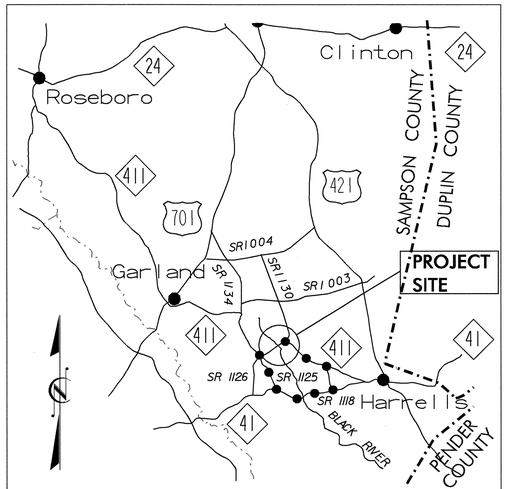
09/09/99

TIP PROJECT: B-1381

CONTRACT: C200855

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



OFF SITE DETOUR

VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SAMPSON COUNTY

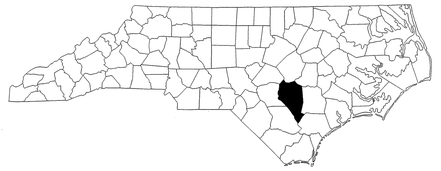
LOCATION: ***BRIDGE NO. 14 OVER BLACK RIVER AND APPROACHES ON NC 411 AT CLEAR RUN WEST OF HARRELLS***

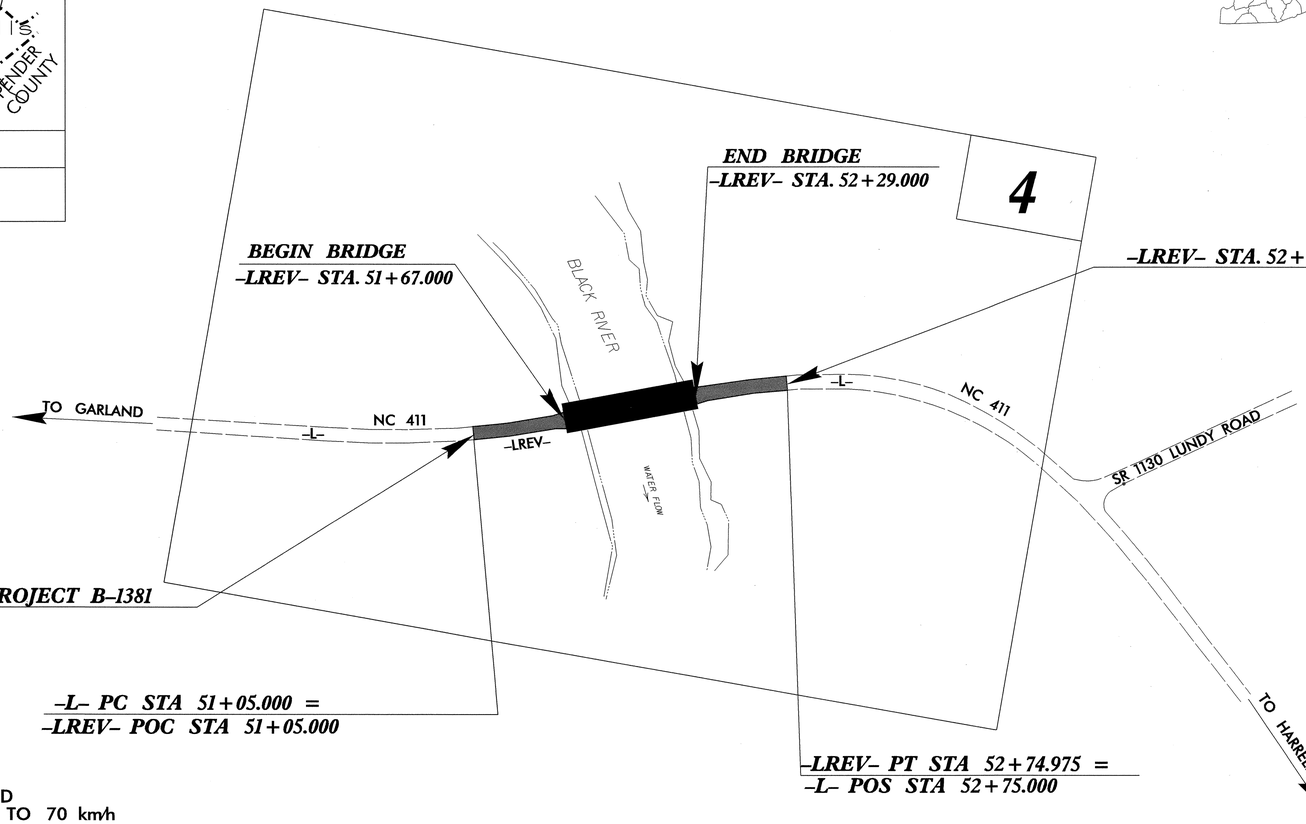
TYPE OF WORK: ***GRADING, PAVING, DRAINAGE, AND STRUCTURE***

ALL DIMENSIONS IN THESE PLANS ARE IN METERS AND/OR MILLIMETERS UNLESS OTHERWISE SHOWN

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-1381	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
32594.1.1	BRSTP-411(1)	P.E.
32594.2.1	BRSTP-411(1)	R/W & UTIL
32594.3.1	BRSTP-411(15)	CONST.





**DESIGN SPEED DESIGN EXCEPTION REQUIRED
TO REDUCE DESIGN SPEED FROM 100 km/h TO 70 km/h

GRAPHIC SCALES

5m 0 10m
PLANS

5m 0 10m
PROFILE (HORIZONTAL)

0.5m 0 1m
PROFILE (VERTICAL)

DESIGN DATA

ADT 2007 = 1,600
ADT 2030 = 3,200
DHV = 10%
D = 60%
*T = 5 %
**V = 70 km/h
* (TTST 2% + DUAL 3%)
FUNCT. CLASS. = RURAL MAJOR COLLECTOR

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-1381 = 0.108 km

LENGTH STRUCTURE TIP PROJECT B-1381 = 0.062 km

TOTAL LENGTH TIP PROJECT B-1381 = 0.170 km

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

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
NOVEMBER 9, 1995
JUNE 30, 2005
LETTING DATE:
MARCH 20, 2007

GLENN W. MUMFORD, PE
PROJECT ENGINEER

SUSAN C. LANCASTER, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. WELLS, JR.

SIGNATURE: 2/14/07

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 027373 ENGINEER SUSAN C. LANCASTER

SIGNATURE: 2/14/07

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

art mcmillan

P.E.
STATE HIGHWAY DESIGN ENGINEER

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PROJECT REFERENCE NO.	SHEET NO.
B-1381	1-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 027373 ENGINEER SUSAN C. LANCASTER

1/12/07

INDEX OF SHEETS

EFF. 01-15-02

2002 ROADWAY METRIC STANDARD DRAWINGS REV.11-23-04

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	
200.03	Method of Clearing – Method III
225.02	Guide for Grading Subgrade – Secondary and Local
225.04	Method of Obtaining Superelevation – Two Lane Pavement
DIVISION 3 – PIPE CULVERTS	
300.01	Method of Pipe Installation – 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	
815.03	Pipe Underdrain and Blind Drain
820.04	Drain Installation in Shoulder Berm Gutter
840.00	Concrete Base Pad for Drainage Structures
840.25	Anchorage for Frames – Brick or Concrete
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Drop Inlet – for Cast Iron Double Frame and Grates
840.46	Traffic Bearing Precast Drainage Structure
846.01	Concrete Curb, Gutter and Curb & Gutter
862.01	Guardrail Placement
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

EFFECTIVE: 07-18-06

REVISED:

GENERAL NOTES: 2002 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 III.

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

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.

TEMPORARY SHORING:

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

SUBSURFACE PLANS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE STAR TELEPHONE MEMBERSHIP CORP., ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

3/15/06

Note: Not to Scale

****S.U.E. = Subsurface Utility Engineering***

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJ. REFERENCE NO.	SHEET NO.
B-1381	1-B

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Property Corner
- Property Monument — ECM
- 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 — S
- Well — W
- 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 — FLOW
- False Sump

RAILROADS:

- Standard Gauge — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- Switch — SWITCH
- RR Abandoned
- RR Dismantled

RIGHT OF WAY:

- Baseline Control Point
- NCGS Monument
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line — RW
- Proposed Right of Way Line with Iron Pin and Cap Marker — RW
- Proposed Right of Way Line with Concrete or Granite Marker — RW
- Existing Control of Access — CA
- Proposed Control of Access — CA
- Existing Easement Line — E
- 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 — 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 — S
- Storm Sewer — S

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole — HH
- H-Frame Pole
- Recorded U/G Power Line — P
- Designated U/G Power Line (S.U.E.*) — P

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Booth
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- Recorded U/G Telephone Cable — T
- Designated U/G Telephone Cable (S.U.E.*) — T
- Recorded U/G Telephone Conduit — TC
- Designated U/G Telephone Conduit (S.U.E.*) — TC
- Recorded U/G Fiber Optics Cable — T FO
- Designated U/G Fiber Optics Cable (S.U.E.*) — T FO

WATER:

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

TV:

- TV Satellite Dish
- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- Recorded U/G TV Cable — TV
- Designated U/G TV Cable (S.U.E.*) — TV
- Recorded U/G Fiber Optic Cable — TV FO
- Designated U/G Fiber Optic Cable (S.U.E.*) — TV FO

GAS:

- Gas Valve
- Gas Meter
- Recorded U/G Gas Line — G
- Designated U/G Gas Line (S.U.E.*) — G
- 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 — S
- Utility Unknown U/G Line — ?UTL
- 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.

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6/2/99

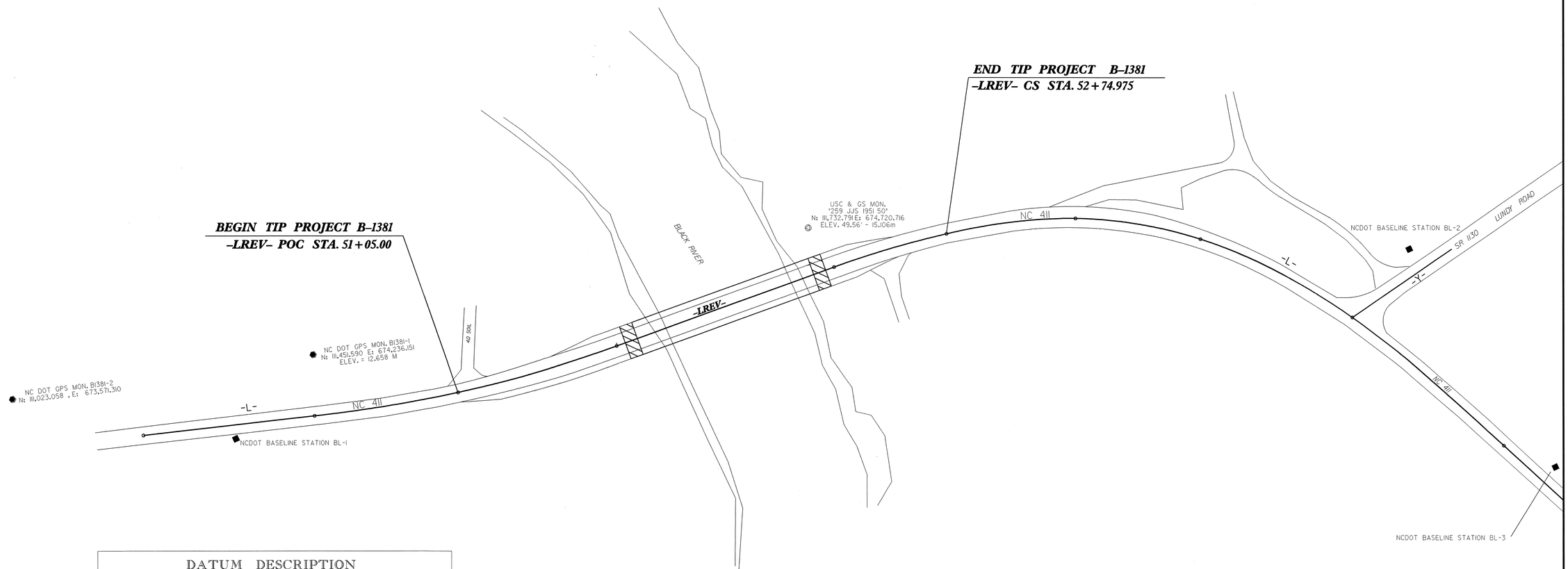
PROJECT REFERENCE NO.	SHEET NO.
B-1381	1C
Location and Surveys	

SURVEY CONTROL SHEET B-1381

BL

POINT	DESC.	NORTH	EAST	ELEVATION	LREV STATION	OFFSET
BL1	REBAR	111602.7630	674566.5650	12.973	OUTSIDE PROJECT LIMITS	
BL2	REBAR	111794.2080	674909.7850	15.305	OUTSIDE PROJECT LIMITS	
BL3	REBAR	111694.2080	675095.6100	15.456	OUTSIDE PROJECT LIMITS	

NC GRID NAD 83



DATUM DESCRIPTION

NC DOT GPS FOR MONUMENT "B1381-1"

WITH NAD 83 STATE PLANE GRID COORDINATES OF

NORTHING: 111451.590 (m) EASTING: 674236.151 (m)

(GROUND TO GRID) IS: 0.99991428

THE N.C. LAMBERT GRID BEARING AND

LOCALIZED HORIZONTAL GROUND DISTANCE FROM

"B1381-1" TO -LREV- STATION 51+05.000 IS

N 64° 12' 11.8" E 437.9054m

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES

VERTICAL DATUM USED IS NGVD 29

NOTES:

1. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:*
   HTTP://WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/
   FILE NAME: B1381_LS_CONTROL_061117.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.
NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION
SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

NOTE: DRAWING NOT TO SCALE

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$$$$LEVNAME$$$$

METRIC

PROJECT REFERENCE NO.	SHEET NO.
B-1381	2

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 027373 ENGINEER SUSAN G. LANCASTER 1/2/07

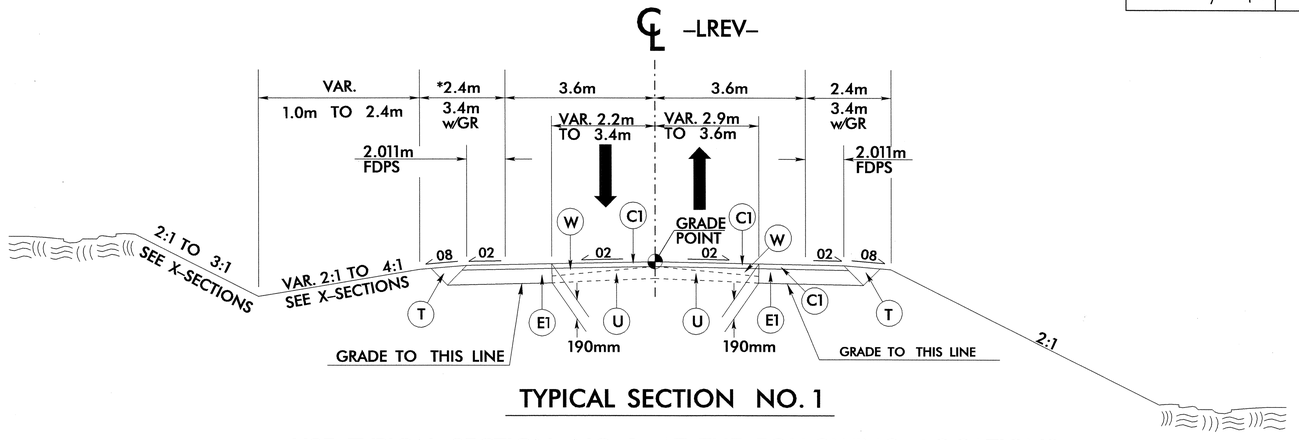
PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 037104 ENGINEER VLADIMIR G. MILTCHEV 01/12/07

PAVEMENT SCHEDULE

C1	PROP. APPROX. 60 mm ASPHALT CONC. SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 70.5 kg PER SQUARE METER IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONC. SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 2.35 kg PER SQUARE METER PER 1 mm DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 25 mm IN DEPTH OR GREATER THAN 38 mm IN DEPTH.
E1	PROP. APPROX. 130 mm ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 318.5 kg PER SQUARE METER.
E2	PROP. VAR. DEPTH ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 2.45 kg PER SQUARE METER PER 1 mm DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 75 mm IN DEPTH OR GREATER THAN 140 mm IN DEPTH.
U	EXISTING PAVEMENT.
T	EARTH MATERIAL.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING).

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



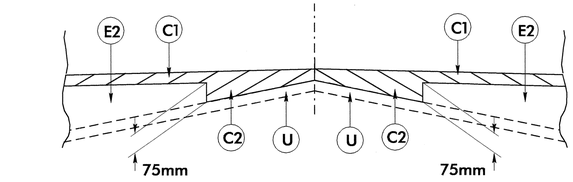
TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1 AT THE FOLLOWING LOCATIONS:

TRANSITION FROM EXISTING AT –LREV– STA. 51+05.000
TO TYPICAL SECTION NO. 1 AT –LREV– STA. 51+40.000

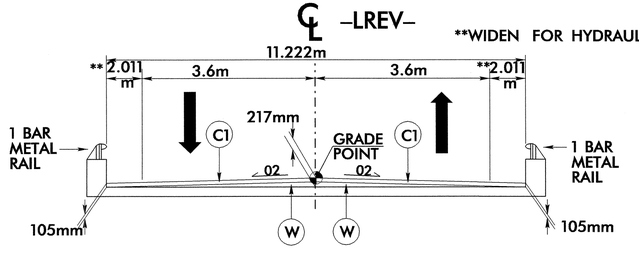
–LREV– STA. 51+40.000 TO STA. 51+52.000

TRANSITION FROM TYPICAL SECTION NO. 1 AT –LREV–
STA. 52+39.975 TO EXISTING AT –LREV– STA. 52+74.975
*NOTE: USE 1.5m FROM –LREV– STA. 52+50 TO 52+74.975 LT.



DETAIL SHOWING METHOD OF WEDGING

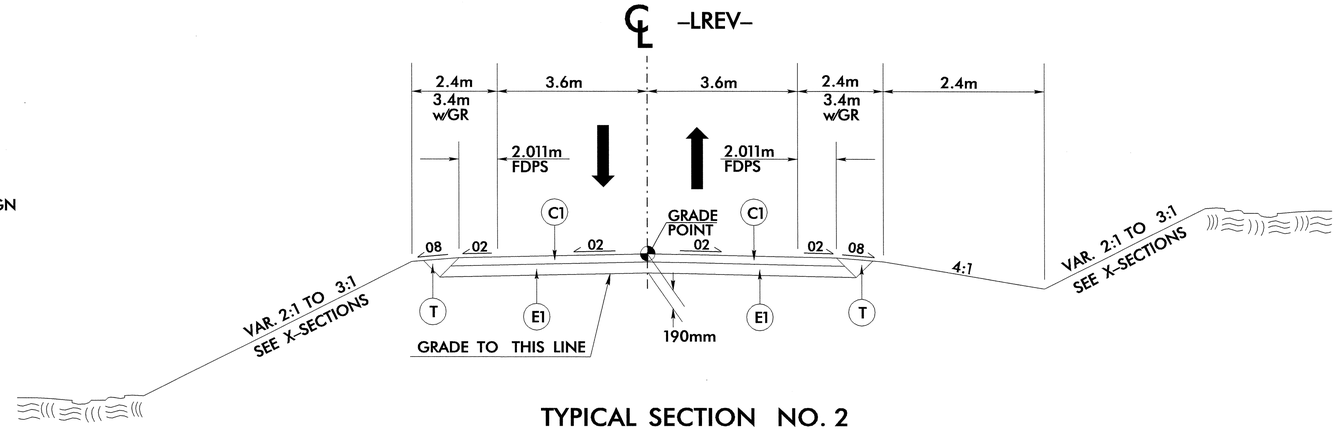
USE IN CONJUNCTION WITH TYPICAL SECTION NO. 1



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3 AT THE FOLLOWING LOCATION:

–LREV– STA. 51+67.000 (BEGIN BRIDGE) TO STA. 52+29.000 (END BRIDGE)



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2 AT THE FOLLOWING LOCATIONS:

–LREV– STA. 51+52.000 TO STA. 51+67.000 (BEGIN BRIDGE)
–LREV– STA. 52+29.000 (END BRIDGE) TO STA. 52+39.975

PROJECT REFERENCE NO.	SHEET NO.
B-1381	2-A

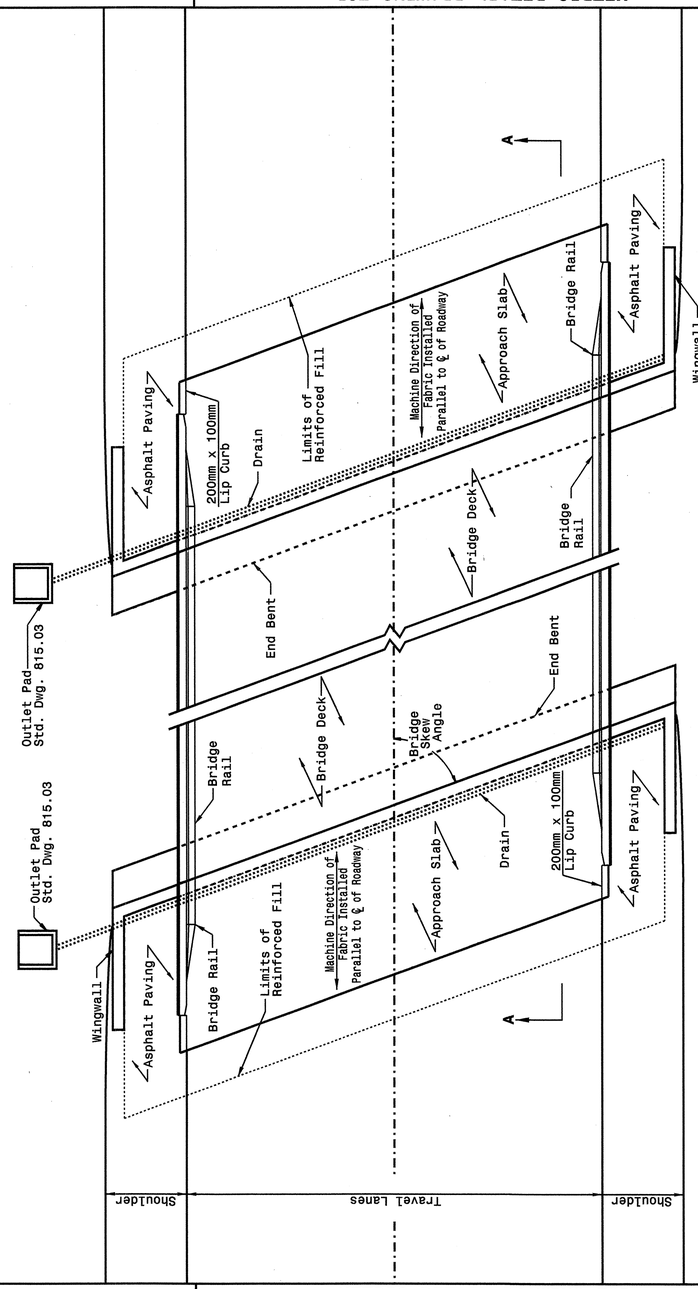
METRIC

METRIC DETAIL DRAWING FOR

REINFORCED BRIDGE APPROACH FILLS

4.57m MINIMUM APPROACH SLAB

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



PLAN VIEW
4.57m MINIMUM APPROACH SLAB

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

REINFORCED BRIDGE APPROACH FILLS

4.57m MINIMUM APPROACH SLAB

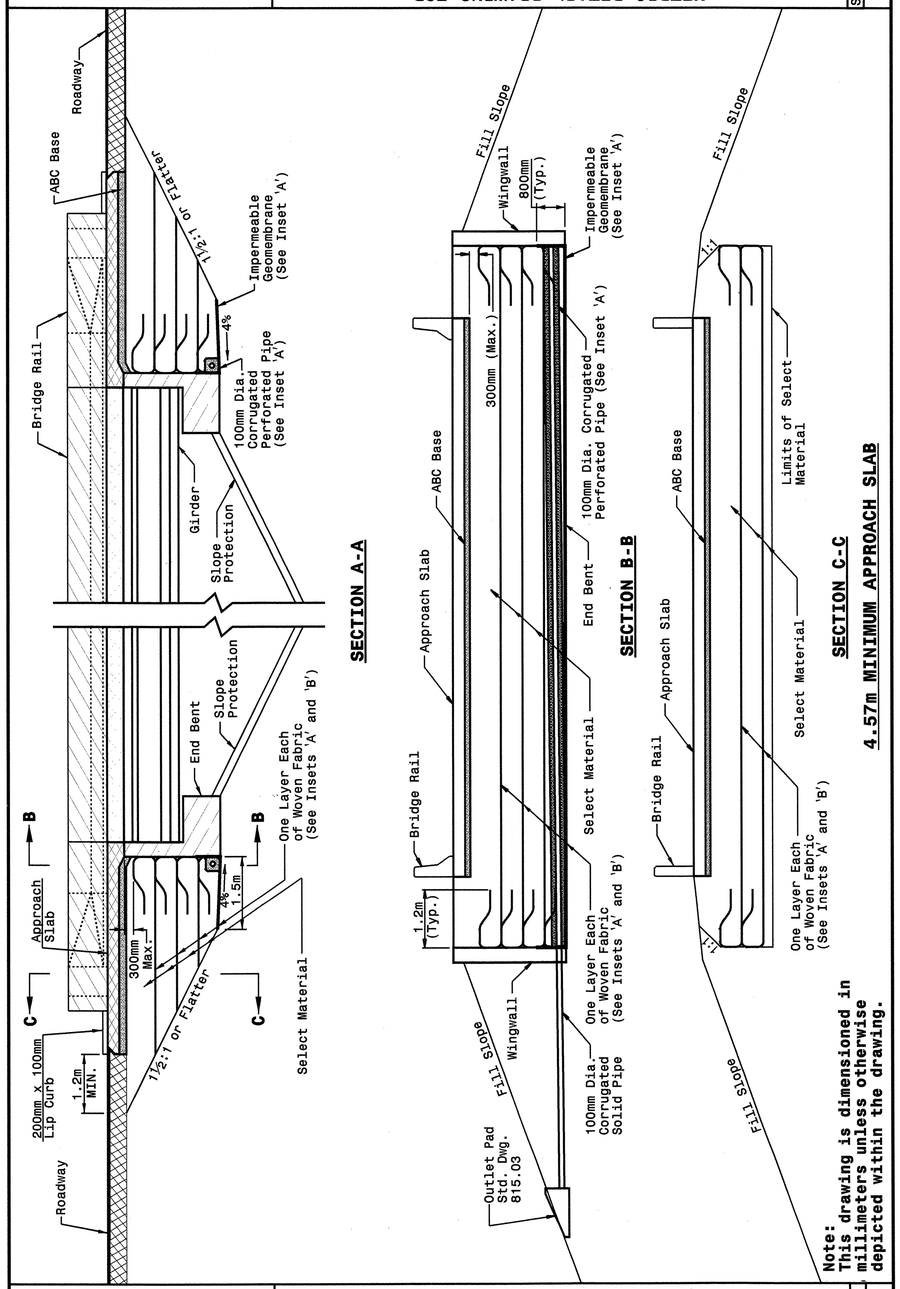
SHEET 1 OF 7 422D10

METRIC DETAIL DRAWING FOR

REINFORCED BRIDGE APPROACH FILLS

PRESTRESSED AND PLATE GIRDER BRIDGES
4.57m MINIMUM APPROACH SLAB

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



SECTION A-A

SECTION B-B

SECTION C-C
4.57m MINIMUM APPROACH SLAB

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

REINFORCED BRIDGE APPROACH FILLS

PRESTRESSED AND PLATE GIRDER BRIDGES
4.57m MINIMUM APPROACH SLAB

SHEET 2 OF 7 422D10

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HOWERTON 1/1/07

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

SEE PLATE FOR TITLE

ORIGINAL BY: 2002 STANDARDS DATE: 01-15-02
MODIFIED BY: E.E. WARD DATE: 09-28-05
CHECKED BY: DATE: 9/29/05
FILE SPEC.: stds/02stdstodetails/metric/422d10.dgn

29-SEP-2005 09:58
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ericward AT FS22243

PROJECT REFERENCE NO.	SHEET NO.
B-1381	2-B

METRIC

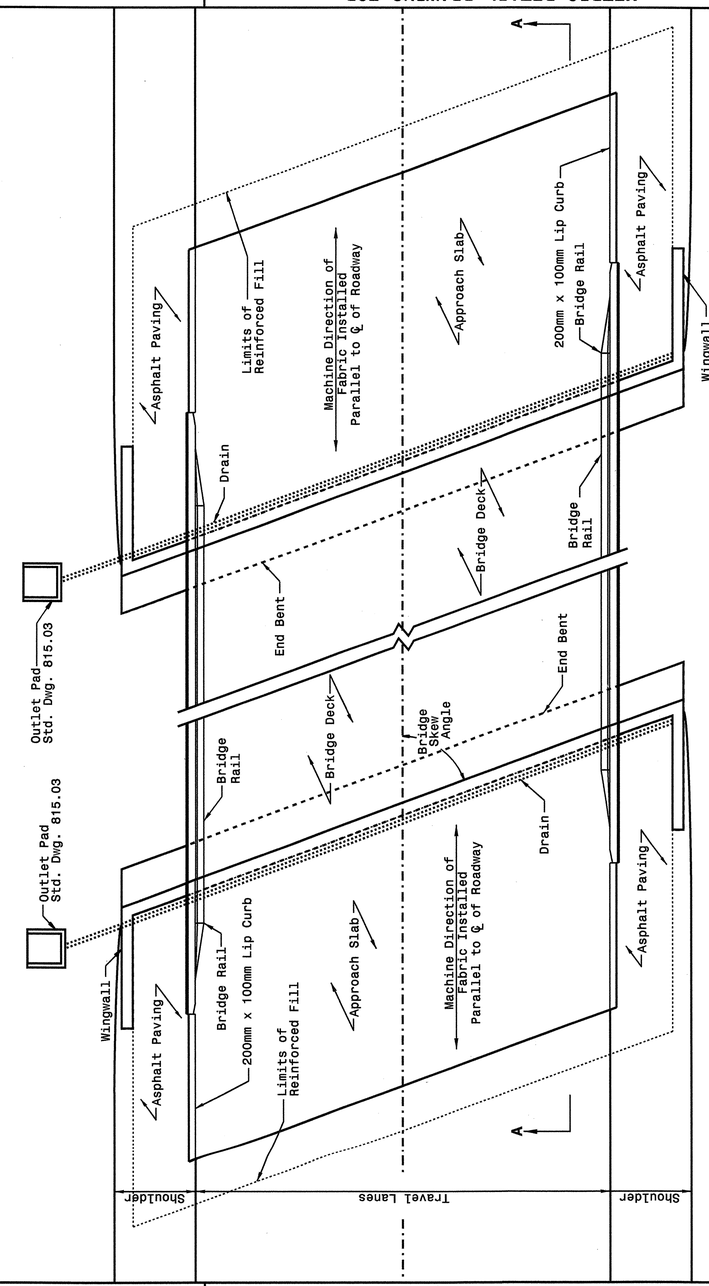
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

METRIC DETAIL DRAWING FOR

REINFORCED BRIDGE APPROACH FILLS

7.62m MINIMUM APPROACH SLAB

SHEET 4 OF 7 — 422D10



PLAN VIEW
7.62m MINIMUM APPROACH SLAB

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

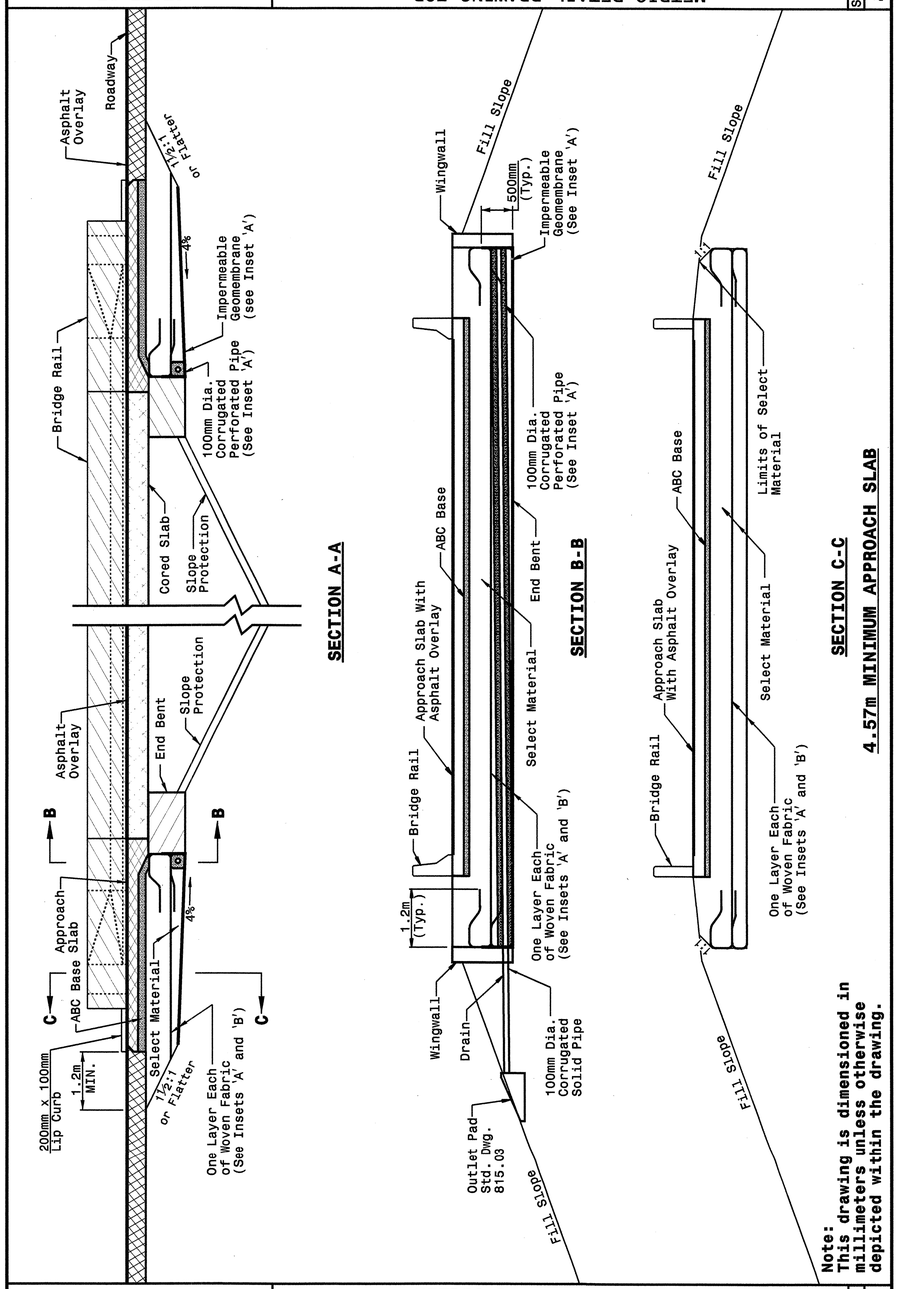
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

METRIC DETAIL DRAWING FOR

REINFORCED BRIDGE APPROACH FILLS

CORED SLAB BRIDGES
4.57m MINIMUM APPROACH SLAB

SHEET 3 OF 7 — 422D10



SECTION A-A

SECTION B-B

SECTION C-C

4.57m MINIMUM APPROACH SLAB

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

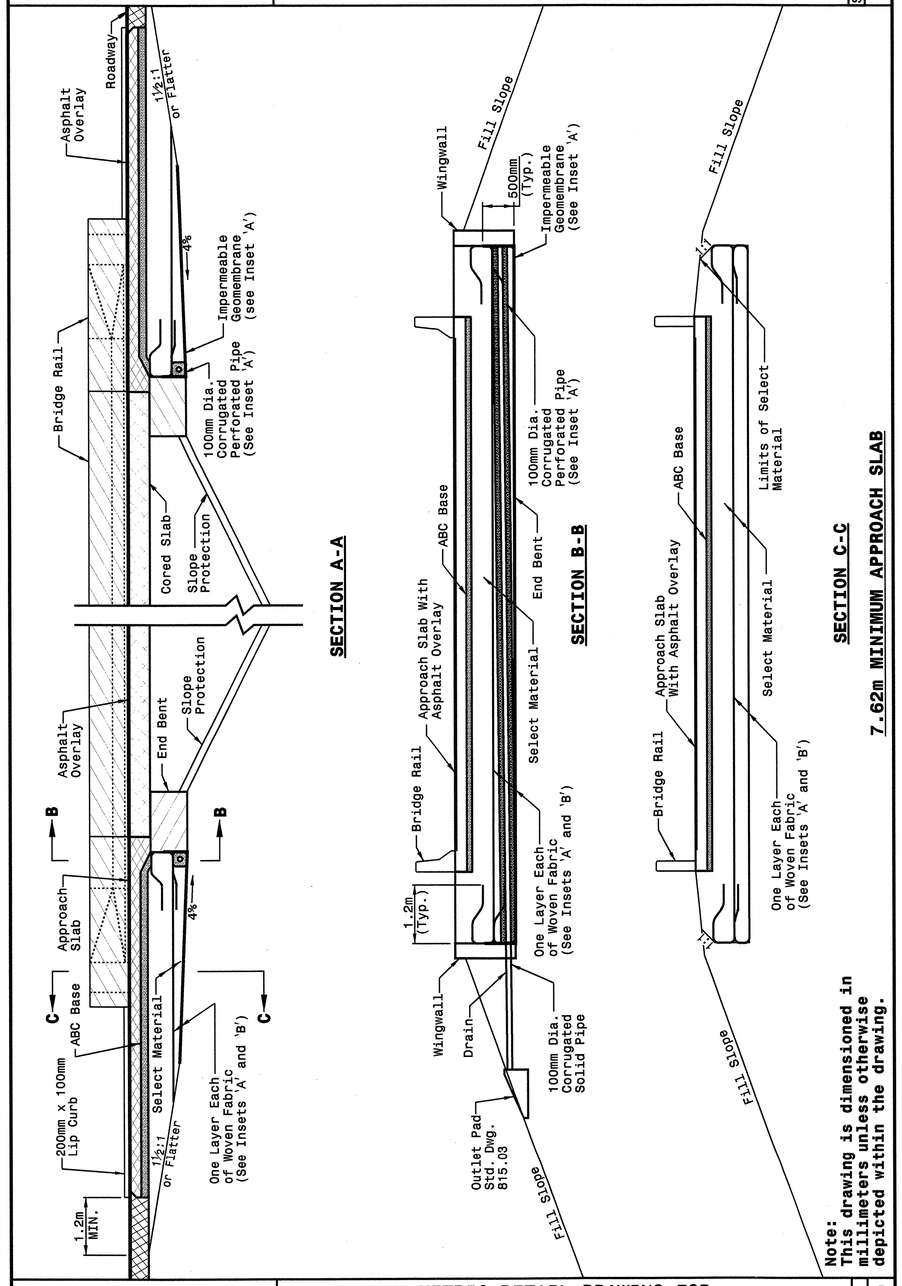
PROJECT SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

SEE PLATE FOR TITLE

ORIGINAL BY: 2002 STANDARDS DATE: 01-15-02
MODIFIED BY: E.E. WARD DATE: 09-28-05
CHECKED BY: DATE: 9/29/05
FILE SPEC.: stds/02stdstodetails/metric/422d10.dgn

PROJECT REFERENCE NO.	SHEET NO.
B-1381	2-C

METRIC



STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
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

7.62m MINIMUM APPROACH SLAB

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

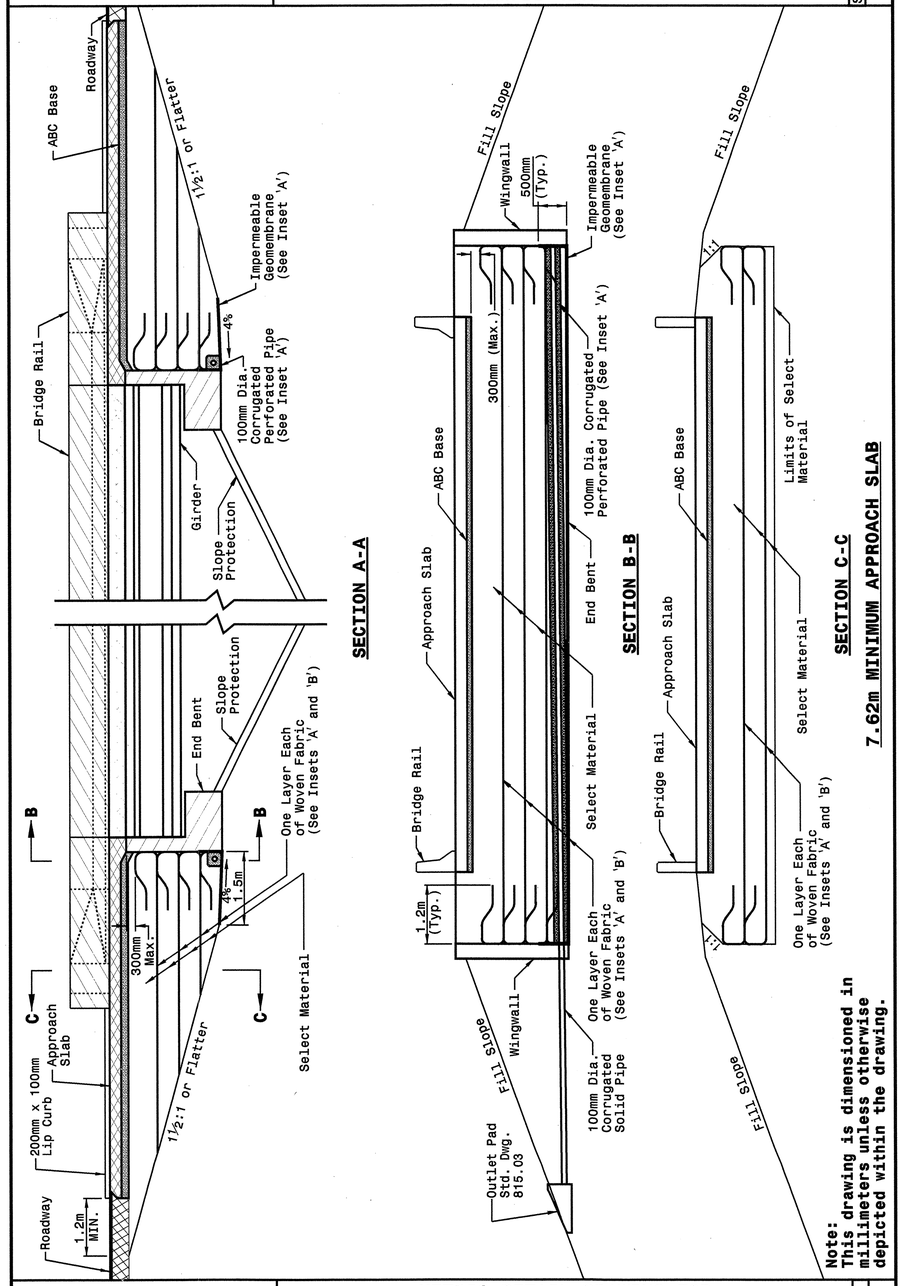
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

METRIC DETAIL DRAWING FOR

REINFORCED BRIDGE APPROACH FILLS

PRESTRESSED AND PLATE GIRDER BRIDGES
7.62m MINIMUM APPROACH SLAB

SHEET 5 OF 7
422D10



7.62m MINIMUM APPROACH SLAB

Note:
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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

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

SEE PLATE FOR TITLE

ORIGINAL BY: 2002 STANDARDS DATE: 01-15-02
MODIFIED BY: E.E. WARD DATE: 09-12-05
CHECKED BY: DATE: 9/28/05
FILE SPEC.: stds/02stdstodetails/metric/422d10.dgn

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

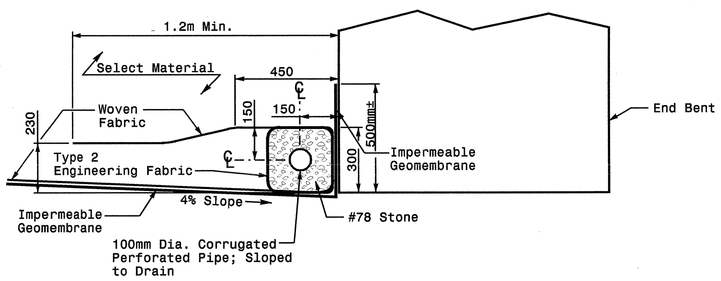
METRIC DETAIL DRAWING FOR

REINFORCED BRIDGE APPROACH FILLS

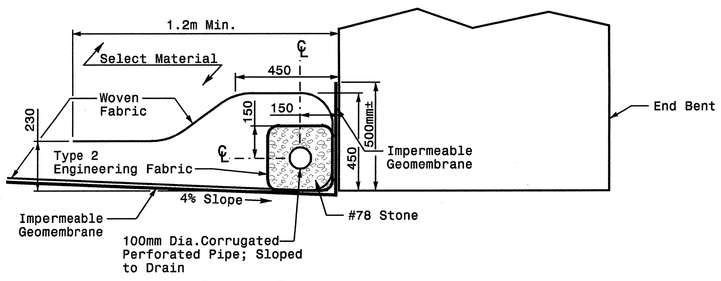
INSETS AND CHARTS

SHEET 7 OF 7

422D10

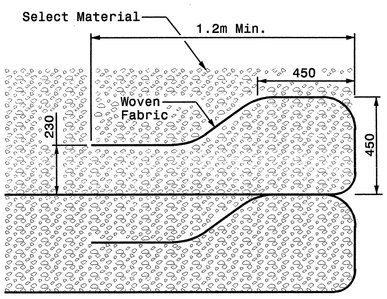


Cored Slab Bridge
Showing First Lift and Drains



Girder Bridge
Showing First Lift and Drains

Inset 'A'



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

Note:
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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

INSETS AND CHARTS

SHEET 7 OF 7

422D10

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

SEE PLATE FOR TITLE

ORIGINAL BY:- 2002 STANDARDS DATE: 01-15-02
MODIFIED BY: [illegible] DATE: 09-15-09
CHECKED BY: [illegible] DATE: 11/2/09
FILE SPEC:: stds/02stdstodetails/metric/422d10.dgn

NORTH CAROLINA PROFESSIONAL SEAL 021916 ENGINEER BRIAN R. BURCH HIGHWAY DESIGN BRANCH 11/2/09

PROJECT REFERENCE NO. 8-1361
SHEET NO. 2-D
METRIC

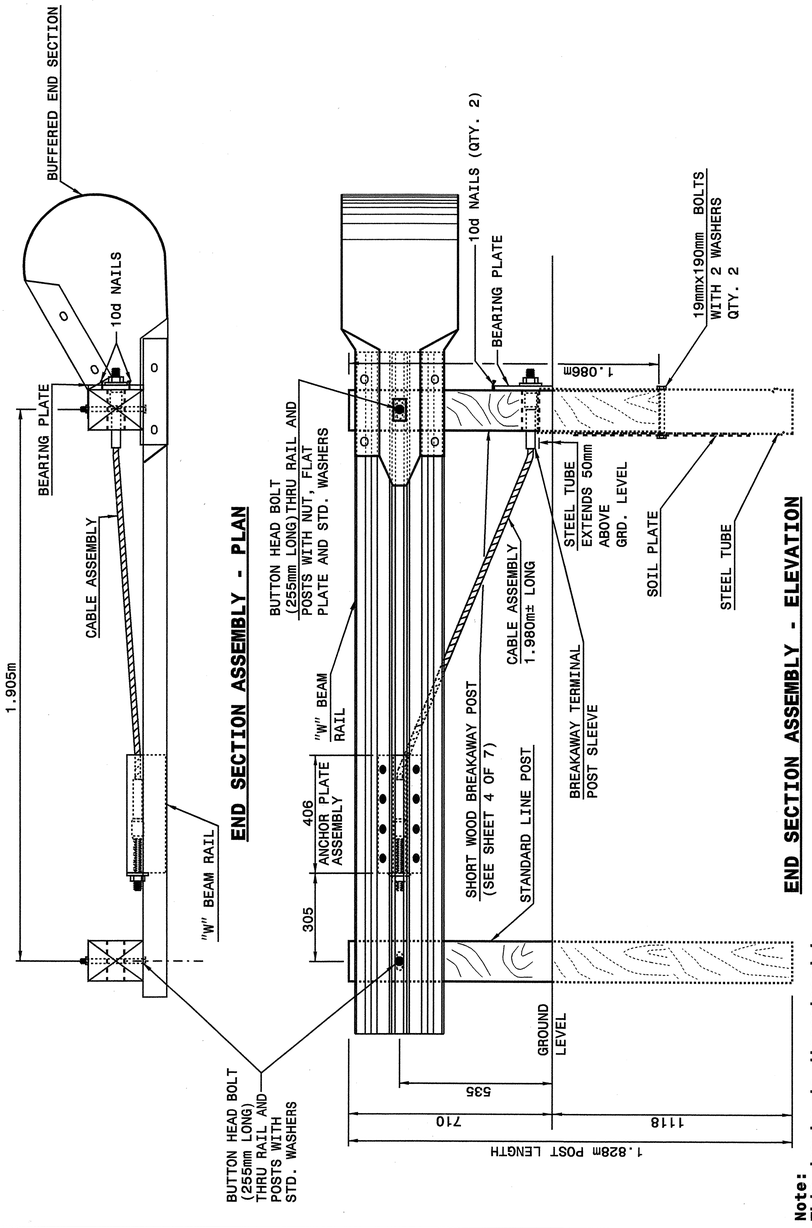
PROJECT REFERENCE NO.	SHEET NO.
B-1381	2-E

METRIC

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

METRIC DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 1 OF 7
862D02



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

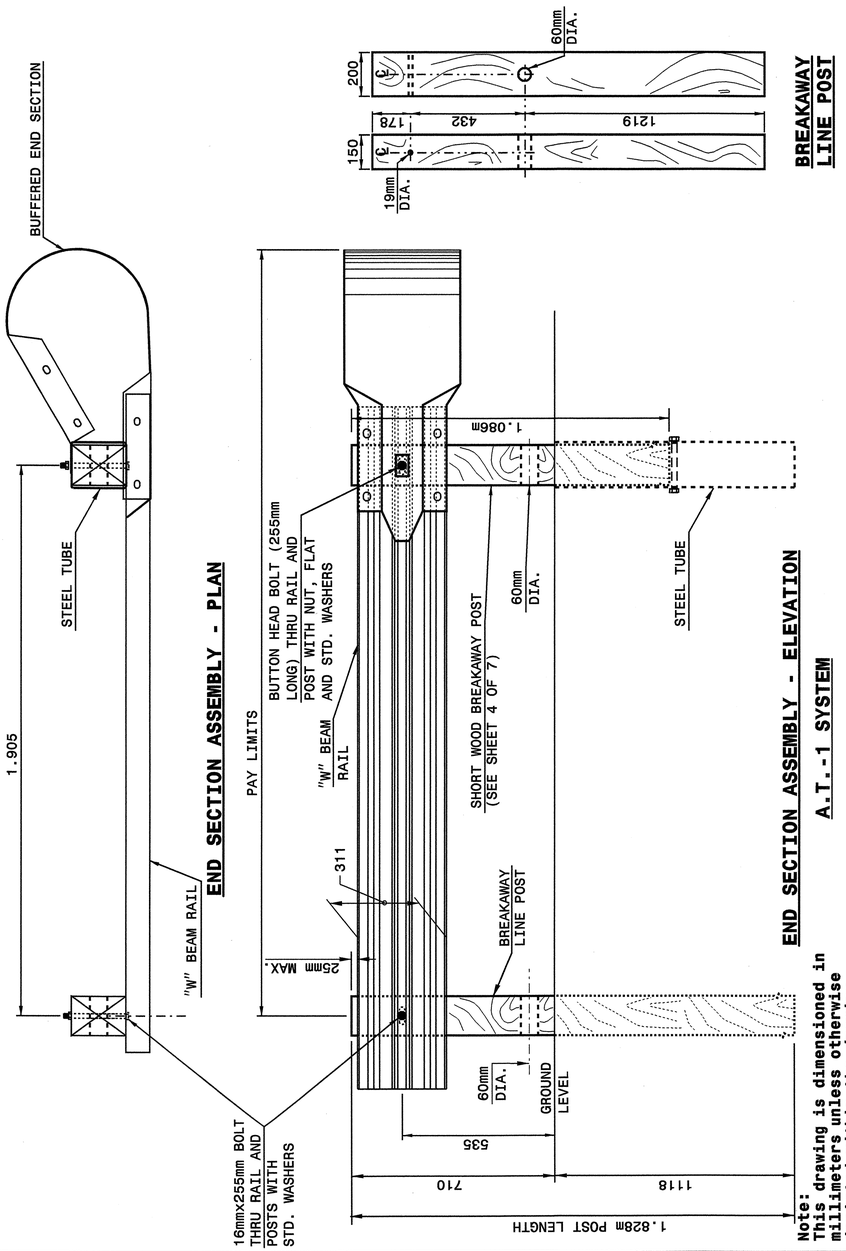
METRIC DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 1 OF 7
862D02

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

METRIC DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 2 OF 7
862D02



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

METRIC DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 2 OF 7
862D02

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL E. HOMEYER 1/2/07

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

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ORIGINAL BY: 2002 STD.862.02 DATE:
MODIFIED BY: E.E. WARD DATE: 02-09-03
CHECKED BY: DATE: 10/22/04
FILE SPEC.: //pgr/stds/02todetail/metric/86202/862d02m.dgn

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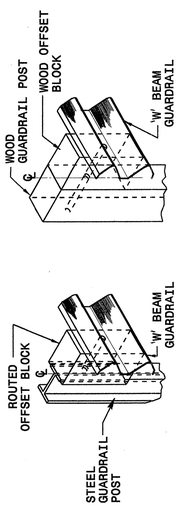
ericward AT DS212260

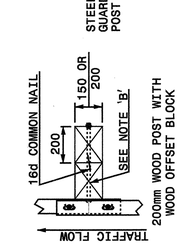
PROJECT REFERENCE NO.	SHEET NO.
B-1381	2-F

METRIC

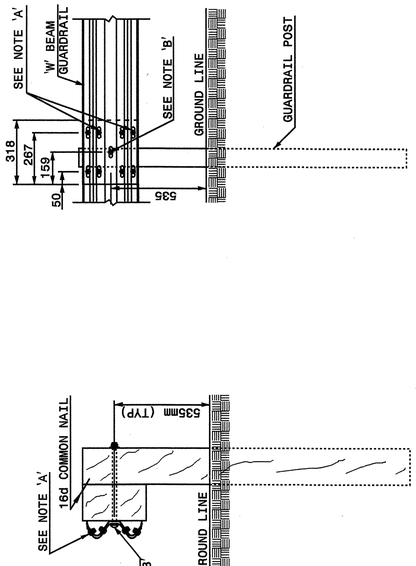
ISOMETRIC VIEWS



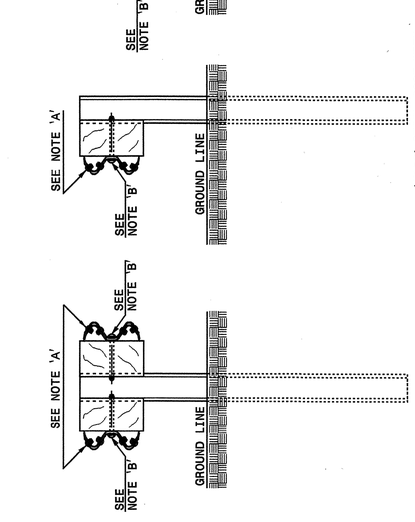
PLAN



FRONT



SIDE



TYPICAL GUARDRAIL AND GUARDRAIL POST ALTERNATIVES

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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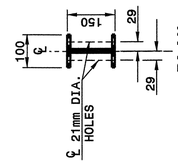
PLAN



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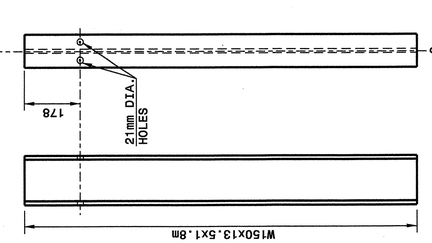
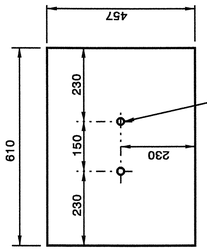


SIDE

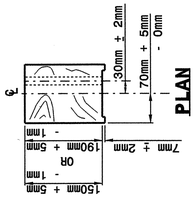
"W150" STEEL POST

SOIL PLATE

6mm THICK



PLAN



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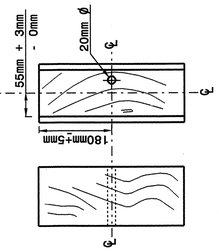
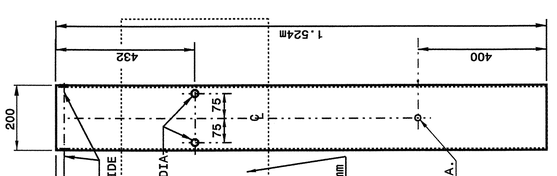


SIDE

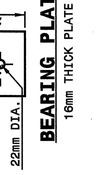
ROUTED WOOD OFFSET BLOCK

SYSTEM PARTS



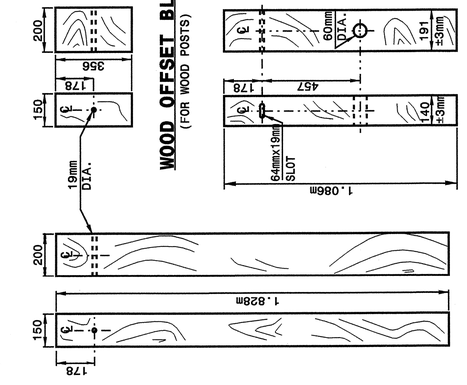
STEEL TUBE

TS 150mmx200mmx5mm



BEARING PLATE

16mm THICK PLATE



SHORT WOOD BREAKAWAY POST

STANDARD LINE POST

Note:
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NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HOWERTON 11/2/17

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

SEE PLATE FOR TITLE

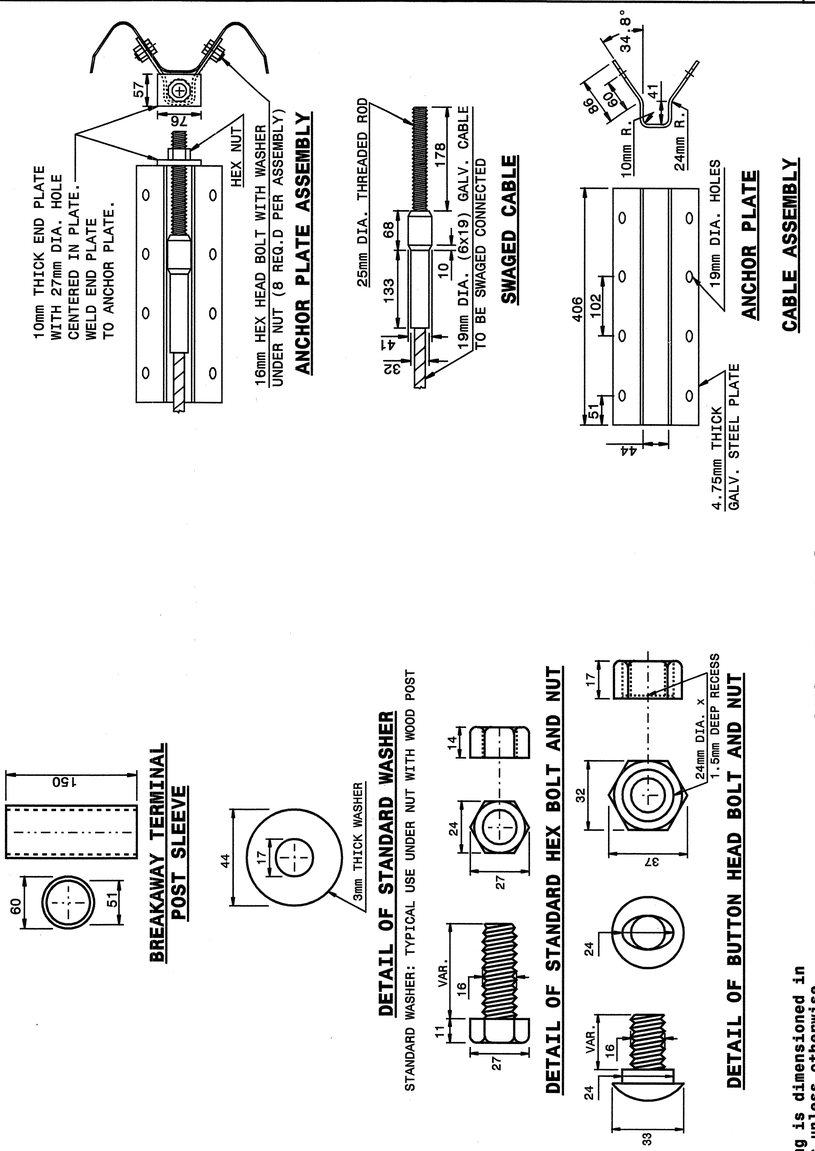
ORIGINAL BY: 2002 STD.862.02 DATE:
MODIFIED BY: E.E. WARD DATE: 02-09-03
CHECKED BY: DATE: 10/22/04
FILE SPEC.: /usr/stds/02todetail/metric/86202/862d02m.dgn

METRIC

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

METRIC DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 5 OF 7
862D02



SYSTEM PARTS

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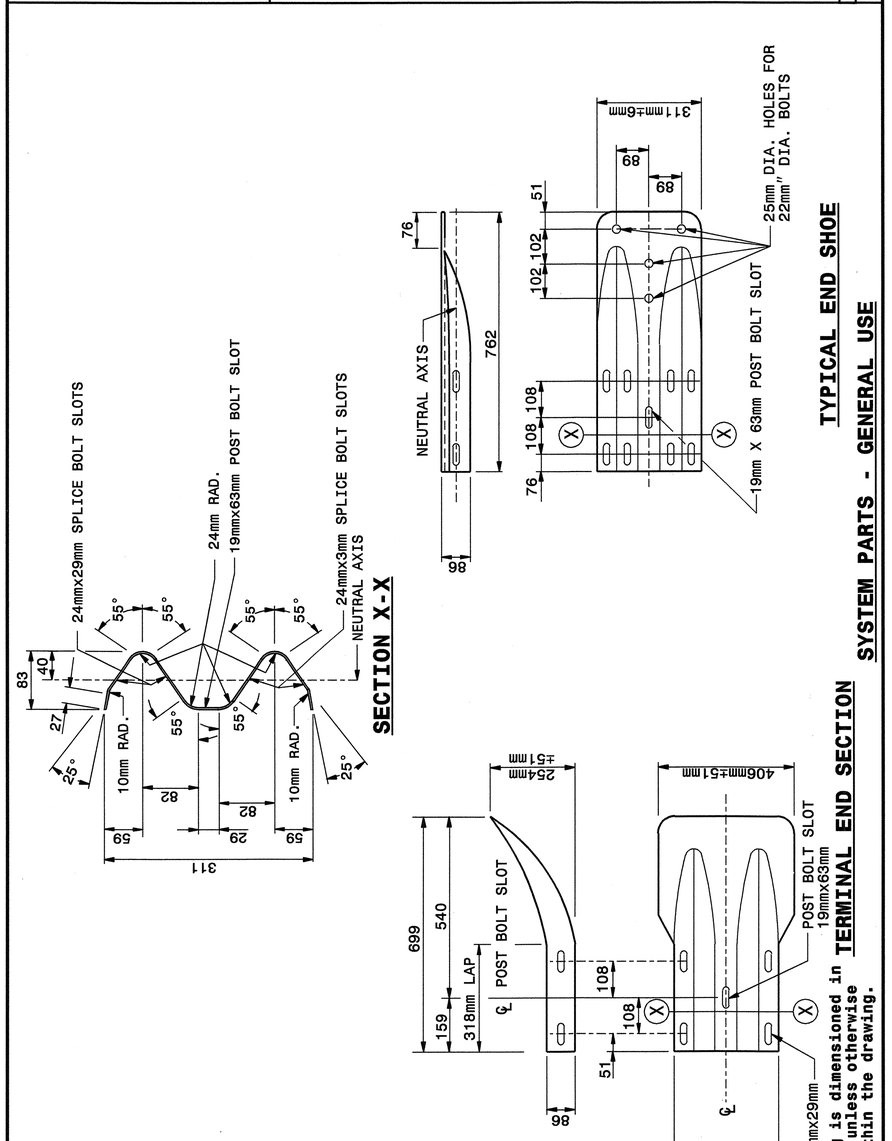
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

METRIC DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 7
862D02



SYSTEM PARTS - GENERAL USE

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

METRIC DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 7
862D02

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

SEE PLATE FOR TITLE

ORIGINAL BY: 2002 STD.862.02 DATE:
MODIFIED BY: E.E. WARD DATE: 02-09-03
CHECKED BY: Joel E. Howerton DATE: 10/22/04
FILE SPEC.: /pgr/stds/02todetail/metric/86202/862d02m.dgn

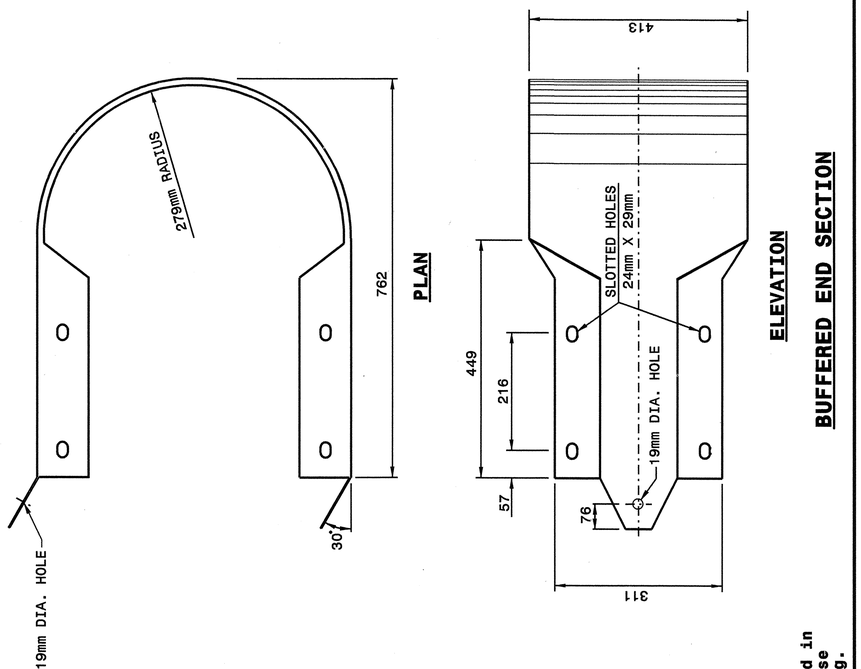
PROJECT REFERENCE NO.	SHEET NO.
B-1381	2-H

METRIC

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

METRIC DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 7 OF 7
862D02



BUFFERED END SECTION

Note:
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STATE OF
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DIVISION OF HIGHWAYS
RALEIGH, N.C.

METRIC DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 7 OF 7
862D02

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

SEE PLATE FOR TITLE

ORIGINAL BY: 2002 STD.862.02 DATE:
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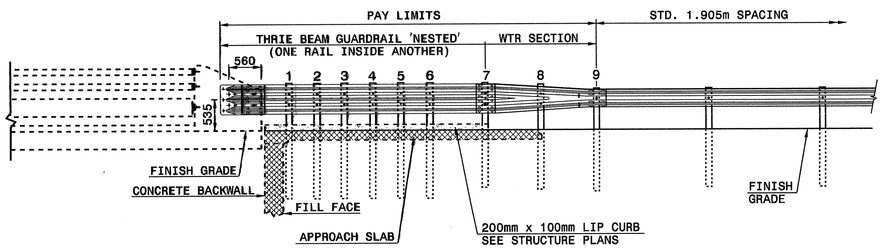
CHECKED BY: DATE: 10/22/14
FILE SPEC.: /dgr/stds/02todetail/metric/86202/862d02m.dgn

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

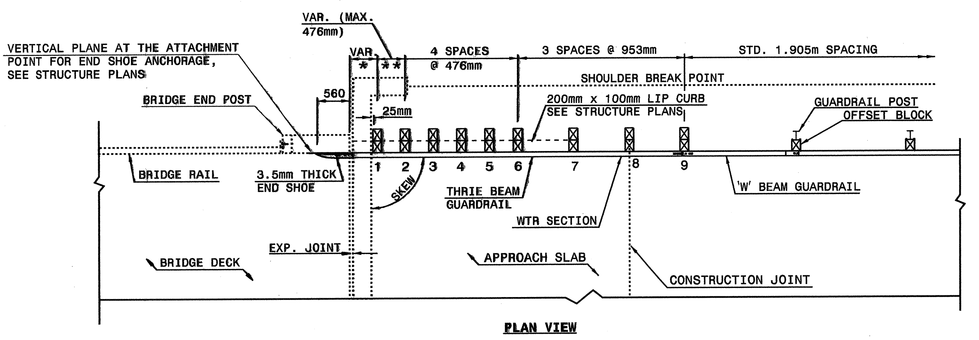
METRIC DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE (4.57m MINIMUM LENGTH APPROACH SLAB)

SHEET 1 OF 6
862D03



ELEVATION

NOTE:
**POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 292mm IF CONCRETE BACKWALL IS NOT PRESENT.
-SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 200mm x 100mm LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
-MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
-LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
-SEE SHEET 5 FOR POST SECTIONS 1 THRU 9.



PLAN VIEW

Note:
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GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE (4.57m MINIMUM LENGTH APPROACH SLAB)

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

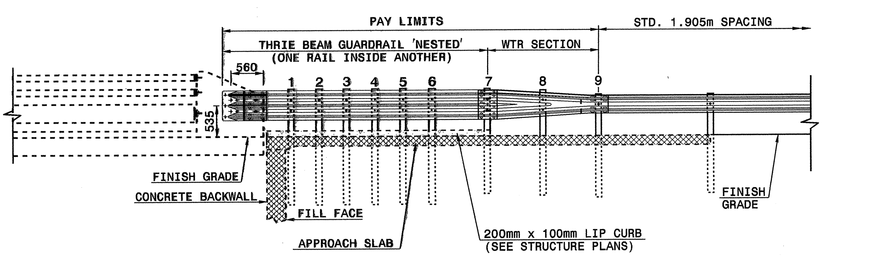
METRIC DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE (4.57m MINIMUM LENGTH APPROACH SLAB)

SHEET 1 OF 6
862D03

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

METRIC DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE (7.62m MINIMUM LENGTH APPROACH SLAB)

SHEET 2 OF 6
862D03



ELEVATION

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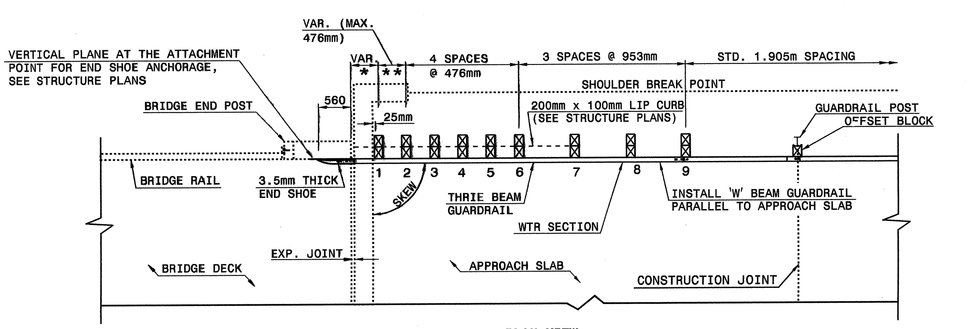
-LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
-SEE SHEET 5 FOR POST SECTIONS 1 THRU 9.



PLAN VIEW

Note:
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GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE (7.62m MINIMUM LENGTH APPROACH SLAB)

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

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ORIGINAL BY: 2002 STANDARDS DATE: 01-15-02
MODIFIED BY: E.E. WARD DATE: 09-14-05
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FILE SPEC.: s:\de\02stdstocdetails\metric\862d03.dgn

NORTH CAROLINA PROFESSIONAL SEAL 022986 ENGINEER
DOCUMENTS NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
11/2/07

PROJECT REFERENCE NO. B-1381
SHEET NO. 2-I

METRIC

PROJECT REFERENCE NO.	SHEET NO.
B-1381	2-J

METRIC

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

METRIC DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO
RAIL ON APPROACH SLAB (7.62m MINIMUM LENGTH APPROACH SLAB)

SHEET 4 OF 6
862D03

ELEVATION

NOTE:
-SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 200mm x 100mm LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
-MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
-LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
-SEE SHEET 5 FOR POST SECTIONS 1 THRU 9.

PLAN VIEW

GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON APPROACH SLAB (7.62m MINIMUM LENGTH APPROACH SLAB)

Note:
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STATE OF
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DIVISION OF HIGHWAYS
RALEIGH, N.C.

METRIC DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO
RAIL ON APPROACH SLAB (4.57m MINIMUM LENGTH APPROACH SLAB)

SHEET 3 OF 6
862D03

ELEVATION

NOTE:
-SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 200mm x 100mm LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
-MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
-LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
-SEE SHEET 5 FOR POST SECTIONS 1 THRU 9.

PLAN VIEW

GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON APPROACH SLAB (4.57m MINIMUM LENGTH APPROACH SLAB)

Note:
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STATE OF
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RALEIGH, N.C.

METRIC DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO
RAIL ON APPROACH SLAB (4.57m MINIMUM LENGTH APPROACH SLAB)

SHEET 3 OF 6
862D03

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HOWERTON 1/26/07

PROJECT SERVICES UNIT
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CHECKED BY: DATE: 9/21/05
FILE SPEC.: stds/02stdstodetails/metric/862d03.dgn

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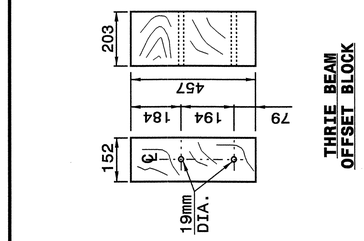
METRIC

16-SEP-2005 09:23
S:\Contracts\Contracts\Special Details\ericward\stds\02 Stds to Special Details\metric\86203\0862d03m.dgn
ericward

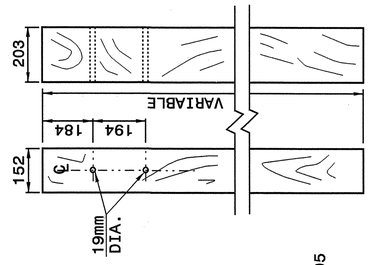
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

METRIC DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III

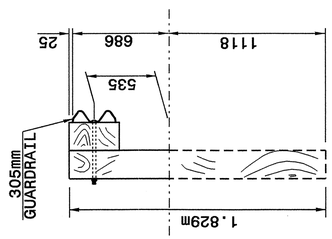
SHEET 5 OF 6 **862D03**



THRIE BEAM OFFSET BLOCK

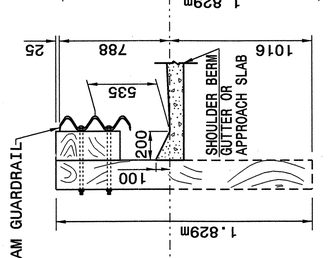


THRIE BEAM LINE POST

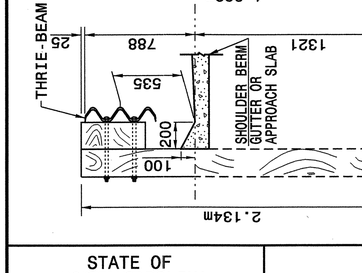


SECTION OF 'W' BEAM POST 9

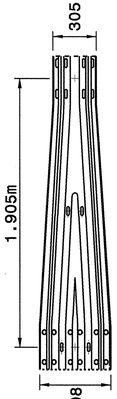
SECTION OF WTR BEAM POST 8



SECTION OF THRIE BEAM POST 7

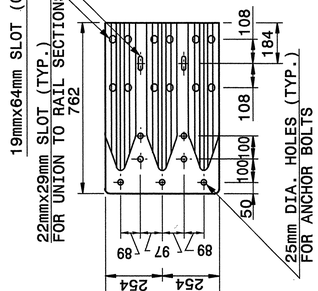


SECTION OF THRIE BEAM POSTS 1 THRU 6

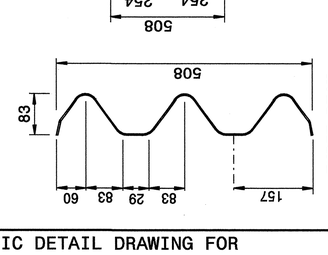


WTR SECTION
ELEVATION VIEW

NOTE: THE MID POST AND OFFSET BLOCK OF THE WTR SECTION WILL REQUIRE SPECIAL BOLT HOLE DRILLING IN THE THRIE BEAM OFFSET BLOCK AND LINE POST.



END SHOE



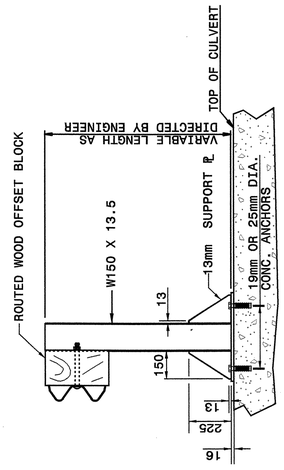
THRIE-BEAM SECTION

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

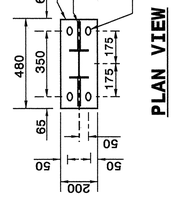
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

METRIC DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
ANCHORAGE FOR GUARDRAIL POST ON BOX CULVERT

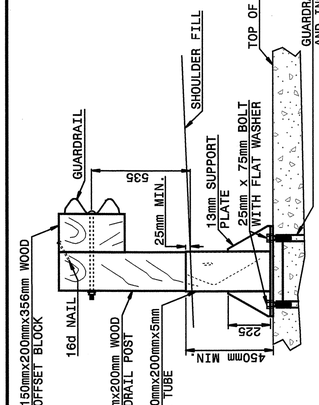
SHEET 6 OF 6 **862D03**



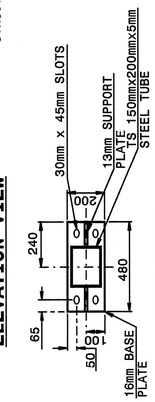
ELEVATION VIEW



PLAN VIEW



ELEVATION VIEW



PLAN VIEW

NOTES FOR:
GUARDRAIL POST ANCHORED TO STRUCTURE:
-USE FULL LENGTH 6mm BUTT WELDS AT ALL LOCATIONS OF CONTACT BETWEEN THE BASE PLATE, SUPPORT PLATES AND STEEL POST OR STEEL TUBE.
-USE POST AND POST BASE PLATES CONFORMING TO THE REQUIREMENTS OF A.S.T.M. A-36 AND GALVANIZED AFTER FABRICATION TO CONFORM TO A.S.T.M. A-123.
-USE WOOD POSTS WHICH FIT SNUGLY IN THE STEEL TUBE WITH A MAXIMUM OF 3mm CLEARANCE BETWEEN TUBE WALL AND POST.

NEW STRUCTURES:
-ATTACH POST TO INSERT ASSEMBLY UNITS (USING ANCHOR BOLTS SUPPLIED WITH INSERTS) WHICH HAVE BEEN CAST INTO THE STUCTURE DURING CONSTRUCTION.

EXISTING STRUCTURES:
-USE CONCRETE ANCHORS CONSISTING OF A STUD BOLT WITH NUT AND WASHER. USE STUDS THREADED ON ONE END AND HAVING AN EXPANDED WEDGE ASSEMBLY POSITIONED AROUND A TAPERED AREA AT THE OTHER END. USE ANCHORS WHICH PROVIDE A MINIMUM SAFE HOLDING POWER OF 1300kg. FOR A 19mm OR 25mm DIAMETER BOLT. CALCULATE HOLDING POWER BASED ON ¼ THE ACTUAL HOLDING POWER OF THE ANCHOR IN 24MPa CONCRETE AS DETERMINED BY AN APPROVED COMMERCIAL TESTING LABORATORY.

-USE ANCHORS GALVANIZED IN ACCORDANCE WITH A.S.T.M. A-153. SIZE HOLES FOR THE CONCRETE ANCHORS IN ACCORDANCE WITH THE ANCHOR MANUFACTURER'S RECOMMENDATIONS. DRILL HOLES WITH A CARBIDE OR DIAMOND TIPPED MASONRY BIT POWERED BY A ROTARY OR ROTARY IMPACT DRILL. NO OTHER IMPACT TOOLS WILL BE PERMITTED. DRILL HOLES VERTICALLY. FURNISH DOCUMENTATION OF HOLE SIZE RECOMMENDED FOR THE SPECIFIED ANCHOR TO THE ENGINEER BEFORE DRILLING HOLES. THOROUGHLY CLEAN HOLES FOR ANCHORS OF ALL CONCRETE CHIPS, DUST, GREASE, OIL, ETC. BEFORE ANCHORS ARE INSTALLED. REPAIR ALL DAMAGE CAUSED BY THIS WORK TO THE SATISFACTION OF THE ENGINEER.

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
STRUCTURE ANCHOR UNITS
ANCHORAGE FOR GUARDRAIL POST ON BOX CULVERT

SHEET 6 OF 6 **862D03**

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HOWERTON
4/19/07

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

SEE PLATE FOR TITLE

ORIGINAL BY: 2002 STANDARDS DATE: 01-15-02
MODIFIED BY: E.E. WARD DATE: 09-14-05
CHECKED BY: DATE: 9/19/05
FILE SPEC.: stds/02stdstodetails/metric/862d03.dgn

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

METRIC

PROJECT REFERENCE NO.	SHEET NO.
B-1381	3

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C200855

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ********** (STA 51+98.000 -L- REV)
0043000000-N	226	Lump Sum		GRADING
0050000000-M	226	0.4	HA	SUPPLEMENTARY CLEARING & GRUBBING
0057000000-M	226	100	M3	UNDERCUT EXCAVATION
0134000000-M	240	9	M3	DRAINAGE DITCH EXCAVATION
0318000000-M	300	10	MTN	FOUNDATION CONDITIONING MATERIAL, MINOR STRS
0343000000-M	310	8.4	M	375MM SIDE DRAIN PIPE
0708000000-M	310	15.6	M	400MM BIT COAT CS PIPE CULVERTS, TYPE B 1.63MM THICK
0806000000-M	310	3	EA	400MM BIT COAT CS PIPE ELBOWS, TYPE B 1.63MM THICK
1220000000-M	545	25	MTN	INCIDENTAL STONE BASE
1489000000-M	610	395	MTN	ASPHALT CONC BASE COURSE, TYPE B25.0B
1525000000-M	SP	305	MTN	ASPHALT CONC SURFACE COURSE, TYPE SF9.5A
1560000000-M	620	37	MTN	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22
2022000000-M	815	55.2	M3	SUBDRAIN EXCAVATION
2033000000-M	815	41.4	M3	SUBDRAIN FINE AGGREGATE
2044000000-M	815	100	M	150MM PERFORATED SUBDRAIN PIPE
2055000000-M	815	9	EA	150MM SUBDRAIN PIPE WYES, TEES, & ELBOWS
2066000000-N	815	1	EA	CONCRETE PAD FOR SUBDRAIN PIPE OUTLET
2077000000-M	815	2	M	150MM OUTLET PIPE (SUBDRAINS)
2286000000-N	840	2	EA	MASONRY DRAINAGE STRUCTURES
2367000000-N	840	2	EA	FRAME WITH TWO GRATES, STD 840.29
2556000000-M	846	10	M	SHOULDER BERM GUTTER
3000000000-N	SP	3	EA	IMPACT ATTENUATOR UNIT, TYPE 350
3030000000-M	862	30.48	M	STEEL BM GUARDRAIL
3150000000-N	862	5	EA	ADDITIONAL GUARDRAIL POSTS
3215000000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE III
3270000000-N	SP	1	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
3649000000-M	876	29	MTN	PLAIN RIP RAP, CLASS B
3656000000-M	876	209	M2	FILTER FABRIC FOR DRAINAGE
4412000000-M	SP	35	M2	WORK ZONE SIGNS (STATIONARY)
4412200000-M	SP	10	M2	WORK ZONE SIGNS (BARRICADE MOUNTED)
4430000000-N	1130	10	EA	DRUMS
4446100000-M	SP	28	M	BARRICADES (TYPE III)
4810000000-M	1205	1,360	M	PAINT PAVEMENT MARKING LINES (100MM)
4900000000-N	1252	8	EA	PERMANENT RAISED PAVEMENT MARKERS
6000000000-M	1605	260	M	TEMPORARY SILT FENCE
6006000000-M	1610	50	MTN	STONE FOR EROSION CONTROL, CLASS A
6009000000-M	1610	80	MTN	STONE FOR EROSION CONTROL, CLASS B
6012000000-M	1610	35	MTN	SEDIMENT CONTROL STONE
6015000000-M	1615	0.5	HA	TEMPORARY MULCHING
6018000000-M	1620	25	KG	SEED FOR TEMPORARY SEEDING
6021000000-M	1620	0.25	MTN	FERTILIZER FOR TEMPORARY SEEDING
6024000000-M	1622	16	M	TEMPORARY SLOPE DRAINS
6027000000-N	1622	2	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
6029000000-M	SP	70	M	SAFETY FENCE
6030000000-M	1630	160	M3	SILT EXCAVATION
6036000000-M	1631	105	M2	MATTING FOR EROSION CONTROL
6042000000-M	1632	15	M	6.4MM HARDWARE CLOTH
6084000000-M	1660	0.5	HA	SEEDING & MULCHING
6087000000-M	1660	0.5	HA	MOWING
6090000000-M	1661	25	KG	SEED FOR REPAIR SEEDING
6093000000-M	1661	0.25	MTN	FERTILIZER FOR REPAIR SEEDING
6096000000-M	1662	25	KG	SEED FOR SUPPLEMENTAL SEEDING
6108000000-M	1665	0.5	MTN	FERTILIZER TOPDRESSING
6114000000-N	SP	2	HR	SPECIALIZED HAND MOWING
6117000000-N	1675	8	EA	RESPONSE FOR EROSION CONTROL
6147000000-M	SP	30	M	GENERIC EROSION CONTROL ITEM COIR FIBER BAFFLE

COMPUTED BY: TLW DATE: 09/06
CHECKED BY: BCF DATE: 10/06

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

METRIC

PROJECT REFERENCE NO.	SHEET NO.
B-1381	3-A

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 1200 mm & UNDER)

STATION / SIZE	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	FROM INVERT ELEVATION	TO INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 300	375	450	600	750	900	1050	1200	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) 300	400	450	600	800	900	1000	1200	375 SIDE DRAIN PIPE	ENDWALLS STD. 838.01 (UNLESS NOTED OTHERWISE) CU. METERS USING CONC. R.C.P.	C.S.P.	STD. 838.11 (UNLESS NOTED OTHERWISE) CU. METERS USING BRICK R.C.P.	C.S.P.	QUANTITIES: STRUCTURES PER EACH (0 THRU 1.50)	METERS FOR DRAINAGE * TOTAL M FOR PAY QUANTITY SHALL BE COL. A + (1.3 X COL B) A 1.50 THRU 3.00	B 3.00 AND ABOVE	TYPE OF CONSTRUCTION PERMITTED BRICK	BLOCK	CONCRETE	PRECAST	D.I. STD.840.14 OR STD.840.15	D.I. GRATES & FRAMES STD.840.16	M.D.I. TYPE "A" STD. 840.17 OR 840.26	M.D.I. TYPE "B" STD. 840.18 OR 840.27	M.D.I. TYPE "D" STD. 840.19 OR 840.28	M.D.I. GRATE & FRAME STD.840.21	M.D.I. GRATES & FRAMES STD.840.22	M.D.I.(N.S) GRATE & FRAME STD. 840.29	M.D.I.(N.S) GRATE & FRAME STD.840.24	J.B. STD.840.31 OR STD. 840.32	T.B.D.I. STD. 840.35 OR STD. 840.46	METAL FUNNEL	300MM FUNNEL DRAIN PIPE	ROD & LUG CONNECTOR	CORR. STEEL ELBOW NO. & SIZE	REMARKS
–LREV–																																														
51+61	LT	1		14.90													9.6																														
51+61	LT	1	OUT		13.98	11.97																			1																			1	2@400			
51+55	RT	2		14.87																																										
51+55	RT	2	OUT		13.95	13.50											6.0								1																			1@400			
52+54	RT	3																						8.4																							
PROJECT TOTAL																	15.6							8.4					2														1	3@400			

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
M.D.I.	MEDIAN DROP INLET
M.D.I. (N.S.)	MEDIAN DROP INLET (NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUCTION BOX

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH STRAIGHT	LENGTH SHOP CURVED	LENGTH DOUBLE FACED	WARRANT POINT APPROACH END	WARRANT POINT TRAILING END	"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH APPROACH END	FLARE LENGTH TRAILING END	W APPROACH END	W TRAILING END	ANCHORS IAU 350	ANCHORS TYPE III	ANCHORS GRAU 350	REMARKS
–LREV–	51+19.375	51+67.000	RIGHT	47.625			51+20.000		2.011	3.4	15.24		0.3			1	1	
–LREV–	51+54.885	51+67.000	LEFT	12.115			51+67.000		2.011	3.4		6.40		0.126	1	1		
–LREV–	52+29.000	52+41.115	RIGHT	12.115			52+29.000		2.011	3.4		6.40		0.126	1	1		
–LREV–	52+29.000	52+41.115	LEFT	12.115				52+29.000	2.011	3.4	6.40		0.126		1	1		
			SUB-TOTAL:	83.970											3	4	1	
	LESS DEDUCTIONS FOR ANCHOR UNITS:								5 ADDITIONAL GUARDRAIL POSTS									
	GRAU-350 1 @ 15.240 M EACH =			15.240														
	IAU 350 3 @ 6.400 M EACH =			19.200														
	TYPE III 4 @ 5.715M EACH =			22.86														
			TOTAL	26.670														
			SAY	30.480														

COMPUTED BY: BCF DATE: 10-2006
CHECKED BY: SCL DATE: 11/30/2006

PROJECT REFERENCE NO.	SHEET NO.
B-1381	3-B

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

IN CUBIC METERS

LOCATION	UNCL. EXCAVATION	UNDERCUT	EMBT + %	BORROW	WASTE
-LREV- STA. 51+05.00 TO STA. 51+67.00 (BEGIN BRIDGE)	13	0	400	387	0
-LREV- STA. 52+29.00 (END BRIDGE) TO STA. 52+74.975	55	0	59	4	0
SUBTOTAL:	68	0	459	391	0
SHOULDER BORROW	0	0	9	9	
ADDITIONAL UNDERCUT	0	100	125	125	100
PROJECT SUBTOTAL:	68	0	593	525	100
ESTIMATED 5% TO REPLACE TOPSOIL IN BORROW PIT	0	0	0	26	0
GRAND TOTAL:	68	100	593	551	100
SAY:	75			560	

SUMMARY OF ASPHALT PAVEMENT REMOVAL

LINE	STATION - STATION	LT/RT	SQ. METERS
-LREV-	51+52.000 - 51+68.223	LT/RT	98.264
-LREV-	52+28.060 - 52+39.975	LT/RT	79.228
		TOTAL	177.492
		SAY	180

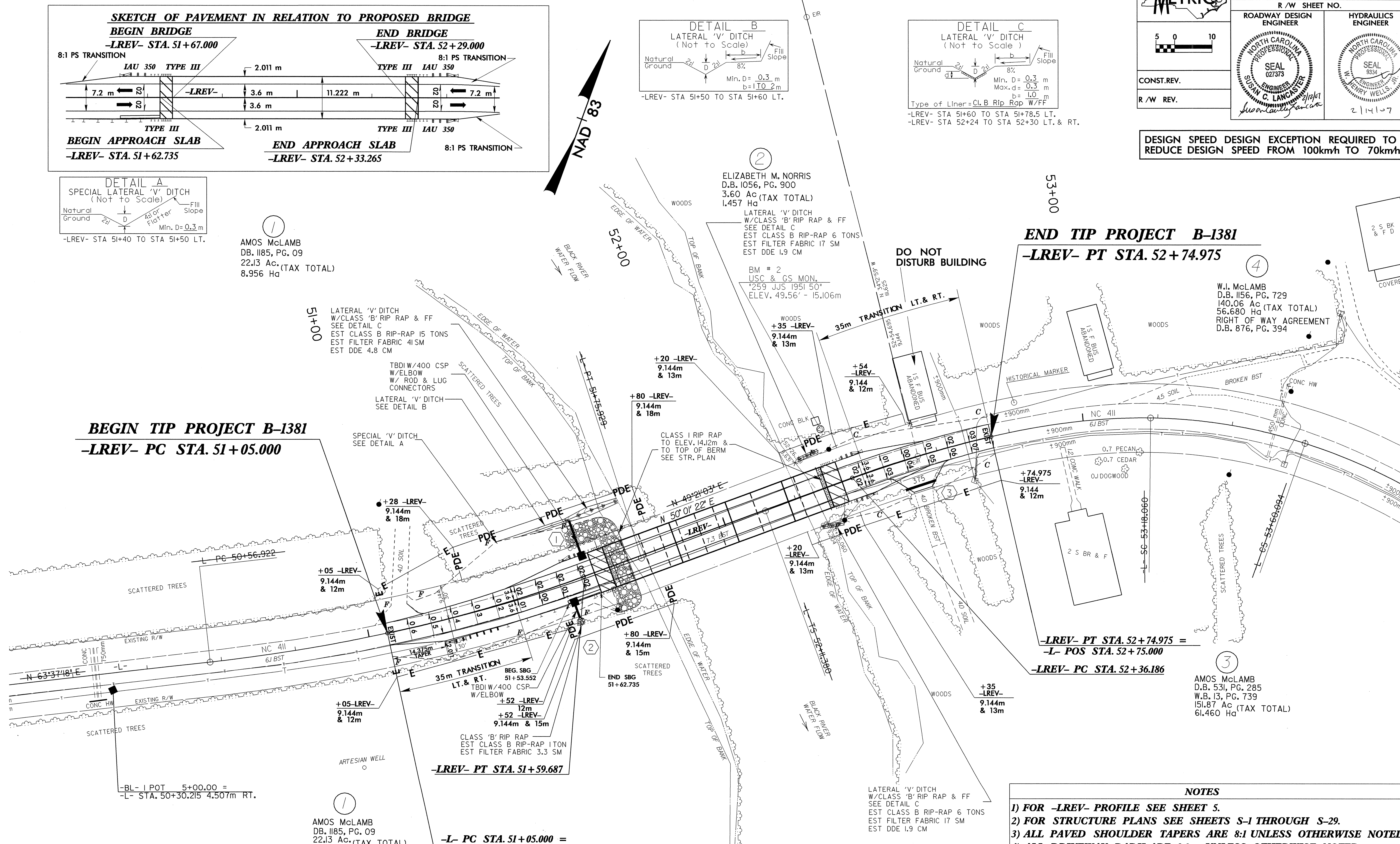
APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, BORROW EXCAVATION, CLEARING AND GRUBBING, FINE GRADING, AND REMOVAL OF EXISTING PAVEMENT WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR "GRADING."

SUMMARY OF SHOULDER BERM GUTTER

LINE	STATION - STATION	LOC	METERS
-LREV-	51+53.552 - 51+62.735	RT	9.183
		TOTAL	9.183
		SAY	10.000

METRIC	PROJECT REFERENCE NO.	SHEET NO.
	B-1381	4
	R/W SHEET NO.	
	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
CONST. REV.	SEAL 027373 SUSAN C. LANCASTER 2/12/07	SEAL 9334 W. HENRY WELLS, JR. 2/14/07
R/W REV.		

DESIGN SPEED DESIGN EXCEPTION REQUIRED TO REDUCE DESIGN SPEED FROM 100km/h TO 70km/h



NOTES

1) FOR -LREV- PROFILE SEE SHEET 5.
2) FOR STRUCTURE PLANS SEE SHEETS S-1 THROUGH S-29.
3) ALL PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
4) ALL DRIVEWAY RADII ARE 3.0m UNLESS OTHERWISE NOTED.

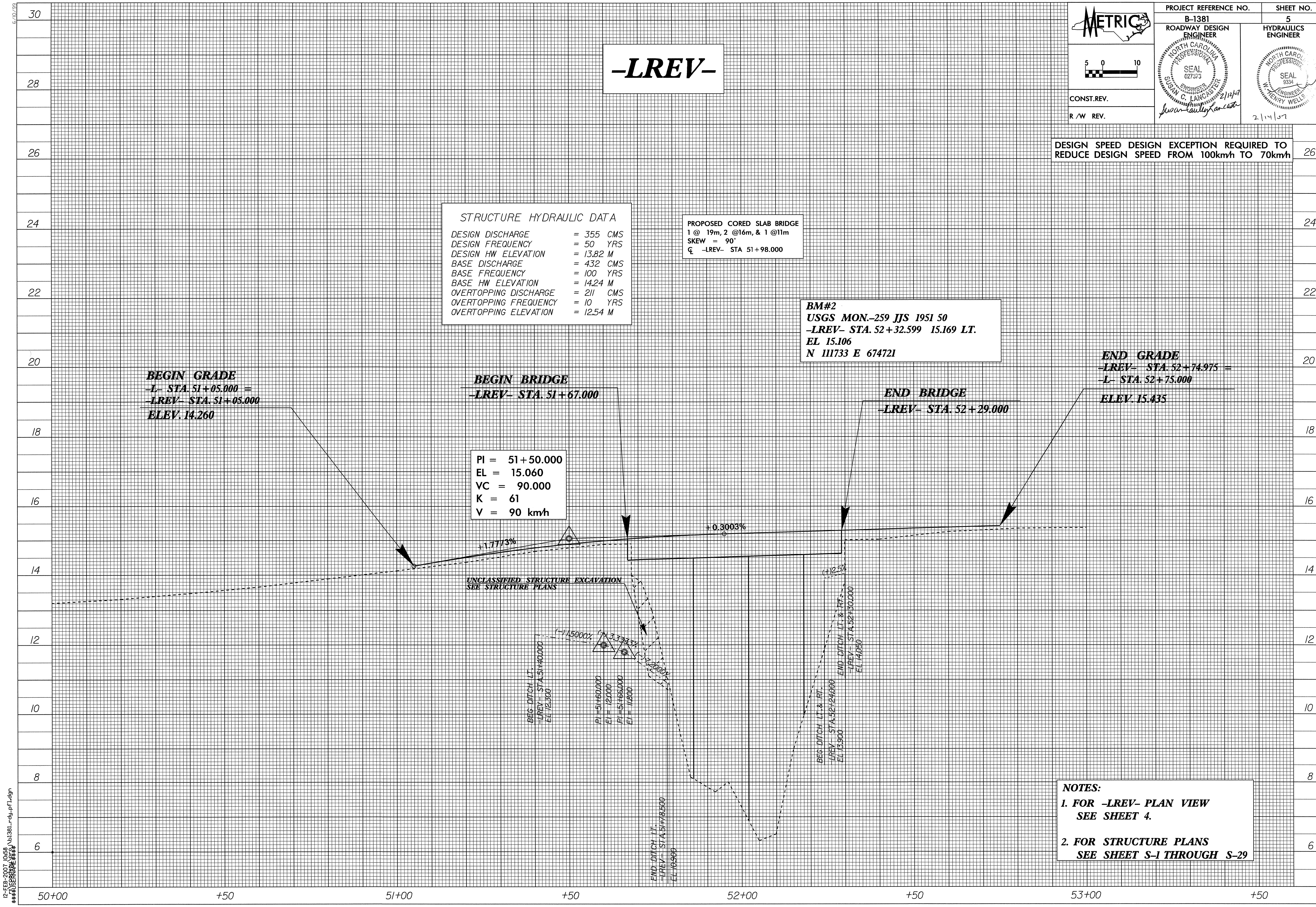
-LREV-

PI Sta 51+32.386	PI Sta 52+55.604
Δ = 7° 50' 00" (LT)	Δ = 6° 57' 20" (RT)
L = 54.687	L = 38.788
T = 27.386	T = 19.418
R = 400.000	R = 319.520
S.E. = SEE PLANS	S.E. = SEE PLANS
INC. = 6m	INC. = 6m

-L-

PI Sta 51+16.735	PIs Sta 52+83.029	PI Sta 53+39.230	PIs Sta 54+01.455
Δ = 14° 16' 15.0" (LT)	Θs = 21° 26' 48.4"	Δ = 16° 54' 01.9" (RT)	Θs = 24° 30' 38.0"
L = 119.007	Ls = 106.680	L = 42.033	Ls = 121.920
T = 59.813	LT = 71.649	T = 21.176	LT = 82.073
R = 477.800	ST = 36.042	R = 142.500	ST = 41.362

12-FEB-2007 r:\roadway\proj\b1381_rdy_psh4.dgn



-LREV-
PROJECT REFERENCE NO.
B-1381
SHEET NO.
5
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
METRIC
CONST.REV.
R /W REV.
DESIGN SPEED DESIGN EXCEPTION REQUIRED TO REDUCE DESIGN SPEED FROM 100km/h TO 70km/h
STRUCTURE HYDRAULIC DATA
DESIGN DISCHARGE = 355 CMS
DESIGN FREQUENCY = 50 YRS
DESIGN HW ELEVATION = 13.82 M
BASE DISCHARGE = 432 CMS
BASE FREQUENCY = 100 YRS
BASE HW ELEVATION = 14.24 M
OVERTOPPING DISCHARGE = 211 CMS
OVERTOPPING FREQUENCY = 10 YRS
OVERTOPPING ELEVATION = 12.54 M
PROPOSED CORED SLAB BRIDGE
1 @ 19m, 2 @16m, & 1 @11m
SKEW = 90°
℄ -LREV- STA 51+98.000
BM#2
USGS MON.-259 JJS 1951 50
-LREV- STA. 52+32.599 15.169 LT.
EL 15.106
N 111733 E 674721
BEGIN GRADE
-L- STA. 51+05.000 =
-LREV- STA. 51+05.000
ELEV. 14.260
BEGIN BRIDGE
-LREV- STA. 51+67.000
END BRIDGE
-LREV- STA. 52+29.000
END GRADE
-LREV- STA. 52+74.975 =
-L- STA. 52+75.000
ELEV. 15.435
PI = 51+50.000
EL = 15.060
VC = 90.000
K = 61
V = 90 km/h
+1.7713%
+0.3003%
UNCLASSIFIED STRUCTURE EXCAVATION
SEE STRUCTURE PLANS
NOTES:
1. FOR -LREV- PLAN VIEW SEE SHEET 4.
2. FOR STRUCTURE PLANS SEE SHEET S-1 THROUGH S-29
50+00
+50
51+00
+50
52+00
+50
53+00
+50