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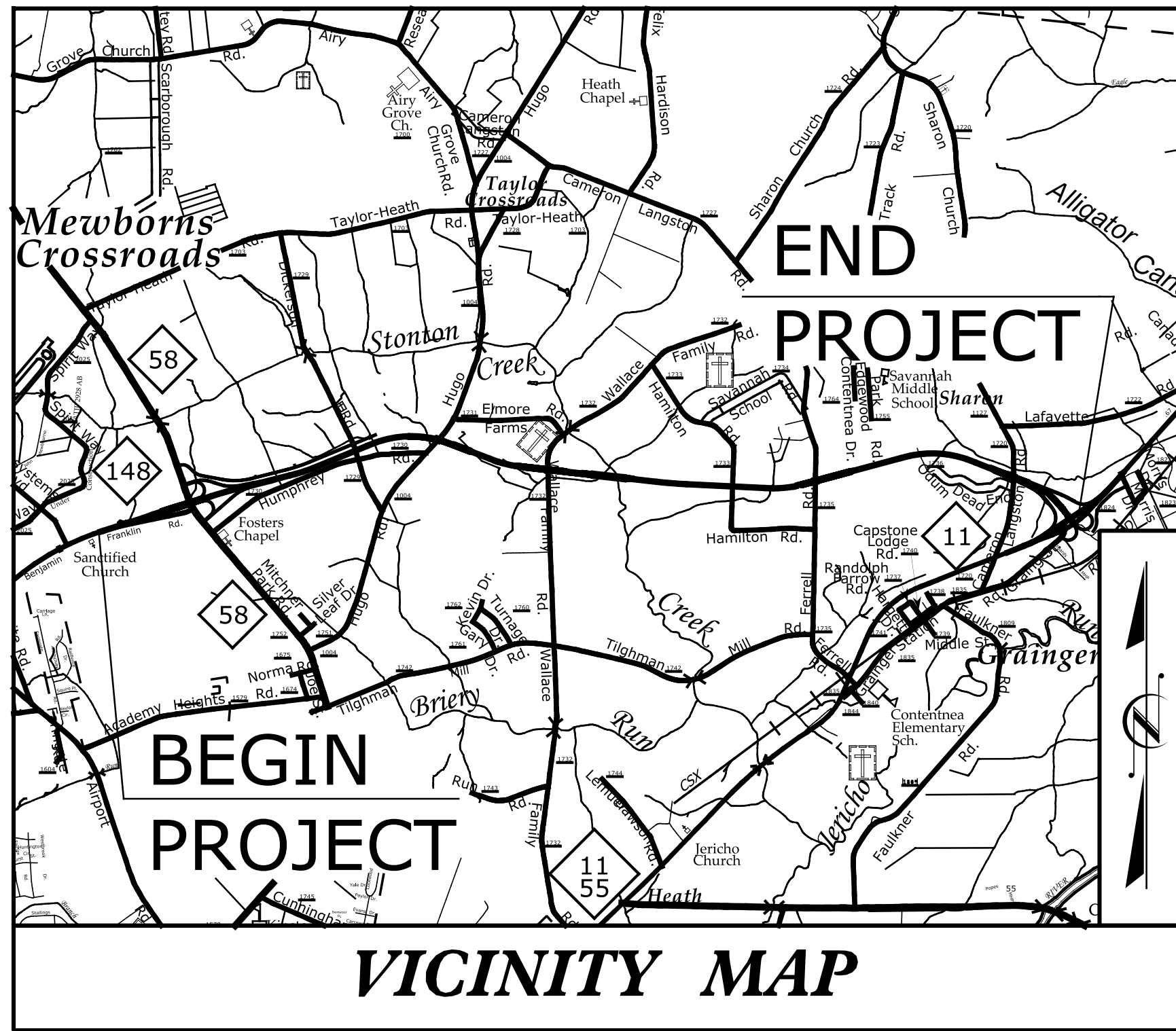
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shall not be considered a certified document.**

09/20/17

TIP PROJECT: R-5703

CONTRACT: C204014

See Sheet 1A For Index of Sheets

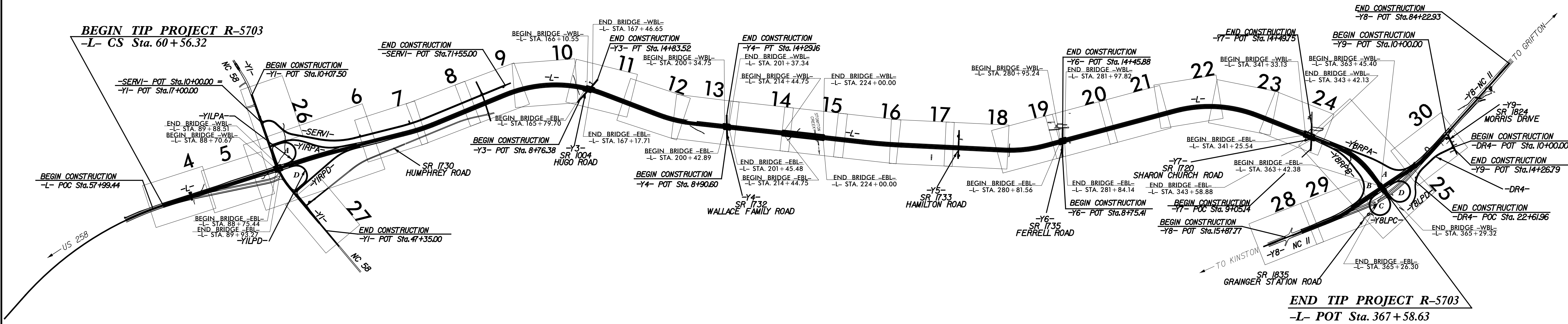


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

LENOIR COUNTY

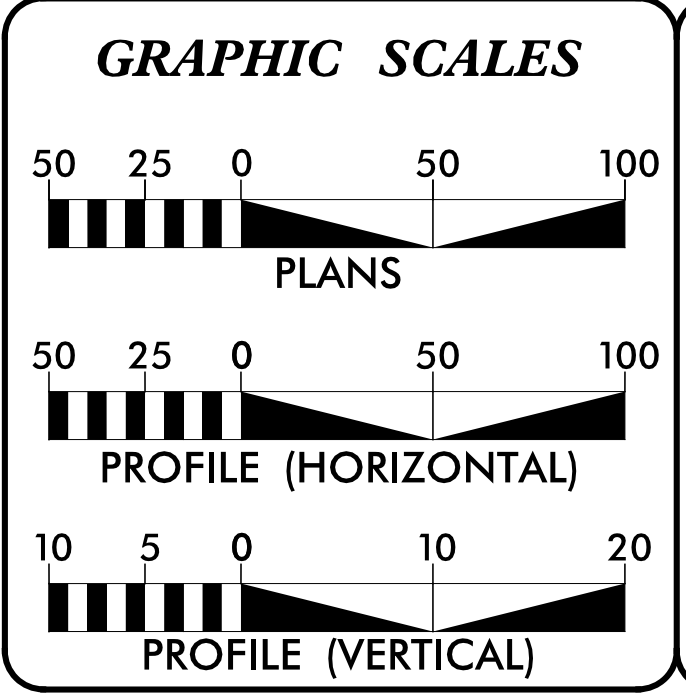
LOCATION: NC 148 (HARVEY PARKWAY) FROM NC 58 TO NC 11
TYPE OF WORK: GRADING, PAVING, DRAINAGE, AND STRUCTURES

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-5703	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
46375.1.1		PE	
46375.2.1		RW	
46375.3.1		CONST.	



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

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



DESIGN DATA

ADT 2017 =	4,000
ADT 2040 =	18,800
K =	9 %
D =	55 %
T =	8 % *
V =	70 MPH
* (TTST 4% + DUAL 4%)	
FUNC CLASS =	FREWAY/INTERSTATE

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-5703 =	5.473 MILES
LENGTH STRUCTURE TIP PROJECT R-5703 =	0.342 MILES
TOTAL LENGTH TIP PROJECT R-5703 =	5.815 MILES

Prepared In the Office of:

Michael Baker INTERNATIONAL
8000 Regency Parkway, Suite 600
Cary, NC 27518
Professional Corporation License Number: F-1084

DIVISION OF HIGHWAYS

2012 STANDARD SPECIFICATIONS
RIGHT OF WAY DATE: FEBRUARY 20, 2017
LETTING DATE: DECEMBER 19, 2017

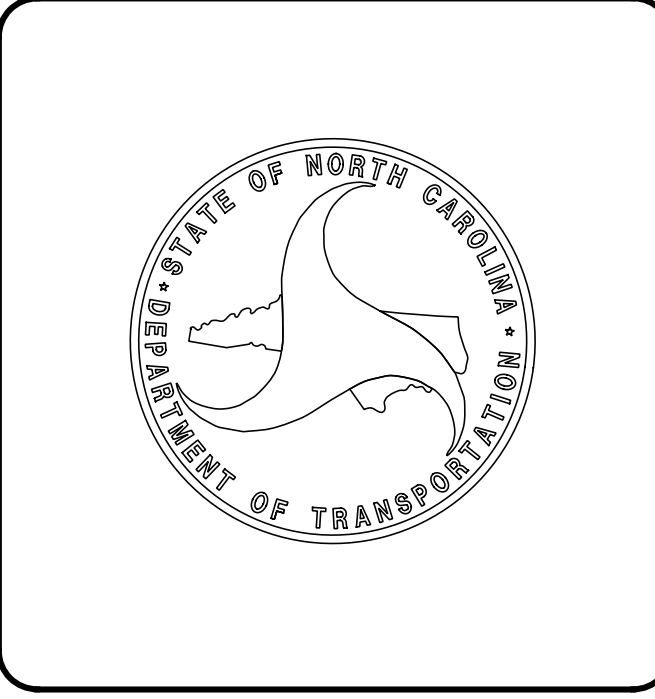
TODD H. BUCKNER, P.E. PROJECT ENGINEER
TERRANCE A. HARRIS, P.E. PROJECT DESIGN ENGINEER
MARIA A. ROGERSON, P.E. NCDOT DIVISION 2 CONTACT

HYDRAULICS ENGINEER

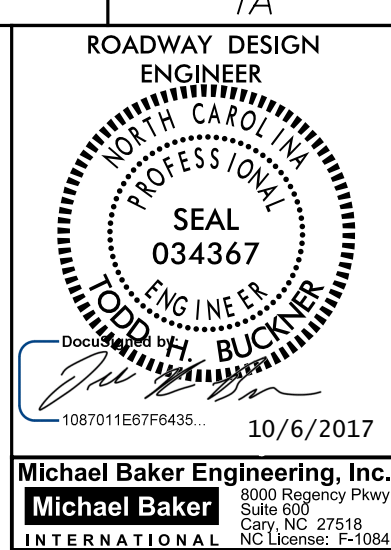
Professional Engineer Seal for Todd H. Buckner, No. 26971, State of North Carolina, expires 9/14/2017.

ROADWAY DESIGN ENGINEER

Professional Engineer Seal for Todd H. Buckner, No. 034367, State of North Carolina, expires 9/14/2017.



11-SEP-2017 14:57 R:\R00d\wg\p\proj\NR-5703_RDY_TSH.dgn \$\$\$USER\$NAME\$\$\$



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INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES & LIST OF STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
1C-1 THRU 1C-5	SURVEY CONTROL SHEETS
2A-1 THRU 2A-6	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2B-1 THRU 2B-2	SHEAR POINT DIAGRAM SHEETS
2B-3 THRU 2B-4	INTERCHANGE GRADING PLANS
2C-1 THRU 2C-6	DETAIL OF GUARDRAIL PLACEMENT
2C-7 THRU 2C-10	DETAIL OF GUARDRAIL INSTALLATION
2C-11 THRU 2C-12	DETAIL OF STRUCTURE ANCHOR UNIT TYPE III
2C-13	DETAIL OF STRUCTURE ANCHOR UNIT TYPE B-77
2C-14	DETAIL OF STRUCTURE ANCHOR UNITS ANCHORAGE FOR GUARDRAIL POST ON BOX CULVERT
2C-15	DETAIL OF MODIFIED CONCRETE FLUME
2C-16	DETAIL OF PAVING SHOULDERS UNDER BRIDGES
2C-17	CABLE GUIDERAIL DUAL LANE BRIDGES GUIDERAIL LAYOUT
2C-18	DETAIL OF SHOULDER BERM GUTTER TO 2'-6" CURB & GUTTER TRANSITION SECTION
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3B-1 THRU 3B-2	EARTHWORK SUMMARY, GUARDRAIL SUMMARY, GUIDERAIL SUMMARY, SUMMARY OF PAVEMENT REMOVAL, WOVEN WIRE & CHAIN LINK FENCE, SHOULDER BERM GUTTER SUMMARY & 2'-6" CURB & GUTTER SUMMARY
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3G-1	SUMMARIES OF SUBSURFACE DRAINAGE, AGGREGATE SUBGRADE/STABILIZATION, & BRIDGE WAITING PERIODS
3P-1	PARCEL INDEX SHEETS
4 THRU 30	PLAN SHEETS
31 THRU 56	PROFILE SHEETS
TMP-1 THRU TMP-7-C2	TRANSPORTATION MANAGEMENT PLANS
PMP-1 THRU PMP-20	PAVEMENT MARKING PLANS
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SCP-1 THRU SCP-6	COMMUNICATIONS CABLE ROUTING PLANS
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X-1A THRU X-1G	CROSS-SECTION SUMMARY SHEETS
X-1 THRU X-296	CROSS-SECTIONS
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S2-1 THRU S2-25	STRUCTURE NO. 2 PLANS
S3-1 THRU S3-34	STRUCTURE NO. 3 PLANS
S4-1 THRU S4-31	STRUCTURE NO. 4 PLANS
S5-1 THRU S5-25	STRUCTURE NO. 5 PLANS
S6-1 THRU S6-25	STRUCTURE NO. 6 PLANS
S7-1 THRU S7-50	STRUCTURE NO. 7 PLANS
S8-1 THRU S8-52	STRUCTURE NO. 8 PLANS
S9-1 THRU S9-25	STRUCTURE NO. 9 PLANS
S10-1 THRU S10-25	STRUCTURE NO. 10 PLANS
S11-1 THRU S11-29	STRUCTURE NO. 11 PLANS
S12-1 THRU S12-29	STRUCTURE NO. 12 PLANS
S13-1 THRU S13-29	STRUCTURE NO. 13 PLANS
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C15-1 THRU C15-5	CULVERT NO. 15 PLANS

GENERAL NOTES:

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

GRADE LINE:
GRADING AND SURFACING:

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

CLEARING:

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

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 & STD. NO. 225.05 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

SIDE ROADS:

THE CONTRACTOR WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS, AND DRIVES ENTERING THIS PROJECT. THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR THE PARTICULAR ITEMS INVOLVED.

SUBSURFACE DRAINS:

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

TEMPORARY SHORING:

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

STREET TURNOUT:

STREET RETURNS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 848.04 USING THE RADII NOTED ON PLANS.

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.

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 - ELECTRIC, CITY OF KINSTON - ELECTRIC, CENTURYLINK - COMMUNICATIONS, SUDDENLINK - COMMUNICATIONS, PIEDMONT NATURAL GAS - TRANSMISSION, PIEDMONT NATURAL GAS - DISTRIBUTION, NEUSE REGIONAL WATER AND SEWER AUTHORITY (NRWASA) - WATER, NORTH LENOIR WATER CORPORATION (NLW) - WATER, GREENE COUNTY - SEWER, HUGO AUTO SALES - SEWER. ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

RIGHT-OF-WAY MARKERS:

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

2012 ROADWAY ENGLISH STANDARD DRAWINGS

EFF. 01-17-2012
REV. 05-24-2017

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

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.01	Guide for Grading Subgrade - Interstate and Freeway
225.02	Guide for Grading Subgrade - Secondary and Local
225.03	Deceleration and Acceleration Lanes
225.04	Method of Obtaining Superelevation - Two Lane Pavement
225.05	Method of Obtaining Superelevation - Divided Highways
225.09	Guide for Shoulder and Ditch Transition at Grade Separations
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
422.11	Bridge Approach Fills - Sub Regional Tier
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
560.02	Method of Shoulder Construction - High Side of Superelevated Curve - Method II (Sheet 2 of 3 is no longer applicable)
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
665.01	Asphalt Shoulders - Milled Rumble Strips
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
838.21	Reinforced Concrete Endwall - for Single 54" Pipe 90 Skew
838.27	Reinforced Concrete Endwall - for Single 60" Pipe 90 Skew
838.33	Reinforced Concrete Endwall - for Single 66" Pipe 90 Skew
838.39	Reinforced Concrete Endwall - for Single 72" Pipe 90 Skew
838.45	Notes for Reinforced Concrete Endwall - Std. Dwg 838.21 thru 838.40
838.51	Reinforced Brick Endwall - for Single 54" Pipe 90 Skew
838.57	Reinforced Brick Endwall - for Single 60" Pipe 90 Skew
838.63	Reinforced Brick Endwall - for Single 66" Pipe 90 Skew
838.69	Reinforced Brick Endwall - for Single 72" Pipe 90 Skew
838.75	Notes for Reinforced Brick Endwall - Std. Dwg 838.51 thru 838.70
838.80	Precast Endwalls - 12" thru 72" 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
840.04	Concrete Open Throat Catch Basin - 12" thru 48" Pipe
840.05	Brick Open Throat Catch Basin - 12" thru 48" Pipe
840.14	Concrete Drop Inlet - 12" thru 30" Pipe
840.15	Brick Drop Inlet - 12" thru 30" Pipe
840.16	Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
840.17	Concrete Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.19	Concrete Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.20	Frames and Wide Slot Flat Grates
840.22	Frames and Wide Slot Sag Grates
840.24	Frames and Narrow Slot Sag Grates
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.26	Brick Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.28	Brick Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.45	Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
848.04	Street Turnout
852.01	Concrete Islands
852.06	Method for Placement of Drop Inlets in Concrete Islands
862.04	Anchoring End of Guardrail - B-77 and B-83 Anchor Units
865.01	Cable Guiderail
866.02	Woven Wire Fence - with Wood Post
876.02	Guide for Rip Rap at Pipe Outlets

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

BOUNDARIES AND PROPERTY:

Table listing symbols for 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:

Table listing symbols for 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:

Table listing symbols for 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:

Table listing symbols for railroads: Standard Gauge, RR Signal Milepost, Switch, RR Abandoned, RR Dismantled.

Note: Not to Scale *S.U.E. = Subsurface Utility Engineering

RIGHT OF WAY & PROJECT CONTROL:

Table listing symbols for right of way and 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 CA 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:

Table listing symbols for 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:

Table listing symbols for vegetation: Single Tree, Single Shrub.

Table listing symbols for other features: Hedge, Woods Line, Orchard, Vineyard.

EXISTING STRUCTURES:

Table listing symbols for 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:

Table listing symbols for 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:

Table listing symbols for 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:

Table listing symbols for 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:

Table listing symbols for 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.

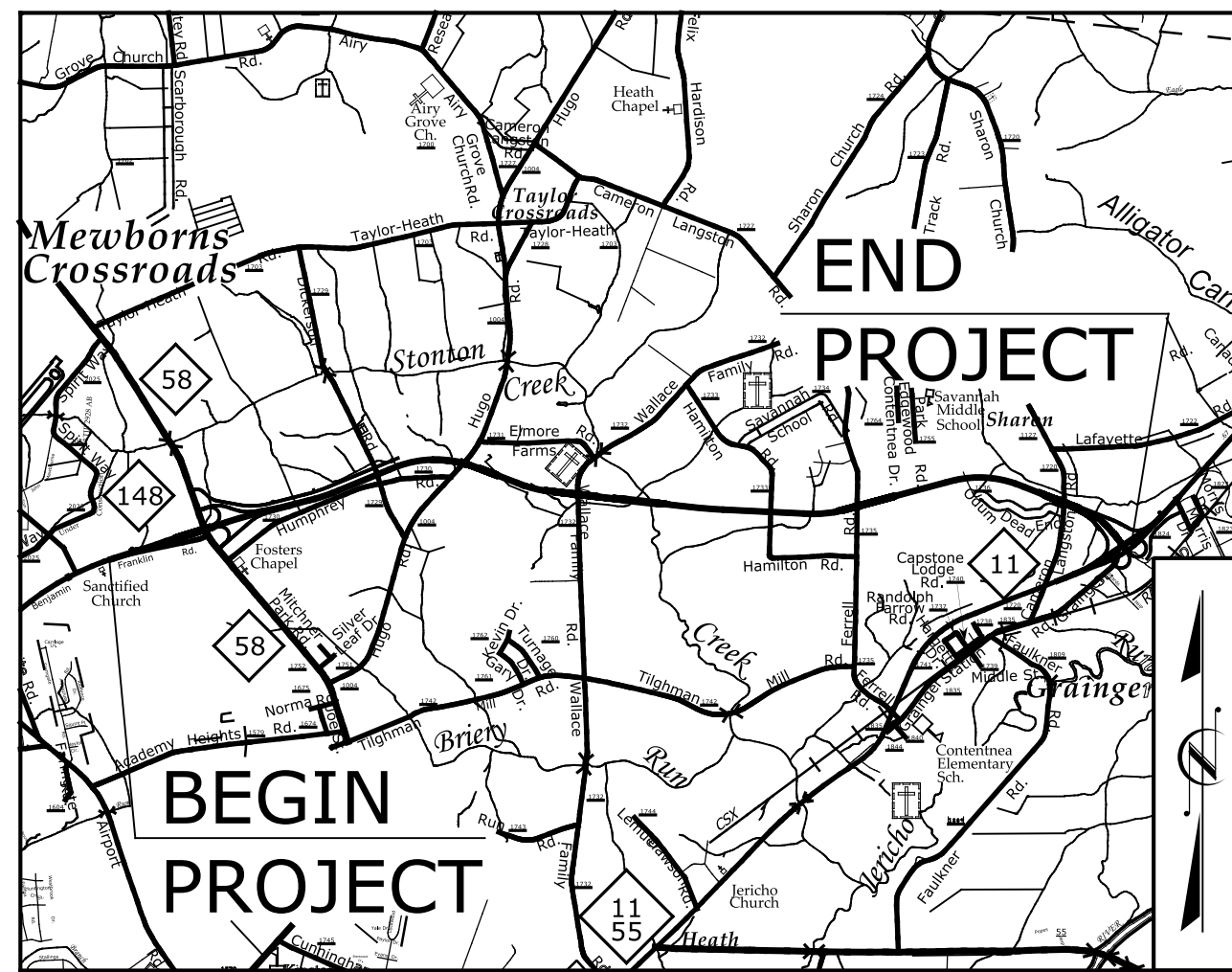
SANITARY SEWER:

Table listing symbols for 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.*).

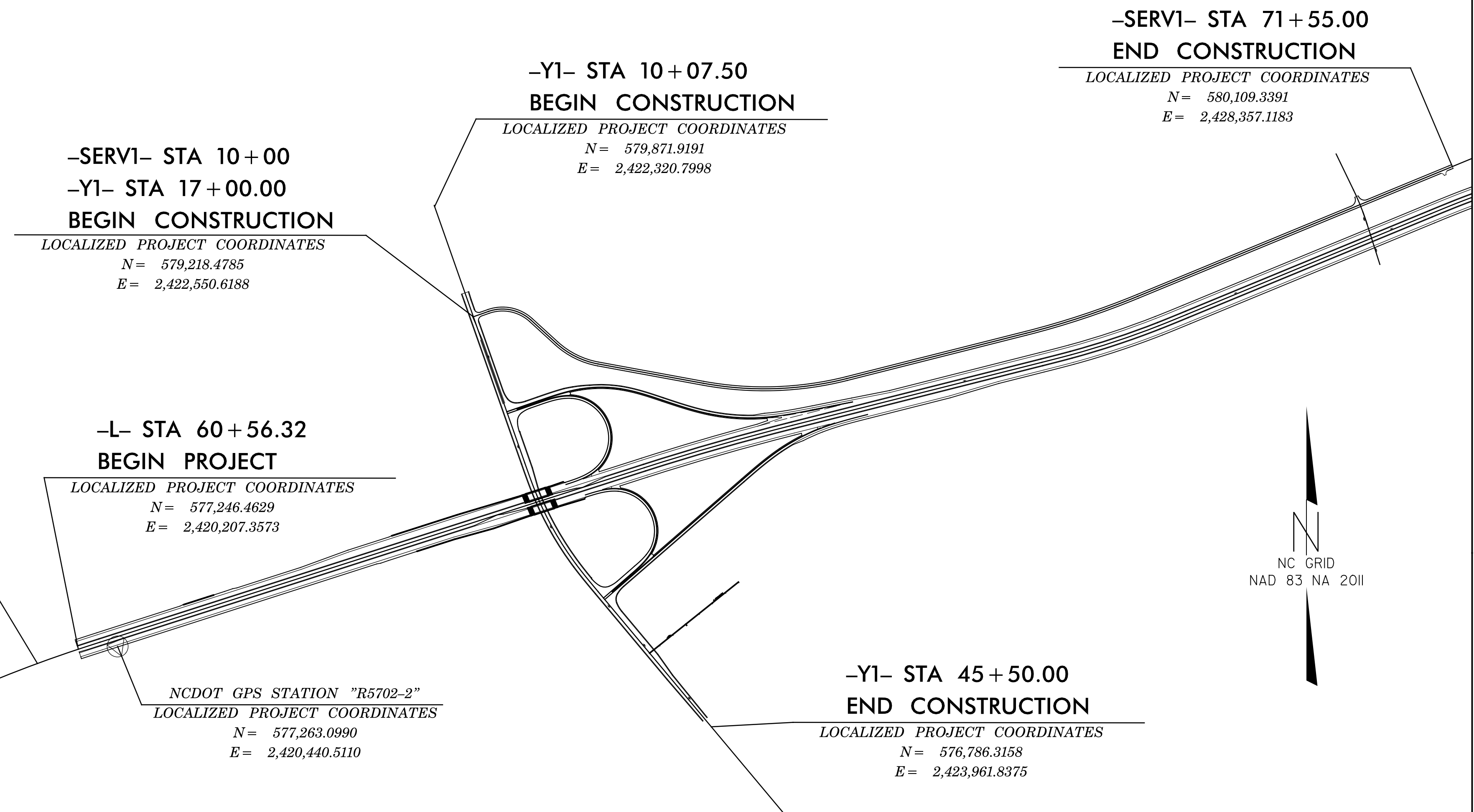
MISCELLANEOUS:

Table listing symbols for 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.

SURVEY CONTROL SHEET R-5703



VICINITY MAP



**-L- STA 57+99.44
BEGIN CONSTRUCTION**
LOCALIZED PROJECT COORDINATES
N = 577,161.8405
E = 2,419,964.9258

NCDOT GPS STATION "R5703-1"
LOCALIZED PROJECT COORDINATES
N = 576,884.3880
E = 2,419,433.0080

**-L- STA 60+56.32
BEGIN PROJECT**
LOCALIZED PROJECT COORDINATES
N = 577,246.4629
E = 2,420,207.3573

NCDOT GPS STATION "R5702-2"
LOCALIZED PROJECT COORDINATES
N = 577,263.0990
E = 2,420,440.5110

**-YI- STA 45+50.00
END CONSTRUCTION**
LOCALIZED PROJECT COORDINATES
N = 576,786.3158
E = 2,423,961.8375

**-SERVI- STA 71+55.00
END CONSTRUCTION**
LOCALIZED PROJECT COORDINATES
N = 580,109.3391
E = 2,428,357.1183

**-YI- STA 10+07.50
BEGIN CONSTRUCTION**
LOCALIZED PROJECT COORDINATES
N = 579,871.9191
E = 2,422,320.7998

**-SERVI- STA 10+00
-YI- STA 17+00.00
BEGIN CONSTRUCTION**
LOCALIZED PROJECT COORDINATES
N = 579,218.4785
E = 2,422,550.6188

CONTROL DATA

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
R57031	GPS MON	576884.3880	2419433.0080	80.96	51+99.73	53.34 RT
R57032	GPS MON	577263.0990	2420440.5110	83.43	62+83.43	55.73 RT
BL20	BL-20	577493.7750	2421427.2730	85.67	72+93.50	137.30 RT
BL21	BL-21	577672.9380	2422278.8000	81.11	81+59.08	226.64 RT
BL22	BL-22	577903.6650	2423086.0280	76.53	89+98.21	253.35 RT
BL23	BL-23	578133.2570	2424052.6590	75.85	99+98.12	323.99 RT
BL24	BL-24	578521.5350	2425085.0750	74.37	111+05.37	208.60 RT
BL25	BL-25	578985.7630	2426179.5270	71.27	122+79.22	29.50 RT
BL26	BL-26	579318.1700	2426991.2340	67.28	131+54.23	0.40 RT
BL27	BL-27	579691.5740	2427891.3170	66.93	141+28.69	1.48 LT
BL28	BL-28	580034.9920	2428728.0440	63.17	150+30.87	26.53 LT
BL29	BL-29	580296.9690	2429546.3010	62.25	158+52.37	178.58 LT

BENCHMARK DATA

.....
 BM10 ELEVATION = 76.99
 N 577986 E 2422782
 BL2 STATION 40+30.00 163 LEFT
 RR SPIKE IN BASE OF 24" PINE

BM11 ELEVATION = 77.41
 N 578300 E 2425417
 BL1 STATION 8+85.00 104 RIGHT
 RR SPIKE IN BASE OF 36" OAK

BM12 ELEVATION = 69.75
 N 579932 E 2427837
 BL2 STATION 94+77.00 243 LEFT
 RR SPIKE IN BASE OF 30" PINE

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "P60"
 WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 574939.107(ft) EASTING: 2435346.9420(ft) ELEVATION: 53.49(ft)
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999876417
 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "P60" TO -L- STATION 60+56.32 IS
 N 81° 20' 04.17" W 15,314.40'
 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
 VERTICAL DATUM USED IS NAVD 88

NOTES:

THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
[HTTP://WWW.NCDOT.GOV/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/](http://www.ncdot.gov/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/)

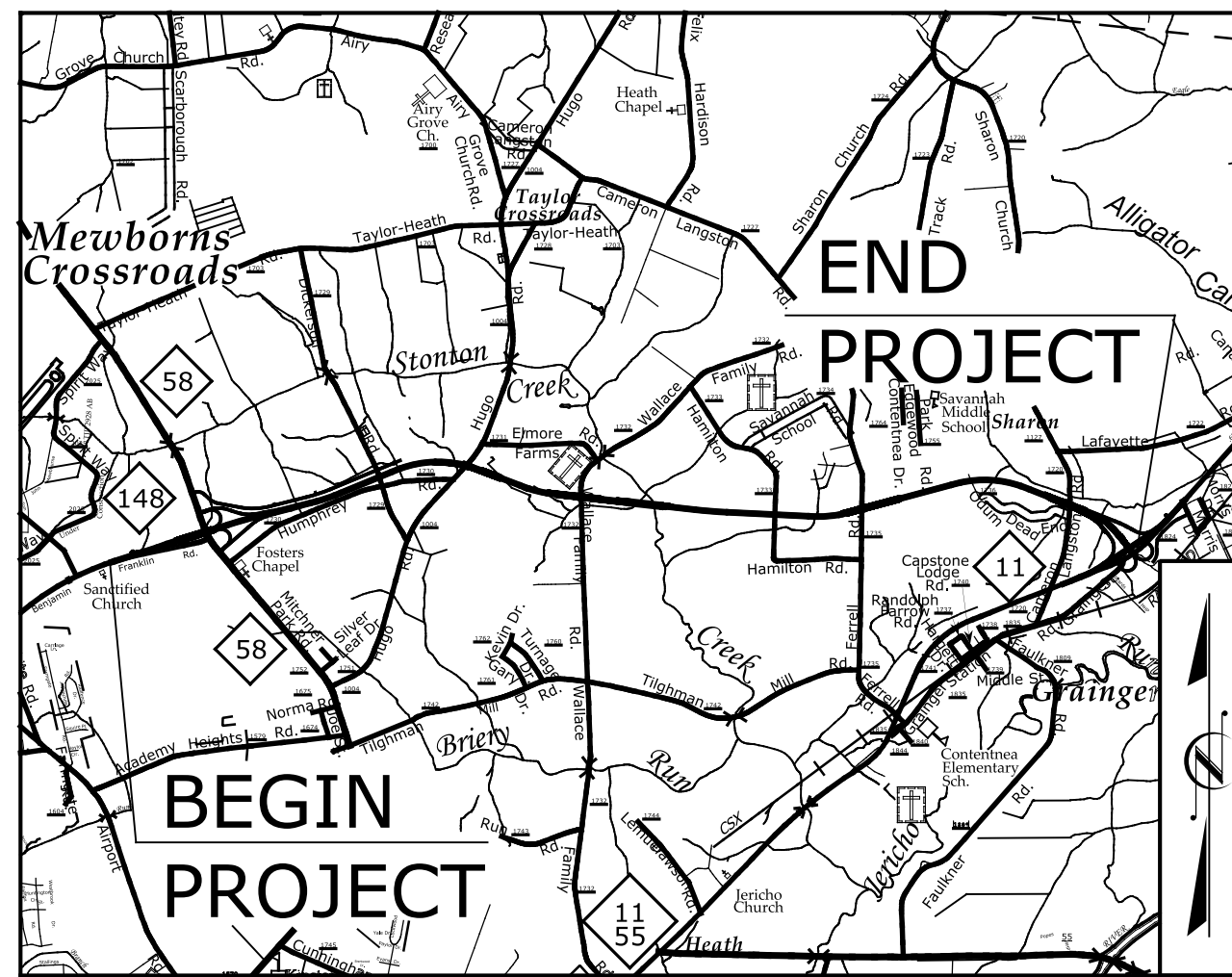
THE FILES TO BE FOUND ARE AS FOLLOWS:
 TIP R5703_LS_CONTROL.TXT

SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

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

NOTE: DRAWING NOT TO SCALE

SURVEY CONTROL SHEET R-5703



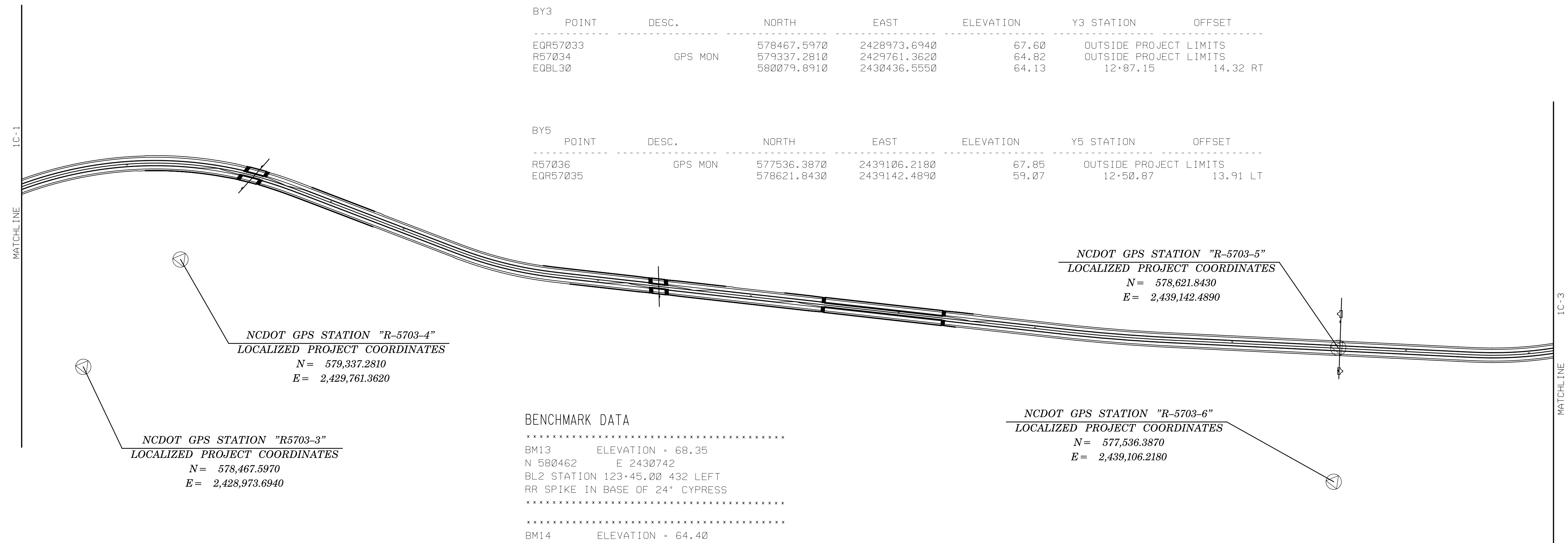
VICINITY MAP

CONTROL DATA

BL2 POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
BL30	BL-30	580079.8910	2430436.5550	64.13	167+30.29	83.54 LT
BL31	BL-31	579845.3620	2431667.9070	68.73	179+57.27	289.80 LT
BL32	BL-32	579631.8160	2432372.5940	64.81	187+21.11	329.73 LT
BL33	BL-33	579420.2110	2433620.6920	61.79	200+41.67	297.45 LT
BL34	BL-34	579353.1570	2434353.7970	54.89	207+77.69	312.20 LT
BL35	BL-35	579295.2240	2434965.1260	42.39	213+91.67	322.49 LT
BL36	BL-36	579233.3530	2435682.7750	42.66	221+11.75	340.67 LT
BL37	BL-37	579193.6020	2436039.1090	62.45	224+70.29	340.72 LT
BL38	BL-38	579086.6910	2437179.5260	62.56	236+22.00	358.79 LT
BL39	BL-39	578906.2420	2438369.1210	62.09	248+35.17	250.48 LT
R57035	GPS MON	578621.8430	2439142.4890	59.07	256+21.46	4.03 LT
BL40	BL-40	578799.9820	2439900.0290	66.83	263+69.44	218.80 LT

BY3 POINT	DESC.	NORTH	EAST	ELEVATION	Y3 STATION	OFFSET
EQR57033		578467.5970	2428973.6940	67.60	OUTSIDE PROJECT LIMITS	
R57034	GPS MON	579337.2810	2429761.3620	64.82	OUTSIDE PROJECT LIMITS	
EQBL30		580079.8910	2430436.5550	64.13	12+87.15	14.32 RT

BY5 POINT	DESC.	NORTH	EAST	ELEVATION	Y5 STATION	OFFSET
R57036	GPS MON	577536.3870	2439106.2180	67.85	OUTSIDE PROJECT LIMITS	
EQR57035		578621.8430	2439142.4890	59.07	12+50.87	13.91 LT



BENCHMARK DATA

```

*****
BM13    ELEVATION = 68.35
N 580462    E 2430742
BL2 STATION 123+45.00 432 LEFT
RR SPIKE IN BASE OF 24' CYPRESS
*****
BM14    ELEVATION = 64.40
N 579195    E 2436021
BL2 STATION 177+83.00 0 RIGHT
RR SPIKE IN BASE OF 12' PINE
*****
BM15    ELEVATION = 58.69
N 578374    E 2439008
BL2 STATION 209+33.00 279 RIGHT
RR SPIKE IN BASE OF 16' GUM
*****

```

NOTES:

THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
[HTTP://WWW.NCDOT.GOV/DOH/RECONSTRUCTHIGHWAY/LOCATION/PROJECT/](http://www.ncdot.gov/DOH/RECONSTRUCTHIGHWAY/LOCATION/PROJECT/)

THE FILES TO BE FOUND ARE AS FOLLOWS:
 TIP R5703_LS_CONTROL.TXT

SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

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

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "P60"

WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
 NORTHING: 574939.107(ft) EASTING: 2435346.9420(ft)
 ELEVATION: 53.49(ft)

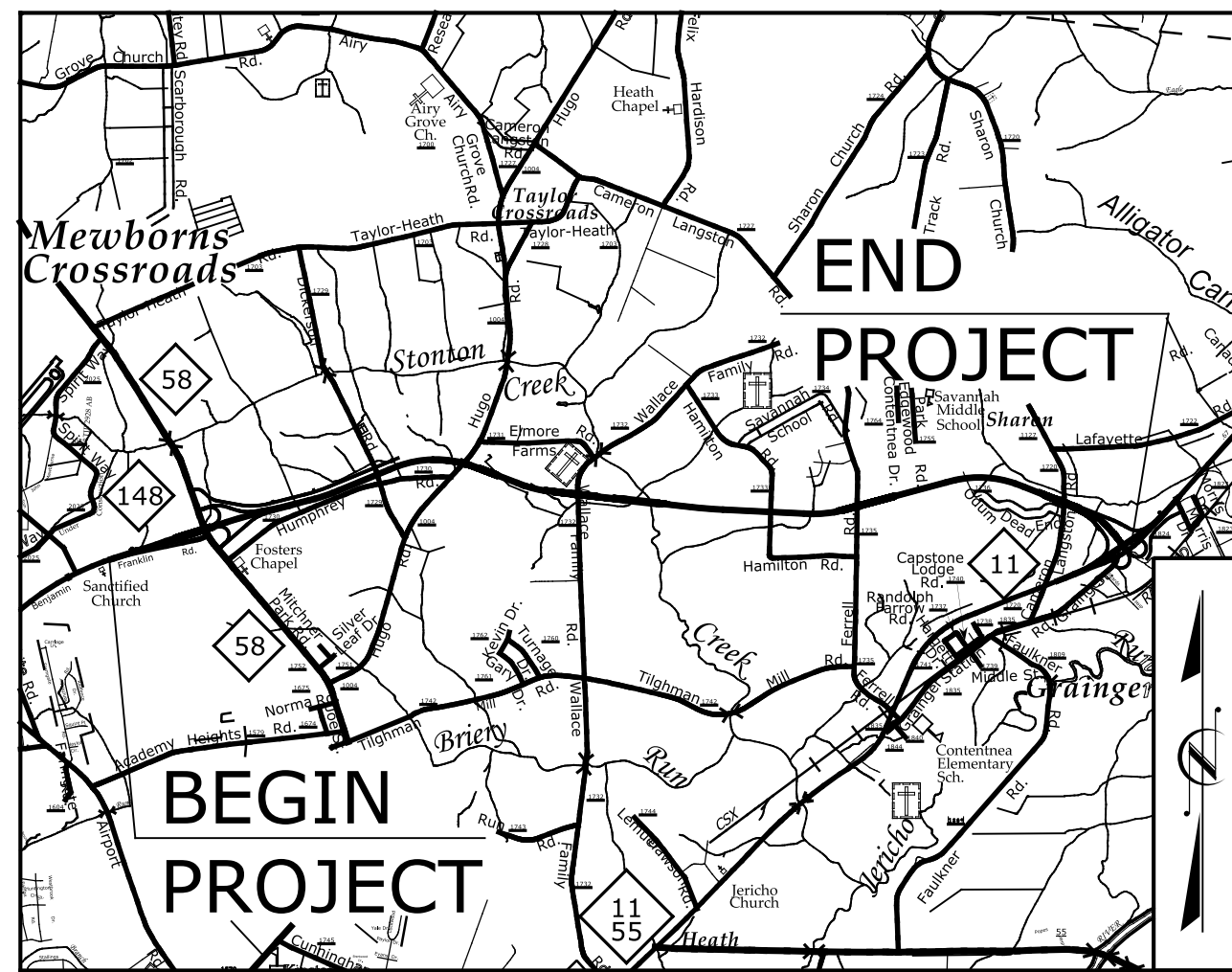
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999876417

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "P60" TO -L- STATION 60+56.32 IS
 N 81° 20' 04.17" W 15,314.40'

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

NOTE: DRAWING NOT TO SCALE

SURVEY CONTROL SHEET R-5703



VICINITY MAP

CONTROL DATA

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
BL41	BL-41	578946.0680	2440689.8540	67.68	272+09.06	370.18 LT
BL42	BL-42	578979.2720	2441651.4540	74.53	282+07.13	189.04 LT
BL43	BL-43	579061.5680	2442437.3340	75.34	289+07.49	64.82 LT
BL44	BL-44	579230.2110	2443421.7280	75.18	299+01.95	27.46 RT
BL45	BL-45	579347.9260	2444091.5740	74.64	306+59.41	87.40 RT
BL46	BL-46	579474.1040	2444811.9640	74.55	314+07.71	114.14 RT
BL47	BL-47	579602.9250	2445824.9650	68.68	324+22.96	73.16 LT
BL48	BL-48	579170.9910	2446727.7440	63.22	334+11.84	38.40 RT
R57037	GPS MON	578731.5020	2447574.9400	56.27	343+61.33	135.17 RT
R57038	GPS MON	577785.4340	2447463.7680	71.47	346+06.21	1055.74 RT
BL49	BL-49	577734.7140	2448366.3140	63.54	357+78.82	647.43 RT
BY850	BY8-50	577404.1950	2449319.5760	74.76	366+74.46	99.42 RT

POINT	DESC.	NORTH	EAST	ELEVATION	Y8 STATION	OFFSET
BY847	BY8-47	576395.5020	2446900.8880	74.60	14+82.39	51.35 RT
BY848	BY8-48	576667.6800	2447598.7460	73.45	22+31.44	54.77 RT
BY849	BY8-49	576992.3870	2448420.3680	73.58	31+00.04	96.13 RT
EQBY850		577404.1950	2449319.5760	74.76	40+73.29	251.46 RT
BY851	BY8-51	578156.1420	2450138.3690	50.85	51+65.01	90.18 RT
BY852	BY8-52	578996.4170	2450886.4890	36.10	62+76.48	51.69 RT
BY853	BY8-53	579827.5550	2451631.0050	30.76	73+92.31	54.29 RT
R57039	GPS MON	581276.9850	2452917.2470	34.31	OUTSIDE PROJECT LIMITS	
R570310	GPS MON	582108.2270	2453659.0310	34.32	OUTSIDE PROJECT LIMITS	

NCDOT GPS STATION "R5703-10"
LOCALIZED PROJECT COORDINATES
N = 582,108.2270
E = 2,453,659.0310

NCDOT GPS STATION "R5703-9"
LOCALIZED PROJECT COORDINATES
N = 581,276.9850
E = 2,452,917.2470

**-Y8- STA 84+22.93
END CONSTRUCTION**

LOCALIZED PROJECT COORDINATES
N = 580,632.9479
E = 2,452,276.3488

**-Y9- STA 10+00
BEGIN CONSTRUCTION**

LOCALIZED PROJECT COORDINATES
N = 578,949.3718
E = 2,450,775.2888

**-Y9- STA 14+26.79
END CONSTRUCTION**

LOCALIZED PROJECT COORDINATES
N = 578,578.5307
E = 2,450,979.3426

NCDOT GPS STATION "R5703-7"
LOCALIZED PROJECT COORDINATES
N = 578,731.5020
E = 2,447,574.9400

NCDOT GPS STATION "R5703-8"
LOCALIZED PROJECT COORDINATES
N = 577,785.4340
E = 2,447,463.7680

**-Y8- STA 15+87.77
BEGIN CONSTRUCTION**

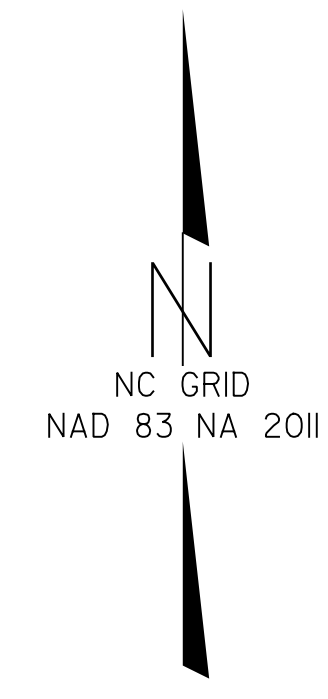
LOCALIZED PROJECT COORDINATES
N = 576,481.9978
E = 2,446,980.0107

**-L- STA 367+58.63
END PROJECT**

LOCALIZED PROJECT COORDINATES
N = 577,397.9971
E = 2,449,449.6961

BENCHMARK DATA

BM16	ELEVATION = 76.43
N 579296	E 2444854
BL2 STATION 267+37.00	182 RIGHT
RR SPIKE IN BASE OF 24' GUM	
BM17	ELEVATION = 56.38
N 579248	E 2447596
BL2 STATION 294+76.00	468 LEFT
RR SPIKE IN BASE OF 18' PINE	
BM18	ELEVATION = 56.27
N 577312	E 2449300
BL2 STATION 5+00.00	
N 89°10'44.57" E	DIST 29870.28
RR SPIKE IN BASE OF 24' PINE	
BM19	ELEVATION = 34.24
N 579569	E 2451475
BL2 STATION 296+94.00	3989 LEFT
RR SPIKE IN BASE OF 18' PINE	
BM20	ELEVATION = 36.96
N 581233	E 2452977
BL2 STATION 296+94.00	5953 LEFT
RR SPIKE IN BASE OF 18' PINE	



MATCHLINE 1C-2

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "P60"
 WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 574939.107(ft) EASTING: 2435346.9420(ft)
 ELEVATION: 53.49(ft)
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 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
 VERTICAL DATUM USED IS NAVD 88

NOTES:

THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
[HTTP://WWW.NCDOT.GOV/DOH/RECONSTRUCT/HIGHWAY/LOCATION/PROJECT/](http://www.ncdot.gov/DOH/RECONSTRUCT/HIGHWAY/LOCATION/PROJECT/)

THE FILES TO BE FOUND ARE AS FOLLOWS:
 TIP R5703_LS_CONTROL.TXT

SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

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

NOTE: DRAWING NOT TO SCALE

SURVEY CONTROL SHEET R-5703

PRELIMINARY ROW MARKER IRON PIN AND CAP

Table with columns: ALIGN, STATION, OFFSET, NORTH, EAST. Contains survey data for various points along the alignment.

PRELIMINARY ROW MARKER IRON PIN AND CAP

Table with columns: ALIGN, STATION, OFFSET, NORTH, EAST. Contains survey data for various points along the alignment.

PRELIMINARY PERMANENT EASEMENT IRON PIN AND CAP

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NOTE: DRAWING NOT TO SCALE

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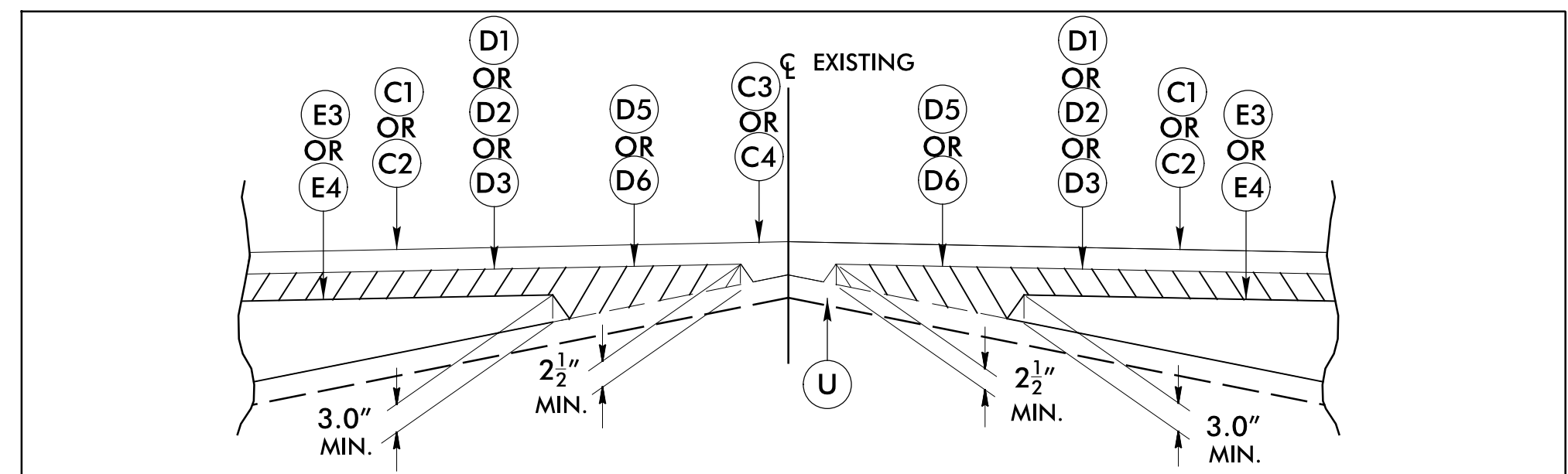
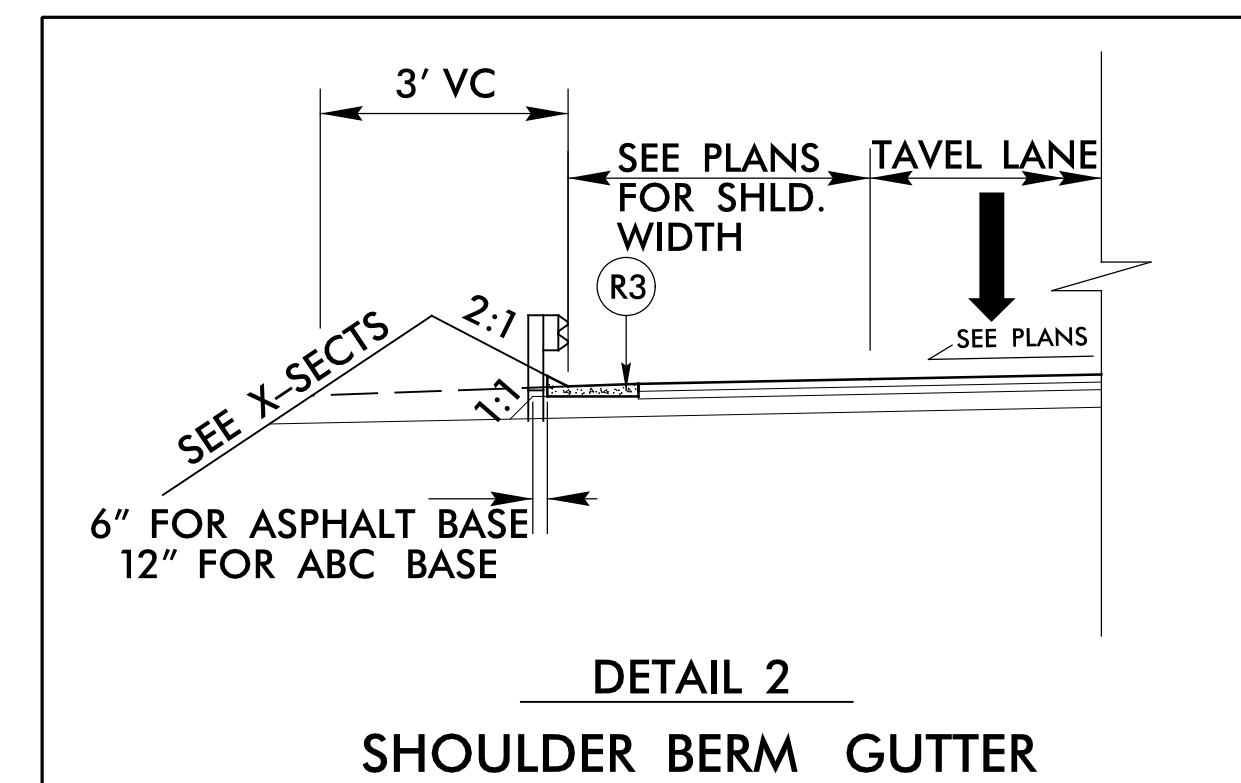
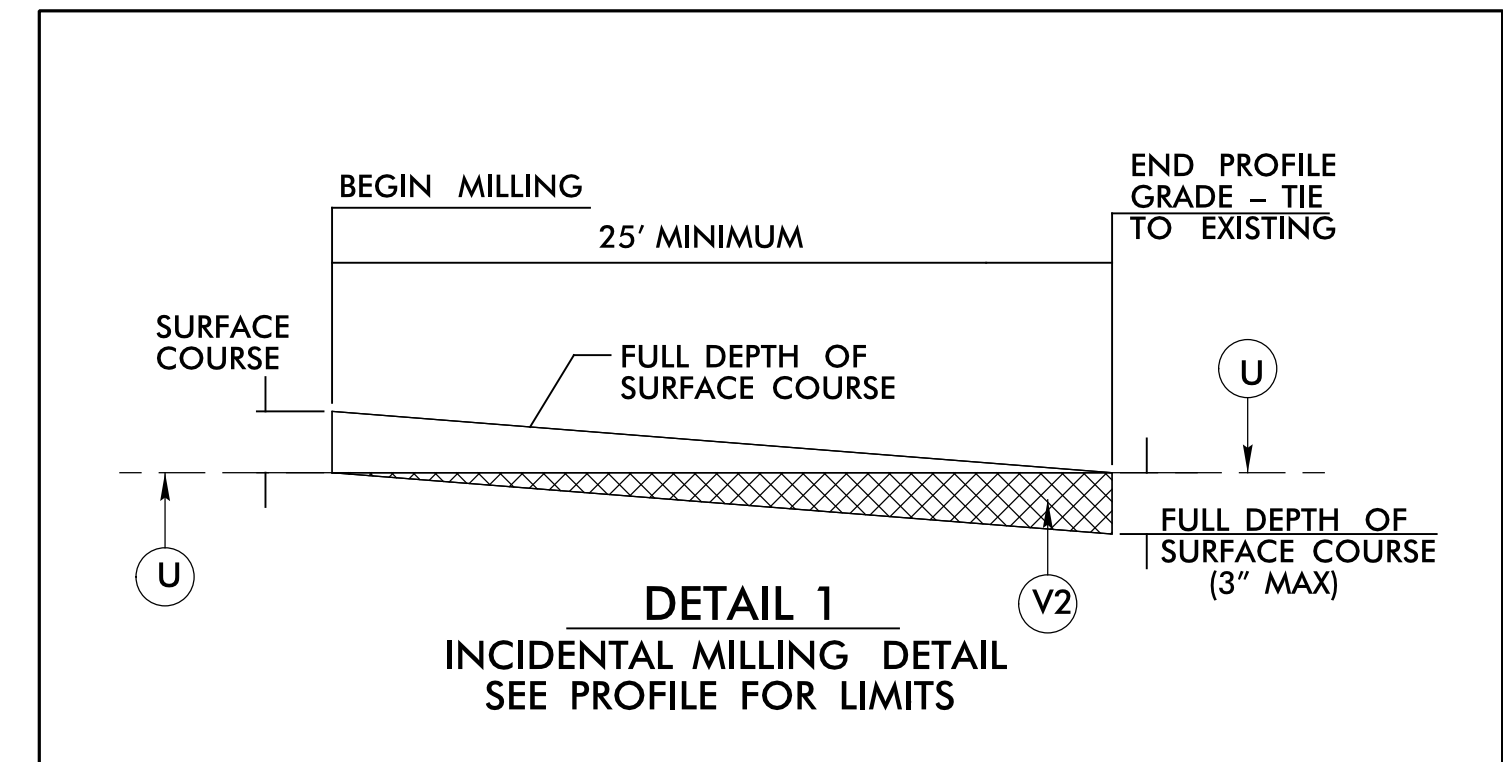
6/2/19

PAVEMENT SCHEDULE

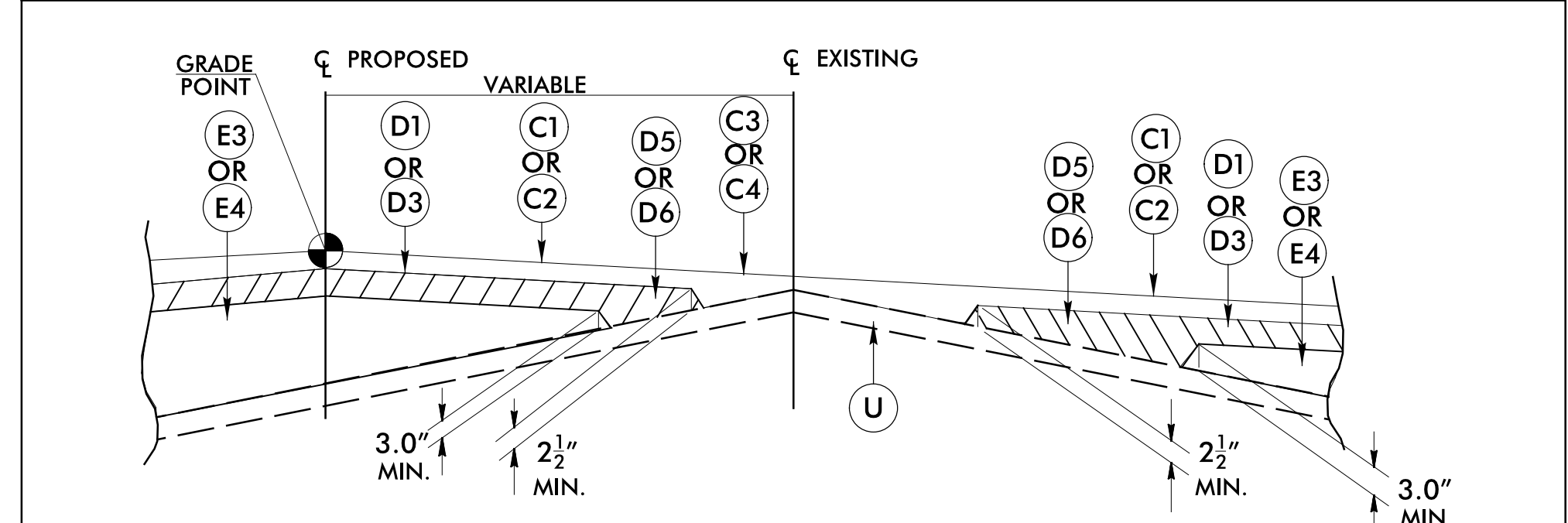
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	D4	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	M1	MILLING EXISTING SOIL SHOULDER, TO A DEPTH OF 5", WITH A WIDTH SHOWN ON THE TYPICAL FOR WIDENING.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	D5	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 2 1/2" IN DEPTH OR GREATER THAN 4" IN DEPTH.	P	PRIME COAT (AT THE RATE OF 0.35 GAL. PER SQ. YD.)
C3	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.	D6	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2 1/2" IN DEPTH OR GREATER THAN 4" IN DEPTH.	R1	5" MONOLITHIC CONCRETE ISLAND (KEYED IN)
C4	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.	E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R2	2'-6" CONCRETE CURB AND GUTTER
C5	PROP. APPROX. 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	E2	PROP. APPROX. 4 1/2" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.	R3	SHOULDER BERM GUTTER
C6	PROP. APPROX. 2 1/2" ASPHALT CONCRETE SURFACE COURSE TYPE SF9.5A, AT AN AVERAGE RATE OF 137 1/2 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	E3	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5 1/2" IN DEPTH.	T	EARTH MATERIAL
C7	PROP. APPROX. 2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.	E4	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5 1/2" IN DEPTH.	U	EXISTING PAVEMENT
C8	PROP. APPROX. 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	E5	PROP. APPROX. 5 1/2" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.	V1	MILLED RUMBLE STRIPS
D1	PROP. APPROX. 3 1/2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD.	J1	PROPOSED 8" AGGREGATE BASE COURSE	V2	INCIDENTAL MILLING
D2	PROP. APPROX. 3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.	J2	PROPOSED 10" AGGREGATE BASE COURSE	W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAILS)
D3	PROP. APPROX. 3 1/2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD.				

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

PROJECT REFERENCE NO. R-5703	SHEET NO. 2A-1
ROADWAY DESIGN ENGINEER SEAL 034367 9/18/2017	PAVEMENT DESIGN ENGINEER SEAL 022896 9/18/2017
<i>Clark Mottram</i>	<i>Clark Mottram</i>
Michael Baker Engineering, Inc. 8000 Regency Park Suite 600 Raleigh, NC 27618 NCE License: P-1084	NC DEPARTMENT OF TRANSPORTATION PAVEMENT MANAGEMENT UNIT 1503 MAIL SERVICE CENTER RALEIGH, NC 27699-1503
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



Detail Showing Method of Wedging No. 1

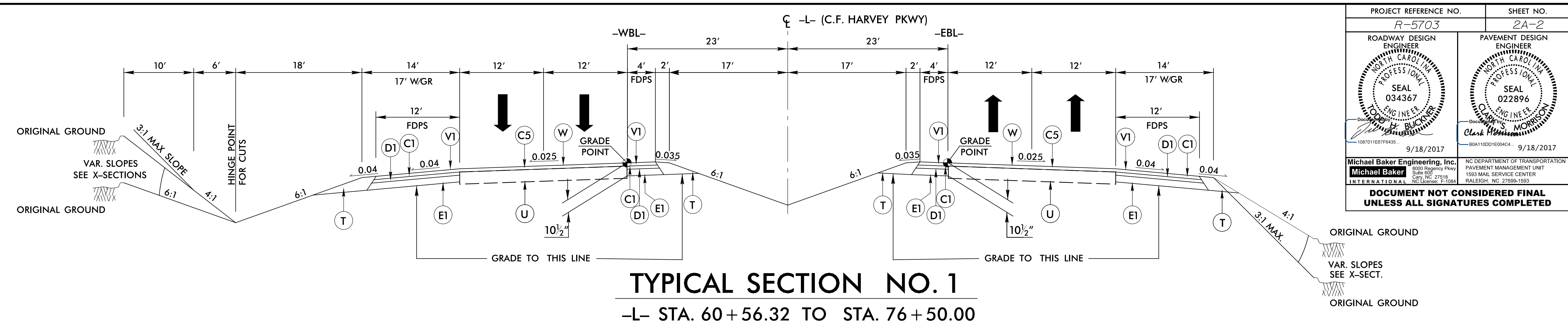


Detail Showing Method Of Wedging No. 2

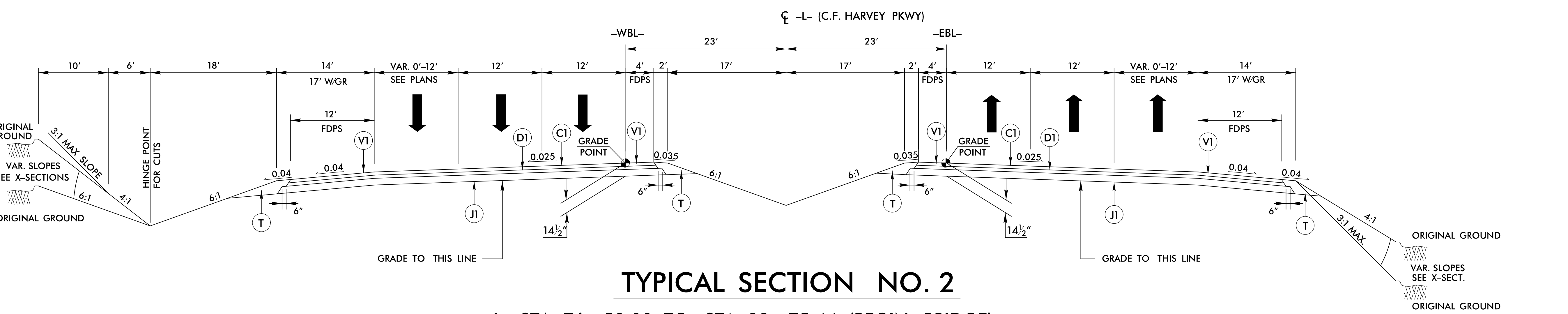
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6/2/2017

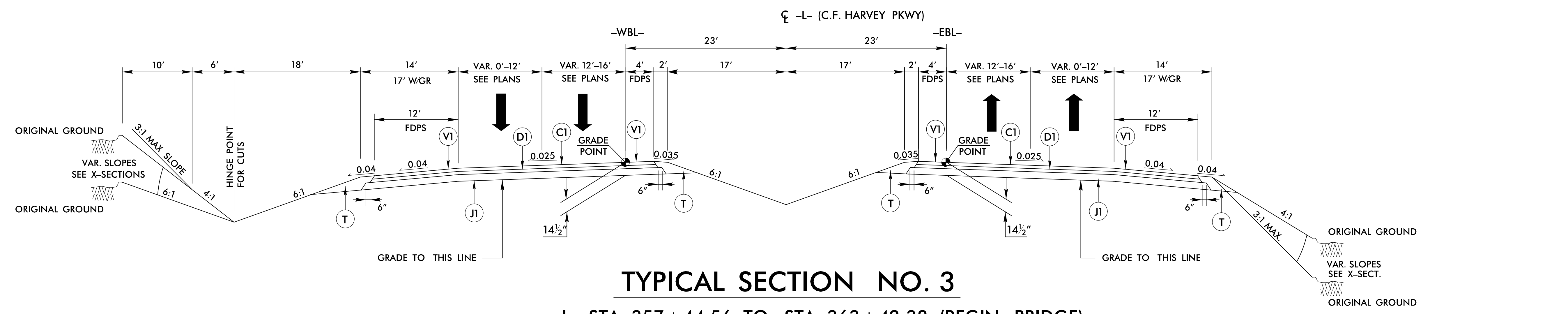
PAVEMENT SCHEDULE	
C1	3" S9.5B
C2	3" S9.5C
C3	VAR. S9.5B
C4	VAR. S9.5C
C5	1 1/2" S9.5B
C6	2 1/2" SF9.5A
C7	2" S9.5B
C8	1 1/2" S9.5C
D1	3 1/2" I19.0B
D2	3" I19.0B
D3	3 1/2" I19.0C
D4	4" I19.0B
D5	VAR. I19.0B
D6	VAR. I19.0C
E1	4" B25.0B
E2	4 1/2" B25.0C
E3	VAR. B25.0B
E4	VAR. B25.0C
E5	5 1/2" B25.0B
J1	8" ABC
J2	10" ABC
M1	MILLING EXIST. SHOULDER
P	PRIME COAT
R1	MCI
R2	2'-6" C & G
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V1	RUMBLE STRIPS
V2	INCIDENTAL MILLING
W	WEDGING



TYPICAL SECTION NO. 1
 -L- STA. 60+56.32 TO STA. 76+50.00



TYPICAL SECTION NO. 2
 -L- STA. 76+50.00 TO STA. 88+75.44 (BEGIN BRIDGE)
 -L- STA. 89+93.27 (END BRIDGE) TO STA. 165+79.70 (BEGIN BRIDGE)
 -L- STA. 167+17.71 (END BRIDGE) TO STA. 200+42.89 (BEGIN BRIDGE)
 -L- STA. 201+45.48 (END BRIDGE) TO STA. 214+44.75 (BEGIN BRIDGE)
 -L- STA. 224+00.00 (END BRIDGE) TO STA. 280+81.56 (BEGIN BRIDGE)
 -L- STA. 281+84.14 (END BRIDGE) TO STA. 341+25.54 (BEGIN BRIDGE)
 -L- STA. 343+58.88 (END BRIDGE) TO STA. 357+44.56



TYPICAL SECTION NO. 3
 -L- STA. 357+44.56 TO STA. 363+42.38 (BEGIN BRIDGE)
 -L- STA. 365+26.30 (END BRIDGE) TO STA. 366+52.40

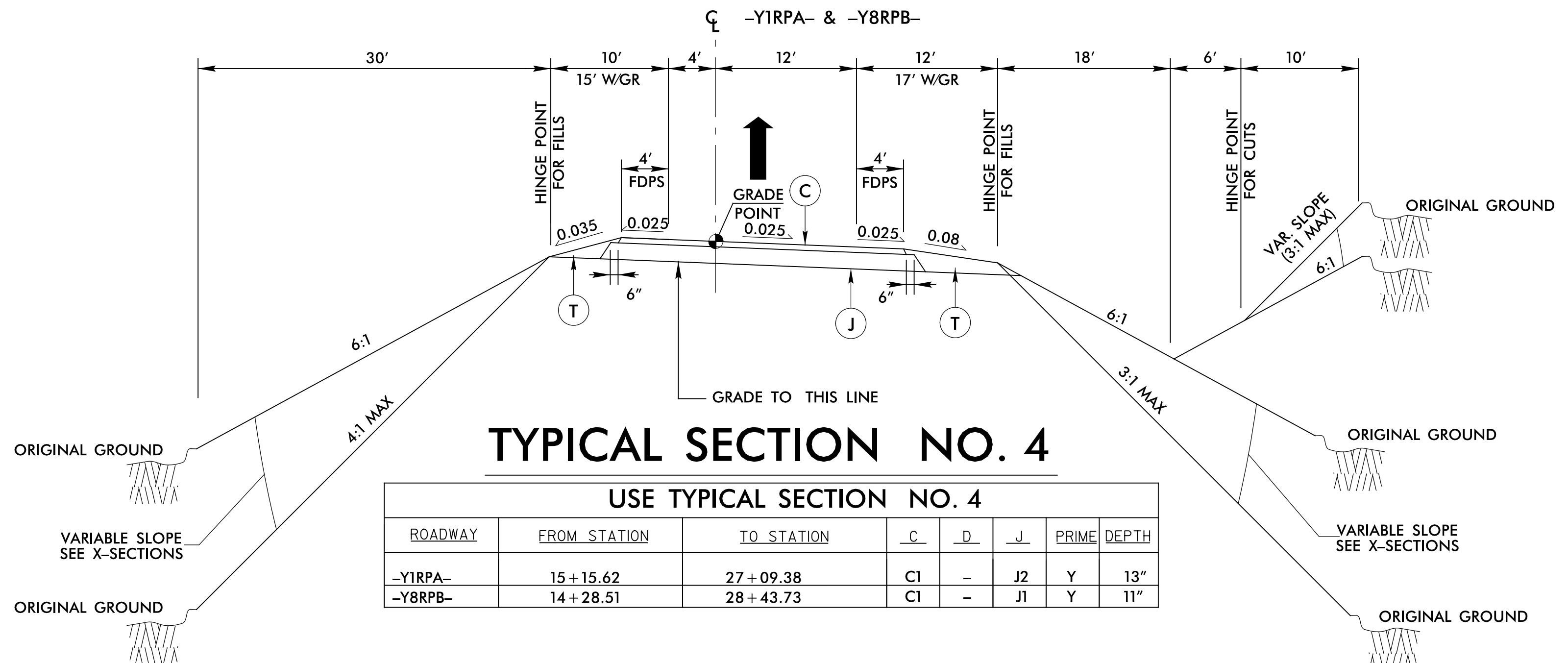
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PROJECT REFERENCE NO. R-5703	SHEET NO. 2A-2
ROADWAY DESIGN ENGINEER SEAL 034367 MICHAEL BAKER ENGINEERING, INC. 10870118776433	PAVEMENT DESIGN ENGINEER SEAL 022896 MICHAEL BAKER ENGINEERING, INC. 10870118776433
9/18/2017	9/18/2017
Michael Baker Engineering, Inc. 8000 Regency Park Suite 600 Charlotte, NC 27518 Tel: 704.211.1000 Fax: 704.211.1001 www.mbakercorp.com	NC DEPARTMENT OF TRANSPORTATION PAVEMENT MANAGEMENT UNIT 1593 MAIL SERVICE CENTER RALEIGH, NC 27699-1593
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

6/2/19

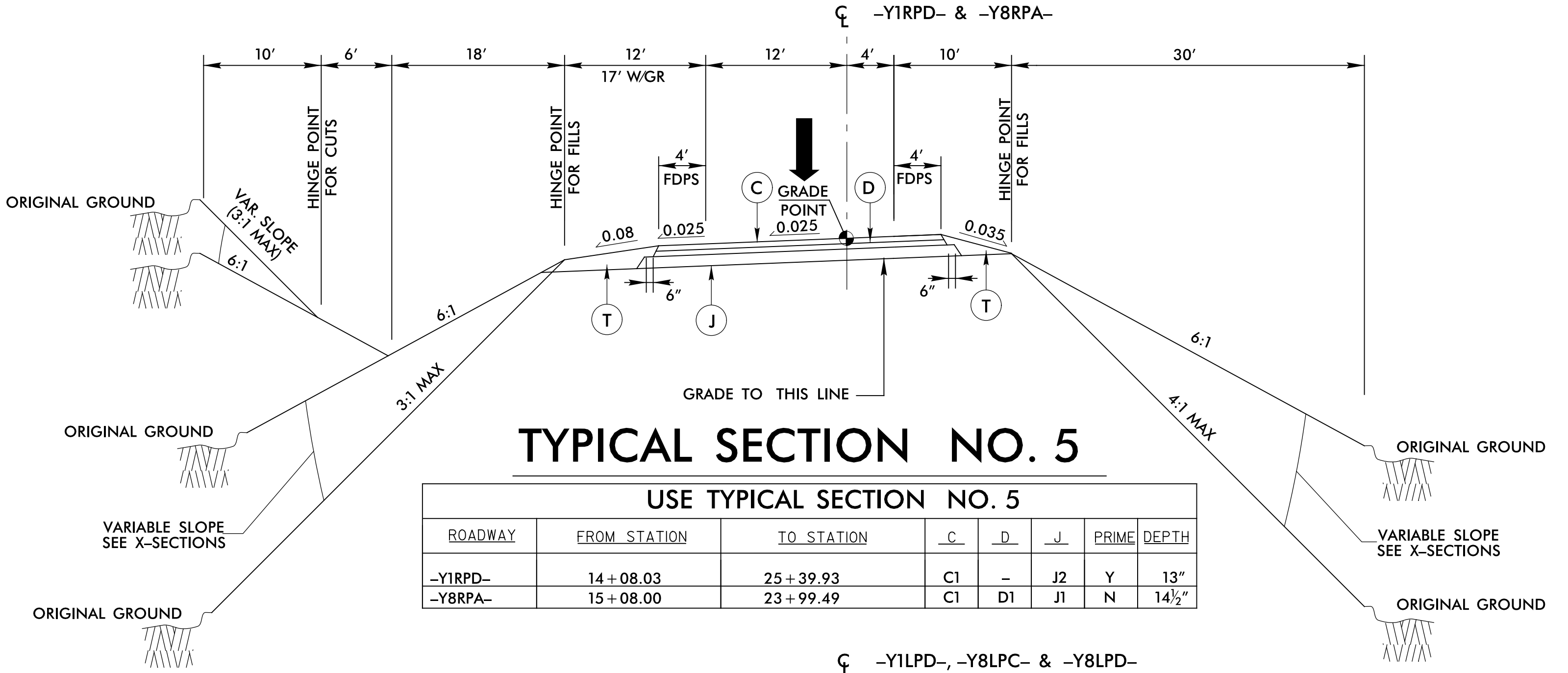
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PAVEMENT SCHEDULE	
C1	3" S9.5B
C2	3" S9.5C
C3	VAR. S9.5B
C4	VAR. S9.5C
C5	1 1/2" S9.5B
C6	2 1/2" SF9.5A
C7	2" S9.5B
C8	1 1/2" S9.5C
D1	3 1/2" I19.0B
D2	3" I19.0B
D3	3 1/2" I19.0C
D4	4" I19.0B
D5	VAR. I19.0B
D6	VAR. I19.0C
E1	4" B25.0B
E2	4 1/2" B25.0C
E3	VAR. B25.0B
E4	VAR. B25.0C
E5	5 1/2" B25.0B
J1	8" ABC
J2	10" ABC
M1	MILLING EXIST. SHOULDER
P	PRIME COAT
R1	MCI
R2	2'-6" C & G
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V1	RUMBLE STRIPS
V2	INCIDENTAL MILLING
W	WEDGING



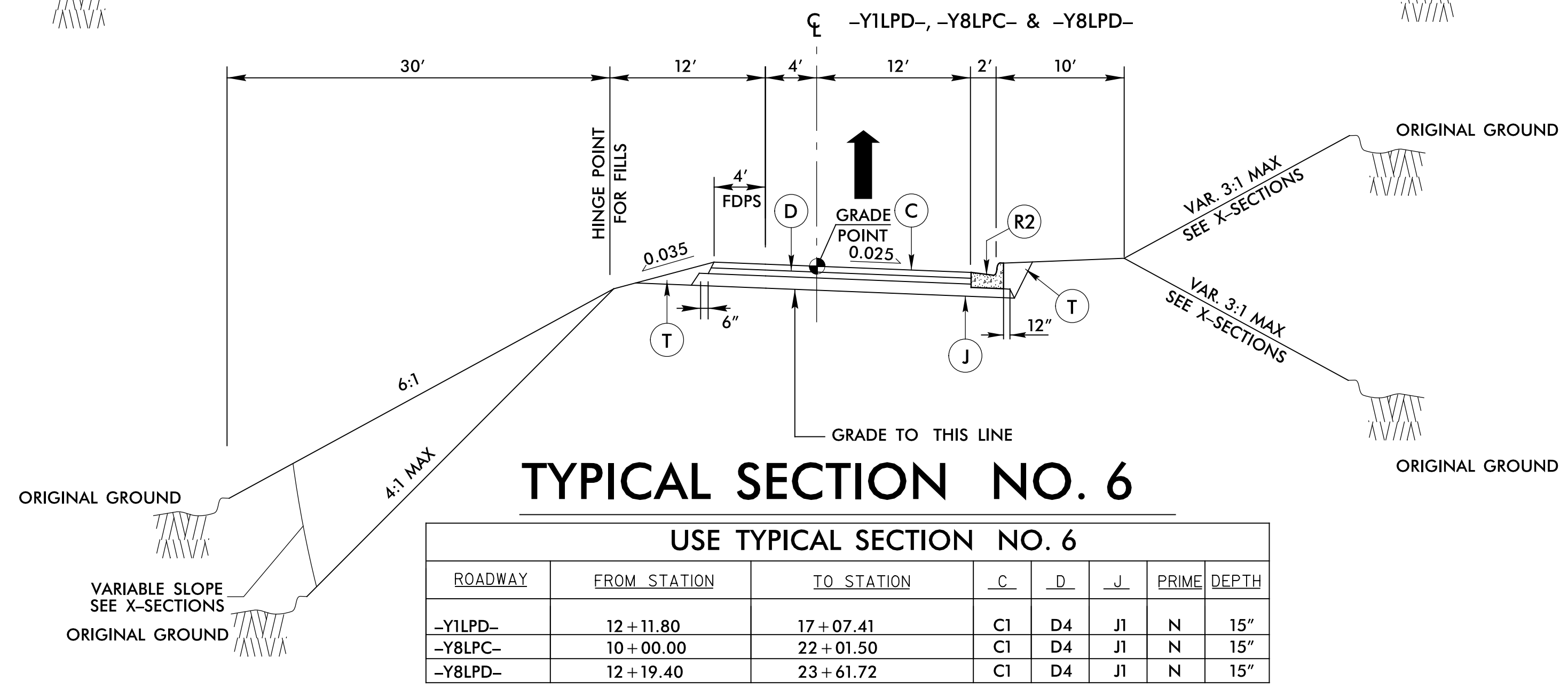
USE TYPICAL SECTION NO. 4

ROADWAY	FROM STATION	TO STATION	C	D	J	PRIME	DEPTH
-Y1RPA-	15+15.62	27+09.38	C1	-	J2	Y	13"
-Y8RPB-	14+28.51	28+43.73	C1	-	J1	Y	11"



USE TYPICAL SECTION NO. 5

ROADWAY	FROM STATION	TO STATION	C	D	J	PRIME	DEPTH
-Y1RPD-	14+08.03	25+39.93	C1	-	J2	Y	13"
-Y8RPA-	15+08.00	23+99.49	C1	D1	J1	N	14 1/2"



USE TYPICAL SECTION NO. 6

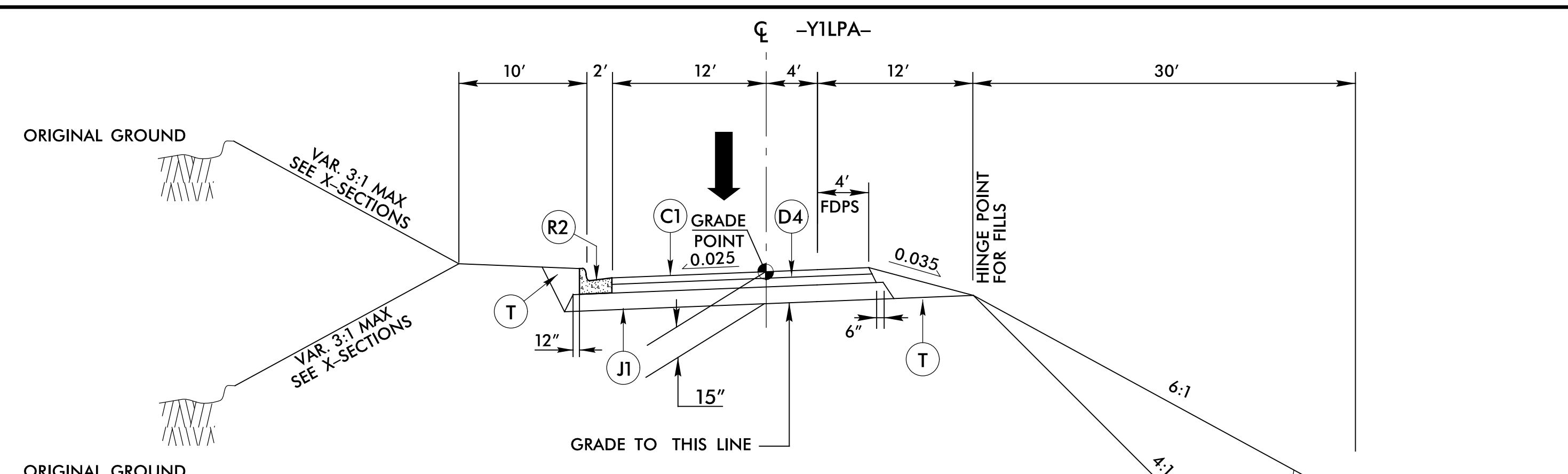
ROADWAY	FROM STATION	TO STATION	C	D	J	PRIME	DEPTH
-Y1LPD-	12+11.80	17+07.41	C1	D4	J1	N	15"
-Y8LPC-	10+00.00	22+01.50	C1	D4	J1	N	15"
-Y8LPD-	12+19.40	23+61.72	C1	D4	J1	N	15"

PROJECT REFERENCE NO. R-5703	SHEET NO. 2A-3
ROADWAY DESIGN ENGINEER SEAL 034367	PAVEMENT DESIGN ENGINEER SEAL 022896
9/18/2017	9/18/2017
Michael Baker Engineering, Inc. 8000 Regency Park Suite 600 Raleigh, NC 27618 NC License: P-11084	NC DEPARTMENT OF TRANSPORTATION PAVEMENT MANAGEMENT UNIT 1593 MAIL SERVICE CENTER RALEIGH, NC 27699-1593
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

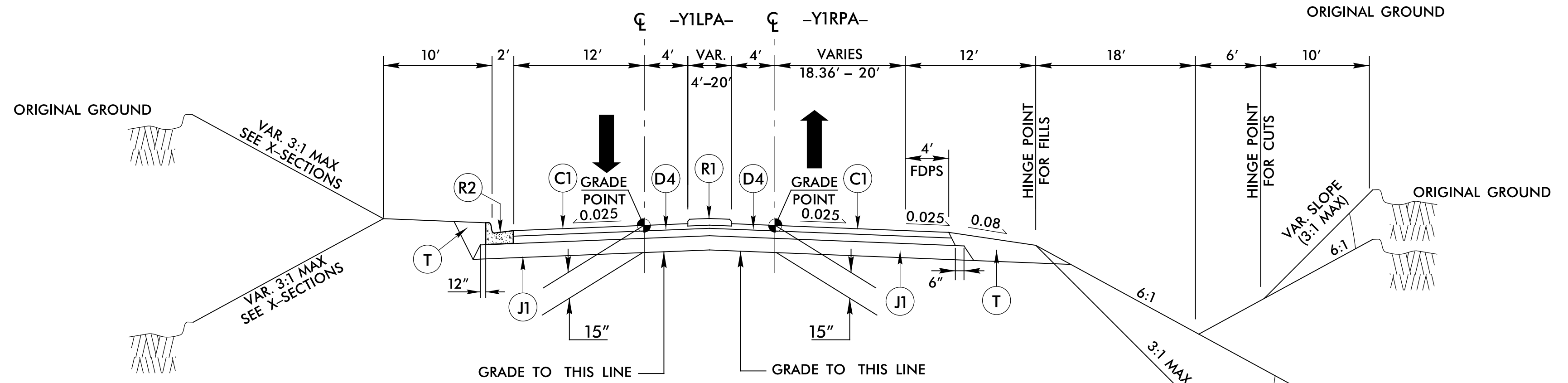
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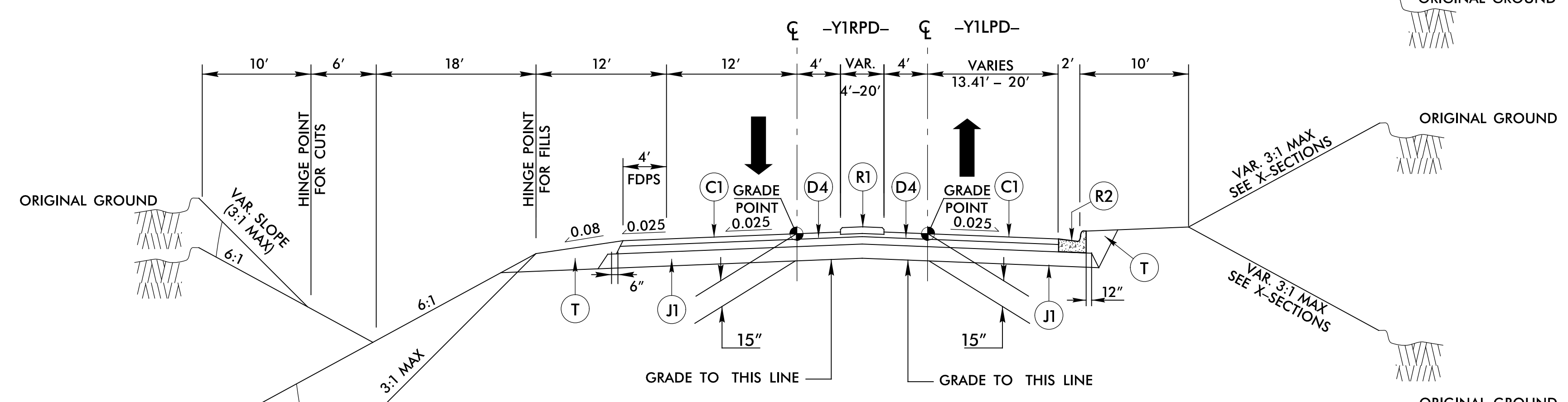
PAVEMENT SCHEDULE	
C1	3" S9.5B
C2	3" S9.5C
C3	VAR. S9.5B
C4	VAR. S9.5C
C5	1 1/2" S9.5B
C6	2 1/2" SF9.5A
C7	2" S9.5B
C8	1 1/2" S9.5C
D1	3 1/2" I19.0B
D2	3" I19.0B
D3	3 1/2" I19.0C
D4	4" I19.0B
D5	VAR. I19.0B
D6	VAR. I19.0C
E1	4" B25.0B
E2	4 1/2" B25.0C
E3	VAR. B25.0B
E4	VAR. B25.0C
E5	5 1/2" B25.0B
J1	8" ABC
J2	10" ABC
M1	MILLING EXIST. SHOULDER
P	PRIME COAT
R1	MCI
R2	2'-6" C & G
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V1	RUMBLE STRIPS
V2	INCIDENTAL MILLING
W	WEDGING



TYPICAL SECTION NO. 7
 -Y1LPA- STA. 12 + 11.80 TO STA. 17 + 98.08



TYPICAL SECTION NO. 8
 -Y1LPA- STA. 17 + 98.08 TO STA. 21 + 57.71
 -Y1RPA- STA. 27 + 09.38 TO STA. 30 + 73.58



TYPICAL SECTION NO. 9
 -Y1LPD- STA. 17 + 07.41 TO STA. 20 + 65.25
 -Y1RPD- STA. 25 + 39.93 TO STA. 29 + 01.02

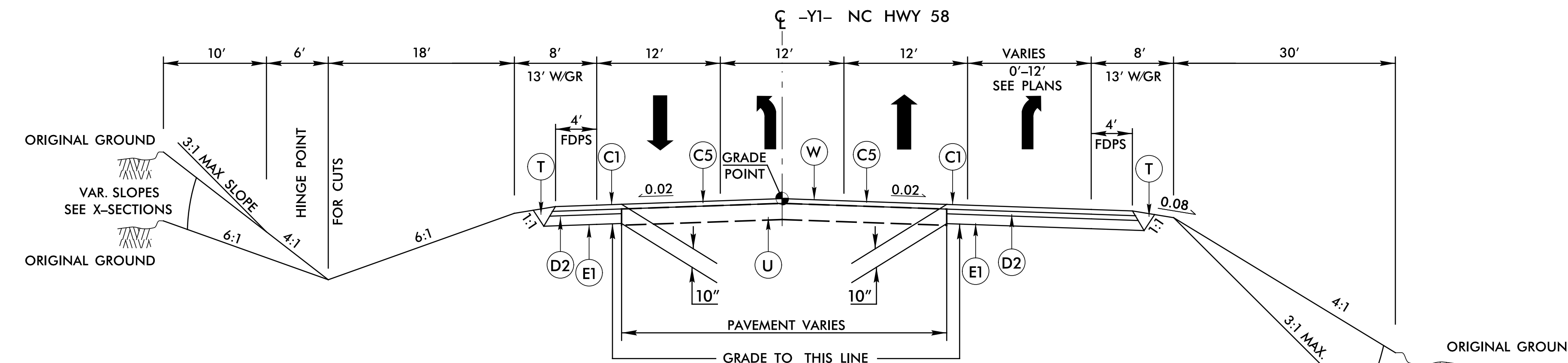
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ROADWAY DESIGN ENGINEER Michael Baker SEAL 034367 9/18/2017	PAVEMENT DESIGN ENGINEER Clark Morrison SEAL 022896 9/18/2017
Michael Baker Engineering, Inc. 15000 Regency Parkway Suite 600 Charlotte, NC 27518 NCE License: P-1084	NC DEPARTMENT OF TRANSPORTATION PAVEMENT MANAGEMENT UNIT 1503 MAIL SERVICE CENTER RALEIGH, NC 27699-1503
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

6/2/19

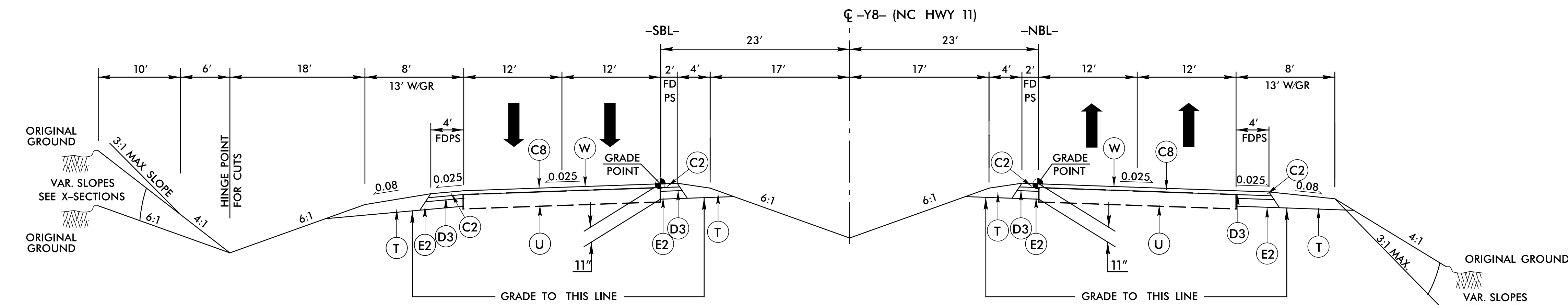
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PAVEMENT SCHEDULE	
C1	3" S9.5B
C2	3" S9.5C
C3	VAR. S9.5B
C4	VAR. S9.5C
C5	1 1/2" S9.5B
C6	2 1/2" SF9.5A
C7	2" S9.5B
C8	1 1/2" S9.5C
D1	3 1/2" I19.0B
D2	3" I19.0B
D3	3 1/2" I19.0C
D4	4" I19.0B
D5	VAR. I19.0B
D6	VAR. I19.0C
E1	4" B25.0B
E2	4 1/2" B25.0C
E3	VAR. B25.0B
E4	VAR. B25.0C
E5	5 1/2" B25.0B
J1	8" ABC
J2	10" ABC
M1	MILLING EXIST. SHOULDER
P	PRIME COAT
R1	MCI
R2	2'-6" C & G
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V1	RUMBLE STRIPS
V2	INCIDENTAL MILLING
W	WEDGING

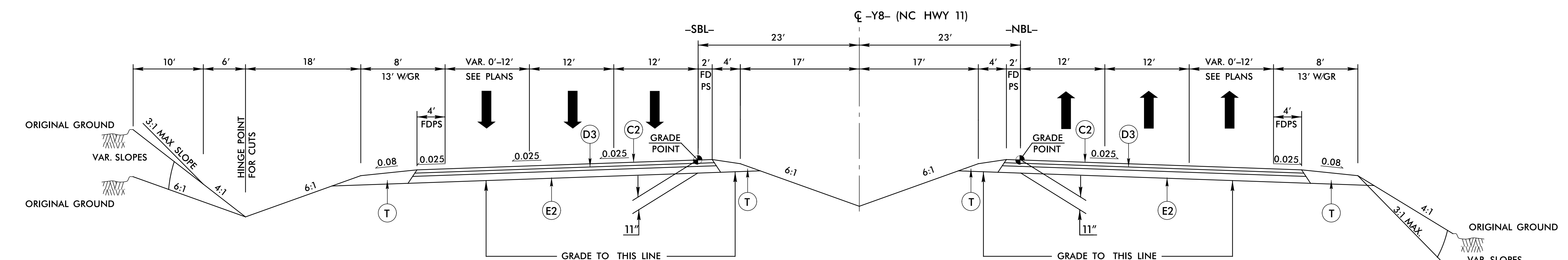
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ROADWAY DESIGN ENGINEER SEAL 034367 9/18/2017	PAVEMENT DESIGN ENGINEER SEAL 022896 9/18/2017
Michael Baker Engineering, Inc. 8200 Regency Park Suite 600 Cary, NC 27518 NC License # P-11081	NC DEPARTMENT OF TRANSPORTATION PAVEMENT MANAGEMENT UNIT 1593 MAIL SERVICE CENTER RALEIGH, NC 27699-1593
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



TYPICAL SECTION NO. 10
 -Y1- STA. 15 + 50.00 TO STA. 44 + 92.00



TYPICAL SECTION NO. 11
 -Y8- STA. 19 + 76.61 TO STA. 25 + 50.00
 -Y8- STA. 56 + 95.60 TO STA. 63 + 00.00

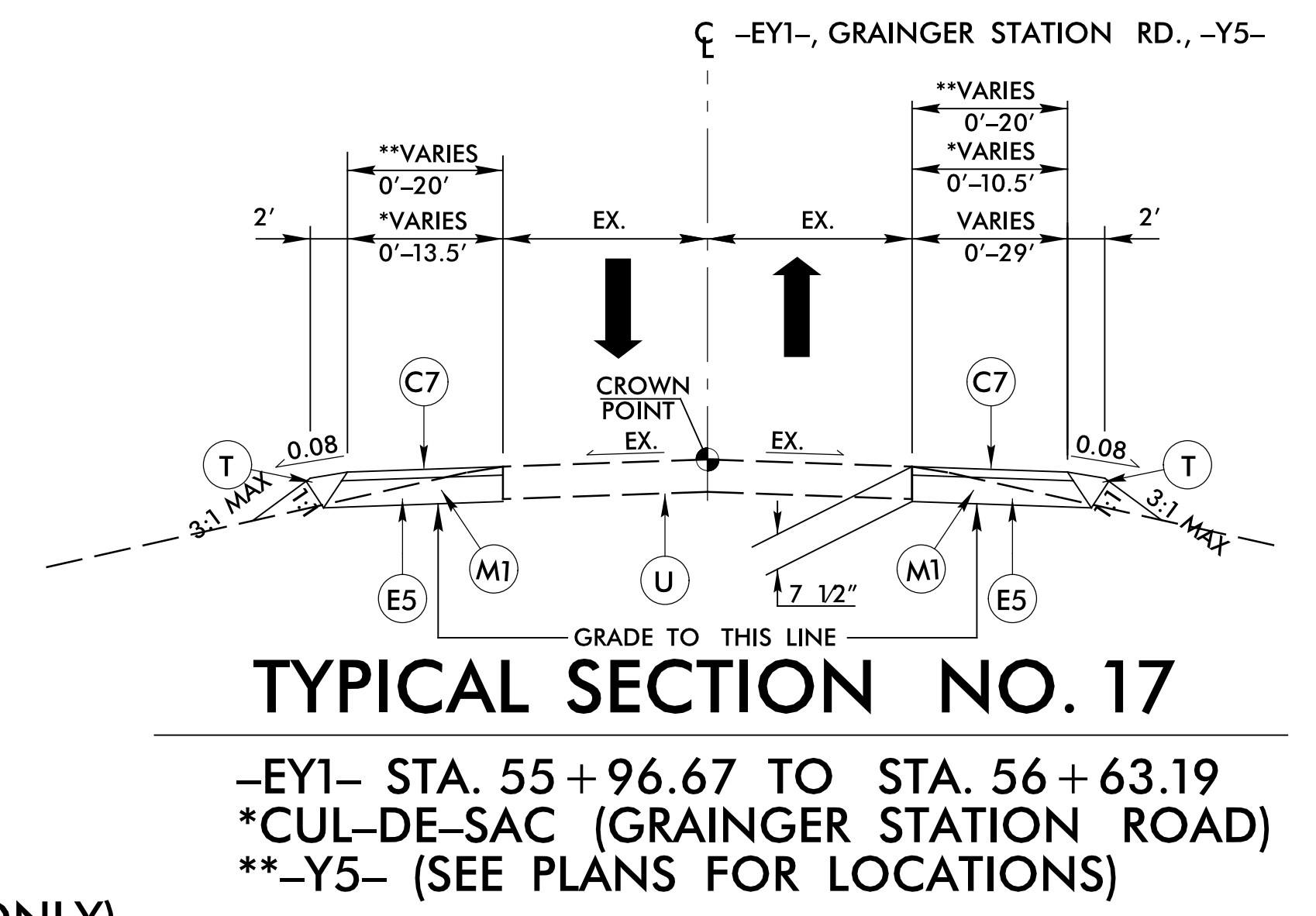
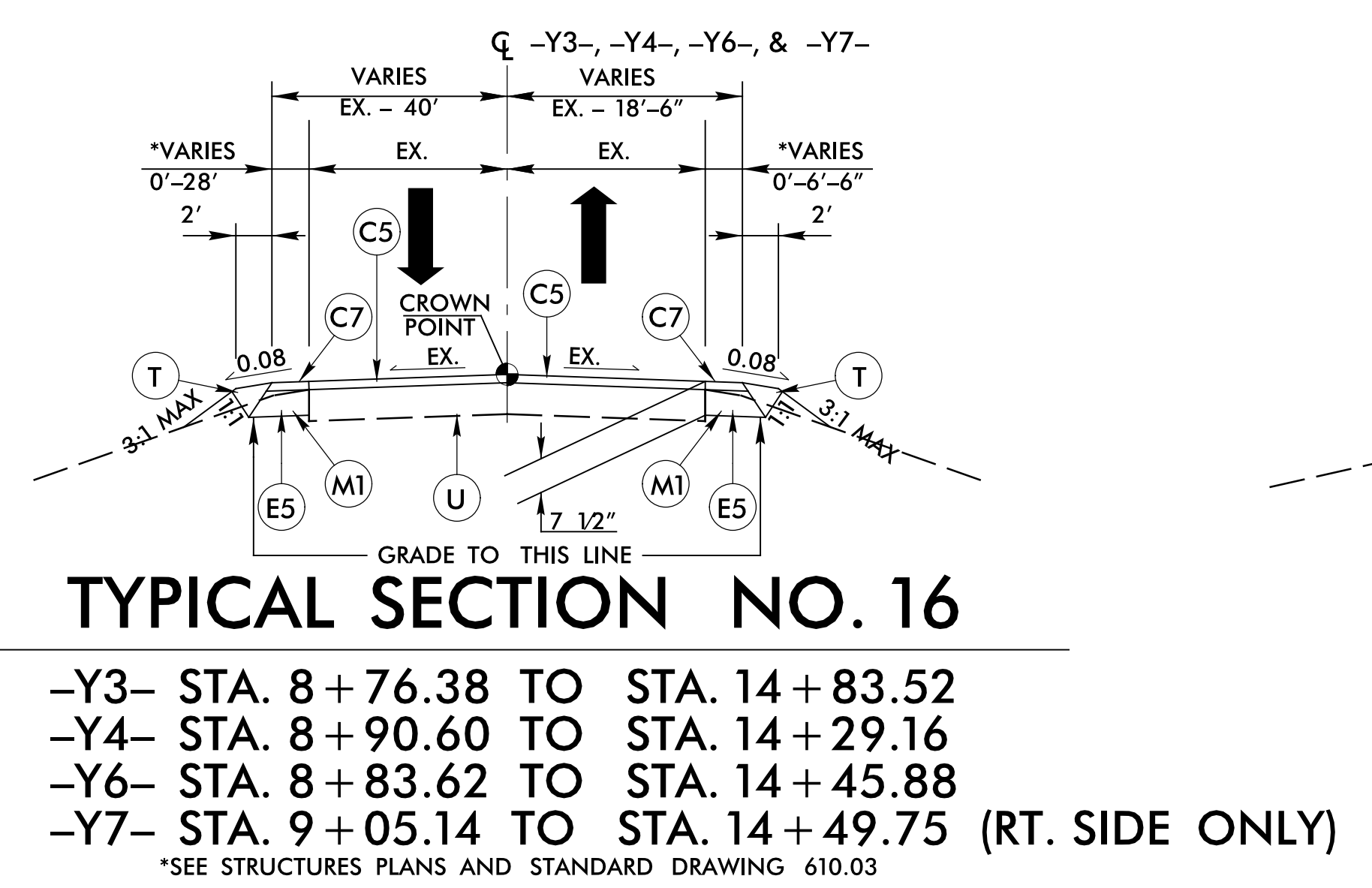
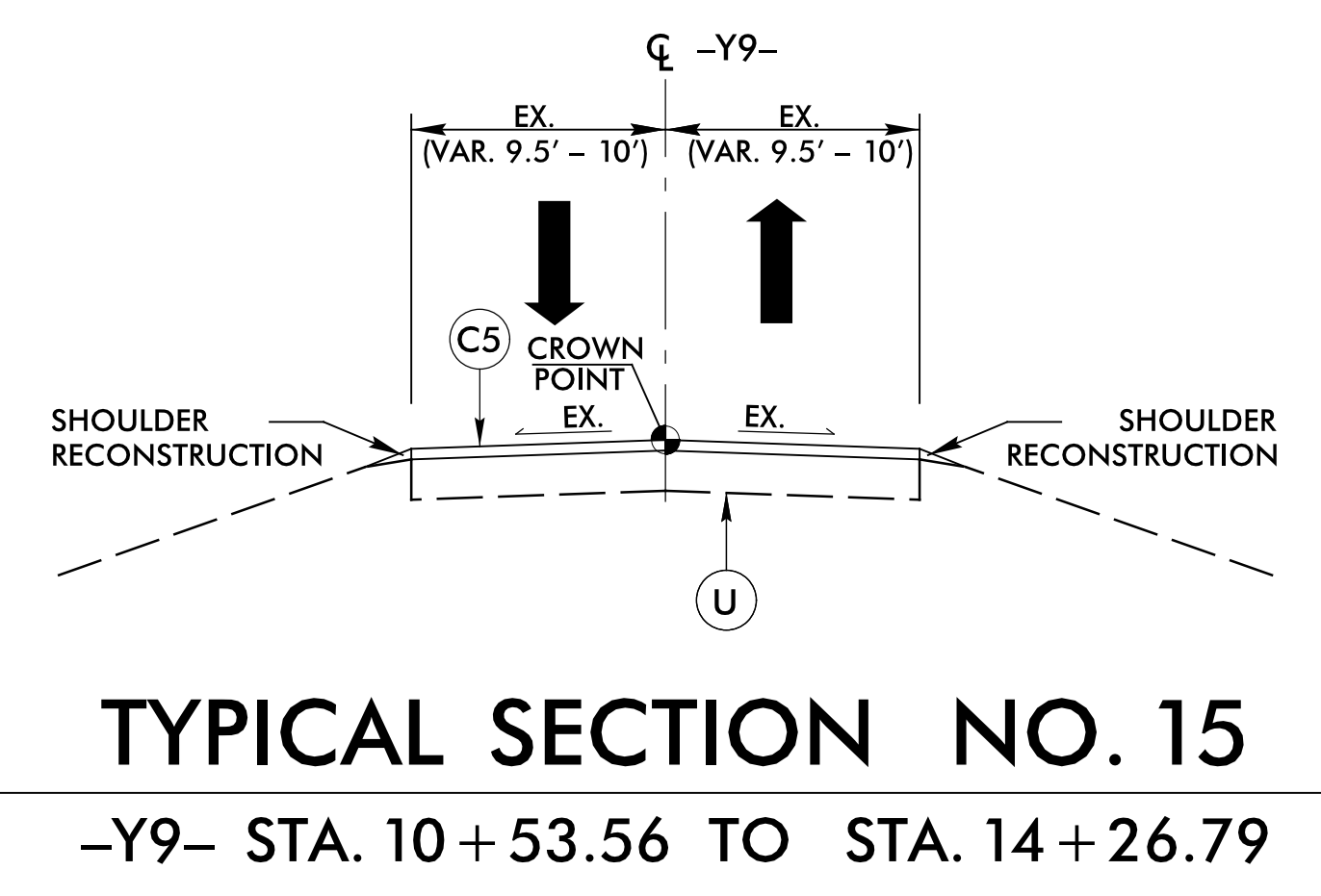
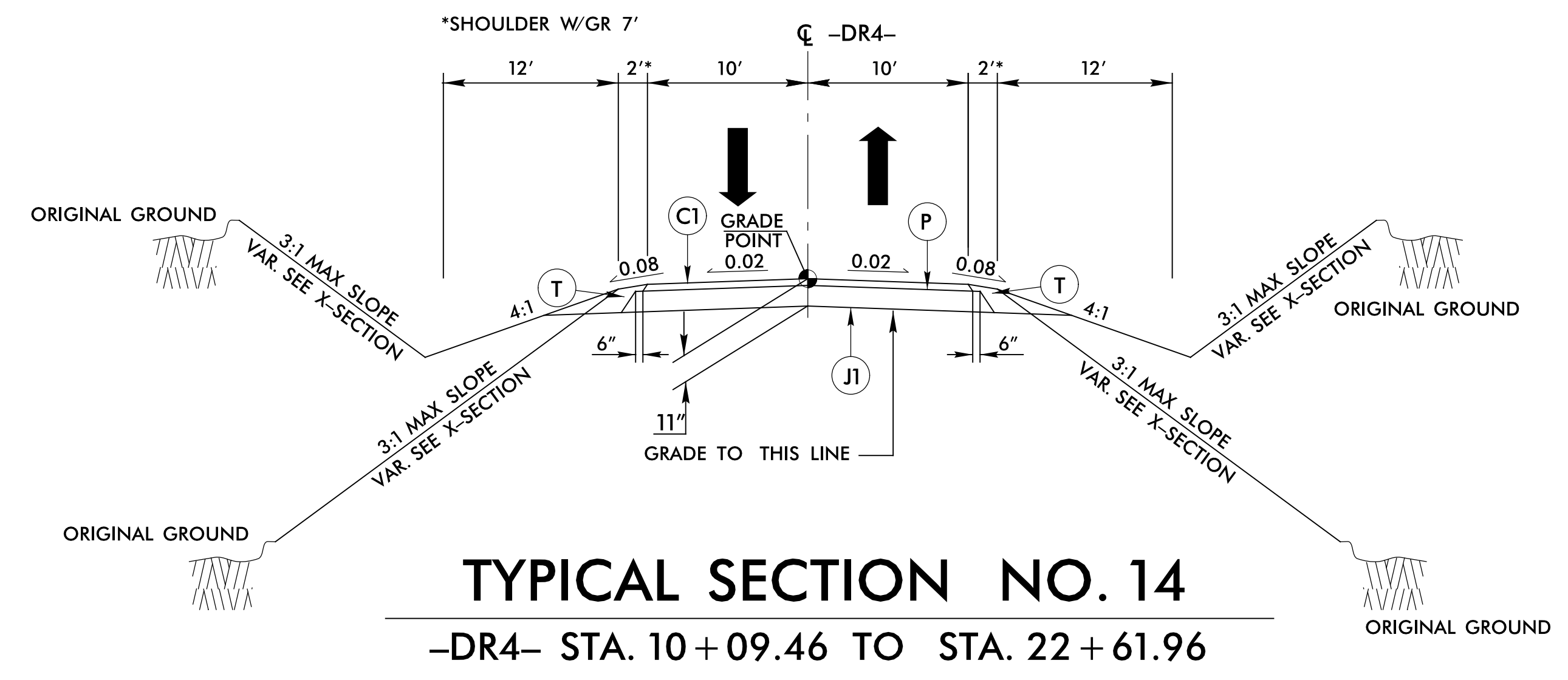
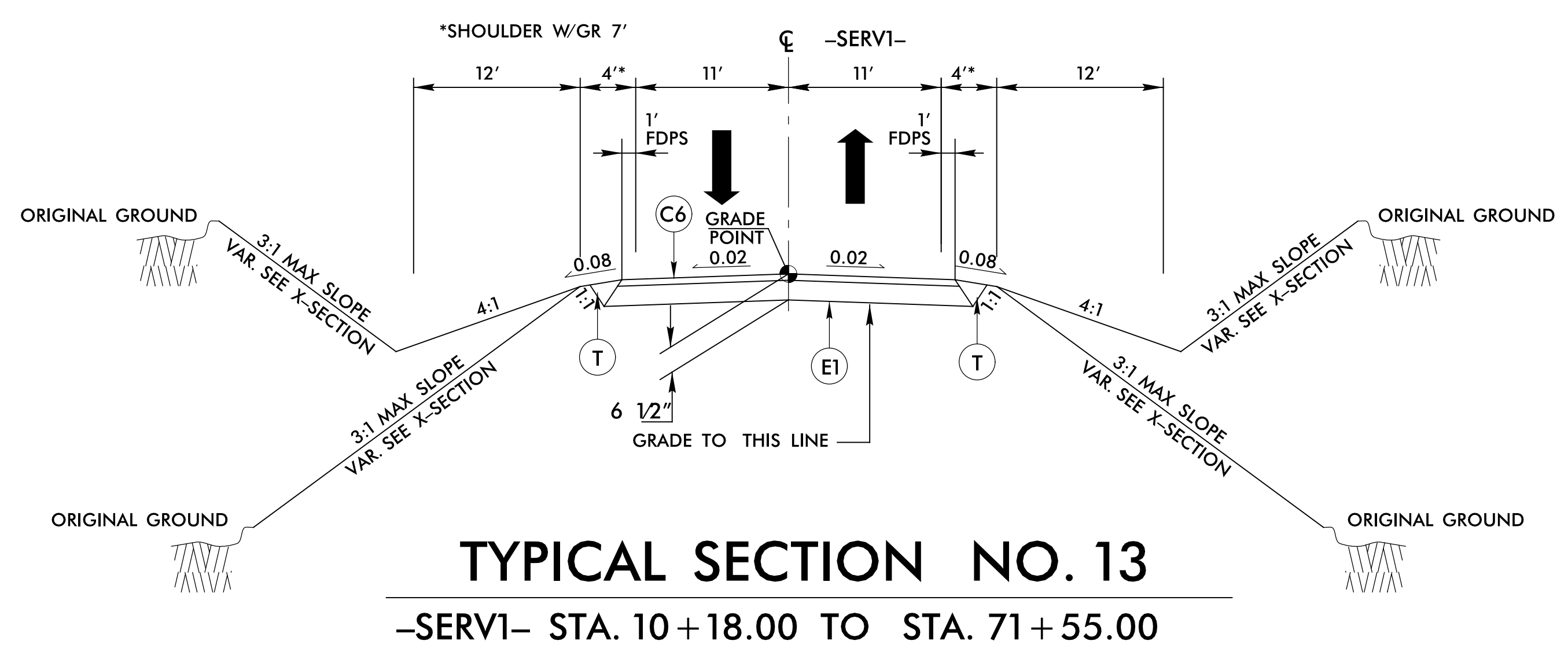


TYPICAL SECTION NO. 12
 -Y8- STA. 25 + 50.00 TO STA. 56 + 95.60

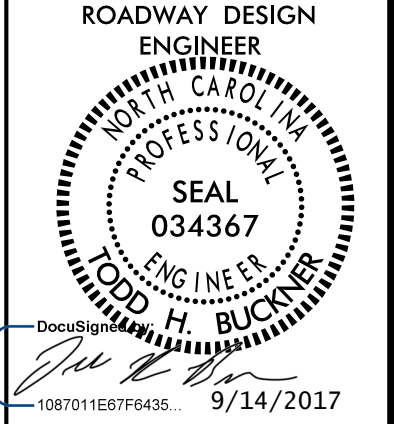
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PAVEMENT SCHEDULE	
C1	3" S9.5B
C2	3" S9.5C
C3	VAR. S9.5B
C4	VAR. S9.5C
C5	1 1/2" S9.5B
C6	2 1/2" SF9.5A
C7	2" S9.5B
C8	1 1/2" S9.5C
D1	3 1/2" I19.0B
D2	3" I19.0B
D3	3 1/2" I19.0C
D4	4" I19.0B
D5	VAR. I19.0B
D6	VAR. I19.0C
E1	4" B25.0B
E2	4 1/2" B25.0C
E3	VAR. B25.0B
E4	VAR. B25.0C
E5	5 1/2" B25.0B
J1	8" ABC
J2	10" ABC
M1	MILLING EXIST. SHOULDER
P	PRIME COAT
R1	MCI
R2	2'-6" C & G
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V1	RUMBLE STRIPS
V2	INCIDENTAL MILLING
W	WEDGING



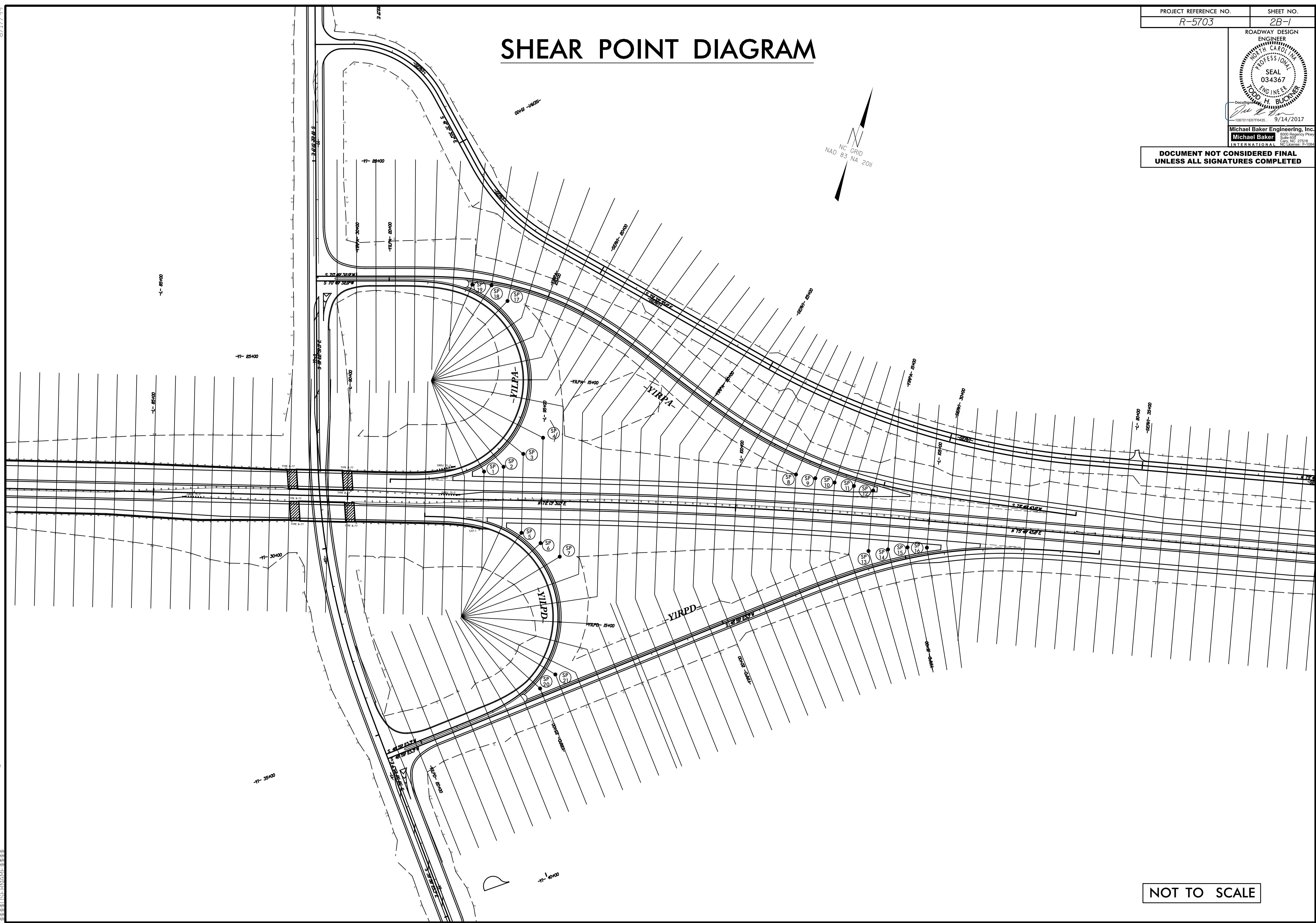
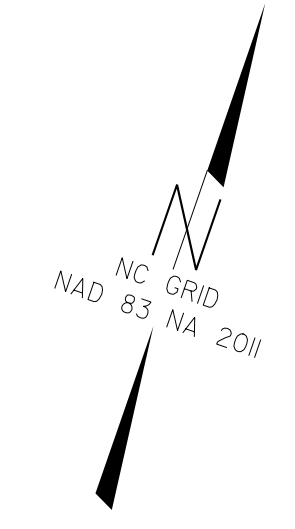
PROJECT REFERENCE NO. R-5703	SHEET NO. 2A-6
ROADWAY DESIGN ENGINEER SEAL 034367 9/18/2017	PAVEMENT DESIGN ENGINEER SEAL 32116 9/18/2017
Michael Baker Engineering, Inc. 8200 Regency Park Suite 600 Cary, NC 27518 NC License # P-1084	NC DEPARTMENT OF TRANSPORTATION DIVISION 2 105 PACTOLIUS HIGHWAY (NC 33) GREENVILLE, NC 27635-1687
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



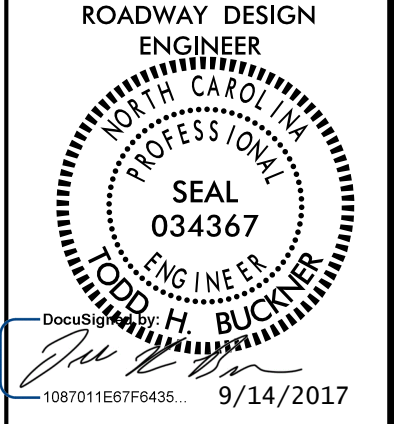
Michael Baker Engineering, Inc.
8000 Regency Pkwy
Suite 600
Cary, NC 27519
NC License E-1084

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SHEAR POINT DIAGRAM



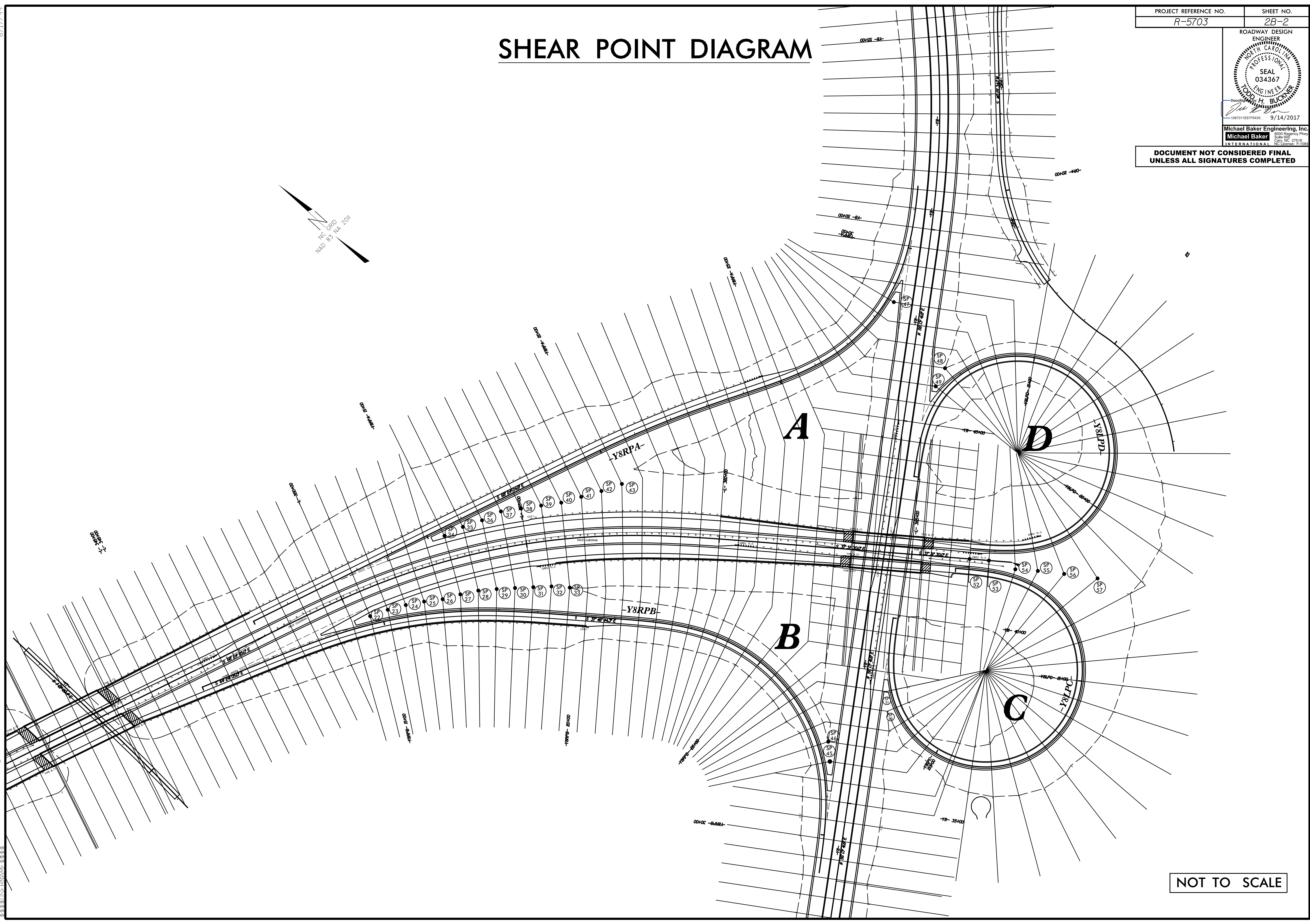
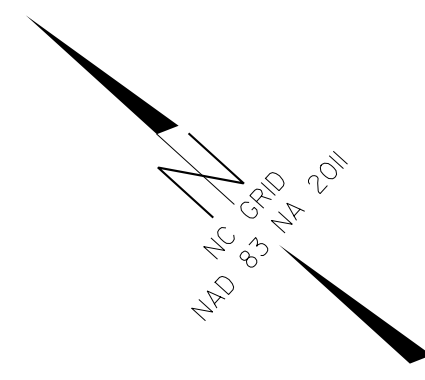
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 8000 Regency Pkwy
 Suite 600
 Cary, NC 27519
 NC License E-11884
 Michael Baker
 9/14/2017

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SHEAR POINT DIAGRAM



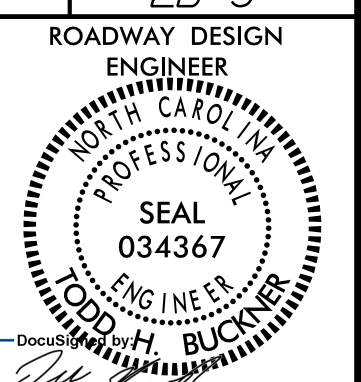
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NOT TO SCALE

-Y1- INTERCHANGE GRADING PLAN

PROJECT REFERENCE NO. R-5703	SHEET NO. 2B-3
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ROADWAY DESIGN
ENGINEER

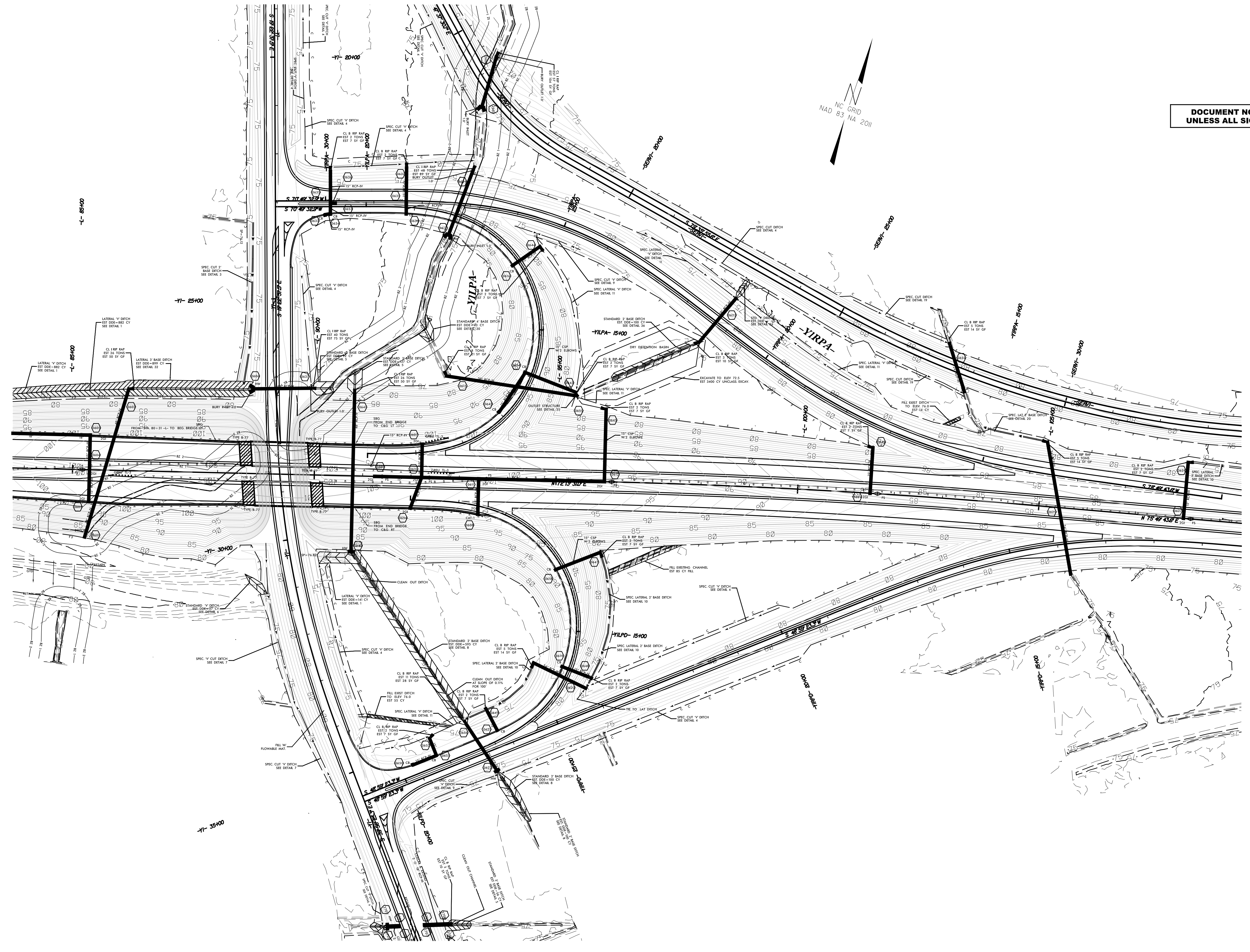


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Michael Baker Engineering, Inc.
8000 Regency Pkwy
Suite 600
Cary, NC 27518
NC License E-1084

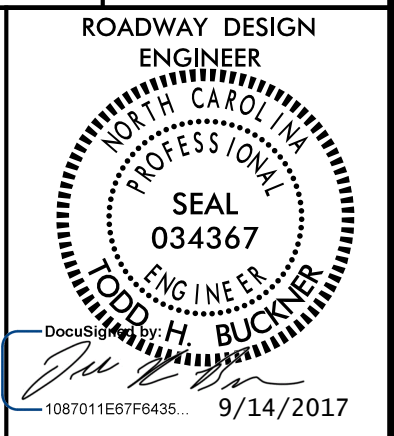
Michael Baker

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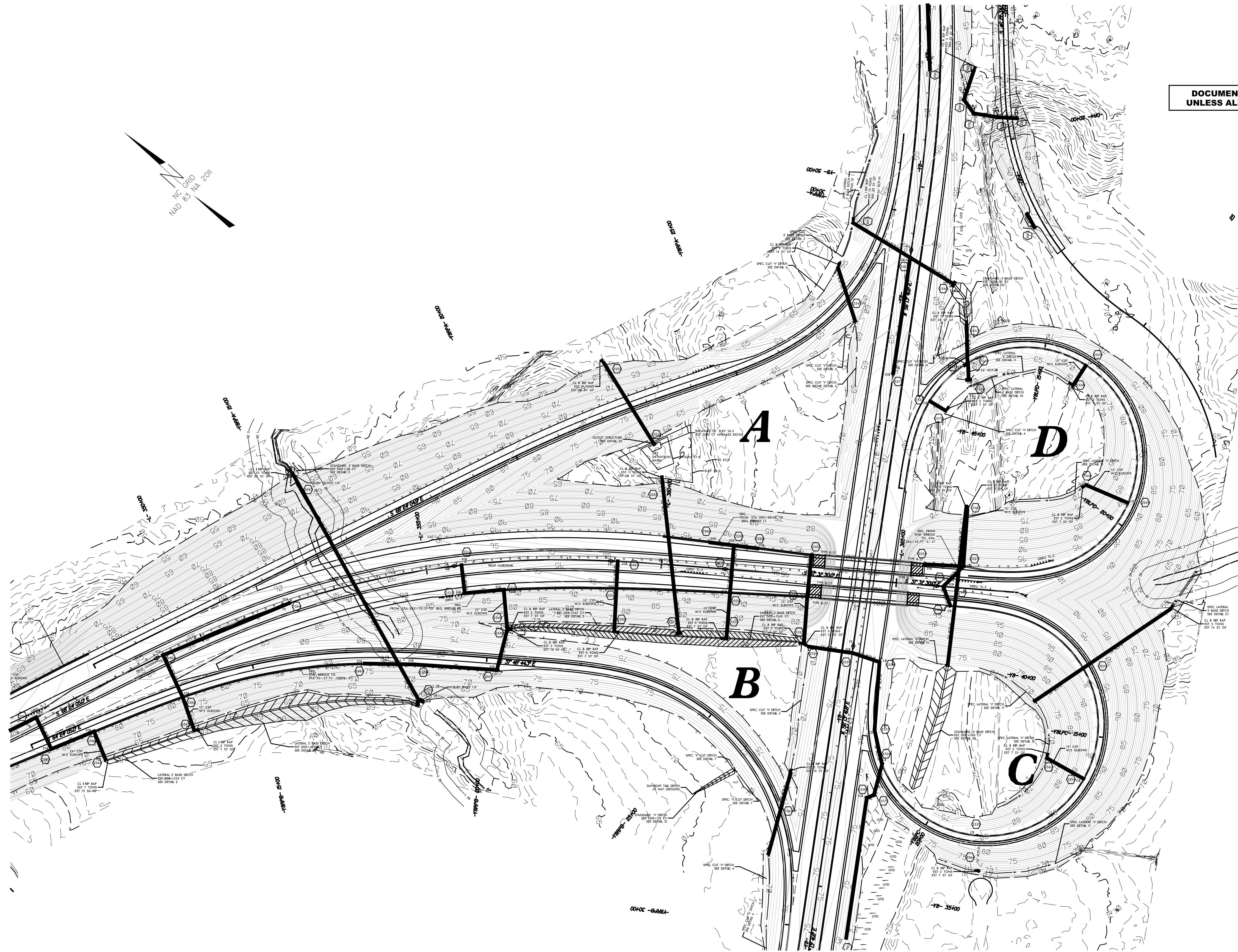
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INTERCHANGE GRADING PLAN



Michael Baker Engineering, Inc.
108701160798435 9/14/2017
Michael Baker
8000 Regency Pkwy
Suite 600
Cary, NC 27519
NC License E-1084

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8/17/09

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STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ROADWAY DETAIL DRAWING FOR GUARDRAIL PLACEMENT	SHEET 2 OF 11 862D01
ROADWAY DETAIL DRAWING FOR GUARDRAIL PLACEMENT		
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.		

NOTE SPECIAL LAYER OF PAVEMENT
 USE 3'-1 1/2" POST SPACING ON THE 50' OF GUARDRAIL PARALLEL TO LANES AND 6'-3" POST SPACING ON 15:1 TRANSITION SECTIONS.
 GRADE MEDIAN IN THE VICINITY OF THE SIGN SUPPORT AS ILLUSTRATED IN THE ROADWAY STANDARD DRAWINGS (STANDARD 862D01 SHEET 1 OF 12).

SECT. YY

SECT. ZZ

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ROADWAY DETAIL DRAWING FOR GUARDRAIL PLACEMENT	SHEET 1 OF 11 862D01
ROADWAY DETAIL DRAWING FOR GUARDRAIL PLACEMENT		
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.		

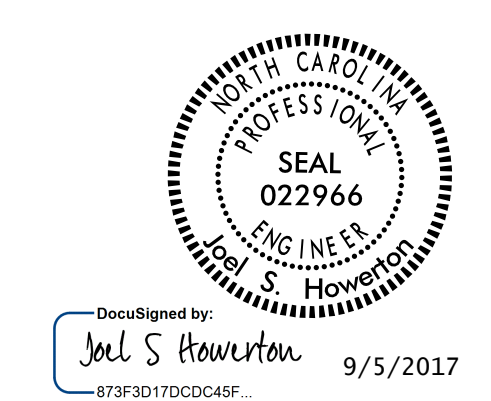
NOTE: WHEN OFFSET DISTANCE FROM FACE OF OBSTRUCTION TO FACE OF GUARDRAIL IS BETWEEN 3'-6" AND 5'-6" MIN. AND 5'-6" MIN. POST SPACING AT A POINT 25' BEFORE REACHING THE OBSTRUCTION AND CARRY THROUGHOUT ITS LENGTH. IF THE OFFSET IS LESS THAN 3'-6" USE CONCRETE BARRIER.

SECT. XX

SECT. YY

SECT. ZZ

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



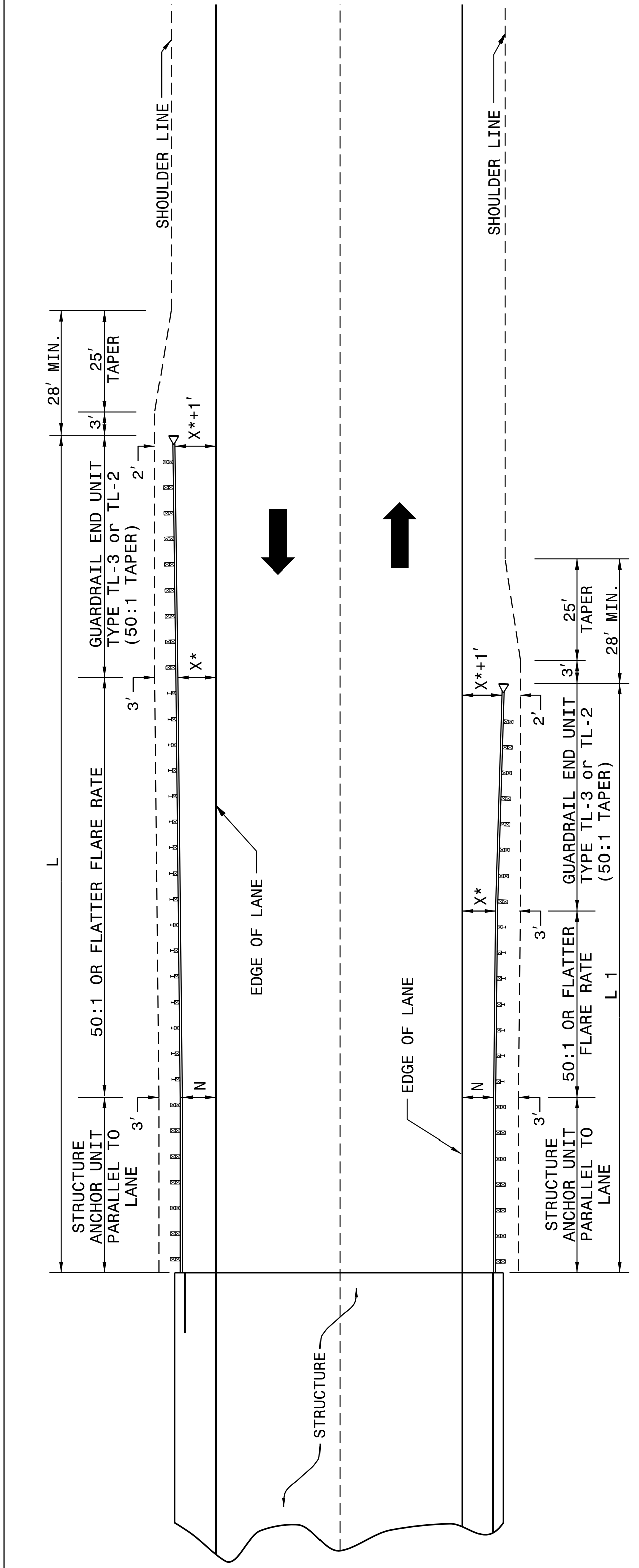
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STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 4 OF 11
862D01



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

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

* 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

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

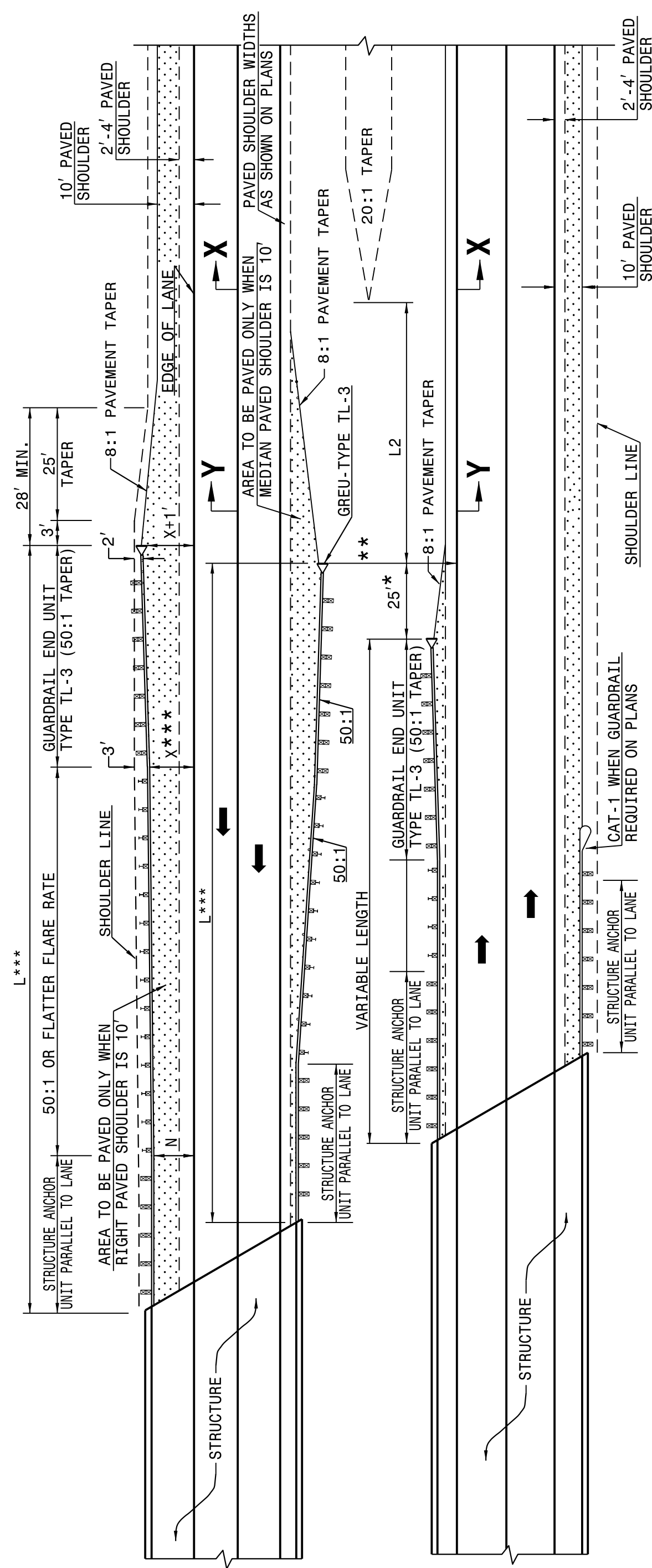
ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

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 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.
	60 MPH	50 MPH	
30'	300.0'	250.0'	80.0'
36'	300.0'	250.0'	60.0'
40' & ABOVE	300.0'	250.0'	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

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 3 OF 11
862D01

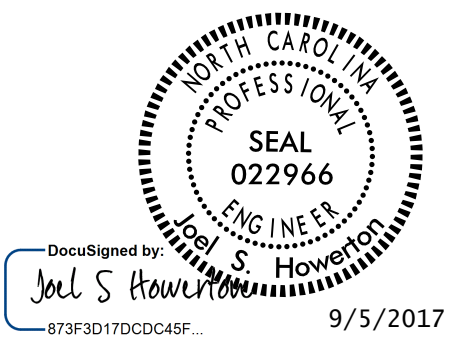
DETAIL OF GUARDRAIL APPROACHING DUAL LANE BRIDGES

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

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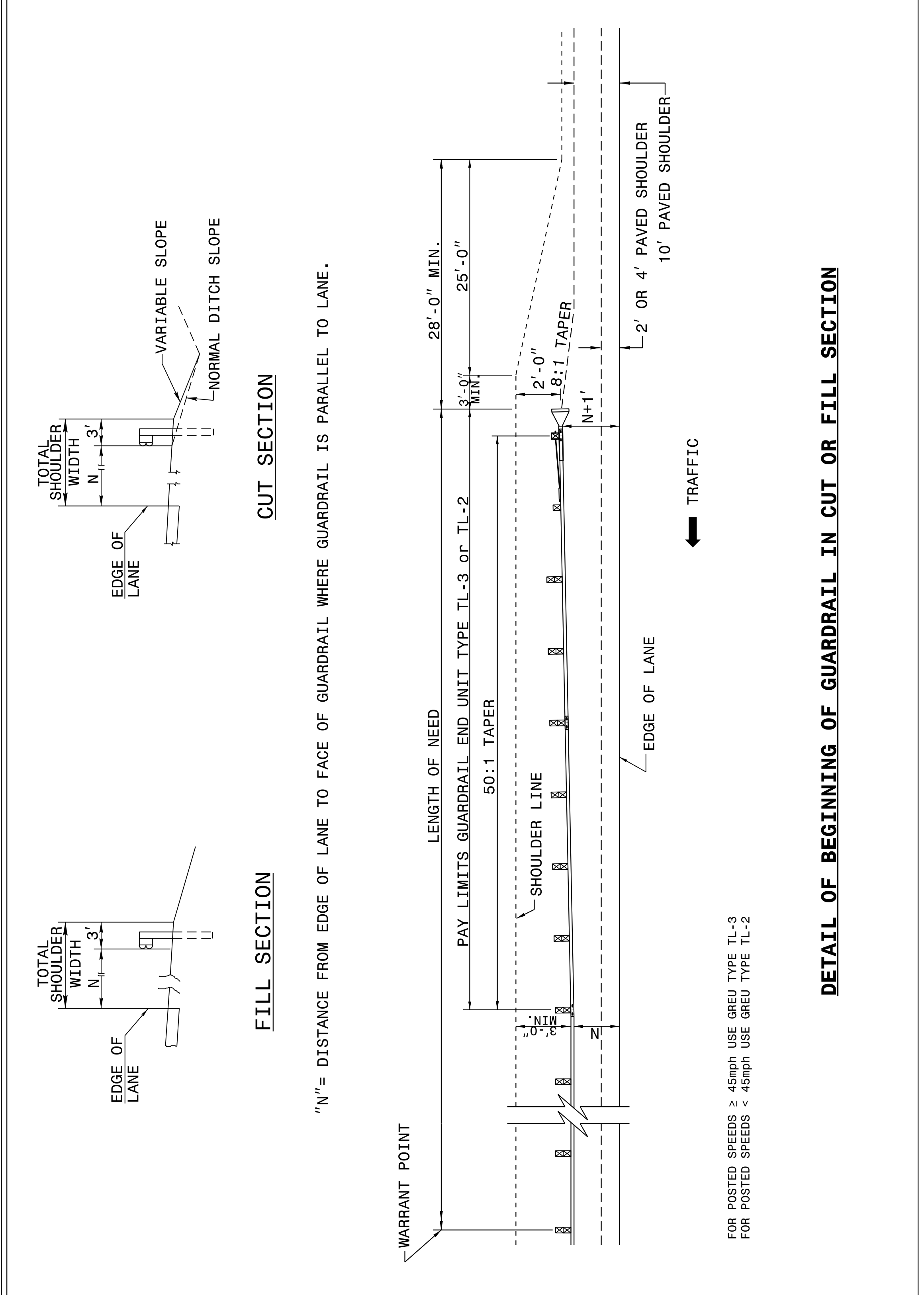
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MODIFIED BY:	DATE:
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STATE OF NORTH CAROLINA
 DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.

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



ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

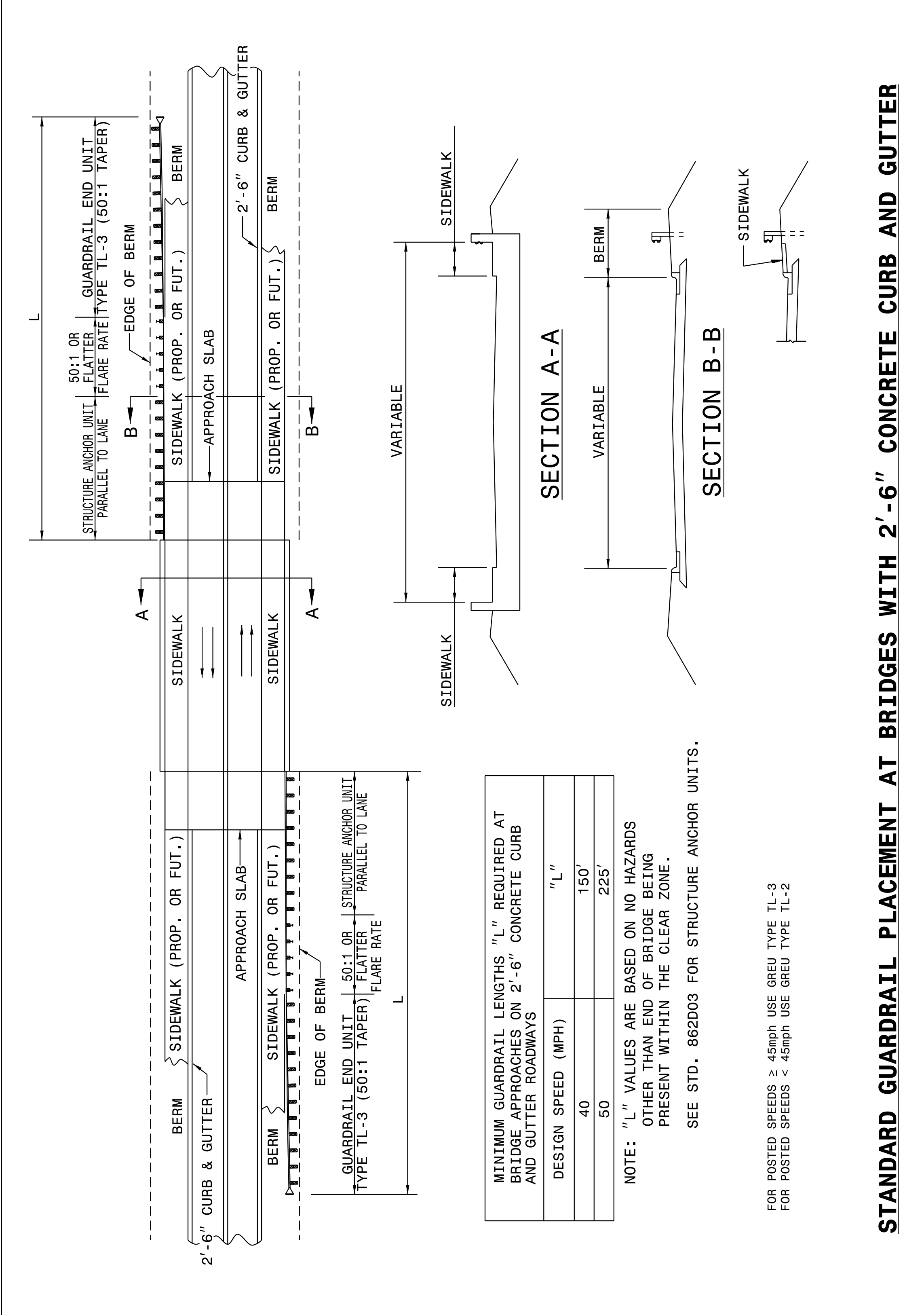
ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 6 OF 11
862D01

SHEET 6 OF 11
862D01

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

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



ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 5 OF 11
862D01

SHEET 5 OF 11
862D01

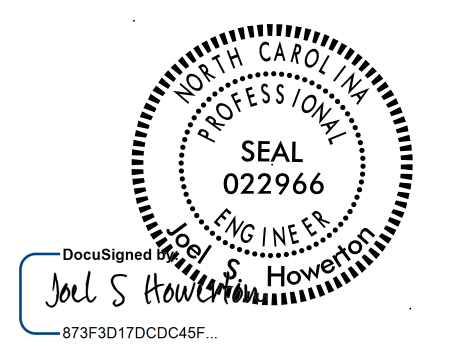
STANDARD GUARDRAIL PLACEMENT AT BRIDGES WITH 2'-6" CONCRETE CURB AND GUTTER

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

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

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



8/7/2017

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

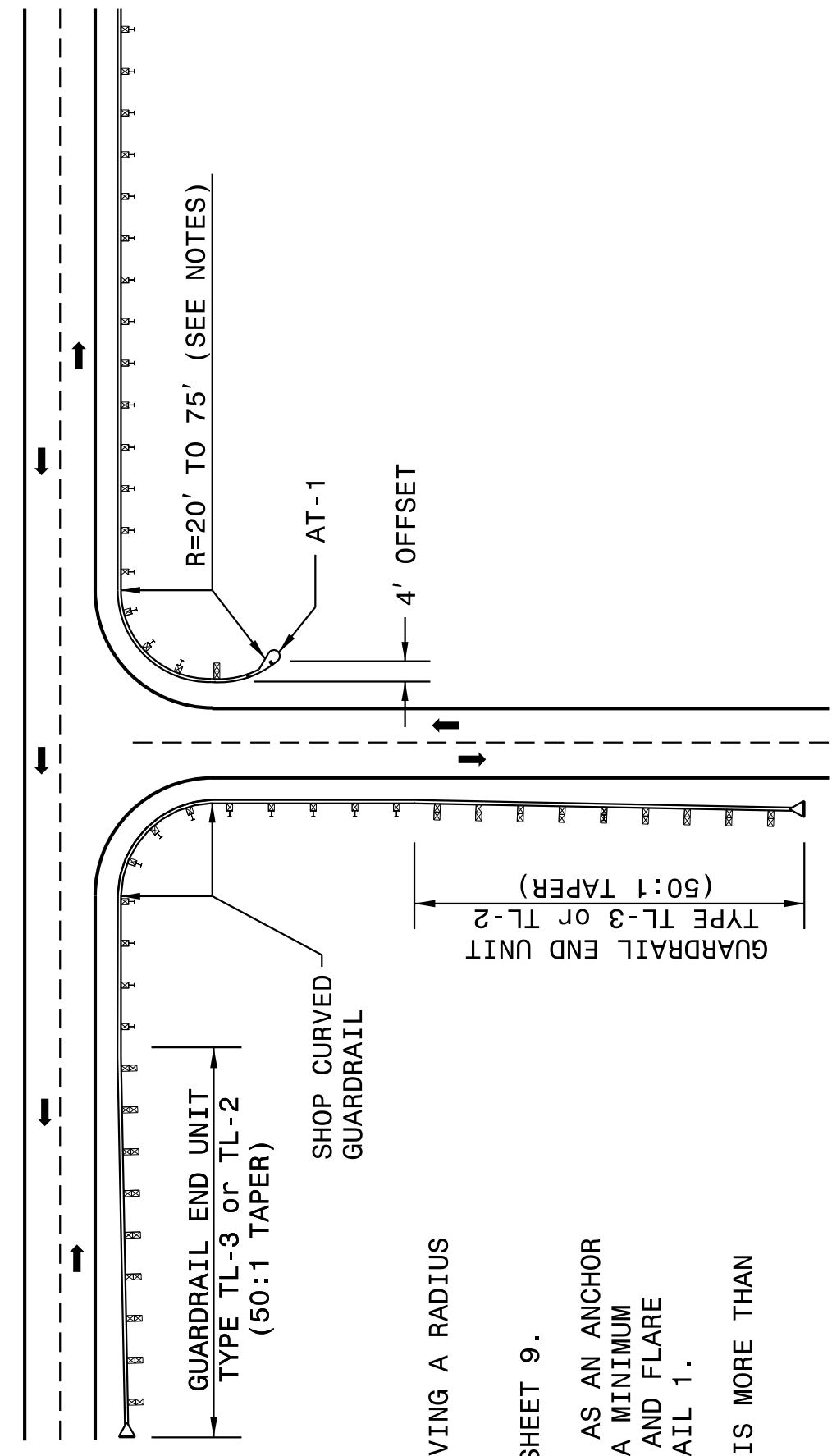
ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 8 OF 11
862D01

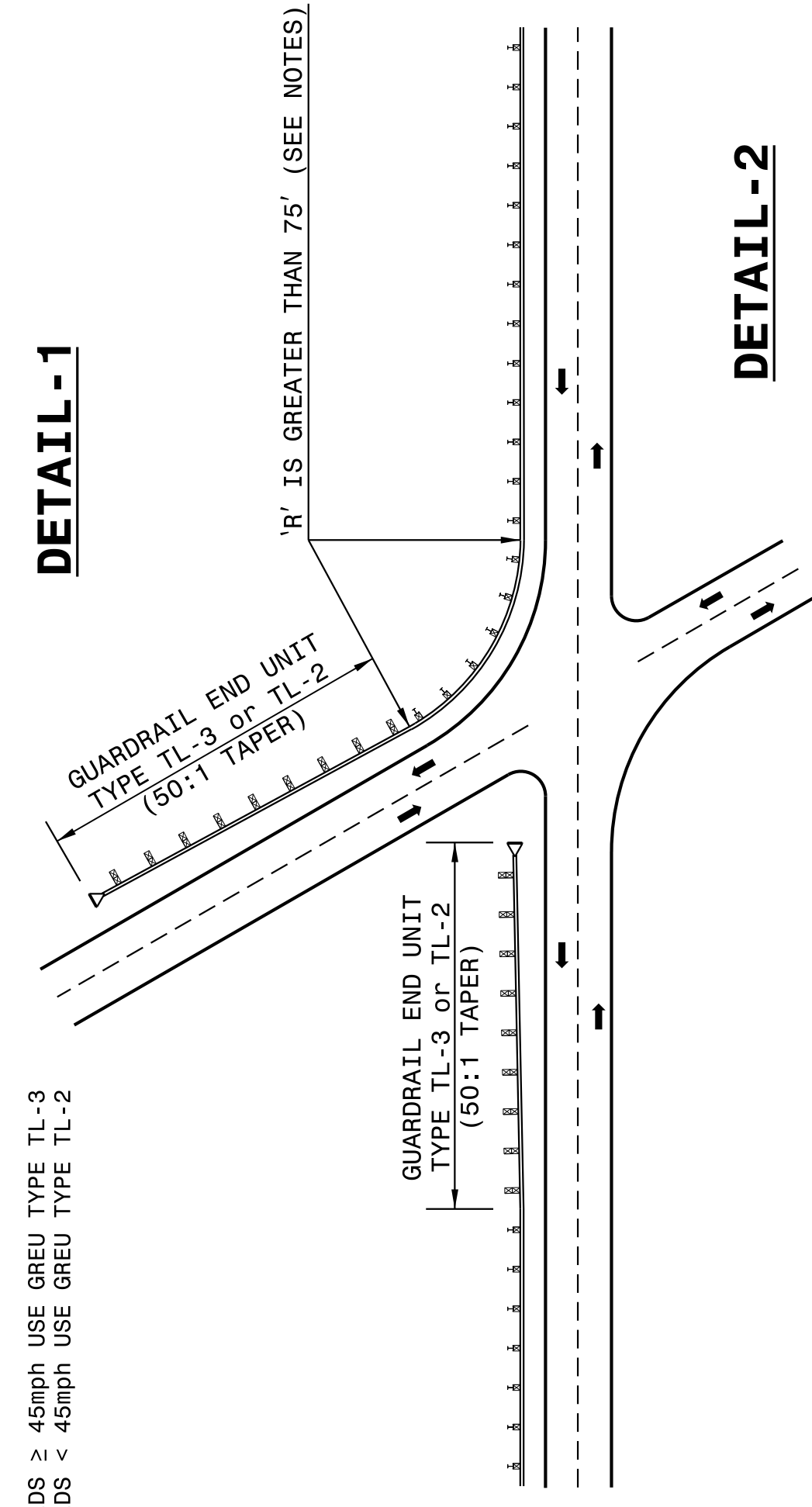
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ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 8 OF 11
862D01



DETAIL - 1



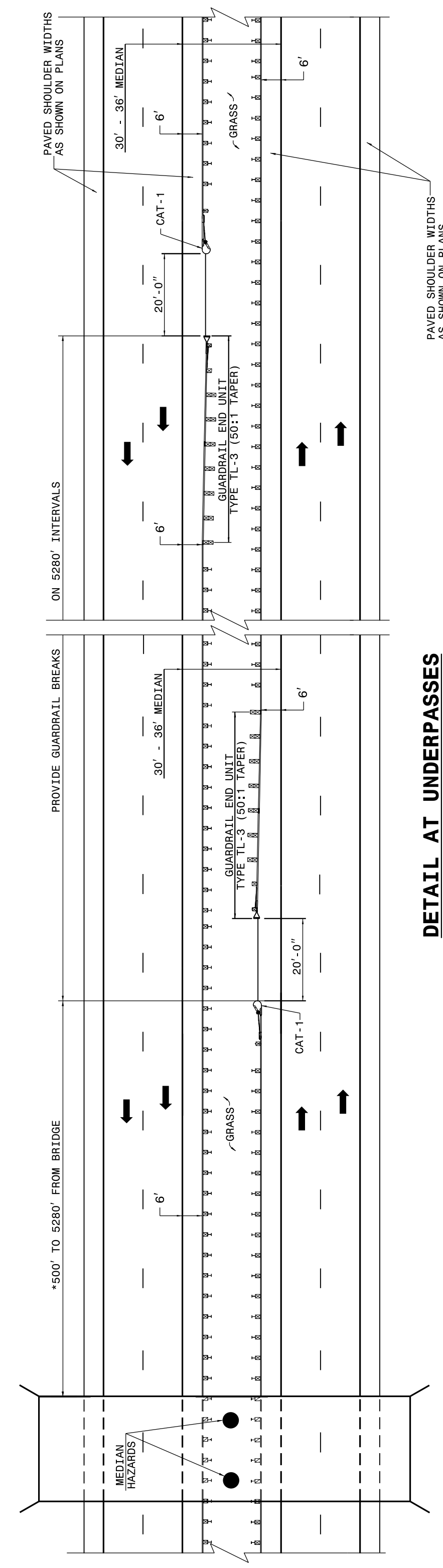
DETAIL - 2

NOTES:
 SHOP CURVED GUARDRAIL IS DEFINED AS HAVING A RADIUS OF 150' OR LESS.
 WHEN RADIUS IS LESS THAN 20' REFER TO SHEET 9.
 WHENEVER SHOP CURVED GUARDRAIL IS USED AS AN ANCHOR AND THE RADIUS IS FROM 20' TO 75', USE A MINIMUM LENGTH OF 50' OF SHOP CURVED GUARDRAIL AND FLARE WITH AN AT-1 ANCHOR UNIT. REFER TO DETAIL 1.
 WHENEVER SHOP CURVED GUARDRAIL RADIUS IS MORE THAN 75', REFER TO DETAIL 2.
 MAINTAIN CLEAR SIGHT DISTANCE.
 FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3
 FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2

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ROADWAY DETAIL DRAWING FOR
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862D01

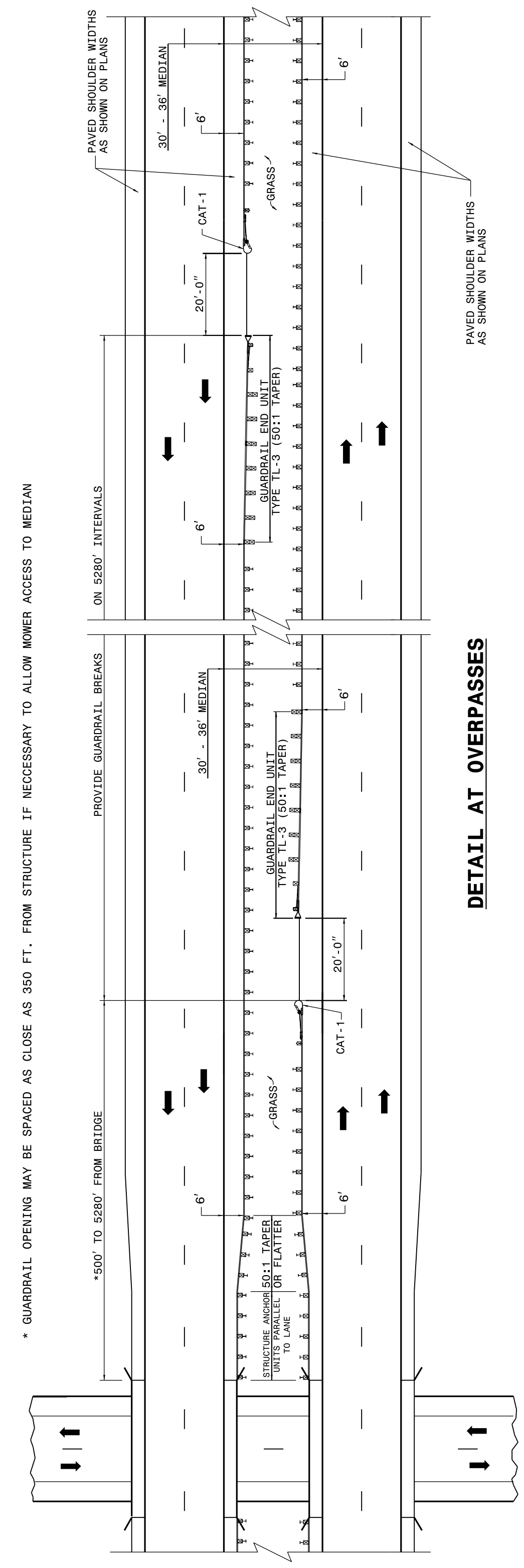


DETAIL AT UNDERPASSES

* GUARDRAIL OPENING MAY BE SPACED AS CLOSE AS 350 FT. FROM STRUCTURE IF NECESSARY TO ALLOW MOWER ACCESS TO MEDIAN

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 7 OF 11
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DETAIL AT OVERPASSES

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

GUARDRAIL BREAK INTERVALS WITH 30' - 36' MEDIANS

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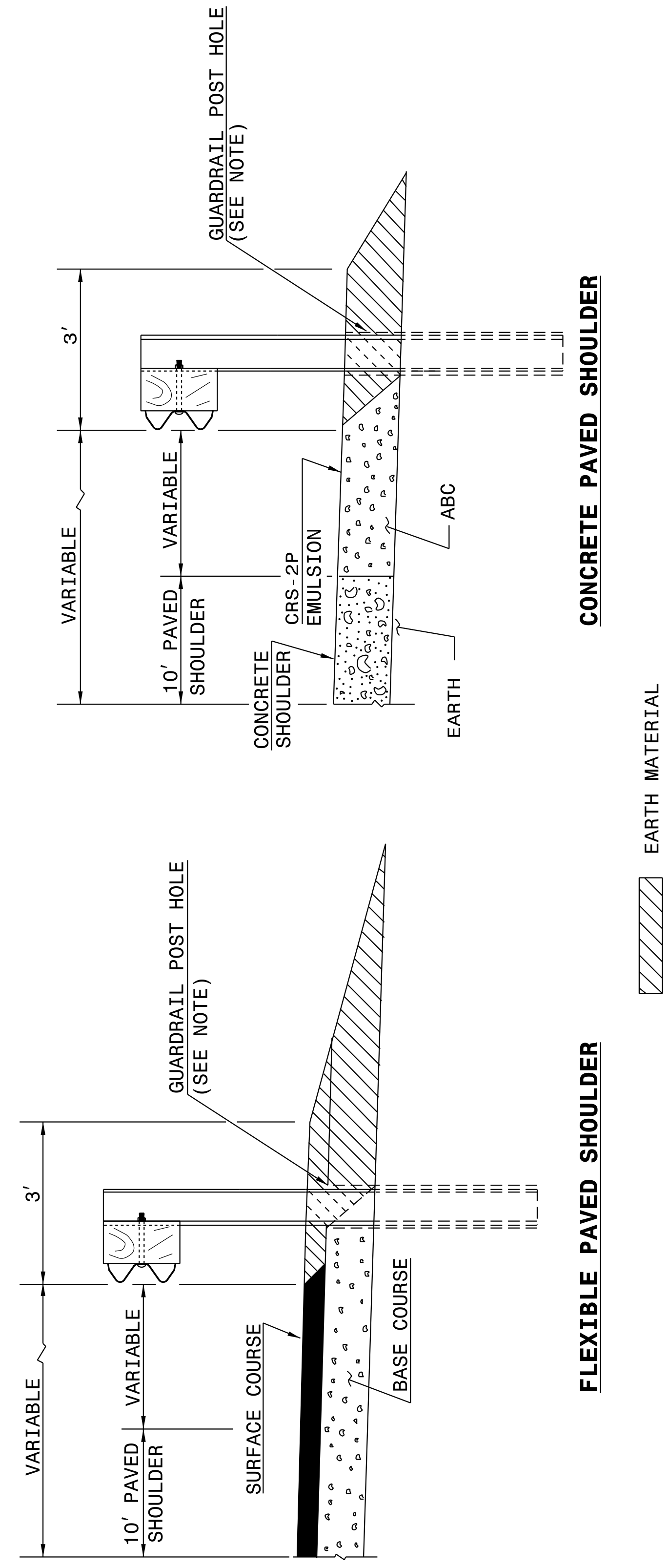
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ENGLISH DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

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FLEXIBLE PAVED SHOULDER

CONCRETE PAVED SHOULDER

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

Legend: EARTH MATERIAL

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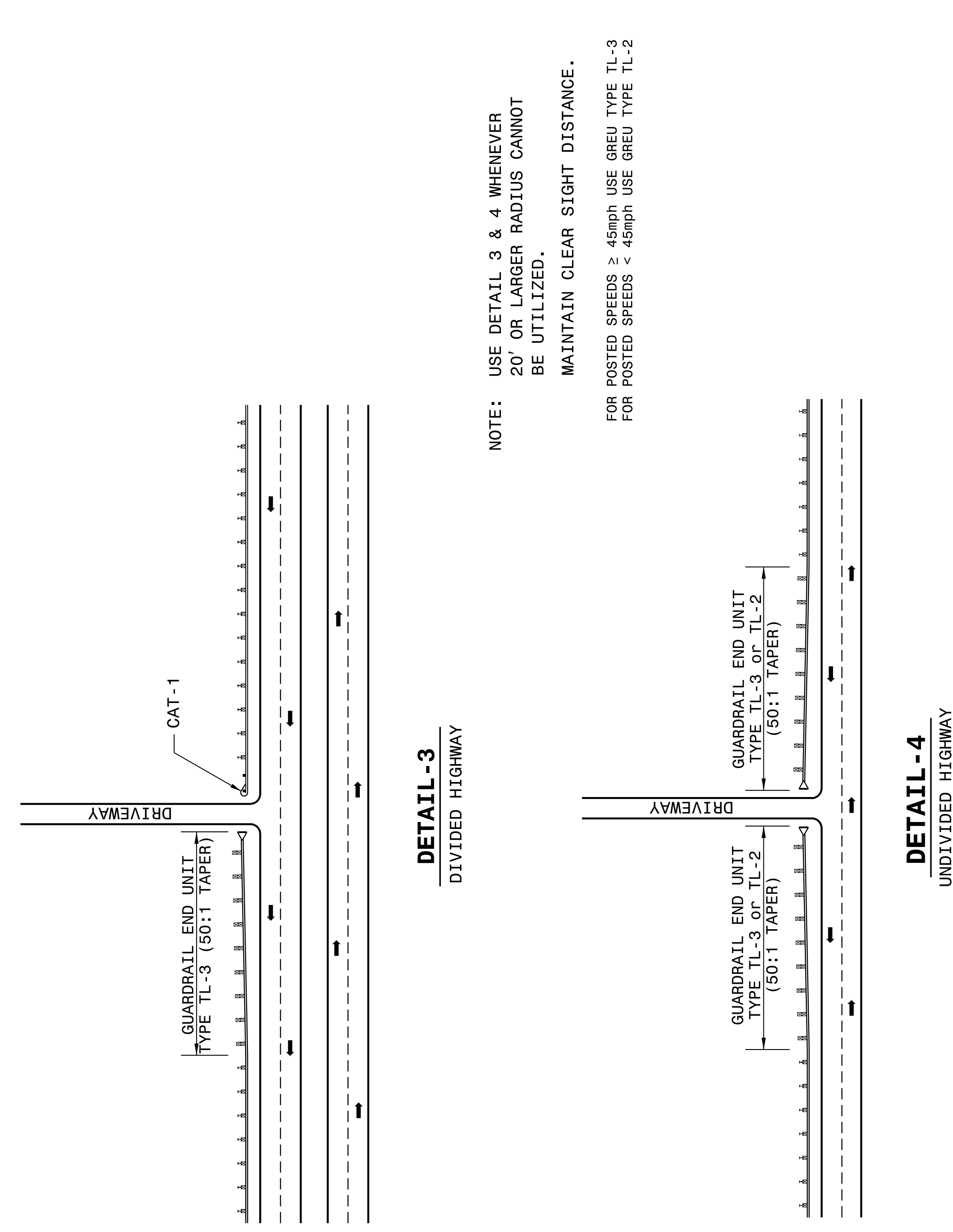
ENGLISH DETAIL DRAWING FOR
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ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 9 OF 11
862D01



DETAIL -3
 DIVIDED HIGHWAY

DETAIL -4
 UNDIVIDED HIGHWAY

GUARDRAIL TREATMENT AT DRIVEWAYS

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

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

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ROADWAY DETAIL DRAWING FOR
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SHEET 10 OF 11
862D01

PROJECT REFERENCE NO. R-5703	SHEET NO. 2C-5
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DocuSigned by:
 Joel S Howerton
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 8/7/2017

PROFESSIONAL SEAL
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 ENGINEER
 Howerton

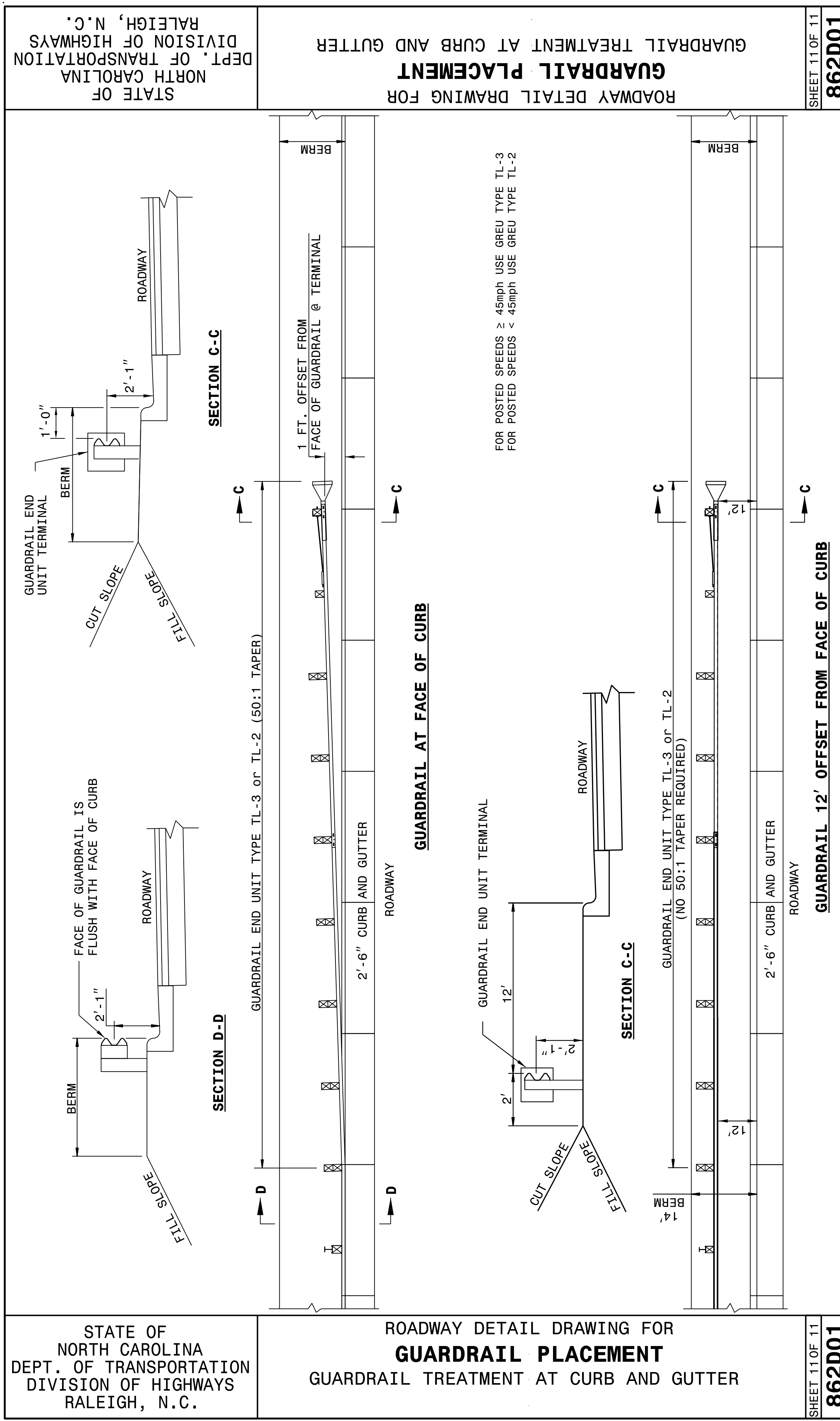
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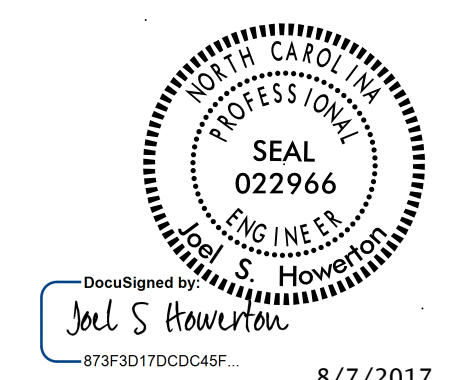
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ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT
GUARDRAIL TREATMENT AT CURB AND GUTTER

SHEET 11 OF 11
862D01



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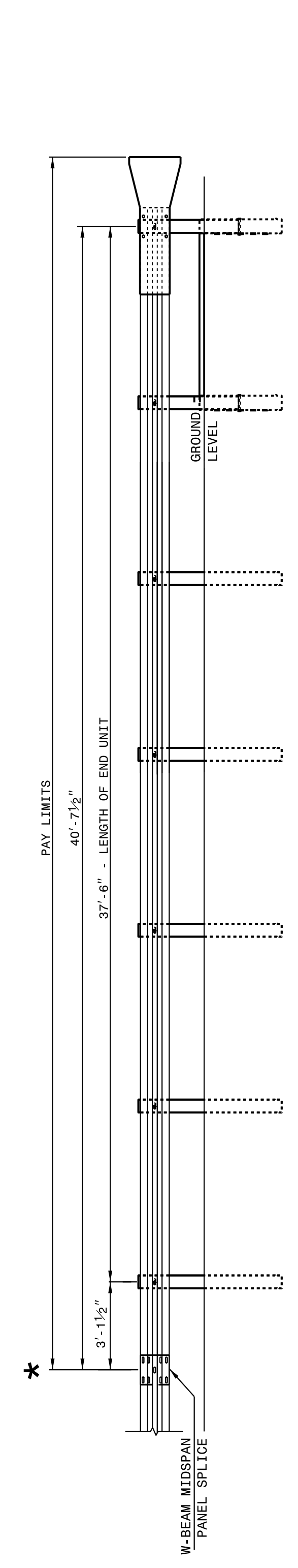
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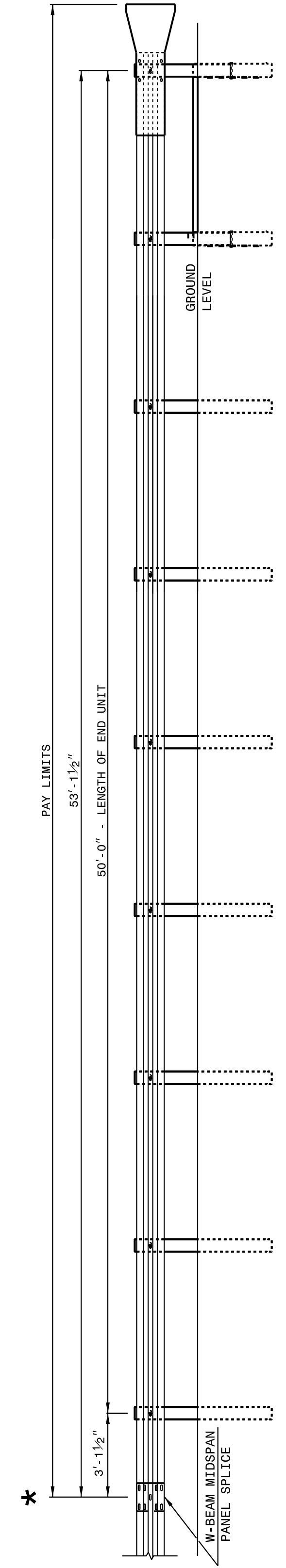
ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

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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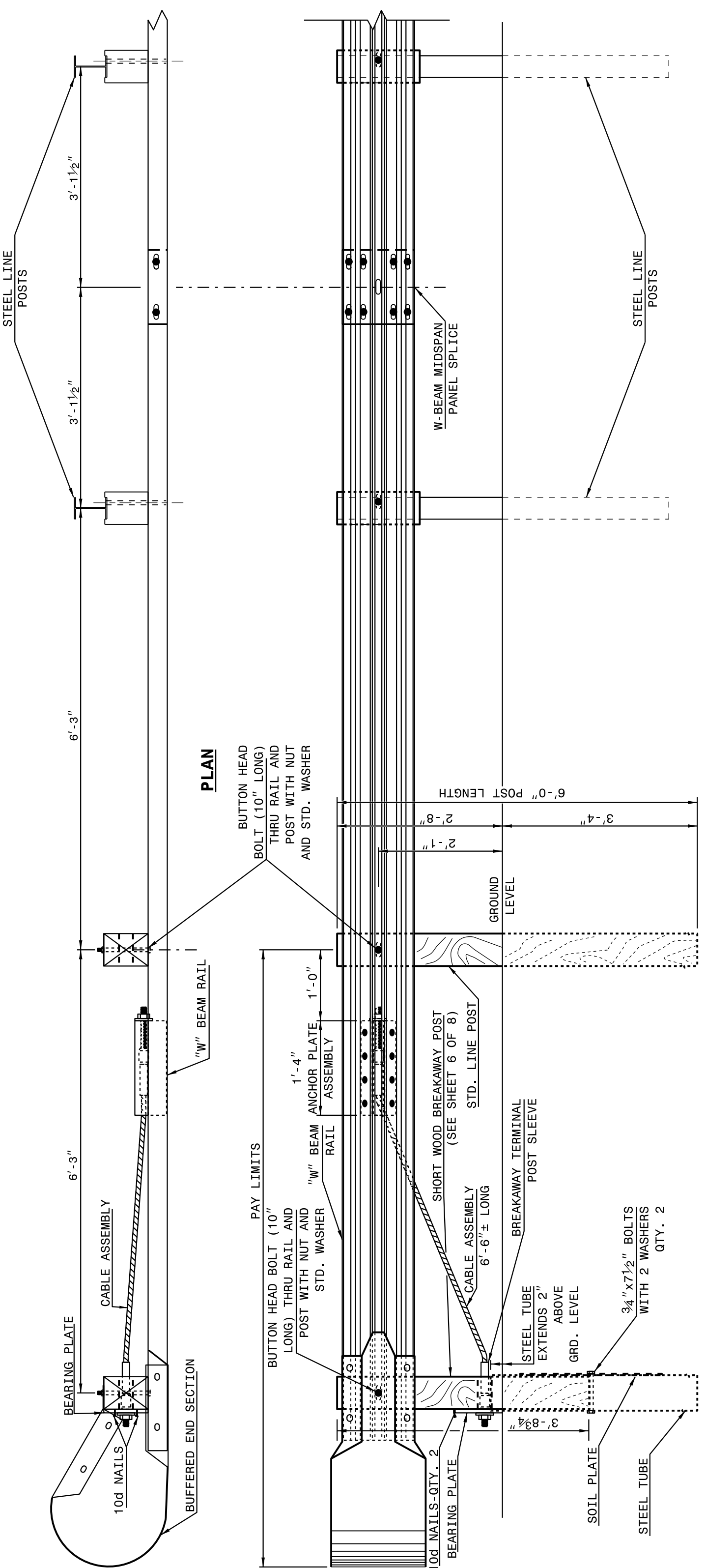
ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 1 OF 8
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ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 1 OF 8
862D02



ELEVATION

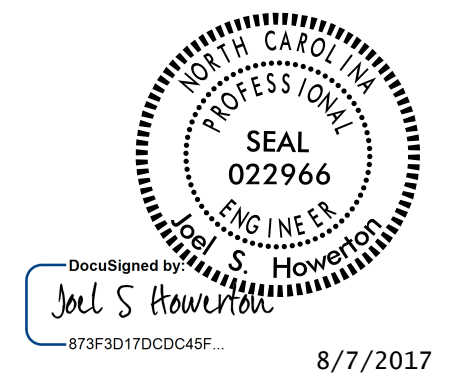
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C.A.T. - 1 SYSTEM**

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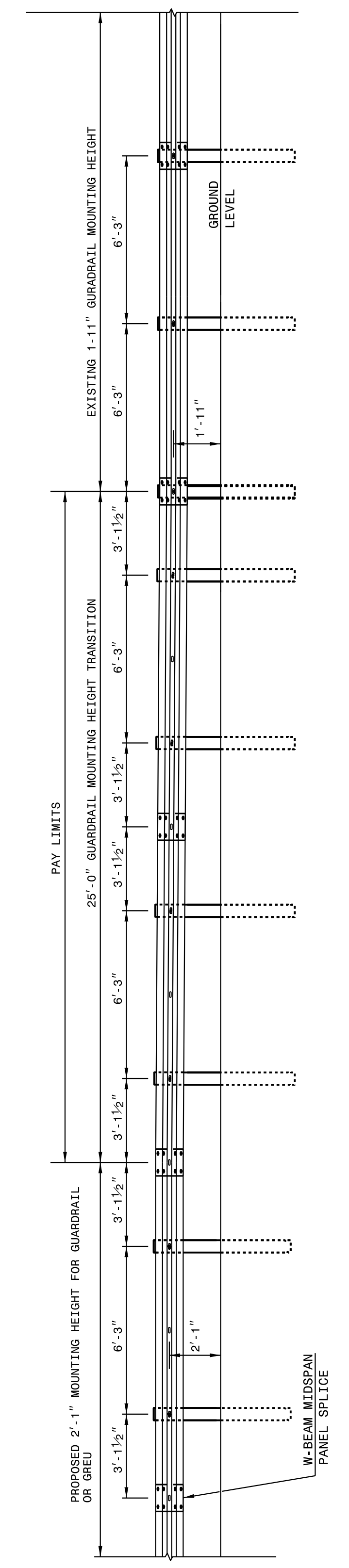
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ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 4 OF 8
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NOTE: IF EXISTING GUARDRAIL IS LOWER THAN 1'-11", USE AN ADDITIONAL 12'-6" LONG SECTION OF GUARDRAIL, FOR EVERY 1" OF HEIGHT DIFFERENCE, TO TRANSITION FROM EXISTING GUARDRAIL TO PROPOSED 2'-1" GUARDRAIL.



ELEVATION VIEW

TRANSITION FROM OR 1'-11" TO 2'-1" W-BEAM GUARDRAIL MOUNTING HEIGHT

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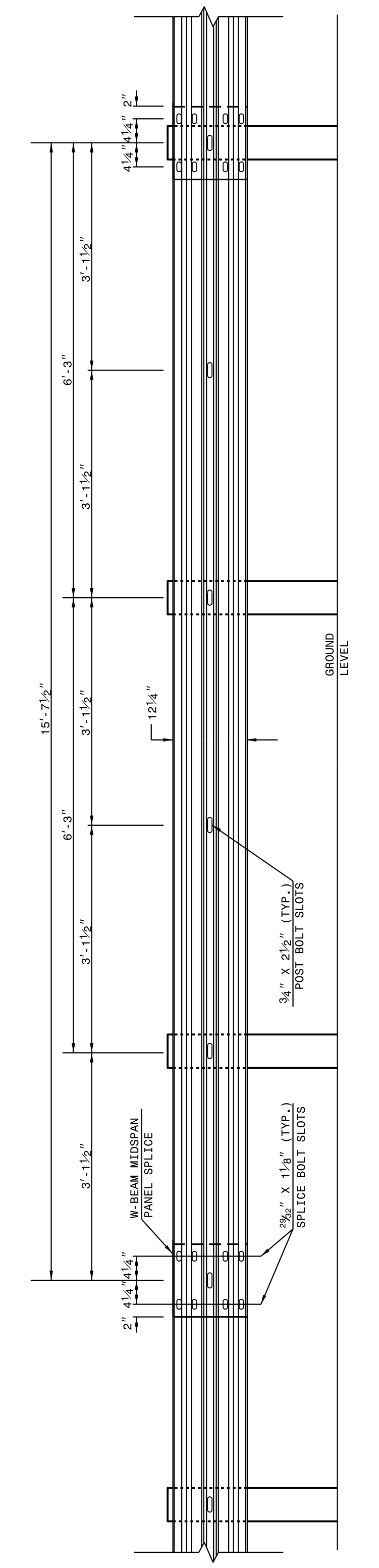
ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 3 OF 8
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ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 3 OF 8
862D02



15'-7 1/2" W-BEAM GUARDRAIL PANEL

NOTE: USE 5-SPACE 15'-7 1/2" W-BEAM GUARDRAIL PANEL AT THE DOWNSTREAM END OF AN END UNIT OR EXISTING GUARDRAIL THAT DOES NOT OFFSET THE W-BEAM PANEL SPLICE TO MIDSPAN

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SYSTEM PARTS		
ROADWAY DETAIL DRAWING FOR GUARDRAIL INSTALLATION		
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TYPICAL GUARDRAIL AND GUARDRAIL POST ALTERNATIVES		
ROADWAY DETAIL DRAWING FOR GUARDRAIL INSTALLATION		
SHEET 5 OF 8 862D02		

PROJECT REFERENCE NO. R-5703	SHEET NO. 2C-9
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