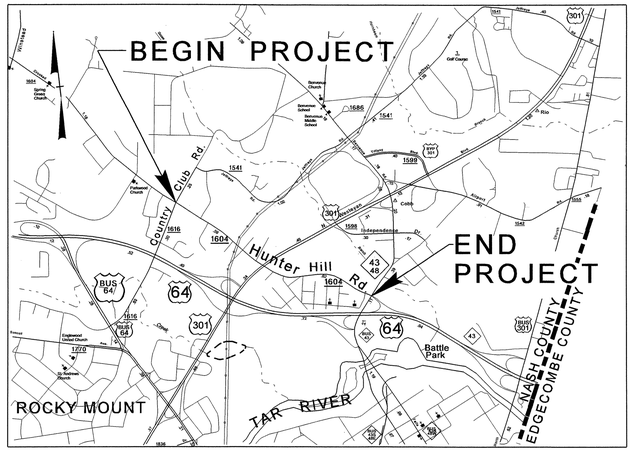
09/08/99

TIP PROJECT: U-3621B

CONTRACT: C202586

See Sheet 1-A For Index of Sheets



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

NASH COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-3621B	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34964.1.1	STP-1604(1)	PE
34964.3.1	STP-1604(5)	R/W, UTIL
34964.2.3	STP-1604(6)	CONST.

LOCATION: SR 1604 (HUNTER HILL RD) IN ROCKY MOUNT FROM SR 1616 (COUNTRY CLUB RD) TO NC 43/48 (BENVENUE RD)

TYPE OF WORK: GRADING, WIDENING, PAVING, DRAINAGE, STRUCTURES, SIGNALS, GUARDRAIL AND RETAINING WALLS, CURB & GUTTER

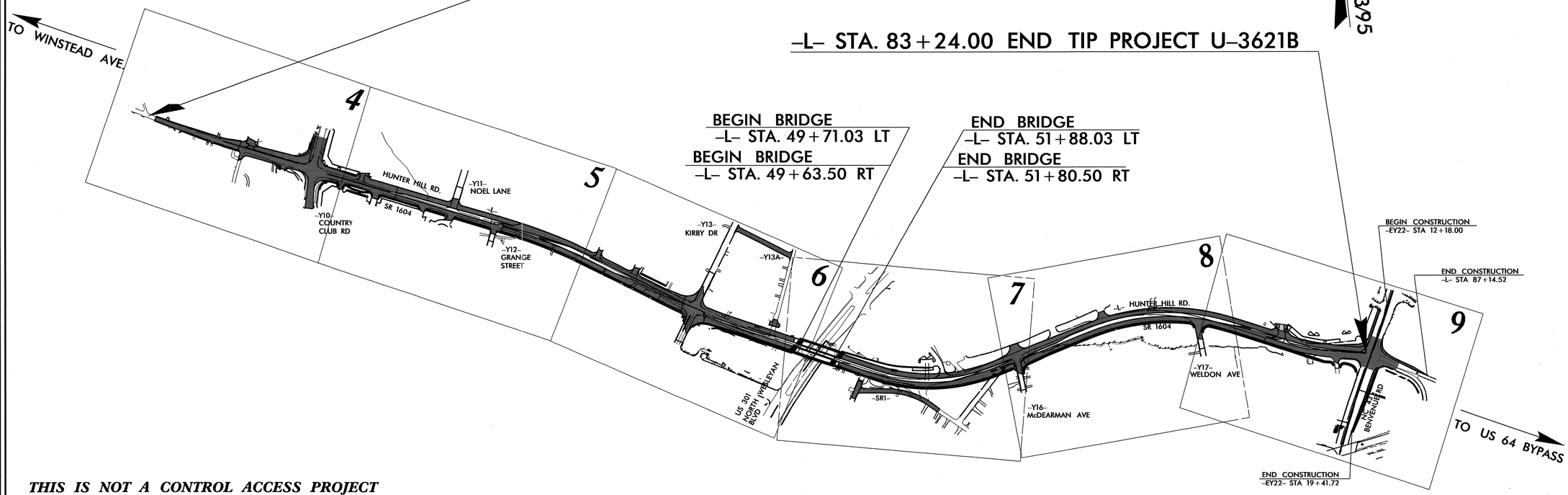
NAD 83/95

-L- STA. 10+00.00 BEGIN TIP PROJECT U-3621B

-L- STA. 83+24.00 END TIP PROJECT U-3621B

BEGIN BRIDGE
-L- STA. 49+71.03 LT
BEGIN BRIDGE
-L- STA. 49+63.50 RT

END BRIDGE
-L- STA. 51+88.03 LT
END BRIDGE
-L- STA. 51+80.50 RT



THIS IS NOT A CONTROL ACCESS PROJECT

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 2009 = 10,090
ADT 2035 = 22,860
DHV = 11%
D = 55%
T = 2 % *
V = 50 MPH
* TTST=1% DUAL=1%
MINOR URBAN ARTERIAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-3621B = 1.346 MILES
LENGTH STRUCTURE TIP PROJECT U-3621B = 0.041 MILES
TOTAL LENGTH TIP PROJECT U-3621B = 1.387 MILES

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
DECEMBER 11, 2008

LETTING DATE:
MARCH 15, 2011

TED S. WALLS
PROJECT ENGINEER

ALLISON K. WHITE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 21162 ENGINEER HERBERT W. HOLLAND, JR.
SIGNATURE: W. Holland Turner P.E. 1/20/11

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22924 ENGINEER GLENN W. MUMFORD
SIGNATURE: 1/19/11 P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

Art McMillan P.E.
STATE HIGHWAY DESIGN ENGINEER

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PROJECT REFERENCE NO.	SHEET NO.
U-3621B	1-A

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 029218 ENGINEER GLENN W. MUMFORD
1/19/11

INDEX OF SHEETS

1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND A LIST OF STANDARDS
1-B	CONVENTIONAL PLAN SHEET SYMBOLS
1-C THRU 1-E	SURVEY CONTROL SHEETS
2 THRU 2-E	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS
2-F THRU 2-G	SUPER ELEVATION AND GRADE POINT TRANSITION
2-H	INTERSECTION AND ISLAND DETAIL
2-I	DETAIL OF TEMPORARY STEEL COVER
2-J THRU 2-T	SHORING DETAILS
2-U THRU 2-V	METHOD OF PIPE INSTALLATION DETAILS
2-W	ANCHORAGE FOR FRAMES DETAIL
2-X THRU 2-Y	WHEELCHAIR RAMP DETAILS
2-Z	SPECIAL CATCH BASIN DETAIL
2-AA	DROP CURB FLUME DETAIL
2-AB	GROUND IMPROVEMENT FOR WALL 2
2-AC	EMBANKMENT MONITORING FOR WALL 2
3 (2 SHEETS)	SUMMARY OF QUANTITIES SHEET
3-A THRU 3-I	SUMMARY OF DRAINAGE QUANTITIES
3-J	SUMMARY OF EARTHWORK, SUMMARY OF BREAKING OF EXISTING ASPHALT PAVEMENT, SUMMARY OF REMOVAL OF EXISTING ASPHALT PAVEMENT, CHAIN LINK FENCE
3-K	GUARDRAIL SUMMARY
3-L	PARCEL INDEX SHEET
4 THRU 9	PLAN SHEETS
10 THRU 15	PROFILE SHEETS
TCP-1 THRU TCP-35	TRAFFIC CONTROL PLANS
PMP-1 THRU PMP-7	PAVEMENT MARKING PLAN
EC-1 THRU EC-16	EROSION CONTROL PLANS
RF-1	REFORESTATION DETAIL SHEET
SIGN-1 THRU SIGN-12	SIGNING PLANS
SIG-1 THRU SIG-49	SIGNAL PLANS
UC-1 THRU UC22	UTILITY CONSTRUCTION PLANS
UO-1 THRU UO-7	UTILITY BY OTHERS PLANS
X-1A THRU X1C	CROSS-SECTION SUMMARY SHEET
X-1 THRU X-45	CROSS-SECTION PLANS
S-1 THRU S-26	STRUCTURE PLANS
W-1 THRU W-4	RETAINING WALL PLANS

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.

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

SIDE ROADS:

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

UNDERDRAINS:

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

DRIVEWAYS:

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.02 USING 3' RADII OR RADII AS SHOWN ON THE PLANS. LOCATIONS OF DRIVES WILL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

STREET TURNOUT:

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

GUARDRAIL:

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

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".

END BENTS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE City of Rocky Mount

Progress Energy, Century Link, and Sudden Link

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

RIGHT-OF-WAY MARKERS:

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

WHEELCHAIR RAMPS:

WHEELCHAIR RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS. THE CONSTRUCTION OF ALL WHEELCHAIR RAMPS SHALL BE IN ACCORDANCE WITH THE DETAILS IN THE PLANS

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
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
225.05	Method of Obtaining Superelevation - Divided Highways
225.06	Method of Grading Sight Distance at Intersections
DIVISION 3 - PIPE CULVERTS	
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
422.10	Reinforced Bridge Approach Fills
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
815.03	Pipe Underdrain and Blind Drain
838.01	Concrete Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.11	Brick Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.80	Precast Endwalls - 12" thru 72" Pipe 90 Skew
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.14	Concrete Drop Inlet - 12" thru 30" Pipe
840.15	Brick Drop Inlet - 12" thru 30" Pipe
840.16	Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
840.17	Concrete Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.22	Frames and Wide Slot Sag Grates
840.24	Frames and Narrow 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
840.31	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
840.45	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
848.01	Concrete Sidewalk
848.02	Driveway Turnout - Radius Type
848.04	Street Turnout
852.01	Concrete Islands
852.04	Method for Placement of Drop Inlets in Grassed Median - Using 1'-6" Curb and Gutter
852.05	Median Curb for Catch Basin - for Use with 1'-6" Curb and Gutter
852.06	Method for Placement of Drop Inlets in Concrete Islands
852.10	Median Construction - with Curb and Gutter
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
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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09/08/09

PROJECT REFERENCE NO.	SHEET NO.
U-3621B	1-B

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:

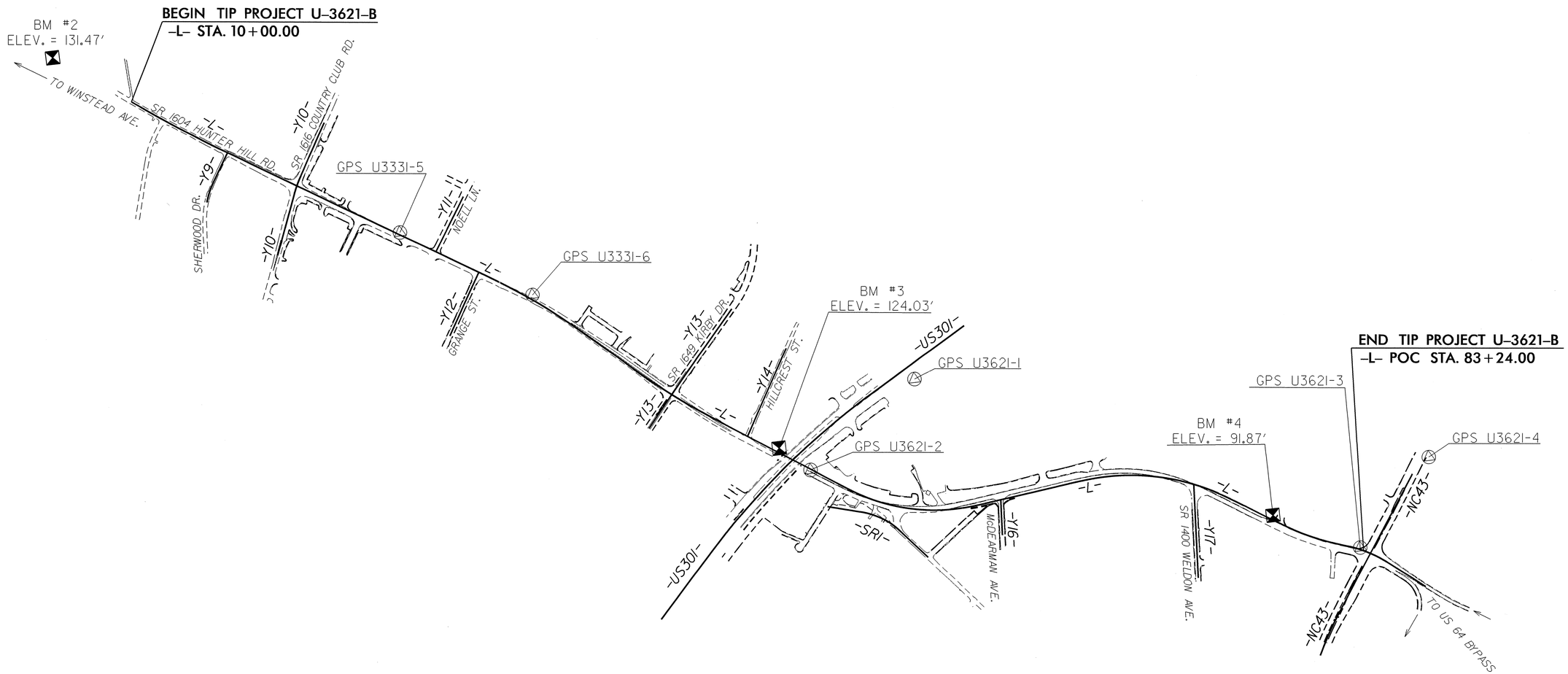
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

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.
U-3621-B	1C
Location and Surveys	

SURVEY CONTROL SHEET U-3621-B



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "U4019-10"
WITH NAD 83/95 STATE PLANE GRID COORDINATES OF
NORTHING: 815621.352(ft) EASTING: 2343015.324(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99995099
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "U4019-10" TO -L- STATION 10+00.00 IS
S 49°03'22.9" E 5882.385'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

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.NCDOT.ORG/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

THE FILES TO BE FOUND ARE AS FOLLOWS:
U3621B_LS_GPSCALIB_080115.HTML
U3621B_LS_WGS84_080115.TXT
U3621B_LS_LOCAL_080115.TXT
U3621B_LS_CONTROL_080115.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.

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PROJECT REFERENCE NO.	SHEET NO.
U-3621-B	1D
Location and Surveys	

SURVEY CONTROL SHEET U-3621B

GPS CALIBRATION REPORT

PROJECT : U3621Z

TIP NUMBER U3621
USER NAME PWOODARD DATE & TIME 2:42:33 PM 4/12/04

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 METERS
DISTANCE UNITS METERS
HEIGHT UNITS METERS

LOCAL SITE INFORMATION
LOCALIZED AROUND U4019-10
LATITUDE 35°59'07.78174"N
LONGITUDE 77°50'26.02039"W
SITE SCALE FACTOR 1.0000490100
HEIGHT 12.143M

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 244949.374M
EASTING COORDINATE OF ROTATION
CENTER 720576.537M
ROTATION ABOUT THE CENTER POINT 0°00'00"
TRANSLATION NORTH 0.001M
TRANSLATION EAST 0.003M
SCALE FACTOR 1.00000013

VERTICAL ADJUSTMENT PARAMETERS

NORTHING COORDINATE OF ORIGIN
POINT 251068.833M
EASTING COORDINATE OF ORIGIN
POINT 744724.300M
VERTICAL SEPARATION AT ORIGIN -0.004M
SLOPE NORTH -0.260PPM
SLOPE EAST -0.259PPM

GEOID MODEL DEFINITION

GEOID99 (CONUS)

RESIDUAL DIFFERENCES BETWEEN GPS (WGS84) AND LOCAL COORDINATES

SUMMARY

	MAXIMUM ERROR	ROOT MEAN SQUARE ERROR	POINT
HORIZONTAL	0.002M	0.001	CUTOFF GPS
VERTICAL	0.009M	0.004	U4019-2 GPS
THREE-DIMENSIONAL	0.009M	0.004	U4019-2 GPS

POINT RESIDUALS

WGS84 COORDINATES		CALCULATED POINT FOR DISPLAY ONLY		LOCAL COORDINATES	
POINT	CUTOFF GPS	NORTHING	251068.833M	POINT	CUTOFF
LATITUDE	36°00'14.53294"N	EASTING	744724.300M	NORTHING	251068.832M
LONGITUDE	77°30'04.24620"W	ELEVATION	29.278M	EASTING	744724.302M
HEIGHT	-5.923M	HORZ ERROR	0.002M	ELEVATION	29.277M
		VERT ERROR	0.001M	UTILIZED HORZ AND VERT	
		3D ERROR	0.003M	CONTROL QUALITY	
POINT	SHINGLED GPS	NORTHING	223026.310M	POINT	SHINGLED
LATITUDE	35°45'10.19685"N	EASTING	733131.314M	NORTHING	223026.313M
LONGITUDE	77°38'02.50711"W	ELEVATION	31.804M	EASTING	733131.314M
HEIGHT	-3.589M	HORZ ERROR	0.002M	ELEVATION	31.804M
		VERT ERROR	0.000M	UTILIZED HORZ AND VERT	
		3D ERROR	0.002M	CONTROL QUALITY	
POINT	U4019-2 GPS	NORTHING	245987.598M	POINT	U4019-2
LATITUDE	35°57'43.25357"N	EASTING	713396.448M	NORTHING	245987.599M
LONGITUDE	77°50'57.40964"W	ELEVATION	41.787M	EASTING	713396.448M
HEIGHT	6.970M	HORZ ERROR	0.001M	ELEVATION	41.778M
		VERT ERROR	0.009M	UTILIZED HORZ AND VERT	
		3D ERROR	0.009M	CONTROL QUALITY	
POINT	U4019-10 GPS	NORTHING	248601.886M	POINT	U4019-10
LATITUDE	35°59'07.78174"N	EASTING	714152.501M	NORTHING	248601.885M
LONGITUDE	77°50'26.02039"W	ELEVATION	46.955M	EASTING	714152.499M
HEIGHT	12.143M	HORZ ERROR	0.002M	ELEVATION	46.950M
		VERT ERROR	0.005M	UTILIZED HORZ AND VERT	
		3D ERROR	0.005M	CONTROL QUALITY	
POINT	U3331-5 GPS	NORTHING	247164.100M	POINT	U3331-5
LATITUDE	35°58'20.46009"N	EASTING	715923.414M	NORTHING	247164.100M
LONGITUDE	77°49'16.01224"W	ELEVATION	32.870M	EASTING	715923.413M
HEIGHT	-2.002M	HORZ ERROR	0.001M	ELEVATION	32.873M
		VERT ERROR	0.003M	UTILIZED HORZ AND VERT	
		3D ERROR	0.003M	ADJUSTED QUALITY	

POINT RESIDUALS

WGS84 COORDINATES		CALCULATED POINT FOR DISPLAY ONLY		LOCAL COORDINATES	
POINT	U3331-6 GPS	NORTHING	247037.426M	POINT	U3331-6
LATITUDE	35°58'16.27100"N	EASTING	716129.518M	NORTHING	247037.426M
LONGITUDE	77°49'07.84665"W	ELEVATION	36.891M	EASTING	716129.518M
HEIGHT	2.013M	HORZ ERROR	0.001M	ELEVATION	36.894M
		VERT ERROR	0.003M	UTILIZED HORZ AND VERT	
		3D ERROR	0.003M	ADJUSTED QUALITY	
POINT	U3621-1 GPS	NORTHING	246829.431M	POINT	U3621-1
LATITUDE	35°58'09.28644"N	EASTING	716741.069M	NORTHING	246829.431M
LONGITUDE	77°48'43.53903"W	ELEVATION	34.956M	EASTING	716741.068M
HEIGHT	0.061M	HORZ ERROR	0.000M	ELEVATION	34.959M
		VERT ERROR	0.003M	UTILIZED HORZ AND VERT	
		3D ERROR	0.003M	ADJUSTED QUALITY	
POINT	U3621-2 GPS	NORTHING	246700.217M	POINT	U3621-2
LATITUDE	35°58'05.16712"N	EASTING	716553.717M	NORTHING	246700.217M
LONGITUDE	77°48'51.07766"W	ELEVATION	39.068M	EASTING	716553.717M
HEIGHT	4.176M	HORZ ERROR	0.000M	ELEVATION	39.070M
		VERT ERROR	0.002M	UTILIZED HORZ AND VERT	
		3D ERROR	0.002M	ADJUSTED QUALITY	
POINT	U3621-3 GPS	NORTHING	246471.118M	POINT	U3621-3
LATITUDE	35°57'57.38898"N	EASTING	717441.850M	NORTHING	246471.118M
LONGITUDE	77°48'15.74380"W	ELEVATION	25.924M	EASTING	717441.850M
HEIGHT	-8.992M	HORZ ERROR	0.001M	ELEVATION	25.926M
		VERT ERROR	0.002M	UTILIZED HORZ AND VERT	
		3D ERROR	0.002M	ADJUSTED QUALITY	
POINT	U3621-4 GPS	NORTHING	246606.828M	POINT	U3621-4
LATITUDE	35°58'01.74114"N	EASTING	717571.268M	NORTHING	246606.828M
LONGITUDE	77°48'10.51376"W	ELEVATION	25.980M	EASTING	717571.269M
HEIGHT	-8.937M	HORZ ERROR	0.001M	ELEVATION	25.983M
		VERT ERROR	0.002M	UTILIZED HORZ AND VERT	
		3D ERROR	0.002M	ADJUSTED QUALITY	

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "U4019-10"
WITH NAD 83/95 STATE PLANE GRID COORDINATES OF
NORTHING: 815621.352(ft) EASTING: 2343015.324(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99995099
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "U4019-10" TO -L- STATION 10+00.00 IS
S 49°03'22.9" E 5882.385'
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.NCDOT.ORG/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

THE FILES TO BE FOUND ARE AS FOLLOWS:
U3621B_LS_GPSCALIB_080115.HTML
U3621B_LS_WGS84_080115.TXT
U3621B_LS_LOCAL_080115.TXT
U3621B_LS_CONTROL_080115.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.

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$$$$USERNAME$$$$ U3621B_LS_1D_080115.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-3621-B	1E
Location and Surveys	

SURVEY CONTROL SHEET U-3621B

BASELINE DATA

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
100	U4019-BY11-600	814935.7300	2344148.0680	141.77	OUTSIDE PROJECT LIMITS	
101	BL-101	814586.3383	2344664.6249	139.02	OUTSIDE PROJECT LIMITS	
102	BL-102	814237.2135	2345156.1098	135.57	OUTSIDE PROJECT LIMITS	
103	BL-103	813732.3794	2345557.2100	139.39	OUTSIDE PROJECT LIMITS	
104	BL-104	813143.9758	2346005.8169	137.95	OUTSIDE PROJECT LIMITS	
105	BL-105	812460.7753	2346554.0840	133.18	OUTSIDE PROJECT LIMITS	
106	BL-106	811951.6651	2347180.3843	127.83	OUTSIDE PROJECT LIMITS	
107	BL-107	811610.5435	2347645.1686	121.80	12+42.30	16.67 RT
108	U3331-BL-107	811262.1659	2348271.8819	115.13	19+57.82	25.51 LT
109	GPS U3331-5	810904.2864	2348825.4655	107.84	26+16.87	11.95 LT
110	GPS U3331-6	810488.6781	2349501.6465	121.02	34+08.90	24.07 LT
111	BL-111	809971.1788	2350149.5560	118.73	42+36.76	52.57 LT
112	BL-112	809638.5575	2350561.6466	124.16	47+70.33	23.45 LT
2	GPS U3621-2	809382.2986	2350893.3199	128.18	51+88.60	3.61 RT
113	BL-113	809089.1906	2351388.8677	125.92	57+60.03	29.51 RT
114	BL-114	809152.1899	2351900.9120	109.74	62+73.58	44.14 LT
115	BL-115	809172.9470	2352826.2386	103.82	71+86.41	54.19 LT
116	BL-116	808850.2685	2353307.4880	93.59	77+55.18	9.85 RT
3	GPS U3621-3	808630.6596	2353807.1362	85.06	83+01.80	10.53 LT

BY1

POINT	DESC.	NORTH	EAST	ELEVATION	Y10 STATION	OFFSET
150	U3331-BL-108	811779.9574	2348657.4811	110.88	OUTSIDE PROJECT LIMITS	
A108	U3331-BL-107	811262.1659	2348271.8819	115.13	13+44.22	44.70 RT
151	U3331-BL-106	810528.3827	2348050.3381	104.07	OUTSIDE PROJECT LIMITS	

BY12

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
A115	BL-115	809172.9470	2352826.2386	103.82	71+86.41	54.19 LT
500	BY12-500	808895.2304	2352958.3447	96.48	74+21.37	156.97 RT

BY13

POINT	DESC.	NORTH	EAST	ELEVATION	NC43 STATION	OFFSET
4	GPS U3621-4	809075.9015	2354231.7384	85.25	OUTSIDE PROJECT LIMITS	
A3	GPS U3621-3	808630.6596	2353807.1362	85.06	4+85.41	63.29 RT
550	BY13-550	808341.8188	2353747.8871	86.77	7+57.47	50.37 LT

BASELINE DATA

BY3

POINT	DESC.	NORTH	EAST	ELEVATION	Y12 STATION	OFFSET
A110	GPS U3331-6	810488.6781	2349501.6465	121.02	OUTSIDE PROJECT LIMITS	
200	BY3-200	810545.4935	2349189.7003	114.31	11+02.19	18.05 LT

BY4

POINT	DESC.	NORTH	EAST	ELEVATION	Y13 STATION	OFFSET
250	BY4-250	810142.8374	2350461.5184	127.56	11+81.98	22.73 LT
A111	BL-111	809971.1788	2350149.5560	118.73	15+16.40	97.02 RT

BY5

POINT	DESC.	NORTH	EAST	ELEVATION	Y14 STATION	OFFSET
300	BY5-300	810135.5865	2350870.4639	123.81	OUTSIDE PROJECT LIMITS	
301	BY5-301	809860.1877	2350754.5778	131.03	12+03.23	25.24 LT
A112	BL-112	809638.5575	2350561.6466	124.16	14+92.06	28.78 RT

BY6

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
350	BY6-350	809521.3511	2350822.5530	110.71	50+52.19	72.13 LT
A2	GPS U3621-2	809382.2986	2350893.3199	128.18	51+88.60	3.61 RT

BY7

POINT	DESC.	NORTH	EAST	ELEVATION	SR1 STATION	OFFSET
B113	BL-113	809089.1906	2351388.8677	125.92	13+95.06	97.12 LT
400	BY7-400	809181.2280	2350988.0090	126.66	10+23.29	11.85 LT
401	BY7-401	808955.5570	2350763.4920	117.96	OUTSIDE PROJECT LIMITS	

BY8

POINT	DESC.	NORTH	EAST	ELEVATION	SR1 STATION	OFFSET
A113	BL-113	809089.1906	2351388.8677	125.92	13+95.06	97.12 LT
450	BY8-450	808593.8725	2351666.4730	122.03	OUTSIDE PROJECT LIMITS	

BY14

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
B3	GPS U3621-3	808630.6596	2353807.1362	85.06	83+01.80	10.53 LT
600	BY14-600	808393.0396	2354093.9930	94.60	86+73.35	16.42 RT

BENCHMARK DATA

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*************************************
BM #2       ELEVATION = 131.47
N 812055      E 2347061
L STATION 10+00
N 53° 34' 40.9" W  DIST   4848.44
RR SPIKE SET IN 28" PINE
*************************************
*************************************
BM #3       ELEVATION = 124.03
N 809520      E 2350737
L STATION 10+00
N 33° 14' 17.9" W  DIST    410.73
RR SPIKE SET IN POWER POLE
*************************************
*************************************
BM #4       ELEVATION = 91.87
N 808858      E 2353357
L STATION 16+31
N 89° 29' 59.5" E  DIST   1884.12
RR SPIKE SET IN POWER POLE
*************************************
```

DATUM DESCRIPTION

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NCDOT FOR MONUMENT "U4019-10"
WITH NAD 83/95 STATE PLANE GRID COORDINATES OF
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U3621B_LS_GPSCALIB_080115.HTML
U3621B_LS_WGS84_080115.TXT
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PROJECT REFERENCE NO.	SHEET NO.
U-3621B	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

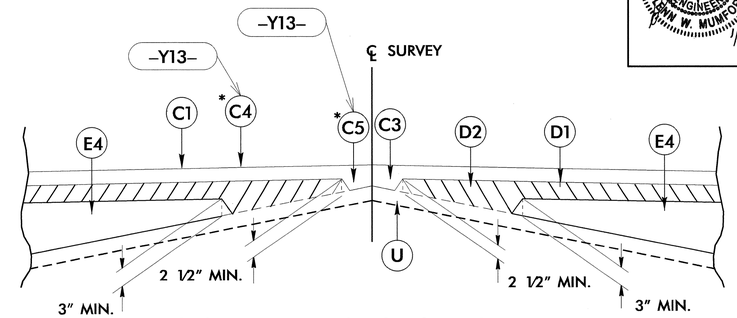
NORTH CAROLINA PROFESSIONAL SEAL 22434 ENGINEER BRIAN W. MUMFORD 1/24/11

NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER CHI CHEN 1/24/11

PAVEMENT SCHEDULE

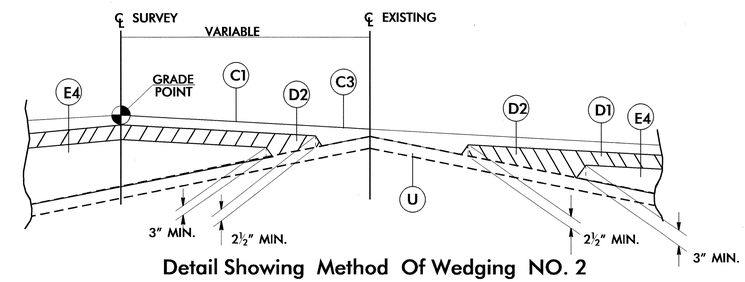
C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	E4	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
C2	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.	R1	1'-6" CONCRETE CURB AND GUTTER.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.	R2	2'-6" CONCRETE CURB AND GUTTER.
C4	PROP. APPROX. 2 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	R3	5"MONOLITHIC CONCRETE ISLAND (SURFACE MOUNTED)
C5	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1½" IN DEPTH.	R4	EXISTING CONCRETE ISLAND
C6	PROP. APPROX. 2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD. IN ONE LAYER	R5	EXISTING CURB & GUTTER
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	S	4" CONCRETE SIDEWALK.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.	T	EARTH MATERIAL.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	U	EXISTING PAVEMENT.
E2	PROP. APPROX. 4 1/2" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.	W	WEDGING
E3	PROP. APPROX. 5 1/2" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.		

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



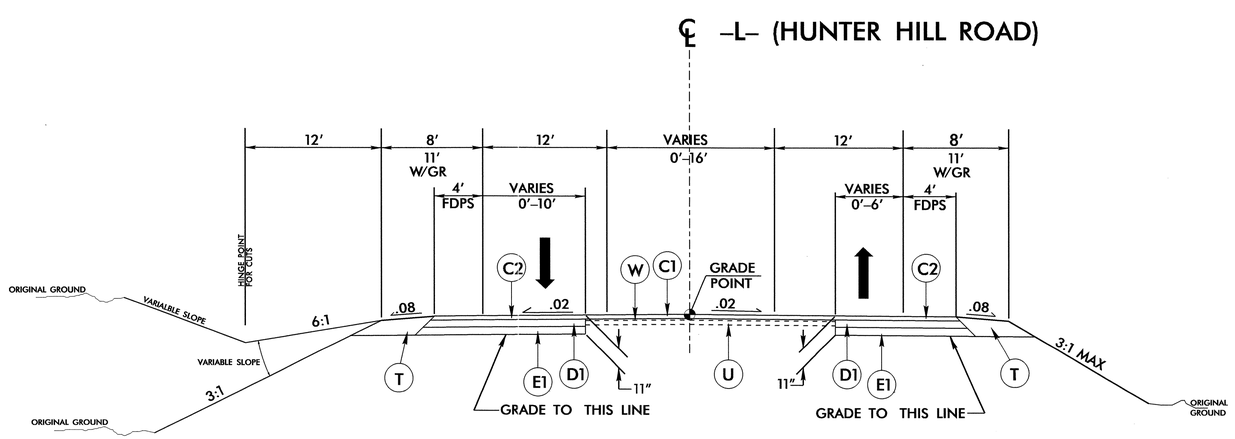
Detail Showing Method of Wedging No. 1

*NOTE: USE WHERE APPLICABLE. CHOOSE APPROPRIATE PAVEMENT TYPE PER TYPICAL SECTION



Detail Showing Method Of Wedging NO. 2

NOTE: USE WHERE APPLICABLE. CHOOSE APPROPRIATE PAVEMENT TYPE PER TYPICAL SECTION



TYPICAL SECTION NO. 1

USE TYPICAL NO. 1 AS FOLLOWS :

-L- STA. 10+56.82 TO STA. 15+66.82

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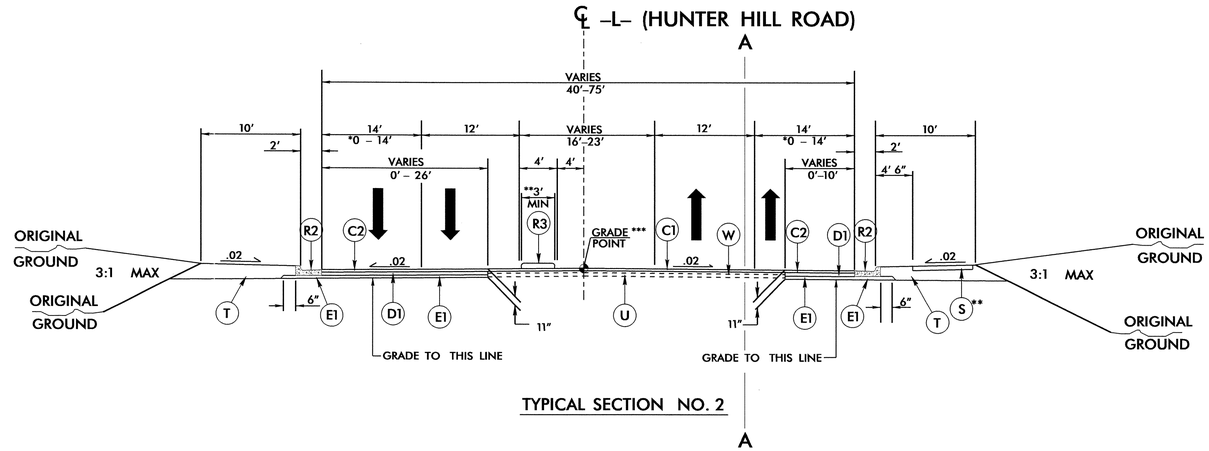
PROJECT REFERENCE NO.	SHEET NO.
U-3621B	2A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 27924 ENGINEER GLENN W. MUMFORD 1/24/11

NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER JOHN CHI CHEN 1/24/11

PAVEMENT SCHEDULE	
C1	1 1/2" S9.5B
C2	3" S9.5B
C3	VAR. S9.5B
C4	2 1/2" SF9.5A
C5	VAR. SF9.5A
C6	2" S9.5B
D1	4" I19.0B
D2	VAR. I19.0B
E1	4" B25.0B
E2	4 1/2" B25.0B
E3	5 1/2" B25.0B
E4	VAR. B25.0B
R1	1'-6" C & G
R2	2'-6" C & G
R3	5"MCI
R4	EXIST. ISLAND
R5	EXIST. C&G
S	4" SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W	WEDGING

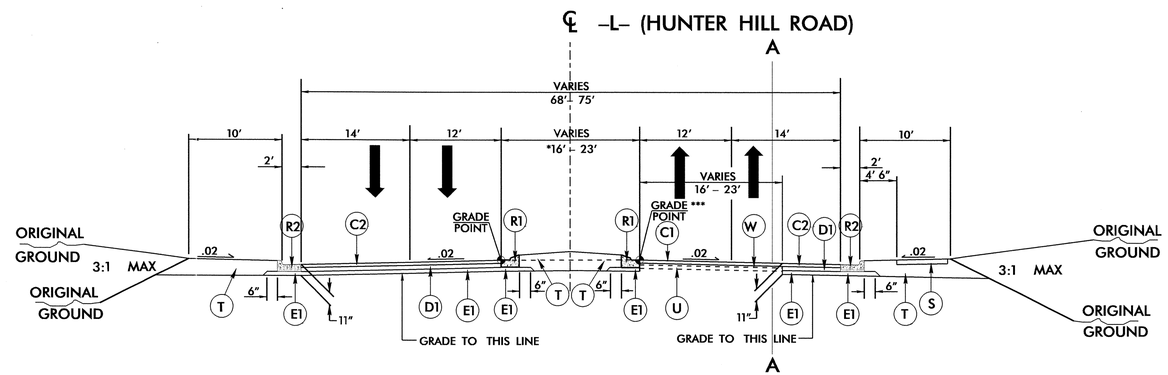


TYPICAL SECTION NO. 2

USE TYPICAL NO. 2 AS FOLLOWS :

*-L- STA. 15+66.82 TO STA. 16+69.00
-L- STA. 16+69.00 TO STA. 25+00.00
-L- STA. 30+92.13 TO STA. 33+58.95
-L- STA. 42+27.64 TO STA. 45+00.57
-L- STA. 62+16.63 TO STA. 63+28.73
-L- STA. 76+57.51 TO STA. 78+59.52

**SEE DETAIL FOR ISLAND LOCATION AND DIMENSIONS



TYPICAL SECTION NO.3

***SEE DETAIL SHEETS 2-F TO 2-H FOR SUPER ELEVATION AND GRADE POINT TRANSITION

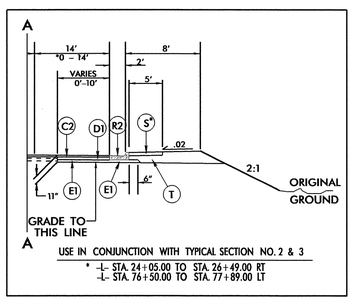
-L- STA. 24+74.89 TO STA. 25+46.89
-L- STA. 40+31.00 TO STA. 41+19.00
-L- STA. 45+67.70 TO STA. 46+55.70
-L- STA. 59+06.31 TO STA. 60+54.61
-L- STA. 64+25.91 TO STA. 65+00.00
-L- STA. 75+51.51 TO STA. 76+25.51

USE TYPICAL NO. 3 AS FOLLOWS :

-L- STA. 25+00.00 TO STA. 30+92.13
-L- STA. 33+58.95 TO STA. 42+27.64
-L- STA. 45+00.57 TO STA. 48+38.76
-L- STA. 58+67.27 TO STA. 62+16.63
-L- STA. 63+28.73 TO STA. 65+99.91
-L- STA. 74+77.51 TO STA. 76+57.51
-L- STA. 78+59.52 TO STA. 80+06.00

*SEE PLANS FOR MEDIAN TRANSITIONS

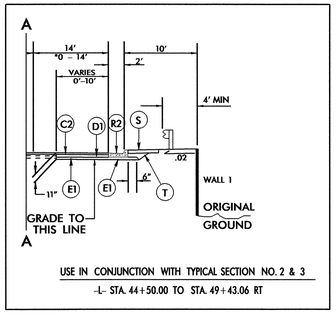
REDUCED BERM WIDTH



USE IN CONJUNCTION WITH TYPICAL SECTION NO. 2 & 3

* -L- STA. 24+05.00 TO STA. 26+49.00 RT
-L- STA. 76+50.00 TO STA. 77+89.00 LT

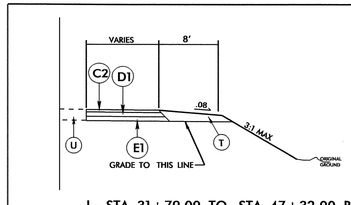
PROPOSED RETAINING WALL 1



USE IN CONJUNCTION WITH TYPICAL SECTION NO. 2 & 3

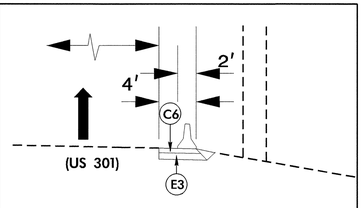
-L- STA. 44+50.00 TO STA. 49+43.06 RT

TEMPORARY PAVEMENT



-L- STA. 31+79.00 TO STA. 47+32.00 RT
-L- STA. 51+66.00 TO STA. 61+00.00 RT
-L- STA. 71+00.00 TO STA. 75+07.00 RT

**NOTE: TEMPORARY PAVEMENT DESIGN (SEE TRAFFIC CONTROL PLANS)



-EY15- STA. 7+55.00 TO STA. 13+69.00 RT
-EY15- STA. 9+65.00 TO STA. 13+67.00 LT

**NOTE: TEMPORARY PAVEMENT DESIGN (SEE TRAFFIC CONTROL PLANS)

6/2/99

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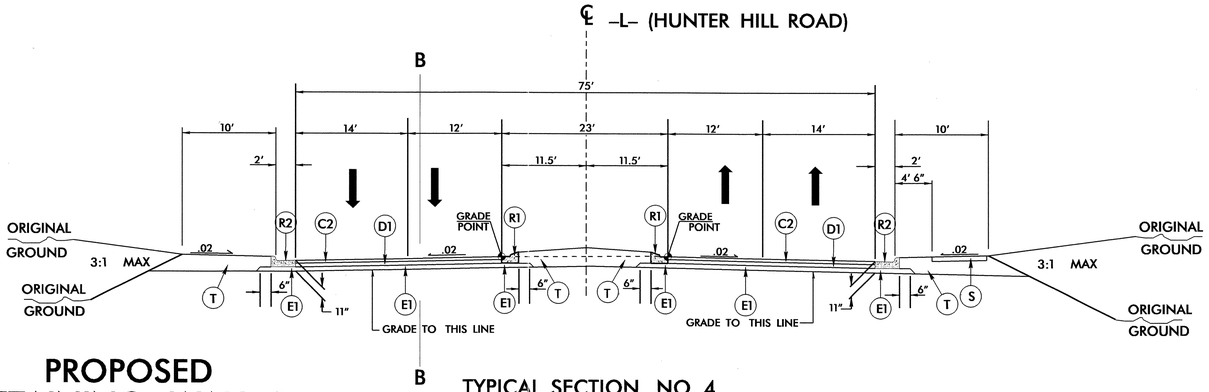
$$$$INTERNAL$$$$

PROJECT REFERENCE NO.	SHEET NO.
U-3621 B	2B

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 22924 ENGINEER GARY W. MUMFORD 1/24/11

PAVEMENT DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER CHI CHEN 1/24/11

PAVEMENT SCHEDULE	
C1	1 1/2" S9.5B
C2	3" S9.5B
C3	VAR. S9.5B
C4	2 1/2" SF9.5A
C5	VAR. SF9.5A
C6	2" S9.5B
D1	4" I19.0B
D2	VAR. I19.0B
E1	4" B25.0B
E2	4 1/2" B25.0B
E3	5 1/2" B25.0B
E4	VAR. B25.0B
R1	1'-6" C & G
R2	2'-6" C & G
R3	5"MCI
R4	EXIST. ISLAND
R5	EXIST. C&G
S	4" SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W	WEDGING

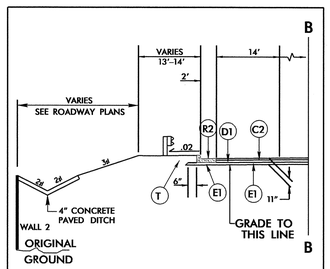


TYPICAL SECTION NO. 4

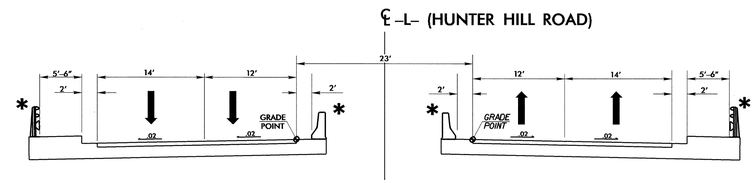
USE TYPICAL NO. 4 AS FOLLOWS :

-L- STA. 48+38.76 TO STA. 49+63.50 (BEGIN BRIDGE)
-L- STA. 51+88.03 (END BRIDGE) TO STA. 58+67.27
-L- STA. 65+99.91 TO STA. 74+77.51

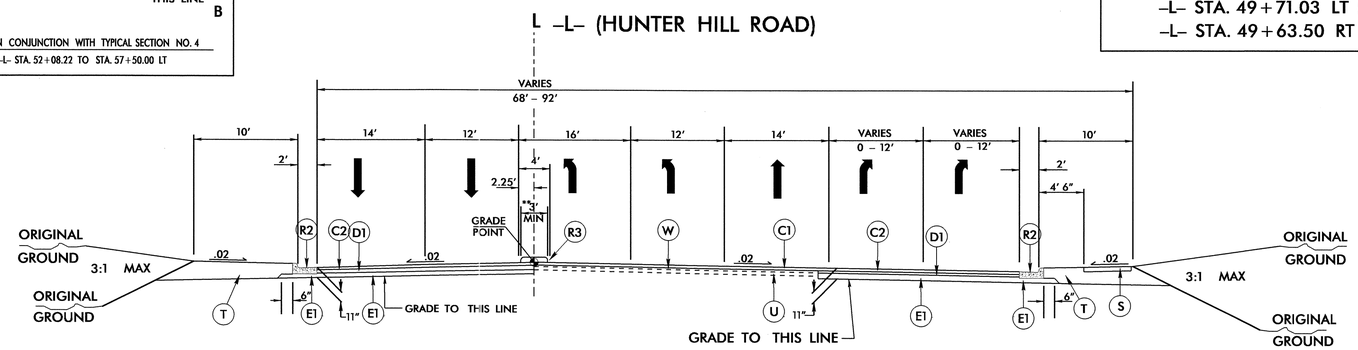
PROPOSED RETAINING WALL 2



USE IN CONJUNCTION WITH TYPICAL SECTION NO. 4
-L- STA. 52+08.22 TO STA. 57+50.00 LT



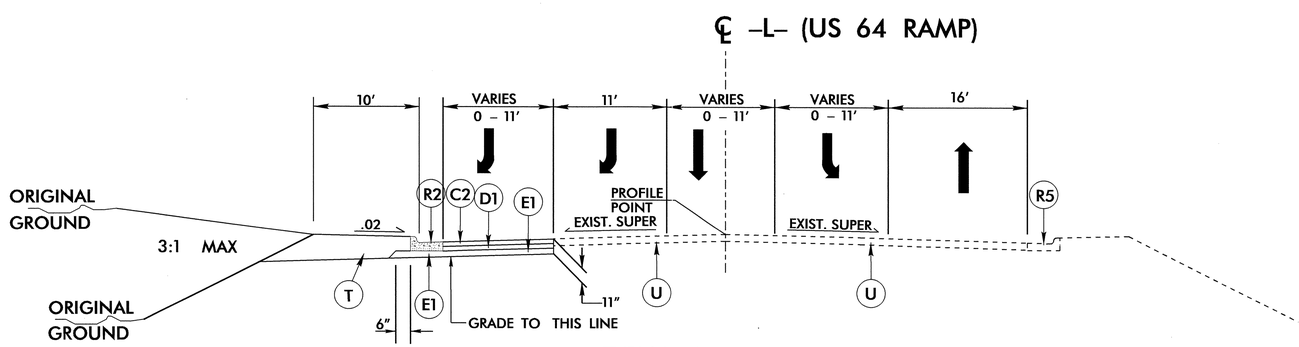
-L- STA. 49+71.03 LT (BEGIN BRIDGE) TO STA. 51+88.03 LT (END BRIDGE)
-L- STA. 49+63.50 RT (BEGIN BRIDGE) TO STA. 51+80.50 RT (END BRIDGE)



TYPICAL SECTION NO. 5

USE TYPICAL NO. 5 AS FOLLOWS :

-L- STA. 80+06.00 TO STA. 83+24.00
**SEE DETAIL FOR ISLAND LOCATION AND DIMENSIONS



TYPICAL SECTION NO.6

USE TYPICAL NO. 6 AS FOLLOWS :

-L- STA. 83+24.00 TO STA. 87+14.52

6/2/99

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PROJECT REFERENCE NO.	SHEET NO.
U-3621B	2C

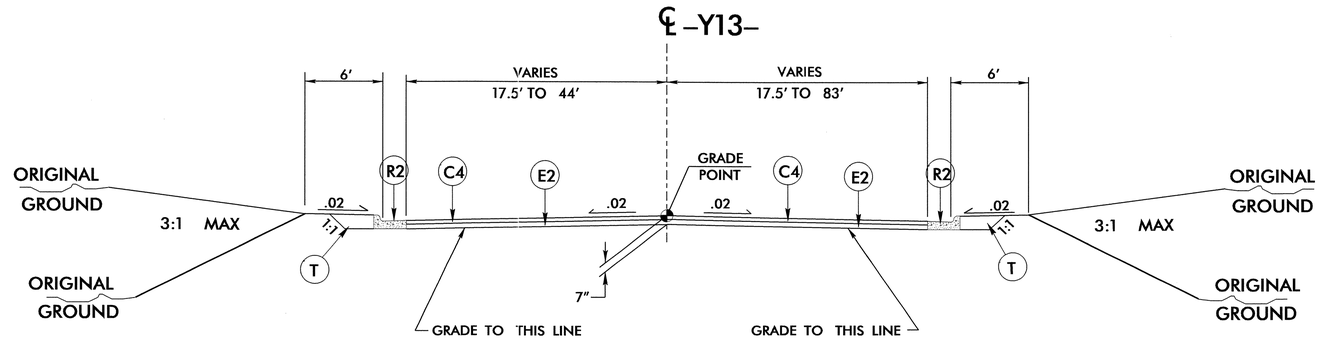
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 23924 ENGINEER JOHN W. MUMFORD 1/24/11

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER JOHN-CHI CHEN 1/24/11

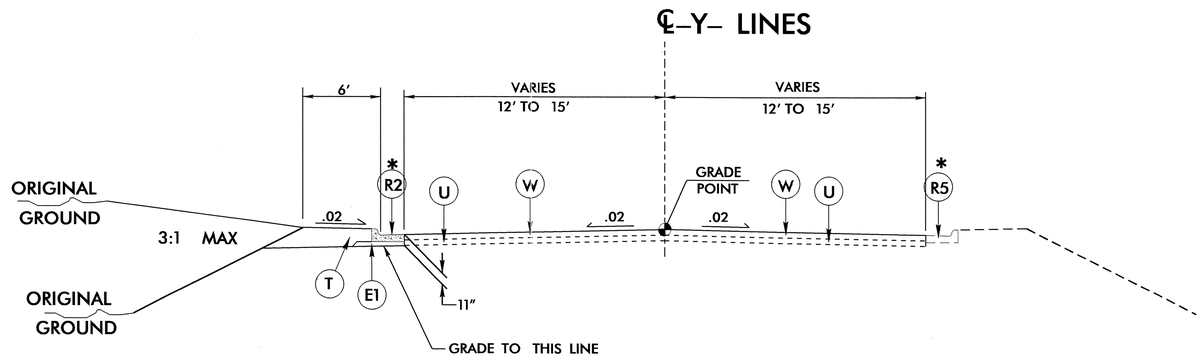
PAVEMENT SCHEDULE	
C1	1 1/2" S9.5B
C2	3" S9.5B
C3	VAR. S9.5B
C4	2 1/2" SF9.5A
C5	VAR. SF9.5A
C6	2" S9.5B
D1	4" I19.0B
D2	VAR. I19.0B
E1	4" B25.0B
E2	4 1/2" B25.0B
E3	5 1/2" B25.0B
E4	VAR. B25.0B
R1	1'-6" C & G
R2	2'-6" C & G
R3	5"MCI
R4	EXIST. ISLAND
R5	EXIST. C&G
S	4" SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W	WEDGING



TYPICAL SECTION NO.7

USE TYPICAL NO. 7 AS FOLLOWS :

-Y13- STA. 13+92.00 TO STA. 15+28.09
-Y13- STA. 16+03.17 TO STA. 17+35.00

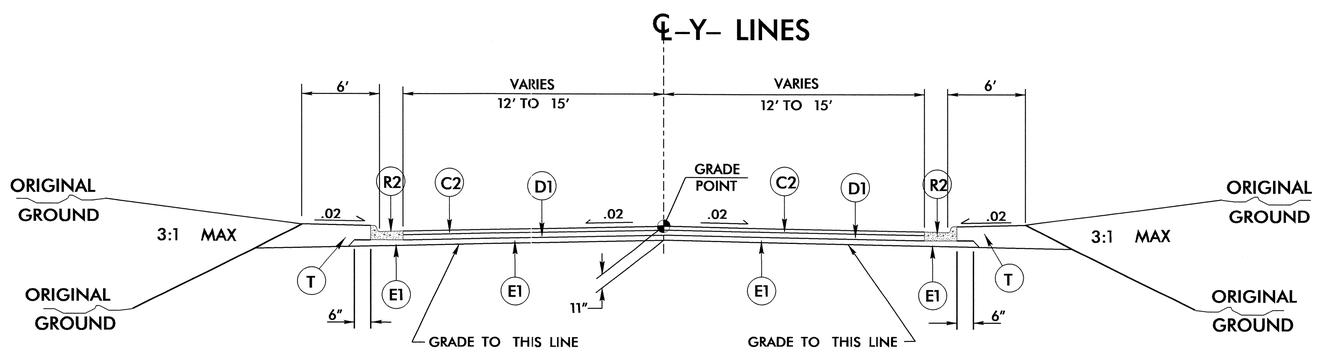


TYPICAL SECTION NO.8

USE TYPICAL NO. 8 AS FOLLOWS :

-Y11- STA. 12+00.00 TO STA. 12+97.79
-Y12- STA. 10+50.00 TO STA. 11+10.00
-Y13- STA. 13+31.13 TO STA. 13+92.00
-Y13- STA. 17+35.00 TO STA. 17+66.68
-Y16- STA. 11+37.00 TO STA. 11+80.00
-Y17- STA. 11+00.00 TO STA. 11+90.00

* SEE PLANS FOR EXISTING AND PROPOSED CURB AND GUTTER



TYPICAL SECTION NO.9

USE TYPICAL NO. 9 AS FOLLOWS :

-Y12- STA.10+37.54 TO STA.10+50.00
-Y16- STA. 10+41.37 TO STA. 11+37.00
-Y17- STA. 10+39.76 TO STA. 11+00.00

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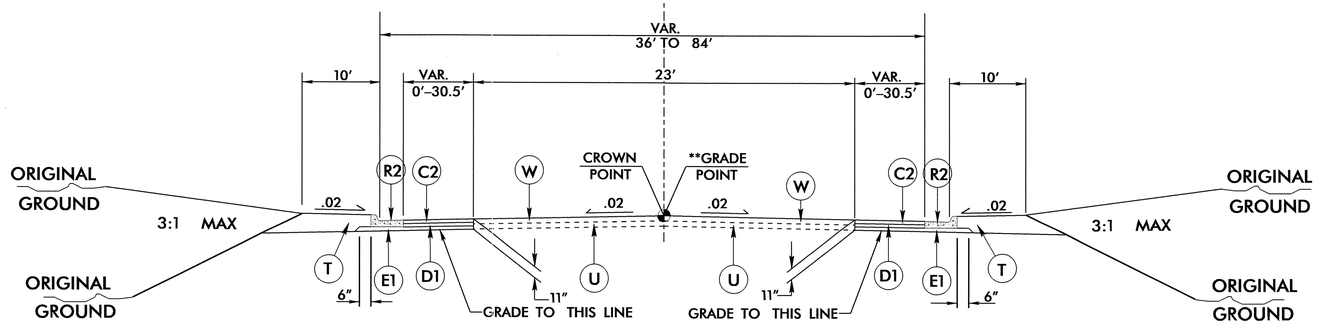
PROJECT REFERENCE NO.	SHEET NO.
U-3621B	2D
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 12424 ENGINEER BRIAN W. MUMFORD 1/24/11

NORTH CAROLINA PROFESSIONAL SEAL 13369 ENGINEER CHI CHEN 1/24/11

PAVEMENT SCHEDULE	
C1	1 1/2" S9.5B
C2	3" S9.5B
C3	VAR. S9.5B
C4	2 1/2" SF9.5A
C5	VAR. SF9.5A
C6	2" S9.5B
D1	4" I19.0B
D2	VAR. I19.0B
E1	4" B25.0B
E2	4 1/2" B25.0B
E3	5 1/2" B25.0B
E4	VAR. B25.0B
R1	1'-6" C & G
R2	2'-6" C & G
R3	5"MCI
R4	EXIST. ISLAND
R5	EXIST. C&G
S	4" SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W	WEDGING

℄ –Y10– (COUNTRY CLUB RD.)

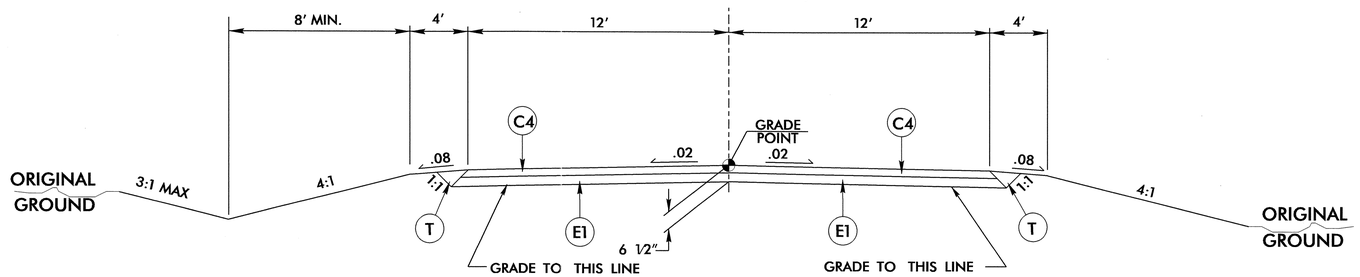


TYPICAL SECTION NO.10

USE TYPICAL NO. 10 AS FOLLOWS :

–Y10– STA. 10+91.00 TO STA. 11+36.00
** –Y10– STA. 11+36.00 TO STA. 15+29.22
–Y10– STA. 15+29.22 TO STA. 16+50.00

℄ –SR1–, –Y13A–

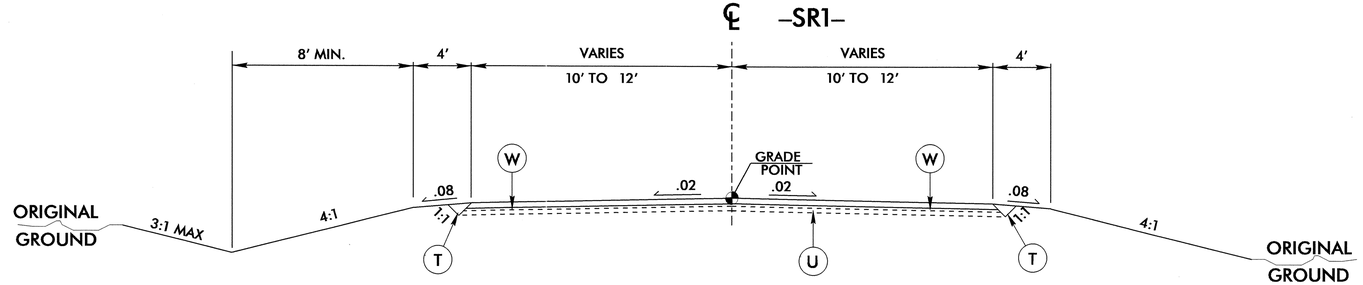


TYPICAL SECTION NO.11

USE TYPICAL NO. 11 AS FOLLOWS :

–SR1– STA. 10+13.31 TO STA. 14+00.00
–Y13A– STA. 10+16.00 TO STA. 13+63.68

℄ –SR1–



TYPICAL SECTION NO.12

USE TYPICAL NO. 12 AS FOLLOWS :

–SR1– STA. 14+00.00 TO STA. 15+00.00

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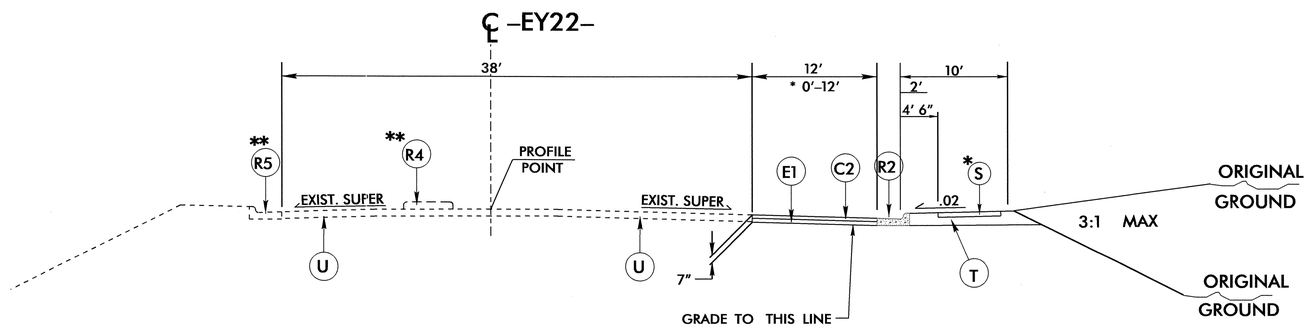
PROJECT REFERENCE NO.	SHEET NO.
U-3621B	2E
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22024 ENGINEER DONNIE W. MUMFORD 1/24/11

NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER DANG-CHI CHEN 1/24/11

PAVEMENT SCHEDULE	
C1	1 1/2" S9.5B
C2	3" S9.5B
C3	VAR. S9.5B
C4	2 1/2" SF9.5A
C5	VAR. SF9.5A
C6	2" S9.5B
D1	4" I19.0B
D2	VAR. I19.0B
E1	4" B25.0B
E2	4 1/2" B25.0B
E3	5 1/2" B25.0B
E4	VAR. B25.0B
R1	1'-6" C & G
R2	2'-6" C & G
R3	5"MCI
R4	EXIST. ISLAND
R5	EXIST. C&G
S	4" SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W	WEDGING



TYPICAL SECTION NO.13

USE TYPICAL NO. 13 AS FOLLOWS :

-EY22- STA. 11+75.00 TO STA. 13+90.16 RT

* -EY22- STA. 15+85.85 TO STA. 19+41.72 LT

REVERSE TYPICAL FOR WIDENING ON THE LEFT SIDE

**SEE PLANS FOR EXISTING ISLAND AND EXISTING CURB LOCATIONS

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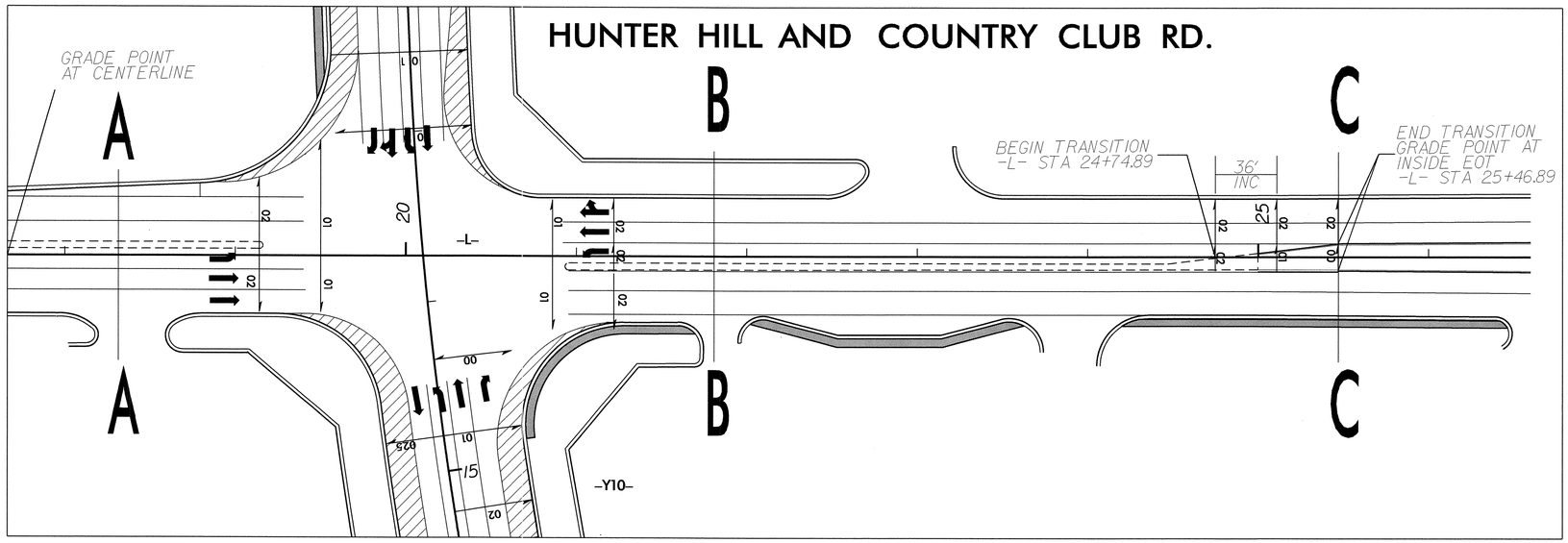
PROJECT REFERENCE NO.	SHEET NO.
U-3621B	2-F
R/W SHEET NO.	

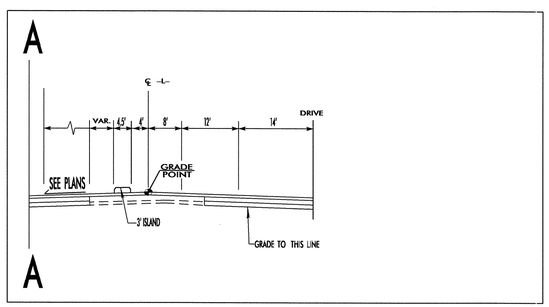
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22924 ENGINEER DAVID W. MUMFORD

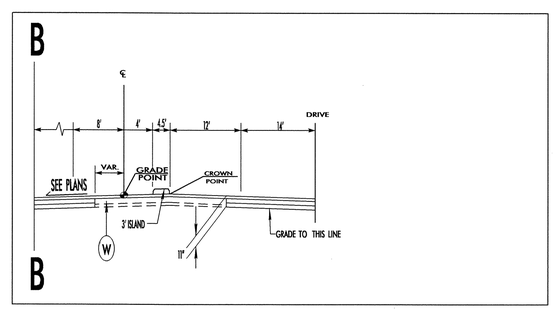
1/14/11

SUPERELEVATION AND GRADE POINT TRANSITION DETAIL 1 of 2

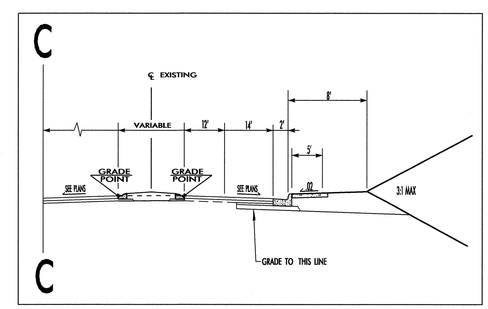




USE ALONG WITH TYPICAL NO. 2 AS FOLLOWS :
-L- STA 14+66.82 TO STA 19+16.21



USE ALONG WITH TYPICAL NO. 2 AS FOLLOWS :
-L- STA 20+93.42 TO STA 25+00.00



USE ALONG WITH TYPICAL NO. 3 AS FOLLOWS :
-L- STA 20+93.42 TO STA 25+00.00

REVISIONS

8/17/99

14-JAN-2011 10:40
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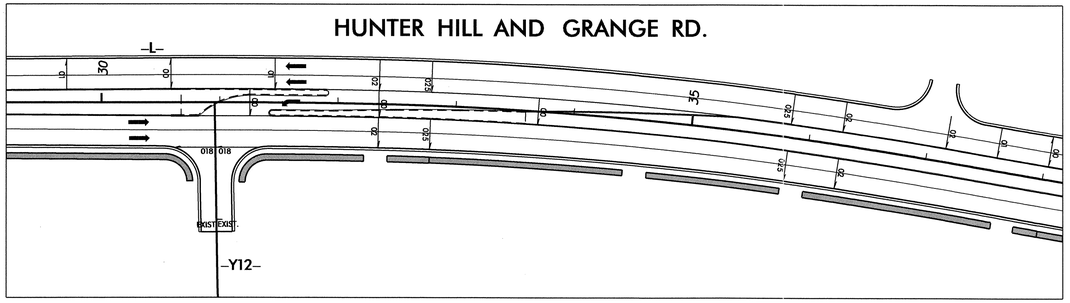
PROJECT REFERENCE NO.	SHEET NO.
U-3621B	2-G
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	

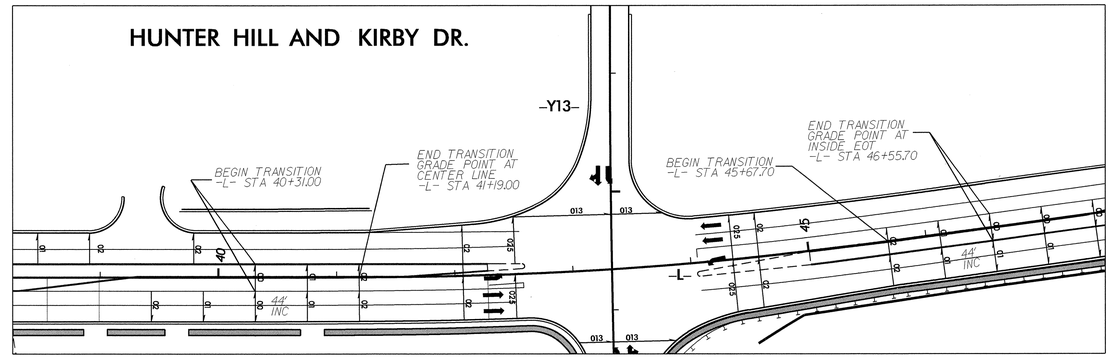
NORTH CAROLINA PROFESSIONAL SEAL 22324 ENGINEER BRENN W. MUMFORD
1/14/11

SUPERELEVATION AND GRADE POINT TRANSITION DETAIL 2 OF 2

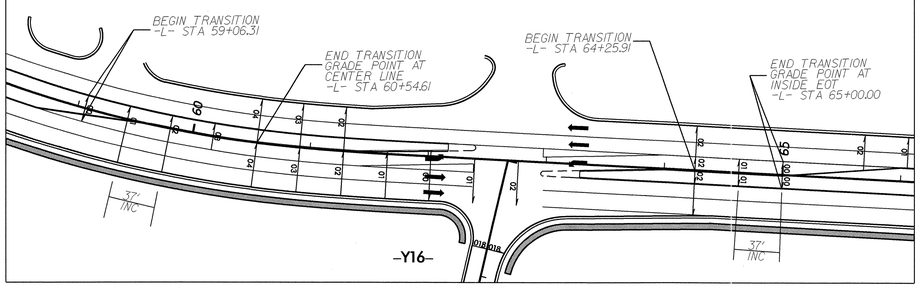
HUNTER HILL AND GRANGE RD.



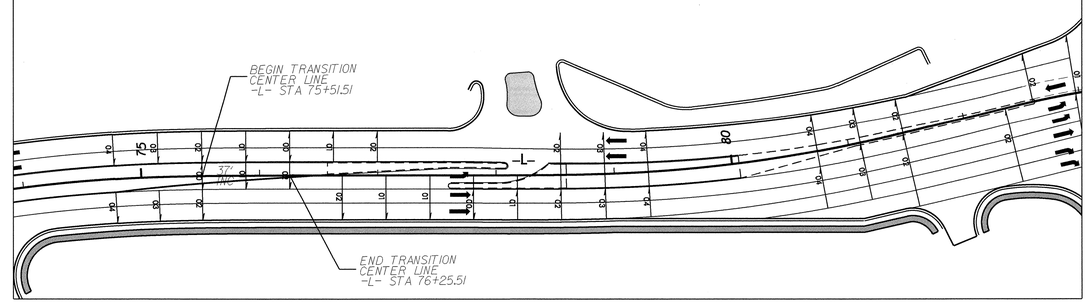
HUNTER HILL AND KIRBY DR.



HUNTER HILL AND MCDEARMAN AVE.



HUNTER HILL APPROACHING BENVENUE RD.



REVISIONS

8/17/99

04-JAN-2011 09:54
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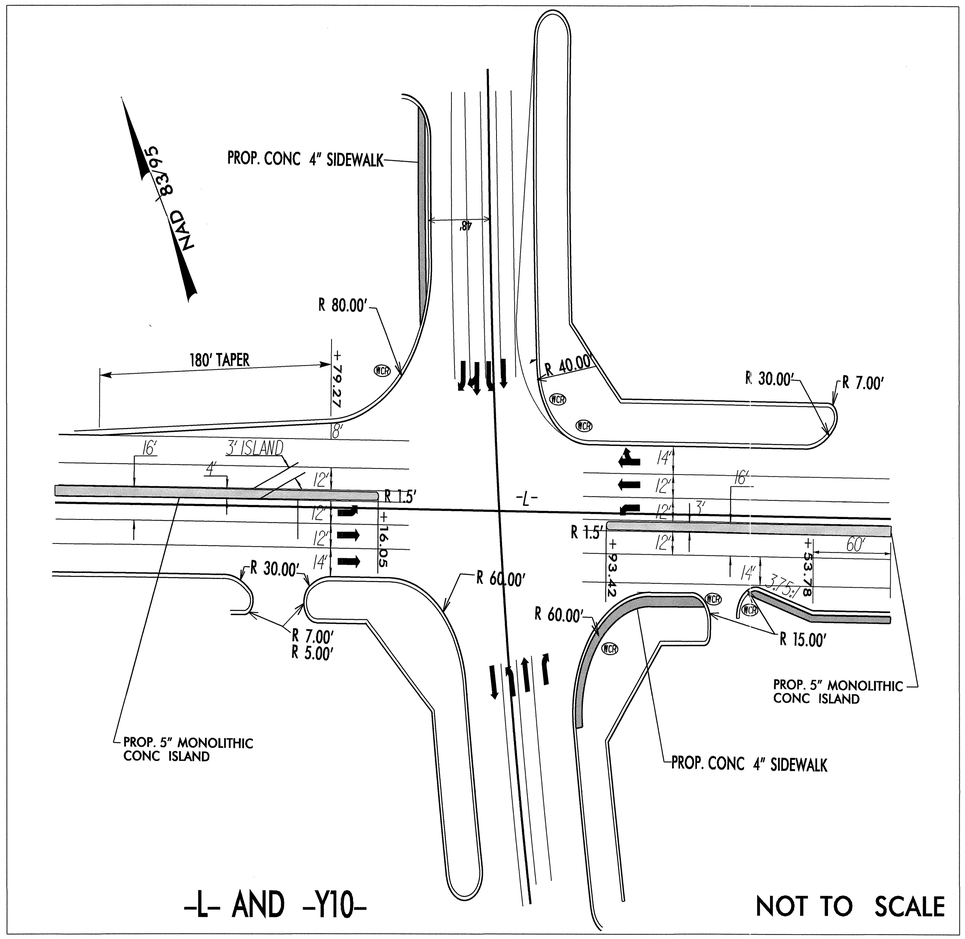
PROJECT REFERENCE NO.	SHEET NO.
U-3621B	2-H

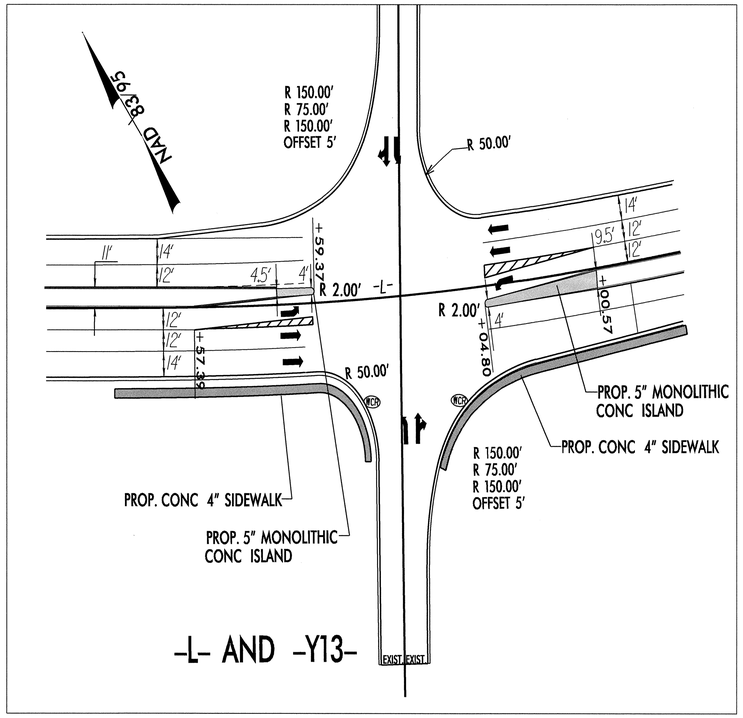
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 23924 ENGINEER DENNIS W. MUMFORD
1/24/11

INTERSECTION AND ISLAND DETAIL

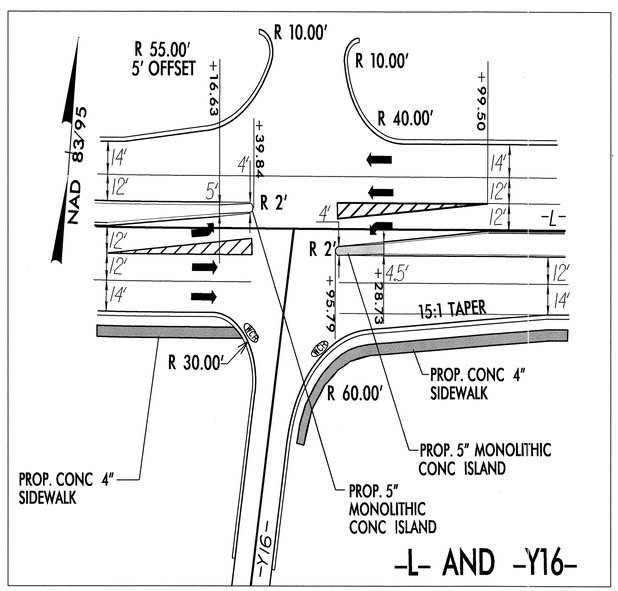


-L- AND -Y10-

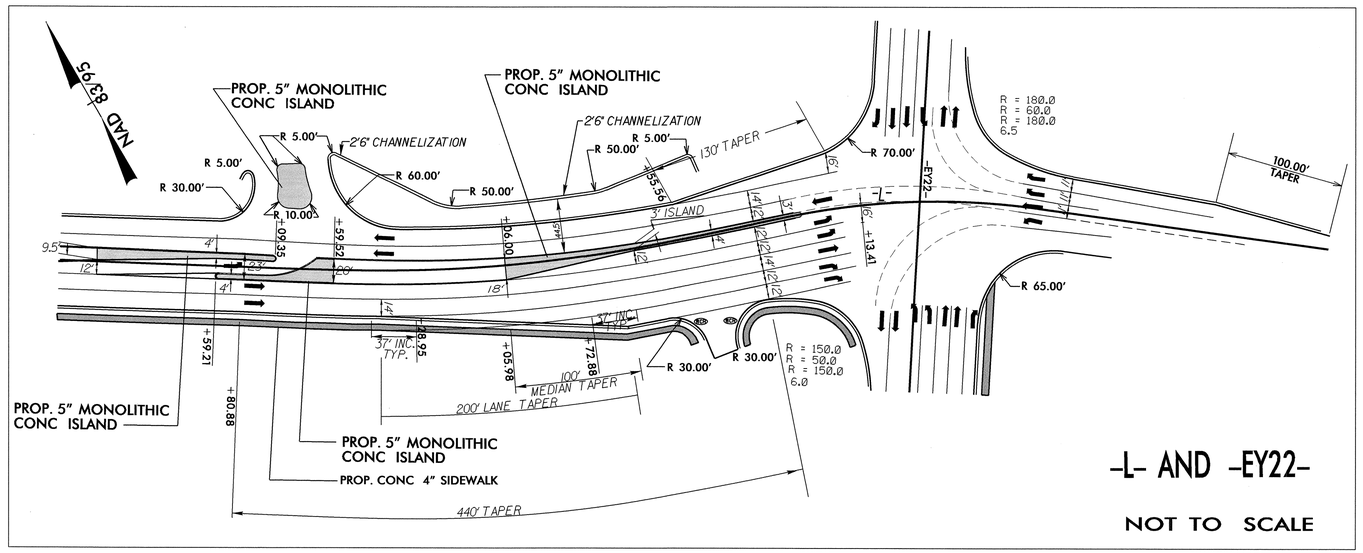
NOT TO SCALE



-L- AND -Y13-



-L- AND -Y16-



-L- AND -EY22-

NOT TO SCALE

6/2/99

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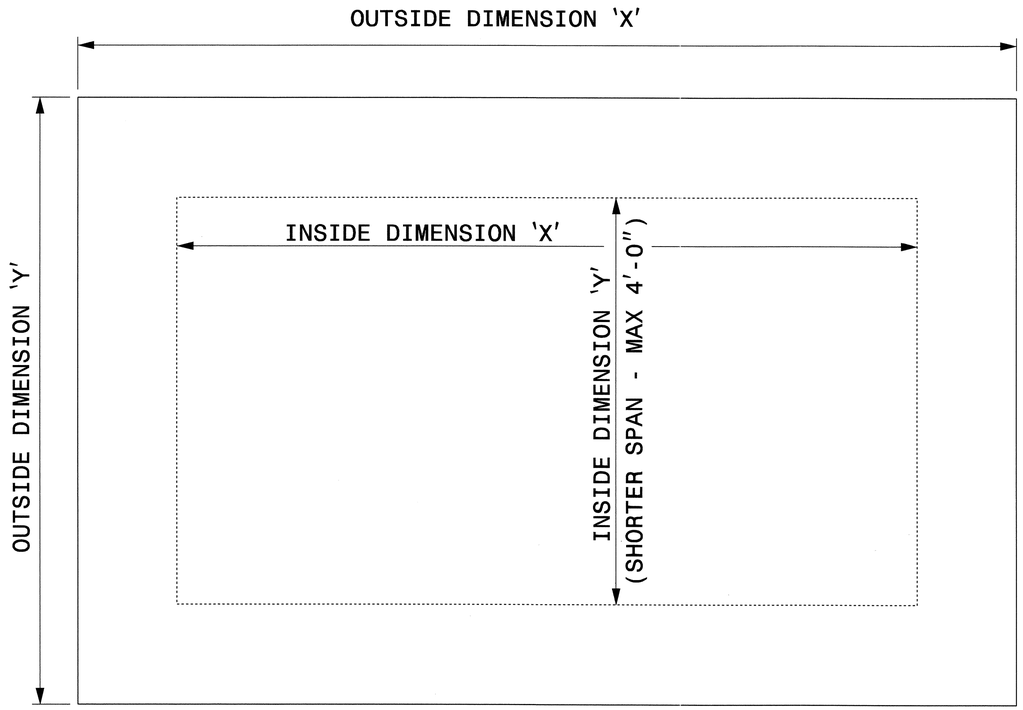
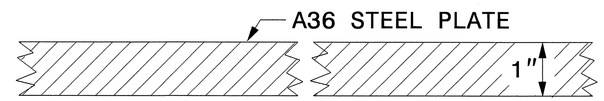
PROJECT REFERENCE NO.	SHEET NO.
U-3621B	2-1



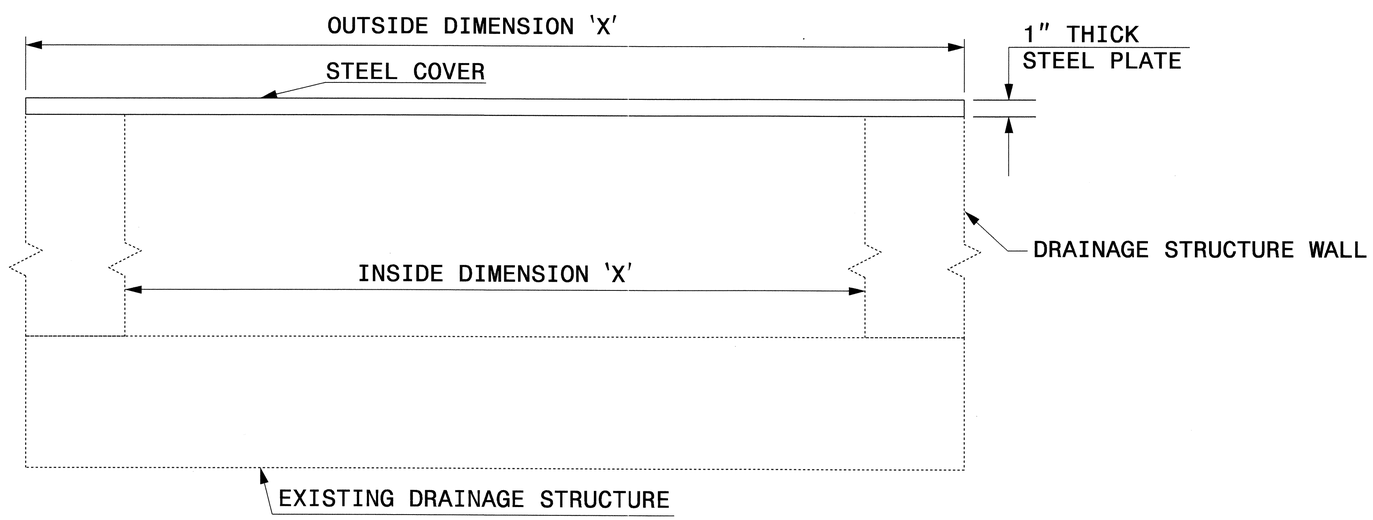
PLAN VIEWS

GENERAL NOTES:

-USE GRADE A36 STEEL
-STEEL COVERS ARE FOR TEMPORARY USE DURING PHASE CONSTRUCTION.
-FILL SHALL BE PLACED DIRECTLY OVER THE STEEL PLATES.
-SEE ROADWAY PLANS AND PROVISIONS FOR LOCATIONS
-QUANTITES TO BE PAID FOR AT THE UNIT PRICE BID PER EACH.



SECTION VIEW OF STEEL TOP PLATE



ELEVATION VIEWS

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HOWERTON
1/8/10

CONTRACT STANDARDS
AND DEVELOPMENT UNIT
Office 919-250-4128 FAX 919-250-4119

DETAIL OF TEMPORARY 1" STEEL COVER OVER DRAINAGE STRUCTURE

ORIGINAL BY: E.E. WARD DATE: 2-2-98
MODIFIED BY: DATE:
CHECKED BY: DATE: 10/2/10
FILE SPEC.: epic:/usr/details/metric/stand/stlcvr2.dgn

03-DEC-2010 09:24
S:\Contracts\Contracts\Special Details\jhowerton\Steel Cover.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET
U-3621B	2-J

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.

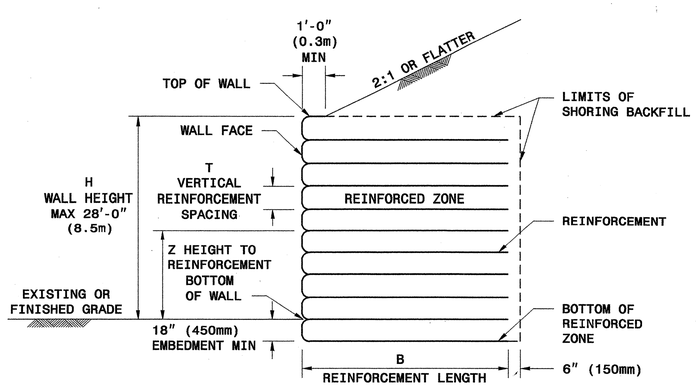
PLACE SHORING BACKFILL IN 8″ TO 10″ (200mm to 250mm) THICK LIFTS AND COMPACT IN ACCORDANCE WITH SUBARTICLE 235-4(C) OF THE STANDARD SPECIFICATIONS. USE ONLY HAND OPERATED COMPACTION EQUIPMENT WITHIN 3′-0″ (1m) OF THE WALL FACE.

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.

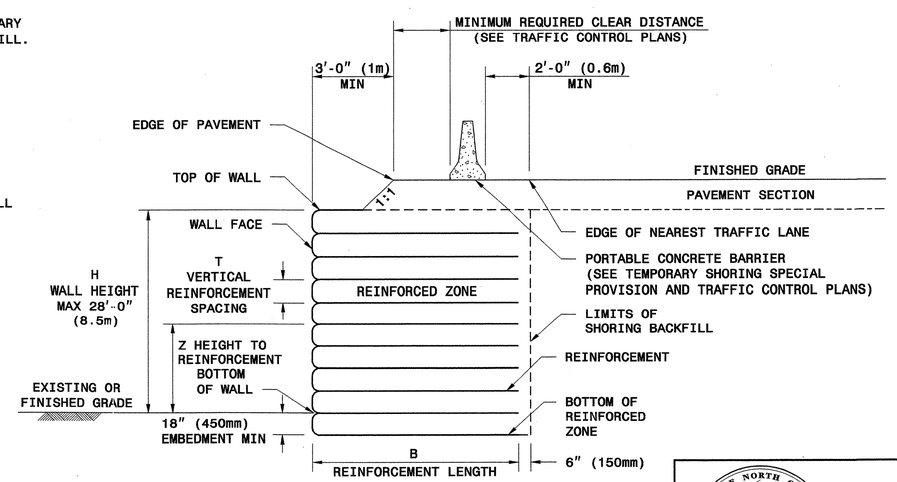
COVER REINFORCING AND RETENTION FABRIC WITH AT LEAST 3″ (75mm) OF SHORING BACKFILL. PLACE TOP REINFORCEMENT LAYER BETWEEN 4″ AND 24″ (100mm and 600mm) BELOW TOP OF WALL DEPENDING ON WALL OPTION.

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

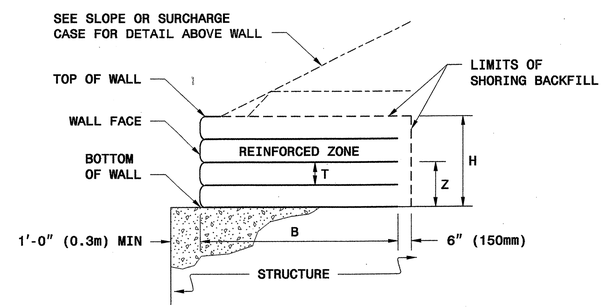
IF THE TOP OF WALL IS WITHIN 5′-0″ (1.5m) OF FINISHED GRADE, REMOVE TOP FORM OR FACING AND INCORPORATE THE TOP REINFORCEMENT LAYER INTO THE FILL WHEN PLACING FILL IN FRONT OF THE WALL. STANDARD TEMPORARY MSE WALLS REMAIN IN PLACE PERMANENTLY UNLESS REQUIRED OTHERWISE.



SLOPE CASE



SURCHARGE CASE



TEMPORARY MSE WALL ON STRUCTURE

U-3621B

U-3621B

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
U-3621B	2-K

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	11	21
								11	11	11	11	11	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	11	15	15	15	15	15	10.5
		11	11	11	11	11	15	15	15	15	15	15	9
		11	11	11	11	11	15	15	15	15	15	16	7.5
		11	11	11	11	11	15	15	15	15	16	16	6
	11	11	11	11	11	15	15	15	15	15	16	16	4.5
11	11	11	11	11	15	15	15	15	15	16	16	16	3
11	11	11	11	11	15	15	15	15	15	16	16	16	1.5
11	11	11	11	11	15	15	15	15	15	16	16	17	0
11	11	11	11	11	15	15	15	15	15	16	16	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′.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

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
U-3621B	2-L

GEOTECHNICAL ENGINEER

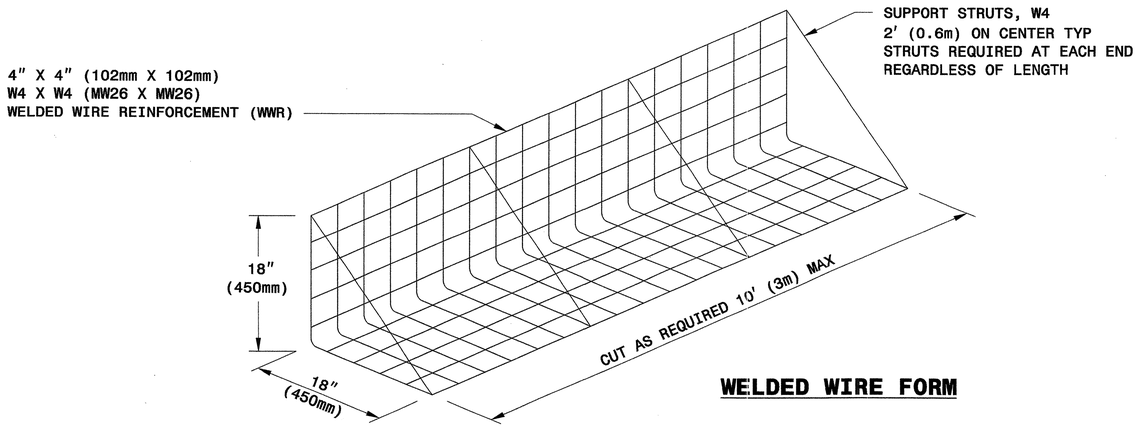
NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

Scott A. Hidden 3/29/07

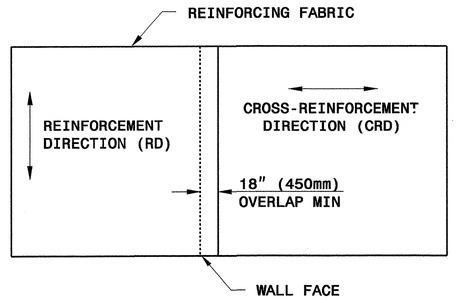
SIGNATURE DATE

ENGINEER

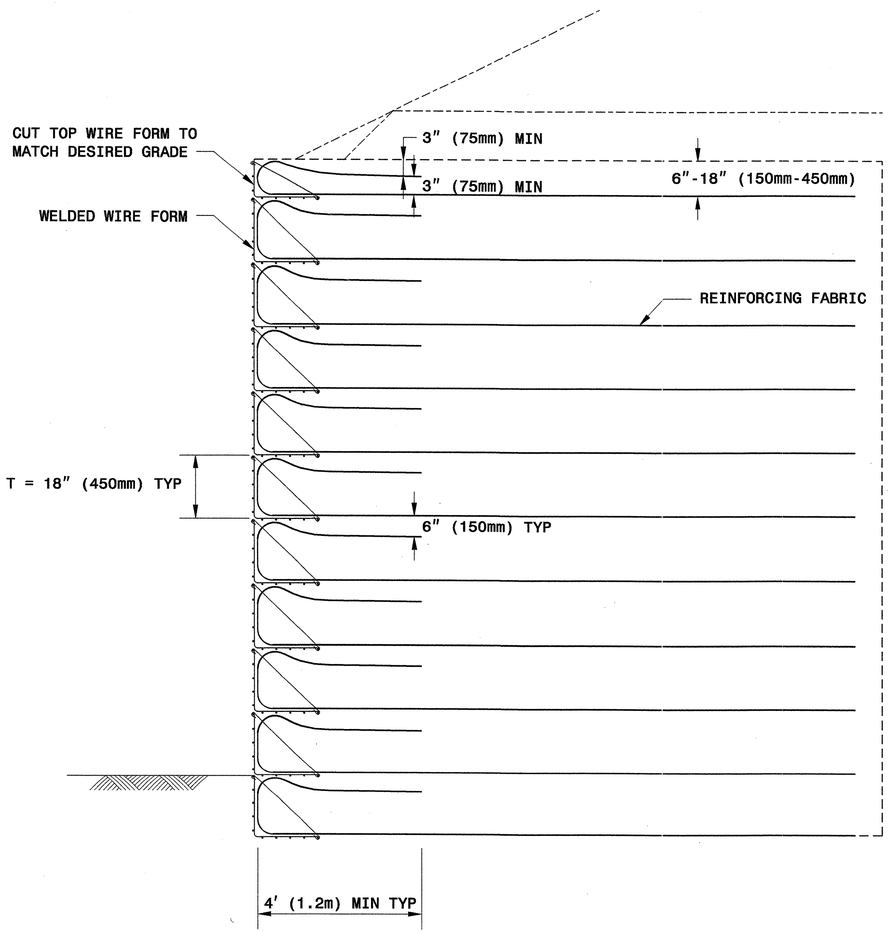
SIGNATURE DATE



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

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD DRAWING NO. 1801.02

TEMPORARY
FABRIC WALL

SHEET 3 OF 11 DATE: 12-19-06

PROJECT REFERENCE NO.	SHEET
U-3621B	2-M

GEOTECHNICAL ENGINEER

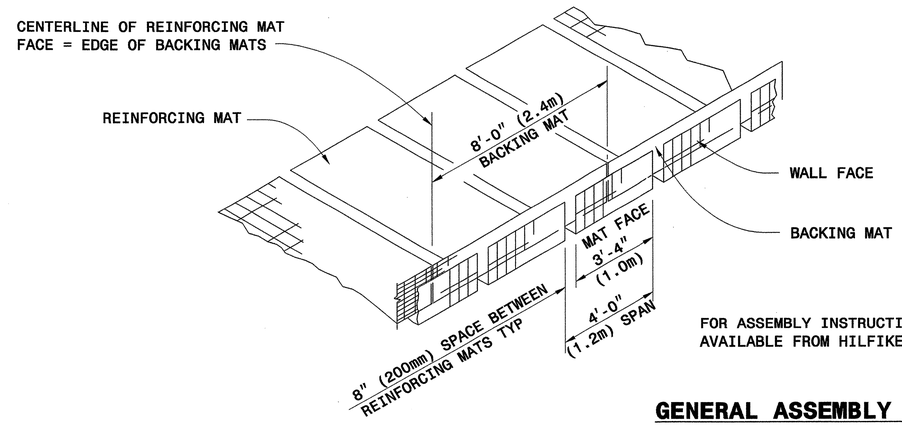
NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

Scott A. Hidden 3/29/07

SIGNATURE DATE

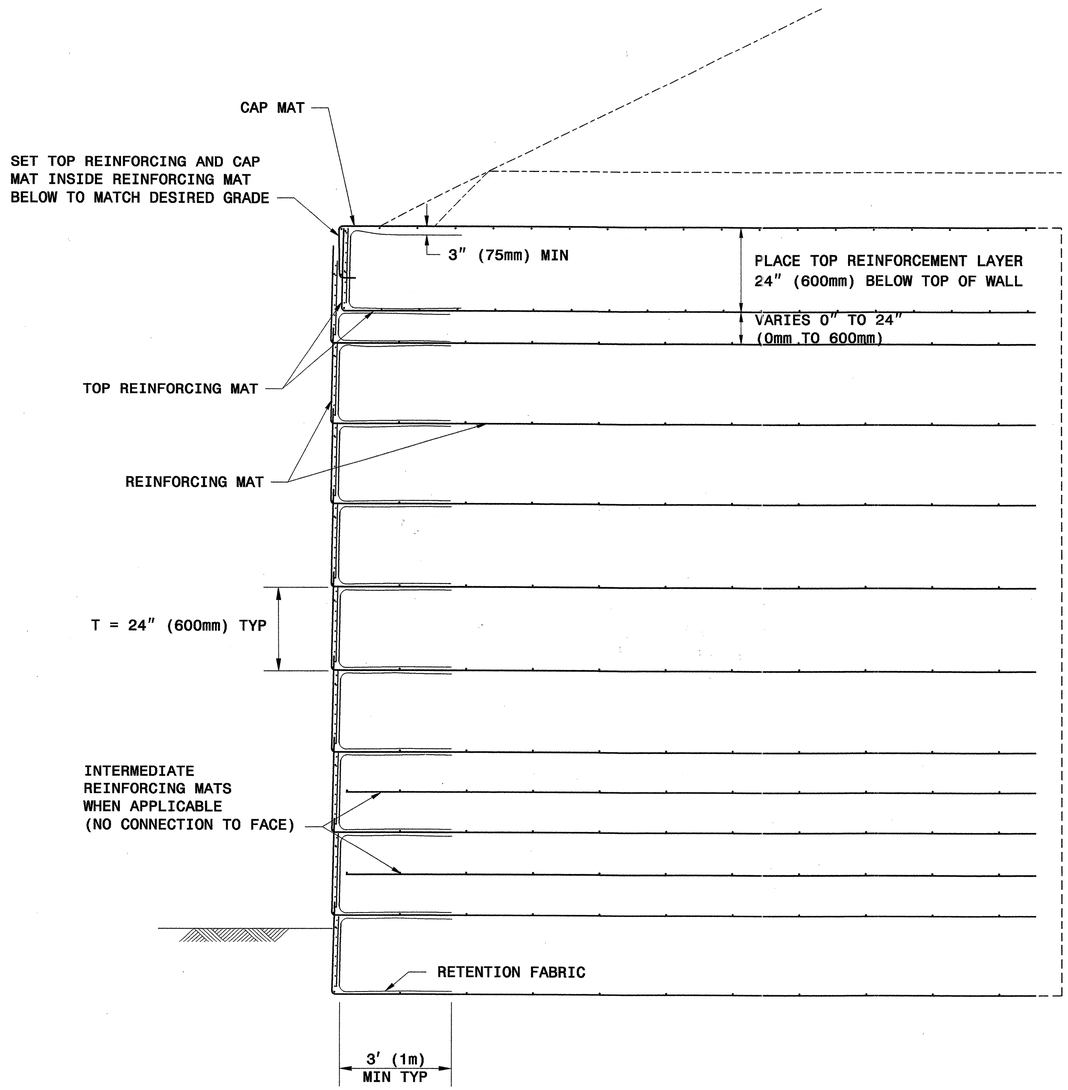
ENGINEER

SIGNATURE DATE

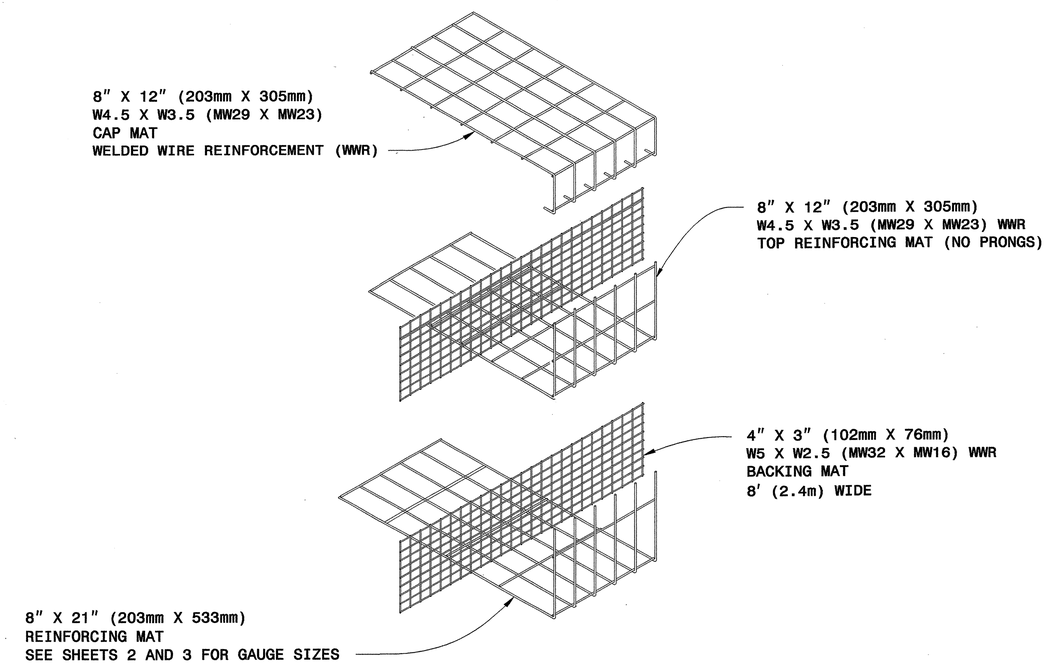


FOR ASSEMBLY INSTRUCTIONS, SEE WELDED WIRE WALL CONSTRUCTION GUIDE AVAILABLE FROM HILFIKER WEBSITE AT WWW.HILFIKER.COM/WWW

GENERAL ASSEMBLY DETAIL



TYPICAL SECTION



WALL COMPONENTS

HILFIKER RETAINING WALLS

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

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
U-3621B	2-N

GEOTECHNICAL ENGINEER

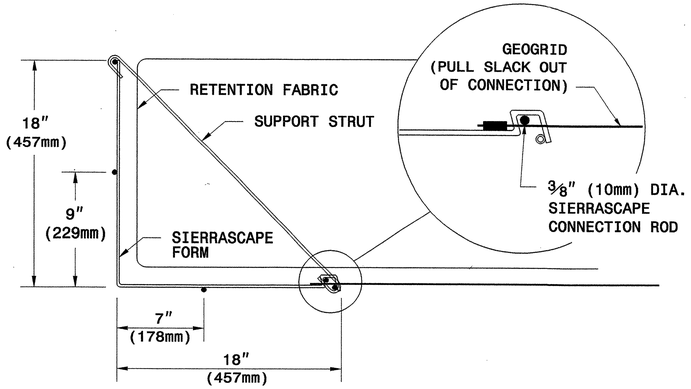
NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

Scott A. Hidden 3/29/07

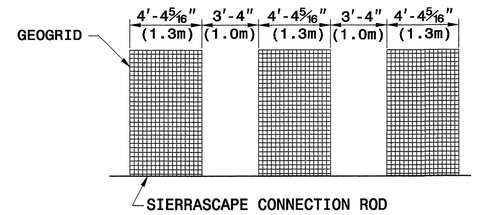
SIGNATURE DATE

ENGINEER

SIGNATURE DATE

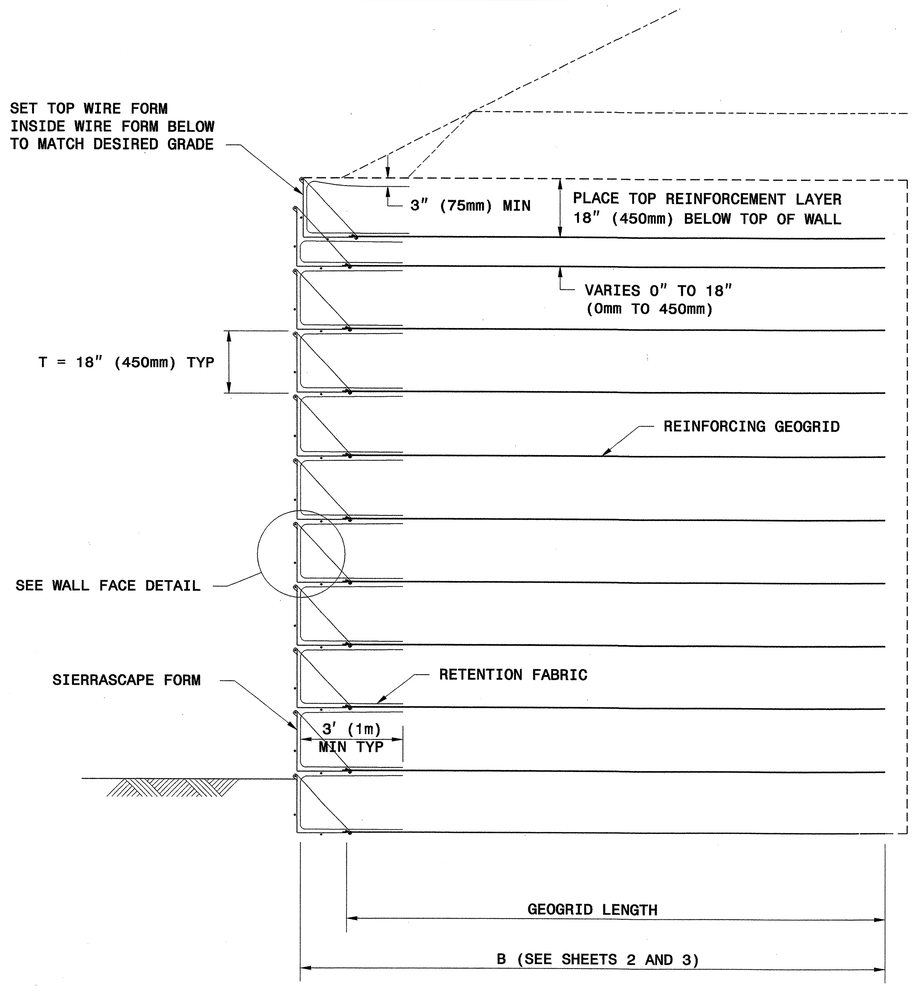


WALL FACE DETAIL

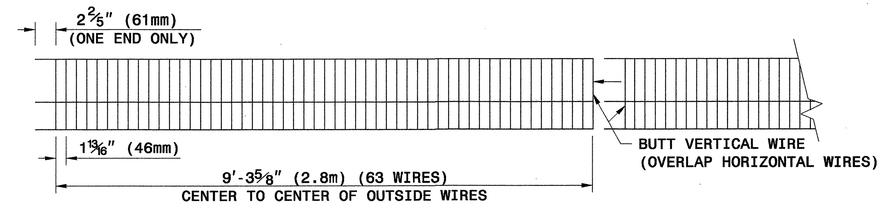


PLACE ALTERNATE LAYERS OF GEOGRID IN STAGGERED PATTERN SUCH THAT THE LAYER ABOVE IS CENTERED OVER SPACE BELOW

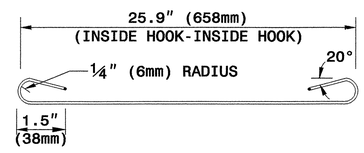
TYPICAL GEOGRID COVERAGE



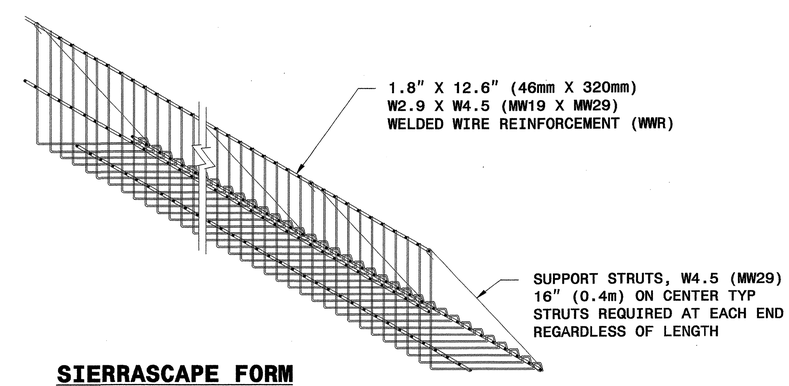
TYPICAL SECTION



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
U-3621B	2-0

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

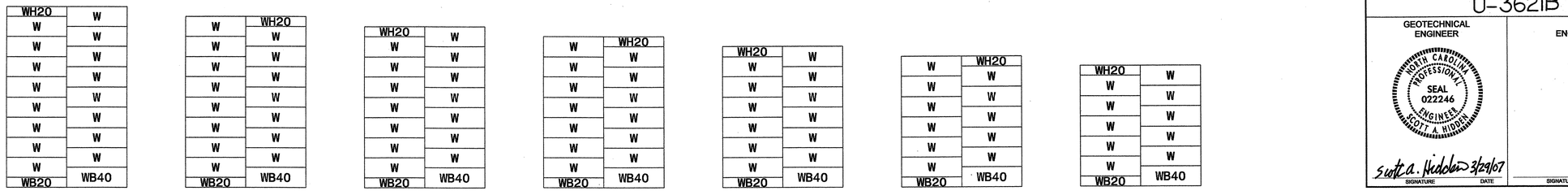
Scott A. Hidden 3/29/07

SIGNATURE DATE

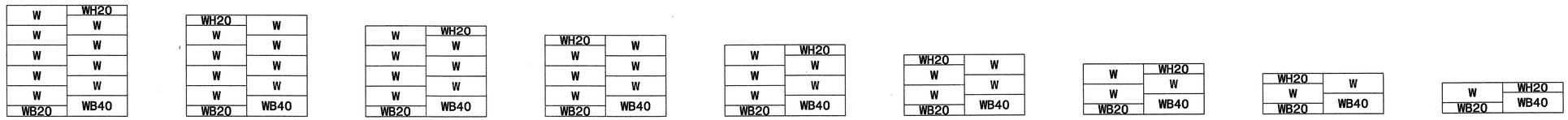
ENGINEER

SIGNATURE DATE

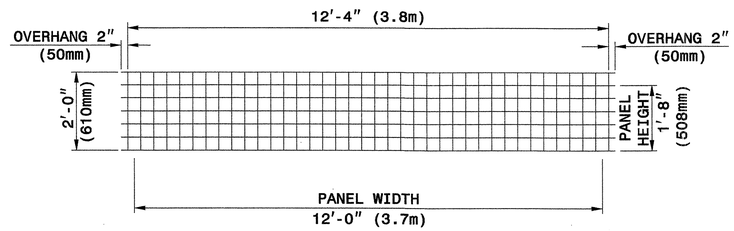
PANEL LAYOUTS



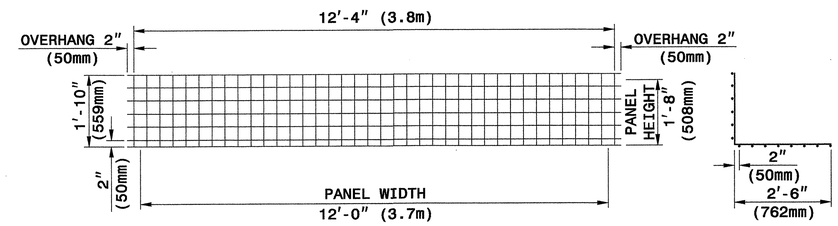
H - WALL HEIGHT							
(FEET-INCHES)	< 28 - 0	< 27 - 0	< 25 - 4	< 23 - 8	< 22 - 0	< 20 - 4	< 18 - 8
(METER)	< 8.5	< 8.2	< 7.7	< 7.2	< 6.7	< 6.2	< 5.7



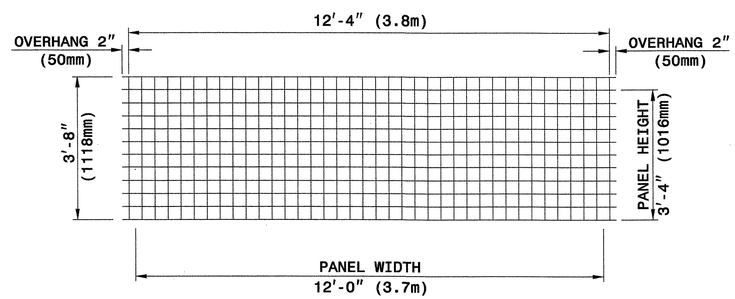
(FEET-INCHES)	< 17 - 0	< 15 - 4	< 13 - 8	< 12 - 0	< 10 - 4	< 8 - 8	< 7 - 0	< 5 - 4	< 3 - 8
(METER)	< 5.2	< 4.7	< 4.2	< 3.7	< 3.2	< 2.6	< 2.1	< 1.6	< 1.1



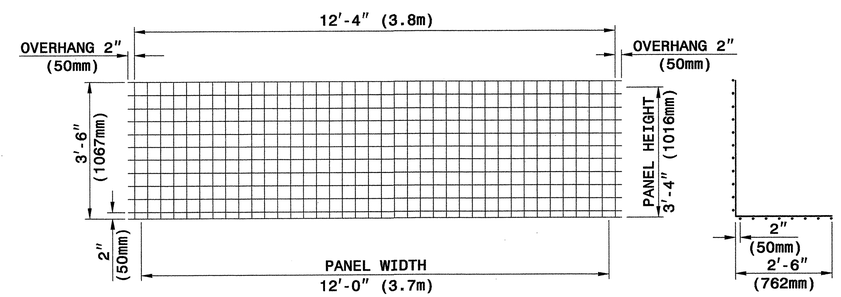
TYPE WH20



TYPE WB20 **SECTION**



TYPE W



TYPE WB40 **SECTION**

WELDED WIRE FACINGS **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)

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 6 OF 11 DATE: 12-19-06

PROJECT REFERENCE NO.	SHEET
U-3621B	2-P

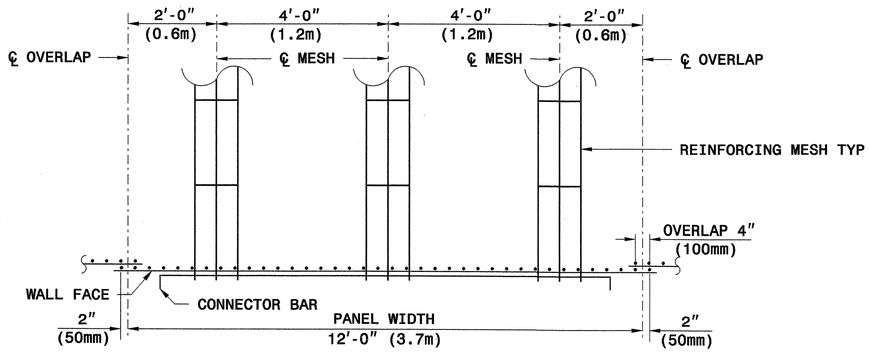
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

Scott A. Hidden 3/29/07
SIGNATURE DATE

ENGINEER

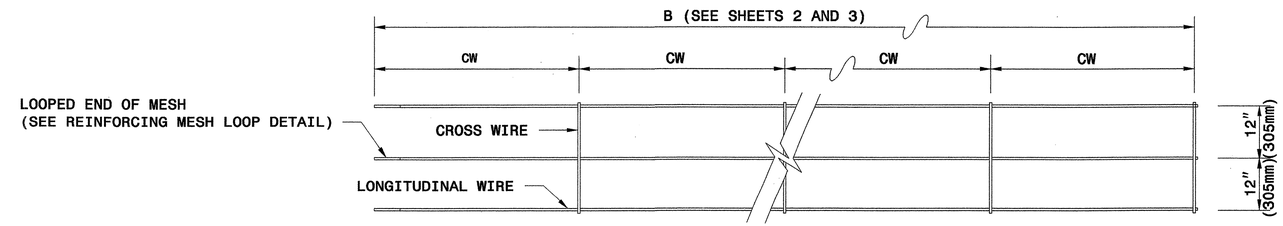
SIGNATURE DATE



REINFORCING MESH PLACEMENT DETAIL
(PLAN VIEW)

½" (13mm) DIA. BAR

CONNECTOR BAR



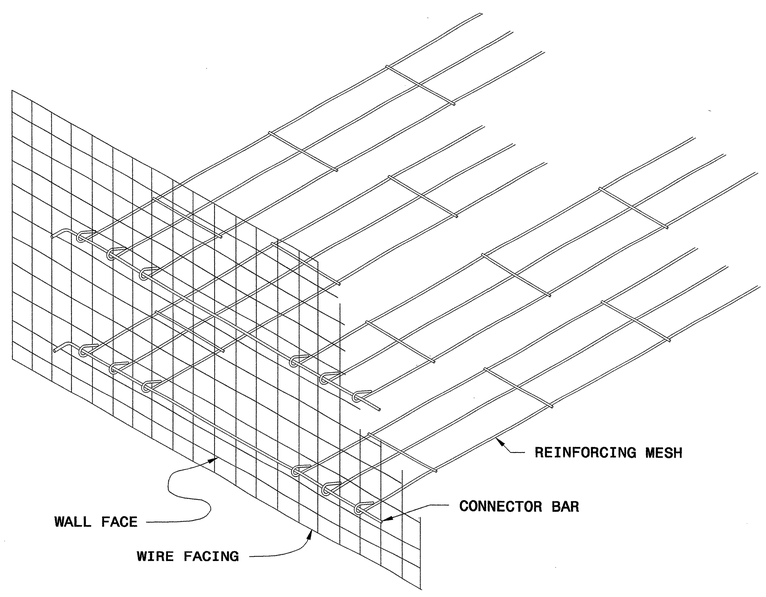
IF REINFORCEMENT LENGTH IS NOT AN INCREMENT OF 2'-0" (610mm) MAKE CW EQUAL TO 12" (305mm) AT THE END OF THE REINFORCING MESH OPPOSITE THE LOOPED END

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

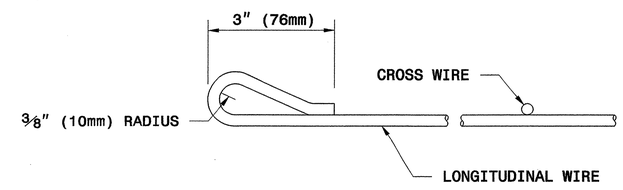
NO. OF LONGITUDINAL WIRES
GAUGE OF LONGITUDINAL WIRES
GAUGE OF CROSS WIRES
SPACING OF CROSS WIRES IN FT (mm), CW

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
U-3621B	2-Q

GEOTECHNICAL ENGINEER

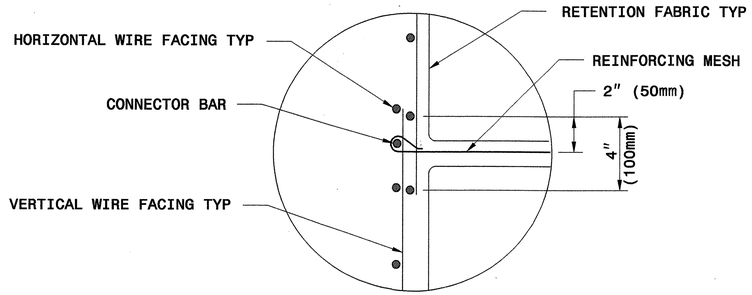
NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

Scott A. Hidden 3/29/07

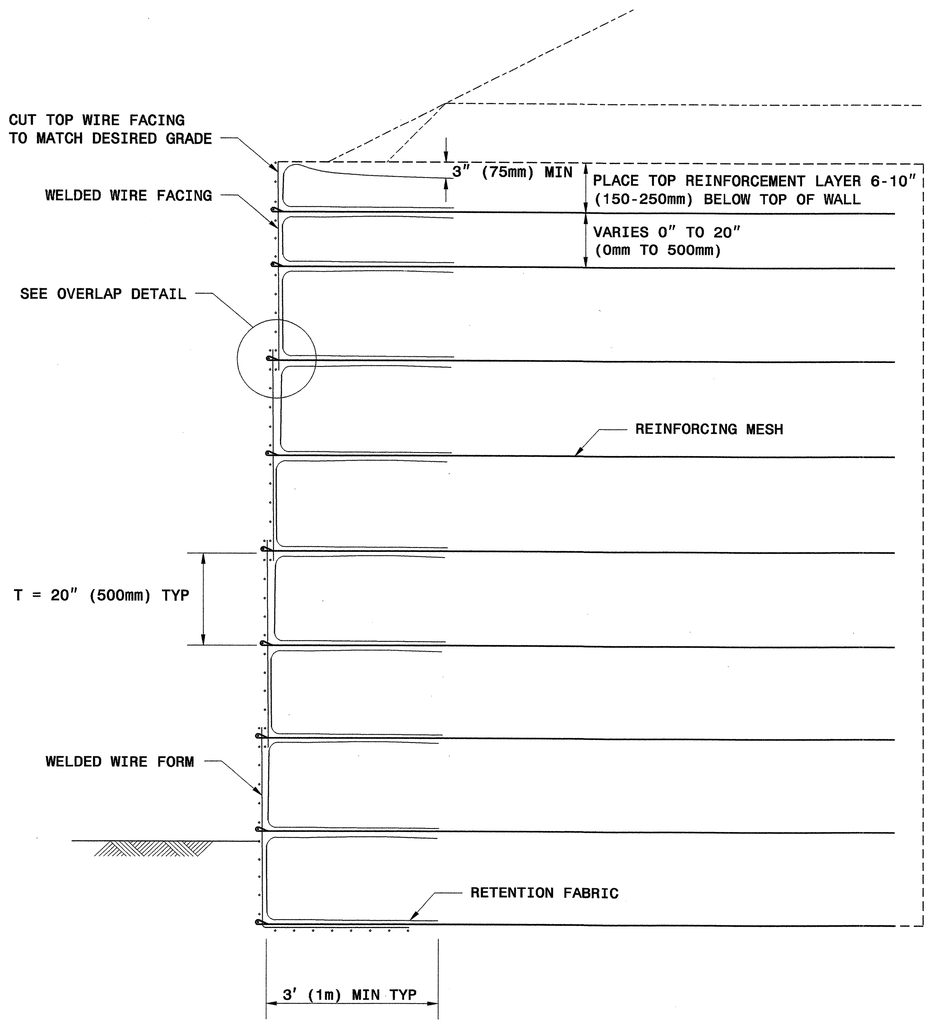
SIGNATURE DATE

ENGINEER

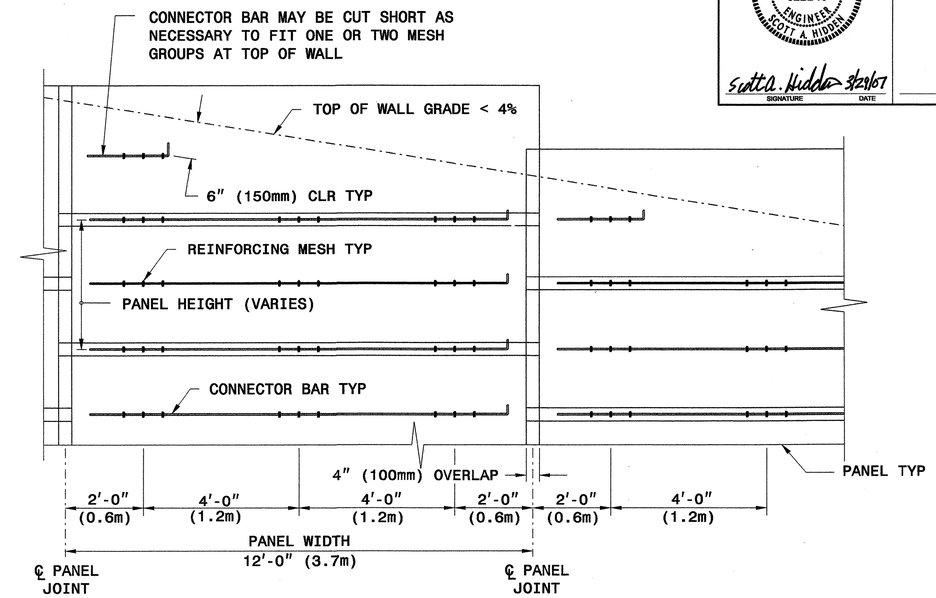
SIGNATURE DATE



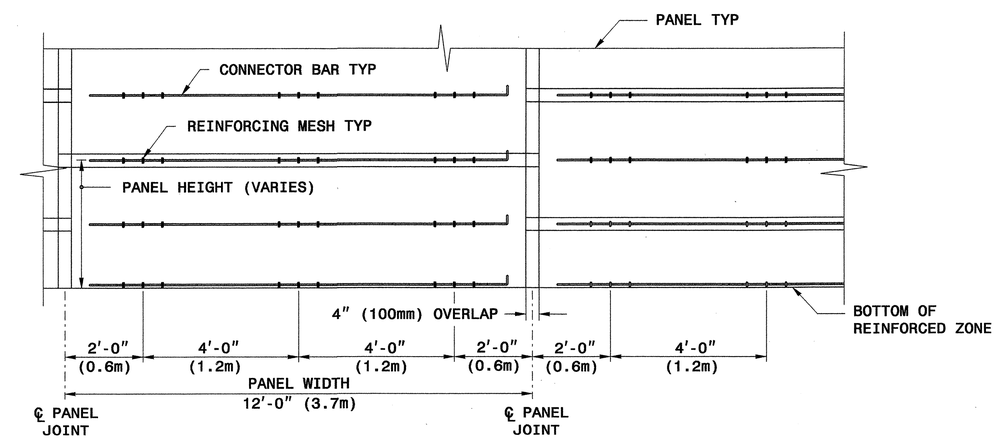
OVERLAP DETAIL



TYPICAL SECTION



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



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

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 8 OF 11 DATE: 12-19-06

PROJECT REFERENCE NO.	SHEET
U-3621B	2-R

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

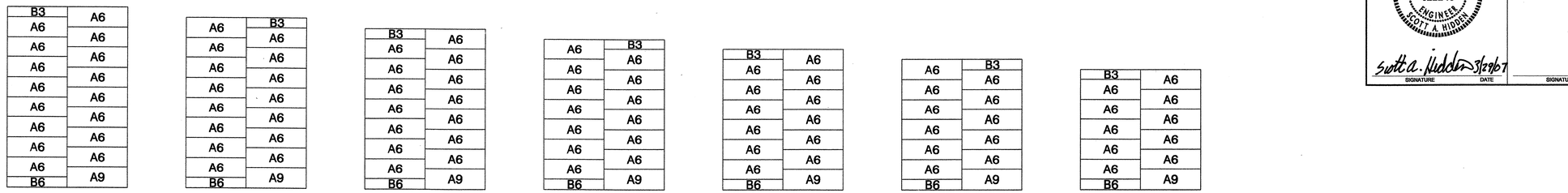
Scott A. Hidden 3/29/07

SIGNATURE DATE

ENGINEER

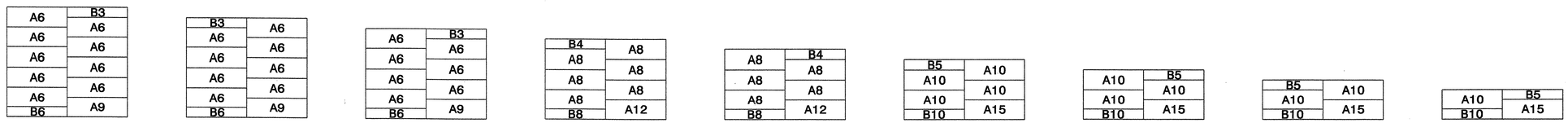
SIGNATURE DATE

PANEL LAYOUTS

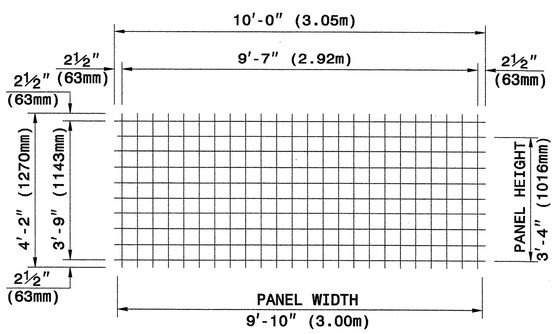


H - WALL HEIGHT

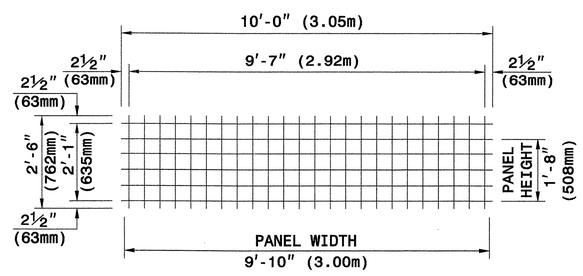
(FEET-INCHES)	< 28 - 0	< 27 - 8	< 26 - 0	< 24 - 4	< 22 - 8	< 21 - 0	< 19 - 4
(METER)	< 8.5	< 8.4	< 7.9	< 7.4	< 6.9	< 6.4	< 5.9



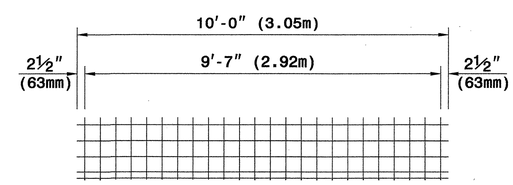
(FEET-INCHES)	< 17 - 8	< 16 - 0	< 14 - 4	< 12 - 8	< 11 - 0	< 9 - 4	< 7 - 8	< 6 - 0	< 4 - 4
(METER)	< 5.4	< 4.9	< 4.4	< 3.9	< 3.4	< 2.8	< 2.3	< 1.8	< 1.3



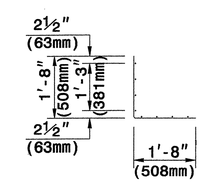
TYPE A



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
U-3621B	2-S

GEOTECHNICAL ENGINEER

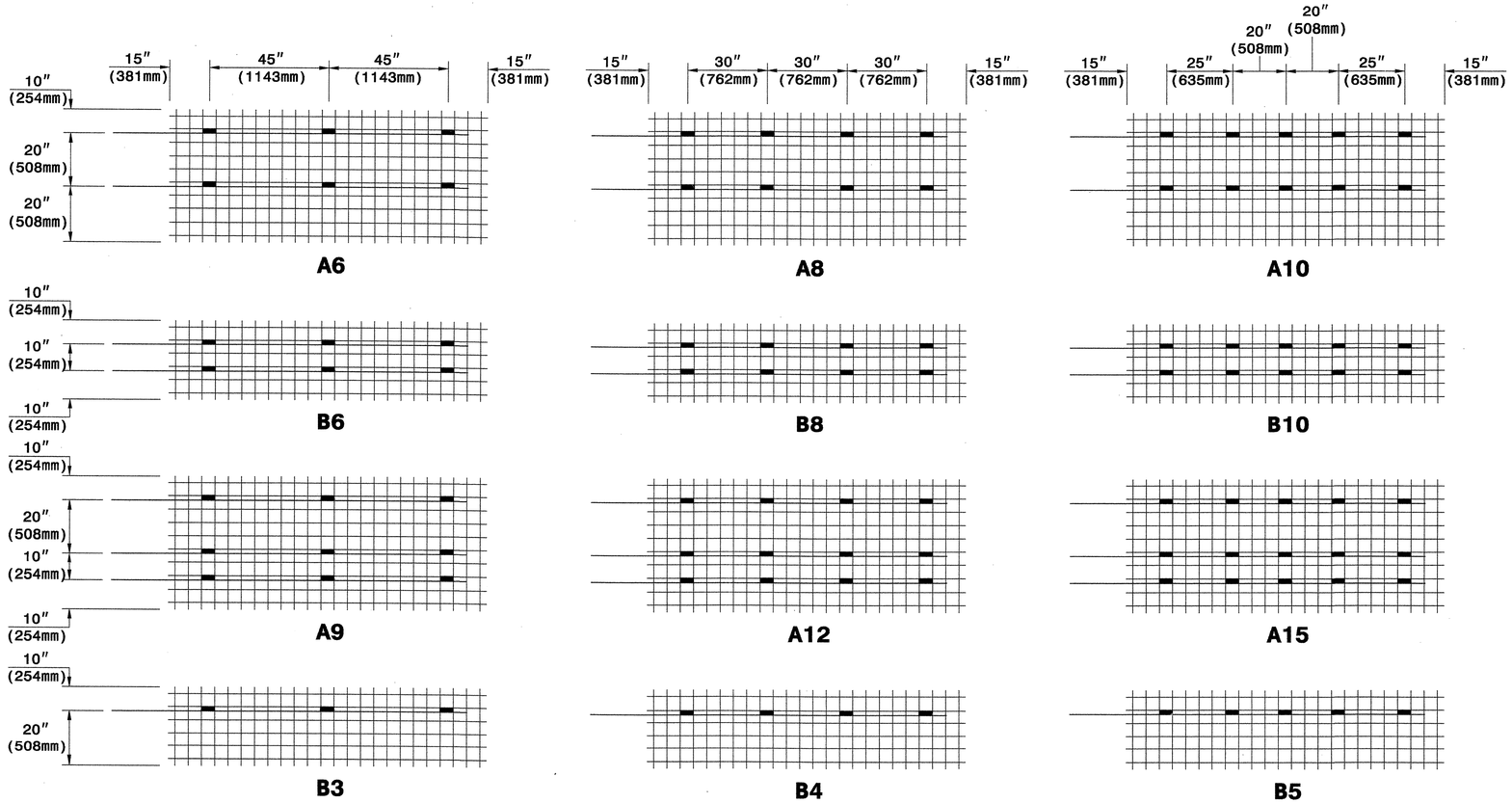
NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

Scott A. Hidden 3/29/07

SIGNATURE DATE

ENGINEER

SIGNATURE DATE

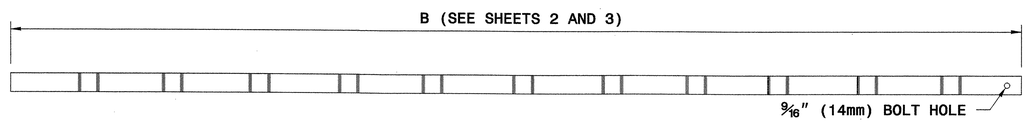


KEY: A8

NUMBER OF REINFORCING STRIPS

PANEL TYPE

CONNECTOR ROD AND REINFORCING STRIP PLACEMENT DIAGRAMS



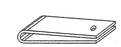
REINFORCING STRIP - 2" X 5/32" (50mm X 4mm)

1/2" (13mm) DIA. ROD

CONNECTOR ROD

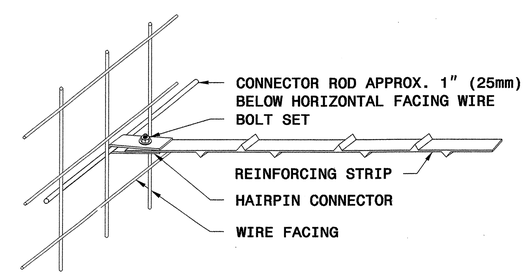
1/2" (13mm) BOLT WITH NUT AND WASHER

BOLT SET



HAIRPIN CONNECTOR

WALL COMPONENTS



STRIP TO FACING CONNECTION

The Reinforced Earth Company

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
U-3621B	2-T

GEOTECHNICAL ENGINEER

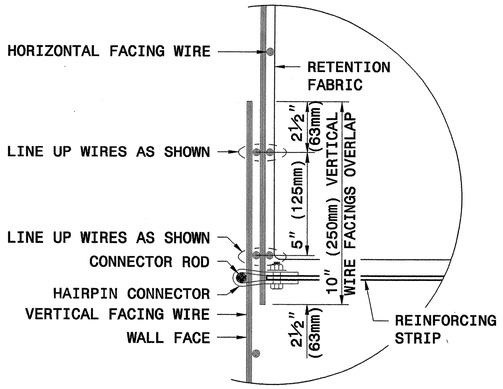
NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

Scott A. Hidden 3/29/07

SIGNATURE DATE

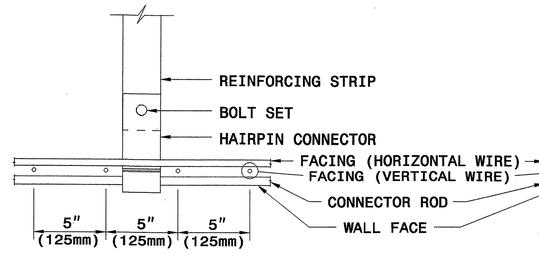
ENGINEER

SIGNATURE DATE



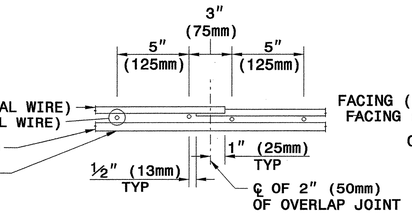
OVERLAP FACINGS VERTICALLY ONE FULL 5" (125mm) WIRE SQUARE DISREGARDING HALF SQUARES AT EDGES

VERTICAL OVERLAP DETAIL



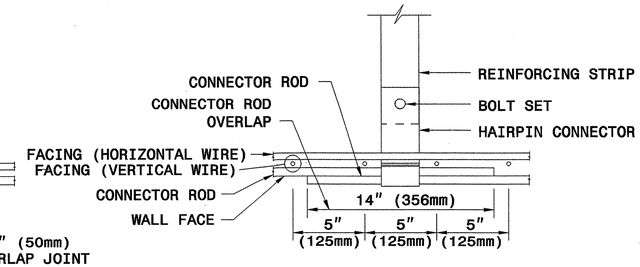
PLAN DETAIL 'A'

STRIP CONNECTION



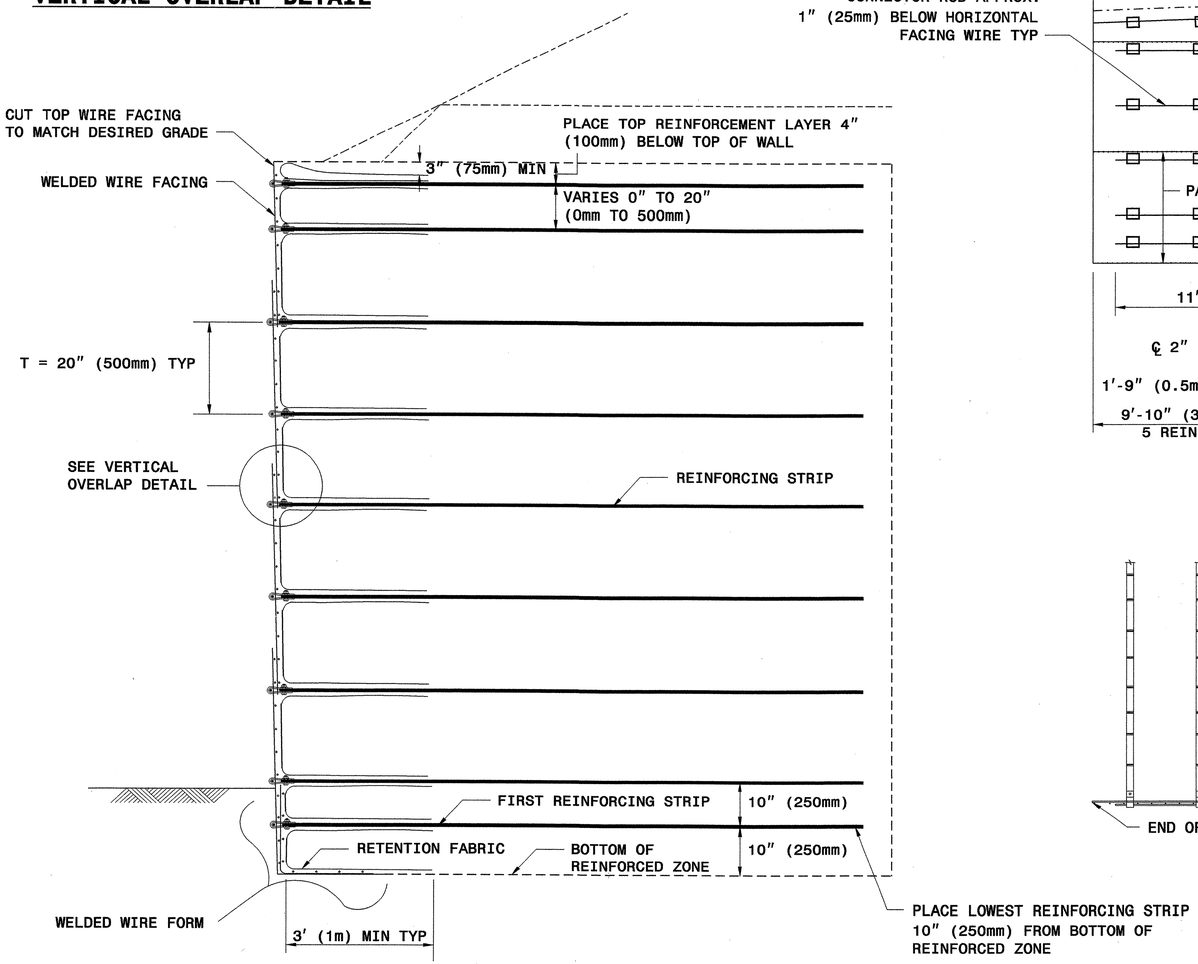
PLAN DETAIL 'B'

HORIZONTAL OVERLAP DETAIL

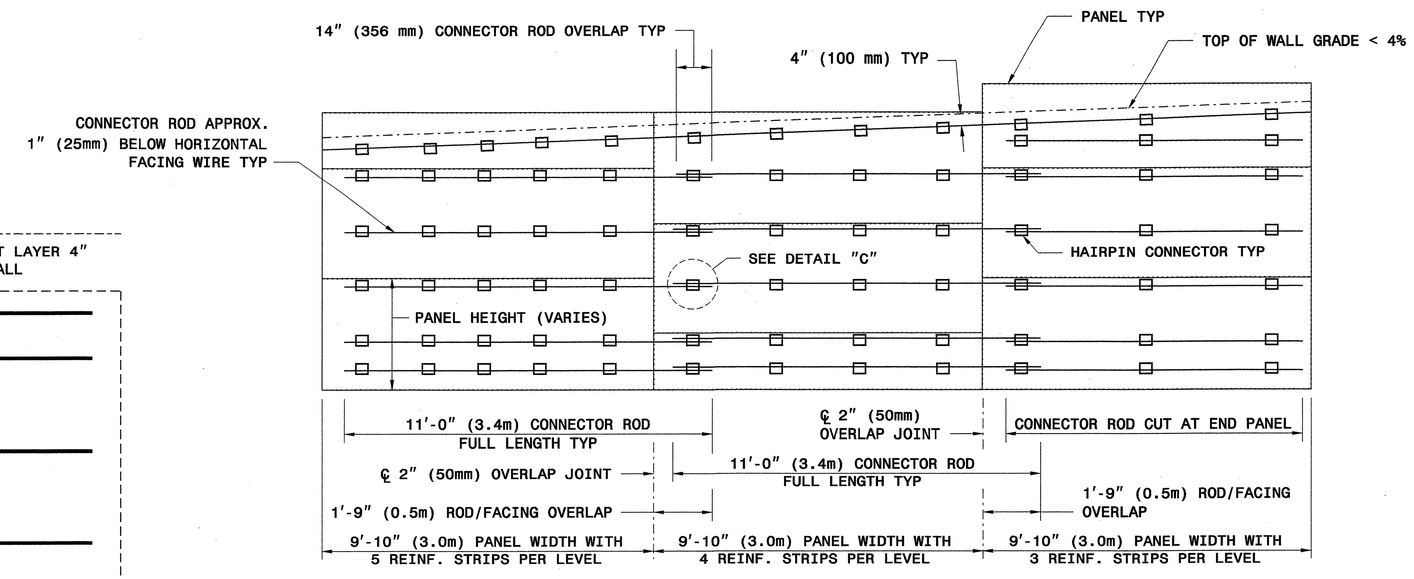


PLAN DETAIL 'C'

STRIP CONNECTION WITH HORIZONTAL OVERLAP DETAIL

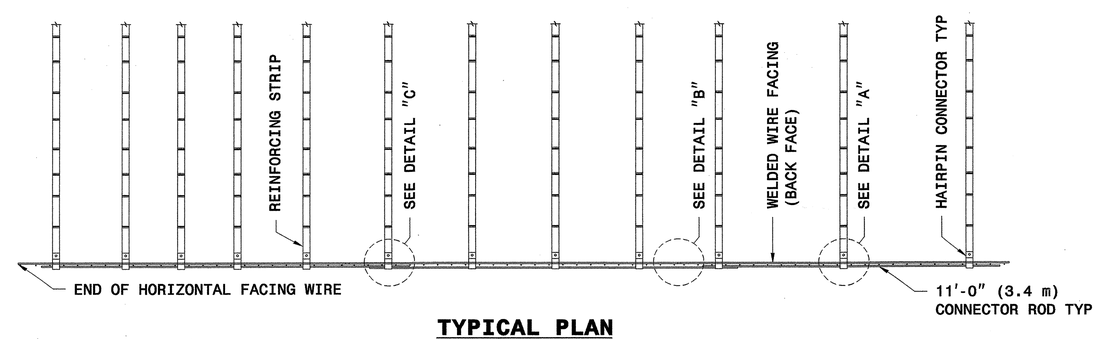


TYPICAL SECTION



TYPICAL ELEVATION

(WIRES NOT SHOWN FOR CLARITY)



TYPICAL PLAN

The Reinforced Earth Company

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

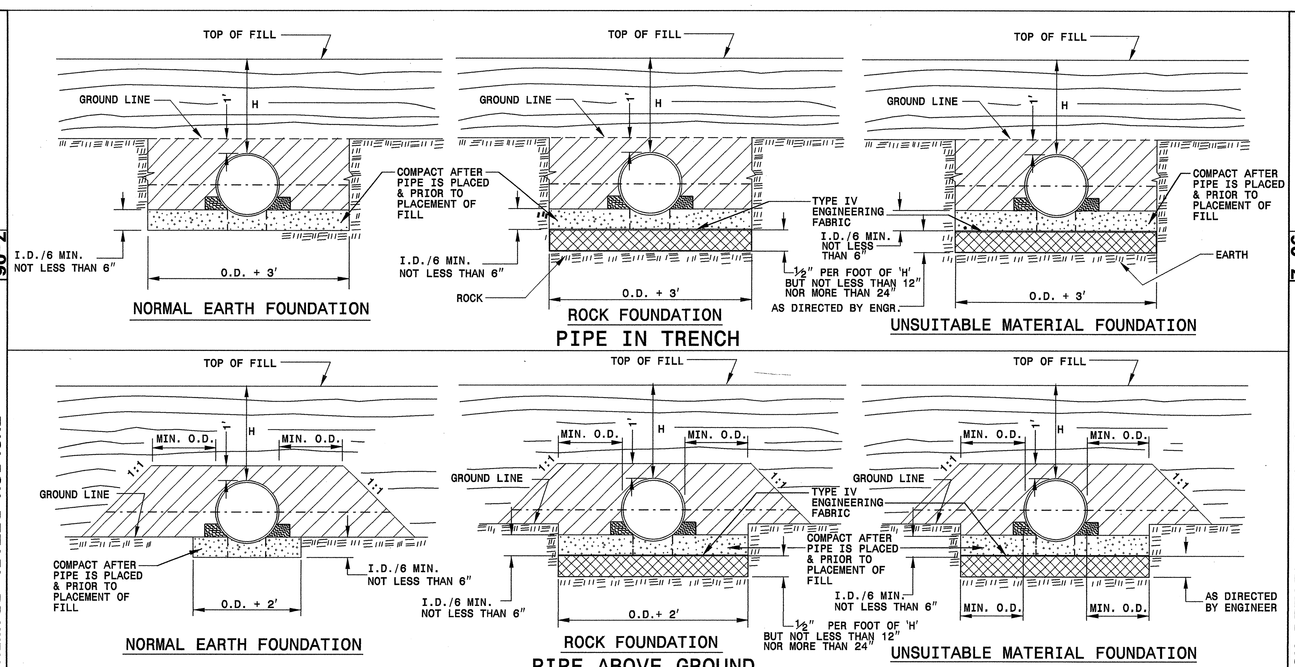
30-JUL-2009 08:48
s:\contracts\contracts\special details\ericward\stds\06' stds to special details\30001\0300d01.dgn
jhowerton AT PS237501

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

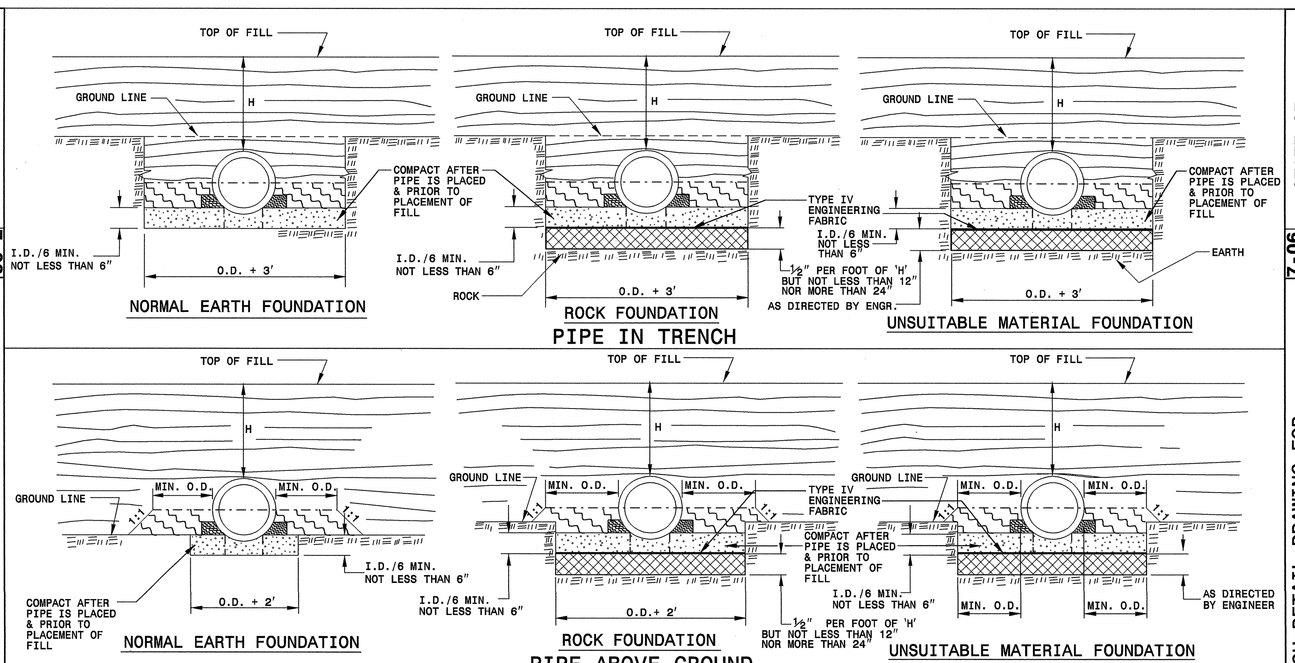
SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH ENGINEERING FABRIC AS DIRECTED BY THE ENGINEER.

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 MEACURED 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

ORIGINAL BY: KKempf DATE: 5-15-09
MODIFIED BY: DATE:
CHECKED BY: DATE: 7/31/09
FILE SPEC/ericward/stds/stdstodetails/30001/0300d01.dgn

SEE PLATE FOR TITLE

NORTH CAROLINA PROFESSIONAL SEAL 022996 ENGINEER

PROJECT REFERENCE NO. U-3621B
SHEET NO. 2-U

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

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.

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

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

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

SHEET 3 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
FILL HEIGHT TABLES

SHEET 3 OF 3
300D01

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ORIGINAL BY: KKeagyr DATE: 5-15-09
MODIFIED BY: DATE:
CHECKED BY: DATE: 7/8/09
FILE SPEC/ericward/stds/stdscode418/30001/0300d01.dgn

NORTH CAROLINA PROFESSIONAL SEAL 022566 ENGINEER JOHN D. HOWERTON

PROJECT REFERENCE NO. U-3621B
SHEET NO. 2-V

PROJECT REFERENCE NO.	SHEET NO.
U-3621B	2-W

STATE OF
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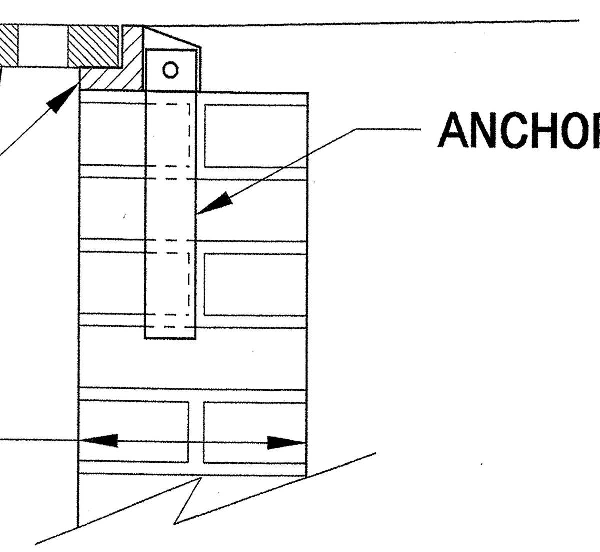
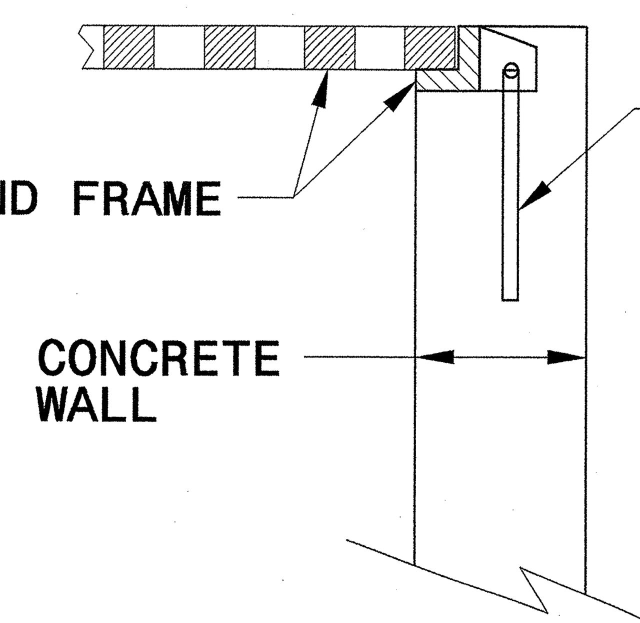
RALEIGH, N.C.

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

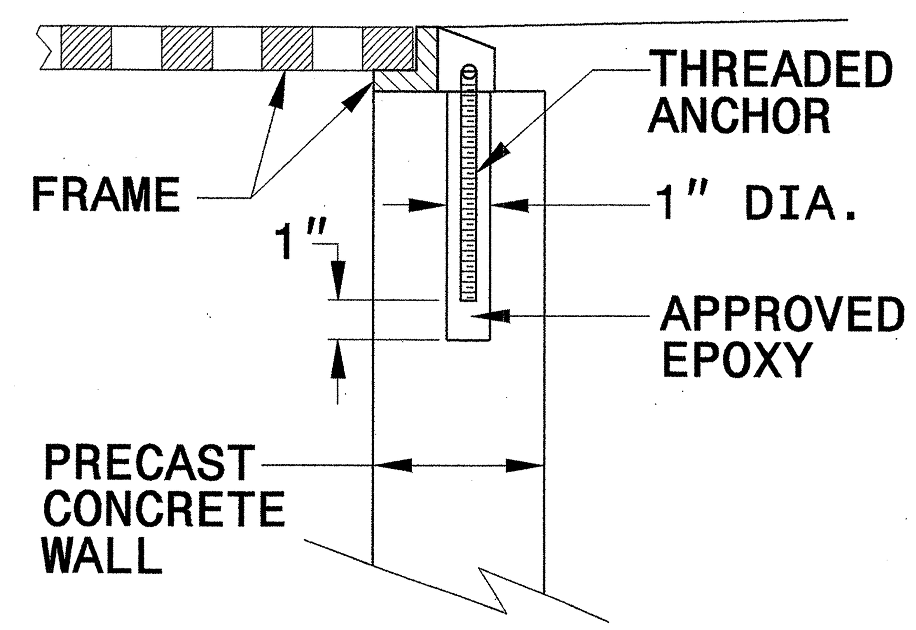
SHEET 1 OF 1
840D25



BRICK MASONRY CONSTRUCTION



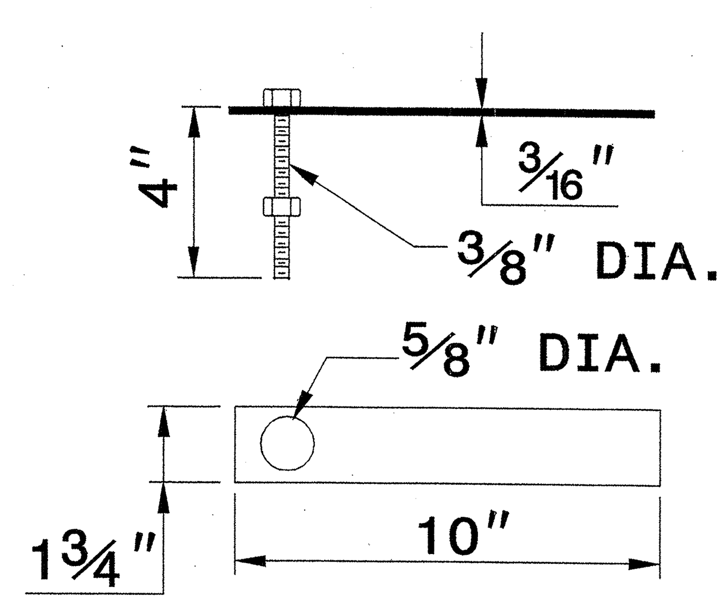
CONCRETE CONSTRUCTION



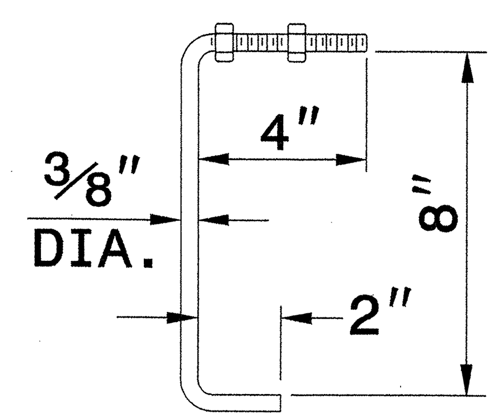
PRECAST CONCRETE CONSTRUCTION

DETAIL SHOWING ANCHORAGE OF FRAME FOR GRATED DROP INLET

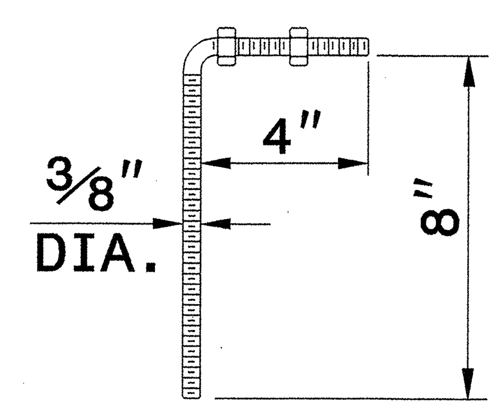
NOTE:
CONSTRUCT GRATED DROP INLET TO COINCIDE WITH NORMAL OR SUPERELEVATED SHOULDER OR PAVEMENT SLOPE.



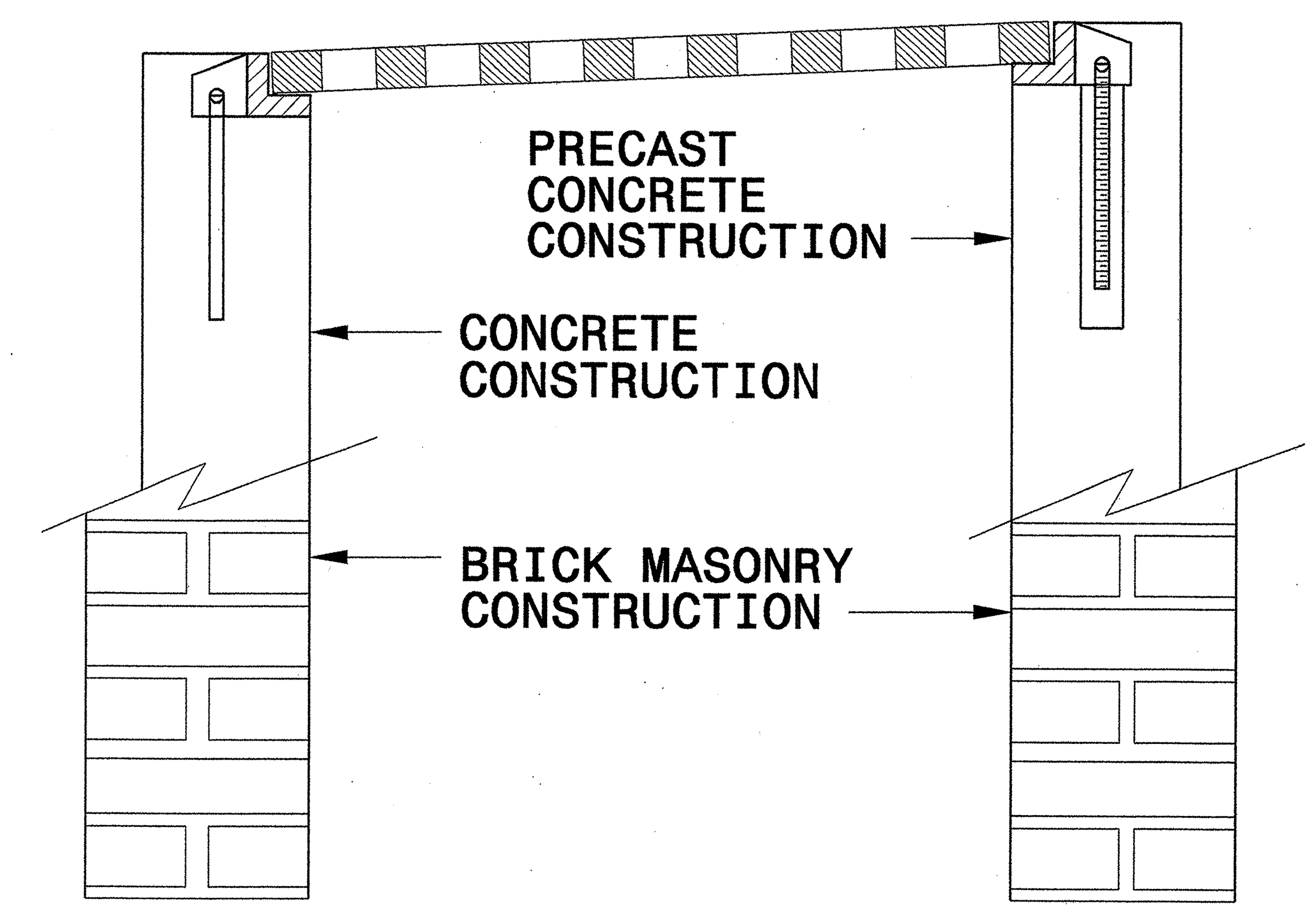
MASONRY ANCHOR
3/8" DIA. BOLT WITH PLATE



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

STATE OF
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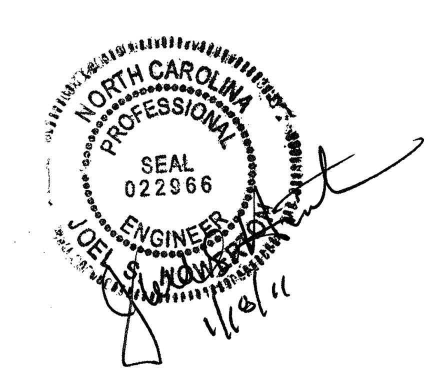
RALEIGH, N.C.

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

SHEET 1 OF 1
840D25



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: 11/13/08
FILE SPEC.:

$$$$$$$SYSTIME$$$$$
$$$$$$$$$DGN$$$$$$$$$$$$$$$$
$$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
U-3621B	2-X

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

ENGLISH DETAIL DRAWING FOR

WHEELCHAIR RAMP

PROPOSED CURB AND GUTTER

SHEET 1 OF 3 — **848D05**

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

ENGLISH DETAIL DRAWING FOR

WHEELCHAIR RAMP

PROPOSED CURB AND GUTTER

SHEET 2 OF 3 — **848D05**

NORTH CAROLINA PROFESSIONAL SEAL 022866 ENGINEER ERIC W. HOWARD 1/6/11

PROJECT SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
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SEE PLATE FOR TITLE

ORIGINAL BY: STD.NO.848.05 DATE: 4-22-10
MODIFIED BY: DATE:
CHECKED BY: DATE: 4/22/10
FILE SPEC.: SpecialDetails/EricWard/STDS/848d05.dgn

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

ENGLISH DETAIL DRAWING FOR

WHEELCHAIR RAMP

PROPOSED CURB AND GUTTER

SHEET 3 OF 3

848D05

NOTES:

1. CONSTRUCT THE WALKING SURFACE WITH SLIP RESISTANTANCE AND A 70% CONTRASTING COLOR TO THE SIDEWALK.
2. CROSSWALK WIDTHS AND CONFIGURATION VARY BUT MUST CONFORM TO TRAFFIC DESIGN STANDARDS.
3. NORTH CAROLINA GENERAL STATUTE 136-44.14 REQUIRES THAT ALL STREET CURBS BEING CONSTRUCTED OR RECONSTRUCTED FOR MAINTENANCE PROCEDURES, TRAFFIC OPERATIONS, REPAIRS, CORRECTION OF UTILTIES OR ALTERED FOR ANY REASON AFTER SEPTEMBER 1, 1973 SHALL PROVIDE WHEELCHAIR RAMPS FOR THE PHYSICALLY DISABLED AT ALL INTERSECTIONS WHERE BOTH CURB AND GUTTER AND SIDEWALKS ARE PROVIDED AND AT OTHER POINTS OF PEDESTRIAN FLOW.

   IN ADDITION, SECTION 228 OF THE 1973 FEDERAL AID HIGHWAY SAFETY ACT REQUIRES PROVISION OF CURB RAMPS ON ANY CURB CONSTRUCTION AFTER JULY 1,1976 WHETHER A SIDEWALK IS PROPOSED INITIALLY OR IS PLANNED FOR A FUTURE DATE.

   THE AMERICANS WITH DISABILITIES ACT (ADA) OF 1990 EXTENDS TO INDIVIDUALS WITH DISABILITIES. COMPREHENSIVE CIVIL RIGHTS PROTECTIONS SIMILIAR TO THOSE PROVIDED TO PERSONS ON THE BASIS OF RACE, SEX, NATIONAL ORIGIN AND RELIGION UNDER THE CIVIL RIGHTS ACT OF 1964. THESE CURB RAMPS HAVE BEEN DESIGNED TO COMPLY WITH THE CURRENT ADA STANDARDS.
4. PROVIDE WHEELCHAIR RAMPS AT LOCATIONS AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER. LOCATE WHEELCHAIR RAMPS AS DIRECTED BY THE ENGINEER WHERE EXISTING LIGHT POLES, FIRE HYDRANTS, DROP INLETS, ETC. AFFECT PLACEMENT. WHERE TWO RAMPS ARE INSTALLED PLACE NOT LESS THAN 2 FEET OF FULL HEIGHT CURB BETWEEN THE RAMPS. PLACE DUAL RAMPS AS NEAR PERPENDICULAR TO THE TRAVEL LANE BEING CROSSED AS POSSIBLE.
5. DO NOT EXCEED 0.08 (12:1) SLOPE ON THE WHEELCHAIR RAMP IN RELATIONSHIP TO THE GRADE OF THE STREET.
6. CONSTRUCT WHEELCHAIR RAMPS 40" (3'-4") OR GREATER FOR DUAL RAMPS.
7. USE CLASS "B" CONCRETE WITH A SIDEWALK FINISH IN ORDER TO OBTAIN A ROUGH NON-SKID TYPE SURFACE.
8. PLACE A ½" EXPANSION JOINT WHERE THE CONCRETE WHEELCHAIR RAMP JOINS THE CURB AND AS SHOWN ON STD. DWG. 848.01.
9. PLACE THE INSIDE PEDESTRIAN CROSSWALK LINES NO CLOSER IN THE INTERSECTION BY BISECTING THE INTERSECTION RADII, WITH ALLOWANCE OF A 4' CLEAR ZONE IN THE VEHICULAR TRAVELWAY WHEN ONE RAMP IS INSTALLED. (SEE NOTE 17)
10. COORDINATE THE CURB CUT AND THE PEDESTRIAN CROSSWALK LINES SO THE FLOOR OF THE WHEELCHAIR RAMP WILL FALL WITHIN THE PEDESTRIAN CROSSWALK LINES. PLACE DIAGONAL RAMPS WITH FLARED SIDES SO 24" OF FULL HEIGHT CURB FALLS WITHIN THE CROSSWALK MARKINGS ON EACH SIDE OF THE FLARES.
11. CONSTRUCT THE PEDESTRIAN CROSSWALK A MINIMUM OF 6 FEET. A CROSSWALK WIDTH OF 10 FEET OR GREATER IS DESIRABLE.
12. USE STOP LINES, NORMALLY PERPENDICULAR TO THE LANE LINES, WHERE IT IS IMPORTANT TO INDICATE THE POINT BEHIND WHICH VEHICLES ARE REQUIRED TO STOP IN COMPLIANCE WITH A TRAFFIC SIGNAL, STOP SIGN OR OTHER LEGAL REQUIREMENT. AN UNUSUAL APPROACH SKEW MAY REQUIRE THE PLACEMENT OF THE STOP LINE TO BE PARALLEL TO THE INTERSECTING ROADWAY.
13. TERMINATE PARKING A MINIMUM OF 20 FEET BACK OF PEDESTRIAN CROSSWALK.
14. PLACE ALL PAVEMENT MARKINGS IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION AND THE NORTH CAROLINA SUPPLEMENT TO THE MUTCD.

STATE OF
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RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR

WHEELCHAIR RAMP

PROPOSED CURB AND GUTTER

SHEET 3 OF 3

848D05

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

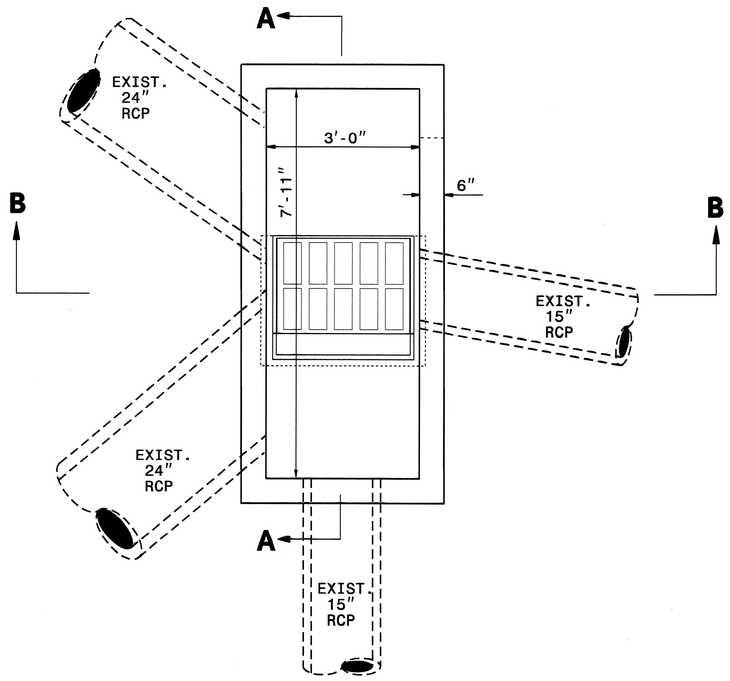
SEE PLATE FOR TITLE

ORIGINAL BY: STD.NO.848.05 DATE: 4-22-10
MODIFIED BY: DATE:
CHECKED BY: DATE: 4/22/10
FILE SPEC.: S:\Contracts\Special Details\Ericward\stds\848d05.dgn

NORTH CAROLINA PROFESSIONAL SEAL 025986 ENGINEER

PROJECT REFERENCE NO.	SHEET NO.
U-3621B	2-Y

PROJECT REFERENCE NO.	SHEET NO.
U-3621B	2-Z



PLAN

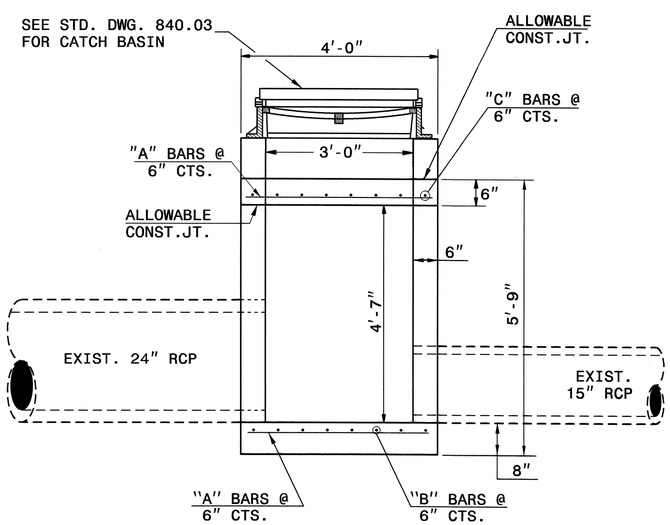
GENERAL NOTES:

1. USE CLASS "B" CONCRETE THROUGHOUT.
2. CONSTRUCT CONCRETE BOX IN ACCORDANCE WITH SECTION 825 OF THE STANDARD SPECIFICATIONS.
3. ADJUST LENGTH OF STEEL BARS AS NEEDED TO COMPENSATE FOR PIPES AND FRAME AND GRATE OPENINGS.
4. REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 400.
5. CUT OR BEND STEEL BARS AS NEEDED TO PROVIDE 2" CLEARANCE.
6. LOCATE FRAME AND GRATE AS FIELD CONDITIONS DICTATE AND AS DIRECTED BY THE ENGINEER.
7. DIMENSIONS MAY BE ADJUSTED AS DIRECTED BY THE ENGINEER.

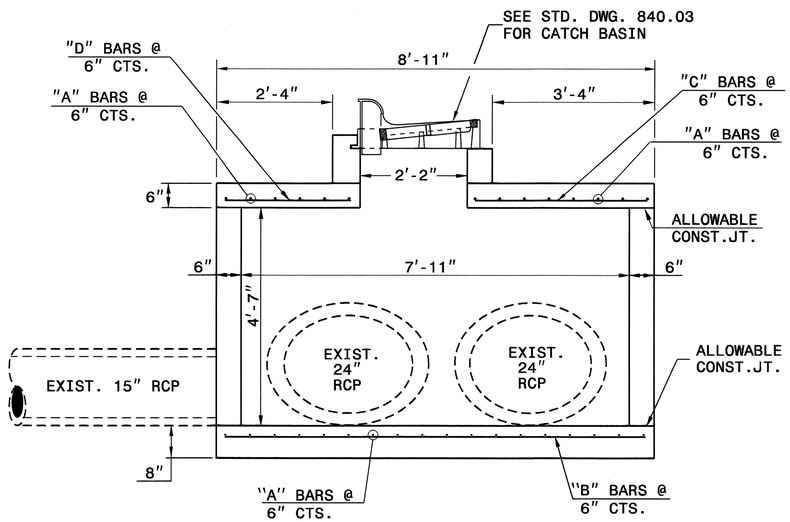
BILL OF MATERIALS

BAR	QTY	SIZE	LENGTH	WEIGHT
A	21	#5	3'-8"	122
B	8	#5	8'-7"	72
C	8	#5	3'-6"	29
D	8	#5	2'-6"	21
TOTAL REINF. STEEL (lbs.)				244
TOTAL CONCRETE (CU. YDS.)				3.4
DEDUCTIONS FOR ONE PIPE				
15" RC PIPE				0.04
24" RC PIPE				0.09

NO DEDUCTIONS HAVE BEEN MADE TO ACCOMMODATE PIPES OR CATCH BASIN OPENING.



SECTION B-B



SECTION A-A

CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-250-4128 FAX 919-250-4119

DETAIL OF SPECIAL CATCH BASIN

ORIGINAL BY: T.Stephenson DATE: Aug.1996
MODIFIED BY: TSB DATE: 12-30-10
CHECKED BY: [signature] DATE: 1/18/11
FILE SPEC.: $:\tspell/details/stand/cb18or24rcp_u3621b.dgn

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PROJECT REFERENCE NO.	SHEET NO.
U-3621B	2-AA

STATE OF
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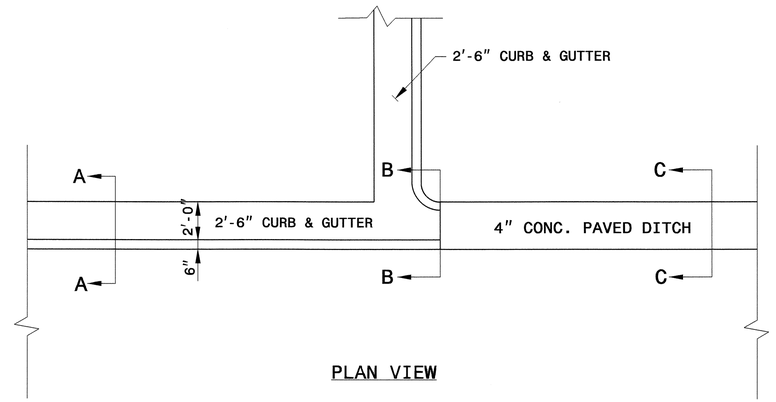
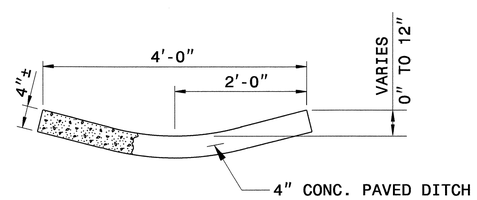
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR

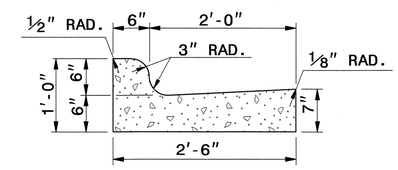
DROP CURB FLUME IN
2'-6" CURB AND GUTTER



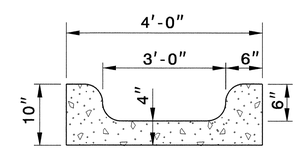
PLAN VIEW



SECTION C-C



2'-6" CURB AND GUTTER
SECTION A-A



SECTION B-B

NOTES:

- CONSTRUCT CONCRETE DITCH IN ACCORDANCE WITH STD. DWG. NO. 850.01.
- CONSTRUCT RIP RAP LINED DITCH IN ACCORDANCE WITH THIS DETAIL, IF CALLED FOR IN PLANS.
- CONCRETE OR RIP RAP LINED DITCH SHALL BE THE TYPE AND LENGTH SPECIFIED BY THE ROADWAY PLANS. THE DITCH SHALL TERMINATE AS SHOWN ON THE PLANS. IF NO TERMINATION IS INDICATED PLACE RIP-RAP AT THE END OF THE DITCH AS INDICATED BY STD. DWG. 876.02 FOR AN 18" PIPE. TRANSITIONS FROM THE DITCH TO TERMINATION SHALL BE AS DIRECTED BY THE ENGINEER.
- MODIFICATIONS SHALL BE AS DICTATED BY SITE CONDITIONS AND DIRECTED BY THE ENGINEER.

SHEET 1 OF 1
C&GDTCH

STATE OF
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DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR

DROP CURB FLUME IN
2'-6" CURB AND GUTTER

SHEET 1 OF 1
C&GDTCH

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HOWERTON
1/18/11

CONTRACT STANDARDS & DEVELOPMENT UNIT
STANDARDS AND SPECIAL DESIGN
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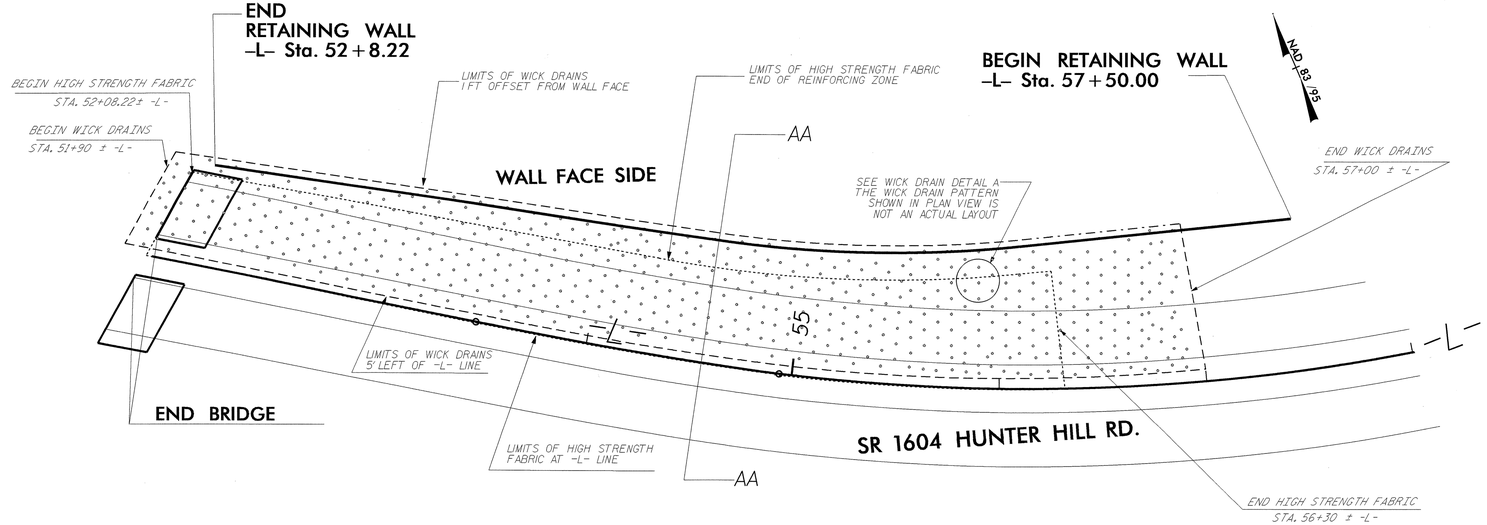
ORIGINAL BY: DATE:
MODIFIED BY: rnbritt DATE: 12/23/10
CHECKED BY: DATE: 12/30/10
FILE SPEC.: details/rnbritt/english/urban/u3621bflume.dgn

$$$$SYSTIME$$$$
$$$$USERNAME$$$$
$$$$DGN$$$$

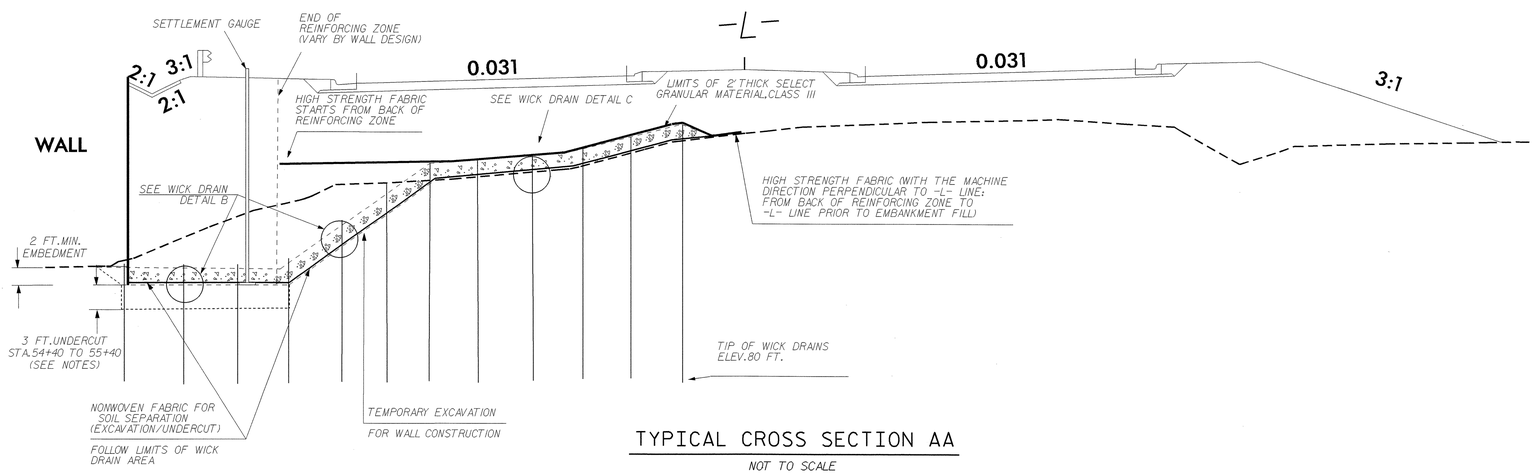
PROJECT REFERENCE NO.	SHEET
34964.1.1 (U-3621B)	2-AB

GEOTECHNICAL ENGINEER	ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18899 ENGINEER JINYOUNG PARK 1-12-11	
SIGNATURE DATE	SIGNATURE DATE



MSE WALL 2 AND EMBANKMENT PLAN VIEW

NOT TO SCALE



TYPICAL CROSS SECTION AA

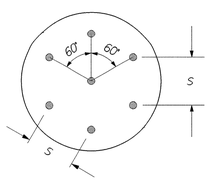
NOT TO SCALE

WICK DRAIN CONFIGURATION					
STATIONS (-L- LINE)		WICK DRAIN SPACING, S	WICK DRAIN TIP ELEVATION	MINIMUM SURCHARGE	ESTIMATED WAITING PERIOD
FROM	TO				
51 + 90	57 + 00	5 FT.	80 FT.	N/A	2 MONTH

NOTES

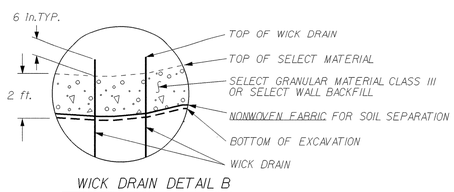
1. FOR WICK DRAINS, SEE INSTALLATION OF VERTICAL WICK DRAINS AND DRAINAGE LAYER SPECIAL PROVISION.
2. NONWOVEN FABRIC FOR SOIL SEPARATION SHALL BE PLACED ON THE BOTTOM OF MSE WALL EXCAVATION, TEMPORARY EXCAVATION, AND EXISTING EMBANKMENT AS SHOWN ON THE PLANS OR DIRECTED BY THE ENGINEER. FOR PROPERTIES OF NONWOVEN FABRIC, SEE NONWOVEN FABRIC FOR SOIL SEPARATION SPECIAL PROVISION.
3. THE PROPOSED UNDERCUT EXCAVATION UNDER MSE WALL NO. 2 REINFORCING ZONE ARE BETWEEN STA. 54+40 AND STA. 55+40. THE ENGINEER WILL DETERMINE THE LIMITS OF THE UNDERCUT DURING CONSTRUCTION. THE UNDERCUT EXCAVATION AND BACKFILL WILL BE PAID SEPARATELY AS ROADWAY UNDERCUT EXCAVATION AND SELECT GRANULAR MATERIAL, CLASS III (CONTINGENCY QUANTITIES ARE INCLUDED IN THE ESTIMATED QUANTITIES TABLE BELOW).
4. THE DRAINAGE LAYER SHALL BE INSTALLED AS SHOWN ON THE PLANS OR DIRECTED BY THE ENGINEER. FOR INSTALLATION DETAIL, SEE INSTALLATION OF VERTICAL WICK DRAINS AND DRAIN LAYER SPECIAL PROVISION.
5. INSTALL WICK DRAINS AS DIRECTED BY PROVISIONS, PLANS, AND/OR ENGINEER AFTER THE SELECT GRANULAR MATERIAL CLASS III HAS BEEN PLACED AND COMPACTED. WICK DRAINS SHALL PENETRATE THE SELECT GRANULAR MATERIAL CLASS III AND SHALL BE INSTALLED TO ELEVATION 80 FEET UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
6. PRE-AUGERING MAY BE REQUIRED TO INSTALL THE WICK DRAINS. IF PRE-AUGERING IS NECESSARY, THE COST OF PRE-AUGERING IS INCIDENTAL TO THE COST OF THE WICK DRAINS.
7. CONSTRUCT PARTIAL MSE RETAINING WALL NO. 2 (STAGE ONE) TO MATCH THE TOP OF THE DRAINAGE LAYER AT THE NEW EMBANKMENT. THEN PLACE HIGH STRENGTH FABRIC AS SHOWN ON PLAN OR DIRECTED BY THE ENGINEER FROM THE BACK OF THE REINFORCING ZONE TO THE -L- LINE. CONSTRUCT REMAINDER OF MSE RETAINING WALL NO. 2 (STAGE ONE) AND EMBANKMENT.
8. FOR SETTLEMENT GAUGES, SEE EMBANKMENT MONITORING FOR WALL NO. 2 AND ROADWAY PLAN SHEET AND EMBANKMENT MONITORING SPECIAL PROVISION.
9. WAITING PERIOD BEGINS AFTER CONSTRUCTING THE MSE RETAING WALL NO. 2 (STAGE ONE) AND THE ROADWAY EMBANKMENT.

ESTIMATED QUANTITIES		
WICK DRAINS	66,000	FOOT
SELECT GRANULAR MATERIAL, CLASS III	2,300	CUBIC YARD
NONWOVEN FABRIC FOR SOIL SEPARATION	3,500	SQUARE YARD
HIGH STRENGTH FABRIC	2,500	SQUARE YARD
UNDERCUT EXCAVATION	700	CUBIC YARD



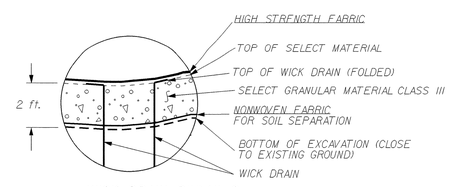
WICK DRAIN DETAIL A

NOT TO SCALE



WICK DRAIN DETAIL B

NOT TO SCALE



WICK DRAIN DETAIL C

NOT TO SCALE

PREPARED BY: SHIHAI ZHANG	DATE: 1/2011
REVIEWED BY: JINYOUNG PARK	DATE: 1/2011

GEOTECHNICAL ENGINEERING UNIT

- [X] EASTERN REGIONAL OFFICE
- [ ] WESTERN REGIONAL OFFICE
- [ ] CONTRACT OFFICE

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

GROUND IMPROVEMENT FOR WALL NO. 2 AND ROADWAY

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

PROJECT REFERENCE NO.	SHEET
34964.1.1 (U-3621B)	2-AC

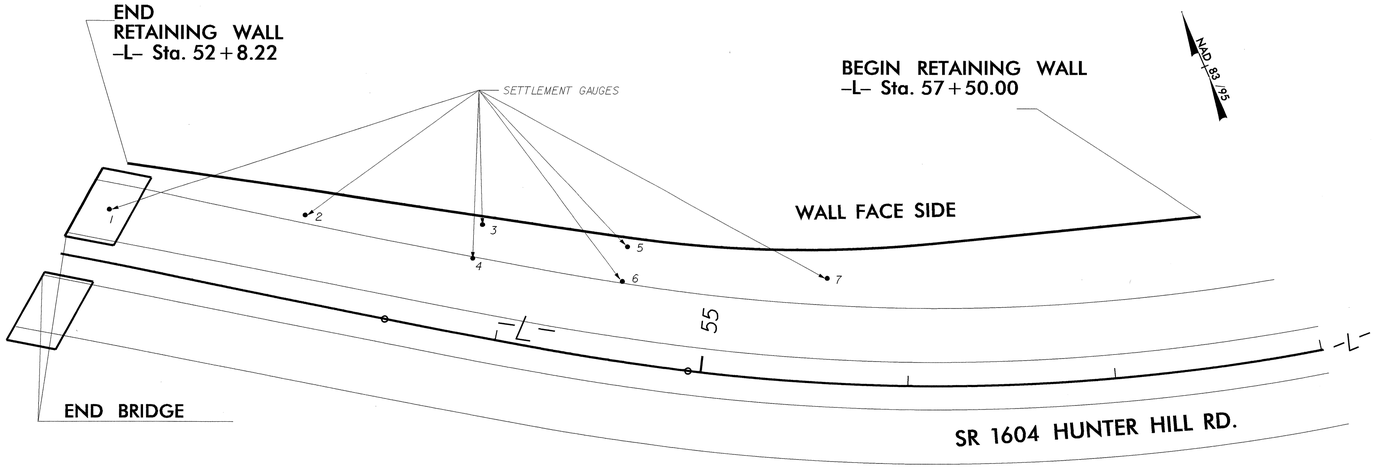
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18829 ENGINEER JINYOUNG PARK 1-12-11

SIGNATURE DATE

ENGINEER

SIGNATURE DATE

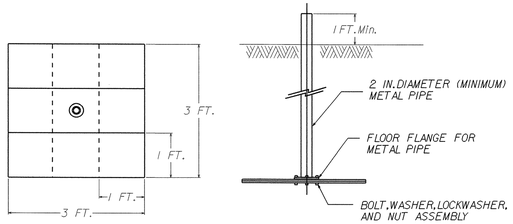


MSE WALL 2 AND EMBANKMENT PLAN VIEW

NOT TO SCALE

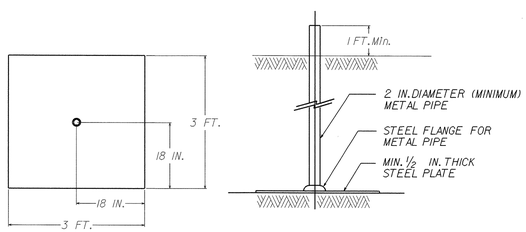
NOTES

1. FOR MSE WALL, SEE MSE WALL NO. 2 PLAN SHEETS
2. LOCATIONS OF ALL SETTLEMENT GAUGES SHOWN ON THIS PLAN SHEET ARE APPROXIMATE. THE ENGINEER WILL DETERMINE THE EXACT LOCATIONS AT THE TIME OF INSTALLATION.
3. THE USE OF EITHER THE WOOD BASE OR THE STEEL BASE SETTLEMENT GAUGE SHALL BE THE CONTRACTOR'S OPTION.
4. SETTLEMENT GAUGES SHALL BE INSTALLED BEFORE ANY FILL IS PLACED.
5. SETTLEMENT GAUGE ELEVATIONS ARE TO BE DETERMINED AND RECORDED WEEKLY BY THE RESIDENT ENGINEER.
6. THE INITIAL ELEVATION OF THE SETTLEMENT GAUGE PLATE (AT TOP OF PLATE) SHALL BE DETERMINED AT THE TIME OF INSTALLATION ALONG WITH THE EMBANKMENT ELEVATION. WHEN NEW SECTIONS OF THE PIPE ARE ADDED, ELEVATIONS SHALL BE RECORDED AT THE TOP OF EXISTING PIPE AND AT THE TOP OF THE NEW PIPE. THIS IS TO TAKE INTO ACCOUNT INTERIM SETTLEMENT, VARIABLE PIPE LENGTHS, AND THREAD LENGTHS IN COUPLING.
7. RESULTS OF SETTLEMENT GAUGE READINGS SHALL BE FORWARDED TO MR. K.J. KIM, EASTERN REGIONAL GEOTECHNICAL MANAGER, WITHIN THREE DAYS.



DETAIL OF WOOD BASE

SIX - 1 IN. X 1 FT. X 3 FT. PLANKS OF LUMBER OR TWO PIECES 1 IN. X 3 FT. X 3 FT. EXTERIOR GRADE PLYWOOD, SECURELY FASTENED AND THEN COATED WITH WOOD PRESERVATIVE



DETAIL OF STEEL BASE

QUANTITIES

SETTLEMENT GAUGE.....7 EACH

SETTLEMENT GAUGE LOCATIONS

GAUGE NO.	STATION -L-	OFFSET FROM -L-
1	52 + 10 ±	30 FT ±, LT
2	53 + 00 ±	45 FT. ±, LT
3	53 + 80 ±	55 FT. ±, LT
4	53 + 80 ±	40 FT ±, LT
5	54 + 60 ±	57 FT. ±, LT
6	54 + 60 ±	40 FT. ±, LT
7	55 + 60 ±	50 FT. ±, LT

PREPARED BY:	SHIHAI ZHANG	DATE:	1/2011
REVIEWED BY:	JINYOUNG PARK	DATE:	1/2011

GEOTECHNICAL ENGINEERING UNIT

☒ EASTERN REGIONAL OFFICE
☐ WESTERN REGIONAL OFFICE
☐ CONTRACT OFFICE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

EMBANKMENT MONITORING FOR WALL NO. 2 AND ROADWAY

REVISIONS

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

PROJECT REFERENCE NO.	SHEET NO.
U-3621B	3(1 of 2)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES

ItemNumber	Sec #	Quantity	Unit	Description
1489000000-E	610	14,500	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
1498000000-E	610	12,100	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B
1519000000-E	610	10,900	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5B
1525000000-E	610	760	TON	ASPHALT CONC SURFACE COURSE, TYPE SF9.5A
1560000000-E	620	1,900	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22
1693000000-E	654	260	TON	ASPHALT PLANT MIX, PAVEMENT REPAIR
2022000000-E	SP	224	CY	SUBDRAIN EXCAVATION
2033000000-E	SP	168	CY	SUBDRAIN FINE AGGREGATE
2044000000-E	SP	1,000	LF	6" PERFORATED SUBDRAIN PIPE
2070000000-N	SP	2	EA	SUBDRAIN PIPE OUTLETS
2077000000-E	SP	12	LF	6" OUTLET PIPE (SUBDRAINS)
2190000000-N	828	1	EA	TEMPORARY STEEL PLATE COVERS FOR MASONRY DRAINAGE STRUCTURE
2209000000-E	838	3.4	CY	ENDWALLS
2253000000-E	840	10.377	CY	PIPE COLLARS
2264000000-E	840	0.103	CY	PIPE PLUGS
2275000000-E	SP	1.45	CY	FLOWABLE FILL
2286000000-N	840	150	EA	MASONRY DRAINAGE STRUCTURES
2308000000-E	840	44.73	LF	MASONRY DRAINAGE STRUCTURES
2354200000-N	840	1	EA	FRAME WITH GRATE, STD 840.24
2364000000-N	840	19	EA	FRAME WITH TWO GRATES, STD 840.16
2366000000-N	840	5	EA	FRAME WITH TWO GRATES, STD 840.24
2374000000-N	840	10	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (E)
2374000000-N	840	44	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (F)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C202586

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
[redacted]	[redacted]	[redacted]		[redacted]
0001000000-E	200	Lump Sum		CLEARING & GRUBBING .. ACRE(S)
0008000000-E	200	1	ACR	SUPPLEMENTARY CLEARING & GRUBBING
0022000000-E	225	9,850	CY	UNCLASSIFIED EXCAVATION
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ********** (50+72.00 -L- EBL)
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ********** (50+79.33 -L- WBL)
0036000000-E	225	1,900	CY	UNDERCUT EXCAVATION
0038000000-E	SP	1,950	CY	SHALLOW UNDERCUT
0080000000-E	SP	3,700	TON	CLASS IV SUBGRADE STABILIZATION
0084000000-E	SP	66,000	LF	WICK DRAINS
0106000000-E	230	71,700	CY	BORROW EXCAVATION
0127000000-N	SP	7	EA	EMBANKMENT SETTLEMENT GAUGES
0134000000-E	240	870	CY	DRAINAGE DITCH EXCAVATION
0156000000-E	250	3,150	SY	REMOVAL OF EXISTING ASPHALT PAVEMENT
0177000000-E	250	2,930	SY	BREAKING OF EXISTING ASPHALT PAVEMENT
0194000000-E	SP	3,500	CY	SELECT GRANULAR MATERIAL, CLASS III
0196000000-E	270	7,500	SY	FABRIC FOR SOIL STABILIZATION
0199000000-E	SP	3,133	SF	TEMPORARY SHORING
0241000000-E	SP	2,500	SY	GENERIC GRADING ITEM HIGH STRENGTH FABRIC FOR EMBANKMENT STABILIZATION
0241000000-E	SP	3,500	SY	GENERIC GRADING ITEM NONWOVEN FABRIC FOR SOIL SEPARATION
0318000000-E	SP	1,180	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRS
0320000000-E	SP	3,690	SY	FOUNDATION CONDITIONING FABRIC
0973100000-E	SP	56	LF	**" WELDED STEEL PIPE, ****" THICK, GRADE ** IN SOIL (18", 0.5", B)
0987000000-E	310	112	LF	GENERIC PIPE ITEM 12" BIT COAT CS PIPE CULVERTS, TYPE B 0.064" THICK
0987000000-E	310	124	LF	GENERIC PIPE ITEM 15" BIT COAT CS PIPE CULVERTS, TYPE B 0.064" THICK
0987000000-E	310	7,110	LF	GENERIC PIPE ITEM 15" RC PIPE CULVERTS, CLASS III
0987000000-E	310	196	LF	GENERIC PIPE ITEM 15" SIDE DRAIN PIPE
0987000000-E	310	60	LF	GENERIC PIPE ITEM 18" BIT COAT CS PIPE CULVERTS, TYPE B 0.064" THICK
0987000000-E	310	1,900	LF	GENERIC PIPE ITEM 18" RC PIPE CULVERTS, CLASS III
0987000000-E	310	1,056	LF	GENERIC PIPE ITEM 24" RC PIPE CULVERTS, CLASS III
0987000000-E	310	132	LF	GENERIC PIPE ITEM 30" RC PIPE CULVERTS, CLASS III
0987000000-E	310	236	LF	GENERIC PIPE ITEM 36" RC PIPE CULVERTS, CLASS III
0987000000-E	310	144	LF	GENERIC PIPE ITEM 48" RC PIPE CULVERTS, CLASS III
0987000000-E	310	12	LF	GENERIC PIPE ITEM 54" RC PIPE CULVERTS, CLASS III
0988000000-E	310	3	EA	GENERIC PIPE ITEM 15" BIT COAT CS PIPE ELBOWS, TYPE B 0.064" THICK
0988000000-E	310	1	EA	GENERIC PIPE ITEM 18" BIT COAT CS PIPE ELBOWS, TYPE B 0.064" THICK
0995000000-E	340	3,463	LF	PIPE REMOVAL
1011000000-N	500	Lump Sum		FINE GRADING
1110000000-E	510	500	TON	STABILIZER AGGREGATE

ItemNumber	Sec #	Quantity	Unit	Description
2374000000-N	840	59	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (G)
2396000000-N	840	11	EA	FRAME WITH COVER, STD 840.54
2440000000-N	852	19	EA	CONCRETE TRANSITIONAL SECTION FOR CATCH BASIN
2451000000-N	852	10	EA	CONCRETE TRANSITIONAL SECTION FOR DROP INLETS
2542000000-E	846	8,840	LF	1'-6" CONCRETE CURB & GUTTER
2549000000-E	846	17,120	LF	2'-6" CONCRETE CURB & GUTTER
2591000000-E	848	3,470	SY	4" CONCRETE SIDEWALK
2605000000-N	848	28	EA	CONCRETE WHEELCHAIR RAMPS
2612000000-E	848	300	SY	6" CONCRETE DRIVEWAY
2619000000-E	850	160	SY	4" CONCRETE PAVED DITCH
2647000000-E	852	1,300	SY	5" MONOLITHIC CONCRETE ISLANDS (SURFACE MOUNTED)
2761000000-E	848	18	SY	GENERIC PAVING ITEM 6" CONC SIDEWALK (FOR 8' X 20' BUS SHELTER PAD)
3030000000-E	862	1,862.5	LF	STEEL BM GUARDRAIL
3045000000-E	862	150	LF	STEEL BM GUARDRAIL, SHOP CURVED
3105000000-N	862	2	EA	STEEL BM GUARDRAIL TERMINAL SECTIONS
3150000000-N	862	10	EA	ADDITIONAL GUARDRAIL POSTS
3210000000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE CAT-1
3215000000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE III
3270000000-N	SP	4	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
3285000000-N	SP	4	EA	GUARDRAIL ANCHOR UNITS, TYPE M-350
3317000000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE B-77
3380000000-E	862	350	LF	TEMPORARY STEEL BM GUARDRAIL
3389100000-N	SP	2	EA	GUARDRAIL ANCHOR UNITS, TYPE 350 TEMPORARY
3536000000-E	866	900	LF	CHAIN LINK FENCE, 48" FABRIC
3542000000-E	866	75	EA	METAL LINE POSTS FOR 48" CHAIN LINK FENCE
3548000000-E	866	6	EA	METAL TERMINAL POSTS FOR 48" CHAIN LINK FENCE
3628000000-E	876	329	TON	RIP RAP, CLASS I
3649000000-E	876	140	TON	RIP RAP, CLASS B
3656000000-E	876	2,410	SY	FILTER FABRIC FOR DRAINAGE
4057000000-E	SP	15	CY	OVERHEAD FOOTING
4072000000-E	903	1,507	LF	SUPPORTS, 3-LB STEEL U-CHANNEL
4082100000-N	SP	Lump Sum		SUPPORTS, OVERHEAD SIGN STRUCTURE AT STA ****** (81+12 -L-)
4096000000-N	904	5	EA	SIGN ERECTION, TYPE D
4102000000-N	904	64	EA	SIGN ERECTION, TYPE E
4108000000-N	904	13	EA	SIGN ERECTION, TYPE F
4116100000-N	904	3	EA	SIGN ERECTION, RELOCATE, TYPE **** (GROUND MOUNTED) (E)
4155000000-N	907	55	EA	DISPOSAL OF SIGN SYSTEM, U-CHANNEL
4158000000-N	907	3	EA	DISPOSAL OF SIGN SYSTEM, WOOD
4192000000-N	907	3	EA	DISPOSAL OF SUPPORT, U-CHANNEL
4400000000-E	1110	551	SF	WORK ZONE SIGNS (STATIONARY)
4405000000-E	1110	408	SF	WORK ZONE SIGNS (PORTABLE)
4410000000-E	1110	133	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4415000000-N	1115	2	EA	FLASHING ARROW PANELS, TYPE C
4420000000-N	1120	4	EA	CHANGEABLE MESSAGE SIGN
4430000000-N	1130	360	EA	DRUMS
4435000000-N	1135	100	EA	CONES
4445000000-E	1145	416	LF	BARRICADES (TYPE III)
4450000000-N	1150	8,760	HR	FLAGGER
4465000000-N	1160	4	EA	TEMPORARY CRASH CUSHIONS

5/28/99

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STATE OF NORTH CAROLINA
SUMMARY OF QUANTITIES

PROJECT REFERENCE No.	SHEET No.
U-3621B	3 (2 of 2)

ItemNumber	Sec #	Quantity	Unit	Description
4480000000-N	1165	2	EA	TMIA
4485000000-E	1170	970	LF	PORTABLE CONCRETE BARRIER
4495000000-E	1170	110	LF	PORTABLE CONCRETE BARRIER (DRAINAGE)
4510000000-N	SP	480	HR	LAW ENFORCEMENT
4520000000-N	1266	35	EA	TUBULAR MARKERS (FIXED)
4650000000-N	1251	594	EA	TEMPORARY RAISED PAVEMENT MARKERS
4685000000-E	1205	6,576	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)
4686000000-E	1205	12,293	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS)
4695000000-E	1205	1,784	LF	THERMOPLASTIC PAVEMENT MARKING LINES (8", 90 MILS)
4710000000-E	1205	646	LF	THERMOPLASTIC PAVEMENT MARKING LINES (24", 120 MILS)
4725000000-E	1205	102	EA	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)
4770000000-E	1205	974	LF	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (III)
4810000000-E	1205	147,630	LF	PAINT PAVEMENT MARKING LINES (4")
4820000000-E	1205	404	LF	PAINT PAVEMENT MARKING LINES (8")
4835000000-E	1205	1,600	LF	PAINT PAVEMENT MARKING LINES (24")
4845000000-N	1205	129	EA	PAINT PAVEMENT MARKING SYMBOL
4850000000-E	1205	52,432	LF	REMOVAL OF PAVEMENT MARKING LINES (4")
4860000000-E	1205	200	LF	REMOVAL OF PAVEMENT MARKING LINES (8")
4870000000-E	1205	1,600	LF	REMOVAL OF PAVEMENT MARKING LINES (24")
4875000000-N	1205	70	EA	REMOVAL OF PAVEMENT MARKING SYMBOLS & CHARACTERS
4915000000-E	1264	9	EA	7' U-CHANNEL POSTS
4955000000-N	1264	9	EA	OBJECT MARKERS (END OF ROAD)
5319000000-E	1505	31	CY	CLASS B CONCRETE FOR ENCASING UTILITY LINES
5325600000-E	1510	373	LF	6" WATER LINE
5325800000-E	1510	48	LF	8" WATER LINE
5326200000-E	1510	455	LF	12" WATER LINE
5326600000-E	1510	540	LF	16" WATER LINE
5328000000-E	1510	253	LF	30" WATER LINE
5540000000-E	1515	2	EA	6" VALVE
5558600000-E	1515	1	EA	16" VALVE
5571600000-E	1515	2	EA	6" TAPPING VALVE
5606000000-E	1515	1	EA	2" BLOW OFF
5648000000-N	1515	32	EA	RELOCATE WATER METER
5666000000-E	1515	5	EA	FIRE HYDRANT
5672000000-N	1515	8	EA	RELOCATE FIRE HYDRANT
5691300000-E	1520	1,103	LF	8" SANITARY GRAVITY SEWER
5775000000-E	1525	4	EA	4' DIA UTILITY MANHOLE
5781000000-E	1525	21.93	LF	UTILITY MANHOLE WALL, 4' DIA
5801000000-E	1530	1,056	LF	ABANDON 8" UTILITY PIPE
5804000000-E	1530	449	LF	ABANDON 12" UTILITY PIPE
5810000000-E	1530	521	LF	ABANDON 16" UTILITY PIPE
5814000000-E	1530	251	LF	ABANDON 30" UTILITY PIPE
5815000000-N	1530	5	EA	REMOVE WATER METER
5815500000-N	1530	5	EA	REMOVE FIRE HYDRANT
5828000000-N	1530	2	EA	REMOVE UTILITY MANHOLE
5835700000-E	1540	102	LF	16" ENCASEMENT PIPE
6000000000-E	1605	18,000	LF	TEMPORARY SILT FENCE
6006000000-E	1610	940	TON	STONE FOR EROSION CONTROL, CLASS A
6009000000-E	1610	3,450	TON	STONE FOR EROSION CONTROL, CLASS B
6012000000-E	1610	2,700	TON	SEDIMENT CONTROL STONE

ItemNumber	Sec #	Quantity	Unit	Description
6015000000-E	1615	20	ACR	TEMPORARY MULCHING
6018000000-E	1620	750	LB	SEED FOR TEMPORARY SEEDING
6021000000-E	1620	4	TON	FERTILIZER FOR TEMPORARY SEEDING
6024000000-E	1622	1,500	LF	TEMPORARY SLOPE DRAINS
6027000000-N	1622	20	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
6029000000-E	SP	1,850	LF	SAFETY FENCE
6030000000-E	1630	5,650	CY	SILT EXCAVATION
6036000000-E	1631	8,500	SY	MATTING FOR EROSION CONTROL
6037000000-E	SP	70	SY	COIR FIBER MAT
6038000000-E	SP	200	SY	PERMANENT SOIL REINFORCEMENT MAT
6042000000-E	1632	7,100	LF	1/4" HARDWARE CLOTH
6070000000-N	SP	2	EA	SPECIAL STILLING BASINS
6071020000-E	SP	250	LB	POLYACRYLAMIDE (PAM)
6071030000-E	SP	1,200	LF	COIR FIBER BAFFLES
6071050000-E	SP	6	EA	**" SKIMMER (1-1/2")
6084000000-E	1660	20	ACR	SEEDING & MULCHING
6087000000-E	1660	20	ACR	MOWING
6090000000-E	1661	300	LB	SEED FOR REPAIR SEEDING
6093000000-E	1661	1	TON	FERTILIZER FOR REPAIR SEEDING
6096000000-E	1662	600	LB	SEED FOR SUPPLEMENTAL SEEDING
6108000000-E	1665	18	TON	FERTILIZER TOPDRESSING
6111000000-E	SP	50	LF	IMPERVIOUS DIKE
6114500000-N	SP	20	MHR	SPECIALIZED HAND MOWING
6117000000-N	SP	36	EA	RESPONSE FOR EROSION CONTROL
6123000000-E	1670	0.1	ACR	REFORESTATION
6138000000-E	SP	7,850	CY	GENERIC EROSION CONTROL ITEM BORROW PIT DEWATERING BASIN
7060000000-E	1705	9,970	LF	SIGNAL CABLE

ItemNumber	Sec #	Quantity	Unit	Description
7120000000-E	1705	51	EA	VEHICLE SIGNAL HEAD (12", 3 SECTION)
7132000000-E	1705	9	EA	VEHICLE SIGNAL HEAD (12", 4 SECTION)
7144000000-E	1705	14	EA	VEHICLE SIGNAL HEAD (12", 5 SECTION)
7252000000-E	1710	8,010	LF	MESSENGER CABLE (1/4")
7264000000-E	1710	3,850	LF	MESSENGER CABLE (3/8")
7279000000-E	1715	2,570	LF	TRACER WIRE
7288000000-E	1715	40	LF	PAVED TRENCHING (**********) (1, 2")
7300000000-E	1715	2,060	LF	UNPAVED TRENCHING (**********) (1, 2")
7300000000-E	1715	740	LF	UNPAVED TRENCHING (**********) (2, 2")
7300000000-E	1715	100	LF	UNPAVED TRENCHING (**********) (4, 2")
7301000000-E	1715	390	LF	DIRECTIONAL DRILL (**********) (1, 2")
7301000000-E	1715	1,860	LF	DIRECTIONAL DRILL (**********) (2, 2")
7312000000-N	1716	4	EA	JUNCTION BOX (**********) (SPECIAL-SIZED, HEAVY DUTY)
7324000000-N	1716	38	EA	JUNCTION BOX (STANDARD SIZE)
7348000000-N	1716	9	EA	JUNCTION BOX (OVER-SIZED, HEAVY DUTY)
7360000000-N	1720	11	EA	WOOD POLE
7372000000-N	1721	50	EA	GUY ASSEMBLY
7408000000-E	1722	3	EA	1" RISER WITH WEATHERHEAD
7420000000-E	1722	6	EA	2" RISER WITH WEATHERHEAD
7430000000-N	1722	1	EA	HEAT SHRINK TUBING RETROFIT KIT
7432000000-E	1722	6	EA	2" RISER WITH HEAT SHRINK TUBING
7444000000-E	1725	5,590	LF	INDUCTIVE LOOP SAWCUT
7456000000-E	1726	14,960	LF	LEAD-IN CABLE (**********) (14-2)
7481000000-N	SP	3	EA	SITE SURVEY
7481200000-N	SP	12	EA	LUMINAIRE ARM FOR VIDEO SYSTEM
7481240000-N	SP	12	EA	CAMERA WITHOUT INTERNAL LOOP EMULATOR PROCESSING UNIT
7481260000-N	SP	3	EA	EXTERNAL LOOP EMULATOR PROCESSING UNIT
7516000000-E	1730	10,240	LF	COMMUNICATIONS CABLE (**FIBER) (24)
7516000000-E	1730	3,550	LF	COMMUNICATIONS CABLE (**FIBER) (6)
7540000000-N	1731	2	EA	SPLICE ENCLOSURE
7566000000-N	1733	10	EA	DELINEATOR MARKER
7575160000-E	1734	500	LF	REMOVE EXISTING COMMUNICATIONS CABLE
7575180000-N	1735	2	EA	CABLE TRANSFER
7576000000-N	SP	12	EA	METAL STRAIN SIGNAL POLE
7613000000-N	SP	12	EA	SOIL TEST
7614100000-E	SP	144	CY	DRILLED PIER FOUNDATION
7636000000-N	1745	7	EA	SIGN FOR SIGNALS
7684000000-N	1750	3	EA	SIGNAL CABINET FOUNDATION
7756000000-N	1751	3	EA	CONTROLLER WITH CABINET (TYPE 2070L, BASE MOUNTED)
7780000000-N	1751	32	EA	DETECTOR CARD (TYPE 2070L)
7901000000-N	1753	3	EA	CABINET BASE EXTENDER
7980000000-N	SP	1	EA	GENERIC SIGNAL ITEM FURNISH GPS UNIT
7980000000-N	SP	3	EA	GENERIC SIGNAL ITEM GPS UNIT

COMPUTED BY: LJAH DATE: 12-22-10
CHECKED BY: AKW DATE: 12-22-10

PROJECT REFERENCE NO.	SHEET NO.
U-3621B	3-A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 15"	CLASS III R.C. PIPE 18"	CLASS III R.C. PIPE 24"	15" SIDE DRAIN PIPE	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE F	TYPE OF GRATE G	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & WITH TWO GRATE STD. 840.16	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.34	M.H. FRAME & COVER STD. 840.54	SLAB LID	CONCRETE TRANSITIONAL SECTION D.I.	PIPE REMOVAL LIN.FT.	REMARKS
-L- 11+23	LT	1								24														22	DRIVEWAY PIPE
-L- 11+49	RT	2								20														23	DRIVEWAY PIPE
-L- 11+99	RT	3								44														41	DRIVEWAY PIPE
-L- 13+02	RT	4								20														19	DRIVEWAY PIPE
-L- 13+84	RT	5								20														48	DRIVEWAY PIPE
-L- 14+09	RT	6								20															DRIVEWAY PIPE
-L- 14+30	LT	7								20														27	DRIVEWAY PIPE
-L- 15+40	RT	8																						61	EXISTING DRIVEWAY PIPE
-L- 15+70	LT	9		119.6							1				1	1							1		
-L- 15+70	LT	9	10		116.5	115.7	36																		
-L- 15+71	LT	10		118.7							1	1		1											
-L- 15+71	LT	10	In		115.7	116.3	28																		
-L- 16+44	LT	10	11		115.7	113.7	148																	52	REMOVE (2) EXIST.DI'S
-L- 17+17	LT	11		117.2							1	1		1											
-L- 17+17	LT	11	12		113.7	113.7	16																		
-L- 17+17	LT	12		116.9							1				1	1									
-L- 17+17	LT	11	13		113.7	113.0	144																		
-L- 18+58	LT	13		116.0							1	1		1											
-L- 18+58	LT	13	14		113.0	112.8	28																		
-L- 18+86	LT	14		115.8							1	1		1											
-L- 18+86	LT	14	15		112.8	111.0	96																	31	
-Y10- 12+60	RT	15		114.3							1	1	1												
-Y10- 11+96	RT	15	15A		111.0	108.6		64																	
-Y10- 11+98	RT	15A		113.6							1	1		1										41	
-Y10- 11+98	RT	15A	15B		108.6	108.6			16																
-Y10- 11+95	RT	15B		112.4							1				1	1									
-Y10- 11+95	RT	15B	15C		108.6	109.1		32																30	
-Y10- 11+66	RT	15C		112.8							1	1		1											
-Y10- 11+65	RT	15C	15D		109.1	109.2		24																35	
-Y10- 11+42	RT	15D		113.1							1	1		1											
-Y10- 11+42	RT	15D	15E		109.2	109.4		44																16	
-Y10- 11+22	RT	15E		111.8							1						1	1							REMOVE EXIST 3 CB
-Y10- 11+98	RT	15A	15F		108.6	108.3			52															64	
-Y10- 11+98	RT	15F		113.2							1									1	1				
-Y10- 11+98	CL	15F	15G		108.3	108.2			32																
-Y10- 12+00	LT	15G		112.1							1	1		1											
-Y10- 12+00	LT	15G	15H		108.2	107.8			116																
-Y10- 10+84	LT	15H		112.2							1								1			1			JB W/SLAB LID
-Y10- 10+84	LT	15H	OUT		107.8	107.8			16																
-L- 16+35	RT	In	16		115.5	115.2	68																	61	
-L- 16+35	RT	16		118.7							1	1	1												
-L- 16+35	RT	16	17		115.2	113.5	168																		
-L- 18+00	RT	17		116.5							1	1	1												
-L- 18+00	RT	17	18		113.5	112.9	120																	198	
-L- 19+19	RT	18		116.0							1	1	1												
-L- 19+19	RT	18	19		112.9	112.6	68																	28	
SUBTOTAL							920		232		18	12	4	8											
								164		168					3	3	1	1	1	1	1	1	1	797	

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

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

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COMPUTED BY: LJAH	DATE: 12-22-10
CHECKED BY: AKW	DATE: 12-22-10

PROJECT REFERENCE NO.	SHEET NO.
U-3621B	3-B

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE)								BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHRWISE)								CLASS III R.C. PIPE OR ALUMINIZED C.S. PIPE, TYPE IR OR HDPE PIPE, TYPE S OR D							
SIZE								12"	15"	18"	24"	30"	36"	42"	48"	12"	15"	18"	24"	30"	36"	42"	48"	12"	15"	18"	24"	30"	36"	42"	48"
THICKNESS OR GAUGE																.064	.064	.064	.064	.079	.079	.109	.109								
-L- 19+65	RT	19		115.9																											
-L- 19+74	RT	19	20		112.6	111.3			68																						
-Y10- 14+60	RT	20		114.3																											
-Y10- 14+60	RT	20	21		111.3	10.94			88																						
-Y10- 15+46	RT	21		112.4																											
-Y10- 15+46	RT	21	21BA		109.4	109.9			28																						
-Y10- 15+44	RT	21BA		112.9																											
-Y10- 15+44	RT	21	21B		109.4	108.0			56																						
-Y10- 16+00	RT	21B		111.6																											
-Y10- 16+00	RT	21B	21C		108.0	106.8			80																						
-Y10- 16+39	RT	21C		109.5																											
-L- 22+50	LT	22		113.1																											
-L- 22+50	LT	22	23		110.1	107.8			232																						
-L- 24+80	LT	23		110.8																											
-L- 24+80	CL	23	24		107.8	107.5			72																						
-L- 24+80	RT	24		110.8																											
-L- 23+12	RT	25	24		106.8	107.5			172																						
-L- 23+12	RT	25		112.6																											
-L- 25+50	RT	24	26		107.5	106.8			144																						
-L- 26+20	RT	26		109.8																											
-L- 26+20	RT	26	27		106.8	101.1			64																						
-L- 26+80	RT	27		109.00																											
-L- 26+80	CL	27	28		101.1	102.7							84																		
-L- 26+64	LT	28		109.7																											
-L- 26+64	LT	28	29		102.7	106.8			48																						
-L- 26+18	LT	29		109.8																											
-L- 26+64	LT	28	30		102.7	104.00							36																		
-L- 26+45	LT	30		104.00																											
-L- 26+64	LT	28	31		102.7	106.0					40																				
-L- 27+00	LT	31		109.7																											
-L- 27+00	LT	31	32		106.0	106.5					92																				
-L- 27+90	LT	32		110.2																											
-L- 28+03	LT	32	33		106.5	106.7				64																					
-Y11- 12+42	RT	33		110.0																											
-Y11- 12+42	RT	33	34		106.7	107.0			16																						
-Y11- 12+29	RT	34		110.0																											
-Y11- 12+29	RT	34	35		107.0	106.5			48																						
-Y11- 12+29	LT	35		110.3																											
-L- 28+40	LT	32	36		106.5	107.8					100																				
-L- 28+90	LT	36		111.5																											
-L- 29+09	LT	36	37		107.8	108.6					44																				
-L- 29+30	LT	37		112.4																											
-L- 29+30	LT	37	IN		108.6	111.00					32																				
-L- 26+80	RT	27	38		101.1	105.8				32																					
SUBTOTAL									1116	96	308		120																		

STATION	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	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 * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') 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	F	G	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & WITH TWO GRATE STD. 840.16	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. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.34	M.H. FRAME & COVER STD. 840.54	SLAB LID	CONCRETE TRANSITIONAL SECTION D.I.	CONCRETE TRANSITIONAL SECTION C.B.	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- 19+65						1														1			1							
-L- 19+74																													248	
-Y10- 14+60						1			1		1																			
-Y10- 14+60																														
-Y10- 15+46						1			1		1																			REMOVE EXIST CB
-Y10- 15+46																														
-Y10- 15+44						1			1		1																			
-Y10- 15+44																													51	
-Y10- 16+00						1														1		1								
-Y10- 16+00																													90	
-Y10- 16+39						1											1		1											
-L- 22+50						1			1			1																		
-L- 22+50																													52	
-L- 24+80						1			1			1																		
-L- 24+80																														
-L- 24+80						1			1		1																			
-L- 23+12																													68	
-L- 23+12						1	0.8		1		1																			
-L- 25+50																														
-L- 26+20						1			1		1																			
-L- 26+20																													66	
-L- 26+80						1	2.9														1	1								
-L- 26+80																													44	
-L- 26+64						1	2		1	1																				
-L- 26+64																														
-L- 26+18						1			1		1																			
-L- 26+64																														
-L- 26+45				3.4																										HEADWALL
-L- 26+64																														
-L- 27+00						1			1		1																			
-L- 27+00																														
-L- 27+90						1			1		1																			
-L- 28+03																														
-Y11- 12+42						1			1			1																		
-Y11- 12+42																														
-Y11- 12+29						1			1	1																				
-Y11- 12+29																														
-Y11- 12+29						1			1			1																		
-L- 28+40																													89	REMOVE EXIST 2 CB
-L- 28+90						1			1		1																			
-L- 29+09																														
-L- 29+30						1			1		1																			
-L- 29+30																														
-L- 26+80																													36	
SUBTOTAL				3.4		21	5.7		17	2	11	4					1		1	2	1	2	1						744	

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: LJAH DATE: 12-22-10
CHECKED BY: AKW DATE: 12-22-10

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
U-3621B	3-C

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	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 12"	15"	18"	24"	30"	36"	42"	48"	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHRWISE) 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109	CLASS III R.C. PIPE OR ALUMINIZED C.S. PIPE, TYPE IR OR HDPE PIPE, TYPE S OR D 12"	15"	18"	24"	30"	36"	42"	48"	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.
-L- 27+10	RT	38		109.8																																
-L- 27+95	RT	38	39		105.8	108.1				172																										
-L- 31+00	CL	39A														60																				
-L- 28+80	RT	39		111.3																																
-L- 30+10	RT	39	40		108.1	113.1			260																											
-L- 31+40	RT	40		116.1																																
-L- 31+48	RT	40	41		113.1	113.4			16																											
-L- 31+55	RT	41		116.4																																
-L- 31+55	RT	41	42		113.4	114.2			32																											
-L- 31+55	CL	42		117.3																																
-L- 31+73	CL	42	43		114.2	114.8			36																											
-L- 31+90		43		118.0																																
-L- 32+53	RT	41	44		113.4	116.8			196																											
-L- 33+50	RT	44		119.8																																
-L- 33+50	RT	44	45		116.8	117.9			40																											
-L- 33+50	CL	45		121.1																																
-L- 34+51	RT	45A																																		
-L- 35+89	LT	45B																																		
-L- 36+90	LT	IN	46		122.5	120.5				52																										
-L- 37+19	LT	46		124.0																																
-L- 37+34	LT	46	47		120.8	120.6				40																										
-L- 37+50	LT	47		124.3																																
-L- 37+43	LT	47	48		120.6	120.7			36																											
-L- 37+37	CL	48		123.7																																
-L- 38+65	LT	47	49		120.6	117.0				232																										
-L- 39+80	LT	49		120.3																																
-L- 39+67	LT	49	50		117.0	117.2			36																											
-L- 39+54	LT	50		120.5																																
-L- 39+26	LT	50	51		117.2	117.0			52																											
-L- 39+00	LT	51		120.5																																
-L- 40+50	LT	49	52		117.0	114.8				140																										
-L- 41+20	LT	52		118.5																																
-L- 41+20	LT	52	53		114.8	115.2				16																										
-L- 41+20	LT	53		118.2																																
-L- 41+60	LT	52	54		114.8	113.7					80																									
-L- 42+00	LT	54		117.5																																
-L- 42.37	LT	54	55		113.7	112.8					76																									
-L- 42+74	LT	55		116.5																																
-L- 42.71	LT	55	56		112.8	113.3			16																											
-L- 42+69	LT	56		115.5																																
-L- 42+79	LT	55	57		112.8	112.6					12																									
-L- 42+83	LT	57		116.3																																
SUBTOTAL									720	652	168					60																				

STATION	STRUCTURE NO. FROM	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	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & WITH TWO GRATE STD. 840.16	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. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.34	M.H. FRAME & COVER STD. 840.54	CONCRETE TRANSITIONAL SECTION D.I.	CONCRETE TRANSITIONAL SECTION C.B.	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- 27+10	38	1			1			1																
-L- 27+95	38																						58	
-L- 31+00	39A																						60	TEMPORARY PIPE
-L- 28+80	39	1			1			1																
-L- 30+10	39																						57	
-L- 31+40	40	1			1			1																
-L- 31+55	41	1			1			1																
-L- 31+55	41																						89	REMOVE EXIST 2 CB
-L- 31+55	42	1							1	1								1						
-L- 31+90	43	1							1	1								1						
-L- 32+53	41																						27	
-L- 33+50	44	1			1			1																
-L- 33+50	45	1							1	1								1						
-L- 34+51	45A																						28	PIPE REMOVAL
-L- 35+89	45B																						28	PIPE REMOVAL
-L- 36+90	IN																						48	
-L- 37+19	46	1			1			1																REMOVE CB
-L- 37+50	47	1			1			1																
-L- 37+37	48	1			1		1												1				20	REMOVE PIPE AT -L-37+45 RT
-L- 38+65	47																						62	
-L- 39+80	49	1			1			1																
-L- 39+54	50	1			1			1																
-L- 39+00	51	1							1	1														
-L- 41+20	52	1			1			1																
-L- 41+20	53	1			1			1																
-L- 42+00	54	1			1			1																
-L- 42+74	55	1			1			1															260	REMOVE PIPE SYSTEM THAT EXTEND FROM 63 & CROSS 57-58
-L- 42+69	56	1							1	1														
-L- 42+83	57	1			1			1																
SUBTOTAL		20			15		1	14	5	5								3	1				737	

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: LJAH DATE: 12-22-10
CHECKED BY: AKW DATE: 12-22-10

PROJECT REFERENCE NO.	SHEET NO.
U-3621B	3-D

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 12"	15"	18"	24"	30"	36"	42"	48"	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHRWISE) 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109	CLASS III R.C. PIPE OR ALUMINIZED C.S. PIPE, TYPE IR OR HDPE PIPE, TYPE S OR D 12"	15"	18"	24"	30"	36"	42"	48"	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.
-L- 43+20	LT	57	58		112.6	110.5					76																									
-L- 43+56	LT	58		117.5																																
-L- 43+55	LT	58	59		110.5	110.4									16																					
-L- 43+55	LT	59		117.5																																
-L- 43+63	LT	58	60		110.5	111.8					20																									
-L- 43+71	LT	60		116.2																																
-L- 43+64	LT	60	61		111.8	114.3			36																											
-Y13- 14+80	LT	61		117.3																																
-L- 43+77	LT	60	62		111.8	111.8			16																											
-L- 43+83	LT	62		115.0																																
-L- 43+86	LT	60	63		111.8	114.4				36																										
-L- 44+01	LT	63		117.6																																
-L- 44+76	LT	63	64		114.4	115.7			152																											
-L- 45+50	LT	64		120.6																																
-L- 45+50	LT	64	IN		115.7	115.8			16																											
-L- 38+75	RT	65		120.5																																
-L- 38+75	RT	65	66		117.3	117.2			20																											
-L- 38+75	RT	66		121.8																																
-L- 39+09	RT	66	67		117.2	115.5			72																											
-L- 39.43	RT	67	68		115.5	115.5			24																											
-L- 39+43	RT	67		121.2																																
-L- 40+32	RT	67	70		115.5	114.0			308																											
-L- 39.43	RT	68		118.8																																
-L- 42+50	RT	70		118.3																																
-L- 42.50	RT	70	71		114.0	115.2			48																											
-L- 42+50	RT	71		118.3																																
-L- 42.25	RT	71	72		115.2	115.4			52																											
-L- 42+00	RT	72		118.6																																
-L- 41+60	RT	72	73		115.4	114.0			80																											
-L- 41+20	RT	73		119.4																																
-L- 42+64	RT	70	74		114.0	113.5			32																											
-L- 42+79	RT	74		117.4																																
-L- 42+93	RT	74	75		113.5	110.8				32																										
-L- 43+09	RT	75		118.5																																
-L- 43+51	RT	76		118.7																																
-L- 43+86	RT	76	77		109.5	116.1			72																											
-L- 44+20	RT	77		119.9																																
-L- 44+20	RT	77	78		116.1	116.3			40																											
-L- 44+19	CL	78		119.4																																
SUBTOTAL										68																										
									968		96				16																					

STATION	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	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & WITH TWO GRATE STD. 840.16	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. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.34	M.H. FRAME & COVER STD. 840.54	CONCRETE TRANSITIONAL SECTION D.I.	CONCRETE TRANSITIONAL SECTION C.B.	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- 43+20																							
-L- 43+56	1	2													1	1							
-L- 43+55																						56	REMOVE CB
-L- 43+55																				1.0126			REMOVE EXISTING JB AND EXTEND
-L- 43+63																						20	REMOVE CB
-L- 43+71	1			1	1																		
-L- 43+64																							
-Y13- 14+80	1			1			1																REMOVE CB
-L- 43+77																							
-L- 43+83	1							1	1														
-L- 43+86																							
-L- 44+01	1			1	1																		
-L- 44+76																							
-L- 45+50	1			1		1																	
-L- 45+50																							15" STUB
-L- 38+75	1							1	1														
-L- 38+75																							
-L- 38+75	1			1		1																	
-L- 39+09																							
-L- 39.43																							
-L- 39+43	1	0.70		1		1																	
-L- 40+32																							
-L- 39.43	1							1	1														
-L- 42+50	1			1	1																		
-L- 42.50																							
-L- 42+50	1							1	1								1						
-L- 42.25																							
-L- 42+00	1							1	1								1						
-L- 41+60																							
-L- 41+20	1	0.4		1			1											1					
-L- 42+64																							
-L- 42+79	1													1		1							
-L- 42+93																							
-L- 43+09		2.7																		0.4465			REMOVING EXISTING CB
-L- 43+51	1	4.2													1	1							REMOVE EXISTING CB
-L- 43+86																							
-L- 44+20	1			1			1																
-L- 44+20																							
-L- 44+19	1							1	1								1						
SUBTOTAL		10																					
	18			9	3	3	3	6	6					1	2	3	3	1		1.4591		76	

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

4/04/06

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COMPUTED BY: L.JAH DATE: 12-22-10
CHECKED BY: AKW DATE: 12-22-10

4/04/06

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
U-3621B	3-E

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	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 12"	15"	18"	24"	30"	36"	42"	48"	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHRWISE) 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109
-L- 44+27	CL	78	79		116.3	116.4			16														
-L- 44+35	CL	79		119.6																			
-L- 44+92	CL	79	80		116.4	118.9			116														
-L- 45+50	CL	80		121.9																			
-Y13A- 10+44	CL	81			---	---				56													
-L- 46+80	LT	82A														52							
-L- 47+20	RT	82		125.6																			
-L- 47+60	RT	82	83		122.6	122.4			80														
-L- 48+00	RT	83		128.3																			
-L- 48+00	CL	83	84		122.4	122.2			84														
-L- 48+00	LT	84		128.1																			
-L- 48+25	LT	84	85		122.2	122.0			52														
-L- 48+50	LT	85		129.7																			
-L- 48+50	LT	85	86		122.0	121.9			40														
-L- 48+50	LT	86		127.8																			
-L- 48+63	LT	86	OUT		121.9	118.0											28						
-Y14- 13+86	LT	87			---	---				40													
-Y13A- 13+55	LT	88			---	---				56													
-L- 50+31	LT	IN	89		115.0	104.0											52						
-L- 50+41	LT	89		108.7																			
-L- 50+69	LT	89	90		104.0	105.2																	
-L- 51+00	LT	90		108.2																			
-L- 49+80	LT	91			103.1																		
-EY15- 10+15.65	RT	89	91		104.0	103.1					228												
-L- 51+34	RT	92	OUT		119.5	106.0												60					
-L- 52+70	RT	93		134.2																			
-L- 52+70	RT	93	OUT		128.2	122.0											44						
-L- 52+40	CL	93	94		128.2	128.6			84														
-L- 52+70	LT	94		134.2																			
-L- 53+45	LT	94	95		128.6	129.4			152														
-L- 54+20	LT	95		132.4																			
-L- 54+20	LT	95	96		129.4	131.0			56														
-L- 54.20	RT	96		134.0																			
-SRI- 10+19	LT	97	OUT		---	---				68													
-SRI- 10+47	CL	98	OUT		---	---				52													
-L- 54.95	RT	98A																					
-SRI- 12+44	RT	98B																					
-L- 56+50	RT	99		130.3																			
SUBTOTAL									680		228					52		60					
										272							124						

STATION	STR. FROM	CLASS III R.C. PIPE OR ALUMINIZED C.S. PIPE, TYPE IR OR HDPE PIPE, TYPE S OR D 12"	15"	18"	24"	30"	36"	42"	48"	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	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
-L- 44+35	79														1						
-L- 45+50	80														1			1		1	
-L- 47+20	82														1			1			1
-L- 48+00	83														1	0.9		1			1
-L- 48+00	84														1	0.9		1		1	
-L- 48+50	85														1	2.7		1		1	
-L- 48+50	86														1	0.9					
-L- 50+41	89														1						
-L- 51+00	90														1						
-L- 52+70	93														1	1.0		1		1	
-L- 52+70	94														1	0.6		1			1
-L- 54+20	95														1			1			1
-L- 54.20	96														1			1		1	
-L- 56+50	99														1			1		1	
SUBTOTAL																7				6	
															14			10			4

STATION	STR. FROM	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & WITH TWO GRATE STD. 840.16	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. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.34	M.H. FRAME & COVER STD. 840.54	CONCRETE TRANSITIONAL SECTION D.I.	CONCRETE TRANSITIONAL SECTION C.B.	18" WELDED STEEL PIPE	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- 44+35	79	1	1								1							
-L- 45+50	80											1						
-L- 46+80	82A															2@ 0.029		PLUG AND FILL TEMPORARY PIPE
-L- 48+00	84																	EXTRA DEPTH
-L- 48+50	85																	EXTRA DEPTH
-L- 48+50	86				1		1											
-L- 48+63	86													1@15"				ROD & LUG CONNECTORS
-Y14- 13+86	87															0.045		PLUG EXISTING PIPE
-L- 50+31	IN													1@15"				
-L- 50+41	89				1	1	1											
-L- 50+69	89												56					TRENCHELESS INSTALLATION
-L- 51+00	90				1		1											
-L- 49+80	91														.5526			
-EY15- 10+15.65	89																172	REMOVE 2 DI.'s
-L- 51+34	92													1@18"			76	
-L- 52+70	93													1@15"				ROD & LUG CONNECTORS
-L- 52+70	94																	EXTRA DEPTH
-L- 54.20	96											1						
-SRI- 10+19	97																100	
-L- 54.95	98A																117	
-SRI- 12+44	98B																20	
-L- 56+50	99											1					72	REMOVE DI.
SUBTOTAL		1			3		3					3		1@18"		0.1030		
			1			1					1		56	3@15"	.5526		557	

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: LJAH DATE: 12-22-10
CHECKED BY: AKW DATE: 12-22-10

PROJECT REFERENCE NO. U-3621B | SHEET NO. 3-F

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE)								BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHRWISE)								CLASS III R.C. PIPE OR ALUMINIZED C.S. PIPE, TYPE IR OR HDPE PIPE, TYPE S OR D							
SIZE								12"	15"	18"	24"	30"	36"	42"	48"	12"	15"	18"	24"	30"	36"	42"	48"	12"	15"	18"	24"	30"	36"	42"	48"
THICKNESS OR GAUGE																.064	.064	.064	.064	.079	.079	.109	.109								
-L- 56+50	LT	99	100		127.3	125.1			52																						
-L- 56+50	LT	100		128.1																											
-L- 57+25	LT	100	101		125.1	121.3			144																						
-L- 58+00	LT	101		124.3																											
-L- 58+00	LT	101	102		121.3	123.4			52																						
-L- 58+00	RT	102		126.4																											
-L- 59+18	LT	101	103		121.3	113.0			240																						
-L- 60+50	LT	103		116.0																											
-L- 60+50	LT	103	104		113.0	115.1			40																						
-L- 60+50	LT	104		118.1																											
-L- 60+95	LT	103	105		115.1	108.7			76																						
-L- 61+30	LT	105		114.8																											
-L- 61+30	LT	105	106		108.7	108.5				40																					
-L- 61+30	LT	105	108		108.7	109.0			72																						
-L- 62+00	LT	108		112.0																											
-L- 61+30	CL	106		114.9																											
-L- 61+30	LT	106	107		108.5	111.5			16																						
-L- 61+45	LT	107		114.5																											
-L- 61+30	RT	106	OUT		108.5	108.0				76																					
-Y16- 10+80	LT	109		109.3																											
-Y16- 10+80	RT	IN	109		106.0	105.0						56																			
-Y16- 10+80	LT	109	OUT		105.0	104.5						36																			
-Y16- 10+80	LT	109	110		105.0	106.2			64																						
-Y16- 11+42	LT	110		109.4																											
-Y16- 11+42	LT	110	111		106.2	106.2			8																						
-Y16- 11+50	LT	111		109.6																											
-Y16- 11+50	CL	111	112		106.2	106.8			24																						
-Y16- 11+50	RT	112		109.8																											
-Y16- 11+64	LT	111	113		106.2	106.6			32																						
-Y16- 11+80	LT	113		109.8																											
-L- 63+71	LT	114	115		101.3	101.1							28																		
-L- 63+60	LT	114		101.3																											
-L- 63+82	LT	115		106.5																											
-L- 63+91	LT	115	OUT		101.1	102.2			20																						
-L- 65+00	RT	116			98.3																										
-L- 65+39	RT	116	117		98.3	94.5							88																		
-L- 65+77	RT	117		106.6																											
-L- 65+77	RT	117	OUT		94.5	91.4									100																
-L- 65+77	RT	117	IN		94.5	102.5						40																			
-L- 65+68	LT	118		107.6																											
SUBTOTAL									840			132			100																
										116			116																		

STATION	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	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	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & WITH TWO GRATE STD. 840.16	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. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.34	M.H. FRAME & COVER STD. 840.54	CONCRETE TRANSITIONAL SECTION D.I.	CONCRETE TRANSITIONAL SECTION C.B.	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- 56+50																												
-L- 56+50						1			1			1																
-L- 57+25																												
-L- 58+00						1			1			1																
-L- 58+00																												
-L- 58+00						1			1		1												1					
-L- 59+18																												
-L- 60+50						1			1			1																
-L- 60+50																												
-L- 60+50						1			1			1											1					
-L- 60+95																												
-L- 61+30						1	1.1		1			1																EXTRA DEPTH
-L- 61+30																												
-L- 61+30																												
-L- 62+00						1			1			1																
-L- 61+30						1	1.4		1			1											1					EXTRA DEPTH
-L- 61+30																												
-L- 61+45						1			1			1											1					
-L- 61+30																												
-Y16- 10+80						1			1			1																
-Y16- 10+80																											88	PIPE REMOVAL -Y16- 10+10
-Y16- 10+80																												
-Y16- 10+80																												
-Y16- 11+42						1			1			1																
-Y16- 11+42																												
-Y16- 11+50						1			1	1																		
-Y16- 11+50																												
-Y16- 11+50						1			1	1																		
-Y16- 11+64																												
-Y16- 11+80						1							1	1														
-L- 63+71																												
-L- 63+60																									0.764			
-L- 63+82						1	0.40												1		1							EXTRA DEPTH
-L- 63+91																												
-L- 65+00																									0.764			
-L- 65+39																												
-L- 65+77						1	5	2.1											1		1							EXTRA DEPTH
-L- 65+77																												BURY OUTLET INVERT 1'
-L- 65+77																												
-L- 65+68						1			1			1																
SUBTOTAL						17		2.1															4				88	
							7.9		14	2	1	11	1	1					2		2				1.528			

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

4/04/06
18-JAN-2011 16:00
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4/04/06

COMPUTED BY: L.JAH DATE: 12-22-10
CHECKED BY: AKW DATE: 12-22-10

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
U-3621B	3-G

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	DRAINAGE 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
-L- 65+68	LT	118	119		104.5	104.6			20										
-L- 65+86	LT	119		107.6															
-L- 65+68	LT	118	OUT		104.5	103.0			24										
-L- 67+53	RT	120		105.9															
-L- 67+53	RT	120	121		102.9	104.1			52										
-L- 67+53	LT	121		107.5															
-L- 67+53	LT	121	122		104.1	104.3			40										
-L- 67+90	LT	122		107.3															
-L- 67+53	RT	120	123		102.9	101.5			144										
-L- 69+00	RT	123		104.5															
-L- 69+00	RT	123	124		101.5	103.6			52										
-L- 69+00	LT	124		106.6															
-L- 69+00	RT	123	125		101.5	98.0			148										
-L- 70+50	RT	125		103.5															
-L- 70+50	RT	125	126		98.0	102.6			52										
-L- 70+50	LT	126		105.6															
-L- 70+50	RT	125	OUT		98.0	97.8			28										
-L- 71+08	RT	125	127		98.0	98.5			100										
-L- 71+55	RT	127		102.8															
-L- 71+55	RT	127	128		98.5	102.8				24									
-L- 71+55	RT	128		101.4															
-L- 71+55	RT	127	129		98.5	99.1			128										
-L- 72+80	RT	129		102.1															
-L- 72+80	RT	129	130		99.1	100.9			56										
-L- 72+80	LT	130		103.9															
-L- 71+58	LT	131		104.8															
-L- 70+87	LT	132																	
-L- 71+61	LT	133	134		102.2	99.0				20									
-L- 71+61	LT	134		99.0															
-L- 75+32	LT	135		98.9															
-L- 75+51	LT	135	136		95.9	95.0			40										
-L- 75+70	LT	136		98.0															
-L- 75+70	RT	136	137		95.0	90.3			52										
-L- 75+70	RT	137		97.0															
-L- 75+70	RT	137	138		90.3	90.7			108										
-L- 76+75	RT	138		95.3															
-L- 75+70	RT	137	OUT		90.3	90.0			36										
-L- 77+00	RT	138	139		90.7	90.9			52										
-L- 77+25	RT	139		93.9															
SUBTOTAL									1132										
										44									

STATION	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109		CLASS III R.C. PIPE OR ALUMINIZED C.S. PIPE, TYPE IR OR HDPE PIPE, TYPE S OR D 12"	15"	18"	24"	30"	36"	42"	48"	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	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 * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL.'A' + (1.3 X COL.'B') 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	
-L- 65+68																														
-L- 65+86																							1			1			1	
-L- 65+68																														
-L- 67+53																							1			1		1		
-L- 67+53																														
-L- 67+53																							1			1		1		
-L- 67+53																														
-L- 67+90																							1			1		1		
-L- 67+53																														
-L- 69+00																							1			1		1		
-L- 69+00																														
-L- 69+00																							1			1		1		
-L- 69+00																														
-L- 70+50																							1	0.5		1		1		
-L- 70+50																														
-L- 70+50																							1			1		1		
-L- 70+50																														
-L- 71+08																														
-L- 71+55																							1			1		1		
-L- 71+55																														
-L- 71+55																														
-L- 71+55																														
-L- 72+80																							1			1		1		
-L- 72+80																														
-L- 72+80																							1			1		1		
-L- 71+58																							1			1		1		
-L- 70+87																		28												
-L- 71+61																														
-L- 71+61																														
-L- 75+32																							1			1		1		
-L- 75+51																														
-L- 75+70																							1			1		1		
-L- 75+70																														
-L- 75+70																							1	1.7		1		1		
-L- 75+70																														
-L- 76+75																							1			1		1		
-L- 75+70																														
-L- 77+00																														
-L- 77+25																							1			1		1		
SUBTOTAL																														
																		28					17			17		16	1	
																								2.2						

STATION	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & WITH TWO GRATE STD. 840.16	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. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.34	M.H. FRAME & COVER STD. 840.54			CONCRETE TRANSITIONAL SECTION D.I.	CONCRETE TRANSITIONAL SECTION C.B.		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- 65+68																					32	
-L- 65+86																						
-L- 65+68																						
-L- 67+53																						
-L- 67+53																						
-L- 67+53																1						
-L- 67+53																						
-L- 67+90																1						
-L- 67+53																						
-L- 69+00																						
-L- 69+00																						
-L- 69+00																1						
-L- 69+00																						
-L- 70+50																						EXTRA DEPTH
-L- 70+50																						
-L- 70+50																1						
-L- 70+50																						
-L- 71+08																						
-L- 71+55																						
-L- 71+55																						
-L- 71+55																			.4465			
-L- 71+55																						
-L- 72+80																						
-L- 72+80																						
-L- 72+80																1						
-L- 71+58																1						
-L- 70+87																						DRIVEWAY PIPE
-L- 71+61																						
-L- 71+61																			.4465			
-L- 75+32																1						
-L- 75+51																						
-L- 75+70																1						
-L- 75+70																						
-L- 75+70																						
-L- 75+70																						
-L- 76+75																						
-L- 75+70																						
-L- 77+00																						
-L- 77+25																						
SUBTOTAL																8						
																			.8930		32	

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: L.JAH DATE: 12-22-10
CHECKED BY: AKW DATE: 12-22-10

PROJECT REFERENCE NO.: U-3621B | SHEET NO.: 3-H

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 12"	15"	18"	24"	30"	36"	42"	48"
-L- 76+25	LT	140		97.4											
-L- 76+00	LT	IN	140		96.0	94.2				32					
-L- 76+25	LT	140	141		94.2	89.9				136					
-L- 77+61	LT	141		93.2											
-L- 77+61	LT	141	142		89.9	81.6				164					
-L- 79+27	LT	142		89.5											
-L- 78+59	LT	143		90.4											
-L- 78+59	LT	143	142		83.4	81.6			80						
-L- 79+21	LT	144		---											
-L- 79+21	LT	144	142		---	81.6									12
-L- 78+63	RT	145A	145		82.6	82.5									16
-L- 78+63		145A													
-L- 79+25	RT	146		90.7											
-L- 79+61	RT	146	147		87.7	86.08			76						
-L- 80+00	RT	147		89.1											
-L- 80+00	RT	147	OUT		86.1	85.9			64						
-L- 81+29	RT	148		87.5											
-L- 81+29	RT	148	149		80.9	80.4				32					
-L- 81+44	RT	149		80.4											
-L- 81+79	LT	150		85.3											
-L- 81+79	LT	150	151		80.3	79.5			36						
-L- 81+79	CL	151		85.8											
-L- 82+36	CL	151	152		79.5	79.2				60					
-L- 82+36	CL	152		85.6											
-L- 82+36	CL	152	153		79.2	78.8				64					
-L- 82+97	CL	153		78.7											
-L- 82+36	CL	152	155		79.2	81.5			44						
-L- 82+59	LT	154		84.6											
-L- 82+59	LT	154	155		81.6	81.5			24						
-L- 82+36	LT	155		84.6											
-L- 82+36	RT	152	156		79.2	82.0									
-L- 82+36	RT	156		86.2					72						
-L- 82+79	CL	IN	156		91.6	82.0			60						
-L- 82+62	RT	157													
-L- 82+36	RT	156	158		82.0	82.3			68						
-L- 82+96	RT	158		85.3											
-EY22- 15+85	LT	159		85.5											
-EY22- 15+85	LT	159	160		81.2	82.0			16						
-EY22- 15+90	LT	160		82.0											
-EY22- 17+28	LT	161		86.2											
-EY22- 17+28	LT	161	162		82.0	82.4			12						
-EY22- 17+28	LT	162		85.7											
SUBTOTAL										488					28
									552						

(SIZE / THICKNESS OR GAUGE)

BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHRWISE) 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109	CLASS III R.C. PIPE OR ALUMINIZED C.S. PIPE, TYPE IR OR HDPE PIPE, TYPE S OR D 12"	15"	18"	24"	30"	36"	42"	48"	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.

STATION	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	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & WITH TWO GRATE STD. 840.16	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. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.34	M.H. FRAME & COVER STD. 840.54	CONCRETE TRANSITIONAL SECTION D.I.	CONCRETE TRANSITIONAL SECTION C.B.	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- 76+25	1			1			1																
-L- 76+00																							
-L- 76+25																							
-L- 77+61	1			1			1																
-L- 77+61																							
-L- 79+27	1	2.9		1			1															124	EXTRA DEPTH / REM EXIST JB
-L- 78+59	1	2.0		1			1																EXTRA DEPTH
-L- 78+59																						76	REMOVE 76' OF EXIST 15" PIPE
-L- 79+21																				1.0126			
-L- 79+21																							EXISTING PIPE EXTENSION
-L- 78+63																							EXISTING PIPE EXTENSION
-L- 78+63																				1.0126			
-L- 79+25	1			1			1											1					
-L- 79+61																							
-L- 80+00	1			1			1											1					
-L- 80+00																							
-L- 81+29	1	1.6						1	1														
-L- 81+29																							
-L- 81+44																				.4465		46	REMOVE D.I.
-L- 81+79	1			1	1																		EXTRA DEPTH
-L- 81+79																							
-L- 81+79	1	1.3						1	1								1						EXTRA DEPTH.PRECSAT
-L- 82+36																							
-L- 82+36	1	1.4						1	1								1						EXTRA DEPTH.PRECSAT
-L- 82+36																						36	REMOVE 36' OF EXISTING PIPE
-L- 82+97																				.4465			
-L- 82+36																							
-L- 82+59	1			1	1																		
-L- 82+59																							
-L- 82+36	1			1	1																		
-L- 82+36																							
-L- 82+36	1			1			1													.4465			
-L- 82+79																							
-L- 82+62																						36	EXIST 18" PIPE.REMOVE 2CB
-L- 82+36																							
-L- 82+96	1			1			1																
-EY22- 15+85	1														1	1							SHALLOW DEPTH DESIGN
-EY22- 15+85																							
-EY22- 15+90	1			1			1																REMOVE EXIST CB
-EY22- 17+28	1														1	1							SHALLOW DEPTH DESIGN
-EY22- 17+28																							
-EY22- 17+28	1			1			1																
SUBTOTAL	18			13	3		10	3	3						2	2	2			3.3647			
		9.2																2				318	

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

4/04/06

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4/04/06

COMPUTED BY: L.JAH	DATE: 12-22.10
CHECKED BY: AKW	DATE: 12-22-10

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
U-3621B	3-1

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	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 12"	15"	18"	24"	30"	36"	42"	48"
-L- 82+96	RT	163		86.1											
-L- 84+78	LT	164		85.4											
-L- 84+78	LT	164	165		82.4	81.6			32						
-L- 84+50	LT	165		84.6											
-L- 84+50	LT	165	OUT		81.6	81.5			22						
-EY22- 17+28	LT	166		85.0											
-EY22- 17+28	LT	166	OUT		80.9	81.2					24				
-EY22- 13+00	RT	167		84.5											
-EY22- 13+00	RT	167	168		81.5	81.2			52						
-EY22- 12+50	RT	168		84.6											
-EY22- 12+50	RT	168	169		81.2	80.6			76						
-EY22- 11+78	RT	169		84.7											
SUBTOTAL									182		24				
SHEET TOTAL 3-A									920	164	232				
SHEET TOTAL 3-B									1116	96	308		120		
SHEET TOTAL 3-C									720	652	168				
SHEET TOTAL 3-D									968	68	96				16
SHEET TOTAL 3-E									680	272	228				
SHEET TOTAL 3-F									840	116		132	116		100
SHEET TOTAL 3-G									1132	44					
SHEET TOTAL 3-H									552	488					28
SHEET TOTAL 3-I									182		24				
GRAND TOTAL									7110		1056		236		144
										1900		132			

STATION	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHRWISE) 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109	CLASS III R.C. PIPE OR ALUMINIZED C.S. PIPE, TYPE IR OR HDPE PIPE, TYPE S OR D 12"	15"	18"	24"	30"	36"	42"	48"	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.
-L- 82+96																					
-L- 84+78																					
-L- 84+78																					
-L- 84+50																					
-L- 84+50																					
-EY22- 17+28																					
-EY22- 17+28																					
-EY22- 13+00																					
-EY22- 13+00																					
-EY22- 12+50																					
-EY22- 12+50																					
-EY22- 11+78																					
SUBTOTAL																					
SHEET TOTAL 3-A																	168				
SHEET TOTAL 3-B																				3.4	
SHEET TOTAL 3-C	60																				
SHEET TOTAL 3-D																					
SHEET TOTAL 3-E	52	124	60																		
SHEET TOTAL 3-F																					
SHEET TOTAL 3-G																	28				
SHEET TOTAL 3-H																					
SHEET TOTAL 3-I																					
GRAND TOTAL		124	60														196			3.4	
	112																				

STATION	QUANTITIES FOR DRAINAGE STRUCTURES * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') 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	F	G
-L- 82+96	1			1			1
-L- 84+78	1			1		1	
-L- 84+78							
-L- 84+50	1			1		1	
-L- 84+50							
-EY22- 17+28	1			1			1
-EY22- 17+28							
-EY22- 13+00	1			1			1
-EY22- 13+00							
-EY22- 12+50	1			1			1
-EY22- 12+50							
-EY22- 11+78	1						
SUBTOTAL	7			6		2	4
SHEET TOTAL 3-A	18			12		4	8
SHEET TOTAL 3-B	21	5.7		17	2	11	4
SHEET TOTAL 3-C	20			15		1	14
SHEET TOTAL 3-D	18	10		9	3	3	3
SHEET TOTAL 3-E	14	7		10		6	4
SHEET TOTAL 3-F	17	7.9	2.1	14	2	1	11
SHEET TOTAL 3-G	17	2.2		17		16	1
SHEET TOTAL 3-H	18	9.2		13	3		10
SHEET TOTAL 3-I	7			6		2	4
GRAND TOTAL	150	42	2.1	113	10	44	59
		44.73					

STATION	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & WITH TWO GRATE STD. 840.16	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. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.34	M.H. FRAME & COVER STD. 840.54	SLAB LID	CONCRETE TRANSITIONAL SECTION D.I.	CONCRETE TRANSITIONAL SECTION C.B.	18" WELDED STEEL PIPE	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- 82+96																			SEE SPECIAL CB DETAIL 2-Z
-L- 84+78																			
-L- 84+78																			
-L- 84+50																			
-L- 84+50																			
-EY22- 17+28																			
-EY22- 17+28																			
-EY22- 13+00																			
-EY22- 13+00																			
-EY22- 12+50																			
-EY22- 12+50																		100	REMOVE EXIST CB
-EY22- 11+78								1		1								14	REMOVE 14' OF EXIST 15" PIPE & JB
SUBTOTAL								1		1								114	
SHEET TOTAL 3-A	3	3			1		1	1	1	1	1	1						797	
SHEET TOTAL 3-B					1		1	2	1	2	1							744	
SHEET TOTAL 3-C	5	5										3	1					737	
SHEET TOTAL 3-D	6	6						1	2	3		3	1			1.4591		76	
SHEET TOTAL 3-E	1	1	3			1	3					1	3	56	3@15" 1@18"	.5526	.103	557	
SHEET TOTAL 3-F	1	1						2		2			4			1.528		88	
SHEET TOTAL 3-G													8			.893		32	
SHEET TOTAL 3-H	3	3							2	2		2	2			3.3647		318	
SHEET TOTAL 3-I								1		1								114	
GRAND TOTAL	19	19		3	2	1	5	7	6	11	2	10		56	3@15" 1@18"		.1030		
													19			7.7974		3463	

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

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 54" & OVER)

STATION	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 54"	60"	66"	72"	78"	84"
-L- 79+25	RT	142	142A		81.6			12					
-L- 79+37		142A											
TOTAL								12					
GRAND TOTAL								12					

STATION	BITUMINOUS COATED C.S. PIPE TYPE B 54" .109	54" .138	54" .168	54" SHOP ELON-GATED .138	54" SHOP ELON-GATED .168	60" .138	60" .168	66" .138	66" .168	72" .138	72" .168	STRUCTURAL PLATE PIPE 60" 12	60" 10	66" 12	66" 10	72" 12	72" 10	REINFORCED ENDWALLS WITH R.C. – C.Y.	WITH C.S. – C.Y.	MASONARY DRAINAGE STRUCTURES CUBIC YARDS	CONC. COLLARS CL. "B" C.Y. STD 840.72	REMARKS
-L- 79+25																						EXISTING 54" PIPE EXTENSION
-L- 79+37																					2.5793	
TOTAL																					2.5793	
GRAND TOTAL																					2.5793	

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: KTB DATE: 9-10-08
CHECKED BY: WAD DATE: 12/7/10

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
U-3621B	3-J

SUMMARY OF EARTHWORK
IN CUBIC YARDS

STATION	STATION	UNCL. EXCAV.	UNDERCUT	EMBANK. +%	BORROW	WASTE
PHASE: I						
-L- 10+56.82	40+50.00 (LT)	1409		5140	3894	163
-L- 40+50.00	49+56.21 (LT)	1000		5693	4693	
-L- 51+88.21	81+50.00 (LT)	643		22025	21382	
-L- 81+50.00	87+00.00 (LT)	260		280	20	
-L- 61+00.00	71+00.00 (RT)	23		9955	9932	
-Y10- 11+36.00	13+00.00	103		333	230	
-Y11- 12+00.00	12+97.80	22		5	0	17
-Y13- 13+31.14	15+50.00 (LT)	655		9	0	646
-Y13A- 10+16.00	13+63.68	2277	747	934	0	2090
-Y16- 10+41.37	11+80.00	4		128	124	
-EY22- 12+50.00	19+00.00	1,581		1	0	1580
SUBTOTAL PHASE: I		7977	747	44501	40274	4496
WASTE IN LIEU OF BORROW					-2729	-2802
TOTAL PHASE: I		7977	747	44926	37969	1694
PHASE: II						
-L- 10+56.82	40+50.00 (RT)	1421		6111	5713	1023
-L- 40+50.00	49+56.21 (RT)	19		6019	6000	
-L- 51+88.21	61+00.00 (RT)	176		13354	13178	
-L- 71+00.00	83+00.00 (RT)	557		3490	2933	
-Y10- 14+59.22	16+29.22	108		518	410	
-Y12- 10+37.54	11+00.00	7		98	91	
-Y13- 16+40.00	17+66.68 (RT)	95		229	134	
-Y17- 10+39.76	11+90.00	5		83	78	
-SR1- 10+13.31	15+00.00	107		48	0	60
SUBTOTAL PAHSE: 2		2495		29948	28535	1083
WASTE IN LIEU OF BORROW					-60	-60
TOTAL PHASE: II		2495		29948	28476	1023
PHASE I - PHASE II TOTAL		10472	747	74449	65947	2717
MATERIAL FOR SHOULDER CONST.				2375	2375	
LOSS DUE TO CLEARING & GRUBBING		-730			730	
ADDITIONAL UNDERCUT PER GEOTECH			1100	1375	1375	1100
SELECT GRANULAR MATERIAL,CLASS III				-2375	-2375	
IN LIEU OF BACKFILL FOR UNDERCUT						
PROJECT TOTAL		9742	1147	75824	68052	3817
EST 5 % TO REPLACE BORROW					3403	
GRAND TOTALS:		9742	1847	75824	71454	
SAY:		9850	1900		71700	
DRAINAGE DITCH EXCA.= 870 CY						
EST.SHALLOW UNDERCUT CONTINGENCY.= 1000 CY						
EST.SHALLOW UNDERCUT BY STATION.= 950 CY						
TOTAL EST.SHALLOW UNDERCUT = 1950 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.

REMOVAL OF EXISTING ASPHALT PAVEMENT

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD²
-L-	57+50.00	59+50.00	RT	155.56
-L-	63+00.00	65+00.00	LT	555.56
-L-	65+99.91	74+77.51	LT/RT	2437.78
			TOTAL:	3148.90
			SAY:	3150

SUMMARY OF BREAKING EXISTING ASPHALT PAVEMENT

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD²
-L-	47+00.00	49+56.21	RT	854.03
-L-	51+88.21	57+50.00	RT & LT	1560.53
-L-	57+50.00	60+54.31	LT	507.18
			TOTAL:	2,921.74
			SAY:	2,930

SUMMARY OF 4' CHAIN LINK FENCE

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	LF
-L-	45+00.00	49+27.77	RT	427.77
-L-	52+30.00	57+00.00	LT	470.00
			TOTAL:	897.77
			SAY:	900

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COMPUTED BY: M.S. DATE: 12-1-2010
CHECKED BY: W.A.D. DATE: 12-1-2010

PROJECT REFERENCE NO.	SHEET NO.
U-3621B	3-K

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

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS									IMPACT ATTENUATOR TYPE 350			SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	GRAU 350	M-350	CAT-1	TYPE III	T.E.S.	TYPE B-77				EA	G	NG				
-L-	43+53.50	49+48.61	RT	580.54	150.00		49+52.79				50.00		1		1			1												START 8' POSTS -L- STA 44+90.00
-L-	48+10.07	49+64.40	RT	154.33			49+64.40				37.50		4			1				1										
-L-	48+34.34	49+70.63	LT	137.50				49+70.63				37.50		4		1				1										
-L-	48+91.56	49+82.24	LT	91.00				49+82.24									1	1												
-L-	51+69.29	53+08.00	RT	138.71				51+97.53									1	1												
-L-	51+80.90	53+25.72	RT	137.50				51+80.90				37.50		4		1				1										
-L-	51+87.13	53+56.26	LT	169.13			51+87.13				37.50		4			1				1										
-L-	51+98.74	57+93.00	LT	594.26			51+98.74				50.00		1		1			1												
-L-	79+61.80	81+40.10	RT	189.17							50.00		1		1		1													
-L-	80+72.09	82+62.11	LT	190.02							50.00	50.00	1	1	1		1													
-EY18-	11+14.87	11+19.40	LT	25.00															2											
			PROJECT TOTAL	2407.16	150.00										4	4	4	4	2	4										
	LESS DEDUCTION FOR ANCHOR UNITS																													
		TYPE GRAU 350	4 @ 50 FT	200.00																										
		TYPE M-350	4 @ 37.5 FT	150.00																										
		TYPE CAT-1	4 @ 6.25 FT	25.00																										
		TYPE III	4 @ 18.75 FT	75.00																										
		TYPE B-77	4 @ 25 FT	100.00																										
	LESS DEDUCTION FOR ANCHOR UNITS			-550.00																										
			GRAND TOTAL	1857.16	150.00										4	4	4	4	2	4										
			SAY	1862.5	150.00										4	4	4	4	2	4										
TEMPORARY GUARDRAIL																														
-L-	48+25.00	49+27.00	LT	100.00			49+27.00				50.00		1		1															
-L-	52+07.00	55+57.00	LT	350.00				55+57.00				50.00		1	1															
			PROJECT TOTAL	450.00											2															
	LESS DEDUCTION FOR ANCHOR UNITS																													
		TYPE GRAU 350	2 @ 50 FT	100.00																										
	LESS DEDUCTION FOR ANCHOR UNITS			-100.00																										
			GRAND TOTAL	350.00											2															
			SAY	350.00											2															
	10 ADDITIONAL GUARDRAIL POST																													

12/06/07

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PROJ. REFERENCE NO.	SHEET NO.
U-3621B	3-L

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

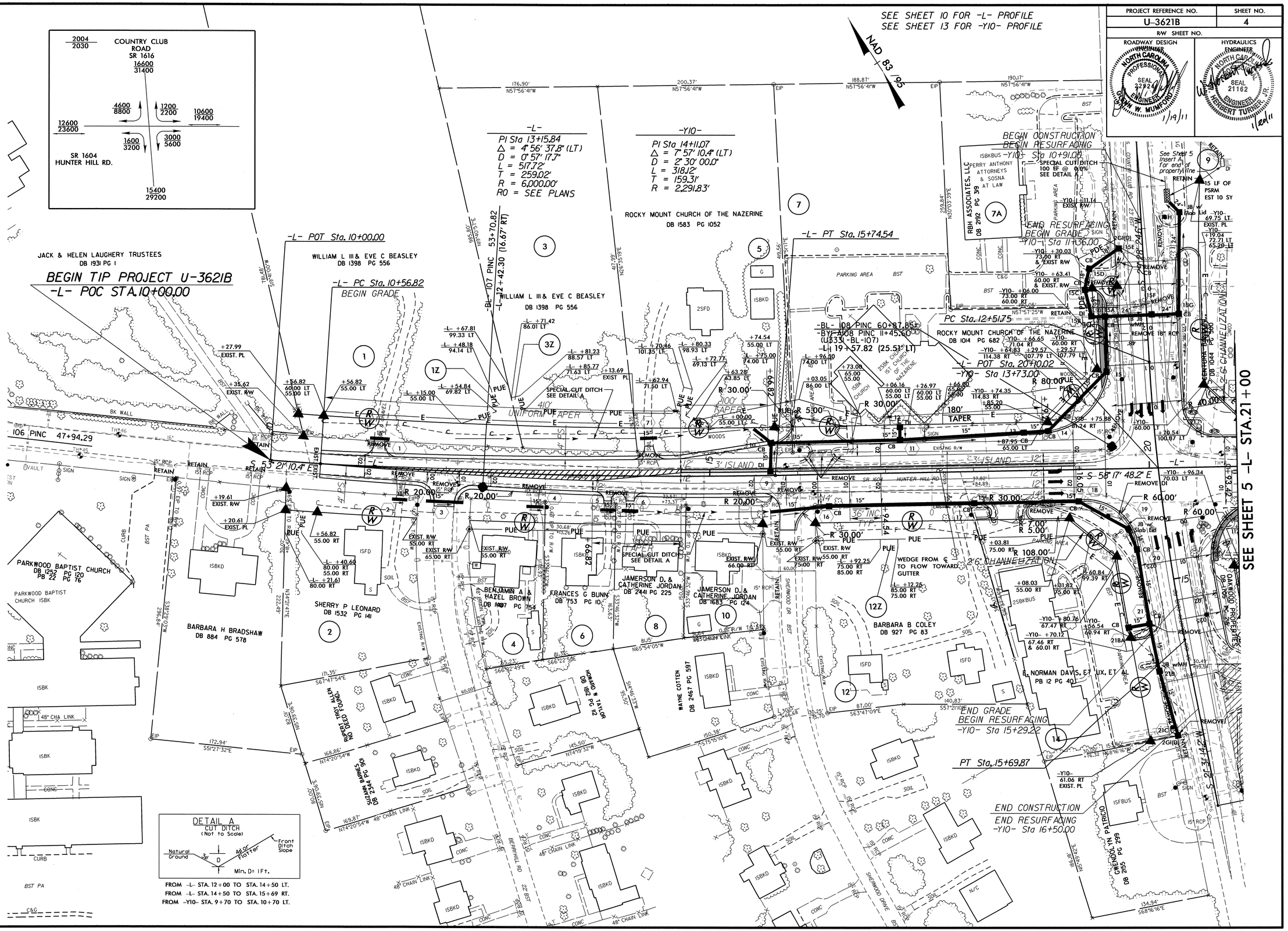
PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1	1	WILLIAM L III & EVE C BEASLEY
2	1	SHERRY P LEONARD
3	1	WILLIAM L III & EVE C BEASLEY
4	1	BENJAMIN A & HAZEL BROWN
5	1	ROCKY MOUNT CHURCH OF THE NAZERINE
6	1	FRANCES G BUNN
7	1	ROCKY MOUNT CHURCH OF THE NAZERINE
8	1	JAMERSON D. & CATHERINE JORDAN
9	1	CENTURA BANK INC.
9	2	CENTURA BANK INC.
10	1	JAMERSON D. & CATHERINE JORDAN
11	2	BODDIE NOELL ENTERPRISES INC.
12	1	BARBARA B COLEY
13	2	BODDIE NOELL ENTERPRISES INC.
13	3	BODDIE NOELL ENTERPRISES INC.
14	1	E. NORMAN DAVIS, ET UX, ET AL
15	3	J R N PROPERTIES LLC
16	2	OAKWOOD PROPERTIES
17	2	OAKWOOD PROPERTIES
18	2	ROSE HILL ENTERPRISES
19	2	TIMOTHY ALLEN COLEY
20	2	PATRICIA A. BULLOCK
21	3	JULIAN CARR COLLIE
22	2	OAKWOOD PROPERTIES, LLC
22	3	OAKWOOD PROPERTIES, LLC
23	3	R K W PROPERTIES
24	3	ROBERT D. GORHAM JR.
24A	3	JOSEPH HOWELL
25	3	J. B. OVERTON HEIRS
26	3	VERNELLE HIATT
27	3	UNKNOWN
28	3	UNKNOWN
29	3	PCB 2 BCW II
30	3	ANDERSON B. HOLT III
31	3	ROBERT D.GORHAM, JR.
32	3	WILLIAM F. OUTLAW
33	3	ROBERT D.GORHAM, JR.
34	3	SOUTH WESLEYAN ASSOCIATES
35	3	JOSEPH HOWELL
35	4	JOSEPH HOWELL
36	3	CLUB FOREST, LLC
37	3	WILLIAM C. MEDLIN
37	4	WILLIAM C. MEDLIN
38	4	PBIW ASSOCIATES, LLC
39	4	WILLIAM A. MOORE
40	4	WAYNE NOBLES
41	4	WILLIAM F. OUTLAW
42	4	BISHOP PARTNERS
43	4	JACQUELINE D. MURRAY
44	4	WILLIAM A. MOORE
45	4	WILLIAM A. MOORE
46	4	WILLIAM MOORE
47	4	MATTHEW HUTCHINSON
48	5	DAILEY T ROCKY MOUNT, LLC, ET AL
49	4	BISHOP PARTNERS
50	4	WALKER RESOURCES, LLC
50	5	WALKER RESOURCES, LLC
51	5	MARY M. VIVERETTE
52	5	WILLIAM H. BARNES
53	5	W W PROPERTIES

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
54	5	BRASWELL GORHAM COMPANY
55	5	THE GORHAM COMPANY
55	5	THE GORHAM COMPANY
56	5	THE GORHAM COMPANY
56	6	THE GORHAM COMPANY
57	6	THE GORHAM COMPANY
58	6	UNITED ENTERTAINMENT
59	6	C. B. DAUGHTRIDGE JR., ET AL
60	6	JOSEPH LANE JOHNSON
61	5	WILLIAM PITTMAN

PROJECT REFERENCE NO.	SHEET NO.
U-3621B	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 22924 ENGINEER GLENN W. MUMFORD 1/19/11

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 21162 ENGINEER HERBERT TURNER, JR. 1/20/11



REVISIONS

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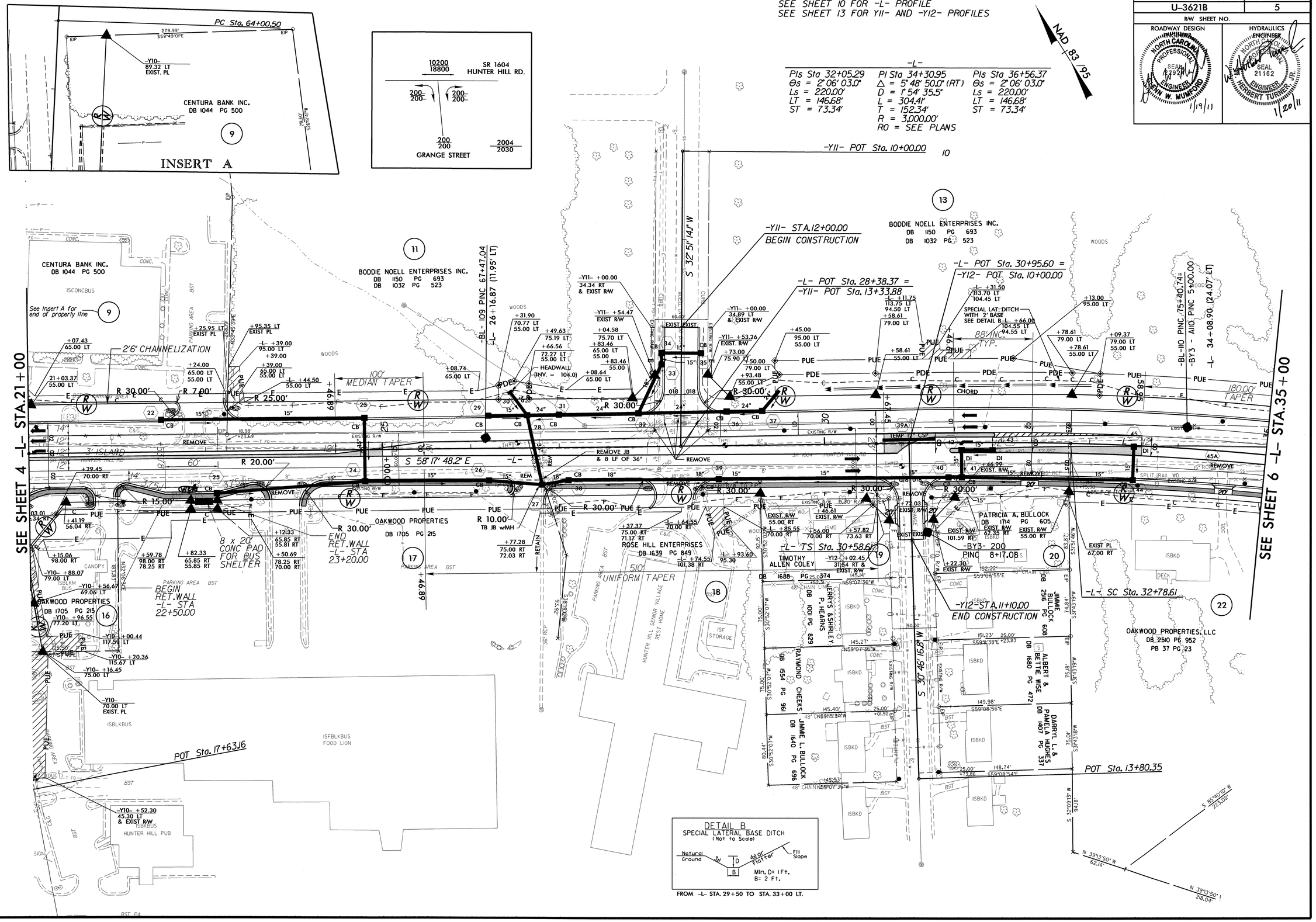
PROJECT REFERENCE NO.	SHEET NO.
U-3621B	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SEE SHEET 10 FOR -L- PROFILE
SEE SHEET 13 FOR Y11- AND -Y12- PROFILES

NAD 83 /95

-L-

PIs Sta 32+05.29	PI Sta 34+30.95	PIs Sta 36+56.37
Θs = 2° 06' 03.0"	Δ = 5° 48' 50.0" (RT)	Θs = 2° 06' 03.0"
Ls = 220.00'	D = 1° 54' 35.5"	Ls = 220.00'
LT = 146.68'	L = 304.41'	LT = 146.68'
ST = 73.34'	T = 152.34'	ST = 73.34'
	R = 3,000.00'	
	RO = SEE PLANS	



REVISIONS

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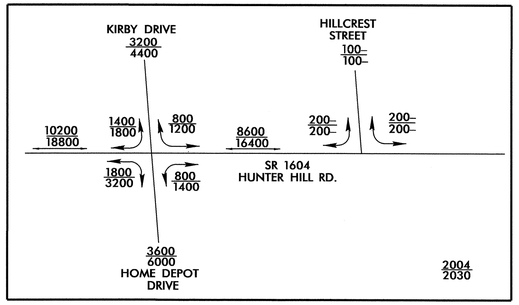
PROJECT REFERENCE NO.	SHEET NO.
U-3621B	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

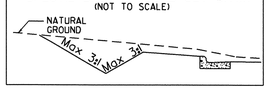
NORTH CAROLINA PROFESSIONAL SEAL 22824 ENGINEER KEVIN W. MUMFORD 1/14/11

NORTH CAROLINA PROFESSIONAL SEAL 21162 ENGINEER HERBERT TURNER, JR. 1-14-11

SEE SHEETS W1-W4 FOR WALL PLANS
SEE SHEET 10 AND 11 FOR -L- PROFILE
SEE SHEET 13 AND 14 FOR -Y13- AND -Y13A- PROFILES

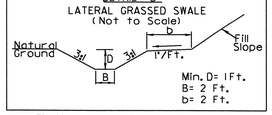


DETAIL C
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)



FROM -L- STA. 41+70 TO STA. 42+70 LT.
FROM -L- STA. 43+85 TO STA. 45+10 LT.
FROM -Y13- STA. 8+70 TO STA. 10+20 LT.
FROM -Y13- STA. 14+50 TO STA. 14+90 RT.
FROM -Y13- STA. 14+70 TO STA. 15+00 LT.

DETAIL D
LATERAL GRASSED SWALE
(Not to Scale)



FROM -L- STA. 48+75 TO STA. 50+00 LT

DETAIL E
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

FROM -L- STA. 45+50 TO STA.47+00 LT.

-L-

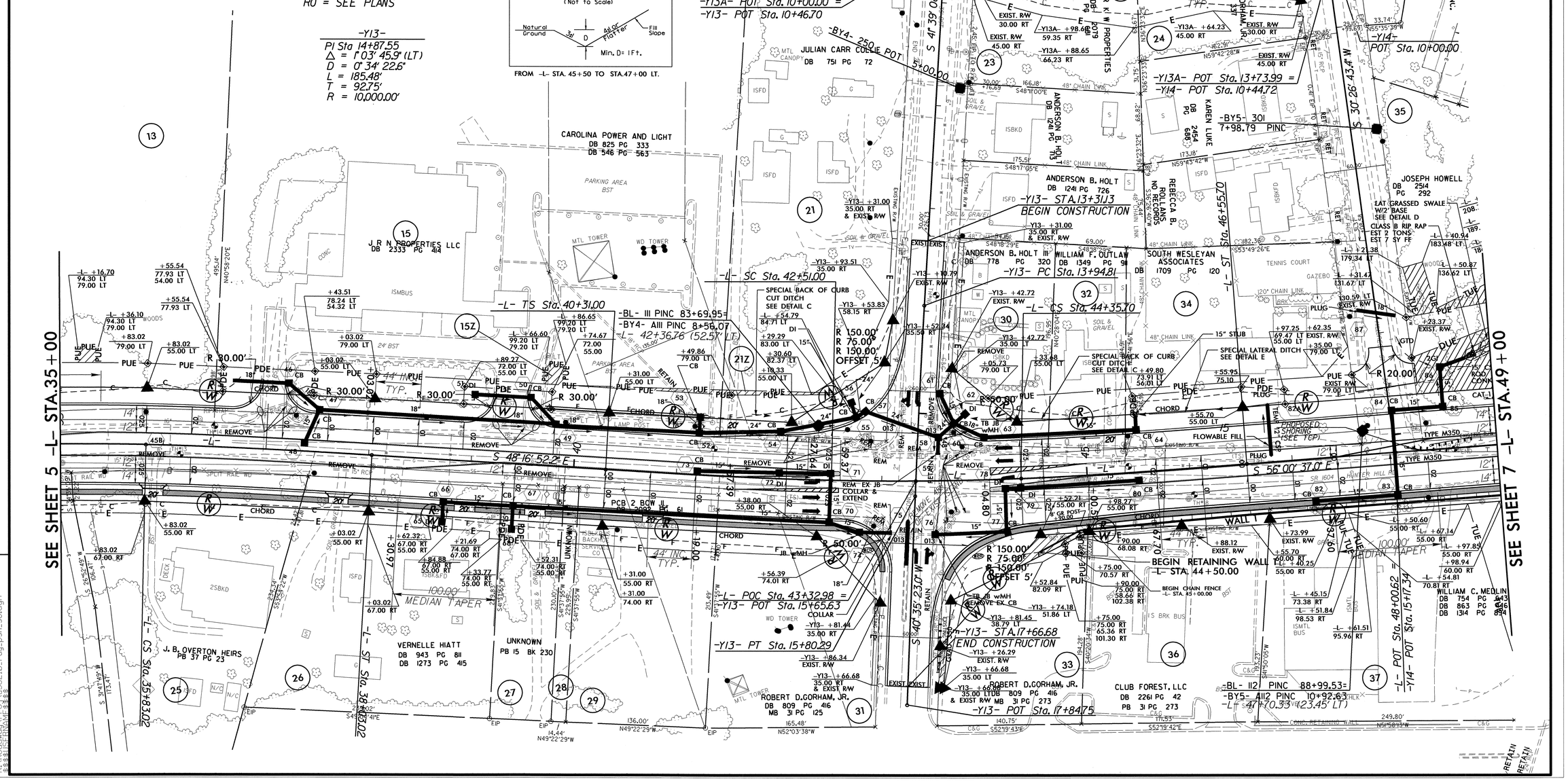
PIs Sta 36+56.37	PIs Sta 41+77.68	PI Sta 43+43.38	PIs Sta 45+09.04
Θs = 2° 06' 03.0"	Θs = 2° 06' 03.0"	Δ = 3° 31' 38.7" (LT)	Θs = 2° 06' 03.0"
Ls = 220.00'	Ls = 220.00'	D = 1° 54' 35.5"	Ls = 220.00'
LT = 146.68'	LT = 146.68'	L = 184.70'	LT = 146.68'
ST = 73.34'	ST = 73.34'	T = 92.38'	ST = 73.34'
		R = 3,000.00'	
		RO = SEE PLANS	

-Y13-

PI Sta 14+87.55
Δ = 1° 03' 45.9" (LT)
D = 0° 34' 22.6"
L = 185.48'
T = 92.75'
R = 10,000.00'

REVISIONS

8/17/99



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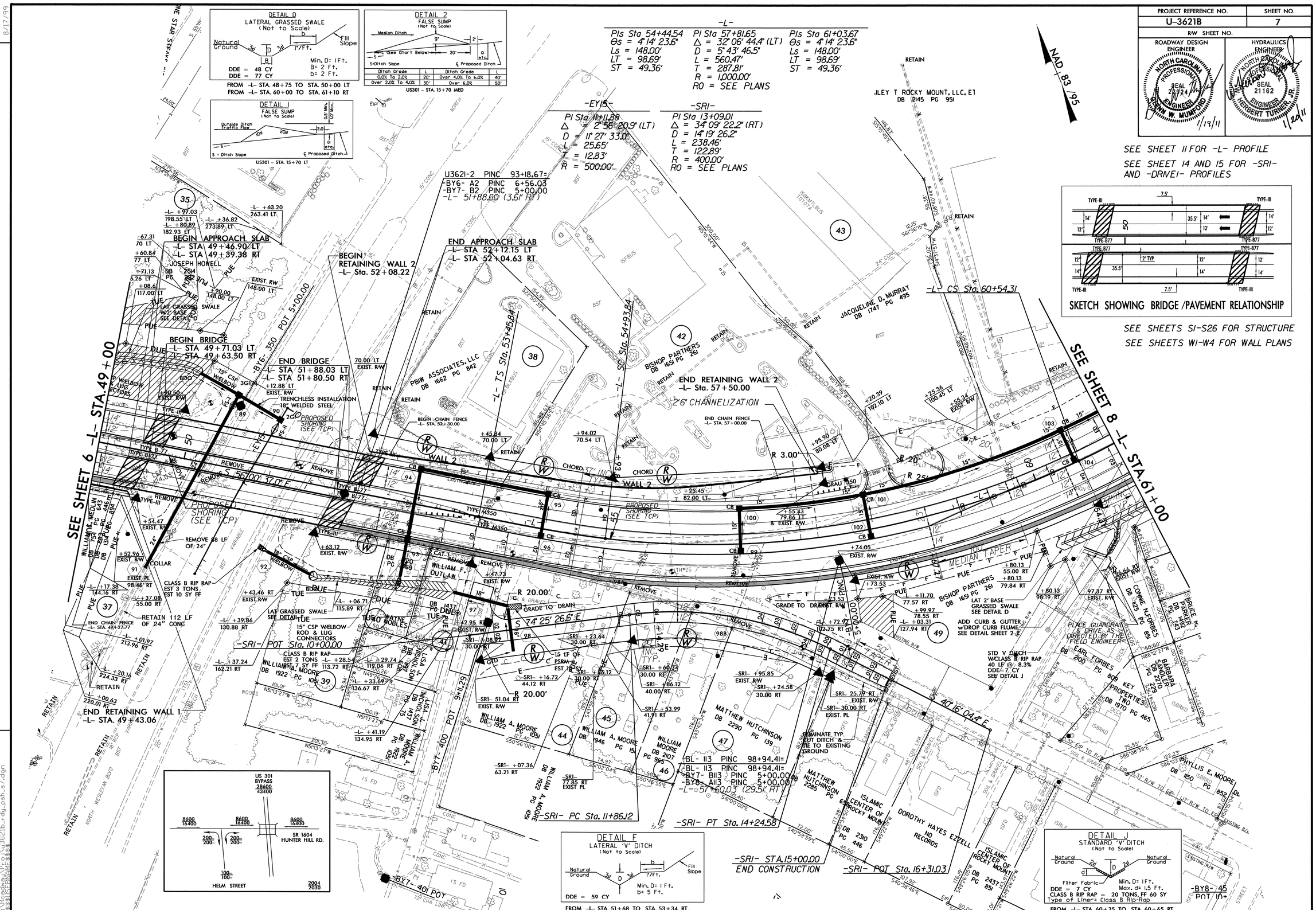
PROJECT REFERENCE NO.	SHEET NO.
U-3621B	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER


DETAIL D
LATERAL GRASSED SWALE
(Not to Scale)
DDE = 48 CY
DDE = 77 CY
Min. D= 1Ft.
B= 2 Ft.
b= 2 Ft.
FROM -L- STA. 48+75 TO STA. 50+00 LT
FROM -L- STA. 60+00 TO STA. 61+10 RT
DETAIL 2
FALSE SUMP
(Not To Scale)
US301 - STA. 15+70 MED
DETAIL 1
FALSE SUMP
(Not To Scale)
US301 - STA. 15+70 LT
-L-
PIs Sta 54+44.54
Θs = 4° 14' 23.6"
Ls = 148.00'
LT = 98.69'
ST = 49.36'
PI Sta 57+81.65
Δ = 32° 06' 44.4" (LT)
D = 5° 43' 46.5"
L = 560.47'
T = 287.81'
R = 1,000.00'
RO = SEE PLANS
PIs Sta 61+03.67
Θs = 4° 14' 23.6"
Ls = 148.00'
LT = 98.69'
ST = 49.36'
-EY15-
PI Sta 11+11.88
Δ = 2° 58' 20.9" (LT)
D = 11° 27' 33.0"
L = 25.65'
T = 12.83'
R = 500.00'
-SRI-
PI Sta 13+09.01
Δ = 34° 09' 22.2" (RT)
D = 14° 19' 26.2"
L = 238.46'
T = 122.89'
R = 400.00'
RO = SEE PLANS
NAD 83/95
SEE SHEET 11 FOR -L- PROFILE
SEE SHEET 14 AND 15 FOR -SRI- AND -DRIVE1- PROFILES
SKETCH SHOWING BRIDGE /PAVEMENT RELATIONSHIP
SEE SHEETS S1-S26 FOR STRUCTURE
SEE SHEETS W1-W4 FOR WALL PLANS
SEE SHEET 6 -L- STA. 49+00
SEE SHEET 8 -L- STA 61+00
BEGIN APPROACH SLAB
-L- STA 49+46.90 LT
-L- STA 49+39.38 RT
END APPROACH SLAB
-L- STA 52+12.15 LT
-L- STA 52+04.63 RT
BEGIN RETAINING WALL 2
-L- Sta. 52+08.22
BEGIN BRIDGE
-L- STA 49+71.03 LT
-L- STA 49+63.50 RT
END BRIDGE
-L- STA 51+88.03 LT
-L- STA 51+80.50 RT
END RETAINING WALL 2
-L- Sta. 57+50.00
2'6" CHANNELIZATION
END RETAINING WALL 1
-L- STA. 49+43.06
-L- CS Sta. 60+54.31
-L- TS Sta. 57+45.84
-L- SC Sta. 54+93.84
-L- POT Sta. 10+00.00
-SRI- POT Sta. 10+00.00
-SRI- PC Sta. 11+86.12
-SRI- PT Sta. 14+24.58
-SRI- STA.15+00.00
END CONSTRUCTION
-SRI- POT Sta. 16+31.03
-BY6- 350 POT 5+00.00
-BY7- 400 POT 9+11.29
-BY7- 401 POT
-BY8- 45 POT 10+
U3621-2 PINC 93+18.67=
-BY6- A2 PINC 6+56.03
-BY7- B2 PINC 5+00.00
-L- 51+88.60 (3.61' RT)
-BL- 113 PINC 98+94.41=
-BY7- B113 PINC 5+00.00
-BY8- A113 PINC 5+00.00
-L- 57+60.03 (29.51' RT)
DETAIL F
LATERAL 'V' DITCH
(Not to Scale)
DDE = 59 CY
FROM -L- STA. 51+68 TO STA. 53+34 RT.
DETAIL J
STANDARD 'V' DITCH
(Not to Scale)
DDE = 7 CY
CLASS B RIP RAP = 20 TONS, FF 60 SY
Type of Liner= Class B Rip-Rap
FROM -L- STA. 60+35 TO STA. 60+65 RT.
US 301
BYPASS
28600
43400
SR 1604
HUNTER HILL RD.
HELM STREET
2004
2030
JILEY T ROCKY MOUNT, LLC, ET
DB 1214 5 PG 951
JACQUELINE D. MURRAY
DB 1741 PG 495
BISHOP PARTNERS
DB 1651 PG 261
PBIW ASSOCIATES, LLC
DB 1662 PG 842
JOSEPH HOWELL
DB 2514
PG 282
WILLIAM F. MEDLIN
DB 1754 PG 643
DB 1853 PG 446
DB 1914 PG 864
WILLIAM F. OUTLAW
DB 1437
PG 1010
WAYNE MOBLES
DB 1928 PG 1051
WILLIAM A. MOORE
DB 1922 PG 1051
WILLIAM A. MOORE
DB 1946 PG 1051
WILLIAM MOORE
DB 2107
PG 965
MATTHEW HUTCHINSON
DB 2290 PG 139
MATTHEW HUTCHINSON
DB 2285 PG 639
ISLAMIC CENTER OF ROCKY MOUNT
DB 2310 PG 446
ISLAMIC CENTER OF ROCKY MOUNT
DB 2431 PG 851
DOROTHY HAYES EZZELL
NO RECORDS
KEY PROPERTIES TWO
DB 1970 PG 465
BARBARA SANDIFER
DB 2270 PG 229
EARL FORBES
DB 2100 PG 806
COMMIE N. FORBES
DB 1125 PG 851
BRUCE W. PARKER
DB 1842 PG 743
PHYLLIS E. MOORE
DB 150 PG 852
MEDIAN TAPER
PLACE GUARDRAIL & DRIVE AS DIRECTED BY THE FIELD ENGINEER
ADD CURB & GUTTER W/DROP CURB FLUME SEE DETAIL SHEET 2
STD V DITCH W/CLASS B RIP RAP 40 LF @ 8.3% DDE= 7 CY SEE DETAIL J
LAT 2' BASE GRASSED SWALE SEE DETAIL D
LAT GRASSED SWALE SEE DETAIL D
15" CSP W/ELBOW ROD & LUG CONNECTORS
CLASS B RIP RAP EST 3 TONS, EST 10 SY FF
CLASS B RIP RAP EST 2 TONS -L- +28.54 SY FF 113.72 RT
TRENCHLESS INSTALLATION 18" WELDED STEEL
PROPOSED SHORING (SEE TCP)
REMOVE 88 LF OF 24"
RETAIN 112 LF OF 24" CONC
END CHAIN FENCE -L- STA. 49+27.77
BEGIN CHAIN FENCE -L- STA. 52+30.00
END CHAIN FENCE -L- STA. 57+00.00
GRADE TO DRAIN
ELIMINATE TYP. CUT DITCH & TIE TO EXISTING GROUND
S 74° 25' 26.6" E
S 40° 16' 04.4" E
S 56° 00' 37.0" E
R 20.00'
R 3.00'
R 25'
R 20'
CHORD
WALL 2
NORTH WESLEYAN BLVD
RETAIN
REMOVE
PUE
DDE
ISFD
ISBRKD
ISBLK
ISBLVD
ISFBLVD
ISFBUS
ISBUS
ISPARK
ISPOSIS
ISPOLE
ISPOLE
ISFLT
ISFLTR
ISFLTRS
ISFLTRS
ISFLTRS

PROJECT REFERENCE NO.	SHEET NO.
U-3621B	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 28924 ENGINEER KEVIN W. MUNFORD 1/19/11

NORTH CAROLINA PROFESSIONAL SEAL 21162 ENGINEER HERBERT TURNER, JR. 1/20/11

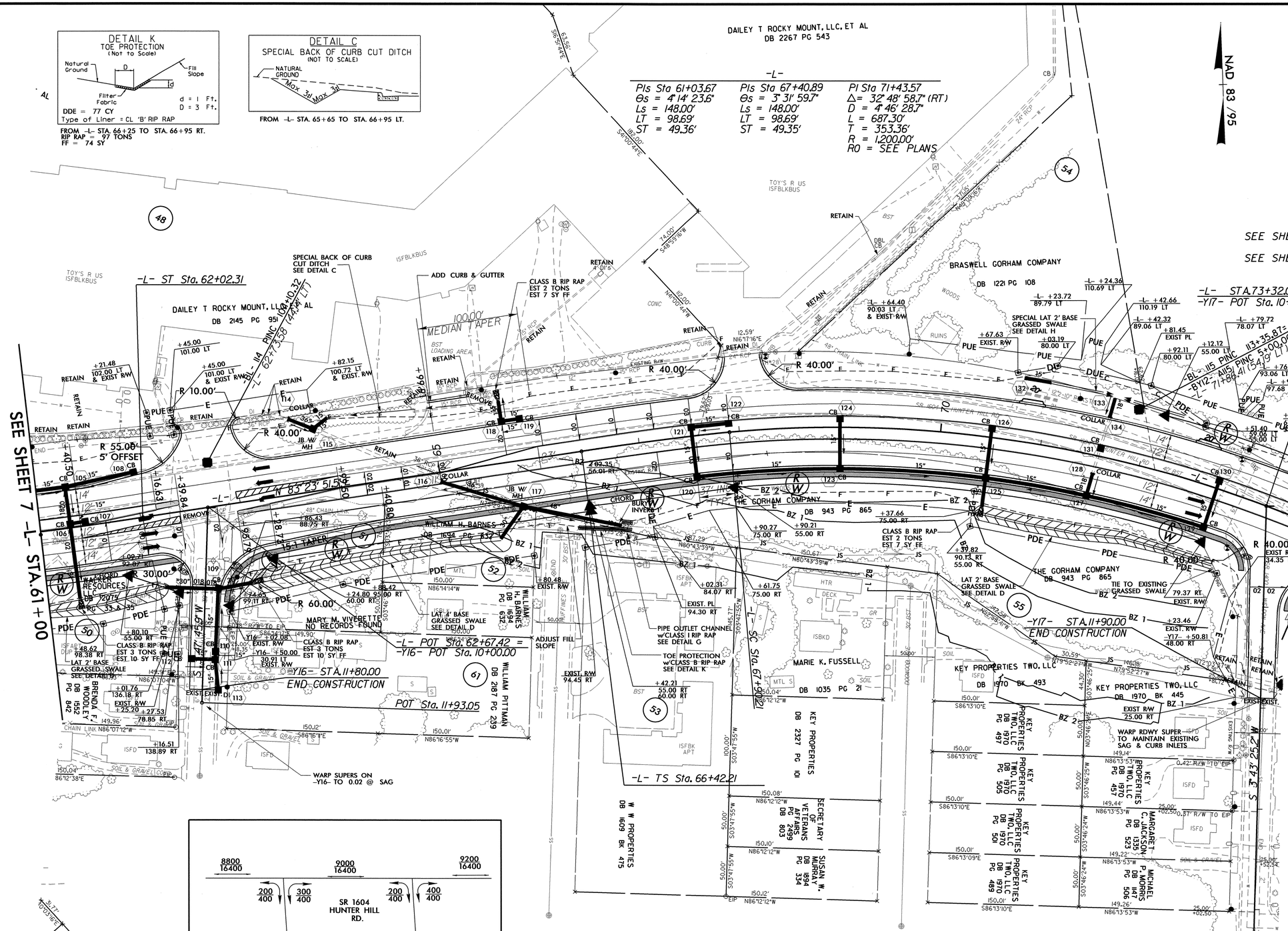
REVISIONS

8/17/99

NAD 83 / 95

SEE SHEET 11 AND 12 FOR -L- PROFILE

SEE SHEET 14 FOR -Y16- AND -Y17- PROFILES



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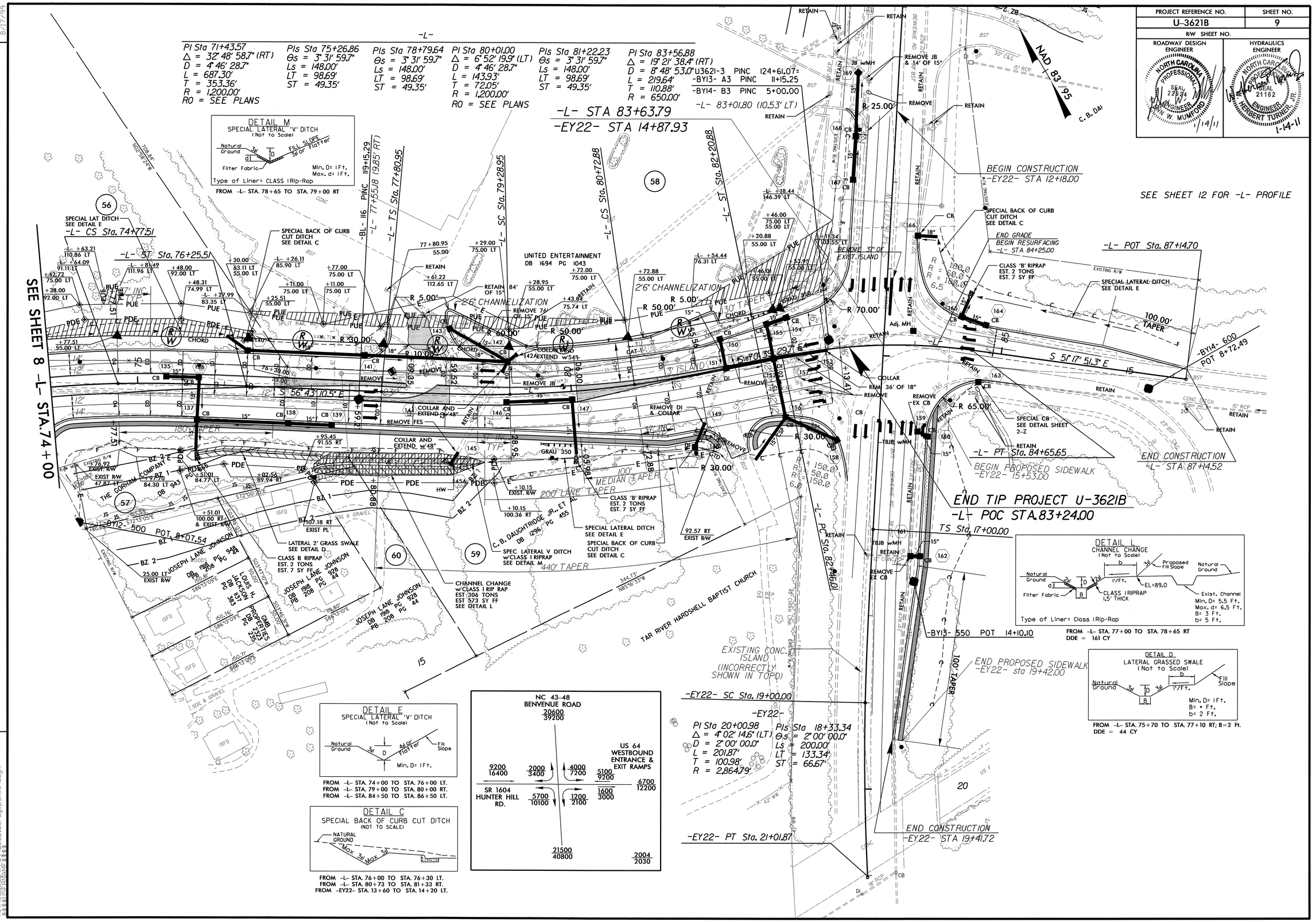
PROJECT REFERENCE NO.	SHEET NO.
U-3621B	9
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 22634 ENGINEER — RYAN W. MUMFORD — 1/14/11

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 21162 ENGINEER — HERBERT TURNER, JR. — 1-14-11



REVISIONS

8/17/99

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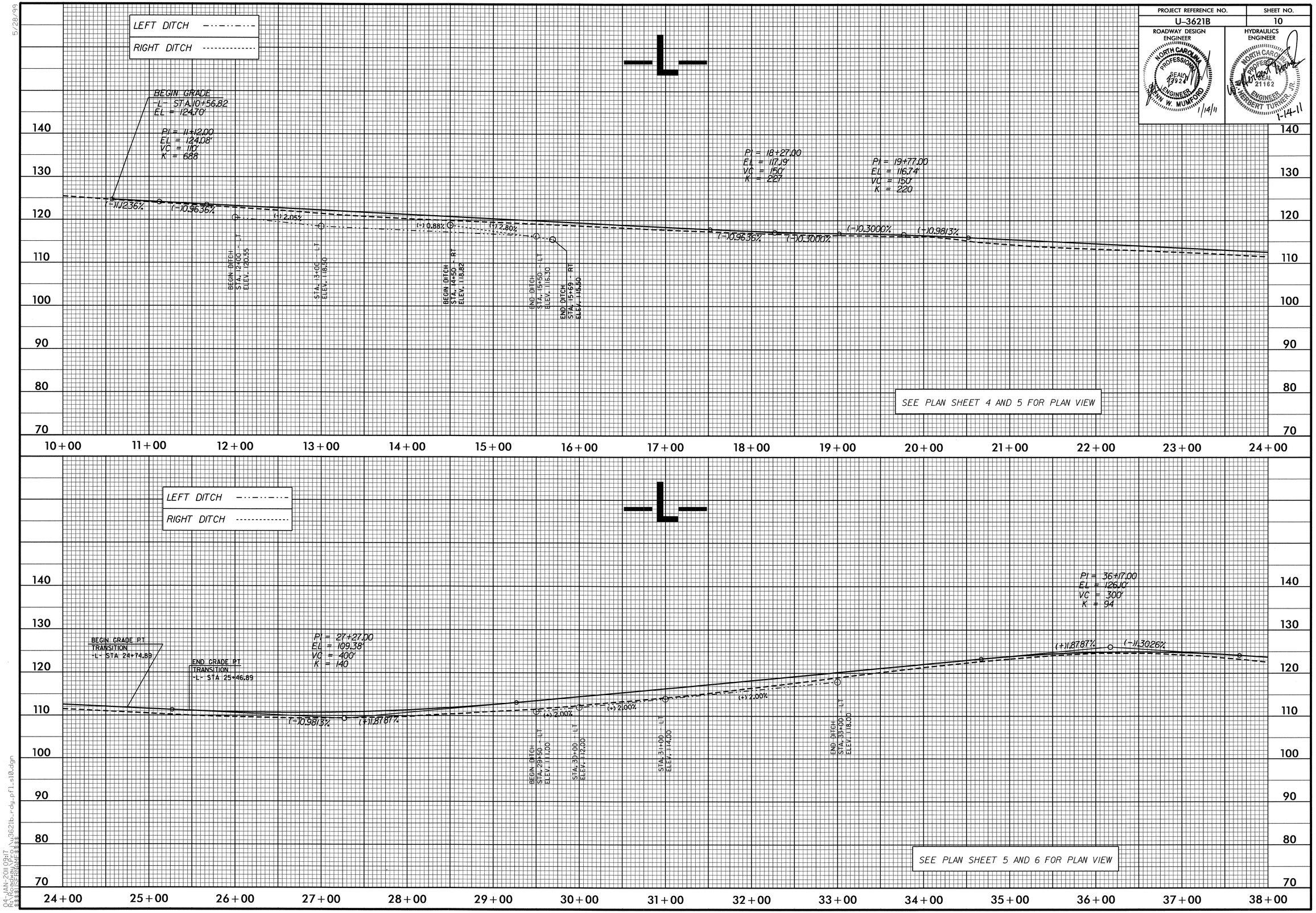
PROJECT REFERENCE NO.	SHEET NO.
U-3621B	10

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 23924 ENGINEER ALAIN W. MUMFORD 1/14/11

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 21162 ENGINEER HERBERT TURNER, JR. 1-14-11



5/28/99

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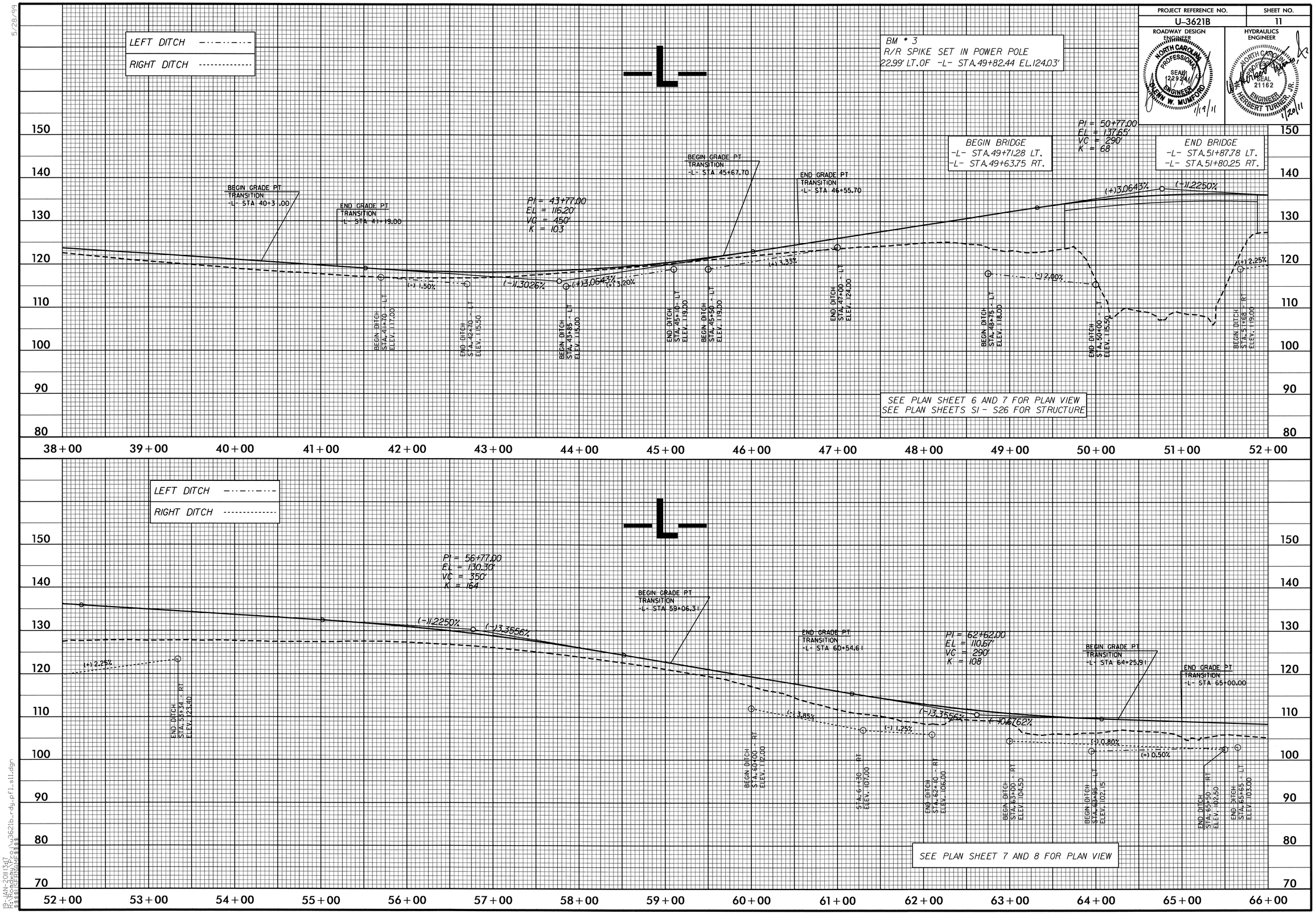
PROJECT REFERENCE NO.	SHEET NO.
U-3621B	11

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12293 ENGINEER DENNIS W. MUMFORD 1/19/11

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 21162 ENGINEER HERBERT TURNER, JR. 1/20/11



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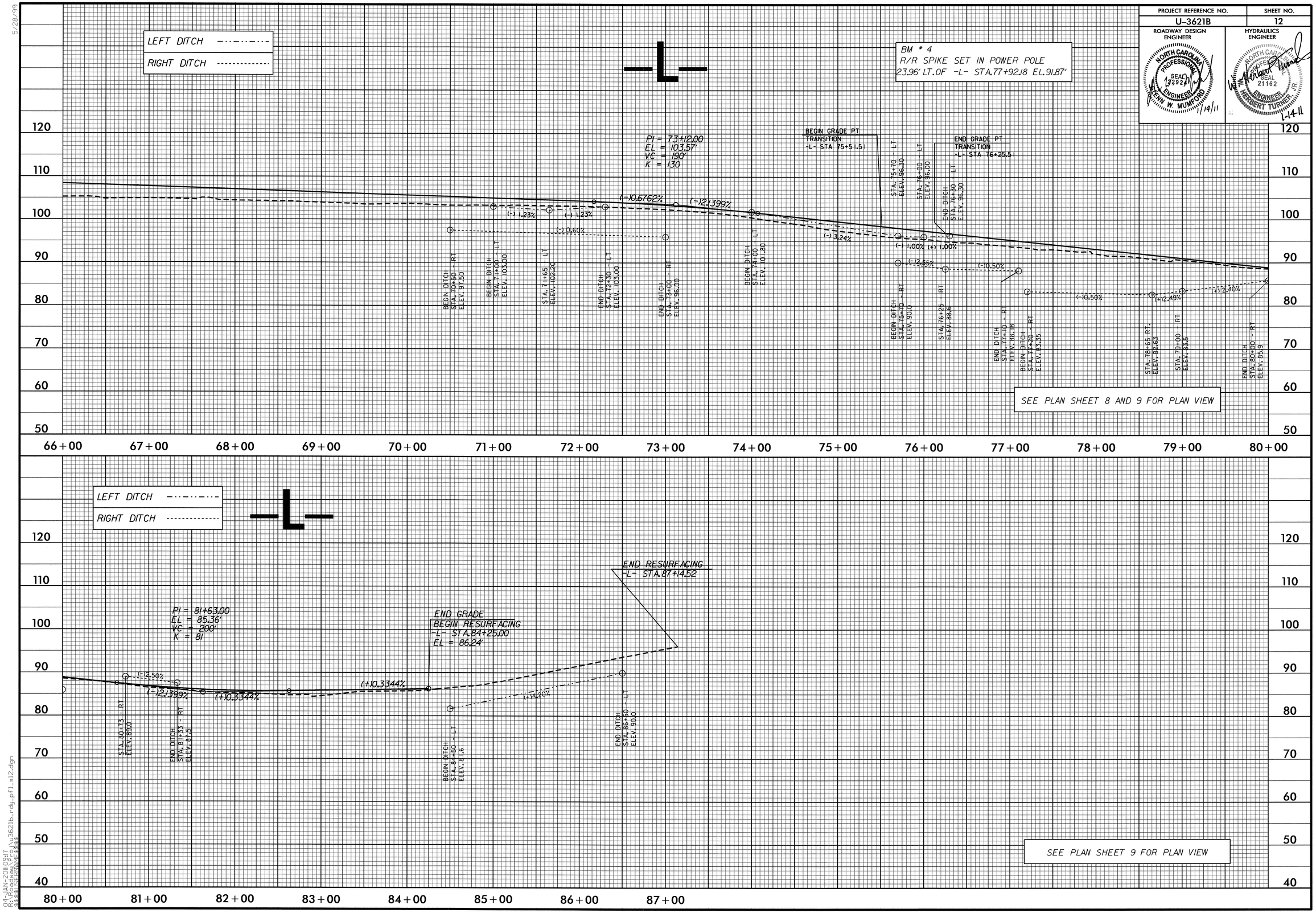
PROJECT REFERENCE NO.	SHEET NO.
U-3621B	12

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER



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PROJECT REFERENCE NO.	SHEET NO.
U-3621B	13

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 22924 ENGINEER JOHN W. MUNFORD 1/14/11

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 21162 ENGINEER HERBERT TURNER, JR. 1-14-11

-Y10- COUNTRY CLUB ROAD

BEGIN GRADE
-Y10- 11+36.00
ELEV.= 112.34

PI = 11+79.00
EL = 112.49'
VC = 80'
K = 48

PI = 13+38.87
EL = 115.72'

PI = 13+73.00
EL = 116.38'

PI = 14+07.16
EL = 116.35'

END GRADE
Y10 15+29.22
ELEV.= 113.90

(+)0.3488% (+)2.0204% (+)1.9338% (-)0.0878% (-)2.0072%

120 110 100

SEE PLAN SHEET 4 FOR PLAN VIEW

10 11 12 13 14 15 16 17

-Y11-

BEGIN GRADE
-Y11- 12+00.00
ELEV.= 110.57

END GRADE
-Y11- 12+97.79
ELEV.= 111.23

PI = 12+43.00
EL = 110.16'
VC = 80'
K = 27

(-)0.9622% (+)1.9608% (-)1.9608%

INSIDE EP EL 111.74'
-L- STA. 28+37.57
-Y11- STA. 13+23.77

120 110 100

SEE PLAN SHEET 5 FOR PLAN VIEW

10 11 12 13

-Y12-

BEGIN GRADE
-Y12- 10+37.54
ELEV.= 115.80'

END GRADE
-Y12- 11+10.00
ELEV.= 113.75'

PI = 10+75.00
EL = 115.07'
VC = 70'
K = 39

(-)1.9593% (-)1.9593% (-)1.3760%

EP EL 115.80'
-L- STA. 30+95.89
-Y12- STA. 10+71.50

120 110 100

SEE PLAN SHEET 5 FOR PLAN VIEW

10 11 12

LEFT DITCH
RIGHT DITCH

-Y13-

BEGIN GRADE
-Y13- 13+31.13
ELEV.= 125.14

END GRADE
-Y13- 17+66.68
ELEV.= 111.49

PI = 13+92.00
EL = 123.54'
VC = 80'
K = 21

PI = 14+98.00
EL = 116.68'
VC = 50'
K = 6

PI = 16+33.50
EL = 118.69'
VC = 50'
K = 12

PI = 17+35.00
EL = 112.40'
VC = 50'
K = 15

(-)2.6323% (-)6.4716% (-)0.3% (+)2.4967% (-)2.0000% (-)6.2000% (-)2.8854%

BEGIN DITCH
STA. 14+50 - RT
ELEV. = 117.20

BEGIN DITCH
STA. 14+70 - LT
ELEV. = 115.09

END DITCH
STA. 15+00 - LT
ELEV. = 115.00

EP EL = 117.43'
-L- STA. 43+34.79
-Y13- STA. 15+28.09

END DITCH
STA. 14+90 - RT
ELEV. = 115.50

EP EL = 119.30'
-L- STA. 43+34.33
-Y13- STA. 16+10.17

120 110 100

SEE PLAN SHEET 6 FOR PLAN VIEW

10 11 12 13 14 15 16 17

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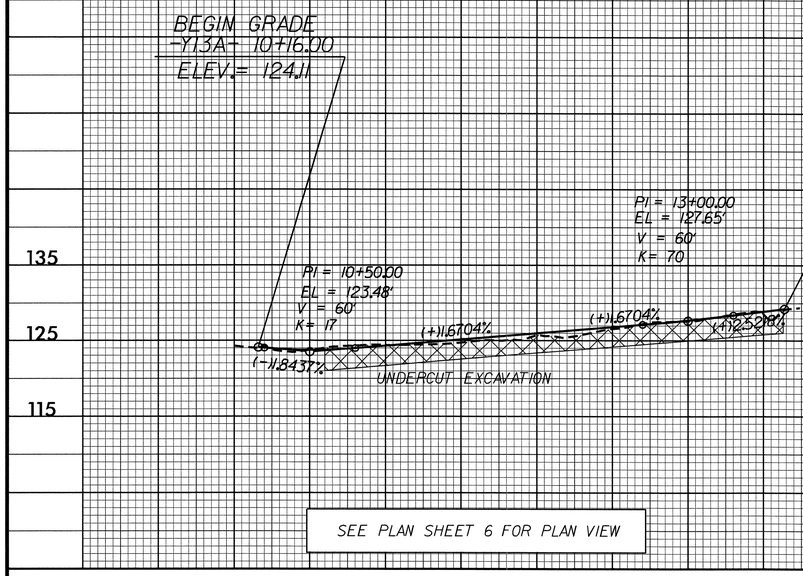
PROJECT REFERENCE NO.	SHEET NO.
U-3621B	14

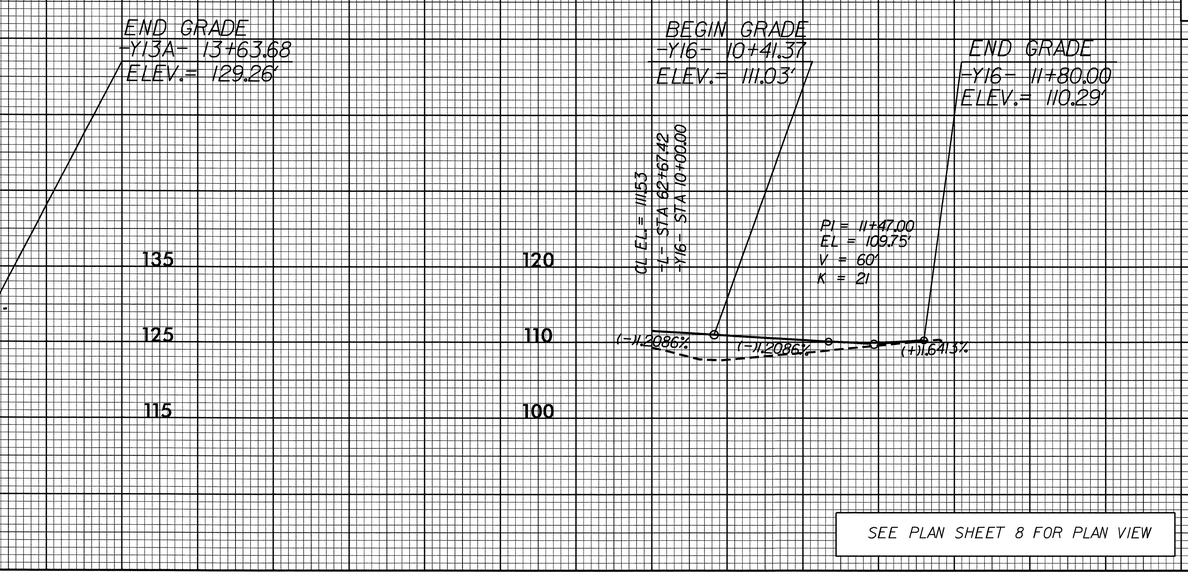
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 28824 ENGINEER JOHN W. MUMFORD
1/14/11

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 21162 ENGINEER HERBERT TURNER, JR.
1-14-11

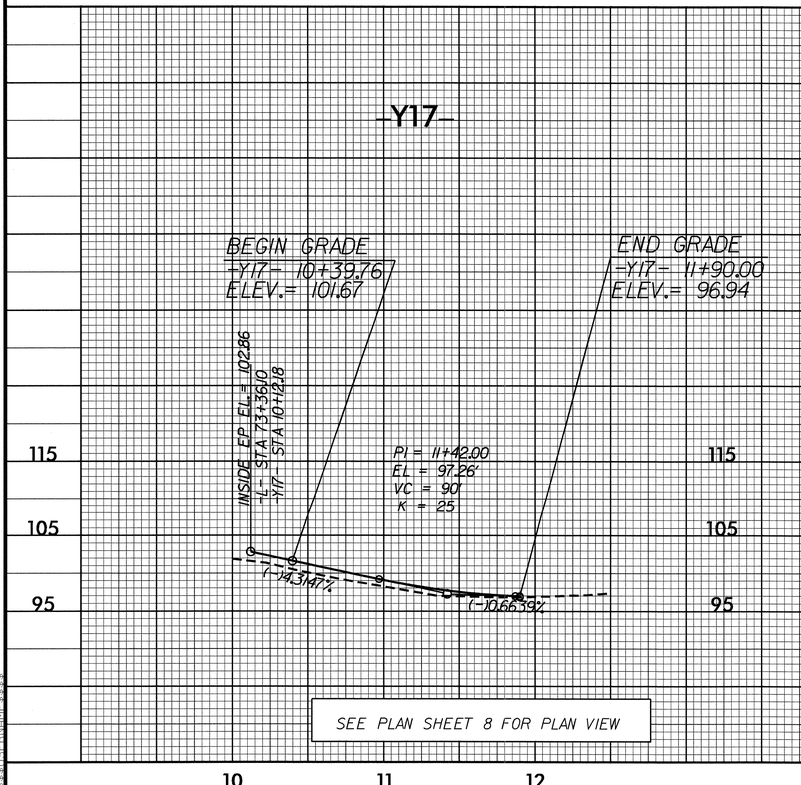
-Y13A-



-Y16-



-Y17-



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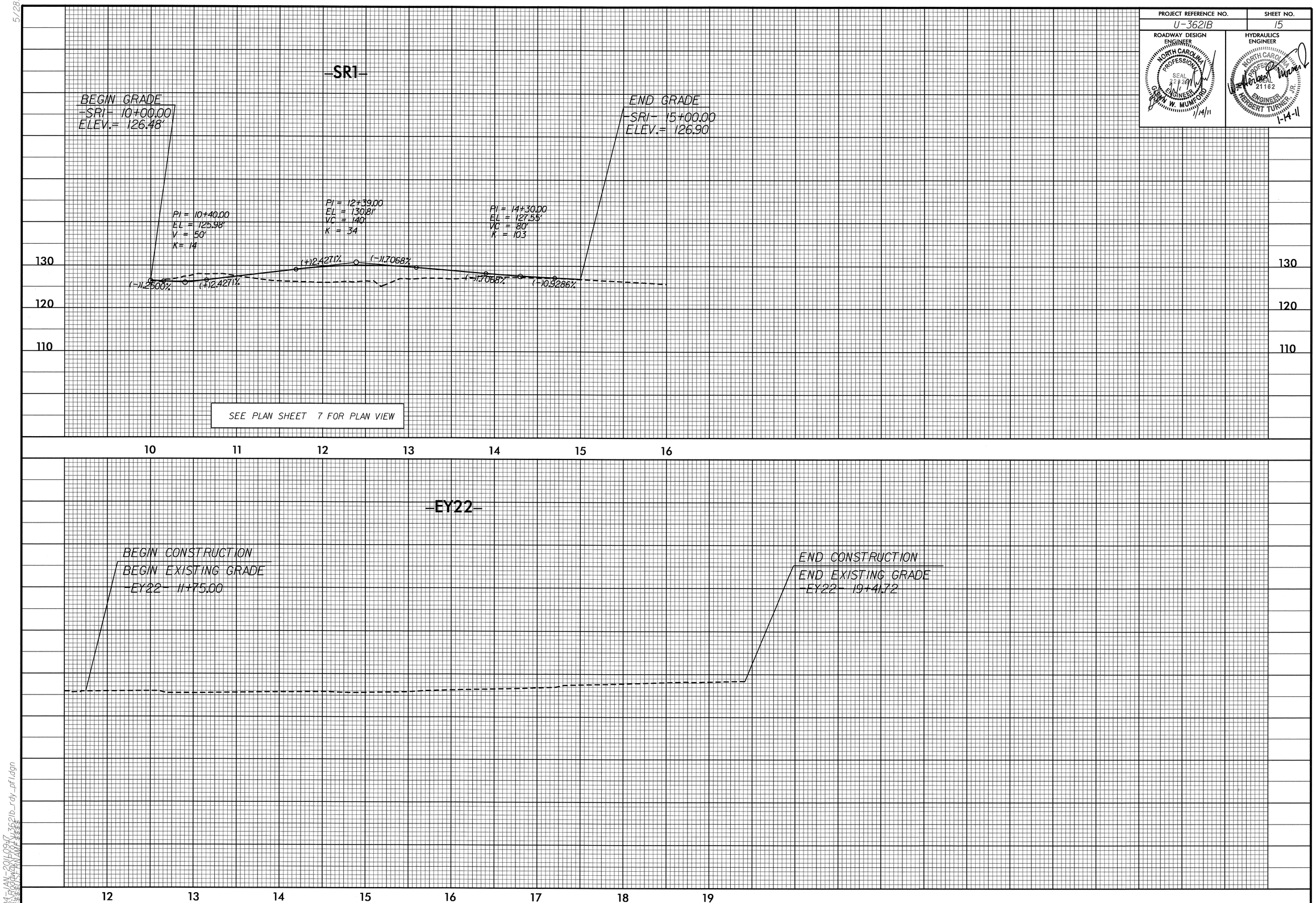
PROJECT REFERENCE NO.	SHEET NO.
U-3621B	15

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22920 ENGINEER JOHN W. MUMFORD
1/14/11

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 21162 ENGINEER HERBERT TURNER, JR.
1-14-11



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