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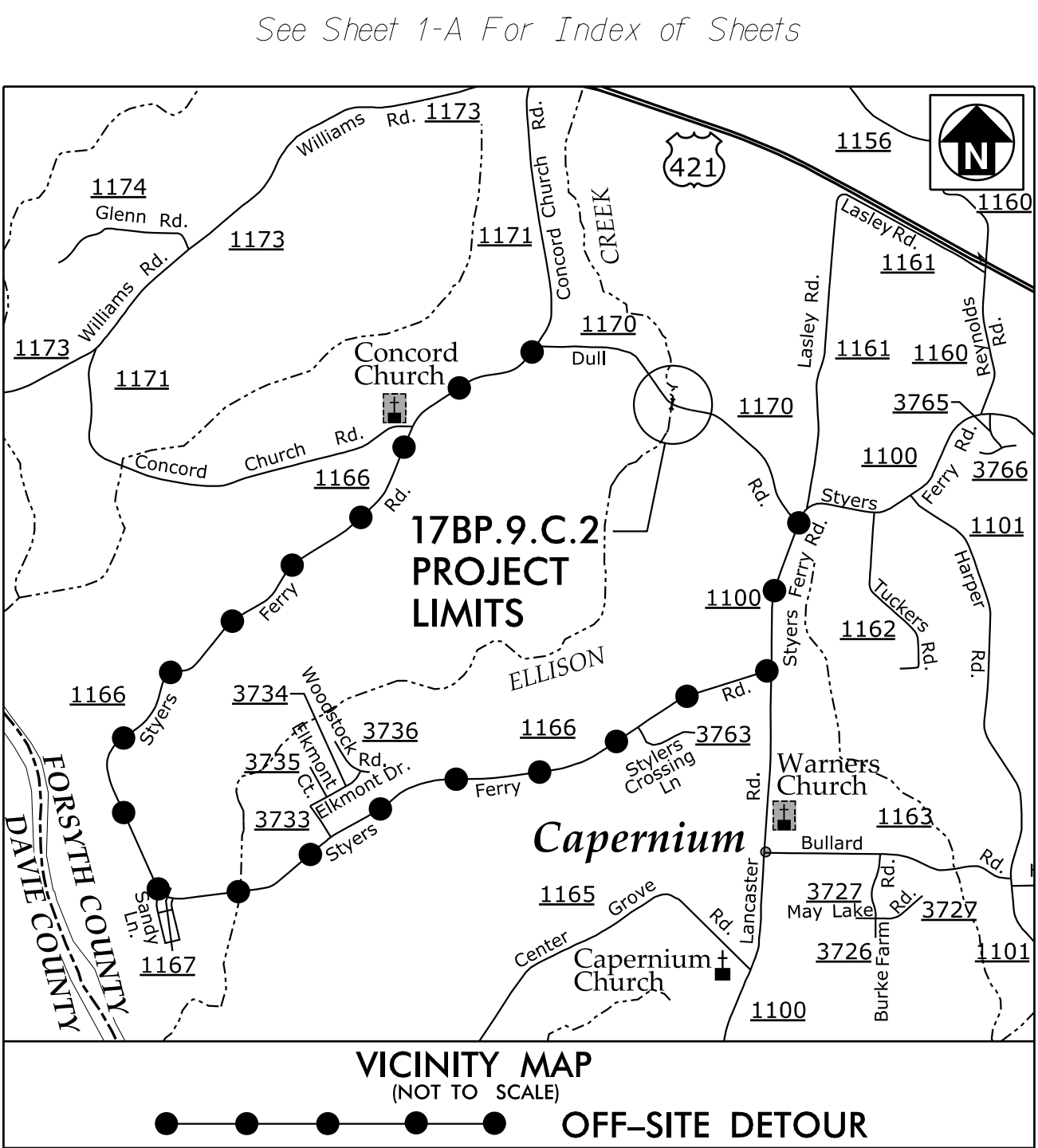
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09.08/2017

PROJECT: 17BP.9.C.2

CONTRACT: DI00174

I5:57:41
R:\Roadway\Proj\330133_rdy_tsh.dgn
deftout



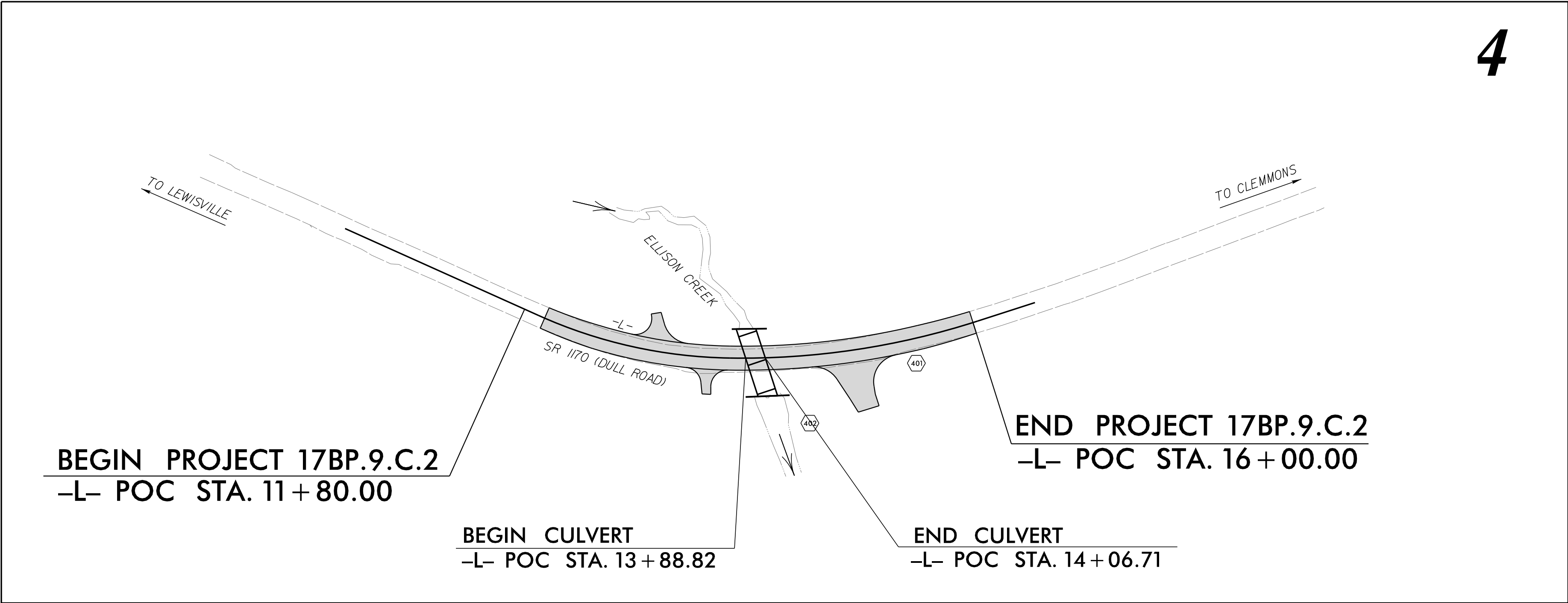
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

FORSYTH COUNTY

LOCATION: CULVERT NO.133 OVER ELLISON CREEK
ON SR 1170 (DULL ROAD)

TYPE OF WORK: GRADING, PAVING, DRAINAGE AND CULVERT

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.9.C.2	1	
STATE PROJ.NO.	F.A.PROJ.NO.	DESCRIPTION	
17BP.9.C.2	N/A	PE	
17BP.9.C.2	N/A	R/W / UTIL	
17BP.9.C.2	N/A	CONST	



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:

M PO Box 700
Fuquay-Varina, NC 27526
(919) 552-2253
(919) 552-2254 (Fax)
www.mottmac.com/americas

M
MOTT
MACDONALD

LICENSE NO. F-0669

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

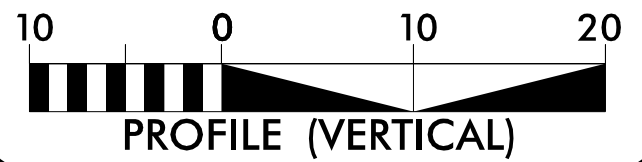
GRAPHIC SCALES



PLANS



PROFILE (HORIZONTAL)



PROFILE (VERTICAL)

DESIGN DATA

ADT (2013) = 2000

V = 55 MPH

FUNC CLASS =
MAJOR COLLECTOR
SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT = 0.077 MILES

LENGTH STRUCTURE TIP PROJECT = 0.003 MILES

TOTAL LENGTH TIP PROJECT = 0.080 MILES

Prepared In the Office of Mott MacDonald for

DIVISION 9

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MARCH 1, 2017

LETTING DATE:
OCTOBER 25, 2017

DAVID C. WALLER, PE
PROJECT ENGINEER

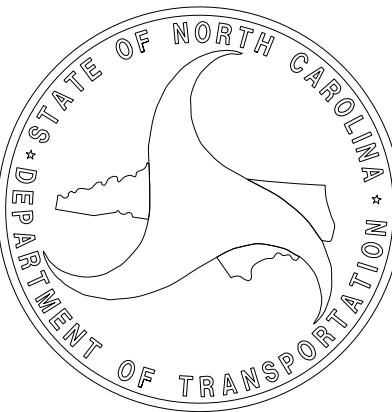
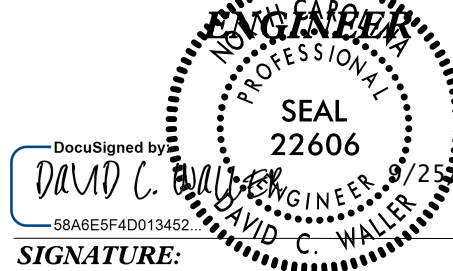
WILLIAM G. CAIL, PE
HYDRAULIC ENGINEER

MATTHEW JONES, PE
NCDOT BRIDGE PROGRAM MANAGER

HYDRAULICS ENGINEER



ROADWAY DESIGN



8/17/99

S:\Q10_4M
R:\Roadway\Proj\330133_r.dwg
psh01a.dgn
8/17/2014

INDEX OF SHEETS:

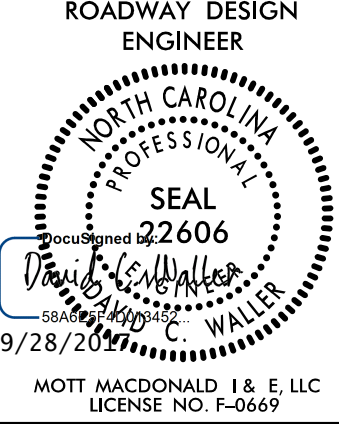
SHEET NO.	DESCRIPTION
1	TITLE SHEET
1-A	GENERAL NOTES, LIST OF STANDARD DRAWINGS, INDEX OF SHEETS
1-B	CONVENTIONAL SYMBOLS
1C-1	SURVEY CONTROL SHEET
2A-1	PAVEMENT SCHEDULE & TYPICAL SECTIONS
2C-1 THRU 2C-7	GUARDRAIL DETAILS
3	SUMMARY SHEET
4	PLAN/PROFILE SHEET
TMP-1 THRU TMP-3	TRAFFIC MANAGEMENT PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
UO-1	UTILITY BY OTHERS PLAN
X-1 THRU X-3	CROSS SECTIONS

EFF. 01-17-2012
REV. 02-29-2016

2012 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2012 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
840.19	Concrete Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.24	Frames and Narrow Slot Sag Grates
840.28	Brick Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.45	Precast Drainage Structure
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units (Beg. March 2013 Letting use detail in lieu of Standard)

PROJECT REFERENCE NO.		SHEET NO.	
17BP.9C.2		1A	
		ROADWAY DESIGN ENGINEER  9/28/2014 MOTT MACDONALD I & E, LLC LICENSE NO. F-0669	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

GENERAL NOTES: 2012 SPECIFICATIONS
EFFECTIVE: 01-17-2012
REVISED: 01-24-2017

GRADE LINE:
GRADING AND SURFACING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:

ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01

GUARDRAIL:

THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER PRIOR TO ORDERING GUARDRAIL MATERIAL.

SUBSURFACE PLANS:

NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE Duke Energy Carolinas, LLC.,

City of Winston Salem, Piedmont Natural Gas and Windstream Communications.

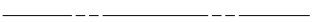
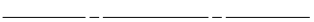
ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

RIGHT-OF-WAY MARKERS:

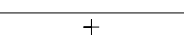
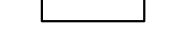
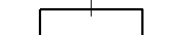
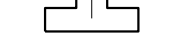
ALL RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY CONTRACT.

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS
CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

State Line	
County Line	
Township Line	
City Line	
Reservation Line	
Property Line	
Existing Iron Pin	
Computed Property Corner	
Property Monument	
Parcel/Sequence Number	
Existing Fence Line	
Proposed Woven Wire Fence	
Proposed Chain Link Fence	
Proposed Barbed Wire Fence	
Existing Wetland Boundary	
Proposed Wetland Boundary	
Existing Endangered Animal Boundary	
Existing Endangered Plant Boundary	
Existing Historic Property Boundary	
Known Contamination Area: Soil	
Potential Contamination Area: Soil	
Known Contamination Area: Water	
Potential Contamination Area: Water	
Contaminated Site: Known or Potential	

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	
Sign	
Well	
Small Mine	
Foundation	
Area Outline	
Cemetery	
Building	
School	
Church	
Dam	

HYDROLOGY:

Stream or Body of Water	
Hydro, Pool or Reservoir	
Jurisdictional Stream	
Buffer Zone 1	
Buffer Zone 2	
Flow Arrow	
Disappearing Stream	
Spring	
Wetland	
Proposed Lateral, Tail, Head Ditch	
False Sump	

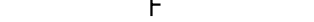
RAILROADS:

Standard Gauge	
RR Signal Milepost	
Switch	
RR Abandoned	
RR Dismantled	

RIGHT OF WAY & PROJECT CONTROL:

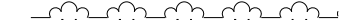
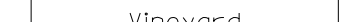
Secondary Horiz and Vert Control Point	
Primary Horiz Control Point	
Primary Horiz and Vert Control Point	
Exist Permanent Easment Pin and Cap	
New Permanent Easement Pin and Cap	
Vertical Benchmark	
Existing Right of Way Marker	
Existing Right of Way Line	
New Right of Way Line	
New Right of Way Line with Pin and Cap	
New Right of Way Line with Concrete or Granite R/W Marker	
New Control of Access Line with Concrete C/A Marker	
Existing Control of Access	
New Control of Access	
Existing Easement Line	
New Temporary Construction Easement	
New Temporary Drainage Easement	
New Permanent Drainage Easement	
New Permanent Drainage /Utility Easement	
New Permanent Utility Easement	
New Temporary Utility Easement	
New Aerial Utility Easement	

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	
Existing Curb	
Proposed Slope Stakes Cut	
Proposed Slope Stakes Fill	
Proposed Curb Ramp	
Existing Metal Guardrail	
Proposed Guardrail	
Existing Cable Guiderail	
Proposed Cable Guiderail	
Equality Symbol	
Pavement Removal	

VEGETATION:

Single Tree	
Single Shrub	

Hedge	
Woods Line	
Orchard	
Vineyard	

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	
Bridge Wing Wall, Head Wall and End Wall	
MINOR:	
Head and End Wall	
Pipe Culvert	
Footbridge	
Drainage Box: Catch Basin, DI or JB	
Paved Ditch Gutter	
Storm Sewer Manhole	
Storm Sewer	

UTILITIES:

POWER:	
Existing Power Pole	
Proposed Power Pole	
Existing Joint Use Pole	
Proposed Joint Use Pole	
Power Manhole	
Power Line Tower	
Power Transformer	
U/G Power Cable Hand Hole	
H-Frame Pole	
U/G Power Line LOS B (S.U.E.*)	
U/G Power Line LOS C (S.U.E.*)	
U/G Power Line LOS D (S.U.E.*)	

TELEPHONE:

Existing Telephone Pole	
Proposed Telephone Pole	
Telephone Manhole	
Telephone Pedestal	
Telephone Cell Tower	
U/G Telephone Cable Hand Hole	
U/G Telephone Cable LOS B (S.U.E.*)	
U/G Telephone Cable LOS C (S.U.E.*)	
U/G Telephone Cable LOS D (S.U.E.*)	
U/G Telephone Conduit LOS B (S.U.E.*)	
U/G Telephone Conduit LOS C (S.U.E.*)	
U/G Telephone Conduit LOS D (S.U.E.*)	
U/G Fiber Optics Cable LOS B (S.U.E.*)	
U/G Fiber Optics Cable LOS C (S.U.E.*)	
U/G Fiber Optics Cable LOS D (S.U.E.*)	

WATER:

Water Manhole	
Water Meter	
Water Valve	
Water Hydrant	
U/G Water Line LOS B (S.U.E.*)	
U/G Water Line LOS C (S.U.E.*)	
U/G Water Line LOS D (S.U.E.*)	
Above Ground Water Line	

TV:

TV Pedestal	
TV Tower	
U/G TV Cable Hand Hole	
U/G TV Cable LOS B (S.U.E.*)	
U/G TV Cable LOS C (S.U.E.*)	
U/G TV Cable LOS D (S.U.E.*)	
U/G Fiber Optic Cable LOS B (S.U.E.*)	
U/G Fiber Optic Cable LOS C (S.U.E.*)	
U/G Fiber Optic Cable LOS D (S.U.E.*)	

GAS:

Gas Valve	
Gas Meter	
U/G Gas Line LOS B (S.U.E.*)	
U/G Gas Line LOS C (S.U.E.*)	
U/G Gas Line LOS D (S.U.E.*)	
Above Ground Gas Line	

SANITARY SEWER:

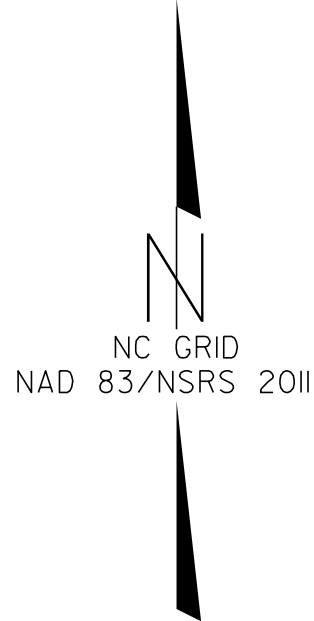
Sanitary Sewer Manhole	
Sanitary Sewer Cleanout	
U/G Sanitary Sewer Line	
Above Ground Sanitary Sewer	
SS Forced Main Line LOS B (S.U.E.*)	
SS Forced Main Line LOS C (S.U.E.*)	
SS Forced Main Line LOS D (S.U.E.*)	

MISCELLANEOUS:

Utility Pole	
Utility Pole with Base	
Utility Located Object	
Utility Traffic Signal Box	
Utility Unknown U/G Line LOS B (S.U.E.*)	
U/G Tank; Water, Gas, Oil	
Underground Storage Tank, Approx. Loc.	
A/G Tank; Water, Gas, Oil	
Geoenvironmental Boring	
U/G Test Hole LOS A (S.U.E.*)	
Abandoned According to Utility Records	
End of Information	

3/16/17

12:45:55 PM
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wa178449



BM#2
N=849699
E=1579308
ELEV=812.94'

BL-4
N=849603.8648
E=1579297.9938
ELEV=803.10'

BL-3
N=849351.5738
E=1579473.7736
ELEV=778.77'

BM#1
N=849463
E=1579725
ELEV=764.79'

330133-GPS2
N=849156.3236
E=1579674.9146
ELEV=765.45'

330133-GPS1
N=849067.6198
E=1580204.7912
ELEV=802.59'

SURVEY CONTROL SHEET 17BP.9.C.2

PROJECT REFERENCE NO.	SHEET NO.
17BP.9.C.2	1C-1
DDC	

ROW MARKER CONCRETE OF GRANITE

ALIGN	STATION	OFFSET	NORTH	EAST
L	12+50.00	-29.03	849313.08112	1579556.27043
L	13+00.00	31.84	849234.65727	1579548.80108
L	13+05.00	-45.00	849289.02506	1579603.32317
L	14+00.00	65.00	849144.27476	1579618.77972
L	15+00.00	-45.00	849198.59298	1579757.91337
L	15+50.00	-30.00	849168.45694	1579797.34556
L	16+00.00	30.00	849097.19639	1579829.22474
L	16+00.00	40.00	849087.47963	1579826.86154

PROPOSED ALIGNMENT -L-

TYPE	STATION	NORTH	EAST
POT	10+00.00	849497.4568	1579389.9530
PC	11+93.88	849337.8112	1579499.9602
PCC	13+74.40	849213.7632	1579629.3939
PT	16+04.55	849125.2855	1579840.7401
POT	16+59.55	849112.6357	1579894.2656

BENCHMARKS (NAVD 88)

BM1 ELEVATION = 764.79'
N 849463 E 1579725
L STATION 12+52 255' LEFT
RR SPIKE IN 24" WALNUT TREE

BM2 ELEVATION = 812.94'
N 849699 E 1579308
L STATION 10+00 TO BM #2
N 22° 11' 42" W 218'
RR SPIKE IN 48" WHITE OAK TREE

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR GPS MONUMENT "330133-2"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 849156.3236(ft) EASTING: 1579674.9146(ft)
 ELEVATION: 765.45(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9999442930
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS 330133-2" TO -L- STATION 10+00.00 IS
N 39 52' 23.87" W 444.49 (ft)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

BEGIN CULVERT
-L- POC STA.13+88.82

END CULVERT
-L- POC STA.14+06.71

END PROJECT 17BP.9.C.2
-L- POC STA. 16+00.00

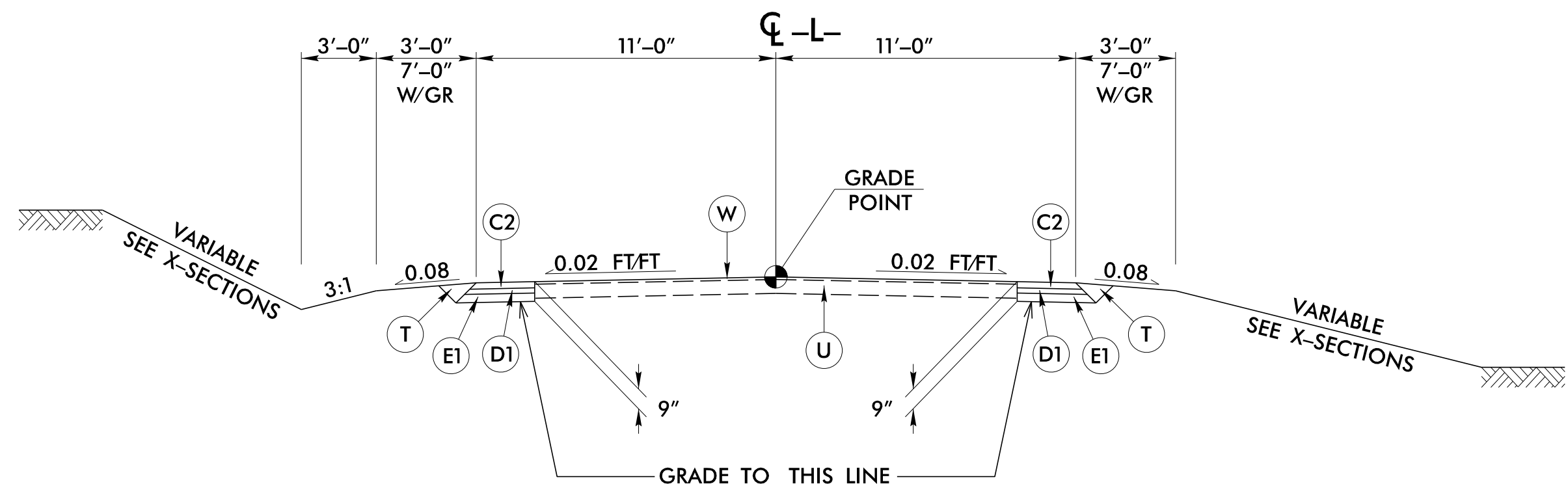
BL	POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
4		BL -4	849603.8648	1579297.9938	803.10	OUTSIDE PROJECT LIMITS	
3		BL -3	849351.5738	1579473.7736	778.77	11+67.69	13.75 RT
2		330133-GPS2	849156.3236	1579674.9146	765.45	14+40.97	27.71 RT
1		330133-GPS1	849067.6198	1580204.7912	802.59	OUTSIDE PROJECT LIMITS	

NOTES:

 INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

NOTE: DRAWING NOT TO SCALE

5/2/99

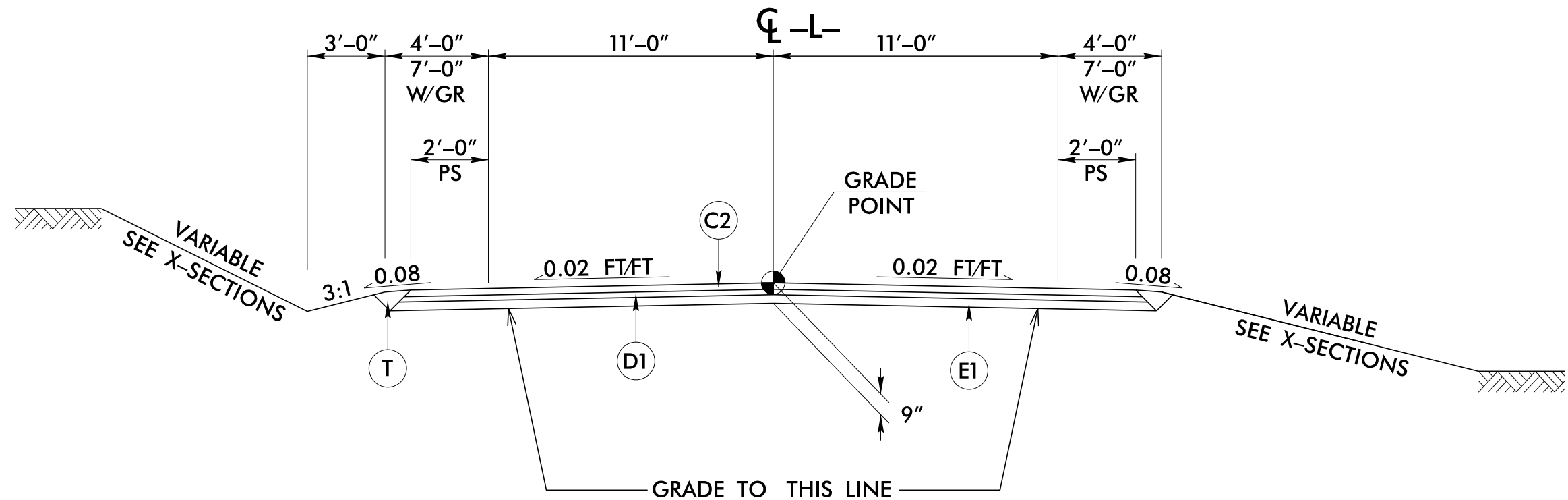


TRANSITION FROM EXISTING TO TYPICAL SECTION NO. 1:
-L- STA 12+00.00 TO 12+50.00

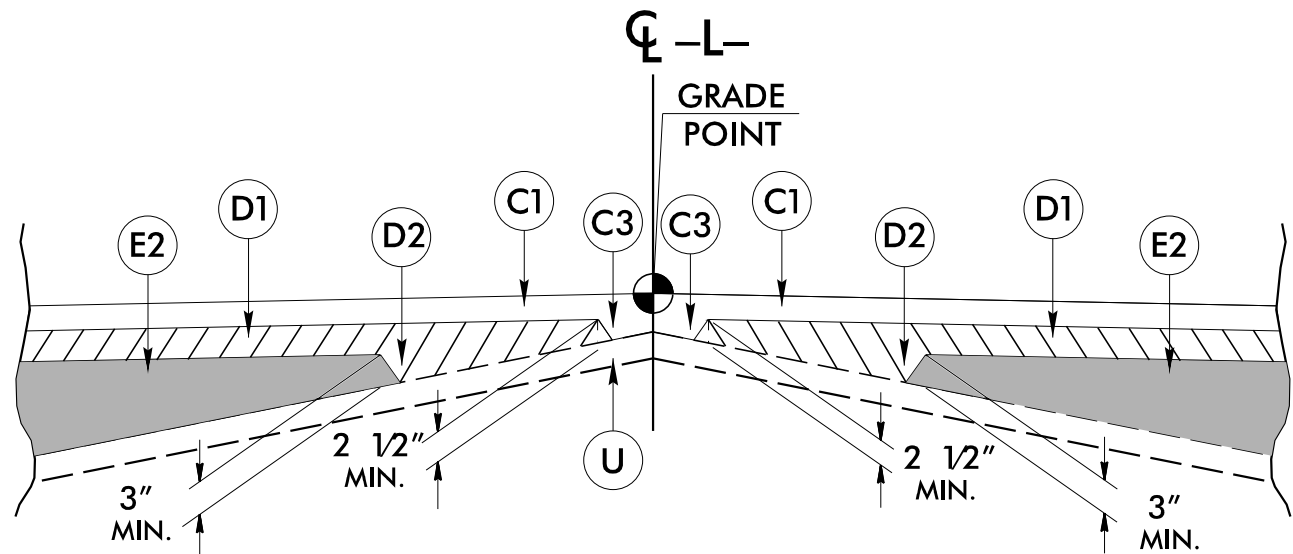
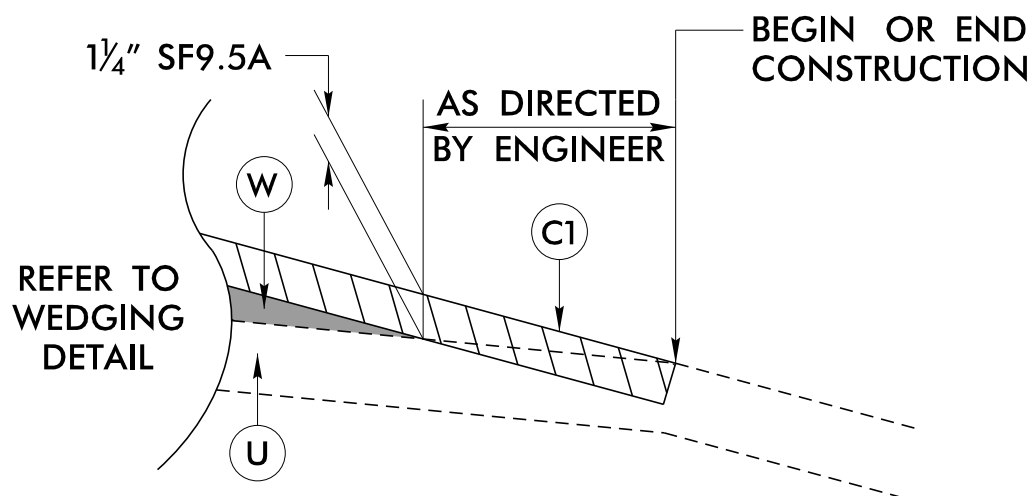
USE TYPICAL SECTION NO. 1:

-L-	STA 12+50.00	TO	13+10.00
-L-	STA 14+90.00	TO	15+50.00

TRANSITION FROM TYPICAL SECTION NO. 1 TO EXISTING:
-L- STA 15+50.00 TO 16+00.00



USE TYPICAL SECTION NO. 2:
-L- STA 13+10.00 TO 14+90.00



PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1½ " ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 138 LBS. PER SQ. YD.
C2	PROP. APPROX. 2½ " ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 138 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1" IN DEPTH OR GREATER THAN 1½ " IN DEPTH.
D1	PROP. APPROX. 2½ " ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, 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.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, 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.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	WEDGING (SEE DETAIL SHOWING METHOD OF WEDGING).

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

94 MAY-2017 1514
C:\projects\Special Details\Howerton\Standard Drawings\Details in Lieu of Standards\Division 8\862d01 862d03 862d03\862d01.dgn
Howerton
CS0-292595

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

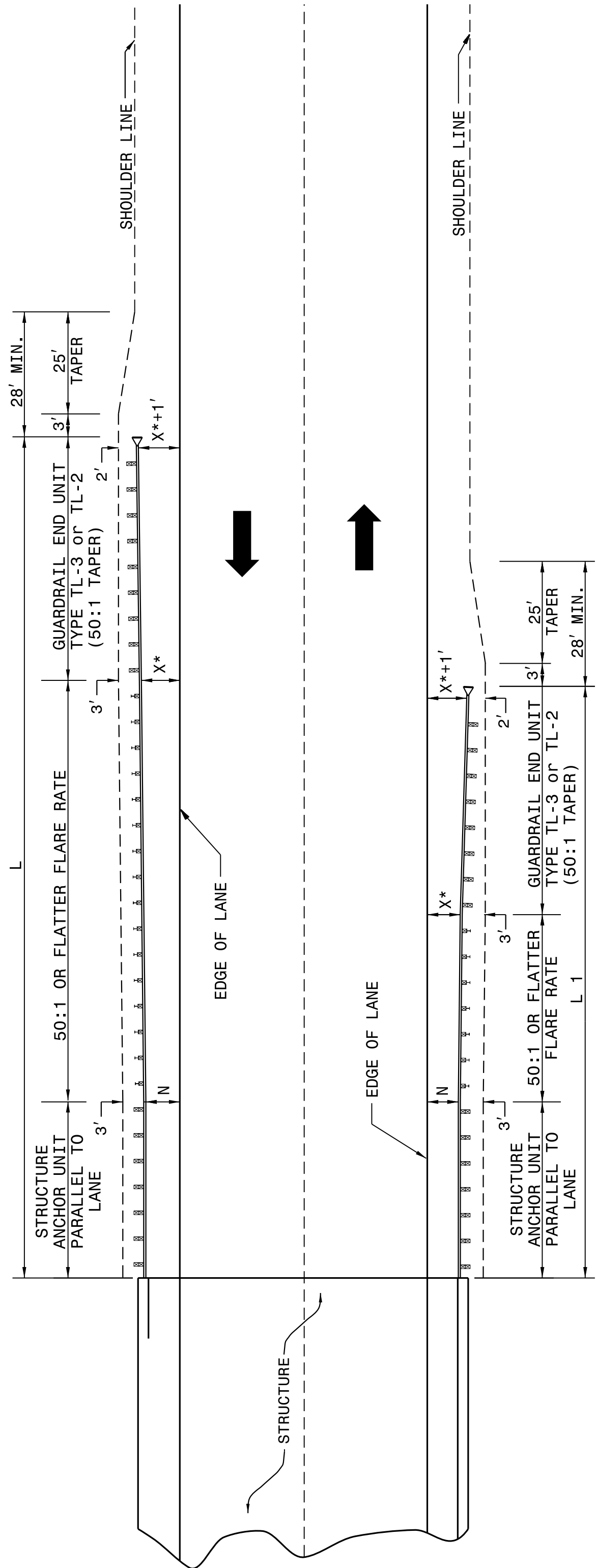
ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 4 OF 11
862D01

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 4 OF 11
862D01



* USE FLARE RATE AS THE CONTROL IF THE "X" DISTANCE IS NOT OBTAINED.
("X" IS BASED ON SHOULDER WIDTHS IN THE HIGHWAY DESIGN BRANCH
MANUAL, PART 1, 1-4B, F1).

"N"= DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL WHERE GUARDRAIL IS
PARALLEL TO LANE.

SEE STD. 862.03 FOR STRUCTURE ANCHOR UNITS

FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3

FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2

GUARDRAIL INSTALLATION AT BRIDGE APPROACHES
FOR TWO-LANE, TWO-WAY TRAFFIC

DESIGN SPEED (MPH)	"L" APPROACH LENGTH (FT.)		"L1" TRAILING LENGTH (FT.)			
	DESIGN YEAR ADT	CURRENT YEAR ADT	DESIGN YEAR ADT	CURRENT YEAR ADT	DESIGN YEAR ADT	CURRENT YEAR ADT
70	OVER 2000	1001- 2000	400 UNDER 1000	1001- 2000	OVER 2000	1001- 2000
60	362.5'	362.5'	350.0'	287.5'	187.5'	187.5'
50	300.0'	287.5'	275.0'	225.0'	137.5'	137.5'
40	212.5'	212.5'	200.0'	162.5'	87.5'	87.5'
	175.0'	150.0'	137.5'	112.5'	75.0'	75.0'
X *	8'	6'	4'	4'	8'	4'

LENGTHS AND OFFSETS FOR PROPOSED GUARDRAIL AT TWO LANE - TWO WAY LOCATIONS

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

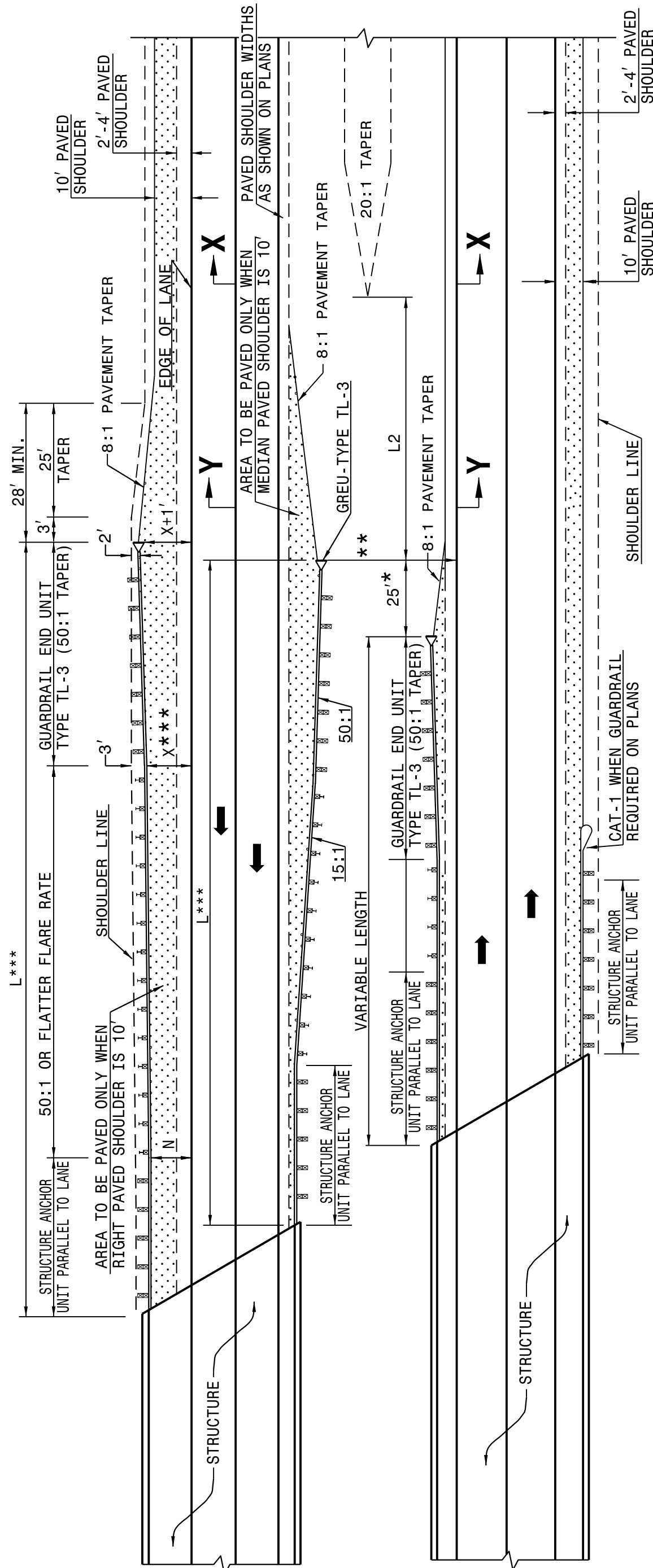
ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 3 OF 11
862D01

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 3 OF 11
862D01



FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3
FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2

NOTES: * MINOR VARIATION TO THE 25'-0" DIMENSION IS PERMISSIBLE TO ACCOMMODATE THE 12'-6" IN
GUARDRAIL LENGTHS.

** NO GUARDRAIL IS REQUIRED ON THE TRAILING END WHEN THIS DISTANCE EXCEEDS CLEAR ROADSIDE
RECOVERY AREA FOR THE APPROPRIATE DESIGN SPEED.

*** BASED ON "X" OF 12'

USE FLARE RATE AS THE CONTROL IF THE "X" DISTANCE IS NOT OBTAINED. ("X" IS BASED ON
SHOULDER WIDTHS IN THE HIGHWAY DESIGN BRANCH MANUAL, PART 1, 1-4B, F1A).

"N"= DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL WHERE GUARDRAIL IS PARALLEL TO LANE.
THE DESIGN LAYOUT FOR LENGTHS SHOWN ON THIS STANDARD ARE MINIMUM DESIGN LENGTHS.

SEE SHEET 1 OF 12 FOR SECTIONS XX, YY

SEE STD. 862.03 FOR STRUCTURE ANCHOR UNITS

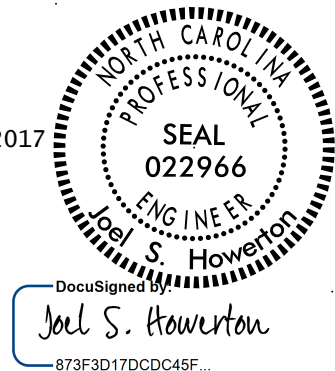
DETAIL OF GUARDRAIL APPROACHING DUAL LANE BRIDGES

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

SEE TITLE BLOCK

ORIGINAL BY: J. HOWERTON DATE: 06-22-12
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: DATE:

9/26/2017



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FILL SECTION

"N" = DISTANCE FROM EDGE OF



FOR POSTED SPEEDS $\geq$ 45mph	USE GREU TYPE TL-3
FOR POSTED SPEEDS $<$ 45mph	USE GREU TYPE TL-2

DETAIL OF BEGINNING OF GUARDRAIL IN CUT OR FILL SECTION



DESIGN SPEED (MPH)
40
50

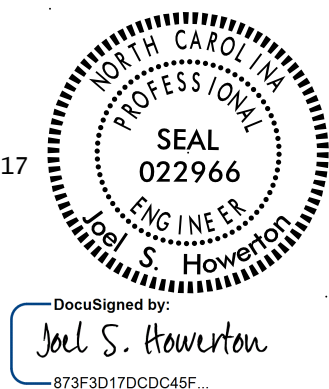
NOTE: "L" VALUES ARE BASED ON NO HAZARDS OTHER THAN END OF BRIDGE BEING PRESENT WITHIN THE CLEAR ZONE.

SEE STD. 862D03 FOR STRUCTURE ANCHOR UNITS.

FOR POSTED SPEEDS $\geq$ 45mph	USE GREU TYPE TL-3
FOR POSTED SPEEDS $<$ 45mph	USE GREU TYPE TL-2

STANDARD GUARDRAIL PLACEMENT AT BRIDGES WITH 2'-6" CONCRETE CURB AND GUTTER

9/26/2013



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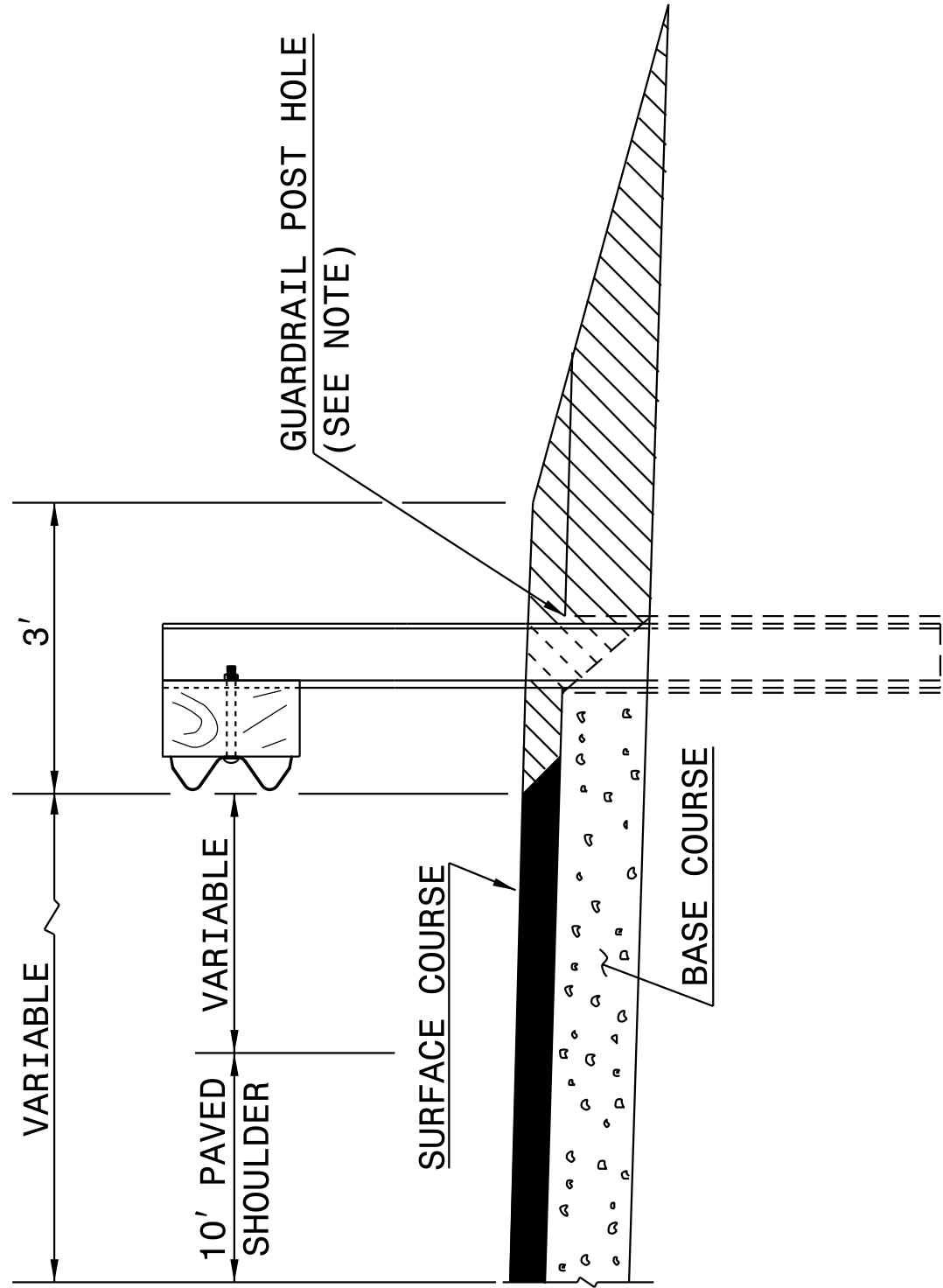
ORIGINAL BY: J HOWERTON DATE: 06-22-12
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: _____

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Jhowerton AT CSD-262966

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DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 10 OF 11
862D01

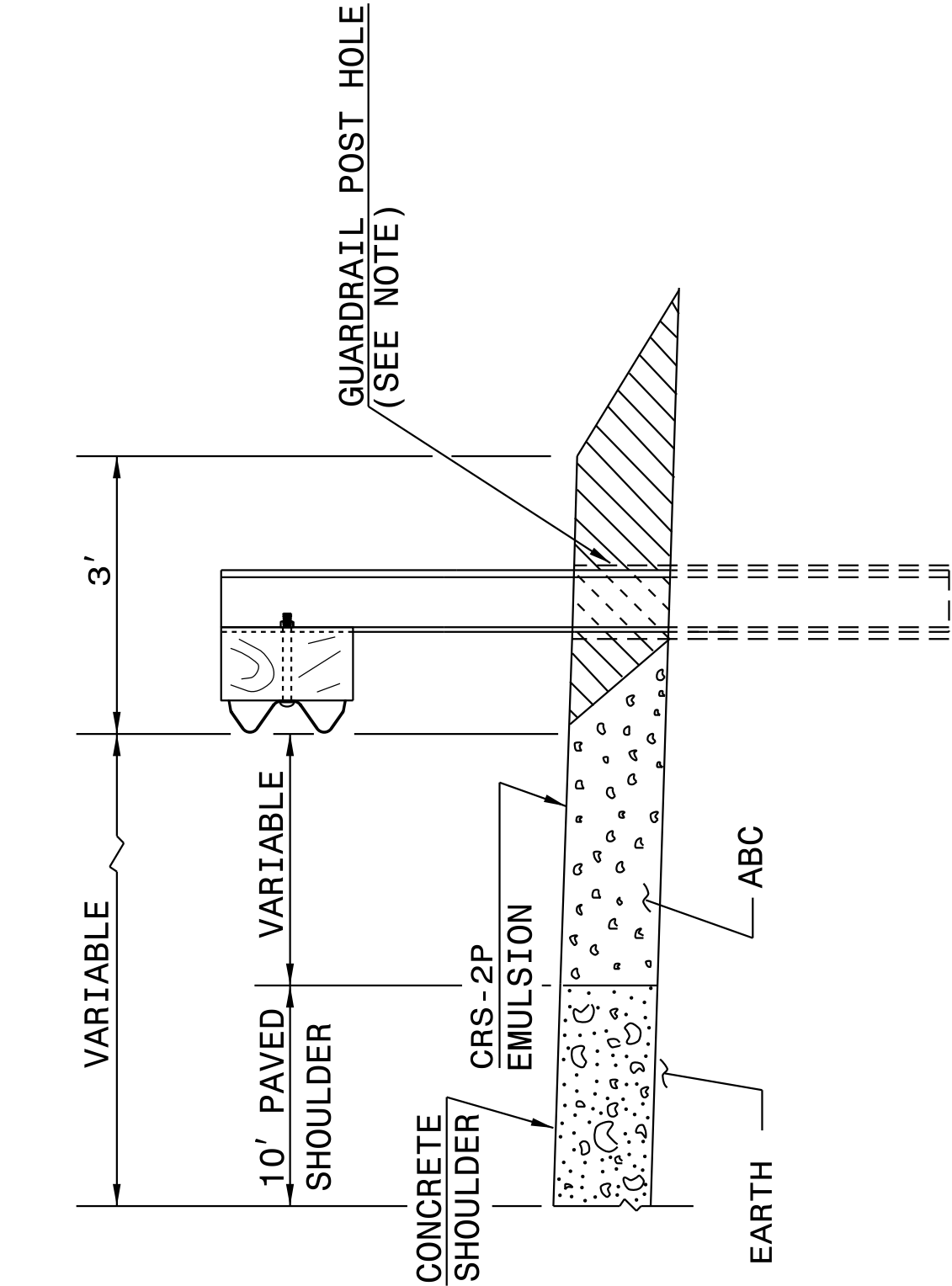


FLEXIBLE PAVED SHOULDER



EARTH MATERIAL

NOTE:
WHEN WOODEN GUARDRAIL POSTS ARE USED, DRILL HOLES THROUGH EARTH MATERIAL AND BASE COURSE. THE POST MAY THEN BE DRIVEN TO THE PROPER DEPTH. DRILL THE HOLE OF SUFFICIENT SIZE TO ACCOMMODATE THE PARTICULAR POST BEING USED. BACKFILL AND TAMP HOLES USING THE EXCAVATED MATERIAL.



CONCRETE PAVED SHOULDER

STATE OF
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RALEIGH, N.C.

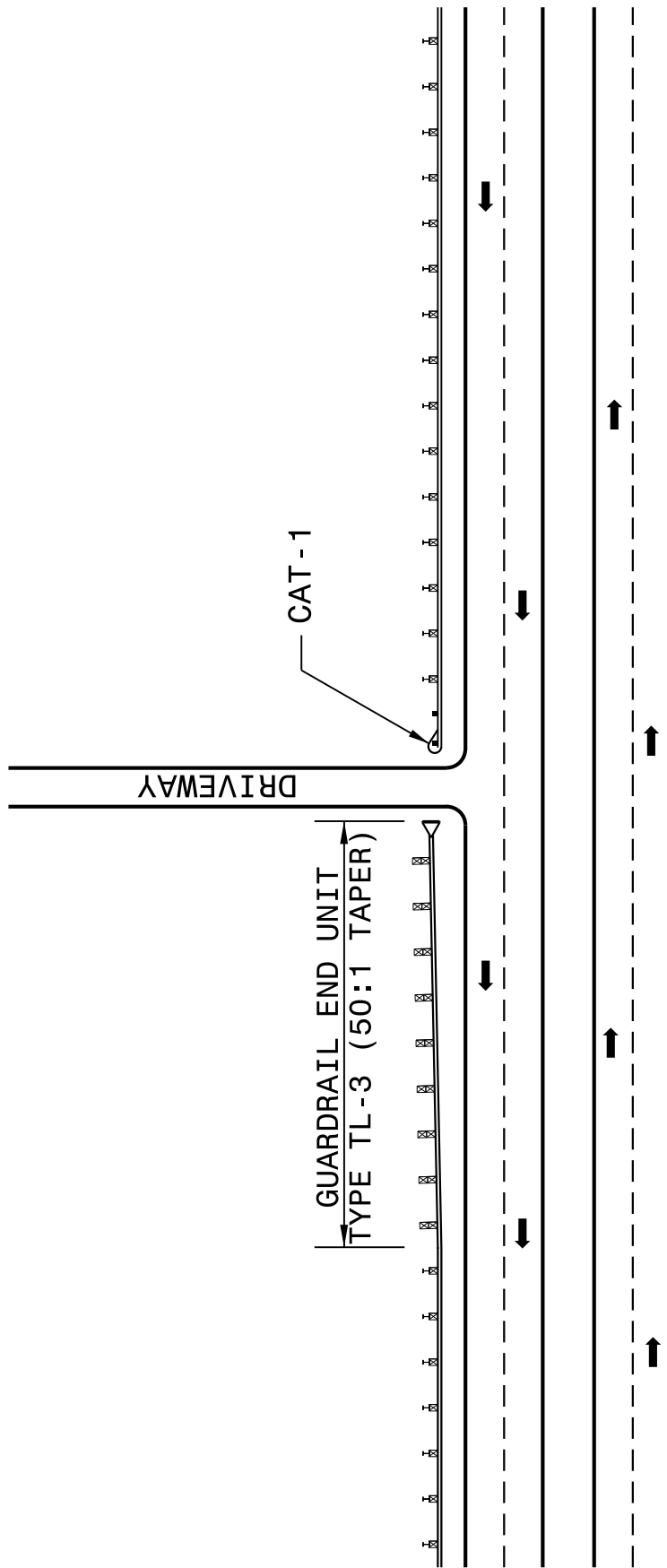
ENGLISH DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 10 OF 11
862D01

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

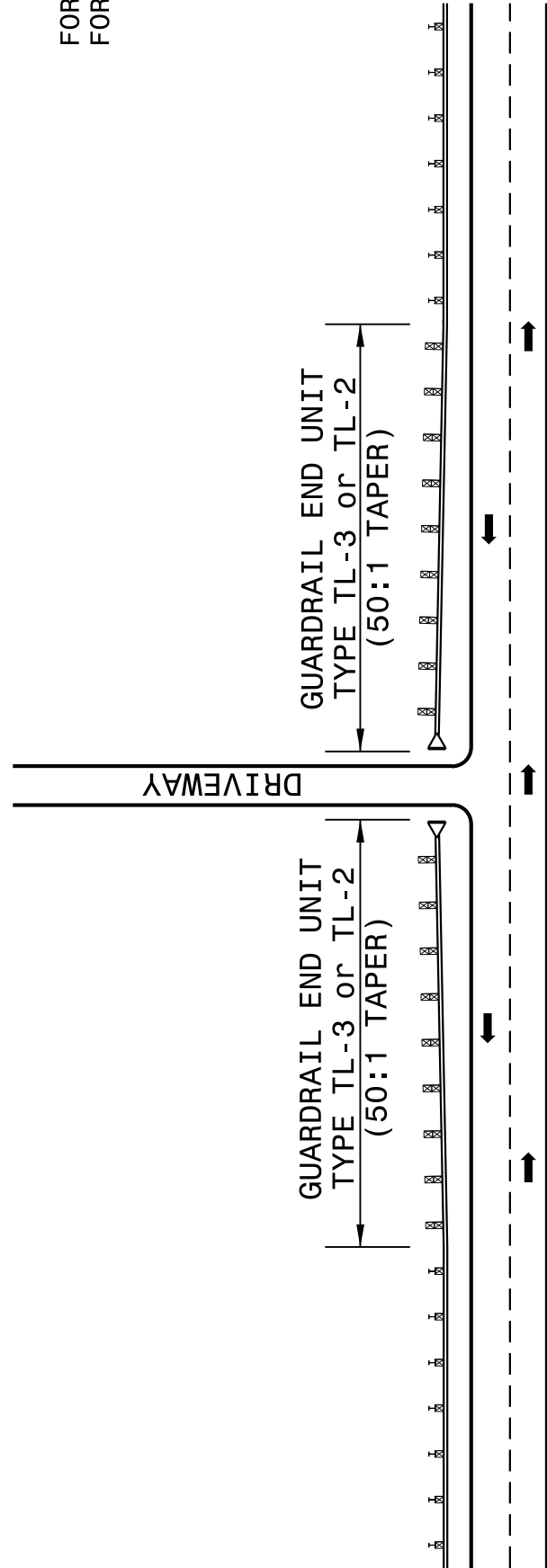
SHEET 9 OF 11
862D01



DETAIL-3
DIVIDED HIGHWAY

NOTE:
USE DETAIL 3 & 4 WHENEVER
20' OR LARGER RADIUS CANNOT
BE UTILIZED.
MAINTAIN CLEAR SIGHT DISTANCE.

FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3
FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2



DETAIL-4
UNDIVIDED HIGHWAY
GUARDRAIL TREATMENT AT DRIVEWAYS

9/26/2017
Seal of J. S. Howerton, Professional Engineer, No. 022966
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CONTRACT STANDARDS
AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119
SEE TITLE BLOCK
ORIGINAL BY: J HOWERTON DATE: 06-22-12
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

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Jhowerton AI CS0-27295

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

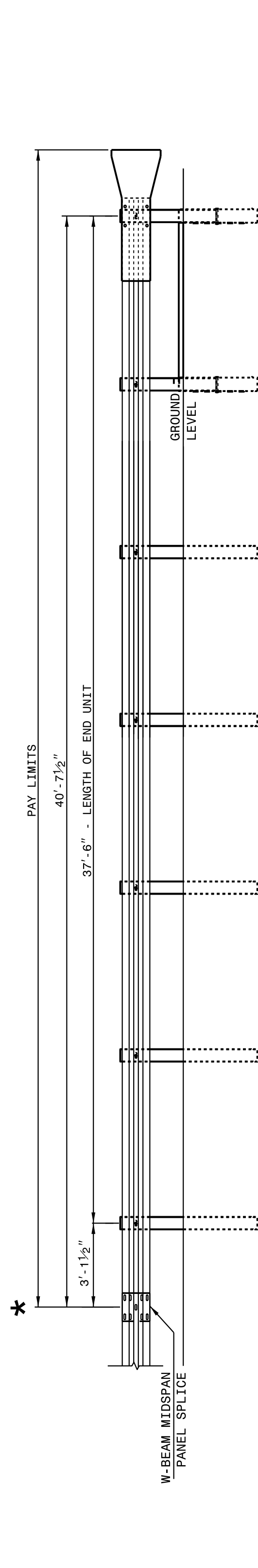
ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 2 OF 8
862D02

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

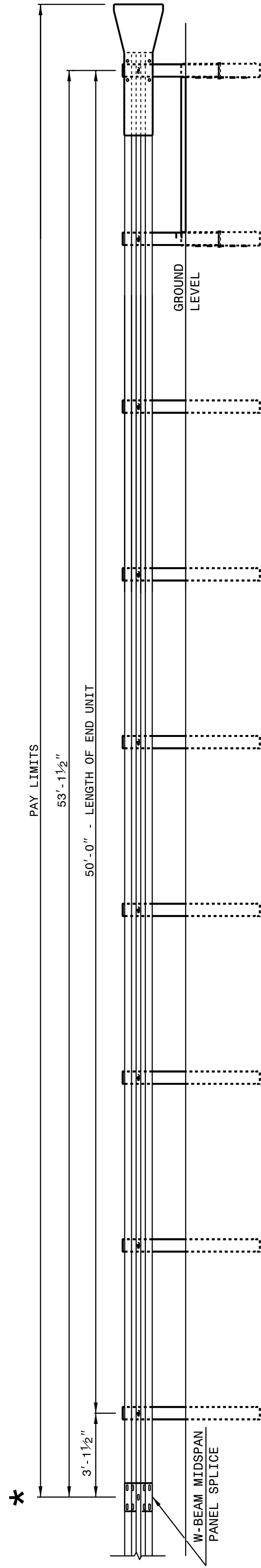
ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 2 OF 8
862D02



FLARED AND TANGENT
ELEVATION VIEW

★ WHEN INSTALLING GUARDRAIL END UNITS THAT ARE 2'-1" MOUNTING HEIGHT TO EXISTING GUARDRAIL, REMOVE THE EXISTING GUARDRAIL TO TRANSITION FROM THE EXISTING HEIGHT TO THE PROPOSED 2'-1" HEIGHT. SEE 862.02, SHEET 4 OF 8 FOR TRANSITION DETAILS.



FLARED AND TANGENT
ELEVATION VIEW

APPROACH END UNITS

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

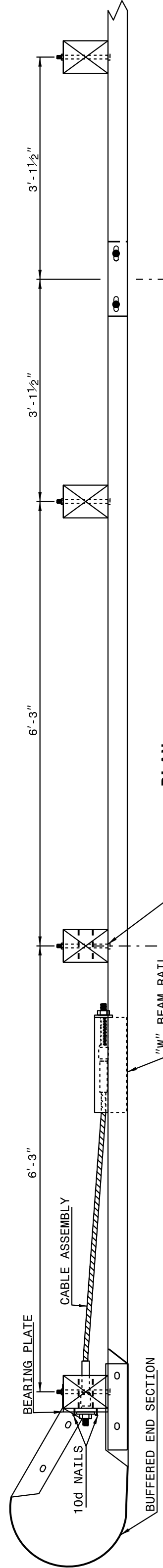
ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 1 OF 8
862D02

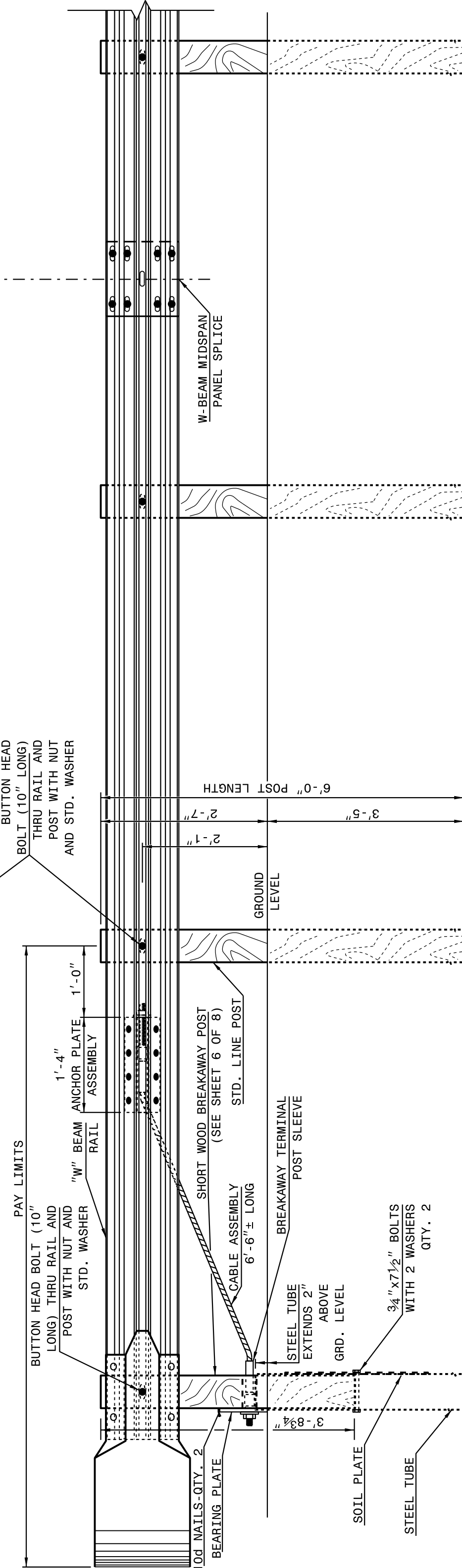
STATE OF
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RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 1 OF 8
862D02



PLAN



ELEVATION

TRAILING END UNIT ASSEMBLY

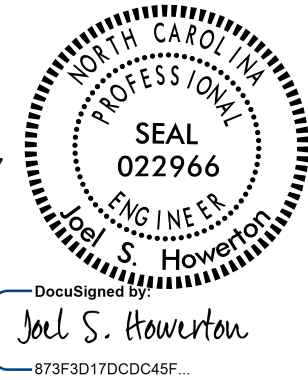
C.A.T.-1 SYSTEM

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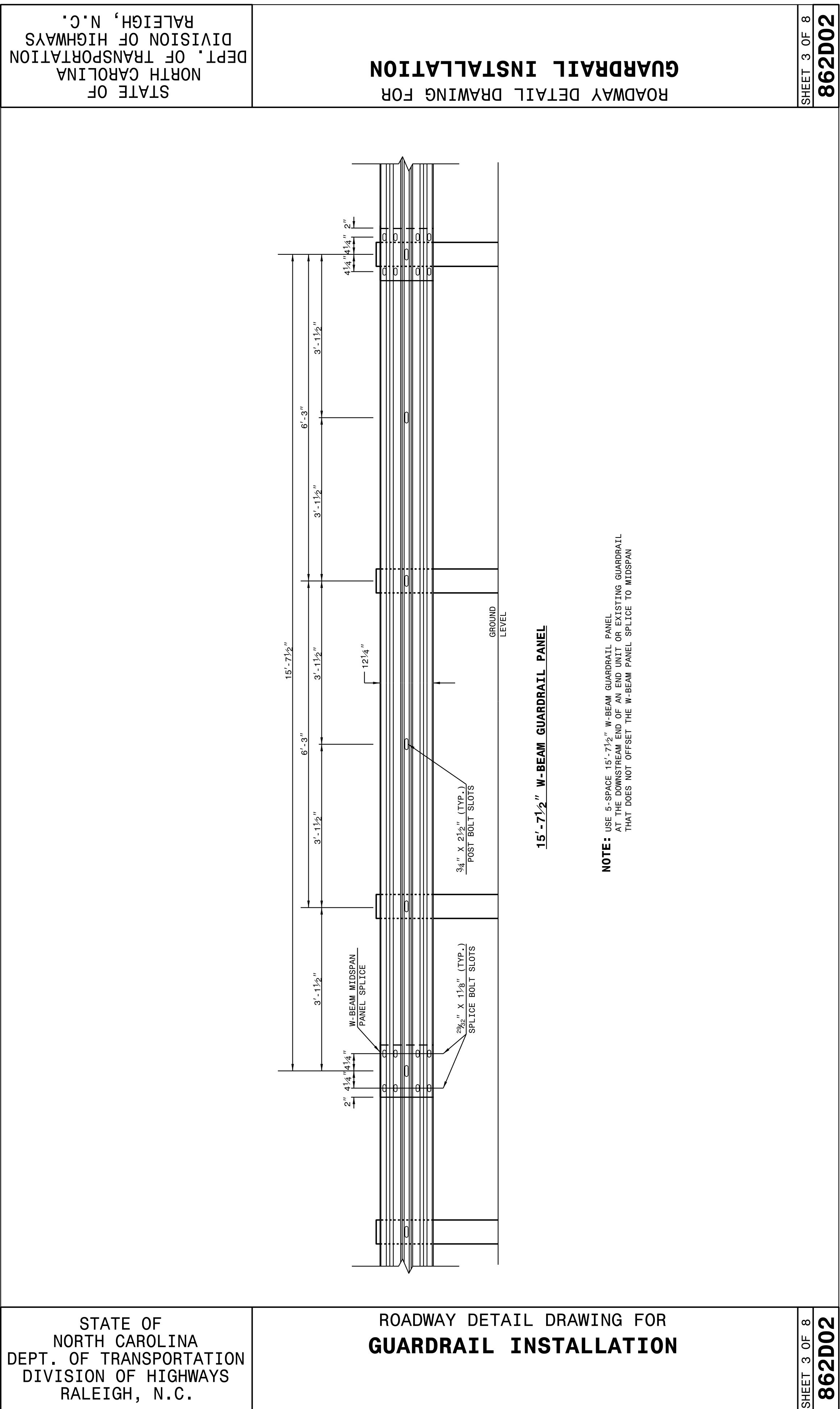
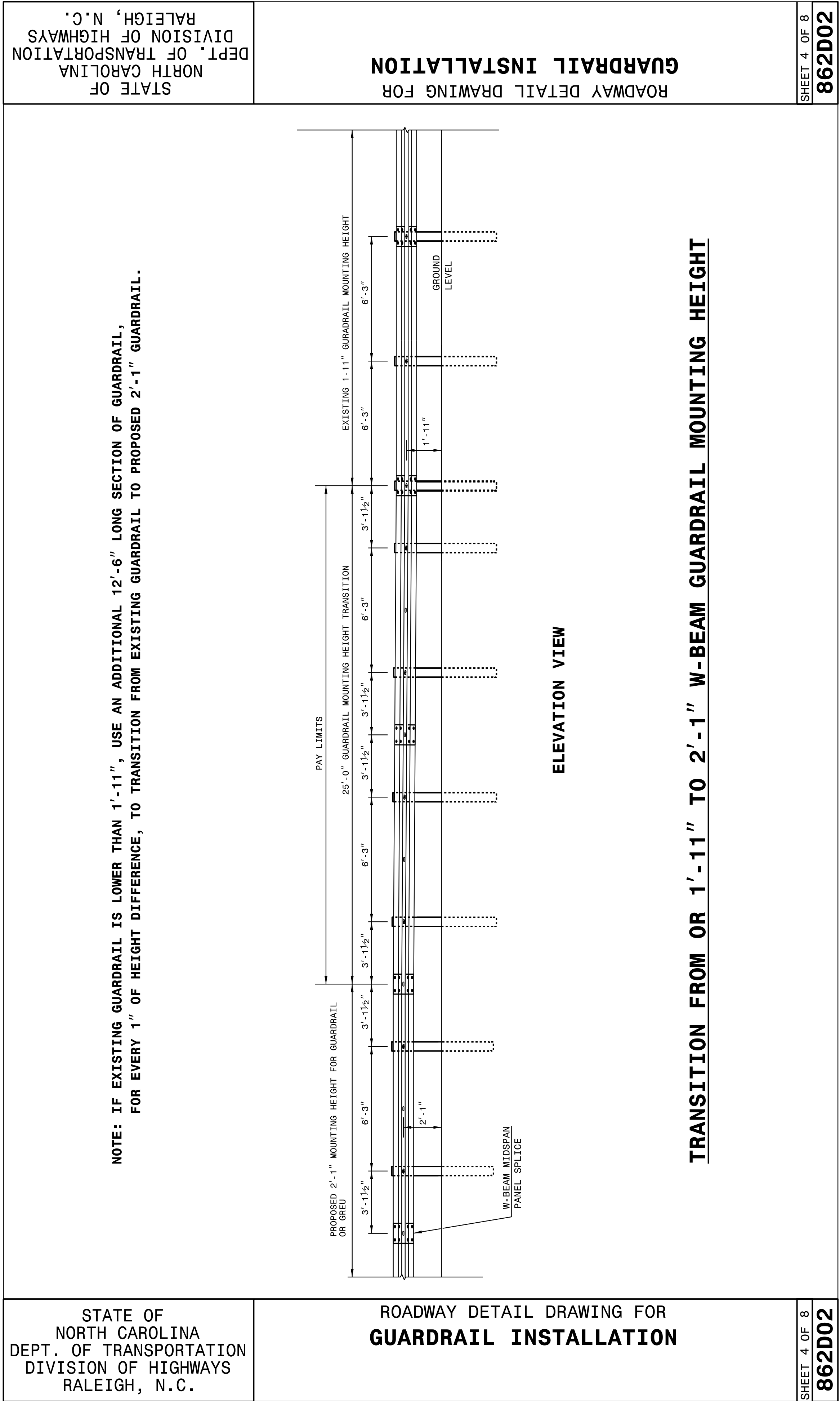
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CHECKED BY: DATE:
FILE SPEC.:

9/26/2017



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9/26/2017



DocuSigned by:
Joel S. Howerton
873F3D17DCD45F...

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UNLESS ALL SIGNATURES COMPLETED**

CONTRACT STANDARDS AND DEVELOPMENT UNIT	
Office 919-707-6950	FAX 919-250-4119
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ORIGINAL BY: J HOWERTON	DATE: 06-22-12
MODIFIED BY: _____	DATE: _____
CHECKED BY: _____	DATE: _____
FILE SPEC.: _____	

PROJECT REFERENCE NO.	SHEET NO.
17BP.9.C.2	2C-6

PROJECT REFERENCE NO.	SHEET NO.
17BP.9.C.2	2C-7

COMPUTED BY: VICTORIA RIEGE DATE: 9-22-2017
CHECKED BY: DAVID WALLER DATE: 9-22-2017

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
17BP.9.C.2	3

SUMMARY OF EARTHWORK

STATION	STATION	UNCL. EXCAV.	EMBANK. + %	BORROW	WASTE
-L- 12 + 00.00	-L- 16 + 00.00	7	925	918	
PROJECT TOTALS:		7	925	918	
WASTE IN LIEU OF BORROW					
5% TO REPLACE BORROW			46	46	
GRAND TOTALS:		7		964	
SAY:		10		1020	

NOTE: Approximate quantities only. Unclassified Excavation, Borrow Excavation, Fine Grading, Clearing and Grubbing and Removal of Existing Asphalt Pavement will be paid for at the contract Lump Sum price for "Grading".

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

PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD ²
-L-	13 + 10.00	14 + 90.00	CL	440
-L-	12 + 54.00	13 + 10.00	RT	4.5
TOTAL:				444.5
SAY:				450

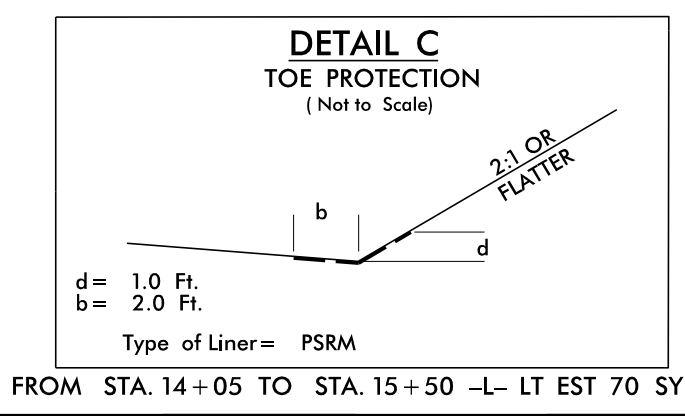
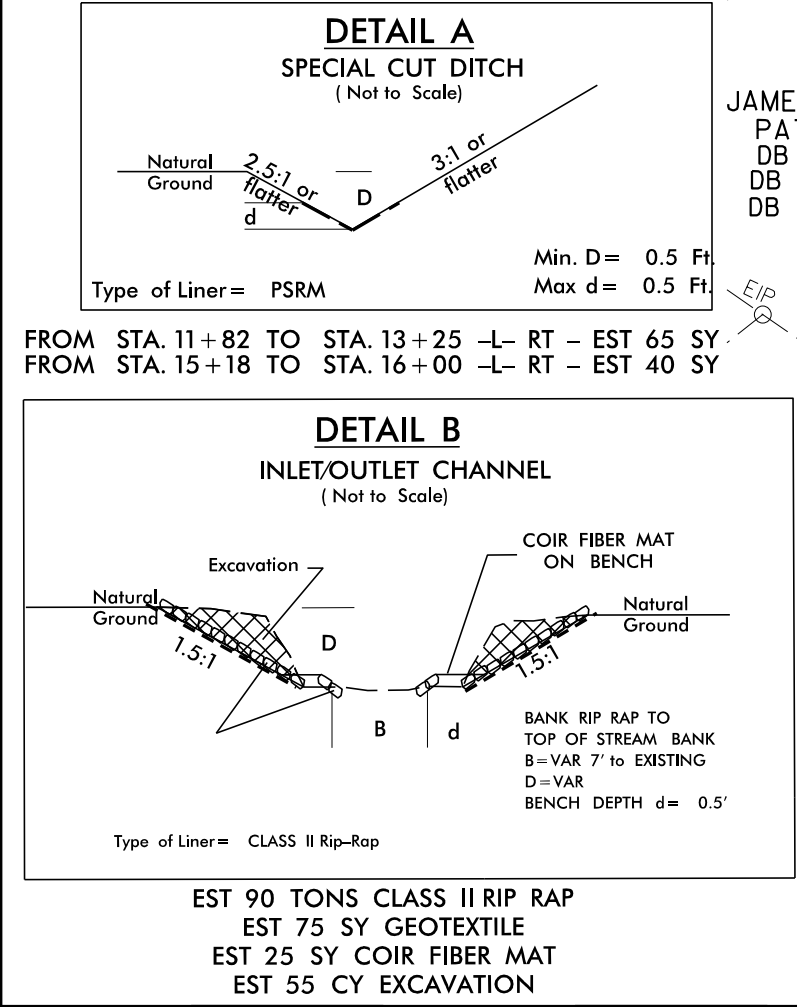
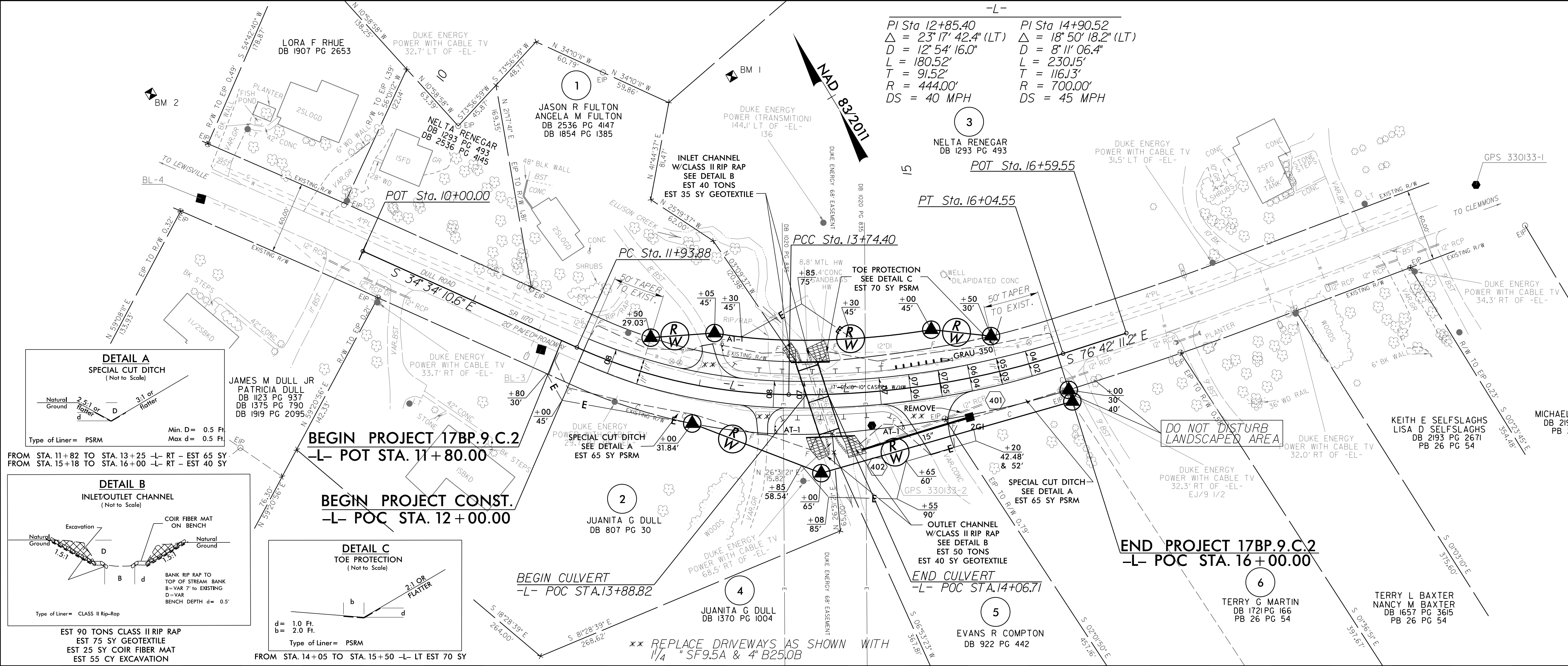
[illegible]

FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

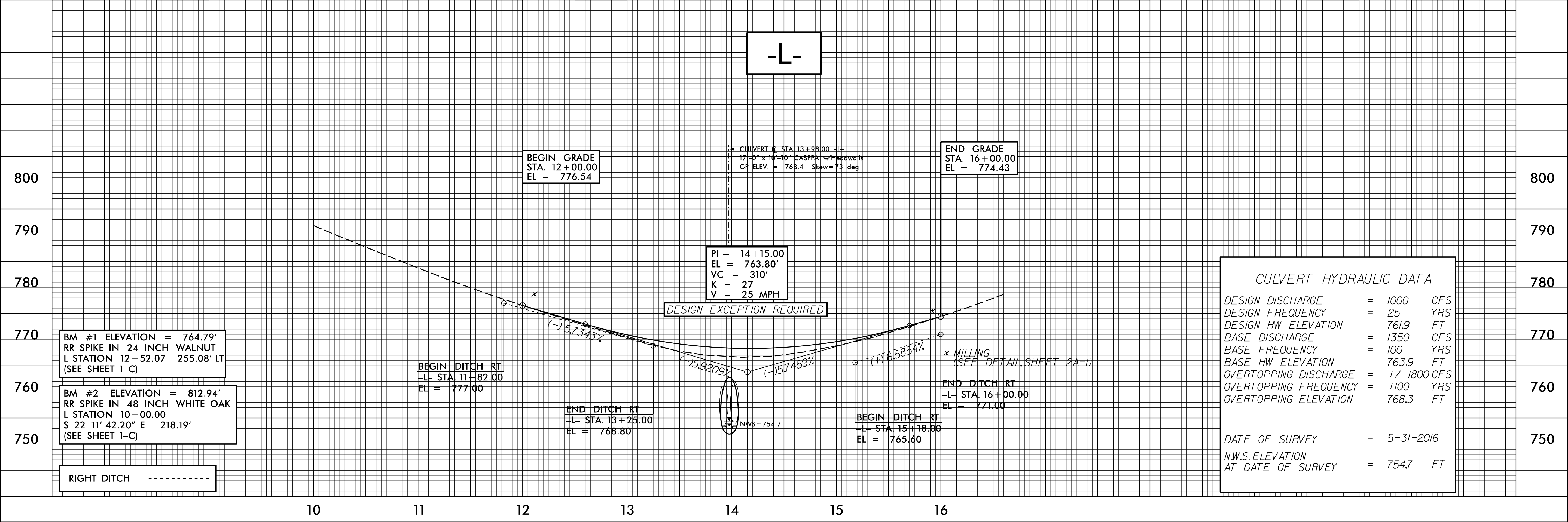
GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS										IMPACT ATTENUATOR TYPE 350			SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	XI	GRAU 350	M-350	TYPE III	CAT-1	VI MOD	BIC	AT-1	EA	G	NG					
-L-	13+12.68	15+13.65	LT	181.25	26.0				6	9							1						1								
-L-	13+64.32	14+66.57	RT	92.5	35.0																	2									
			TOTALS																												
	DEDUCTION FOR ANCHOR UNITS																														
	GRAU-350		1 @ 50' =	-50																											
	AT-1		3 @ 6.25' =	-18.75																											
			GRAND TOTALS	205	61																										
			SAY	205	61		5 EACH ADDITIONAL GUARDRAIL POSTS										1						3								

8/17/99



PROJECT REFERENCE NO. 17BP.9.C.2		SHEET NO. 4	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		SEAL NORTH CAROLINA PROFESSIONAL 9/25/2006 MOTT MACDONALD & E, LLC LICENSE NO. F-0669	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		SEAL NORTH CAROLINA PROFESSIONAL 9/26/2006 MOTT MACDONALD & E, LLC LICENSE NO. F-0669	
Prepared in the Office of:		MOTT MACDONALD & E, LLC PO Box 700 Fuquay-Varina, NC 27526 www.mottmac.com/americas	
DESIGN EXCEPTION REQUIRED FOR: HORIZONTAL CURVE RADIUS VERTICAL CURVE K (SAG)			



CULVERT HYDRAULIC DATA		
DESIGN DISCHARGE	=	1000 CFS
DESIGN FREQUENCY	=	25 YRS
DESIGN HW ELEVATION	=	761.9 FT
BASE DISCHARGE	=	1350 CFS
BASE FREQUENCY	=	100 YRS
BASE HW ELEVATION	=	763.9 FT
OVERTOPPING DISCHARGE	=	+/-1800 CFS
OVERTOPPING FREQUENCY	=	+100 YRS
OVERTOPPING ELEVATION	=	768.3 FT
DATE OF SURVEY	=	5-31-2016
N.W.S.ELEVATION AT DATE OF SURVEY	=	754.7 FT

6/2/2019

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THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN “ROADWAY STANDARD DRAWINGS” – HIGHWAY DESIGN BRANCH– N.C. DEPARTMENT OF TRANSPORTATION – RALEIGH, N.C., DATED JANUARY 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD.	TITLE
1101.03	TEMPORARY ROAD CLOSURES
1110.01	STATIONARY WORK ZONE SIGNS
1145.01	BARRICADES
1205.01	PAVEMENT MARKINGS – LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS – TWO-LANE AND MULTI-LANE ROADWAYS
1261.01	GUARDRAIL AND BARRIER DELINEATORS – INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS – TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

GENERAL NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS, AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS OR RESULT IN DUPLICATE OR UNDESIRED OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING, OR REMOVAL OF DEVICES AS DIRECTED BY THE ENGINEER.

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT EXCEPT WHEN OTHERWISE NOTED IN THE PLAN OR DIRECTED BY THE ENGINEER.

TRAFFIC PATTERN ALTERATIONS

A) NOTIFY THE ENGINEER TWENTY ONE (21) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

B) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC CONTROL PLANS.

PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTE AS SHOWN IN THE TRAFFIC CONTROL PLANS.

C) COVER OR REMOVE ALL SIGNS AND DEVICES REQUIRED TO CLOSE THE ROAD WHEN ROAD CLOSURE IS NOT IN OPERATION.

COVER OR REMOVE ALL SIGNS REQUIRED FOR THE OFF-SITE DETOUR WHEN THE DETOUR IS NOT IN OPERATION.

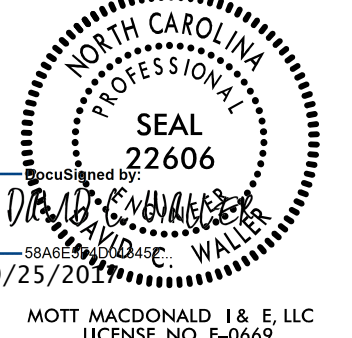
D) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

TRAFFIC CONTROL DEVICES

E) PLACE TYPE III BARRICADES, WITH “ROAD CLOSED” SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.

PAVEMENT MARKINGS AND MARKERS

F) INSTALL PAVEMENT MARKINGS ON THE FINAL SURFACE.

PROJECT REFERENCE NO.		SHEET NO.
17BP-9.C.2		TMP-1
ROADWAY DESIGN ENGINEER 		
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		
Prepared in the Office of:		M MOTT MACDONALD PO Box 700 Fuquay-Varina, NC 27526 www.mottmac.com/americas

PHASING

- STEP 1: USING ROADWAY STANDARD DRAWING NUMBER 1101.03, SHEET 1 OF 9, AND SHEET TMP-2, PERFORM THE FOLLOWING:
- INSTALL ALL ROAD CLOSURE AND DETOUR SIGNING INCLUDING BARRICADES
 - CLOSE SR 1170 (DULL ROAD)
 - PLACE TRAFFIC ONTO OFF- SITE DETOUR
- STEP 2: REMOVE EXISTING CULVERT #133 AND CONSTRUCT THE PROPOSED CULVERT AND APPROACHES AS SHOWN IN THE CONSTRUCTION PLANS.
- STEP 3: INSTALL FINAL PAVEMENT MARKINGS.
- STEP 4: REMOVE ALL TRAFFIC CONTROL SIGNING AND DEVICES AND RE-OPEN SR 1170 (DULL ROAD) TO THE FINAL TRAFFIC PATTERN.

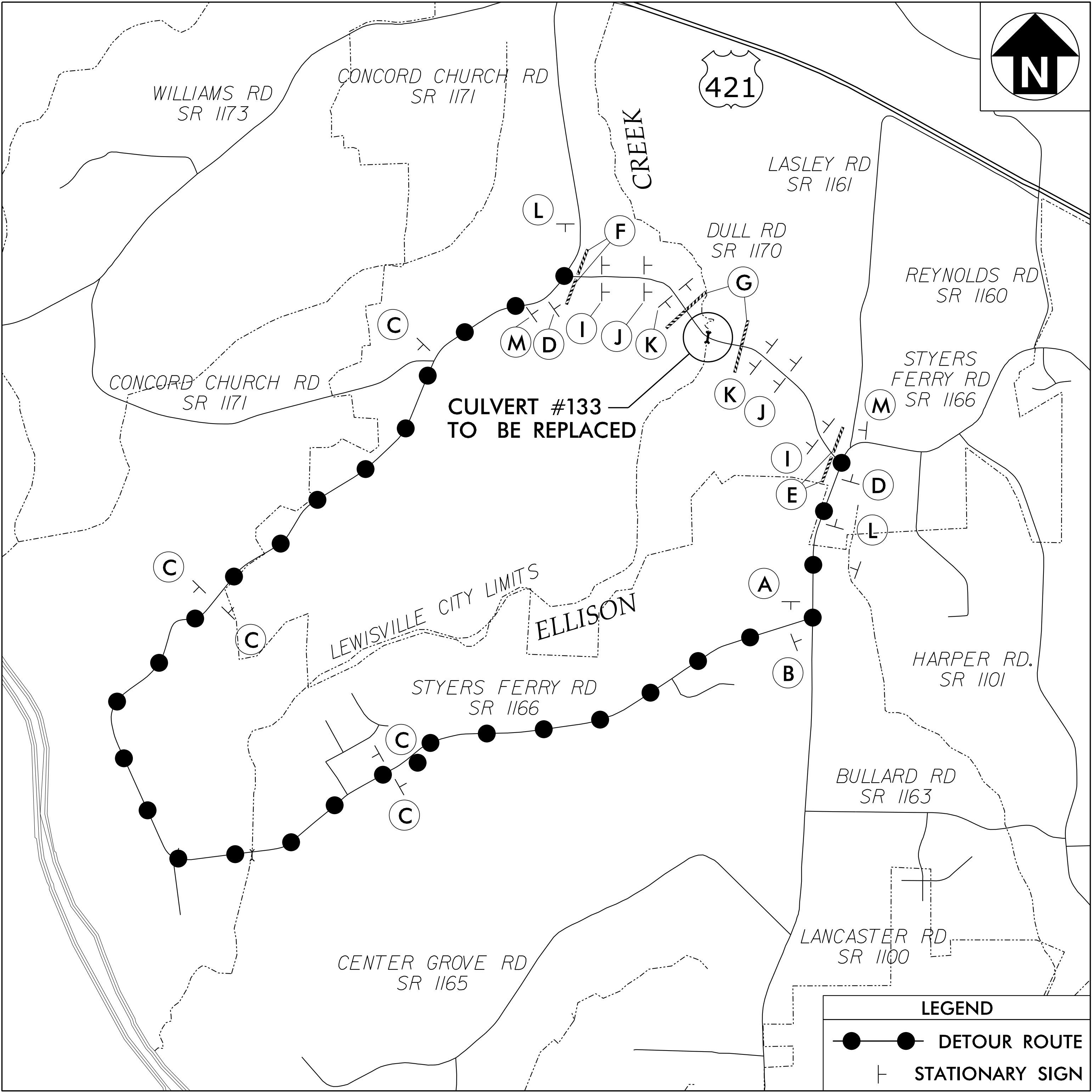
PAVEMENT MARKING

PAINT WHITE EDGELINE (4”) 1,600 LF
PAINT YELLOW DOUBLE CENTER (4”) 1,600 LF

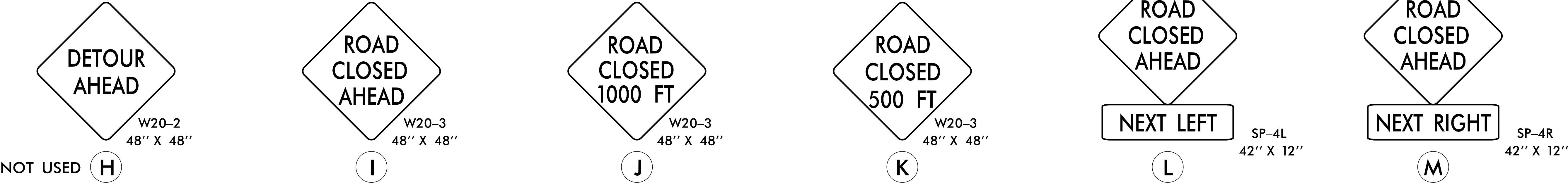
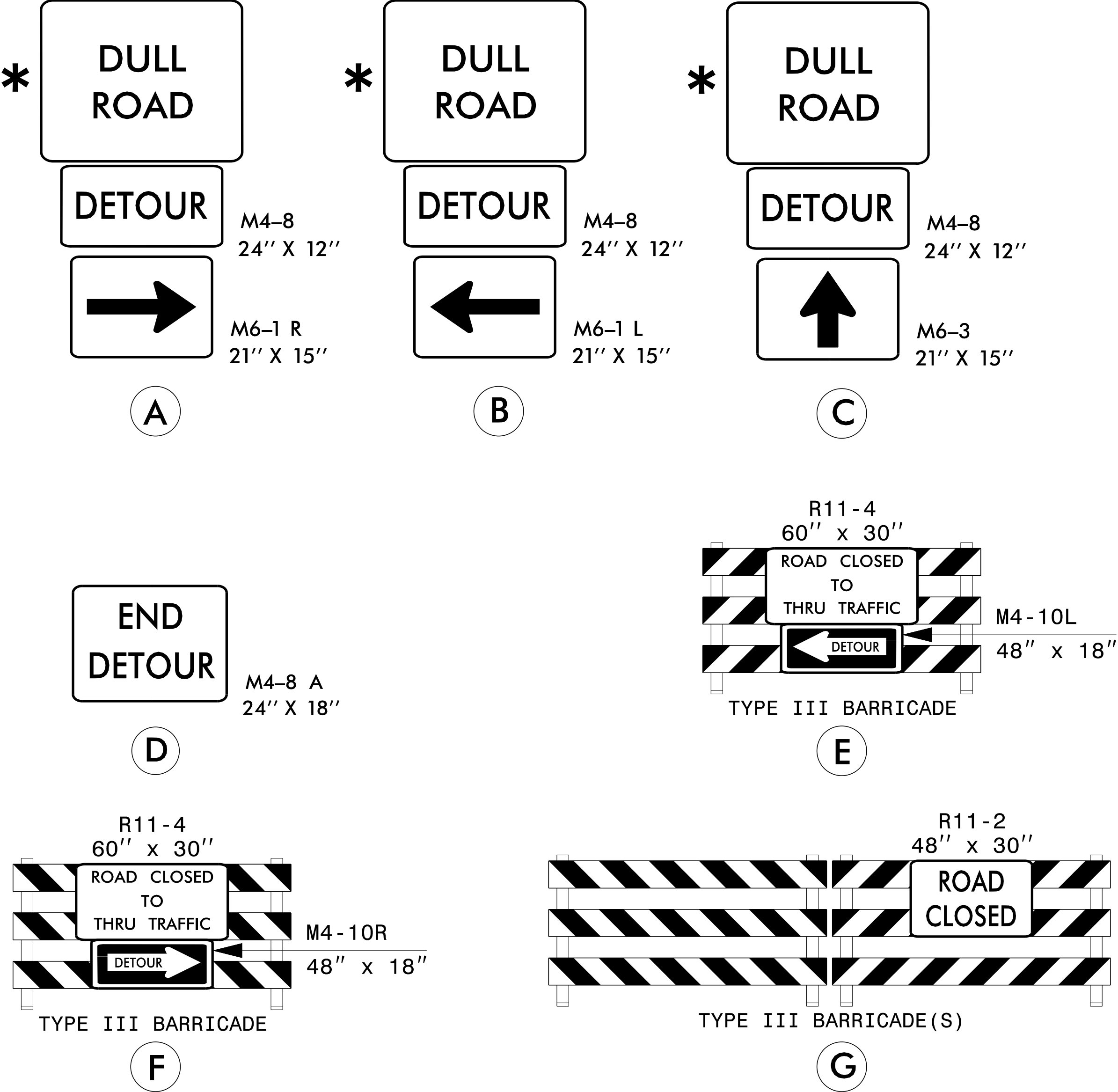
NOTE: QUANTITY INCLUDES 2 APPLICATIONS OF EACH

6/2/99

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* SEE SHEET TMP-3 FOR SPECIAL SIGN DESIGNS

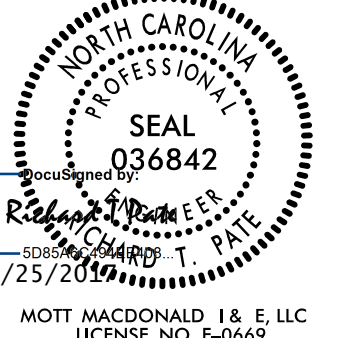


6/2/99

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PROJECT REFERENCE NO.
17BP.9.C.2

SHEET NO.
TMP-3

TRAFFIC ENGINEER

ROBERT T. PATE
9/25/2019
MOTT MACDONALD 1 & E, LLC
LICENSE NO. E-0669

PAVEMENT DESIGN ENGINEER

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Prepared in the Office of:

M

MOTT MACDONALD

M

PO. Box 700
Fuquay-Varina, NC. 27526
www.mottmac.com/americas

SIGN NUMBER: SD-1
TYPE: D
QUANTITY: SEE PLANS
SIGN WIDTH: 2'-6"
HEIGHT: 2'-6"
TOTAL AREA: 6.3 Sq.Ft.
BORDER TYPE: INSET
RECESS: 0.47"
WIDTH: 0.63"
RADII: 1.5"
NO. Z BARS:
LENGTH:

BACKG COLOR: Fluorescent Orange
COPY COLOR: Black

SYMBOL	X	Y	WID	HT

MAT'L: 0.063" (2.0 mm) ALUMINUM

USE NOTES: 1,2

1. Legend and border shall be direct applied black non-reflective sheeting.
2. Background shall be NC GRADE B fluoresent orange retroreflective sheeting.

DESIGN BY: PJ
PROJECT ID: 17BP.9.C.2

CHECKED BY: RTP
DIV: 9

DATE: Dec 06, 2016

2'-6"

2'-6"

6.75"

6" C

4.5"

6" C

6.75"

6.7"

16.6"

6.7"

DULL ROAD

BORDER
R=1.5"
TH=0.63"
IN=0.47"

Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter locations are panel edge to lower left corner																									Series/Size Text Length
D	U	L	L																						C 2000
6.9	11.5	16.1	20.1																						16.2
R	O	A	D																						C 2000
6.7	11	15.2	19.9																						16.6

FILENAME: 330133_rdy_tmp3

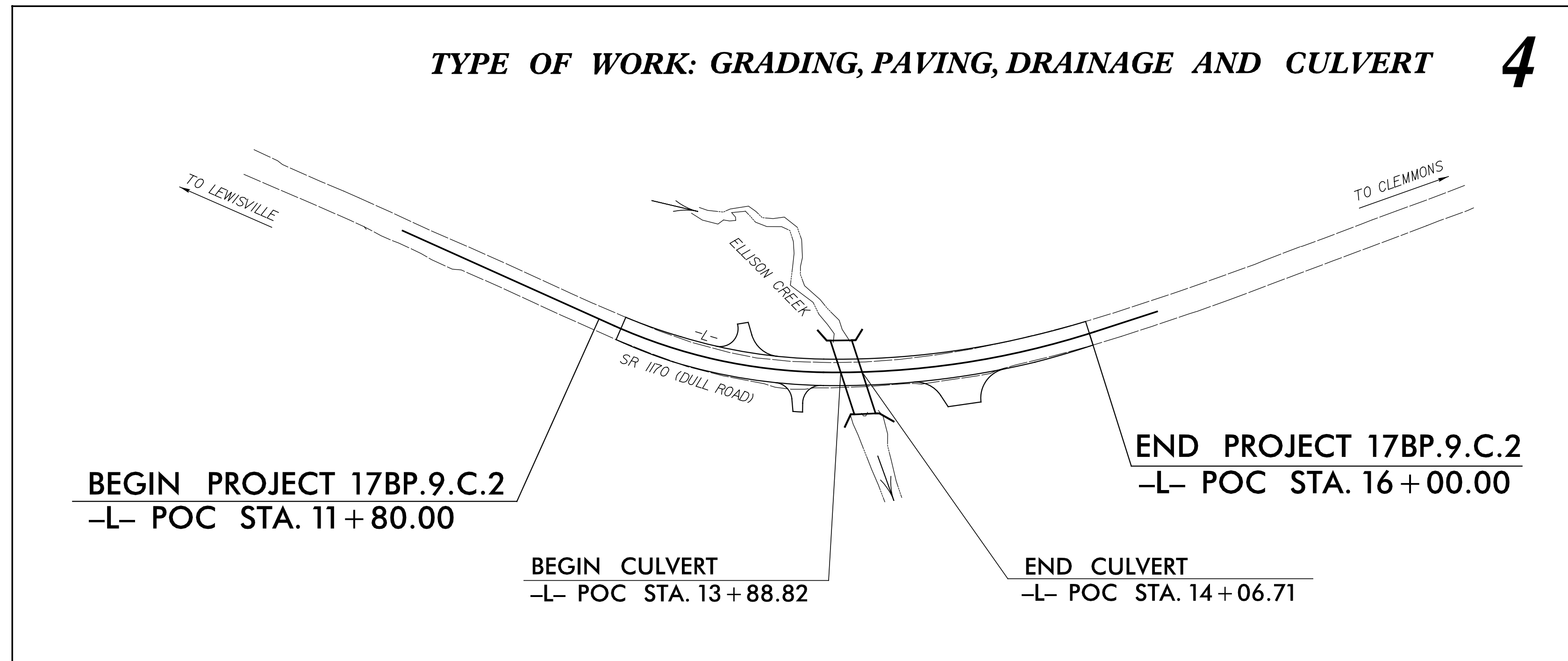
NORTH CAROLINA D.O.T. SIGN DETAIL

9/28/2017
ICA ENGINEERING INC-control.tsh.dgn

PROJECT: 17BP.9.C.2

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

LOCATION: CULVERT NO.133 OVER ELLISON CREEK
ON SR 1170 (DULL ROAD)



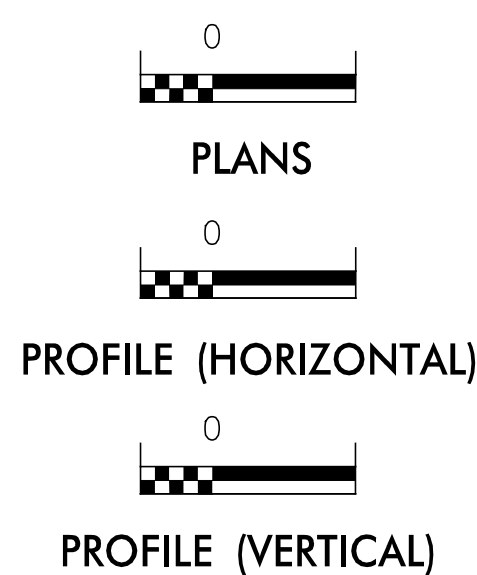
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.9.C.2	EC-1	
STATE PROJ.NO.	F.A.PROJ.NO.	DESCRIPTION	
17BP.9.C.2	N/A	PE	
17BP.9.C.2	N/A	R/W / UTIL	
17BP.9.C.2	N/A	CONST	

EROSION AND SEDIMENT CONTROL MEASURES

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

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

GRAPHIC SCALE



THESE EROSION AND SEDIMENT
CONTROL PLANS COMPLY WITH
THE REGULATIONS SET FORTH
BY THE NCG-010000 GENERAL
CONSTRUCTION PERMIT EFFECTIVE
AUGUST 1, 2016 AND ISSUED BY
THE NORTH CAROLINA DEPARTMENT
OF ENVIRONMENT AND NATURAL
RESOURCES DIVISION OF WATER
RESOURCES.

Prepared In the Office of:

ICA
ICA Engineering, Inc.
5121 Kingdom Way,
Suite 100
Raleigh, NC 27607
NC License No: F-0258

Designed by:

ALEXANDER D. SNIDER, P.E. 3064
NAME LEVEL III CERTIFICATION NO.

Reviewed In the Office of:

ROADSIDE ENVIRONMENTAL UNIT
1 South Wilmington St.
Raleigh, NC 27611

2012 STANDARD SPECIFICATIONS

Reviewed by:

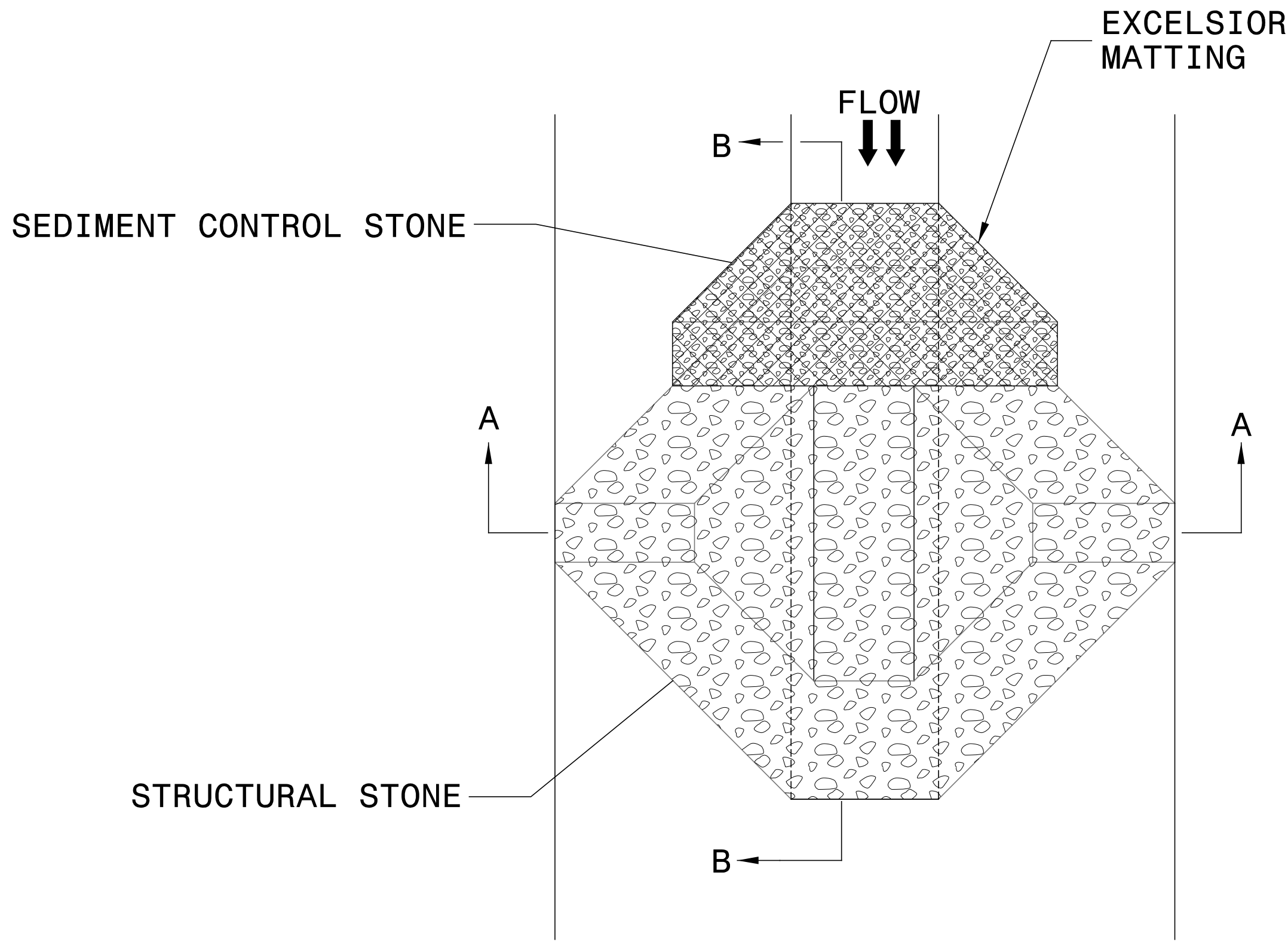
MATTHEW JONES, PE

Roadway Standard Drawings

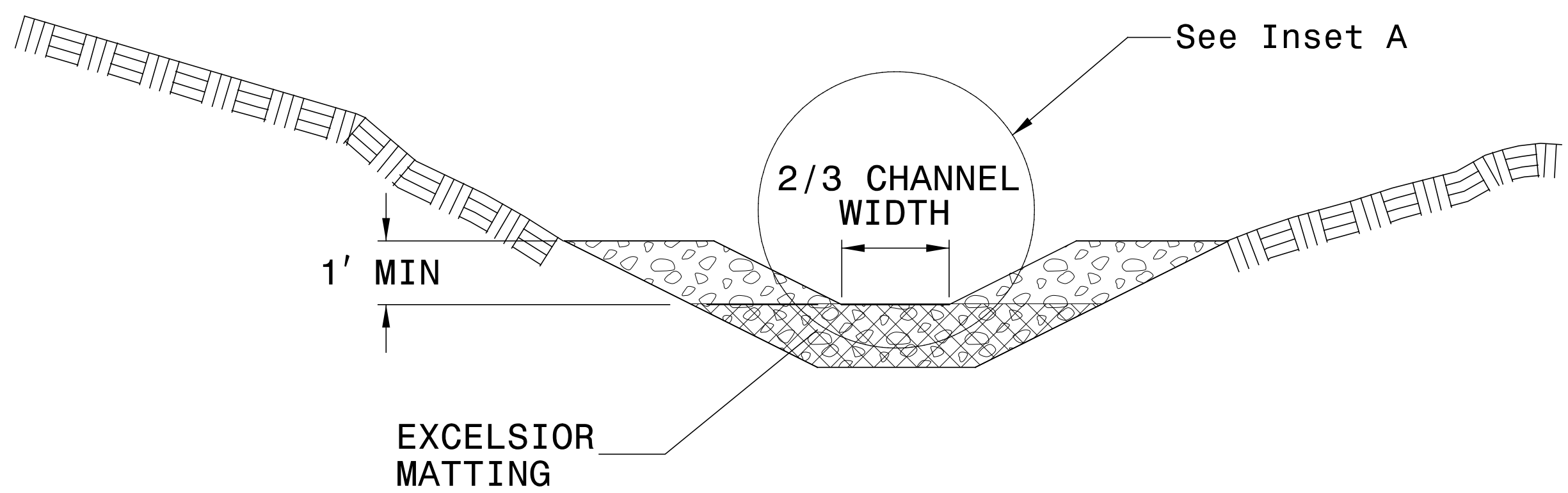
The following roadway english standards as appear in "Roadway Standard Drawings"- Roadway Design Unit - N. C. Department of Transportation - Raleigh, N. C., dated January 2012 and the latest revision thereto are applicable to this project and by reference hereby are considered a part of these plans.

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

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



PLAN



SECTION A-A

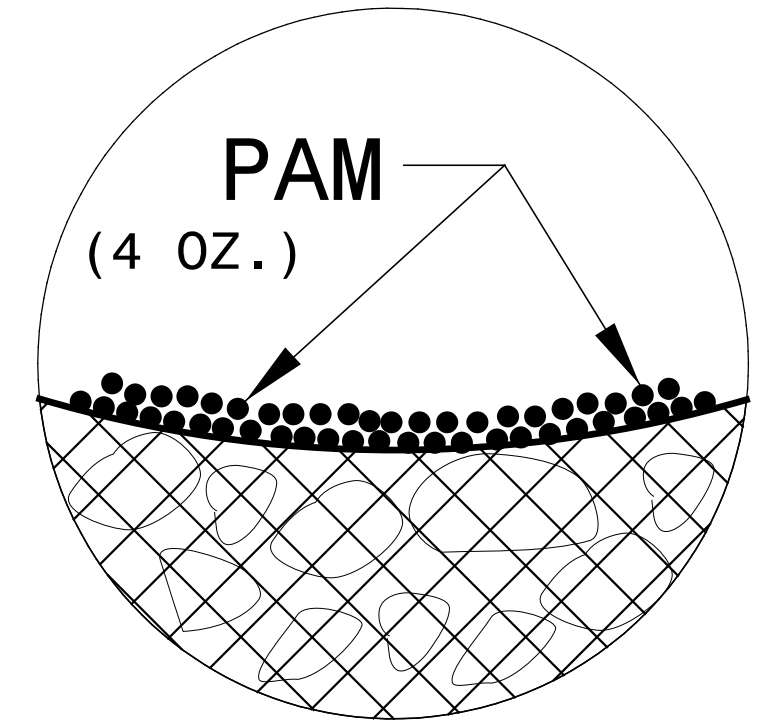
NOTES:

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

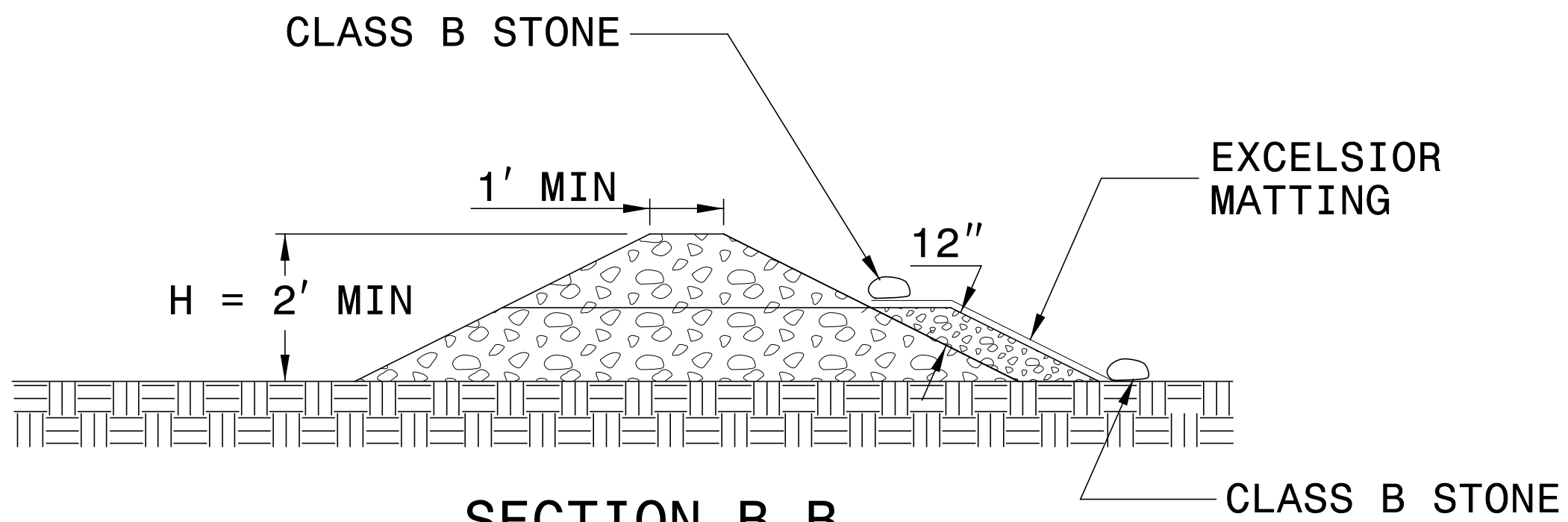
USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

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

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



INSET A



SECTION B-B

NOT TO SCALE

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

SITE DESCRIPTION	STABILIZATION TIME	TIMEFRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND HQW ZONES.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
17BP.9C.2	EC-3A
ROADSIDE ENVIRONMENTAL PROJECT ENGINEER	
LEVEL III CERTIFIED BY: ALEXANDER D. SNIDER, PE CERTIFICATION NUMBER: 3064 ISSUED: SEPTEMBER 27, 2017	

SOIL STABILIZATION SUMMARY SHEET

PERMANENT SOIL REINFORCEMENT MAT

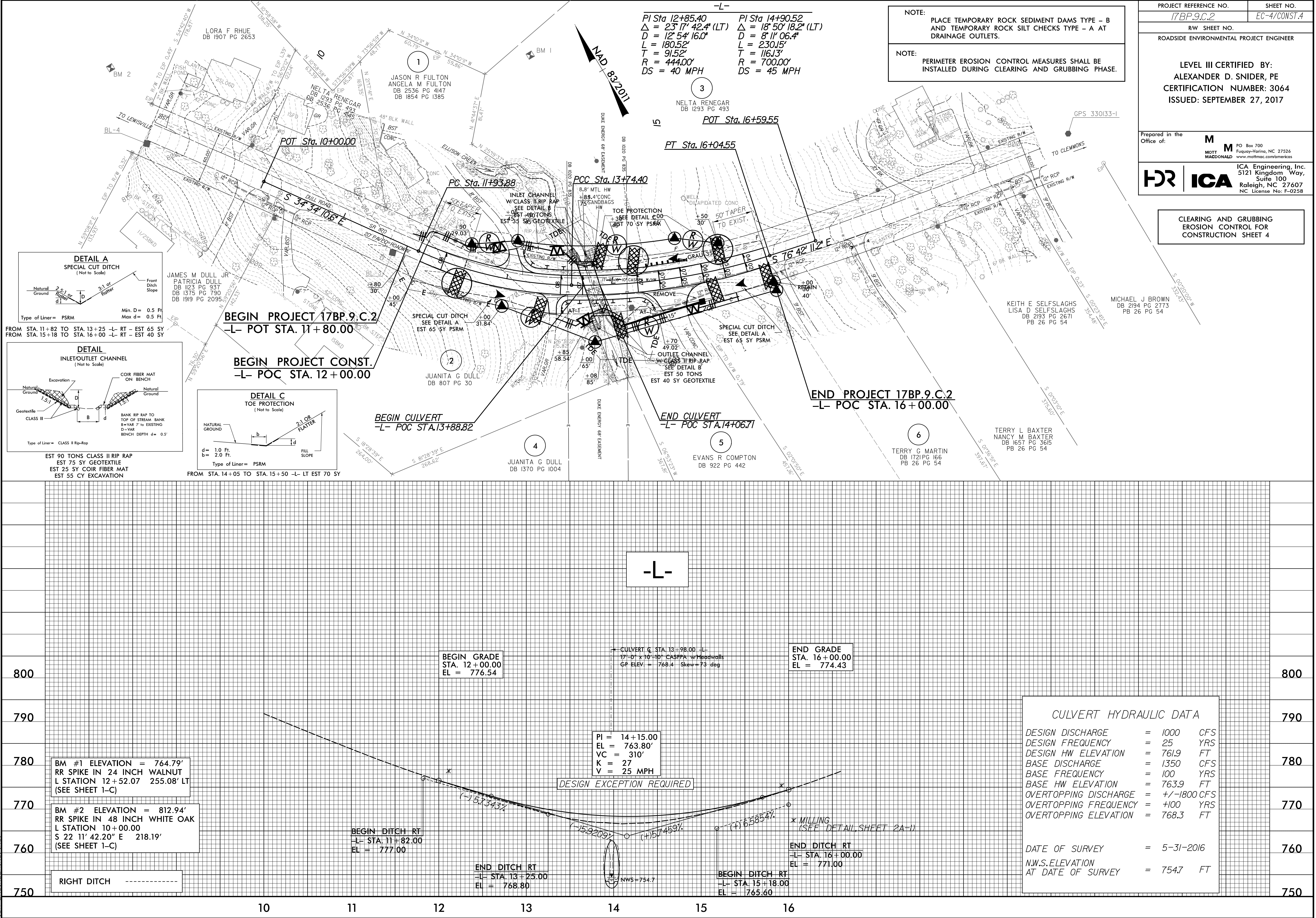
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PERMANENT SOIL REINFORCEMENT MAT

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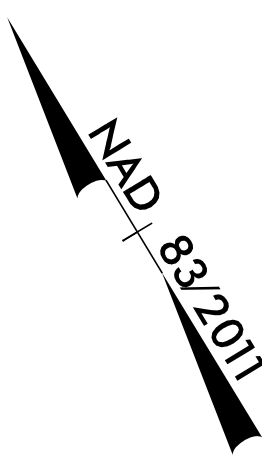
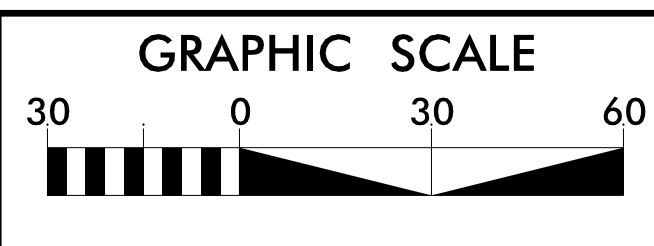
8/17/99

9/27/2017 P:\Hydro\DDC\Forsyth\133\Hydraulics\Erosion Control\cadd\330133.ec.c&g.psh.dgn ICA ENGINEERING, INC.

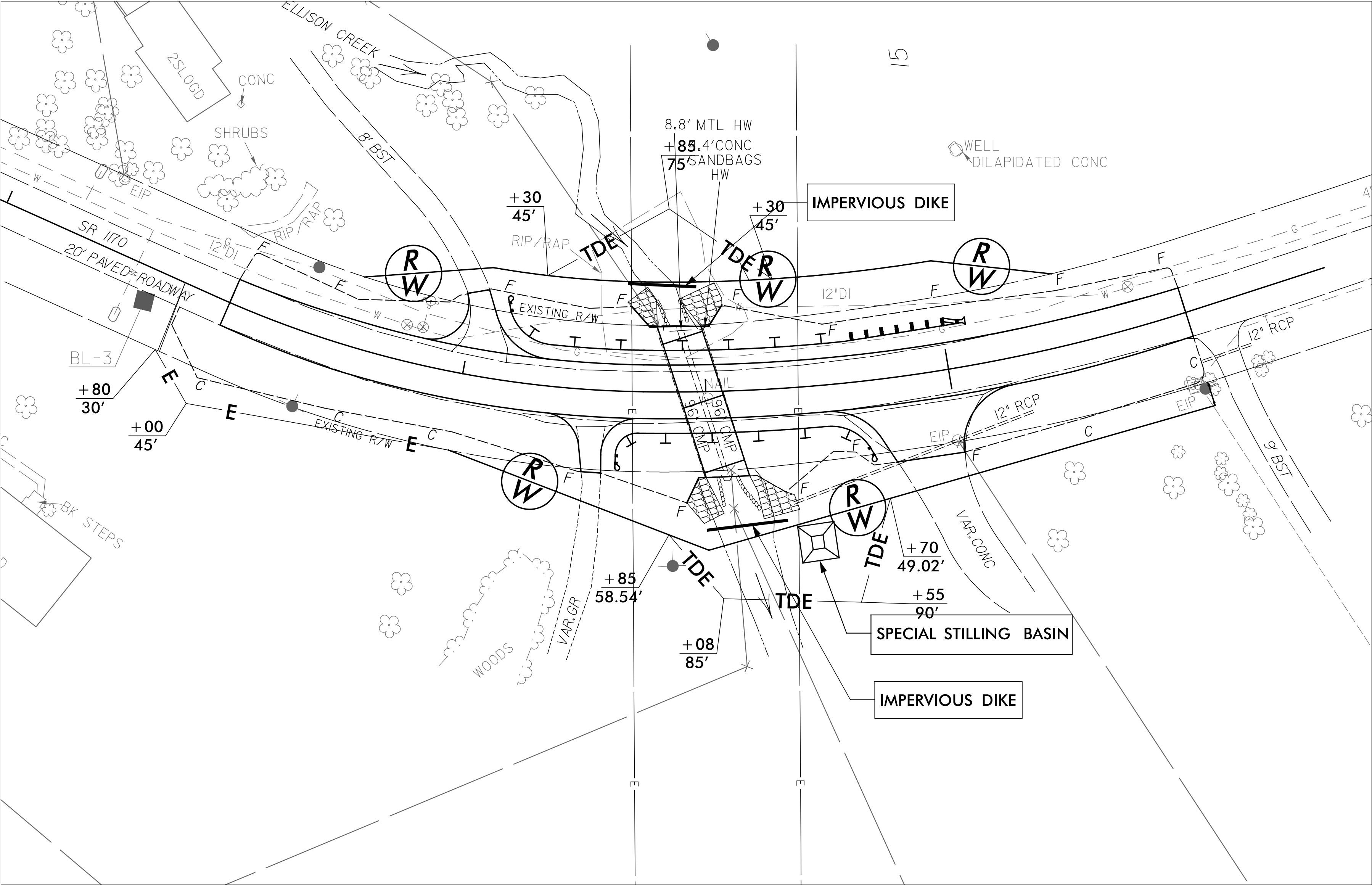


5/14/99
STATE OF NORTH CAROLINA
ICA ENGINEERING, INC.

CONSTRUCTION SEQUENCE



PROJECT REFERENCE NO.	SHEET NO.
17BP.9.C.2	EC-4A/CONST.4
RW SHEET NO.	
ROADSIDE ENVIRONMENTAL PROJECT ENGINEER	
LEVEL III CERTIFIED BY: ALEXANDER D. SNIDER, PE CERTIFICATION NUMBER: 3064 ISSUED: SEPTEMBER 27, 2017	
Prepared in the Office of:	M MOTT MACDONALD
	PO Box 700 Fuquay-Varina, NC 27526 www.mottmac.com/americas
HR	ICA ICA Engineering, Inc. 5121 Kingdom Way, Suite 100 Raleigh, NC 27607 NC License No. F-0258



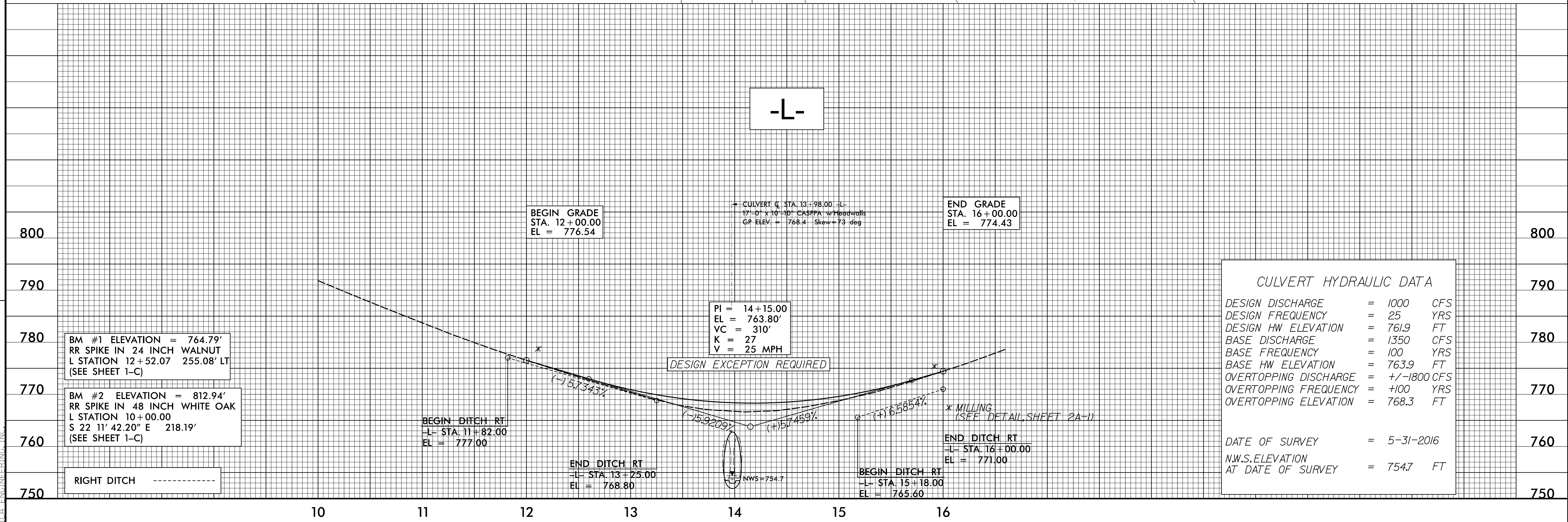
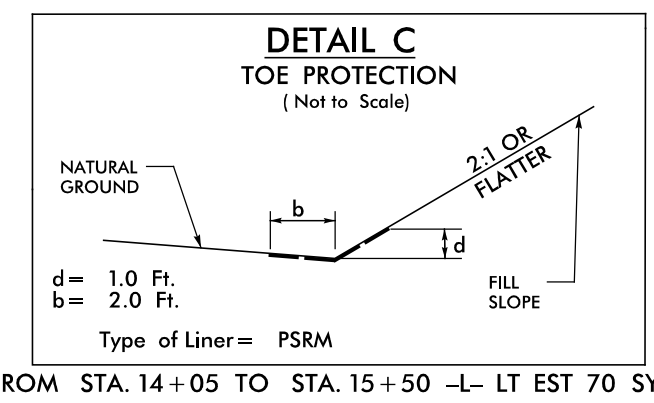
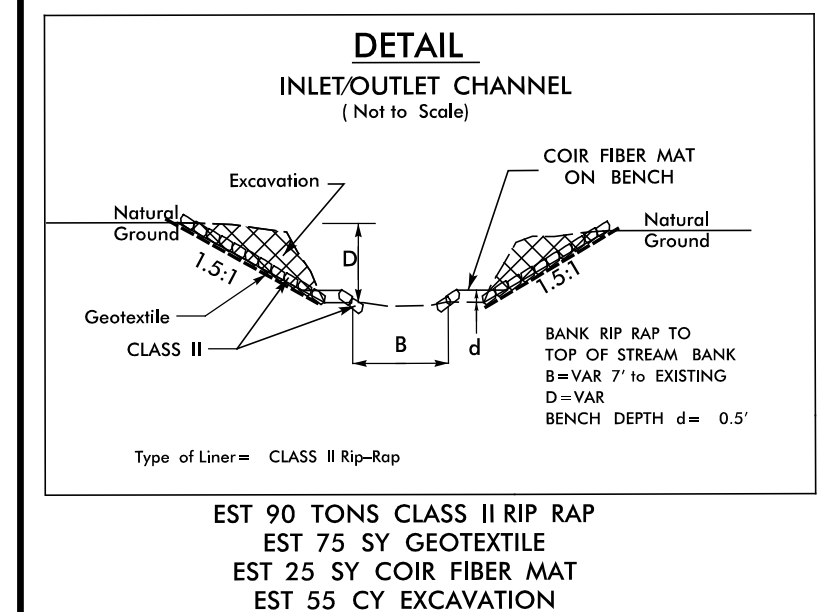
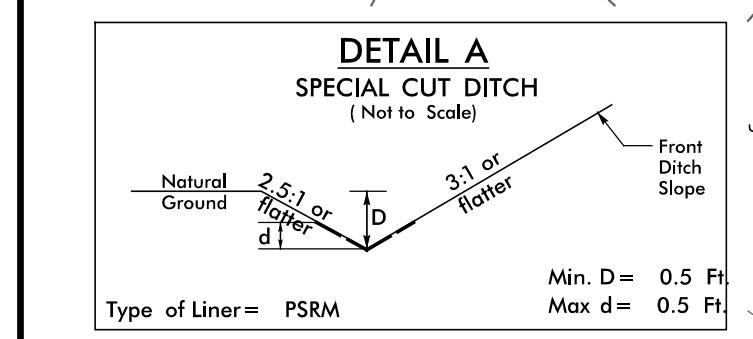
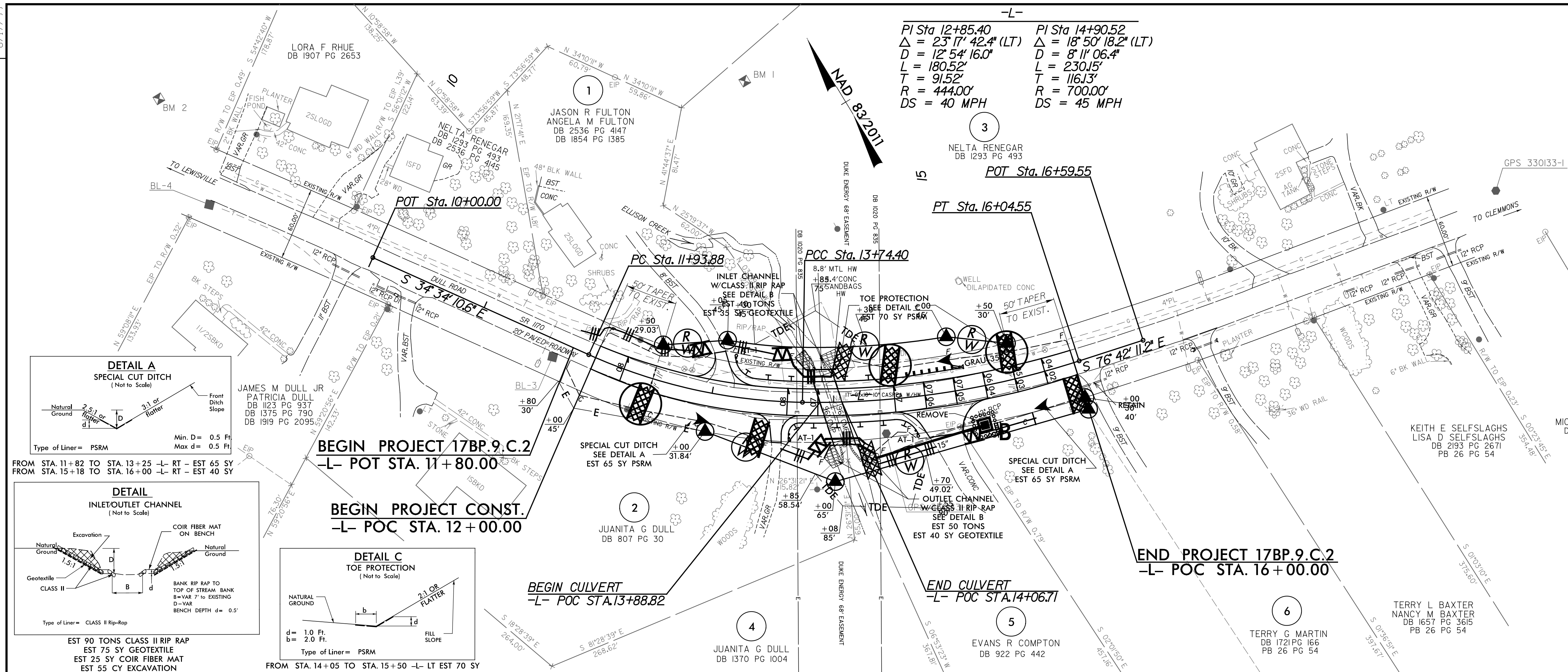
CONSTRUCTION PHASING:

- 1.) INSTALL TEMPORARY IMPERVIOUS DIKES (53 LF) UP & DOWNSTREAM
- 2.) SET UP PUMP AROUND; INSTALL SPECIAL STILLING BASIN
- 3.) REMOVE EXISTING CULVERTS AND INSTALL NEW CULVERT WITH WINGWALLS. CONSTRUCT UP AND DOWNSTREAM CHANNEL IMPROVEMENTS.
- 4.) REMOVE IMPERVIOUS DIKES AND SPECIAL STILLING BASIN AND DIRECT FLOW INTO NEW CULVERT.
- 5.) REVEGETATE DISTURBED AREAS.

8/17/99

9/27/2017
P:\Hydro\DDC\Forsyth\133\Hydraulics\Erosion_Control\cadd\330133.ec_final_psh.dgn
ICA ENGINEERING, INC.

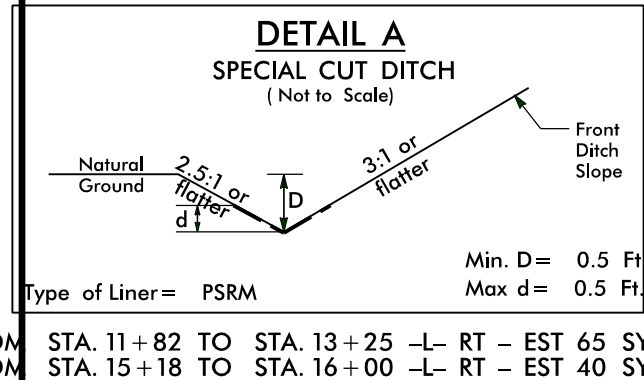
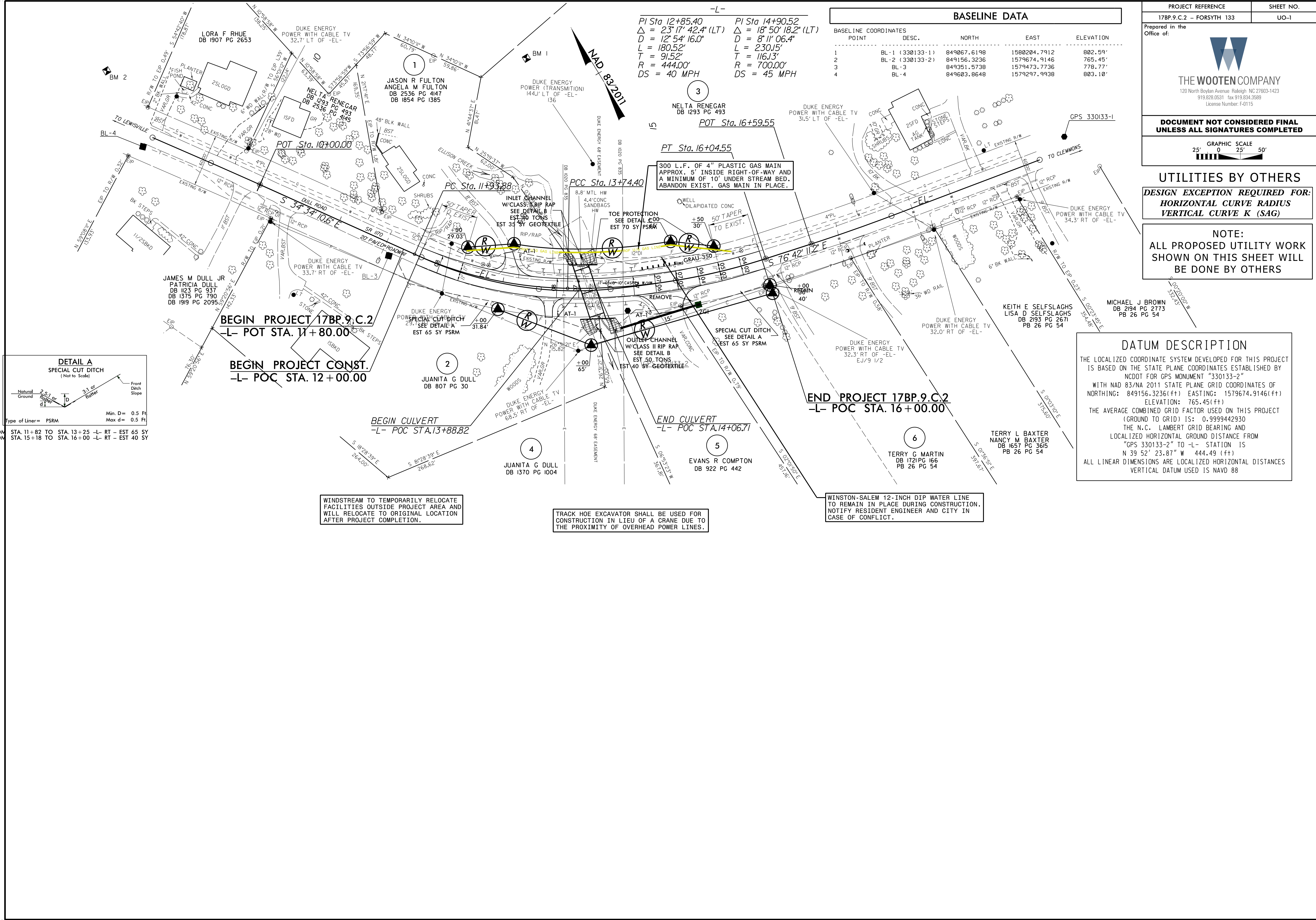
REVISIONS



PROJECT REFERENCE NO.	SHEET NO.
17BP.9.C.2	EC-5/CONST.4
RW SHEET NO.	
ROADSIDE ENVIRONMENTAL PROJECT ENGINEER	
LEVEL III CERTIFIED BY: ALEXANDER D. SNIDER, PE CERTIFICATION NUMBER: 3064 ISSUED: SEPTEMBER 27, 2017	
Prepared in the Office of:	MOTT MACDONALD PO Box 700 Fuquay-Varina, NC 27526 www.mottmac.com/americas
ICA Engineering, Inc. 5121 Kingdom Way, Suite 100 Raleigh, NC 27607 NC License No. F-0258	

FINAL EROSION CONTROL FOR CONSTRUCTION SHEET 4

\\330133\Projects\Hatch_Mott MacDonald\3160\017BP9C2_Forsyth\133\330133_pre75_Plans\Roadway\Proj\330133_rdy.utl Ub0.dgn
1/3/24 AM
jthornis



BASELINE DATA				
BASELINE COORDINATES				
POINT	DESC.	NORTH	EAST	ELEVATION
1	BL-1 (330133-1)	849067.6198	1580204.7912	802.59'
2	BL-2 (330133-2)	849156.3236	1579674.9146	765.45'
3	BL-3	849351.5738	1579473.7736	778.77'
4	BL-4	849603.8648	1579297.9938	803.10'

PROJECT REFERENCE
17BP.9.C.2 - FORSYTH 133

SHEET NO.
UO-1

Prepared in the Office of:

THE WOOTEN COMPANY
120 North Boylan Avenue, Raleigh, NC 27603-1423
919.528.0531 fax 919.894.3589
License Number: F-0115

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALE
25' 0' 25' 50'

UTILITIES BY OTHERS
DESIGN EXCEPTION REQUIRED FOR:
HORIZONTAL CURVE RADIUS
VERTICAL CURVE K (SAG)

NOTE:
ALL PROPOSED UTILITY WORK
SHOWN ON THIS SHEET WILL
BE DONE BY OTHERS

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR GPS MONUMENT "330133-2"

WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 849156.3236(±) EASTING: 1579674.9146(±)
ELEVATION: 765.45(±)

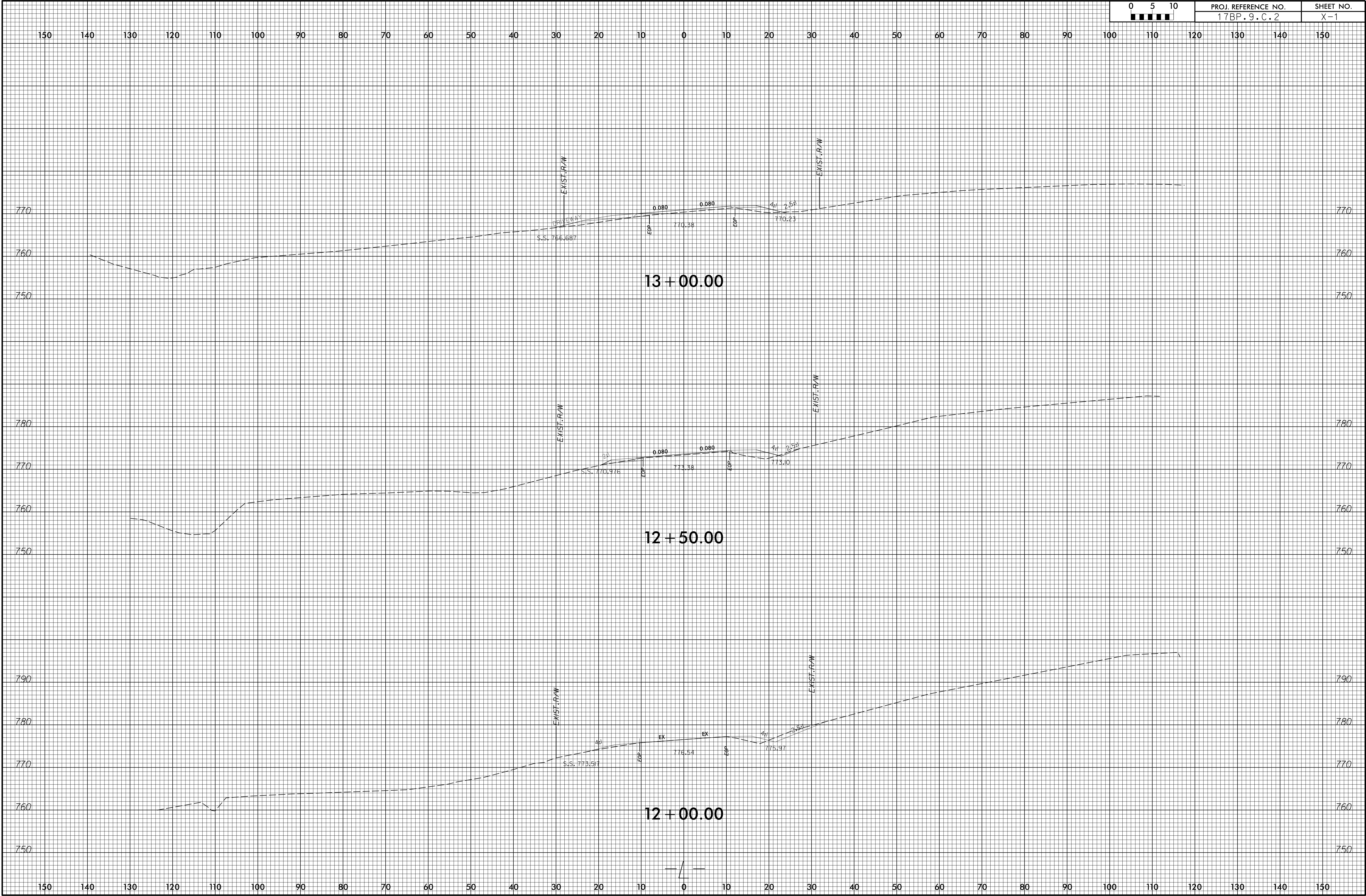
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9999442930

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS 330133-2" TO -L- STATION IS
N 39 52' 23.87" W 444.49 (±)

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

8/23/99

05	10	PROJ. REFERENCE NO.	SHEET NO.
17BP.9.C.2	X-1		



8/23/99

05	PROJ. REFERENCE NO.	SHEET NO.
0 5 10	17BP.9.C.2	X-2

