TIP PROJECT: R–2707E

CONTRACT: C204851

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CLEVELAND COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R–2707E	1	

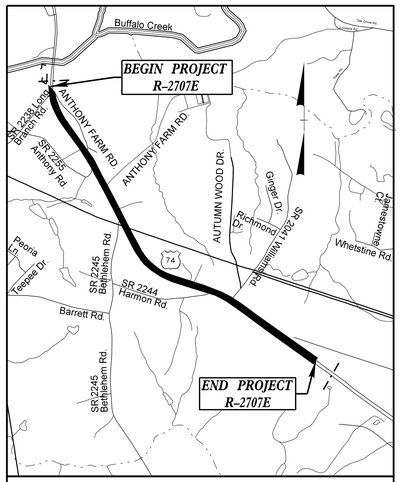
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34497.1.FS7	NHS–0074(165)	P.E.
34497.2.15	N/A	R/W & UTIL.
34497.3.12	N/A	CONST.

PART 2

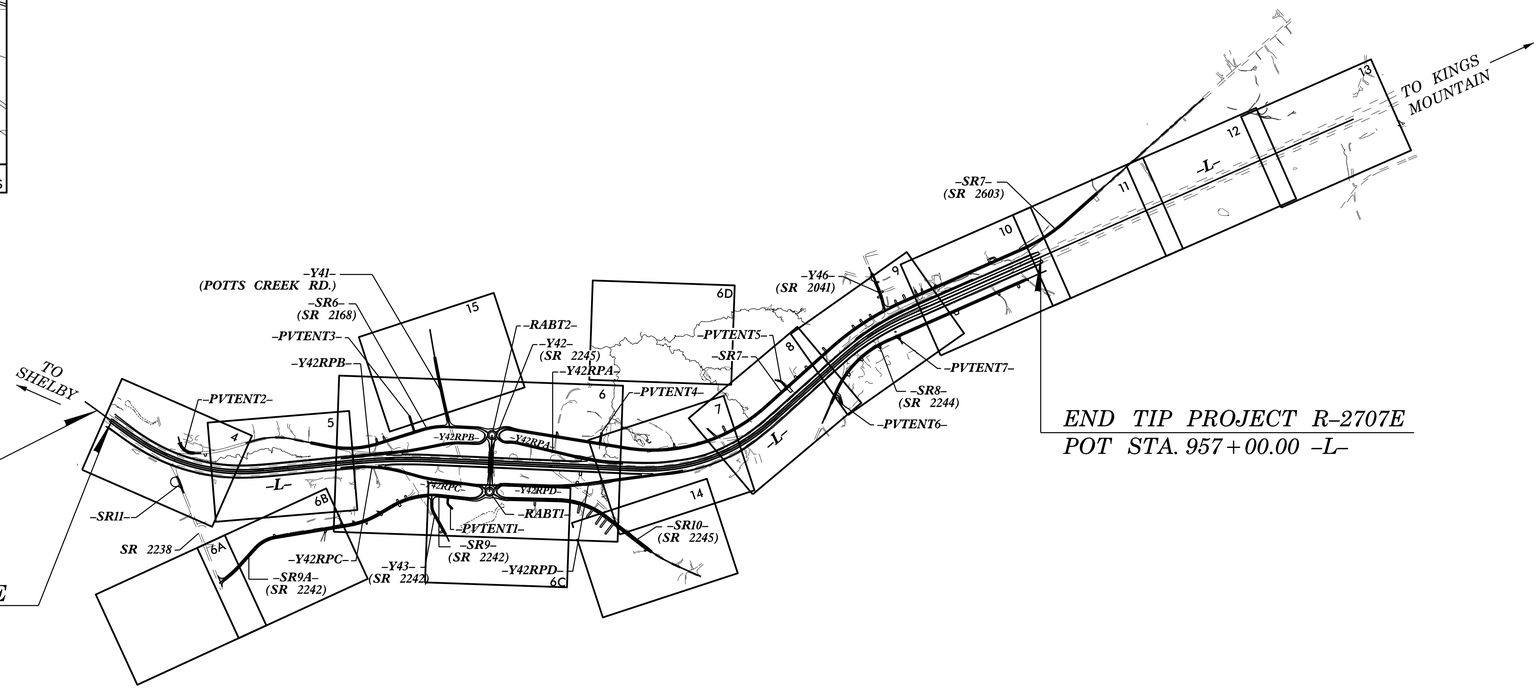
LOCATION: US 74 FROM EXISTING US 74 WEST OF SR 2238 (LONG BRANCH RD) TO WEST OF SR 1001 (STONEY POINT RD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURE, SIGNING, & NOISE WALL

NAD 83 / 95



VICINITY MAP NTS



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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

50 25 0 50 100
PROFILE (VERTICAL)

DESIGN DATA

ADT 2019 = 41,600
ADT 2043 = 61,700
K = 11 %
D = 55 %
T = 15 % *
V = 70 MPH

* TTST = 10% DUAL 5%

FUNC CLASS = FREEWAY
STATEWIDE TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT R–2707E = *2.008 MI.*
TOTAL LENGTH OF TIP PROJECT R–2707E = *2.008 MI.*

PREPARED IN THE OFFICE OF:
Stantec
Stantec Consulting Services Inc. Tel. (919) 851-6866
801 Jones Franklin Road Fax. (919) 851-7024
Suite 300 www.stantec.com
Raleigh, NC 27606 License No. F-0672

SUNGATE DESIGN GROUP, P.A.
905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
ENG FIRM LICENSE NO. C-690

FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: 01 /10 /2019

LETTING DATE: 07 /18 /2023

JOSEPH T. KELVINGTON, P.E.
PROJECT ENGINEER

MATTHEW FERGUSON, P.E.
PROJECT DESIGN ENGINEER

BRYAN SOWELL, P.E.
NCDOT DIVISON 12

HYDRAULICS ENGINEER

DocuSigned by: Joshua G. Dalton
1089ADBC1499AC3...
P.E.
SIGNATURE: 4/21/2023

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 26971 JOSHUA G. DALTON

ROADWAY DESIGN ENGINEER

DocuSigned by: Matthew Ferguson
6AA1C96D2A0B48E...
P.E.
SIGNATURE: 4/21/2023

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 044480 MATTHEW T. FERGUSON

STATE OF NORTH CAROLINA * DEPARTMENT OF TRANSPORTATION *

6/2/99

PAVEMENT SCHEDULE

(FINAL PAVEMENT DESIGN)

A1	12″ PORTLAND CEMENT CONCRETE PAVEMENT (WITHOUT DOWELS).	K1	PROP. CHEMICAL STABILIZATION (7″ SOIL-CEMENT BASE/8″ LIME-TREATED SOIL). BASE TREADED WITH CEMENT AT A RATE OF 56 LBS. PER SQ. YD. AS DIRECTED BY THE ENGINEER OR SOIL TREADED WITH LIME AT A RATE OF 24 LBS. PER SQ. YD. AS DIRECTED BY THE ENGINEER @ 50% EACH
C1	PROP. APPROX. 2.5″ ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	K2	PROP 12″ CLASS IV SUBGRADE STABILZATION
C2	PROP. APPROX. 3″ ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	N1	GEOTEXTILE FOR SUBGRADE STABILIZATION
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2″ IN DEPTH.	N2	GEOTEXTILE FOR SOIL STABILIZATION
C4	PROP. APPROX. 3″ ASPHALT CONCRETE SURFACE COURSE TYPE S9.5C AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	P1	PRIME COAT AT THE RATE OF .35 GAL. PER SQ. YARD.
C5	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. 1″ DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1.5″ IN DEPTH.	R1	1′-6″ CONCRETE CURB AND GUTTER.
D1	PROP. APPROX. 2.5″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	R2	2′-6″ CONCRETE CURB AND GUTTER.
D2	PROP. APPROX. 4″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R3	8″ x 18″ CONCRETE CURB
D3	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½″ IN DEPTH OR GREATER THAN 4″ IN DEPTH.	R4	SINGLE FACED CONCRETE BARRIER
E1	PROP. APPROX. 4″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R5	SHOULDER BERM GUTTER.
E2	PROP. APPROX. 5″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.	T	EARTH MATERIAL.
E3	PROP. APPROX. 8″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	U	EXISTING PAVEMENT.
E4	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3″ IN DEPTH OR GREATER THAN 5½″ IN DEPTH.	V	MILLING EXISTING PAVEMENT, 1.5″ DEPTH.
J1	PROP. 8″ DEPTH AGGREGATE BASE COURSE.	W1	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL).
J2	PROP. 10″ DEPTH AGGREGATE BASE COURSE.	W2	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL).

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

Stantec

Stantec Consulting Services Inc.
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Raleigh, NC 27606
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www.stantec.com
License No. F-0672

PROJECT REFERENCE NO.	SHEET NO.
R-2707E	2A-1

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 044480 ENGINEER MATTHEW B FERGUSON

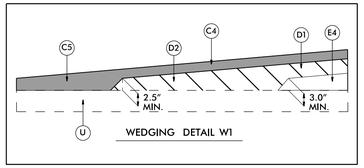
4/25/2023

PAVEMENT DESIGN ENGINEER

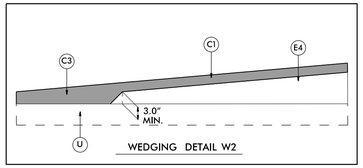
NORTH CAROLINA PROFESSIONAL SEAL 024964 ENGINEER JOSEPH T HOLLAND

4/25/2023

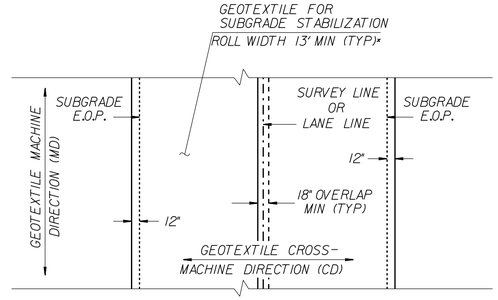
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



WEDGING DETAIL W1

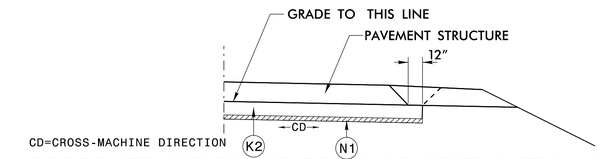


WEDGING DETAIL W2



GEOTEXTILE FOR SUBGRADE STABILIZATION PLACEMENT
(PLAN VIEW)
(100% COVERAGE REQUIRED)

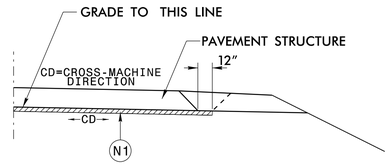
*INSTALL GEOTEXTILE FOR SUBGRADE STABILIZATION WITH MINIMUM ROLL WIDTH UNDER ROADWAY EDGES AND SHOULDERS ADJACENT TO FILL SLOPES



AGGREGATE SUBGRADE FOR SHOULDER WITH ASPHALT BASE

USE ON:

LINE	STATION	STATION	LOCATION
–L–	944+00	957+00	–
SEE SHEET 3G–1 FOR ADDITIONAL INFORMATION			



GEOTEXTILE FOR SUBGRADE STABILIZATION

USE ON:

LINE	STATION	STATION	LOCATION
LINE	STATION	STATION	LOCATION
–L–	851+00	852+00	LT & RT
–L–	863+50	864+50	LT
–L–	871+50	875+00	LT
–L–	901+50	910+00	LT
–L–	920+50	921+00	RT
–L–	921+00	922+50	LT & RT
–L–	922+50	927+00	LT
–Y42RPA–	18+00	23+50	CL
–Y42RPB–	20+00	25+50	CL
–Y42RPC–	20+00	25+70	CL
–Y42RPD–	23+00	30+00	CL
–Y41–	12+50	17+00	CL
–Y42–	11+00	12+50	CL
–Y42–	14+50	15+00	CL
–Y43–	10+50	12+00	CL
SEE SHEET 3G–1 FOR ADDITIONAL INFORMATION			

6/2/99

PAVEMENT SCHEDULE	
A1	12" PORTLAND CEMENT CONCRETE PAVEMENT (WITHOUT DOWELS)
C1	PROP. APPROX. 2.5", TYPE S9.5B
C2	PROP. APPROX. 3", TYPE S9.5B
C3	PROP. VAR. DEPTH, TYPE S9.5B
C4	PROP. APPROX. 3", TYPE S9.5C
C5	PROP. VAR. DEPTH, TYPE S9.5C
D1	PROP. APPROX. 2.5", I19.0C
D2	PROP. APPROX. 4", I19.0C
D3	PROP. VAR. DEPTH, TYPE I19.0C
E1	PROP. APPROX. 4", TYPE B25.0C
E2	PROP. APPROX. 5", TYPE B25.0C
E3	PROP. APPROX. 8", TYPE B25.0C
E4	PROP. VAR. DEPTH, TYPE B25.0C
J1	PROP. 8" DEPTH AGGREGATE BASE COURSE.
J2	PROP. 10" DEPTH AGGREGATE BASE COURSE.
K1	PROP. 8" LIME OR 7" CEMENT STABILZATION
K2	PROP CLASS IV SUBGRADE STABILZATION
N1	GEOTEXTILE FOR SUBGRADE STABILIZATION
N2	GEOTEXTILE FOR SOIL STABILIZATION
P1	PRIME COAT
R1	1'-6" CONCRETE CURB AND GUTTER.
R2	2'-6" CONCRETE CURB AND GUTTER
R3	8" x 18" CONCRETE CURB
R4	SINGLE FACED CONCRETE BARRIER
R5	SHOULDER BERM GUTTER.
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	1.5" MILLING
W1	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL SHEET No. 2A-1)
W2	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL SHEET No. 2A-1)

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

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PROJECT REFERENCE NO.	SHEET NO.
R-2707E	2A-2

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 044480 MATTHEW B. FERGUSON
4/25/2023

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 024964 JOSEPH T. HOLLAND
4/25/2023

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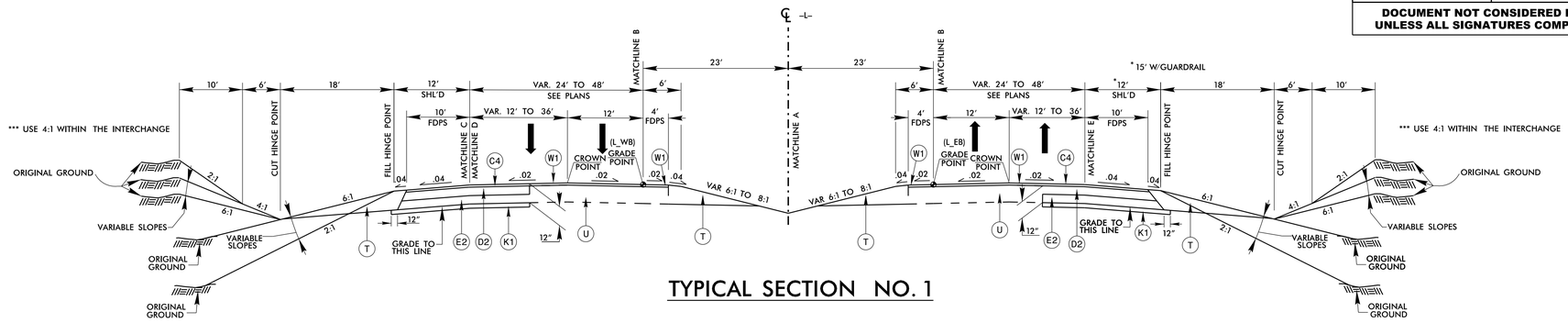
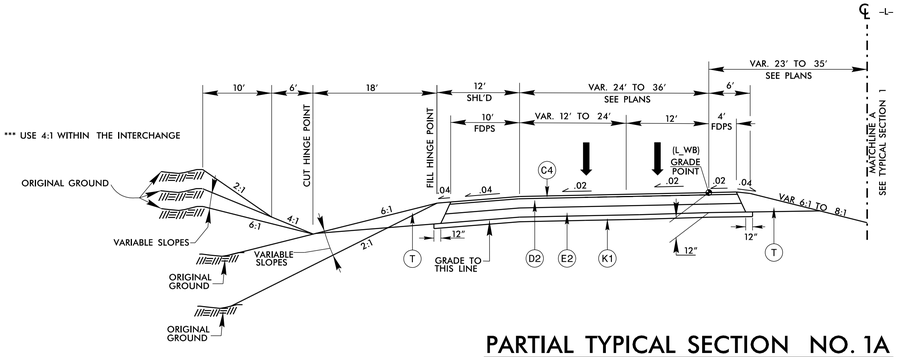


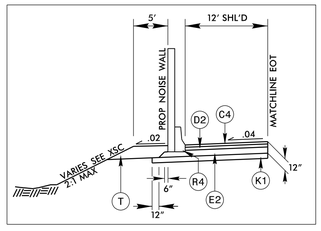
TYPICAL SECTION NO. 1

USE ON: –L– STA. 851+00.00 TO STA. 943+21.49



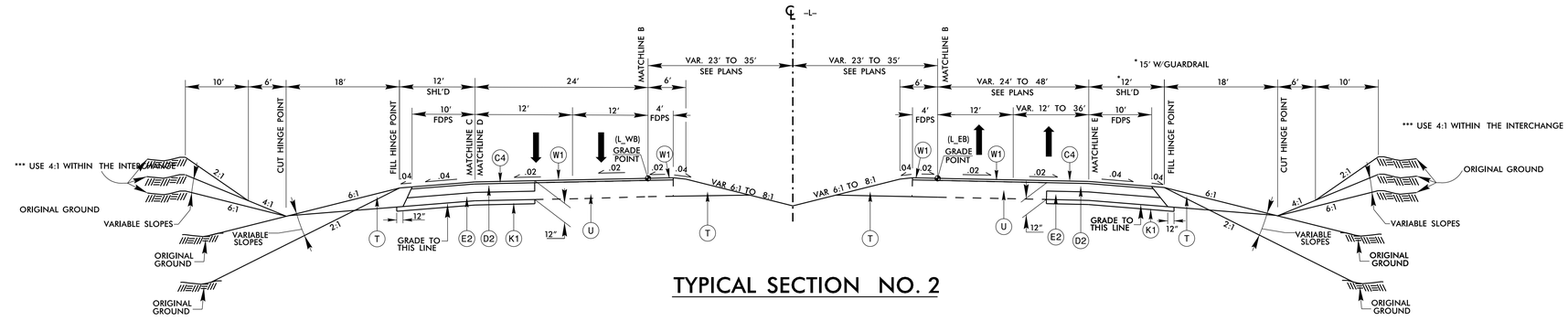
PARTIAL TYPICAL SECTION NO. 1A

USE PARTIAL TYPICAL SECTION NO. 1A IN CONJUCTION WITH TYPICAL SECTION NO. 1
–L– STA. 896+50.00 TO STA. 908+50.00



PARTIAL TYPICAL SECTION NO. 1B

USE PARTIAL TYPICAL SECTION NO. 1B IN CONJUCTION WITH TYPICAL SECTION NO. 1 AND NO. 2 FOR
–L– STA. 935+69.92 TO STA. 949+50.07 (LT)



TYPICAL SECTION NO. 2

USE ON: –L– STA. 934+81.49 TO STA. 957+00.00

6/2/99

PAVEMENT SCHEDULE	
A1	12" PORTLAND CEMENT CONCRETE PAVEMENT (WITHOUT DOWELS)
C1	PROP. APPROX. 2.5", TYPE S9.5B
C2	PROP. APPROX. 3", TYPE S9.5B
C3	PROP. VAR. DEPTH, TYPE S9.5B
C4	PROP. APPROX. 3", TYPE S9.5C
C5	PROP. VAR. DEPTH, TYPE S9.5C
D1	PROP. APPROX. 2.5", I19.0C
D2	PROP. APPROX. 4", I19.0C
D3	PROP. VAR. DEPTH, TYPE I19.0C
E1	PROP. APPROX. 4", TYPE B25.0C
E2	PROP. APPROX. 5", TYPE B25.0C
E3	PROP. APPROX. 8", TYPE B25.0C
E4	PROP. VAR. DEPTH, TYPE B25.0C
J1	PROP. 8" DEPTH AGGREGATE BASE COURSE.
J2	PROP. 10" DEPTH AGGREGATE BASE COURSE.
K1	PROP. 8" LIME OR 7" CEMENT STABILZATION
K2	PROP CLASS IV SUBGRADE STABILZATION
N1	GEOTEXTILE FOR SUBGRADE STABILIZATION
N2	GEOTEXTILE FOR SOIL STABILIZATION
P1	PRIME COAT
R1	1'-6" CONCRETE CURB AND GUTTER.
R2	2'-6" CONCRETE CURB AND GUTTER
R3	8" x 18" CONCRETE CURB
R4	SINGLE FACED CONCRETE BARRIER
R5	SHOULDER BERM GUTTER.
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	1.5" MILLING
W1	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL SHEET No. 2A-1)
W2	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL SHEET No. 2A-1)

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

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PROJECT REFERENCE NO.	SHEET NO.
R-2707E	2A-3

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 044480 MATTHEW B. FERGUSON
4/25/2023

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 024964 JOSEPH T. HOLLAND
4/25/2023

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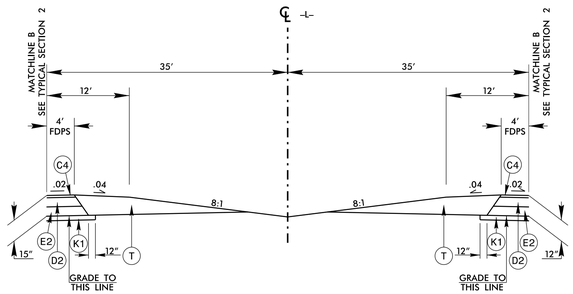
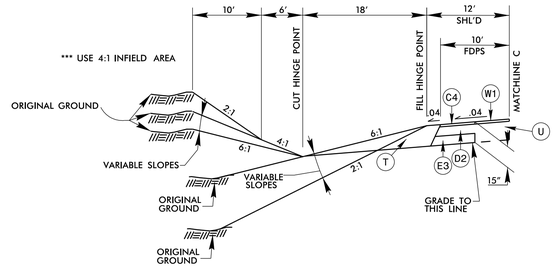


PARTIAL TYPICAL SECTION NO. 2B

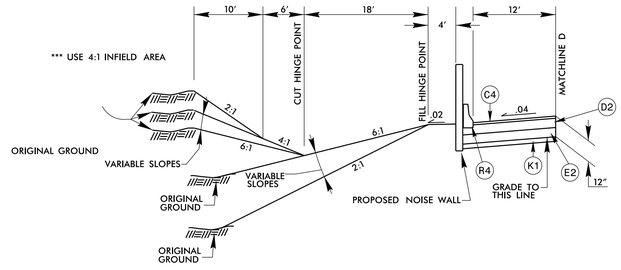
USE ON:
–L– STA. 943+21.49 TO STA. 957+00.00
–L– STA. 943+21.49 TO STA. 957+00.00



PARTIAL TYPICAL SECTION NO. 2C

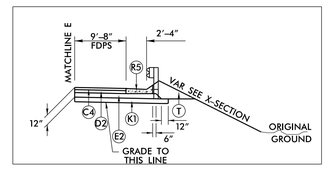
(NARROW WIDENING)

USE ON:
–L– STA. 932+62.31 TO STA. 935+57.00
–L– STA. 937+68.46 TO STA 957+00
–L– STA. 933+60.17 TO STA. 957+00.00



PARTIAL TYPICAL SECTION NO. 2D

USE PARTIAL TYPICAL SECTION NO. 2D IN CONJUCTION WITH TYPICAL SECTION NO. 2
–L– STA. 937+75.00 TO STA. 947+90.00



PARTIAL TYPICAL SECTION NO. 1E

USE PARTIAL TYPICAL SECTION NO. 1E IN CONJUCTION WITH TYPICAL SECTION NO. 1, 2 & 4 FOR SBG LOCATIONS
–L– STA. 851+00.00 TO STA. 875+50.00 (LT)
–L– STA. 851+00.00 TO STA. 851+30.00 (RT)
–L– STA. 906+40.00 TO STA. 910+60.00 (LT)
–L– STA. 920+55.00 TO STA. 927+00.00 (LT)

PROJECT REFERENCE NO.	SHEET NO.
R-2707E	2A-4

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ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 044480 ENGINEER MATHEW B. FERGUSON
4/25/2023

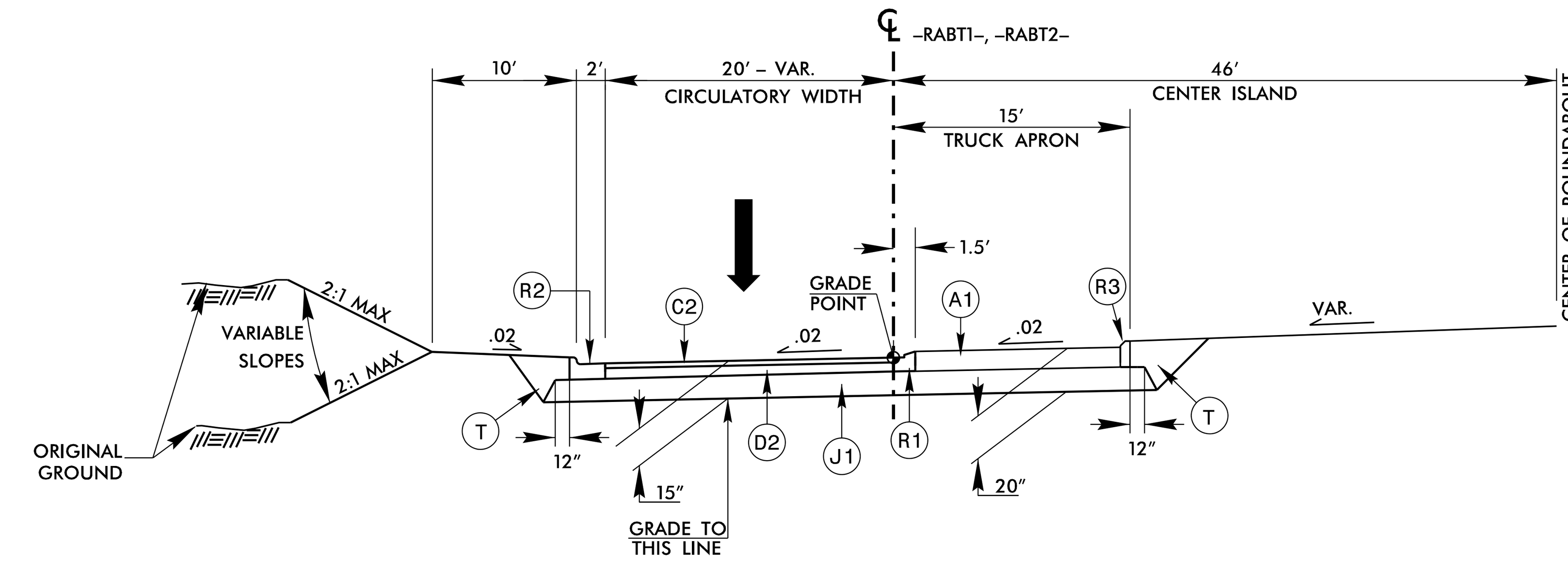
PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 024964 ENGINEER JOSEPH T. HOLLAND
4/25/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVEMENT SCHEDULE

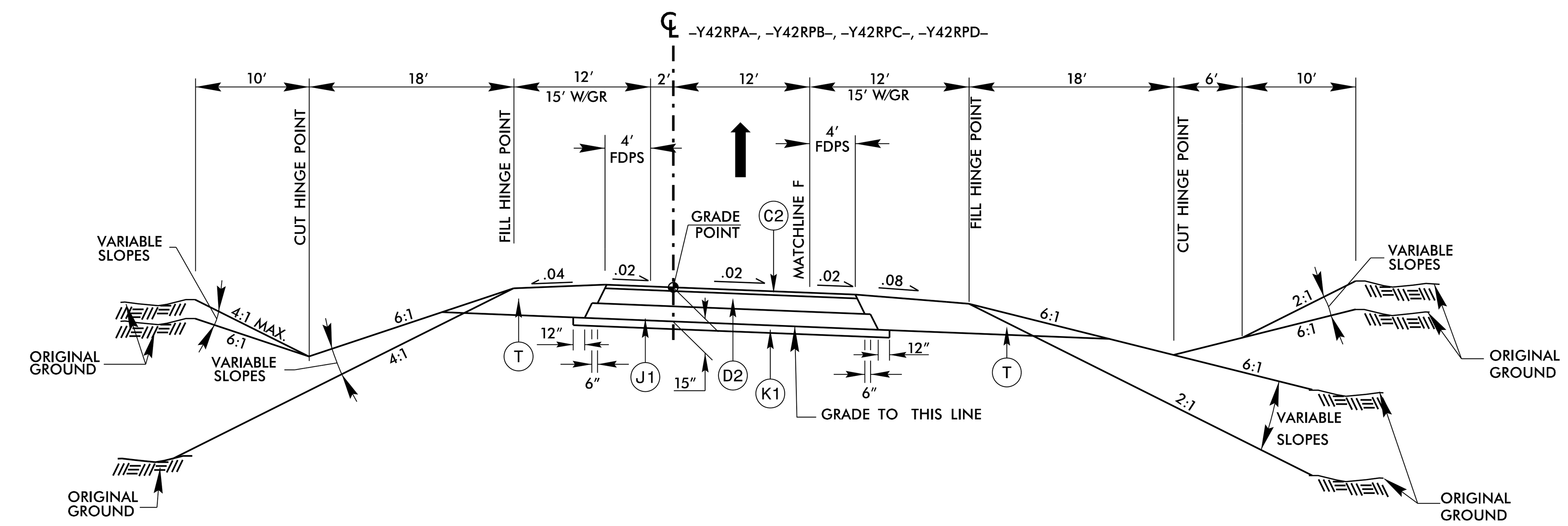
A1	12" PORTLAND CEMENT CONCRETE PAVEMENT (WITHOUT DOWELS)
C1	PROP. APPROX. 2.5", TYPE S9.5B
C2	PROP. APPROX. 3", TYPE S9.5B
C3	PROP. VAR. DEPTH, TYPE S9.5B
C4	PROP. APPROX. 3", TYPE S9.5C
C5	PROP. VAR. DEPTH, TYPE S9.5C
D1	PROP. APPROX. 2.5", I19.0C
D2	PROP. APPROX. 4", I19.0C
D3	PROP. VAR. DEPTH, TYPE I19.0C
E1	PROP. APPROX. 4", TYPE B25.0C
E2	PROP. APPROX. 5", TYPE B25.0C
E3	PROP. APPROX. 8", TYPE B25.0C
E4	PROP. VAR. DEPTH, TYPE B25.0C
J1	PROP. 8" DEPTH AGGREGATE BASE COURSE.
J2	PROP. 10" DEPTH AGGREGATE BASE COURSE.
K1	PROP. 8" LIME OR 7" CEMENT STABILZATION
K2	PROP CLASS IV SUBGRADE STABILZATION
N1	GEOTEXTILE FOR SUBGRADE STABILIZATION
N2	GEOTEXTILE FOR SOIL STABILIZATION
P1	PRIME COAT
R1	1'-6" CONCRETE CURB AND GUTTER.
R2	2'-6" CONCRETE CURB AND GUTTER
R3	8" x 18" CONCRETE CURB
R4	SINGLE FACED CONCRETE BARRIER
R5	SHOULDER BERM GUTTER.
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	1.5" MILLING
W1	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL SHEET No. 2A-1)
W2	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL SHEET No. 2A-1)

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



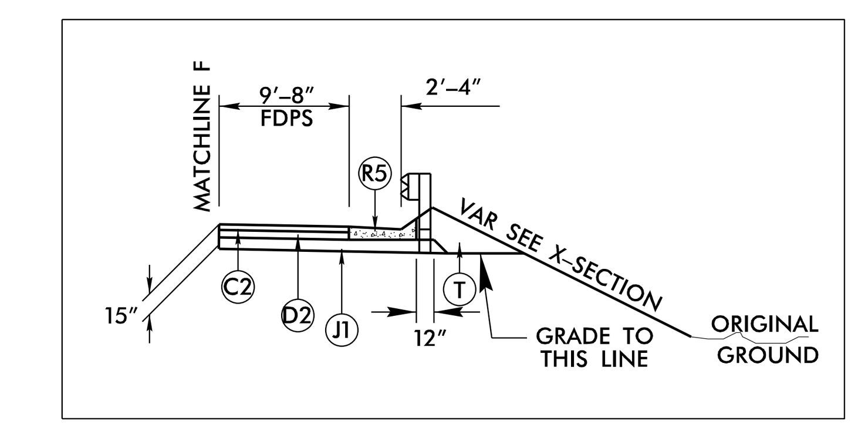
TYPICAL SECTION NO. 3

USE ON: -RABT1- STA. 10+00.00 TO STA. 12+89.02
-RABT2- STA. 10+00.00 TO STA. 12+89.02



TYPICAL SECTION NO. 4

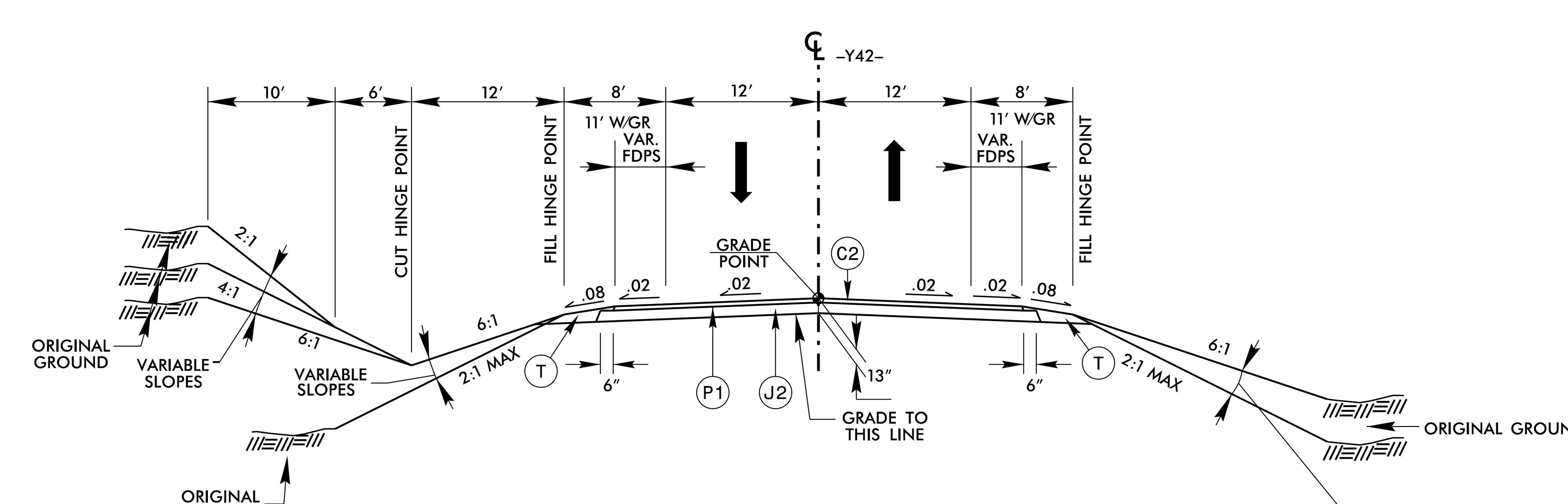
USE ON: -Y42RPA- STA. 10+00.00 TO STA. 23+66.43
-Y42RPB- STA. 10+00.00 TO STA. 25+75.11 (MIRROR)
-Y42RPC- STA. 10+00.00 TO STA. 25+48.29
-Y42RPD- STA. 10+00.00 TO STA. 30+11.39 (MIRROR)



PARTIAL TYPICAL SECTION NO. 4F

USE PARTIAL TYPICAL SECTION NO. 4F IN CONJUCTION WITH TYPICAL SECTION NO. 4 FOR SBG LOCATIONS

-Y42RPA- STA. 10+00.00 TO STA. 14+50.00 (RT)



TYPICAL SECTION NO. 5

USE ON: -Y42- STA. 10+66.00 TO STA. 12+13.49 (BEGIN BRIDGE)
STA. 14+10.49 (END BRIDGE) TO STA. 15+34.00

6/2/99

PAVEMENT SCHEDULE	
A1	12" PORTLAND CEMENT CONCRETE PAVEMENT (WITHOUT DOWELS)
C1	PROP. APPROX. 2.5", TYPE S9.5B
C2	PROP. APPROX. 3", TYPE S9.5B
C3	PROP. VAR. DEPTH, TYPE S9.5B
C4	PROP. APPROX. 3", TYPE S9.5C
C5	PROP. VAR. DEPTH, TYPE S9.5C
D1	PROP. APPROX. 2.5", I19.0C
D2	PROP. APPROX. 4", I19.0C
D3	PROP. VAR. DEPTH, TYPE I19.0C
E1	PROP. APPROX. 4", TYPE B25.0C
E2	PROP. APPROX. 5", TYPE B25.0C
E3	PROP. APPROX. 8", TYPE B25.0C
E4	PROP. VAR. DEPTH, TYPE B25.0C
J1	PROP. 8" DEPTH AGGREGATE BASE COURSE.
J2	PROP. 10" DEPTH AGGREGATE BASE COURSE.
K1	PROP. 8" LIME OR 7" CEMENT STABILZATION
K2	PROP CLASS IV SUBGRADE STABILZATION
N1	GEOTEXTILE FOR SUBGRADE STABILIZATION
N2	GEOTEXTILE FOR SOIL STABILIZATION
P1	PRIME COAT
R1	1'-6" CONCRETE CURB AND GUTTER.
R2	2'-6" CONCRETE CURB AND GUTTER
R3	8" x 18" CONCRETE CURB
R4	SINGLE FACED CONCRETE BARRIER
R5	SHOULDER BERM GUTTER.
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	1.5" MILLING
W1	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL SHEET No. 2A-1)
W2	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL SHEET No. 2A-1)

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

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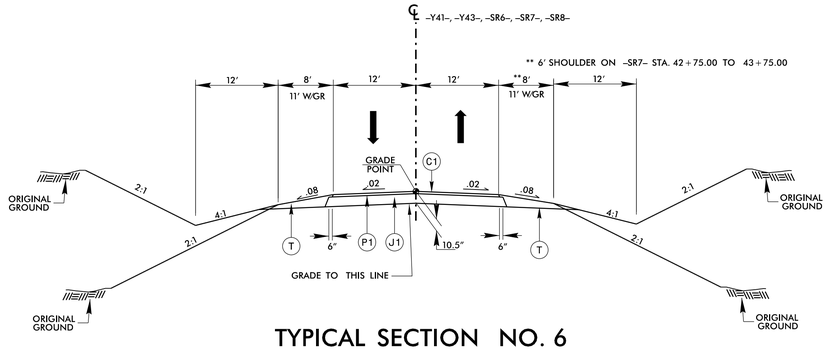
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

PROJECT REFERENCE NO.	SHEET NO.
R-2707E	2A-5

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 044480 ENGINEER MATTHEW B FERGUSON
4/25/2023

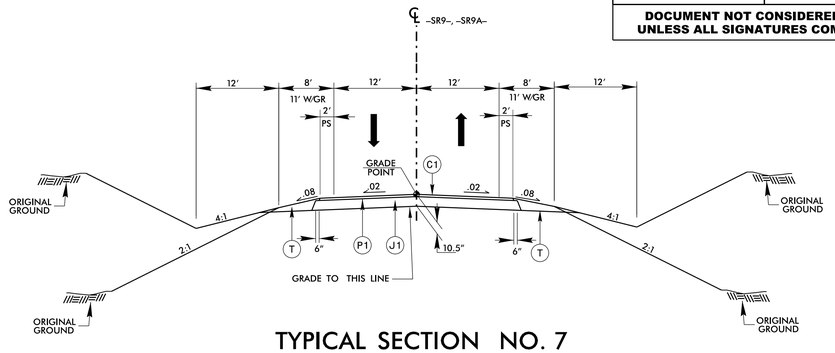
PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 024964 ENGINEER JOSEPH T HOLLAND
4/25/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



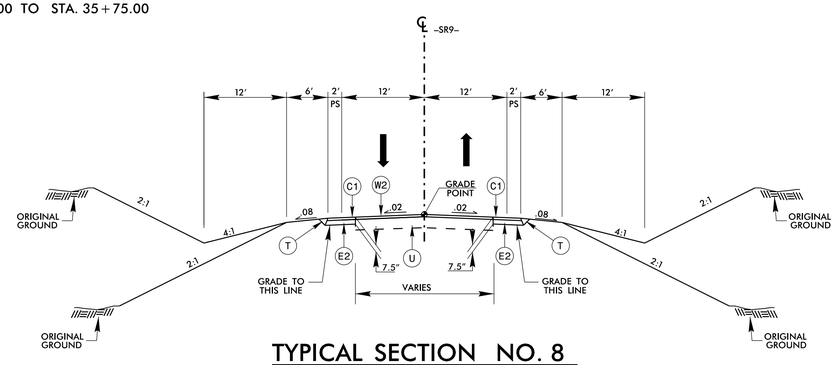
TYPICAL SECTION NO. 6

USE ON: –Y41– STA. 10+00.00 TO STA. 17+37.51
–Y43– STA. 10+12.00 TO STA. 14+50.00
–SR6– STA. 13+94.33 TO STA. 31+03.30
–SR7– STA. 10+20.00 TO STA. 77+59.91
–SR8– STA. 12+00.00 TO STA. 35+75.00



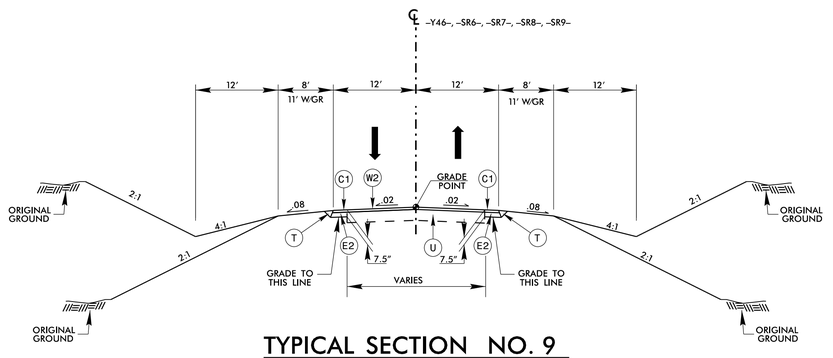
TYPICAL SECTION NO. 7

USE ON: –SR9– STA. 11+25.10 TO STA. 21+38.91
–SR9A– STA. 10+18.26 TO STA. 29+36.55



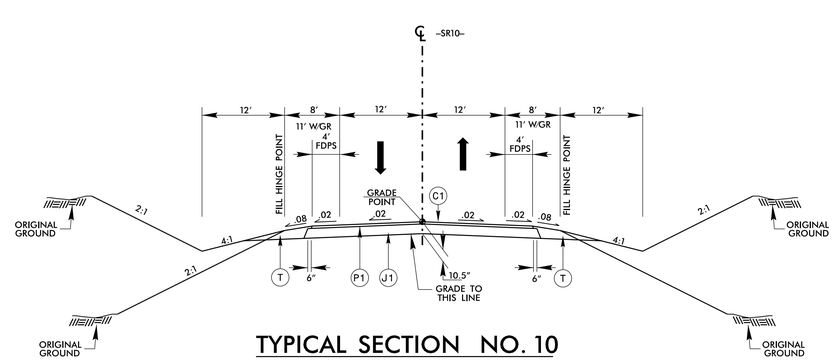
TYPICAL SECTION NO. 8

USE ON: –SR9– STA. 10+00.00 TO STA. 11+25.10



TYPICAL SECTION NO. 9

USE ON: –Y46– STA. 10+75.00 TO STA. 14+79.57
–SR6– STA. 12+00.00 TO STA. 13+94.33
–SR7– STA. 77+59.91 TO STA. 79+52.00
–SR8– STA. 10+75.00 TO STA. 12+00.00



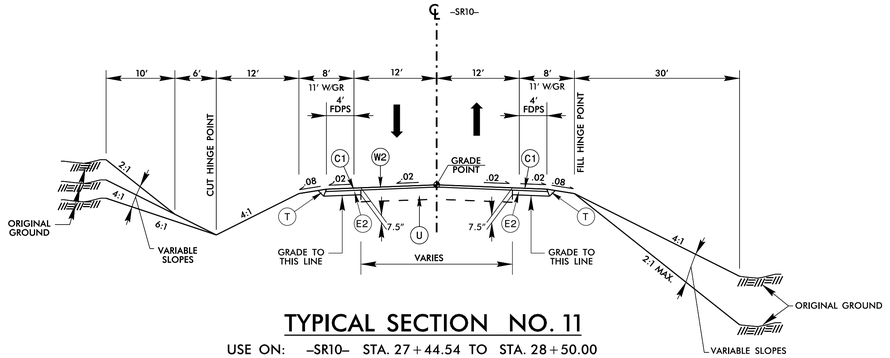
TYPICAL SECTION NO. 10

USE ON: –SR10– STA. 10+20.00 TO STA. 27+44.54

6/2/99

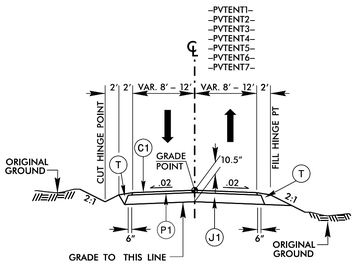
PAVEMENT SCHEDULE	
A1	12" PORTLAND CEMENT CONCRETE PAVEMENT (WITHOUT DOWELS)
C1	PROP. APPROX. 2.5", TYPE S9.5B
C2	PROP. APPROX. 3", TYPE S9.5B
C3	PROP. VAR. DEPTH, TYPE S9.5B
C4	PROP. APPROX. 3", TYPE S9.5C
C5	PROP. VAR. DEPTH, TYPE S9.5C
D1	PROP. APPROX. 2.5", I19.0C
D2	PROP. APPROX. 4", I19.0C
D3	PROP. VAR. DEPTH, TYPE I19.0C
E1	PROP. APPROX. 4", TYPE B25.0C
E2	PROP. APPROX. 5", TYPE B25.0C
E3	PROP. APPROX. 8", TYPE B25.0C
E4	PROP. VAR. DEPTH, TYPE B25.0C
J1	PROP. 8" DEPTH AGGREGATE BASE COURSE.
J2	PROP. 10" DEPTH AGGREGATE BASE COURSE.
K1	PROP. 8" LIME OR 7" CEMENT STABILZATION
K2	PROP CLASS IV SUBGRADE STABILZATION
N1	GEOTEXTILE FOR SUBGRADE STABILIZATION
N2	GEOTEXTILE FOR SOIL STABILIZATION
P1	PRIME COAT
R1	1'-6" CONCRETE CURB AND GUTTER.
R2	2'-6" CONCRETE CURB AND GUTTER
R3	8" x 18" CONCRETE CURB
R4	SINGLE FACED CONCRETE BARRIER
R5	SHOULDER BERM GUTTER.
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	1.5" MILLING
W1	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL SHEET No. 2A-1)
W2	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL SHEET No. 2A-1)

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



TYPICAL SECTION NO. 11

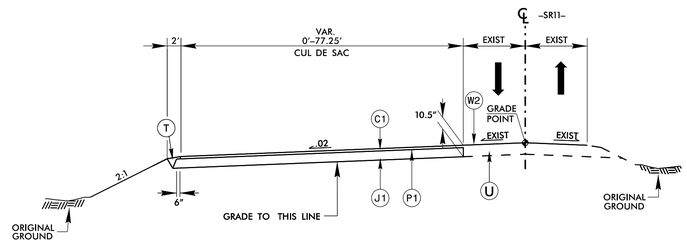
USE ON: –SR10– STA. 27+44.54 TO STA. 28+50.00



TYPICAL SECTION NO. 12

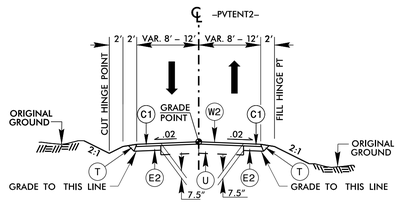
(PRIVATE ENTRANCES)

USE ON:
–PVTENT1– STA. 10+12.00 TO STA. 11+48.83
–PVTENT2– STA. 11+56.50 TO STA. 12+75.00
–PVTENT3– STA. 10+12.00 TO STA. 11+80.00
–PVTENT4– STA. 10+12.00 TO STA. 11+20.00
–PVTENT5– STA. 10+12.00 TO STA. 10+90.00
–PVTENT6– STA. 10+12.00 TO STA. 11+31.02
–PVTENT7– STA. 10+12.07 TO STA. 10+45.73



TYPICAL SECTION NO. 13

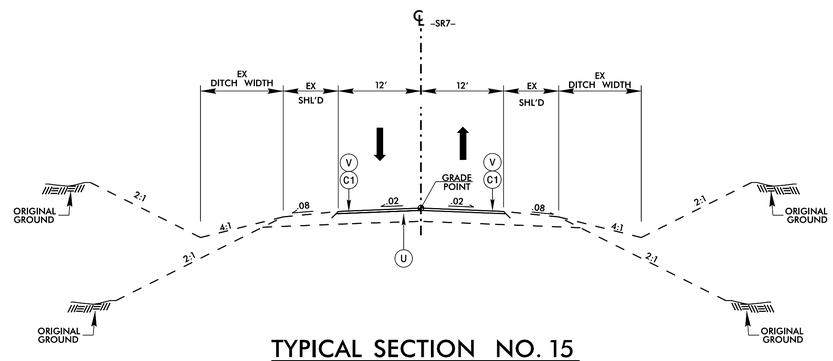
USE ON: –SR11– STA. 10+60.95 TO STA. 11+95.45



TYPICAL SECTION NO. 14

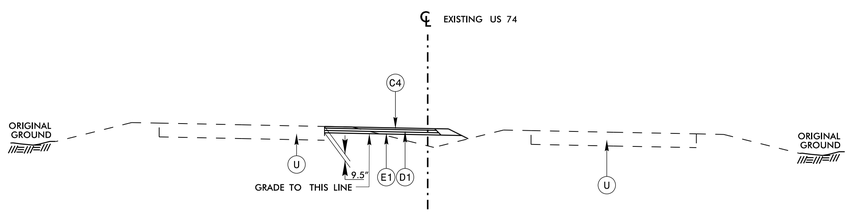
(PRIVATE ENTRANCES)

USE ON: –PVTENT2– STA. 10+75.00 TO STA. 11+56.50



TYPICAL SECTION NO. 15

USE ON: –SR7– STA. 79+52.00 TO STA. 82+00



TYPICAL SECTION NO. 16

NOTE: FOR MAINTENANCE OF TRAFFIC ONLY (SEE TMP PLANS)

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Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
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License No. F-0672

PROJECT REFERENCE NO.	SHEET NO.
R-2707E	2A-6

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 044480 ENGINEER MATTHEW B FERGUSON
4/25/2023

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 024964 ENGINEER JOSEPH T HOLLAND
4/25/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

6/2/99

SUMMARY OF SHOULDER DRAIN, SHOULDER DRAIN PIPE, & CONCRETE OULET PADS

STATION	STATION	LOCATION	OUTLET LOCATION	SHOULDER DRAIN PIPE (FT)	SHOULDER DRAIN (FT)	OUTLET PIPE (FT)	CONCRETE PAD	REMARKS
851+15.00	865+00.00	LT. OUTSIDE		1385.00	1385.00			
			851+15			N/A		TIE TO 2GI 403
			852+00			N/A		TIE TO 2GI 402
			853+00			N/A		TIE TO 2GI 401
			856+00			19	1	
			859+00			11		
			862+00			N/A		TIE TO 2GI 417
			862+65			N/A		TIE TO 2GI 418
887+20.79	902+00.00	LT. OUTSIDE		1479.21	1479.21			
			887+20.79			18	1	
			891+75			20		TIE TO 2GI 614
			893+00			20		TIE TO 2GI 607
			896+00			25	1	
			900+00			16	1	
902+15.00	906+00.00	LT. OUTSIDE		385.00	385.00			
			902+15			N/A		TIE TO 2GI 652
			904+05			N/A		TIE TO 2GI 651
926+50.00	931+66.49	LT. OUTSIDE		516.49	516.49			
			926+50			5		TIE TO 2GI 826
			929+00			33	1	
943+18.69	955+00.00	LT. OUTSIDE		1181.31	1181.31			
			943+18.69			11	1	
			946+00			11	1	
			952+00			22	1	
			955+00			18	1	
851+15.00	852+85.00	RT. OUTSIDE		170.00	170.00			
			851+15			N/A		TIE TO 2GI 412
			851+30			N/A		TIE TO 2GI 411
			852+00			20		TIE TO 2GI 413
881+50.00	906+50.00	RT. OUTSIDE		2500.00	2500.00			
			881+50			9		TIE TO 2GI 602
			884+50			18	1	
			887+50			18	1	
			890+50			38	1	
			893+50			5	1	
			896+50			39	1	
			899+50			84	1	
			902+50			32	1	
			905+00			18	1	
926+60.00	953+00.00	RT. OUTSIDE		2640.00	2640.00			
			926+60			18		TIE TO 2GI 820
			929+00			18	1	
			930+30			22		TIE TO 2GI-D 822
			933+00			26	1	
			936+00			29	1	
			938+05			89		TIE TO JB w/MH 905
			941+00			18	1	
			942+55			21		TIE TO JB w/MH 915
			945+00			27	1	
			948+00			20	1	
			953+00			32	1	
851+15.00	854+20.00	LT. MEDIAN		305.00	305.00			
			851+15			N/A		TIE TO 2GI 404
			851+70			18		TIE TO 2GI 408
			853+00			17		TIE TO 2GI-A 407
881+50.00	887+20.79	LT. MEDIAN		570.79	570.79			
			881+50			17		TIE TO 2GI 601
			885+00			15	1	
931+66.49	943+18.69	LT. MEDIAN		1152.20	1152.20			
			931+66.49			17	1	
			934+20			18		TIE TO 2GI-D 901
			938+95			26		TIE TO 2GI 904
			942+80			31		TIE TO 2GI 914
851+15.00	865+00.00	RT. MEDIAN		1385.00	1385.00			
			851+15			N/A		TIE TO 2GI 410
			851+70			18		TIE TO 2GI 408
			853+00			17		TIE TO 2GI-A 407
			856+00			17		TIE TO 2GI 406
			859+00			17		TIE TO 2GI 405
			862+65			18		TIE TO 2GI 416

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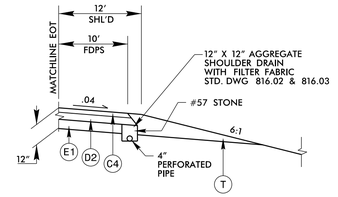
PROJECT REFERENCE NO.	SHEET NO.
R-2707E	2A-7

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 044480 ENGINEER MATTHEW B FERGUSON
4/25/2023

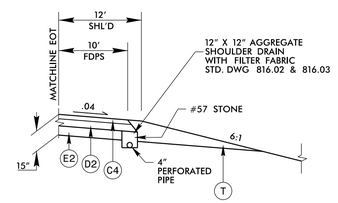
PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 024964 ENGINEER JOSEPH T HOLLAND
4/25/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

	PAVEMENT SCHEDULE
C4	PROP. APPROX. 3", TYPE S9.5C
D2	PROP. APPROX. 4", I19.0C
E1	PROP. APPROX. 5", TYPE B25.0C
E2	PROP. APPROX. 8", TYPE B25.0C
T	EARTH MATERIAL



SHOULDER DRAIN DETAIL
NEW CONSTRUCTION



SHOULDER DRAIN DETAIL
NARROW WIDENING ALTERNATE
(NO SOIL STABILIZATION)

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2707E	2B-1

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 044480 MATTHEW B FERGUSON

4/21/2023

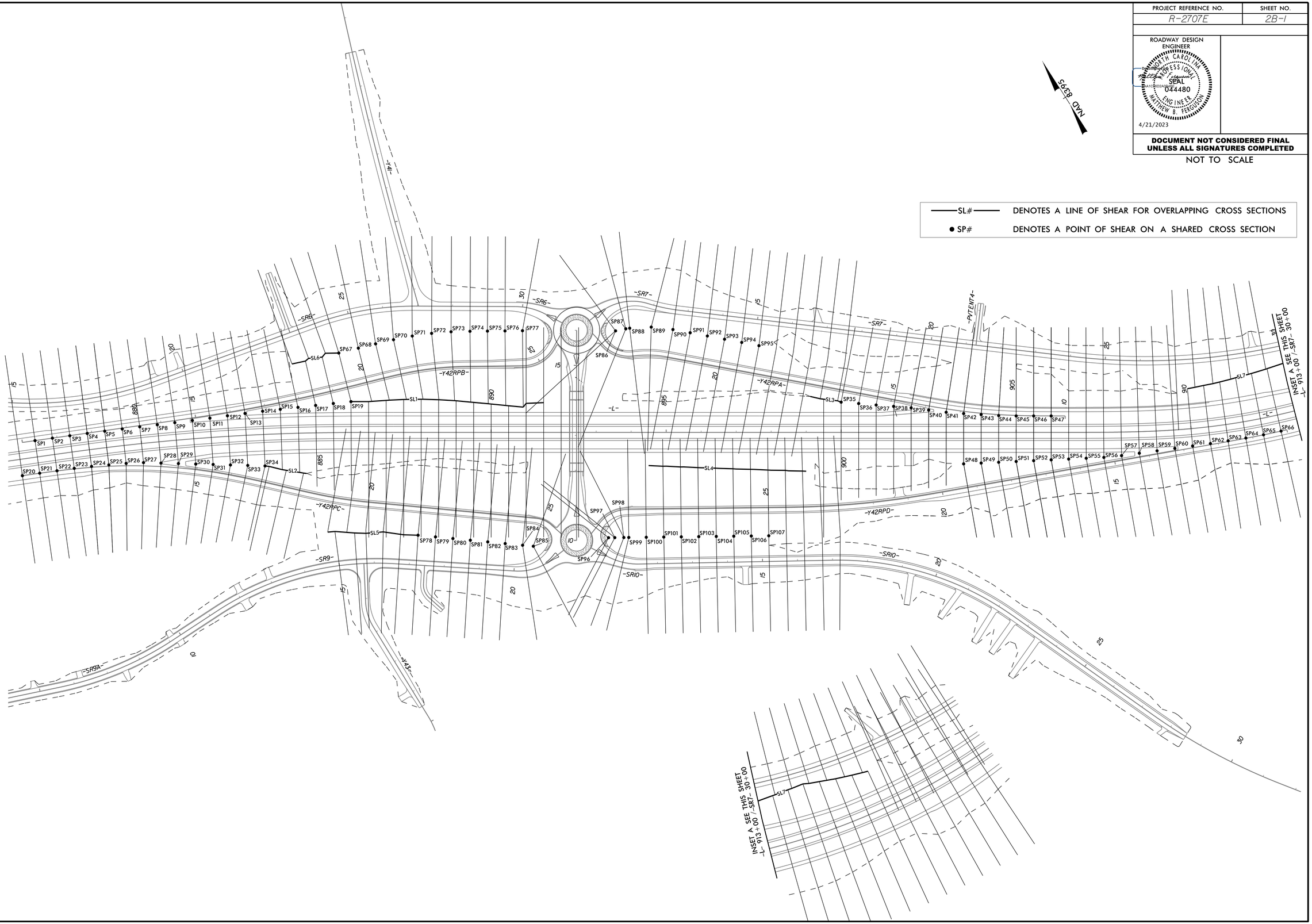
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NOT TO SCALE

NAD 83'95

—SL#— DENOTES A LINE OF SHEAR FOR OVERLAPPING CROSS SECTIONS

● SP# DENOTES A POINT OF SHEAR ON A SHARED CROSS SECTION



3/30/2023
c:\users\mferguson\documents\pw_working\dms43124\R2707E_RDY_PSH02B-1.dgn
mferguson

INTERSECTION DETAILS

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
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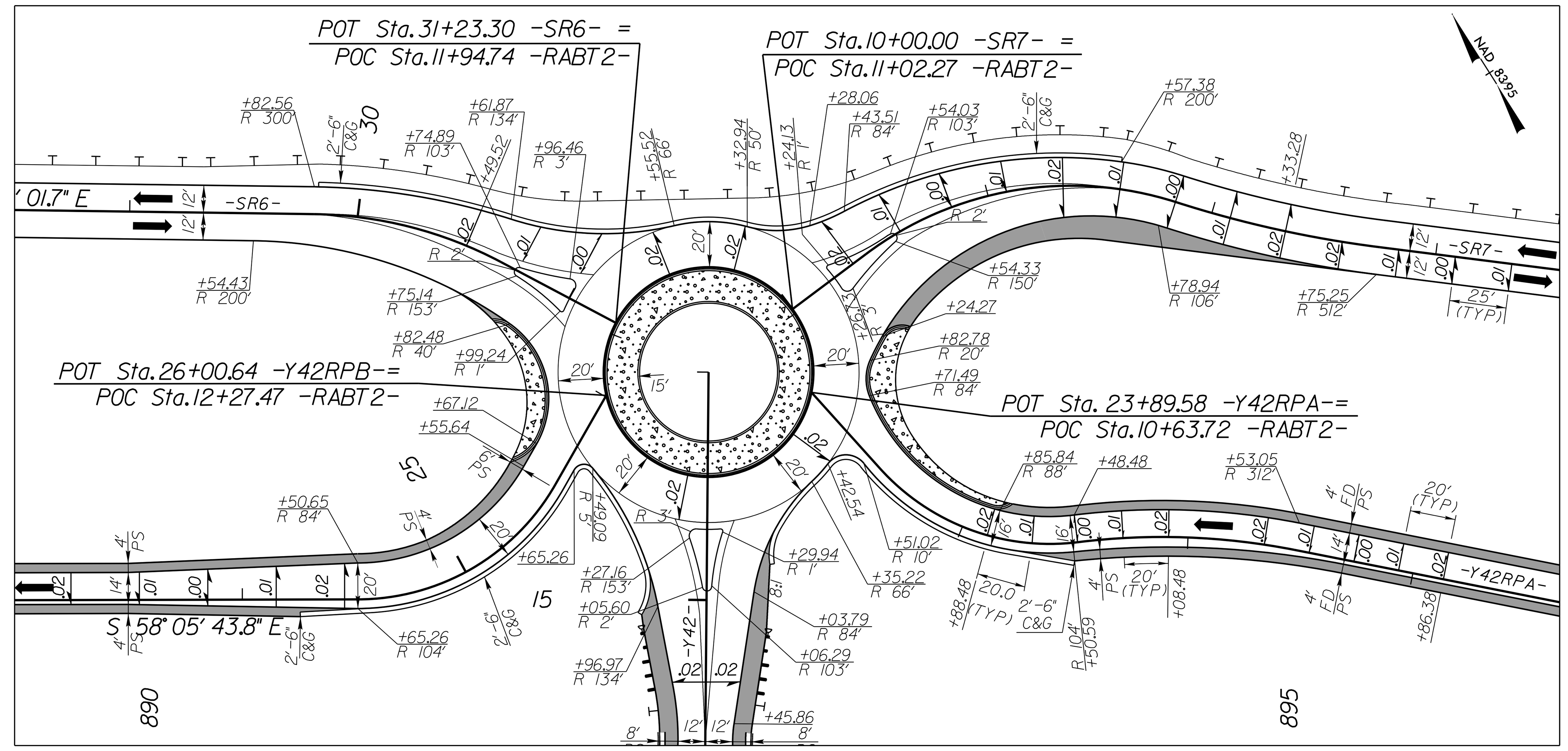
PROJECT REFERENCE NO.	SHEET NO.
R-2707E	2B-2

ROADWAY DESIGN ENGINEER

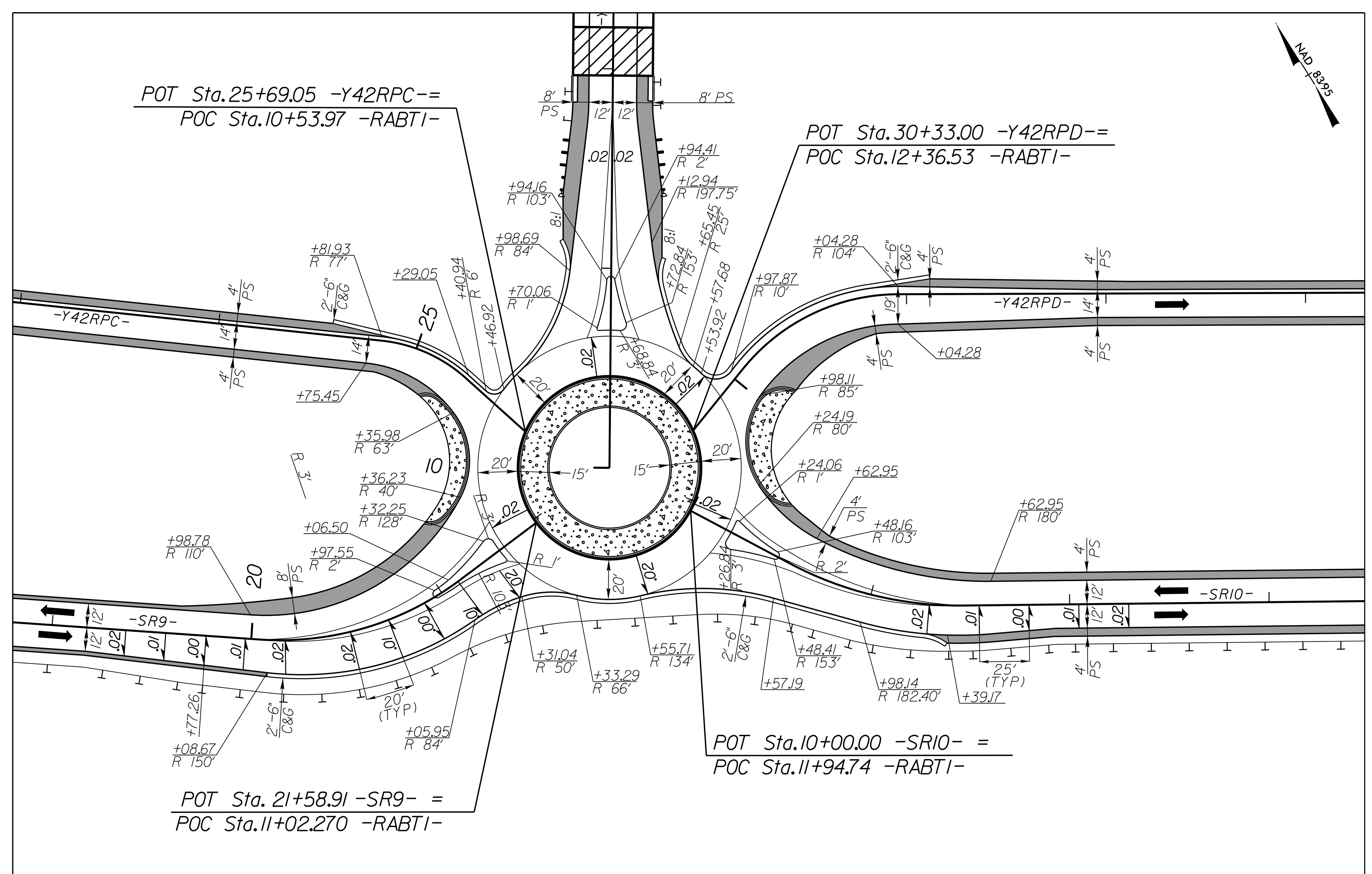
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 044480 MATTHEW B. FERGUSON

4/21/2023

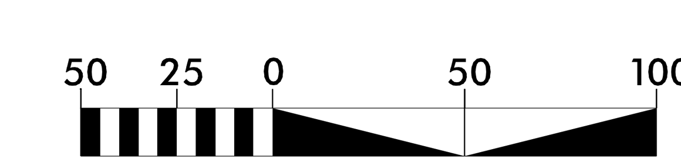
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

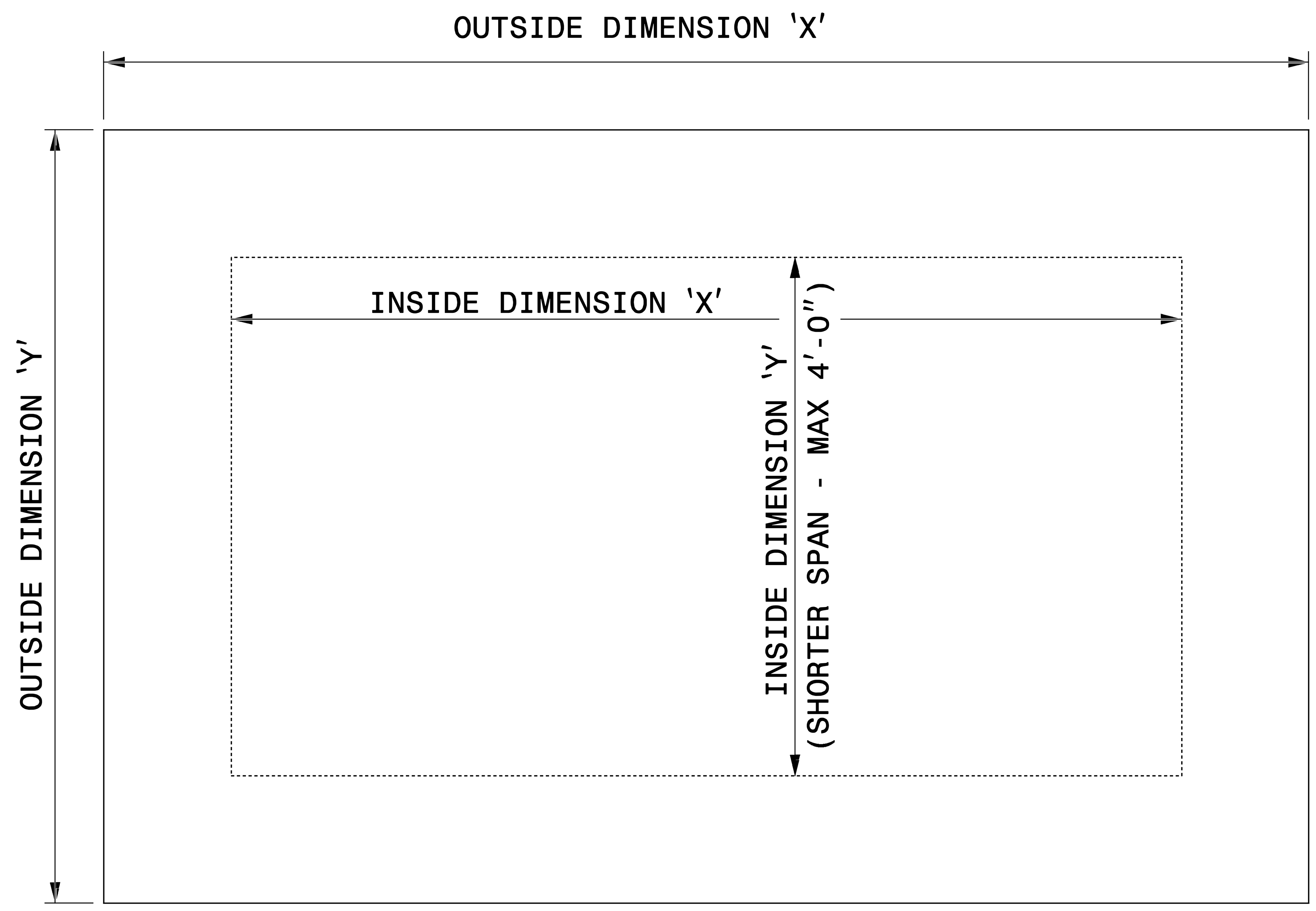


-RABT2-
INTERSECTION DETAIL SHOWN FROM PLAN SHEET 6



-RABT1-
INTERSECTION DETAIL SHOWN FROM PLAN SHEET 6

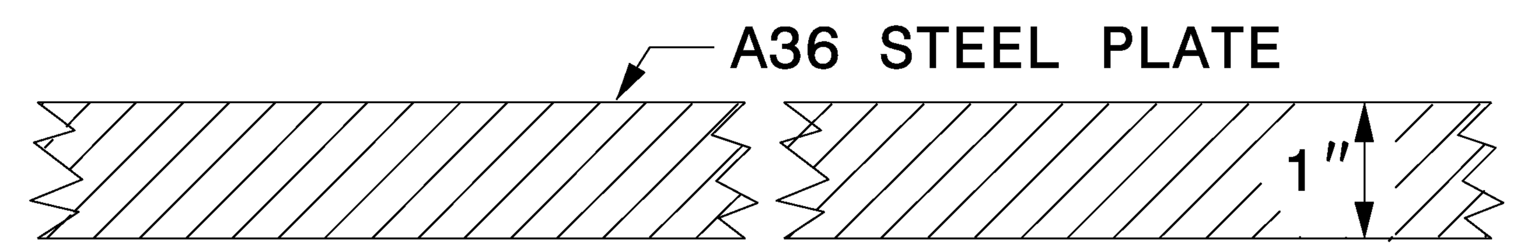




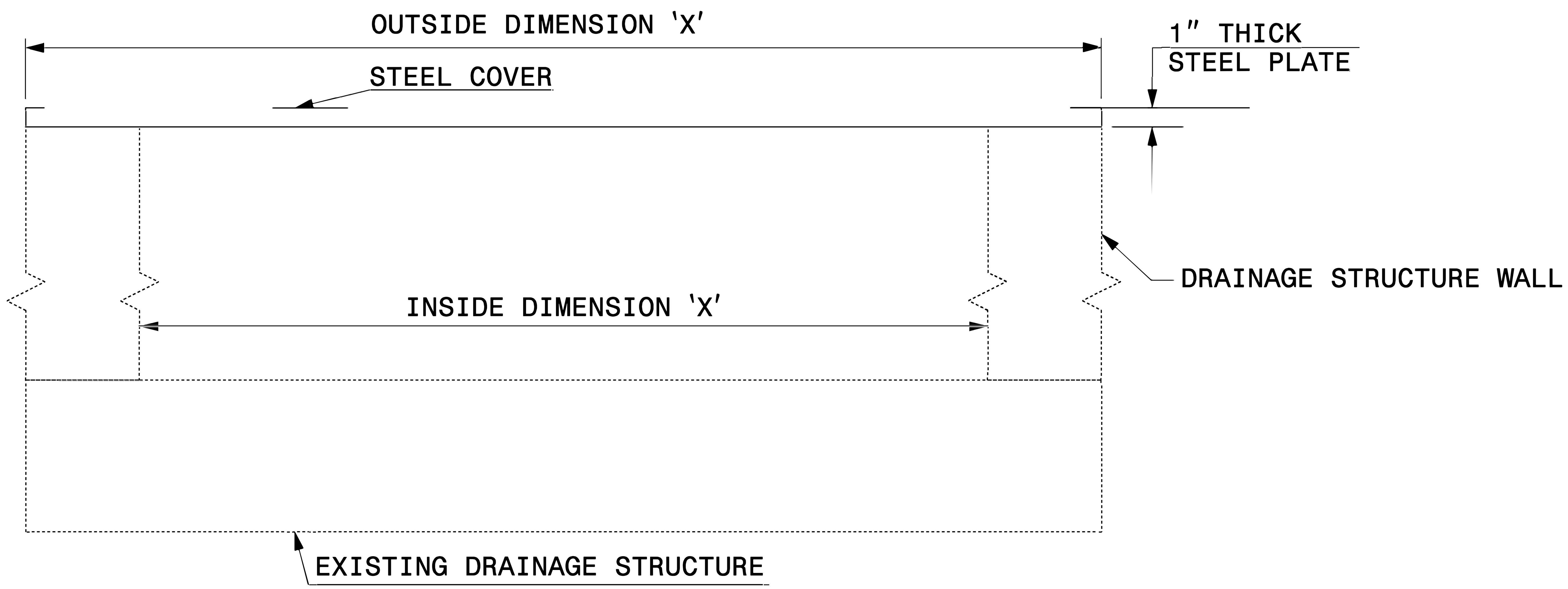
PLAN VIEWS

GENERAL NOTES:

- -USE GRADE A36 STEEL
- -STEEL COVERS ARE FOR TEMPORARY USE DURING PHASE CONSTRUCTION.
- -FILL SHALL BE PLACED DIRECTLY OVER THE STEEL PLATES.
- -SEE ROADWAY PLANS AND PROVISIONS FOR LOCATIONS
- -QUANTITES TO BE PAID FOR AT THE UNIT PRICE BID PER EACH.



SECTION VIEW OF STEEL TOP PLATE



ELEVATION VIEWS

4/21/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

DETAIL OF TEMPORARY 1" STEEL COVER OVER DRAINAGE STRUCTURE

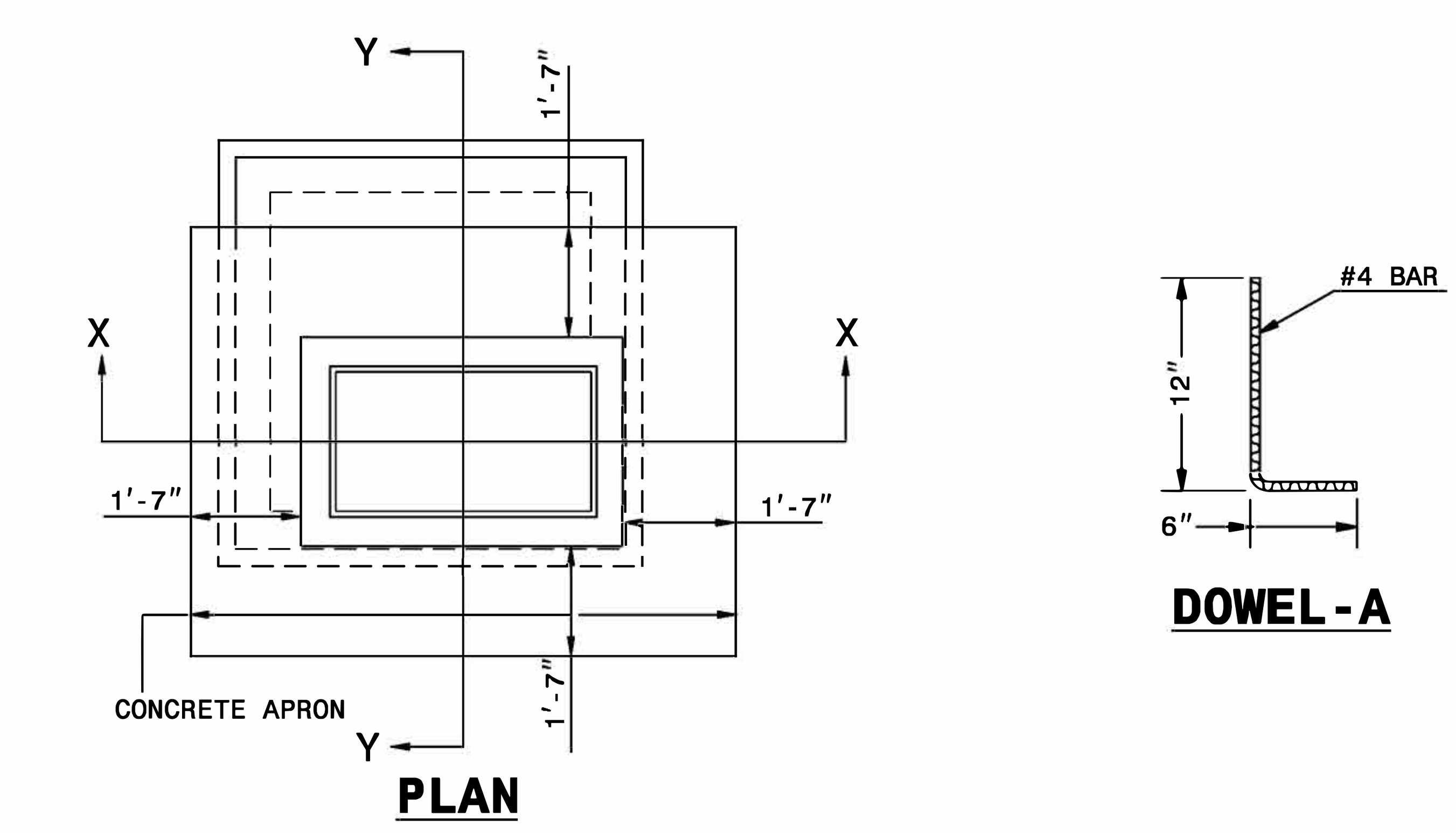
ORIGINAL BY: E.E. WARD DATE: 2-2-98
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: eric:/usr/details/metric/stand/stlcvr2.dgn

PROJECT REFERENCE NO. R-2707E | SHEET NO. 2C-2

ENGLISH DETAIL DRAWING FOR CONCRETE GRATED DROP INLET TYPE 'A' MINIMUM DEPTH 12" THRU 72" PIPE

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

SHEET 1 OF 2 — 840d17



GENERAL NOTES:

USE CLASS "B" CONCRETE THROUGHOUT.

PROVIDE ALL GRATED DROP INLETS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.

OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.

USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.

IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.

CONSTRUCT WITH PIPE CROWNS MATCHING.

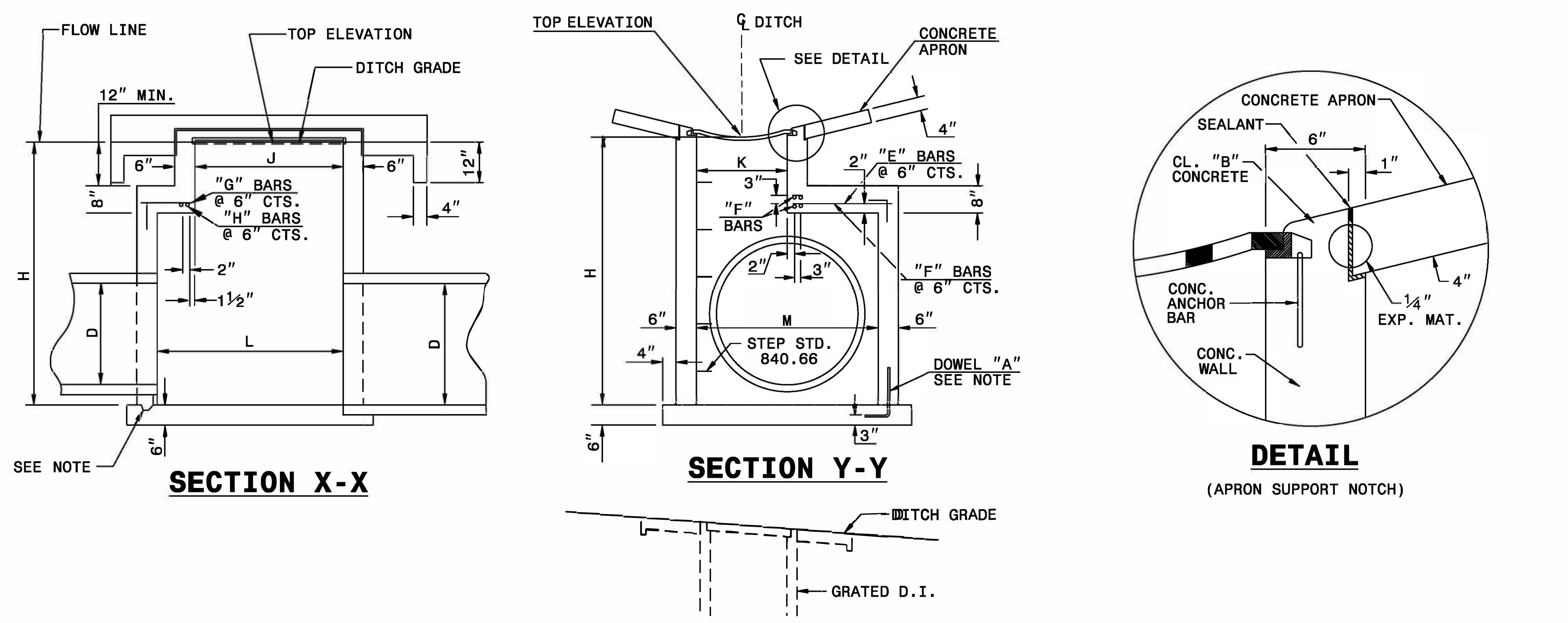
USE STANDARD FRAMES AND GRATES 840.22 (SHOWN), 840.24(SHOWN), 840.20 (NOT SHOWN) OR 840.29 (NOT SHOWN).

SEE STANDARD DRAWING 840.25 FOR ATTACHMENT OF FRAMES AND GRATES.

CHAMFER ALL EXPOSED CORNERS 1".

DRAWING NOT TO SCALE.

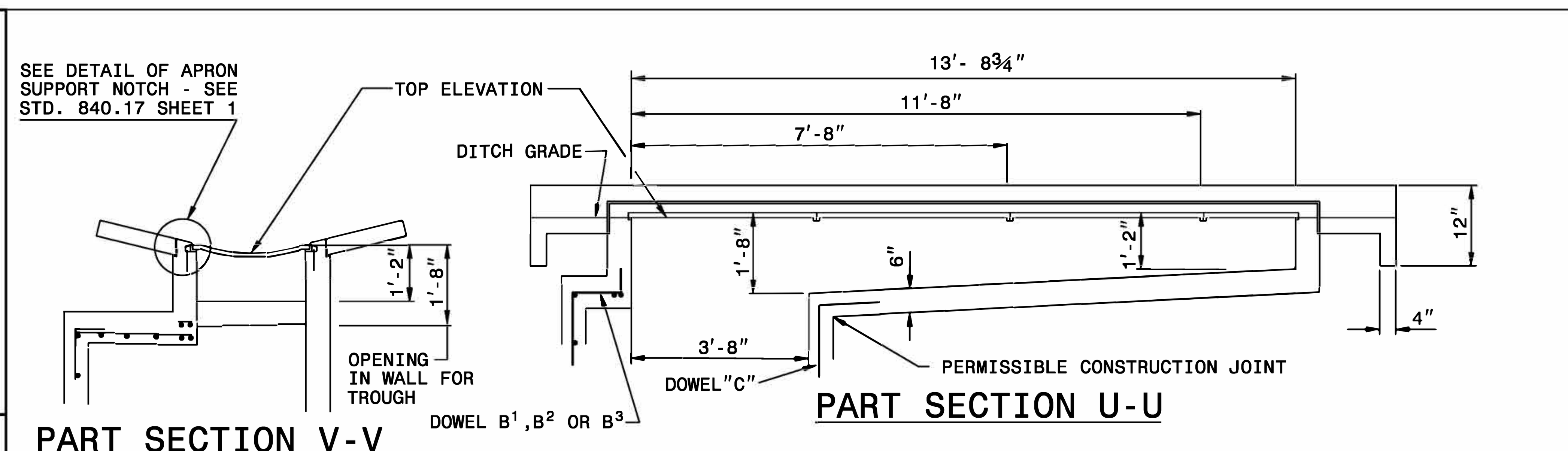
MAX. DEPTH OF THIS STRUCTURE FROM TOP OF BOTTOM SLAB TO TOP ELEVATION IS 12 FEET.

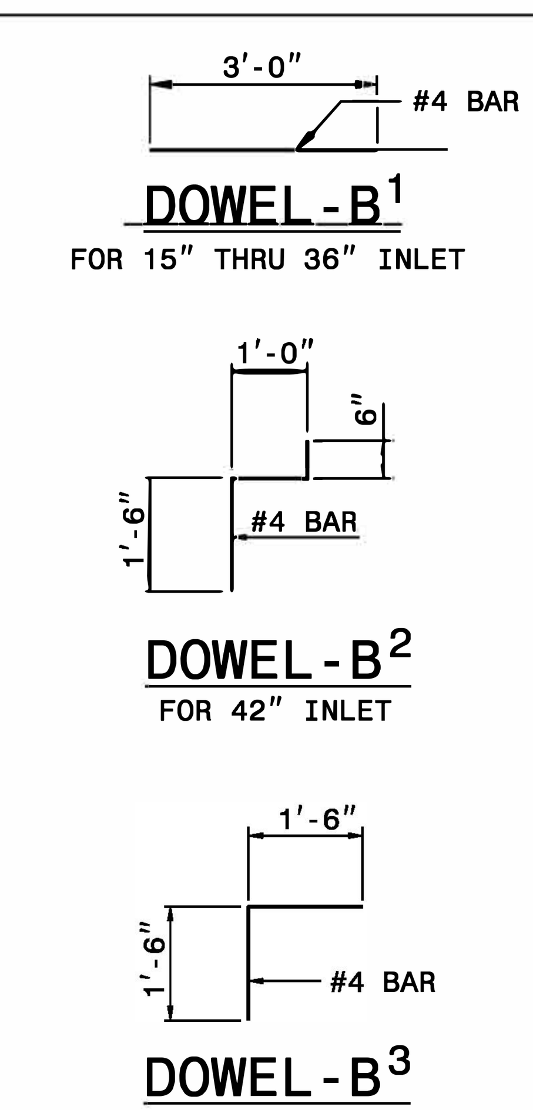


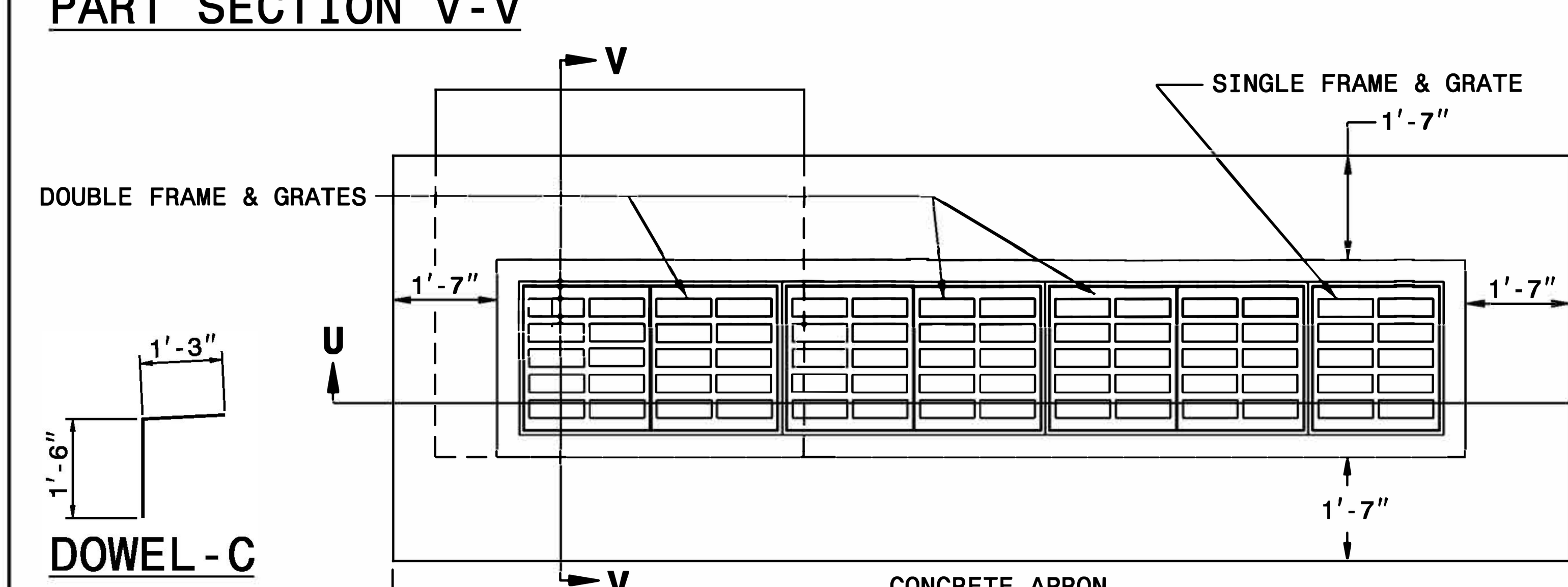
ENGLISH DETAIL DRAWING FOR CONCRETE GRATED DROP INLET TYPE 'A' MINIMUM DEPTH 12" THRU 72" PIPE

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

SHEET 2 OF 2 — 840d17



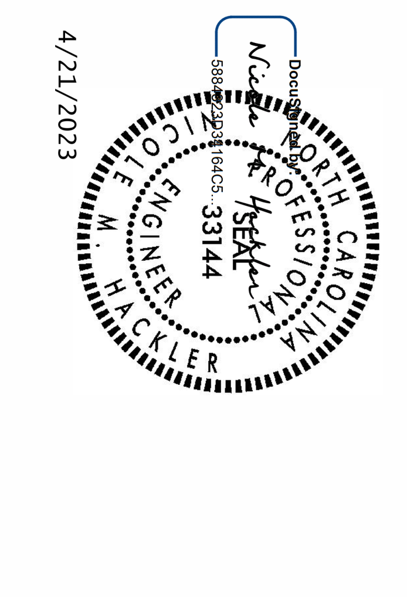




QUANTITY TO BE ADDED FOR EACH 2' INCREMENT INLET OPENING						
ADDITIONAL INLETS	2'-0"	4'-0"	6'-0"	8'-0"	10'-0"	12'-0"
CONCRETE CU. YDS.	0.191	0.417	0.665	0.897	1.145	1.380
CONCRETE APRON CU. YDS.	0.074	0.148	0.222	0.296	0.370	0.444

MIN. DIMENSIONS AND QUANTITIES FOR CONCRETE GRATED DROP INLET(BASED ON MIN. HEIGHT, H)

DIMENSIONS OF BOX AND PIPE						REINFORCING STEEL - NO. 4 BARS									CU YDS CONC. IN BOX					DEDUCTIONS FOR ONE PIPE	
PIPE	SPAN	WIDTH	SPAN	WIDTH	HEIGHT	BARS E		BARS F		BARS G		BARS H		TOTAL	BOTTOM SLAB	H TOTAL	H PER FT HT	APRON	TOTAL		
D	J	K	L	M	H	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	LBS.						C.S.	R.C.
12"	3'-8"	2'-0"	3'-8"	2'-0"	2'-3"	—	—	—	—	—	—	—	—	—	0.362	0.926	0.247	0.395	1.683	0.015	0.024
15"	3'-8"	2'-0"	3'-8"	2'-0"	2'-5"	—	—	—	—	—	—	—	—	—	0.362	0.988	0.247	0.395	1.745	0.023	0.036
18"				2'-0"	2'-8"	—	—	—	—	—	—	—	—	—	0.362	1.050	0.247		1.807	0.033	0.049
24"				2'-10"	3'-3"	8	1'-5"	6	4'-9"	—	—	—	—	27	0.444	1.362	0.278		2.201	0.059	0.085
30"			3'-8"	3'-5"	3'-10"	8	2'-0"	7	4'-9"	—	—	—	—	33	0.502	1.644	0.288		2.541	0.092	0.127
36"			4'-0"	4'-0"	4'-4"	8	2'-5"	8	4'-11"	4	0'-9"	2	4'-11"	47	0.560	1.931	0.321		2.920	0.132	0.178
42"			4'-10"	4'-10"	5'-0"	10	3'-1"	9	5'-7"		1'-5"	3	5'-7"	67	0.704	2.500	0.370		3.677	0.180	0.243
48"			5'-4"	5'-4"	5'-6"	11	3'-7"	10	6'-1"		1'-11"	4	6'-1"	87	0.823	3.013	0.407		4.315	0.235	0.317
54"			6'-0"	6'-0"	6'-0"	12	4'-1"	11	6'-7"		2'-5"	5	6'-7"	107	0.951	3.589	0.444		5.072	0.297	0.401
60"			6'-6"	6'-6"	6'-7"	13	4'-9"	12	7'-3"		3'-1"	6	7'-3"	135	1.311	4.539	0.494		6.170	0.367	0.495
66"			7'-2"	7'-2"	7'-1"	14	5'-4"	14	7'-10"		3'-7"	7	7'-10"	168	1.136	5.061	0.537		6.901	0.444	0.599
72"	3'-8"	2'-0"	7'-8"	7'-8"	7'-8"	15	5'-11"	15	8'-5"	4	4'-3"	8	8'-5"	199	1.500	5.860	0.580	0.395	7.868	0.528	0.713



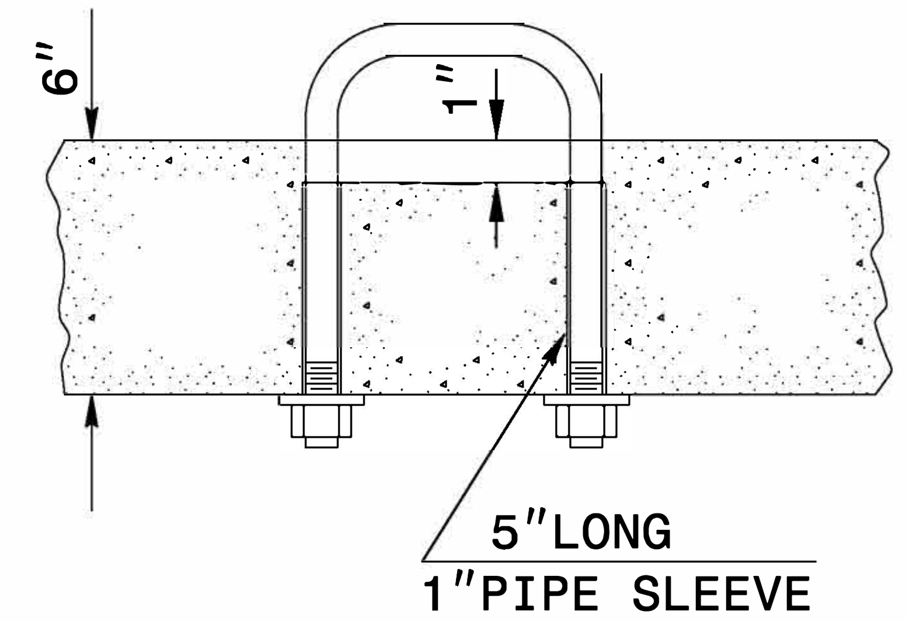
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

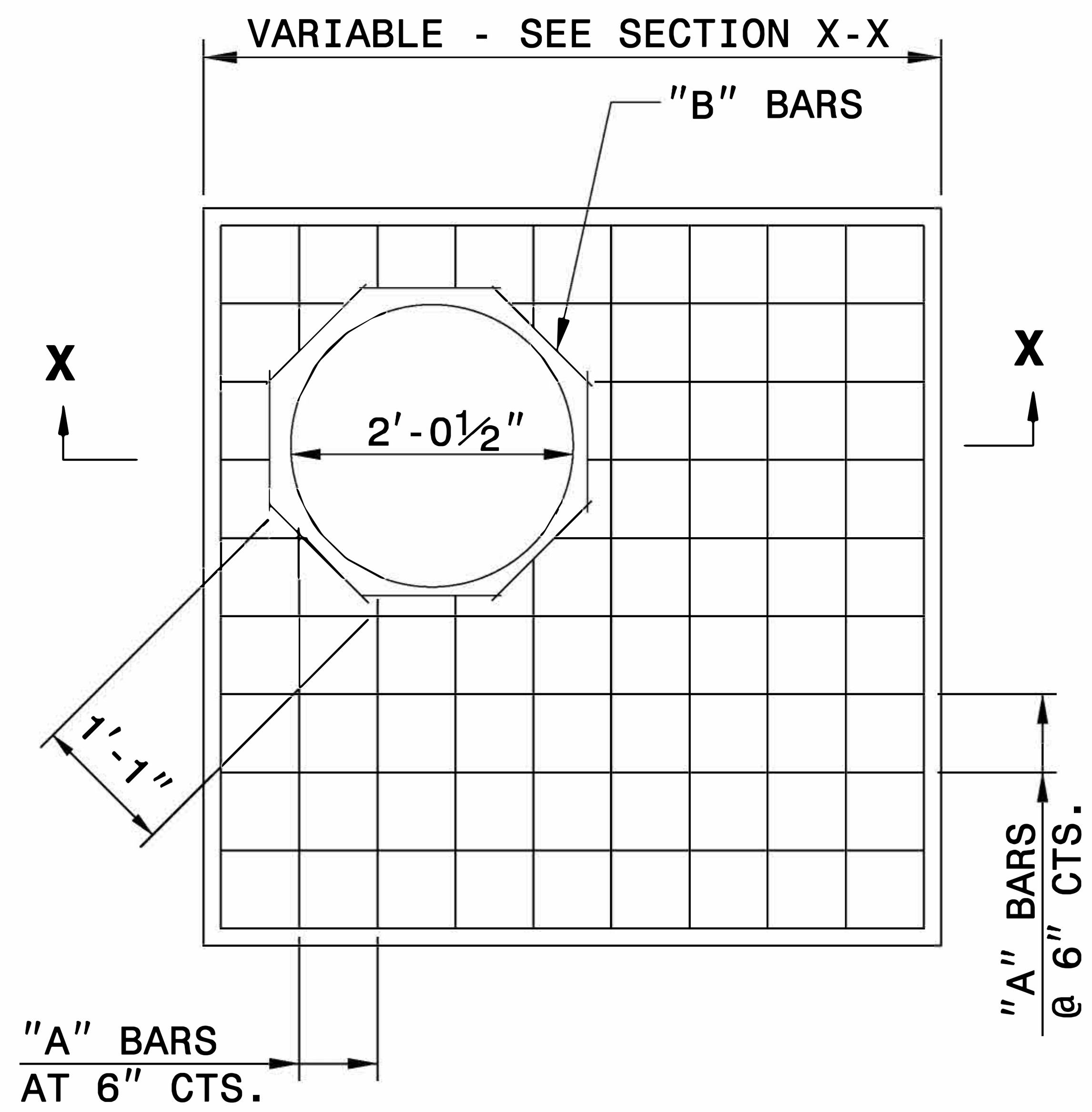
SEE TITLE BLOCK

ORIGINAL BY: J. Howerton DATE: 1/22/14
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: jhowerton\minimum depth type A.dgn

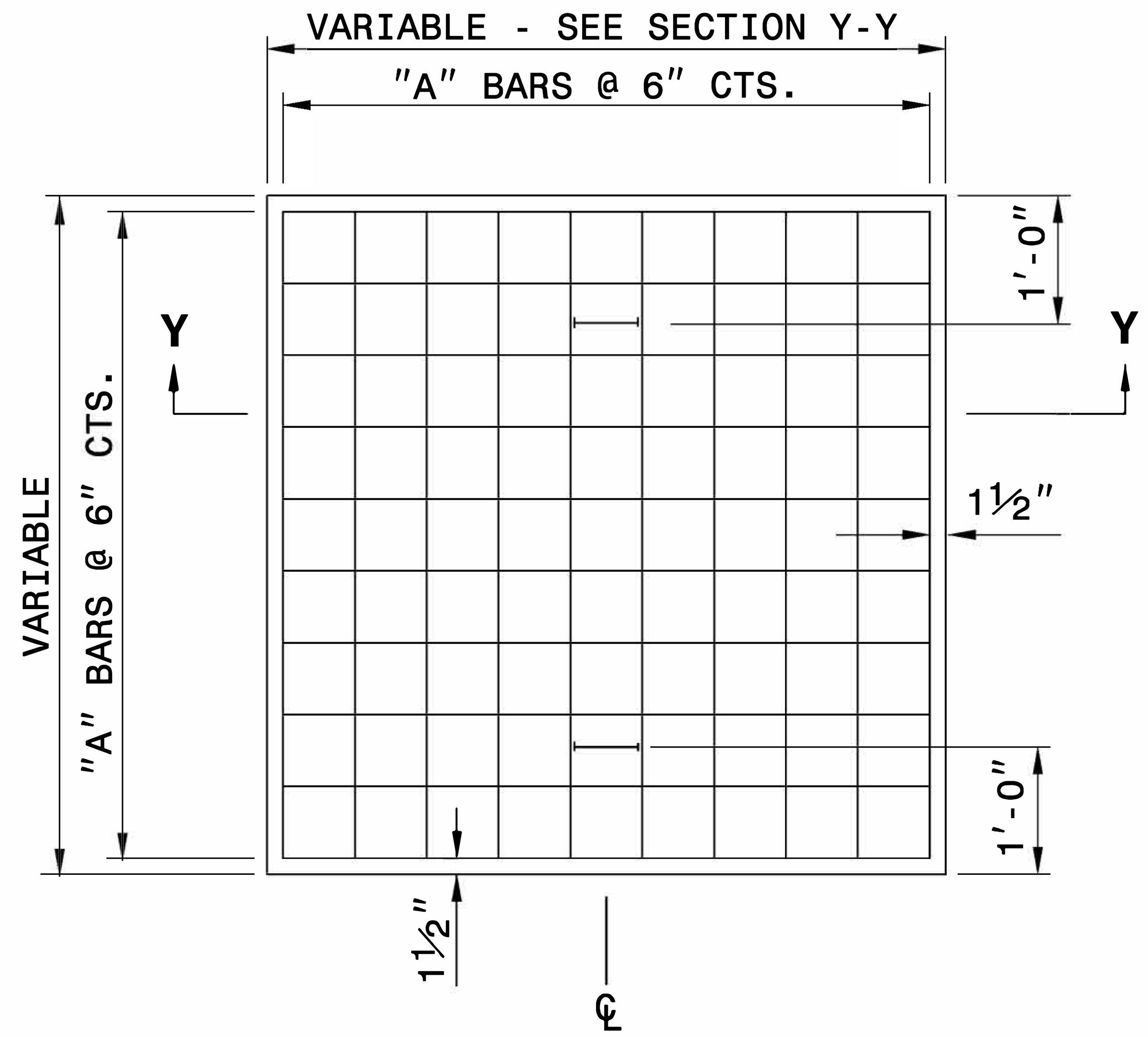
PROJECT REFERENCE NO.	SHEET NO.
R-2707E	2C-3



PARTIAL SECTION



PLAN



PLAN

GENERAL NOTES:

CONSTRUCT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.

THE DIMENSIONS FOR THE EXISTING BOXES ARE APPROXIMATE AND MAY VARY SLIGHTLY.

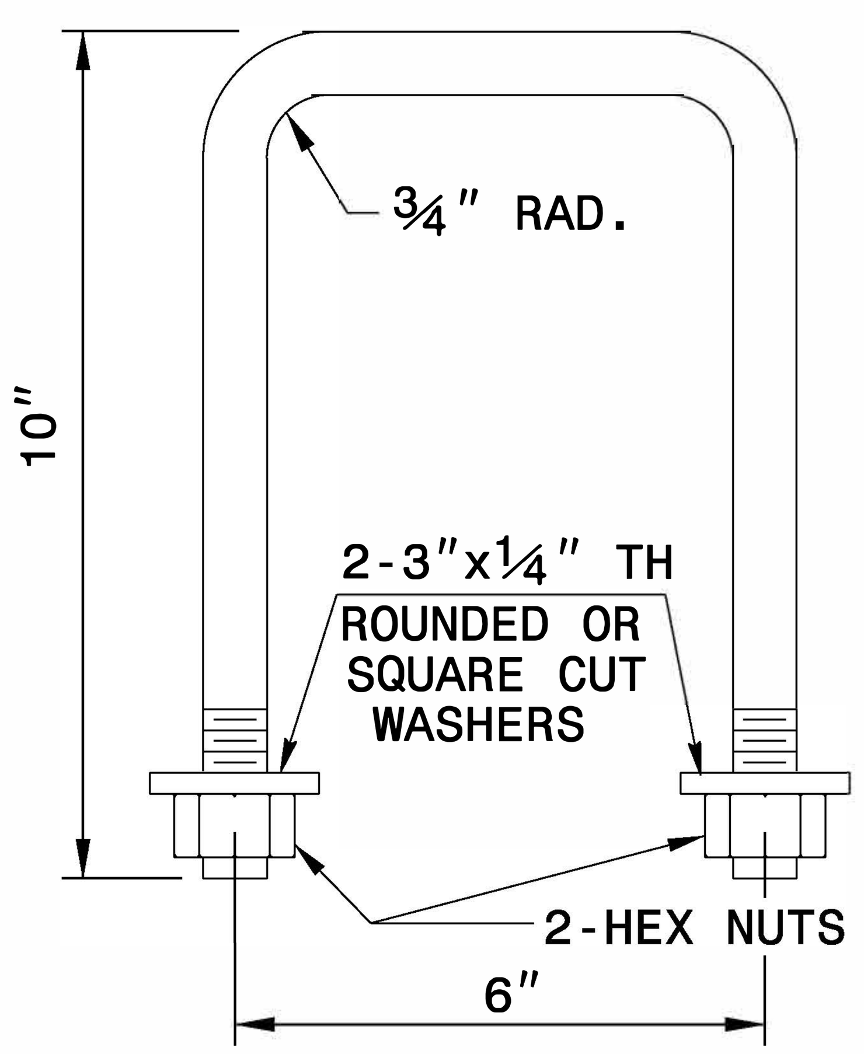
DETAIL INTENDED FOR NON-TRAFFIC BEARING DRAINAGE STRUCTURES.

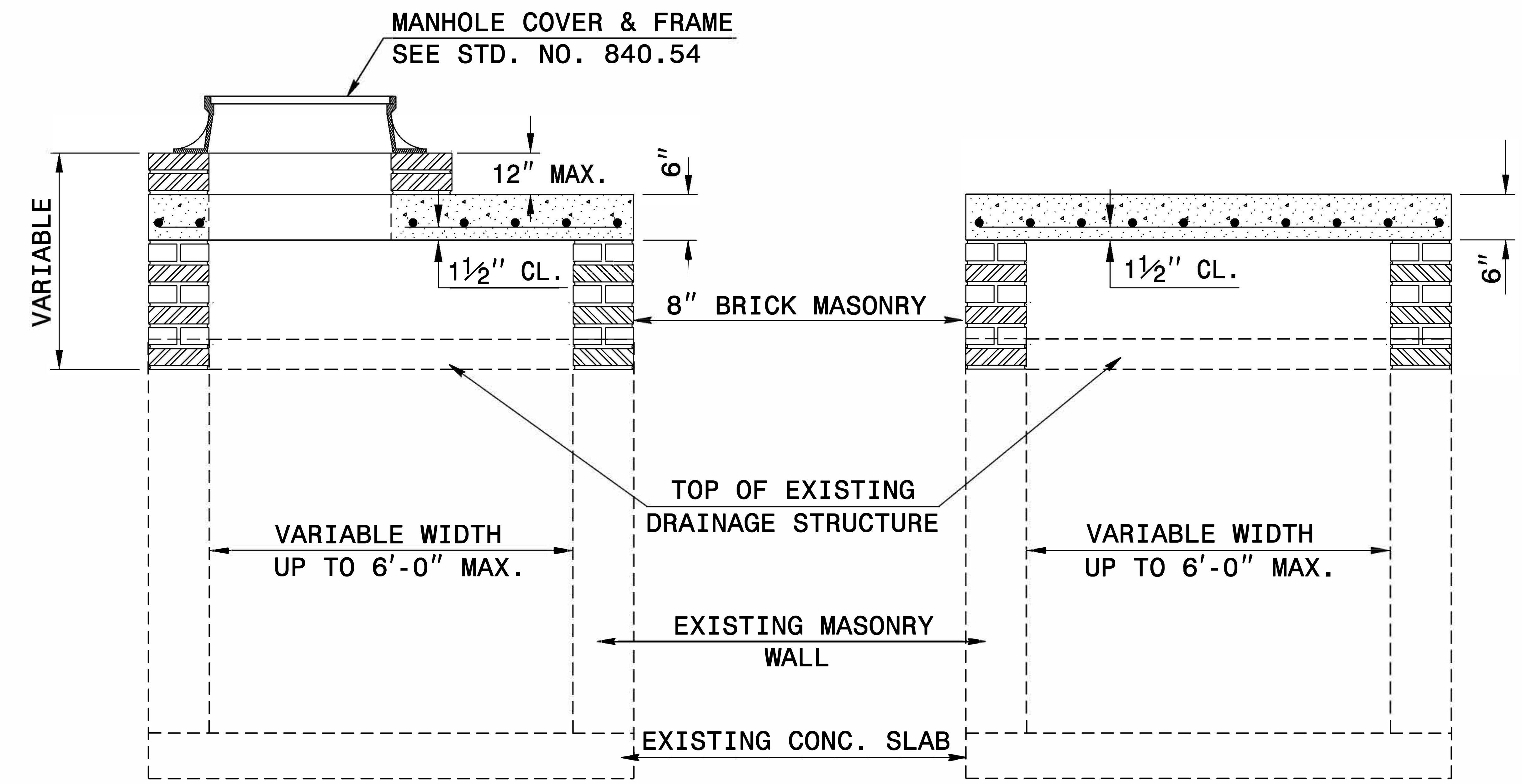
BILL OF MATERIALS

REINFORCING STEEL				
CODE	SIZE	QTY.	LENGTH	REINF. STEEL LBS.
A	#4	20	4'-6"	60.12
B	#4	8	1'-1"	5.79
TOTAL				65.91 *

MASONRY	CU YDS
TOP SLAB CONCRETE CLASS "B"	.4326 *
BRICK MASONRY PER FT HT (MIN)	.4111

* NOTE:
QUANTITIES BASED ON 3'-6" X 3'-6" DRAINAGE STRUCTURE. ADJUST QUANTITIES FOR LARGER STRUCTURES AND MANHOLE CONSTRUCTION.





DETAIL OF HANDLE **SECTION X-X** **SECTION Y-Y**

4/21/2023

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DETAIL TO CONVERT EXISTING DI, CB, OTCB or GI TO JUNCTION BOX (MANHOLE OPTIONAL)

ORIGINAL BY: T.S.S. DATE: NOV.1997
MODIFIED BY: T.S.S. DATE: FEB.2000
CHECKED BY: DATE:
FILE SPEC.: ds174:/usr/details/stand/boxtojbe.dgn

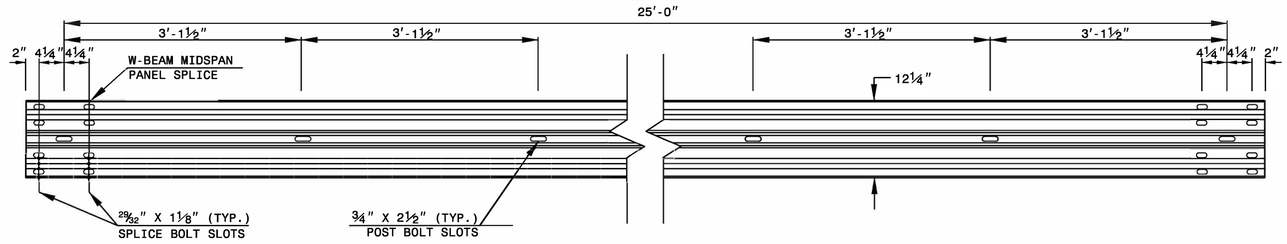
PROJECT REFERENCE NO.	SHEET NO.
R-2707E	2C-4

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

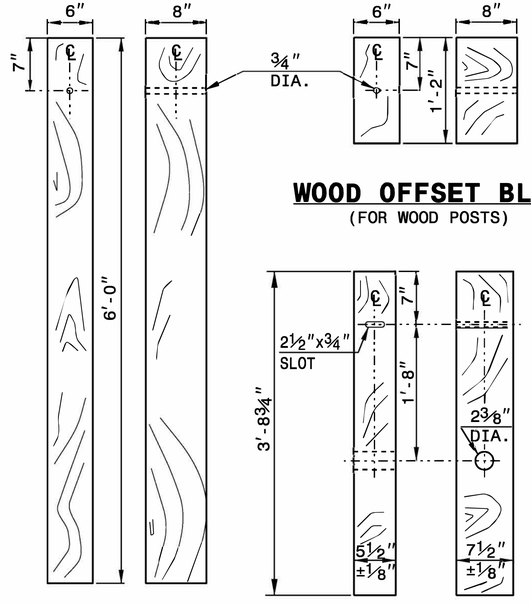
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02



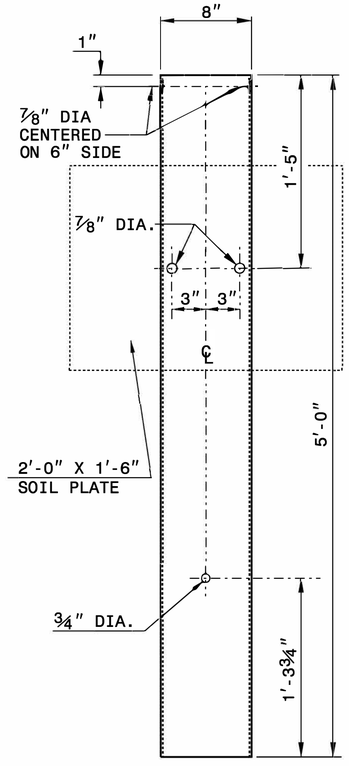
STANDARD W-BEAM GUARDRAIL



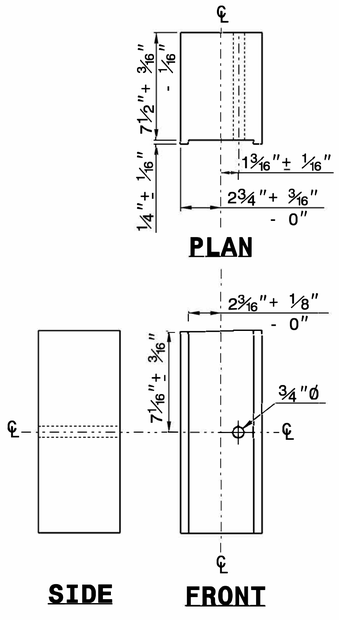
WOOD OFFSET BLOCK
(FOR WOOD POSTS)

STANDARD LINE POST

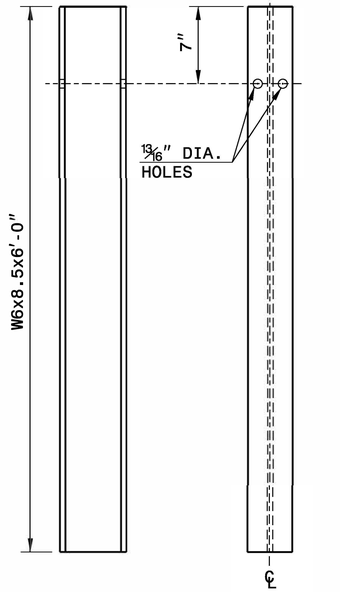
SHORT WOOD BREAKAWAY POST



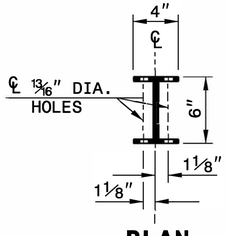
STEEL TUBE
TS 6"x8"x0.1875"



ROUTED OFFSET BLOCK



"W6" STEEL POST



PLAN

SYSTEM PARTS

STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02

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

SEE TITLE BLOCK

ORIGINAL BY: J.HOWERTON DATE: 3-7-2018
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

5/14/99

SUNGATE DESIGN GROUP, P.A.
905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
ENG FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R-2707E	2D-1

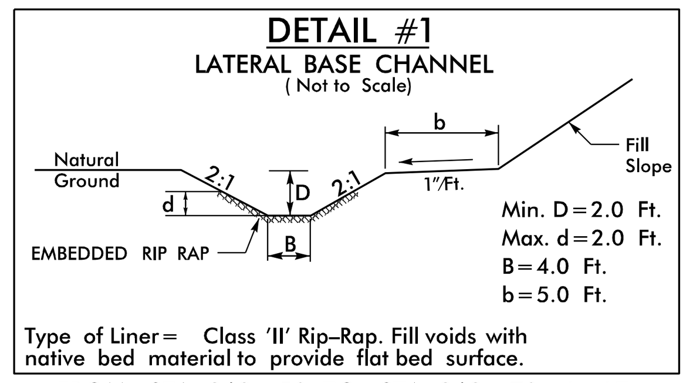
HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 26971 JOSHUA G. DALTON

4/21/2023

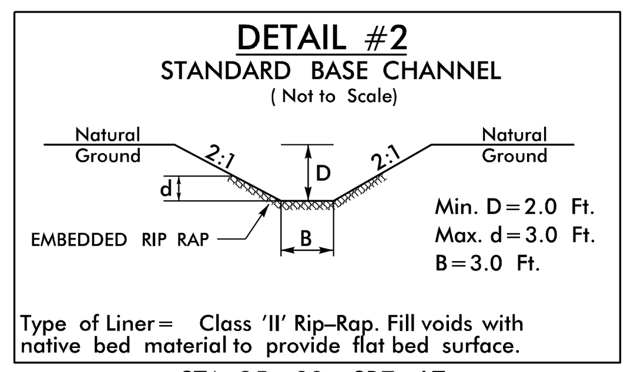
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DETAIL #1
LATERAL BASE CHANNEL
(Not to Scale)



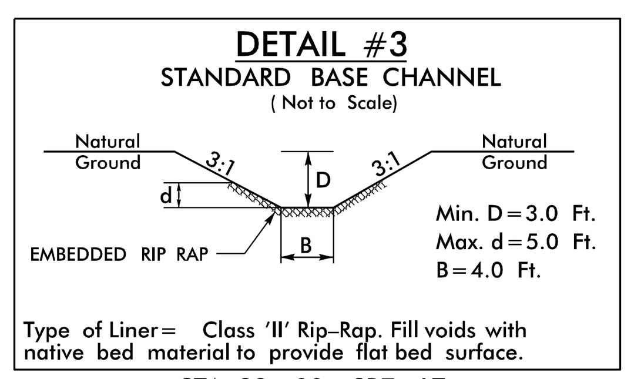
FROM STA. 862+50 TO STA. 863+70 -L- LT
FROM STA. 871+15 TO STA. 874+00 -L- LT

DETAIL #2
STANDARD BASE CHANNEL
(Not to Scale)



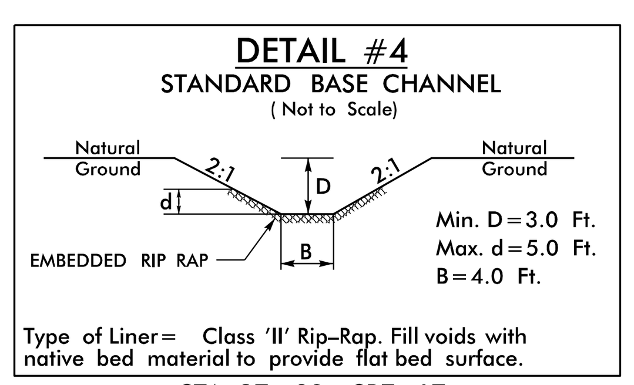
STA. 25+80 -SR7- LT

DETAIL #3
STANDARD BASE CHANNEL
(Not to Scale)



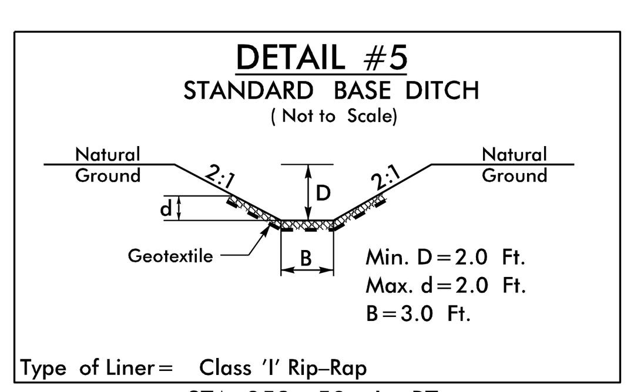
STA. 22+00 -SR7- LT

DETAIL #4
STANDARD BASE CHANNEL
(Not to Scale)



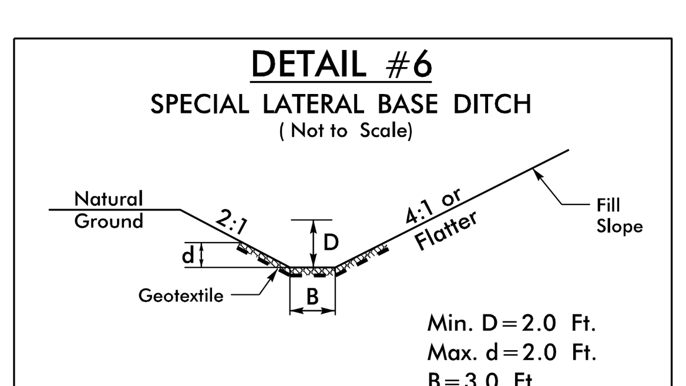
STA. 37+90 -SR7- LT

DETAIL #5
STANDARD BASE DITCH
(Not to Scale)



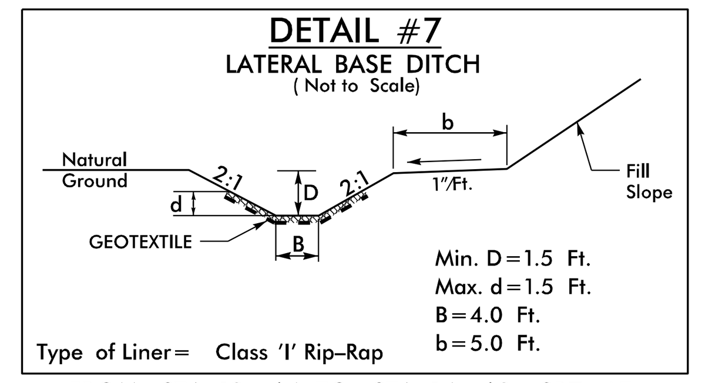
STA. 859+50 -L- RT

DETAIL #6
SPECIAL LATERAL BASE DITCH
(Not to Scale)



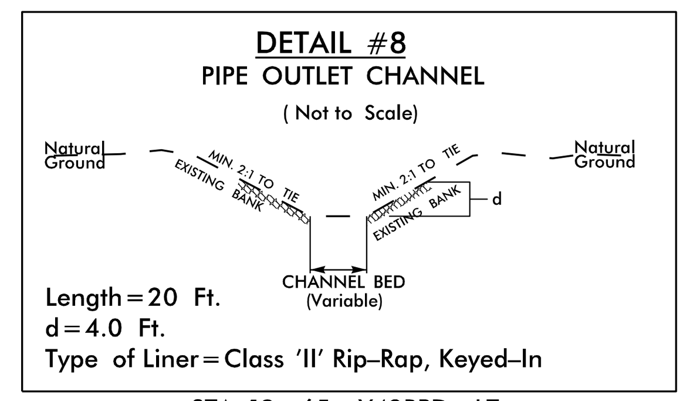
FROM STA. 859+50 TO STA. 868+00 -L- RT
FROM STA. 915+00 TO STA. 917+00 -L- LT
FROM STA. 26+00 TO STA. 31+80 -SR7- RT

DETAIL #7
LATERAL BASE DITCH
(Not to Scale)



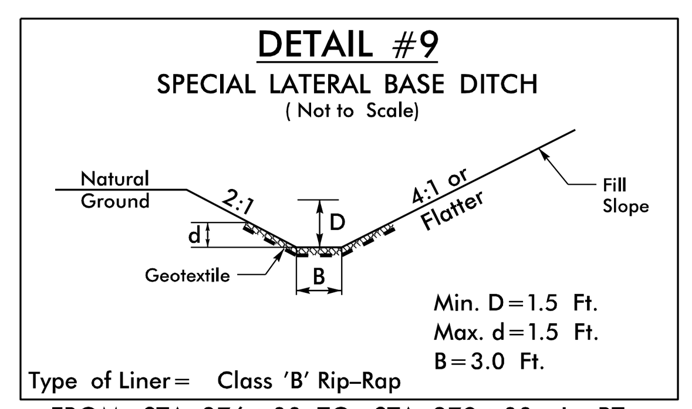
FROM STA. 12+64 TO STA. 14+63 -SR7- LT

DETAIL #8
PIPE OUTLET CHANNEL
(Not to Scale)



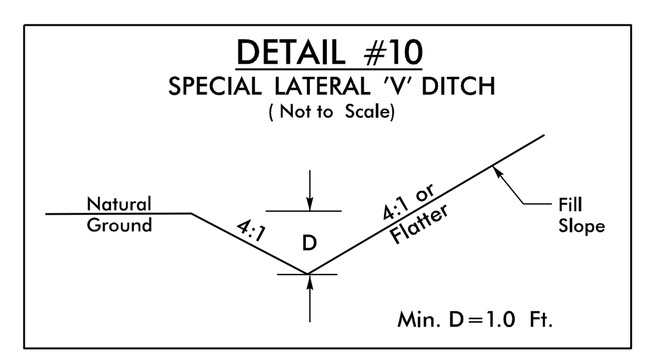
STA. 18+65 -Y42RPD- LT
STA. 921+00 -L- RT

DETAIL #9
SPECIAL LATERAL BASE DITCH
(Not to Scale)



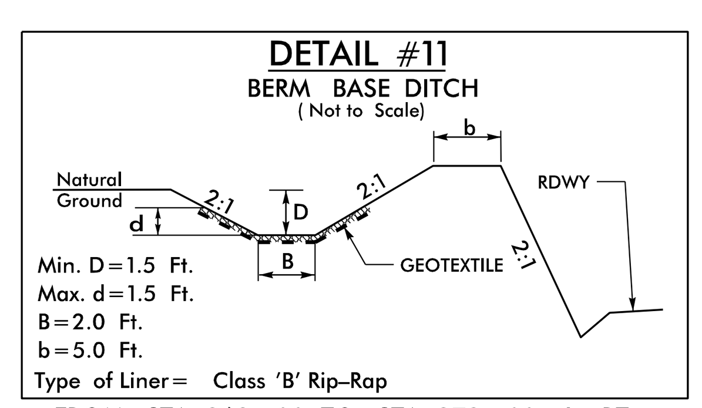
FROM STA. 876+00 TO STA. 879+00 -L- RT

DETAIL #10
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



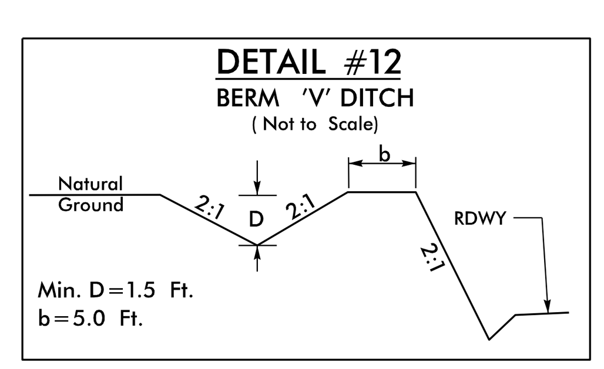
FROM STA. 899+00 TO STA. 901+00 -L- RT
FROM STA. 18+50 TO STA. 23+00 -Y42RPC- LT

DETAIL #11
BERM BASE DITCH
(Not to Scale)



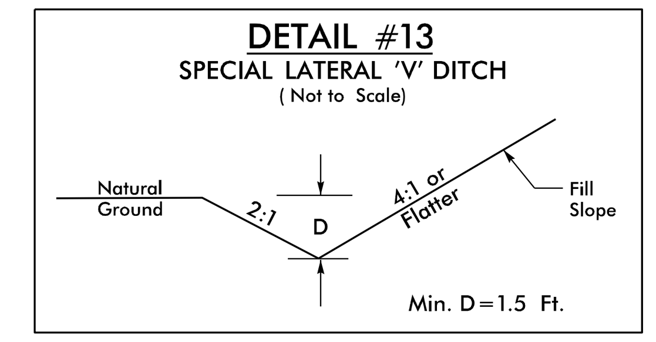
FROM STA. 868+00 TO STA. 873+00 -L- RT

DETAIL #12
BERM 'V' DITCH
(Not to Scale)



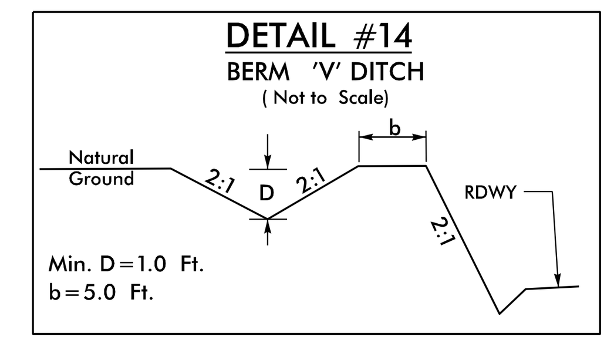
FROM STA. 873+00 TO STA. 876+00 -L- RT

DETAIL #13
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



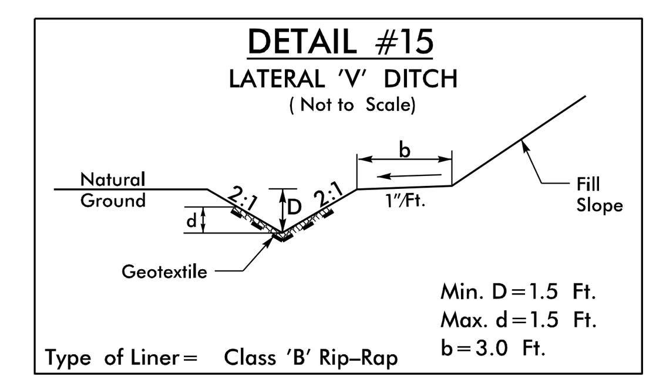
FROM STA. 922+00 TO STA. 924+00 -L- RT
FROM STA. 35+20 TO STA. 36+50 -SR7- LT
FROM STA. 37+00 TO STA. 39+00 -SR7- RT
FROM STA. 41+75 TO STA. 42+90 -SR7- RT
FROM STA. 43+60 TO STA. 44+50 -SR7- RT
FROM STA. 19+50 TO STA. 21+00 -Y42RPD- LT

DETAIL #14
BERM 'V' DITCH
(Not to Scale)



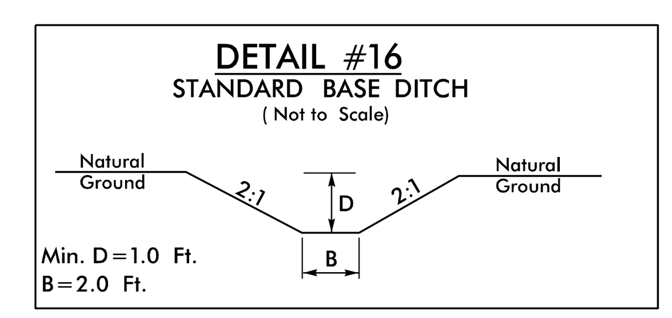
FROM STA. 926+00 TO STA. 929+00 -L- RT

DETAIL #15
LATERAL 'V' DITCH
(Not to Scale)



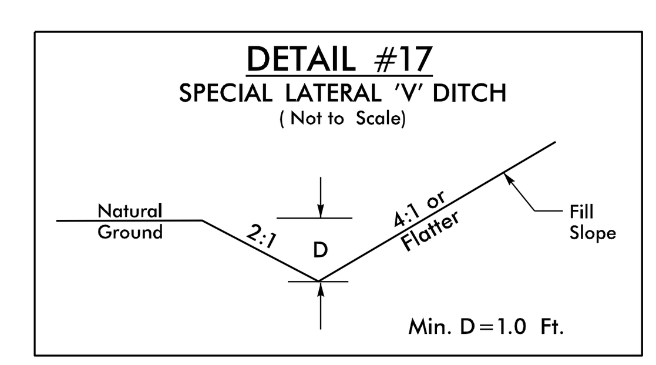
FROM STA. 36+50 TO STA. 37+00 -SR7- LT

DETAIL #16
STANDARD BASE DITCH
(Not to Scale)



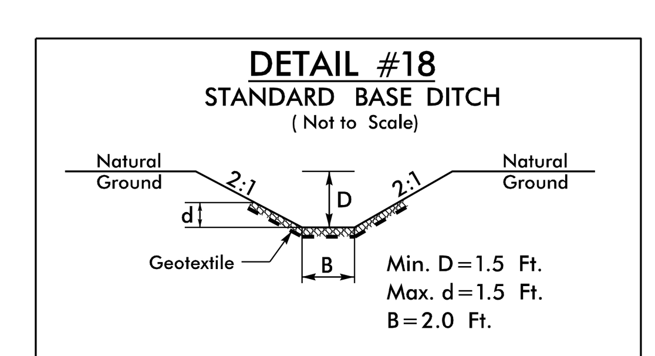
STA. 17+12 -SR8- RT
STA. 22+60 -SR8- RT
STA. 35+75 -SR8- RT

DETAIL #17
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



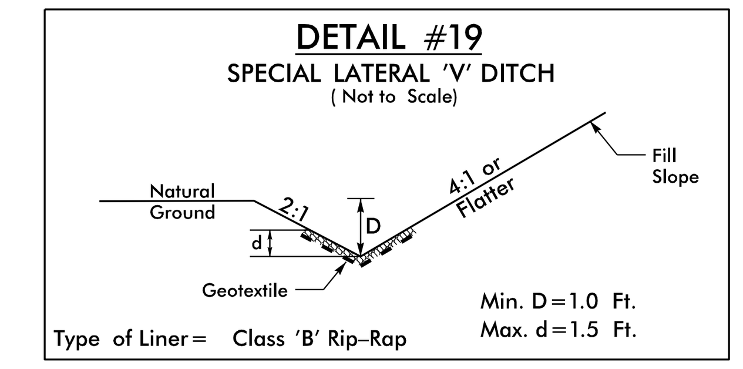
FROM STA. 48+50 TO STA. 51+50 -SR7- LT
FROM STA. 63+50 TO STA. 67+50 -SR7- RT
FROM STA. 75+75 TO STA. 80+00 -SR7- RT
FROM STA. 21+80 TO STA. 22+60 -SR8- LT
FROM STA. 34+00 TO STA. 35+75 -SR8- RT
FROM STA. 10+50 TO STA. 14+00 -SR9- LT
FROM STA. 19+50 TO STA. 22+00 -SR9A- RT
FROM STA. 16+90 TO STA. 19+00 -SR10- LT
FROM STA. 13+13 TO STA. 13+50 -Y46- LT

DETAIL #18
STANDARD BASE DITCH
(Not to Scale)



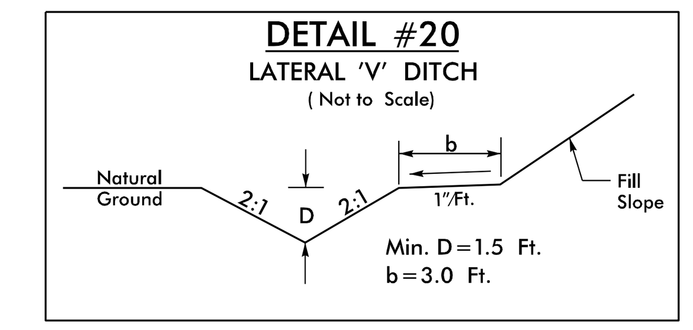
STA. 22+70 -SR10- LT

DETAIL #19
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



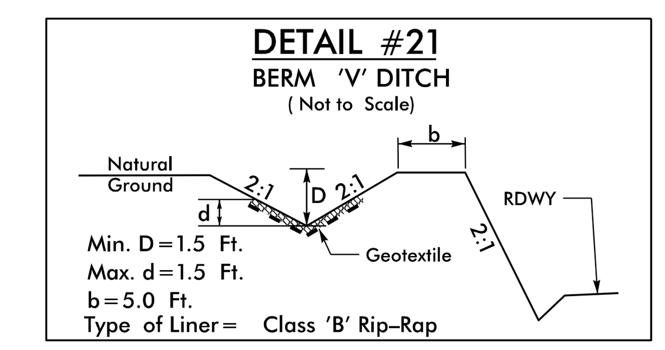
FROM STA. 12+00 TO STA. 17+00 -SR6- LT
FROM STA. 19+50 TO STA. 25+00 -SR7- RT
FROM STA. 43+35 TO STA. 44+25 -SR7- LT
FROM STA. 22+70 TO STA. 24+50 -SR10- LT
FROM STA. 22+80 TO STA. 28+50 -SR10- RT
FROM STA. 14+30 TO STA. 15+90 -Y42RPA- RT
FROM STA. 16+30 TO STA. 18+00 -Y42RPD- LT
FROM STA. 11+50 TO STA. 12+50 -PVTENT_2- RT

DETAIL #20
LATERAL 'V' DITCH
(Not to Scale)



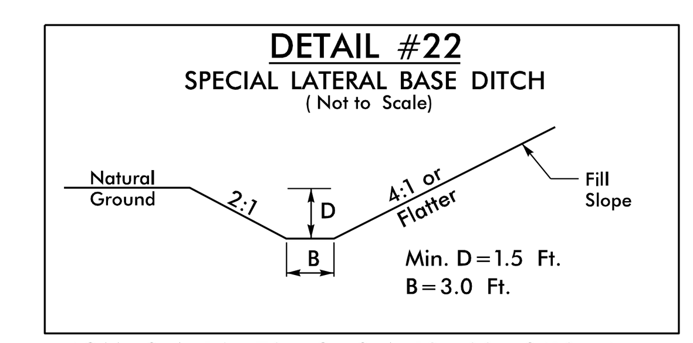
FROM STA. 69+50 TO STA. 72+50 -SR7- RT

DETAIL #21
BERM 'V' DITCH
(Not to Scale)



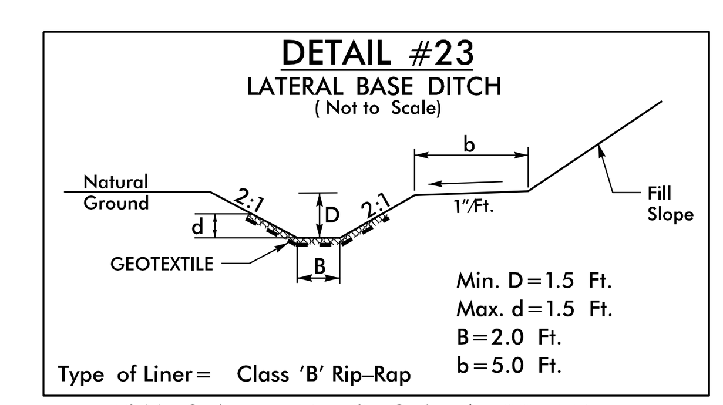
FROM STA. 914+50 TO STA. 917+50 -L- RT
FROM STA. 30+25 TO STA. 33+25 -SR7- LT

DETAIL #22
SPECIAL LATERAL BASE DITCH
(Not to Scale)



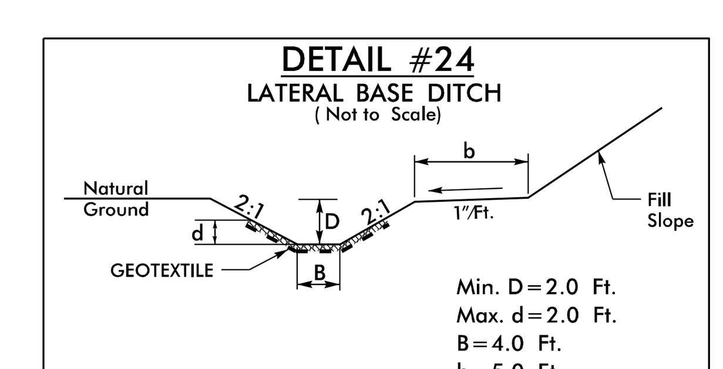
FROM STA. 14+70 TO STA. 18+00 -SR10- RT

DETAIL #23
LATERAL BASE DITCH
(Not to Scale)



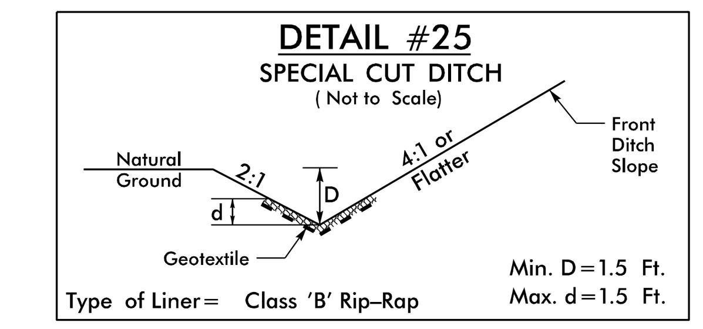
FROM STA. 11+50 TO STA. 16+90 -Y41- LT

DETAIL #24
LATERAL BASE DITCH
(Not to Scale)



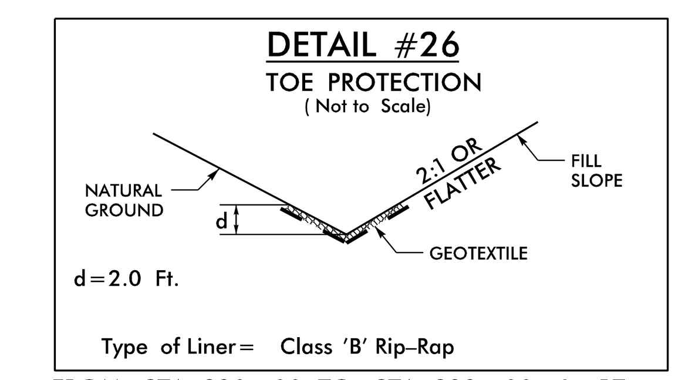
FROM STA. 11+00 TO STA. 14+20 -SR10- RT

DETAIL #25
SPECIAL CUT DITCH
(Not to Scale)



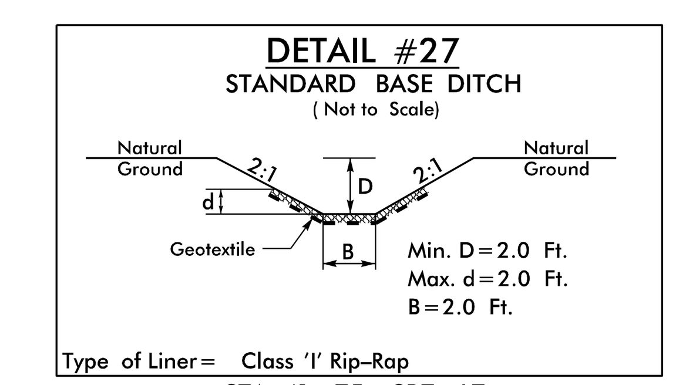
FROM STA. 10+15 TO STA. 14+50 -SR9A- RT
FROM STA. 10+50 TO STA. 14+50 -SR9A- LT

DETAIL #26
TOE PROTECTION
(Not to Scale)



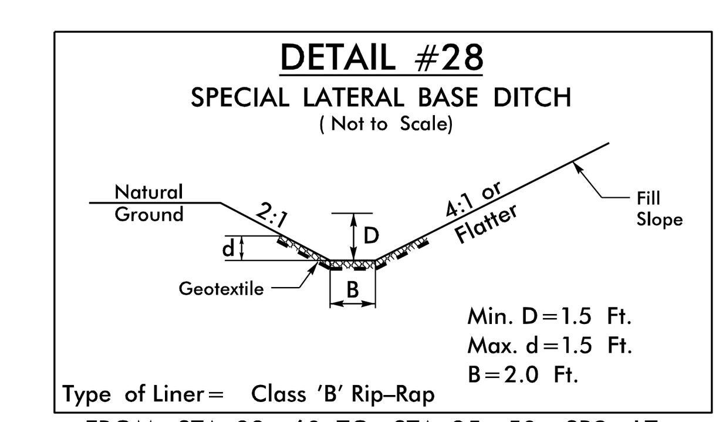
FROM STA. 920+00 TO STA. 922+00 -L- RT
FROM STA. 21+45 TO STA. 21+95 -SR7- LT
FROM STA. 37+00 TO STA. 37+88 -SR7- LT
FROM STA. 18+15 TO STA. 19+25 -Y42RPD- LT

DETAIL #27
STANDARD BASE DITCH
(Not to Scale)



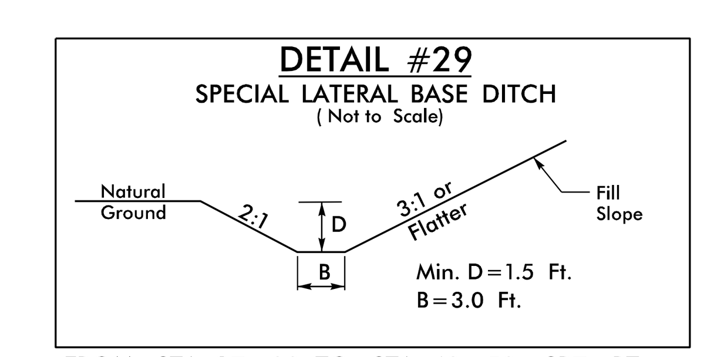
STA. 41+75 -SR7- LT

DETAIL #28
SPECIAL LATERAL BASE DITCH
(Not to Scale)



FROM STA. 22+60 TO STA. 25+50 -SR8- LT
FROM STA. 12+90 TO STA. 14+30 -Y42RPA- RT
FROM STA. 10+00 TO STA. 11+50 -Y41- LT

DETAIL #29
SPECIAL LATERAL BASE DITCH
(Not to Scale)



FROM STA. 37+00 TO STA. 40+50 -SR7- RT

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RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
ENG FIRM LICENSE NO. C-890

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON
4/21/2023

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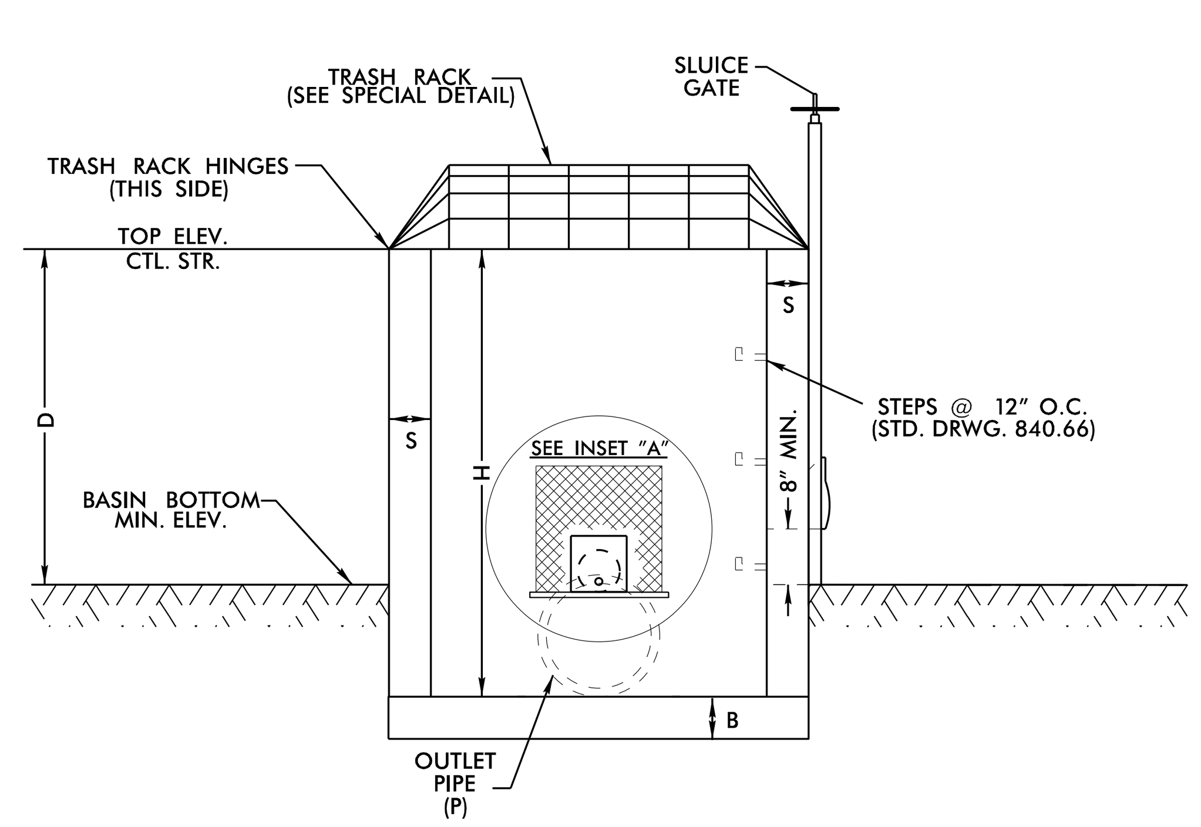
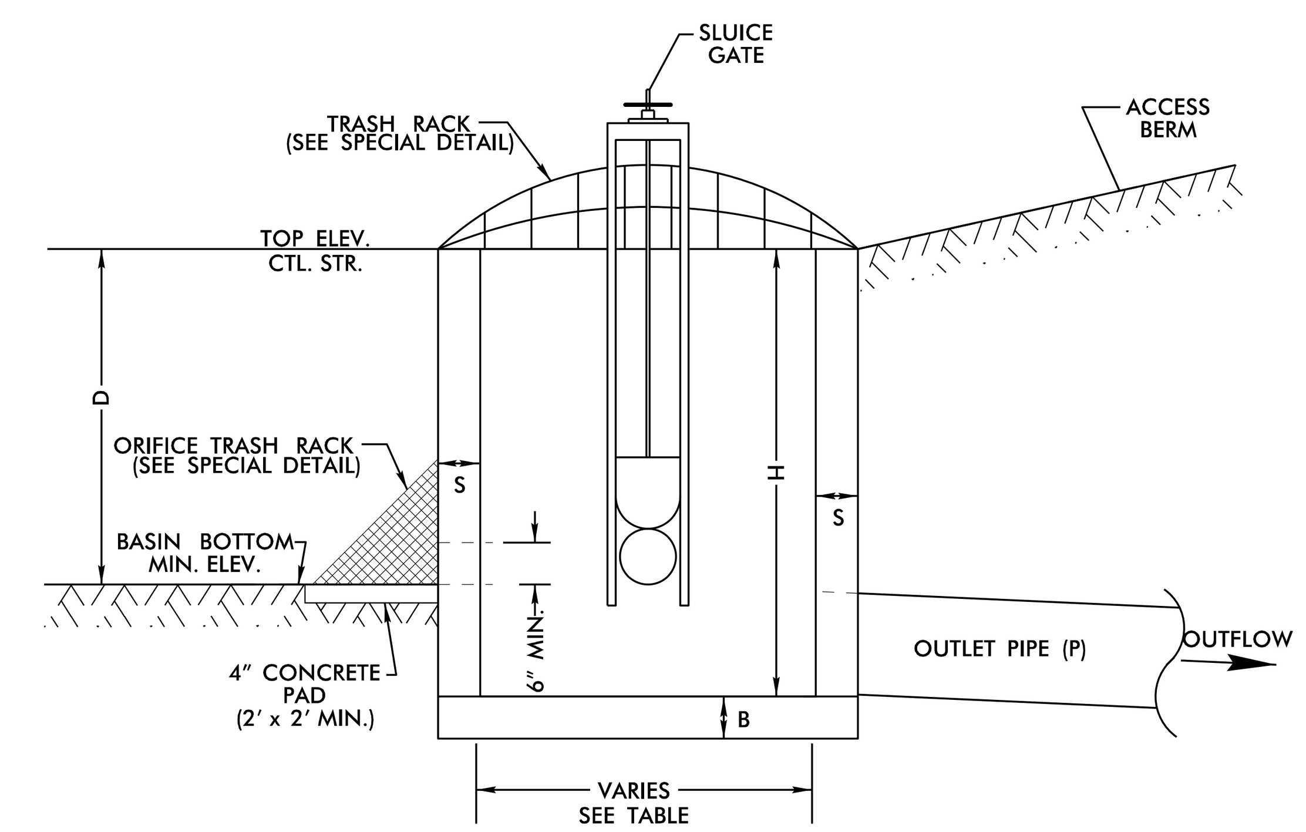
DETAIL #30

DRY DETENTION BASIN DRAWDOWN STRUCTURE

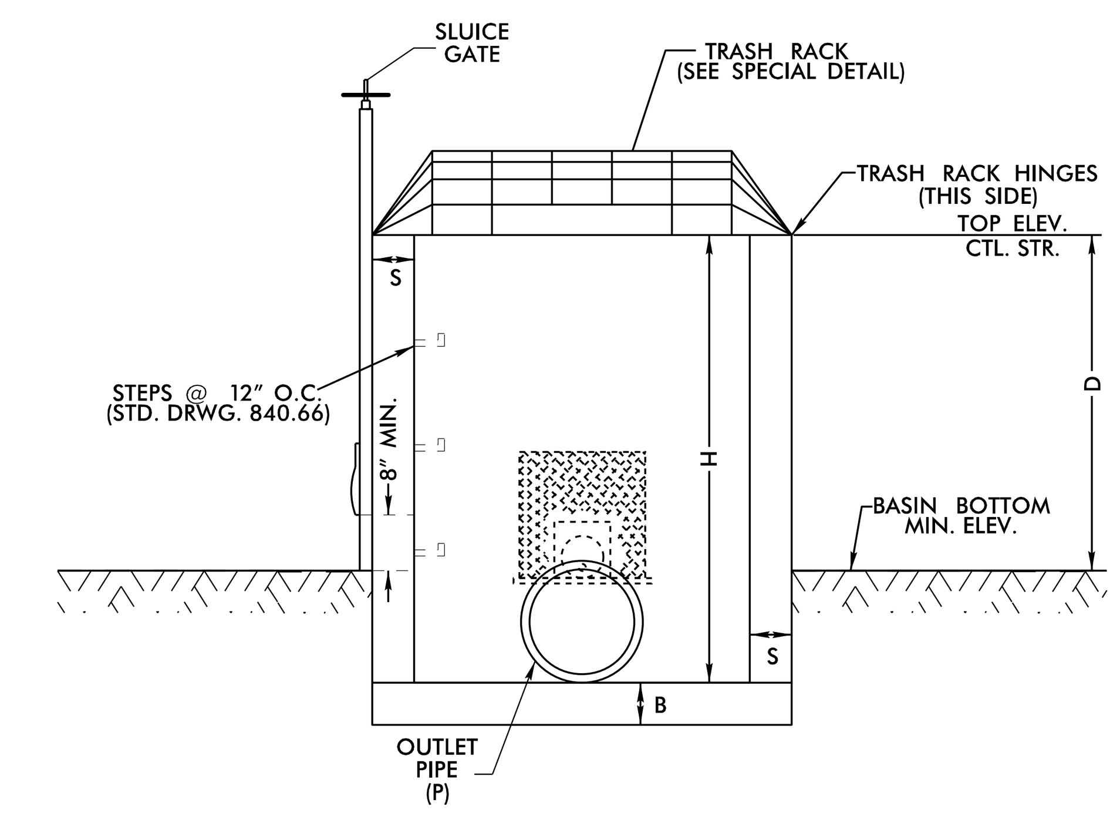
NOT TO SCALE



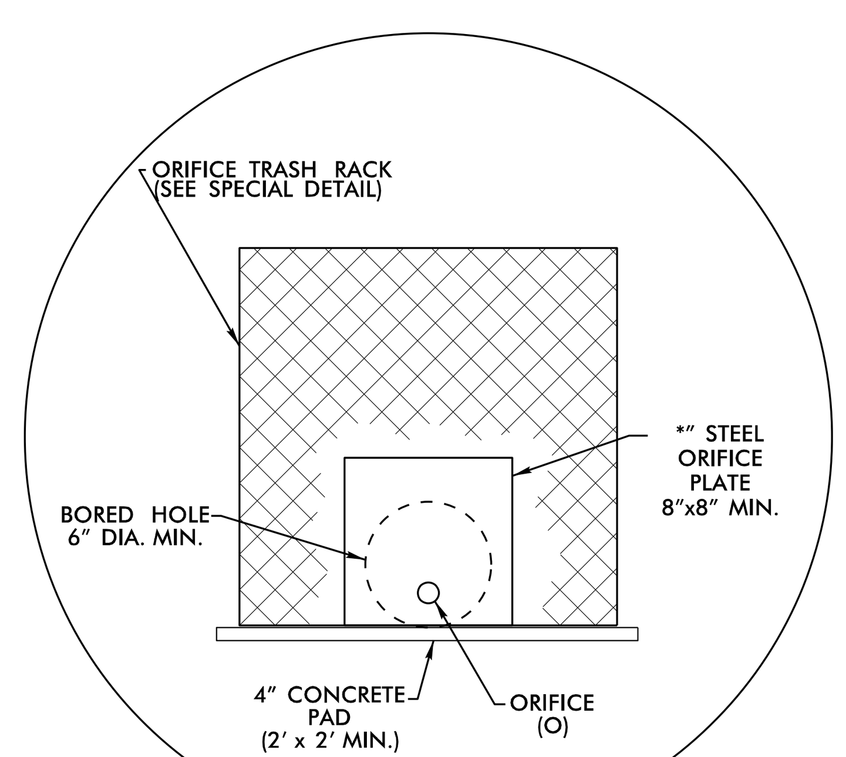
SIDE 1



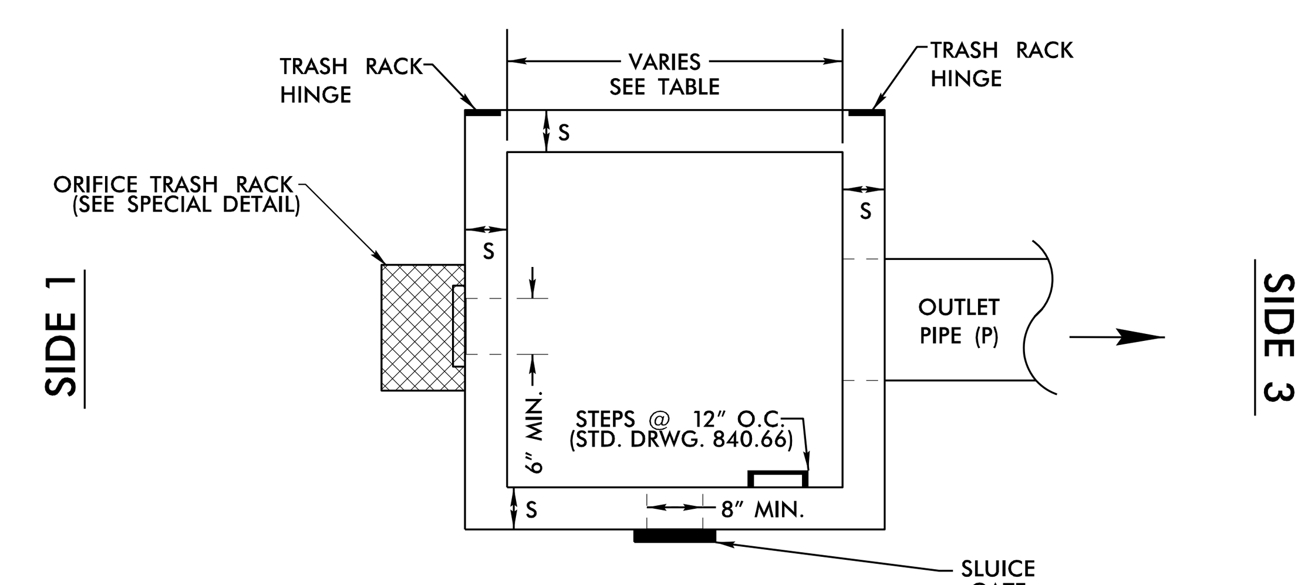
SIDE 2



SIDE 3



INSET "A"



PLAN VIEW

TRASH RACK NOT SHOWN FOR CLARITY

NOTES:

1. TOP ELEVATION OF CONTROL STRUCTURE (WEIR ELEVATION) SHOULD BE SET AT THE WQv ELEVATION.
2. 15" MINIMUM DIAMETER FOR OUTLET PIPE.
3. 2" MINIMUM DIAMETER ORIFICE. IF ORIFICE IS GREATER THAN 6", A STEEL PLATE IS NOT REQUIRED.
4. NO BEDDING MATERIAL TO BE USED. THEREFORE, DO NOT FOLLOW STANDARD DRAWINGS FOR METHOD OF PIPE INSTALLATION FOR OUTLET PIPE THROUGH EMBANKMENT.
5. SLUICE GATE IS FOR MAINTENANCE AND SHOULD REMAIN CLOSED DURING NORMAL OPERATION. A GATE VALVE MAY BE USED IN LIEU OF THE 8" SLUICE GATE.
6. SLUICE GATE SHALL PROVIDE WATERTIGHT SEAL. PROVIDE ADEQUATE CLEARANCE FOR GATE OPERATION AND FOR PROPER SEATING OF GATE OVER PIPE.
7. SELECT BOX STANDARD AS REQUIRED TO ACCOMMODATE SLUICE GATE AND ORIFICE TRASH RACK WIDTH.
8. ENSURE TRASH RACK OPENS FREELY AND WITHOUT INTERFERENCE WITH SLUICE GATE.
9. ADJUST FOOTER DIMENSIONS AS NEEDED FOR ANTI–FLOTATION.
10. PAYMENT OF TRASH RACKS ARE INCIDENTAL TO BASIN DRAWDOWN STRUCTURE.
11. PAYMENT OF 4" CONCRETE ORIFICE TRASH RACK PAD INCIDENTAL TO THE BASIN DRAWDOWN STRUCTURE.

MINIMUM DIMENSIONS FOR DRY DETENTION BASIN DRAWDOWN STRUCTURE

STATION	STRUCTURE NUMBER	S (INCHES) 6" MIN.	B (INCHES) 6" MIN.	BASIN BOTTOM MINIMUM ELEV.	TOP ELEVATION CONTROL STRUCTURE	MAX. STORAGE DEPTH(D) FEET	INV. ELEV. CTL. STR.	CTL. STR. DIMENSIONS (W x L x H)	ORIFICE DIAMETER (O) INCHES	ORIFICE INV. ELEV.	OUTLET PIPE DIAMETER(P) INCHES
896+75 –L– RT	0630	6"	18"	772.0	775.0	3.0'	770.0	5.0' X 5.0' X 5.0'	2.0"	772.0	24"
19+22 –Y42RPB– LT	0619	6"	18"	764.0	768.0	4.0'	762.0	5.0' X 5.0' X 6.0'	2.0"	724.0	24"
20+25 –Y42RPC– RT	0635	6"	18"	773.0	775.0	2.0'	770.0	5.0' X 5.0' X 5.0'	2.0"	773.0	24"

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905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
ENG FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R-2707E	2D-3

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON

4/21/2023

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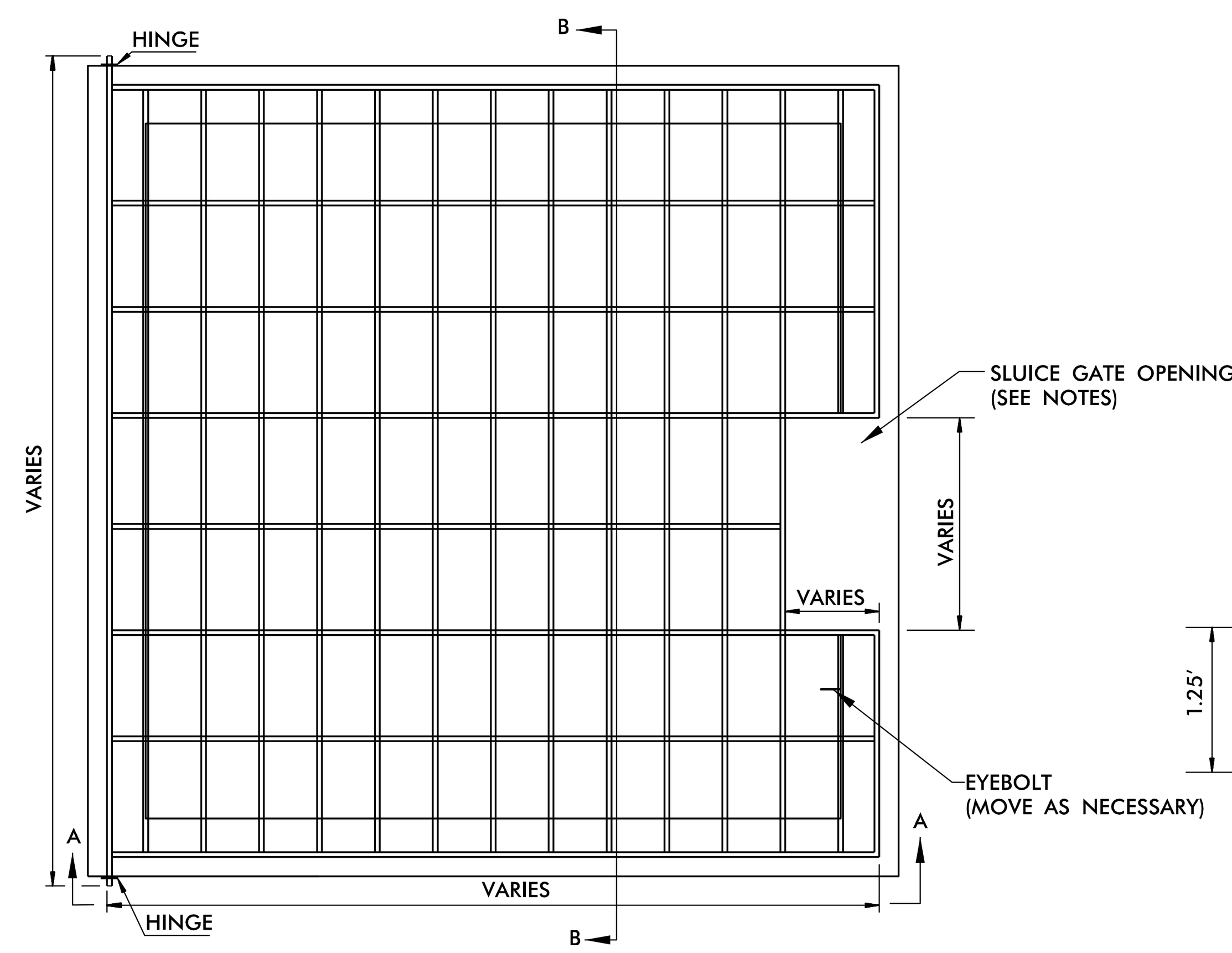
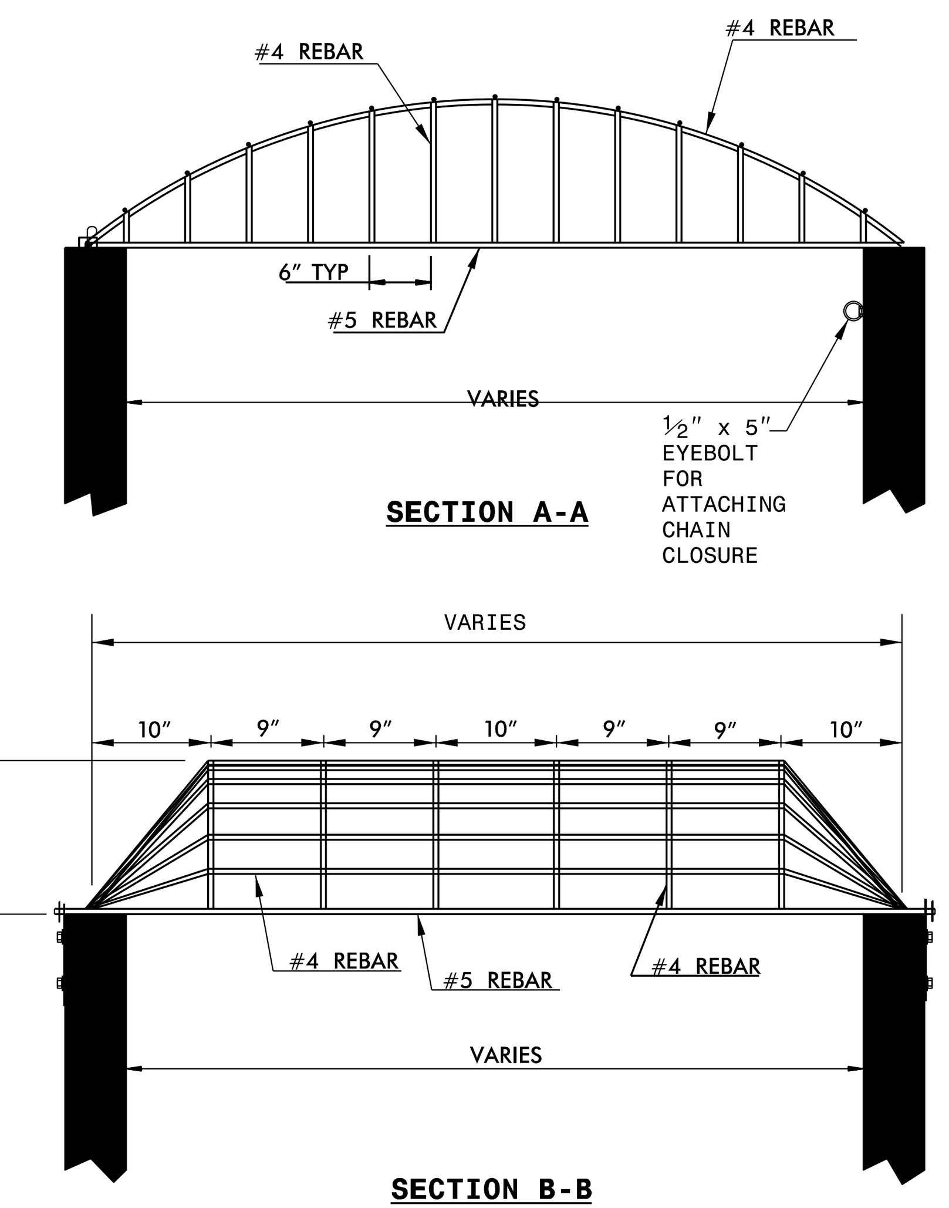
DETAIL #31

REMOVABLE ORIFICE TRASH RACK

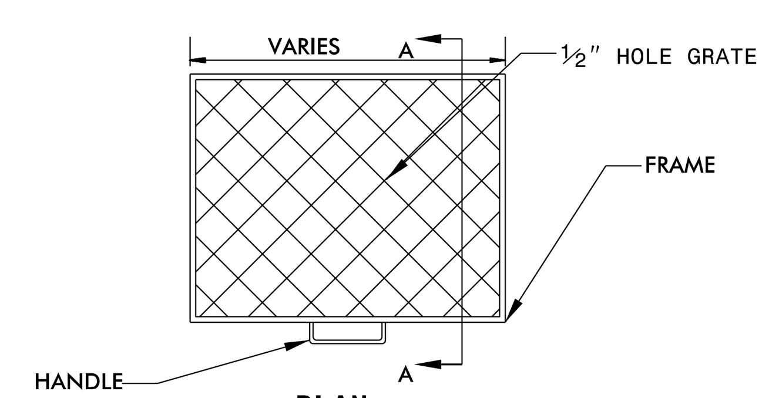
NOT TO SCALE

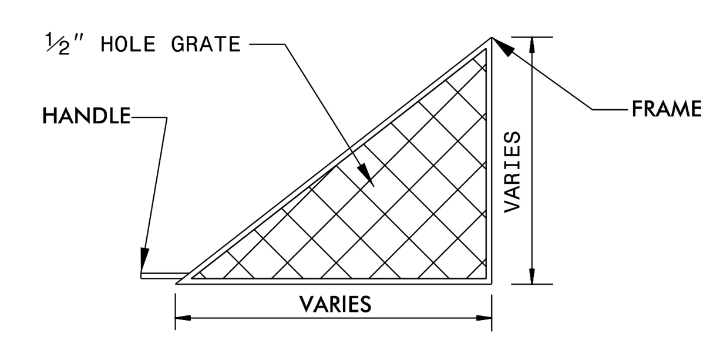




REBAR TRASH RACK
NOT TO SCALE

RISER TRASH RACK NOTES:
1. ALL JOINTS SHALL BE FULLY WELDED AROUND JOINT WITH A MINIMUM OF A 1/4" BEAD.
2. IF BOLTS ARE ANCHORED IN CONCRETE, FOLLOW STD. DWG. 862.03 AND 862.04 FOR ANCHORING PROCEDURE.
3. EYEBOLT FOR CHAIN CLOSURE SHALL BE INSTALLED BY THE SAME METHOD AS THE HINGE PLATE BOLTS.
4. RACK AND HARDWARE SHALL BE ALUMINUM OR REBAR AND GALVANIZED IN ACCORDANCE WITH ASTM A-153.
5. PROVIDE OPENING IN TRASH RACK TO ACCOMODATE SLUICE GATE ON THE OUTLET PIPE. ENSURE TRASH RACK OPENS FREELY AND WITHOUT INTERFERENCE WITH SLUICE GATES.

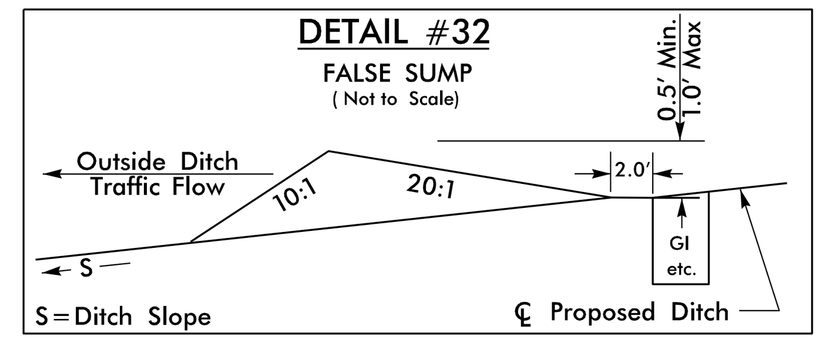




ORIFICE TRASH RACK NOTES:
1. ALL JOINTS SHALL BE FULLY WELDED AROUND JOINT WITH A MINIMUM OF A *" BEAD.
2. IF BOLTS ARE ANCHORED IN CONCRETE, FOLLOW STD. DWG. 862.03 AND 862.04 FOR ANCHORING PROCEDURE.
3. REMOVEABLE ORIFICE TRASH RACK SHALL BE ATTACHED TO CONCRETE BOX BY HINGE OR SLIDE RAIL SYSTEM.
4. RACK AND HARDWARE SHALL BE ALUMINUM OR GALVANIZED IN ACCORDANCE WITH ASTM A-153.

DETAIL #32

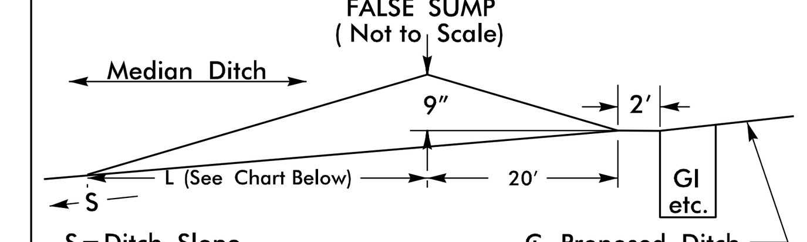
FALSE SUMP
(Not to Scale)



STA. 859+30 –L– RT
STA. 940+88 –L– LT
STA. 968+69 –L– RT
STA. 12+75 –SR7– RT
STA. 875+88 –L– LT
STA. 960+29 –L– RT
STA. 973+25 –L– RT
STA. 26+87 –SR7– LT
STA. 19+37 –Y42RPD– LT
STA. 917+37 –L– LT
STA. 964+24 –L– RT
STA. 983+33 –L– RT
STA. 14+24 –Y46– LT

DETAIL #33

FALSE SUMP
(Not to Scale)

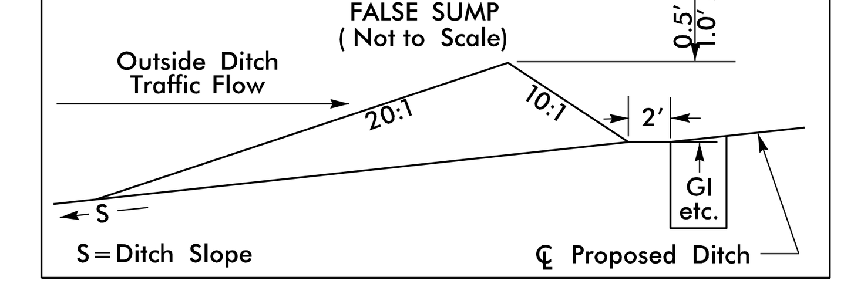


Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

STA. 855+87 –L– MED
STA. 866+06 –L– MED
STA. 881+36 –L– MED
STA. 910+37 –L– MED
STA. 920+22 –L– MED
STA. 929+88 –L– MED
STA. 942+70 –L– MED
STA. 964+53 –L– MED
STA. 978+08 –L– MED
STA. 858+87 –L– MED
STA. 871+26 –L– MED
STA. 901+99 –L– MED
STA. 913+86 –L– MED
STA. 923+44 –L– MED
STA. 934+01 –L– MED
STA. 953+52 –L– MED
STA. 969+07 –L– MED
STA. 983+08 –L– MED
STA. 862+47 –L– MED
STA. 875+88 –L– MED
STA. 905+87 –L– MED
STA. 917+37 –L– MED
STA. 926+46 –L– MED
STA. 938+84 –L– MED
STA. 960+56 –L– MED
STA. 973+06 –L– MED
STA. 985+25 –L– MED

DETAIL #34

FALSE SUMP
(Not to Scale)



STA. 851+88 –L– RT
STA. 885+37 –L– LT
STA. 930+18 –L– RT
STA. 968+92 –L– LT
STA. 871+27 –L– RT
STA. 917+39 –L– RT
STA. 960+20 –L– LT
STA. 972+75 –L– LT
STA. 985+53 –L– LT
STA. 875+79 –L– RT
STA. 926+43 –L– RT
STA. 964+24 –L– LT
STA. 982+75 –L– LT
STA. 27+82 –SR6– RT
STA. 56+50 –SR7– RT
STA. 25+72 –SR7– RT
STA. 79+18 –SR7– RT
STA. 37+13 –SR7– LT
STA. 14+13 –SR10– LT
STA. 13+33 –Y42RPC– RT
STA. 14+77 –Y42RPC– RT
STA. 11+96 –Y42RPD– LT

PROJECT REFERENCE NO.	SHEET NO.
R-2707E	2G-1

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 039779 ENGINEER JEREMY R. HAMM

DocuSigned by: Jeremy Hamm 3/6/2023
462202304BBC46A...
SIGNATURE DATE

ENGINEER

SIGNATURE DATE

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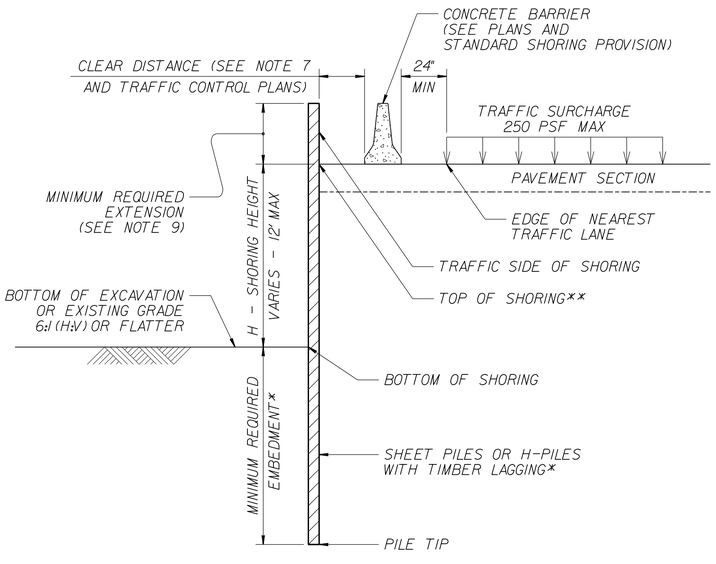
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (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 BETWEEN 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 "--".

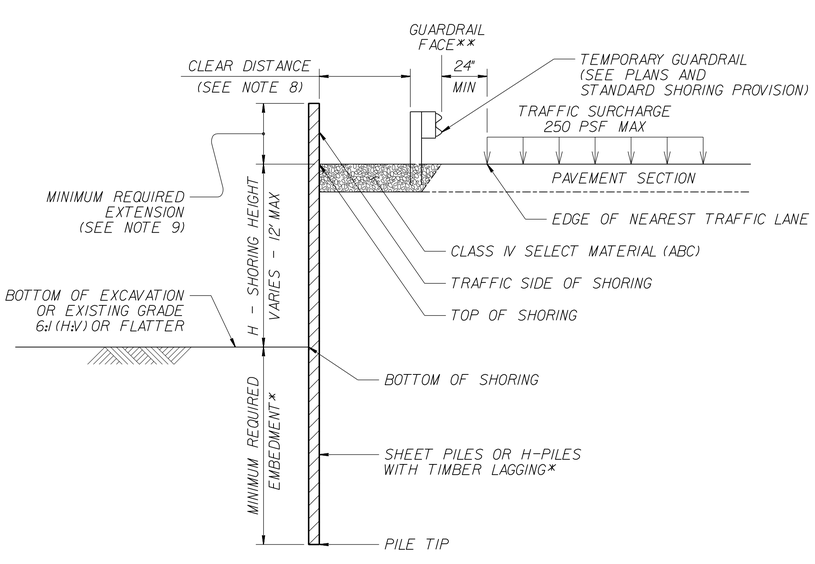
NOTES:

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.



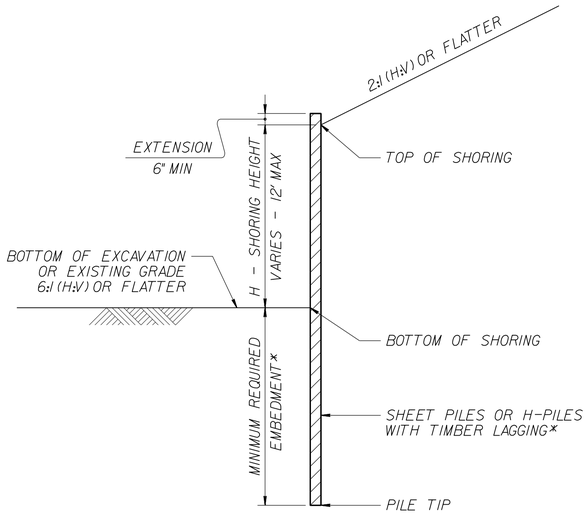
CONCRETE BARRIER

**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.
R-2707E	2G-2

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048207 ENGINEER STEPHEN C. CROCKETT

DocuSigned by: Stephen Crockett 5/2/2023

SIGNATURE DATE

ENGINEER

SIGNATURE DATE

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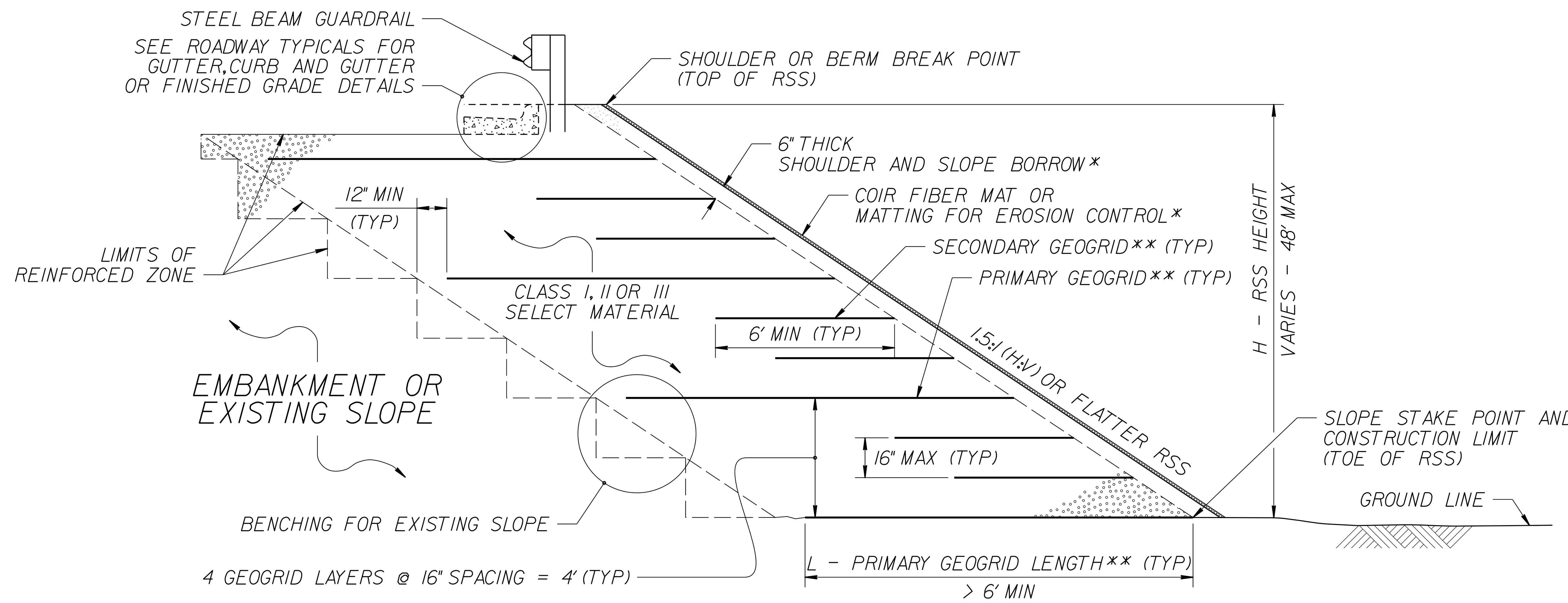
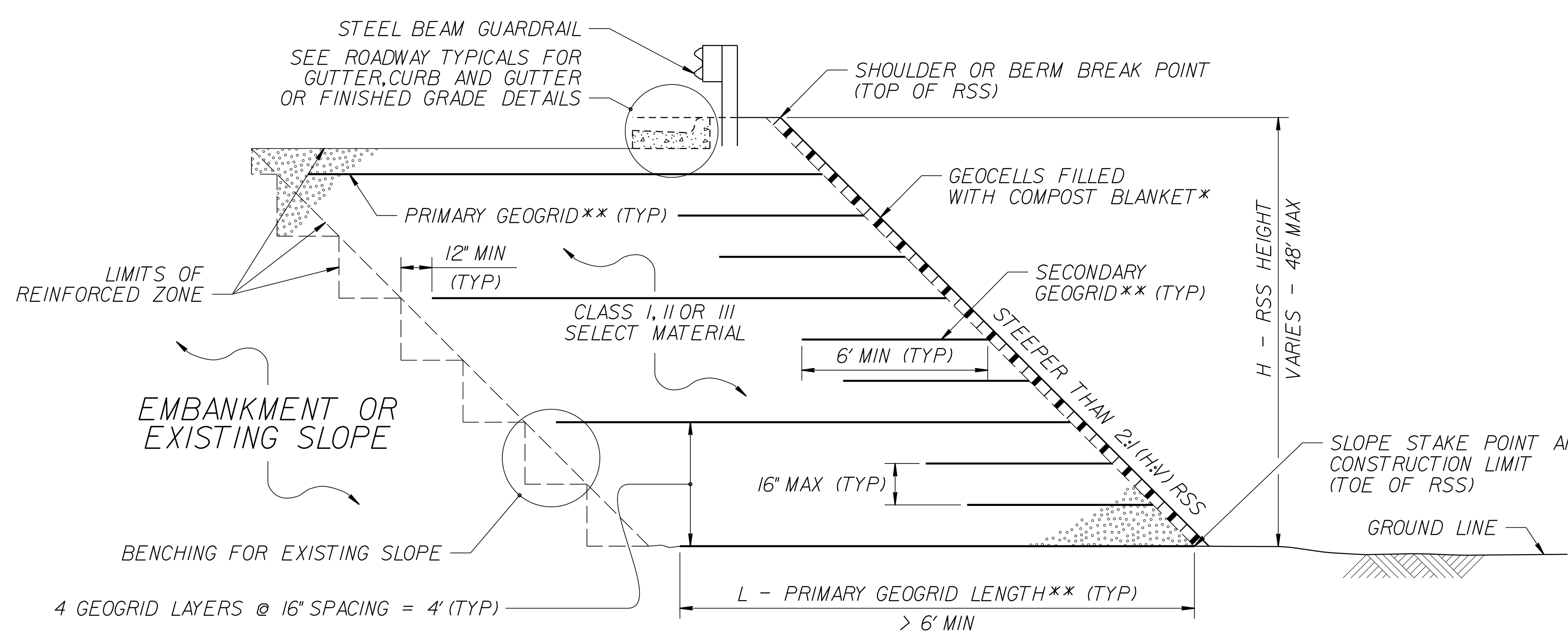


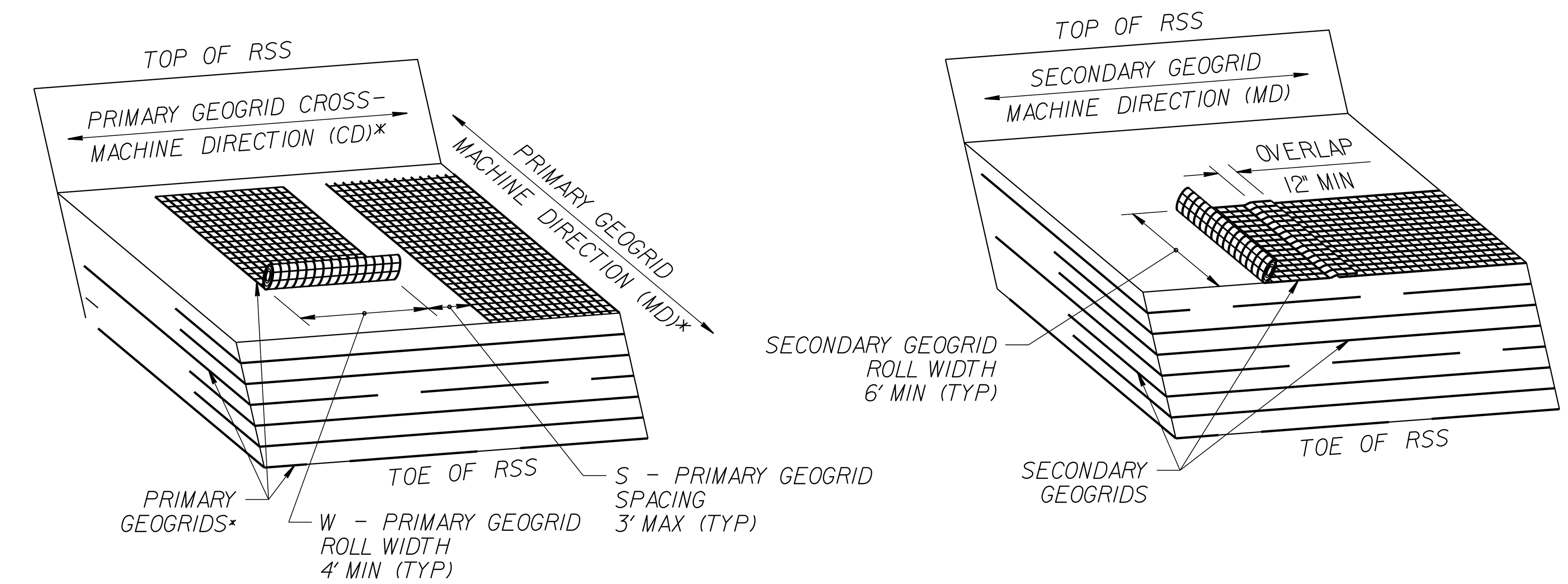
MATTING WITH SHOULDER AND SLOPE BORROW

*SEE NOTES 3 AND 9 ON SHEET 2.



GEOCELLS WITH COMPOST BLANKET

*SEE NOTES 3 AND 9 ON SHEET 2.



GEOGRID PLACEMENT DETAILS

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

*SEE NOTE 7 ON SHEET 2. DO NOT OVERLAP PRIMARY GEOGRIDS IN ANY DIRECTION.

REINFORCED SOIL SLOPE (RSS)

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

FALCON ENGINEERING
FALCON ENGINEERING, INC.
1210 TRINITY ROAD, SUITE 110
CARY, NC 27513
PHONE: 919.871.0800
www.falconengineers.com

REINFORCED SOIL SLOPE (RSS)
SHEET 1 OF 2

DATE: 5-2-23

PROJECT REFERENCE NO.	SHEET NO.
R-2707E	2G-3

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048207 ENGINEER STEPHEN C. CROCKETT

DocuSigned by: Stephen Crockett 5/2/2023
C5CA5FED4BE0435...
SIGNATURE DATE

ENGINEER

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

H (FT)	0 - < 12		12 - 24		> 24 - 36		> 36 - 48	
SELECT MATERIAL CLASS	I	II OR III	I	II OR III	I	II OR III	I	II OR III
1:1 TO < 1.5:1 (H:V) RSS	900	500	1200	900	1800	1200	2400	1700
1.5:1 TO 1.75:1 (H:V) RSS	500	500	900	500	1400	1000	1900	1500
> 1.75:1 TO < 2:1 (H:V) RSS	500	500	600	500	1000	800	1500	1000

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

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

NOTES:

1. SEE EROSION CONTROL AND ROADWAY PLANS AND SUMMARY SHEETS FOR REINFORCED SOIL SLOPE (RSS) AND SLOPE EROSION CONTROL LOCATIONS.
2. FOR REINFORCED SOIL SLOPES, SEE REINFORCED SOIL SLOPES PROVISION. FOR STEEL BEAM GUARDRAIL, SEE SECTION 862 OF THE STANDARD SPECIFICATIONS.
3. FOR SHOULDER AND SLOPE BORROW, SEE ARTICLE 1019-2 OF THE STANDARD SPECIFICATIONS. FOR GEOCELLS, SEE CELLULAR CONFINEMENT SYSTEMS PROVISION. FOR COIR FIBER MAT, MATTING FOR EROSION CONTROL AND COMPOST BLANKET, SEE EROSION CONTROL PROVISIONS, SECTION 1631 OF THE STANDARD SPECIFICATIONS AND ROADWAY STANDARD DRAWING NO. 1631.01.
4. RSS ARE BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
   UNIT WEIGHT, γ = 120 PCF
   FRICTION ANGLE, ϕ = 30 DEGREES
   COHESION, c = 0 PSF
5. IF IN-SITU MATERIALS DO NOT MEET OR EXCEED THE PARAMETERS IN NOTE 4, EXCAVATE AND REPLACE WITH CLASS I SELECT MATERIAL.
6. PRIMARY GEOGRIDS ARE APPROVED FOR LTDS FOR A 75-YEAR DESIGN LIFE IN THE MD BASED ON MATERIAL TYPE. THE LIST OF APPROVED GEOGRIDS WITH DESIGN STRENGTHS IS AVAILABLE FROM: connect.ncdot.gov/resources/Geological/Pages/Products.aspx
   DEFINE MATERIAL TYPE FROM THE WEBSITE ABOVE FOR SELECT MATERIAL AS FOLLOWS:

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

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

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

   SEE TABLE FOR LTDS BASED ON 100% COVERAGE AND GEOGRID PLACEMENT DETAILS FOR PRIMARY GEOGRID ROLL WIDTH (W) AND SPACING (S). FOR PRIMARY GEOGRIDS WITH LESS THAN 100% COVERAGE, STAGGER PRIMARY GEOGRIDS SO GEOGRIDS ARE CENTERED OVER GAPS IN THE PRIMARY GEOGRID LAYER BELOW. DO NOT USE LESS THAN 75% COVERAGE FOR PRIMARY GEOGRIDS.
8. DO NOT PLACE ANY GEOGRIDS UNTIL EXCAVATION DIMENSIONS AND IN-SITU MATERIAL ARE APPROVED.
9. FOR SLOPE EROSION CONTROL, USE GEOCELLS OR MATTING ON SLOPE FACES OF RSS AS FOLLOWS:

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

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

H (FT)	0 - < 12		12 - 24		> 24 - 36		> 36 - 48	
SELECT MATERIAL CLASS	I	II OR III	I	II OR III	I	II OR III	I	II OR III
1:1 TO < 1.5:1 (H:V) RSS	1.10	1.00	0.90	0.85	0.85	0.80	0.80	0.75
1.5:1 TO 1.75:1 (H:V) RSS	0.90	0.80	0.75	0.70	0.75	0.70	0.75	0.70
> 1.75:1 TO < 2:1 (H:V) RSS	0.75	0.70	0.65	0.60	0.65	0.60	0.65	0.60

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

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

FALCON ENGINEERING

FALCON ENGINEERING, INC.
1210 TRINITY ROAD, SUITE 110
CARY, NC 27513

PHONE: 919.871.0800
www.falconengineers.com

REINFORCED SOIL SLOPE (RSS)
SHEET 2 OF 2

DATE: 5-2-23

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2707E	2N-1
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

PLAN AND PROFILE OF NOISE WALL 10a

NAD 83/95

BEGIN NOISE WALL 10a
NW10a Sta. 10+00.00 =
-L- Sta. 935+69.92
61.76' LT

END NOISE WALL 10a
NW10a Sta. 23+95.00 =
-L- Sta. 949+50.07
72.5' LT

SR 2319 SERVICE ROAD

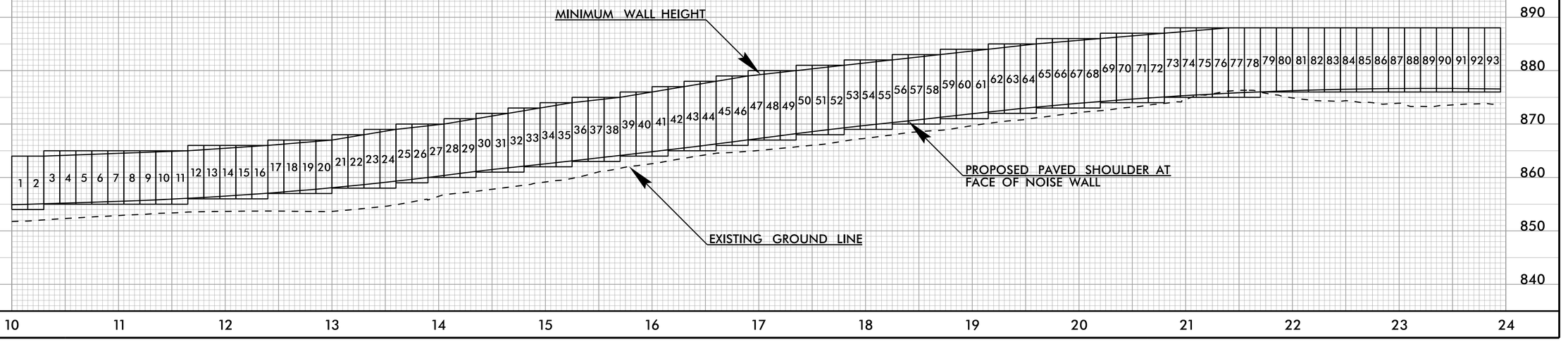
SR 2241 WILLIAMS RD

US 74 EAST DIXON BLVD WBL

US 74 EAST DIXON BLVD EBL

13.5'

PANEL NUMBER	1-2	3-11	12-16	17-20	21-22	23-24	25-26	27	28-29	30-31	32	33	34-35	36-38	39-40	41	42	43-44	45-46	47-49	50-52	53-55	56-58	59-61	62-64	65-68	69-72	73-78	79-93
TOP ELEVATION	864'	865'	866'	867'	868'	869'	870'	870'	871'	872'	873'	873'	874'	875'	876'	877'	877'	878'	879'	880'	881'	882'	883'	884'	885'	886'	887'	888'	888'
PANEL LENGTH	30'	135'	75'	60'	30'	30'	30'	15'	30'	30'	15'	15'	30'	45'	30'	15'	15'	30'	30'	45'	45'	45'	45'	45'	45'	60'	60'	90'	225'
PANEL HEIGHT	10'	10'	10	10'	10'	11'	11'	10'	11'	11'	12'	11'	12'	12'	12'	13'	12'	13'	13'	13'	13'	13'	13'	13'	13'	13'	13'	13'	12'



3/30/2023
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mferguson

COMPUTED BY: MBF DATE: 04/05/2023
CHECKED BY: TSJ DATE: 04/06/2023

PROJECT REFERENCE NO.	SHEET NO.
R-2707E	3B-1

SUMMARY OF EARTHWORK IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
-L- LT 851+00.00 TO 875+00.00	1,177		21,177	20,000	
-PVTENT2- 10+75.00 TO 12+75.00	111		138	27	
SUBTOTAL	1,288		21,315	20,027	
-L- MED 851+00.00 TO 875+00.00	1,286		1,535	249	
SUBTOTAL	1,286		1,535	249	
-L- RT 851+00.00 TO 875+00.00	29,141		6,905		22,236
SUBTOTAL	29,141		6,905		22,236
-L- LT 875+00.00 TO 913+00.00	19,551		15,134		4,417
-SR6- 12+00.00 TO 31+03.30	11,354		70,672	59,318	
-Y42RPB- 10+00.00 TO 25+75.11	4,557		80,267	75,710	
-Y41- 10+00.00 TO 17+37.51	187		39,034	38,847	
-RABT2- 10+00.00 TO 12+89.02			21,589	21,589	
-Y42- 14+01.49 TO 15+34.00			24,700	24,700	
-Y42RPA- 10+00.00 TO 23+66.43	2,355		95,504	93,149	
-SR7- 10+42.56 TO 30+00.00	27,265		78,459	51,194	
-PVTENT3- 10+12.00 TO 11+80.00	38		1,864	1,826	
-PVTENT4- 10+12.00 TO 11+20.00	30		132	102	
SUBTOTAL	65,337		427,355	366,435	4,417
-L- MED 875+00.00 TO 913+00.00	6,740		4,110		2,630
SUBTOTAL	6,740		4,110		2,630
-L- RT 875+00.00 TO 913+00.00	4,315		3,988		327
-Y42RPC- 10+00.00 TO 25+00.00	11,844		57,042	45,198	
-SR9- 10+00.00 TO 20+86.43	125		71,729	71,604	
-Y43- 10+50.00 TO 14+50.00	51		6,245	6,194	
-PVTENT1- 10+12.00 TO 11+48.83	25		3,508	3,483	
-RABT1- 10+00.00 TO 12+89.02			35,892	35,892	
-Y42- 10+66.00 TO 12+20.82			38,101	38,101	
-Y42RPD- 10+17.06 TO 30+00.00	11,714		130,277	118,563	
-SR10- 10+31.34 TO 28+50.00	16,361		60,443	44,082	
-SR9A- 10+50.00 TO 29+00.00	15,575		948		14,627
SUBTOTAL	60,010		408,171	363.115	14,954
-L- LT 913+00.00 TO 943+00.00	16,738		5,530		11,208
-SR7- 30+00.00 TO 60+00.00	33,476		39,931	6,455	
-Y46- 10+75.00 TO 14+79.57	359		141		218
-PVTENT5- 10+12.00 TO 10+90.00	9		316	307	
SUBTOTAL	50,582		45,919	6,762	11,425
-L- MED 913+00.00 TO 943+00.00	3,635		284		3,351
SUBTOTAL	3,635		284		3,351
-L- RT 913+00.00 TO 943+00.00	16,257		4,211		12,046
-SR8- 10+75.00 TO 25+00.00	5,039		1,662		3,377
-PVTENT6- 10+12.00 TO 11+31.02	75		121	46	
-PVTENT7- 10+12.07 TO 10+45.73	11		21	10	
SUBTOTAL	21,382		6,015	56	

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
-L- LT 943+00.00 TO 957+00.00	501		1,359	858	
-SR7- 60+00.00 TO 79+52.00	5,266		20,732	15,466	
SUBTOTAL	5,767		22,092	16,324	
-L- MED 943+00.00 TO 957+00.00	1,050		1,465	415	
SUBTOTAL	1,050		1,465	415	
-L- RT 943+00.00 TO 957+00.00	1,372		197		1,175
-SR7- 60+00.00 TO 79+52.00	12,681		99		12,582
SUBTOTAL	14,053		296		13,757
PROJECT SUBTOTAL	260,271		945,461	773,384	88,194
MATERIAL FOR SHOULDER CONSTRUCTION			17,768	17,768	
FILL IN EXISTING CHANNEL			230	230	
LOSS DUE TO CLEARING AND GRUBBING	-15,000			15,000	
WASTE IN LIEU OF BORROW				-88,194	-88,194
PROJECT TOTALS	245,271		963,459	718,188	
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT				35,909	
GRAND TOTAL	245,271		963,459	754,097	
R-2707E SAY	246,000			755,000	

EST. DDE = 8,600 CY
EST. SHALLOW UNDERCUT = 1,000 CY (CONTINGENCY)
EST. SHALLOW UNDERCUT = 1,600 CY (BY STATION)
EST. CLASS IV SUBGRADE STABILIZATION = 5,200 TONS
PAVEMENT STRUCTURE VOLUME = 28,900 CY

Earthwork quantities are calculated by Stantec.
These earthwork quantities are based in part on subsurface data provided by Flacon Engineering.

COMPUTED BY: GMM DATE: 11/11/2022
CHECKED BY: STS DATE: 11/14/2022

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
R-2707E	3B-2

SUMMARY OF SHOULDER BERM GUTTER

IN LINEAR FEET

LOCATION	SIDE	BEG STATION	END STATION	LENGTH
–L–	LT	851+00.00	875+50.00	2400.0
–L–	MED/LT	851+00.00	851+71.00	71.0
–L–	MED/RT	851+00.00	851+15.00	15.0
–L–	RT	851+00.00	851+30.00	30.0
–L–	LT	920+55.00	927+00.00	638.0
–Y42–	LT	11+83.17	11+96.65	13.0
–Y42–	RT	11+84.40	11+96.65	13.0
–Y42–	LT	14+25.66	14+42.00	16.0
–Y42–	RT	14+25.66	14+42.17	17.0
–Y42RPA– /–L–	RT/LT	–Y42RPA– 14+50.00	–L– 910+60.00	858.0
			TOTAL	4,070
			SAY	4,100

SUMMARY OF ASPHALT PAVEMENT REMOVAL

IN SQUARE YARDS

LINE	BEG STATION	END STATION	LOCATION	SQUARE YARDS
–L–	851+00.00	892+64.00	LT/RT	6232
–L–	858+56.00	859+91.00	RT	461
–L–	892+64.00	938+74.00	LT/RT	6109
–L–	933+50.00	947+22.00	LT	2745
–L–	933+50.00	855+26.00	CL	680
–Y41–	10+50.00	17+50.00	CL	1543
–Y43–	10+21.00	13+92.00	RT	560
–Y42RPB–	22+08.00	22+33.00	LT	692
–Y42RPC–	11+26.00	17+19.00	LT/RT	1211
–Y42RPD–	21+33.00	24+01.00	RT	776
–SR6–	12+52.00	20+36.00	RT	1024
–SR7–	32+47.00	36+32.00	RT	1241
–SR8–	13+00.00	15+57.00	LT	521
–SR9–	12+21.00	14+60.00	LT/RT	878
–SR10–	18+31.00	26+17.00	LT	1639
–PVTENT2–	10+87.00	12+71.00	LT	520
TEMPORARY PAVEMENT				
–L–	893+37.00	898+96.00	LT	649
–L–	899+40.00	912+32.00	LT	1604
–L–	889+16.00	896+74.00	RT	11
			TOTAL	29,027
			SAY	29,100

SUMMARY OF WOVEN WIRE FENCE 47" FABRIC

IN LINEAR FEET AND EACH

STATION TO STATION	LT. or RT.	FABRIC LF	4" POSTS EA	5" POSTS EA
–L– 851+00.00 TO –L– 888+70.00	LT	3,880	237	73
–L– 850+60.00 TO –L– 889+44.00	RT	4,028	256	58
–Y42RPD– 27+19.00 TO –L– 944+32.00	RT	5,078	306	103
–L– 945+07.00 TO –L– 955+42.00	RT	1,120	70	19
–SR6– 27+80.00 TO –SR7– 15+50.00	LT	1,081	67	19
–SR7– 15+50.00 TO –SR7– 20+50.00	RT	500	30	10
–SR7– 21+80.00 TO –SR7– 31+75.00	RT	1,025	60	25
–SR7– 32+50.00 TO –SR7– 77+30.00	RT	4,508	289	61
–SR9– 18+75.00 TO –SR10– 11+00.00	RT	510	29	13
–SR10– 11+05.00 TO –SR10– 14+25.00	RT	409	24	10
NOTE: LT. OR RT. INDICATES LEFT OR RIGHT OF THE MAIN LINE.	TOTAL	22,139	1,367	393
	SAY	22,140	1,367	393

DOUBLE FACED CABLE GUIDERAIL

IN LINEAR FEET AND EACH

LINE	STATION	STATION	LENGTH	END ANCHOR UNIT	INTERMEDIATE ANCHOR UNIT	COMMENTS
–L–	934+75.04	957+00.00	2179	2		
		SUBTOTAL	2179	2		
		LESS TERMINAL ANCHOR UNIT	–50			
		GRAND TOTALS	2119	2		
		SAY	2,200	2		
		ADDITIONAL GUIDERAIL POSTS = 10				

PROJECT REFERENCE NO.	SHEET NO.
R-2707E	3B-3

COMPUTED BY: GMM /THH DATE: 11-11-2022
CHECKED BY: STS DATE: 11-14-2022

"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
NG = NON-GATING IMPACT ATTENUATOR

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS					IMPACT ATTENUATOR MASH, TL-3			SINGLE FACED CONCRETE BARRIER	REMOVE AND RESET EXISTING GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	GREU TL-3	GREU TL-2	CAT-1	B-77	TES	NO.	PERMITTED G	PERMITTED NG				
L	851+00.00	877+34.88	LT	2587.5			874+75.00	BRIDGE	12'	15'	50.00	N/A	1'	N/A	1										2093	
L	851+00.00	885+30.67	LT/MED	3425					6'	9'	50.00	N/A	1'	N/A	1										296	
L	885+50.66	935+50.00	LT/MED	4987.5			934+00.00		6'	9'	50.00	N/A	1'	N/A	1		1									
L	851+00.00	882+79.73	RT/MED	3200			852+50.00		6'	9'		N/A		N/A			1								207	
L	882+99.86	935+00.00	RT/MED	5212.5					6'	9'	50.00	N/A	1'	N/A	1		1									
L	851+00.00	851+40.00	RT	50			851+00.00	851+08.75	12'	15'							1									
L	861+50.00	864+25.00	RT	287.5			863+00.00	863+93.75	12'	15'	50.00	N/A	1'	N/A	1		1									
L	875+50.00	878+24.42	RT	275			877+00.00	877+93.17	12'	15'	50.00	N/A	1'	N/A	1		1									
L	901+90.92	912+26.93	LT	1025			909+50.00	902+22.17	12'	15'	50.00	N/A	1'	N/A	1		1								927	
L	917+76.81	927+50.00	RT	1000			920+50.00	927+18.75	12'	15'	50.00	N/A	1'	N/A	1		1								731	
L	920+50.00	929+45.00	LT	887.5			926+70.00	920+81.25	12'	15'	50.00	N/A	1'	N/A	1		1								640	
L	935+69.92	950+43.82	LT	100			950+43.82		12'	15'	50.00	N/A	1'	N/A	1			1					1395			NOISE WALL
Y41/SR6	10+21.09	23+43.00	RT/LT	987.5	38.9		11+30.00	22+50.00	8'	11'		50.00		1'	1	1										
SR6	21+82.01	23+07.00	LT	125			22+50.00		8'	11'	50.00		1'		2											
Y41/SR7	11+76.00	16+50.00	LT	1575	80.0		15+30.00	12+30.00	8'	11'	50.00	N/A	1'	N/A	1	1										
Y42	11+35.52	12+14.32	LT	87.5			11+39.40	12+14.32	8'	11'						1		1								
Y42	11+36.09	12+14.32	RT	87.5			11+39.42	12+14.32	8'	11'						1		1								
Y42	14+09.66	14+88.83	LT	87.5			14+85.75	14+32.54	8'	11'				N/A		1		1								
Y42	14+09.66	14+87.77	RT	87.5			14+09.66	14+84.49	8'	11'						1		1								
Y43/SR9	12+93.97	12+21.05	RT	537.5	52.4		12+40.0	13+30.00	8'	11'	50.00	N/A	1'	N/A	1	1										
Y43/SR9	12+53.97	17+23.03	LT/RT	262.5	52.0		12+00.00	21+38.92	8'	11'		50.00		1'	1	1										
SR9	10+61.00	11+87.35	RT	125					8'	11'	50.00	50.00	1'	1'	2											
Y42RPD	18+00.00	20+00.00	LT	200			18+75.00	19+25.00	12'	15'	50.00	N/A	1'		1		1									
SR7	21+50.00	28+30.64	LT	687.5			26+30.00	21+60.00	8'	11'	50.00	50.00	1'	1'	2											
SR7	35+49.38	42+80.79	LT	737.5			43+30.00	36+60.00	8'	11'	50.00	50.00	1'	1'	2											
SR7	43+13.65	44+26.14	LT	112.5			43+30.00	36+60.00	8'	11'	50.00	50.00	1'	1'	2											
SR7	36+01.06	42+00.00	RT	612.5			36+75.56	41+24.93	8'	11'	50.00	50.00	1'	1'	2											
SR7	62+50.00	66+49.99	LT	400.0			64+50.00	63+50.00	8'	11'	50.00	50.00	1'	1'	2											
SR7	68+30.00	73+16.92	RT	500			70+30.00	72+30.00	8'	11'	50.00	50.00	1'	1'	2											
SR7	69+23.75	78+30.00	LT	900			73+30.00	69+70.00	8'	11'	50.00	50.00	1'	1'	2											
SR9/SR10	17+63.47	14+33.00	RT	900			18+38.47	13+55.00	8'	11'	50.00	50.00	1'	1'	2											
SR10	14+69.00	15+93.99	RT	125			18+38.47	13+55.00	8'	11'	50.00	50.00	1'	1'	2											
SHEET TOTALS				32,175																			1395			
LESS ANCHOR DEDUCTIONS																										
GREU TL-3	36		@ 50	-1,800																						
GREU TL-2	8		@ 25	-200																						
CAT-1	10		@ 6.25	-62.5																						
B-77	5		@ 22.875	-114.375																						
TOTALS				29,998.125	223.3										36	8	10	5					1395		4894	
SAY				30,000	250										36	8	10	5					1400		4894	

ADDITIONAL GUARDRAIL POSTS = 10

BELAM-NEW

COMPUTED BY:	DJS	DATE:	04/04/2023
CHECKED BY:	BNE	DATE:	04/04/2023

PROJECT NO.	SHEET NO.
R-2707E	3D-1

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)

Column headings: LINE & STATION; SIZE; THICKNESS OR GAUGE.

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, PVC, or PP PIPE) 15	18	24	30	36	42	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE HDPE	DO NOT USE PVC	DO NOT USE PP PIPE	C. S. PIPE 15 (.064)	18 (.064)	24 (.064)	36 (.079)
L 857+00	70 LT	0401A		670.3																		
		0401A	0401B		667.5	667.0																
L 855+00	70 LT	0401B		670.1																		
		0401B	0401		667.0	666.2																
L 853+00	73 LT	0401		669.5																		
		0401	0402		666.0	665.5																
L 852+00	76 LT	0402		669.6																		
		0402	0403		665.5	665.0	0.3															
L 851+10	78 LT	0403		669.8																		
		0403	0404		665.0	664.7	0.4															
L 851+10	17 LT	0404		670.7																		
		0404	0409		664.7	663.4	0.5															
L 859+00	0 CL	0405		671.6																		
		0405	0406		668.9	666.6																
L 856+00	0 CL	0406		669.4																		
		0406	0407		666.4	663.4																
L 853+00	0 CL	0407		667.7																		
		0407	0408		662.9	662.5																
L 851+66	0 CL	0408		667.6																		
		0408	0409		662.5	662.4																
L 851+10	0 CL	0409		667.7																		
		0409	0410		661.9	661.8																
L 851+10	17 RT	0410		670.7																		
		0410	0412		661.8	661.6																
L 851+25	80 RT	0411		669.8																		
		0411	0412		667.0	666.8																
L 851+10	80 RT	0412		669.8																		
		0412	0414		661.6	657.1					36			X								
L 852+00	101 RT	0413		667.0																		
		0413	0414		664.3	658.3		88														
L 851+10	115 RT	0414		662.0																		
		0414	0415		657.1	649.0					64			X								
L 862+60	0 CL	0416		680.8																		
		0416	0418		678.0	673.8																
L 862+00	70 LT	0417		676.8																		
		0417	0418		674.0	673.8																
L 862+60	70 LT	0418		678.7																		
		0418	0419		673.8	662.1	2.4	40						X								
L 866+18	0 CL	0501		696.7																		
		0501	0503		694.0	692.2																
L 866+50	70 LT	0502		696.7																		
		0502	0503		693.9	692.2																
L 866+18	70 LT	0503		694.9																		
		0503	0504		692.2	673.2	3.3	48						X								
L 871+35	89 RT	0506		720.2																		
		0506	0507		717.4	717.1																
L 871+35	0 CL	0507		721.0																		
		0507	0509		717.1	716.9																
L 871+80	70 LT	0508		724.7																		
		0508	0509		722.0	720.0																
							SHEET TOTALS	176			100											

FROM	TO	R. C. PIPE CLASS III 15	18	24	30	36	42	48	R. C. PIPE CLASS IV 15	18	24	30	36	42	48	R. C. PIPE CLASS V 30	48	42" R.C. PIPE CULVERTS, CONTRACTOR DESIGN	48" R.C. PIPE CULVERTS, CONTRACTOR DESIGN	16" WELDED STEEL PIPE 0.281" THICK, GRADE B (50% IN SOIL, 50% NOT IN SOIL)	18" WELDED STEEL PIPE 0.312" THICK, GRADE B (50% IN SOIL, 50% NOT IN SOIL)	30" WELDED STEEL PIPE 0.500" THICK, GRADE B (50% IN SOIL, 50% NOT IN SOIL)	42" WELDED STEEL PIPE 0.625" THICK, GRADE B (50% IN SOIL, 50% NOT IN SOIL)	48" WELDED STEEL PIPE 0.688" THICK, GRADE B (50% IN SOIL, 50% NOT IN SOIL)	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY
0401A																									
0401A	0401B								192																
0401B																									
0401B	0401								192																
0401																									
0401	0402									96															
0402																									
0402	0403									88															
0403																									
0403	0404									60															
0404																									
0404	0409		16																						
0405																									
0405	0406	296																							
0406																									
0406	0407		296																						
0407																									
0407	0408			132																					
0408																									
0408	0409			52																					
0409																									
0409	0410				16																				
0410																									
0410	0412				60																				
0411																									
0411	0412	12																							
0412																									
0412	0414																								
0413																									
0413	0414																								
0414																									
0414	0415																								
0416																									
0416	0418																				68				
0417																									
0417	0418								56																
0418																									
0418	0419																								
0501																									
0501	0503																				68				
0502																									
0502	0503	28																							
0503																									
0503	0504																								
0506																									
0506	0507																					88			
0507																									
0507	0509																					68			
0508																									
0508	0509	44																							
SHEET TOTALS		380	312	184	76				440	244										136	156				

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

FROM	TO	0' THRU 5' EACH	A: 5' THRU 10' LIN. FT.	B: 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 — GRATE TYPE E	F	G		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. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	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
0401A		1											1			1				
0401A	0401B																			
0401B		1											1			1				
0401B	0401																			
0401		1											1			1				
0401	0402																			
0402		1											1			1				
0402	0403																			
0403		1											1			1				
0403	0404																			
0404		1	1.0													1				
0404	0409																			
0405		1											1					1		
0405	0406																			
0406		1											1					1		
0406	0407																			
0407		1										1						1		
0407	0408																			
0408		1	0.1									1						1		
0408	0409																			
0409		1	0.8									1						1		
0409	0410																			
0410		1	3.9													1				
0410	0412																			
0411		1	0.5										1			1				
0411	0412																			
0412		1	3.3										1			1				
0412	0414																			
0413		1											1					1		
0413	0414																			
0414		1																		
0414	0415																			
0416		1											1					1		
0416	0418																			
0417		1											1			1				
0417	0418																			
0418		1											1			1				
0418	0419																			
0501		1											1					1		
0501	0503																			
0502		1											1			1				
0502	0503																			
0503		1											1			1				
0503	0504																			
0506		1											1					1		
0506	0507																			
0507		1											1					1		
0507	0509																			
0508		1											1			1				
0508	0509																			
SHEET TOTALS		25	9.6									3	19			14		10		

FROM	TO	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	SPRING BOX STD. 840.41	M.H. FRAME AND COVER STD. 840.54	CONVERT EXISTING D.I. TO J.B. w/ MH	ADJUST D.I.	15" SIDE DRAIN PIPE ELBOW	18" SIDE DRAIN PIPE ELBOW	24" SIDE DRAIN PIPE ELBOW	30" SIDE DRAIN PIPE ELBOW	36" SIDE DRAIN PIPE ELBOW	18" SLUICE GATE (25" SIZE SLUICE GATE)	24" SLUICE GATE (32" SIZE SLUICE GATE)	30" SLUICE GATE (38.75" SIZE SLUICE GATE)	BERM DITCH OUTLET STD. 850.10	BERM DITCH OUTLET STD. 850.11	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
0401A																								
0401A	0401B																							
0401B																								
0401B	0401																							
0401																								
0401	0402																							
0402																								
0402	0403																							
0403																								
0403	0404																							
0404				1																				
0404	0409																							
0405																								
0405	0406																							
0406																								
0406	0407																							
0407																								
0407	0408																							
0408																								
0408	0409																							
0409																								
0409	0410																							
0410				1																				
0410	0412																							
0411																								
0411	0412																							
0412																								
0412	0414																							
0413																								
0413	0414																							
0414		1				1																		
0414	0415																							
0416																								
0416	0418																							
0417																								
0417	0418																							
0418																								
0418	0419								2															
0501																								
0501	0503																							
0502																								
0502	0503																							
0503																								
0503	0504								2															
0506																								
0506	0507																							
0507																								
0507	0509																							
0508																								
0508	0509																							
SHEET TOTALS		1		2		1			4															

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

BELAM-NEW

COMPUTED BY: DJS DATE: 04/04/2023

CHECKED BY: BNE DATE: 04/04/2023

PROJECT NO.	SHEET NO.
R-2707E	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 / 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, PVC, or PP PIPE) 15	18	24	30	36	42	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE HDPE	DO NOT USE PVC	DO NOT USE PP PIPE	C. S. PIPE 15 .064	18 .064	24 .064	36 .079	R. C. PIPE CLASS III 15	18	24	30	36	42	48	R. C. PIPE CLASS IV 15	18	24	30	36	42	48	R. C. PIPE CLASS V 30	48
L 871+35	70 LT	0509		722.5																																		
		0509	0510		716.9	691.7	0.4		80					X																								
L 876+00	102 RT	0511		739.0																																		
		0511	0512		739.0	737.6																																
L 876+00	0 CL	0512		743.9																																		
		0512	0513		737.6	737.4																																
L 876+00	93 LT	0513		744.2																																		
		0513	0514		737.4	710.6	0.8						204	X																								
SR6 11+75	31 LT	0515								52																												
L 881+50	0 CL	0601		769.3																																		
		0601	0602		766.6	766.3																																
L 881+50	70 RT	0602		769.1																																		
		0602	0603		766.3	761.8	1.1																60															
Y42RPC 14+95	42 RT	0603		764.6																																		
		0603	0604		761.6	756.5	0.6																	140														
Y42RPC 13+48	42 RT	0604		759.5																																		
		0604	0605		756.5	751.0	0.8		92																													
L 893+00	0 CL	0606		775.9																																		
		0606	0607		773.2	771.4																																
L 893+00	77 LT	0607		774.2																																		
		0607	0608		771.4	771.3																	32															
L 892+66	77 LT	0608		774.2																																		
		0608	0614		771.1	770.8																									88							
Y42 15+30	31 RT	0609		802.7																																		
		0609	0610		799.7	799.4																								64								
Y42 15+00	28 LT	0610		802.5																																		
		0610	0612		799.4	799.3																								60								
Y42 14+40	19 RT	0611		803.7																																		
		0611	0612		800.9	799.3																								36								
Y42 14+40	19 LT	0612		803.7																																		
		0612	0614		799.3	771.1		76						X																								
L 891+75	0 CL	0613		775.7																																		
		0613	0614		773.0	771.1																																
L 891+75	77 LT	0614		774.5																																		
		0614	0615		770.8	767.7	0.4																	324														
L 888+50	93 LT	0615		772.0																																		
		0615	0617		767.2	766.3																			324													
L 883+50	63 LT	0616		777.6																																		
		0616	0617		774.9	767.0																	176															
L 885+25	77 LT	0617		776.2																																		
		0617	0618		766.3	765.0																			128													
SR6 24+20	84 RT	0619		768.0																																		
		0619	0620		762.0	746.0																										184						
SR9 21+20	31 LT	0621		801.6																																		
		0621	0622		798.5	798.3																								52								
SR9 21+20	24 RT	0622		801.6																																		
		0622	0623		798.3	798.1																								56								
RABT1 11+48	22 RT	0623		802.0																																		
		0623	0624		798.1	797.8																								96								
SR10 10+38	25 LT	0624		801.0																																		
SHEET TOTALS								76	172	52			204										268	464	452					364	88	184						

FROM	TO	42" R.C. PIPE CULVERTS, CONTRACTOR DESIGN	48" R.C. PIPE CULVERTS, CONTRACTOR DESIGN	16" WELDED STEEL PIPE 0.281" THICK, GRADE B (50% IN SOIL, 50% NOT IN SOIL)	18" WELDED STEEL PIPE 0.312" THICK, GRADE B (50% IN SOIL, 50% NOT IN SOIL)	30" WELDED STEEL PIPE 0.500" THICK, GRADE B (50% IN SOIL, 50% NOT IN SOIL)	42" WELDED STEEL PIPE 0.625" THICK, GRADE B (50% IN SOIL, 50% NOT IN SOIL)	48" WELDED STEEL PIPE 0.688" THICK, GRADE B (50% IN SOIL, 50% NOT IN SOIL)	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) 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.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G	
0509										1	0.6						
0509	0510																
0511									4.500								
0511	0512						104										
0512										1	1.3						
0512	0513						92										
0513										1	1.8						
0513	0514																
0515																	
0601										1							
0601	0602			68													
0602										1							
0602	0603																
0603										1							
0603	0604																
0604										1							
0604	0605																
0606										1							
0606	0607			76													
0607										1							
0607	0608																
0608										1							
0608	0614																
0609										1			1			1	
0609	0610																
0610										1			1	1			
0610	0612																
0611										1							
0611	0612																
0612										1							
0612	0614																
0613										1							
0613	0614			76													
0614										1							
0614	0615																
0615										1							
0615	0617																
0616										1							
0616	0617																
0617										1	4.9						
0617	0618																
0619										1							
0619	0620																
0621										1							
0621	0622																
0622										1			1			1	
0622	0623																
0623										1			1	1			
0623	0624																
0624										1							
SHEET TOTALS				220			196		4.500	24	8.6		4	2		2	

FROM	TO	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. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	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	SPRING BOX STD. 840.41	M.H. FRAME AND COVER STD. 840.54	CONVERT EXISTING D.I. TO J.B. w/ MH	ADJUST D.I.	15" SIDE DRAIN PIPE ELBOW	18" SIDE DRAIN PIPE ELBOW	24" SIDE DRAIN PIPE ELBOW	30" SIDE DRAIN PIPE ELBOW	36" SIDE DRAIN PIPE ELBOW	18" SLUICE GATE (25" SIZE SLUICE GATE)	24" SLUICE GATE (32" SIZE SLUICE GATE)	30" SLUICE GATE (38.75" SIZE SLUICE GATE)	BERM DITCH OUTLET STD. 850.10	BERM DITCH OUTLET STD. 850.11	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
0509					1			1																											
0509	0510																				2														
0511																																			
0511	0512																																		
0512				1						1																									
0512	0513																																		
0513				1						1																									
0513	0514																																		
0515																																			
0601					1					1																									
0601	0602																																		
0602					1					1																									
0602	0603																																		
0603					1					1																									
0603	0604																																		
0604					1					1																									
0604	0605																																		
0606					1					1																									
0606	0607																																		
0607					1					1																									
0607	0608																																		
0608					1					1																									
0608	0614																																		
0609																																			
0609	0610																																		
0610																																			
0610	0612																																		
0611					1							1																							
0611	0612																																		
0612					1							1																							
0612	0614																			2															
0613					1					1																									
0613	0614																																		
0614					1					1																									
0614	0615																																		
0615				1					1	1																									
0615	0617																																		
0616					1					1																									
0616	0617																																		
0617				1						1																									
0617	0618																																		
0619																																			Dry Det. Basin Outlet Str., See Sheets 2D-2 and 2D-3
0619	0620																																		
0621		1	1																																
0621	0622																																		
0622																																			
0622	0623																																		
0623																																			
0623	0624																																		
0624		1	1																																
SHEET TOTALS		2	2	4	13			1	1	14		2								2	2														

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

BELAM-NEW

COMPUTED BY: DJS DATE: 04/04/2023

CHECKED BY: BNE DATE: 04/04/2023

PROJECT NO.	SHEET NO.
R-2707E	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 / SIZE / THICKNESS OR GAUGE	OFFSET	STRUCTURE NUMBER FROM	TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Side Drain Pipe (RCP, CSP, CAAP, HDPE, PVC, or PP PIPE) 15	18	24	30	36	42	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE HDPE	DO NOT USE PVC	DO NOT USE PP PIPE	C. S. PIPE 15 .064	18 .064	24 .064	36 .079
		0624	0626		797.8	797.4																
Y42 11+00	23 LT	0625		802.5																		
		0625	0626		799.5	797.4																
Y42 11+00	26 RT	0626		802.5																		
		0626	0628		797.2	796.9																
Y42 11+85	20 LT	0627		804.0																		
		0627	0628		801.3	797.2																
Y42 11+85	20 RT	0628		804.0																		
		0628	0629		796.9	774.0	0.4		188					X								
L 896+75	104 RT	0630		775.0																		
		0630	0632		770.0	766.3	0.7															
		0631	0632		767.8	766.8																
SR10 14+00	51 LT	0632		772.0																		
		0632	0633		766.3	765.5	0.4															
L 887+57	123 RT	0634		771.7																		
		0634	0635		771.7	770.0																
SR9 16+00	81 LT	0635		775.0																		
		0635	0635A		770.0	763.0																
SR6 27+95	79 RT	0636		777.9																		
		0636	0637		775.2	768.0																
Y42RPB 25+60	20 LT	0638		802.6																		
		0638	0639		799.5	786.2		76						X								
RABT2 11+48	22 RT	0640		802.0																		
		0640	0641		799.0	798.5																
SR7 10+46	22 LT	0641		801.5																		
		0641	0642		798.5	798.3																
SR7 10+25	34 RT	0642		801.8																		
		0642	0643		798.3	798.1																
Y42RPA 22+92	13 RT	0643		801.6																		
		0643	0644		798.1	782.3		160						X								
Y42RPA 21+50	78 RT	0644		785.1																		
		0644	0645		782.3	748.5	0.9												176			
L 898+50	89 LT	0646		774.2																		
		0646	0647		770.0	766.5	0.3															
Y42RPA 18+50	100 RT	0647		769.5																		
		0647	0648		766.5	765.0	0.8															
L 900+96	0 CL	0649		776.1																		
		0649	0650		773.4	772.9																
L 902+12	0 CL	0650		776.5																		
		0650	0652		772.9	772.5																
Y42RPA 12+35	23 RT	0651		779.1																		
		0651	0652		776.0	772.2	0.4															
Y42RPA 14+31	23 RT	0652		778.0																		
		0652	0653		772.2	760.5	3.0		72					X								
L 903+05	95 RT	0654		777.0																		
		0654	0655		772.8	772.4																
Y42RPD 19+50	58 LT	0655		783.5																		
		0655	0657		772.4	762.0	1.4		88					X								
Y42RPD 18+66	92 LT	0656		785.5																		
		0656	0657		758.5	757.8																
SHEET TOTALS								236	348										176			

FROM	TO	R. C. PIPE CLASS III 15	18	24	30	36	42	48	R. C. PIPE CLASS IV 15	18	24	30	36	42	48	R. C. PIPE CLASS V 30	48	42" R.C. PIPE CULVERTS, CONTRACTOR DESIGN	48" R.C. PIPE CULVERTS, CONTRACTOR DESIGN	16" WELDED STEEL PIPE 0.281" THICK, GRADE B (50% IN SOIL, 50% NOT IN SOIL)	18" WELDED STEEL PIPE 0.312" THICK, GRADE B (50% IN SOIL, 50% NOT IN SOIL)	30" WELDED STEEL PIPE 0.500" THICK, GRADE B (50% IN SOIL, 50% NOT IN SOIL)	42" WELDED STEEL PIPE 0.625" THICK, GRADE B (50% IN SOIL, 50% NOT IN SOIL)	48" WELDED STEEL PIPE 0.688" THICK, GRADE B (50% IN SOIL, 50% NOT IN SOIL)	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) 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.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G	
0624	0626								132																								
0625																										1			1	1			
0625	0626								48																								
0626																										1	0.3		1	1			
0626	0628		84																														
0627																										1							
0627	0628								36																								
0628																										1	2.1						
0628	0629																																
0630																										1							
0630	0632										216																						
0631	0632		288																														
0632																										1	0.7						
0632	0633				136																												
0634																																	
0634	0635										196																						
0635																										1							
0635	0635A										172																						
0636																										1							
0636	0637	164																															
0638																										1							
0638	0639																																
0640																										1			1	1			
0640	0641								64																								
0641																										1			1			1	
0641	0642								60																								
0642																										1							
0642	0643								84																								
0643																										1							
0643	0644																																
0644																										1							
0644	0645																																
0646																										1							
0646	0647		172																														
0647																										1							
0647	0648		160																														
0649																										1							
0649	0650	116																															
0650																										1							
0650	0652	104																															
0651																										1							
0651	0652		192																														
0652																										1	0.8						
0652	0653																																
0654																										1							
0654	0655		132																														
0655																										1	5.0	1.1					
0655	0657																																
0656																									6.000								
0656	0657							16																									
SHEET TOTALS		384	1028		136			16	424		584														6.000	22	8.9	1.1	4	3		1	

FROM	TO	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. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	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	SPRING BOX STD. 840.41	M.H. FRAME AND COVER STD. 840.54	CONVERT EXISTING D.I. TO J.B. w/ MH	ADJUST D.I.	15" SIDE DRAIN PIPE ELBOW	18" SIDE DRAIN PIPE ELBOW	24" SIDE DRAIN PIPE ELBOW	30" SIDE DRAIN PIPE ELBOW	36" SIDE DRAIN PIPE ELBOW	18" SLUICE GATE (25" SIZE SLUICE GATE)	24" SLUICE GATE (32" SIZE SLUICE GATE)	30" SLUICE GATE (38.75" SIZE SLUICE GATE)	BERM DITCH OUTLET STD. 850.10	BERM DITCH OUTLET STD. 850.11	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
0624	0626																																		
0625																																			
0625	0626																																		
0626																																			
0626	0628																																		
0627												1			1																				
0627	0628																																		
0628												1			1																				
0628	0629																																		
0630																																			Dry Det. Basin Outlet Str., See Sheets 2D-2 and 2D-3
0630	0632																																		
0631	0632																																		
0632				1							1																								
0632	0633																																		
0634																																			
0634	0635																																		
0635																																			Dry Det. Basin Outlet Str., See Sheets 2D-2 and 2D-3
0635	0635A																																		
0636					1					1																									
0636	0637																																		
0638		1	1																																
0638	0639																			2															
0640																																			
0640	0641																																		
0641																																			
0641	0642																																		
0642		1	1																																
0642	0643																																		
0643		1	1																																
0643	0644																																		
0644					1					1																									
0644	0645																																		
0646				1					1	1																									
0646	0647																																		
0647					1					1																									
0647	0648																																		
0649					1					1																									
0649	0650																																		
0650					1					1																									
0650	0652																																		
0651					1			1																											
0651	0652																																		
0652					1			1																											
0652	0653																				2														
0654				1					1	1																									
0654	0655																																		
0655					1					1																									
0655	0657																																		
0656																																			
0656	0657																																		
SHEET TOTALS		3	3	3	8			2	2	8	1	2			2					2	2														

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

BELAM-NEW

COMPUTED BY: DJS DATE: 04/04/2023

CHECKED BY: BNE DATE: 04/04/2023

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2707E	3D-4

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, PVC, or PP PIPE) SIZE 15 | 18 | 24 | 30 | 36 | 42 | DO NOT USE RCP | DO NOT USE CSP | DO NOT USE HDPE | DO NOT USE PVC | DO NOT USE PP PIPE | THICKNESS OR GAUGE .064 | .064 | .064 | .079 | C. S. PIPE SIZE 15 | 18 | 24 | 36 | R. C. PIPE CLASS III 15 | 18 | 24 | 30 | 36 | 42 | 48 | R. C. PIPE CLASS IV 15 | 18 | 24 | 30 | 36 | 42 | 48 | R. C. PIPE CLASS V 30 | 48 | 42" R.C. PIPE CULVERTS, CONTRACTOR DESIGN | 48" R.C. PIPE CULVERTS, CONTRACTOR DESIGN | 16" WELDED STEEL PIPE 0.281" THICK, GRADE B (50% IN SOIL, 50% NOT IN SOIL) | 18" WELDED STEEL PIPE 0.312" THICK, GRADE B (50% IN SOIL, 50% NOT IN SOIL) | 30" WELDED STEEL PIPE 0.500" THICK, GRADE B (50% IN SOIL, 50% NOT IN SOIL) | 42" WELDED STEEL PIPE 0.625" THICK, GRADE B (50% IN SOIL, 50% NOT IN SOIL) | 48" WELDED STEEL PIPE 0.688" THICK, GRADE B (50% IN SOIL, 50% NOT IN SOIL) | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY | QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) A 0' THRU 5' EACH | A 5' THRU 10' LIN. FT. | A 10' AND ABOVE LIN. FT. | B LIN. FT. | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E | F | G | 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. TYPE "D" STD. 840.19 OR STD. 840.28 | G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20 | G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20 | G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22 | G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22 | 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 | SPRING BOX STD. 840.41 | M.H. FRAME AND COVER STD. 840.54 | CONVERT EXISTING D.I. TO J.B. w/ MH | ADJUST D.I. | 15" SIDE DRAIN PIPE ELBOW | 18" SIDE DRAIN PIPE ELBOW | 24" SIDE DRAIN PIPE ELBOW | 30" SIDE DRAIN PIPE ELBOW | 36" SIDE DRAIN PIPE ELBOW | 18" SLUICE GATE (25" SIZE SLUICE GATE) | 24" SLUICE GATE (32" SIZE SLUICE GATE) | 30" SLUICE GATE (38.75" SIZE SLUICE GATE) | BERM DITCH OUTLET STD. 850.10 | BERM DITCH OUTLET STD. 850.11 | 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 |
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BEL.AM-NEW

COMPUTED BY: DJS DATE: 04/04/2023

CHECKED BY: BNE DATE: 04/04/2023

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2707E	3D-5

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, PVC, or PP PIPE) SIZE 15 | 18 | 24 | 30 | 36 | 42 | Side Drain Pipe THICKNESS OR GAUGE DO NOT USE RCP | DO NOT USE CSP | DO NOT USE HDPE | DO NOT USE PVC | DO NOT USE PP PIPE | C. S. PIPE SIZE 15 | 18 | 24 | 36 | C. S. PIPE THICKNESS OR GAUGE .064 | .064 | .064 | .079 | R. C. PIPE CLASS III SIZE 15 | 18 | 24 | 30 | 36 | 42 | 48 | R. C. PIPE CLASS IV SIZE 15 | 18 | 24 | 30 | 36 | 42 | 48 | R. C. PIPE CLASS V SIZE 30 | 48 | 42" R.C. PIPE CULVERTS, CONTRACTOR DESIGN | 48" R.C. PIPE CULVERTS, CONTRACTOR DESIGN | 16" WELDED STEEL PIPE 0.281" THICK, GRADE B (50% IN SOIL, 50% NOT IN SOIL) | 18" WELDED STEEL PIPE 0.312" THICK, GRADE B (50% IN SOIL, 50% NOT IN SOIL) | 30" WELDED STEEL PIPE 0.500" THICK, GRADE B (50% IN SOIL, 50% NOT IN SOIL) | 42" WELDED STEEL PIPE 0.625" THICK, GRADE B (50% IN SOIL, 50% NOT IN SOIL) | 48" WELDED STEEL PIPE 0.688" THICK, GRADE B (50% IN SOIL, 50% NOT IN SOIL) | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY | QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) A 0' THRU 5' EACH | A 5' THRU 10' LIN. FT. | A 10' AND ABOVE LIN. FT. | B | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E | F | G | 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. TYPE "D" STD. 840.19 OR STD. 840.28 | G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20 | G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20 | G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22 | G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22 | 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 | SPRING BOX STD. 840.41 | M.H. FRAME AND COVER STD. 840.54 | CONVERT EXISTING D.I. TO J.B. w/ MH | ADJUST D.I. | 15" SIDE DRAIN PIPE ELBOW | 18" SIDE DRAIN PIPE ELBOW | 24" SIDE DRAIN PIPE ELBOW | 30" SIDE DRAIN PIPE ELBOW | 36" SIDE DRAIN PIPE ELBOW | 18" SLUICE GATE (25" SIZE SLUICE GATE) | 24" SLUICE GATE (32" SIZE SLUICE GATE) | 30" SLUICE GATE (38.75" SIZE SLUICE GATE) | BERM DITCH OUTLET STD. 850.10 | BERM DITCH OUTLET STD. 850.11 | 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 |
|---|---|---

BEL.AM-NEW

COMPUTED BY: DJS DATE: 04/04/2023

CHECKED BY: BNE DATE: 04/04/2023

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2707E	3D-6

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, PVC, or PP PIPE) SIZE 15 | 18 | 24 | 30 | 36 | 42 | DO NOT USE RCP | DO NOT USE CSP | DO NOT USE HDPE | DO NOT USE PVC | DO NOT USE PP PIPE | C. S. PIPE SIZE 15 | 18 | 24 | 36 | R. C. PIPE CLASS III SIZE 15 | 18 | 24 | 30 | 36 | 42 | 48 | R. C. PIPE CLASS IV SIZE 15 | 18 | 24 | 30 | 36 | 42 | 48 | R. C. PIPE CLASS V SIZE 30 | 48 | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY | QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) A: 0' THRU 5' EACH | A: 5' THRU 10' LIN. FT. | A: 10' AND ABOVE LIN. FT. | B | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E | F | G | 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. TYPE "D" STD. 840.19 OR STD. 840.28 | G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20 | G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20 | G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22 | G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22 | 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 | SPRING BOX STD. 840.41 | M.H. FRAME AND COVER STD. 840.54 | CONVERT EXISTING D.I. TO J.B. w/ MH | ADJUST D.I. | 15" SIDE DRAIN PIPE ELBOW | 18" SIDE DRAIN PIPE ELBOW | 24" SIDE DRAIN PIPE ELBOW | 30" SIDE DRAIN PIPE ELBOW | 36" SIDE DRAIN PIPE ELBOW | 18" SLUICE GATE (25" SIZE SLUICE GATE) | 24" SLUICE GATE (32" SIZE SLUICE GATE) | 30" SLUICE GATE (38.75" SIZE SLUICE GATE) | BERM DITCH OUTLET STD. 850.10 | BERM DITCH OUTLET STD. 850.11 | 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 |
|---|---|---

BELAM-NEW

COMPUTED BY: DJS DATE: 04/04/2023

CHECKED BY: BNE DATE: 04/04/2023

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2707E	3D-7

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, PVC, or PP PIPE) SIZE 15 | 18 | 24 | 30 | 36 | 42 | DO NOT USE RCP | DO NOT USE CSP | DO NOT USE HDPE | DO NOT USE PVC | DO NOT USE PP PIPE | C. S. PIPE SIZE 15 | 18 | 24 | 36 | R. C. PIPE CLASS III SIZE 15 | 18 | 24 | 30 | 36 | 42 | 48 | R. C. PIPE CLASS IV SIZE 15 | 18 | 24 | 30 | 36 | 42 | 48 | R. C. PIPE CLASS V SIZE 30 | 48 | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY | QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) A: 0' THRU 5' EACH | B: 5' THRU 10' LIN. FT. | B: 10' AND ABOVE LIN. FT. | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E | F | G | 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. TYPE "D" STD. 840.19 OR STD. 840.28 | G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20 | G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20 | G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22 | G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22 | 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 | SPRING BOX STD. 840.41 | M.H. FRAME AND COVER STD. 840.54 | CONVERT EXISTING D.I. TO J.B. w/ MH | ADJUST D.I. | 15" SIDE DRAIN PIPE ELBOW | 18" SIDE DRAIN PIPE ELBOW | 24" SIDE DRAIN PIPE ELBOW | 30" SIDE DRAIN PIPE ELBOW | 36" SIDE DRAIN PIPE ELBOW | 18" SLUICE GATE (25" SIZE SLUICE GATE) | 24" SLUICE GATE (32" SIZE SLUICE GATE) | 30" SLUICE GATE (38.75" SIZE SLUICE GATE) | BERM DITCH OUTLET STD. 850.10 | BERM DITCH OUTLET STD. 850.11 | 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 |
|---|---|---

BELAM-NEW

COMPUTED BY: DJS DATE: 04/04/2023
CHECKED BY: BNE DATE: 04/04/2023

PROJECT NO.	SHEET NO.
R-2707E	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 / 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, PVC, or PP PIPE) 15	Side Drain 18	Side Drain 24	Side Drain 30	Side Drain 36	Side Drain 42	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE HDPE	DO NOT USE PVC	DO NOT USE PP PIPE	C. S. PIPE 15 .064	C. S. PIPE 18 .064	C. S. PIPE 24 .064	C. S. PIPE 36 .079	R. C. PIPE CLASS III 15	CLASS III 18	CLASS III 24	CLASS III 30	CLASS III 36	CLASS III 42	CLASS III 48	R. C. PIPE CLASS IV 15	CLASS IV 18	CLASS IV 24	CLASS IV 30	CLASS IV 36	CLASS IV 42	CLASS IV 48	R. C. PIPE CLASS V 30	CLASS V 48	42" R.C. PIPE CULVERTS, CONTRACTOR DESIGN	48" R.C. PIPE CULVERTS, CONTRACTOR DESIGN	16" WELDED STEEL PIPE 0.281" THICK, GRADE B (50% IN SOIL, 50% NOT IN SOIL)	18" WELDED STEEL PIPE 0.312" THICK, GRADE B (50% IN SOIL, 50% NOT IN SOIL)	30" WELDED STEEL PIPE 0.500" THICK, GRADE B (50% IN SOIL, 50% NOT IN SOIL)	42" WELDED STEEL PIPE 0.625" THICK, GRADE B (50% IN SOIL, 50% NOT IN SOIL)	48" WELDED STEEL PIPE 0.688" THICK, GRADE B (50% IN SOIL, 50% NOT IN SOIL)	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) 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.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G		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. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	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	SPRING BOX STD. 840.41	M.H. FRAME AND COVER STD. 840.54	CONVERT EXISTING D.I. TO J.B. w/ MH	ADJUST D.I.	15" SIDE DRAIN PIPE ELBOW	18" SIDE DRAIN PIPE ELBOW	24" SIDE DRAIN PIPE ELBOW	30" SIDE DRAIN PIPE ELBOW	36" SIDE DRAIN PIPE ELBOW	18" SLUICE GATE (25" SIZE SLUICE GATE)	24" SLUICE GATE (32" SIZE SLUICE GATE)	30" SLUICE GATE (38.75" SIZE SLUICE GATE)	BERM DITCH OUTLET STD. 850.10	BERM DITCH OUTLET STD. 850.11	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 866+97	83	RT																																																																																				51	
L 866+71	32	RT																																																																																		4				
L 866+44	43	LT																																																																																		6				
L 871+46	30	RT																																																																																		4				
L 876+35	93	RT																																																																																					85	
L 874+72	0	CL																																																																																		36				
L 876+92	41	RT																																																																																		11				
L 877+73	1	RT																																																																																					136	
L 877+91	99	RT																																																																																					43	
L 878+21	79	RT																																																																																					42	
L 877+94	56	LT																																																																																					49	
L 875+13	59	RT																																																																																					37	
L 880+05	98	RT																																																																																					22	
L 902+53	32	LT																																																																																					74	
L 890+53	46	RT																																																																																		5				
L 894+07	46	RT																																																																																		5				
L 904+82	463	LT																																																																																					23	
L 914+44	21	LT																																																																																		5				
SR10 21+00	68	LT																																																																																					27	
SR10 22+02	44	LT																																																																																					21	
SR10 27+88	20	RT																																																																																					20	
SR10 22+67	50	LT																																																																																					33	
Y42RPD 20+73	56	LT																																																																																					40	
Y42RPD 21+83	36	RT																																																																																					37	
																																																																																							30	
SR9 12+06	15	RT																																																																																					42	
SR9 12+07	21	LT																																																																																					41	
SR9 14+67	16	RT																																																																																					23	
SR9 13+89	54	LT																																																																																					41	
Y42RPC 16+87	20	RT																																																																																					21	
PVTENT2 11+35	2	LT																																																																																					131	
L 861+07	63	LT																																																																																					41	
L 861+09	4	RT																																																																																		11				
L 862+55	31	LT																																																																																		5				
L 892+70	44	LT																																																																																					23	
L 914+38	35	RT																																																																																		5				
L 913+61	9	RT																																																																																					99	
L 917+48	32	RT																																																																																		3				
L 917+39	24	LT																																																																																		4				
SR7 43+33	24	RT																																																																																		5				
SHEET TOTALS																																																																																							109			1232	
PROJECT TOTALS									1516	1192	136	216		204						176	116			1720	2660	880	328			72	1572	620	920			108	324		156			356	156	172	196	420	21.000	110	64.4		8	5		3		7	7	11	62	3	2	22	6	51	4	4	11	1	4	1	14	3	6	14	17		2					1			388	5.9212		2602	

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

BELAM-NEW

COMPUTED BY:	DJS	DATE:	04/04/2023
CHECKED BY:	BNE	DATE:	04/04/2023

PROJECT NO.	SHEET NO.
R-2707E	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 54 INCHES & OVER)

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 %
L 861+70	114 RT	0420		673.0			
		0420	0422		673.0	660.2	
L 862+50	110 LT	0421		662.0			
		0421	0422		662.0	660.2	
L 861+00	102 LT	0422		668.5			
		0422	0423		660.2	654.0	0.3
PVTENT_2 12+00	33 RT	0423		661.5			
		0423	0424		654.0	653.0	0.3
L 858+13	149 LT	0424		665.0			

LINE & STATION	FROM	TO	R. C. PIPE CLASS III 54	60	66	72	78	84		R. C. PIPE CLASS IV 54	60	66	72	78	84		R. C. PIPE CLASS V 54	60	66	72	78	84		STRUCTURAL PLATE PIPE 60	66	72		
L 861+70	0420																											
	0420	0422																										
L 862+50	0421																											
	0421	0422	140																									
L 861+00	0422																											
	0422	0423			152																							
PVTENT_2 12+00	0423																											
	0423	0424			124																							
L 858+13	0424																											
SHEET TOTALS			140		276																							
PROJECT TOTALS			140		276																							

LINE & STATION	FROM	TO	54" R.C. PIPE CULVERTS, CONTRACTOR DESIGN	60" WELDED STEEL PIPE 0.875" THICK, GRADE B (50% IN SOIL, 50% 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.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G	
L 861+70	0420						5.600									
	0420	0422		228												
L 862+50	0421						5.000									
	0421	0422														
L 861+00	0422							5.406								
	0422	0423														
PVTENT_2 12+00	0423							5.703								
	0423	0424														
L 858+13	0424							7.603								
SHEET TOTALS				228			10.600	18.712								
PROJECT TOTALS				228			10.600	18.712								

LINE & STATION	FROM	TO	CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	CONCRETE TRANSITIONAL SECTION C.B. STD. 852.05	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	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. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.2	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.2	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/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.2
L 861+70	0420																		
	0420	0422																	
L 862+50	0421																		
	0421	0422																	
L 861+00	0422								1						1				
	0422	0423																	
PVTENT_2 12+00	0423														1				
	0423	0424																	
L 858+13	0424																		
SHEET TOTALS									1						2				
PROJECT TOTALS									1						2				

LINE & STATION	FROM	TO	DRIVEWAY D.I. STD. 840.30	FRAME W/ GRATE FOR DRIVEWAY STD. 840.30	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAG	SPRING BOX STD. 840.41		M.H. FRAME AND COVER STD. 840.54		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 861+70	0420																			
	0420	0422																		
L 862+50	0421																			
	0421	0422																		
L 861+00	0422																			
	0422	0423																		
PVTENT_2 12+00	0423																			Min. Depth 2GI-A, See Detail Sheet 2C-2
	0423	0424																		
L 858+13	0424				1									1						
SHEET TOTALS					1									1						
PROJECT TOTALS					1									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

PREPARED BY: M.J. ALEXANDER DATE: 4/13/2023

(2-3-23)

PROJECT NO.	SHEET NO.
R-2707E	3G-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF SUBSURFACE DRAINAGE

LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
CONTINGENCY				SD	1000
				TOTAL LF:	1000

*UD = Underdrain
*BD = Blind Drain
*SD = Subsurface Drain

SUMMARY OF GEOTEXTILE FOR SUBGRADE STABILIZATION

LINE	Station	Station	Geotextile for Subgrade Stabilization SY
-L-	851+00	852+00	1733
-L-	863+50	864+50	522
-L-	871+50	875+00	1633
-L-	901+50	910+00	5478
-L-	920+50	921+00	211
-L-	921+00	922+50	1067
-L-	922+50	927+00	1100
-Y42RPA-	18+00	23+50	3422
-Y42RPB-	20+00	25+50	2872
-Y42RPC-	20+00	25+70	2977
-Y42RPD-	23+00	30+00	3733
-Y41-	12+50	17+00	2450
-Y42-	11+00	12+50	900
-Y42-	14+50	15+00	306
-Y43-	10+50	12+00	767
CONTINGENCY			
		TOTAL SY:	29171*

*Total square yards of "Geotextile for Subgrade Stabilization" is only the estimated quantity for subgrades and may only represent a portion of the geotextile quantity shown in the Item Sheets of the Proposal.

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type* ASU(1/2)/ AST	Aggregate Thickness INCHES [8" for ASU(2)]	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Subgrade Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
-L-	944+00	957+00	ASU (1)	12	1600	3200	4800		
CONTINGENCY			ASU (1)	8	1000	2000	2000		
CONTINGENCY			AST					500	
			TOTAL CY/TONS/SY:		2600	5200**	6800**	500	0

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

SUMMARY OF REINFORCED SOIL SLOPES AND SLOPE EROSION CONTROL

LINE	Beginning Slope/ RSS (H:V)	Approx. Station	Ending Slope/ RSS (H:V)	Approx. Station	Location LT/RT	Reinforced Soil Slope (RSS) SY	Geocells SY	Coir Fiber Mat SY	Matting for Erosion Control SY
-SR7-	1.5:1	37+00	1.5:1	39+50	LT	1695		1695	
					TOTAL SY:	1695	0	1695*	0**

*Total square yards of "Coir Fiber Mat" is only the estimated quantity for slopes steeper than 2:1 (H:V) and may only represent a portion of the coir fiber mat quantity shown in the Item Sheets of the Proposal.
**Total square yards of "Matting for Erosion Control" is only the estimated quantity for RSS and may only represent a portion of the matting quantity shown in the Item Sheets of the Proposal.

SUMMARY OF BRIDGE WAITING PERIODS

Bridge Description	End Bent/ Bent No.	MONTHS
Bridge No. 494 on -Y42- over -L- at -L- Sta. 892+44.19	End Bent 1	1
Bridge No. 494 on -Y42- over -L- at -L- Sta. 892+44.19	End Bent 2	1

PROJ. REFERENCE NO.	SHEET NO.
R-2707E	3P-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
079	4	RONNIE BRADY CHEEK CATHY CORNWELL CHEEK
080	4,5	JERRY LEE ALLEN
081	5	DAVID WAYNE ALLEN
082	5	WILLIE A. HOWARD
083	5,6	CONCRETE SUPPLY CO. LLC
085	6,6B	WAYNE D. ALLEN
086	6	THOMAS KEITH ANTHONY
087	6	ASHLEY N. CHILDERS
090A	6	GREGORY KEITH ANTHONY
092	6	CLARA OLIVE CRAWFORD
096	6	GAIL A. BELL GAIL A. BELL
099	6,6C	JO ANN CARROLL HARMON
102	6,15	BRINKLEY FAMILY FARMS LLC
105	6	NCDOT
108	6	LESTER A. HARMON, HEIRS
109	6,7	CHARLES E. DOVER
112	6	ROBERT HOWARD DIXON
113	6	ANN W. TRIA
115	6	THOMAS E. WILSON, HEIRS
116	6,14	STEVEN RAMSEY LANCASTER
117	14	AUDREY CRAWLEY
118	14	ANDREW J. CHAMPION, JR.
119	7,14	GILBERT KEITH RANDALL
120	7,14	JO ANN HARMON
123	6D,7	PAMELA R. BIVINS
125	7	KENNETH & NELL RANDALL
128	8	WILLIAM PRESTON HARMON, JR.
130	8	JULIE J. HARMON
133	8	CHARLES CARRIGAN
134	9	BETTY CARRIGAN
136	8,9	BETTY CARRIGAN
161	5,6A	ROBERT L. TRICE & WF. LISA V. TRICE
175	4	ASPHALT PAVING OF SHELBY, INC.
604	6	JAMES F. MORROW
605	6	RONNIE F. MORROW
606	6	MONTE & AMANDA DEATON
607	6	JACK RAY HARMON
608	6,15	LARRY RADFORD NICOLE H RADFORD
609	6	ROBERT GREGORY RANDALL
610	6	LUNETTE L. WHISNANT
611	6	LUNETTE L. WHISNANT
612	6	JO ANN HARMON
613	9	JAMES LAWSON THOMPSON BOBBY RAY HORNE, ETAL
614	9	DELORES W. PATTERSON
619	6	ALCONON CLUB OF SHELBY, INC.
620	6	ANN W. TRIA
621	6	BETTY HARMON BABB
634	4	HAL STAN QUEEN
635	4,5,6	WESTLEY M. LAIL
636	6	JAMES STRICKLAND, JR.
637	6,15	MICHAEL R. STRICKLAND MARY MADIGAN
638	6	CALVIN K. & TONY C. CRAWFORD
639	6	ROBERT KEITH PROCTOR
640	6,6C	JACK THOMAS PETTYCORD III
641	6D,7,8	KENNETH B. RANDALL
642	6D,8	JACK WILLIAMS
643	7,8	CASSANDRA EVERHART
644	8,9	JOHN M. OVERMAN
645	8,9	JAMES RALPH LEDBETTER & LORA M. LEDBETTER
646	9	CATHY S. COWAN HUNTWOOD TRUST

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
647	9	DELORES W.
652	6	GLENN ALTON DOVER

8/17/99

-PVTENT2-

PI Sta 12+02.15
△ = 74° 25' 49.3" (RT)
D = 38° 11' 49.9"
L = 194.86'
T = 113.92'
R = 150.00'
e = SEE PLANS

PI Sta 10+44.14
△ = 4° 23' 44.6" (RT)
D = 4° 58' 56.1"
L = 88.23'
T = 44.14'
R = 1,150.00'
e = SEE PLANS

-L-

Pls Sta 854+72.58
Θs = 7° 11' 58.1"
Ls = 480.00'
LT = 320.27'
ST = 160.24'

PI Sta 860+97.91
△ = 27° 23' 57.3" (LT)
D = 2° 59' 59.2"
L = 913.38'
T = 465.59'
R = 1,910.00'
SE = SEE PLANS
DS = 70 MPH

SUNGATE DESIGN GROUP, P.A.
905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
ENG FIRM LICENSE NO. C-890

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

PROJECT REFERENCE NO.	SHEET NO.
R-2707E	4
RW SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 044480 ENGINEER MATTHEW B. FERGUSON
4/21/2023

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON
4/21/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

END TIP PROJECT R-2707D
BEGIN TIP PROJECT R-2707E
POT STA.851+00 -L-

END CONSTRUCTION
POC Sta.12+75.00 -PVTENT2-

PCC Sta. 10+88.23 -PVTENT2-

BEGIN CONSTRUCTION
POC Sta.10+75.00 -PVTENT2-

PC Sta. 10+00.00 -PVTENT2-

PT Sta. 12+83.09 -PVTENT2-

POT Sta. 13+44.72 -PVTENT2-
BK BRG N 16° 13' 06.8" E

TS Sta. 851+52.31 -L-
BK BRG S 23° 50' 54.0" E

SC Sta. 856+32.31 -L-

MATCH -L- STA 850+15.00 SEE INSET THIS SHEET

MATCHLINE -L- STA 868+00.00 SEE SHEET 5

NAD 83/95

SHOULDER BERM GUTTER FROM STA. 851+00 TO STA. 851+15 -L- MED LT

SHOULDER BERM GUTTER FROM STA. 851+00 TO STA. 875+50 -L- LT

SHOULDER BERM GUTTER FROM STA. 851+00 TO STA. 851+15 -L- MED RT

SHOULDER BERM GUTTER FROM STA. 851+00 TO STA. 851+30 -L- RT

LAT. 4' BASE CHANNEL W/EMBEDDED CL 'II' RIP RAP EST. 226 TONS, EST. 1511 CY DDE SEE DETAIL #1

SPEC. LAT. 'V' DITCH W/CL 'B' RIP RAP EST. 115 TONS EST. 181 SY GF SEE DETAIL #19

SPEC. LAT. 3' BASE DITCH W/CL 'I' RIP RAP EST. 1390 TONS EST. 2437 SY GF SEE DETAIL #6

STD. 3' BASE DITCH W/CL 'I' RIP RAP SEE R-2707D SHEET 19

STD. 3' BASE CHANNEL W/CL 'I' RIP RAP EST. 432 TONS, EST. 753 SY GF LENGHT=345', SLOPE=4.8% EST. 320 CY DDE SEE DETAIL #5

R/W PURCHASED UNDER TIP R-2707E FORMERLY PARCEL 078

R/W PURCHASED UNDER TIP R-2707D FORMERLY PARCEL 077

R/W PURCHASED UNDER TIP R-2707D

RETAIN EXIST. R/W

RETAIN

REMOVE

REMOVE EXTG 1@6'X4' RCBC

FS, SEE DETAIL #33

FS, SEE DETAIL #34

FS TO EL 678.5 SEE DETAIL #32

FS, SEE DETAIL #33

FLOWABLE FILL

FRENCHLESS INSTALLATION 60" WELDED STEEL PIPE

DO NOT BURY INVERT

840' TAPER

300' TAPER (LT)

CHORD PROPOSED WW FENCE

APPROX. LOCATION OF SEPTIC SYSTEM

APPROX. LOCATION AS PER PLANS FOR EROSION CONTROL FOR BUFFALO VALLEY MINE

R2707-22

WESTLEY M. LAIL
DB 1629 PG 1844

HAL STAN QUEEN
DB 035 PG 622
DB 7-P PG 414
DB 1192 PG 816

ASPHALT PAVING OF SHELBY, INC.
DB 15-S PG 117
DB NNN PG 32
DB FFF PG 543
DB YY PG 352

RONNIE BRADY CHEEK
CATHY CORNWELL CHEEK
DB 1444 PG 2041
DB 1436 PG 2438

RONNIE BRADY CHEEK
CATHY CORNWELL CHEEK
DB 1436 PG 2438, TRACT 2

JERRY LEE ALLEN
DB 1642 PG 924

POT Sta. 12+00.00 -SRII-

END CONSTRUCTION
POT Sta. 11+95.45 -SRII-

POC STA.859+66.56 -L-
223.57' RT=
POT STA.11+45.45 -SRII-
38.47' LT

POT Sta.10+00.00 -SRII-

BEGIN CONSTRUCTION
POT Sta. 10+60.95 -SRII-

BEGIN CONSTRUCTION R-2707E
POT STA.849+12.00 -L-

MATCH -L- STA 850+15.00 SEE THIS SHEET

REFERENCES:
FOR -L- PROFILE, SEE SHEET NO. 16
FOR -SR11- PROFILE, SEE SHEET NO. 41
FOR -PVTENT2- PROFILE, SEE SHEET NO. 42

PROJECT REFERENCE NO.	SHEET NO.
R-2707E	5

R/W SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 044480 MATTHEW B. FERGUSON — DocuSigned by: Matthew Ferguson — 4/21/2023	NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 26971 JOSHUA G. DALTON — DocuSigned by: Joshua G. Dalton — 4/21/2023

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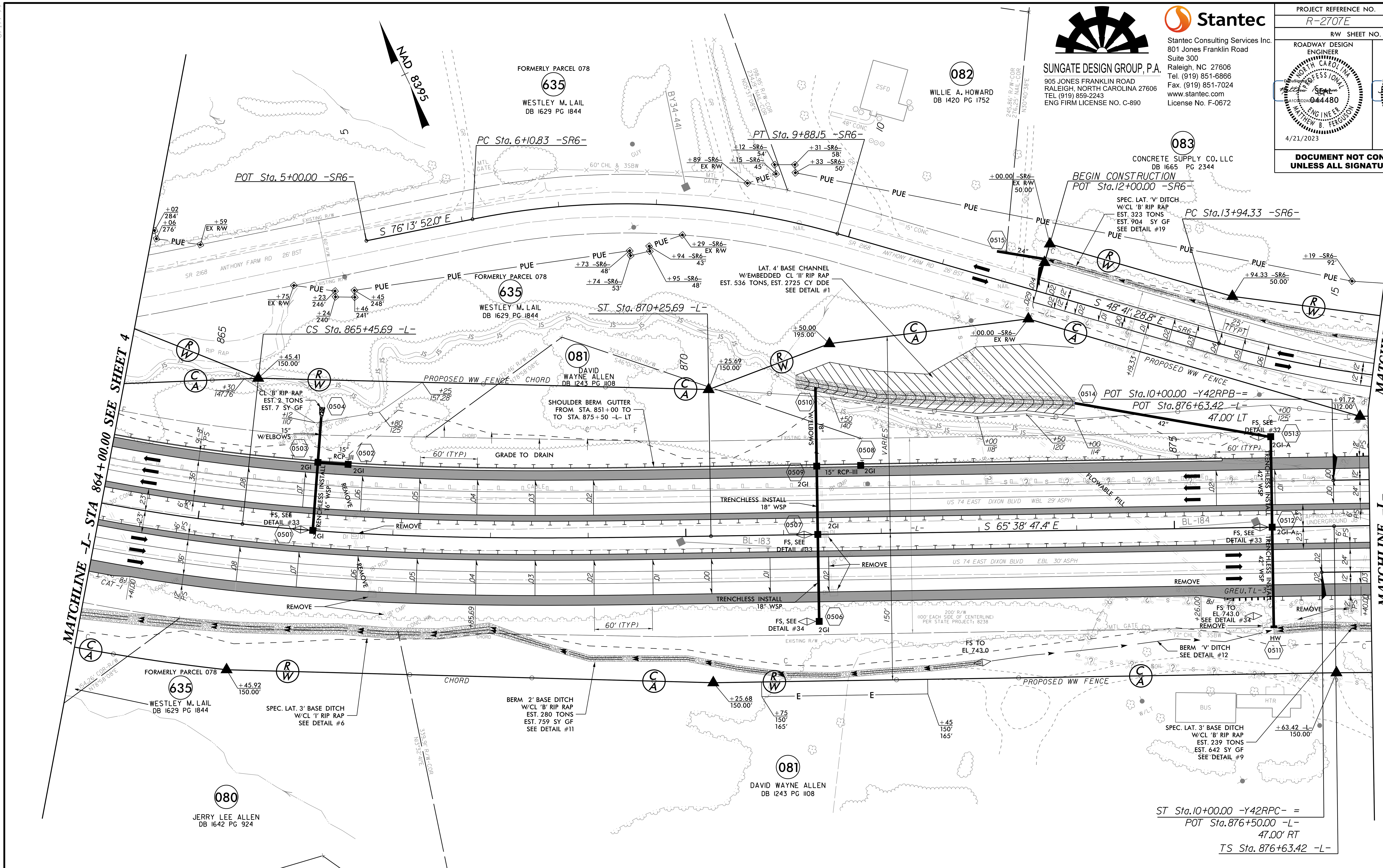

NAD 83/95
FORMERLY PARCEL 078
635
WESTLEY M. LAIL
DB 1629 PG 1844
082
WILLIE A. HOWARD
DB 1420 PG 1752
083
CONCRETE SUPPLY CO. LLC
DB 1665 PG 2344
081
DAVID WAYNE ALLEN
DB 1243 PG 1108
080
JERRY LEE ALLEN
DB 1642 PG 924
POT Sta. 5+00.00 -SR6-
PC Sta. 6+10.83 -SR6-
PT Sta. 9+88.15 -SR6-
BEGIN CONSTRUCTION
POT Sta.12+00.00 -SR6-
PC Sta.13+94.33 -SR6-
S 76° 13' 52.0" E
S 48° 41' 28.8" E
S 65° 38' 47.4" E
CS Sta. 865+45.69 -L-
ST Sta. 870+25.69 -L-
POT Sta.10+00.00 -Y42RPB- =
POT Sta.876+63.42 -L-
47.00' LT
ST Sta.10+00.00 -Y42RPC- =
POT Sta.876+50.00 -L-
47.00' RT
TS Sta. 876+63.42 -L-
MATCHLINE -L- STA 864+00.00 SEE SHEET 4
MATCHLINE -SR6- STA. 15+55.00 SEE SHEET 6
MATCHLINE -L- STA 877+00.00 SEE SHEET 6
US 74 EAST DIXON BLVD WBL 29' ASPH
US 74 EAST DIXON BLVD EBL 30' ASPH
SR 2168 ANTHONY FARM RD 26' BST
PROPOSED WW FENCE
LAT. 4' BASE CHANNEL
W/EMBEDDED CL 'II' RIP RAP
EST. 536 TONS, EST. 2725 CY DDE
SEE DETAIL #1
SPEC. LAT. 'V' DITCH
W/CL 'B' RIP RAP
EST. 323 TONS
EST. 904 SY GF
SEE DETAIL #19
SHOULDER BERM GUTTER
FROM STA. 851+00 TO
TO STA. 875+50 -L- LT
GRADE TO DRAIN
TRENCHLESS INSTALL
18" WSP
FLOWABLE FILL
SPEC. LAT. 3' BASE DITCH
W/CL 'I' RIP RAP
SEE DETAIL #6
BERM 2' BASE DITCH
W/CL 'B' RIP RAP
EST. 280 TONS
EST. 759 SY GF
SEE DETAIL #11
BERM 'V' DITCH
SEE DETAIL #12
SPEC. LAT. 3' BASE DITCH
W/CL 'B' RIP RAP
EST. 239 TONS
EST. 642 SY GF
SEE DETAIL #9

-L-	
PI Sta 860+97.91	PIs Sta 867+05.93
Δ = 27° 23' 57.3" (LT)	θs = 7° 11' 58.1"
D = 2° 59' 59.2"	Ls = 480.00'
L = 913.38'	LT = 320.27'
T = 465.59'	ST = 160.24'
R = 1,910.00'	
SE = .08	
DS = 70 MPH	

-L-
PIs Sta 878+23.42
θs = 1° 11' 59.7"
Ls = 240.00'
LT = 160.00'
ST = 80.00'

-SR6-	
PI Sta 8+03.21	PI Sta 16+60.45
Δ = 27° 32' 23.2" (RT)	Δ = 28° 42' 22.6" (LT)
D = 7° 17' 55.8"	D = 5° 30' 33.2"
L = 377.32'	L = 521.06'
T = 192.38'	T = 266.12'
R = 785.00'	R = 1,040.00'
	SE = .06
	RO = 150'
	DS = 50 MPH

REFERENCES:
FOR -L- PROFILE, SEE SHEET NO. 17
FOR -SR6- PROFILE, SEE SHEET NO. 34
FOR -Y42RPB- PROFILE, SEE SHEET NO. 28
FOR -Y42RPC- PROFILE, SEE SHEET NO. 29

PROJECT REFERENCE NO.	SHEET NO.
R-2707E	6
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — Matthew B. Ferguson, SEAL 044480, 4/28/2023
HYDRAULICS ENGINEER — Joshua G. Dalton, SEAL 26971, 4/28/2023

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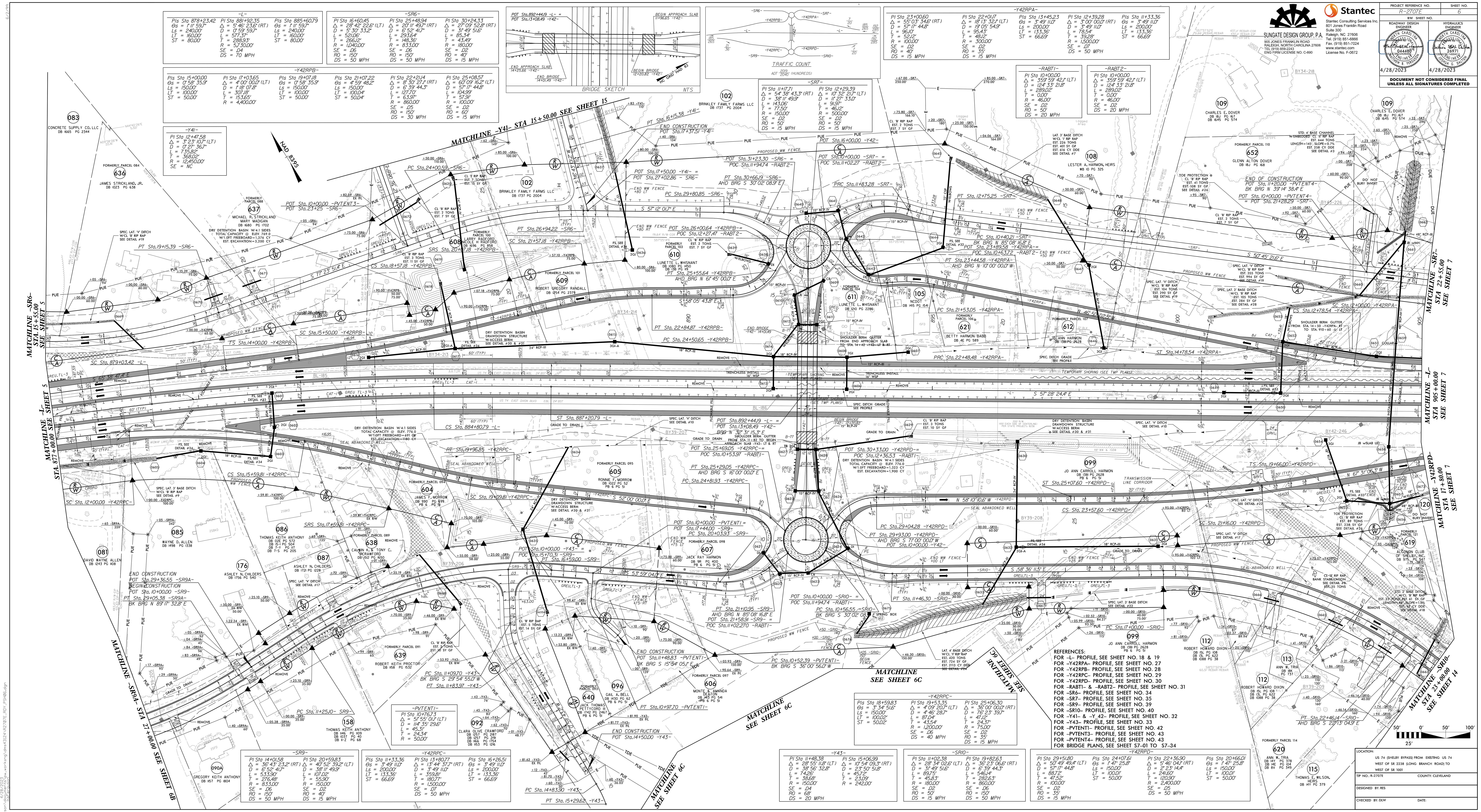

-L-

PIs Sta 878+23.42	PI Sta 881+92.35	PIs Sta 885+60.79
Θs = 1° 11' 59.7"	Δ = 5° 46' 23.6" (RT)	Θs = 1° 11' 59.7"
Ls = 240.00'	D = 0° 59' 59.7"	Ls = 240.00'
LT = 160.00'	L = 577.37'	LT = 160.00'
ST = 80.00'	T = 288.93'	ST = 80.00'
	R = 5,730.00'	
	SE = .04	
	DS = 70 MPH	

-SR6-

PI Sta 16+60.45	PI Sta 25+48.94	PI Sta 30+24.33
Δ = 28° 42' 22.6" (LT)	Δ = 20° 11' 49.7" (RT)	Δ = 27° 09' 52.8" (RT)
D = 5° 30' 33.2"	D = 6° 52' 41.7"	D = 31° 49' 51.6"
L = 521.06'	L = 293.64'	L = 85.34'
T = 266.12'	T = 148.36'	T = 43.49'
R = 1,040.00'	R = 833.00'	R = 180.00'
SE = .06	SE = .06	SE = .02
RO = 150'	RO = 150'	RO = 40'
DS = 50 MPH	DS = 50 MPH	DS = 15 MPH

-Y42RPB-

PIs Sta 15+00.00	PI Sta 17+03.65	PIs Sta 19+07.18	PIs Sta 21+07.22	PI Sta 22+21.14	PI Sta 25+08.57
Θs = 0° 58' 35.9"	Δ = 4° 00' 00.0" (LT)	Θs = 0° 58' 35.9"	Θs = 4° 59' 48.2"	Δ = 8° 30' 27.1" (RT)	Δ = 60° 09' 16.2" (LT)
Ls = 150.00'	D = 1° 18' 07.8"	Ls = 150.00'	Ls = 150.00'	D = 6° 39' 44.3"	D = 57° 17' 44.8"
LT = 100.00'	L = 307.18'	LT = 100.00'	LT = 100.04'	L = 127.70'	L = 104.99'
ST = 50.00'	T = 153.65'	ST = 50.00'	ST = 50.04'	T = 63.97'	T = 57.91'
	R = 4,400.00'			R = 860.00'	R = 100.00'
				SE = .05	SE = .02
				RO = 150'	RO = 60'
				DS = 30 MPH	DS = 15 MPH

-Y41-

PI Sta 12+47.58
Δ = 3° 23' 10.7" (LT)
D = 0° 27' 36.7"
L = 735.82'
T = 368.02'
R = 12,450.00'
SE = NC

-SR7-

PI Sta 11+17.71	PI Sta 12+29.39
Δ = 54° 38' 43.3" (RT)	Δ = 10° 32' 21.7" (LT)
D = 38° 11' 49.9"	D = 11° 27' 33.0"
L = 143.06'	L = 91.97'
T = 77.50'	T = 46.12'
R = 150.00'	R = 500.00'
SE = .02	SE = .02
RO = 50'	RO = 50'
DS = 15 MPH	DS = 15 MPH

-Y42RPA-

PI Sta 23+00.60	PI Sta 22+01.17	PIs Sta 13+45.23	PI Sta 12+39.28	PIs Sta 11+33.36
Δ = 55° 03' 34.6" (RT)	Δ = 18° 13' 32.1" (LT)	Θs = 3° 49' 11.0"	Δ = 3° 00' 00.0" (RT)	Θs = 3° 49' 11.0"
D = 57° 17' 44.8"	D = 19° 05' 54.9"	Ls = 200.00'	D = 3° 49' 11.0"	Ls = 200.00'
L = 96.10'	L = 95.43'	LT = 133.36'	L = 78.54'	LT = 133.36'
T = 52.12'	T = 48.12'	ST = 66.69'	T = 39.28'	ST = 66.69'
R = 100.00'	R = 300.00'		R = 1,500.00'	
SE = .02	SE = .02		SE = .07	
RO = 40'	RO = 35'		DS = 50 MPH	
DS = 15 MPH	DS = 15 MPH			

-RABT1-

PI Sta 10+00.00
Δ = 359° 59' 42.1" (LT)
D = 124° 33' 21.8"
L = 289.02'
T = 0.00'
R = 46.00'
SE = .02
RO = 50'
DS = 20 MPH

-RABT2-

PI Sta 10+00.00
Δ = 359° 59' 42.1" (LT)
D = 124° 33' 21.8"
L = 289.02'
T = 0.00'
R = 46.00'
SE = .02
DS = 20 MPH

REFERENCES:
FOR -L- PROFILE, SEE SHEET NO. 18 & 19
FOR -Y42RPA- PROFILE, SEE SHEET NO. 27
FOR -Y42RPB- PROFILE, SEE SHEET NO. 28
FOR -Y42RPC- PROFILE, SEE SHEET NO. 29
FOR -Y42RPD- PROFILE, SEE SHEET NO. 30
FOR -RABT1- & -RABT2- PROFILE, SEE SHEET NO. 31
FOR -SR6- PROFILE, SEE SHEET NO. 34
FOR -SR7- PROFILE, SEE SHEET NO. 35
FOR -SR9- PROFILE, SEE SHEET NO. 39
FOR -SR10- PROFILE, SEE SHEET NO. 40
FOR -Y41- & -Y_42- PROFILE, SEE SHEET NO. 32
FOR -Y43- PROFILE, SEE SHEET NO. 33
FOR -PVTENT1- PROFILE, SEE SHEET NO. 42
FOR -PVTENT3- PROFILE, SEE SHEET NO. 43
FOR -PVTENT4- PROFILE, SEE SHEET NO. 43
FOR BRIDGE PLANS, SEE SHEET S7-01 TO S7-34

-PVTENT1-

PI Sta 10+76.73
Δ = 51° 55' 01.1" (LT)
D = 114° 35' 29.6"
L = 45.31'
T = 24.34'
R = 50.00'

-Y42RPC-

PIs Sta 18+59.83	PI Sta 19+53.35	PI Sta 25+06.30
Θs = 3° 34' 51.6"	Δ = 4° 09' 20.7" (LT)	Δ = 36° 00' 00.0" (RT)
Ls = 150.00'	D = 4° 46' 28.7"	D = 76° 23' 39.7"
LT = 100.02'	L = 87.04'	L = 47.12'
ST = 50.02'	T = 43.54'	T = 24.37'
	R = 1,200.00'	R = 75.00'
	SE = .06	SE = .02
	DS = 40 MPH	RO = 35'
		DS = 15 MPH

-SR9-

PI Sta 14+01.58	PI Sta 20+59.83
Δ = 36° 43' 23.2" (RT)	Δ = 40° 52' 39.2" (LT)
D = 6° 52' 41.7"	D = 38° 11' 49.9"
L = 533.90'	L = 107.02'
T = 276.48'	T = 55.90'
R = 833.00'	R = 150.00'
SE = .06	SE = .02
RO = 150'	RO = 40'
DS = 50 MPH	DS = 15 MPH

-Y42RPC-

PIs Sta 11+33.36	PI Sta 13+80.77	PIs Sta 16+26.51
Θs = 3° 49' 11.0"	Δ = 13° 44' 37.7" (RT)	Θs = 3° 49' 11.0"
Ls = 200.00'	D = 3° 49' 11.0"	Ls = 200.00'
LT = 133.36'	L = 359.81'	LT = 133.36'
ST = 66.69'	T = 180.77'	ST = 66.69'
	R = 1,500.00'	
	SE = .07	
	DS = 50 MPH	

-Y43-

PI Sta 11+48.38	PI Sta 15+06.99
Δ = 28° 55' 11.8" (LT)	Δ = 10° 54' 09.3" (RT)
D = 38° 56' 32.8"	D = 23° 50' 51.8"
L = 74.26'	L = 45.72'
T = 38.68'	T = 23.09'
R = 150.00'	R = 242.00'
SE = .04	
RO = 68'	
DS = 20 MPH	

-SR10-

PI Sta 11+02.38	PI Sta 19+82.63
Δ = 28° 34' 02.6" (LT)	Δ = 36° 23' 06.6" (RT)
D = 31° 49' 51.6"	D = 6° 39' 44.3"
L = 89.75'	L = 546.14'
T = 45.83'	T = 282.63'
R = 180.00'	R = 860.00'
SE = .02	SE = .06
RO = 50'	RO = 150'
DS = 15 MPH	DS = 50 MPH

-Y42RPD-

PI Sta 29+51.80	PIs Sta 24+07.61	PI Sta 22+36.90	PIs Sta 20+66.01
Δ = 50° 49' 49.4" (LT)	Θs = 1° 47' 25.8"	Δ = 5° 46' 04.1" (RT)	Θs = 1° 47' 25.8"
D = 57° 17' 44.8"	Ls = 150.00'	D = 2° 23' 14.4"	Ls = 150.00'
L = 88.72'	LT = 100.01'	L = 241.60'	LT = 100.01'
T = 47.52'	ST = 50.00'	T = 120.90'	ST = 50.00'
R = 100.00'		R = 2,400.00'	
SE = .02		SE = .05	
RO = 35'		DS = 50 MPH	
DS = 15 MPH			

50' 0' 50' 100'
25'

LOCATION:
US 74 (SHELBY BYPASS) FROM EXISTING US 74 WEST OF SR 2238 (LONG BRANCH ROAD) TO WEST OF SR 1001

TIP NO.: R-2707E COUNTY: CLEVELAND
DESIGNED BY: RES
CHECKED BY: DLW DATE:

8/17/99

RONNIE BRADY CHEEK
CATHY CORNWELL CHEEK
DB 1436 PG 2438,
TRACT 1

S 62°44'27" E
579.18'

079
RONNIE BRADY CHEEK
CATHY CORNWELL CHEEK
DB 1444 PG 2041
DB 1436 PG 2438

S 88°36'50" E
197.33'

R2707-21

PC Sta. 10+81.58 -SR9A-
BK BRG N 82° 45' 23.4" E

POT Sta. 10+00.00 -SR9A-

BEGIN CONSTRUCTION
POT Sta.10+18.26 -SR9A-
BY38-202

ASPHALT PAVING OF SHELBY, INC.
DB 15-S PG 117
DB NNN PG 32
DB FFF PG 543
DB YY PG 352

161
ROBERT L. TRICE & WF.
LISA V. TRICE
DB 977 PG 127
DB 1205 PG 1000

PT Sta. 12+86.53 -SR9A-

MATCH SHEET NO.6B STA.15+00 -SR9A-

N 72°04'38" E
153.20'

+86.53 -SR9A-
60.00'

+60.00 -SR9A-
EX R/W

+81.58 -SR9A-
60.00'

+17 -SR9A-
82'
88'

+99 -SR9A-
82'
88'

+18.76 -SR9A-
EX R/W

+27 -SR9A-
88'

+24 -SR9A-
100'

+08.82 -SR9A-
EX R/W

LINE ROADWY DITCH
W/CL 'B' RIP RAP
EST. 539 TONS
EST. 1509 SY GF
SEE DETAIL #25

159
PAUL H. DOVER & RACHEL H. DOVER
REVOCABLE LIVING TRUST
DB 1510 PG 1476

162
ASPHALT PAVING
OF SHELBY, INC.
DB 15-S PG 117
DB NNN PG 32
DB FFF PG 543
DB YY PG 352

ASHLEY PAUL DOVER
DB IIK PG 137

NAD 83'95

-SR9A-
PI Sta 11+84.39
△ = 10° 40' 45.2" (LT)
D = 5° 12' 37.8"
L = 204.96'
T = 102.81'
R = 1,100.00'
SE = 0.04
DS = 50 mph

REFERENCES:
FOR -SR9A- PROFILE, SEE SHEET NO. 46

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

SUNGATE DESIGN GROUP, P.A.
905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
ENG FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R-2707E	6A
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 044480 ENGINEER MATTHEW B. FERGUSON
4/21/2023

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON
4/21/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

4/6/2023
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PROJECT REFERENCE NO.	SHEET NO.
R-2707E	6B
R/W SHEET NO.	

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ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 044480 MATTHEW B. FERGUSON — 4/21/2023

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 26971 JOSHUA G. DALTON — 4/21/2023

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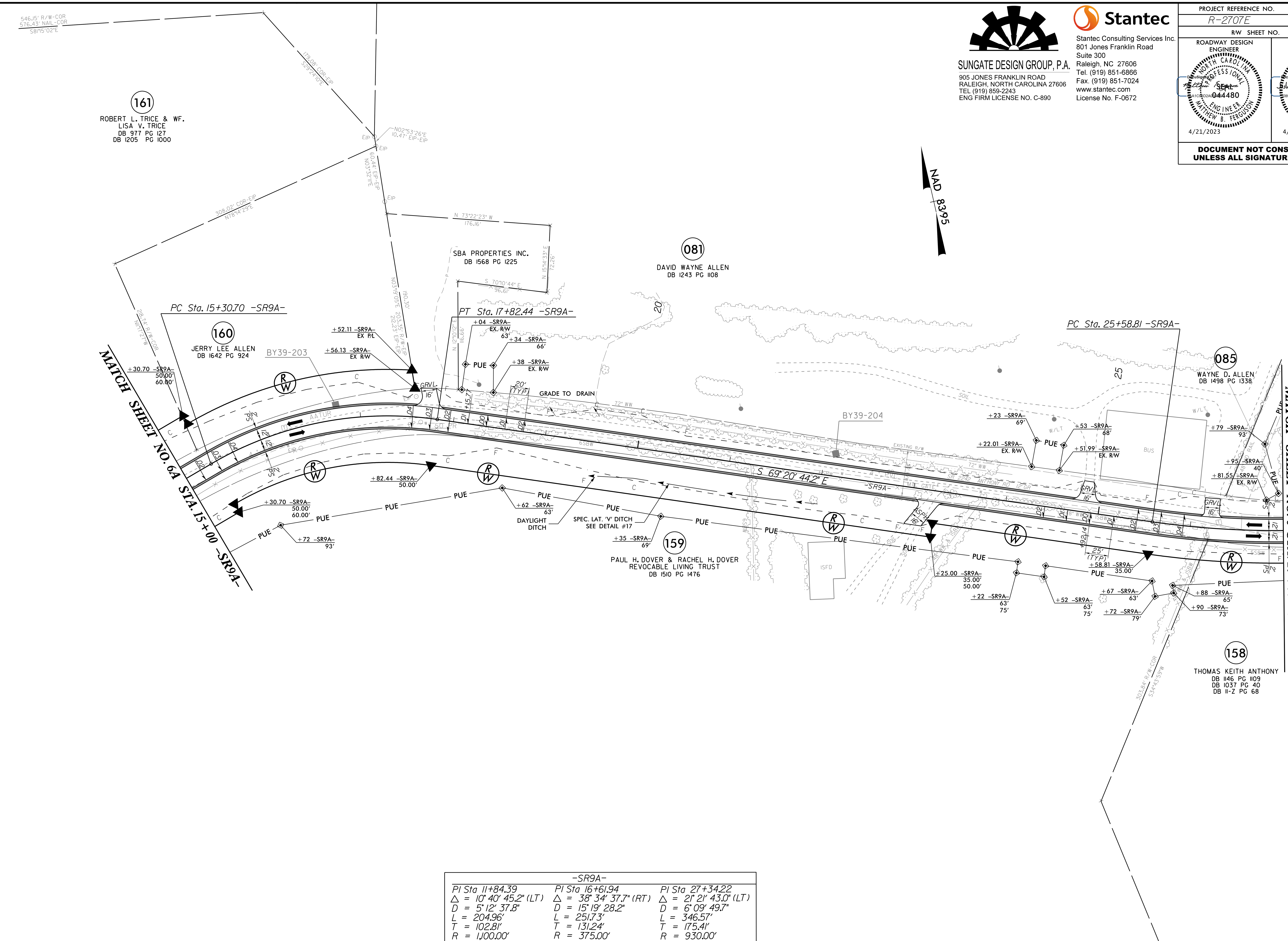

-SR9A-		
PI Sta 11+84.39	PI Sta 16+61.94	PI Sta 27+34.22
Δ = 10° 40' 45.2" (LT)	Δ = 38° 34' 37.7" (RT)	Δ = 21° 21' 43.0" (LT)
D = 5° 12' 37.8"	D = 15° 19' 28.2"	D = 6° 09' 49.7"
L = 204.96'	L = 251.73'	L = 346.57'
T = 102.81'	T = 131.24'	T = 175.41'
R = 1,100.00'	R = 375.00'	R = 930.00'
SE = 0.04	SE = 0.04	SE = 0.04
DS = 50 mph	DS = 35 mph	DS = 50 mph

REFERENCES:
FOR -SR9A- PROFILE, SEE SHEET NO. 46

4/6/2023
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8/17/99

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Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
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PROJECT REFERENCE NO.	SHEET NO.
R-2707E	6C
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 044480 ENGINEER MATTHEW B. FERGUSON
4/21/2023

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON
4/21/2023

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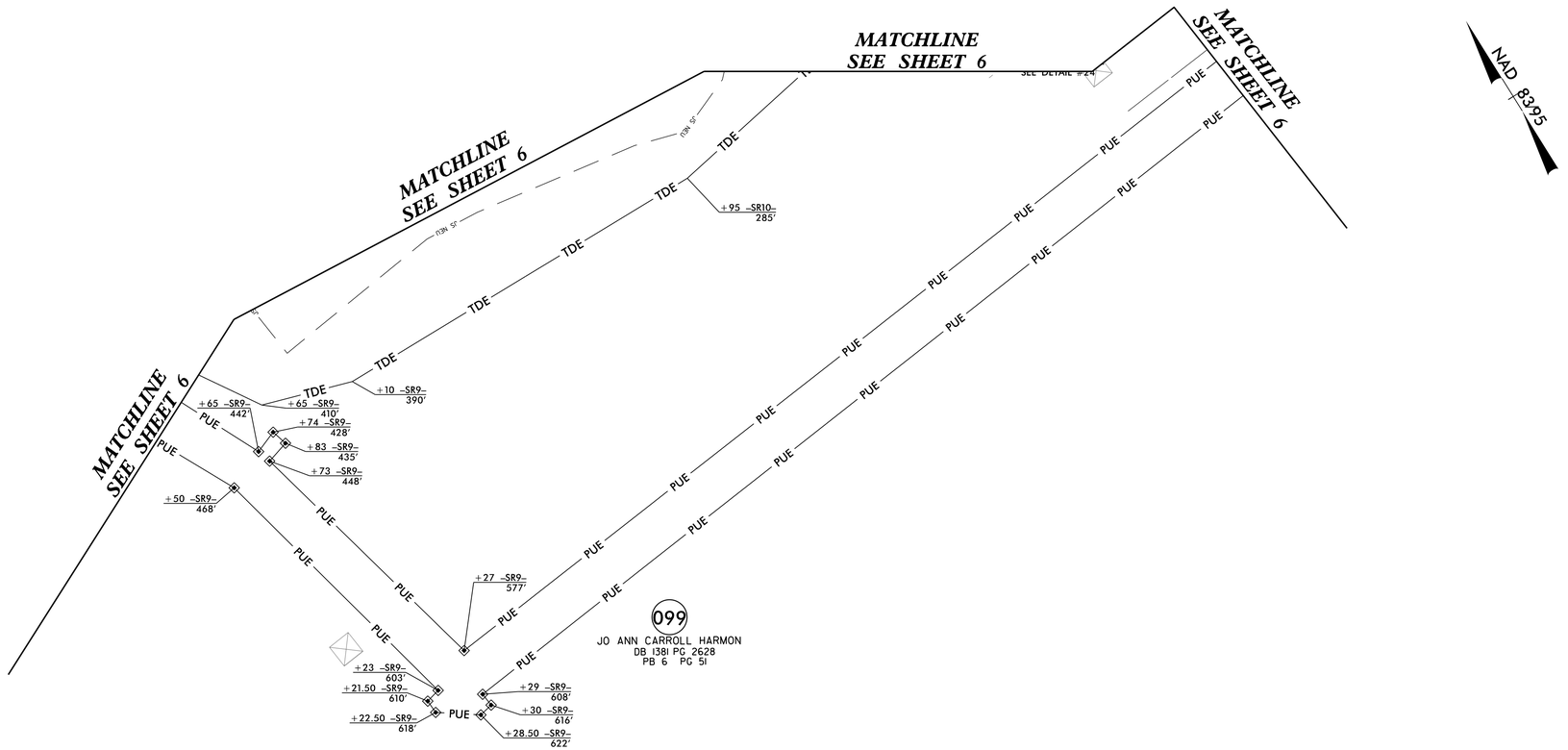

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PROJECT REFERENCE NO.	SHEET NO.
R-2707E	6D

R/W SHEET NO.

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905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
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ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 044480 MATTHEW B. FERGUSON — 4/21/2023

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 26971 JOSHUA G. DALTON — 4/21/2023

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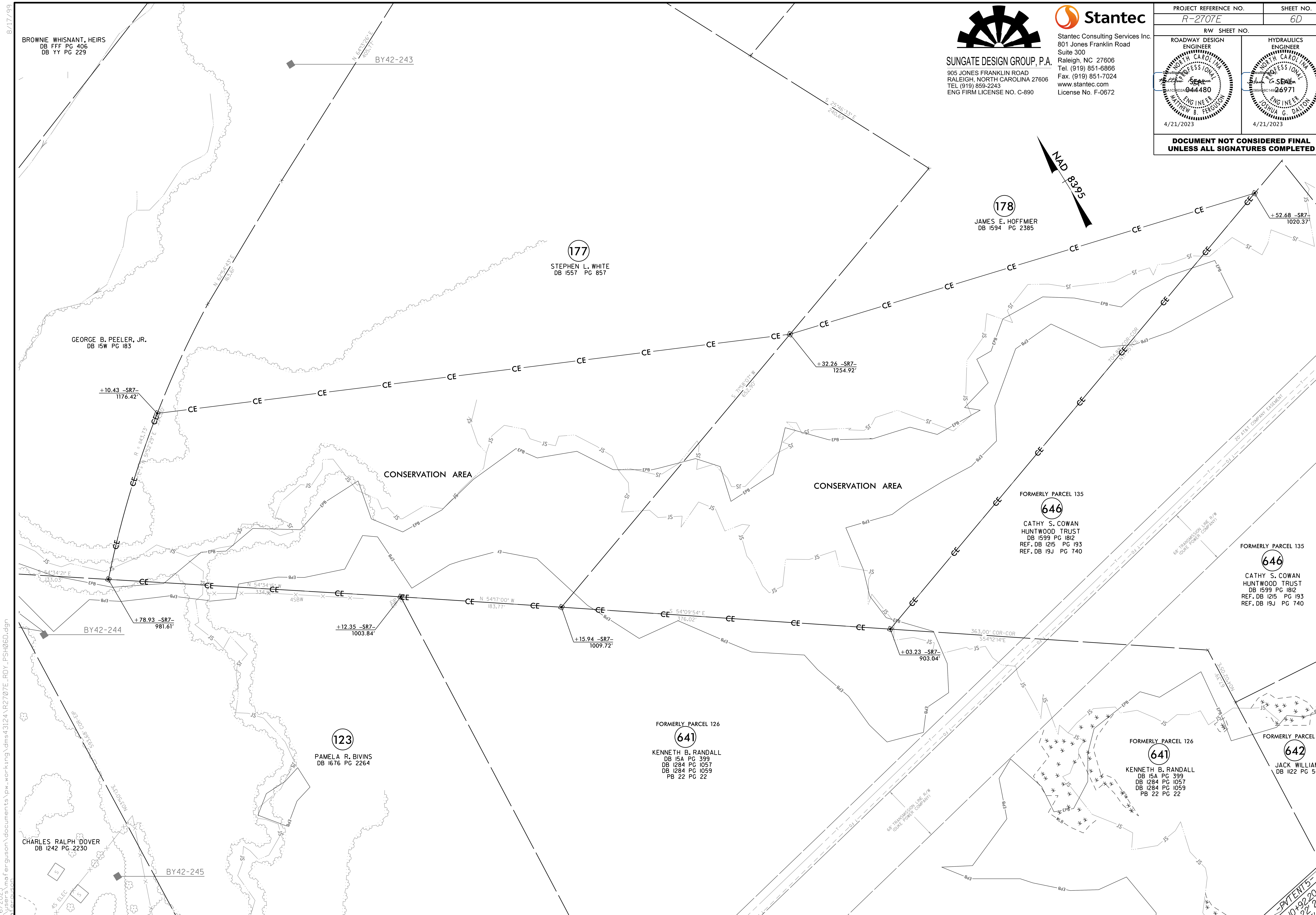

8/17/99
BROWNIE WHISNANT, HEIRS
DB FFF PG 406
DB YY PG 229
BY42-243
NAD 83
177
STEPHEN L. WHITE
DB 1557 PG 857
178
JAMES E. HOFFMIER
DB 1594 PG 2385
GEORGE B. PEELER, JR.
DB 15W PG 183
+10.43 -SR7-
1176.42'
+32.26 -SR7-
1254.92'
+52.68 -SR7-
1020.37'
CONSERVATION AREA
CONSERVATION AREA
FORMERLY PARCEL 135
646
CATHY S. COWAN
HUNTWOOD TRUST
DB 1599 PG 1812
REF. DB 1215 PG 193
REF. DB 19J PG 740
+78.93 -SR7-
981.61'
+12.35 -SR7-
1003.84'
+15.94 -SR7-
1009.72'
+03.23 -SR7-
903.04'
BY42-244
N 54°17'00" W
183.77'
S 54°09'54" E
376.02'
363.00' COR-COR
123
PAMELA R. BIVINS
DB 1676 PG 2264
FORMERLY PARCEL 126
641
KENNETH B. RANDALL
DB 15A PG 399
DB 1284 PG 1057
DB 1284 PG 1059
PB 22 PG 22
FORMERLY PARCEL 12
642
JACK WILLIAMS
DB 1122 PG 548
CHARLES RALPH DOVER
DB 1242 PG 2230
BY42-245
68' TRANSMISSION LINE R/W DUKE POWER COMPANY
20' AT&T COMPANY EASEMENT
-PVTENT5-
4/6/2023
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PROJECT REFERENCE NO.	SHEET NO.
R-2707E	7
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 044480 MATTHEW B. FERGUSON 4/21/2023

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 26971 JOSHUA G. DALTON 4/21/2023

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RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
ENG FIRM LICENSE NO. C-890

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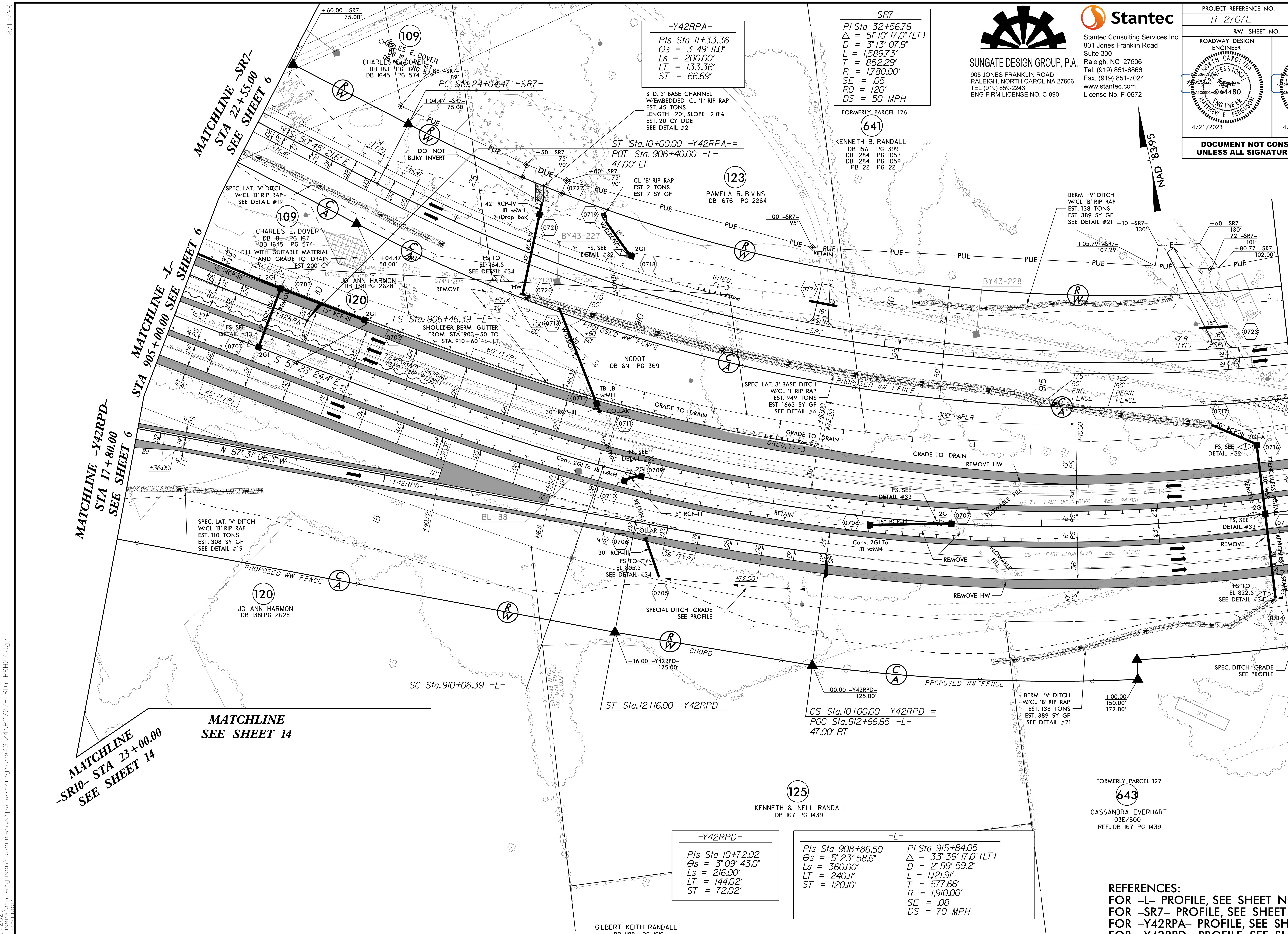
MATCHLINE -SR7- STA 22+55.00 SEE SHEET 6
MATCHLINE -L- STA 905+00.00 SEE SHEET 6
MATCHLINE -Y42RPD- STA 17+80.00 SEE SHEET 6
MATCHLINE -SR7- STA 34+52.00 SEE SHEET 8
MATCHLINE -L- STA 918+00.00 SEE SHEET 8
MATCHLINE SEE SHEET 14
MATCHLINE -SR10- STA 23+00.00 SEE SHEET 14
NAD 83/95
109 CHARLES E. DOVER DB 18J PG 167 DB 1645 PG 574
120 JO ANN HARMON DB 1381 PG 2628
123 PAMELA R. BIVINS DB 1676 PG 2264
FORMERLY PARCEL 126
641 KENNETH B. RANDALL DB 15A PG 399 DB 1284 PG 1057 DB 1284 PG 1059 PB 22 PG 22
125 KENNETH & NELL RANDALL DB 1671 PG 1439
FORMERLY PARCEL 127
643 CASSANDRA EVERHART 03E/500 REF. DB 1671 PG 1439
GILBERT KEITH RANDALL DB 1188 PG 1919
NCDOT DB 6N PG 369
PC Sta.24+04.47 -SR7-
ST Sta.10+00.00 -Y42RPA-= POT Sta. 906+40.00 -L- 47.00' LT
TS Sta. 906+46.39 -L-
SC Sta.910+06.39 -L-
ST Sta.12+16.00 -Y42RPD-
CS Sta.10+00.00 -Y42RPD-= POC Sta.912+66.65 -L- 47.00' RT
S 50°45'21.6" E
S 57°28'24.4" E
N 67°31'06.3" W
STD. 3' BASE CHANNEL W/EMBEDDED CL 'II' RIP RAP EST. 45 TONS LENGTH=20', SLOPE=2.0% EST. 20 CY DDE SEE DETAIL #2
CL 'B' RIP RAP EST. 2 TONS EST. 7 SY GF
SPEC. LAT. 'V' DITCH W/CL 'B' RIP RAP SEE DETAIL #19
FILL WITH SUITABLE MATERIAL AND GRADE TO DRAIN EST 200 CY
SHOULDER BERM GUTTER FROM STA. 903+50 TO STA. 910+60 -L- LT
SPEC. LAT. 3' BASE DITCH W/CL 'I' RIP RAP EST. 949 TONS EST. 1663 SY GF SEE DETAIL #6
BERM 'V' DITCH W/CL 'B' RIP RAP EST. 138 TONS EST. 389 SY GF SEE DETAIL #21
SPEC. LAT. 'V' DITCH W/CL 'B' RIP RAP EST. 110 TONS EST. 308 SY GF SEE DETAIL #19
SPECIAL DITCH GRADE SEE PROFILE
SPEC. DITCH GRADE SEE PROFILE
TEMPORARY SHORING (SEE TMP PLANS)
DO NOT BURY INVERT
42" RCP-IV JB w/MH 7 (Drop Box)
TB JB w/MH
Conv. 2GI To JB w/MH
Conv. 2GI To JB w/MH
FS TO EL 764.5 SEE DETAIL #34
FS TO EL 805.3 SEE DETAIL #34
FS TO EL 822.5 SEE DETAIL #34
300' TAPER
GRADE TO DRAIN
REMOVE HW
FLOWABLE FILL
US 74 EAST DIXON BLVD WBL 24' BST
US 74 EAST DIXON BLVD EBL 24' BST
TRENCHLESS INSTALL 30" WSP
PROPOSED WW FENCE
END FENCE
BEGIN FENCE
BY43-227
BY43-228
BL-188
GREU. TL-3

-SR7-
PI Sta 32+56.76
△ = 51°10' 17.0" (LT)
D = 3°13' 07.9"
L = 1,589.73'
T = 852.29'
R = 1,780.00'
SE = .05
RO = 120'
DS = 50 MPH

-Y42RPA-
PIs Sta 11+33.36
Θs = 3°49' 11.0"
Ls = 200.00'
LT = 133.36'
ST = 66.69'

-Y42RPD-
PIs Sta 10+72.02
Θs = 3°09' 43.0"
Ls = 216.00'
LT = 144.02'
ST = 72.02'

-L-	
PIs Sta 908+86.50	PI Sta 915+84.05
Θs = 5°23' 58.6"	△ = 33°39' 17.0" (LT)
Ls = 360.00'	D = 2°59' 59.2"
LT = 240.11'	L = 1,121.91'
ST = 120.10'	T = 577.66'
	R = 1,910.00'
	SE = .08
	DS = 70 MPH

REFERENCES:
FOR -L- PROFILE, SEE SHEET NO. 20
FOR -SR7- PROFILE, SEE SHEET NO. 35
FOR -Y42RPA- PROFILE, SEE SHEET NO. 27
FOR -Y42RPD- PROFILE, SEE SHEET NO. 30