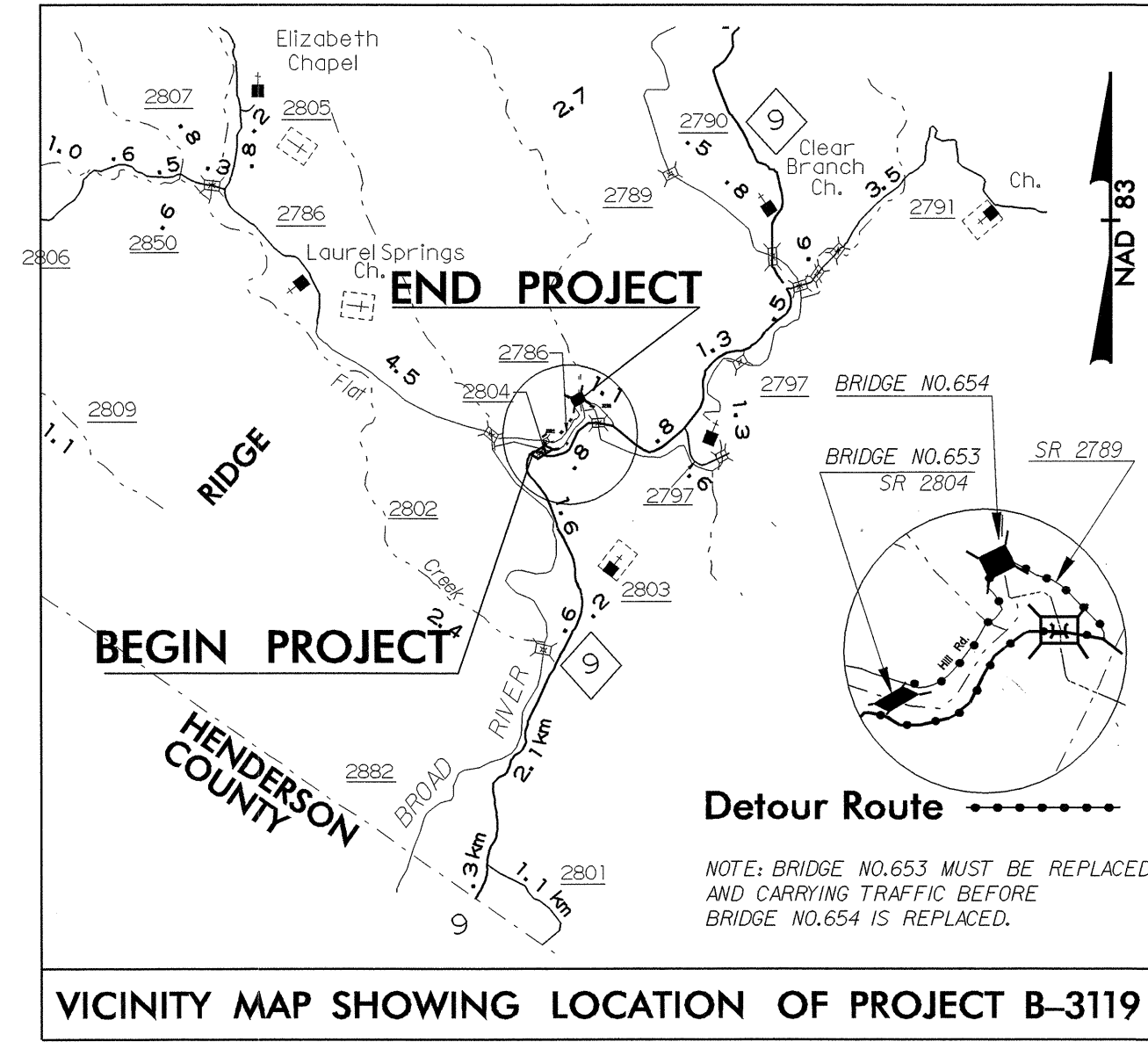


9/09/09

CONTRACT: C201222 TIP PROJECT: B-3119

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols



VICINITY MAP SHOWING LOCATION OF PROJECT B-3119

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

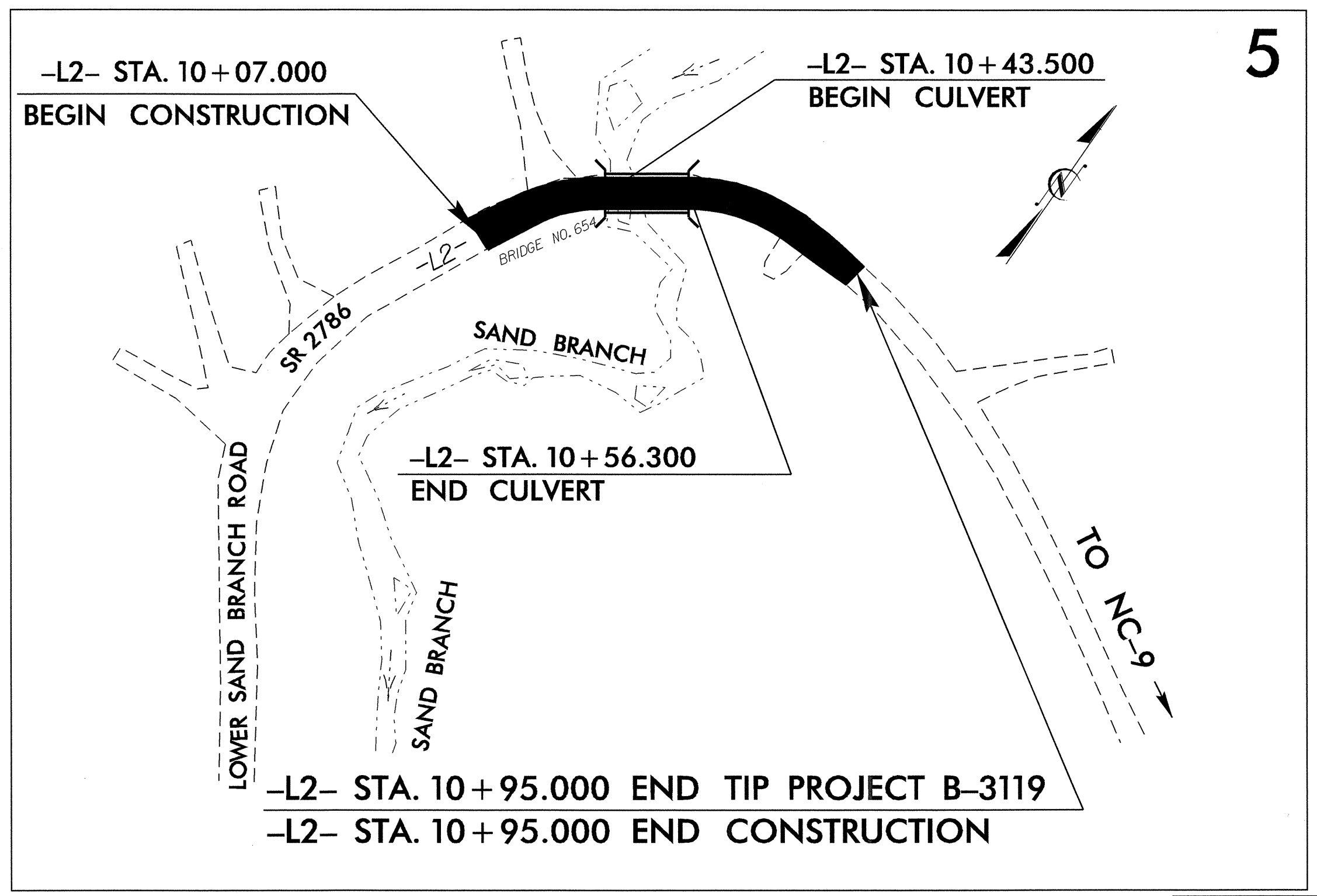
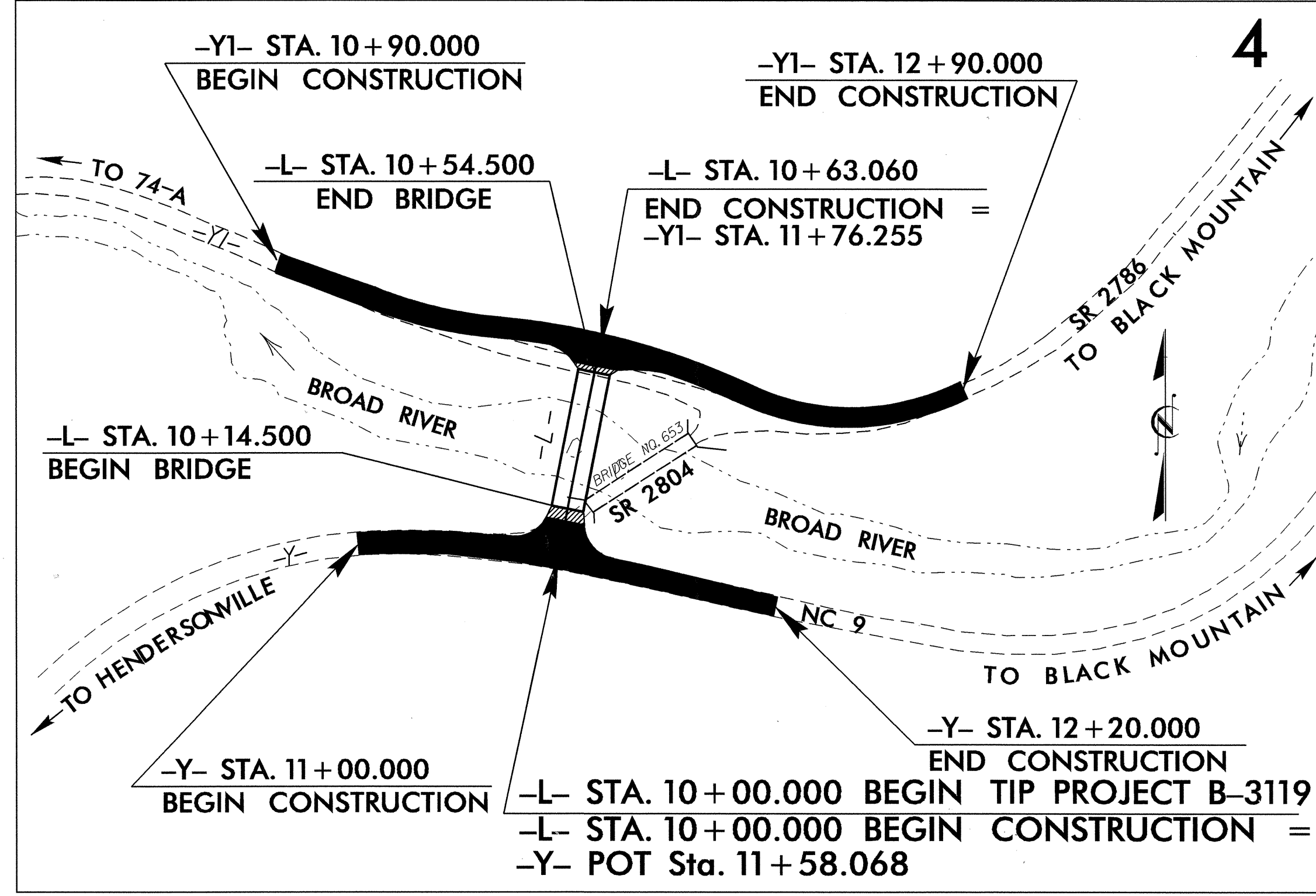
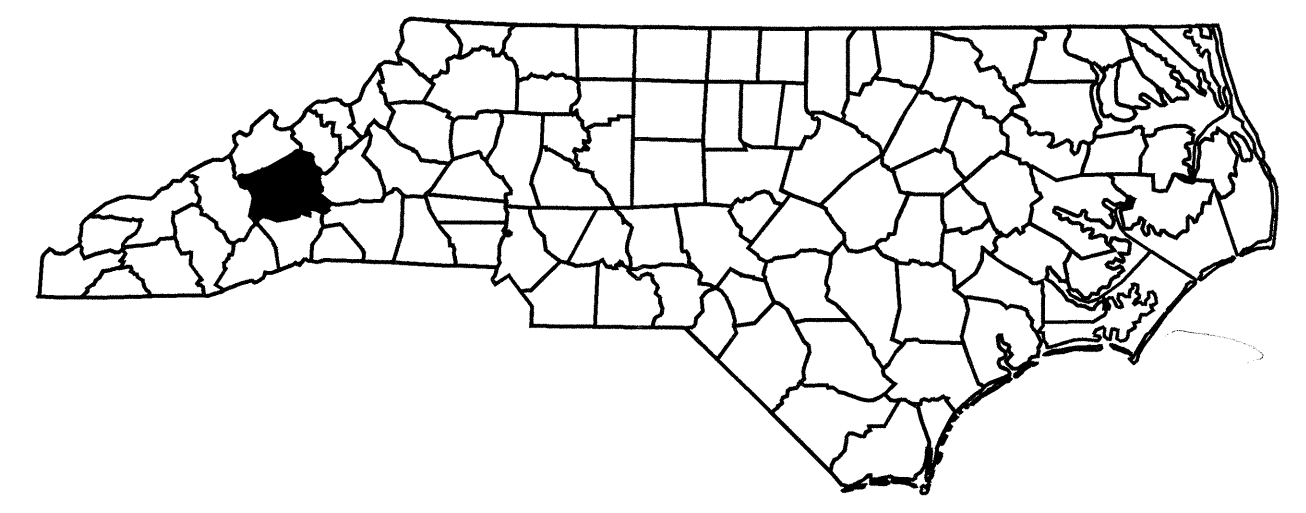
BUNCOMBE COUNTY

LOCATION: BRIDGE NO. 653 OVER THE BROAD RIVER ON SR 2804
AND BRIDGE NO. 654 OVER SAND BRANCH CREEK ON SR 2786

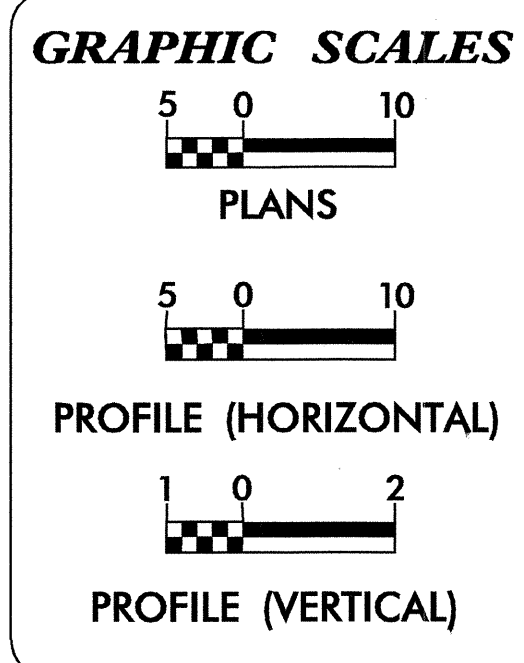
TYPE OF WORK: GRADING, DRAINAGE, PAVING, CULVERT, AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3119	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
32877.1.1	BRZ-2804(1)	PE	
32877.2.1	BRZ-2804(1)	RW, UTL	
32877.3.1	BRZ-2804(1)	CONST	

ALL DIMENSIONS IN THESE PLANS ARE IN METERS



THERE IS NO CONTROL OF ACCESS ON THIS PROJECT.
**DESIGN EXCEPTION REQUIRED FOR THE DESIGN SPEED FROM 90KMH TO 30 KMH.



DESIGN DATA

ADT 2007 =	147
ADT 2027 =	382
DHV =	10 %
D =	60 %
T =	3 % *
V =	30 km/h**
* TTST 1 %	DUAL 2 %
FUNC CLASS =	LOCAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-3119 =	0.098 km
LENGTH STRUCTURE TIP PROJECT B-3119 =	0.053 km
TOTAL LENGTH TIP PROJECT B-3119 =	0.151 km

Prepared In the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh, NC 27610

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: MAY 28, 2004

LETTING DATE: JANUARY 16, 2007

TONY HOUSER, PE
PROJECT ENGINEER

LEE ANN MOORE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SEAL 20870
11-15-06

ROADWAY DESIGN ENGINEER

SEAL 18494
11-14-2006

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

Ant McMillan
STATE DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR

DATE

20-OCT-2006 15:01
5:58:53 PM
C:\PROJECTS\B-3119\B-3119.DWG



PROJECT REFERENCE NO. B-3119	SHEET NO. 1-A
ROADWAY DESIGN ENGINEER	

SHEET NUMBER	SHEET TITLE
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARDS
1-B	CONVENTIONAL SYMBOLS
2	PAVEMENT SCHEDULE, MISCELLANEOUS DETAILS, AND TYPICAL SECTIONS
2-A THRU 2-B	STRUCTURE ANCHOR UNIT DETAILS
2-C THRU 2-F	DETAILS FOR GUARDRAIL INSTALLATION
2-G THRU 2-J	REINFORCED BRIDGE APPROACH FILLS DETAILS
2-K	ROCK FILL DETAIL
3	SUMMARY OF QUANTITIES
3-A	SUMMARY OF GUARDRAIL, EARTHWORK, PAVEMENT REMOVAL, AND PARCEL INDEX SUMMARY
3-B	SUMMARY OF DRAINAGE
4 THRU 5	PLAN SHEETS
6	PROFILE SHEET
TCP-1 THRU TCP-13	TRAFFIC CONTROL PLANS
PM-1	PAVEMENT MARKING PLAN
EC-1 THRU EC-7	EROSION CONTROL PLANS
RF-1	REFORESTATION DETAIL
SIG.1 THRU SIG.4	SIGNAL PLANS
UO-2	UTILITY BY OTHERS PLAN
X-1A	CROSS SECTION EARTHWORK SUMMARY
X-1 THRU X-27	CROSS SECTIONS
C-1 THRU C-4	CULVERT PLANS
W-1 THRU W-4	RETAINING WALL PLANS
S-1 THRU S-26	STRUCTURE PLANS

EFFECTIVE: 01-15-02
REVISED: 05-14-03

GENERAL NOTES: 2006 SPECIFICATIONS

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.

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.

UNDERDRAINS:

UNDERDRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.03 AT LOCATIONS 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.

SUBSURFACE PLANS:

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

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 BELL SOUTH AND CP&L.

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.

REV.11-23-04
EFF. 01-15-02

2002 ROADWAY METRIC 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 15, 2002 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
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation - Method 'A'
310.10	Driveway Pipe Construction
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-of-Way Marker
815.03	Pipe Underdrain and Blind Drain
820.01	Funnel and Funnel Drain - 300mm Metal Funnel
820.04	Drain Installation in Shoulder Berm Gutter
840.00	Concrete Base Pad for Drainage Structures
840.18	Concrete Median Drop Inlet Type 'B' - 300mm thru 900mm Pipe
840.24	Frames and Narrow Slot Sag Grates
840.27	Brick Median Drop Inlet Type 'B' - 300mm thru 900mm Pipe
840.29	Frames and Narrow Slot Flat Grates
840.36	Traffic Bearing Drop Inlet - for Steel (840.37) Double Frame and Grates
840.37	Steel Grate and Frame
846.01	Concrete Curb, Gutter and Curb & Gutter
850.01	Concrete Paved Ditches
862.01	Guardrail Placement
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS



PROJ. REFERENCE NO. SHEET NO.
B-3119 1-B

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○
Property Corner	✕
Property Monument	□
Parcel/Sequence Number	⑫③
Existing Fence Line	×××
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	WLB
Proposed Wetland Boundary	WLB
Existing Endangered Animal Boundary	EAB
Existing Endangered Plant Boundary	EPB

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	JS
Buffer Zone 1	BZ 1
Buffer Zone 2	BZ 2
Flow Arrow	→
Disappearing Stream	→
Spring	○
Swamp Marsh	→
Proposed Lateral, Tail, Head Ditch	→
False Sump	◇

RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○
Switch	□
RR Abandoned	-----
RR Dismantled	-----

RIGHT OF WAY:

Baseline Control Point	◆
Existing Right of Way Marker	△
Existing Right of Way Line	-----
Proposed Right of Way Line	-----
Proposed Right of Way Line with Iron Pin and Cap Marker	-----
Proposed Right of Way Line with Concrete or Granite Marker	-----
Existing Control of Access	○
Proposed Control of Access	○
Existing Easement Line	-----
Proposed Temporary Construction Easement	E
Proposed Temporary Drainage Easement	TDE
Proposed Permanent Drainage Easement	PDE
Proposed Permanent Utility Easement	PUE

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	C
Proposed Slope Stakes Fill	F
Proposed Wheel Chair Ramp	WCR
Proposed Wheel Chair Ramp Curb Cut	WCC
Curb Cut for Future Wheel Chair Ramp	CCFR
Existing Metal Guardrail	-----
Proposed Guardrail	-----
Existing Cable Guiderail	-----
Proposed Cable Guiderail	-----
Equality Symbol	⊕
Pavement Removal	-----

VEGETATION:

Single Tree	○
Single Shrub	○
Hedge	-----
Woods Line	-----
Orchard	-----
Vineyard	-----

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	CONC
Bridge Wing Wall, Head Wall and End Wall	CONC WW
MINOR:	
Head and End Wall	CONC HW
Pipe Culvert	-----
Footbridge	-----
Drainage Box: Catch Basin, DI or JB	CB
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	PH
H-Frame Pole	●
Recorded U/G Power Line	-----
Designated U/G Power Line (S.U.E.*)	-----

TELEPHONE:

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	○
Telephone Booth	□
Telephone Pedestal	□
Telephone Cell Tower	⊗
U/G Telephone Cable Hand Hole	PH
Recorded U/G Telephone Cable	-----
Designated U/G Telephone Cable (S.U.E.*)	-----
Recorded U/G Telephone Conduit	-----
Designated U/G Telephone Conduit (S.U.E.*)	-----
Recorded U/G Fiber Optics Cable	-----
Designated U/G Fiber Optics Cable (S.U.E.*)	-----

WATER:

Water Manhole	○
Water Meter	○
Water Valve	⊗
Water Hydrant	⊗
Recorded U/G Water Line	-----
Designated U/G Water Line (S.U.E.*)	-----
Above Ground Water Line	A/G Water

TV:

TV Satellite Dish	⊗
TV Pedestal	□
TV Tower	⊗
U/G TV Cable Hand Hole	PH
Recorded U/G TV Cable	-----
Designated U/G TV Cable (S.U.E.*)	-----
Recorded U/G Fiber Optic Cable	-----
Designated U/G Fiber Optic Cable (S.U.E.*)	-----

GAS:

Gas Valve	◇
Gas Meter	◇
Recorded U/G Gas Line	-----
Designated U/G Gas Line (S.U.E.*)	-----
Above Ground Gas Line	A/G Gas

SANITARY SEWER:

Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
U/G Sanitary Sewer Line	SS
Above Ground Sanitary Sewer	A/G Sanitary Sewer
Recorded SS Forced Main Line	FSS
Designated SS Forced Main Line (S.U.E.*)	FSS

MISCELLANEOUS:

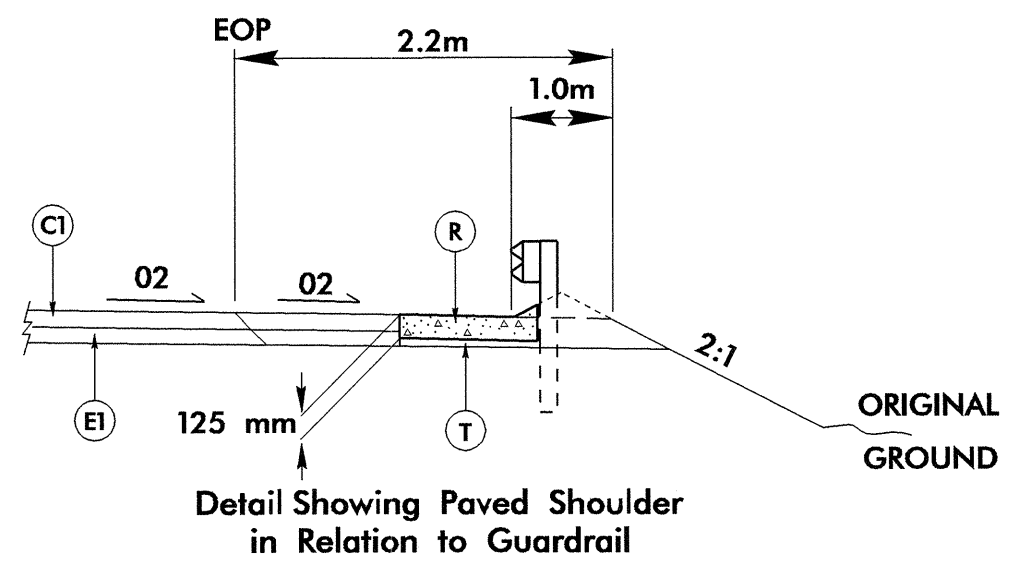
Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	⊗
Utility Unknown U/G Line	-----
U/G Tank; Water, Gas, Oil	□
A/G Tank; Water, Gas, Oil	□
U/G Test Hole (S.U.E.*)	⊗
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

08-NOV-2006 14:09
#####USENAME#####B3119.txd

6/16/09
 01-DEC-2006 09:16 3119 typ-tup
 *****USERNAME*****

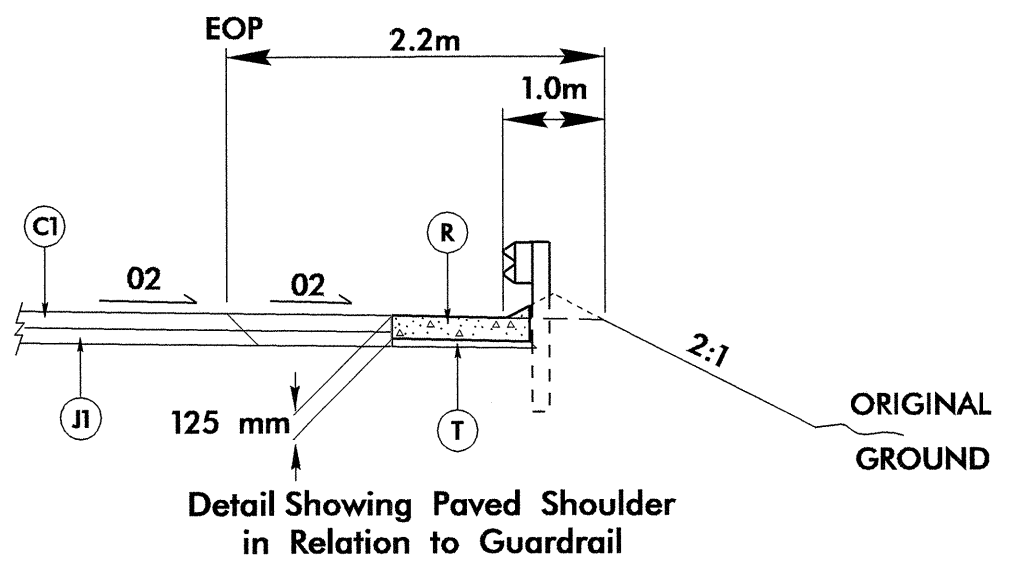
PAVEMENT SCHEDULE	
C1	PROP. APPROX. 60 mm ASPHALT CONC. SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 72 kg PER SQ. METER IN EACH OF TWO LAYERS.
E1	PROP. APPROX. 75 mm ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 183.75 kg PER SQ. METER.
J1	PROP. 150 mm AGGREGATE BASE COURSE.
P	PRIME COAT
R	SHOULDER BERM GUTTER
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.

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



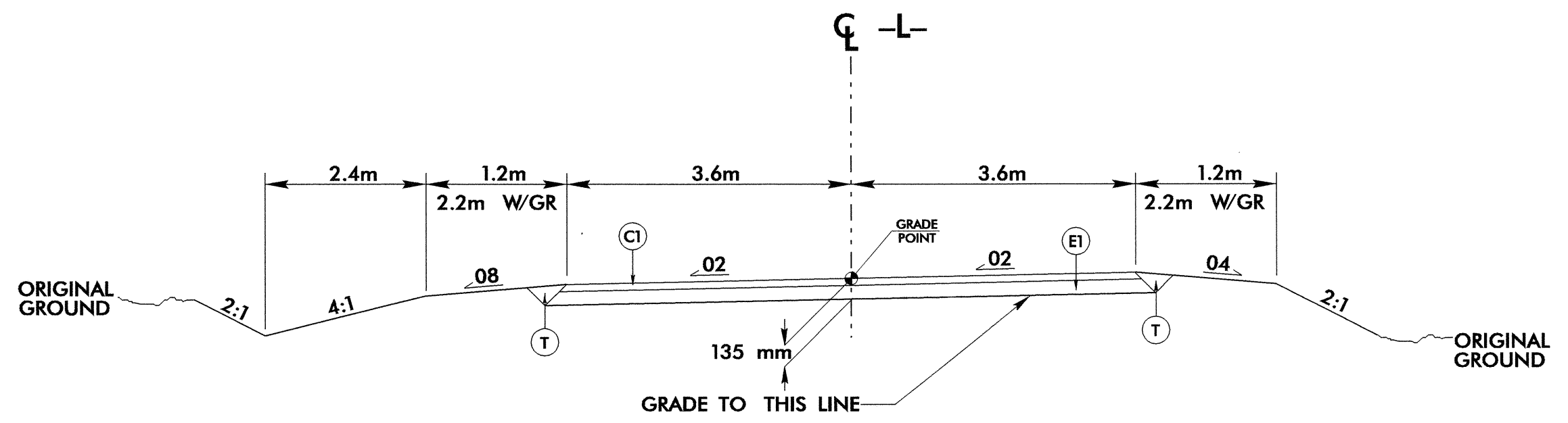
USE SHOULDER BERM GUTTER FOR THE FOLLOWING:

-L2- STA 10+23 RT TO -L2- STA 10+59 RT
 LEFT SHOULDER:
 -Y- STA 11+87 TO APPROACH SLAB -L- STA. 10+11.147



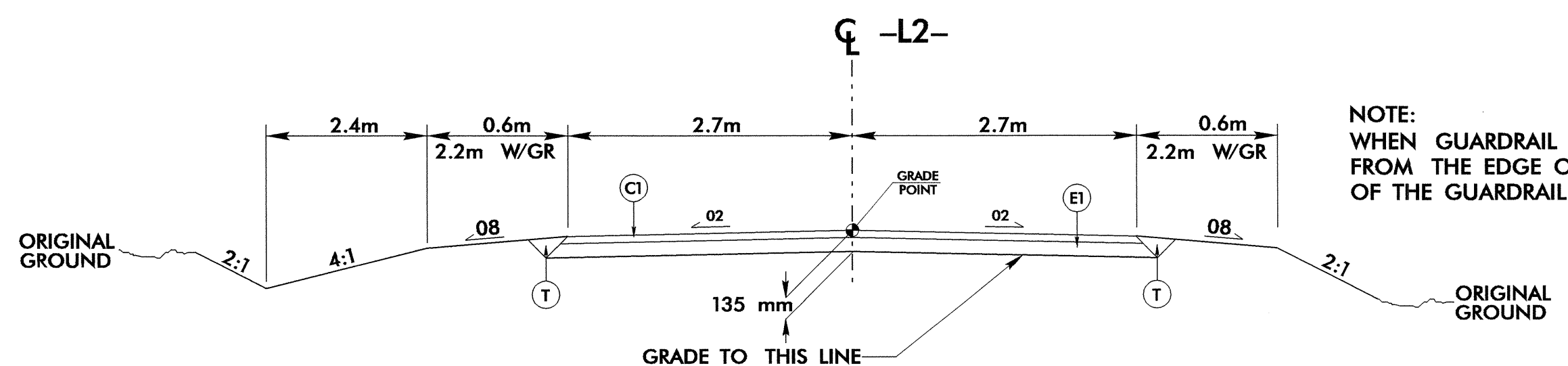
USE SHOULDER BERM GUTTER FOR THE FOLLOWING:

RIGHT SHOULDER:
 -Y1- STA 11+46 TO APPROACH SLAB -L- STA. 10+56.023
 -Y1- STA 12+20 TO APPROACH SLAB -L- STA. 10+56.023



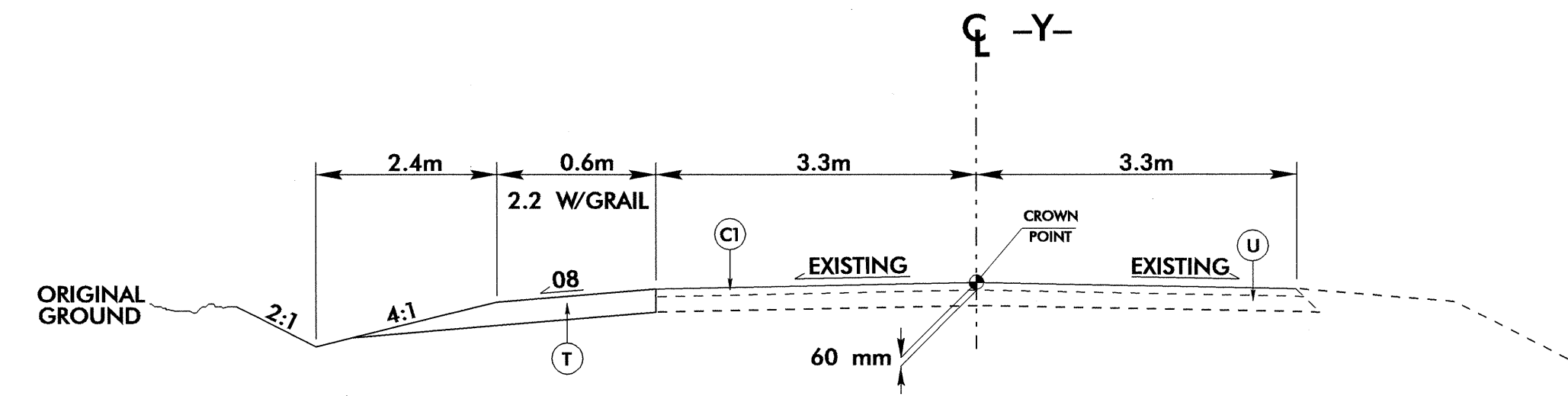
TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1 FOR THE FOLLOWING:
 -L- STA. 10+03.300 TO 10+14.500 (BEG. BRIDGE)
 -L- 10+54.500 (END BRIDGE) TO STA. 10+59.858



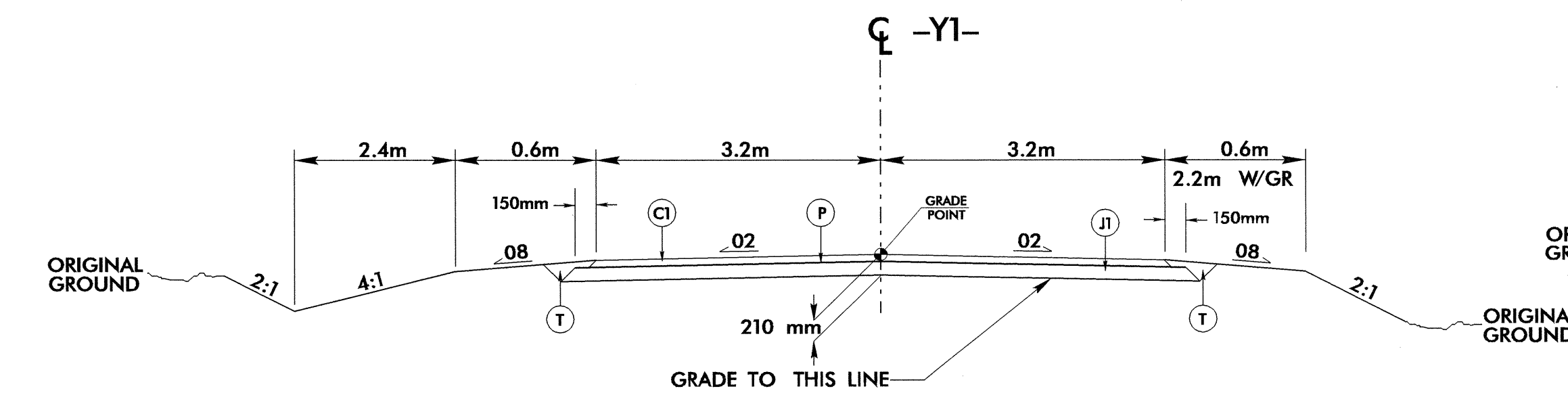
TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2 FOR THE FOLLOWING:
 -L2- STA. 10+07 TO 10+95



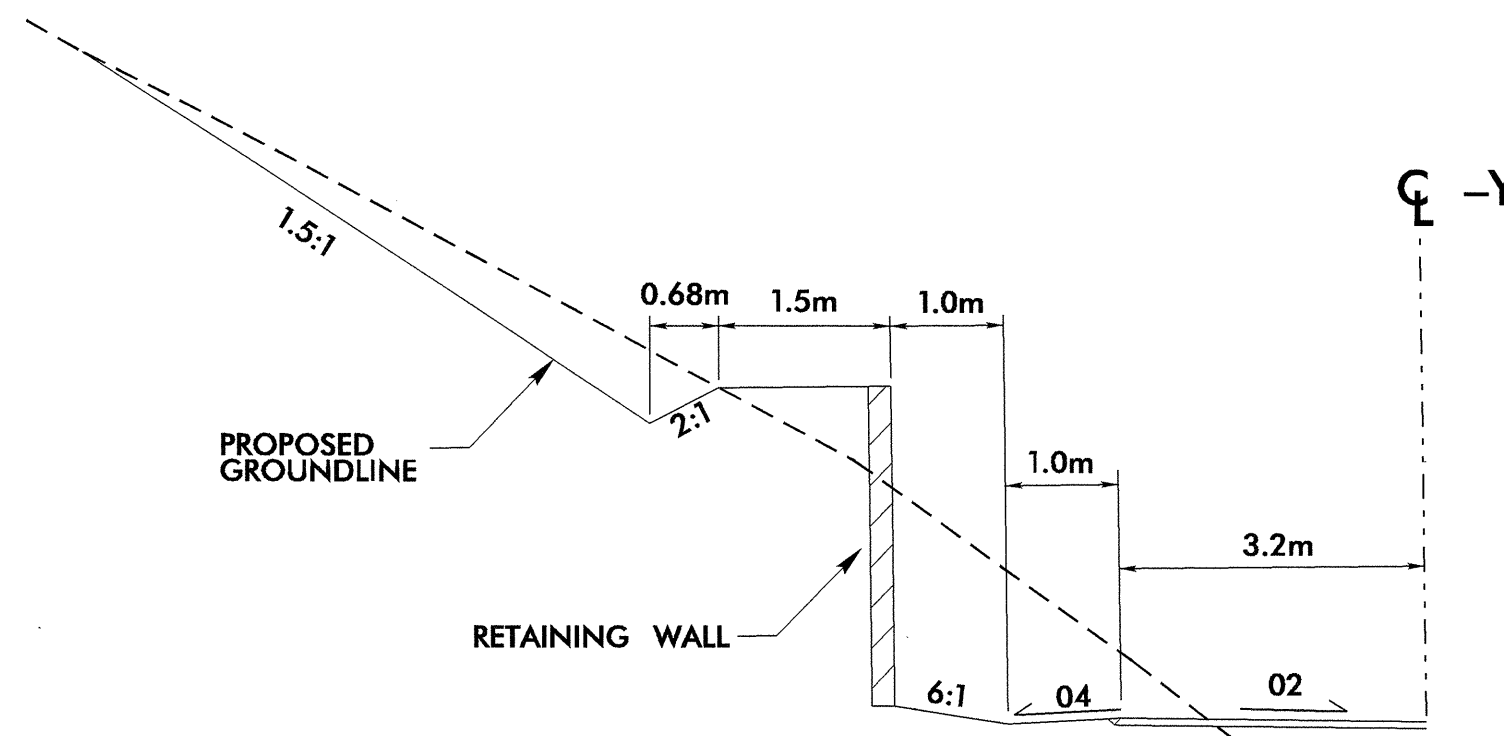
TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3 FOR THE FOLLOWING:
 -Y- STA. 11+16.000 TO 12+05.000
 RESURFACE ONLY:
 -Y- STA. 11+00.000 TO 11+16.000
 -Y- STA. 12+05.000 TO 12+20.000



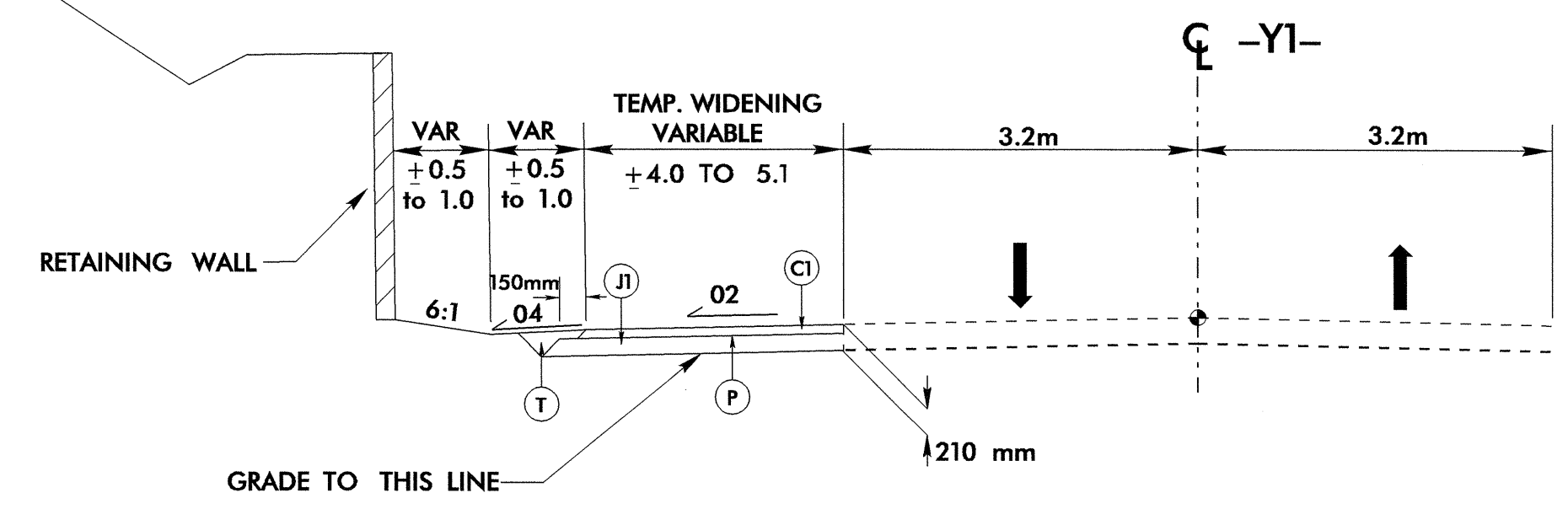
TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4 FOR THE FOLLOWING:
 -Y1- STA. 10+90.000 TO 12+90.000



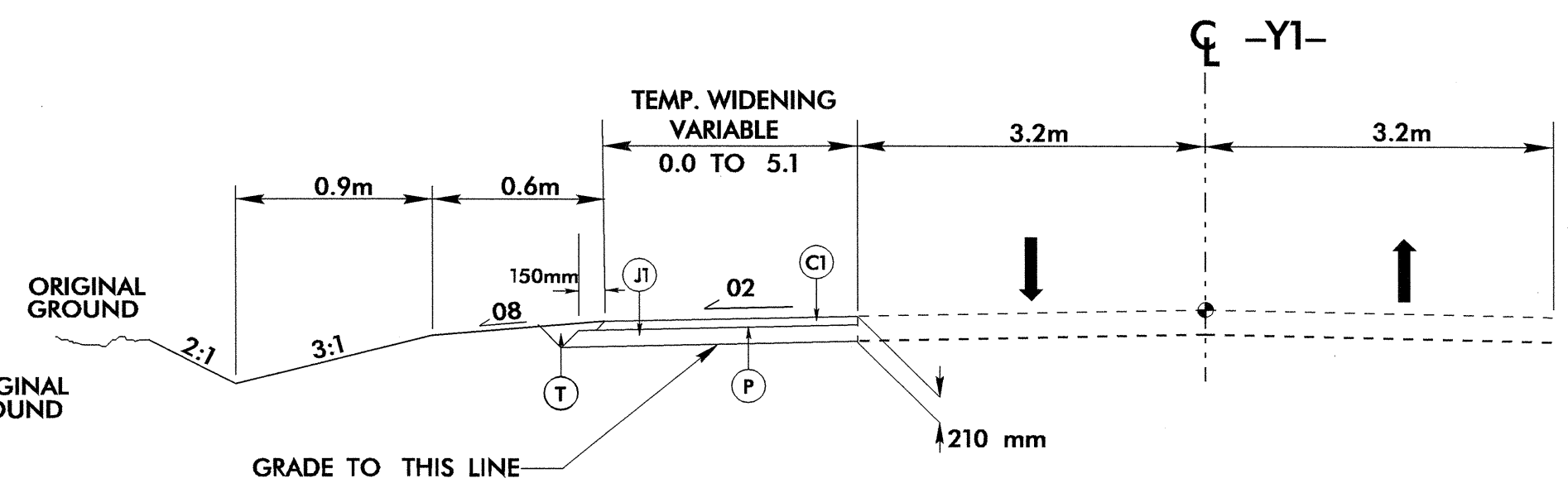
RETAINING WALL DETAIL

-Y1- STA. 11+68.05 TO STA. 12+03.14 LT
 SEE SHEETS W-1 THRU W-4 FOR RETAINING WALL PLANS



TEMPORARY WIDENING DETAIL

-Y1- STA. 11+68.05 TO STA. 12+03.14 LT
 SEE SHEETS TCP-1 THRU TCP-9 FOR TRAFFIC CONTROL PLANS



TEMPORARY WIDENING DETAIL

-Y1- STA. 11+25.000 TO STA. 11+68.050 LT.
 -Y1- STA. 12+03.140 TO STA. 12+40.000 LT.
 SEE SHEETS TCP-1 THRU TCP-9 FOR TRAFFIC CONTROL PLANS



PROJECT REFERENCE NO. B-3119	SHEET NO. 2
ROADWAY DESIGN	PAVEMENT DESIGN
Anthony Houser 12-1-06	Clark S. Morrison 12-1-06

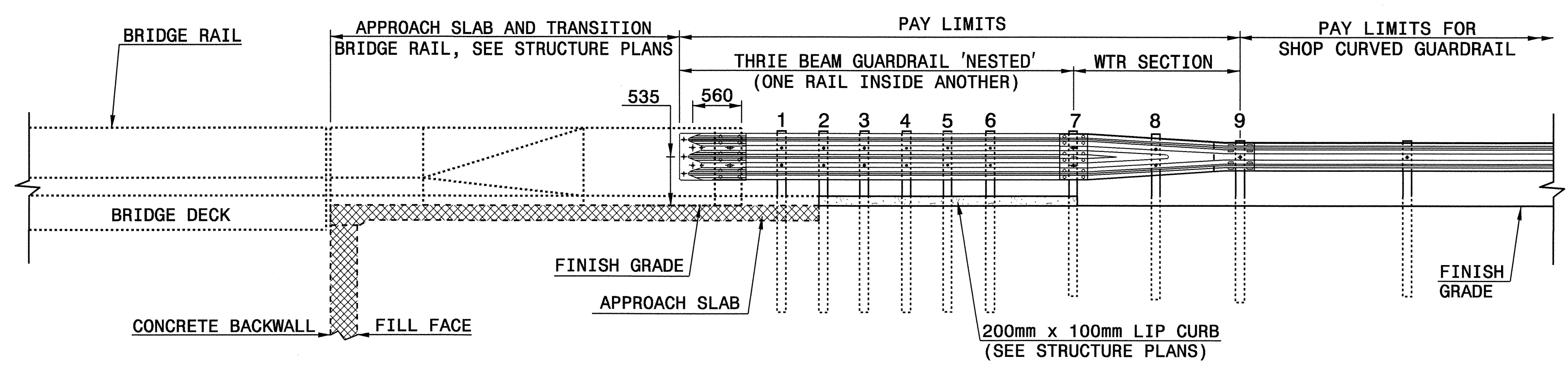


STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

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RALEIGH, N.C.

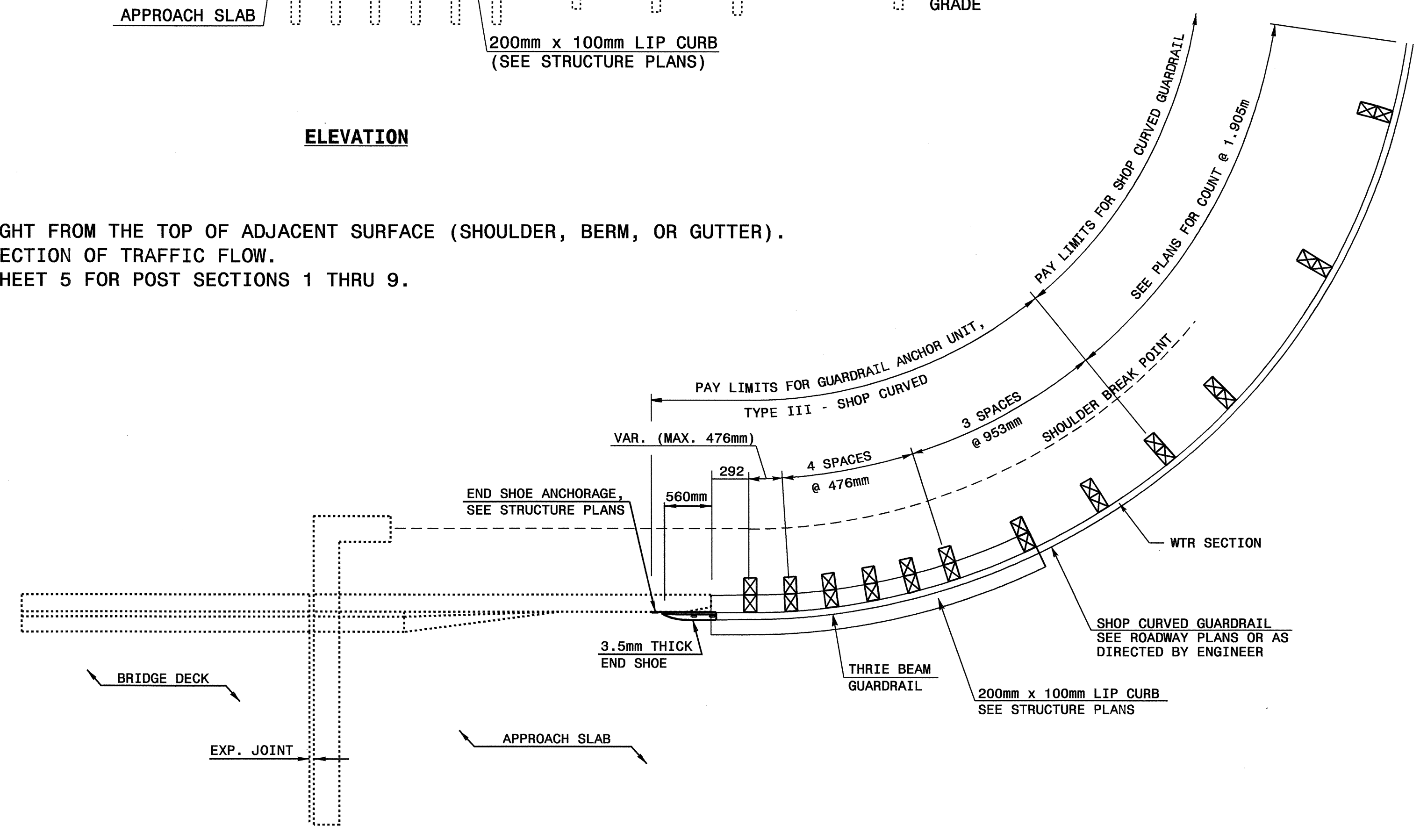
METRIC DETAIL DRAWING FOR
**TYPE III - SHOP CURVED
STRUCTURE ANCHOR UNIT**

METRIC DETAIL DRAWING FOR
**TYPE III - SHOP CURVED
STRUCTURE ANCHOR UNIT**



ELEVATION

NOTE:
-MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
-LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
-SEE STANDARD 862.03 SHEET 5 FOR POST SECTIONS 1 THRU 9.



PLAN VIEW

GUARDRAIL ANCHOR UNIT, TYPE III - SHOP CURVED

SHEET 1 OF 1
TYPE III SC

SHEET 1 OF 1
TYPE III SC

Note:
This drawing is dimensioned in millimeters unless otherwise depicted within the drawing.

27-SEP-2006 16:00 S:\Contractors\Projects\Special\Details\ward\usr\details\862stds\typeiii.sc.dgn .ericward AT P522293



**PROJECT SERVICES UNIT
STANDARDS AND SPECIAL DESIGN**
Office 919-250-4128 FAX 919-250-4119

SEE PLATE FOR TITLE

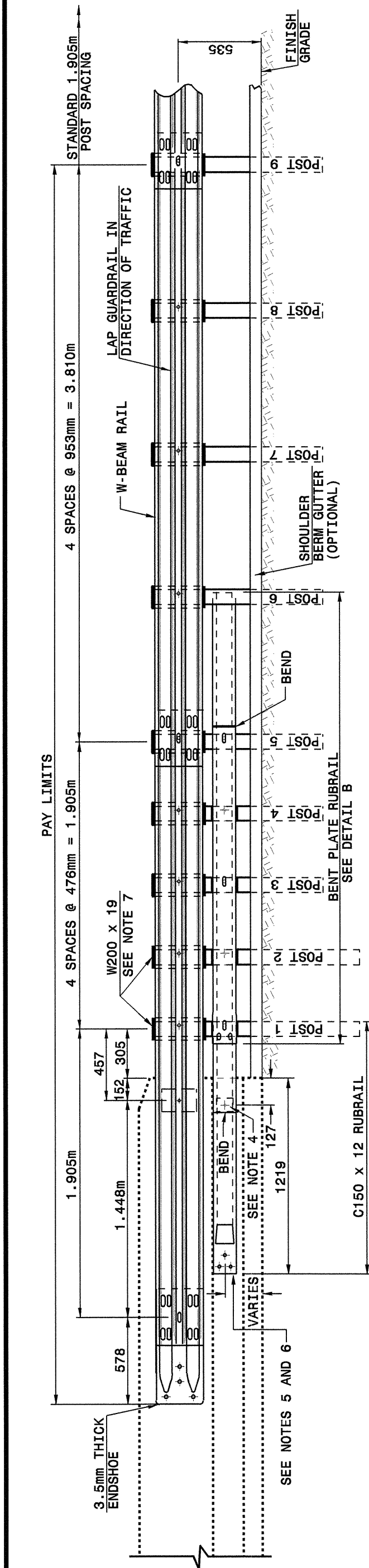
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MODIFIED BY: *Eric Ward* DATE: *11/16/06*
CHECKED BY: *Eric Ward* DATE: *11/16/06*
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 AT PG:22289

STATE OF
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 DIVISION OF HIGHWAYS
 RALEIGH, N.C.

METRIC DETAIL DRAWING FOR
**GUARDRAIL ANCHOR UNIT
 TYPE B-77 SHOP CURVED**

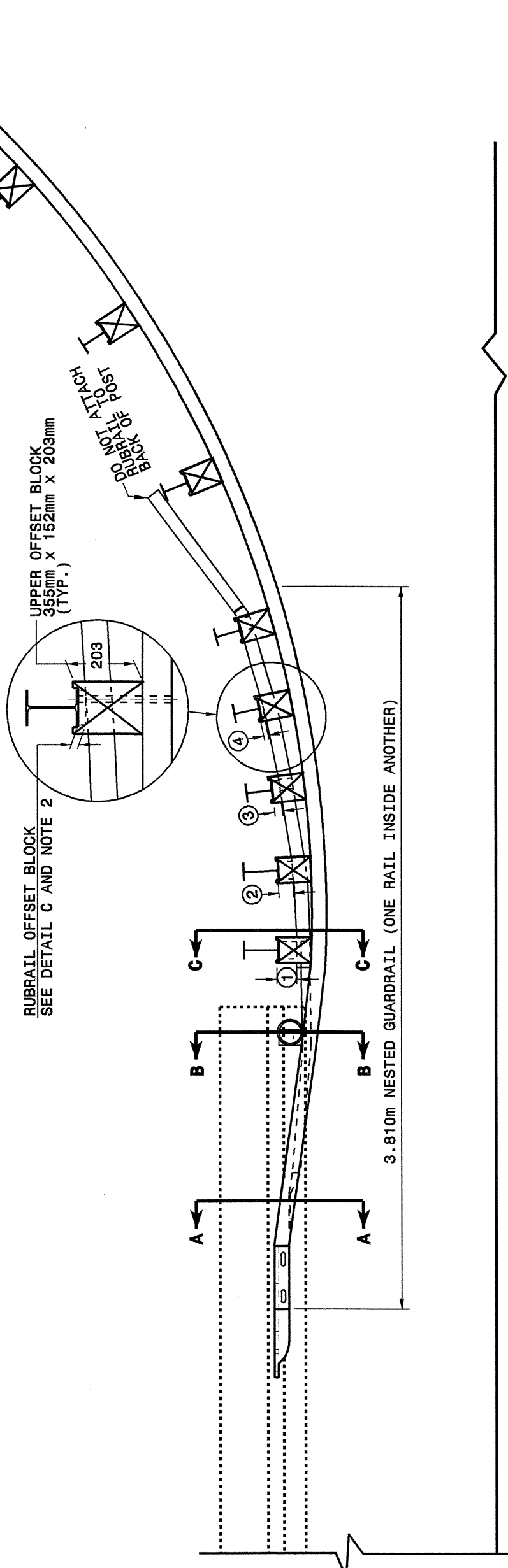
SHEET 1 OF 2
B-77SC



ELEVATION

- GENERAL NOTES:
- POSTS 1 THROUGH 5 REQUIRE AN ADDITIONAL HOLE TO ATTACH LOWER BLOCKOUTS AND/OR RUBRAIL. DIMENSIONS FOR BLOCKOUTS AND RUBRAIL ATTACHMENT BOLTS SHALL BE AS SHOWN IN THE BLOCKOUT AND RUBRAIL BOLT CHART FOR BOLT LENGTHS. SECURE BLOCKS ONLY TO POSTS 2 AND 4. SECURE RUBRAIL AND BLOCKOUTS TO POSTS 1 AND 3. RUBRAIL IS SECURED TO POST 5 WITH A 16mm x 114mm BUTTONHEAD BOLT. RUBRAIL IS FLARED TO BACK OF POST 6 AND NOT SECURED.
 - STEEL SPACER TUBE IS A SCHEDULE 40 GALVANIZED PIPE 152mm INSIDE DIAMETER X 229mm LONG. ATTACH TUBE TO GUARDRAIL ONLY WITH 16mm x 32mm LONG BUTTONHEAD BOLT AND RECTANGULAR PLATE WASHER.
 - SHOP FABRICATE THE C150 X 12 RUBRAIL END TO BE CONSISTENT WITH THE SLOPE OF THE JERSEY SHAPE AND ATTACH FLUSH WITH THE SLOPED TOE OF THE BARRIER OR BRIDGE RAIL.
 - ANCHORAGE: EXISTING BRIDGE RAIL AND NEW OR EXISTING BARRIERS, RUBRAIL SHALL BE ANCHORED USING THREE 16mm x 150mm CHEMICALLY ANCHORED TYPE 3 BOLT WITH WASHER AND MAXIMUM PROJECTION BOLTS SHALL BE 3mm.
 - AT EXISTING BRIDGE RAIL AND NEW OR EXISTING BARRIERS, THE W-BEAM END SHOE SHALL BE ANCHORED USING A 4 BOLT HOLD DOWN PLATE. A 4 BOLT INSERT ASSEMBLY IS ALLOWED ON PRECAST REINFORCED CONCRETE BARRIER (SEE 857001). THE W-BEAM END SHOE SHALL BE INSTALLED BEHIND THE NESTED W-BEAM ELEMENTS.
 - FINISH GRADE: FINISH GRADE AND SHOULDER BERM GUTTER SHALL BE ANCHORED AS DETAILED ON THE STRUCTURE PLANS.
 - POSTS 1 AND 2 ARE W200 X 19, 2290mm LONG. ALL OTHER POSTS IN THE ANCHOR UNIT ARE W150 X 13.5.

SEE ROADWAY PLANS FOR END TREATMENT



PLAN

GUARDRAIL ANCHOR UNIT TYPE B-77

SHEET 1 OF 2
B-77SC

STATE OF
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 DIVISION OF HIGHWAYS
 RALEIGH, N.C.

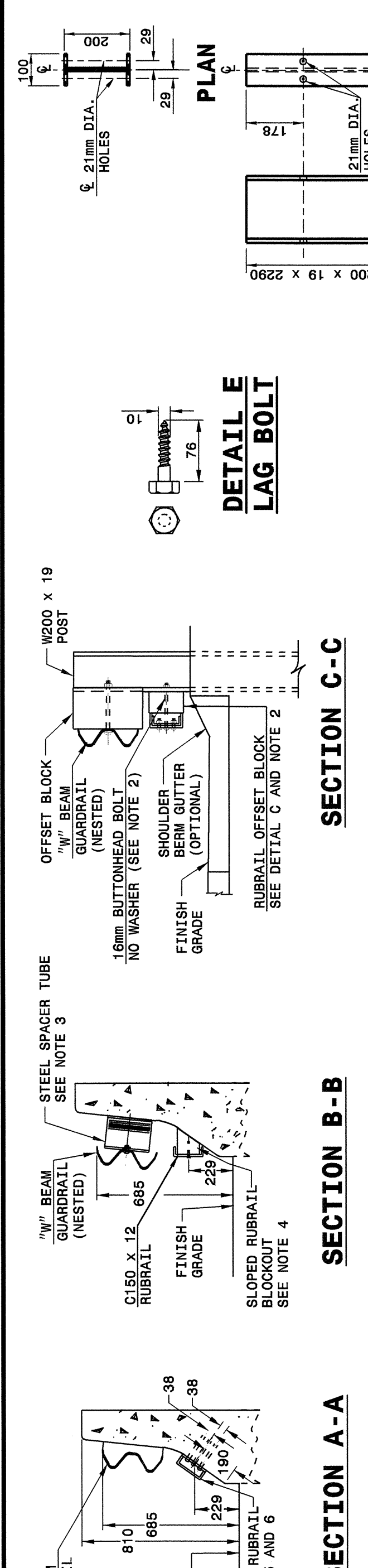
METRIC DETAIL DRAWING FOR
**GUARDRAIL ANCHOR UNIT
 TYPE B-77 SHOP CURVED**

SHEET 1 OF 2
B-77SC

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

METRIC DETAIL DRAWING FOR
**GUARDRAIL ANCHOR UNIT
 TYPE B-77 SHOP CURVED**

SHEET 2 OF 2
B-77SC



SECTION A-A

SECTION B-B

SECTION C-C

POST	THICKNESS	BOLT LENGTH
1	108	229
2	85	127*
3	51	152
4	25	76*

* BOLTS FOR POSTS 2 AND 4 ARE USED TO ATTACH TO BLOCKOUT. RUBRAIL NOT ATTACHED TO BLOCK.

**DETAIL C
 RUBRAIL BLOCKOUT**

**DETAIL D
 SLOPED RUBRAIL BLOCKOUT**

**DETAIL F
 STEEL POST
 W200 X 19 X 2290mm**

FRONT

SIDE

FRONT

SIDE

FRONT

SIDE

FRONT

SIDE

FRONT

SIDE

**ELEVATION
 DETAIL A**

**ELEVATION
 DETAIL B**

DETAIL A

DETAIL B

GUARDRAIL ANCHOR UNIT TYPE B-77

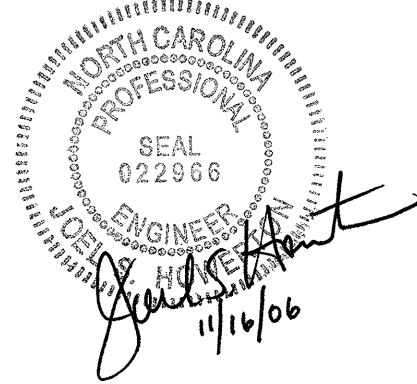
SHEET 2 OF 2
B-77SC

Note: This drawing is dimensioned in millimeters unless otherwise depicted within the drawing.

PROJECT SERVICES UNIT
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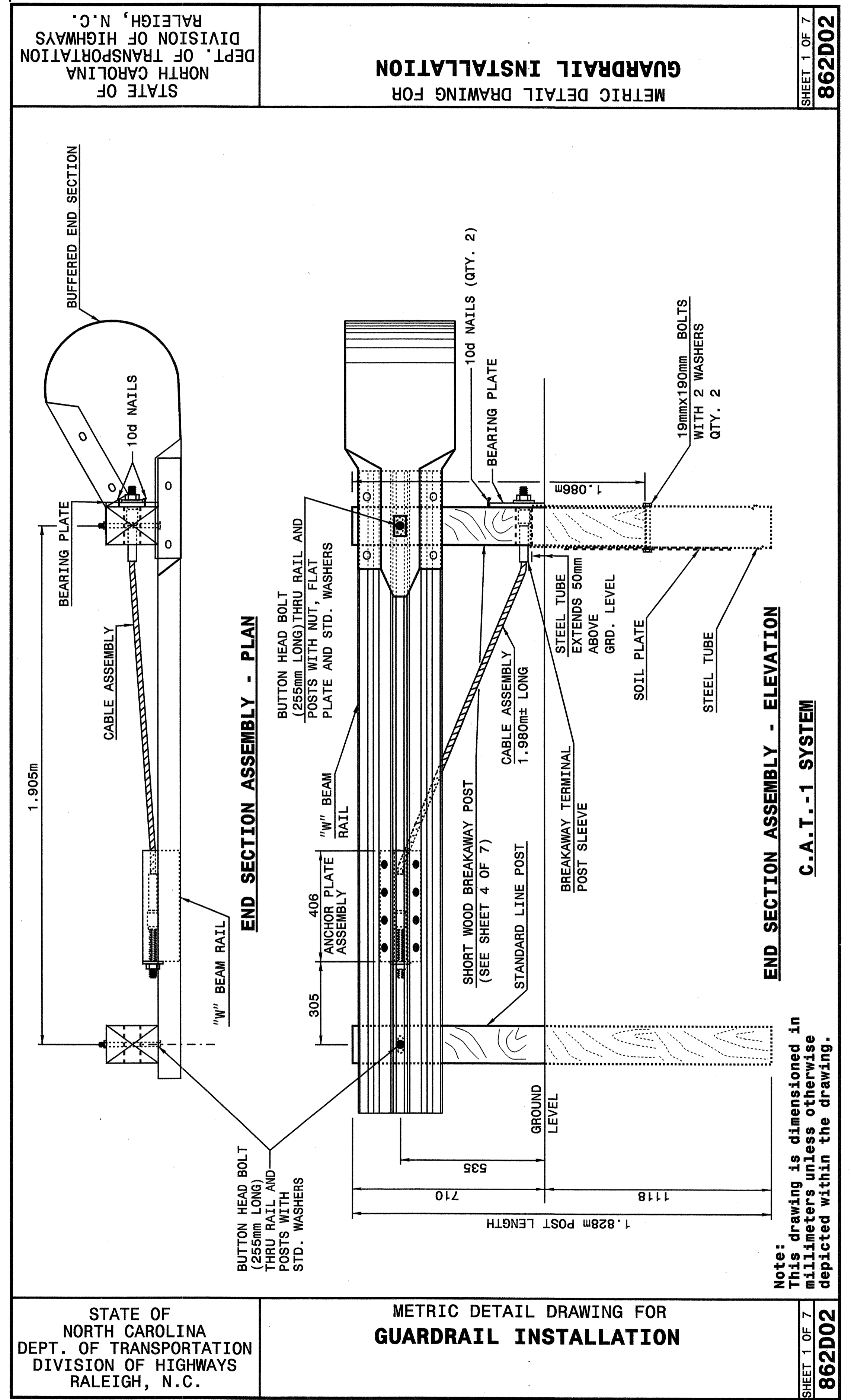
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 MODIFIED BY: E.E. WARD DATE: 03-15-05
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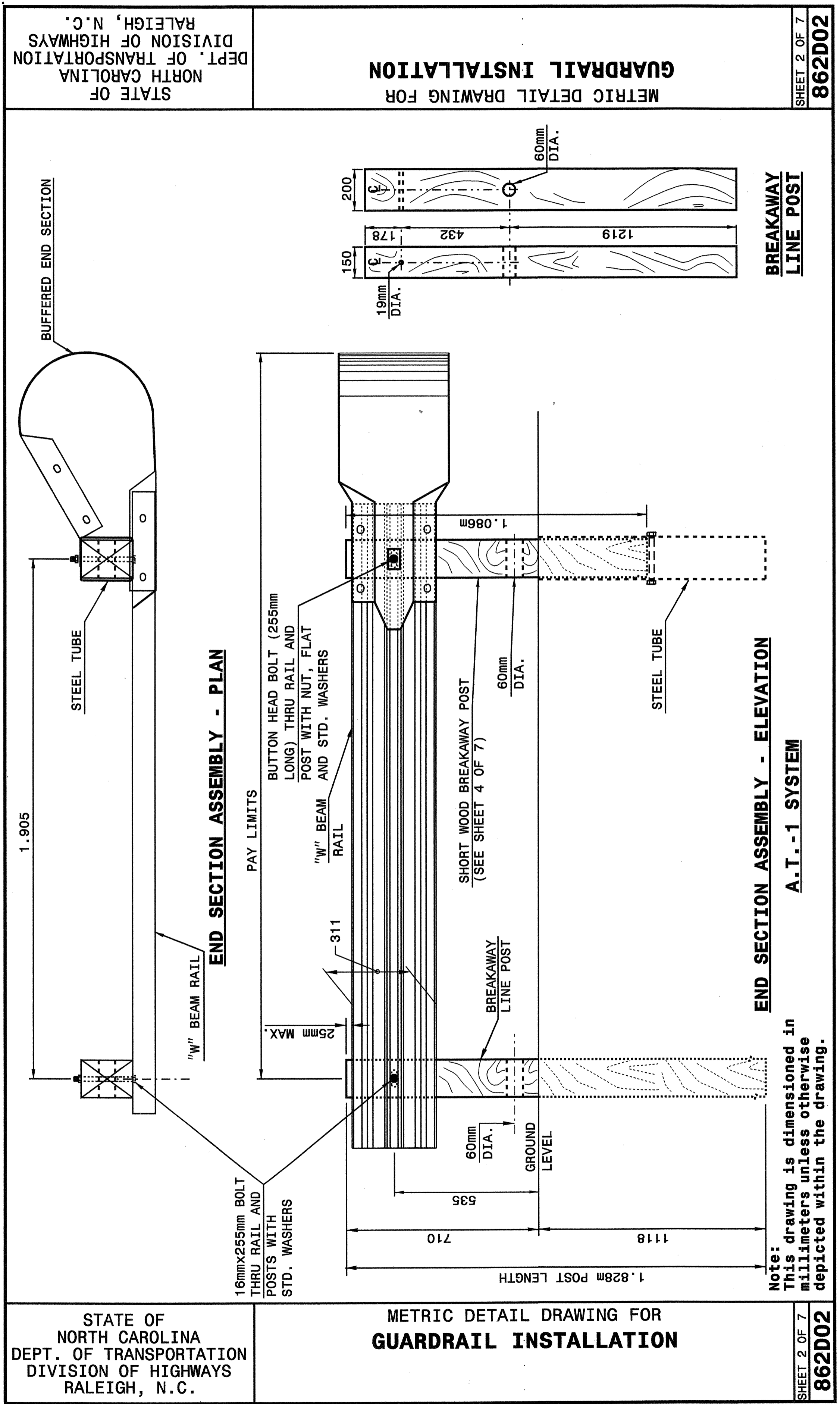
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STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

METRIC DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

Note:
This drawing is dimensioned in millimeters unless otherwise depicted within the drawing.



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

METRIC DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

Note:
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SEE PLATE FOR TITLE

ORIGINAL BY: 2002 STD.862.02 DATE: _____
 MODIFIED BY: E.E. WARD DATE: 02-09-03
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STATE OF NORTH CAROLINA
 DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.

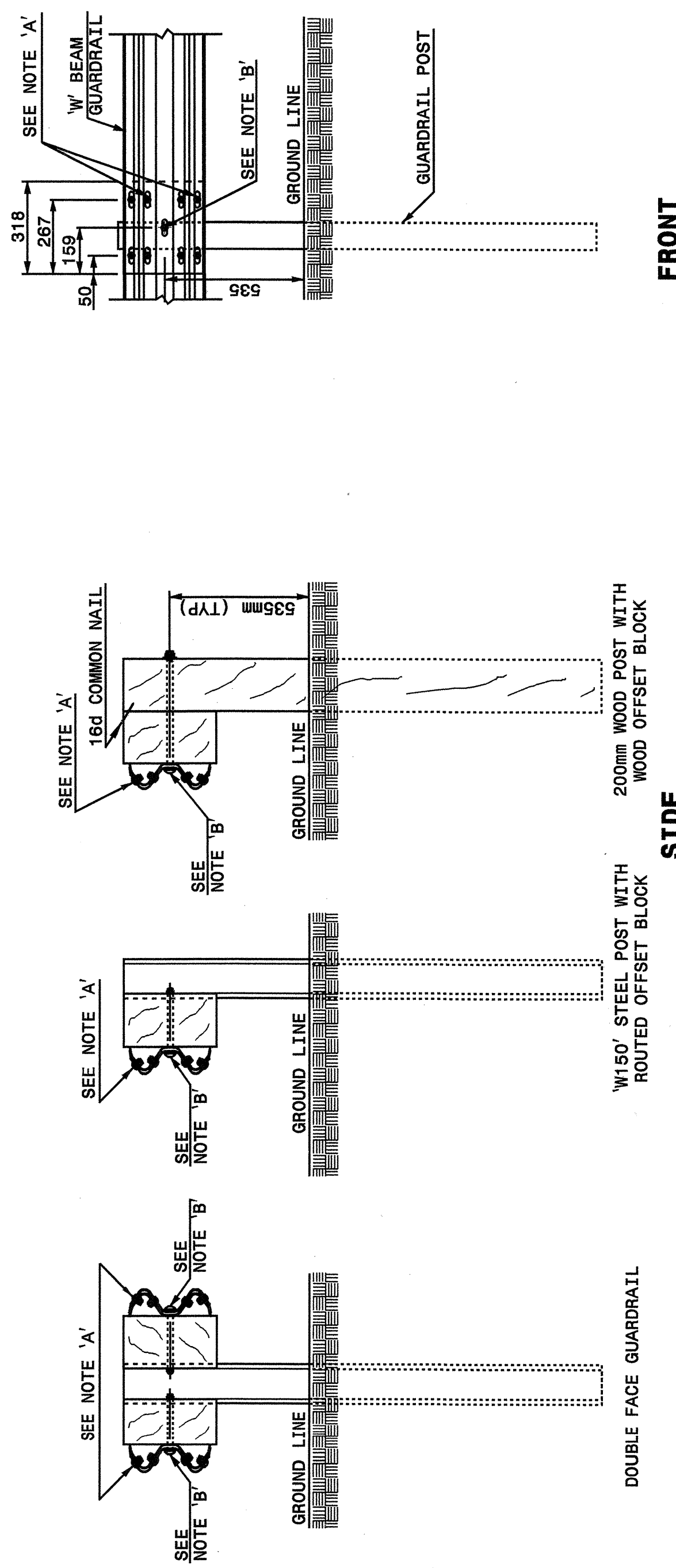
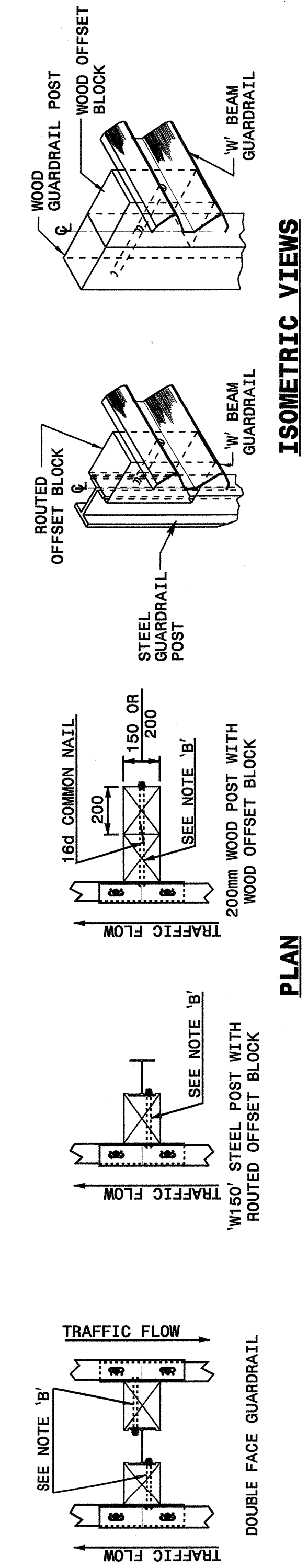
**METRIC DETAIL DRAWING FOR
 GUARDRAIL INSTALLATION**

SHEET 3 OF 7
862D02

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

**METRIC DETAIL DRAWING FOR
 GUARDRAIL INSTALLATION**

SHEET 3 OF 7
862D02



NOTES:
 A - 16mm DIA. BUTTON HEAD SPLICE BOLT 32mm LONG WITH STD. WASHER UNDER NUT (8 REQ. PER SPLICE JOINT).
 B - 16mm DIA. BUTTON HEAD BOLT 190mm/228mm LONG WITH NUT FOR BOLTING 150mm/200mm ROUTED OFFSET BLOCK TO STEEL POSTS OR 16mm DIA. BUTTON HEAD BOLT 457mm LONG WITH STD. WASHER UNDER NUT FOR BOLTING TO WOOD POSTS (1 REQ. PER LOCATION)
 C - FIELD PUNCH HOLES INTO THE GUARDRAIL AS DIRECTED BY THE ENGINEER.

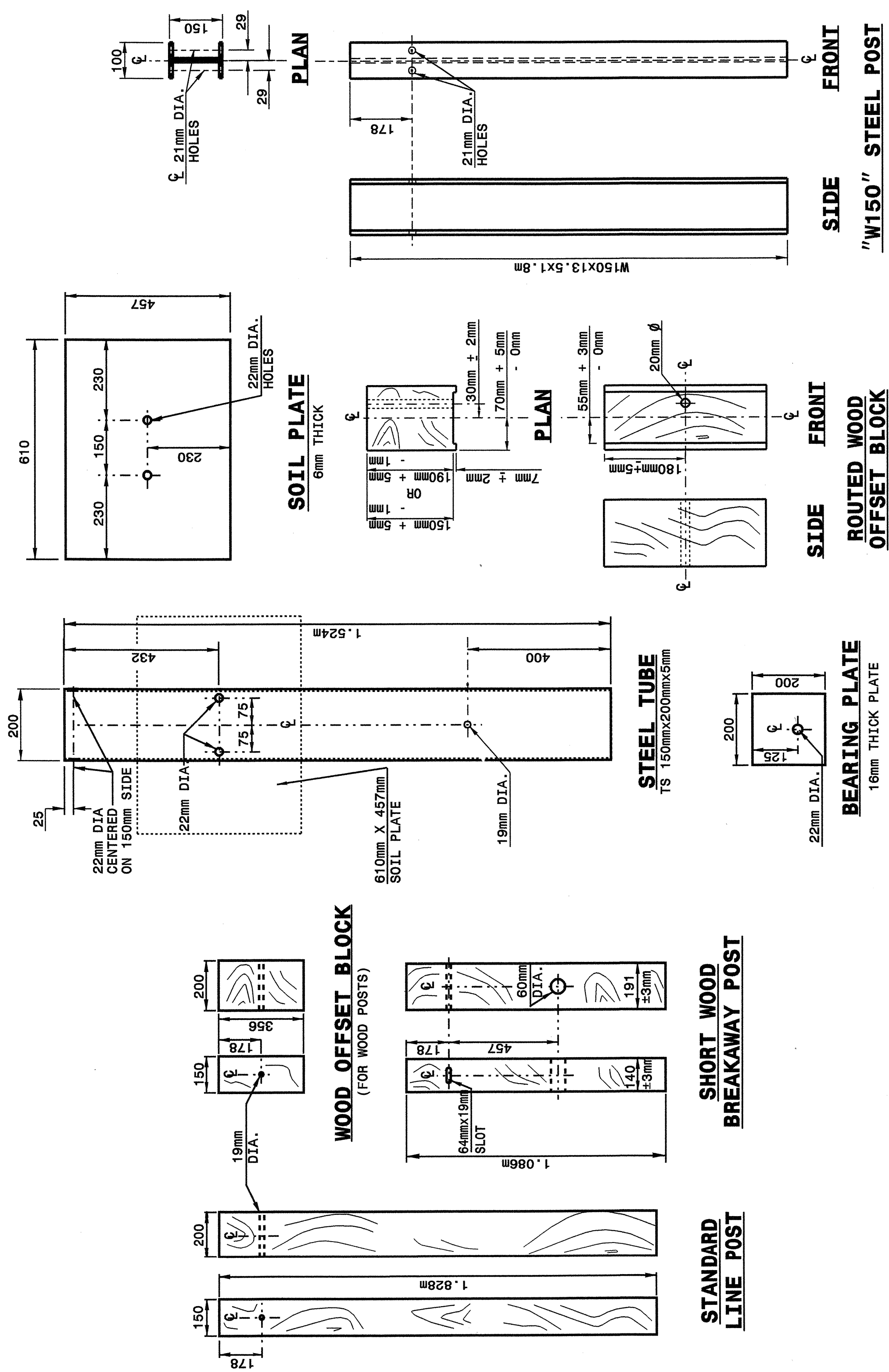
Note:
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TYPICAL GUARDRAIL AND GUARDRAIL POST ALTERNATIVES

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

**METRIC DETAIL DRAWING FOR
 GUARDRAIL INSTALLATION**

SHEET 4 OF 7
862D02



Note:
 This drawing is dimensioned in millimeters unless otherwise depicted within the drawing.

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SEE PLATE FOR TITLE

ORIGINAL BY: 2002 STD.862.02 DATE: _____
 MODIFIED BY: E.E. WARD DATE: 02-09-03
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 AT 05212260
 erichard

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	METRIC DETAIL DRAWING FOR GUARDRAIL INSTALLATION	METRIC DETAIL DRAWING FOR GUARDRAIL INSTALLATION	STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.
SHEET 5 OF 7 862D02	SHEET 5 OF 7 862D02	SHEET 6 OF 7 862D02	SHEET 6 OF 7 862D02

BREAKAWAY TERMINAL POST SLEEVE

DETAIL OF STANDARD WASHER
STANDARD WASHER: TYPICAL USE UNDER NUT WITH WOOD POST

DETAIL OF STANDARD HEX BOLT AND NUT

DETAIL OF BUTTON HEAD BOLT AND NUT

ANCHOR PLATE ASSEMBLY

SWAGED CABLE

ANCHOR PLATE

CABLE ASSEMBLY

SYSTEM PARTS

Note: This drawing is dimensioned in millimeters unless otherwise depicted within the drawing.

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	METRIC DETAIL DRAWING FOR GUARDRAIL INSTALLATION	METRIC DETAIL DRAWING FOR GUARDRAIL INSTALLATION	STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.
SHEET 5 OF 7 862D02	SHEET 5 OF 7 862D02	SHEET 6 OF 7 862D02	SHEET 6 OF 7 862D02

SECTION X-X

TYPICAL END SHOE

SYSTEM PARTS - GENERAL USE

Note: This drawing is dimensioned in millimeters unless otherwise depicted within the drawing.

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SEE PLATE FOR TITLE

ORIGINAL BY: 2002 STD.862.02 DATE: 02-09-03
 MODIFIED BY: E.E. WARD DATE: 10/22/04
 CHECKED BY: *Paul S. Hunt* DATE: 10/22/04
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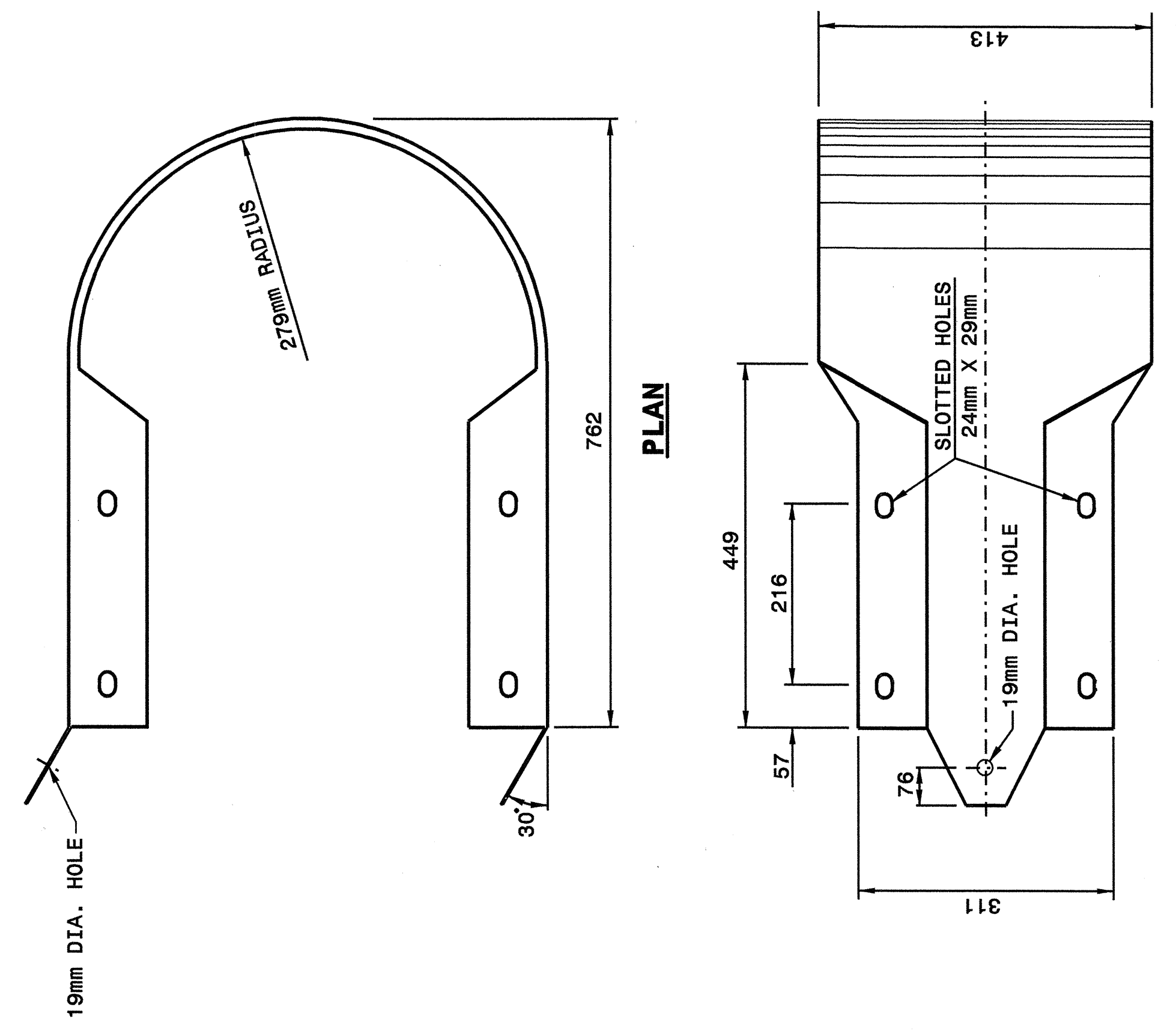




METRIC DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

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

SHEET 7 OF 7
862D02



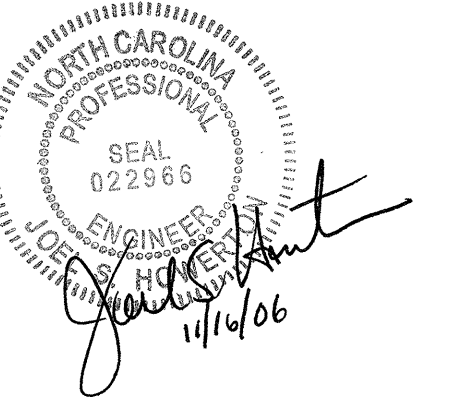
ELEVATION
BUFFERED END SECTION

Note:
This drawing is dimensioned in
millimeters unless otherwise
depicted within the drawing.

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

METRIC DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 7 OF 7
862D02



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STANDARDS AND SPECIAL DESIGN
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SEE PLATE FOR TITLE

ORIGINAL BY: 2002 STD.862.02 DATE: _____
 MODIFIED BY: E.E. WARD DATE: 02-09-03
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STATE OF
 NORTH CAROLINA
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 DIVISION OF HIGHWAYS
 RALEIGH, N.C.

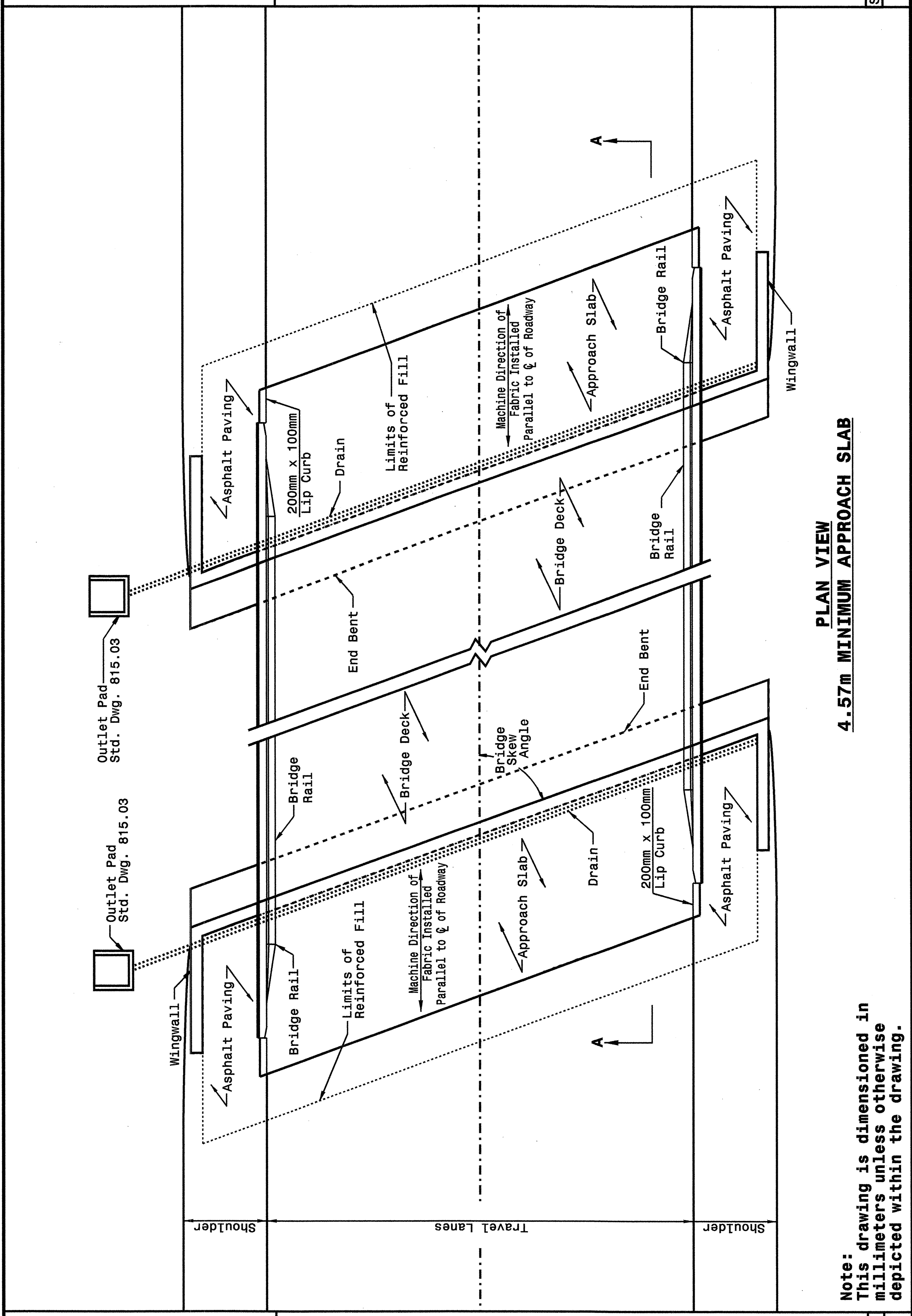
METRIC DETAIL DRAWING FOR
REINFORCED BRIDGE APPROACH FILLS
 4.57m MINIMUM APPROACH SLAB

SHEET 1 OF 7
422D10

STATE OF
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 DIVISION OF HIGHWAYS
 RALEIGH, N.C.

METRIC DETAIL DRAWING FOR
REINFORCED BRIDGE APPROACH FILLS
 4.57m MINIMUM APPROACH SLAB

SHEET 1 OF 7
422D10



PLAN VIEW
 4.57m MINIMUM APPROACH SLAB

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 millimeters unless otherwise
 depicted within the drawing.

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

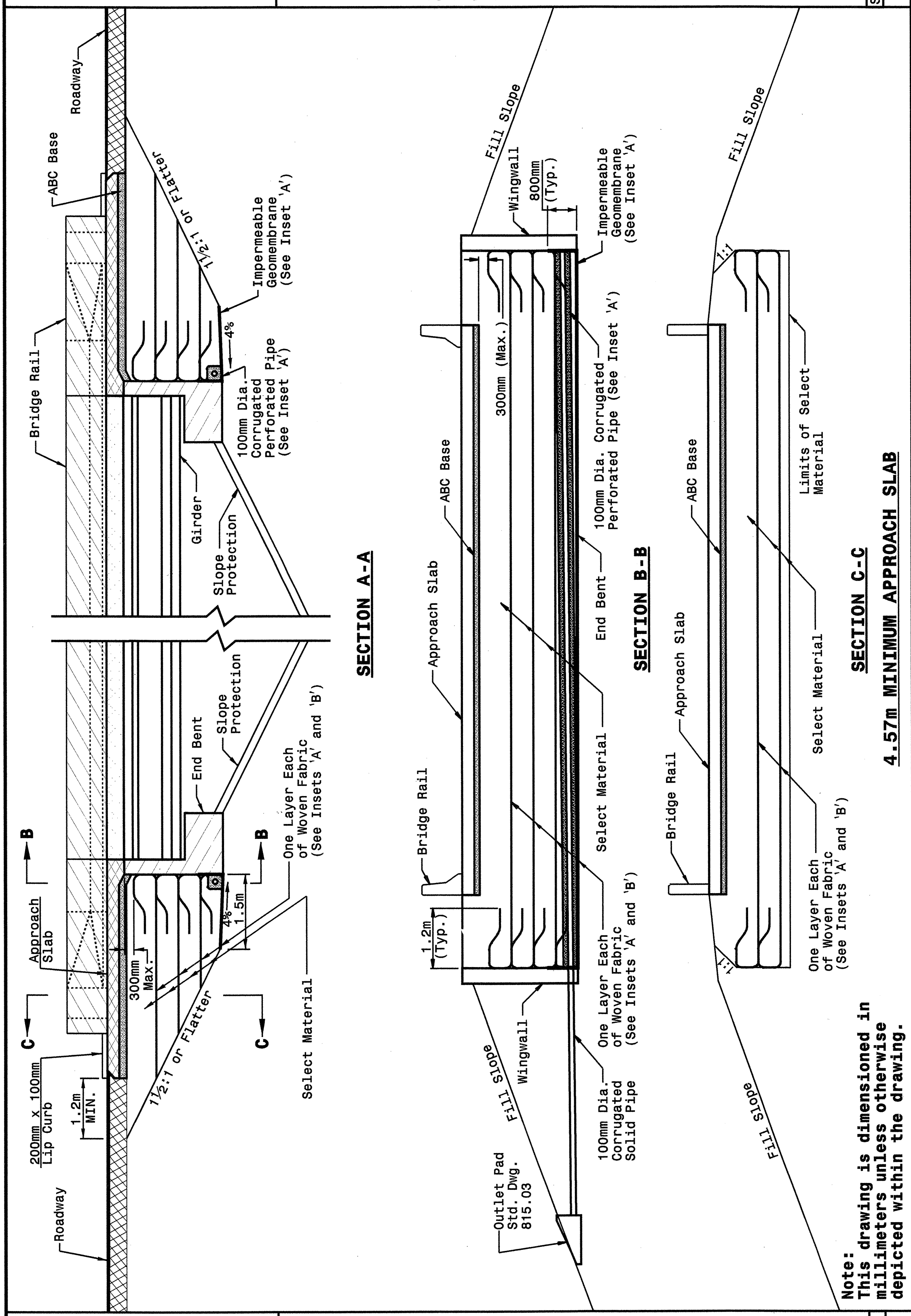
METRIC DETAIL DRAWING FOR
REINFORCED BRIDGE APPROACH FILLS
 PRESTRESSED AND PLATE GIRDER BRIDGES
 4.57m MINIMUM APPROACH SLAB

SHEET 2 OF 7
422D10

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

METRIC DETAIL DRAWING FOR
REINFORCED BRIDGE APPROACH FILLS
 PRESTRESSED AND PLATE GIRDER BRIDGES
 4.57m MINIMUM APPROACH SLAB

SHEET 2 OF 7
422D10



SECTION A-A

SECTION B-B

SECTION C-C

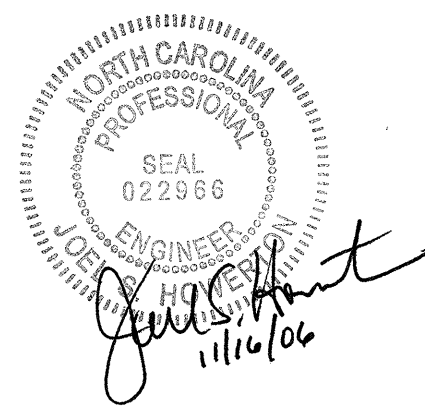
4.57m MINIMUM APPROACH SLAB

Note:
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 millimeters unless otherwise
 depicted within the drawing.

PROJECT SERVICES UNIT
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SEE PLATE FOR TITLE

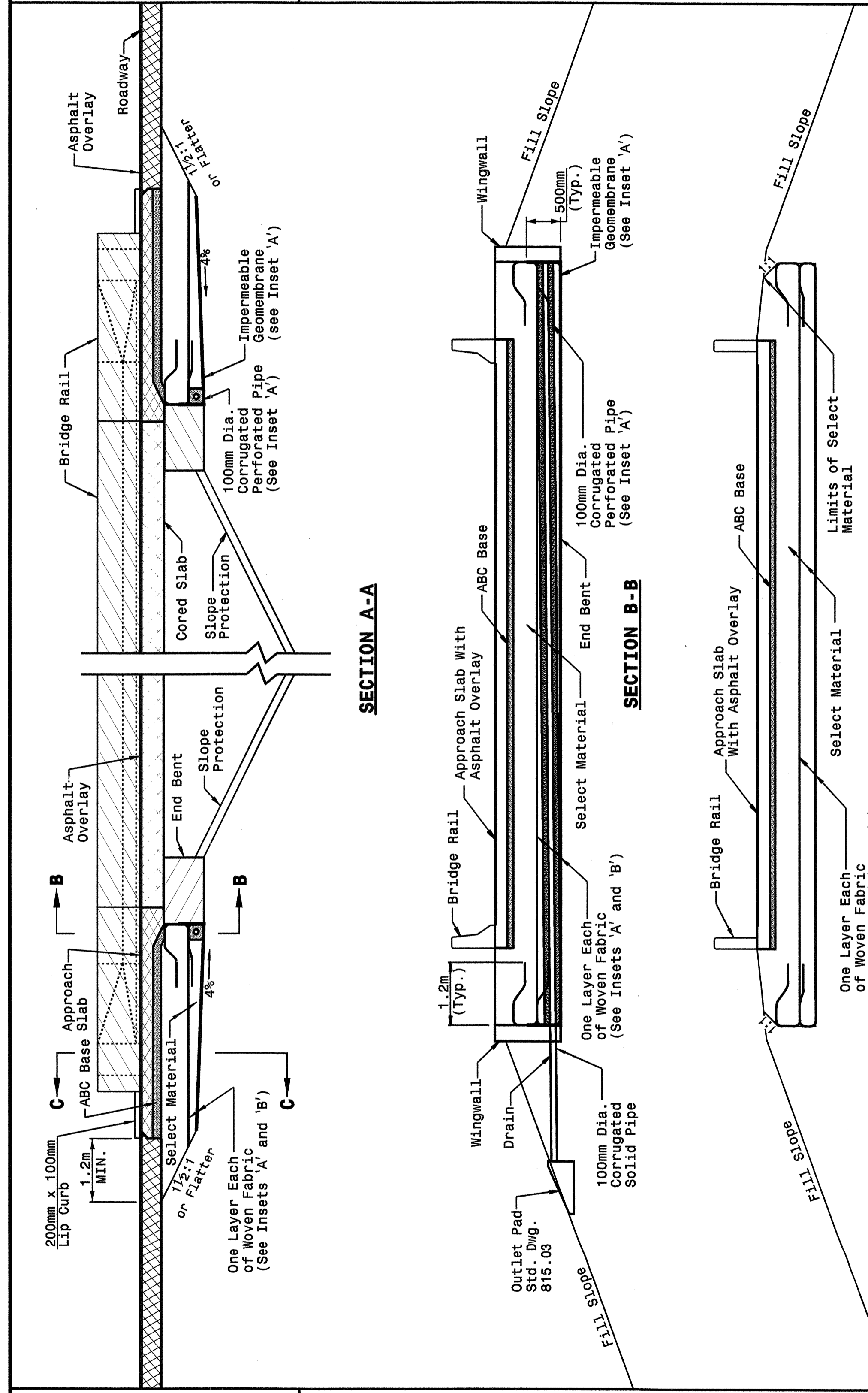
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 MODIFIED BY: E.E. WARD DATE: 09-28-05
 CHECKED BY: *Eric Ward* DATE: 9/29/05
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STATE OF
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 DIVISION OF HIGHWAYS
 RALEIGH, N.C.

STATE OF
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METRIC DETAIL DRAWING FOR
REINFORCED BRIDGE APPROACH FILLS
 CORED SLAB BRIDGES
 4.57m MINIMUM APPROACH SLAB

METRIC DETAIL DRAWING FOR
REINFORCED BRIDGE APPROACH FILLS
 CORED SLAB BRIDGES
 4.57m MINIMUM APPROACH SLAB

SHEET 3 OF 7
422D10

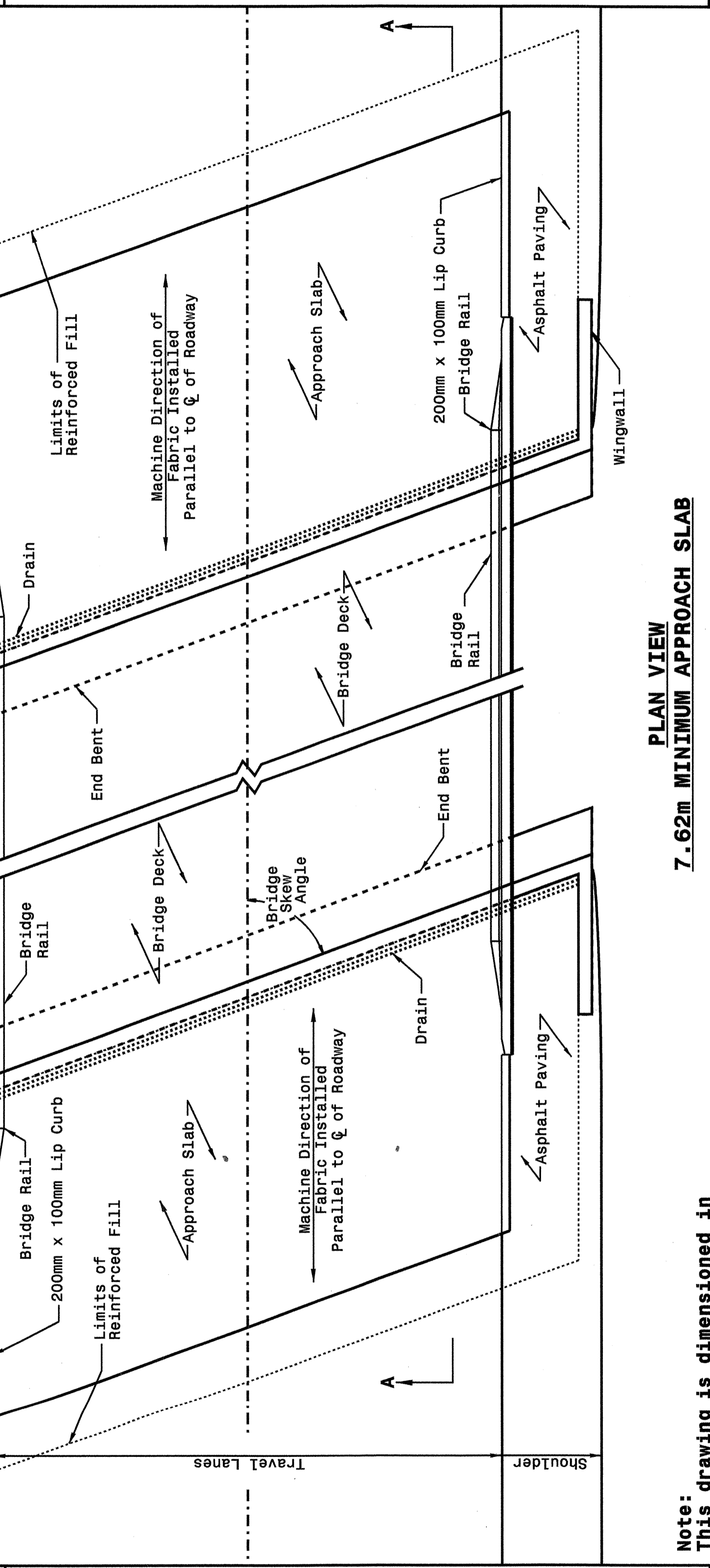
SHEET 3 OF 7
422D10

Note: drawing is dimensioned in millimeters unless otherwise depicted within the drawing.

SECTION C-C
 4.57m MINIMUM APPROACH SLAB

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 DIVISION OF HIGHWAYS
 RALEIGH, N.C.

STATE OF
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 DIVISION OF HIGHWAYS
 RALEIGH, N.C.



METRIC DETAIL DRAWING FOR
REINFORCED BRIDGE APPROACH FILLS
 7.62m MINIMUM APPROACH SLAB

METRIC DETAIL DRAWING FOR
REINFORCED BRIDGE APPROACH FILLS
 7.62m MINIMUM APPROACH SLAB

SHEET 4 OF 7
422D10

SHEET 4 OF 7
422D10

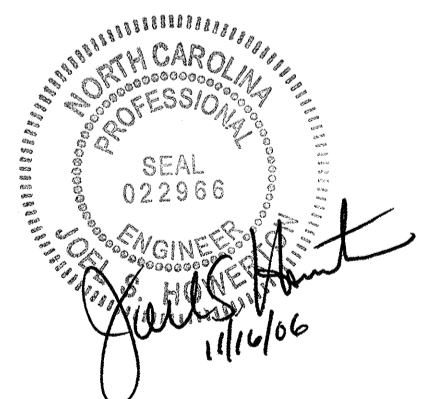
Note: This drawing is dimensioned in millimeters unless otherwise depicted within the drawing.

PLAN VIEW
 7.62m MINIMUM APPROACH SLAB

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SEE PLATE FOR TITLE

ORIGINAL BY: 2002 STANDARDS DATE: 01-15-02
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 CHECKED BY: DATE: 1/29/05
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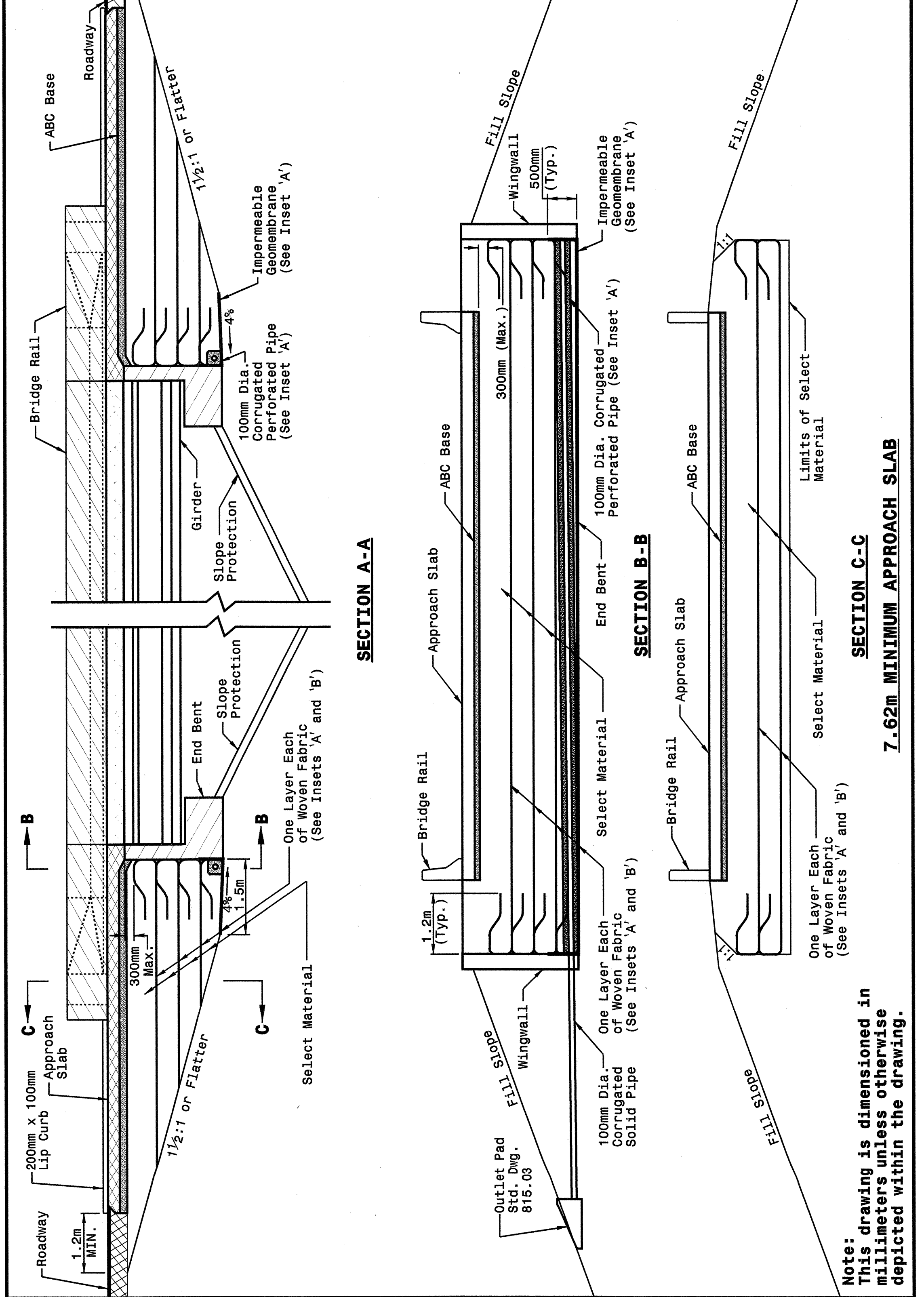


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STATE OF NORTH CAROLINA
 DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.

METRIC DETAIL DRAWING FOR
REINFORCED BRIDGE APPROACH FILLS
 PRESTRESSED AND PLATE GIRDER BRIDGES
 7.62m MINIMUM APPROACH SLAB

SHEET 5 OF 7
422D10



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

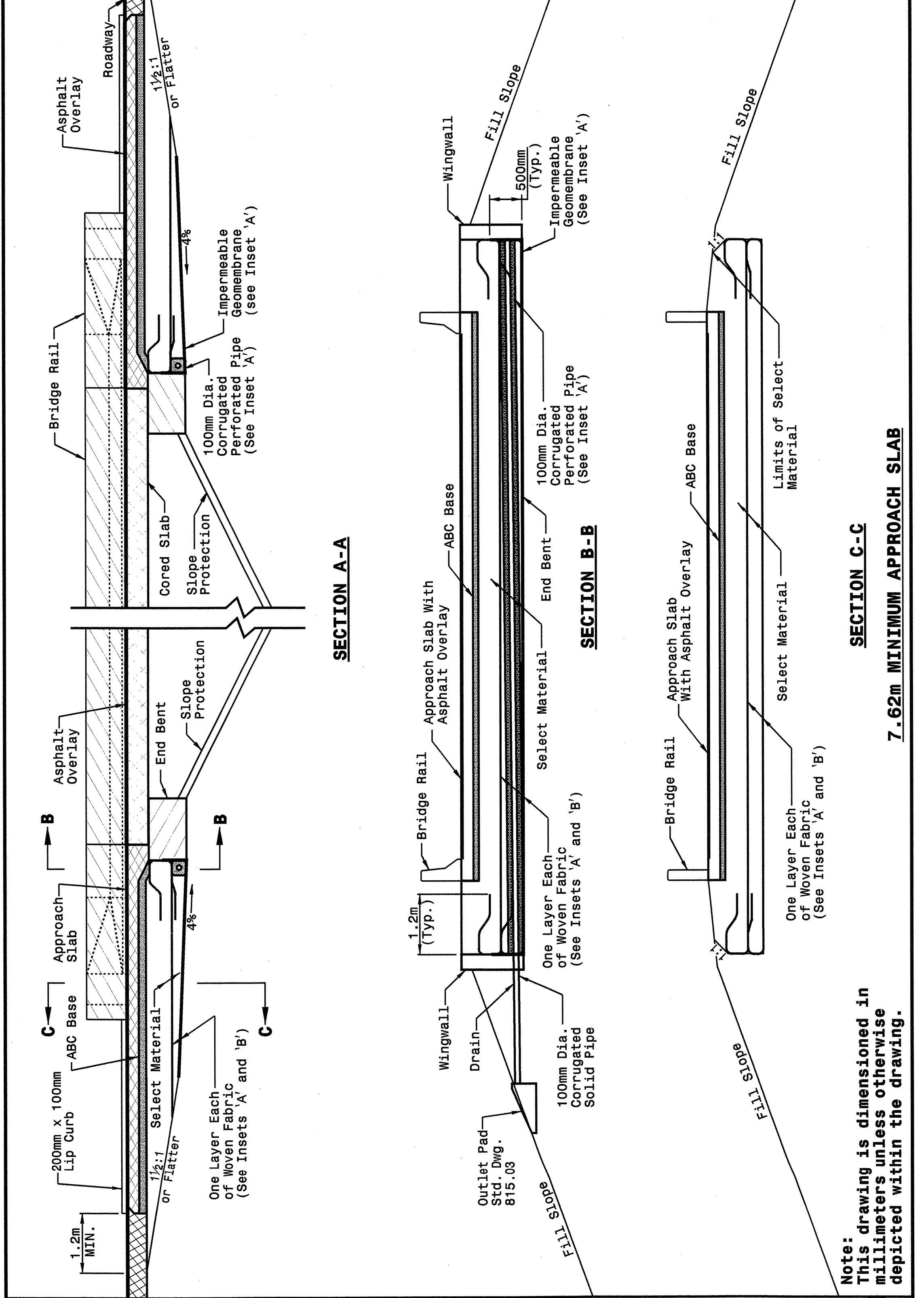
METRIC DETAIL DRAWING FOR
REINFORCED BRIDGE APPROACH FILLS
 PRESTRESSED AND PLATE GIRDER BRIDGES
 7.62m MINIMUM APPROACH SLAB

SHEET 5 OF 7
422D10

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

METRIC DETAIL DRAWING FOR
REINFORCED BRIDGE APPROACH FILLS
 CORED SLAB BRIDGES
 7.62m MINIMUM APPROACH SLAB

SHEET 6 OF 7
422D10



STATE OF NORTH CAROLINA
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 RALEIGH, N.C.

METRIC DETAIL DRAWING FOR
REINFORCED BRIDGE APPROACH FILLS
 CORED SLAB BRIDGES
 7.62m MINIMUM APPROACH SLAB

SHEET 6 OF 7
422D10

Note:
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SEE PLATE FOR TITLE

ORIGINAL BY: 2002 STANDARDS DATE: 01-15-02
 MODIFIED BY: E.E. WARD DATE: 09-12-05
 CHECKED BY: *Joel S. Ward* DATE: 1/23/05
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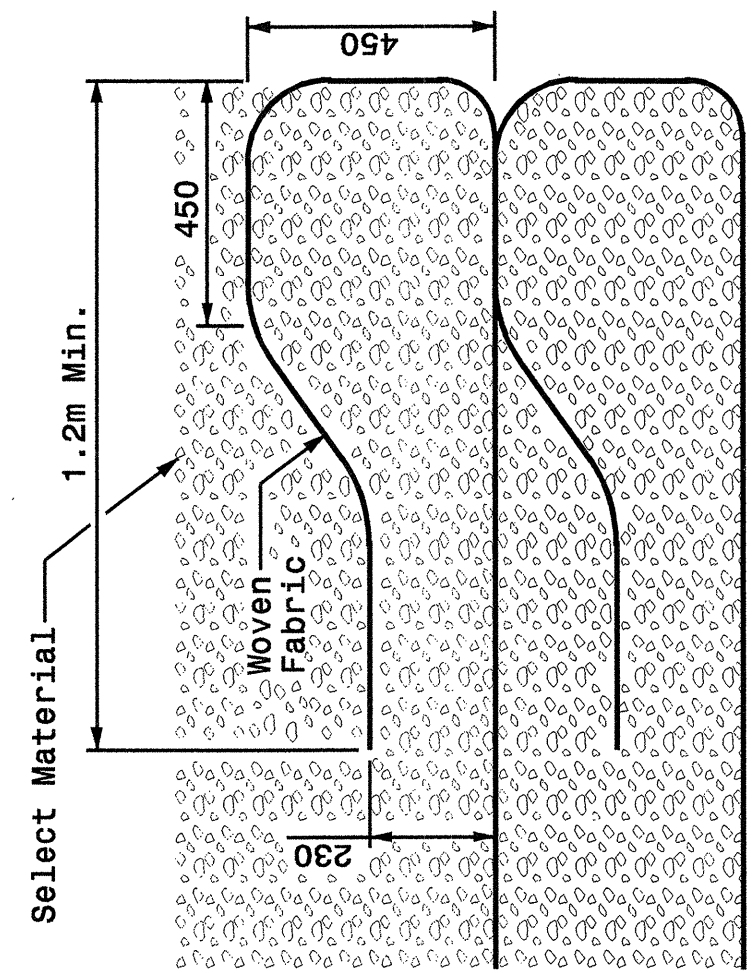


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REINFORCED BRIDGE APPROACH FILLS

METRIC DETAIL DRAWING FOR
INSETS AND CHARTS

SHEET 7 OF 7
422D10



Typical Fabric Lift and Wrap
Showing Second and Above Lifts

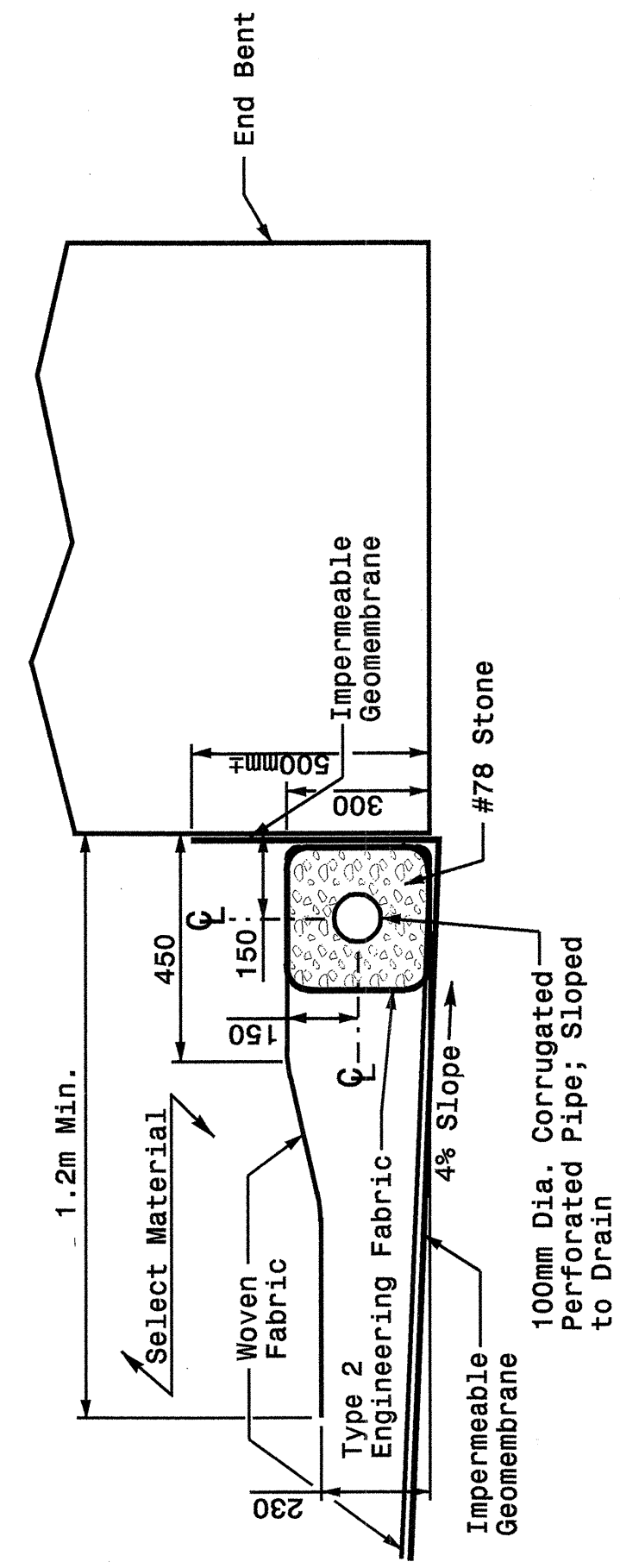
Inset 'B'

Height of Backwall	Number of Fabric Layers
1400-1750	3
1760-2200	4
2210-2650	5
2660-3100	6
3110-3550	7

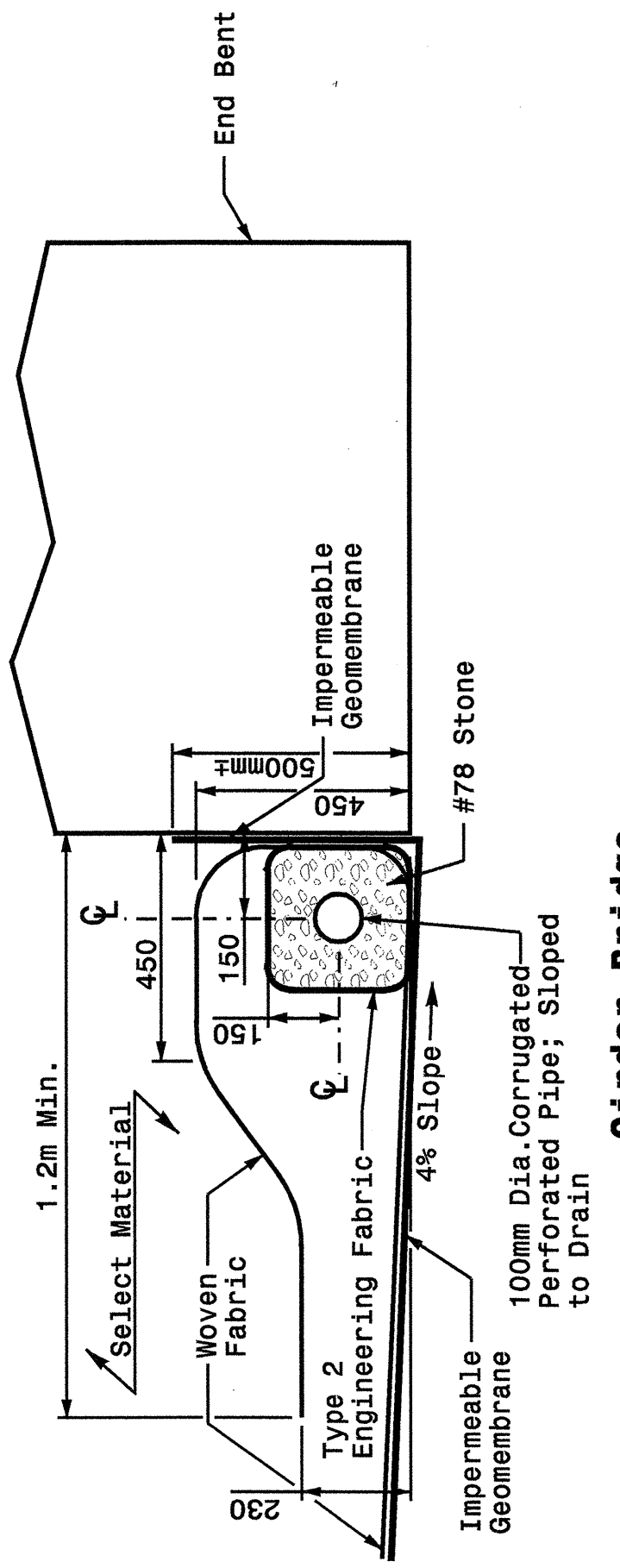
Note: Cored Slab Structures
Require 2 Fabric Layers.

Length of Bridge End Bent Inside Wingwalls
If Bridge Skew is Less Than or Equal to 90°:
$$\frac{\text{Roadway Width} + 2140\text{mm}}{\sin(\text{Bridge Skew Angle})} = \text{Dis. Between Wingwalls}$$

If Bridge Skew is Greater Than 90°:
$$\frac{\text{Roadway Width} + 2140\text{mm}}{\cos(\text{Bridge Skew Angle} - 90^\circ)} = \text{Dis. Between Wingwalls}$$



Cored Slab Bridge
Showing First Lift and Drains



Girder Bridge
Showing First Lift and Drains

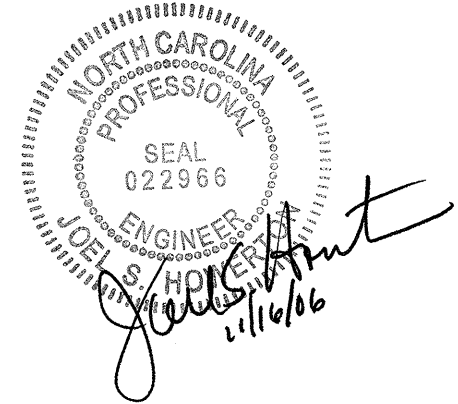
Inset 'A'

Note:
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RALEIGH, N.C.

METRIC DETAIL DRAWING FOR
REINFORCED BRIDGE APPROACH FILLS
INSETS AND CHARTS

SHEET 7 OF 7
422D10

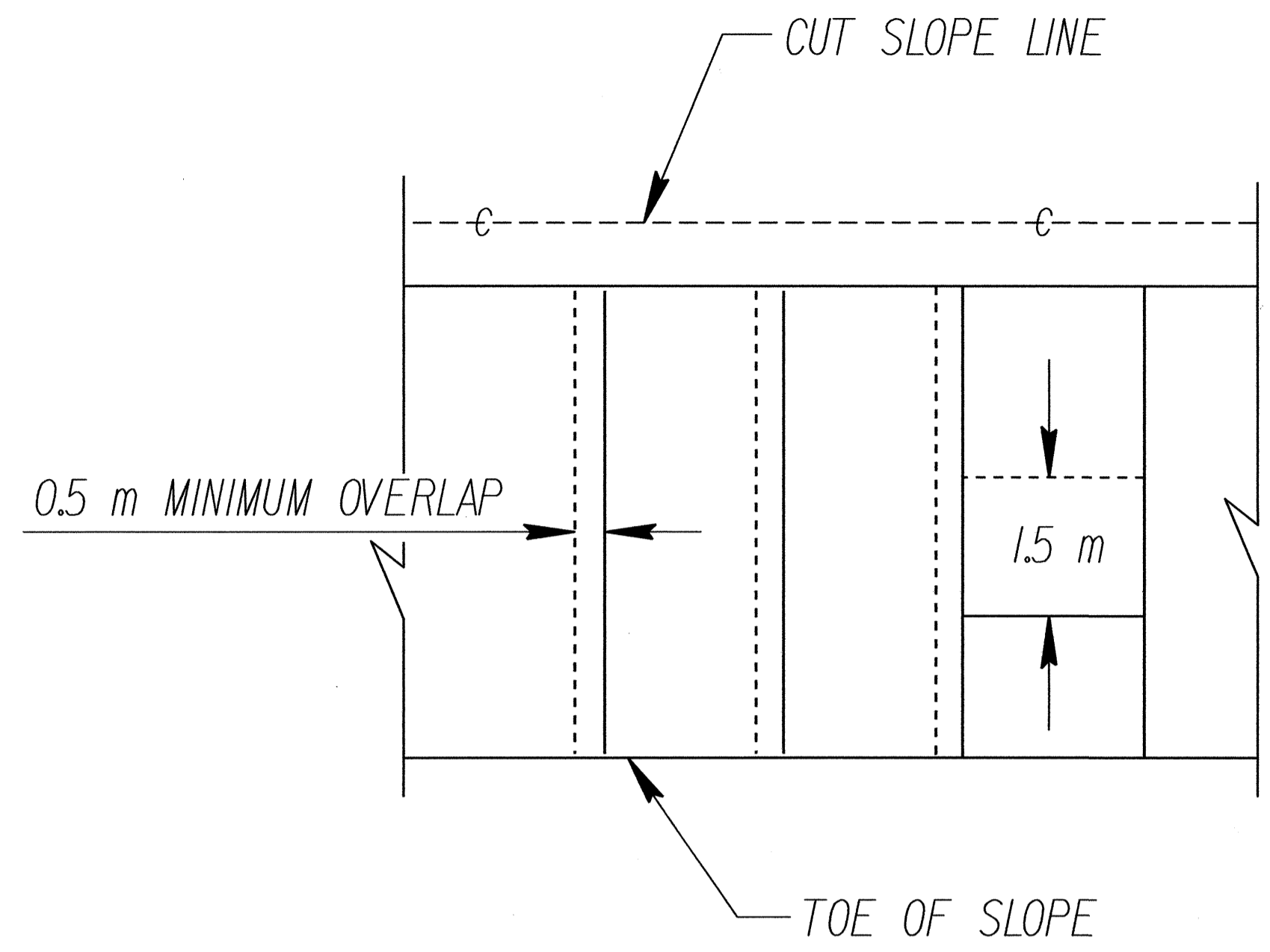
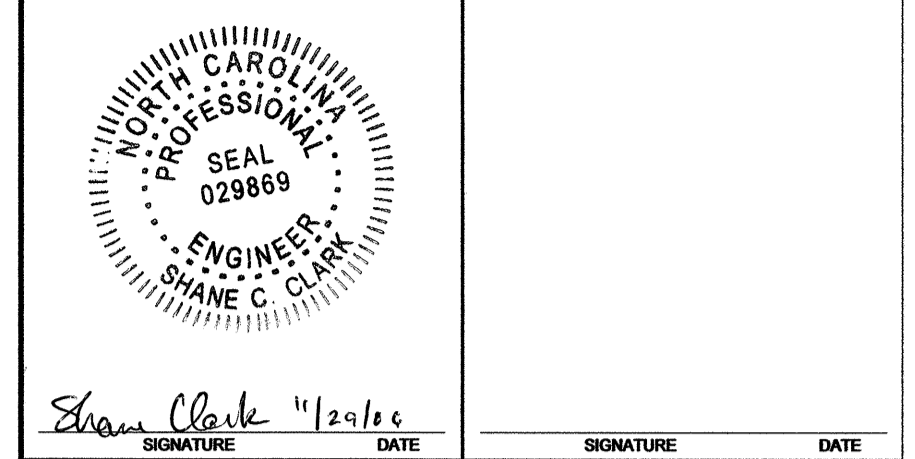


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SEE PLATE FOR TITLE

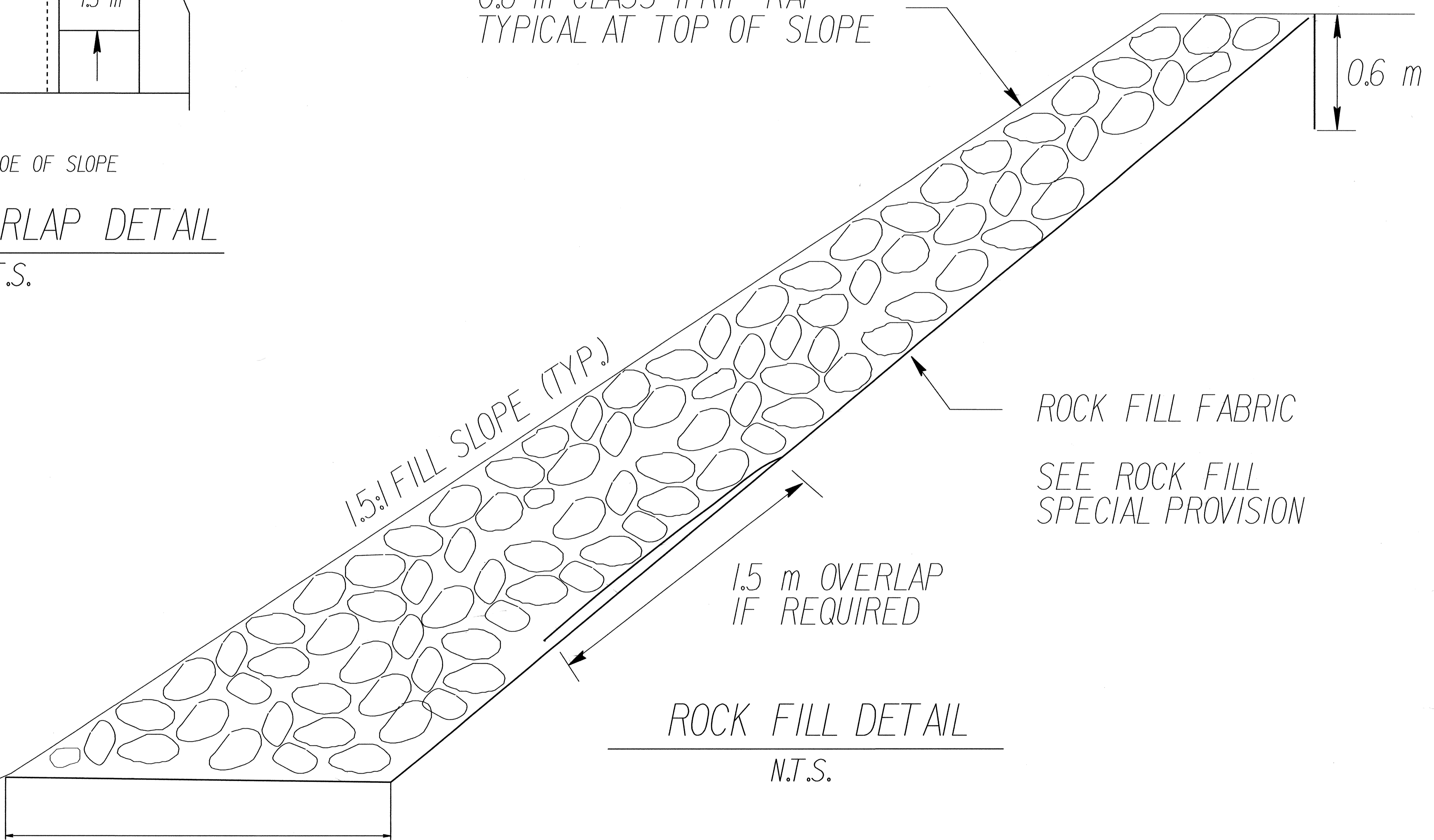
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FABRIC OVERLAP DETAIL
N.T.S.

0.6 m CLASS II RIP RAP
TYPICAL AT TOP OF SLOPE



ROCK FILL DETAIL
N.T.S.

1.0 m to 2.5 m (max)
To Be Field Adjusted
By Engineer

ROCK FILL FABRIC
SEE ROCK FILL
SPECIAL PROVISION



STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES

Table with columns: ItemNumber, Sec #, Quantity, Unit, Description. Includes items like MOBILIZATION, CONSTRUCTION SURVEYING, REINFORCED BRIDGE APPROACH, GRADING, SUPPLEMENTARY CLEARING & GRUBBING, etc.

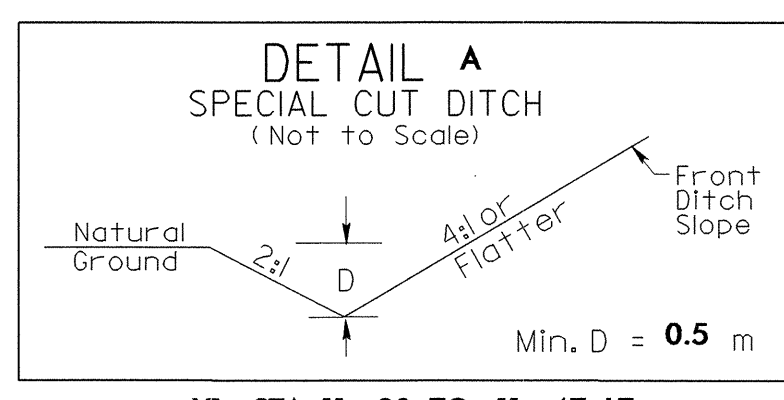
Table with columns: ItemNumber, Sec #, Quantity, Unit, Description. Includes items like PLAIN RIP RAP, CLASS B, FILTER FABRIC FOR DRAINAGE, WORK ZONE SIGNS, etc.

Table with columns: ItemNumber, Sec #, Quantity, Unit, Description. Includes items like SEED FOR TEMPORARY SEEDING, FERTILIZER FOR TEMPORARY SEEDING, SAFETY FENCE, etc.

Table with columns: ItemNumber, Sec #, Quantity, Unit, Description. Includes schedule alternates for 600MM RC PIPE CULVERTS, CLASS III.

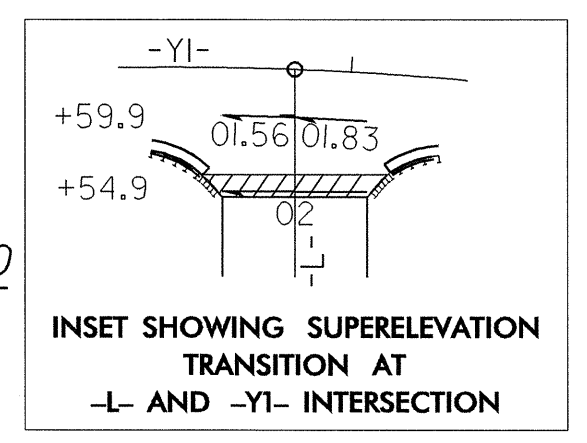
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** Design Exception required for the design speed from 90 km/h to 30 km/h.



PI Sta. 11+27.704	PI Sta. 11+84.460	PI Sta. 12+47.533	PI Sta. 13+04.715
$\Delta = 17' 21'' 12.2''$ (LT)	$\Delta = 19' 40'' 03.1''$ (RT)	$\Delta = 44' 19'' 00.8''$ (LT)	$\Delta = 23' 18'' 54.4''$ (LT)
L = 39.979	L = 73.115	L = 51.049	L = 65.108
T = 20.144	T = 36.921	T = 26.878	T = 33.011
R = 132.000	R = 213.000	R = 66.000	R = 160.000
SE = See Plans	SE = See Plans	SE = See Plans	SE = See Plans
Runoff = See Plans	Runoff = See Plans	Runoff = See Plans	Runoff = See Plans

TBM-7 RAILROAD SPIKE SET IN 24" WATER OAK EL. 620.565
 (-L2- STA. 10+37.351 25.618 RT.)



DATUM DESCRIPTION

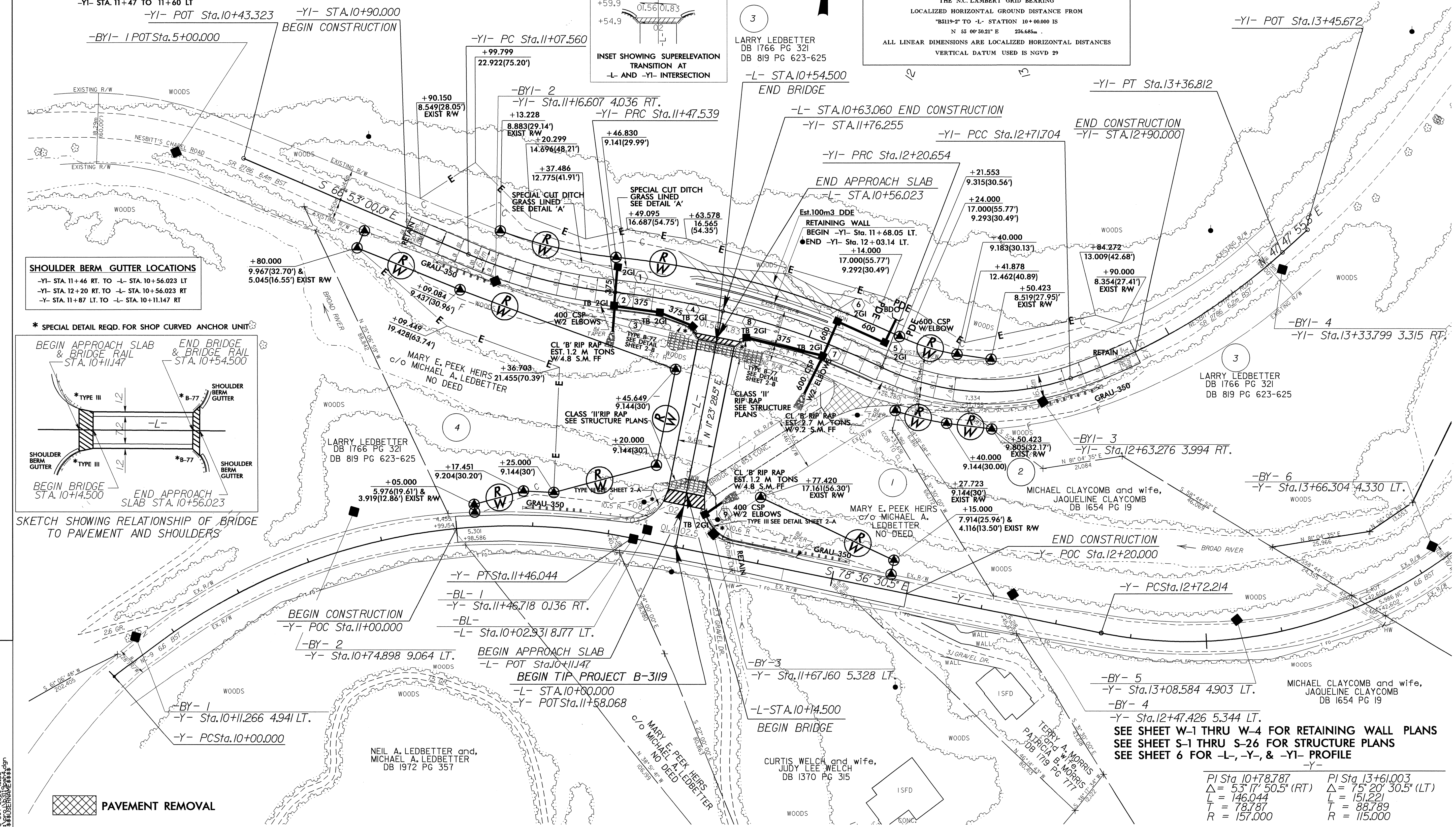
THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B5119-2"

WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 200044.443(m) EASTING: 512456.153(m)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999791560

THE N.C. LAMBERT GRID BEARING LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B5119-2" TO -L- STATION 10+00.000 IS N 55 00' 50.21" E 276.685m

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NGVD 29

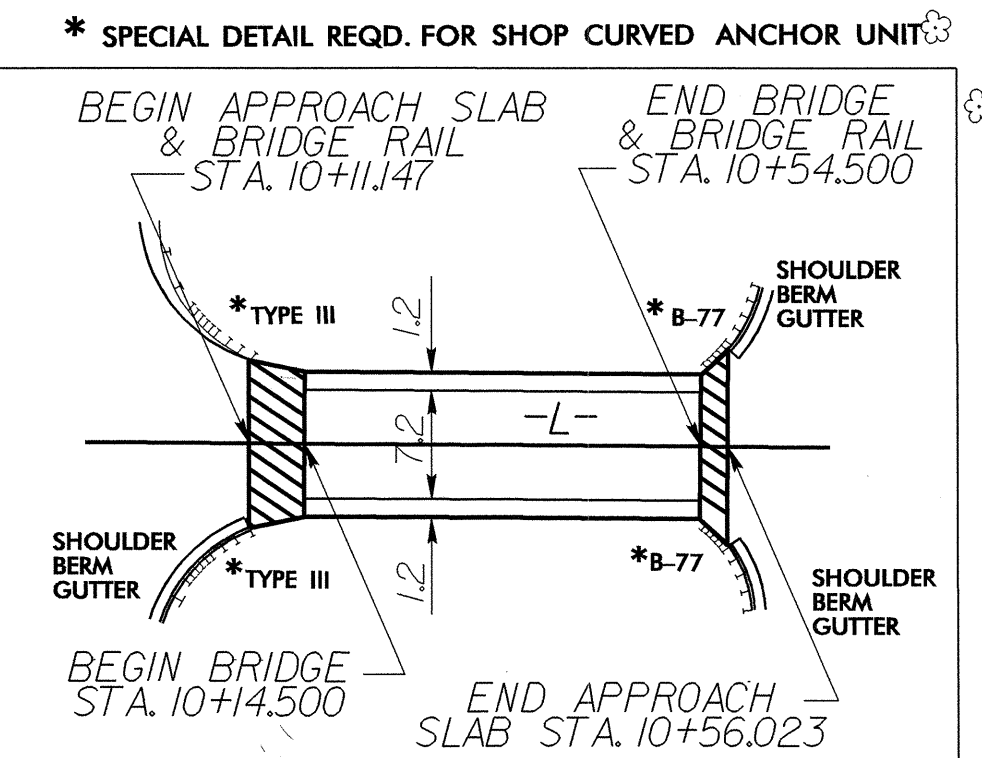


SHOULDER BERM GUTTER LOCATIONS

-YI- STA. 11+46 RT. TO -L- STA. 10+56.023 LT

-YI- STA. 12+20 RT. TO -L- STA. 10+56.023 RT

-Y- STA. 11+87 LT. TO -L- STA. 10+11.147 RT



SKETCH SHOWING RELATIONSHIP OF BRIDGE TO PAVEMENT AND SHOULDERS

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PAVEMENT REMOVAL

PI Sta. 10+78.787	PI Sta. 13+61.003
$\Delta = 53' 17'' 50.5''$ (RT)	$\Delta = 75' 20'' 30.5''$ (LT)
L = 146.044	L = 151.221
T = 78.787	T = 88.789
R = 157.000	R = 115.000

** Design Exception required for the design speed from 90 km/h to 30 km/h.

-L2-

PI Sta. 10+34.883 Δ = 28° 50' 22.2" (RT) L = 15.100 T = 7.714 R = 30.000 RO = 6 SE = 02 V = 30 KM/H	PI Sta. 10+67.508 Δ = 36° 14' 10.4" (RT) L = 18.973 T = 9.816 R = 30.000 RO = 6 SE = 02 V = 30 KM/H	PI Sta. 11+3.652 Δ = 30° 53' 46.4" (RT) L = 62.013 T = 31.780 R = 115.000
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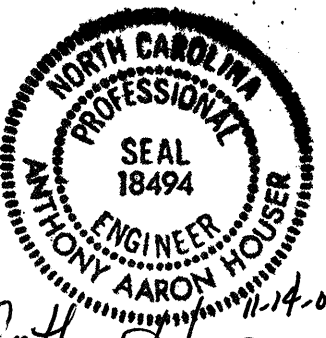

DATUM DESCRIPTION

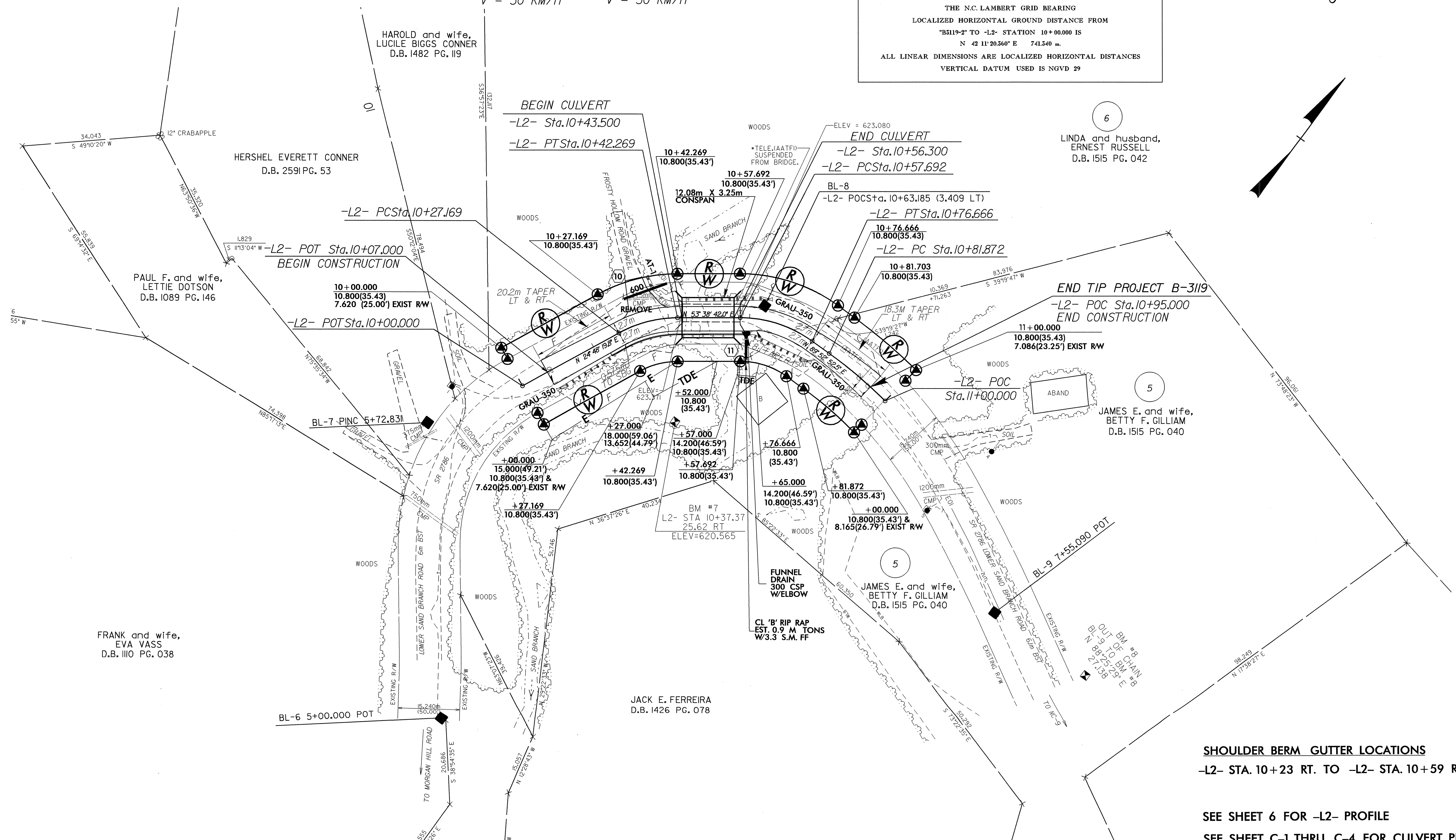
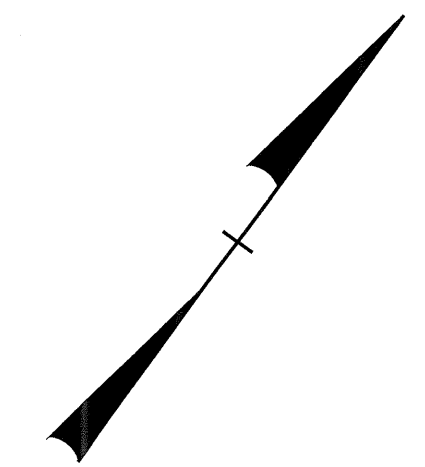
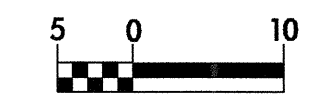
THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B5119-2" WITH NAD 85 STATE PLANE GRID COORDINATES OF NORTHING: 200044.443(m) EASTING: 312436.153(m)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999791560

THE N.C. LAMBERT GRID BEARING LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B5119-2" TO -L2- STATION 10+00.000 IS
N 42 11' 20.560" E 741.540 m.

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NGVD 29

PROJECT REFERENCE NO. B-3119	SHEET NO. 5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
 ANTHONY A. HOUSE 11-14-06	 MARC T. SHOWN 11-15-06
CONST. REV.	
R/W REV.	



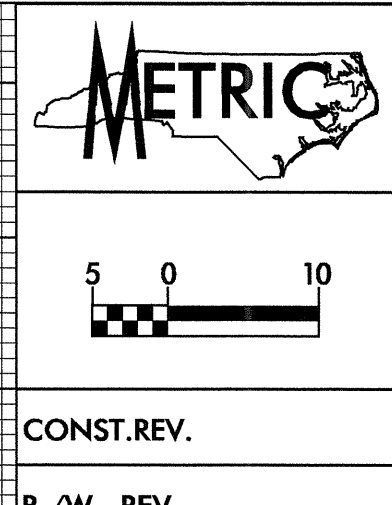
REVISIONS

SHOULDER BERM GUTTER LOCATIONS
-L2- STA. 10+23 RT. TO -L2- STA. 10+59 RT

SEE SHEET 6 FOR -L2- PROFILE
SEE SHEET C-1 THRU C-4 FOR CULVERT PLANS

BM #6
OUT OF CHAIN
BL-6 TO BM #6
N 17°43'33" W
38.218

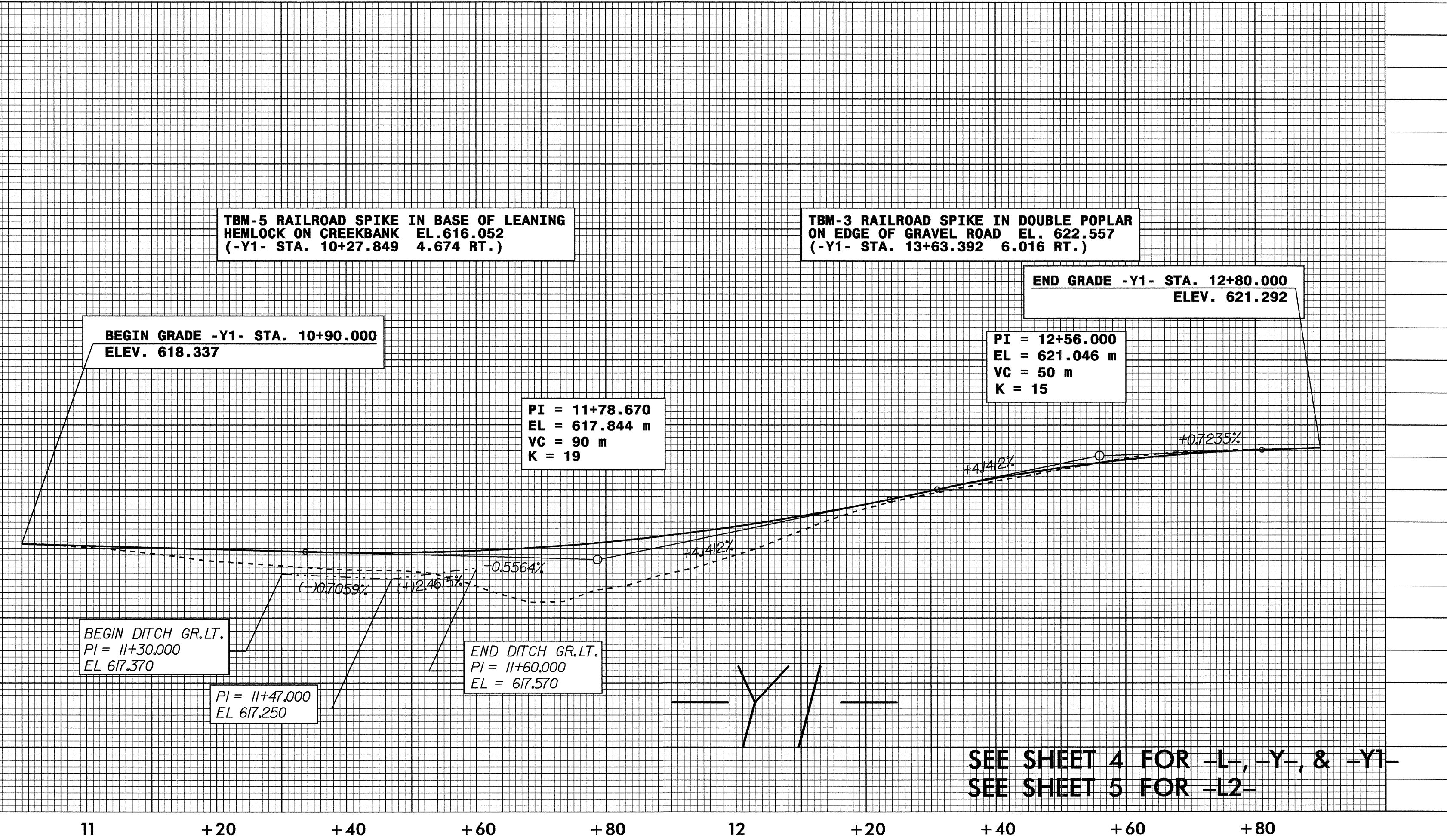
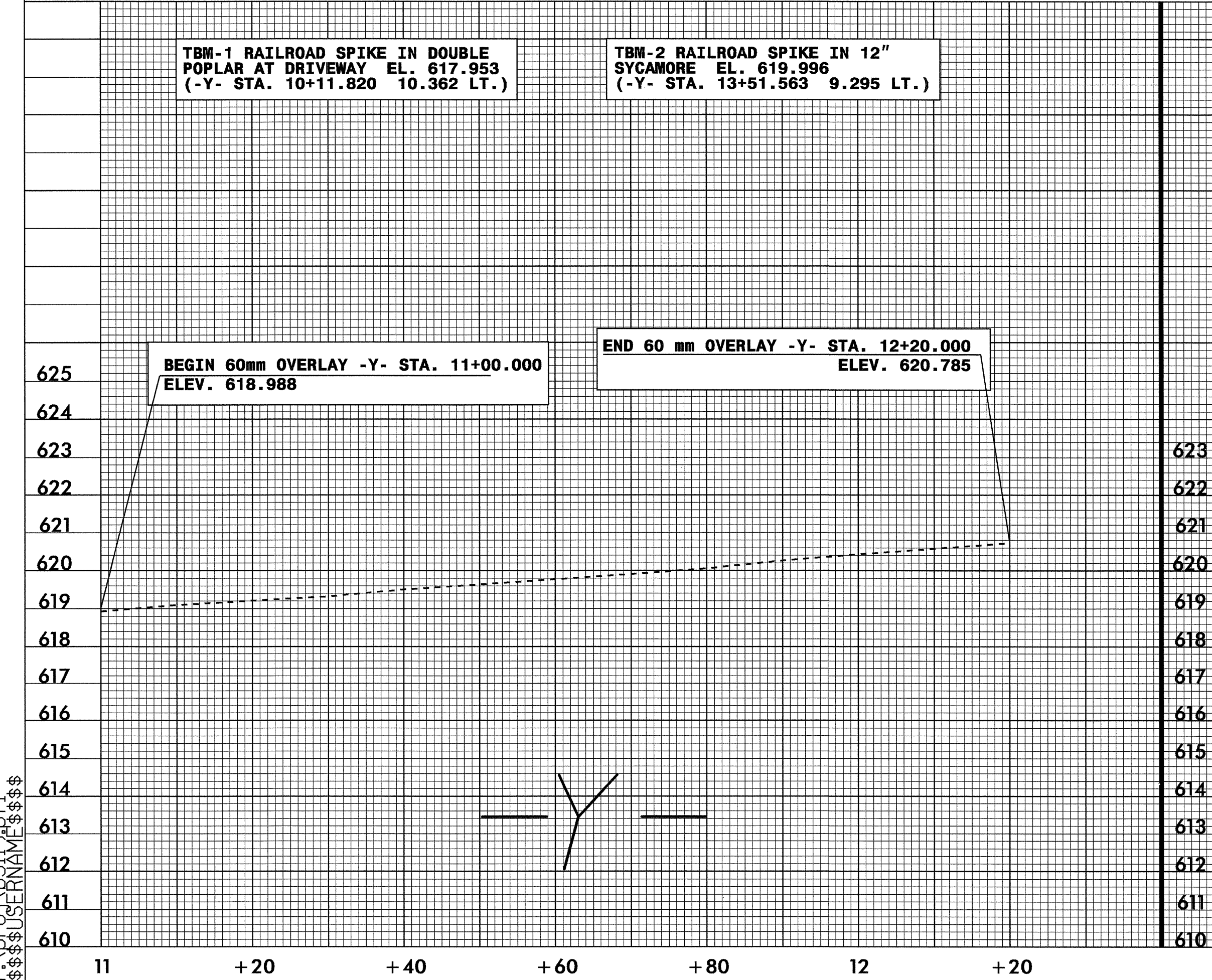
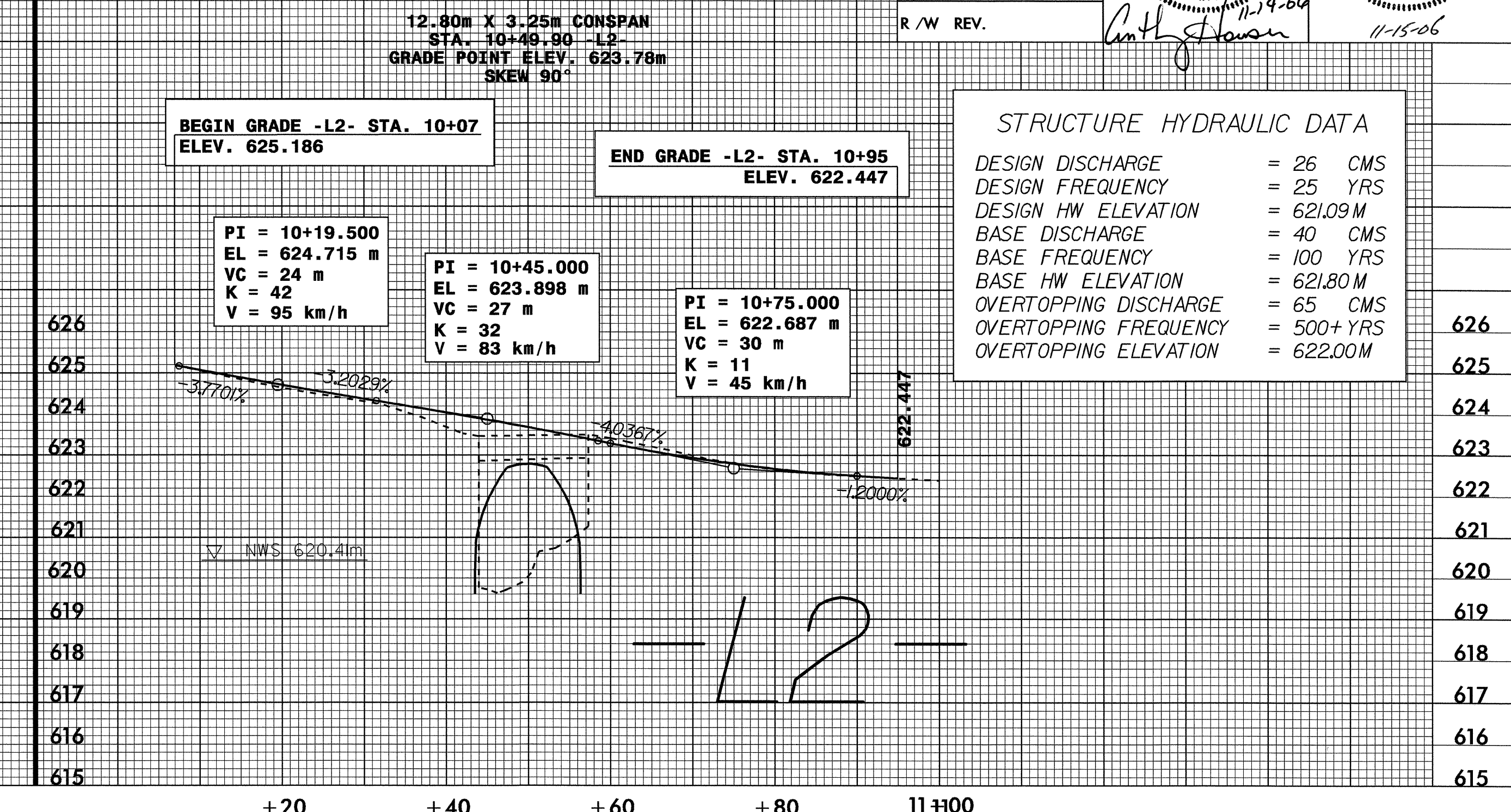
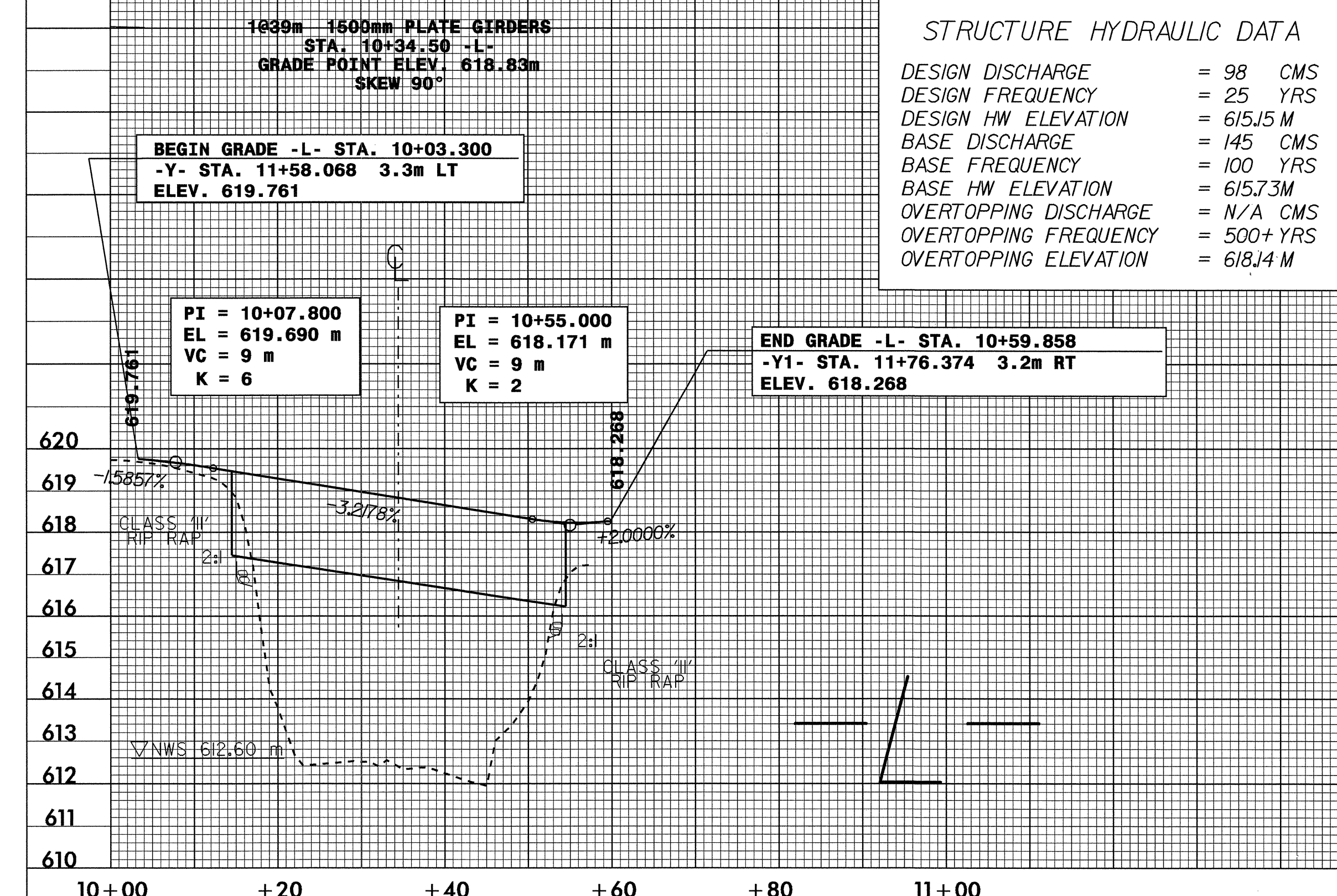
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DEC 30 2006 15:45
DEC 31 2006 15:45



TBM-4 RAILROAD SPIKE IN POWER POLE AT NORTH END OF BRIDGE EL. 619.423 (-L- STA. 10+43.066 16.679 LT.)

TBM-7 RAILROAD SPIKE SET IN 24" WATER OAK EL. 620.565 (-L2- STA. 10+37.351 25.618 RT.)

** Design Exception required for the design speed from 90 km/h to 30 km/h.



SEE SHEET 4 FOR -L-, -Y-, & -Y1-
 SEE SHEET 5 FOR -L2-

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 r:\prg\103119\p1
 \$\$\$USERNAME\$\$\$