PROJECT: C201225 R-0609IB / R-2606A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD & RANDOLPH

ALL DIMENSIONS IN **R-0609IB** PLANS ONLY ARE IN METERS

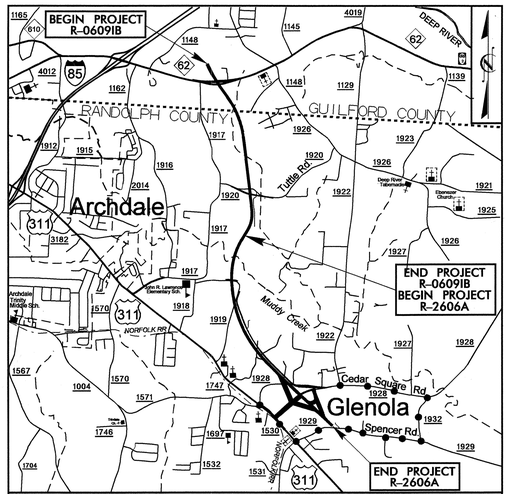
ALL DIMENSIONS IN **R-2606A** PLANS ONLY ARE IN FEET

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-0609IB /R-2606A	1	

STATE PROJ.NO.	F.A. PROJ.NO.	DESCRIPTION
34345.1.1	MAF-F-119-(1)	R-0609IB (PE)
34345.2.8	NHF-119-1(12)	R-0690IB (R/W)
34345.2.8	NHF-119-1(12)	R-0609IB (UTIL.)
34345.3.13	NHF-119-1(14)	R-0609IB (CONST.)
34480.1.1	STP-NHF-311(3)	R-2606A (PE)
34480.2.2	NHF-311(17)	R-2606A (R/W)
34480.2.2	NHF-311(17)	R-2606A (UTIL.)
34480.3.2	NHF-311(18)	R-2606A (CONST.)

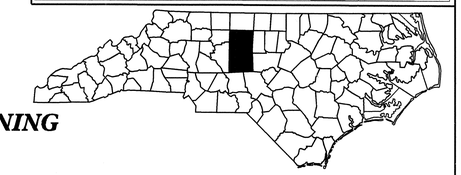
LOCATION: US-311 HIGH POINT EAST BELT FROM SOUTH OF I-85 TO NORTH OF SR-1929 (SPENCER ROAD)

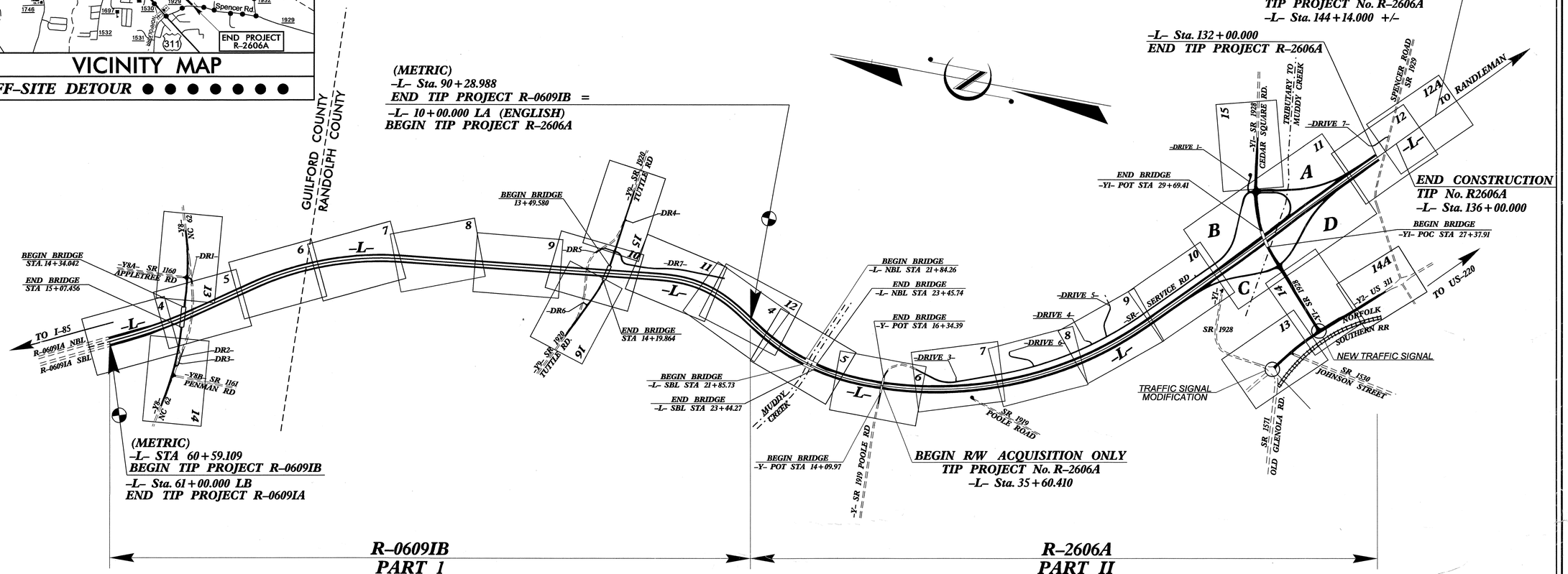
TYPE OF WORK: GRADING, DRAINAGE, PAVING, WIDENING, GUARDRAIL, CABLE GUIDERAIL, STRUCTURES, CULVERTS, SIGNALS AND SIGNING



VICINITY MAP

OFF-SITE DETOUR





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

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT R-0609IB	=	2.970 km
LENGTH OF ROADWAY TIP PROJECT R-2606A	=	2.311 MILES
TOTAL LENGTH OF TIP PROJECTS R-0609IB / R-2606A	=	6.689 km

Prepared In the Office of:

DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh, NC 27610

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE : (R-0609IB): 05-30-03
RIGHT OF WAY DATE : (R-2606A): 08-04-03

LETTING DATE: APRIL 17, 2007

R-2606A Prepared In the Office of:

EarthTech
A Tyco International Ltd. Company
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

701 Corporate Center Drive
Suite 475
Raleigh, N.C. 27607
(919)-854-6200
FAX (919)-854-6259

DESIGN EXCEPTIONS

R-0609IB: REQUIRED FOR BRIDGE WIDTH AND SAG VERTICAL CURVE ON SR 1920 TUTTLE ROAD (-Y9-)

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE HIGHWAY DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAYS ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR DATE

9/09/99

08-MAY-2006 16:48
F:\PROJ\R2606A\0609ib_r2606.tsh
$$$$$ENGINEER$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-0609IB /R-2606A	1-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JAMES STAFFORD GOODNIGHT, JR.

7-26-06

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET (R-0609IB/R-2606A)
1-A	INDEX OF SHEETS,(R-0609IB/R-2606A) GENERAL NOTES
1-B	LIST OF STANDARD DRAWINGS
2	CONVENTIONAL SYMBOLS
3	SUMMARY OF QUANTITIES
PART 1 R-0609IB	
1	TITLE SHEET (R-0609IB)
1-A THRU 1-B	SURVEY CONTROL SHEETS
1-C THRU 1-D	CENTERLINE COORDINATE LIST
2 THRU 2-B	TYPICAL SECTIONS, PAVEMENT SCHEDULE, WEDGING DETAILS
2-C	DETAILS OF DITCHES, SWALES, CROSS VANES, FALSE SUMPS, ENERGY DISSIPATOR BASINS
2D	DETAILS OF SHOULDER DRAINS, UNDERCUT AT GRADE POINTS AND CHIPPED TIRE MATERIAL
2-E THRU 2-F2	DETAILS OF REINFORCED BRIDGE APPROACH FILLS
2-G THRU 2-H1	DETAIL OF STRUCTURE ANCHOR UNITS
2- I THRU 2-L	DETAIL OF GUARDRAIL INSTALLATION
2-M THRU 2-R	DETAIL OF CABLE GUIDRAIL
2-S	DETAIL OF 14.0m MEDIAN GUIDRAIL TRANSITIONS WITH SUPERELEVATION AND / OR FALSE SUMPS
2-T THRU 2-U	DETAIL OF ASPHALT SHOULDERS AND MILLED RUMBLE STRIPS
2-V	DETAIL OF REINFORCED TAPERED INLET 2100 mm DIAMETER PIPE
2-W	DETAIL OF EXTRA DEPTH CONCRETE MEDIAN DROP INLET
2-X THRU 2-Y	DETAIL OF TEMPORARY SHORING AND FABRIC WALL
2-Z	DETAIL OF ROCK PLATING
3-A THRU 3-F	SUMMMARIES OF PIPES AND ENDWALLS
3-G	SUMMARY OF EARTHWORK
3-H	SUMMARY OF GUARDRAIL
3-I	SUMMMARIES OF SHOULDER BERM GUTTER, CABLE GUIDERAIL, ASPHALT PAVEMENT REMOVAL AND BREAKING OF EXISTING ASPHALT PAVEMENT
3-J	SUMMARY OF WOVEN WIRE FENCE
3-K	PARCEL INDEX SHEET
4 THRU 16	PLAN SHEETS
17 THRU 26	PROFILE SHEETS
TCP-1 THRU TCP-11	TRAFFIC CONTROL, MARKING AND DELINEATION PLANS
SIGN-1 THRU SIGN-9	SIGNING PLANS
EC-1 THRU EC-32	EROSION CONTROL PLANS
RF-1	REFORESTATION PLANS
UC-1 THRU UC-3	UTILITY CONSTRUCTION PLANS
UO-1 THRU UO-9	UTILITIES BY OTHERS
X-1	CROSS-SECTION INDEX
X-1A THRU X-1B	EARTHWORK VOLUMES SUMMARY
X-2 THRU X-73	CROSS SECTIONS
S-1 THRU S-76	STRUCTURE PLANS
C-1 THRU C-7	CULVERT PLANS
PART II R-2606A	
1	TITLE SHEET (R-2606A)
1-A	CENTERLINE COORDINATE LIST
1-B THRU 1-C	SURVEY CONTROL SHEETS
2	PAVEMENT SCHEDULE
2-A THRU 2-D	TYPICAL SECTIONS
2-E	SHOULDER DRAIN DETAIL
2-F	DRAINAGE DITCH DETAILS
2-G THRU 2-H	INTERSECTION DETAIL SHEETS
2-I THRU 2-L	HAZARDOUS SPILL/DRY DETENTION BASIN DETAILS
2-M	DRY DETENTION BASIN DETAIL
2-N	RIP RAP ENERGY DISSIPATOR DETAIL
2-O	SHEAR POINT DIAGRAM DETAIL
2-P	TEMPORARY TIE-IN DETAIL FOR TRAFFIC CONTROL
2-Q	STD. DETAIL FOR GRADING SUBGRADE
2-R THRU 2-U	STD. DETAIL-REINFORCED BRIDGE APPROACH FILLS
2-V	STD. DETAIL-MILLED RUMBLE STRIPS
2-W THRU 2-Z	STD. DETAIL-GUARDRAIL INSTALLATION
2-AA THRU 2-AC	STD. DETAIL-STRUCTURE ANCHOR UNITS
2-AD THRU 2-AI	DETAIL OF CABLE GUIDERAIL
2-AJ	DETAIL OF 46' MEDIAN GUIDERAIL TRANSITIONS WITH SUPERELEVATION AND/OR FALSE SUMPS
2-AK	DETAIL OF REINFORCED TAPERED INLET 24" THRU 72" DIA.
2-AL	CONCRETE ENDWALL FOR TAPERED INLET
2-AM	MODIFIED CONCETE FLUME
2-AN	CONCRETE OPEN THROAT CATCH BASIN 54" RC PIPE
3-A THRU 3-F	LIST OF PIPE, ENDWALLS, ETC. (FOR PIPES 48" AND UNDER)
3-G	LIST OF PIPE, ENDWALLS, ETC. (FOR PIPES 54" AND OVER)
3-H	SUMMARY OF EARTHWORK
3-I	GUARDRAIL SUMMARY
3-J	MISCELLANEOUS SUMMERIES (PVMT. REM., FENCE AND PIPE REMOVAL)
3-K	RIGHT OF WAY AREA DATA SHEET
3-L	PARCEL INDEX SHEET
4 THRU 15	PLAN SHEETS
16 THRU 30	PROFILE SHEETS
TCP-1 THRU TCP-16	TRAFFIC CONTROL PLANS
PM-1 THRU PM-8	PAVEMENT MARKING PLANS PLANS
EC-1 THRU EC-32	EROSION CONTROL PLANS
RF-1	REFORESTATION PLANS
SIGN-1 THRU SIGN-16	SIGNING PLANS
SIG-1 THRU SIG-17	SIGNAL PLANS
UC-1 THRU UC-6	UTILITY CONSTRUCTION PLANS
UO-1 THRU UO-10	UTILITIES BY OTHERS
C-8 THRU C-21	CULVERT PLANS
S-77 THRU S-199	STRUCTURE PLANS
XSUM-1 THRU XSUM-2	CROSS SECTION SUMMARIES
X-O THRU X-198	CROSS SECTIONS

GENERAL NOTES:

2002 SPECIFICATIONS
EFFECTIVE: 01-15-02
REVISED: 05-14-03

GRADING AND SURFACING OR RESURFACING AND WIDENING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED 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 .

THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE AREAS IN THE PLANS DESIGNATED SAFETY CLEARING. THE LIMITS ARE AS SHOWN AND THE CLEARING AND GRUBBING IS CONSIDERED A PART OF THE LUMP SUM ITEM FOR "CLEARING AND GRUBBING".

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 OR 225.05 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:

ASPHALT AND EARTH SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01 OR 560.02.

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.

BERM DITCHES:

BERM DITCHES SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 240.01 AT LOCATIONS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

UNDERDRAINS:

UNDERDRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.03 AT LOCATIONS DIRECTED BY THE ENGINEER.

SHOULDER DRAINS:

SHOULDER DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 816.02 AND DETAILS IN PLANS AT LOCATIONS DIRECTED BY THE ENGINEER.

DRIVEWAYS:

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH DETAILS IN PLANS USING 3'/900 MM RADII OR RADII AS SHOWN ON THE PLANS. LOCATIONS OF DRIVES WILL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

GUARDRAIL:

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

TEMPORARY SHORING:

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC NOT SHOWN ON THE PLANS WILL BE PAID FOR AT THE CONTRACT PRICE FOR "TEMPORARY SHORING" OR "TEMPORARY SHORING-BARRIER SUPPORTED" DEPENDING UPON THE LOCATION OF THE SHORING.

END BENTS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE:
DUKE ENERGY
NORTH STATE COMMUNICATIONS
M.C.I.
TIME WARNER CABLE

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 .

PROJECT REFERENCE NO.	SHEET NO.
R-0609IB /R-2606A	1-B

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

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JAMES STAFFORD GOODNIGHT, JR.

7-24-06

ROADWAY METRIC STANDARD DRAWINGS FOR PROJECT R-0609IB

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-Secondary And Local
225.05	Method of Obtaining Superelevation - Divided Highways
225.06	Method of Grading Sight Distance At Intersections
225.08	Earth Berm Median Pier Protection
225.09	Guide For Shoulder And Ditch Transition At Grade Separations
240.01	Guide For Berm Ditch Construction
DIVISION 3 - PIPE CULVERTS	
300.01	Method Of Pipe Instaiiation-Method 'A'
310.02	Parallel Pipe End Section - Precast Concrete Section for 375mm to 600mm Pipe
310.05	Cross Pipe End Section - Prefabricated Steel Section for 450mm to 800mm Pipe
310.10	Driveway Pipe Construction
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method Of Shoulder Construction-High Side Of Superelevated Curve-Method I
560.02	Method Of Shoulder Construction-High Side Of Superelevated Curve-Method II
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
610.03	Guide For Paving Shoulders Under Bridges-Method III
DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-Of-Way Markers
806.02	Granite Right-Of-Way Markers
815.03	Pipe Underdrain and Blind Drain
816.01	Concrete Pads - for Shoulder Drain Installation
816.02	Aggregate Shoulder Drain
816.04	Markers for Drainage Structure and Concrete Pad
820.04	Drain Installation In Shoulder Berm Gutter
838.01	Conc. Endwall For Single And Double Pipe Culverts-375mm Thru 1200mm Pipe 90 Skew
838.11	Brick Endwall For Single And Double Pipe Culverts-375mm Thru 1200mm Pipe 90 Skew
838.80	Precast Endwalls-300mm Thru 1800mm Pipe 90 Skew
840.00	Concrete Base Pad for Drainage Structures
840.17	Concrete Median Drop Inlet Type 'A' - 300mm thru 1800mm Pipe
840.18	Concrete Median Drop Inlet Type 'B' - 300mm thru 900mm Pipe
840.19	Concrete Median Drop Inlet Type 'D' - 300mm thru 900mm Pipe
840.20	Frames and Wide Slot Flat Grates
840.22	Frames and Wide Slot Sag Grates
840.24	Frames and Narrow Slot Sag Grates
840.25	Anchorage For Frames-Brick Or Concrete
840.26	Brick Median Drop Inlet Type 'A' - 300mm thru 1800mm Pipe
840.27	Brick Median Drop Inlet Type 'B' - 300mm thru 900mm Pipe
840.28	Brick Median Drop Inlet Type 'D' - 300mm thru 900mm Pipe
840.29	Frames and Narrow Slot Flat Grates
840.45	Precast Drainage Structure
840.51	Brick Manhole-300mm Thru 900mm Pipe
840.53	Precast Manhole With Masonry Base-300mm Thru 1050mm Pipe
840.54	Manhole Frame And Cover
840.66	Drainage Structure Steps
840.71	Concrete and Brick Pipe Plug
840.72	Pipe Collar
846.01	Concrete Curb, Gutter And Curb And Gutter
848.04	Street Turnout
850.01	Concrete Paved Ditches
850.10	Guide For Berm Ditch Outlet-400mm And 450mm Pipe
862.01	Guardrail Placement
866.02	Woven Wire Fence - with Wood Post
866.03	Woven Wire Fence - with Steel Posts
876.01	Rip Rap In Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.03	Drainage Ditches with Class 'A' Rip Rap
876.04	Drainage Ditches with Class 'B' Rip Rap

ROADWAY ENGLISH STANDARD DRAWINGS FOR PROJECT R-2606A

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
225.03	Deceleration and Acceleration Lanes
225.04	Method Of Obtaining Superelevation-Secondary And Local
225.05	Method of Obtaining Superelevation - Divided Highways
225.06	Method of Grading Sight Distance At Intersections
225.08	Earth Berm Median Pier Protection
225.09	Guide For Shoulder And Ditch Transition At Grade Separations
240.01	Guide For Berm Ditch Construction
DIVISION 3 - PIPE CULVERTS	
300.01	Method Of Pipe Installation-Method 'A'
310.03	Cross Pipe End Section - Precast Concrete Section for 18" to 30" Pipe
310.10	Driveway Pipe Construction
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method Of Shoulder Construction-High Side Of Superelevated Curve-Method I
560.02	Method Of Shoulder Construction-High Side Of Superelevated Curve-Method II
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
610.03	Guide For Paving Shoulders Under Bridges-Method III
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-Of-Way Markers
806.02	Granite Right-Of-Way Markers
815.03	Pipe Underdrain and Blind Drain
816.01	Concrete Pads - for Shoulder Drain Installation
816.02	Aggregate Shoulder Drain
816.04	Markers for Drainage Structure and Concrete Pad
820.04	Drain Installation In Shoulder Berm Gutter
838.01	Conc. Endwall For Single And Double Pipe Culverts-15" Thru 48" Pipe 90 Skew
838.02	Concrete Endwall And Sluice Gate-15" Thru 36" Pipe 90 Skew
838.11	Brick Endwall For Single And Double Pipe Culverts-15" Thru 48" Pipe 90 Skew
838.45	Notes For Reinforced Concrete Endwall-Std. Dwg. 838.21 Thru 838.40
838.57	Reinforced Brick Endwall-For Single 60" Pipe 90 Skew
838.75	Notes For Reinforced Brick Endwall-Std. Dwg. 838.51 Thru 838.70
838.80	Precast Endwalls-12" Thru 72" Pipe 90 Skew
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin-12" Thru 54" Pipe
840.02	Concrete Catch Basin-12" Thru 54" Pipe
840.03	Frame, Grates And Hood-For Use On Standard Catch Basin
840.14	Concrete Drop Inlet-12" Thru 30" Pipe
840.15	Brick Drop Inlet-12" Thru 30" Pipe
840.16	Drop Inlet Frame And Grates-For Use With Std. Dwg. 840.14 And 840.15
840.17	Concrete Median Drop Inlet Type 'A' - 12" Thru 72" Pipe
840.18	Concrete Median Drop Inlet Type 'B' - 12" Thru 36" Pipe
840.19	Concrete Median Drop Inlet Type 'D' - 12" Thru 36" pipe
840.22	Frames and Wide Slot Sag Grates
840.25	Anchorage For Frames-Brick Or Concrete
840.26	Brick Median Drop Inlet Type 'A' - 12" Thru 72" Pipe
840.27	Brick Median Drop Inlet Type 'B' - 12" Thru 36" Pipe
840.28	Brick Median Drop Inlet Type 'D' - 12" Thru 36" Pipe
840.31	Concrete Junction Box-12" Thru 66" Pipe
840.32	Brick Junction Box-12" Thru 66" Pipe
840.45	Precast Drainage Structure
840.54	Manhole Frame And Cover
840.66	Drainage Structure Steps
840.71	Concrete and Brick Pipe Plug
840.72	Pipe Collar
846.01	Concrete Curb, Gutter And Curb And Gutter
850.10	Guide For Berm Ditch Outlet-15" And 18" Pipe
852.01	Concrete Islands
852.02	Concrete Mountable Median-For Use With Ridgid Or Flexable Pavement
852.06	Method For Placement Of Drop Inlets In Concrete Islands
862.01	Guardrail Placement
866.02	Woven Wire Fence - with Wood Post
866.03	Woven Wire Fence - with Steel Posts
876.01	Rip Rap In Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.03	Drainage Ditches with Class 'A' Rip Rap
876.04	Drainage Ditches with Class 'B' Rip Rap

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJ. REFERENCE NO.	SHEET NO.
R-0609IB & R-2606A	2

*S.U.E = SUBSURFACE UTILITY ENGINEER

CONVENTIONAL SYMBOLS

ROADS & RELATED ITEMS

Edge of Pavement
Curb
Prop. Slope Stakes Cut — C
Prop. Slope Stakes Fill — F
Prop. Woven Wire Fence
Prop. Chain Link Fence
Prop. Barbed Wire Fence
Prop. Wheelchair Ramp — WCR
Curb Cut For Future Wheelchair Ramp — CFFR
Exist. Guardrail
Prop. Guardrail
Exist. Cable Guiderail
Prop. Cable Guiderail
Equality Symbol
Pavement Removal

RIGHT OF WAY

Baseline Control Point
Existing Right of Way Marker
Exist. Right of Way Line w/Marker
Prop. Right of Way Line with Proposed R/W marker (Iron Pin & Cap)
Prop. Right of Way Line with Proposed (Concrete or Granite) R/w Marker
Exist. Control of Access Line — CA
Prop. Control of Access Line — CA
Exist. Easement Line — E
Prop. Temp. Construction Easement Line — E
Prop. Temp. Drainage Easement Line — TDE
Prop. Perm. Drainage Easement Line — PDE

HYDROLOGY

Stream or Body of Water
River Basin Buffer — BZ
Flow Arrow
Disappearing Stream
Spring
Swamp Marsh
Shoreline
Falls, Rapids
Prop Lateral, Tail, Head Ditches — FLOW

STRUCTURES

MAJOR
Bridge, Tunnel, or Box Culvert — CONC
Bridge Wing Wall, Head Wall and End Wall — CONC WW

MINOR
Head & End Wall — CONC HW
Pipe Culvert
Footbridge
Drainage Boxes — CB
Paved Ditch Gutter

UTILITIES

Exist. Pole
Exist. Power Pole
Prop. Power Pole
Exist. Telephone Pole
Prop. Telephone Pole
Exist. Joint Use Pole
Prop. Joint Use Pole
Telephone Pedestal — T
Cable TV Pedestal — C
Hydrant
Satellite Dish
Exist. Water Valve
Sewer Clean Out
Power Manhole — P
Telephone Booth
Water Manhole — W
Light Pole
H-Frame Pole
Power Line Tower
Pole with Base
Gas Valve
Gas Meter
Telephone Manhole — T
Power Transformer
Sanitary Sewer Manhole
Storm Sewer Manhole — S
Tank; Water, Gas, Oil
Water Tank With Legs
Traffic Signal Junction Box — S
Fiber Optic Splice Box — F
Television or Radio Tower
Utility Power Line Connects to Traffic Signal Lines Cut Into the Pavement — TS TS

Recorded Water Line — W W
Designated Water Line (S.U.E.*) — W W
Sanitary Sewer — SS SS
Recorded Sanitary Sewer Force Main — FSS FSS
Designated Sanitary Sewer Force Main(S.U.E.*) — FSS FSS
Recorded Gas Line — G G
Designated Gas Line (S.U.E.*) — G G
Storm Sewer — S S
Recorded Power Line — P P
Designated Power Line (S.U.E.*) — P P
Recorded Telephone Cable — T T
Designated Telephone Cable (S.U.E.*) — T T
Recorded U/G Telephone Conduit — TC TC
Designated U/G Telephone Conduit (S.U.E.*) — TC TC
Unknown Utility (S.U.E.*) — ?UTL ?UTL
Recorded Television Cable — TV TV
Designated Television Cable (S.U.E.*) — TV TV
Recorded Fiber Optics Cable — FO FO
Designated Fiber Optics Cable (S.U.E.*) — FO FO
Exist. Water Meter — O
U/G Test Hole (S.U.E.*)
Abandoned According to U/G Record — ATTUR
End of Information — E.O.I.

BOUNDARIES & PROPERTIES

State Line
County Line
Township Line
City Line
Reservation Line
Property Line
Property Line Symbol — PL
Exist. Iron Pin — EIP
Property Corner
Property Monument — ECM
Property Number — 123
Parcel Number — 6
Fence Line — WW & ISBW
Existing Wetland Boundaries — WLB
Proposed Wetland Boundaries — WLB
Existing Endangered Animal Boundaries — EAB
Existing Endangered Plant Boundaries — EPB

BUILDINGS & OTHER CULTURE

Buildings
Foundations
Area Outline
Gate
Gas Pump Vent or U/G Tank Cap
Church
School
Park
Cemetery
Dam
Sign
Well
Small Mine
Swimming Pool

TOPOGRAPHY

Loose Surface
Hard Surface
Change in Road Surface
Curb
Right of Way Symbol — R/W
Guard Post — GP
Paved Walk
Bridge
Box Culvert or Tunnel
Ferry
Culvert
Footbridge
Trail, Footpath
Light House

VEGETATION

Single Tree
Single Shrub
Hedge
Woods Line
Orchard
Vineyard — VINEYARD

RAILROADS

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

revised 2/25/97

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STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C201225

STATE OF NORTH CAROLINA
SUMMARY OF QUANTITIES

PROJECT REFERENCE No.	SHEET No.
R-6091B / R-2606A	3 (1 OF 3)

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0000400000-N	801	Lump Sum		CONSTRUCTION SURVEYING
0000700000-N	SP	Lump Sum		FIELD OFFICE
0000920000-M	SP	8,995	M3	GENERIC MISCELLANEOUS ITEM CHIPPED TIRE MATERIAL
0001000000-M	200	Lump Sum		CLEARING & GRUBBING ... HEC-TARE(S)
0008000000-M	200	2.4	HA	SUPPLEMENTARY CLEARING & GRUB-BING
0015000000-N	205	15	EA	SEALING ABANDONED WELLS
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ********** (13+84.694-Y8-)
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ********** (13+84.722-Y9-)
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ********** (22+65.00 -L-, RT)
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ********** (22+65.00 -L-, LT)
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ********** (28+52.41 -Y1-)
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ********** (35+60.41 -Y-)
0036000000-M	225	16,896	M3	UNDERCUT EXCAVATION
0080000000-M	SP	500	MTN	CLASS IV SUBGRADE STABILIZA-TION
0134000000-M	240	10,834	M3	DRAINAGE DITCH EXCAVATION
0141000000-M	240	220	M	BERM DITCH CONSTRUCTION
0156000000-M	250	7,939	M2	REMOVAL OF EXISTING ASPHALT PAVEMENT
0177000000-M	250	1,354	M2	BREAKING OF EXISTING ASPHALT PAVEMENT
0192000000-N	260	55	HR	PROOF ROLLING
0195000000-M	265	4,382	M3	SELECT GRANULAR MATERIAL
0196000000-M	270	4,918	M2	FABRIC FOR SOIL STABILIZATION
0206000000-M	SP	100	M2	TEMPORARY SHORING - BARRIER SUPPORTED
0312000000-M	300	295	MTN	SELECT MATERIAL, CLASS IV
0318000000-M	300	2,656	MTN	FOUNDATION CONDITIONING MATE-RIAL, MINOR STRS
0343000000-M	310	238.5	M	375MM SIDE DRAIN PIPE
0344000000-M	310	158.2	M	450MM SIDE DRAIN PIPE
0345000000-M	310	31.7	M	600MM SIDE DRAIN PIPE
0390000000-M	310	398	M	900MM RC PIPE CULVERTS, CLASS III
0396000000-M	310	163.3	M	1050MM RC PIPE CULVERTS, CLASS III
0408000000-M	310	54.8	M	1350MM RC PIPE CULVERTS, CLASS III
0414000000-M	310	195	M	1500MM RC PIPE CULVERTS, CLASS III
0420000000-M	310	141.4	M	1650MM RC PIPE CULVERTS, CLASS III
0438000000-M	310	81.6	M	2100MM RC PIPE CULVERTS, CLASS III
0448000000-M	310	56	M	****MM RC PIPE CULVERTS, CLASS IV (1050MM)
0448000000-M	310	178	M	****MM RC PIPE CULVERTS, CLASS IV (1350MM)
0448000000-M	310	205.2	M	****MM RC PIPE CULVERTS, CLASS IV (750MM)
0448000000-M	310	107.2	M	****MM RC PIPE CULVERTS, CLASS IV (900MM)
0453000000-M	310	1	EA	***MM PIPE END SECTION (450MM)
0453000000-M	310	1	EA	***MM PIPE END SECTION (750MM)
0480000000-M	SP	2	EA	1500 X 900MM RC PIPE TAPERED INLET, CLASS III
0504000000-M	SP	1	EA	2100 X 1500MM RC PIPE TAPERED INLET, CLASS III
0594000000-M	310	51.2	M	600MM CS PIPE CULVERTS, 1.63MM THICK
0600000000-M	310	79.4	M	800MM CS PIPE CULVERTS, 2.01MM THICK
0706000000-M	310	109.2	M	300MM BIT COAT CS PIPE CUL-VERTS, TYPE B 1.63MM THICK
0708000000-M	310	378	M	400MM BIT COAT CS PIPE CUL-VERTS, TYPE B 1.63MM THICK
0714000000-M	310	20.7	M	450MM BIT COAT CS PIPE CUL-VERTS, TYPE B 1.63MM THICK
0720000000-M	310	25.2	M	600MM BIT COAT CS PIPE CUL-VERTS, TYPE B 1.63MM THICK
0726000000-M	310	64.4	M	800MM BIT COAT CS PIPE CUL-VERTS, TYPE B 2.01MM THICK
0732000000-M	310	40.2	M	900MM BIT COAT CS PIPE CUL-VERTS, TYPE B 2.01MM THICK
0744000000-M	310	62.4	M	1200MM BIT COAT CS PIPE CUL-VERTS, TYPE B 2.77MM THICK
0804000000-M	310	2	EA	***MM BIT COAT CS PIPE ELBOWS, TYPE B ****MM THICK (900MM, 2.01MM)
0805000000-M	310	14	EA	300MM BIT COAT CS PIPE ELBOWS, TYPE B 1.63MM THICK
0806000000-M	310	26	EA	400MM BIT COAT CS PIPE ELBOWS, TYPE B 1.63MM THICK
0807000000-M	310	1	EA	450MM BIT COAT CS PIPE ELBOWS, TYPE B 1.63MM THICK
0809000000-M	310	2	EA	800MM BIT COAT CS PIPE ELBOWS, TYPE B 2.01MM THICK
0995000000-M	340	377.6	M	PIPE REMOVAL
1000000000-M	462	353	M2	150MM SLOPE PROTECTION
1004000000-M	462	375	M2	GENERIC GRADING ITEM 100MM SLOPE PROTECTION
1011000000-N	500	Lump Sum		FINE GRADING
1044000000-M	501	65,855	M2	LIME TREATED SOIL (SLURRY METHOD)
1066000000-M	501	724	MTN	LIME FOR LIME TREATED SOIL
1077000000-M	SP	38	MTN	#57 STONE
1110000000-M	510	953	MTN	STABILIZER AGGREGATE
1176000000-M	542	80,535	M2	***MM SOIL CEMENT BASE (180MM)
1187000000-M	542	2,428	MTN	PORTLAND CEMENT FOR SOIL CE-MENT BASE
1198000000-M	SP	564	MTN	AGGREGATE FOR SOIL CEMENT BASE
1209000000-M	543	99,533	L	ASPHALT CURING SEAL
1220000000-M	545	772	MTN	INCIDENTAL STONE BASE
1275000000-M	600	10,583	L	PRIME COAT
1489000000-M	610	1,634	MTN	ASPHALT CONC BASE COURSE, TYPE B25.0B
1498000000-M	610	8,636	MTN	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B
1519000000-M	610	7,625	MTN	ASPHALT CONC SURFACE COURSE, TYPE S9.5B
1523000000-M	610	27,799	MTN	ASPHALT CONC SURFACE COURSE, TYPE S9.5C
1525000000-M	SP	1,250	MTN	ASPHALT CONC SURFACE COURSE, TYPE SP9.5A
1565000000-M	620	1,717	MTN	ASPHALT BINDER FOR PLANT MIX, GRADE PG 70-22
1693000000-M	654	181	MTN	ASPHALT PLANT MIX PAVEMENT REPAIR
1840000000-M	665	20,586	M	MILLED RUMBLE STRIPS
2000000000-N	806	255	EA	RIGHT OF WAY MARKERS
2022000000-M	815	1,521	M3	SUBDRAIN EXCAVATION
2033000000-M	815	850	M3	SUBDRAIN FINE AGGREGATE
2044000000-M	815	2,021	M	150MM PERFORATED SUBDRAIN PIPE
2055000000-M	815	201	EA	150MM SUBDRAIN PIPE WYES, TEES, & ELBOWS
2066000000-N	815	13	EA	CONCRETE PAD FOR SUBDRAIN PIPE OUTLET
2077000000-M	815	24	M	150MM OUTLET PIPE (SUBDRAINS)
2099000000-M	816	5,529	M	SHOULDER DRAIN
2110000000-M	816	5,529	M	100MM SHOULDER DRAIN PIPE
2121000000-M	816	615	M	100MM OUTLET PIPE (SHOULDER DRAINS)
2132000000-N	816	25	EA	CONCRETE PAD FOR SHOULDER DRAIN PIPE OUTLET
2143000000-M	818	28	MTN	BLOTTING SAND
2209000000-M	838	45.46	M3	ENDWALLS
2220000000-M	838	27.53	M3	REINFORCED ENDWALLS
2253000000-M	840	1.53	M3	PIPE COLLARS
2286000000-N	840	152	EA	MASONRY DRAINAGE STRUCTURES
2297000000-M	840	6.87	M3	MASONRY DRAINAGE STRUCTURES
2308000000-M	840	25.86	M	MASONRY DRAINAGE STRUCTURES
2354000000-N	840	4	EA	FRAME WITH GRATE, STD 840.22
2364000000-N	840	3	EA	FRAME WITH TWO GRATES, STD 840.16
2364200000-N	840	15	EA	FRAME WITH TWO GRATES, STD 840.20
2365000000-N	840	113	EA	FRAME WITH TWO GRATES, STD 840.22
2366000000-N	840	5	EA	FRAME WITH TWO GRATES, STD 840.24
2367000000-N	840	11	EA	FRAME WITH TWO GRATES, STD 840.29
2374000000-N	840	3	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (E)
2396000000-N	840	1	EA	FRAME WITH COVER, STD 840.54
2451000000-N	840	1	EA	CONCRETE APRON FOR DROP INLETS
2462000000-M	SP	2	EA	***MM SLUICE GATE (800MM)
2462000000-M	SP	5	EA	***MM SLUICE GATE (900MM)
2474000000-N	SP	Lump Sum		GENERIC DRAINAGE ITEM HAZARDOUS SPILL/DRY DETENTION BASINS
2529000000-M	SP	310	M2	GENERIC GRADING ITEM (M2) ROCK PLATING
2529000000-M	SP	280	M2	GENERIC GRADING ITEM (M2) TEMPORARY FABRIC WALL
2549000000-M	846	323	M	750MM CONCRETE CURB & GUTTER
2556000000-M	846	2,388	M	SHOULDER BERM GUTTER
2570000000-N	SP	1	EA	MODIFIED CONCRETE FLUME

STATE OF NORTH CAROLINA
SUMMARY OF QUANTITIES

PROJECT REFERENCE No.	SHEET No.
R-6091B / R-2606A	3 (2 OF 3)

ItemNumber	Sec #	Quantity	Unit	Description
2612000000-M	848	100	M2	150MM CONCRETE DRIVEWAY
2619000000-M	850	30	M2	100MM CONCRETE PAVED DITCH
2655000000-M	852	2,140	M2	125MM MONOLITHIC CONCRETE ISLANDS (KEYED IN)
3030000000-M	862	6,130.29	M	STEEL BM GUARDRAIL
3045000000-M	862	217.17	M	STEEL BM GUARDRAIL, SHOP CURVED
3105000000-N	862	8	EA	STEEL BM GUARDRAIL TERMINAL SECTIONS
3150000000-N	862	20	EA	ADDITIONAL GUARDRAIL POSTS
3195000000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE AT-1
3210000000-N	862	13	EA	GUARDRAIL ANCHOR UNITS, TYPE CAT-1
3215000000-N	862	22	EA	GUARDRAIL ANCHOR UNITS, TYPE III
3270000000-N	SP	41	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
3285000000-N	SP	2	EA	GUARDRAIL ANCHOR UNITS, TYPE M-350
3389200000-M	865	5,565	M	CABLE GUIDERAIL
3389600000-N	865	23	EA	CABLE GUIDERAIL ANCHOR UNITS
3503000000-M	866	15,041	M	WOVEN WIRE FENCE, 1200MM FABRIC
3509000000-M	866	2,878	EA	100MM TIMBER FENCE POSTS, 2.30M LONG
3515000000-M	866	825	EA	125MM TIMBER FENCE POSTS, 2.50M LONG
3557000000-M	866	600	M	ADDITIONAL BARBED WIRE
3628000000-M	876	921	MTN	PLAIN RIP RAP, CLASS I
3635000000-M	876	145	MTN	PLAIN RIP RAP, CLASS II
3642000000-M	876	34	MTN	PLAIN RIP RAP, CLASS A
3649000000-M	876	1,308	MTN	PLAIN RIP RAP, CLASS B
3651000000-M	SP	245	MTN	BOULDERS
3656000000-M	876	17,745	M2	FILTER FABRIC FOR DRAINAGE
3659000000-N	SP	13	EA	PREFORMED SCOUR HOLES WITH LEVEL SPREADER APRON
3691000000-N	SP	2	EA	GENERIC EROSION CONTROL ITEM LEVEL SPREADER
4048000000-M	902	3	M3	REINFORCED CONCRETE SIGN FOOTINGS
4060000000-M	903	1,418	KG	SUPPORTS, BREAKAWAY STEEL BEAM
4072000000-M	903	413	M	SUPPORTS, 4.5KG STEEL U-CHANNEL
4078000000-M	903	8	EA	SUPPORTS, 3KG STEEL U-CHANNEL
4082200000-N	SP	Lump Sum		OVERHEAD SIGN ASSEMBLY AT STA ********* (74+00.00)
4082200000-N	SP	Lump Sum		OVERHEAD SIGN ASSEMBLY AT STA ********* (90+20.00)
4096000000-N	904	8	EA	SIGN ERECTION, TYPE D
4102000000-N	904	36	EA	SIGN ERECTION, TYPE E
4108000000-N	904	17	EA	SIGN ERECTION, TYPE F
4110000000-N	904	5	EA	SIGN ERECTION, TYPE *** (GROUND MOUNTED) (A)
4110000000-N	904	2	EA	SIGN ERECTION, TYPE *** (GROUND MOUNTED) (B)
4114000000-N	904	8	EA	SIGN ERECTION, MILEMARKERS
4365000000-M	SP	46.21	M3	GENERIC SIGNING ITEM OVERHEAD FOOTINGS
4412000000-M	SP	44	M2	WORK ZONE SIGNS (STATIONARY)
4412100000-M	SP	46	M2	WORK ZONE SIGNS (PORTABLE)
4412200000-M	SP	29	M2	WORK ZONE SIGNS (BARRICADE MOUNTED)
4415000000-N	1115	2	EA	FLASHING ARROW PANELS, TYPE C
4420000000-N	1120	1	EA	CHANGEABLE MESSAGE SIGN
4425000000-N	1125	4	EA	WARNING FLAG SETS
4430000000-N	1130	305	EA	DRUMS
4435000000-N	1135	124	EA	CONES
4446100000-M	SP	417	M	BARRICADES (TYPE III)
4455000000-N	1150	225	MD	FLAGGER
4465000000-N	1160	6	EA	TEMPORARY CRASH CUSHIONS
4475000000-N	1165	2	EA	TRUCK MOUNTED IMPACT ATTENUATOR (45 MPH)
4485000000-M	1170	315	M	PORTABLE CONCRETE BARRIER
4520000000-N	1266	44	EA	TUBULAR MARKERS (FIXED)
4650000000-N	1251	615	EA	TEMPORARY RAISED PAVEMENT MARKERS
4685000000-M	1205	3,850	M	THERMOPLASTIC PAVEMENT MARKING LINES (100MM, 2.3MM)
4686000000-M	1205	3,596	M	THERMOPLASTIC PAVEMENT MARKING LINES (100MM, 3.1MM)
4695000000-M	1205	170	M	THERMOPLASTIC PAVEMENT MARKING LINES (200MM, 2.3MM)
4710000000-M	1205	9	M	THERMOPLASTIC PAVEMENT MARKING LINES (600MM, 3.1MM)
4725000000-M	1205	12	EA	THERMOPLASTIC PAVEMENT MARKING SYMBOL (2.3MM)
4810000000-M	1205	82,426	M	PAINT PAVEMENT MARKING LINES (100MM)
4820000000-M	1205	271	M	PAINT PAVEMENT MARKING LINES (200MM)
4835000000-M	1205	120	M	PAINT PAVEMENT MARKING LINES (600MM)
4840000000-N	1205	4	EA	PAINT PAVEMENT MARKING CHARACTER
4845000000-N	1205	24	EA	PAINT PAVEMENT MARKING SYMBOL
4847000000-M	SP	18,001	M	POLYUREA PAVEMENT MARKING LINES (100MM)
4847100000-M	SP	14,130	M	POLYUREA PAVEMENT MARKING LINES (150MM)
4847220000-N	SP	29	EA	POLYUREA PAVEMENT MARKING SYMBOL
4850000000-M	1205	1,067	M	REMOVAL OF PAVEMENT MARKING LINES (100MM)
4900000000-N	1252	665	EA	PERMANENT RAISED PAVEMENT MARKERS
4905000000-N	1253	495	EA	SNOWPLOWABLE PAVEMENT MARKERS
4935000000-N	1267	20	EA	FLEXIBLE DELINEATORS (CRYSTAL)
4940000000-N	1267	25	EA	FLEXIBLE DELINEATORS (YELLOW)
4945000000-N	1267	5	EA	FLEXIBLE DELINEATORS (CRYSTAL & RED)
4950000000-N	1267	5	EA	FLEXIBLE DELINEATORS (YELLOW & RED)
4955000000-N	1264	6	EA	OBJECT MARKERS (END OF ROAD)
5300000000-M	1505	2	MTN	FOUNDATION CONDITIONING MATERIAL, UTILITIES CLASS ******** (VI)
5306000000-M	SP	2	MTN	BEDDING MATERIAL, UTILITIES CLASS ********** (IV)
5318000000-M	1505	20	MTN	PAVEMENT REPAIR FOR UTILITY WORK
5360000000-M	1510	21	M	150MM DI WATER PIPE, PC 2.41MPA
5384000000-M	1510	36.7	M	400MM DI WATER PIPE, PC ***MPA (2.41MPA)
5402000000-M	1510	2,100	KG	DI RESTRAINED JOINT WATER PIPE FITTINGS, 1.72MPA MIN WP
5414000000-M	1510	9.5	M	20MM COPPER WATER PIPE, TYPE K
5648000000-N	1510	1	EA	RELOCATE EXISTING WATER METER
5672000000-N	1510	2	EA	RELOCATE EXISTING FIRE HYDRANT
5840000000-M	1540	72	M	***MM STEEL ENCASEMENT PIPE, ****MM THICK, BY OPEN CUT (600MM, 6.35MM)
6000000000-M	1605	6,734	M	TEMPORARY SILT FENCE
6006000000-M	1610	2,883	MTN	STONE FOR EROSION CONTROL, CLASS A
6009000000-M	1610	21,496	MTN	STONE FOR EROSION CONTROL, CLASS B
6012000000-M	1610	10,443	MTN	SEDIMENT CONTROL STONE
6015000000-M	1615	72.2	HA	TEMPORARY MULCHING
6018000000-M	1620	3,289	KG	SEED FOR TEMPORARY SEEDING
6021000000-M	1620	26.25	MTN	FERTILIZER FOR TEMPORARY SEEDING
6024000000-M	1622	1,651	M	TEMPORARY SLOPE DRAINS
6027000000-N	1622	114	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
6029000000-M	SP	5,614	M	SAFETY FENCE
6030000000-M	1630	346,926	M3	SILT EXCAVATION
6036000000-M	1631	27,868	M2	MATTING FOR EROSION CONTROL
6037000000-M	SP	210	M2	COIR FIBER MAT
6038000000-M	SP	7,432	M2	PERMANENT SOIL REINFORCEMENT MAT
6042000000-M	1632	718	M	6.4MM HARDWARE CLOTH
6045000000-M	SP	30	M	***MM TEMPORARY PIPE (450MM)
6069000000-M	1638	1,233	M3	STILLING BASINS
6084000000-M	1660	87.4	HA	SEEDING & MULCHING
6087000000-M	1660	41.4	HA	MOWING
6090000000-M	1661	779	KG	SEED FOR REPAIR SEEDING
6093000000-M	1661	3.29	MTN	FERTILIZER FOR REPAIR SEEDING
6096000000-M	1662	2,188	KG	SEED FOR SUPPLEMENTAL SEEDING
6108000000-M	1665	146.25	MTN	FERTILIZER TOPDRESSING
6111000000-M	SP	186	M	IMPERVIOUS DIKE
6114000000-N	SP	37	HR	SPECIALIZED HAND MOWING
6120000000-M	SP	2,469	M3	CULVERT DIVERSION CHANNEL
6123000000-M	1670	2.62	HA	REFORESTATION
6132000000-N	SP	3	EA	GENERIC EROSION CONTROL ITEM 102MM SKIMMER
6132000000-N	SP	23	EA	GENERIC EROSION CONTROL ITEM 51MM SKIMMER
6132000000-N	SP	9	EA	GENERIC EROSION CONTROL ITEM 64MM SKIMMER
6132000000-N	SP	7	EA	GENERIC EROSION CONTROL ITEM 76MM SKIMMER
6132000000-N	SP	84	EA	GENERIC EROSION CONTROL ITEM RESPONSE FOR EROSION CONTROL
6147000000-M	SP	860	M	GENERIC EROSION CONTROL ITEM COIR FIBER BAFFLE

STATE OF NORTH CAROLINA
SUMMARY OF QUANTITIES

PROJECT REFERENCE No.	SHEET No.
R-609 IB/R-2606A	3 (3 OF 3)

ItemNumber	Sec #	Quantity	Unit	Description
7060000000-M	1705	190	M	SIGNAL CABLE
7120000000-M	1705	3	EA	VEHICLE SIGNAL HEAD (300MM, 3 SECTION)
7144000000-M	1705	3	EA	VEHICLE SIGNAL HEAD (300MM, 5 SECTION)
7252000000-M	1710	1,250	M	MESSENGER CABLE (6.35MM)
7264000000-M	1710	100	M	MESSENGER CABLE (9.52MM)
7279000000-M	1715	120	M	TRACER WIRE
7300000000-M	1715	265	M	TRENCHING (UNPAVED)
7301000000-M	SP	60	M	DIRECTIONAL DRILL POLYETHYLENE CONDUIT, *****MM (** CONDUIT) (50MM, 1)
7324000000-N	1716	9	EA	JUNCTION BOX (STANDARD SIZE)
7348000000-N	1716	5	EA	JUNCTION BOX (OVER-SIZED, HEAVY DUTY)
7360000000-N	1720	2	EA	WOOD POLE
7372000000-N	1721	10	EA	GUY ASSEMBLY
7408000000-M	1722	1	EA	25MM RISER WITH WEATHERHEAD
7420000000-M	1722	1	EA	50MM RISER WITH WEATHERHEAD
7432000000-M	1722	3	EA	50MM RISER WITH HEAT SHRINK TUBING
7444000000-M	1725	175	M	INDUCTIVE LOOP SAWCUT
7456000000-M	1726	545	M	LEAD-IN CABLE
7516000000-M	1730	1,240	M	COMMUNICATIONS CABLE (**FIBER) (12)
7552000000-N	1731	3	EA	INTERCONNECT CENTER
7574000000-N	SP	1	EA	FURNISH FIBER-OPTIC TRANSCEIVER
7613000000-N	SP	4	EA	SOIL TEST
7684000000-N	1750	1	EA	SIGNAL CABINET FOUNDATION
7756000000-N	1751	1	EA	CONTROLLER WITH CABINET (TYPE 2070L, BASE MOUNTED)
7780000000-N	SP	4	EA	DETECTOR CARD (TYPE 2070L)
7980000000-N	SP	1	EA	GENERIC SIGNAL ITEM CABINET BASE EXTENDER
7980000000-N	SP	3	EA	GENERIC SIGNAL ITEM FIBER-OPTIC TRANSCEIVER SELF-HEALING RING
7980000000-N	SP	4	EA	GENERIC SIGNAL ITEM METAL STRAIN SIGNAL POLE
7992000000-M	SP	18	M3	GENERIC SIGNAL ITEM DRILLED PIER FOUNDATION
******* BEGIN SCHEDULE AA ******* ******* (3 ALTERNATES) *******				
0366000000-M AA1	310	2,326.1	M	375MM RC PIPE CULVERTS, CLASS III
0372000000-M AA1	310	1,224.6	M	450MM RC PIPE CULVERTS, CLASS III
0378000000-M AA1	310	1,028.9	M	600MM RC PIPE CULVERTS, CLASS III
0384000000-M AA1	310	700.8	M	750MM RC PIPE CULVERTS, CLASS III
0402000000-M AA1	310	226.6	M	1200MM RC PIPE CULVERTS, CLASS III
*** OR ***				
0366000000-M AA2	310	1,638.2	M	375MM RC PIPE CULVERTS, CLASS III
0372000000-M AA2	310	181.2	M	450MM RC PIPE CULVERTS, CLASS III
0378000000-M AA2	310	225.6	M	600MM RC PIPE CULVERTS, CLASS III
0384000000-M AA2	310	365.6	M	750MM RC PIPE CULVERTS, CLASS III
0402000000-M AA2	310	219.4	M	1200MM RC PIPE CULVERTS, CLASS III
0986000000-M AA2	SP	7.2	M	GENERIC PIPE ITEM 1200MM HDPE PIPE CULVERTS
0986000000-M AA2	SP	687.9	M	GENERIC PIPE ITEM 375MM HDPE PIPE CULVERTS
0986000000-M AA2	SP	1,043.4	M	GENERIC PIPE ITEM 450MM HDPE PIPE CULVERTS
0986000000-M AA2	SP	803.3	M	GENERIC PIPE ITEM 600MM HDPE PIPE CULVERTS
0986000000-M AA2	SP	335.2	M	GENERIC PIPE ITEM 750MM HDPE PIPE CULVERTS
*** OR ***				
0366000000-M AA3	310	1,638.2	M	375MM RC PIPE CULVERTS, CLASS III
0372000000-M AA3	310	181.2	M	450MM RC PIPE CULVERTS, CLASS III
0378000000-M AA3	310	225.6	M	600MM RC PIPE CULVERTS, CLASS III
0384000000-M AA3	310	365.6	M	750MM RC PIPE CULVERTS, CLASS III
0402000000-M AA3	310	219.4	M	1200MM RC PIPE CULVERTS, CLASS III
0986000000-M AA3	SP	7.2	M	GENERIC PIPE ITEM 1200MM ALUMINIZED CORRUGATED STEEL PIPE CULVERTS, 1.63MM THICK
0986000000-M AA3	SP	687.9	M	GENERIC PIPE ITEM 400MM ALUMINIZED CORRUGATED STEEL PIPE CULVERTS, 1.63MM THICK
0986000000-M AA3	SP	1,043.4	M	GENERIC PIPE ITEM 450MM ALUMINIZED CORRUGATED STEEL PIPE CULVERTS, 1.63MM THICK
0986000000-M AA3	SP	803.3	M	GENERIC PIPE ITEM 600MM ALUMINIZED CORRUGATED STEEL PIPE CULVERTS, 1.63MM THICK
0986000000-M AA3	SP	335.2	M	GENERIC PIPE ITEM 800MM ALUMINIZED CORRUGATED STEEL PIPE CULVERTS, 1.63MM THICK
******* END SCHEDULE AA *******				
******* BEGIN SCHEDULE AB ******* ******* (2 ALTERNATES) *******				
0022000000-M AB1	225	901,350	M3	UNCLASSIFIED EXCAVATION
0106000000-M AB1	230	510,992	M3	BORROW EXCAVATION
1121000000-M AB1	520	104,422	MTN	AGGREGATE BASE COURSE
1491000000-M AB1	610	27,742	MTN	ASPHALT CONC BASE COURSE, TYPE B25.0C
1503000000-M AB1	610	29,533	MTN	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C
1560000000-M AB1	620	3,573	MTN	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22
*** OR ***				
0022000000-M AB2	225	915,000	M3	UNCLASSIFIED EXCAVATION
0106000000-M AB2	230	505,000	M3	BORROW EXCAVATION
1121000000-M AB2	520	31,375	MTN	AGGREGATE BASE COURSE
1491000000-M AB2	610	53,454	MTN	ASPHALT CONC BASE COURSE, TYPE B25.0C
1503000000-M AB2	610	37,052	MTN	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C
1560000000-M AB2	620	5,102	MTN	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22
******* END SCHEDULE AB *******				

TIP: R-0609IB

CONTRACT:

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

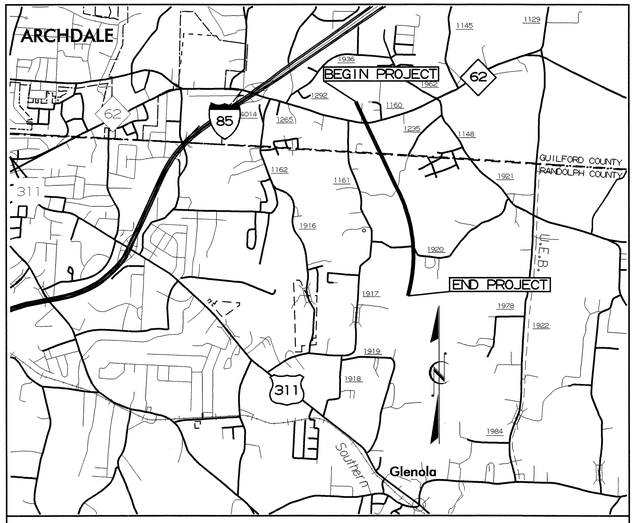
GUILFORD – RANDOLPH

METRIC

ALL DIMENSIONS IN THESE PLANS ARE IN METERS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-0609IB	1	

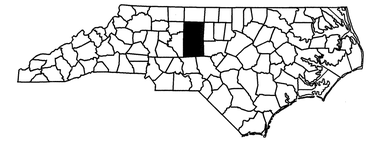
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34345.1.1	MAF-F-119-(1)	PE
34345.2.8	NHF-119-1(12)	R/W
34345.2.8	NHF-119-1(12)	UTIL
34345.3.13	NHF-119-1(14)	(CONST.)

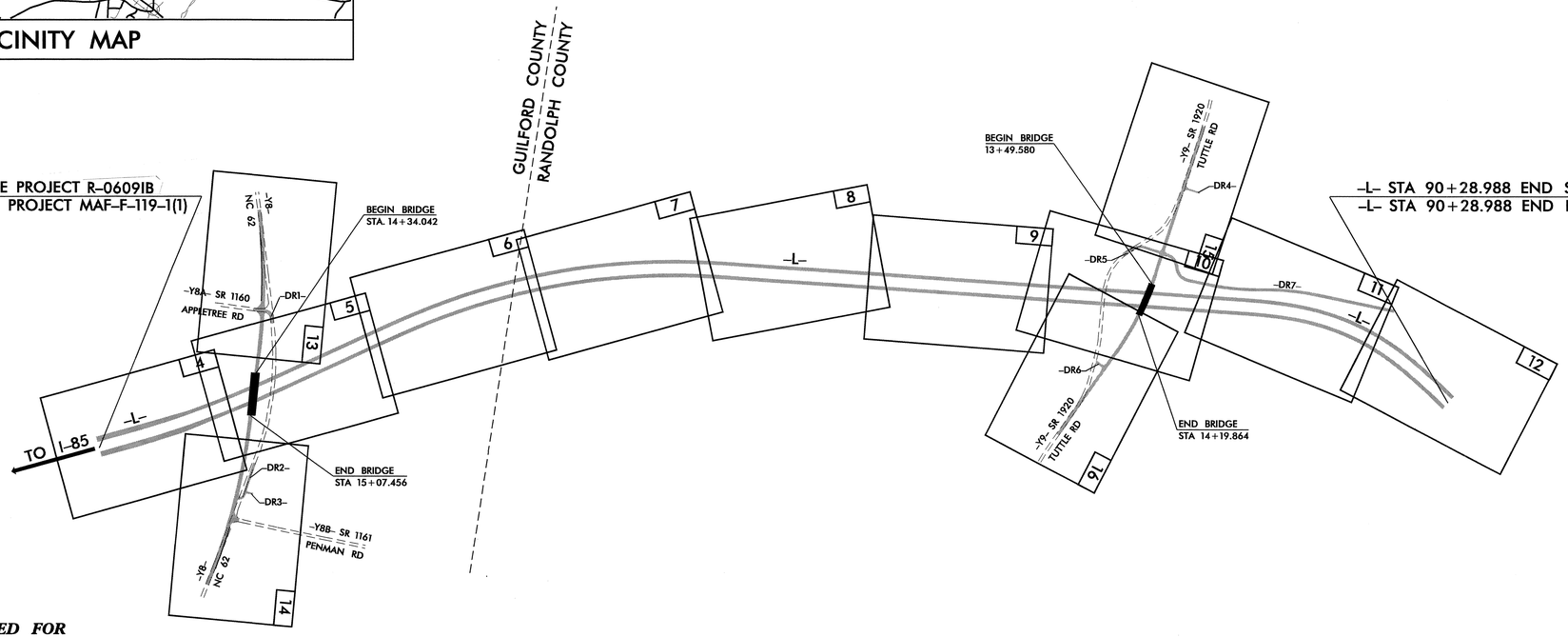


VICINITY MAP

LOCATION: US 311 HIGH POINT EAST BELT FROM I-85 TO SOUTH OF SR 1920 (TUTTLE RD) NORTH OF ARCHDALE

TYPE OF WORK: GRADING, DRAINAGE, PAVING, SIGNING, GUARDRAIL, CABLE GUIDERAIL AND STRUCTURES





DESIGN EXCEPTION REQUIRED FOR BRIDGE WIDTH AND SAG VERTICAL CURVE ON SR 1920 TUTTLE ROAD (-Y9-)

THIS IS A CONTROLLED ACCESS PROJECT

PART 1 of 2

GRAPHIC SCALES

5 0 10 PLANS

5 0 10 PROFILE (HORIZONTAL)

1 0 2 PROFILE (VERTICAL)

DESIGN DATA

ADT 2005 = 20,200
ADT 2025 = 29,000
DHV = 10 %
D = 60 %
T = 13 % *
V = 110 km/h
* TTST 7% DUAL 6%

FUNC CLASS – FREEWAY

PROJECT LENGTH

LENGTH ROADWAY PROJECT R-0609IB = 2.970 Km

TOTAL LENGTH ROADWAY PROJECT R-0609IB = 2.970 Km

Prepared In the Office of:

DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh, NC 27610

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MAY 30, 2003

LETTING DATE:
SEPTEMBER 19, 2006

J. S. GOODNIGHT, PE
PROJECT ENGINEER

S. D. KENDALL
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM A. ELAM

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JAMES S. GOODNIGHT, JR.

SIGNATURE: 9-19-06

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

P.E.
STATE DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR *DATE*

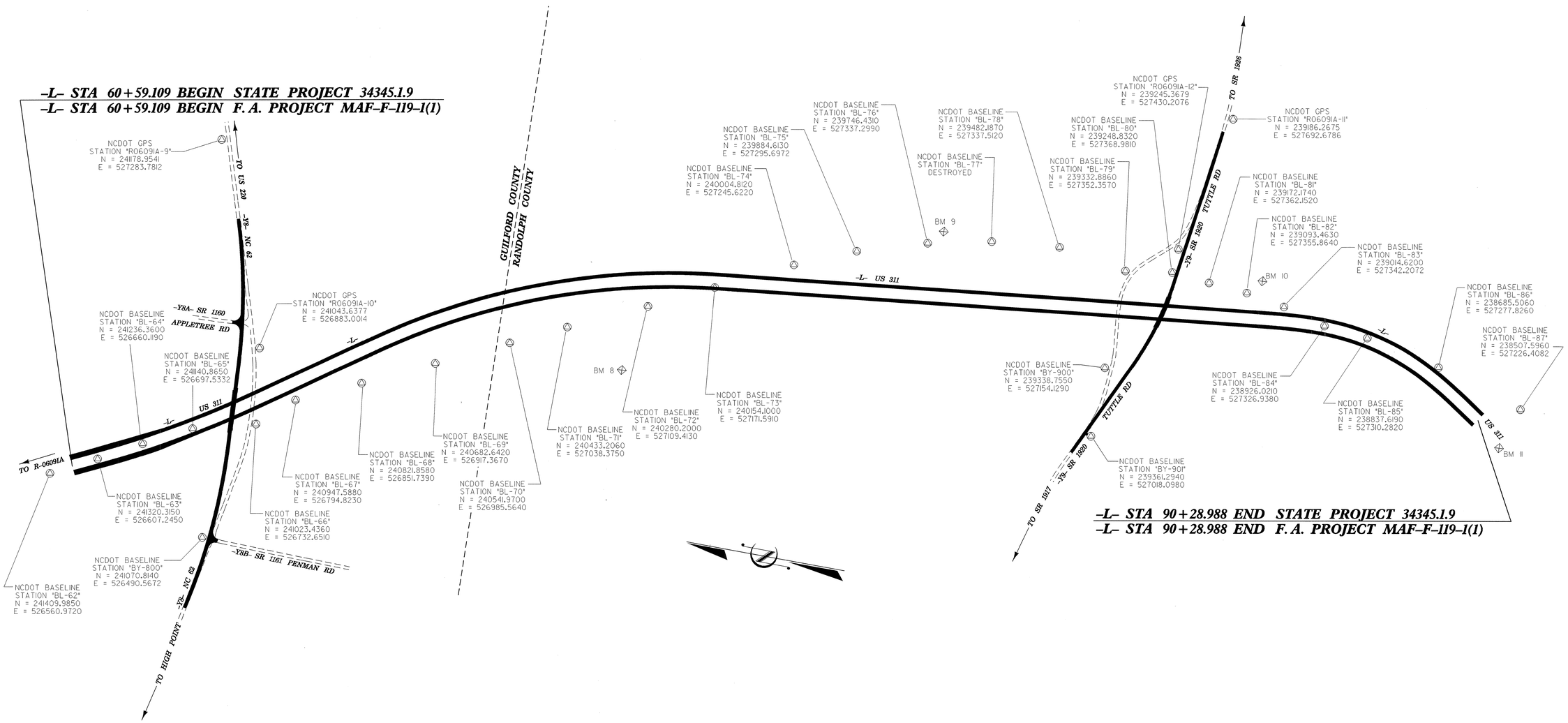
04-MAY-2006 11:25
r:\proj\r0609ib.sh
$$$$USERNAME$$$$

9/09/06

PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	1A
LOCATION AND SURVEYS	

R-0609IB SURVEY CONTROL SHEET

-L- STA 60+59.109 BEGIN STATE PROJECT 34345.1.9
-L- STA 60+59.109 BEGIN F.A. PROJECT MAF-F-119-1(1)



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "HOLLAND"
WITH NAD 83 STATE PLANE GRID COORDINATES OF
NORTHING: 243098.3720(m) EASTING: 525132.3280(m)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999908360
THE N.C. LAMBERT GRID BEARING
LOCALIZED HORIZONTAL GROUND DISTANCE FROM
"HOLLAND" TO -L- STATION 60+59.109 IS
S 40°02' 13.2" E 2,258.866m
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: r0609ib_ls_control_040130.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. ALL COORDINATES SHOWN ARE LOCALIZED PROJECT COORDINATES.*
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
NETWORK ESTABLISHED FROM EXISTING NCGS MONUMENTATION.

NOTE: DRAWING NOT TO SCALE

5/14/99
13-JUL-2006 12:17
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5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	1B
LOCATION AND SURVEYS	

R-0609IB SURVEY CONTROL SHEET

CONTROL DATA

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
61	BL-61	241491.8730	526526.0390	249.562	59+63.459	0.076 LT
62	BL-62	241409.9850	526560.9720	248.676	60+52.388	4.127 RT
63	BL-63	241320.3150	526607.2450	250.223	61+12.367	1.511 RT
64	BL-64	241236.3600	526660.1190	250.622	62+11.315	7.757 LT
65	BL-65	241140.8650	526697.5332	246.737	63+12.847	6.966 RT
66	BL-66	241023.4360	526732.6510	243.893	64+29.243	41.004 RT
67	BL-67	240947.5880	526794.8230	241.048	65+26.676	33.252 RT
68	BL-68	240821.8580	526851.7390	239.636	66+62.368	58.455 RT
69	BL-69	240682.6420	526917.3670	237.242	68+19.026	81.634 RT
70	BL-70	240541.9700	526985.5640	232.049	69+85.391	87.618 RT
71	BL-71	240433.2060	527038.3750	232.332	71+13.721	79.437 RT
72	BL-72	240280.2000	527109.4130	239.808	72+88.663	52.743 RT
73	BL-73	240154.1000	527171.5910	240.523	74+26.396	12.083 RT
74	BL-74	240004.8120	527245.6220	237.163	75+83.178	44.531 LT
75	BL-75	239884.6130	527295.6972	227.872	77+08.248	80.765 LT
76	BL-76	239746.4310	527337.2990	226.127	78+50.233	106.555 LT
78	BL-78	239482.1870	527377.5120	228.926	81+17.324	116.782 LT
79	BL-79	239332.8860	527352.3570	231.356	82+62.847	74.988 LT
80	BL-80	239248.8320	527368.9810	228.864	83+48.237	82.049 LT
81	BL-81	239172.1740	527362.1520	224.927	84+23.640	66.638 LT
82	BL-82	239093.4630	527355.8640	231.315	85+01.144	51.534 LT
83	BL-83	239014.6200	527342.2072	232.213	85+77.324	29.524 LT
84	BL-84	238926.0210	527326.9380	230.989	86+63.222	10.154 LT
85	BL-85	238837.6190	527310.2820	227.583	87+51.869	2.401 LT
86	BL-86	238685.5060	527277.8260	232.068	89+02.920	23.267 LT
87	BL-87	238507.5960	527226.4082	232.951	OUTSIDE PROJECT LIMITS	

BY8

POINT	DESC.	NORTH	EAST	ELEVATION	BY8 STATION	OFFSET
9	GPS R0609IA-9	241178.9541	527283.7812	244.410	5+00.000	0.000
10	GPS R0609IA-10	241043.6377	526883.0014	247.821	9+23.007	0.000
66	BL-66	241023.4360	526732.6510	243.893	10+74.709	0.000
800	BY-801	241070.8140	526490.5672	251.007	13+21.385	0.000

BY9

POINT	DESC.	NORTH	EAST	ELEVATION	Y9 STATION	OFFSET
11	GPS R0609IA-11	239186.2675	527692.6786	237.806	OUTSIDE PROJECT LIMITS	
12	GPS R0609IA-12	239245.3679	527430.2076	224.884	12+38.604	14.539 RT
79	BL-79	239332.8860	527352.3570	231.356	13+27.840	90.478 RT
900	BY-900	239338.7550	527154.1290	241.159	15+39.331	34.168 RT
901	BY-901	239361.2940	527018.0980	243.156	16+71.888	3.794 LT

BENCHMARK DATA

```
**************************************
BM #8       ELEVATION = 231.001
N 240364      E 526975
L STATION 71+63 161 RIGHT
RR SPIKE IN BASE OF 600MM GUM
**************************************
**************************************
BM #9       ELEVATION = 225.037
N 239762      E 527413
L STATION 78+43 183 LEFT
RR SPIKE IN BASE OF 800MM PIN OAK
**************************************
**************************************
BM #10      ELEVATION = 221.815
N 239089      E 527421
L STATION 85+13 115 LEFT
RR SPIKE IN BASE OF 300MM GUM
**************************************
**************************************
BM #11      ELEVATION = 237.417
N 238536      E 527132
L STATION 90+30
S 48° 15' 43.1" W  DIST    78.882
RR SPIKE IN BASE OF 450MM WALNUT
**************************************
```

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: r0609ib_ls_control_030617.txt

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

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "HOLLAND"
WITH NAD 83 STATE PLANE GRID COORDINATES OF
NORTHING: 243098.3720(m) EASTING: 525132.3280(m)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999908360
THE N.C. LAMBERT GRID BEARING
LOCALIZED HORIZONTAL GROUND DISTANCE FROM
"HOLLAND" TO -L- STATION 60+59.109 IS
S 40°12' 26.25" E 2,232.7059m
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NGVD 29

13-JUL-2006 12:18
r:\location\proj\r0609ib_ls_id_040219.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	1-C
R /W SHEET NO.	

CENTERLINE COORDINATE LIST

Disclaimer: This coordinate list is provided for the convenience of interested contractors and is intended for use during the project bidding process only. Coordinates are localized to this particular project and any conversion to state grid coordinates or other formats will be the responsibility of the recipient. While every effort has been made to provide up-to-date, accurateinformation, NCDOT makes no express guarantee as to the validity or potential for revision of this information prior to project letting.

Point #	Chain	Station	Northing(Y)	Easting(X)	Point #	Chain	Station	Northing(Y)	Easting(X)	Point #	Chain	Station	Northing(Y)	Easting(X)
1	L	60+60.000	241404.9287	526568.0015	27	L	70+59.109	240510.7335	527094.1656	53	L	80+99.109	239487.1466	527259.4226
2	L	61+00.000	241368.9186	526585.4162	28	L	70+99.109	240473.3452	527108.3785	54	L	81+39.109	239447.4006	527263.9231
3	L	60+99.109	241332.9085	526602.8308	29	L	71+39.109	240435.5662	527121.5175	55	L	81+79.109	239407.6546	527268.4236
4	L	61+39.109	241296.9352	526620.3215	30	L	71+79.109	240397.4272	527133.5719	56	L	82+19.109	239367.9086	527272.9242
5	L	61+79.109	241261.2024	526638.2970	31	L	72+19.109	240358.9594	527144.5318	57	L	82+59.109	239328.1626	527277.4247
6	L	62+19.109	241225.8334	526656.9778	32	L	72+59.109	240320.1942	527154.3883	58	L	82+99.109	239288.4166	527281.9253
7	L	62+59.109	241190.8449	526676.3623	33	L	72+99.109	240281.1632	527163.1334	59	L	83+39.109	239248.6706	527286.4258
8	L	62+99.109	241156.2512	526696.4426	34	L	73+39.109	240241.8984	527170.7599	60	L	83+79.109	239208.9246	527290.9264
9	L	63+39.109	241122.0659	526717.2107	35	L	73+79.109	240202.4317	527177.2616	61	L	84+19.109	239169.1785	527295.4269
10	L	63+79.109	241088.3028	526738.6583	36	L	74+19.109	240162.8022	527182.6859	62	L	84+59.109	239129.4325	527299.9275
11	L	64+19.109	241054.9754	526760.7769	37	L	74+59.109	240123.0822	527187.4087	63	L	84+99.109	239089.6865	527304.4280
12	L	64+59.109	241022.0345	526783.4677	38	L	74+99.109	240083.3367	527191.9144	64	L	85+39.109	239049.9383	527308.9086
13	L	64+99.109	240989.2177	526806.3382	39	L	75+39.109	240043.5907	527196.4149	65	L	85+79.109	239010.1455	527312.9683
14	L	65+39.109	240956.4026	526829.2112	40	L	75+79.109	240003.8447	527200.9155	66	L	86+19.109	238970.2528	527315.8612
15	L	65+79.109	240923.5876	526852.0843	41	L	76+19.109	239964.0987	527205.4160	67	L	86+59.109	238930.2700	527316.8252
16	L	66+19.109	240890.7726	526874.9573	42	L	76+59.109	239924.3527	527209.9166	68	L	86+99.109	238890.3169	527315.1007
17	L	66+59.109	240857.9576	526897.8303	43	L	76+99.109	239884.6067	527214.4171	69	L	87+39.109	238850.6325	527310.1759
18	L	66+99.109	240825.1421	526920.7027	44	L	77+39.109	239844.8607	527218.9177	70	L	87+79.109	238811.4824	527302.0283
19	L	67+39.109	240792.2409	526943.4513	45	L	77+79.109	239805.1147	527223.4182	71	L	88+19.109	238773.1280	527290.7123
20	L	67+79.109	240758.9929	526965.6888	46	L	78+19.109	239765.3687	527227.9188	72	L	88+59.109	238735.8253	527276.3034
21	L	68+19.109	240725.1736	526987.0463	47	L	78+59.109	239725.6226	527232.4193	73	L	88+99.109	238699.7567	527259.0298
22	L	68+59.109	240690.7579	527007.4289	48	L	78+99.109	239685.8766	527236.9198	74	L	89+39.109	238664.8185	527239.5629
23	L	68+99.109	240655.7740	527026.8201	49	L	79+39.109	239646.1306	527241.4204	75	L	89+79.109	238630.7408	527218.6210
24	L	69+39.109	240620.2504	527045.2039	50	L	79+79.109	239606.3846	527245.9209	76	L	90+19.109	238597.1676	527196.8766
25	L	69+79.109	240584.2161	527062.5654	51	L	80+19.109	239566.6386	527250.4215	77	L	90+28.988	238588.9078	527191.4576
26	L	70+19.109	240547.7005	527078.8904	52	L	80+59.109	239526.8926	527254.9220	78	L	90+28.988	238588.9078	527191.4576

8/17/99
13-JUL-2006 12:20
r:\wmcbride\centerline-coordinates-1.e.dgn
$$$$USERNAME$$$$

CENTERLINE COORDINATE LIST

Disclaimer: This coordinate list is provided for the convenience of interested contractors and is intended for use during the project bidding process only. Coordinates are localized to this particular project and any conversion to state grid coordinates or other formats will be the responsibility of the recipient. While every effort has been made to provide up-to-date, accurateinformation, NCDOT makes no express guarantee as to the validity or potential for revision of this information prior to project letting.

Point #	Chain	Station	Northing(Y)	Easting(X)
1	Y8	10+00.000	241150.2070	527213.9840
2	Y8	10+40.000	241138.5345	527175.7250
3	Y8	10+80.000	241126.8620	527137.4660
4	Y8	11+20.000	241115.6687	527099.0657
5	Y8	11+60.000	241105.7013	527060.3292
6	Y8	12+00.000	241096.9784	527021.2936
7	Y8	12+40.000	241089.5088	526981.9990
8	Y8	12+80.000	241083.3003	526942.4855
9	Y8	13+20.000	241078.3592	526902.7935
10	Y8	13+60.000	241074.6906	526862.9639
11	Y8	14+00.000	241072.2773	526823.0382
12	Y8	14+40.000	241070.2930	526783.0874
13	Y8	14+80.000	241068.3087	526743.1367
14	Y8	15+20.000	241066.3245	526703.1859
15	Y8	15+60.000	241064.4125	526663.2318
16	Y8	16+00.000	241063.4979	526623.2440
17	Y8	16+40.000	241063.8632	526583.2474
18	Y8	16+80.000	241065.5080	526543.2829
19	Y8	17+20.000	241068.4306	526503.3915
20	Y8	17+60.000	241072.6281	526463.6141
21	Y8	18+00.000	241078.0960	526423.9913
22	Y8	18+40.000	241084.8288	526384.5637
23	Y8	18+80.000	241092.3355	526345.2744
24	Y8	18+88.934	241094.0142	526336.4996
25	Y8	18+88.934	241094.0142	526336.4996

Point #	Chain	Station	Northing(Y)	Easting(X)
23	Y9	10+00.000	239198.0470	527664.5240
24	Y9	10+40.000	239203.5660	527624.9066
25	Y9	10+80.000	239209.0849	527585.2891
26	Y9	11+20.000	239214.6039	527545.6717
27	Y9	11+60.000	239220.1229	527506.0543
28	Y9	12+00.000	239225.6418	527466.4368
29	Y9	12+40.000	239231.1608	527426.8194
30	Y9	12+80.000	239236.6798	527387.2020
31	Y9	13+20.000	239242.1987	527347.5845
32	Y9	13+60.000	239248.5881	527308.1044
33	Y9	14+00.000	239257.5475	527269.1283
34	Y9	14+40.000	239269.0836	527230.8357
35	Y9	14+80.000	239283.1450	527193.3966
36	Y9	15+20.000	239299.5986	527156.9434
37	Y9	15+60.000	239316.7487	527120.8066
38	Y9	16+00.000	239333.8989	527084.6697
39	Y9	16+40.000	239351.0491	527048.5329
40	Y9	16+80.000	239368.1992	527012.3960
41	Y9	17+20.000	239385.3494	526976.2592
42	Y9	17+54.760	239400.2529	526944.8563
43	Y9	17+54.760	239400.2529	526944.8563

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$$$$USERNAME$$$$

PAVEMENT SCHEDULE

(FINAL PAVEMENT DESIGN)

C1	PROP. APPROX. 50 mm ASPHALT CONC. SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 58.75 kg PER SQ. METER IN EACH OF TWO LAYERS.	E3	PROP. VAR. DEPTH ASPHALT CONC. BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 2.45 kg PER SQ. METER PER I mm DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 75 mm IN DEPTH OR GREATER THAN 140 mm IN DEPTH.
C2	PROP. APPROX. 80 mm ASPHALT CONC. SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 96 kg PER SQ. METER IN EACH OF TWO LAYERS.	J1	PROP. 250mm AGGREGATE BASE COURSE.
C3	PROP. VAR. DEPTH ASPHALT CONC. SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 2.40 kg PER SQ. METER PER 1 mm DEPTH, TO BE PLACED IN LAYERS NOT TO EXCEED 50 mm IN DEPTH.	J2	PROP. 200mm AGGREGATE BASE COURSE.
C4	PROP. VAR. DEPTH ASPHALT CONC. SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 2.35 kg PER SQ. METER PER 1 mm DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 25mm IN DEPTH OR GREATER THAN 40mm IN DEPTH.	J3	PROP. 150 mm AGGREGATE BASE COURSE.
D1	PROP. APPROX. 70mm ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 171.5 kg PER SQ. METER.	K	SUBGRADE TO BE TREATED WITH LIME TO A DEPTH OF 200mm AT A RATE OF 11 kg PER SQ. METER AS DIRECTED BY THE ENGINEER. OR SUBGRADE TO BE TREATED WITH CEMENT TO A DEPTH OF 180mm AT A RATE OF 30 kg PER SQ. METER AS DIRECTED BY THE ENGINEER. OR SUBGRADE TO BE STABILIZED WITH 135 kg PER SQ. METER OF AGGREGATE ONLY IN CEMENT STABILIZATION AREAS AS DIRECTED BY THE ENGINEER.
D2	PROP. APPROX. 70mm ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 171.5 kg PER SQ. METER.		
D3	PROP. APPROX. 100mm ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 245 kg PER SQ. METER.		
D4	PROP. APPROX. 110mm ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 269.5 kg PER SQ. METER.	P	PRIME COAT AT THE RATE OF 1.58 LITERS PER SQ. METER.
D5	PROP. VAR. DEPTH ASPHALT CONC. INTERMEDIATE COURSE,TYPE I19.0C, AT AN AVERAGE RATE OF 2.45 kg PER SQ. METER PER 1 mm DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 65mm OR GREATER THAN 110 mm IN DEPTH.	T	EARTH MATERIAL.
D6	PROP. VAR. DEPTH ASPHALT CONC. INTERMEDIATE COURSE,TYPE I19.0B, AT AN AVERAGE RATE OF 2.45 kg PER SQ. METER PER 1 mm DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 65mm OR GREATER THAN 110 mm IN DEPTH.	U	EXISTING PAVEMENT.
E1	PROP. APPROX. 80 mm ASPHALT CONC. BASE COURSE, TYPE B25.0C,AT AN AVERAGE RATE OF 196 kg PER SQ. METER.	V	RUMBLE STRIPS (SEE DETAIL SHEET No. 2-T).
E2	PROP. APPROX. 140mm ASPHALT CONC. BASE COURSE, TYPE B25.0C,AT AN AVERAGE RATE OF 343 kg PER SQ. METER.	W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL SHEET No. 2)

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

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	2

ROADWAY DESIGN ENGINEER

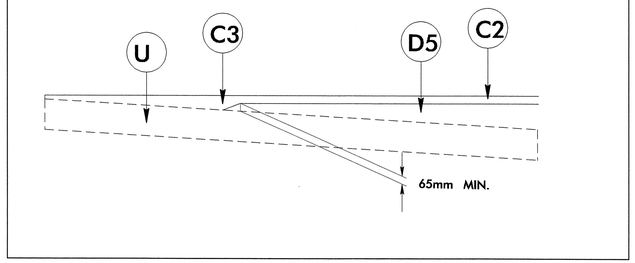
PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JAMES STAFFORD GOODNIGHT, JR.

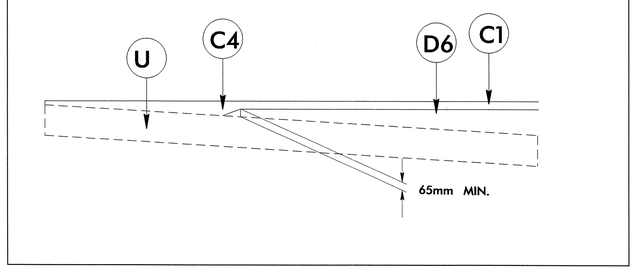
NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER DON-CHARLES KLEIN

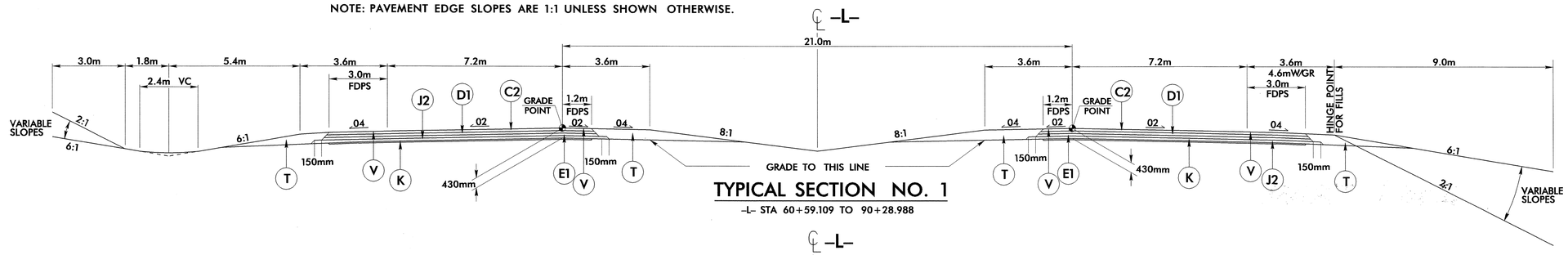
7/13/06

DETAIL FOR SHOWING METHOD OF WEDGING FOR -Y8-



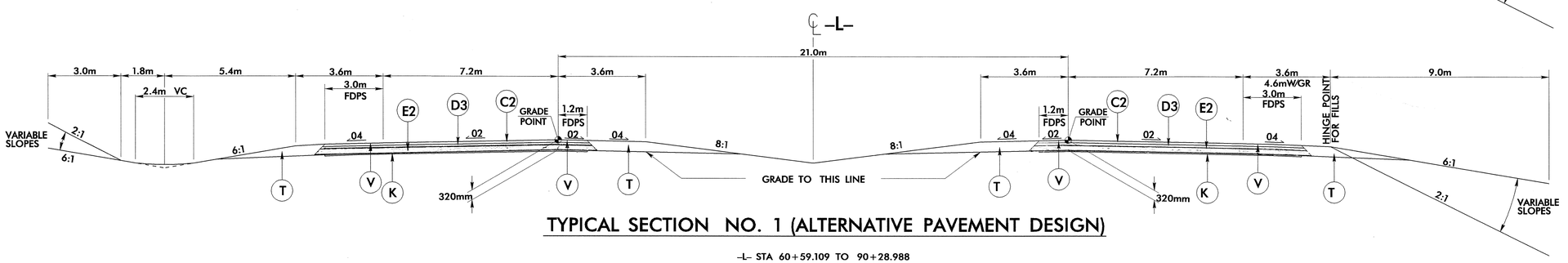
DETAIL FOR SHOWING METHOD OF WEDGING FOR -Y9-





TYPICAL SECTION NO. 1

-L- STA 60+59.109 TO 90+28.988



TYPICAL SECTION NO. 1 (ALTERNATIVE PAVEMENT DESIGN)

-L- STA 60+59.109 TO 90+28.988

19-JUN-2006 08:42
$$$$USERNAME$$$$ $$$$DGN$$$$ 0609ib.sup

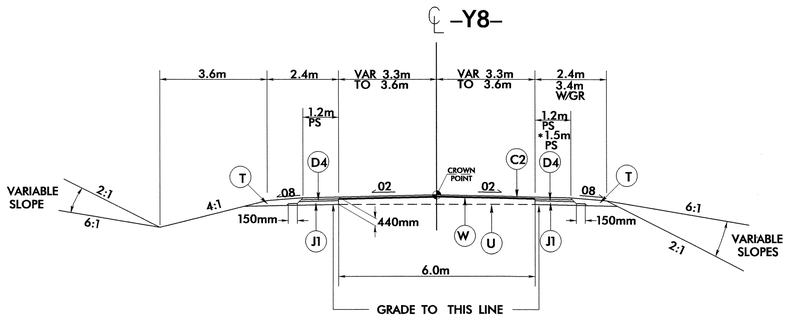
PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	2-A

ROADWAY DESIGN ENGINEER

PAVEMENT DESIGN ENGINEER

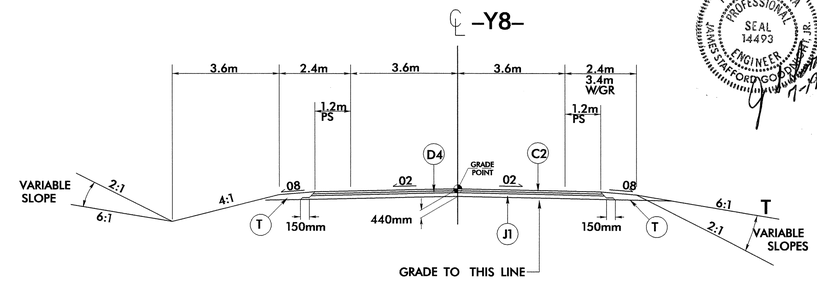
PAVEMENT SCHEDULE

C1	50 mm	SF9.5A
C2	80 mm	S9.5C
D2	70 mm	I19.0B
D4	110 mm	I19.0C
J1	250 mm	ABC
J2	200 mm	ABC
J3	150 mm	ABC
P	PRIME COAT	
W	WEDGING (SEE DETAIL)	
U	EXIST PAVEMENT	
T	EARTH MATERIAL	



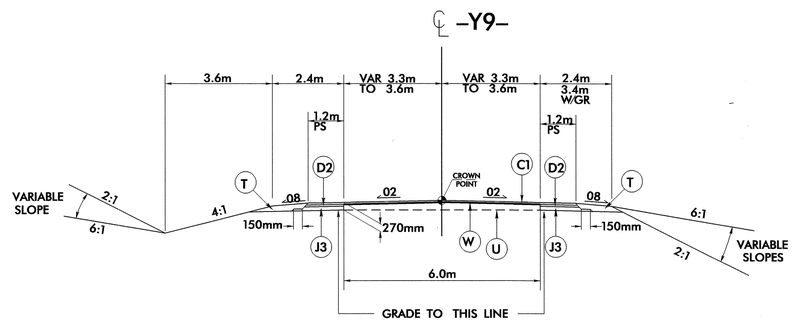
TYPICAL SECTION NO. 2

-Y8- STA 10+84.660 TO STA 11+99.545 (WIDENING & RESURFACING)
-Y8- STA 17+04.269 TO STA 18+82.197 (WIDENING & RESURFACING)
* -Y8- STA 17+00 TO STA 17+18 (RT.)



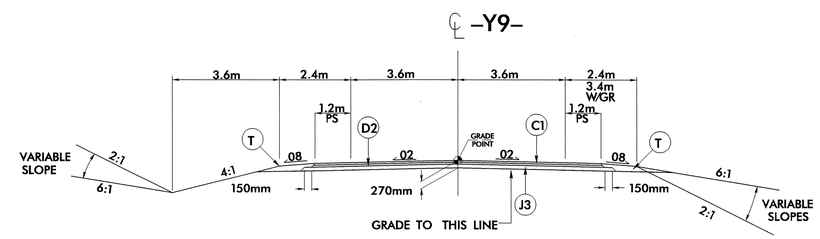
TYPICAL SECTION NO. 3

-Y8- STA 11+99.545 TO 14+34.042 (BEG BRIDGE)
-Y8- STA 15+07.456 (END BRIDGE) TO 17+04.269



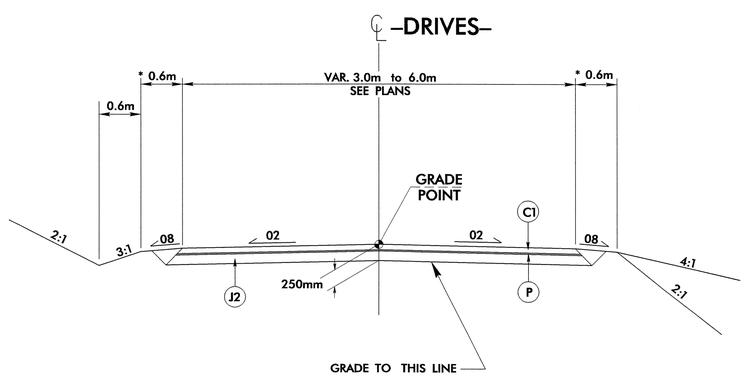
TYPICAL SECTION NO. 4

-Y9- STA 10+00 TO 10+62.134 (RESURFACING&WIDENING)
-Y9- STA 16+48.008 TO 17+20 (RESURFACING & WIDENING)



TYPICAL SECTION NO. 5

-Y9- STA 10+62.134 TO 13+50.708 (BEG BRIDGE)
-Y9- STA 14+18.680 (END BRIDGE) TO 16+48.008



TYPICAL SECTION NO. 6

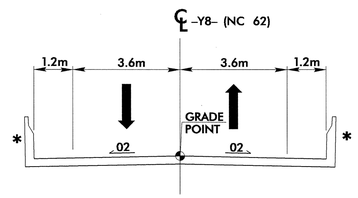
* 1.6m W/GRD

DRIVE -DR1- STA 10+03.620 TO 10+40
DRIVE -DR2- STA 10+03.600 TO 10+90
DRIVE -DR3- STA 10+02.400 TO 10+17.035
DRIVE -DR4- STA 10+03.300 TO 10+35
DRIVE -DR5- STA 10+03.600 TO 10+90
DRIVE -DR6- STA 10+03.600 TO 10+23.187
DRIVE -DR7- STA 10+03.600 TO 15+23.485

6/16/99
13-JUN-2006 14:10
$$$$USERNAME$$$$ R-0609ib.tgp

PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	2-B

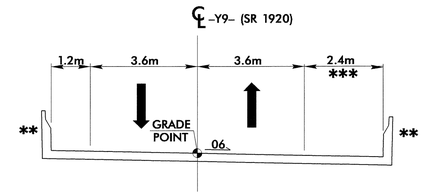
ROADWAY DESIGN ENGINEER



TYPICAL SECTION ON STRUCTURE

*BRIDGE RAIL TO BE DETERMINED BY STRUCTURE DESIGN

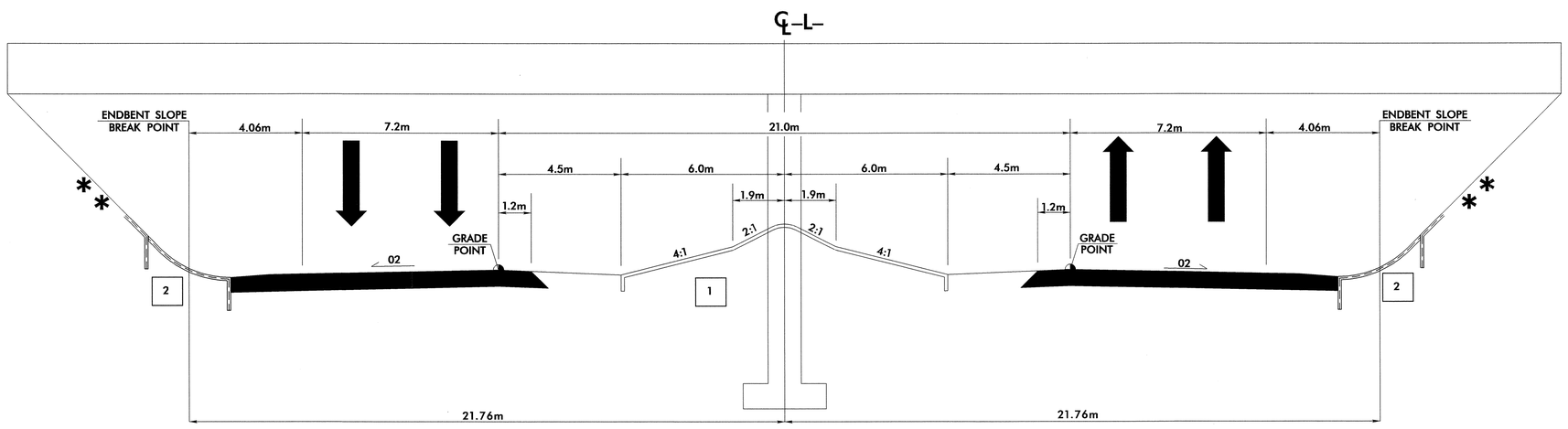
DESIGN DATA -Y8-
ADT 2000 = 10,600
ADT 2025 = 20,000
D = 60%
DHV = 10%
TTST = 3%
DUAL = 2%
V = 100 km/h
FUNC CLASS-COLLECTOR



TYPICAL SECTION ON STRUCTURE

**BICYCLE SAFE RAIL REQUIRED
***WIDEN FOR STOPPING SIGHT DISTANCE

DESIGN DATA -Y9-
ADT 2000 = 1,000
ADT 2025 = 2,700
D = 60%
DHV = 10%
TTST = 3%
DUAL = 2%
V = 100 km/h
FUNC CLASS-LOCAL



DETAIL OF TYPICAL SECTION UNDER STRUCTURE

MINIMUM VERTICAL CLEARANCE = 5.2m
**SLOPES DETERMINED BY SOILS AND FOUNDATIONS UNIT

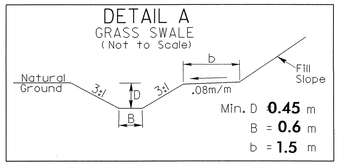
1	SEE STD. 225.08
2	SEE STD. 610.03

24-JAN-2005 14:59
RACruz AT RD195380
R-0609ib.typ

PROJECT REFERENCE NO.	SHEET NO.
R-0609B	2-C
R/W SHEET NO.	

METRIC

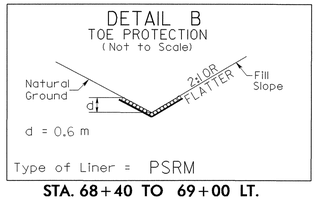
DETAIL A
GRASS SWALE
(Not to Scale)



STA. 62+60 TO 63+00 LT –L–
STA. 68+20 TO 68+70 RT. –L–
STA. 70+70 TO 70+90 LT. –L–
STA. 70+70 TO 71+00 RT. –L–
STA. 76+60 TO 77+40 RT. –L–

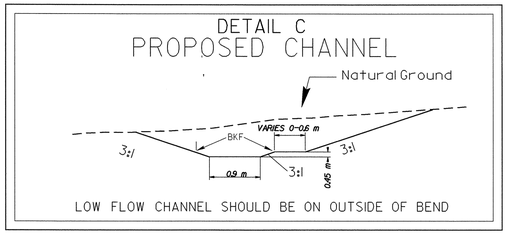
STA. 83+80 TO 84+60 RT. –L–
STA. 86+60 TO 87+60 RT. –L–
STA. 11+00 TO 11+60 RT –Y8–
STA. 13+20 TO 14+52 RT –Y8–
STA. 15+40 TO 17+00 RT –Y8–
STA. 11+80 TO 12+16 LT. –Y9–
STA. 13+00 TO 13+40 RT. –Y9–
STA. 10+30 TO 10+60 LT. –DR5–

DETAIL B
TOE PROTECTION
(Not to Scale)



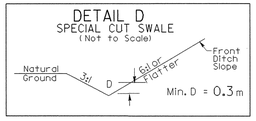
STA. 68+40 TO 69+00 LT.
STA. 77+40 TO 78+00 RT.
STA. 79+00 TO 79+20 RT.

DETAIL C
PROPOSED CHANNEL



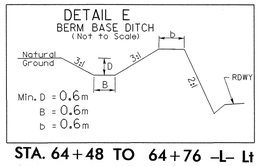
STA. 68+76 TO 69+17 RT.

DETAIL D
SPECIAL CUT SWALE
(Not to Scale)



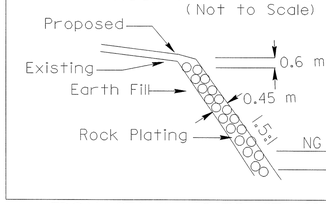
STA. 71+00 TO 73+15 Lt –L–
STA. 82+00 TO 82+20 Rt –L–
STA. 82+20 TO 82+40 Lt –L–
STA. 86+20 TO 86+40 RT. –L–
STA. 11+80 TO 12+00 RT. –Y8–
STA. 15+60 TO 16+60 LT. –Y9
STA. 16+00 TO 16+80 RT. –Y9–
STA. 17+20 TO 17+40 RT. –Y9–
STA. 17+00 TO 17+50 LT. –Y9–
USE THIS TYPICAL w/PROPOSED PROFILE
STA. 17+20 TO 18+40 RT. –Y8–

DETAIL E
BERM BASE DITCH
(Not to Scale)



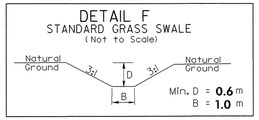
STA. 64+48 TO 64+76 –L– Lt
STA. 82+00 TO 83+00 –L– Rt
STA. 88+10 TO 89+00 –L– Rt

DETAIL S
ROCK PLATING FILL SLOPE
(Not to Scale)



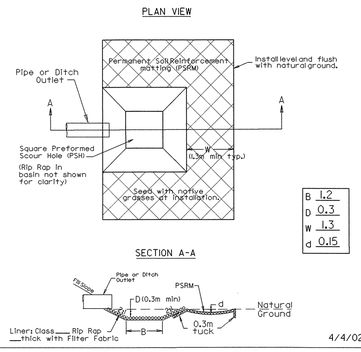
FROM STA. 11+60 TO STA. 12+00 –Y6– Rt

DETAIL F
STANDARD GRASS SWALE
(Not to Scale)



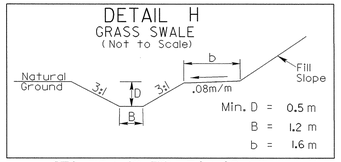
STA. 64+08 TO 64+31 RT –L–

DETAIL G
PREFORMED SCOUR HOLE



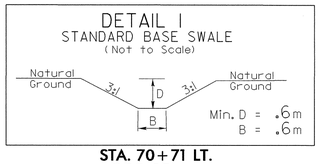
STA. 10+57 LT. –DR5–
STA. 76+20 RT. –L–
STA. 79+42 RT. –L–

DETAIL H
GRASS SWALE
(Not to Scale)



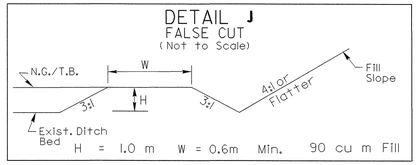
STA. 75+40 TO 76+60 LT.
STA. 76+80 TO 77+20 LT.

DETAIL I
STANDARD BASE SWALE
(Not to Scale)



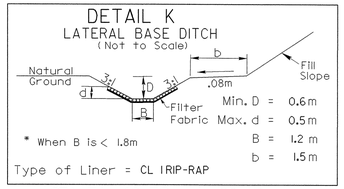
STA. 70+71 LT.
DDE 35 cm

DETAIL J
FALSE CUT
(Not to Scale)



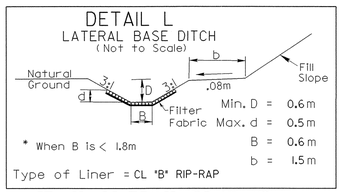
STA. 90+06 RT. –L–

DETAIL K
LATERAL BASE DITCH
(Not to Scale)



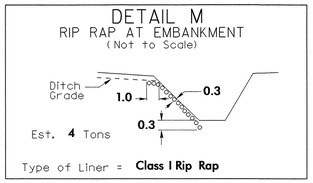
STA. 76+60 TO 76+80 LT.

DETAIL L
LATERAL BASE DITCH
(Not to Scale)



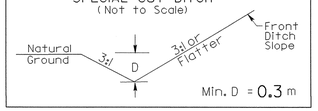
STA. 11+20 TO 11+80 LT –Y9–

DETAIL M
RIP RAP AT EMBANKMENT
(Not to Scale)



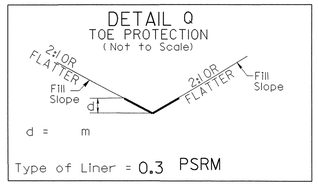
STA. 68+80 RT. –L–

DETAIL P
SPECIAL CUT DITCH
(Not to Scale)



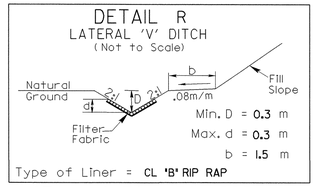
STA. 12+00 TO 13+80 DR7 RT.
STA. 14+60 TO 15+20 DR7 RT.

DETAIL Q
TOE PROTECTION
(Not to Scale)



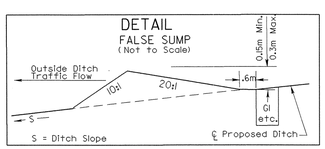
STA. 83+90 TO 85+10 –L– LT.
STA. 13+80 TO 14+30 DR7 RT.

DETAIL R
LATERAL 'V' DITCH
(Not to Scale)

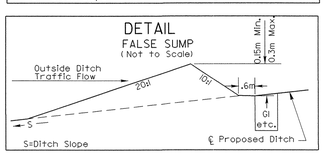


STA 11+12 TO 11+30 -DR7- LT

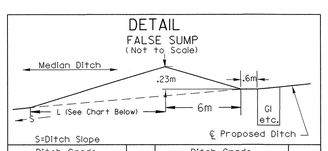
DETAIL
FALSE SUMP
(Not to Scale)



DETAIL
FALSE SUMP
(Not to Scale)

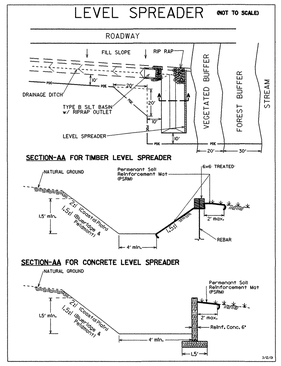


DETAIL
FALSE SUMP
(Not to Scale)



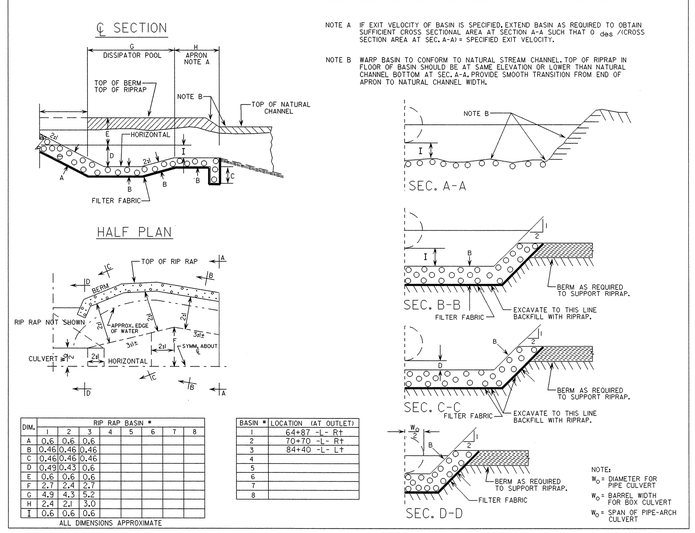
S=Ditch Slope		
Ditch Grade		Ditch Grade
0.0% To 2.0%		Over 4.0% To 6.0%
Over 2.0% To 4.0%		Over 6.0%

LEVEL SPREADER (NOT TO SCALE)



STA. 10+90 RI–Y8–
STA. 11+95 Lt. –Y9–

DETAIL N
DETAIL OF RIP-RAPPED ENERGY DISSIPATOR BASIN



NOTE A IF EXIT VELOCITY OF BASIN IS SPECIFIED, EXTEND BASIN AS REQUIRED TO OBTAIN SUFFICIENT CROSS SECTIONAL AREA AT SECTION A-A SUCH THAT Q_{des} /CROSS SECTION AREA AT SEC. A-A) = SPECIFIED EXIT VELOCITY.

NOTE B WARP BASIN TO CONFORM TO NATURAL STREAM CHANNEL, TOP OF RIPRAP IN FLOOR OF BASIN SHOULD BE AT SAME ELEVATION OR LOWER THAN NATURAL CHANNEL BOTTOM AT SEC. A-A. PROVIDE SMOOTH TRANSITION FROM END OF APRON TO NATURAL CHANNEL WIDTH.

DIM.	RIP RAP BASIN *							
	1	2	3	4	5	6	7	8
A	0.6	0.6	0.6					
B	0.46	0.46	0.46					
C	0.46	0.46	0.46					
D	0.49	0.43	0.6					
E	0.6	0.6	0.6					
F	2.7	2.4	2.7					
G	4.9	4.3	5.2					
H	2.4	2.1	3.0					
I	0.6	0.6	0.6					

ALL DIMENSIONS APPROXIMATE

BASIN *	LOCATION (AT OUTLET)
1	64+87 -L- Rt
2	70+70 -L- Rt
3	84+40 -L- Lt
4	
5	
6	
7	
8	

NOTE:
W_D = DIAMETER FOR PIPE CULVERT
W_D = BARREL WIDTH FOR BOX CULVERT
W_D = SPAN OF PIPE-ARCH CULVERT

STA 64+87 -L-
FILTER FABRIC = 140 sq m
CL IRIP RAP = 105 mtons
DDE = 150 cu m

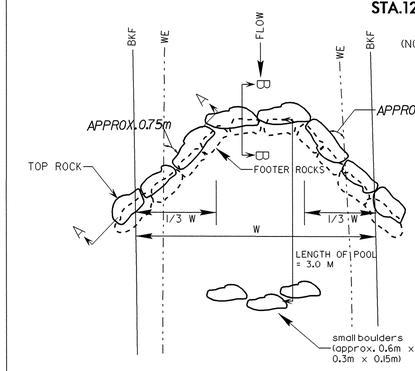
STA 70+70 -L-
FILTER FABRIC = 100 sq m
CL IRIP RAP = 65 mtons
DDE = 125 cu m

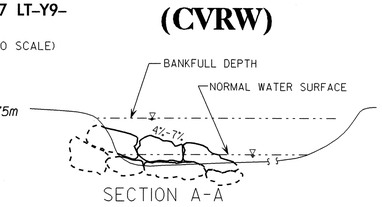
STA 84+40 -L-
FILTER FABRIC = 250 sq m
CL IRIP RAP = 195 mtons
DDE = 350 cu m

DETAIL O
CROSS VANE ROCK WEIR
(CVRW)

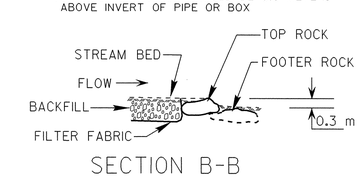
STA. 68+80 RT. –L–
STA.77+25 LT. –L–
STA.12+17 LT–Y9–

(NOT TO SCALE)





NOTE:
TOP ROCK ELEVATION SHOULD BE 0.3 METERS ABOVE INVERT OF PIPE OR BOX



NOTE:
ROCKS SHOULD BE NATIVE STONE OR SHOT ROCK, ANGULAR AND OBLONG WITH AXIS APPROXIMATELY 1m IN LENGTH

STA 68+80 -L-
FILTER FABRIC = 18 sq m
LARGE BOULDERS = 15
SMALL BOULDERS = 3
TOTAL mtons = 46

STA 77+25 -L-
FILTER FABRIC = 25 sq m
LARGE BOULDERS = 20
SMALL BOULDERS = 3
TOTAL mtons = 52

STA 12+17 -Y9-
FILTER FABRIC = 25 sq m
LARGE BOULDERS = 20
SMALL BOULDERS = 3
TOTAL mtons = 52

NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. SAMPSON
7/25/06

8/17/99

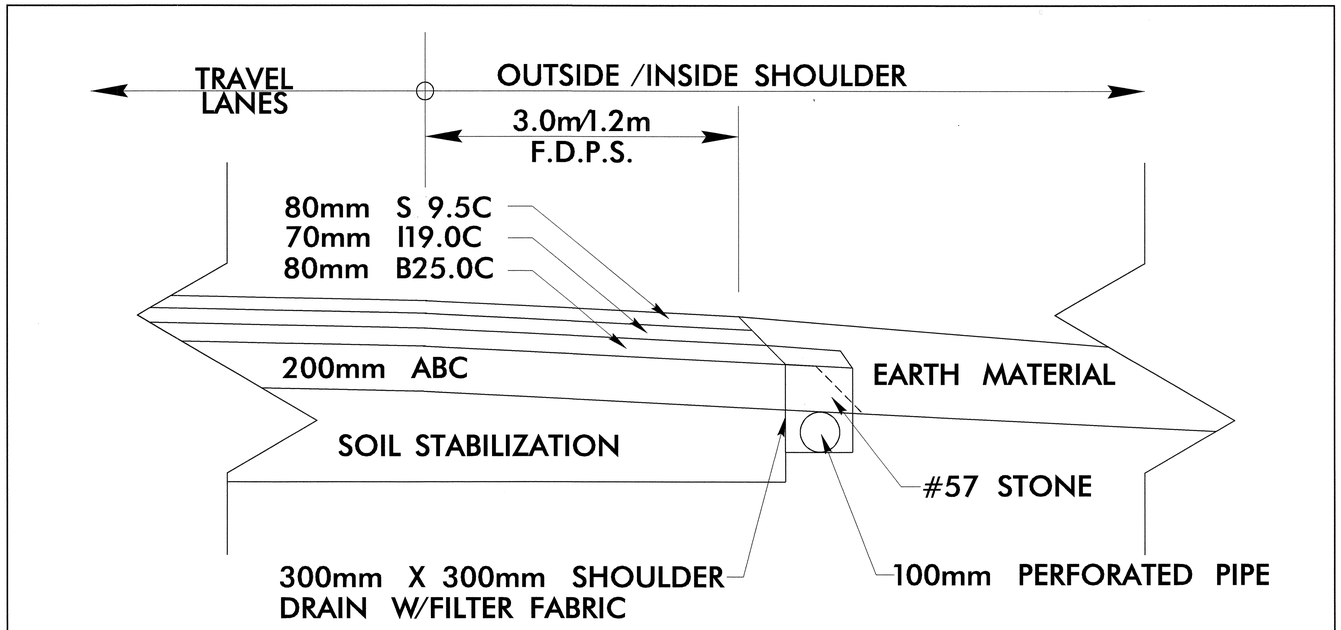
25-JUL-2006 14:48
$$$$DGN$$$$ $$$$RDMS$$$$ $$$$USER$$$$ hgapsh

METRIC	PROJECT REFERENCE NO.	SHEET NO.
	R-06091B	2-D
	ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

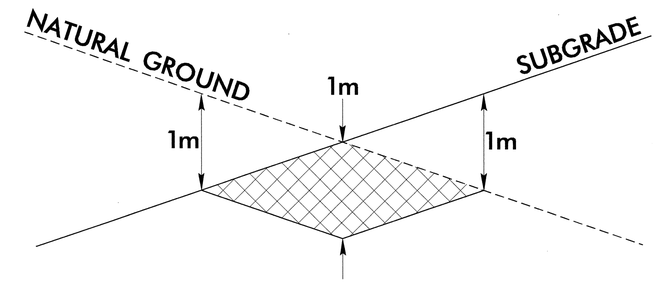
NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JAMES STAFFORD GOODNIGHT JR. 7-19-06

NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JAMES STAFFORD GOODNIGHT JR.

NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER DON-CHI CHEN 7/13/06



DETAIL OF SHOULDER DRAIN PLACEMENT
FOR MEDIAN AND OUTSIDE PAVED SHOULDERS



DETAIL OF PROPOSED UNDERCUT AT GRADE POINT

RECOMMENDED SHOULDER DRAINS:

–L– STA. 67+60 TO 73+60 (RT., OUTSIDE)
OUTLETS: 68+60, 69+50, 70+31 +/–, 71+20, 72+60
(2GI) (2GI) (2GI)

–L– STA. 80+20 TO 83+00 (RT., OUTSIDE)
OUTLETS: 81+20, 82+00 +/–
(2GI) (2GI)

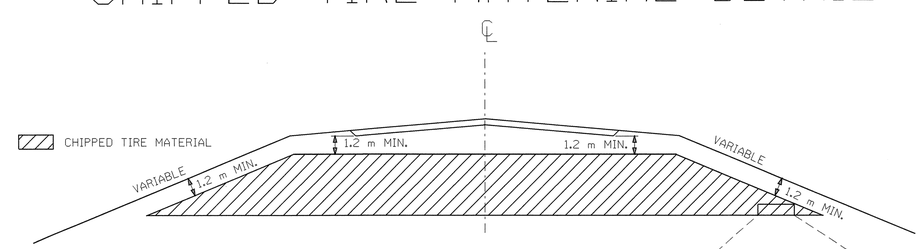
–L– STA. 85+50 TO 88+40 (RT., OUTSIDE)
OUTLETS: 86+40, 87+40, 88+40
(2GI) (2GI)

–L– STA. 69+30 TO 71+70 (LT., MEDIAN)
OUTLETS: 70+31 +/–, 70+70
(2GI) (2GI)

–L– STA. 80+20 TO 83+20 (LT., OUTSIDE)
OUTLETS: 81+20, 82+20 +/–
(2GI) (2GI)

NOTE:
STATION +/– : INDICATES VERTICAL SAG WHICH HAS TWO OUTLETS.
(EXAMPLE: –L– STA. 82+20 +/–)

CHIPPED TIRE MATERIAL DETAIL



CHIPPED TIRE MATERIAL NOT TO BE PLACED BELOW AN ELEVATION OF 1.2m MIN. ABOVE THE 100 YR FLOOD ELEVATION AS INDICATED BY HYDRAULICS

ESTIMATED CHIP TIRE MATERIAL = 8,995 m^3

30-60% CHIPPED TIRE MATERIAL PER 250 mm LIFT
100% EMBANKMENT SOIL PER 250 mm LIFT
30-60% CHIPPED TIRE MATERIAL PER 250 mm LIFT
100% EMBANKMENT SOIL PER 250 mm LIFT

USE DETAIL AS FOLLOWS:

-Y8- 13+20 TO 14+18.802
-Y8- 15+22.282 TO 16+80
-Y9- 11+00 TO 13+35.468
-Y9- 14+33.920 TO 15+00

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29-SEP-2005 09:58
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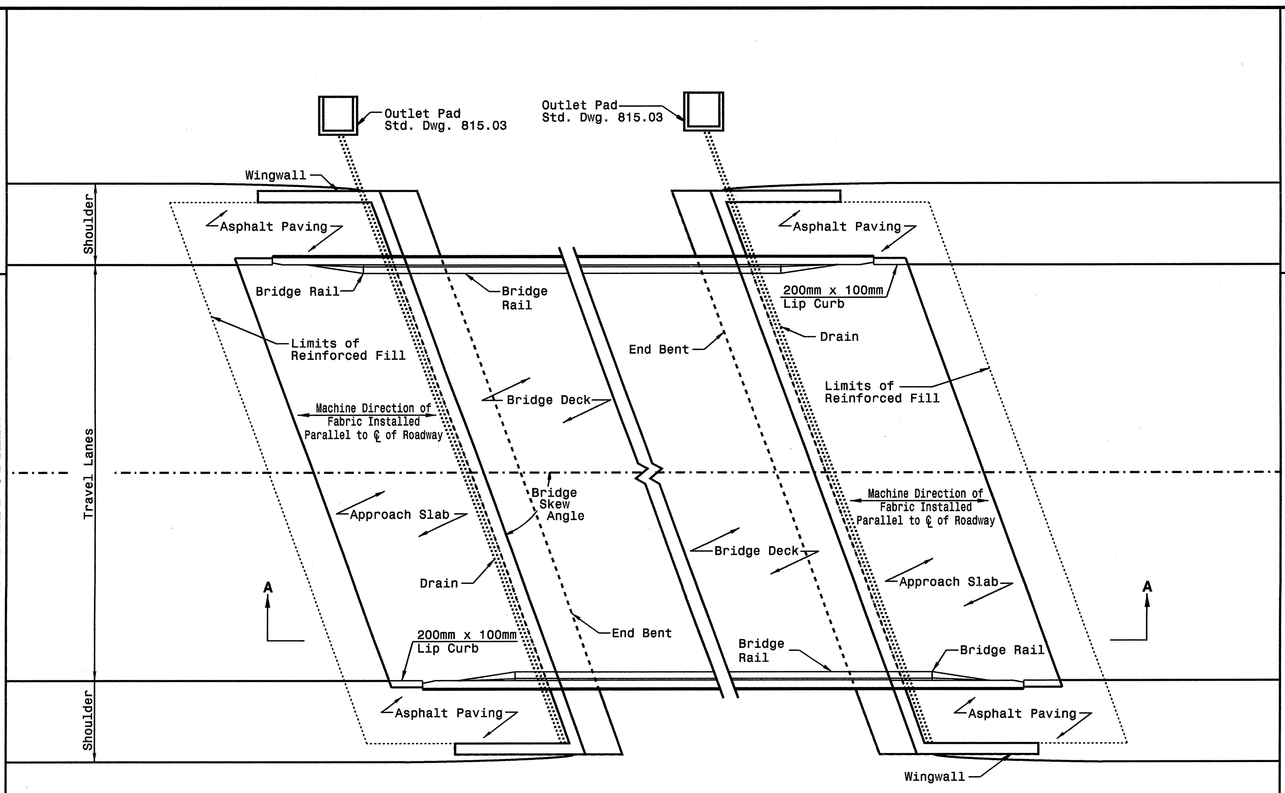
ericward AT PS222293

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



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.

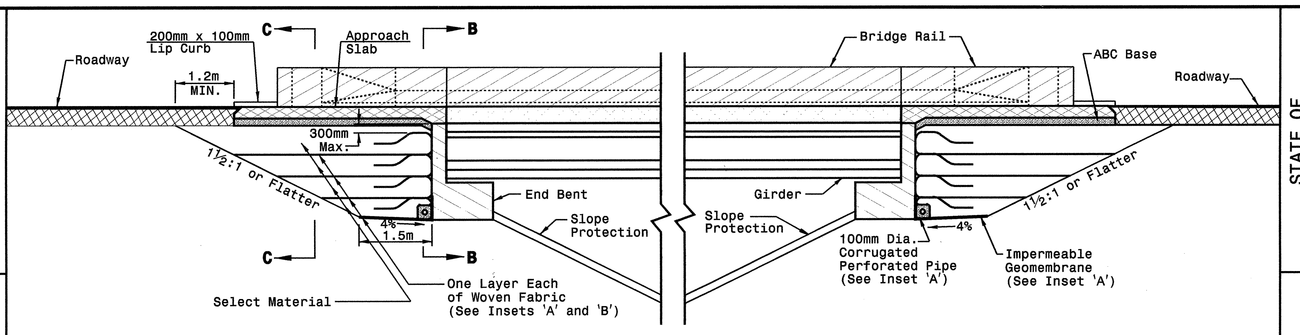
METRIC DETAIL DRAWING FOR
REINFORCED BRIDGE APPROACH FILLS
4.57m MINIMUM APPROACH SLAB

SHEET 1 OF 7
422D10

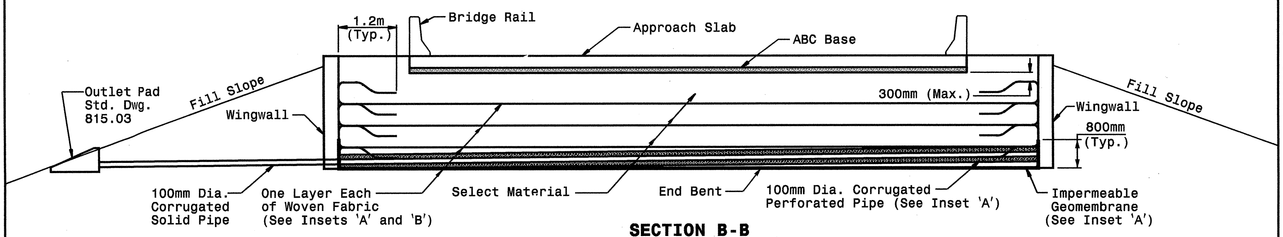
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

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

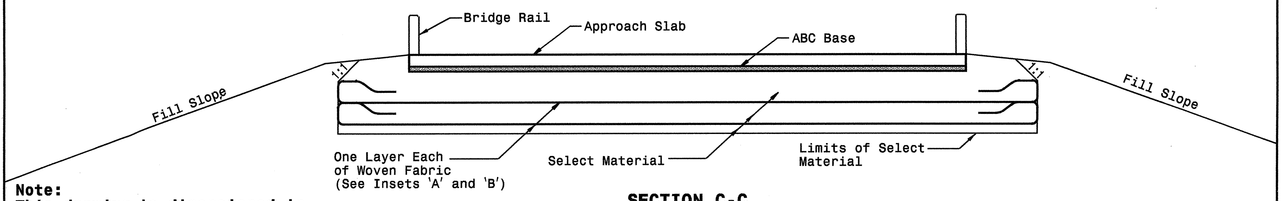
SHEET 2 OF 7
422D10



SECTION A-A



SECTION B-B



SECTION C-C

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

4.57m MINIMUM APPROACH SLAB

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

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: [signature] DATE: 9/21/05
FILE SPEC.: stds/02stdstodetails/metric/422d10.dgn

NORTH CAROLINA PROFESSIONAL SEAL 12956 ENGINEER
7/27/06

PROJECT REFERENCE NO. R-0609 18
SHEET NO. 2-E
METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	2-F

METRIC

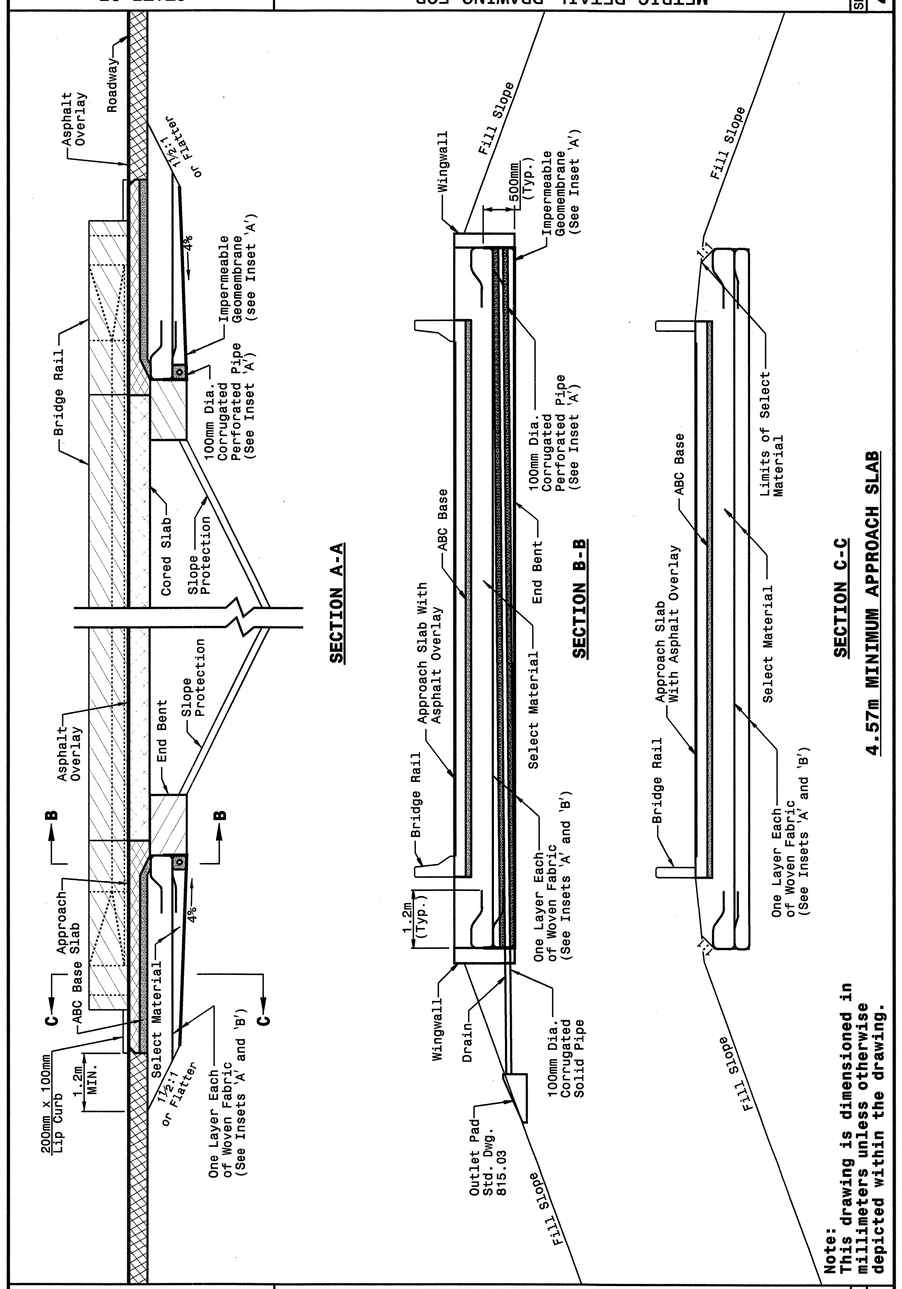
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

METRIC DETAIL DRAWING FOR

REINFORCED BRIDGE APPROACH FILLS

CORED SLAB BRIDGES
4.57m MINIMUM APPROACH SLAB

SHEET 3 OF 7 **422D10**



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

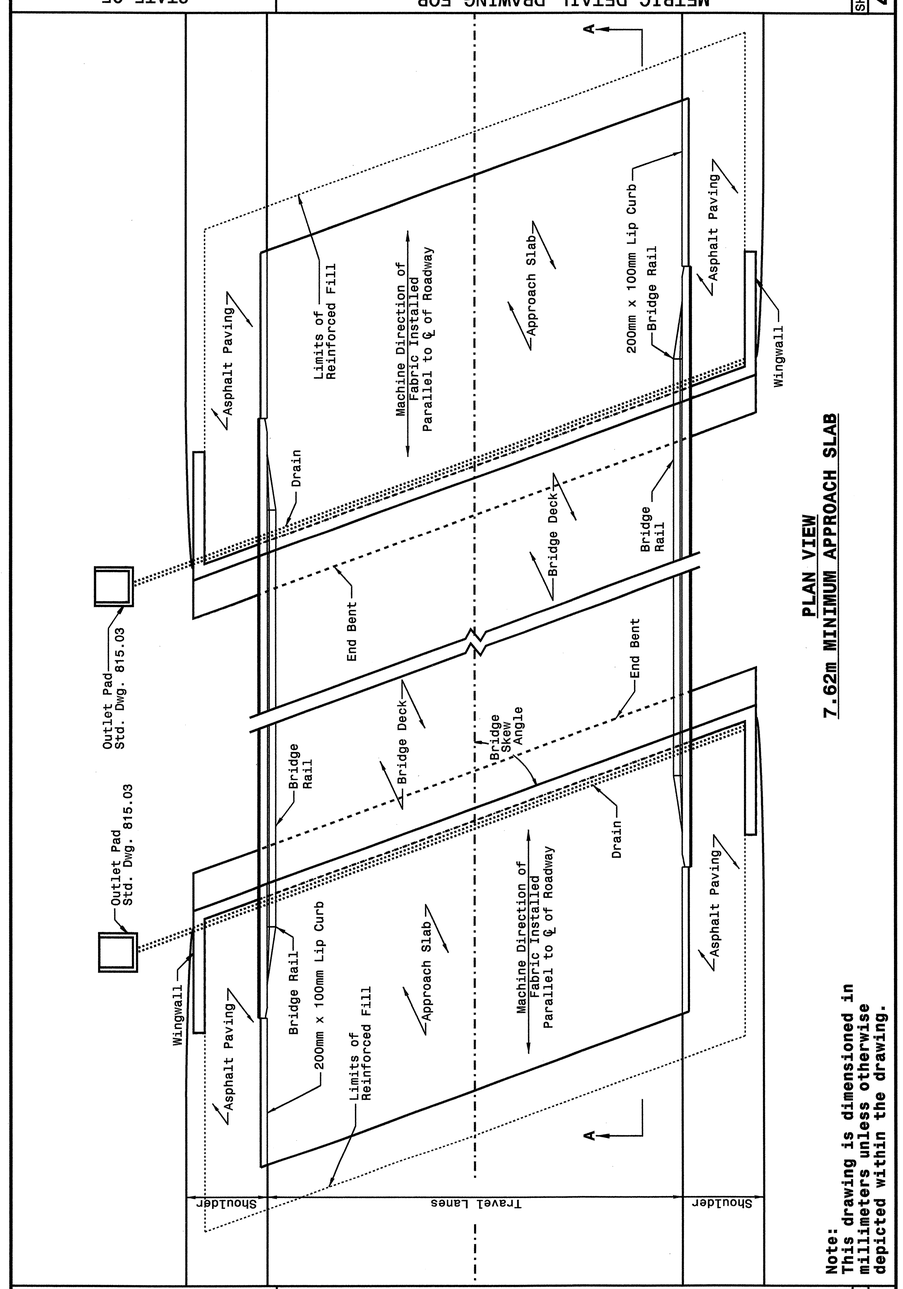
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

METRIC DETAIL DRAWING FOR

REINFORCED BRIDGE APPROACH FILLS

7.62m MINIMUM APPROACH SLAB

SHEET 4 OF 7 **422D10**



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

7.62m MINIMUM APPROACH SLAB

SHEET 4 OF 7 **422D10**

NORTH CAROLINA PROFESSIONAL SEAL 022266 ENGINEER
7/26/06

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: 7/26/05
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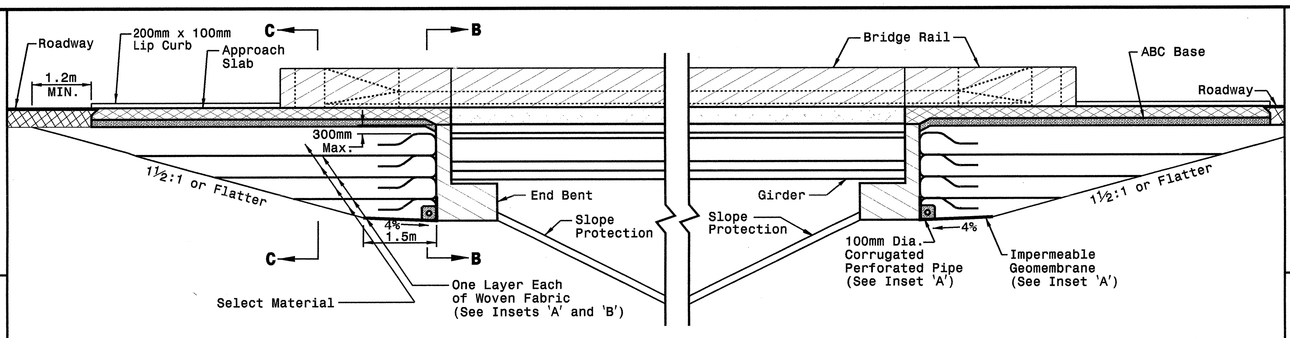
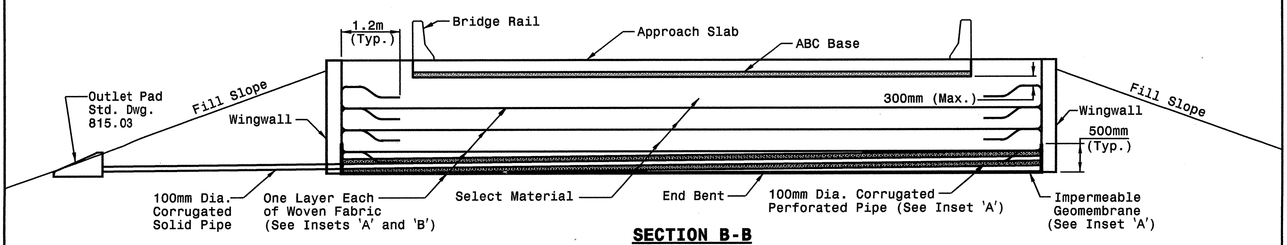
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

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



SECTION A-A



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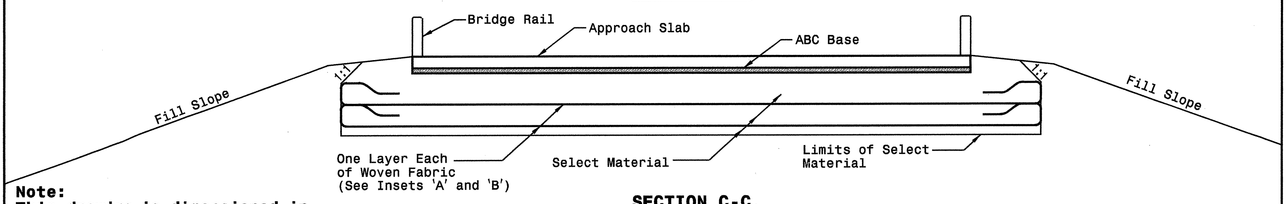


SECTION C-C

7.62m MINIMUM APPROACH SLAB

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

SHEET 5 OF 7
422D10

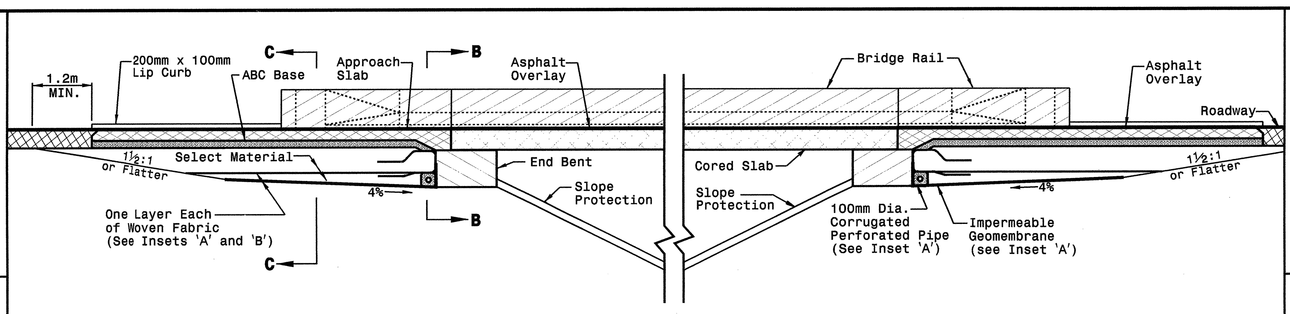
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

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

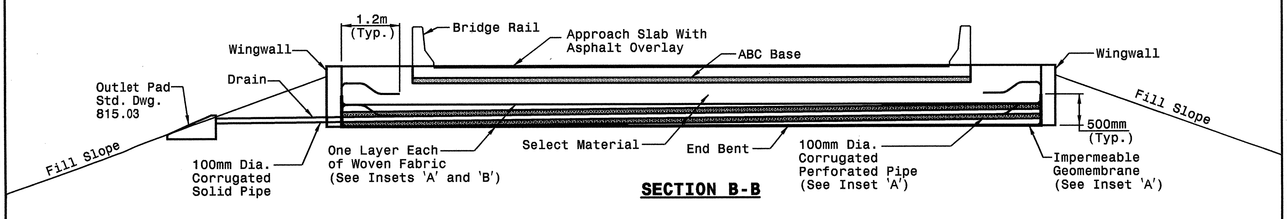
SHEET 5 OF 7
422D10

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

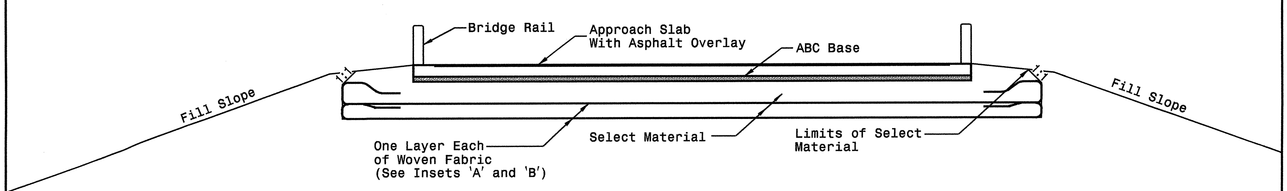
METRIC DETAIL DRAWING FOR
REINFORCED BRIDGE APPROACH FILLS
CORED SLAB BRIDGES
7.62m MINIMUM APPROACH SLAB



SECTION A-A



SECTION B-B



SECTION C-C

7.62m MINIMUM APPROACH SLAB

Note:
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SHEET 6 OF 7
422D10

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

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:
FILE SPEC.: stds/02stdspecdetail/metric/422d10.dgn

PROJECT REFERENCE NO. R-0609B
SHEET NO. 2-F1

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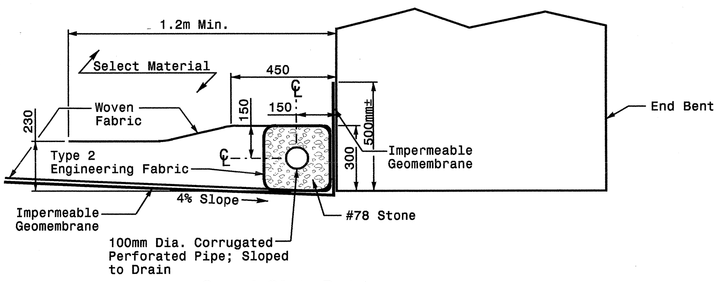
ericward AT PS222293

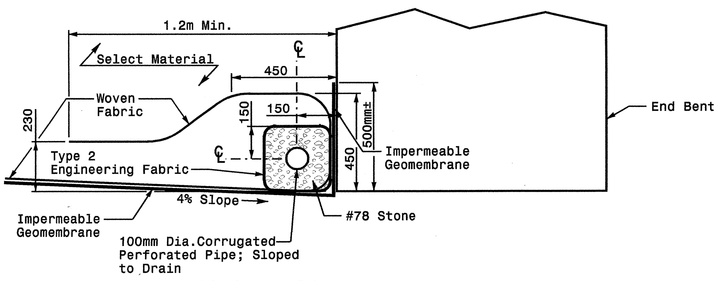
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

METRIC DETAIL DRAWING FOR
REINFORCED BRIDGE APPROACH FILLS
INSETS AND CHARTS

SHEET 7 OF 7
422D10

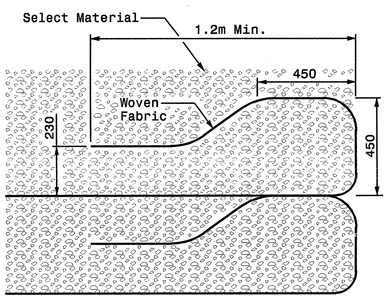


Cored Slab Bridge
Showing First Lift and Drains



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:
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
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: E.E. WARD DATE: 09-12-05
CHECKED BY: DATE: 9/23/05
FILE SPEC.: stds/02stdstodetails/metric/422d10.dgn

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HOCKER

PROJECT REFERENCE NO. R-0609IB
SHEET NO. 2-F-2
METRIC

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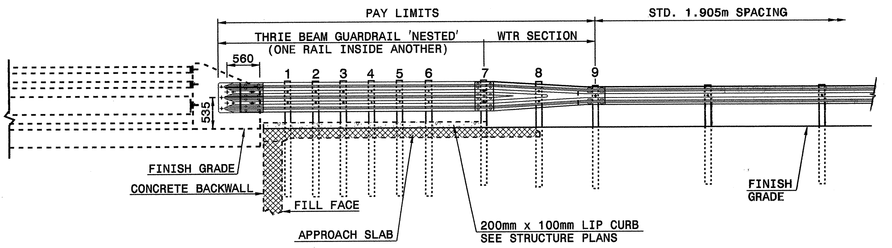
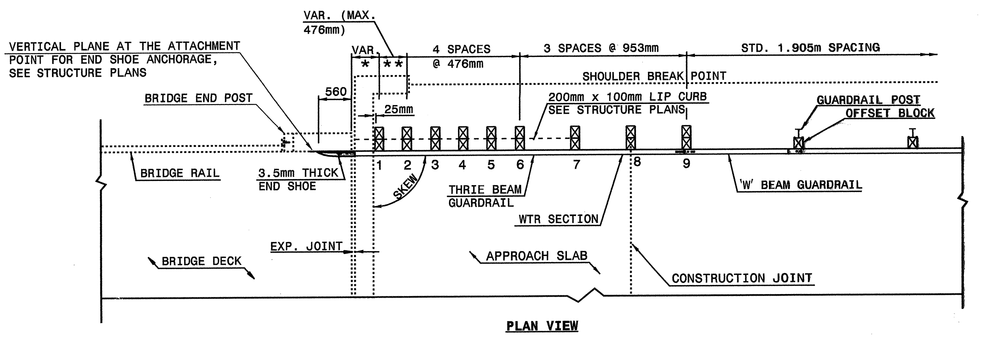
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

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



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

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

SHEET 1 OF 6
862D03

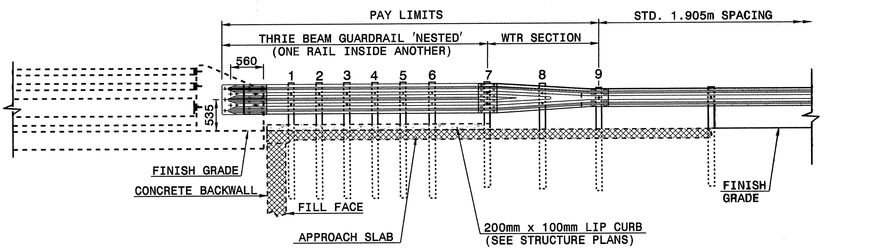
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

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

SHEET 1 OF 6
862D03

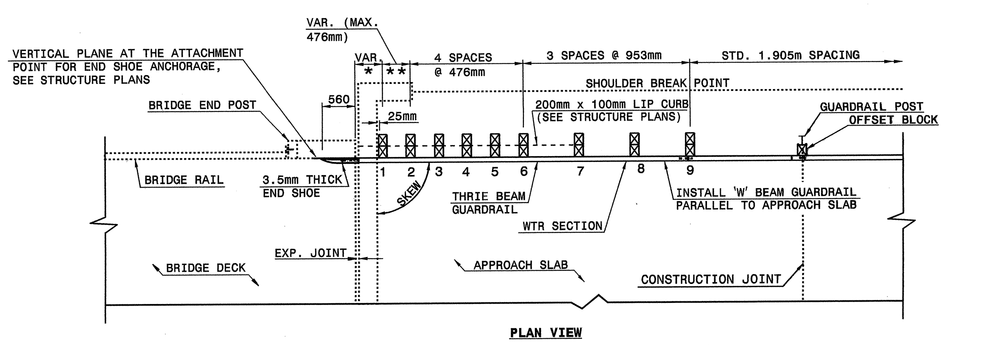
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

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



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

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

SHEET 2 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

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: 9-21-05
FILE SPEC.: st05/02stdtoDetails/metric/86203.dgn

NORTH CAROLINA PROFESSIONAL SEAL 022906 ENGINEER

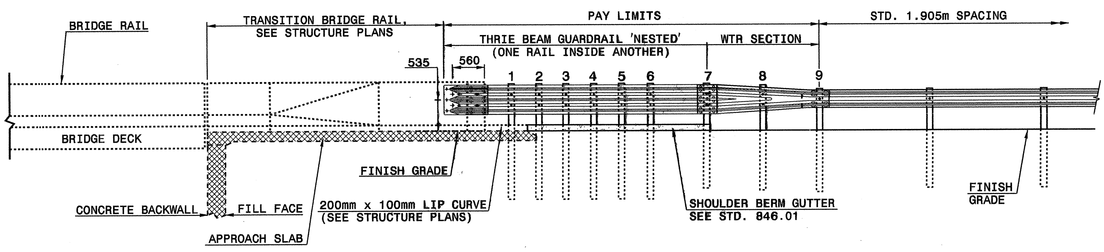
PROJECT REFERENCE NO.	SHEET NO.
R-0609B	2-G

METRIC

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

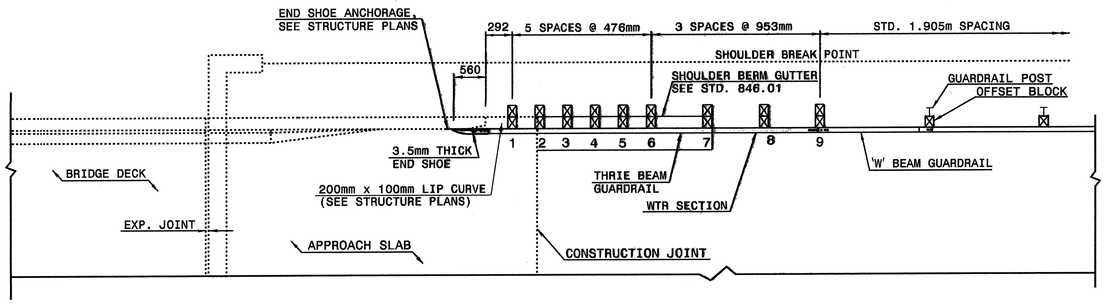
METRIC DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO
RAIL ON APPROACH SLAB (4.57m MINIMUM LENGTH APPROACH SLAB)

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

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

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

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

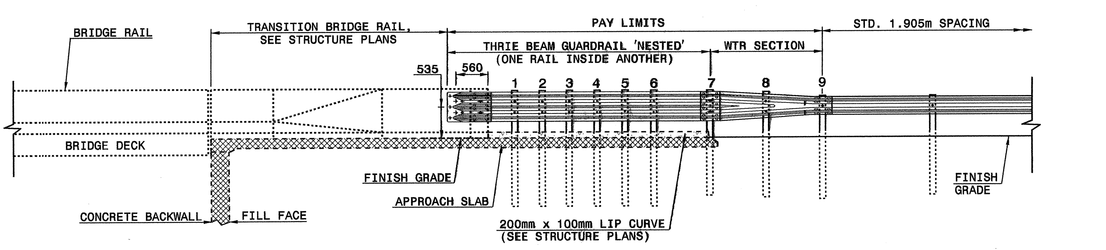
METRIC DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO
RAIL ON APPROACH SLAB (4.57m MINIMUM LENGTH APPROACH SLAB)

SHEET 3 OF 6
862D03

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

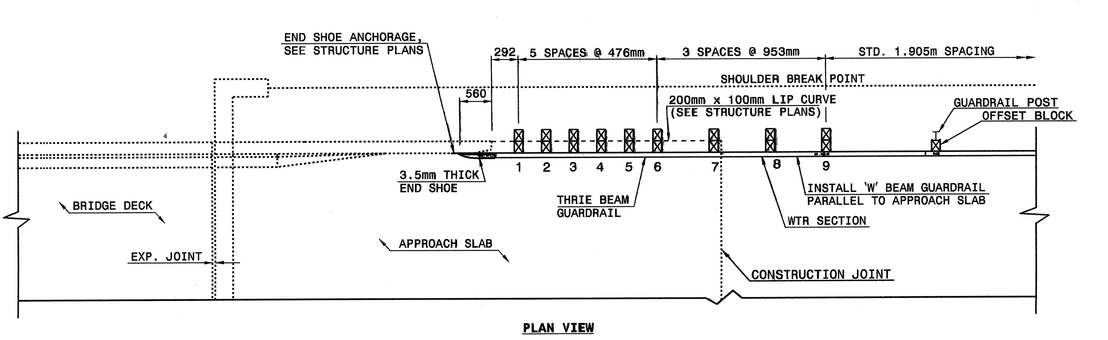
METRIC DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO
RAIL ON APPROACH SLAB (7.62m MINIMUM LENGTH APPROACH SLAB)

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

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

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

SHEET 4 OF 6
862D03

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

SEE PLATE FOR TITLE

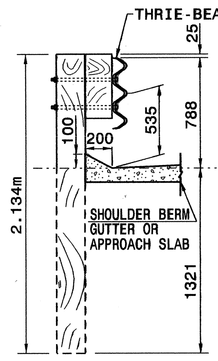
ORIGINAL BY: 2002 STANDARDS DATE: 01-15-02
MODIFIED BY: E.E. WARD DATE: 09-21-05
CHECKED BY: DATE: 9/21/05
FILE SPEC.: s:\ps\02stds\details\metric\862d03.dgn

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 025196 ENGINEERING

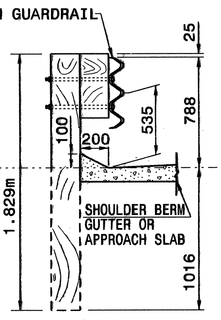
PROJECT REFERENCE NO. R-0009B
SHEET NO. 2-H
METRIC

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

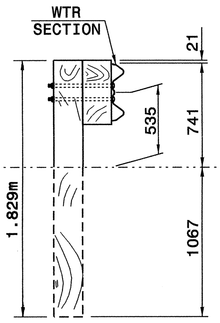
METRIC DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III



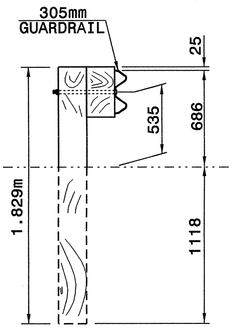
SECTION OF THRIE BEAM POSTS 1 THRU 6



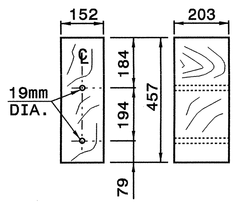
SECTION OF THRIE BEAM POST 7



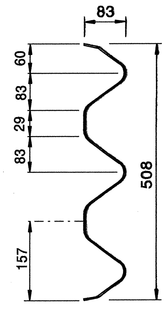
SECTION OF WTR BEAM POST 8



SECTION OF 'W' BEAM POST 9

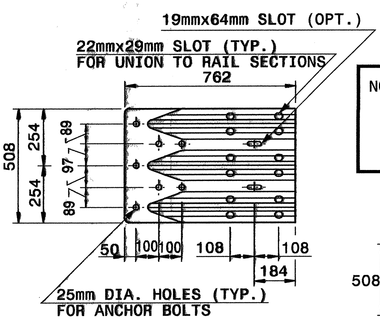


THRIE BEAM OFFSET BLOCK



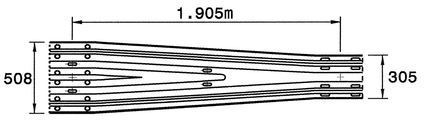
THRIE-BEAM SECTION

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

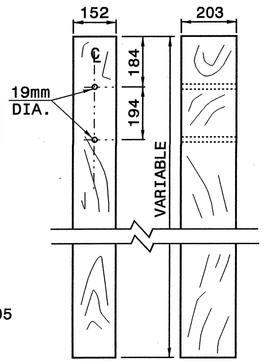


END SHOE

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.



WTR SECTION
ELEVATION VIEW



THRIE BEAM LINE POST

SHEET 5 OF 6
862D03

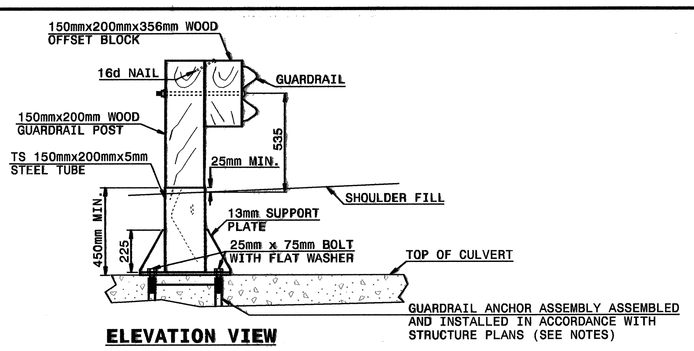
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

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

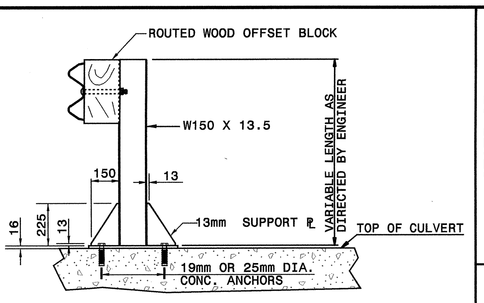
SHEET 5 OF 6
862D03

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

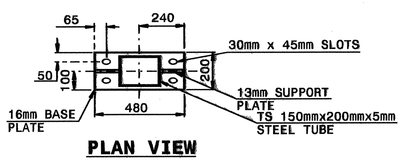
METRIC DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
ANCHORAGE FOR GUARDRAIL POST ON BOX CULVERT



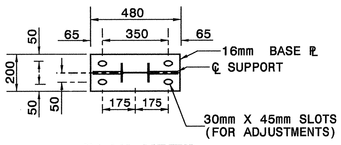
ELEVATION VIEW



ELEVATION VIEW



PLAN 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 POSTIONED 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.

ANCHORAGE FOR GUARDRAIL POST ON BOX CULVERT

SHEET 6 OF 6
862D03

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

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

ORIGINAL BY: 2002 STANDARDS DATE: 01-15-02
MODIFIED BY: DATE: 09-15-05
FILE SPEC.: stds/02stdstoDetails/metric/862d03.dgn

SEE PLATE FOR TITLE

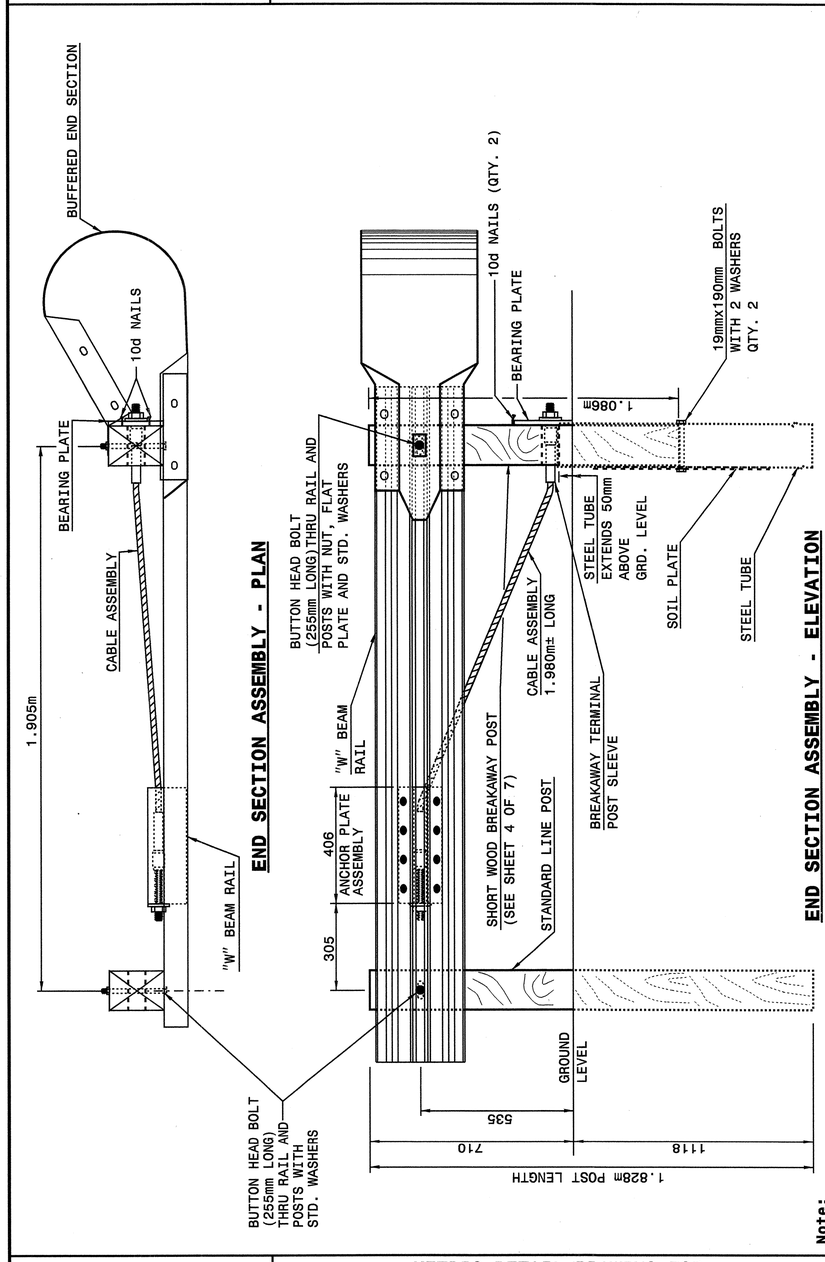
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 025256

PROJECT REFERENCE NO. R-0609B
SHEET NO. 2-H.1

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-0609B	2-I

METRIC

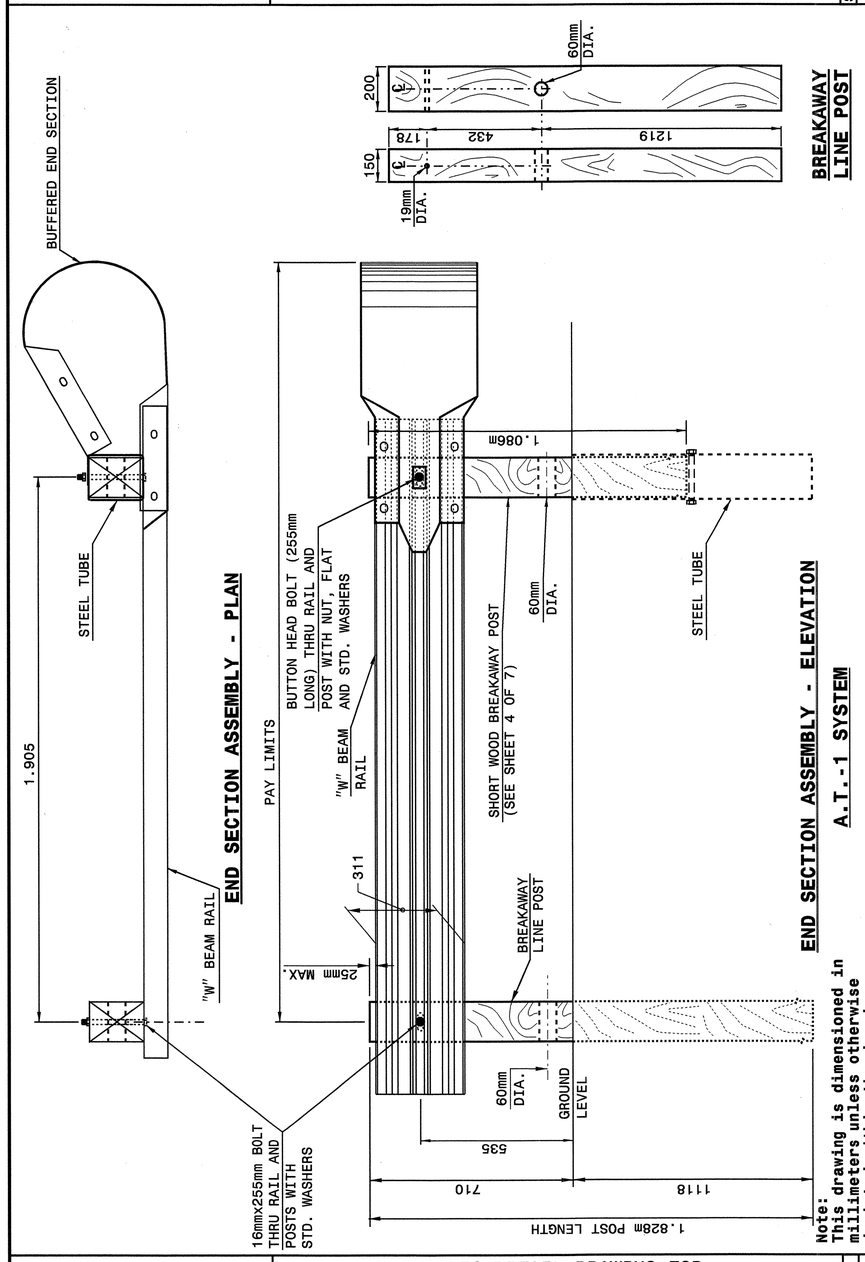


Note: This drawing is dimensioned in millimeters unless otherwise depicted within the drawing.

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

METRIC DETAIL DRAWING FOR **GUARDRAIL INSTALLATION**

SHEET 1 OF 7 **862D02**



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**

SHEET 2 OF 7 **862D02**

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL E. HOCHSTEDLER

7/26/06

DESIGN 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:
FILE SPEC.: /dsf/stds/02todetail/metric/86202/862d02m.dgn

12-JUL-2004 15:06
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ericward AT DS212260

6/20/03

12-JUL-2004 15:07
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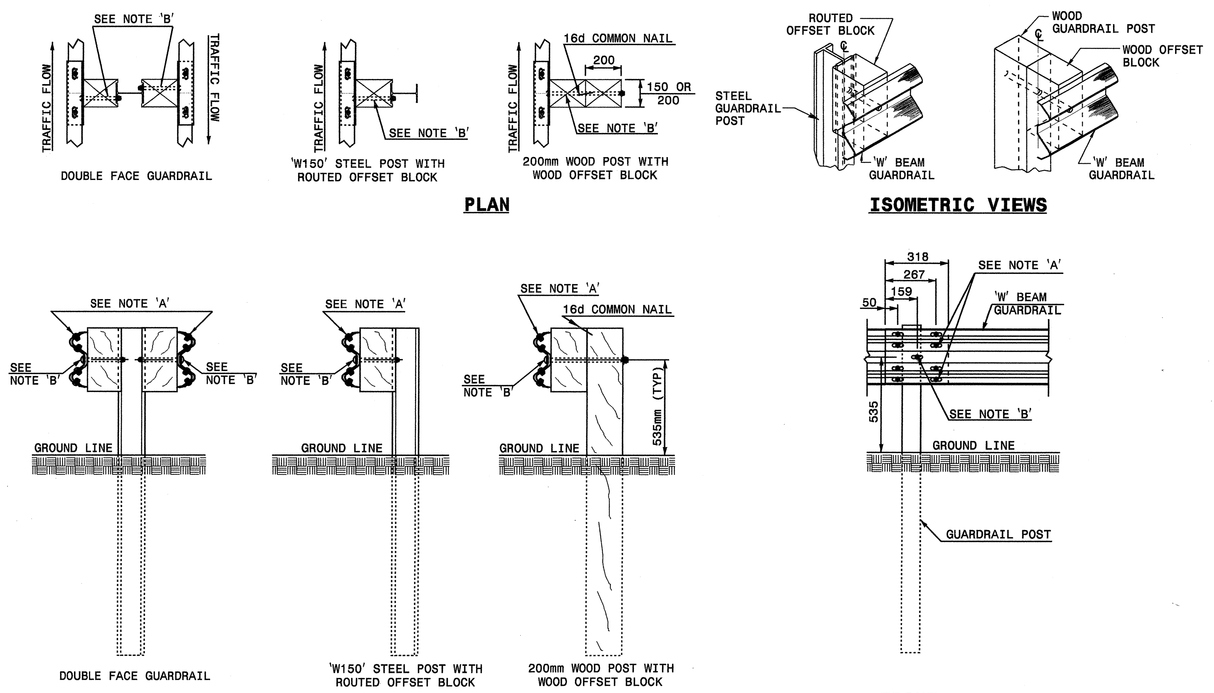
ericward AT DS212260

6/10/99

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

METRIC DETAIL DRAWING FOR
GUARDRAIL INSTALLATION



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

SHEET 3 OF 7
862D02

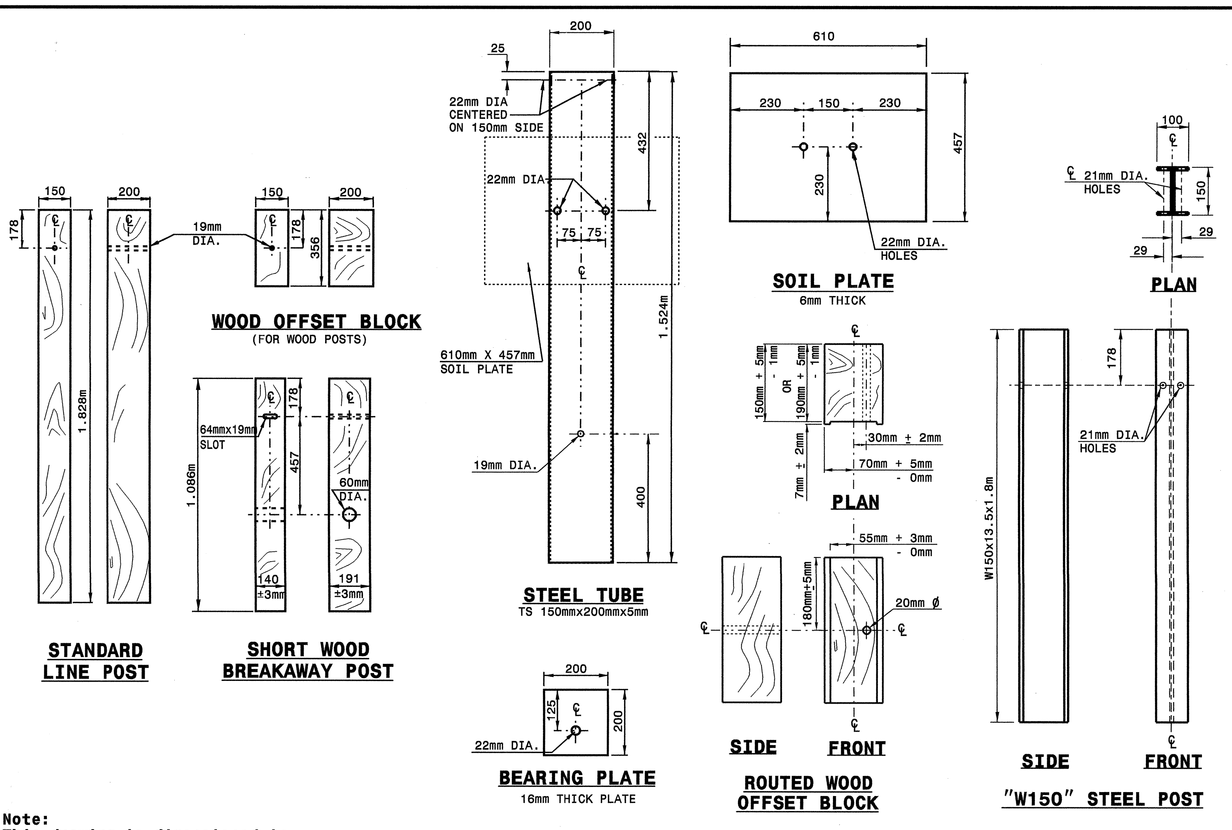
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

METRIC DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 3 OF 7
862D02

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.

SYSTEM PARTS

SHEET 4 OF 7
862D02

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

METRIC DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 4 OF 7
862D02

DESIGN 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. WARD DATE: 02-09-03
CHECKED BY: DATE: 7/1/04
FILE SPEC.: /usr/stds/02todetail/metric/86202/862d02m.dgn

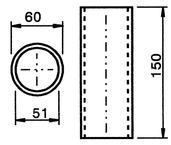
NORTH CAROLINA PROFESSIONAL SEAL 022963 ENGINEER JOEL S. HARRISON
7/26/06

PROJECT REFERENCE NO. R-0609B
SHEET NO. 2-J
METRIC

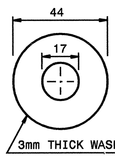
6/10/99

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

METRIC DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

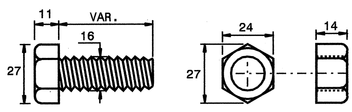


BREAKAWAY TERMINAL POST SLEEVE

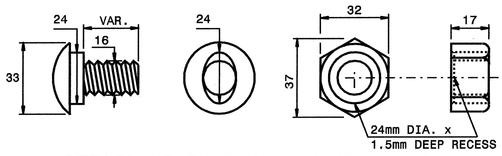


DETAIL OF STANDARD WASHER

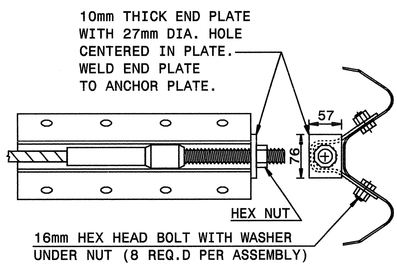
STANDARD WASHER: TYPICAL USE UNDER NUT WITH WOOD POST



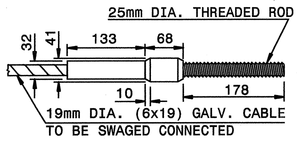
DETAIL OF STANDARD HEX BOLT AND NUT



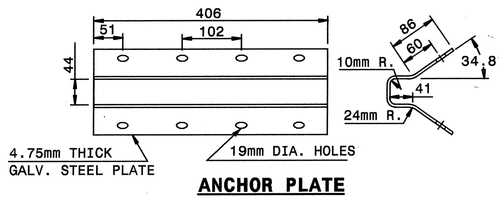
DETAIL OF BUTTON HEAD BOLT AND NUT



ANCHOR PLATE ASSEMBLY



SWAGED CABLE



ANCHOR PLATE

CABLE ASSEMBLY

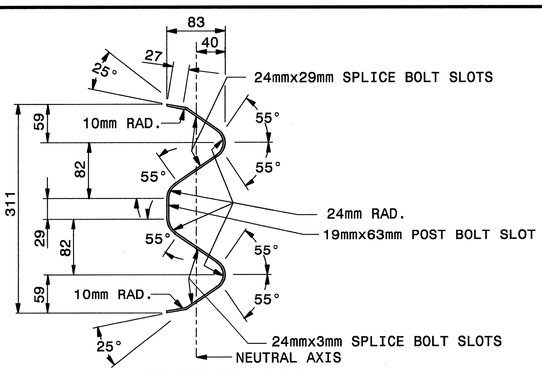
Note:
This drawing is dimensioned in millimeters unless otherwise depicted within the drawing.

SYSTEM PARTS

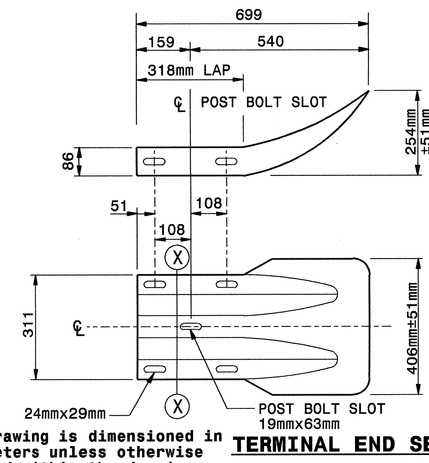
SHEET 5 OF 7
862D02

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

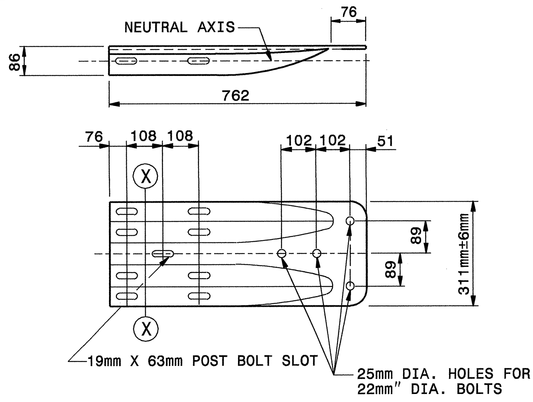
METRIC DETAIL DRAWING FOR
GUARDRAIL INSTALLATION



SECTION X-X



TERMINAL END SECTION



TYPICAL END SHOE

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

SYSTEM PARTS - GENERAL USE

SHEET 6 OF 7
862D02

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

SEE PLATE FOR TITLE

ORIGINAL BY: 2D02 STD.862.02 DATE:
MODIFIED BY: K.L. WARD DATE: 02-09-03
CHECKED BY: DATE:
FILE SPEC.: /usr/stds/02ctdetail/metric/86202/0862d02m.dgn

NORTH CAROLINA PROFESSIONAL SEAL 02356 ENGINEER JOEL R. LEWIS

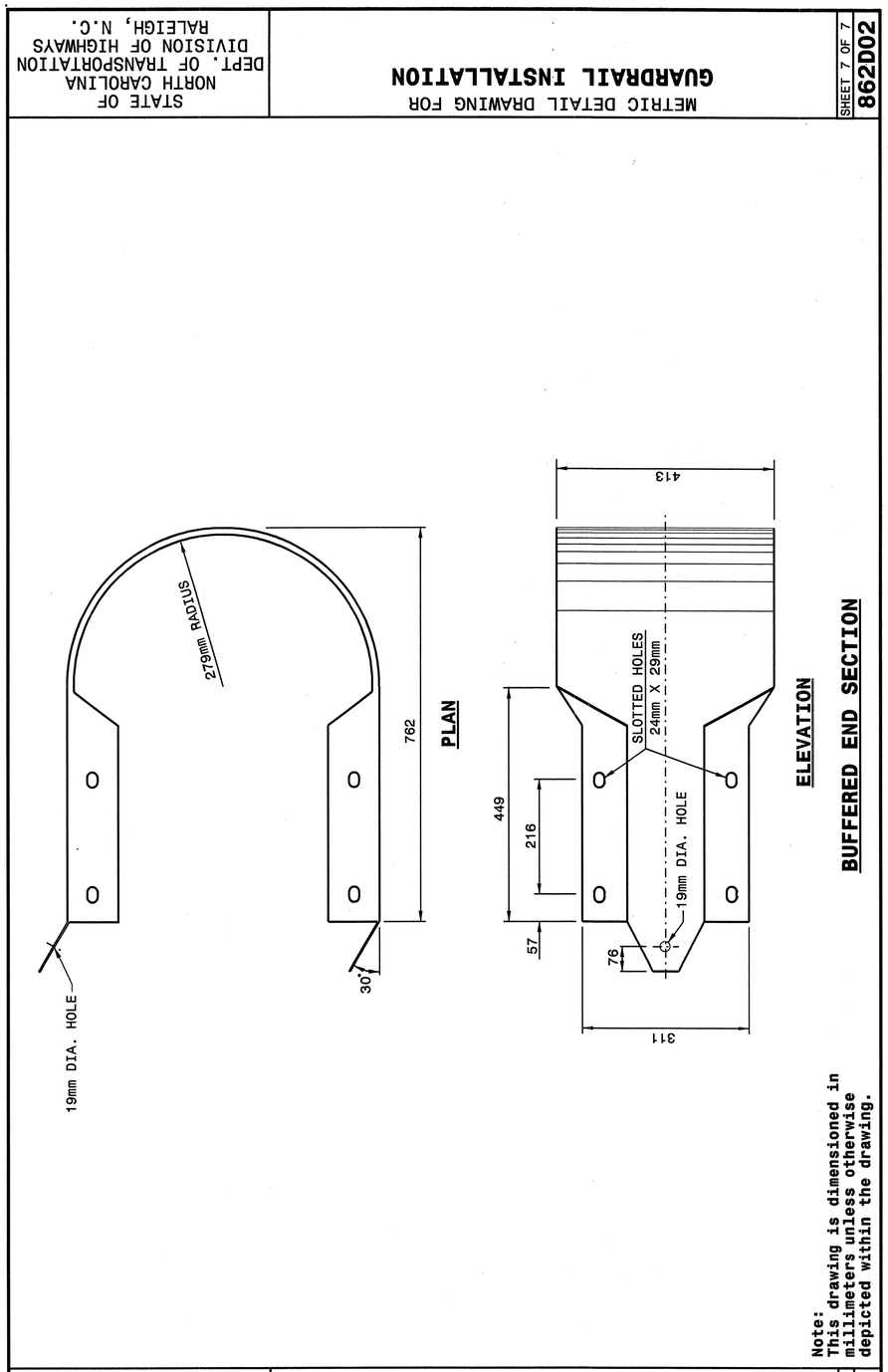
7/14/16

PROJECT REFERENCE NO. R-0609B
SHEET NO. 2-K

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-06091B	2-L

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

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HOCHSTEIN
7/24/06

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

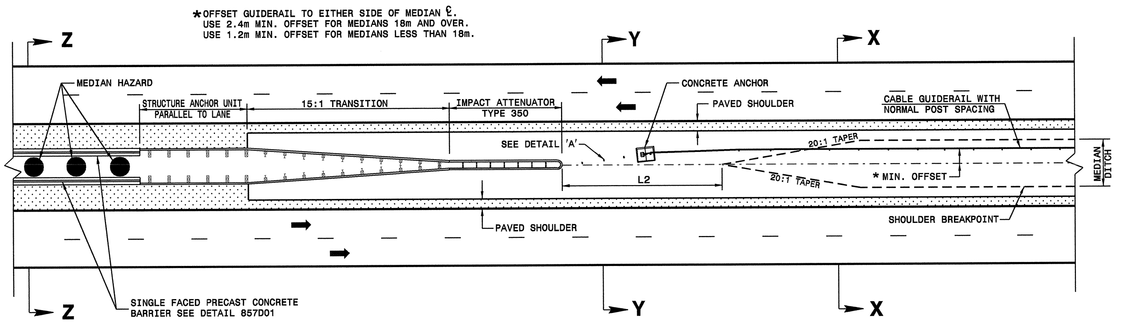
SEE PLATE FOR TITLE

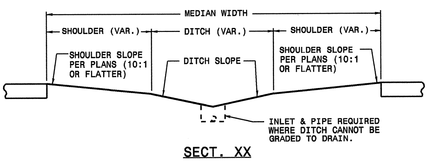
ORIGINAL BY: 2002 STD.862.02 DATE:
MODIFIED BY: E.E. WARD DATE: 02-09-03
CHECKED BY: [signature] DATE: 7/13/04
FILE SPEC.: /usr/stds/02todetail/metric/86202/862d02m.dgn

12-JUL-2004 15:07
W:\Special Details\ericward\stds\02'Stds to Special Details\metric\86202\0862d02m.dgn
ericward AT DS212260

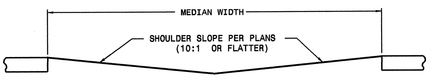
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

METRIC DETAIL DRAWING FOR
CABLE GUIDERAIL
MEDIAN HAZARD GUIDERAIL LAYOUT

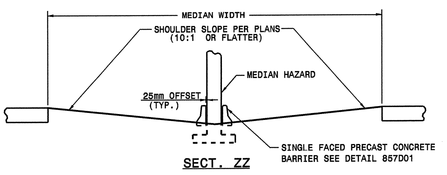




SECT. XX

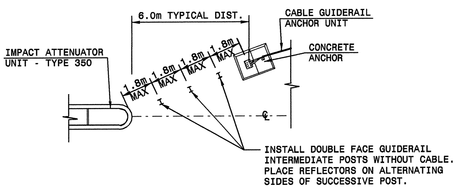


SECT. YY



SECT. ZZ

LIMITS OF -L2-	
MEDIAN WIDTH (m)	-L2- DIMENSION (m)
9.0	24.4
11.0	18.3
12.0 & ABOVE	12.2



NOTE: POSTS WILL ONLY BE PLACED IN ONE OF THE TWO OPENINGS AT EACH MEDIAN HAZARD UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

DETAIL 'A'

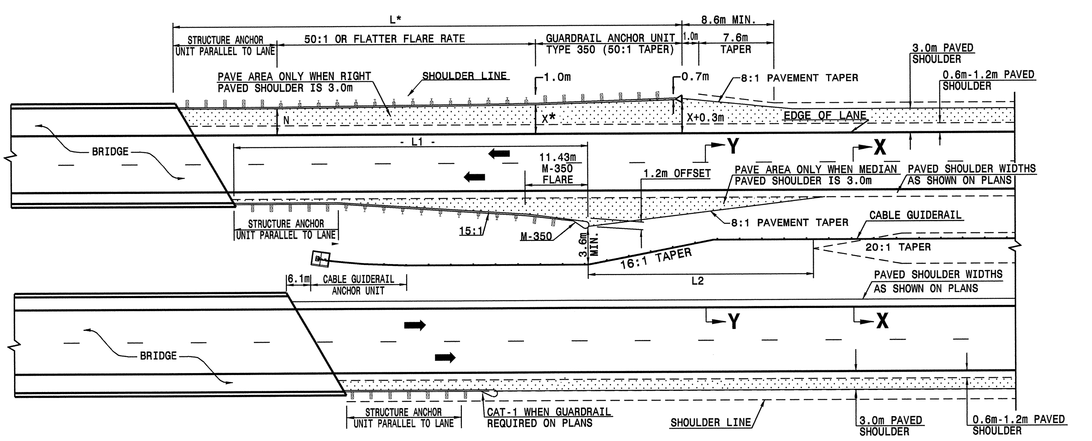
Note:
This drawing is dimensioned in millimeters unless otherwise depicted within the drawing.

DETAIL OF TREATMENT AT MEDIAN HAZARDS

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

METRIC DETAIL DRAWING FOR
CABLE GUIDERAIL
MEDIAN HAZARD GUIDERAIL LAYOUT

SHEET 1 OF 11
865D01



DIMENSIONS FOR LENGTH OF GUARDRAIL APPROACHING DUAL LANE BRIDGES							
MEDIAN WIDTH	-L-*			-L1-			-L2- DIM.
	110 km/h	100 km/h	80 km/h	110 km/h	100 km/h	80 km/h	
14.0m & ABOVE	91.440	76.200	45.720	64.770	57.150	41.910	12.2

NOTES: ★BASED ON "X" OF 3.6m
USE FLARE RATE AS THE CONTROL IF THE "X" DISTANCE IS NOT OBTAINED. ("X" IS BASED ON SHOULDER WIDTHS IN THE HIGHWAY DESIGN BRANCH MANUAL, PART 1, 1-4B, F1A).
"N"= DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL WHERE GUARDRAIL IS PARALLEL TO LANE.
THE DESIGN LAYOUT FOR LENGTHS SHOWN ON THIS STANDARD ARE MINIMUM DESIGN LENGTHS.
SEE STANDARD 862.01 SHEET 1 FOR SECTIONS XX, YY
SEE STD. 862.03 FOR STRUCTURE ANCHOR UNITS

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

DETAIL OF CABLE GUIDERAIL AT DUAL LANE BRIDGES

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

METRIC DETAIL DRAWING FOR
CABLE GUIDERAIL
DUAL LANE BRIDGES GUIDERAIL LAYOUT

SHEET 2 OF 11
865D01

ORIGINAL BY: 2002 STANDARDS DATE: 1-15-02
MODIFIED BY: E.E. WARD DATE: 12-03-04
CHECKED BY: DATE: 12/6/04
FILE SPEC.: /usr/std/02stds to details/metric/86501/0865d01.dgn

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

SEE PLATE FOR TITLE

NORTH CAROLINA PROFESSIONAL SEAL 022569 ENGINEER
12/6/04

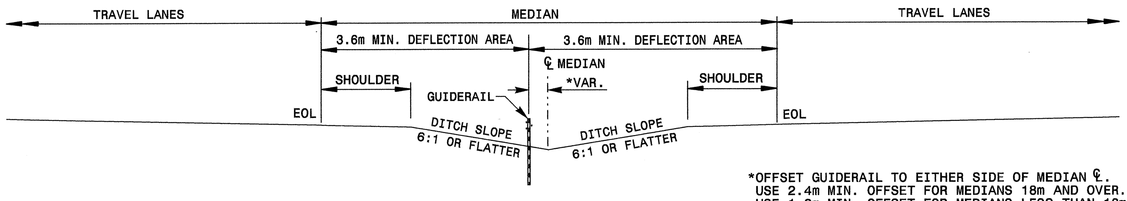
PROJECT REFERENCE NO. R-0603B
SHEET NO. 2-M
METRIC

14-APR-2004 08:15
W:\Special Details\ericward\stds\02 Stds to Special Details\metric\86501\0865d01m.dgn
ericward AT DS212260

6/10/99

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

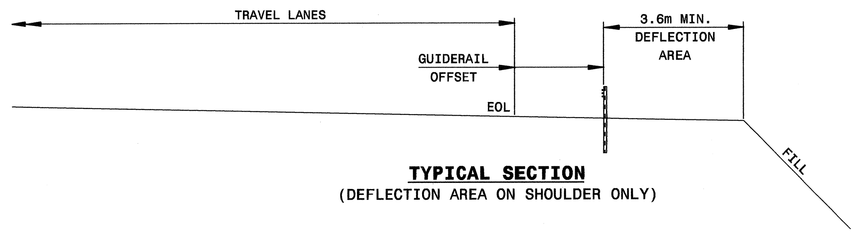
METRIC DETAIL DRAWING FOR
CABLE GUIDERAIL
DESIGN AND PLACEMENT



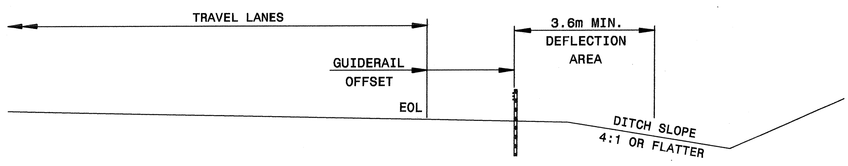
*OFFSET GUIDERAIL TO EITHER SIDE OF MEDIAN ℄.
USE 2.4m MIN. OFFSET FOR MEDIANS 18m AND OVER.
USE 1.2m MIN. OFFSET FOR MEDIANS LESS THAN 18m.

TYPICAL SECTION
(DEFLECTION AREA ON MEDIAN SLOPES)

DOUBLE FACE GUIDERAIL APPLICATION



TYPICAL SECTION
(DEFLECTION AREA ON SHOULDER ONLY)



TYPICAL SECTION
(DEFLECTION AREA ON SHOULDER AND DITCH SLOPE)

SINGLE FACE GUIDERAIL APPLICATION

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

SHEET 3 OF 11
865D01

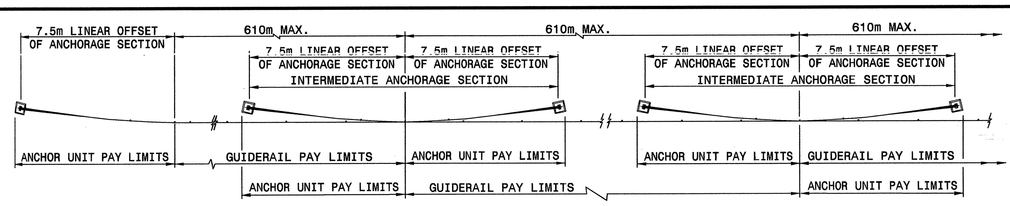
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

METRIC DETAIL DRAWING FOR
CABLE GUIDERAIL
DESIGN AND PLACEMENT

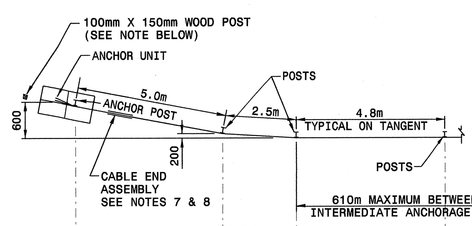
SHEET 3 OF 11
865D01

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

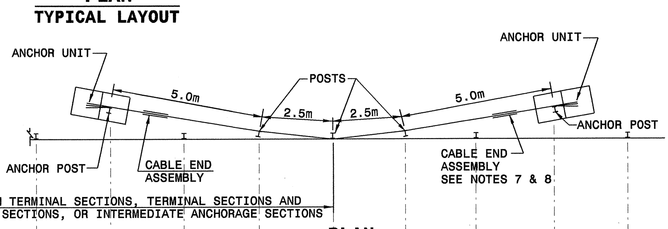
METRIC DETAIL DRAWING FOR
CABLE GUIDERAIL
GUIDERAIL LAYOUT



PLAN
TYPICAL LAYOUT



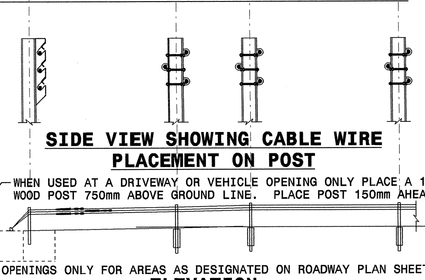
PLAN
TYPICAL APPROACH & TERMINAL SECTIONS



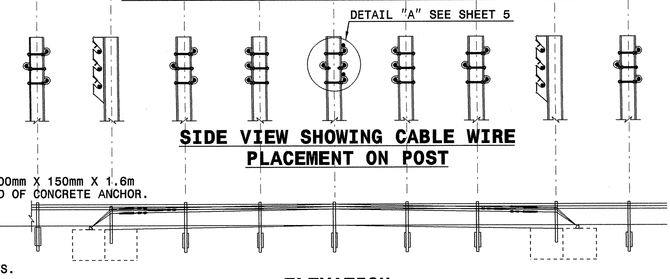
610m MAXIMUM BETWEEN TERMINAL SECTIONS, TERMINAL SECTIONS AND INTERMEDIATE ANCHORAGE SECTIONS, OR INTERMEDIATE ANCHORAGE SECTIONS

PLAN
TYPICAL INTERMEDIATE ANCHORAGE SECTION

DETAIL "A" SEE SHEET 5



SIDE VIEW SHOWING CABLE WIRE PLACEMENT ON POST



SIDE VIEW SHOWING CABLE WIRE PLACEMENT ON POST

WHEN USED AT A DRIVEWAY OR VEHICLE OPENING ONLY PLACE A 100mm X 150mm X 1.6m WOOD POST 750mm ABOVE GROUND LINE. PLACE POST 150mm AHEAD OF CONCRETE ANCHOR.

*PROVIDE OPENINGS ONLY FOR AREAS AS DESIGNATED ON ROADWAY PLAN SHEETS.

ELEVATION
TYPICAL APPROACH & TERMINAL SECTIONS

ELEVATION
TYPICAL INTERMEDIATE ANCHORAGE SECTION

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

SHEET 4 OF 11
865D01

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

METRIC DETAIL DRAWING FOR
CABLE GUIDERAIL
GUIDERAIL LAYOUT

SHEET 4 OF 11
865D01

SEE PLATE FOR TITLE

ORIGINAL BY: 2002 STANDARDS DATE: 1-15-02
MODIFIED BY: E.E. WARD DATE: 4-07-04
CHECKED BY: C.B. Kinnaman DATE: 4-14-04
FILE SPEC.: /usr/std/02stds to details/metric/86501/0865d01.dgn

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

NORTH CAROLINA PROFESSIONAL SEAL 02916 ENGINEER
DESIGN ENGINEER OF RECORD
7/6/06

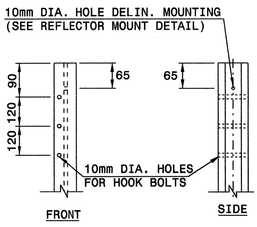
PROJECT REFERENCE NO. R-0609B
SHEET NO. 2-N

METRIC

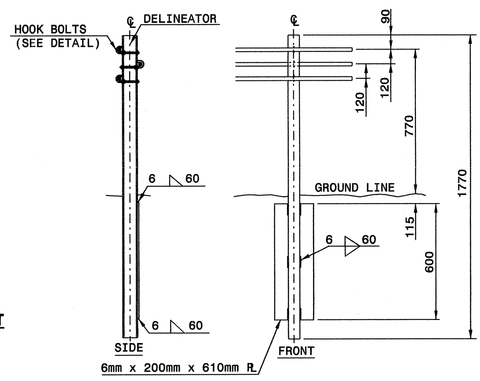
6/10/99

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

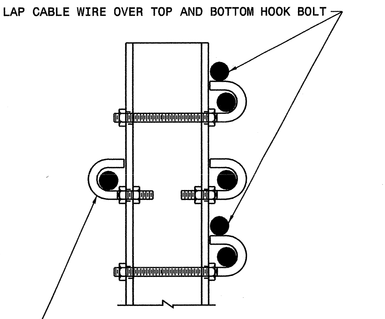
METRIC DETAIL DRAWING FOR
CABLE GUIDERAIL
DOUBLE FACE GUIDERAIL - POST DETAILS



DOUBLE FACE GUIDERAIL POST
HOLE PLACEMENT DETAIL
INTERMEDIATE POST

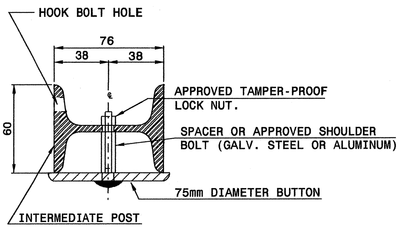


DOUBLE FACE GUIDERAIL
INTERMEDIATE POST



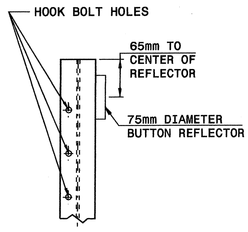
THE CENTER POST IN THE INTERMEDIATE ANCHORAGE SECTION WILL HAVE CABLE WIRE ON BOTH SIDES OF THE MIDDLE STRAND REQUIRING THE USE OF TWO 45mm HOOK BOLTS FOR THIS APPLICATION.

DETAIL "A" CENTER POST
INTERMEDIATE ANCHORAGE SECTION

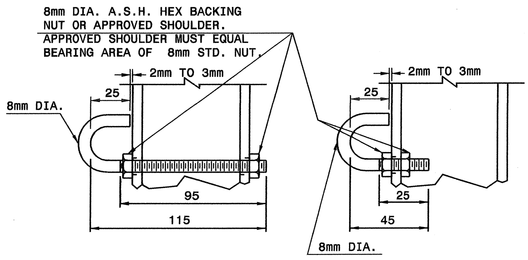


REFLECTOR MOUNT DETAIL
PLAN VIEW

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



REFLECTOR MOUNT DETAIL
ELEVATION VIEW



HOOK BOLT (ALTERNATES)

SHEET 5 OF 11
865D01

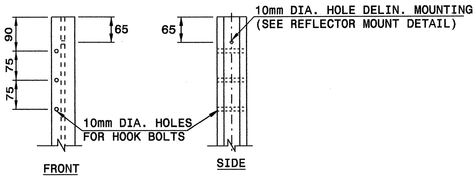
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

METRIC DETAIL DRAWING FOR
CABLE GUIDERAIL
DOUBLE FACE GUIDERAIL - POST DETAILS

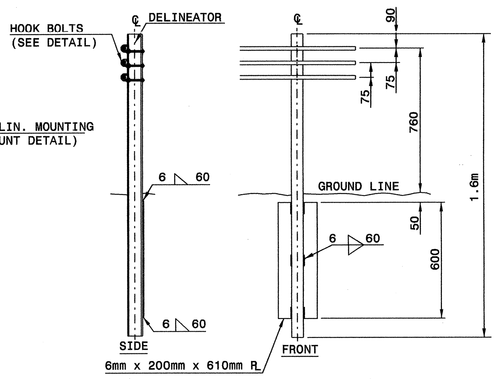
SHEET 5 OF 11
865D01

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

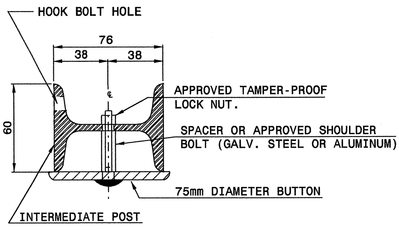
METRIC DETAIL DRAWING FOR
CABLE GUIDERAIL
SINGLE FACE GUIDERAIL - POST DETAILS



SINGLE FACE GUIDERAIL POST
HOLE PLACEMENT DETAIL

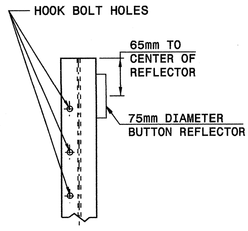


SINGLE FACE GUIDERAIL
INTERMEDIATE POST

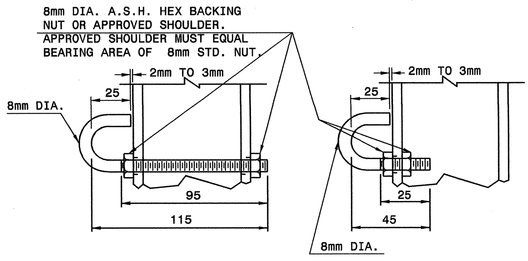


REFLECTOR MOUNT DETAIL
PLAN VIEW

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



REFLECTOR MOUNT DETAIL
ELEVATION VIEW



HOOK BOLT (ALTERNATES)

SHEET 6 OF 11
865D01

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

METRIC DETAIL DRAWING FOR
CABLE GUIDERAIL
SINGLE FACE GUIDERAIL - POST DETAILS

SHEET 6 OF 11
865D01

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

SEE PLATE FOR TITLE

ORIGINAL BY: 2002 STANDARDS DATE: 1-15-02
MODIFIED BY: E.E. WARD DATE: 4-07-04
CHECKED BY: C.L.B. Mabry DATE: 4-16-04
FILE SPEC.: /usr/std/02stds to details/metric/86501/0865d01.dgn

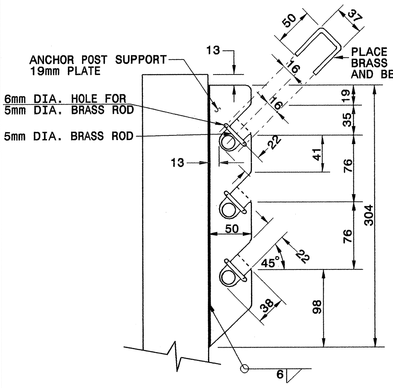
NORTH CAROLINA PROFESSIONAL SEAL 022595 ENGINEER
7/6/06

PROJECT REFERENCE NO. R-0609B
SHEET NO. 20
METRIC

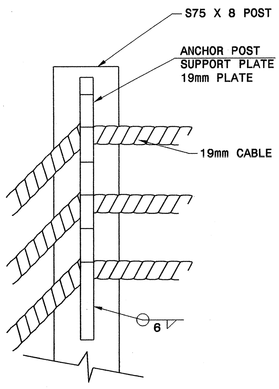
6/01/95

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

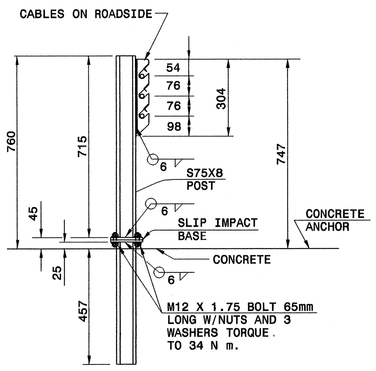
METRIC DETAIL DRAWING FOR
CABLE GUIDERAIL
ANCHOR POST DETAILS



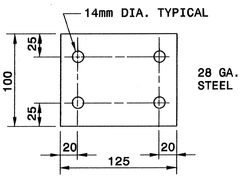
SIDE VIEW OF POST TOP



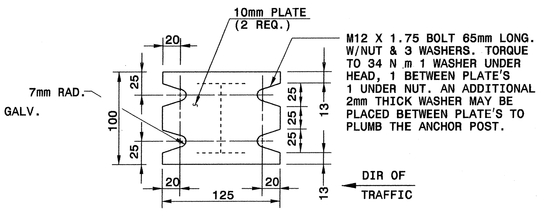
FRONT VIEW OF POST TOP
(ROAD SIDE)



ANCHOR POST DETAIL
(SHOWN FOR LEFT HANDED ANCHOR)



KEEPER PLATE



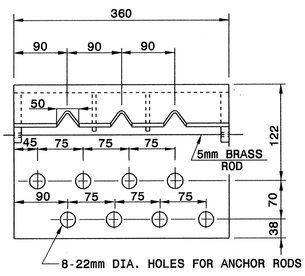
SLIP IMPACT BASE
(KEEPER PLATE NOT SHOWN)

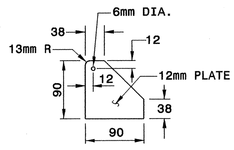
Note:
This drawing is dimensioned in millimeters unless otherwise depicted within the drawing.

SHEET 7 OF 11
865D01

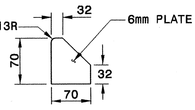
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

METRIC DETAIL DRAWING FOR
CABLE GUIDERAIL
ANCHOR DETAILS

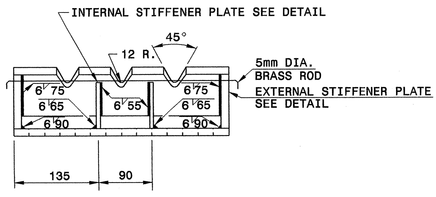




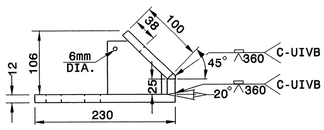
EXTERNAL STIFFENER PLATE



INTERNAL STIFFENER PLATE



ANCHOR ANGLE DETAILS



NOTE: SUBMIT ALTERNATE METHODS OF FABRICATING ANCHOR ANGLES FOR APPROVAL.

BREAKAWAY ANCHOR ANGLE

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

SHEET 8 OF 11
865D01

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

METRIC DETAIL DRAWING FOR
CABLE GUIDERAIL
ANCHOR DETAILS

SHEET 8 OF 11
865D01

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

SEE PLATE FOR TITLE

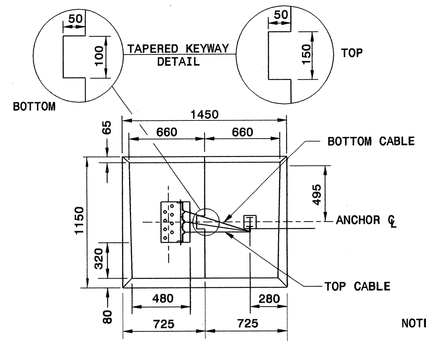
ORIGINAL BY: 2002 STANDARDS DATE: 1-15-02
MODIFIED BY: E.E. WARD DATE: 4-07-04
CHECKED BY: C.L.D. WAYS DATE: 4-14-04
FILE SPEC.: (usr/std/025.06) to details/metric/8650/0865d01.dgn

NORTH CAROLINA PROFESSIONAL SEAL 023996 ENGINEER
DOUGLAS HOWARD WAYS
4/20/06

PROJECT REFERENCE NO. R-0601B
SHEET NO. 2-P
METRIC

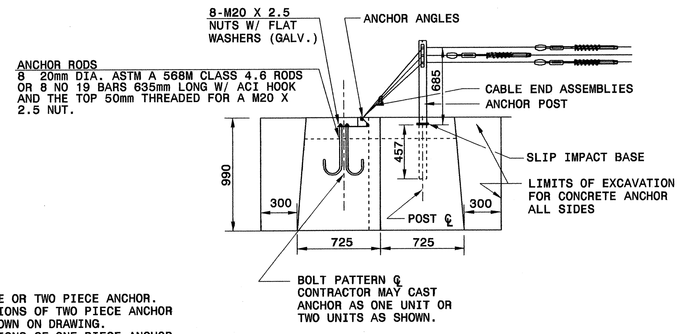
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

METRIC DETAIL DRAWING FOR
CABLE GUIDERAIL
ANCHOR DETAILS



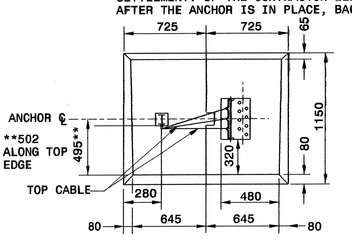
ANCHOR UNIT DETAIL
TOP VIEW LEFT HAND
(REINFORCEMENT NOT SHOWN)
TWO PIECE

NOTE: USE ONE OR TWO PIECE ANCHOR. DIMENSIONS OF TWO PIECE ANCHOR ARE SHOWN ON DRAWING. DIMENSIONS OF ONE PIECE ANCHOR ARE 1.50m LONG BY 0.90m WIDE BY 1.00m HIGH.

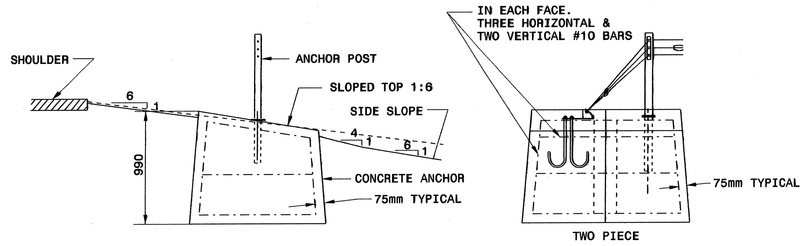


ANCHOR UNIT DETAIL
LEFT HAND
(REINFORCEMENT NOT SHOWN)

NOTE: SET THE CONCRETE ANCHOR INTO THE EXCAVATION AS DETAILED. THE BOTTOM OF THE ANCHOR MUST HAVE A FULL AND EVEN BEARING ON THE SURFACE UNDER IT SO THAT IF THE CONTRACTOR ELECTS TO PLACE THE ANCHOR IN TWO SECTIONS, THERE WILL BE LITTLE OR NO DIFFERENTIAL SETTLEMENT. IF THE CONTRACTOR ELECTS TO PLACE THE ANCHOR IN TWO SECTIONS, PLACE THE TOPS OF BOTH SECTIONS ON THE SAME PLANE. AFTER THE ANCHOR IS IN PLACE, BACKFILL THE EXCAVATION.



ANCHOR UNIT DETAIL
TOP VIEW RIGHT HAND
(REINFORCEMENT NOT SHOWN)
TWO PIECE



ANCHOR UNIT & RE-BAR INSTALLATION DETAIL

Note:
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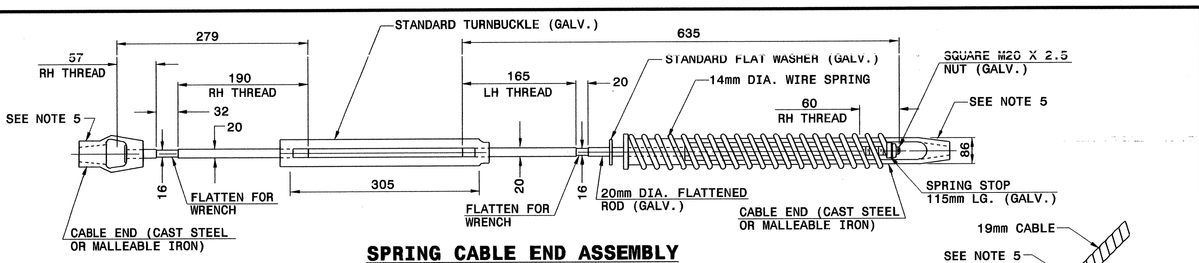
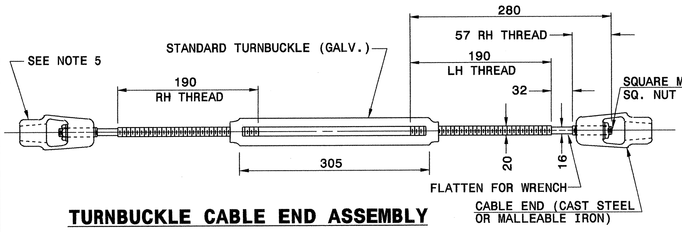
SHEET 9 OF 11
865D01

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

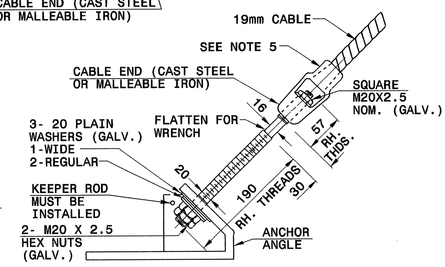
METRIC DETAIL DRAWING FOR
CABLE GUIDERAIL
ANCHOR DETAILS



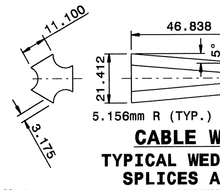
SPRING CABLE END ASSEMBLY
(COMPENSATING DEVICE)



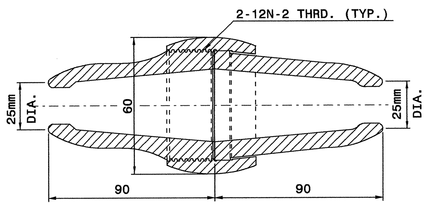
TURNBUCKLE CABLE END ASSEMBLY



CABLE END ASSEMBLY TO
ANCHOR ANGLE DETAIL



CABLE WEDGE
TYPICAL WEDGE FOR ALL SPLICES AND CABLE FITTINGS



CABLE SPLICE
NOTE: USE WITH WEDGE

WASHER

WASHER	WASHER SERIES	A INSIDE DIA. mm	B OUTSIDE DIA. mm	C THICKNESS mm
20	REGULAR	22.00	50.00	4.00
	WIDE	22.00	65.50	4.80
12	NARROW	13.50	25.4	2.4

Note:
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SHEET10 OF 11
865D01

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

METRIC DETAIL DRAWING FOR
CABLE GUIDERAIL
ANCHOR DETAILS

SHEET10 OF 11
865D01

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

ORIGINAL BY: 2002 STANDARDS DATE: 1-15-02
MODIFIED BY: E.E. WARD DATE: 4-07-04
CHECKED BY: C.B. Mann DATE: 7-14-94
FILE SPEC.: /usr/std/02stds to details/metric/86501/0865d01.dgn

SEE PLATE FOR TITLE

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022368
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
7/2/06

PROJECT REFERENCE NO. R-0609B
SHEET NO. 2Q

METRIC

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

METRIC DETAIL DRAWING FOR
CABLE GUIDERAIL
NOTES

SHEET 11 OF 11
865D01

GENERAL NOTES:

1. PROVIDE ALL S75x8.5 ROLLED STEEL SECTIONS IN ACCORDANCE WITH ASTM A-6. USE POSTS, PLATES AND ANCHOR ANGLES CONFORMING TO THE REQUIREMENTS OF SECTION 862 OF THE STANDARD SPECIFICATIONS. WHERE THE RAIL IS PARALLEL TO THE EDGE OF THE TRAVEL LANE, REFLECTORIZE EVERY 6th POST (29.3m) (SEE STANDARD 1261.02 FOR DELINEATORS). FOR DOUBLE FACE GUIDERAIL, PLACE DELINEATOR VISIBLE ON EVERY 6th POST TO TRAFFIC IN EITHER DIRECTION. DO NOT REFLECTORIZE POSTS IN THE TYPICAL INTERMEDIATE ANCHORAGE SECTION, TYPICAL APPROACH OR TERMINAL SECTIONS.

2. PROVIDE ROUND 19mm DIAMETER ZINC COATED CABLE WIRE CONSTRUCTED OF THREE STRANDS (7 WIRES PER STRAND) HAVING A MINIMUM TENSILE STRENGTH OF 11,340 kgs IN ACCORDANCE WITH AASHTO M-30 TYPE I CABLE, CLASS 'A' COATING.

3. PROVIDE MATERIALS INDICATED AS 'CAST STEEL' WHICH CONFORM TO AASHTO M103.

4. PROVIDE INSTALLED HOOK BOLTS WHICH DEVELOP AN ULTIMATE PULL OPEN STRENGTH OF 225 kgs TO 450 kgs APPLIED IN A DIRECTION NORMAL TO THE LONGITUDINAL AXIS OF THE POST.

5. DESIGN ALL FITTINGS, INCLUDING SPLICES, TO USE THE CABLE WEDGE AND DEVELOP THE FULL STRENGTH OF THE 19mm CABLE. HOT DIP GALVANIZE ALL FITTINGS, EXCEPT THE CABLE WEDGE, ACCORDANCE WITH AASHTO M-30.

6. CRIMP ONE WIRE OF THE WIRE ROPE OVER THE BASE OF THE WEDGE TO HOLD IT FIRMLY IN PLACE AT ALL LOCATIONS WHERE THE CABLE IS CONNECTED TO A CABLE SPLICE CONNECTION.

7. DESIGNS FOR A COMBINATION OR SINGLE UNIT COMPENSATING DEVICE AND TURNBUCKLE ASSEMBLY MAY BE SUMBITTED FOR APPROVAL. COMPENSATING DEVICES MUST HAVE A SPRING RATE OF 205 kgs PLUS OR MINUS 23 kgs PER 25mm WITH A MINIMUM TOTAL 'THROW' OF 150mm.

8. APPLY THE FOLLOWING CRITERIA FOR ARRANGEMENT OF SPRING CABLE END ASSEMBLIES (COMPENSATING DEVICES) AND TURNBUCKLE CABLE END ASSEMBLIES:

   LENGTH OF CABLE RUNS:

   TO 304.800m - USE COMPENSATING DEVICE ON ONE END AND TURNBUCKLE ON THE OTHER END OF EACH INDIVIDUAL CABLE.

   304.800m TO 609.600m - USE COMPENSATING DEVICE ON EACH END OF EACH CABLE.

   OVER 609.600m - START NEW STRETCH BY INTERLACING AT LAST PARALLEL POST (TYPICAL LAYOUT).

   PRIOR TO FINAL ACCEPTANCE BY THE STATE, USE THE FOLLOWING VALUES TO TIGHTEN THE TURNBUCKLES BASED ON THE TEMPERATURE AT THE TIME OF ADJUSTMENT.

Note:
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TABLE "A"

PAVEMENT ℄ CURVATURE	POST SPACING
8° OR LESS	4800mm
MORE THAN 8° TO 13° (135m RAD.)	3600mm

TEMPERATURE (CELSIUS)	SPRING COMPRESSION FROM UNLOADED POSITION IN EACH SPRING
44° - 49°	25mm
38° - 43°	30mm
32° - 37°	40mm
27° - 31°	45mm
21° - 26°	50mm
16° - 20°	60mm
10° - 15°	65mm
5° - 9°	70mm
-1° - 4°	75mm
-7° - -2°	80mm
-12° - -8°	90mm
-18° - -13°	95mm
-23° - -19°	100mm
-29° - -24°	110mm

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

METRIC DETAIL DRAWING FOR
CABLE GUIDERAIL
NOTES

SHEET 11 OF 11
865D01

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

SEE PLATE FOR TITLE

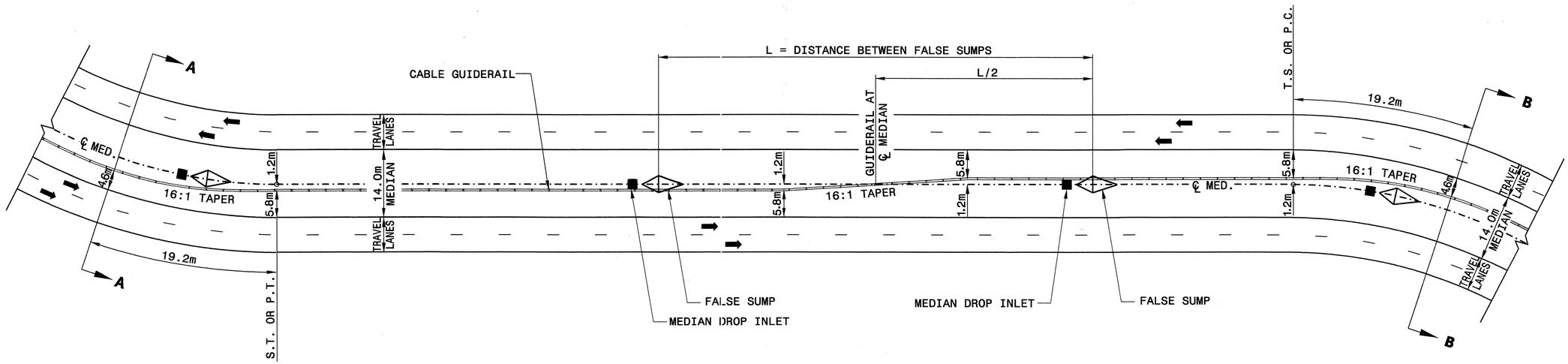
ORIGINAL BY: 2002 STANDARDS DATE: 1-15-02
MODIFIED BY: E.E. WARD DATE: 4-07-04
CHECKED BY: E.E. Ward DATE: 4-16-04
FILE SPEC.: /usr/std/02std/to details/metric/86501/0865d01.dgn

NORTH CAROLINA PROFESSIONAL SEAL 86501 022169 DIVISION OF HIGHWAYS ENGINEER
7/24/06

PROJECT REFERENCE NO. R-0609B
SHEET NO. 2-R
METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	2-S

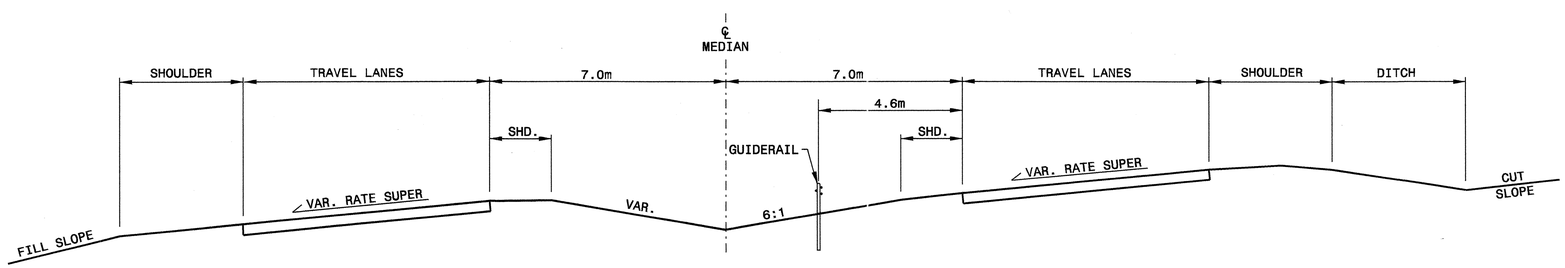
METRIC



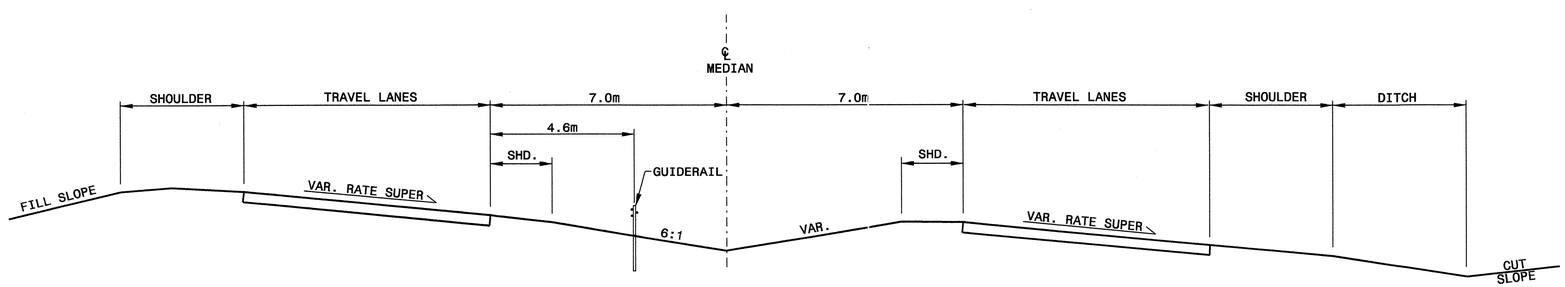
PLAN VIEW

14.0m MEDIAN GUIDERAIL TRANSITIONS WITH SUPERELEVATION AND/OR FALSE SUMPS

GENERAL NOTES:
1. REFER TO DETAIL 865D01 IN LIEU OF 2002 STANDARD 865.01 FOR INSTALLATION OF CABLE GUIDERAIL.
2. FALSE SUMP DETAIL IS APPLICABLE TO ALL MEDIAN WIDTHS.
3. DO NOT TRANSITION GUIDERAIL FOR SUPERELEVATION WHEN THE RATE IS 2 PERCENT OR LESS.
4. DO NOT INSTALL GUIDERAIL ON SLOPES STEEPER THAN 6:1.



SECTION A-A



SECTION B-B

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER
7/26/06

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

DETAIL OF 14.0m MEDIAN GUIDERAIL TRANSITIONS WITH SUPERELEVATION AND/OR FALSE SUMPS

ORIGINAL BY: E.E. WARD DATE: 2-12-04
MODIFIED BY: DATE:
CHECKED BY: C.B. Perry DATE: 4-12-04
FILE SPEC.: /usr/std/02stdstddetails/english/865D01/guiderailtransition.dgn

08-APR-2004 14:5
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ericward AT DS212260

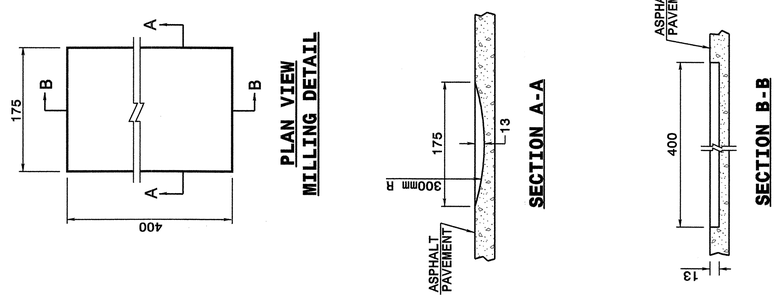
PROJECT REFERENCE NO.	SHEET NO.
R-0609B	2-T

METRIC

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

METRIC DETAIL DRAWING FOR
ASPHALT SHOULDERS MILLED RUMBLE STRIPS

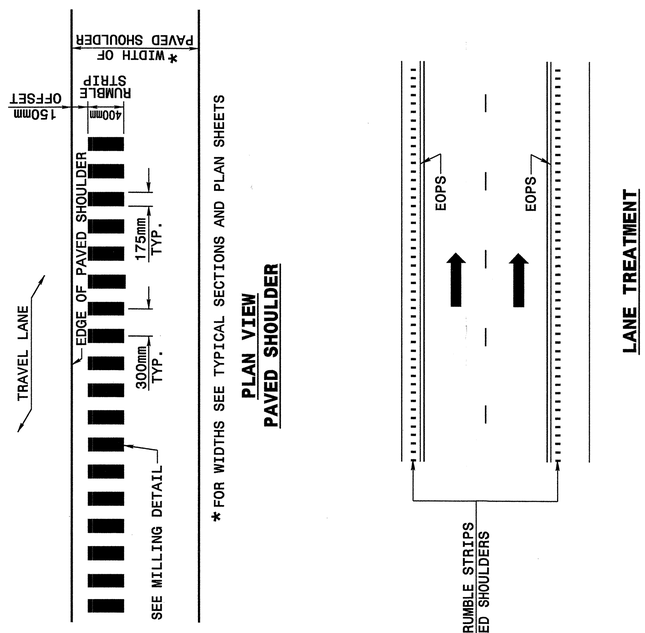
SHEET 1 OF 2 — 665D01



PLAN VIEW MILLING DETAIL

SECTION A-A

SECTION B-B



* FOR WIDTHS SEE TYPICAL SECTIONS AND PLAN SHEETS

PLAN VIEW PAVED SHOULDER

LANE TREATMENT

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.

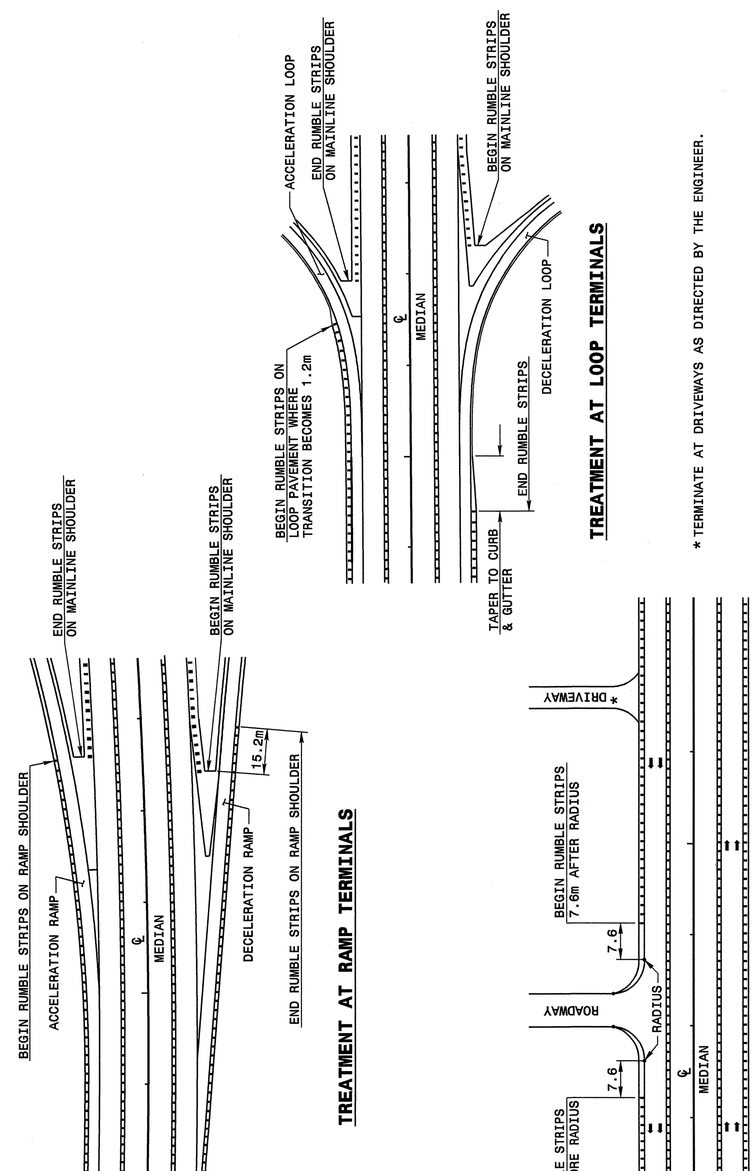
METRIC DETAIL DRAWING FOR
ASPHALT SHOULDERS MILLED RUMBLE STRIPS

SHEET 1 OF 2 — 665D01

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

METRIC DETAIL DRAWING FOR
ASPHALT SHOULDERS MILLED RUMBLE STRIPS

SHEET 2 OF 2 — 665D01



TREATMENT AT LOOP TERMINALS

* TERMINATE AT DRIVEWAYS AS DIRECTED BY THE ENGINEER.

TREATMENT AT RAMP TERMINALS

TREATMENT AT INTERSECTIONS (ROADWAY OR DRIVEWAY)

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
ASPHALT SHOULDERS MILLED RUMBLE STRIPS

SHEET 2 OF 2 — 665D01

NORTH CAROLINA PROFESSIONAL SEAL 022996 ENGINEER
7/26/06

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: 09-16-04
CHECKED BY: DATE: 11/2/04
FILE SPEC.: sids/02stdstodetails/metric/665d01.dgn

28-OCT-2004 11:38
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ericward AT DS212260

28-OCT-2004 11:38
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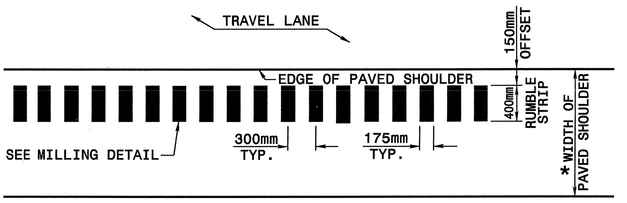
ericward AT DS212260

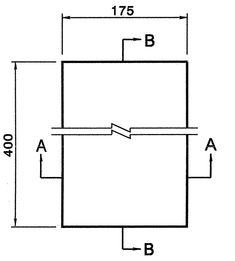
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

METRIC DETAIL DRAWING FOR
ASPHALT SHOULDERS
MILLED RUMBLE STRIPS

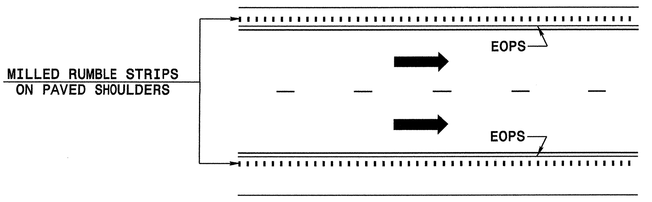


* FOR WIDTHS SEE TYPICAL SECTIONS AND PLAN SHEETS

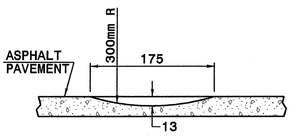
PLAN VIEW
PAVED SHOULDER



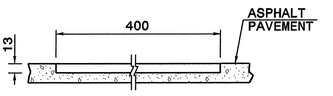
PLAN VIEW
MILLING DETAIL



LANE TREATMENT



SECTION A-A



SECTION B-B

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

SHEET 1 OF 2
665D01

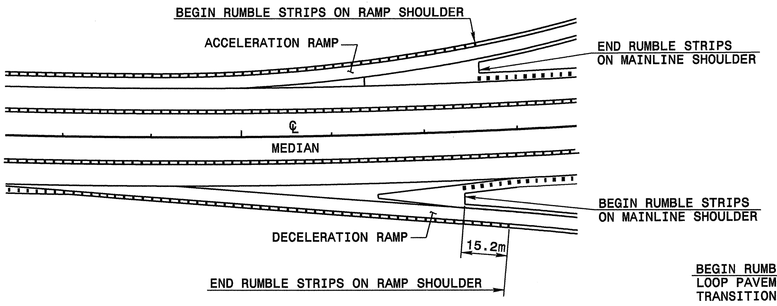
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

METRIC DETAIL DRAWING FOR
ASPHALT SHOULDERS
MILLED RUMBLE STRIPS

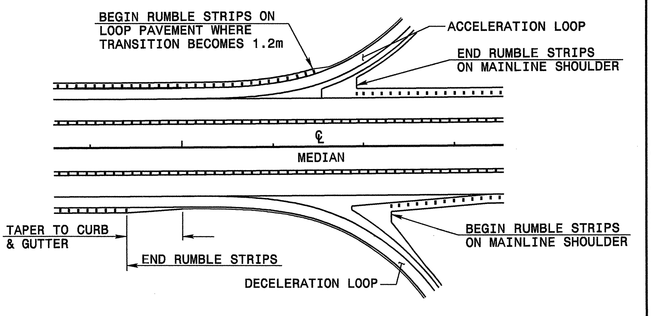
SHEET 1 OF 2
665D01

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

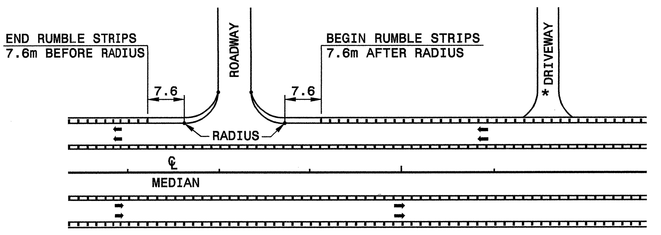
METRIC DETAIL DRAWING FOR
ASPHALT SHOULDERS
MILLED RUMBLE STRIPS



TREATMENT AT RAMP TERMINALS



TREATMENT AT LOOP TERMINALS



TREATMENT AT INTERSECTIONS
(ROADWAY OR DRIVEWAY)

* TERMINATE AT DRIVEWAYS AS DIRECTED BY THE ENGINEER.

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

SHEET 2 OF 2
665D01

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

METRIC DETAIL DRAWING FOR
ASPHALT SHOULDERS
MILLED RUMBLE STRIPS

SHEET 2 OF 2
665D01

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

SEE PLATE FOR TITLE

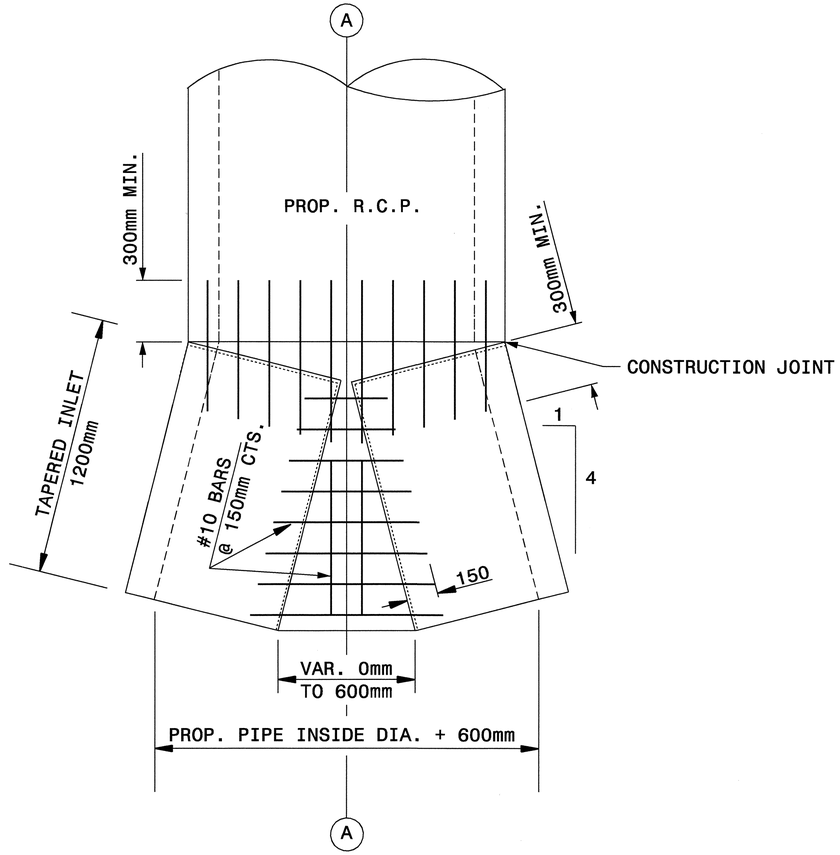
ORIGINAL BY: 2002 STANDARDS DATE: 01-15-02
MODIFIED BY: E.E. WARD DATE: 09-16-04
CHECKED BY: [signature] DATE: 11/2/04
FILE SPEC.: stds/02stdstodetails/metric/665d01.dgn

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022966 JOEL HOLLEMAN
7/24/06

PROJECT REFERENCE NO. R-0609B
SHEET NO. 2-U
METRIC

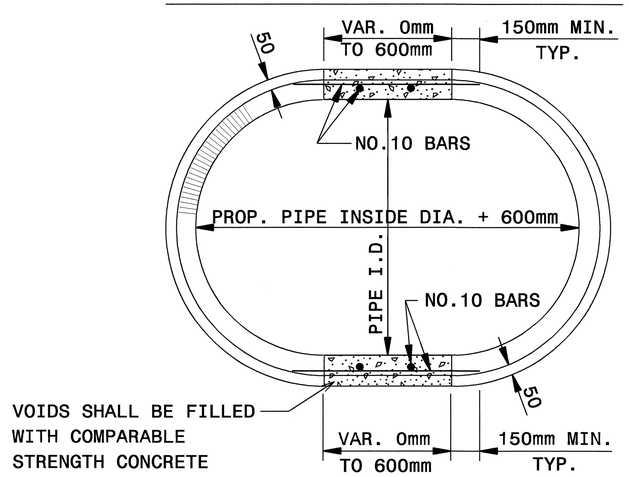
PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	2-V

METRIC



PLAN

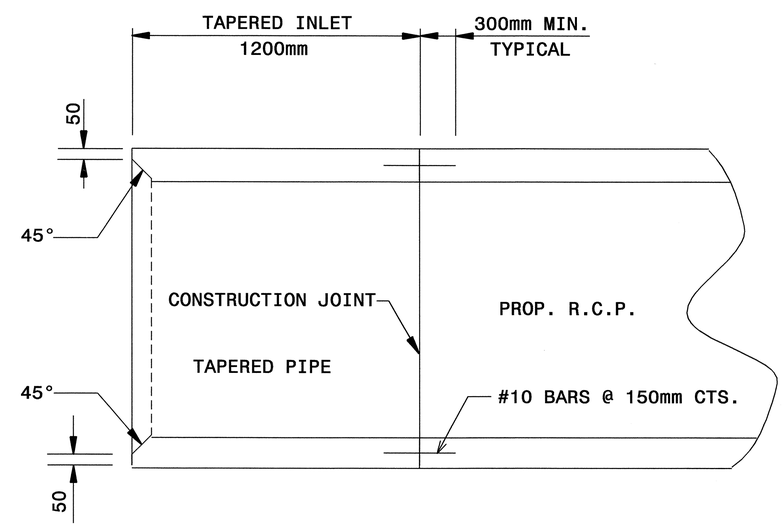
SHOWING PLACEMENT OF REINFORCING STEEL



END VIEW

GENERAL NOTES:

* SPECIAL REINFORCED CONCRETE TAPERED INLET TO BE CONSTRUCTED IN ACCORDANCE WITH DETAIL AND SECTION 310 OF THE STANDARD ROADWAY SPECIFICATIONS.
* THE TAPERED INLET SHALL BE CONSTRUCTED FROM CLASS III REINFORCED CONCRETE PIPE.
* ALL REINFORCING STEEL SHALL HAVE A 300mm EMBEDMENT UNLESS SHOWN OTHERWISE.
* THE TAPERED INLET SHALL BE CONSTRUCTED AS DIRECTED BY THE ENGINEER.



SECTION A-A

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HOWERTON
7/26/06

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

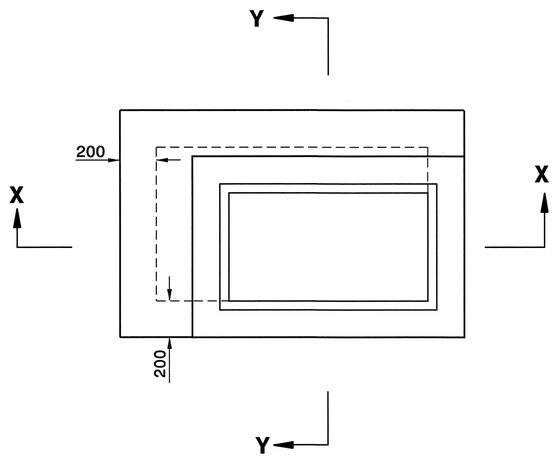
DETAIL OF
REINFORCED TAPERED INLET
FOR 2100mm DIAMETER PIPE

ORIGINAL BY: ERIC E. WARD DATE: 01-11-04
MODIFIED BY: DATE:
CHECKED BY: DATE: 1/12/04
FILE SPEC.: /usr/details/metric/stand/tapin1.dgn

11-JAN-2005 15:07
W:\Special Details\ericward\usr\details\stand\metric\tapin1.dgn
ericward AT PSU222293

PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	2-W

METRIC



PLAN

SEE PLANS FOR PIPE SIZE AND LOCATIONS

GENERAL NOTES:

USE CLASS "B" CONCRETE THROUGHOUT.

PROVIDE DROP INLET WITH STEPS 300mm ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.

USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.

IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.

USE STANDARD FRAMES AND GRATES 840.22, 840.24, 840.20, 840.29 AND 840.33.

SEE STANDARD DRAWING 840.25 FOR ATTACHMENT OF FRAMES AND GRATES.

CHAMFER ALL EXPOSED CORNERS 25mm.

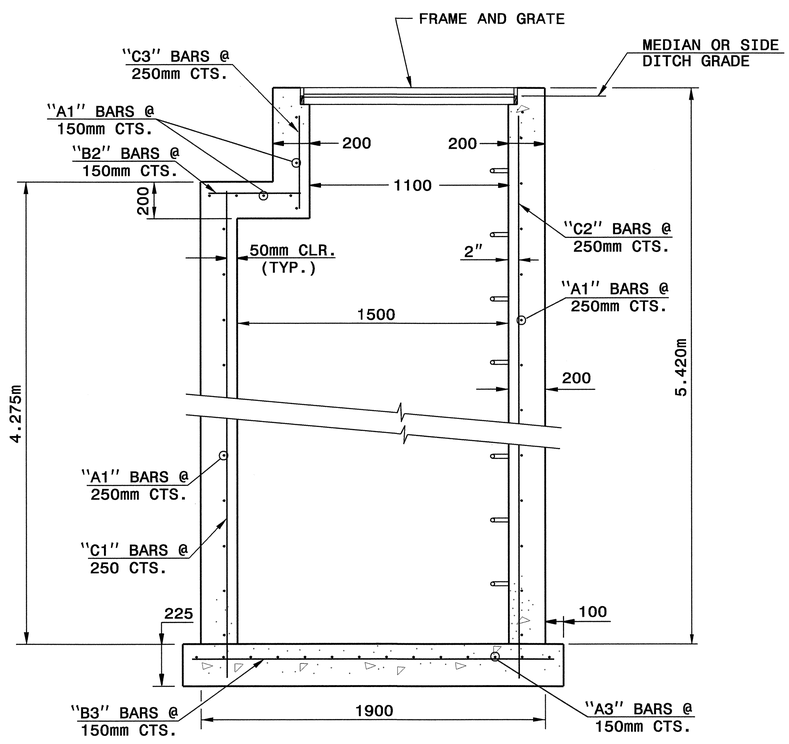
CUT OR BEND STEEL BARS AS NEEDED TO PROVIDE 50mm CLEARANCE AROUND PIPES

HEIGHT, WIDTH AND DEPTH DIMENSIONS OF THE BOX MAY BE ADJUSTED IN THE FIELD AS DIRECTED BY THE ENGINEER.

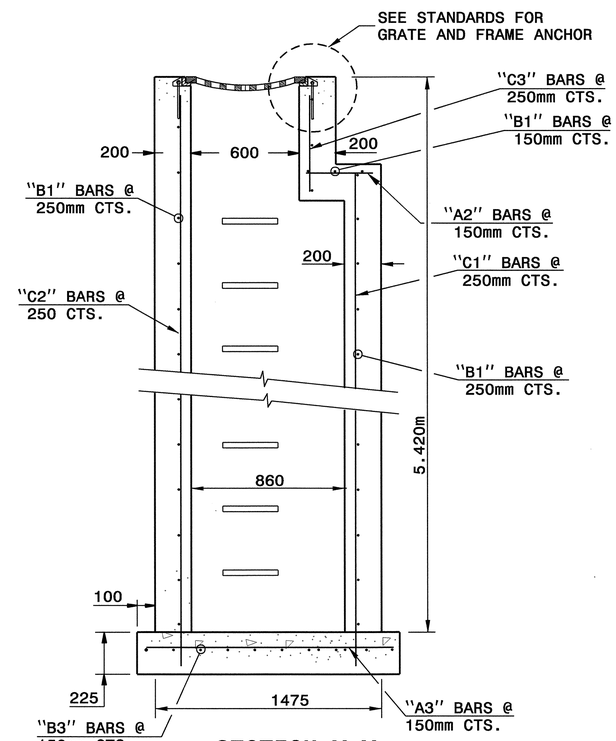
BILL OF MATERIAL

BAR	NO.	SIZE	LENGTH	WEIGHT
A1	43	13	1375	58.8
A2	9	16	575	8.0
A3	14	16	1575	34.2
B1	42	13	1800	75.1
B2	5	13	450	2.2
B3	10	16	2000	31.0
C1	13	13	4500	58.1
C2	13	13	5315	68.7
C3	10	13	525	5.2
TOTAL REINF. STEEL (kg.)				341.3
CLASS "B" CONC. (cu. m.)				7.72

NO DEDUCTIONS HAVE BEEN MADE TO ACCOMODATE PIPE OPENINGS



SECTION X-X



SECTION Y-Y

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HOWERTON

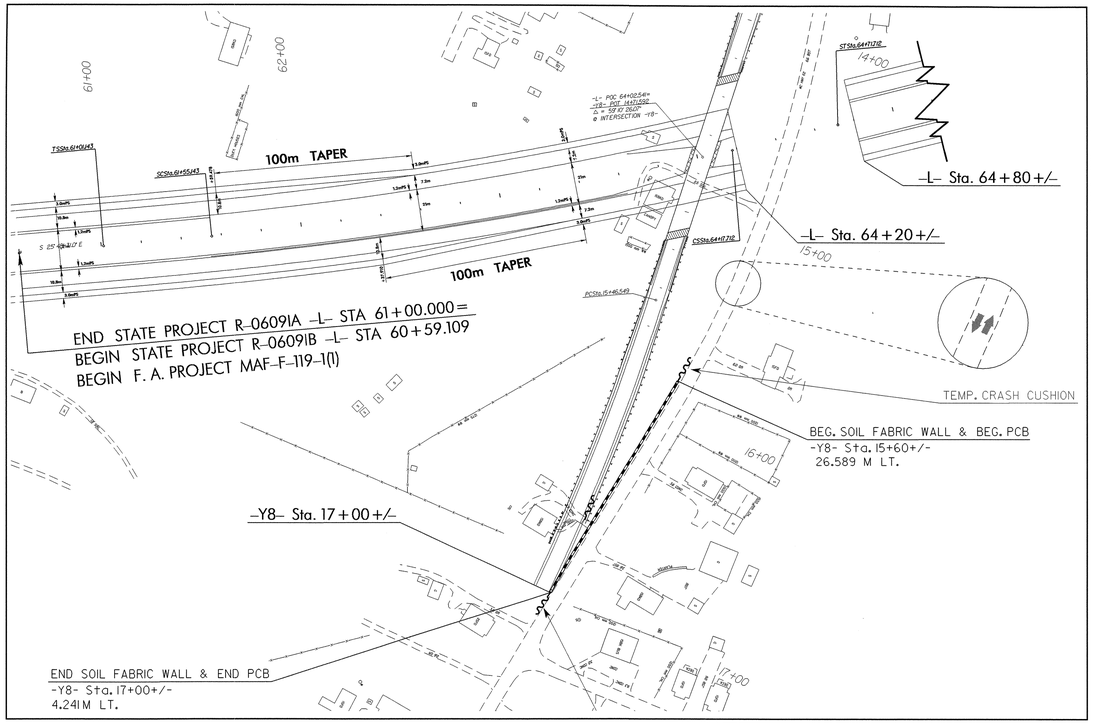
DESIGN SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

EXTRA DEPTH REINFORCED CONCRETE MEDIAN DROP INLET

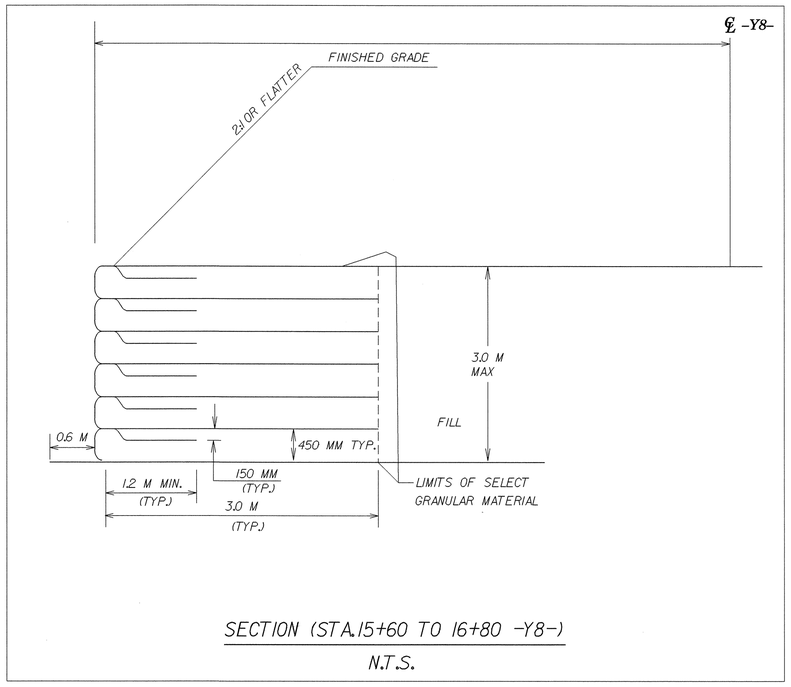
ORIGINAL BY: E.E.WARD DATE: 07-08-03
MODIFIED BY: T.S.Spell DATE: 12-29-04
CHECKED BY: [signature] DATE: 1/13/05
FILE SPEC.: ericward/usr/details/stand/metric/diextradepth.dgn

12-JAN-2005 11:39
W:\Special Details\ericward\usr\details\metric\stand\diextradepth.dgn
.tspell AT PSU203655

PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	2-X

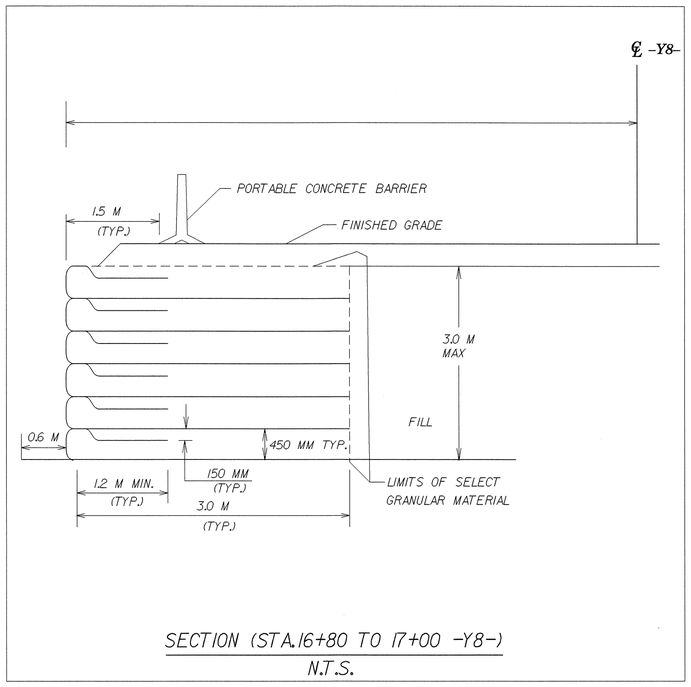


NOTE: REFER TO TRAFFIC CONTROL PLANS (TCP)-4 FOR FURTHER INFORMATION



SECTION (STA.15+60 TO 16+80 -Y8-)

N.T.S.



SECTION (STA.16+80 TO 17+00 -Y8-)

N.T.S.

Sheet 1 of 2

PROJECT R-0609IB
GUILFORD COUNTY
STATION -Y8- 15+60+/- TO
-Y8- 17+00+/-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TEMPORARY FABRIC WALL

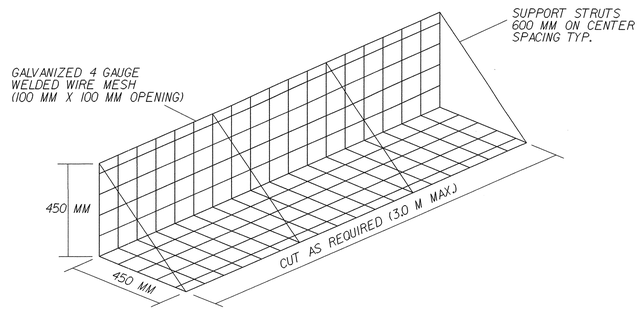
DESIGNED BY ENW DATE 10/04
DRAWN BY WDF DATE 10/04
CHECKED BY RSW DATE 10/04

NORTH CAROLINA PROFESSIONAL SEAL 26962 ENGINEER ERIC N. WILLIAMS 10/27/06

05-APR-2006 17:03
r:\proj\0609ib\roadway\temp\r0609ib_geo_fabricwall.dgn
$$$$USERNAME$$$$

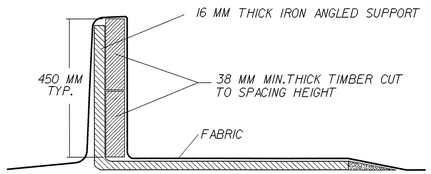
PROJECT REFERENCE NO.	SHEET NO.
R-06091B	2-Y

FORM OPTION #1

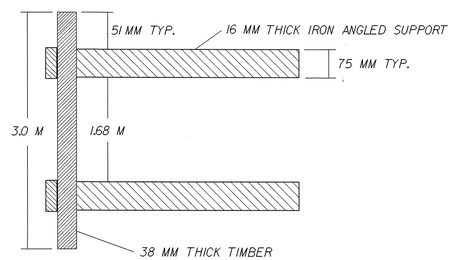


WELDED WIRE MESH FORM

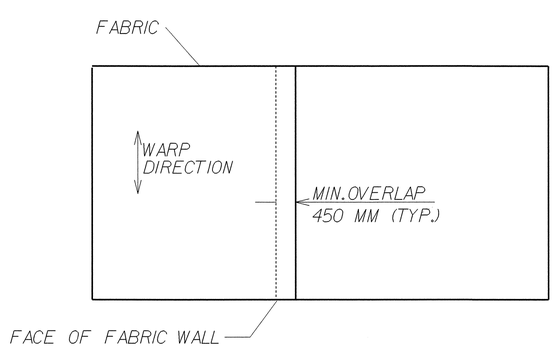
FORM OPTION #2



ELEVATION VIEW OF WALL FACE FALSEWORK



PLAN VIEW OF WALL FACE FALSEWORK



PLAN VIEW OF FABRIC OVERLAP

NOTES:

1. FABRIC FOR THE TEMPORARY FABRIC WALL SHALL HAVE A MINIMUM WIDE WIDTH TENSILE STRENGTH OF 15.1 KN/M IN THE WARP DIRECTION (BASED ON ASTM-D4595) AT 5% ELONGATION AND A MINIMUM ULTIMATE WIDE WIDTH TENSILE STRENGTH OF 53.0 KN/M IN THE WARP DIRECTION.
2. FOR TEMPORARY FABRIC WALL, SEE SPECIAL PROVISIONS.
3. LOCATIONS AND QUANTITIES PROVIDED ARE ONLY APPROXIMATE. EXACT LOCATIONS AND QUANTITIES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD.
4. THE FABRIC WALL SHALL BE BENCHED INTO THE SIDE OF THE EXCAVATION WHERE APPLICABLE AND AS DIRECTED BY THE ENGINEER.
5. PROPER DRAINAGE AT THE TOP OF THE WALL SHALL BE AS DIRECTED BY THE ENGINEER.
6. SELECT GRANULAR MATERIAL SHALL BE IN ACCORDANCE WITH PROJECT SPECIAL PROVISIONS.
7. FABRIC WALL SHALL BE LEFT IN PLACE PERMANENTLY.
8. WHEN THE FINAL FILL IS PLACED IN FRONT OF THE WALL, UNFOLD THE TOP LAYER OF FABRIC AND INCORPORATE IT INTO THE FILL AS DIRECTED BY THE ENGINEER.
9. THE REQUIRED BEARING PRESSURE FOR THE FABRIC WALLS IS 90 KPA. VERIFY THE REQUIRED BEARING PRESSURE IN THE FIELD.
10. THE CONTRACTOR MAY ELECT TO USE A FORMING SYSTEM TO CONSTRUCT THE TEMPORARY FABRIC WALL OTHER THAN THE FALSEWORK OR WIRE MESH FORM OPTIONS SHOWN IN THESE PLANS, HOWEVER; THE ALTERNATE METHOD MUST BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL.
11. THE CONTRACTOR MAY ELECT TO USE A SHORING SYSTEM OTHER THAN FABRIC WALLS. THE ALTERNATE METHOD MUST BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL.

NORTH CAROLINA PROFESSIONAL SEAL 26962 ENGINEER ERIC N. WILLIAMS

7/21/06

NOTE: REFER TO TRAFFIC CONTROL PLANS (TCP)-4 FOR FURTHER INFORMATION

ESTIMATED QUANTITIES

FABRIC WALL:

TEMPORARY FABRIC WALL ..... 280 m^2

PROJECT R-06091B

GUILFORD COUNTY

STATION -Y8- 15+60+/- TO -Y8- 17+00+/-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TEMPORARY FABRIC WALL

DESIGNED BY ENW DATE 5/04
DRAWN BY WDF DATE 5/04
CHECKED BY RSW DATE 6/04

Sheet 2 of 2

05-APR-2006 17:04
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$$$$USERNAME$$$$

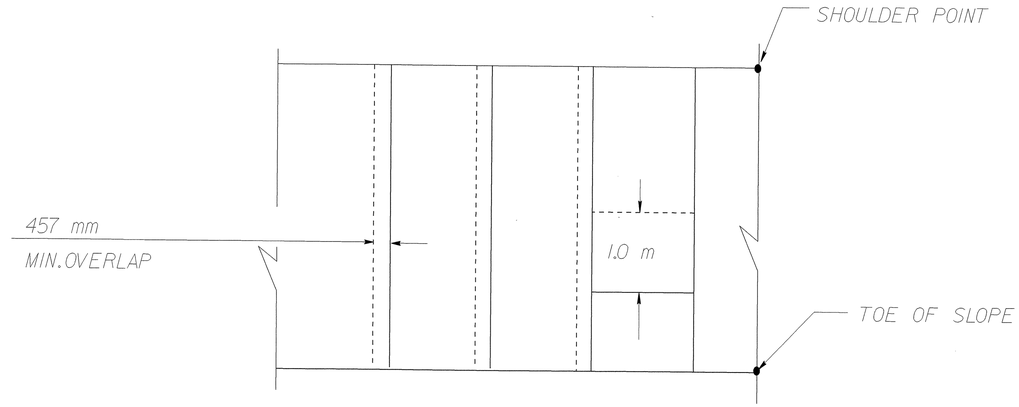
JEJ221417 6/22/2006 r0609ib_geo_rdwy_rockplating jrmatula RD-Oce34

PROJECT REFERENCE NO.	SHEET
(R-0609IB)	2-Z

GEOTECHNICAL ENGINEER

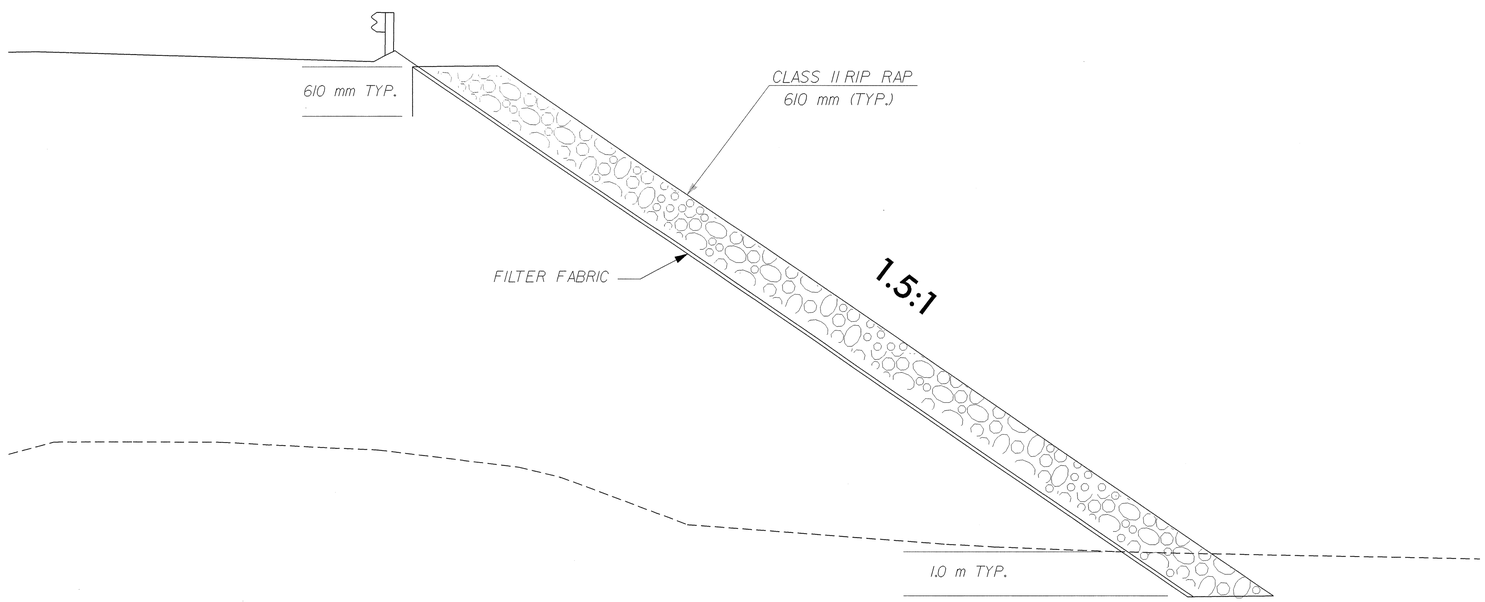
NORTH CAROLINA PROFESSIONAL SEAL 26962 ENGINEER ERIC N. WILLIAMS

SIGNATURE DATE 6/21/06



OVERLAP DETAIL

NTS



ESTIMATED QUANTITIES
ROCK PLATING.....310 SQUARE METERS

NOTES ON PLANS:

* CONSTRUCT ROCK PLATING ACCORDING TO THE SPECIAL PROVISION FOR ROCK PLATING.

TYPICAL SECTION

NTS

ROCK PLATING
11+70 TO 11+90 -Y9-
OR AS DIRECTED BY THE ENGINEER

PREPARED BY:	E. N. WILLIAMS	DATE:	05/06
REVIEWED BY:	J. R. BATTS	DATE:	05/06

GEOTECHNICAL ENGINEERING UNIT

☒ EASTERN REGIONAL OFFICE
☐ WESTERN REGIONAL OFFICE

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

ROCK PLATING DETAIL

REVISIONS

NO.	BY	DATE	NO.	BY	DATE
1	-		3	-	-
2			4		

COMPUTED BY: B WEDEKING DATE: 10/2004
CHECKED BY: WHY DATE: 1/2005

NOTES: 1. ALL ELEVATIONS ARE BASED UPON THE APPROVED 25% ROADWAY PLANS AND ELEVATIONS MAY DIFFER FROM CONSTRUCTION DOCUMENTS.
2. ALL ELEVATIONS ON THIS SHEET ARE FOR COST ESTIMATING ONLY AND SHALL NOT BE USED FOR FIELD STAKING.
3. CONTRACTOR SHALL FIELD VERIFY ALL ELEVATIONS, IN ADVANCE OF CONSTRUCTION, AND MAKE ANY OBSERVATIONS THAT AFFECT CONSTRUCTION KNOWN TO THE RESIDENT ENGINEER AND PROVIDE PROPOSED ADJUSTMENTS.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

METRIC

PROJECT REFERENCE NO. R-0609IB | SHEET NO. 3-A

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

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) * CLASS IV R.C. PIPE 300	375	450	600	750	900	1050	1200	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) CU. METERS 300 (1.63)	400 (1.63)	450 (1.63)	600 (1.63)	800 (2.01)	1200 (2.77)	CLASS III RC PIPE OR C.S. PIPE, TYPE IR ALUMINIZED OR HDPE PIPE S OR D 300	375	400	450	600	800	1200	375mm SIDE DRAIN PIPE	450mm SIDE DRAIN PIPE	600mm SIDE DRAIN PIPE	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CUBIC METERS R.C.P.	C.S.P.	QUANTITIES: STRUCTURES PER EACH (0 THRU 1.50)	FOR DRAINAGE *TOTAL M FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') METERS A 1.50 THRU 3.00	B 3.00 AND ABOVE	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. FRAME W/ TWO GRATES STD. 840.20	M.D.I. FRAME WITH GRATE STD. 840.22	M.D.I. FRAME WITH TWO GRATES STD. 840.22	M.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	M.D.I. (N.S.) FRAME W/2 GRATES STD. 840.29	M.H. STD. 840.51 OR 840.53	M.H. FRAME & COVER STD. 840.54	EXTRA DEPTH REINFORCED CONCRETE MEDIAN DROP INLET SEE DETAIL 2-W	CORR. STEEL ELBOW NO. & SIZE	PIPE REMOVAL (meters)	REMARKS
-L- 61+95	RT	1		249.15																														1				1				1								
		1	2		248.31	247.37			39.6																																									
-L- 62+20	CL	2		248.21																														1				1				1								
		2	3		247.37	247.10			31.2																																									
-L- 62+35	LT	3		248.18																														1			1					1								
		3	4		246.89	246.70																				30.0																								
		5	6		244.7	241.52						91.2																																						
-L- 63+48	RT	6		244.32																														1	1.3										1	1				
		6	7		241.52	241.66																						7.2				3.4																		
		6	8		241.52	240.35																	62.4																											12 GAGE TYPE "B" 75mm X 25mm
-Y8- 15+44	RT	9		254.38																														1				1						1						
		9	10		253.54	253.57			8.4																																									
		9	11		253.54	251.65			80.4																																									
-Y8- 15+44	LT	10		254.40																														1				1						1						
-Y8- 16+20	LT	11		252.49																														1				1					1							
		11	11A		251.65	243.70											18.0																															2 @ 400		
		12	13		247.10	245.33																			3.6																									BDO
-L- 63+91	LT	13		246.2																														1				1				1								
		13	14		245.33	245.20				18.0																																								
-L- 63+95	LT	14		246.57																														1				1		1										
		14	15		245.20	243.78																			85.2																									
-L- 64+80	LT	15		244.69																														1	0.19			1				1								
		15	16		243.00	243.18				20.4																																								
		15	17		243.00	242.90					12.0																																							
-L- 64+80	RT	17		244.69																														1	0.29			1				1								
		17	18		242.90	241.00					30.0																																							
-Y8- 14+25	RT	19		254.07																														1				1						1						
		19	20		253.30	247.97										16.8																																2 @ 300		
-Y8- 14+21	LT	21		253.95																														1				1						1						
		21	22		253.19	245.97										16.8																																2 @ 300		
-L- 66+60	LT	23		239.57																														1				1				1								
		23	24		238.73	238.60			26.4																																									
-L- 66+60	CL	24		239.63																														1				1				1								
		24	25		238.60	237.45																		60.0																										
-L- 67+20	CL	25		238.29																														1				1				1								
		25	26		237.45	237.62			26.4																																									
		25	27		237.38	235.92																			80.4																									
-L- 67+20	LT	26		238.46																														1				1				1								
-L- 68+00	CL	27		236.83																														1				1				1								
SHEET TOTAL										38.4		91.2				33.6	18									30						3.4		18			1	16		1		11		4	1					
									212.4		42										62.4		60		169.2			7.2							1.78								1			1		4 @ 300		
																																																2 @ 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

6/20/00

19-JUL-2006 10:57
r:\summaries\r0609ib_drn.sum
$$$$USERNAME$$$$

COMPUTED BY: B WEDEKING DATE: 10/2004
CHECKED BY: WHY DATE: 1/2005

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	3-B

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

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) * CLASS IV R.C. PIPE 300	375	450	600	750	900	1050	1200	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) CU. METERS 300 (1.63)	400 (1.63)	450 (1.63)	600 (1.63)	800 (2.01)	1200 (2.77)	CLASS III RC PIPE OR C.S. PIPE, TYPE IR ALUMINIZED OR HDPE PIPE S OR D 300	375	400	450	600	800	1200	375mm SIDE DRAIN PIPE	450mm SIDE DRAIN PIPE	600mm SIDE DRAIN PIPE	ENDWALLS STD. 838.01 STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CUBIC METERS R.C.P.	C.S.P.	QUANTITIES: STRUCTURES PER EACH (0 THRU 1.50)	FOR DRAINAGE *TOTAL M FOR PAY QUANTITY SHALL BE TOT. "A" + "B" (1.5 (COL. B)) METERS 1.50 THRU 3.00 A	3.00 AND ABOVE B	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. FRAME W/ TWO GRATES STD. 840.20	M.D.I. FRAME WITH GRATE STD. 840.22	M.D.I. FRAME WITH TWO GRATES STD. 840.22	M.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	M.D.I. (N.S.) FRAME W/2 GRATES STD. 840.29	M.H. STD. 840.51 OR 840.53	M.H. FRAME & COVER STD. 840.54	EXTRA DEPTH REINFORCED CONCRETE MEDIAN DROP INLET SEE DETAIL 2-W	CORR. STEEL ELBOW NO. & SIZE	PIPE REMOVAL (meters)	REMARKS
		27	28		235.82	235.02					26.4																																								
-L- 68+00	RT	28		236.50																													1		1				1												
		28	29		235.02	234.80																	20.4																											
-L- 70+31	LT	31		235.57																													1		1			1	1												
		31	32		234.35	233.77			26.4																																										
-L- 70+31	CL	32		235.07																													1		1			1	1												
		32	33		233.77	233.90			27.6																																										
		32	34		233.77	233.37																		39.6																										
-L- 70+31	RT	33		234.75																													1		1			1	1												
-L- 70+71	CL	34		235.12																													1		1				1												
		34	35		233.37	234.60							25.2																			2.6																				
		34	36		233.37	233.30							28.8																																						
-L- 71+00	LT	37		235.72																													1			1			1												
		37	38		234.88	234.69																13.2																											
		39	40		233.40	233.55																	19.2																											
-L- 71+20	RT	40		235.00																													1		1				1												
		40	41		233.55	234.96																	136.8																											
-L- 72+60	RT	41		237.23																													1		1				1												
		41	42		235.50	235.83				26.4																																									
-L- 72+60	CL	42		236.74																													1			1			1												
		42	43		235.90	236.39			26.4																																										
-L- 72+60	LT	43		237.23																													1			1			1												
-L- 75+20	LT	44		237.98																													1			1			1												
		44	45		237.14	236.80																18.0																											
-L- 76+26	RT	46		238.40																													1			1	1														
		46	47		237.64	229.40										20.4																															2 @ 300			
-L- 76+80	CL	48		237.17																													1			1			1												
		48	49		236.33	227.40											43.2																													2 @ 400			
-L- 77+58	RT	50		237.01																													1			1	1														
		50	51		236.17	235.40			20.4																																										
-L- 77+58	CL	51		236.24																													1			1			1												
		51	52		235.40	235.31			20.4																																										
-L- 77+58	LT	52		237.01																													1	0.2		1	1														
		52	53		235.31	234.88			100.8																																										
-L- 78+60	LT	53		235.72																													1	0.2		1			1												
		53	53A		234.88	228.40											18																													2 @ 400			
-L- 79+11	CL	54			229.70	227.10							70.8																			2.6																			
-L- 79+39	LT	55		234.79		X																											1			1	1														
SHEET TOTAL										26.4			124.8			20.4							176.4									5.2	18			11	4		14											
									222		26.4						61.2				31.2		39.6											0.4	7			3										2 @ 300		
																																															4 @ 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

6/20/00
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$$$$USERNAME$$$$ /0609ib_drn.sum

COMPUTED BY: B WEDEKING DATE: 10/2004
CHECKED BY: WHY DATE: 1/2005

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	3-C

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

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) * CLASS IV R.C. PIPE 300	375	450	600	750	900	1050	1200	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) CU. METERS 300 (1.63)	400 (1.63)	450 (1.63)	600 (1.63)	800 (2.01)	1200 (2.77)	CLASS III RC PIPE OR C.S. PIPE, TYPE IR ALUMINIZED OR HDPE PIPE S OR D 300	375	400	450	600	800	1200	375mm SIDE DRAIN PIPE	450mm SIDE DRAIN PIPE	600mm SIDE DRAIN PIPE	ENDWALLS STD. 838.01 STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. METERS R.C.P.	C.S.P.	QUANTITIES: STRUCTURES PER EACH (0 THRU 1.50)	FOR DRAINAGE *TOTAL M FOR PAY QUANTITY SHALL BE COL. "A" + (1.3 COL. "B") METERS 1.50 THRU 3.00 A	3.00 AND ABOVE B	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. FRAME W/ TWO GRATES STD. 840.20	M.D.I. FRAME WITH GRATE STD. 840.22	M.D.I. FRAME WITH TWO GRATES STD. 840.22	M.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	M.D.I. (N.S.) FRAME W/2 GRATES STD. 840.29	M.H. STD. 840.51 OR 840.53	M.H. FRAME & COVER STD. 840.54	EXTRA DEPTH REINFORCED CONCRETE MEDIAN DROP INLET SEE DETAIL 2-W	CORR. STEEL ELBOW NO. & SIZE	PIPE REMOVAL (meters)	REMARKS
		55	56		233.95	233.94			3.6																																										
-L- 79+42	LT	56		234.78																												1			1		1														
		56	57		233.94	233.16			20.4																																										
-L- 79+42	CL	57		234.02																												1			1			1														
		57	58		233.16	232.50			30.0																																										
-L- 81+20	LT	59		232.79																												1			1			1														
		59	60		231.95	231.85			26.4																																										
-L- 81+25	CL	60		232.85																												1			1			1														
		60	61		231.75	231.95			26.4																																										
		60	62		231.75	231.35																			42.0																										
-L- 81+20	RT	61		232.79																												1	1.41		1			1														
-L- 81+67	CL	62		232.75																												1	2.6		1			1														
		62	63		229.88	228.65							33.6																		2.6																				
		62	64		228.65	227.50							32.4																																						
		62	65		230.75	231.03																			33.6																										
-L- 82+01	CL	65		233.13																												1			1			1	1													
		65	66		231.53	231.66			33.6																																										
		65	67		231.03	231.26			26.4																																										
-L- 82+20	LT	66		232.50																												1				1		1														
-L- 82+00	RT	67		232.10																												1				1		1														
		67	68		231.26	233.40											12																																1 @ 400			
-Y9- 14+30	RT	69		242.90																												1			1					1												
		69	70		242.14	237.90										12.0																															2 @ 300			
-Y9- 13+40	RT	71		240.31																												1			1					1												
		71	72		239.55	233.15										15.6																															2 @ 300			
-L- 84+28	CL	73	76		230.15	226.48						*72																																							* CLASS IV RCP
-L- 84+40	RT	74		234.29																												1			1			1														
		74	75		233.45	233.39			12.0																																										
-L- 84+40	LT	75		234.29																												1			1			1														
		75	76		233.39	228.90											26.4																																		
-DR7-11+05	RT	76		231.90																												1	1.5	2.42				1					1								SEE DETAIL "2-W"
-DR7-11+03	LT	76	76A		230.0	230.30																			49.2																										
		76	76B		228.90	224.70						*36																																							CLASS IV
-DR7-11+30	LT	76C		233.94																												1			1		1														
		76C	76D		233.16	227.60										15.6																															2 @ 300			
-L- 86+40	RT	77		233.81																												1			1			1														
		77	78		232.97	231.81																	19.2																											
-L- 87+43	LT	79		224.20																												1	0.6		1			1														
-L- 87+51	CL	79	79A		222.60	229.51						*78																																							* CLASS IV RCP
		79	79B		222.6	222.0						*19.2																																							* CLASS IV RCP
-L- 87+63	CL	80		232.13																												1			1			1														
		80	81		231.29	229.51											27.6																															2 @ 400			
		82	83		233.40	229.41											9.6																															2 @ 400			
SHEET TOTAL												*205.2				43.2															2.6	18				16		1		15		2			1							
									178.8				66.0				75.6						19.2		124.8									6.11	2.42	1				1									6 @ 300			
																																															7 @ 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

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6/20/00

COMPUTED BY: B WEDEKING DATE: 10/2004
CHECKED BY: WHY DATE: 1/2005

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	3-D

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

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) * CLASS IV R.C. PIPE 300	375	450	600	750	900	1050	1200
-L- 88+40	RT	83		232.10											
		83	84		231.26	227.99									
-L- 89+40	RT	84		228.83											
		84	85		227.99	227.57			27.6						
-L- 89+40	CL	85		229.17											
		85	86		228.33	228.79			26.4						
		85	87		227.57	227.01									
-L- 89+40	LT	86		229.63											
-L- 90+00	CL	87		227.93											
		87	88		226.13	225.85						27.6			
		87	89		226.26	226.13						27.6			
-L- 90+05	RT	89		227.47											
		89	90		226.25	227.28									
-Y8- 11+75	RT	91			DRIVE										
-Y8- 12+18	LT	92			DRIVE										
-Y8- 13+60	RT	93		252.25											
		93	94		251.49	249.11									
-Y8- 17+21	RT	95			DRIVE										
-Y8- 17+34	LT	95A			DRIVE										
-Y8- 17+53	RT	96			DRIVE										
-Y8- 17+62	LT	97			DRIVE										
-Y8- 18+00	RT	98			DRIVE										
-Y8- 18+15	RT	99			DRIVE										
-Y8- 18+44	RT	100			DRIVE										
-Y9- 10+09	RT	101			DRIVE										
-Y9- 10+06	LT	102			DRIVE										
-Y9- 10+56	RT	103		231.11											
		103	104		230.27	230.03			16.8						
-Y9- 10+60	LT	104		230.87											
		104	105		229.96	228.60				34.8					
-Y9- 10+95	LT	105		229.52											
		105	106		228.45	228.05									
SHEET TOTAL										34.8		55.2			
									70.8						

STATION	FROM	TO	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) CU. METERS 300 (1.63)	400 (1.63)	450 (1.63)	600 (1.63)	800 (2.01)	1200 (2.77)	CLASS III RC PIPE OR C.S. PIPE, TYPE IR ALUMINIZED OR HDPE PIPE S OR D 300	375	400	450	600	800	1200	375mm SIDE DRAIN PIPE	450mm SIDE DRAIN PIPE	600mm SIDE DRAIN PIPE	ENDWALLS STD. 838.01 STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CUBIC METERS R.C.P.	C.S.P.
-L- 88+40	83																			
	83	84								96.0										
-L- 89+40	84																			
	84	85																		
-L- 89+40	85																			
	85	86																		
	85	87										60.0								
-L- 89+40	86																			
-L- 90+00	87																			
	87	88																		
	87	89																		
-L- 90+05	89																			
	89	90					9.6													
-Y8- 11+75	91																9.6			
-Y8- 12+18	92															9.6				
-Y8- 13+60	93																			
	93	94	12.0																	
-Y8- 17+21	95															9.6				
-Y8- 17+34	95A																26.4			
-Y8- 17+53	96															9.6				
-Y8- 17+62	97															7.2				
-Y8- 18+00	98															9.6				
-Y8- 18+15	99															10.8				
-Y8- 18+44	100															10.8				
-Y9- 10+09	101															12.0				
-Y9- 10+06	102															13.2				
-Y9- 10+56	103																			
	103	104																		
-Y9- 10+60	104																			
	104	105																		
-Y9- 10+95	105																			
	105	106												27.6						
SHEET TOTAL										96				27.6			36.0			
			12				9.6					60				92.4				

STATION	FROM	TO	QUANTITIES: STRUCTURES PER EACH (0 THRU 1.50)	FOR DRAINAGE *TOTAL M. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') METERS A 1.50 THRU 3.00	B 3.00 AND ABOVE	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. FRAME W/ TWO GRATES STD. 840.20	M.D.I. FRAME WITH GRATE STD. 840.22	M.D.I. FRAME WITH TWO GRATES STD. 840.22	M.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	M.D.I. (N.S.) FRAME W/2 GRATES STD. 840.29	M.H. STD. 840.51 OR 840.53	M.H. FRAME & COVER STD. 840.54	EXTRA DEPTH REINFORCED CONCRETE MEDIAN DROP INLET SEE DETAIL 2-W
-L- 88+40	83		1				1				1					
	83	84														
-L- 89+40	84		1				1				1					
	84	85														
-L- 89+40	85		1	0.1			1				1					
	85	86														
	85	87														
-L- 89+40	86		1				1				1					
-L- 90+00	87		1	0.3		1					1					
	87	88														
	87	89														
-L- 90+05	89		1				1				1					
	89	90														
-Y8- 11+75	91															
-Y8- 12+18	92															
-Y8- 13+60	93		1				1						1			
	93	94														
-Y8- 17+21	95															
-Y8- 17+34	95A															
-Y8- 17+53	96															
-Y8- 17+62	97															
-Y8- 18+00	98															
-Y8- 18+15	99															
-Y8- 18+44	100															
-Y9- 10+09	101															
-Y9- 10+06	102															
-Y9- 10+56	103		1				1					1				
	103	104														
-Y9- 10+60	104		1				1					1				
	104	105														
-Y9- 10+95	105		1				1					1				
	105	106														
SHEET TOTAL			10				9				6		1			
				0.4		1						3				

STATION	FROM	TO	CORR. STEEL ELBOW NO. & SIZE	PIPE REMOVAL (meters)	REMARKS
-L- 88+40	83				
	83	84			
-L- 89+40	84				
	84	85			
-L- 89+40	85				
	85	86			
	85	87			
-L- 89+40	86				
-L- 90+00	87				
	87	88			
	87	89			
-L- 90+05	89				
	89	90	1 @ 800		
-Y8- 11+75	91			10.8	
-Y8- 12+18	92				
-Y8- 13+60	93				
	93	94	2 @ 300		
-Y8- 17+21	95			7.2	
-Y8- 17+34	95A			12.4	
-Y8- 17+53	96			8.4	
-Y8- 17+62	97				
-Y8- 18+00	98			7.2	
-Y8- 18+15	99			6.0	
-Y8- 18+44	100				
-Y9- 10+09	101				
-Y9- 10+06	102			6.4	
-Y9- 10+56	103				
	103	104			
-Y9- 10+60	104				
	104	105			
-Y9- 10+95	105				
	105	106			
SHEET TOTAL				58.4	
			2 @ 300		
			1 @ 800		

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

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6/20/00

COMPUTED BY: B WEDEKING DATE: 10/2004
CHECKED BY: WHY DATE: 1/2005

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 1200 mm & UNDER)

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	3-E

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) * CLASS IV R.C. PIPE 300	375	450	600	750	900	1050	1200	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) CU. METERS 300 (1.63)	400 (1.63)	450 (1.63)	600 (1.63)	800 (2.01)	1200 (2.77)
-DR4- 10+17	CL	107			DRIVE							15.6									
-Y9- 11+57	LT	108		230.91																	
		108	109		230.07	224.90											14.4				
		110		230.21																	
		110	112		229.37	228.05											18				
-Y9-13+03		113																			
-DR5- 10+55	CL	114			DRIVE														25.2		
		113	113A														24				
-Y9- 16+00	LT	115		242.09																	
		115	116		241.51	241.30			26.4												
-Y9- 16+76	RT	117			DRIVE																
-DR2- 10+50	RT	118			DRIVE																
-Y8- 16+60	RT	119		251.15																	
-Y8- 16+60	RT	119	120		250.30	246.90											12				
SHEET TOTAL												15.6							25.2		
									26.4								68.4				

STATION	CLASS III RC PIPE OR C.S. PIPE, TYPE IR ALUMINIZED OR HDPE PIPE S OR D 300	375	400	450	600	800	1200	375mm SIDE DRAIN PIPE	450mm SIDE DRAIN PIPE	600mm SIDE DRAIN PIPE	ENDWALLS STD. 838.01 STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. METERS R.C.P.	C.S.P.	QUANTITIES: STRUCTURES PER EACH (0 THRU 1.50)	FOR DRAINAGE *TOTAL M FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') METERS A 1.50 THRU 3.00	B 3.00 AND ABOVE
-DR4- 10+17															
-Y9- 11+57													1		
(108–109)															
(110)													1		
(110–112)															
-Y9-13+03													1		
-DR5- 10+55															
(113–113A)															
-Y9- 16+00													1		
(115–116)															
-Y9- 16+76								10.8							
-DR2- 10+50									57.6						
-Y8- 16+60 (119)													1		
-Y8- 16+60 (119–120)															
SHEET TOTAL									57.6				5		
								10.8							

STATION	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. FRAME W/ TWO GRATES STD. 840.20	M.D.I. FRAME WITH GRATE STD. 840.22	M.D.I. FRAME WITH TWO GRATES STD. 840.22	M.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	M.D.I. (N.S.) FRAME W/2 GRATES STD. 840.29	M.H. STD. 840.51 OR 840.53	M.H. FRAME & COVER STD. 840.54	EXTRA DEPTH REINFORCED CONCRETE MEDIAN DROP INLET SEE DETAIL 2-W	CORR. STEEL ELBOW NO. & SIZE	PIPE REMOVAL (meters)	REMARKS
-DR4- 10+17													7.4	
-Y9- 11+57		1						1						
(108–109)												2 @ 400		
(110)		1						1						
(110–112)														
-Y9-13+03		1						1						
-DR5- 10+55														
(113–113A)												2 @ 400		
-Y9- 16+00			1				1							
(115–116)													19.2	
-Y9- 16+76														
-DR2- 10+50														
-Y8- 16+60 (119)		1						1						
-Y8- 16+60 (119–120)												2 @ 400		
SHEET TOTAL		4						4					26.6	
			1				1					8 @ 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

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 1350 mm & OVER)

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 1350	1500	1650	1800	1950	2100
-L- 68+55	CL	30			231.95	231.24	X						81.6

STATION	BITUMINOUS COATED C.S. PIPE TYPE B 1400: 2.77	1400: 3.51	1400: 4.27	1500: 2.77	1500: 3.51	1500	1650	1800	SHOP ELONGATED	STRUCTURAL PLATE PIPE 1500: 2.77	1500: 3.51	1500: 4.27	1650: 2.77	1650: 3.51	1650: 4.27	1800: 2.77	1800: 3.51	1800: 4.27
-L- 68+55																		

STATION	REINFORCED ENDWALLS CLASS "A" CONC. WITH R.C. cu. m.	WITH C.S. cu. m.	MASONARY DRAINAGE STRUCTURES CUBIC METERS	C.B. STD. 840.01 OR 840.02	FRAME, GRATES & HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	SIDE TAPERED INLET	REMARKS
-L- 68+55								1	INLET LEFT

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

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COMPUTED BY: B WEDEKING DATE: 10/2004
CHECKED BY: WHY DATE: 1/2005

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 1200 mm & UNDER)

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	3-F

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO.	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) * CLASS IV R.C. PIPE							BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) CU. METERS							CLASS III RC PIPE OR C.S. PIPE, TYPE IR ALUMINIZED OR HDPE PIPE S OR D				
SIZE							375	450	600	750	900	1050	1200	300	400	450	600	800	900	1200	375	450	600	800	1200
THICKNESS OR GAUGE														1.63	1.63	1.63	1.63	2.01		2.77					
R-0609IB PROJECT TOTAL							710.4		68.4		190.8				223.2			9.6			206.4	393.6			7.2
								99.6		162				109.2			25.2			62.4			234		
										* 205.2															
	TOTAL																								
R-2606A PROJECT TOTAL							927.81		157.28		207.26		219.46			20.73			40.23			649.83		335.28	
								81.69		203.61		163.37			154.84			54.86			481.58		569.37		
											*107.29	*56.08													
	TOTAL																51.21	UNCOATED		600CSP					
																		79.45	UNCOATED	800CSP					
R-0609IB & R-2606A COMBINED PROJECT TOTAL							1638.21		225.68		398.06		219.46		378.04		25.2		40.23		687.98	1043.43		335.28	
								181.29		365.61		163.37		109.2		20.73		64.46		62.4			803.37		7.2
		R-0609IB								* 205.2															
		R-2606									*107.29	*56.08					51.21	UNCOATED		600CSP					
		TOTAL																79.45	UNCOATED	800CSP					

STATION	375mm SIDE DRAIN PIPE	450mm SIDE DRAIN PIPE	600mm SIDE DRAIN PIPE	ENDWALLS STD. 838.01 STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. METERS R.C.P.	C.S.P.	QUANTITIES: STRUCTURES PER EACH (0 THRU 1.50)	FOR DRAINAGE "TOTAL W FOR KY QUANTITY SHALL BE COL. 'A' + 1.3 X COL. 'B'" A 1.50 THRU 3.00	B 3.00 AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATE, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE 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. FRAME W/ TWO GRATES STD. 840.20	M.D.I. FRAME WITH GRATE STD. 840.22	M.D.I. FRAME WITH TWO GRATES STD. 840.22	M.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	M.D.I. (N.S.) FRAME W/ 2 GRATES STD. 840.29	M.H. STD. 840.51 OR 840.53	M.H. FRAME & COVER STD. 840.54	EXTRA DEPTH REINFORCED CONCRETE MEDIAN DROP INLET SEE DETAIL 2-W	60" X 36" RC TAPERED INLET	18" CONCRETE PIPE END SECTION STD 310	30" CONCRETE PIPE END SECTION STD 310	OTCB	30" SLUICE GATE	36" SLUICE GATE	SLUICE GATE INLET	CONC. COLLARS	CORR. STEEL ELBOW NO. & SIZE	PIPE REMOVAL (meters)	REMARKS
R-0609IB PROJECT TOTAL		93.6				69		2.42								56		6		46		11	1		1												14 @ 300mm	111.6	
	103.2			11.2			8.69									10		1		4		5			1												21 @ 400mm		
																																					1 @ 800mm		
TOTAL							11.84																																
R-2606A PROJECT TOTAL		64.62		24.47		76		1.83		3			3		15		6										2		1		1		5		1.53	5 @ 400mm	266.09	
	135.33		31.70		9.79		11.63		3					3		47		9		59									1		2		7			1 @ 450mm		
																																					1 @ 800mm		
																																					2 @ 900mm		
TOTAL							14.02																																
R-0609IB & R-2606A COMBINED PROJECT TOTAL	238.53		31.70		9.79		20.32		3					3		103		15		105		11		1		1		2		1		1		5		1.53	14 @ 300mm	377.69	
		158.22		35.67		145		4.25		3			3		25		7		4		5		1								1		2		7		26 @ 400mm		
																																					1 @ 450mm		
																																					2 @ 800mm		
																																					2 @ 900mm		
TOTAL							25.86																																

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

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 1350 mm & OVER)

STATION	LOCATION (LT, RT, OR CL)		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE)					BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) CU. METERS	STRUCTURAL PLATE PIPE	REINFORCED ENDWALLS R.C.P.	C.S.P.	MASONRY DRAINAGE STRUCTURES CUBIC METERS	OTCB (SEE SHEET 2-AN	FRAME, GRATE, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	SIDE TAPERED INLET	J.B. STD. 840.31 OR 840.32	CORR. STEEL ELBOW NO. & SIZE	PIPE REMOVAL (meters)	REMARKS
SIZE							1350	1350	1500	1650	2100														
THICKNESS OR GAUGE								CLASS IV																	
R-0609IB PROJECT TOTAL											81.6										1				INLET LEFT
R-2606A PROJECT TOTAL							54.86		195.07					27.53		6.87		1							OPEN THROAT CATCH BASIN
								178		141.43												1			
R-0609IB & R-2606A COMBINED PROJECT TOTAL								178		141.43											1				
							54.86		195.07		81.6			27.53		6.87		1				1			

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

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COMPUTED BY: BW DATE: 03/06
CHECKED BY: WHY DATE: 03/06

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SUMMARY OF EARTHWORK
IN CUBIC METERS

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	3-G

LOCATION	UNCL. EXCAVATION	UNDERCUT	EMBT + %	BORROW	WASTE
SUMMARY #1					
-L- 60+59.109 TO 70+60.000	52,102	3,670	67,985	15,883	3,670
-Y8- 10+84.660 TO 14+34.042 (BEGIN BRIDGE)	1,054		12,756	11,702	
-Y8- (END BRIDGE) 15+07.456 TO 18+82.197	847		54,778	53,931	
-DR1- 10+03.620 TO 10+40.000	4		244	240	
-DR2- 10+03.600 TO 10+90.000	4		421	417	
-DR3- 10+02.400 TO 10+17.035	4		5	1	
SUMMARY #2					
-L- 70+60.000 TO 80+60.000	96,174	400	186,481	90,307	400
SUMMARY #3					
-L- 80+60.000 TO 90+28.988	64,321	380	92,947	28,626	380
-Y9- 10+00.000 TO 13+50.708 (BEGIN BRIDGE)	735		84,166	83,431	
-Y9- (END BRIDGE) 14+18.680 TO 17+20.000	879		9,226	8,347	
-DR4- 10+03.600 TO 10+35.000	0		506	506	
-DR5- 10+03.600 TO 10+90.000	2		13,561	13,559	
-DR6- 10+03.600 TO 10+23.187	28		25	0	3
-DR7- 10+03.600 TO 15+23.485	126		43,848	43,722	
SUMMARIES TOTAL	216,280	4,450	566,949	350,672	4,453
LOSS DUE TO CLEARING AND GRUBBING	-10,814			10,814	
UNDERCUT FOR GRADE POINTS		3,100	3,720	3,720	3,100
UNDERCUT FROM GEOTECH		4,300	5,160	5,160	4,300
SUITABLE WASTE IN LIEU OF BORROW				-3,103	-3,103
SHOULDER MATERIAL			15,000	15,000	
PROJECT TOTALS	205,466	11,850	590,829	382,263	8,750
+5% TO REPLACE TOPSOIL IN BORROW PIT				19,113	
CHIPPED TIRES (SEE DETAIL 2-D)				-8,995	
GRAND TOTAL R-0609IB	205,466	11,850		392,381	8,750
SAY R-0609IB	205,600			393,250	8,750
SAY R-2606A	695,750	5,046		117,742	5,046
COMBINED PROJECT TOTALS R-0609IB & R-2606A	901,350	16,896		510,992	13,796

PAVEMENT STRUCTURE VOLUME R-0609IB = 22,723 CM
PAVEMENT STRUCTURE VOLUME R-2606A = 27,755 CM

EARTHWORK TOTALS FOR ALTERNATE PAVEMENT DESIGN

LOCATION	UNCL. EXCAVATION	UNDERCUT	EMBT + %	BORROW	WASTE
SUMMARIES TOTAL	216,280	4,450	566,949	350,672	4,453
ADJ. FOR ALTERNATE PAVMENT DESIGN	-3350		9,925	13,275	
ADDITIONAL UNDERCUT		7,400	8,880	8,880	7,400
LOSS DUE TO CLEARING AND GRUBBING	-10,814			10,814	
SUITABLE WASTE IN LIEU OF BORROW				-3,103	-3,103
SHOULDER MATERIAL			11,250	11,250	
PROJECT TOTALS	202,116	11,850	597,004	391,788	8,750
+5% TO REPLACE TOPSOIL IN BORROW PIT				19,590	
CHIPPED TIRES				-8,995	
GRAND TOTAL	202,116	11,850		402,383	
SAY	202,300			402,500	
COMBINED PROJECT TOTALS R-0609IB & R-2606A	898,050			520,242	

PAVEMENT STRUCTURE VOLUME R-0609IB = 21,587 CM
PAVEMENT STRUCTURE VOLUME R-2606A = 44,879 CM

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COMPUTED BY: BW DATE: 11-2005
CHECKED BY: WHY DATE: 11-2005

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	3-H

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 GRAU 350	ANCHORS TYPE 111	ANCHORS CAT-1	ANCHORS AT 1	ANCHORS TES	ANCHORS M-350	IMPACT ATTENUATOR TYPE 350 NO.	PERMITTED G	PERMITTED NG	REMARKS
-L-	72+92.691	79+63.251	RT	670.560			75+00.000	79+40.000	0.6	4.6	15.24		1.6	0.6	1		1							
-L-	75+78.370	79+70.800	LT	392.430			79+40.000	76+00.000	0.6	4.6	15.24		1.6	0.6	1		1							
-L-	81+56.190	82+47.630	LT	91.440			82+00.000	81+60.000	0.6	4.6	15.24		1.6	0.6	1		1							
-L-	85+75.260	90+28.650	LT	453.390			88+60.000	85+80.000	0.6	4.6	15.24		1.6	0.6			1							
-Y8-	13+16.794	14+34.904	LT	118.110				14+34.904	2.4	3.4		15.24			1	1								
-Y8-	13+41.475	14+32.915	RT	91.440			14+32.915		2.4	3.4	15.24				1	1								
-Y8-	15+08.464	16+79.914	LT	171.450			16+40.000		2.4	3.4	15.24				1	1								
-Y8-	15+14.068	16+85.518	RT	171.450				16+40.000	2.4	3.4		15.24			1	1								
-Y9-	10+89.120	12+70.000	RT	182.880			11+20.000		2.4	3.4	15.24				1									
-Y9-	12+87.748	13+48.708	RT	60.960			13+48.708		2.4	3.4						1								
-Y9-	14+25.077	15+24.137	RT	99.060				14+25.077	2.4	3.4					1	1								
-Y9-	11+39.350	12+68.890	LT	129.540				11+60.000	2.4	3.4		15.24			1									
-Y9-	13+41.663	12+92.133	LT	49.530				13+41.663	2.4	3.4						1								
-Y9-	14+20.460	15+08.090	LT	87.630			14+20.460		2.4	3.4					1	1								
-DR5-	10+06.000	10+73.100	LT	41.910	38.100		10+70.000		0.6	1.6		15.24						1						
-DR5-	10+06.000	10+67.320	RT	30.480	38.100			10+60.000	0.6	1.6	15.24							1						
-DR7-	10+06.210	11+42.81	LT	60.960	83.820		11+40.000		0.6	1.6					1									
-DR7-	10+05.960	10+18.440	RT		19.050			10+18.440	0.6	1.6								1						
-DR7-	13+83.420	14+52.000	LT	68.580			14+00.000		0.6	1.6	15.24	15.24			2									
-L-	82+48.000		LT	7.620															2					
-L-	82+43.000		RT	7.620															2					
-Y8-	14+00.000		LT	7.620															2					
-Y8-	15+15.000		LT	7.620															2					
			TOTAL	3002.28	179.07										14	8	4	3	8					
	ANCHOR	DEDUCTION																						
		GRAU 350 14 @	15.24	-213.360																				
		TYPE 111 8 @	5.175	-41.400																				
		CAT 1 4 @	1.905	-7.620																				
		AT 1 3 @	1.905	-5.715																				
		R-0609IB	TOTAL	2734.185	179.07																			
		R-0609IB	SAY	2758.440	186.69																			
		(ADDITIONAL POSTS= 10 EACH)																						
		R-2606A	TOTAL	3371.85	30.48										27	14	9	1		2				
		(ADDITIONAL POSTS= 10 EACH)																						
	R-0609IB &	R-2606A GRAND TOTAL		6,130.29	217.17										41	22	13	4	8	2				
		(ADDITIONAL POSTS= 20 EACH)																						

RD223192 7/25/2006 guardrail&cable sdkendall RD-Oce34

COMPUTED BY: BW	DATE: 11/2004
CHECKED BY: WHY	DATE: 11/2005

PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	3-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES

SUMMARY OF SHOULDER BERM GUTTER

SURVEY LINE	STATION TO STATION	LOCATION	LENGTH METERS
-L-	75+00.000 TO 77+60.000	RIGHT	260
-L-	76+00.000 TO 79+40.000	LEFT	340
-Y8-	13+60.000 TO 14+26.636	RIGHT	66.636
-Y8-	15+14.862 TO 15+40.000	RIGHT	25.138
-Y8-	14+20.000 TO 14+26.303	LEFT	6.303
-Y8-	15+14.862 TO 15+40.000	LEFT	25.138
-Y9-	11+04.500 TO 12+59.000	RIGHT	154.5
-Y9-	13+00.000 TO 13+41.960	RIGHT	41.960
-Y9-	14+28.674 TO 14+80.000	RIGHT	51.326
-Y9-	11+56.000 TO 12+71.000	LEFT	115
		R-0609IB TOTAL	1086.001
		SAY	1090
		R-2606A TOTAL	1298.45
	R-0609IB & R-2606A GRAND TOTAL		2388.45

SUMMARY OF PAVEMENT REMOVAL (ASPHALT)

SURVEY LINE	STATION TO STATION	LOCATION	SQUARE METERS
-L-	82+46	LEFT	96
-L-	82+46	RIGHT	108
-Y8-	12+19.000 TO 12+87.000	LEFT	563
-Y8-	14+00.000 TO 14+19.000	LEFT	126
-Y9-	15+79.000 TO 15+94.000	RIGHT	57
R-0609IB		TOTAL	950
		SAY	1000
R-2606A		TOTAL	6939.63
	R-0609IB & R-2606A	GRAND TOTAL	7939.63

SUMMARY OF CABLE GUIDERAIL

SURVEY LINE	BEGIN STATION	END STATION	LOCATION	CABLE GUIDERAIL LENGTH	ANCHORS
-L-	60+00.000	62+80.000	MEDIAN	172.5	2
-L-	65+31.000	70+91.000	MEDIAN	560	2
-L-	70+91.000	76+51.000	MEDIAN	560	2
-L-	76+51.000	82+07.000	MEDIAN	558	2
-L-	84+60.000	90+28.988	MEDIAN	567.988	2
			PROJECT TOTAL	2418.488	10
			LESS ANCHOR UNITS		
		(TERMINAL ANCHORS ONLY) 10 @ 7.62		(-)76.2	
			R-0609IB TOTAL	2342.288	10
			SAY	2350	10
			R-2606A TOTAL	3215.64	13
		R-0609IB & R-2606A GRAND TOTAL		5565.64	23

SUMMARY OF BREAKING EXISTING ASPHALT PAVEMENT

SURVEY LINE	STATION TO STATION	LOCATION	SQUARE METERS
		R-2606A	1354.48

COMPUTED BY: WHY DATE: 12/2005
CHECKED BY: BW DATE: 12/2005

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	3-J

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WOVEN WIRE FENCE

STATION TO STATION	LT. OR RT.	A FABRIC M	B END BRACE	C CORNER BRACE	D LINE BRACE	E 100mm POST	F 125mm POST
61+62.000 -L- TO 63+90.000 -L-	LT	228	2	1	3	45	16
62+00.000 -L- TO 63+22.000 -L-	RT	131	2	2	2	22	16
64+20.000 -L- TO 76+40.000 -L-	RT	1235	2	12	14	245	82
64+79.000 -L- TO 77+18.000 -L-	LT	1240	2	9	13	253	70
76+72.000 -L- TO 82+95.000 -L-	RT	625	2	6	7	123	49
77+40.000 -L- TO 83+20.000 -L-	LT	585	2	7	6	114	43
83+45.000 -L- TO 90+28.988 -L-	RT	685	2	6	7	137	43
10+30.000 -DR7- TO 15+23.485 -DR7-	LT	495	2	4	5	99	29
15+23.485 -DR7- TO 88+41.870 -L-	LT	32	2	1	1	1	10
88+41.879 -L- TO 90+28.988 -L-	LT	188	2	2	2	36	169
-Y8-							
13+03.500 -Y8- TO 14+43.500 -Y8-	RT	140	2	0	2	28	10
15+65.500 -Y8- TO 16+82.000 -Y8-	RT	117	2	0	2	22	10
-Y9-							
13+07.000 -Y9- TO 13+47.500 -Y9-	RT	40.5	2	0	1	6	7
R-0609IB TOTALS		5741.5				1131	401
SAY		5745				1135	405
R-2606A TOTALS		9296.40				1743	420
R-0609IB & R-2606A GRAND TOTALS		15041.4				2878	825

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PROJ. REFERENCE NO.	SHEET NO.
R-0609IB	3-K

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1	4&13	FAIRFIELD GOLF CLUB, INC.
2A	4	FAIRFIELD GOLF CLUB INC
2B	4	FAIRFIELD GOLF CLUB INC
2	4&5	HAROLD G. COX
3	4&5&14	JAMES P. HINKLE, SR.
24	4	NCDOT
4	4&5	RUBY K. POWELL
5	5&13	JERRY W. QUEEN
6	5&6	MARGARET W. HANEY
7	5&13	JESSE W. TYNDALL
8	6	RUSSELL J. HOFFMAN
9	6&7	PATRICIA G. DRIGGERS
10	6&7&8	C.C. GILBRETH
11	7&8	WILLIAM D. BEAN
12	8&9	PAUL A. LAWSON, SR.
13	9	MARY L. KING
14	9&16	ROBERT L. BURGESS
15	9	HUGH A. MYERS
16	10&11&12&15	TERESA T. CUNNUP & OTHERS
17	10&16	HAROLD R. MARTIN
18	10&11&12	KEPLEY-FRANK HARDWOOD CO., INC.
19	13	HALLIE GILBREATH MYERS
20	13	ROBERT L. KEARNS|
21	13	CLAY C. GILBRETH
22	13	JOHNNY MORRIS FRYE
23	14	POSEY E. MARSHALL
24	14	NCDOT
25	14	JEFFREY L. BOSWELL & WIFE, CATHY L. BOSWELL
26	14	ROGER D. QUEEN
27	14	NO CLAIM
28	14	WILLIAM LEON SPARKS
29	14	PATRICK TODD RIDGE ANGELA M. RIDGE
30	15	DONALD C. HENDERSON
31	10&15	BILLY L. TUTTLE
32	15	CHINA A. TUTTLE
33	10	HUGH A. MYERS
34	10&16	JOHN K. WRIGHT
35	16	ARTHUR L. LOMAX
36	16	HAROLD R. MARTIN
37	16	ARTHUR L. LOMAX
38	16	RONNIE G. STANLEY & WIFE

PARCEL No.	SHEET No.	PROPERTY OWNER NAME

PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	4
R/W SHEET NO.	

METRIC

5 0 10

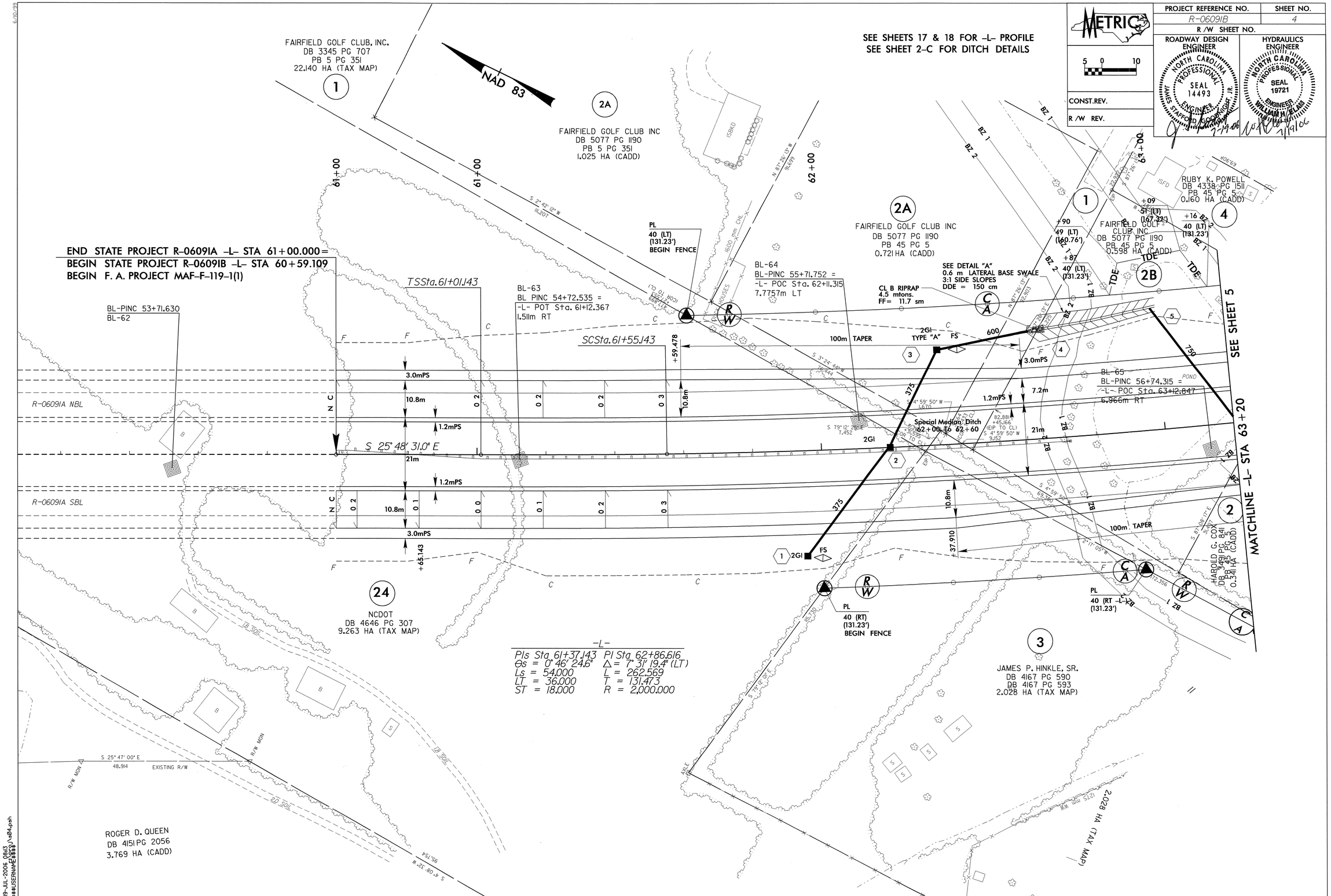
CONST.REV.

R/W REV.

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JAMES STAFFORD GOODNIGHT, JR.

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. ELLIS

SEE SHEETS 17 & 18 FOR -L- PROFILE
SEE SHEET 2-C FOR DITCH DETAILS



PROJECT REFERENCE NO.	SHEET NO.
R-06091B	5
R/W SHEET NO.	

METRIC

5 0 10

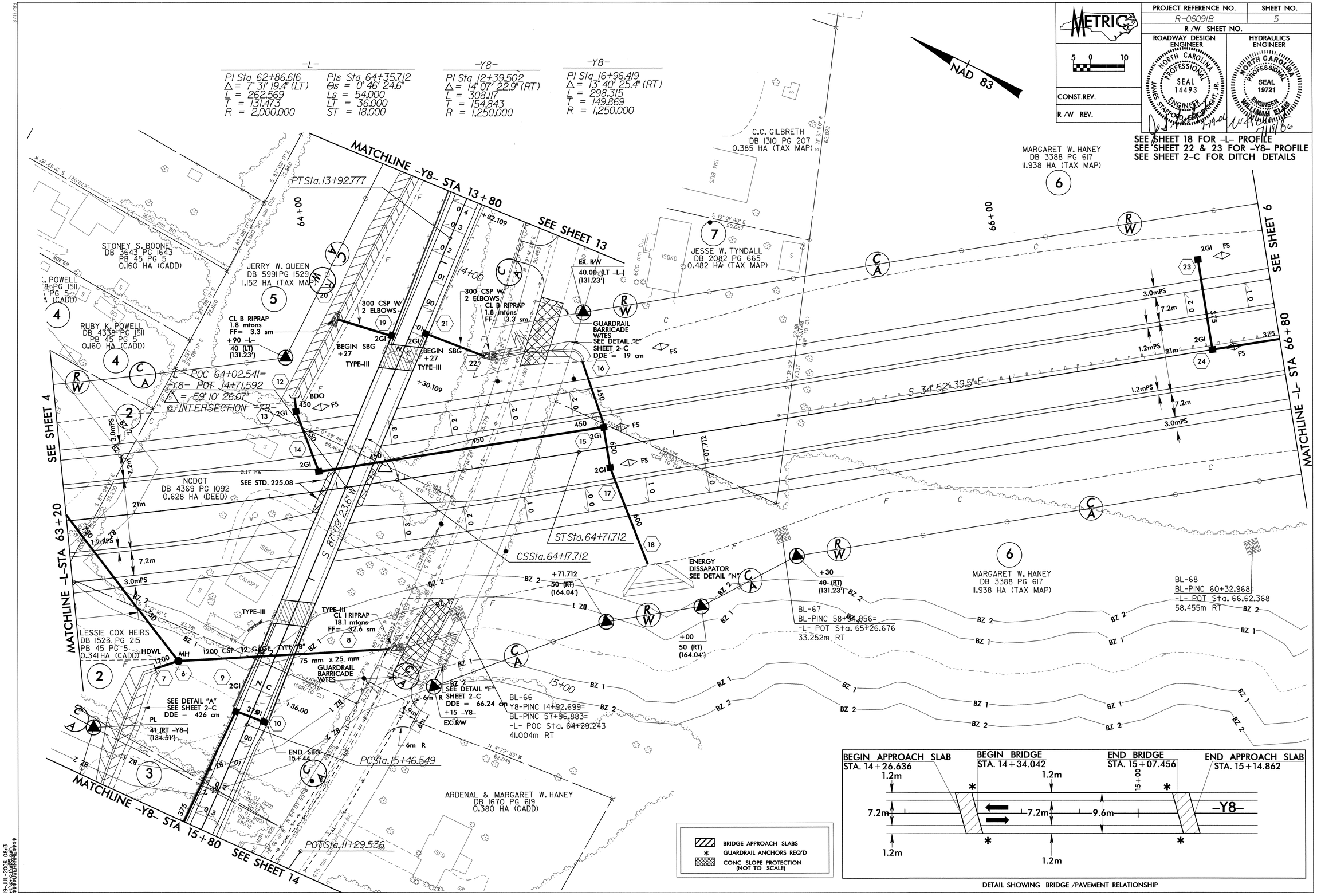
CONST.REV.

R/W REV.

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JAMES STAFFORD GOODRIGHT, JR. 7-19-06

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM ELAM 7/19/06

SEE SHEET 18 FOR -L- PROFILE
SEE SHEET 22 & 23 FOR -Y8- PROFILE
SEE SHEET 2-C FOR DITCH DETAILS



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RD223192 7/19/2006 s05 sdkendall RD-Oce34

PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	6
R /W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

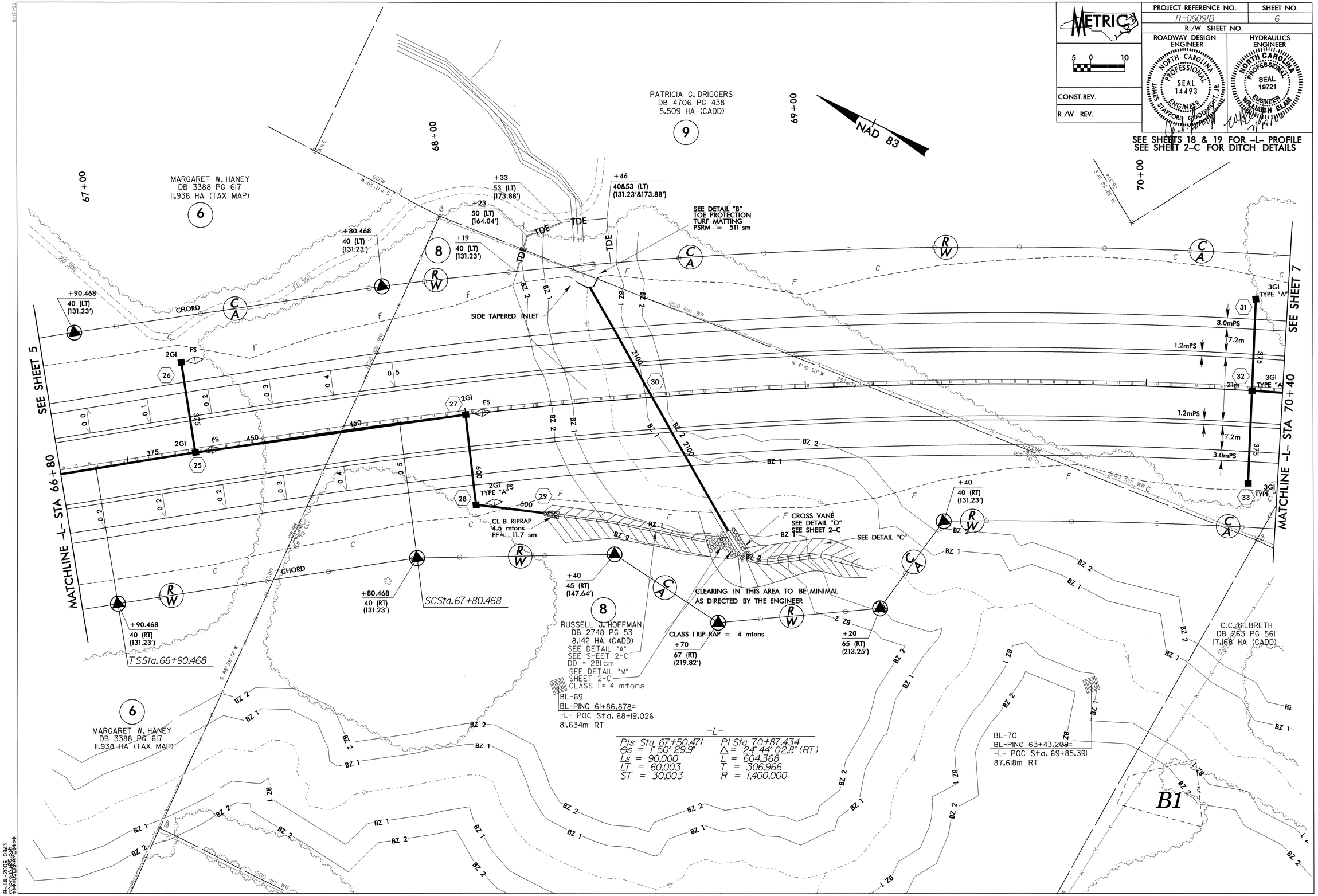
CONST.REV.

R /W REV.

NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JAMES STAFFORD GOODWIN, JR.

NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. BLAND

SEE SHEETS 18 & 19 FOR -L- PROFILE
SEE SHEET 2-C FOR DITCH DETAILS



RD223192 7/19/2006 s06 sdkendall RD-Oce34

PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	7
R /W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

CONST.REV.

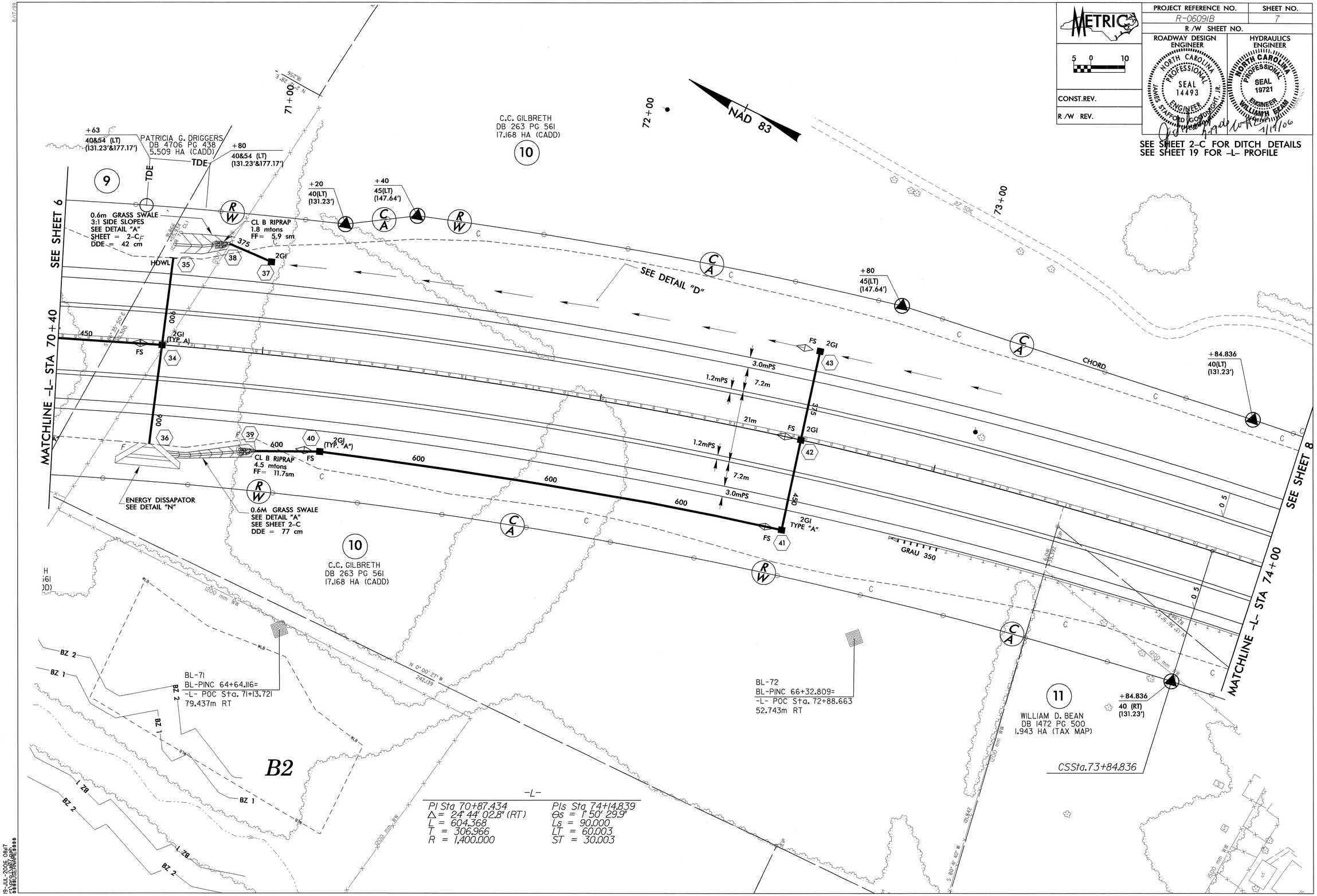
R /W REV.

NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JAMES STAFFORD GOODNIGHT, JR.

NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. EGAN, JR.

7/19/06

SEE SHEET 2-C FOR DITCH DETAILS
SEE SHEET 19 FOR -L- PROFILE



PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	8
R /W SHEET NO.	

METRIC

5 0 10

CONST.REV.

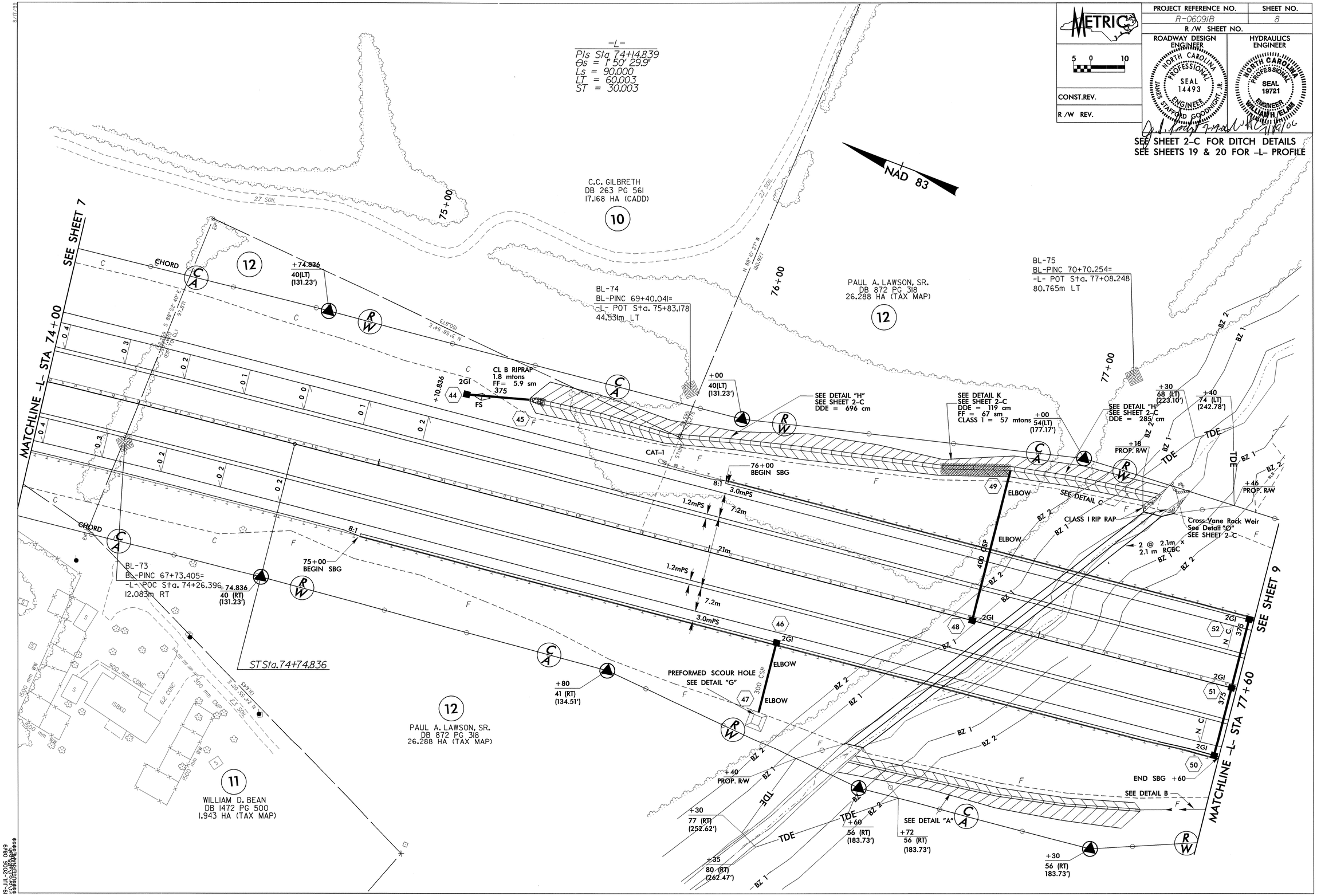
R /W REV.

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JAMES STAFFORD GOODNIGHT, JR.

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. ELAM

7/18/06

SEE SHEET 2-C FOR DITCH DETAILS
SEE SHEETS 19 & 20 FOR -L- PROFILE



RD223192 7/19/2006 s08 sdkendall RD-Oce34

PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	9
R /W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

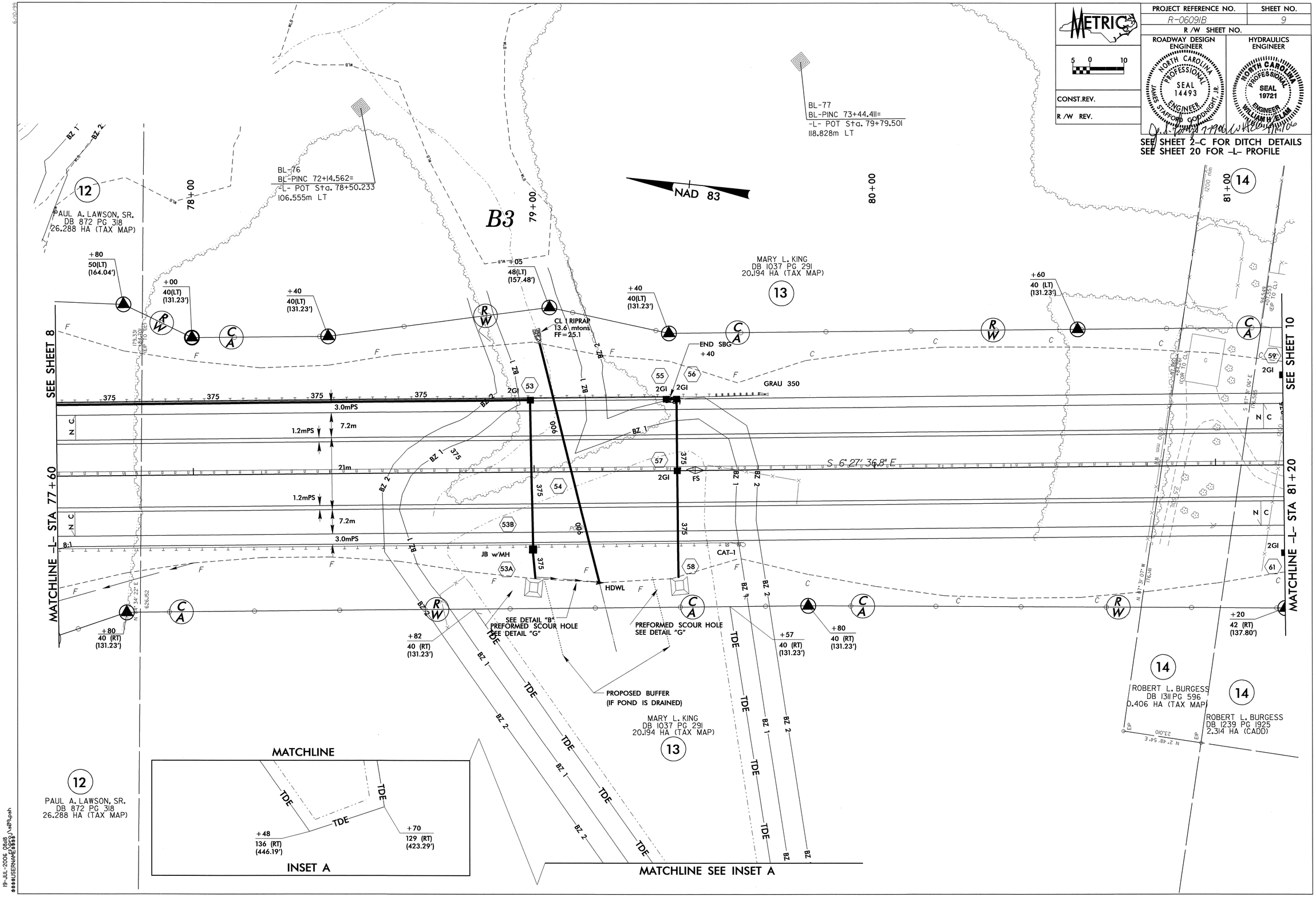
CONST.REV.

R /W REV.

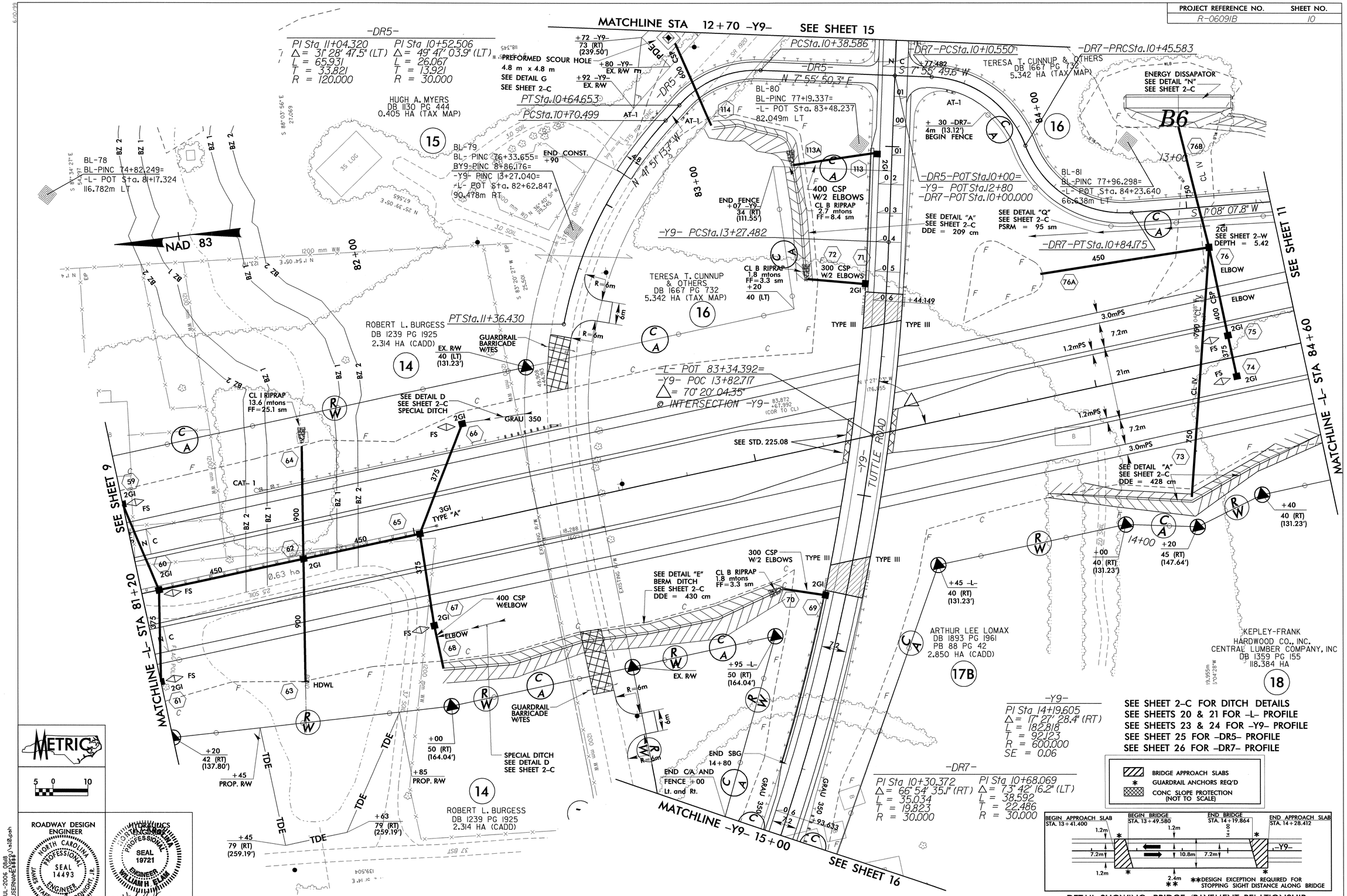
NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JAMES STAFFORD GODDNIGHT, JR.

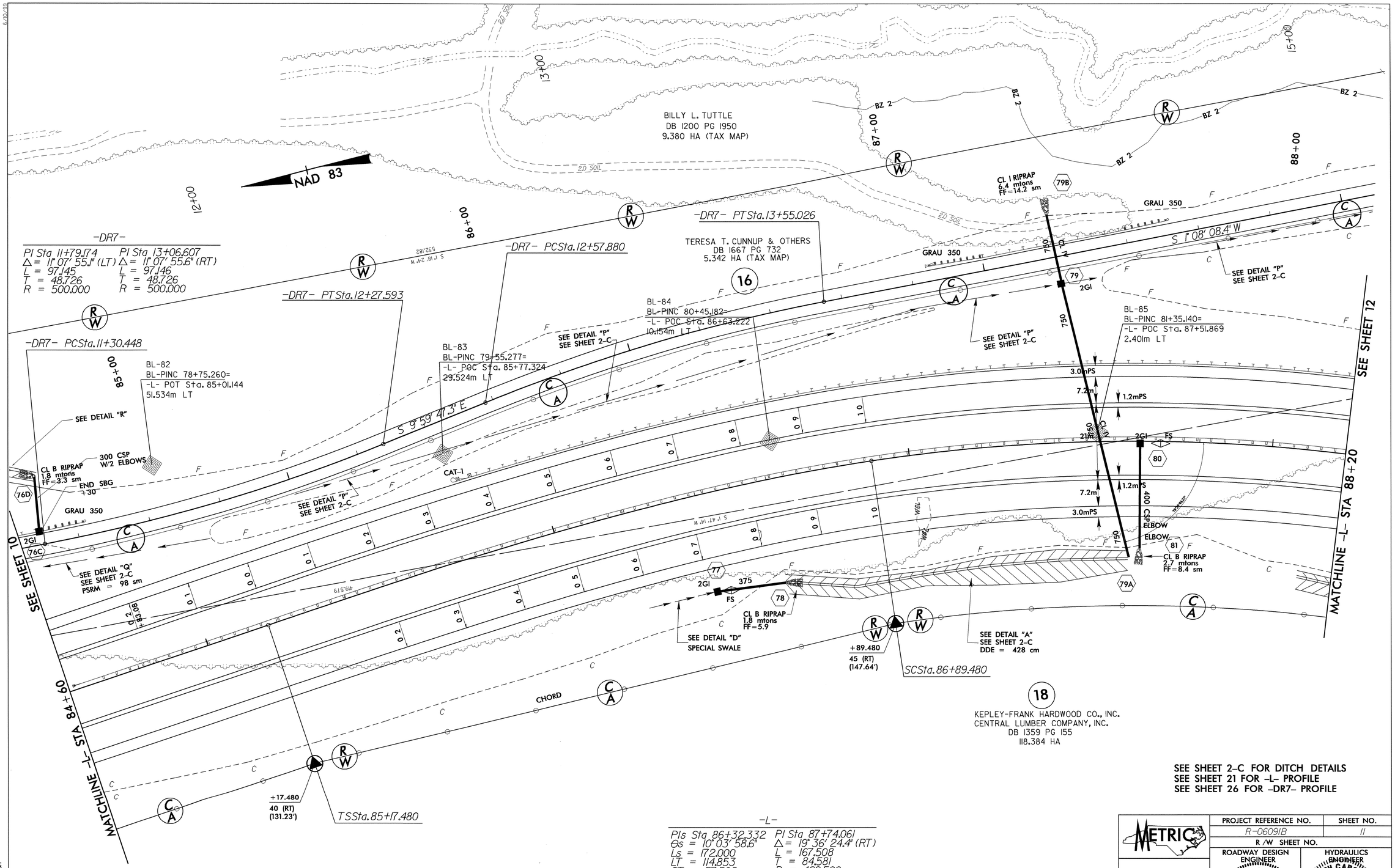
NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM W. ELAM

SEE SHEET 2-C FOR DITCH DETAILS
SEE SHEET 20 FOR -L- PROFILE



PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	10





RD223192 7/19/2006 s11 sdkendall RD-Oce34

PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	12
R /W SHEET NO.	

METRIC

5 0 10

CONST.REV.

R /W REV.

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JAMES STAFFORD GOODNIGHT, JR.

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM ELAM

7/19/06

SEE SHEET 2-C FOR DITCH DETAILS
SEE SHEET 21 FOR -L- PROFILE
SEE SHEET 26 FOR -DR7- PROFILE

-L-

PI Sta 87+74.061
Δ = 19° 36' 24.4" (RT)
L = 167.508
T = 84.581
R = 489.500

PIs Sta 89+14.491
Θs = 10° 03' 58.6"
Ls = 172.000
LT = 114.853
ST = 57.502

NAD 83

INTERSECTION
EX. PL'S

-DR7- POT Sta.15+23.485

+40 -L-
90m(295.276')
PROP. R/W

SEE DETAIL "I"
SEE SHEET 2-C
DDE = 43 cm

TDE

+45 -L-
73m(239.501')
PROP. R/W

+23.485 -DR7-
EX. PL

+41.879
EX. PL

+56.988
40(LT)
(131.23')

TERESA T. CLAMP & OTHERS
DB 1681 PG 732
5.342 HA (TAX MAP)

16

KEPLEY-FRANK HARDWOOD CO., INC.
CENTRAL LUMBER COMPANY, INC.
DB 1359 PG 155
118.384 HA

18

BL-86
BL-PINC 82+90.677=
-L- POC Sta. 89+02.920
23.267m LT

BL-PINC 84+75.868
BL-87

END STATE PROJECT R-0609IB -L- STA 90+28.988
END F. A. PROJECT MAF-F-119-1(1)
BEGIN STATE PROJECT R-2606

SEE SHEET 11

MATCHLINE -L- STA 88+20

CHORD

+28.988
38.10 (LT)
(125')

CL I RIPRAP
6.4 mtons
FF=14.2 sm

CL B RIPRAP
2.7 mtons
FF=8.4 sm

400 CSP
W/2 ELBOWS

2GI
FS

375
450
750

2GI (TYP. A)

21m

3.0mPS
7.2m
1.2mPS

+56.988
45 (RT)
(147.64')

SEE DETAIL "E"
SEE SHEET 2-C
DDE = 284 cm

CSSta.88+56.988

ELBOW

FALSE CUT
SEE DETAIL "J"
SEE SHEET 2-C
FILL = 90 cm

+28.988
47.244 (RT)
(155')

ST Sta.90+28.988

BZ 1
BZ 2

6/10/99

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RD223192 7/19/2006 s12 sdkendall RD-Oce34

PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	13
R /W SHEET NO.	

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JAMES STAFFORD GOODNIGHT, JR.

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. ELAM III

7/19/06

CONST.REV.

R /W REV.

METRIC 5 0 10

SEE SHEET 2-C FOR DITCH DETAILS
SEE SHEETS 22 & 23 FOR -Y8- PROFILE
SEE SHEET 25 FOR -DR1- PROFILE

-Y8A-
PI Sta 10+78.015
Δ = 10° 47' 43.6" (LT)
L = 43.5241
T = 21.8267
R = 231.0000

-Y8-
PI Sta 12+39.503
Δ = 14° 07' 23.0" (RT)
L = 308.117
T = 154.843
R = 1,250.000
SE = 0.04

DRIVE DR1
PI Sta 10+18.206
Δ = 74° 25' 06.8" (RT)
L = 19.483
T = 11.389
R = 15.000

NAD 83

19 BEGIN CONST. -Y8-
PCSta.10+84.660
HALLIE GILBREATH MYERS
DB 3604 PG 1869
PB 139 PG 61

20 ROBERT L. KEARNS
DB 1766 PG 591

21 CLAY C. GILBRETH
DB 2895 PG 420
0.854 HA (TAX MAP)

22 JOHNNY MORRIS FRYE
DB 3472 PG 1247

6 PATRICIA G. DRIGGERS
DB 3114 PG 188
0.304 HA (TAX MAP)

7 C.C. GILBRETH
DB 2895 PG 420
0.385 HA (TAX MAP)

JESSE W. TONDALE
DB 2582 PG 594
0.482 HA (TAX MAP)

1 FAIRFIELD GOLF CLUB, INC.
DB 3345 PG 707
PB 5 PG 351
22.140 HA (TAX MAP)

5 JERRY W. QUEEN
DB 5991 PG 1529
1.152 HA (TAX MAP)

MATCHLINE -Y8- STA 13+80 — SEE SHEET 5

POT Sta.10+43.511
PT Sta.10+26.299
PCSta.10+06.816
DR1 POT Sta.10+00
-Y8- POC Sta.12+94.657
-Y8- POCSta.12+94.657 = -Y8A- POCSta.10+91.215
-Y8A- PCSta.10+56.188
-Y8A- POTSta.10+00.000

GPS-10
BY8-PINC 9+23.007 = -Y8- POC Sta. 13+42.821
32.603m \ LT

END CONST +40

S 73° 01' 28.2" W

S 1° 48' 28.4" E

S 73° 02' 00.6" W

48m TAPER

TYPE B SILT BASIN

LEVEL SPREADER

SEE DETAIL "A" SEE SHEET 2-C DDE = 169 cm

SPECIAL DITCH SEE DETAIL "D" SHEET 2-C

SEE DETAIL "A" SHEET 2-C DD = 363 cm

da = .06 ha

2GI

CL B RIPRAP 1.8 mtons FF = 3.3 sm

GRADE TO DRAIN

300 CSP W/ 2 ELBOWS

BEG SBG +60

R=15m

EX. R/W 18 (RT) (59.06') END FENCE

EX. R/W 18 (RT -Y8-) (59.06')

GRAU 350

END FENCE

APPLETREE CT

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PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	14
R /W SHEET NO.	

METRIC

5 0 10

CONST.REV.

R /W REV.

ROADWAY DESIGN ENGINEER

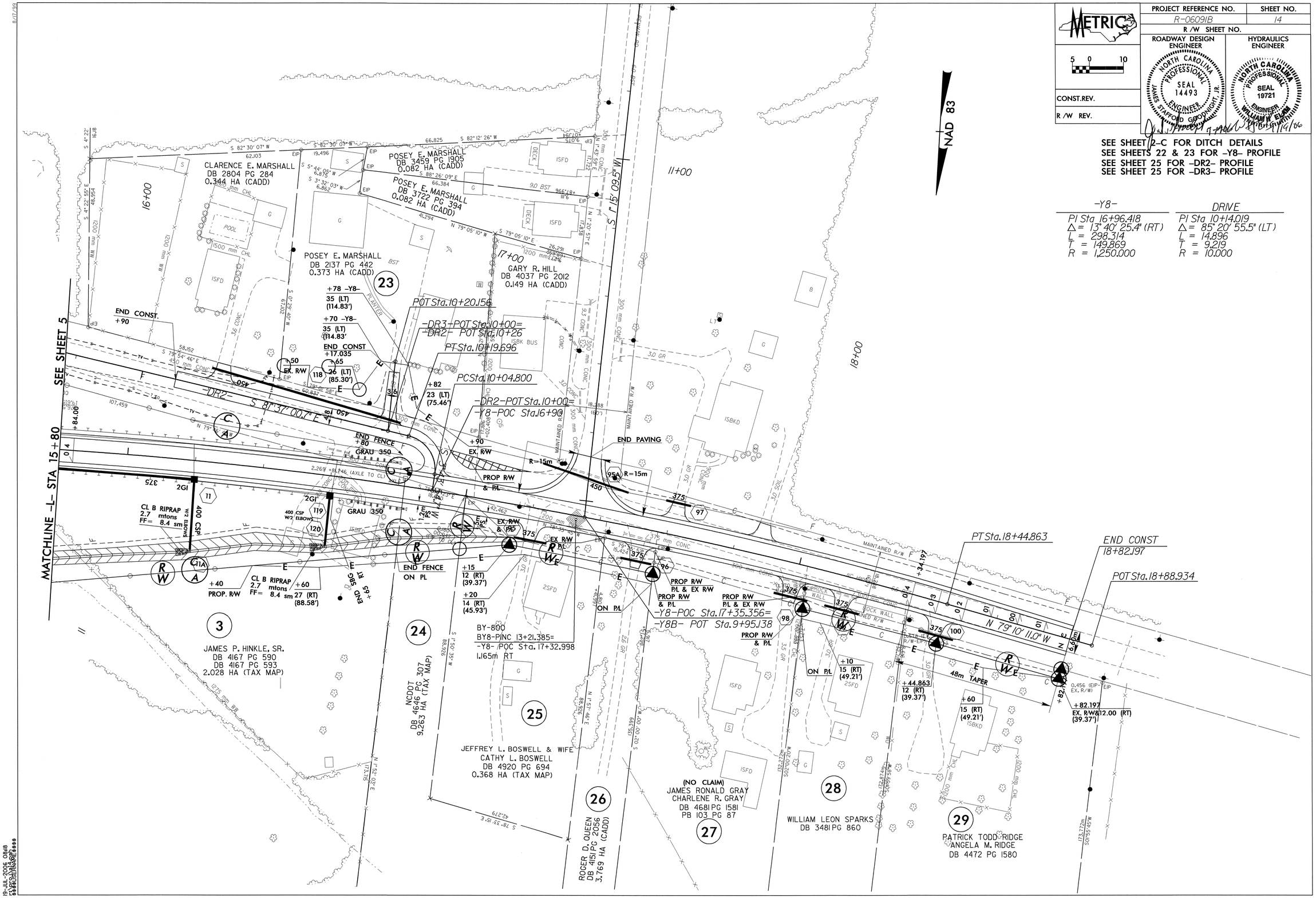
NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JAMES STAFFORD GOODNIGHT, JR.

HYDRAULICS ENGINEER

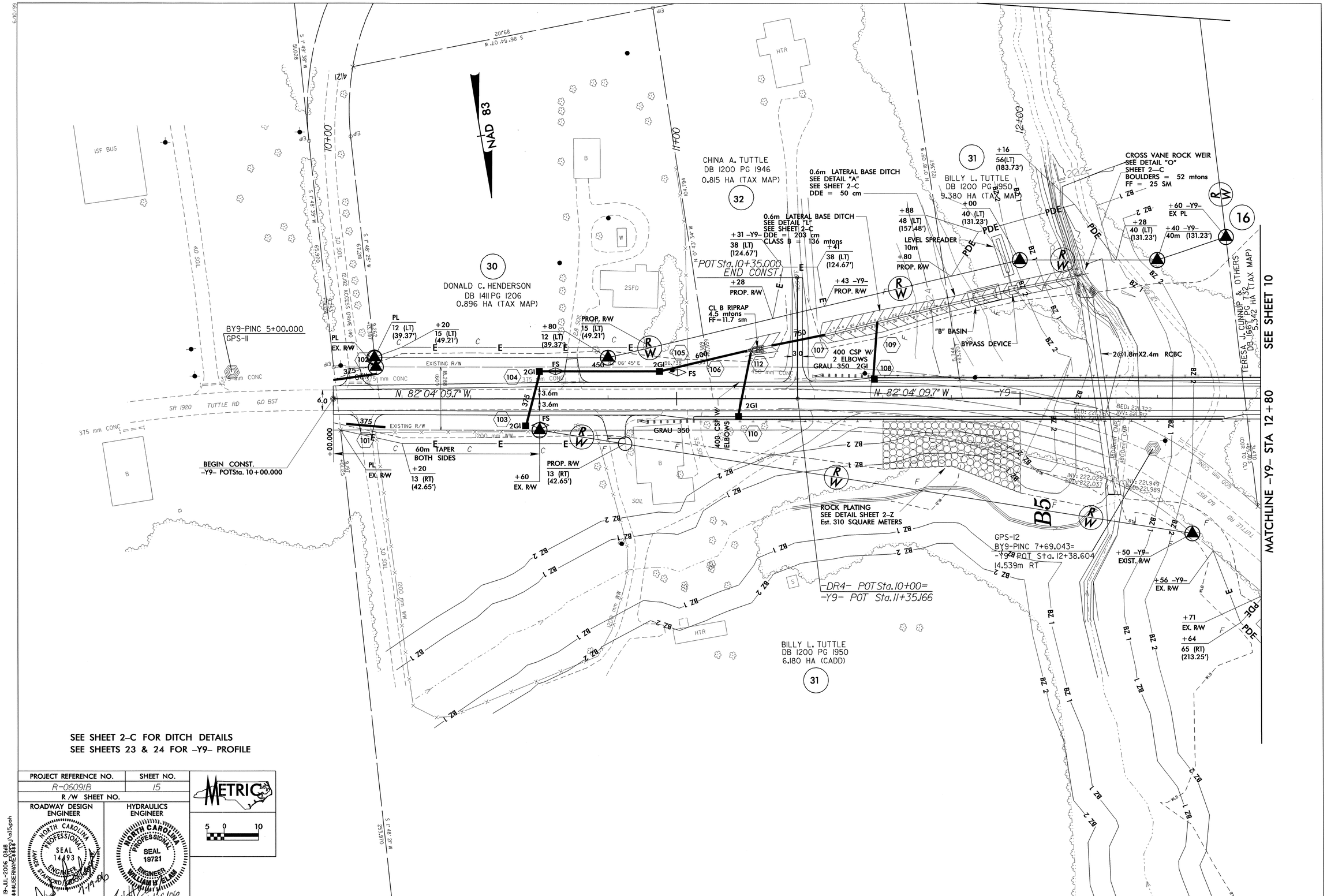
NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM W. ELAM

SEE SHEET 12-C FOR DITCH DETAILS
SEE SHEETS 22 & 23 FOR -Y8- PROFILE
SEE SHEET 25 FOR -DR2- PROFILE
SEE SHEET 25 FOR -DR3- PROFILE

-Y8-	DRIVE
PI Sta 16+96.418	PI Sta 10+14.019
Δ = 13° 40' 25.4" (RT)	Δ = 85° 20' 55.5" (LT)
L = 298.314	L = 14.896
T = 149.869	T = 9.219
R = 1,250.000	R = 10.000



RD223192 7/19/2006 s14 sdkendall RD-Oce34



SEE SHEET 2-C FOR DITCH DETAILS
SEE SHEETS 23 & 24 FOR -Y9- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
R-06091B	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JAMES STAFFORD GOODWIN 7-19-06

NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. ELAM 7/19/06

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RD223192 7/19/2006 s15 sdkendall RD-Oce34

PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	16
R /W SHEET NO.	

METRIC

5 0 10

CONST.REV.

R /W REV.

ROADWAY DESIGN ENGINEER

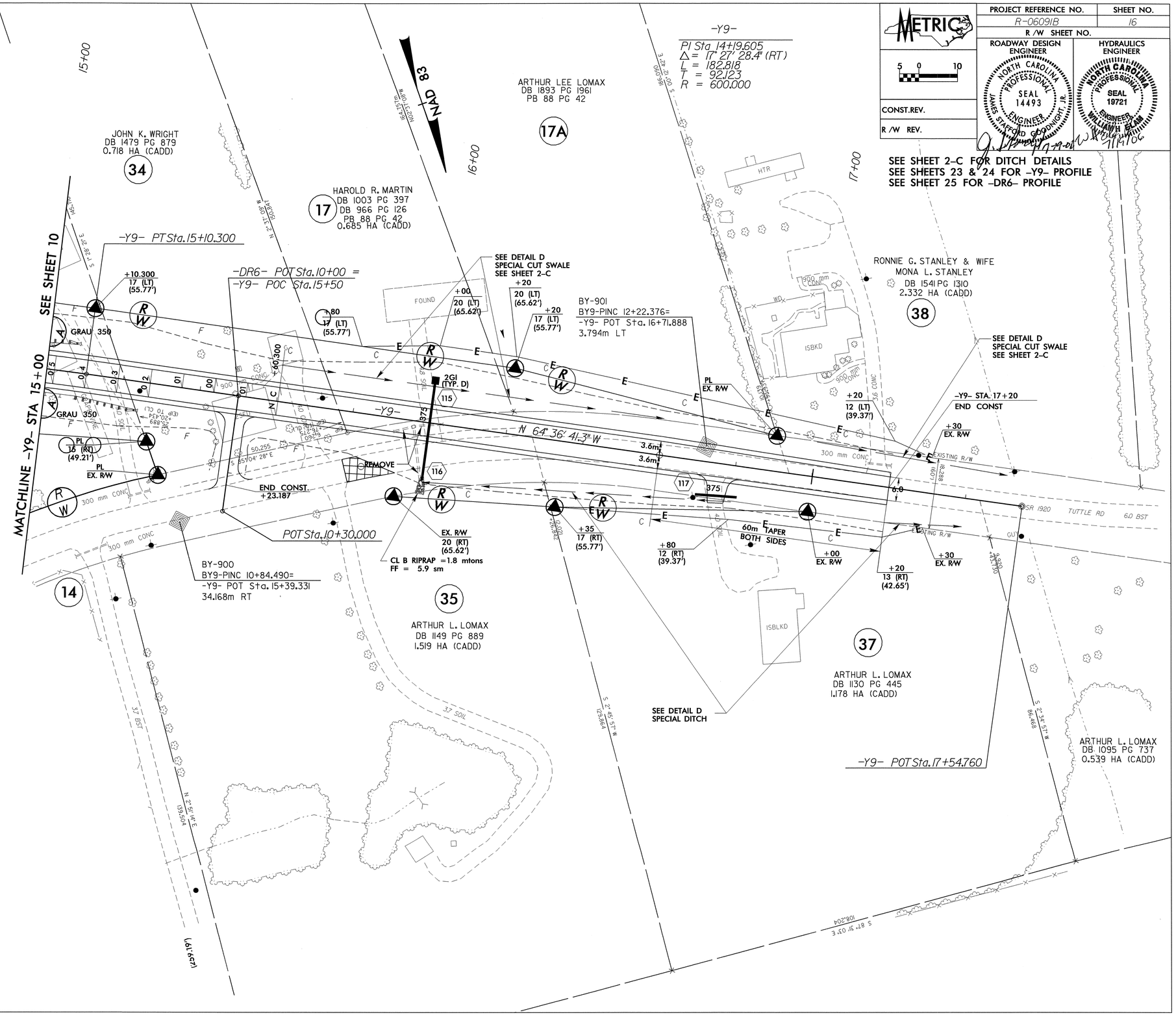
NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JAMES STAFFORD GOODNIGHT, JR.

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. ELAM

7/19/06

SEE SHEET 2-C FOR DITCH DETAILS
SEE SHEETS 23 & 24 FOR -Y9- PROFILE
SEE SHEET 25 FOR -DR6- PROFILE



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RD223192 7/19/2006 s16 sdkendall RD-Oce34

PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	17

METRIC

5 0 10

CONST.REV.

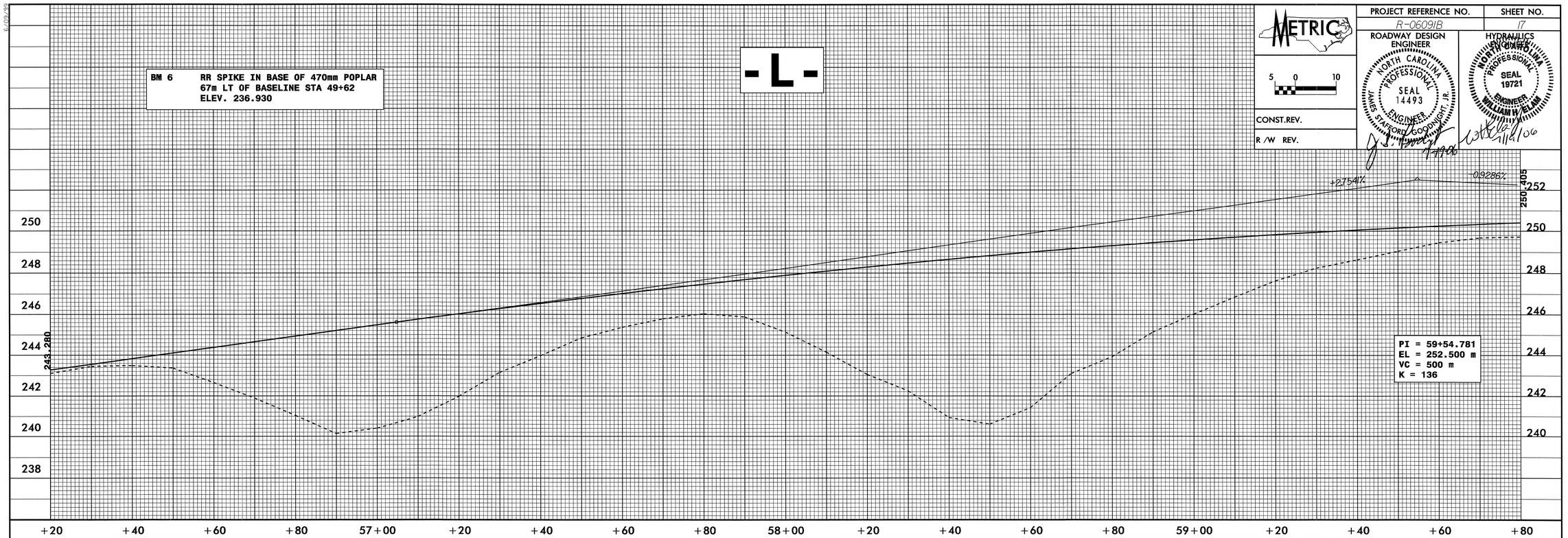
R /W REV.

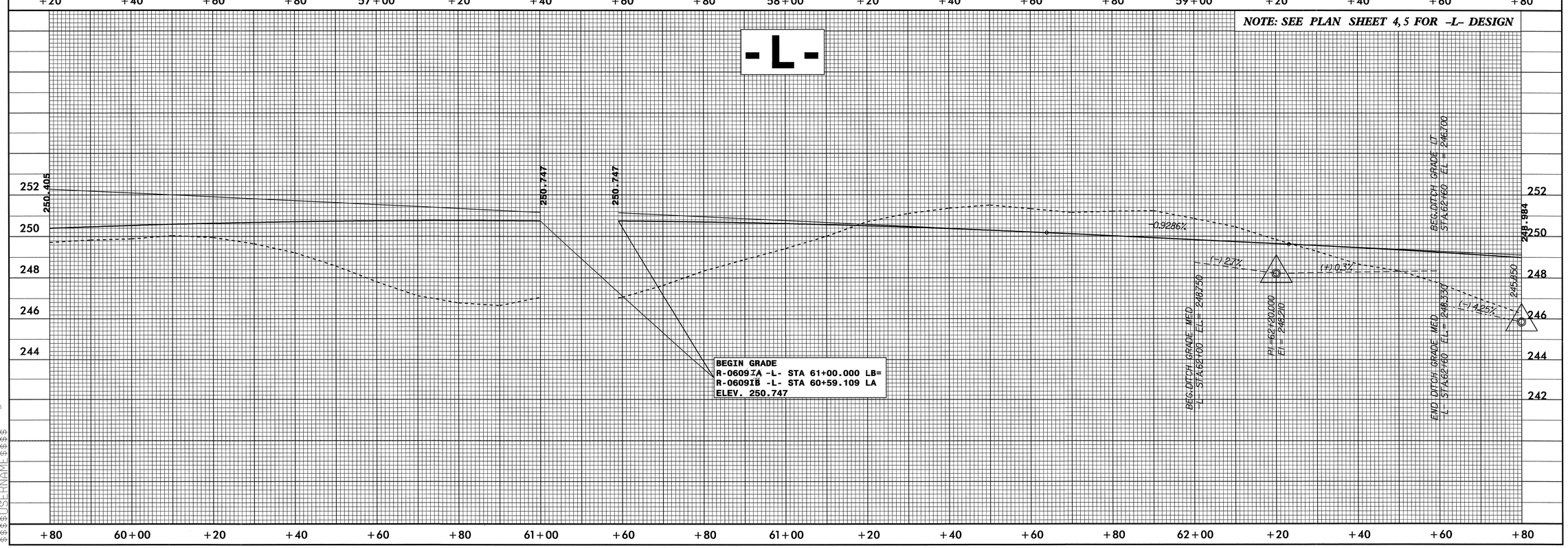
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JAMES STAFFORD GOODNIGHT, JR.

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. SLAMP





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PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	18

METRIC

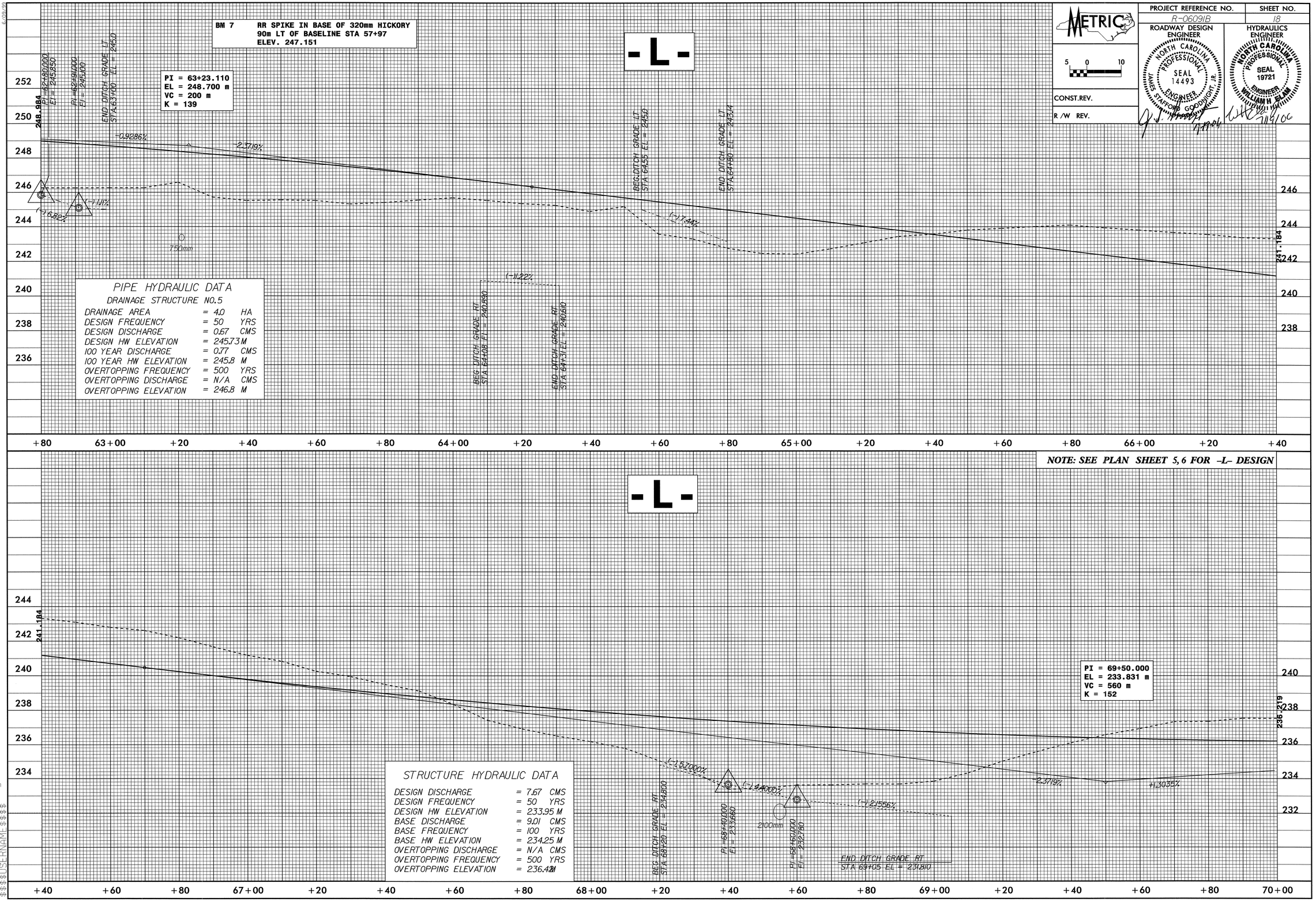
5 0 10

CONST.REV.

R /W REV.

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER
JAMES STAFFORD GOODDIGHT, JR.
7/19/06

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER
WILLIAM H. BLAIR, JR.
7/19/06



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PROJECT REFERENCE NO.	SHEET NO.
R-0609B	19

METRIC

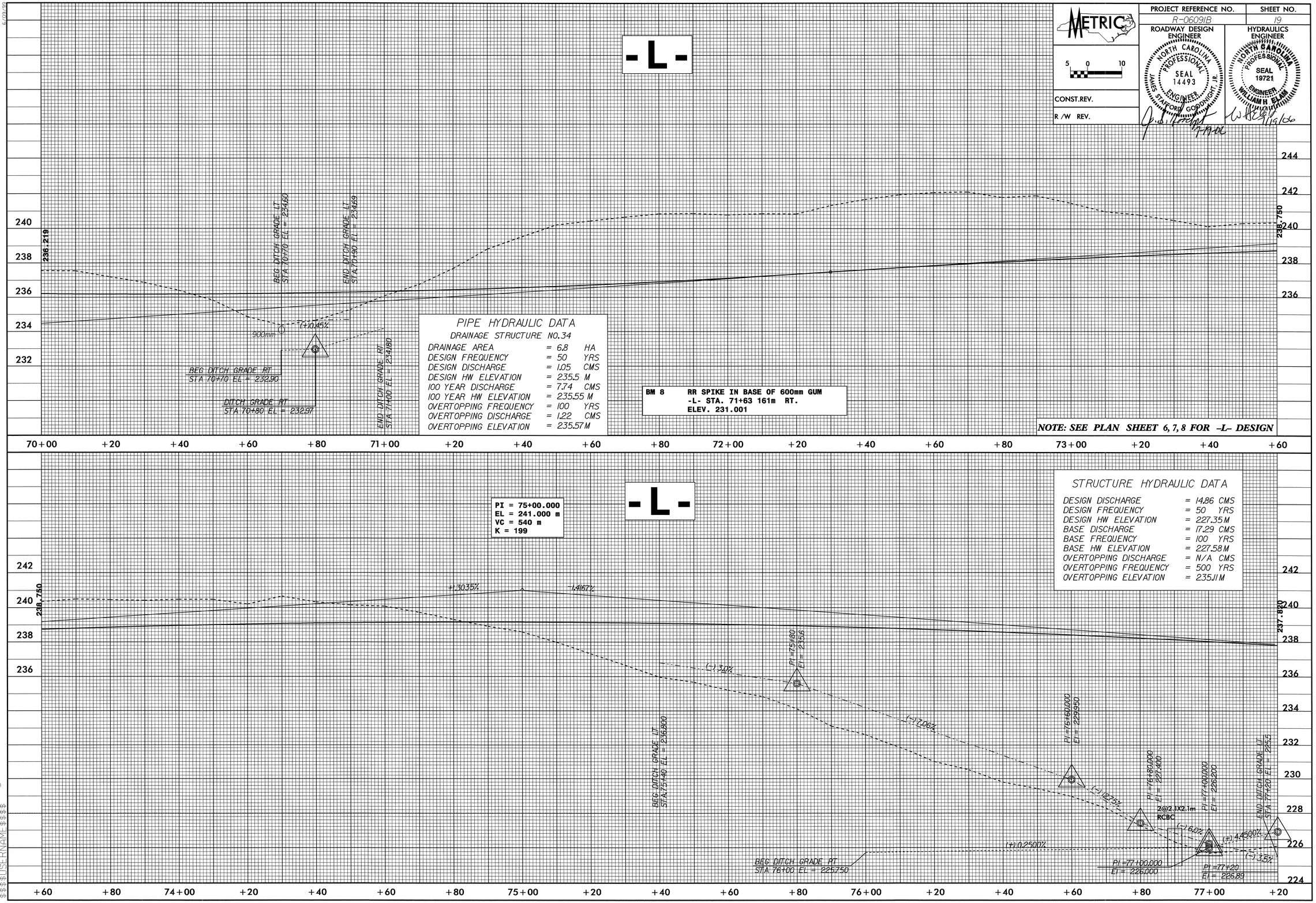
5 0 10

CONST.REV.

R /W REV.

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JAMES STAFFORD GOODNIGHT, JR.
7-19-06

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. ELLIS
7/19/06



PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.34

DRAINAGE AREA	=	6.8	HA
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	1.05	CMS
DESIGN HW ELEVATION	=	235.5	M
100 YEAR DISCHARGE	=	7.74	CMS
100 YEAR HW ELEVATION	=	235.55	M
OVERTOPPING FREQUENCY	=	100	YRS
OVERTOPPING DISCHARGE	=	1.22	CMS
OVERTOPPING ELEVATION	=	235.57	M

BM 8 RR SPIKE IN BASE OF 600mm GUM
-L- STA. 71+63 161m RT.
ELEV. 231.001

STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	=	14.86	CMS
DESIGN FREQUENCY	=	50	YRS
DESIGN HW ELEVATION	=	227.35	M
BASE DISCHARGE	=	17.29	CMS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	227.58	M
OVERTOPPING DISCHARGE	=	N/A	CMS
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING ELEVATION	=	235.11	M

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PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	20

METRIC

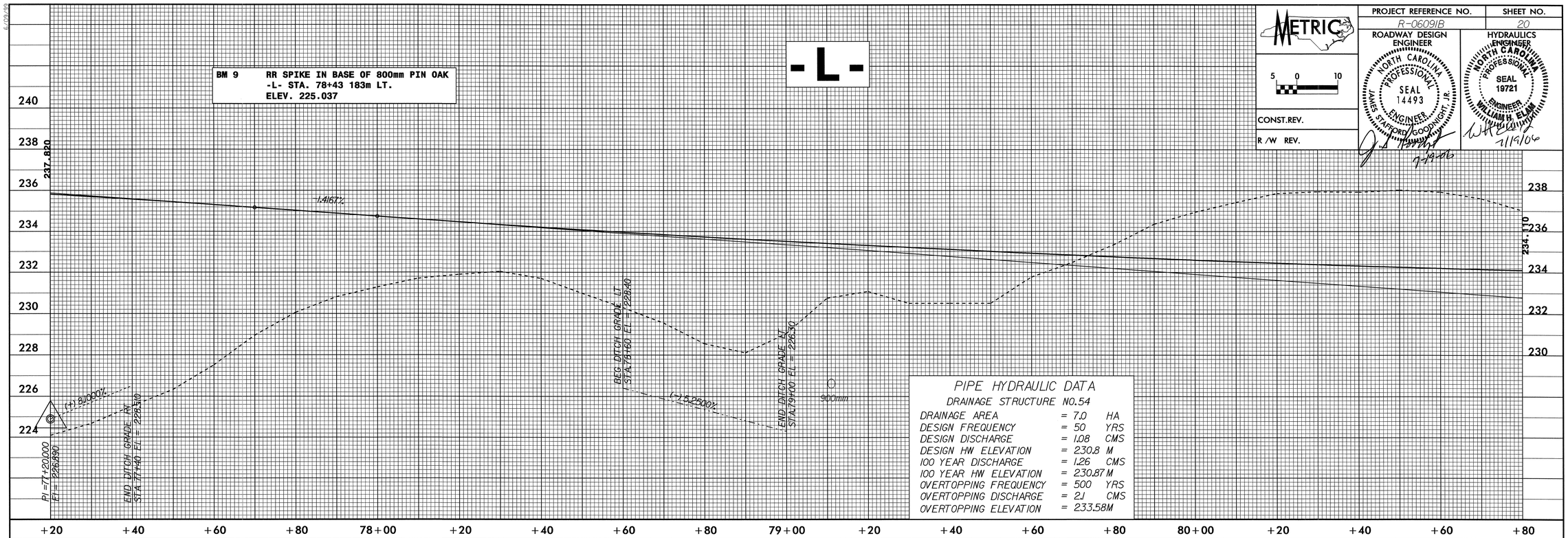
5 0 10

CONST.REV.

R /W REV.

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER
JAMES STAFFORD GOODNIGHT, JR.
7/19/06

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER
WILLIAM H. ELAM
7/19/06

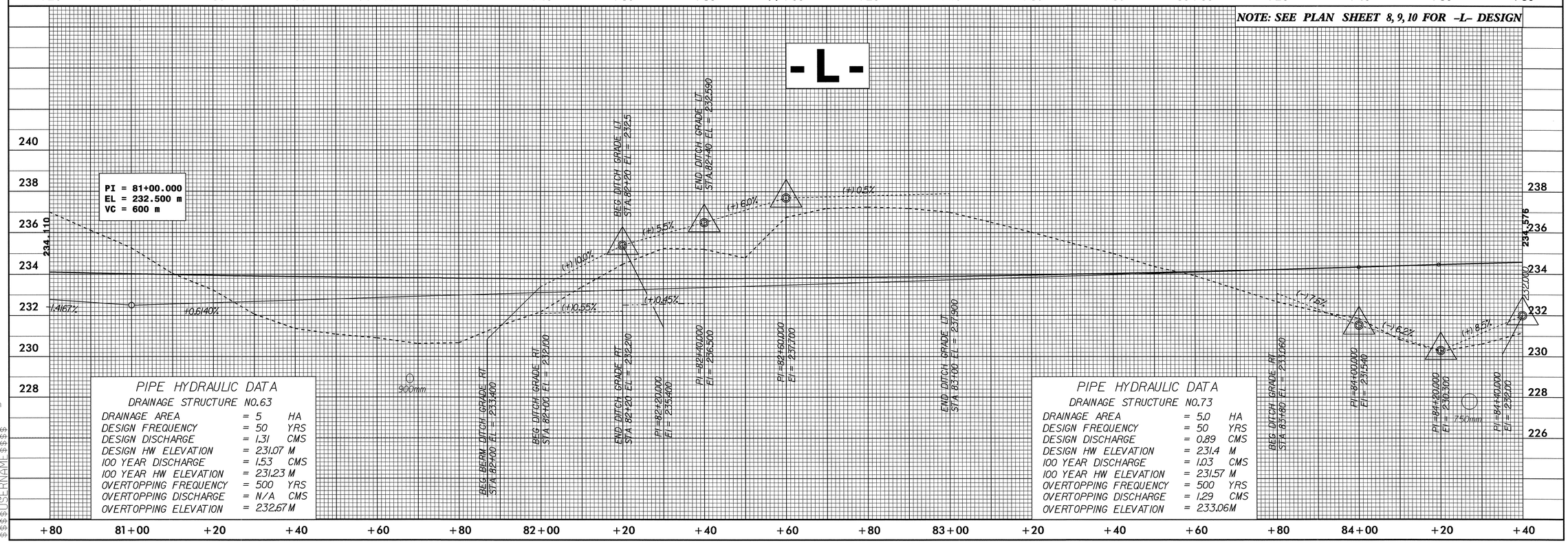


PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.54

DRAINAGE AREA	=	7.0	HA
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	1.08	CMS
DESIGN HW ELEVATION	=	230.8	M
100 YEAR DISCHARGE	=	1.26	CMS
100 YEAR HW ELEVATION	=	230.87	M
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	2.1	CMS
OVERTOPPING ELEVATION	=	233.58	M

NOTE: SEE PLAN SHEET 8, 9, 10 FOR -L- DESIGN



PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.63

DRAINAGE AREA	=	5	HA
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	1.31	CMS
DESIGN HW ELEVATION	=	231.07	M
100 YEAR DISCHARGE	=	1.53	CMS
100 YEAR HW ELEVATION	=	231.23	M
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	N/A	CMS
OVERTOPPING ELEVATION	=	232.67	M

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.73

DRAINAGE AREA	=	5.0	HA
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	0.89	CMS
DESIGN HW ELEVATION	=	231.4	M
100 YEAR DISCHARGE	=	1.03	CMS
100 YEAR HW ELEVATION	=	231.57	M
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	1.29	CMS
OVERTOPPING ELEVATION	=	233.06	M

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PROJECT REFERENCE NO.	SHEET NO.
R-0609B	21

METRIC

5 0 10

CONST.REV.

R /W REV.

ROADWAY DESIGN ENGINEER

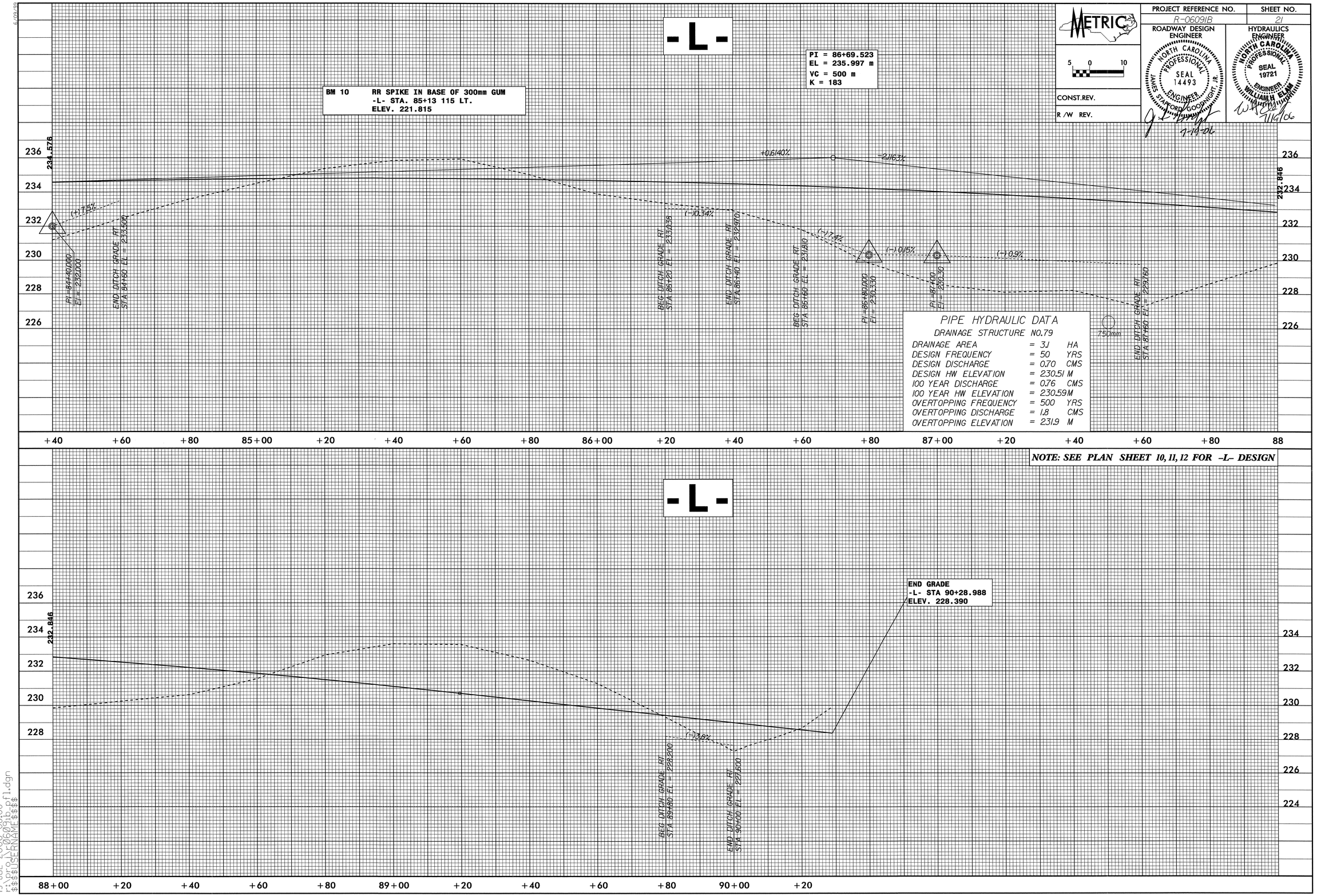
NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JAMES STAFFORD GOODNIGHT, JR.

7-19-06

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. ELAM

7/19/06



NOTE: SEE PLAN SHEET 10, 11, 12 FOR -L- DESIGN

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PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	22

METRIC

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CONST.REV.

R /W REV.

ROADWAY DESIGN ENGINEER

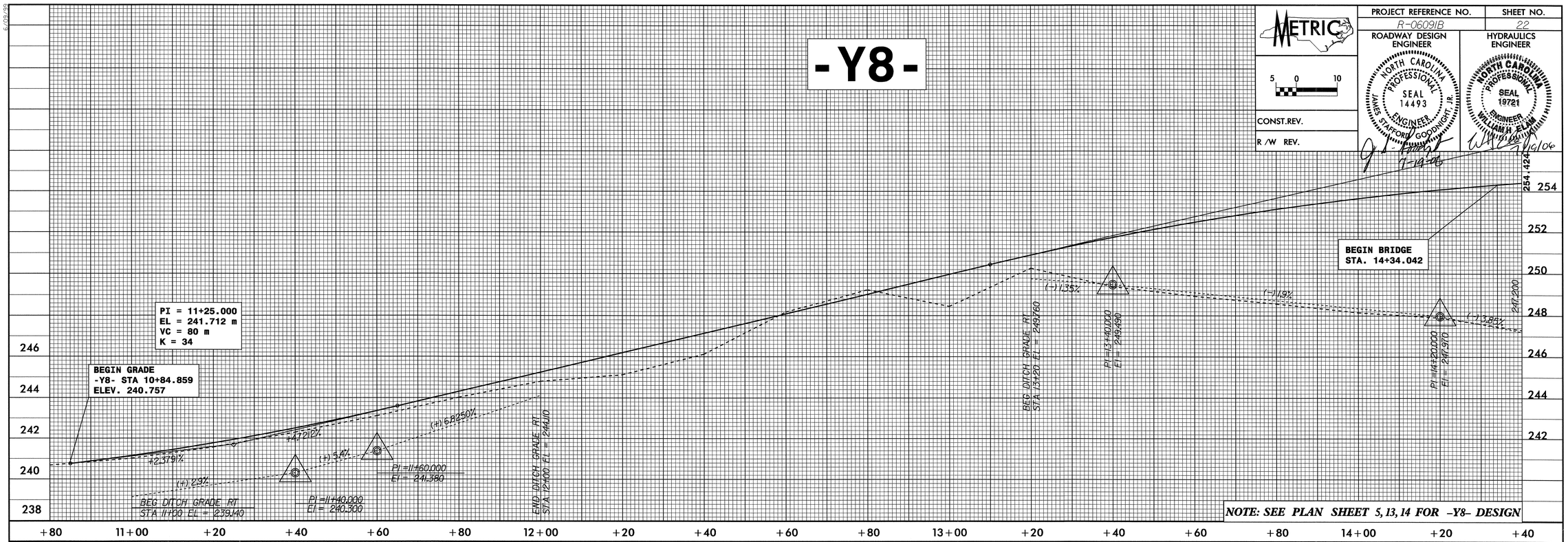
NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JAMES STAFFORD GOODNIGHT, JR.

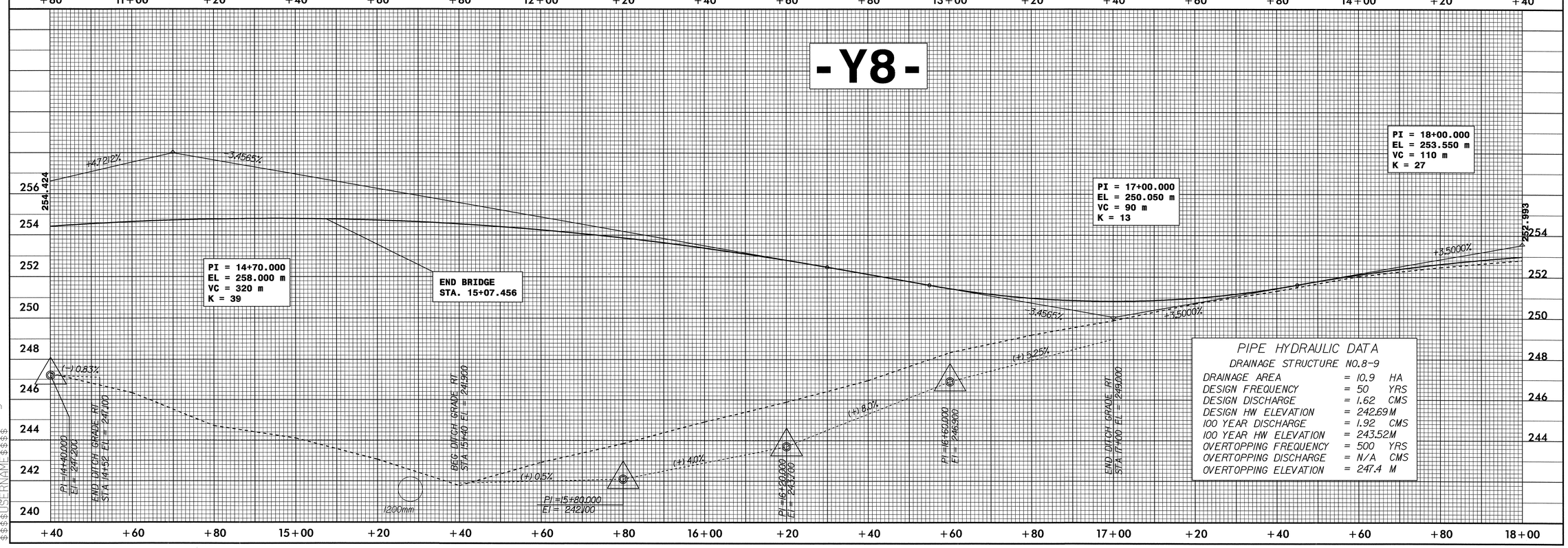
7-19-06

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. ELLIS

7/19/06





PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.8-9

DRAINAGE AREA	= 10.9	HA
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 1.62	CMS
DESIGN HW ELEVATION	= 242.69	M
100 YEAR DISCHARGE	= 1.92	CMS
100 YEAR HW ELEVATION	= 243.52	M
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING DISCHARGE	= N/A	CMS
OVERTOPPING ELEVATION	= 247.4	M

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PROJECT REFERENCE NO.	SHEET NO.
R-0609B	23

METRIC

5 0 10

CONST.REV.

R /W REV.

ROADWAY DESIGN ENGINEER

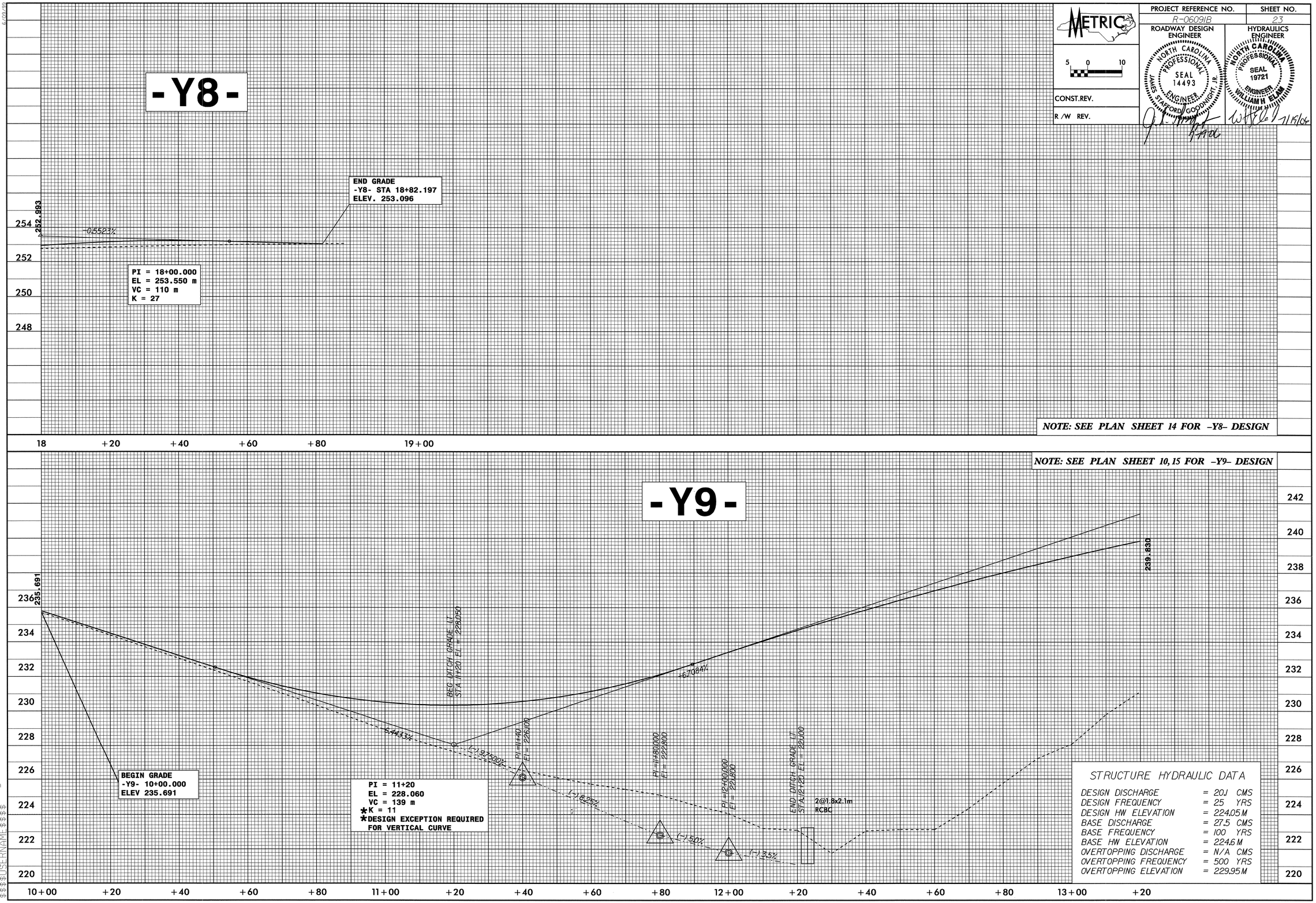
NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JAMES STAFFORD GOODNIGHT, JR.

7/18/06

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H ELAM

7/18/06



STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	=	20.1 CMS
DESIGN FREQUENCY	=	25 YRS
DESIGN HW ELEVATION	=	224.05 M
BASE DISCHARGE	=	27.5 CMS
BASE FREQUENCY	=	100 YRS
BASE HW ELEVATION	=	224.6 M
OVERTOPPING DISCHARGE	=	N/A CMS
OVERTOPPING FREQUENCY	=	500 YRS
OVERTOPPING ELEVATION	=	229.95 M

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PROJECT REFERENCE NO.	SHEET NO.
R-0609B	24

METRIC

5 0 10

CONST.REV.

R /W REV.

ROADWAY DESIGN ENGINEER

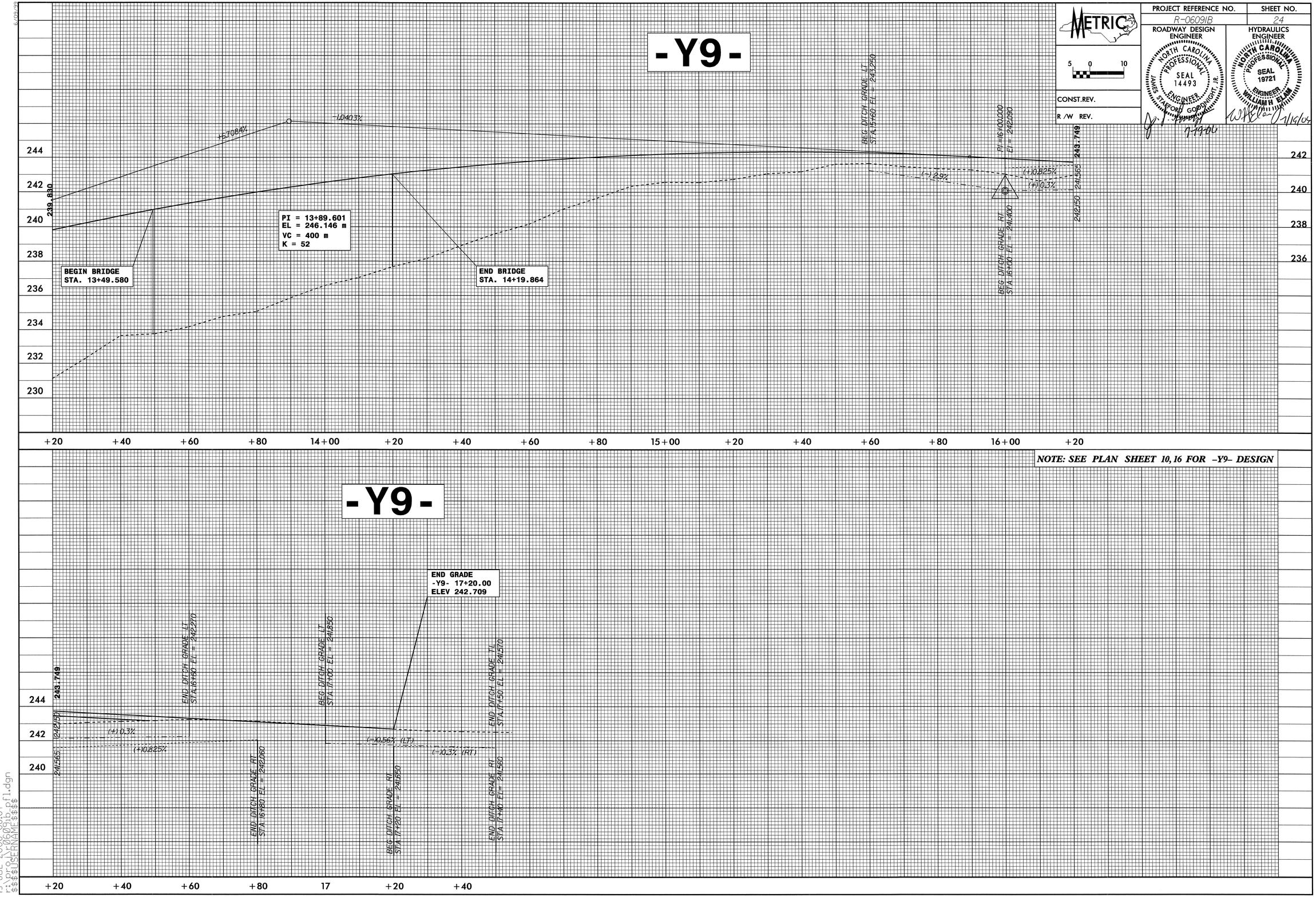
NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JAMES STAFFORD GOODNIGHT, JR.

7-19-06

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H ELAM

7/19/06



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PROJECT REFERENCE NO.	SHEET NO.
R-0609B	25

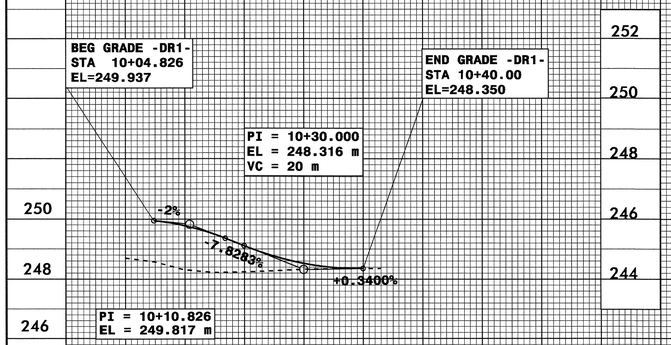
ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

CONST.REV.

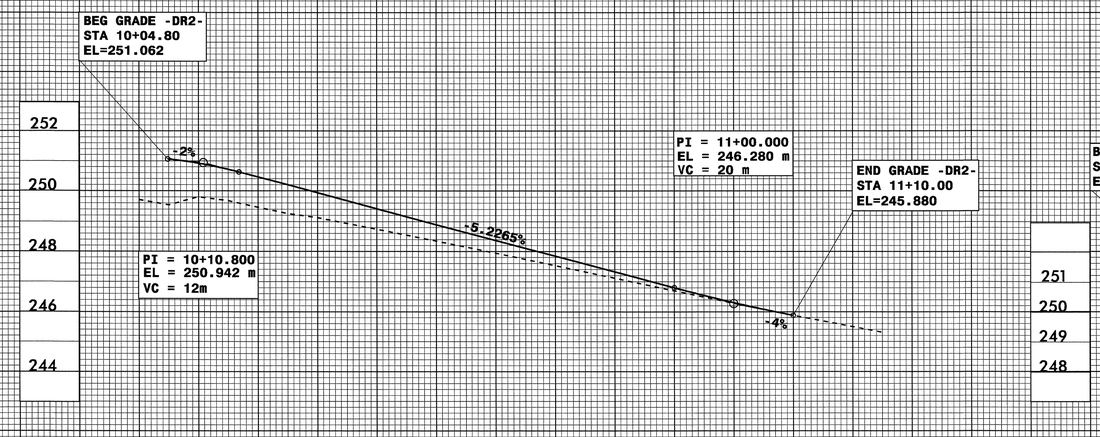
R /W REV.

-DR1-



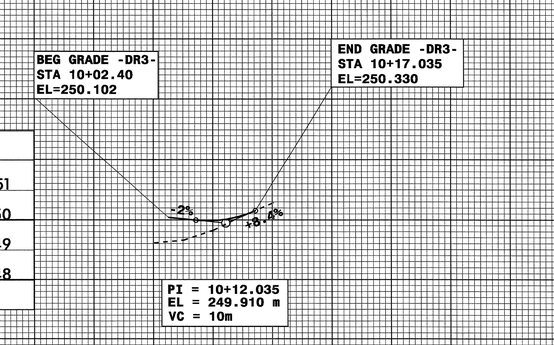
NOTE: SEE PLAN SHEET 13 FOR –DR1– DESIGN

-DR2-



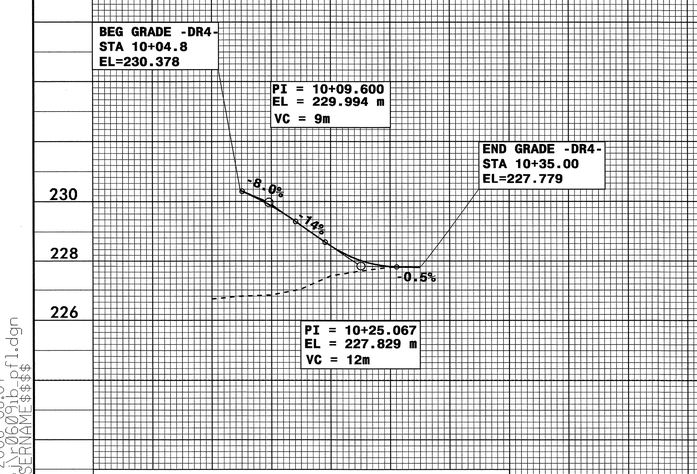
NOTE: SEE PLAN SHEET 14 FOR –DR2– DESIGN

-DR3-



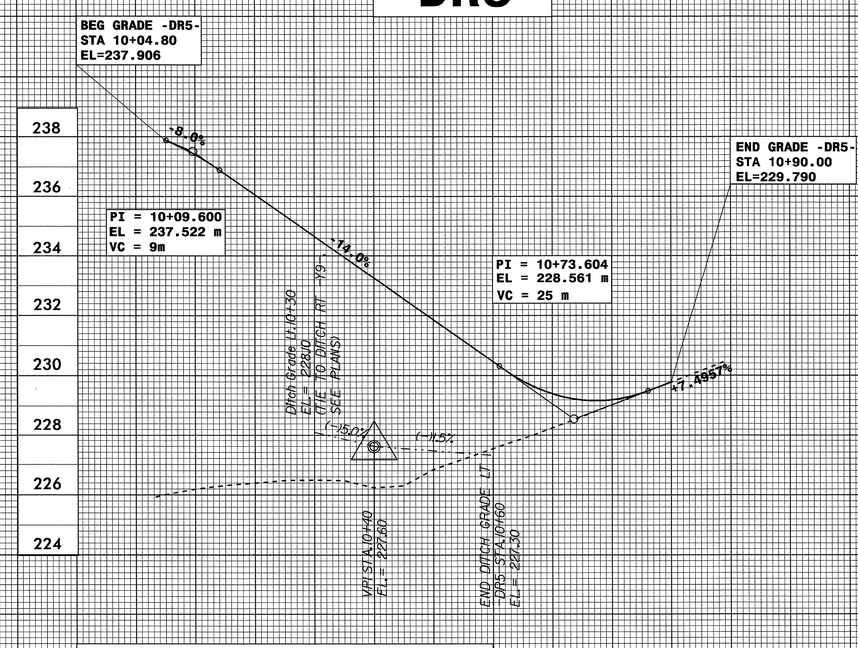
NOTE: SEE PLAN SHEET 14 FOR –DR3– DESIGN

-DR4-



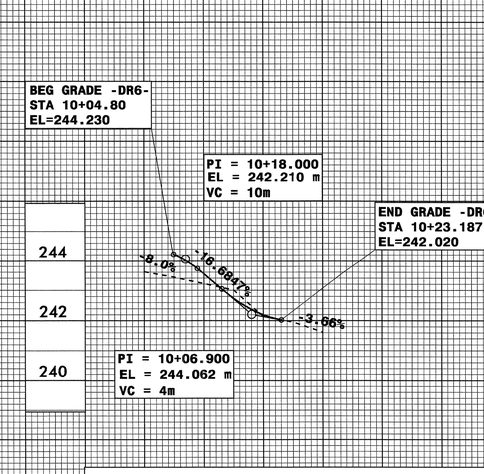
NOTE: SEE PLAN SHEET 15 FOR –DR4– DESIGN

-DR5-



NOTE: SEE PLAN SHEET 10 FOR –DR5– DESIGN

-DR6-



NOTE: SEE PLAN SHEET 16 FOR –DR6– DESIGN

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PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	26

METRIC

5 0 10

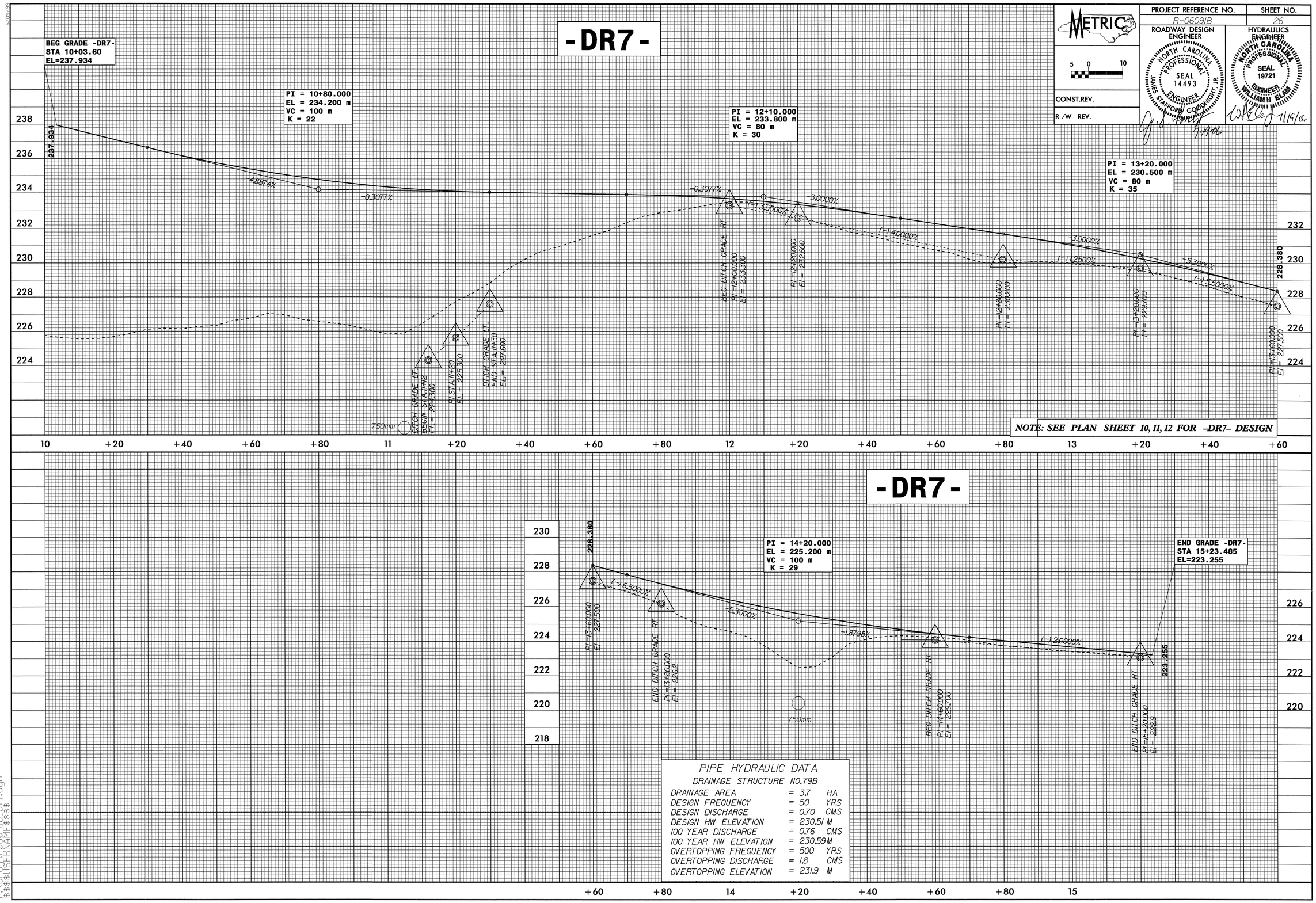
CONST.REV.

R /W REV.

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JAMES STAFFORD GOODNIGHT, JR.

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H ELAM

7/19/06



PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.79B

DRAINAGE AREA	= 3.7	HA
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 0.70	CMS
DESIGN HW ELEVATION	= 230.51	M
100 YEAR DISCHARGE	= 0.76	CMS
100 YEAR HW ELEVATION	= 230.59	M
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING DISCHARGE	= 1.8	CMS
OVERTOPPING ELEVATION	= 231.9	M

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