

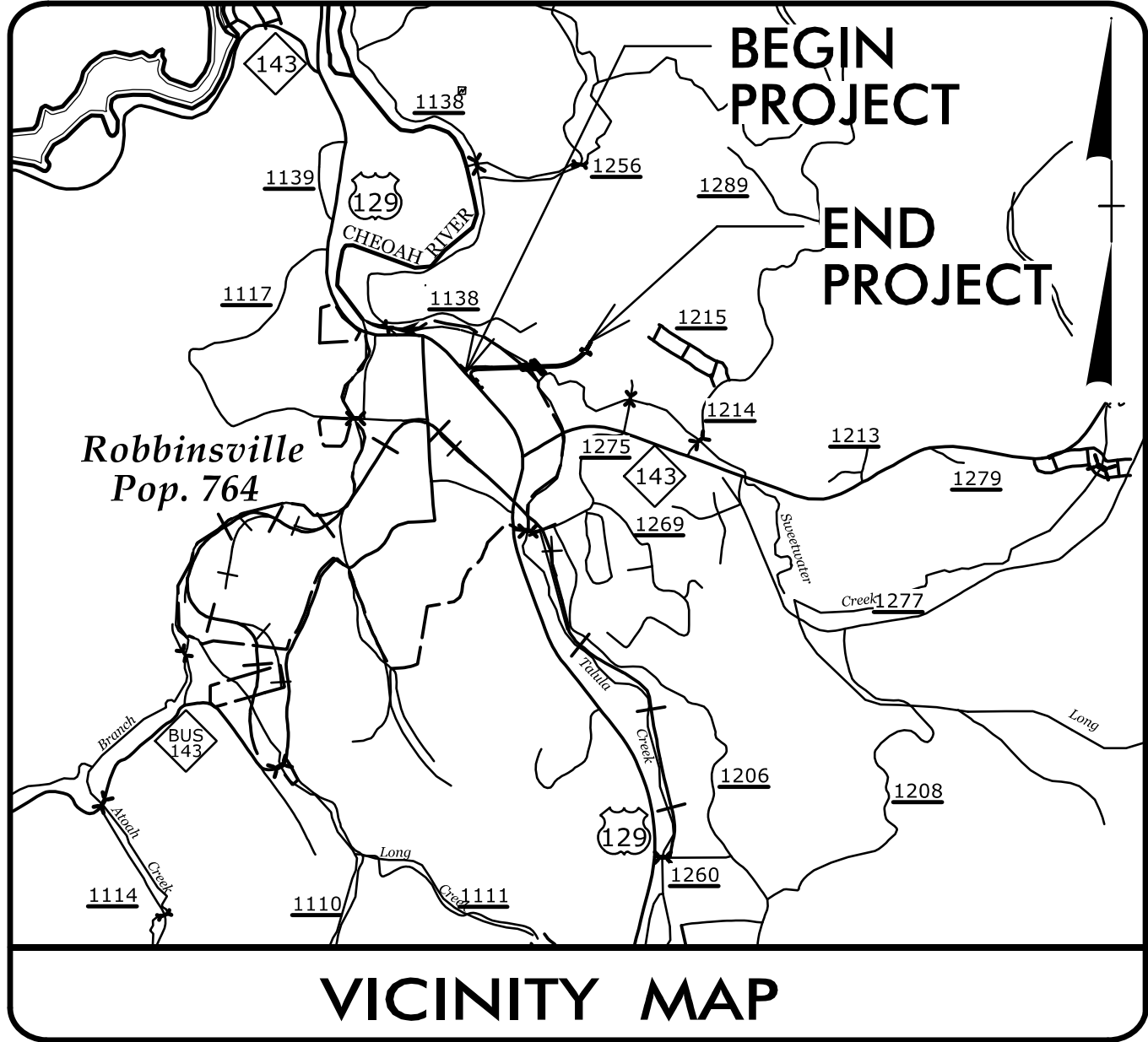
09.08/19

2/19/2018
X:\NCDOT\U-5866\Roadway\Proj\U-5866_Rdy-f.sh.dgn
User:smelvin

TIP PROJECT: U-5866

CONTRACT: DN00560

See Sheet 1-A For Index of Sheets



VICINITY MAP

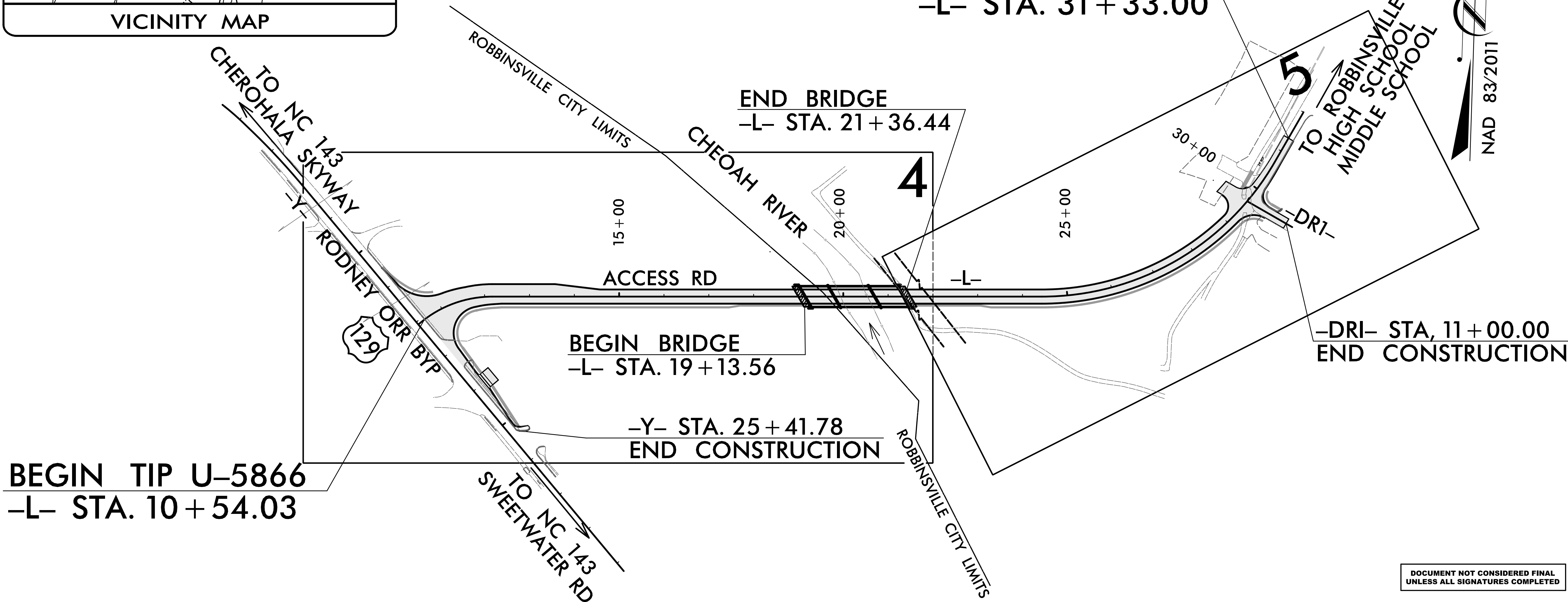
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GRAHAM COUNTY

LOCATION: NEW ROUTE FROM US 129 (RODNEY ORR BYP) TO
ROBBINSVILLE HIGH SCHOOL /MIDDLE SCHOOL CAMPUS
INCLUDING BRIDGE OVER CHEOAH RIVER

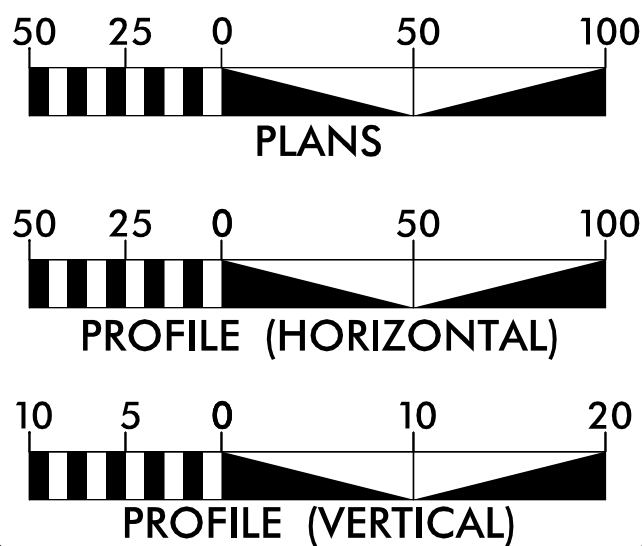
TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURE, AND SIGNALS

END TIP U-5866
-L- STA. 31 + 33.00



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES



DESIGN DATA

ADT 2015 = N/A
ADT 2041 = 1200
K = 20 %
D = 60 %
T = 8 % *
V = 30 MPH
* TTST =1% DUAL =7%
FUNC CLASS =
URBAN COLLECTOR
REGIONAL TIER

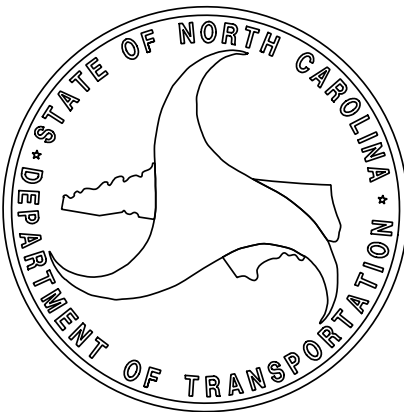
PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-5866 = 0.352 MILES
LENGTH STRUCTURE TIP PROJECT U-5866 = 0.042 MILES
TOTAL LENGTH TIP PROJECT U-5866 = 0.394 MILES

NCDOT CONTACT: STEPHEN WILLIAMS

PLANS PREPARED BY: TGS ENGINEERS 804-C N. LAFAYETTE ST SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	PLANS PREPARED FOR: NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION 14 253 Webster Road Sylva, NC 28775
RIGHT OF WAY DATE: FEB. 17, 2017	JIMMY L. TERRY, PE PROJECT ENGINEER
LETTING DATE: MARCH 13, 2018	SANDRA G. MELVIN PROJECT DESIGN ENGINEER
2012 STANDARD SPECIFICATIONS	

 HYDRAULICS ENGINEER 2/20/2018 DocuSigned by: David B Petty 400E7F4963B0465 P.E. SIGNATURE:	 ROADWAY DESIGN ENGINEER 2/20/2018 DocuSigned by: Jimmy Terry FD39F38825E4D00 P.E. SIGNATURE:
---	---



8/17/99

I:\2017\NCDOT\U-5866\Roadway\Proj\U-5866.Rdj_tsh.dgn
User: tshelton

PROJECT REFERENCE NO.	SHEET NO.
U-5866	1A

ROADWAY DESIGN
ENGINEER

Seal

35018

JIMMY L. TERRY

07/20/2018

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

INDEX OF SHEETS

SHEET NO.	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
1-C	SURVEY CONTROL SHEET
2A-1	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2B-1	DETAIL OF EXCAVATION
2C-1 THRU 2C-2	CURB RAMP DETAILS
2C-3 THRU 2C-5	GUARDRAIL PLACEMENT DETAILS
2C-6 THRU 2C-8	GUARDRAIL INSTALLATION DETAILS
2C-9 THRU 2C-10	STRUCTURE ANCHOR UNITS DETAILS
3B-1	SUMMARY OF GUARDRAIL, EARTHWORK SUMMARY AND ASPHALT PAVEMENT REMOVAL SUMMARY
3D-1	SUMMARY OF DRAINAGE QUANTITIES
3G-1	GEOTECHNICAL SUMMARIES
3P-1	PARCEL INDEX SHEET
4 THRU 6	PLAN AND PROFILE SHEETS
TMP-1 THRU TMP-4	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-4	PAVEMENT MARKING PLAN
EC-1 THRU EC-6	EROSION CONTROL PLANS
RF-1	REFORESTATION PLANS
SIGN-1 THRU SIGN-4	SIGNING PLANS
SIG-1 THRU SIG-1.2	SIGNAL PLANS
SIG P1 THRU SIG P3	PEDESTRIAN DETAILS
UC-1 THRU UC-6	UTILITY CONSTRUCTION PLANS
UO-1 THRU UO-2	UTILITIES BY OTHERS
X-INDEX	CROSS-SECTION INDEX
X-SUM	EARTHWORK VOLUME SUMMARY
X-1 THRU X-10	CROSS-SECTIONS
S-1 THRU S-32	STRUCTURE PLANS

GENERAL NOTES

GENERAL NOTES: 2012 SPECIFICATIONS
EFFECTIVE: 01-17-2012
REVISED: 10-31-2014

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 II.

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

SUBSURFACE DRAINS:
SUBSURFACE DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.02 AT LOCATIONS DIRECTED BY THE ENGINEER.

DRIVEWAYS:
DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.02 USING 900 MM RADII OR RADII AS SHOWN ON THE PLANS. LOCATIONS OF DRIVES WILL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

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.

TEMPORARY SHORING:
SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7.

END BENTS:
THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS-SECTION PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE.

UTILITIES:
UTILITY OWNERS ON THIS PROJECT ARE DUKE ENERGY, FRONTIER COMMUNICATION, TOWN OF ROBBINSVILLE, AND ZITO MEDIA
ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

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

CURB RAMPS
CURB RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS. CONSTRUCT ALL CURB RAMPS ACCORDANCE WITH STD 848.05 and/or 848.06.

STANDARD DRAWINGS

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

200.02 Method of Clearing - Method II
225.02 Guide for Grading Subgrade - Secondary and Local
225.04 Method of Obtaining Superelevation - Two Lane Pavement
225.06 Method of Grading Sight Distance at Intersections

DIVISION 3 - PIPE CULVERTS

300.01 Method of Pipe Installation

DIVISION 4 - MAJOR STRUCTURES

422.10 Reinforced Bridge Approach Fills

DIVISION 5 - SUBGRADE, BASES AND SHOULDERS

560.01 Method of Shoulder Construction - High Side of Superelevated Curve - Method I

DIVISION 8 - INCIDENTALS

815.02 Subsurface Drain
838.01 Concrete Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.11 Brick Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
840.00 Concrete Base Pad for Drainage Structures
840.01 Brick Catch Basin - 12' thru 54" Pipe
840.02 Concrete Catch Basin - 12" thru 54" Pipe
840.03 Frame, Grates and Hood - for Use on Standard Catch Basin
840.45 Precast Drainage Structure
840.46 Traffic Bearing Precast Drainage Structure
840.66 Drainage Structure Steps
846.01 Concrete Curb, Gutter and Curb & Gutter
848.01 Concrete Sidewalk
848.02 Driveway Turnout - Radius Type
848.05 Curb Ramp - Proposed Curb & Gutter
876.02 Guide for Rip Rap at Pipe Outlets

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	

Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

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	

8/17/99

REVISIONS

U:\2017
X:\NC000\U-5866\Roadway\Proj\U-5866.LS,loc.dgn
Jsermalyn

PROJECT REFERENCE NO.	SHEET NO.
U-5866	IC-1

SURVEY CONTROL SHEET U-5866

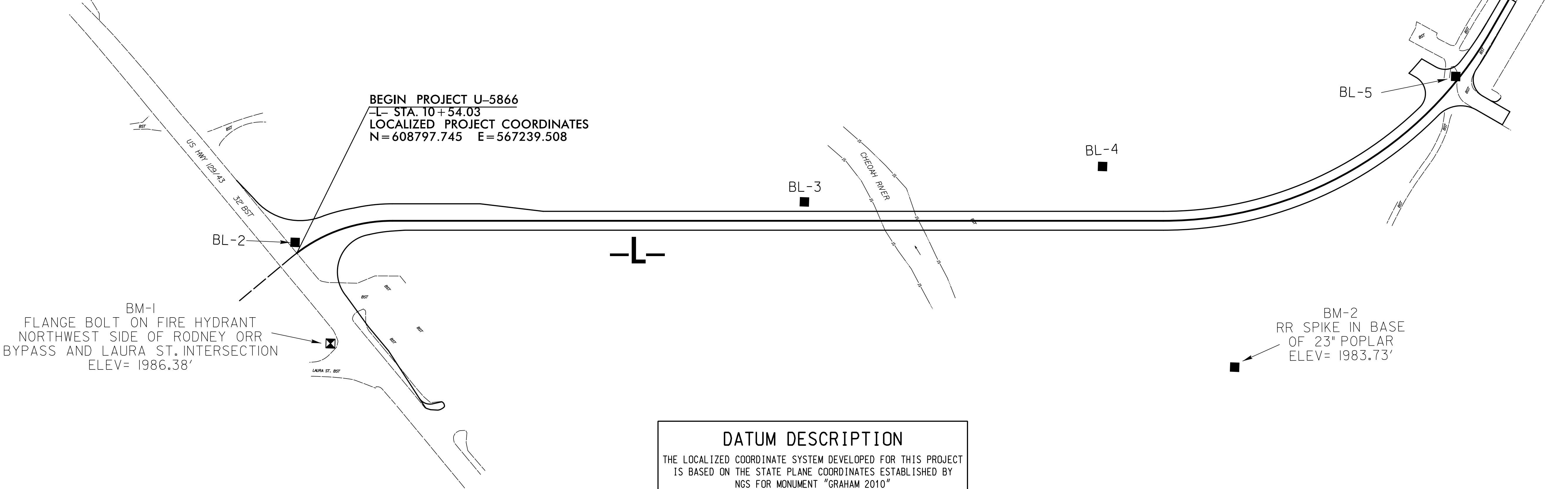
BL	POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
BL -2			608814.7792	567236.2101	1986.79	10+61.81	15.39 LT
BL -3			608906.8924	568043.2127	1976.84	18+72.36	30.05 LT
BL -4			608979.3332	568515.0660	1978.19	23+46.43	86.24 LT
BL -5			609141.6377	569071.2915	1984.12	29+81.64	5.46 LT

BM1 ELEVATION = 1986.38
N 608656 E 567298
L STATION 10+03.27 145 RIGHT
FLANGE BOLT ON FIRE HYDRANT

BM2 ELEVATION = 1983.73
N 608668 E 568736
L STATION 25+24.00 240 RIGHT
RR SPIKE IN BASE OF 23" POPLAR



END PROJECT U-5866
-L- STA. 31+33.00
LOCALIZED PROJECT COORDINATES
N=609268.547 E=569152.552



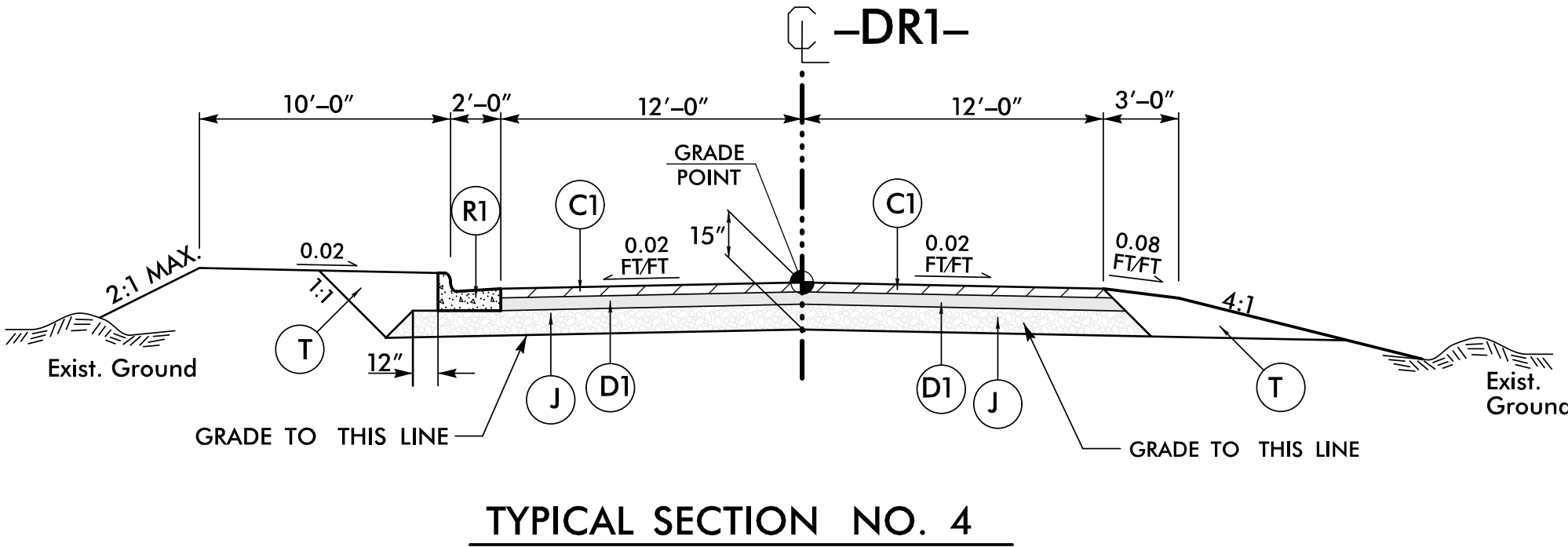
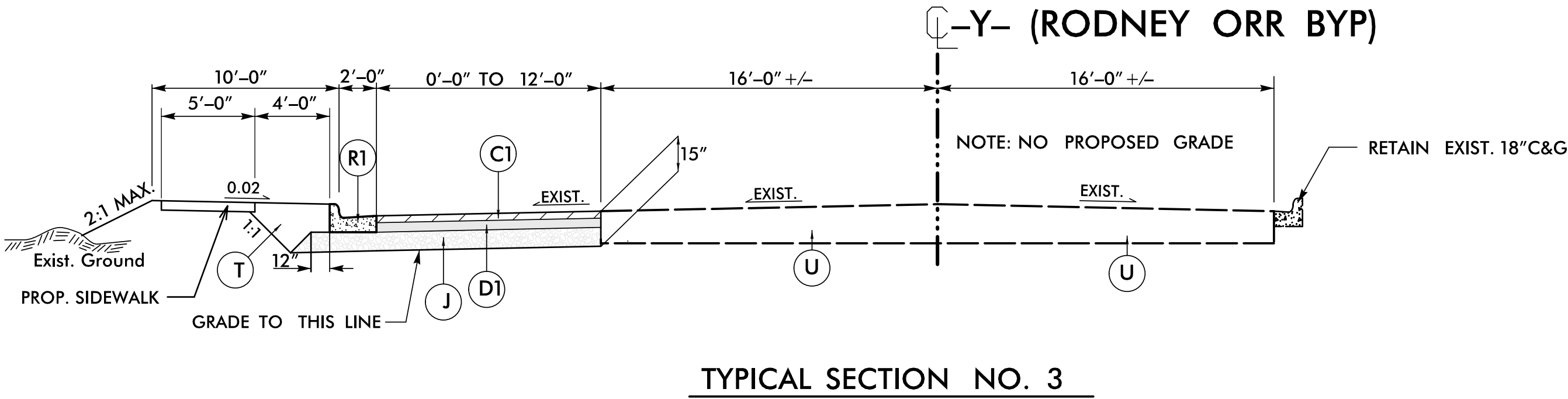
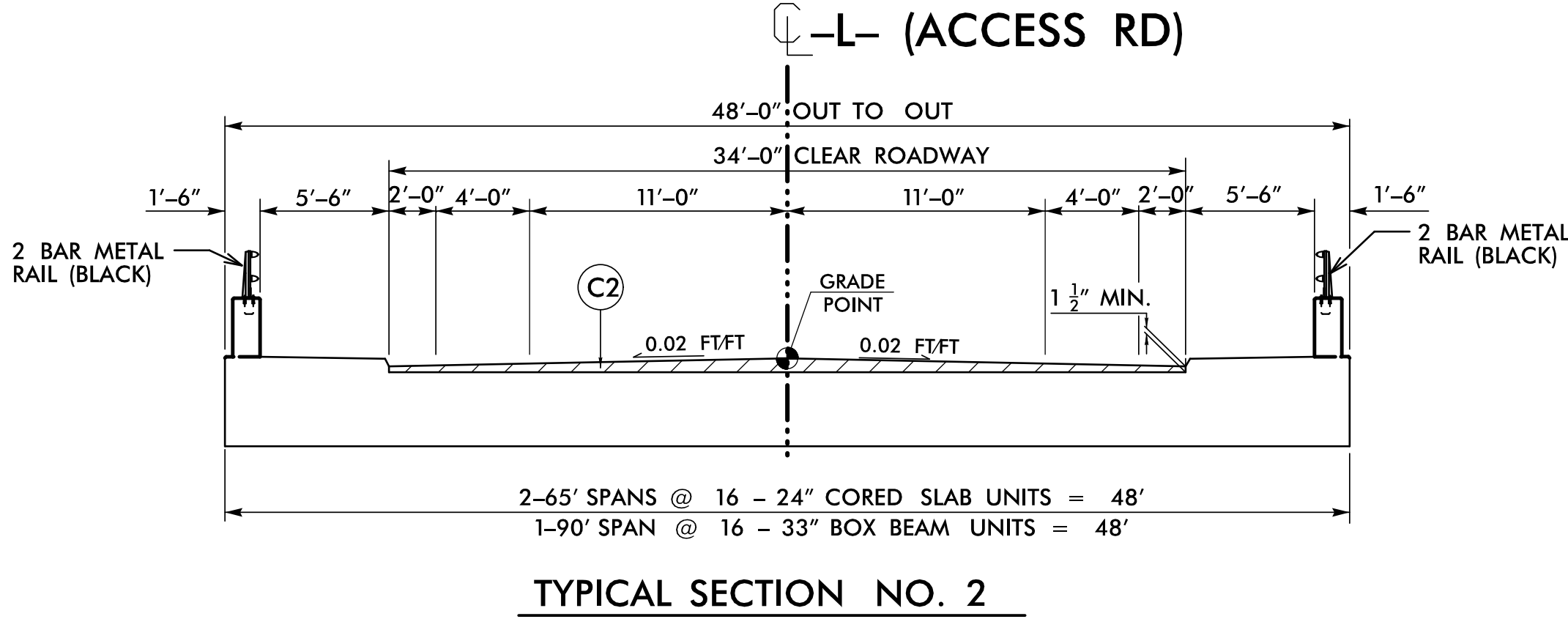
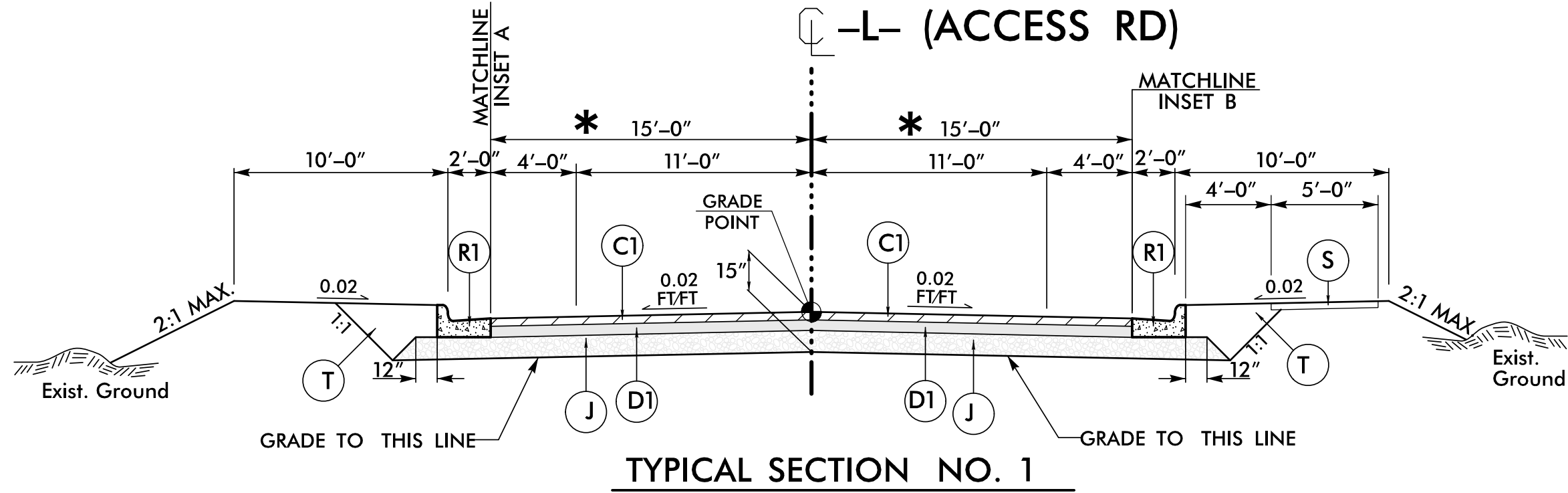
DATUM DESCRIPTION
THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NGS FOR MONUMENT "GRAHAM 2010"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 607934.438(±) EASTING: 566169.123(±)
ELEVATION: 1995.90(±)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99978241
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GRAHAM" TO -L- STATION IS
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

6/2/99

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 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.
J	PROP. 8" AGGREGATE BASE COURSE.
R1	2'-6" CONCRETE CURB AND GUTTER.
S	CONCRETE SIDEWALK
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.

PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



PROJECT REFERENCE NO.
U-5866

SHEET NO.
2A-1

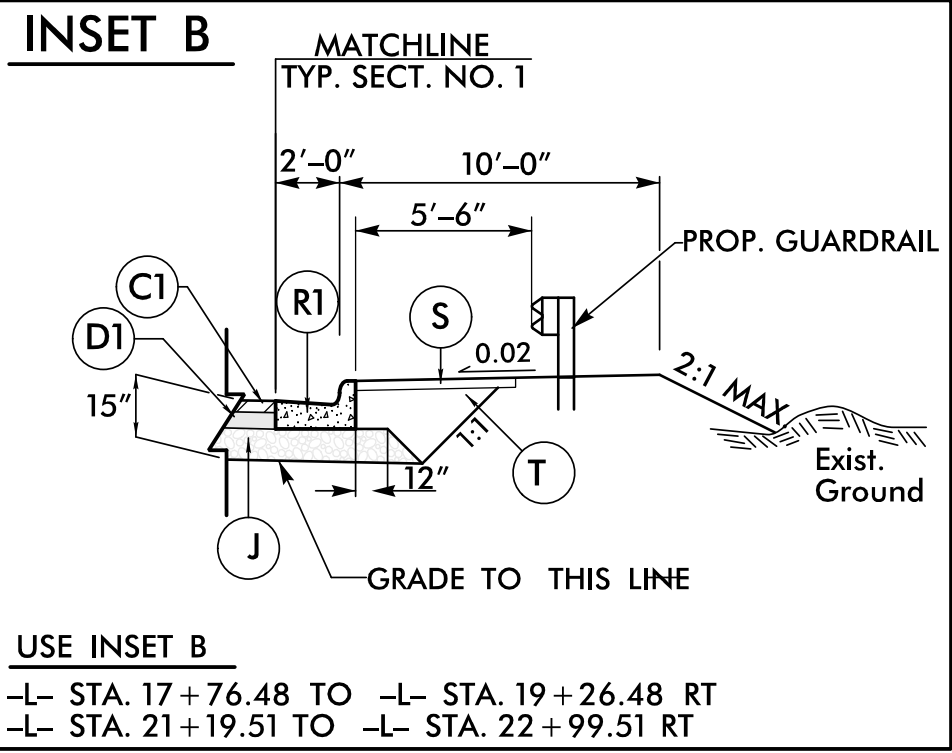
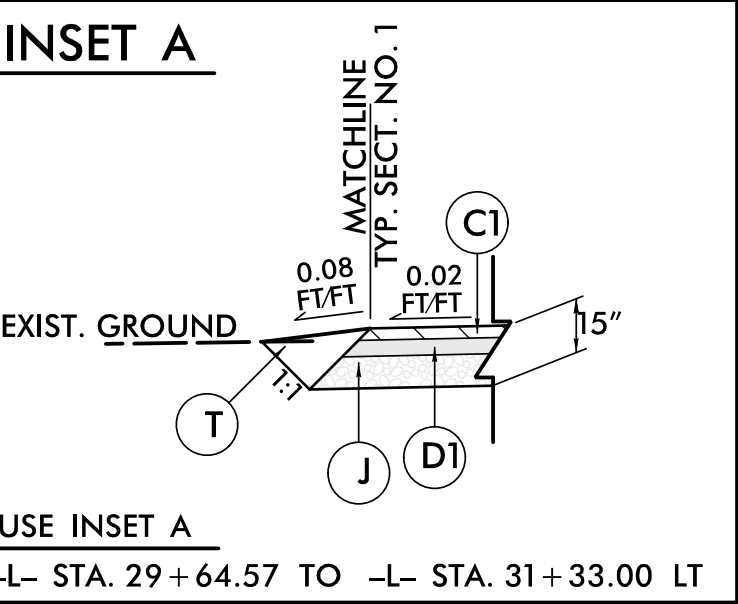
ROADWAY DESIGN ENGINEER

JIMMY L. TERRY
ENGINEER
1/20/2018

PAVEMENT DESIGN ENGINEER

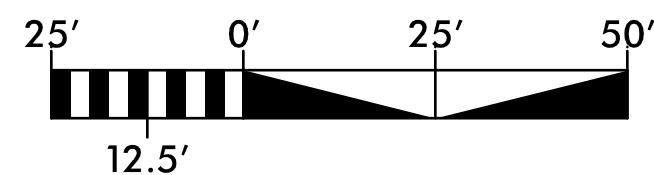
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UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
804-C N. LAFAYETTE ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275



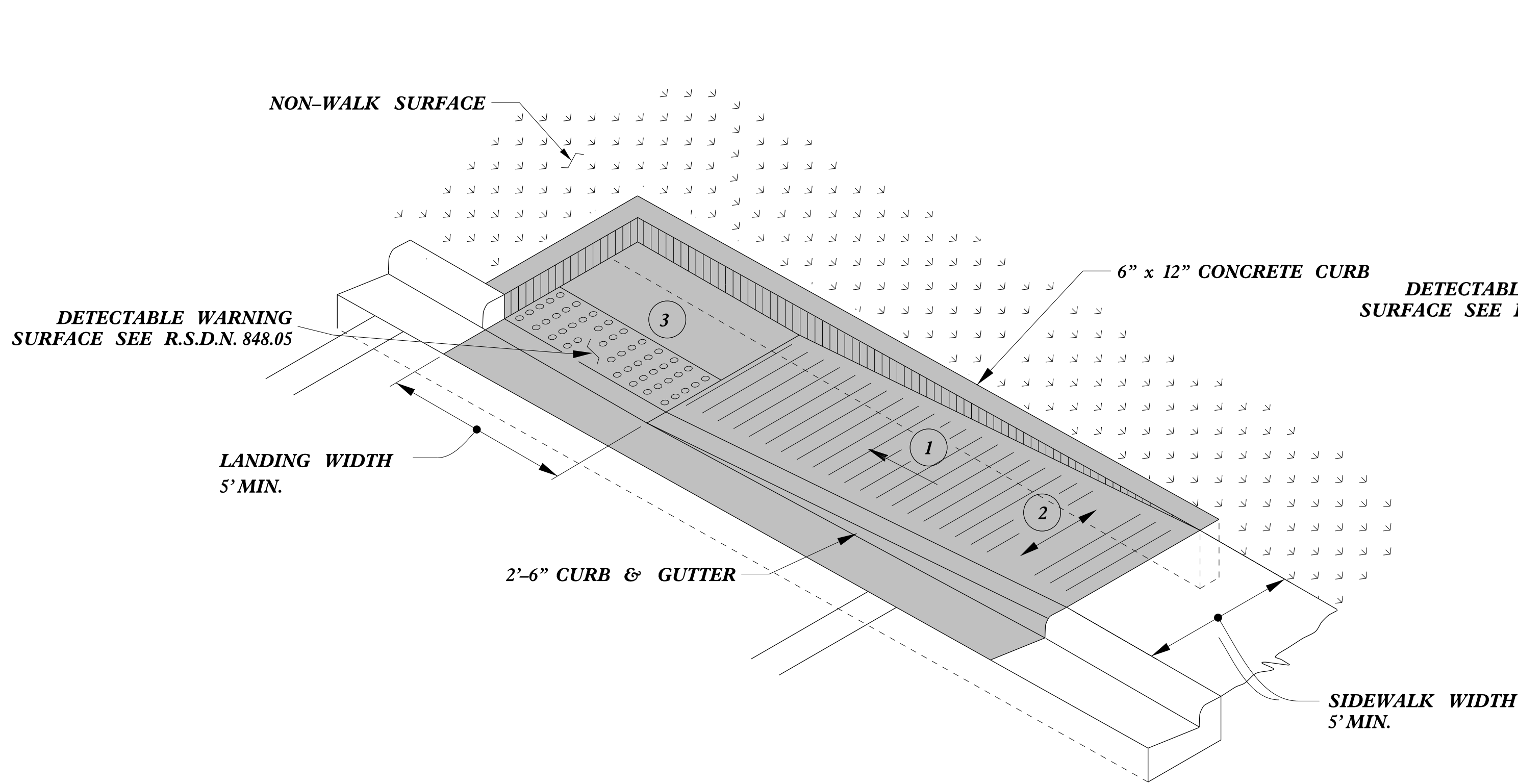
LEGEND

AREA TO BE EXCAVATED	
PROPOSED CONTOURS	---1980---
EXISTING CONTOURS	---1990---

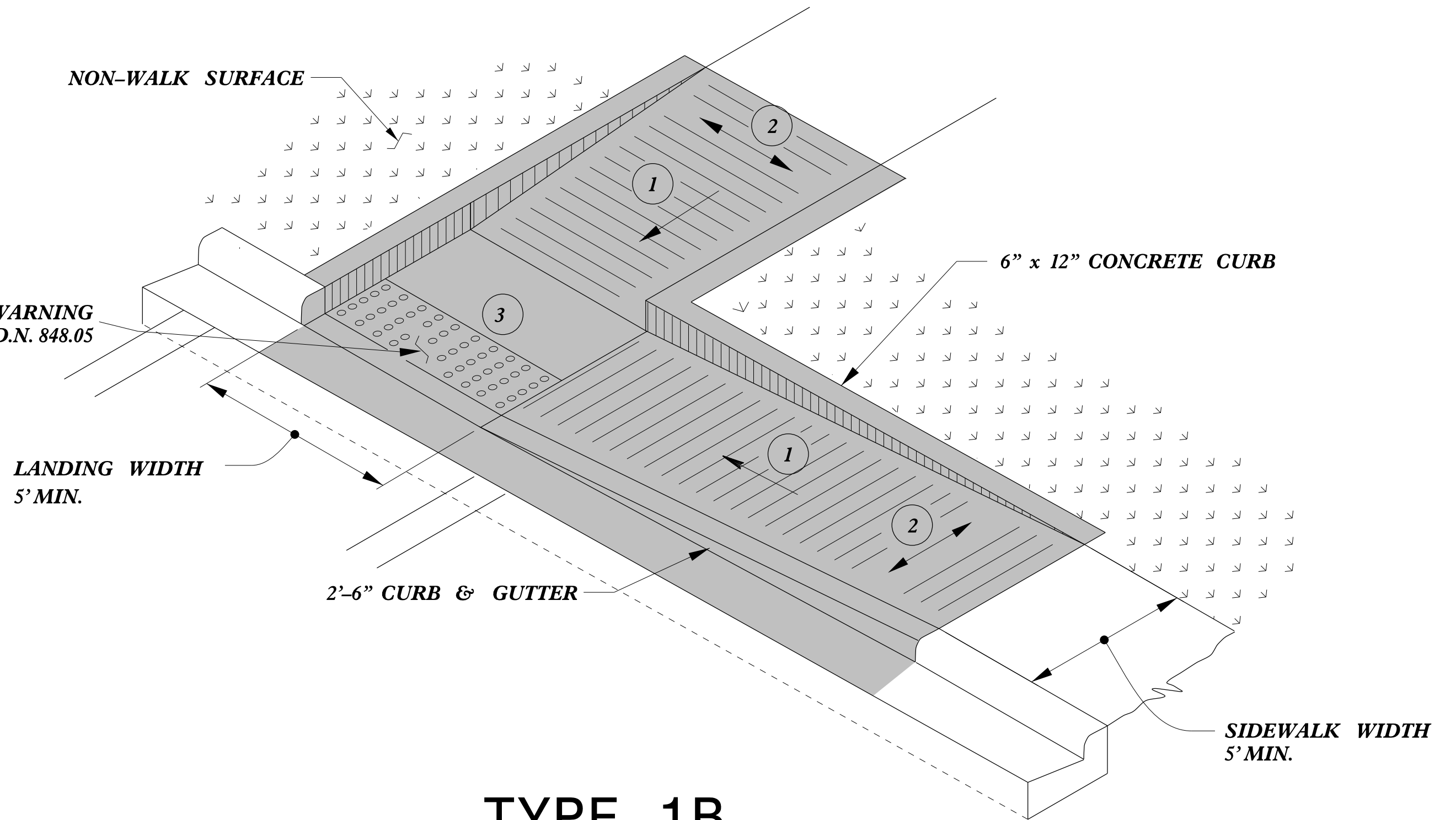


5/14/99

PROJECT REFERENCE NO.	SHEET NO.
U-5866	2C-1



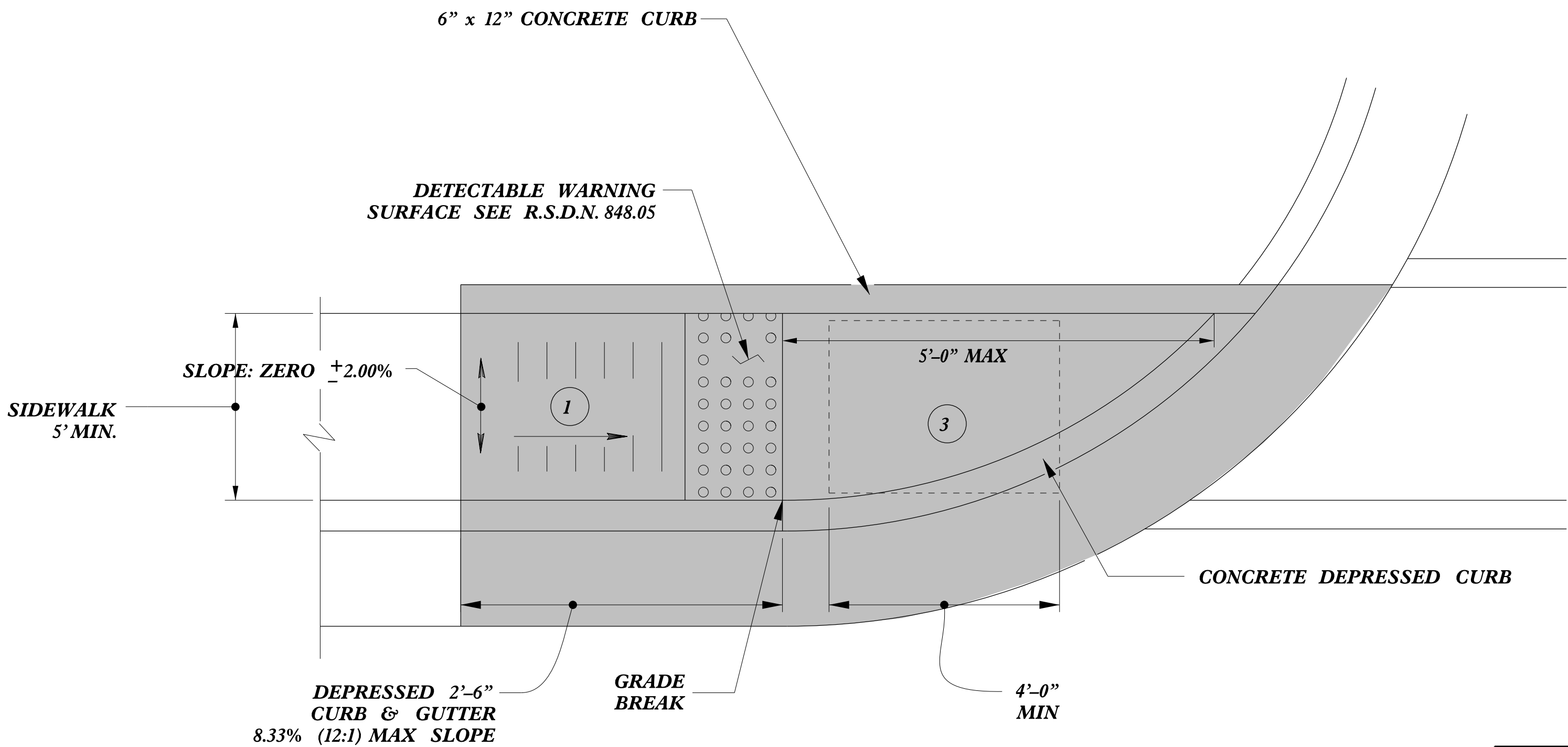
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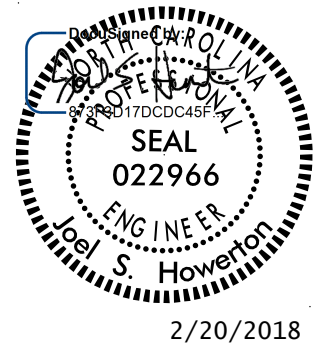
TYPE 1B

PAY LIMITS FOR 1 CURB RAMP

- 1 8.33% (12:1) MAX RAMP SLOPE
- 2 CROSS SLOPE: 2.00%
- 3 CURB RAMPS REQUIRE A (4'-0") MINIMUM LANDING WITH A MAXIMUM CROSS SLOPE AND LONGITUDINAL SLOPE OF 2.00% WHERE PEDESTRIANS PERFORM TURNING MANEUVERS. SLOPE TO DRAIN TO CURB.



TYPE 1

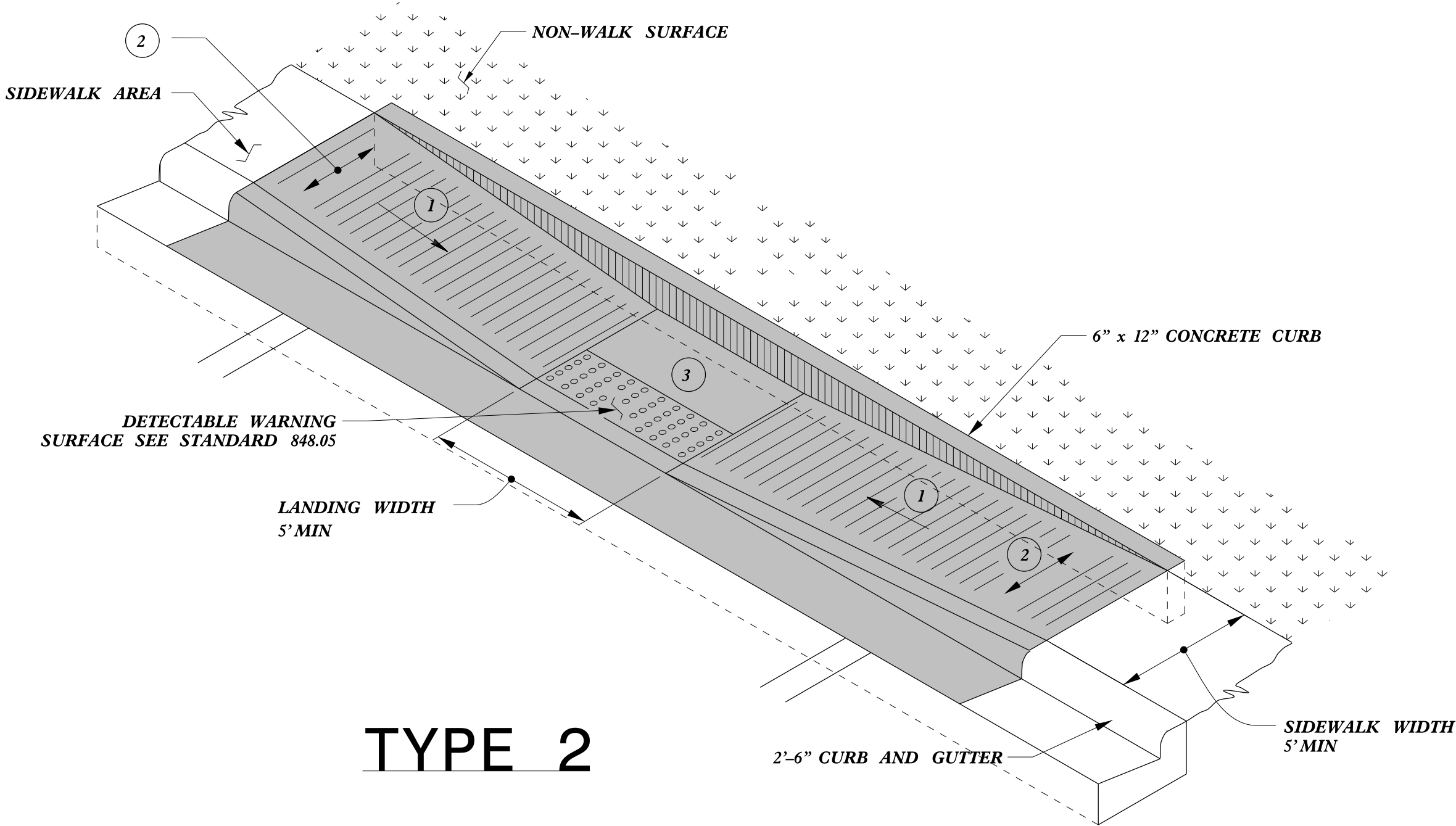


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
CONTRACT STANDARDS AND DEVELOPMENT UNIT Office 919-707-6950 FAX 919-250-4119	
CURB RAMPS Directional Ramps	
ORIGINAL BY: J.S. HOWERTON	DATE: 7/7/11
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC.: stds/2012CurbRamp/CurbRampDetails.dgn	

REFER TO ROADWAY STANDARD DRAWING NUMBER 848.05 SHEET 3 OF 3 FOR ALL RAMP NOTES

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
U-5866	2C-2

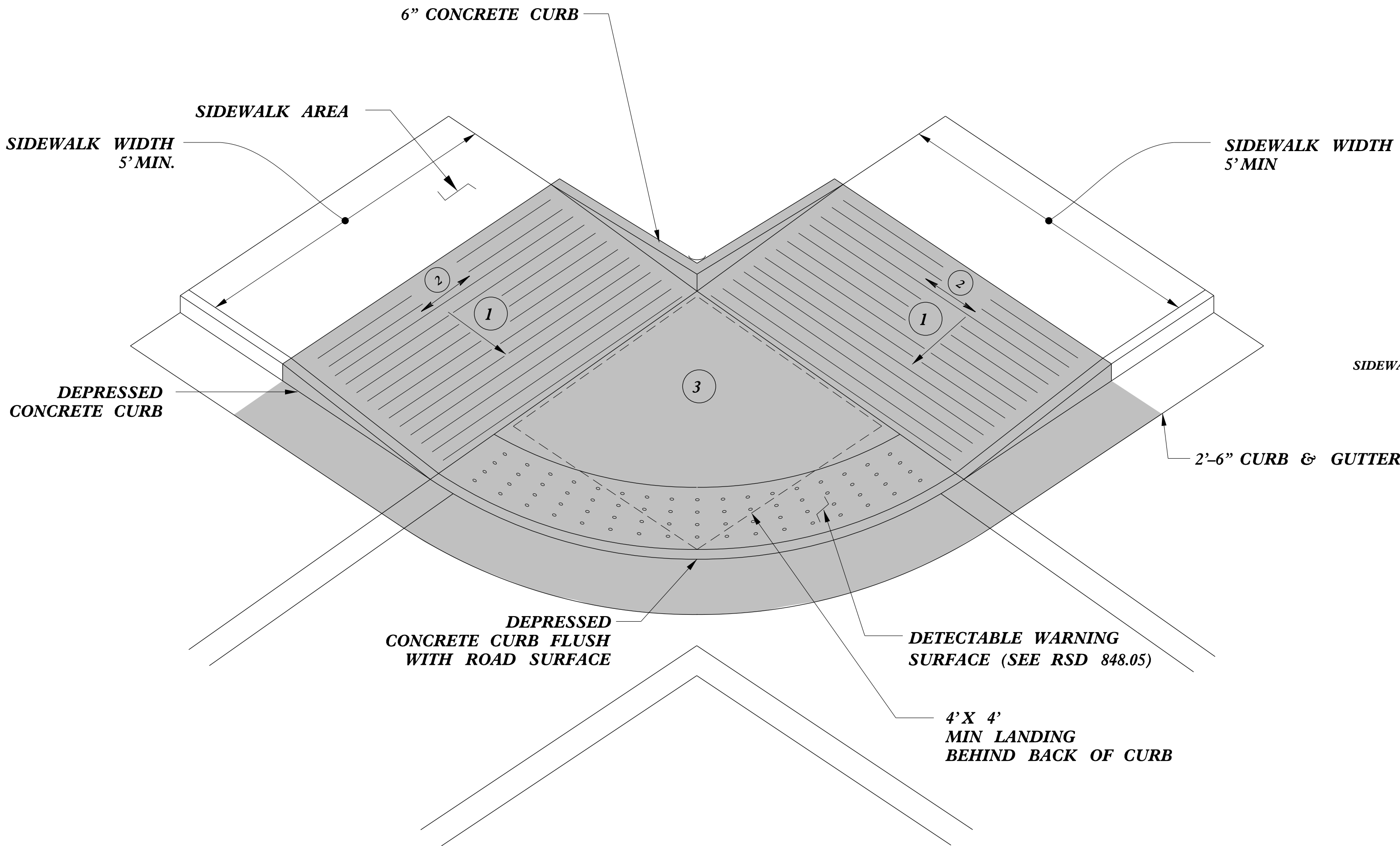


TYPE 2

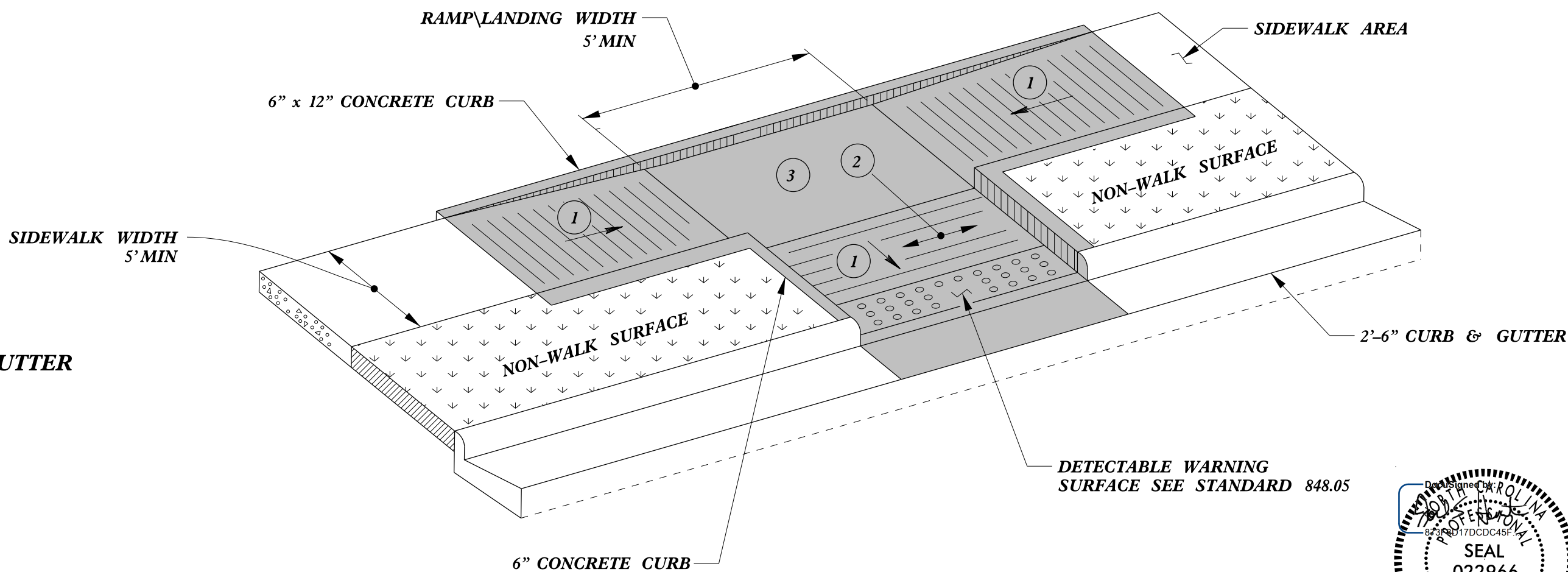


PAY LIMITS FOR 1 CURB RAMP

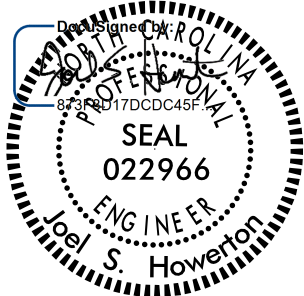
- 1 8.33% (12:1) MAX RAMP SLOPE
- 2 CROSS SLOPE: 2.00%
- 3 CURB RAMPS REQUIRE A (4'-0") MINIMUM LANDING WITH A MAXIMUM CROSS SLOPE AND LONGITUDINAL SLOPE OF 2.00% WHERE PEDESTRIANS PERFORM TURNING MANEUVERS. SLOPE TO DRAIN TO CURB.



TYPE 2A



TYPE 3



2/20/2018

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

CONTRACT STANDARDS AND DEVELOPMENT UNIT	
Office 919-707-6950	FAX 919-250-4119
CURB RAMPS	
Parallel Ramps	
ORIGINAL BY: J.S. HOWERTON	DATE: 7/7/11
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC. stds/2012CurbRamp/CurbRampDetails.dgn	

REFER TO ROADWAY STANDARD DRAWING NUMBER 848.05 SHEET 3 OF 3 FOR ALL RAMP NOTES

84 MAY-2017 1514
C:\projects\Special Details\Standard Drawings\Details in Lieu of Standards\Division 8\862d01 862d03 862d01.dgn
Jhowerton AT CSO 292595

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

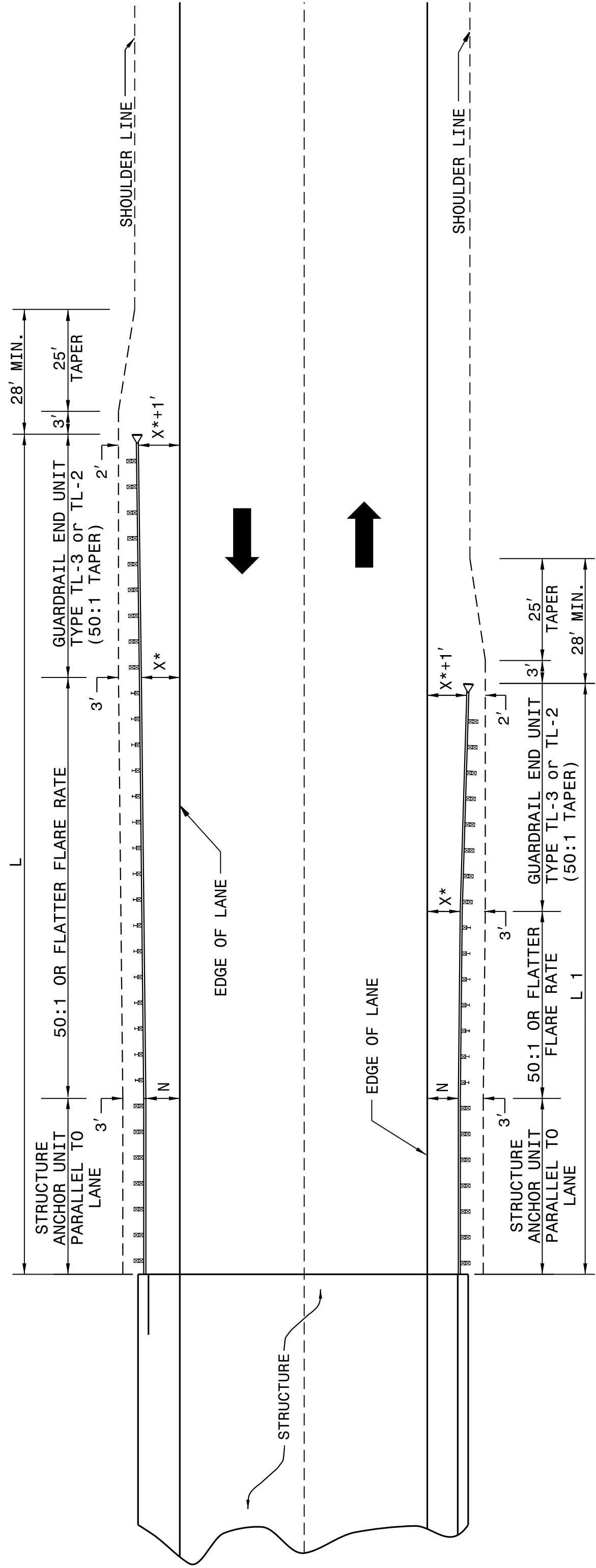
ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

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	DESIGN YEAR ADT	CURRENT YEAR ADT	DESIGN YEAR ADT	CURRENT YEAR ADT	DESIGN YEAR ADT	CURRENT YEAR ADT
70	OVER 2000	1001- 2000	400- 1000	UNDER 400	UNDER 400	OVER 2000	1001- 2000	1001- 2000	400- 1000
60	362.5'	362.5'	350.0'	287.5'	187.5'	187.5'	187.5'	187.5'	175.0'
50	300.0'	287.5'	275.0'	225.0'	137.5'	137.5'	137.5'	100.0'	75.0'
40	212.5'	212.5'	200.0'	162.5'	87.5'	87.5'	87.5'	75.0'	75.0'
	175.0'	150.0'	137.5'	112.5'	75.0'	75.0'	75.0'	75.0'	75.0'
X *	8'	6'	4'	4'	8'	6'	4'	4'	4'

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

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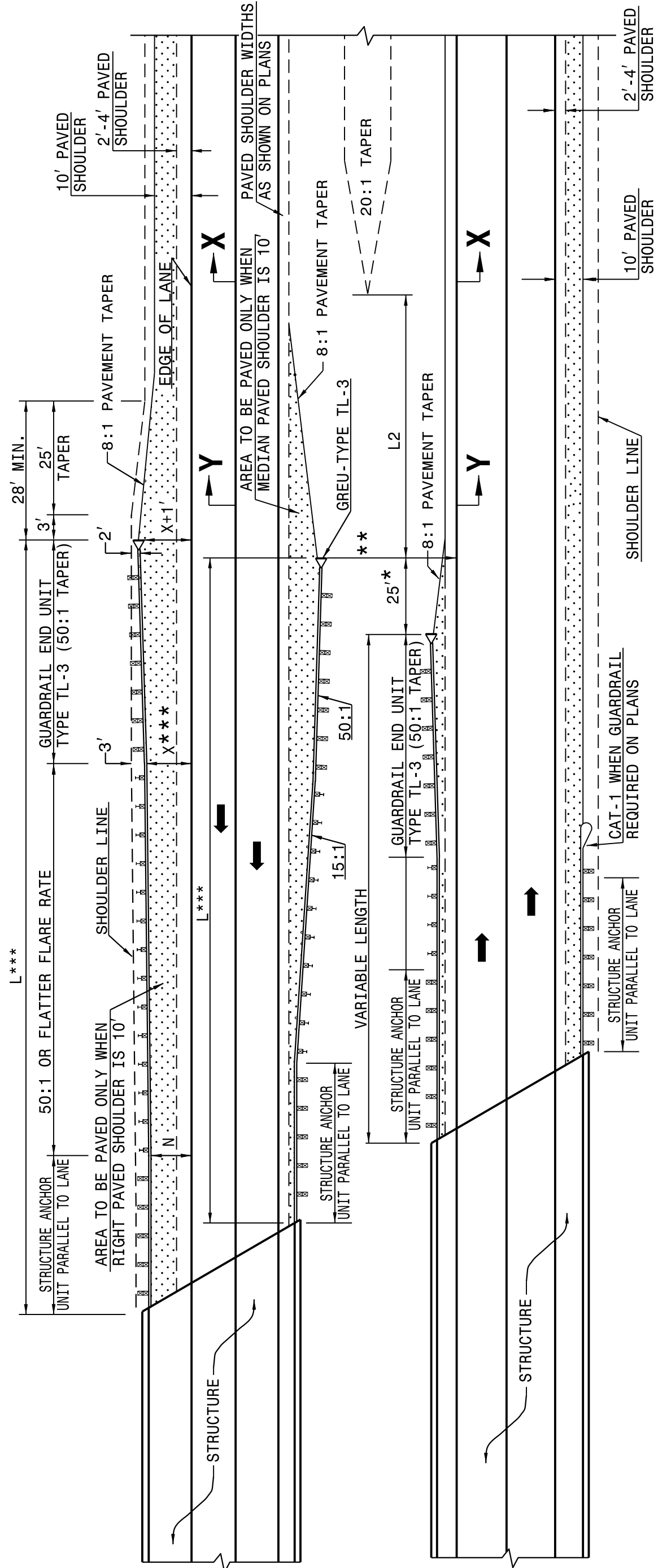
ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 3 OF 11
862D01

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



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

DIMENSIONS FOR LENGTH OF GUARDRAIL APPROACHING DUAL LANE BRIDGES				
MEDIAN WIDTH	-L-***			-L2- DIM.
	70 MPH	60 MPH	50 MPH	
30'	300.0'	250.0'	150.0'	80.0'
36'	300.0'	250.0'	150.0'	60.0'
40' & ABOVE	300.0'	250.0'	150.0'	40.0'

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

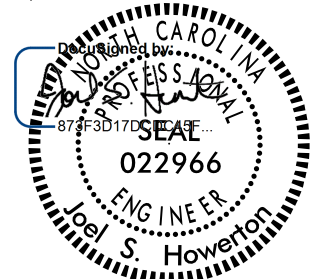
DETAIL OF GUARDRAIL APPROACHING DUAL LANE BRIDGES

CONTRACT STANDARDS
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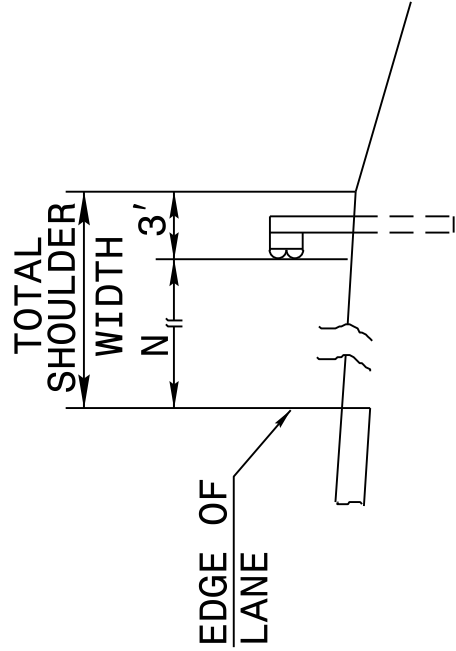
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CS0-292595

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RALEIGH, N.C.

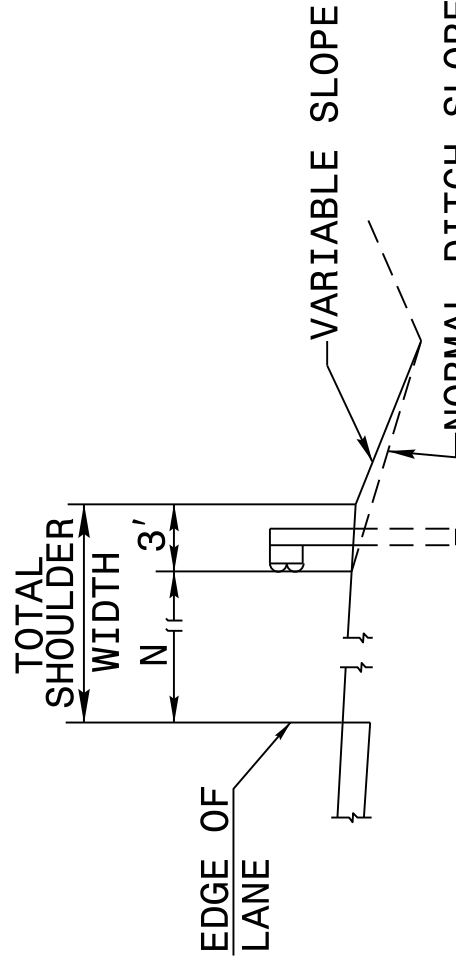
ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 6 OF 11
862D01

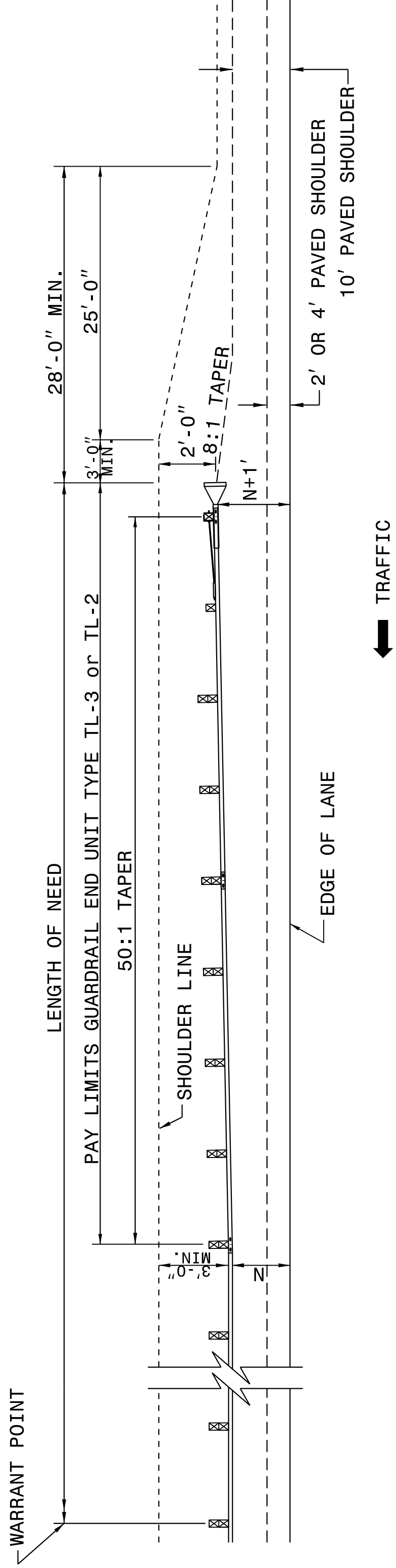


FILL SECTION

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



CUT SECTION



FOR POSTED SPEEDS ≥ 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

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RALEIGH, N.C.

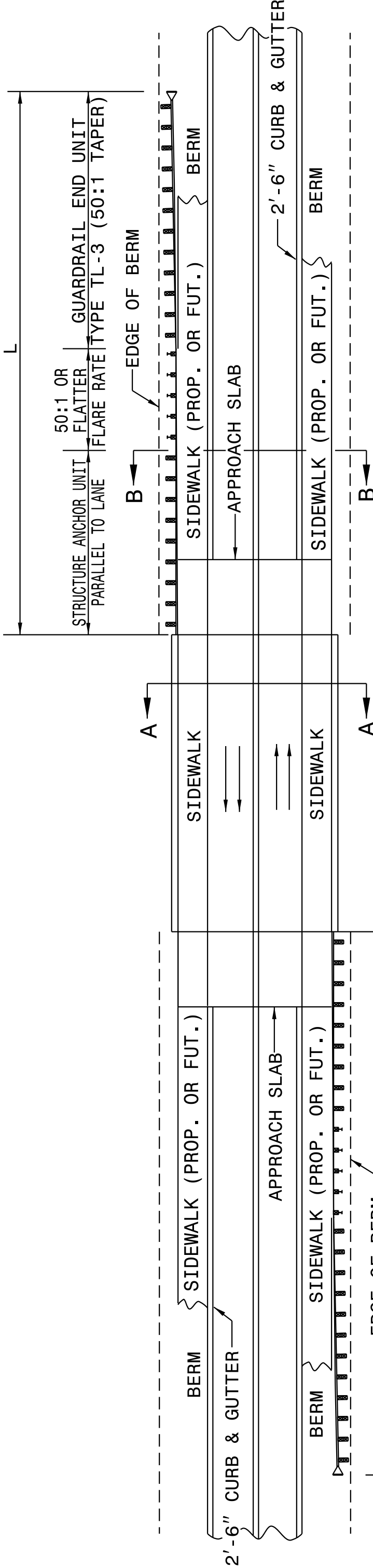
ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 6 OF 11
862D01

STATE OF
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DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 5 OF 11
862D01

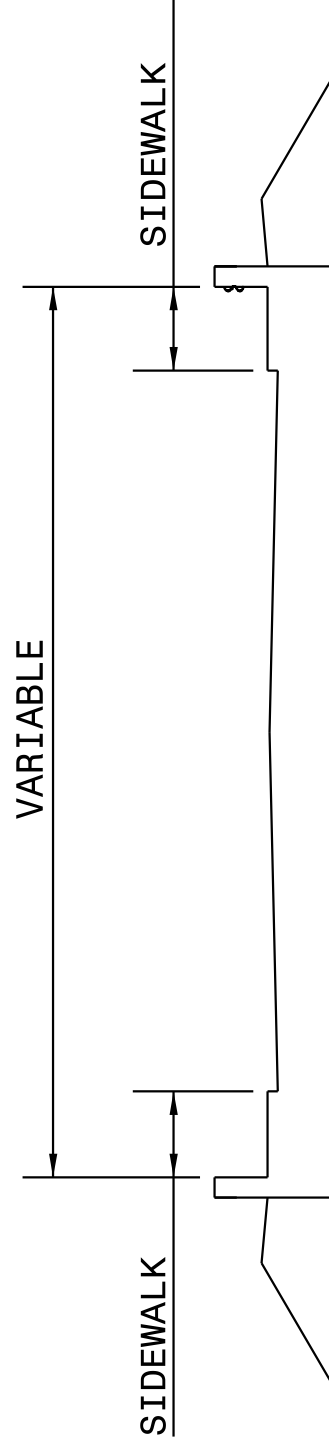


MINIMUM GUARDRAIL LENGTHS "L" REQUIRED AT
BRIDGE APPROACHES ON 2'-6" CONCRETE CURB
AND GUTTER ROADWAYS

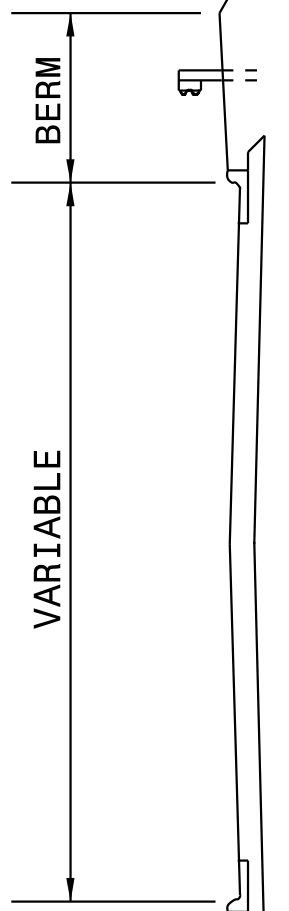
DESIGN SPEED (MPH)	"L"
40	150'
50	225'

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



SECTION A-A



SECTION B-B

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

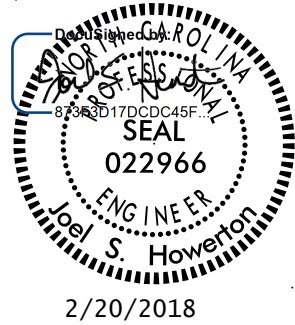
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PROJECT REFERENCE NO.
U-5866

SHEET NO.
2C-4



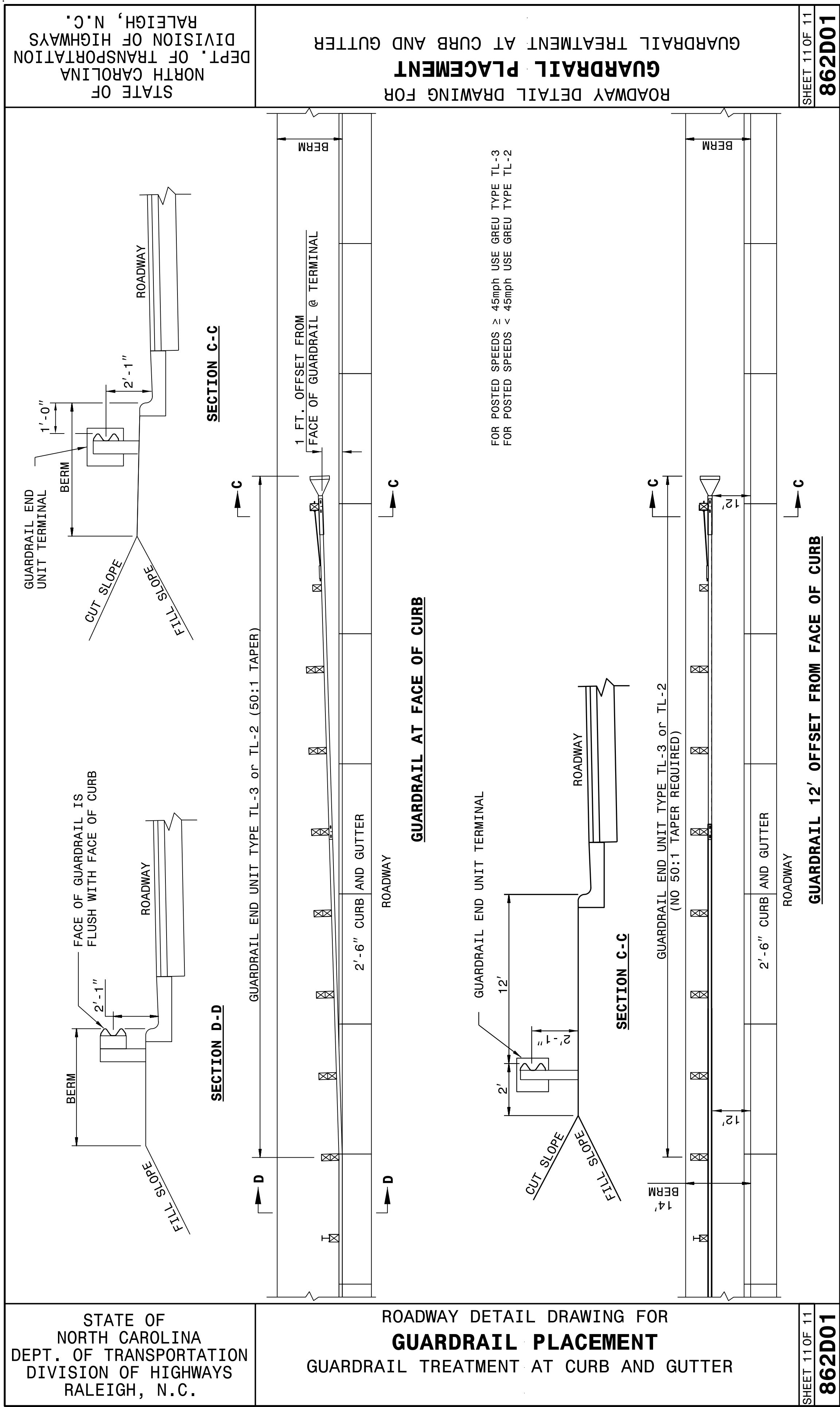
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Professional Engineer Seal for Joel S. Howerton, State of North Carolina, License No. 022966, Exp. Date 12/31/2024.

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RALEIGH, N.C.

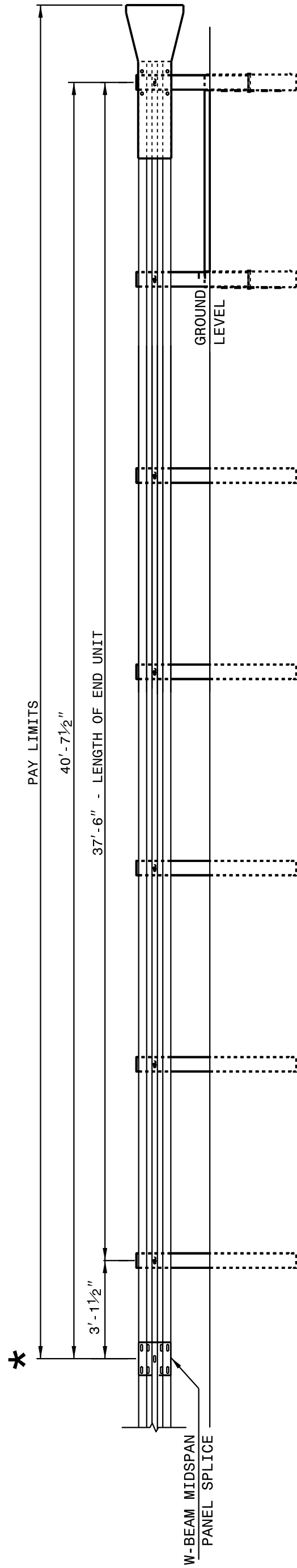
ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 2 OF 8
862D02

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DIVISION OF HIGHWAYS
RALEIGH, N.C.

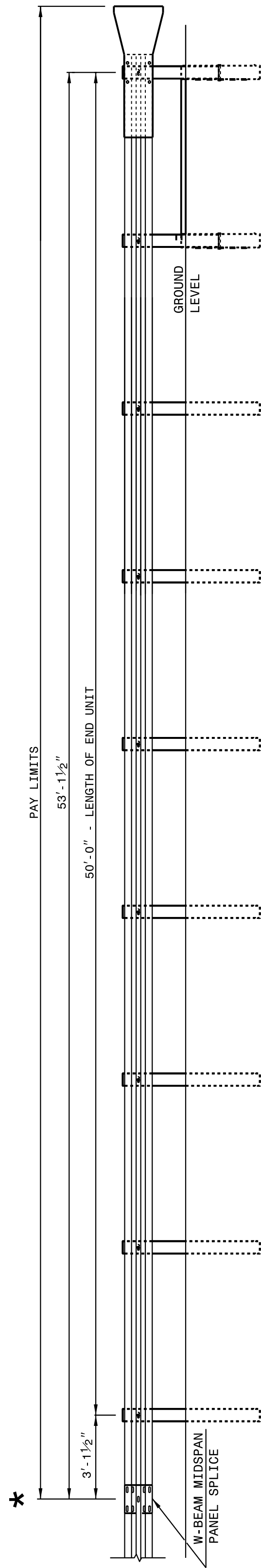
ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

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

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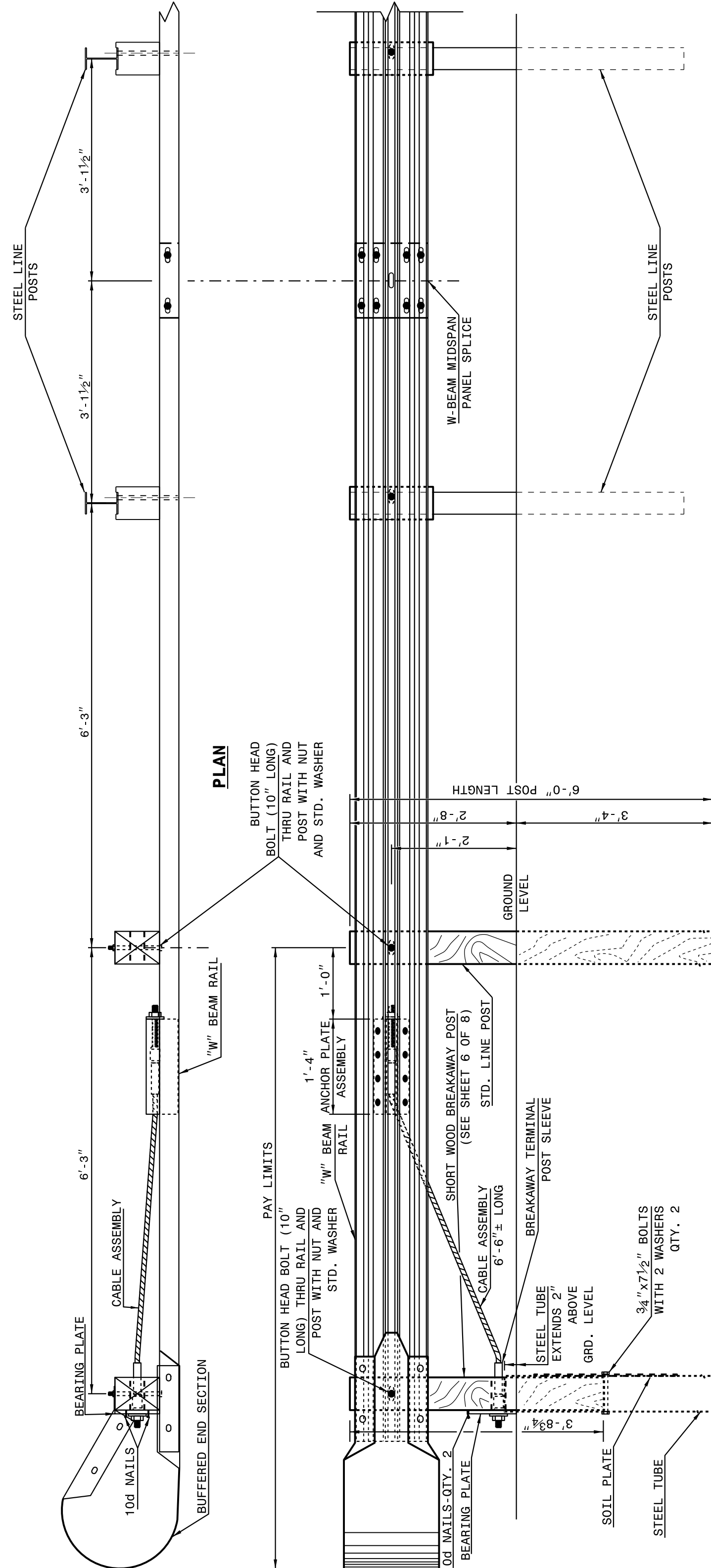
ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 1 OF 8
862D02

STATE OF
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DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 1 OF 8
862D02

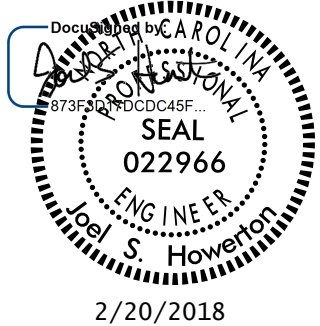


PLAN

ELEVATION

TRAILING END UNIT ASSEMBLY

C.A.T.-1 SYSTEM



2/20/2018

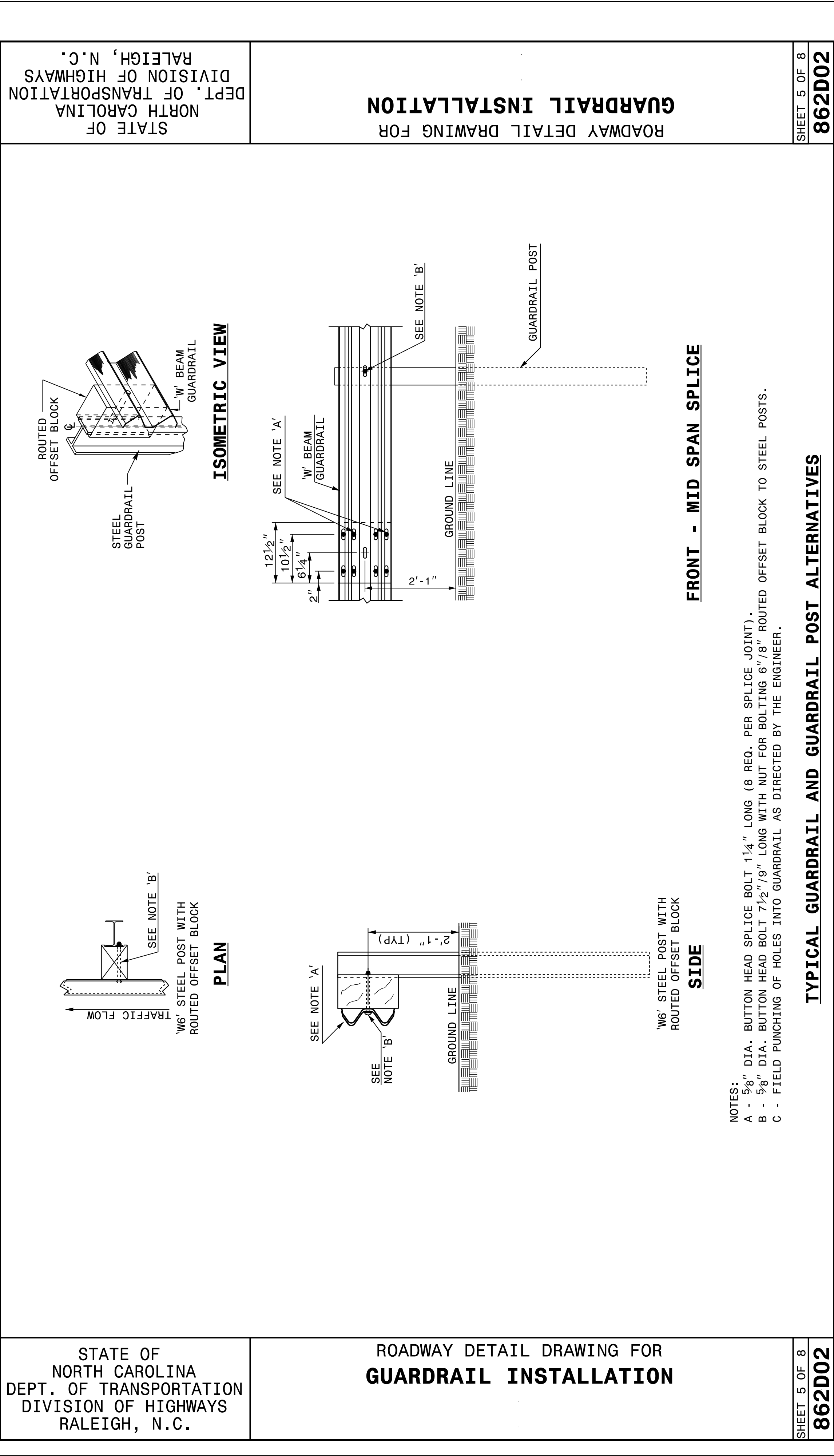
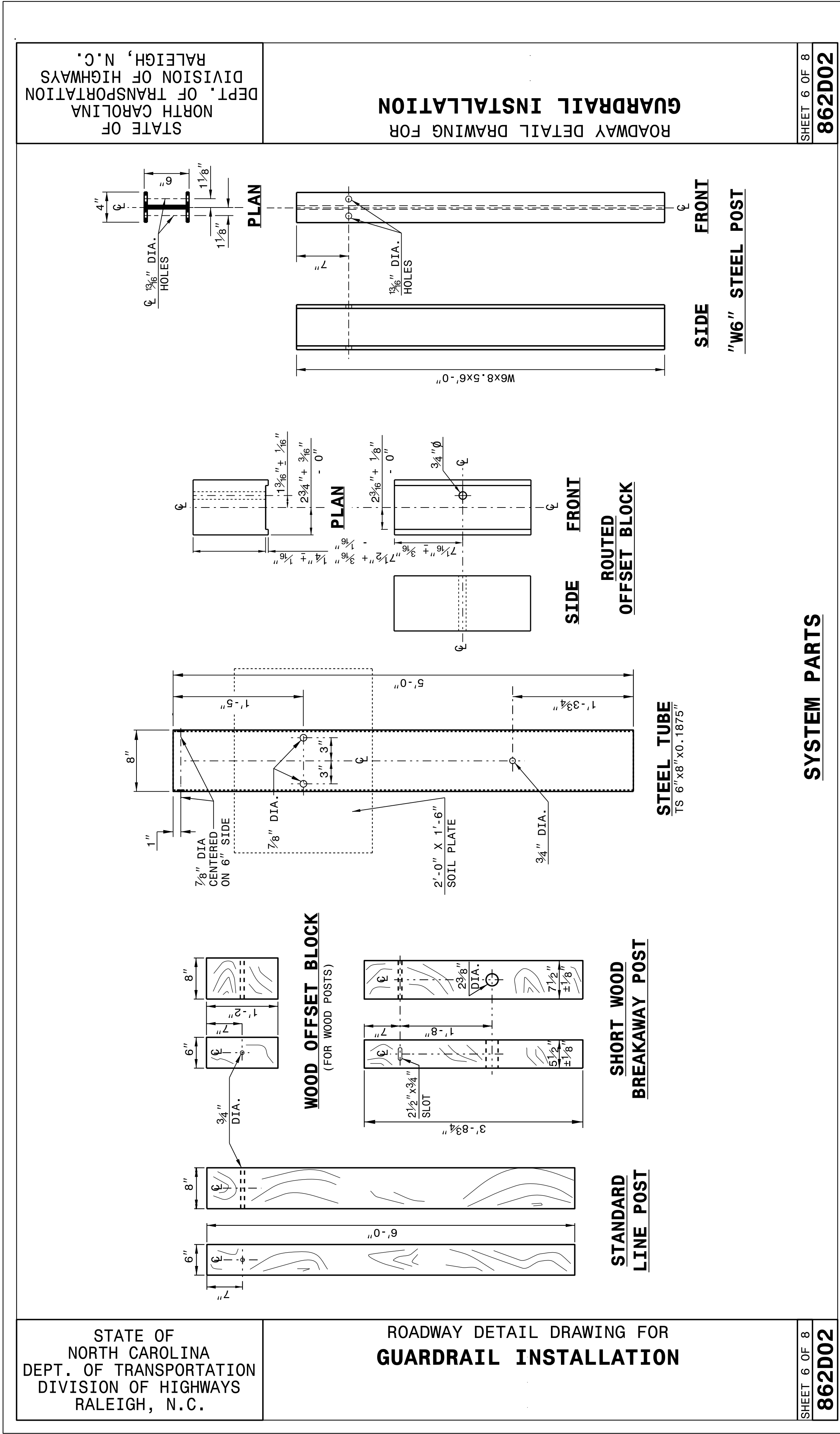
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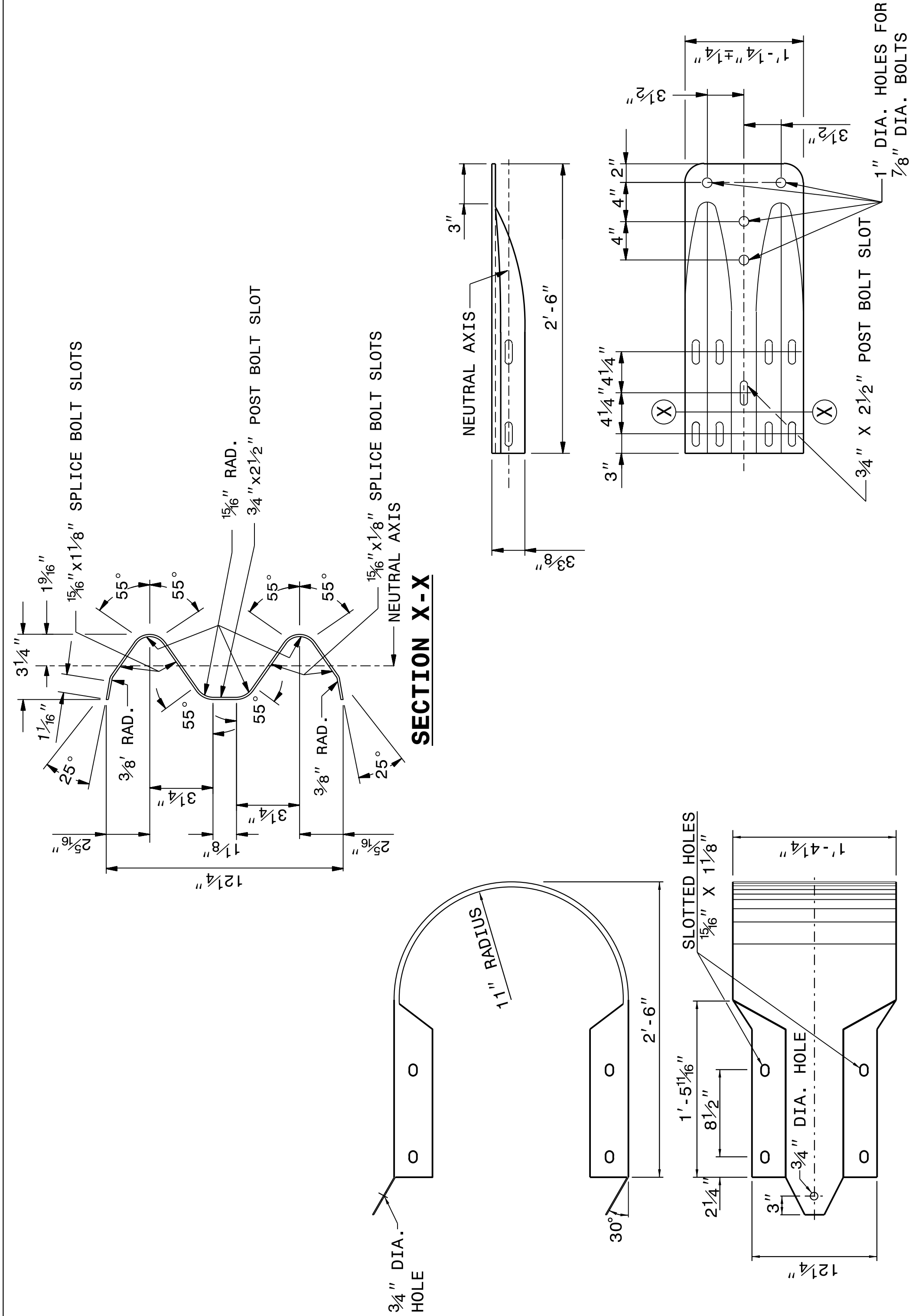
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RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 8 OF 8
862D02



STATE OF
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RALEIGH, N.C.

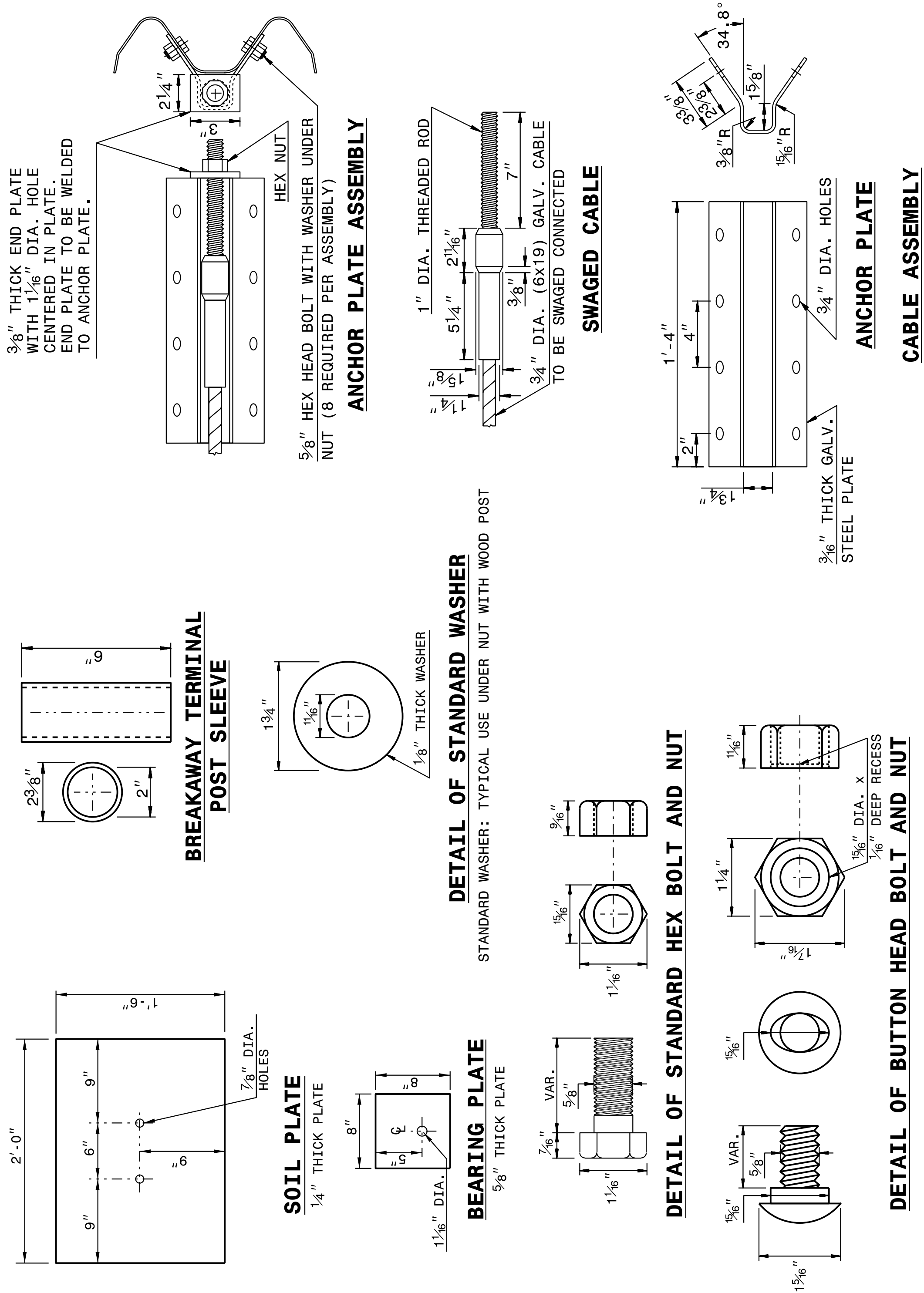
ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 8 OF 8
862D02

STATE OF
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RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 7 OF 8
862D02



STATE OF
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DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

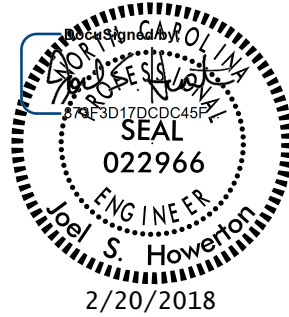
SHEET 7 OF 8
862D02

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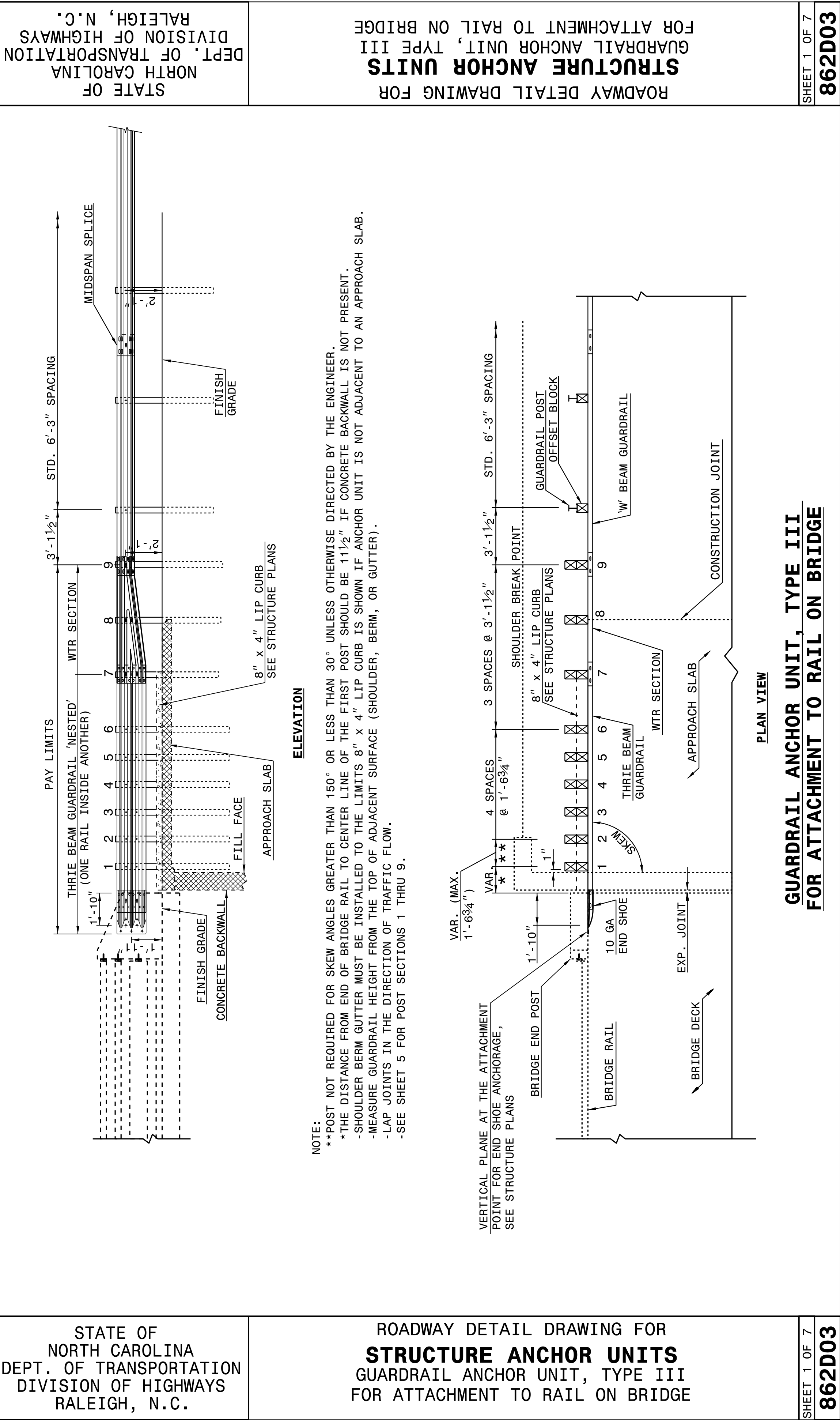
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U-5866

SHEET NO.
2C-8

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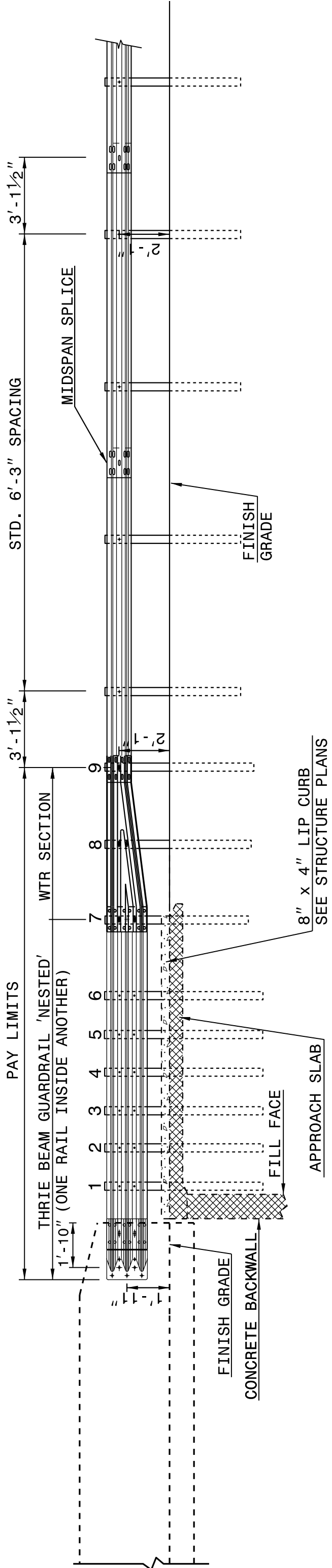
ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO
RAIL ON BRIDGE - SUB REGIONAL TIER

SHEET 2 OF 7
862D03

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

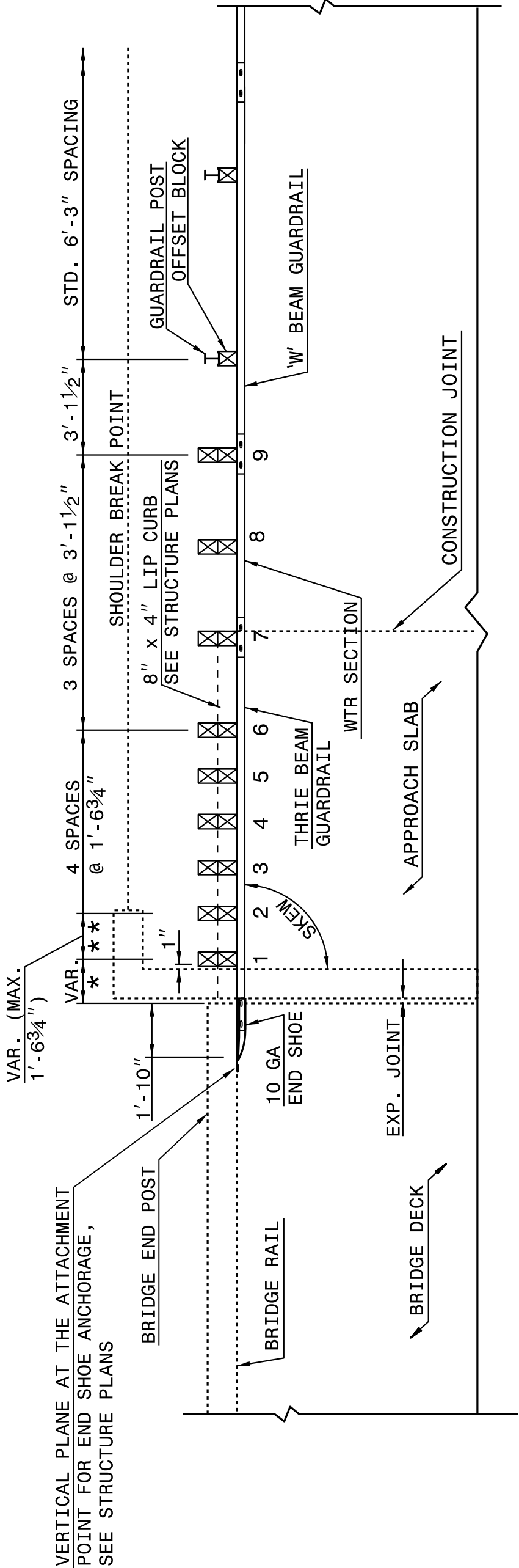
ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO
RAIL ON BRIDGE - SUB REGIONAL TIER

SHEET 2 OF 7
862D03



ELEVATION

NOTE:
**POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11½" IF CONCRETE BACKWALL IS NOT PRESENT.
-SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
-MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
-LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
-SEE SHEET 5 FOR POST SECTIONS 1 THRU 9.



PLAN VIEW

**GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO
RAIL ON BRIDGE - SUB REGIONAL TIER**

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RALEIGH, N.C.

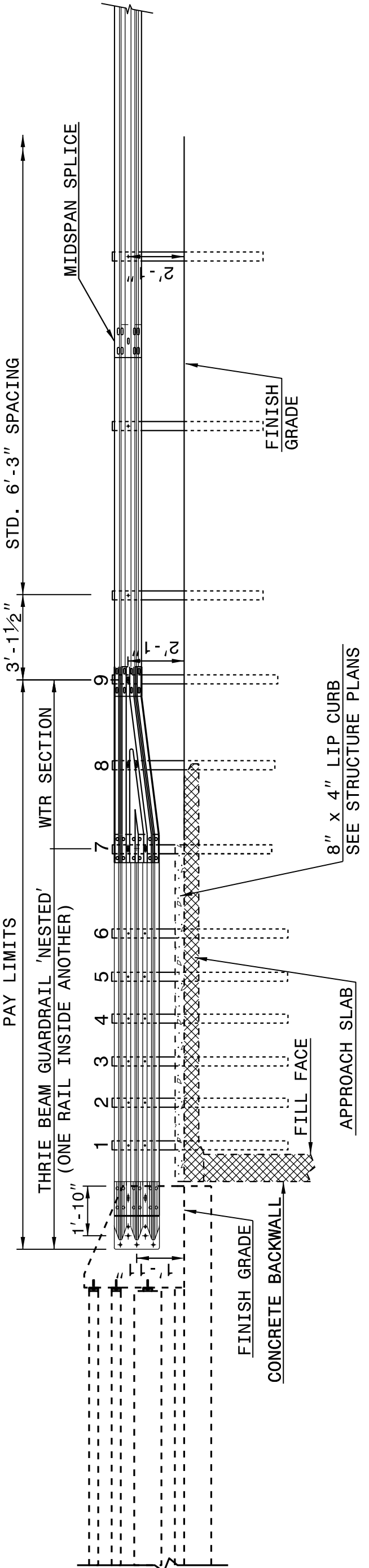
ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III
FOR ATTACHMENT TO RAIL ON BRIDGE

SHEET 1 OF 7
862D03

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RALEIGH, N.C.

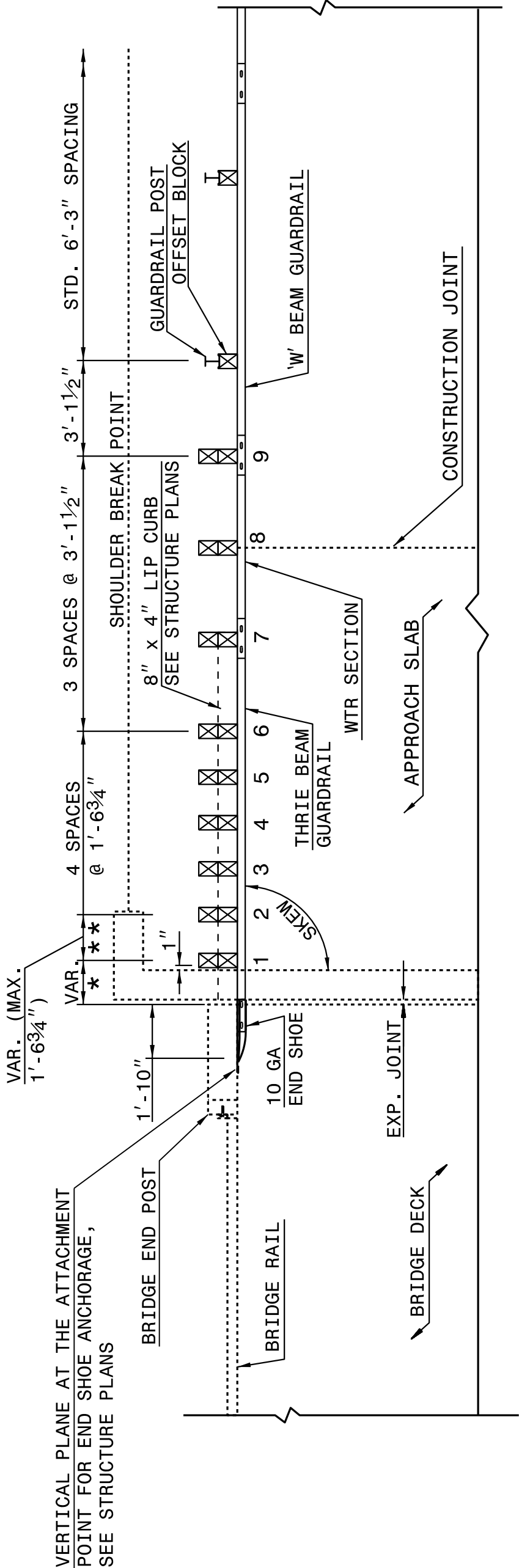
ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III
FOR ATTACHMENT TO RAIL ON BRIDGE

SHEET 1 OF 7
862D03



ELEVATION

NOTE:
**POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11½" IF CONCRETE BACKWALL IS NOT PRESENT.
-SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
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-SEE SHEET 5 FOR POST SECTIONS 1 THRU 9.



PLAN VIEW

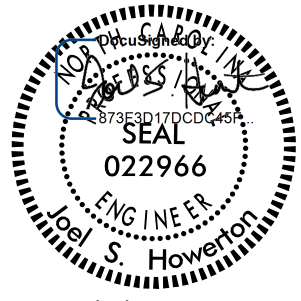
**GUARDRAIL ANCHOR UNIT, TYPE III
FOR ATTACHMENT TO RAIL ON BRIDGE**

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11/2/2017

COMPUTED BY: SGM DATE: 3/30/2017
CHECKED BY: JLT DATE: 4/8/2017

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

Station	Station	Uncl. Excav.	Embank. +%	Borrow	Waste
-L- 10+54.03	-L- 19+13.56	268	10,041	9,773	
-Y- 22+70.00	-Y- 25+41.78	259	35		224
Bridge					
-L- 21+36.44	-L- 31+33.00	828	2,080	1,252	
-DR1- 10+15.24	-DR1- 11+00.00	106	23		83
SUBTOTALS:		1,461	12,179	11,025	307
LOSS DUE TO CLEARING & GRUBBING		-2000		2000	
WASTE IN LIEU OF BORROW				-307	-307
PROJECT TOTALS:		-539	12,179	12,718	0
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT				636	
GRAND TOTALS:		-539	12,179	13,354	0
SAY:		0		14,700	

PAVEMENT REMOVAL SUMMARY

IN SQUARE YARDS

SURVEY LINE	Station	Station	LOCATION LT/RT/CL	ASPHALT REMOVAL	ASPHALT BREAKUP	CONCRETE REMOVAL	CONCRETE BREAKUP
-L-	29+78	31+33	CL	432.06			
-DR1-	10+15	11+00	CL	235.37			
			TOTAL:	667.43			
			SAY:	700			

Approximate quantities only. Unclassified excavation, fine grading, clearing and grubbing, and removal of existing pavement will be paid for at the lump sum price for "Grading".

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

GUARDRAIL SUMMARY

LINE	BEG. STA.	END STA.	LOC.	LENGTH			WARRANT POINT		"N" DIST FROM E.O.L.	TOTAL SHLDR WIDTH	FLAIR LENGTH		W		ANCHORS						IMP. ATTEN. TYPE 350			REMOVE EXISTING GUARDRAIL		REMARKS	
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPR. END	TRAIL. END			APPR. END	TRAIL. END	APPR. END	TRAIL. END		III	GREU TL2					EA	G				NG
-L-	17+50.49	19+00.49	LT	150.00				19+00.49	7.5'	10' Berm		25'		0.5'			1	1									
-L-	17+76.36	19+26.36	RT	150.00			19+26.36		7.5'	10' Berm	25'		0.5'				1	1									
-L-	21+23.38	22+73.38	LT	150.00			21+23.38		7.5'	10' Berm	25'		0.5'				1	1									
-L-	21+49.51	22+99.51	RT	150.00				21+49.51	7.5'	10' Berm		25'		0.5'			1	1									
SUB-TOTALS:				600.00													4	4									
	LESS ANCHOR DEDUCTIONS																										
	TYPE III	4@18.75 ft		75																							
	GREU TL-2	4@25.00 ft		100																							
	ANCHOR TOTALS			175																							
GRAND TOTALS				425.00													4	4							Powder Coated		
SAY				437.50																					Powder Coated		
ADDITIONAL GUARDRAIL POSTS = 5 EA (Powder Coated)																											

COMPUTED BY: _____ M. Bahiradhan
CHECKED R. Wargo

9/13/2016
9/13/2016

(4-21-15)

PROJECT NO. 46390.1.D1/U-5866
SHEET NO. 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
-L-	15+00	17+00	LT. & RT.	SD	400
-	-	-	-	-	-
-	-	-	-	-	-
CONTINGENCY				SD	300
-	-	-	-	-	-
-	-	-	-	TOTAL LF:	700
-	-	-	-	-	-

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

SUMMARY OF
BRIDGE WAITING PERIODS

Bridge Description	End Bent/ Bent No.	MONTHS
-	-	-
-	-	-
-	-	-

SUMMARY OF
SETTLEMENT GAUGES

Gauge No.	LINE	Approx. Station	Approx. Offset
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
TOTAL GAUGES (EACH):			-

SUMMARY OF ROCK PLATING

LINE	Beginning Slope	Approx. Station	Ending Slope	Approx. Station	Location LT/RT	Rock Plating Detail No. 1/2/3/4	Riprap Class* 1/2/B	SY
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	TOTAL SY:	-

*Use Class 1, 2 or B riprap if riprap class is not shown for rock plating location.

SUMMARY OF
EMBANKMENT WAITING PERIODS

LINE	Station	Station	MONTHS
-	-	-	-
-	-	-	-
-	-	-	-

SUMMARY OF SURCHARGES
AND SURCHARGE WAITING PERIODS

LINE	Station	Station	Surcharge Height FT	MONTHS
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

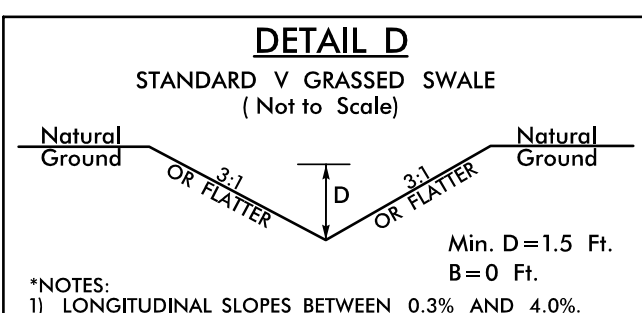
SUMMARY OF GEOTEXTILE
FOR PAVEMENT STABILIZATION

LINE	Station	Station	SY
-	-	-	-
-	-	-	-
-	-	-	-
CONTINGENCY			-
-	-	-	-
TOTAL SY:			-

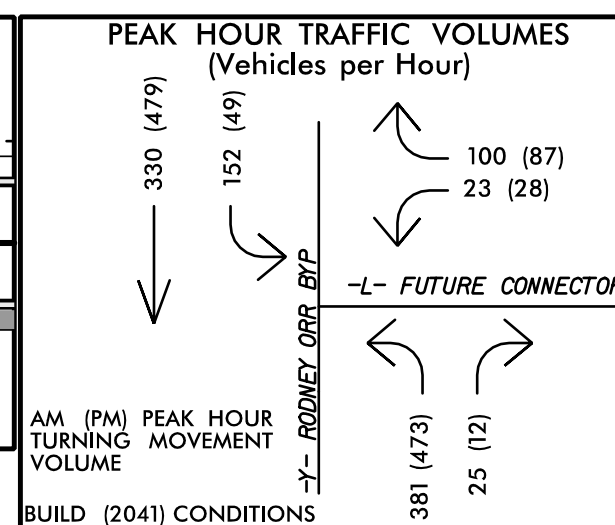
SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

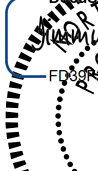
LINE	Station	Station	Aggregate Type ASU/AST	Aggregate Thickness INCHES	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
CONTINGENCY							800	800	
-	-	-	-	-	-	-	-	-	-
TOTAL CY/TONS/SY:							800	800	

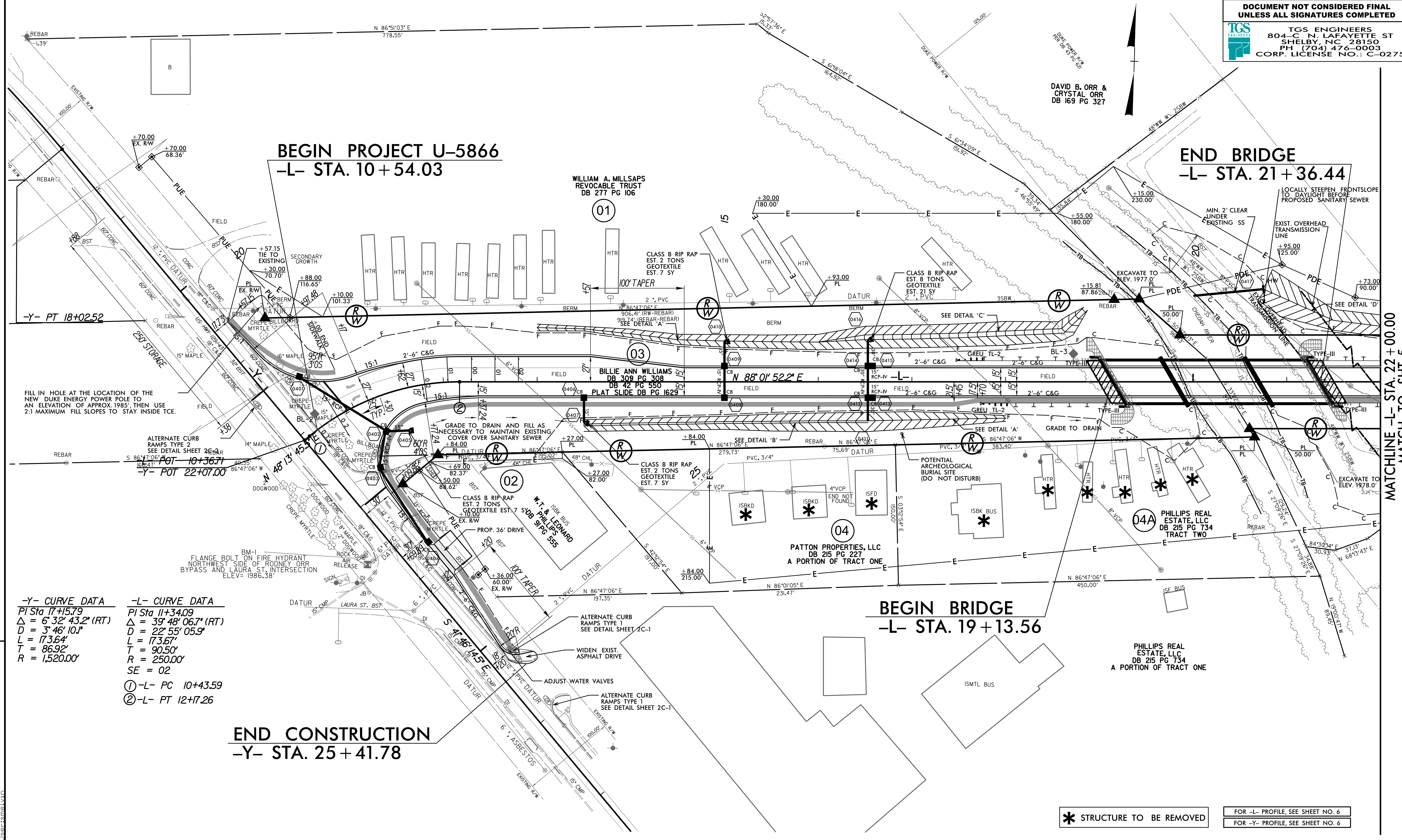
ASU = Aggregate Subgrade, AST = Aggregate Stabilization
*Total square yards of Geotextile for Soil Stabilization is only the estimated quantity for ASU/AST and may only represent a portion of the geotextile quantity shown in the Item Sheets of the Proposal.



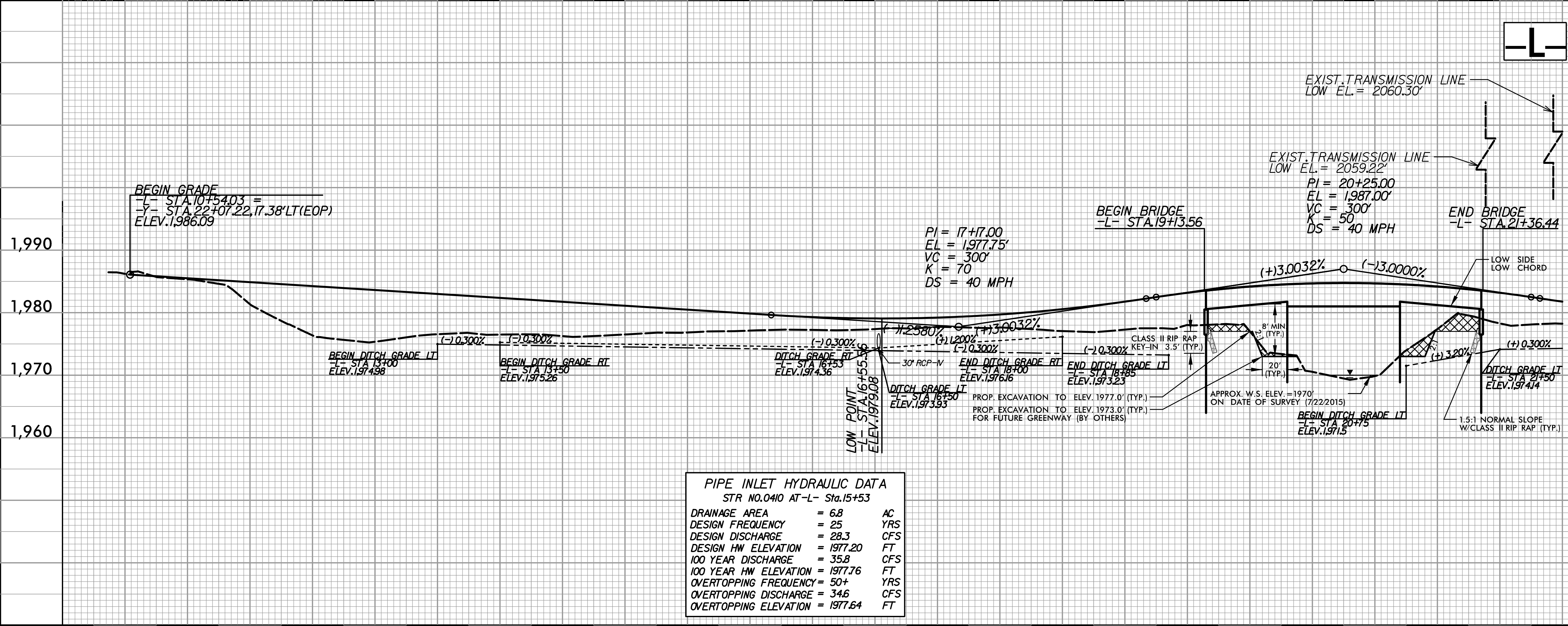
FROM -L- STA. 20+75 TO 21+50 LT
DDE: EST. 200 CY
(SEE DITCH GRADES, SHEET NO.6)



PROJECT REFERENCE NO.		SHEET NO.	
U-5866		4	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
			
2/20/2018		2/20/2018	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			



5/28/19

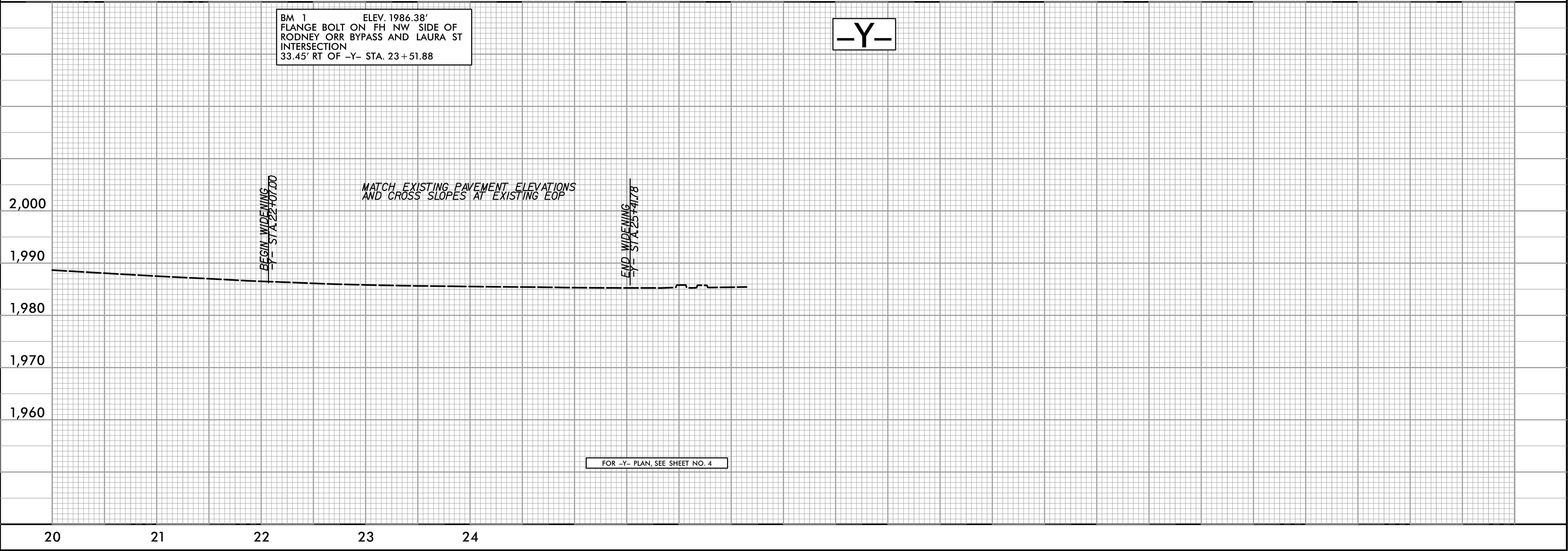


PROJECT REFERENCE NO. U-5866	SHEET NO. 6
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER 
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
 TGS ENGINEERS 804-C N. LAFAYETTE ST SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	

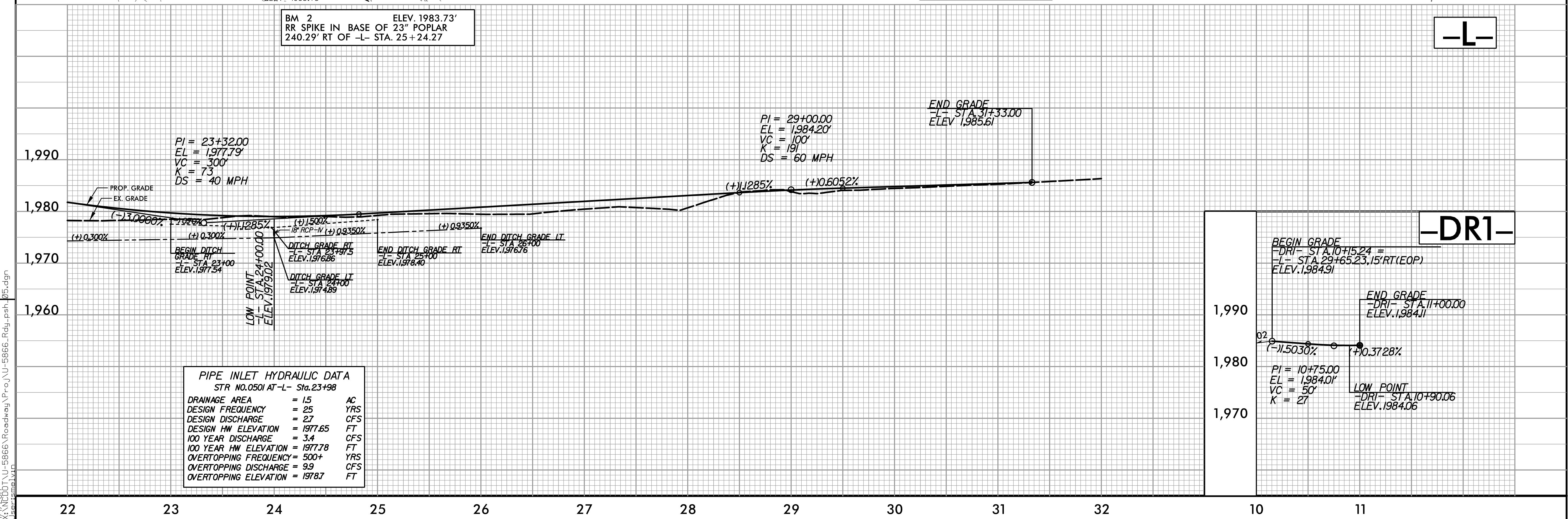
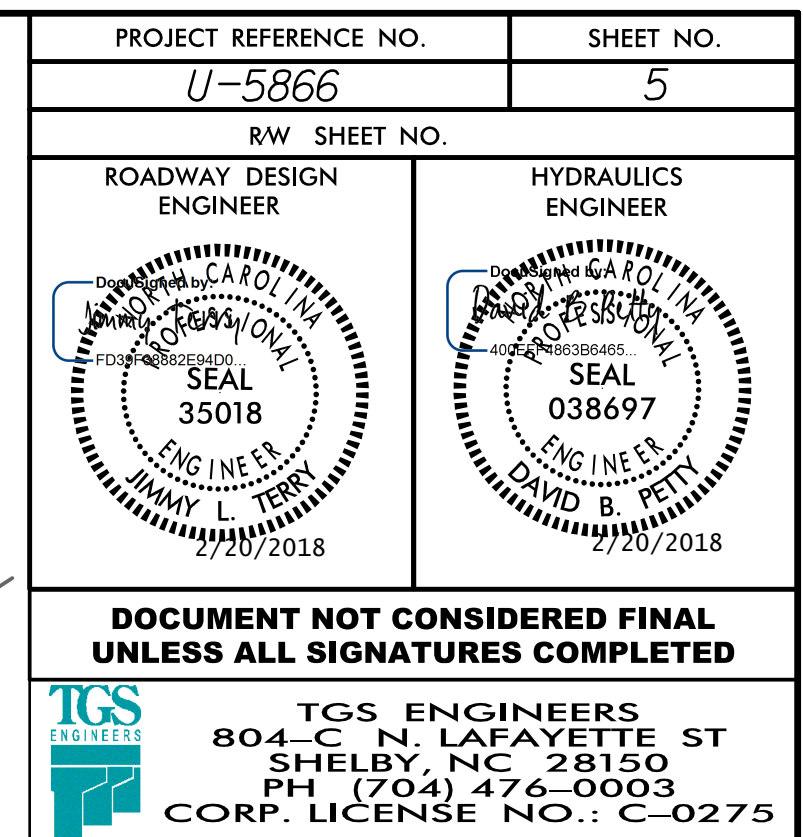
FOR -L- PLAN, SEE SHEET NO. 4

BM 1 ELEV. 1986.38'
FLANGE BOLT ON FH NW SIDE OF
RODNEY ORR BYPASS AND LAURA ST
INTERSECTION
33.45' RT OF -Y- STA. 23+51.88

-Y-

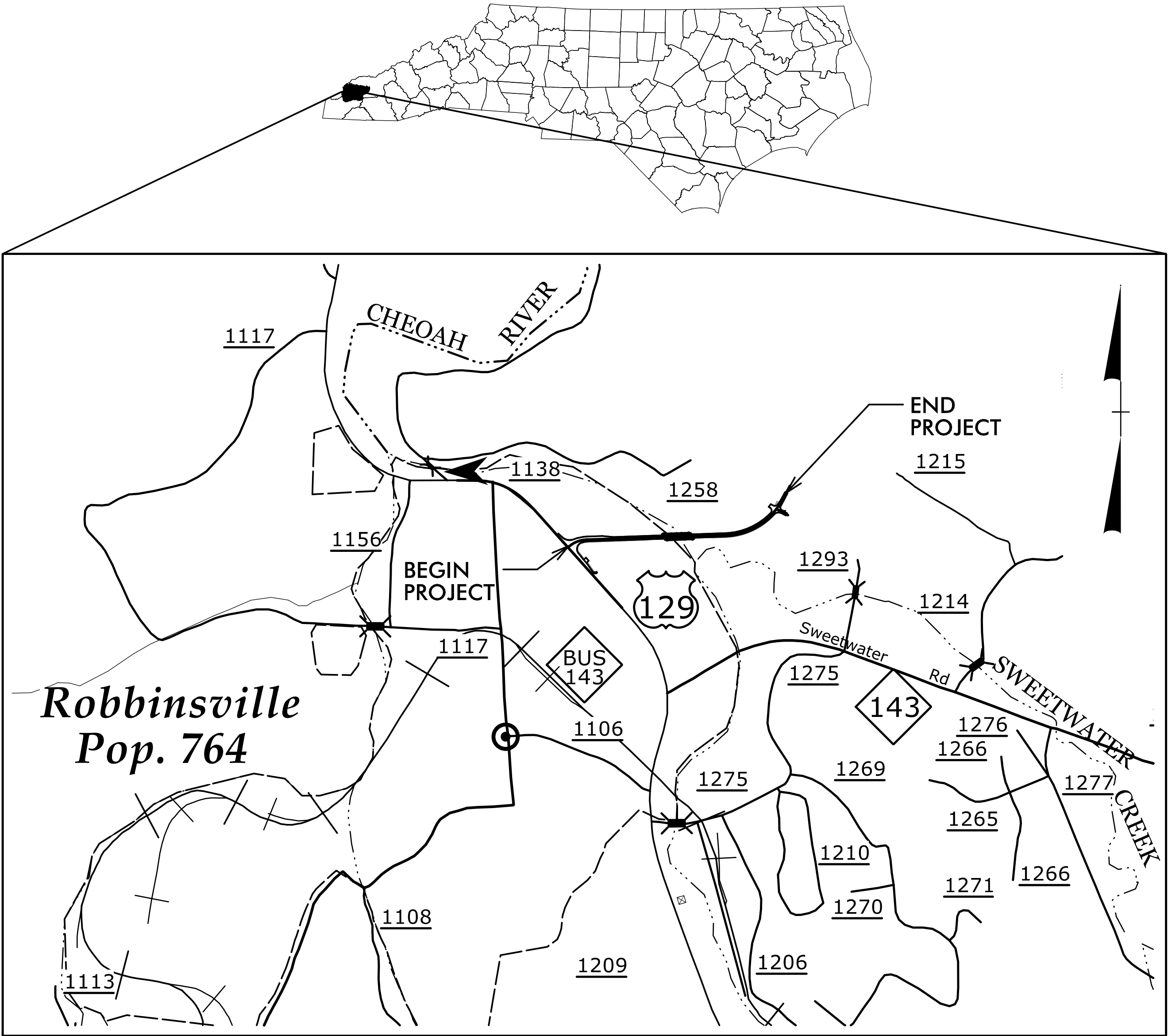


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User: jml



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN
GRAHAM COUNTY



INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	TITLE SHEET, VICINITY MAP AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, AND LEGEND
TMP-1B	TRANSPORTATION OPERATIONS PLAN: (MANAGEMENT STRATEGIES, GENERAL NOTES AND LOCAL NOTES)
TMP-2	PHASING
TMP-3	PHASE I OVERVIEW
TMP-4	PHASE I DETAILS

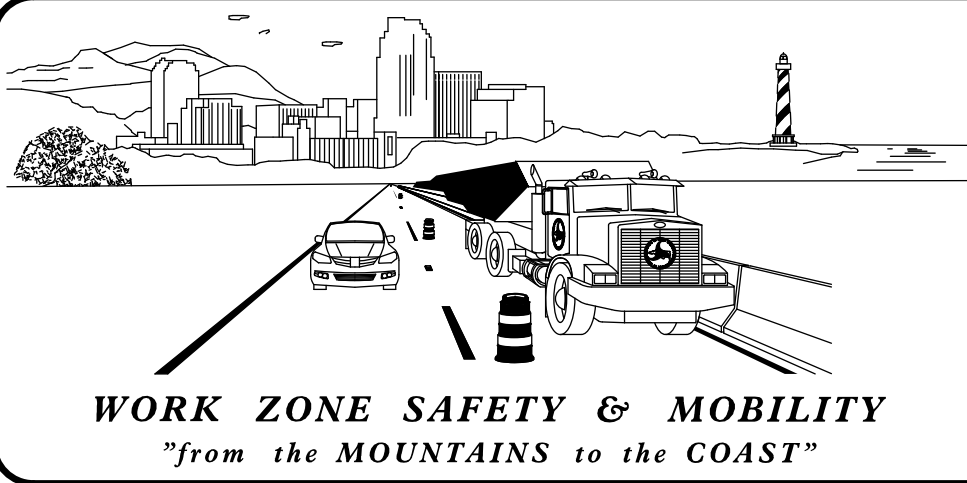
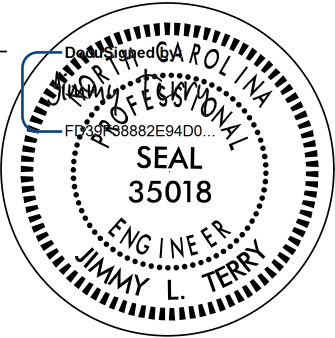
SHEET NO.
TMP-1

TIP PROJECT: U-5866

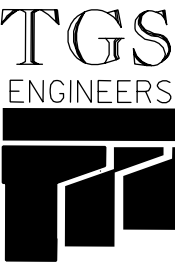
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UNLESS ALL SIGNATURES COMPLETED

APPROVED: _____
DATE: 11/2/2017

SEAL

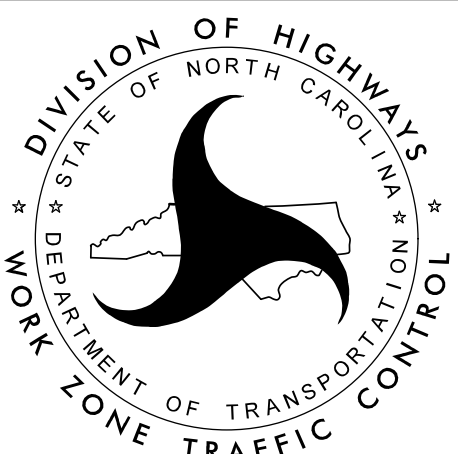


PLAN PREPARED FOR N.C.D.O.T. BY:



TGS ENGINEERS
804-C N. LAFAYETTE ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

JIMMY L. TERRY, PE PROJECT ENGINEER
SANDRA G. MELVIN DESIGN TECHNICIAN



I:\V2017
V\NC001\U-5866\Traffic\TrafficControl\TCP\U-5866_TC_TMP_OIA\rdw Std.dgn
User:smelvin

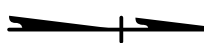
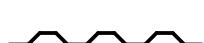
ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - 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:

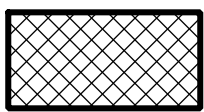
STD. NO.	TITLE
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1130.01	DRUM
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1180.01	SKINNY-DRUM

LEGEND

GENERAL

-  DIRECTION OF TRAFFIC FLOW
-  DIRECTION OF PEDESTRIAN TRAFFIC FLOW
-  EXIST. PVMT.
-  NORTH ARROW
-  PROPOSED PVMT.
-  TEMP. SHORING (LOCATION PURPOSES ONLY)

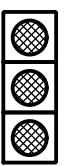
 WORK AREA

 REMOVAL

 USER DEFINED (IF NEEDED)

 USER DEFINED (IF NEEDED)

SIGNALS

-  EXISTING
-  PROPOSED
-  TEMPORARY

PAVEMENT MARKINGS

-  EXISTING LINES
-  TEMPORARY LINES

TRAFFIC CONTROL DEVICES

-  BARRICADE (TYPE III)
-  CONE
-  DRUM  SKINNY DRUM  TUBULAR MARKER
-  TEMPORARY CRASH CUSHION
-  FLASHING ARROW BOARD
-  FLAGGER
-  LAW ENFORCEMENT
-  TRUCK MOUNTED ATTENUATOR (TMA)
-  CHANGEABLE MESSAGE SIGN

TEMPORARY SIGNING

-  PORTABLE SIGN
-  STATIONARY SIGN
-  STATIONARY OR PORTABLE SIGN

PAVEMENT MARKERS

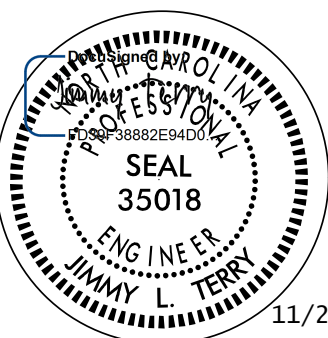
-  CRYSTAL/CRYSTAL
-  CRYSTAL/RED
-  YELLOW/YELLOW

PAVEMENT MARKING SYMBOLS

-  PAVEMENT MARKING SYMBOLS

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

APPROVED: _____ DATE: _____





ROADWAY STANDARD
DRAWINGS & LEGEND

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 UNDESIREDOVERLAPPING 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.

TIME RESTRICTIONS

A) DO NOT CLOSE OR NARROW TRAVEL LANES AS FOLLOWS:

ROAD NAME	DAY AND TIME RESTRICTIONS	
US 129	MONDAY THRU FRIDAY	7:00 AM TO 9:00 AM
US 129	MONDAY THRU FRIDAY	2:00 PM TO 6:00 PM

B) DO NOT CLOSE OR NARROW TRAVEL LANES DURING HOLIDAYS AND SPECIAL EVENTS AS FOLLOWS:

ROAD NAME
US 129

HOLIDAY

- FOR ANY UNEXPECTED OCCURRENCE THAT CREATES UNUSUALLY HIGH TRAFFIC VOLUMES, AS DIRECTED BY THE ENGINEER.
- FOR NEW YEAR’S, BETWEEN THE HOURS OF 2:00 P.M. DECEMBER 31st TO 9:00 A.M. JANUARY 2ND. IF NEW YEAR’S DAY IS ON A FRIDAY, SATURDAY, SUNDAY, OR MONDAY THEN UNTIL 9:00 A.M. THE FOLLOWING TUESDAY.
- FOR EASTER, BETWEEN THE HOURS OF 2:00 P.M. THURSDAY AND 9:00 A.M. MONDAY.
- FOR MEMORIAL DAY, BETWEEN THE HOURS OF 2:00 P.M. FRIDAY TO 9:00 A.M. TUESDAY.
- FOR INDEPENDENCE DAY, BETWEEN THE HOURS OF 2:00 P.M. THE DAY BEFORE INDEPENDENCE DAY AND 9:00 A.M. THE DAY AFTER INDEPENDENCE DAY.

IF INDEPENDENCE DAY IS ON A FRIDAY, SATURDAY, SUNDAY OR MONDAY THEN BETWEEN THE HOURS OF 2:00 P.M. THE THURSDAY BEFORE INDEPENDENCE DAY AND 9:00 A.M. THE TUESDAY AFTER INDEPENDENCE DAY.
- FOR LABOR DAY, BETWEEN THE HOURS OF 2:00 P.M. FRIDAY AND 9:00 A.M. TUESDAY.
- FOR THANKSGIVING DAY, BETWEEN THE HOURS OF 2:00 P.M. TUESDAY TO 9:00 A.M. MONDAY.
- FOR CHRISTMAS, BETWEEN THE HOURS OF 2:00 P.M. THE FRIDAY BEFORE THE WEEK OF CHRISTMAS DAY AND 9:00 A.M. THE FOLLOWING TUESDAY AFTER THE WEEK OF CHRISTMAS.

LANE AND SHOULDER CLOSURE REQUIREMENTS

- C) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED OR AS DIRECTED BY THE ENGINEER.
- D) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO A DIVIDED FACILITY AND WITHIN 10 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.
- E) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS, OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.
- F) DO NOT WORK SIMULTANEOUSLY WITHIN 15 FT ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP, OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.

PAVEMENT EDGE DROP OFF REQUIREMENTS

G) BACKFILL AT A 6:1 SLOPE UP TO THE EDGE AND ELEVATION OF EXISTING PAVEMENT IN AREAS ADJACENT TO AN OPENED TRAVEL LANE THAT HAS AN EDGE OF PAVEMENT DROP-OFF AS FOLLOWS:

BACKFILL DROP-OFFS THAT EXCEED 2 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS OF 45 MPH OR GREATER.

BACKFILL DROP-OFFS THAT EXCEED 3 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS LESS THAN 45 MPH.

BACKFILL WITH SUITABLE COMPACTED MATERIAL, AS APPROVED BY THE ENGINEER, AT NO EXPENSE TO THE DEPARTMENT.

H) DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC FOR NOMINAL LIFTS OF 1.5 INCHES. INSTALL ADVANCE WARNING “UNEVEN LANES” SIGNS (W8-11) IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

J) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

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

TRAFFIC CONTROL DEVICES

L) WHEN LANE CLOSURES ARE NOT IN EFFECT SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER IN FEET THAN TWICE THE POSTED SPEED LIMIT (MPH) EXCEPT, 10 FT ON-CENTER IN RADIUS, AND 3 FT OFF THE EDGE OF AN OPEN TRAVELWAY. REFER TO STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SECTIONS 1130 (DRUMS), 1135 (CONES) AND 1180 (SKINNY DRUMS) FOR ADDITIONAL REQUIREMENTS.

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

MISCELLANEOUS

- N) IN THE EVENT A TIE-IN CANNOT BE MADE IN ONE DAY’S TIME, BRING THE TIE-IN AREA TO AN APPROPRIATE ROADWAY ELEVATION AS DETERMINED BY THE ENGINEER. PLACE BLACK ON ORANGE, “LOOSE GRAVEL” SIGNS (W8-7) AND BLACK ON ORANGE, “PAVEMENT ENDS” SIGNS (W8-3) AND RESPECTIVELY IN ADVANCE OF THE UNEVEN AREAS. USE DRUMS TO DELINEATE THE EDGE OF ROADWAY ALONG UNPAVED AREAS.
- O) ALL CURB RAMP LOCATIONS SHALL BE DERIVED FROM STATIONING SHOWN ON PAVEMENT MARKING PLANS OR AS DIRECTED BY THE ENGINEER IN COORDINATION WITH THE SIGNING AND DELINEATION UNIT.
- P) CONTRACTOR SHALL MAINTAIN SIDEWALK ACCESS AT ALL TIMES AS STATED IN THE PHASING. CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE TEMPORARY SIDEWALKS (CONCRETE, ASPHALT, OR OTHER SUITABLE MATERIAL AS APPROVED BY THE ENGINEER) AT ALL LOCATIONS WHERE THE OPEN PEDESTRIAN TRAVELWAY HAS BEEN REMOVED FOR CONSTRUCTION OPERATIONS (UTILITIES, DRAINAGE, ETC.).

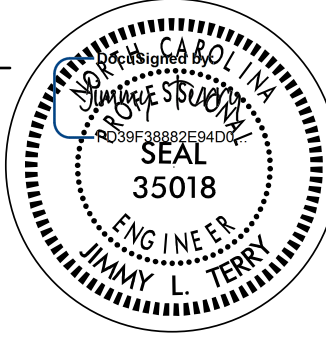
LOCAL NOTES

UNLESS OTHERWISE NOTED PROVIDE ACCESS TO ALL DRIVES AT ALL TIMES.

MANAGEMENT STRATEGIES

THE MAJORITY OF WORK TO CONSTRUCT THE PROPOSED ACCESS ROAD BETWEEN RODNEY ORR BYPASS/US129 AND THE ROBBINSVILLE HIGH SCHOOL/ MIDDLE SCHOOL WILL BE PERFORMED AWAY FROM THE EXISTING TRAFFIC. THE TIE-IN TO EXISTING ROADS WILL BE CONSTRUCTED USING TEMPORARY LANE CLOSURES AND FLAGGERS AS NEEDED.

PROJ. REFERENCE NO.	SHEET NO.
U-5866	TMP-1B
TCS ENGINEERS 804-C N. LAFAYETTE ST SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	

APPROVED: _____ DATE: 11/2/2017 SEAL 		TRANSPORTATION OPERATIONS PLAN
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		

PHASING

PHASE I

STEP 1:

INSTALL ALL ADVANCE WORK ZONE WARNING SIGNS ON -L-, -Y- AND -DR1- IN ACCORDANCE WITH NCDOT RDY STD DRAWING 1101.01 (SHT 3 OF 3).

STEP 2:

INSTALL THE ROADWAY DRAINAGE ALONG -L- (ACCESS RD) BETWEEN -L- STA 11+00.00 AND 29+05.00 (SEE ROADWAY PLANS)

WITHOUT DISTURBING ANY EXISTING TRAFFIC CONSTRUCT THE FOLLOWING UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE (SEE TMP-3 & 4):
-L- STA 11+00.00 TO 19+13.56 (BEGIN BRIDGE)
-L- STA 21+36.44 (END BRIDGE) TO 29+05.00

CONSTRUCT THE ROADWAY BRIDGE OVER CHEOAH RIVER FROM -L- STA 19+13.56 TO 21+36.44

STEP 3:

WORK IN THIS STEP WILL TAKE PLACE IN TWO AREAS AND THE CONTRACTOR CAN WORK CONCURRENTLY IN BOTH AREAS.

AREA 1 (TIE IN TO RODNEY ORR BYPASS):

- A. CLOSE THE EXISTING ENTRANCE AT -Y- STA 23+11.00 LT TO TRAFFIC. (SEE TMP-3 AND 4)
- B. INSTALL ROADSIDE DRAINAGE. (SEE ROADWAY PLANS)

USING TEMPORARY LANE CLOSURES AND FLAGGERS AS NEEDED CONSTRUCT -L- (ACCESS RD) FROM -L- STA. 10+54.03 TO 11+00.00 AND THE TURN LANE ALONG -Y-(RODNEY ORR BYP) FROM -Y- STA. 23+10.00 TO 25+41.78 UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE. (SEE TMP-3 AND 4, SEE NCDOT RDY STD. DWG 1101.02, SHT 2 OF 15)

INSTALL THE ADJACENT SIDEWALK AND PLACE CURB RAMPS AT THE INTERSECTON AND THE BUSINESS ENTRANCE AS SHOWN ON PLANS (SEE TMP-4 & PAVEMENT MARKING PLANS) (SEE TMP-3 AND 4)

AREA 2 (TIE TO SCHOOL PROPERTY):

- A. CLOSE THE EXISTING PEDESTRIAN BRIDGE AND WALK TO PEDESTRIANS. (SEE TMP-4)
- B. USING TEMPORARY LANE CLOSURES AND FLAGGERS AS NEEDED CONSTRUCT THE FOLLOWING UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE:
-L- STA. 29+05.00 TO 31+33.00
-DR1- STA. 10+15.24 TO 11+00.00
CONSTRUCT SIDEWALK AND CURB RAMPS AS SHOWN ON PLANS. (SEE TMP 3 & 4, SEE PAVEMENT MARKING PANS)

STEP 4:

INSTALL NEW SIGNAL SYSTEM AT THE INTERSECTION OF THE NEW ACCESS RD (-L-) AND RODNEY ORR BYP (-Y-) (SEE SIGNAL PLANS FOR PHASING SEQUENCE)

STEP 5:

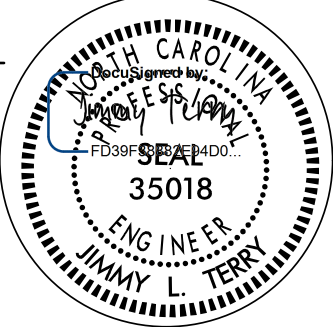
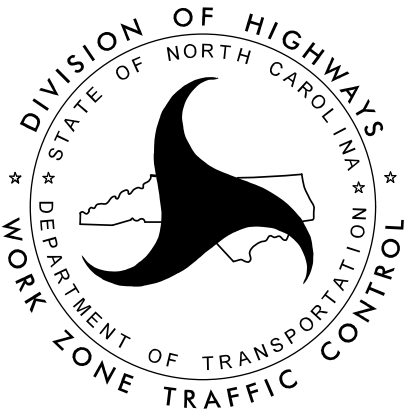
USING TEMPORARY LANE CLOSURES AND FLAGGERS AS NEEDED PLACE THE FINAL LAYER OF SURFACE COURSE AS FOLLOWS: (SEE TMP-3)
-L- STA. 10+54.03 TO 19+13.56 (BEGIN BRIDGE)
-L- STA. 21+36.44 (END BRIDGE) TO 31+33.00
-Y- STA. 23+10.00 TO 25+41.78 (TURNING LANE ONLY)
-DR1- STA. 10+15.24 TO 11+00.00

STEP 6:

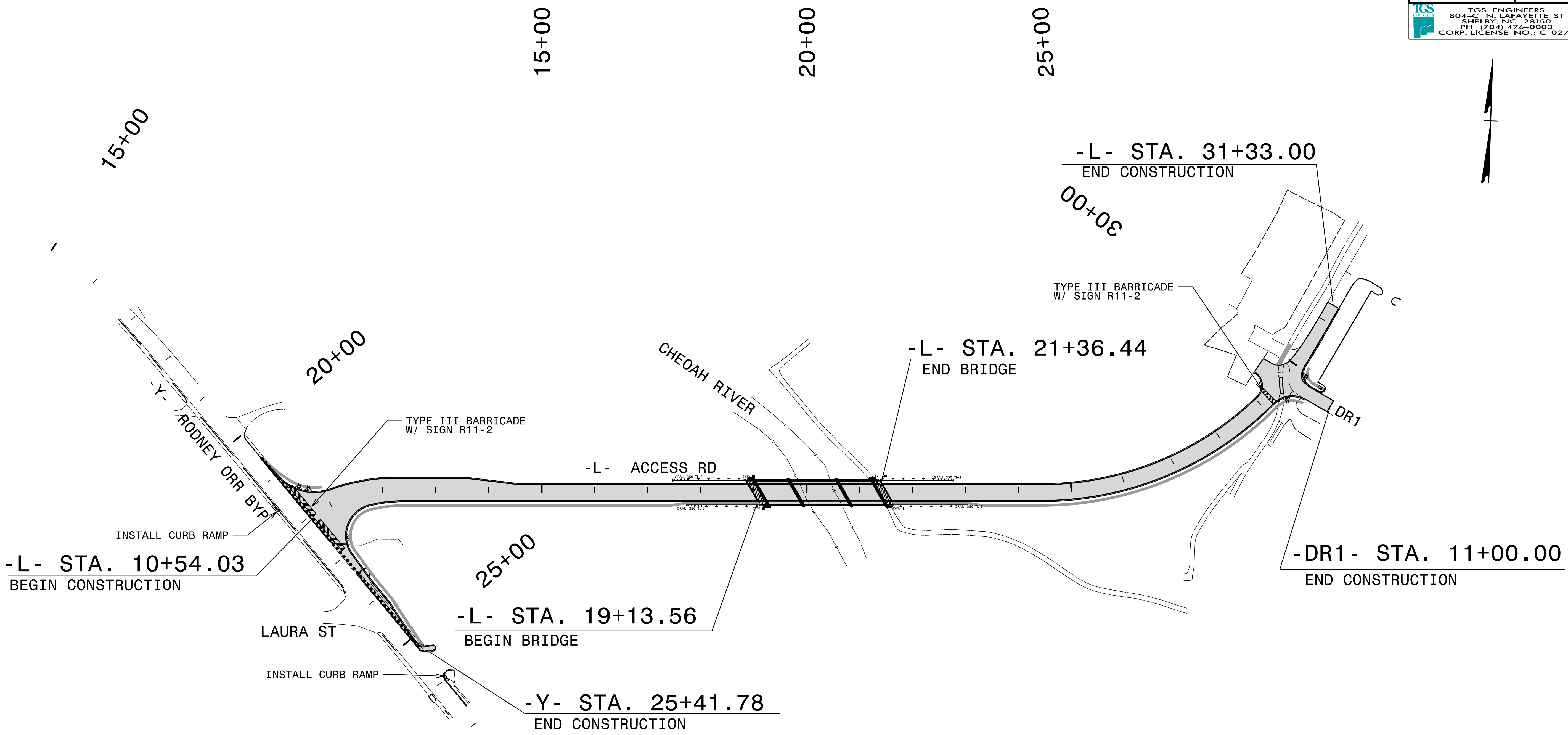
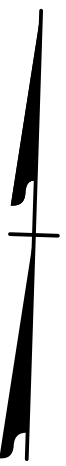
USING TEMPORARY LANE CLOSURES AND FLAGGERS AS NEEDED REMOVE EXISTING CONFLICTING PAVEMENT MARKINGS AND PLACE THE FINAL PAVEMENT MARKINGS AS FOLLOWS:
-L- STA. 10+54.03 TO 31+33.00
-Y- STA. 15+60.00 TO 26+30.00
(SEE PAVEMENT MARKING PLANS)

STEP 7:

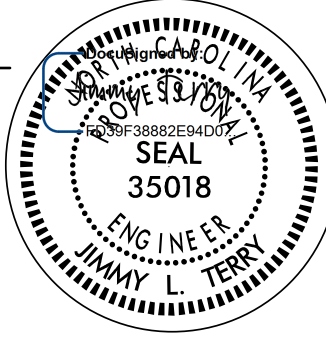
ACTIVATE THE NEW SIGNAL SYSTEM AND OPEN ALL ROADS TO TRAFFIC IN THEIR NEW PATTERN .

APPROVED: _____ DATE: 11/2/2017 SEAL 		PHASING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		

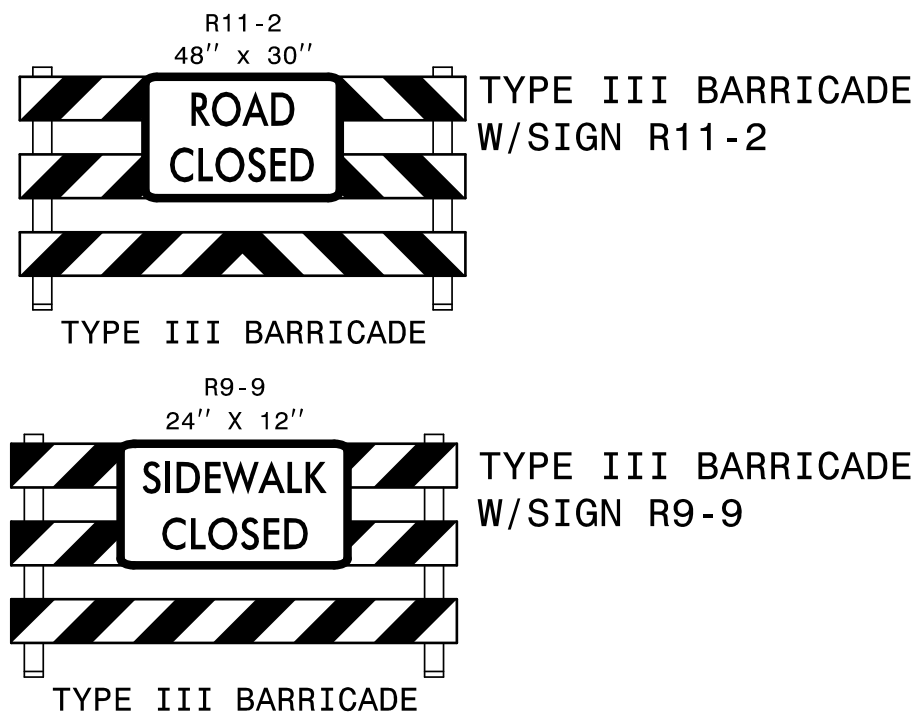
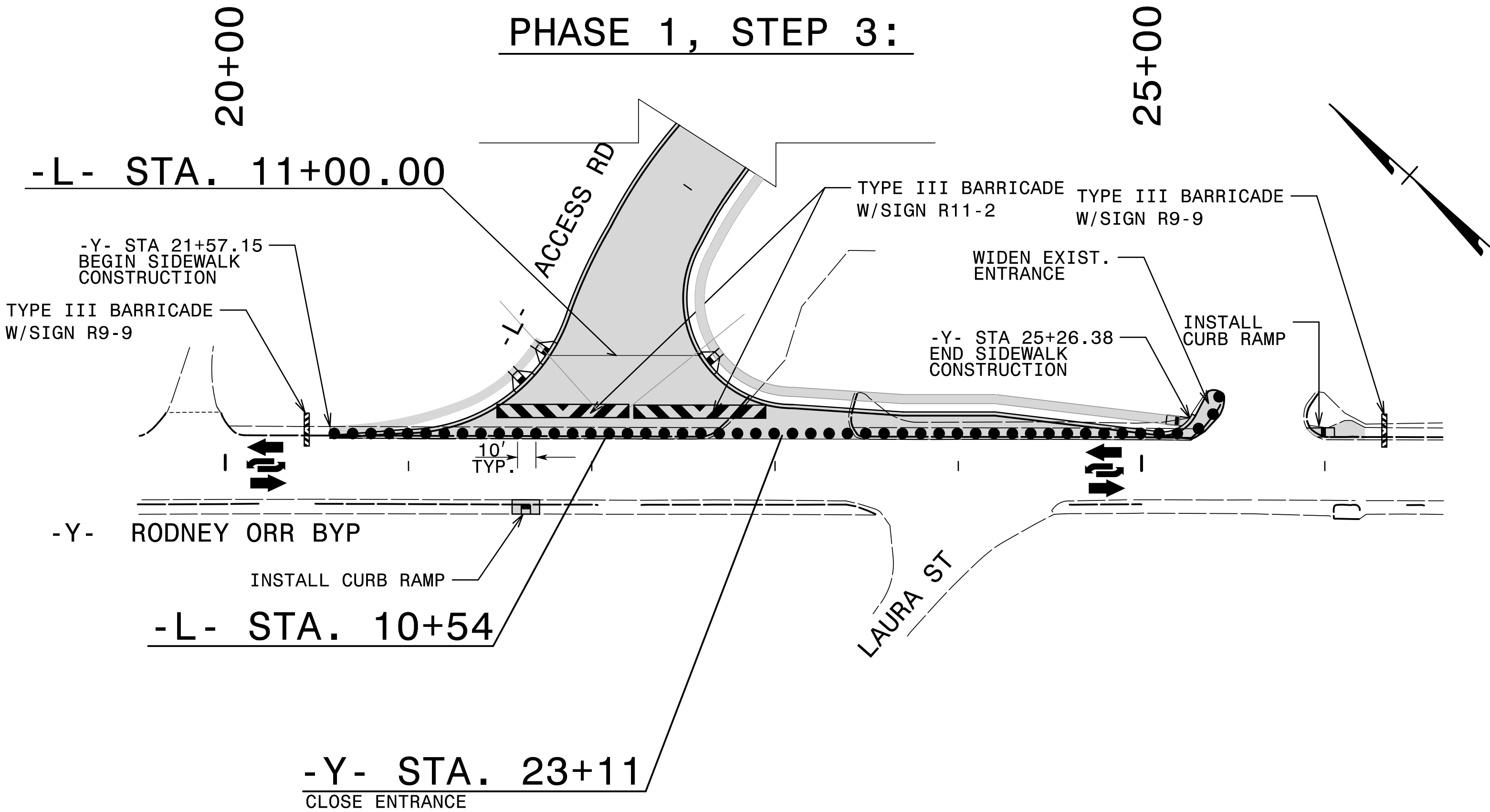
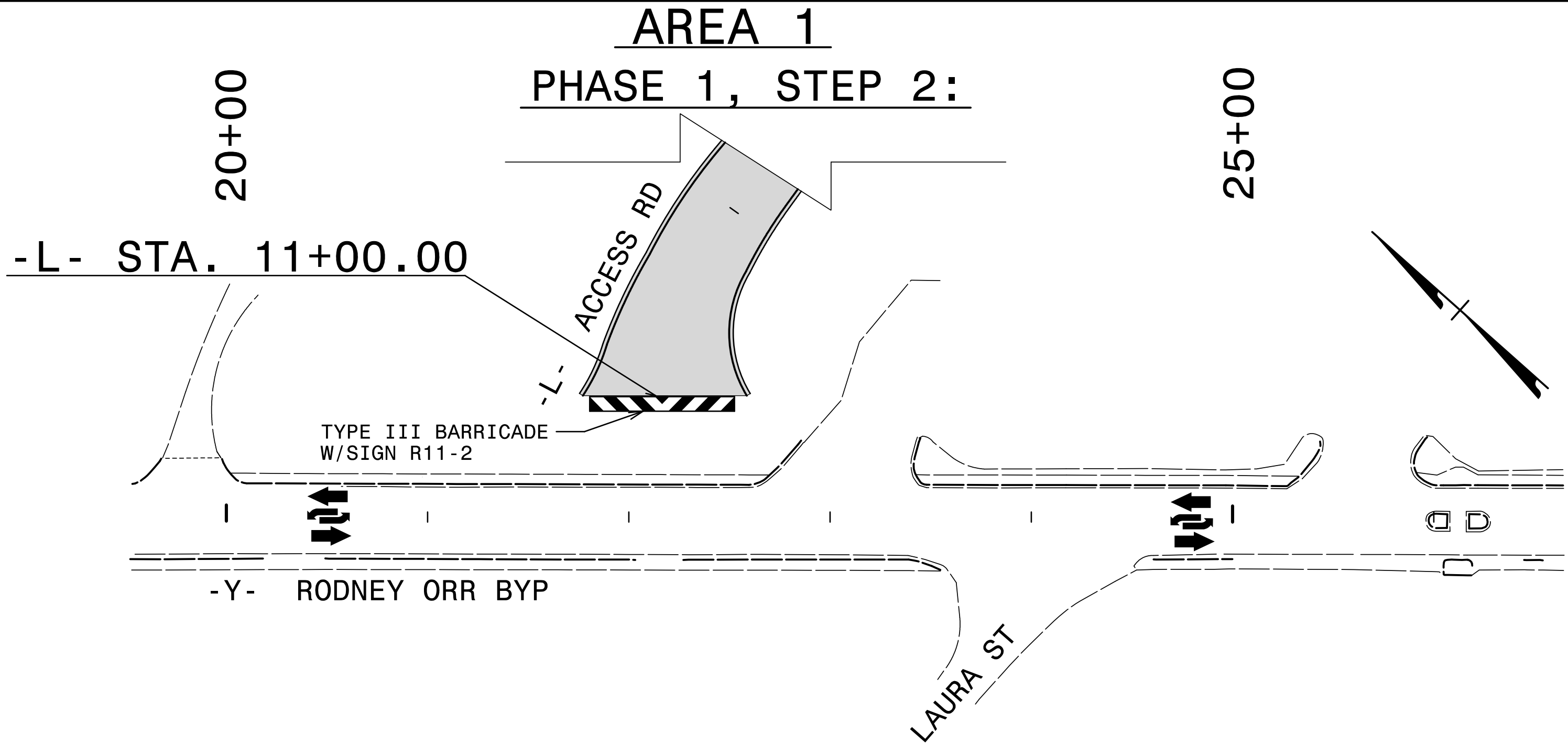
PROJ. REFERENCE NO.	SHEET NO.
U-5866	TMP-3
TGS ENGINEERS TGS ENGINEERS 804-C N. LAFAYETTE ST SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	



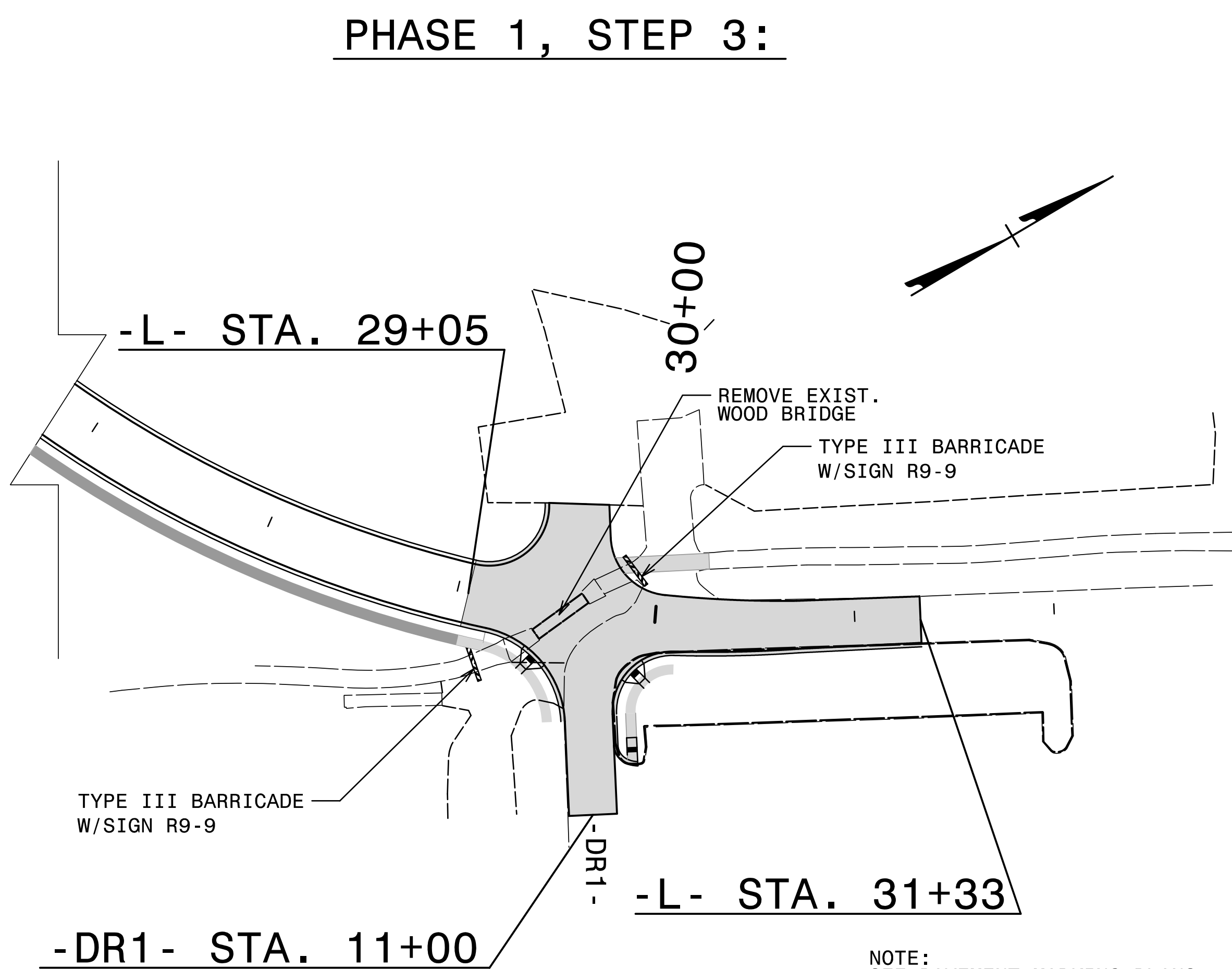
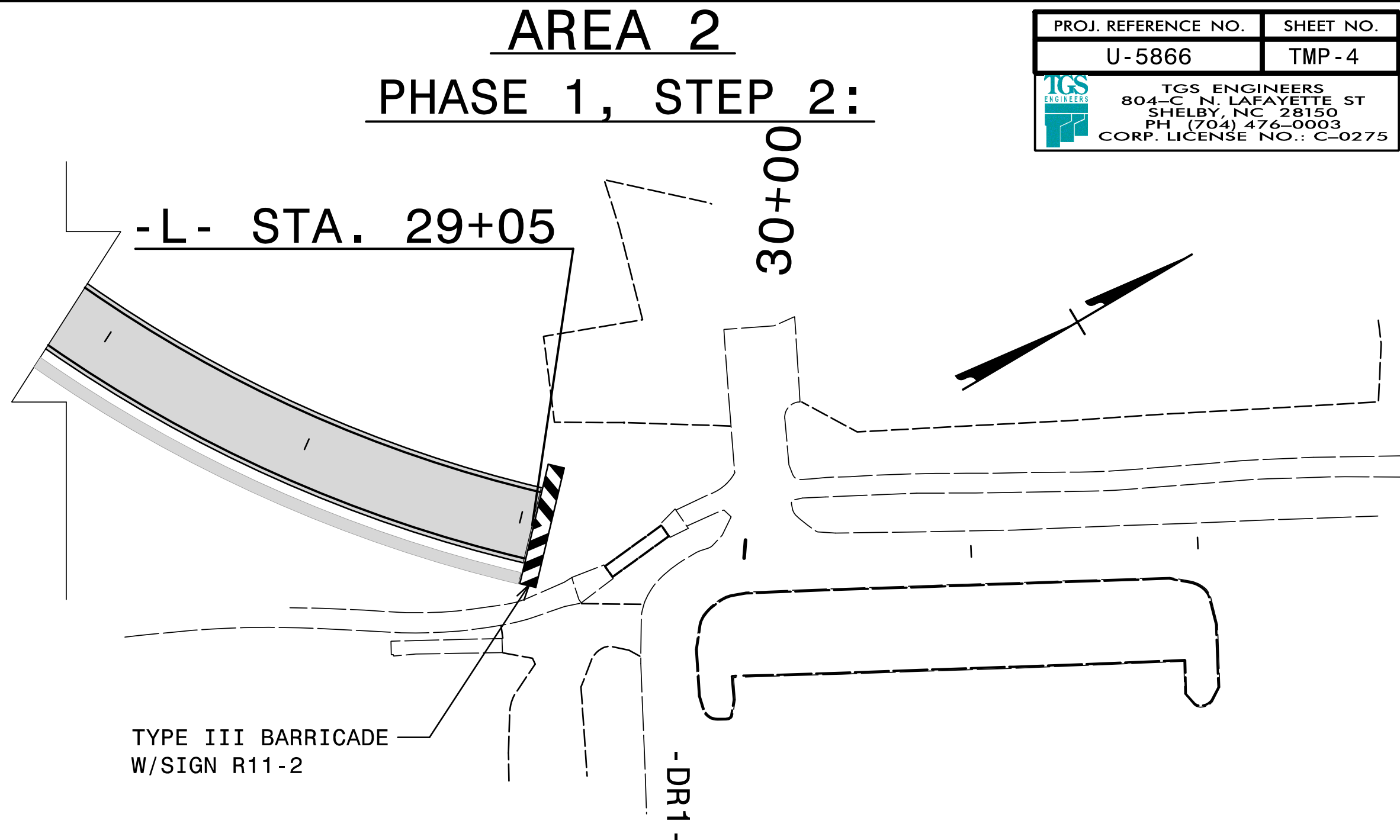
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U-5866\TrafficControl\TCP\U-5866_TC_TMP_03(0V).dgn
User:smelvin

APPROVED: _____ DATE: 11/2/2017 SEAL 		PHASE I OVERVIEW
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		

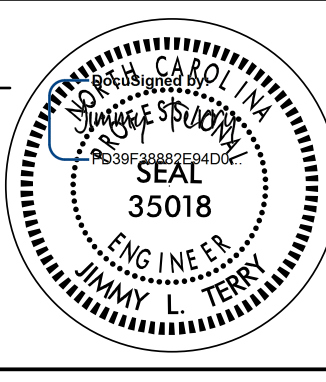
I:\V\2017
V\NC001\U-5866\Traffic\TrafficControl\TCP\U-5866_TC_TMP_04(DETAIL).dgn
User:smelvin



NOTE:
SEE PAVEMENT MARKING PLANS
FOR CURB RAMP LOCATIONS.



NOTE:
SEE PAVEMENT MARKING PLANS
FOR CURB RAMP LOCATIONS.

APPROVED: _____ DATE: 11/2/2017 SEAL			PHASE I DETAILS
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

U:\2017\U-5866-TrafficControl\TCP\Pavement Marking Plans\U-5866-Sgn-PMP-01(Tsh).dgn
User:smelvin

T.I.P.: U-5866

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLAN
GRAHAM COUNTY
LOCATION: NEW ROUTE FROM US 129(RODNEY ORR BYP) TO
ROBBINSVILLE HIGH SCHOOL/MIDDLE SCHOOL CAMPUS

TIP NO.	SHEET NO.
U-5866	PMP-1
APPROVED: _____	
DATE: _____	
SEAL  11/2/2017	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

ROADWAY STANDARD DRAWING

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - 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:

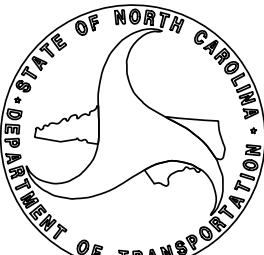
STD. NO.	TITLE
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTILANE ROADWAYS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.05	PAVEMENT MARKINGS - TURN LANES
1205.08	PAVEMENT MARKINGS - SYMBOLS AND WORD MESSAGES
1205.10	PAVEMENT MARKINGS - SCHOOL AREAS
1205.12	PAVEMENT MARKINGS - BRIDGES
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1253.01	RAISED PAVEMENT MARKERS - SNOWPLOWABLE
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

GENERAL NOTES

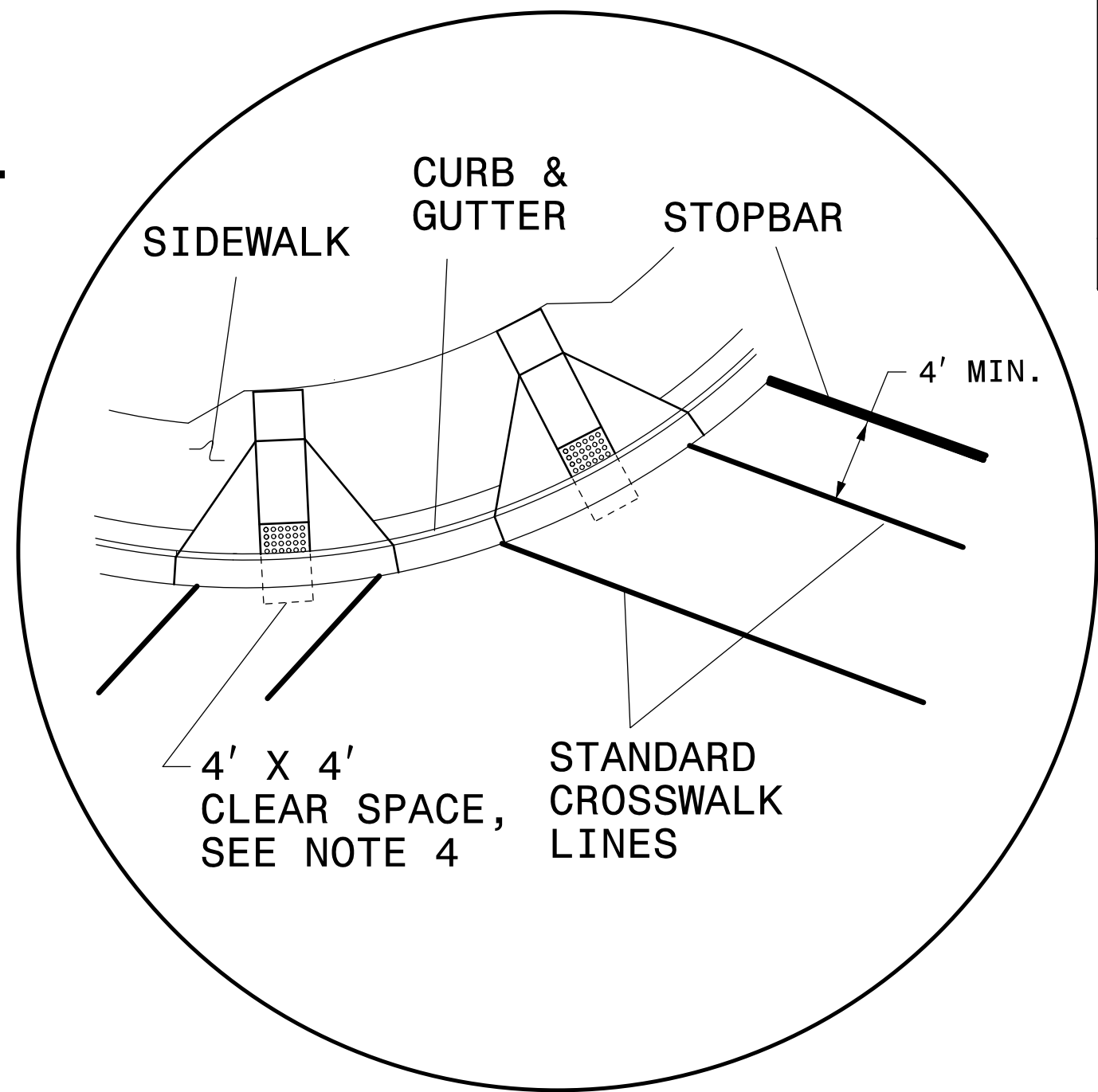
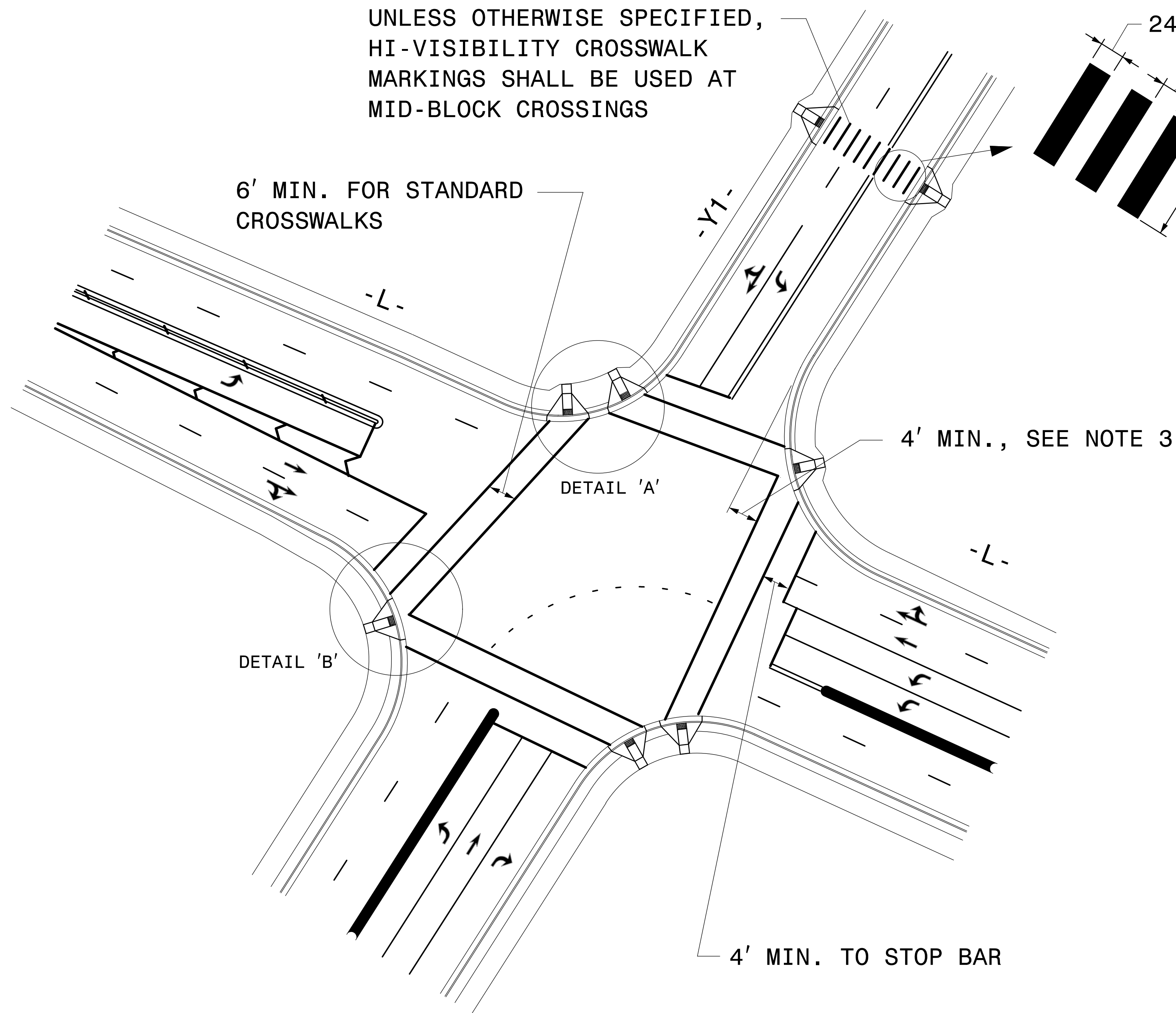
- THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT, EXCEPT WHEN OTHERWISE NOTED IN THE PLAN, OR DIRECTED BY THE ENGINEER.
- A) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS FOLLOWS:
- | | | |
|-------------------|---------------|---------------------|
| ROAD NAME | MARKING | MARKER |
| ACCESS ROAD | THERMOPLASTIC | SNOWPLOWABLE RAISED |
| RODNEY ORR BYPASS | THERMOPLASTIC | SNOWPLOWABLE RAISED |
- B) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- C) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS.
- D) UNLESS OTHERWISE SPECIFIED, HEATED-IN-PLACE THERMOPLASTIC MAY BE USED IN LIEU OF EXTRUDED THERMOPLASTIC FOR STOP BARS, SYMBOLS, CHARACTERS AND DIAGONALS. IF HEATED-IN-PLACE IS USED, IT SHALL BE PAID FOR USING THE EXTRUDED THERMOPLASTIC PAY ITEM.
- E) SEE ROADWAY PLANS FOR ALTERNATE CURB RAMP DESIGNS WHEN INDICATED ON PAVEMENT MARKING DETAIL SHEETS.

FINAL PAVEMENT MARKING SCHEDULE

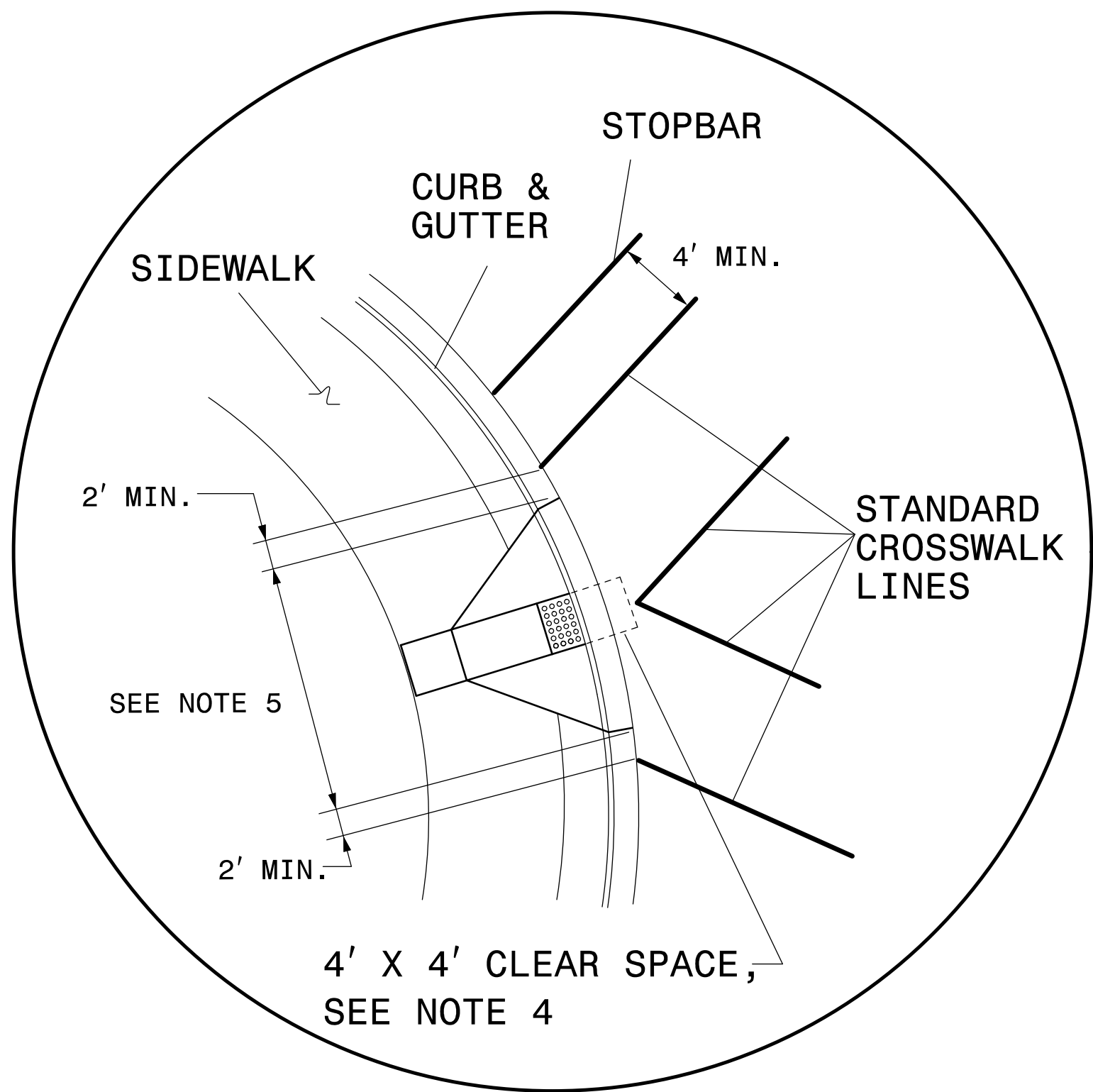
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	PAVEMENT MARKINGS		THERMOPLASTICPAVEMENT MARKING CHARACTER (120 MILS) UI ALPHANUMERIC CHAR.
	THERMOPLASTIC(24", 120 MILS)		THERMOPLASTICPAVEMENT MARKING SYMBOLS (90 MILS)
T2	WHITE STOPBAR	UA	LEFT TURN ARROW
T3	WHITE CROSSWALK LINE	UB	RIGHT TURN ARROW
		UC	STRAIGHT ARROW
	THERMOPLASTIC(4", 120 MILS)		
TD	3 FT. - 9 FT./SP WHITE MINISKIP		
TE	WHITE SOLID LANE LINE		MARKERS
TF	10 FT. YELLOW SKIP		
TH	YELLOW SINGLE CENTER		SNOWPLOWABLE RAISED PAVEMENT MARKERS
TI	YELLOW DOUBLE CENTER	ME	YELLOW & YELLOW
		MF	CRYSTAL & RED
	THERMOPLASTIC(4", 90 MILS)		
TA	WHITE EDGELINE		
	THERMOPLASTIC(8", 120 MILS)		
TQ	WHITE CROSSWALK LINE		
	THERMOPLASTIC(8", 90 MILS)		
TP	YELLOW DIAGONAL		

PLAN PREPARED FOR N.C.D.O.T. BY:			
	TGS ENGINEERS 804-C N. LAFAYETTE ST SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275		JIMMY L. TERRY, PE PROJECT ENGINEER
			SANDRA MELVIN DESIGN TECHNICIAN

TIP NO.	SHEET NO.
U-5866	PMP-2
APPROVED: _____	
DATE: _____	
SEAL  11/2/2017	
REVISIONS	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



DETAIL 'A'- DUAL CURB RAMPS



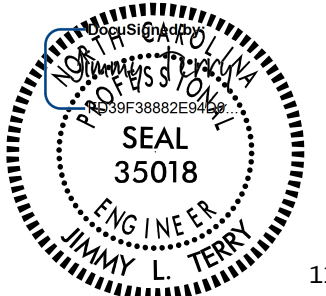
DETAIL 'B'- SINGLE DIAGONAL CURB RAMP

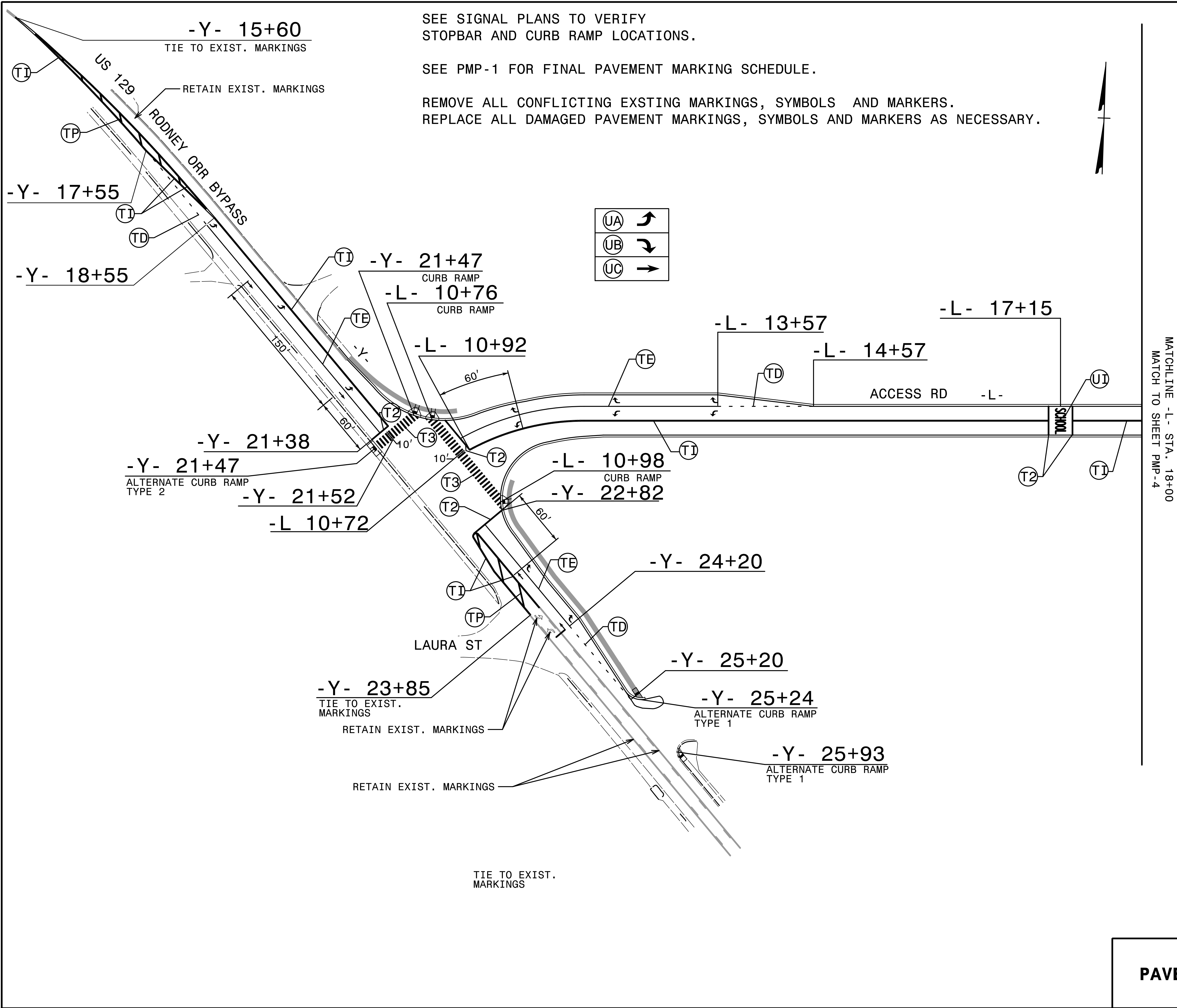
GUIDANCE DETAIL FOR CROSSWALK MARKINGS

NOTES:

- USE THE DETAILS ABOVE AND THE FOLLOWING NOTES FOR GUIDANCE IN PLACING CROSSWALK MARKINGS NOT STATIONED ON THE DETAIL SHEETS OR WHEN FIELD ADJUSTMENTS REQUIRED MOVING STATIONED MARKINGS AS DIRECTED BY THE ENGINEER. REFER TO NCDOT ROADWAY STANDARD DRAWINGS, MUTCD AND ADA STANDARDS FOR ADDITIONAL GUIDANCE.
- THE CROSSWALK MARKINGS SHOWN ON THE ABOVE DETAILS ARE FOR REFERENCE ONLY. ONLY INSTALL CROSSWALK MARKINGS WHERE SHOWN ON THE DETAIL SHEETS OR AS DIRECTED BY THE ENGINEER. THE CROSSWALK MARKING TYPE, STANDARD OR HI-VISIBILITY, SHALL BE INSTALL AS SPECIFIED ON THE DETAIL SHEETS OR AS DIRECTED BY THE ENGINEER.
- SET BACK DISTANCE FROM INSIDE CROSSWALK MARKING TO NEAREST EDGE OF TRAVEL IS 4' MIN.
- BEYOND THE BOTTOM GRADE BRAKE, A CLEAR SPACE OF 4' X 4' MINIMUM SHALL BE PROVIDED WITHIN THE MARKINGS.
- SINGLE DIAGONAL CURB RAMPS WITH FLARED SIDES SHALL HAVE A SEGMENT OF CURB 2 FEET LONG MINIMUM LOCATED ON EACH SIDE OF THE CURB RAMP AND WITHIN THE MARKED CROSSING, SEE DETAIL 'B'.
- CURB RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE TO THE LATEST NCDOT ROADWAY STANDARD DRAWINGS.

CROSSWALK PAVEMENT MARKING GUIDANCE DETAIL

TIP NO.	SHEET NO.
U-5866	PMP-3
APPROVED: _____	
DATE: _____	
SEAL	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
TGS ENGINEERS 804-C N. LAFAYETTE ST SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	

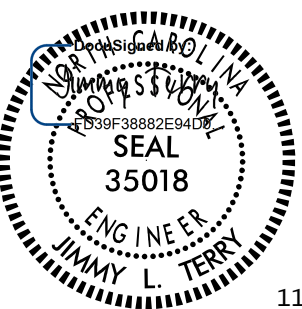


PAVEMENT MARKING DETAIL

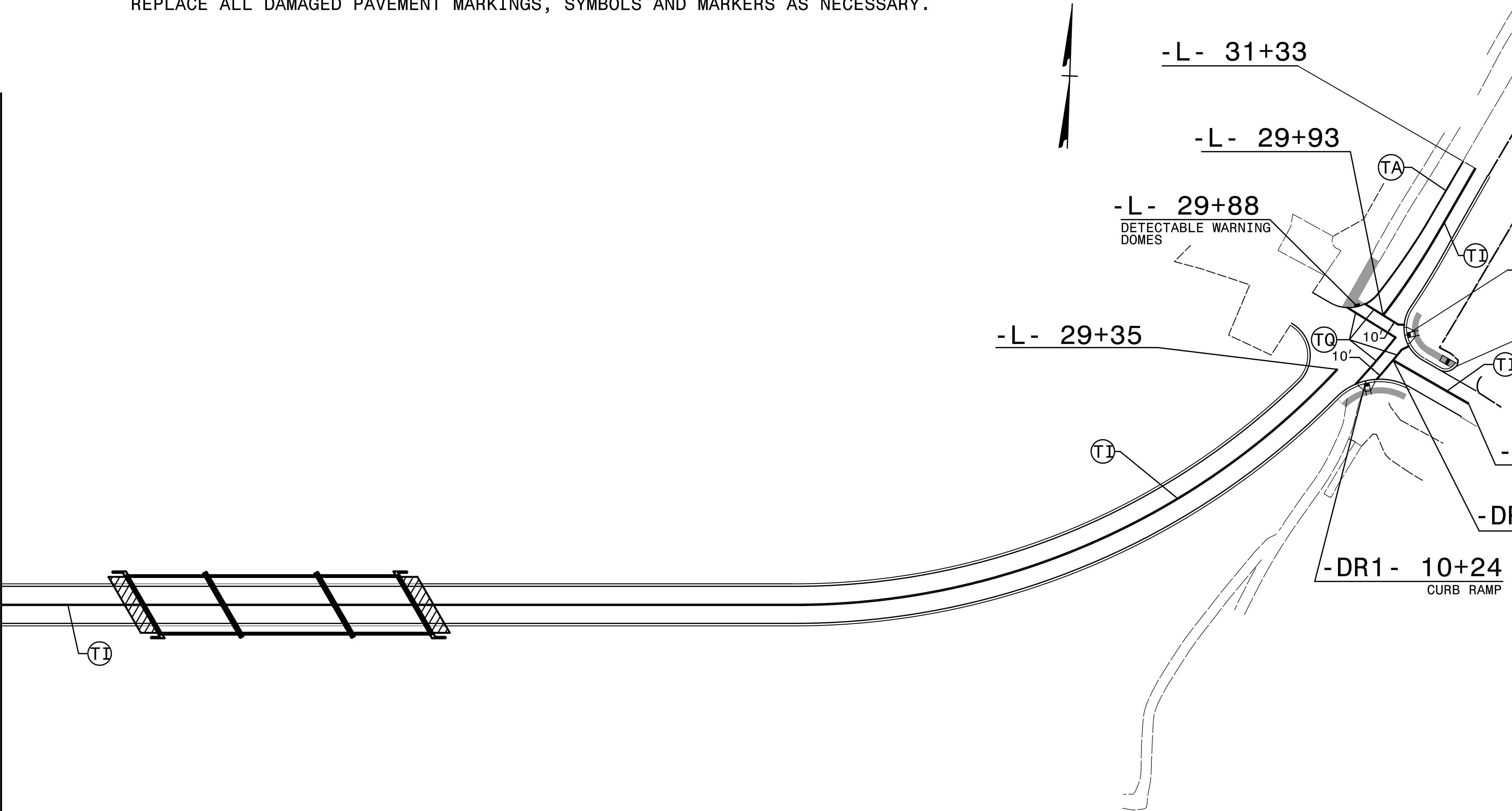
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X:\NC001\U-5866\Traffic\TrafficControl\TCP\Pavement Marking Plans\U-5866_Sgn_PMP_03.dgn
User:smv\m

SEE PMP-1 FOR FINAL PAVEMENT MARKING SCHEDULE.

REMOVE ALL CONFLICTING EXSTING MARKINGS, SYMBOLS AND MARKERS.
REPLACE ALL DAMAGED PAVEMENT MARKINGS, SYMBOLS AND MARKERS AS NECESSARY.

TIP NO.	SHEET NO.
U-5866	PMP-4
APPROVED: _____	
DATE: _____	
SEAL	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
TCS ENGINEERS 804-C N. LAFAYETTE ST SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	

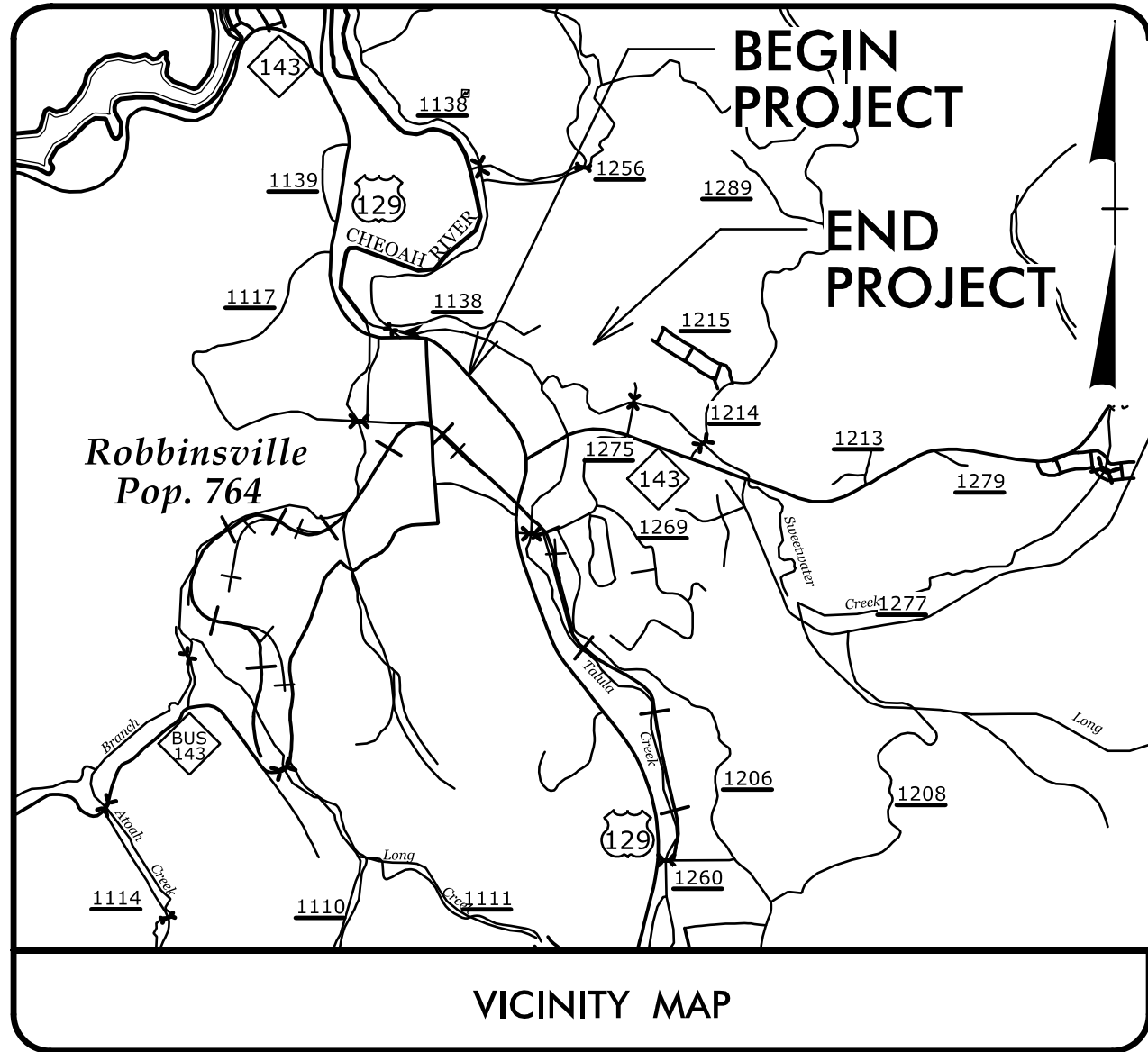
MATCHLINE -L- STA. 18+00
MATCH TO SHEET PMP-3



PAVEMENT MARKING DETAIL

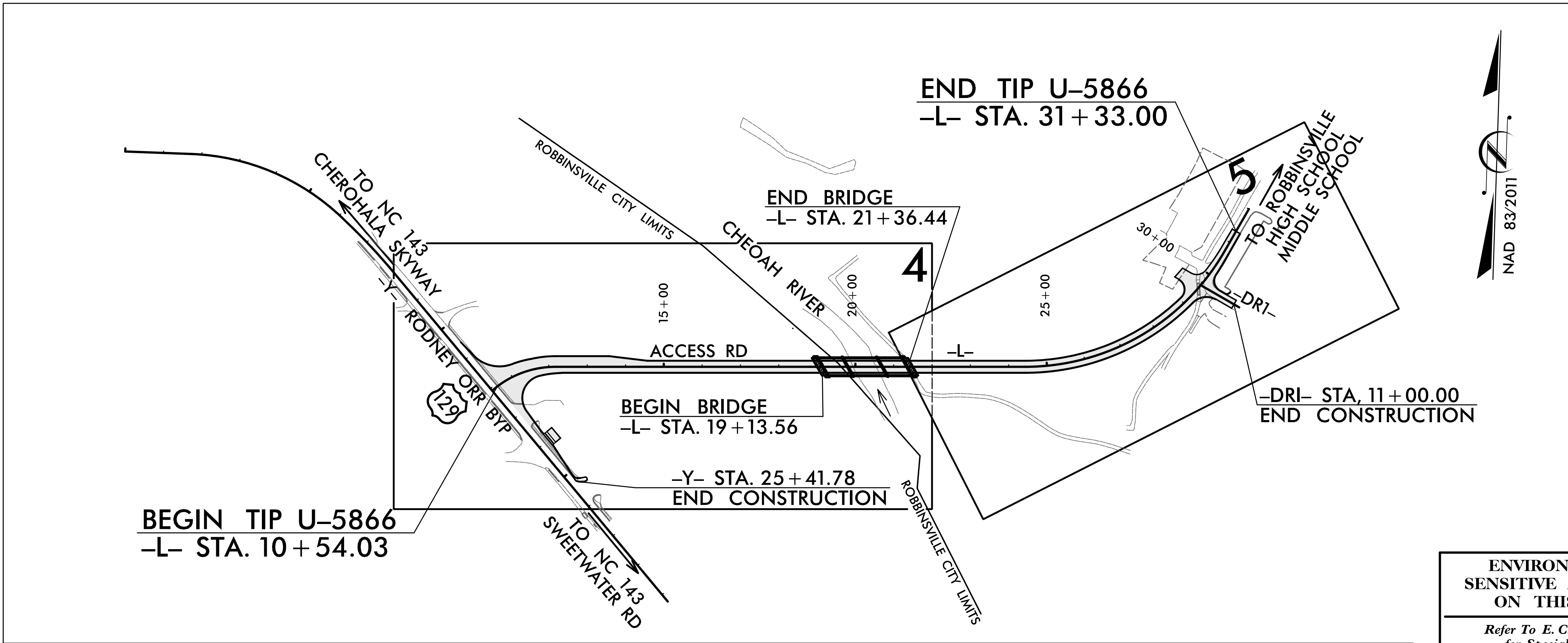
PROJECT: U-5866

CONTRACT: DN00560



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

LOCATION: NEW ROUTE FROM US.129 (RODNEY ORR BYP) TO
ROBBINSVILLE HIGH SCHOOL /MIDDLE SCHOOL CAMPUS
INCLUDING BRIDGE OVER CHEOAH RIVER
TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURE, AND SIGNALS



STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-5866	EC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
46390.1.D1	N/A	PE	
46390.2.1	N/A	R/W, UTIL.	
46390.3.1	N/A	CONST.	

EROSION AND SEDIMENT CONTROL MEASURES

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

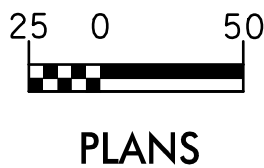
THIS PROJECT CONTAINS
EROSION CONTROL PLANS
FOR CLEARING AND
GRUBBING PHASE OF
CONSTRUCTION.

THIS PROJECT HAS
BEEN DESIGNED TO
SENSITIVE WATERSHED
STANDARDS.

ENVIRONMENTALLY
SENSITIVE AREA(S) EXIST
ON THIS PROJECT
Refer To E. C. Special Provisions
for Special Considerations.

HIGH QUALITY WATER(S) EXIST
ON THIS PROJECT
High Quality Water Zone(s) Exist
From Sta. Begin
to Sta. End
Refer To E. C. Special Provisions
for Special Considerations.

GRAPHIC SCALE



THESE EROSION AND SEDIMENT
CONTROL PLANS COMPLY WITH
THE REGULATIONS SET FORTH
BY THE NCG-010000 GENERAL
CONSTRUCTION PERMIT EFFECTIVE
AUGUST 3, 2011 AND ISSUED BY
THE NORTH CAROLINA DEPARTMENT
OF ENVIRONMENT AND NATURAL
RESOURCES DIVISION OF WATER
RESOURCES.

Prepared In the Office of:

TGS ENGINEERS
804-C N. LAFAYETTE ST.
SHELBY, NC 28150

2012 STANDARD SPECIFICATIONS

Designed by:

ANDREW H. COCHRANE, PE 3015
NAME LEVEL III CERTIFICATION NO.

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.

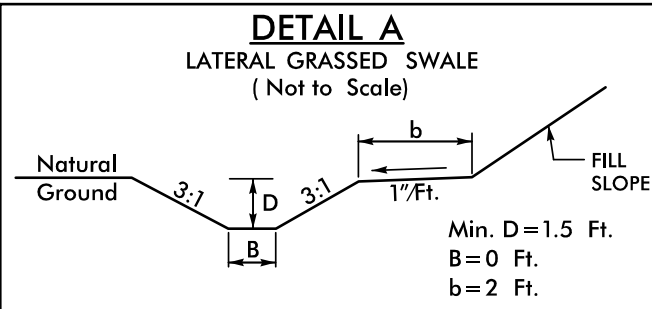
1604.01	Railroad Erosion Control Detail	1632.01	Rock Inlet Sediment Trap Type A
1605.01	Temporary Silt Fence	1632.02	Rock Inlet Sediment Trap Type B
1606.01	Special Sediment Control Fence	1632.03	Rock Inlet Sediment Trap Type C
1607.01	Gravel Construction Entrance	1633.01	Temporary Rock Silt Check Type A
1622.01	Temporary Berms and Slope Drains	1633.02	Temporary Rock Silt Check Type B
1630.01	Riser Basin	1633.03	Temporary Rock Silt Check Type C
1630.02	Silt Basin Type A	1634.01	Temporary Rock Sediment Dam Type A
1630.03	Temporary Silt Ditch	1634.02	Temporary Rock Sediment Dam Type B
1630.04	Stilling Basin	1635.01	Rock Pipe Inlet Sediment Trap Type A
1630.05	Temporary Diversion	1635.02	Rock Pipe Inlet Sediment Trap Type B
1630.06	Special Stilling Basin	1640.01	Coir Fiber Wattle
1631.01	Matting Installation	1645.01	Temporary Stream Crossing

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

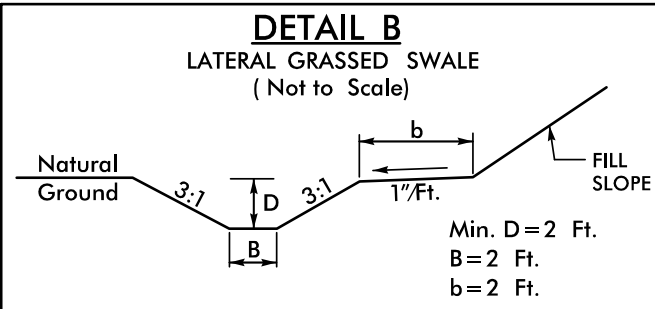
PROJECT REFERENCE NO.	SHEET NO.
U-5866	EC-2
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SOIL STABILIZATION TIMEFRAMES

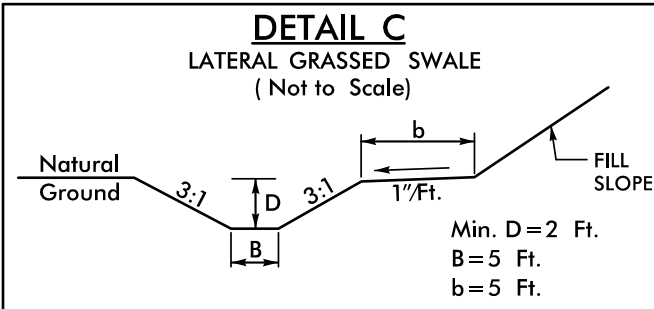
SITE DESCRIPTION	STABILIZATION TIME	TIMEFRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS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



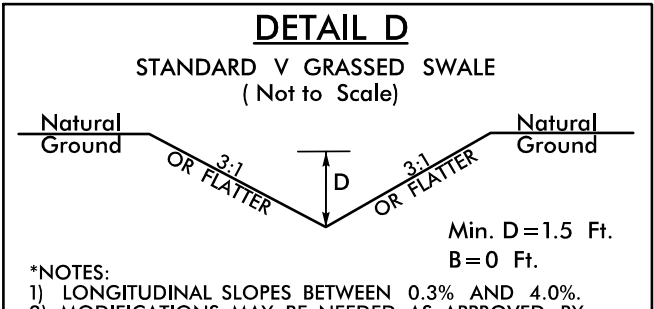
FROM -L- STA. 16+53 TO 18+00 RT
DDE: EST. 120 CY
FROM -L- STA. 13+00 TO 16+50 LT
DDE: EST. 210 CY
(SEE DITCH GRADES, SHEET NO.6)



FROM -L- STA. 13+50 TO 16+53 RT
DDE: EST. 260 CY
(SEE DITCH GRADES, SHEET NO.6)



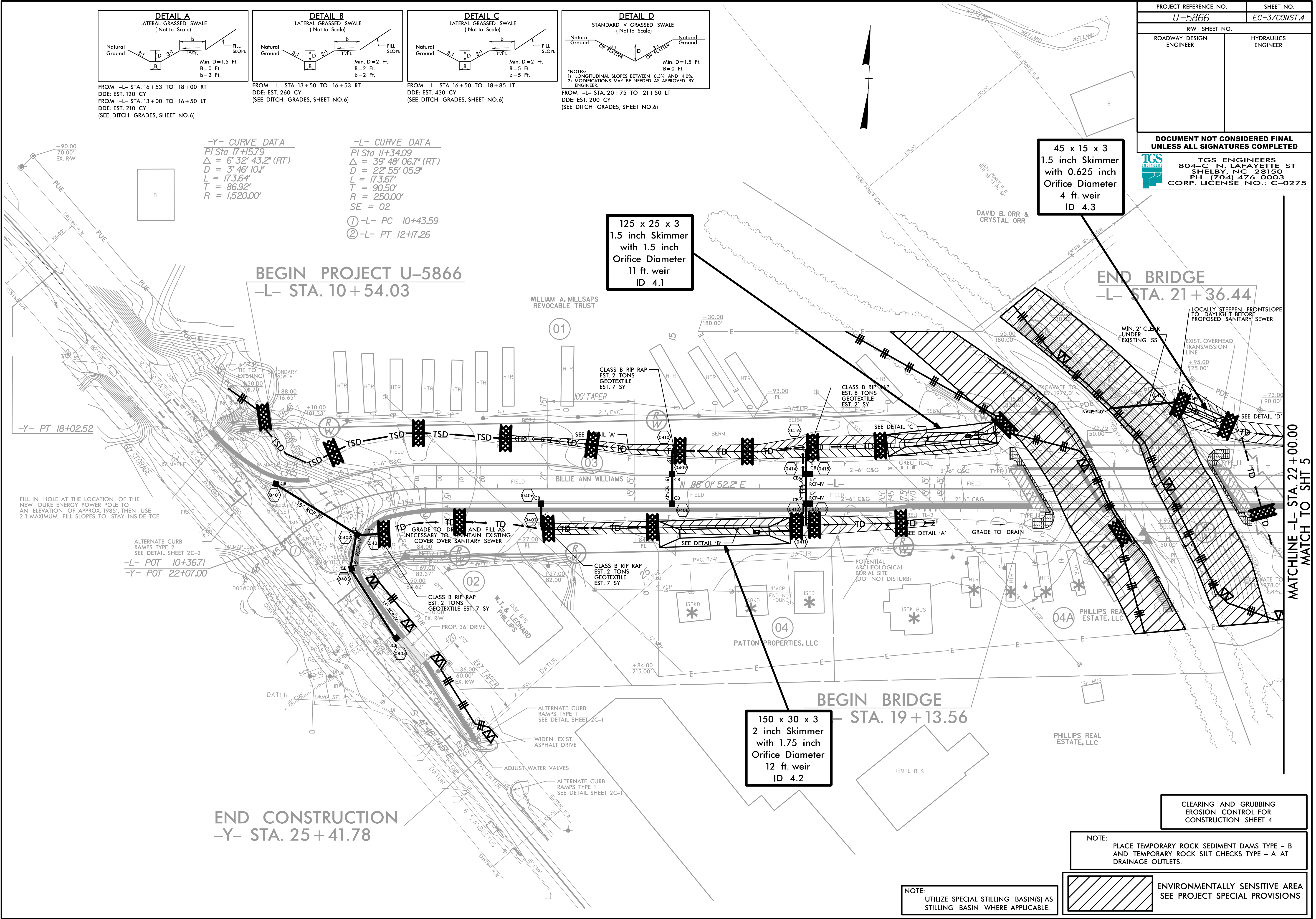
FROM -L- STA. 16+50 TO 18+85 LT
DDE: EST. 430 CY
(SEE DITCH GRADES, SHEET NO.6)



FROM -L- STA. 20+75 TO 21+50 LT
DDE: EST. 200 CY
(SEE DITCH GRADES, SHEET NO.6)

-Y- CURVE DATA
PI Sta 17+15.79
 $\Delta = 6^\circ 32' 43.2''$ (RT)
D = 3' 46' 10.1"
L = 173.64'
T = 86.92'
R = 1,520.00'

-L- CURVE DATA
PI Sta 11+34.09
 $\Delta = 39^\circ 48' 06.7''$ (RT)
D = 22' 55' 05.9"
L = 173.67'
T = 90.50'
R = 250.00'
SE = 02
① -L- PC 10+43.59
② -L- PT 12+17.26



PROJECT REFERENCE NO. U-5866		SHEET NO. EC-3/CONST.4	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
TGS ENGINEERS 804-C N. LAFAYETTE ST SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275			

45 x 15 x 3
1.5 inch Skimmer
with 0.625 inch
Orifice Diameter
4 ft. weir
ID 4.3

125 x 25 x 3
1.5 inch Skimmer
with 1.5 inch
Orifice Diameter
11 ft. weir
ID 4.1

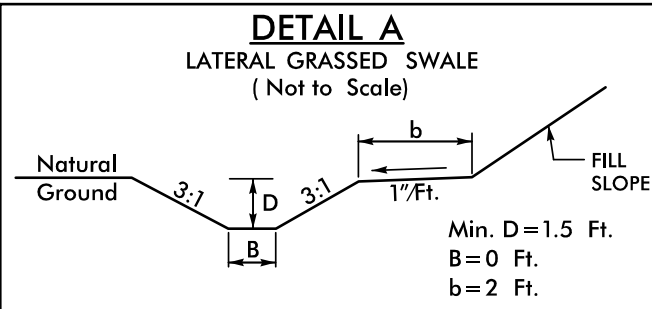
150 x 30 x 3
2 inch Skimmer
with 1.75 inch
Orifice Diameter
12 ft. weir
ID 4.2

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

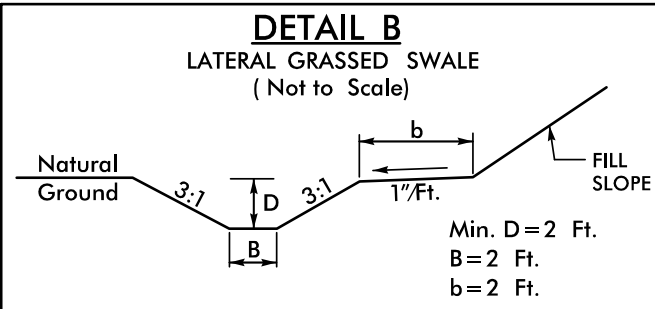
ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

NOTE:
UTILIZE SPECIAL STILLING BASIN(S) AS
STILLING BASIN WHERE APPLICABLE.

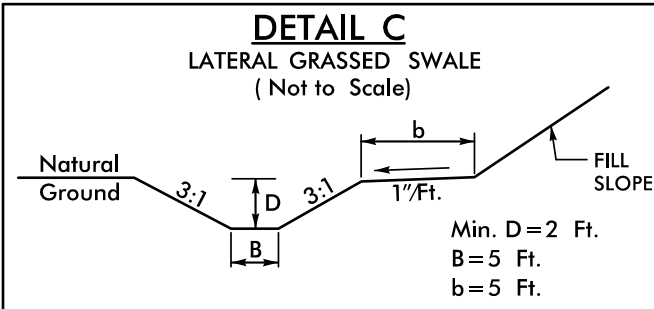
CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 4



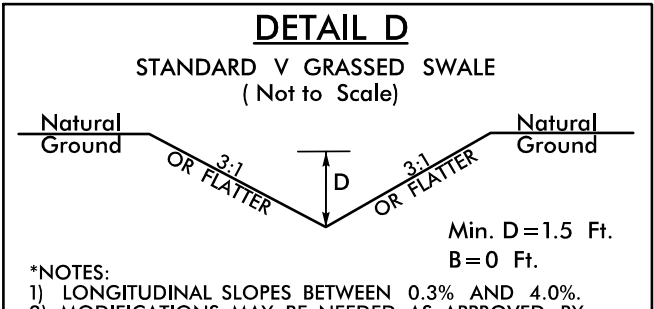
FROM -L- STA. 16+53 TO 18+00 RT
DDE: EST. 120 CY
FROM -L- STA. 13+00 TO 16+50 LT
DDE: EST. 210 CY
(SEE DITCH GRADES, SHEET NO.6)



FROM -L- STA. 13+50 TO 16+53 RT
DDE: EST. 260 CY
(SEE DITCH GRADES, SHEET NO.6)



FROM -L- STA. 16+50 TO 18+85 LT
DDE: EST. 430 CY
(SEE DITCH GRADES, SHEET NO.6)



FROM -L- STA. 20+75 TO 21+50 LT
DDE: EST. 200 CY
(SEE DITCH GRADES, SHEET NO.6)

-Y- CURVE DATA
PI Sta 17+15.79
 $\Delta = 6^\circ 32' 43.2''$ (RT)
D = 3' 46' 10.1"
L = 173.64'
T = 86.92'
R = 1,520.00'

-L- CURVE DATA
PI Sta 11+34.09
 $\Delta = 39^\circ 48' 06.7''$ (RT)
D = 22' 55' 05.9"
L = 173.67'
T = 90.50'
R = 250.00'
SE = 02
① -L- PC 10+43.59
② -L- PT 12+17.26

BEGIN PROJECT U-5866
-L- STA. 10+54.03

END BRIDGE
-L- STA. 21+36.44

END CONSTRUCTION
-Y- STA. 25+41.78

Place Matting for Erosion Control on Slope as Work Allows.
-L- Sta. 11+00 to 15+00 LT
-L- Sta. 11+50 to 15+00 RT
-L- Sta. 18+50 to 19+13 LT
-L- Sta. 18+50 to 19+13 RT
-L- Sta. 21+36 to 22+50 LT

NOTE:
UTILIZE SPECIAL STILLING BASIN(S) AS STILLING BASIN WHERE APPLICABLE.

INSTALL MATTING IN THE PROPOSED DITCH LINE
-L- STA 20+75 TO 21+50 LT
EST. 85 SY

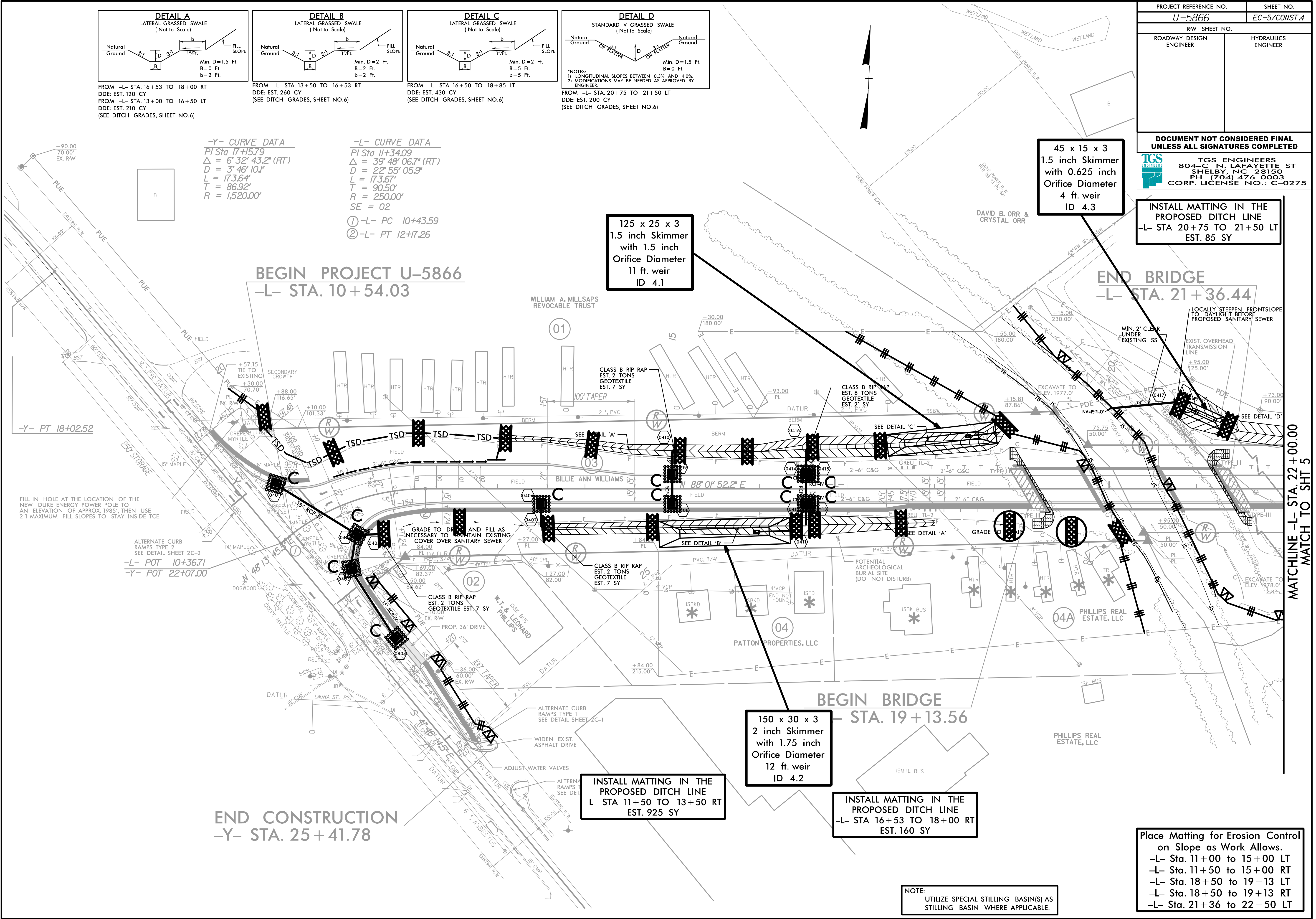
125 x 25 x 3
1.5 inch Skimmer
with 1.5 inch
Orifice Diameter
11 ft. weir
ID 4.1

150 x 30 x 3
2 inch Skimmer
with 1.75 inch
Orifice Diameter
12 ft. weir
ID 4.2

INSTALL MATTING IN THE PROPOSED DITCH LINE
-L- STA 11+50 TO 13+50 RT
EST. 925 SY

INSTALL MATTING IN THE PROPOSED DITCH LINE
-L- STA 16+53 TO 18+00 RT
EST. 160 SY

45 x 15 x 3
1.5 inch Skimmer
with 0.625 inch
Orifice Diameter
4 ft. weir
ID 4.3

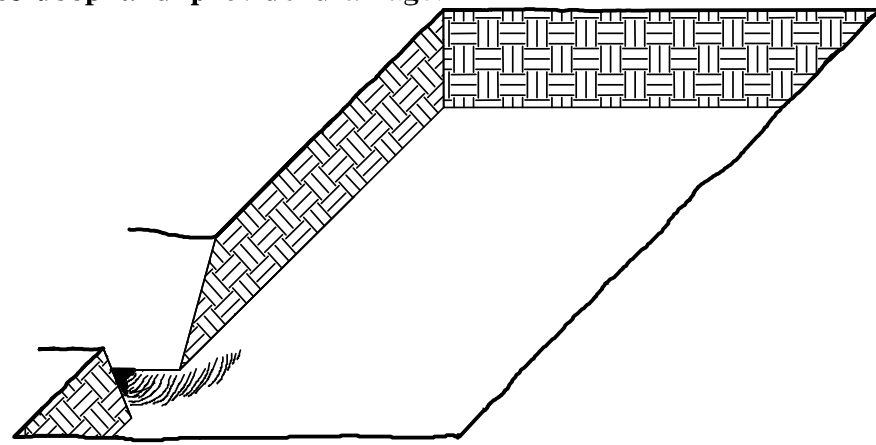


STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-5866	RF-1	
STATE PROJ.NO.	P.A.PROJ.NO.	DESCRIPTION	

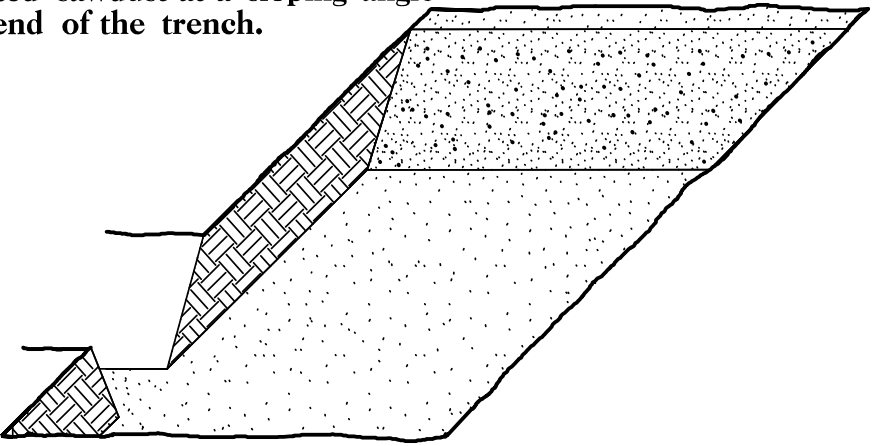
PLANTING DETAILS
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

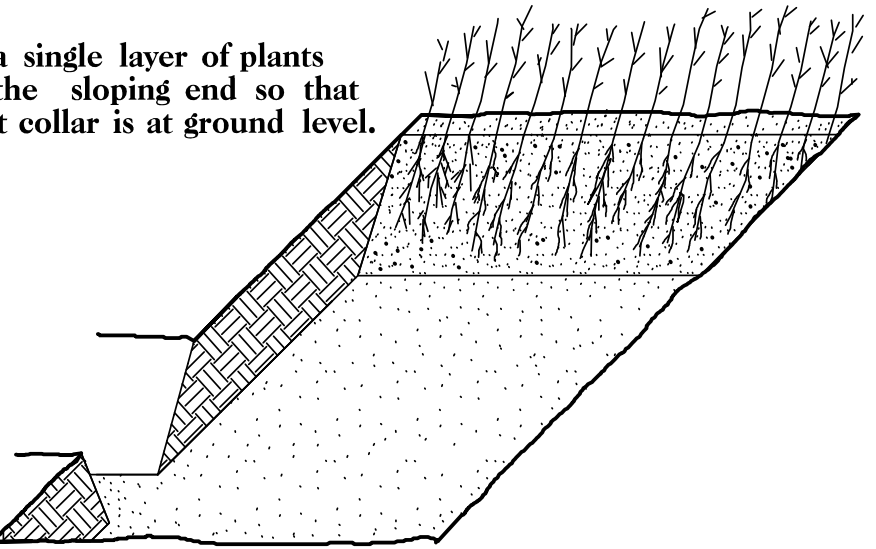
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



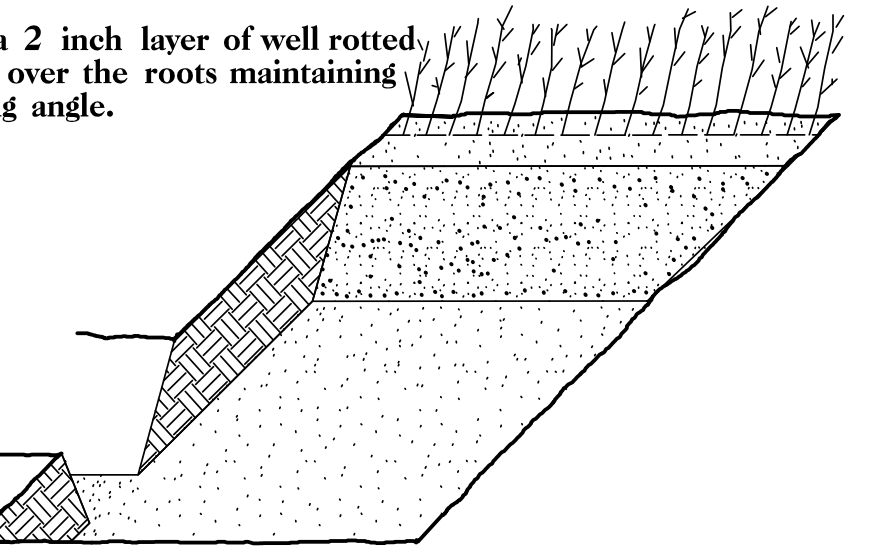
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



4. Place a single layer of plants against the sloping end so that the root collar is at ground level.

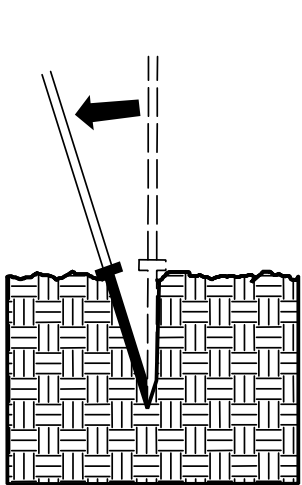


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

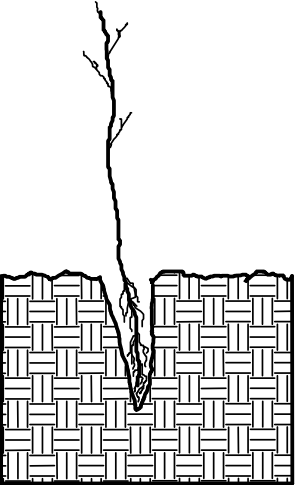


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

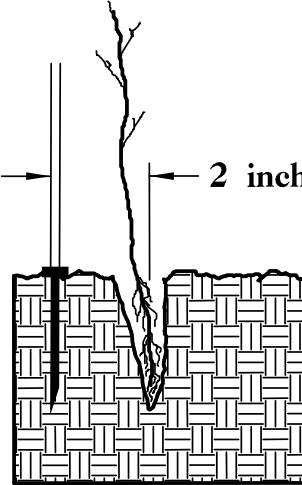
DOUBLE PLANTING METHOD
USING THE K3C PLANTING BAR



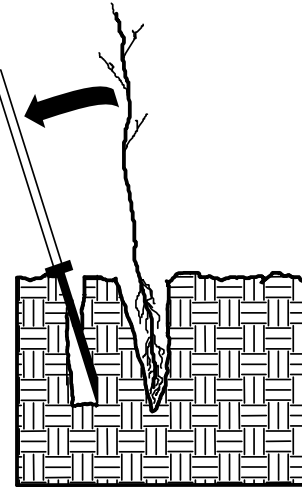
1. Insert planting bar as shown and pull handle toward planter.



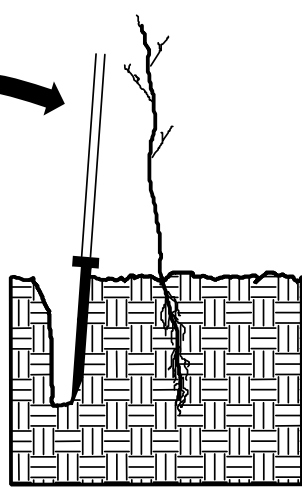
2. Remove planting bar and place seedling at correct depth.



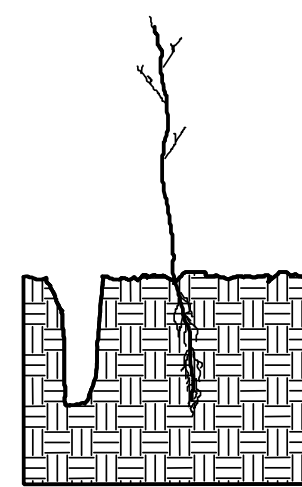
3. Insert planting bar 2 inches toward planter from seedling.



4. Pull handle of bar toward planter, firming soil at bottom.



5. Push handle forward firming soil at top.



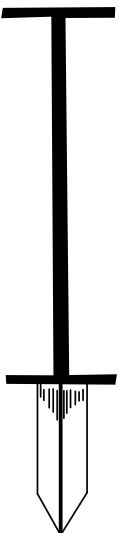
6. Leave compaction hole open. Water thoroughly.

PLANTING NOTES:

PLANTING BAG
During planting, seedlings shall be kept in a moist canvas bag or similar container to prevent the root systems from drying.



K3C PLANTING BAR
Planting bar shall have a blade with a triangular cross section, and shall be 12 inches long, 4 inches wide and 1 inch thick at center.



ROOT PRUNING
All seedlings shall be root pruned, if necessary, so that no roots extend more than 10 inches below the root collar.

REFORESTATION

- TREE REFORESTATION SHALL BE PLANTED 6 FT. TO 10 FT. ON CENTER, RANDOM SPACING, AVERAGING 8 FT. ON CENTER, APPROXIMATELY 680 PLANTS PER ACRE.

REFORESTATION

MIXTURE, TYPE, SIZE, AND FURNISH SHALL CONFORM TO THE FOLLOWING:

25% LIRIODENDRON TULIPIFERA	TULIP POPLAR	12 in - 18 in 3R
25% PLATANUS OCCIDENTALIS	SYCAMORE	12 in - 18 in 3R
25% FRAXINUS PENNSYLVANICA	GREEN ASH	12 in - 18 in 3R
25% BETULA NIGRA	RIVER BIRCH	12 in - 18 in 3R

REFORESTATION DETAIL SHEET

N.C.D.O.T. - ROADSIDE ENVIRONMENTAL UNIT

I:\V\2017\X:\V\2017\U-5866\Traffic\Signing\CADD\Signing Layout Plans\U-5866_Sgn-SON_01(TSH).dgn
User:smelvin

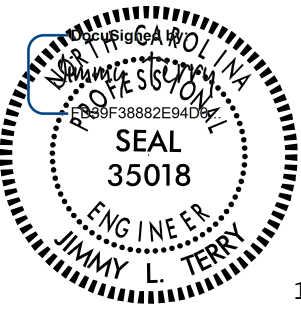
T.I.P.: U-5866

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

SIGNING PLAN

GRAHAM COUNTY

LOCATION: NEW ROUTE FROM US 129 (RODNEY ORR BYP) TO
ROBBINSVILLE HIGH SCHOOL/MIDDLE SCHOOL CAMPUS

PROJECT REFERENCE NO.	SHEET NO.
U-5866	SIGN-1
APPROVED: _____	
DATE: _____	
SEAL	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

ROADWAY STANDARD DRAWING

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" -
PROJECT SERVICES UNIT - 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
901.50	ARROWS AND SHIELDS
904.10	ORIENTATION OF GROUND MOUNTED SIGNS
904.50	MOUNTING OF TYPE 'D', 'E' AND 'F' SIGNS ON 'U' CHANNEL POSTS

GENERAL NOTES

- . SIGNS FURNISHED BY CONTRACTOR
- . IF REMOVAL OR RELOCATION OF SIGNS ON PRIVATE STREET (NON-STATE MAINTAINED) IS REQUIRED DUE TO CONSTRUCTION, THE CONTRACTOR SHALL INFORM THE ENGINEER. THE WORK WILL BE COMPLETED BY OTHERS.
- . WHEN NOT STATIONED OR DIMENSIONED ON PLANS, ALL 'E' AND 'F' SIGNS SHALL BE FIELD LOCATED BY THE ENGINEER
- . ALL EXISTING SIGNS ON "U" CHANNEL POST WITHIN THE PROJECT LIMITS SHALL BE REMOVED AND DISPOSED OF UNLESS OTHERWISE NOTED ON PLANS.
- . WHEN EXISTING SIGNS ARE REMOVED AND INSTALLED ON NEW SUPPORTS, THE RE-ERECTION SHALL IMMEDIATELY FOLLOW THE REMOVAL.
- . THE BACKGROUND FOR TYPE E & F SIGNS SHALL BE TYPE C REFLECTIVE SHEETING.
- . SEE ROADWAY PLANS FOR GUARD/GUIDE RAIL DETAILS.

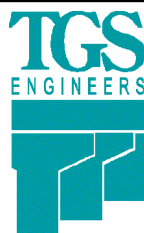
SUMMARY OF QUANTITIES

ITEM NO.		ITEM DESCRIPTION	QUANTITY	UNIT
DESC. NO.	SECT. NO.			
4025000000	901	CONTRACTOR FURNISHED, TYPE E SIGN	95	S.F.
4025000000	901	CONTRACTOR FURNISHED, TYPE F SIGN	40	S.F.
4072000000	903	SUPPORTS, 3 LB STEEL U-CHANNEL	280	L.F.
4102000000	904	SIGN ERECTION, TYPE E	13	EA.
4108000000	904	SIGN ERECTION, TYPE F	2	EA.
4155000000	907	DISPOSAL OF SIGN SYSTEM, U-CHANNEL	3	EA.

INDEX

SHEET NO.	DESCRIPTION
SIGN-1	TITLE SHEET
SIGN-2	E AND F SHEETS
SIGN-3-4	SIGNING PLAN SHEETS

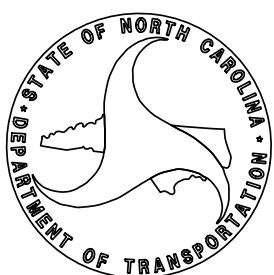
PLANS PREPARED FOR N.C.D.O.T. BY:



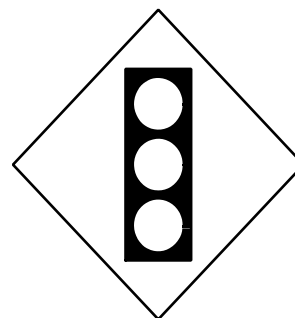
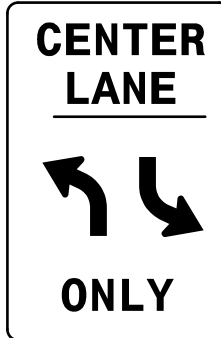
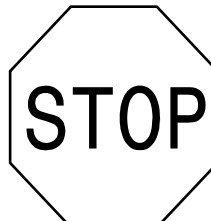
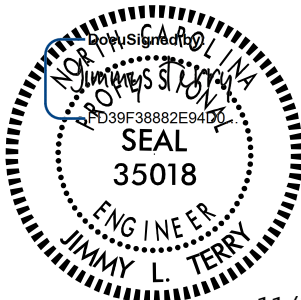
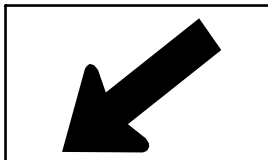
TGS ENGINEERS
804-C N. LAFAYETTE ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

JIMMY L. TERRY, PE PROJECT ENGINEER

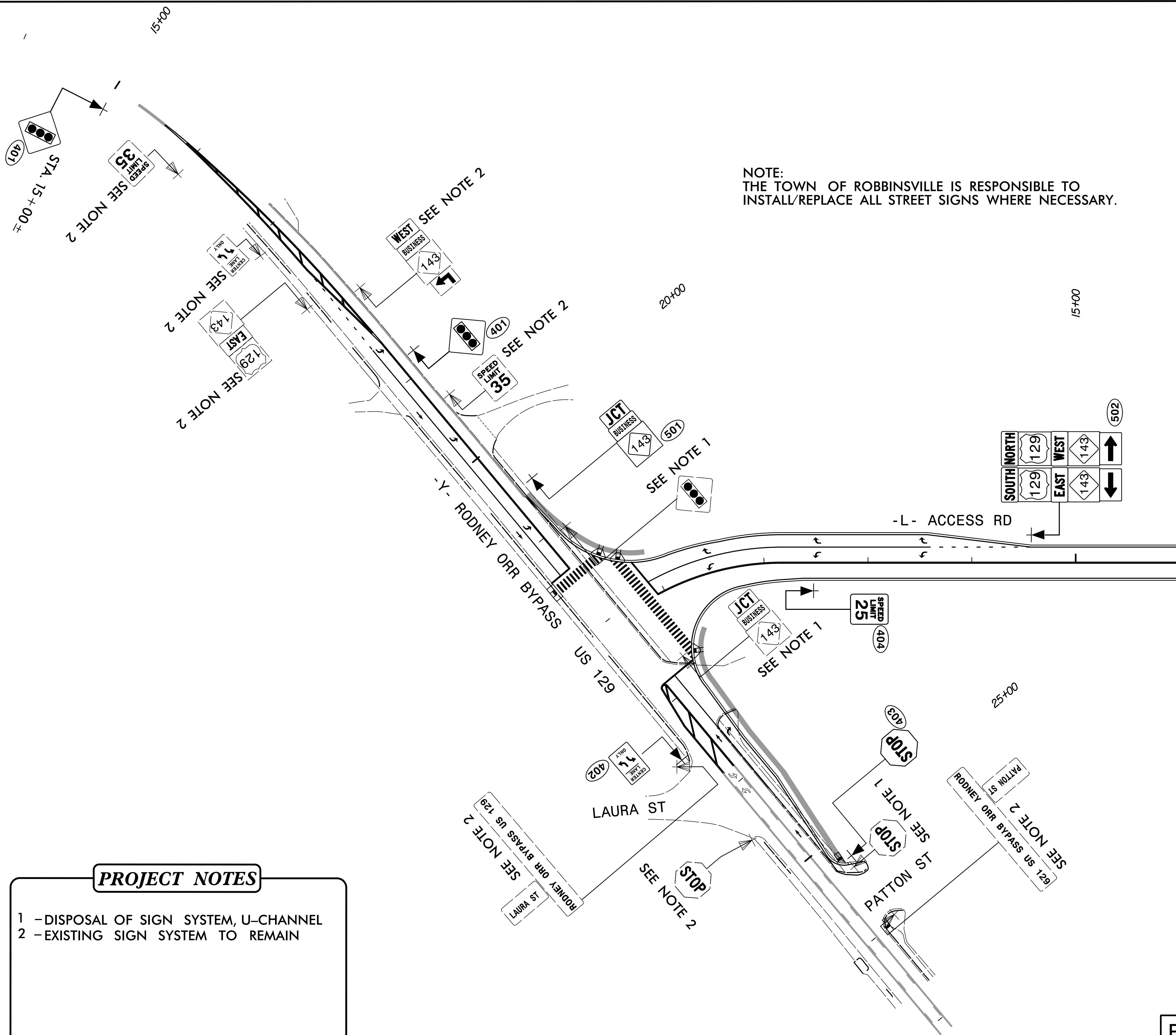
SANDRA G. MELVIN DESIGN TECHNICIAN



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User:jsm\van

401 QUANTITY REQ'D <u>3</u>  36 X 36 W3-3 ONE "U" POST PER SIGN		402 QUANTITY REQ'D <u>1</u>  24 X 36 R3-9b ONE "U" POST PER SIGN		403 QUANTITY REQ'D <u>3</u>  30 X 30 R1-1 ONE "U" POST PER SIGN		404 QUANTITY REQ'D <u>2</u>  24 X 30 R2-1 ONE "U" POST PER SIGN				501 QUANTITY REQ'D JCT BUSINESS 143 1 - 21" x 15" 1 - 24" x 12" 1 - 24" x 24" ONE "U" POSTS		PROJECT REFERENCE NO. U-5866 SHEET NO. SIGN-2 APPROVED: _____ DATE: _____ SEAL  11/2/2017 DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED TGS ENGINEERS 804-C N. LAFAYETTE ST SHELBY, NC 28150 PH: (704) 476-0003 CORP. LICENSE NO.: C-0275	
405 QUANTITY REQ'D <u>4</u>  36 X 36 S1-1 YELLOW/GREEN REFLECTIVE SHEETING ONE "U" POST PER SIGN		406 QUANTITY REQ'D <u>1</u>  24 X 8 S4-3 YELLOW/GREEN REFLECTIVE SHEETING MOUNT BELOW SIGN 405 IN 1 INSTALLATION		407 QUANTITY REQ'D <u>1</u>  24 X 12 W16-9P YELLOW/GREEN REFLECTIVE SHEETING MOUNT BELOW SIGN 405 IN 1 INSTALLATION		408 QUANTITY REQ'D <u>2</u>  24 X 12 W16-7 YELLOW/GREEN REFLECTIVE SHEETING MOUNT BELOW SIGN 405 IN 2 INSTALLATIONS				502 QUANTITY REQ'D SOUTH 129 EAST 143 ← NORTH 129 WEST 143 → 2 - 24" x 12" 2 - 24" x 24" 2 - 24" x 12" 2 - 24" x 24" 2 - 21" x 15" TWO "U" POSTS			

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User:smelvin



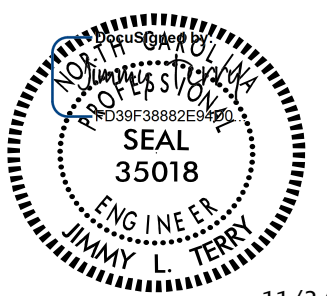
NOTE:
THE TOWN OF ROBBINSVILLE IS RESPONSIBLE TO
INSTALL/REPLACE ALL STREET SIGNS WHERE NECESSARY.

PROJECT NOTES

- 1 - DISPOSAL OF SIGN SYSTEM, U-CHANNEL
- 2 - EXISTING SIGN SYSTEM TO REMAIN

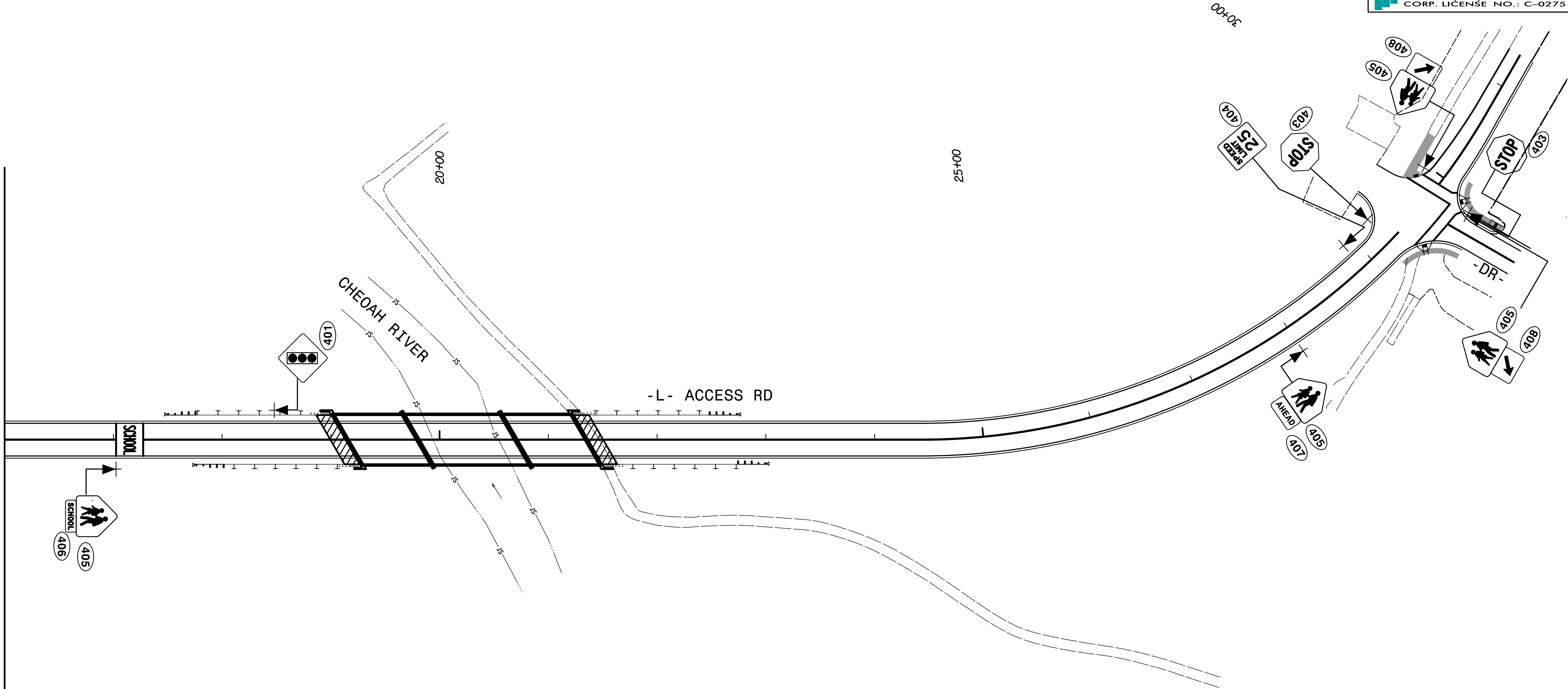
EXISTING AND PROPOSED SIGNS
-Y- STA. 15+00 TO 26+50
-L- STA. 10+54.03 TO 16+00

NAD 83/2011

TIP NO. U-5866	SHEET NO. SIGN-3
APPROVED: _____	
DATE: _____	
SEAL  11/2/2017	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
TGS ENGINEERS 804-C N. LAFAYETTE ST SHELBY, NC 28150 PH: (704) 476-0003 CORP. LICENSE NO.: C-0275	

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X:\N0000T\U-5866\Traffic\Signing\CADD\Signing Layout Plans\U-5866_Sgn_S0N_04.dgn
User:smelvin

MATCH LINE STA. -L- 16+00.00
MATCH TO SHEET SIGN-3

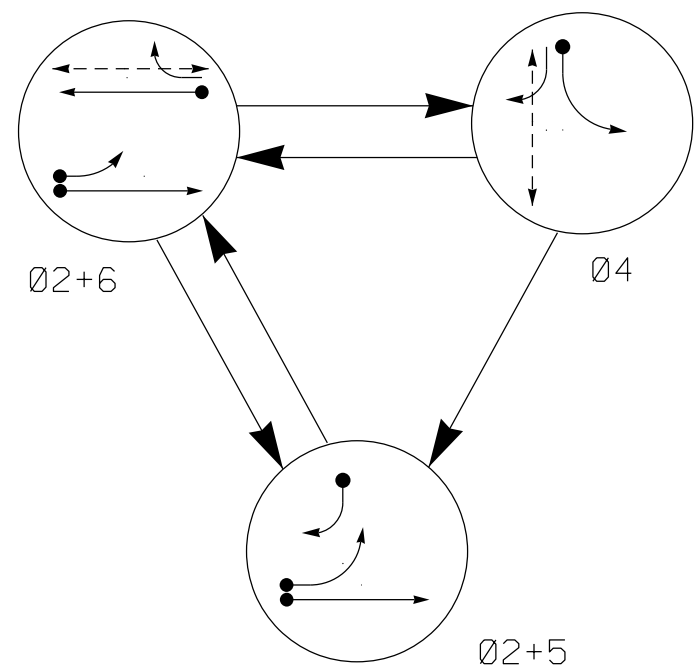


NAD 83/2011

TIP NO. U-5866	SHEET NO. SIGN-4
APPROVED: _____	
DATE: _____	
SEAL  11/2/2017	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
TGS ENGINEERS 804-C N. LAFAYETTE ST SHELBY, NC 28150 PH: (704) 476-0003 CORP. LICENSE NO.: C-0275	

PROPOSED SIGNS
-L- STA. 16+00 TO 31+33

PHASING DIAGRAM



SIGNAL FACE	PHASE			
	Ø 2 + 5	Ø 2 + 6	Ø 4	FLASH
21, 22	G	G	R	Y
41	R	R	G	R
42	R	R	G	R
51	R	R	G	R
61, 62	R	G	R	Y
P41,P42	DW	DW	W	DRK
P61, P62	DW	W	DW	DRK

OASIS 2070 LOOP & DETECTOR INSTALLATION CHART											
INDUCTIVE LOOPS					DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP
2A	6X6	70	5	Y	2	Y	Y	-	-	-	Y
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	3	Y
5A	6X40	0	2-4-2	Y	5	Y	Y	-	-	15	Y
5B	6X40	0	2-4-2	Y	5	Y	Y	-	-	15	Y
6A	6X6	70	3	Y	6	Y	Y	-	-	-	Y

3 Phase Fully Actuated (Isolated)

NOTES

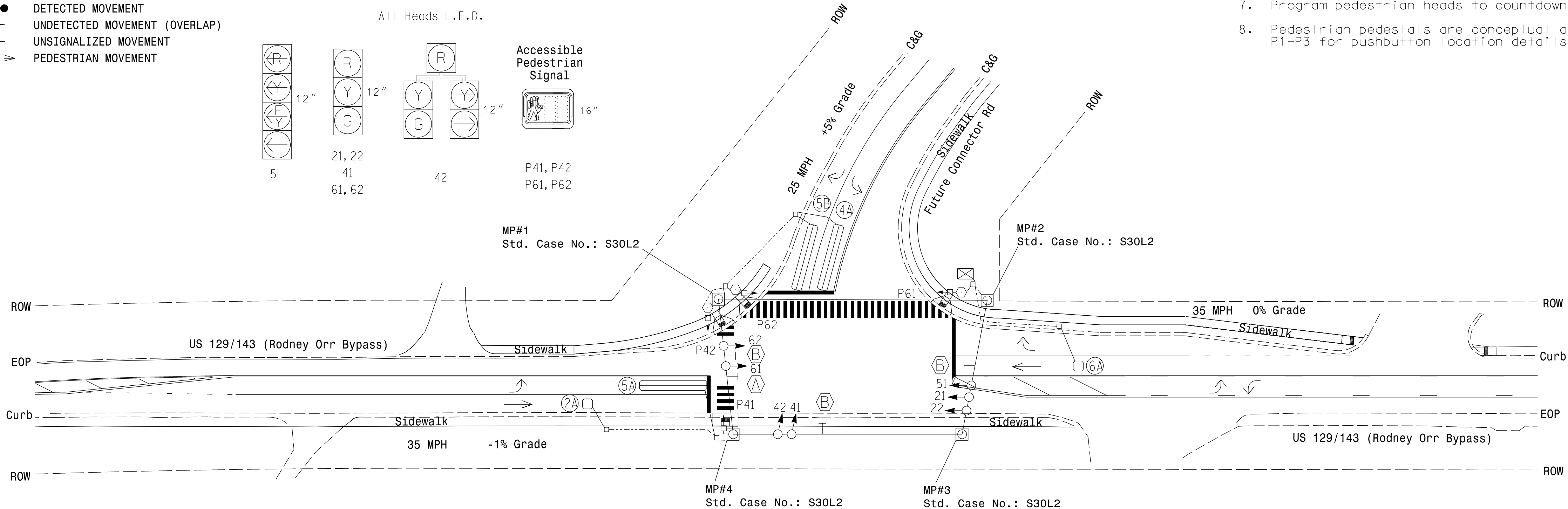
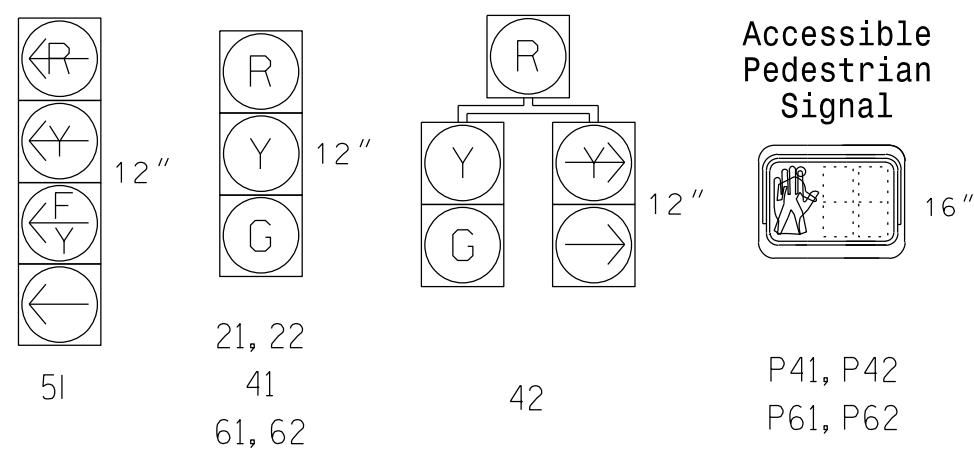
- Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012 and all applicable sections of the latest version of the generic Project Special Provisions. The PSP can be accessed at the following website: <http://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx>
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 5 may be lagged.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing 'Don't Walk' time only.
- Pedestrian pedestals are conceptual and shown for reference only. See sheets P1-P3 for pushbutton location details.

PHASING DIAGRAM DETECTION LEGEND

- DETECTED MOVEMENT
- ◄ UNDETECTED MOVEMENT (OVERLAP)
- ◄-- UNSIGNALIZED MOVEMENT
- ◄--> PEDESTRIAN MOVEMENT

SIGNAL FACE I.D.

All Heads L.E.D.



LEGEND

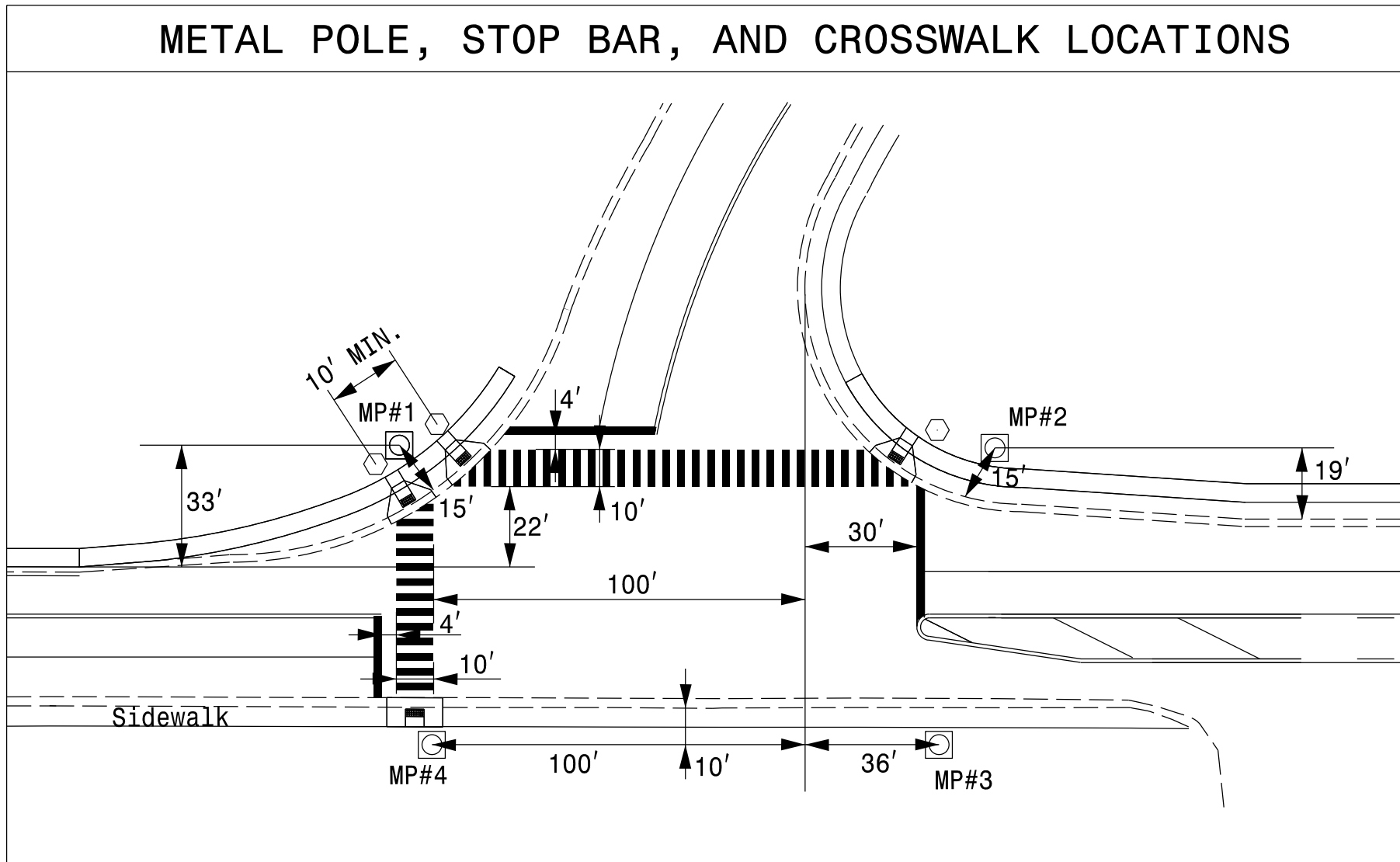
PROPOSED	EXISTING
○→ Traffic Signal Head	●→ Traffic Signal Head
↓ Pedestrian Signal Head With Push Button & Sign	↓ Pedestrian Signal Head With Push Button & Sign
⊗ Inductive Loop Detector	⊗ Inductive Loop Detector
□ Junction Box	□ Junction Box
□ Oversize Junction Box	□ Oversize Junction Box
--- 2-in Underground Conduit	--- 2-in Underground Conduit
--- Right of Way	--- Right of Way
→ Directional Arrow	→ Directional Arrow
○ Metal Strain Pole	○ Metal Strain Pole
○ Type II Signal Pedestal	○ Type II Signal Pedestal
△ Curb Ramp	N/A
⊗ No U-Turn Sign (R 3-4)	⊗ No U-Turn Sign (R 3-4)
⊗ Street Name Sign (D3-1)	⊗ Street Name Sign (D3-1)

OASIS 2070 TIMING CHART

FEATURE	PHASE			
	2	4	5	6
Min Green 1 *	10	7	7	10
Extension 1 *	3.0	2.0	2.0	3.0
Max Green 1 *	45	25	15	45
Yellow Clearance	3.9	3.0	3.0	3.9
Red Clearance	2.6	2.9	3.1	2.6
Red Revert	2.0	2.0	2.0	2.0
Walk 1 *	-	7	-	7
Don't Walk 1	-	13	-	31
Advance Walk Time	-	-	-	-
Seconds Per Actuation *	-	-	-	-
Max Variable Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Recall Mode	MIN RECALL	-	-	MIN RECALL
Vehicle Call Memory	YELLOW	-	-	YELLOW
Dual Entry	-	-	-	-
Simultaneous Gap	ON	ON	ON	ON

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown.
Min Green for all other phases should not be lower than 4 seconds.

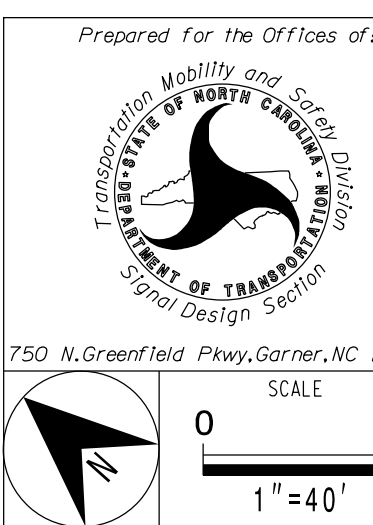
METAL POLE, STOP BAR, AND CROSSWALK LOCATIONS



ACCESSIBLE PEDESTRIAN SIGNAL OPERATION

SIGNAL FACE	VOICE TONES	INTERVAL	SPEECH MESSAGE
P41	- X	Walk	(Rapid Ticks)
P41	- X	Flashing Don't Walk/Don't Walk	-
P42	- X	Walk	(Rapid Ticks)
P42	- X	Flashing Don't Walk/Don't Walk	-
P61	- X	Walk	(Rapid Ticks)
P61	- X	Flashing Don't Walk/Don't Walk	-
P62	- X	Walk	(Rapid Ticks)
P62	- X	Flashing Don't Walk/Don't Walk	-

New Installation



NC Dept of Transportation
Division of Highways

Final Drawing Date: _____

ITS & Signals Unit

US 129/143 (Rodney Orr Bypass)
at
Future Connector Rd

Division 14 Graham County Robbinsville

PLAN DATE: Apr. 2017 REVIEWED BY: J.L. Lewis

PREPARED BY: J. Ma VHB PROJECT NO.: 38536.05

REVISIONS INIT. DATE

SIGNATURE DATE

SIG. INVENTORY NO. 14-1299

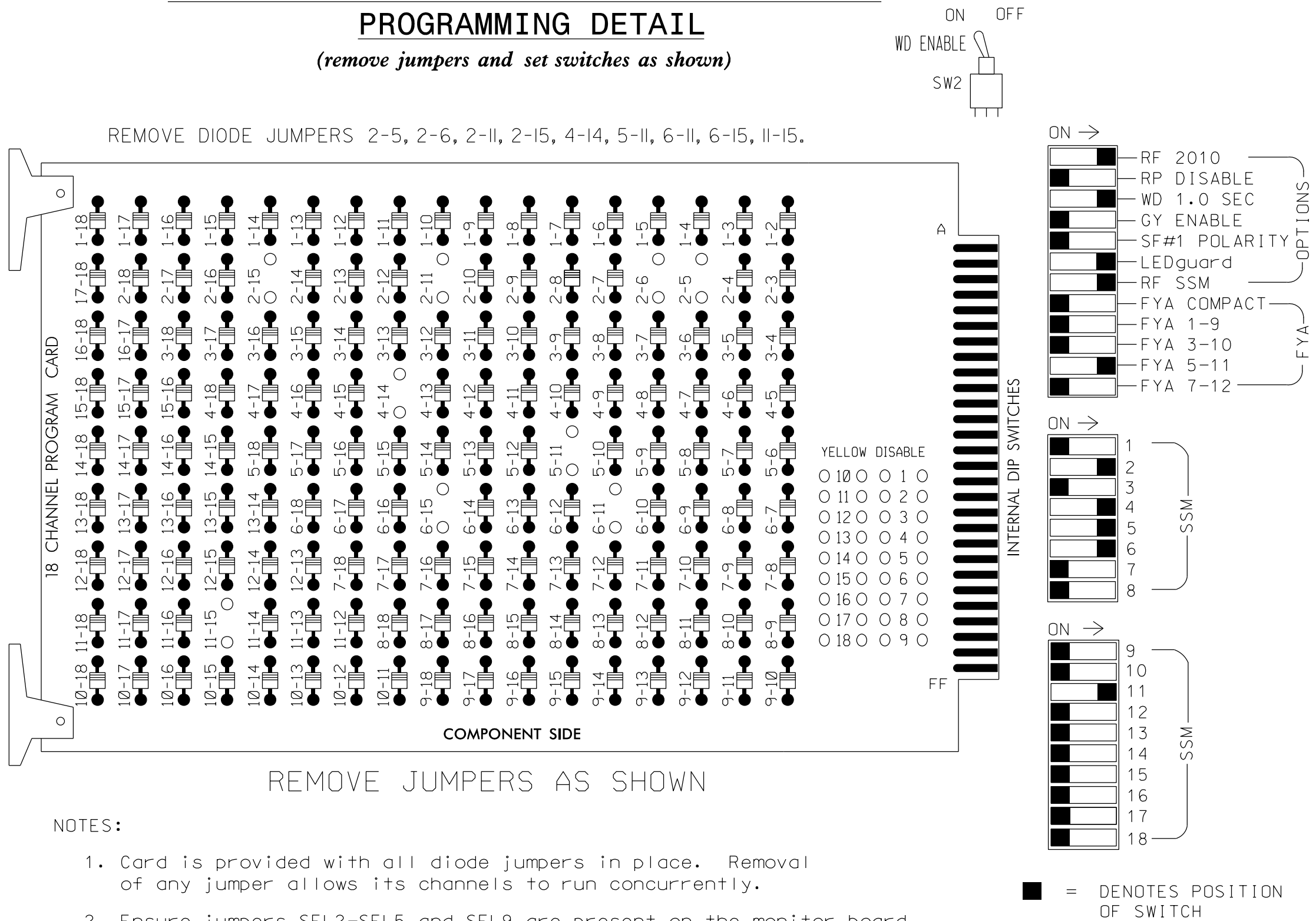


DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



EDI MODEL 2018ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Enable Simultaneous Gap-Out for all phases.
- Program phases 2 and 6 for Start Up In Green.
- Program phases 4 and 6 for "STARTUP PED CALL".
- Program phases 2 and 6 for Yellow Flash.

EQUIPMENT INFORMATION

CONTROLLER.....2070
CABINET.....332 /W/ AUX
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
LOAD SWITCHES USED.....S2,S5,S6,S7,S8,S9,AUX S4
PHASES USED.....2,4,4PED,5,6,6PED
OVERLAP "A".....NOT USED
OVERLAP "B".....NOT USED
OVERLAP "C".....5+6
OVERLAP "D".....NOT USED

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO. CMU CHANNEL NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,42	P41, P42	51★	42	61,62	P61, P62	NU	NU	NU	NU	NU	51★	NU	NU
RED		128			101			*	134									
YELLOW		129			102				135									
GREEN		130			103				136									
RED ARROW																	A114	
YELLOW ARROW								132									A115	
FLASHING YELLOW ARROW																	A116	
GREEN ARROW							133	133										
⤴						104				119								
⤵						106				121								

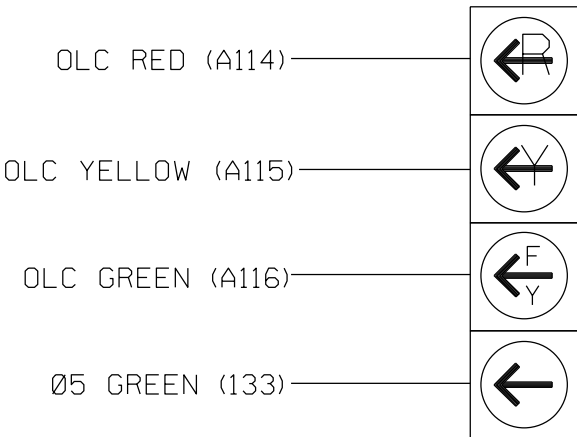
NU = Not Used

* Denotes install load resistor. See Load Resistor Installation Detail this sheet.

★ See pictorial of head wiring in detail below.

4 SECTION FYA PPLT SIGNAL WIRING DETAIL

(wire signal heads as shown)



51

NOTE

- The sequence display for this signal requires special logic programming. See sheet 2 of 2 for programming instructions.

INPUT FILE POSITION LAYOUT

(front view)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE U	S	Ø 2	S	Ø 4	S	Ø 4	S	S	S	S	S	NOT USED	Ø6PED	FS
"I"	2A		DC ISOLATOR	DC ISOLATOR		4A						DC ISOLATOR	DC ISOLATOR	DC ISOLATOR
L	NOT USED		DC ISOLATOR	DC ISOLATOR		NOT USED						DC ISOLATOR	DC ISOLATOR	DC ISOLATOR
FILE U	Ø 5	Ø 5	S	S	S	S	S	S	S	S	S	S	S	S
"J"	5A	5B												
L	NOT USED	Ø 6												
	6A													

EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

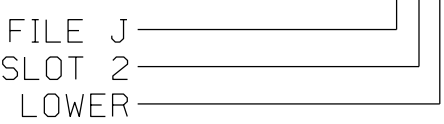
INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			3
5A ¹	TB3-1,2	J1U	55	17	5	5	Y	Y			15
	-	I4U	47	9	22	2	Y	Y			
5B	TB3-5,6	J2U	40	2	6	5	Y	Y			15
6A	TB3-7,8	J2L	44	6	16	6	Y	Y			
PED PUSH BUTTONS											
P41,P42	TB8-5,6	I12L	69	31	PED 4	4 PED					
P61,P62	TB8-7,9	I13U	68	30	PED 6	6 PED					

NOTE:
INSTALL DC ISOLATORS
IN INPUT FILE SLOTS
112 AND 113.

¹Add jumper from J1-W to 14-W, on rear of input file.

INPUT FILE POSITION LEGEND: J2L



NC Dept of Transportation
Division of Highways

Final Drawing Date: _____

ITS & Signals Unit

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 14-1299
DESIGNED: Apr. 2017
SEALED: 04/28/2017
REVISED: N/A



New Installation - Electrical Detail Sheet 1 of 2

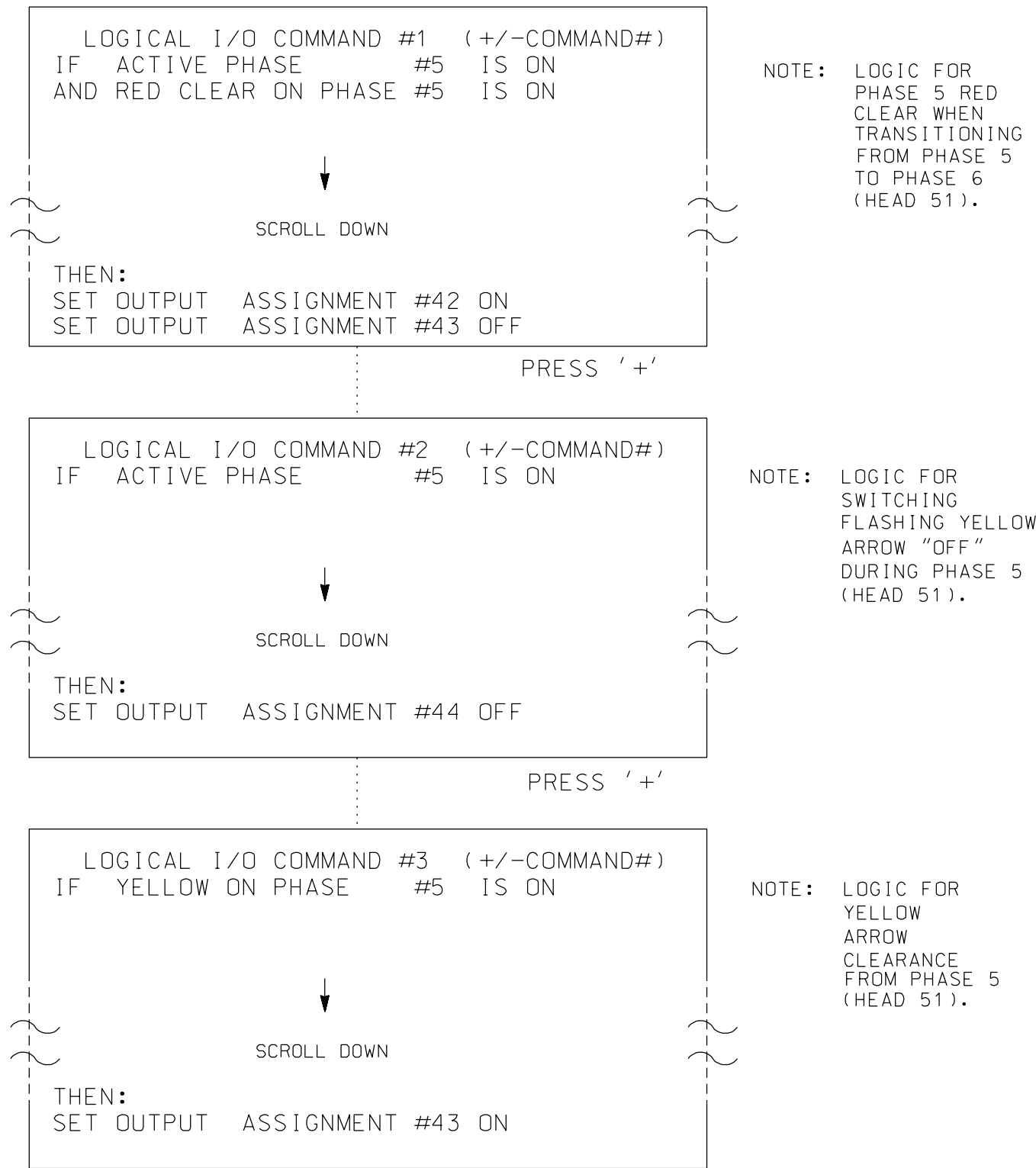
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING DETAILS FOR:	US 129/143 (Rodney Orr Bypass) at Future Connector Rd	
	Division 14	Graham County
	PLAN DATE: Apr. 2017	REVIEWED BY: J.L. Lewis
	PREPARED BY: J. Ma	VHB PROJECT NO.: 38536.05
	REVISIONS	INIT. DATE
Prepared for the Offices of:	Jianxin Ma	
Signature	DATE	
Sig. Inventory No.	14-1299	

LOGICAL I/O PROCESSOR PROGRAMMING DETAIL
TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE

(program controller as shown below)

- FROM MAIN MENU PRESS '2' (PHASE CONTROL), THEN '1' (PHASE CONTROL FUNCTIONS). SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1, 2, AND 3.
- FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).



LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

OUTPUT REFERENCE SCHEDULE

OUTPUT 42 = Overlap C Red
OUTPUT 43 = Overlap C Yellow
OUTPUT 44 = Overlap C Green

OVERLAP PROGRAMMING DETAIL

(program controller as shown below)

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN
'1' (VEHICLE OVERLAP SETTINGS).
PRESS '+' TWICE

PAGE 1: VEHICLE OVERLAP 'C' SETTINGS
PHASE: 12345678910111213141516
VEH OVL PARENTS: XX
VEH OVL NOT VEH:
VEH OVL NOT PED:
VEH OVL GRN EXT:
STARTUP COLOR: RED YELLOW GREEN
FLASH COLORS: RED YELLOW X GREEN
SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC).....0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0

NOTICE GREEN FLASH

OVERLAP PROGRAMMING COMPLETE

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

ACCESSIBLE PEDESTRIAN SIGNAL (APS)
INSTALLATION NOTES

- Install push buttons and APS equipment per manufacturer's instructions.
- Provide a dedicated cable to each push button per manufacturer's instructions.
- If APS equipment is mounted in cabinet, use filtered power (i.e., Controller Receptacle) to power APS equipment. Do not use Equipment Receptacle, which is a GFCI outlet.
- Never attempt to operate a standard contact closure push button with the APS system unless cabinet is re-wired for standard button operation or unless explicitly allowed by the manufacturer.
- Place manufacturer's instructions in cabinet with cabinet prints, signal plans, and electrical details.

NC Dept of Transportation
Division of Highways

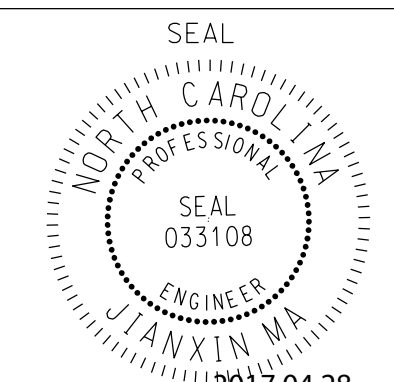
Final Drawing Date: _____

ITS & Signals Unit

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 14-1299
DESIGNED: Apr. 2017
SEALED: 04-28-2017
REVISED: N/A

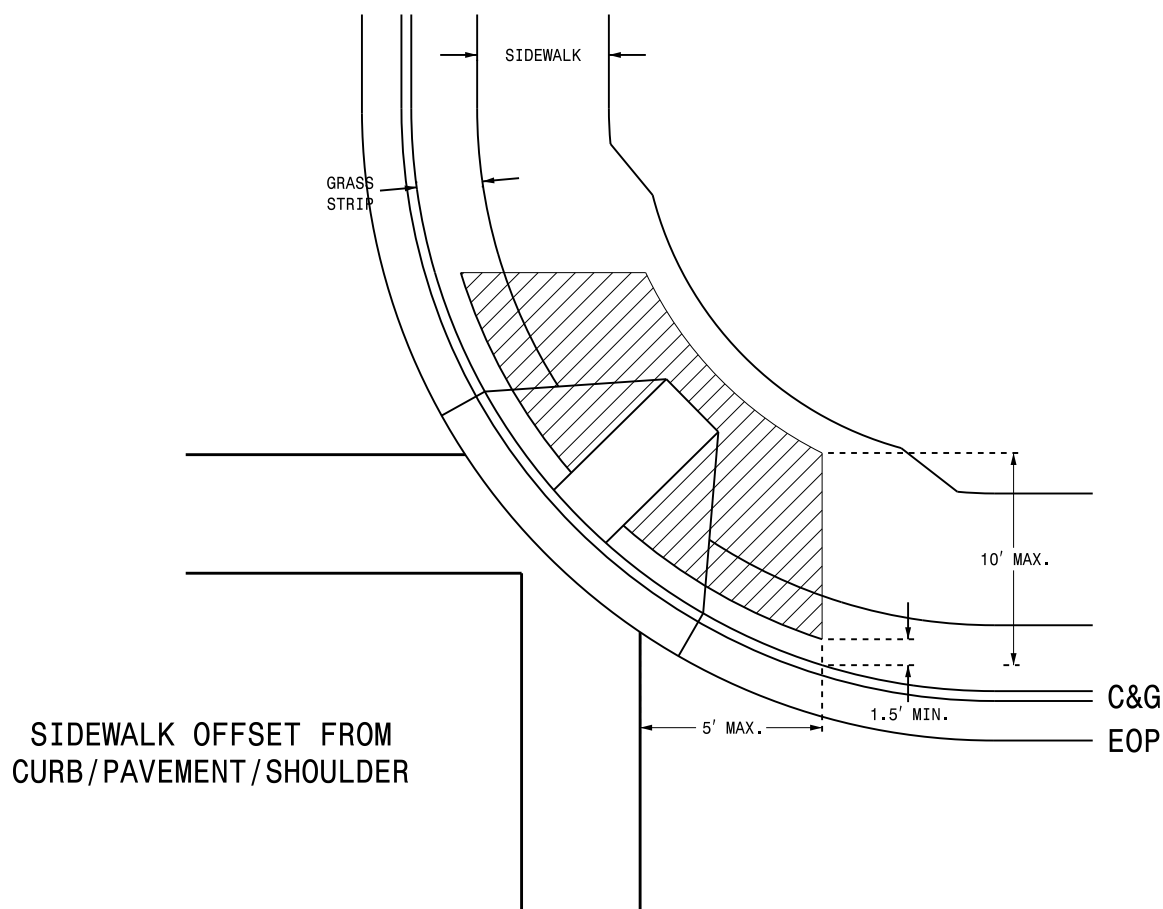
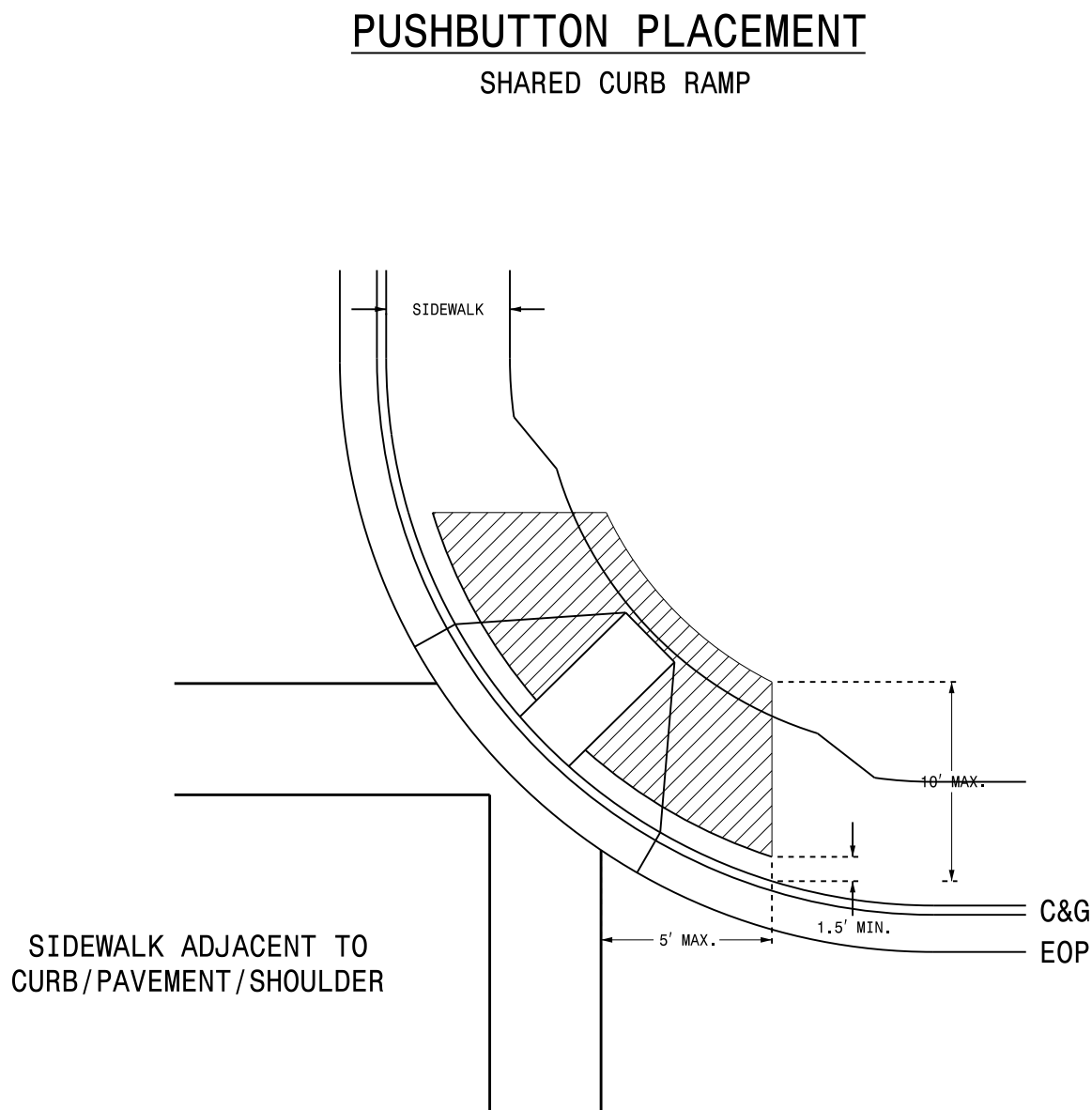
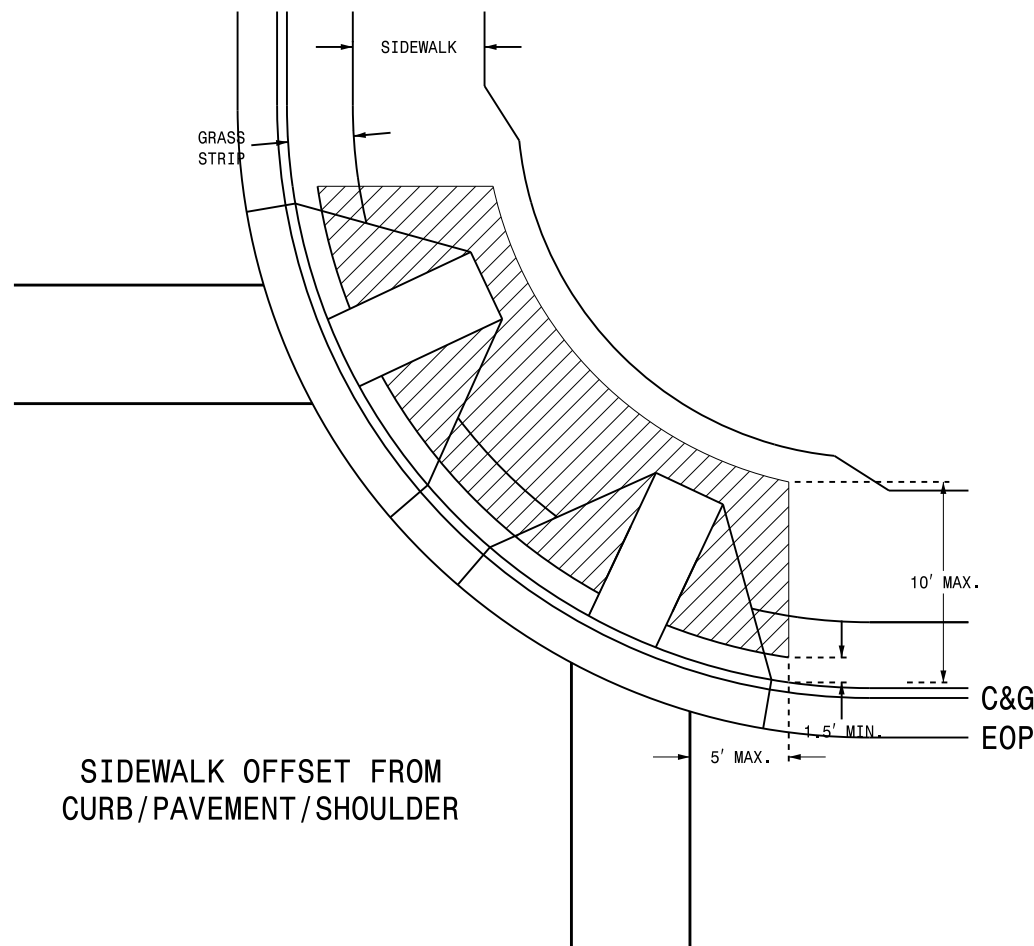
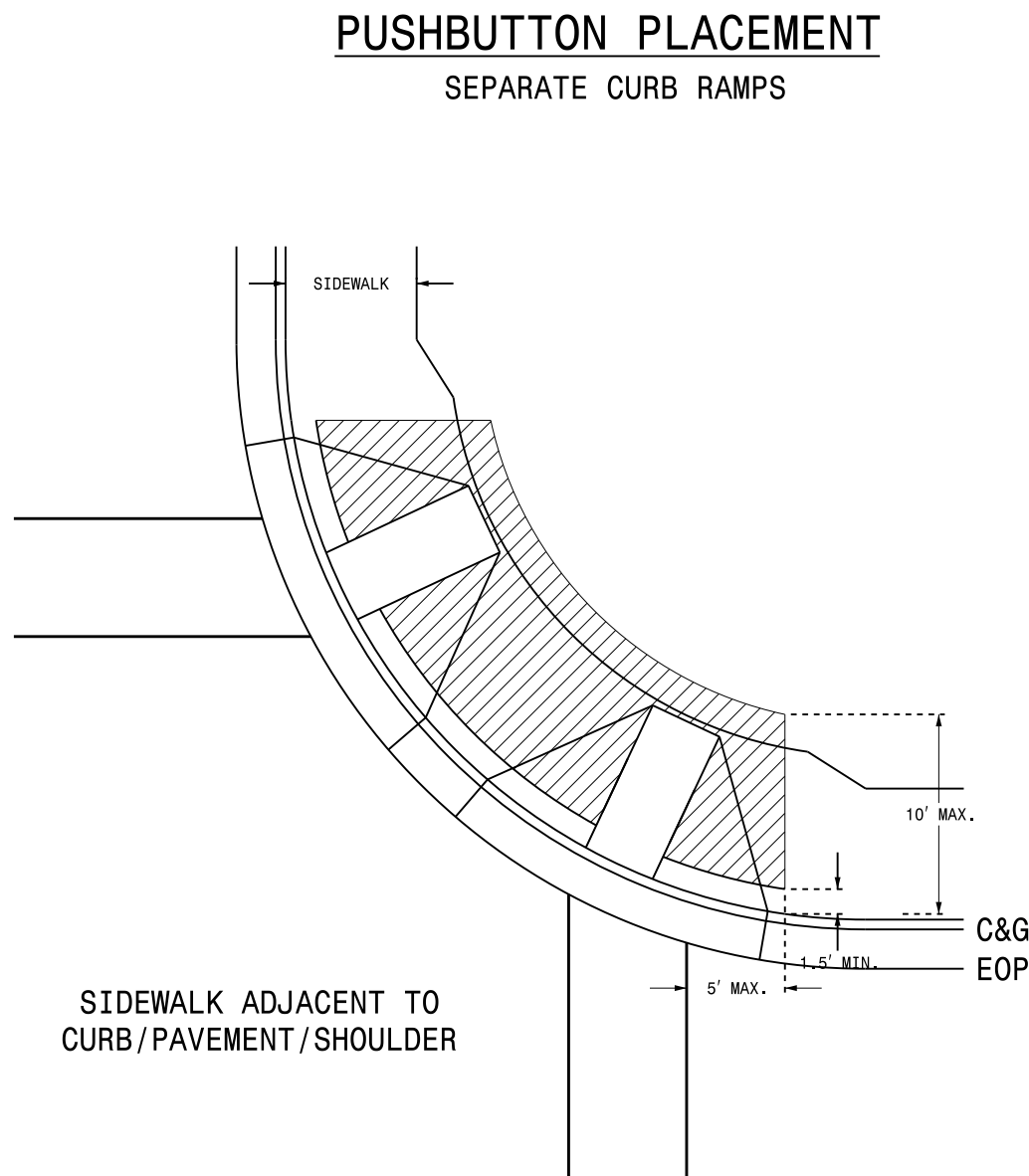
New Installation - Electrical Detail Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared for the Offices of:  750 N. Greenfield Pkwy, Garner, NC 27529	US 129/143 (Rodney Orr Bypass) at Future Connector Rd		 Jianxin Ma 2017.04.28 12:01:15 -04'00'			
	Division 14	Graham County		Robbinsville		
	PLAN DATE: Apr. 2017	REVIEWED BY: J.L. Lewis				
	PREPARED BY: J. Ma	VHB PROJECT NO.: 38536.05				
	REVISIONS	INIT.		DATE		
						SIG. INVENTORY NO. 14-1299

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

06-14
ENGLISH DETAIL DRAWING FOR
PEDESTRIAN PUSHBUTTON LOCATIONS
PLACEMENT DETAIL
SHEET 1 OF 3
1705D01



- NOTES**
1. Pushbutton pedestals should not be located further than 10 feet from the edge of curb, shoulder, or pavement.
 2. The face of the pushbutton should be parallel to the applicable crosswalk.
 3. Separate pushbuttons used on the same corner should be separated by a distance of at least 10 feet.
 4. Pushbuttons shall be installed adjacent to a level surface with a maximum reach distance of 10 inches.
 5. Maintain 4 feet of clearance around pedestal if located in sidewalk.
 6. Refer to section 1705 of the 2012 NCDOT Roadway Standard Drawings for Pushbutton Assembly details.
 7. Refer to section 1743 of the 2012 NCDOT Roadway Standard Drawings for Pedestal details.
 8. Contact Division Traffic Engineer for pushbutton location approval prior to installation.
 9. Curb ramps are for symbolic use only and may not reflect actual design or field conditions.

- PROPOSED**
- LEGEND**
- Signal Pole
 - Type I Pushbutton Post
 - Type II Signal Pedestal
 - Pushbutton & Sign
 - Pedestrian Signal Head
 - Curb Ramp
 - Pushbutton Location Area

06-14
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
PEDESTRIAN PUSHBUTTON LOCATIONS
PLACEMENT DETAIL
SHEET 1 OF 3
1705D01

See Plate for Title

Prepared in the Offices of: 750 N. Greenfield Parkway Garner, NC 27529	SEAL DocuSigned by: 186648292744604 SIGNATURE
	6/17/2014 DATE

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

ENGLISH DETAIL DRAWING FOR
PEDESTRIAN PUSHBUTTON LOCATIONS
PLACEMENT DETAIL

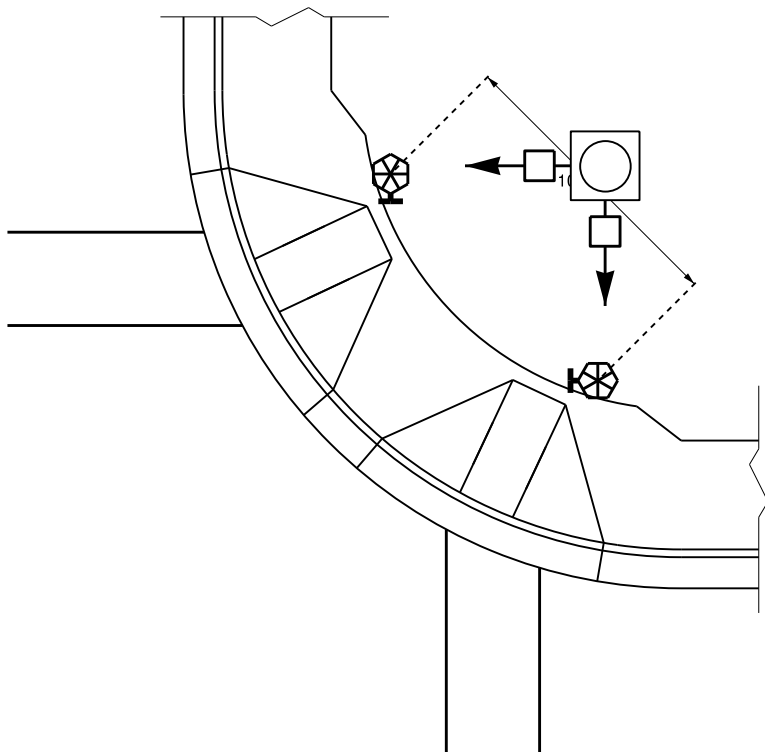
SHEET 2 OF 3
1705D01

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

ENGLISH DETAIL DRAWING FOR
PEDESTRIAN PUSHBUTTON LOCATIONS
PLACEMENT DETAIL

SHEET 2 OF 3
1705D01

TYPICAL PUSHBUTTON LOCATIONS (CASE I)
SEPARATE CURB RAMP W/ TYPE I PEDESTALS

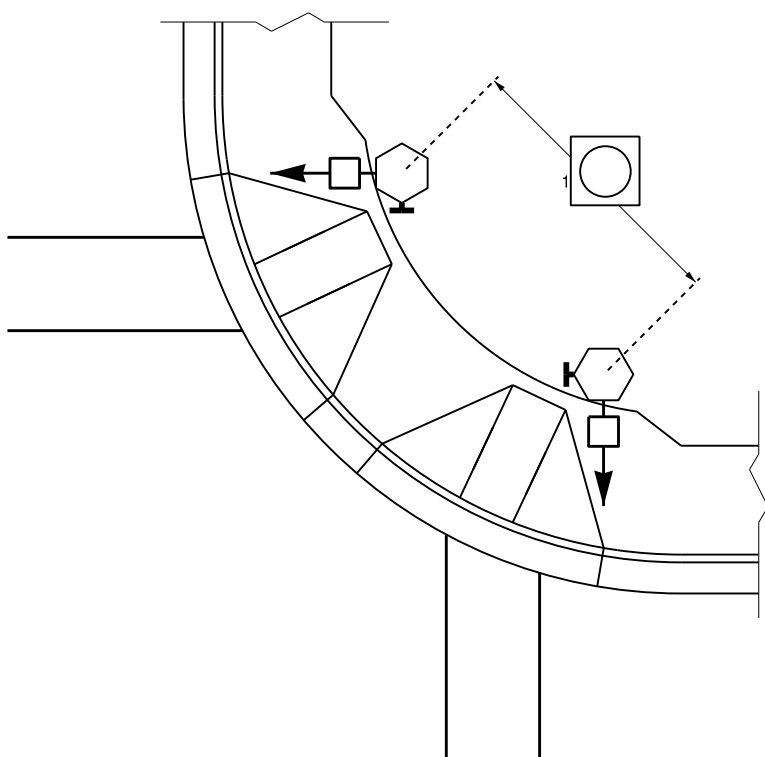


BACK OF SIDEWALK IS WITHIN 10'
OF CURB OR PAVEMENT/SHOULDER

GRASS STRIP PLACEMENT IF BACK
OF SIDEWALK EXCEEDS 10' FROM
CURB OR PAVEMENT/SHOULDER

PUSHBUTTON PLACEMENT
IN WIDE SIDEWALK

TYPICAL PUSHBUTTON LOCATIONS (CASE II)
SEPARATE CURB RAMP W/ TYPE II PEDESTALS



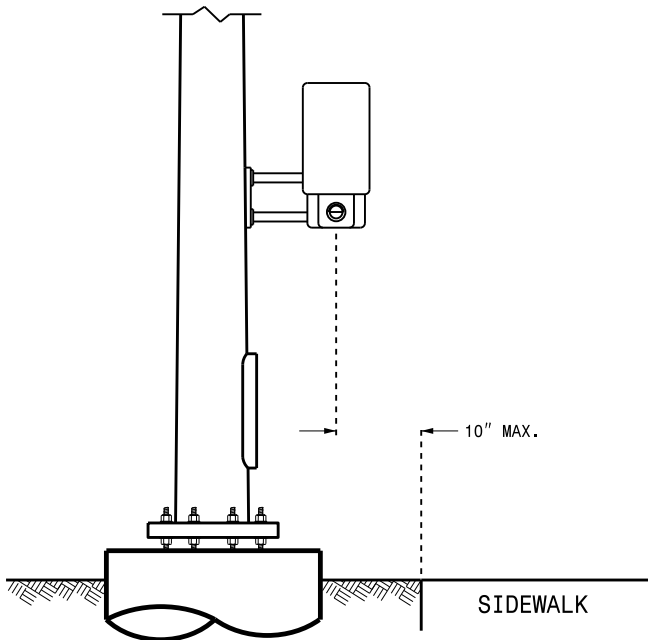
BACK OF SIDEWALK IS WITHIN 10'
OF CURB OR PAVEMENT/SHOULDER

GRASS STRIP PLACEMENT IF BACK
OF SIDEWALK EXCEEDS 10' FROM
CURB OR PAVEMENT/SHOULDER

PUSHBUTTON PLACEMENT
IN WIDE SIDEWALK

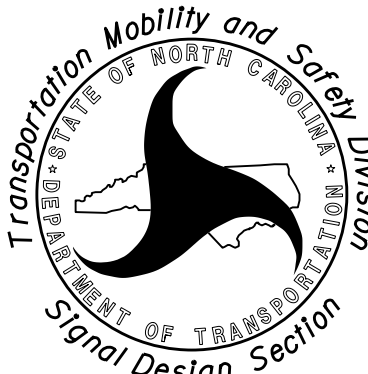
- PROPOSED**
- Signal Pole
 - Type I Pushbutton Post
 - Type II Signal Pedestal
 - Pushbutton & Sign
 - Pedestrian Signal Head
 - Curb Ramp
 - Pushbutton Location Area

OPTIONAL PUSHBUTTON EXTENSION
FACE OF PUSHBUTTON PARALLEL TO
APPLICABLE CROSSWALK



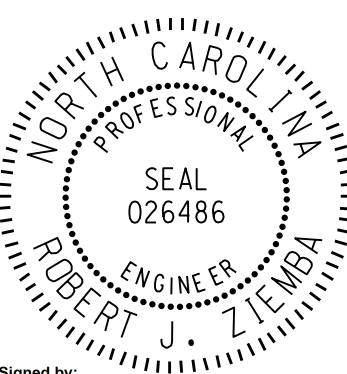
See Plate for Title

Prepared in the Offices of:



750 N. Greenfield Parkway
Garner, NC 27529

SEAL



DocuSigned by:
Robert J. Ziemba
18BB4B0274A494

SIGNATURE

6/17/2014

DATE

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

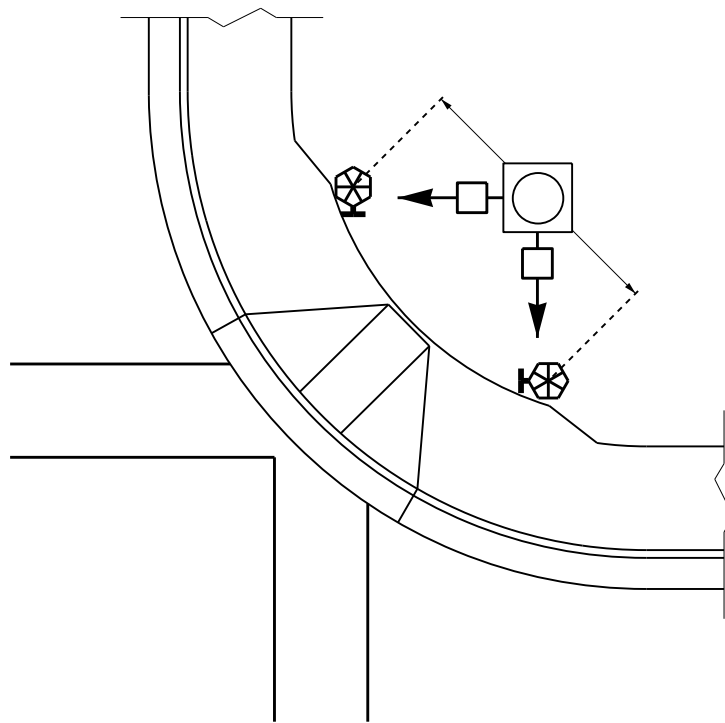
06-14
ENGLISH DETAIL DRAWING FOR
PEDESTRIAN PUSHBUTTON LOCATIONS
PLACEMENT DETAIL
SHEET 3 OF 3
1705D01

06-14
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

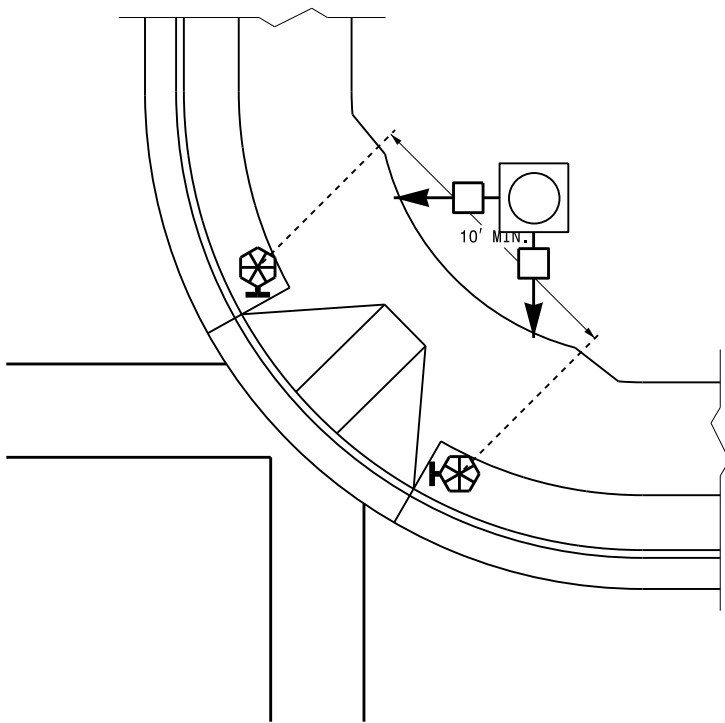
ENGLISH DETAIL DRAWING FOR
PEDESTRIAN PUSHBUTTON LOCATIONS
PLACEMENT DETAIL
SHEET 3 OF 3
1705D01

TYPICAL PUSHBUTTON LOCATIONS (CASE III)

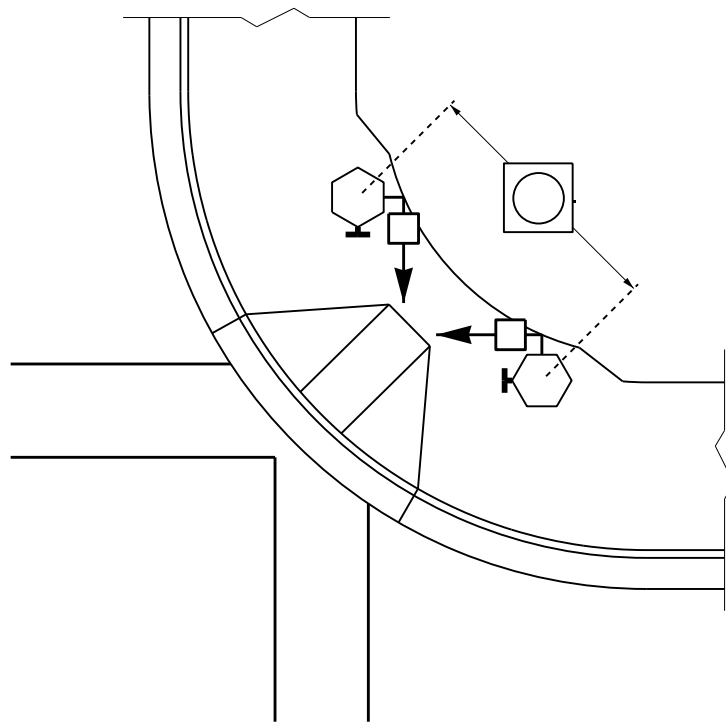
SHARED CURB RAMPS



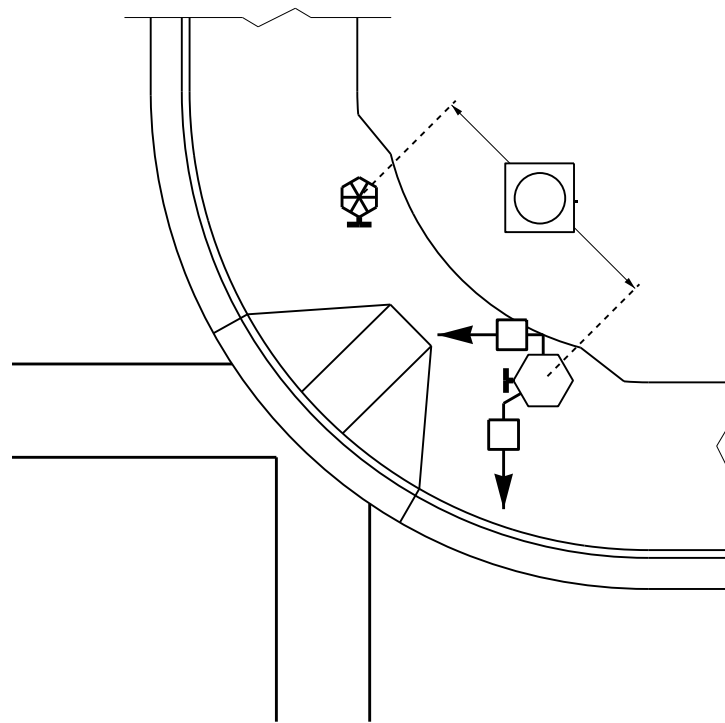
BACK OF SIDEWALK IS WITHIN 10'
OF CURB OR PAVEMENT/SHOULDER



GRASS STRIP PLACEMENT IF BACK
OF SIDEWALK EXCEEDS 10' FROM
CURB OR PAVEMENT/SHOULDER

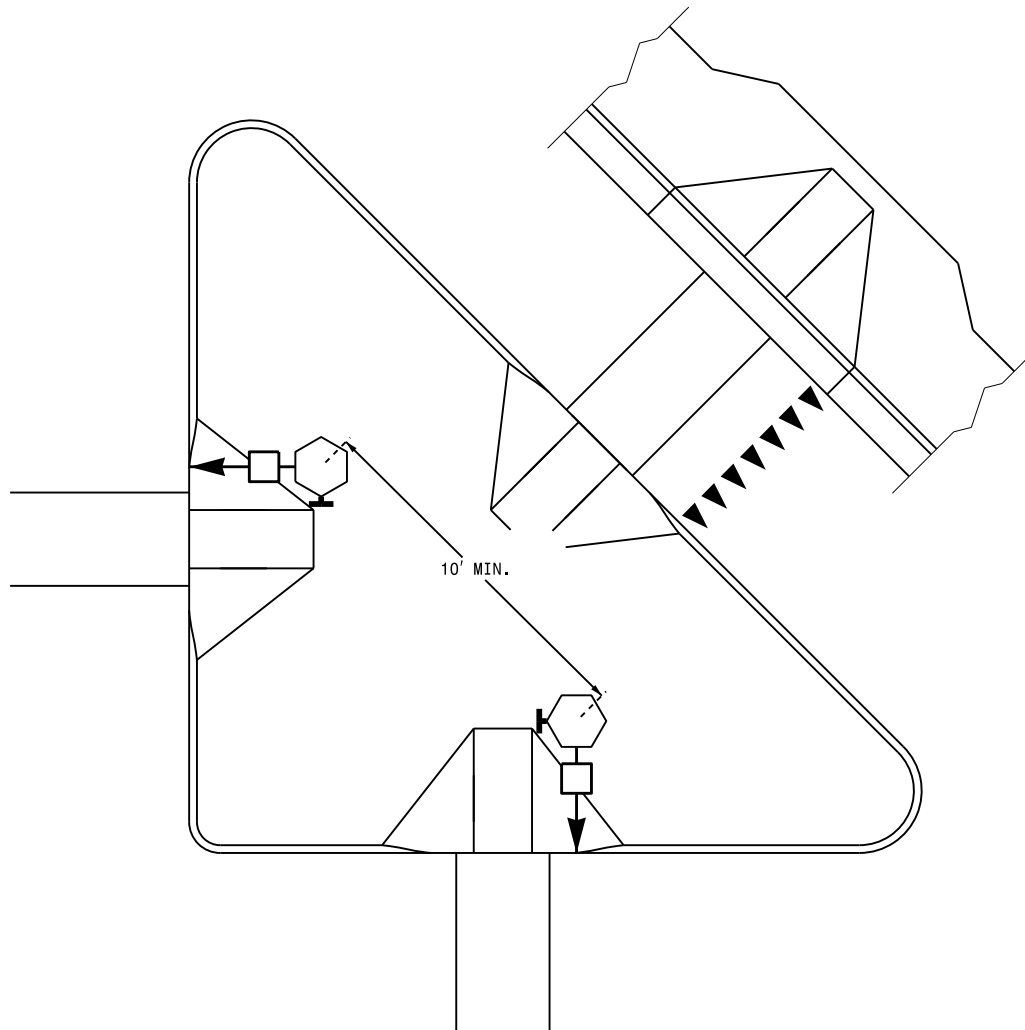


PUSHBUTTON PLACEMENT IN WIDE SIDEWALK
(CORRESPONDING PUSHBUTTONS AND SIGNAL
HEADS ON DIFFERENT PEDESTALS)

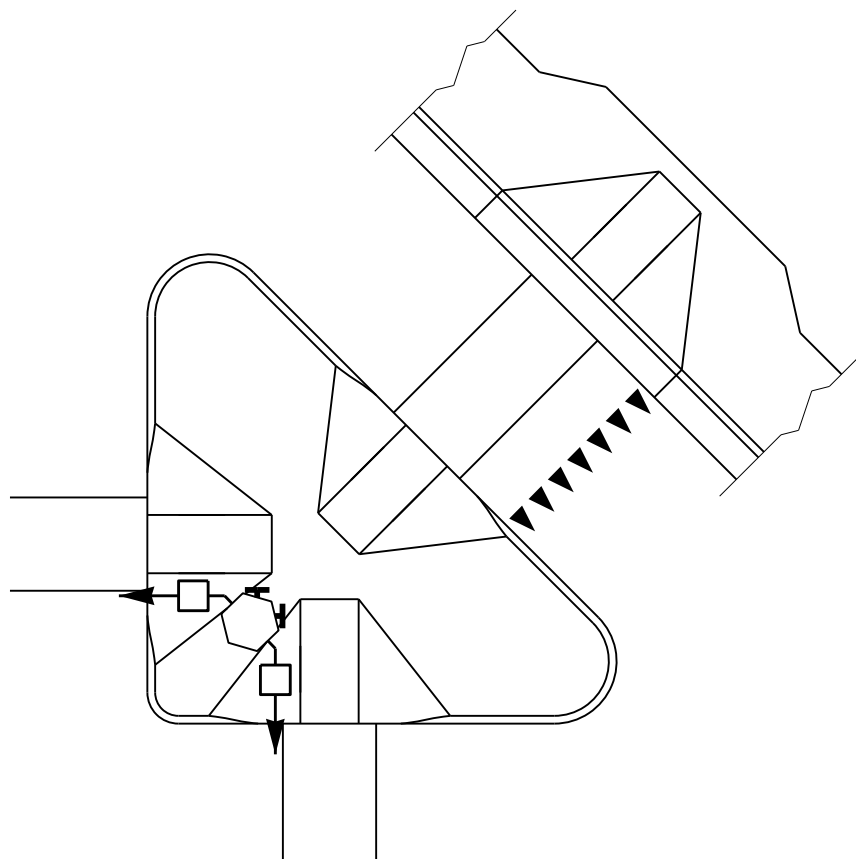


PUSHBUTTON PLACEMENT WITH SHARED
TYPE II SIGNAL PEDESTAL AND TYPE I
PUSHBUTTON POST

TRAFFIC ISLAND PUSHBUTTON LOCATIONS



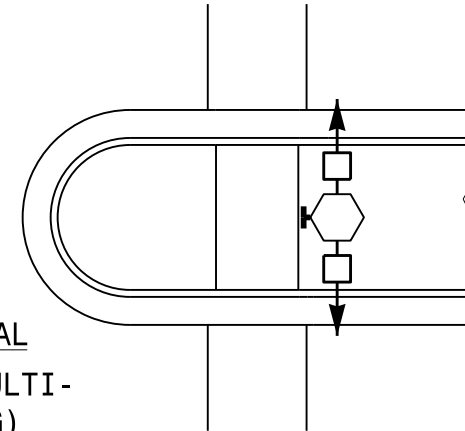
PUSHBUTTON PLACEMENT IN LARGE "PORK
CHOP ISLAND" WITH SEPARATE PEDESTALS



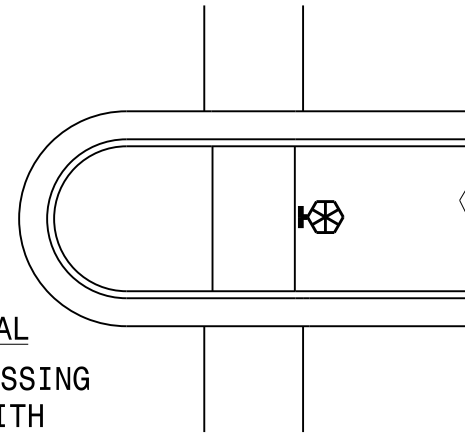
PUSHBUTTON PLACEMENT IN SMALL "PORK
CHOP ISLAND" WITH SHARED PEDESTAL

PUSHBUTTON PLACEMENT IN MEDIAN

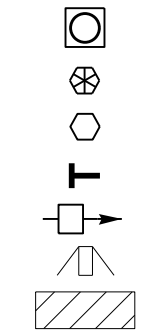
TYPE II PEDESTAL
(FOR STAGED OR MULTI-
PHASE CROSSING)



TYPE I PEDESTAL
(FOR COMPLETE CROSSING
CURB TO CURB WITH
OPTIONAL REFUGE)



PROPOSED

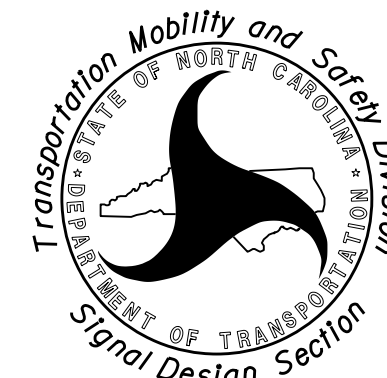


LEGEND

Signal Pole
Type I Pushbutton Post
Type II Signal Pedestal
Pushbutton & Sign
Pedestrian Signal Head
Curb Ramp
Pushbutton Location Area

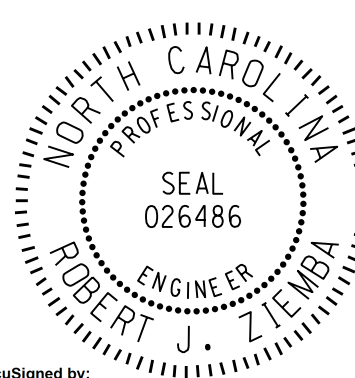
See Plate for Title

Prepared in the Offices of:



750 N. Greenfield Parkway
Garner, NC 27529

SEAL



DocuSigned by

1866496274A454

SIGNATURE

6/17/2014

DATE

09/08/99
11/6/2017
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TIP PROJECT: U-5866

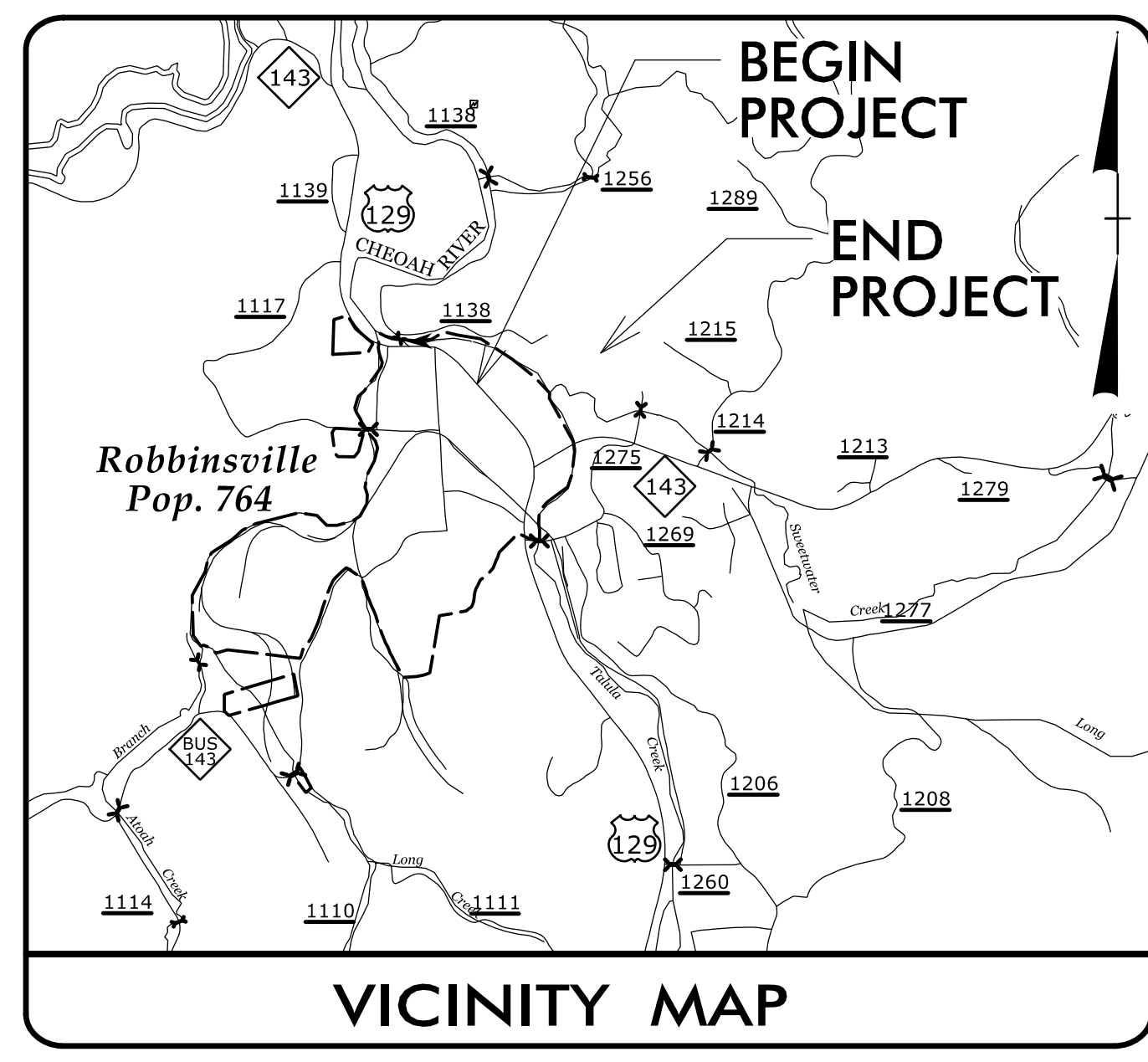
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

T.I.P. NO.	SHEET NO.
U-5866	UC-1

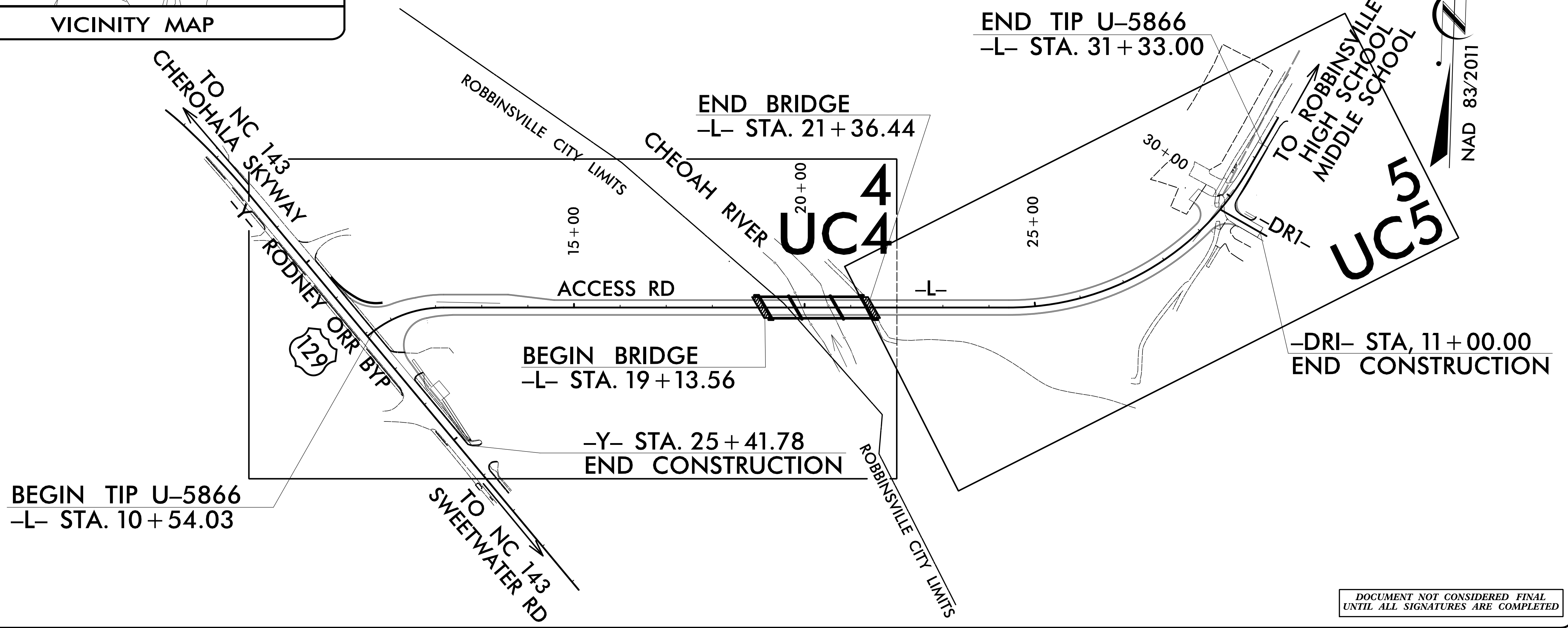
UTILITY CONSTRUCTION PLANS
GRAHAM COUNTY

LOCATION: NEW ROUTE FROM US 129 (RODNEY ORR BYP) TO
ROBBINSVILLE HIGH SCHOOL /MIDDLE SCHOOL CAMPUS
INCLUDING BRIDGE OVER CHEOAH RIVER

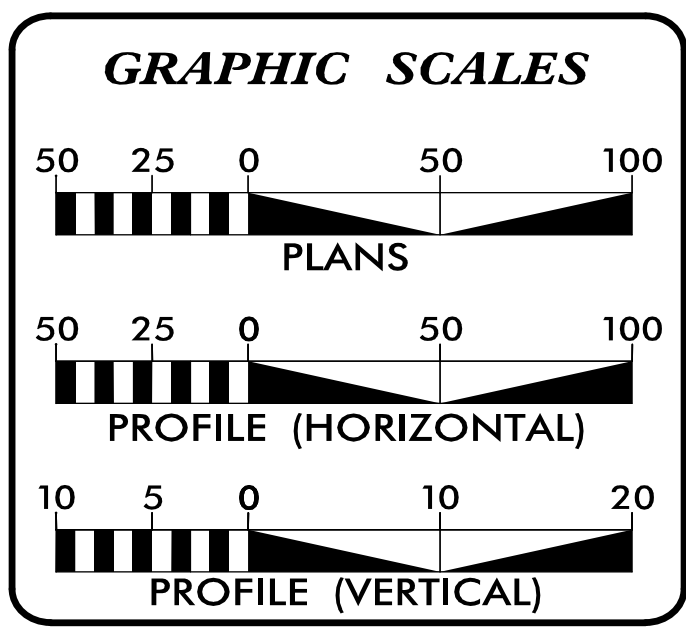
TYPE OF WORK: SANITARY SEWER RELOCATION



VICINITY MAP



DOCUMENT NOT CONSIDERED FINAL
UNTIL ALL SIGNATURES ARE COMPLETED



SHEET NO.:	DESCRIPTION:
UC-1	TITLE SHEET
UC-2	UTILITY SYMBOLOGY
UC-3	NOTES /DETAILS
UC-4 THRU UC-5	UTILITY CONSTRUCTION SHEETS
UC-6	PROFILE SHEET

WATER AND SEWER
OWNERS ON PROJECT

(A) WATER - TOWN OF ROBBINSVILLE
(B) SANITARY SEWER - TOWN OF ROBBINSVILLE
(C) SANITARY SEWER - GRAHAM COUNTY BOARD OF EDUCATION

TGS ENGINEERS
804-C N. LAFAYETTE ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

B. CHAD HOUSER PE, PLS CONSULTANT CONTACT #1
JIMMY TERRY PE CONSULTANT CONTACT #2

SEAL

Professional Engineer
Bobby C. Houser
11/6/2017

DIVISION OF HIGHWAYS
DIVISION 14
253 WEBSTER ROAD
SYLVIA, NC 28779
PHONE (828) 631-2141
FAX (828) 586-4043

BRIAN BURCH DIVISION CONTACT 1
STEVE WILLIAMS DIVISION CONTACT 2

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

UTILITIES PLAN SHEET SYMBOLS

PROPOSED WATER SYMBOLS

Water Line (Sized as Shown)	
11¼ Degree Bend	
22½ Degree Bend	
45 Degree Bend	
90 Degree Bend	
Plug	
Tee	
Cross	
Reducer	
Gate Valve	
Butterfly Valve	
Tapping Valve	
Line Stop	
Line Stop with Bypass	
Blow Off	
Fire Hydrant	
Relocate Fire Hydrant	
Remove Fire Hydrant	
Water Meter	
Relocate Water Meter	
Remove Water Meter	
Water Pump Station	
RPZ Backflow Preventer	
DCV Backflow Preventer	
Relocate RPZ Backflow Preventer	
Relocate DCV Backflow Preventer	

PROPOSED SEWER SYMBOLS

Gravity Sewer Line 12" SS
(Sized as Shown)

Force Main Sewer Line 12" FSS
(Sized as Shown)

Manhole ●
(Sized per Note)

Sewer Pump Station PS(SS)

PROPOSED MISCELLANEOUS UTILITIES SYMBOLS

Power Pole	
Telephone Pole	
Joint Use Pole	
Telephone Pedestal	
Utility Line by Others (Type as Shown)	
Trenchless Installation	
Encasement by Open Cut	
Encasement	

Thrust Block		
Air Release Valve		
Utility Vault		
Concrete Pier		
Steel Pier		
Plan Note		NOTE
Pay Item Note		

EXISTING UTILITIES SYMBOLS

Power Pole.....	
Telephone Pole.....	
Joint Use Pole.....	
Utility Pole.....	
Utility Pole with Base.....	
H-Frame Pole.....	
Power Transmission Line Tower.....	
Water Manhole.....	
Power Manhole.....	
Telephone Manhole.....	
Sanitary Sewer Manhole.....	
Hand Hole for Cable.....	
Power Transformer.....	
Telephone Pedestal.....	
CATV Pedestal.....	
Gas Valve.....	
Gas Meter.....	
Located Miscellaneous Utility Object.....	
Abandoned According to Utility Records ...	AATUR
End of Information	E.O.I.

*Underground Power Line.....	
*Underground Telephone Cable	
*Underground Telephone Conduit.....	
*Underground Fiber Optics Telephone Cable.....	
*Underground TV Cable.....	
*Underground Fiber Optics TV Cable	
*Underground Gas Pipeline	
Aboveground Gas Pipeline	A/G Gas
*Underground Water Line	
Aboveground Water Line	A/G Water
*Underground Gravity Sanitary Sewer Line..	SS
Aboveground Gravity Sanitary Sewer Line..	A/G Sanitary Sewer
*Underground SS Forced Main Line.....	
Underground Unknown Utility Line	
SUE Test Hole	⊗
Water Meter.....	⊠
Water Valve	⊗
Fire Hydrant	⊕
Sanitary Sewer Cleanout	⊕

*For Existing Utilities

Utility Line Drawn from Record
(Type as Shown)
Designated Utility Line
(Type as Shown)

5/14/99

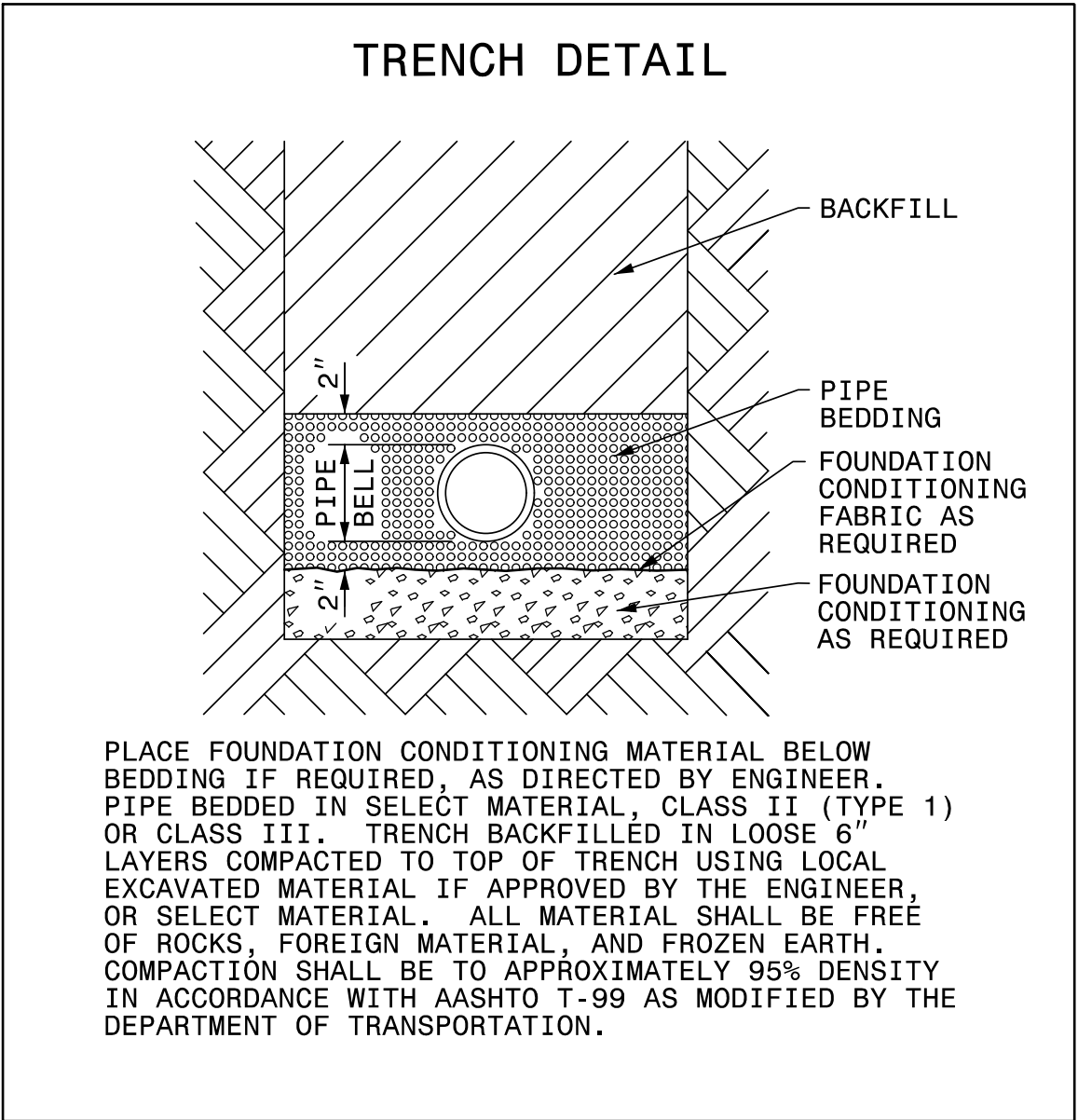
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U-5866\Utility\U-5866_Ut-Notes_UC3.psh.dgn

UTILITY CONSTRUCTION

GENERAL NOTES:

1. THE PROPOSED UTILITY CONSTRUCTION SHALL MEET THE APPLICABLE REQUIREMENTS OF THE NC DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JANUARY 2012.
2. THE EXISTING UTILITIES BELONG TO THE TOWN OF ROBBINSVILLE AND THE GRAHAM COUNTY BOARD OF EDUCATION.
3. ALL WATER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY, DIVISION OF WATER RESOURCES, PUBLIC WATER SUPPLY SECTION. ALL SEWER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT QUALITY, DIVISION OF WATER RESOURCES, WATER QUALITY SECTION. PERFORM ALL WORK IN ACCORDANCE WITH THE APPLICABLE PLUMBING CODES.
4. THE UTILITY OWNER OWNS THE EXISTING UTILITY FACILITIES AND WILL OWN THE NEW UTILITY FACILITIES AFTER ACCEPTANCE BY THE DEPARTMENT. THE DEPARTMENT OWNS THE CONSTRUCTION CONTRACT AND HAS ADMINISTRATIVE AUTHORITY. COMMUNICATIONS AND DECISIONS BETWEEN THE CONTRACTOR AND UTILITY OWNER ARE NOT BINDING UPON THE DEPARTMENT OR THIS CONTRACT UNLESS AUTHORIZED BY THE ENGINEER. AGREEMENTS BETWEEN THE UTILITY OWNER AND CONTRACTOR FOR THE WORK THAT IS NOT PART OF THIS CONTRACT OR IS SECONDARY TO THIS CONTRACT ARE ALLOWED, BUT ARE NOT BINDING UPON THE DEPARTMENT.
5. PROVIDE ACCESS FOR THE DEPARTMENT PERSONNEL AND THE OWNER'S REPRESENTATIVES TO ALL PHASES OF CONSTRUCTION. NOTIFY DEPARTMENT PERSONNEL AND THE UTILITY OWNER TWO WEEKS PRIOR TO COMMENCEMENT OF ANY WORK AND ONE WEEK PRIOR TO SERVICE INTERRUPTION. KEEP UTILITY OWNERS' REPRESENTATIVES INFORMED OF WORK PROGRESS AND PROVIDE OPPORTUNITY FOR INSPECTION OF CONSTRUCTION AND TESTING.

6. THE PLANS DEPICT THE BEST AVAILABLE INFORMATION FOR THE LOCATION, SIZE, AND TYPE OF MATERIAL FOR ALL EXISTING UTILITIES. MAKE INVESTIGATIONS FOR DETERMINING THE EXACT LOCATION, SIZE, AND TYPE MATERIAL OF THE EXISTING FACILITIES AS NECESSARY FOR THE CONSTRUCTION OF THE PROPOSED UTILITIES AND FOR AVOIDING DAMAGE TO EXISTING FACILITIES. REPAIR ANY DAMAGE INCURRED TO EXISTING FACILITIES TO THE ORIGINAL OR BETTER CONDITION AT NO ADDITIONAL COST TO THE DEPARTMENT.
7. MAKE FINAL CONNECTIONS OF THE NEW WORK TO THE EXISTING SYSTEM WHERE INDICATED ON THE PLANS, AS REQUIRED TO FIT THE ACTUAL CONDITIONS, OR AS DIRECTED.
8. MAKE CONNECTIONS BETWEEN EXISTING AND PROPOSED UTILITIES AT TIMES MOST CONVENIENT TO THE PUBLIC, WITHOUT ENDANGERING THE UTILITY SERVICE, AND IN ACCORDANCE WITH THE UTILITY OWNER'S REQUIREMENTS. MAKE CONNECTIONS ON WEEKENDS, AT NIGHT, AND ON HOLIDAYS IF NECESSARY.
9. ALL UTILITY MATERIALS SHALL BE APPROVED PRIOR TO DELIVERY TO THE PROJECT. SEE 1500-7, "SUBMITTALS AND RECORDS" IN SECTION 1500 OF THE STANDARD SPECIFICATIONS.

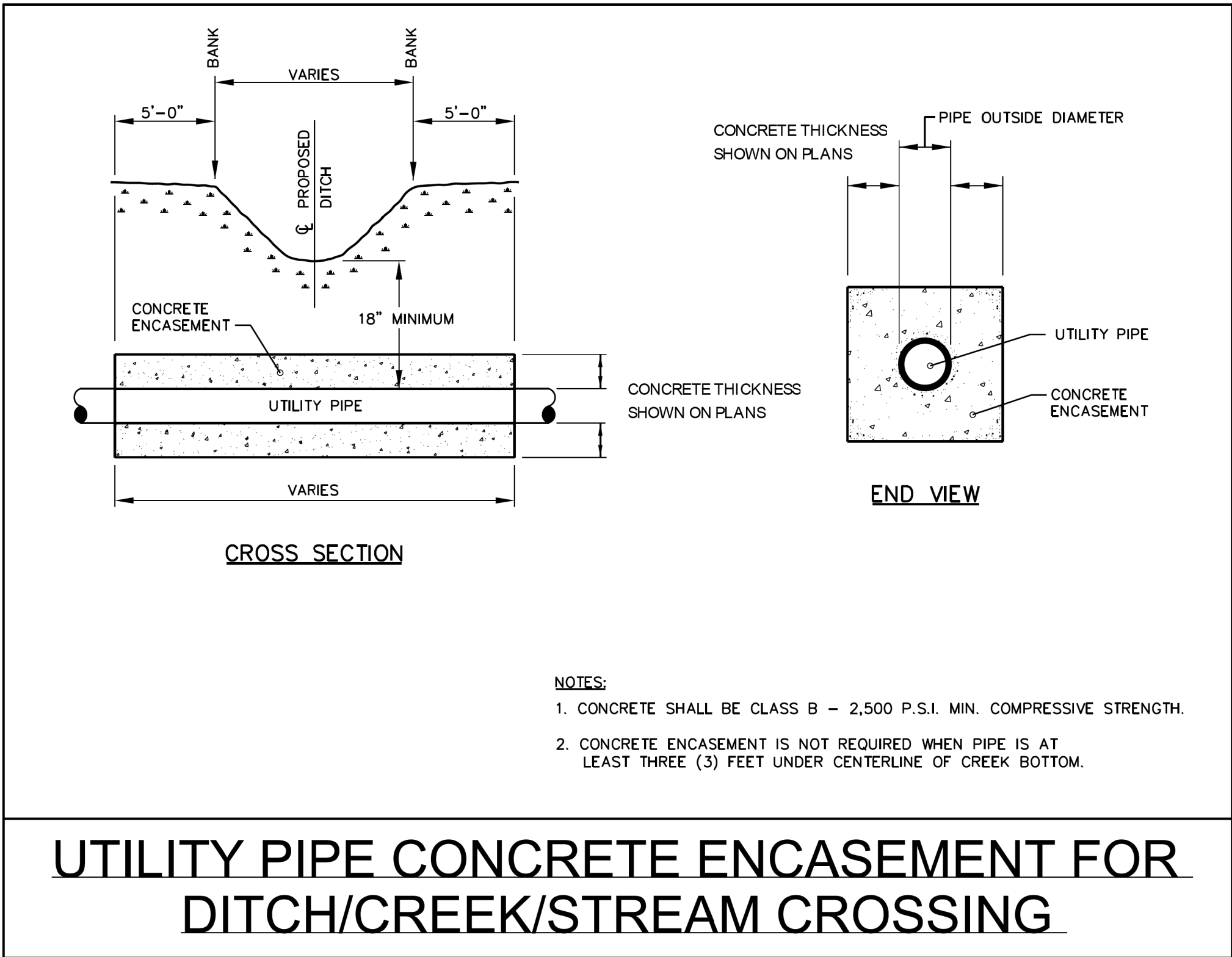


PROJECT SPECIFIC NOTES:

1. ALL PROPOSED GRAVITY SEWER LINES SHALL BE DUCTILE IRON THICKNESS CLASS 51.
2. WATERTIGHT MANHOLE LIDS SHALL BE USED FOR PROPOSED MANHOLES ON -SL1-, -SL2-, AND -SL3- AS SHOWN ON THE PROFILE SHEET. (SEE SPECIAL PROVISIONS)

LIST OF STANDARD DRAWINGS

- 1525.06 PRECAST CONCRETE SANITARY SEWER MANHOLE WITH CAST-IN-PLACE BOTTOM



PROJECT REFERENCE NO.		SHEET NO.
U-5866		UC-3
DESIGNED BY:	BCH	PROFESSIONAL SEAL Robb C. Housley 11/6/2017 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION 14 PHONE: (828) 631-2141 FAX: (828) 586-4043
DRAWN BY:	BCH	
CHECKED BY:	JLT	
APPROVED BY:		
REVISED:		
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION		UTILITY CONSTRUCTION PLANS ONLY

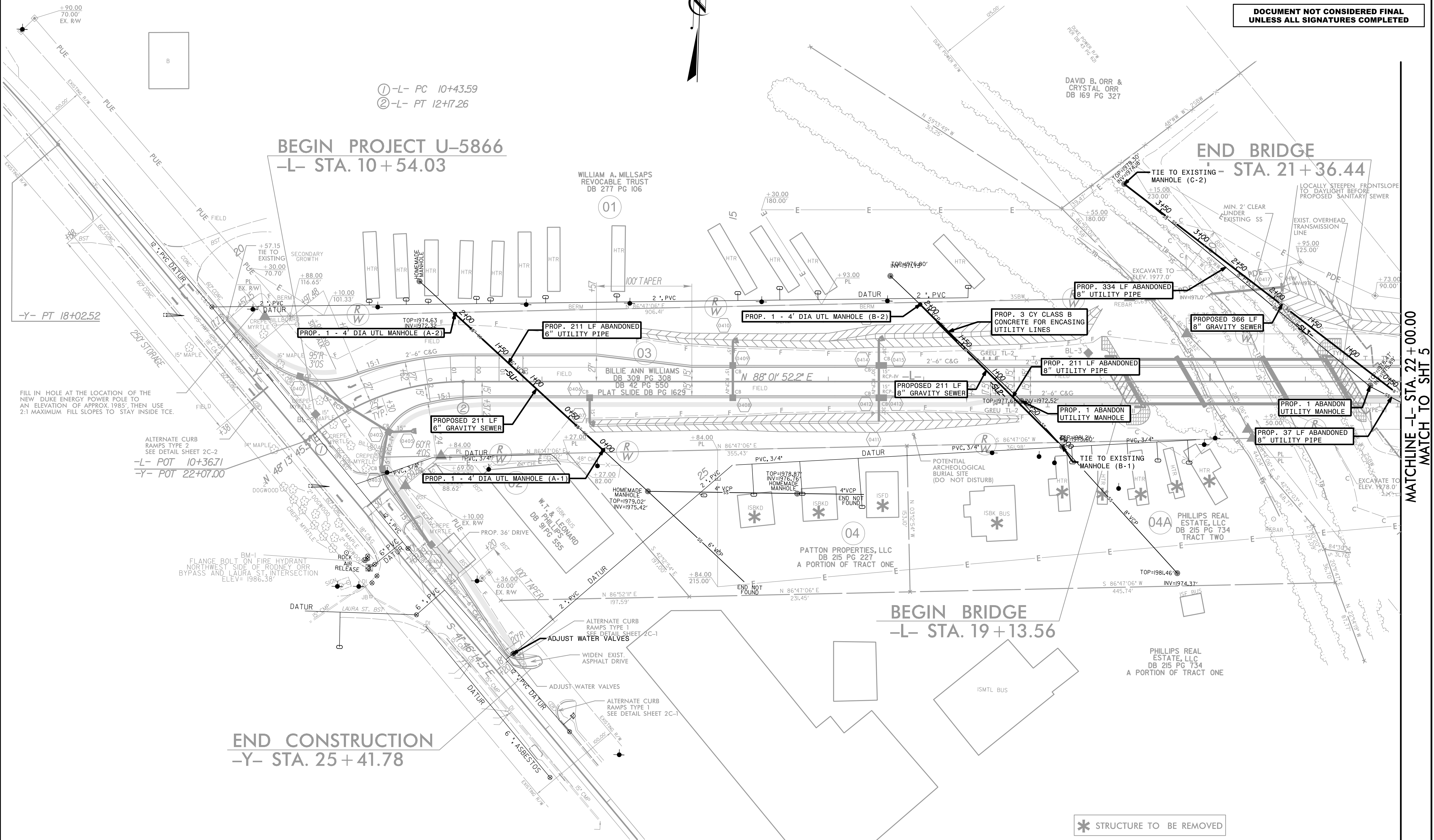
5/14/99

SEWER LINES ON THIS SHEET ARE OWNED
BY THE TOWN OF ROBBINSVILLE.

PROJECT REFERENCE NO.		SHEET NO.	
U-5866		UC-4	
DESIGNED BY: BCH			
DRAWN BY: BCH			
CHECKED BY: JLT			
APPROVED BY:			
REVISED:			
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION			
DIVISION 14			
PHONE: (828) 631-2141			
FAX: (828) 586-4043			
UTILITY CONSTRUCTION PLANS ONLY		11/6/2017	

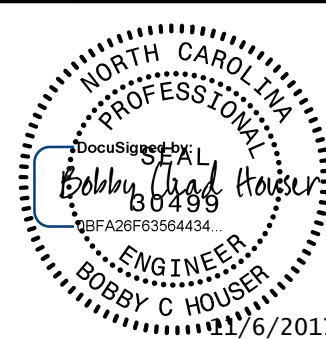
UTILITY CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



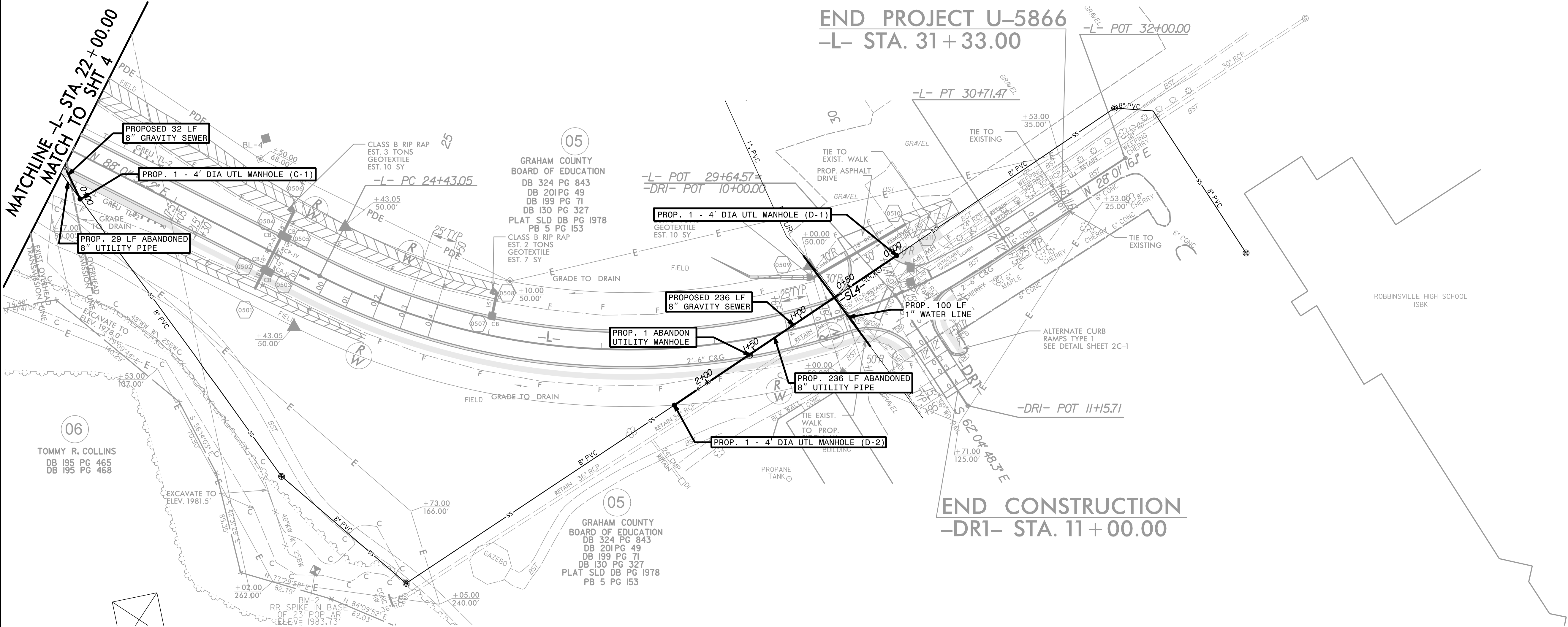
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SEWER LINE -SL4- ON THIS SHEET IS OWNED
BY GRAHAM COUNTY BOARD OF EDUCATION.

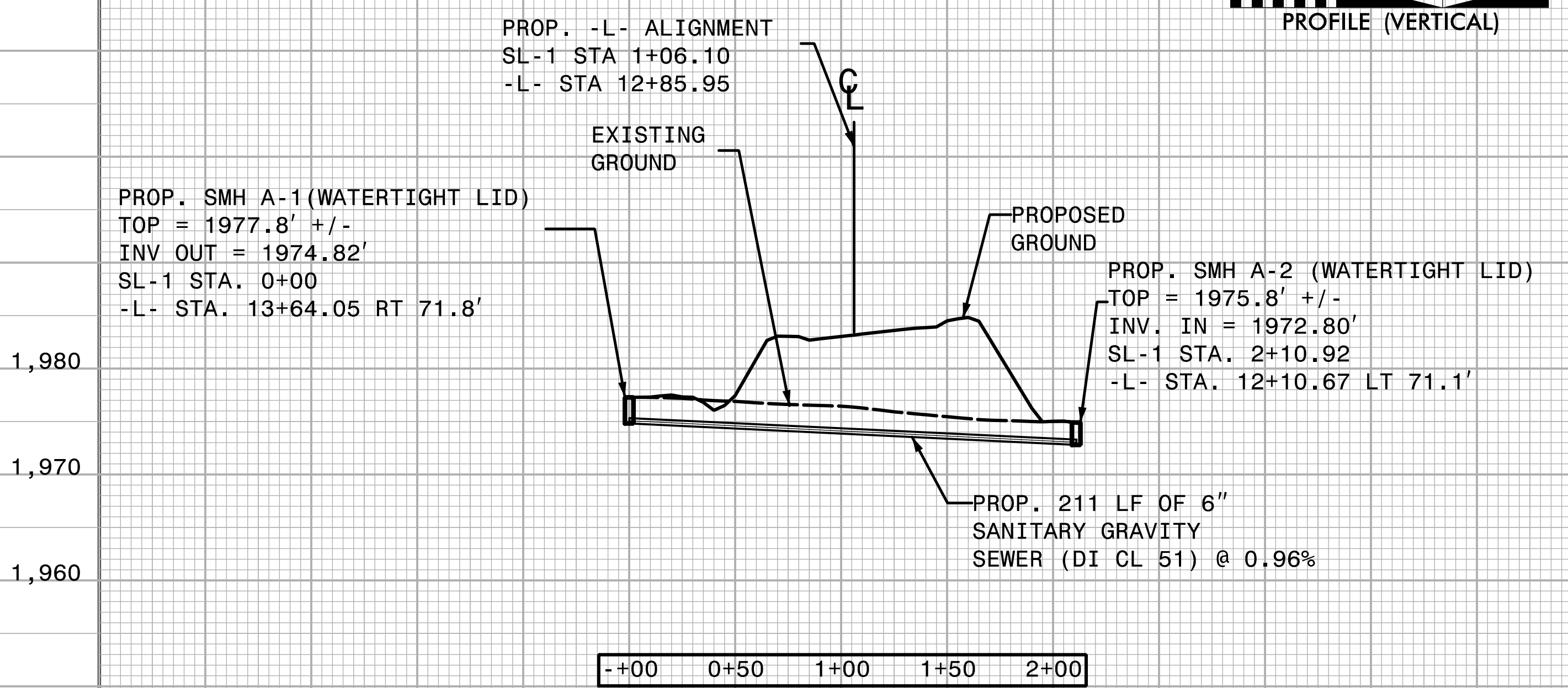
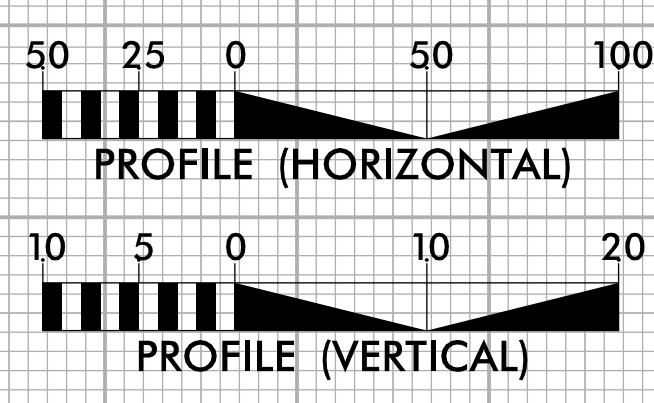
PROJECT REFERENCE NO.		SHEET NO.	
U-5866		UC-5	
DESIGNED BY: BCH			
DRAWN BY: BCH			
CHECKED BY: JLT			
APPROVED BY:			
REVISED:		NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
DIVISION 14		UTILITY CONSTRUCTION PLANS ONLY	
PHONE: (828) 631-2141		FAX: (828) 586-4043	

UTILITY CONSTRUCTION

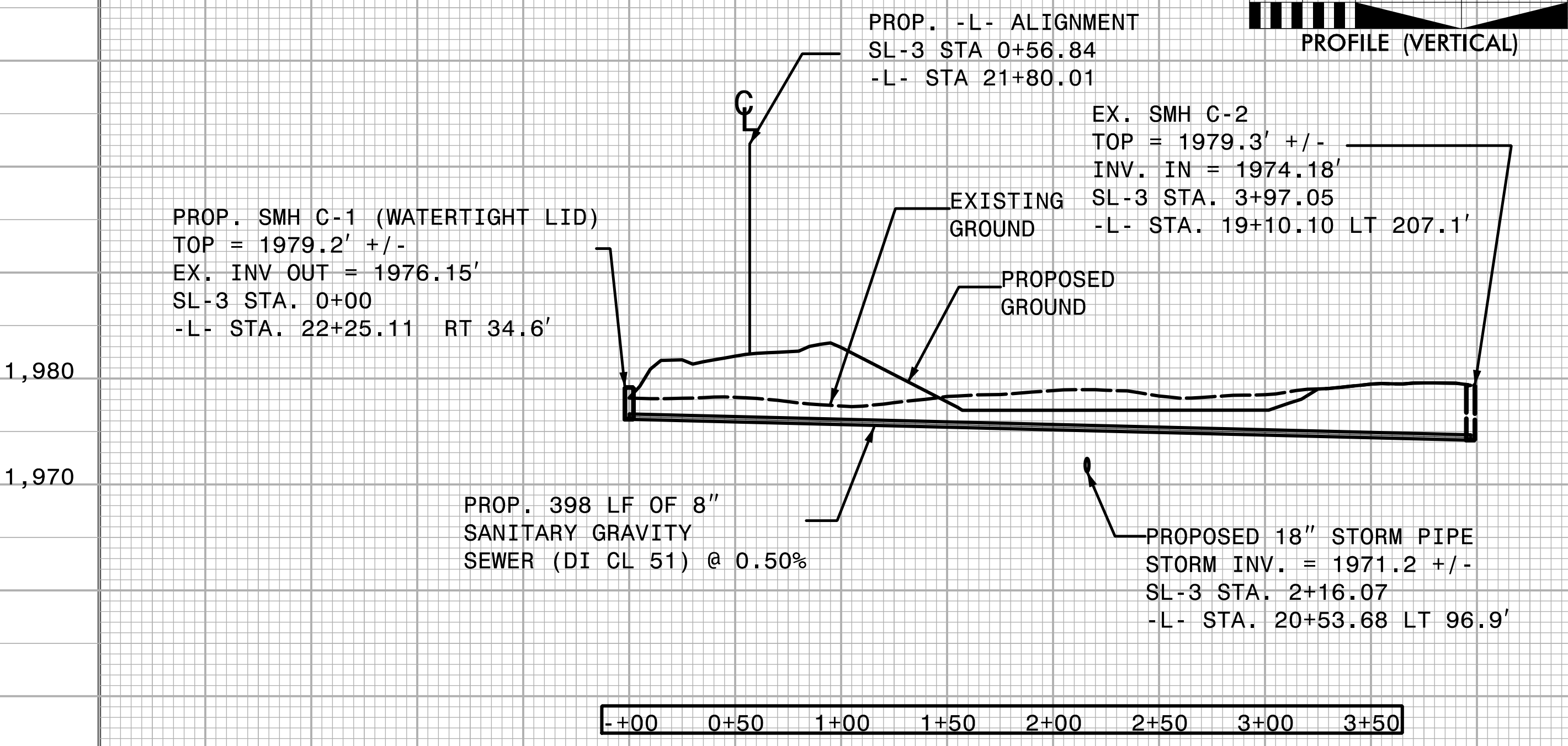
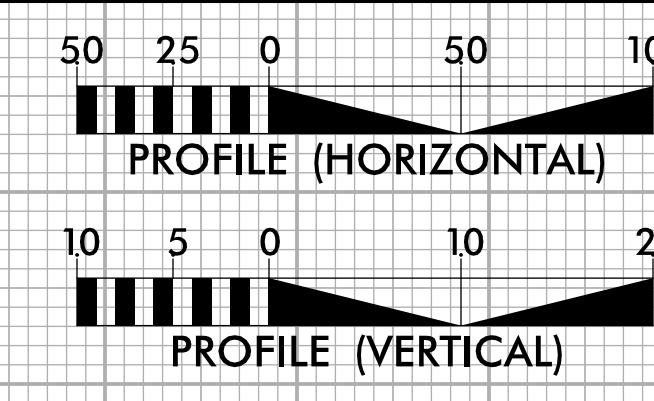
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



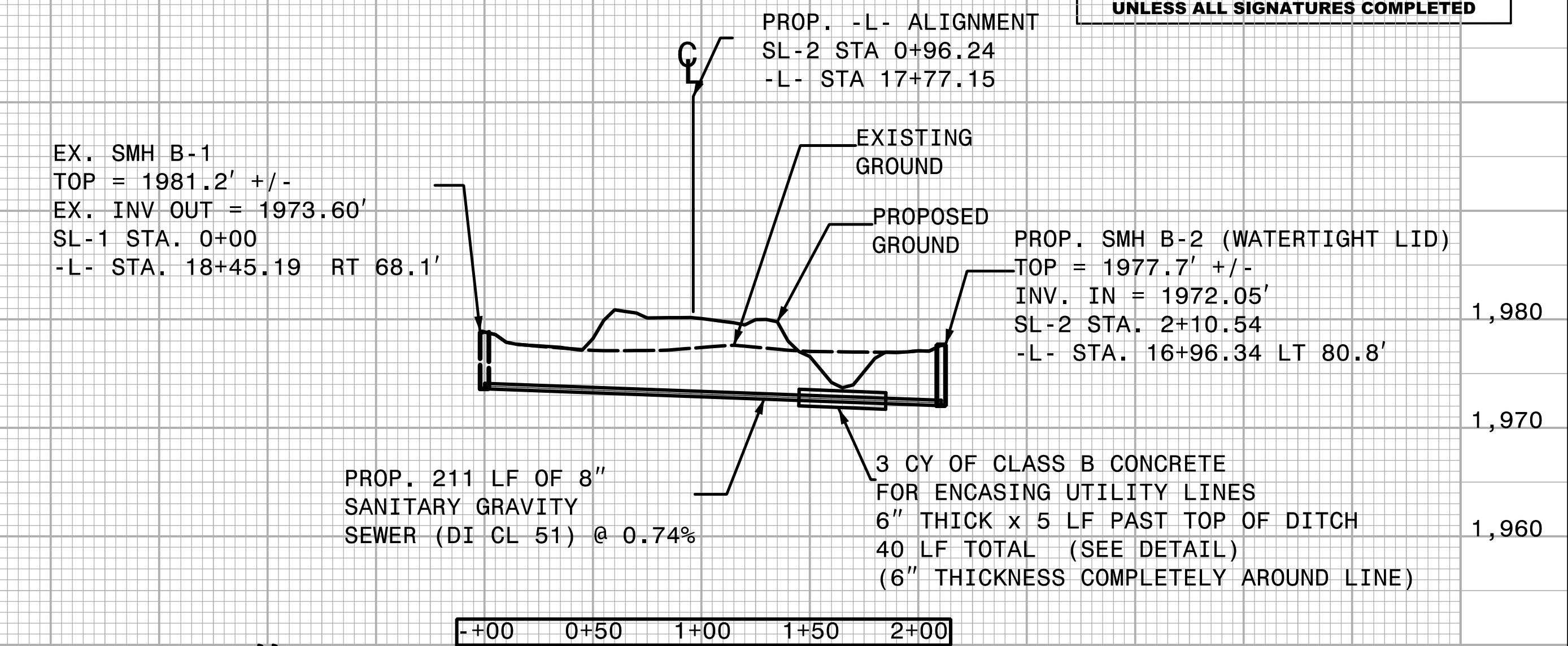
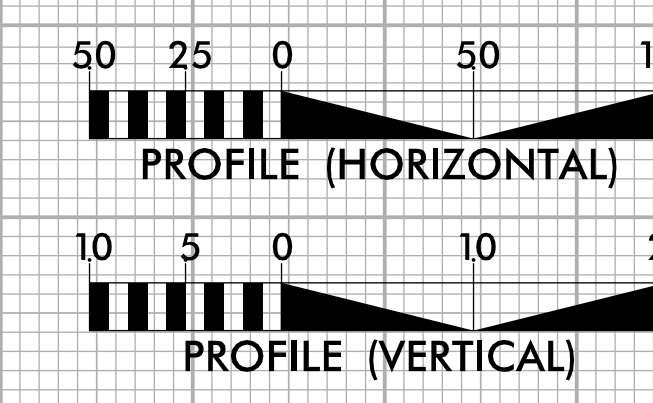
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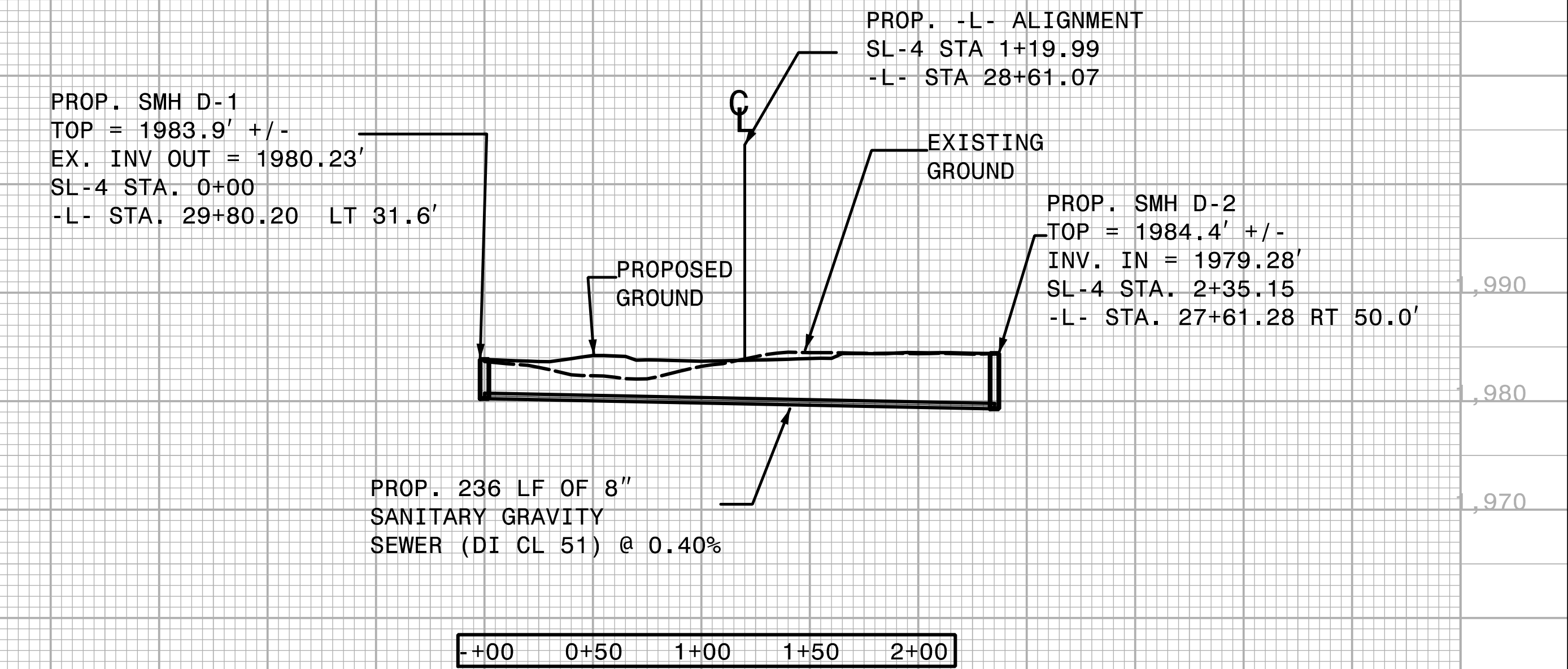
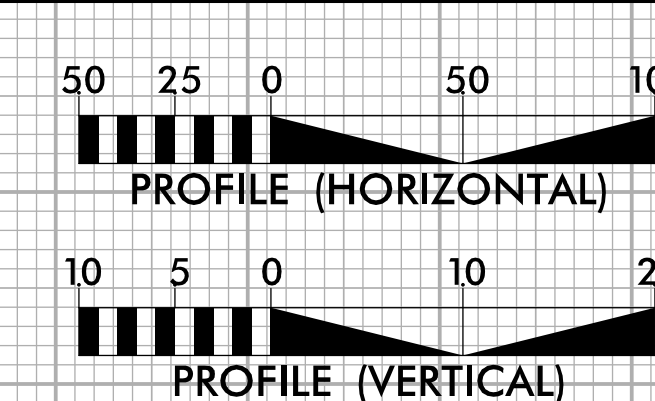
6" GRAVITY SEWER LINE SL-1
SEE SHEET UC-4 FOR 6" GRAVITY SEWER PLAN



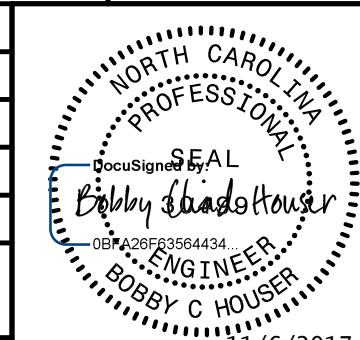
8" GRAVITY SEWER LINE SL-3
SEE SHEET UC-4 AND UC-5 FOR 8" GRAVITY SEWER PLAN



8" GRAVITY SEWER LINE SL-2
SEE SHEET UC-4 FOR 8" GRAVITY SEWER PLAN



8" GRAVITY SEWER LINE SL-4
SEE SHEET UC-5 FOR 8" GRAVITY SEWER PLAN

PROJECT REFERENCE NO.		SHEET NO.
U-5866		UC-6
DESIGNED BY:	BCH	
DRAWN BY:	BCH	
CHECKED BY:	JLT	
APPROVED BY:		
REVISED:		
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION		UTILITY CONSTRUCTION PLANS ONLY
DIVISION 14 PHONE: (828) 631-2141 FAX: (828) 586-4043		

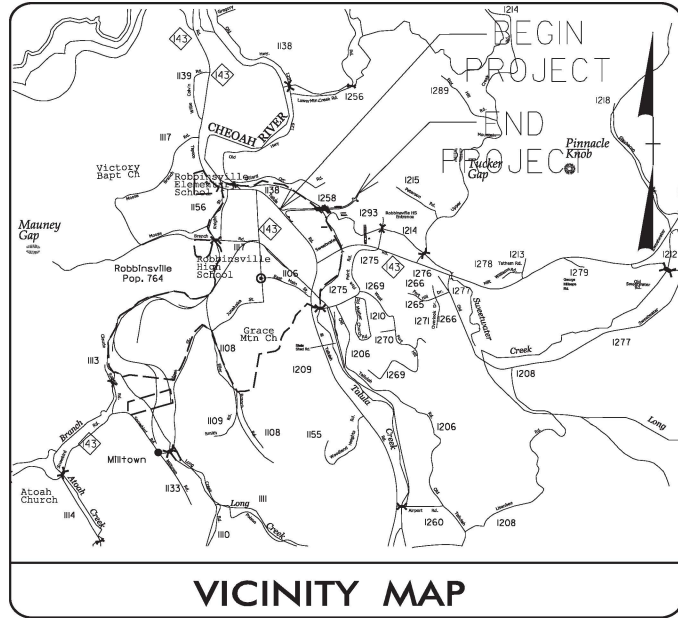
UTILITY CONSTRUCTION

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

09-MAY-2017 15:22
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09/28/99

TIP PROJECT: U-5866



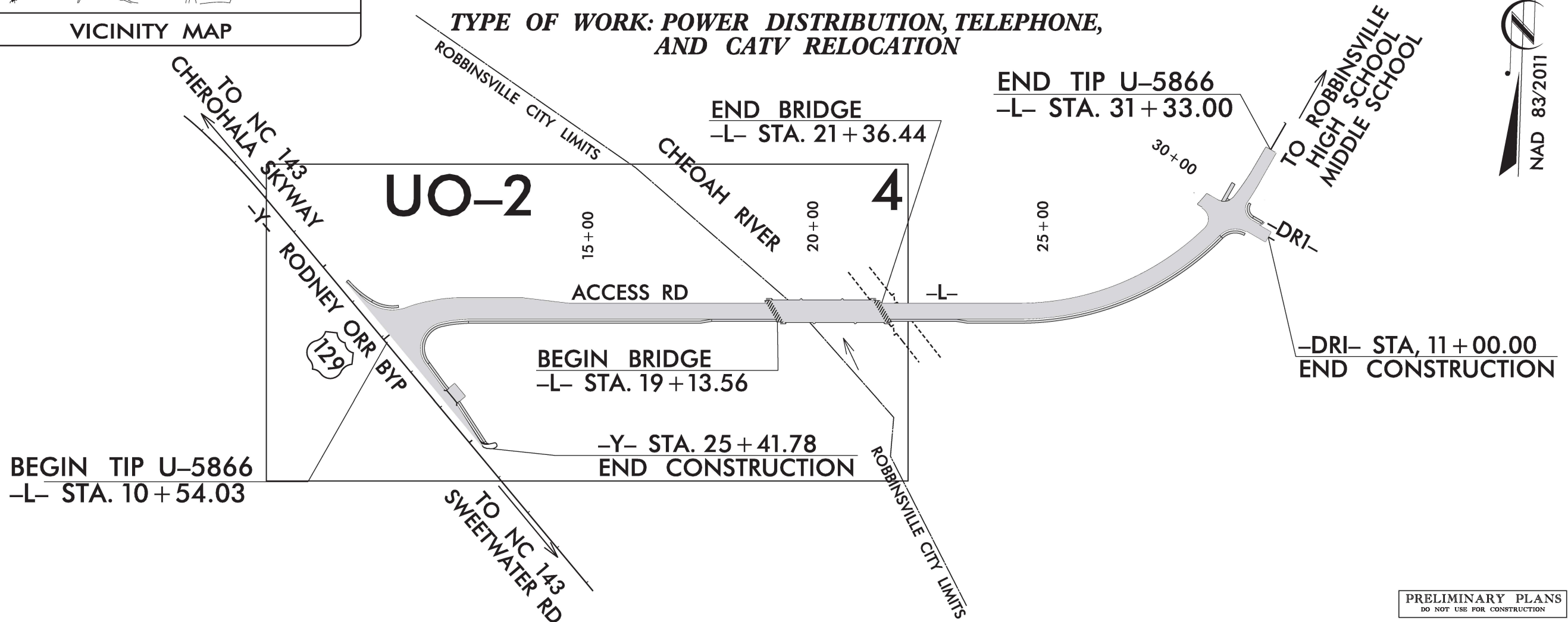
VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES BY OTHERS PLANS
GRAHAM COUNTY

LOCATION: NEW ROUTE FROM US 129 (RODNEY ORR BYP) TO
ROBBINSONVILLE HIGH SCHOOL /MIDDLE SCHOOL CAMPUS
INCLUDING BRIDGE OVER CHEOAH RIVER

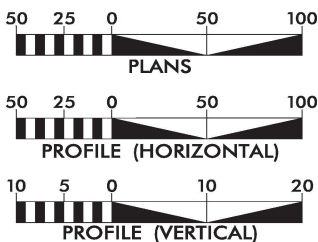
TYPE OF WORK: POWER DISTRIBUTION, TELEPHONE,
AND CATV RELOCATION



NOTE:
ALL UTILITY WORK SHOWN ON THIS
SHEET IS DONE BY OTHERS.
NO PAYMENT WILL BE MADE TO
THE CONTRACTOR FOR UTILITY WORK
SHOWN ON THIS SHEET.



GRAPHIC SCALES



INDEX OF SHEETS

SHEET NO.:	DESCRIPTION:
UO-1	TITLE SHEET
UO-2	UBO PLAN SHEET

UTILITY OWNERS WITH CONFLICTS

- (A) DUKE ENERGY - POWER DISTRIBUTION
- (B) ZITO MEDIA - CATV
- (C) FRONTIER COMMUNICATIONS - COMMUNICATIONS

PREPARED IN THE OFFICE OF:

TELICS

849 SOUTH LAUREL ST
LINCOLNTON, NC 28092
PHONE (704) 732-3241

STEVE MODE	UTILITY PROJECT MANAGER
DANNY LITTLE	PROJECT UTILITY COORDINATOR
	PROJECT UTILITY XXXX



DIVISION OF HIGHWAYS
UTILITIES UNIT
1535 MAIL SERVICES CENTER
RALEIGH NC 27699-1555
PHONE (919) 707-6690
FAX (919) 250-4151

XXXX	UTILITIES REGIONAL ENGINEER
XXXX	UTILITIES ENGINEER
XXXX	UTILITIES AREA COORDINATOR
ROBERT C. GOLDING	UTILITIES COORDINATOR

