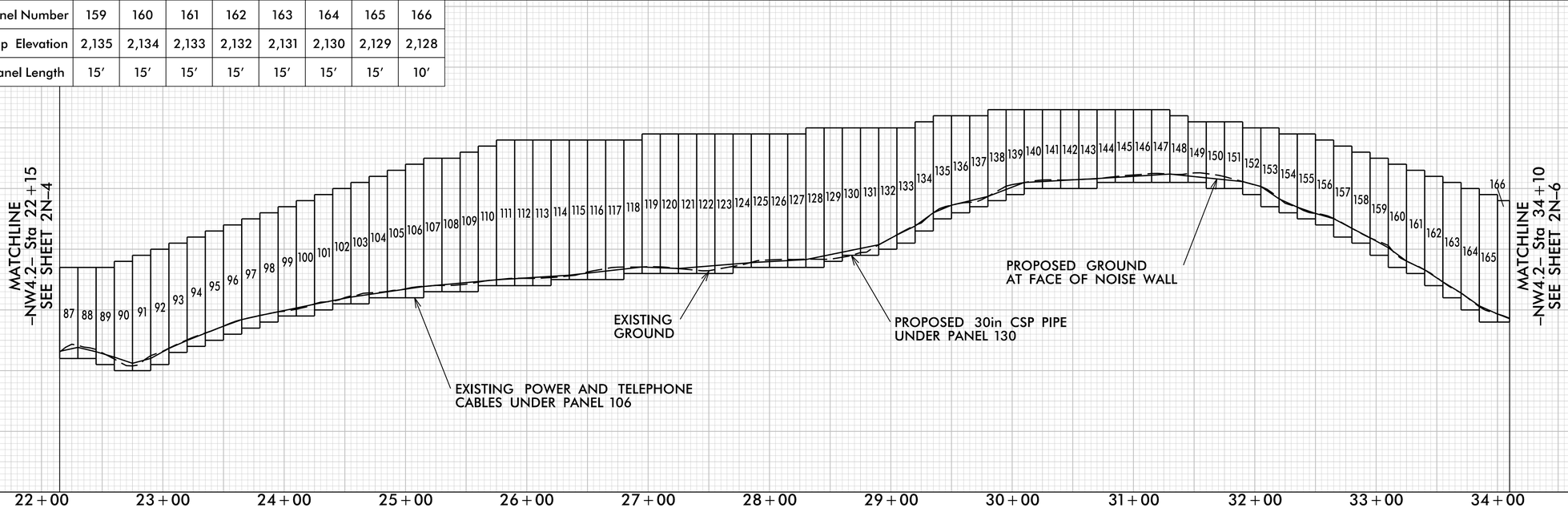


Noise Wall 4.2 Design Data

Panel Number	87–89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107–108	109	110	111–118	119–127	128–133	134	135–137	138–147	148	149–151	152–153	154–155	156	157	158
Top Elevation	2,117	2,118	2,119	2,120	2,121	2,122	2,123	2,124	2,125	2,126	2,127	2,128	2,129	2,130	2,131	2,132	2,133	2,134	2,135	2,136	2,137	2,138	2,139	2,140	2,141	2,142	2,143	2,142	2,141	2,140	2,139	2,138	2,137	2,136
Panel Length	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′

Panel Number	159	160	161	162	163	164	165	166
Top Elevation	2,135	2,134	2,133	2,132	2,131	2,130	2,129	2,128
Panel Length	15′	15′	15′	15′	15′	15′	15′	10′



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PLAN AND PROFILE OF NOISE WALL 4.2

0 50 100 150 200
HORIZ. SCALE IN FEET

0 10 20 30 40
VERT. SCALE IN FEET

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PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	2N-6

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-0893378AAA55482

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MATCHLINE -NW4.2- Sta 34+10 SEE SHEET 2N-5

570 – L –

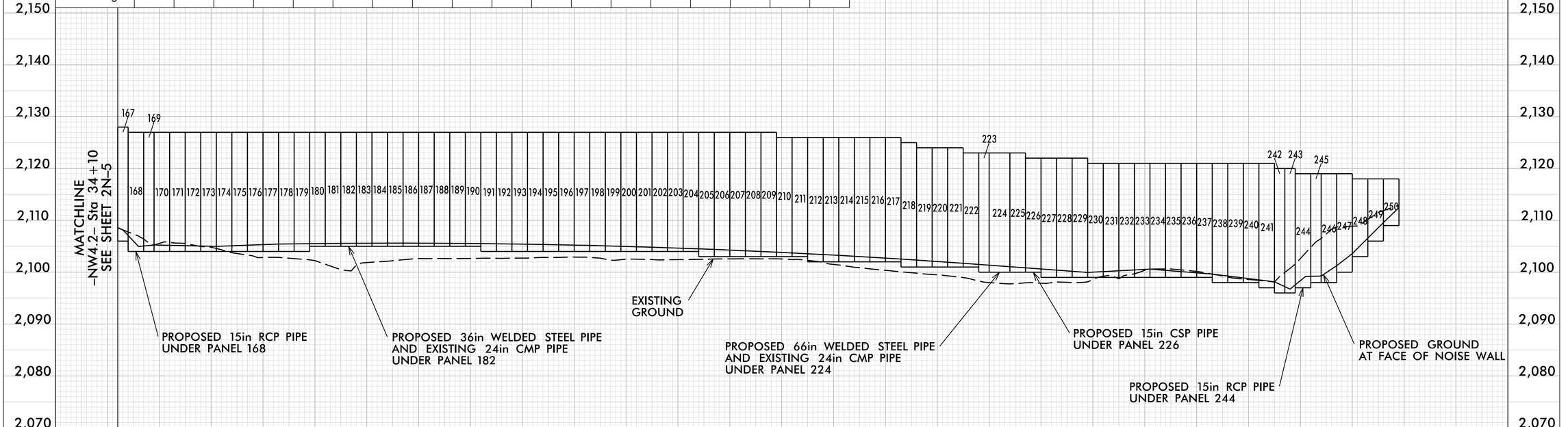
35 40 45

N 53° 51' 24.9" W — PI Sta. 34+45.00
N 52° 48' 03.0" W — PI Sta. 35+05.00
N 51° 53' 07.5" W — PI Sta. 35+65.00
N 50° 57' 56.9" W — PI Sta. 36+25.00
N 50° 03' 03.8" W — PI Sta. 36+85.00
N 49° 07' 19.1" W — PI Sta. 37+45.00
N 48° 12' 53.4" W — PI Sta. 38+05.00
N 47° 17' 28.9" W — PI Sta. 38+65.00
N 46° 22' 36.6" W — PI Sta. 39+25.00
N 45° 26' 40.6" W — PI Sta. 39+85.00
N 44° 32' 31.7" W — PI Sta. 40+45.00
N 43° 37' 03.9" W — PI Sta. 41+05.00
N 42° 41' 31.0" W — PI Sta. 41+65.00
N 41° 46' 35.8" W — PI Sta. 42+25.00
N 40° 52' 41.1" W — PI Sta. 42+85.00
N 39° 55' 42.5" W — PI Sta. 43+45.00
N 41° 08' 57.3" W — PI Sta. 44+05.00
N 40° 28' 46.4" W — PI Sta. 44+65.00
PI Sta. 45+25.00
N 88° 32' 28.0" W
N 11° 03' 42.7" W

EXISTING ROW

End Prop.Noise Wall
-NW4.2- Sta. 46+45.00=
-L- Sta. 577+49.99
123.97' RT

Noise Wall 4.2 Design Data																		
Panel Number	167	168	169	170–209	210–217	218	219–221	222	223	224	225	226–229	230–241	242–243	244	245	246–247	248–250
Top Elevation	2,128	2,127	2,127	2,127	2,126	2,125	2,124	2,123	2,123	2,123	2,123	2,122	2,121	2,120	2,119	2,119	2,119	2,118
Panel Length	10′	15′	10′	15′	15′	15′	15′	15′	10′	20′	15′	15′	15′	10′	15′	10′	15′	15′



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PLAN AND PROFILE OF NOISE WALL 12.2A

0 50 100 150 200
HORIZ. SCALE IN FEET

0 10 20 30 40
VERT. SCALE IN FEET

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	2N-7

NORTH CAROLINA PROFESSIONAL SEAL 045953 ENGINEER HAROLD D. JORDAN, III

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-0893379AAA55482

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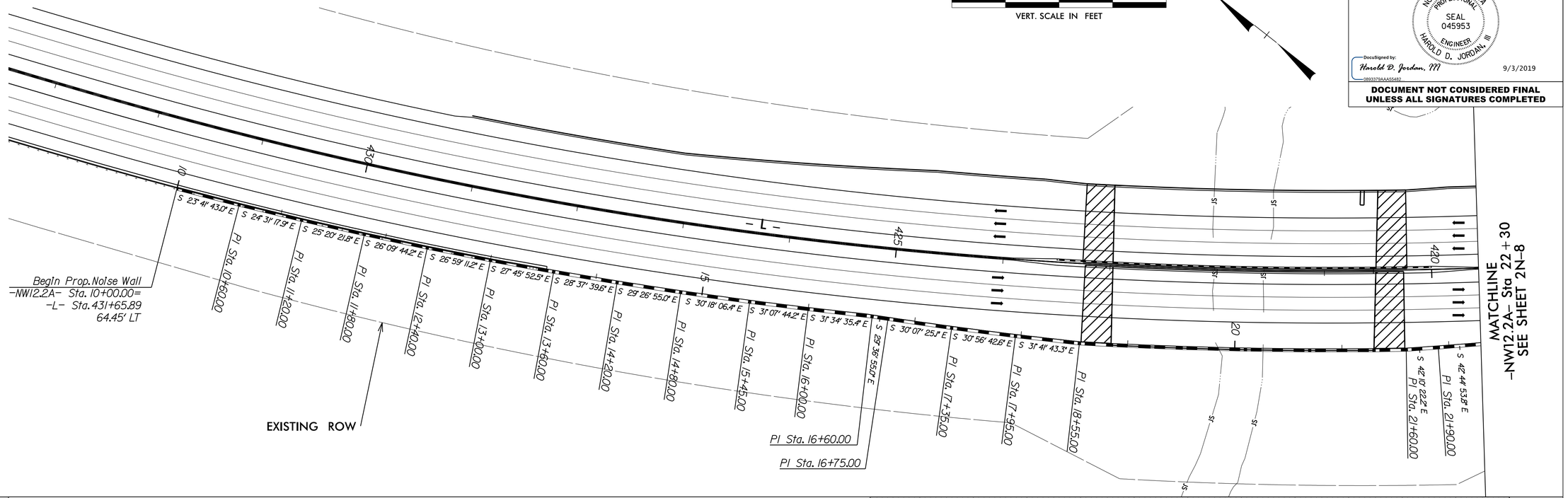
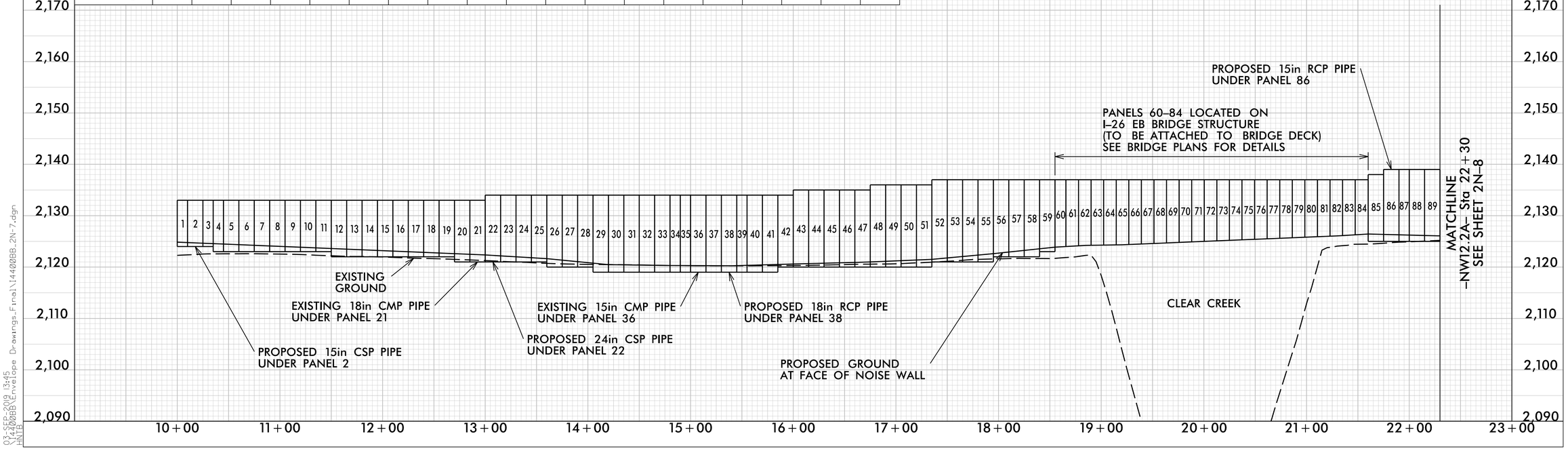


Noise Wall 12.2A Design Data																			
Panel Number	1	2	3–4	5–21	22–33	34–35	36–38	39	40–42	43–47	48–51	52–59	60	61–83	84	85	86	87	88–89
Top Elevation	2,133	2,133	2,133	2,133	2,134	2,134	2,134	2,134	2,134	2,135	2,136	2,137	2,137	2,137	2,137	2,138	2,139	2,139	2,139
Panel Length	10′	15′	10′	15′	15′	10′	15′	10′	15′	15′	15′	15′	10′–7½″	12′–3″	12′–7½″	15′	15′	10′	15′



PLAN AND PROFILE OF NOISE WALL 12.2A

HORIZ. SCALE IN FEET: 0 50 100 150 200

VERT. SCALE IN FEET: 0 10 20 30 40

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Raleigh, North Carolina 27609
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PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	2N-8

NORTH CAROLINA PROFESSIONAL SEAL 045953 ENGINEER HAROLD D. JORDAN, III

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-0893378AAA55482

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MATCHLINE –NW12.2A– Sta 22+30 SEE SHEET 2N-7

MATCHLINE –NW12.2A– Sta 33+10 SEE SHEET 2N-9

EXISTING ROW

Noise Wall 12.2A Design Data																				
Panel Number	90	91–94	95–100	101–120	121	122	123	124	125	126	127	128	129	130	131	132	133	134–147	148–162	
Top Elevation	2,139	2,140	2,141	2,142	2,143	2,144	2,145	2,145	2,146	2,147	2,148	2,149	2,150	2,151	2,152	2,153	2,154	2,155	2,156	
Panel Length	15′	15′	15′	15′	10′	10′	15′	10′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	

EXISTING 24in CMP PIPE UNDER PANEL 120

PROPOSED 15in RCP PIPE UNDER PANEL 123

PROPOSED GROUND AT FACE OF NOISE WALL

EXISTING GROUND

PLAN AND PROFILE OF NOISE WALL 12.2A

0 50 100 150 200
HORIZ. SCALE IN FEET

0 10 20 30 40
VERT. SCALE IN FEET

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Raleigh, North Carolina 27609
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PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	2N-9

NORTH CAROLINA PROFESSIONAL SEAL 045953 ENGINEER HAROLD D. JORDAN, III

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-0893379AAA55482...
9/3/2019

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MATCHLINE
–NW12.2A– Sta 33+10
SEE SHEET 2N-8

405 400 40 35

S 55° 20' 59.2" E
S 55° 55' 30.8" E
S 56° 48' 03.8" E
S 57° 40' 33.4" E
S 58° 32' 15.7" E
S 59° 24' 30.0" E
S 60° 10' 00.8" E
S 84° 37' 42.0" E
S 61° 48' 31.2" E
S 62° 24' 03.4" E
S 62° 47' 46.9" E
S 62° 56' 15.1" E

PI Sta. 33+25.00
PI Sta. 33+85.00
PI Sta. 34+45.00
PI Sta. 35+05.00
PI Sta. 35+65.00
PI Sta. 36+25.00
PI Sta. 36+70.00
PI Sta. 38+50.00
PI Sta. 39+10.00
PI Sta. 39+70.00
PI Sta. 40+30.00

EXISTING ROW

End Prop.Noise Wall
–NW12.2A– Sta. 43+60.00=
–L– Sta. 399+13.83
64.59' LT

Noise Wall 12.2A Design Data

Panel Number	163–166	167	168–169	170	171	172	173	174	175	176–181	182–183	184	185–186	187	188	189	190	191	192	193	194–211	212	213	214	215–232
Top Elevation	2,156	2,157	2,158	2,159	2,160	2,161	2,162	2,163	2,164	2,165	2,164	2,163	2,162	2,161	2,160	2,159	2,158	2,157	2,156	2,155	2,154	2,154	2,154	2,154	2,155
Panel Length	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	10′	25′	10′	15′

MATCHLINE
–NW12.2A– Sta 33+10
SEE SHEET 2N-8

163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232

PROPOSED GROUND
AT FACE OF NOISE WALL

EXISTING 8in SANITARY SEWER
LINE UNDER PANEL 211

EXISTING
GROUND

PROPOSED 60in WELDED STEEL PIPE
AND EXISTING 60in CMP PIPE
UNDER PANEL 213

2,190 2,180 2,170 2,160 2,150 2,140 2,130 2,120 2,110

33+00 34+00 35+00 36+00 37+00 38+00 39+00 40+00 41+00 42+00 43+00 44+00

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HNTB

PLAN AND PROFILE OF NOISE WALL 12.2B

0 50 100 150 200
HORIZ. SCALE IN FEET

0 10 20 30 40
VERT. SCALE IN FEET

HNTB NORTH CAROLINA, P.C.
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Raleigh, North Carolina 27609
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PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	2N-10

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-0893378AAA55482

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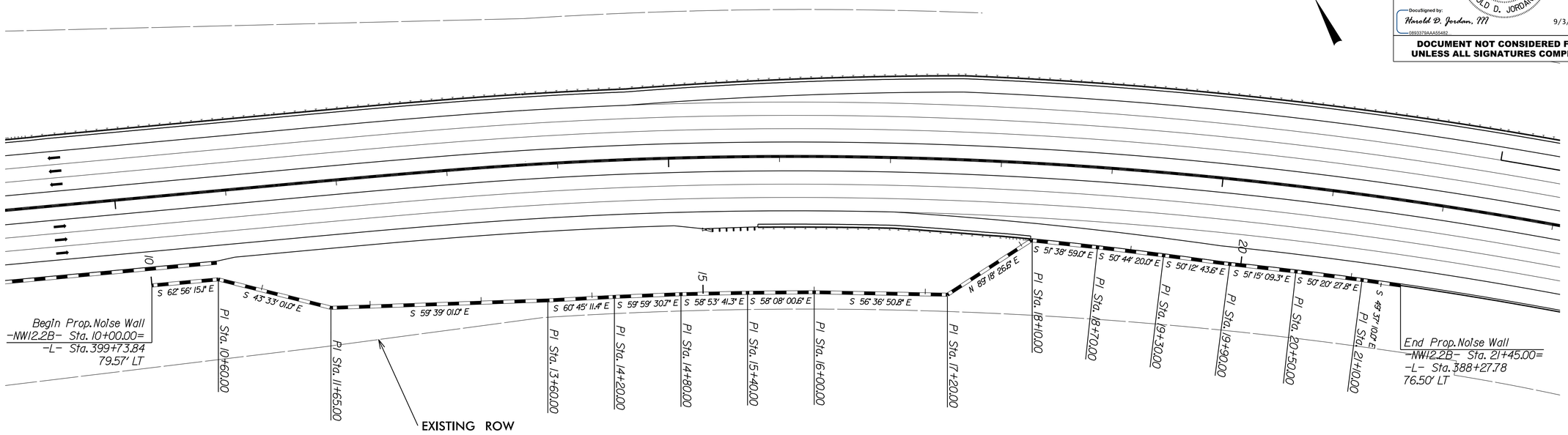
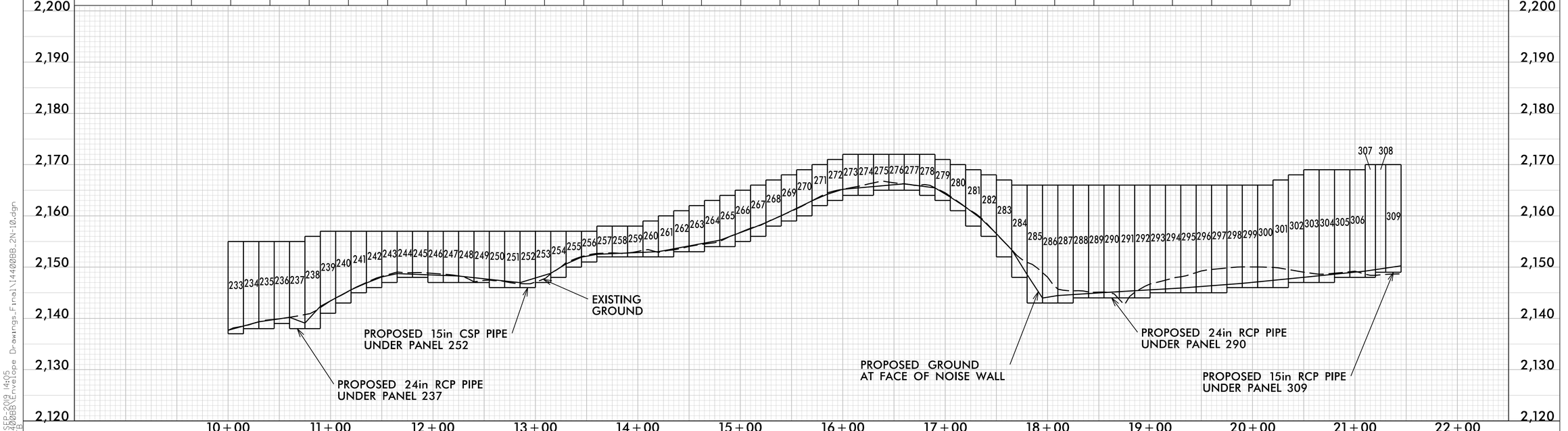


Noise Wall 12.2B Design Data																															
Panel Number	233–237	238	239–256	257–259	260	261	262	263	264	265	266	267	268	269	270	271	272	273–278	279	280	281	282	283	284–300	301	302	303–306	307–308	309
Top Elevation	2,155	2,156	2,157	2,158	2,159	2,160	2,161	2,162	2,163	2,164	2,165	2,166	2,167	2,168	2,169	2,170	2,171	2,172	2,171	2,170	2,169	2,168	2,167	2,166	2,167	2,168	2,169	2,170	2,170
Panel Length	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	10′	15′



PLAN AND PROFILE OF NOISE WALL 12.2C

HORIZ. SCALE IN FEET: 0 50 100 150 200

VERT. SCALE IN FEET: 0 10 20 30 40

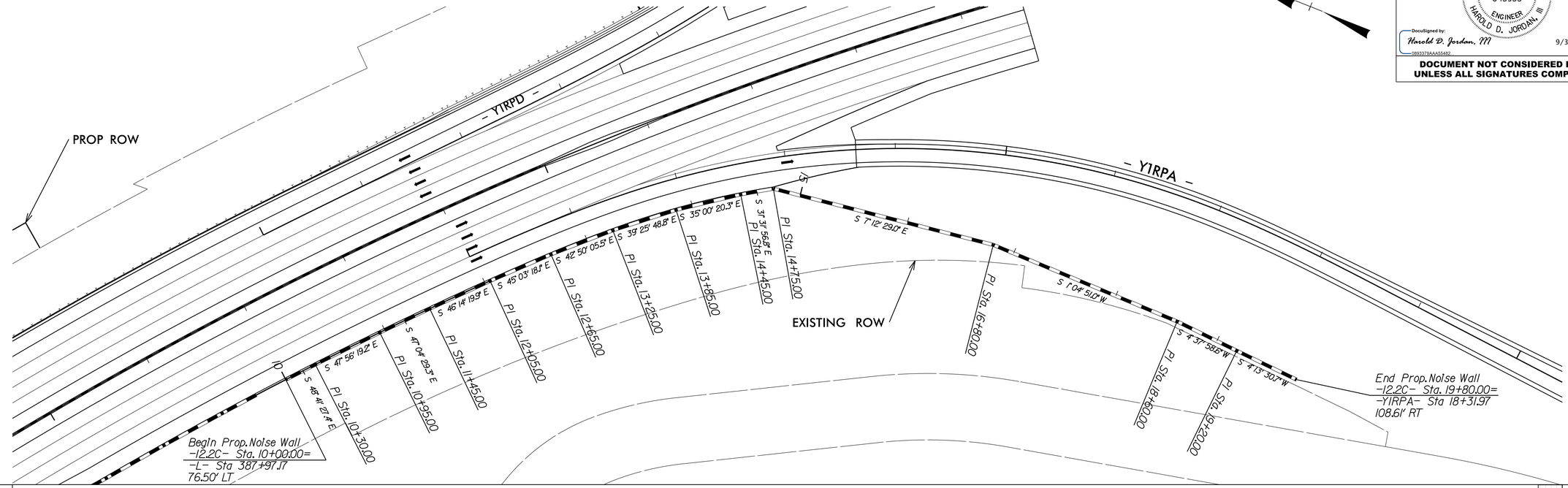
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	2N-11

NORTH CAROLINA PROFESSIONAL SEAL 045953 ENGINEER HAROLD D. JORDAN, III

DocuSigned by: Harold D. Jordan, III 9/3/2019
-0893378AAA55482

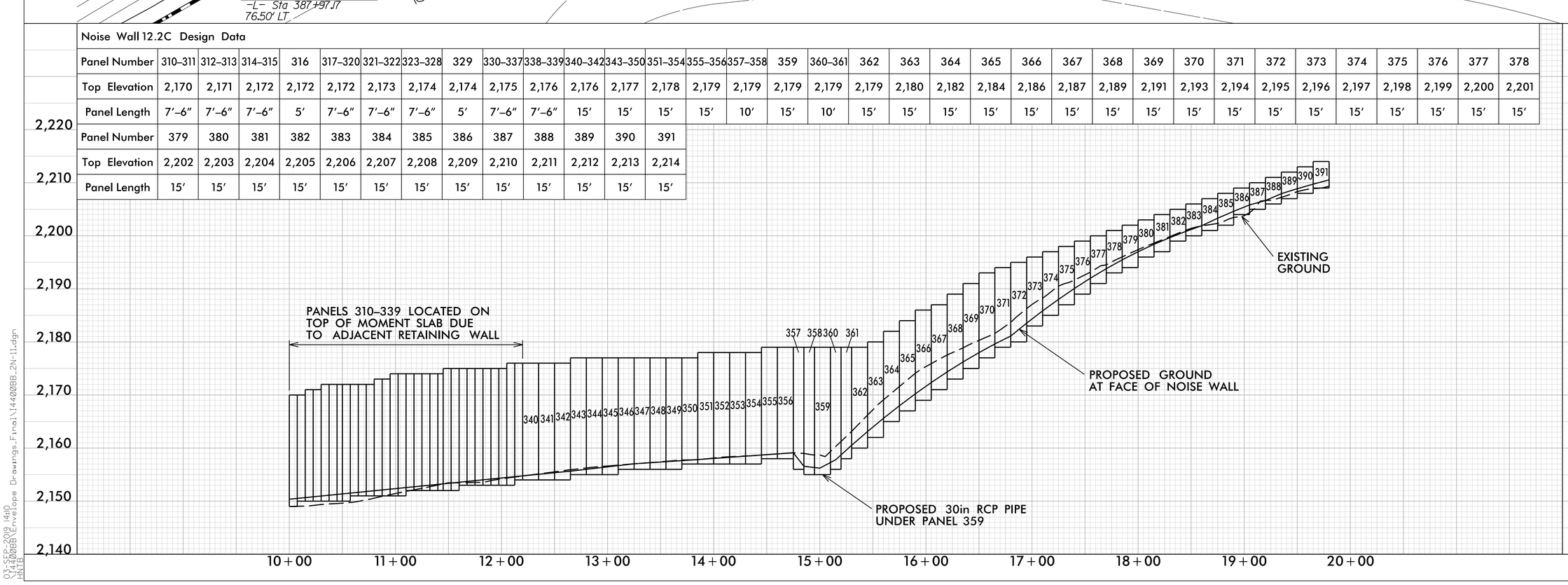
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



Noise Wall 12.2C Design Data

Panel Number	310–311	312–313	314–315	316	317–320	321–322	323–328	329	330–337	338–339	340–342	343–350	351–354	355–356	357–358	359	360–361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378
Top Elevation	2,170	2,171	2,172	2,172	2,172	2,173	2,174	2,174	2,175	2,176	2,176	2,177	2,178	2,179	2,179	2,179	2,179	2,179	2,180	2,182	2,184	2,186	2,187	2,189	2,191	2,193	2,194	2,195	2,196	2,197	2,198	2,199	2,200	2,201
Panel Length	7′–6″	7′–6″	7′–6″	5′	7′–6″	7′–6″	7′–6″	5′	7′–6″	7′–6″	15′	15′	15′	15′	10′	15′	10′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′

Panel Number	379	380	381	382	383	384	385	386	387	388	389	390	391
Top Elevation	2,202	2,203	2,204	2,205	2,206	2,207	2,208	2,209	2,210	2,211	2,212	2,213	2,214
Panel Length	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′	15′



COMPUTED BY: MAK DATE: 03/12/2019
JS 03/14/2019

"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.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
G = GATING IMPACT ATTENUATOR TYPE 350

HNTB HNTB NORTH CAROLINA, P.C. 343 E. Six Forks Road, Suite 200 Raleigh, North Carolina 27609 NC License No: C-1554

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF TEMPORARY GUARDRAIL

"SURVEY LINE"	BEG. STA.	END STA.	LOCATION	LENGTH STRAIGHT	LENGTH "SHOP CURVED"	LENGTH	WARRANT POINT "APPROACH END"	WARRANT POINT "TRAILING END"	"""N"" DIST. FROM E.O.L."	"TOTAL SHOUL WIDTH"	FLARE LENGTH "APPROACH END"	FLARE LENGTH "TRAILING END"	W "APPROACH END"	W "TRAILING END"	ANCHORS GREU, TL-3	ANCHORS GREU, TL-2	ANCHORS CAT-1	ANCHORS AT-1	ANCHORS B-77	ANCHORS	ANCHORS TEMP ANCHOR UNIT CONNECTING TUBULAR BEAM GUARDRAIL TO PCB	ANCHORS	IMPACT ATTENUATOR TYPE 350 G	IMPACT ATTENUATOR TYPE 350 NG	REMOVE & RESET EXISTING GUARDRAIL (LF)	REMARKS
L	434+82	435+32	RT	50.00					8.0'															NG		Phase 1 Step 2.1 Thru 2.2
L	444+70	445+20	RT	50.00					8.0'															NG		Phase 1 Step 2.1 Thru 2.2
Y4	12+96	13+03	RT	6.25					8.0'								1									Phase 1 Step 2.1 Thru 2.2
Y7	14+08	14+45	RT	50.00					8.0'						1											Phase 1 Step 4.1 Thru 4.4
L	396+43	396+50	RT	6.25					8.0'								1									Phase 1 Step 5.1 Thru 5.3
L	420+57	420+72	RT	15.25					8.0'												1					Phase 1 Step 5.1 Thru 5.3
L	422+86	423+01	RT	15.25					8.0'												1					Phase 1 Step 5.1 Thru 5.3
L	531+78	539+32	LT	762.50					8.0'																	Phase 1 Step 3.1 Thru 3.2
L	533+58	534+08	RT	50.00					8.0'															NG		Phase 1 Step 3.1 Thru 3.2
L	535+33	540+36	RT	512.50					8.0'						1											Phase 1 Step 3.1 Thru 3.2
L	537+11	537+61	LT	50.00					8.0'						1											Phase 1 Step 3.1 Thru 3.2
L	546+85	547+35	RT	50.00					8.0'															NG		Phase 1 Step 3.1 Thru 3.2
L	632+63	633+13	RT	50.00					8.0'															NG		Phase 1 Step 4.1 Thru 4.4
L	634+48	638+85	RT	437.00					8.0'						1											Phase 1 Step 4.1 Thru 4.4
L	645+21	645+70	LT	50.00					8.0'															NG		Phase 1 Step 4.1 Thru 4.4
L	376+13	376+63	LT	50.00					8.0'															NG		Phase 1 Step 6 Thru 10
L	420+03	420+22	RT	18.75					8.0'										1							Phase 2 Step 2
L	396+50	401+00	RT	450.00					8.0'																450.00	Phase 4
L	403+13	408+72	RT	562.50					8.0'																562.50	Phase 4
L	435+92	440+74	RT	481.25					8.0'																481.25	Phase 4
L	448+50	462+46	RT	1400.00					8.0'																1400.00	Phase 4
L	475+00	480+31	RT	531.25					8.0'																531.25	Phase 4
L	483+38	500+06	RT	1693.75					8.0'																1693.75	Phase 4
L	505+62	511+02	RT	543.75					8.0'																543.75	Phase 4
L	518+12	523+83	RT	575.00					8.0'																575.00	Phase 4
L	528+78	529+57	RT	87.50					8.0'																87.50	Phase 4
L	535+32	541+79	RT	631.25					8.0'																631.25	Phase 4
L	562+88	565+36	RT	250.00					8.0'																250.00	Phase 4
L	576+40	588+43	RT	1206.25					8.0'																1206.25	Phase 4
L	595+75	612+56	RT	1681.25					8.0'																1681.25	Phase 4
L	616+15	617+96	RT	181.25					8.0'																181.25	Phase 4
L	625+13	627+06	RT	200.00					8.0'																200.00	Phase 4
L	634+88	646+56	RT	1175.00					8.0'																1175.00	Phase 4
SHEET SUBTOTAL (LF)				13873.75	0.00	0.00					SHEET SUBTOTAL ANCHORS OR ATTENUATORS (EA)				4	0	2	0	1		2					
TOTAL (LF)				13873.75	0.00	0.00					TOTAL ANCHORS OR ATTENUATORS (EA)				4	0	2	0	1		2					
LESS ANCHORS (LF)				261.75	0.00	0.00																				
TOTAL GUARDRAIL (LF)				13612.00	0.00	0.00					ANCHOR UNIT LENGTH (LF)				50.00	25.000	6.25	6.25	18.75		15.25					
SAY GUARDRAIL (LF)				13,620	0	0					DEDUCTION PER TYPE (LF)				200.00	0.00	12.50	0.00	18.75		30.50					
SAY REMOVAL & RESET OF EXIST. GUARDRAIL (LF)				11650.00			ADDITIONAL GUARDRAIL POSTS: 5 EA				TOTAL DEDUCTION (LF)				261.75											

NOTE:
THESE QUANTITIES DO NOT INCLUDE I-26 REST AREA QUANTITIES. SEE REST AREA PLANS.

12/06/07

COMPUTED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	3B-3

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF CONCRETE BARRIER

(IN LINEAR FEET AND EACH)

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	PRECAST REINFORCED CONCRETE BARRIER, SINGLE FACED (LF)	TYPE I SINGLE SLOPE CONCRETE BARRIER (LF)	TYPE II SINGLE SLOPE CONCRETE BARRIER (LF)	CONC. BARRIER TRANSITION SECTION (EA)	MEDIAN HAZARD PROTECTION (LF) (SEE DETAIL SHT-2C-)	CONCRETE BARRIER RAIL	CONCRETE BARRIER RAIL W/MOMENT SLAB (LF) (STRUCT. PAY ITEM)
RPA-/-L-	12+86.00	385+88.00	LT	278.13						
-L-	380+44.02	383+84.00	CL			339.98				
-L-	383+84.00	384+34.00	LT/RT				1			
-L-	384+34.00	384+54.00	LT/RT					20.00		
-L-	384+54.00	385+04.00	LT/RT				1			
-L-	385+04.00	419+70.00	CL			3,466.00				
-L-	385+88.00	388+32.00	LT							244.00
-L-	388+32.00	391+70.00	LT	338.00						
-L-	399+13.00	404+23.00	LT	510						
-L-	400+97.00	403+13.00	RT							216.00
-L-	408+73.00	418+48.43	RT	975.43						
-L-	414+98.00	428+18.26	LT	1,320.26						
-L-	418+48.43	420+57.44	RT							209.01
-L-	419+70.00	420+00.00	LT/RT				1			
-L-	420+00.00	420+54.38	RT	54.38						
-L-	420+00.00	420+54.38	LT	54.38						
-L-	420+54.38	422+92.12	LT						237.74	
-L-	420+54.38	422+92.12	RT						237.74	
-L-	420+54.38	422+92.12	LT						237.74	
-L-	420+54.38	422+92.12	RT						237.74	
-L-	422+92.12	423+50.00	LT	57.88						
-L-	422+92.12	423+50.00	RT	57.88						
-L-	422+92.12	429+13.00	RT	620.88						
-L-	422+99.22	424+14.01	RT							114.79
-L-	423+50.00	423+80.00	LT/RT				1			
-L-	423+80.00	438+39.00	CL			1,459.00				
-L-	438+39.00	438+89.00	LT/RT				1			
-L-	438+89.00	439+46.00	LT/RT					57.00		
-L-	439+46.00	439+96.00	LT/RT				1			
-L-	439+96.00	441+00.00	CL			104.00				
-L-	441+00.00	445+75.00	CL		475.00					
-L-	445+75.00	498+50.00	CL			5,275.00				
-L-	498+50.00	522+00.00	CL		2,350.00					
-L-	511+02.00	513+43.00	RT	241						
-L-	522+00.00	539+22.00	CL			1,722.00				
-L-	523+83.00	528+79.00	RT	496						
-L-	539+22.00	539+72.00	LT/RT				1			
-L-	539+72.00	540+22.00	LT/RT					50.00		
-L-	540+22.00	540+72.00	LT/RT				1			
-L-	540+72.00	638+41.00	CL			9,769.00				
-L- /-WEIGH_C-	541+80.00	14+88.00	RT /RT	1147.95						
-WEIGH_D- /-L-	10+47.00	576+40.00	LT /RT	1103.85						
-L-	638+41.00	638+91.00	LT/RT				1			
-L-	638+91.00	639+58.00	LT/RT					67.00		
-L-	639+58.00	640+08.00	LT/RT				1			
-L-	640+08.00	650+50.00	CL			1,042.00				
-Y2-	20+20.21	22+22.04	RT						201.83	
-Y2-	20+44.22	22+46.06	LT						201.83	
-Y5-	18+17.23	20+00.08	RT						184.58	
-Y5-	18+29.72	20+16.36	LT						184.88	
-Y7-	15+85.95	18+10.19	LT						238.81	
-Y7-	16+12.59	18+57.50	RT						229.82	
Y7	19+97.00	25+75.00	RT							578.00
			TOTAL:	6,977.89	2,825.00	23,176.98	10	194.00	2,192.71	1,361.80
			SAY:	6,980	2,830	23,180	10	200	2,200	1,370

"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.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

19-AUG-2019 10:57
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HNTB

COMPUTED BY: MAK DATE: 03/12/2019
JS 03/14/2019

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STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	3B-2

GUARDRAIL SUMMARY

	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS									SINGLE FACED CONCRETE BARRIERS	REMOVE EXISTING GUARDRAIL	REMOVE & STOCKPILE EXISTING GUARDRAIL	REMARKS
					SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	TYPE III	B-77	GREU, TL-3	GREU, TL-2	CAT-1	AT-1	TYPE III SC	B-83		G	NG				
-L-	371+94.00	372+25.54	LT	31.54			371+94		14	17									1								TIE INTO EXISTING GUARDRAIL
-L-	374+08.69	374+50.25	RT	41.56			374+44		14	17									1								TIE INTO EXISTING GUARDRAIL
-L-	378+21.02	380+44.02	RT			223.00									1												TIE INTO EXISTING GUARDRAIL
-RPD-/-L-	14+43.99	400+97.00	RT	1785.45			383+76	400+97	VAR	VAR	50.00		1.00			1	1										TIE INTO CONCRETE BARRIER
-L-	391+70.00	394+70.00	LT	300.00			391+95		14	17	50.00		1.00			1	1										TIE INTO CONCRETE BARRIER
-L-	403+13.00	408+73.00	RT	560.00			402+80	408+73	14	17						2											TIE INTO CONCRETE BARRIER
-L-	404+23.00	407+23.00	LT	300.0			404+48		14	17	50.00		1.00			1	1										TIE INTO CONCRETE BARRIER
-L-	428+18.26	463+34.36	LT	3516.10			462+30	428+18	14	17	100.00		2.00			1	1										TIE INTO CONCRETE BARRIER
-L-	435+93.00	440+74.25	RT	481.25			438+85	440+60	14	17	50.00		1.00				1		1								
-L-	448+50.00	462+46.15	RT	1396.15			452+40	462+42	14	17	50.00		1.00				1		1								
-L-	470+71.25	473+65.00	LT	293.75			472+15	471+25	14	17	50.00	50.00	1.00	1.00			1		1								
-L-	475+00.00	480+31.25	RT	531.25			476+50	480+25	14	17	50.00		1.00				1		1								
-L-	483+37.50	500+06.25	RT	1668.75			484+90	500+00	14	17	50.00		1.00				1		1								
-L-	488+41.75	519+60.50	LT	3118.75			518+09	491+50	14	17	50.00		1.00				1		1								
-L-	505+62.50	511+02.00	RT	539.50			508+50	511+02	14	17	50.00		1.00			1	1										TIE INTO CONCRETE BARRIER
-L-	518+11.00	523+83.00	RT	572.00			520+50	523+83	14	17	50.00		1.00			1	1										TIE INTO CONCRETE BARRIER
-L-	524+68.75	549+00.00	LT	2431.25			547+50	538+73	VAR	VAR	50.00		1.00				1		1								
-L-	528+79.00	529+56.25	RT	77.25			529+50		14	17						1			1								TIE INTO CONCRETE BARRIER
-L-	535+33.00	541+80.00	RT	647.00			538+12	541+80	14	17	50.00		1.00			1	1										TIE INTO CONCRETE BARRIER
-L-	576+40.00	588+43.75	RT	1203.75			576+40	584+00	VAR	VAR	50.00		1.00			1			1								TIE INTO CONCRETE BARRIER
-WEIGHA-/-L-	13+37.25	591+30.50	LT	2675.94			588+32	564+90	VAR	VAR	50.00		1.00				1		1								
-L-	595+75.00	612+56.25	RT	1681.25			597+75	612+50	14	17	50.00		1.00				1		1								
-L-	605+93.75	614+50.00	LT	856.25			613+00	606+00	14	17	50.00		1.00				1		1								
-L-	616+15.00	617+96.25	RT	181.25			617+90		14	17	50.00	50.00	1.00	2.00			1		1								
-L-	618+93.75	621+37.50	LT	243.75			619+00		14	17	50.00		1.00				1		1								
-L-	625+12.50	627+06.25	RT	193.75			627+00		14	17	100.00		2.00				1		1								
-L-	627+42.75	637+00.00	LT	957.25			633+60	627+50	14	17	50.00		1.00				1		1								
-L-	638+81.25	650+50.00	LT	1168.75			650+00	638+92	14	17									1								
-L-	634+87.50	646+56.25	RT	1168.75			637+66	639+38	14	17	50.00		1.00				1		1								
-WEIGHD-	10+47.00	12+97.00	LT	250.00			10+67									1	1										TIE INTO CONCRETE BARRIER
-Y2-	13+95.00	16+20.00	LT	225.00				15+00	8	11	50.00	50.00	1.00	1.00			2										TIE INTO BRIDGE
-Y2-	13+97.33	20+20.21	RT	622.88			15+00	20+27	8	11	50.00		1.00			1	1										TIE INTO BRIDGE
-Y2-	16+80.00	20+44.22	LT	364.22			19+90					50.00		1.00		1	1										
-Y2-	22+22.04	25+80.55	RT	358.51			22+39	26+00	8	11						1											TIE INTO BRIDGE
-Y4-/-Y2-	11+88.25	29+52.51	RT	267.06	100.00		27+25	28+50	8	11	50.00	50.00	1.00	1.00			2										
-Y2-	22+46.06	23+68.94	LT	122.88			22+60	22+39	8	11	50.00		1.00			1	1										TIE INTO BRIDGE
-Y4-	10+00.00	13+08.63	LT	246.42	75.00		10+00	12+55	8	11		50.00	1.00				1										
-Y5-	11+85.00	18+17.23	RT	632.23			12+40	18+25	8	11	50.00		1.00			1	1										TIE INTO BRIDGE
-Y5-	15+69.30	18+29.72	LT	260.42			18+24	16+70	8	11		50.00		1.00		1	1										TIE INTO BRIDGE
-Y5-	20+00.08	25+48.00	RT	547.92			20+08	24+50	8	11		50.00		1.00		1	1										TIE INTO BRIDGE
-Y5-	20+16.36	22+76.73	LT	260.37			21+80	20+08	8	11	50.00		1.00			1	1										TIE INTO BRIDGE
-Y7-	12+32.79	13+14.25	RT	81.46					VAR	VAR										2							
-Y7-	13+93.00	16+12.59	RT	219.59			14+25	15+93	8	11	50.00		1.00			1	1										TIE INTO BRIDGE
-Y7-	13+88.08	15+85.95	LT	197.87			15+93	15+00	8	11		50.00		1.00		1	1										TIE INTO BRIDGE
-Y7-	18+10.19	18+97.63	LT	122.53	50.00		18+67	18+47	8	11	50.00		1.00			1	1										TIE INTO BRIDGE
-Y7-	18+57.50	19+97.00	RT	139.50			18+46	19+97	8	11						2											TIE INTO BRIDGE
-Y7-	19+37.61	20+74.00	LT	144.85	37.50			20+01	8	11	50.00	50.00	1.00	1.00			2										
-Y7-	21+25.70	23+79.00	LT	244.81	25.00		23+00		8	11	50.00		1.00				1			1							
-Y7-	25+75.00	30+43.00	RT	468.00								50.00		1.00		1	1										
-RPC-(EX)	9+83.20	11+06.70	RT	123.50			12+56		10	13	50.00		1.00				1										TIE INTO EXISTING GUARDRAIL
-L-	378+21.02	420+69.84	LT/RT																						8143.18		
-L-	422+86.73	439+91.62	LT/RT																						3559.73		
-L-	439+68.49	540+77.48	LT/RT																						22335.18		
-L-	540+69.82	640+39.05	LT/RT																						16782.47		
-L-	640+08.40	650+50.00	LT/RT																						3062.95		
-Y2-	18+67.53	28+54.26	LT/RT																						1685.3671		
-Y5-	10+00.00	28+04.75	LT/RT																						1628.2847		
-Y7-	12+57.24	18+46.56	LT/RT																						629.5346		
SHEET SUBTOTAL (LF)				34522.26	287.50	223.00					SHEET SUBTOTAL ANCHORS OR ATTENUATORS (EA)				1	26	43	0	20	3	0	0	0				
TOTAL (LF)				34522.26	287.50	223.00																					
LESS ANCHORS (LF)				2907.25	0.00	0.00					TOTAL ANCHORS OR ATTENUATORS (EA)				1	26	43	0	20	3	0	0	0				
TOTAL GUARDRAIL (LF)				31615.01	287.50	223.00					ANCHOR UNIT LENGTH (LF)				18.75	22.875	50.00	25.00	6.25	6.25	18.75	25.00					
SAY GUARDRAIL (LF)							ADDITIONAL GUARDRAIL POSTS: 5 EA				DEDUCTION PER TYPE (LF)				18.75	594.75	2150.00	0.00	125.00	18.75	0.00	0.00	0.00				
											TOTAL DEDUCTION (LF)				2907.25												

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PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	3B-3

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF CONCRETE BARRIER

(IN LINEAR FEET AND EACH)

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	PRECAST REINFORCED CONCRETE BARRIER, SINGLE FACED (LF)	SINGLE SLOPE CONC. BARRIER TYPE I (LF)	DOUBLE FACED BARRIER TYPE II (VAR. HEIGHT) (LF)	CONC. BARRIER TRANSITION SECTION (EA)	MEDIAN HAZARD PROTECTION (LF) (SEE DETAIL SHT-2C-)	CONCRETE BARRIER RAIL	CONCRETE BARRIER RAIL W/MOMENT SLAB (LF) (STRUCT. PAY ITEM)
RPA-/-L-	12+86.00	385+88.00	LT	278.13						
-L-	380+44.02	383+84.00	CL			339.98				
-L-	383+84.00	384+34.00	LT/RT				1			
-L-	384+34.00	384+54.00	LT/RT					20.00		
-L-	384+54.00	385+04.00	LT/RT				1			
-L-	385+04.00	419+70.00	CL			3,466.00				
-L-	385+88.00	388+32.00	LT							244.00
-L-	388+32.00	391+70.00	LT	338.00						
-L-	399+13.00	404+23.00	LT	510						
-L-	400+97.00	403+13.00	RT							216.00
-L-	408+73.00	418+48.43	RT	975.43						
-L-	414+98.00	428+18.26	LT	1,320.26						
-L-	418+48.43	420+57.44	RT							209.01
-L-	419+70.00	420+00.00	LT/RT				1			
-L-	420+00.00	420+54.38	RT	54.38						
-L-	420+00.00	420+54.38	LT	54.38						
-L-	420+54.38	422+92.12	LT						237.74	
-L-	420+54.38	422+92.12	RT						237.74	
-L-	420+54.38	422+92.12	LT						237.74	
-L-	420+54.38	422+92.12	RT						237.74	
-L-	422+92.12	423+50.00	LT	57.88						
-L-	422+92.12	423+50.00	RT	57.88						
-L-	422+92.12	429+13.00	RT	620.88						
-L-	422+99.22	424+14.01	RT							114.79
-L-	423+50.00	423+80.00	LT/RT				1			
-L-	423+80.00	438+39.00	CL			1,459.00				
-L-	438+39.00	438+89.00	LT/RT				1			
-L-	438+89.00	439+46.00	LT/RT					57.00		
-L-	439+46.00	439+96.00	LT/RT				1			
-L-	439+96.00	441+00.00	CL			104.00				
-L-	441+00.00	445+75.00	CL		475.00					
-L-	445+75.00	498+50.00	CL			5,275.00				
-L-	498+50.00	522+00.00	CL		2,350.00					
-L-	511+02.00	513+43.00	RT	241						
-L-	522+00.00	539+22.00	CL			1,722.00				
-L-	523+83.00	528+79.00	RT	496						
-L-	539+22.00	539+72.00	LT/RT				1			
-L-	539+72.00	540+22.00	LT/RT					50.00		
-L-	540+22.00	540+72.00	LT/RT				1			
-L-	540+72.00	638+41.00	CL			9,769.00				
-L- /-WEIGH_C-	541+80.00	14+88.00	RT /RT	1147.95						
-WEIGH_D- /-L-	10+47.00	576+40.00	LT /RT	1103.85						
-L-	638+41.00	638+91.00	LT/RT				1			
-L-	638+91.00	639+58.00	LT/RT					67.00		
-L-	639+58.00	640+08.00	LT/RT				1			
-L-	640+08.00	650+50.00	CL			1,042.00				
-Y2-	20+20.21	22+22.04	RT						201.83	
-Y2-	20+44.22	22+46.06	LT						201.83	
-Y5-	18+17.23	20+00.08	RT						184.58	
-Y5-	18+29.72	20+16.36	LT						184.88	
-Y7-	15+85.95	18+10.19	LT						238.81	
-Y7-	16+12.59	18+57.50	RT						229.82	
Y7	19+97.00	25+75.00	RT							578.00
			TOTAL:	6,977.89	2,825.00	23,176.98	10	194.00	2,192.71	1,361.80
			SAY:	6,980	2,830	23,180	10	200	2,200	1,370

"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.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

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CHECKED BY: JS DATE: 3/14/2019

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	3B-4

SHOULDER BERM GUTTER SUMMARY

SURVEY LINE	LOCATION	STATION	STATION	LENGTH
–RPD–/–L–	RT	11+80.00	400+97.00	1521.46
–L–	LT	391+70.00	394+20.00	250.00
–L–	RT	403+13.00	408+73.00	560.00
–L–	LT	404+23.00	406+73.00	250.00
–L–	LT	428+18.26	463+16.00	3497.74
–L–	RT	436+43.00	440+68.00	425.00
–L–	RT	449+00.00	462+40.00	1340.00
–L–	LT	470+71.25	473+15.00	243.75
–L–	RT	475+50.00	480+25.00	475.00
–L–	RT	483+90.00	500+00.00	1610.00
–L–	LT	488+48.00	519+10.50	3062.50
–L–	RT	506+12.50	511+02.00	489.50
–L–	RT	518+61.00	523+83.00	522.00
–L–	LT	524+75.00	548+50.00	2375.00
–L–	RT	528+79.00	529+50.00	71.00
–L–	RT	535+83.00	541+80.00	597.00
–WEIGH_D–	LT	12+47.00	10+47.00	200.00
–WEIGH_A–/–L–	LT	13+31.00	590+80.50	2619.69
–L–	RT	576+40.00	588+37.50	1197.50
–L–	RT	596+25.00	612+50.00	1625.00
–L–	LT	606+00.00	614+00.00	800.00
–L–	RT	616+65.00	617+80.00	115.00
–L–	LT	619+00.00	620+87.50	187.50
–L–	RT	625+12.50	627+00.00	187.50
–L–	LT	627+49.00	636+50.00	901.00
–L–	RT	635+37.50	646+50.00	1112.50
–L–	LT	638+87.50	650+50.00	1162.50
			TOTAL	27,398.14
			SAY	27,400

SUMMARY OF WOVEN WIRE FENCE, 47" FABRIC
(IN LINEAR FEET AND EACH)

LINE	LOCATION	STATION TO STATION	FABRIC LF	4" POSTS EA	5" POSTS EA
–L–	RT	377+84.78 to 419+30.58	4437.58	277	73
–L–	LT	378+05.23 to 421+63.26	4470.86	289	55
–L–	RT	422+27.75 to 438+79.00	1674.75	108	22
–L–	LT	422+35.69 to 437+77.00	1608.73	101	25
–L–	RT	440+65.00 to 494+15.20	5494.52	351	76
–L–	LT	439+51.00 to 495+36.00	5663.15	366	70
–L–	RT	494+26.56 to 525+64.64	3428.90	210	64
–L–	LT	495+87.00 to 525+96.16	3059.36	198	37
–L–	LT	526+30.11 to 534+00.00	872.12	52	19
–L–	RT	526+01.91 to 539+30.00	1391.33	89	19
–L–	LT	540+68.00 to 588+05.58	4937.18	323	55
–L–	LT	588+30.83 to 638+98.00	5115.04	330	64
–L–	RT	541+29.00 to 588+03.50	4804.44	307	67
–L–	RT	588+33.11 to 631+82.73	4551.67	292	61
–L–	RT	639+55.00 to 650+50.00	1365.58	90	14
–L–	LT	640+91.00 to 650+50.00	1306.60	84	17
		TOTAL	54,181.81	3,467	738
		SAY	54,190	3,467	738

"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.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

SUMMARY OF ASPHALT PAVEMENT REMOVAL

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	ASPHALT REMOVAL SY
–L–	380+44	385+94	LT Gore	667.56
–L–	380+44	420+70	LT Median	1718.33
–L–	380+44	384+28	RT Gore	433.78
–L–	380+44	420+69	RT Median	1852.33
–Y1RPA–	10+02	21+59	RT	534.78
–Y1RPA–	13+11	21+59	LT	366.44
–Y1RPD–	13+31	21+11	LT	379.00
–Y1RPD–	15+21	21+11	RT	266.67
–L–	384+28	420+69	RT Out	3574.89
–L–	385+94	420+70	LT Out	3769.33
–L–	422+87	522+48	LT Out	13149.33
–L–	422+87	650+50	LT Median	9907.00
–L–	422+86	650+50	RT Median	100008.44
–L–	422+86	549+09	RT Out	13290.89
–Weigh_A–	11+71	15+44	RT	176.00
–Weigh_A–	14+51	15+44	LT	38.33
–Weigh_B–	12+48	14+73	LT	281.78
–Weigh_B–	14+80	15+40	RT	33.44
–Weigh_C–	10+70	15+00	RT	186.44
–Weigh_C–	13+51	15+00	LT	103.44
–Weigh_D–	11+69	15+23	LT	653.78
–Weigh_D–	14+21	15+23	RT	33.00
–L–	549+09	564+14	RT Gore	1840.22
–L–	522+48	566+24	LT Gore	1646.44
–L–	564+14	650+50	RT Out	9445.78
–L–	566+24	650+50	LT Out	9428.56
–Y2–	10+00	14+00		951.89
–Y2–	17+23	20+45		798.00
–Y2–	22+70	29+54		1703.00
–Y2–	30+25	33+10		780.78
–Y3–	10+00	11+57		727.11
–Y3–	13+00	14+25		268.67
–Y4–	10+00	12+77		660.67
–Y5–	10+00	12+00		1106.78
–Y5–	12+33	13+49		65.22
–Y5	13+74	18+42		1166.33
–Y5–	20+49	32+55		5107.56
–Y7–	10+00	15+55		2643.00
–Y7–	17+63	20+95		2004.00
–Y7–	21+08	24+10		886.67
–Y7–	24+17	25+84		441.89
–Y7–	25+79	30+43		1273.78
TEMP PAVEMENT				168258.68
			TOTAL	362,630.02
			SAY	362,640

SUMMARY OF CONCRETE PAVEMENT REMOVAL

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	CONCRETE REMOVAL SY
–L–	380+44	420+70	LT	11100.67
–L–	380+44	420+69	RT	11152.89
–Y1RPA–	10+02	21+59		2112.56
–Y1RPD–	13+31	21+11		1349.78
–L–	422+87	650+50	LT	62060.89
–L–	422+86	650+50	RT	62493.78
–Weigh_A–	11+71	15+44		721.33
–Weigh_B–	12+48	15+40		1029.89
–Weigh_C–	10+70	15+00		801.89
–Weigh_D–	11+68	15+23		866.89
			TOTAL	153,690.56
			SAY	153,700

BREAKING OF EXISTING ASPHALT PAVEMENT

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	ASPHALT REMOVAL SY
–Y2–	14+00	18+05		1108.11
–Y2–	23+00	25+80		137.78
–Y2–	26+46	27+77		463.22
–Y2–	28+27	30+25		352.56
–Y3–	11+12	13+00		383.44
–Y5–	12+00	16+53		1309.89
			TOTAL	3,755.00
			SAY	3,760

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PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	3B-5

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SHOULDER DRAIN SUMMARY

LINE	BEG. STATION	END STATION	SHOULDER DRAIN PIPE LF	SHOULDER DRAIN LF	OUTLET PIPES LF	CONC. PADS EA
OUTSIDE SHOULDER (EASTBOUND)						
–L–	380+44.02	381+87.34	143.32	143.32	36.72	0
–L–	385+00.00	402+00.91	1700.91	1700.91	123.74	4
–L–	434+07.40	550+00.00	11592.60	11592.60	556.71	13
–L–	555+60.00	562+00.00	640.00	640.00	89.75	1
–L–	588+31.51	650+50.00	6218.49	6218.49	424.16	15
MEDIAN SHOULDER (EASTBOUND)						
–L–	398+53.83	420+00.00	2146.17	2146.17	53.3347	0
–L–	423+25.00	511+02.00	8777.00	8777.00	75.9445	0
–L–	470+54.77	536+46.96	6592.19	6592.19	122.6683	0
–L–	554+70.00	602+55.38	4785.38	4785.38	131.3807	0
–L–	649+87.20	650+50.00	62.80	62.80	0	0
OUTSIDE SHOULDER (WESTBOUND)						
–L–	398+43.83	420+00.00	2156.17	2156.17	151.5283	1
–L–	423+25.00	456+49.99	3324.99	3324.99	210.3692	7
–L–	470+54.77	536+46.96	6592.19	6592.19	418.7434	9
–L–	553+19.09	561+00.00	780.91	780.91	43.4511	0
–L–	565+00.00	602+55.38	3755.38	3755.38	193.5778	6
–L–	649+87.20	650+50.00	62.80	62.80	0.00	0
MEDIAN SHOULDER (WESTBOUND)						
–L–	380+44.02	400+95.00	2050.98	2050.98	48.00	0
–L–	434+07.40	563+58.75	12951.35	12951.35	245.54	0
–L–	588+31.51	650+50.00	6218.49	6218.49	166.5768	0
TOTAL			80552.12	80552.12	3092.21	56
SAY			80,560	80,560	3,100	60

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PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	3B-6

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

(IN CUBIC YARDS)

STATION TO STATION	UNCL. EXCAV.	SUITABLE UNDERCUT	EMBANK. +%	BORROW	WASTE
AREA 1 BEGIN PROJECT TO –L– 420+00.00					
EB –L– 380+50.00 TO 420+00.00	17,271	–	4,545	–	12,726
MEDIAN –L– 380+50.00 TO 420+00.00	3,507	–	13	–	3,494
WB –L– 380+50.00 TO 420+00.00	16,775	–	8,983	–	7,792
–Y1–RPD – 10+00.00 TO 19+00.00	19,319	–	788	–	18,531
–Y1–RPA – 10+50.00 TO 21+50.00	17,632	–	29	–	17,603
TOTAL AREA 1	74,504	–	14,358	–	60,146
AREA 2 –L– 423+00.00 TO 490+00.00					
EB –L– 423+50.00 TO 490+00.00	39,493	–	6,219	–	33,274
MEDIAN –L– 423+50.00 TO 490+00.00	5,509	–	–	–	5,509
WB –L– 423+50.00 TO 490+00.00	28,109	–	4,539	–	23,570
TOTAL AREA 2	73,110	–	10,758	–	62,352
AREA 3 –L– 490+00.00 TO 540+00.00					
EB –L– 490+00.00 TO 540+00.00	16,762	–	6,993	–	9,769
MEDIAN –L– 490+00.00 TO 540+00.00	3,409	–	–	–	3,409
WB –L– 490+00.00 TO 540+00.00	35,339	–	4,379	–	30,960
–WEIGH–A– 10+00.00 TO 15+50.00	720	–	1,057	337	–
–WEIGH–B– 10+00.00 TO 15+50.00	828	–	28	–	800
–WEIGH–C– 10+00.00 TO 15+00.00	846	–	589	–	257
–WEIGH–D– 10+00.00 TO 17+70.00	5,243	–	29	–	5,214
TOTAL AREA 3	63,146	–	13,075	337	50,408
AREA 4 –L– 540+00.00 TO 568+00.00					
EB –L– 540+00.00 TO 568+00.00	5,688	–	2,379	–	3,309
MEDIAN –L– 540+00.00 TO 568+00.00	1,656	–	126	–	1,530
WB –L– 540+00.00 TO 568+00.00	9,325	–	2,448	–	6,877
TOTAL AREA 4	16,670	–	4,953	–	11,717
AREA 5 –L– 568+00.00 TO 650+50.00					
EB –L– 568+00.00 TO 650+50.00	37,377	–	10,674	–	26,703
MEDIAN –L– 568+00.00 TO 650+50.00	4,730	–	125	–	4,605
WB –L– 568+00.00 TO 650+50.00	44,247	–	5,244	–	39,003
TOTAL AREA 5	86,354	–	16,043	–	70,311
LINE –Y2–					
LINE –Y2– 10+00.00 TO 33+00.00	1,829	–	56,611	54,782	–
TOTAL –Y2–	1,829	–	56,611	54,782	–
LINE –Y3–					
LINE –Y3– 10+50.00 TO 15+50.00	20	–	3,261	3,241	–
TOTAL –Y3–	20	–	3,261	3,241	–
LINE –Y4–					
LINE –Y4– 10+50.00 TO 12+0.00	208	–	1,916	1,708	–
TOTAL –Y4–	208	–	1,916	1,708	–
LINE –Y5–					
LINE –Y5– 10+00.00 TO 31+50.00	798	–	36,031	35,233	–
TOTAL –Y5–	798	–	36,031	35,233	–
LINE –Y6–					
LINE –Y6– 10+00.00 TO 11+50.00	169	–	8	–	161
TOTAL –Y6–	169	–	8	–	161
LINE –Y7–					
LINE –Y77– 10+00.00 TO 30+00.00	1,015	–	22,388	21,373	–
TOTAL –Y7–	1,015	–	22,388	21,373	–
LINE –Y8–					
LINE –Y8– 10+50.00 TO 11+50.00	30	–	16	–	14
TOTAL –Y8–	30	–	16	–	14
LINE –Y9–					
LINE –Y9– 10+50.00 TO 12+50.00	655	–	483	–	172
TOTAL –Y9–	655	–	483	–	172
PROJECT SUBTOTAL	318,508	–	179,901	116,673	255,281
ESTIMATED LOSS DUE TO CLEARING AND GRUBBING	–9,800	–	–	9,800	–
ESTIMATED SHOULDER MATERIAL	–	–	15,450	15,450	–
PROJECT TOTAL	308,708	–	195,351	141,923	255,281
ESTIMATED 5% FOR REPLACING TOPSOIL ON BORROW PIT	–	–	–	7,096	–
					255,281
GRAND TOTAL (CUBIC YARDS)	308,708	–	195,351	149,019	
SAY (CUBIC YARDS)	309,000	–	–	150,000	–
ESTIMATED DRAINAGE DITCH EXCAVATION = –					
ESTIMATED –L– PAVEMENT STRUCTURE VOLUME = 110,770					

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.

NOTES:

1. 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.

2. Quantities are approximate only. The Resident Engineer will recross-section the work accurately when the project is staked out. These cross-section notes will be used in computing the final quantities for which the contractor will be paid.

17-JUL-2019 16:31
H:\Roadway Proj\I4400BB_RDY_Quantities.dgn

RAODYNSKI-5285

COMPUTED BY:	JCF	DATE:	7/11/2019
CHECKED BY:	BSR	DATE:	7/11/2019

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
I-4400BB	3D-1

**Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".**

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

LINE & STATION	OFFSET		STRUCTURE NUMBER		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	MINIMUM REQUIRED SLOPE	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC)									C. S. PIPE								R. C. PIPE CLASS IV								36" WELDED STEEL PIPE 0.53" THICK, GRADE B IN SOIL	36" WELDED STEEL PIPE 0.53" THICK, GRADE B NOT IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B NOT IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B NOT IN SOIL	12" FUNNEL DRAIN PIPE	TEMPORARY 12" SLOTTED DRAIN SPECIAL DETAIL		METAL FUNNEL	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE)	REINFORCED ENDWALLS	DRAINAGE STRUCTURE	QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)			OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	ADJUST D.I.	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	12" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	BERM DITCH OUTLET STD. 850.11 (PER EACH)	PREFORMED SCOUR HOLE (PER EACH)	ENERGY DISSIPATION BASIN	TEMP STEEL PLATE COVER MASONRY DRAINAGE	FLOWABLE FILL	CONCRETE COLLARS CL. "B" STD. 840.72	CONCRETE AND BRICK PIPE PLUG STD. 840.71	PIPE REMOVAL	REMARKS
SIZE									12	15	18							15	18	24	30	36	42	48		15	18	24	30	36	42	48																A	B																																
THICKNESS OR GAUGE			FROM	TO	FT.	FT.	FT.	%					DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	.064	.064	.064	.079	.079	.109	.109																				CY	CY	MASONRY CY	0' THRU 5' EACH	5' THRU 10' LIN. FT.	10' AND ABOVE LIN. FT.																													CY	CY	CY	LIN. FT.	
L 381+88	75	LT	0402		2162.1																																										1	1.8					1			1																										
			0402	0419		2155.3	2152.0	0.9																					104																																																				
L 381+40	3	LT	0403		2166.2																																										1	4.4							1							1																				
			0403	0402		2156.8	2156.0																						88																																																			
L 381+38	3	RT	0404		2164.9																																										1	3.1							1							1																				
			0404	0403		2156.8	2156.8																						4																																																			
L 380+98	67	RT	0405		2167.0																																										1	4.9													1			1																		
			0405	0404		2157.1	2156.8																						76																																																			
L 381+77	85	RT	0406		2163.5																																										1							1		1																										
			0406	0405		2158.7	2158.3	0.4																		80																																																							
Y1RPD 14+88	20	LT	0407		2164.1																																										1								1							1																				
			0407	0409		2160.9	2157.1																			200																																																							
Y1RPD 12+90	28	LT	0409		2160.2																																										1								1							1																				
			0409	0413		2157.1	2153.7																			96																																																							
L 384+94	3	LT	0410		2159.3																																										1	0.6							1							1																				
			0410	0411		2153.7	2153.1																			4																																																							
L 384+94	3	RT	0411		2158.0																																										1								1							1																				
			0411	0412		2153.1	2151.1																			92																																																							
L 385+87	3	RT	0412		2156.0																																										1	0.6							1							1																				
			0412	0505		2150.4	2149.2																					156																																																		6				
Y1RPD 11+97	26	LT	0413		2158.5																																										1								1							1																				
			0413	0412		2153.7	2151.1	1.6																		76																																																					81	
Y1RPD 11+97	36	LT	0414		2157.0																																										1							1		1																										
			0414	0413		2154.3	2153.7	0.9																		12																																																						
Y1RPA 10+00	36	RT	0416		2154.3																																										1							1		1																										
			0416	0415		2151.6	2139.7												32																																																	2															
L 386+50	75	RT	0417		2157.4																																										1								1							1																				
			0417	0536		2152.5	2151.9																			48																																																							
L 383+50	2	LT	0418		2162.1																																										1								1							1																				
			0418	0410		2158.5	2154.5																			140																																																							
Y1RPA 13+15	36	RT	0419		2157.5																																										1	0.5					1			1																										
			0419	0401		2152.0	2150.0	1.2																					72																																																				
L 389+39	74	RT	0502		2151.3																																										1								1							1																				
			0502	0535		2146.5	2145.0																			100																																																							
L 389+39	3	RT	0503		2148.6																																										1								1							1																				
			0503	0511		2145.1	2142.8																					172																																																						
L 389+39	3	LT	0504		2150.6																																										1								1							1																				
			0504	0503		2146.1	2145.9																			4																																																							
L 387+44	3	RT	0505		2152.6																																										1								1							1																				
			0505	0503		2149.2	2145.1																					192																																																					
L 387+44	3	LT	0506		2154.4																																										1								1							1																				
			0506	0505		2150.2	2149.9																			4																																																							
L 388+37	74	LT	0507		2149.6																																										1							1	1																											
L 387+39	97	LT	0509		2137.9																																								6.000																																								
			0509	0534		2133.9	2115.3																															156	156																																													111				
			0507	0508		2144.8	2144.7	0.4																		12																																																							
L 391+14	3	LT	0510		2147.8																																										1	4.6							1							1																				
			0510	0511		2138.1	2138.1																					4																																																						
L 391+14	3	RT	0511		2146.2																																										1	3.6							1							1																				
			0511	0533		2137.6	2137.3																						68																																																				
SHEET TOTALS																		32								868		524	412									156	156					6.000			24	24.1					2	4	18	5					1	17		1		2											117			81	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

RAODYNSKI-5285

COMPUTED BY: JCF **DATE:** 7/11/2019
CHECKED BY: BSR **DATE:** 7/11/2019

PROJECT NO.	SHEET NO.
I-4400BB	3D-2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

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

LINE & STATION	OFFSET	STRUCTURE NUMBER		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	MINIMUM REQUIRED SLOPE	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC)									C. S. PIPE								R. C. PIPE CLASS IV							
SIZE								12	15	18							15	18	24	30	36	42	48		15	18	24	30	36	42	48	
THICKNESS OR GAUGE		FROM	TO	FT.	FT.	FT.	%					DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	.064	.064	.064	.079	.079	.109	.109									
L 391+14	88 LT	0512		2143.1																												
		0512	0510		2138.5	2138.1																					88					
L 392+35	74 RT	0513		2148.0																												
		0513	0514		2140.5	2140.5																			12							
L 398+04	62 RT	0516		2141.6																												
		0516	0515		2135.6	2129.0	0.6												28													
L 398+04	3 RT	0517		2082.0																												
		0517	0516		2135.9	2135.6																					56					
L 398+04	3 LT	0518		2142.4																												
		0518	0517		2135.9	2135.9																					4					
L 397+64	3 LT	0519		2142.8																												
		0519	0518		2136.0	2135.9																					36					
L 395+44	3 LT	0520		2145.1																												
		0520	0519		2136.9	2136.0																					216					
L 395+44	3 RT	0521		2142.5																												
		0521	0520		2139.8	2139.8																			4							
L 393+94	3 LT	0522		2145.9																												
		0522	0520		2138.0	2137.4	0.3																			148						
L 393+94	3 RT	0523		2143.8																												
		0523	0522		2141.1	2141.1																			4							
L 400+89	62 RT	0524		2138.7																												
		0524	0525		2133.9	2108.7	1.2										64															
L 400+89	3 RT	0526		2138.6																												
		0526	0524		2134.8	2133.9																			56							
L 400+89	3 LT	0527		2139.8																												
		0527	0526		2134.8	2134.8																			4							
L 400+89	62 LT	0528		2139.9																												
		0528	0527		2135.1	2134.8																			60							
L 400+44	3 RT	0529		2139.0																												
		0529	0526		2136.3	2135.9																			44							
L 400+44	3 LT	0530		2140.1																												
		0530	0529		2136.5	2136.3																			4							
L 388+60	74 RT	0531		2152.9																												
		0531	0502		2148.1	2146.5																			80							
L 387+79	74 RT	0532		2154.6																												
		0532	0531		2149.8	2148.1																			80							
L 391+14	74 RT	0533		2149.0																												
		0533	0501		2137.3	2130.0	1.0													32												
L 390+40	74 RT	0535		2149.8																												
		0535	0533		2145.0	2144.2											72															
L 387+00	74 RT	0536		2156.7																												
		0536	0532		2151.9	2149.8											80															
L 391+82	82 LT	0538		2142.3																												
		0538	0512		2139.5	2139.2																			64							
L 396+85	81 LT	0539		2139.1																												
		0539	0542	2136.1	2135.1																					212						
L 396+85	129 LT	0540		2145.0																												
		0540	0539		2142.3	2136.4	0.3										48															
L 399+00	81 LT	0542		2138.1																												
		0542	0541		2135.1	2135.0																				24						
SHEET TOTALS																	264		28	32					412	384	400					

LINE & STATION	FROM	TO	36" WELDED STEEL PIPE 0.53" THICK, GRADE B IN SOIL	36" WELDED STEEL PIPE 0.53" THICK, GRADE B NOT IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B NOT IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B NOT IN SOIL	12" FUNNEL DRAIN PIPE	TEMPORARY 12" SLOTTED DRAIN SPECIAL DETAIL		METAL FUNNEL	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	ADJUST D.I.	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	12" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	BERM DITCH OUTLET STD. 850.11 (PER EACH)	PREFORMED SCOUR HOLE (PER EACH)	ENERGY DISSIPATION BASIN	TEMP STEEL PLATE COVER MASONRY DRAINAGE	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
L 391+14	0512															1							1		1																									
	0512	0510																																											13					
L 392+35	0513															1	2.5							1							1																			
	0513	0514																																																
L 398+04	0516															1	1.0							1							1																			
	0516	0515																																			2													
L 398+04	0517															1								1							1																			
	0517	0516																																																
L 398+04	0518															1	1.5							1							1																			
	0518	0517																																																
L 397+64	0519															1	1.8							1							1																			
	0519	0518																																																
L 395+44	0520															1	3.2							1							1																	75	
	0520	0519																																																
L 395+44	0521															1								1							1																			
	0521	0520																																																
L 393+94	0522															1	2.9							1							1																			
	0522	0520																																																
L 393+94	0523															1								1							1																			
	0523	0522																																																
L 400+89	0524															1								1							1																			
	0524	0525																																	2											5			55	
L 400+89	0526															1								1							1																			
	0526	0524																																																
L 400+89	0527															1								1							1																			
	0527	0526																																																
L 400+89	0528															1							1	1																										
	0528	0527																																																
L 400+44	0529															1								1							1																			
	0529	0526																																																
L 400+44	0530															1								1							1																			
	0530	0529																																																
L 388+60	0531															1								1							1																			
	0531	0502																																																
L 387+79	0532															1								1							1																			
	0532	0531																																																
L 391+14	0533															1	5.0	1.7						1							1																			
	0533	0501																																				2												
L 390+40	0535															1								1							1																			
	0535	0533																																	2															
L 387+00	0536															1								1							1																			
	0536	0532																																	2															
L 391+82	0538															1							1		1																									
	0538	0512																																																
L 396+85	0539															1							1		1																									
	0539	0542																																																
L 396+85	0540															1			1																															
	0540	0539																																	2															
L 399+00	0542															1						1			1																									
	0542	0541																																																
SHEET TOTALS																25	17.9	1.7	1			1	4	20	4						19				8		2	2									18			130	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

RAODYNSKI-5285

COMPUTED BY:	JCF	**DATE:**	7/11/2019
CHECKED BY:	BSR	**DATE:**	7/11/2019

PROJECT NO.	SHEET NO.
I-4400BB	3D-3

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

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

LINE & STATION	OFFSET	STRUCTURE NUMBER		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	MINIMUM REQUIRED SLOPE	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC)									C. S. PIPE								R. C. PIPE CLASS IV							
SIZE								12	15	18							15	18	24	30	36	42	48		15	18	24	30	36	42	48	
THICKNESS OR GAUGE		FROM	TO	FT.	FT.	FT.	%					DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	.064	.064	.064	.079	.079	.109	.109									
L 393+94	62 LT	0543		2143.6																												
		0543	0522		2138.5	2138.3	0.3																		60							
L 394+17	62 LT	0544		2143.4																												
		0544	0543		2138.6	2138.5																			20							
L 404+25	62 RT	0606		2135.4																												
		0606	0628		2130.0	2120.0	1.8										28															
L 404+25	2 RT	0607		2137.7																												
		0607	0606		2130.2	2130.0																			60							
L 404+25	2 LT	0608		2136.1																												
		0608	0607		2130.2	2130.2																			4							
L 404+25	62 LT	0609		2138.3																												
		0609	0608		2130.5	2130.2																			60							
L 404+65	62 LT	0610		2138.0																												
		0610	0609		2130.6	2130.5																			40							
L 414+30	62 RT	0611		2126.7																												
		0611	0710		2121.1	2120.3	0.4																				80					
L 412+55	62 RT	0612		2128.2																												
		0612	0611		2122.6	2121.1	0.3																				172					
L 412+55	2 RT	0613		2130.5																												
		0613	0612		2126.6	2123.3																			60							
L 412+55	2 LT	0614		2129.2																												
		0614	0613		2126.6	2126.6																			4							
L 410+75	62 RT	0615		2129.7																												
		0615	0612		2124.1	2122.6																					176					
L 409+00	62 RT	0616		2131.2																												
		0616	0615		2126.2	2124.6	0.7																			172						
L 409+00	2 RT	0617		2133.6																												
		0617	0616		2129.5	2126.4																			60							
L 409+00	2 LT	0618		2132.2																												
		0618	0617		2129.6	2129.5																			4							
L 407+45	2 RT	0619		2134.9																												
		0619	0617		2130.8	2129.7																			152							
L 407+45	2 LT	0620		2133.5																												
		0620	0619		2130.8	2130.8																			4							
L 410+75	2 RT	0621		2132.1																												
		0621	0615		2125.7	2124.9																			60							
L 410+75	81 LT	0622		2129.8																												
		0622	0621		2126.0	2125.7																			84							
L 409+00	72 RT	0623		2140.6																												
		0623	0616		2127.3	2126.4																			8							
L 407+70	72 RT	0624		2130.9																												
		0624	0623		2128.1	2127.6																			124							
L 402+95	62 LT	0627		2138.7																												
		0627	0609		2133.9	2133.3																			128							
L 404+25	91 RT	0628		2122.8																												
		0628	0605		2120.0	2089.7	4.0										148															
L 412+25	67 RT	0629		2139.1																												
		0629	0631		2134.2	2132.3																			172							
L 409+65	67 RT	0630		2138.9																												
		0630	0623		2134.1	2133.9																			64							
						SHEET TOTALS											176								1168	172	428					

LINE & STATION	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	36" WELDED STEEL PIPE 0.53" THICK, GRADE B IN SOIL	36" WELDED STEEL PIPE 0.53" THICK, GRADE B NOT IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B NOT IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B NOT IN SOIL	12" FUNNEL DRAIN PIPE	TEMPORARY 12" SLOTTED DRAIN SPECIAL DETAIL		METAL FUNNEL	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	ADJUST D.I.	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	12" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	BERM DITCH OUTLET STD. 850.11 (PER EACH)	PREFORMED SCOUR HOLE (PER EACH)	ENERGY DISSIPATION BASIN	TEMP STEEL PLATE COVER MASONRY DRAINAGE	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
L 393+94	0543															1	0.1						1	1																										
	0543	0522																																																
L 394+17	0544															1							1	1																										
	0544	0543																																																
L 404+25	0606															1	0.4							1								1																		
	0606	0628																																		2															
L 404+25	0607															1	2.5							1								1																		
	0607	0606																																																
L 404+25	0608															1	0.9							1								1																		
	0608	0607																																																
L 404+25	0609															1	2.9						1	1																										
	0609	0608																																																
L 404+65	0610															1	2.4						1	1																										
	0610	0609																																																
L 414+30	0611															1	0.6							1								1															44			634	
	0611	0710																																																
L 412+55	0612															1	0.6							1								1																		
	0612	0611																																																
L 412+55	0613															1								1								1																		
	0613	0612																																																
L 412+55	0614															1								1								1																		
	0614	0613																																																
L 410+75	0615															1	0.6							1								1																		
	0615	0612																																																
L 409+00	0616															1	0.1							1								1																		
	0616	0615																																																
L 409+00	0617															1								1								1																		
	0617	0616																																																
L 409+00	0618															1								1								1																		
	0618	0617																																																
L 407+45	0619															1								1								1																		
	0619	0617																																																
L 407+45	0620															1								1								1																		
	0620	0619																																																
L 410+75	0621															1	1.4							1								1																		
	0621	0615																																																
L 410+75	0622															1							1		1																									
	0622	0621																																																
L 409+00	0623															1	5.0	3.3					1		1																									
	0623	0616																																																
L 407+70	0624															1							1		1																									
	0624	0623																																																
L 402+95	0627															1							1	1																									87	
	0627	0609																																																
L 404+25	0628															1							1		1																									
	0628	0605																																		2															
L 412+25	0629															1							1	1																						3			175	
	0629	0631																																																
L 409+65	0630															1							1	1																										
	0630	0623																																																
SHEET TOTALS																25	17.5	3.3					11	21	4							14				4											47			896	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

RAODYNSKI-5285

COMPUTED BY:	JCF	**DATE:**	7/11/2019
CHECKED BY:	BSR	**DATE:**	7/11/2019

PROJECT NO.	SHEET NO.
I-4400BB	3D-4

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

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

LINE & STATION	OFFSET	STRUCTURE NUMBER		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	MINIMUM REQUIRED SLOPE	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC)									C. S. PIPE								R. C. PIPE CLASS IV								36" WELDED STEEL PIPE 0.53" THICK, GRADE B IN SOIL	36" WELDED STEEL PIPE 0.53" THICK, GRADE B NOT IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B NOT IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B NOT IN SOIL	12" FUNNEL DRAIN PIPE	TEMPORARY 12" SLOTTED DRAIN SPECIAL DETAIL		METAL FUNNEL	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE)	REINFORCED ENDWALLS	DRAINAGE STRUCTURE	QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)			OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	ADJUST D.I.	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	12" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	BERM DITCH OUTLET STD. 850.11 (PER EACH)	PREFORMED SCOUR HOLE (PER EACH)	ENERGY DISSIPATION BASIN	TEMP STEEL PLATE COVER MASONRY DRAINAGE	FLOWABLE FILL	CONCRETE COLLARS CL. "B" STD. 840.72	CONCRETE AND BRICK PIPE PLUG STD. 840.71	PIPE REMOVAL	
SIZE								12	15	18							15	18	24	30	36	42	48		15	18	24	30	36	42	48																A	B																																	
THICKNESS OR GAUGE		FROM	TO	FT.	FT.	FT.	%					DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	.064	.064	.064	.079	.079	.109	.109																				CY	CY	MASONRY CY	0' THRU 5' EACH	5' THRU 10' LIN. FT.	10' AND ABOVE LIN. FT.																													CY	CY	CY	LIN. FT.	REMARKS
L 414+00	67 RT	0631		2137.1																																										1								1	1																										
		0631	0741		2132.3	2131.4																			196																																																									
L 409+17	81 LT	0632		2131.1																																										1								1		1																									
		0632	0622		2128.4	2126.0																			160																																																									
L 409+17	137 LT	0633		2146.3																																										1			1																																
		0633	0632		2143.6	2131.7												56																																																2															
L 412+00	81 LT	0634		2128.7																																										1								1		1																									
		0634	0636		2126.0	2123.7																			272																																																									
L 412+00	141 LT	0635		2144.0																																										1			1																																
		0635	0634		2141.3	2130.5												60																																																2															
L 414+69	81 LT	0636		2126.5																																										1								1		1																									
		0636	0719		2123.7	2120.9																			344																																																									
L 406+70	62 LT	0637		2136.3																																										1								1	1																										
		0637	0610		2131.4	2130.6																			204																																																									
L 418+65	74 RT	0702		2122.3																																										1	2.7								1								1																			
		0702	0718		2114.6	2114.6																						4																																																					
L 419+95	74 RT	0703		2121.2																																										1									1								1																			
		0703	0702		2116.3	2115.8																			124																																																									
L 418+65	2 RT	0704		2125.2																																										1									1								1																			
		0704	0702		2121.5	2117.5																			72																																																								
L 418+65	2 LT	0705		2124.1																																										1									1								1																			
		0705	0704		2121.5	2121.5																			4																																																								
L 420+00	4 LT	0707		2123.1																																										1									1								1															6			77	
		0707	0745		2118.2	2118.0																			72																																																								
L 416+90	69 RT	0708		2136.9																																										1	0.9							1		1																									
		0708	0718		2131.0	2121.0	1.0																		172																																																									
L 416+95	65 RT	0709		2124.2																																										1	0.6								1								1																			
		0709	0702		2118.6	2116.7	0.5																				164																																																							
L 415+15	62 RT	0710		2125.9																																										1	0.6								1								1																			
		0710	0744		2120.3	2119.4	0.5																				108																																																							
L 415+15	2 RT	0711		2128.3																																										1									1								1																			
		0711	0710		2124.4	2121.1																			60																																																									
L 415+15	2 LT	0712		2127.0																																										1									1								1																			
		0712	0711		2124.4	2124.4																			4																																																								
L 423+60	74 RT	0714		2117.3																																										1	1.8								1								1																			
		0714	0743		2110.5	2109.2	0.7																		12																																																								
L 423+60	3 LT	0716		2120.0																																										1									1								1																			
		0716	0714		2117.4	2113.2																			76																																																								
L 423+60	71 LT	0717		2125.5																																										1	2.5							1	1																										
		0717	0716		2118.0	2117.4																			72																																																								
L 418+65	77 RT	0718		2125.9																																										1	5.0	1.8						1		1																									
		0718	0742		2114.1	2114.0																							12																																																					
L 418+10	81 LT	0719		2123.7																																										1								1		1																									
		0719	0720		2120.9	2120.1																			192																																																									
L 420+00	81 LT	0720		2125.5																																										1	2.5							1		1																									
		0720	0721		2117.9	2083.7	1.7										88																																																	2															
L 427+50	62 LT	0723		2123.5																																										1	2.5							1	1																										
		0723	0724		2116.0	2115.6																			112																																																									
L 426+38	62 LT	0724		2123.2																																										1	5.0	2.0						1	1																										
		0724	0728		2111.2	2111.2	0.3																			8																																																							
SHEET TOTALS																	204								2148	8	272	4	12																	25	24.1	3.8	2				12	16	7						11				6											6			77	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

RAODYNSKI-5285

COMPUTED BY:	JCF	**DATE:**	7/11/2019
CHECKED BY:	BSR	**DATE:**	7/11/2019

PROJECT NO.	SHEET NO.
I-4400BB	3D-5

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

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

LINE & STATION SIZE THICKNESS OR GAUGE	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) 12	15	18		DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	C. S. PIPE 15 .064	18 .064	24 .064	30 .079	36 .079	42 .109	48 .109		R. C. PIPE CLASS IV 15	18	24	30	36	42	48		36" WELDED STEEL PIPE 0.53" THICK, GRADE B IN SOIL	36" WELDED STEEL PIPE 0.53" THICK, GRADE B NOT IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B NOT IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B NOT IN SOIL	12" FUNNEL DRAIN PIPE	TEMPORARY 12" SLOTTED DRAIN SPECIAL DETAIL		METAL FUNNEL	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	ADJUST D.I.	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	12" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	BERM DITCH OUTLET STD. 850.11 (PER EACH)	PREFORMED SCOUR HOLE (PER EACH)	ENERGY DISSIPATION BASIN	TEMP STEEL PLATE COVER MASONRY DRAINAGE	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
L 426+38	2 LT	0725		2118.3																																										1	1.9							1							1																			
		0725	0724		2111.4	2111.2																				60																																																		4				
L 426+49	2 RT	0726		2119.3																																										1	2.6							1							1																			
		0726	0725		2111.7	2111.7																			12																																																								
L 426+49	65 RT	0727		2116.8																																										1								1							1																			
		0727	0726		2112.0	2111.7																			64																																																							
L 426+38	72 LT	0728		2119.1																																										1	2.9						1		1																										
		0728	0722		2111.2	2111.0	0.4																			48																																																									
L 428+65	62 LT	0730		2121.7																																										1	5.0	0.5					1	1																											
		0730	0729		2111.2	2099.0	1.1												52																																														2												
L 428+65	2 LT	0731		2119.5																																										1	3.1							1							1																			
		0731	0730		2111.5	2111.2																					60																																																						
L 428+65	2 RT	0732		2120.3																																										1	3.8							1							1																			
		0732	0731		2111.5	2111.5																					4																																																						
L 428+65	62 RT	0733		2118.0																																										1	1.3							1							1																			
		0733	0732		2111.7	2111.5																					60																																																						
L 429+00	60 RT	0734		2118.5																																										1	1.6													1			1																	
		0734	0733		2111.8	2111.7																					32																																																11				
L 429+00	67 RT	0735		2120.2																																										1	3.3					1			1																										
		0735	0734		2111.9	2111.8																					8																																																						
L 424+95	72 RT	0736		2117.0																																										1								1							1																			
		0736	0714		2113.7	2113.2																			132																																																							
L 425+50	62 LT	0737		2123.4																																										1	2.5						1	1																											
		0737	0724		2115.9	2115.5																			88																																																							
L 427+50	2 RT	0738		2119.5																																										1								1							1																			
		0738	0726		2116.1	2115.7																			100																																																						
L 425+50	2 RT	0739		2119.5																																										1								1							1																			
		0739	0726		2116.0	2115.6																			96																																																						
L 424+70	2 RT	0740		2120.0																																										1								1							1																			
		0740	0739		2116.5	2116.0																			76																																																						
L 416+00	67 RT	0741		2136.2																																										1							1	1																											
		0741	0708		2131.4	2131.0																			88																																																						
L 418+65	89 RT	0742		2120.5																																										1	1.5					1			1																										
		0742	0701		2114.0	2072.0	0.6														108																																																	2										
L 423+60	86 RT	0743		2112.0																																										1							1		1																										
		0743	0713		2109.2	2074.7	4.1										148																																																2														
L 416+28	62 RT	0744		2124.9																																										1	0.6							1							1																			
		0744	0709		2119.4	2118.6	0.5																				64																																																								
L 420+00	72 LT	0745		2128.7																																										1	5.0	0.7					1	1																											
		0745	0720		2118.0	2117.9																			8																																																							
L 417+56	62 LT	0746		2127.2																																										1							1	1																											
		0746	0745		2122.4	2121.4																			248																																																						
L 431+50	62 LT	0802		2124.1																																										1							1	1																											
		0802	0801		2119.1	2107.7	0.4										40																																																2														
L 431+50	2 LT	0803		2121.9																																										1								1							1																			
		0803	0802		2119.3	2119.1																			60																																																						
L 431+50	2 RT	0804		2123.4																																										1								1							1																			
		0804	0803		2119.5	2119.3																			4																																																						
L 434+10	62 LT	0806		2125.3																																										1	2.9						1	1																											
		0806	0805		2117.4	2117.0																					28																																																						
SHEET TOTALS																	188		52		108				976	108	256																			25	38.0	1.2				2	9	20	4					1	13		1		4		2		2							15				

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

RAODYNSKI-5285

COMPUTED BY: JCF	DATE: 7/11/2019
CHECKED BY: BSR	DATE: 7/11/2019

PROJECT NO.	SHEET NO.
I-4400BB	3D-6

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

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

LINE & STATION	OFFSET	STRUCTURE NUMBER		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	MINIMUM REQUIRED SLOPE	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC)									C. S. PIPE								R. C. PIPE CLASS IV							
SIZE								12	15	18							15	18	24	30	36	42	48		15	18	24	30	36	42	48	
THICKNESS OR GAUGE		FROM	TO	FT.	FT.	FT.	%					DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	.064	.064	.064	.079	.079	.109	.109									
L 434+10	3 LT	0807		2125.0																												
		0807	0806		2117.6	2117.4																					60					
L 434+10	3 RT	0808		2124.6																												
		0808	0807		2121.9	2121.9																			4							
L 434+56	3 LT	0809		2125.4																												
		0809	0807		2117.8	2117.6																					44					
L 435+21	3 LT	0810		2125.9																												
		0810	0809		2121.0	2120.7																					64					
L 434+56	81 RT	0811		2121.7																												
		0811	0809		2118.9	2118.6																			84							
L 437+50	72 LT	0812		2126.5																												
		0812	0849		2123.7	2123.1																			12							
L 436+89	62 LT	0813		2127.4																												
		0813	0814		2122.6	2122.4	0.3																		60							
L 436+89	3 LT	0814		2127.3																												
		0814	0810		2121.6	2121.0																					168					
L 436+89	3 RT	0815		2127.2																												
		0815	0814		2124.5	2124.4																			4							
L 437+50	4 LT	0816		2127.9																												
		0816	0814		2122.6	2122.3																				60						
L 437+50	4 RT	0817		2127.9																												
		0817	0816		2122.9	2122.8																			8							
L 437+50	62 RT	0818		2127.9																												
		0818	0817		2123.1	2122.9																			56							
L 438+50	62 RT	0819		2129.1																												
		0819	0818		2124.3	2123.1																			96							
L 438+50	72 RT	0820		2127.6																												
		0820	0819		2124.8	2124.3																			8							
L 440+75	81 RT	0822		2130.0																												
		0822	0823		2127.3	2126.5																			192							
L 439+96	62 LT	0825		2131.7																												
		0825	0850		2126.8	2126.3																			24							
L 439+96	99 LT	0826		2138.5																												
		0826	0825		2130.6	2126.8																			40							
L 441+46	62 LT	0827		2135.3																												
		0827	0825		2130.5	2126.8																			148							
L 442+72	62 LT	0828		2139.1																												
		0828	0830		2133.5	2133.4	0.4																				20					
L 442+72	72 LT	0829		2137.6																												
		0829	0828		2134.6	2134.0	1.7																			8						
L 442+95	62 LT	0830		2139.8																												
		0830	0831		2132.9	2132.7																						60				
L 442+95	2 LT	0831		2139.6																												
		0831	0832		2130.6	2130.6																						4				
L 442+95	2 RT	0832		2139.6																												
		0832	0833		2130.6	2127.5																						100				
L 442+40	3 LT	0834		2138.0																												
		0834	0831		2132.1	2131.9																			52							
L 442+40	3 RT	0835		2138.0																												
		0835	0834		2132.1	2132.1																			4							
						SHEET TOTALS																			792	68	356	164				

FROM	TO	36" WELDED STEEL PIPE 0.53" THICK, GRADE B IN SOIL	36" WELDED STEEL PIPE 0.53" THICK, GRADE B NOT IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B NOT IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B NOT IN SOIL	12" FUNNEL DRAIN PIPE	TEMPORARY 12" SLOTTED DRAIN SPECIAL DETAIL		METAL FUNNEL	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE)	REINFORCED ENDWALLS	DRAINAGE STRUCTURE	QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)			OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	ADJUST D.I.	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	12" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	BERM DITCH OUTLET STD. 850.11 (PER EACH)	PREFORMED SCOUR HOLE (PER EACH)	ENERGY DISSIPATION BASIN	TEMP STEEL PLATE COVER MASONRY DRAINAGE	FLOWABLE FILL	CONCRETE COLLARS CL. "B" STD. 840.72	CONCRETE AND BRICK PIPE PLUG STD. 840.71	PIPE REMOVAL	REMARKS
												CY	CY	MASONRY CY	0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.																												CY	CY	CY	LIN. FT.	
0807															1	2.3							1							1																		69	
0807	0806																																																
0808															1								1							1																			
0808	0807																																																
0809															1	2.5							1							1																			
0809	0807																																																
0810															1								1							1																			
0810	0809																																																
0811															1							1		1																									
0811	0809																																															70	
0812															1							1		1																									
0812	0849																																																
0813															1								1							1																			
0813	0814																																																
0814															1	0.7							1							1																			
0814	0810																																																
0815															1								1							1																			
0815	0814																																																
0816															1	0.3							1							1																			
0816	0814																																																
0817															1								1							1																			
0817	0816																																																
0818															1								1							1																			
0818	0817																																																
0819															1								1							1																			
0819	0818																																																
0820															1							1		1																									
0820	0819																																																
0822															1							1		1																				12					
0822	0823																																																
0825															1								1							1																			
0825	0850																																																
0826															1	2.9		1																															
0826	0825																																																
0827															1							1	1																										
0827	0825																																																
0828															1	0.6					1		1																										
0828	0830																																																
0829															1							1		1																									
0829	0828																																																
0830															1	1.9					1		1																					31					
0830	0831																																																
0831															1	4.0							1							1																			
0831	0832																																																
0832															1	4.0							1							1																			
0832	0833																																																
0834															1	0.9							1							1																			
0834	0831																																																
0835															1	0.9							1							1																			
0835	0834																																																
SHEET TOTALS															25	21.0		1			2	6	19	5						16															43			139	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

RAODYNSKI-5285

COMPUTED BY:	JCF	DATE:	7/11/2019
CHECKED BY:	BSR	DATE:	7/11/2019

PROJECT NO.	SHEET NO.
I-4400BB	3D-7

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

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

LINE & STATION / SIZE / THICKNESS OR GAUGE	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) 12	Side Drain Pipe 15	Side Drain Pipe 18		DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	C. S. PIPE 15 .064	C. S. PIPE 18 .064	C. S. PIPE 24 .064	C. S. PIPE 30 .079	C. S. PIPE 36 .079	C. S. PIPE 42 .109	C. S. PIPE 48 .109		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	
L 441+46	3 RT	0836		2135.2																												
		0836	0835		2132.5	2132.1																			92							
L 441+46	3 LT	0837		2135.2																												
		0837	0836		2132.5	2132.5																			4							
L 429+25	81 RT	0838		2115.5																												
		0838	0735		2112.5	2112.4	0.3																			28						
L 439+72	72 LT	0839		2129.9																												
		0839	0850		2127.0	2126.3																			12							
L 442+72	84 LT	0840		2139.5																												
		0840	0829		2135.8	2134.6	1.2																			12						
L 433+00	62 LT	0841		2124.8																												
		0841	0802		2119.9	2119.3																			148							
L 432+50	2 RT	0842		2123.9																												
		0842	0804		2120.7	2119.5																			96							
L 435+50	62 LT	0843		2126.3																												
		0843	0806		2121.4	2120.5																			140							
L 435+21	3 RT	0844		2125.4																												
		0844	0810		2122.6	2122.6																			4							
L 429+50	62 LT	0845		2122.5																												
		0845	0730		2117.6	2116.9																			84							
Y2 16+20	73 LT	0846		2136.0																												
		0846	0848		2133.0	2132.5	0.3																			136						
Y2 17+22	48 LT	0847		2145.0																												
		0847	0846		2142.3	2133.2	0.4																		112							
L 437+50	62 LT	0849		2128.0																												
		0849	0813		2123.1	2122.6																			60							
L 439+72	62 LT	0850		2131.2																												
		0850	0849		2126.3	2123.1																			220							
L 444+90	3 RT	0902		2145.5																												
		0902	0906		2140.3	2140.0	0.4																			52						
L 444+90	3 LT	0903		2145.5																												
		0903	0902		2140.5	2140.5																			4							
L 444+90	62 LT	0904		2145.6																												
		0904	0903		2140.8	2140.5																			60							
L 444+90	57 RT	0906		2145.8																												
		0906	0901		2140.0	2127.5	1.5												80													
L 448+03	3 RT	0908		2154.9																												
		0908	0902		2149.9	2142.8																			312							
L 448+03	3 LT	0909		2154.8																												
		0909	0908		2149.9	2149.9																			4							
L 448+03	62 LT	0910		2155.0																												
		0910	0909		2150.1	2149.9																			60							
L 451+00	62 RT	0912		2163.9																												
		0912	0911		2158.4	2158.3	0.4																		8							
L 451+00	2 RT	0913		2163.8																												
		0913	0912		2158.6	2158.4																			60							
L 451+00	2 LT	0914		2163.6																												
		0914	0913		2158.6	2158.6																			4							
L 451+00	62 LT	0915		2163.7																												
		0915	0914		2158.9	2158.6																			60							
SHEET TOTALS																		80							1544	228						

LINE & STATION	FROM	TO	36" WELDED STEEL PIPE 0.53" THICK, GRADE B IN SOIL	36" WELDED STEEL PIPE 0.53" THICK, GRADE B NOT IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B NOT IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B NOT IN SOIL	12" FUNNEL DRAIN PIPE	TEMPORARY 12" SLOTTED DRAIN SPECIAL DETAIL		METAL FUNNEL	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	ADJUST D.I.	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	12" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	BERM DITCH OUTLET STD. 850.11 (PER EACH)	PREFORMED SCOUR HOLE (PER EACH)	ENERGY DISSIPATION BASIN	TEMP STEEL PLATE COVER MASONRY DRAINAGE	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
L 441+46	0836															1								1							1																			
	0836	0835																																																
L 441+46	0837															1								1							1																			
	0837	0836																																																
L 429+25	0838															1							1		1																									
	0838	0735																																																
L 439+72	0839															1							1		1																				2				
	0839	0850																																																
L 442+72	0840															1							1		1																									
	0840	0829																																																
L 433+00	0841															1							1	1																										
	0841	0802																																																
L 432+50	0842															1								1							1																			
	0842	0804																																																
L 435+50	0843															1							1	1																										
	0843	0806																																																
L 435+21	0844															1								1							1																			
	0844	0810																																																
L 429+50	0845															1							1	1																										
	0845	0730																																																
Y2 16+20	0846															1							1		1																							76	
	0846	0848																																																
Y2 17+22	0847															1							1		1																									
	0847	0846																																																
L 437+50	0849															1								1							1																			
	0849	0813																																																
L 439+72	0850															1								1							1																			
	0850	0849																																																
L 444+90	0902															1	0.2							1							1																			
	0902	0906																																											7				
L 444+90	0903															1								1							1																			
	0903	0902																																																
L 444+90	0904															1							1	1																										
	0904	0903																																																
L 444+90	0906															1	0.8													1			1																	
	0906	0901																																		2														
L 448+03	0908															1								1							1																			
	0908	0902																																																
L 448+03	0909															1								1							1																			
	0909	0908																																																
L 448+03	0910															1							1	1																										
	0910	0909																																																
L 451+00	0912															1	0.5							1							1																			
	0912	0911																																																
L 451+00	0913															1	0.2							1							1																			
	0913	0912																																																
L 451+00	0914															1								1							1																			
	0914	0913																																																
L 451+00	0915															1							1	1																										
	0915	0914																																																
SHEET TOTALS																25	1.7						11	19	5					1	13		1			2											9			76	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)

RAODYNSKI-5285

COMPUTED BY: JCF DATE: 7/11/2019

CHECKED BY: BSR DATE: 7/11/2019

PROJECT NO.	SHEET NO.
I-4400BB	3D-8

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

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

LINE & STATION	OFFSET	STRUCTURE NUMBER		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	MINIMUM REQUIRED SLOPE	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC)									C. S. PIPE								R. C. PIPE CLASS IV							
SIZE								12	15	18		DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	15	18	24	30	36	42	48		15	18	24	30	36	42	48	
THICKNESS OR GAUGE		FROM	TO	FT.	FT.	FT.	%										.064	.064	.064	.079	.079	.109	.109									
L 453+20	62 LT	0917		2170.1																												
		0917	0929		2165.2	2165.0	0.4																		60							
L 453+20	2 LT	0918		2170.0																												
		0918	0917		2165.4	2165.2	0.3																		60							
L 453+20	2 RT	0919		2170.4																												
		0919	0918		2165.4	2165.4																			4							
L 453+20	62 RT	0920		2170.5																												
		0920	0919		2165.7	2165.4																			60							
L 453+25	91 RT	0921		2159.5																												
		0921	0931		2156.5	2145.0																										
L 456+57	134 LT	0923		2139.6																												
		0923	0922		2135.6	2132.5																						60				
L 456+90	62 LT	0924		2179.2																												
		0924	0923		2168.5	2136.9	3.8										80															
L 456+90	3 LT	0925		2179.8																												
		0925	0924		2174.5	2174.3																			60							
L 456+90	3 RT	0926		2180.7																												
		0926	0925		2176.1	2176.0																			4							
L 456+90	62 RT	0927		2181.1																												
		0927	0926		2176.3	2176.1																			60							
L 456+03	3 LT	0928		2177.6																												
		0928	0925		2174.9	2174.5																			84							
L 453+80	62 LT	0929		2171.9																												
		0929	0916		2165.0	2148.7	2.5										48															
L 457+40	62 RT	1001		2182.3																												
		1001	1002		2177.5	2177.2																			60							
L 457+40	3 RT	1002		2181.7																												
		1002	1003		2177.2	2177.2																			4							
L 457+40	3 LT	1003		2180.9																												
		1003	1004		2177.2	2175.2	0.3																		60							
L 457+40	62 LT	1004		2180.1																												
		1004	0924		2175.2	2174.4	0.9																		48							
L 459+27	63 RT	1005		2186.1																												
		1005	1001		2181.2	2177.5																			188							
L 468+18	3 LT	1006		2179.8																												
		1006	1014		2171.9	2167.5	0.5																				280					
L 468+18	3 RT	1007		2178.7																												
		1007	1006		2172.0	2171.9	0.3																				4					
L 468+15	81 RT	1008		2177.9																												
		1008	1007		2172.3	2172.0																					76					
L 465+50	3 LT	1009		2184.1																												
		1009	1006		2176.7	2175.6	0.4																		268							
L 465+50	3 RT	1010		2183.6																												
		1010	1009		2180.9	2180.9																			4							
L 465+50	62 LT	1011		2181.7																												
		1011	1009		2176.9	2176.7																			60							
L 458+10	3 RT	1012		2182.6																												
		1012	1002		2179.9	2178.3																			68							
L 471+00	3 LT	1014		2171.0																												
		1014	1106		2167.5	2165.6	0.6																				52					
SHEET TOTALS																	128								1152		412	60				

FROM	TO	36" WELDED STEEL PIPE 0.53" THICK, GRADE B IN SOIL	36" WELDED STEEL PIPE 0.53" THICK, GRADE B NOT IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B NOT IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B NOT IN SOIL	12" FUNNEL DRAIN PIPE	TEMPORARY 12" SLOTTED DRAIN SPECIAL DETAIL		METAL FUNNEL	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.
0917															1		
0917	0929																
0918															1		
0918	0917																
0919															1		
0919	0918																
0920															1		
0920	0919																
0921												3.400					
0921	0931	102	102														
0923															1		
0923	0922																
0924															1	5.0	0.7
0924	0923																
0925															1	0.2	
0925	0924																
0926															1		
0926	0925																
0927															1		
0927	0926																
0928															1		
0928	0925																
0929															1	1.9	
0929	0916																
1001															1		
1001	1002																
1002															1		
1002	1003																
1003															1		
1003	1004																
1004															1		
1004	0924																
1005															1		
1005	1001																
1006															1	2.9	
1006	1014																
1007															1	1.8	
1007	1006																
1008															1	0.6	
1008	1007																
1009															1	2.4	
1009	1006																
1010															1		
1010	1009																
1011															1		
1011	1009																
1012															1		
1012	1002																
1014															1		
1014	1106																
SHEET TOTALS		102	102									3.400			24	14.8	0.7

FROM	TO	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	ADJUST D.I.	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	12" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	BERM DITCH OUTLET STD. 850.11 (PER EACH)	PREFORMED SCOUR HOLE (PER EACH)	ENERGY DISSIPATION BASIN	TEMP STEEL PLATE COVER MASONRY DRAINAGE	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
0917						1	1																									42	
0917	0929																																
0918							1							1																			
0918	0917																																
0919							1							1																			
0919	0918																																
0920							1							1																			
0920	0919																												5				
0921																																	
0921	0931																																
0923					1			1																									
0923	0922																															65	
0924						1	1																										
0924	0923																	2															
0925							1							1																			
0925	0924																																
0926							1							1																			
0926	0925																																
0927							1							1																			
0927	0926																																
0928							1							1																			
0928	0925																																
0929						1	1																										
0929	0916																	2														53	
1001							1							1																			
1001	1002																																
1002							1							1																			
1002	1003																																
1003							1							1																			
1003	1004																																
1004						1	1																										
1004	0924																																
1005							1							1																			
1005	1001																																
1006							1							1																		349	
1006	1014																																
1007							1							1																			
1007	1006																																
1008						1		1																									
1008	1007																																
1009							1							1																			
1009	1006																																
1010							1							1																			
1010	1009																																
1011						1	1																										
1011	1009																																
1012							1							1																			
1012	1002																																
1014							1							1																			
1014	1106																															44	
SHEET TOTALS					1	6	22	2						17				4											5			553	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

COMPUTED BY: JCF DATE: 7/11/2019

CHECKED BY: BSR DATE: 7/11/2019

PROJECT NO.	SHEET NO.
I-4400BB	3D-9

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

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

Line & Station	Offset	Structure Number From	Structure Number To	Top Elevation (FT.)	Invert Elevation (FT.)	Invert Elevation (FT.)	Minimum Required Slope (%)
L 473+21	62 LT	1104		2164.3			
		1104	1105		2159.5	2158.8	
L 471+55	62 LT	1105		2169.2			
		1105	1103		2157.0	2157.0	
L 471+55	3 LT	1106		2169.1			
		1106	1105		2159.8	2159.6	
L 471+55	3 RT	1107		2169.9			
		1107	1106		2160.8	2160.8	
L 471+55	84 RT	1108		2166.7			
		1108	1107		2161.1	2160.8	
L 475+98	81 LT	1109		2152.9			
		1109	1110		2148.1	2147.8	
L 476+00	3 LT	1110		2155.9			
		1110	1111		2147.8	2147.8	0.3
L 476+00	3 RT	1111		2156.5			
		1111	1115		2147.5	2140.5	0.9
L 475+93	72 RT	1112		2155.4			
		1112	1111		2150.3	2150.0	
L 474+75	81 RT	1113		2157.3			
		1113	1112		2154.6	2150.5	0.5
L 480+21	3 LT	1114		2143.3			
		1114	1115		2140.6	2140.6	
L 480+21	3 RT	1115		2143.9			
		1115	1119		2138.2	2129.0	0.4
L 480+21	62 RT	1116		2144.0			
		1116	1115		2139.2	2138.9	
L 483+90	81 LT	1117		2129.4			
		1117	1118		2126.4	2126.0	
L 483+90	3 LT	1118		2132.3			
		1118	1119		2126.0	2126.0	
L 483+90	3 RT	1119		2132.8			
		1119	1202		2125.5	2124.2	0.8
L 485+50	3 LT	1201		2127.6			
		1201	1202		2124.9	2124.8	
L 485+50	3 RT	1202		2128.0			
		1202	1203		2124.1	2122.5	0.9
L 485+50	62 RT	1203		2128.1			
		1203	1204		2122.5	2107.0	3.7
L 486+71	109 LT	1205		2114.4			
		1205	1206		2111.4	2094.3	
L 488+00	3 LT	1207		2120.1			
		1207	1208		2117.4	2117.4	
L 488+00	3 RT	1208		2120.5			
		1208	1226		2117.4	2115.8	
L 486+87	3 RT	1209		2123.9			
		1209	1208		2120.9	2117.5	
L 492+30	62 RT	1210		2107.7			
		1210	1211		2102.8	2102.6	
L 492+30	3 RT	1211		2107.5			
		1211	1212		2102.4	2102.3	
						SHEET TOTALS	

From	To	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) 12	Side Drain 15	Side Drain 18	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	C. S. PIPE 15 (.064)	C. S. 18 (.064)	C. S. 24 (.064)	C. S. 30 (.079)	C. S. 36 (.079)	C. S. 42 (.109)	C. S. 48 (.109)	R. C. PIPE CLASS IV 15	R. C. 18	R. C. 24	R. C. 30	R. C. 36	R. C. 42	R. C. 48
1104																							
1104	1105																164						
1105																							
1105	1103																				24		
1106																							
1106	1105																				60		
1107																							
1107	1106																		4				
1108																							
1108	1107																		80				
1109																							
1109	1110																80						
1110																							
1110	1111																4						
1111																							
1111	1115																	420					
1112																							
1112	1111																	68					
1113																							
1113	1112																116						
1114																							
1114	1115																4						
1115																							
1115	1119																		368				
1116																							
1116	1115																60						
1117																							
1117	1118																	80					
1118																							
1118	1119																	4					
1119																							
1119	1202																		160				
1201																							
1201	1202																4						
1202																							
1202	1203																		60				
1203																							
1203	1204											40											
1205																							
1205	1206																						
1207																							
1207	1208																4						
1208																							
1208	1226																60						
1209																							
1209	1208																112						
1210																							
1210	1211																60						
1211																							
1211	1212																	4					
SHEET TOTALS												40					668	576	672		84		

From	To	36" WELDED STEEL PIPE 0.53" THICK, GRADE B IN SOIL	36" WELDED STEEL PIPE 0.53" THICK, GRADE B NOT IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B NOT IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B NOT IN SOIL	12" FUNNEL DRAIN PIPE	TEMPORARY 12" SLOTTED DRAIN SPECIAL DETAIL	METAL FUNNEL	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	0' THRU 5' EACH	A: 5' THRU 10' LIN. FT.	B: 10' AND ABOVE LIN. FT.
1104														1		
1104	1105															
1105														1	5.0	2.2
1105	1103															
1106														1	4.3	
1106	1105															
1107														1	4.1	
1107	1106															
1108														1	0.6	
1108	1107															
1109														1		
1109	1110															
1110														1	3.1	
1110	1111															
1111														1	4.0	
1111	1115															
1112														1	0.1	
1112	1111															
1113														1		
1113	1112															
1114														1		
1114	1115															
1115														1	0.7	
1115	1119															
1116														1		
1116	1115															
1117														1		
1117	1118															
1118														1	1.3	
1118	1119															
1119														1	2.3	
1119	1202															
1201														1		
1201	1202															
1202														1		
1202	1203															
1203														1	0.6	
1203	1204															
1205											3.400					
1205	1206	118	118													
1207														1		
1207	1208															
1208														1		
1208	1226															
1209														1		
1209	1208															
1210														1		
1210	1211															
1211														1	0.2	
1211	1212															
SHEET TOTALS		118	118								3.400			24	26.3	2.2

QUANTITIES FOR DRAINAGE STRUCTURES — NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)

From	To	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	ADJUST D.I.	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	12" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	BERM DITCH OUTLET STD. 850.11 (PER EACH)	PREFORMED SCOUR HOLE (PER EACH)	ENERGY DISSIPATION BASIN	TEMP STEEL PLATE COVER MASONRY DRAINAGE	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
1104						1	1																										
1104	1105																																
1105					1		1																										
1105	1103																																
1106							1							1																			
1106	1105																																
1107							1							1																			
1107	1106																																
1108						1		1																									
1108	1107																																
1109						1		1																								67	
1109	1110																																
1110							1							1																			
1110	1111																																
1111							1							1																		548	
1111	1115																																
1112						1		1																								111	
1112	1111																																
1113						1		1																									
1113	1112																																
1114							1							1																		68	
1114	1115																																
1115							1							1																			
1115	1119																																
1116							1							1																			
1116	1115																																
1117						1		1																									
1117	1118																																
1118							1							1																			
1118	1119																																
1119							1							1																			
1119	1202																												26				
1201							1							1																			
1201	1202																																
1202							1							1																			
1202	1203																												6				
1203							1							1																			
1203	1204																			2													
1205																																	
1205	1206																												37				
1207							1							1																			
1207	1208																															78	
1208							1							1																			
1208	1226																																
1209							1							1																			
1209	1208																												6			41	
1210							1							1																			
1210	1211																																
1211							1							1																			
1211	1212																																
SHEET TOTALS					1	6	19	5						17						2									75			913	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

RAODYNSKI-5285

COMPUTED BY:	JCF	DATE:	7/11/2019
CHECKED BY:	BSR	DATE:	7/11/2019

PROJECT NO.	SHEET NO.
I-4400BB	3D-10

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications For Roads and Structures, Section 300-5".

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

LINE & STATION / SIZE / THICKNESS OR GAUGE	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) 12	Side Drain Pipe 15	Side Drain Pipe 18		DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	C. S. PIPE 15 .064	C. S. PIPE 18 .064	C. S. PIPE 24 .064	C. S. PIPE 30 .079	C. S. PIPE 36 .079	C. S. PIPE 42 .109	C. S. PIPE 48 .109		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		36" WELDED STEEL PIPE 0.53" THICK, GRADE B IN SOIL	36" WELDED STEEL PIPE 0.53" THICK, GRADE B NOT IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B NOT IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B NOT IN SOIL	12" FUNNEL DRAIN PIPE	TEMPORARY 12" SLOTTED DRAIN SPECIAL DETAIL		METAL FUNNEL	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	ADJUST D.I.	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	12" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	BERM DITCH OUTLET STD. 850.11 (PER EACH)	PREFORMED SCOUR HOLE (PER EACH)	ENERGY DISSIPATION BASIN	TEMP STEEL PLATE COVER MASONRY DRAINAGE	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
L 492+30	3 LT	1212		2107.3																																											1								1							1																			
		1212	1213		2102.3	2102.1	0.3																			60																				1																																			
L 492+30	62 LT	1213		2107.5																																											1	0.4						1	1																													
		1213	1214		2102.1	2091.5	1.9											28																																																2															
L 495+47	3 RT	1215		2098.0																																											1								1							1																			
		1215	1216		2093.1	2093.1																			4																																																										
L 495+47	3 LT	1216		2097.9																																											1								1							1																			
		1216	1217		2093.1	2092.8	0.3																		60																																																										
L 495+47	62 LT	1217		2098.0																																											1	0.2						1	1																													
		1217	1218		2092.8	2091.6	0.5																		52																																																									
L 496+00	62 LT	1218		2096.4																																											1	0.4						1	1																												27	
		1218	1219		2091.1	2067.7	3.1										60																																																	2																
L 496+00	120 LT	1219		2069.0																																																																								1							
L 495+47	62 RT	1220		2098.2																																											1								1							1																5			76	
		1220	1215		2093.3	2093.1																			60																																																											
L 498+90	3 RT	1222		2088.5																																											1								1							1																			73	
		1222	1223		2085.7	2085.7																			4																																																												
L 498+90	3 LT	1223		2088.4																																											1								1							1																4				
		1223	1224		2085.7	2083.7																			60																																																											
L 498+90	62 LT	1224		2088.6																																											1								1							1																			45	
		1224	1225		2083.7	2067.0	1.5										48																																																	2																
L 488+00	62 RT	1226		2120.6																																											1	0.6							1							1																			
		1226	1227		2115.0	2089.7	1.0										64																																																2																
L 501+50	62 LT	1302		2084.6																																											1							1	1																												39	
		1302	1301		2079.8	2063.7	1.0										52																																																2																
L 501+50	3 LT	1303		2084.5																																											1								1							1																			
		1303	1302		2081.8	2079.8																			60																																																											
L 501+50	3 RT	1304		2084.5																																											1								1							1																			
		1304	1303		2081.8	2081.8																			8																																																											
L 499+96	62 RT	1305		2086.6																																											1								1							1																			
		1305	1306		2081.8	2068.7											44																																																2														41	
L 499+68	96 RT	1308		2070.4																																							3.400																																											
		1308	1307		2067.4	2066.4																											114	114																																														26				
L 504+50	62 LT	1310		2082.8																																											1	5.0	1.6				1	1																													
		1310	1309		2071.2	2063.0	1.0													48																																																	2											40	
L 504+50	3 LT	1311		2082.7																																											1	5.0	1.2					1							1																			
		1311	1310		2071.5	2071.2																						60																																																		4				
L 504+50	3 RT	1312		2082.7																																											1	5.0	1.2					1							1																			
		1312	1311		2071.5	2071.5																						4																																																							
L 505+13	3 RT	1313		2082.4																																											1	5.0	0.6					1							1																			
		1313	1312		2071.7	2071.5																						60																																																		13				
L 505+05	80 RT	1314		2079.0																																											1	1.9					1		1																													
		1314	1313		2072.1	2071.7																						76																																																								
L 507+90	62 LT	1316		2080.9																																											1	0.3						1	1																													
		1316	1315		2075.6	2060.7	2.2										52																																																2																
L 507+90	3 LT	1317		2080.8																																											1								1							1																			
		1317	1316		2075.8	2075.6	0.3																		60																																																													
L 507+90	3 RT	1318		2080.8																																											1								1							1																4				
		1318	1317		2075.8	2075.8																			4																																																												
L 507+90	62 RT	1319		2080.9																																											1								1							1																			
SHEET TOTALS																	320	28		48					372	60		200					114	114									3.400			24	23.8	4.6				1	6	24							17				12	2		2					1			56			341	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

RAODYNSKI-5285

COMPUTED BY:	JCF	**DATE:**	7/11/2019
CHECKED BY:	BSR	**DATE:**	7/11/2019

PROJECT NO.	SHEET NO.
I-4400BB	3D-11

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

**Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".**

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

LINE & STATION	OFFSET	STRUCTURE NUMBER		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	MINIMUM REQUIRED SLOPE	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC)									C. S. PIPE								R. C. PIPE CLASS IV							
SIZE								12	15	18							15	18	24	30	36	42	48		15	18	24	30	36	42	48	
THICKNESS OR GAUGE		FROM	TO	FT.	FT.	FT.	%					DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	.064	.064	.064	.079	.079	.109	.109									
		1319	1318		2076.1	2075.8																			60							
L 511+30	62 LT	1320		2079.0																												
		1320	1321		2074.1	2060.7											48															
L 511+30	3 LT	1322		2078.8																												
		1322	1323		2076.1	2076.1																			4							
L 511+30	3 RT	1323		2078.8																												
		1323	1405		2076.1	2075.1																			188							
L 511+30	62 RT	1324		2079.0																												
		1324	1325		2074.1	2073.6																			100							
L 512+32	62 RT	1325		2078.4																												
		1325	1406		2073.6	2073.1																			88							
L512+22	98 RT	1327		2063.2																												
		1327	1326		2060.2	2060.0																										
L 510+70	81 RT	1331		2073.6																												
		1331	1330		2070.9	2070.8																			28							
L 514+50	62 LT	1402		2077.1																												
		1402	1401		2072.1	2057.5	1.4											48														
L 514+50	3 LT	1403		2077.0																												
		1403	1402		2074.0	2072.1																				60						
L 514+50	3 RT	1404		2077.0																												
		1404	1403		2074.1	2074.0																				4						
L 513+21	3 RT	1405		2077.8																												
		1405	1404		2075.1	2074.3	0.3																		128							
L 513+21	62 RT	1406		2077.9																												
		1406	1407		2073.1	2071.7																			32							
L 518+46	62 LT	1409		2074.9																												
		1409	1408		2067.5	2058.5	0.6													48												
L 517+50	62 LT	1410		2075.4																												
		1410	1409		2067.9	2067.5																						96				
L 517+50	3 LT	1411		2075.3																												
		1411	1410		2068.7	2068.4	0.4																				60					
L 517+50	3 RT	1412		2075.3																												
		1412	1411		2068.7	2068.7	0.3																				4					
L 516+60	3 RT	1413		2075.8																												
		1413	1412		2069.0	2068.7	0.3																				88					
L 516+60	81 RT	1414		2072.8																												
		1414	1413		2069.3	2069.0																					76					
		1415	1414		2080.0	2069.3	0.7												48													
L 523+06	72 RT	1416		2071.2																												
		1416	1435		2066.3	2066.3																			8							
L 523+03	81 LT	1418		2069.5																												
		1418	1417		2063.4	2062.5	0.7													44												
L 523+03	3 LT	1419		2072.5																												
		1419	1418		2065.3	2063.9	0.4																				80					
L 523+06	3 RT	1420		2072.5																												
		1420	1419		2065.8	2065.8																				8						
L 522+06	3 LT	1421		2072.7																												
		1421	1419		2069.7	2069.4																				96						
L 522+06	3 RT	1422		2072.8																												
		1422	1421		2070.0	2070.0																			4							
SHEET TOTALS																	48	48	48	92					640	168	308	96				

FROM	TO	36" WELDED STEEL PIPE 0.53" THICK, GRADE B IN SOIL	36" WELDED STEEL PIPE 0.53" THICK, GRADE B NOT IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B NOT IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B NOT IN SOIL	12" FUNNEL DRAIN PIPE	TEMPORARY 12" SLOTTED DRAIN SPECIAL DETAIL		METAL FUNNEL	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	ADJUST D.I.	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	12" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	BERM DITCH OUTLET STD. 850.11 (PER EACH)	PREFORMED SCOUR HOLE (PER EACH)	ENERGY DISSIPATION BASIN	TEMP STEEL PLATE COVER MASONRY DRAINAGE	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
1319	1318																																																
1320															1							1	1																									38	
1320	1321																																	2															
1322															1								1							1																			
1322	1323																																																
1323															1								1							1																			
1323	1405																																																
1324															1								1							1																			
1324	1325																																																
1325															1								1							1																			
1325	1406																																																
1327											3.400																																						
1327	1326	102	102																																									34				
1331															1							1		1																									
1331	1330																																																
1402															1	0.1						1	1																										
1402	1401																																		2													40	
1403															1								1							1																			
1403	1402																																												4				
1404															1								1							1																			
1404	1403																																																
1405															1								1							1																			
1405	1404																																																
1406															1								1							1																			
1406	1407																																																
1409															1	2.4					1		1																										
1409	1408																																				2											47	
1410															1	2.5					1		1																										
1410	1409																																															41	
1411															1	1.7							1							1																			
1411	1410																																																
1412															1	1.6							1							1																			
1412	1411																																																
1413															1	1.8							1							1																			
1413	1412																																																
1414															1							1		1																									
1414	1413																																																
1415	1414																																			2													
1416															1							1		1																									
1416	1435																																																
1418															1	1.1					1		1																										
1418	1417																																				2												
1419															1	2.2							1							1																			
1419	1418																																																
1420															1	1.7							1							1																			
1420	1419																																																
1421															1								1							1																			
1421	1419																																												6				
1422															1								1							1																			
1422	1421																																																
SHEET TOTALS		102	102									3.400			23	15.1					3	5	20	3						15				2	2	2	4								44			166	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

RAODYNSKI-5285

COMPUTED BY:	JCF	DATE:	7/11/2019
CHECKED BY:	BSR	DATE:	7/11/2019

PROJECT NO.	SHEET NO.
I-4400BB	3D-12

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications For Roads and Structures, Section 300-5".

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

LINE & STATION / SIZE / THICKNESS OR GAUGE	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) 12	15	18	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	C. S. PIPE 15 .064	18 .064	24 .064	30 .079	36 .079	42 .109	48 .109	R. C. PIPE CLASS IV 15	18	24	30	36	42	48
L 520+50	3 LT	1423		2073.6																									
		1423	1421		2070.9	2070.0	0.3																152						
L 520+50	3 RT	1424		2073.6																									
		1424	1423		2070.9	2070.9																	4						
L 519+50	3 RT	1425		2074.2																									
		1425	1424		2071.5	2070.9																	100						
L 519+50	81 RT	1426		2077.3																									
		1426	1425		2071.8	2071.5																	76						
L 522+06	62 RT	1427		2072.9																									
		1427	1435		2070.8	2067.8																	96						
L 525+53	62 LT	1428		2073.9																									
		1428	1430		2069.1	2068.5																	72						
L 524+78	62 LT	1430		2073.4																									
		1430	1429		2068.5	2062.7											48												
L 524+78	3 LT	1431		2073.2																									
		1431	1419		2070.5	2069.8																	172						
L 524+78	3 RT	1432		2073.2																									
		1432	1431		2070.5	2070.5																	4						
L 525+53	62 RT	1433		2073.8																									
		1433	1436		2069.0	2068.1																	132						
L 523+06	62 RT	1435		2072.7																									
		1435	1420		2066.0	2065.8																		60					
L 524+20	62 RT	1436		2072.9																									
		1436	1434		2067.9	2063.5											44												
L 513+70	81 RT	1438		2073.8																									
		1438	1437		2071.1	2071.0																	20						
L 528+00	62 LT	1502		2075.8																									
		1502	1501		2070.9	2066.7	1.8										32												
L 528+00	3 LT	1503		2075.7																									
		1503	1502		2072.7	2070.9																	60						
L 528+00	3 RT	1504		2075.4																									
		1504	1503		2072.7	2072.7																	4						
L 531+75	62 LT	1506		2078.6																									
		1506	1518		2072.5	2071.2																				172			
L 531+75	3 LT	1507		2078.5																									
		1507	1506		2072.7	2072.5																				60			
L 531+75	3 RT	1508		2078.0																									
		1508	1507		2075.3	2075.3																	4						
L 538+13	62 LT	1509		2081.8																									
		1509	1515		2076.5	2076.3																		60					
L 533+85	3 LT	1510		2080.0																									
		1510	1507		2073.6	2072.7																				208			
L 533+85	3 RT	1511		2079.5																									
		1511	1510		2076.8	2076.8																	4						
L 535+85	3 LT	1512		2081.4																									
		1512	1510		2074.9	2074.1																			196				
L 535+85	2 RT	1513		2080.8																									
		1513	1512		2076.0	2076.0																	4						
L 535+85	62 RT	1514		2081.0																									
		1514	1513		2076.2	2076.0																	60						
						SHEET TOTALS											124							964	120	196	440			

STRUCTURE NUMBER FROM	TO	36" WELDED STEEL PIPE 0.53" THICK, GRADE B IN SOIL	36" WELDED STEEL PIPE 0.53" THICK, GRADE B NOT IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B NOT IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B NOT IN SOIL	12" FUNNEL DRAIN PIPE	TEMPORARY 12" SLOTTED DRAIN SPECIAL DETAIL	METAL FUNNEL	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	ADJUST D.I.	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	12" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	BERM DITCH OUTLET STD. 850.11 (PER EACH)	PREFORMED SCOUR HOLE (PER EACH)	ENERGY DISSIPATION BASIN	TEMP STEEL PLATE COVER MASONRY DRAINAGE	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
1423														1								1							1																			
1423	1421																																															
1424														1								1							1																			
1424	1423																																															
1425														1								1							1																			
1425	1424																																											6				
1426														1							1		1																									
1426	1425																																														63	
1427														1								1							1																			
1427	1435																																															
1428														1							1	1																										
1428	1430																																															
1430														1							1	1																										
1430	1429																																2															
1431														1								1							1																			
1431	1419																																															
1432														1								1							1																			
1432	1431																																															
1433														1								1							1																			
1433	1436																																															
1435														1	1.6							1							1																			
1435	1420																																															
1436														1	0.1							1							1																			
1436	1434																																2															
1438														1							1		1																									
1438	1437																																															
1502														1							1	1																										
1502	1501																																2															
1503														1								1							1																			
1503	1502																																															
1504														1								1							1																			
1504	1503																																															
1506														1	1.1					1		1																										
1506	1518																																															
1507														1	0.7							1							1																			
1507	1506																																														203	
1508														1								1							1																			
1508	1507																																															
1509														1	0.3							1							1																			
1509	1515																																															
1510														1	1.5							1							1																			
1510	1507																																														296	
1511														1								1							1																			
1511	1510																																															
1512														1	1.5							1							1																			
1512	1510																																															
1513														1								1							1																			
1513	1512																																														68	
1514														1								1							1																			
1514	1513																																															
SHEET TOTALS														25	6.8					1	5	23	2						19				6											6			630	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

RAODYNSKI-5285

COMPUTED BY: JCF **DATE:** 7/11/2019

CHECKED BY: BSR **DATE:** 7/11/2019

PROJECT NO.	SHEET NO.
I-4400BB	3D-13

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

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

LINE & STATION	OFFSET	STRUCTURE NUMBER		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	MINIMUM REQUIRED SLOPE	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC)									C. S. PIPE								R. C. PIPE CLASS IV							
SIZE								12	15	18							15	18	24	30	36	42	48		15	18	24	30	36	42	48	
THICKNESS OR GAUGE		FROM	TO	FT.	FT.	FT.	%					DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	.064	.064	.064	.079	.079	.109	.109									
L 538+13	1 LT	1515		2083.4																												
		1515	1512		2075.8	2074.9																					228					
L 538+13	5 RT	1516		2082.0																												
		1516	1515		2078.3	2078.3	0.3																		8							
L 538+13	62 RT	1517		2083.4																												
		1517	1516		2078.5	2078.3																			56							
L 530+00	62 LT	1518		2077.3																												
		1518	1505		2071.2	2071.1																						20				
L 533+85	72 LT	1519		2080.6																												
		1519	1510		2077.9	2076.9																			72							
L 538+50	72 RT	1520		2082.2																												
		1520	1521		2079.4	2078.9																			8							
L 538+50	62 RT	1521		2083.7																												
		1521	1517		2078.9	2078.5																			36							
L 539+01	63 LT	1522		2081.9																												
		1522	1509		2077.1	2076.7																			84							
L 539+01	83 LT	1523		2087.9																												
		1523	1522		2077.2	2077.1																			20							
L 529+25	83 RT	1525		2073.0																												
		1525	1524		2069.5	2069.4																					24					
L 530+00	127 RT	1527		2076.0																												
		1527	1526		2073.3	2073.1																			56							
L 541+31	66 LT	1602		2083.9																												
		1602	1601		2077.0	2077.0																					8					
L 541+31	2 LT	1603		2085.8																												
		1603	1602		2079.2	2078.8																				64						
L 541+31	2 RT	1604		2084.3																												
		1604	1603		2079.2	2079.2																				8						
L 541+50	81 RT	1605		2083.2																												
		1605	1644		2080.5	2080.4																			20							
Y5 23+32	41 RT	1606		2096.1																												
		1606	1609		2091.2	2087.6	0.9																					60				
Y5 20+66	68 RT	1607		2088.0																												
		1607	1626		2077.0	2073.0																										
Y5 20+63	42 LT	1608		2102.4																												
		1608	1607		2096.2	2085.3																			108							
Y5 22+73	58 RT	1609		2091.6																												
		1609	1607		2087.1	2083.5	0.4																						208			
L 546+00	74 LT	1610		2089.4																												
		1610	1627		2081.9	2080.9																			96							
L 543+70	74 LT	1612		2086.7																												
		1612	1611		2079.0	2075.0	1.2											36														
L 543+70	2 LT	1613		2088.9																												
		1613	1612		2083.6	2079.0																					72					
L 543+70	2 RT	1614		2087.0																												
		1614	1613		2083.6	2083.6																					8					
L 543+70	96 RT	1615		2086.5																												
		1615	1614		2084.5	2083.6																					92					
L 546+95	85 RT	1616		2091.8																												
		1616	1632		2082.9	2082.9																					8					
SHEET TOTALS																			36						564	72	440	80	208			

LINE & STATION	FROM	TO	36" WELDED STEEL PIPE 0.53" THICK, GRADE B IN SOIL	36" WELDED STEEL PIPE 0.53" THICK, GRADE B NOT IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B NOT IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B NOT IN SOIL	12" FUNNEL DRAIN PIPE	TEMPORARY 12" SLOTTED DRAIN SPECIAL DETAIL		METAL FUNNEL	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE)	REINFORCED ENDWALLS	DRAINAGE STRUCTURE	QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)	A	B
													CY	CY	MASONRY CY	0' THRU 5' EACH	5' THRU 10' LIN. FT.	10' AND ABOVE LIN. FT.
L 538+13	1515															1	2.6	
	1515	1512																
L 538+13	1516															1		
	1516	1515																
L 538+13	1517															1		
	1517	1516																
L 530+00	1518															1	1.1	
	1518	1505																
L 533+85	1519															1		
	1519	1510																
L 538+50	1520															1		
	1520	1521																
L 538+50	1521															1		
	1521	1517																
L 539+01	1522															1		
	1522	1509																
L 539+01	1523															1	5.0	0.7
	1523	1522																
L 529+25	1525															1		
	1525	1524																
L 530+00	1527															1		
	1527	1526																
L 541+31	1602															1	1.9	
	1602	1601																
L 541+31	1603															1	1.6	
	1603	1602																
L 541+31	1604															1	0.1	
	1604	1603																
L 541+50	1605															1		
	1605	1644																
Y5 23+32	1606															1		
	1606	1609																
Y5 20+66	1607															1	5.0	1.0
	1607	1626					200	200										
Y5 20+63	1608															1	1.1	
	1608	1607																
Y5 22+73	1609															1		
	1609	1607																
L 546+00	1610															1	2.4	
	1610	1627																
L 543+70	1612															1	2.7	
	1612	1611																
L 543+70	1613															1	0.3	
	1613	1612																
L 543+70	1614															1		
	1614	1613																
L 543+70	1615																	
	1615	1614																
L 546+95	1616															1	3.9	
	1616	1632																
SHEET TOTALS							200	200								24	27.7	1.7

LINE & STATION	FROM	TO	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	ADJUST D.I.	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	12" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	BERM DITCH OUTLET STD. 850.11 (PER EACH)	PREFORMED SCOUR HOLE (PER EACH)	ENERGY DISSIPATION BASIN	TEMP STEEL PLATE COVER MASONRY DRAINAGE	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
L 538+13	1515							1							1																			
	1515	1512																																
L 538+13	1516							1							1																			
	1516	1515																																
L 538+13	1517							1							1																			
	1517	1516																																
L 530+00	1518					1		1																										
	1518	1505																												5				
L 533+85	1519							1							1																			
	1519	1510																															67	
L 538+50	1520						1		1																									
	1520	1521																																
L 538+50	1521							1							1																			
	1521	1517																																
L 539+01	1522							1							1																			
	1522	1509																																
L 539+01	1523						1		1																									
	1523	1522																																
L 529+25	1525					1			1																									
	1525	1524																																
L 530+00	1527		1																															
	1527	1526																																
L 541+31	1602						1	1																										
	1602	1601																																
L 541+31	1603							1							1																			
	1603	1602																												18				
L 541+31	1604							1							1																			
	1604	1603																																
L 541+50	1605						1		1																									
	1605	1644																												17				
Y5 23+32	1606												1				1																	
	1606	1609																																
Y5 20+66	1607					1			1																									
	1607	1626																												34				
Y5 20+63	1608						1		1																									
	1608	1607																																
Y5 22+73	1609					1			1																									
	1609	1607																																
L 546+00	1610							1							1																			
	1610	1627																																
L 543+70	1612						1	1																										
	1612	1611																				2												
L 543+70	1613							1							1																			
	1613	1612																																
L 543+70	1614							1							1																			
	1614	1613																																
L 543+70	1615																																	
	1615	1614																												20				
L 546+95	1616					1		1																										
	1616	1632																																
SHEET TOTALS			1			5	6	15	7				1		11		1				2									94			67	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

RAODYNSKI-5285

COMPUTED BY:	JCF	DATE:	7/11/2019
CHECKED BY:	BSR	DATE:	7/11/2019

PROJECT NO.	SHEET NO.
I-4400BB	3D-14

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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See "Standard Specifications For Roads and Structures, Section 300-5".

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

LINE & STATION / SIZE / THICKNESS OR GAUGE	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) 12	15	18		DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	C. S. PIPE 15 .064	18 .064	24 .064	30 .079	36 .079	42 .109	48 .109		R. C. PIPE CLASS IV 15	18	24	30	36	42	48		36" WELDED STEEL PIPE 0.53" THICK, GRADE B IN SOIL	36" WELDED STEEL PIPE 0.53" THICK, GRADE B NOT IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B NOT IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B NOT IN SOIL	12" FUNNEL DRAIN PIPE	TEMPORARY 12" SLOTTED DRAIN SPECIAL DETAIL		METAL FUNNEL	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	ADJUST D.I.	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	12" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	BERM DITCH OUTLET STD. 850.11 (PER EACH)	PREFORMED SCOUR HOLE (PER EACH)	ENERGY DISSIPATION BASIN	TEMP STEEL PLATE COVER MASONRY DRAINAGE	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
L 548+50	74 RT	1617		2092.5																																		1								1							1																			
		1617	1632		2089.7	2084.1																			156																																																							
L 548+00	2 LT	1618		2093.3																																		1								1							1																			
		1618	1630		2088.3	2087.8	0.4																		104																																																							
L 548+00	2 RT	1619		2091.0																																		1								1							1																			
		1619	1618		2088.4	2088.3																			8																																																							
L 551+35	3 LT	1620		2096.1																																		1	0.1							1							1																			
		1620	1618		2091.0	2088.6																			332																																																					55	
L 551+35	3 RT	1621		2093.8																																		1								1							1																			
		1621	1620		2091.0	2091.0																			8																																																							
L 547+80	74 LT	1622		2090.9																																		1	2.0						1	1																												
		1622	1629		2083.9	2082.8																			80																																																						
Y5 23+32	28 LT	1623		2104.5																																		1	3.7					1		1																												
		1623	1606		2095.8	2091.2																						68																																																				
L 540+76	71 LT	1625		2082.0																																		1							1		1																										
		1625	1640		2079.1	2078.5																			8																																																						
Y5 16+72	58 RT	1626		2080.0																																		1	2.0					1			1																										
		1626	1639		2073.0	2070.6																									76																																																	
L 545+00	74 LT	1627		2088.3																																		1	2.4						1	1																												
		1627	1612		2080.9	2079.7																			128																																																						
L 546+95	74 LT	1629		2090.2																																		1	3.2						1	1																												
L 546+95	2 LT	1630		2092.4																																		1	4.9							1							1																			
		1630	1629		2082.5	2082.0	0.3																				72																																																						
L 546+95	2 RT	1631		2090.1																																		1	2.5							1							1																			
		1631	1630		2082.6	2082.5																					8																																																			5				
L 546+95	74 RT	1632		2092.2																																		1	4.3							1							1																			
		1632	1631		2082.9	2082.6																					72																																																							
L 545+50	101 RT	1633		2087.0																																		1			1																																	
		1633	1616		2083.5	2082.9																					148																																																			14				
WEIGH_C 14+50	36 RT	1635		2095.0																																		1							1		1																										
		1635	1701		2092.0	2090.6	0.5																		72																																																					3				
L 539+42	238 LT	1639		2082.0																																		1	5.0	1.4											1																						
		1639	1638		2070.6	2066.4																															62	62																																							38				
L 540+76	64 LT	1640		2083.3																																		1								1							1																			
		1640	1602		2078.5	2078.3																			52																																																							
L 544+00	72 RT	1643		2089.4																																		1								1							1																			
		1643	1644		2084.5	2081.4																			252																																																					3				
L 541+50	60 RT	1644		2086.3																																		1	0.9							1							1																			
		1644	1604		2080.4	2079.5																			60																																																								
WEIGH_C 14+85	25 LT	1701		2094.5																																		1							1		1																										
		1701	1702		2089.8	2089.6																					64																																																							
L 553+20	3 RT	1702		2095.7																																		1	1.1							1							1																			
		1702	1703		2089.6	2089.5																					8																																																							
L 553+20	3 LT	1703		2097.0																																		1	3.0							1							1																			
		1703	1730		2089.0	2088.6																						104																																																						
L 554+70	3 LT	1704		2097.4																																		1								1							1																			
		1704	1703		2094.3	2093.2																			148																																																								
L 554+70	3 RT	1705		2097.0																																		1								1							1																			
		1705	1704		2094.3	2094.3																			8																																																						126	
L 563+14	2 LT	1706		2105.6																																		1								1							1																			
SHEET TOTALS																									1416		372	172			76						62	62								26	35.1	1.4	1			2	6	20	4				1		16															63			181	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

RAODYNSKI-5285

COMPUTED BY: JCF **DATE:** 7/11/2019

CHECKED BY: BSR **DATE:** 7/11/2019

PROJECT NO.	SHEET NO.
I-4400BB	3D-15

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

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

LINE & STATION	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) 12	Side Drain Pipe 15	Side Drain Pipe 18	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	C. S. PIPE 15 .064	C. S. PIPE 18 .064	C. S. PIPE 24 .064	C. S. PIPE 30 .079	C. S. PIPE 36 .079	C. S. PIPE 42 .109	C. S. PIPE 48 .109	R. C. PIPE CLASS IV 15	R. C. PIPE 18	R. C. PIPE 24	R. C. PIPE 30	R. C. PIPE 36	R. C. PIPE 42	R. C. PIPE 48
		1706	1725		2100.8	2100.7																	8						
L 558+56	75 LT	1709		2098.5																									
		1709	1708		2091.7	2089.6																					124		
WEIGH_D 16+20	74 LT	1710		2098.5																									
		1710	1714		2092.8	2092.3																					112		
L 558+87	2 LT	1711		2100.6																									
		1711	1709		2092.0	2091.7																					76		
L 558+88	3 RT	1712		2100.5																									
		1712	1711		2092.0	2092.0																					8		
L 560+00	241 RT	1713		2117.5																									
		1713	1731		2112.5	2095.6	21.8									44													
L 559+18	71 RT	1714		2098.9																									
		1714	1712		2092.3	2092.0																					72		
L 561+50	74 LT	1715		2100.2																									
		1715	1709		2097.2	2095.5	0.5																	292					
L 561+50	3 LT	1716		2102.8																									
		1716	1715		2097.5	2097.2	0.4																	68					
L 561+50	3 RT	1717		2102.6																									
		1717	1716		2097.6	2097.5	0.3																	8					
WEIGH_D 14+65	75 LT	1718		2097.9																									
		1718	1710		2094.4	2093.8																			156				
WEIGH_A 11+93	25 RT	1720		2107.8																									
		1720	1719		2097.8	2090.7	1.3									32													
L 566+02	2 LT	1721		2105.7																									
		1721	1720		2098.1	2097.8																	80						
L 566+02	2 RT	1722		2108.1																									
		1722	1721		2098.1	2098.1																	4						
L 564+50	3 LT	1723		2105.3																									
		1723	1724		2100.5	2100.4																	8						
L 564+50	3 RT	1724		2106.1																									
		1724	1734		2100.4	2099.7																	108						
L 563+14	3 RT	1725		2105.7																									
		1725	1717		2099.3	2097.6																		160					
WEIGH_A 13+27	25 RT	1726		2105.9																									
		1726	1720		2103.2	2102.6																	132						
L 555+66	69 LT	1727		2096.0																									
		1727	1728		2092.2	2089.7																	136						
L 566+02	74 RT	1729		2105.1																									
		1729	1722		2098.4	2098.1																	72						
WEIGH_D 16+08	101 LT	1731		2100.5																									
		1731	1710		2094.3	2094.2																				28			
WEIGH_D 10+50	36 LT	1733		2103.5																									
		1733	1732		2100.8	2100.7																	24						
L 563+39	1 RT	1734		2104.5																									
		1734	1725		2099.4	2099.3																		24					
L 563+39	80 RT	1735		2105.1																									
		1735	1734		2100.3	2099.7																	80						
WEIGH_C 15+02	32 RT	1736		2097.0																									
		1736	1635		2094.3	2092.0																	52						
L 567+50	2 LT	1801		2106.9																									
SHEET TOTALS																76							704	552	156	28	392		

LINE & STATION	FROM	TO	36" WELDED STEEL PIPE 0.53" THICK, GRADE B IN SOIL	36" WELDED STEEL PIPE 0.53" THICK, GRADE B NOT IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B NOT IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B NOT IN SOIL	12" FUNNEL DRAIN PIPE	TEMPORARY 12" SLOTTED DRAIN SPECIAL DETAIL	METAL FUNNEL	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.
	1706	1725															
L 558+56	1709														1	1.8	
	1709	1708															
WEIGH_D 16+20	1710														1	0.7	
	1710	1714															
L 558+87	1711														1	3.6	
	1711	1709															
L 558+88	1712														1	3.4	
	1712	1711															
L 560+00	1713														1		
	1713	1731															
L 559+18	1714														1	1.6	
	1714	1712															
L 561+50	1715														1		
	1715	1709															
L 561+50	1716														1	0.3	
	1716	1715															
L 561+50	1717														1	0.1	
	1717	1716															
WEIGH_D 14+65	1718														1		
	1718	1710															
WEIGH_A 11+93	1720														1	5.0	
	1720	1719															
L 566+02	1721														1	2.6	
	1721	1720															
L 566+02	1722														1	5.0	
	1722	1721															
L 564+50	1723														1		
	1723	1724															
L 564+50	1724														1	0.6	
	1724	1734															
L 563+14	1725														1	1.3	
	1725	1717															
WEIGH_A 13+27	1726														1		
	1726	1720															
L 555+66	1727																
	1727	1728															
L 566+02	1729														1	1.7	
	1729	1722															
WEIGH_D 16+08	1731														1	1.2	
	1731	1710															
WEIGH_D 10+50	1733														1		
	1733	1732															
L 563+39	1734														1	0.1	
	1734	1725															
L 563+39	1735														1		
	1735	1734															
WEIGH_C 15+02	1736														1		
	1736	1635															
L 567+50	1801														1		
SHEET TOTALS															24	29.0	

NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)

LINE & STATION	FROM	TO	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	ADJUST D.I.	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	12" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	BERM DITCH OUTLET STD. 850.11 (PER EACH)	PREFORMED SCOUR HOLE (PER EACH)	ENERGY DISSIPATION BASIN	TEMP STEEL PLATE COVER MASONRY DRAINAGE	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
	1706	1725																															110	
L 558+56	1709					1			1																									
	1709	1708																																
WEIGH_D 16+20	1710					1			1																									
	1710	1714																																
L 558+87	1711							1							1																			
	1711	1709																																
L 558+88	1712							1							1																			
	1712	1711																																
L 560+00	1713		1																															
	1713	1731																	2											12				
L 559+18	1714					1			1																									
	1714	1712																																
L 561+50	1715						1		1																									
	1715	1709																																
L 561+50	1716							1							1																			
	1716	1715																																
L 561+50	1717							1							1																			
	1717	1716																																
WEIGH_D 14+65	1718					1			1																									
	1718	1710																																
WEIGH_A 11+93	1720							1							1																			
	1720	1719																	2															
L 566+02	1721							1							1																			
	1721	1720																												5			49	
L 566+02	1722							1							1																			
	1722	1721																																
L 564+50	1723							1							1																			
	1723	1724																																
L 564+50	1724							1							1																			
	1724	1734																																
L 563+14	1725							1							1																			
	1725	1717																																
WEIGH_A 13+27	1726							1							1																			
	1726	1720																															28	
L 555+66	1727																	1																
	1727	1728																																
L 566+02	1729							1							1																			
	1729	1722																												24				
WEIGH_D 16+08	1731		1																															
	1731	1710																																
WEIGH_D 10+50	1733						1		1																									
	1733	1732																																
L 563+39	1734							1							1																			
	1734	1725																																
L 563+39	1735							1							1																			
	1735	1734																																
WEIGH_C 15+02	1736						1		1																									
	1736	1635																																
L 567+50	1801							1							1																			
SHEET TOTALS			2			4	3	15	7						15			1	4											41			187	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

RAODYNSKI-5285

COMPUTED BY:	JCF	DATE:	7/11/2019
CHECKED BY:	BSR	DATE:	7/11/2019

PROJECT NO.	SHEET NO.
I-4400BB	3D-16

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

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

LINE & STATION	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) 12	15	18		DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	C. S. PIPE 15 .064	18 .064	24 .064	30 .079	36 .079	42 .109	48 .109		R. C. PIPE CLASS IV 15	18	24	30	36	42	48		36" WELDED STEEL PIPE 0.53" THICK, GRADE B IN SOIL	36" WELDED STEEL PIPE 0.53" THICK, GRADE B NOT IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B NOT IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B NOT IN SOIL	12" FUNNEL DRAIN PIPE	TEMPORARY 12" SLOTTED DRAIN SPECIAL DETAIL		METAL FUNNEL	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	ADJUST D.I.	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	12" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	BERM DITCH OUTLET STD. 850.11 (PER EACH)	PREFORMED SCOUR HOLE (PER EACH)	ENERGY DISSIPATION BASIN	TEMP STEEL PLATE COVER MASONRY DRAINAGE	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
		1801	1721		2104.3	2103.1																			148																																																						
L 567+34	88 RT	1802		2099.0																																							3.400																																					
		1802	1707		2096.0	2087.7																											106	106																																											
L 579+60	62 LT	1803		2096.9																																										1								1								1																			
		1803	1930		2092.0	2089.7																			160																																																						
L 570+00	74 RT	1804		2104.9																																										1								1								1																			
		1804	1805		2100.1	2098.4																			196																																																						
L 572+00	74 RT	1805		2103.3																																										1								1								1																			
		1805	1806		2098.4	2097.0																			116																																																						
L 573+20	74 RT	1806		2101.8																																										1								1								1																			
		1806	1808		2097.0	2095.9																			76																																																							
L 574+00	73 RT	1808		2100.7																																										1								1								1																			
L 572+00	74 LT	1810		2108.6																																										1	4.1						1	1																												
		1810	1809		2099.5	2084.7	0.5										36																																																		2															
L 572+00	2 LT	1811		2105.8																																										1								1								1																			
		1811	1810		2103.2	2100.7																			72																																																						
L 572+00	2 RT	1812		2106.2																																										1								1								1																		398	
		1812	1811		2103.2	2103.2																			4																																																						
L 570+00	2 RT	1813		2107.8																																										1								1								1																			
		1813	1812		2104.7	2103.2																			196																																																							
L 577+80	62 LT	1814		2099.5																																										1								1								1																			
		1814	1803		2094.7	2092.0																			180																																																							
L 573+95	68 LT	1815		2105.5																																										1							1	1																												
		1815	1816		2100.7	2098.2																			68																																																							
L 573+95	2 LT	1816		2103.0																																										1								1								1																			
		1816	1817		2098.2	2098.2																			4																																																						
L 573+95	2 RT	1817		2103.7																																										1	0.5							1								1																			
		1817	1828		2098.2	2095.9																			204																																																								
L 577+80	3 LT	1818		2097.4																																										1								1								1																			
		1818	1819		2092.5	2092.5																			4																																																							
L 577+80	3 RT	1819		2098.1																																										1	3.3							1								1																			
		1819	1827		2089.9	2089.2																					168																																																						
L 577+80	64 RT	1820		2095.7																																										1	0.1							1								1																			
		1820	1819		2090.6	2090.4																				60																																																								
L 577+80	72 RT	1821		2094.6																																										1							1		1																											
		1821	1820		2091.6	2090.9																			8																																																							
L 568+80	74 RT	1825		2105.4																																										1								1								1																			
		1825	1804		2100.5	2100.1																			116																																																		14				
L 571+00	74 LT	1826		2109.5																																										1	2.1						1	1																												
		1826	1810		2102.4	2100.7																			100																																																		3				
L 579+50	2 RT	1827		2095.7																																										1	1.5							1								1																			
		1827	1907		2089.2	2087.6																					168																																																		38				
L 576+00	2 RT	1828		2100.7																																										1								1								1																			
		1828	1819		2095.9	2093.3																			176																																																							
L 576+57	85 RT	1829		2095.2																																										1							1		1																											
		1829	1821		2092.5	2091.9																			120																																																		3				
L 585+00	2 LT	1902		2086.7																																										1								1								1																			
		1902	1903		2084.1	2084.0																			4																																																							
L 585+00	2 RT	1903		2087.7																																										1	2.7							1								1																			
		1903	1912		2080.1	2079.2																				212																																																								
SHEET TOTALS																	36								1952	272	336						106	106									3.400			24	14.3						5	22	2						19				2											58			398	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

RAODYNSKI-5285

COMPUTED BY:	JCF	**DATE:**	7/11/2019
CHECKED BY:	BSR	**DATE:**	7/11/2019

PROJECT NO.	SHEET NO.
I-4400BB	3D-17

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

**Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".**

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

LINE & STATION SIZE THICKNESS OR GAUGE	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) 12	15	18		DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	C. S. PIPE 15 .064	18 .064	24 .064	30 .079	36 .079	42 .109	48 .109		R. C. PIPE CLASS IV 15	18	24	30	36	42	48		36" WELDED STEEL PIPE 0.53" THICK, GRADE B IN SOIL	36" WELDED STEEL PIPE 0.53" THICK, GRADE B NOT IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B NOT IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B NOT IN SOIL	12" FUNNEL DRAIN PIPE	TEMPORARY 12" SLOTTED DRAIN SPECIAL DETAIL		METAL FUNNEL	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	ADJUST D.I.	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	12" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	BERM DITCH OUTLET STD. 850.11 (PER EACH)	PREFORMED SCOUR HOLE (PER EACH)	ENERGY DISSIPATION BASIN	TEMP STEEL PLATE COVER MASONRY DRAINAGE	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
L 585+00	62 RT	1904		2085.4																																										1								1								1																			
		1904	1903		2080.6	2080.3																			60																																																							
L 585+00	72 RT	1905		2083.9																																										1							1		1																											
		1905	1904		2081.1	2080.6																			8																																																							
L 581+20	3 LT	1906		2092.3																																										1								1								1																			
		1906	1907		2087.5	2087.5																			4																																																							
L 581+20	3 RT	1907		2093.2																																										1	3.2							1								1																			
		1907	1928		2085.1	2084.4																					152																																																				126	
L 581+20	62 RT	1908		2090.9																																										1								1								1																			
		1908	1907		2086.0	2085.8																			60																																																					110	
L 587+13	62 LT	1910		2085.1																																										1	3.9						1	1																													
		1910	1909		2076.2	2075.0	0.8												20																																																2													
L 587+13	2 LT	1911		2084.2																																										1	2.7							1								1																			
		1911	1910		2076.5	2076.2																					60																																																						
L 587+13	2 RT	1912		2084.5																																										1	3.0							1								1																			
		1912	1911		2076.5	2076.5																					4																																																					74	
L 589+10	62 LT	1914		2082.8																																										1	0.5						1	1																													
		1914	1916		2077.3	2076.5																			88																																																					308	
L 590+00	62 LT	1916		2082.6																																										1	2.8					1		1																													
		1916	1926		2074.8	2074.7																							16																																																	12				
L 589+37	2 LT	1917		2082.4																																										1	0.5							1								1																			
		1917	1920		2076.9	2076.7																			60																																																							
L 589+37	2 RT	1918		2082.4																																										1	0.5							1								1																			
		1918	1917		2076.9	2076.9																			4																																																								
L 590+00	2 LT	1920		2082.3																																										1	2.4							1								1																			
		1920	1916		2075.0	2074.8																							60																																																						
L 590+00	2 RT	1921		2082.5																																										1	0.5							1								1																			
		1921	1920		2077.0	2076.8																			8																																																								
L 591+00	1 LT	1922		2082.6																																										1	2.3							1								1																			
		1922	1920		2075.3	2075.0																							100																																																						
L 591+00	3 RT	1923		2082.9																																										1	0.5							1								1																			
		1923	1922		2077.4	2077.1																			4																																																								
L 594+00	1 LT	1924		2085.7																																										1	1.8							1								1																			
		1924	1922		2079.0	2075.8																						300																																																		5			49	
L 594+00	3 RT	1925		2086.0																																										1	0.5							1								1																			
		1925	1924		2080.5	2080.2																			4																																																									
L 590+17	62 LT	1926		2082.6																																										1	2.9					1		1																													
		1926	1913		2074.7	2074.7																							12																																																							
L 588+34	62 RT	1927		2082.8																																										1								1								1																			
		1927	1935		2078.0	2077.5																			120																																																						135	
L 582+75	2 RT	1928		2091.0																																										1	1.5							1								1																			
		1928	1934		2084.4	2083.6																					124																																																						
L 582+75	72 LT	1929		2091.3																																										1							1		1																											
		1929	1915		2088.6	2083.5																			104																																																					28	
L 581+20	62 LT	1930		2094.5																																										1								1								1																			
		1930	1931		2089.7	2089.6																			12																																																							
L 581+20	72 LT	1931		2093.0																																										1							1		1																											
		1931	1929		2089.6	2088.6																			156																																																		24				
L 581+20	72 RT	1932		2089.4																																										1							1		1																											
		1932	1908		2086.6	2086.0																			8																																																							
SHEET TOTALS																			20						700		340	300	188																	25	29.5					2	6	21	4							17						2									41			830	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

RAODYNSKI-5285

COMPUTED BY:	JCF	**DATE:**	7/11/2019
CHECKED BY:	BSR	**DATE:**	7/11/2019

PROJECT NO.	SHEET NO.
I-4400BB	3D-18

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

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

LINE & STATION SIZE THICKNESS OR GAUGE	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) 12	15	18		DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	C. S. PIPE 15 .064	18 .064	24 .064	30 .079	36 .079	42 .109	48 .109		R. C. PIPE CLASS IV 15	18	24	30	36	42	48		36" WELDED STEEL PIPE 0.53" THICK, GRADE B IN SOIL	36" WELDED STEEL PIPE 0.53" THICK, GRADE B NOT IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B NOT IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B NOT IN SOIL	12" FUNNEL DRAIN PIPE	TEMPORARY 12" SLOTTED DRAIN SPECIAL DETAIL		METAL FUNNEL	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	ADJUST D.I.	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	12" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	BERM DITCH OUTLET STD. 850.11 (PER EACH)	PREFORMED SCOUR HOLE (PER EACH)	ENERGY DISSIPATION BASIN	TEMP STEEL PLATE COVER MASONRY DRAINAGE	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
L 584+00	62 LT	1933		2090.3																																										1	2.0							1							1																			
		1933	1901		2083.3	2082.0	0.3																				24																																																						
L 584+00	2 RT	1934		2089.2																																										1	0.6							1							1																			
		1934	1933		2083.6	2083.3																					64																																																						
L 587+13	62 RT	1935		2083.4																																										1	0.9							1							1																			
		1935	1912		2077.5	2077.2																					60																																																								
L 596+29	1 LT	2001		2088.6																																										1	1.8							1							1																			
		2001	1924		2081.8	2079.0																							228																																																			
L 596+29	3 RT	2002		2088.9																																										1	0.5							1							1																			
		2002	2001		2083.4	2083.1	0.4																		4																																																								
L 596+29	61 RT	2003		2089.1																																										1	0.5							1							1																			
		2003	2002		2083.6	2083.4																			60																																																							
L 599+50	1 LT	2004		2092.6																																										1	1.3							1							1																			
		2004	2001		2086.3	2082.3	0.3																				320																																																						
L 599+50	3 RT	2005		2093.1																																										1	0.5							1							1																			
		2005	2004		2087.6	2087.1																			4																																																							
L 602+63	1 LT	2006		2096.9																																										1	1.4							1							1																			
		2006	2004		2090.5	2086.3																					312																																																						
L 599+50	61 RT	2007		2093.3																																										1	0.5							1							1																			
		2007	2005		2087.8	2087.6																			60																																																							
L 602+63	3 RT	2008		2097.2																																										1	0.8							1							1																			
		2008	2006		2091.4	2091.2	0.4																			4																																																								
L 602+63	61 RT	2009		2097.6																																										1	0.8							1							1																			
		2009	2008		2091.8	2091.4																				60																																																							
L 604+76	63 RT	2010		2100.6																																										1	0.8							1							1																			
		2010	2027		2094.8	2093.2																				108																																																				398	
L 602+63	71 RT	2011		2095.9																																										1							1	1																										
		2011	2009		2093.5	2091.8				8				X																																																																		
L 603+69	71 RT	2012		2098.6																																										1							1	1																										
		2012	2027		2094.9	2093.2				8				X																																																																		
L 605+80	1 LT	2013		2101.2																																										1	0.9							1							1																			
		2013	2006		2095.3	2091.4																			316																																																							
L 605+80	2 RT	2014		2100.8																																										1	0.5							1							1																			
		2014	2013		2095.3	2095.3																			4																																																							
L 604+76	71 RT	2015		2100.1																																										1							1	1																										
		2015	2010		2096.5	2094.8				8				X																																																																			
L 602+63	81 LT	2021		2093.3																																										1							1		1																									
		2021	2006		2091.3	2091.0																				80																																																							
L 596+29	81 LT	2022		2085.7																																										1							1		1																					5				
		2022	2001		2083.4	2083.1																			80																																																							
L 608+75	3 RT	2023		2104.5																																										1	0.5							1							1																			
		2023	2122		2099.0	2098.7																			100																																																							
L 608+75	2 LT	2024		2105.7																																										1	1.3							1							1																			
		2024	2023		2099.5	2099.0																			8																																																							
L 608+95	61 LT	2025		2104.3																																										1	1.4						1	1																										
		2025	2026		2097.9	2097.7																			28																																																							
L 603+69	63 RT	2027		2098.9																																										1	0.8							1							1																			
		2027	2009		2093.2	2091.8																				104																																																							
		2029	2030		2100.7	2099.1																																		12			1																													1										
L 596+29	81 RT	2032		2087.6																																										1							1	1																						5				
SHEET TOTALS										24															724	356	720	228												12			1				25	17.8						7	23	2						18									1						10			398	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

RAODYNSKI-5285

COMPUTED BY: JCF DATE: 7/11/2019
CHECKED BY: BSR DATE: 7/11/2019

PROJECT NO.	SHEET NO.
I-4400BB	3D-19

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

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

LINE & STATION / SIZE / THICKNESS OR GAUGE	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) 12	Side Drain Pipe 15	Side Drain Pipe 18		DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	C. S. PIPE 15 .064	C. S. PIPE 18 .064	C. S. PIPE 24 .064	C. S. PIPE 30 .079	C. S. PIPE 36 .079	C. S. PIPE 42 .109	C. S. PIPE 48 .109		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		36" WELDED STEEL PIPE 0.53" THICK, GRADE B IN SOIL	36" WELDED STEEL PIPE 0.53" THICK, GRADE B NOT IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B NOT IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B NOT IN SOIL	12" FUNNEL DRAIN PIPE	TEMPORARY 12" SLOTTED DRAIN SPECIAL DETAIL		METAL FUNNEL	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	ADJUST D.I.	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	12" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	BERM DITCH OUTLET STD. 850.11 (PER EACH)	PREFORMED SCOUR HOLE (PER EACH)	ENERGY DISSIPATION BASIN	TEMP STEEL PLATE COVER MASONRY DRAINAGE	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
		2032	2003		2084.8	2083.6																			20																																																						
L 609+75	61 LT	2101		2105.4																																										1	2.1						1	1																												
		2101	2105		2098.2	2092.1	1.1											28																																																2														
L 612+50	3 RT	2102		2111.3																																										1	4.1							1							1																					
		2102	2122		2102.2	2098.7																			272																																																						
L 612+50	2 LT	2103		2112.5																																										1	5.0	0.3						1							1																					
		2103	2102		2102.2	2102.2																			4																																																							
L 612+50	61 LT	2104		2110.8																																										1	0.4						1	1																												
		2104	2123		2105.4	2102.0																			24																																																							
L 609+75	90 LT	2105		2093.6																																																																						1							
L 615+30	1 LT	2107		2119.0																																										1	2.3							1							1																					
		2107	2106		2111.8	2111.5																						96																																																					
L 615+30	3 RT	2108		2118.0																																										1	1.2							1							1																					
		2108	2107		2111.8	2111.8																						4																																																					
L 616+66	81 RT	2109		2121.3																																										1							1		1																												
		2109	2110		2118.5	2117.2																			20																																																							
L 616+66	63 RT	2110		2122.7																																										1	0.5							1							1																					
		2110	2111		2117.2	2115.7																			60																																																							
L 616+65	3 RT	2111		2121.2																																										1	1.3							1							1																					
		2111	2108		2115.0	2112.3																					132																																																						
L 618+05	4 RT	2112		2124.4																																										1	1.8							1							1																					
		2112	2111		2117.6	2115.0																					140																																																						
L 618+05	65 RT	2113		2126.1																																										1	0.5							1							1																					
		2113	2112		2120.6	2118.9																			60																																																							
L 621+10	81 LT	2114		2129.5																																										1							1		1																												
		2114	2115		2124.9	2124.6																			80																																																							
L 621+10	1 LT	2115		2132.4																																										1	2.8							1							1																					
		2115	2116		2124.6	2124.6																			4																																																							
L 621+10	3 RT	2116		2131.8																																										1	2.2							1							1																					
		2116	2112		2124.6	2118.1	0.6																			304																																																								
L 621+10	65 RT	2117		2133.3																																										1	2.5							1							1																					
		2117	2116		2125.8	2124.6																				60																																																								
L 621+10	75 RT	2118		2137.3																																										1	5.0	0.7											1				1																				
		2118	2117		2126.6	2126.1	0.5																		12																																																							
L 609+75	3 RT	2122		2105.9																																										1	2.5							1							1																					
		2122	2101		2098.4	2098.2																				64																																																							
L 619+00	62 LT	2124		2126.6																																										1							1	1																												
		2124	2125		2123.8	2123.6			32					X																																																																		
L 610+50	63 RT	2126		2108.6																																										1	0.5							1							1																					
		2126	2127		2103.1	2103.0																			24																																																							
L 623+25	1 LT	2202		2137.7																																										1	1.2							1							1																					
		2202	2201		2131.4	2131.2																					92																																																						
L 624+00	3 RT	2203		2138.6																																										1								1							1																					
		2203	2204		2133.8	2132.0	0.5																			72																																																							
L 623+25	3 RT	2204		2136.8																																										1	0.3							1							1																					
		2204	2202		2131.5	2131.4																					4																																																						
L 624+00	63 RT	2205		2140.2																																										1								1							1																					
		2205	2203		2135.4	2133.8																				60																																																							
L 624+00	72 RT	2206		2138.7																																										1							1					1																									
		2206	2205		2135.7	2135.4																				8																																																							
SHEET TOTALS									32									28							580	568	368	100																		24	36.2	1.0					6	20	2			1	1		17		1			2							1							

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

RAODYNSKI-5285

COMPUTED BY:	JCF	DATE:	7/11/2019
CHECKED BY:	BSR	DATE:	7/11/2019

PROJECT NO.	SHEET NO.
I-4400BB	3D-20

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

**Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".**

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

LINE & STATION / SIZE / THICKNESS OR GAUGE	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) 12	15	18		DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC
L 624+06	115 RT	2207		2157.3												
		2207	2206		2144.4	2135.7	0.3			44				X		
L 624+26	148 RT	2208		2162.3												
		2208	2207		2156.1	2154.3				40				X		
L 628+21	1 LT	2209		2149.4												
		2209	2218		2135.9	2130.7										
L 628+21	3 RT	2210		2147.6												
		2210	2209		2136.2	2136.2										
L 630+50	3 RT	2211		2150.3												
		2211	2210		2144.8	2142.1										
L 629+50	72 LT	2212		2147.7												
		2212	2216		2144.7	2132.2			112					X		
L 627+52	61 LT	2215		2146.5												
		2215	2214		2142.0	2141.4			16					X		
L 629+50	61 LT	2217		2149.2												
		2217	2212		2144.7	2144.7			8					X		
L 628+22	84 RT	2219		2144.9												
		2219	2210		2141.0	2136.2										
L 634+76	72 LT	2220		2148.1												
		2220	2226		2145.3	2143.2										
L 634+76	62 LT	2221		2148.2												
		2221	2220		2145.4	2145.3										
L 636+45	62 LT	2222		2150.0												
		2222	2226		2146.6	2143.2										
L 635+25	75 RT	2223		2149.0												
		2223	2224		2146.3	2145.9										
L 635+25	3 RT	2224		2150.0												
		2224	2303		2145.9	2141.7										
L 636+45	72 LT	2226		2146.2												
		2226	2305		2143.2	2140.3										
Y7 27+41	28 LT	2227		2182.3												
		2227	2229		2180.1	2178.9										
Y7 25+09	97 LT	2230		2159.9												
		2230	2242		2157.1	2152.3	1.2									
Y7 23+61	111 LT	2232		2167.8												
		2232	2241		2165.8	2158.1	1.1									
Y7 24+33	34 LT	2234		2187.2												
		2234	2235		2184.5	2176.0										
Y7 22+28	39 LT	2235		2178.8												
		2235	2238		2166.0	2158.6	1.1									
Y7 21+83	136 LT	2236		2171.9												
		2236	2235		2169.4	2168.9										
Y7 21+50	40 LT	2237		2177.4												
		2237	2235		2174.4	2174.1										
Y7 20+01	16 RT	2239		2180.9												
		2239	2225		2171.2	2162.9										
Y7 25+22	9 RT	2240		2180.6												
		2240	2241		2140.0	2131.6										
L 632+88	97 LT	2241		2136.4												
Y7 25+22	9 RT	2242		2180.6												
SHEET TOTALS									136	84						

LINE & STATION	FROM	TO	C. S. PIPE 15 .064	C. S. PIPE 18 .064	C. S. PIPE 24 .064	C. S. PIPE 30 .079	C. S. PIPE 36 .079	C. S. PIPE 42 .109	C. S. PIPE 48 .109		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		36" WELDED STEEL PIPE 0.53" THICK, GRADE B IN SOIL	36" WELDED STEEL PIPE 0.53" THICK, GRADE B NOT IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B NOT IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B NOT IN SOIL	12" FUNNEL DRAIN PIPE	TEMPORARY 12" SLOTTED DRAIN SPECIAL DETAIL		METAL FUNNEL	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY
L 624+06	2207																														
	2207	2206																													
L 624+26	2208																														
	2208	2207																													
L 628+21	2209																														
	2209	2218																	44	44											
L 628+21	2210																														
	2210	2209																	2	2											
L 630+50	2211																														
	2211	2210								228																					
L 629+50	2212																														
	2212	2216																													
L 627+52	2215																														
	2215	2214																													
L 629+50	2217																														
	2217	2212																													
L 628+22	2219																											3.400			
	2219	2210																	44	44											
L 634+76	2220																														
	2220	2226								164																					
L 634+76	2221																														
	2221	2220								8																					
L 636+45	2222																														
	2222	2226	8																												
L 635+25	2223																														
	2223	2224								72																					
L 635+25	2224																														
	2224	2303								224																					
L 636+45	2226																														
	2226	2305								100																					
Y7 27+41	2227																														
	2227	2229								72																					
Y7 25+09	2230																														
	2230	2242					108																								
Y7 23+61	2232																														
	2232	2241																													
Y7 24+33	2234																														
	2234	2235								212																					
Y7 22+28	2235																														
	2235	2238				76																									
Y7 21+83	2236																											2.300			
	2236	2235											108																		
Y7 21+50	2237																														
	2237	2235									80																				
Y7 20+01	2239																														
	2239	2225		36																											
Y7 25+22	2240																												6.000		
	2240	2241																					102	102							
L 632+88	2241																														
Y7 25+22	2242																														
SHEET TOTALS			8	36		76	108				1080	80		108					90	90			102	102					5.700	6.000	

LINE & STATION	FROM	TO	QUANTITIES FOR DRAINAGE STRUCTURES 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	ADJUST D.I.	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	12" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	BERM DITCH OUTLET STD. 850.11 (PER EACH)	PREFORMED SCOUR HOLE (PER EACH)	ENERGY DISSIPATION BASIN	TEMP STEEL PLATE COVER MASONRY DRAINAGE	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
L 624+06	2207		1	5.0	2.9					1				1																							
	2207	2206																																			
L 624+26	2208		1	1.2						1					1																						
	2208	2207																																			
L 628+21	2209		1	5.0	3.5						1							1																			
	2209	2218																															3				
L 628+21	2210		1	5.0	1.5						1							1																			
	2210	2209																																			
L 630+50	2211		1	0.5							1							1																			
	2211	2210																																			
L 629+50	2212		1							1		1																									
	2212	2216																																			
L 627+52	2215		1								1							1																			
	2215	2214																																			
L 629+50	2217		1								1							1																			
	2217	2212																																			
L 628+22	2219																																				
	2219	2210																															32				
L 634+76	2220		1							1		1																									
	2220	2226																																			
L 634+76	2221		1							1	1																										
	2221	2220																																			
L 636+45	2222		1							1	1																										
	2222	2226																				2															
L 635+25	2223		1							1		1																									
	2223	2224																																			
L 635+25	2224		1								1							1																			
	2224	2303																																			
L 636+45	2226		1							1	1																										
	2226	2305																																			
Y7 27+41	2227		1				1	1																													
	2227	2229																																			
Y7 25+09	2230																																				
	2230	2242																																			
Y7 23+61	2232																																				
	2232	2241																																			
Y7 24+33	2234		1							1				1																							
	2234	2235																																			
Y7 22+28	2235		1	5.0	2.7				1					1																							
	2235	2238																							2												
Y7 21+83	2236																																				
	2236	2235																																			
Y7 21+50	2237		1							1				1																							
	2237	2235																																			
Y7 20+01	2239		1	4.7						1					1																						
	2239	2225																					2														
Y7 25+22	2240																																				
	2240	2241																															89				
L 632+88	2241		1																																		
Y7 25+22	2242		1	5.0	18.3											1																					
SHEET TOTALS			21	31.4	28.9		1	1	1	11	9	3		4	2	1		6				2	2		2								124				

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

RAODYNSKI-5285

COMPUTED BY:	JCF	DATE:	7/11/2019
CHECKED BY:	BSR	DATE:	7/11/2019

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
I-4400BB	3D-21

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

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

LINE & STATION	OFFSET	STRUCTURE NUMBER		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	MINIMUM REQUIRED SLOPE	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC)									C. S. PIPE								R. C. PIPE CLASS IV								36" WELDED STEEL PIPE 0.53" THICK, GRADE B IN SOIL	36" WELDED STEEL PIPE 0.53" THICK, GRADE B NOT IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B NOT IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B NOT IN SOIL	12" FUNNEL DRAIN PIPE	TEMPORARY 12" SLOTTED DRAIN SPECIAL DETAIL		METAL FUNNEL	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE)	REINFORCED ENDWALLS	DRAINAGE STRUCTURE	QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)			OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	ADJUST D.I.	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	12" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	BERM DITCH OUTLET STD. 850.11 (PER EACH)	PREFORMED SCOUR HOLE (PER EACH)	ENERGY DISSIPATION BASIN	TEMP STEEL PLATE COVER MASONRY DRAINAGE	FLOWABLE FILL	CONCRETE COLLARS CL. "B" STD. 840.72	CONCRETE AND BRICK PIPE PLUG STD. 840.71	PIPE REMOVAL	REMARKS
SIZE		FROM	TO					12	15	18		DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	15	18	24	30	36	42	48		15	18	24	30	36	42	48														MASONRY	0' THRU 5'	A 5' THRU 10'	B 10' AND ABOVE																																	
THICKNESS OR GAUGE				FT.	FT.	FT.	%										.064	.064	.064	.079	.079	.109	.109																				CY	CY	CY	EACH	LIN. FT.	LIN. FT.																												CY	CY	CY	LIN. FT.	
		2242	2231		2152.3	2150.0																							48																																																					
Y7 23+75	9 RT	2243		2167.1																																										1	4.1												1																						
		2243	2233		2158.1	2156.9																					16																																																							
L 637+05	72 RT	2301		2147.3																																										1							1		1																									
		2301	2302		2144.6	2144.0																				8																																																							
L 637+05	63 RT	2302		2149.5																																										1	1.6							1							1																			
		2302	2313		2142.8	2139.7																				332																																																							
L 637+50	3 RT	2303		2147.2																																										1	0.5							1							1																			
		2303	2304		2141.7	2141.6																				4																																																							
L 637+50	1 LT	2304		2147.8																																										1	1.2							1							1																			
		2304	2305		2141.6	2140.3	0.3																			80																																																									
L 637+50	81 LT	2305		2143.0																																										1							1		1																									
		2305	2306		2140.0	2135.0	0.4																				136																																																							
L 638+90	81 LT	2306		2140.2																																										1	0.7					1			1																									
		2306	2307		2134.5	2134.4																						20																																																						
L 638+95	61 LT	2307		2143.0																																										1	3.6							1							1																			
		2307	2310		2134.4	2131.3																						200																																																							
L 641+00	3 RT	2308		2137.7																																										1	0.5							1							1																			
		2308	2309		2132.2	2132.2																				8																																																							
L 641+00	1 LT	2309		2140.1																																										1	2.9							1							1																			
		2309	2310		2132.2	2132.0																				60																																																							
L 641+00	61 LT	2310		2138.3																																										1	2.0							1							1																			
		2310	2311		2131.3	2130.1	0.4																					120																																																							
L 642+25	61 LT	2311		2136.4																																										1	5.0	2.0						1							1																			
		2311	2333		2124.4	2123.3																									36																																																		
		2312	OUT						32					X																																																																	
L 640+35	63 RT	2313		2142.8																																										1								1							1																			
		2313	2314		2139.7	2137.3																				192																																																							
L 642+25	63 RT	2314		2142.8																																										1	5.0	2.8						1							1																			
		2314	2311		2130.1	2126.2																													62	62																																									29				
Y7 15+75	19 RT	2316		2162.8																																										1	2.1							1							1																			
		2316	2317		2155.7	2135.6													64																																																	2															
Y7 16+13	72 RT	2317		2138.6																																										1				1	1																															
		2317	2306		2135.2	2135.0																					48																																																								
L 645+00	3 RT	2318		2130.6																																										1	0.5							1							1																			
		2318	2319		2125.1	2125.1																				4																																																							
L 645+00	1 LT	2319		2130.8																																										1	0.7							1							1																			
		2319	2320		2125.1	2123.5																				60																																																								
L 645+00	61 LT	2320		2129.0																																										1	0.5							1							1																			
		2320	2321		2123.5	2114.8	1.7										32																																																			2															
I 646+06	94 RT	2322		2117.5																																																																														
		2322	2323		2114.5	2107.5																												100	100																																											34				
L 648+69	84 RT	2324		2119.0																																																																														
		2324	2331		2119.0	2110.6																					84																																																							
L 647+50	62 LT	2326		2124.4																																										1	5.0	3.0					1	1																											
		2326	2327		2111.5	2103.4													48																																																	2															
L 648+68	2 LT	2328		2123.9																																										1	5.0	4.7						1							1																			
		2328	2325		2109.3	2097.5																						108																																																						
L 649+98	62 LT	2329		2123.3																																										1	5.0	6.6					1	1																											
		2329	2330		2106.6	2097.9													52																																																	2															
SHEET TOTALS									32								196								748	268	464		48	36			100	100	62	62										22	45.9	19.1		1	1	1	4	17	3				1		15				8											63				

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

RAODYNSKI-5285

COMPUTED BY: JCF DATE: 7/11/2019
CHECKED BY: BSR DATE: 7/11/2019

PROJECT NO.	SHEET NO.
I-4400BB	3D-22

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

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

LINE & STATION	OFFSET	STRUCTURE NUMBER		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	MINIMUM REQUIRED SLOPE	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC)									C. S. PIPE								R. C. PIPE CLASS IV							
SIZE								12	15	18							15	18	24	30	36	42	48		15	18	24	30	36	42	48	
THICKNESS OR GAUGE		FROM	TO	FT.	FT.	FT.	%					DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	.064	.064	.064	.079	.079	.109	.109									
L 648+68	2 RT	2331		2124.0																												
		2331	2328		2110.1	2109.6																					4					
Y8 10+37	22 RT	2336		2144.9																												
		2336	2339		2139.1	2138.0	1.3																			44						
Y7 13+00	22 LT	2338		2142.9																												
		2338	2339		2139.4	2138.0																				40						
Y7 13+10	18 RT	2339		2143.2																												
		2339	2340		2138.0	2134.4	1.4																			60						
Y7 12+50	28 RT	2340		2137.6																												
		2340	2401		2134.1	2130.3	1.5																			88						
L 645+00	62 RT	2341		2132.3																												
		2341	2343		2125.0	2122.7			24					X																		
L 646+46	62 RT	2342		2128.9																												
		2342	2344		2122.0	2119.0			28					X																		
Y7 20+00	35 LT	2346		2177.3																												
		2346	2239		2175.8	2175.4																				52						
		2348	2336		2142.5	2139.1			16					X																		
Y2 10+50	29 LT	2502		2110.5																												
		2502	2501		2107.5	2105.5	0.6																			76						
Y2 12+42	16 LT	2503		2132.6																												
		2503	2502		2126.7	2107.5	0.5																			192						
Y2 14+30	30 LT	2504		2140.0																												
		2504	2503		2137.0	2129.6	0.5																			188						
Y2 27+50	28 LT	2602		2140.2																												
		2602	2601		2137.5	2120.7	0.5																		116							
Y2 26+20	122 LT	2603		2118.3																												
		2603	0850		2114.8	2107.3																										
Y5 13+50	34 LT	2702		2078.7																												
		2702	2701		2076.0	2068.7																			256							
Y5 11+71	37 RT	2703	OUT		2071.0	2070.0			56					X																		
Y5 24+50	28 LT	2801		2102.6																												
		2801	1623		2096.3	2095.8																						116				
Y5 26+17	21 RT	2802		2103.0																												
		2802	1606		2099.5	2091.7	0.8																				284					
Y5 26+27	16 RT	2803		2106.9																												
		2803	2802		2101.4	2100.3	1.5																		8							
Y5 27+00	16 RT	2804		2108.6																												
		2804	2803		2105.8	2104.2	1.3																		72							
Y5 27+99	16 RT	2805		2111.5																												
		2805	2814		2108.7	2106.9	1.0																		56							
Y5 28+75	16 RT	2806		2113.1																												
		2806	2815		2110.3	2109.5	0.6																		44							
Y5 29+50	16 RT	2807		2114.6																												
		2807	2806		2111.8	2110.3																			72							
Y5 31+80	16 RT	2808		2117.0																												
		2808	2809		2115.8	2114.2																			148							
Y5 30+30	16 RT	2809		2117.0																												
		2809	2807		2114.2	2111.8																			76							
Y5 24+63	68 LT	2810		2104.9																												
		2810	2801		2096.4	2096.3																						40				
SHEET TOTALS									124																848	740	288	156				

LINE & STATION	FROM	TO	36" WELDED STEEL PIPE 0.53" THICK, GRADE B IN SOIL	36" WELDED STEEL PIPE 0.53" THICK, GRADE B NOT IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B NOT IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B NOT IN SOIL	12" FUNNEL DRAIN PIPE	TEMPORARY 12" SLOTTED DRAIN SPECIAL DETAIL		METAL FUNNEL	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.
L 648+68	2331															1	5.0	3.9
	2331	2328																
Y8 10+37	2336															1	0.9	
	2336	2339																
Y7 13+00	2338															1		
	2338	2339																
Y7 13+10	2339															1	0.2	
	2339	2340																
Y7 12+50	2340															1		
	2340	2401																
L 645+00	2341															1	2.3	
	2341	2343																
L 646+46	2342															1	1.9	
	2342	2344																
Y7 20+00	2346																	
	2346	2239																
	2348	2336																
Y2 10+50	2502															1		
	2502	2501																
Y2 12+42	2503															1	0.9	
	2503	2502																
Y2 14+30	2504															1		
	2504	2503																
Y2 27+50	2602															1		
	2602	2601																
Y2 26+20	2603												4.500					
	2603	0850			130	130												
Y5 13+50	2702															1		
	2702	2701																
Y5 11+71	2703	OUT																
Y5 24+50	2801															1	1.3	
	2801	1623																
Y5 26+17	2802															1		
	2802	1606																
Y5 26+27	2803															1	0.5	
	2803	2802																
Y5 27+00	2804															1		
	2804	2803																
Y5 27+99	2805															1		
	2805	2814																
Y5 28+75	2806															1		
	2806	2815																
Y5 29+50	2807															1		
	2807	2806																
Y5 31+80	2808																	
	2808	2809																
Y5 30+30	2809															1		
	2809	2807																
Y5 24+63	2810															1	3.5	
	2810	2801																
SHEET TOTALS					130	130							4.500			21	16.5	3.9

NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)

LINE & STATION	FROM	TO	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	ADJUST D.I.	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	12" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	BERM DITCH OUTLET STD. 850.11 (PER EACH)	PREFORMED SCOUR HOLE (PER EACH)	ENERGY DISSIPATION BASIN	TEMP STEEL PLATE COVER MASONRY DRAINAGE	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
L 648+68	2331							1							1																			
	2331	2328																																
Y8 10+37	2336						1				1																							
	2336	2339																																
Y7 13+00	2338						1				1																							
	2338	2339																																
Y7 13+10	2339			1	1																													
	2339	2340																																
Y7 12+50	2340						1				1																							
	2340	2401																																
L 645+00	2341						1	1																										
	2341	2343																																
L 646+46	2342						1	1																										
	2342	2344																																
Y7 20+00	2346																																	
	2346	2239																																
	2348	2336																																
Y2 10+50	2502						1		1																									
	2502	2501																																
Y2 12+42	2503							1							1																			
	2503	2502																																
Y2 14+30	2504						1		1																									
	2504	2503																																
Y2 27+50	2602						1		1																									
	2602	2601																	2															
Y2 26+20	2603																																	
	2603	0850																												64				
Y5 13+50	2702						1		1																									
	2702	2701																																
Y5 11+71	2703	OUT																																
Y5 24+50	2801					1			1																									
	2801	1623																																
Y5 26+17	2802						1				1																							
	2802	1606																																
Y5 26+27	2803											1			1																			
	2803	2802																																
Y5 27+00	2804											1			1																			
	2804	2803																																
Y5 27+99	2805											1			1																			
	2805	2814																																
Y5 28+75	2806											1			1																			
	2806	2815																																
Y5 29+50	2807											1			1																			
	2807	2806																																
Y5 31+80	2808																																	
	2808	2809																																
Y5 30+30	2809											1			1																			
	2809	2807																																
Y5 24+63	2810					1				1	1																							
	2810	2801																																
SHEET TOTALS				1	1	2	10	4	5	1	5	6			8				2											64				

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

RAODYNSKI-5285

COMPUTED BY:	JCF	**DATE:**	7/11/2019
CHECKED BY:	BSR	**DATE:**	7/11/2019

PROJECT NO.	SHEET NO.
I-4400BB	3D-23

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

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

LINE & STATION	OFFSET		STRUCTURE NUMBER		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	MINIMUM REQUIRED SLOPE	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC)									C. S. PIPE								R. C. PIPE CLASS IV							
SIZE			FROM	TO	FT.	FT.	FT.	%	12	15	18		DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	15	18	24	30	36	42	48		15	18	24	30	36	42	48	
THICKNESS OR GAUGE																		.064	.064	.064	.079	.079	.109	.109									
Y5 28+03	30	LT	2811	OUT		2109.2	2108.5				32				X																		
Y5 29+39	30	LT	2812	OUT		2111.0	2110.5				28				X																		
Y5 31+06	28	LT	2813	OUT		2118.5	2115.0				56				X																		
Y5 27+40	16	RT	2814		2109.7																												
			2814	2804		2106.9	2105.8	1.1																		36							
Y5 28+30	16	RT	2815		2112.2																												
			2815	2805		2109.5	2108.7	0.7																		28							
L 376+76	1	RT	900T																														
			900T	900E																							308						
L 381+40	3	LT	0403																														
L 381+38	3	RT	0404																														
L 380+98	67	RT	0405																														
L 384+94	3	LT	0410																														
L 385+87	3	RT	0412																														
Y1RPD 11+97	36	LT	0414																														
L 383+50	2	LT	0418																														
L 389+39	3	RT	0503																														
L 389+39	3	LT	0504																														
L 387+44	3	RT	0505																														
L 387+44	3	LT	0506																														
L 391+14	3	LT	0510																														
L 391+14	3	RT	0511																														
L 398+04	3	RT	0517																														
L 398+04	3	LT	0518																														
L 397+64	3	LT	0519																														
L 395+44	3	LT	0520																														
L 395+44	3	RT	0521																														
L 393+94	3	LT	0522																														
L 393+94	3	RT	0523																														
L 400+89	3	RT	0526																														
L 400+89	3	LT	0527																														
L 400+44	3	RT	0529																														
L 400+44	3	LT	0530																														
L 404+25	2	RT	0607																														
L 404+25	2	LT	0608																														
L 412+55	2	RT	0613																														
L 412+55	2	LT	0614																														
L 409+00	2	RT	0617																														
L 409+00	2	LT	0618																														
L 407+45	2	RT	0619																														
L 407+45	2	LT	0620																														
L 410+75	2	RT	0621																														
L 418+65	2	RT	0704																														
L 418+65	2	LT	0705																														
L 420+00	4	LT	0707																														
L 415+15	2	RT	0711																														
L 415+15	2	LT	0712																														
L 423+60	3	LT	0716																														
L 426+38	62	LT	0724																														
L 426+38	72	LT	0728																														
SHEET TOTALS											116															64	308						

LINE & STATION	FROM	TO	36" WELDED STEEL PIPE 0.53" THICK, GRADE B IN SOIL	36" WELDED STEEL PIPE 0.53" THICK, GRADE B NOT IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B NOT IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B NOT IN SOIL	12" FUNNEL DRAIN PIPE	TEMPORARY 12" SLOTTED DRAIN SPECIAL DETAIL		METAL FUNNEL	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE)	REINFORCED ENDWALLS	DRAINAGE STRUCTURE	QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)		
													CY	CY	MASONRY CY	0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.
Y5 28+03	2811	OUT																
Y5 29+39	2812	OUT																
Y5 31+06	2813	OUT																
Y5 27+40	2814															1		
	2814	2804																
Y5 28+30	2815															1		
	2815	2805																
L 376+76	900T															1		
	900T	900E														1		
L 381+40	0403															1		
L 381+38	0404															1		
L 380+98	0405															1		
L 384+94	0410															1		
L 385+87	0412															1		
Y1RPD 11+97	0414															1		
L 383+50	0418															1		
L 389+39	0503															1		
L 389+39	0504															1		
L 387+44	0505															1		
L 387+44	0506															1		
L 391+14	0510															1		
L 391+14	0511															1		
L 398+04	0517															1		
L 398+04	0518															1		
L 397+64	0519															1		
L 395+44	0520															1		
L 395+44	0521															1		
L 393+94	0522															1		
L 393+94	0523															1		
L 400+89	0526															1		
L 400+89	0527															1		
L 400+44	0529															1		
L 400+44	0530															1		
L 404+25	0607															1		
L 404+25	0608															1		
L 412+55	0613															1		
L 412+55	0614															1		
L 409+00	0617															1		
L 409+00	0618															1		
L 407+45	0619															1		
L 407+45	0620															1		
L 410+75	0621															1		
L 418+65	0704															1		
L 418+65	0705															1		
L 420+00	0707															1		
L 415+15	0711															1		
L 415+15	0712															1		
L 423+60	0716															1		
L 426+38	0724															1		
L 426+38	0728															1		
SHEET TOTALS																45		

LINE & STATION	FROM	TO	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	ADJUST D.I.	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	12" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	BERM DITCH OUTLET STD. 850.11 (PER EACH)	PREFORMED SCOUR HOLE (PER EACH)	ENERGY DISSIPATION BASIN	TEMP STEEL PLATE COVER MASONRY DRAINAGE	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
Y5 28+03	2811	OUT																															30	
Y5 29+39	2812	OUT																															30	
Y5 31+06	2813	OUT																															107	
Y5 27+40	2814											1			1																			
	2814	2804																																
Y5 28+30	2815											1			1																			
	2815	2805																																
L 376+76	900T																																	
	900T	900E						1																										
L 381+40	0403																												1					
L 381+38	0404																												1					
L 380+98	0405																																	
L 384+94	0410																												1					
L 385+87	0412																												1					
Y1RPD 11+97	0414																																	
L 383+50	0418																												1					
L 389+39	0503																																	
L 389+39	0504																												1					
L 387+44	0505																												1					
L 387+44	0506																												1					
L 391+14	0510																												1					
L 391+14	0511																												1					
L 398+04	0517																																	
L 398+04	0518																																	
L 397+64	0519																																	
L 395+44	0520																												1					
L 395+44	0521																												1					
L 393+94	0522																												1					
L 393+94	0523																												1					
L 400+89	0526																																	
L 400+89	0527																												1					
L 400+44	0529																																	
L 400+44	0530																												1					
L 404+25	0607																																	
L 404+25	0608																												1					
L 412+55	0613																																	
L 412+55	0614																												1					
L 409+00	0617																																	
L 409+00	0618																												1					
L 407+45	0619																																	
L 407+45	0620																												1					
L 410+75	0621																																	
L 418+65	0704																																	
L 418+65	0705																												1					
L 420+00	0707																												1					
L 415+15	0711																																	
L 415+15	0712																												1					
L 423+60	0716																												1					
L 426+38	0724																																	
L 426+38	0728																																	
SHEET TOTALS								1				2			2														24				167	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

RAODYNSKI-5285

COMPUTED BY:	JCF	DATE:	7/11/2019
CHECKED BY:	BSR	DATE:	7/11/2019

PROJECT NO.	SHEET NO.
I-4400BB	3D-24

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

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

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

LINE & STATION	OFFSET		STRUCTURE NUMBER		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	MINIMUM REQUIRED SLOPE	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC)									C. S. PIPE								R. C. PIPE CLASS IV								36" WELDED STEEL PIPE 0.53" THICK, GRADE B IN SOIL	36" WELDED STEEL PIPE 0.53" THICK, GRADE B NOT IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B NOT IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B NOT IN SOIL	12" FUNNEL DRAIN PIPE	TEMPORARY 12" SLOTTED DRAIN SPECIAL DETAIL		METAL FUNNEL	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE)	REINFORCED ENDWALLS	DRAINAGE STRUCTURE	QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)			OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	ADJUST D.I.	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	12" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	BERM DITCH OUTLET STD. 850.11 (PER EACH)	PREFORMED SCOUR HOLE (PER EACH)	ENERGY DISSIPATION BASIN	TEMP STEEL PLATE COVER MASONRY DRAINAGE	FLOWABLE FILL	CONCRETE COLLARS CL. "B" STD. 840.72	CONCRETE AND BRICK PIPE PLUG STD. 840.71	PIPE REMOVAL	REMARKS
SIZE									12	15	18							15	18	24	30	36	42	48		15	18	24	30	36	42	48																A	B																																
THICKNESS OR GAUGE			FROM	TO	FT.	FT.	FT.	%					DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	.064	.064	.064	.079	.079	.109	.109																				CY	CY	MASONRY CY	0' THRU 5' EACH	5' THRU 10' LIN. FT.	10' AND ABOVE LIN. FT.																												CY	CY	CY	LIN. FT.	
L 428+65	62	LT	0730																																												1																														1					
L 434+10	3	LT	0807																																												1																														1					
L 434+10	3	RT	0808																																												1																																			
L 434+56	3	LT	0809																																												1																														1					
L 435+21	3	LT	0810																																												1																														1					
L 436+89	3	LT	0814																																												1																														1					
L 436+89	3	RT	0815																																												1																																			
L 437+50	4	LT	0816																																												1																														1					
L 437+50	4	RT	0817																																												1																																			
L 437+50	62	RT	0831																																												1																														1					
L 442+95	2	LT	0832																																												1																																			
L 442+95	2	RT	0834																																												1																														1					
L 442+40	3	LT	0835																																												1																																			
L 442+40	3	RT	0836																																												1																																			
L 441+46	3	RT	0837																																												1																														1					
L 441+46	3	LT	0844																																												1																																			
L 435+21	3	RT	0902																																												1																																			
L 444+90	3	RT	0903																																												1																														1					
L 444+90	3	LT	0908																																												1																																			
L 448+03	3	RT	0909																																												1																														1					
L 448+03	3	LT	0913																																												1																																			
L 451+00	2	RT	0914																																												1																														1					
L 451+00	2	LT	0918																																												1																																			
L 453+20	2	LT	0919																																												1																																			
L 453+20	2	RT	0925																																												1																														1					
L 456+90	3	LT	0926																																												1																																			
L 456+03	3	LT	0928																																												1																														1					
L 457+40	3	RT	1002																																												1																																			
L 457+40	3	LT	1003																																												1																														1					
L 457+40	62	LT	1004																																												1																														1					
L 468+18	3	LT	1006																																												1																														1					
L 468+18	3	RT	1007																																												1																																			
L 465+50	3	LT	1009																																												1																														1					
L 465+50	3	RT	1010																																												1																																			
L 458+10	3	RT	1012																																												1																																			
L 459+30	3	114	RT																																												1																														1					
L 471+00	3	LT	1014																																												1																														1					
L 471+55	62	LT	1105																																												1																														1					
L 471+55	3	LT	1106																																												1																																			
L 471+55	3	RT	1107																																												1																																			
L 476+00	3	LT	1110																																												1																																			
L 476+00	3	RT	1111																																												1																																			
L 480+21	3	LT	1114																																												1																																			
L 480+21	3	RT	1115																																												1																																			
L 483+90	3	LT	1118																																												1																														1					
L 483+90	3	RT	1119																																												1																																			
L 485+50	3	LT	1201																																												1																																			
L 485+50	3	RT	1202																																												1																																			
L 488+00	3	LT	1207																																												1																														1					
L 488+00	3	RT	1208																																												1																																			
							SHEET TOTALS																																								50																														23					

RAODYNSKI-5285

COMPUTED BY:	JCF	DATE:	7/11/2019
CHECKED BY:	BSR	DATE:	7/11/2019

PROJECT NO.	SHEET NO.
I-4400BB	3D-25

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications For Roads and Structures, Section 300-5".

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

LINE & STATION	OFFSET		STRUCTURE NUMBER		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	MINIMUM REQUIRED SLOPE	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC)									C. S. PIPE								R. C. PIPE CLASS IV								36" WELDED STEEL PIPE 0.53" THICK, GRADE B IN SOIL	36" WELDED STEEL PIPE 0.53" THICK, GRADE B NOT IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B NOT IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B NOT IN SOIL	12" FUNNEL DRAIN PIPE	TEMPORARY 12" SLOTTED DRAIN SPECIAL DETAIL		METAL FUNNEL	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE)	REINFORCED ENDWALLS	DRAINAGE STRUCTURE	QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)			OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	ADJUST D.I.	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	12" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	BERM DITCH OUTLET STD. 850.11 (PER EACH)	PREFORMED SCOUR HOLE (PER EACH)	ENERGY DISSIPATION BASIN	TEMP STEEL PLATE COVER MASONRY DRAINAGE	FLOWABLE FILL	CONCRETE COLLARS CL. "B" STD. 840.72	CONCRETE AND BRICK PIPE PLUG STD. 840.71	PIPE REMOVAL	REMARKS
SIZE			FROM	TO					12	15	18		DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	15	18	24	30	36	42	48		15	18	24	30	36	42	48														MASONRY	0' THRU 5'	A 5' THRU 10'	B 10' AND ABOVE																																		
THICKNESS OR GAUGE					FT.	FT.	FT.	%										.064	.064	.064	.079	.109	.109																					CY	CY	CY	EACH	LIN. FT.	LIN. FT.																												CY	CY	CY	LIN. FT.	
L 486+87	3	RT	1209																																									1																																			
L 492+30	3	RT	1211																																									1																																			
L 492+30	3	LT	1212																																									1																													1					
L 492+30	62	LT	1213																																																																								1					
L 495+47	3	RT	1215																																																																													
L 495+47	3	LT	1216																																																																													
L 495+47	62	LT	1217																																																																								1					
L 496+00	62	LT	1218																																																																								1					
L 498+90	3	RT	1222																																																																													
L 498+90	3	LT	1223																																																																													
L 498+90	62	LT	1224																																																																								1					
L 501+50	62	LT	1302																																																																								1					
L 501+50	3	LT	1303																																																																													
L 501+50	3	RT	1304																																																																													
L 504+50	62	LT	1310																																																																								1					
L 504+50	3	LT	1311																																																																													
L 504+50	3	RT	1312																																																																													
L 505+13	3	RT	1313																																																																													
L 507+90	62	LT	1316																																																																								1					
L 507+90	3	LT	1317																																																																								1					
L 507+90	3	RT	1318																																																																													
L 511+30	3	LT	1322																																																																													
L 511+30	3	RT	1323																																																																													
L 514+50	62	LT	1402																																																																								1					
L 514+50	3	LT	1403																																																																													
L 514+50	3	RT	1404																																																																													
L 513+21	3	RT	1405																																																																													
L 523+03	3	LT	1419																																																																								1					
L 523+06	3	RT	1420																																																																													
L 522+06	3	LT	1421																																																																													
L 522+06	3	RT	1422																																																																													
L 520+50	3	LT	1423																																																																													
L 520+50	3	RT	1424																																																																													
L 519+50	3	RT	1425																																																																													
L 524+78	3	LT	1431																																																																								1					
L 524+78	3	RT	1432																																																																													
L 525+53	62	RT	1433																																																																													
L 528+00	62	LT	1502																																																																								1					
L 528+00	3	LT	1503																																																																								1					
L 528+00	3	RT	1504																																																																													
L 531+75	62	LT	1506																																																																								1					
L 531+75	3	LT	1507																																																																													
L 531+75	3	RT	1508																																																																													
L 533+85	3	LT	1510																																																																								1					
L 533+85	3	RT	1511																																																																													
L 535+85	3	LT	1512																																																																								1					
L 535+85	2	RT	1513																																																																													
L 538+13	1	LT	1515																																																																								1					
L 538+13	5	RT	1516																																																																													
L 530+00	62	LT	1518																																																																								1					
SHEET TOTALS																																															3																														19					

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

RAODYNSKI-5285

COMPUTED BY:	JCF	**DATE:**	7/11/2019
CHECKED BY:	BSR	**DATE:**	7/11/2019

PROJECT NO.	SHEET NO.
I-4400BB	3D-26

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

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

LINE & STATION	OFFSET		STRUCTURE NUMBER		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	MINIMUM REQUIRED SLOPE	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC)									C. S. PIPE								R. C. PIPE CLASS IV								36" WELDED STEEL PIPE 0.53" THICK, GRADE B IN SOIL	36" WELDED STEEL PIPE 0.53" THICK, GRADE B NOT IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B NOT IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B NOT IN SOIL	12" FUNNEL DRAIN PIPE	TEMPORARY 12" SLOTTED DRAIN SPECIAL DETAIL		METAL FUNNEL	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE)	REINFORCED ENDWALLS	DRAINAGE STRUCTURE	QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)			OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	ADJUST D.I.	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	12" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	BERM DITCH OUTLET STD. 850.11 (PER EACH)	PREFORMED SCOUR HOLE (PER EACH)	ENERGY DISSIPATION BASIN	TEMP STEEL PLATE COVER MASONRY DRAINAGE	FLOWABLE FILL	CONCRETE COLLARS CL. "B" STD. 840.72	CONCRETE AND BRICK PIPE PLUG STD. 840.71	PIPE REMOVAL	REMARKS
SIZE									12	15	18		DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	15	18	24	30	36	42	48		15	18	24	30	36	42	48														MASONRY	0' THRU 5'	A 5' THRU 10'	B 10' AND ABOVE																																
THICKNESS OR GAUGE			FROM	TO	FT.	FT.	FT.	%										.064	.064	.064	.079	.109	.109																					CY	CY	CY	EACH	LIN. FT.	LIN. FT.																												CY	CY	CY	LIN. FT.	
L 541+31	2	LT	1603																																																																												
L 541+31	2	RT	1604																																																																													
L 543+70	74	LT	1612																																																																								1					
L 543+70	2	LT	1613																																																																								1					
L 543+70	2	RT	1614																																																																												
L 548+00	2	LT	1618																																																																								1					
L 548+00	2	RT	1619																																																																												
L 551+35	3	LT	1620																																																																								1					
L 551+35	3	RT	1621																																																																												
L 546+95	74	LT	1629																																																																								1					
L 546+95	2	LT	1630																																																																												
L 546+95	2	RT	1631																																																																												
L 553+20	3	RT	1702																																																																												
L 553+20	3	LT	1703																																																																												
L 554+70	3	LT	1704																																																																								1					
L 554+70	3	RT	1705																																																																								1					
L 563+14	2	LT	1706																																																																								1					
L 558+87	2	LT	1711																																																																												
L 558+88	3	RT	1712																																																																								1					
L 561+50	3	LT	1716																																																																												
L 561+50	3	RT	1717																																																																								1					
L 566+02	2	LT	1721																																																																												
L 566+02	2	RT	1722																																																																								1					
L 564+50	3	LT	1723																																																																												
L 564+50	3	RT	1724																																																																								1					
L 563+14	3	RT	1725																																																																								1					
L 572+00	74	LT	1810																																																																								1					
L 572+00	2	LT	1811																																																																								1					
L 572+00	2	RT	1812																																																																												
L 570+00	2	RT	1813																																																																												
L 573+95	2	LT	1816																																																																								1					
L 573+95	2	RT	1817																																																																												
L 577+80	3	LT	1818																																																																												
L 577+80	3	RT	1819																																																																								1					
L 579+50	2	RT	1827																																																																												
L 576+00	2	RT	1828																																																																												
L 585+00	2	LT	1902																																																																								1					
L 585+00	2	RT	1903																																																																												
L 581+20	3	LT	1906																																																																												
L 581+20	3	RT	1907																																																																								1					
L 587+13	62	LT	1910																																																																								1					
L 587+13	2	LT	1911																																																																								1					
L 587+13	2	RT	1912																																																																												
L 590+17	73	LT	1913																																																																								1					
L 589+10	62	LT	1914																																																																								1					
L 590+00	62	LT	1916																																																																								1					
L 589+37	2	LT	1917																																																																								1					
L 589+37	2	RT	1918																																																																								1					
L 590+00	2	LT	1920																																																																								1					
L 590+00	2	RT	1921																																																																								1					
								SHEET TOTALS																																																																		28					

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

RAODYNSKI-5285

COMPUTED BY: JCF **DATE:** 7/11/2019

CHECKED BY: BSR **DATE:** 7/11/2019

PROJECT NO.	SHEET NO.
I-4400BB	3D-27

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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See "Standard Specifications For Roads and Structures, Section 300-5".**

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

LINE & STATION / SIZE / THICKNESS OR GAUGE	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) 12	15	18		DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	C. S. PIPE 15 .064	18 .064	24 .064	30 .079	36 .079	42 .109	48 .109		R. C. PIPE CLASS IV 15	18	24	30	36	42	48		36" WELDED STEEL PIPE 0.53" THICK, GRADE B IN SOIL	36" WELDED STEEL PIPE 0.53" THICK, GRADE B NOT IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B NOT IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B NOT IN SOIL	12" FUNNEL DRAIN PIPE	TEMPORARY 12" SLOTTED DRAIN SPECIAL DETAIL		METAL FUNNEL	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	ADJUST D.I.	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	12" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	BERM DITCH OUTLET STD. 850.11 (PER EACH)	PREFORMED SCOUR HOLE (PER EACH)	ENERGY DISSIPATION BASIN	TEMP STEEL PLATE COVER MASONRY DRAINAGE	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
L 591+00	1 LT	1922																																																																											1					
L 591+00	3 RT	1923																																																																																	
L 594+00	1 LT	1924																																																																											1					
L 594+00	3 RT	1925																																																																											1					
L 582+75	2 RT	1928																																																																											1					
L 584+00	62 LT	1933																																																																																	
L 584+00	2 RT	1934																																																																																	
L 596+29	1 LT	2001																																																																											1					
L 596+29	3 RT	2002																																																																																	
L 596+29	61 RT	2003																																																																											1					
L 599+50	1 LT	2004																																																																																	
L 599+50	3 RT	2005																																																																																	
L 602+63	1 LT	2006																																																																											1					
L 599+50	61 RT	2007																																																																																	
L 602+63	3 RT	2008																																																																											1					
L 605+80	1 LT	2013																																																																																	
L 605+80	2 RT	2014																																																																											1					
L 605+80	2 RT	2023																																																																											1					
L 608+75	2 LT	2024																																																																											1					
L 608+95	88 LT	2026																																																																											1					
L 609+75	61 LT	2101																																																																											1					
L 612+50	3 RT	2102																																																																											1					
L 612+50	2 LT	2103																																																																											1					
L 615+30	1 LT	2107																																																																											1					
L 615+30	3 RT	2108																																																																											1					
L 616+66	63 RT	2110																																																																											1					
L 616+65	3 RT	2111																																																																											1					
L 618+05	4 RT	2112																																																																																	
L 618+05	65 RT	2113																																																																																	
L 621+10	1 LT	2115																																																																											1					
L 621+10	3 RT	2116																																																																											1					
L 621+10	65 RT	2117																																																																											1					
L 609+75	3 RT	2122																																																																											1					
L 612+50	84 LT	2123																																																																											1					
L 610+50	63 RT	2126																																																																											1					
L 623+25	1 LT	2202																																																																											1					
L 624+00	3 RT	2203																																																																																	
L 623+25	3 RT	2204																																																																											1					
L 624+00	63 RT	2205																																																																											1					
L 628+21	1 LT	2209																																																																											1					
L 628+21	3 RT	2210																																																																																	
L 630+50	3 RT	2211																																																																																	
L 627+52	61 LT	2215																																																																											1					
L 629+50	61 LT	2217																																																																											1					
L 610+72	94 LT	2221																																																																																	
L 636+45	62 LT	2222																																																																											1					
L 635+25	3 RT	2224																																																																											1					
L 637+05	63 RT	2302																																																																											1					
L 637+50	3 RT	2303																																																																																	
L 637+50	1 LT	2304																																																																																	
SHEET TOTALS																																																																														34					

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

RAODYNSKI-5285

COMPUTED BY:	JCF	DATE:	7/11/2019
CHECKED BY:	BSR	DATE:	7/11/2019

PROJECT NO.	SHEET NO.
I-4400BB	3D-28

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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See "Standard Specifications For Roads and Structures, Section 300-5".**

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

LINE & STATION / SIZE / THICKNESS OR GAUGE	OFFSET		STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) 12	Side Drain Pipe 15	Side Drain Pipe 18	Side Drain Pipe	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	C. S. PIPE 15 .064	C. S. PIPE 18 .064	C. S. PIPE 24 .064	C. S. PIPE 30 .079	C. S. PIPE 36 .079	C. S. PIPE 42 .109	C. S. PIPE 48 .109	C. S. PIPE
L 637+50	81	LT	2306																						
L 638+90	81	LT	2308																						
L 641+00	3	RT	2309																						
L 641+00	1	LT	2310																						
L 641+00	61	LT	2311																						
L 642+25	61	LT	2313																						
Y7 16+13	72	RT	2317																						
L 645+00	3	RT	2318																						
L 645+00	1	LT	2319																						
L 645+00	61	LT	2320																						
L 647+50	62	LT	2326																						
L 647+50	109	LT	2327																						
L 648+68	2	RT	2331																						
L 642+25	88	RT	2332																						
L 646+46	62	RT	2342																						
L 376+75	1	RT	T101																						
L 381+35	9	RT	T102																						
L 384+94	9	RT	T103																						
L 385+92	5	LT	T104																						
L 385+85	9	RT	T105																						
L 390+64	3	LT	T106																						
L 400+44	9	3	T107																						
L 400+04	9	RT	T108																						
L 400+89	9	RT	T109																						
L 404+25	9	RT	T110																						
L 407+45	9	RT	T111																						
L 409+00	9	RT	T112																						
L 409+93	0	RT	T113																						
L 410+75	9	RT	T114																						
L 414+78	3	LT	T115																						
L 456+03	9	RT	T116																						
L 456+67	3	LT	T117																						
L 456+90	3	RT	T118																						
L 457+40	9	RT	T119																						
L 458+10	9	RT	T120																						
L 465+50	9	RT	T121T																						
L 468+18	9	RT	T122																						
L 471+55	9	RT	T123																						
L 476+00	9	RT	T124																						
L 480+20	9	RT	T125																						
L 481+70	9	RT	T126																						
L 483+90	9	RT	T127																						
L485+50	9	RT	T128																						
L 486+87	9	RT	T129																						
L 488+00	9	RT	T130																						
L 492+30	9	RT	T131																						
L 495+97	9	RT	T132																						
L 498+90	9	RT	T133																						
L 501+50	9	RT	T134																						
L 504+50	9	RT	T135																						
								SHEET TOTALS																	

LINE & STATION	STRUCTURE NUMBER FROM	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 IV	36" WELDED STEEL PIPE 0.53" THICK, GRADE B IN SOIL	36" WELDED STEEL PIPE 0.53" THICK, GRADE B NOT IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B NOT IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B NOT IN SOIL	12" FUNNEL DRAIN PIPE	TEMPORARY 12" SLOTTED DRAIN SPECIAL DETAIL		METAL FUNNEL	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.
L 637+50	2306																								
L 638+90	2308																								
L 641+00	2309																								
L 641+00	2310																								
L 641+00	2311																								
L 642+25	2313																								
Y7 16+13	2317																								
L 645+00	2318																								
L 645+00	2319																								
L 645+00	2320																								
L 647+50	2326																								
L 647+50	2327																								
L 648+68	2331																								
L 642+25	2332																								
L 646+46	2342																								
L 376+75	T101																								
L 381+35	T102																								
L 384+94	T103																								
L 385+92	T104																								
L 385+85	T105																								
L 390+64	T106																								
L 400+44	T107																								
L 400+04	T108																								
L 400+89	T109																								
L 404+25	T110																								
L 407+45	T111																								
L 409+00	T112																								
L 409+93	T113																								
L 410+75	T114																								
L 414+78	T115																								
L 456+03	T116																								
L 456+67	T117																								
L 456+90	T118																								
L 457+40	T119																								
L 458+10	T120																								
L 465+50	T121T																								
L 468+18	T122																								
L 471+55	T123																								
L 476+00	T124																								
L 480+20	T125																								
L 481+70	T126																								
L 483+90	T127																								
L485+50	T128																								
L 486+87	T129																								
L 488+00	T130																								
L 492+30	T131																								
L 495+97	T132																								
L 498+90	T133																								
L 501+50	T134																								
L 504+50	T135																								
SHEET TOTALS																									

LINE & STATION	STRUCTURE NUMBER FROM	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	ADJUST D.I.	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	12" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	BERM DITCH OUTLET STD. 850.11 (PER EACH)	PREFORMED SCOUR HOLE (PER EACH)	ENERGY DISSIPATION BASIN	TEMP STEEL PLATE COVER MASONRY DRAINAGE	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
L 637+50	2306																											1					
L 638+90	2308																											1					
L 641+00	2309																											1					
L 641+00	2310																											1					
L 641+00	2311																											1					
L 642+25	2313																											1					
Y7 16+13	2317																											1					
L 645+00	2318																											1					
L 645+00	2319																											1					
L 645+00	2320																																
L 647+50	2326																											1					
L 647+50	2327																											1					
L 648+68	2331																											1					
L 642+25	2332																																
L 646+46	2342																																
L 376+75	T101																											1					
L 381+35	T102																																
L 384+94	T103																																
L 385+92	T104																																
L 385+85	T105																																
L 390+64	T106																																
L 400+44	T107																																
L 400+04	T108																																
L 400+89	T109																																
L 404+25	T110																																
L 407+45	T111																																
L 409+00	T112																																
L 409+93	T113																																
L 410+75	T114																																
L 414+78	T115																																
L 456+03	T116																																
L 456+67	T117																																
L 456+90	T118																																
L 457+40	T119																																
L 458+10	T120																																
L 465+50	T121T																																
L 468+18	T122																																
L 471+55	T123																																
L 476+00	T124																																
L 480+20	T125																																
L 481+70	T126																																
L 483+90	T127																																
L485+50	T128																																
L 486+87	T129																																
L 488+00	T130																																
L 492+30	T131																																
L 495+97	T132																																
L 498+90	T133																																
L 501+50	T134																																
L 504+50	T135																																
SHEET TOTALS																												13					

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

RAODYNSKI-5285

COMPUTED BY: JCF DATE: 7/11/2019

CHECKED BY: BSR DATE: 7/11/2019

PROJECT NO.	SHEET NO.
I-4400BB	3D-29

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

**Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".**

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

LINE & STATION	OFFSET		STRUCTURE NUMBER		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	MINIMUM REQUIRED SLOPE	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC)									C. S. PIPE								R. C. PIPE CLASS IV								36" WELDED STEEL PIPE 0.53" THICK, GRADE B IN SOIL	36" WELDED STEEL PIPE 0.53" THICK, GRADE B NOT IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B NOT IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B NOT IN SOIL	12" FUNNEL DRAIN PIPE	TEMPORARY 12" SLOTTED DRAIN SPECIAL DETAIL		METAL FUNNEL	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE)	REINFORCED ENDWALLS	DRAINAGE STRUCTURE	QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)			OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	ADJUST D.I.	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	12" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	BERM DITCH OUTLET STD. 850.11 (PER EACH)	PREFORMED SCOUR HOLE (PER EACH)	ENERGY DISSIPATION BASIN	TEMP STEEL PLATE COVER MASONRY DRAINAGE	FLOWABLE FILL	CONCRETE COLLARS CL. "B" STD. 840.72	CONCRETE AND BRICK PIPE PLUG STD. 840.71	PIPE REMOVAL	REMARKS
SIZE									12	15	18		DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	15	18	24	30	36	42	48		15	18	24	30	36	42	48																A	B																																		
THICKNESS OR GAUGE			FROM	TO	FT.	FT.	FT.	%										.064	.064	.064	.079	.079	.109	.109																			CY	CY	MASONRY CY	0' THRU 5' EACH	5' THRU 10' LIN. FT.	10' AND ABOVE LIN. FT.																													CY	CY	CY	LIN. FT.	
L 505+12	9	RT	T136																																																																																
L 507+90	9	RT	T137																																																																																
L 511+30	9	RT	T138																																																																															
L 513+21	9	RT	T139																																																																															
L 514+50	9	RT	T140																																																																															
L 516+60	9	RT	T141																																																																															
L517+60	9	RT	T142																																																																															
L 519+50	9	RT	T143																																																																															
L 520+50	9	RT	T144																																																																															
L 522+06	9	RT	T145																																																																															
L 523+06	9	RT	T146																																																																															
L 523+42	9	RT	T147																																																																															
L 524+78	9	RT	T148																																																																															
L 528+00	9	RT	T149																																																																															
L 531+75	9	RT	T150																																																																															
L 531+75	9	RT	T151																																																																															
L 535+85	9	RT	T152																																																																															
L 546+95	9	RT	T153																																																																															
L 548+00	9	RT	T154																																																																															
L 551+35	9	RT	T155																																																																															
L 553+20	9	RT	T156																																																																															
L 554+70	9	RT	T157																																																																															
L 558+91	9	RT	T158																																																																															
L 561+50	9	RT	T159																																																																															
L 563+14	9	RT	T160																																																																															
L 564+50	9	RT	T161																																																																															
L 566+02	9	RT	T162																																																																															
L 570+00	9	RT	T163																																																																															
L 572+00	9	RT	T164																																																																															
L 573+95	9	RT	T165																																																																															
L 576+00	9	RT	T166																																																																															
L 577+80	9	RT	T167																																																																															
L 579+50	9	RT	T168																																																																															
L 581+20	9	RT	T169																																																																															
L 582+75	9	RT	T170																																																																															
L 584+00	9	RT	T171																																																																															
L 585+00	9	RT	T172																																																																															
L 587+13	9	RT	T173																																																																															
L 591+00	23	LT	T174																																																																															
L 591+00	12	RT	T175																																																																															
L 594+80	23	LT	T176																																																																															
L 595+73	12	RT	T177																																																																															
L 596+29	23	LT	T178																																																																															
L 599+50	23	LT	T179																																																																															
L 602+51	71	RT	T180																																																																															
L 602+63	71	RT	T181																																																																															
L 603+68	12	RT	T182																																																																															
L604+76	12	RT	T183																																																																															
L 605+80	12	RT	T184																																																																															
L 608+75	12	RT	T185																																																																															
							SHEET TOTALS																																																																												

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
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D.I.	DROP INLET
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J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

RAODYNSKI-5285

COMPUTED BY:	JCF	**DATE:**	7/11/2019
CHECKED BY:	BSR	**DATE:**	7/11/2019

PROJECT NO.	SHEET NO.
I-4400BB	3D-30

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

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

LINE & STATION	OFFSET	STRUCTURE NUMBER		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	MINIMUM REQUIRED SLOPE	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC)									C. S. PIPE								R. C. PIPE CLASS IV								36" WELDED STEEL PIPE 0.53" THICK, GRADE B IN SOIL	36" WELDED STEEL PIPE 0.53" THICK, GRADE B NOT IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B IN SOIL	42" WELDED STEEL PIPE 0.63" THICK, GRADE B NOT IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B IN SOIL	48" WELDED STEEL PIPE 0.69" THICK, GRADE B NOT IN SOIL	12" FUNNEL DRAIN PIPE	TEMPORARY 12" SLOTTED DRAIN SPECIAL DETAIL		METAL FUNNEL	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE)	REINFORCED ENDWALLS	DRAINAGE STRUCTURE	QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)			OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	ADJUST D.I.	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	12" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	BERM DITCH OUTLET STD. 850.11 (PER EACH)	PREFORMED SCOUR HOLE (PER EACH)	ENERGY DISSIPATION BASIN	TEMP STEEL PLATE COVER MASONRY DRAINAGE	FLOWABLE FILL	CONCRETE COLLARS CL. "B" STD. 840.72	CONCRETE AND BRICK PIPE PLUG STD. 840.71	PIPE REMOVAL	REMARKS
SIZE		FROM	TO				12	15	18						15	18	24	30	36	42	48		15	18	24	30	36	42	48													MASONRY	0' THRU 5'	A 5' THRU 10'	B 10' AND ABOVE																															
THICKNESS OR GAUGE				FT.	FT.	FT.	%					DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	.064	.064	.064	.079	.079	.109	.109																			CY	CY	CY	EACH	LIN. FT.	LIN. FT.																											CY	CY	CY	LIN. FT.	
L 612+50	12 RT	T186																																																																													
L 616+24	12 RT	T187																																																																													
L 618+05	12 RT	T188																																																																													
L 621+00	12 RT	T189																																																																													
L 623+88	12 RT	T190																																																																													
L 628+28	12 RT	T191																																																																													
L 630+50	12 RT	T192																																																																													
L 635+25	12 RT	T193																																																																													
L 639+11	12 RT	T194																																																																													
L 642+25	12 RT	T195																																																																													
L 645+80	12 RT	T196																																																																													
L 648+72	12 RT	T197																																																																													
L 376+75 - 379+86	0 RT	N/A																							308																																																					
L 385+87 - 385+92	8 RT	N/A																						8																																																						
L 385+95 - 385+92	4 RT	N/A																						4																																																						
L 386+44 - 389+39	10 RT	N/A																						32														264																																							
L 389+34 - 391+14	10 RT	N/A																						30														148																																							
L 390+96 - 393+94	10 RT	N/A																						26														272																																							
L 393+86 - 395+44	10 RT	N/A																						30														132																																							
L 395+32 - 400+04	10 RT	N/A																						270														270																																							
L 410+75 - 409+00	10 RT	N/A																						96																																																						
L 411+29 - 414+78	13 LT	N/A																						94														194																																							
L 411+60 - 412+55	13 LT	N/A																						44														50																																							
L 414+62 - 418+65	13 LT	N/A																						42														362																																							
L 414+78 - 415+15	13 LT	N/A																						56																																																						
L 418+95 - 420+00	13 LT	N/A																						44														102																																							
L 423+16 - 426+38	13 LT	N/A																						48														274																																							
L 426+36 - 428+65	13 LT	N/A																						62														166																																							
L 428+64 - 431+50	13 LT	N/A																						64														224																																							
L 431+46 - 434+10	13 LT	N/A																						52														210																																							
L 434+06 - 437+90	13 LT	N/A																						46														234																																							
L 437+86 - 441+46	13 LT	N/A																						46														414																																							
L 441+42 - 442+40	13 LT	N/A																						38														60																																							
L 442+36 - 444+90	13 LT	N/A																						46														206																																							
L 444+86 - 448+00	13 LT	N/A																						50														266																																							
L 447+96 - 451+00	13 LT	N/A																						44														258																																							
L 450+96 - 453+20	13 LT	N/A																						42														184																																							
L 590+00 - 590+17	23 LT	N/A																										24																																																		
L 591+00 - 592+60	23 LT	N/A																																					158																																							
L 594+00 - 595+25	23 LT	N/A																																					92																																							
L 596+30 - 597+30	23 LT	N/A																																					138																																							
L 599+50 - 601+15	23 LT	N/A																																					138																																							
L 628+20 - 630+50	23 LT	N/A																						230																																																						
Y1RPA 15+82 - 16+65	48 LT	N/A																						80																																																						
SHEET TOTALS																								1624	308			24										4816																																							
PROJECT TOTALS									324	224							1800	220	224	248	216				22708	5416	7308	2548	956	36	76		732	732	192	192	520	520	12	4816		1	33.200	6.000		628	610.1		8	3	3	31	149	408	85	1	9	11	5	3	332		5	1	66	10	12	10	2	1			2		141	999			6230	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

RAODYNSKI-5285

COMPUTED BY: JCF DATE: 7/11/2019
CHECKED BY: BSR DATE: 7/11/2019

PROJECT NO.	SHEET NO.
I-4400BB	3D-31

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications For Roads and Structures, Section 300-5".

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

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

LINE & STATION SIZE THICKNESS OR GAUGE	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	C. S. PIPE 54	C. S. PIPE 60	C. S. PIPE 66	C. S. PIPE 72	C. S. PIPE 78	C. S. PIPE 84		R. C. PIPE CLASS IV 54	R. C. PIPE CLASS IV 60	R. C. PIPE CLASS IV 66	R. C. PIPE CLASS IV 72	R. C. PIPE CLASS IV 78	R. C. PIPE CLASS IV 84		54" WELDED STEEL PIPE 0.78" THICK, GRADE B IN SOIL	54" WELDED STEEL PIPE 0.78" THICK, GRADE B NOT IN SOIL	60" WELDED STEEL PIPE 0.84" THICK, GRADE B IN SOIL	60" WELDED STEEL PIPE 0.84" THICK, GRADE B NOT IN SOIL	66" WELDED STEEL PIPE 0.94" THICK, GRADE B IN SOIL	66" WELDED STEEL PIPE 0.94" THICK, GRADE B NOT IN SOIL										ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	ADJUST D.I.	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	##" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	BERM DITCH OUTLET STD. 850.11 (PER EACH)	PREFORMED SCOUR HOLE (PER EACH)	ENERGY DISSIPATION BASIN		FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
L 459+30	133 LT	0625		2100.3																																		7.900																																			
		0625	0626		2095.3	2086.8																		140	140													7.900																																			
L 459+30	114 RT	1013		2157.0																																		5.000																																			
		1013	1015		2152.5	2139.8																152	152																																																					
L 457+37	121 LT	1015		2148.5																																			3.465							1			1																										
		1015	0930		2137.1	2132.3									100																																																											
PR_L4400 551+89	150 RT	1636		2086.7																																		6.300																																			
		1636	1637		2081.2	2075.1																				130	130																																														133				
PR_L4400 573+74	95 RT	1824		2086.4																																		6.300																																			
		1824	1822		2080.9	2072.3																				124	124																																																		
PR_L4400 611+63	87 RT	2120		2097.6																																		6.300																																			
		2120	2121		2092.1	2089.0																				104	104																																														174				
SHEET TOTALS															100							152	152	140	140	358	358											39.700	3.465							1			1																					307				
PROJECT TOTALS															100							152	152	140	140	358	358											39.700	3.465							1			1																					307				

12/06/07

COMPUTED BY: MAK DATE: 03/12/2019
CHECKED BY: JS DATE: 03/14/2019

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	3G-1

SUMMARY OF SUBSURFACE DRAINAGE

LINE	STATION	STATION	LOCATION LT/RT/CL	DRAIN TYPE* UD/BD/SD	LF
CONTINGENCY				SD	2000
				TOTAL LF:	2000

*UD = UNDERDRAIN
*BD = BLIND DRAIN
*SD = SUBSURFACE DRAIN

SUMMARY OF AGGREGATE SUBGRADE /STABILIZATION

LINE	STATION	STATION	AGGREGATE TYPE* ASU/AST	AGGREGATE THICKNESS INCHES	SHALLOW UNDERCUT CY	CLASS IV SUBGRADE STABILIZATION TONS	GEOTEXTILE FOR SOIL STABILIZATION SY	STABILIZER AGGREGATE TONS	CLASS IV AGGREGATE STABILIZATION TONS
–L–	380+44.02	420+26.23	ASU	12		87349	56142		
–L–	423+23.12	650+50.00	ASU	12		212767	321817		
–Y1–RPA–	10+00.00	13+64.28	ASU	12		934	1384		
–Y1–RPD–	10+00.00	14+63.29	ASU	12		1105	1637		
–WEIGH A–	10+00.00	15+44.39	ASU	12		1443	1713		
–WEIGH B–	10+00.00	15+15.83	ASU	12		1461	1772		
–WEIGH C–	10+00.00	15+00.00	ASU	12		1263	1647		
–WEIGH D–	10+00.00	15+22.99	ASU	12		1565	1852		
CONTINGENCY			ASU	18	1000	5322	10500		
TOTAL CY/TONS/SY:					1,000	313,210	398,470		

***ASU = Aggregate Subgrade**
***AST = Aggregate Stabilization**
****Total square yards of "Geotextile for Soil Stabilization" is only the estimated quantity for ASU/AST and may only represent a portion of the geotextile quantity shown in the Item Sheets of the Proposal.**

SUMMARY OF GEOTEXTILE FOR PAVEMENT STABILIZATION
(IN SQUARE YARDS)

LINE	Station	Station	SIDE	SY
–L–	390+50.00	392+00.00	RT	283
–L–	397+50.00	401+50.00	RT	578
–L–	401+50.00	402+00.00	LT	72
–L–	403+00.00	404+50.00	RT	267
–L–	423+00.00	423+50.00	RT	128
–L–	432+00.00	434+50.00	LT	389
–L–	511+50.00	513+50.00	RT	333
–L–	570+00.00	574+00.00	LT	1,778
–L–	15+50.00	20+50.00	CL	2,667
–L–	22+50.00	26+00.00	CL	1,789
–L–	27+50.00	28+50.00	CL	422
–L–	10+50.00	511+02.00	CL	1,206
–L–	12+00.00	12+50.00	LT	222
–L–	14+00.00	18+50.00	CL	2,300
–L–	20+50.00	24+50.00	CL	2,000
–L–	15+00.00	16+00.00	CL	522
–L–	18+50.00	20+50.00	CL	1,044
			TOTAL	16,000
			SAY	16,000

"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.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

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COMPUTED BY: ______ DATE: ______
CHECKED BY: ______ DATE: ______

12/06/07

REVISIONS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	3P-1

I–4400BB PARCEL INDEX SHEET

PARCEL NO.	SHEET NO.	PROPERTY OWNER NAME
101	5, 6, 7	Group Ventures, Inc.
101Z	5, 6, 7	Group Ventures, Inc.
102	8, 26	Heather G. Fernandez
102A	8, 9, 25	Heather G. Fernandez
102B	7, 8, 25	Clear Creek Investment Group, LLC
103	26	Vulcan Lands, Inc.
104	14, 15, 16, 27	HRR Properties, LLC.
104Z	14, 15, 16, 27	HRR Properties, LLC.
105	16	Leon Lamb
106	28	June K Stepp
107	28	Southern Bell Tel. & Tel. Co.
108	28	R. Leon Lamb
109	16	Nathan A. Benson
110	23, 24	Asheville South SE Storage VI, LLC
112	23	Jeffrey Hutchinson
113	28	Fakir B. Patel
113A	28	Fakir B. Patel
114	15	Carmen H. London
115	8, 26	William L. Harper, Jr.
116	16	Champions Golf Learning Center, Inc.
116Z	16	Champions Golf Learning Center, Inc.
118	12	Beverly L. Killough, Et Al.
119	14	Josue Solano
120	17, 18	Clement Pappas NC, Inc.
121	19	Layman Foundation of NC, Inc.
122	22	Rodney A. Smith
123	22	Lois C. Codington
124	22	Robert E. Hanson
125	9	Joseph B. Garren
126	22	Mack C. Younblood, Jr.
127	14	Calvin H. McMinn
128	14	Denise E. Barnwell

PARCEL NO.	SHEET NO.	PROPERTY OWNER NAME

11-JUL-2019 14:38
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HNTB

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

Vaughn & Melton
Consulting Engineers, Inc.
1800E Associates Lane
Charlotte, NC 28217
NC License No: F-1088

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 047262 ENGINEER MATTHEW J. KIRBY 8/30/2019	NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JOHN C. FORD 9/3/2019

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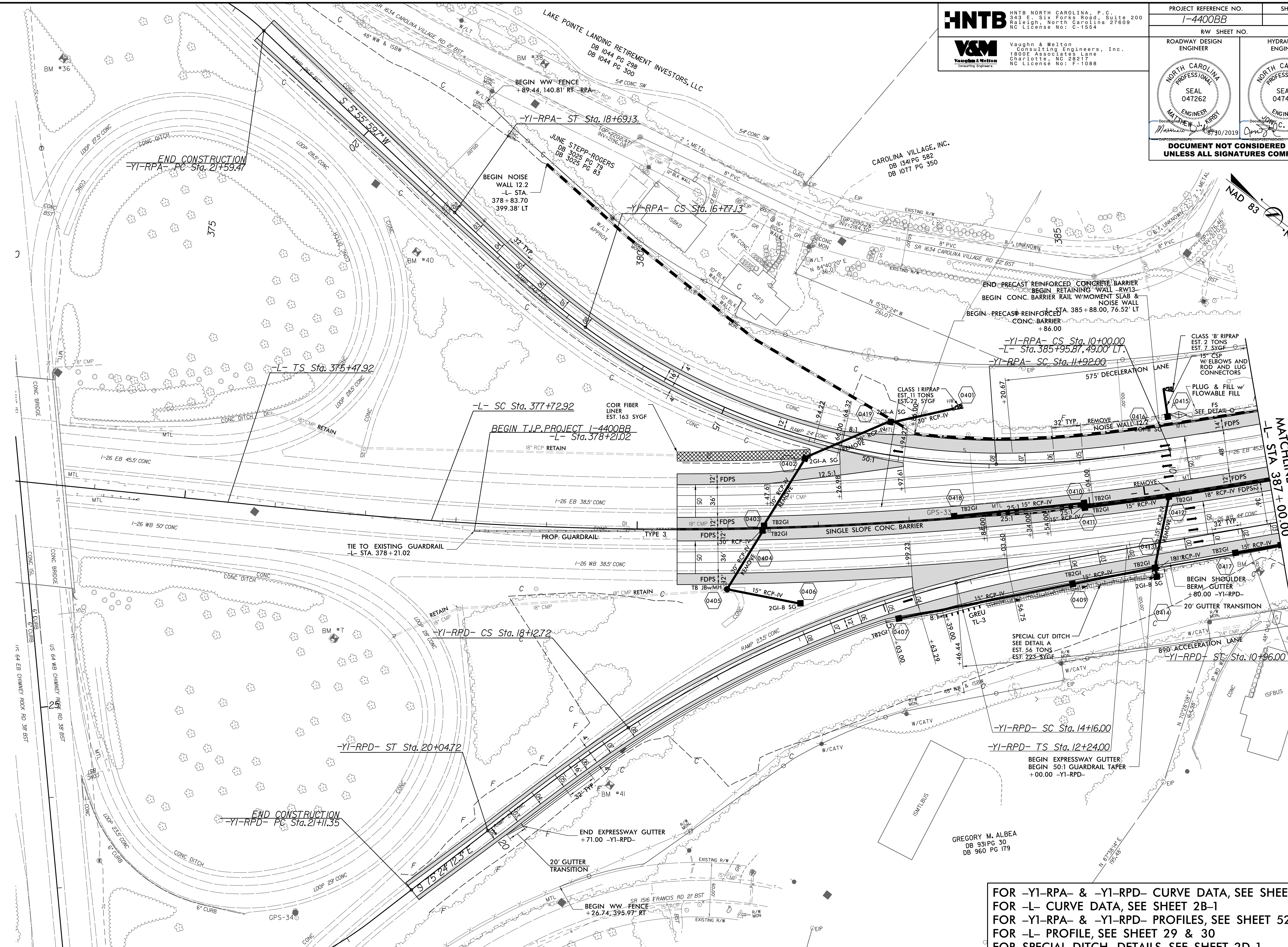
REVISIONS


LAKE POINTE LANDING RETIREMENT INVESTORS, LLC
DB 1044 PG 298
DB 1044 PG 300
BEGIN WW FENCE
+89.44, 140.81' RT -RPA-
-Y1-RPA- ST Sta. 18+69.13
JUNE STEPP-ROGERS
DB 3025 PG 79
DB 3025 PG 83
END CONSTRUCTION
-Y1-RPA- PC Sta. 21+59.47
BEGIN NOISE WALL 12.2
-L- STA. 378+83.70
399.38' LT
-Y1-RPA- CS Sta. 16+77.13
CAROLINA VILLAGE, INC.
DB 1341 PG 582
DB 1077 PG 350
NAD 83 / NA 2011
END PRECAST REINFORCED CONCRETE BARRIER
BEGIN RETAINING WALL -RW13-
BEGIN CONC. BARRIER RAIL W/MOMENT SLAB & NOISE WALL
-L- STA. 385+88.00, 76.52' LT
BEGIN PRECAST REINFORCED CONC. BARRIER
+86.00
-Y1-RPA- CS Sta. 10+00.00
-L- Sta. 385+95.87, 49.00' LT.
-Y1-RPA- SC Sta. 11+92.00
575' DECELERATION LANE
CLASS 'B' RIPRAP
EST. 2 TONS
EST. 7 SYGF
15" CSP W/ ELBOWS AND ROD AND LUG CONNECTORS
PLUG & FILL w/ FLOWABLE FILL
CLASS I RIPRAP
EST. 11 TONS
EST. 22 SYGF
-L- TS Sta. 375+47.92
-L- SC Sta. 377+72.92
BEGIN T.I.P. PROJECT I-4400BB
-L- Sta. 378+21.02
COIR FIBER LINER
EST. 163 SYGF
MATCHLINE SHEET 5
-L- STA 387+00.00
TIE TO EXISTING GUARDRAIL
-L- STA. 378+21.02
PROP. GUARDRAIL
SINGLE SLOPE CONC. BARRIER
BEGIN SHOULDER BERM GUTTER
+80.00 -Y1-RPD-
20' GUTTER TRANSITION
-Y1-RPD- CS Sta. 18+12.72
SPECIAL CUT DITCH
SEE DETAIL A
EST. 56 TONS
EST. 223 SYGF
890' ACCELERATION LANE
-Y1-RPD- ST Sta. 10+96.00
-Y1-RPD- SC Sta. 14+16.00
-Y1-RPD- TS Sta. 12+24.00
BEGIN EXPRESSWAY GUTTER
BEGIN 50:1 GUARDRAIL TAPER
+00.00 -Y1-RPD-
-Y1-RPD- ST Sta. 20+04.72
END CONSTRUCTION
-Y1-RPD- PC Sta. 21+11.35
END EXPRESSWAY GUTTER
+71.00 -Y1-RPD-
20' GUTTER TRANSITION
GREGORY M. ALBEA
DB 931 PG 30
DB 960 PG 179
BEGIN WW FENCE
+26.74, 395.97' RT

FOR -Y1-RPA- & -Y1-RPD- CURVE DATA, SEE SHEET 2B-2
FOR -L- CURVE DATA, SEE SHEET 2B-1
FOR -Y1-RPA- & -Y1-RPD- PROFILES, SEE SHEET 52
FOR -L- PROFILE, SEE SHEET 29 & 30
FOR SPECIAL DITCH DETAILS, SEE SHEET 2D-1

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HNTB

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

V&M Vaughn & Melton Consulting Engineers, Inc.
1800E Associates Lane
Charlotte, NC 28217
NC License No: F-1088

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 047262 ENGINEER MATTHEW J. KIRBY 8/30/2019	NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JON C. FORD 9/3/2019

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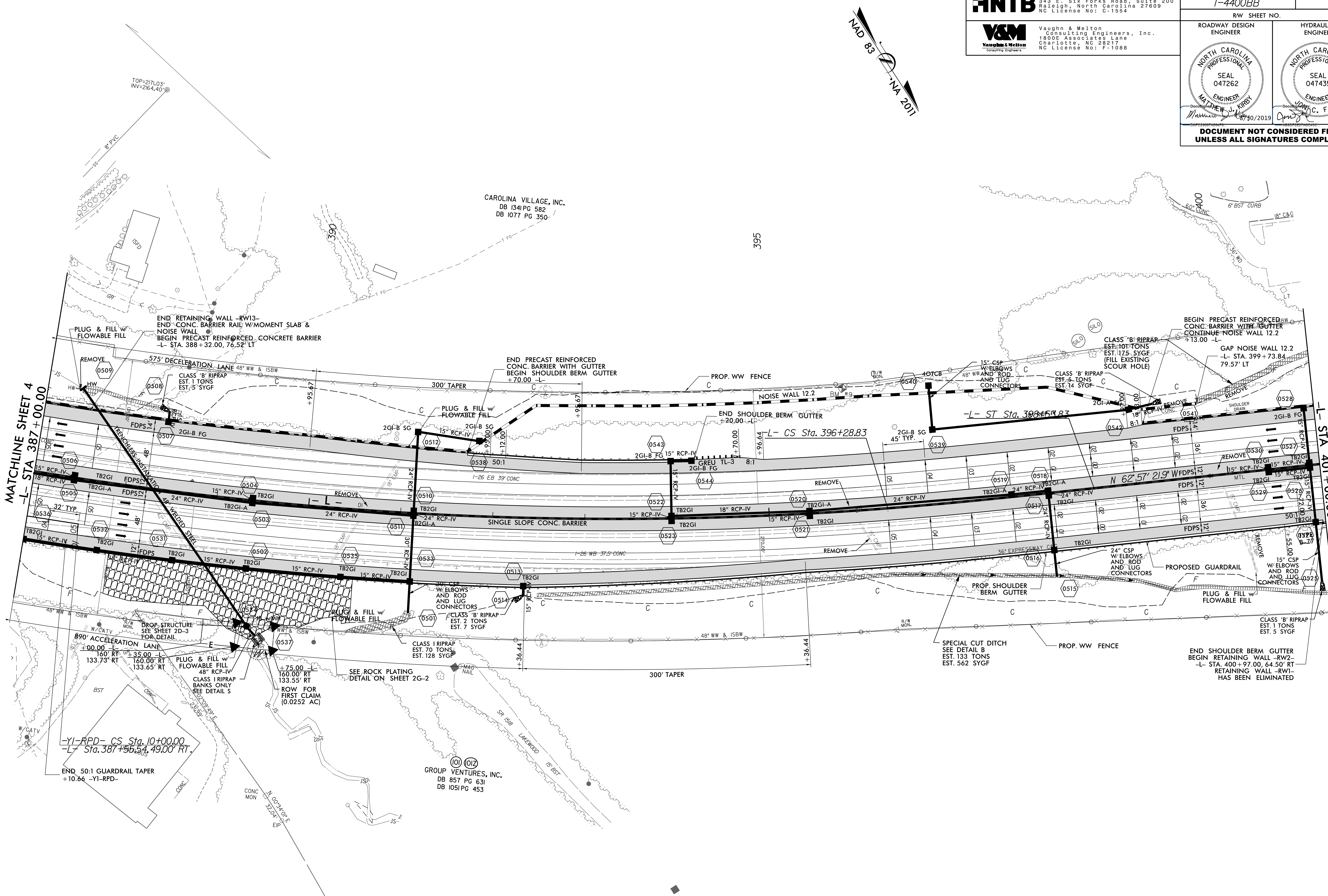
NAD 83 / NA 2011
MATCHLINE SHEET 4 -L- STA 387+00.00
MATCHLINE SHEET 6 -L- STA 401+00.00
CAROLINA VILLAGE, INC.
DB 1341 PG 582
DB 1077 PG 350
END RETAINING WALL -RW13-
END CONC. BARRIER RAIL W/MOMENT SLAB & NOISE WALL
BEGIN PRECAST REINFORCED CONCRETE BARRIER
-L- STA. 388+32.00, 76.52' LT
PLUG & FILL w/ FLOWABLE FILL
575' DECELERATION LANE
300' TAPER
END PRECAST REINFORCED CONC. BARRIER WITH GUTTER
BEGIN SHOULDER BERM GUTTER
+70.00 -L-
PROP. WW FENCE
NOISE WALL 12.2
END SHOULDER BERM GUTTER
+20.00 -L-
-L- CS Sta. 396+28.83
-L- ST Sta. 398+53.83
CLASS 'B' RIPRAP
EST. 101 TONS
EST. 175 SYGF
(FILL EXISTING SCOUR HOLE)
BEGIN PRECAST REINFORCED CONC. BARRIER WITH GUTTER
CONTINUE NOISE WALL 12.2
+13.00 -L-
GAP NOISE WALL 12.2
-L- STA. 399+73.84 79.57' LT
SINGLE SLOPE CONC. BARRIER
I-26 EB 39' CONC
I-26 WB 37.5' CONC
N 62°57' 21.9" W
TRENCHLESS INSTALLATION 48" WELDED STEEL
890' ACCELERATION LANE
DROP STRUCTURE SEE SHEET 2D-3 FOR DETAIL
CLASS I RIPRAP BANKS ONLY SEE DETAIL S
ROW FOR FIRST CLAIM (0.0252 AC)
SEE ROCK PLATING DETAIL ON SHEET 2G-2
CLASS I RIPRAP EST. 70 TONS EST. 128 SYGF
PROP. SHOULDER BERM GUTTER
SPECIAL CUT DITCH SEE DETAIL B EST. 133 TONS EST. 562 SYGF
PROP. WW FENCE
PROPOSED GUARDRAIL
END SHOULDER BERM GUTTER
BEGIN RETAINING WALL -RW2-
-L- STA. 400+97.00, 64.50' RT
RETAINING WALL -RW1- HAS BEEN ELIMINATED
-Y1-RPD- CS Sta. 10+00.00
-L- Sta. 387+56.54, 49.00' RT.
END 50:1 GUARDRAIL TAPER
+10.66 -Y1-RPD-
GROUP VENTURES, INC.
DB 857 PG 631
DB 1051 PG 453
SR 1518 LAKEWOOD

FOR -L- CURVE DATA, SEE SHEET 2B-1
FOR -L- PROFILE, SEE SHEET 30 & 31
FOR SPECIAL DITCH DETAILS, SEE SHEET 2D-1

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HNTB

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

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PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 047262 ENGINEER MATTHEW J. KIRBY 8/30/2019	NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JOHN C. FORD 9/3/2019

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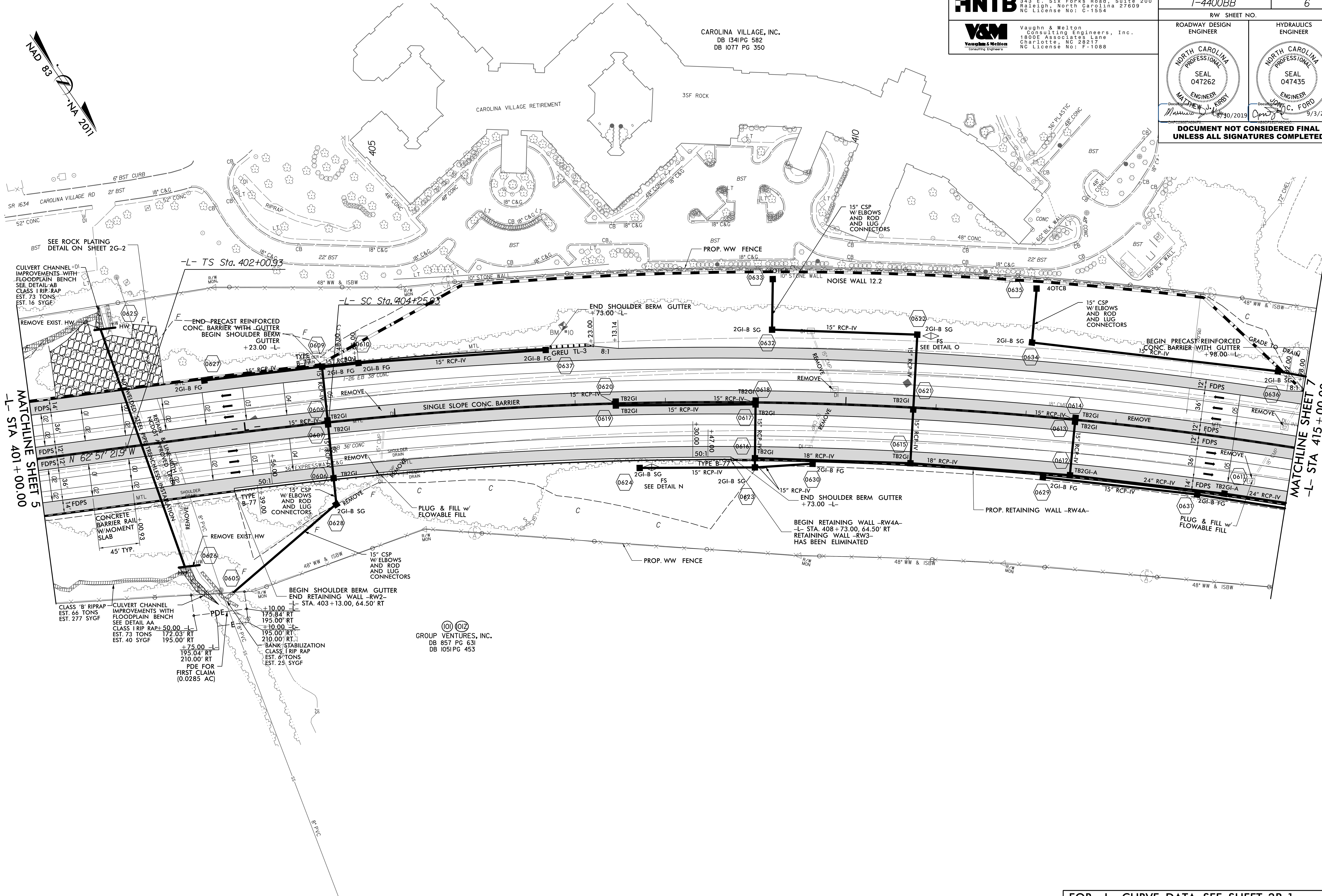

NAD 83
NA 2011
CAROLINA VILLAGE, INC.
DB 1341 PG 582
DB 1077 PG 350
CAROLINA VILLAGE RETIREMENT
SR 1634 CAROLINA VILLAGE RD
SEE ROCK PLATING DETAIL ON SHEET 2G-2
CULVERT CHANNEL IMPROVEMENTS WITH FLOODPLAIN BENCH SEE DETAIL AB CLASS I RIP RAP EST. 73 TONS EST. 16 SYGF
REMOVE EXIST. HW
-L- TS Sta. 402+00.93
-L- SC Sta. 404+25.93
END PRECAST REINFORCED CONC. BARRIER WITH GUTTER BEGIN SHOULDER BERM GUTTER +23.00 -L-
END SHOULDER BERM GUTTER +73.00 -L-
PROP. WW FENCE
NOISE WALL 12.2
15" CSP W/ELBOWS AND ROD AND LUG CONNECTORS
SEE DETAIL O
BEGIN PRECAST REINFORCED CONC. BARRIER WITH GUTTER +98.00 -L-
SINGLE SLOPE CONC. BARRIER
N 62°57'21.9" W
MATCHLINE SHEET 5 -L- STA 401+00.00
MATCHLINE SHEET 7 -L- STA 415+00.00
CONCRETE BARRIER RAIL W/MOMENT SLAB
45' TYP.
REMOVE EXIST HW
PLUG & FILL W/ FLOWABLE FILL
SEE DETAIL N
END SHOULDER BERM GUTTER +73.00 -L-
BEGIN RETAINING WALL -RW4A- -L- STA. 408+73.00, 64.50' RT RETAINING WALL -RW3- HAS BEEN ELIMINATED
PROP. RETAINING WALL -RW4A-
BEGIN SHOULDER BERM GUTTER END RETAINING WALL -RW2- -L- STA. 403+13.00, 64.50' RT
CLASS 'B' RIPRAP EST. 66 TONS EST. 277 SYGF
CULVERT CHANNEL IMPROVEMENTS WITH FLOODPLAIN BENCH SEE DETAIL AA CLASS I RIP RAP EST. 73 TONS EST. 40 SYGF
BANK STABILIZATION CLASS I RIP RAP EST. 6 TONS EST. 25 SYGF
PDE FOR FIRST CLAIM (0.0285 AC)
GROUP VENTURES, INC.
DB 857 PG 631
DB 1051 PG 453
48" WW & ISBW

FOR -L- CURVE DATA, SEE SHEET 2B-1
FOR -L- PROFILE, SEE SHEET 31 & 32
FOR SPECIAL DITCH DETAILS, SEE SHEET 2D-1

30-AUG-2019 16:50
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NC License No: C-1554

Vaughn & Melton Consulting Engineers, Inc.
1800E Associates Lane
Charlotte, NC 28217
NC License No: F-1088

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	7
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 047262 ENGINEER MATTHEW J. KIRBY
8/30/2019

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JOHN C. FORD
9/3/2019

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REVISIONS

NAD 83 - NA 2011

CAROLINA VILLAGE, INC.
DB 1341 PG 582
DB 1077 PG 350

CLEAR CREEK INVESTMENT GROUP, LLC
DB 3309 PG 430
SLIDE 1167O

GROUP VENTURES, INC.
DB 857 PG 631
DB 1051 PG 453

HEATHER G. FERNANDEZ
DB 1498 PG 321

MATCHLINE SHEET 6
–L– STA 415+00.00

MATCHLINE SHEET 8
–L– STA 429+00.00

REMOVE GR

REMOVE EXIST. DI
PLUG & FILL w/ FLOWABLE FILL

PLUG & FILL w/ FLOWABLE FILL

CLASS 'B' RIPRAP
EST. 1 TONS
EST. 5 SYGF

15" CSP W/ ELBOWS AND ROD AND LUG CONNECTORS

END SHOULDER BERM GUTTER
BEGIN BARRIER RAIL
–L– STA. 420+26.23

STA. 421+05.56
102.74' LT

STA. 421+18.97
110.94' LT

STA. 421+08.11
74.62' LT

STA. 421+21.66
74.63' LT

CLASS II RIPRAP (RIPRAP UNDER BRIDGE INCLUDED IN STRUCTURE PLANS)
423+18.11
144.76' LT

END BARRIER RAIL
BEGIN PRECAST REINFORCED CONC. BARRIER WITH GUTTER
–L– STA. 423+23.12

END PRECAST REINFORCED CONC. BARRIER WITH GUTTER
END NOISE WALL 12.2
BEGIN SHOULDER BERM GUTTER
–L– STA. 428+18.26

PLUG & FILL w/ FLOWABLE FILL

PLUG & FILL w/ FLOWABLE FILL

CLASS 'B' RIPRAP
EST. 36 TONS
EST. 81 SYGF

CLASS I RIPRAP
EST. 4 TONS
EST. 12 SYGF

24" CSP W/ ELBOWS AND ROD AND LUG CONNECTORS

FS SEE DETAIL O

SINGLE SLOPE CONC. BARRIER

TEMP. SHORING

BARRIER RAIL

CONC. BRIDGE

NOISE WALL 12.2

END RETAINING WALL –RW4A–
END CONCRETE BARRIER
BEGIN RETAINING WALL –RW4B–
BEGIN CONC. BARRIER
RAIL W/MOMENT SLAB
–L– STA. 418+48.43, 75.42' RT

STA. 418+55.45
75.77' RT

30" CSP W/ ELBOWS AND ROD AND LUG CONNECTORS
STA. 419+51.31
154.66' RT

BANK STABILIZATION
CLASS I RIPRAP
EST 7 TONS
EST 17 SYGF

END CONC. BARRIER
RAIL W/MOMENT SLAB
BEGIN BARRIER RAIL
–L– STA. 420+49.40

CLASS II RIPRAP (RIPRAP UNDER BRIDGE INCLUDED IN STRUCTURE PLANS)
+60.00 –L–
188.67' RT
205.00' RT

STA. 420+57.06
111.75' RT

STA. 420+34.05
153.44' RT

+90.00 –L–
188.83' RT
205.00' RT

420+56.89
131.30' RT
EL. 2083±

STA. 420+46.18
161.38' RT

STA. 421+18.80
19.30' RT

30" CSP W/ ELBOWS AND ROD AND LUG CONNECTORS

STA. 421+07.22
113.67' RT

CLASS II RIPRAP (RIPRAP UNDER BRIDGE INCLUDED IN STRUCTURE PLANS)

BANK STABILIZATION
CLASS I RIPRAP
EST 2 TONS
EST 6 SYGF

END RETAINING WALL –RW4C–
–L– STA. 420+66.27, 61.10' RT
–RW4C– STA. 10+13.41
END RETAINING WALL –RW4B–
BEGIN RETAINING WALL –RW4C–
–L– STA. 420+65.85, 74.50' RT
–RW4C– STA. 10+00.00

SOIL-CHOKED CLASS II RIPRAP FOR FUTURE GREENWAY (RIPRAP UNDER BRIDGE INCLUDED IN STRUCTURE PLANS)

420+65.4
142.90' RT
EL. 2083±

PROP. RETAINING WALL –RW5A–

STA. 423+27.41
116.83' RT

END BARRIER RAIL
BEGIN CONC. BARRIER
RAIL W/MOMENT SLAB
–L– STA. 422+99.22, 74.50 RT

BEGIN RETAINING WALL –RW5A–
–L– STA. 422+93.11, 74.50 RT

END CONC. BARRIER
RAIL W/MOMENT SLAB
BEGIN PRECAST REINFORCED
CONC. BARRIER WITH GUTTER
END RETAINING WALL –RW5A–
BEGIN RETAINING WALL –RW5B–
–L– STA. 424+14.01, 75.00' RT

PROP. RETAINING WALL –RW5B–

S 45°46'04" W
566.70'

FOR BRIDGE SKETCH, SEE SHEET 2B–3
FOR –L– CURVE DATA, SEE SHEET 2B–1
FOR –L– PROFILE, SEE SHEET 32 & 33
FOR SPECIAL DITCH DETAILS, SEE SHEET 2D–1

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1800E Associates Lane
Charlotte, NC 28217
NC License No: F-1088

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	8
RW SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 047262 ENGINEER MATTHEW J. KIRBY
DocuSigned by: 8/9/2019

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JOHN C. FORD
DocuSigned by: 8/9/2019

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REVISIONS

MATCHLINE SHEET 25
–Y2– STA 16+00.00

MATCHLINE SHEET 7
–L– STA 429+00.00

MATCHLINE SHEET 9
–L– STA 443+00.00

MATCHLINE SHEET 26
–Y2– STA 26+00.00

–Y3– POT Sta. 10+00.00
–Y2– Sta. 16+35.26
–Y3– PC Sta. 10+08.28
–Y2– PT Sta. 17+37.89
–Y3– PT Sta. 12+22.10
–Y3– PC Sta. 13+92.79
–Y3– Sta. 14+25.00
–L– CS Sta. 431+82.40
–L– ST Sta. 434+07.40

CLEAR CREEK INVESTMENT GROUP, LLC
DB 3309 PG 430
SLIDE 11670

HEATHER G. FERNANDEZ
DB 1498 PG 321
DB 884 PG 453

HEATHER G. FERNANDEZ
DB 1498 PG 321

TIE TO EXISTING DRIVEWAY

LATERAL BASE DITCH SEE DETAIL T

LATERAL BASE DITCH SEE DETAIL AG

LATERAL BASE DITCH SEE DETAIL V

PROP. GUARDRAIL

PROP. WW FENCE

CLASS 'B' RIPRAP EST. 1 TONS EST. 5 SYGF

CLASS 'B' RIPRAP EST. 5 TONS EST. 14 SYGF

CLASS 'B' RIPRAP EST. 2 TONS EST. 7 SYGF

15" CSP W/ ELBOWS AND ROD AND LUG CONNECTORS

48" WW & ISBW

SINGLE SLOPE CONC. BARRIER

REMOVE

PLUG & FILL w/ FLOWABLE FITL

PLUG & FILL w/ FLOWABLE FILL

END RETAINING WALL –RW5B–
–L– STA. 429+13.00, 64.50' RT

BEGIN RETAINING WALL –RW7–
–L– STA. 437+77.00, 80.50' LT

END WW FENCE
+77.00, 85.50' LT –L–

BEGIN RETAINING WALL –RW6–
–L– STA. 438+79.00, 80.50' RT

END WW FENCE
+79.00, 85.50' RT –L–

BEGIN WW FENCE
+51.00, 85.50' LT –L–

END RETAINING WALL –RW7–
–L– STA. 439+51.00, 80.50' LT

BEGIN RETAINING WALL –RW6–
–L– STA. 440+65.00, 80.50' RT

BEGIN WW FENCE
+65.00, 85.50' RT –L–

BEGIN SHOULDER BERM GUTTER
+43.00 –L–

END SHOULDER BERM GUTTER
+68.00 –L–

BEGIN BARRIER RAIL
–Y2– STA. 20+44.22

BEGIN BARRIER RAIL
–Y2– STA. 20+20.21

END BARRIER RAIL
–Y2– STA. 22+22.04

END BARRIER RAIL
–Y2– STA. 22+46.06

TEMP. SHORING

TEMP CAT-1 SHORING

PROP. SHOULDER BERM GUTTER

FS SEE DETAIL N

FS SEE DETAIL O

FS SEE DETAIL

GREU TL-3

BANK STABILIZATION CLASS B RIP-RAP EST. 7 TONS EST. 19 SYGF

CLASS 'I' RIPRAP BANKS ONLY SEE DETAIL S

CLASS I RIPRAP EST. 7 TONS EST. 17 SYGF

CLASS 'B' RIPRAP EST. 5 TONS EST. 5 SYGF FILL EXISTING SCOUR HOLE

TRENCHLESS INSTALLATION 42" WELDED STEEL

LATERAL 'V' DITCH SEE DETAIL H

–Y2– PC Sta. 24+70.33

+24.66 –Y2– 102.93' LT
+22.35 –Y2– 105.35' LT
+46.55 –Y2– 115.16' LT
+55.92 –Y2– 101.11' LT
+80.00 –Y2– 100.23' LT

+70.33 –Y2– 125.00' RT

+17.32 –Y2– 125.00' RT

+20.34 –Y2– 95.00' RT

+37.89 –Y2– 95.00' RT

BM #13

BM #46

POND

NAD 83 (2011)

FOR BRIDGE SKETCH, SEE SHEET 2B–3
FOR –Y2– & –Y3– INTERSECTION DETAIL, SEE SHEET 2B–4
FOR –L– CURVE DATA, SEE SHEET 2B–1
FOR –L– PROFILE, SEE SHEET 33 & 34
FOR –Y2– & –Y3– CURVE DATA, SEE SHEET 2B–2
FOR –Y2– PROFILE, SEE SHEET 53
FOR –Y3– PROFILE, SEE SHEET 54
FOR SPECIAL DITCH DETAILS, SEE SHEET 2D–1

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PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 047262 ENGINEER MATTHEW J. KIRBY 7/11/2019	NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JON C. FORD 7/12/2019

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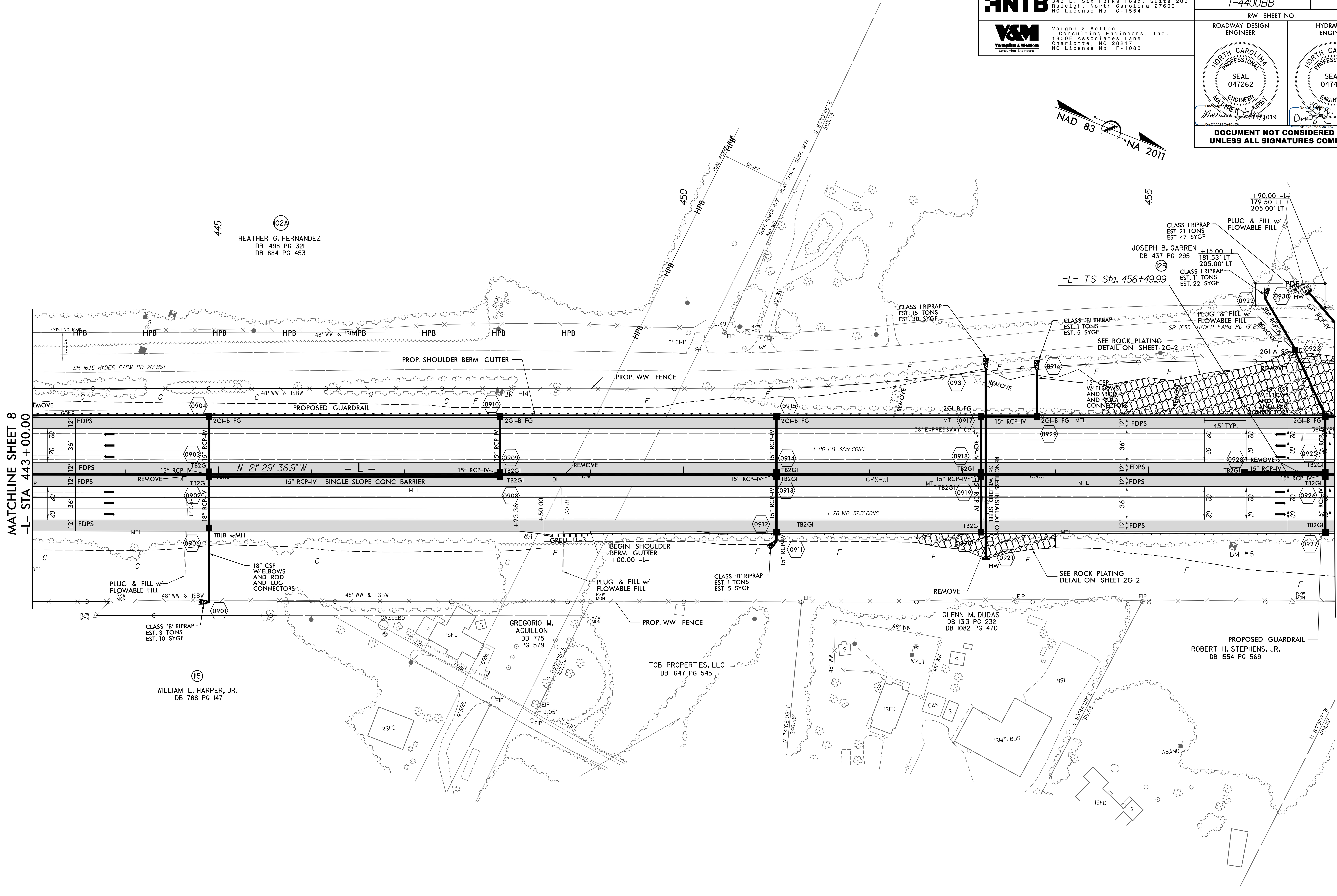
REVISIONS


NAD 83
NA 2011
MATCHLINE SHEET 8
-L- STA 443+00.00
MATCHLINE SHEET 10
-L- STA 457+00.00
HEATHER G. FERNANDEZ
DB 1498 PG 321
DB 884 PG 453
JOSEPH B. GARREN
DB 437 PG 295
-L- TS Sta. 456+49.99
SR 1635 HYDER FARM RD 20' BST
PROP. SHOULDER BERM GUTTER
PROP. WW FENCE
PROPOSED GUARDRAIL
N 21° 29' 36.9" W
SINGLE SLOPE CONC. BARRIER
I-26 EB 37.5' CONC
I-26 WB 37.5' CONC
BEGIN SHOULDER BERM GUTTER
PLUG & FILL w/ FLOWABLE FILL
CLASS 'B' RIPRAP
EST. 3 TONS
EST. 10 SYGF
18" CSP W/ ELBOWS AND ROD AND LUG CONNECTORS
SEE ROCK PLATING DETAIL ON SHEET 2G-2
TRENCHLESS INSTALLATION 36" WELDED STEEL
WILLIAM L. HARPER, JR.
DB 788 PG 147
GREGORIO M. AGUILLON
DB 775
PG 579
TCB PROPERTIES, LLC
DB 1647 PG 545
GLENN M. DUDAS
DB 1313 PG 232
DB 1082 PG 470
ROBERT H. STEPHENS, JR.
DB 1554 PG 569

FOR -L- CURVE DATA, SEE SHEET 2B-1
FOR -L- PROFILE, SEE SHEET 34 & 35
FOR SPECIAL DITCH DETAILS, SEE SHEET 2D-1

11-JUL-2019 14:39
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Charlotte, NC 28217
NC License No: F-1088

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	10

R/W SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 047262 ENGINEER MATTHEW J. KIRBY	NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JON C. FORD
DocuSigned by: DAFC29687A694F8 8/9/2019	DocuSigned by: AB9DF2F27A6C43C 8/9/2019

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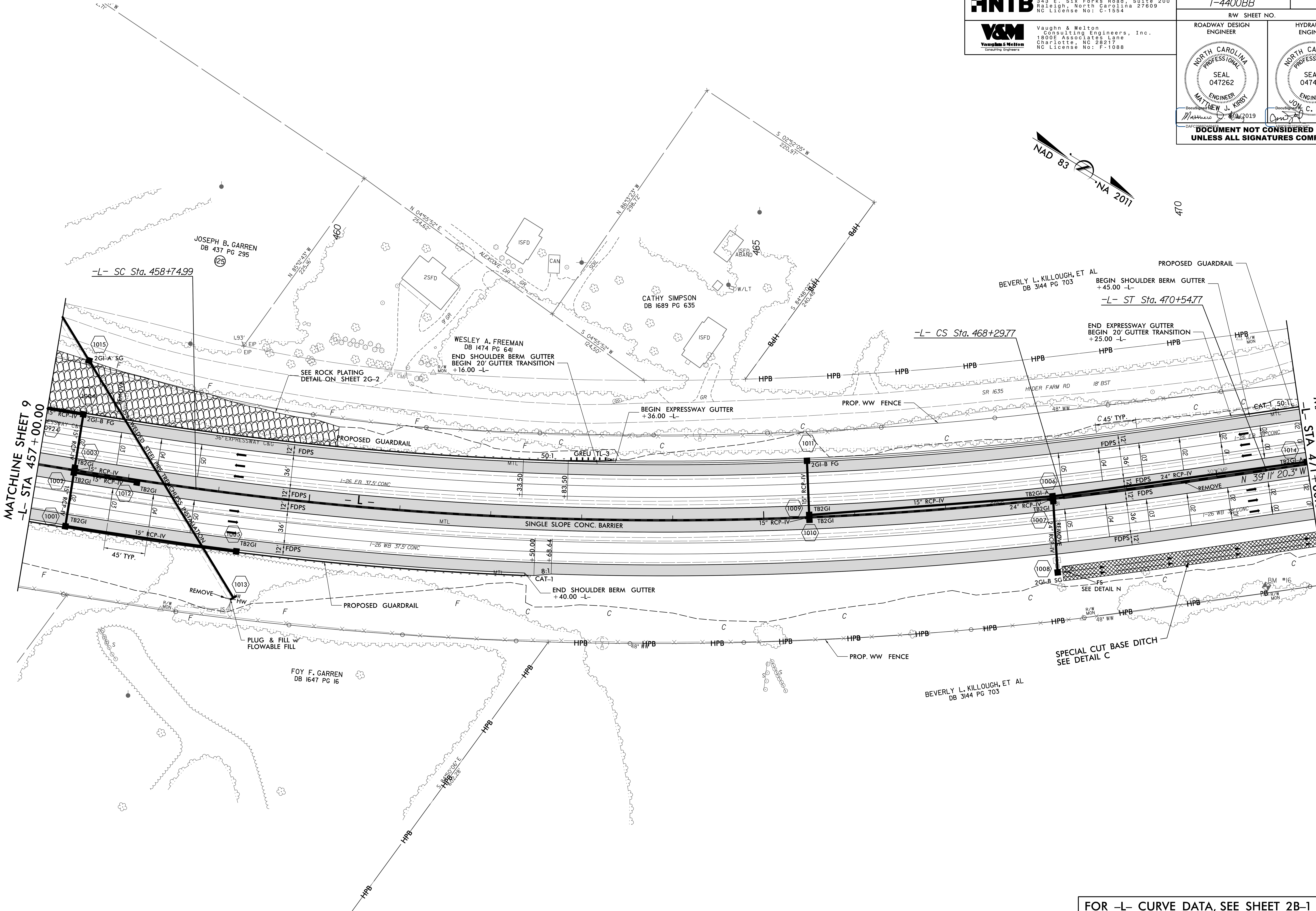
REVISIONS



FOR -L- CURVE DATA, SEE SHEET 2B-1
FOR -L- PROFILE, SEE SHEET 35 & 36
FOR SPECIAL DITCH DETAILS, SEE SHEET 2D-1

06-AUG-2019 09:43
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