09/08/99

TIP PROJECT: I-4407

CONTRACT: C202472

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

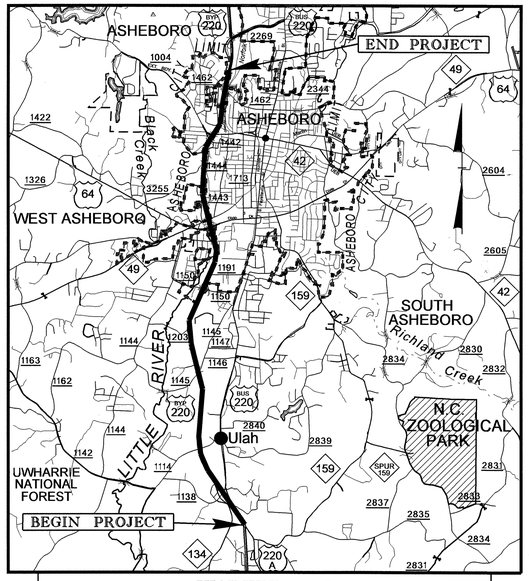
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-4407	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34236.1.1	IMS-73(8)	PE
34236.2.1	NHS-0220(31)	R/W & UTIL
34236.3.1	NHS-0220(36)	CONST.

RANDOLPH COUNTY

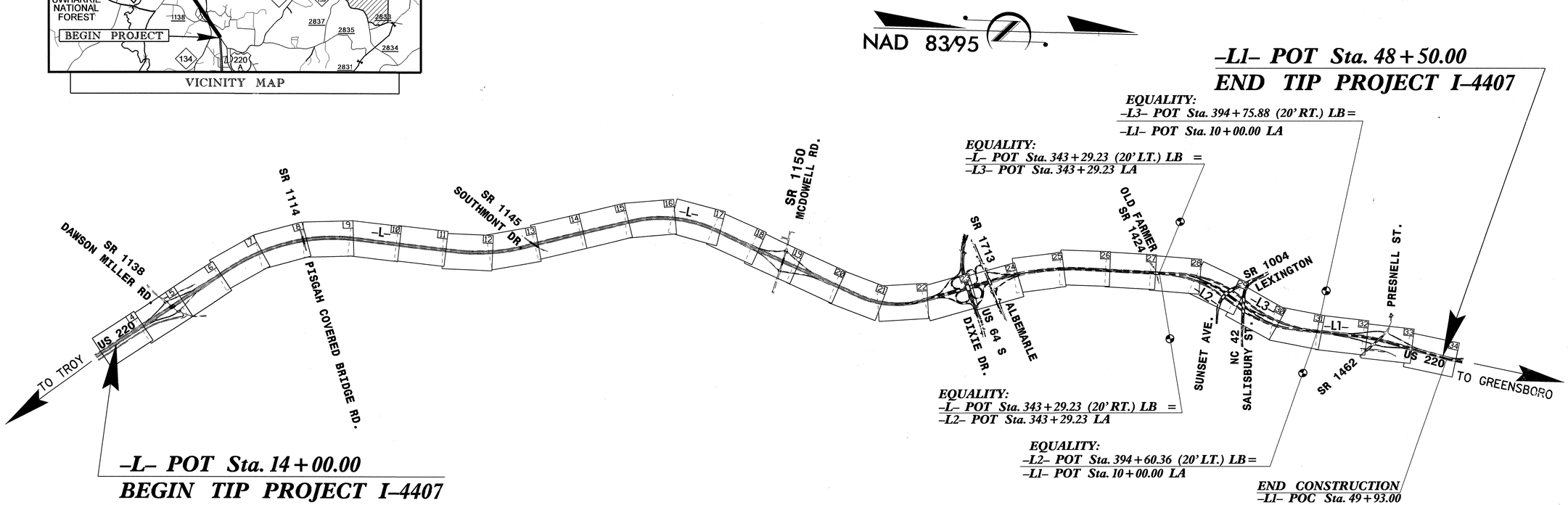
LOCATION: US 220 (FUTURE I-73/74) FROM SOUTH OF NC 134-US 220 BUSINESS TO NORTH OF SR 1462 (PARK DRIVE EXT.)

TYPE OF WORK: SAFETY IMPROVEMENTS - GRADING, DRAINAGE, PAVING, GUARDRAIL, LIGHTING, AND SIGNING



VICINITY MAP

NAD 83/95



NOTE: (1) THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES

GRAPHIC SCALES

50' 25' 0 50' 100'
PLANS

50' 25' 0 50' 100'
PROFILE (HORIZONTAL)

10' 5' 0 10' 20'
PROFILE (VERTICAL)

DESIGN DATA

ADT 2010 = 19310-49230
ADT 2035 = 38200-89600
DHV = 10 %
D = 60 %
T = 20 % *
V = 70 MPH

* TTST 15% DUAL 5%
STATEWIDE TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT I-4407 = 7.941 MILES
TOTAL LENGTH OF TIP PROJECT I-4407 = 7.941 MILES

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: APRIL 16, 2008

LETTING DATE: JUNE 15, 2010

ROGER D. THOMAS, P.E.
PROJECT ENGINEER

MICHAEL W. LITTLE, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN
SIGNATURE: 4/12/10

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE
SIGNATURE: P.E. 4/7/10

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER P.E.

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PROJECT REFERENCE NO.	SHEET NO.
I-4407	I-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE

5/14/10

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1-C THRU 1-E	SURVEY CONTROL SHEETS
2 THRU 2-D	TYPICAL SECTIONS
2-E	DETAIL OF SHALLOW UNDERCUT AND MILLING UNDER BRIDGES
2-F	DETAIL TO CONVERT EXISTING CATCH BASIN OR JUNCTION BOX TO DROP INLET
2-G	DETAIL TO CONVERT EXISTING DROP INLET OR CATCH BASIN TO JUNCTION BOX (MANHOLE OPTIONAL)
2-H	DETAIL FOR ANCHORAGE FOR FRAMES
2-I THRU 2-J	DETAIL FOR METHOD OF PIPE INSTALLATION
2-K	DETAIL OF SHOULDER BERM GUTTER TO EXPRESSWAY GUTTER TRANSITIONAL SECTION
2-L	TRANSITION DETAIL FOR EXPRESSWAY GUTTER
2-M	DETAIL FOR MEDIAN HAZARD PROTECTION
2-N	DETAIL OF CONCRETE BARRIER TRANSITION
2-O	DETAIL FOR CONCRETE MEDIAN BARRIER FOUNDATION FOR SIGN ASSEMBLIES
2-P1	DETAIL FOR STANDARD TEMPORARY SHORING
2-P2 THRU 2-P12	DETAILS FOR STANDARD TEMPORARY MECHANICALLY STABLILIZED EARTH (MSE) WALLS
2-Q	DOUBLE FACED CONCRETE BARRIER - TYPE T ACROSS EXISTING BRIDGE
3 (2 SHEETS)	SUMMARY OF QUANTITIES
3-A THRU 3-J	LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)
3-K THRU 3-L	SUMMARIES OF GUARDRAIL AND REMOVE AND RESET EXISTING GUARDRAIL
3-M	SUMMARY OF PAVEMENT REMOVAL
3-N	SUMMARIES OF CONCRETE BARRIER TYPE T, TYPE T1 AND TYPE T2, SINGLE FACED PRECAST REINFORCED CONCRETE BARRIER, TRANSITION BETWEEN CONCRETE EXPRESSWAY GUTTER AND 2'-6" CURB AND GUTTER AND 2'-6" CURB AND GUTTER
3-O	SUMMARIES OF SHOULDER BERM GUTTER AND TRANSITION BETWEEN CONC. EXPRESSWAY GUTTER AND SHOULDER BERM GUTTER
3-P	SUMMARIES OF CONCRETE EXPRESSWAY GUTTER AND TRANSITION BETWEEN CONCRETE EXPRESSWAY GUTTER AND CONC. MONOLITHIC ISLAND
3-Q THRU 3-R	SUMMARY OF EARTHWORK
4 THRU 34	PLAN SHEETS
35 THRU 63	PROFILE SHEETS
TCP-1 THRU TCP-42	TRAFFIC CONTROL PLANS
PM-1 THRU PM-12	PAVEMENT MARKING PLANS
E-1 THRU E-5	ELECTRICAL PLANS
EC-1 THRU EC-34	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-62	SIGNING PLANS
XS-INDEX	CROSS-SECTION INDEX SHEET
X-1A THRU X-1G	CROSS-SECTION SUMMARY SHEET
X-1 THRU X-194	CROSS-SECTIONS

GENERAL NOTES:

2006 SPECIFICATIONS
EFFECTIVE: 07-18-06
REVISED: 07-30-08

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.

SAFETY CLEARING:

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".

SHOULDER CONSTRUCTION:

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

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".

2006 ROADWAY ENGLISH STANDARD DRAWINGS

EFF. 07-18-06
REV. 01-02-07

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated July 18, 2006 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.01	Guide for Grading Subgrade - Interstate and Freeway
225.03	Deceleration and Acceleration Lanes
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.02	Method of Shoulder Construction - High Side of Superelevated Curve - Method II
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
665.01	Milled Rumble Strips - Asphalt Pavements
DIVISION 8 - INCIDENTALS	
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.04	Concrete Open Throat Catch Basin - 12" thru 48" Pipe
840.05	Brick Open Throat Catch Basin - 12" thru 48" Pipe
840.17	Concrete Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.19	Concrete Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.20	Frames and Wide Slot Flat Grates
840.22	Frames and Wide Slot Sag Grates
840.26	Brick Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.28	Brick Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.34	Traffic Bearing Junction Box - for Use with Pipes 42" and Under
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.36	Traffic Bearing Grated Drop Inlet - for Steel (840.37) Double Frame and Grates
840.37	Steel Grate and Frame
840.45	Precast Drainage Structure
840.46	Traffic Bearing 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 & Gutter
846.02	Drop Inlet Installation in Expressway Gutter
846.03	Funnel Drain Installation in Shoulder Berm Gutter
852.01	Concrete Islands
854.02	Double Faced Concrete Barrier - Types 'T', 'T1' and 'T2'
854.05	Concrete Median Transition Barrier - Location of Overhead Assembly
857.01	Precast Reinforced Concrete Barrier - 41" Single Faced
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
862.04	Anchoring End of Guardrail - B-77 and B-83 Anchor Units
866.01	Chain Link Fence - 4', 5' and 6' High Fence
866.02	Woven Wire Fence - with Wood Post
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

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PROJECT REFERENCE NO.	SHEET NO.
I-4407	I-B

09/08/09

Note: Not to Scale

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign — S
- Well — W
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream — JS
- Buffer Zone 1 — BZ 1
- Buffer Zone 2 — BZ 2
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- Proposed Lateral, Tail, Head Ditch — FLOW
- False Sump

RAILROADS:

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

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line — RW
- Proposed Right of Way Line with Iron Pin and Cap Marker — RW
- Proposed Right of Way Line with Concrete or Granite Marker — RW
- Existing Control of Access — CA
- Proposed Control of Access — CA
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Drainage / Utility Easement — DUE
- Proposed Permanent Utility Easement — PUE
- Proposed Temporary Utility Easement — TUE
- Proposed Permanent Easement with Iron Pin and Cap Marker

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

- Head and End Wall — CONC HW
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB — CB
- Paved Ditch Gutter
- Storm Sewer Manhole — S
- Storm Sewer — S

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

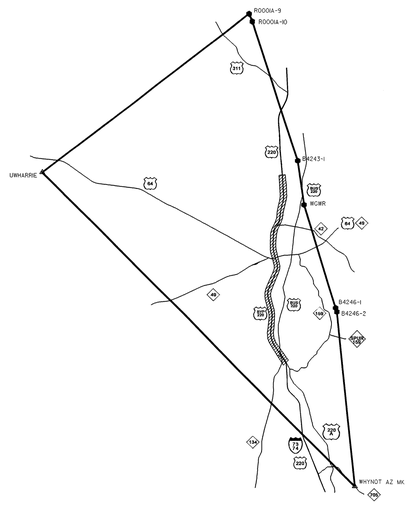
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

MISCELLANEOUS:

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

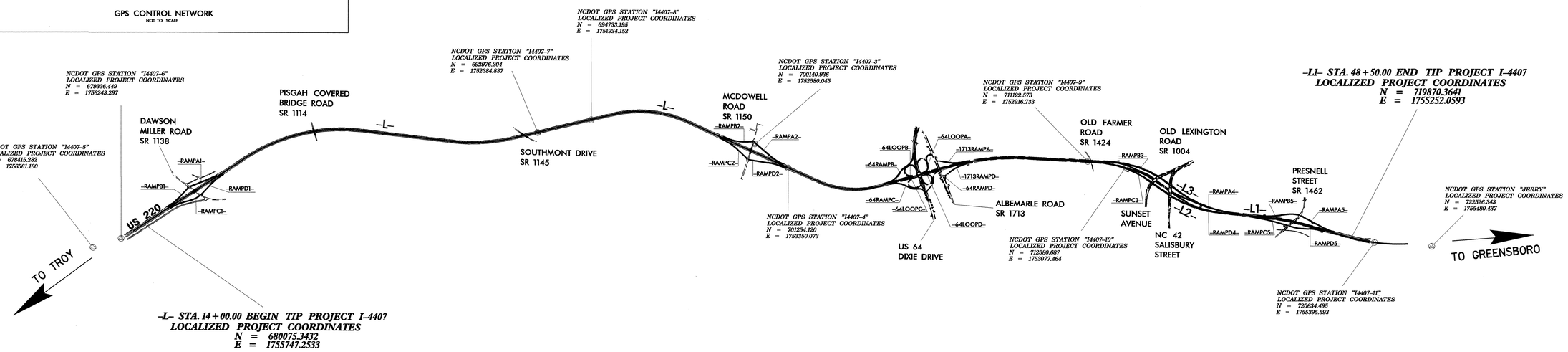
PROJECT REFERENCE NO.	SHEET NO.
I-4407	I-C
Location and Surveys	

SURVEY CONTROL SHEET I-4407



GPS CONTROL NETWORK
NOT TO SCALE

NAD 83/95



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "I4407-3"
WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF
NORTHING: 700140.936(ft) EASTING: 1752580.045(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99987513
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "I4407-3" TO -L- STATION 14+00.00 IS
S 08 58 11.0 E 20,314.015'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTES:

1. *THE SITE CALIBRATION SHOWN IS BASED UPON A NETWORK TIED TO THE HARN (HIGH ACCURACY REFERENCE NETWORK) NAD 8395 ADJUSTMENT. THIS CALIBRATION WILL ALLOW THE END USER TO WORKWITHIN THE SAME COORDINATE SYSTEM WHEN USING RTK (REAL TIME KINEMATIC) GPS AND A LOCAL BASE STATION. IF ANOTHER SYSTEM SUCH AS VRS (VIRTUAL REFERENCE STATION) IS USED, ADDITIONAL FIELD TIES MAY BE NEEDED TO REDUCE POSSIBLE ERRORS, OR BIASES.*

2. *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/

THE FILES TO BE FOUND ARE AS FOLLOWS:
I4407_LS_GPSCALIB_061130.HTML
I4407_LS_WGS84_061130.TXT
I4407_LS_LOCAL_061130.TXT
I4407_LS_CONTROL_080514.TXT

THE WGS84 AND LOCAL FILES ARE COMMA DELIMITED AND CAN BE USED TO REPRODUCE THE SITE CALIBRATION FOR THE END USER'S GPS EQUIPMENT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

© *INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.*
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION
SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

NOTE: DRAWING NOT TO SCALE

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SURVEY CONTROL SHEET I–4407

GPS CALIBRATION REPORT

PROJECT : I4407-04

TIP NUMBER	I4407		
USER NAME	SCRANFORD	DATE & TIME	2:47:20 PM 8/23/2006
COORDINATE SYSTEM	US STATE PLANE 1983(AT GROUND)	ZONE	NORTH CAROLINA 3200
HORIZONTAL DATUM	NAD 1983 (CONUS)		
VERTICAL DATUM	NAVD88	GEOID MODEL	GEOID99 (CONUS)
COORDINATE UNITS	US SURVEY FEET		
DISTANCE UNITS	US SURVEY FEET		
HEIGHT UNITS	US SURVEY FEET		

LOCAL SITE INFORMATION

LOCALIZED AROUND	I4407-3
LATITUDE	35°40'15.21187"N
LONGITUDE	79°49'59.00141"W
SITE SCALE FACTOR	1.0001248856
HEIGHT	714.470SFT

THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION USES A LOCALIZED COORDINATE SYSTEM WHICH IS VERY SIMILAR TO NORTH CAROLINA ZONE 3200 FROM WHICH IT IS DERIVED.
PLEASE TAKE CARE IN UTILIZING THESE COORDINATES TO ELIMINATE CONFUSION OF THE TWO SYSTEMS.
THIS FILE IS TO AID IN THE USE OF REAL TIME KINEMATIC (RTK) GPS DURING CONSTRUCTION LAYOUT.

DATUM TRANSFORMATION PARAMETERS

DATUM TRANSFORMATION COMPUTATION NOT REQUESTED

UPDATED DEFAULT PROJECTION (TRANSVERSE MERCATOR) DEFINITION

UPDATED DEFAULT PROJECTION NOT REQUESTED

HORIZONTAL ADJUSTMENT PARAMETERS

NORTHING COORDINATE OF ROTATION CENTER	699647.761SFT
EASTING COORDINATE OF ROTATION CENTER	1756841.758SFT
ROTATION ABOUT THE CENTER POINT	0°00'00"
TRANSLATION NORTH	-0.015SFT
TRANSLATION EAST	0.030SFT
SCALE FACTOR	1.00000028

VERTICAL ADJUSTMENT PARAMETERS

NORTHING COORDINATE OF ORIGIN POINT	647851.582SFT
EASTING COORDINATE OF ORIGIN POINT	1774205.606SFT
VERTICAL SEPARATION AT ORIGIN	-0.003SFT
SLOPE NORTH	0.000PPM
SLOPE EAST	-0.110PPM

GEOID MODEL DEFINITION

GEOID99 (CONUS)

RESIDUAL DIFFERENCES BETWEEN GPS (WGS84) AND LOCAL COORDINATES

SUMMARY

	MAXIMUM ERROR	ROOT MEAN SQUARE ERROR	POINT
HORIZONTAL	0.034SFT	0.004	VESTAL-1 GPS
VERTICAL	0.008SFT	0.001	B4246-2 GPS
THREE-DIMENSIONAL	0.034SFT	0.004	VESTAL-1 GPS

POINT RESIDUALS

WGS84 COORDINATES		CALCULATED POINT FOR DISPLAY ONLY		LOCAL COORDINATES
POINT	WHYNOT AZ MK GPS	NORTHING	647851.582SFT	POINT WHYNOT AZ MK
LATITUDE	35°31'39.82388"N	EASTING	1774205.606SFT	NORTHING 647851.588SFT
LONGITUDE	79°45'32.07504"W	ELEVATION	614.420SFT	EASTING 1774205.632SFT
HEIGHT	514.329SFT	HORZ ERROR	0.026SFT	ELEVATION 614.416SFT
		VERT ERROR	0.004SFT	UTILIZED HORZ AND VERT
		3D ERROR	0.027SFT	CONTROL QUALITY QUALITY
POINT	B4243-1 GPS	NORTHING	730497.887SFT	POINT B4243-1
LATITUDE	35°45'15.93060"N	EASTING	1758940.149SFT	NORTHING 730497.887SFT
LONGITUDE	79°48'44.93462"W	ELEVATION	698.769SFT	EASTING 1758940.170SFT
HEIGHT	599.448SFT	HORZ ERROR	0.021SFT	ELEVATION 698.762SFT
		VERT ERROR	0.007SFT	UTILIZED HORZ AND VERT
		3D ERROR	0.022SFT	CONTROL QUALITY QUALITY
POINT	B4246-1 GPS	NORTHING	692904.891SFT	POINT B4246-1
LATITUDE	35°39'04.96417"N	EASTING	1768905.575SFT	NORTHING 692904.886SFT
LONGITUDE	79°46'40.46436"W	ELEVATION	575.770SFT	EASTING 1768905.574SFT
HEIGHT	476.213SFT	HORZ ERROR	0.005SFT	ELEVATION 575.773SFT
		VERT ERROR	0.002SFT	UTILIZED HORZ AND VERT
		3D ERROR	0.006SFT	CONTROL QUALITY QUALITY
POINT	B4246-2 GPS	NORTHING	691891.405SFT	POINT B4246-2
LATITUDE	35°38'54.96869"N	EASTING	1769254.458SFT	NORTHING 691891.398SFT
LONGITUDE	79°46'36.14115"W	ELEVATION	584.306SFT	EASTING 1769254.469SFT
HEIGHT	484.732SFT	HORZ ERROR	0.012SFT	ELEVATION 584.314SFT
		VERT ERROR	0.008SFT	UTILIZED HORZ AND VERT
		3D ERROR	0.014SFT	CONTROL QUALITY QUALITY
POINT	VESTAL-1 GPS	NORTHING	698761.883SFT	POINT VESTAL-1
LATITUDE	35°40'02.11637"N	EASTING	1759198.260SFT	NORTHING 698761.898SFT
LONGITUDE	79°48'38.65889"W	ELEVATION	805.890SFT	EASTING 1759198.230SFT
HEIGHT	706.521SFT	HORZ ERROR	0.034SFT	ELEVATION 805.891SFT
		VERT ERROR	0.001SFT	UTILIZED HORZ AND VERT
		3D ERROR	0.034SFT	CONTROL QUALITY QUALITY
POINT	WGWR GPS	NORTHING	719213.967SFT	POINT WGWR
LATITUDE	35°43'24.48245"N	EASTING	1760636.602SFT	NORTHING 719213.965SFT
LONGITUDE	79°48'23.24189"W	ELEVATION	965.911SFT	EASTING 1760636.605SFT
HEIGHT	866.645SFT	HORZ ERROR	0.004SFT	ELEVATION 965.909SFT
		VERT ERROR	0.002SFT	UTILIZED HORZ AND VERT
		3D ERROR	0.004SFT	CONTROL QUALITY QUALITY
POINT	I4407-1 GPS	NORTHING	677153.455SFT	POINT I4407-1
LATITUDE	35°36'27.43602"N	EASTING	1747211.541SFT	NORTHING 677153.456SFT
LONGITUDE	79°51'01.67585"W	ELEVATION	707.679SFT	EASTING 1747211.534SFT
HEIGHT	608.207SFT	HORZ ERROR	0.007SFT	ELEVATION 707.678SFT
		VERT ERROR	0.001SFT	UTILIZED HORZ AND VERT
		3D ERROR	0.007SFT	CONTROL QUALITY QUALITY
POINT	I4407-2 GPS	NORTHING	721864.078SFT	POINT I4407-2
LATITUDE	35°43'49.38200"N	EASTING	1744886.173SFT	NORTHING 721864.074SFT
LONGITUDE	79°51'34.52336"W	ELEVATION	608.342SFT	EASTING 1744886.176SFT
HEIGHT	509.005SFT	HORZ ERROR	0.006SFT	ELEVATION 608.340SFT
		VERT ERROR	0.002SFT	UTILIZED HORZ AND VERT
		3D ERROR	0.006SFT	CONTROL QUALITY QUALITY
POINT	I4407-3 GPS	NORTHING	700140.934SFT	POINT I4407-3
LATITUDE	35°40'15.21199"N	EASTING	1752580.064SFT	NORTHING 700140.936SFT
LONGITUDE	79°49'59.00153"W	ELEVATION	813.755SFT	EASTING 1752580.045SFT
HEIGHT	714.460SFT	HORZ ERROR	0.019SFT	ELEVATION 813.760SFT
		VERT ERROR	0.005SFT	UTILIZED HORZ AND VERT
		3D ERROR	0.020SFT	CONTROL QUALITY QUALITY
POINT	I4407-4 GPS	NORTHING	701254.121SFT	POINT I4407-4
LATITUDE	35°40'26.28413"N	EASTING	1753350.083SFT	NORTHING 701254.120SFT
LONGITUDE	79°49'49.78252"W	ELEVATION	804.042SFT	EASTING 1753350.073SFT
HEIGHT	704.749SFT	HORZ ERROR	0.010SFT	ELEVATION 804.048SFT
		VERT ERROR	0.006SFT	UTILIZED HORZ AND VERT
		3D ERROR	0.011SFT	ADJUSTED QUALITY QUALITY
POINT	I4407-5 GPS	NORTHING	678415.274SFT	POINT I4407-5
LATITUDE	35°36'40.69192"N	EASTING	1756561.157SFT	NORTHING 678415.282SFT
LONGITUDE	79°49'08.58212"W	ELEVATION	757.776SFT	EASTING 1756561.160SFT
HEIGHT	658.213SFT	HORZ ERROR	0.008SFT	ELEVATION 757.770SFT
		VERT ERROR	0.006SFT	UTILIZED HORZ AND VERT
		3D ERROR	0.010SFT	ADJUSTED QUALITY QUALITY
POINT	I4407-6 GPS	NORTHING	679336.444SFT	POINT I4407-6
LATITUDE	35°36'49.77560"N	EASTING	1756243.298SFT	NORTHING 679336.449SFT
LONGITUDE	79°49'12.52360"W	ELEVATION	773.582SFT	EASTING 1756243.297SFT
HEIGHT	674.035SFT	HORZ ERROR	0.005SFT	ELEVATION 773.580SFT
		VERT ERROR	0.002SFT	UTILIZED HORZ AND VERT
		3D ERROR	0.005SFT	ADJUSTED QUALITY QUALITY
POINT	I4407-7 GPS	NORTHING	692976.208SFT	POINT I4407-7
LATITUDE	35°39'04.34338"N	EASTING	1752384.846SFT	NORTHING 692976.204SFT
LONGITUDE	79°50'00.63830"W	ELEVATION	836.948SFT	EASTING 1752384.837SFT
HEIGHT	737.595SFT	HORZ ERROR	0.009SFT	ELEVATION 836.948SFT
		VERT ERROR	0.000SFT	UTILIZED HORZ AND VERT
		3D ERROR	0.009SFT	ADJUSTED QUALITY QUALITY
POINT	I4407-8 GPS	NORTHING	694733.197SFT	POINT I4407-8
LATITUDE	35°39'21.68010"N	EASTING	1751924.163SFT	NORTHING 694733.195SFT
LONGITUDE	79°50'06.39906"W	ELEVATION	803.698SFT	EASTING 1751924.152SFT
HEIGHT	704.365SFT	HORZ ERROR	0.011SFT	ELEVATION 803.701SFT
		VERT ERROR	0.003SFT	UTILIZED HORZ AND VERT
		3D ERROR	0.011SFT	ADJUSTED QUALITY QUALITY
POINT	I4407-9 GPS	NORTHING	711122.576SFT	POINT I4407-9
LATITUDE	35°42'03.83722"N	EASTING	1752916.735SFT	NORTHING 711122.573SFT
LONGITUDE	79°49'56.03718"W	ELEVATION	794.180SFT	EASTING 1752916.733SFT
HEIGHT	694.930SFT	HORZ ERROR	0.004SFT	ELEVATION 794.184SFT
		VERT ERROR	0.004SFT	UTILIZED HORZ AND VERT
		3D ERROR	0.005SFT	ADJUSTED QUALITY QUALITY
POINT	I4407-10 GPS	NORTHING	712380.692SFT	POINT I4407-10
LATITUDE	35°42'16.29198"N	EASTING	1753077.463SFT	NORTHING 712380.687SFT
LONGITUDE	79°49'54.21639"W	ELEVATION	759.177SFT	EASTING 1753077.464SFT
HEIGHT	659.926SFT	HORZ ERROR	0.005SFT	ELEVATION 759.177SFT
		VERT ERROR	0.000SFT	UTILIZED HORZ AND VERT
		3D ERROR	0.005SFT	ADJUSTED QUALITY QUALITY
POINT	I4407-11 GPS	NORTHING	720634.497SFT	POINT I4407-11
LATITUDE	35°43'38.10424"N	EASTING	1755395.585SFT	NORTHING 720634.495SFT
LONGITUDE	79°49'26.94216"W	ELEVATION	772.427SFT	EASTING 1755395.593SFT
HEIGHT	673.156SFT	HORZ ERROR	0.008SFT	ELEVATION 772.427SFT
		VERT ERROR	0.000SFT	UTILIZED HORZ AND VERT
		3D ERROR	0.008SFT	ADJUSTED QUALITY QUALITY
POINT	JERRY GPS	NORTHING	722526.345SFT	POINT JERRY
LATITUDE	35°43'56.81942"N	EASTING	1755480.423SFT	NORTHING 722526.343SFT
LONGITUDE	79°49'26.10372"W	ELEVATION	760.517SFT	EASTING 1755480.437SFT
HEIGHT	661.237SFT	HORZ ERROR	0.014SFT	ELEVATION 760.513SFT
		VERT ERROR	0.004SFT	UTILIZED HORZ AND VERT
		3D ERROR	0.014SFT	ADJUSTED QUALITY QUALITY

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "I4407-3"
WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF
NORTHING: 700140.936(ft) EASTING: 1752580.045(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99987513
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "I4407-3" TO -L- STATION 14+00.00 IS
S 08 58 11.0 E 20,314.015'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTES:

1. *THE SITE CALIBRATION SHOWN IS BASED UPON A NETWORK TIED TO THE HARN (HIGH ACCURACY REFERENCE NETWORK) NAD 83/95 ADJUSTMENT. THIS CALIBRATION WILL ALLOW THE END USER TO WORKWITHIN THE SAME COORDINATE SYSTEM WHEN USING RTK (REAL TIME KINEMATIC) GPS AND A LOCAL BASE STATION. IF ANOTHER SYSTEM SUCH AS VRS (VIRTUAL REFERENCE STATION) IS USED, ADDITIONAL FIELD TIES MAY BE NEEDED TO REDUCE POSSIBLE ERRORS, OR BIASES.*
2. *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/

   THE FILES TO BE FOUND ARE AS FOLLOWS:
   I4407_LS_GPSCALIB_061130.HTML
   I4407_LS_WGS84_061130.TXT
   I4407_LS_LOCAL_061130.TXT
   I4407_LS_CONTROL_080514.TXT

   THE WGS84 AND LOCAL FILES ARE COMMA DELIMITED AND CAN BE USED TO REPRODUCE THE SITE CALIBRATION FOR THE END USER'S GPS EQUIPMENT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

6/2/99
24-FEB-2010 14:42
r:\roadway\proj\i4407_rdy_1d.dgn
$$$$USERNAME$$$$

6/2/99

SURVEY CONTROL SHEET I–4407

PROJECT REFERENCE NO.	SHEET NO.
I–4407	*1–E*
Location and Surveys	

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
6	I4407-6	679336.4490	1756243.2970	773.58	OUTSIDE PROJECT LIMITS	
101	BL-101	681204.8460	1754976.5810	813.71	27+67.36	6.42 RT
102	BL-102	681792.0660	1754550.6960	817.17	34+92.55	11.00 LT
103	BL-103	683264.6960	1753540.0630	777.44	52+78.61	7.44 LT
104	BL-104	684275.9880	1752967.8090	788.14	64+42.44	6.94 RT
105	BL-105	685657.9560	1752538.9050	774.84	78+95.05	6.72 RT
106	BL-106	686855.1750	1752502.6750	790.70	91+00.43	53.18 RT
107	BL-107	688793.9960	1752681.0010	762.57	110+50.67	58.57 RT
108	BL-108	690518.3830	1752829.4780	800.03	127+78.28	55.30 RT
109	BL-109	692216.0720	1752632.7880	836.34	144+77.80	53.34 RT
7	I4407-7	692976.2040	1752384.8370	836.95	152+75.97	6.39 RT
8	I4407-8	694733.1950	1751924.1520	803.70	170+92.36	6.63 RT
110	BL-110	695968.8850	1751684.9820	793.65	183+57.25	53.16 RT
111	BL-111	696846.6780	1751682.8090	804.13	192+49.42	52.76 RT
112	BL-112	697666.4930	1751872.9390	813.16	201+04.67	53.77 RT
113	BL-113	699406.7430	1752611.4800	805.01	219+98.89	55.32 RT
4	I4407-4	701254.1200	1753350.0730	804.05	239+87.84	6.44 RT

POINT	DESC.	NORTH	EAST	ELEVATION	LRT STATION	OFFSET
114	BL-114	702745.7370	1753990.1590	818.00	13+53.88	34.11 RT
115	BL-115	704040.2990	1753989.8790	812.81	26+43.67	36.27 RT

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
116	BL-116	705903.6690	1753433.7360	830.64	288+29.08	45.20 RT
117	BL-117	707068.5080	1753048.2540	853.35	300+55.99	0.16 LT
118	BL-118	708002.5760	1752889.2060	855.56	310+04.17	1.12 RT
119	BL-119	709675.0870	1752867.2850	812.27	326+78.77	0.07 RT
9	I4407-9	711122.5730	1752916.7330	794.18	341+27.09	1.93 RT

POINT	DESC.	NORTH	EAST	ELEVATION	RAMPC3 STATION	OFFSET
10	I4407-10	712380.6870	1753077.4640	759.18	11+35.74	25.41 LT

POINT	DESC.	NORTH	EAST	ELEVATION	L2 STATION	OFFSET
120	BL-120	713459.4230	1753688.4870	768.85	366+27.48	21.04 LT
121	BL-121	714090.7590	1754140.4380	781.41	374+01.92	24.86 RT
122	BL-122	715162.5710	1754505.2260	803.41	385+30.91	24.73 RT

POINT	DESC.	NORTH	EAST	ELEVATION	RAMPC5 STATION	OFFSET
123	BL-123	716535.6340	1754655.1690	825.84	10+50.75	19.04 RT

POINT	DESC.	NORTH	EAST	ELEVATION	RAMPD5 STATION	OFFSET
124	BL-124	717886.3450	1754860.2190	815.38	21+19.31	65.49 RT
125	BL-125	718916.1260	1755068.0370	791.85	10+57.78	22.06 LT

POINT	DESC.	NORTH	EAST	ELEVATION	L1 STATION	OFFSET
126	BL-126	719646.0300	1755243.6590	793.30	46+30.39	46.54 RT
11	I4407-11	720634.4950	1755395.5930	772.43	56+28.11	0.40 LT

BYA

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
A102	BL-102	681792.0660	1754550.6960	817.17	34+92.55	11.00 LT

POINT	DESC.	NORTH	EAST	ELEVATION	RAMPA1 STATION	OFFSET
127	BYA-127	681946.0900	1754318.1788	806.43	15+67.08	15.89 LT

BYB

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
A101	BL-101	681204.8460	1754976.5810	813.71	27+67.36	6.42 RT

POINT	DESC.	NORTH	EAST	ELEVATION	RAMPB1 STATION	OFFSET
128	BYB-128	681235.4644	1754792.0592	807.47	15+56.34	18.97 LT

BYC

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
B101	BL-101	681204.8460	1754976.5810	813.71	27+67.36	6.42 RT

POINT	DESC.	NORTH	EAST	ELEVATION	RAMPC1 STATION	OFFSET
129	BYC-129	681606.2310	1754943.2740	813.06	17+34.57	19.35 RT

BYD

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
B102	BL-102	681792.0660	1754550.6960	817.17	34+92.55	11.00 LT

POINT	DESC.	NORTH	EAST	ELEVATION	RAMPD1 STATION	OFFSET
130	BYD-130	681992.9560	1754701.9810	799.94	19+60.28	25.61 LT

BY1A

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
A4	I4407-4	701254.1200	1753350.0730	804.05	239+87.84	6.44 RT

POINT	DESC.	NORTH	EAST	ELEVATION	RAMPA2 STATION	OFFSET
3	I4407-3	700140.9360	1752580.0450	813.76	21+62.56	28.76 LT

BY1B

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
A113	BL-113	699406.7430	1752611.4800	805.01	219+98.89	55.32 RT

POINT	DESC.	NORTH	EAST	ELEVATION	RAMPB2 STATION	OFFSET
132	BY1B-132	699871.0415	1752530.4001	809.59	18+16.69	10.56 RT

BY1C

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
B113	BL-113	699406.7430	1752611.4800	805.01	219+98.89	55.32 RT

POINT	DESC.	NORTH	EAST	ELEVATION	RAMPC2 STATION	OFFSET
133	BY1C-133	699847.4315	1753065.9323	824.13	21+26.77	23.73 RT

BY1D

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
B4	I4407-4	701254.1200	1753350.0730	804.05	239+87.84	6.44 RT

POINT	DESC.	NORTH	EAST	ELEVATION	RAMPD2 STATION	OFFSET
134	BY1D-134	700411.4823	1753157.6295	809.43	17+91.71	11.38 RT

BY2A

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
A116	BL-116	705903.6690	1753433.7360	830.64	288+29.08	45.20 RT
136	BY2A-136	705835.8512	1752828.7864	867.74	289+40.20	553.31 LT

BY2B

POINT	DESC.	NORTH	EAST	ELEVATION	LRT STATION	OFFSET
A115	BL-115	704040.2990	1753989.8790	812.81	26+43.67	36.27 RT

POINT	DESC.	NORTH	EAST	ELEVATION	64RAMPB STATION	OFFSET
161	BY4-161	704747.6730	1753628.3430	808.24	13+67.79	19.15 LT
137	BY4-137	705045.6854	1753238.1351	828.23	18+58.34	34.64 LT

BY2C

POINT	DESC.	NORTH	EAST	ELEVATION	LRT STATION	OFFSET
B115	BL-115	704040.2990	1753989.8790	812.81	26+43.67	36.27 RT

POINT	DESC.	NORTH	EAST	ELEVATION	64RAMPC STATION	OFFSET
135	BY2C-135	704868.5383	1753752.8518	811.17	12+64.12	29.87 LT
138	BY2C-138	705313.7542	1753953.3560	822.78	17+47.38	25.73 RT

BY2D

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
B116	BL-116	705903.6690	1753433.7360	830.64	288+29.08	45.20 RT
139	BY2D-139	705886.6930	1753952.0419	835.72	286+62.04	536.14 RT

BY3A

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
A117	BL-117	707068.5080	1753048.2540	853.35	300+55.99	0.16 LT
140	BY3A-140	706205.5356	1753037.7359	866.52	292+33.10	245.85 LT

BY3D

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
B117	BL-117	707068.5080	1753048.2540	853.35	300+55.99	0.16 LT
141	BY3D-141	706431.8708	1753461.7750	844.79	293+26.27	225.70 RT

BY4

POINT	DESC.	NORTH	EAST	ELEVATION	RAMPC3 STATION	OFFSET
A10	I4407-10	712380.6870	1753077.4640	759.18	11+35.74	25.41 LT
159	BY4-159	712804.3690	1753210.3840	764.76	15+79.49	16.89 LT

POINT	DESC.	NORTH	EAST	ELEVATION	RAMPB3 STATION	OFFSET
142	BY4-142	713324.0420	1753423.7230	782.29	23+51.96	14.13 LT

POINT	DESC.	NORTH	EAST	ELEVATION	RAMPD4 STATION	OFFSET
160	BY4-160	713994.2750	1753955.5720	790.51	20+22.07	9.11 LT

POINT	DESC.	NORTH	EAST	ELEVATION	L2 STATION	OFFSET
A121	BL-121	714090.7590	1754140.4380	781.41	374+01.92	24.86 RT

BY5A

POINT	DESC.	NORTH	EAST	ELEVATION	RAMPD5 STATION	OFFSET
A125	BL-125	718916.1260	1755068.0370	791.85	10+57.78	22.06 LT

POINT	DESC.	NORTH	EAST	ELEVATION	RAMPA5 STATION	OFFSET
143	BY5A-143	718195.4460	1754580.9870	834.52	21+85.65	14.00 LT

BY5B

POINT	DESC.	NORTH	EAST	ELEVATION	RAMPC5 STATION	OFFSET
A123	BL-123	716535.6340	1754655.1690	825.84	10+50.75	19.04 RT

POINT	DESC.	NORTH	EAST	ELEVATION	RAMPB5 STATION	OFFSET
144	BY5B-144	718098.2080	1754514.1210	831.48	23+76.89	22.84 LT

BM1 ELEVATION = 755.69
N 676454 E 1756478
L STATION 10+00
S 8° 42′ 08.4" E DIST 3329.90
RR SPIKE SET IN 30 INCH OAK

BM2 ELEVATION = 751.07
N 678484 E 1756443
L STATION 10+00
S 20° 22′ 13.9" E DIST 1346.27
RR SPIKE SET IN 8 INCH WILLOW OAK

BM3 ELEVATION = 802.07
N 680352 E 1755390
L STATION 18+31 137 LEFT
RR SPIKE SET IN 8 INCH PINE

BM4 ELEVATION = 840.43
N 681979 E 1754103
L STATION 39+01 273 LEFT
RR SPIKE SET IN 8 INCH CHESTNUT OAK

BM5 ELEVATION = 794.12
N 683814 E 1753065
L STATION 59+90 115 LEFT
RR SPIKE SET IN 20 INCH PINE

BM6 ELEVATION = 785.58
N 685947 E 1752617
L STATION 81+72 127 RIGHT
RR SPIKE SET IN 12 INCH PINE

BM7 ELEVATION = 762.58
N 688371 E 1752715
L STATION 106+33 132 RIGHT
RR SPIKE SET IN 10 INCH PIN OAK

BM8 ELEVATION = 794.88
N 690624 E 1752904
L STATION 128+84 127 RIGHT
RR SPIKE SET IN 10 INCH GUM

BM9 ELEVATION = 842.92
N 692433 E 1752666
L STATION 146+79 141 RIGHT
RR SPIKE SET IN 16 INCH PIN OAK

BM10 ELEVATION = 819.14
N 694579 E 1752096
L STATION 168+99 134 RIGHT
RR SPIKE SET IN 16 INCH WHITE OAK

BM11 ELEVATION = 796.94
N 696653 E 1751744
L STATION 190+58 131 RIGHT
RR SPIKE SET IN 12 INCH WHITE OAK

BM12 ELEVATION = 814.45
N 698491 E 1752313
L STATION 210+39 142 RIGHT
RR SPIKE SET IN 16 INCH TWIN MAPLE

BM13 ELEVATION = 800.79
N 700491 E 1753246
L STATION 232+46 212 RIGHT
RR SPIKE SET IN 10 INCH GUM

BM14 ELEVATION = 806.63
N 702167 E 1753579
L STATION 249+17 143 LEFT
RR SPIKE SET IN 10 INCH GUM

BM15 ELEVATION = 815.34
N 704552 E 1753680
L STATION 274+65 113 LEFT
RR SPIKE SET IN 8 INCH OAK

BM16 ELEVATION = 848.79
N 706900 E 1752998
L STATION 299+05 89 LEFT
RR SPIKE SET IN 14 INCH PINE

BM17 ELEVATION = 833.79
N 708905 E 1752742
L STATION 319+07 102 LEFT
RR SPIKE SET IN 16 INCH RED OAK

BM18 ELEVATION = 798.73
N 710760 E 1752817
L STATION 337+62 86 LEFT
RR SPIKE SET IN 12 INCH PINE

BM19 ELEVATION = 753.48
N 712672 E 1753293
L2 STATION 357+44 52 RIGHT
RR SPIKE SET IN 8 INCH SOURWOOD

BM20 ELEVATION = 799.77
N 715038 E 1754252
L2 STATION 383+53 199 LEFT
RR SPIKE SET IN 10 INCH MAPLE

BM21 ELEVATION = 854.13
N 717593 E 1754392
L1 STATION 24+64 312 LEFT
RR SPIKE SET IN 14 INCH WHITE OAK

BM22 ELEVATION = 804.36
N 719642 E 1755068
L1 STATION 45+84 123 LEFT
RR SPIKE SET IN 8 INCH PINE

DATUM DESCRIPTION

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NOTES:

1. *THE SITE CALIBRATION SHOWN IS BASED UPON A NETWORK TIED TO THE HARN (HIGH ACCURACY REFERENCE NETWORK) NAD 8395 ADJUSTMENT. THIS CALIBRATION WILL ALLOW THE END USER TO WORKWITHIN THE SAME COORDINATE SYSTEM WHEN USING RTK (REAL TIME KINEMATIC) GPS AND A LOCAL BASE STATION. IF ANOTHER SYSTEM SUCH AS VRS (VIRTUAL REFERENCE STATION) IS USED, ADDITIONAL FIELD TIES MAY BE NEEDED TO REDUCE POSSIBLE ERRORS, OR BIASES.*

2. *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/*

   THE FILES TO BE FOUND ARE AS FOLLOWS:
   I4407_LS_GPSCALIB_061130.HTML
   I4407_LS_WGS84_061130.TXT
   I4407_LS_LOCAL_061130.TXT
   I4407_LS_CONTROL_080514.TXT

   THE WGS84 AND LOCAL FILES ARE COMMA DELIMITED AND CAN BE USED TO REPRODUCE THE SITE CALIBRATION FOR THE END USER'S GPS EQUIPMENT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

24-FEB-2010 14:42
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PROJECT REFERENCE NO.	SHEET NO.
I-4407	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22567 ENGINEER MICHAEL W. LITTLE

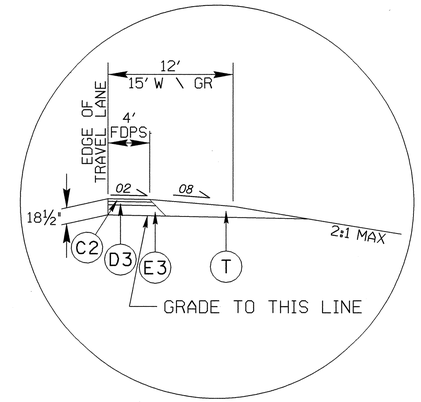
4/1/10

04/13/2010

FINAL PAVEMENT SCHEDULE

C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	E5	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT GREATER THAN 5.5" IN DEPTH OR LESS THAN 4" IN DEPTH
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	J1	PROP. 8" AGGREGATE BASE COURSE
D1	PROP. APPROX. 2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	J2	PROP. VAR. DEPTH AGGREGATE BASE COURSE
D2	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R1	EXPRESSWAY GUTTER
D3	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R2	CONCRETE MEDIAN BARRIER, TYPE T, KEY-IN 3"
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R3	SHOULDER BERM GUTTER
E2	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.	T	EARTH MATERIAL
E3	PROP. APPROX. 11½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 437 LBS. PER SQ. YD. IN EACH OF THREE LAYERS	U	EXISTING PAVEMENT
E4	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT GREATER THAN 5.5" IN DEPTH OR LESS THAN 4" IN DEPTH	V	MILLED ASPHALT PAVEMENT

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



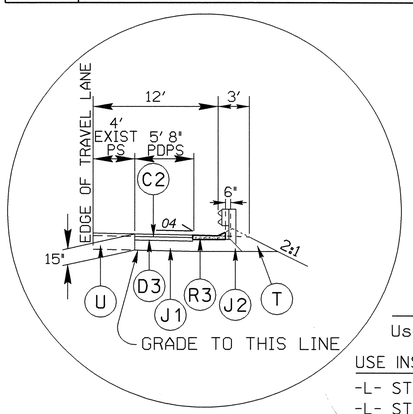
INSET NO. 3

INSET NO. 3

Use with Typical Section No. 1

USE INSET NO. 3 AT THE FOLLOWING LOCATIONS:

-L- STA. 16+00.92 (LT.) TO -L- STA. 23+51.33 (LT.)
-RAMPB1- STA. 10+00.00 (LT.) TO -RAMPB1- STA. 14+13.23 (LT.)
-L- STA. 20+07.75 (RT.) TO -L- STA. 24+06.23 (RT.)
-RAMPC1- STA. 10+00.00 (RT.) TO -RAMPC1- STA. 13+67.35 (RT.)
-RAMPA1- STA. 10+00.00 (RT.) TO -RAMPA1- STA. 13+14.48 (RT.)
-L- STA. 43+13.94 (LT.) TO -L- STA. 43+36.00 (LT.)
-RAMPC2- STA. 12+43.00 (RT.) TO -RAMPC2- STA. 14+71.94 (RT.)
-RAMPA2- STA. 10+00.00 (RT.) TO -RAMPA2- STA. 14+12.50 (RT.)
-L- STA. 238+00.00 (LT.) TO -L- STA. 241+42.31 (LT.)
-RAMPD2- STA. 10+00.00 (LT.) TO -RAMPD2- STA. 14+00.94 (LT.)
-L- STA. 239+17.67 (RT.) TO -L- STA. 241+36.00 (RT.)



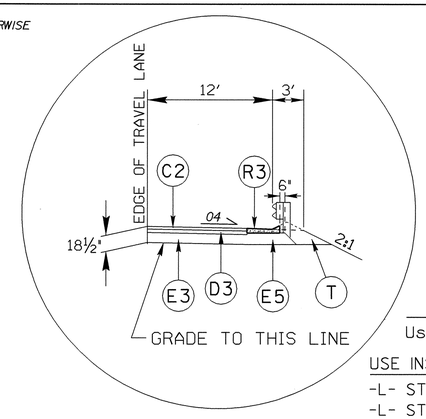
INSET NO. 1

INSET NO. 1

Use with Typical Section No. 1

USE INSET NO. 1 AT THE FOLLOWING LOCATIONS:

-L- STA. 49+27.00 (LT.) TO -L- STA. 55+80.00 (LT.)
-L- STA. 52+10.00 (RT.) TO -L- STA. 55+00.00 (RT.)
-L- STA. 172+05.00 (RT.) TO -L- STA. 182+75.00 (RT.)
-L- STA. 202+40.00 (RT.) TO -L- STA. 205+75.00 (RT.)
-L- STA. 202+50.00 (LT.) TO -L- STA. 206+98.00 (LT.)



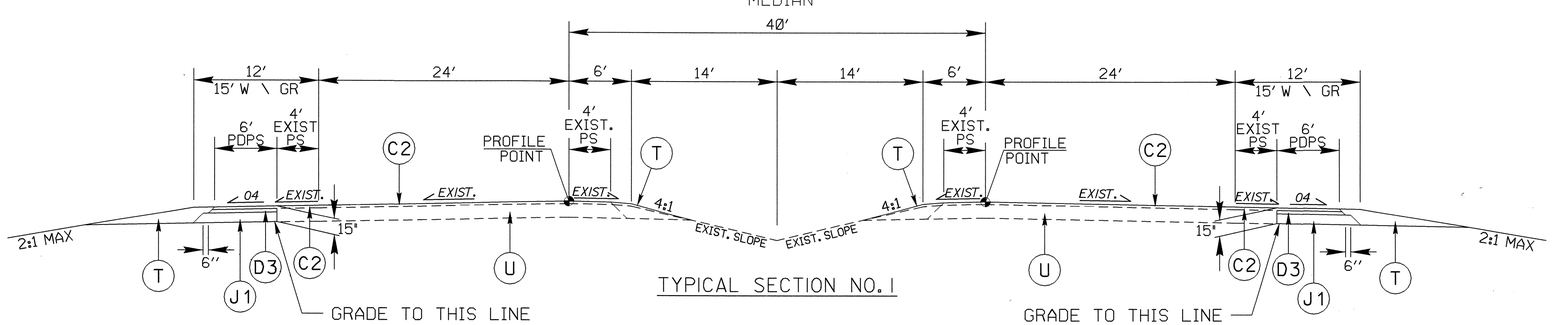
INSET NO. 2

INSET NO. 2

Use with Typical Section No. 1

USE INSET NO. 2 AT THE FOLLOWING LOCATIONS:

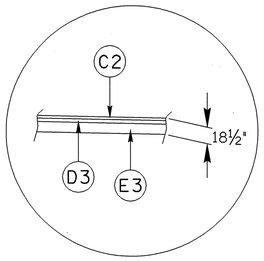
-L- STA. 43+75.00 (RT.) TO -L- STA. 52+10.00 (RT.)
-L- STA. 46+17.00 (LT.) TO -L- STA. 49+27.00 (LT.)
-L- STA. 206+98.00 (LT.) TO -L- STA. 215+98.76 (LT.)
-RAMPB2- STA. 10+00.00 (LT.) TO -RAMPB2- STA. 13+05.00 (LT.)
-L- STA. 213+00.00 (RT.) TO -L- STA. 214+96.50 (RT.)
-RAMPC2- STA. 10+00.00 (RT.) TO -RAMPC2- STA. 11+55.00 (RT.)



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1

-L- STA. 14+00.00 TO -L- STA. 32+79.00
-L- STA. 35+26.00 TO -L- STA. 252+52.71



INSET NO. 3A
FULL DEPTH PAVEMENT REPAIR

NOTES: (1) USE INSET 3A FOR FULL DEPTH PAVEMENT REPAIR -L- STA. 32+79.00 TO -L- STA. 33+29 +\- (BEGIN BRIDGE)
(2) USE INSET 3A FOR FULL DEPTH PAVEMENT REPAIR -L- STA. 34+76 +/- (END BRIDGE) TO -L- STA. 35+26.00

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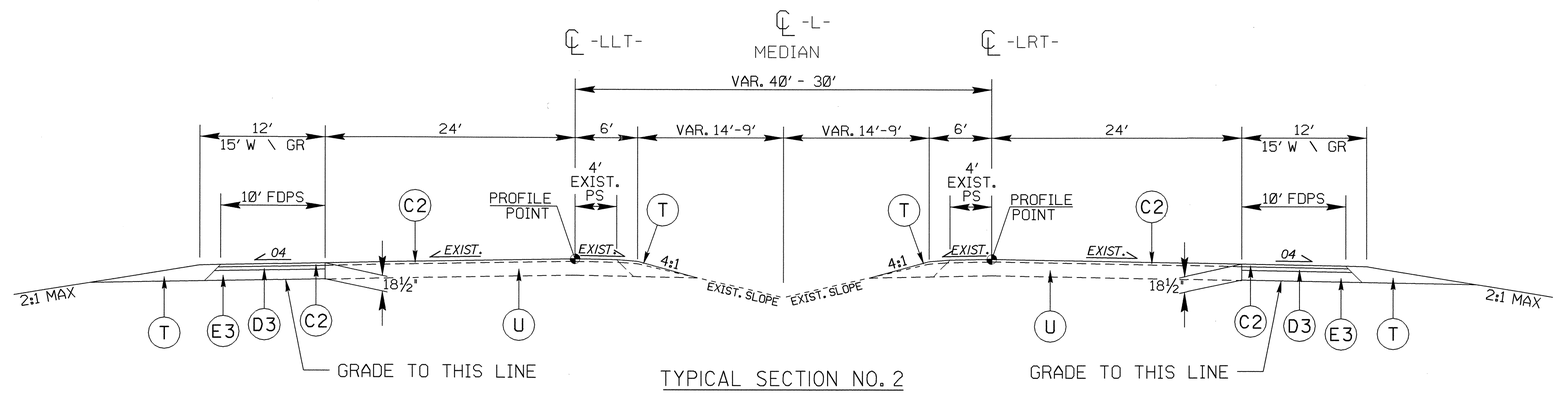
PROJECT REFERENCE NO.	SHEET NO.
I-4407	2-A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER



TYPICAL SECTION NO. 2

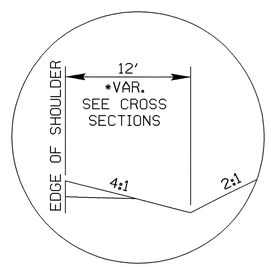
USE TYPICAL SECTION NO. 2

-L- STA. 252+52.71 TO -L- STA. 259+00.00

NOTES: (1) REMOVE EXISTING OUTSIDE PAVED SHOULDERS
(2) TRANSITION FROM TYPICAL SECTION NO.2 TO TYPICAL SECTION NO.3
-L- STA.259+00.00 TO -L- STA.262+35.00

FINAL PAVEMENT SCHEDULE	
C2	3" TYPE S9.5C
D3	4" TYPE I19.0C
E3	11½" TYPE B25.0C
R1	EXPRESSWAY GUTTER
R2	CONCRETE MEDIAN BARRIER, TYPE T KEY-IN 3"
T	EARTH MATERIAL
U	EXISTING PAVEMENT

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

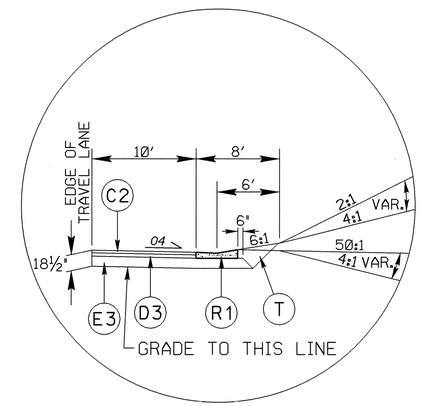


INSET NO. 3B

INSET NO. 3B
Use with Typical Section No. 1
Use with Typical Section No. 2
Use with Typical Section No. 4

USE INSET NO. 3B AT THE FOLLOWING LOCATIONS:

*-L- STA. 57+00.00 (LT.) TO -L- STA. 70+00.00 (LT.)
-L- STA. 73+00.00 (RT.) TO -L- STA. 74+00.00 (RT.)
-L- STA. 80+00.00 (RT.) TO -L- STA. 102+00.00 (RT.)
-L- STA. 81+00.00 (LT.) TO -L- STA. 82+00.00 (LT.)
-L- STA. 85+00.00 (LT.) TO -L- STA. 95+00.00 (LT.)
-L- STA. 103+00.00 (LT.) TO -L- STA. 107+00.00 (LT.)
-L- STA. 112+00.00 (LT.) TO -L- STA. 127+00.00 (LT.)
-L- STA. 136+00.00 (LT.) TO -L- STA. 146+00.00 (LT.)
-L- STA. 161+00.00 (RT.) TO -L- STA. 171+00.00 (RT.)
-L- STA. 184+00.00 (RT.) TO -L- STA. 189+00.00 (RT.)
-L- STA. 196+00.00 (RT.) TO -L- STA. 202+00.00 (RT.)
-L- STA. 222+00.00 (LT.) TO -L- STA. 225+00.00 (LT.)
-L- STA. 238+00.00 (LT.) TO -L- STA. 249+00.00 (LT.)
-L- STA. 255+00.00 (RT.) TO -L- STA. 257+50.00 (RT.)
-L1- STA. 12+50.00 (RT.) TO -L1- STA. 14+50.00 (RT.)
-L1- STA. 36+50.00 (RT.) TO -L1- STA. 41+00.00 (RT.)

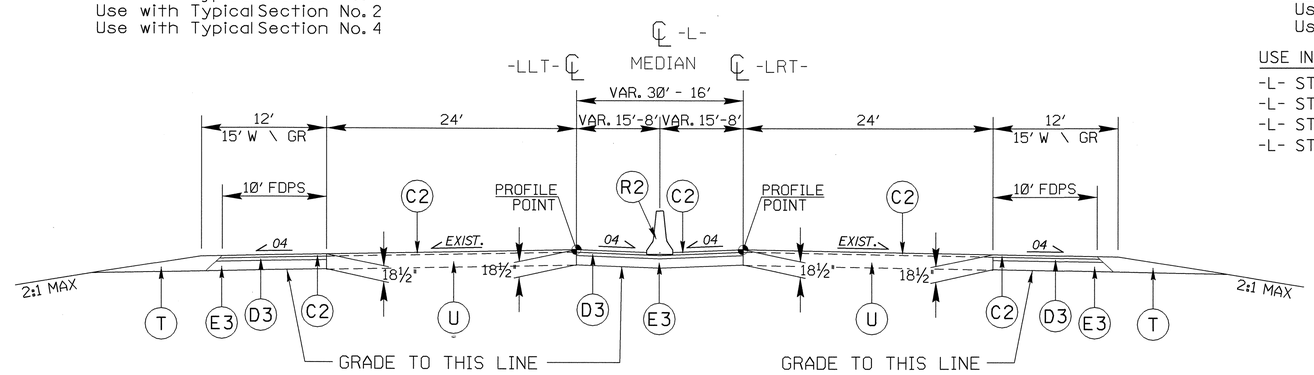


INSET NO. 4

INSET NO. 4
Use with Typical Section No. 1
Use with Typical Section No. 4

USE INSET NO. 4 AT THE FOLLOWING LOCATIONS:

-L- STA. 44+00.00 (LT.) TO -L- STA. 46+07.00 (LT.)
-L- STA. 242+00.00 (RT.) TO -L- STA. 247+30.00 (RT.)
-L- STA. 305+00.00 (LT.) TO -L- STA. 307+50.00 (LT.)
-L- STA. 305+60.00 (RT.) TO -L- STA. 315+52.00 (RT.)



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3

-L- STA. 262+35.00 TO -L- STA. 269+58.38

NOTES: (1) REMOVE EXISTING MEDIAN PAVED SHOULDERS
(2) REMOVE EXISTING OUTSIDE PAVED SHOULDERS

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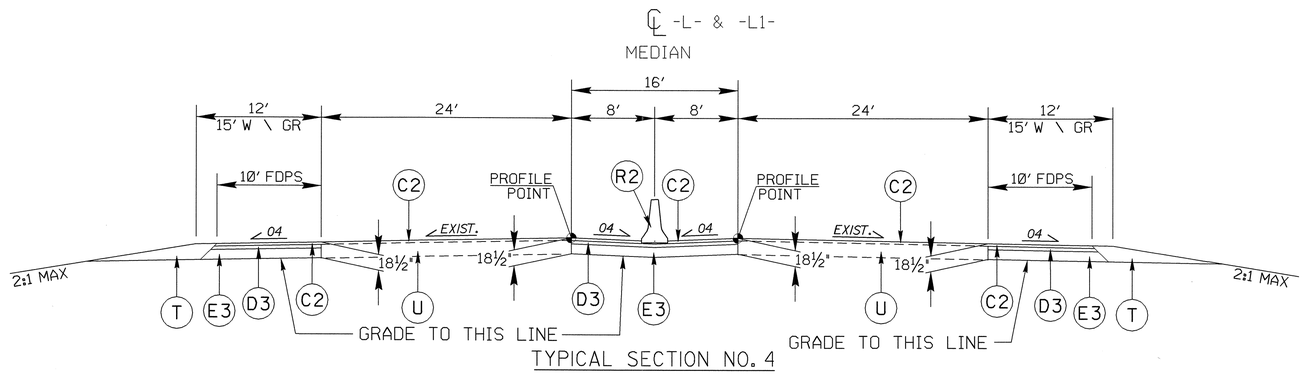
PROJECT REFERENCE NO.	SHEET NO.
I-4407	2-B
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22567 ENGINEER MICHAEL W. UTTLE 4/7/10

08/13/2010



TYPICAL SECTION NO. 4

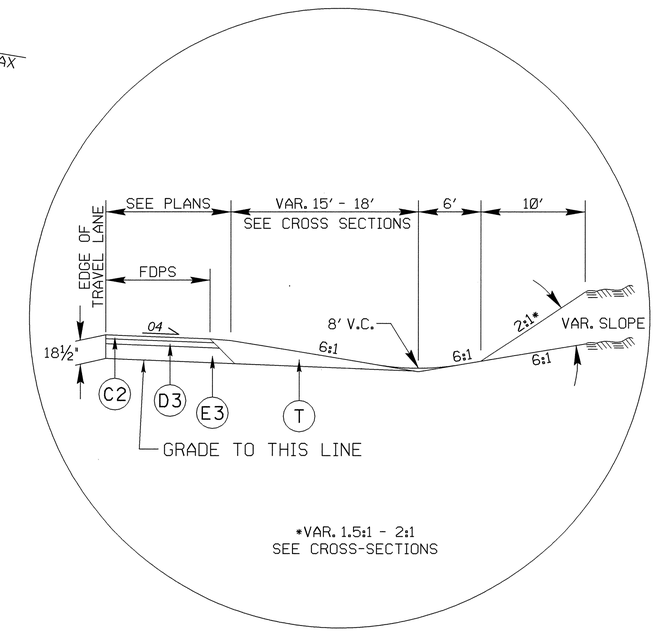
USE TYPICAL SECTION NO. 4

-L- STA. 269+58.38 TO -L- STA. 341+05.00
-L1- STA. 10+00.00 TO -L1- STA. 48+50.00

NOTES: (1) REMOVE EXISTING MEDIAN AND OUTSIDE PAVED SHOULDERS
(2) USE INSET 3A FOR FULL DEPTH PAVEMENT REPAIR -L- STA. 341+05.00 TO -L- STA. 341+55 +/- (BEGIN BRIDGE)
(3) USE INSET 3A FOR FULL DEPTH PAVEMENT REPAIR -L- STA. 343+04 +/- (END BRIDGE) TO -L- STA. 343+29.23

FINAL PAVEMENT SCHEDULE	
C2	3" TYPE S9.5C
D3	4" TYPE I19.0C
E3	11½" TYPE B25.0C
R2	CONCRETE MEDIAN BARRIER, TYPE T, KEY-IN 3"
T	EARTH MATERIAL
U	EXISTING PAVEMENT

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



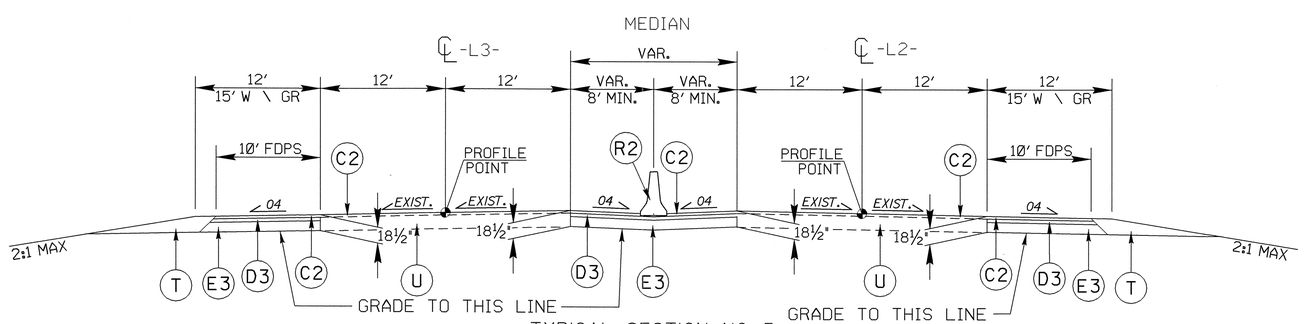
INSET NO. 5

INSET NO. 5

Use with Typical Section No. 1
Use with Typical Section No. 4
Use with Typical Section No. 5

USE INSET NO. 5 AT THE FOLLOWING LOCATIONS:

-L- STA. 17+00.00 (LT.) TO -L- STA. 21+00.00 (LT.)
-L3- STA. 393+50.00 (LT.) TO -L3- STA. 394+75.88 (LT.)
*-L1- STA. 10+00.00 (LT.) TO -L1- STA. 14+00.00 (LT.)
*-L1- STA. 41+50.00 (RT.) TO -L1- STA. 44+00.00 (RT.)
-L1- STA. 46+50.00 (RT.) TO -L1- STA. 47+50.00 (RT.)



TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5

-L2- STA. 343+55.00 TO -L2- STA. 347+40.00
-L3- STA. 343+55.00 TO -L3- STA. 347+41.42
-L2- STA. 391+29.42 TO -L2- STA. 394+60.36
-L3- STA. 391+46.00 TO -L3- STA. 394+75.88

NOTES: (1) REMOVE EXISTING MEDIAN AND OUTSIDE PAVED SHOULDERS
(2) REMOVE EXISTING CURB AND GUTTER
(3) TRANSITION FROM T.S.NO.5 TO T.S.NO.6 -L2- STA. 347+40.00 TO -L2- STA. 347+81.00
(4) TRANSITION FROM T.S.NO.5 TO T.S.NO.7 -L3- STA. 347+41.42 TO -L3- STA. 347+84.00
(5) USE INSET 3A FOR FULL DEPTH PAVEMENT REPAIR -L2- STA. 343+29.23 TO -L2- STA. 343+55.00
(6) USE INSET 3A FOR FULL DEPTH PAVEMENT REPAIR -L3- STA. 343+29.23 TO -L3- STA. 343+55.00

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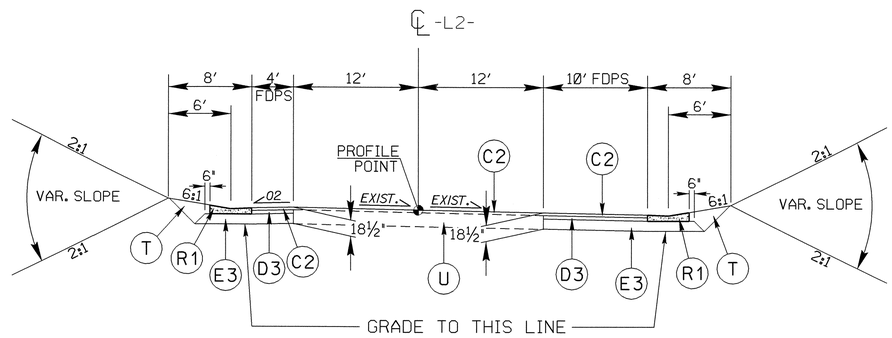
PROJECT REFERENCE NO.	SHEET NO.
I-4407	2-C
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

FINAL PAVEMENT SCHEDULE	
C2	3" TYPE S9.5C
D3	4" TYPE I19.0C
E3	11½" TYPE B25.0C
E5	VAR. TYPE B25.0C
R1	EXPRESSWAY GUTTER
R3	SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT

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

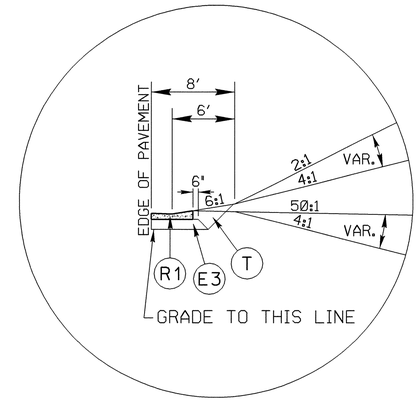


TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO. 6

-L2- STA. 347+81.00 TO -L2- STA. 391+00.00

NOTES: (1) REMOVE EXISTING PAVED SHOULDERS
(2) REMOVE EXISTING CURB AND GUTTER AND REPLACE WITH EXPRESSWAY GUTTER (SEE PLANS FOR LOCATIONS)
(3) TRANSITION FROM T.S.NO.6 TO T.S.NO.5 -L2- STA. 391+00.00 TO -L2- STA. 391+29.42



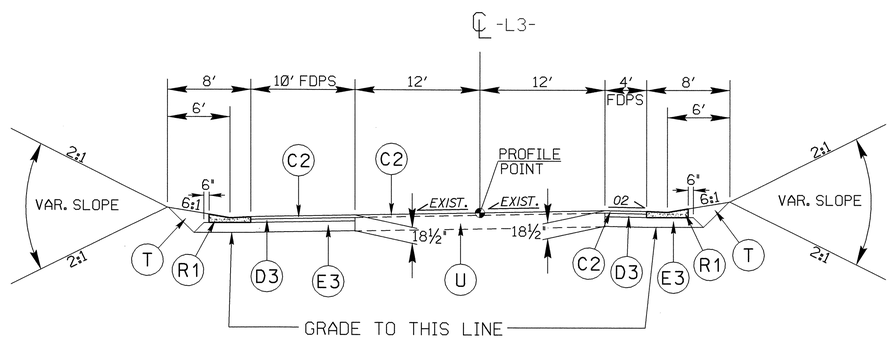
INSET NO. 6

INSET NO. 6

Use with Typical Section No. 6
Use with Typical Section No. 7

USE INSET NO. 6 AT THE FOLLOWING LOCATIONS:

-L2- STA. 364+48.00 (LT.) TO -L2- STA. 369+10.00 (LT.)
-L2- STA. 371+68.00 (LT.) TO -L2- STA. 372+50.00 (LT.)
-L3- STA. 367+46.00 (RT.) TO -L3- STA. 370+00.00 (RT.)

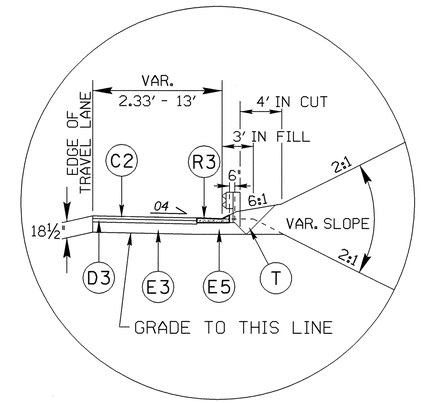


TYPICAL SECTION NO. 7

USE TYPICAL SECTION NO. 7

-L3- STA. 347+84.00 TO -L3- STA. 391+16.00

NOTES: (1) REMOVE EXISTING PAVED SHOULDERS
(2) REMOVE EXISTING CURB AND GUTTER AND REPLACE WITH EXPRESSWAY GUTTER (SEE PLANS FOR LOCATIONS)
(3) TRANSITION FROM T.S.NO.7 TO T.S.NO.5 -L3- STA. 391+16.00 TO -L3- STA. 391+46.00



INSET NO. 7

INSET NO. 7

Use with Typical Section No. 4
Use with Typical Section No. 6
Use with Typical Section No. 7

USE INSET NO. 7 AT THE FOLLOWING LOCATIONS:

-L- STA. 292+19.00 (LT.) TO -L- STA. 293+19.00 (LT.)
-1713RAMPA- STA. 13+50.00 (RT.) TO -L- STA. 304+70.00 (LT.)
-1713RAMPD- STA. 12+34.00 (LT.) TO -L- STA. 305+50.00 (RT.)
-L- STA. 315+92.00 (RT.) TO -L- STA. 325+70.00 (RT.)
-L2- STA. 347+81.00 (LT.) TO -L2- STA. 351+60.00 (LT.)
-RAMPC3- STA. 11+75.00 (LT.) TO -RAMPC3- STA. 12+81.25 (LT.)
-L2- STA. 361+20.75 (RT.) TO -L2- STA. 363+52.00 (RT.)
-L2- STA. 361+22.75 (LT.) TO -L2- STA. 363+54.00 (LT.)
-L2- STA. 368+57.75 (RT.) TO -L2- STA. 370+89.00 (RT.)
-L2- STA. 368+93.75 (LT.) TO -L2- STA. 370+50.00 (LT.)
-L2- STA. 386+85.00 (LT.) TO -L2- STA. 391+00.00 (LT.)
-L3- STA. 347+84.00 (RT.) TO -L3- STA. 350+73.73 (RT.)
-RAMPB3- STA. 10+00.00 (RT.) TO -RAMPB3- STA. 15+70.00 (RT.)
-L3- STA. 366+06.00 (RT.) TO -L3- STA. 368+37.25 (RT.)
-L3- STA. 366+48.00 (LT.) TO -L3- STA. 368+79.25 (LT.)
-L3- STA. 370+84.00 (LT.) TO -L3- STA. 373+15.25 (LT.)
-L3- STA. 371+35.00 (RT.) TO -L3- STA. 373+66.25 (RT.)
-L3- STA. 387+07.00 (RT.) TO -L3- STA. 391+16.00 (RT.)

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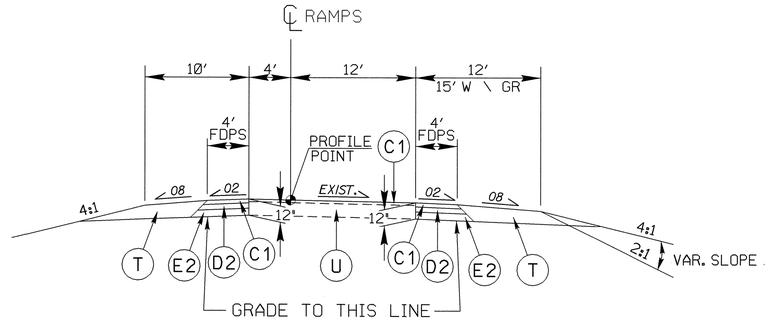
PROJECT REFERENCE NO.	SHEET NO.
I-4407	2-D
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22567 ENGINEER MICHAEL W. LITTLE 4/7/10

04/13/2010 SEAL 031434 ENGINEER VADIM G. KUPCHO

FINAL PAVEMENT SCHEDULE	
C1	3" TYPE S9.5B
D1	2½" TYPE I19.0B
D2	4" TYPE I19.0B
E1	4" TYPE B25.0B
E2	5" TYPE B25.0B
E4	VAR. TYPE B25.0B
R1	EXPRESSWAY GUTTER
R3	SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT

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

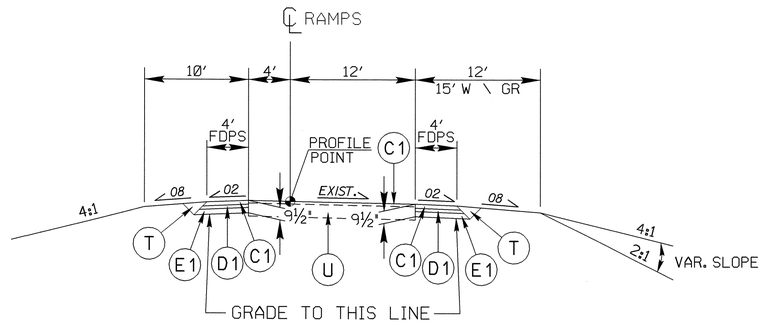


TYPICAL SECTION NO. 8

USE TYPICAL SECTION NO. 8

-RAMPA1- STA. 13+14.48 TO -RAMPA1- STA. 19+81.40
-RAMPD1- STA. 13+94.35 TO -RAMPD1- STA. 20+14.15 (REVERSE)

NOTE: (1) REMOVE EXISTING PAVED SHOULDERS

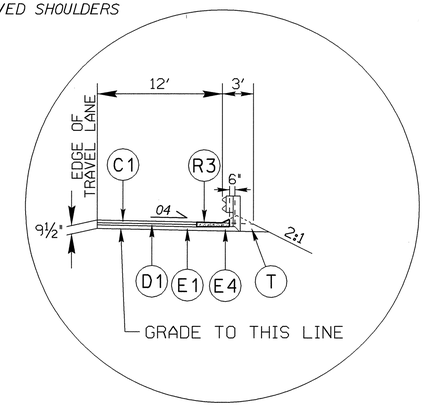


TYPICAL SECTION NO. 9

USE TYPICAL SECTION NO. 9

-RAMPB1- STA. 14+13.23 TO -RAMPB1- STA. 19+74.29 (REVERSE)
-RAMPC1- STA. 13+67.35 TO -RAMPC1- STA. 20+86.14
-RAMPB2- STA. 13+94.08 TO -RAMPB2- STA. 20+36.40 (REVERSE)
-RAMPC2- STA. 14+71.94 TO -RAMPC2- STA. 21+96.68
-RAMPA5- STA. 13+40.71 TO -RAMPA5- STA. 22+21.29
-RAMPB5- STA. 14+75.47 TO -RAMPB5- STA. 24+33.79 (REVERSE)
-RAMPC5- STA. 15+30.14 TO -RAMPC5- STA. 23+26.18
-RAMPD5- STA. 14+08.22 TO -RAMPD5- STA. 21+86.36 (REVERSE)

NOTE: (1) REMOVE EXISTING PAVED SHOULDERS



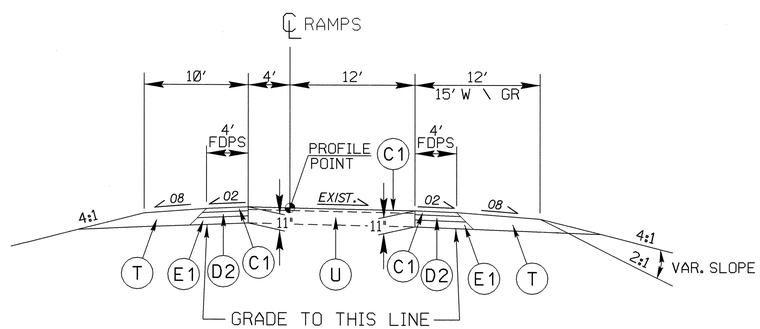
INSET NO. 8

INSET NO. 8

Use with Typical Section No. 9

USE INSET NO. 8 AT THE FOLLOWING LOCATIONS:

-RAMPA5- STA. 17+00.00 (RT.) TO -RAMPA5- STA. 21+25.00 (RT.)
-RAMPC5- STA. 16+00.00 (RT.) TO -RAMPC5- STA. 22+00.00 (RT.)

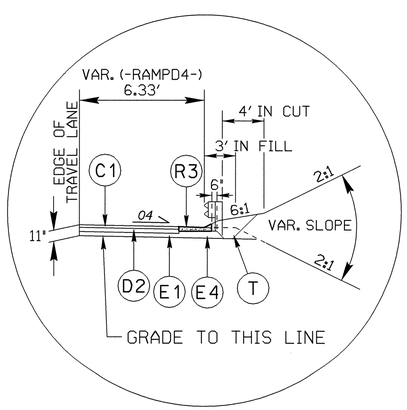


TYPICAL SECTION NO. 10

USE TYPICAL SECTION NO. 10

-RAMPA2- STA. 14+12.50 TO -RAMPA2- STA. 22+33.55
-RAMPD2- STA. 14+00.94 TO -RAMPD2- STA. 22+74.17 (REVERSE)

NOTE: (1) REMOVE EXISTING PAVED SHOULDERS



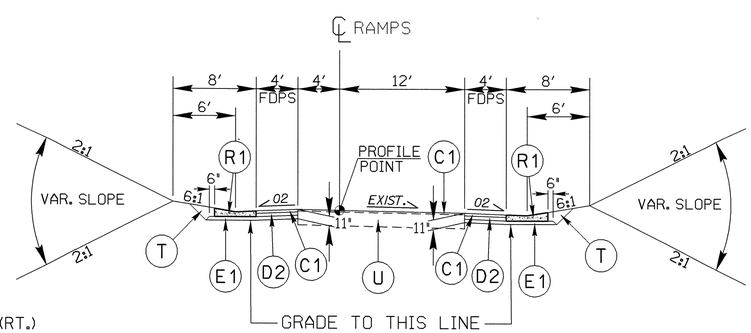
INSET NO. 9

INSET NO. 9

Use with Typical Section No. 11

USE INSET NO. 9 AT THE FOLLOWING LOCATIONS:

-RAMPB3- STA. 13+83.11 (RT.) TO -RAMPB3- STA. 15+70.00 (RT.)
-RAMPD4- STA. 16+67.75 (RT.) TO -RAMPD4- STA. 17+74.00 (RT.)
-RAMPA4- STA. 15+78.00 (LT.) TO -RAMPA4- STA. 16+71.75 (LT.)



TYPICAL SECTION NO. 11

USE TYPICAL SECTION NO. 11

-RAMPB3- STA. 13+83.11 TO -RAMPB3- STA. 18+80.00
-RAMPC3- STA. 15+09.55 TO -RAMPC3- STA. 16+70.00 (REVERSE)
-RAMPA4- STA. 15+26.73 TO -RAMPA4- STA. 19+27.00 (REVERSE)
-RAMPD4- STA. 14+52.20 TO -RAMPD4- STA. 19+48.00

NOTE: (1) REMOVE EXISTING PAVED SHOULDERS

11-MAR-2010 08:20
r:\roadway\proj\i4407_rdy_typ.dgn
$$$$USERNAME$$$$

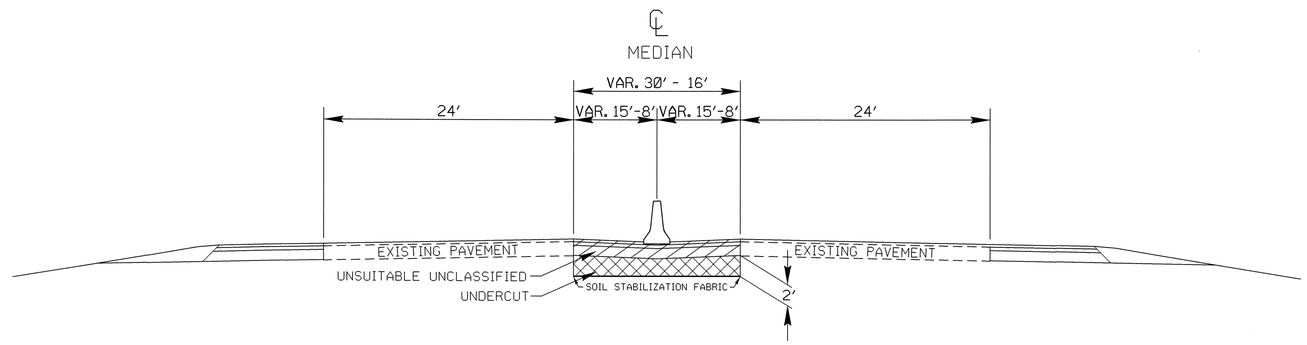
PROJECT REFERENCE NO.	SHEET NO.
I-4407	2-E

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE

4/7/10

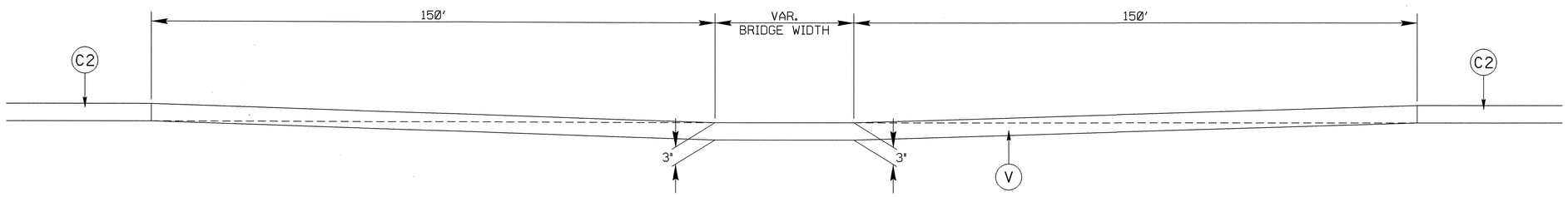
4/13/2010



DETAIL NO. 1 FOR SHALLOW UNDERCUT

USE DETAIL NO. 1

-L- STA. 262+35.00 TO -L- STA. 343+29.23
-L2- STA. 343+29.23 TO -L2- STA. 346+50.00
-L1- STA. 10+00.00 TO -L1- STA. 48+50.00



DETAIL NO. 2 FOR MILLING UNDER BRIDGES

USE DETAIL NO. 2

-L- STA. 76+80 TO -L- STA. 80+28
-L- STA. 146+17 TO -L- STA. 150+48
-L- STA. 224+64 TO -L- STA. 228+04
-L- STA. 283+09 TO -L- STA. 287+15
-L- STA. 290+03 TO -L- STA. 293+71
-L2- STA. 362+09 TO -L2- STA. 365+89
-L2- STA. 369+22 TO -L2- STA. 373+28
-L3- STA. 363+64 TO -L3- STA. 367+70
-L3- STA. 368+30 TO -L3- STA. 372+50
-L1- STA. 26+60 TO -L1- STA. 30+50

NOTE: MILL AT A RATE OF 1" PER 50'

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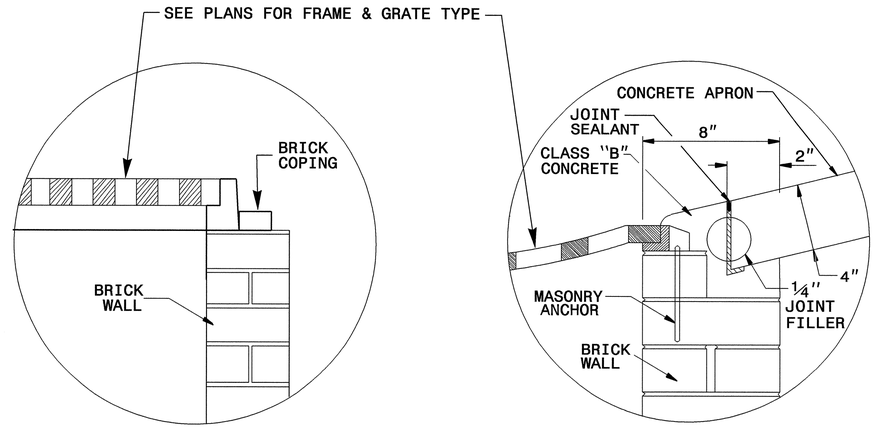
PROJECT REFERENCE NO.	SHEET NO.
I-4407	2-F



GRATE PLACEMENT DETAIL

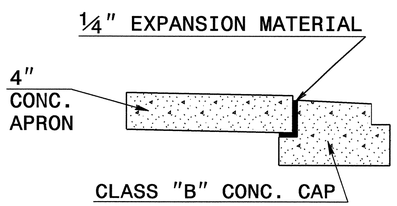
FOR DROP INLETS

GRATE PLACEMENT DETAIL

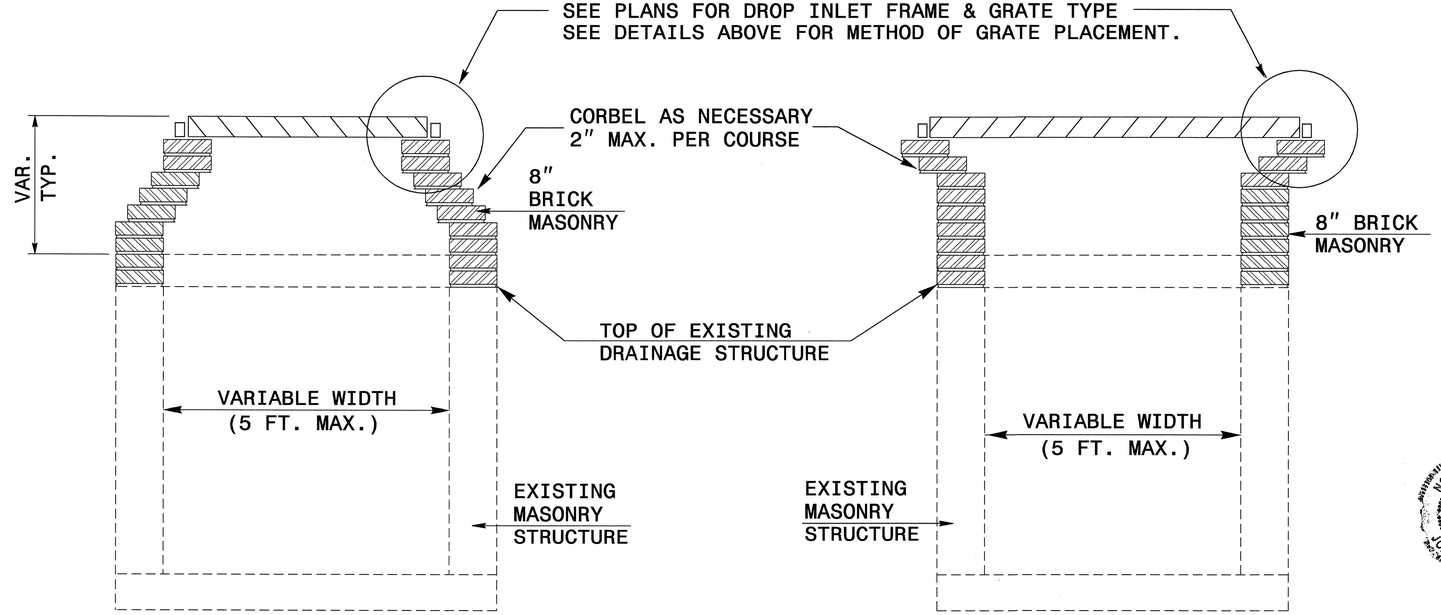
FOR MEDIAN DROP INLETS

GENERAL NOTES:

- CONSTRUCT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.
- USE CLASS B CONCRETE.
- THE DIMENSIONS FOR THE EXISTING BOXES ARE APPROXIMATE AND MAY VARY SLIGHTLY.
- JUMBO CONCRETE BRICK WILL BE PERMITTED. 4" CONCRETE BRICK OR 8" SOLID CONCRETE BLOCK ARE REQUIRED FOR DRAINAGE STRUCTURE.
- INCLUDE 18" CONCRETE APRON IN UNIT PRICE BID PER EACH, CONVERT EXISTING CATCH BASIN TO DROP INLET.
- SPECIAL DESIGN IS REQUIRED FOR USE UNDER PAVEMENT.
- CONFIRM DIMENSIONS ON EACH INDIVIDUAL FRAME & GRATE PROPOSAL.
- SEE STD. DRAWING 840.25 FOR MASONRY ANCHORAGE.



EXPANSION JOINT DETAIL



TYPICAL SECTION

TYPICAL SECTION

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER
JOHN S. HOWERTON
4/12/10

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

DETAIL TO CONVERT EXISTING CATCH BASIN OR JUNCTION BOX TO DROP INLET

ORIGINAL BY:	T.S.S.	DATE:	NOV.1997
MODIFIED BY:	T.S.S.	DATE:	FEB.2000
CHECKED BY:	[signature]	DATE:	2/19/10
FILE SPEC.:	DSD4:usr/details/stand/cbtodi02.dgn		

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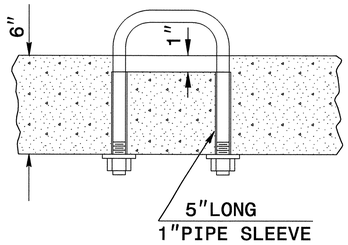
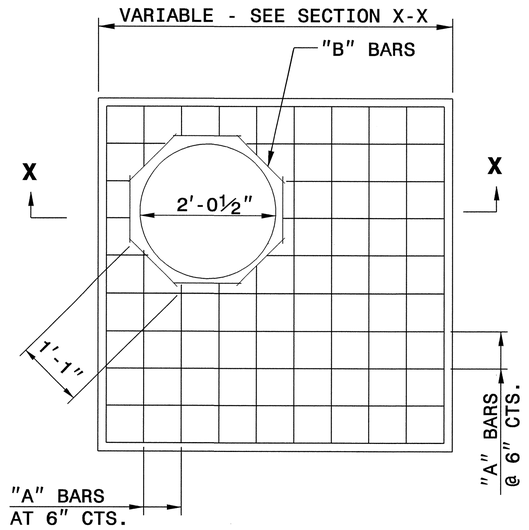
jhowerton AT PS23750I

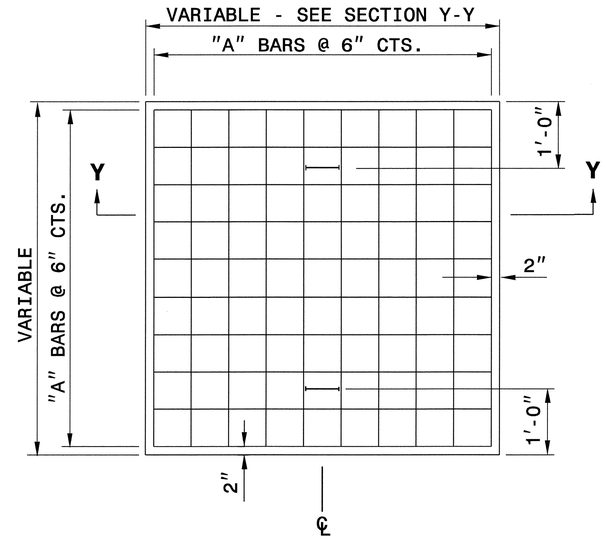
PROJECT REFERENCE NO.	SHEET NO.
I-4407	2-G



PARTIAL SECTION



PLAN



PLAN

GENERAL NOTES:

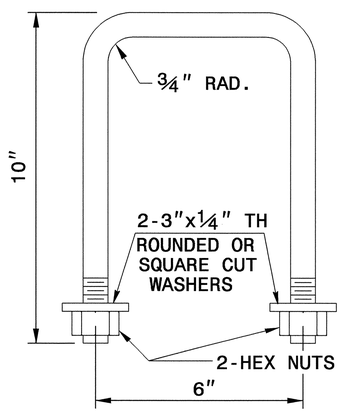
CONSTRUCT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.

FIELD VERIFY THE DIMENSIONS FOR THE EXISTING BOXES

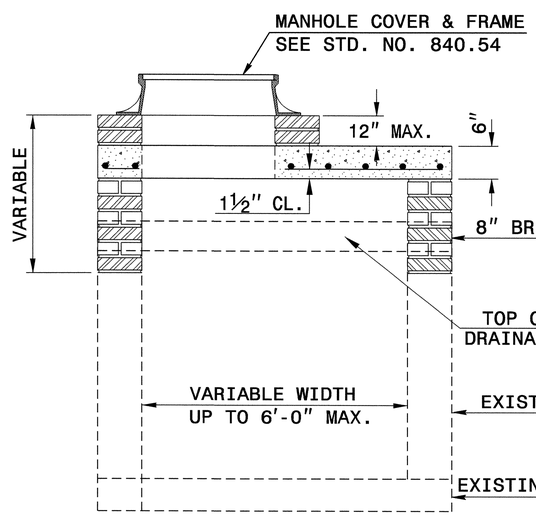
DETAIL INTENDED FOR NON-TRAFFIC BEARING DRAINAGE STRUCTURES.

BILL OF MATERIALS				
REINFORCING STEEL				
CODE	SIZE	QTY.	LENGTH	REINF. STEEL LBS.
A	#4	20	4'-6"	60.12
B	#4	8	1'-1"	5.79
TOTAL				65.91 *
MASONRY				CU YDS
TOP SLAB CONCRETE CLASS "B"				.433 *
BRICK MASONRY PER FT HT (MIN)				.4111

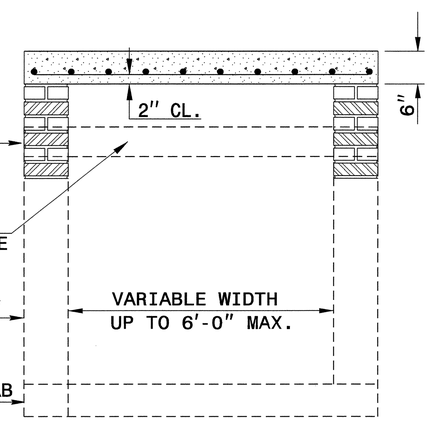
★ NOTE:
QUANTITIES BASED ON 3'-6" X 3'-6" DRAINAGE STRUCTURE. ADJUST QUANTITIES FOR LARGER STRUCTURES AND MANHOLE CONSTRUCTION.



DETAIL OF HANDLE



SECTION X-X



SECTION Y-Y

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER
4/12/10

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

DETAIL TO CONVERT EXISTING DROP INLET OR CATCH BASIN TO JUNCTION BOX (MANHOLE OPTIONAL)

ORIGINAL BY: T.S.S. DATE: NOV.1997
MODIFIED BY: E.E.W. DATE: 8-28-02
CHECKED BY: DATE: 2/19/10
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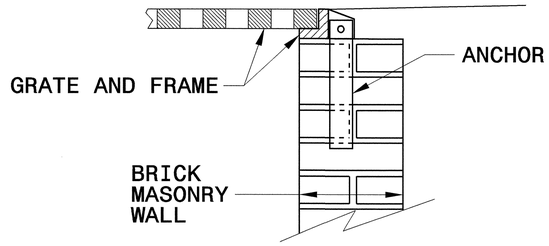
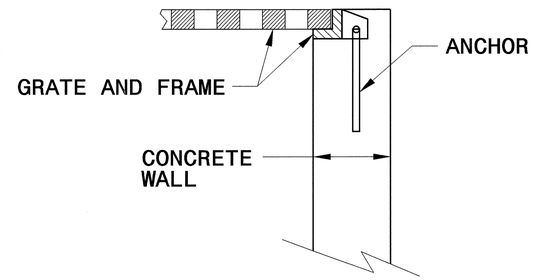
jhoverton AT PS23750I

PROJECT REFERENCE NO.	SHEET NO.
I-4407	2-H

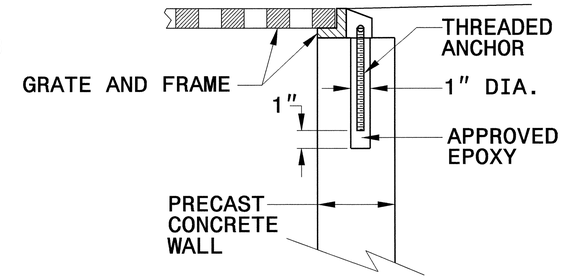
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.



BRICK MASONRY CONSTRUCTION



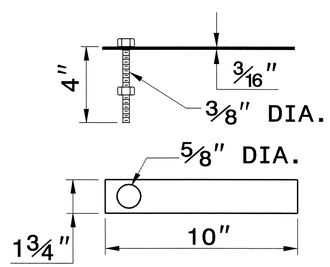
CONCRETE CONSTRUCTION



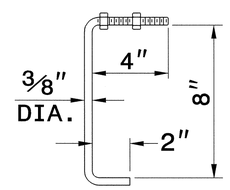
PRECAST CONCRETE CONSTRUCTION

DETAIL SHOWING ANCHORAGE OF FRAME FOR GRATED DROP INLET

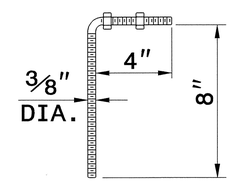
NOTE:
CONSTRUCT GRATED DROP INLET TO COINCIDE WITH NORMAL OR SUPERELEVATED SHOULDER OR PAVEMENT SLOPE.



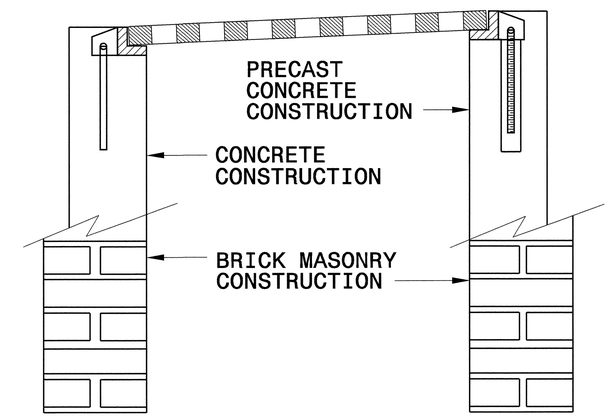
MASONRY ANCHOR
3/8" DIA. BOLT WITH PLATE



CONCRETE ANCHOR
3/8" DIA. BENT BAR



PRECAST CONCRETE ANCHOR
3/8" DIA. BENT BAR



FRAME AND GRATE INSTALLATION FOR NORMAL CROWN AND SUPERELEVATED SECTIONS

ENGLISH DETAIL DRAWING FOR
ANCHORAGE FOR FRAMES
BRICK/CONCRETE/PRECAST CONCRETE

SHEET 1 OF 1
840D25

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

ENGLISH DETAIL DRAWING FOR
ANCHORAGE FOR FRAMES
BRICK/CONCRETE/PRECAST CONCRETE

SHEET 1 OF 1
840D25

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HONEYCUTT
4/12/10

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

SEE PLATE FOR TITLE

ORIGINAL BY: 2006 STD 840.25 DATE: 07/18/06
MODIFIED BY: E.E. WARD DATE: 9/25/06
CHECKED BY: DATE:
FILE SPEC.:

06-JAN-2010 08:56
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30-JUL-2009 08:48
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jhowerton AT PS23750I

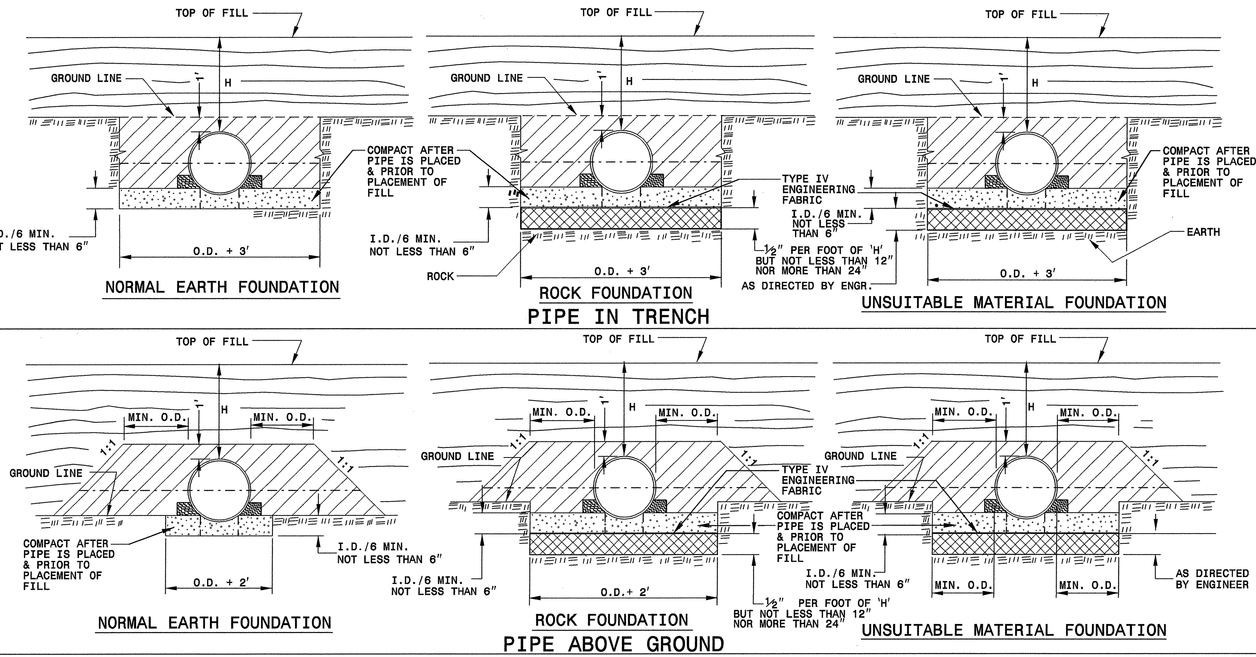
5/14/99

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

7-06

ENGLISH DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION

FLEXIBLE PIPE



GENERAL NOTES:

I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.

O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.

H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.

LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

SPRINGLINE OF PIPE

SELECT BACKFILL MATERIAL CLASS III OR CLASS II, TYPE 1 ABOVE AND BELOW SPRINGLINE.

APPROVED SUITABLE LOCAL MATERIAL.

UNDISTURBED EARTH MATERIAL

SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH ENGINEERING FABRIC AS DIRECTED BY THE ENGINEER.

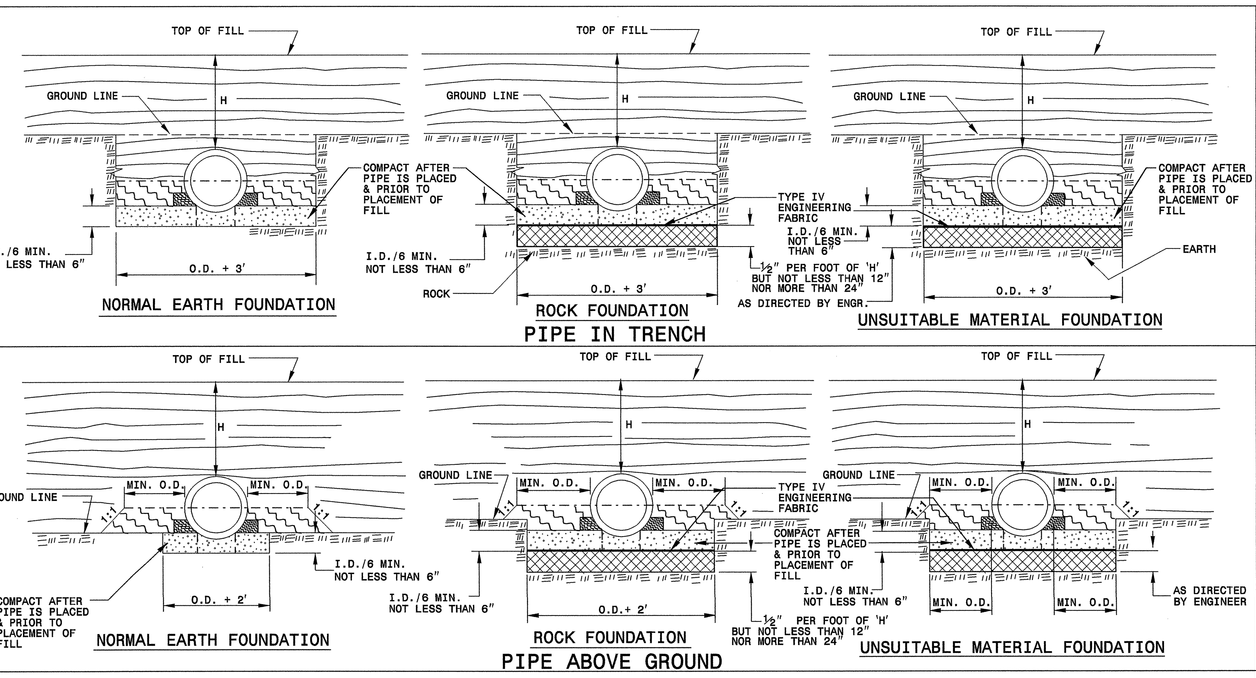
SHEET 1 OF 3
300D01

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

7-06

ENGLISH DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION

RIGID PIPE



GENERAL NOTES:

I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.

O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.

H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.

LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

SPRINGLINE OF PIPE

SELECT BACKFILL MATERIAL CLASS III OR CLASS II, BELOW SPRINGLINE.

APPROVED SUITABLE LOCAL MATERIAL ABOVE SPRINGLINE.

UNDISTURBED EARTH MATERIAL

SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH ENGINEERING FABRIC AS DIRECTED BY THE ENGINEER.

SHEET 2 OF 3
300D01

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

SEE PLATE FOR TITLE

ORIGINAL BY: KKempf
MODIFIED BY: DATE: 5-15-09
CHECKED BY: DATE: 7/8/09
FILE SPEC: e:\ericward\stds\stdscode\a18/30001/0300d01.dgn

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022566 JOHN L. HOWERTON
4/9/10

PROJECT REFERENCE NO. 1-4407
SHEET NO. 2-1

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

7-06

ENGLISH DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION

FILL HEIGHT TABLES

SHEET 3 OF 3
300D01

FLEXIBLE PIPE

Round Corrugated Steel Pipe
2 2/3 x ½ corrugation **

Diameter (inches)	Minimum cover (inches)	Maximum Height of Cover (feet) (Ga) 16	14	12	10	8
12	12	204	256			
15	12	162	204			
18	12	135	169	239		
21	12	115	145	204		
24	12	100	126	178		
30	12	79	100	142		
36	12	65	83	117	152	
42	12	55	70	100	130	160
48	12	48	61	87	113	139
54	12		54	77	100	123
60	12			69	90	111
66	12				81	100
72	12				74	91
78	12					81
84	12					69

Round Corrugated Aluminum Pipe
2 2/3 x ½ corrugation **

Diameter (inches)	Minimum cover (inches)	Maximum Height of Cover (feet) (Ga) 16	14	12	10	8
12	12	123	155	218	281	344
15	12	98	123	174	224	275
18	12	81	102	144	187	228
21	12	69	87	123	160	195
24	12	60	76	108	139	171
27	12		67	95	123	151
30	12		60	85	111	136
36	12		50	71	92	113
42	12			60	78	96
48	12			52	68	84
54	12			46	50	74
60	12				50	62
66	12					51
72	12					41

** FOR DIFFERENT CORRUGATIONS AND ARCH PIPES REFER TO ROADWAY DESIGN MANUAL OR MANUFACTURERS SPECIFICATION.

REFER TO THE FOLLOWING FOR PIPE SPECIFICATIONS

CSP - AASHTO M36
CAAP - AASHTO M196
HDPE - AASHTO M294
PVC - ASTM F949 or AASHTO M304

NOTES: FILL HEIGHTS SHOWN WERE CALCULATED USING AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

1' MINIMUM COVER FOR ALL SIDE DRAIN PIPE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS

HDPE - * (Minimum fill) 2' for pipe diameters ≥ 12" and ≤ 60"
* (Maximum fill) 20' for pipe diameters ≤ 24"
17' for pipe diameters ≥ 30" and ≤ 60"

PVC - * (Minimum fill) 2' for pipe diameters ≥ 12" and ≤ 36"
* (Maximum fill) 30' for pipe diameters ≥ 12" and ≤ 36"

* FILL HEIGHT IS MEASURED FROM THE TOP OF THE PIPE TO THE BOTTOM OF THE PAVEMENT STRUCTURE

RIGID PIPE

RCP - * (Minimum fill) 1' for Class IV & CLASS V
2' for Class III & Class II

* (Maximum fill) 10' - Class II pipe
20' - Class III pipe
30' - Class IV pipe
40' - Class V pipe

(For fills > 40' & < 80' use LRFD Direct Design Method)

* FILL HEIGHT IS MEASURED FROM THE TOP OF THE PIPE TO THE BOTTOM OF THE PAVEMENT STRUCTURE

REFER TO THE FOLLOWING FOR PIPE SPECIFICATIONS

RCP - AASHTO M170

NOTES: FILL HEIGHTS SHOWN WERE CALCULATED USING AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

1' MINIMUM COVER FOR ALL SIDE DRAIN PIPE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS

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

7-06

ENGLISH DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION

FILL HEIGHT TABLES

SHEET 3 OF 3
300D01

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

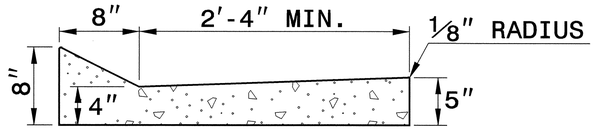
SEE PLATE FOR TITLE

ORIGINAL BY: Kkempf DATE: 5-15-09
MODIFIED BY: DATE:
CHECKED BY: DATE: 7/30/10
FILE SPEC: s:\contracts\specs\stds\standards\30001\0300d01.dgn

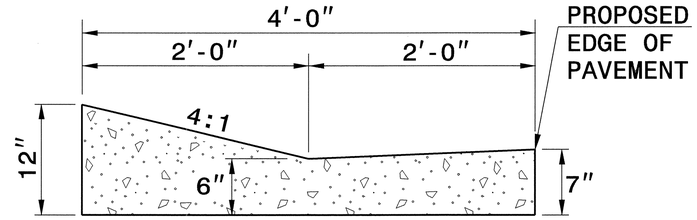
NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER
JOHN C. HOWERTON
7/22/10

PROJECT REFERENCE NO. I-4407
SHEET NO. 2-J

PROJECT REFERENCE NO.	SHEET NO.
I-4407	2-K



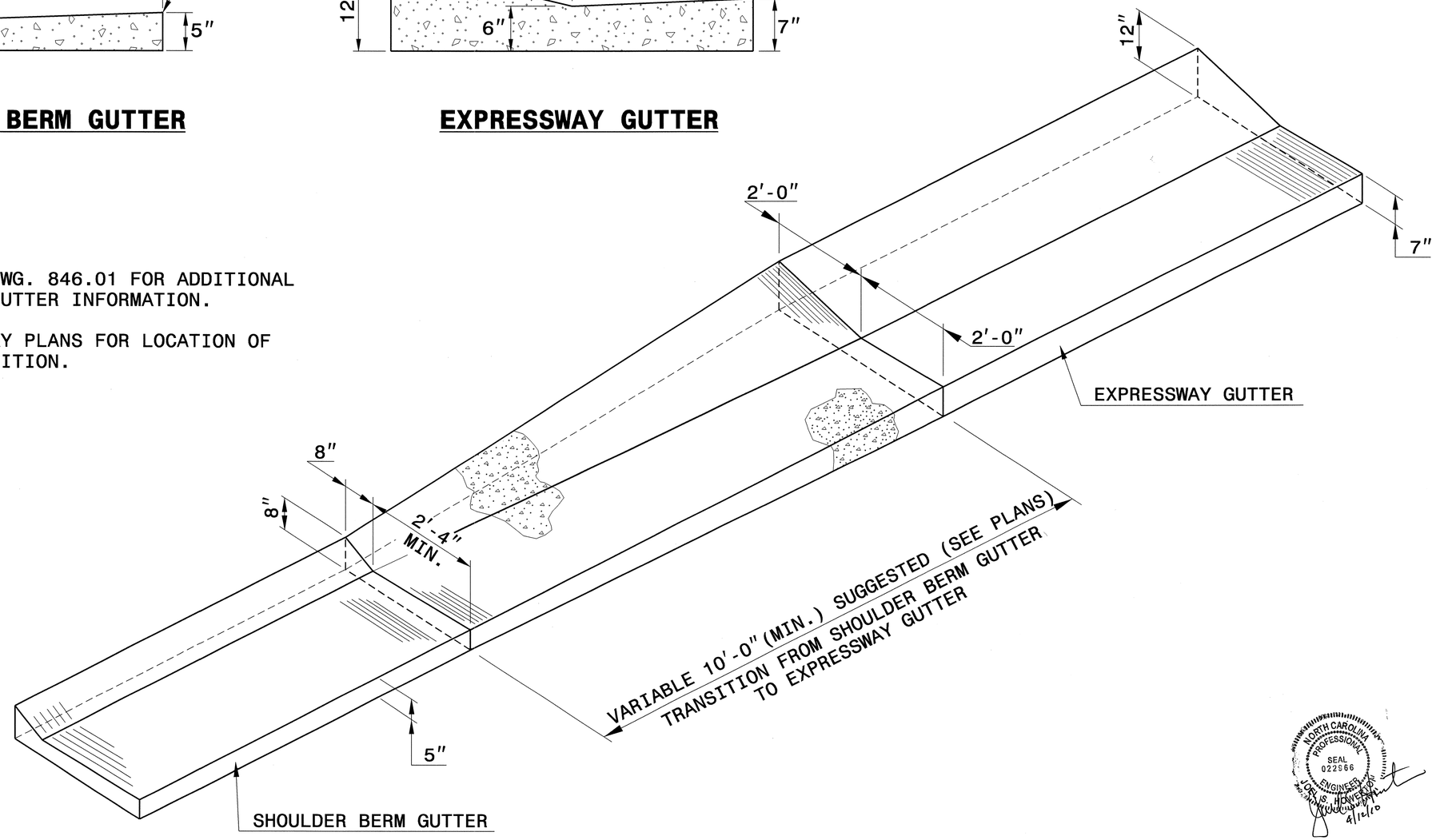
SHOULDER BERM GUTTER



EXPRESSWAY GUTTER

NOTE: SEE STD. DWG. 846.01 FOR ADDITIONAL CURB AND GUTTER INFORMATION.

SEE ROADWAY PLANS FOR LOCATION OF CURB TRANSITION.



ISOMETRIC VIEW OF TRANSITION

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOELS. HOWERTON
4/12/10

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

DETAIL OF SHOULDER BERM GUTTER TO EXPRESSWAY GUTTER TRANSITION SECTION

ORIGINAL BY: T.S.Spell DATE: 8-13-02
MODIFIED BY: DATE:
CHECKED BY: DATE: 2/4/10
FILE SPEC.: w:\usr\details\stand\cgtransit.dgn

5/14/99

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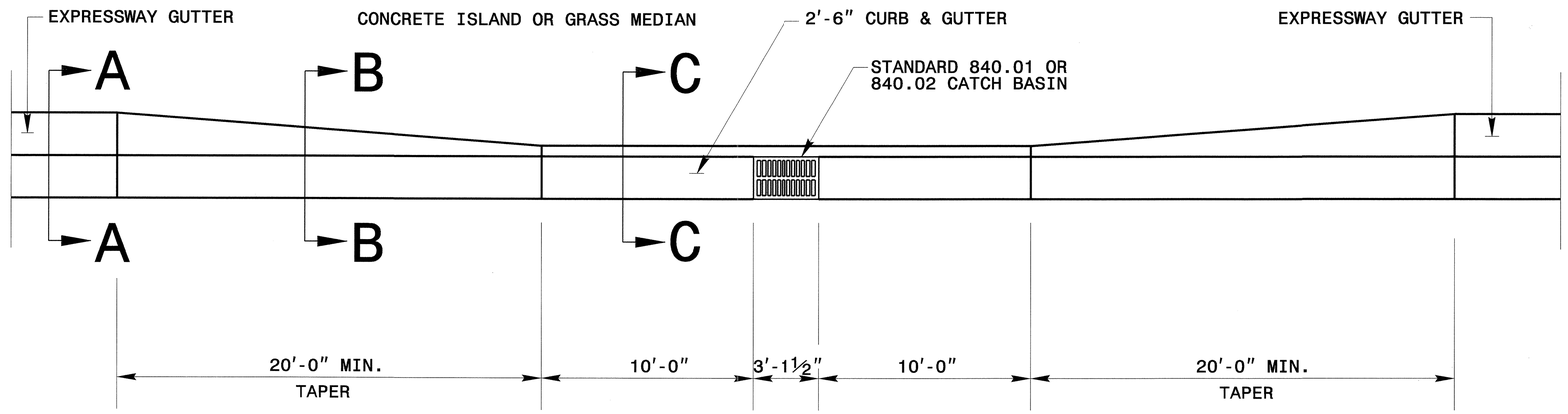
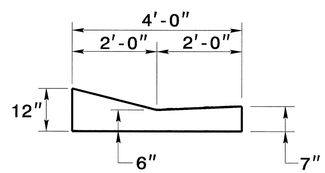
jhowerton AT PS23750I

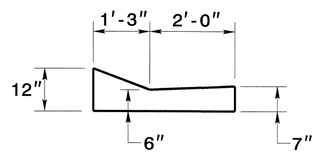
PROJECT REFERENCE NO.	SHEET NO.
I-4407	2-L



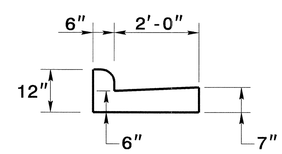
PLAN VIEW OF TRANSITION
EXPRESSWAY GUTTER TO 2'-6" CURB & GUTTER



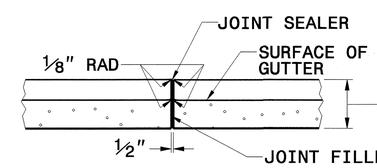
SECTION A-A
EXPRESSWAY GUTTER



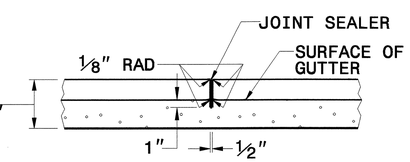
SECTION B-B
TRANSITION GUTTER



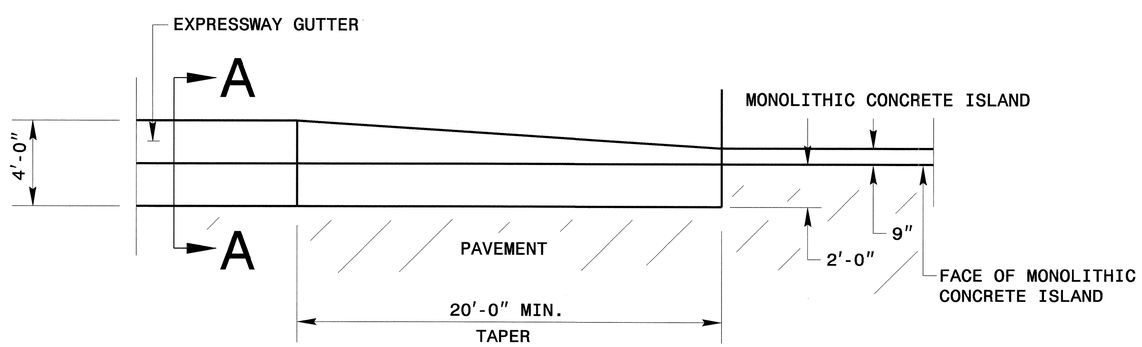
SECTION C-C
2'-6" CURB & GUTTER



EXPANSION JOINT



CONTRACTION JOINT



PLAN VIEW OF TRANSITION
EXPRESSWAY GUTTER TO MONOLITHIC CONCRETE ISLAND

SEE STANDARD NO. 852.01, 852.05
AND 846.01 SHEET 3 OF 3

NOTES:
- IN THE TRANSITION FROM 4'-0" CONCRETE EXPRESSWAY GUTTER TO 2'-6" CURB & GUTTER, PLACE ½" EXPANSION JOINTS AT 25' INTERVALS.
- PLACE GROOVE JOINTS 1" DEEP AT 12'-6" INTERVALS BETWEEN EXPANSION JOINTS.
- FILL AND SEAL THE TOP ½" OF THE EXPANSION JOINTS AND 1" OF CONTRACTION JOINTS WITH APPROVED JOINT SEALING COMPOUND.

NORTH CAROLINA PROFESSIONAL SEAL 022566 ENGINEER
4/12/10

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

TRANSITION DETAIL FOR EXPRESSWAY GUTTER

ORIGINAL BY: _____ DATE: _____
MODIFIED BY: rnbritt DATE: 11-02-05
CHECKED BY: _____ DATE: 2/8/10
FILE SPEC.: details/nbritt/english/hydro/u3615aexpresswayto2_6c&g.dgn

NBRITT.ENGLISH,U3615A EXPRESSWAY TO 2_6 C&G.DGN

08-FEB-2010 14:04
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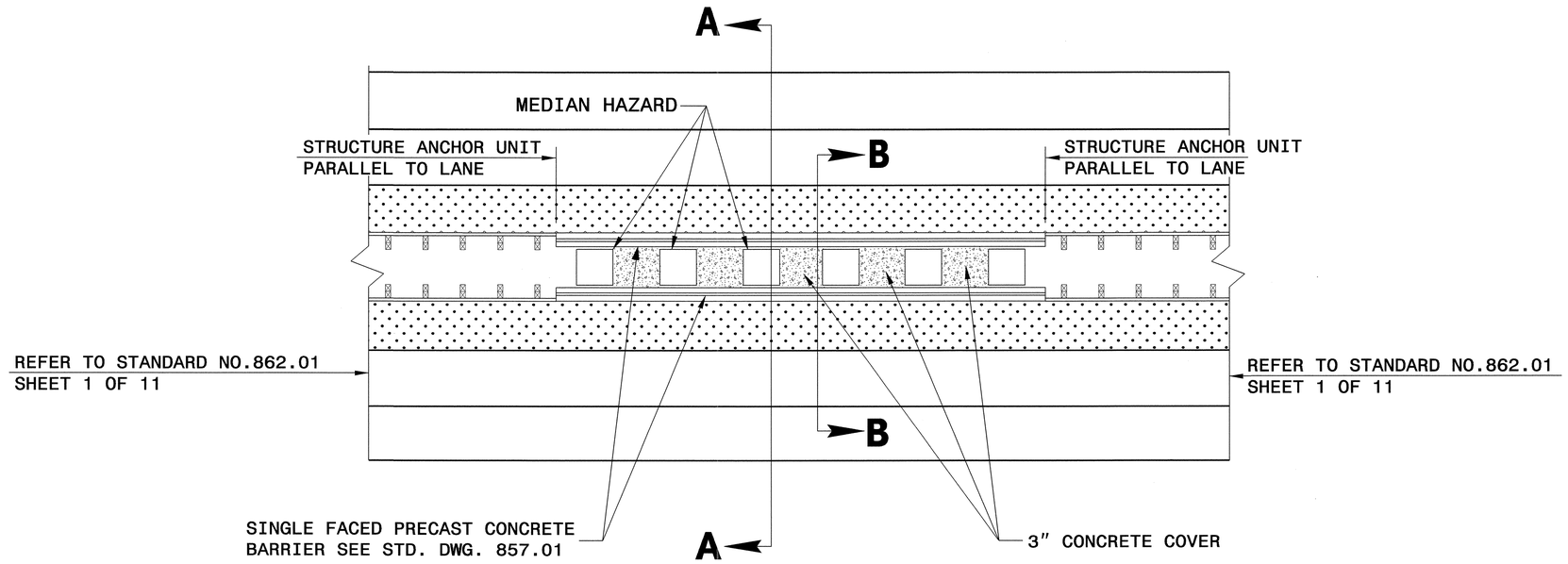
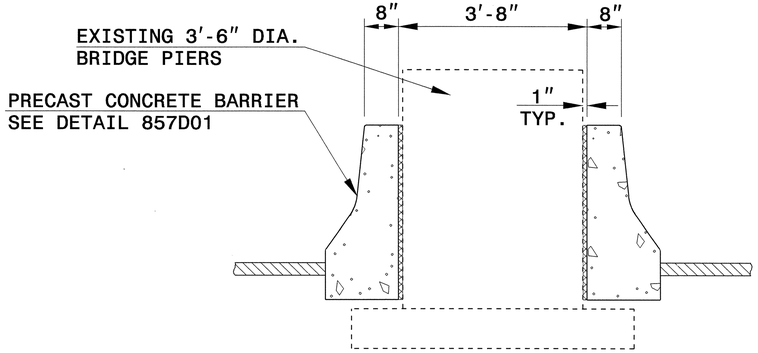
jhowerton AT PS2375\01

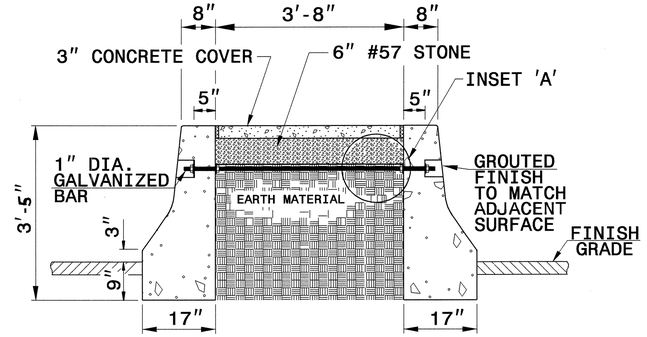
5/14/99

PROJECT REFERENCE NO.	SHEET NO.
I-4407	2-M

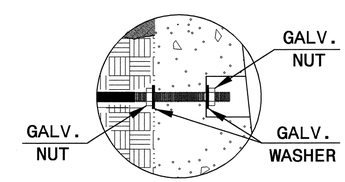




SECTION A-A



SECTION B-B



INSET 'A'

GENERAL NOTES:

CONCRETE BARRIER TO BE CONSTRUCTED OF CLASS 'AA' CONCRETE. (SEE SPECIFICATIONS SECTION 854).

EXPANSION AND CONTRACTION JOINTS SHALL BE CONSTRUCTED AS SHOWN IN STANDARD DRAWING 854.01 SHEET 2.

EXPANSION JOINTS SHALL BE SEALED WITH JOINT FILLER. (SEE SECTION 1028 OF THE SPECIFICATIONS).

ALTERNATIVE METHODS FOR STEEL FABRICATION PLACEMENT SHALL BE SUBMITTED FOR REVIEW.

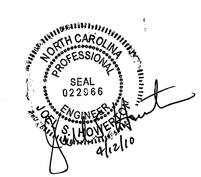
SEE STANDARD DRAWING 854.01 SHEET 3 FOR STEEL LAYOUT OF BARRIERS.

*THE 2" DIMENSION FROM FINSIH GRADE TO THE BASE IS A MINIMUM DIMENSION.

INSET FIRST 1" DIA. GALVANIZED BAR 12'-6" AND SPACE THE REMAINING 1' BARS AT 25'-0".

USE AN APPROVED BONDING SYSTEM IN ACCORDANCE WITH SECTION 1081-1, TYPE 3A OF THE STANDARD SPECIFICATIONS.

SEAL ALL EXPANSION JOINTS WITH JOINT FILLER (SEE SECTION 1028 OF THE SPECIFICATIONS).



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

DETAIL OF MEDIAN HAZARD PROTECTION

ORIGINAL BY: T.S.Spell DATE: 2-4-10
MODIFIED BY: DATE:
CHECKED BY: DATE: 2/5/10
FILE SPEC.: ericw:d:details/stand/transition barrier_862d01.dgn

05-FEB-2010 08:45
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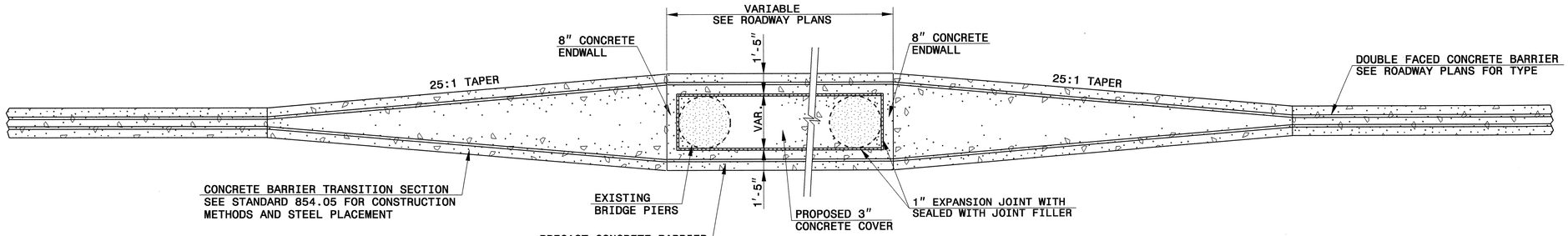
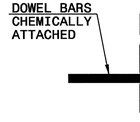
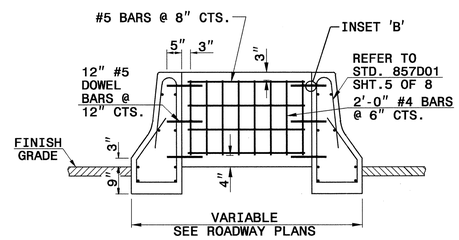
PROJECT REFERENCE NO.	SHEET NO.
I-4407	2-N



PLAN



INSET 'B'



8" CONCRETE ENDWALL

GENERAL NOTES:

CONCRETE BARRIER TO BE CONSTRUCTED OF CLASS 'AA' CONCRETE. (SEE SPECIFICATIONS SECTION 854).

EXPANSION AND CONTRACTION JOINTS SHALL BE CONSTRUCTED AS SHOWN IN STANDARD DRAWING 854.01.

EXPANSION JOINTS SHALL BE SEALED WITH JOINT FILLER. (SEE SECTION 1028 OF THE SPECIFICATIONS).

ALTERNATIVE METHODS FOR STEEL FABRICATION PLACEMENT SHALL BE SUBMITTED FOR REVIEW.

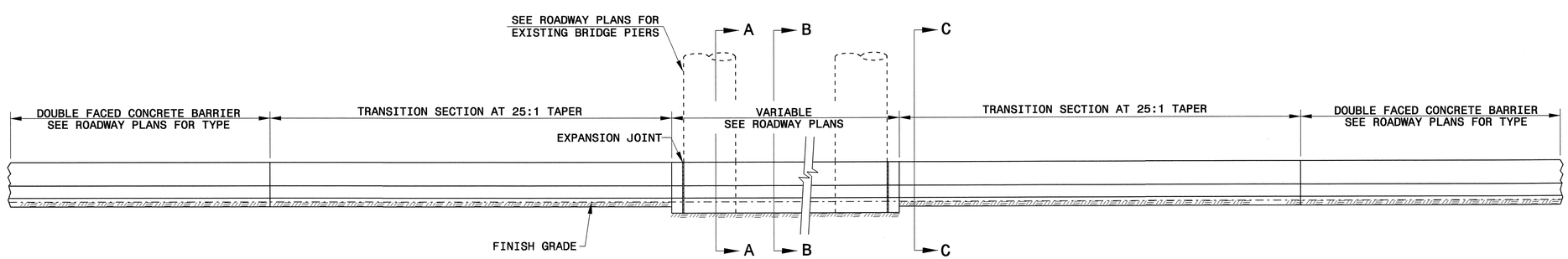
SEE STANDARD DRAWING 854.05 FOR STEEL LAYOUT OF TRANSITION BARRIER.

*THE 2" DIMENSION FROM FINSIH GRADE TO THE BASE IS A MINIMUM DIMENSION.

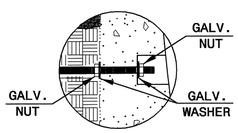
INSET FIRST 1" DIA. GALVANIZED BAR 12'-6" AND SPACE THE REMAINING 1' BARS AT 25'-0".

USE AN APPROVED BONDING SYSTEM IN ACCORDANCE WITH SECTION 1081-1, TYPE 3A OF THE STANDARD SPECIFICATIONS.

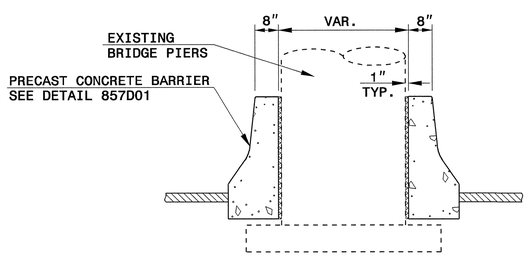
SEAL ALL EXPANSION JOINTS WITH JOINT FILLER (SEE SECTION 1028 OF THE SPECIFICATIONS).



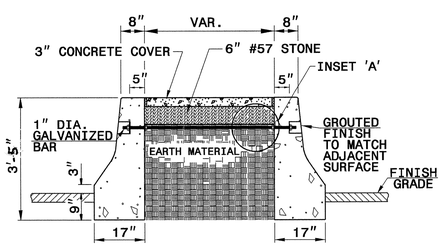
ELEVATION



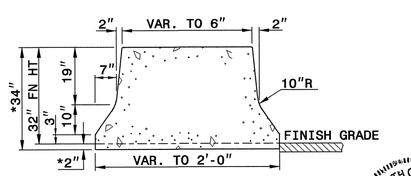
INSET 'A'



SECTION A-A



SECTION B-B



SECTION C-C

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HOWESTON
8/12/10

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

DETAIL OF CONCRETE BARRIER TRANSITION

ORIGINAL BY:	E.E. WARD	DATE:	7-28-03
MODIFIED BY:	E.E. WARD	DATE:	8-26-04
CHECKED BY:		DATE:	1/20/10
FILE SPEC.:	\usr\details\stand\transition barrier.dgn		

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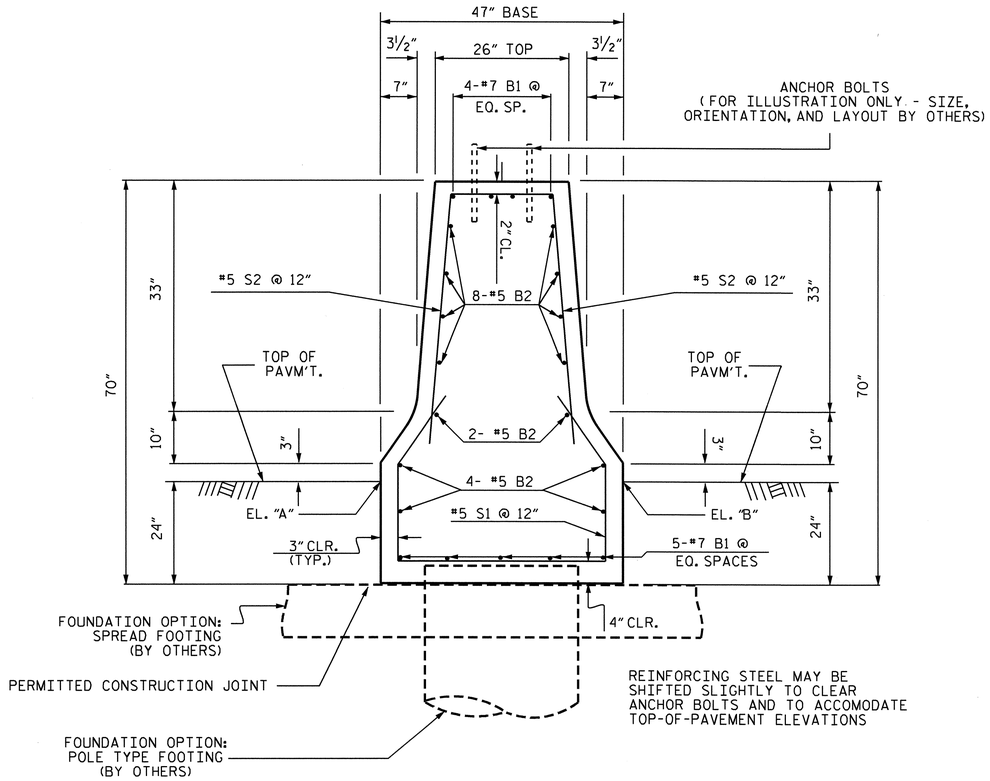
jhowerton AT PS237001

PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS
I-4407	2 - 0	
STATE PROJECT NO.	F.A. PROJ. NO.	DESCRIPTION



SECTION A-A

PAVEMENT ELEVATIONS ON EACH SIDE OF PEDESTAL		
STATION	EL. "A"	EL. "B"
30+00 -L1- SBL	796.55	796.42
275+00 -L- NBL	809.76	809.86
299+00 -L- SBL	850.42	850.30
317+80 -L- NBL	833.30	833.40

NOTES

CONCRETE FOR MEDIAN BARRIER OVERHEAD SIGN ASSEMBLY BASE (PEDESTAL) SHALL BE CLASS "AA".

ALL REINFORCING STEEL SHALL BE ASTM-A615, GRADE 60

THE CONTRACTOR WILL BE REQUIRED TO PREPARE AND SUBMIT TO THE ENGINEER FOR APPROVAL DESIGN AND DRAWINGS FOR THE FOOTING BELOW BASE IN ACCORDANCE WITH NCDOT STANDARD SPECIFICATIONS. A SPREAD TYPE FOOTING SHALL HAVE 18 IN. COVER AT THE CENTER OF THE PEDESTAL.

THE FOOTING SHALL BE DESIGNED FOR THE COMBINED EFFECTS OF ALL LOADS INCLUDING PAVEMENT HEIGHT, DIFFERENTIAL LATERAL EARTH PRESSURE (IF ANY), CONCRETE MEDIAN BARRIER SIGN BASE PEDESTAL AND OVERHEAD SIGN ASSEMBLY.

THE REINFORCING STEEL SHOWN ON THESE PLANS IS THE MINIMUM REQUIRED FOR THE CONCRETE PEDESTAL OF THE SIGN BASE. THE CONTRACTOR SHALL PROVIDE ON HIS SUBMITTED FOOTING DRAWINGS, THE REINFORCING STEEL WHICH MAY BE NECESSARY TO CONNECT THE FOOTING TO THE PEDESTAL .

THE VERTICAL BARS OF PROPOSED FOOTING SHALL EXTEND INTO THE PEDESTAL. THEY SHALL TERMINATE 2 INCHES CLEAR OF THE PEDESTAL TOP.

REINFORCING TO BE TIED SUFFICIENTLY TO RETAIN ITS PROPER SHAPE DURING PLACEMENT.

REINFORCING TO BE HOOKED OR BENT PER ACI CODE.

CONTRACTOR TO PROVIDE CONDUIT IN FOOTING AS NECESSARY FOR ELECTRICAL SERVICE.

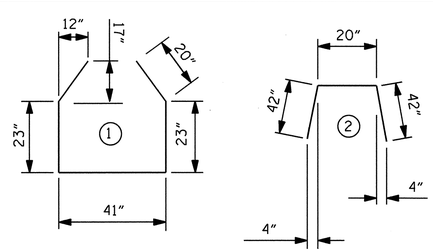
SEE STRUCTURE ERECTION DRAWINGS FOR FOOTING ELEVATIONS & ANCHOR BOLT MARKS, QUANTITIES, & SPACING.

THE DIMENSIONS AT THE FACE OF THE BARRIER ARE FROM THE BEST INFORMATION AVAILABLE. THIS INFORMATION IS SUBJECT TO FIELD VERIFICATION BY THE CONTRACTOR.

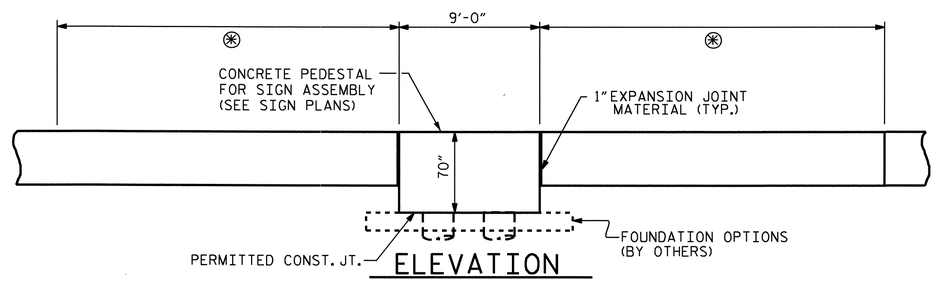
THE COST OF THE SIGN BASE AND FOUNDATION(S) SHALL BE INCLUDED IN THE COST OF THE OVERHEAD SIGN ASSEMBLY.

IF THE CONTRACTOR ELECTS TO UTILIZE A POLE TYPE FOOTING, THE TOP OF THE DRILLED SHAFT MUST EXTEND 3 INCHES INTO THE BOTOM OF THE MEDIAN BARRIER PEDESTAL.

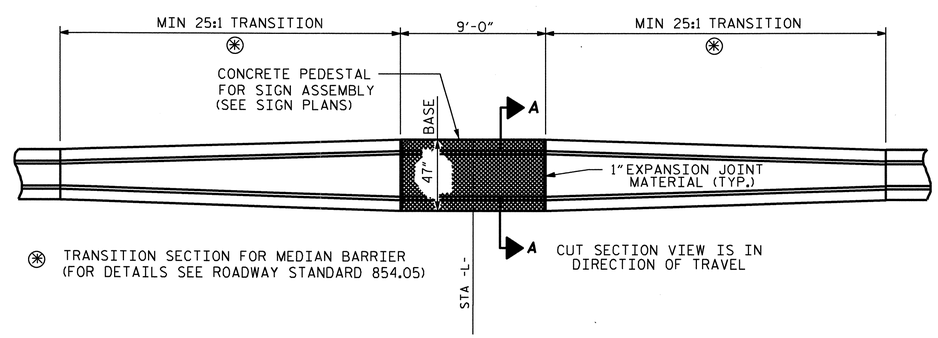
BAR TYPE



NOTE: BAR DIMENSIONS ARE OUT TO OUT



ELEVATION



TRANSITION SECTION FOR MEDIAN BARRIER (FOR DETAILS SEE ROADWAY STANDARD 854.05)

PLAN

REINFORCING STEEL BAR SCHEDULE FOR ONE PEDESTAL					
BAR	NO.	SIZE	TYPE	LENGTH (in)	WEIGHT (lb)
B1	9	7	STR	102	156
B2	14	5	STR	102	124
S1	9	5	1	127	99
S2	9	5	2	104	81
TOTAL REINFORCING STEEL PER PEDESTAL 455 lbs.					
TOTAL CLASS "AA" CONCRETE PER PEDESTAL 6.1 cu. yds.					

PROJECT NO. I-4407

RANDOLPH COUNTY

STATION:

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONCRETE MEDIAN BARRIER FOUNDATION FOR SIGN ASSEMBLIES US 220

JANUARY 2010

NORTH CAROLINA PROFESSIONAL SEAL 18565 ENGINEER TIMOTHY M. SHERRILL
03/12/10

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			

DRAWN BY : T. SHERRILL DATE : 01/10
CHECKED BY : A. SHAH DATE : 01/10

PROJECT REFERENCE NO.	SHEET
I-4407	2-P1

GEOTECHNICAL ENGINEER

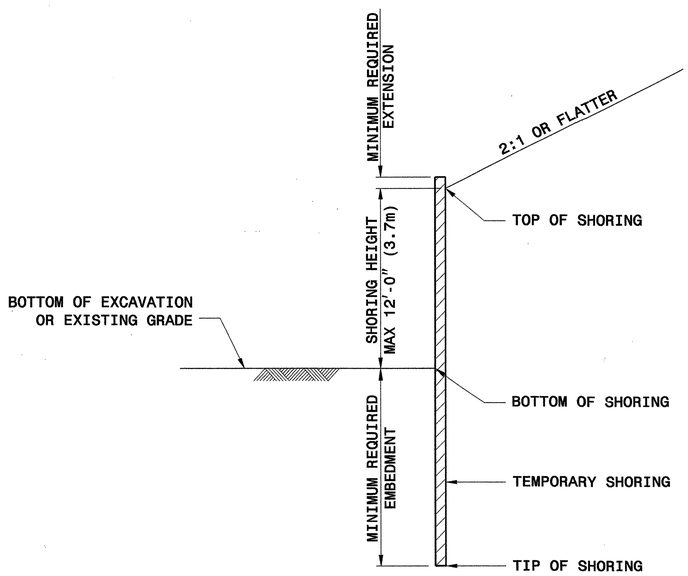
NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

Scott A. Hidden 3/29/07

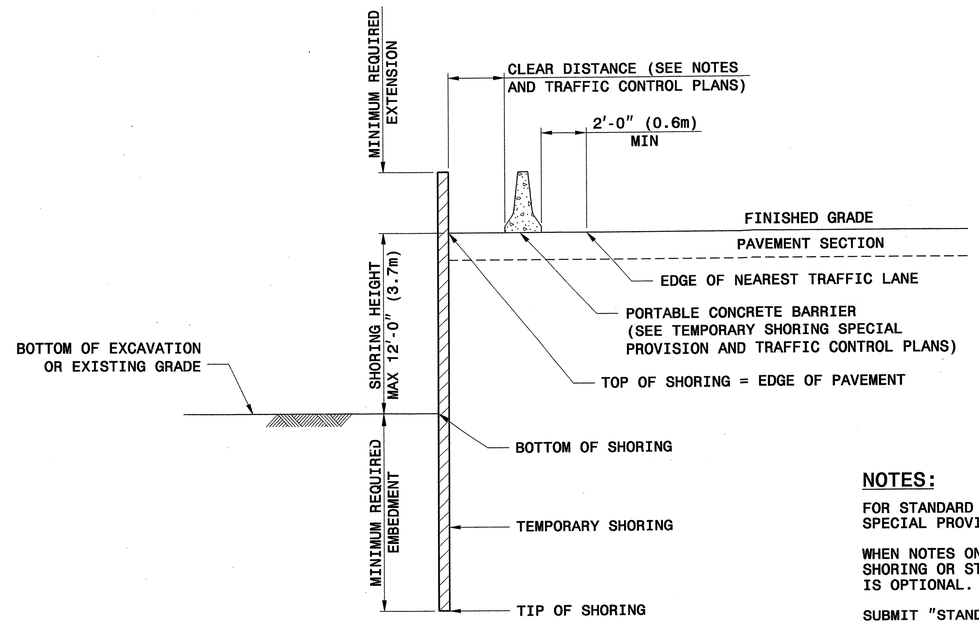
SIGNATURE DATE

ENGINEER

SIGNATURE DATE



SLOPE CASE



SURCHARGE CASE

		SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H PILES WITH TIMBER LAGGING			SHEET PILES		H PILES WITH TIMBER LAGGING		
				MINIMUM REQUIRED EMBEDMENT FT (m)					MINIMUM REQUIRED EMBEDMENT FT (m)		
GROUNDWATER CONDITION	SHORING HEIGHT FT (m)	MINIMUM REQUIRED EMBEDMENT FT (m)	MINIMUM REQUIRED SECTION MODULUS IN^3/FT (cm^3/m)	HP 10x42 (HP 250x62)	HP 12x53 (HP 310x79)	HP 14x73 (HP 360x108)	MINIMUM REQUIRED EMBEDMENT FT (m)	MINIMUM REQUIRED SECTION MODULUS IN^3/FT (cm^3/m)	HP 10x42 (HP 250x62)	HP 12x53 (HP 310x79)	HP 14x73 (HP 360x108)
GROUNDWATER ELEVATION BELOW TIP OF SHORING	< 6 (1.8)	7.5 (2.3)	3.0 (161)	8.0 (2.4)	8.0 (2.4)	8.0 (2.4)	11.0 (3.4)	10.0 (538)	9.5 (2.9)	9.5 (2.9)	9.5 (2.9)
	7 (2.1)	8.5 (2.6)	4.5 (242)	9.5 (2.9)	9.5 (2.9)	9.5 (2.9)	12.0 (3.7)	12.0 (645)	10.5 (3.2)	10.5 (3.2)	10.5 (3.2)
	8 (2.4)	10.0 (3.0)	6.5 (349)	10.5 (3.2)	10.5 (3.2)	10.5 (3.2)	12.5 (3.8)	14.0 (753)	11.5 (3.5)	11.5 (3.5)	11.5 (3.5)
	9 (2.7)	11.0 (3.4)	9.5 (511)	--	12.0 (3.7)	12.0 (3.7)	13.5 (4.1)	16.5 (887)	--	12.5 (3.8)	12.5 (3.8)
	10 (3.0)	12.5 (3.8)	13.0 (699)	--	--	13.5 (4.1)	14.0 (4.3)	19.5 (1048)	--	13.5 (4.1)	13.5 (4.1)
	11 (3.4)	13.5 (4.1)	17.0 (914)	--	--	14.5 (4.4)	15.0 (4.6)	22.5 (1210)	--	--	14.5 (4.4)
	12 (3.7)	15.0 (4.6)	21.5 (1156)	--	--	16.0 (4.9)	16.0 (4.9)	25.5 (1371)	--	--	15.5 (4.7)
GROUNDWATER ELEVATION BEWTEEN BOTTOM OF SHORING AND TIP OF SHORING	< 6 (1.8)	11.5 (3.5)	4.5 (242)	11.5 (3.5)	11.5 (3.5)	11.5 (3.5)	16.0 (4.9)	12.0 (645)	13.0 (4.0)	13.0 (4.0)	13.0 (4.0)
	7 (2.1)	13.0 (4.0)	7.0 (376)	13.0 (4.0)	13.0 (4.0)	13.0 (4.0)	17.0 (5.2)	14.5 (780)	14.5 (4.4)	14.5 (4.4)	14.5 (4.4)
	8 (2.4)	15.0 (4.6)	10.0 (538)	--	15.0 (4.6)	15.0 (4.6)	18.0 (5.5)	17.0 (914)	--	15.5 (4.7)	15.5 (4.7)
	9 (2.7)	17.0 (5.2)	14.0 (753)	--	17.0 (5.2)	17.0 (5.2)	19.0 (5.8)	20.0 (1075)	--	17.0 (5.2)	17.0 (5.2)
	10 (3.0)	18.5 (5.6)	19.5 (1048)	--	--	18.5 (5.6)	20.0 (6.1)	23.5 (1263)	--	--	18.5 (5.6)
	11 (3.4)	20.5 (6.3)	26.0 (1398)	--	--	--	21.0 (6.4)	28.0 (1505)	--	--	20.0 (6.1)
	12 (3.7)	22.5 (6.9)	33.0 (1774)	--	--	--	22.0 (6.7)	33.0 (1774)	--	--	21.5 (6.6)

NOTE: MINIMUM REQUIRED EXTENSION IS 6" (150mm) FOR "SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT" AND 32" (800 mm) FOR "SURCHARGE CASE WITH TRAFFFIC IMPACT".

NOTES:

FOR STANDARD TEMPORARY SHORING, SEE TEMPORARY SHORING SPECIAL PROVISION.

WHEN NOTES ON PLANS DO NOT PROHIBIT STANDARD TEMPORARY SHORING OR STANDARD SHORING, STANDARD TEMPORARY SHORING IS OPTIONAL.

SUBMIT "STANDARD TEMPORARY SHORING SELECTION FORM" AT LEAST 14 DAYS BEFORE BEGINNING SHORING CONSTRUCTION. UP TO THREE LOCATIONS MAY BE INCLUDED ON EACH SELECTION FORM.

STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING CONDITIONS:
1) MAXIMUM SHORING HEIGHT IS 12'-0" (3.7m).
2) TRAFFIC SURCHARGE IS 240 PSF (11.5 KPA) MAXIMUM OR BACKSLOPE IS 2:1 (H:V) OR FLATTER.
3) BOTTOM OF EXCAVATION OR EXISTING GRADE IN FRONT OF SHORING IS 6:1 (H:V) SLOPE OR FLATTER.
4) H PILE SPACING IS 6'-0" (1.8m).
5) H PILE EMBEDMENT DEPTHS ARE FOR DRIVEN PILES.
6) TIMBER LAGGING IS A MINIMUM OF 3" (75mm) THICK.

STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
TOTAL UNIT WEIGHT = 120 PCF (18.8 KN/M^3)
FRICTION ANGLE = 30 DEGREES
COHESION = 0 PSF (0 KPA)
GROUNDWATER IS ASSUMED TO BE BELOW BOTTOM OF SHORING.

DO NOT USE STANDARD TEMPORARY SHORING WHEN THE ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE OR GROUNDWATER IS ABOVE THE BOTTOM OF SHORING.

DO NOT USE STANDARD TEMPORARY SHORING WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS PRESENT WITHIN THE EMBEDMENT DEPTH.

VERIFY GROUNDWATER ELEVATION BEFORE BEGINNING SHORING CONSTRUCTION.

IF THE CLEAR DISTANCE AVAILABLE IS LESS THAN THE MINIMUM REQUIRED IN ACCORDANCE WITH THE TRAFFIC CONTROL PLANS, SET THE BARRIER AGAINST THE TRAFFIC SIDE OF THE SHORING AND USE THE "SURCHARGE CASE WITH TRAFFIC IMPACT".

AT THE CONTRACTOR'S OPTION, H PILE EMBEDMENT DEPTHS FOR PILES SET IN DRILLED HOLES MAY BE REDUCED BY 25%. FOR PILE EXCAVATION, SEE TEMPORARY SHORING SPECIAL PROVISION.

CONTROL DRAINAGE DURING CONSTRUCTION IN THE VICINITY OF THE SHORING. COLLECT AND DIRECT RUNOFF AWAY FROM SHORING.

CONTACT THE ENGINEER IF MINIMUM REQUIRED EMBEDMENT IS NOT ACHIEVED.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

STANDARD DRAWING NO. 1801.01

STANDARD TEMPORARY SHORING

DATE: 2-20-07

PROJECT REFERENCE NO.	SHEET
I-4407	2-P2

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

Scott A. Hidden 3/29/07
SIGNATURE DATE

ENGINEER

SIGNATURE DATE

STANDARD TEMPORARY MSE WALL OPTIONS

TEMPORARY MSE WALL OPTION	VENDOR	CONTACT INFORMATION	REINFORCEMENT TYPE	SHEETS
TEMPORARY FABRIC WALL	N/A	N/A	POLYESTER OR POLYPROPYLENE FABRIC	3
HILFIKER TEMPORARY WALL	HILFIKER RETAINING WALLS	1902 HILFIKER LANE, EUREKA, CA 95503-5711 707-443-5093 WWW.HILFIKER.COM	WELDED WIRE MAT	4
SIERRASCAPE TEMPORARY WALL	TENSAR EARTH TECHNOLOGIES, INC	5883 GLENRIDGE DRIVE, SUITE 200 ATLANTA, GA 30328-5363 404-250-1290 WWW.TENSARCORP.COM	GEOGRID	5
RETAINED EARTH TEMPORARY WALL	THE REINFORCED EARTH COMPANY	8614 WESTWOOD CENTER DRIVE, SUITE 1100 VIENNA, VA 22182-2233 703-749-4325 WWW.REINFORCEDEARTH.COM	WELDED WIRE MESH	6-8
TERRATREL TEMPORARY WALL	THE REINFORCED EARTH COMPANY	8614 WESTWOOD CENTER DRIVE, SUITE 1100 VIENNA, VA 22182-2233 703-749-4325 WWW.REINFORCEDEARTH.COM	RIBBED STEEL STRIPS	9-11

FOR STANDARD TEMPORARY MSE WALLS, SEE TEMPORARY SHORING SPECIAL PROVISION.

WHEN NOTES ON PLANS DO NOT PROHIBIT TEMPORARY MSE WALLS OR STANDARD SHORING, STANDARD TEMPORARY MSE WALLS ARE OPTIONAL.

WHEN NOTES ON PLANS REQUIRE TEMPORARY MSE WALLS, USE STANDARD TEMPORARY MSE WALLS OR CONTRACTOR DESIGNED TEMPORARY MSE WALLS.

WHEN THE ALIGNMENT OF STANDARD TEMPORARY MSE WALLS RESULTS IN AN INTERIOR ANGLE LESS THAN 90 DEGREES, SUBMIT AN ACUTE CORNER DETAIL FOR THE SPECIFIC SITUATION IN ACCORDANCE WITH THE WALL VENDOR RECOMMENDATIONS. ALSO, SUBMIT A "STANDARD TEMPORARY MSE WALL SELECTION FORM" FOR EACH TEMPORARY MSE WALL LOCATION. SUBMIT THESE ITEMS AT LEAST 14 DAYS BEFORE BEGINNING WALL CONSTRUCTION.

STANDARD TEMPORARY MSE WALLS ARE BASED ON THE FOLLOWING CONDITIONS:
1) MAXIMUM WALL HEIGHT IS 28'-0" (8.5m).
2) TRAFFIC SURCHARGE IS 240 PSF (11.5 KPA) MAXIMUM OR BACKSLOPE IS 2:1 (H:V) OR FLATTER.
3) EXISTING OR FINISHED GRADE IN FRONT OF WALL IS 6:1 (H:V) SLOPE OR FLATTER.
4) THE GRADE OF THE TOP OF WALL IS LESS THAN 4% FOR RETAINED EARTH AND TERRATREL TEMPORARY WALLS.
5) DESIGN SERVICE LIFE IS 3 YEARS.
6) MATERIAL IN REINFORCED ZONE IS SHORING BACKFILL.
7) MAXIMUM APPLIED BEARING PRESSURE IS 1 TSF (100 KPA) FOR WALL HEIGHTS UP TO 8'-0" (2.4m), 2 TSF (195 KPA) FOR WALL HEIGHTS BETWEEN 8'-0" AND 18'-0" (2.4m AND 5.5m) AND 3 TSF (290 KPA) FOR WALL HEIGHTS OVER 18'-0" (5.5m).

STANDARD TEMPORARY MSE WALLS ARE BASED ON THE FOLLOWING IN-SITU ASSUMMED SOIL PARAMETERS:
TOTAL UNIT WEIGHT = 120 PCF (18.8 KN/M^3)
FRICTION ANGLE = 30 DEGREES
COHESION = 0 PSF (0 KPA)
GROUNDWATER IS ASSUMED TO BE BELOW BOTTOM OF REINFORCED ZONE.

DO NOT USE STANDARD TEMPORARY MSE WALLS WHEN THE ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE OR VERY LOOSE OR SOFT SOIL OR MUCK IS PRESENT BELOW THE BOTTOM OF REINFORCED ZONE.

CONTROL DRAINAGE DURING CONSTRUCTION IN THE VICINITY OF STANDARD TEMPORARY MSE WALLS. COLLECT AND DIRECT RUNOFF AWAY FROM WALLS AND SHORING BACKFILL.

EXCAVATE AS NECESSARY FOR STANDARD TEMPORARY MSE WALLS IN ACCORDANCE WITH THE FOLLOWING FOR THE WALL OPTION CHOSEN:
1) MINIMUM EMBEDMENT OF 18" (450mm) UNLESS WALL BEARS ON ROCK, CONCRETE OR PAVEMENT AS DETERMINED BY THE ENGINEER
2) VERTICAL STEPS IN INCREMENTS EQUAL TO THE VERTICAL REINFORCEMENT SPACING
3) WITH THE EXCEPTION OF EITHER THE FIRST OR LAST SECTION OF WALL, HORIZONTAL SECTION LENGTHS IN INCREMENTS EQUAL TO THE FOLLOWING:

STANDARD TEMPORARY MSE WALL OPTION	INCREMENT
TEMPORARY FABRIC WALL	9'-0" (2.7m) MIN (VARIES)
HILFIKER TEMPORARY WALL	10'-0" (3.0m) MIN (VARIES)
SIERRASCAPE TEMPORARY WALL	18'-7¼" (5.7m)
RETAINED EARTH TEMPORARY WALL	24'-0" (7.3m)
TERRATREL TEMPORARY WALL	19'-8" (6.0m)

DO NOT PLACE SHORING BACKFILL OR FIRST REINFORCEMENT LAYER UNTIL OBTAINING APPROVAL OF THE EXCAVATION DEPTH AND FOUNDATION MATERIAL.

IF APPLICABLE, INSTALL FOUNDATIONS LOCATED WITHIN THE REINFORCED ZONE BEFORE BEGINNING WALL CONSTRUCTION UNLESS DIRECTED OTHERWISE BY THE ENGINEER.

ERECT AND MAINTAIN FACINGS AND FORMS AS SHOWN ON THE STANDARD TEMPORARY MSE WALL DETAILS. STAGGER VERTICAL JOINTS OF FACINGS AND FORMS TO CREATE A RUNNING BOND WHEN POSSIBLE UNLESS SHOWN OTHERWISE ON THESE DETAILS.

PLACE FACINGS AND FORMS AS NEAR TO VERTICAL AS POSSIBLE WITH NO NEGATIVE BATTER. CONSTRUCT STANDARD TEMPORARY MSE WALLS WITH A VERTICAL AND HORIZONTAL TOLERANCE OF 3" (75mm) WHEN MEASURED WITH A 10'-0" (3m) STRAIGHT EDGE AND AN OVERALL VERTICAL PLUMBNESS (BATTER) AND HORIZONTAL ALIGNMENT OF LESS THAN 6" (150mm).

PLACE REINFORCEMENT AT LOCATIONS AND ELEVATIONS SHOWN ON THE STANDARD TEMPORARY MSE WALL DETAILS AND IN SLIGHT TENSION FREE OF KINKS, FOLDS, WRINKLES OR CREASES.

DO NOT SPLICE REINFORCEMENT IN THE REINFORCEMENT DIRECTION (RD), i.e., PARALLEL TO THE WALL FACE. SEAMS ARE ALLOWED IN THE CROSS-REINFORCEMENT DIRECTION (CRD).

CONTACT THE ENGINEER WHEN EXISTING OR FUTURE STRUCTURES SUCH AS FOUNDATIONS, PAVEMENTS, PIPES, INLETS OR UTILITIES WILL INTERFERE WITH REINFORCEMENT. TO AVOID STRUCTURES, DELFECT, SKEW AND MODIFY REINFORCEMENT.

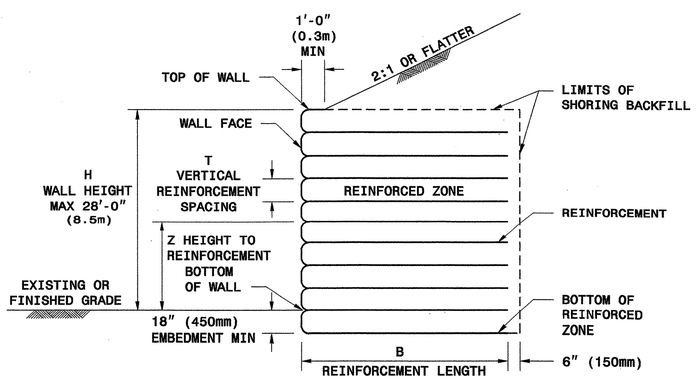
PLACE SHORING BACKFILL IN 8" TO 10" (200mm to 250mm) THICK LIFTS AND COMPACT IN ACCORDANCE WITH SUBARTICLE 235-4(C) OF THE STANDARD SPECIFICATIONS. USE ONLY HAND OPERATED COMPACTION EQUIPMENT WITHIN 3'-0" (1m) OF THE WALL FACE.

DO NOT DAMAGE REINFORCEMENT WHEN PLACING AND COMPACTING SHORING BACKFILL. DO NOT OPERATE HEAVY EQUIPMENT ON REINFORCEMENT UNTIL IT IS COVERED WITH AT LEAST 10" (250mm) OF SHORING BACKFILL. DO NOT USE SHEEPSFOOT, GRID ROLLERS OR OTHER TYPES OF COMPACTION EQUIPMENT WITH FEET.

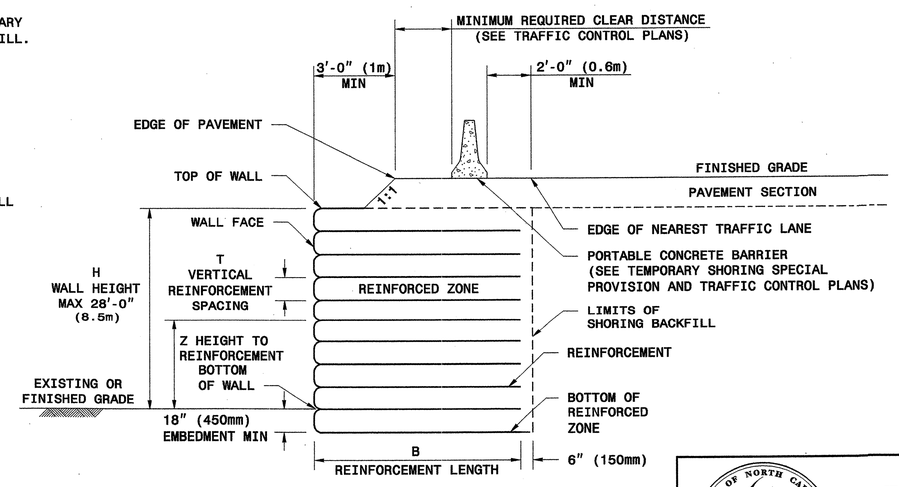
COVER REINFORCING AND RETENTION FABRIC WITH AT LEAST 3" (75mm) OF SHORING BACKFILL. PLACE TOP REINFORCEMENT LAYER BETWEEN 4" AND 24" (100mm and 600mm) BELOW TOP OF WALL DEPENDING ON WALL OPTION.

BENCH STANDARD TEMPORARY MSE WALLS INTO THE SIDES OF EXCAVATIONS WHERE APPLICABLE.

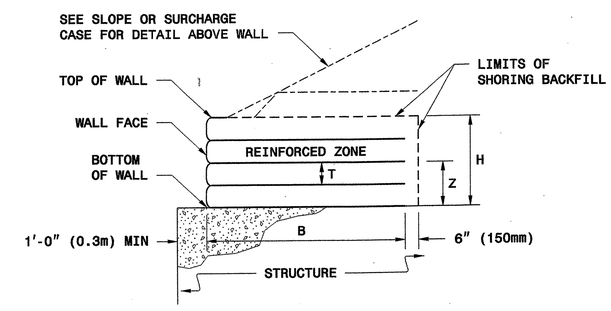
IF THE TOP OF WALL IS WITHIN 5'-0" (1.5m) OF FINISHED GRADE, REMOVE TOP FORM OR FACING AND INCORPORATE THE TOP REINFORCEMENT LAYER INTO THE FILL WHEN PLACING FILL IN FRONT OF THE WALL. STANDARD TEMPORARY MSE WALLS REMAIN IN PLACE PERMANENTLY UNLESS REQUIRED OTHERWISE.



SLOPE CASE



SURCHARGE CASE



TEMPORARY MSE WALL ON STRUCTURE

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD DRAWING NO. 1801.02

STANDARD TEMPORARY MECHANICALLY STABILIZED EARTH (MSE) WALLS

SHEET 1 OF 11 DATE: 2-20-07

PROJECT REFERENCE NO.	SHEET
I-4407	2-P3

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

Scott A. Hidden 3/29/07

SIGNATURE DATE

ENGINEER

SIGNATURE DATE

HOW TO USE THIS SHEET:

- FOR ALL WALL OPTIONS, DETERMINE MINIMUM REQUIRED REINFORCEMENT LENGTH (B) FROM TABLE AT RIGHT BASED ON WALL HEIGHT (H) AND SLOPE OR SURCHARGE CASE
- FOR STANDARD TEMPORARY FABRIC WALL, SEE SHEET 3 FOR FABRIC STRENGTH REQUIREMENTS BASED ON WALL HEIGHT (H)
- FOR ALL OTHER WALL OPTIONS, DETERMINE REINFORCEMENT TYPE FROM TABLES BELOW FOR EACH HEIGHT TO REINFORCEMENT (Z) BASED ON WALL HEIGHT (H) AND SLOPE OR SURCHARGE CASE

MINIMUM REQUIRED REINFORCEMENT LENGTH B (FT)

(FOR ALL WALL OPTIONS)

WALL HEIGHT H (FT)	<8	8 TO 10	10 TO 12	12 TO 14	14 TO 16	16 TO 18	18 TO 20	20 TO 22	22 TO 24	24 TO 26	26 TO 28
SLOPE CASE	8	11	13	14	16	18	20	22	24	25	27
SURCHARGE CASE	8	9	11	12	14	15	16	18	19	21	22

TERRATREL TEMPORARY WALL (STRIPS PER LEVEL PER PANEL)

H (FT)

<4	4 TO 6	6 TO 8	8 TO 10	10 TO 12	12 TO 14	14 TO 16	16 TO 18	18 TO 20	20 TO 22	22 TO 24	24 TO 26	26 TO 28	Z (FT-INCHES)
												3	27 - 8
											3	3	26 -10
											3	3	25 - 2
										3	3	3	23 - 6
									3	3	3	3	21 -10
								3	3	3	3	3	20 - 2
							3	3	3	3	3	3	18 - 6
						3	3	3	3	3	3	3	16 -10
						3	3	3	3	3	3	3	15 - 2
					4	3	3	3	3	3	3	3	13 - 6
				4	4	3	3	3	3	3	3	3	11 -10
			5	4	4	3	3	3	3	3	3	3	10 - 2
		5	5	4	4	3	3	3	3	3	3	3	8 - 6
	5	5	5	4	4	3	3	3	3	3	3	3	6 -10
	5	5	5	4	4	3	3	3	3	3	3	3	5 - 2
5	5	5	5	4	4	3	3	3	3	3	3	3	3 - 6
5	5	5	5	4	4	3	3	3	3	3	3	3	1 -10
5	5	5	5	4	4	3	3	3	3	3	3	3	0 - 2
5	5	5	5	4	4	3	3	3	3	3	3	3	-0 - 8

SLOPE AND SURCHARGE CASES

SIERRASCAPE TEMPORARY WALL (GEOGRID TYPE)

11 = UX1100MSE
14 = UX1400MSE
15 = UX1500MSE
16 = UX1600MSE
17 = UX1700MSE

H (FT)

<4	4 TO 6	6 TO 8	8 TO 10	10 TO 12	12 TO 14	14 TO 16	16 TO 18	18 TO 20	20 TO 22	22 TO 24	24 TO 26	26 TO 28	Z (FT)
												11	26.5
											11	11	25.5
											11	11	24
										11	11	11	22.5
									11	11	11	15	21
								11	11	11	14	15	19.5
								11	11	11	14	15	18
							11	11	11	11	14	15	16.5
						11	11	11	11	11	14	15	15
					11	11	11	11	15	15	15	15	13.5
					11	11	11	15	15	15	15	15	12
				11	11	11	11	15	15	15	15	16	10.5
			11	11	11	11	15	15	15	15	15	16	9
		11	11	11	11	14	15	15	15	15	16	16	7.5
		11	11	11	11	14	15	15	15	16	16	16	6
	11	11	11	11	15	15	15	15	15	16	16	17	4.5
11	11	11	11	14	15	15	15	15	16	16	16	17	3
11	11	11	11	14	15	15	15	16	16	16	17	17	1.5
11	11	11	14	15	15	15	15	16	16	17	17	17	0
11	11	11	14	15	15	15	15	16	16	17	17	17	-1.5

SLOPE CASE

H (FT)

<4	4 TO 6	6 TO 8	8 TO 10	10 TO 12	12 TO 14	14 TO 16	16 TO 18	18 TO 20	20 TO 22	22 TO 24	24 TO 26	26 TO 28	Z (FT)
												11	26.5
												11	25.5
											11	11	24
										11	11	11	22.5
									11	11	11	15	21
								11	11	11	11	15	19.5
							11	11	11	11	11	15	18
						11	11	11	11	11	15	15	16.5
					11	11	11	11	11	15	15	15	15
				11	11	11	11	11	15	15	15	15	13.5
				11	11	11	11	15	15	15	15	15	12
			11	11	11	11	15	15	15	15	15	15	10.5
		11	11	11	11	15	15	15	15	15	15	15	9
	11	11	11	11	15	15	15	15	15	15	15	16	7.5
11	11	11	11	15	15	15	15	15	15	15	16	16	6
11	11	11	11	15	15	15	15	15	15	16	16	16	4.5
11	11	11	14	15	15	15	15	15	16	16	16	16	3
11	11	11	14	15	15	15	15	16	16	16	16	17	1.5
11	11	11	14	15	15	15	15	16	16	16	17	17	0
11	11	11	14	15	15	15	15	16	16	17	17	17	-1.5

SURCHARGE CASE

HILFIKER TEMPORARY WALL (WELDED WIRE MAT TYPE)

4.5 = W4.5 x W3.5
7.0 = W7.0 x W3.5
9.5 = W9.5 x W4.0

H (FT)

<4	4 TO 6	6 TO 8	8 TO 10	10 TO 12	12 TO 14	14 TO 16	16 TO 18	18 TO 20	20 TO 22	22 TO 24	24 TO 26	26 TO 28	Z (FT)
												4.5	26
											4.5	7.0	24
										4.5	7.0	7.0	22
									4.5	7.0	7.0	7.0	20
								4.5	7.0	7.0	7.0	7.0	18
							4.5	7.0	7.0	7.0	7.0	7.0	16
						4.5	7.0	7.0	7.0	7.0	7.0	9.5	14
					4.5	7.0	7.0	7.0	7.0	7.0	9.5	9.5	12
				4.5	7.0	7.0	7.0	7.0	7.0	9.5	9.5	9.5	10
			4.5	7.0	7.0	7.0	7.0	7.0	9.5	9.5	9.5	9.5	8
		4.5	7.0	7.0	7.0	7.0	7.0	9.5	9.5	9.5	9.5	9.5	6
	4.5	7.0	7.0	7.0	7.0	7.0	9.5	9.5	9.5	9.5	9.5	9.5	4
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3
4.5	7.0	7.0	7.0	7.0	7.0	9.5	9.5	9.5	9.5	9.5	9.5	9.5	2
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0	1
7.0	7.0	7.0	7.0	7.0	9.5	9.5	9.5	9.5	9.5	9.5	7.0	7.0	0
7.0	7.0	7.0	7.0	7.0	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	-1.5

SLOPE CASE

H (FT)

<4	4 TO 6	6 TO 8	8 TO 10	10 TO 12	12 TO 14	14 TO 16	16 TO 18	18 TO 20	20 TO 22	22 TO 24	24 TO 26	26 TO 28	Z (FT)
												4.5	26
											4.5	7.0	24
										4.5	7.0	7.0	22
									4.5	7.0	7.0	7.0	20
								4.5	7.0	7.0	7.0	7.0	18
							4.5	7.0	7.0	7.0	7.0	7.0	16
						4.5	7.0	7.0	7.0	7.0	7.0	7.0	14
					4.5	7.0	7.0	7.0	7.0	7.0	7.0	9.5	12
				4.5	7.0	7.0	7.0	7.0	7.0	7.0	9.5	9.5	10
			4.5	7.0	7.0	7.0	7.0	7.0	7.0	9.5	9.5	9.5	8
		4.5	7.0	7.0	7.0	7.0	7.0	7.0	9.5	9.5	9.5	9.5	6
	4.5	7.0	7.0	7.0	7.0	7.0	7.0	9.5	9.5	9.5	9.5	9.5	4
4.5	7.0	7.0	7.0	7.0	7.0	7.0	9.5	9.5	9.5	9.5	9.5	9.5	2
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0	1
7.0	7.0	7.0	7.0	7.0	7.0	9.5	9.5	9.5	9.5	9.5	9.5	7.0	0
7.0	7.0	7.0	7.0	7.0	7.0	9.5	9.5	9.5	9.5	9.5	9.5	9.5	-1.5

SURCHARGE CASE

RETAINED EARTH TEMPORARY WALL (WELDED WIRE MESH TYPE)

3X1 = 3W8 x W8 x 1.0'
3X2 = 3W8 x W8 x 2.0'

H (FT)

<4	4 TO 6	6 TO 8	8 TO 10	10 TO 12	12 TO 14	14 TO 16	16 TO 18	18 TO 20	20 TO 22	22 TO 24	24 TO 26	26 TO 28	Z (FT-INCHES)
												3X1	27 - 6
												3X1	26 -10
											3X1	3X2	25 - 2
										3X1	3X1	3X2	23 - 6
									3X1	3X1	3X2	3X2	21 -10
								3X1	3X1	3X2	3X2	3X2	20 - 2
							3X1	3X1	3X2	3X2	3X2	3X2	18 - 6
							3X1	3X2	3X2	3X2	3X2	3X2	16 -10
						3X1	3X2	3X2	3X2	3X2	3X2	3X2	15 - 2
					3X1	3X1	3X2	3X2	3X2	3X2	3X2	3X2	13 - 6
				3X1	3X1	3X2	3X2	3X2	3X2	3X2	3X2	3X2	11 -10
			3X1	3X1	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	10 - 2
		3X1	3X1	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	8 - 6
		3X1	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	6 -10
	3X1	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	5 - 2
3X1	3X1	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3 - 6
3X1	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	1 -10
3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	0 - 2
3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	-1 - 6

SLOPE AND SURCHARGE CASES

NOTES FOR HILFIKER TEMPORARY WALL

1) CAP MAT AT TOP OF WALL IS NOT INCLUDED IN TABLES.
2) REINFORCEMENT IS NOT REQUIRED AT 1' LEVEL FOR SLOPE CASE UNTIL WALL HEIGHT (H) IS GREATER THAN 24'.
3) REINFORCEMENT IS NOT REQUIRED AT 3' LEVEL FOR SLOPE CASE UNTIL WALL HEIGHT (H) IS GREATER THAN 26'.
4) REINFORCEMENT IS NOT REQUIRED AT 1' LEVEL FOR SURCHARGE CASE UNTIL WALL HEIGHT (H) IS GREATER THAN 26'.

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STANDARD DRAWING NO. 1801.02

STANDARD TEMPORARY MSE WALL REINFORCEMENT TABLES - ENGLISH UNITS

SHEET 2 OF 11 DATE: 2-20-07

PROJECT REFERENCE NO.	SHEET
I-4407	2-P4

GEOTECHNICAL ENGINEER

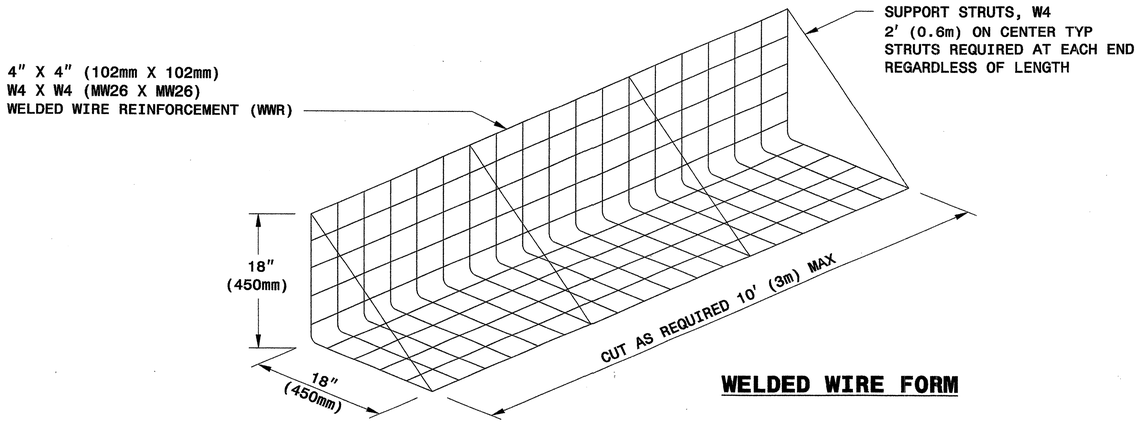
NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

Scott A. Hidden 3/29/07

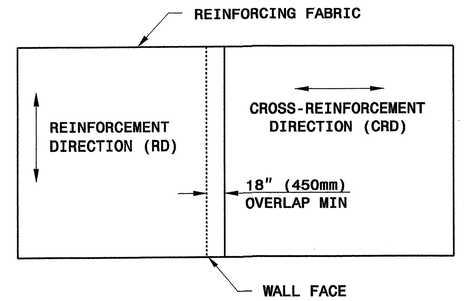
SIGNATURE DATE

ENGINEER

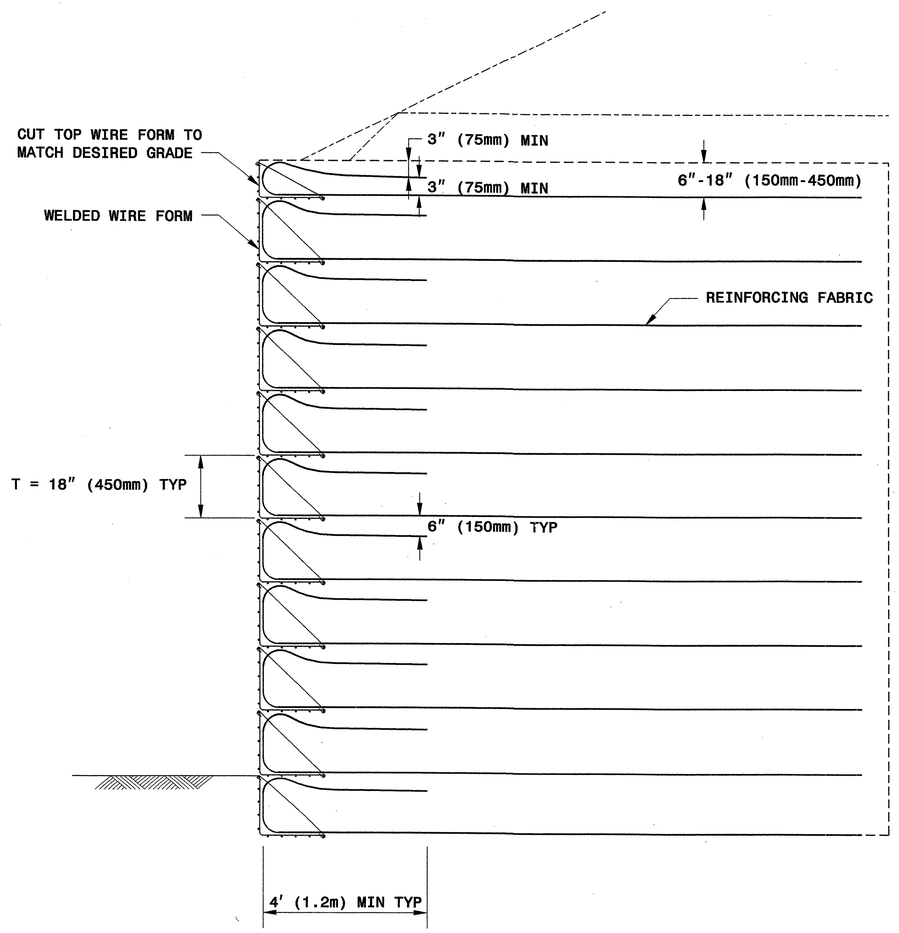
SIGNATURE DATE



WELDED WIRE FORM



PLAN VIEW OF FABRIC OVERLAP



TYPICAL SECTION

MINIMUM REQUIRED REINFORCING FABRIC STRENGTH FOR RD*
(SLOPE AND SURCHARGE CASES)

WALL HEIGHT H FEET (M)	POLYESTER WIDE WIDTH TENSILE STRENGTH @ ULTIMATE LB/INCH (KN/M)	POLYPROPYLENE WIDE WIDTH TENSILE STRENGTH @ ULTIMATE LB/INCH (KN/M)
4 (1.2)	200 (35)	200 (35)
6 (1.8)	200 (35)	200 (35)
8 (2.4)	200 (35)	200 (35)
10 (3.0)	200 (35)	230 (40)
12 (3.7)	220 (39)	264 (46)
14 (4.3)	248 (43)	297 (52)
16 (4.9)	276 (48)	330 (58)
18 (5.5)	304 (53)	364 (64)
20 (6.1)	332 (58)	397 (70)
22 (6.7)	359 (63)	431 (76)
24 (7.3)	387 (68)	464 (81)
26 (7.9)	415 (73)	497 (87)
28 (8.5)	443 (78)	531 (93)

*RD = REINFORCEMENT DIRECTION

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RALEIGH

STANDARD DRAWING NO. 1801.02

TEMPORARY
FABRIC WALL

SHEET 3 OF 11 DATE: 12-19-06

PROJECT REFERENCE NO.	SHEET
I-4407	2-P5

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

Scott A. Hidden 3/29/07

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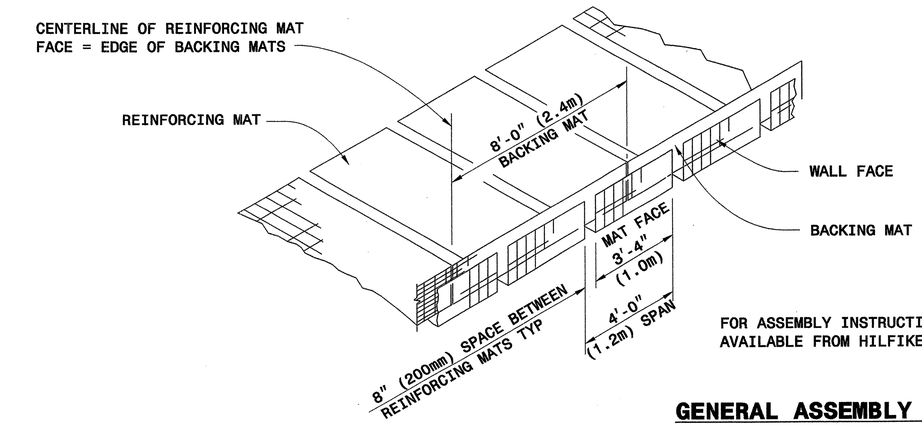
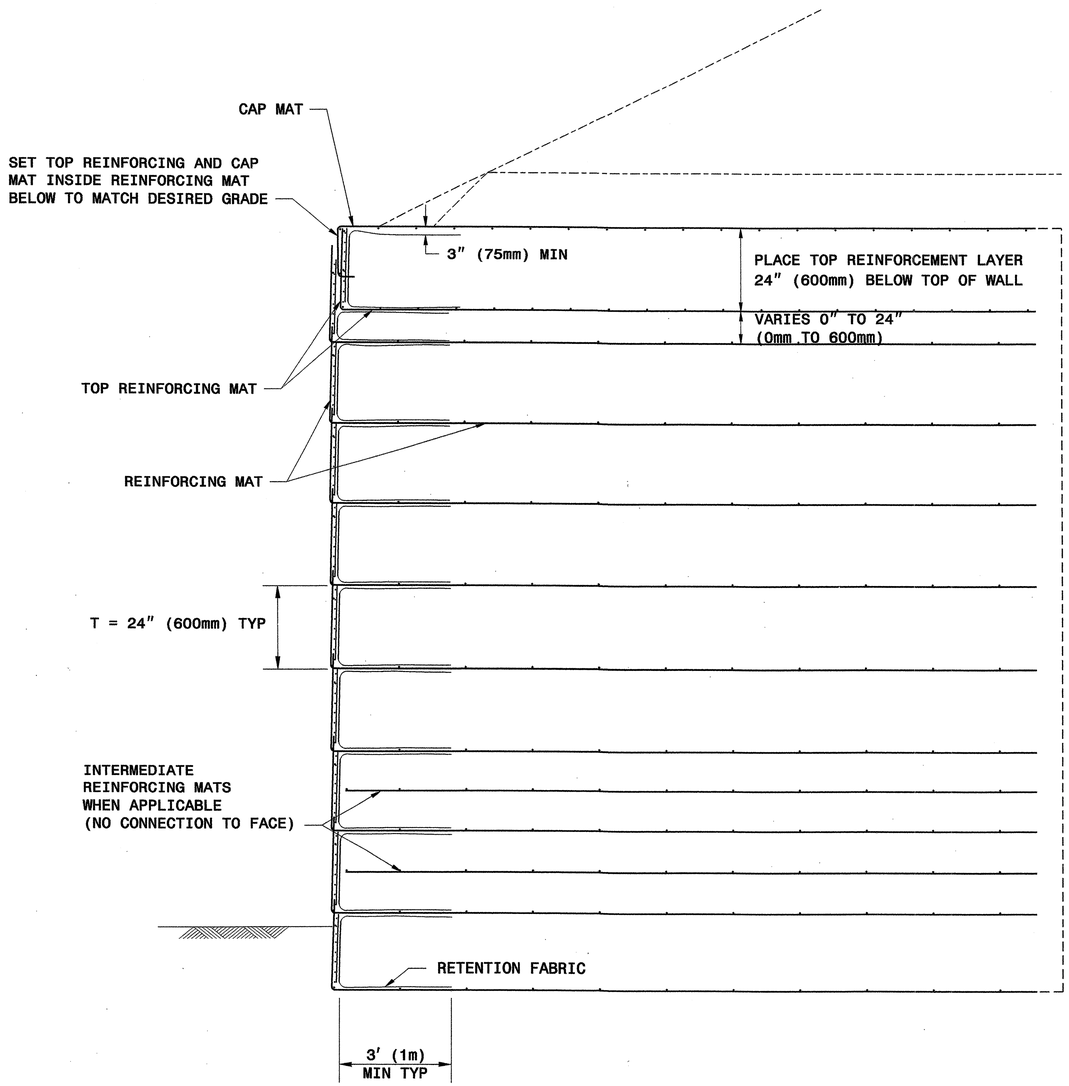
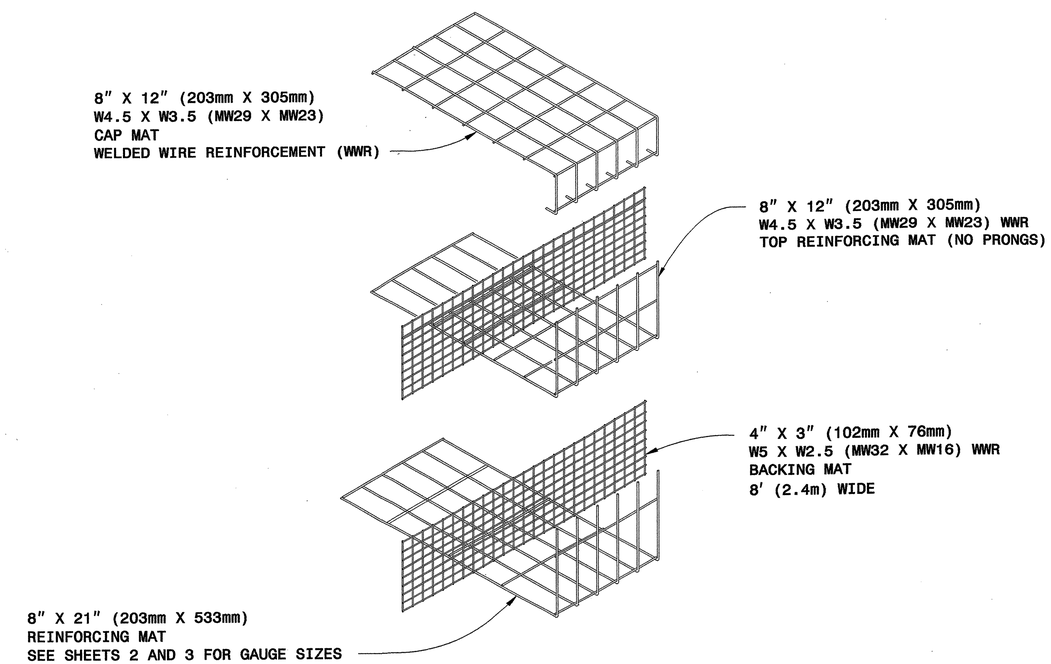


FOR ASSEMBLY INSTRUCTIONS, SEE WELDED WIRE WALL CONSTRUCTION GUIDE AVAILABLE FROM HILFIKER WEBSITE AT WWW.HILFIKER.COM/WWW

GENERAL ASSEMBLY DETAIL



TYPICAL SECTION



WALL COMPONENTS

HW® HILFIKER RETAINING WALLS

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GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

STANDARD DRAWING NO. 1801.02

HILFIKER TEMPORARY WALL

SHEET 4 OF 11 DATE: 12-19-06

PROJECT REFERENCE NO.	SHEET
I-4407	2-P6

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

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ENGINEER

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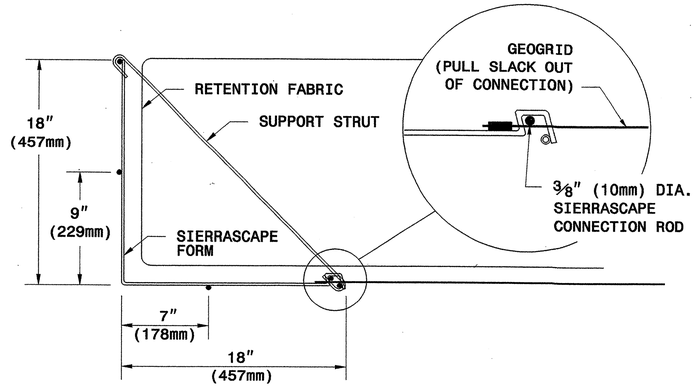
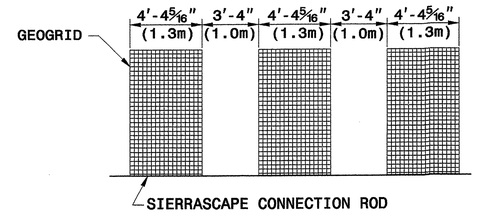
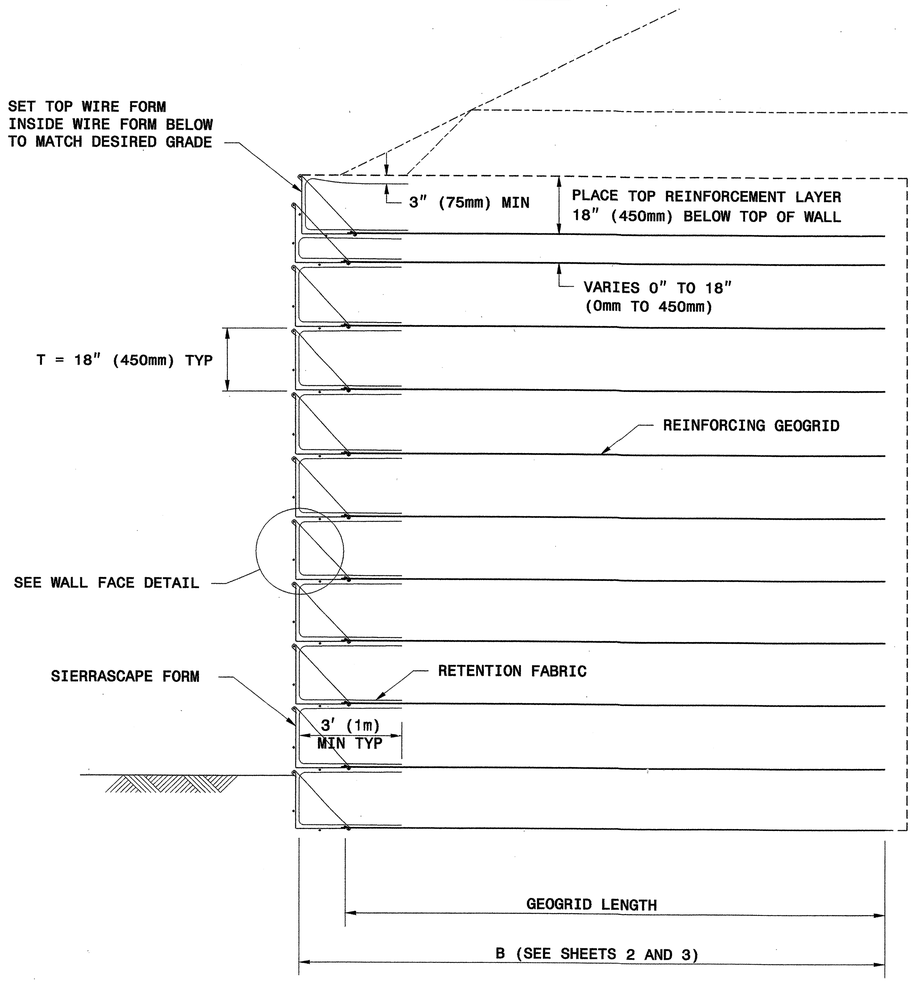


WALL FACE DETAIL

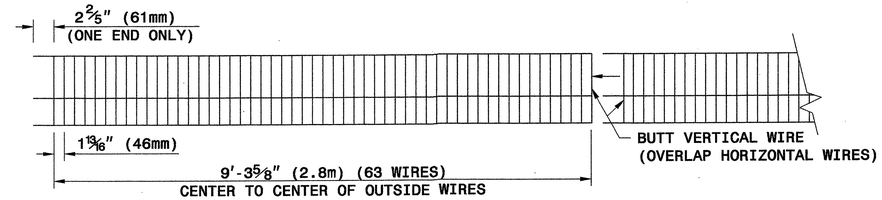


PLACE ALTERNATE LAYERS OF GEOGRID IN STAGGERED PATTERN SUCH THAT THE LAYER ABOVE IS CENTERED OVER SPACE BELOW

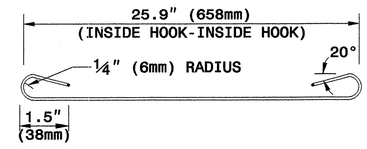
TYPICAL GEOGRID COVERAGE



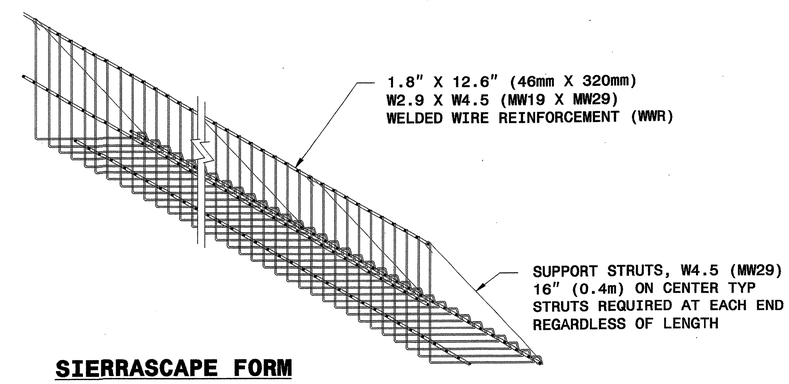
TYPICAL SECTION



ELEVATION VIEW



SUPPORT STRUT



SIERRASCAPE FORM

WALL COMPONENTS

TENSAR®
TENSAR EARTH TECHNOLOGIES, INC.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

STANDARD DRAWING NO. 1801.02

SIERRASCAPE TEMPORARY WALL

SHEET 5 OF 11 DATE: 12-19-06

PROJECT REFERENCE NO.	SHEET
I-4407	2-P7

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

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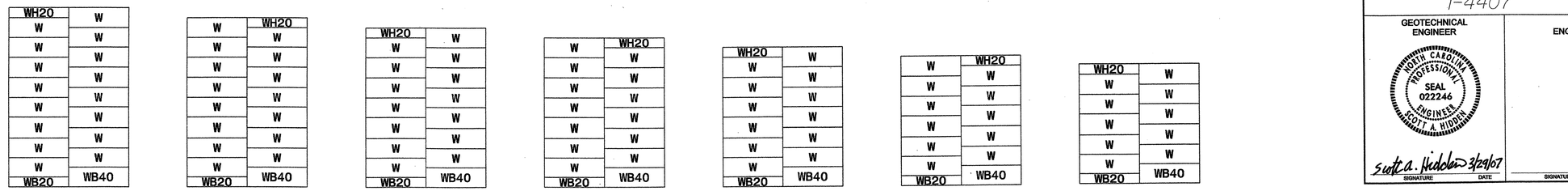
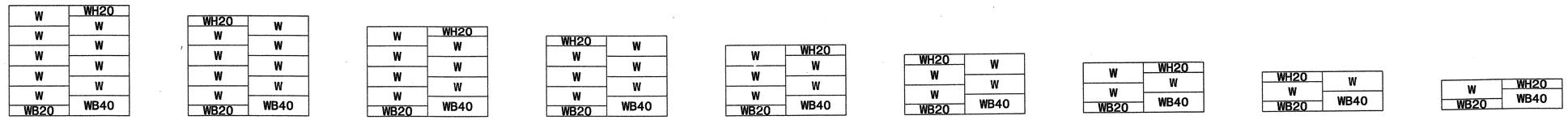
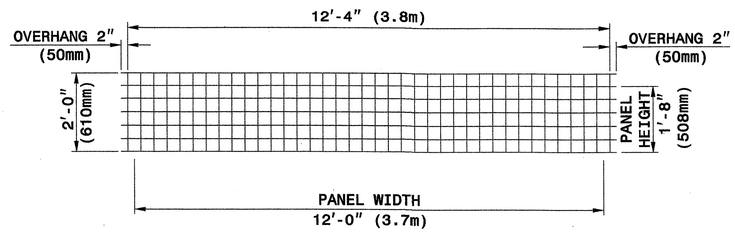
PANEL LAYOUTS



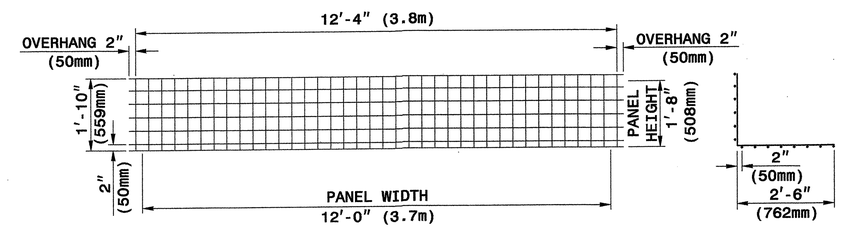
H - WALL HEIGHT							
(FEET-INCHES)	< 28 - 0	< 27 - 0	< 25 - 4	< 23 - 8	< 22 - 0	< 20 - 4	< 18 - 8
(METER)	< 8.5	< 8.2	< 7.7	< 7.2	< 6.7	< 6.2	< 5.7



(FEET-INCHES)	< 17 - 0	< 15 - 4	< 13 - 8	< 12 - 0	< 10 - 4	< 8 - 8	< 7 - 0	< 5 - 4	< 3 - 8
(METER)	< 5.2	< 4.7	< 4.2	< 3.7	< 3.2	< 2.6	< 2.1	< 1.6	< 1.1

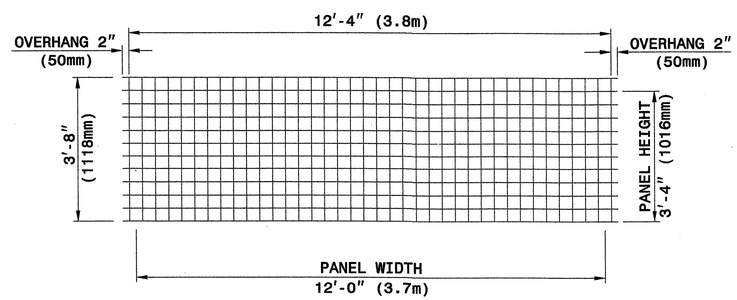


TYPE WH20



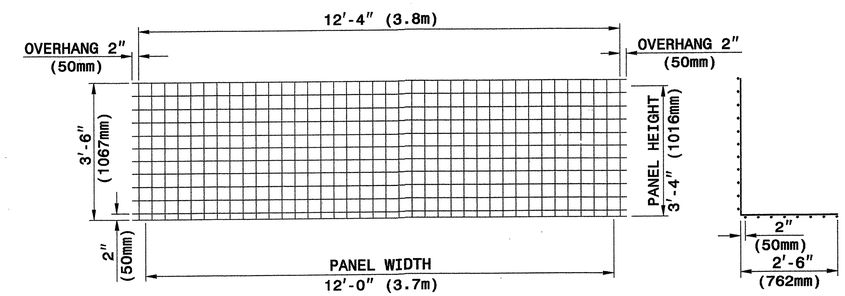
TYPE WB20

SECTION



TYPE W

WELDED WIRE FACINGS



TYPE WB40

SECTION

WELDED WIRE FORMS

PANEL TYPES (WELDED WIRE FACINGS AND FORMS)

4" X 4" (100mm X 100mm), W8 X W8 (MW52 X MW52) WELDED WIRE REINFORCEMENT (WWR)

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STANDARD DRAWING NO. 1801.02

RETAINED EARTH TEMPORARY WALL

SHEET 6 OF 11

DATE: 12-19-06

PROJECT REFERENCE NO.	SHEET
I-4407	2-P8

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

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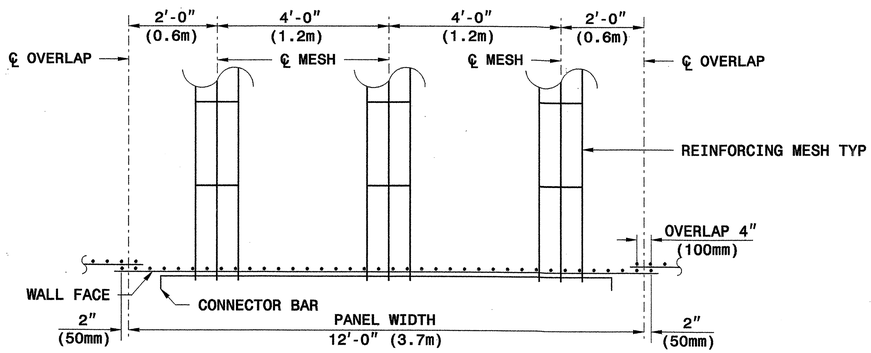
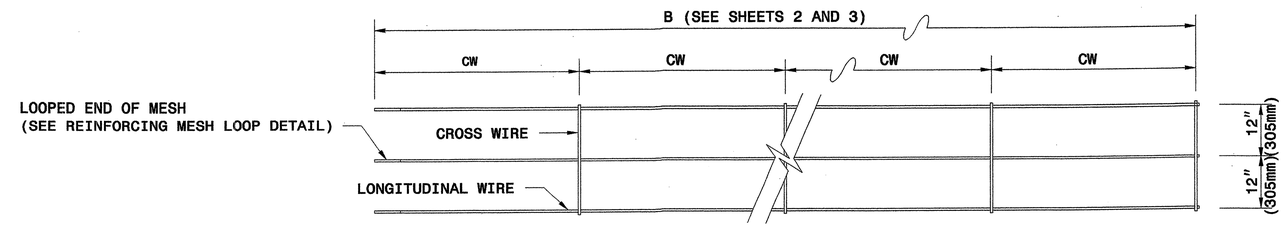


REINFORCING MESH PLACEMENT DETAIL
(PLAN VIEW)

½" (13mm) DIA. BAR

CONNECTOR BAR



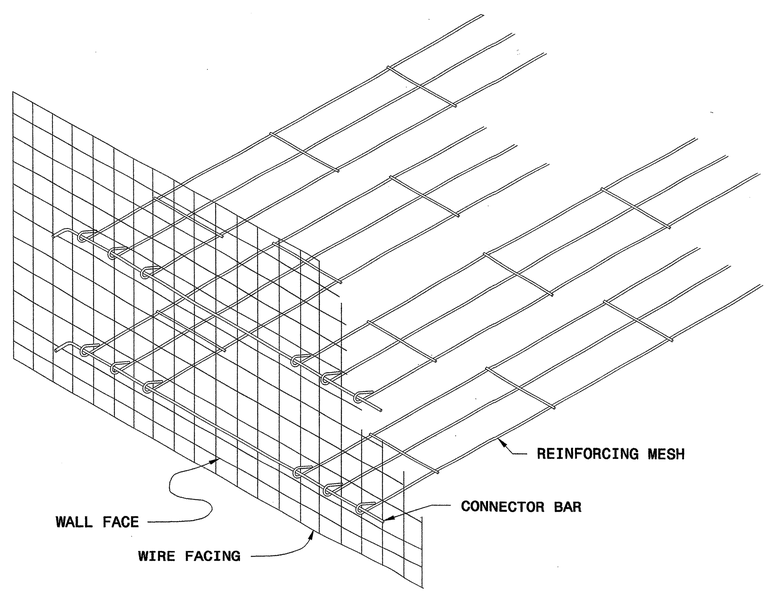
IF REINFORCEMENT LENGTH IS NOT AN INCREMENT OF 2'-0" (610mm) MAKE CW EQUAL TO 12" (305mm) AT THE END OF THE REINFORCING MESH OPPOSITE THE LOOPED END

3W8 X W8 x 2.0' (3MW52 X MW52 X 610mm)

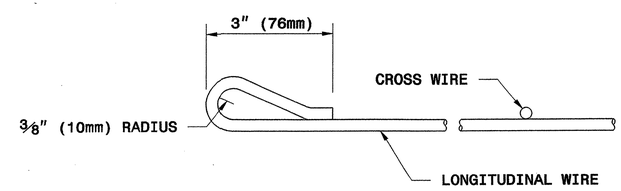
NO. OF LONGITUDINAL WIRES
GAUGE OF LONGITUDINAL WIRES
GAUGE OF CROSS WIRES
SPACING OF CROSS WIRES IN FT (mm), CW

REINFORCING MESH DESIGNATION

REINFORCING MESH



GENERAL ASSEMBLY DETAIL



REINFORCING MESH LOOP DETAIL

The Reinforced Earth Company

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

STANDARD DRAWING NO. 1801.02

RETAINED EARTH TEMPORARY WALL

SHEET 7 OF 11 DATE: 12-19-06

PROJECT REFERENCE NO.	SHEET
I-4407	2-P9

GEOTECHNICAL ENGINEER

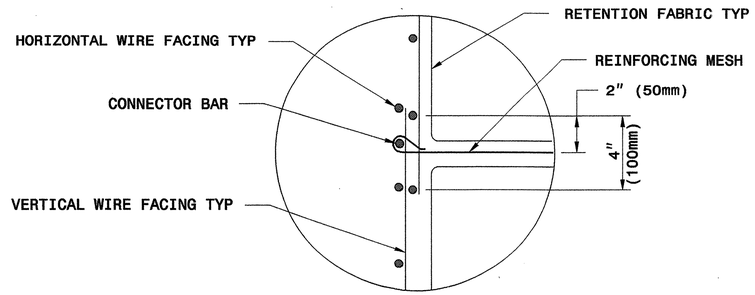
NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

Scott A. Hidden 3/29/07

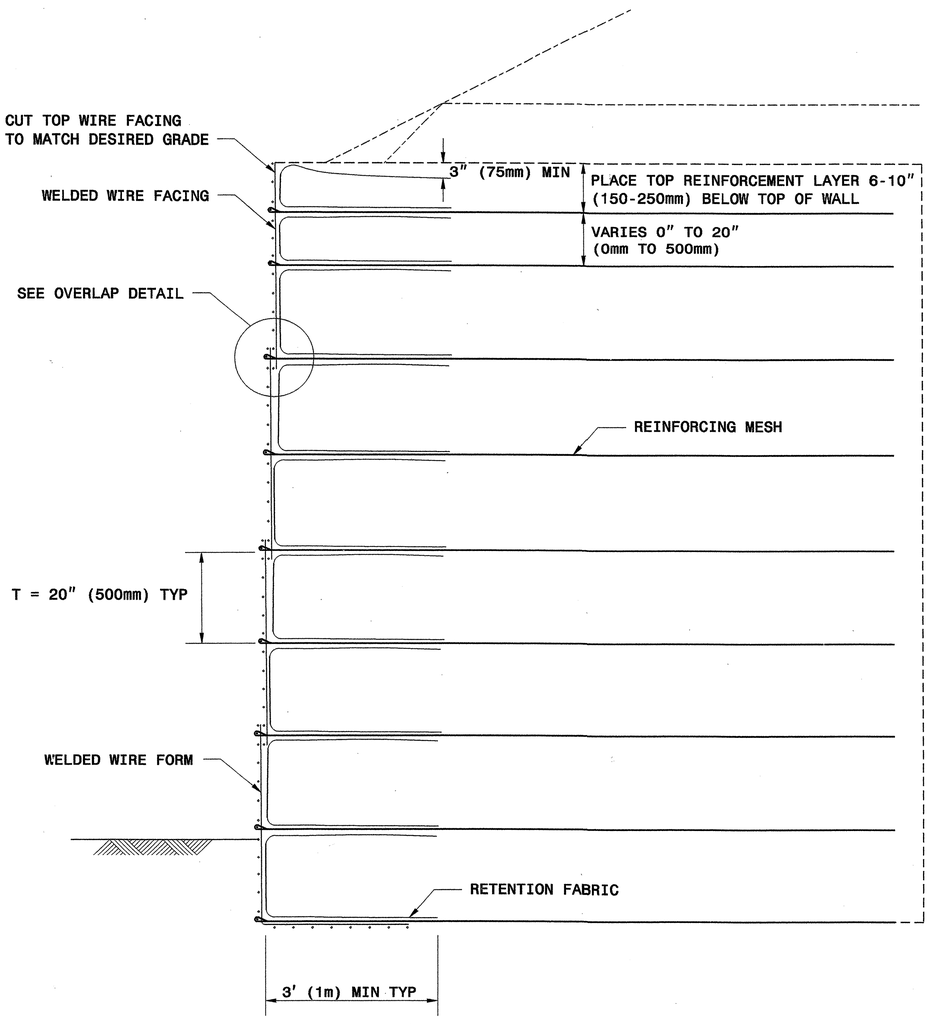
SIGNATURE DATE

ENGINEER

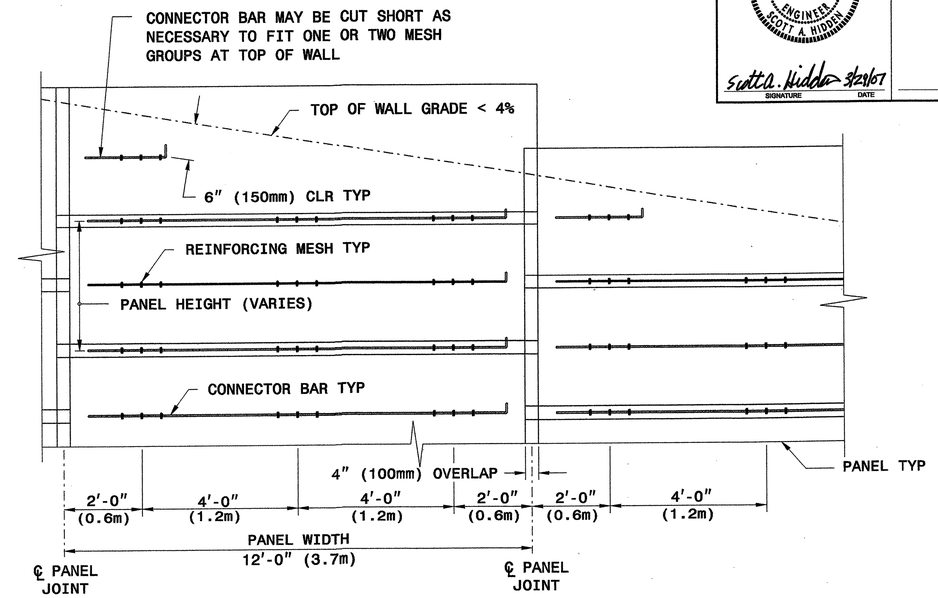
SIGNATURE DATE



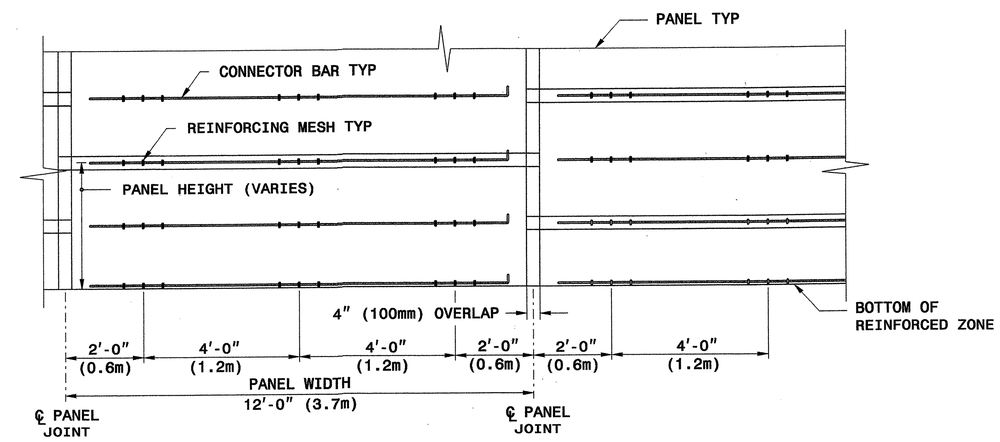
OVERLAP DETAIL



TYPICAL SECTION



TYPICAL ELEVATION @ TOP OF WALL
(WIRES NOT SHOWN FOR CLARITY)



TYPICAL ELEVATION @ BOTTOM OF WALL
(WIRES NOT SHOWN FOR CLARITY)

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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

STANDARD DRAWING NO. 1801.02

RETAINED EARTH TEMPORARY WALL

SHEET 8 OF 11 DATE: 12-19-06

PROJECT REFERENCE NO.	SHEET
I-4407	2-P10

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

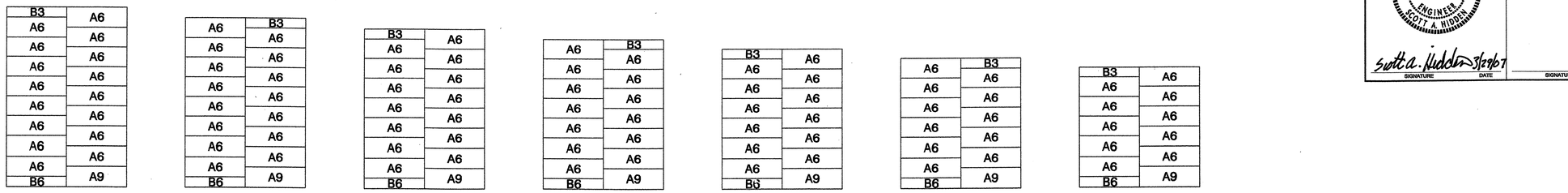
Scott A. Hidden 3/29/07
SIGNATURE DATE

ENGINEER

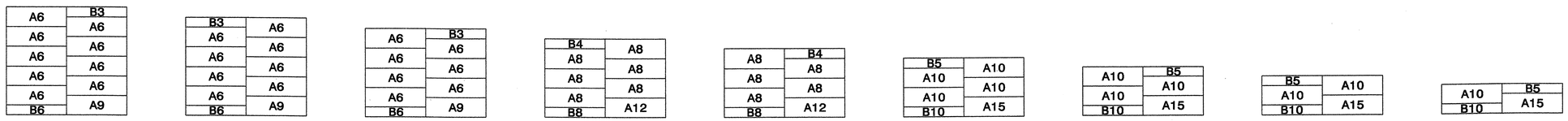
SIGNATURE DATE

PANEL LAYOUTS

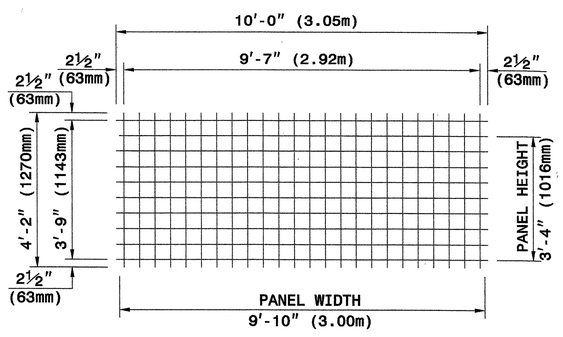
H - WALL HEIGHT



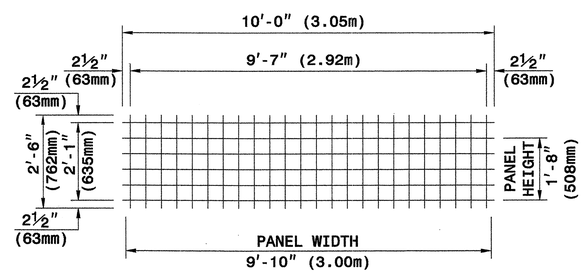
(FEET-INCHES)	< 28 - 0	< 27 - 8	< 26 - 0	< 24 - 4	< 22 - 8	< 21 - 0	< 19 - 4
(METER)	< 8.5	< 8.4	< 7.9	< 7.4	< 6.9	< 6.4	< 5.9



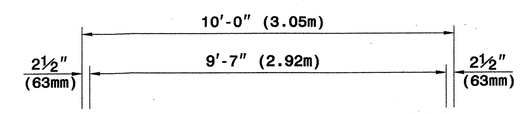
(FEET-INCHES)	< 17 - 8	< 16 - 0	< 14 - 4	< 12 - 8	< 11 - 0	< 9 - 4	< 7 - 8	< 6 - 0	< 4 - 4
(METER)	< 5.4	< 4.9	< 4.4	< 3.9	< 3.4	< 2.8	< 2.3	< 1.8	< 1.3



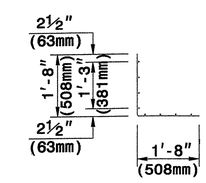
TYPE A



TYPE B



WELDED WIRE FORM



SECTION

WELDED WIRE FACINGS

PANEL TYPES (WELDED WIRE FACINGS AND FORM

5" X 5" (125mm X 125mm), W5 X W5 (MW32 X MW32) WELDED WIRE REINFORCEMENT (WWR)

The Reinforced Earth Company

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

STANDARD DRAWING NO. 1801.02

TERRATREL TEMPORARY WALL

SHEET 9 OF 11 DATE: 12-19-06

PROJECT REFERENCE NO.	SHEET
I-4407	2-P11

GEOTECHNICAL ENGINEER

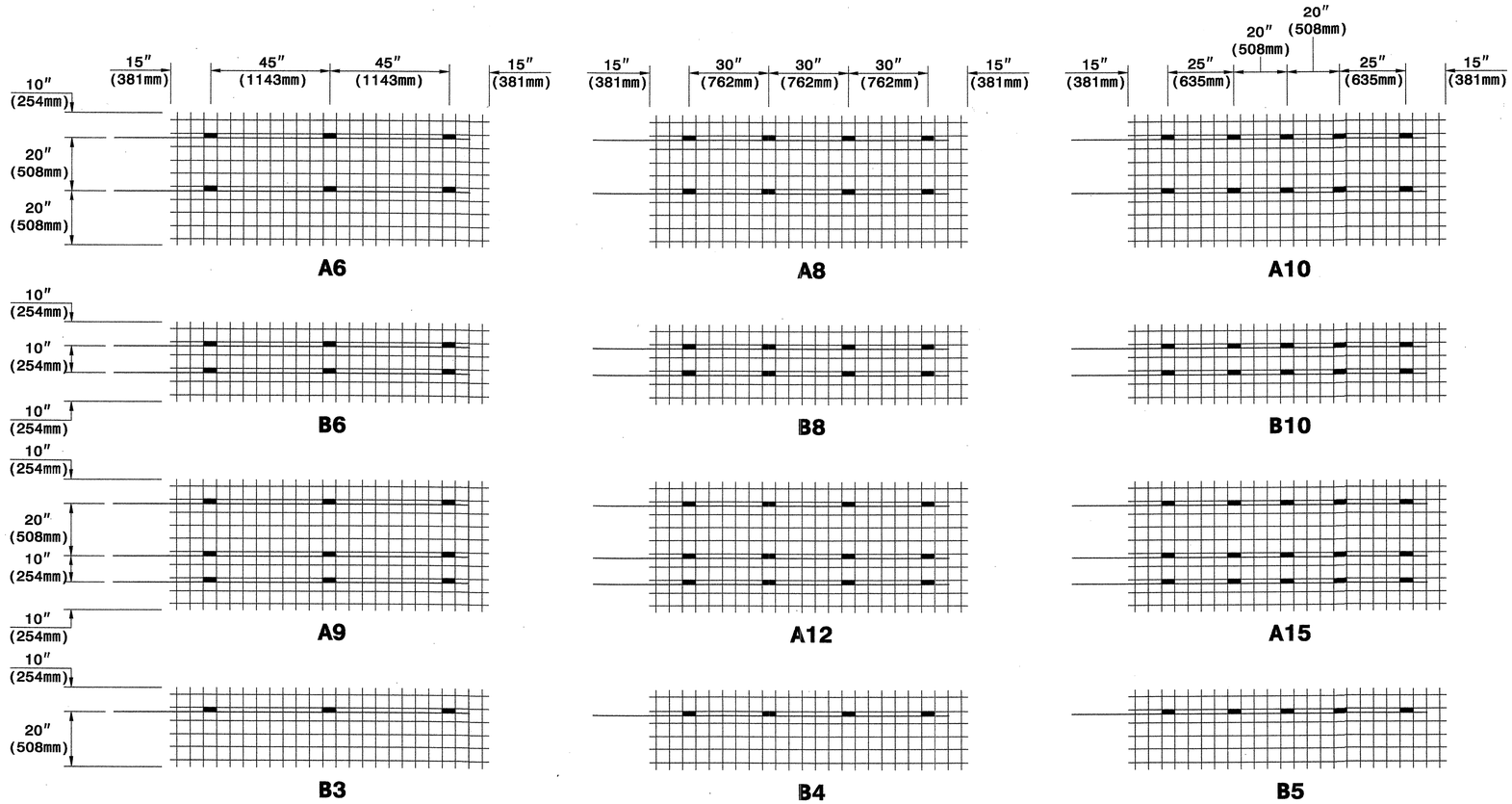
NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

Scott A. Hidden 3/29/07

SIGNATURE DATE

ENGINEER

SIGNATURE DATE

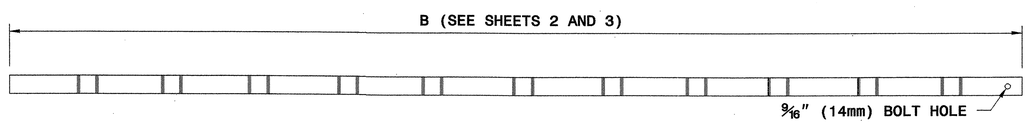


KEY: A8

NUMBER OF REINFORCING STRIPS

PANEL TYPE

CONNECTOR ROD AND REINFORCING STRIP PLACEMENT DIAGRAMS



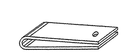
REINFORCING STRIP - 2" X 5/32" (50mm X 4mm)

½" (13mm) DIA. ROD

CONNECTOR ROD

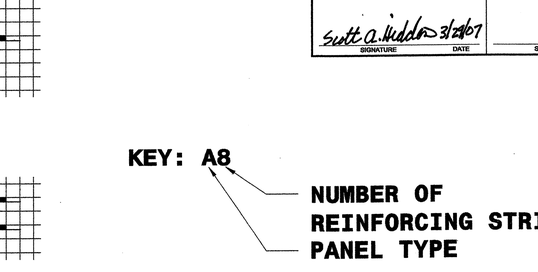
½" (13mm) BOLT WITH NUT AND WASHER

BOLT SET



HAIRPIN CONNECTOR

WALL COMPONENTS



STRIP TO FACING CONNECTION

The Reinforced Earth Company

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

STANDARD DRAWING NO. 1801.02

TERRATREL TEMPORARY WALL

SHEET 10 OF 11

DATE: 12-19-06

PROJECT REFERENCE NO.	SHEET
I-4407	2-P12

GEOTECHNICAL ENGINEER

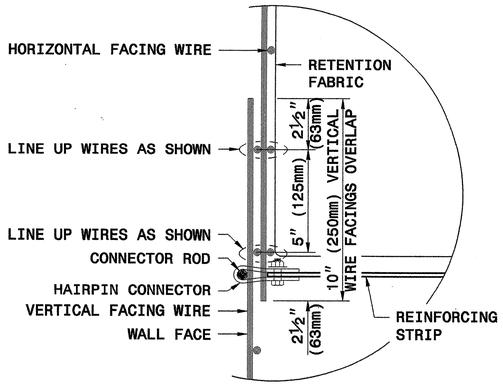
NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

Scott A. Hidden 3/29/07

SIGNATURE DATE

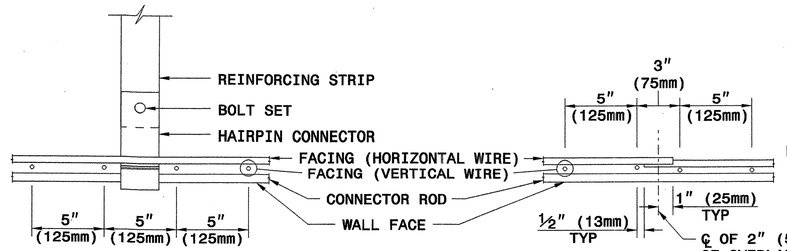
ENGINEER

SIGNATURE DATE



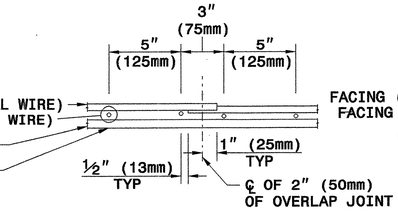
OVERLAP FACINGS VERTICALLY ONE FULL 5" (125mm) WIRE SQUARE DISREGARDING HALF SQUARES AT EDGES

VERTICAL OVERLAP DETAIL



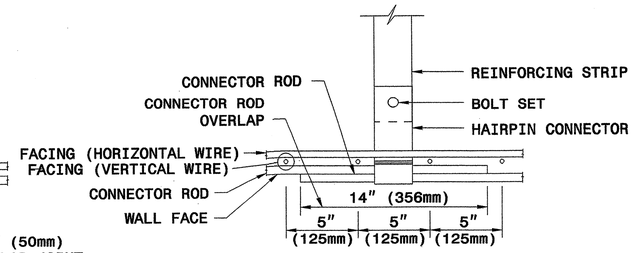
PLAN DETAIL 'A'

STRIP CONNECTION



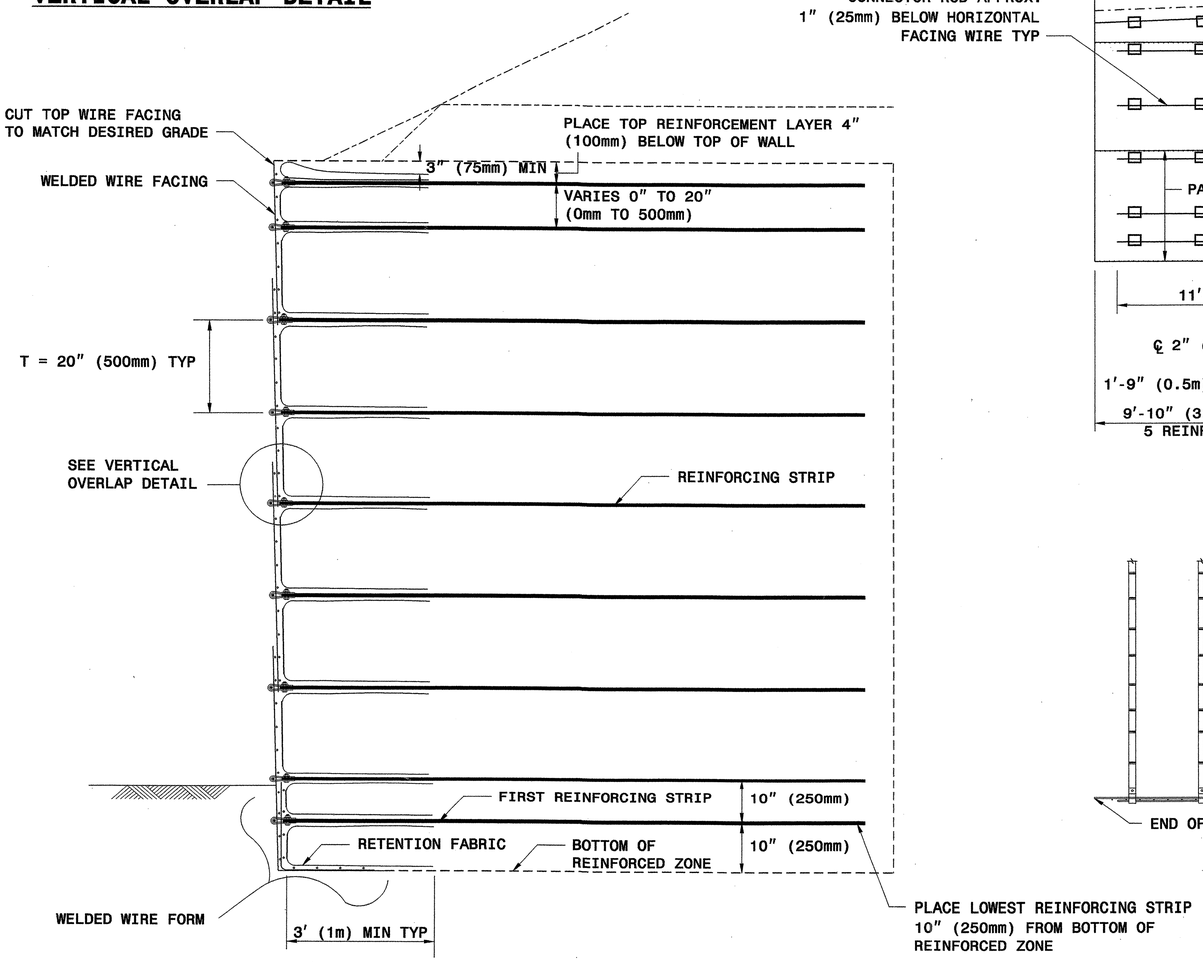
PLAN DETAIL 'B'

HORIZONTAL OVERLAP DETAIL

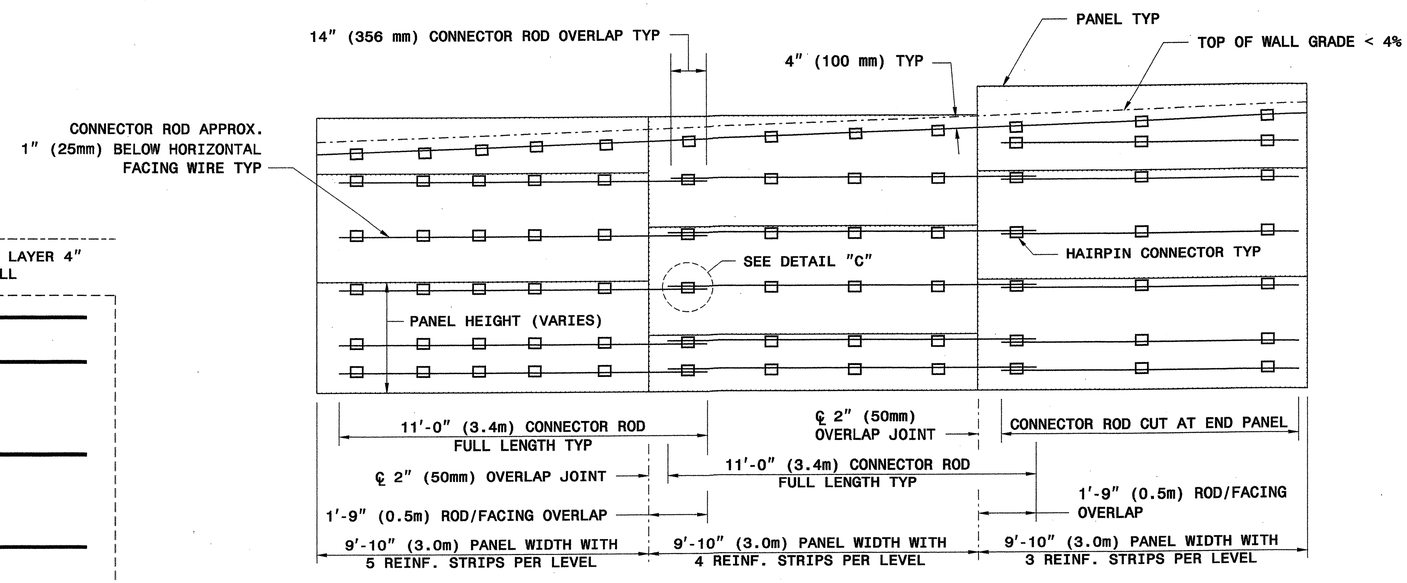


PLAN DETAIL 'C'

STRIP CONNECTION WITH HORIZONTAL OVERLAP DETAIL

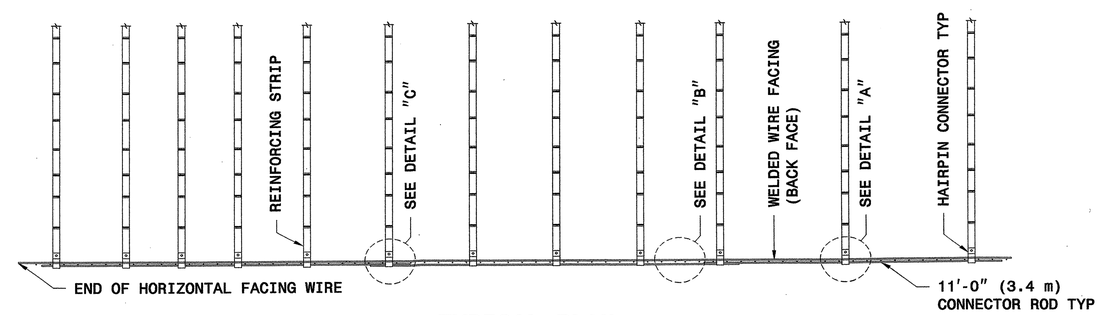


TYPICAL SECTION



TYPICAL ELEVATION

(WIRES NOT SHOWN FOR CLARITY)



TYPICAL PLAN

The Reinforced Earth Company

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

STANDARD DRAWING NO. 1801.02

TERRATREL TEMPORARY WALL

SHEET 11 OF 11

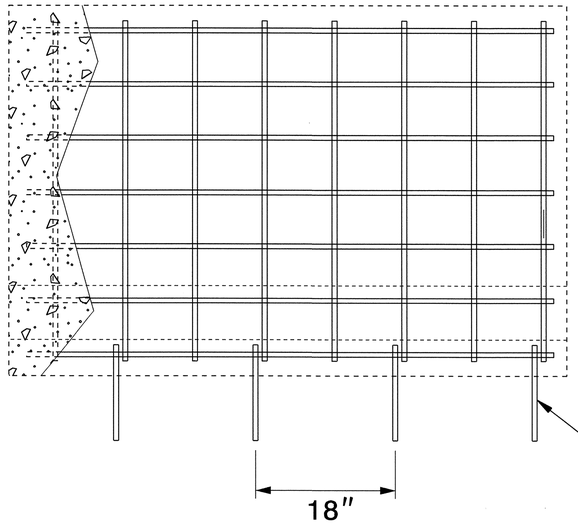
DATE: 12-19-06

PROJECT REFERENCE NO.	SHEET NO.
I-4407	2-Q

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

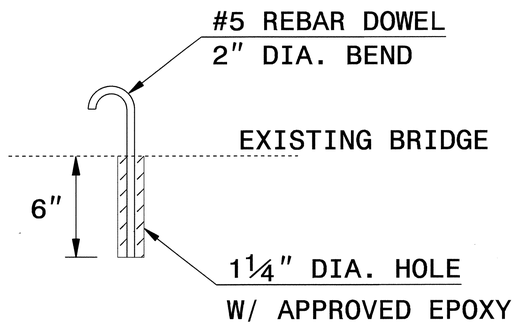
ENGLISH DETAIL DRAWING FOR
DOUBLE FACED CONCRETE BARRIER
TYPE T ACROSS EXISTING BRIDGE

SHEET OF
854d02

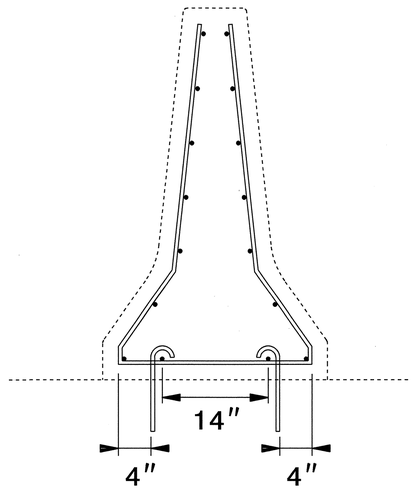


ELEVATION VIEW

NOTES:
1. SPACE #5 REBAR DOWELS AT 18 o.c.
2. DRILL 1-¼" HOLES INTO BRIDGE DECK FOR PLACEMENT OF DOWELS
3. USE AN APPROVED TYPE 3A EPOXY, AS DEFINED IN SECTION 1081 OF THE STANDARD SPECIFICATIONS, TO ANCHOR DOWELS INTO EXISTING STRUCTURE.
4. DOWEL LOCATIONS MAY BE ADJUSTED AS DIRECTED BY THE ENGINEER.
5. SEE RDWY. STD. DWG. NO. 854.02 FOR BARRIER REBAR PLACEMENT.



DOWEL INSET



SECTION VIEW

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

ENGLISH DETAIL DRAWING FOR
DOUBLE FACED CONCRETE BARRIER
TYPE T ACROSS EXISTING BRIDGE

SHEET OF
854d02

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HOWERTON
4/12/10

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

SEE TITLE

ORIGINAL BY: J. S. Howerton DATE: 4/12/10
MODIFIED BY: DATE:
CHECKED BY: DATE: 4/12/10
FILE SPEC.: w:\jhowerton\0854d02 Type T Dowels.dgn

12-APR-2010 12:01
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PROJECT REFERENCE NO.	SHEET NO.
I-4407	3 (1 of 2)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C202472

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0000400000-N	801	Lump Sum		CONSTRUCTION SURVEYING
0001000000-E	200	Lump Sum		CLEARING & GRUBBING .. ACRE(S)
0008000000-E	200	2	ACR	SUPPLEMENTARY CLEARING & GRUBBING
0022000000-E	225	87,000	CY	UNCLASSIFIED EXCAVATION
0036000000-E	225	3,000	CY	UNDERCUT EXCAVATION
0038000000-E	SP	21,600	CY	SHALLOW UNDERCUT
0080000000-E	SP	40,000	TON	CLASS IV SUBGRADE STABILIZATION
0134000000-E	240	240	CY	DRAINAGE DITCH EXCAVATION
0156000000-E	250	44,000	SY	REMOVAL OF EXISTING ASPHALT PAVEMENT
0196000000-E	270	41,850	SY	FABRIC FOR SOIL STABILIZATION
0199000000-E	SP	2,030	SF	TEMPORARY SHORING
0234000000-E	SP	2,000	CY	GENERIC GRADING ITEM SELECT GRANULAR MATERIAL
0320000000-E	SP	3,200	SY	FOUNDATION CONDITIONING FABRIC
0330000000-E	SP	1,020	TON	GENERIC DRAINAGE ITEM FOUNDATION CONDITIONING MATERIAL, MINOR STRS
0354000000-E	SP	1,164	LF	***" RC PIPE CULVERTS, CLASS ***** (15", III)
0354000000-E	SP	568	LF	***" RC PIPE CULVERTS, CLASS ***** (18", III)
0354000000-E	SP	160	LF	***" RC PIPE CULVERTS, CLASS ***** (24", III)
0354000000-E	SP	140	LF	***" RC PIPE CULVERTS, CLASS ***** (30", III)
0354000000-E	SP	44	LF	***" RC PIPE CULVERTS, CLASS ***** (36", III)
0448200000-E	SP	1,952	LF	15" RC PIPE CULVERTS, CLASS IV
0448300000-E	SP	268	LF	18" RC PIPE CULVERTS, CLASS IV
0448400000-E	SP	4	LF	24" RC PIPE CULVERTS, CLASS IV
0973100000-E	SP	32	LF	**" WELDED STEEL PIPE, ****" THICK, GRADE ** IN SOIL (18", 0.5", B)
0973300000-E	SP	32	LF	**" WELDED STEEL PIPE, ****" THICK, GRADE ** NOT IN SOIL (18", 0.5", B)
0986000000-E	SP	852	LF	GENERIC PIPE ITEM 15" CS PIPE CULVERTS, 0.064" THICK
0986000000-E	SP	3,970	LF	GENERIC PIPE ITEM 15" SIDE DRAIN PIPE
0986000000-E	SP	104	LF	GENERIC PIPE ITEM 18" CS PIPE CULVERTS, 0.064" THICK
0986000000-E	SP	356	LF	GENERIC PIPE ITEM 18" SIDE DRAIN PIPE
0992000000-E	SP	33	EA	GENERIC PIPE ITEM 15" CS PIPE ELBOWS, 0.064" THICK
0992000000-E	SP	4	EA	GENERIC PIPE ITEM 18" CS PIPE ELBOWS, 0.064" THICK
0995000000-E	340	1,959	LF	PIPE REMOVAL
1011000000-N	500	Lump Sum		FINE GRADING
1110000000-E	510	500	TON	STABILIZER AGGREGATE
1121000000-E	520	15,400	TON	AGGREGATE BASE COURSE
1231000000-E	560	21,600	CY	SHOULDER BORROW
1297000000-E	607	3,900	SY	MILLING ASPHALT PAVEMENT, ***" DEPTH (3")
1308000000-E	607	16,200	SY	MILLING ASPHALT PAVEMENT, ***" TO ******" DEPTH (0" TO 3")
1489000000-E	610	4,400	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
1491000000-E	610	64,600	TON	ASPHALT CONC BASE COURSE, TYPE B25.0C
1498000000-E	610	2,800	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B
1503000000-E	610	25,600	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C

ItemNumber	Sec #	Quantity	Unit	Description
1519000000-E	610	6,000	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5B
1523000000-E	610	66,600	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5C
1560000000-E	620	4,665	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22
1565000000-E	620	4,000	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 70-22
1840000000-E	665	167,000	LF	MILLED RUMBLE STRIPS (ASPHALT CEMENT CONCRETE)
2022000000-E	815	112	CY	SUBDRAIN EXCAVATION
2033000000-E	815	84	CY	SUBDRAIN FINE AGGREGATE
2044000000-E	815	500	LF	6" PERFORATED SUBDRAIN PIPE
2055000000-E	815	15	EA	6" SUBDRAIN PIPE WYES, TEES, & ELBOWS
2066000000-N	815	1	EA	CONCRETE PAD FOR SUBDRAIN PIPE OUTLET
2077000000-E	815	6	LF	6" OUTLET PIPE (SUBDRAINS)
2253000000-E	840	45.146	CY	PIPE COLLARS
2264000000-E	840	0.09	CY	PIPE PLUGS
2286000000-N	840	205	EA	MASONRY DRAINAGE STRUCTURES
2308000000-E	840	144.54	LF	MASONRY DRAINAGE STRUCTURES
2364200000-N	840	96	EA	FRAME WITH TWO GRATES, STD 840.20
2365000000-N	840	37	EA	FRAME WITH TWO GRATES, STD 840.22
2367000000-N	840	1	EA	FRAME WITH TWO GRATES, STD 840.29
2374000000-N	840	2	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (E)
2374000000-N	840	1	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (F)
2374000000-N	840	1	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (G)
2396000000-N	840	6	EA	FRAME WITH COVER, STD 840.54
2407000000-N	840	71	EA	STEEL FRAME WITH TWO GRATES, STD 840.37
2495000000-E	SP	0.79	CY	GENERIC DRAINAGE ITEM CONCRETE APRON FOR GDI
2549000000-E	846	700	LF	2'-6" CONCRETE CURB & GUTTER
2556000000-E	846	12,800	LF	SHOULDER BERM GUTTER
2577000000-E	846	17,600	LF	CONCRETE EXPRESSWAY GUTTER
2619000000-E	850	170	SY	4" CONCRETE PAVED DITCH
2655000000-E	852	700	SY	5" MONOLITHIC CONCRETE ISLANDS (KEYED IN)
2703000000-E	854	10,030	LF	CONCRETE BARRIER, TYPE ******* (T)
2710000000-N	854	10	EA	CONCRETE BARRIER TRANSITION SECTION
2717000000-E	854	1,520	LF	VARIABLE HEIGHT CONCRETE BARRIER, TYPE ********** (T1)
2717000000-E	854	370	LF	VARIABLE HEIGHT CONCRETE BARRIER, TYPE ********** (T2)
2724000000-E	857	2,030	LF	PRECAST REINFORCED CONCRETE BARRIER, SINGLE FACED
2875000000-N	859	11	EA	CONVERT EXISTING CATCH BASIN TO DROP INLET
2893000000-N	SP	11	EA	CONVERT EXISTING CATCH BASIN TO JUNCTION BOX WITH MANHOLE COVER
2938000000-N	SP	5	EA	CONVERT EXISTING DROP INLET TO JUNCTION BOX WITH MANHOLE COVER
3030000000-E	862	31,000	LF	STEEL BM GUARDRAIL
3045000000-E	862	550	LF	STEEL BM GUARDRAIL, SHOP CURVED
3105000000-N	862	2	EA	STEEL BM GUARDRAIL TERMINAL SECTIONS
3150000000-N	862	20	EA	ADDITIONAL GUARDRAIL POSTS
3195000000-N	862	2	EA	GUARDRAIL ANCHOR UNITS, TYPE AT-1
3210000000-N	862	46	EA	GUARDRAIL ANCHOR UNITS, TYPE CAT-1

ItemNumber	Sec #	Quantity	Unit	Description
3215000000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE III
3270000000-N	SP	66	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
3285000000-N	SP	4	EA	GUARDRAIL ANCHOR UNITS, TYPE M-350
3317000000-N	862	35	EA	GUARDRAIL ANCHOR UNITS, TYPE B-77
3319000000-N	862	3	EA	GUARDRAIL ANCHOR UNITS, TYPE B-83
3345000000-E	864	44,400	LF	REMOVE & RESET EXISTING GUARDRAIL
3360000000-E	863	54,791	LF	REMOVE EXISTING GUARDRAIL
3435000000-N	SP	1,000	EA	GENERIC GUARDRAIL ITEM REPLACE EXISTING GUARDRAIL OFFSET BLOCKS
3503000000-E	866	42,900	LF	WOVEN WIRE FENCE, 47" FABRIC
3509000000-E	866	2,720	EA	4" TIMBER FENCE POSTS, 7'-6" LONG
3515000000-E	866	640	EA	5" TIMBER FENCE POSTS, 8'-0" LONG
3536000000-E	866	4,700	LF	CHAIN LINK FENCE, 48" FABRIC
3542000000-E	866	390	EA	METAL LINE POSTS FOR 48" CHAIN LINK FENCE
3548000000-E	866	35	EA	METAL TERMINAL POSTS FOR 48" CHAIN LINK FENCE
3554000000-E	866	12	EA	METAL GATE POSTS FOR **" CHAIN LINK FENCE, DOUBLE GATE (48")
3557000000-E	866	2,000	LF	ADDITIONAL BARBED WIRE
3564000000-E	866	5	EA	SINGLE GATES, **" HIGH, **' WIDE, **' OPENING (47", 10', 10')
3565000000-E	866	6	EA	DOUBLE GATES, **" HIGH, **' WIDE, **' OPENING (48", 5', 10')
3628000000-E	876	100	TON	RIP RAP, CLASS I
3649000000-E	876	160	TON	RIP RAP, CLASS B
3656000000-E	876	3,250	SY	FILTER FABRIC FOR DRAINAGE
3659000000-N	SP	4	EA	PREFORMED SCOUR HOLES WITH LEVEL SPREADER APRON
4048000000-E	902	61	CY	REINFORCED CONCRETE SIGN FOUNDATIONS
4054000000-E	902	5	CY	PLAIN CONCRETE SIGN FOUNDATIONS
4057000000-E	SP	120	CY	OVERHEAD FOOTING
4060000000-E	903	32,765	LB	SUPPORTS, BREAKAWAY STEEL BEAM
4066000000-E	903	15,110	LB	SUPPORTS, SIMPLE STEEL BEAM
4072000000-E	903	5,350	LF	SUPPORTS, 3-LB STEEL U-CHANNEL
4078000000-E	903	16	EA	SUPPORTS, 2-LB STEEL U-CHANNEL
4082100000-N	SP	Lump Sum		SUPPORTS, OVERHEAD SIGN STRUCTURE AT STA ****** (-L- 275+00 NBL)
4082100000-N	SP	Lump Sum		SUPPORTS, OVERHEAD SIGN STRUCTURE AT STA ****** (-L- 299+00 SBL)
4082100000-N	SP	Lump Sum		SUPPORTS, OVERHEAD SIGN STRUCTURE AT STA ****** (-L- 317+80 NBL)
4082100000-N	SP	Lump Sum		SUPPORTS, OVERHEAD SIGN STRUCTURE AT STA ****** (-L1- 30+00 SBL)
4082100000-N	SP	Lump Sum		SUPPORTS, OVERHEAD SIGN STRUCTURE AT STA ****** (-L2- 355+00 NBL)
4082100000-N	SP	Lump Sum		SUPPORTS, OVERHEAD SIGN STRUCTURE AT STA ****** (-L3- 381+00 SBL)
4096000000-N	904	24	EA	SIGN ERECTION, TYPE D
4102000000-N	904	74	EA	SIGN ERECTION, TYPE E
4108000000-N	904	56	EA	SIGN ERECTION, TYPE F
4109000000-N	904	21	EA	SIGN ERECTION, TYPE *** (OVERHEAD) (A)
4109000000-N	904	9	EA	SIGN ERECTION, TYPE *** (OVERHEAD) (B)
4110000000-N	904	43	EA	SIGN ERECTION, TYPE *** (GROUND MOUNTED) (A)

09-MAR-2010 11:37
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$$$$USERNAME$$$$

STATE OF NORTH CAROLINA
SUMMARY OF QUANTITIES

PROJECT REFERENCE No.	SHEET No.
I-4407	3 (2 of 2)

ItemNumber	Sec #	Quantity	Unit	Description
4110000000-N	904	20	EA	SIGN ERECTION, TYPE *** (GROUND MOUNTED) (B)
4114000000-N	904	16	EA	SIGN ERECTION, MILEMARKERS
4116100000-N	904	14	EA	SIGN ERECTION, RELOCATE, TYPE **** (GROUND MOUNTED) (A)
4116100000-N	904	6	EA	SIGN ERECTION, RELOCATE, TYPE **** (GROUND MOUNTED) (E)
4138000000-N	907	12	EA	DISPOSAL OF SUPPORT, STEEL BEAM
4141000000-N	907	2	EA	DISPOSAL OF SUPPORT, WOOD
4149000000-N	907	6	EA	DISPOSAL OF SIGN SYSTEM, OVER-HEAD
4152000000-N	907	27	EA	DISPOSAL OF SIGN SYSTEM, STEEL BEAM
4155000000-N	907	160	EA	DISPOSAL OF SIGN SYSTEM, U-CHANNEL
4158000000-N	907	7	EA	DISPOSAL OF SIGN SYSTEM, WOOD
4192000000-N	907	6	EA	DISPOSAL OF SUPPORT, U-CHANNEL
4370000000-N	SP	Lump Sum		GENERIC SIGNING ITEM SUPPORTS, OVERHEAD SIGN STRUCT URE AT "EB US 64 20' +/- IN FRONT OF EXISTING"
4370000000-N	SP	Lump Sum		GENERIC SIGNING ITEM SUPPORTS, OVERHEAD SIGN STRUCT URE AT "WB US 64 20' +/- IN FRONT OF EXISTING"
4400000000-E	1110	632	SF	WORK ZONE SIGNS (STATIONARY)
4405000000-E	1110	1,741	SF	WORK ZONE SIGNS (PORTABLE)
4410000000-E	1110	130	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4415000000-N	1115	7	EA	FLASHING ARROW PANELS, TYPE C
4420000000-N	1120	2	EA	CHANGEABLE MESSAGE SIGN
4422000000-N	1120	42	DAY	CHANGEABLE MESSAGE SIGN (SHORT TERM)
4430000000-N	1130	1,100	EA	DRUMS
4435000000-N	1135	70	EA	CONES
4445000000-E	1145	104	LF	BARRICADES (TYPE III)
4455000000-N	1150	18	MD	FLAGGER
4465000000-N	1160	11	EA	TEMPORARY CRASH CUSHIONS
4470000000-N	1160	6	EA	RESET TEMPORARY CRASH CUSHIONS
4480000000-N	1165	2	EA	TMIA
4485000000-E	1170	18,480	LF	PORTABLE CONCRETE BARRIER
4510000000-N	SP	40	HR	LAW ENFORCEMENT
4575000000-E	SP	18,480	LF	MOVABLE CONCRETE BARRIER
4580000000-E	SP	18,480	LF	RESET MOVABLE CONCRETE BARRIER
4600000000-N	SP	1	EA	GENERIC TRAFFIC CONTROL ITEM TRANSFER & TRANSPORT VEHICLE FOR MOVABLE CONCRETE BARRIER
4650000000-N	1251	1,750	EA	TEMPORARY RAISED PAVEMENT MARKERS
4688000000-E	1205	193,644	LF	THERMOPLASTIC PAVEMENT MARKING LINES (6", 90 MILS)
4690000000-E	1205	23,307	LF	THERMOPLASTIC PAVEMENT MARKING LINES (6", 120 MILS)
4700000000-E	1205	13,526	LF	THERMOPLASTIC PAVEMENT MARKING LINES (12", 90 MILS)
4725000000-E	1205	30	EA	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)
4770000000-E	1205	94,413	LF	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (IV)
4775000000-E	1205	1,080	LF	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (6") (III)
4780000000-E	1205	2,400	LF	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (8") (IV)
4810000000-E	1205	299,601	LF	PAINT PAVEMENT MARKING LINES (4")
4820000000-E	1205	14,900	LF	PAINT PAVEMENT MARKING LINES (8")
4845000000-N	1205	33	EA	PAINT PAVEMENT MARKING SYMBOL
4850000000-E	1205	700	LF	REMOVAL OF PAVEMENT MARKING LINES (4")

ItemNumber	Sec #	Quantity	Unit	Description
4860000000-E	1205	1,400	LF	REMOVAL OF PAVEMENT MARKING LINES (8")
4900000000-N	1251	3	EA	PERMANENT RAISED PAVEMENT MARKERS
4905000000-N	1253	2,150	EA	SNOWPLOWABLE PAVEMENT MARKERS
5000000000-E	1401	7	EA	***' HIGH MOUNT STANDARD (60')
5005000000-E	1401	6	EA	80' HIGH MOUNT STANDARD
5010000000-E	1401	3	EA	100' HIGH MOUNT STANDARD
5015000000-E	1401	3	EA	120' HIGH MOUNT STANDARD
5020000000-N	1401	1	EA	PORTABLE DRIVE UNIT
5025000000-E	1402	96	CY	HIGH MOUNT FOUNDATIONS
5030000000-N	1403	76	EA	HIGH MOUNT LUMINAIRES ******** (400W HPS)
5030000000-N	1403	42	EA	HIGH MOUNT LUMINAIRES ******** (750W HPS)
5120000000-N	1407	1	EA	ELECTRIC SERVICE POLE **** ******** (30' CLASS 4)
5125000000-E	1407	300	LF	ELECTRIC SERVICE LATERAL ********** (3 #1/0 USE IN 2"C)
5145000000-N	1408	3	EA	LIGHT CONTROL EQUIPMENT, TYPE RW ********** (240/480 V, 150A)
5155000000-E	1409	790	LF	ELECTRICAL DUCT, TYPE BD, SIZE ***** (2")
5155000000-E	1409	115	LF	ELECTRICAL DUCT, TYPE BD, SIZE ***** (3")
5160000000-E	1409	650	LF	ELECTRICAL DUCT, TYPE JA, SIZE ***** (2")
5160000000-E	1409	175	LF	ELECTRICAL DUCT, TYPE JA, SIZE ***** (3")
5160000000-E	1409	515	LF	ELECTRICAL DUCT, TYPE JA, SIZE ***** (4")
5160000000-E	1409	35	LF	ELECTRICAL DUCT, TYPE JA, SIZE ***** (6")
5170000000-E	1410	1,282	LF	** #8 W/G FEEDER CIRCUIT (2)
5175000000-E	1410	280	LF	** #6 W/G FEEDER CIRCUIT (2)
5180000000-E	1410	1,158	LF	** #4 W/G FEEDER CIRCUIT (2)
5185000000-E	1410	246	LF	** #2 W/G FEEDER CIRCUIT (2)
5205000000-E	1410	5,550	LF	** #8 W/G FEEDER CIRCUIT IN ***** CONDUIT (2, 1.5")
5210000000-E	1410	1,263	LF	** #6 W/G FEEDER CIRCUIT IN ***** CONDUIT (2, 1.5")
5215000000-E	1410	4,910	LF	** #4 W/G FEEDER CIRCUIT IN ***** CONDUIT (2, 1.5")
5220000000-E	1410	571	LF	** #2 W/G FEEDER CIRCUIT IN ***** CONDUIT (2, 1.5")
5240000000-N	1411	33	EA	ELECTRICAL JUNCTION BOXES ********** (PC18)
5240000000-N	1411	7	EA	ELECTRICAL JUNCTION BOXES ********** (PC36)
5255000000-N	1413	Lump Sum		PORTABLE LIGHTING
6000000000-E	1605	45,000	LF	TEMPORARY SILT FENCE
6006000000-E	1610	6,750	TON	STONE FOR EROSION CONTROL, CLASS A
6009000000-E	1610	4,150	TON	STONE FOR EROSION CONTROL, CLASS B
6012000000-E	1610	6,300	TON	SEDIMENT CONTROL STONE
6015000000-E	1615	166	ACR	TEMPORARY MULCHING
6018000000-E	1620	3,400	LB	SEED FOR TEMPORARY SEEDING
6021000000-E	1620	13.5	TON	FERTILIZER FOR TEMPORARY SEED-ING
6024000000-E	1622	470	LF	TEMPORARY SLOPE DRAINS
6027000000-N	1622	6	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
6029000000-E	SP	4,850	LF	SAFETY FENCE

ItemNumber	Sec #	Quantity	Unit	Description
6030000000-E	1630	9,855	CY	SILT EXCAVATION
6036000000-E	1631	93,100	SY	MATTING FOR EROSION CONTROL
6038000000-E	SP	125	SY	PERMANENT SOIL REINFORCEMENT MAT
6042000000-E	1632	10,500	LF	1/4" HARDWARE CLOTH
6071010000-E	SP	5,450	LF	WATTLE
6071020000-E	SP	1,335	LB	POLYACRYLAMIDE (PAM)
6071030000-E	SP	875	LF	COIR FIBER BAFFLES
6084000000-E	1660	93	ACR	SEEDING & MULCHING
6087000000-E	1660	102	ACR	MOWING
6090000000-E	1661	1,300	LB	SEED FOR REPAIR SEEDING
6093000000-E	1661	3.25	TON	FERTILIZER FOR REPAIR SEEDING
6096000000-E	1662	2,325	LB	SEED FOR SUPPLEMENTAL SEEDING
6108000000-E	1665	69.25	TON	FERTILIZER TOPDRESSING
6114500000-N	SP	125	MHR	SPECIALIZED HAND MOWING
6117000000-N	SP	27	EA	RESPONSE FOR EROSION CONTROL

COMPUTED BY: MTP DATE: 3/08/2010
CHECKED BY: PWR DATE: 3/09/2010

PROJECT REFERENCE NO.	SHEET NO.
I-4407	3-A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATEWIDE

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)

STATION	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC)								DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE						
SIZE								12"	15"	18"	24"	30"	36"	42"	48"					12"	15"	18"	24"	36"	42"	48"
THICKNESS OR GAUGE																				.064	.064	.064	.064	.079	.109	.109
-L- 16+79	RT	0401																								
-L- 17+02		0402																								
-L- 21+03		0403		798.2	795.8																					
-L- 25+95	RT	0501		802.5	798.7																					
-RAMPD1- 19+78	RT	0502		798.4	795.9																					
-L- 34+03	RT	0503		798.4	794.4																					
-RAMPB1- 19+48	RT	0504		792.5	788.9																					
-RAMPB1- 19+35	LT	0505		794.2	787.6																					
		0505	0506	790.0	790.3				8'																	
-RAMPB1- 19+33	LT	0506		793.3	790.3																					
-RAMPD1- 19+59	LT	0507																								
-RAMPD1- 19+58	LT	0508		799.4	796.4																					
-L- 46+00	RT	0601		786.4	783.6																					
-L- 46+00	RT	0602			783.6	769.9															36'					
-L- 48+25	RT	0603		780.5	777.8																					
-L- 48+25	RT	0604			777.8	767.4															32'					
-L- 50+50	RT	0605		778.1	775.4																					
-L- 50+50	RT	0606			775.4	770.0															28'					
-L- 43+50	LT	0607		792.5	789.8																					
		0607	0608		789.8	783.4			236'																	
-L- 45+90	LT	0608		786.4	783.4																					
		0608	0609		783.4	760.0															140'					
-L- 47+31	LT	0609		763.0	760.0																					
		0609	0610		760.0	753.9			112'																	
-L- 48+44	LT	0610		756.0	753.9																					
-L- 48+63	LT	0611			753.9	753.4			36'																	
-L- 48+90	LT	0612		779.6	776.8																					
-L- 48+90	LT	0613			776.8	753.4															48'					
-L- 48+84	LT	0614																								
-L- 51+57	RT	0701		777.7	775.0																					
		0701	0702		775.0	774.9			4'																	
-L- 51+50	RT	0702		777.7	774.9																					
-L- 51+50	RT	0703			774.9	765.1															36'					
-L- 53+15	RT	0704		778.4	775.7																					
-L- 53+15	RT	0705			775.7	758.0															48'					
-L- 52+50	LT	0706		778.9	776.0																					
-L- 52+50	LT	0707			776.0	756.2															52'					
-L- 55+60	LT	0708		783.4	780.6																					
-L- 55+60	LT	0709			780.6	777.6			16'																	
-L- 55+83	LT	0710			exist.	776.9																				
-L- 60+55	LT	0711		786.8	784.2																					
-L- 60+55	LT	0712																								
-L- 68+21	RT	0801			exist.	778.9																				
-L- 79+81	LT	0901		772.4	769.3																					
-L- 80+18	RT	0902			exist.	770.6																				
-L- 85+17		0903		784.2	779.7																					
-L- 85+59	RT	0904			780.8	780.9																				
-L- 85+62	RT	0905		783.5	780.9																					
SHEET TOTALS									412'												420'					

STATION	STRUCTURE NO. FROM	STRUCTURE NO. TO	R.C. PIPE (CLASS III)							R.C. PIPE (CLASS IV) (UNLESS NOTED OTHERWISE) ▪ WELDED STEEL PIPE								ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS.	
			15"	18"	24"	30"	36"	42"	48"	12"	15"	18"	24"	30"	36"	42"	48"	R.C.P.	C.S.P.
-L- 16+79	0401																		
-L- 17+02	0402																		
-L- 21+03	0403																		
-L- 25+95	0501																		
-RAMPD1- 19+78	0502																		
-L- 34+03	0503																		
-RAMPB1- 19+48	0504																		
-RAMPB1- 19+35	0505																		
	0505	0506																	
-RAMPB1- 19+33	0506																		
-RAMPD1- 19+59	0507			8'															
-RAMPD1- 19+58	0508																		
-L- 46+00	0601																		
-L- 46+00	0602																		
-L- 48+25	0603																		
-L- 48+25	0604																		
-L- 50+50	0605																		
-L- 50+50	0606																		
-L- 43+50	0607																		
	0607	0608																	
-L- 45+90	0608																		
	0608	0609																	
-L- 47+31	0609																		
	0609	0610																	
-L- 48+44	0610																		
-L- 48+63	0611																		
-L- 48+90	0612																		
-L- 48+90	0613																		
-L- 48+84	0614																		
-L- 51+57	0701																		
	0701	0702																	
-L- 51+50	0702																		
-L- 51+50	0703																		
-L- 53+15	0704																		
-L- 53+15	0705																		
-L- 52+50	0706																		
-L- 52+50	0707																		
-L- 55+60	0708																		
-L- 55+60	0709																		
-L- 55+83	0710			8'															
-L- 60+55	0711																		
-L- 60+55	0712		4'																
-L- 68+21	0801		16'																
-L- 79+81	0901																		
-L- 80+18	0902					12'													
-L- 85+17	0903																		
-L- 85+59	0904			8'															
-L- 85+62	0905																		
SHEET TOTALS			20'	24'		12'													

QUANTITIES FOR DRAINAGE STRUCTURES — * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B'); FRAME, GRATES AND HOOD STANDARD 840.03 — TYPE OF GRATE

STATION	STRUCTURE NO. FROM	STRUCTURE NO. TO	PER EACH (0' THRU 5.0')	LIN. *FT. A: 5.0' THRU 10.0'	LIN. *FT. B: 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	E	F	G	OPEN THROAT CATCH BASIN STD. 840.04 OR 840.05	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. (W.S.F.G.) FRAME WITH TWO GRATES STD. 840.20	G.D.I. (W.S.S.G.) FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.F.G.) FRAME WITH TWO GRATES STD. 840.29	J.B. STD. 840.31 OR 840.32	TRAFFIC BEARING J.B. STD. 840.34 OR 840.46	TRAFFIC BEARING G.D.I. STD. 840.36 OR 840.46	STEEL GRATE & FRAME STD. 840.37	MANHOLE FRAME & COVER STD. 840.54	CONVERT CATCH BASIN TO D.I. (SEE SHEET 2-F)		CONVERT C.B. TO J.B. WITH M.H. (SEE SHEET 2-G)	CONVERT DROP INLET TO J.B. WITH M.H. (SEE SHEET 2-G)	CONCRETE APRON FOR G.D.I. STD. 840.17	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS
-L- 16+79	0401																									0.395					REMOVE & REPLACE APRON
-L- 17+02	0402																									0.395					REMOVE & REPLACE APRON
-L- 21+03	0403		1									1			1																2GI
-L- 25+95	0501		1									1				1															2GI
-RAMPD1- 19+78	0502		1									1			1																2GI
-L- 34+03	0503		1									1			1																2GI
-RAMPB1- 19+48	0504		1									1			1																2GI
-RAMPB1- 19+35	0505																								1						CONV. DI TO JB W/MH
	0505	0506																													15" PIPE
-RAMPB1- 19+33	0506		1									1			1																2GI
-RAMPD1- 19+59	0507																											.4465			COLLAR AND EXTEND 18" RCP III
-RAMPD1- 19+58	0508		1									1			1																2GI
-L- 46+00	0601		1									1		1																	2GI
-L- 46+00	0602																										2-15"				15" CSP W/ELBOWS
-L- 48+25	0603		1									1		1																	2GI
-L- 48+25	0604																										2-15"				15" CSP W/ELBOWS
-L- 50+50	0605		1									1		1																	2GI
-L- 50+50	0606																										2-15"				15" CSP W/ELBOWS
-L- 43+50	0607		1									1			1																2GI
	0607	0608																													15" PIPE
-L- 45+90	0608		1									1		1																	2GI
	0608	0609																													15" CSP
-L- 47+31	0609		1							1																					4OTCB
	0609	0610																													15" PIPE
-L- 48+44	0610		1							1																					4OTCB
-L- 48+63	0611																														15" PIPE
-L- 48+90	0612		1									1		1																	2GI
-L- 48+90	0613																										2-15"				15" CSP W/ELBOWS
-L- 48+84	0614																														RESET ONE JOINT OF EXISTING PIPE
-L- 51+57	0701		1									1		1																	2GI
	0701	0702																													15" PIPE
-L- 51+50	0702		1									1		1																	2GI
-L- 51+50	0703																										2-15"				15" CSP W/ELBOWS
-L- 53+15	0704		1									1		1																	2GI
-L- 53+15	0705																										2-15"				15" CSP W/ELBOWS
-L- 52+50	0706		1									1		1																	2GI
-L- 52+50	0707																										2-15"				15" CSP W/ELBOWS
-L- 55+60	0708		1									1		1																	2GI
-L- 55+60	0709																														15" PIPE
-L- 55+83	0710																											.4465			COLLAR AND EXTEND 18" RCP III
-L- 60+55	0711		1									1			1																2GI
-L- 60+55	0712																											.3990			COLLAR AND EXTEND 15" RCP III
-L- 68+21	0801																											.3990			COLLAR AND EXTEND 15" RCP III
-L- 79+81	0901		1									1			1																2GI
-L- 80+18	0902																											.6560			COLLAR AND EXTEND 30" RCP III
-L- 85+17	0903		1									1			1																2GI
-L- 85+59	0904																											.4465			COLLAR AND EXTEND 18" RCP III
-L- 85+62	0905		1									1			1																2GI
SHEET TOTALS			24							2		22		10	11	1									1	0.79	14-15"	2.7935			

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I. (N.S.)	GRATED 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 JUNCTION BOX

COMPUTED BY: MTP DATE: 3/08/2010
CHECKED BY: PWR DATE: 3/09/2010

PROJECT REFERENCE NO.	SHEET NO.
I-4407	3-B

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATEWIDE
LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & 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	SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	SIDE DRAIN PIPE 15"	SIDE DRAIN PIPE 18"	SIDE DRAIN PIPE 24"	SIDE DRAIN PIPE 30"	SIDE DRAIN PIPE 36"	SIDE DRAIN PIPE 42"	SIDE DRAIN PIPE 48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE 12" .064	C.S. PIPE 15" .064	C.S. PIPE 18" .064	C.S. PIPE 24" .064	C.S. PIPE 36" .079	C.S. PIPE 42" .109	C.S. PIPE 48" .109	R.C. PIPE (CLASS III) 15"	R.C. PIPE (CLASS III) 18"	R.C. PIPE (CLASS III) 24"	R.C. PIPE (CLASS III) 30"	R.C. PIPE (CLASS III) 36"	R.C. PIPE (CLASS III) 42"	R.C. PIPE (CLASS III) 48"	R.C. PIPE (CLASS IV) (UNLESS NOTED OTHERWISE) ■ WELDED STEEL PIPE 12"	R.C. PIPE (CLASS IV) 15"	R.C. PIPE (CLASS IV) 18"	R.C. PIPE (CLASS IV) 24"	R.C. PIPE (CLASS IV) 30"	R.C. PIPE (CLASS IV) 36"	R.C. PIPE (CLASS IV) 42"	R.C. PIPE (CLASS IV) 48"	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	ENDWALLS CU. YDS. C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	LIN. *FT. A 5.0' THRU 10.0'	LIN. *FT. B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	TYPE OF GRATE F	TYPE OF GRATE G	OPEN THROAT CATCH BASIN STD. 840.04 OR 840.05	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. (W.S.F.G.) FRAME WITH TWO GRATES STD. 840.20	G.D.I. (W.S.S.G.) FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.F.G.) FRAME WITH TWO GRATES STD. 840.29	J.B. STD. 840.31 OR 840.32	TRAFFIC BEARING J.B. STD. 840.34 OR 840.46	TRAFFIC BEARING G.D.I. STD. 840.36 OR 840.46	STEEL GRATE & FRAME STD. 840.37	MANHOLE FRAME & COVER STD. 840.54	CONVERT CATCH BASIN TO D.I. (SEE SHEET 2-F)		CONVERT C.B. TO J.B. WITH M.H. (SEE SHEET 2-G)	CONVERT DROP INLET TO J.B. WITH M.H. (SEE SHEET 2-G)	CONCRETE APRON FOR G.D.I. STD. 840.17	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS
-L- 95+49	RT	1001		783.5	781.0																																							1									1			1																2GI
-L- 95+49	RT	1002			781.0	781.0																						8'																																									.4465			COLLAR AND EXTEND 18" RCP III
-L- 98+97	RT	1003		776.2	774.0																																							1									1			1																2GI
-L- 98+97	RT	1004			774.0	773.9																						8'																																									.4465			COLLAR AND EXTEND 18" RCP III
-L- 102+61	LT	1005			765.7	765.4																									20'																																								.7640			COLLAR AND EXTEND 36" RCP III
-L- 102+99		1006		768.4	764.4																																							1									1			1																2GI
-L- 103+38	RT	1007		766.3	763.4																																							1									1			1																2GI
-L- 103+51	RT	1008			763.4	763.3																									24'																																											36" RCP III
-L- 112+98	LT	1101		765.6	762.0																																							1									1			1																2GI
-L- 112+98	LT	1102			762.0	761.9																						8'																																									.4465			COLLAR AND EXTEND 18" RCP III
-L- 116+98	LT	1103		775.1	770.7																																							1									1			1																2GI
-L- 116+98	LT	1104			770.7	770.6																						4'																																									.4465			COLLAR AND EXTEND 18" RCP III
-L- 120+97	LT	1105		783.5	779.5																																							1									1			1																2GI
-L- 120+97	LT	1106			779.5	779.3																						4'																																									.4465			COLLAR AND EXTEND 18" RCP III
-L- 120+99	RT	1107																										16'																																									.4465			COLLAR AND EXTEND 18" RCP III
-L- 125+37	LT	1201		791.8	789.0																																							1									1			1																2GI
-L- 125+36	LT	1202			789.0	788.9																						8'																																									.4465			COLLAR AND EXTEND 18" RCP III
-L- 124+52	RT	1203			786.6	786.5																						12'																																									.4465			COLLAR AND EXTEND 18" RCP III
-L- 128+98	RT	1204																										12'																																									.4465			COLLAR AND EXTEND 18" RCP III
-L- 132+98	LT	1205			805.4	805.3																							8'																																								.5526			COLLAR AND EXTEND 24" RCP III
-L- 141+49	RT	1301			825.3	825.2																					12'																																											.3990			COLLAR AND EXTEND 15" RCP III
-L- 145+99	LT	1302		835.8	832.4																																							1									1			1																2GI
-L- 145+44	RT	1303			830.8	830.7																						12'																																									.4465			COLLAR AND EXTEND 18" RCP III
-L- 151+52	RT	1401		835.7	833.4																																							1									1			1																2GI
-L- 162+86	RT	1402		717.5	714.3																																							1									1			1																2GI
-L- 162+86	RT	1403			714.3	714.2																						8'																																									.4465			COLLAR AND EXTEND 18" RCP III
-L- 172+16	RT	1501			795.7	795.5																					4'																																											.3990			COLLAR AND EXTEND 15" RCP III
-L- 174+50	RT	1502		798.3	795.6																																							1									1		1																	2GI
		1502	1503		795.6	791.7			196'																																																																	15" PIPE
-L- 176+50	RT	1503		794.4	791.7																																							1									1		1																	2GI
-L- 176+50	RT	1504			791.7	784.3															44'																																																1-15"				15" CSP W/ELBOW
-L- 179+70	RT	1601		791.3	788.6																																							1									1		1																	2GI
		1601	1602		788.6	788.5			8'																																																																15" PIPE
-L- 179+80	RT	1602		791.3	788.5																																							1									1		1																	2GI
-L- 179+80	RT	1603			788.5	774.6															48'																																																2-15"				15" CSP W/ELBOWS
-L- 187+95	RT	1604			794.1	794.2																						8'																																									.4465			COLLAR AND EXTEND 18" RCP III
-L- 187+95	RT	1605		797.8	794.2																																							1									1			1																2GI
-L- 191+82	LT	1701			793.0	793.6															16'																																																	.3990			COLLAR AND EXTEND 15" CSP
-L- 205+65	RT	1801		813.0	810.3																																							1									1		1																	2GI
-L- 205+65	RT	1802			810.3	802.0															40'																																																2-15"				15" CSP W/ELBOWS
-L- 210+77	RT	1803			805.5	806.0																						8'																																									.4465			COLLAR AND EXTEND 18" RCP III
-RAMPC2- 10+55	RT	1804		807.3	803.3																																							1								1			1																	2GI, TYPE A
-RAMPC2- 10+55	RT	1805			803.3	788.9															44'																																																2-15"				15" CSP W/ELBOWS
		1804	1806		803.3	803.8			88'																																																																15" PIPE
-RAMPC2- 11+45	RT	1806		806.5	803.8																																							1									1		1																	2GI
-L- 205+50	LT	1807		813.8	811.1																																							1									1		1																	2GI
-L- 205+50	LT	1808			811.1	796.0															44'																																																2-15"				15" CSP W/ELBOWS
-L- 208+00	LT	1809		812.2	809.4																																							1									1		1																	2GI
SHEET TOTALS									292'												236'						16'	116'	8'		44'													21								1	20		9	12													9-15"	8.3181			

* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B')

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I. (N.S.)	GRATED 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 JUNCTION BOX

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COMPUTED BY: MTP DATE: 3/08/2010
CHECKED BY: PWR DATE: 3/09/2010

PROJECT REFERENCE NO.	SHEET NO.
I-4407	3-C

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATEWIDE
LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)

STATION	LOCATION (LT,RT, OR CL)	STRUCTURE NO.		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC)													C.S. PIPE							R.C. PIPE (CLASS III)							R.C. PIPE (CLASS IV) (UNLESS NOTED OTHERWISE) ■ WELDED STEEL PIPE								ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE)		QUANTITIES FOR DRAINAGE STRUCTURES * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B')			C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03			OPEN THROAT CATCH BASIN STD. 840.04 OR 840.05	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. (W.S.F.G.) FRAME WITH TWO GRATES STD. 840.20	G.D.I. (W.S.S.G.) FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.F.G.) FRAME WITH TWO GRATES STD. 840.29	J.B. STD. 840.31 OR 840.32	TRAFFIC BEARING J.B. STD. 840.34 OR 840.46	TRAFFIC BEARING G.D.I. STD. 840.36 OR 840.46	STEEL GRATE & FRAME STD. 840.37	MANHOLE FRAME & COVER STD. 840.54	CONVERT CATCH BASIN TO D.I. (SEE SHEET 2-F)		CONVERT C.B. TO J.B. WITH M.H. (SEE SHEET 2-G)	CONVERT DROP INLET TO J.B. WITH M.H. (SEE SHEET 2-G)	CONCRETE APRON FOR G.D.I. STD. 840.17	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS
SIZE / THICKNESS OR GAUGE		FROM	TO					12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	12" .064	15" .064	18" .064	24" .064	36" .079	42" .109	48" .109	15"	18"	24"	30"	36"	42"	48"	12"	15"	18"	24"	30"	36"	42"	48"	CU. YDS. R.C.P.	CU. YDS. C.S.P.	PER EACH (0' THRU 5.0')	LIN. *FT. A 5.0' THRU 10.0'	LIN. *FT. B 10.0' AND ABOVE		TYPE OF GRATE E	F	G																						
		1809	1810		809.4	807.7			248'																																																															15" PIPE
-L- 210+50	LT	1810		810.4	807.7																																							1									1		1																	2GI
-L- 210+50	LT	1811			807.7	800.0															28'																																															2-15"				15" CSP W/ELBOWS
-L- 210+81	LT	1812			797.9	796.8																						20'																																									.4465			COLLAR AND EXTEND 18" RCP III
-L- 213+00	LT	1813		808.5	805.8																																							1									1		1																	2GI
-L- 213+00	LT	1814			805.8	783.6															52'																																															2-15"				15" CSP W/ELBOWS
-L- 215+50	LT	1815		807.2	804.5																																							1									1		1																	2GI
-L- 215+50	LT	1816			804.5	789.0															40'																																															2-15"				15" CSP W/ELBOWS
-RAMPC2- 18+94	RT	1901		814.8	810.3																																							1									1			1																2GI
-L- 225+51	RT	1902		800.0	795.7																																																			1							1									CONV. OTCB TO 2GI
-L- 225+47	LT	1903																										4'																																									.4465			COLLAR & EXTEND 18" RCP III
-L- 225+47	LT	1904		800.2	794.0																																							1	1.2								1			1															4'	2GI (EXTRA DEPTH) REMOVE PORTION OF EXIST. 24" CONC PIPE
-RAMPB2- 12+03	LT	1905		805.2	802.3																																							1									1		1																	2GI
		1905	1906		802.3	799.4			92'																																																															15" PIPE
-RAMPB2- 12+99	LT	1906		804.5	799.4																																							1	0.1								1		1																	2GI (EXTRA DEPTH)
-RAMPB2- 13+00	LT	1907			799.4	798.9																					12'																																												10'	15" RCP III REMOVE PORTION OF EXIST. 12" CONC. PIPE
-L- 229+95	LT	1908		790.7	788.0																																							1									1			1																2GI
-L- 231+86	RT	2001		795.4	792.4																																							1									1			1																2GI
-RAMPA2- 11+03	RT	2002			795.4	795.3																						12'																																									.4465			COLLAR AND EXTEND 18" RCP III
-L- 242+08	RT	2003		806.9	804.9																																							1										1	1																	2GI, TYPE D
		2003	2101		804.9	803.5			216'																																																															15" PIPE
-L- 244+25	RT	2101		808.6	803.5																																							1	0.1								1		1																	2GI (EXTRA DEPTH)
-L- 244+25	RT	2102			exist.	803.5																					8'																																										.3990			COLLAR AND EXTEND 15" RCP III
		2101	2103		803.5	808.1			304'																																																															15" PIPE
-L- 247+28	RT	2103		810.9	808.1																																							1									1		1																	2GI
-L- 249+42	LT	2104			806.3	806.2																						12'																																									.4465			COLLAR AND EXTEND 18" RCP III
-L- 253+96	LT	2105			808.0	807.6																					8'																																										.3990			COLLAR AND EXTEND 15" RCP III
-L- 263+46	RT	2201			806.9	805.8																							4'																																								.5526		8'	COLLAR AND EXTEND 24" RCP III REMOVE PORTION OF EXIST. 24" CONC. PIPE
-L- 263+47	RT	2202		814.9	805.8																																							1	4.1															1	1											TB2GI (EXTRA DEPTH)
		2202	2203		805.8	805.2																							8'																																											24" RCP III
-L- 263+48	LT	2203		815.4	805.2																																							1	5.0	0.2														1	1											TB2GI (EXTRA DEPTH)
-L- 263+49	LT	2204			805.2	804.8																							4'																																								.5526		10'	COLLAR AND EXTEND 24" RCP III REMOVE PORTION OF EXIST. 24" CONC. PIPE
-L- 268+71	RT	2205		812.1	807.3																																							1																1	1											TB2GI
		2205	2206		807.3	806.9																					4'																																												21'	15" RCP III REMOVE PORTION OF EXIST. 15" CONC. PIPE
-L- 268+71	LT	2206		812.3	806.9																																							1	0.4															1	1											TB2GI (EXTRA DEPTH)
-L- 268+71	LT	2207			exist.	806.9																					4'																																										.3990			COLLAR AND EXTEND 15" RCP III
-L- 268+67	LT	2208			802.4	801.5																					24'																																										.3990			COLLAR AND EXTEND 15" RCP III
-L- 271+70	RT	2209		810.1	807.1																																							1																1	1											TB2GI
		2209	2210		807.1	805.3																					4'																																												21'	15" RCP III REMOVE PORTION OF EXIST. 15" CONC. PIPE
-L- 271+70	LT	2210		810.0	805.3																																							1																1	1											TB2GI
-L- 271+70	LT	2211			805.3	804.9																					4'																																										.3990			COLLAR AND EXTEND 15" RCP III
-L- 273+95	RT	2301		809.7	806.9																																							1																1	1											TB2GI
-L- 273+95	LT	2302		809.6	806.8																																							1																1	1											TB2GI
		2301	2303		806.9	806.9																													8'																																					15" RCP IV
-L- 274+05	RT	2303		809.7	806.9																																							1																1	1											TB2GI
		2302	2304		806.8	803.6																													8'																																					15" RCP IV
		2303	2304		806.9	803.6																														4'																																				18" RCP IV
-L- 274+05	LT	2304		809.6	803.6																																							1	1.0															1	1											TB2GI (EXTRA DEPTH)
SHEET TOTALS									860'												120'						68'	48'	16'						16'	4'								22	11.9'	0.2'							11	1	8	5				10	10		1					6-15"	4.8862		74'	

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I. (N.S.)	GRATED 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 JUNCTION BOX

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COMPUTED BY: MTP DATE: 3/08/2010
CHECKED BY: PWR DATE: 3/09/2010

PROJECT REFERENCE NO.	SHEET NO.
I-4407	3-D

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATEWIDE

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)

STATION	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
		2304	2305		803.6	801.1													
-64RAMPB- 10+97	LT	2305		805.5	801.1														
-L- 275+75	LT	2306																	
		2306	2307		805.6	805.8			8'										
-L- 275+87	LT	2307		809.7	805.8														
-L- 276+88	LT	2308		810.4	807.4														
		2307	2309		805.8	806.6			40'										
		2308	2309		807.4	806.6			56'										
-L- 276+32	LT	2309		810.0	806.6														
-L- 278+77	LT	2310		813.4	806.6														
		2310	2311		806.6	806.5													
-L- 278+93	LT	2311																	
-L- 279+42	LT	2312			809.7	809.8													
-L- 279+46	LT	2313		815.3	809.8														
-L- 279+49		2314			809.8	809.9													
-L- 279+74	RT	2315		815.9	812.6														
		2313	2316		809.8	812.4			24'										
		2315	2316		812.6	812.4													
-L- 279+74	LT	2316		815.8	812.4														
-L- 281+18	RT	2317		817.0	813.4														
		2317	2318		813.4	813.3													
-L- 281+25	RT	2318		816.9	813.3														
-L- 281+26	LT	2319		815.9	810.0														
		2319	2320		810.0	809.9													
-L- 281+33	LT	2320		815.8	809.9														
-L- 283+84	LT	2321		822.0	816.4														
-64RAMPC- 12+57	LT	2322		808.5	805.8														
		2322	2323		805.8	805.7			16'										
-L- 277+33	RT	2323		811.4	805.7														
		2323	2324		805.7	805.5			36'										
-L- 276+93	RT	2324		810.8	805.5														
-64RAMPC- 11+84	RT	2325			exist.	802.5			4'										
-64LOOPD- 10+04	RT	2401		827.2	824.4														
		2401	2402		824.4	822.7													
-64LOOPD- 10+04	RT	2402		827.6	822.7														
-L- 286+71	RT	2403																	
-L- 286+71	RT	2404		828.5	unk.														
		2404	2405																
-L- 286+71	LT	2405		828.4	unk.														
-L- 286+71	LT	2406																	
-L- 287+48	LT	2407		829.5	825.1														
		2407	2408		825.1	825.2													
-L- 287+59	LT	2408		829.7	825.2														
		2408	2409		825.2	825.3													
-L- 287+82	LT	2409		830.0	825.3														
-L- 287+90	RT	2410																	
-L- 291+24	LT	2411			exist.	829.4													
-L- 291+37	LT	2412		835.7	829.4														
SHEET TOTALS									184'										

STATION	FROM	TO	C.S. PIPE 12" (.064)	15" (.064)	18" (.064)	24" (.064)	36" (.079)	42" (.109)	48" (.109)	R.C. PIPE (CLASS III) 15"	18"	24"	30"	36"	42"	48"	R.C. PIPE (CLASS IV) (UNLESS NOTED OTHERWISE) ▪ WELDED STEEL PIPE 12"	15"	18"	24"	30"	36"	42"	48"	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.
	2304	2305																	▪64'							
-64RAMPB- 10+97	2305																									
-L- 275+75	2306																									
	2306	2307																								
-L- 275+87	2307																									
-L- 276+88	2308																									
	2307	2309																								
	2308	2309																								
-L- 276+32	2309																									
-L- 278+77	2310																									
	2310	2311																	12'								
-L- 278+93	2311																									
-L- 279+42	2312																		4'								
-L- 279+46	2313																									
-L- 279+49	2314									4'																
-L- 279+74	2315																									
	2313	2316																								
	2315	2316																	4'								
-L- 279+74	2316																									
-L- 281+18	2317																									
	2317	2318																	12'								
-L- 281+25	2318																									
-L- 281+26	2319																									
	2319	2320																	8'								
-L- 281+33	2320																									
-L- 283+84	2321																									
-64RAMPC- 12+57	2322																									
	2322	2323																								
-L- 277+33	2323																									
	2323	2324																								
-L- 276+93	2324																									
-64RAMPC- 11+84	2325																									
-64LOOPD- 10+04	2401																									
	2401	2402								12'																
-64LOOPD- 10+04	2402																									
-L- 286+71	2403																		4'								
-L- 286+71	2404																									
	2404	2405																	4'								
-L- 286+71	2405																									
-L- 286+71	2406																		4'								
-L- 287+48	2407																									
	2407	2408																	8'								
-L- 287+59	2408																									
	2408	2409																	20'								
-L- 287+82	2409																									
-L- 287+90	2410																									
-L- 291+24	2411																		24'								
-L- 291+37	2412																									
SHEET TOTALS										16'								104'	▪64'							

STATION	FROM	TO	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. *FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	OPEN THROAT CATCH BASIN STD. 840.04 OR 840.05	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. (W.S.F.G.) FRAME WITH TWO GRATES STD. 840.20	G.D.I. (W.S.S.G.) FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.F.G.) FRAME WITH TWO GRATES STD. 840.29	J.B. STD. 840.31 OR 840.32	TRAFFIC BEARING J.B. STD. 840.34 OR 840.46	TRAFFIC BEARING G.D.I. STD. 840.36 OR 840.46	STEEL GRATE & FRAME STD. 840.37	MANHOLE FRAME & COVER STD. 840.54	CONVERT CATCH BASIN TO D.I. (SEE SHEET 2-F)		CONVERT C.B. TO J.B. WITH M.H. (SEE SHEET 2-G)	CONVERT DROP INLET TO J.B. WITH M.H. (SEE SHEET 2-G)	CONCRETE APRON FOR G.D.I. STD. 840.17	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS
	2304	2305																													BORE & JACK 18" WELDED STEEL PIPE
-64RAMPB- 10+97	2305		1									1			1																2GI
-L- 275+75	2306																							1							CONV. CB TO JB W/MH
	2306	2307																													15" PIPE
-L- 275+87	2307		1									1		1																	2GI
-L- 276+88	2308		1									1			1																2GI
	2307	2309																													15" PIPE
	2308	2309																													15" PIPE
-L- 276+32	2309		1									1		1																	2GI
-L- 278+77	2310		1	1.8								1		1																	2GI (EXTRA DEPTH)
	2310	2311																													15" RCP IV
-L- 278+93	2311																							1							CONV. CB TO JB W/MH
-L- 279+42	2312																											.3990			COLLAR AND EXTEND 15" RCP IV
-L- 279+46	2313		1	0.5															1	1										15'	TB2GI (EXTRA DEPTH) REMOVE PORTION OF EXIST. 15" CONC. PIPE
-L- 279+49	2314																											.3990			COLLAR AND EXTEND 15" RCP III
-L- 279+74	2315		1																1	1											TB2GI
	2313	2316																													15" PIPE
	2315	2316																													15" RCP IV
-L- 279+74	2316		1																1	1											TB2GI
-L- 281+18	2317		1			1		1																							CB
	2317	2318																													15" RCP IV
-L- 281+25	2318		1			1	1																								CB
-L- 281+26	2319		1	0.9		1			1																						CB (EXTRA DEPTH)
	2319	2320																													15" RCP IV
-L- 281+33	2320		1	0.9		1	1																								CB (EXTRA DEPTH)
-L- 283+84	2321		1	0.6															1	1											TB2GI (EXTRA DEPTH)
-64RAMPC- 12+57	2322		1									1			1																2GI
	2322	2323																													15" PIPE
-L- 277+33	2323		1	0.7								1		1																	2GI (EXTRA DEPTH)
	2323	2324																													15" PIPE
-L- 276+93	2324		1	0.3								1		1																	2GI (EXTRA DEPTH)
-64RAMPC- 11+84	2325																											.3990			COLLAR AND EXTEND 15" PIPE
-64LOOPD- 10+04	2401		1									1			1																2GI
	2401	2402																													15" RCP III
-64LOOPD- 10+04	2402		1																1	1											REMOVE EXIST. CB & REPLACE W/TB2GI
-L- 286+71	2403																											.3990			COLLAR AND EXTEND 15" RCP IV
-L- 286+71	2404		1	2+/-															1	1											TB2GI (EXTRA DEPTH)
	2404	2405																													15" RCP IV
-L- 286+71	2405		1	2+/-															1	1											TB2GI (EXTRA DEPTH)
-L- 286+71	2406																											.3990			COLLAR AND EXTEND 15" RCP IV
-L- 287+48	2407																							1							CONV. CB TO JB W/MH
	2407	2408																													15" RCP IV
-L- 287+59	2408		1									1		1																	2GI
	2408	2409																												34'	15" RCP IV REMOVE PORTION OF EXIST. 15" CONC. PIPE
-L- 287+82	2409		1															1			1										TB JB W/MH
-L- 287+90	2410													1								1									CONV. CB TO 2GI
-L- 291+24	2411																											.3990		25'	COLLAR AND EXTEND 15" RCP IV REMOVE PORTION OF EXIST. 15" CONC. PIPE
-L- 291+37	2412		1	1.3								1		1																	2GI (EXTRA DEPTH)
SHEET TOTALS			23	11.0'		4	2	1	1			11		8	4			1	7	7	1	1		3				2.3940		74'	

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I. (N.S.)	GRATED 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 JUNCTION BOX

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COMPUTED BY:	MTP	DATE:	3/08/2010
CHECKED BY:	PWR	DATE:	3/09/2010

PROJECT REFERENCE NO.	SHEET NO.
I-4407	3-E

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATEWIDE
LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)

STATION	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	REMARKS
		2412	2413		829.4	829.9		15" RCP IV
-L- 291+37	LT	2413		836.4	829.9			TB JB W/MH (EXTRA DEPTH)
-64RAMPD- 10+44	LT	2414						CONV. CB TO TB2GI
-L- 293+50	LT	2415		840.5	838.6			TB2GI
-L- 294+76	LT	2416		842.6	838.6			2GI
-L- 294+76	LT	2417			exist.	838.6		COLLAR AND EXTEND 15" RCP IV
-L- 294+82	LT	2418			exist.	837.8		COLLAR AND EXTEND 15" RCP IV
		2415	2419		838.6	837.8		15" RCP IV
-L- 294+82	LT	2419		842.9	837.8			TB2GI (EXTRA DEPTH)
		2419	2420		837.8	837.7		15" RCP IV
-L- 294+82	RT	2420		843.0	837.7			TB2GI (EXTRA DEPTH)
-L- 294+82	RT	2421			exist.	837.7		COLLAR AND EXTEND 15" RCP IV REMOVE PORTION OF EXIST. 15" CONC. PIPE
-L- 294+90	RT	2422		842.6	837.0			TB2GI (EXTRA DEPTH)
-L- 294+97	RT	2423			exist.	837.0		COLLAR AND EXTEND 18" RCP III REMOVE PORTION OF EXIST. 18" CONC. PIPE
-1713RAMPA- 15+70	RT	2424			exist.	839.1		COLLAR AND EXTEND 18" RCP III
-1713RAMPA- 15+59	RT	2425		845.4	837.4			TB2GI (EXTRA DEPTH)
-1713RAMPA- 15+58	RT	2426			exist.	837.4		COLLAR AND EXTEND 18" RCP III
-L- 297+04	LT	2427			exist.	832.1		COLLAR AND EXTEND 18" RCP III
-L- 297+04	LT	2428		846.8	832.1			TB2GI (EXTRA DEPTH)
		2428	2429		832.1	831.8		18" RCP III REMOVE PORTION OF EXIST. 18" CONC. PIPE
-L- 297+04	RT	2429		847.0	831.8			TB2GI (EXTRA DEPTH)
-L- 297+04	RT	2430			exist.	831.8		COLLAR AND EXTEND 18" RCP III
-L- 297+89	RT	2431		847.9	843.6			2GI
-L- 297+90	RT	2432			exist.	843.6		COLLAR AND EXTEND 15" CSP
-1713RAMPD- 11+74	LT	2501		853.8	851.0			2GI
-1713RAMPD- 11+74	LT	2502			843.7	851.0		15" PIPE
-1713RAMPD- 10+89	LT	2503						CONV. CB TO JB W/MH
-L- 302+39	RT	2504			exist.	851.4		COLLAR AND EXTEND 15" RCP IV REMOVE PORTION OF EXIST. 15" CONC. PIPE
-L- 302+39	RT	2505		855.8	851.4			TB2GI
		2505	2506		851.4	851.5		15" RCP IV
-L- 302+39	LT	2506		855.8	851.5			TB2GI
-L- 311+42	RT	2507		852.8	850.0			TB2GI
		2507	2508		850.0	849.9		15" RCP IV
-L- 311+42	LT	2508		852.7	849.9			TB2GI
-L- 309+25	RT	2509		855.1	852.3			2GI
		2509	2510		852.3	848.2		15" PIPE
-L- 311+75	RT	2510		851.0	848.2			2GI
		2508	2603		849.9	840.0		15" RCP IV REMOVE EXISTING 15" CONC. PIPE
		2510	2601		848.2	839.2		15" PIPE
-L- 314+38	RT	2601		844.3	839.2			2GI (EXTRA DEPTH) REMOVE PORTION OF EXIST. 15" RCP
-L- 314+31	RT	2602		845.3	839.8			TB2GI (EXTRA DEPTH) REMOVE PORTION OF EXIST. 18" CONC. PIPE
		2602	2603		839.8	840.0		18" RCP IV
-L- 314+31	LT	2603		845.2	840.0			TB2GI (EXTRA DEPTH)
-L- 314+29	LT	2604			exist.	840.0		COLLAR AND EXTEND 18" RCP IV
-L- 314+21	LT	2605			exist.	841.4		COLLAR AND EXTEND 18" RCP III
-L- 314+20	LT	2606		844.7	841.4			2GI
		2601	2607		839.2	835.0		18" PIPE
-L- 316+20	RT	2607		838.0	835.0			2GI
SHEET TOTALS								

Size / Thickness or Gauge — Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC); C.S. Pipe; R.C. Pipe (Class III); R.C. Pipe (Class IV) (Unless Noted Otherwise) ■ Welded Steel Pipe; Endwalls Std. 838.01, Std. 838.11 or Std. 838.80 (Unless Noted Otherwise) Cu. Yds.

Structure No.	Side Drain 12"	Side Drain 15"	Side Drain 18"	Side Drain 24"	Side Drain 30"	Side Drain 36"	Side Drain 42"	Side Drain 48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. 12" .064	C.S. 15" .064	C.S. 18" .064	C.S. 24" .064	C.S. 36" .079	C.S. 42" .109	C.S. 48" .109	R.C. III 15"	R.C. III 18"	R.C. III 24"	R.C. III 30"	R.C. III 36"	R.C. III 42"	R.C. III 48"	R.C. IV 12"	R.C. IV 15"	R.C. IV 18"	R.C. IV 24"	R.C. IV 30"	R.C. IV 36"	R.C. IV 42"	R.C. IV 48"	Endwalls R.C.P.	Endwalls C.S.P.
2412–2413																												8'								
2413																																				
2414																																				
2415																																				
2416																																				
2417																												4'								
2418																												4'								
2415–2419																												128'								
2419																																				
2419–2420																												4'								
2420																																				
2421																												4'								
2422																																				
2423																					16'															
2424																					8'															
2425																																				
2426																					8'															
2427																					4'															
2428																																				
2428–2429																					4'															
2429																																				
2430																					4'															
2431																																				
2432														12'																						
2501																																				
2502		32'																																		
2503																																				
2504																												4'								
2505																																				
2505–2506																												4'								
2506																																				
2507																																				
2507–2508																												4'								
2508																																				
2509																																				
2509–2510		244'																																		
2510																																				
2508–2603																												284'								
2510–2601		260'																																		
2601																																				
2602																																				
2602–2603																													4'							
2603																																				
2604																													8'							
2605																					8'															
2606																																				
2601–2607			180'																																	
2607																																				
SHEET TOTALS		536'	180'											12'							52'							448'	12'							

Quantities for Drainage Structures (* Total L.F. for pay quantity shall be col. 'A' + (1.3 X col. 'B')); Frame, Grates and Hood Standard 840.03.

Structure No.	PER EACH (0' THRU 5.0')	LIN. *FT. A 5.0' THRU 10.0'	LIN. *FT. B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	TYPE OF GRATE E	TYPE OF GRATE F	TYPE OF GRATE G	OPEN THROAT CATCH BASIN STD. 840.04 OR 840.05	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. (W.S.F.G.) FRAME WITH TWO GRATES STD. 840.20	G.D.I. (W.S.S.G.) FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.F.G.) FRAME WITH TWO GRATES STD. 840.29	J.B. STD. 840.31 OR 840.32	TRAFFIC BEARING J.B. STD. 840.34 OR 840.46	TRAFFIC BEARING G.D.I. STD. 840.36 OR 840.46	STEEL GRATE & FRAME STD. 840.37	MANHOLE FRAME & COVER STD. 840.54	CONVERT CATCH BASIN TO D.I. (SEE SHEET 2-F)		CONVERT C.B. TO J.B. WITH M.H. (SEE SHEET 2-G)	CONVERT DROP INLET TO J.B. WITH M.H. (SEE SHEET 2-G)	CONCRETE APRON FOR G.D.I. STD. 840.17	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.
2412–2413																												
2413	1	1.5														1			1									
2414																		1		1								
2415	1																1	1										
2416	1									1		1																
2417																										.3990		
2418																										.3990		
2415–2419																												
2419	1	0.1															1	1										
2419–2420																												
2420	1	0.3															1	1										
2421																										.3990		16'
2422	1	0.6															1	1										
2423																										.4465		16'
2424																										.4465		
2425	1	3.0															1	1										
2426																										.4465		
2427																										.4465		
2428	1	5.0	4.7														1	1										
2428–2429																												20'
2429	1	5.0	5.2														1	1										
2430																										.4465		
2431	1									1		1																
2432																										.3990		
2501	1									1		1																
2502																												
2503																						1						
2504																										.3990		16'
2505	1																1	1										
2505–2506																												
2506	1																1	1										
2507	1																1	1										
2507–2508																												
2508	1																1	1										
2509	1									1		1																
2509–2510																												
2510	1									1		1																
2508–2603																												285'
2510–2601																												
2601	1	0.1								1		1																9'
2602	1	0.5															1	1										12'
2602–2603																												
2603	1	0.2															1	1										
2604																										.4465		
2605																										.4465		
2606	1									1			1															
2601–2607																												
2607	1									1		1																
SHEET TOTALS	22	16.3'	9.9'							8		7	1			1	13	14	1	1		1				5.1205		374'

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I. (N.S.)	GRATED 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 JUNCTION BOX

COMPUTED BY:	MTP	DATE:	3/08/2010
CHECKED BY:	PWR	DATE:	3/09/2010

PROJECT REFERENCE NO.	SHEET NO.
I-4407	3-F

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
STATEWIDE
LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & 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	SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
		2607	2608		835.0	828.7				176'									
-L- 318+00	RT	2608		831.7	828.7														
-L- 318+00	RT	2609			820.5	828.7													
-L- 318+40	LT	2610		831.2	827.0														
		2610	2611		827.0	826.6													
-L- 318+40	RT	2611		831.4	826.6														
-L- 320+00	RT	2612		824.7	821.9														
-L- 321+71	LT	2613		820.0	816.0														
		2613	2614		816.0	814.7													
-L- 321+71	RT	2614		820.0	814.7														
		2612	2615		821.9	815.8			188'										
-L- 321+90	RT	2615		818.6	815.8														
		2615	2616		815.8	809.7			196'										
-L- 323+90	RT	2616		814.2	809.7														
-L- 323+90	RT	2617			785.0	809.7													
		2616	2618		809.7	810.1			166'										
-L- 325+60	RT	2618		812.2	810.1														
-L- 332+72	RT	2701		805.9	803.1														
		2701	2702		803.1	803.0													
-L- 332+72	LT	2702		805.9	803.0														
-L- 336+76	RT	2703		801.9	785.8														
		2702	2704		803.0	794.5													
		2703	2704		785.8	786.1													
-L- 336+76	LT	2704		801.7	786.1														
-L2- 346+38	LT	2801		779.8	776.1														
		2801	2802		776.1	776.0			4'										
-L2- 346+38	LT	2802		778.8	776.0														
-L3- 347+94	RT	2803		774.3	771.0														
		2802	2804		776.0	770.9			152'										
		2803	2804		771.0	770.9			8'										
-L3- 347+94	RT	2804		775.4	770.9														
-L3- 348+88	RT	2805		771.4	767.4														
		2804	2806		770.9	767.3			92'										
		2805	2806		767.4	767.3			12'										
-L2- 348+85	LT	2806		772.6	767.3														
		2806	2807		767.3	769.2			12'										
-L2- 348+86	LT	2807		772.6	769.2														
-L3- 350+38	RT																		
-L2- 351+74	LT	2808		764.3	761.5														
		2806	2809		767.3	757.5			296'										
		2808	2809		761.6	757.5			40'										
-RAMPB3- 11+15	RT	2809		760.9	757.5														
		2809	2810		757.5	757.4			8'										
-RAMPB3- 11+16	RT	2810		761.2	757.4														
		2810	2811		757.4	751.5													
-RAMPB3- 13+81	RT	2811		755.3	751.5														
-RAMPB3- 13+87	RT	2812			exist.	751.5													
-RAMPB3- 14+27	LT	2901		756.1	749.3														
SHEET TOTALS									1,174'	176'									

FROM	TO	C.S. PIPE 12" (.064)	15" (.064)	18" (.064)	24" (.064)	36" (.079)	42" (.109)	48" (.109)	R.C. PIPE (CLASS III) 15"	18"	24"	30"	36"	42"	48"	R.C. PIPE (CLASS IV) (UNLESS NOTED OTHERWISE) ■ WELDED STEEL PIPE 12"	15"	18"	24"	30"	36"	42"	48"	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.
2609				44'																					
2610	2611																4'								
2613	2614																4'								
2617				60'																					
2701	2702																4'								
2702	2704																400'								
2703	2704										4'														
2810	2811																260'								
2812																		16'							
SHEET TOTALS				104'							4'						672'	16'							

FROM	TO	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') LIN. *FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	OPEN THROAT CATCH BASIN STD. 840.04 OR 840.05	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. (W.S.F.G.) FRAME WITH TWO GRATES STD. 840.20	G.D.I. (W.S.S.G.) FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.F.G.) FRAME WITH TWO GRATES STD. 840.29	J.B. STD. 840.31 OR 840.32	TRAFFIC BEARING J.B. STD. 840.34 OR 840.46	TRAFFIC BEARING G.D.I. STD. 840.36 OR 840.46	STEEL GRATE & FRAME STD. 840.37	MANHOLE FRAME & COVER STD. 840.54	CONVERT CATCH BASIN TO D.I. (SEE SHEET 2-F)		CONVERT C.B. TO J.B. WITH M.H. (SEE SHEET 2-G)	CONVERT DROP INLET TO J.B. WITH M.H. (SEE SHEET 2-G)	CONCRETE APRON FOR G.D.I. STD. 840.17	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS
2607	2608																													18" PIPE
2608		1									1		1																	2GI
2609																										2-18"				18" CSP W/ELBOWS
2610		1																1	1										12'	TB2GI REMOVE PORTION OF EXIST. 15" CONC. PIPE
2610	2611																													15" RCP IV
2611		1																1	1											TB2GI
2612		1									1		1																	2GI
2613		1																1	1										12'	TB2GI REMOVE PORTION OF EXIST. 15" CMP
2613	2614																													15" RCP IV
2614		1	0.3															1	1											TB2GI (EXTRA DEPTH)
2612	2615																													15" PIPE
2615		1									1		1																	2GI
2615	2616																													15" PIPE
2616		1								1			1																	2GI, TYPE A
2617																										2-18"				18" CSP W/ELBOWS
2616	2618																													15" PIPE
2618		1										1	1																	2GI, TYPE D
2701		1																1	1											TB2GI
2701	2702																													15" RCP IV
2702		1																1	1											TB2GI
2703		1	5.0	6.1														1	1											TB2GI (EXTRA DEPTH)
2702	2704																													15" RCP IV
2703	2704																												14'	24" RCP III REMOVE PORTION OF EXIST. 24" CONC. PIPE
2704		1	5.0	5.6														1	1											TB2GI (EXTRA DEPTH)
2801		1																1	1											TB2GI
2801	2802																													15" PIPE
2802		1																1	1											TB2GI
2803		1									1		1																	2GI
2802	2804																													15" PIPE
2803	2804																													15" PIPE
2804		1														1				1										JB W/MH
2805		1									1		1																	2GI
2804	2806																													15" PIPE
2805	2806																													15" PIPE
2806		1	0.3													1				1										JB W/MH (EXTRA DEPTH)
2806	2807																													15" PIPE
2807		1									1		1																	2GI
(-L3- 350+38)																													297'	REMOVE EXIST. 15" CONC. PIPE
2808		1									1		1																	2GI
2806	2809																													15" PIPE
2808	2809																													15" PIPE
2809		1														1				1										JB W/MH
2809	2810																													15" PIPE
2810		1									1		1																	2GI
2810	2811																												266'	15" RCP IV REMOVE EXIST. 15" CONC. PIPE
2811		1									1		1																	2GI
2812																											.4465			COLLAR AND EXTEND 18" RCP IV
2901		1	1.8							1			1																	2GI, TYPE A (EXTRA DEPTH)
SHEET TOTALS		25	12.4'	11.7'						2	9	1	12			3		10	10	3						4-18"	0.4465		601'	

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I. (N.S.)	GRATED 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 JUNCTION BOX

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COMPUTED BY: MTP DATE: 3/08/2010
CHECKED BY: PWR DATE: 3/09/2010

PROJECT REFERENCE NO.	SHEET NO.
I-4407	3-G

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
STATEWIDE
LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)

Station	Location (LT, RT, or CL)	Structure No. From	Structure No. To	Top Elevation	Invert Elevation	Invert Elevation	Slope Critical
-L3- 355+64	RT	2902			exist.	747.1	
-L3- 355+72	RT	2903		751.9	747.1		
		2903	2904		747.1	746.6	
-L3- 355+88	RT	2904		751.5	746.6		
-L3- 355+88	RT	2905			exist.	746.6	
-RAMPC3- 13+02	LT	2906		757.6	754.8		
		2906	2907		754.8	754.7	
-RAMPC3- 13+12	LT	2907		757.6	754.7		
		2907	2908		754.7	753.4	
-RAMPB3- 16+59	RT	2908		759.1	753.4		
		2908	2909		753.4	753.2	
-RAMPB3- 16+60	RT	2909		760.6	753.2		
-RAMPC3- 14+74	RT	2910					
-L2- 357+39	LT	2911		757.0	739.9		
		2911	2912		739.9	754.1	
-L2- 357+57	LT	2912		757.0	754.1		
		2912	2913		754.1	756.0	
-RAMPC3- 15+02	RT	2913		760.6	756.0		
-L2- 359+80	RT	2914		757.7	753.2		
		2914	2915		753.2	753.6	
-L2- 359+89	RT	2915		757.9	753.6		
-L2- 359+90	LT	2916		759.4	755.6		
-L3- 357+76	LT	2917			742.3	742.5	
-L3- 357+95	LT	2918		749.9	742.5		
		2918	2919		746.2	746.5	
-L3- 359+39	LT	2919		749.3	746.5		
		2919	2920		746.5	746.9	
-L3- 360+00	LT	2920		749.7	746.9		
-L3- 351+39							
-L3- 359+39	RT	2921			exist.	743.4	
-L3- 359+51	RT	2922		748.7	743.4		
-L3- 359+82	RT	2923			exist.	743.4	
-L3- 359+63	RT	2924			exist.	743.4	
-L3- 363+23	LT	2925		752.7	748.0		
-L3- 363+22	LT	2926			exist.	748.0	
-L3- 362+91	RT	2927			exist.	746.6	
-L3- 363+14	RT	2928			exist.	746.6	
-L3- 363+13	RT	2929		751.7	746.6		
-L2- 362+91	LT	2930		763.1	759.6		
-L2- 362+91	LT	2931			exist.	759.6	
-L2- 362+91	RT	2932		763.0	759.4		
		2932	2933		759.4	759.5	
-L2- 363+00	RT	2933		763.0	759.5		
-L2- 364+00	LT	2934					
-L2- 364+75	LT	2935		765.9	763.1		
-L2- 366+55	RT	2936		768.5	761.0		
		2936	2937		761.0	760.9	
-L2- 366+68	RT	2937		768.8	760.9		
SHEET TOTALS							

Station (Size / Thickness or Gauge)	From	To	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. Pipe 12" .064	15" .064	18" .064	24" .064	36" .079	42" .109	48" .109	R.C. Pipe (Class III) 15"	18"	24"	30"	36"	42"	48"	R.C. Pipe (Class IV) (Unless noted otherwise) ■ Welded steel pipe 12"	15"	18"	24"	30"	36"	42"	48"
-L3- 355+64	2902																														16'					
-L3- 355+72	2903																																			
	2903	2904																													12'					
-L3- 355+88	2904																																			
-L3- 355+88	2905																														8'					
-RAMPC3- 13+02	2906																																			
	2906	2907																												8'						
-RAMPC3- 13+12	2907																																			
	2907	2908																												140'						
-RAMPB3- 16+59	2908																																			
	2908	2909																														4'				
-RAMPB3- 16+60	2909																																			
-RAMPC3- 14+74	2910																																			
-L2- 357+39	2911																																			
	2911	2912																												16'						
-L2- 357+57	2912																																			
	2912	2913																												12'						
-RAMPC3- 15+02	2913																																			
-L2- 359+80	2914																																			
	2914	2915																													8'					
-L2- 359+89	2915																																			
-L2- 359+90	2916																																			
-L3- 357+76	2917																						40'													
-L3- 357+95	2918																																			
	2918	2919																				144'														
-L3- 359+39	2919																																			
	2919	2920																				60'														
-L3- 360+00	2920																																			
-L3- 351+39																																				
-L3- 359+39	2921																						20'													
-L3- 359+51	2922																																			
-L3- 359+82	2923																						60'													
-L3- 359+63	2924																						40'													
-L3- 363+23	2925																																			
-L3- 363+22	2926																													8'						
-L3- 362+91	2927																														40'					
-L3- 363+14	2928																													8'						
-L3- 363+13	2929																																			
-L2- 362+91	2930																																			
-L2- 362+91	2931																													4'						
-L2- 362+91	2932																																			
	2932	2933																												8'						
-L2- 363+00	2933																																			
-L2- 364+00	2934																																			
-L2- 364+75	2935																																			
-L2- 366+55	2936																																			
	2936	2937																												12'						
-L2- 366+68	2937																																			
SHEET TOTALS																						204'	160'							216'	84'	4'				

Station	From	To	Endwalls (Std. 838.01, Std. 838.11 or Std. 838.80 (unless noted otherwise)) Cu. Yds. R.C.P.	C.S.P.	Quantities for Drainage Structures Per Each (0' thru 5.0')	Lin. *Ft. A 5.0' thru 10.0'	B 10.0' and above	C.B. Std. 840.01 or Std. 840.02	Frame, Grates and Hood Standard 840.03 Type of Grate E	F	G	Open Throat Catch Basin Std. 840.04 or 840.05	G.D.I. Type "A" Std. 840.17 or 840.26	G.D.I. Type "B" Std. 840.18 or 840.27	G.D.I. Type "D" Std. 840.19 or 840.28	G.D.I. (W.S.F.G.) Frame with Two Grates Std. 840.20	G.D.I. (W.S.S.G.) Frame with Two Grates Std. 840.22	G.D.I. (N.S.F.G.) Frame with Two Grates Std. 840.29	J.B. Std. 840.31 or 840.32	Traffic Bearing J.B. Std. 840.34 or 840.46	Traffic Bearing G.D.I. Std. 840.36 or 840.46	Steel Grate & Frame Std. 840.37	Manhole Frame & Cover Std. 840.54	Convert Catch Basin to D.I. (See Sheet 2-F)		Convert C.B. to J.B. with M.H. (See Sheet 2-G)	Convert Drop Inlet to J.B. with M.H. (See Sheet 2-G)	Concrete Apron for G.D.I. Std. 840.17	Corr. Steel Elbows No. & Size	Conc. Collars Cl. "B" C.Y. Std 840.72	Conc. & Brick Pipe Plug, C.Y. Std. 840.71	Pipe Removal Lin. Ft.	Remarks
-L3- 355+64	2902																													.4465			COLLAR AND EXTEND 18" RCP IV
-L3- 355+72	2903				1									1		1																	2GI
	2903	2904																															18" RCP IV
-L3- 355+88	2904				1									1		1																	2GI
-L3- 355+88	2905																													.4465			COLLAR AND EXTEND 18" RCP IV
-RAMPC3- 13+02	2906				1									1		1																	2GI
	2906	2907																															15" RCP IV
-RAMPC3- 13+12	2907				1									1		1																	2GI
	2907	2908																															15" RCP IV
-RAMPB3- 16+59	2908				1	0.7								1		1																	2GI (EXTRA DEPTH)
	2908	2909																															24" RCP IV
-RAMPB3- 16+60	2909																									1							CONV. CB TO JB W/MH
-RAMPC3- 14+74	2910																									1							CONV. CB TO JB W/MH
-L2- 357+39	2911																										1						CONV. DI TO JB W/MH
	2911	2912																															15" RCP IV
-L2- 357+57	2912				1									1		1																	2GI
	2912	2913																															15" RCP IV
-RAMPC3- 15+02	2913				1									1		1																	2GI
-L2- 359+80	2914				1									1		1																12'	2GI REMOVE PORTION OF EXIST. 18" CONC. PIPE
	2914	2915																															18" RCP IV
-L2- 359+89	2915																										1						CONV. DI TO JB W/MH
-L2- 359+90	2916				1									1		1																	2GI
-L3- 357+76	2917																																18" RCP III
-L3- 357+95	2918				1	2.4								1		1																48'	2GI (EXTRA DEPTH) REMOVE PORTION OF EXIST. 18" CONC. PIPE
	2918	2919																															15" RCP III
-L3- 359+39	2919				1									1		1																	2GI
	2919	2920																															15" RCP III
-L3- 360+00	2920				1									1		1																	2GI
-L3- 351+39																															0.09		PLUG EXISTING PIPE & FILL W/GROUT
-L3- 359+39	2921																													.4465		12'	COLLAR AND EXTEND 18" RCP III REMOVE PORTION OF EXIST. 18" CONC. PIPE
-L3- 359+51	2922				1	0.3								1		1																	2GI (EXTRA DEPTH)
-L3- 359+82	2923																													.4465		70'	COLLAR AND EXTEND 18" RCP III REMOVE PORTION OF EXIST. 18" CONC. PIPE
-L3- 359+63	2924																													.4465		52'	COLLAR AND EXTEND 18" RCP III REMOVE PORTION OF EXIST. 18" CONC. PIPE
-L3- 363+23	2925				1									1		1																	2GI
-L3- 363+22	2926																													.3990		8'	COLLAR AND EXTEND 15" RCP IV REMOVE PORTION OF EXIST. 15" CONC. PIPE
-L3- 362+91	2927																													.4465		44'	COLLAR AND EXTEND 18" RCP IV REMOVE PORTION OF EXIST. 18" CONC. PIPE
-L3- 363+14	2928																													.3990		6'	COLLAR AND EXTEND 15" RCP IV REMOVE PORTION OF EXIST. 15" CONC. PIPE
-L3- 363+13	2929				1	0.1								1		1																	2GI (EXTRA DEPTH)
-L2- 362+91	2930				1																1	1											TB2GI
-L2- 362+91	2931																													.3990			COLLAR AND EXTEND 15" RCP IV
-L2- 362+91	2932																									1							CONV. CB TO JB W/MH
	2932	2933																															15" RCP IV
-L2- 363+00	2933				1									1		1																	2GI
-L2- 364+00	2934																					1		1									CONV. CB TO TB2GI
-L2- 364+75	2935				1																1	1											TB2GI
-L2- 366+55	2936				1	2.5								1		1																	2GI (EXTRA DEPTH)
	2936	2937																															15" RCP IV
-L2- 366+68	2937																									1							CONV. CB TO JB W/MH
SHEET TOTALS					19	6.0'								17		17					2	3		1		4	2			3.8760	0.09	252'	

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I. (N.S.)	GRATED 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 JUNCTION BOX

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COMPUTED BY: MTP DATE: 3/08/2010
CHECKED BY: PWR DATE: 3/09/2010

PROJECT REFERENCE NO.	SHEET NO.
I-4407	3-H

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
STATEWIDE
LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)

ABBREVIATIONS

- C.B. — CATCH BASIN
- N.D.I. — NARROW DROP INLET
- D.I. — DROP INLET
- G.D.I. — GRATED DROP INLET
- G.D.I. (N.S.) — GRATED 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 JUNCTION BOX

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	36" .079	42" .109	48" .109
		2935	2938		763.1	760.0																				
-L2- 366+57	LT	2938		768.7	760.0																					
-L3- 366+59	LT	2939																								
		2939	2940		753.8	753.8																				
-L3- 366+78	LT	2940		756.9	753.8																					
-L3- 366+78	RT	2941		756.0	750.0																					
-L3- 366+79	LT	2942																								
-L3- 369+08	LT	2943			exist.	752.9																				
		3001	3002		752.9	753.1																				
-L3- 369+22	LT	3001		759.4	752.9																					
-L3- 369+40	LT	3002		759.7	753.1																					
-L2- 368+49	LT	3003		771.5	unk.																					
-L2- 370+39	LT	3004																								
		3005	3006		771.7	771.8																				
-L2- 372+30	RT	3005		778.0	771.7																					
-L2- 372+43	RT	3006		778.2	771.8																					
-L2- 372+41	LT	3007		777.7	unk.																					
		3008	3009		760.4	756.6																				
-L3- 372+50	RT	3008		763.2	760.4																					
-L3- 371+41	RT	3009		761.6	756.6																					
-L3- 371+87	LT	3010		762.2	757.6																					
		3010	3011		757.6	757.7																				
-L3- 372+02	LT	3011		762.3	757.7																					
-L3- 372+14	LT	3012			757.7	758.2																				
-L3- 374+75	LT	3013			exist.	763.9																				
-L3- 374+85	LT	3014		768.6	763.9																					
-L3- 374+85	LT	3015			exist.	763.9																				
-L3- 374+95	LT	3016			exist.	763.9																				
-L3- 374+90	RT	3017		769.7	765.4																					
-L2- 374+67	LT	3018			exist.	777.5																				
-L2- 374+89	LT	3019		782.3	777.5																					
-L2- 374+89	LT	3020			exist.	777.5																				
-L2- 375+11	LT	3021			exist.	777.5																				
-L2- 374+90	RT	3022		783.0	779.3																					
-L2- 374+90	RT	3023			exist.	779.3																				
-L2- 377+17	LT	3024			exist.	782.4																				
-L2- 377+39	LT	3025		787.2	782.4																					
-L2- 377+39	LT	3026			exist.	782.4																				
-L2- 377+41	RT	3027		787.8	783.6																					
-RAMPD4- 15+04	RT	3028		789.5	784.5																					
-RAMPA4- 15+31	LT	3029			exist.	779.0																				
-RAMPA4- 15+35	LT	3030		784.2	779.0																					
-RAMPA4- 15+35	LT	3031			exist.	779.0																				
-RAMPA4- 15+36	RT	3032			exist.	776.3																				
-RAMPA4- 15+36	RT	3033		783.9	776.3																					
-L3- 377+64	LT	3034			exist.	772.7																				
-L3- 377+41	LT	3035			exist.	772.7																				
-L3- 377+64	LT	3036		778.2	772.7																					
SHEET TOTALS																										

STATION	FROM	TO	R.C. PIPE (CLASS III) 15"	18"	24"	30"	36"	42"	48"	R.C. PIPE (CLASS IV) (UNLESS NOTED OTHERWISE) ■ WELDED STEEL PIPE 12"	15"	18"	24"	30"	36"	42"	48"	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. *FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G
	2935	2938									180'															
-L2- 366+57	2938																									
-L3- 366+59	2939																									
	2939	2940	16'																							
-L3- 366+78	2940																			1						
-L3- 366+78	2941																									
-L3- 366+79	2942																									
-L3- 369+08	2943					28'																				
	3001	3002				16'																				
-L3- 369+22	3001																			1	1.5					
-L3- 369+40	3002																									
-L2- 368+49	3003																									
-L2- 370+39	3004																									
	3005	3006	12'																							
-L2- 372+30	3005																									
-L2- 372+43	3006																			1	1.4					
-L2- 372+41	3007																									
	3008	3009	108'																							
-L3- 372+50	3008																			1						
-L3- 371+41	3009																									
-L3- 371+87	3010																									
	3010	3011			12'																					
-L3- 372+02	3011																			1						
-L3- 372+14	3012				20'																					
-L3- 374+75	3013				16'																					
-L3- 374+85	3014																			1						
-L3- 374+85	3015		4'																							
-L3- 374+95	3016				16'																					
-L3- 374+90	3017																									
-L2- 374+67	3018			40'																						
-L2- 374+89	3019																			1						
-L2- 374+89	3020		8'																							
-L2- 375+11	3021		40'																							
-L2- 374+90	3022																			1						
-L2- 374+90	3023		4'																							
-L2- 377+17	3024		40'																							
-L2- 377+39	3025																			1						
-L2- 377+39	3026		8'																							
-L2- 377+41	3027																			1						
-RAMPD4- 15+04	3028																			1						
-RAMPA4- 15+31	3029										12'															
-RAMPA4- 15+35	3030																			1	0.2					
-RAMPA4- 15+35	3031										8'															
-RAMPA4- 15+36	3032										4'															
-RAMPA4- 15+36	3033																			1	2.6					
-L3- 377+64	3034			4'																						
-L3- 377+41	3035				40'																					
-L3- 377+64	3036																			1	0.5					
SHEET TOTALS			240'	44'	104'	44'					204'									14	6.2'					

STATION	FROM	TO	OPEN THROAT CATCH BASIN STD. 840.04 OR 840.05	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. (W.S.F.G.) FRAME WITH TWO GRATES STD. 840.20	G.D.I. (W.S.S.G.) FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.F.G.) FRAME WITH TWO GRATES STD. 840.29	J.B. STD. 840.31 OR 840.32	TRAFFIC BEARING J.B. STD. 840.34 OR 840.46	TRAFFIC BEARING G.D.I. STD. 840.36 OR 840.46	STEEL GRATE & FRAME STD. 840.37	MANHOLE FRAME & COVER STD. 840.54	CONVERT CATCH BASIN TO D.I. (SEE SHEET 2-F)		CONVERT C.B. TO J.B. WITH M.H. (SEE SHEET 2-G)	CONVERT DROP INLET TO J.B. WITH M.H. (SEE SHEET 2-G)	CONCRETE APRON FOR G.D.I. STD. 840.17	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS
	2935	2938																						15" RCP IV
-L2- 366+57	2938												1		1									CONV. CB TO TB2GI
-L3- 366+59	2939																1							CONV. CB TO JB W/MH
	2939	2940																						15" RCP III
-L3- 366+78	2940				1		1																	2GI
-L3- 366+78	2941												1		1									CONV. CB TO TB2GI
-L3- 366+79	2942												1		1									CONV. CB TO TB2GI
-L3- 369+08	2943																				.6560		44'	COLLAR & EXTEND 30" RCP III REMOVE PORTION OF EXIST. 30" CONC. PIPE
	3001	3002																						30" RCP III
-L3- 369+22	3001				1		1																	2GI (EXTRA DEPTH)
-L3- 369+40	3002																1							CONV. CB TO JB W/MH
-L2- 368+49	3003												1		1									CONV. CB TO TB2GI
-L2- 370+39	3004												1		1									CONV. CB TO TB2GI
	3005	3006																						15" RCP III
-L2- 372+30	3005																	1						CONV. DI TO JB W/MH
-L2- 372+43	3006				1		1																	2GI (EXTRA DEPTH)
-L2- 372+41	3007												1		1									CONV. CB TO TB2GI
	3008	3009																						15" RCP III
-L3- 372+50	3008											1	1											TB2GI
-L3- 371+41	3009												1		1									CONV. CB TO TB2GI
-L3- 371+87	3010																1							CONV. CB TO JB W/MH
	3010	3011																						24" RCP III
-L3- 372+02	3011				1		1																	2GI
-L3- 372+14	3012																				.5526		37'	COLLAR & EXTEND 24" RCP III REMOVE PORTION OF EXIST. 24" CONC. PIPE
-L3- 374+75	3013																				.5526			COLLAR AND EXTEND 24" RCP III
-L3- 374+85	3014				1		1																40'	2GI REMOVE PORTION OF EXIST. 24" CONC. PIPE
-L3- 374+85	3015																				.3990			COLLAR AND EXTEND 15" RCP III
-L3- 374+95	3016																				.5526			COLLAR AND EXTEND 24" RCP III
-L3- 374+90	3017						1											1						CONV. DI TO 2GI
-L2- 374+67	3018																				.4465		42'	COLLAR AND EXTEND 18" RCP III REMOVE PORTION OF EXIST. 18" CONC. PIPE
-L2- 374+89	3019				1		1																	2GI
-L2- 374+89	3020																				.3990			COLLAR AND EXTEND 15" RCP III
-L2- 375+11	3021																				.3990		43'	COLLAR AND EXTEND 15" RCP III REMOVE PORTION OF EXIST. 15" CONC. PIPE
-L2- 374+90	3022				1		1																	2GI
-L2- 374+90	3023																				.3990			COLLAR AND EXTEND 15" RCP III
-L2- 377+17	3024																				.3990		43'	COLLAR AND EXTEND 15" RCP III REMOVE PORTION OF EXIST. 15" CONC. PIPE
-L2- 377+39	3025				1		1																	2GI
-L2- 377+39	3026																				.3990			COLLAR AND EXTEND 15" RCP III
-L2- 377+41	3027				1		1																	2GI
-RAMPD4- 15+04	3028				1		1																	2GI
-RAMPA4- 15+31	3029																				.3990		19'	COLLAR AND EXTEND 15" RCP IV REMOVE PORTION OF EXIST. 15" CONC. PIPE
-RAMPA4- 15+35	3030				1		1																	2GI (EXTRA DEPTH)
-RAMPA4- 15+35	3031																				.3990			COLLAR AND EXTEND 15" RCP IV
-RAMPA4- 15+36	3032																				.3990			COLLAR AND EXTEND 15" RCP IV
-RAMPA4- 15+36	3033				1		1																	2GI (EXTRA DEPTH)
-L3- 377+64	3034																				.4465			COLLAR AND EXTEND 18" RCP III
-L3- 377+41	3035																				.5526		44'	COLLAR & EXTEND 24" RCP III REMOVE PORTION OF EXIST. 24" CONC. PIPE
-L3- 377+64	3036				1		1																	2GI (EXTRA DEPTH)
SHEET TOTALS					13		14					1	8		7		3	2			7.3504		312'	

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COMPUTED BY: MTP DATE: 3/08/2010
CHECKED BY: PWR DATE: 3/09/2010

PROJECT REFERENCE NO. I-4407 SHEET NO. 3-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATEWIDE

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)

■ WELDED STEEL PIPE

* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B')

STATION	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	36" .079	42" .109	48" .109	R.C. PIPE (CLASS III) 15"	18"	24"	30"	36"	42"	48"	R.C. PIPE (CLASS IV) (UNLESS NOTED OTHERWISE) 12"	15"	18"	24"	30"	36"	42"	48"	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	LIN. *FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	OPEN THROAT CATCH BASIN STD. 840.04 OR 840.05	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. (W.S.F.G.) FRAME WITH TWO GRATES STD. 840.20	G.D.I. (W.S.S.G.) FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.F.G.) FRAME WITH TWO GRATES STD. 840.29	J.B. STD. 840.31 OR 840.32	TRAFFIC BEARING J.B. STD. 840.34 OR 840.46	TRAFFIC BEARING G.D.I. STD. 840.36 OR 840.46	STEEL GRATE & FRAME STD. 840.37	MANHOLE FRAME & COVER STD. 840.54	CONVERT CATCH BASIN TO D.I. (SEE SHEET 2-F)		CONVERT C.B. TO J.B. WITH M.H. (SEE SHEET 2-G)	CONVERT DROP INLET TO J.B. WITH M.H. (SEE SHEET 2-G)	CONCRETE APRON FOR G.D.I. STD. 840.17	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS
-L3- 377+86	LT	3037			exist.	772.7																					40'																																										.4465		44'	COLLAR AND EXTEND 18" RCP III REMOVE PORTION OF EXIST. 18" CONC. PIPE
-L3- 380+78	LT	3038			exist.	784.9																					20'																																										.4465		23'	COLLAR AND EXTEND 18" RCP III REMOVE PORTION OF EXIST. 18" CONC. PIPE
-L3- 380+90	LT	3039		789.7	784.9																																							1									1		1																	2GI
-L3- 380+90	LT	3040			exist.	784.9																					4'																																										.4465			COLLAR AND EXTEND 18" RCP III
-RAMPA4- 12+10	LT	3041			exist.	786.2																													8'																																				.4465			COLLAR AND EXTEND 18" RCP IV
-RAMPA4- 12+10	LT	3042		791.0	786.2																																							1									1		1																	2GI
-RAMPA4- 12+06	LT	3043			exist.	786.2																													16'																																				.4465		23'	COLLAR AND EXTEND 18" RCP IV REMOVE PORTION OF EXIST. 18" CONC. PIPE
-RAMPD4- 11+75	RT	3044		793.1	788.3																																							1									1		1																	2GI
-RAMPD4- 11+74	RT	3045			exist.	788.3																												8'																																					.3990			COLLAR AND EXTEND 15" RCP IV
-L2- 380+90	RT	3046			exist.	790.6																				4'																																											.3990			COLLAR AND EXTEND 15" RCP III
-L2- 380+90	RT	3047		794.7	790.6																																							1									1		1																	2GI
-L2- 386+82	LT	3101			exist.	794.0																					16'																																										.4465		14'	COLLAR AND EXTEND 18" RCP III REMOVE PORTION OF EXIST. 18" CONC. PIPE
-L2- 386+79	LT	3102		804.9	794.0																																							1	5.0	0.9							1		1																	2GI (EXTRA DEPTH)
		3102	3103		794.0	794.1																					8'																																												18'	18" RCP III REMOVE PORTION OF EXIST. 18" CONC. PIPE
-L2- 386+75	LT	3103		805.8	794.1																																							1	5.0	1.7												1				1										JB W/MH (EXTRA DEPTH)
-L3- 386+85	RT	3104			exist.	794.3																					8'																																										.4465			COLLAR AND EXTEND 18" RCP III
-L3- 386+83	RT	3105		806.1	794.3																																							1	5.0	1.8							1		1															22'	2GI (EXTRA DEPTH) REMOVE PORTION OF EXIST. 18" CONC. PIPE
-L3- 386+81	RT	3106			exist.	794.3																					8'																																										.4465			COLLAR AND EXTEND 18" RCP III
		3103	3107		801.0	812.3			504'																																																															15" PIPE
-L2- 391+84	LT	3107		815.1	812.3																																							1																1	1											TB2GI
		3107	3108		812.3	813.4			4'																																																															15" PIPE
-L3- 392+00	RT	3108		816.4	813.4																																							1																1	1											TB2GI
-L1- 10+03	LT	3109		817.2	814.5																																							1										1		1																2GI, TYPE D
-L1- 10+02	LT	3110			exist.	814.5																						24'																																									.5526		14'	COLLAR & EXTEND 24" RCP III REMOVE PORTION OF EXIST. 24" CONC. PIPE
-L1- 10+01	LT	3111		821.2	809.3																																							1	5.0	1.9														1	1											TB2GI (EXTRA DEPTH)
		3111	3112		809.3	808.8																						4'																																											12'	24" RCP III REMOVE PORTION OF EXIST. 24" CONC. PIPE
-L1- 10+01	RT	3112		820.9	808.8																																							1	5.0	2.1														1	1											TB2GI (EXTRA DEPTH)
-L1- 21+93	RT	3201		821.2	815.0																																							1	1.2															1	1											TB2GI (EXTRA DEPTH)
		3201	3202		815.0	815.2																					4'																																												14'	18" RCP III REMOVE PORTION OF EXIST. 18" CONC. PIPE
-L1- 21+91	LT	3202		821.4	815.2																																							1	1.2															1	1											TB2GI (EXTRA DEPTH)
-RAMPB5- 16+32	LT	3203		816.1	813.5																																							1									1			1																2GI
-RAMPC5- 18+00	RT	3204		819.5	816.8																																							1									1		1																	2GI
		3204	3205		816.8	813.8																				196'																																														15" RCP III
-RAMPC5- 20+00	RT	3205		816.5	813.8																																							1									1		1																	2GI
-RAMPC5- 19+80	RT	3206			exist.	784.7																					12'																																										.4465			COLLAR AND EXTEND 18" RCP III
		3205	3301		813.8	811.1																				188'																																														15" RCP III
-RAMPC5- 21+90	RT	3301		813.5	811.1																																							1									1		1																	2GI
-RAMPC5- 21+90	RT	3302			804.3	811.1																24'																																															2-15"				15" CSP W/ELBOWS
-L1- 25+66	RT	3303		810.5	805.8																																							1																1	1											TB2GI
		3203	3304		805.8	805.9																					4'																																												12'	18" RCP III REMOVE PORTION OF EXIST. 18" CONC. PIPE
-L1- 25+66	LT	3304		810.4	805.9																																							1																1	1											TB2GI
-RAMPB5- 20+33	LT	3305		822.2	819.4																																							1									1			1																2GI
-L1- 30+94	RT	3306		794.0	789.2																																							1																1	1										32'	TB2GI REMOVE PORTION OF EXIST. 15" CONC. PIPE
		3306	3307		789.2	790.7																				4'																																														15" RCP III
-L1- 30+94	LT	3307		794.0	790.7																																							1																1	1											TB2GI
-L1- 33+25	LT	3308		785.9	775.6																																							1	5.0	0.3							1			1																2GI (EXTRA DEPTH)
-RAMPA5- 19+15	RT	3309		820.1	817.3																																							1									1		1																	2GI
		3309	3310		817.3	805.2																				204'																																														15" RCP III
SHEET TOTALS									508'												24'						596'	124'	28'						8'	24'								25	32.4'	8.7'							13	1	10	4		1		10	10	1						2-15"	5.3691		228'	

ABBREVIATIONS

- C.B. CATCH BASIN
- N.D.I. NARROW DROP INLET
- D.I. DROP INLET
- G.D.I. GRATED DROP INLET
- G.D.I. (N.S.) GRATED 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 JUNCTION BOX

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COMPUTED BY: MTP DATE: 3/08/2010
CHECKED BY: PWR DATE: 3/09/2010

PROJECT REFERENCE NO.	SHEET NO.
I-4407	3-J

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATEWIDE

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)

STATION	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL
-RAMPA5- 17+10	RT	3310		808.0	805.2		
-RAMPA5- 17+10	RT	3311			792.4	805.2	
-L1- 34+63	LT	3312		789.3	786.5		
		3312	3313		786.5	786.4	
-L1- 34+71	LT	3313		789.3	786.4		
-L1- 34+63	RT	3314		789.3	786.5		
		3313	3315		786.4	786.3	
		3314	3315		786.5	786.3	
-L1- 34+71	RT	3315		789.3	786.3		
		3315	3318		786.3	785.1	
-L1- 36+02	LT	3316		790.0	787.2		
		3316	3318		787.2	787.1	
-L1- 36+05	LT	3317			exist.	787.1	
-L1- 36+02	RT	3318		790.0	781.7		
-L1- 36+00	RT	3319			exist.	781.7	
-RAMPD5- 14+23	LT	3320			exist.	780.8	
-L1- 44+24	LT	3401			exist.	790.2	
-L1- 44+62	LT	3402			exist.	786.7	
-L1- 44+64	LT	3403		797.0	786.7		
-L1- 44+66	RT	3404			exist.	786.7	
-L1- 45+15	RT	3405			exist.	782.9	
		3403	3406		789.4	790.5	
-L1- 47+42	LT	3406		793.4	790.5		
		3406	3407		790.5	790.6	
-L1- 47+42	RT	3407		793.4	790.6		
SHEET TOTALS							
PROJECT TOTALS							

SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC)

FROM	TO	12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
3310													
3311													
3312													
3312	3313												
3313													
3314													
3313	3315												
3314	3315												
3315													
3315	3318												
3316													
3316	3318												
3317													
3318													
3319													
3320													
3401													
3402													
3403													
3404													
3405													
3403	3406												
3406													
3406	3407		4'										
3407													
SHEET TOTALS			4'										
PROJECT TOTALS			3,970'	356'									

C.S. PIPE and R.C. PIPE (CLASS III) (SIZE / THICKNESS OR GAUGE)

FROM	TO	C.S. 12" .064	C.S. 15" .064	C.S. 18" .064	C.S. 24" .064	C.S. 36" .079	C.S. 42" .109	C.S. 48" .109	R.C. III 15"	R.C. III 18"	R.C. III 24"	R.C. III 30"	R.C. III 36"	R.C. III 42"	R.C. III 48"
3310															
3311			40'												
3312															
3312	3313														
3313															
3314															
3313	3315								4'						
3314	3315														
3315															
3315	3318														
3316															
3316	3318											4'			
3317												8'			
3318															
3319												8'			
3320												16'			
3401												16'			
3402												8'			
3403															
3404												8'			
3405												16'			
3403	3406														
3406															
3406	3407														
3407															
SHEET TOTALS			40'						4'			84'			
PROJECT TOTALS			852'	104'					1,164'	568'	160'	140'	44'		

R.C. PIPE (CLASS IV) (UNLESS NOTED OTHERWISE) ▪ WELDED STEEL PIPE; ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS.

FROM	TO	12"	15"	18"	24"	30"	36"	42"	48"	R.C.P.	C.S.P.
3310											
3311											
3312											
3312	3313		4'								
3313											
3314											
3313	3315										
3314	3315		4'								
3315											
3315	3318			128'							
3316											
3316	3318										
3317											
3318											
3319											
3320											
3401											
3402											
3403											
3404											
3405											
3403	3406		276'								
3406											
3406	3407										
3407											
SHEET TOTALS			284'	128'							
PROJECT TOTALS			1,952'	268' ▪64'	4'						

QUANTITIES FOR DRAINAGE STRUCTURES (* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B')); FRAME, GRATES AND HOOD STANDARD 840.03 (TYPE OF GRATE)

FROM	TO	PER EACH (0' THRU 5.0')	LIN. *FT. A: 5.0' THRU 10.0'	LIN. *FT. B: 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	E	F	G
3310		1						
3311								
3312		1						
3312	3313							
3313		1						
3314		1						
3313	3315							
3314	3315							
3315		1						
3315	3318							
3316		1						
3316	3318							
3317								
3318		1	3.3					
3319								
3320								
3401								
3402								
3403		1	5.0	0.3				
3404								
3405								
3403	3406							
3406		1						
3406	3407							
3407		1						
SHEET TOTALS		10	8.3'	0.3'				
PROJECT TOTALS		205	104.5'	30.8'	4	2	1	1
			*144.54'					

FROM	TO	OPEN THROAT CATCH BASIN STD. 840.04 OR 840.05	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. (W.S.F.G.) FRAME WITH TWO GRATES STD. 840.20	G.D.I. (W.S.S.G.) FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.F.G.) FRAME WITH TWO GRATES STD. 840.29	J.B. STD. 840.31 OR 840.32	TRAFFIC BEARING J.B. STD. 840.34 OR 840.46	TRAFFIC BEARING G.D.I. STD. 840.36 OR 840.46	STEEL GRATE & FRAME STD. 840.37	MANHOLE FRAME & COVER STD. 840.54	CONVERT CATCH BASIN TO D.I. (SEE SHEET 2-F)		CONVERT C.B. TO J.B. WITH M.H. (SEE SHEET 2-G)	CONVERT DROP INLET TO J.B. WITH M.H. (SEE SHEET 2-G)	CONCRETE APRON FOR G.D.I. STD. 840.17	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS
3310				1		1																	2GI
3311																			2-15"				15" CSP W/ELBOWS
3312											1	1											TB2GI
3312	3313																						15" RCP IV
3313											1	1											TB2GI
3314											1	1											TB2GI
3313	3315																						15" RCP III
3314	3315																						15" RCP IV
3315											1	1											TB2GI
3315	3318																						18" RCP IV
3316											1	1											TB2GI
3316	3318																						30" RCP III
3317																				.6560			COLLAR AND EXTEND 30" RCP III
3318											1	1										22'	TB2GI (EXTRA DEPTH) REMOVE PORTION OF EXIST. 30" CONC. PIPE
3319																				.6560			COLLAR AND EXTEND 30" RCP III
3320																				.6560			COLLAR AND EXTEND 30" RCP III
3401																				.6560			COLLAR AND EXTEND 30" RCP III
3402																				.6560			COLLAR AND EXTEND 30" RCP III
3403											1	1										22'	TB2GI (EXTRA DEPTH) REMOVE PORTION OF EXIST. 30" CONC. PIPE
3404																				.6560			COLLAR AND EXTEND 30" RCP III
3405																				.6560			COLLAR AND EXTEND 30" RCP III
3403	3406																						15" RCP IV
3406											1	1											TB2GI
3406	3407																						15" PIPE
3407											1	1											TB2GI
SHEET TOTALS				1		1					9	9							2-15"	4.5920		44'	
PROJECT TOTALS		2	3	125	3	96	37	1	4	2	62	71	6	11		11	5	0.79	33-15" 4-18"	45.1463	0.09	1,959'	

ABBREVIATIONS

- C.B. CATCH BASIN
- N.D.I. NARROW DROP INLET
- D.I. DROP INLET
- G.D.I. GRATED DROP INLET
- G.D.I. (N.S.) GRATED 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 JUNCTION BOX

COMPUTED BY: MTP DATE: 3/1/2010
CHECKED BY: PWR DATE: 3/9/2010

"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

PROJECT REFERENCE NO.	SHEET NO.
I-4407	3-K

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS									IMPACT ATTENUATOR TYPE 350			SINGLE FACED CONCRETE BARRIERS	REMOVE EXISTING GUARDRAIL		REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	GRAU 350	CAT-1	B-77	B-83	TES	TYPE III	M-350	AT-1		NO.	PERMITTED G	PERMITTED NG				
-L-	30+45.77	33+20.77	RT	275.00			33+45.77		2.5	15	275		5.5		1													212		
-L-	34+85.22	37+60.22	LT	275.00			34+60.22		2.5	15	275		5.5		1													228		
N/A	DAWSON MILLER ROAD			50.00											1													50		
N/A	DAWSON MILLER ROAD			50.00											1													50		
-RAMPD1-	10+00.00	13+47.20	LT	347.20			12+47.20		12	15	50		1		1													347		
-L-	45+09.70	55+06.25	RT	996.55				55+06.25	12	15						1												994		
-L-	46+17.50	56+30.00	LT	1,012.50			54+80.00	46+17.50	12	15	50		1		1	1												1,002		
-L-	74+86.00	82+14.75	MED LT	693.75			78+71.00	78+36.00	16.5	20	325	325	6.5	6.5		1	2										35	755		
-L-	74+93.25	82+15.75	MED RT	687.50			78+37.00	78+72.00	16.5	20	325	325	6.5	6.5			2										35	743		
-L-	75+37.20	78+43.45	RT	306.25			78+43.45		10	15	50	100	1	2	1		1											127		
-L-	78+63.97	81+70.22	LT	306.25			78+63.97		10	15	50	100	1	2	1		1											165		
-L-	107+24.80	109+56.05	RT	231.25			108+74.80	109+56.05	12	15	50		1		1	1												229		
-L-	108+11.37	111+55.12	LT	343.75			110+05.12	108+11.37	12	15	50		1		1	1												328		
-L-	144+69.05	151+96.55	MED LT	687.50			148+52.80	148+12.80	16.5	20	325	325	6.5	6.5			2										40	725		
-L-	144+69.05	151+96.55	MED RT	687.50			148+12.80	148+52.80	16.5	20	325	325	6.5	6.5			2										40	725		
-L-	145+59.10	148+65.35	RT	306.25			148+65.35		10	15	50	100	1	2	1		1											211		
-L-	148+00.00	151+06.25	LT	306.25			148+00.00		10	15	50	100	1	2	1		1											204		
-L-	157+77.45	159+71.20	RT	193.75			159+27.45	159+71.20	12	15	50		1		1	1												153		
-L-	171+50.00	182+81.25	RT	1,131.25			173+00.00	182+81.25	12	15	50		1		1	1												1,103		
-L-	174+93.75	195+75.00	LT	2,081.25			194+25.00	174+93.75	12	15	50		1		1	1												2,093		
-L-	201+90.00	206+08.75	RT	418.75			203+40.00	206+08.75	12	15	50		1		1	1												403		
-L-	202+00.51	215+98.76	LT	1,398.25				202+00.51	12	15						1												1,391		
-RAMPB2-	10+00.00	14+08.00	LT	408.00			13+08.00		12	15	50		1		1													388		
-RAMPB2-	18+52.00	SEE PLANS	LT	131.25	162.50		SEE PLANS	18+52.00	12	15	50	162.5	1	4	1	1												264		
-L-	211+32.75	214+96.50	RT	363.75			212+82.75		12	15	50		1		1													360		
-RAMPC2-	10+00.00	11+80.00	RT	180.00				11+80.00	12	15						1												167		
-L-	222+72.75	229+95.25	MED LT	687.50			226+51.50	226+16.50	16.5	20	325	325	6.5	6.5			2										35	725		
-L-	222+72.75	229+95.25	MED RT	687.50			226+16.50	226+51.50	16.5	20	325	325	6.5	6.5			2										35	725		
-L-	223+22.00	226+15.75	RT	293.75			226+15.75		10	15	50	100	1	2	1		1											137		
-L-	226+54.50	229+48.25	LT	293.75			226+54.50		10	15	50	100	1	2	1		1											123		
-RAMPA2-	14+63.00	SEE PLANS	RT	837.50			15+63.00	SEE PLANS	12	15	50	183	1	4	1													838		
-L-	248+60.00	254+53.75	RT	593.75			250+10.00	254+53.75	12	15	50		1		1	1												580		
-L-	249+81.00	254+24.75	LT	443.75			252+74.75	249+81.00	12	15	50		1		1	1												428		
-L-	259+50.00	262+35.00	MED LT	281.25			262+35.00	259+50.00	10	VARIES	57		3.8				1											284		
-L-	259+50.00	262+35.00	MED RT	281.25			259+50.00	262+35.00	10	VARIES		57		3.8			1											286		
-L-	269+33.12	274+76.87	RT	543.75			270+83.12		12	15	50		1		1													543		
-64RAMPC-	10+00.00	11+50.00	RT	150.00				11+50.00	12	15						1												147		
-L-	270+44.53	273+13.28	LT	268.75			271+63.28	273+13.28	12	15	50		1		1	1												278		
-L-	283+58.00	284+58.00	RT	100.00			284+58.00		2		50		1		1			1										60		
-L-	285+70.00	285+76.02	LT	6.02			285+70.00		2									1										15		
-64LOOPA-	10+00.00	10+93.98	LT	93.98					2		50		1		1													60		
-64RAMPD-	10+44.00	11+44.00	LT	100.00			10+44.00		VARIES		50		1		1			1										49		
-L-	292+19.00	293+19.00	LT	100.00			292+19.00		2.33	N/A	50		1		1		1											78		
-1713RAMPA-	10+00.00	13+50.00	RT	350.00				13+50.00	12	15						1												471		
-L-	302+38.88	304+70.13	LT	231.25			303+20.00		12	15	50		1		1													231		
-1713RAMPD-	10+00.00	12+33.25	LT	233.25			11+33.25		12	15	50		1		1													229		
-L-	303+27.00	305+50.00	RT	223.00				305+50.00	12	15						1												224		
-L-	315+92.00	325+73.25	RT	981.25			317+42.00	325+73.25	12	15	50		1		1	1												978		
-L-	319+89.50	323+45.75	LT	356.25			321+95.75	319+89.50	12	15	50		1		1	1												354		
-L-	334+43.68	341+43.68	RT	700.00			335+93.68	341+43.68	12	15	50	450	1	9	1													690		
-L-	339+75.63	341+31.88	LT	156.25			341+31.88	339+75.63	12	15						1			1									151		
-L-	343+15.15	343+29.23	LT	14.08			343+15.15		3	15	14.08		0.28															39		
-L3-	343+29.23	346+15.15	LT	285.92					VARIES	15	285.92		5.72		1													225		
-L3-	347+34.48	350+73.73	RT	339.25				347+34.48	6.33	N/A						1												340		
-RAMPB3-	10+00.00	15+70.00	RT	570.00			14+70.00		6.33	N/A	50		1		1															
-L3-	349+92.75	357+74.00	LT	781.25			356+24.00	349+92.75	12	15	50		1		1	1												779		
-RAMPB3-	18+46.75	19+78.00	LT	131.25			18+46.75		2	N/A	50	81.25	1	6.5	1	1														NEEDED FOR LIGHTING
-L3-	366+06.00	368+37.25	RT	231.25			366+06.00		2.33	N/A	50		1		1		1											27		
-L3-	366+48.00	368+79.25	LT	231.25			366+48.00		12.33	N/A	50		1		1		1											64		
-L3-	370+84.00	373+15.25	LT	231.25			370+84.00		12.33	N/A	50		1		1		1											57		
-L3-	371+35.00	373+66.25	RT	231.25			371+35.00		2.33	N/A	50		1		1		1													
-RAMPA4-	15+78.00	16+71.75	LT	93.75			16+71.75		6.33	N/A	50		1		1	1														NEEDED FOR LIGHTING
-L3-	384+26.00	391+32.25	LT	706.25			389+82.25	384+26.00	12	15	50		1		1	1												702		
-L3-	387+07.00	391+46.00	RT	439.00			391+46.00	387+07.00	6.33	N/A	18.75		0.17			1	1											374		
-L2-	343+29.23	357+47.98	RT	1,418.75			343+29.23	357+47.98	12	15						1			1									1,414		
-L2-	347+40.00	351+60.00	LT	420.00			347+40.00	351+60.00	6.33	9.33	50		1			1	1											331		
-RAMPC3-	11+75.00	12+81.25	LT	106.25			12+81.25		6.33	9.33	50		1		1	1												126		NEEDED FOR LIGHTING
			SHEET 1 SUBTOTAL	28,993.25 Ft.	162.50 Ft.								SHEET 1 TOTALS		46	30	27	3	2								220	26,479		

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COMPUTED BY: MTP DATE: 3/01/2010
CHECKED BY: PWR DATE: 3/09/2010

PROJECT REFERENCE NO.	SHEET NO.
I-4407	3-L

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

GUARDRAIL SUMMARY (Cont.)

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS								IMPACT ATTENUATOR TYPE 350			SINGLE FACED CONCRETE BARRIERS	REMOVE EXISTING GUARDRAIL		REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	GRAU 350	CAT-1	B-77	B-83	TES	TYPE III	M-350	AT-1	NO.	PERMITTED G	PERMITTED NG				
-RAMPC3-	18+49.75	19+68.50	RT	118.75			19+68.50		2.00	N/A	50		1		1	1													NEEDED FOR LIGHTING
-L2-	361+20.75	363+52.00	RT	231.25			363+52.00		12.33	N/A	50		1		1		1										164		
-L2-	361+22.75	363+54.00	LT	231.25			363+54.00		VARIES	N/A	81.25		1.63		1		1										71		
-L2-	368+93.75	370+50.00	LT	156.25			370+50.00		2.33	N/A	50		1		1		1										71		
-L2-	368+57.75	370+89.00	RT	231.25			370+89.00		VARIES	N/A	81.25		1.63		1		1										50		
-RAMPD4-	20+06.25	20+75.00	LT	68.75			20+06.25		2		50		1		1	1													NEEDED FOR LIGHTING
-RAMPD4-	16+67.75	17+74.00	RT	106.25			16+67.75		VARIES	VARIES	50		1		1	1													NEEDED FOR LIGHTING
-L2-	385+55.00	394+60.36	RT	905.36			387+05.00		12	15	50		1		1												907		
-L1-	10+00.00	11+75.89	RT	175.89				11+75.89	12	15						1											171		
-L2-	386+85.00	391+41.25	LT	456.25			388+35.00	391+41.25	6.33	9.33	50		1		1	1											386		
-RAMPC5-	15+50.00	SEE PLANS	RT	718.75	62.50		16+50.00	SEE PLANS	12	15	50	62.5	1	4	1					1							614		
-RAMPC5-	16+84.00	17+52.75	LT	68.75			17+52.75		N/A	N/A	37.5		4			1					1								NEEDED FOR LIGHTING
-RAMPC5-	22+81.50	SEE PLANS	LT	62.5	50.00		SEE PLANS		VARIES	VARIES	50		4							1		1					125		
-L1-	20+85.00	21+53.75	RT	68.75			21+53.75		N/A	N/A	37.5		4			1					1								NEEDED FOR LIGHTING
-L1-	24+98.65	28+04.90	RT	306.25			28+04.90		12	15	50	125	1	2.5	1		1										127		
-L1-	29+11.92	32+18.17	LT	306.25			29+11.92		12	15	50	100	1	2	1		1										124		
-L1-	36+79.00	37+47.75	LT	68.75			36+79.00		N/A	N/A	37.5		4			1					1								NEEDED FOR LIGHTING
-RAMPA5-	15+83.00	SEE PLANS	RT	537.50	100.00		16+83.00	SEE PLANS	12	15	50	100	1	2	1												639		
-RAMPA5-	14+83.00	15+51.75	LT	68.75			15+51.75		N/A	N/A	37.5		4			1					1								NEEDED FOR LIGHTING
-RAMPD5-	14+32.50	SEE PLANS	LT	725.00	100.00		SEE PLANS	14+32.50	12	15	100		2			1				1							814		
-RAMPD5-	21+09.25	SEE PLANS	RT	37.50	62.50		SEE PLANS	21+09.25	VARIES	VARIES		62.5		4						1		1					75		
-L1-	43+50.00	46+18.75	RT	268.75			45+00.00	46+18.75	12	15	50		1		1	1											226		
-L1-	47+50.00	48+31.25	MED LT	81.25			48+31.25	47+50.00	VARIES	N/A	60		4				1										78		
-L1-	47+50.00	48+31.25	MED RT	81.25			47+50.00	48+31.25	VARIES	N/A		60		4			1										78		
-L-	252+52.71	343+29.23																									15,551		
-L2-	343+29.23	394+60.36																									734		
-L3-	343+29.23	394+75.88																									970		
-L1-	10+00.00	48+50.00																									6,337		
SHEET 1 SUBTOTAL				28,993.25 Ft.	162.50 Ft.								SHEET 1 TOTALS		46	30	27	3	2							220	26,479		
SHEET 2 SUBTOTAL				6,081.25 Ft.	375.00 Ft.								SHEET 2 TOTALS		14	11	8			4	4	2					28,312		
PROJECT SUBTOTAL				35,074.50 Ft.	537.50 Ft.								PROJECT TOTALS		60	41	35	3	2	4	4	2				220	54,791		

LESS ANCHOR DEDUCTIONS		
GRAU-350	60 @ 50.00 Ft.	3,000.00 Ft.
M-350	4 @ 37.50 Ft.	150.00 Ft.
CAT-1	41 @ 6.25 Ft.	256.25 Ft.
AT-1	2 @ 6.25 Ft.	12.50 Ft.
TYPE III	4 @ 18.75 Ft.	75.00 Ft.
B-77	35 @ 18.75 Ft.	656.25 Ft.
B-83	3 @ 25.00 Ft.	75.00 Ft.
SUBTOTAL		-4,225.00 Ft.

PROJECT TOTAL	30,849.50 Ft.	537.50 Ft.
SAY	31,000.00 Ft.	550.00 Ft.
ADDITIONAL GUARDRAIL POSTS	20 EA.	

REMOVE AND RESET EXISTING GUARDRAIL SUMMARY

(AS DIRECTED BY THE ENGINEER)

SURVEY LINE	BEG. STA.	END STA.	LENGTH	ANCHORS					
			STRAIGHT	GRAU 350	CAT-1				
-L-	14+00.00	259+50.00	44,400'	6	5				

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COMPUTED BY: AITP DATE: 3/04/2010
CHECKED BY: PMR DATE: 3/09/2010

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF PAVEMENT REMOVAL
IN SQUARE YARDS

LOCATION	ASPHALT REMOVAL
-L- 14+00.00 TO -L- 19+30.00 (LT.)	589.00
-L- 18+57.27 TO -L- 24+06.23 (RT.)	610.00
-L- 19+30.00 TO -L- 23+51.33 (LT.)	187.00
-RAMPB1- 10+00.00 TO -RAMPB1- 19+74.29 (LT.)	436.00
-RAMPB1- 14+13.23 TO -RAMPB1- 19+74.29 (RT.)	249.00
-RAMPC1- 10+00.00 TO -RAMPC1- 20+86.14 (RT.)	483.00
-RAMPC1- 13+67.35 TO -RAMPC1- 20+86.14 (LT.)	319.00
-RAMPA1- 10+00.00 TO -RAMPA1- 19+81.40 (RT.)	436.00
-RAMPD1- 15+49.97 TO -RAMPD1- 20+14.15 (LT.)	206.00
-L- 43+13.94 TO -L- 49+27.00 (LT.)	272.00
-L- 45+09.70 TO -L- 52+10.00 (RT.)	311.00
-L- 206+98.00 TO -L- 215+98.76 (LT.)	400.00
-L- 210+62.71 TO -L- 214+96.50 (RT.)	193.00
-RAMPB2- 10+00.00 TO -RAMPB2- 20+36.40 (LT.)	461.00
-RAMPC2- 10+00.00 TO -RAMPC2- 21+96.68 (RT.)	532.00
-RAMPA2- 10+00.00 TO -RAMPA2- 22+33.55 (RT.)	548.00
-RAMPD2- 10+00.00 TO -RAMPD2- 22+74.17 (LT.)	566.00
-L- 238+00.00 TO -L- 242+92.00 (LT.)	219.00
-L- 239+17.67 TO -L- 248+18.00 (RT.)	400.00
-L- 252+52.71 TO -L- 273+13.28 (LT.)	916.00
-L- 252+52.71 TO -L- 274+76.87 (RT.)	989.00
-L- 262+30.00 TO -L- 265+70.00 (MED LT.)	151.00
-L- 262+30.00 TO -L- 265+70.00 (MED RT.)	151.00
-64RAMPB- 10+00.00 TO -64RAMPB- 13+20.00 (LT.)	142.00
-64RAMPC- 10+00.00 TO -64RAMPC- 12+50.00 (RT.)	111.00
-L- 275+67.00 TO -L- 281+85.00 (LT.)	824.00
-L- 276+68.00 TO -L- 282+00.00 (RT.)	709.00
-L- 287+39.00 TO -L- 297+79.00 (LT.)	1,387.00
-L- 287+72.00 TO -L- 290+88.00 (RT.)	421.00
-L- 294+24.00 TO -L- 299+03.00 (RT.)	639.00
-L- 303+27.00 TO -L- 321+27.00 (RT.)	2,400.00
-L- 303+60.00 TO -L- 314+25.00 (LT.)	1,420.00
-L- 312+27.00 TO -L- 325+70.00 (RT.)	1,492.00
-L- 314+25.00 TO -L- 341+41.00 (LT.)	3,018.00
-L- 325+70.00 TO -L- 341+69.00 (RT.)	2,132.00
-L2- 343+29.23 TO -L2- 394+60.36 (RT.)	5,701.00
-L3- 343+29.23 TO -L3- 394+75.88 (LT.)	5,718.00
-L1- 10+00.00 TO -L1- 14+60.00 (LT.)	409.00
-L1- 10+00.00 TO -L1- 14+00.00 (RT.)	178.00
-L1- 14+60.00 TO -L1- 16+32.27 (LT.)	77.00
-RAMPB5- 10+00.00 TO -RAMPB5- 14+75.47 (LT.)	211.00
-RAMPB5- 14+75.47 TO -RAMPB5- 24+33.79 (LT.)	213.00
-RAMPB5- 14+75.47 TO -RAMPB5- 24+33.79 (RT.)	213.00
-RAMPC5- 10+00.00 TO -RAMPC5- 15+30.14 (RT.)	177.00
-RAMPC5- 15+30.14 TO -RAMPC5- 23+26.18 (LT.)	177.00
-RAMPC5- 15+30.14 TO -RAMPC5- 23+26.18 (RT.)	177.00
-RAMPA5- 10+00.00 TO -RAMPA5- 22+21.29 (RT.)	543.00
-RAMPD5- 10+00.00 TO -RAMPD5- 21+86.36 (LT.)	527.00
-RAMPD5- 14+08.00 TO -RAMPD5- 21+86.36 (RT.)	173.00
-L1- 19+29.00 TO -L1- 35+30.00 (RT.)	1,779.00
-L1- 21+07.00 TO -L1- 38+88.00 (LT.)	1,979.00
-L1- 39+37.35 TO -L1- 48+50.00 (RT.)	1,014.00
-L1- 42+27.31 TO -L1- 48+50.00 (LT.)	346.00
PROJECT TOTAL	43,928.00
SAY	44,000.00

PROJECT REFERENCE NO. 1-4407
SHEET NO. 3-M

COMPUTED BY: MTP DATE: 3-03-2010
CHECKED BY: PWR DATE: 3-09-2010

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
I-4407	3-N

SUMMARY OF CONCRETE BARRIER TYPE T, TYPE T1 AND TYPE T2

IN FEET

BEGINNING STATION	END STATION	LOCATION	LENGTH TYPE T	LENGTH TYPE T1	LENGTH TYPE T2
-L- STA. 262+35.00	-L- STA. 272+00.00	MEDIAN		965.00	
-L- STA. 272+00.00	-L- STA. 274+76.00	MEDIAN	276.00		
-L- STA. 275+24.00	-L- STA. 284+17.50	MEDIAN	893.50		
-L- STA. 286+07.50	-L- STA. 291+09.50	MEDIAN	502.00		
-L- STA. 292+64.50	-L- STA. 298+76.00	MEDIAN	611.50		
-L- STA. 299+24.00	-L- STA. 317+56.00	MEDIAN	1,832.00		
-L- STA. 318+04.00	-L- STA. 343+00.00	MEDIAN	2,496.00		
-L- STA. 343+00.00	-L- STA. 343+29.23	MEDIAN		29.23	
-L2- STA. 343+29.23	-L2- STA. 345+25.00	MEDIAN		195.77	
-L2- STA. 345+25.00	-L2- STA. 347+40.00	MEDIAN			215.00
-L3- STA. 391+46.00	-L3- STA. 393+00.00	MEDIAN			154.00
-L3- STA. 393+00.00	-L3- STA. 394+75.88	MEDIAN		175.88	
-L1- STA. 10+00.00	-L1- STA. 11+50.00	MEDIAN		150.00	
-L1- STA. 11+50.00	-L1- STA. 27+88.50	MEDIAN	1,638.50		
-L1- STA. 29+28.50	-L1- STA. 29+76.00	MEDIAN	47.50		
-L1- STA. 30+24.00	-L1- STA. 47+50.00	MEDIAN	1,726.00		
TOTAL			10,023.00	1,515.88	369.00
SAY			10,030.00	1,520.00	370.00

SUMMARY OF SINGLE FACED PRECAST REINFORCED CONCRETE BARRIER

IN FEET

BEGINNING STATION	END STATION	LOCATION	LENGTH
-L- STA. 78+36.00	-L- 78+71.00	MED. LT.	35.00
-L- STA. 78+37.00	-L- 78+72.00	MED. RT.	35.00
-L- STA. 148+14.00	-L- 148+52.00	MED. LT.	38.00
-L- STA. 148+14.00	-L- 148+52.00	MED. RT.	38.00
-L- STA. 226+18.00	-L- 226+50.00	MED. LT.	32.00
-L- STA. 226+18.00	-L- 226+50.00	MED. RT.	32.00
-L- STA. 284+50.00	-L- 285+70.00	LT.	120.00
-L- STA. 284+58.00	-L- 285+73.00	RT.	115.00
-L- STA. 284+55.00	-L- 285+70.00	MED. LT.	115.00
-L- STA. 284+55.00	-L- 285+70.00	MED. RT.	115.00
-L- STA. 291+40.00	-L- 292+19.00	LT.	79.00
-64RAMPD- 10+00.00	-64RAMPD- 10+44.00	LT.	44.00
-L- STA. 291+98.46	-L- 292+35.00	RT.	36.54
-L- STA. 291+47.00	-L- 292+27.00	MED. LT.	80.00
-L- STA. 291+47.00	-L- 292+27.00	MED. RT.	80.00
-L2- STA. 363+52.00	-L2- STA. 364+42.00	RT.	90.00
-L2- STA. 363+54.00	-L2- STA. 364+48.00	LT.	94.00
-L2- STA. 370+50.00	-L2- STA. 371+68.00	LT.	118.00
-L2- STA. 370+89.00	-L2- STA. 372+07.00	RT.	118.00
-L3- STA. 364+86.00	-L3- STA. 366+06.00	RT.	120.00
-L3- STA. 365+25.00	-L3- STA. 366+48.00	LT.	123.00
-L3- STA. 369+50.00	-L3- STA. 370+84.00	LT.	134.00
-L3- STA. 370+00.00	-L3- STA. 371+35.00	RT.	135.00
-L1- STA. 28+26.00	-L1- STA. 28+91.00	MED. LT.	65.00
-L1- STA. 28+26.00	-L1- STA. 28+91.00	MED. RT.	65.00
TOTAL			2,021.54
SAY			2,030.00

SUMMARY OF TRANSITION BETWEEN CONC. EXPRESSWAY GUTTER AND 2'-6" CURB AND GUTTER

IN FEET

BEGINNING STATION	END STATION	LOCATION	LENGTH
-64LOOPB- STA. 11+13.00	-64LOOPB- STA. 11+33.00	RT.	20.00
-64LOOPD- STA. 11+19.00	-64LOOPD- STA. 11+39.00	RT.	20.00
-1713RAMPD- STA. 14+60.00	-1713RAMPD- STA. 14+80.00	LT.	20.00
-1713RAMPA- STA. 15+87.00	-1713RAMPA- STA. 16+07.00	LT.	20.00
-1713RAMPA- STA. 15+87.00	-1713RAMPA- STA. 16+07.00	RT.	20.00
-RAMPB3- STA. 18+60.00	-RAMPB3- STA. 18+80.00	LT.	20.00
-RAMPC3- STA. 16+50.00	-RAMPC3- STA. 16+70.00	RT.	20.00
-RAMPA4- STA. 19+07.00	-RAMPA4- STA. 19+27.00	RT.	20.00
-RAMPD4- STA. 19+28.00	-RAMPD4- STA. 19+48.00	LT.	20.00
TOTAL			180.00
SAY			180.00

SUMMARY OF 2'-6" CURB AND GUTTER

IN FEET

BEGINNING STATION	END STATION	LOCATION	LENGTH
-64LOOPC- STA. 10+00.00	-64LOOPC- STA. 11+40.00	LT.	140.00
-L- STA. 283+02.12	-L- STA. 284+58.00	RT.	155.88
-L- STA. 285+70.00	-L- STA. 285+76.02	LT.	6.02
-64LOOPA- STA. 10+00.00	-64LOOPA- STA. 11+99.00	LT.	199.00
-64RAMPD- STA. 10+44.00	-64RAMPD- STA. 11+45.00	LT.	101.00
-64LOOPB- REMOVE AND REPLACE 20'			20.00
-64LOOPC- REMOVE AND REPLACE 20'			20.00
-L2- STA. 364+30 REMOVE AND REPLACE 25' (LEXINGTON RD.)		RT.	25.00
-L3- STA. 366+40 REMOVE AND REPLACE 30' (LEXINGTON RD.)		LT.	30.00
TOTAL			696.90
SAY			700.00

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SUMMARY OF SHOULDER BERM GUTTER

IN FEET

BEGINNING STATION	END STATION	LOCATION	LENGTH
-L- STA. 43+75.00	-L- STA. 55+00.00	RT.	1,125.00
-L- STA. 46+17.00	-L- STA. 55+80.00	LT.	963.00
-L- STA. 172+05.00	-L- STA. 182+75.00	RT.	1,070.00
-L- STA. 202+40.00	-L- STA. 205+75.00	RT.	335.00
-L- STA. 202+50.00	-L- STA. 215+98.76	LT.	1,348.76
-RAMPB2- STA. 10+00.00	-RAMPB2- STA. 13+05.00	LT.	305.00
-L- STA. 213+00.00	-L- STA. 214+96.50	RT.	196.50
-RAMPC2- STA. 10+00.00	-RAMPC2- STA. 11+55.00	RT.	155.00
-L- STA. 292+19.00	-L- STA. 293+19.00	LT.	100.00
-1713RAMPD- STA. 10+00.00	-1713RAMPD- STA. 12+34.00	LT.	234.00
-L- STA. 303+27.00	-L- STA. 305+50.00	RT.	223.00
-1713RAMPA- STA. 10+00.00	-1713RAMPA- STA. 13+50.00	RT.	350.00
-L- STA. 302+38.88	-L- STA. 304+70.00	LT.	231.12
-L- STA. 315+92.00	-L- STA. 325+70.00	RT.	978.00
-L2- STA. 347+81.00	-L2- STA. 351+60.00	LT.	379.00
-RAMPC3- STA. 11+75.00	-RAMPC3- STA. 12+81.25	LT.	106.25
-L2- STA. 361+20.75	-L2- STA. 363+52.00	RT.	231.25
-L2- STA. 361+22.75	-L2- STA. 363+54.00	LT.	231.25
-L2- STA. 368+57.75	-L2- STA. 370+89.00	RT.	231.25
-L2- STA. 368+93.75	-L2- STA. 370+50.00	LT.	156.25
-RAMPD4- STA. 16+67.75	-RAMPD4- STA. 17+74.00	RT.	106.25
-L2- STA. 386+85.00	-L2- STA. 391+00.00	LT.	415.00
-L3- STA. 347+84.00	-L3- STA. 350+73.73	RT.	289.73
-RAMPB3- STA. 10+00.00	-RAMPB3- STA. 15+70.00	RT.	570.00
-L3- STA. 366+06.00	-L3- STA. 368+37.25	RT.	231.25
-L3- STA. 366+48.00	-L3- STA. 368+79.25	LT.	231.25
-L3- STA. 370+84.00	-L3- STA. 373+15.25	LT.	231.25
-L3- STA. 371+35.00	-L3- STA. 373+66.25	RT.	231.25
-RAMPA4- STA. 15+78.00	-RAMPA4- STA. 16+71.75	LT.	93.75
-L3- STA. 387+07.00	-L3- STA. 391+16.00	RT.	409.00
-RAMPC5- STA. 16+00.00	-RAMPC5- STA. 22+00.00	RT.	600.00
-RAMPA5- STA. 17+00.00	-RAMPA5- STA. 21+25.00	RT.	425.00
TOTAL			12,783.36
SAY			12,800.00

SUMMARY OF TRANSITION BETWEEN CONC. EXPRESSWAY GUTTER AND SHOULDER BERM GUTTER *

IN FEET

BEGINNING STATION	END STATION	LOCATION	LENGTH
-L- STA. 46+07.00	-L- STA. 46+17.00	LT.	10.00
-L- STA. 293+19.00	-L- STA. 293+59.00	LT.	40.00
-1713RAMPD- STA. 12+34.00	-1713RAMPD- STA. 13+06.00	LT.	72.00
-1713RAMPA- STA. 13+50.00	-1713RAMPA- STA. 13+60.00	RT.	10.00
-L- STA. 304+70.00	-L- STA. 305+00.00	LT.	30.00
-L- STA. 305+50.00	-L- STA. 305+60.00	RT.	10.00
-L- STA. 315+52.00	-L- STA. 325+92.00	RT.	40.00
-L2- STA. 351+60.00	-L2- STA. 351+70.00	LT.	10.00
-RAMPC3- STA. 11+35.00	-RAMPC3- STA. 11+75.00	LT.	40.00
-RAMPC3- STA. 12+81.25	-RAMPC3- STA. 12+91.25	LT.	10.00
-L2- STA. 360+80.75	-L2- STA. 361+20.75	RT.	40.00
-L2- STA. 360+82.75	-L2- STA. 361+22.75	LT.	40.00
-L2- STA. 368+17.75	-L2- STA. 368+57.75	RT.	40.00
-L2- STA. 368+53.75	-L2- STA. 368+93.75	LT.	40.00
-RAMPD4- STA. 16+57.75	-RAMPD4- STA. 16+67.75	RT.	10.00
-RAMPD4- STA. 17+74.00	-RAMPD4- STA. 18+14.00	RT.	40.00
-L2- STA. 386+45.00	-L2- STA. 386+85.00	LT.	40.00
-RAMPB3- STA. 15+70.00	-RAMPB3- STA. 16+10.00	RT.	40.00
-L3- STA. 368+37.25	-L3- STA. 368+77.25	RT.	40.00
-L3- STA. 368+79.25	-L3- STA. 369+19.25	LT.	40.00
-L3- STA. 373+15.25	-L3- STA. 373+55.25	LT.	40.00
-L3- STA. 373+66.25	-L3- STA. 374+06.25	RT.	40.00
-RAMPA4- STA. 15+38.00	-RAMPA4- STA. 15+78.00	LT.	40.00
-RAMPA4- STA. 16+71.75	-RAMPA4- STA. 16+81.75	LT.	10.00
-L3- STA. 386+97.00	-L3- STA. 387+07.00	RT.	10.00
TOTAL			782.00
SAY			800.00

* TRANSITION SECTIONS WILL BE PAID FOR AS CONCRETE EXPRESSWAY GUTTER

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COMPUTED BY: MTP	DATE: 3/08/2010
CHECKED BY: PWR	DATE: 3/09/2010

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
I-4407	3-P

SUMMARY OF CONCRETE EXPRESSWAY GUTTER

IN FEET

BEGINNING STATION	END STATION	LOCATION	LENGTH
-L- STA. 44+00.00	-L- STA. 46+07.00	LT.	207.00
-L- STA. 242+00.00	-L- STA. 247+30.00	RT.	530.00
-L- STA. 276+30.92	-L- STA. 281+41.38	LT.	510.46
-L- STA. 277+21.47	-L- STA. 281+56.43	RT.	434.96
-64LOOPB- STA. 10+00.00	-64LOOPB- STA. 11+13.00	RT.	113.00
-L- STA. 282+77.48	-L- STA. 284+50.00	LT.	172.52
-L- STA. 285+73.00	-L- STA. 286+66.41	RT.	93.41
-64LOOPD- STA. 10+00.00	-64LOOPD- STA. 11+19.00	RT.	119.00
-L- STA. 287+83.06	-L- STA. 291+40.00	LT.	356.94
-L- STA. 288+14.51	-L- STA. 290+41.15	RT.	226.64
-L- STA. 292+35.00	-L- STA. 298+46.32	RT.	611.32
-L- STA. 293+59.00	-L- STA. 297+15.61	LT.	356.61
-1713RAMPD- STA. 13+06.00	-1713RAMPD- STA. 14+60.00	LT.	154.00
-1713RAMPA- STA. 15+26.10	-1713RAMPA- STA. 15+87.00	LT.	60.90
-1713RAMPA- STA. 13+60.00	-1713RAMPA- STA. 15+87.00	RT.	227.00
-L- STA. 305+00.00	-L- STA. 307+50.00	LT.	250.00
-L- STA. 305+60.00	-L- STA. 315+52.00	RT.	992.00
-L2- STA. 351+70.00	-L2- STA. 352+57.71	LT.	87.71
-RAMPC3- STA. 10+00.00	-RAMPC3- STA. 11+35.00	LT.	135.00
-RAMPC3- STA. 12+91.25	-RAMPC3- STA. 15+75.00	LT.	283.75
-RAMPC3- STA. 15+29.55	-RAMPC3- STA. 16+50.00	RT.	120.45
-L2- STA. 357+82.27	-L2- STA. 360+82.75	LT.	300.48
-L2- STA. 359+60.00	-L2- STA. 360+80.75	RT.	120.75
-L2- STA. 364+42.00	-L2- STA. 368+17.75	RT.	375.75
-L2- STA. 364+48.00	-L2- STA. 368+53.75	LT.	405.75
-L2- STA. 371+68.00	-L2- STA. 377+84.48	LT.	616.48
-L2- STA. 372+07.00	-L2- STA. 385+55.00	RT.	1,348.00
-RAMPD4- STA. 10+00.00	-RAMPD4- STA. 16+57.75	RT.	657.75
-RAMPD4- STA. 18+14.00	-RAMPD4- STA. 18+35.00	RT.	21.00
-RAMPD4- STA. 14+72.00	-RAMPD4- STA. 19+28.00	LT.	456.00
-L2- STA. 382+59.30	-L2- STA. 386+45.00	LT.	385.70
-RAMPB3- STA. 14+03.00	-RAMPB3- STA. 18+60.00	LT.	457.00
-RAMPB3- STA. 16+10.00	-RAMPB3- STA. 17+85.00	RT.	175.00
-L3- STA. 354+79.43	-L3- STA. 364+86.00	RT.	1,006.57
-L3- STA. 357+74.00	-L3- STA. 365+25.00	LT.	751.00
-L3- STA. 368+77.25	-L3- STA. 370+00.00	RT.	122.75
-L3- STA. 369+19.25	-L3- STA. 369+50.00	LT.	30.75
-L3- STA. 373+55.25	-L3- STA. 384+26.00	LT.	1,070.75
-L3- STA. 374+06.00	-L3- STA. 377+56.35	RT.	350.10
-RAMPA4- STA. 10+00.00	-RAMPA4- STA. 15+38.00	LT.	538.00
-RAMPA4- STA. 16+81.75	-RAMPA4- STA. 18+17.00	LT.	135.25
-RAMPA4- STA. 15+46.73	-RAMPA4- STA. 19+07.00	RT.	360.27
-L3- STA. 382+98.57	-L3- STA. 386+97.00	RT.	398.43
TOTAL			16,126.20
SAY			16,180.00

SUMMARY OF TRANSITION BETWEEN CONCRETE EXPRESSWAY GUTTER AND CONC. MONOLITHIC ISLAND *

IN FEET

BEGINNING STATION	END STATION	LOCATION	LENGTH
-L- STA. 227+01.47	-L- STA. 227+21.47	RT.	20.00
-L- STA. 276+10.92	-L- STA. 276+30.92	LT.	20.00
-L- STA. 281+41.38	-L- STA. 281+61.38	LT.	20.00
-L- STA. 281+56.43	-L- STA. 281+76.43	RT.	20.00
-L- STA. 287+63.06	-L- STA. 287+83.06	LT.	20.00
-L- STA. 287+94.51	-L- STA. 288+14.51	RT.	20.00
-L- STA. 290+41.15	-L- STA. 290+61.15	RT.	20.00
-L- STA. 297+15.61	-L- STA. 297+35.61	LT.	20.00
-L- STA. 298+46.32	-L- STA. 298+66.32	RT.	20.00
-1713RAMPA- STA. 15+06.10	-1713RAMPA- STA. 15+26.10	LT.	20.00
-RAMPC3- STA. 15+09.55	-RAMPC3- STA. 15+29.55	RT.	20.00
-RAMPC3- STA. 15+75.00	-RAMPC3- STA. 15+95.00	LT.	20.00
-L2- STA. 357+62.27	-L2- STA. 357+82.27	LT.	20.00
-L2- STA. 377+84.48	-L2- STA. 378+04.48	LT.	20.00
-RAMPD4- STA. 18+35.00	-RAMPD4- STA. 18+55.00	RT.	20.00
-RAMPD4- STA. 14+52.00	-RAMPD4- STA. 14+72.00	LT.	20.00
-RAMPB3- STA. 13+83.00	-RAMPB3- STA. 14+03.00	LT.	20.00
-RAMPB3- STA. 17+85.00	-RAMPB3- STA. 18+05.00	RT.	20.00
-L3- STA. 354+59.43	-L3- STA. 354+79.43	RT.	20.00
-L3- STA. 377+56.35	-L3- STA. 377+76.35	RT.	20.00
-RAMPA4- STA. 18+17.00	-RAMPA4- STA. 18+37.00	LT.	20.00
-RAMPA4- STA. 15+26.73	-RAMPA4- STA. 15+46.73	RT.	20.00
TOTAL			440.00
SAY			440.00

* TRANSITION SECTIONS WILL BE PAID FOR AS CONCRETE EXPRESSWAY GUTTER

15-MAR-2010 08:38
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22-APR-2010 15:41
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DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SUMMARY OF EARTHWORK

IN CUBIC YARDS

	LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
LT.	-L- 14+00.00 TO 33+29.50	4,470		83		4,387
MED.	-L- 14+00.00 TO 33+29.50	712		819	107	
RT.	-L- 14+00.00 TO 33+29.50	948		204		744
	-RAMPB1- 14+13.23 TO 19+74.29	118		312	194	
	-RAMPC1- 13+67.35 TO 20+86.14	145		251	106	
	SUBTOTAL 1	6,393		1,669	407	5,131
LT.	-L- 34+76.41 TO 65+00.00	1,546		1,120		426
MED.	-L- 34+76.41 TO 65+00.00	1,023		1,176	153	
RT.	-L- 34+76.41 TO 65+00.00	1,285		1,350	65	
	-RAMPA1- 13+14.48 TO 19+81.40	385		13		372
	-RAMPD1- 13+94.35 TO 20+14.15	343		20		323
	SUBTOTAL 2	4,582		3,679	218	1,121
LT.	-L- 65+00.00 TO 95+00.00	1,130		158		972
MED.	-L- 65+00.00 TO 95+00.00	1,517		1,745	228	
RT.	-L- 65+00.00 TO 95+00.00	948		214		734
	SUBTOTAL 3	3,595		2,117	228	1,706
LT.	-L- 95+00.00 TO 125+00.00	889		146		743
MED.	-L- 95+00.00 TO 125+00.00	866		996	130	
RT.	-L- 95+00.00 TO 125+00.00	1,001		210		791
	SUBTOTAL 4	2,756		1,352	130	1,534
LT.	-L- 125+00.00 TO 155+00.00	678		230		448
MED.	-L- 125+00.00 TO 155+00.00	1,320		1,518	198	
RT.	-L- 125+00.00 TO 155+00.00	1,075		76		999
	SUBTOTAL 5	3,073		1,824	198	1,447
LT.	-L- 155+00.00 TO 185+00.00	745		597		148
MED.	-L- 155+00.00 TO 185+00.00	889		1,022	133	
RT.	-L- 155+00.00 TO 185+00.00	679		672		7
	SUBTOTAL 6	2,313		2,291	133	155
LT.	-L- 185+00.00 TO 215+00.00	985		4,140	3,155	
MED.	-L- 185+00.00 TO 215+00.00	810		932	122	
RT.	-L- 185+00.00 TO 215+00.00	830		486		344
	SUBTOTAL 7	2,625		5,558	3,277	344
LT.	-L- 215+00.00 TO 245+00.00	1,320		178		1,142
MED.	-L- 215+00.00 TO 245+00.00	1,382		1,589	207	
RT.	-L- 215+00.00 TO 245+00.00	1,762		365		1,397
	-RAMPA2- 14+12.50 TO 22+26.75	359		35		324
	-RAMPB2- 13+94.08 TO 20+32.60	109		240	131	
	-RAMPC2- 14+71.94 TO 21+92.28	107		293	186	
	-RAMPD2- 14+00.94 TO 22+65.50	435		10		425
	SUBTOTAL 8	5,474		2,710	524	3,288
LT.	-L- 245+00.00 TO 275+00.00	1,464		597		867
MED.	-L- 245+00.00 TO 275+00.00	2,129		23		2,106
RT.	-L- 245+00.00 TO 275+00.00	1,676		461		1,215
	SUBTOTAL 9	5,269		1,081		4,188
LT.	-L- 275+00.00 TO 305+00.00	2,856		359		2,497
MED.	-L- 275+00.00 TO 305+00.00	2,957				2,957
RT.	-L- 275+00.00 TO 305+00.00	2,162		676		1,486
	SUBTOTAL 10	7,975		1,035		6,940
LT.	-L- 305+00.00 TO 335+00.00	1,979		18		1,961
MED.	-L- 305+00.00 TO 335+00.00	2,982				2,982
RT.	-L- 305+00.00 TO 335+00.00	2,134		1,962		172
	SUBTOTAL 11	7,095		1,980		5,115
LT.	-L- 335+00.00 TO 341+54.54	414		7		407
MED.	-L- 335+00.00 TO 341+54.54	692				692
RT.	-L- 335+00.00 TO 341+54.54	419		12		407
	SUBTOTAL 12	1,525		19		1,506

COMPUTED BY: PWR DATE: 3/08/2010
CHECKED BY: MTP DATE: 3/09/2010

PROJECT REFERENCE NO. I-4407
SHEET NO. 3-0

23-APR-2010 11:06
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COMPUTED BY: PWR DATE: 3/09/2010
CHECKED BY: MTP DATE: 3/09/2010

SUMMARY OF EARTHWORK (Cont.)

IN CUBIC YARDS

	LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
	-L- 343+04.32 TO 343+29.23	114				114
	-L2- 343+29.23 TO 388+25.64	7,586		343		7,243
	-L2- 388+25.64 TO 394+60.36	745		477		268
	-RAMPC3- 13+95.62 TO 16+70.00	262		209		53
	-RAMPD4- 13+58.24 TO 19+48.00	463		267		196
	SUBTOTAL 13	9,170		1,296		7,874
	-L3- 343+29.23 TO 349+08.96	857		1		856
	-L3- 349+08.96 TO 394+75.88	10,565		186		10,379
	-RAMPB3- 13+25.31 TO 18+80.00	363		131		232
	-RAMPA4- 15+03.01 TO 19+27.00	257		512	255	
	SUBTOTAL 14	12,042		830	255	11,467
LT.	-L1- 10+00.00 TO 48+50.00	5,181		54		5,127
MED.	-L1- 10+00.00 TO 48+50.00	3,791				3,791
RT.	-L1- 10+00.00 TO 48+50.00	4,698		1,079		3,619
	-RAMPA5- 13+40.71 TO 22+17.83	197		669	472	
	-RAMPB5- 14+75.47 TO 24+23.96	206		109		97
	-RAMPC5- 15+30.14 TO 23+20.17	219		2,151	1,932	
	-RAMPD5- 14+08.22 TO 21+86.36	190		270	80	
	SUBTOTAL 15	14,482		4,332	2,484	12,634
	PROJECT SUBTOTAL	88,369		31,773	7,854	64,450
	LOSS DUE TO CLEARING & GRUBBING	-1,700				-1,700
	WASTE IN LIEU OF BORROW				-7,854	-7,854
	PROJECT TOTALS	86,669		31,773		54,896
	SAY	87,000				

ADDITIONAL UNDERCUT = 3,000 CY
EST. DDE = 240 CY
SHALLOW UNDERCUT = 21,600 CY
SHOULDER BORROW = 21,600 CY

NOTE: Earthwork quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

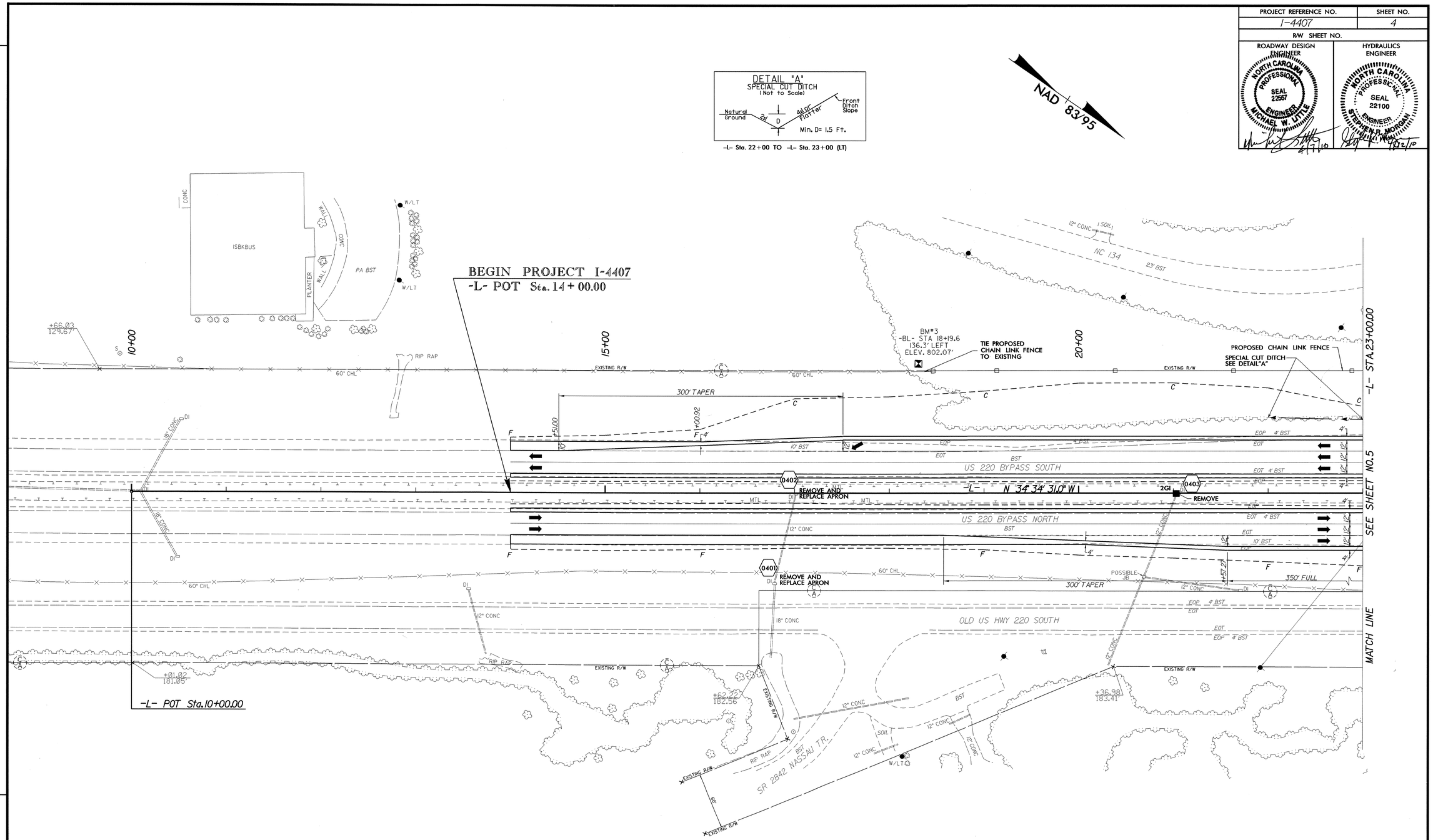
PROJECT REFERENCE NO. I-4407
SHEET NO. 3-R

PROJECT REFERENCE NO.	SHEET NO.
I-4407	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE 6/7/10

NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN 6/02/10

REVISIONS



NOTES: (1) SEE SHEET 35 FOR -L- PROFILE
(2) GUARDRAIL OFFSET BLOCKS SHOULD BE INSPECTED AND REPLACED AS NECESSARY
(3) REMOVE & REPLACE EXISTING ANCHOR UNITS IN MEDIAN
(4) 30' OF SAFETY CLEARING IS REQUIRED FROM EDGE OF TRAVEL LANE
(5) REMOVE AND RESET EXISTING MEDIAN GUARDRAIL AS DIRECTED BY ENGINEER

19-MAR-2010 10:54
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PROJECT REFERENCE NO.	SHEET NO.
I-4407	5
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 22567 ENGINEER MICHAEL W. LITTLE — 4/1/10

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN — 4/1/10

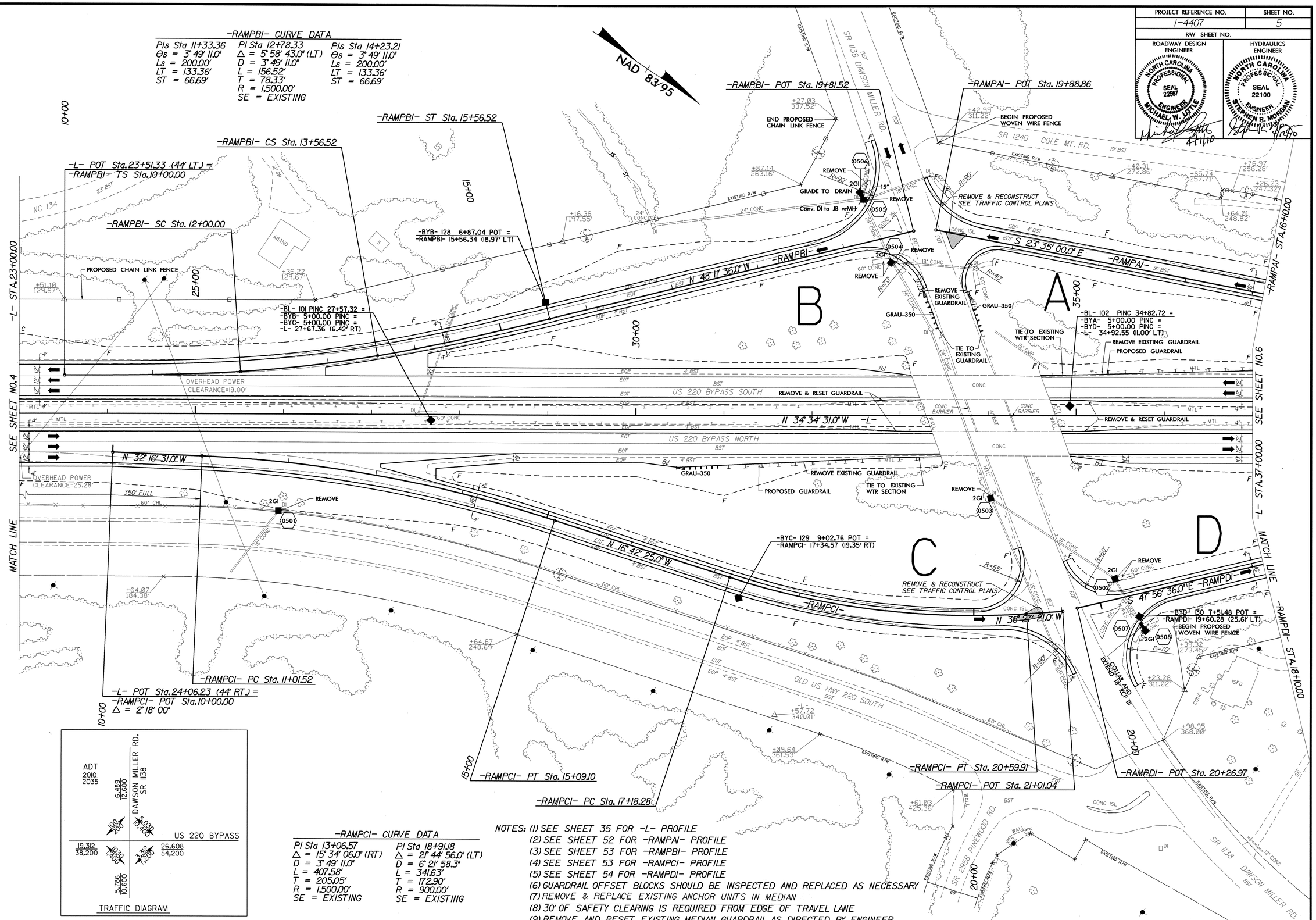
REVISIONS

-RAMPBI- CURVE DATA

PIs Sta 11+33.36	PI Sta 12+78.33	PIs Sta 14+23.21
Θs = 3° 49' 11.0"	Δ = 5° 58' 43.0" (LT)	Θs = 3° 49' 11.0"
Ls = 200.00'	D = 3° 49' 11.0"	Ls = 200.00'
LT = 133.36'	L = 156.52'	LT = 133.36'
ST = 66.69'	T = 78.33'	ST = 66.69'
	R = 1,500.00'	
	SE = EXISTING	

-RAMPCI- CURVE DATA

PI Sta 13+06.57	PI Sta 18+91.18
Δ = 15° 34' 06.0" (RT)	Δ = 21° 44' 56.0" (LT)
D = 3° 49' 11.0"	D = 6° 21' 58.3"
L = 407.58'	L = 341.63'
T = 205.05'	T = 172.90'
R = 1,500.00'	R = 900.00'
SE = EXISTING	SE = EXISTING



TRAFFIC DIAGRAM

NOTES:
(1) SEE SHEET 35 FOR -L- PROFILE
(2) SEE SHEET 52 FOR -RAMPAI- PROFILE
(3) SEE SHEET 53 FOR -RAMPBI- PROFILE
(4) SEE SHEET 53 FOR -RAMPCI- PROFILE
(5) SEE SHEET 54 FOR -RAMPDI- PROFILE
(6) GUARDRAIL OFFSET BLOCKS SHOULD BE INSPECTED AND REPLACED AS NECESSARY
(7) REMOVE & REPLACE EXISTING ANCHOR UNITS IN MEDIAN
(8) 30' OF SAFETY CLEARING IS REQUIRED FROM EDGE OF TRAVEL LANE
(9) REMOVE AND RESET EXISTING MEDIAN GUARDRAIL AS DIRECTED BY ENGINEER

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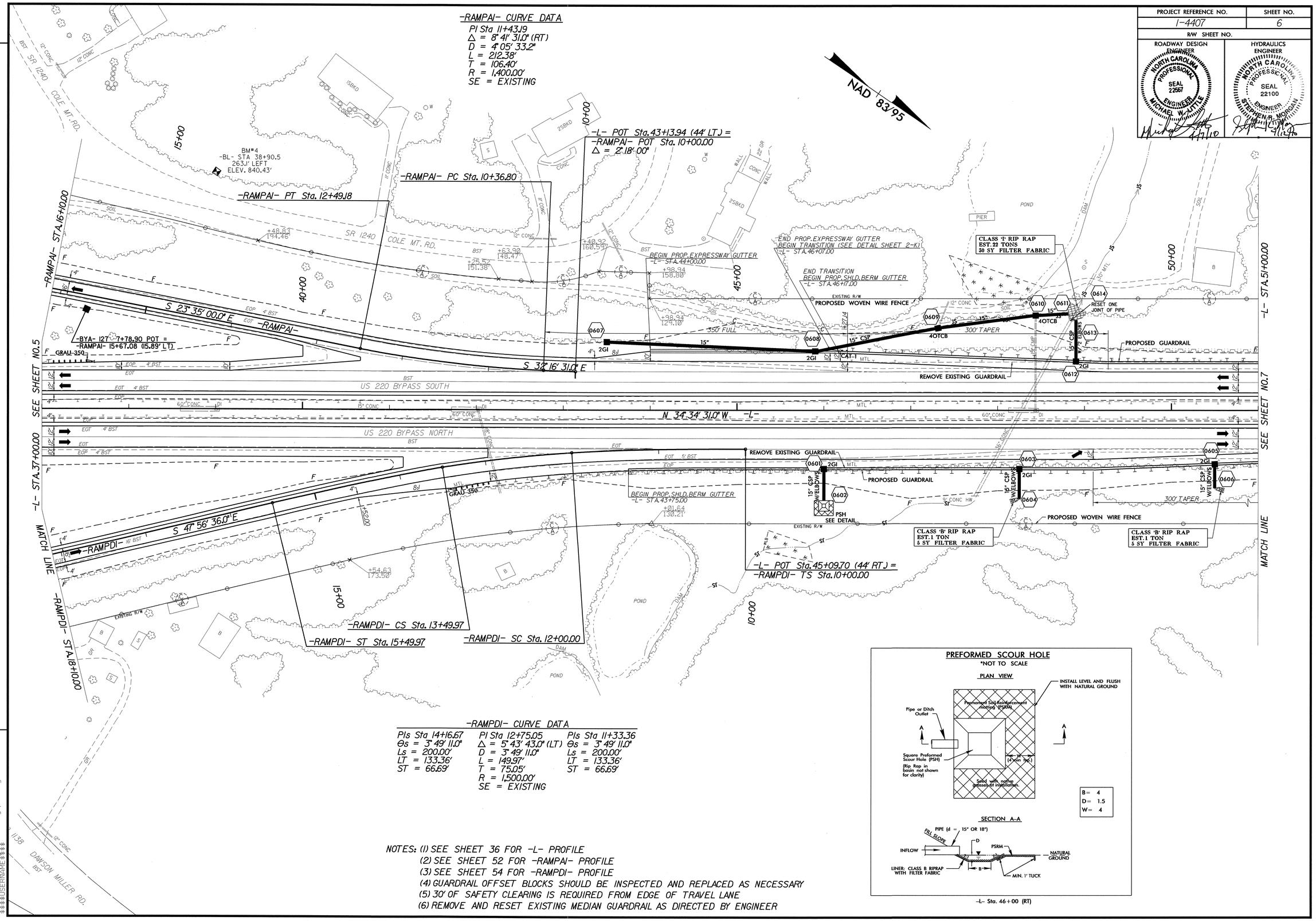
PROJECT REFERENCE NO.	SHEET NO.
I-4407	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22651 ENGINEER MICHAEL W. LITTLE 4/7/10

NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN 4/7/10

REVISIONS



-RAMPDI- CURVE DATA

PIs Sta 14+16.67	PI Sta 12+75.05	PIs Sta 11+33.36
Θs = 3° 49' 11.0"	Δ = 5° 43' 43.0" (LT)	Θs = 3° 49' 11.0"
Ls = 200.00'	D = 3° 49' 11.0"	Ls = 200.00'
LT = 133.36'	L = 149.97'	LT = 133.36'
ST = 66.69'	T = 75.05'	ST = 66.69'
	R = 1,500.00'	
	SE = EXISTING	

PREFORMED SCOUR HOLE

*NOT TO SCALE

-L- Sta. 46+00 (RT)

NOTES: (1) SEE SHEET 36 FOR -L- PROFILE
(2) SEE SHEET 52 FOR -RAMPAI- PROFILE
(3) SEE SHEET 54 FOR -RAMPDI- PROFILE
(4) GUARDRAIL OFFSET BLOCKS SHOULD BE INSPECTED AND REPLACED AS NECESSARY
(5) 30' OF SAFETY CLEARING IS REQUIRED FROM EDGE OF TRAVEL LANE
(6) REMOVE AND RESET EXISTING MEDIAN GUARDRAIL AS DIRECTED BY ENGINEER

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PROJECT REFERENCE NO.	SHEET NO.
I-4407	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE 4/7/10

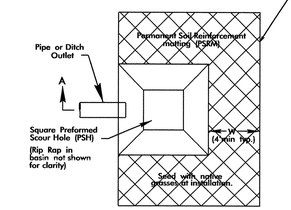
NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN D. MORGAN 4/12/10

REVISIONS

PREFORMED SCOUR HOLE

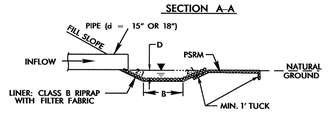
*NOT TO SCALE

PLAN VIEW

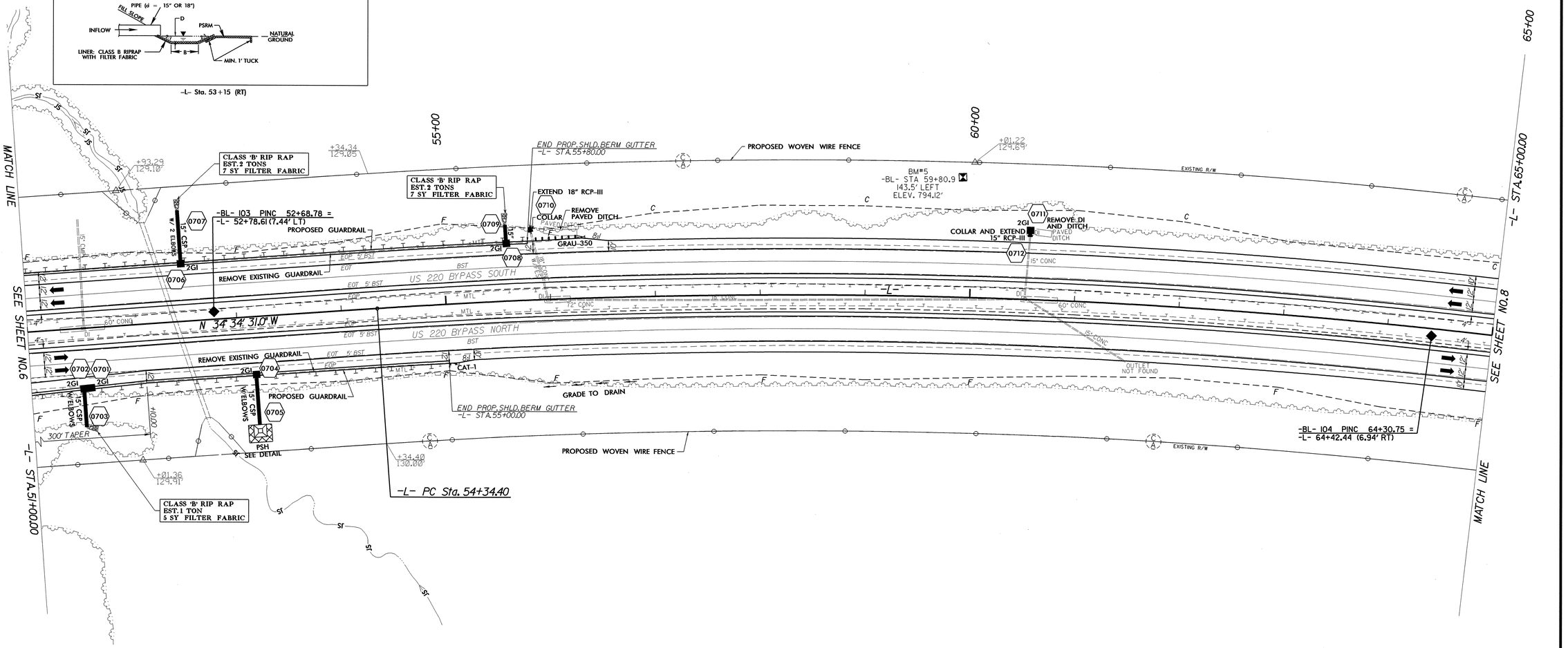


B =	4
D =	1.5
W =	4

SECTION A-A



-L- Sta. 53+15 (RT)



NOTES: (1) SEE SHEET 36 FOR -L- PROFILE
(2) GUARDRAIL OFFSET BLOCKS SHOULD BE INSPECTED AND REPLACED AS NECESSARY
(3) REMOVE & REPLACE EXISTING ANCHOR UNITS IN MEDIAN
(4) 30' OF SAFETY CLEARING IS REQUIRED FROM EDGE OF TRAVEL LANE
(5) REMOVE AND RESET EXISTING MEDIAN GUARDRAIL AS DIRECTED BY ENGINEER

-L- CURVE DATA

PI Sta 75+16.94
Δ = 39° 56' 48.4" (RT)
D = 0° 59' 59.7"
L = 3,994.97'
T = 2,082.54'
R = 5,730.00'
SE = EXISTING

19-MAR-2010 11:29
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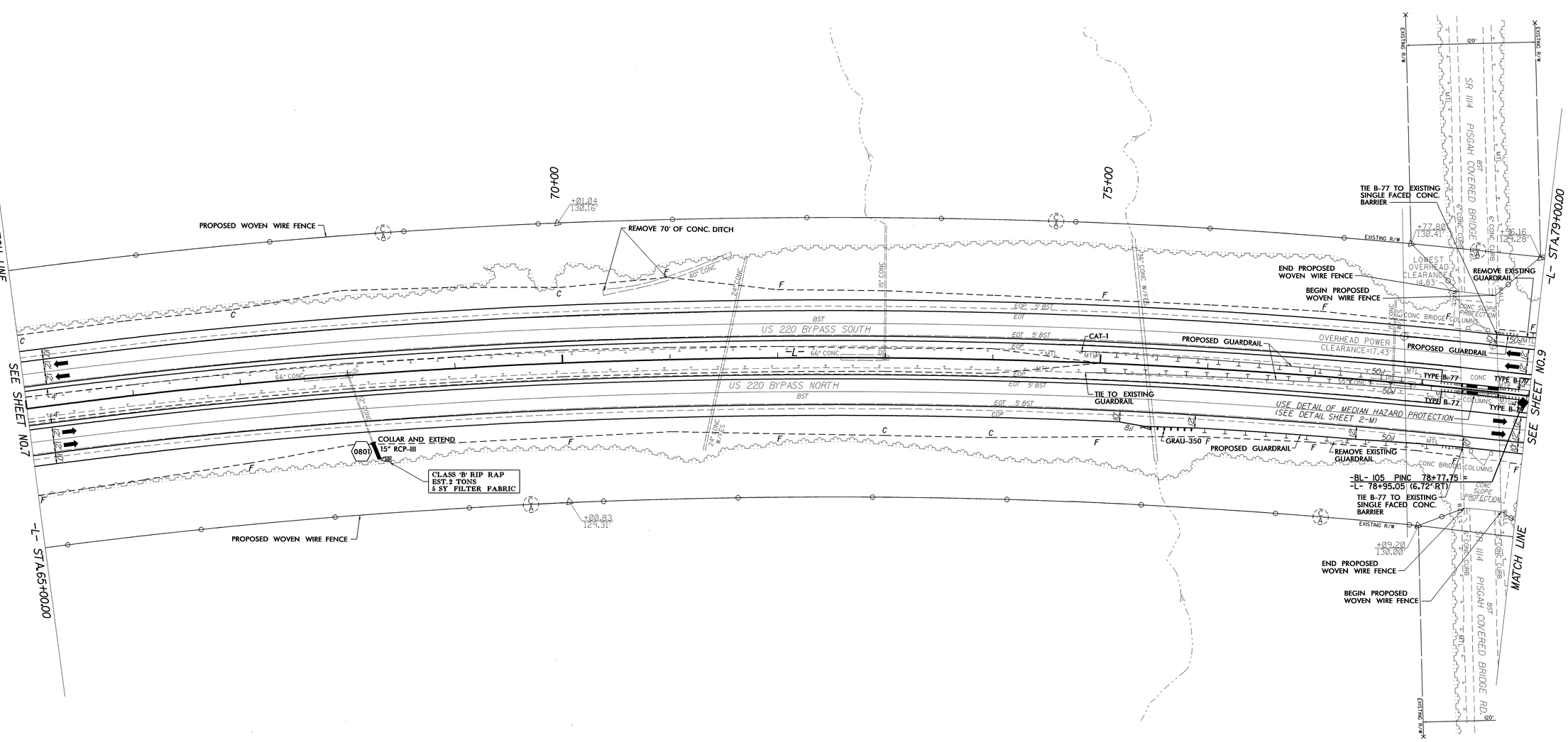
PROJECT REFERENCE NO.	SHEET NO.
I-4407	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22657 ENGINEER MICHAEL W. LITTLE
4/7/10

NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN M. MORGAN
3/16/10



-L- CURVE DATA

PI Sta 75+16.94
Δ = 39° 56' 48.4" (RT)
D = 0° 59' 59.7"
L = 3,994.97'
T = 2,082.54'
R = 5,730.00'
SE = EXISTING

NOTES: (1) SEE SHEET 37 FOR -L- PROFILE
(2) GUARDRAIL OFFSET BLOCKS SHOULD BE INSPECTED AND REPLACED AS NECESSARY
(3) REMOVE & REPLACE EXISTING ANCHOR UNITS IN MEDIAN
(4) 30' OF SAFETY CLEARING IS REQUIRED FROM EDGE OF TRAVEL LANE
(5) REMOVE AND RESET EXISTING MEDIAN GUARDRAIL AS DIRECTED BY ENGINEER

REVISIONS

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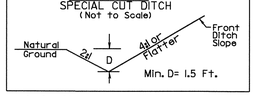
PROJECT REFERENCE NO.	SHEET NO.
I-4407	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE 4/7/10

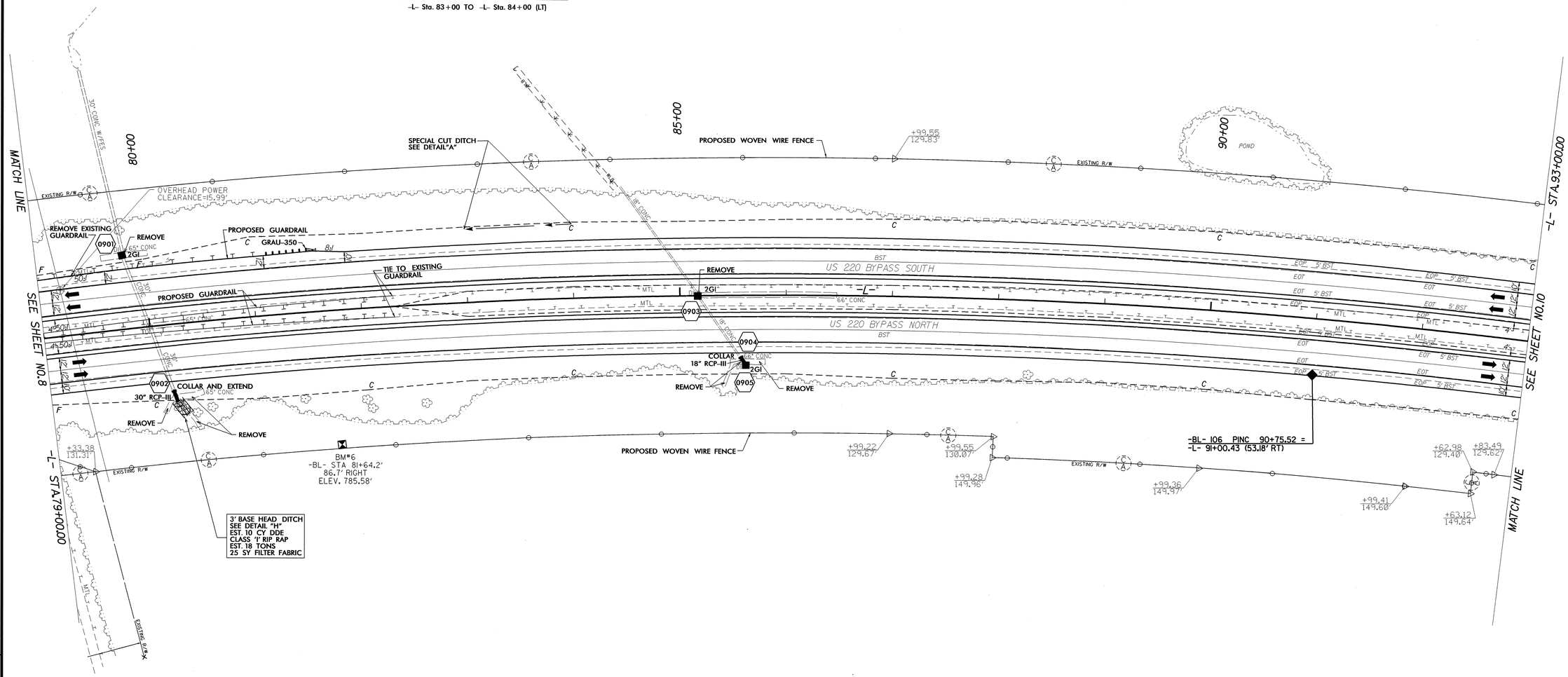
NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN 4/12/10

NAD 83/95

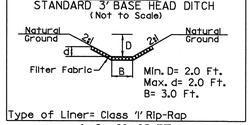
DETAIL "A"
SPECIAL CUT DITCH
(Not to Scale)



-L- Sta. 83+00 TO -L- Sta. 84+00 (LT)



DETAIL "H"
STANDARD 3' BASE HEAD DITCH
(Not to Scale)



Type of Liner= Class "I" Rip-Rap

-L- Sta. 80+25 (RT)

-L- CURVE DATA

PI Sta 75+16.94
Δ = 39° 56' 48.4" (RT)
D = 0° 59' 59.7"
L = 3,994.97'
T = 2,082.54'
R = 5,730.00'
SE = EXISTING

NOTES: (1) SEE SHEET 37 FOR -L- PROFILE
(2) GUARDRAIL OFFSET BLOCKS SHOULD BE INSPECTED AND REPLACED AS NECESSARY
(3) REMOVE & REPLACE EXISTING ANCHOR UNITS IN MEDIAN
(4) 30' OF SAFETY CLEARING IS REQUIRED FROM EDGE OF TRAVEL LANE
(5) REMOVE AND RESET EXISTING MEDIAN GUARDRAIL AS DIRECTED BY ENGINEER

REVISIONS

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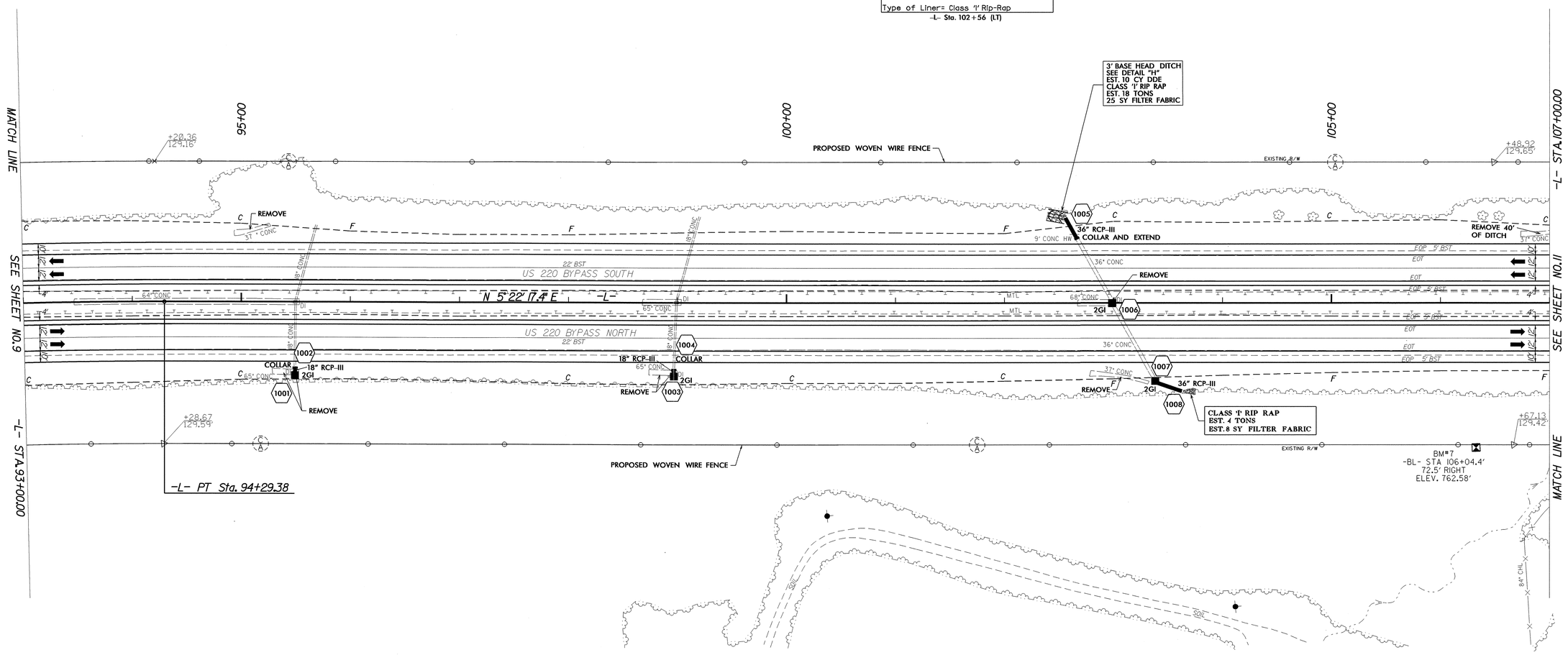
PROJECT REFERENCE NO.	SHEET NO.
1-4407	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE
4/7/10

NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN
4/12/10

NAD 83/95



-L- CURVE DATA

PI Sta 75+16.94
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L = 3,994.97'
T = 2,082.54'
R = 5,730.00'
SE = EXISTING

NOTES: (1) SEE SHEET 38 FOR -L- PROFILE
(2) GUARDRAIL OFFSET BLOCKS SHOULD BE INSPECTED AND REPLACED AS NECESSARY
(3) REMOVE & REPLACE EXISTING ANCHOR UNITS IN MEDIAN
(4) 30' OF SAFETY CLEARING IS REQUIRED FROM EDGE OF TRAVEL LANE
(5) REMOVE AND RESET EXISTING MEDIAN GUARDRAIL AS DIRECTED BY ENGINEER

REVISIONS

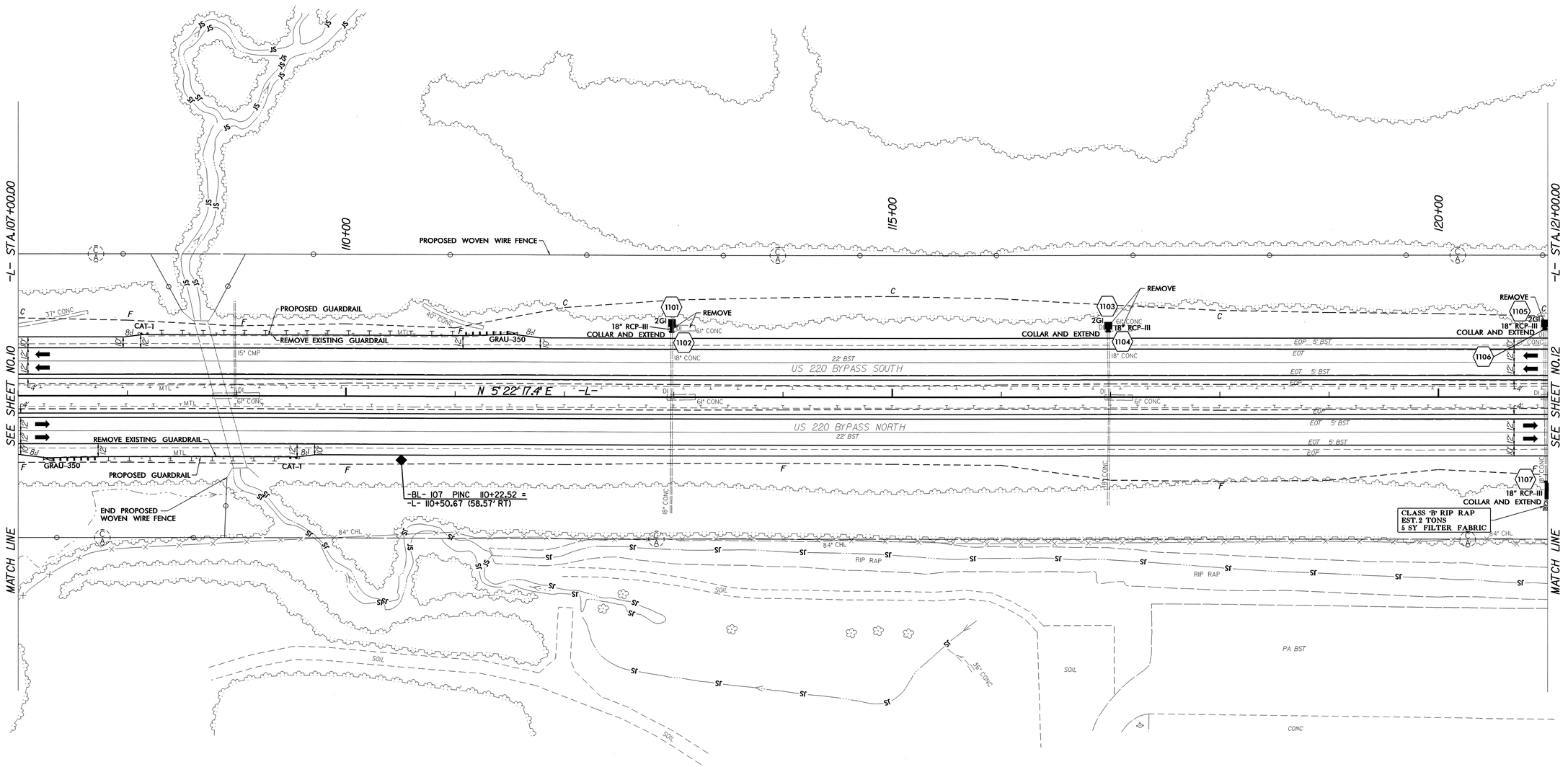
19-MAR-2010 10:53
r:\roadway\proj\1-4407_rdy_psh10.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
I-4407	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE
4/7/10

NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN
4/7/10

NAD 83/95



NOTES: (1) SEE SHEET 38 FOR -L- PROFILE
(2) GUARDRAIL OFFSET BLOCKS SHOULD BE INSPECTED AND REPLACED AS NECESSARY
(3) REMOVE & REPLACE EXISTING ANCHOR UNITS IN MEDIAN
(4) 30' OF SAFETY CLEARING IS REQUIRED FROM EDGE OF TRAVEL LANE
(5) REMOVE AND RESET EXISTING MEDIAN GUARDRAIL AS DIRECTED BY ENGINEER

REVISIONS

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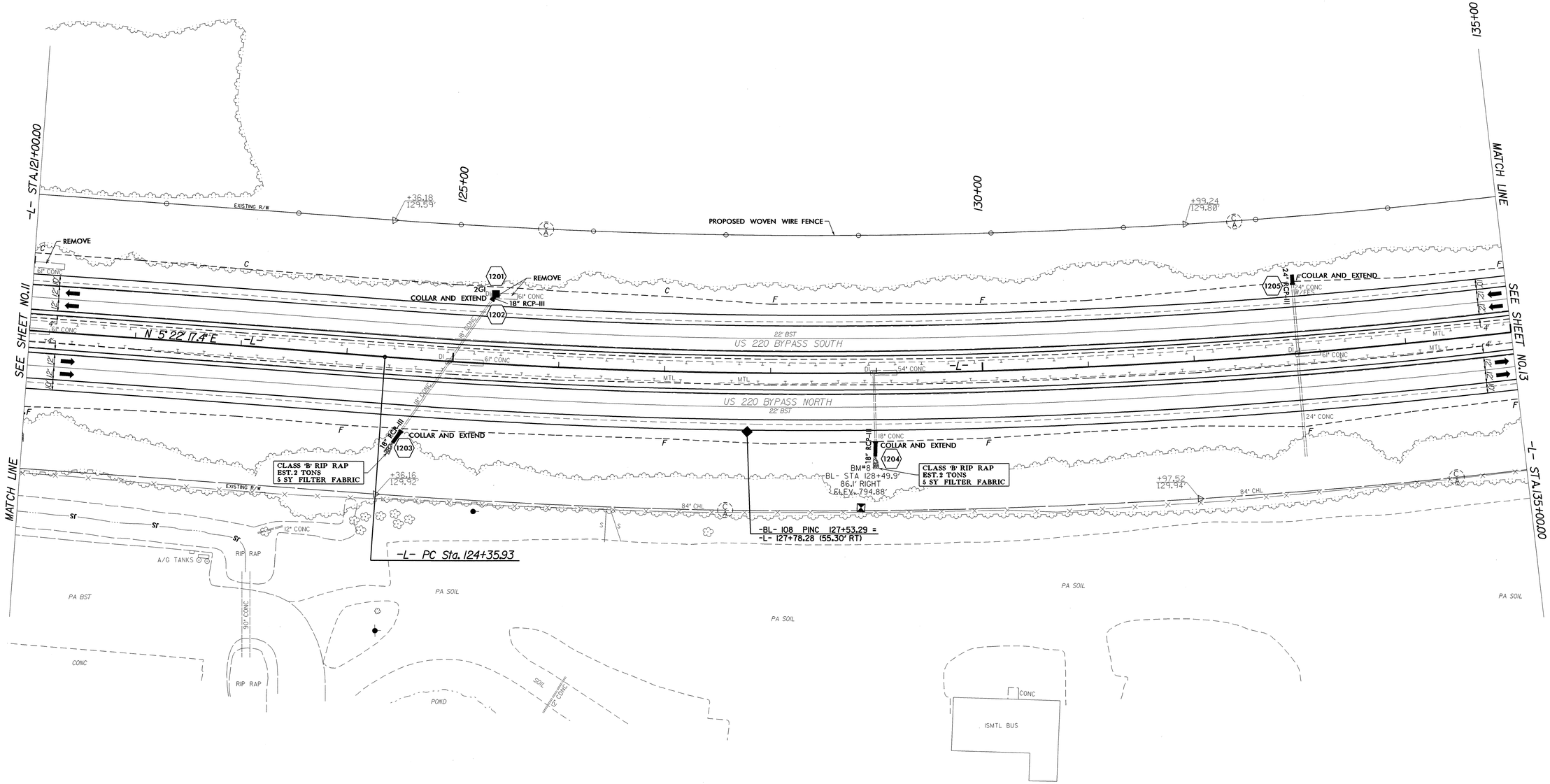
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
I-4407	12
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 22657 ENGINEER MICHAEL W. LITTLE — 4/7/10

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN B. MORGAN — 4/12/10



-L- CURVE DATA

PI Sta 134+49.95
Δ = 20° 04' 16.4" (LT)
D = 0° 59' 59.7"
L = 2,007.27'
T = 1,014.03'
R = 5,730.00'
SE = EXISTING

NOTES:
(1) SEE SHEET 39 FOR -L- PROFILE
(2) GUARDRAIL OFFSET BLOCKS SHOULD BE INSPECTED AND REPLACED AS NECESSARY
(3) REMOVE & REPLACE EXISTING ANCHOR UNITS IN MEDIAN
(4) 30' OF SAFETY CLEARING IS REQUIRED FROM EDGE OF TRAVEL LANE
(5) REMOVE AND RESET EXISTING MEDIAN GUARDRAIL AS DIRECTED BY ENGINEER

REVISIONS

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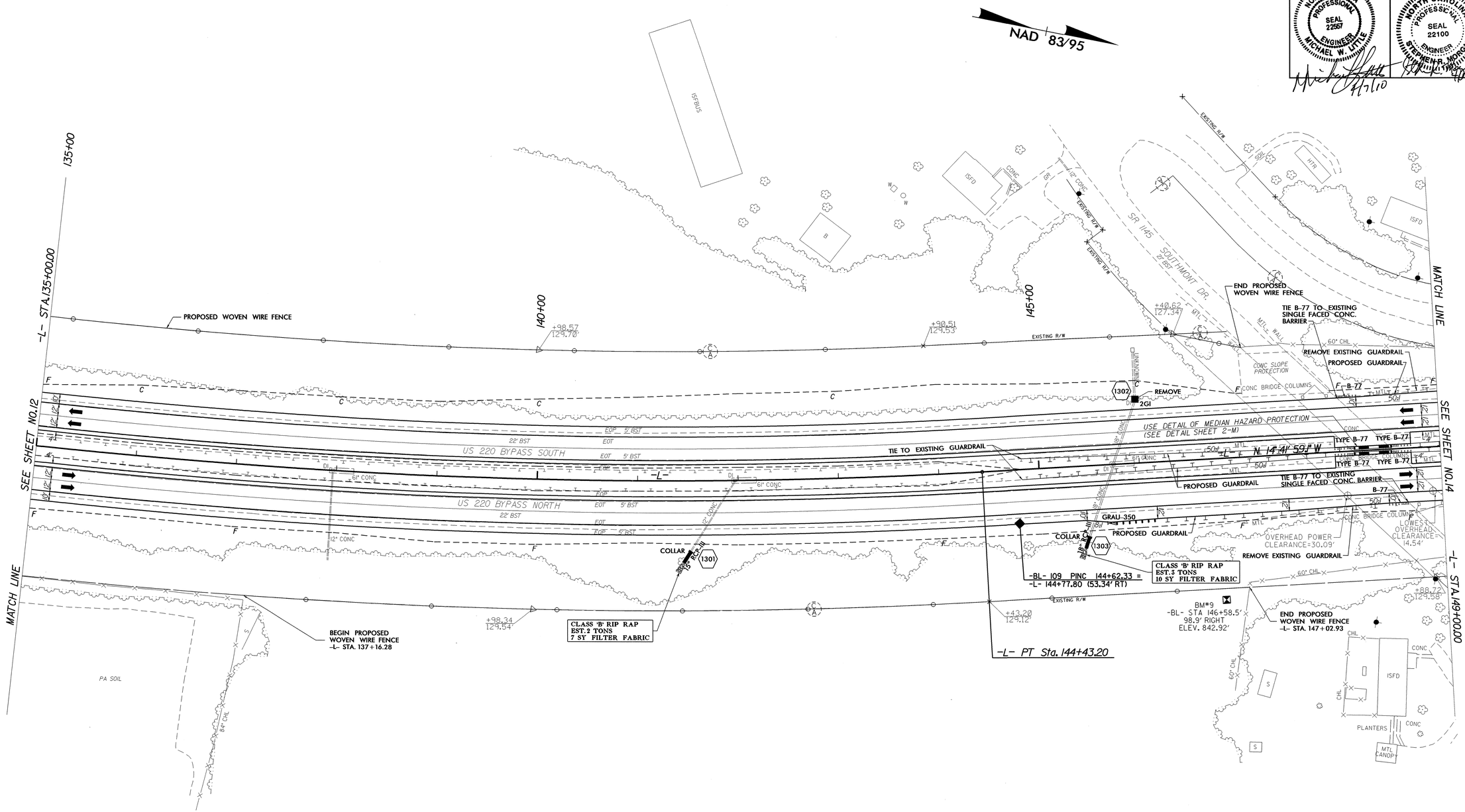
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
I-4407	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22657 ENGINEER MICHAEL W. LITTLE
4/7/10

NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN
4/7/10

REVISIONS



-L- CURVE DATA

PI Sta 134+49.95
Δ = 20° 04' 16.4" (LT)
D = 0° 59' 59.7"
L = 2,007.27'
T = 1,014.03'
R = 5,730.00'
SE = EXISTING

NOTES: (1) SEE SHEET 39 FOR -L- PROFILE
(2) GUARDRAIL OFFSET BLOCKS SHOULD BE INSPECTED AND REPLACED AS NECESSARY
(3) REMOVE & REPLACE EXISTING ANCHOR UNITS IN MEDIAN
(4) 30' OF SAFETY CLEARING IS REQUIRED FROM EDGE OF TRAVEL LANE
(5) REMOVE AND RESET EXISTING MEDIAN GUARDRAIL AS DIRECTED BY ENGINEER

19-MAR-2010 10:53
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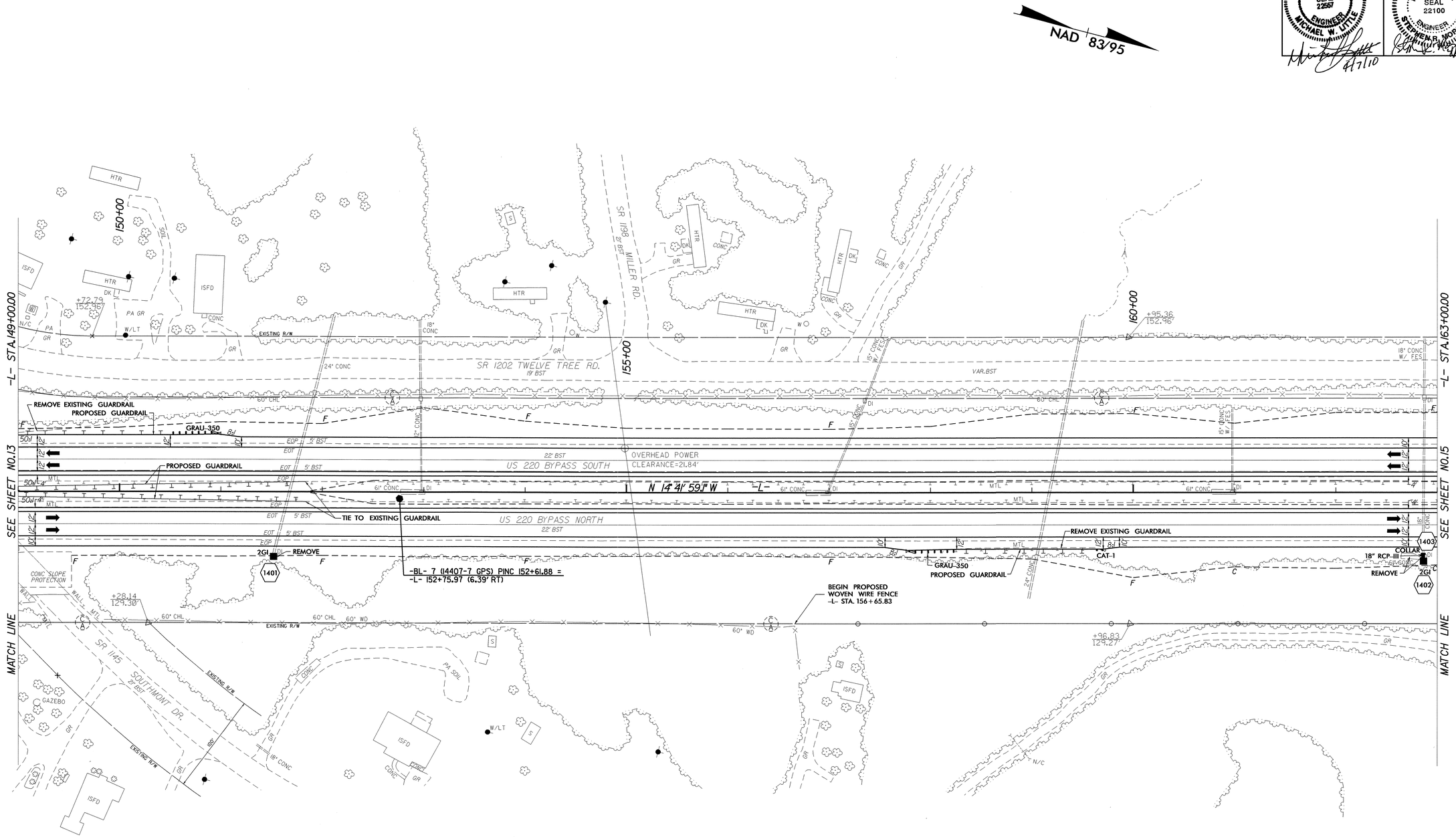
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
I-4407	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE 4/7/10

NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN 4/12/10

REVISIONS



NOTES: (1) SEE SHEET 40 FOR -L- PROFILE
(2) GUARDRAIL OFFSET BLOCKS SHOULD BE INSPECTED AND REPLACED AS NECESSARY
(3) REMOVE & REPLACE EXISTING ANCHOR UNITS IN MEDIAN
(4) 30' OF SAFETY CLEARING IS REQUIRED FROM EDGE OF TRAVEL LANE
(5) REMOVE AND RESET EXISTING MEDIAN GUARDRAIL AS DIRECTED BY ENGINEER

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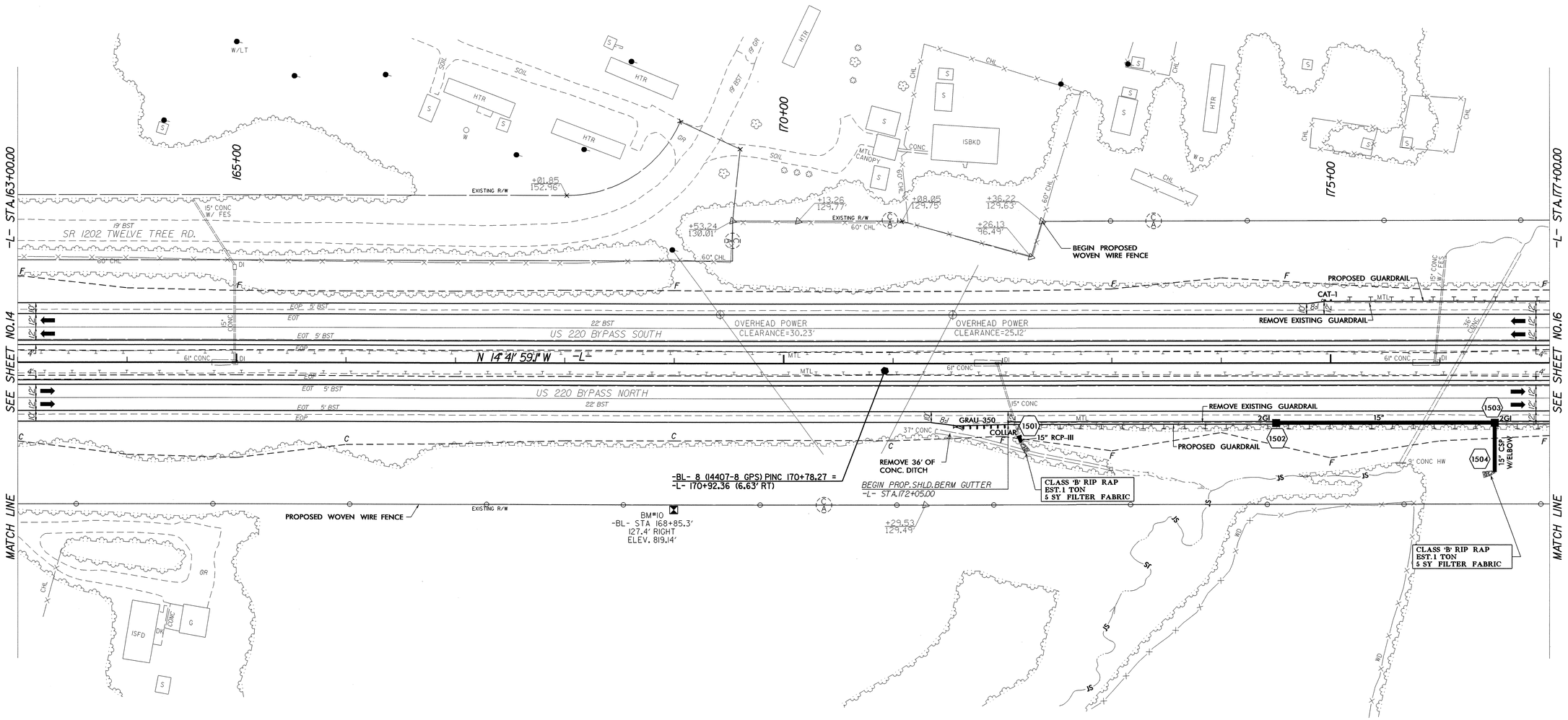
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
I-4407	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE — 4/7/10

NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN — 4/12/10

NAD 83/95



NOTES: (1) SEE SHEET 40 FOR -L- PROFILE
(2) GUARDRAIL OFFSET BLOCKS SHOULD BE INSPECTED AND REPLACED AS NECESSARY
(3) REMOVE & REPLACE EXISTING ANCHOR UNITS IN MEDIAN
(4) 30' OF SAFETY CLEARING IS REQUIRED FROM EDGE OF TRAVEL LANE
(5) REMOVE AND RESET EXISTING MEDIAN GUARDRAIL AS DIRECTED BY ENGINEER

REVISIONS

19-MAR-2010 10:53
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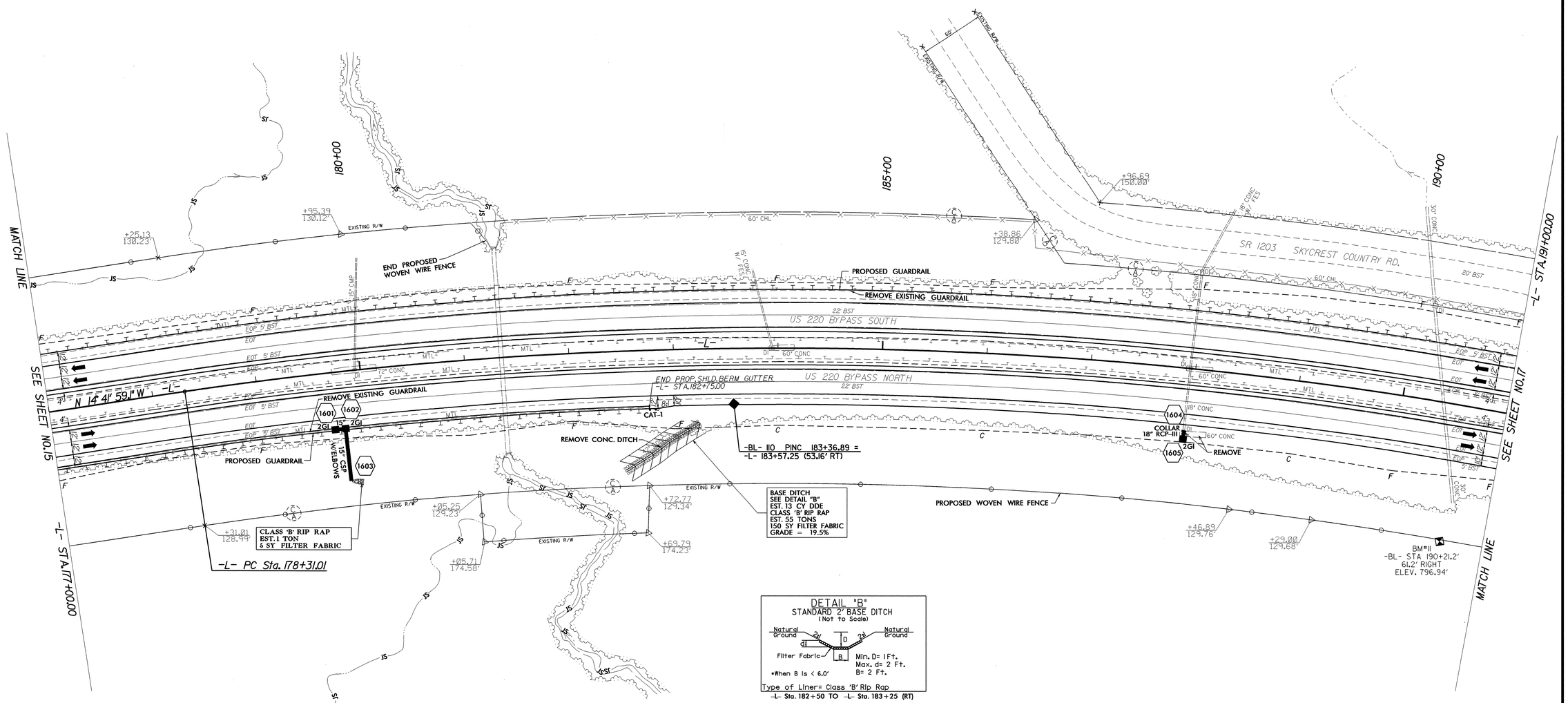
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
I-4407	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE 4/7/10

NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN 4/12/10

NAD 83/95



-L- CURVE DATA

PI Sta 191+42.58
Δ = 37° 53' 56.9" (RT)
D = 1° 29' 59.6"
L = 2,526.80'
T = 1,311.57'
R = 3,820.00'
SE = EXISTING

NOTES: (1) SEE SHEET 41 FOR -L- PROFILE
(2) GUARDRAIL OFFSET BLOCKS SHOULD BE INSPECTED AND REPLACED AS NECESSARY
(3) REMOVE & REPLACE EXISTING ANCHOR UNITS IN MEDIAN
(4) 30' OF SAFETY CLEARING IS REQUIRED FROM EDGE OF TRAVEL LANE
(5) REMOVE AND RESET EXISTING MEDIAN GUARDRAIL AS DIRECTED BY ENGINEER

REVISIONS

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$$$$USERNAME$$$$

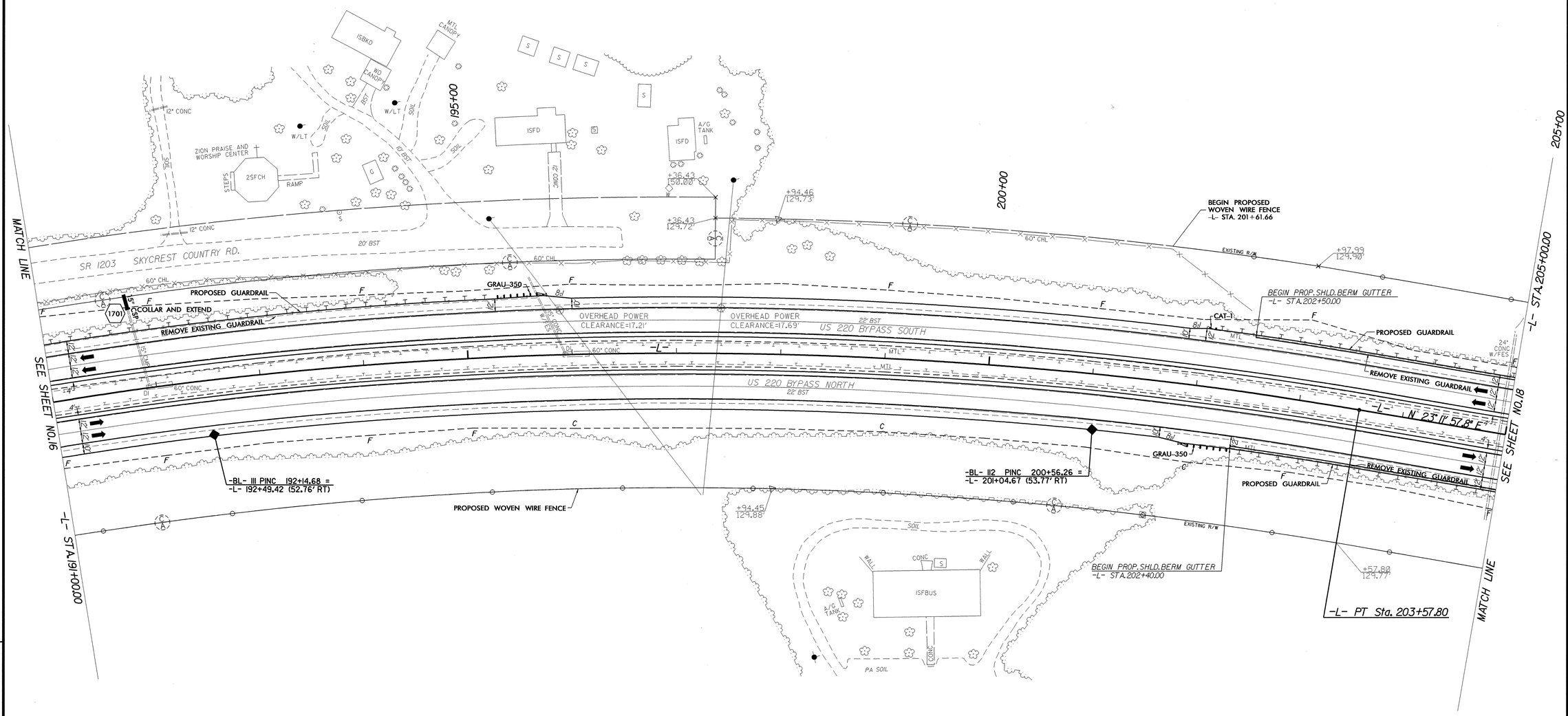
PROJECT REFERENCE NO.	SHEET NO.
I-4407	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE
4/7/10

NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN
4/12/10

REVISIONS

NAD 83/95



-L- CURVE DATA
PI Sta 191+42.58
Δ = 37° 53' 56.9" (RT)
D = 1° 29' 59.6"
L = 2,526.80'
T = 1,311.57'
R = 3,820.00'
SE = EXISTING

NOTES: (1) SEE SHEET 41 FOR -L- PROFILE
(2) GUARDRAIL OFFSET BLOCKS SHOULD BE INSPECTED AND REPLACED AS NECESSARY
(3) REMOVE & REPLACE EXISTING ANCHOR UNITS IN MEDIAN
(4) 30' OF SAFETY CLEARING IS REQUIRED FROM EDGE OF TRAVEL LANE
(5) REMOVE AND RESET EXISTING MEDIAN GUARDRAIL AS DIRECTED BY ENGINEER

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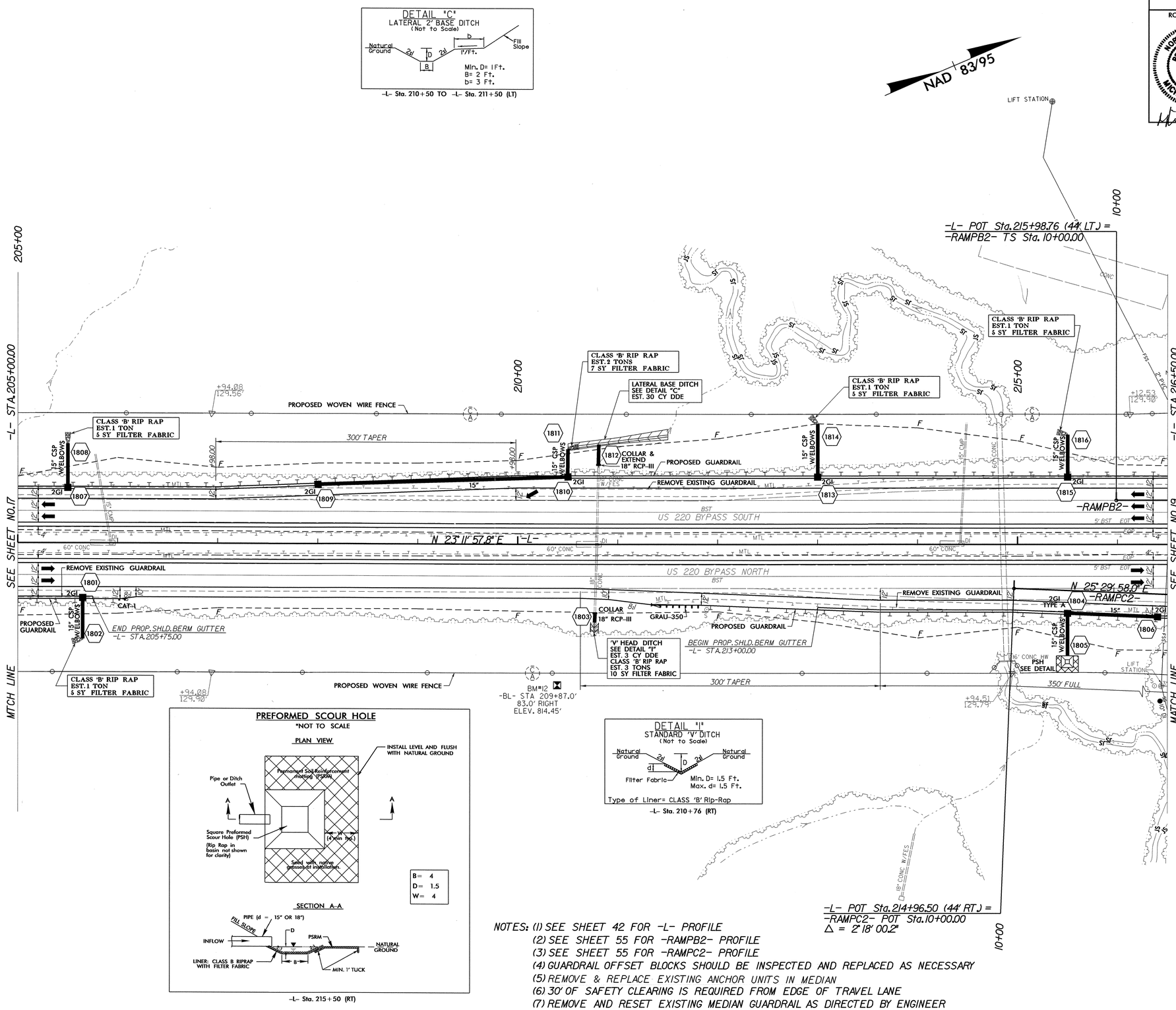
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
I-4407	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE
4/7/10

NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN
4/7/10

REVISIONS



NOTES: (1) SEE SHEET 42 FOR -L- PROFILE
(2) SEE SHEET 55 FOR -RAMPB2- PROFILE
(3) SEE SHEET 55 FOR -RAMPC2- PROFILE
(4) GUARDRAIL OFFSET BLOCKS SHOULD BE INSPECTED AND REPLACED AS NECESSARY
(5) REMOVE & REPLACE EXISTING ANCHOR UNITS IN MEDIAN
(6) 30' OF SAFETY CLEARING IS REQUIRED FROM EDGE OF TRAVEL LANE
(7) REMOVE AND RESET EXISTING MEDIAN GUARDRAIL AS DIRECTED BY ENGINEER

19-MAR-2010 11:29
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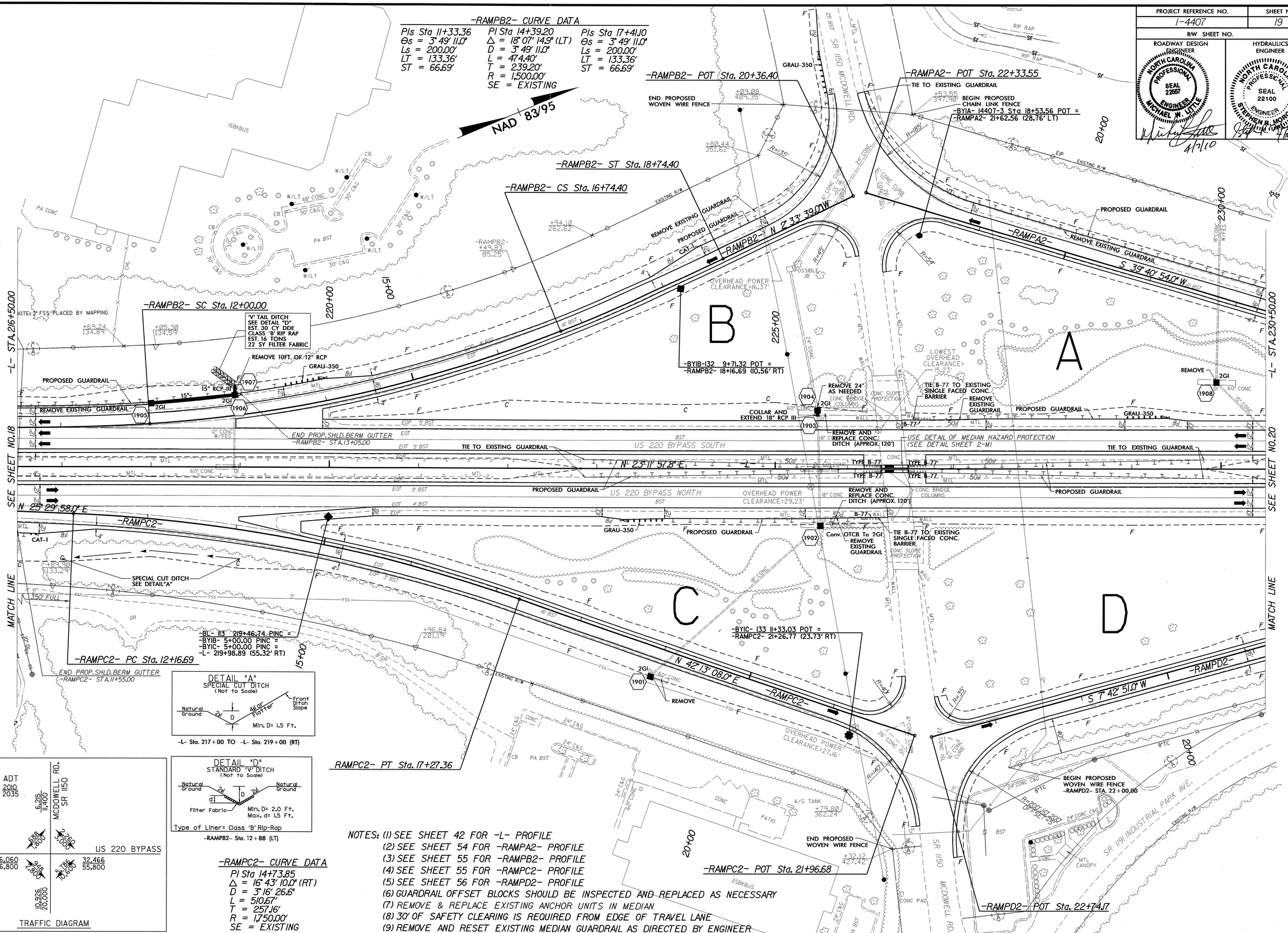
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
I-4407	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22657 ENGINEER MICHAEL W. LITTLE 4/7/10

NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN 4/12/10

REVISIONS



19-MAR-2010 10:53
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$$$$USERNAME$$$$

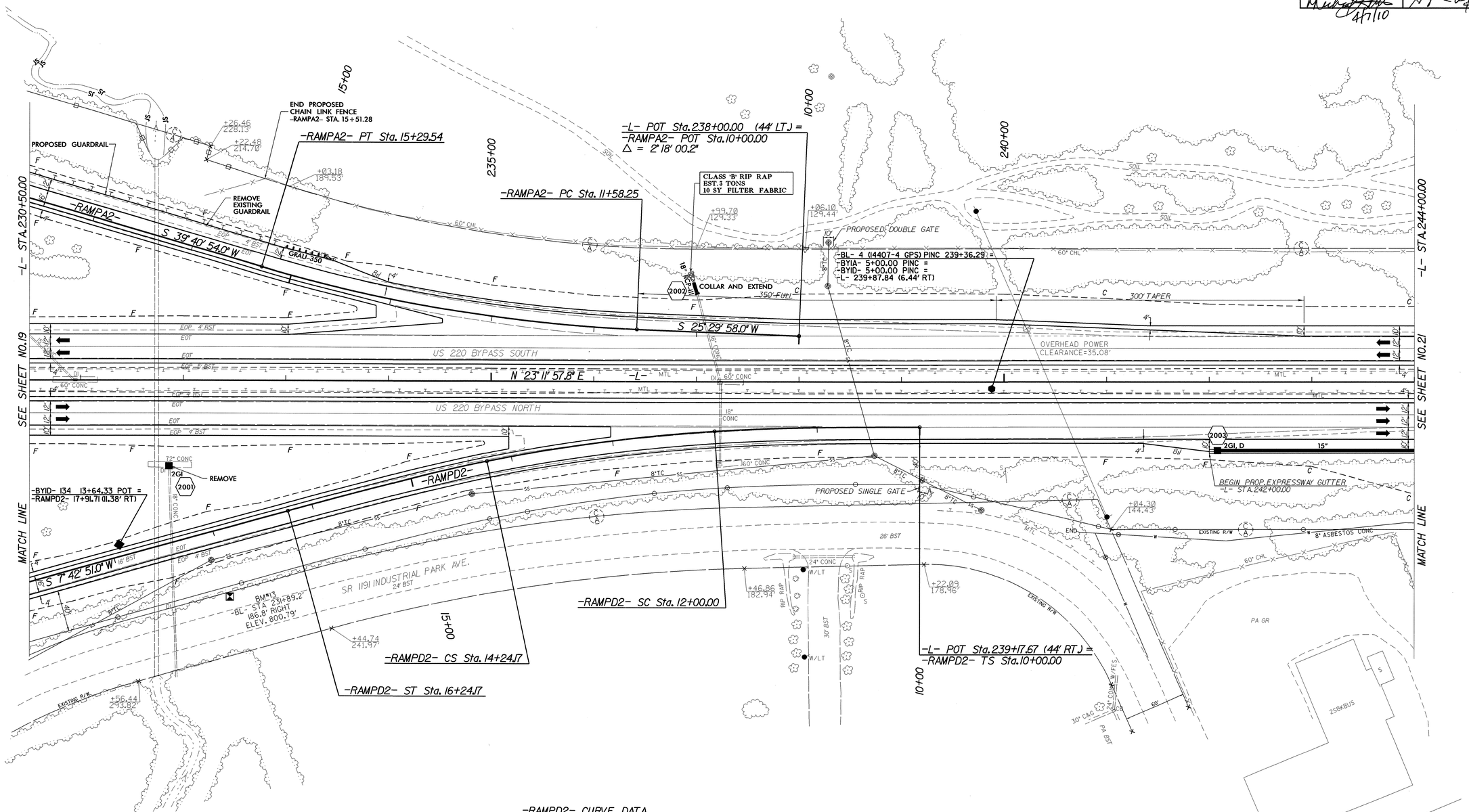
PROJECT REFERENCE NO.	SHEET NO.
I-4407	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE 4/7/10

NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN 4/7/10

-RAMPA2- CURVE DATA
PI Sta 13+44.85
Δ = 14° 10' 56.0" (RT)
D = 3° 49' 11.0"
L = 371.29'
T = 186.60'
R = 1,500.00'

NAD 83/95



-RAMPD2- CURVE DATA

PIs Sta 14+90.86	PI Sta 13+12.28	PIs Sta 11+33.36
Θs = 3° 38' 57.9"	Δ = 8° 10' 51.1" (LT)	Θs = 3° 38' 57.9"
Ls = 200.00'	D = 3° 38' 57.9"	Ls = 200.00'
LT = 133.36'	L = 224.17'	LT = 133.36'
ST = 66.69'	T = 112.28'	ST = 66.69'
	R = 1,570.00'	
	SE = EXISTING	

NOTES: (1) SEE SHEET 43 FOR -L- PROFILE
(2) SEE SHEET 54 FOR -RAMPA2- PROFILE
(3) SEE SHEET 56 FOR -RAMPD2- PROFILE
(4) GUARDRAIL OFFSET BLOCKS SHOULD BE INSPECTED AND REPLACED AS NECESSARY
(5) REMOVE & REPLACE EXISTING ANCHOR UNITS IN MEDIAN
(6) 30' OF SAFETY CLEARING IS REQUIRED FROM EDGE OF TRAVEL LANE
(7) REMOVE AND RESET EXISTING MEDIAN GUARDRAIL AS DIRECTED BY ENGINEER

REVISIONS

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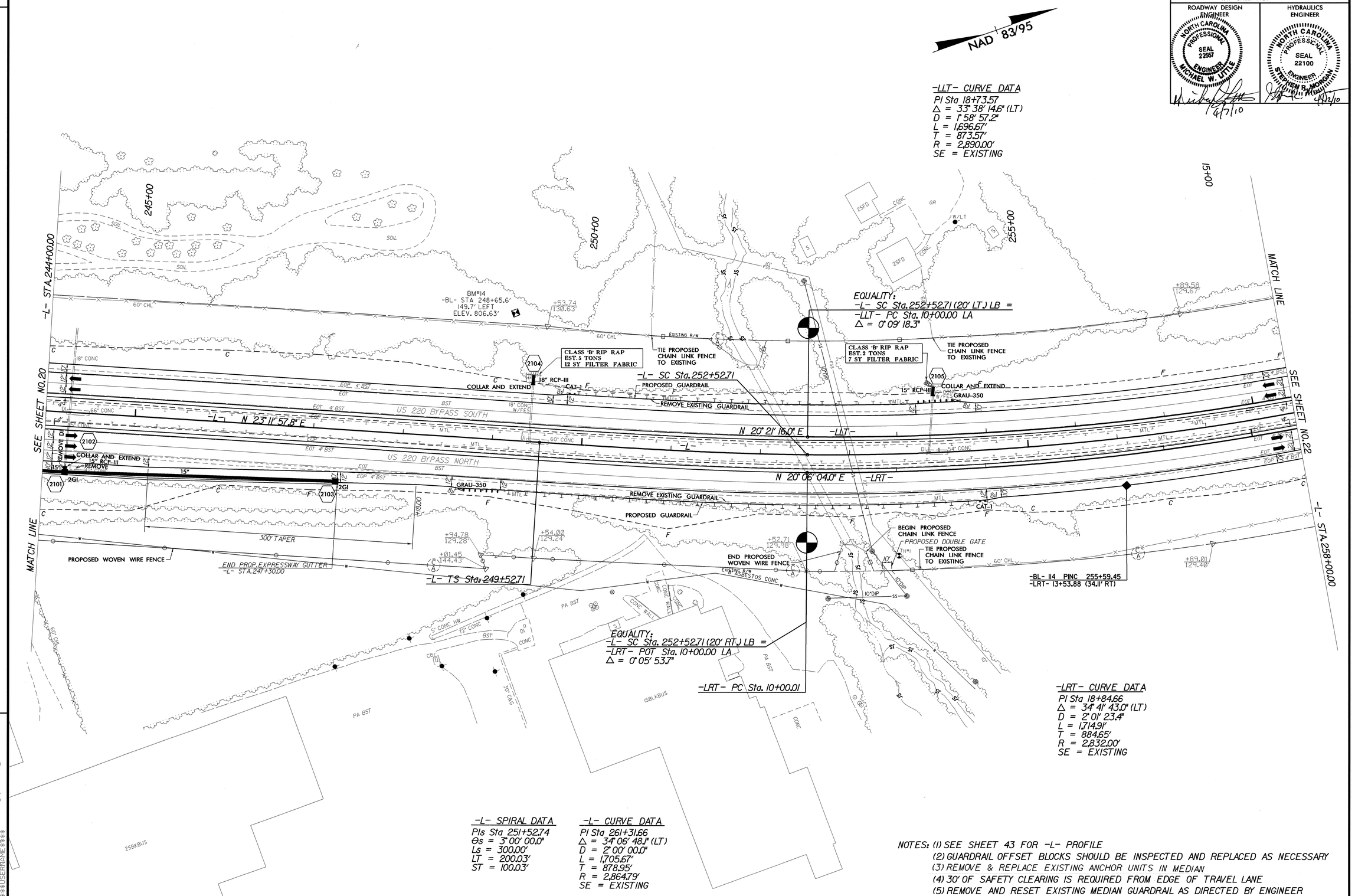
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
I-4407	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22567 ENGINEER MICHAEL W. LITTLE
6/7/10

NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN
6/2/10

REVISIONS



NOTES: (1) SEE SHEET 43 FOR -L- PROFILE
(2) GUARDRAIL OFFSET BLOCKS SHOULD BE INSPECTED AND REPLACED AS NECESSARY
(3) REMOVE & REPLACE EXISTING ANCHOR UNITS IN MEDIAN
(4) 30' OF SAFETY CLEARING IS REQUIRED FROM EDGE OF TRAVEL LANE
(5) REMOVE AND RESET EXISTING MEDIAN GUARDRAIL AS DIRECTED BY ENGINEER

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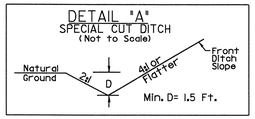
PROJECT REFERENCE NO.	SHEET NO.
I-4407	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE 4/7/10

NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN 4/7/10

REVISIONS

DETAIL "A"
SPECIAL CUT DITCH
(Not to Scale)



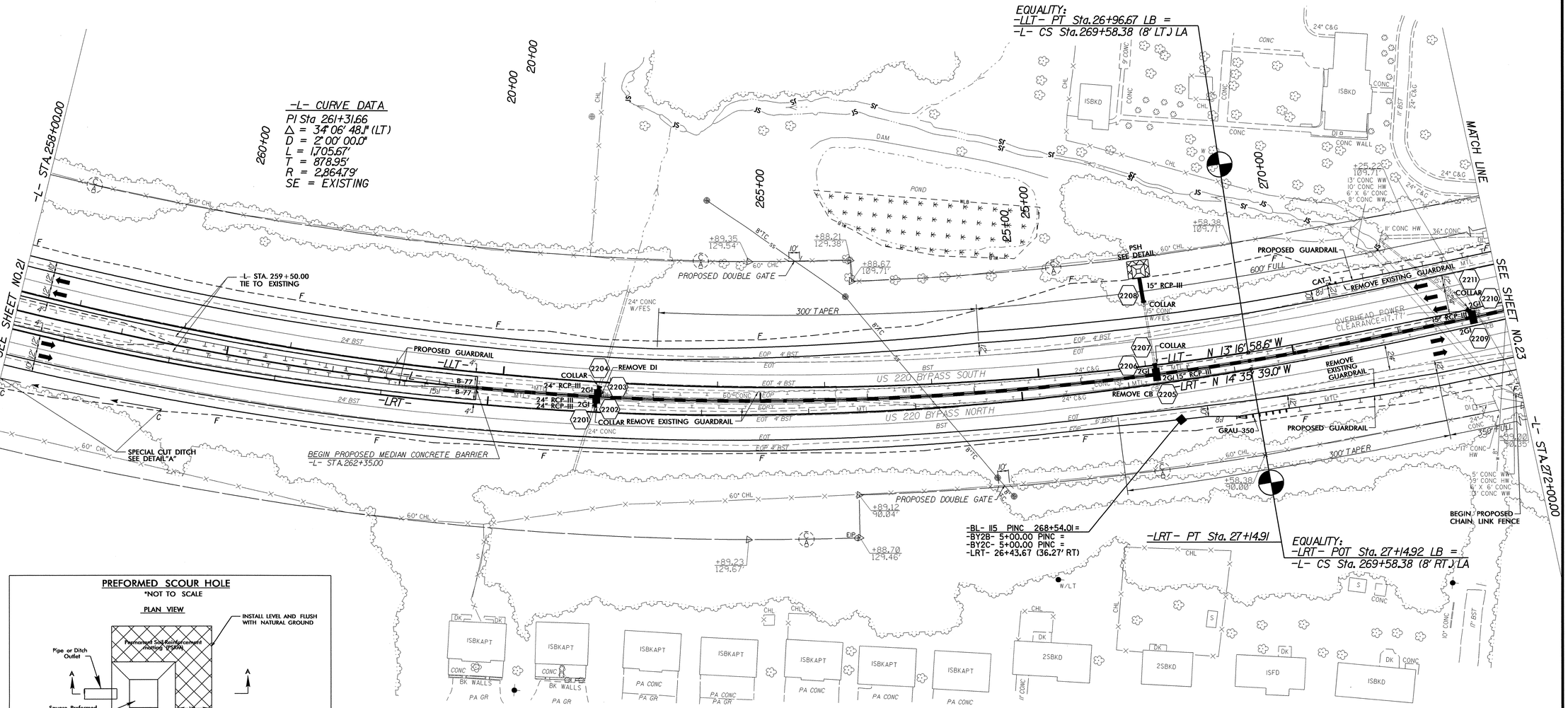
-L- Sta. 258+00 TO -L- Sta. 259+50 (RT)

NAD 83/95

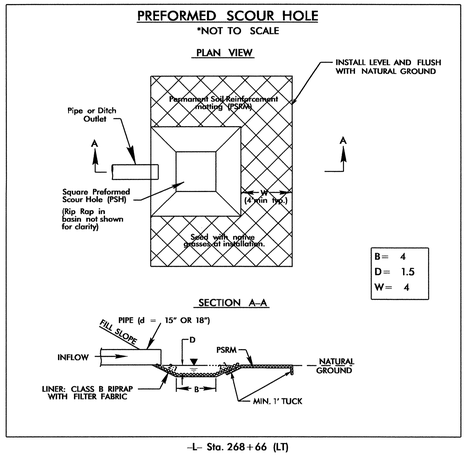
-LLT- CURVE DATA
PI Sta 18+73.57
Δ = 33° 38' 14.6" (LT)
D = 1° 58' 57.2"
L = 1,696.67'
T = 873.57'
R = 2,890.00'
SE = EXISTING

-L- CURVE DATA
PI Sta 261+31.66
Δ = 34° 06' 48.1" (LT)
D = 2° 00' 00.0"
L = 1,705.67'
T = 878.95'
R = 2,864.79'
SE = EXISTING

EQUALITY:
-LLT- PT Sta. 26+96.67 LB =
-L- CS Sta. 269+58.38 (8' LT) LA



PREFORMED SCOUR HOLE
*NOT TO SCALE



-L- Sta. 268+66 (LT)

-LRT- CURVE DATA
PI Sta 18+84.66
Δ = 34° 41' 43.0" (LT)
D = 2° 01' 23.4"
L = 1,714.91'
T = 884.65'
R = 2,832.00'
SE = EXISTING

NOTES: (1) SEE SHEET 44 FOR -L- PROFILE
(2) GUARDRAIL OFFSET BLOCKS SHOULD BE INSPECTED AND REPLACED AS NECESSARY
(3) REMOVE & REPLACE EXISTING ANCHOR UNITS IN MEDIAN
(4) 30' OF SAFETY CLEARING IS REQUIRED FROM EDGE OF TRAVEL LANE
(5) REMOVE AND RESET EXISTING MEDIAN GUARDRAIL AS DIRECTED BY ENGINEER

-L- SPIRAL DATA
PIs Sta 270+58.40
Θs = 3° 00' 00.0"
Ls = 300.00'
LT = 200.03'
ST = 100.03'

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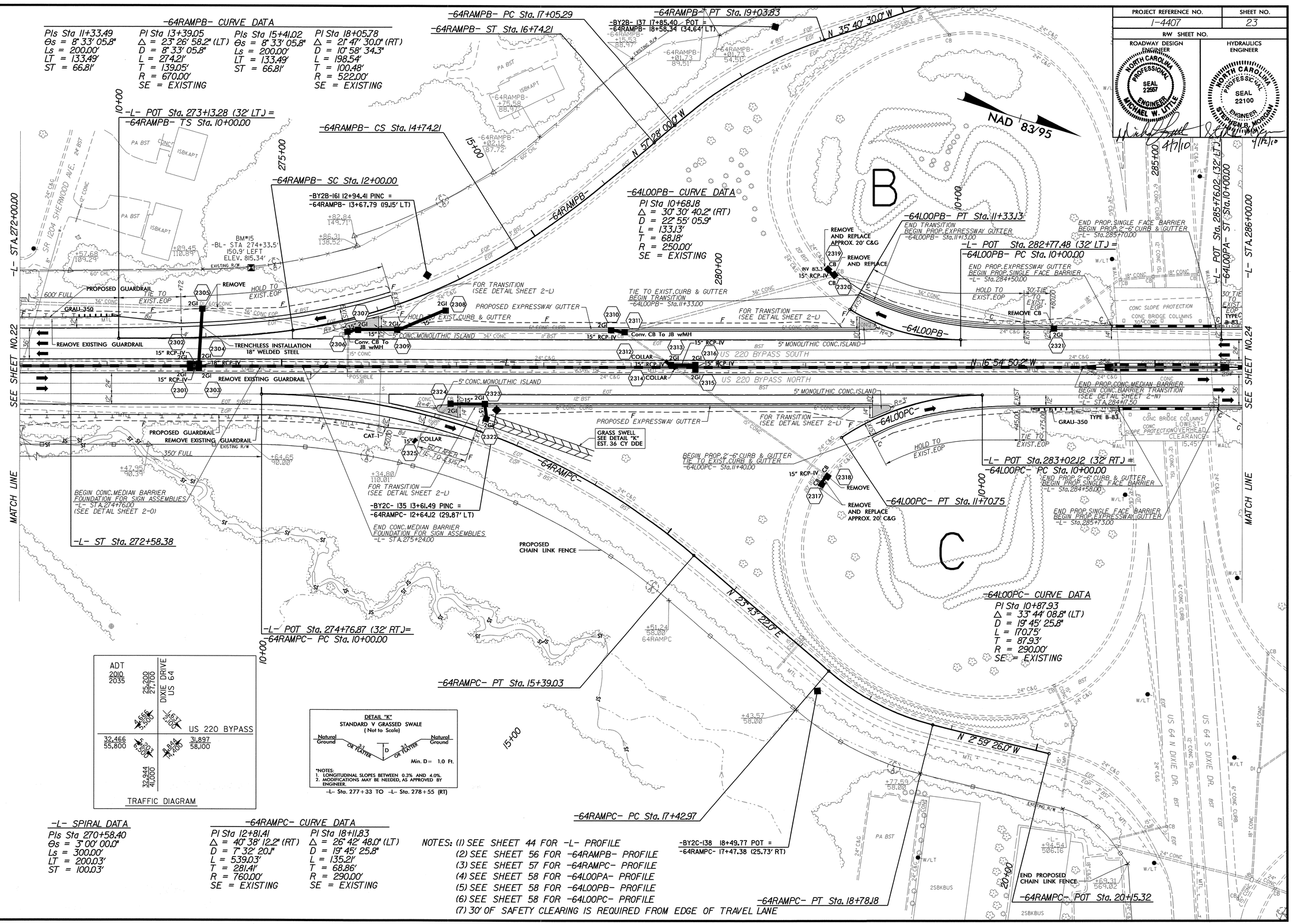
PROJECT REFERENCE NO.	SHEET NO.
1-4407	23
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE — 4/7/10

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN E. MORGAN — 9/12/10

REVISIONS



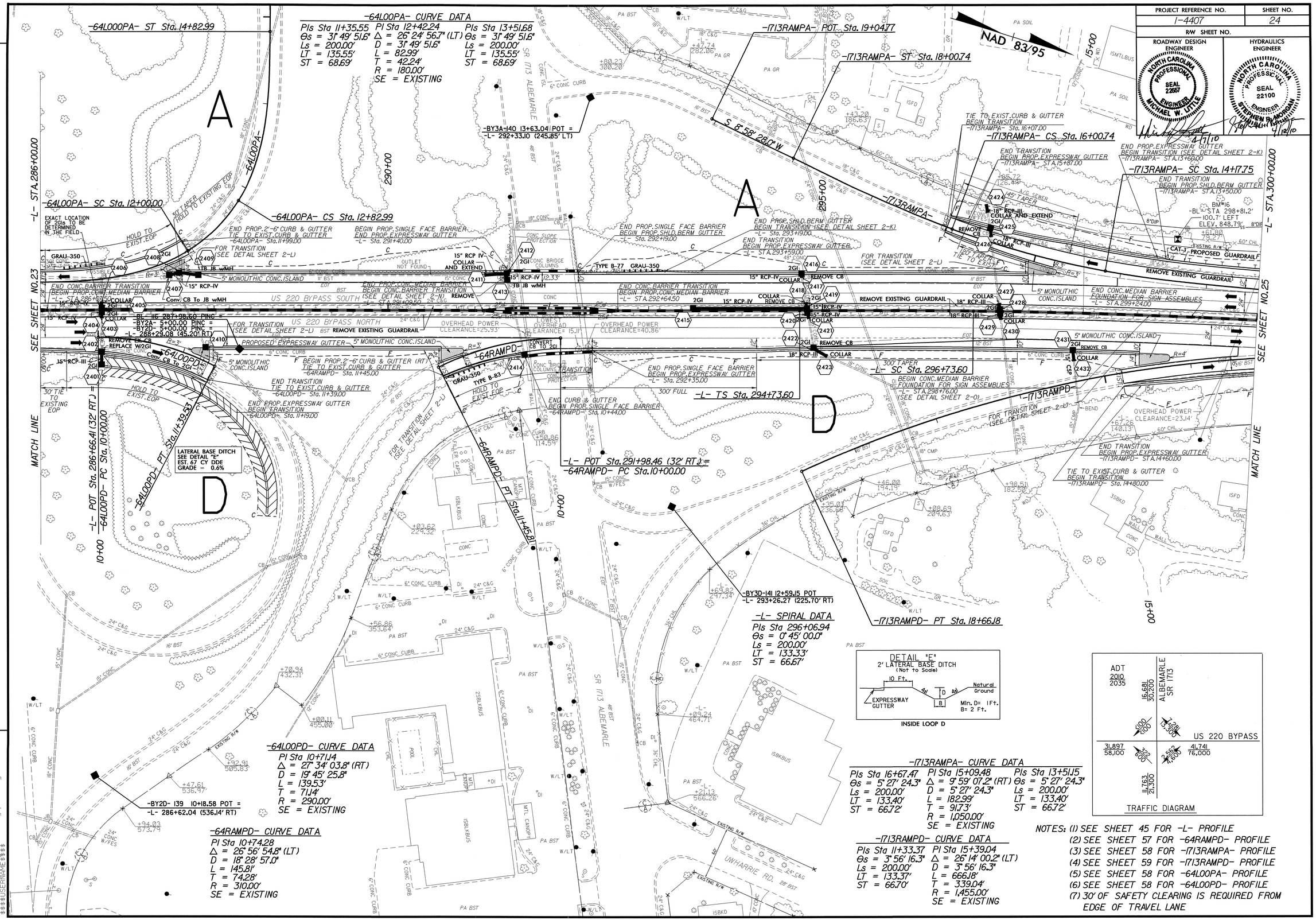
PROJECT REFERENCE NO.	SHEET NO.
I-4407	24
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 22567 ENGINEER MICHAEL W. LITTLE

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN D. MORGAN

4/7/10

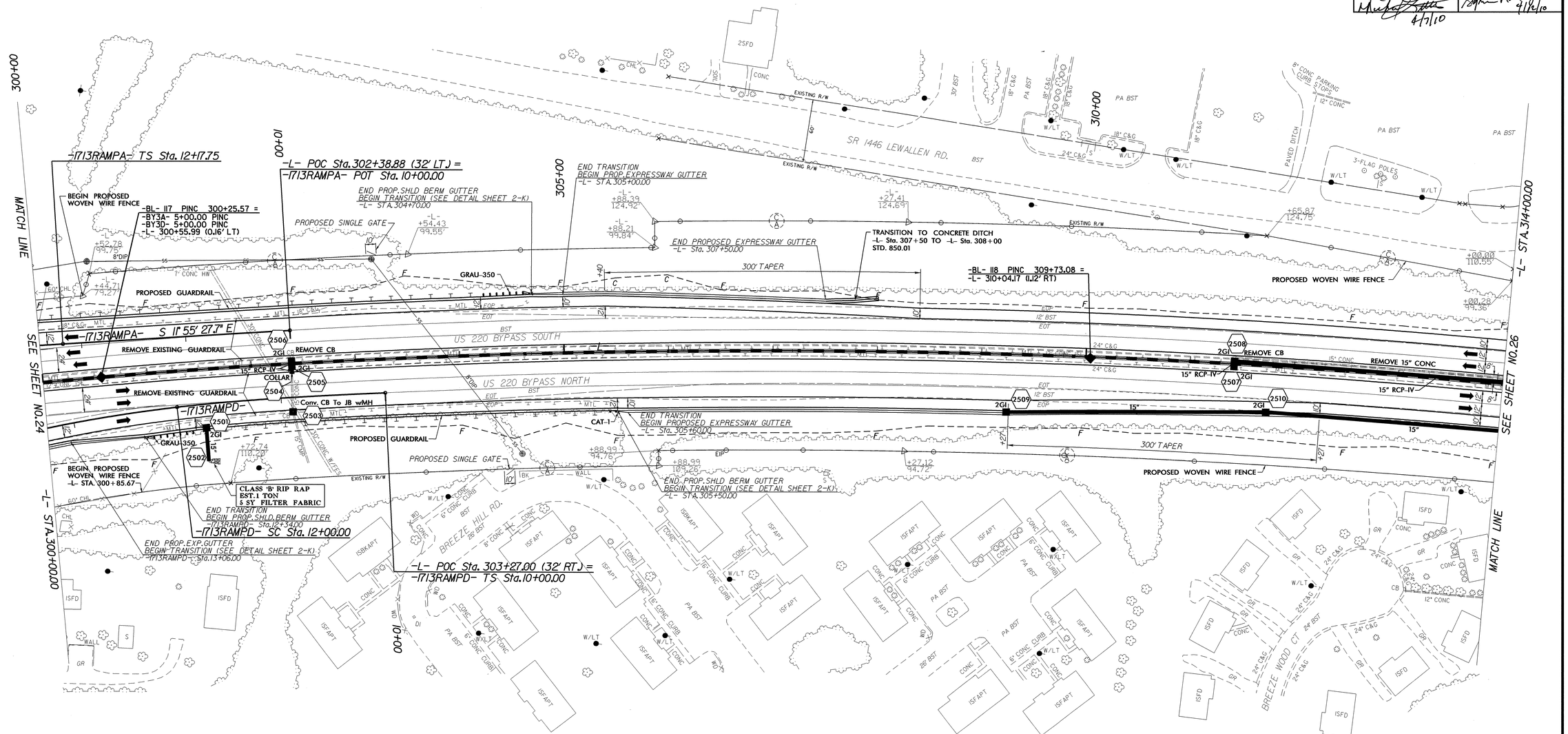
REVISIONS



PROJECT REFERENCE NO.	SHEET NO.
I-4407	25
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE
4/7/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN
4/12/10



-1713RAMPD- CURVE DATA

PIs Sta 11+33.37
Θs = 3° 56' 16.3"
Ls = 200.00'
LT = 133.37'
ST = 66.70'

PI Sta 15+39.04
Δ = 26° 14' 00.2" (LT)
D = 3° 56' 16.3"
L = 666.18'
T = 339.04'
R = 1,455.00'
SE = EXISTING

-L- CURVE DATA

PI Sta 308+35.55
Δ = 17° 17' 48.0" (RT)
D = 0° 45' 00.0"
L = 2,306.22'
T = 1,161.95'
R = 7,639.44'
SE = EXISTING

NOTES: (1) SEE SHEET 45 FOR -L- PROFILE
(2) SEE SHEET 58 FOR -1713RAMPA- PROFILE
(3) SEE SHEET 59 FOR -1713RAMPD- PROFILE
(4) 30' OF SAFETY CLEARING IS REQUIRED FROM EDGE OF TRAVEL LANE

REVISIONS

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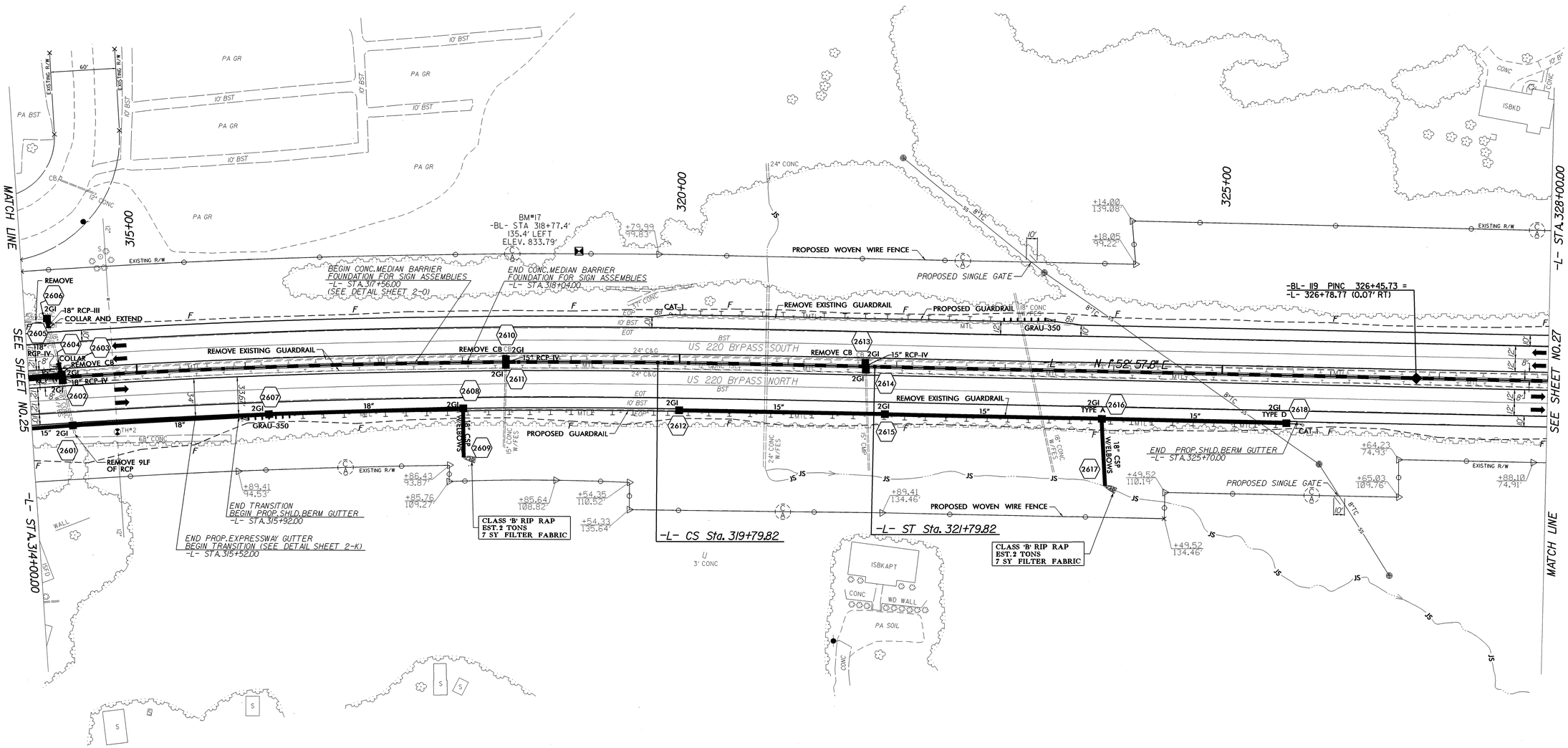
PROJECT REFERENCE NO.	SHEET NO.
I-4407	26
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE
4/5/10

NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN
4/12/10

REVISIONS

NAD 83/95



-L- CURVE DATA

PI Sta 308+35.55	PIs Sta 320+46.49
Δ = 17° 17' 48.0" (RT)	θs = 0° 45' 00.0"
D = 0° 45' 00.0"	Ls = 200.00'
L = 2,306.22'	LT = 133.33'
T = 1,161.95'	ST = 66.67'
R = 7,639.44'	
SE = EXISTING	

NOTES: (1) SEE SHEET 46 FOR -L- PROFILE
(2) 30' OF SAFETY CLEARING IS REQUIRED FROM EDGE OF TRAVEL LANE

19-MAR-2010 10:53
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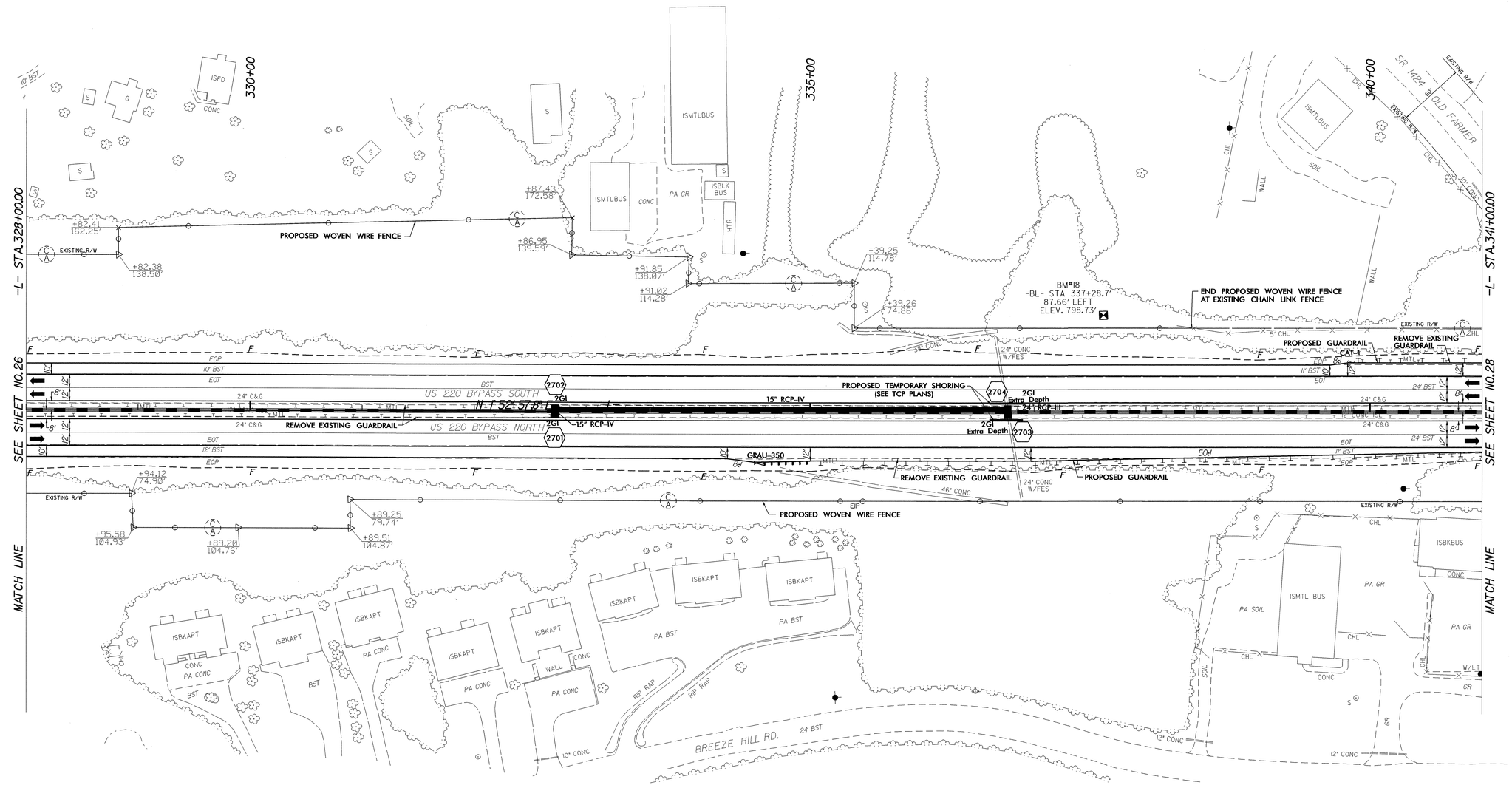
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
I-4407	27
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE
4/7/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN
4/12/10

REVISIONS



NOTES: (1) SEE SHEET 46 FOR -L- PROFILE
(2) 30' OF SAFETY CLEARING IS REQUIRED FROM EDGE OF TRAVEL LANE

19-MAR-2010 10:53
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$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
I-4407	28
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22567 ENGINEER MICHAEL W. LITTLE
4/8/10

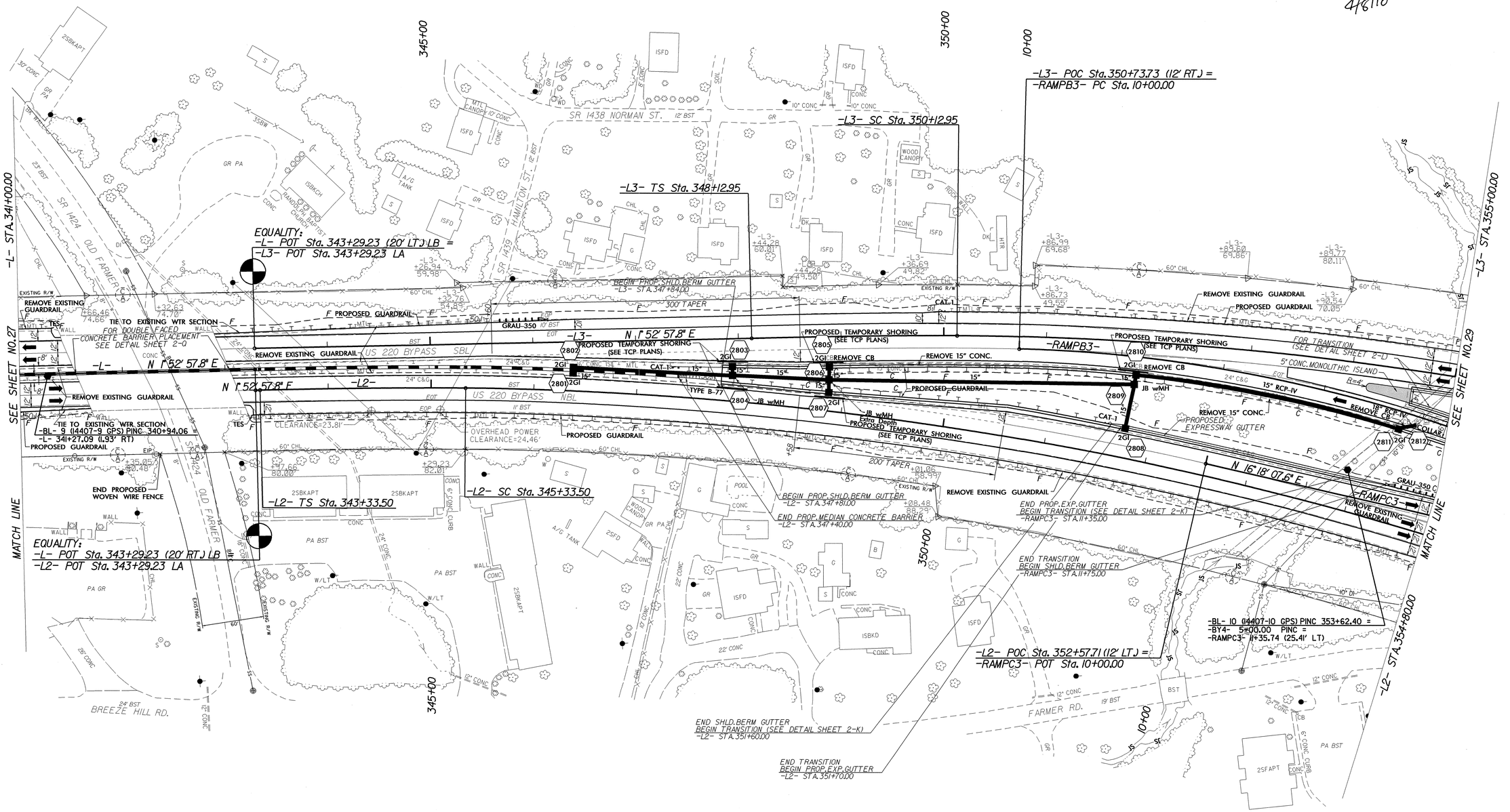
NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN
4/8/10

REVISIONS

-L3- CURVE DATA

PIs Sta 349+46.29	PI Sta 359+24.85
Θs = 1° 44' 58.2"	Δ = 31° 07' 07.3" (RT)
Ls = 200.00'	D = 1° 44' 58.2"
LT = 133.34'	L = 1,778.73'
ST = 66.67'	T = 911.89'
	R = 3,275.00'
	SE = EXISTING

NAD 83/95



-L2- CURVE DATA

PIs Sta 344+66.84	PI Sta 353+84.00
Θs = 1° 44' 58.2"	Δ = 29° 06' 55.6" (RT)
Ls = 200.00'	D = 1° 44' 58.2"
LT = 133.34'	L = 1,664.22'
ST = 66.67'	T = 850.49'
	R = 3,275.00'
	SE = EXISTING

NOTES:
(1) SEE SHEETS 47 & 49 FOR -L- PROFILE
(2) SEE SHEET 47 FOR -L2- PROFILE
(3) SEE SHEET 49 FOR -L3- PROFILE
(4) SEE SHEET 59 FOR -RAMPB3- PROFILE
(5) SEE SHEET 60 FOR -RAMPC3- PROFILE
(6) 30' OF SAFETY CLEARING IS REQUIRED FROM EDGE OF TRAVEL LANE

08-APR-2010 11:25
r:\roadway\proj\I4407_rdy_psh28.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
1-4407	29
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE	NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN
4/7/10	4/12/10

REVISIONS

-RAMPB3- CURVE DATA

PI Sta 12+31.79
Δ = 18° 48' 06.3" (RT)
D = 4° 05' 33.2"
L = 459.41'
T = 231.79'
R = 1,400.00'
SE = EXISTING

PI Sta 18+59.14
Δ = 1° 20' 50.0" (LT)
D = 1° 38' 13.3"
L = 82.30'
T = 41.15'
R = 3,500.00'
SE = EXISTING

PI Sta 21+36.32
Δ = 10° 54' 49.0" (RT)
D = 5° 35' 23.4"
L = 195.24'
T = 97.92'
R = 1,025.00'
SE = EXISTING

-L3- CURVE DATA

PI Sta 359+24.85
Δ = 31° 07' 07.3" (RT)
D = 1° 44' 58.2"
L = 1,778.73'
T = 911.89'
R = 3,275.00'
SE = EXISTING

PIs Sta 368+58.36
Θs = 1° 44' 58.2"
Ls = 200.00'
LT = 133.34'
ST = 66.67'

-RAMPC3- CURVE DATA

PI Sta 17+94.51
Δ = 16° 42' 19.4" (RT)
D = 3° 34' 51.6"
L = 466.50'
T = 234.92'
R = 1,600.00'
SE = EXISTING

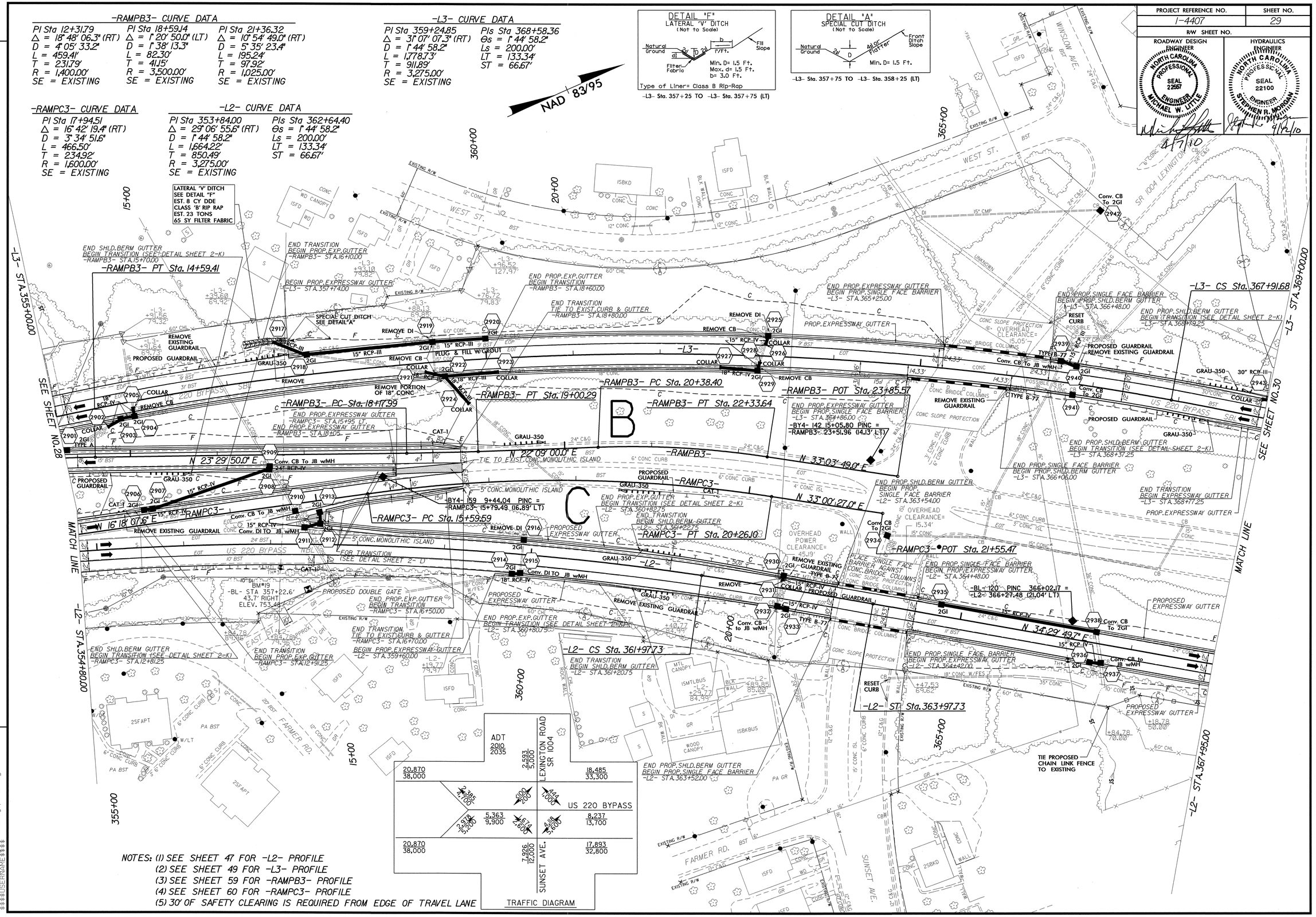
-L2- CURVE DATA

PI Sta 353+84.00
Δ = 29° 06' 55.6" (RT)
D = 1° 44' 58.2"
L = 1,664.22'
T = 850.49'
R = 3,275.00'
SE = EXISTING

PIs Sta 362+64.40
Θs = 1° 44' 58.2"
Ls = 200.00'
LT = 133.34'
ST = 66.67'

-L3- Sta. 357+25 TO -L3- Sta. 357+75 (LT)

-L3- Sta. 357+75 TO -L3- Sta. 358+25 (LT)



NOTES: (1) SEE SHEET 47 FOR -L2- PROFILE
(2) SEE SHEET 49 FOR -L3- PROFILE
(3) SEE SHEET 59 FOR -RAMPB3- PROFILE
(4) SEE SHEET 60 FOR -RAMPC3- PROFILE
(5) 30' OF SAFETY CLEARING IS REQUIRED FROM EDGE OF TRAVEL LANE

19-MAR-2010 10:53
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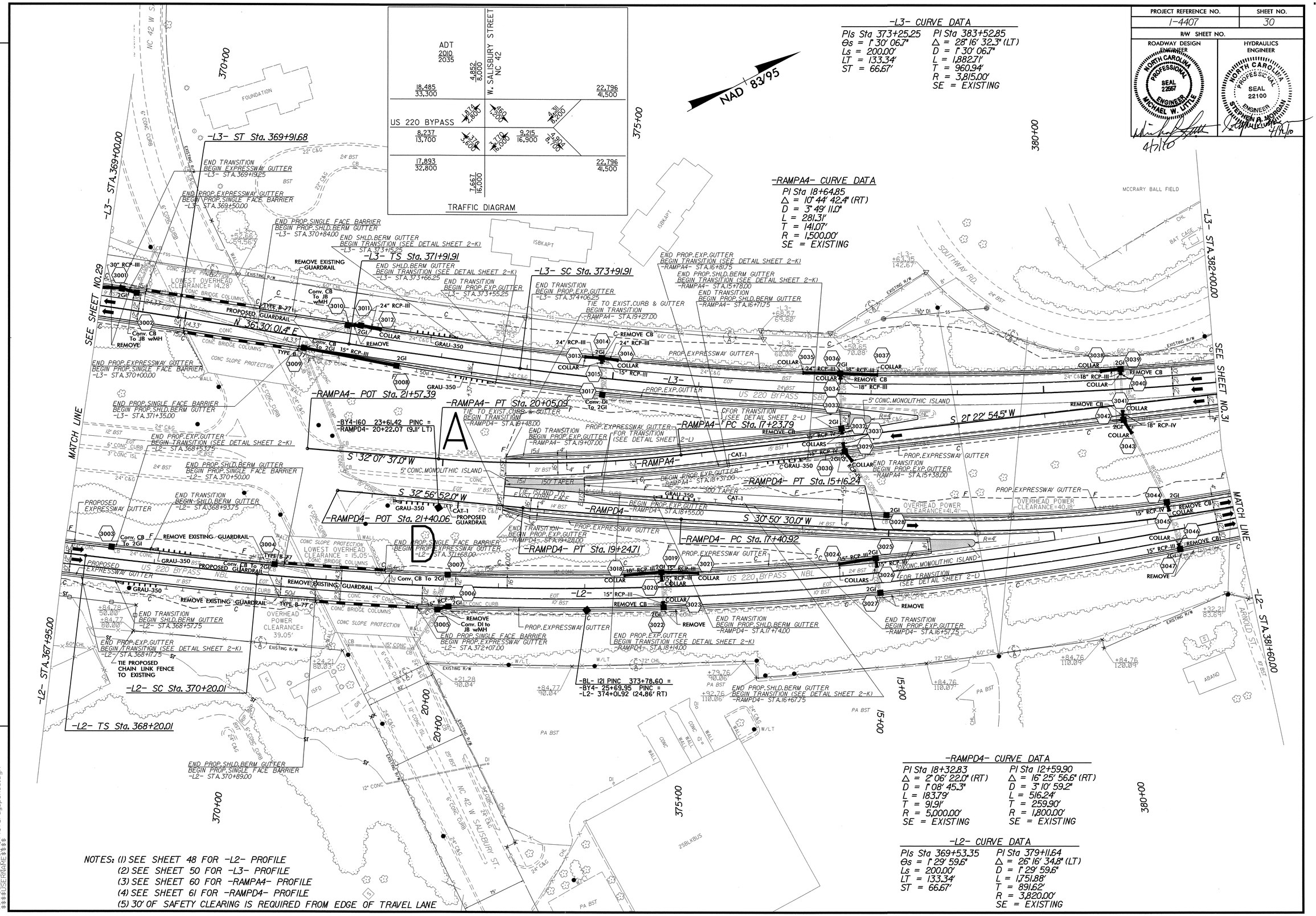
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
I-4407	30
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE 4/7/10

NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN A. MORGAN 4/7/10

REVISIONS



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PROJECT REFERENCE NO.	SHEET NO.
I-4407	31
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE 4/7/10

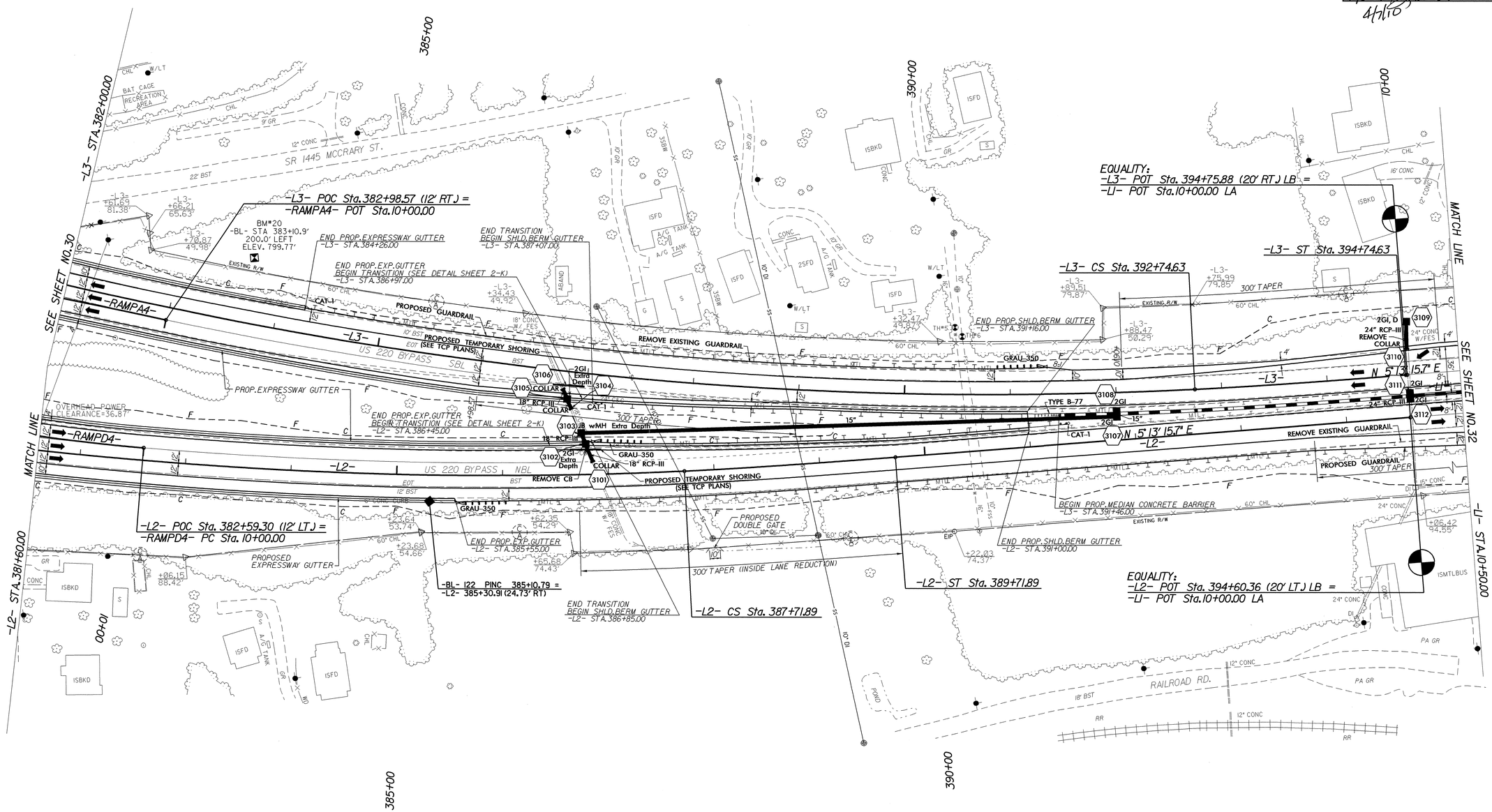
NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN 4/9/10

REVISIONS

-L3- CURVE DATA

PI Sta 383+52.85	PIs Sta 393+41.30
Δ = 28° 16' 32.3" (LT)	Θs = 1° 30' 06.7"
D = 1° 30' 06.7"	Ls = 200.00'
L = 1,882.71'	LT = 133.34'
T = 960.94'	ST = 66.67'
R = 3,815.00'	
SE = EXISTING	

NAD 83/95



-L2- CURVE DATA

PI Sta 379+11.64	PIs Sta 388+38.57
Δ = 26° 16' 34.8" (LT)	Θs = 1° 29' 59.6"
D = 1° 29' 59.6"	Ls = 200.00'
L = 1,751.88'	LT = 133.34'
T = 891.62'	ST = 66.67'
R = 3,820.00'	
SE = EXISTING	

NOTES: (1) SEE SHEETS 48 & 50 FOR -LI- PROFILE
(2) SEE SHEET 48 FOR -L2- PROFILE
(3) SEE SHEET 50 FOR -L3- PROFILE
(4) SEE SHEET 60 FOR -RAMPA4- PROFILE
(5) SEE SHEET 61 FOR -RAMPD4- PROFILE
(6) 30' OF SAFETY CLEARING IS REQUIRED FROM EDGE OF TRAVEL LANE

19-MAR-2010 10:53
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PROJECT REFERENCE NO.	SHEET NO.
1-4407	32
R/W SHEET NO.	

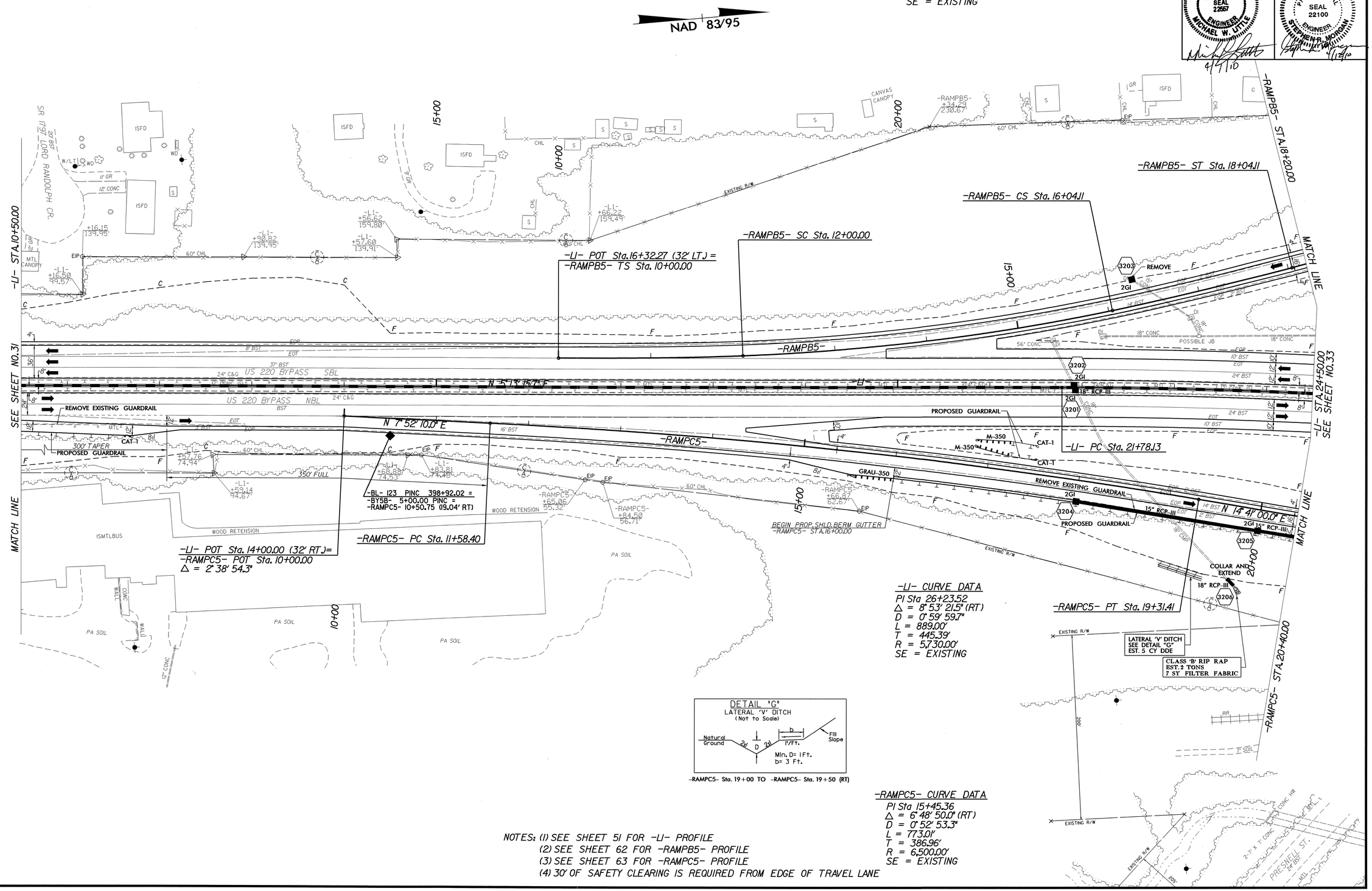
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22657 ENGINEER MICHAEL W. LITTLE
4/9/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN
4/12/10

REVISIONS

-RAMPB5- CURVE DATA

PIs Sta 11+33.34	PI Sta 14+02.51	PIs Sta 16+70.79
Θs = 2° 20' 19.0"	Δ = 9° 27' 01.7" (LT)	Θs = 2° 20' 19.0"
Ls = 200.00'	D = 2° 20' 19.0"	Ls = 200.00'
LT = 133.34'	L = 404.11'	LT = 133.34'
ST = 66.68'	T = 202.51'	ST = 66.68'
	R = 2,450.00'	
	SE = EXISTING	



-L1- CURVE DATA

PI Sta 26+23.52
Δ = 8° 53' 21.5" (RT)
D = 0° 59' 59.7"
L = 889.00'
T = 445.39'
R = 5,730.00'
SE = EXISTING

-RAMPC5- CURVE DATA

PI Sta 15+45.36
Δ = 6° 48' 50.0" (RT)
D = 0° 52' 53.3"
L = 773.01'
T = 386.96'
R = 6,500.00'
SE = EXISTING

-RAMPC5- Sta. 19+00 TO -RAMPC5- Sta. 19+50 (RT)

NOTES: (1) SEE SHEET 51 FOR -L1- PROFILE
(2) SEE SHEET 62 FOR -RAMPB5- PROFILE
(3) SEE SHEET 63 FOR -RAMPC5- PROFILE
(4) 30' OF SAFETY CLEARING IS REQUIRED FROM EDGE OF TRAVEL LANE

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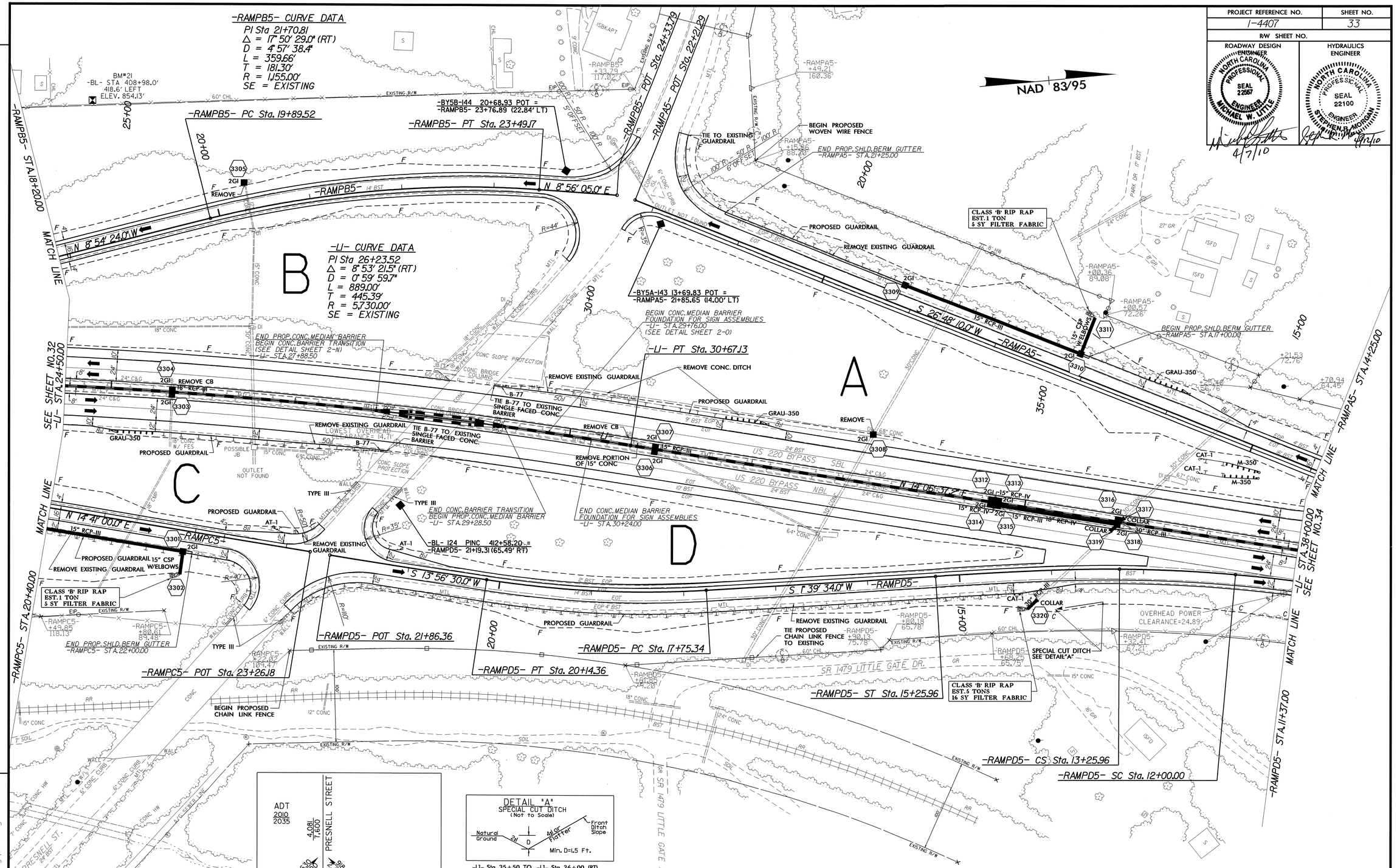
PROJECT REFERENCE NO.	SHEET NO.
I-4407	33
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22567 ENGINEER MICHAEL W. LITTLE 4/7/10

NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN 4/7/10



NOTES: (1) SEE SHEET 51 FOR -LI- PROFILE
(2) SEE SHEET 61 FOR -RAMPA5- PROFILE
(3) SEE SHEET 62 FOR -RAMPB5- PROFILE
(4) SEE SHEET 63 FOR -RAMPC5- PROFILE
(5) SEE SHEET 63 FOR -RAMPD5- PROFILE
(6) 30' OF SAFETY CLEARING IS REQUIRED FROM EDGE OF TRAVEL LANE

-RAMPD5- CURVE DATA

PI Sta 18+95.31	PIs Sta 13+92.66	PI Sta 12+63.02	PIs Sta 11+33.36
Δ = 12° 16' 56.0" (RT)	θs = 3° 49' 11.0"	Δ = 4° 48' 41.2" (LT)	θs = 3° 49' 11.0"
D = 5° 08' 19.1"	Ls = 200.00'	D = 3° 49' 11.0"	Ls = 200.00'
L = 239.02'	LT = 133.36'	L = 125.96'	LT = 133.36'
T = 119.97'	ST = 66.69'	T = 63.02'	ST = 66.69'
R = 1,115.00'		R = 1,500.00'	
SE = EXISTING		SE = EXISTING	

REVISIONS

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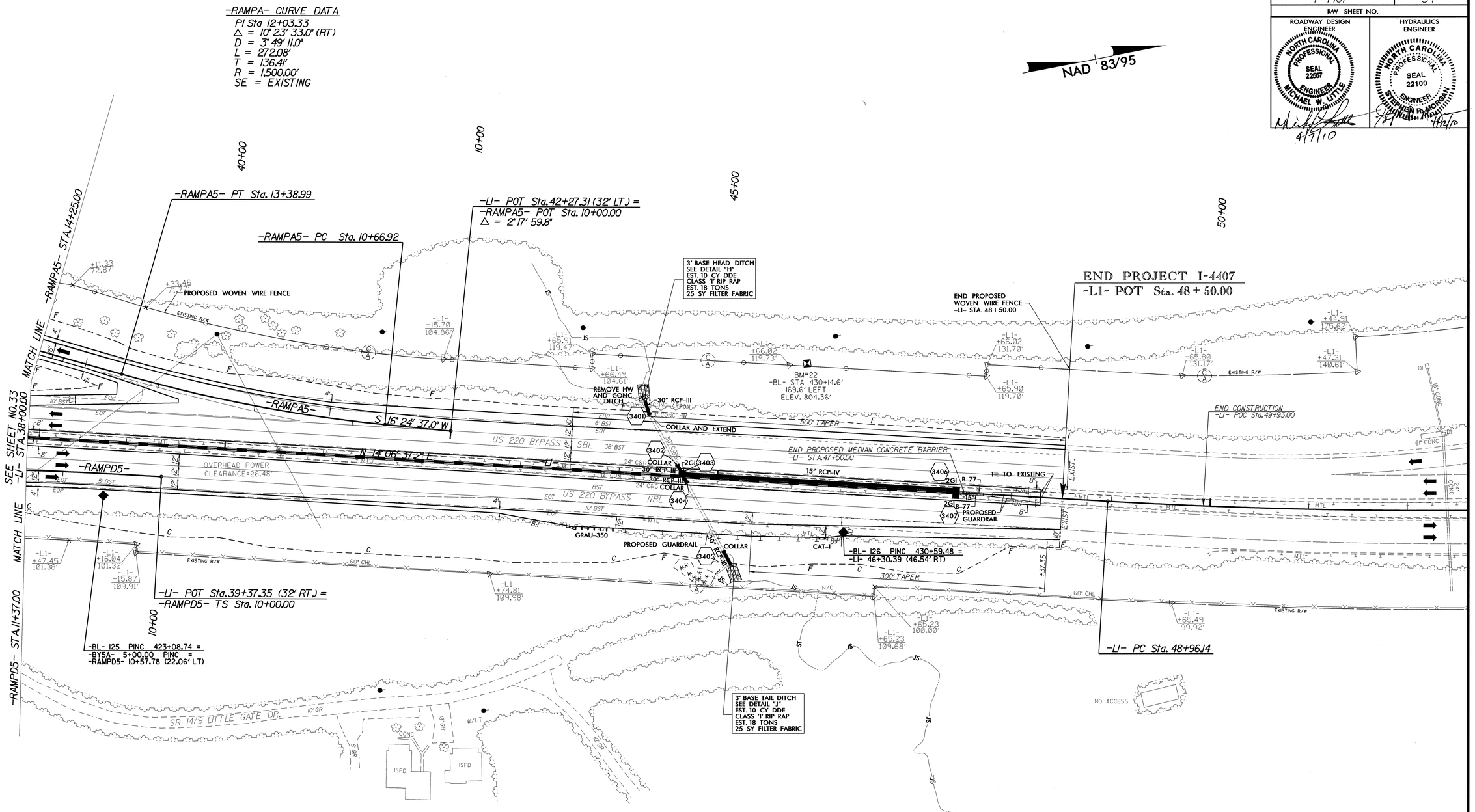
PROJECT REFERENCE NO.	SHEET NO.
I-4407	34
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

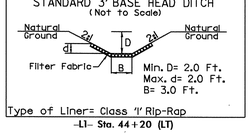
NORTH CAROLINA PROFESSIONAL SEAL 22657 ENGINEER MICHAEL W. LITTLE
4/7/10

NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN

REVISIONS

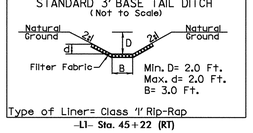


DETAIL "H"
STANDARD 3' BASE HEAD DITCH
(Not to Scale)



-L1- Sta. 44+20 (LT)

DETAIL "J"
STANDARD 3' BASE TAIL DITCH
(Not to Scale)



-L1- Sta. 45+22 (RT)

-RAMPD5- SPIRAL DATA
PIs Sta 11+33.36
θs = 3° 49' 11.0"
Ls = 200.00'
LT = 133.36'
ST = 66.69'

NOTES: (1) SEE SHEET 52 FOR -L1- PROFILE
(2) SEE SHEET 61 FOR -RAMPA5- PROFILE
(3) SEE SHEET 63 FOR -RAMPD5- PROFILE
(4) 30' OF SAFETY CLEARING IS REQUIRED FROM EDGE OF TRAVEL LANE

-L1- CURVE DATA
PI Sta 58+25.91
Δ = 18° 26' 00.0" (LT)
D = 0° 59' 59.7"
L = 1,843.47'
T = 929.77'
R = 5,730.00'
SE = EXISTING

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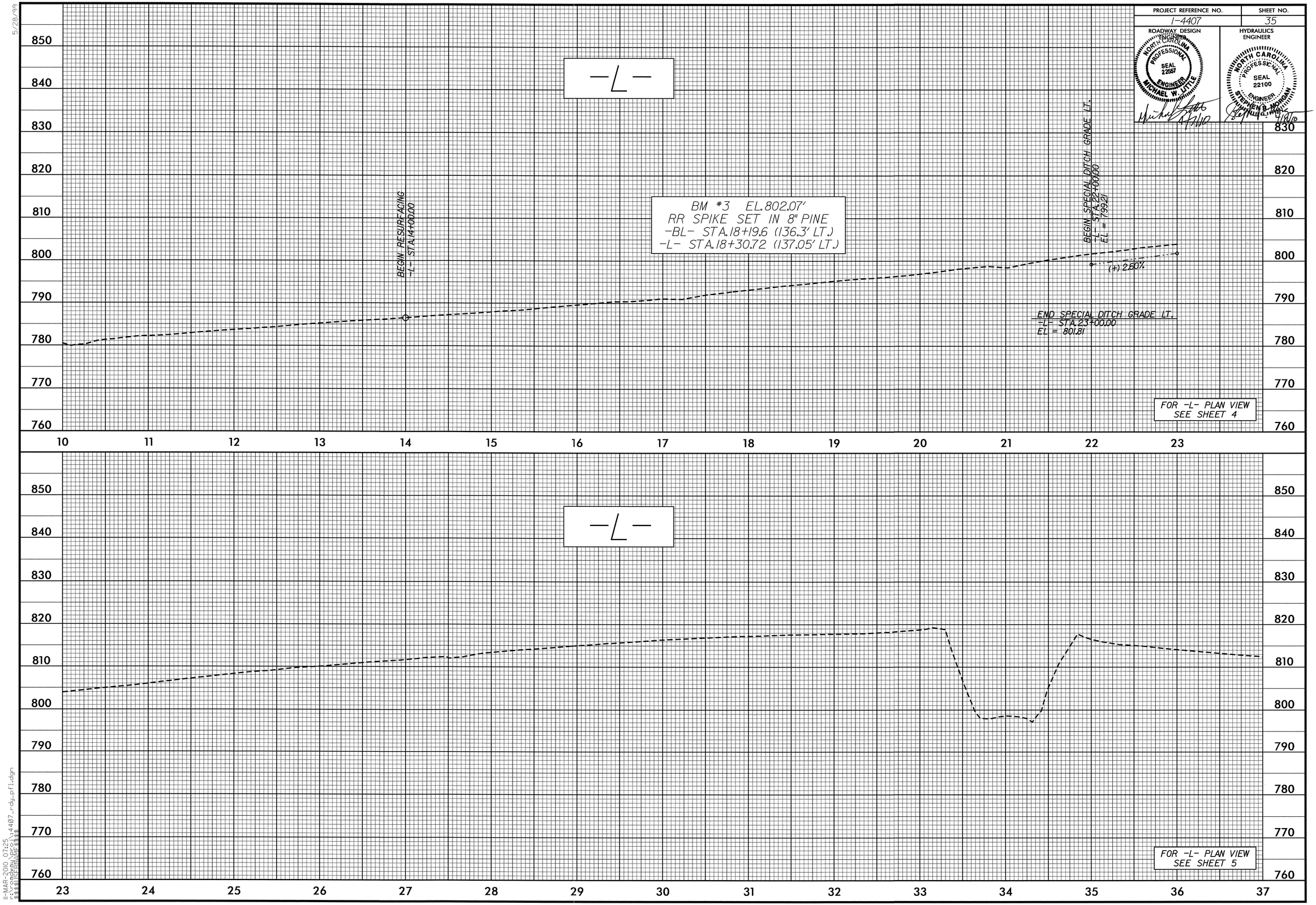
PROJECT REFERENCE NO.	SHEET NO.
I-4407	35

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE
4/7/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN B. MORGAN
4/7/10



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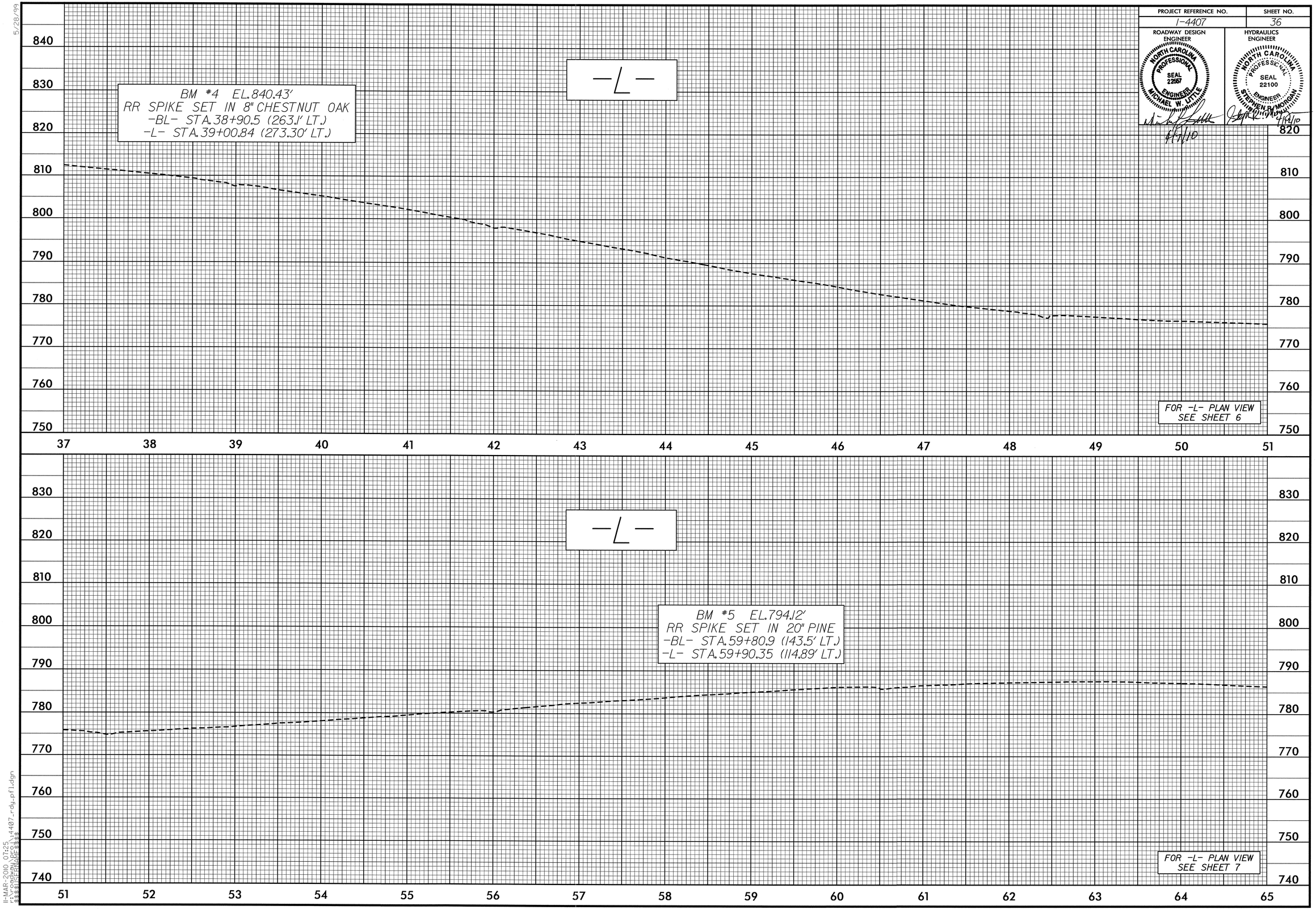
PROJECT REFERENCE NO.	SHEET NO.
I-4407	36

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE
4/7/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN
4/14/10



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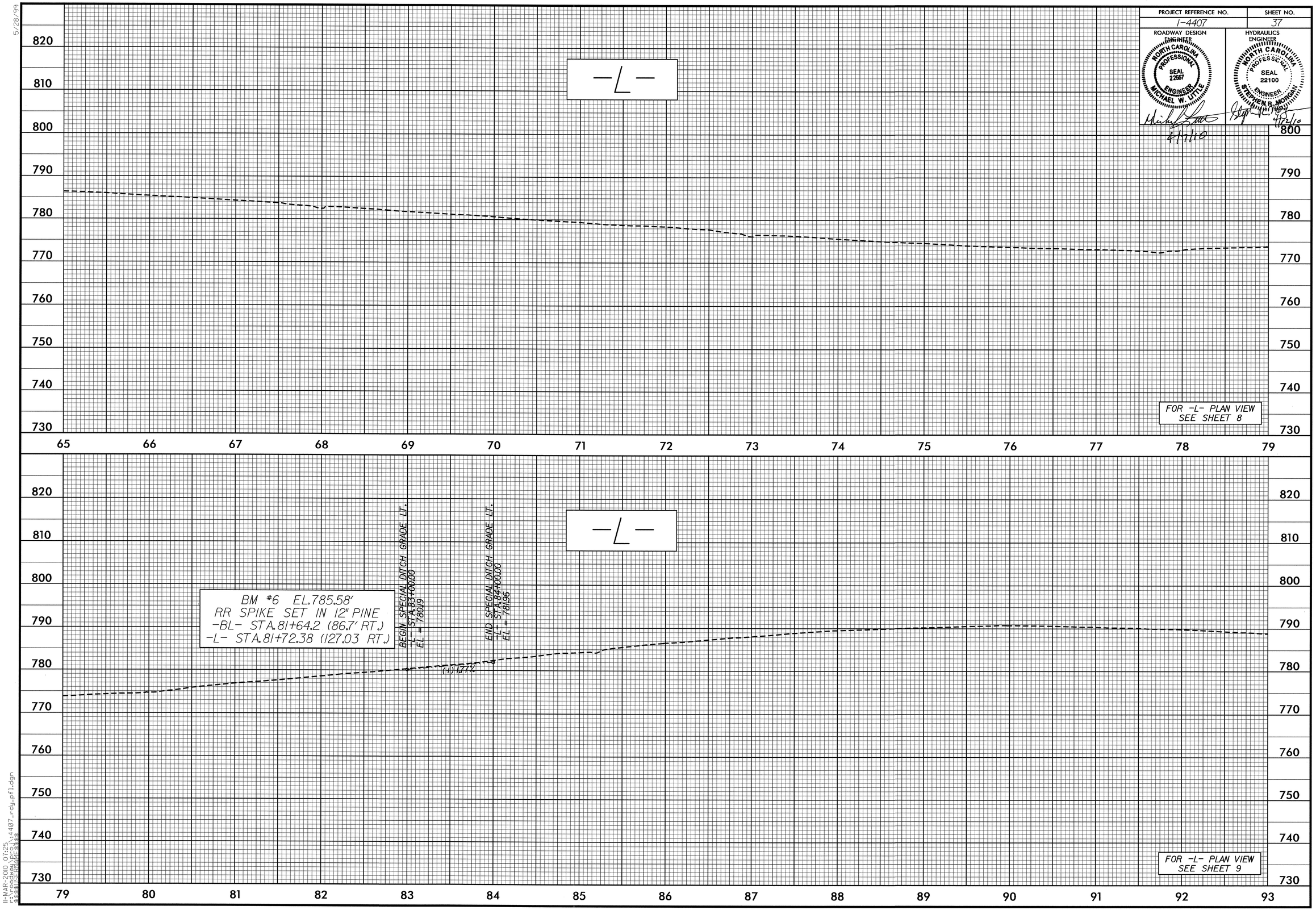
PROJECT REFERENCE NO.	SHEET NO.
I-4407	37

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE
4/7/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN
4/7/10



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PROJECT REFERENCE NO.	SHEET NO.
I-4407	38

ROADWAY DESIGN ENGINEER

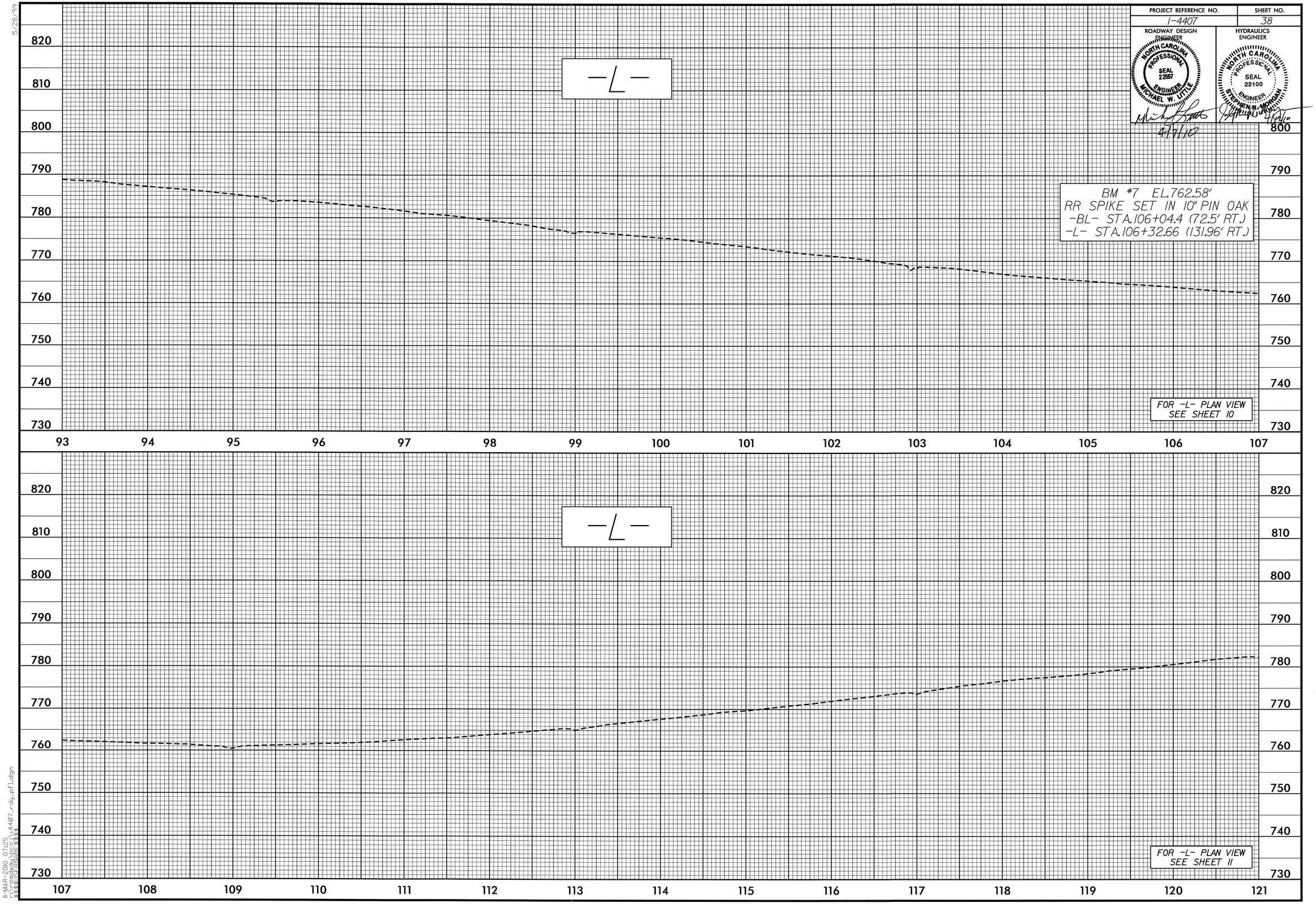
NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE

4/7/10

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN

4/7/10



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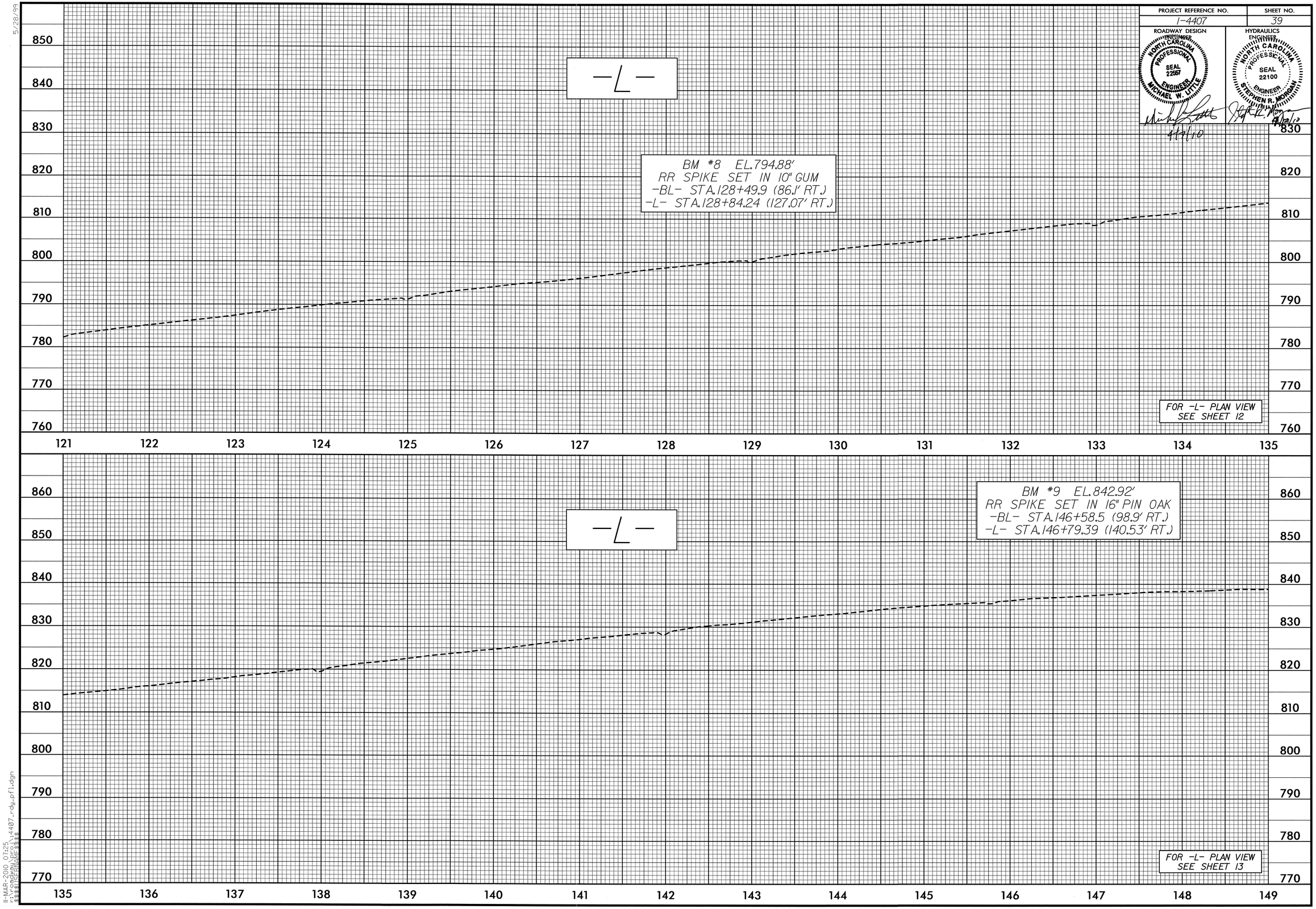
PROJECT REFERENCE NO.	SHEET NO.
I-4407	39

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE
4/21/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN
4/21/10



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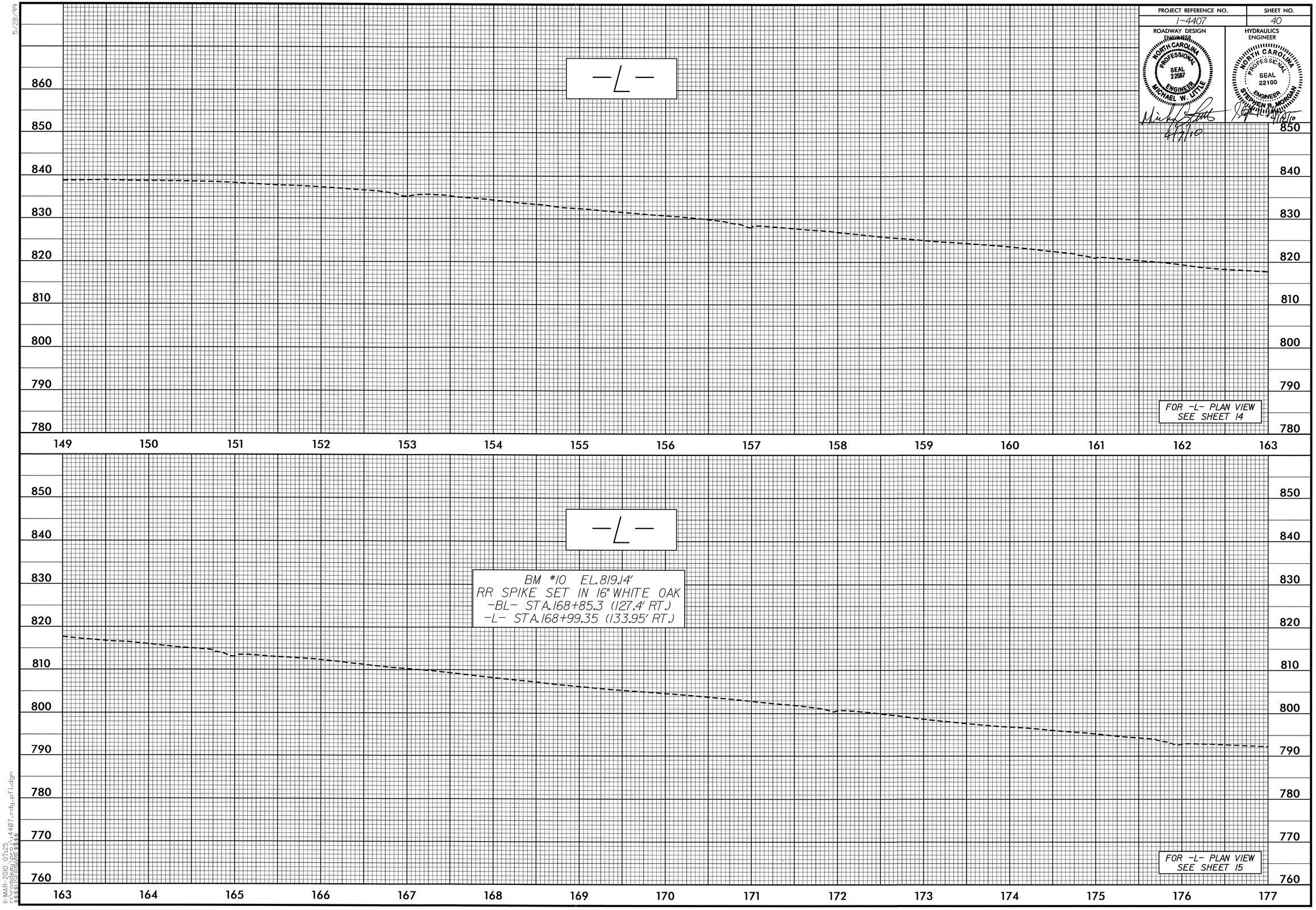
PROJECT REFERENCE NO.	SHEET NO.
I-4407	40

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22567 ENGINEER MICHAEL W. LITTLE
4/7/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN
4/7/10



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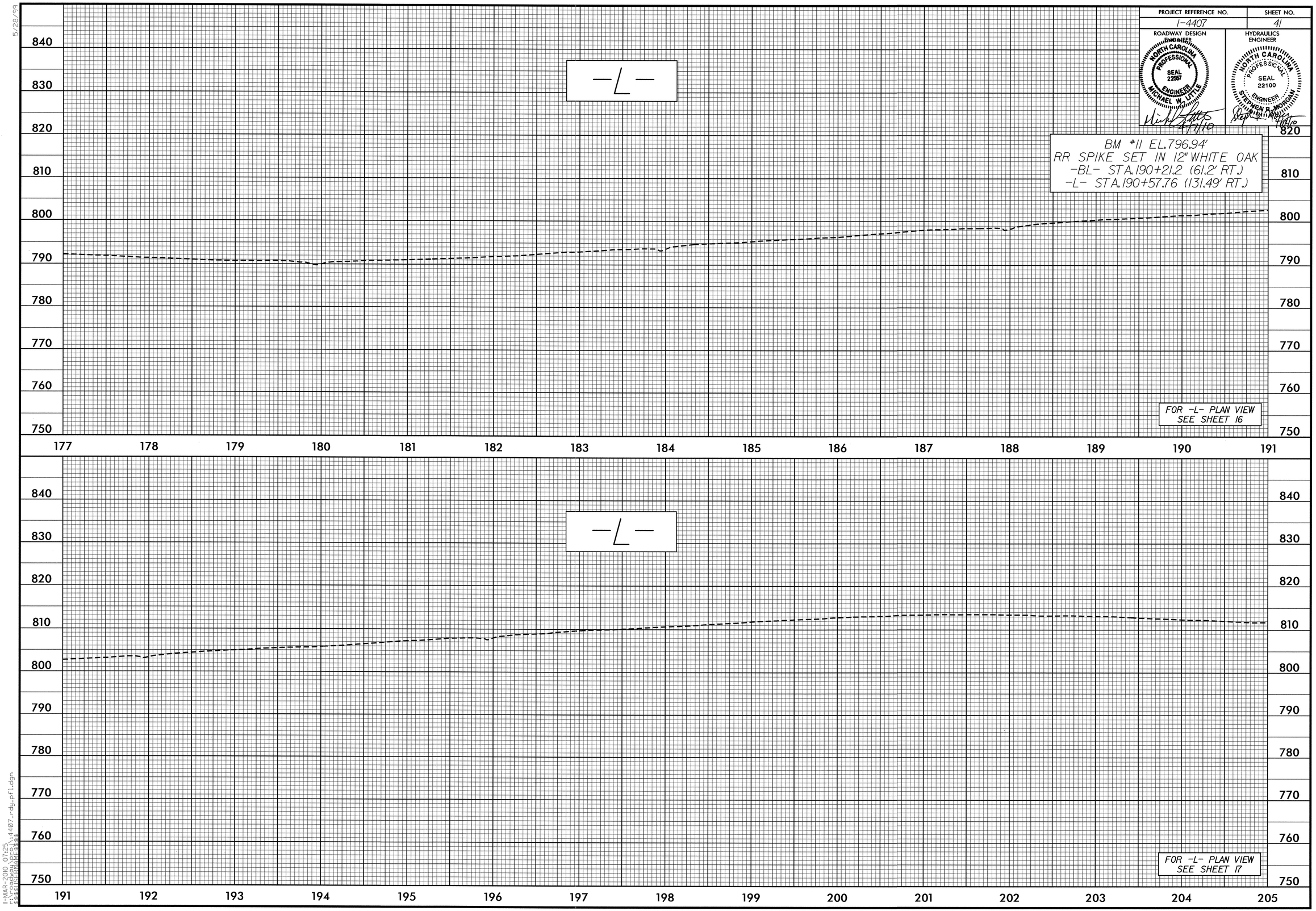
PROJECT REFERENCE NO.	SHEET NO.
I-4407	41

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22567 ENGINEER MICHAEL W. LITTLE
4/7/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN P. MORGAN
4/7/10



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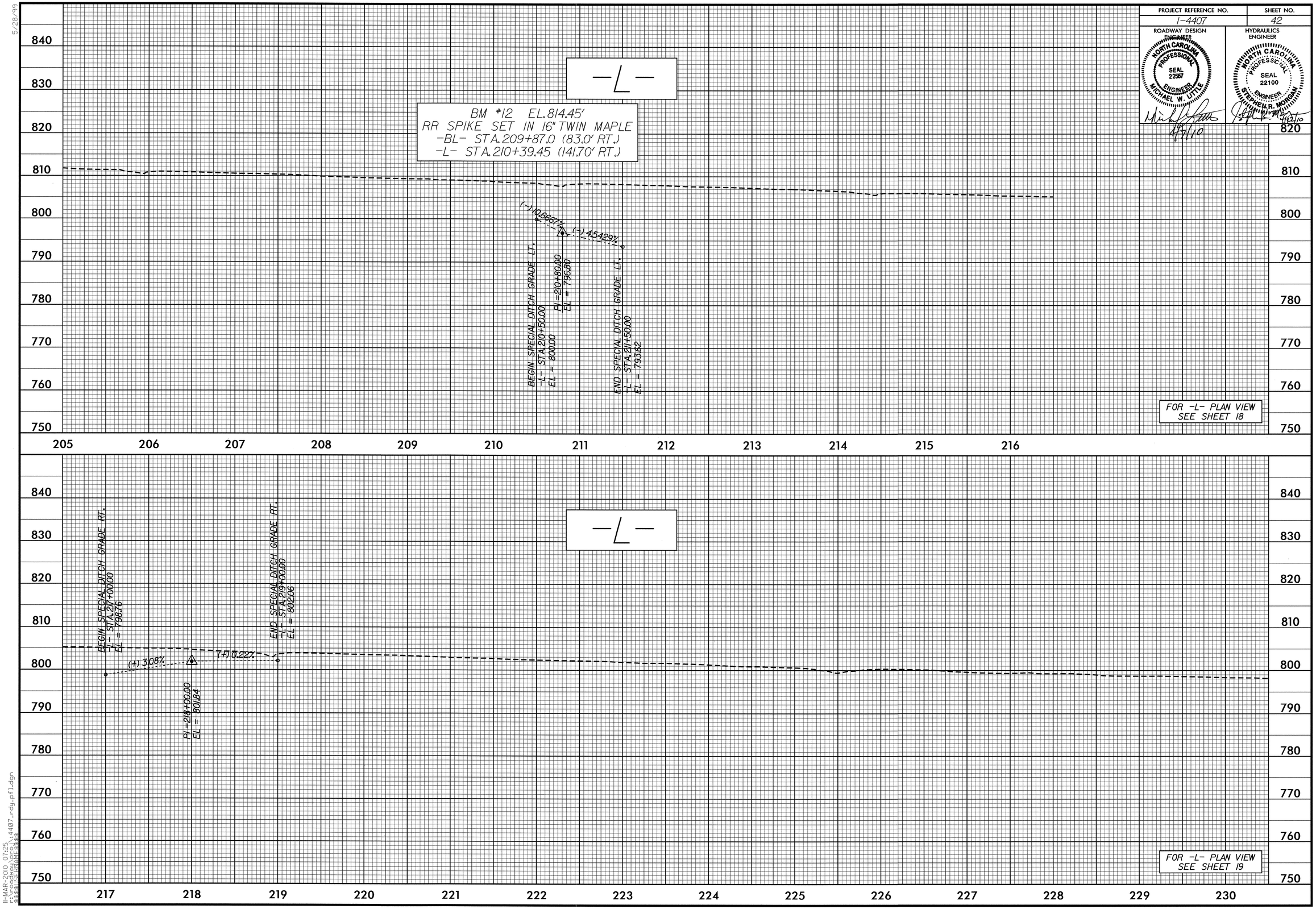
PROJECT REFERENCE NO.	SHEET NO.
I-4407	42

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE
4/7/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN
4/7/10



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PROJECT REFERENCE NO.	SHEET NO.
I-4407	43

ROADWAY DESIGN ENGINEER

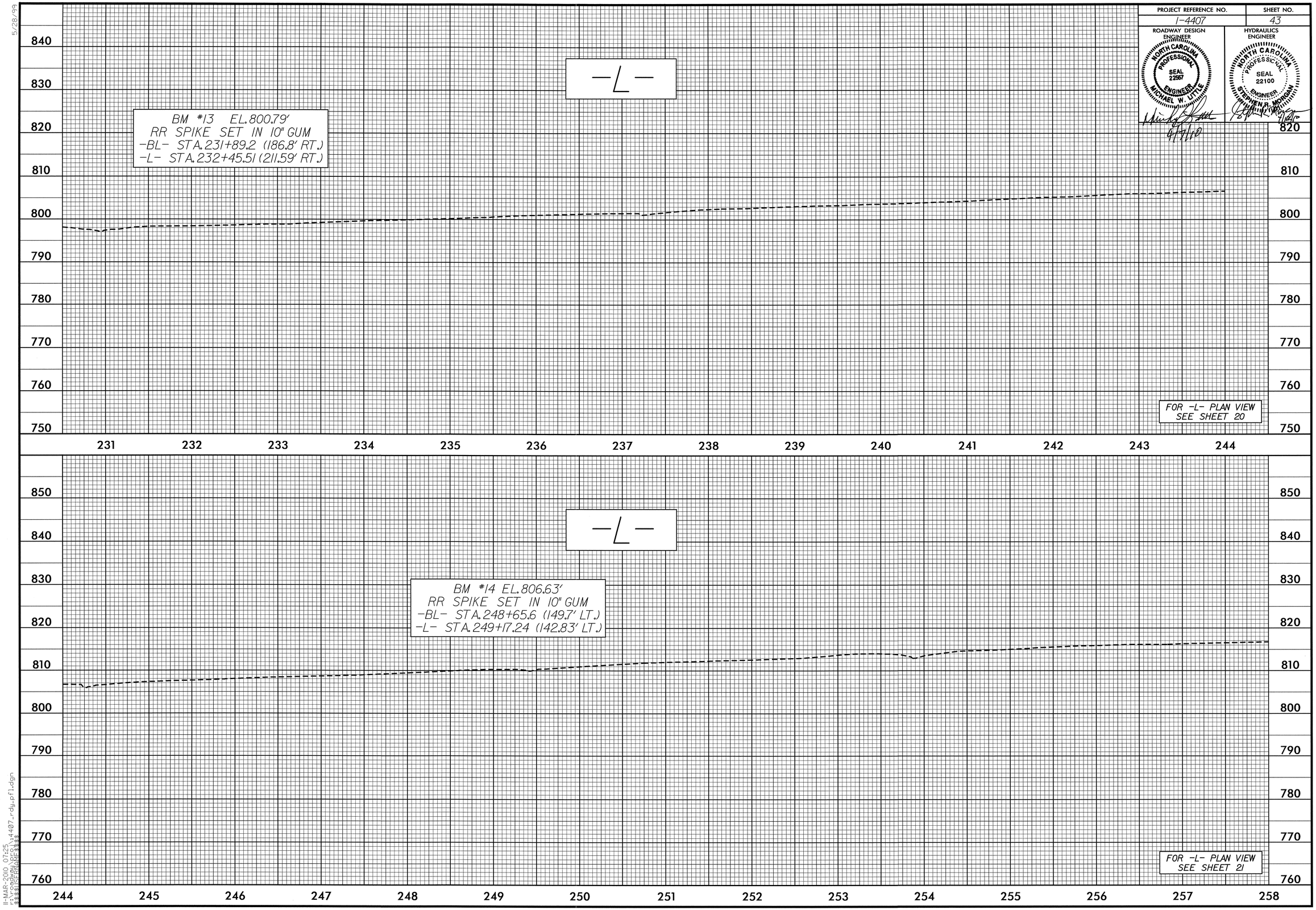
NORTH CAROLINA PROFESSIONAL SEAL 22567 ENGINEER MICHAEL W. LITTLE

4/7/10

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN

4/7/10



5/28/99

11-MAR-2010 07:25
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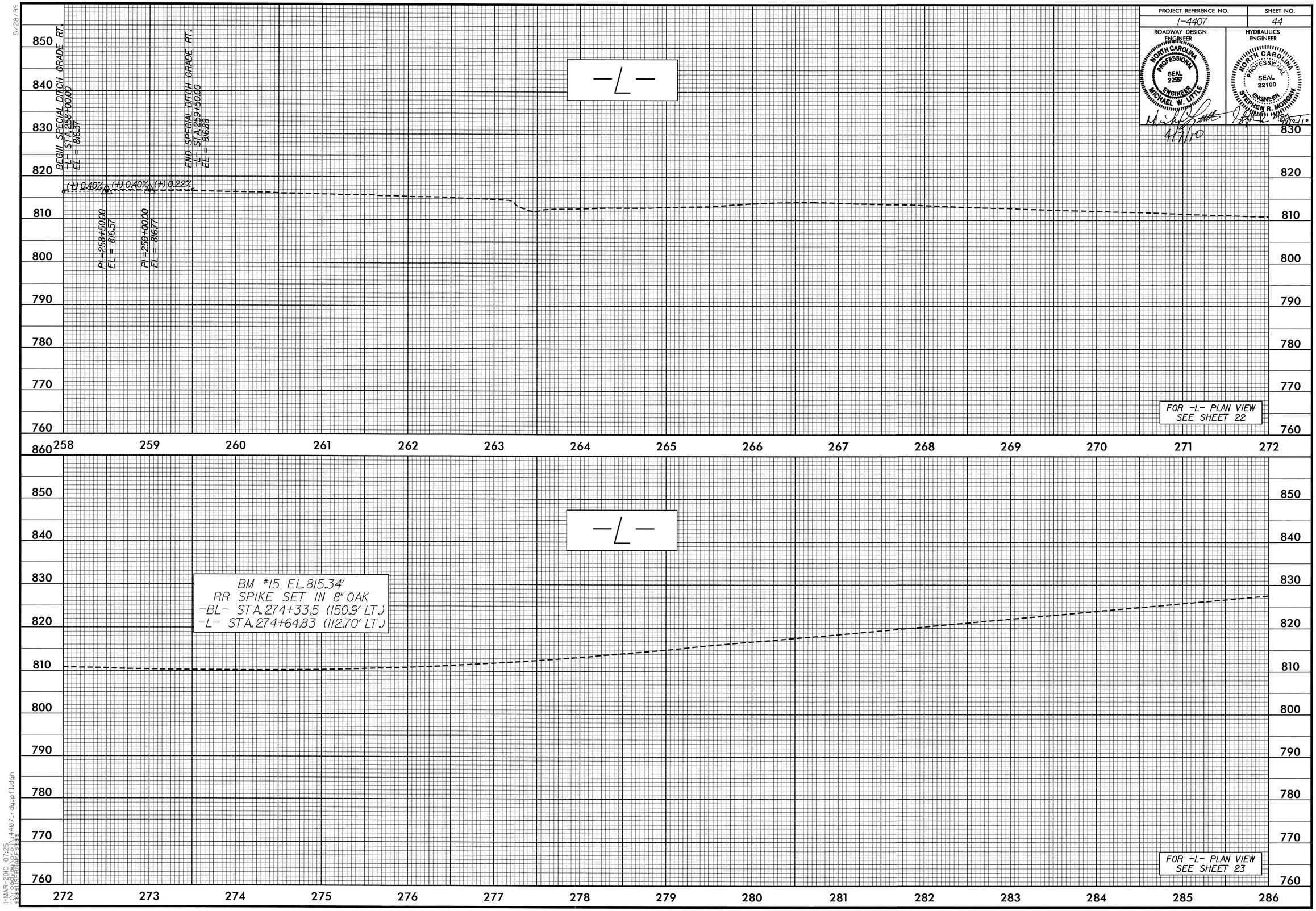
PROJECT REFERENCE NO.	SHEET NO.
I-4407	44

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE
4/7/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN



5/28/99

11-MAR-2010 07:25
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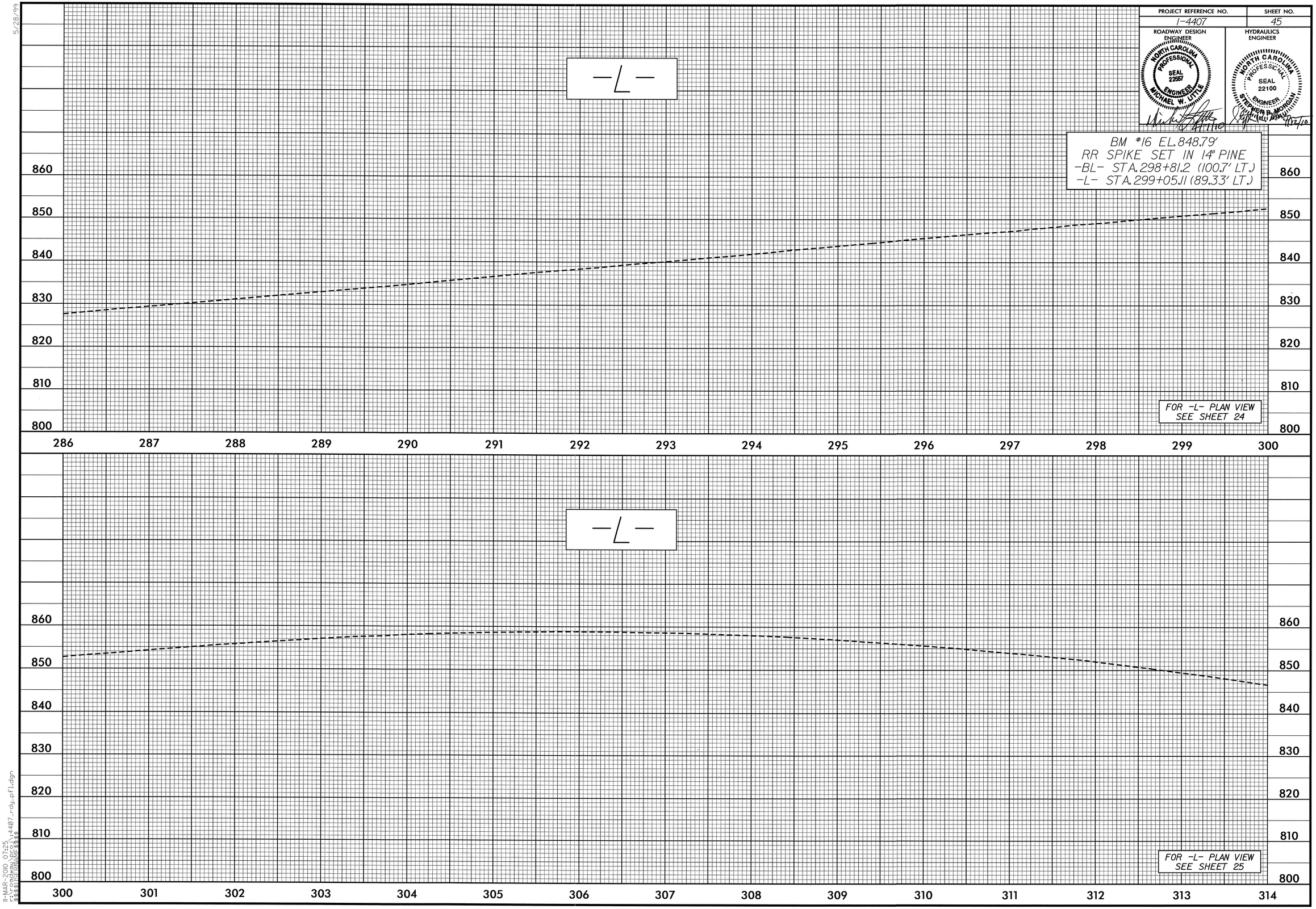
PROJECT REFERENCE NO.	SHEET NO.
I-4407	45

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN B. MORGAN



5/28/99

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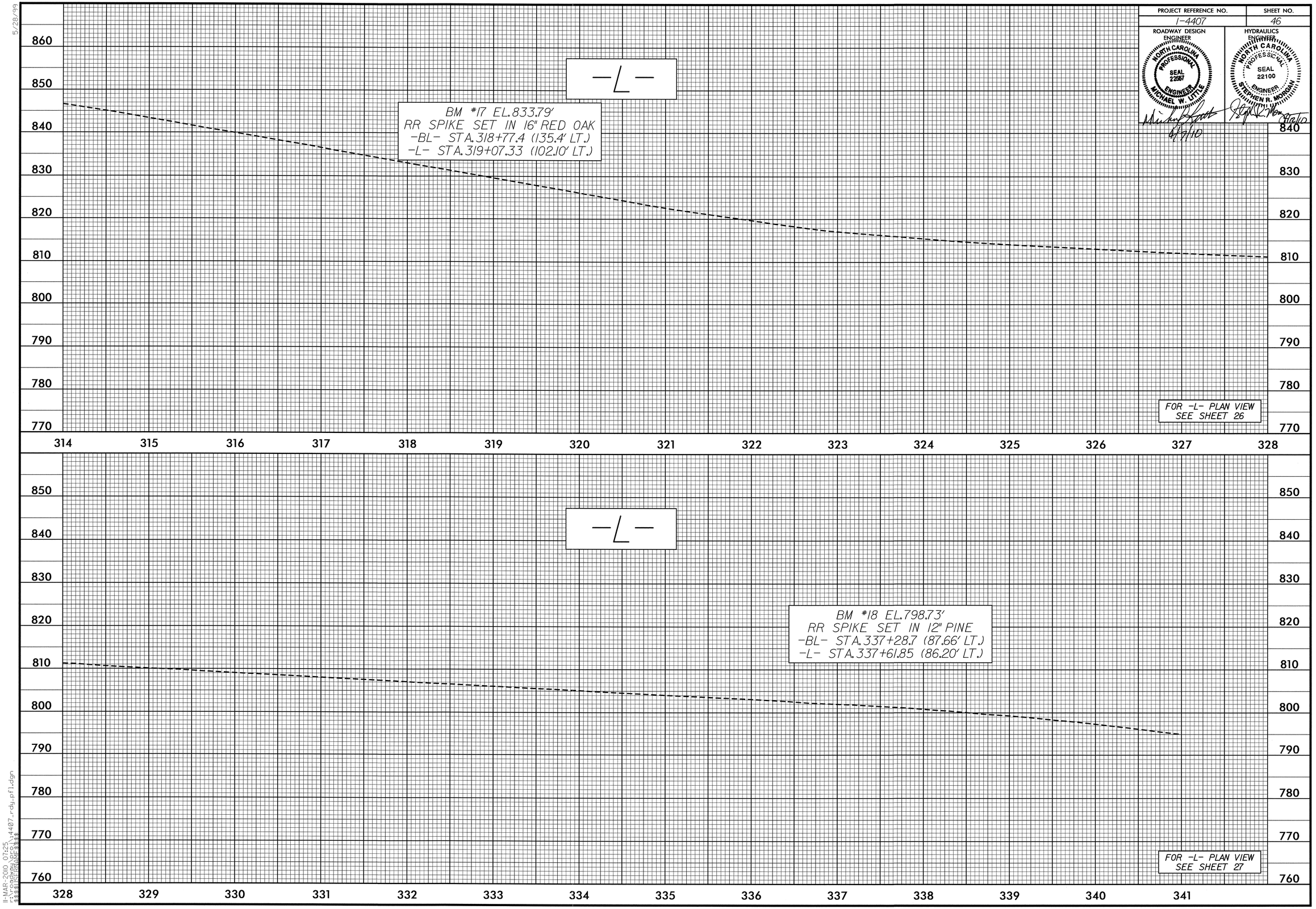
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
I-4407	46

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE
6/7/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN
6/7/10



5/28/99

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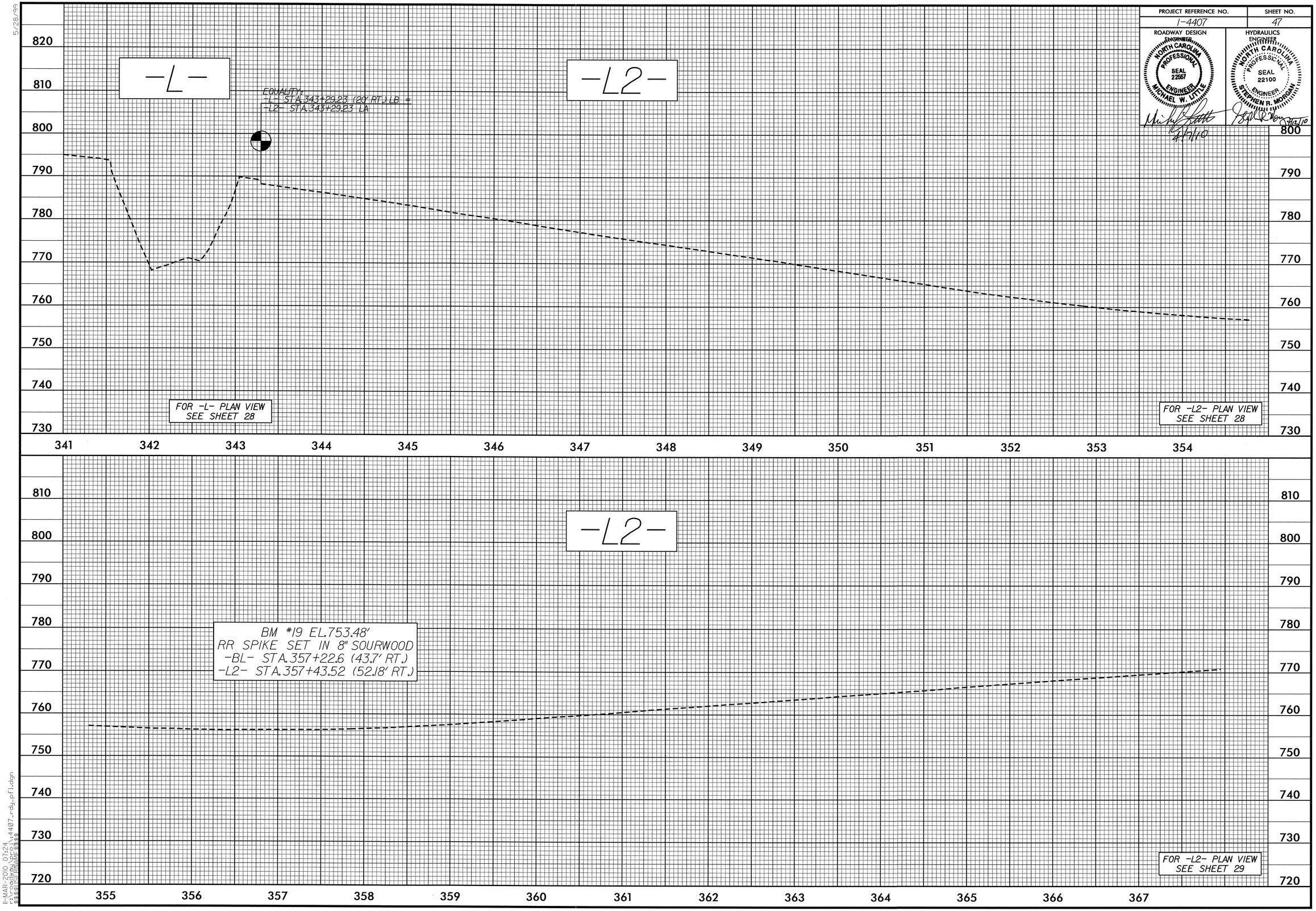
PROJECT REFERENCE NO.	SHEET NO.
I-4407	47

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22551 ENGINEER MICHAEL W. LITTLE
4/9/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN
4/12/10



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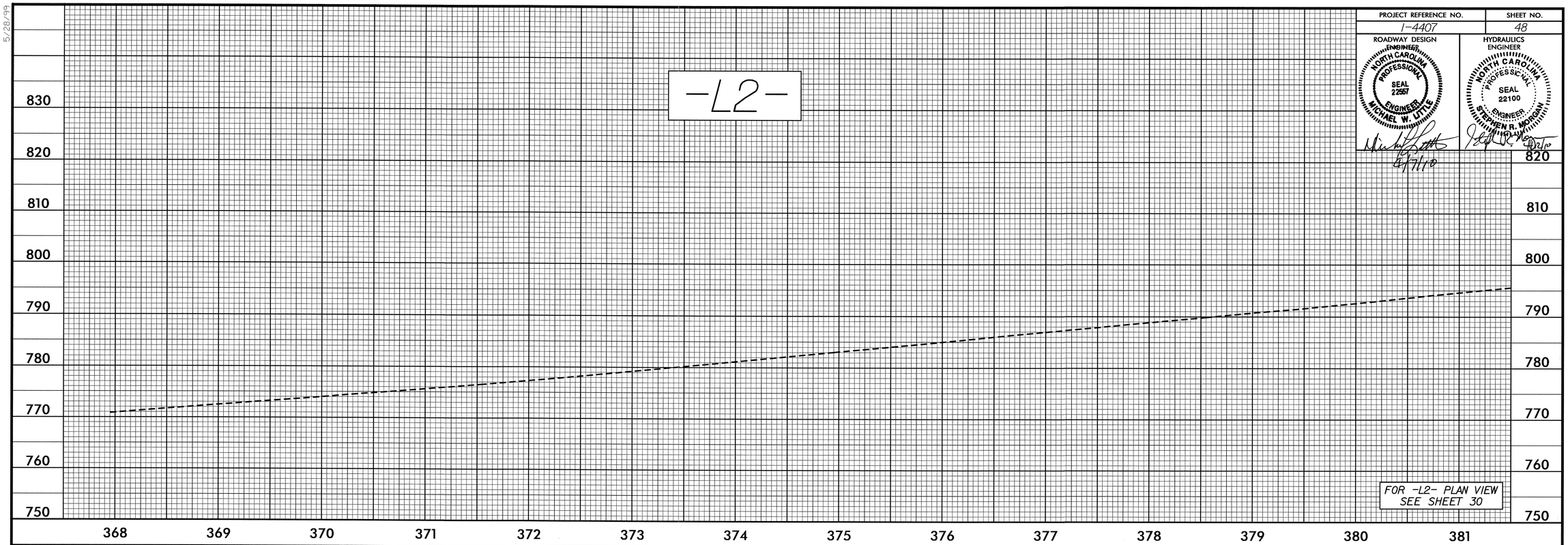
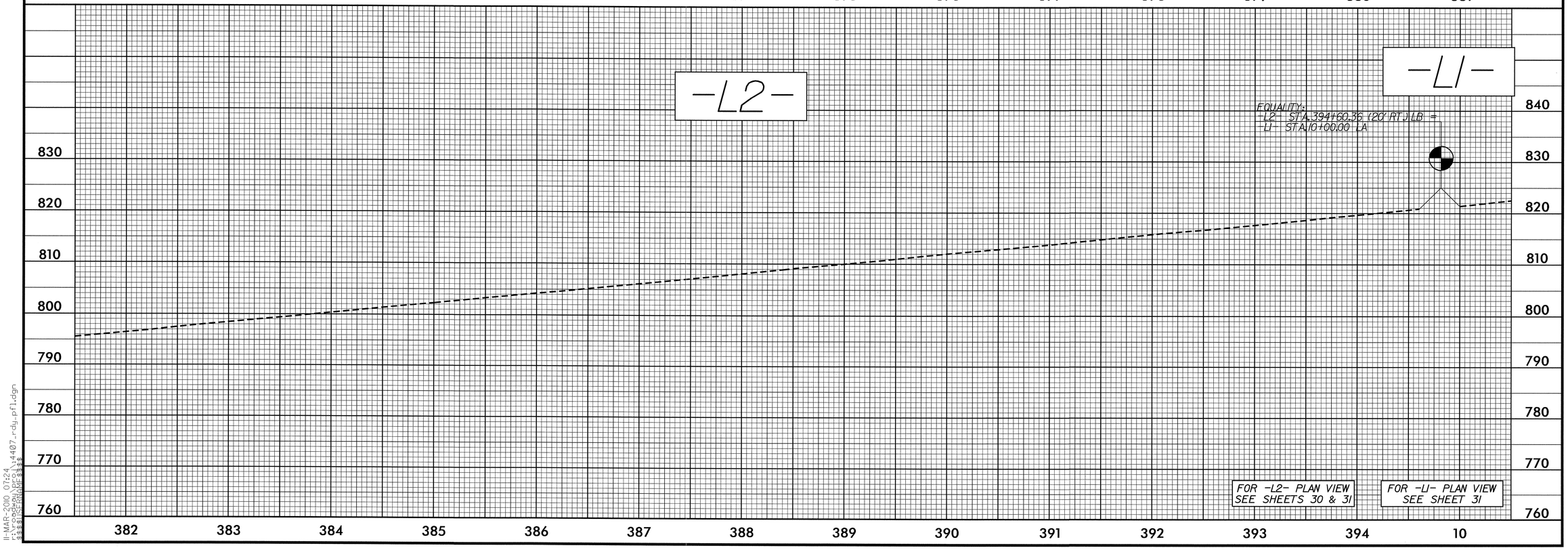
PROJECT REFERENCE NO.	SHEET NO.
I-4407	48

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE
4/7/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN
4/7/10



FOR -L2- PLAN VIEW SEE SHEET 30



FOR -L2- PLAN VIEW SEE SHEETS 30 & 31

FOR -L1- PLAN VIEW SEE SHEET 31

5/28/99

11-MAR-2010 07:24
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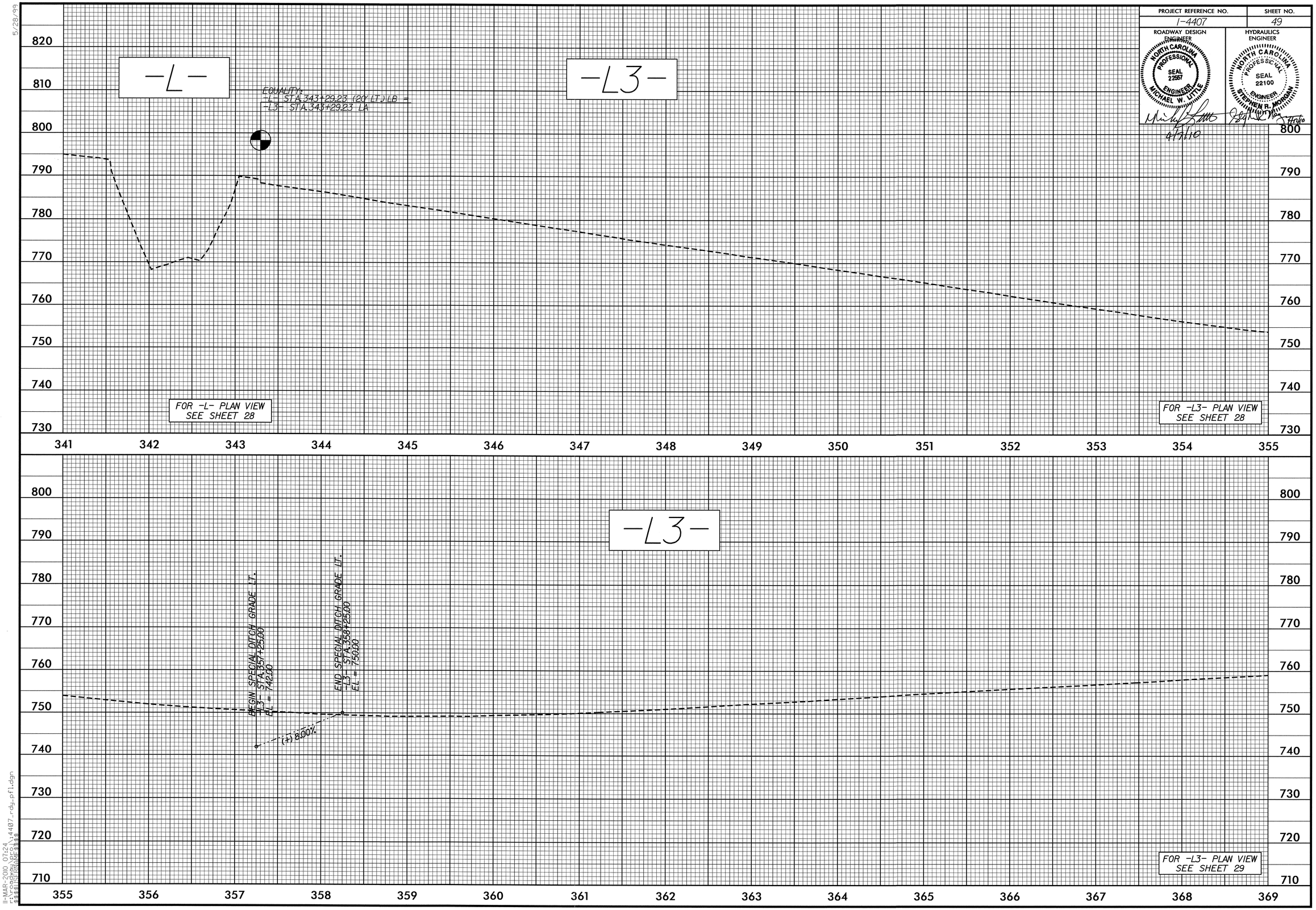
PROJECT REFERENCE NO.	SHEET NO.
I-4407	49

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE
4/7/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN
4/7/10



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PROJECT REFERENCE NO.	SHEET NO.
I-4407	50

ROADWAY DESIGN ENGINEER

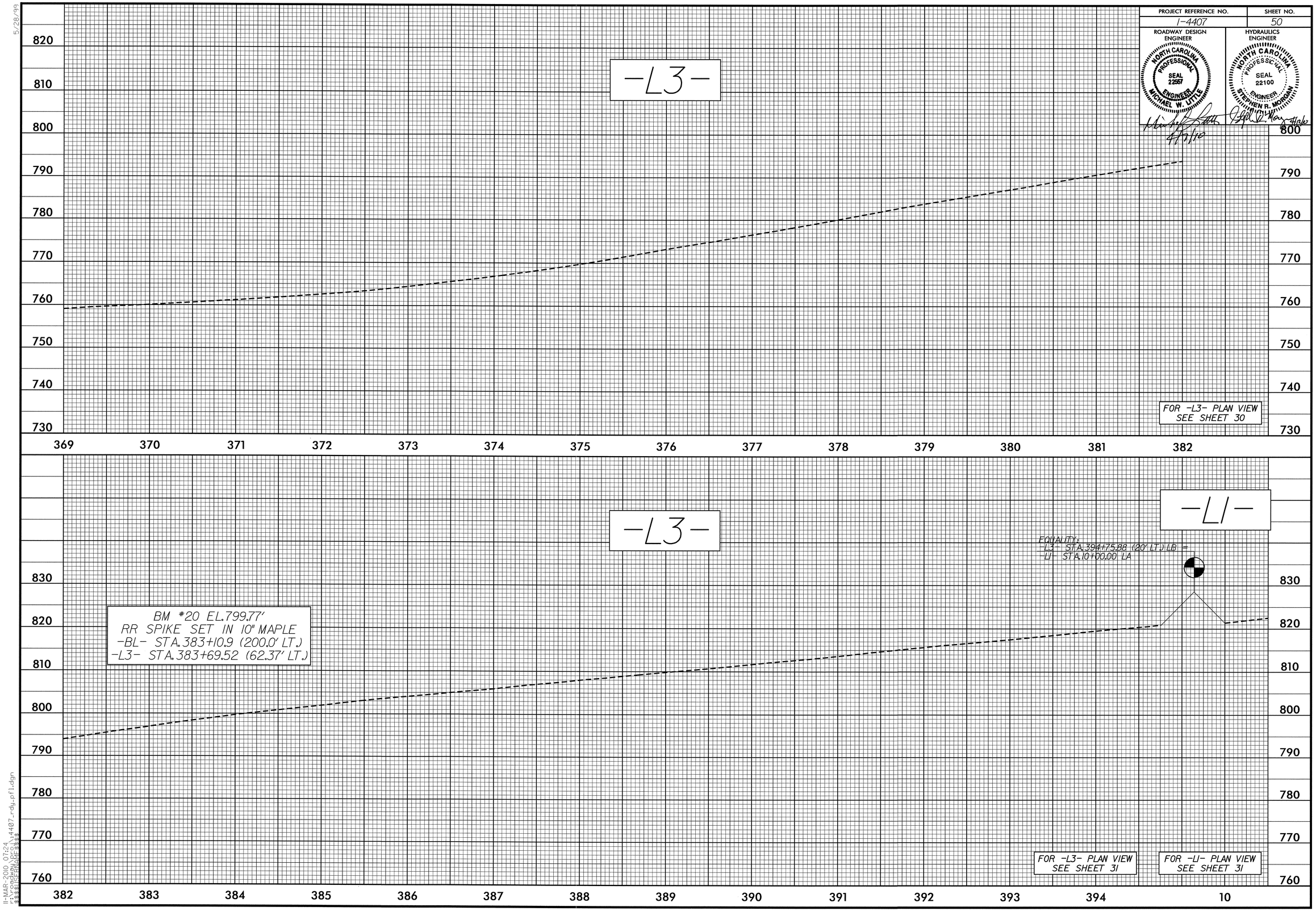
NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE

4/7/10

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN

4/7/10



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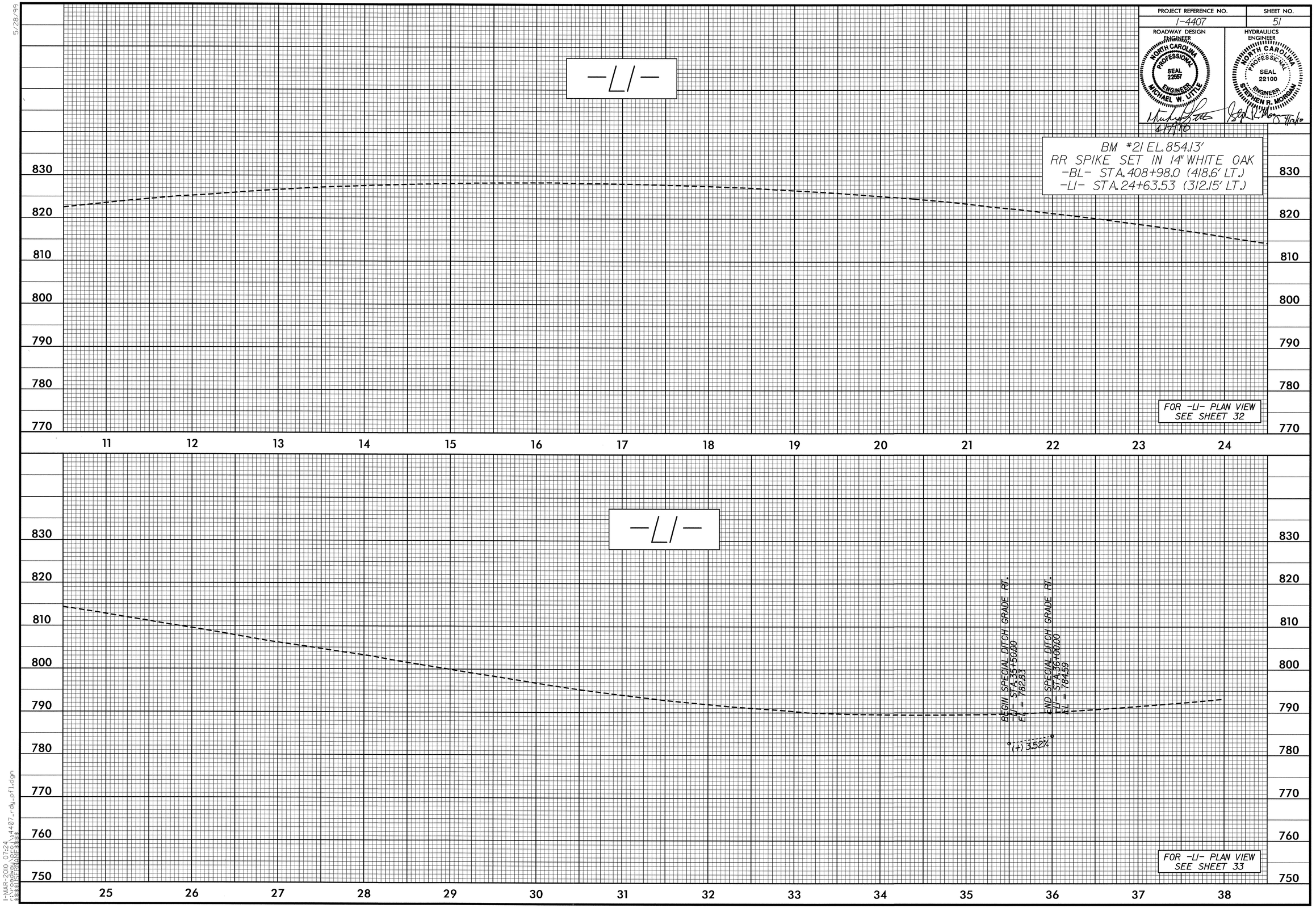
PROJECT REFERENCE NO.	SHEET NO.
I-4407	51
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE
4/17/10

NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN
4/17/10



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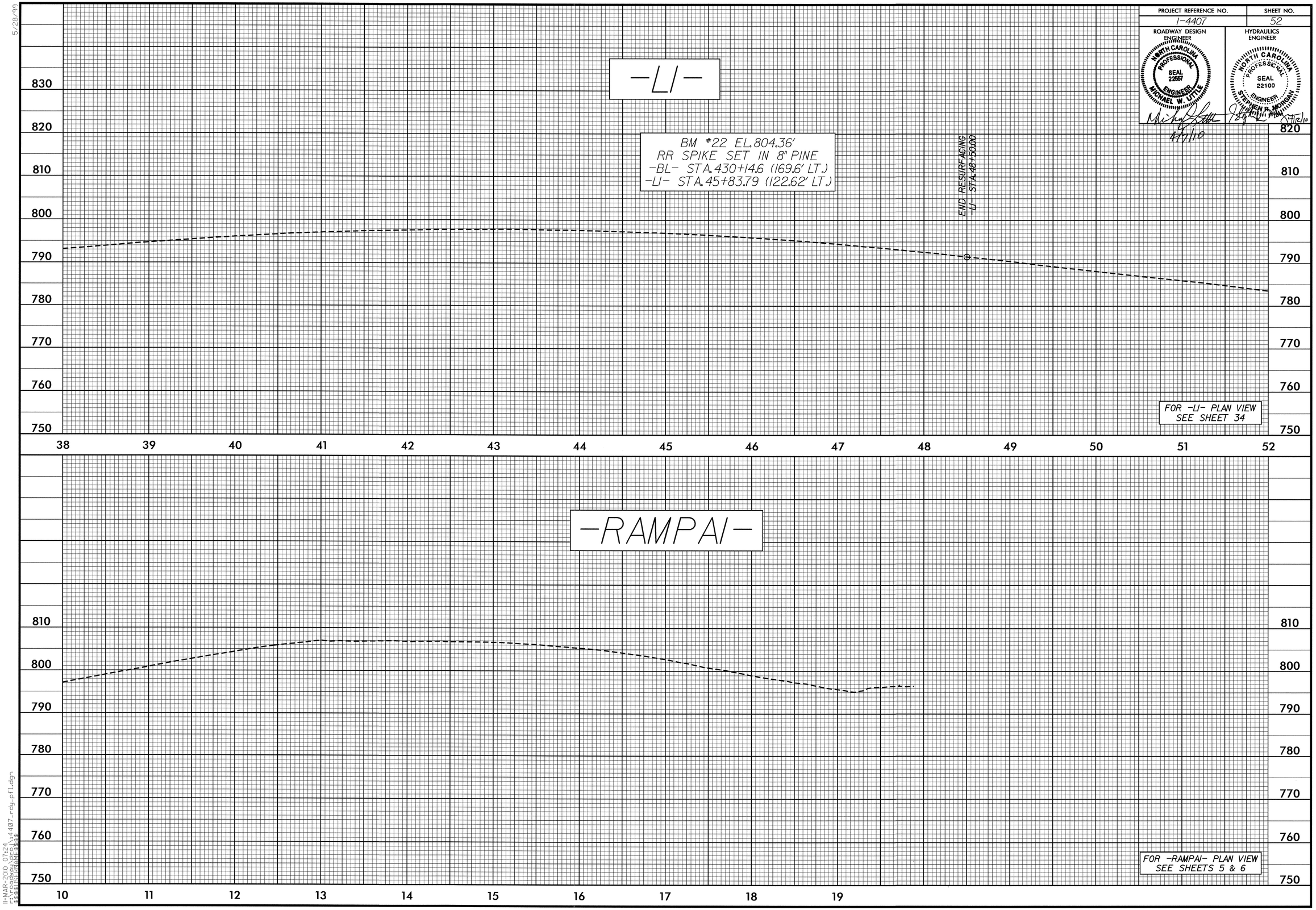
PROJECT REFERENCE NO.	SHEET NO.
I-4407	52

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE
4/9/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN
4/12/10



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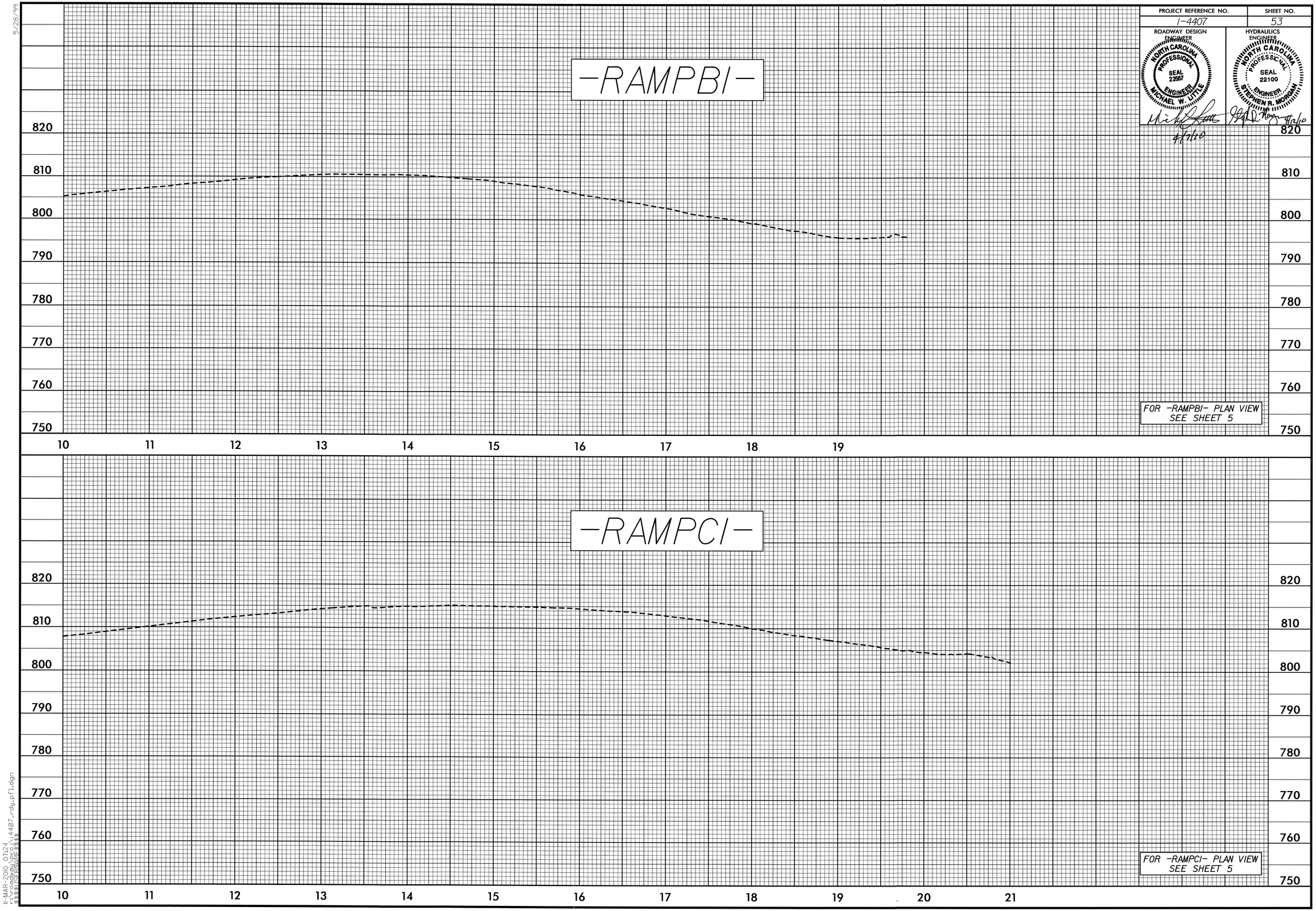
PROJECT REFERENCE NO.	SHEET NO.
I-4407	53

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE
4/7/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN
4/7/10



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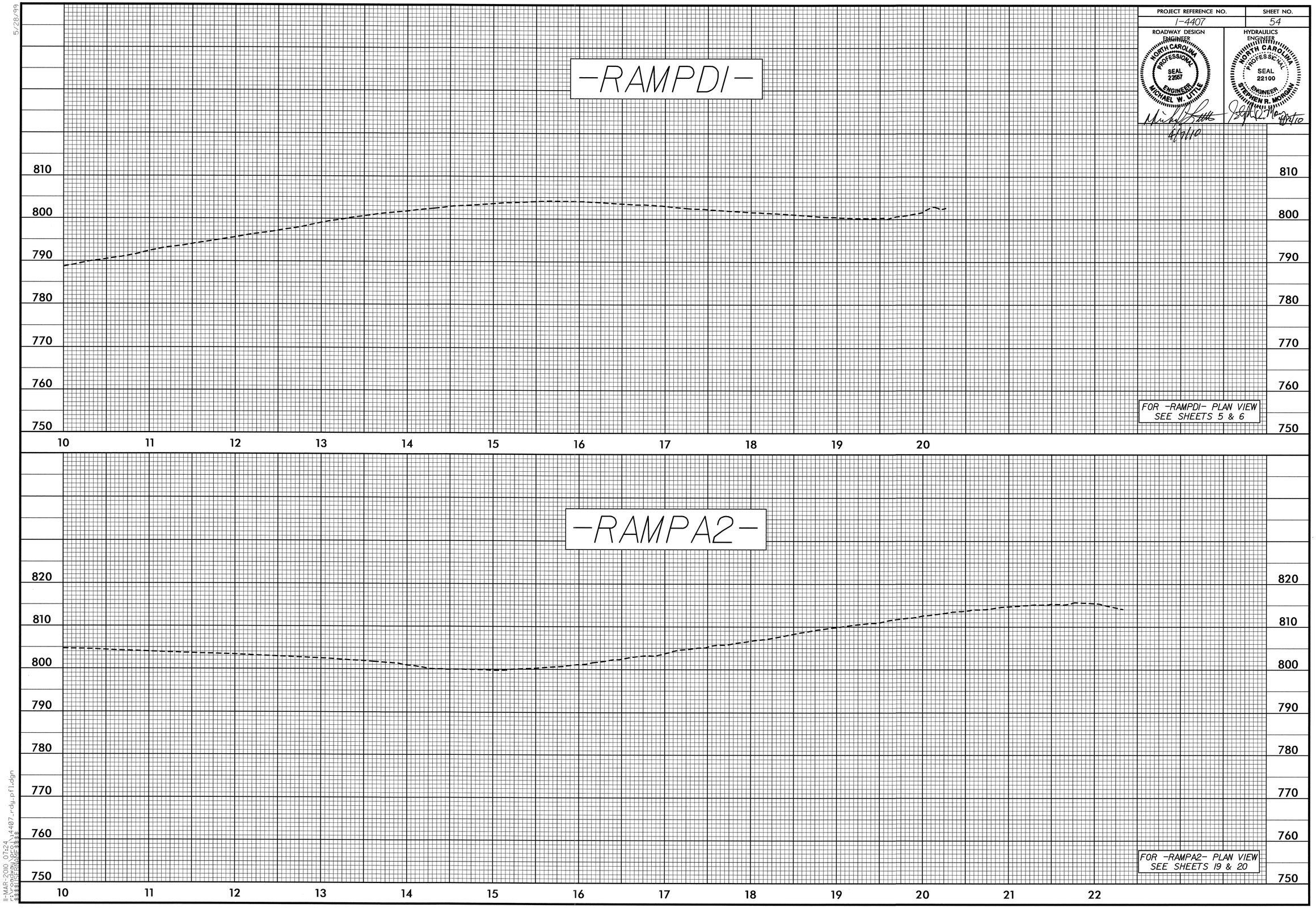
PROJECT REFERENCE NO.	SHEET NO.
I-4407	54

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE
4/7/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN
4/7/10



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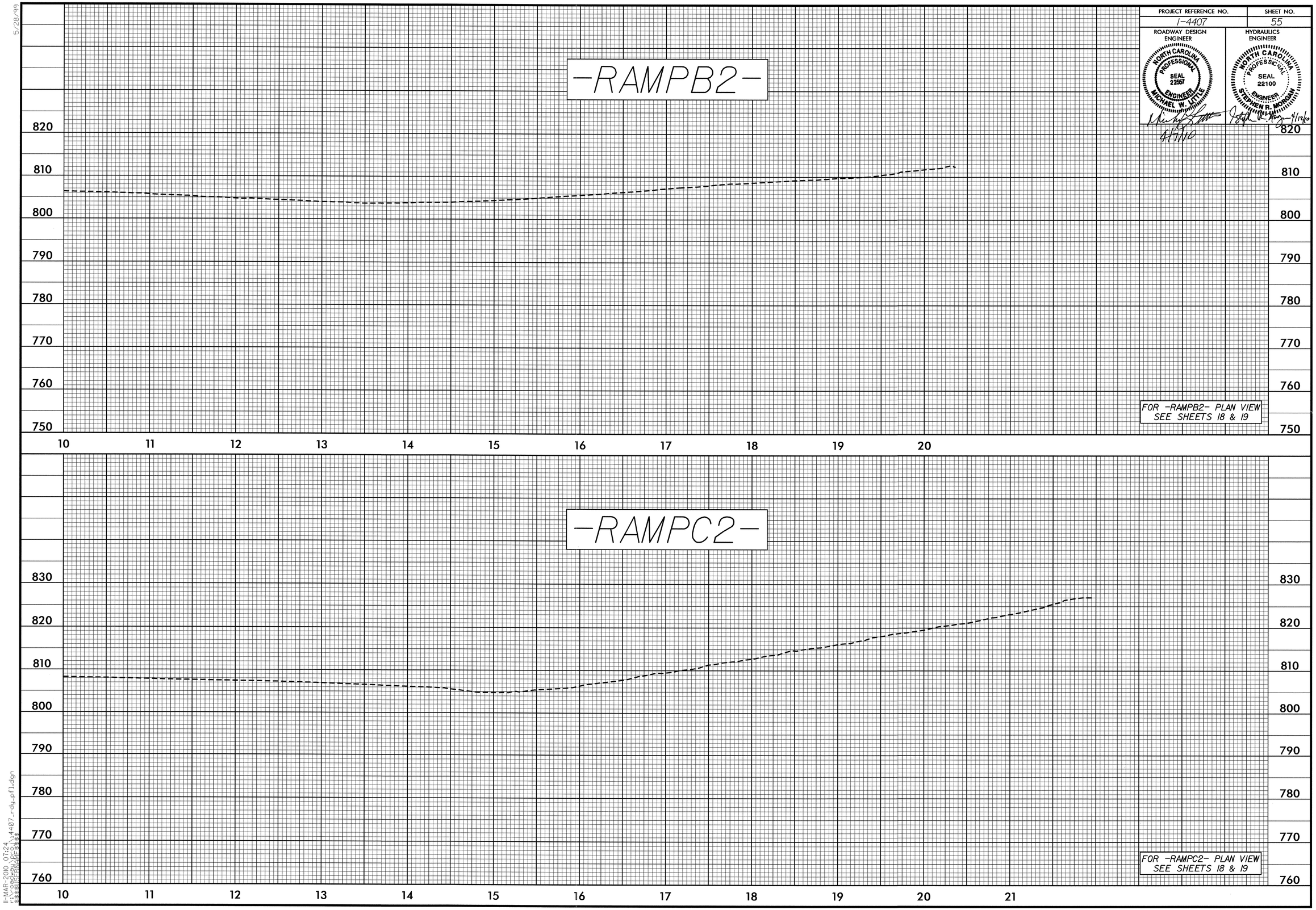
PROJECT REFERENCE NO.	SHEET NO.
I-4407	55

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE
4/14/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN
4/14/10



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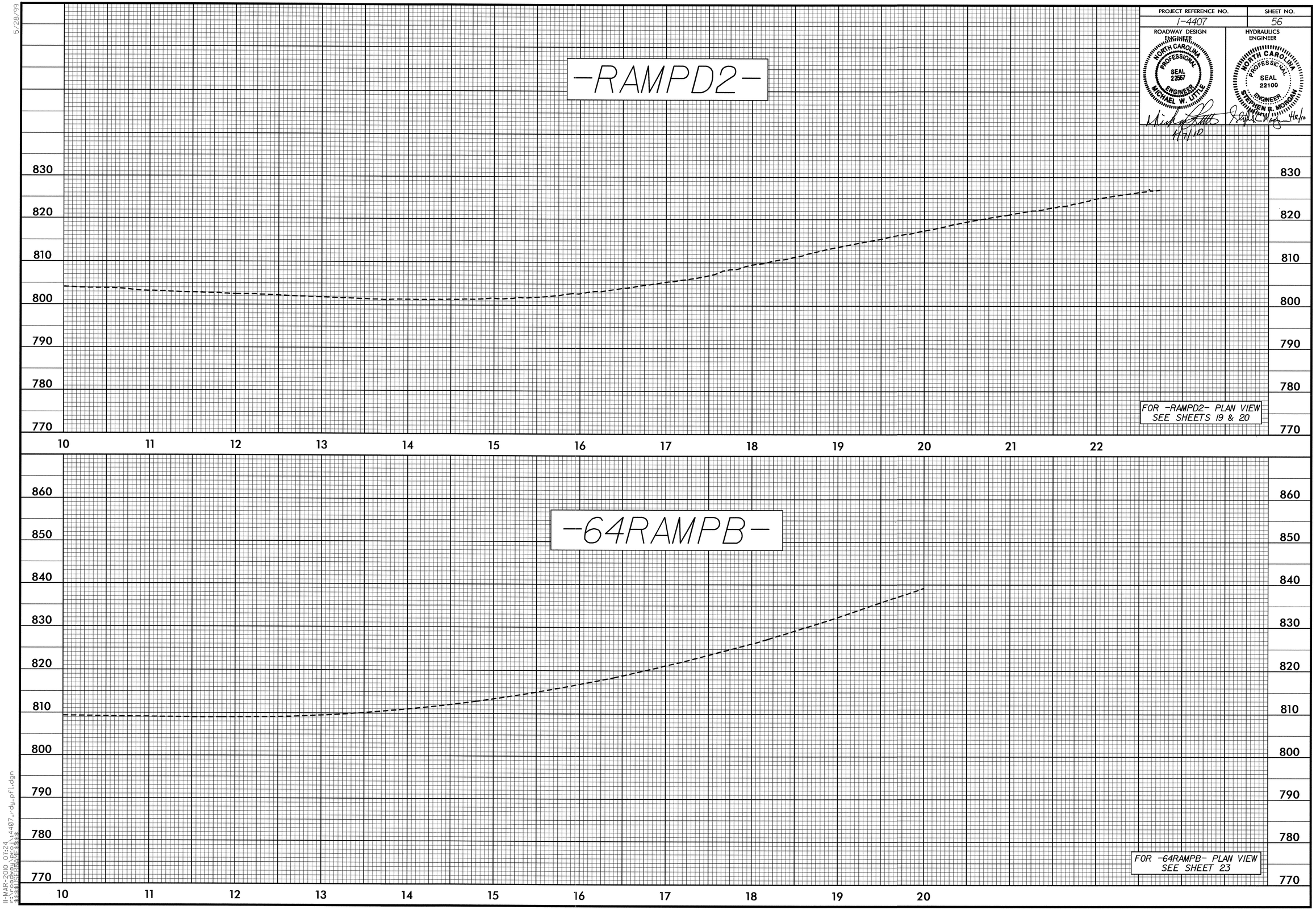
PROJECT REFERENCE NO.	SHEET NO.
I-4407	56

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE
4/7/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN
4/8/10



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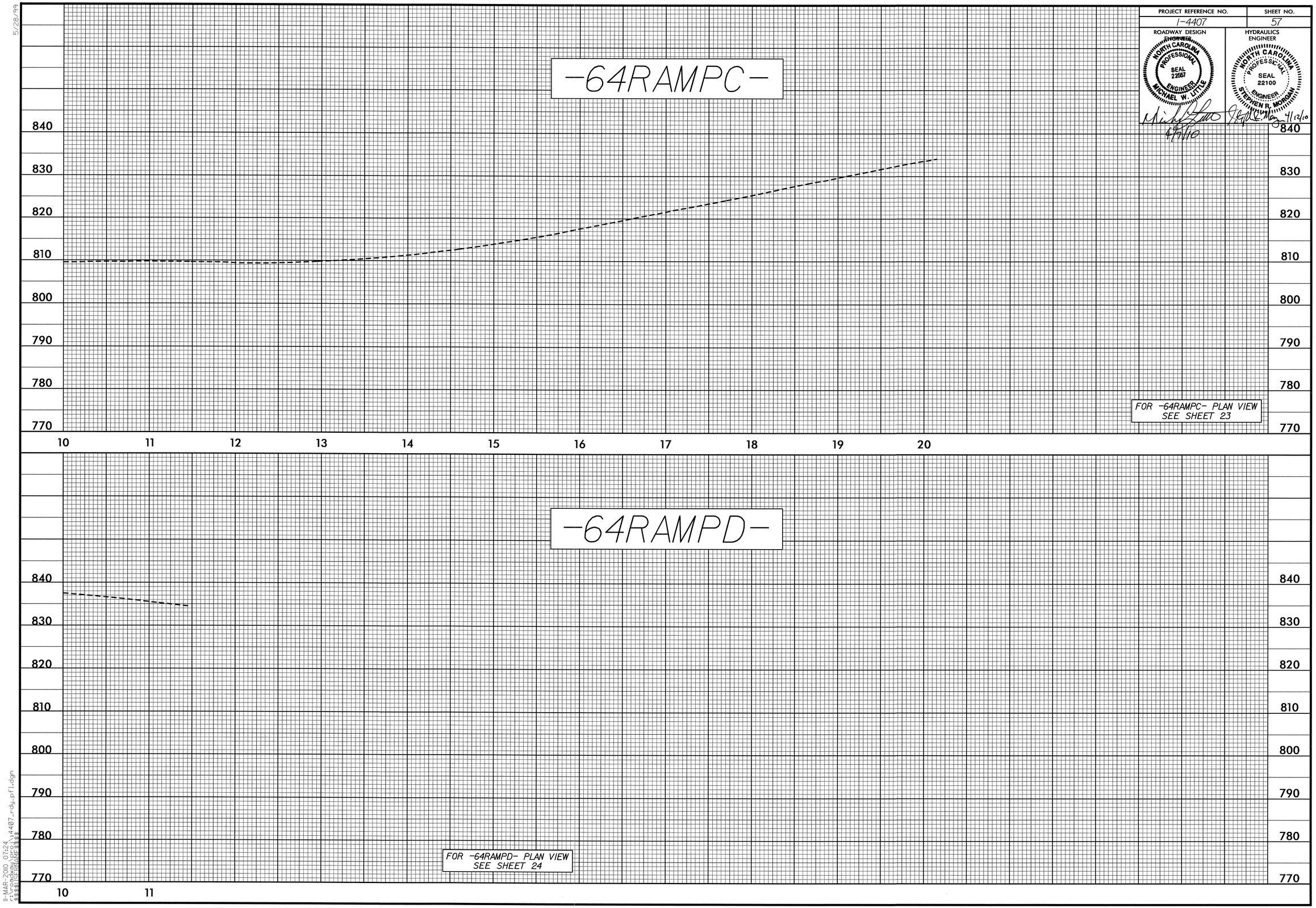
PROJECT REFERENCE NO.	SHEET NO.
I-4407	57

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE
4/9/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN
4/12/10



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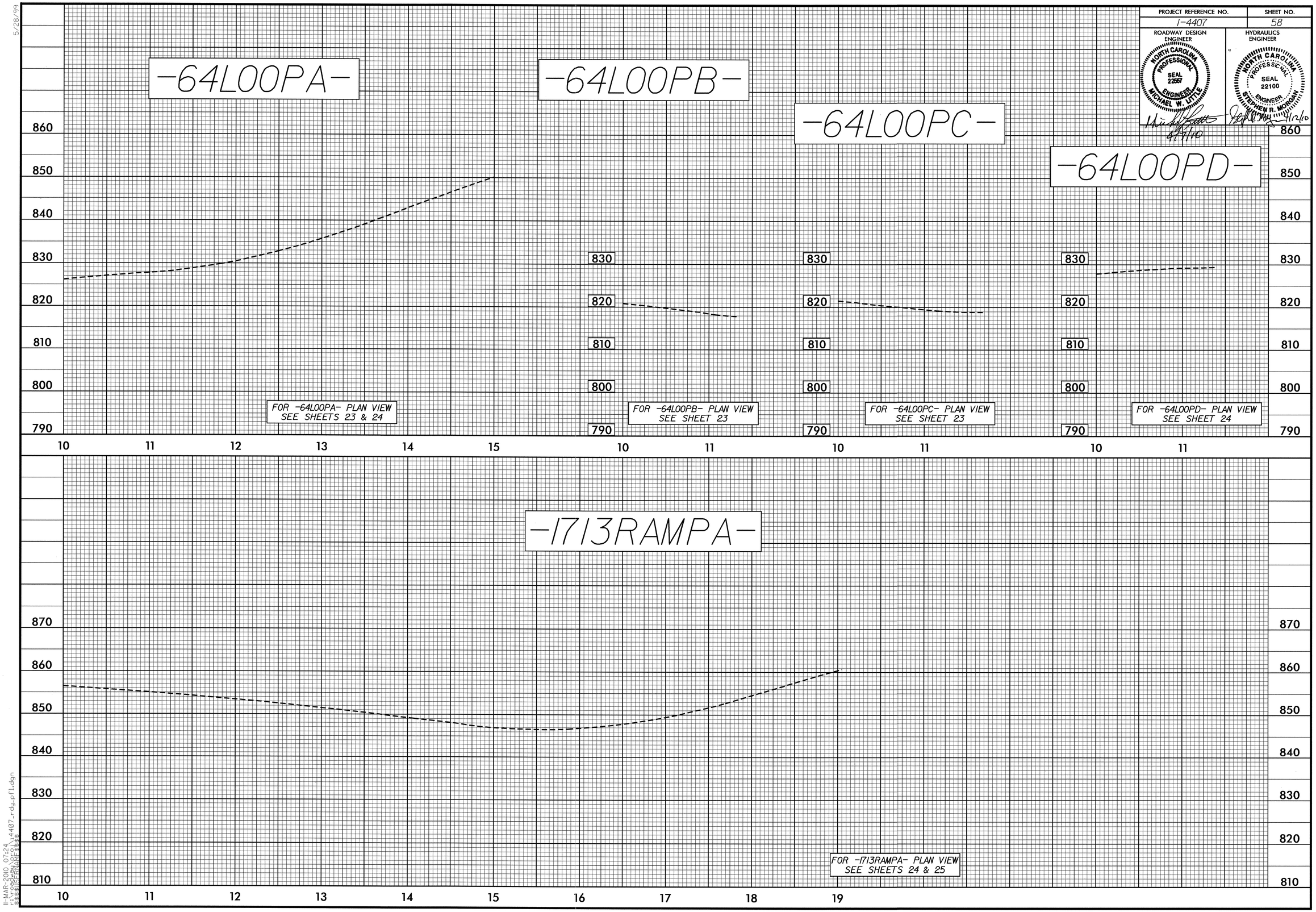
PROJECT REFERENCE NO.	SHEET NO.
I-4407	58

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22567 ENGINEER MICHAEL W. LITTLE
4/7/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN
4/7/10



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PROJECT REFERENCE NO.	SHEET NO.
I-4407	59

ROADWAY DESIGN ENGINEER

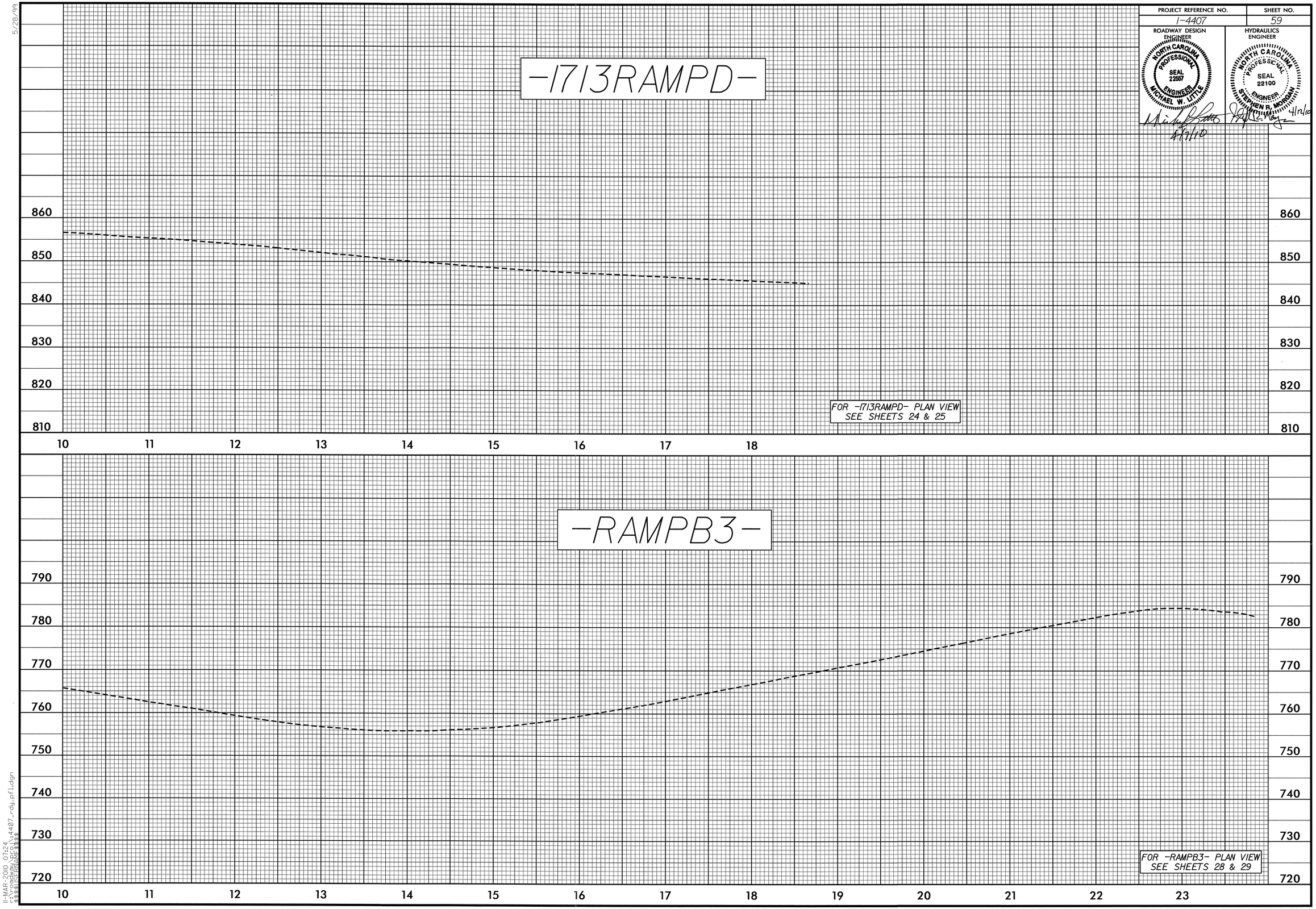
NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE

4/7/10

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN

4/12/10



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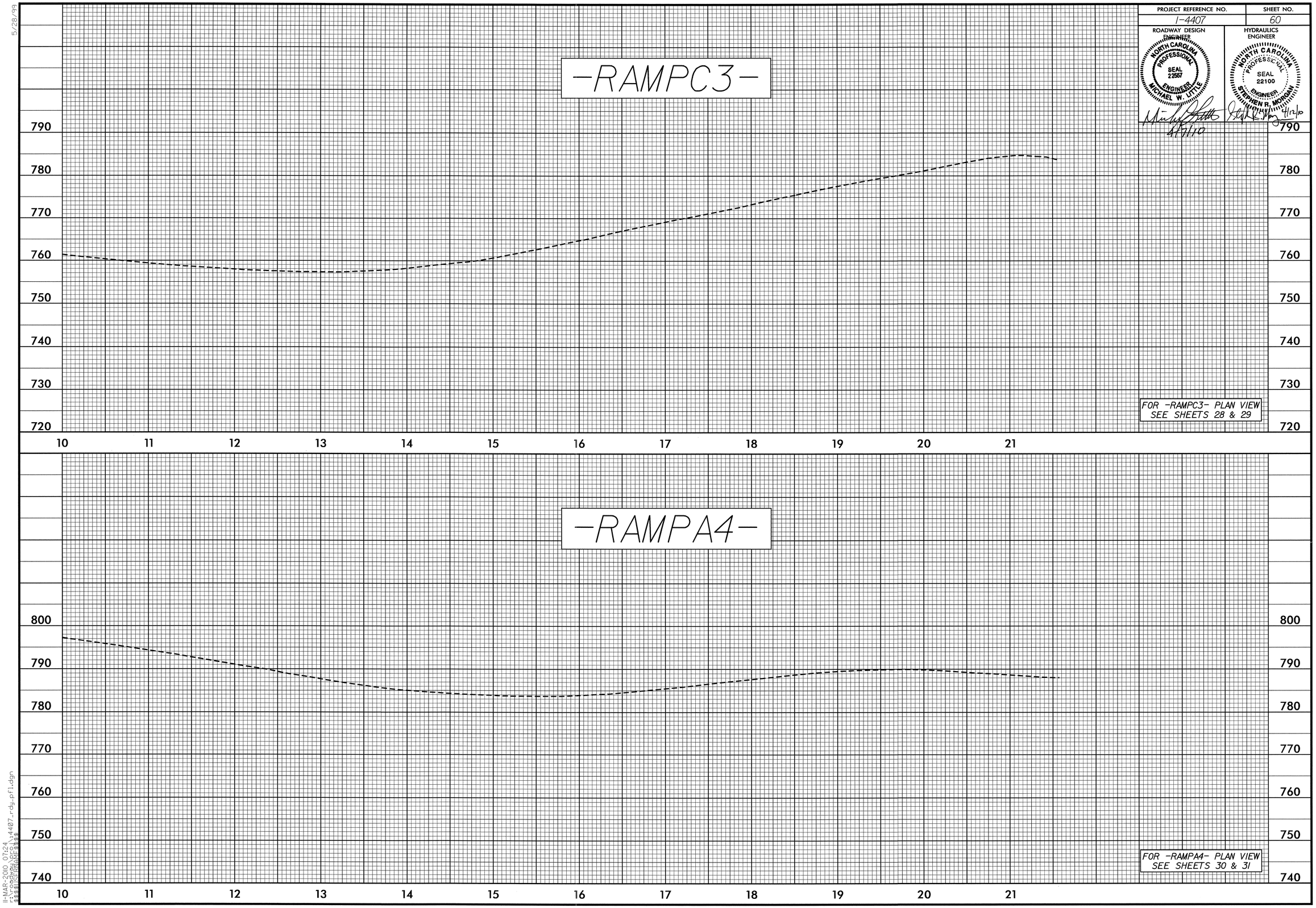
PROJECT REFERENCE NO.	SHEET NO.
I-4407	60

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE
4/12/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN
4/12/10



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PROJECT REFERENCE NO.	SHEET NO.
I-4407	61

ROADWAY DESIGN ENGINEER

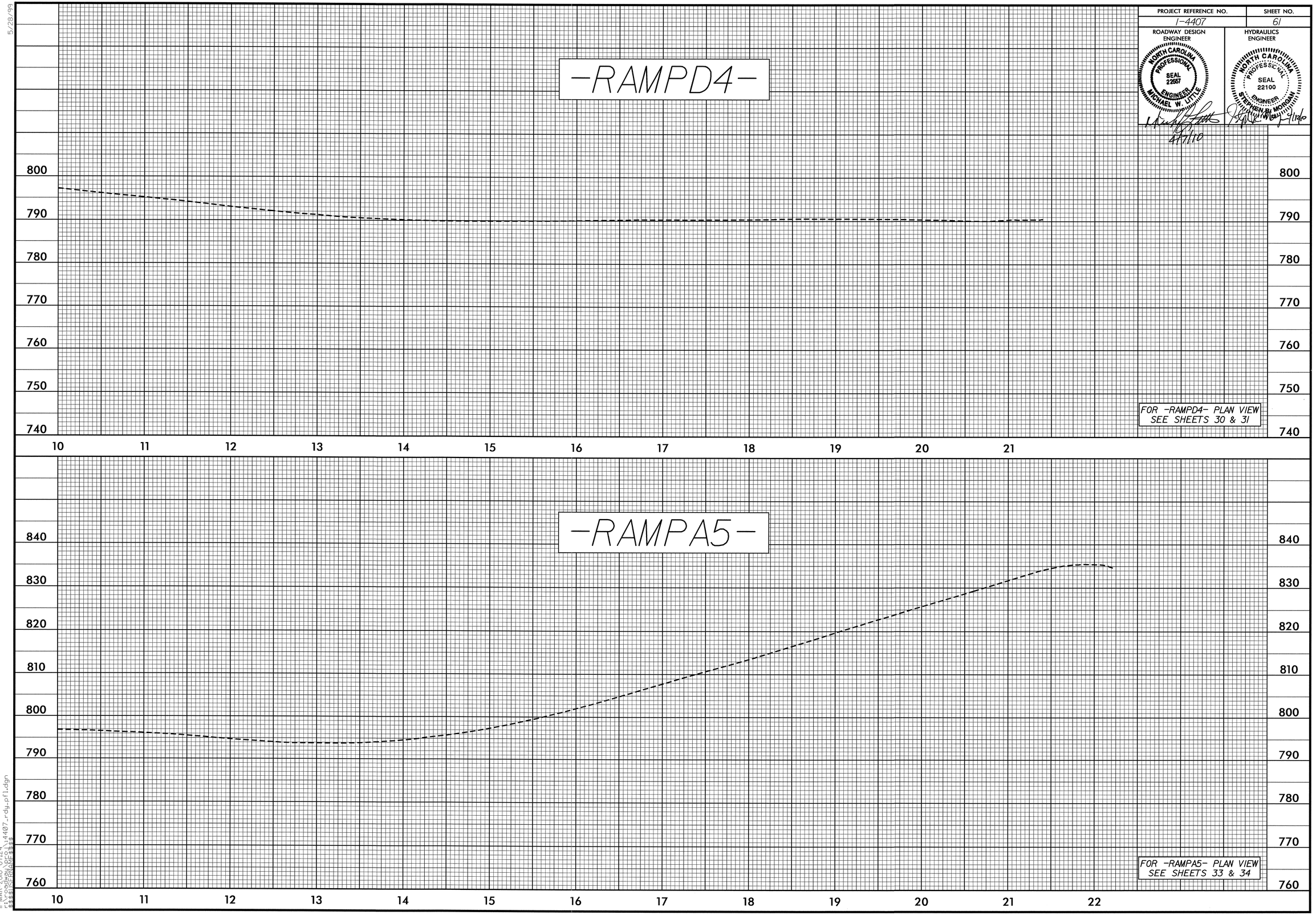
NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE

4/9/10

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN

4/9/10



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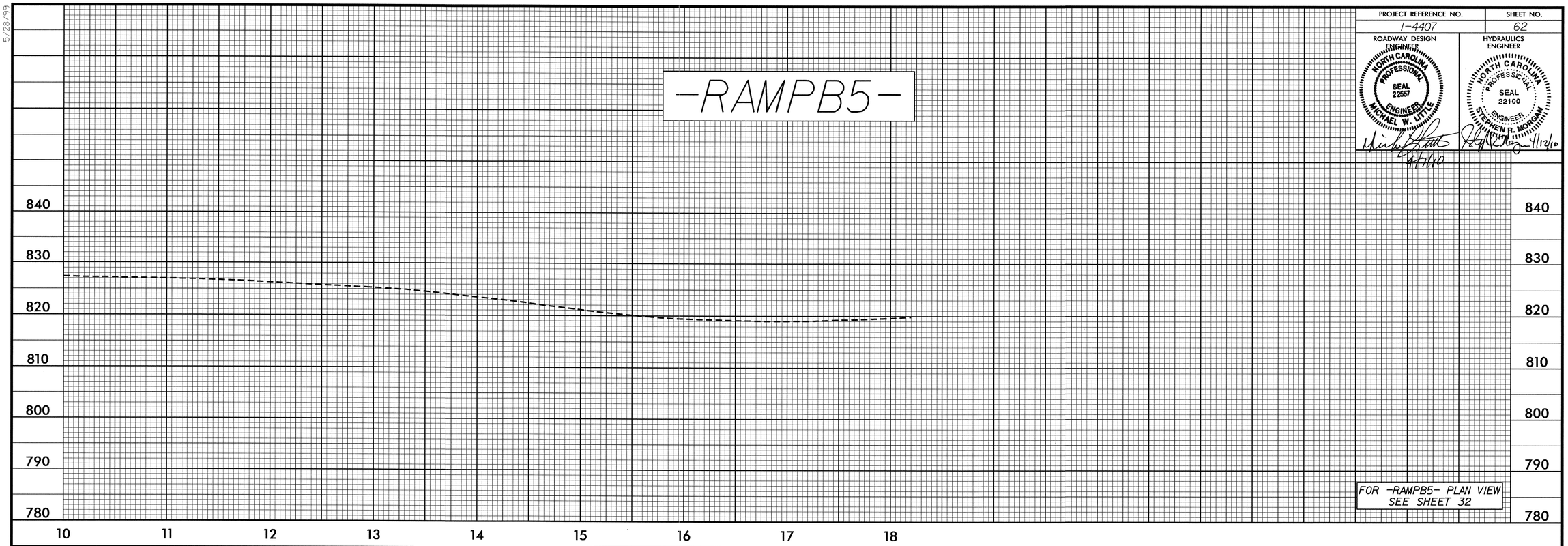
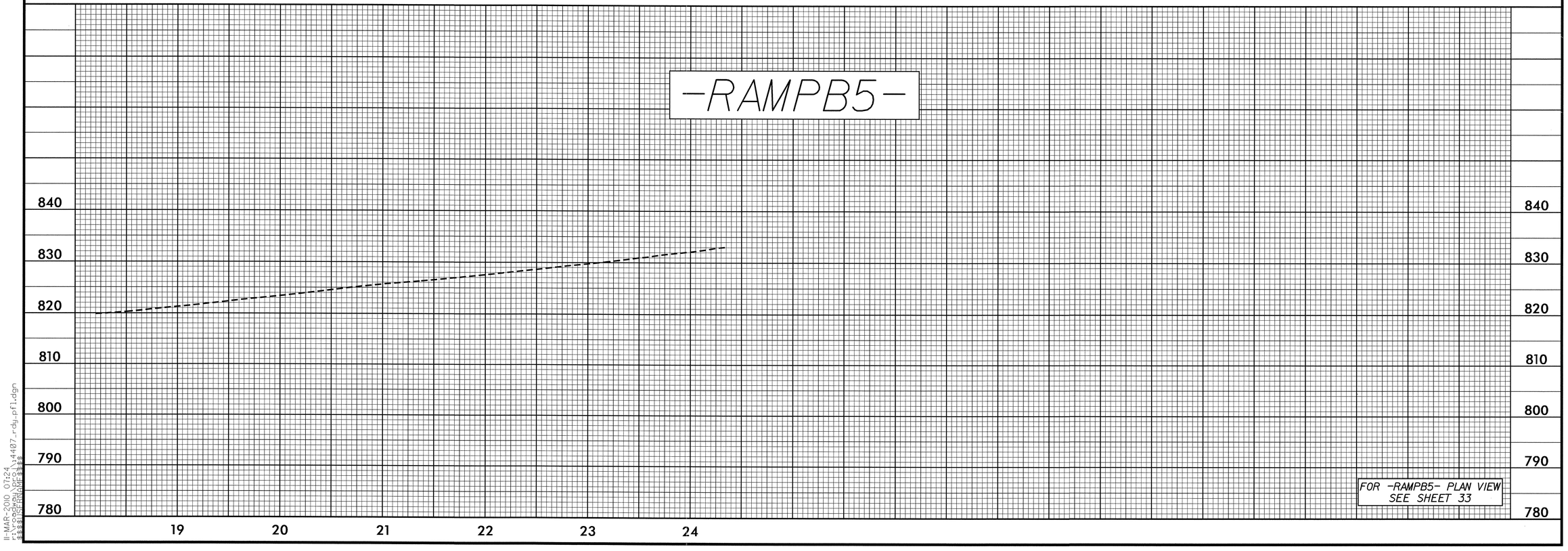
PROJECT REFERENCE NO.	SHEET NO.
I-4407	62

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE
4/12/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN
4/12/10



FOR -RAMPB5- PLAN VIEW SEE SHEET 32



FOR -RAMPB5- PLAN VIEW SEE SHEET 33

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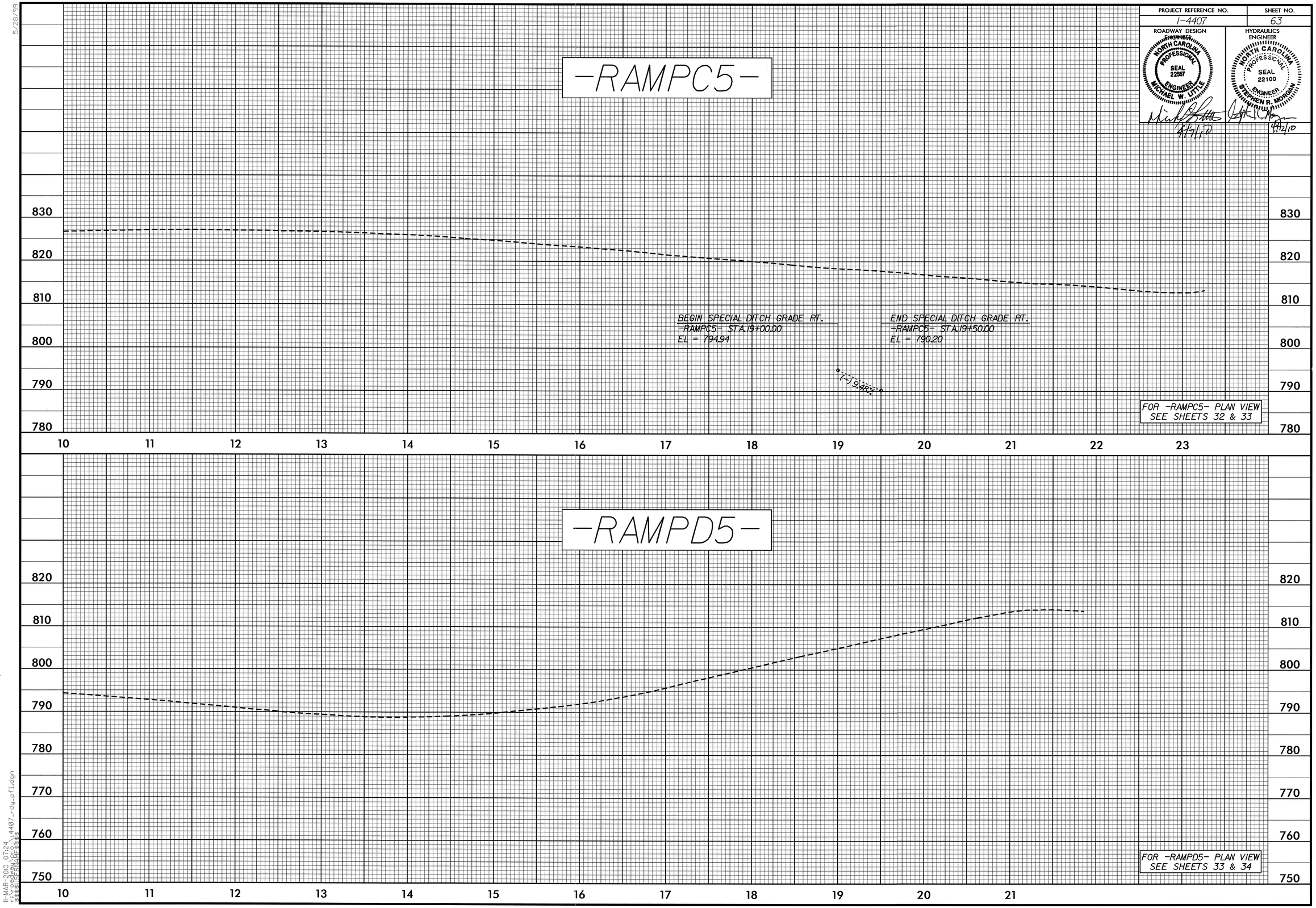
PROJECT REFERENCE NO.	SHEET NO.
I-4407	63

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE
4/7/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN
4/12/10



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