09/08/99

TIP PROJECT: U-4432

CONTRACT: C203360

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Plan Sheet Symbols
See Sheet 1-C, 1-D, 1-E, 1-F & 1-G Survey Control Data

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

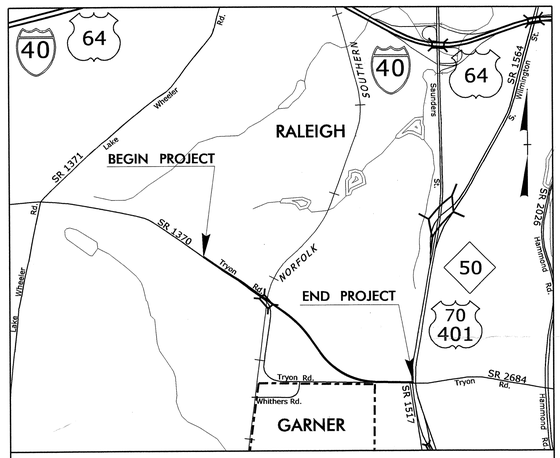
WAKE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-4432	1	

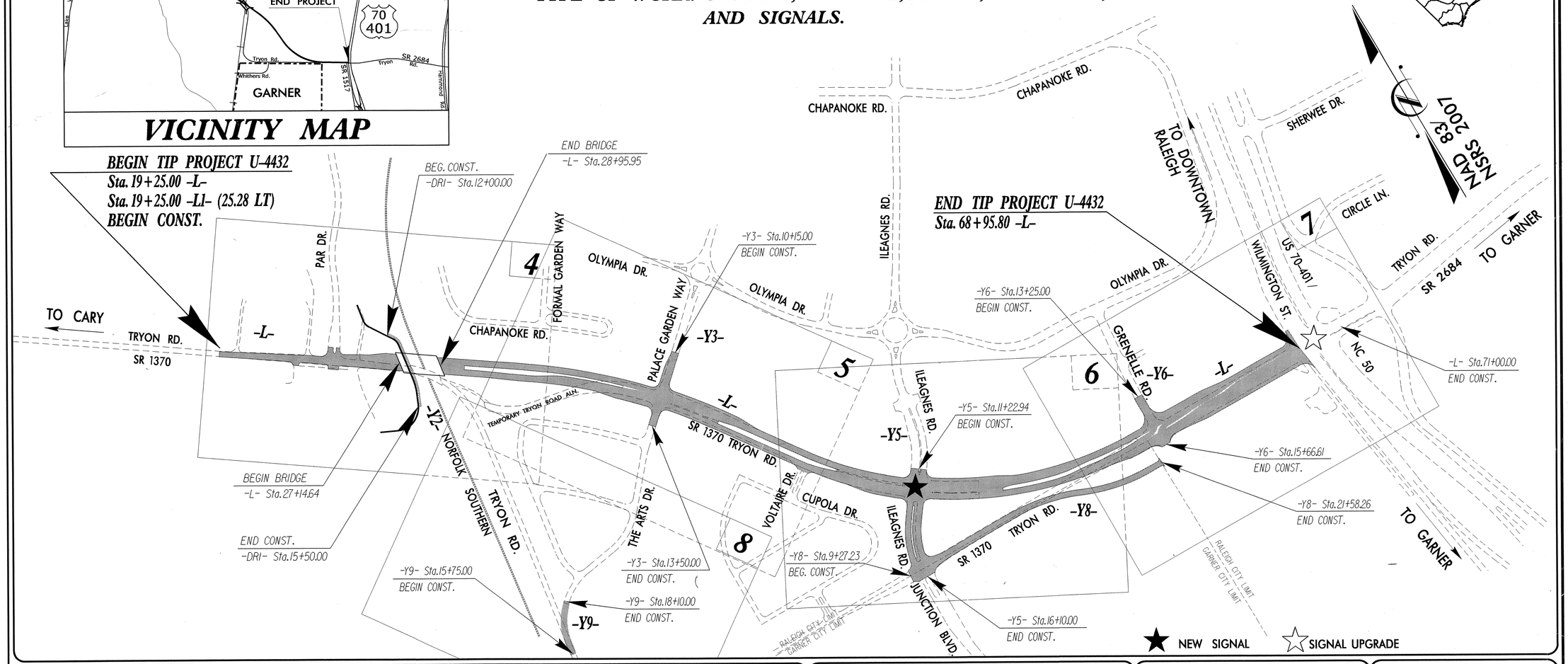
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
35029.1.2		PE
35029.2.1		R/W & UTIL
35029.3.D1		CONST.

LOCATION: RALEIGH – SR 1370 (TRYON ROAD) FROM WEST OF BRIDGE No. 259 OVER NORFOLK SOUTHERN RAILWAY TO US 70–401 /NC 50 (WILMINGTON STREET)

TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURE, AND SIGNALS.



VICINITY MAP



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 2014 = 25,900
ADT 2030 = 41,100
K = 10 %
D = 55 %
T = 4 % *
V = 50 MPH
* TTST =1% DUAL 3%
FUNC CLASS =
URBAN COLLECTOR
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY T.I.P. PROJECT U-4432 = 0.907

LENGTH STRUCTURE T.I.P. PROJECT U-4432 = 0.034

TOTAL LENGTH OF T.I.P. PROJECT U-4432 = 0.941

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
AUGUST 31, 2012

LETTING DATE:
JUNE 17, 2014

JASON MOORE, PE
PROJECT ENGINEER

NYA K. BOAYUE, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
#023454
NORTH CAROLINA PROFESSIONAL SEAL 023454 ENGINEER JAMES D. GANGER
SIGNATURE: 2-4-14 P.E.

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 20111 ENGINEER NYA K. BOAYUE
SIGNATURE: 1/30/2014 P.E.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

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PROJECT REFERENCE NO.	SHEET NO.
U-4432	1-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 20111 ENGINEER K. BOATNER 2/14/2011

INDEX OF SHEETS

SHEET NUMBER	SHEETS
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1-C THUR 1-G	SURVEY CONTROL SHEETS
2 THRU 2-D	PAVEMENT SCHEDULE, TYPICAL SECTIONS
2-E THRU 2-F	ROADWAY INTERSECTION DETAILS
2-G	DETOUR DETAIL
2-H THRU 2-K	STANDARD TEMPORARY SHORING DETAILS
2-L	DETAIL OF TEMPORARY 1" STEEL COVER OVER DRAINAGE STRUCTURE
2-M	DETAIL GUARDRAIL ANCHOR UNIT, TYPE III FOR BRIDGE RAIL ATTACHMENT - SUB REGIONAL TIER
2-N	TEMPORARY ANCHOR UNIT, TYPE W-BEAM
2-O	DETAIL OF PRECAST TRAFFIC BEARING TOP SLAB FOR EXISTING BOXES
2-P	DETAIL OF CONVERSION OF DROP INLET OR JUNCTION BOX TO CATCH BASIN
2-Q	DETAIL FOR TEMPORARY CONTAINMENT OF CONTAMINATED SOIL
3-A	SUMMARY OF EARTHWORK, SUMMARY OF EXISING ASPHALT PAVEMENT REMOVAL, SUMMARY OF MILLING ASPHALT PAVEMENT 1.5" DEPTH SUMMARY OF MILLING ASPHALT PAVEMENT 0 TO 3" DEPTH, AND GUARDRAIL SUMMARY
3-B THRU 3-D	SUMMARY OF DRAINAGE
3-E	PARCEL INDEX SHEET
4 THRU 8	PLAN SHEETS
9 THRU 14	PROFILE SHEET
TMP-1 THRU TMP-17	TRAFFIC MANAGEMENT PLAN
PMP-1 THRU PMP-6	PAVEMENT MARKING PLAN
EC-1 THRU EC-13	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-5	SIGNING PLANS
SIG-1 THRU SIG-21	SIGNAL PLANS
UC-1 THRU UC-6	UTILITY CONSTRUCTION PLANS
UO-1 THRU UO-5	UTILITY BY OTHERS PLANS
X-1 THRU X-62	CROSS-SECTIONS
S-1 THRU S-52	STRUCTURE PLANS

GENERAL NOTES:

2012 SPECIFICATIONS
EFFECTIVE: 01-17-2012
REVISED: 07-30-2012

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
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

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 RALEIGH, DUKENET, PSNC ENERGY, FRC,LLC. (SPIRIT COMMUNICATION)

AND TIME WARNER CABLE

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

RIGHT-OF-WAY MARKERS:

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

CURB RAMPS

CURB RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS.
CONSTRUCT ALL CURB RAMPS ACCORDANCE WITH STD 848.05 and/or 848.06.

2012 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2012 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
225.06	Method of Grading Sight Distance at Intersections
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.02	Parallel Pipe End Section - Precast Concrete Section for 15" to 24" Pipe
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	
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
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
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.04	Concrete Open Throat Catch Basin - 12" thru 48" Pipe
840.05	Brick Open Throat Catch Basin - 12" thru 48" Pipe
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
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.24	Frames and Narrow Slot Sag Grates
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
846.02	Drop Inlet Installation in Expressway Gutter
848.01	Concrete Sidewalk
848.02	Driveway Turnout - Radius Type
848.04	Street Turnout
848.05	Curb Ramp - Proposed Curb & Gutter
848.06	Curb Ramp - Existing Curb & Gutter
852.01	Concrete Islands
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
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure 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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PROJECT REFERENCE NO.	SHEET NO.
U-4432	1-B

04/16/11

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
- Known Soil Contamination: Area or Site
- Potential Soil Contamination: Area or Site

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 Aerial Utility Easement — AUE
- 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 Curb Ramp — CR
- 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
- 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
- Underground Storage Tank, Approx. Loc. — UST
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- 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-4432	1-C
Location and Surveys	

SURVEY CONTROL SHEET U-4432
WAKE COUNTY

SR 1370 (TRYON ROAD) FROM WEST OF BRIDGE No. 259 TO US 70-401 /NC 50

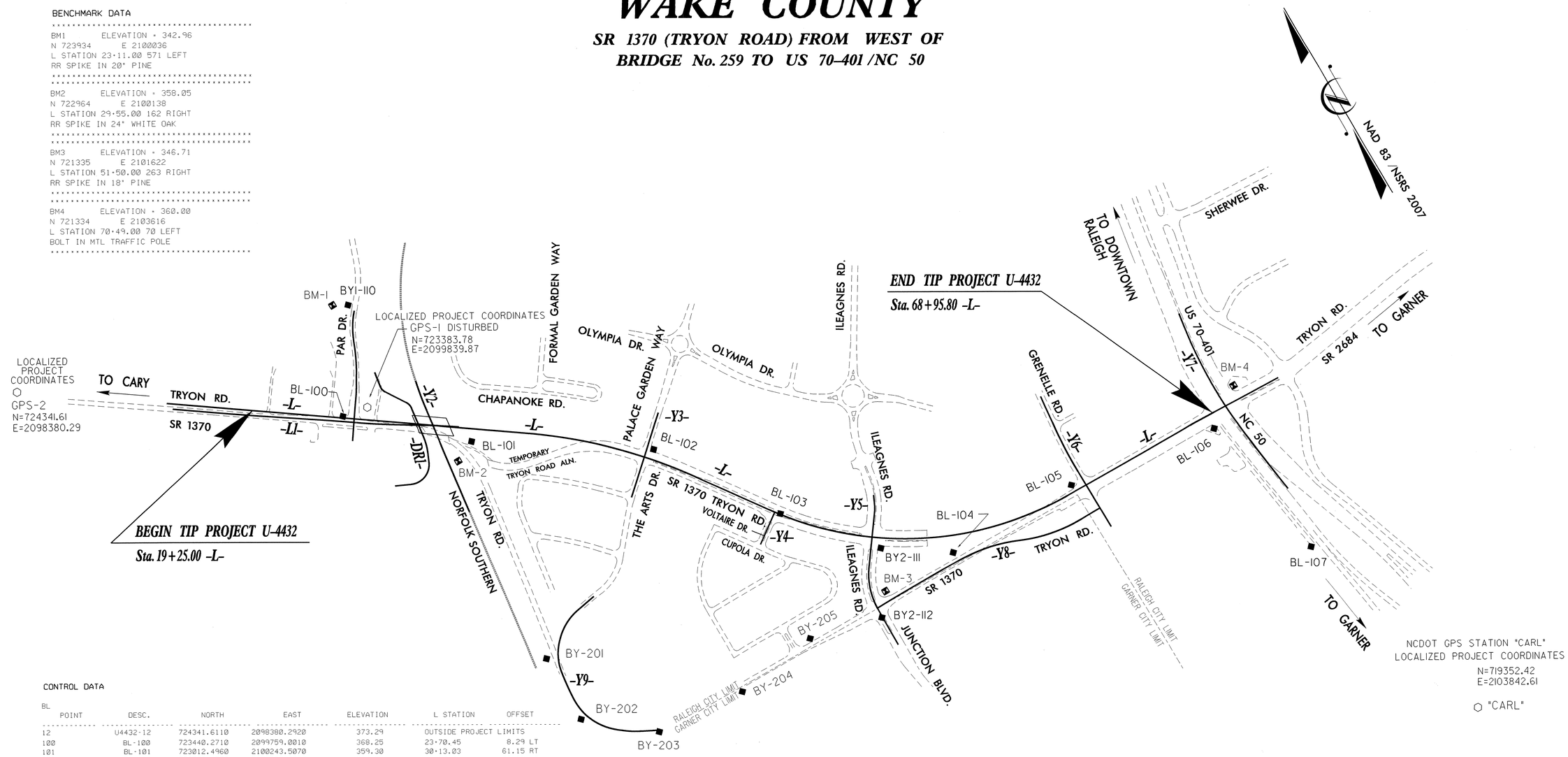
BENCHMARK DATA

BM1 ELEVATION = 342.96
N 723934 E 2100036
L STATION 23+11.00 571 LEFT
RR SPIKE IN 20" PINE

BM2 ELEVATION = 358.05
N 722964 E 2100138
L STATION 29+55.00 162 RIGHT
RR SPIKE IN 24" WHITE OAK

BM3 ELEVATION = 346.71
N 721335 E 2101622
L STATION 51+50.00 263 RIGHT
RR SPIKE IN 18" PINE

BM4 ELEVATION = 360.00
N 721334 E 2103616
L STATION 70+49.00 70 LEFT
BOLT IN MTL TRAFFIC POLE



CONTROL DATA

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
12	U4432-12	724341.6110	2098380.2920	373.29	OUTSIDE PROJECT LIMITS	
100	BL-100	723440.2710	2099759.0010	368.25	23+70.45	8.29 LT
101	BL-101	723012.4960	2100243.5070	359.30	30+13.03	61.15 RT
102	BL-102	722523.4570	2100996.9680	344.35	39+04.45	50.33 LT
103	BL-103	721930.9330	2101372.0450	341.37	46+00.49	3.91 LT
104	BL-104	721330.8210	2102008.0900	358.29	54+59.80	84.21 RT
105	BL-105	721320.8710	2102679.4830	342.32	61+14.60	36.21 LT
106	BL-106	721201.4120	2103426.4520	363.16	68+64.78	70.11 RT
107	BL-107	720455.5900	2103540.8140	356.48	70+11.75	810.44 RT

BY

POINT	DESC.	NORTH	EAST	ELEVATION	Y9 STATION	OFFSET
A101	BL-101	723012.4960	2100243.5070	359.30	OUTSIDE PROJECT LIMITS	
201	BY-201	721890.4936	2100024.8322	326.28	17+04.67	44.42 LT
202	BY-202	721548.7982	2100020.7456	317.40	13+63.74	23.90 LT
203	BY-203	721299.8163	2100321.6422	314.01	OUTSIDE PROJECT LIMITS	
204	BY-204	721261.8702	2100774.9685	332.44	19+73.55	915.51 LT
205	BY-205	721313.9508	2101194.4437	332.86	17+87.75	1250.00 RT

BY2

POINT	DESC.	NORTH	EAST	ELEVATION	Y5 STATION	OFFSET
103	BL-103	721930.9330	2101372.0450	341.37	11+38.59	461.59 RT
111	BY2-111	721531.2990	2101711.2870	347.23	12+58.70	48.68 LT
112	BY2-112	721232.3750	2101540.3940	340.85	16+20.68	3.41 RT

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "CARL"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
NORTHING: 719352.421(ft) EASTING: 2103842.606(ft)
ELEVATION: 361.70(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99989622
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "CARL" TO -L- STATION 19+25 IS
N 45° 44' 29" W 6,216.25'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

NOTES:

1. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:*
HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/

THE FILES TO BE FOUND ARE AS FOLLOWS:
U4432_LS_CONTROL.TXT

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

⬡ *INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.*
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

12/18/2013

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PROJECT REFERENCE NO.	SHEET NO.
U-4432	1-D
Location and Surveys	

SURVEY CONTROL SHEET U-4432

WAKE COUNTY

SR 1370 (TRYON ROAD) FROM WEST OF BRIDGE No. 259 TO US 70-401 /NC 50

L

TYPE	STATION	NORTH	EAST
POT	15+00.00	723936.1711	2099043.5798
PC	32+94.16	722900.0711	2100508.3313
PT	41+54.78	722293.0876	2101112.4431
PC	45+43.51	721974.6636	2101335.4239
PT	60+69.25	721285.4025	2102633.5478
PC	67+68.25	721273.9859	2103332.4583
PT	69+02.45	721269.9937	2103466.5966
POT	72+61.57	721254.4940	2103825.3809

L1

TYPE	STATION	NORTH	EAST
POT	15+31.26	723897.0553	2099054.2022
PC	18+36.78	723720.6827	2099303.6706
PT	20+05.87	723624.3430	2099442.6345
PC	22+20.74	723503.5582	2099620.3313
PT	22+86.55	723466.3842	2099674.6360
POT	22+86.55	723466.3842	2099674.6360
PC	24+15.77	723396.9492	2099783.8082
PRC	24+85.65	723358.7266	2099842.2930
PT	30+00.58	723077.0862	2100273.2341

DR1

TYPE	STATION	NORTH	EAST
POT	10+00.00	723545.1652	2100003.6566
PC	10+73.14	723472.8995	2099992.3576
PT	11+09.42	723438.1739	2099999.6753
PC	12+27.94	723338.4239	2100063.6795
PT	12+63.14	723304.7627	2100071.1519
PC	14+17.26	723152.0240	2100050.6262
PT	15+03.32	723069.5228	2100027.1679
PC	15+43.21	723033.1054	2100010.8843
PT	17+02.01	722983.3492	2099877.2142
POT	17+79.75	723016.2966	2099806.7991

Y1

TYPE	STATION	NORTH	EAST
POT	10+00.00	723857.0741	2100071.2223
PC	10+00.00	723857.0740	2100071.2222
PT	11+38.28	723740.7008	2099997.6688
PC	11+86.09	723696.6805	2099979.0069
PT	13+09.67	723586.4761	2099923.2850
PC	13+56.25	723546.4172	2099899.5277
PT	14+34.25	723480.9442	2099857.1630
POT	16+40.78	723312.0597	2099738.2939

Y2

TYPE	STATION	NORTH	EAST
POT	10+00.00	723407.5069	2100156.1422
PC	10+08.05	723399.6331	2100154.4574
PT	11+49.73	723260.0862	2100130.1887
POT	16+96.49	722718.1913	2100057.3665

Y3

TYPE	STATION	NORTH	EAST
POT	10+00.00	722666.0917	2101108.8578
POT	14+37.89	722374.7195	2100781.9794

Y4

TYPE	STATION	NORTH	EAST
POT	10+00.00	721951.0162	2101352.3020
POT	11+74.60	721849.0904	2101210.5413

Y5

TYPE	STATION	NORTH	EAST
POT	10+00.00	721775.2910	2101814.3650
PC	10+40.04	721738.9432	2101797.5636
PT	10+91.55	721694.6910	2101771.3742
PC	13+57.08	721481.0454	2101613.7026
PT	15+75.95	721277.0306	2101544.5883
POT	17+77.35	721075.6626	2101541.0653

Y6

TYPE	STATION	NORTH	EAST
POT	10+00.00	721773.4499	2102771.2369
PC	11+41.11	721633.1614	2102756.0423
PT	14+13.11	721361.6778	2102741.7100
POT	17+31.63	721043.1616	2102742.4752

Y7

TYPE	STATION	NORTH	EAST
POT	10+00.00	721775.1113	2103564.7191
PC	10+37.95	721737.6788	2103558.4637
PT	16+86.24	721091.8385	2103546.6810
POT	20+19.38	720761.4746	2103589.5685

Y8

TYPE	STATION	NORTH	EAST
POT	9+00.00	721282.5744	2101444.7389
PC	12+98.31	721283.6331	2101843.0478
PT	13+74.93	721283.2497	2101919.6646
PC	14+61.44	721282.1540	2102006.1670
PT	17+79.05	721216.0160	2102314.6894
PC	17+79.05	721216.0160	2102314.6894
PT	21+08.72	721149.8160	2102635.2662
POT	22+15.67	721150.0730	2102742.2184

Y9

TYPE	STATION	NORTH	EAST
POT	10+00.00	721311.3750	2100324.2743
PC	11+00.00	721357.1036	2100235.3418
PT	11+97.93	721410.4915	2100153.4520
PC	12+22.50	721425.9526	2100134.3541
PT	13+58.71	721533.1901	2100052.4758
PC	13+59.52	721533.9338	2100052.1490
PT	14+96.55	721667.6462	2100029.1122
PC	14+96.55	721667.6462	2100029.1122
PT	16+16.51	721786.9185	2100041.7335
PC	16+28.91	721799.2012	2100043.4409
PT	17+87.75	721939.4400	2100112.1912
PC	18+00.25	721948.3801	2100120.9209
PT	19+73.55	722027.0157	2100272.8901
POT	20+73.55	722043.1476	2100370.7825

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT
IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY
NCGS FOR MONUMENT "CARL"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
NORTHING: 719352.421(ft) EASTING: 2103842.606(ft)
ELEVATION: 361.70(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT
(GROUND TO GRID) IS: 0.99989622
THE N.C. LAMBERT GRID BEARING AND
LOCALIZED HORIZONTAL GROUND DISTANCE FROM
"CARL" TO -L- STATION 19+25 IS
N 45° 44' 29" W 6,216.25'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTES:

1. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:*
HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/

THE FILES TO BE FOUND ARE AS FOLLOWS:
U4432_LS_CONTROL.TXT

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

◎ *INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.*
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

NOTE: DRAWING NOT TO SCALE

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PROJECT REFERENCE NO.	SHEET NO.
U-4432	1-E
Location and Surveys	

SURVEY CONTROL SHEET U-4432

WAKE COUNTY

SR 1370 (TRYON ROAD) FROM WEST OF BRIDGE No. 259 TO US 70-401 /NC 50

ROW MARKER CONCRETE OR GRANITE-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	19+50.25	55.00	723631.2536	2099379.4062
L	23+73.26	-20.00	723448.2065	2099768.0562
L	23+74.04	-8.99	723438.7609	2099762.3401
L	24+86.72	-20.00	723382.6846	2099860.6857
L	26+25.00	-55.00	723331.4019	2099993.7925
L	27+88.32	55.00	723147.2826	2100063.6039
L	28+04.00	-133.75	723292.3215	2100185.4038
L	28+31.01	-146.41	723287.0601	2100214.7619
L	28+40.01	-129.49	723267.8648	2100212.2002
L	29+00.42	-75.01	723188.6840	2100230.203
L	29+13.11	-63.64	723172.0755	2100233.9969
L	29+58.41	60.00	723044.9749	2100199.5797
L	29+60.00	134.80	722982.9909	2100157.6797
L	29+60.00	165.25	722958.1293	2100140.0937
L	32+94.16	60.00	722851.0870	2100473.6822
L	35+50.00	60.00	722696.7170	2100669.8118
L	35+53.14	-60.00	722784.9754	2100751.1772
L	37+00.00	70.00	722590.0330	2100770.0976
L	38+00.00	-60.00	722609.3278	2100932.8234
L	38+25.00	70.00	722502.6313	2100854.4784
L	39+19.37	-74.60	722527.6247	2101025.3512
L	40+17.24	-75.11	722449.9218	2101089.5515
L	40+40.53	-75.10	722430.9848	2101104.2735
L	40+75.00	-75.00	722402.6526	2101125.6787
L	42+00.00	-55.00	722287.5921	2101183.4357
L	47+00.00	50.86	721817.9578	2101392.6001
L	48+40.00	70.00	721698.7727	2101477.6872
L	49+75.00	-52.59	721698.6834	2101660.4808
L	49+75.00	70.00	721604.3736	2101582.1590
L	51+60.00	52.46	721504.4988	2101746.9542
L	51+60.00	-70.00	721607.0259	2101813.9274
L	53+25.00	52.66	721418.5952	2101893.9885
L	53+25.00	60.00	721412.0701	2101890.6196
L	54+00.00	-70.00	721496.1557	2102014.7557
L	55+06.01	60.00	721335.1973	2102062.5692
L	55+50.00	-60.00	721432.9990	2102144.4616
L	60+69.25	-60.00	721345.3945	2102634.5278
L	61+10.00	-60.00	721344.7289	2102675.2752
L	61+14.50	85.00	721199.6747	2102677.4057
L	62+10.00	85.00	721198.1150	2102772.8936
L	62+50.00	-70.00	721352.4410	2102815.4198
L	62+75.00	70.00	721212.0513	2102838.1299
L	63+85.00	80.00	721200.2561	2102947.9519
L	64+25.00	-70.00	721349.5828	2102990.3965
L	65+50.00	-60.00	721337.5425	2103115.2165
L	67+68.25	-60.00	721333.9779	2103333.4382
L	67+68.25	80.00	721193.9966	2103331.1517
L	68+13.00	-60.00	721333.0357	2103378.7144
L	68+42.60	80.00	721192.2580	2103404.2867
L	68+57.35	-105.72	721377.3973	2103425.1383

ROW MARKER CONCRETE OR GRANITE-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y2	11+10.00	-50.00	723291.6704	2100185.3018
Y2	11+42.83	50.00	723269.6923	2100081.1323

ROW MARKER CONCRETE OR GRANITE-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y3	10+15.00	29.85	722678.3930	2101077.7986
Y3	10+75.00	40.00	722646.0461	2101026.2553
Y3	11+40.00	40.00	722602.7950	2100977.7337
Y3	11+40.00	-30.44	722550.2118	2101024.6052
Y3	13+06.07	30.06	722484.8767	2100860.3783

ROW MARKER CONCRETE OR GRANITE-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y5	11+15.00	49.71	721705.3425	2101717.4545
Y5	11+15.00	-50.29	721645.9620	2101797.9154
Y5	13+00.00	61.91	721563.7348	2101597.7838
Y5	13+00.00	-50.09	721497.2285	2101687.9000

ROW MARKER CONCRETE OR GRANITE-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y6	13+25.00	30.24	721450.7785	2102712.8533
Y6	13+25.00	-29.76	721448.7794	2102772.8201
Y6	13+50.00	40.00	721425.7086	2102702.3766
Y6	13+50.00	-40.00	721423.8538	2102782.3551
Y6	14+00.00	-40.00	721374.6698	2102781.7132
Y6	14+00.00	40.00	721374.9028	2102701.7135

ROW MARKER CONCRETE OR GRANITE-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y8	16+52.10	30.00	721228.0904	2102187.2796
Y8	17+79.05	30.00	721188.4985	2102302.7398
Y8	21+08.72	30.00	721119.8161	2102635.3383
Y8	21+52.01	30.00	721119.9201	2102678.6255

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y8	14+07.80	50.72	721232.1195	2101951.8859
Y8	14+08.59	73.00	721209.8292	2101952.3985
Y8	14+61.44	73.00	721209.1598	2102005.2442
Y8	15+34.00	71.00	721207.3270	2102071.2558
Y8	15+41.00	78.00	721199.6850	2102076.8144
Y8	15+58.00	64.01	721211.6674	2102093.9008
Y8	16+41.00	50.00	721211.2324	2102172.2114
Y8	17+79.05	50.00	721170.1536	2102294.7735
Y8	20+00.00	30.00	721127.1987	2102522.8699
Y8	20+00.00	70.00	721087.5546	2102517.5459
Y8	20+32.00	85.00	721068.6792	2102550.7192
Y8	20+50.00	30.00	721121.9047	2102574.4656

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	20+98.00	79.00	723526.3391	2099486.1661
L	20+98.00	55.00	723545.9327	2099500.0258
L	21+08.16	-17.84	723599.5331	2099550.3847
L	21+08.16	-7.77	723591.3134	2099544.5704
L	21+19.00	55.00	723533.8055	2099517.1702
L	21+19.00	79.00	723514.2119	2099503.3105
L	23+72.37	-32.31	723458.7666	2099774.4468
L	24+89.00	-41.00	723398.5103	2099874.6771
L	25+06.50	-50.00	723395.7519	2099894.1615
L	25+44.00	63.00	723281.8429	2099859.5207
L	25+44.00	55.00	723288.3741	2099864.1406
L	25+50.00	-36.02	723359.2157	2099921.6001
L	25+59.00	55.00	723279.7118	2099876.3866
L	25+59.00	63.00	723273.1806	2099871.7667
L	26+15.00	55.00	723247.3726	2099922.1050
L	29+98.00	88.36	722998.9565	2100215.5188
L	30+03.00	60.00	723019.2262	2100235.9811
L	30+10.00	81.00	722998.0394	2100229.5687
L	30+36.00	60.00	723000.1692	2100262.9224
L	30+45.00	90.00	722970.4798	2100252.9454
L	30+52.00	110.00	722950.1093	2100247.1105
L	30+52.00	90.00	722966.4374	2100258.6602
L	38+12.00	70.00	722511.9163	2100845.9077
L	38+12.00	96.00	722494.2315	2100826.8464
L	38+32.00	73.04	722495.5634	2100856.8284
L	38+32.00	96.00	722480.0815	2100839.8734
L	51+36.71	-85.00	721631.7828	2101803.7464
L	55+50.00	-77.00	721449.0402	2102150.0900
L	55+74.00	-77.00	721441.6330	2102171.7134
L	57+13.29	-77.00	721405.0422	2102299.1835
L	57+41.00	-88.00	721409.8167	2102327.2829
L	57+47.00	-77.00	721397.8473	2102330.4692
L	61+32.04	-86.00	721370.3655	2102697.7369
L	62+24.85	-86.00	721368.8496	2102790.5345
L	64+19.00	-96.00	721375.6773	2102984.8219
L	64+19.00	-86.00	721365.6786	2102984.6586
L	64+40.00	-86.00	721365.3357	2103005.6558
L	64+40.00	-96.00	721375.3343	2103005.8191
L	68+27.17	-74.00	721346.6473	2103393.4411

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
DR1	12+21.00	-44.12	723368.0943	2100097.0680
DR1	14+82.88	57.73	723108.3748	2099980.6884
DR1	15+72.72	59.59	722969.2302	2100040.0405
DR1	16+10.00	35.00	723016.3441	2099949.7524
DR1	16+10.00	-35.00	722954.3344	2099982.2301

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "CARL"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
NORTHING: 719352.421(ft) EASTING: 2103842.606(ft)
ELEVATION: 361.70(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99989622
THE N.C. LAMBERT GRID BEARING AND
LOCALIZED HORIZONTAL GROUND DISTANCE FROM
"CARL" TO -L- STATION 19+25 IS
N 45° 44' 29" W 6,216.25'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTES:

1. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:*
HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/

THE FILES TO BE FOUND ARE AS FOLLOWS:
U4432_LS_CONTROL.TXT

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

◎ *INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.*
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

NOTE: DRAWING NOT TO SCALE

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SURVEY CONTROL SHEET U-4432

WAKE COUNTY

SR 1370 (TRYON ROAD) FROM WEST OF BRIDGE No. 259 TO US 70-401 /NC 50

L

TYPE	STATION	NORTH	EAST
POT	15+00.00	723936.1711	2099043.5798
PC	32+94.16	722900.0711	2100508.3313
PT	41+54.78	722293.0876	2101112.4431
PC	45+43.51	721974.6636	2101335.4239
PT	60+69.25	721285.4025	2102633.5478
PC	67+68.25	721273.9859	2103332.4583
PT	69+02.45	721269.9937	2103466.5966
POT	72+61.57	721254.4940	2103825.3809

Y1

TYPE	STATION	NORTH	EAST
POT	10+00.00	723857.0741	2100071.2222
PC	10+00.00	723857.0741	2100071.2222
PT	11+38.28	723740.7008	2099997.6688
PC	11+86.09	723696.6805	2099979.0069
PT	13+09.67	723586.4761	2099923.2850
PC	13+56.25	723546.4172	2099899.5277
PT	14+34.25	723480.9442	2099857.1630
POT	16+40.78	723312.0597	2099738.2939

Y2

TYPE	STATION	NORTH	EAST
POT	10+00.00	723407.5069	2100156.1422
PC	10+08.05	723399.6331	2100154.4574
PT	11+49.73	723260.0862	2100130.1887
POT	16+96.49	722718.1913	2100057.3665

Y3

TYPE	STATION	NORTH	EAST
POT	10+00.00	722666.0917	2101108.8578
POT	14+37.89	722374.7195	2100781.9794

Y4

TYPE	STATION	NORTH	EAST
POT	10+00.00	721951.0162	2101352.3020
POT	11+74.60	721849.0904	2101210.5413

Y5

TYPE	STATION	NORTH	EAST
POT	10+00.00	721775.2910	2101814.3650
PC	10+40.04	721738.9432	2101797.5636
PT	10+91.55	721694.6910	2101771.3742
PC	13+57.08	721481.0454	2101613.7026
PT	15+75.95	721277.0306	2101544.5883
POT	17+77.35	721075.6626	2101541.0653

Y6

TYPE	STATION	NORTH	EAST
POT	10+00.00	721773.4499	2102771.2369
PC	11+41.11	721633.1614	2102756.0423
PT	14+13.11	721361.6778	2102741.7100
POT	17+31.63	721043.1616	2102742.4752

Y7

TYPE	STATION	NORTH	EAST
POT	10+00.00	721775.1113	2103564.7191
PC	10+37.95	721737.6788	2103558.4637
PT	16+86.24	721091.8385	2103546.6810
POT	20+19.38	720761.4746	2103589.5685

Y8

TYPE	STATION	NORTH	EAST
POT	10+00.00	721282.8402	2101544.7385
PC	12+98.31	721283.6331	2101843.0478
PT	13+74.93	721283.2497	2101919.6646
PC	14+61.44	721282.1540	2102006.1670
PT	17+79.05	721216.0160	2102314.6894
PC	17+79.05	721216.0160	2102314.6894
PT	21+08.72	721149.8160	2102635.2662
POT	22+15.67	721150.0730	2102742.2184

Y9

TYPE	STATION	NORTH	EAST
POT	10+00.00	721311.3750	2100324.2743
PC	11+00.00	721357.1036	2100235.3418
PT	11+97.93	721410.4915	2100153.4520
PC	12+22.50	721425.9526	2100134.3541
PT	13+58.71	721533.1901	2100052.4758
PC	13+59.52	721533.9338	2100052.1490
PT	14+96.55	721667.6462	2100029.1122
PC	14+96.55	721667.6462	2100029.1122
PT	16+16.51	721786.9185	2100041.7335
PC	16+28.91	721799.2012	2100043.4409
PT	17+87.75	721939.4400	2100112.1912
PC	18+00.25	721948.3801	2100120.9209
PT	19+73.55	722027.0157	2100272.0901
POT	20+73.55	722043.1476	2100370.7825

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "CARL"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
NORTHING: 719352.421(ft) EASTING: 2103842.606(ft)
ELEVATION: 361.70(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99989622
THE N.C. LAMBERT GRID BEARING AND
LOCALIZED HORIZONTAL GROUND DISTANCE FROM
"CARL" TO -L- STATION 19+25 IS
N 45° 44′ 29″ W 6,216.25′
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

NOTES:

1. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:*
   HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/PAGES

   THE FILES TO BE FOUND ARE AS FOLLOWS:
   U4432_LS_CONTROL.TXT

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

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

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SURVEY CONTROL SHEET U-4432

WAKE COUNTY

SR 1370 (TRYON ROAD) FROM WEST OF BRIDGE No. 259 TO US 70-401 /NC 50

ROW MARKER CONCRETE OR GRANITE

ALIGN	STATION	OFFSET	NORTH	EAST
L	19+50.25	55.00	723631.2536	2099379.4062
L	23+74.04	-8.99	723438.7609	2099762.3401
L	25+75.00	-65.00	723368.4401	2099958.7473
L	26+25.00	-55.00	723331.4019	2099993.7925
L	29+00.28	-75.13	723188.8663	2100230.1520
L	29+13.11	-63.64	723172.0755	2100233.9969
L	29+58.41	60.00	723044.9749	2100199.5797
L	32+94.16	60.00	722851.0870	2100473.6822
L	35+50.00	60.00	722696.7170	2100669.8118
L	35+53.14	-60.00	722784.9754	2100751.1772
L	37+00.00	70.00	722590.0330	2100770.0976
L	38+00.00	-60.00	722609.3278	2100932.8234
L	40+17.24	-75.11	722449.9218	2101089.5515
L	40+40.53	-75.10	722430.9848	2101104.2735
L	40+75.00	-75.00	722402.6526	2101125.6787
L	42+00.00	-55.00	722287.5921	2101183.4357
L	47+00.00	50.86	721817.9578	2101392.6001
L	48+40.00	70.00	721698.7727	2101477.6872
L	49+75.00	70.00	721604.3736	2101582.1590
L	49+75.00	-52.59	721698.6834	2101660.4808
L	51+60.00	-70.00	721607.0259	2101813.9274
L	51+60.00	52.46	721504.4988	2101746.9542
L	53+25.00	52.66	721418.5952	2101893.9885
L	53+25.00	60.00	721412.0701	2101890.6196
L	54+00.00	-70.00	721496.1557	2102014.7557
L	55+50.00	-60.00	721432.9990	2102144.4616
L	60+69.25	-60.00	721345.3945	2102634.5278
L	61+10.00	-60.00	721344.7289	2102675.2752
L	62+50.00	-70.00	721352.4410	2102815.4198
L	62+75.00	70.00	721212.0513	2102838.1299
L	63+85.00	80.00	721200.2561	2102947.9519
L	64+25.00	-70.00	721349.5828	2102990.3965
L	65+50.00	-60.00	721337.5425	2103115.2165
L	67+68.25	80.00	721193.9966	2103331.1517
L	67+68.25	-60.00	721333.9779	2103333.4382
L	68+13.00	-60.00	721333.0357	2103378.7144
L	68+42.60	80.00	721192.2580	2103404.2867

ROW MARKER CONCRETE OR GRANITE

ALIGN	STATION	OFFSET	NORTH	EAST
Y2	11+30.65	-80.15	723267.4771	2100212.1514
Y2	11+46.83	50.00	723269.6923	2100081.0323
Y2	12+70.40	50.97	723147.2826	2100063.6039
Y2	14+20.69	-64.15	722982.9909	2100157.6797
Y2	14+47.68	-50.03	722958.1293	2100140.0937

ROW MARKER CONCRETE OR GRANITE

ALIGN	STATION	OFFSET	NORTH	EAST
Y3	10+15.00	29.85	722678.3930	2101077.7986
Y3	10+75.00	40.00	722646.0461	2101026.2553
Y3	11+40.00	40.00	722602.7950	2100977.7337
Y3	11+40.00	-30.44	722550.2118	2101024.6052
Y3	13+06.07	30.06	722484.8767	2100860.3783

ROW MARKER CONCRETE OR GRANITE

ALIGN	STATION	OFFSET	NORTH	EAST
Y5	11+15.00	49.71	721705.3425	2101717.4545
Y5	11+15.00	-50.29	721645.9620	2101797.9154
Y5	13+00.00	61.91	721563.7348	2101597.7838
Y5	13+00.00	-50.09	721497.2285	2101687.9000

ROW MARKER CONCRETE OR GRANITE

ALIGN	STATION	OFFSET	NORTH	EAST
Y6	13+25.00	30.24	721450.7785	2102712.8533
Y6	13+25.00	-29.76	721448.7794	2102772.8201
Y6	13+50.00	40.00	721425.7086	2102702.3766
Y6	13+50.00	-40.00	721423.8538	2102782.3551
Y6	14+00.00	-40.00	721374.6698	2102781.7132
Y6	14+00.00	40.00	721374.9028	2102701.7135
Y6	15+62.22	-56.07	721212.7047	2102798.1352
Y6	15+76.75	-30.79	721198.1150	2102772.8936

ROW MARKER CONCRETE OR GRANITE

ALIGN	STATION	OFFSET	NORTH	EAST
Y8	16+52.10	30.00	721228.0904	2102187.2796
Y8	17+79.05	30.00	721188.4985	2102302.7398
Y8	21+08.72	30.00	721119.8161	2102635.3383
Y8	21+52.01	30.00	721119.9201	2102678.6255

PERMANENT EASEMENT

ALIGN	STATION	OFFSET	NORTH	EAST
Y2	10+49.77	50.01	723368.0943	2100097.0680
Y2	13+20.00	127.96	723108.3748	2099980.6884
Y2	14+15.33	146.37	723016.3441	2099949.7524
Y2	14+50.00	50.61	722969.2302	2100040.0405
Y2	14+72.46	105.92	722954.3344	2099982.2301

PERMANENT EASEMENT

ALIGN	STATION	OFFSET	NORTH	EAST
Y3	12+98.88	59.88	722511.9163	2100845.9077
Y3	13+01.61	40.40	722495.5625	2100856.8274
Y3	13+24.56	40.13	722480.0815	2100839.8734
Y3	13+24.87	59.36	722494.2315	2100826.8486

PERMANENT EASEMENT

ALIGN	STATION	OFFSET	NORTH	EAST
L	20+98.00	79.00	723526.3391	2099486.1661
L	20+98.00	55.00	723545.9327	2099500.0258
L	21+08.16	-17.84	723599.5331	2099550.3847
L	21+08.16	-7.77	723591.3134	2099544.5704
L	21+19.00	79.00	723514.2119	2099503.3105
L	21+19.00	55.00	723533.8055	2099517.1702
L	23+25.00	60.00	723410.7614	2099682.4614
L	23+25.00	55.00	723414.8434	2099685.3488
L	23+72.37	-32.31	723458.7666	2099774.4468
L	25+00.00	60.00	723309.7015	2099825.3315
L	26+00.00	65.00	723247.8709	2099904.0842
L	26+15.00	55.00	723247.3726	2099922.1050
L	26+30.00	65.00	723230.5463	2099928.5762
L	29+98.00	88.36	722998.9565	2100215.5188
L	30+03.00	60.00	723019.2262	2100235.9811
L	30+10.00	81.00	722998.0394	2100229.5687
L	30+36.00	60.00	723000.1692	2100262.9224
L	30+45.00	90.00	722970.4798	2100252.9454
L	30+52.00	90.00	722966.4374	2100258.6602
L	30+52.00	110.00	722950.1093	2100247.1105
L	33+97.00	60.00	722791.4533	2100554.4128
L	34+20.00	60.00	722777.6656	2100572.1274
L	34+40.00	145.00	722699.1301	2100534.3791
L	34+59.00	136.00	722694.8961	2100553.9912
L	55+48.00	-60.00	721433.6377	2102142.6448
L	55+48.00	-71.00	721444.0128	2102146.2996
L	55+74.00	-72.00	721436.8909	2102170.1282
L	55+74.00	-77.00	721441.6330	2102171.7134
L	57+13.29	-77.00	721405.0422	2102299.1835
L	57+41.00	-88.00	721409.8167	2102327.2829
L	57+47.00	-77.00	721397.8473	2102330.4692
L	64+19.00	-96.00	721375.6773	2102984.8219
L	64+19.00	-86.00	721365.6786	2102984.6586
L	64+40.00	-86.00	721365.3357	2103005.6558
L	64+40.00	-96.00	721375.3343	2103005.8191
L	68+27.17	-74.00	721346.6473	2103393.4411

PERMANENT EASEMENT

ALIGN	STATION	OFFSET	NORTH	EAST
Y8	14+07.80	50.72	721232.1195	2101951.8859
Y8	14+08.59	73.00	721209.8292	2101952.3985
Y8	14+61.44	73.00	721209.1598	2102005.2442
Y8	15+34.00	71.00	721207.3270	2102071.2558
Y8	15+41.00	78.00	721199.6850	2102076.8144
Y8	15+58.00	64.01	721211.6674	2102093.9008
Y8	16+41.00	50.00	721211.2324	2102172.2114
Y8	17+79.05	50.00	721170.1536	2102294.7735
Y8	20+00.00	30.00	721127.1987	2102522.8699
Y8	20+00.00	50.00	721107.3767	2102520.2079
Y8	20+32.00	63.00	721090.5831	2102552.7732
Y8	20+50.00	30.00	721121.9047	2102574.4656

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "CARL"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
NORTHING: 719352.421(ft) EASTING: 2103842.606(ft)
ELEVATION: 361.70(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99989622
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "CARL" TO -L- STATION 19+25 IS
N 45° 44′ 29″ W 6,216.25′
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

NOTES:

1. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:*
   HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/PAGES

   THE FILES TO BE FOUND ARE AS FOLLOWS:
   U4432_LS_CONTROL.TXT

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

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

03/08/2013
07-NOV-2013 09:41
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PROJECT REFERENCE NO.	SHEET NO.
U-4432	2

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 20111 ENGINEER MARK K. BOATNER
11/27/2013

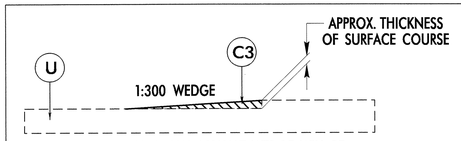
PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER DON-CHI CHEN
12/3/13

PAVEMENT SCHEDULE

(FINAL PAVEMENT DESIGN)

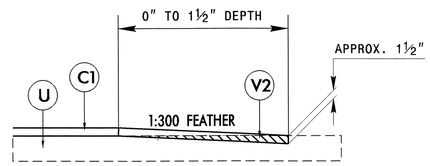
A1	6" JOINTED CONCRETE WITH WIRE MESH (4x4 W3xW3)	R1	2'-6" CONCRETE CURB AND GUTTER
C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	R2	1'-6" CONCRETE CURB AND GUTTER
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	R3	5" MONOLITHIC CONCRETE ISLAND (KEYED-IN)
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.	R4	CONCRETE EXPRESSWAY 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. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.	V1	MILLING BITUMINOUS PAVEMENT. 1½" DEPTH.
E3	PROP. APPROX. 9" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, TO BE PLACED IN TWO LAYERS: -FIRST LAYER 5" AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD. -SECOND LAYER 4" AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	V2	MILLING BITUMINOUS PAVEMENT. 0" - 1½", SEE DETAIL 4.
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.	W	WEDGING (SEE DETAIL 1 AND DETAIL 2)
J	PROP. 6" AGGREGATE BASE COURSE.		

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



NOTE: A TEMPORARY ASPHALT WEDGE WILL BE REQUIRED IMMEDIATELY AFTER MILLING TO ENSURE SMOOTH TRAVEL IF THE FINAL LAYER OF SURFACE COURSE IS NOT PLACED ON THE SAME DAY AS MILLING.

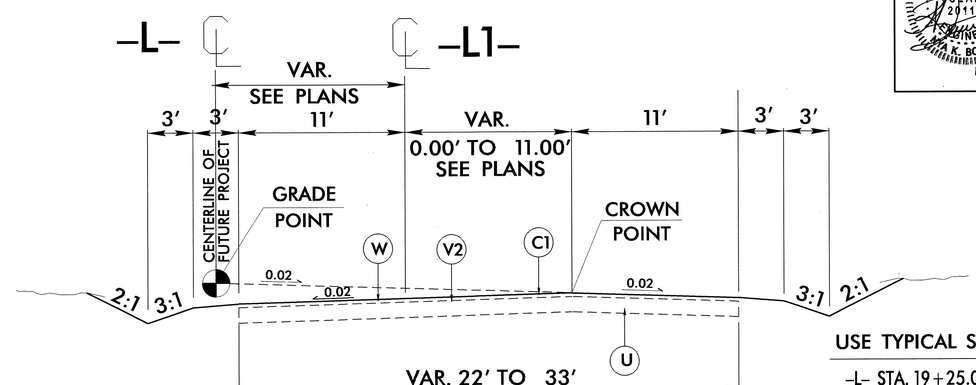
DETAIL NO. 3



NOTE: MILLING DETAIL AT TIE-INS TO EXISTING PAVEMENT (USE AS DIRECTED BY THE ENGINEER)

DETAIL NO. 4

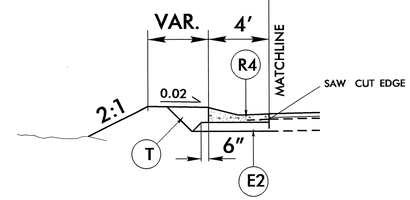
MILLING DETAILS



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1

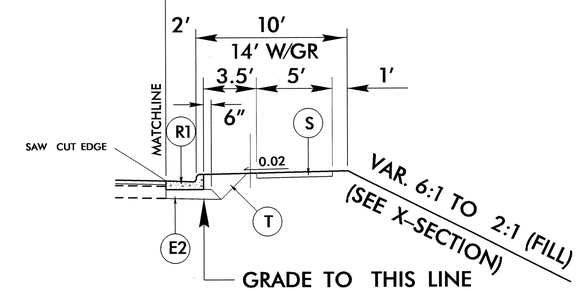
-L- STA. 19+25.00 TO STA. 23+15.00



TYPICAL SECTION NO. 1B

USE TYPICAL SECTION NO. 1B

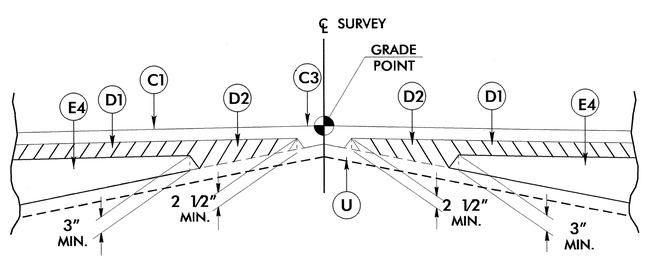
-L- STA. 20+25.00 TO 22+90.00



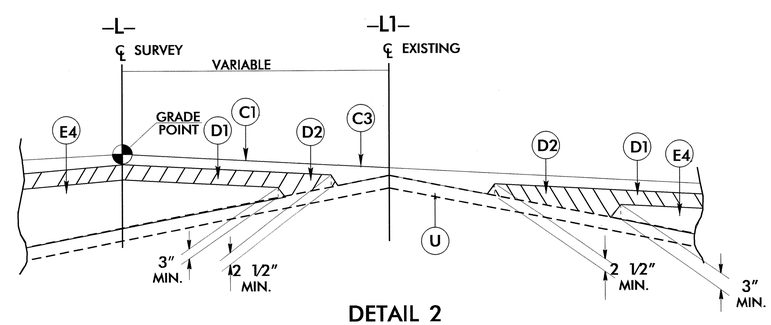
TYPICAL SECTION NO. 1A

USE TYPICAL SECTION NO. 1A

-L- STA. 22+76.49 TO 23+15.00



DETAIL 1



DETAIL 2

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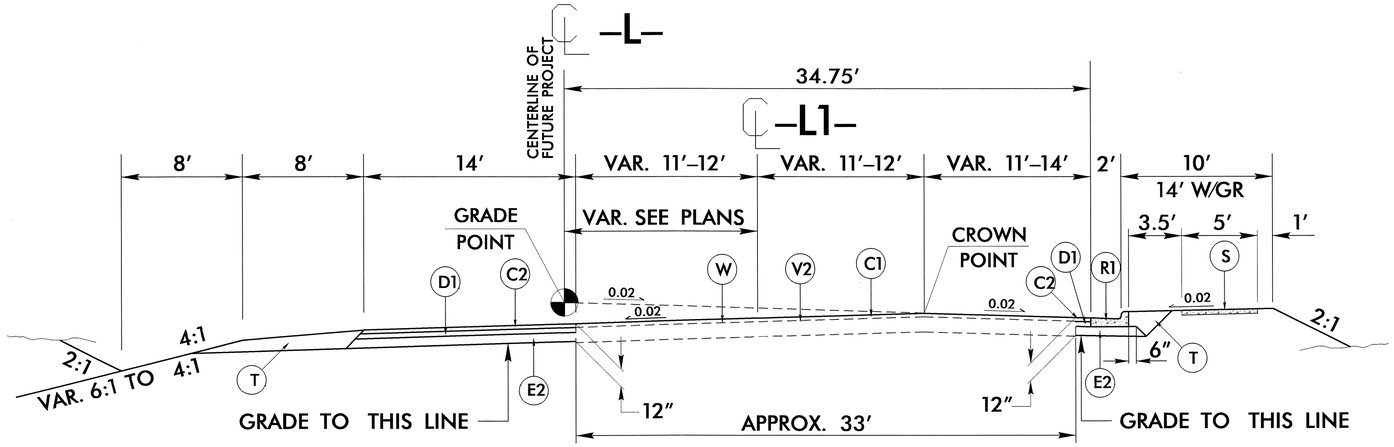
PROJECT REFERENCE NO.	SHEET NO.
U-4432	2-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 20111 ENGINEER JAMES K. BOWIE 12/02/2013

PAVEMENT DESIGN ENGINEER

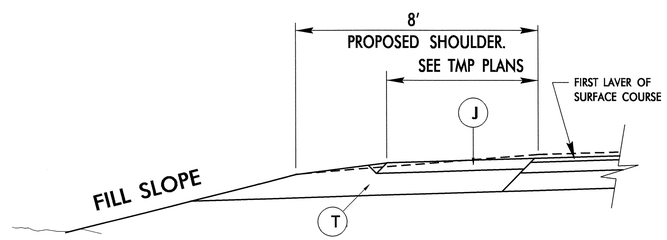
NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER DION-CHI CHEN 12/3/13



TYPICAL SECTION NO. 2

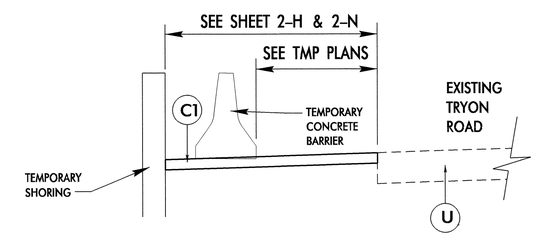
USE TYPICAL SECTION NO. 2

–L– STA. 23+15.00 TO STA. 27+14.64 (BEGIN BRIDGE)



TEMPORARY PAVEMENT DETAIL 1

–L– STA. 24+59.60 TO 25+38.33 LT.
(TEMPORARY GOLF CART PATH)
–L– STA. 25+58.08 TO 26+17.62 LT.
(TEMPORARY WATER FILLED BARRIER)

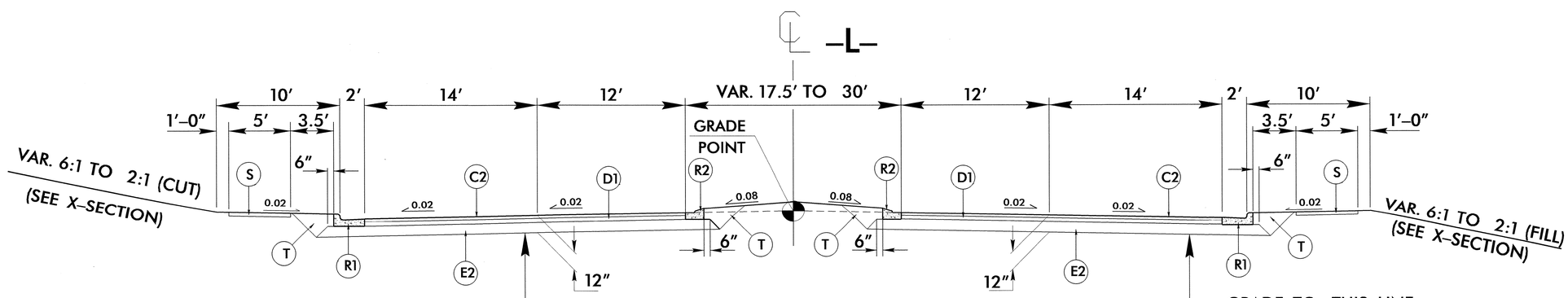


TEMPORARY PAVEMENT DETAIL 2

–L– STA. 26+75.04 TO 27+65.70 RT.

NOTE: USE TEMPORARY PAVEMENT DETAILS 1 & 2 IN CONJUNCTION WITH TS NO. 2.
SEE PLAN SHEETS TMP-4, TMP-4A, TMP-5, TMP-10 & TMP-11 FOR PLAN VIEW LOCATIONS.

PAVEMENT SCHEDULE	
A1	JOINTED CONCRETE
C1	1½″ S9.5B
C2	3″ S9.5B
C3	VAR. S9.5B
D1	4″ I19.0B
D2	VAR. I19.0B
E1	4″ B25.0B
E2	5″ B25.0B
E3	9″ B25.0B
E4	VAR. B25.0B
J	6″ ABC
R1	2′-6″ C & G
R2	1′-6″ C & G
R3	5″ MCI
R4	EXP. WY GUTTER
S	4″ SIDEWALK
T	EARTH MATERIAL
U	EXISTING PVMT
V1	1½″ MILLING
V2	VAR. MILLING
W	WEDGING



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3

–L– STA. 28+95.95 (END BRIDGE) TO STA. 35+10.00

6/2/99

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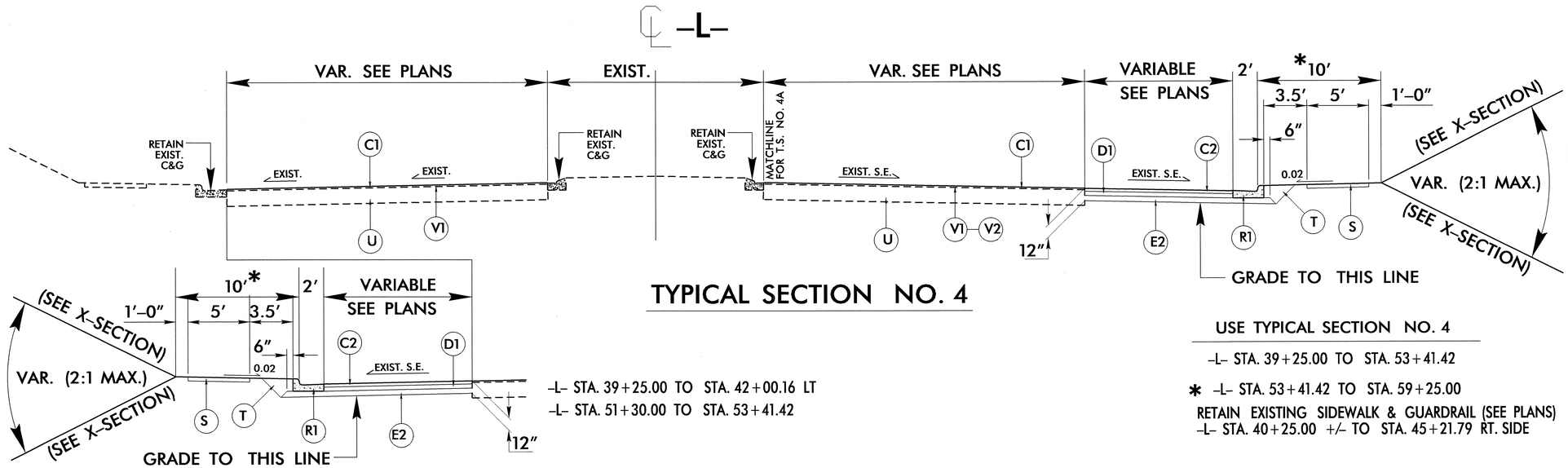
PROJECT REFERENCE NO.	SHEET NO.
U-4432	2-B

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 20111 ENGINEER K. BOYLE 12/02/2013

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER CHI CHEN 12/3/13



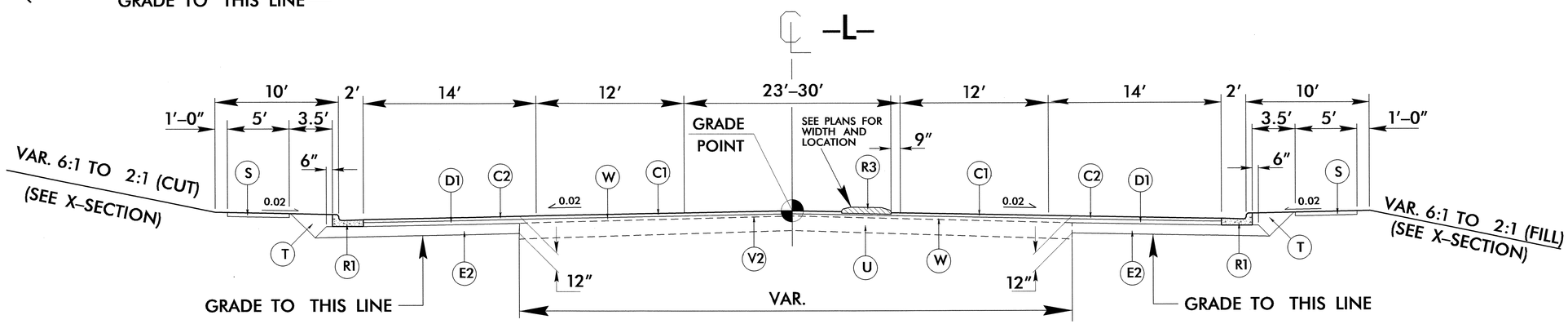
TYPICAL SECTION NO. 4

-L- STA. 39+25.00 TO STA. 42+00.16 LT
-L- STA. 51+30.00 TO STA. 53+41.42

USE TYPICAL SECTION NO. 4

-L- STA. 39+25.00 TO STA. 53+41.42

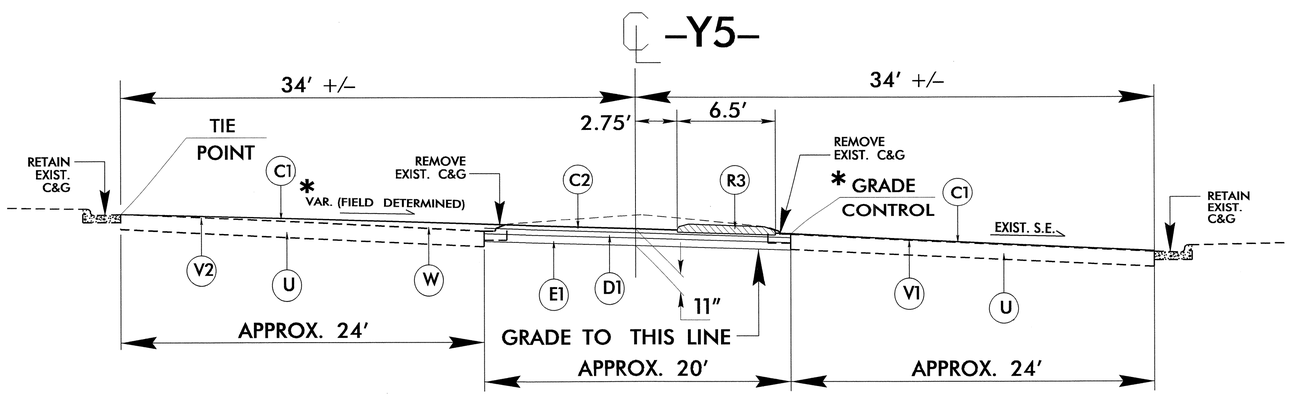
* -L- STA. 53+41.42 TO STA. 59+25.00
RETAIN EXISTING SIDEWALK & GUARDRAIL (SEE PLANS)
-L- STA. 40+25.00 +/- TO STA. 45+21.79 RT. SIDE



TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5

-L- STA. 35+10.00 TO STA. 39+25.00
-L- STA. 59+25.00 TO STA. 68+95.80



TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO. 6

-Y5- STA. 11+22.94 TO STA. 15+35.00
MILLING AND RESURFACING:
-Y5- STA. 15+35.00 TO STA. 16+10.00

* USE EXISTING EOP AS GRADE CONTROL FOR LEFT SIDE SUPERELEVATION

PAVEMENT SCHEDULE

A1	JOINTED CONCRETE
C1	1½" S9.5B
C2	3" S9.5B
C3	VAR. S9.5B
D1	4" I19.0B
D2	VAR. I19.0B
E1	4" B25.0B
E2	5" B25.0B
E3	9" B25.0B
E4	VAR. B25.0B
J	6" ABC
R1	2'-6" C & G
R2	1'-6" C & G
R3	5" MCI
R4	EXP. WY GUTTER
S	4" SIDEWALK
T	EARTH MATERIAL
U	EXISTING PVMT
V1	1½" MILLING
V2	VAR. MILLING
W	WEDGING

6/2/99

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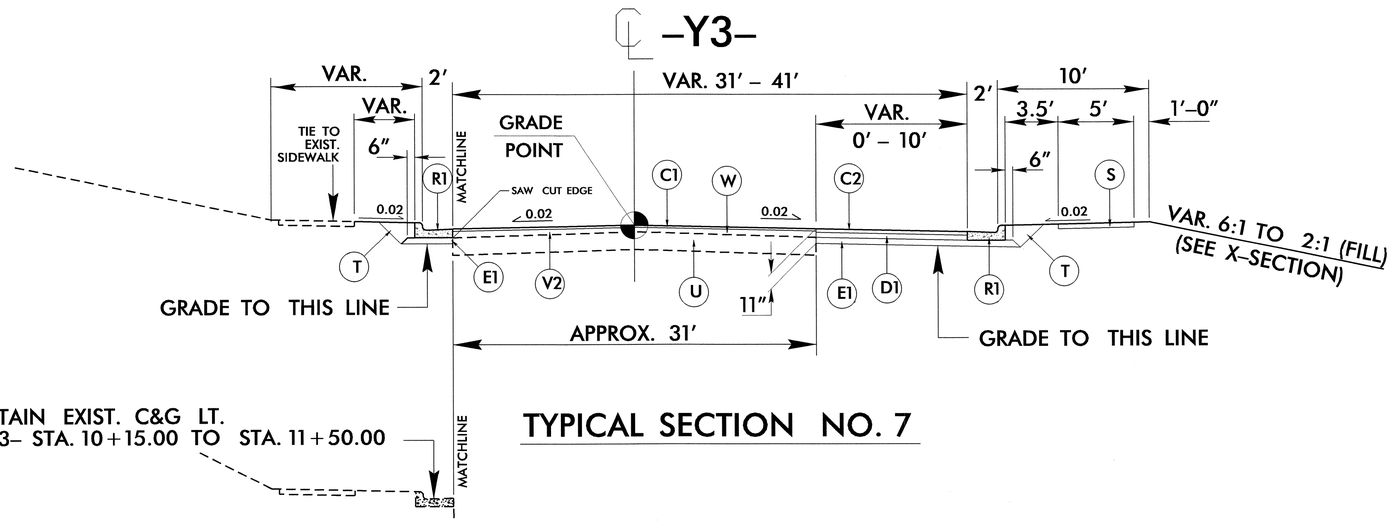
PROJECT REFERENCE NO.	SHEET NO.
U-4432	2-C

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 20111 ENGINEER TARA K. BOAYUE 11/27/2013

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER DON-CHI CHEN 12/3/13



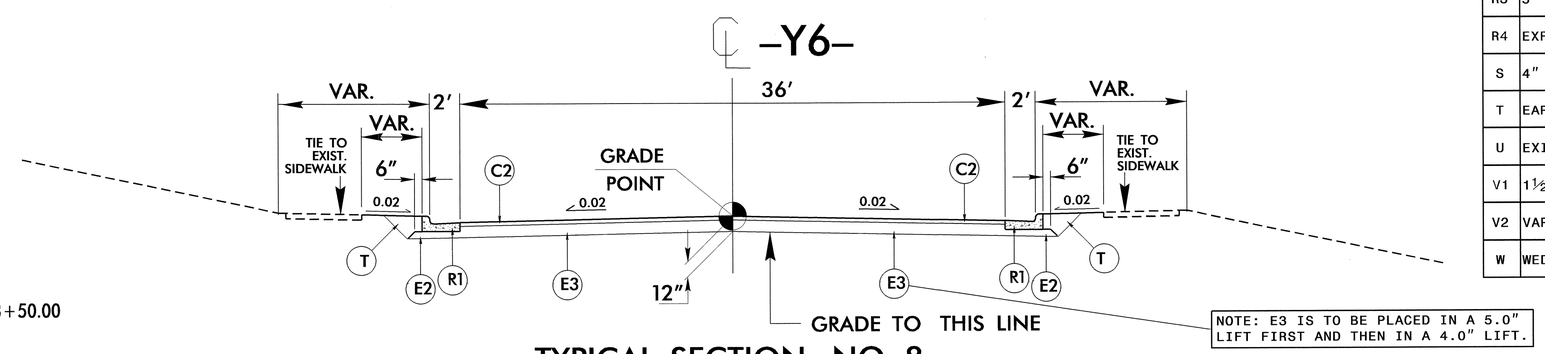
TYPICAL SECTION NO. 7

USE TYPICAL SECTION NO. 7

-Y3- STA. 10+15.00 TO STA. 11+79.00

-Y3- STA. 13+10.55 TO STA. 13+50.00

PAVEMENT SCHEDULE	
A1	JOINTED CONCRETE
C1	1½" S9.5B
C2	3" S9.5B
C3	VAR. S9.5B
D1	4" I19.0B
D2	VAR. I19.0B
E1	4" B25.0B
E2	5" B25.0B
E3	9" B25.0B
E4	VAR. B25.0B
J	6" ABC
R1	2'-6" C & G
R2	1'-6" C & G
R3	5" MCI
R4	EXP. WY GUTTER
S	4" SIDEWALK
T	EARTH MATERIAL
U	EXISTING PVMT
V1	1½" MILLING
V2	VAR. MILLING
W	WEDGING



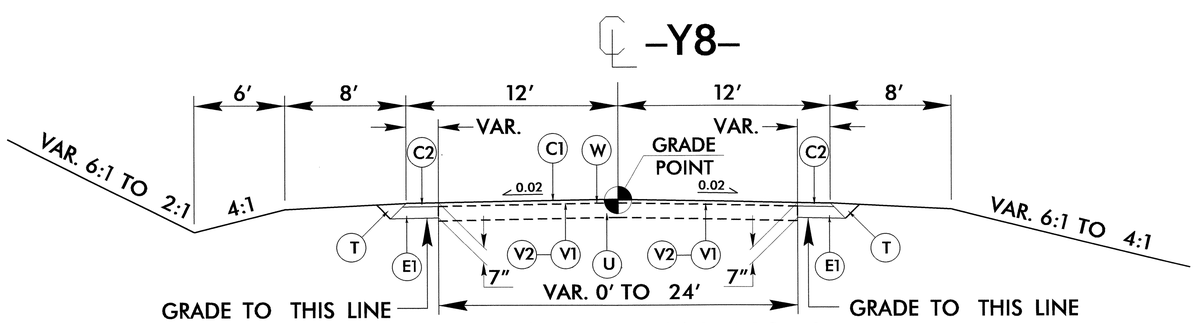
NOTE: E3 IS TO BE PLACED IN A 5.0" LIFT FIRST AND THEN IN A 4.0" LIFT.

TYPICAL SECTION NO. 8

USE TYPICAL SECTION NO. 8

-Y6- STA. 13+50.00 TO STA. 14+38.00

NOTE: RESURFACE -Y6- STA. 13+25.00 TO STA. 13+50.00



TYPICAL SECTION NO. 9

USE TYPICAL SECTION NO. 9

-Y8- STA. 13+74.93 TO STA. 16+50.00

MILLING AND RESURFACING:

-Y8- STA. 9+37.23 TO STA. 13+74.93

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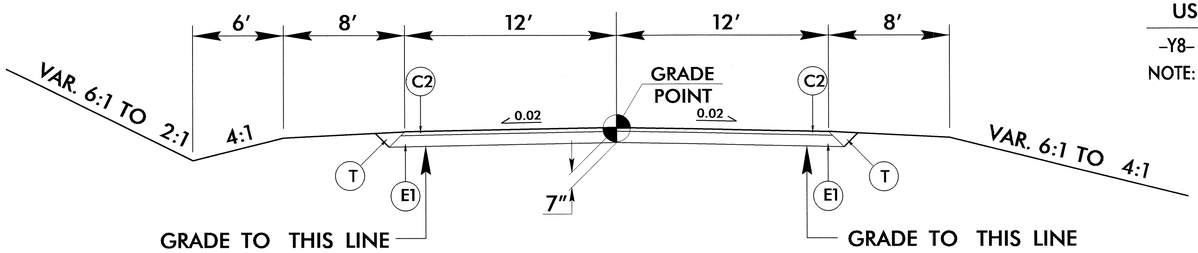
PROJECT REFERENCE NO.	SHEET NO.
U-4432	2-D
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 20111 ENGINEER ANA K. BOATRIGHT 11/27/2013

NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER DON-CHI CHEN 12/3/13

–Y8–



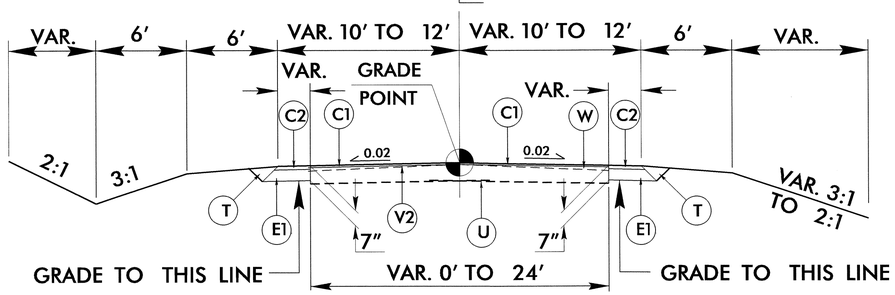
TYPICAL SECTION NO. 10

USE TYPICAL SECTION NO. 10

–Y8– STA. 16+50.00 TO STA. 21+58.26

NOTE: USE DITCH DETAILS 3, 4, 5, 6, & 7 IN CONJUNCTION WITH TS NO. 10

–Y9–



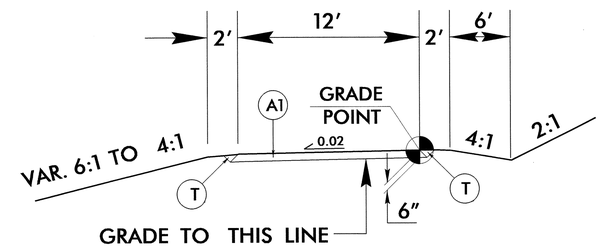
TYPICAL SECTION NO. 11

USE TYPICAL SECTION NO. 11

–Y9– STA. 15+75.00 TO STA. 18+01.94

NOTE: MILL RESURFACE –Y9– STA. 18+01.94 TO STA. 18+10.00

–DR1–



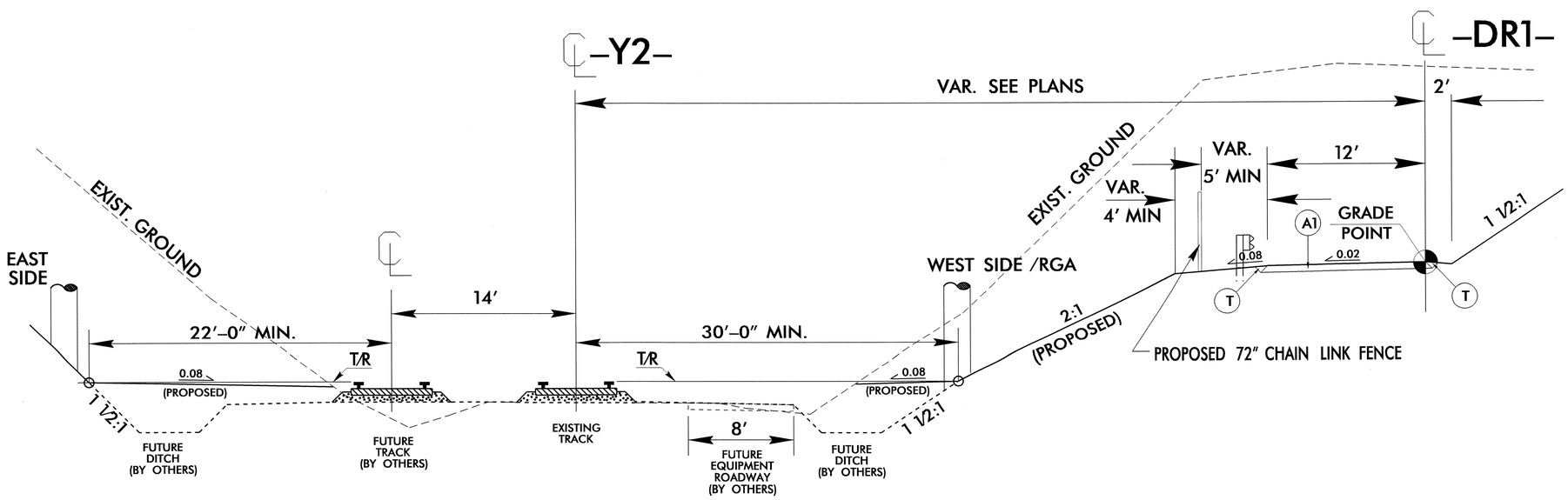
TYPICAL SECTION NO. 12

USE TYPICAL SECTION NO. 12

–DR1– STA. 12+00.00 TO STA. 15+50.00

NOTE: USE DITCH DETAIL 1 IN CONJUNCTION WITH TS NO. 12

PAVEMENT SCHEDULE	
A1	JOINTED CONCRETE
C1	1½″ S9.5B
C2	3″ S9.5B
C3	VAR. S9.5B
D1	4″ I19.0B
D2	VAR. I19.0B
E1	4″ B25.0B
E2	5″ B25.0B
E3	9″ B25.0B
E4	VAR. B25.0B
J	6″ ABC
R1	2′-6″ C & G
R2	1′-6″ C & G
R3	5″ MCI
R4	EXP. WY GUTTER
S	4″ SIDEWALK
T	EARTH MATERIAL
U	EXISTING PVMT
V1	1½″ MILLING
V2	VAR. MILLING
W	WEDGING



ULTIMATE TYPICAL SECTION UNDER BRIDGE

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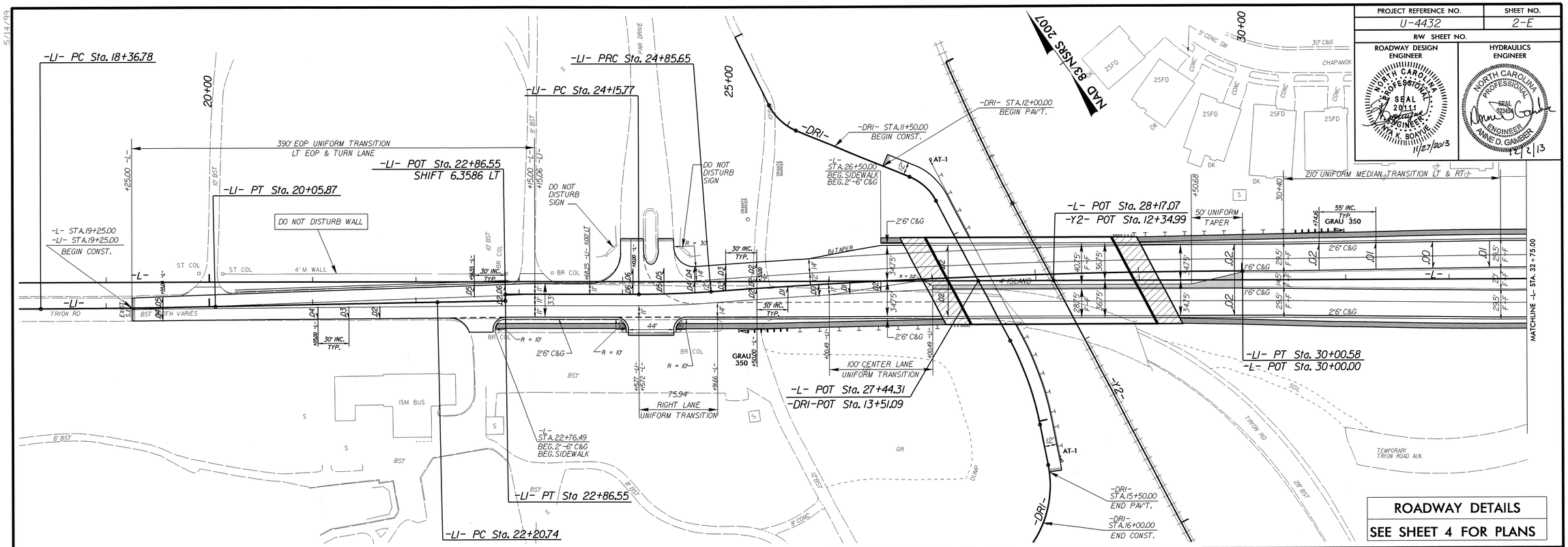
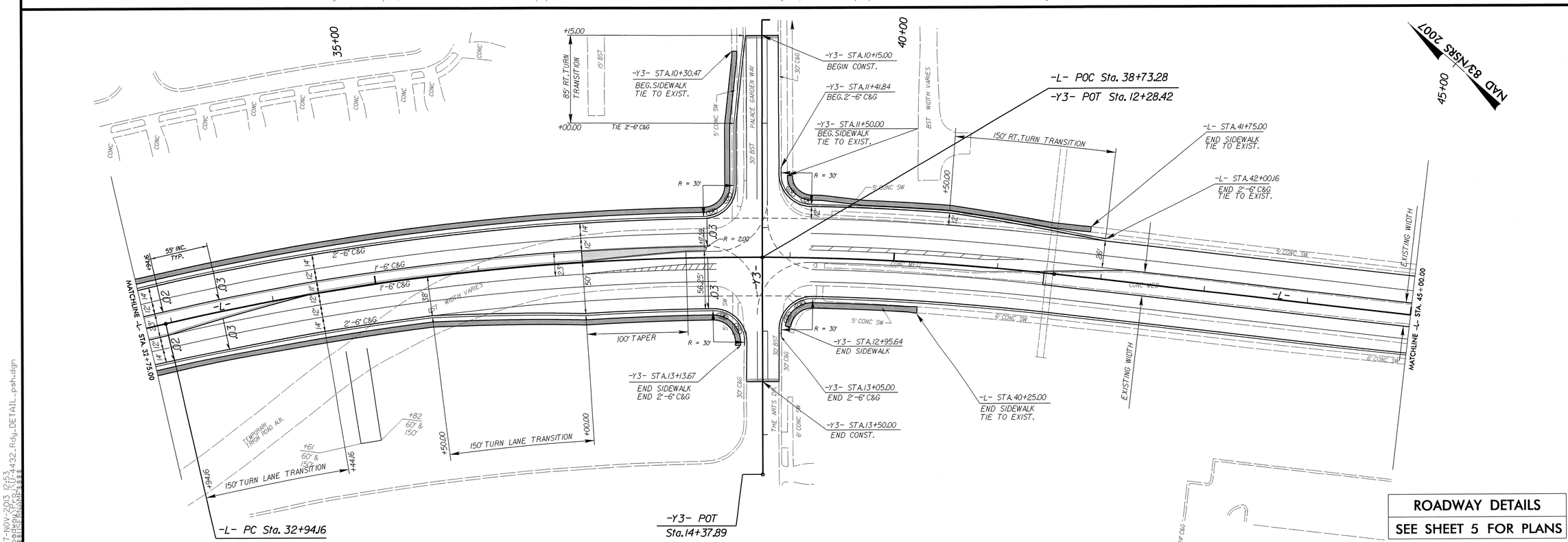
PROJECT REFERENCE NO.	SHEET NO.
U-4432	2-E
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 20111 ENGINEER MARK K. BOATNER 11/27/2013

NORTH CAROLINA PROFESSIONAL SEAL 023464 ENGINEER ANNE D. GAINGER 12/2/13





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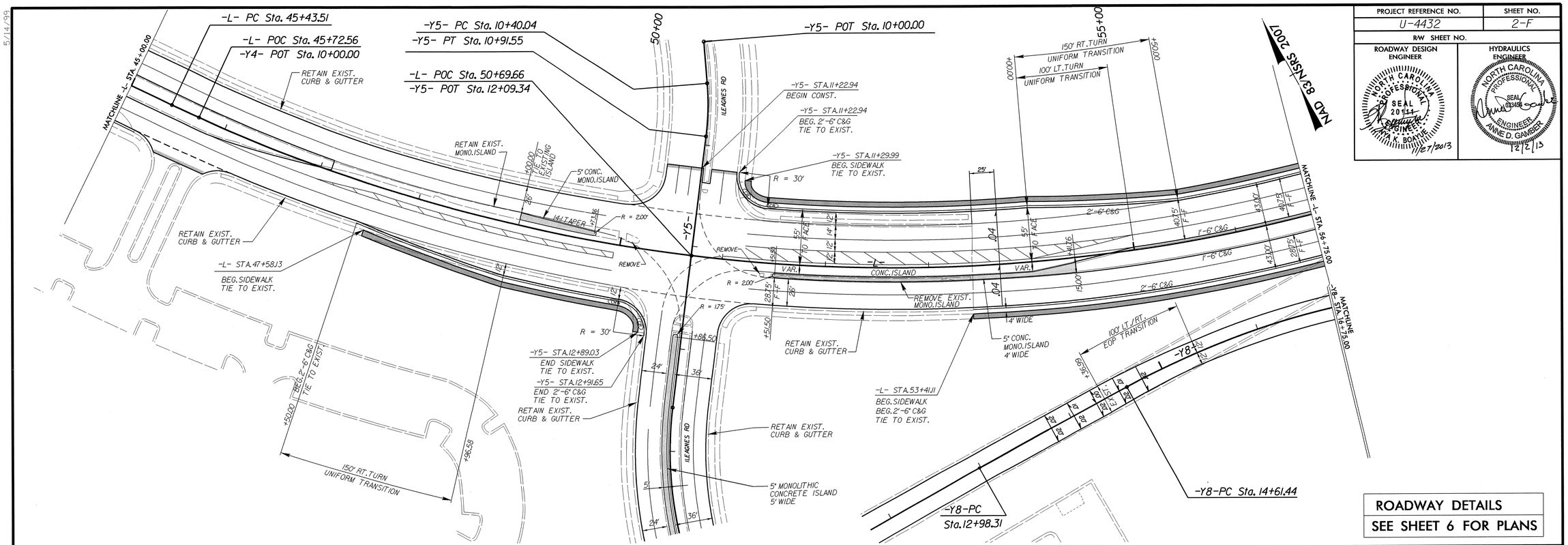
PROJECT REFERENCE NO.	SHEET NO.
U-4432	2-F
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

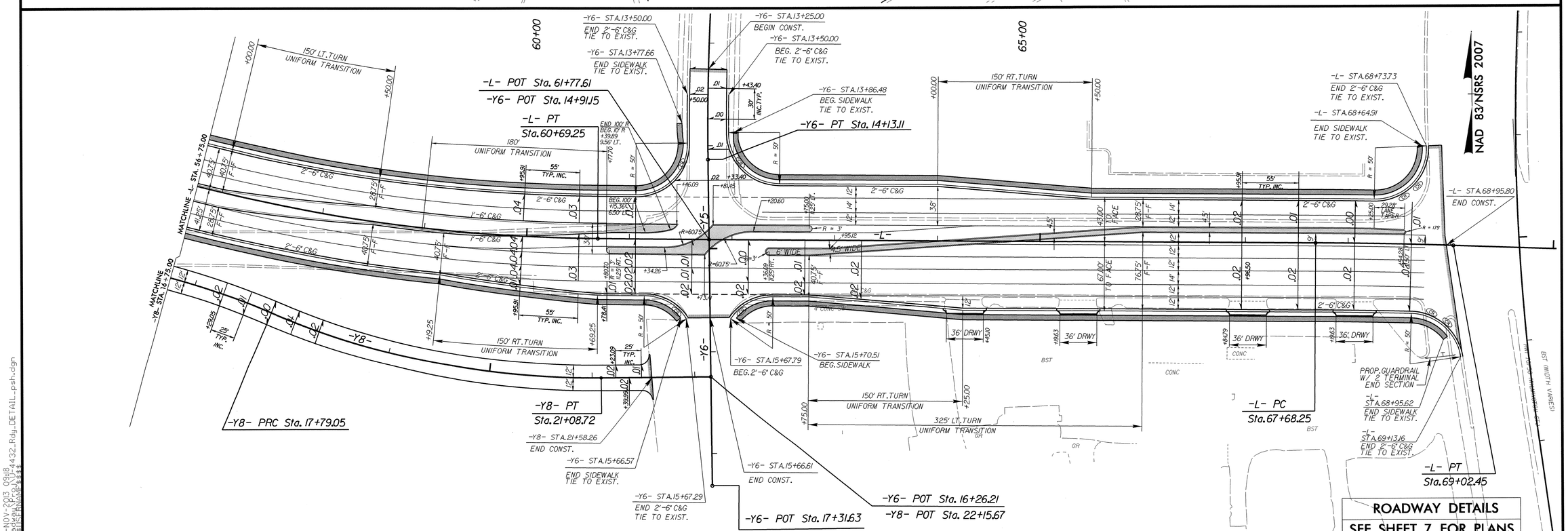
NORTH CAROLINA PROFESSIONAL SEAL 20111 ENGINEER M. K. BOATE 12/7/2013

NORTH CAROLINA PROFESSIONAL SEAL 019382 ENGINEER ANNE D. GAMBER 12/2/13



ROADWAY DETAILS

SEE SHEET 6 FOR PLANS



ROADWAY DETAILS

SEE SHEET 7 FOR PLANS

5/14/99

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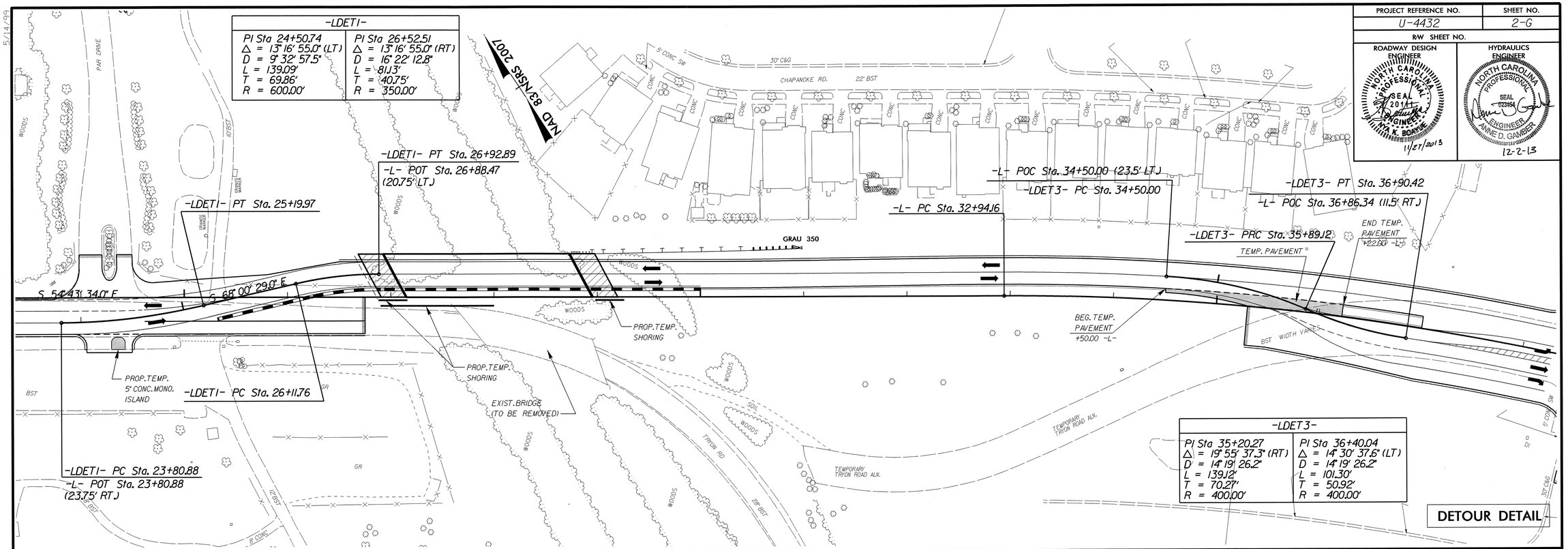
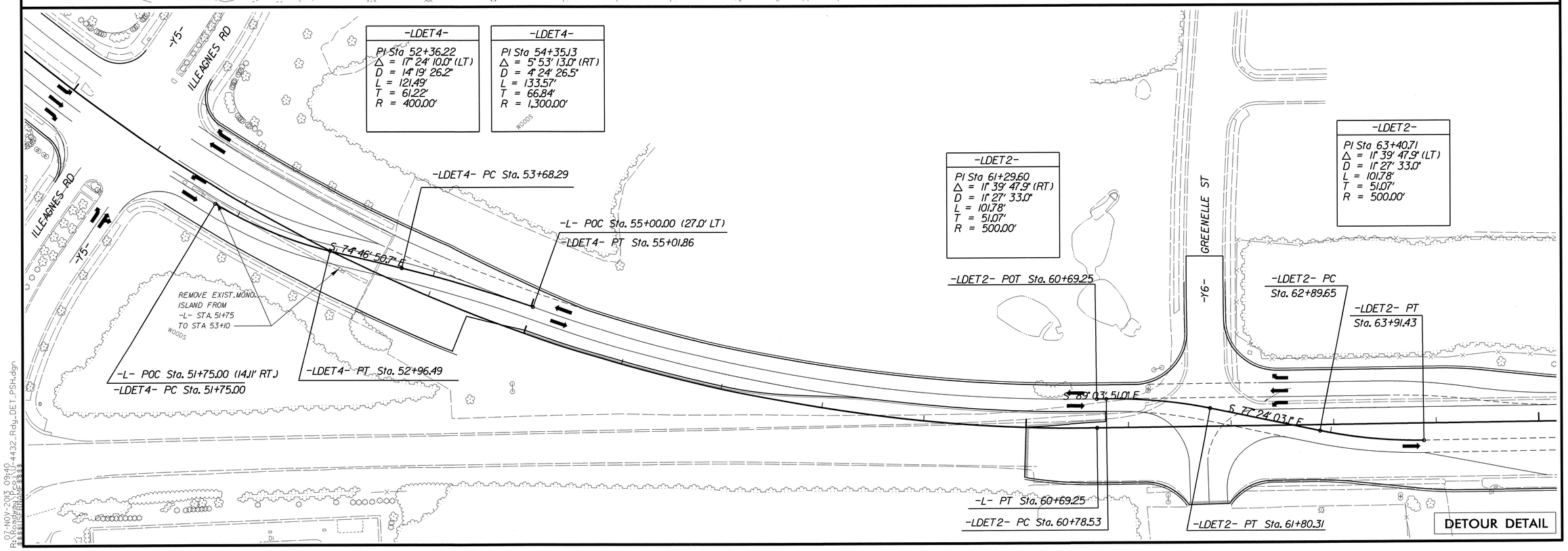
PROJECT REFERENCE NO.	SHEET NO.
U-4432	2-G
RW SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 20111 ENGINEER M. K. BOARDE
11/27/2013

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022864 ENGINEER ANNE D. GAMBER
12-2-13





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PROJECT REFERENCE NO.	SHEET
U-4432	2-H

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

Scott A. Hidden 7/22/13

SIGNATURE DATE

ENGINEER

SIGNATURE DATE

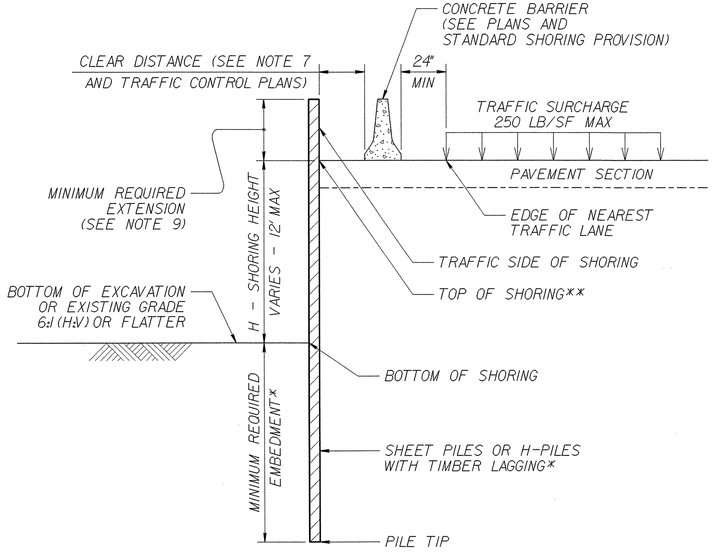
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN^3/FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)			MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN^3/FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)		
				HP 10x42	HP 12x53	HP 14x73			HP 10x42	HP 12x53	HP 14x73
GROUNDWATER ELEVATION BETWEEN BOTTOM OF SHORING AND PILE TIP	< 6	11.5	4.5	11.5	11.5	11.5	16.0	12.0	13.0	13.0	13.0
	7	13.0	7.0	13.0	13.0	13.0	17.0	14.5	14.5	14.5	14.5
	8	15.0	10.0	--	15.0	15.0	18.0	17.0	--	15.5	15.5
	9	17.0	14.0	--	17.0	17.0	19.0	20.0	--	17.0	17.0
	10	18.5	19.5	--	--	18.5	20.0	23.5	--	--	18.5
	11	20.5	26.0	--	--	--	21.0	28.0	--	--	20.0
	12	22.5	33.0	--	--	--	22.0	33.0	--	--	21.5
GROUNDWATER ELEVATION BELOW PILE TIP	< 6	7.5	3.0	8.0	8.0	8.0	11.0	10.0	9.5	9.5	9.5
	7	8.5	4.5	9.5	9.5	9.5	12.0	12.0	10.5	10.5	10.5
	8	10.0	6.5	10.5	10.5	10.5	12.5	14.0	11.5	11.5	11.5
	9	11.0	9.5	--	12.0	12.0	13.5	16.5	--	12.5	12.5
	10	12.5	13.0	--	--	13.5	14.0	19.5	--	13.5	13.5
	11	13.5	17.0	--	--	14.5	15.0	22.5	--	--	14.5
	12	15.0	21.5	--	--	16.0	16.0	25.5	--	--	15.5

MINIMUM REQUIRED EMBEDMENT AND SECTION MODULUS

***DO NOT USE H-PILES WITH TIMBER LAGGING FOR GROUNDWATER CONDITION, SHORING HEIGHT AND H-PILE SIZE SHOWN IF MINIMUM REQUIRED EMBEDMENT IS "--".**

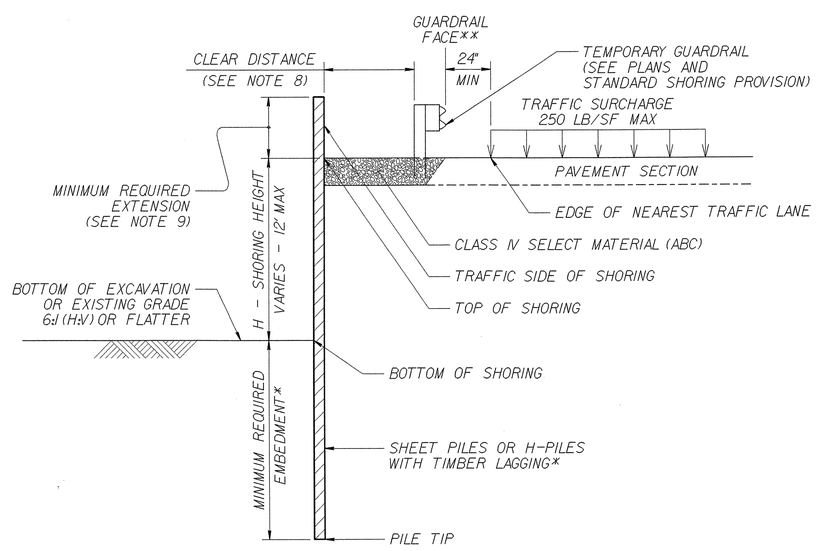
NOTES:

1. AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING AS NOTED IN THE PLANS.
2. FOR STANDARD TEMPORARY SHORING, SEE STANDARD SHORING PROVISION.
3. STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
   UNIT WEIGHT, γ = 120 LB/CF
   FRICTION ANGLE, ϕ = 30 DEGREES
   COHESION, c = 0 LB/SF
4. DO NOT USE STANDARD TEMPORARY SHORING IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
5. DO NOT USE STANDARD TEMPORARY SHORING WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS WITHIN THE EMBEDMENT DEPTH.
6. USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, USE "GROUNDWATER ELEVATION BETWEEN BOTTOM OF SHORING AND PILE TIP" FOR GROUNDWATER CONDITION. DO NOT USE STANDARD TEMPORARY SHORING IF GROUNDWATER IS ABOVE BOTTOM OF SHORING.
7. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN THE MINIMUM REQUIRED FOR CONCRETE BARRIER, SET BARRIER NEXT TO AND UP AGAINST TRAFFIC SIDE OF PILES AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
8. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN 4' FOR TEMPORARY GUARDRAIL, ATTACH GUARDRAIL TO TRAFFIC SIDE OF PILES AS SHOWN IN THE PLANS AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
9. MINIMUM REQUIRED EXTENSION IS 6" FOR "SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT" AND 32" FOR "SURCHARGE CASE WITH TRAFFIC IMPACT".
10. MINIMUM REQUIRED EMBEDMENT FOR H-PILES WITH TIMBER LAGGING IS BASED ON DRIVEN H-PILES AT MAXIMUM 6' SPACING. AT THE CONTRACTOR'S OPTION, EMBEDMENT DEPTHS MAY BE REDUCED BY 25% FOR DRILLED-IN H-PILES.
11. SUBMIT A "STANDARD TEMPORARY SHORING SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY SHORING CONSTRUCTION. UP TO 3 SHORING LOCATIONS MAY BE INCLUDED ON EACH FORM. STANDARD SHORING SELECTION FORMS ARE AVAILABLE FROM: connect.ncdot.gov/resources/Geological/Pages/Geotech_Forms_Details.aspx
12. CONTACT THE ENGINEER IF PILES DO NOT ATTAIN THE MINIMUM REQUIRED EMBEDMENT.



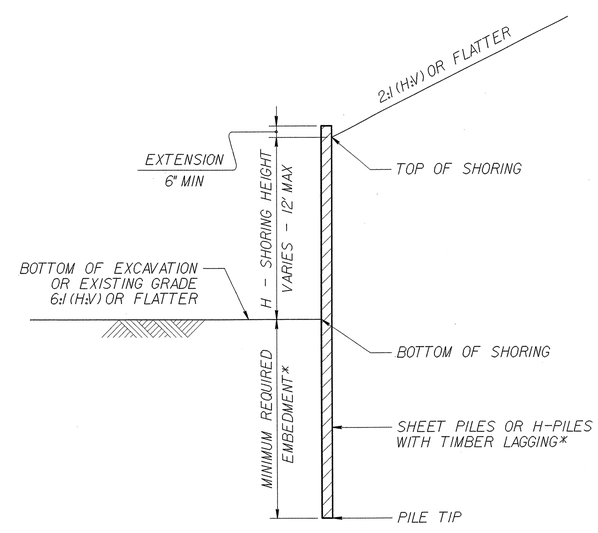
CONCRETE BARRIER

****TOP OF SHORING = EDGE OF PAVEMENT**



TEMPORARY GUARDRAIL

****GUARDRAIL FACE = EDGE OF PAVEMENT**



STANDARD TEMPORARY SHORING

(SLOPE CASE)

***SEE TABLE ABOVE.**

STANDARD TEMPORARY SHORING

(SURCHARGE CASE)

***SEE TABLE ABOVE.**

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

STANDARD DRAWING NO. 1801.01

STANDARD TEMPORARY SHORING

DATE: 11-19-13

PROJECT REFERENCE NO.	SHEET
U-4432	2-I

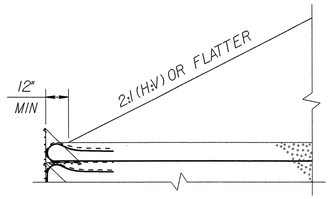
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

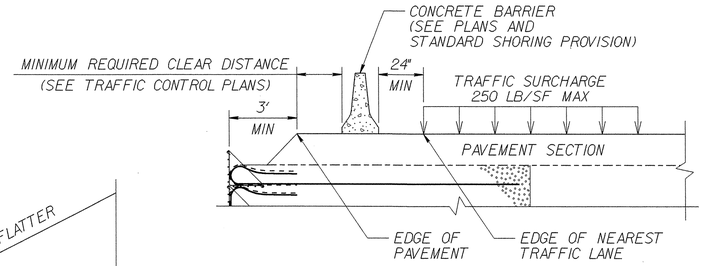
Scott A. Hidden 7/22/13
SIGNATURE DATE

ENGINEER

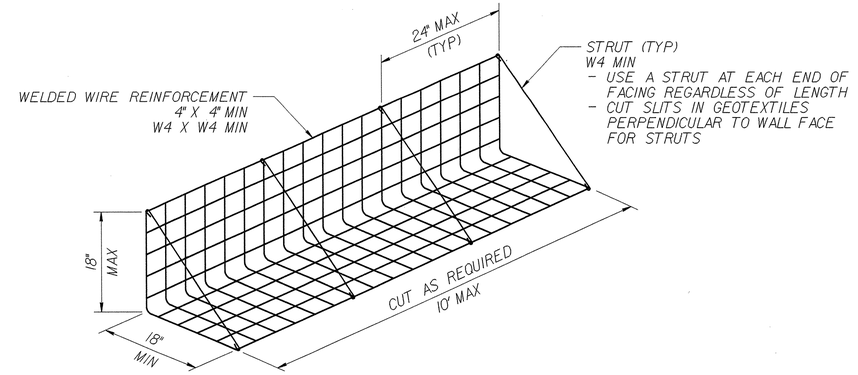
SIGNATURE DATE



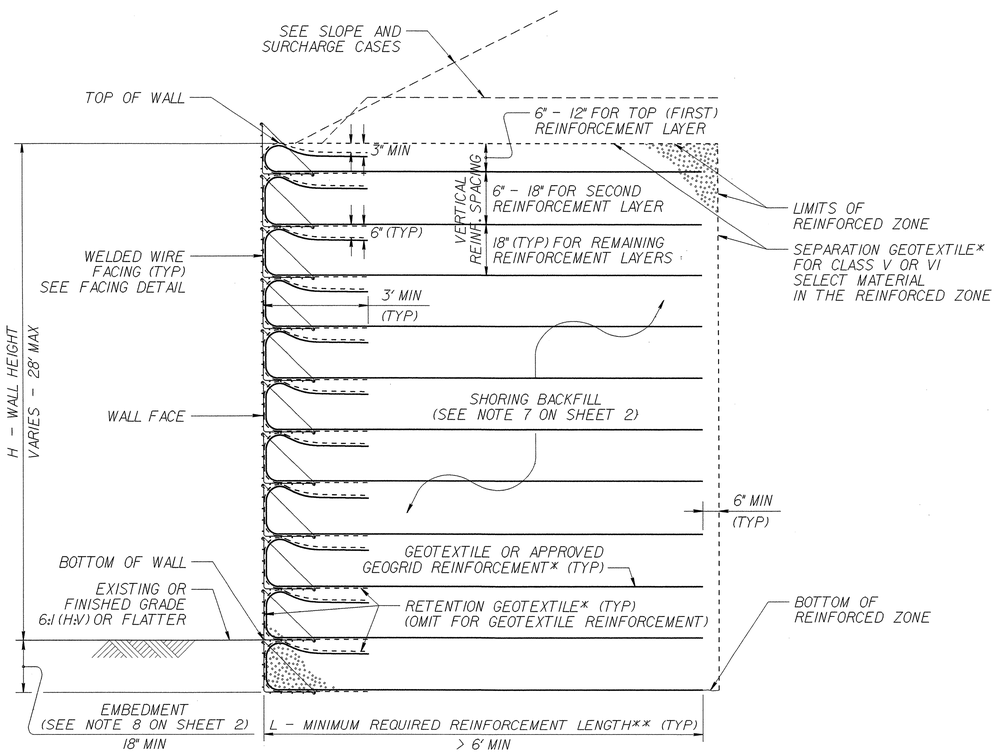
SLOPE CASE



SURCHARGE CASE

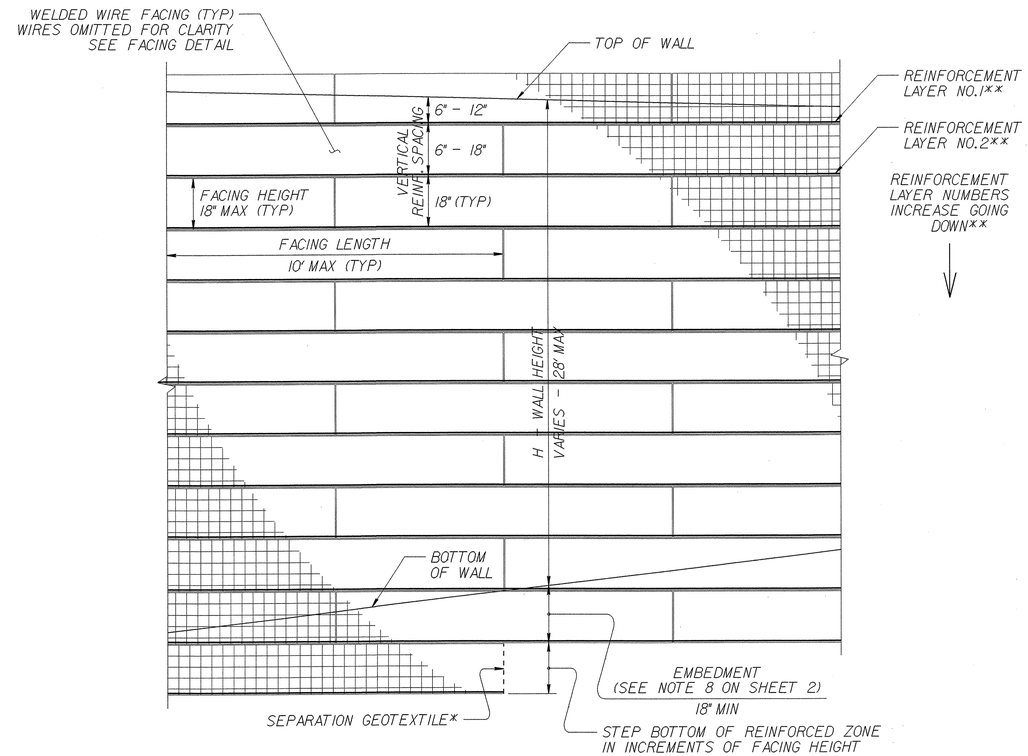


FACING DETAIL



STANDARD TEMPORARY WALL

(FOR STANDARD TEMPORARY WALLS ON STRUCTURES, SEE TEMPORARY WALL ON STRUCTURE DETAIL ON SHEET 2.)
*SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.
**SEE REINFORCEMENT TABLES ON SHEET 3.



STANDARD TEMPORARY WALL – PARTIAL ELEVATION

*SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.
**SEE REINFORCEMENT TABLES ON SHEET 3.

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

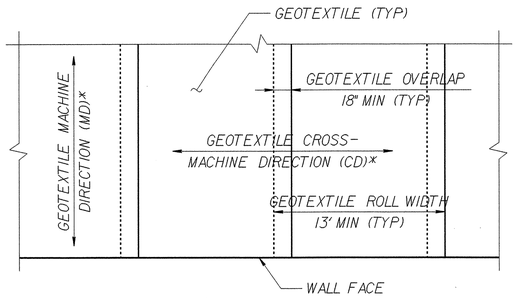
STANDARD DRAWING NO. 1801.02

STANDARD TEMPORARY WALL
Sheet 1 of 3

DATE: 11-19-13

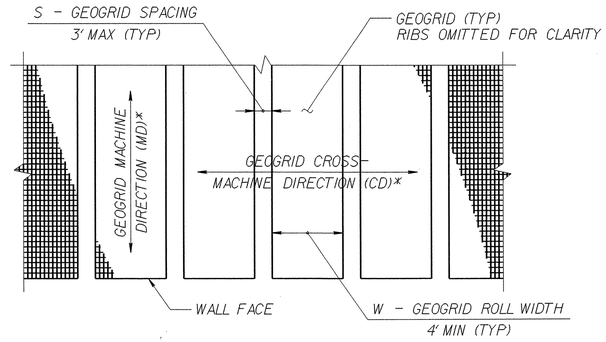
PROJECT REFERENCE NO.	SHEET
U-4432	2-J

GEOTECHNICAL ENGINEER	ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN Scott A. Hidden 7/22/13 SIGNATURE DATE	SIGNATURE DATE



GEOTEXTILE PLACEMENT

(100% COVERAGE MIN FOR GEOTEXTILE REINFORCEMENT)

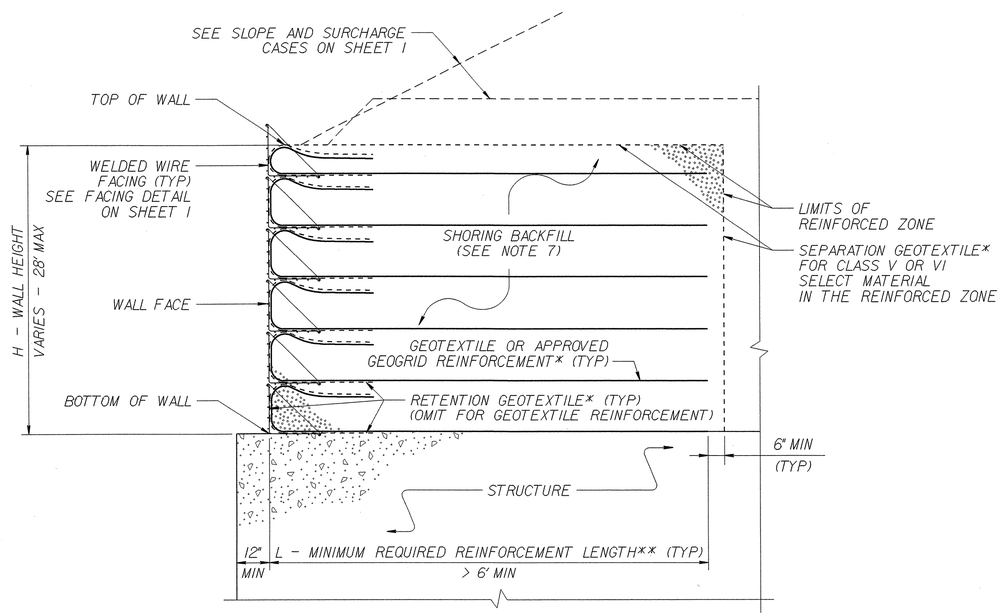


GEOGRID PLACEMENT

(80% COVERAGE MIN FOR GEOGRID REINFORCEMENT – $\frac{W}{W+S} \times 100 \geq 80\%$, SEE NOTE 11)

GEOSYNTHETIC PLACEMENT DETAILS

(PLAN VIEW)
***SEE NOTE 12.**



TEMPORARY WALL ON STRUCTURE DETAIL

***SEE GEOSYNTHETIC PLACEMENT DETAILS.**
****SEE REINFORCEMENT TABLES ON SHEET 3.**

NOTES:

1. AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY WALLS AS NOTED IN THE PLANS.
2. FOR STANDARD TEMPORARY WALLS, SEE STANDARD SHORING PROVISION.
3. STANDARD TEMPORARY WALLS ARE BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
   UNIT WEIGHT, γ = 120 LB/CF
   FRICTION ANGLE, ϕ = 30 DEGREES
   COHESION, c = 0 LB/SF
4. DO NOT USE STANDARD TEMPORARY WALLS IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
5. DO NOT USE STANDARD TEMPORARY WALLS WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS BELOW TEMPORARY WALLS.
6. USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, ASSUME GROUNDWATER DEPTH IS LESS THAN 7' BELOW BOTTOM OF REINFORCED ZONE. DO NOT USE STANDARD TEMPORARY WALLS IF GROUNDWATER IS ABOVE BOTTOM OF REINFORCED ZONE.
7. DO NOT USE A-2-4 SOIL FOR STANDARD TEMPORARY WALLS AROUND CULVERTS OR IN THE REINFORCED ZONE OF STANDARD TEMPORARY WALLS FOR SLOPE CASES. DO NOT USE CLASS VI SELECT MATERIAL IN THE REINFORCED ZONE OF STANDARD TEMPORARY WALLS WITH GEOTEXTILE REINFORCEMENT.
8. EMBEDMENT IS NOT REQUIRED FOR STANDARD TEMPORARY WALLS ON STRUCTURES OR ROCK AS DETERMINED BY THE ENGINEER.
9. DO NOT USE MORE THAN 4 DIFFERENT REINFORCEMENT STRENGTHS FOR EACH STANDARD TEMPORARY WALL.
10. GEOGRIDS ARE TYPICALLY APPROVED FOR ULTIMATE TENSILE STRENGTHS IN THE MACHINE DIRECTION (MD) AND CROSS-MACHINE DIRECTION (CD) OR SHORT-TERM DESIGN STRENGTHS FOR A 3-YEAR DESIGN LIFE IN THE MD BASED ON MATERIAL TYPE. THE LIST OF APPROVED GEOGRIDS WITH DESIGN STRENGTHS IS AVAILABLE FROM:
    connect.ncdot.gov/resources/Materials/Pages/SoilsLaboratory.aspx
    DEFINE MATERIAL TYPE FROM THE WEBSITE ABOVE FOR SHORING BACKFILL AS FOLLOWS:

MATERIAL TYPE	SHORING BACKFILL
BORROW	A-2-4 SOIL
FINE AGGREGATE	CLASS II, TYPE 1 OR CLASS III SELECT MATERIAL
COARSE AGGREGATE	CLASS V OR VI SELECT MATERIAL

    IF THE WEBSITE DOES NOT LIST A SHORT-TERM DESIGN STRENGTH FOR AN APPROVED GEOGRID, USE A SHORT-TERM DESIGN STRENGTH EQUAL TO THE ULTIMATE TENSILE STRENGTH DIVIDED BY 3.5 FOR THE GEOGRID REINFORCEMENT.
11. FOR GEOGRID REINFORCEMENT WITH LESS THAN 100% COVERAGE, STAGGER REINFORCEMENT SO GEOGRIDS ARE CENTERED OVER GAPS IN THE REINFORCEMENT LAYER BELOW.
12. AT THE CONTRACTOR'S OPTION, REINFORCEMENT MAY BE INSTALLED WITH THE MD PARALLEL TO THE WALL FACE IF BOTH OF THE FOLLOWING CONDITIONS OCCUR:
    - W (REINFORCEMENT ROLL WIDTH) $\geq$ (MINIMUM REQUIRED REINFORCEMENT LENGTH) + 4.5' AND
    - REINFORCEMENT STRENGTH IN CD $\geq$ MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD.
13. SUBMIT A "STANDARD TEMPORARY WALL SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY WALL CONSTRUCTION. STANDARD SHORING SELECTION FORMS ARE AVAILABLE FROM:
    connect.ncdot.gov/resources/Geological/Pages/Geotech_Forms_Details.aspx
14. DO NOT PLACE SHORING BACKFILL OR REINFORCEMENT UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.
15. FOR STANDARD TEMPORARY WALLS WITH PILE FOUNDATIONS IN THE REINFORCED ZONE, DRIVE PILES THROUGH REINFORCEMENT AFTER CONSTRUCTING TEMPORARY WALLS.
16. DO NOT SPLICE OR OVERLAP REINFORCEMENT SO SEAMS ARE PARALLEL TO THE WALL FACE.
17. CONTACT THE ENGINEER WHEN EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, PAVEMENTS, PIPES, INLETS OR UTILITIES WILL INTERFERE WITH REINFORCEMENT.
18. FOR STANDARD TEMPORARY WALLS WITH INTERIOR ANGLES LESS THAN 90 DEGREES, WRAP GEOSYNTHETICS AT ACUTE CORNERS AS DIRECTED BY THE ENGINEER.
19. FOR STANDARD TEMPORARY WALLS WITH TOP OF WALL WITHIN 5' OF FINISHED GRADE, REMOVE TOP FACING AND INCORPORATE TOP REINFORCEMENT LAYER INTO FILL WHEN PLACING FILL IN FRONT OF WALL.

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

STANDARD DRAWING NO. 1801.02

STANDARD TEMPORARY WALL
Sheet 2 of 3

DATE: 11-19-13

PROJECT REFERENCE NO.	SHEET
U-4432	2-K

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

Scott A. Hidden 7/22/13
SIGNATURE DATE

ENGINEER

SIGNATURE DATE

SLOPE OR SURCHARGE CASE	GROUNDWATER DEPTH BELOW BOTTOM OF REINFORCED ZONE (SEE NOTE 6 ON SHEET 2) (FT)	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)	H - WALL HEIGHT (FT)																									
			< 4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
SLOPE CASE	> 0	CLASS II, TYPE I, CLASS III, CLASS V OR CLASS VI SELECT MATERIAL	6	6	7	8	9	11	12	13	13	14	15	16	17	18	19	20	21	22	23	24	24	25	26	27	27
SURCHARGE CASE	> 0 TO 7 FOR H < 20′ > 0 TO 10 FOR H ≥ 20′	ALL SHORING BACKFILL TYPES	6	7	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	17	17	18	19	19	20	21	22
	> 7 FOR H < 20′ > 10 FOR H ≥ 20′	A-2-4 SOIL	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	16	17	18	18	19	20	20	21
		CLASS II, TYPE I OR CLASS III SELECT MATERIAL	6	6	7	7	8	8	9	10	10	11	11	12	12	13	14	15	15	16	16	17	17	18	18	19	20
		CLASS V OR CLASS VI SELECT MATERIAL	6	6	7	7	7	8	8	9	9	10	10	11	12	13	13	14	14	15	15	16	17	17	18	19	19

L – MINIMUM REQUIRED REINFORCEMENT LENGTH (FT)

(FOR ALL REINFORCEMENT TYPES)

WALL HEIGHT (H) + EMBEDMENT (FT)	NUMBER OF REINFORCEMENT LAYERS*
2.5 - 4	3
4 - 5.5	4
5.5 - 7	5
7 - 8.5	6
8.5 - 10	7
10 - 11.5	8
11.5 - 13	9
13 - 14.5	10
14.5 - 16	11
16 - 17.5	12
17.5 - 19	13
19 - 20.5	14
20.5 - 22	15
22 - 23.5	16
23.5 - 25	17
25 - 26.5	18
26.5 - 28	19
28 - 29.5	20

*BASED ON VERTICAL REINFORCEMENT SPACING SHOWN ON SHEET 1.

REINFORCEMENT LAYER NUMBER*	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)				
	SLOPE CASE		SURCHARGE CASE		
	CLASS II, TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL	A-2-4 SOIL	CLASS II, TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL
1	2400	2400	2400	2400	2400
2	2400	2400	2400	2400	2400
3	2400	2400	2400	2400	2400
4	2400	2400	2500	2400	2400
5	2500	2400	3000	2400	2400
6	3000	2400	3500	2800	2400
7	3500	2700	4000	3200	2600
8	4000	3100	4500	3600	2900
9	4500	3500	5000	4000	3200
10	5000	3900	5500	4400	3500
11	5500	4300	6000	4800	3800
12	6000	4700	6500	5200	4100
13	6500	5100	7000	5600	4400
14	7000	5400	7500	6000	4700
15	7500	5800	8000	6400	5000
16	8000	6200	8500	6800	5300
17	8500	6600	9000	7200	5600
18	9000	7000	9500	7600	5900
19	9500	7400	10000	8000	6200
20	10000	7800	10500	8400	6500

GEOTEXTILE REINFORCEMENT
ULTIMATE TENSILE STRENGTH (LB/FT)

REINFORCEMENT LAYER NUMBER*	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)				
	SLOPE CASE		SURCHARGE CASE		
	CLASS II, TYPE I OR CLASS III SELECT MATERIAL	CLASS V OR CLASS VI SELECT MATERIAL	A-2-4 SOIL	CLASS II, TYPE I OR CLASS III SELECT MATERIAL	CLASS V OR CLASS VI SELECT MATERIAL
1	240	200	340	290	240
2	380	310	520	430	350
3	530	420	700	570	460
4	690	550	870	720	570
5	860	690	1050	860	680
6	1030	830	1220	1000	790
7	1200	970	1400	1150	900
8	1370	1110	1580	1290	1010
9	1550	1240	1750	1430	1120
10	1720	1380	1930	1580	1230
11	1890	1520	2100	1720	1340
12	2060	1660	2280	1860	1450
13	2240	1800	2450	2010	1560
14	2410	1940	2630	2150	1670
15	2580	2080	2800	2290	1780
16	2750	2220	2980	2440	1890
17	2930	2360	3160	2580	2000
18	3100	2500	3330	2720	2110
19	3270	2640	3510	2860	2220
20	3440	2780	3690	3000	2330

GEOGRID REINFORCEMENT
SHORT-TERM DESIGN STRENGTH (LB/FT)
(SEE NOTE 10 ON SHEET 2.)

MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD
(SEE NOTE 9 ON SHEET 2.)
*SEE PARTIAL ELEVATION ON SHEET 1
FOR REINFORCEMENT LAYER NUMBERING.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING UNIT

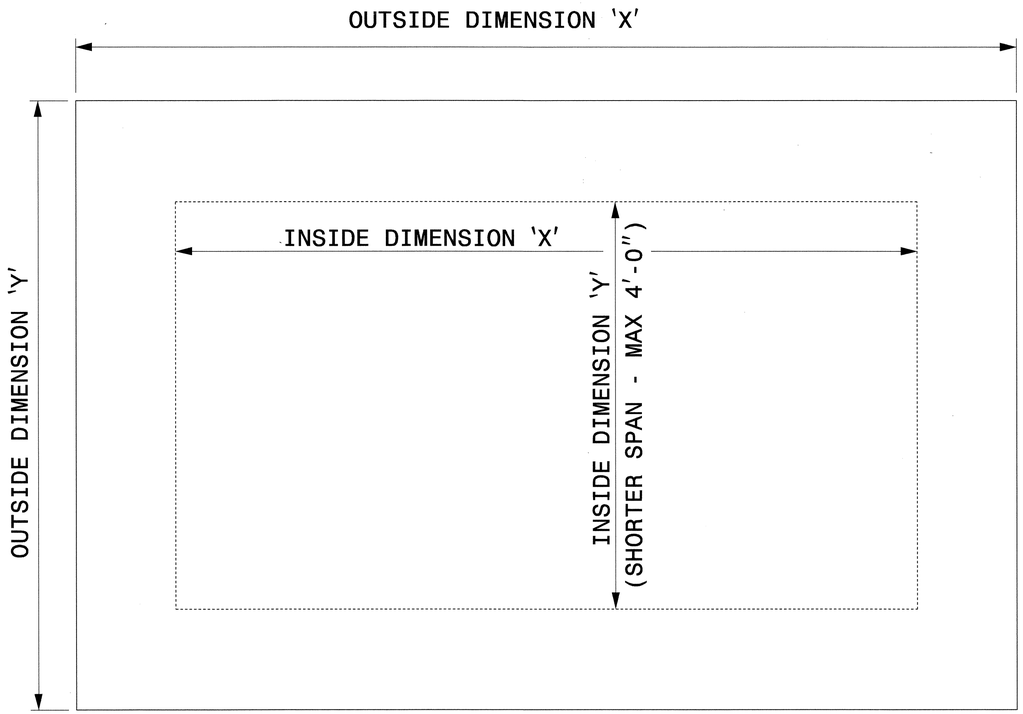
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

STANDARD DRAWING NO. 1801.02

STANDARD
TEMPORARY WALL
Sheet 3 of 3

DATE: 11-19-13

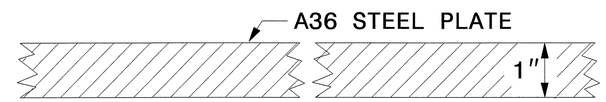
PROJECT REFERENCE NO.	SHEET NO.
U-4432	2-L



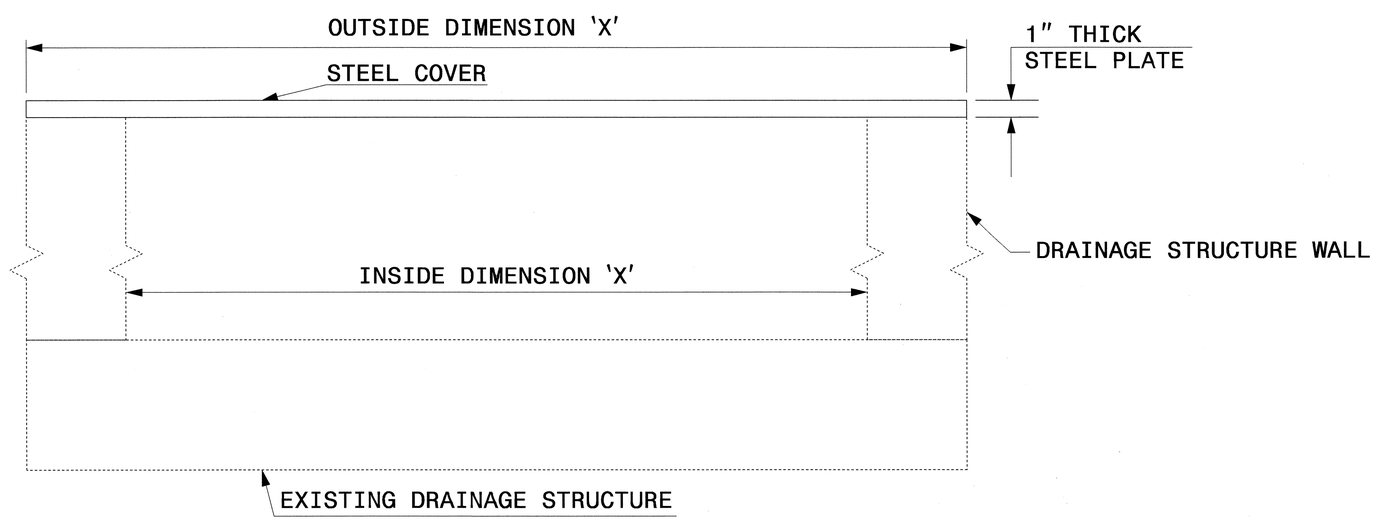
PLAN VIEWS

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
12/3/13

CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 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: 11/6/13
FILE SPEC.: efic:/usr/details/metric/stand/stlcvr2.dgn

*** SYSTEM ***
*** TIME ***
*** DESIGN ***

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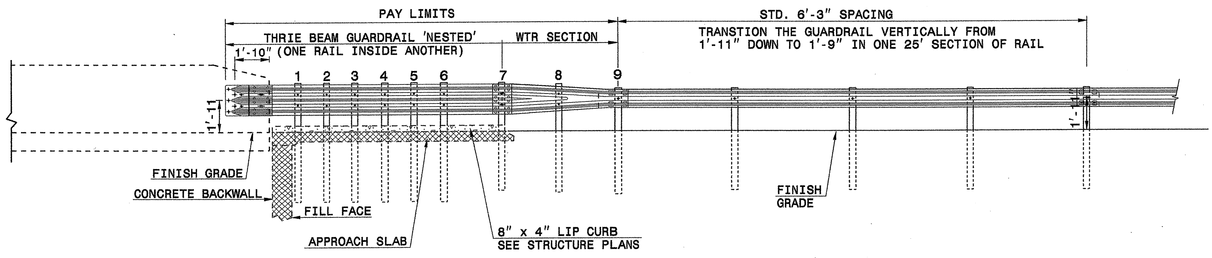
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

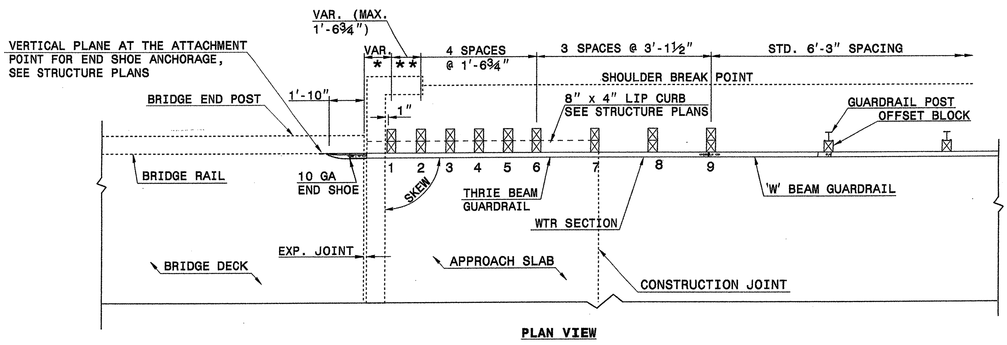
ENGLISH DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO
RAIL ON BRIDGE - SUB REGIONAL TIER

SHEET 2 OF 7
862d03



ELEVATION

NOTE:
**POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11½" IF CONCRETE BACKWALL IS NOT PRESENT.
-SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
-MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
-LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
-SEE SHEET 5 FOR POST SECTIONS 1 THRU 9.



PLAN VIEW

GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER

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

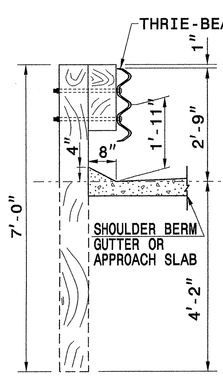
ENGLISH DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO
RAIL ON BRIDGE - SUB REGIONAL TIER

SHEET 2 OF 7
862d03

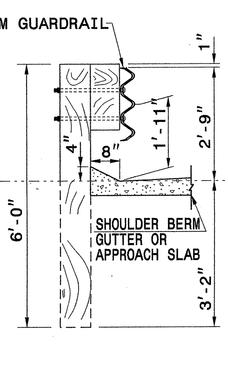
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

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

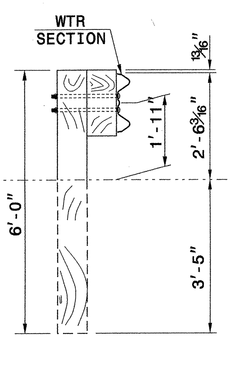
SHEET 3 OF 7
862d03



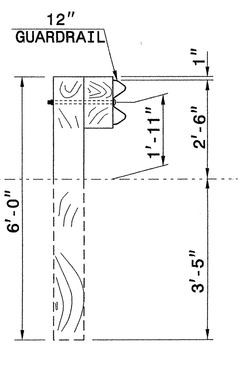
SECTION OF THRIE BEAM POSTS 1 THRU 6



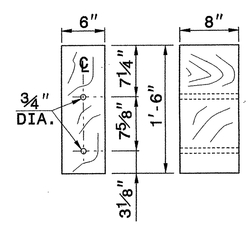
SECTION OF THRIE BEAM POST 7



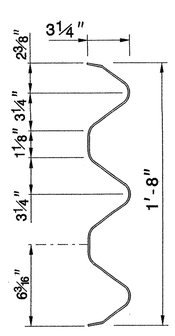
SECTION OF WTR BEAM POST 8



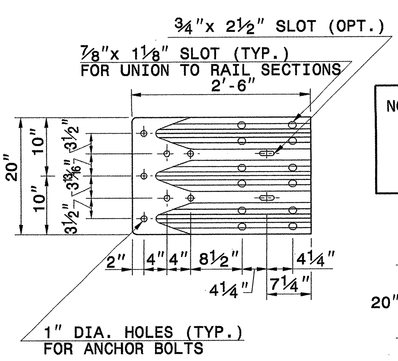
SECTION OF 'W' BEAM POST 9



THRIE BEAM OFFSET BLOCK

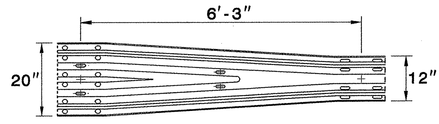


THRIE-BEAM SECTION

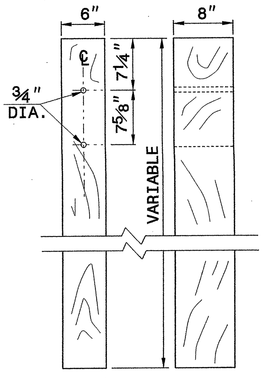


END SHOE

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



WTR SECTION
ELEVATION VIEW



THRIE BEAM LINE POST

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

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

SHEET 3 OF 7
862d03

CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

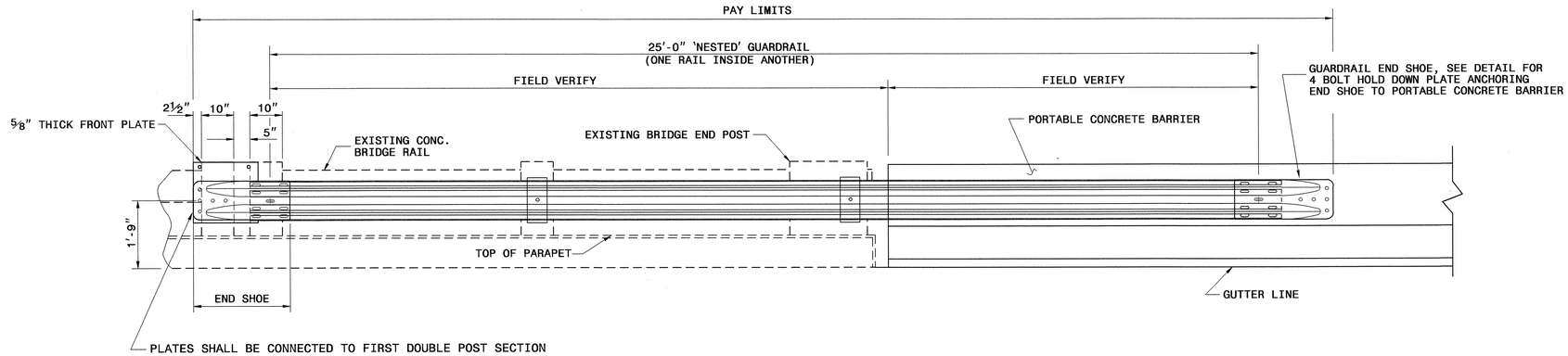
ORIGINAL BY: J. HOWERTON DATE: 06-22-12
MODIFIED BY: DATE:
CHECKED BY: DATE: 11/3/12
FILE SPEC.:

SEE TITLE BLOCK

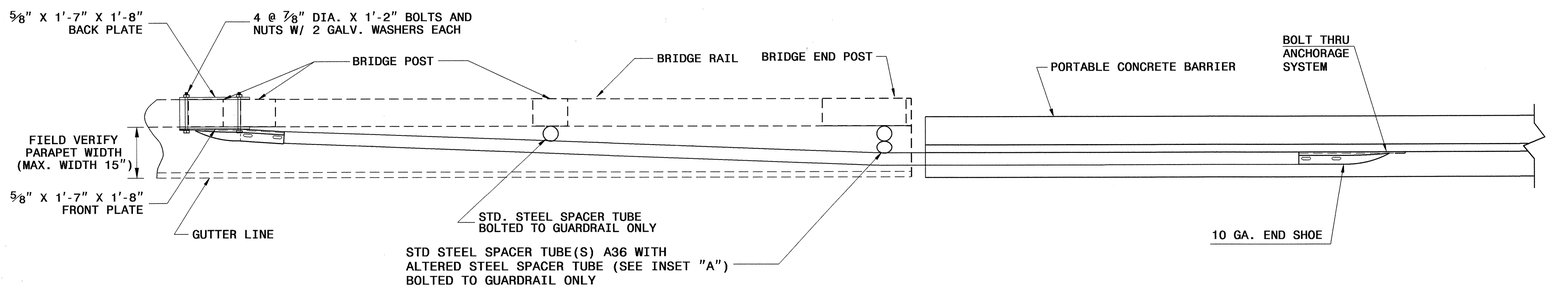
NORTH CAROLINA PROFESSIONAL SEAL 022686 ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
12/3/13

PROJECT REFERENCE NO.	SHEET NO.
U-4432	2-M

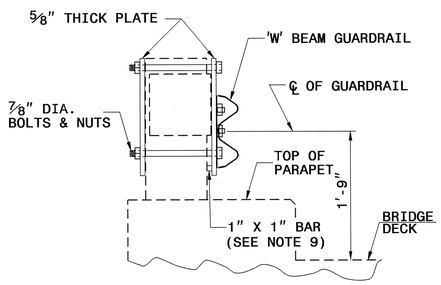
PROJECT REFERENCE NO.	SHEET NO.
U-4432	2-N



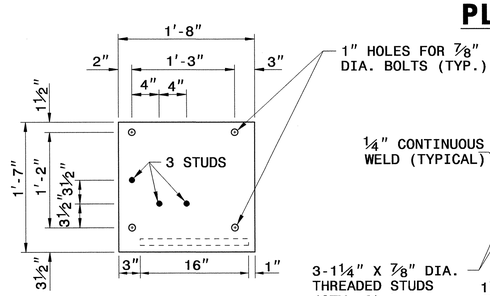
ELEVATION VIEW



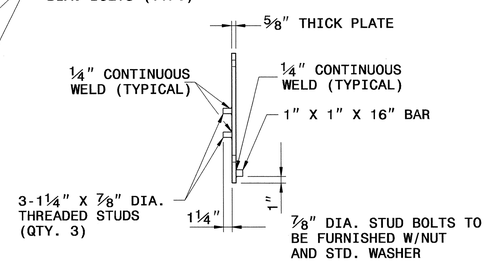
PLAN VIEW



SECTION VIEW

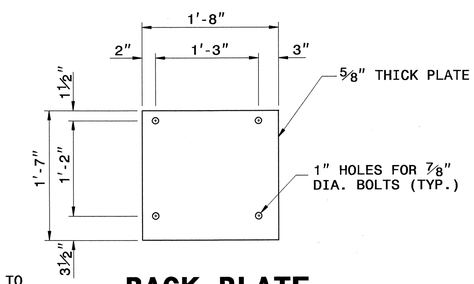


FRONT VIEW



SIDE VIEW

STUDS MAY BE ADJUSTED TO MEET FIELD CONDITIONS



BACK PLATE

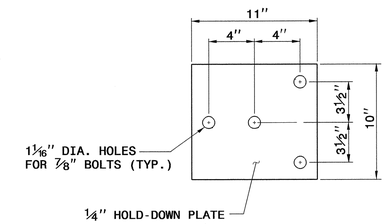
FRONT PLATE

NOTES FOR 4 BOLT HOLD DOWN PLATE

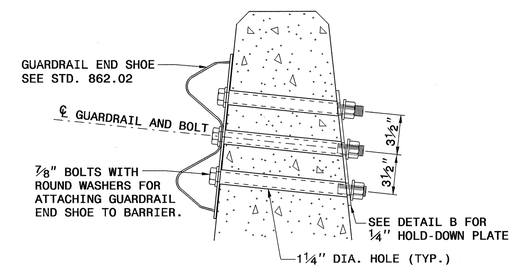
THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A ¼" HOLD DOWN PLATE AND 4 - 7/8" DIA. BOLTS WITH NUTS AND WASHERS.

THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL. THE 1¼" DIA. HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

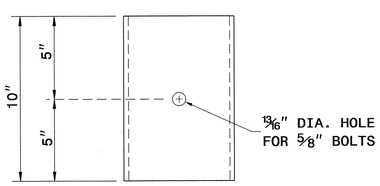


4 BOLT HOLD DOWN PLATE

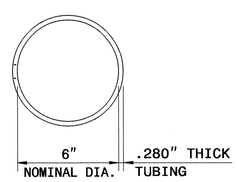


PART SECTION OF BARRIER OR RAIL

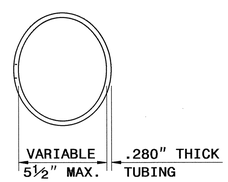
THRU END SHOE SECTION AND 4 BOLT HOLD DOWN PLATE



FRONT VIEW



PLAN VIEW



PLAN VIEW INSET "A"

STEEL SPACER TUBE

GENERAL NOTES:

1. USE NUTS, BOLTS, AND WASHERS CONFORMING TO THE REQUIREMENTS OF A.S.T.M. A-307 AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF STAND. SPECS.
2. TAP NUTS FOR THE 7/8" DIA. STUDS AND BOLTS AFTER GALVANIZING SEE A.S.T.M. A-563.
3. USE PLATES AND TUBES CONFORMING TO THE REQUIREMENTS OF A.S.T.M. A-36 AND GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH SECTION 1076 OF STAND. SPECS.
4. ADDITIONAL FIELD HOLES MAY BE DRILLED IN STEEL RAIL AS DIRECTED BY THE ENGINEER.
5. INSTALL FACE OF GUARDRAIL AS NEAR AS POSSIBLE TO PLUMB WITH THE PARAPET FACE AT BRIDGE END POST SPACER TUBE LOCATION BY USING STANDARD OR ALTERED SPACER TUBES OR A COMBINATION THEREOF OR AS DIRECTED BY THE ENGINEER. FOR VERY SMALL PARAPET WIDTHS, GUARDRAIL MAY BE INSTALLED AGAINST BRIDGE RAIL WITHOUT SPACER TUBES.
6. DO NOT DRILL BRIDGE RAIL IN ORDER TO INSTALL GUARDRAIL ANCHOR UNIT.
7. KEEP TOE OF PORTABLE CONCRETE BARRIER FLUSH WITH FACE OF PARAPET.
8. ATTACH 1" X 1" BAR AND THREADED STUDS TO PLATE WITH ¼" WELDS ALL AROUND.
9. 1" X 1" BAR MAY NOT BE NEEDED ON BRIDGE RAILS WHERE FACE OF RAIL DOES NOT PROJECT BEYOND FACE OF POST.

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER
12/3/13

CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

TEMPORARY ANCHOR UNIT TYPE W-BEAM

ORIGINAL BY:	E.E. WARD	DATE:	4-03
MODIFIED BY:	E.E. WARD	DATE:	6-04
CHECKED BY:		DATE:	11/8/13
FILE SPEC.:	:\usr\details\stand\862stds\and.dgn		

PROJECT REFERENCE NO.	SHEET NO.
U-4432	2-0

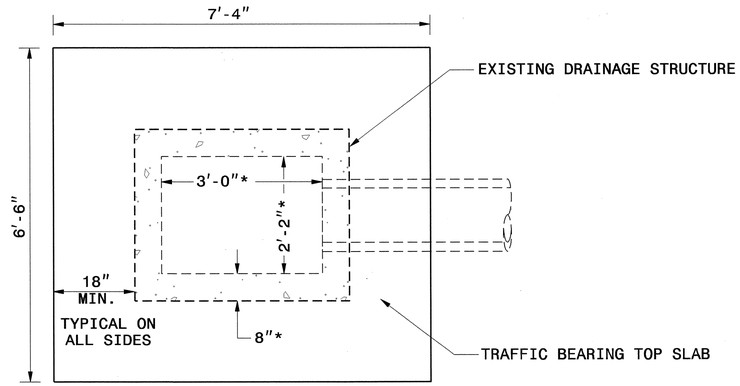
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR

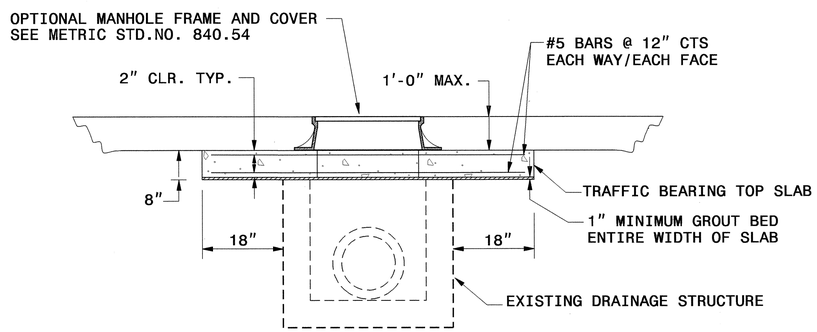
PRECAST TRAFFIC BEARING TOP SLAB FOR EXISTING BOXES

SHEET 1 OF 1

trficbearslab



PLAN



ELEVATION

BILL OF MATERIAL

TRAFFIC BEARING TOP SLAB

BAR	NO.	SIZE	LENGTH	WEIGHT
H1	8	#5	6'-6"	54.2
H2	7	#5	7'-4"	53.5
TOTAL REINF. STEEL (lbs.)				107.7
CLASS "AA" CONC. (cu.yds.)				1.2

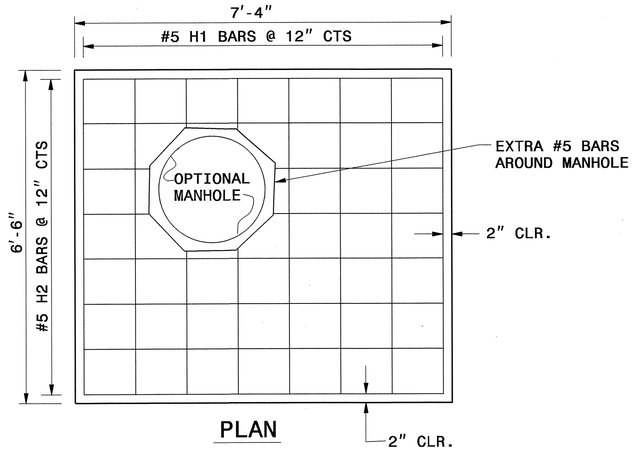
GENERAL NOTES:

QUANTIES FOR TRAFFIC BEARING TOP SLAB ARE CALCULATED FOR A TYPICAL SIZE CATCH BASIN HOUSING 12" THROUGH 36" PIPES

USE 4000 PSI COMPRESSIVE STRENGTH CONCRETE.

ADJUST QUANTIES FOR MANHOLE CONSTRUCTION

* DIMENSIONS MAY VARY AND SHOULD BE FIELD CONFIRMED



PLAN

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

ENGLISH DETAIL DRAWING FOR

PRECAST TRAFFIC BEARING TOP SLAB FOR EXISTING BOXES

SHEET 1 OF 1

trficbearslab

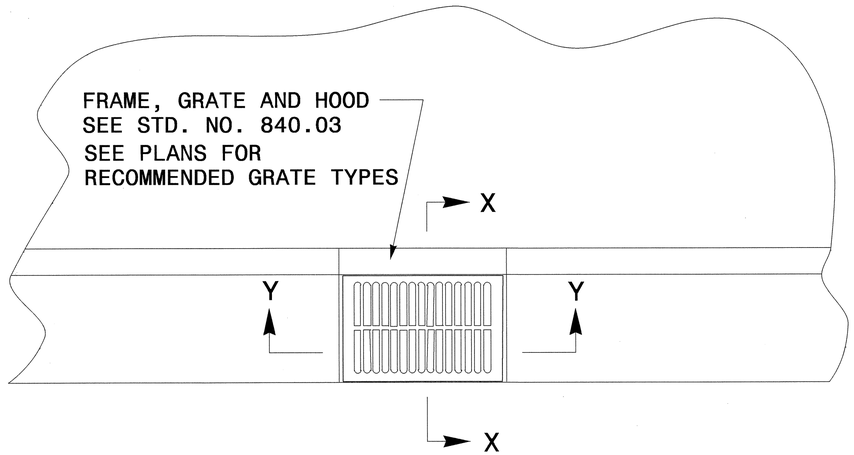
NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER
12/23/13

CONTRACT STANDARDS & DEVELOPMENT UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-707-6950 FAX 919-250-4119

SEE PLATE FOR TITLE

ORIGINAL BY: E.E. WARD DATE: 11-98
MODIFIED BY: cnbritt DATE: 10-24-05
CHECKED BY: DATE: 11/2/13
FILE SPEC.: detail/nbritt/english/hydro/trafficbearslab.dgn

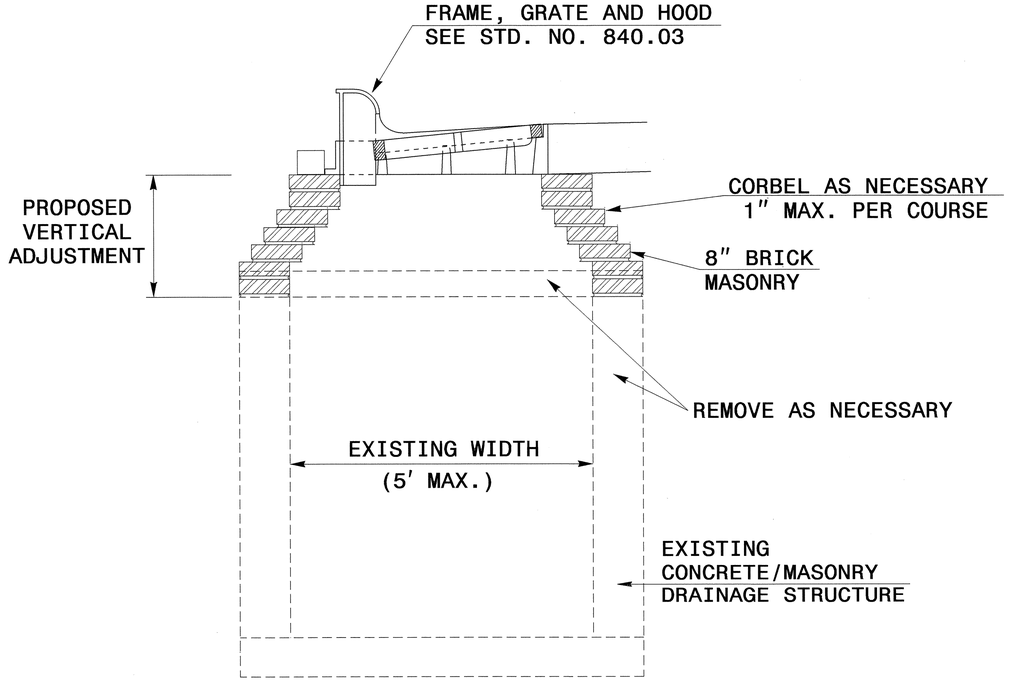
PROJECT REFERENCE NO.	SHEET NO.
U-4432	2-P



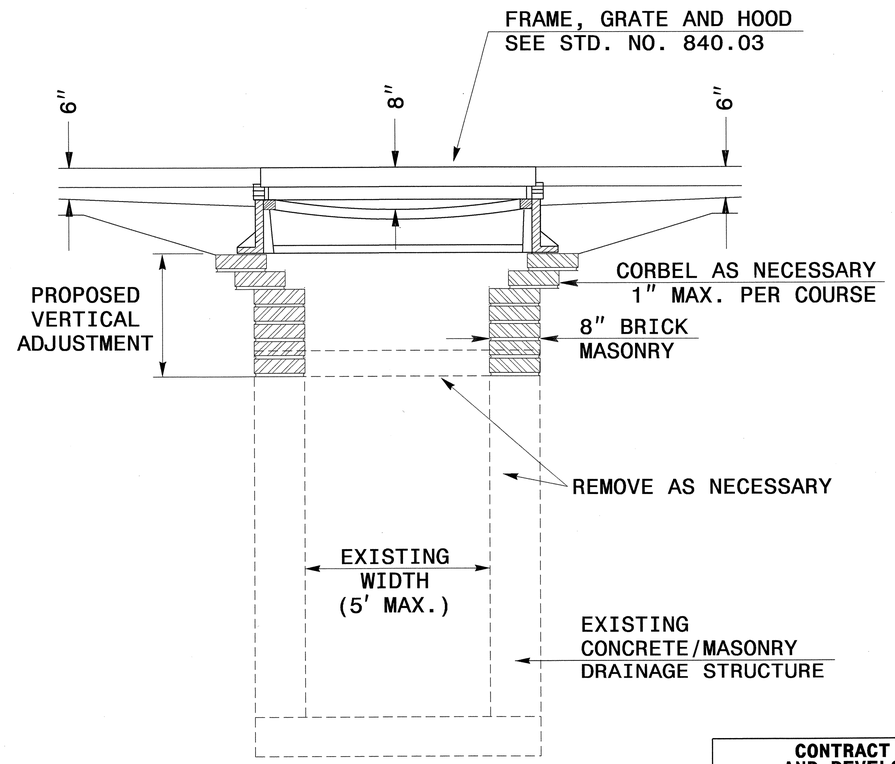
PLAN

GENERAL NOTES:

- THE ROADWAY PLANS INDICATE STRUCTURES TO BE CONVERTED.
- AFTER REMOVAL, STORE GRATES AND FRAMES AS DIRECTED BY THE ENGINEER.
- 4" SOLID CLAY BRICK, JUMBO BRICK, CONCRETE, OR 4" SOLID CONCRETE BLOCK MAY BE USED FOR VERTICAL ADJUSTMENT OF THE STRUCTURE.
- CONVERT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.



SECTION X-X



SECTION Y-Y

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOHN S. HOUTON
12/3/13

CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

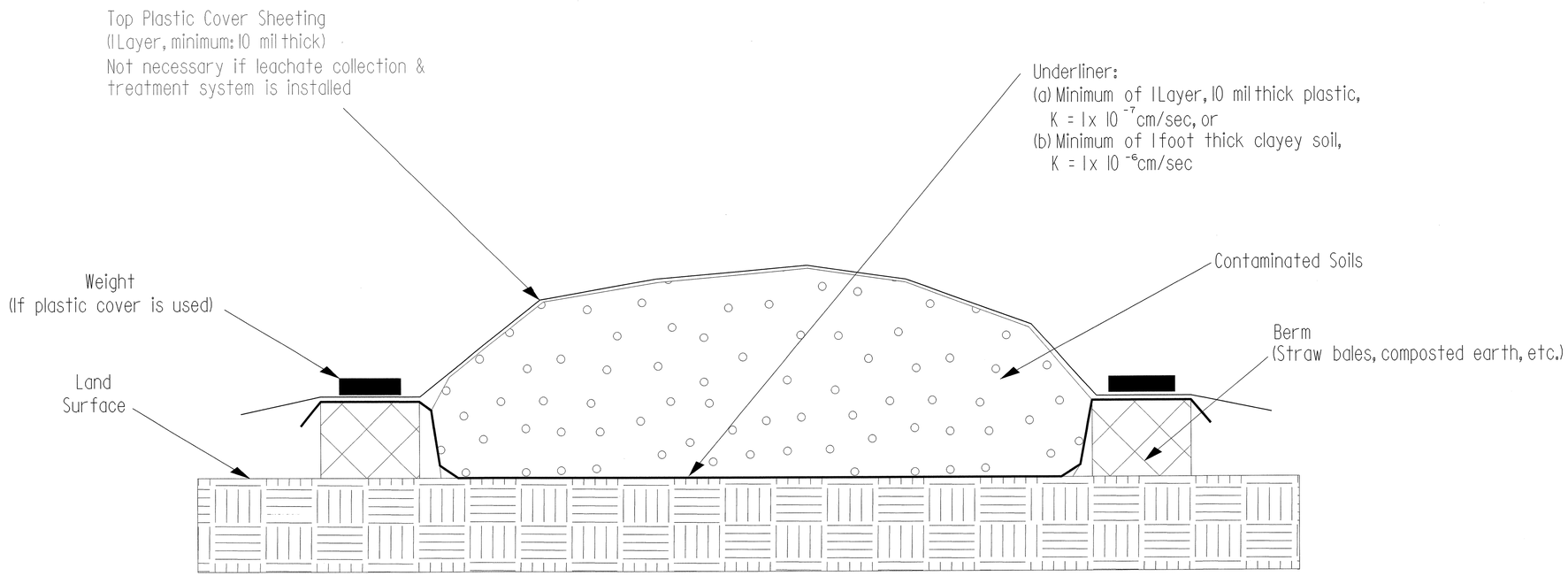
CONVERSION OF DROP INLET OR JUNCTION BOX TO CATCH BASIN

ORIGINAL BY: E.E. WARD DATE: 11-97
MODIFIED BY: DATE:
CHECKED BY: DATE: 11/22/13
FILE SPEC.: D537:usr\details\stand\jbtocb!.dgn

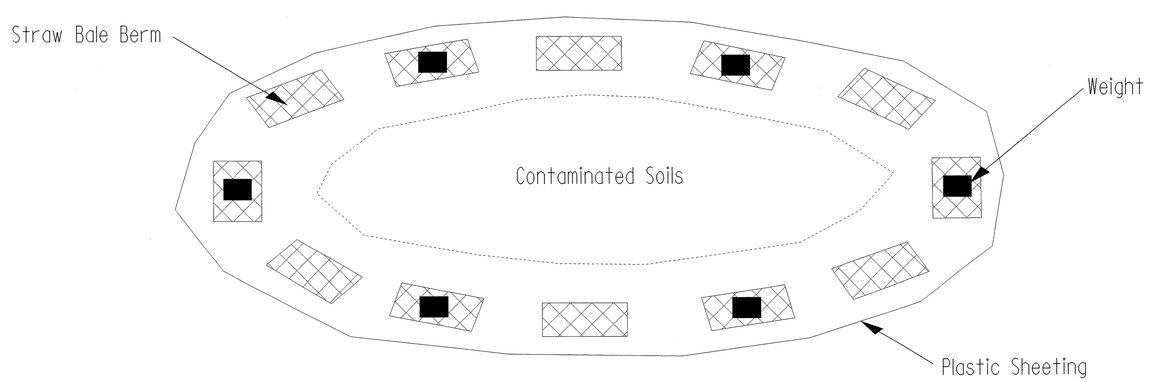
PROJECT REFERENCE NO.	SHEET NO.
U-4432	2-Q

Detail for Temporary Containment of Contaminated Soil

Cross-Section View



Map View



NOTE:
The Contractor shall stockpile all contaminated soil excavated from a property in a location within the property boundaries of the source parcel. If the volume of contaminated material exceeds available space on site, the Contractor shall obtain a permit from the NCDENR UST Section for off-site temporary storage.

8/17/99

06-FEB-2014 15:44
ATOSCPENY
R:\Bridge Proj\U-4432_Rdy_typ.dgn
$$$$USER$$NAME$$$$

COMPUTED BY:	HLE	DATE:	4/29/2014
CHECKED BY:	NKB	DATE:	4/29/2014

PROJECT NO.	SHEET NO.
U-4432	3-A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

	Station	Station	Uncl. Excav.	Embank. +%	Borrow	Waste
-L- LT	19+25.00	27+50.00	114	160	46	
-L- CL	28+25.00	35+25.00	30	5,095	5,065	
-L- LT	35+25.00	38+75.00	6	971	965	
-L- RT	19+25.00	27+50.00	59	434	375	
-L- RT	35+00.00	38+75.00	23	700	677	
-Y2- LT	11+25.00	14+00.00	5,326			5,326
-Y2- RT	10+75.00	13+75.00	6,467			6,467
-DR1- CL	11+25.00	14+50.00	7,828			7,828
	SUBTOTALS: 1		19,853	7,360	7,128	19,621
-L- LT	38+75.00	50+75.00	329			329
-L- RT	38+75.00	50+50.00	637	7		630
-Y3-	10+15.00	11+75.00	200	2		198
-Y3-	12+75.00	13+25.00	21	12		9
-Y5-	11+00.00	11+50.00	16			16
Y5-	12+50.00	15+50.00	254			254
	SUBTOTALS: 2		1,457	21		1,436
-L- CL	50+75.00	56+50.00	4,147	88		4,059
-L- LT	56+50.00	60+00.00	798	46		752
-L- CL	60+00.00	69+00.00	1,054	268		786
-L- LT	56+50.00	60+00.00	837	362		475
-L- RT	60+00.00	69+00.00	591	673	82	
-Y6-	13+25.00	14+25.00	155	4		151
-Y8-	13+50.00	21+75.00	219	3,152	2,933	
-Y9-	15+50.00	18+02.00	194	236	42	
	SUBTOTALS: 3		7,995	4,829	3,057	6,223
PROJECT TOTALS:			29,305	12,210	10,185	27,280
LOSS DUE TO CLEAR. GRUB			-4,100			-4,100
WASTE IN LIEU OF BORROW					-10,185	-10,185
PROJECT TOTALS			25,205	12,210	0	12,995
REPLACE TOP SOIL BORROW PITS						
GRAND TOTALS:			25,205			
SAY:			25,300			

"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

SUMMARY OF EXISTING ASPHALT PAVEMENT REMOVAL

LINE	Station	Station	LOC LT/RT/CL	YD^2
-L-	26+75.00	27+87.89	RT.	280.9
-L-	34+50.00	37+00.00	LT.	157.9
-L-	33+82.00	36+05.00	RT.	664.3
-L-	54+58.00	60+78.00	RT.	1,357.3
-L-	60+09.00	60+38.00	RT.	5.4
-Y6-	13+50.00	14+53.03	CL	414.1
-L-	68+68.60	69+04.46	RT.	108.9
Exist. Tryon Rd.			CL	2,787.1
-LDET3-	34+50.00	36+14.90	CL	136.4
-L- TEMP	26+75.04	27+65.95	RT.	54.3
			TOTAL:	5,966.6
			SAY:	5,970.0

PAVEMENT STRUCTURE VOLUME	=	3653	CUBIC YARDS	
DRAINAGE DITCH EXCAVATION	=	20	CUBIC YARDS	
SHOULDER BORROW	=	90	CUBIC YARDS	
UNDERCUT EXCAVATION	=	2250	CUBIC YARDS	(Contingency Item)
SHALLOW UNDERCUT EXCAVATION	=	1000	CUBIC YARDS	(Contingency Item)
CLASS IV SUBGRADE STABILIZATION	=	1950	CUBIC YARDS	(Backfill material to replace Shallow Undercut Excavation)
SELECT GRANULAR MATERIAL	=	2250	CUBIC YARDS	(Contingency Item, Class II or III)
GEOTEXTILE FOR SOIL STABILIZATION	=	5250	SQUARE YARDS	(Contingency Item)
SUBDRAIN EXCAVATION	=	112	CUBIC YARDS	(Contingency Item)
SUBDRAIN FINE AGGREGATE	=	84	CUBIC YARDS	(Contingency Item)
6" PERFORATED SUBDRAIN PIPE	=	500	LIN. FT.	(Contingency Item)
6" OUTLET PIPE	=	6	LIN. FT.	(Contingency Item)
SUBDRAIN PIPE OUTLET	=	1	EACH	(Contingency Item)

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

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.

SUMMARY OF MILLING ASPHALT PAVEMENT 1.5" DEPTH

LINE	Station	Station	LOC LT/RT/CL	YD^2
-L-	39+25.00	50+17.76	LT	3,636.6
-L-	39+25.00	50+17.76	RT	3,371.8
-L-	50+17.76	51+50.00	LT	584.2
-L-	50+17.76	53+42.11	RT	1,399.2
-Y5-	12+70.00	15+15.00	RT	672.2
-Y5-	15+35.00	16+10.00	CL	897.9
-Y8-	9+37.23	13+75.00	CL	2,074.4
			TOTAL:	12,636.3
			SAY:	12,640.0

SUMMARY OF MILLING ASPHALT PAVEMENT 0 TO 1.5" DEPTH

LINE	Station	Station	LOC LT/RT/CL	YD^2
-L1-	19+25.00	20+50.02	CL	302.9
-L1-	20+50.02	25+76.07	RT	715.6
-L-	23+88.69	24+57.38	LT	181.7
-L-	38+52.76	39+25.00	CL	580.0
-Y3-	10+15.00	11+75.00	CL	531.0
-Y3-	12+76.63	13+50.00	CL	278.8
-L-	51+50.00	53+42.11	LT	840.6
-L-	62+40.00	63+80.00	CL	301.0
-L-	67+90.00	68+95.80	CL	680.1
-Y8-	13+75.00	15+28.42	CL	404.9
-Y6-	13+25.00	13+50.00	CL	98.8
-Y6-	15+57.31	15+66.61	CL	24.1
-Y5-	11+22.94	11+69.08	CL	390.9
-Y5-	12+49.05	15+35.00	LT	461.9
-Y5-	15+15.00	15+35.00	RT	64.0
-Y5-	12+49.05	12+75.00	RT	114.2
-Y9-	15+75.00	16+00.00	CL	58.3
-Y9-	18+02.00	18+10.00	CL	20.2
			TOTAL:	6,049.0
			SAY:	6,050.0

GUARDRAIL SUMMARY

LINE	BEG. STA.	END STA.	LOC.	LENGTH STRAIGHT	LENGTH SHOP CURVED	LENGTH DOUBLE FACED	WARRANT POINT APPR. END	WARRANT POINT TRAIL. END	"N" DIST FROM E.O.L.	TOTAL SHLDR WIDTH	FLAIR LENGTH APPR. END	FLAIR LENGTH TRAIL. END	W APPR. END	W TRAIL. END	ANCHORS III	ANCHORS XI	ANCHORS GRAU 350	ANCHORS TYPE W-BEAM	ANCHORS AT-1	ANCHORS CAT-1	ANCHORS VI MOD	IMP. ATTEN. TYPE 350 EA	IMP. ATTEN. TYPE 350 G	IMP. ATTEN. TYPE 350 NG	REMOVE EXISTING GRDRAIL	TERMINAL END SECTION	REMARKS
-L-	25+12.04	27+36.88	RT.	225.00			X		7.5	N/A	50		1		1		1										
-L-	28+73.71	30+98.54	LT.	225.00			X		7.5	N/A		50	1		1		1										
-DR1-	12+34.19	15+43.21	LT.	325.00															2								
-L-	41+87.50	42+00.00	LT.	12.50																1					109.9		TIE TO EXISTING GUARDRAIL
-L-	68+90		RT	12.50																						2	TERMINAL END SECTION
-L-	27+61.67		RT.															1									TEMP. ANCHOR SEE SHEETS 2-N & TMP-4
			SUBTOTAL	800.00																							
		LESS DEDUCTION FOR ANCHORS		-156.25																							
			PROJECT TOTAL	643.75											2		2	1	2	1					109.9	2	
			SAY	650.0																					110.0		

ADDITIONAL POSTS = 5 EA

TYPE GRAU TYPE III	2	EA @	18.75	FT.	=	37.50
TYPE GRAU TYPE 350	2	EA @	50.00	FT.	=	100.00
TYPE GRAU TYPE AT-1	2	EA @	6.25	FT.	=	12.50
TYPE GRAU TYPE CAT-1	1	EA @	6.25	FT.	=	6.25
DEDUCTION FOR GUARDRAIL ANCHOR				FT.	=	156.25

RD253065

COMPUTED BY: HERMAN L EDWARDS DATE: 4/10/2012

CHECKED BY: C. S. MOZINGO DATE: 9/19/2012

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-4432	3-B

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

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

STATION	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	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109
22+84.72 -L-	LT	0401		370.38	367.38																						
		0401	0422		367.38	366.54																					
22+35.00 -L-	RT	0400	0404		370.30	366.64																					
23+89.97 -L-	RT	0404		370.2	366.64																						
		0404	0403		366.64	366.81																					
23+90.00 -L-	RT	0403		369.98	366.81																						
		0404	0406		366.64	365.15																					
25+50.75 -L-	RT	0406		368.36	365.15																						
		0406	0408			362.60																					
25+51.51 -L-	RT	0405		368.33		365.10																					
		0405	0406		365.10	365.15																					
27+11.46 -L-	RT	0408		367.1	362.60																						
		0408	0407		362.60	362.00																					
27+12.82 -L-	RT	0407		366.02	362.00																						
		0407	0412		362.00	340.64				88																	
14+50.79 -DR1-	RT	0412		343.74	340.64																						
		0412	0424		340.64	336.25																52					
14+94.91 -DR1-	LT	0410		344.20	342.03																						
		0410	0411		342.03	340.97			36																		
14+76.77 -DR1-	RT	0411		343.97	340.97																						
		0411	0412		340.97	340.89			24																		
26+46.82 -L-	LT	0409		365.07	362.32																						
		0409	0413		362.32	342.77															84						
13+30.97 -DR1-	LT	0414		346.89	344.14																						
		0414	0413		344.14	342.77			52																		
13+30.97 -DR1-	LT	0413		345.52	342.77																						
		0413	0423		342.77	336.97															40						
29+15.00 -L-	LT	0415		364.17	361.00																						
		0415	0416		361.00	359.18																					
29+15.00 -L-	LT	0416		363.43	359.18																						
		0416	0425		359.18	359.05																					
29+50.00 -L	RT	0425		364.08	359.05																						
		0425	0417		359.05	358.95																					
29+50.00 -L-	RT	0417		363.43		358.95																					
		0417	0421		358.95	353.47																					
31+25.00 -L-	LT	0418		358.90	354.65																						
		0418	0420		354.65	353.70																					
31+50.00 -L-	LT	0419		357.11	354.86																						
		0419	0420		354.86	354.76			16																		
31+50.00 -L-	LT	0420		358.27	353.70																						
		0420	0421		353.70	353.47																					
31+50.00 -L-	RT	0421		357.75	353.47																						
SHEET TOTALS									128	88											124	52					

STATION	FROM	TO	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	** " R.C. PIPE (CLASS V)	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.
22+84.72 -L-	0401																								
	0401	0422		64																					
22+35.00 -L-	0400	0404										156													
23+89.97 -L-	0404																								
	0404	0403		16																					
23+90.00 -L-	0403																								
	0404	0406										160													
25+50.75 -L-	0406																								
	0406	0408										152													
25+51.51 -L-	0405																								
	0405	0406		20																					
27+11.46 -L-	0408																								
	0408	0407		20																					
27+12.82 -L-	0407																								
	0407	0412																							
14+50.79 -DR1-	0412																								
	0412	0424																							
14+94.91 -DR1-	0410																								
	0410	0411																							
14+76.77 -DR1-	0411																								
	0411	0412																							
26+46.82 -L-	0409																								
	0409	0413																							
13+30.97 -DR1-	0414																								
	0414	0413																							
13+30.97 -DR1-	0413																								
	0413	0423																							
29+15.00 -L-	0415																								
	0415	0416										44													
29+15.00 -L-	0416																								
	0416	0425										44													
29+50.00 -L	0425																								
	0425	0417										32													
29+50.00 -L-	0417																								
	0417	0421										200													
31+25.00 -L-	0418																								
	0418	0420										24													
31+50.00 -L-	0419																								
	0419	0420																							
31+50.00 -L-	0420																								
	0420	0421										76													
31+50.00 -L-	0421																								
SHEET TOTALS				120								888													

STATION	FROM	TO	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND 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	CONVERT DI TO CB (SEE DETAIL 2-P)	CONVERT CB TO JB (SEE DETAIL 2-O)	O.T.C.B. STD 840.04 OR 840.05	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	G.D.I (N.S.) FRAME WITH TWO GRATES STD. 840.29	T. B. D.I. STD. 840.35 (TRAFFIC BEARING)	MANHOLE FRAME AND COVER STD. 840.54	15" FLARED END SECTION	CS PIPE ELBOWS NO. & SIZE	FLOWABLE FILL, C. Y.	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
22+84.72 -L-	0401		1												1					1										2GI TYPE B TB (TRAFFIC BEARING)
	0401	0422																												
22+35.00 -L-	0400	0404																							1					15 " FES
23+89.97 -L-	0404		1			1		1																						CB
	0404	0403																												
23+90.00 -L-	0403		1																				1	1							2GI TYPE B TB (TRAFFIC BEARING)
	0404	0406																												
25+50.75 -L-	0406		1			1		1																						CB
	0406	0408																												
25+51.51 -L-	0405		1																				1	1							2GI TYPE B TB (TRAFFIC BEARING)
	0405	0406																												
27+11.46 -L-	0408		1			1		1																					51.4	CB REMOVE 18"RCP (27+26 -L-)
	0408	0407																											38.4	REMOVE 15" RCP (27+24 -L)
27+12.82 -L-	0407		1												1					1										2GI TYPE B
	0407	0412																												
14+50.79 -DR1-	0412		1												1					1										2GI TYPE B
	0412	0424																								2 @ 18"			65.0	REMOVE 18 HDPE (27+26 -DR1-)
14+94.91 -DR1-	0410		1												1					1										2GI TYPE B (MODIFIED FALSE SUMP)
	0410	0411																												
14+76.77 -DR1-	0411		1												1					1										2GI TYPE B
	0411	0412																												
26+46.82 -L-	0409		1												1					1										2GI TYPE B
	0409	0413																								2 @ 15"				
13+30.97 -DR1-	0414		1												1					1										2GI TYPE B (MODIFIED FALSE SUMP)
	0414	0413																												
13+30.97 -DR1-	0413		1												1					1										2GI TYPE B
	0413	0423																								2 @ 15"				
29+15.00 -L-	0415		1			1			1																					CB
	0415	0416																												
29+15.00 -L-	0416		1			1			1																					CB
	0416	0425																												
29+50.00 -L	0425		1							1		1	1																	DI
	0425	0417																												
29+50.00 -L-	0417		1			1		1																						CB
	0417	0421																												
31+25.00 -L-	0418		1			1			1																					CB
	0418	0420																												
31+50.00 -L-	0419		1									1	1																	DI
	0419	0420																												
31+50.00 -L-	0420		1			1			1																					CB
	0420	0421																												
31+50.00 -L-	0421		1			1		1																						CB
SHEET TOTALS			21			9		5	4	1		2	2		8					8		2	2		1	4 @ 15" 2 @ 18"			154.8	

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.)	(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

RD253065

COMPUTED BY: HERMAN L EDWARDS DATE: 4/10/2012

CHECKED BY: C. S. MOZINGO DATE: 9/19/2012

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-4432	3-C

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & 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
		0421	0502		353.47	348.77													
33+99.95 -L-	RT	0501		353.35	350.35														
		0501	0502		350.35	348.77													
34+00.00 -L-	RT	0502		351.77	348.77														
		0502	0503		348.77	347.9													
34+11.23 -L-	RT	0503		351.2	347.9														
		0503	0511		347.9	337.54				104									
36+50.00 -L-	RT	0504		350.33	347.33														
		0504	0505		347.33	344.23													
36+50.12 -L-	RT	0505		348.48	344.23														
		0505	0508		344.23	338.45													
37+85.00 -L-	LT	0506		346.51	343.34														
		0506	0507		343.34	342.45													
38+10.04 -L-	LT	0507		345.62	342.45														
		0507	0508		342.45	338.45													
38+15.05 -L-	RT	0508		343.45		338.45													
		0508	0512		338.45	332.2			32										
13+13.70 -Y3-	RT	0512			338.00	332.2													
11+13.91 -Y3-	RT	0510		344.46	341.46														
		0510	509		341.46	341.01													
41+51 -L-	RT	0520				331.42													
42+94 -L-	RT	0519				330.63													
53+15.00 -L-	LT	0606	0603		341.96	341.11													
53+15.00 -L-	LT	0603		344.11	341.11														
		0603	0604		341.11	339.75													
51+60.60 -L-	LT	0605	0604		339.88	339.75													
51+60.60 -L-	LT	0604		343.00	339.75														
		0604	0609		339.75	339.64													
11+38.90 -Y5-	LT	0609		344.45	339.64														
15+05 -Y5-	LT	0613		342.2		337.75													
		0613	0614		337.75	336.16													
15+07 -Y5-	RT	0614		341.23															
58+50.00 -L-	LT	0601		343.06	340.06														
		0601	0602		340.06	338.33													
58+50.00 -L-	LT	0602		341.33	338.33														
		0602	0711		338.33	337.6													
59+60.93 -L-	LT	0711		340.6	337.6														
		0711	0707		337.6	337.17													
59+60.90 -L-	RT	0707		342.4	337.17														
		0707	0723		337.17	336													
SHEET TOTAL									32	104									

STATION	FROM	TO	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"
	0421	0502																		248						
33+99.95 -L-	0501																									
	0501	0502																		52						
34+00.00 -L-	0502																									
	0502	0503																		68						
34+11.23 -L-	0503																									
	0503	0511																								
36+50.00 -L-	0504																									
	0504	0505																		60						
36+50.12 -L-	0505																									
	0505	0508																		164						
37+85.00 -L-	0506																									
	0506	0507																		24						
38+10.04 -L-	0507																									
	0507	0508																		60						
38+15.05 -L-	0508																									
	0508	0512																								
13+13.70 -Y3-	0512																									
11+13.91 -Y3-	0510																									
	0510	509																		8						
41+51 -L-	0520																									
42+94 -L-	0519																									
53+15.00 -L-	0606	0603																		12						
53+15.00 -L-	0603																									
	0603	0604																		148						
51+60.60 -L-	0605	0604																		16						
51+60.60 -L-	0604																									
	0604	0609																			36					
11+38.90 -Y5-	0609																									
15+05 -Y5-	0613																									
	0613	0614																			16					
15+07 -Y5-	0614																									
58+50.00 -L-	0601																									
	0601	0602																		44						
58+50.00 -L-	0602																									
	0602	0711																		108						
59+60.93 -L-	0711																									
	0711	0707																		44						
59+60.90 -L-	0707																									
	0707	0723									84															
SHEET TOTAL												84								1056	52					

STATION	FROM	TO	** " R.C. PIPE (CLASS V)	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS 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	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND 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	CONVERT DI TO CB (SEE DETAIL 2-P)	CONVERT CB TO JB (SEE DETAIL 2-O)	O.T.C.B. STD 840.04 OR 840.05	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	G.D.I (N.S.) FRAME WITH TWO GRATES STD. 840.29	T. B. D.I. STD. 840.35 (TRAFFIC BEARING)	MANHOLE FRAME AND COVER STD. 840.54	15" FLARED END SECTION	CS PIPE ELBOWS NO. & SIZE	FLOWABLE FILL, C.Y.	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
	0421	0502																																			
33+99.95 -L-	0501									1			1		1			1																			CB
	0501	0502																																			
34+00.00 -L-	0502									1			1		1																						CB
	0502	0503																																			
34+11.23 -L-	0503									1			1		1																						CB, REMOVE EXIST. DI
	0503	0511																																		74.4	REMOVE 18" RCP
36+50.00 -L-	0504									1			1		1			1																			CB
	0504	0505																																			
36+50.12 -L-	0505									1			1		1																						CB
	0505	0508																																			
37+85.00 -L-	0506									1							1		1	1																	DI
	0506	0507																																			
38+10.04 -L-	0507									1							1		1	1																	DI
	0507	0508																																			
38+15.05 -L-	0508									1			1		1																						CB
	0508	0512																																			
13+13.70 -Y3-	0512									1	0.80								1	1																	DI (REMOVE EXIST. DI RETAIN 18" RDP)
11+13.91 -Y3-	0510									1			1		1																						CB
	0510	509																																	0.3990		COLLAR & EXTEND EXIST. 15' RCP
41+51 -L-	0520													1									1														RETAIN BOX; ADD HOOD AND GRATE
42+94 -L-	0519															1							1														RETAIN BOX; ADD HOOD AND GRATE
53+15.00 -L-	0606	0603																																	0.3990		COLLAR & EXTEND EXIST. 15" RCP
53+15.00 -L-	0603									1			1		1																						CB
	0603	0604																																		147.6	REMOVE EXIST. 15' RCP
51+60.60 -L-	0605	0604																																	0.3990		COLLAR & EXTEND EXIST. 15" RCP
51+60.60 -L-	0604									1			1		1																						CB
	0604	0609																																		41.2	REMOVE CB & PART OF 18' RCP
11+38.90 -Y5-	0609									1																		1			1						JB w/MH
15+05 -Y5-	0613																							1							1						SEE DETAIL 2-O
	0613	0614																																			
15+07 -Y5-	0614									1	0.07						1		1	1																	DI
58+50.00 -L-	0601									1			1		1			1																			CB
	0601	0602																																			
58+50.00 -L-	0602									1			1			1																					CB
	0602	0711																																			
59+60.93 -L-	0711									1			1	1																							CB
	0711	0707																																			
59+60.90 -L-	0707									1	0.23		1	1				1																			CB
	0707	0723																																			
SHEET TOTAL										18	1.1		13	3	10	2	3	4	4	4			2	1				1			2		0		1.197	263.2	

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.)	(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:	HERMAN L EDWARDS	DATE:	4/10/2012
CHECKED BY:	C. S. MOZINGO	DATE:	9/19/2012

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-4432	3-D

R0253065

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications For Roads and Structures, Section 300-5".

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

STATION	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
SIZE / THICKNESS OR GAUGE																			
60+25.50 -L-	RT	0708	0709		335.36	334.44													
60+26.61 -L-	RT	0733			334.30	333.45													
	RT	0733			334.30	333.45													
60+93.00 -L-	LT	0712		342.43	339.43														
		0712	0724		339.43	339.00													
60+93.00 -L-	RT	0724		343.71	339.00														
		0724	0725		339.00	337.66													
60+93.00 -L-	RT	0725		344.06	337.66														
		0725	0706		337.66	336.50													
60+50.00 -L-	RT	0706		343.89	336.50														
		0706	0726		336.50	335.56													
62+50.00 -L-	LT	0722		346.16	343.16														
		0722	0715		343.16	341.47													
62+27.31	LT	0715		345.12	341.47														
		0715	0716		341.47	341													
62+00.00 -L-	LT	0714		345.58	342.41														
		0714	0716		342.41	342.15													
14+19 -Y6-	LT	0716		345.85	340.18														
		0716	0717		340.18	338.56													
13+25.00 -Y6-	LT	0719		347.14	344.14														
		0719	0720		344.14	344.00													
13+25.00 -Y6-	RT	0720		347.16	344.00														
		0720	0721		344.00	341.55													
14+00.00 -Y6-	RT	0721		344.55	341.55														
		0721	0717		341.55	341.39													
14+18.00 -Y6-	RT	0717		345.09	338.56														
66+00.00 -L-	LT	0701		360.03	356.86														
		0701	0702		356.86	355.62													
66+00.00 -L-	RT	0702		358.62	355.62														
		0702	0703		355.62	350.54													
64+50.89 -L-	RT	0703		353.54	350.54														
		0703	0704		350.54	343.73													
62+50.00 -L-	RT	0704		346.73	343.73														
		0704	0705		343.73	343.5													
62+42.91 -L-	RT	0705		346.5	341.78														
		0705	0710		341.78	341.41													
SHEET TOTAL																			
PROJ. TOTALS								160	192										
SAY																			

STATION	C.S. PIPE 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"
SIZE / THICKNESS OR GAUGE	.064	.064	.064	.064	.079	.079	.109	.109																
60+25.50 -L-														36										
60+26.61 -L-																				80				
																				80				
60+93.00 -L-																								
																		52						
60+93.00 -L-																								
																		40						
60+93.00 -L-																								
											40													
60+50.00 -L-																								
											40													
62+50.00 -L-																								
											32													
62+27.31																								
												8												
62+00.00 -L-																								
																		68						
14+19 -Y6-																								
														72										
13+25.00 -Y6-																								
																		36						
13+25.00 -Y6-																								
																		72						
14+00.00 -Y6-																								
																		24						
14+18.00 -Y6-																								
66+00.00 -L-																								
																		76						
66+00.00 -L-																								
																		148						
64+50.89 -L-																								
																		200						
62+50.00 -L-																								
																		4						
62+42.91 -L-																								
																		8						
SHEET TOTAL											112	8	72	36				728		160				
PROJ. TOTALS	124	52							204	112	8	72	36					2672	52	160				
SAY																								

STATION	*" R.C. PIPE (CLASS V)	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	****" RC PIPE CULVERTS, CONTRACTOR DESIGN	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	5.0' THRU 10.0'	10.0' AND ABOVE	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') LIN. FT. A	B	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.19 OR 840.27	CONVERT DI TO CB (SEE DETAIL 2-P)	CONVERT CB TO JB (SEE DETAIL 2-O)	O.T.C.B. STD 840.04 OR 840.05	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	G.D.I (N.S.) FRAME WITH TWO GRATES STD. 840.29	T. B. D.I. STD. 840.35 (TRAFFIC BEARING)	MANHOLE FRAME AND COVER STD. 840.54	15" FLARED ENSECTION	CS PIPE ELBOWS NO. & SIZE	CFLOWABLE FILL, C.Y.	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
60+25.50 -L-																																								12	REMOVE EXIST. CB & 36" RCP
																																							0.7640		COLLAR & EXTEND EXIST. 36" RCP
60+26.61 -L-						2.0																																			HW w/2 24" RCP SEE DETAIL SHT # 2-??
60+93.00 -L-								1			1		1																												CB
60+93.00 -L-								1									1		1	1																					DI
60+93.00 -L-								1	1.4		1			1																										25.2	CB REMOVE 59.0' OF EXIST. 15" RCP
60+50.00 -L-								1	2.4		1			1																											CB
62+50.00 -L-								1			1		1																												CB
62+27.31								1																					1												3 OTCB (STD. 840.04 OR 840.05)
62+00.00 -L-								1									1		1	1																			48.6	DI REMOVE EXIST CB & 15" RCP
																																							20.0	REMOVE EXIST. OTCB & 15" RCP
14+19 -Y6-								1	0.7																							1			1						REMOVE 2 EXIST. OTCB, FILL W / FLOWABLE
																																						10.615			FLOWABLE FILL EXIST. 30" RCP
13+25.00 -Y6-								1			1																														CB
13+25.00 -Y6-								1			1		1																												CB
14+00.00 -Y6-								1			1		1																												CB
14+18.00 -Y6-								1	1.5																							1			1						JB w/MH RETAIN EXIST. 42"RCP
																																								15.1	REMOVE 15.1' OF EXIST. 42"RCP
66+00.00 -L-								1																																	DI
66+00.00 -L-								1			1			1																											CB
																																								118.1	REMOVE EXIST. DI & 15" RCP
64+50.89 -L-								1			1			1																											CB
																																								222.6	REMOVE EXIST. DI & 15" RCP
62+50.00 -L-								1			1			1																											CB
62+42.91 -L-								1			1			1																											CB
																																							0.399		COLLAR & EXTEND EXIST 15" RCP
SHEET TOTAL						2.0		17	6.00		11		4	7	3		3	3				1			2			2				10.615	1.163	461.6		
PROJ. TOTALS						2.0		56	7.1		33	3	19	13	7	4	9	9		8	2	1	1		8	3	2	2	4	1	4 @ 15" 2 @ 18"	10.615	2.360	879.6		
SAY									8.0																								11	3.0	880.0		

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.)	(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

PROJ. REFERENCE NO.	SHEET NO.
U-4432	3-E

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1	4	RALEIGH GOLF ASSOCIATION
3	4	DELTA SIGMA PHI - RHO CHAPTER
4	4	THE LINKS CLUB CONDOMINIUM ASSOCIATION, INC
6	4 & 8	CAROLINA AND NORTHWESTERN RAILWAY
6	4	CAROLINA AND NORTHWESTERN RAILWAY
7	4	RENAISSANCE PARK MASTER ASSOCIATION, INC.
8	4	LARRY CRAIG BARBEE, ETUX
24	5	AMELIA PARK, LLC
24	5	AMELIA PARK, LLC (FORMERLY 25)
24	5	AMELIA PARK, LLC (FORMERLY 26)
35	5	AMELIA PARK, LLC
36	4, 5 & 8	AMELIA PARK, LLC
36B	4 & 8	AMELIA PARK, LLC
36C	5	AMELIA PARK, LLC
37	5	KISHORE & MEENA LAKHIANI
38	5	TUN & AYE MYINT AUNG
39	5	AMELIA PARK, LLC
40	5	AMELIA PARK, LLC
104	5, 6 & 7	AMELIA PARK, LLC
104A	5	RENAISSANCE PARK MASTER ASSN., INC.
105	6	AMELIA PARK, LLC
108	6 & 7	BROOMFIELD, LLC
109	7	BANNISTER PROPERTIES, LLC
110	7	BANNISTER PROPERTIES, LLC
111	6 & 7	AMELIA PARK, LLC
112	7	GOLDEN CORRAL CORP.
113	7	3421 OLYMPIA DRIVE, LLC
114	6 & 7	RENAISSANCE PARK COMMERCIAL CENTER EAST ASSOCIATION, INC
115	5	CENTURY TOWNHOMES AT RENAISSANCE PARK

PARCEL No.	SHEET No.	PROPERTY OWNER NAME

PROJECT REFERENCE NO.	SHEET NO.
U-4432	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 20111 ENGINEER DAVID K. BONUS 1/30/2014

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 023454 ENGINEER ANNE D. GAMBLER 2-4-14

REVISIONS 5/14/99

2005 / 2030 AVERAGE DAILY TRAFFIC

-Y1- PAR DR.

500 / 2,500 — 100 / 700 — 400 / 1,800 — 16,700 / 39,900 — 17,000 / 41,000

SR 1370 (TRYON RD.) -L-

DETAIL 1
CUT DITCH
(Not to Scale)

Natural Ground, 2:1, D, d, 3:1 or Flatter, Front Ditch Slope, Geotextile

Type of Liner= CLASS B Rip-Rap — Min. D= 1.0 Ft. — Max. d= 0.5 Ft.

FROM STA. 12+00 TO STA. 12+28 -DR1- LT
FROM STA. 12+00 TO STA. 12+60 -DR1- RT
FROM STA. 15+00 TO STA. 15+50 -DR1- LT
FROM STA. 14+80 TO STA. 15+50 -DR1- RT

DETAIL 2
MODIFIED FALSE SUMP
(Not to Scale)

0.5' Min. 1.0' Max. — PROPOSED SHOULDER — 10:1 — 10:1 — 2.0' — GI etc. — ℄ Proposed Ditch

FROM STA. 12+18 TO STA. 12+40 -DR1- LT
FROM STA. 14+52 TO STA. 14+73 -DR1- LT

~~U4432 II PINC 22+45.80~~
DISTURBED

BEGIN T.I.P. PROJECT U-4432
-L- STA 19+25.00/-L1- STA 19+25.00
BEGIN CONST.

SKETCH SHOWING BRIDGE/ROADWAY RELATIONSHIP

BEGIN BRIDGE -L- STA.27+14.64 — END BRIDGE -L- STA.28+95.95
TYPE-III — 5" CONC. MONO.ISLAND 4' WIDE — -L- S 54° 43' 34.0" E — Δ= 62° 22' 48" — S 7° 39' 13.7" W
BEGIN APPROACH SLAB -L- STA.26+90.76 — END APPROACH SLAB -L- STA.29+19.82
-L- POT Sta. 28+17.07
-Y2- POT Sta. 12+34.99

NAD 83/NSRS 2007

RENAISANCE PARK PHASE 2 BM 2007 PG 1140

-L1- PRC Sta. 24+85.65
-L1- PC Sta. 24+15.77
-L1- PT Sta. 30+00.58
-L- PT Sta. 30+00.00
-L1- POT Sta. 22+86.55 SHIFT 6.3586' LT
-L1- PC Sta. 18+36.78
-L1- PT Sta. 20+05.87
-L1- PT Sta 22+86.55
-L1- PC Sta. 22+20.74
-L- POT Sta. 27+44.31
-DRI-POT Sta. 13+51.09
-L- PC Sta. 32+94.16
-L- POT Sta. 28+17.07
-Y2- POT Sta. 12+34.99
-Y2- POT Sta. 16+96.49
-DRI- POT Sta. 17+79.75
-DRI- POT Sta. 10+00.00
-DRI- PC Sta.10+73.14
-DRI- PT Sta. 11+09.42
-DRI- PC Sta. 12+27.94
-DRI- PT Sta. 12+63.14
-DRI- PC Sta. 14+17.26
-DRI- PT Sta. 15+03.32
-DRI- PC Sta. 15+43.21
-DRI- PT Sta. 17+02.01
-Y2- POT Sta. 10+00.00
-Y2- PC Sta. 10+08.05
-Y2- PT Sta. 11+49.73

THE LINKS CLUB CONDOMINIUM ASSOCIATION, INC DB 8921 PG 965 BM 2000 PG 618
DB 810 PG 06 DB 10780 PG 1512 BM 1928 PG 118 DB 8438 PG 1512 BM 1999 PG 1872 RALEIGH GOLF ASSOCIATION
CAROLINA AND NORTHWESTERN RAILWAY
RALEIGH GOLF ASSOCIATION DB 810 PG 6 BM 1928 PG 118
DELTA SIGMA PHI- RHO CHAPTER DB 2248 PG 227
RENAISANCE PARK MASTER ASSOCIATION, INC. DB 13933 PG 2031 BM 2007 PG 1141
LARRY CRAIG BARBEE, ETUX DB 12992 PG 1252 BM 2007 PG 1140
JAMES H. WILSON, ETUX DB 12965 PG 2436 BM 2007 PG 1140
WILLIAM C. HATCHER, JR & RENEE M. HATCHER DB 13225 PG 119 BM 2007 PG 1140
ADELFO F. FLORES, ETUX DB 13221 PG 1982 BM 2007 PG 1140
RURAL SL RINN & STUART OLDS DB 13228 PG 171 BM 2007 PG 1140
THOMAS & BASNIGHT, ETUX DB 13229 PG 1989 BM 2007 PG 1140
ROBERT G. HAMMOND, ETUX DB 3164 PG 398 BM 2007 PG 1140
ERNEST K. GREGORY, ETUX DB 12884 PG 749 BM 2007 PG 1140
AMELIA PARK, LLC DB 11384 PG 037 BM 2006 PGS 179-181
RALEIGH GOLF ASSOCIATION C/ O JOHN SWAIN DB 810 PG 06 DB 10780 PG 1512 BM 1928 PG 118 DB 8438 PG 1512 BM 1999 PG 1872
CHAPANOKE ROAD — 210' MEDIAN UNIFORM TRANSITION (LT.& RT.)

MATCH LINE SEE SHEET 5 -L- STA. 33+00.00

MATCH LINE SEE SHEET 8

DETAIL 1A
SPECIAL CUT DITCH
(Not to Scale)

Natural Ground, 2:1, D, 3:1 or Flatter, Front Ditch Slope

Min. D= 1.0 Ft.

FROM STA. 21+00 TO STA. 22+35 -L- RT

-L-
PI Sta 37+28.77
Δ = 19° 43' 26.2" (RT)
D = 2° 17' 30.6"
L = 860.62'
T = 434.61'
R = 2,500.00'
SE = 0.04
V = 50 mhp

-Y2-
PI Sta 10+78.93
Δ = 4° 25' 25.7" (LT)
D = 3° 07' 20.9"
L = 141.68'
T = 70.87'
R = 1,834.95'

-L1-	-L1-
PI Sta 19+21.33	PI Sta 22+53.64
Δ = 1° 03' 18.7" (LT)	Δ = 0° 22' 37.4" (RT)
D = 0° 37' 26.5"	D = 0° 34' 22.6"
L = 169.09'	L = 65.81'
T = 84.55'	T = 32.90'
R = 9,181.72'	R = 10,000.00'

-L1-	-L1-
PI Sta 24+50.73	PI Sta 27+43.23
Δ = 4° 12' 53.1" (LT)	Δ = 4° 12' 53.1" (RT)
D = 6° 01' 52.1"	D = 0° 49' 06.6"
L = 69.88'	L = 514.93'
T = 34.96'	T = 257.58'
R = 950.00'	R = 7,000.00'

-DRI-			
PI Sta 10+92.12	PI Sta 12+46.31	PI Sta 14+60.59	PI Sta 16+44.95
Δ = 41° 34' 21.2" (LT)	Δ = 40° 20' 23.6" (RT)	Δ = 16° 26' 14.8" (RT)	Δ = 90° 59' 01.6" (RT)
D = 114° 35' 29.6"	D = 114° 35' 29.6"	D = 19° 05' 54.9"	D = 57° 17' 44.8"
L = 36.28'	L = 35.20'	L = 86.07'	L = 158.80'
T = 18.98'	T = 18.37'	T = 43.33'	T = 101.73'
R = 50.00'	R = 50.00'	R = 300.00'	R = 100.00'

ASPHALT PAVEMENT REMOVAL
SEE SHEET 9 FOR -L- PROFILE
SEE DETAIL SHEET 2E FOR DIMENSIONS
SEE SHEET S-1 THRU S-52 FOR STRUCTURE PLANS

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PROJECT REFERENCE NO.	SHEET NO.
U-4432	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 20111 ENGINEER TARA K. BOATIE 4/8/2014

NORTH CAROLINA PROFESSIONAL SEAL 022454 ENGINEER ANNE D. GAINER 4/9/14

NAD 83/NSRS 2007

5/14/99

REVISIONS

2005 / 2030 AVERAGE DAILY TRAFFIC

-Y3- PALACE GARDEN WAY: 6,000 / 7,000

-L-: 17,000 / 41,000 (2,700 / 3,300); 17,400 / 41,100 (2,400 / 2,700)

SR 1370 TRYON RD.: 400 / 500; 1,100 / 1,200

-Y3- THE ARTS DRIVE: 2,400 / 2,700

MATCH LINE SEE SHEET 4 -L- STA. 33+00.00

MATCH LINE SEE SHEET 6 -L- STA. 46+00.00

-Y3- POT Sta. 10+00.00

-Y3- STA.10+15.00 BEGIN CONST.

-BL-102

-L- POC Sta. 38+73.28

-Y3- POT Sta. 12+28.42

-L- PC Sta. 45+43.51

-L- PT Sta. 41+54.78

-Y3- POT Sta.14+37.89

-Y3- STA.13+50.00 END CONST.

THE AREA WITHIN THE EXISTING MEDIAN -L- STA.41+45 TO STA.47+10 SHALL REMAIN UNDISTURBED BY CONSTRUCTION.

RENAISSANCE PARK MASTER ASSN., INC. DB 13933 PG 2031 BM 2006 PG 2601 (104A)

AMELIA PARK, LLC DB 11384 PG 037 BM 2006 PG 2601

AMELIA PARK, LLC DB 11384 PG 037 BM 2006 PG 181 (104)

KRYSTEN & MATTHEW JORGENSON DB 14071 PG 604 BM 2007 PG 1140

STEPHEN McCOURT DB 14291 PG 608 BM 2007 PG 1140

DIPTIBEN A. PATEL DB 15043 PG 658 BM 2007 PG 1140

ABDESAMED ASSAS DB 15514 PG 2121 BM 2007 PG 1140

ASHLEY H. BAXTER DB 15515 PG 1765 BM 2007 PG 1140

DORDIC DB 15516 PG 2121 BM 2007 PG 1140

SUJETLANA A. PAVLOVA DB 15517 PG 1765 BM 2007 PG 1140

NABIL AHMAD SHAMMAS DB 15518 PG 1765 BM 2007 PG 1140

KISHORE & MEENA LAKHIANI DB 11384 PG 037 BM 2008 PG 1060 (37)

TUN & AYE MYINT AUNG DB 14976 PG 779 BM 2008 PG 1060 (38)

CHRISTOPHER A. ARNDT, ETUX DB 14860 PG 2433 BM 2008 PG 1060 (39)

MICHAEL P. BALINT DB 15073 PG 1587 BM 2008 PG 1060 (40)

UPRIGHT BUILDERS, INC DB 13235 PG 1930 BM 2008 PG 1060

MICHAEL KAZIMIERCZUK DB 14338 PG 1537 BM 2008 PG 1060

RICK & KAREN ROBERSON DB 15977 PG 1349 BM 2008 PG 1060

AMELIA PARK, LLC DB 11384 PG 037 BM 2008 PG 181 (36C)

DO NOT DISTURB BRICK SIGN

PHASE 6 RENAISSANCE PARK BM 2008 PG 1059

PHASE 3 RENAISSANCE PARK BM 2007 PG 869

AMELIA PARK LLC DB 11384 PG 037

NOTE: PROGRESS ENERGY, AT&T AND TIME WARNER CABLE HAVE COBURIED FACILITIES IN THIS AREA.

150' LT. TURN TRANSITION

150' RT. TURN UNIFORM TRANSITION

S 35° 00' 07.8" E

-L-
PI Sta 37+28.77
Δ = 19° 43' 26.2" (RT)
D = 2° 17' 30.6"
L = 860.62'
T = 434.61'
R = 2,500.00'
SE = 0.04
V = 50 mhp

-L-
PI Sta 53+68.52
Δ = 54° 03' 43.2" (LT)
D = 3° 32' 36.0"
L = 1,525.74'
T = 825.00'
R = 1,617.00'
SE = 0.04
V = 50 mhp

ASPHALT PAVEMENT REMOVAL

SEE DETAIL SHEET 2E FOR DIMENSIONS

SEE SHEET 9 FOR -L- PROFILE

SEE SHEET 12 FOR -Y3- PROFILE

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PROJECT REFERENCE NO.	SHEET NO.
U-4432	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 20111 ENGINEER NA K. BOANG 11/27/2013

NORTH CAROLINA PROFESSIONAL SEAL 023454 ENGINEER ANNE D. GAMBER 2-2-13

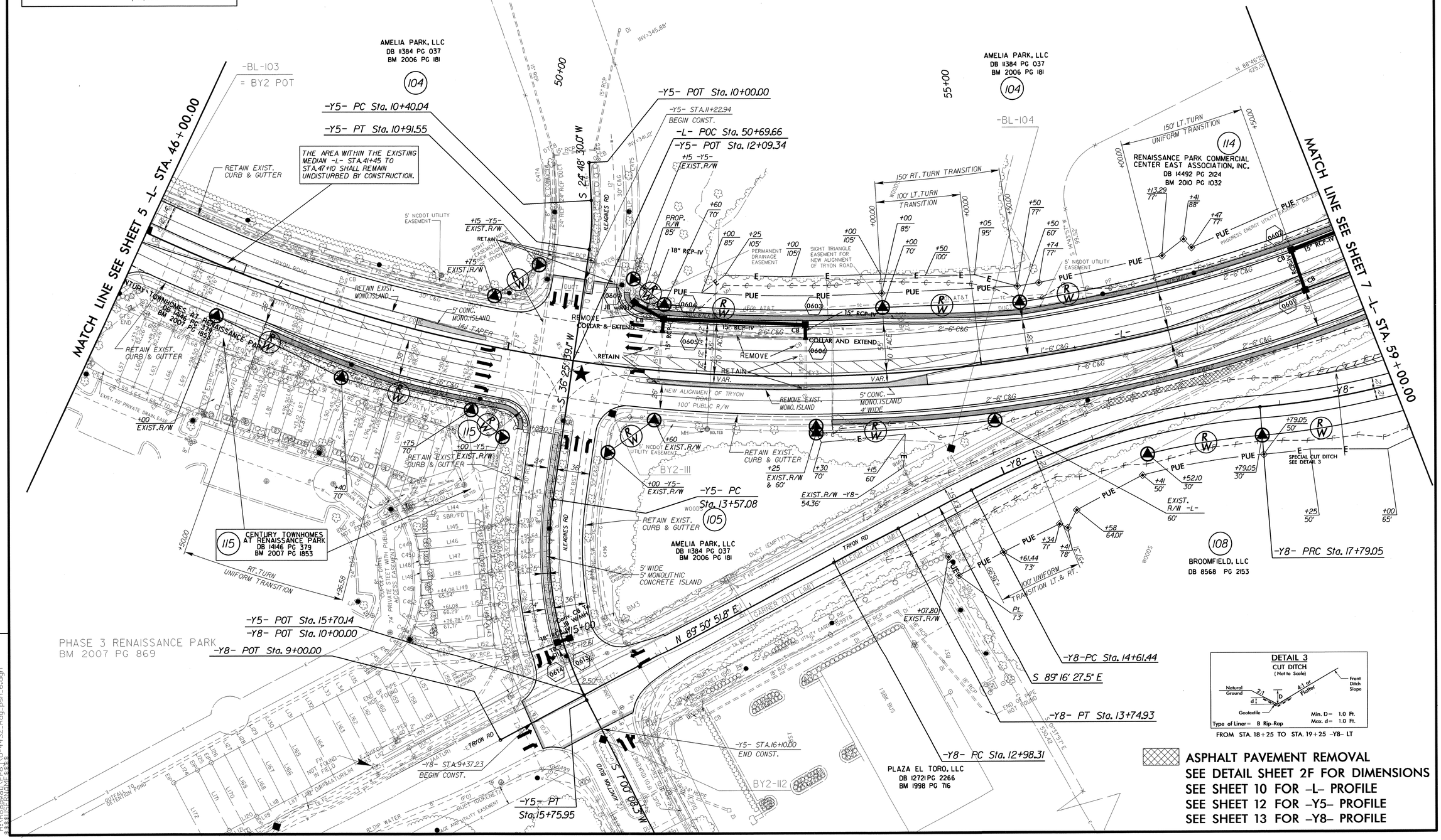
2005 / 2030 AVERAGE DAILY TRAFFIC	
-Y6- ILEAGUNES RD.	800 / 800
-L-	300 / 300
-L-	400 / 400
-L-	17,400 / 41,100
-L-	15,700 / 38,500
SR 1370 TRYON RD.	4000 / 7800
SR 1370 TRYON RD.	2,200 / 4,500
-Y6- ILEAGNES RD.	6,300 / 11,800

-L-
PI Sta 53+68.52
Δ = 54° 03' 43.2" (LT)
D = 3° 32' 36.0"
L = 1,525.74'
T = 825.00'
R = 1,617.00'
SE = 0.04
V = 50 mhp

-Y5-	
PI Sta 10+65.89	PI Sta 14+70.14
Δ = 11° 37' 09.1" (RT)	Δ = 35° 25' 30.8" (LT)
D = 22° 33' 26.6"	D = 16° 11' 06.9"
L = 51.51'	L = 218.87'
T = 25.84'	T = 113.06'
R = 254.00'	R = 354.00'

-Y8-		
PI Sta 13+36.62	PI Sta 16+22.36	PI Sta 19+46.26
Δ = 0° 52' 40.7" (RT)	Δ = 22° 44' 50.6" (RT)	Δ = 23° 36' 38.7" (LT)
D = 1° 08' 45.3"	D = 7° 09' 43.1"	D = 7° 09' 43.1"
L = 76.62'	L = 317.61'	L = 329.67'
T = 38.31'	T = 160.93'	T = 167.21'
R = 5,000.00'	R = 800.00'	R = 800.00'

NAD 83/NSRS 2007



ASPHALT PAVEMENT REMOVAL
SEE DETAIL SHEET 2F FOR DIMENSIONS
SEE SHEET 10 FOR -L- PROFILE
SEE SHEET 12 FOR -Y5- PROFILE
SEE SHEET 13 FOR -Y8- PROFILE

REVISIONS

5/14/99

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PROJECT REFERENCE NO.	SHEET NO.
U-4432	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

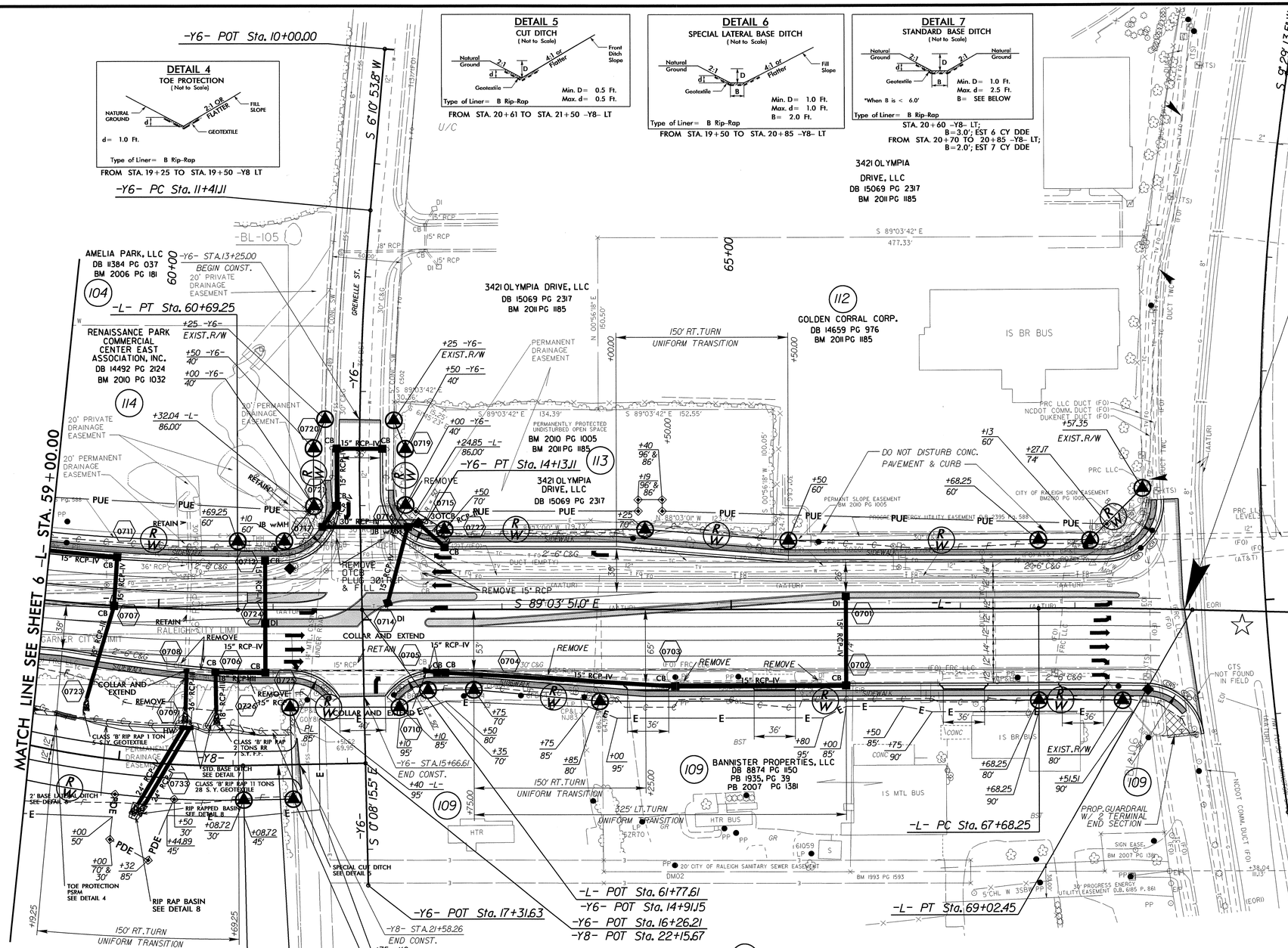
NORTH CAROLINA PROFESSIONAL SEAL 20111 ENGINEER ANA K. BOAYUE 11/27/2013

NORTH CAROLINA PROFESSIONAL SEAL 023454 ENGINEER ANNE D. GAMBER 12-2-13

NAD 83/NSRS 2007

END T.I.P. PROJECT U-4432

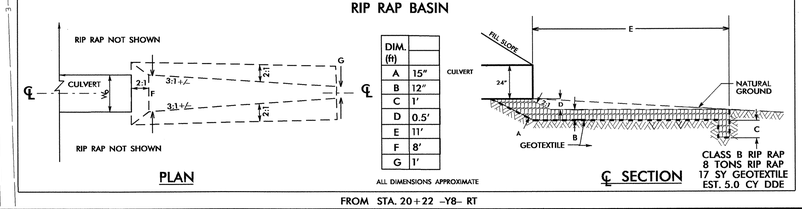
-L- POT Sta. 68+95.80



2005 / 2030 AVERAGE DAILY TRAFFIC	
-Y7- US 70-401 /NC 50 WILMINGTON ST.	60,000 / 70,000
1,900 / 3,400	3,800 / 6,700
15,300 / 37,900	17,900 / 42,500
SR 1370 TRYON RD.	-L-
7,500 / 13,200	8,200 / 14,500
70,000 / 87,600	-Y7- US 70-401 /NC 50 WILMINGTON ST.

2005 / 2030 AVERAGE DAILY TRAFFIC	
-Y6- GRENELLE RD.	
1,600 / 3,000	
1,000 / 1,800	600 / 1,200
15,700 / 38,500	15,300 / 37,900
SR 1370 (TRYON RD.)	-L-

DETAIL 8
RIP RAP BASIN



DIM. (ft)	
A	15"
B	12"
C	1'
D	0.5'
E	11'
F	8'
G	1'

ALL DIMENSIONS APPROXIMATE

CLASS B RIP RAP
8 TONS RIP RAP
17 SY GEOTEXTILE
EST. 5.0 CY DDE

FROM STA. 20+22 -Y8- RT

-L-
PI Sta 68+35.36
Δ = 1° 32' 16.2" (RT)
D = 1° 08' 45.3"
L = 134.20'
T = 67.10'
R = 5,000.00'
SE = NC
V = 50 mph

-Y6-
PI Sta 12+77.25
Δ = 6° 19' 09.3" (LT)
D = 2° 19' 23.7"
L = 272.00'
T = 136.14'
R = 2,466.18'

-Y7-
PI Sta 13+64.46
Δ = 16° 53' 01.6" (LT)
D = 2° 36' 15.7"
L = 648.29'
T = 326.51'
R = 2,200.00'

-Y8-
PI Sta 19+46.26
Δ = 23° 36' 38.7" (LT)
D = 7° 09' 43.1"
L = 329.67'
T = 167.21'
R = 800.00'

SEE DETAIL SHEET 2F FOR DIMENSIONS

ASPHALT PAVEMENT REMOVAL
SEE SHEET 10 FOR -L- PROFILE
SEE SHEET 13 FOR -Y6- PROFILE
SEE SHEET 13 FOR -Y8- PROFILE

-Y7- POT Sta. 20+19.38

REVISIONS

5/14/99

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PROJECT REFERENCE NO.	SHEET NO.
U-4432	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

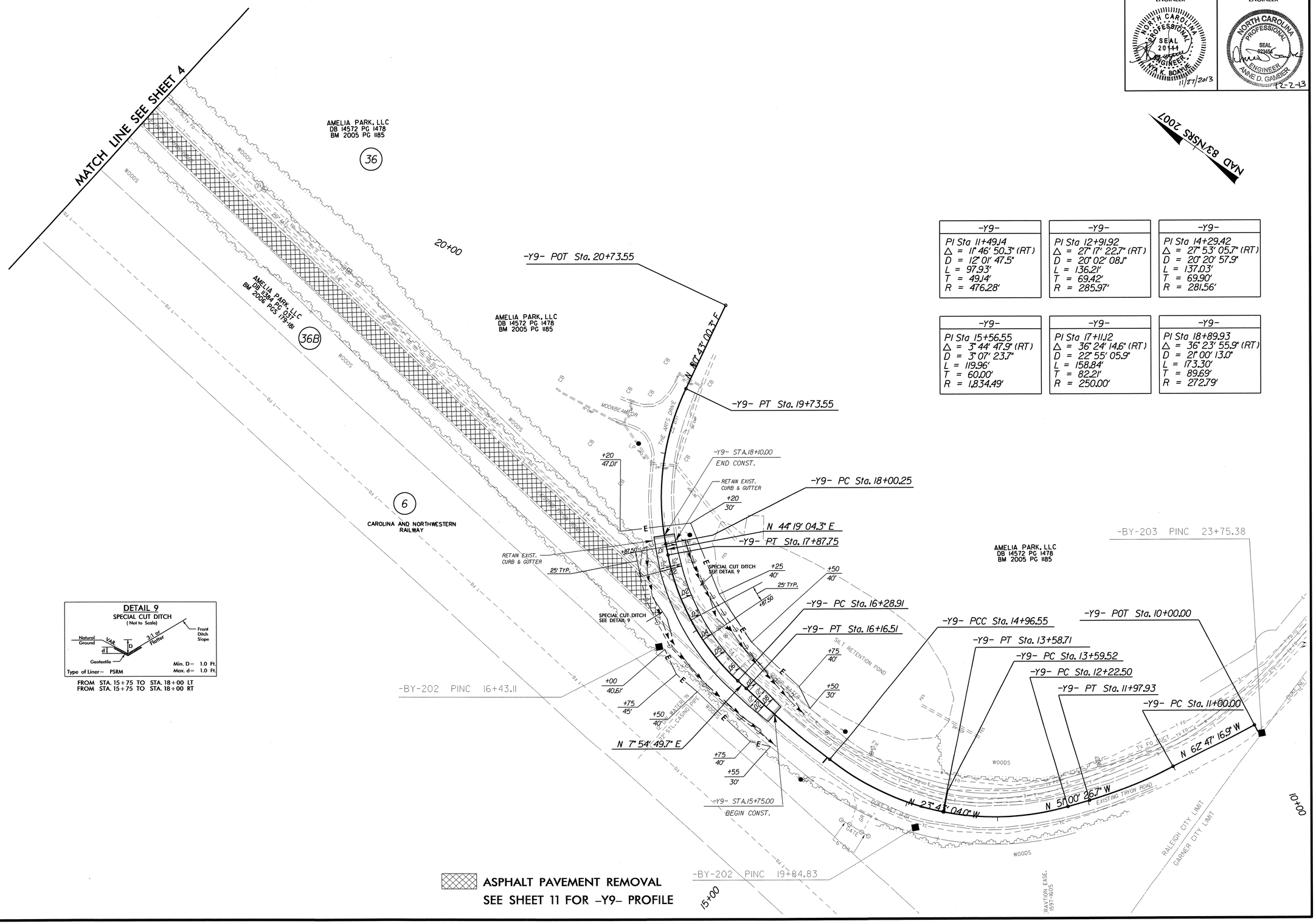
NORTH CAROLINA PROFESSIONAL SEAL 20111 ENGINEER MARK K. BOATLE 11/27/2013

NORTH CAROLINA PROFESSIONAL SEAL 027461 ENGINEER JANNE D. GANGER 12-2-13

NAD 83/NSRS 2007

REVISIONS

5/14/99



-Y9-	-Y9-	-Y9-
PI Sta 11+49.14 Δ = 11° 46' 50.3" (RT) D = 12° 01' 47.5" L = 97.93' T = 49.14' R = 476.28'	PI Sta 12+91.92 Δ = 27° 17' 22.7" (RT) D = 20° 02' 08.1" L = 136.21' T = 69.42' R = 285.97'	PI Sta 14+29.42 Δ = 27° 53' 05.7" (RT) D = 20° 20' 57.9" L = 137.03' T = 69.90' R = 281.56'

-Y9-	-Y9-	-Y9-
PI Sta 15+56.55 Δ = 3° 44' 47.9" (RT) D = 3° 07' 23.7" L = 119.96' T = 60.00' R = 1,834.49'	PI Sta 17+11.12 Δ = 36° 24' 14.6" (RT) D = 22° 55' 05.9" L = 158.84' T = 82.21' R = 250.00'	PI Sta 18+89.93 Δ = 36° 23' 55.9" (RT) D = 21° 00' 13.0" L = 173.30' T = 89.69' R = 272.79'

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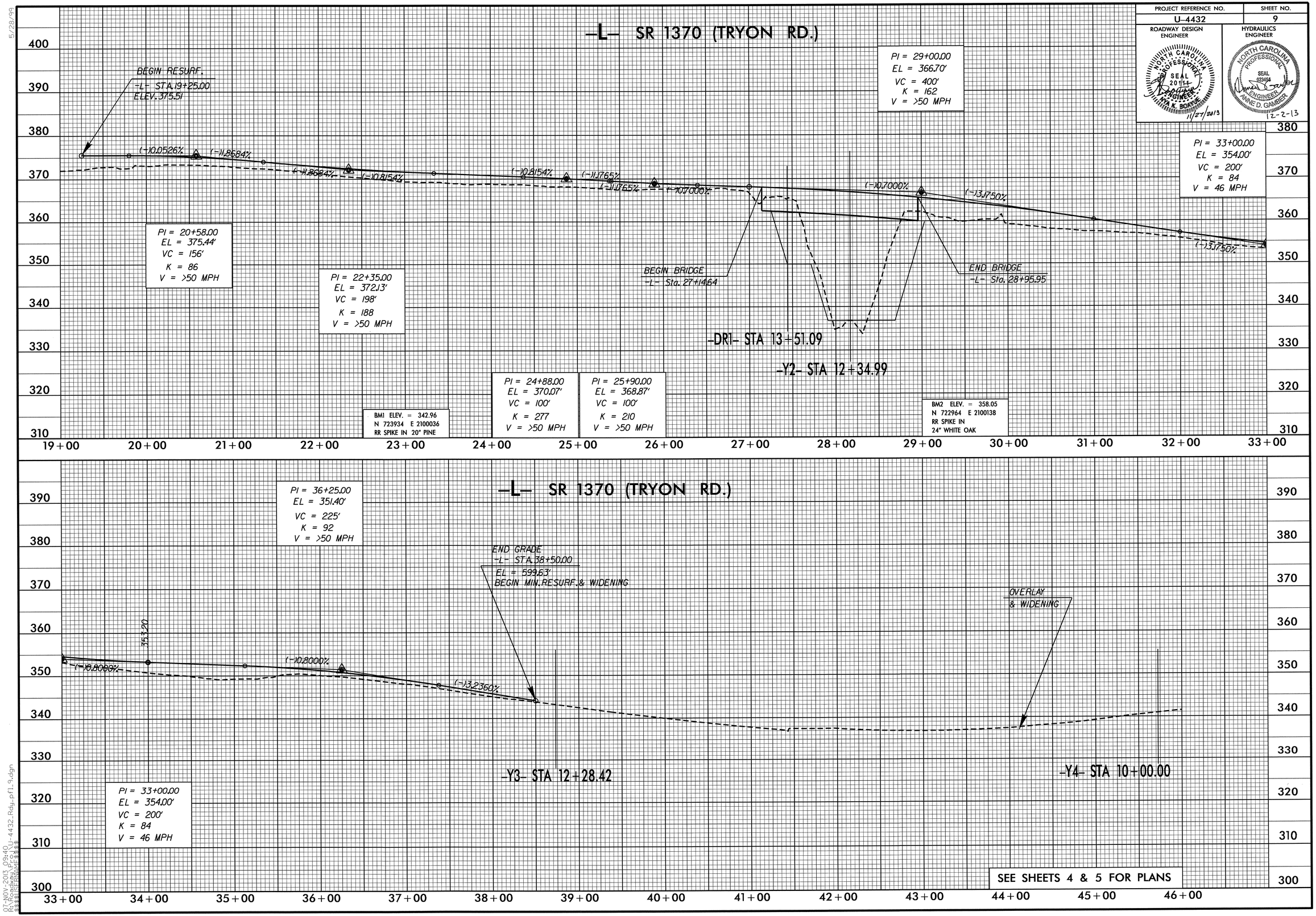
PROJECT REFERENCE NO.	SHEET NO.
U-4432	9

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 20114 ENGINEER RYAN K. BOWEN
11/27/2013

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 024464 ENGINEER JAMES D. GAMBER
12-2-13



SEE SHEETS 4 & 5 FOR PLANS

5/28/99

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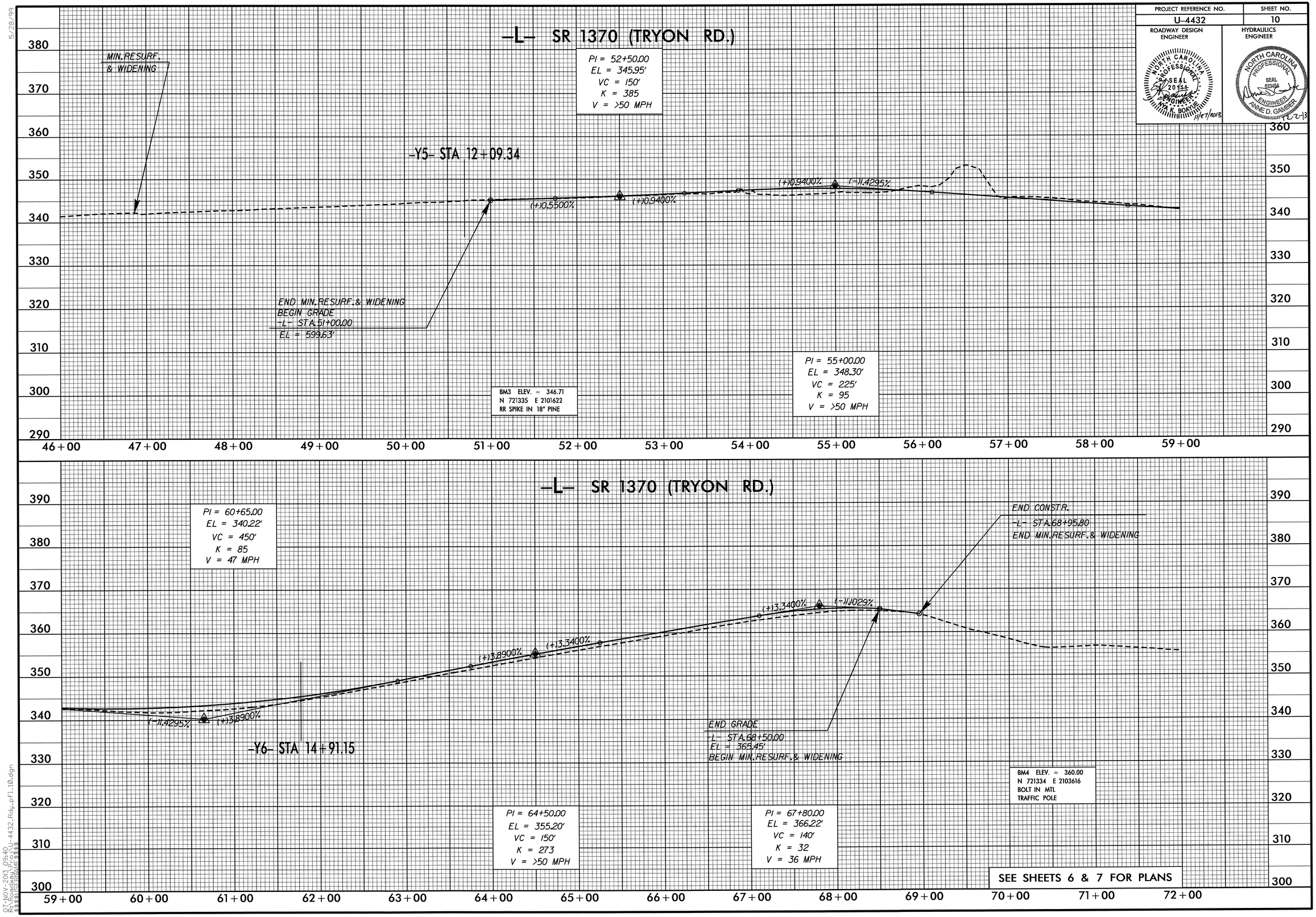
PROJECT REFERENCE NO.	SHEET NO.
U-4432	10

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 20144 ENGINEER TIA K. BOAYUE 11/27/2013

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 023454 ENGINEER ANNIE D. GAMBER 12-2-13



SEE SHEETS 6 & 7 FOR PLANS

5/28/99

07-NOV-2013 09:40
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PROJECT REFERENCE NO.	SHEET NO.
U-4432	11

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 20111 ENGINEER ANA K. BOAVIDA 11/27/2013

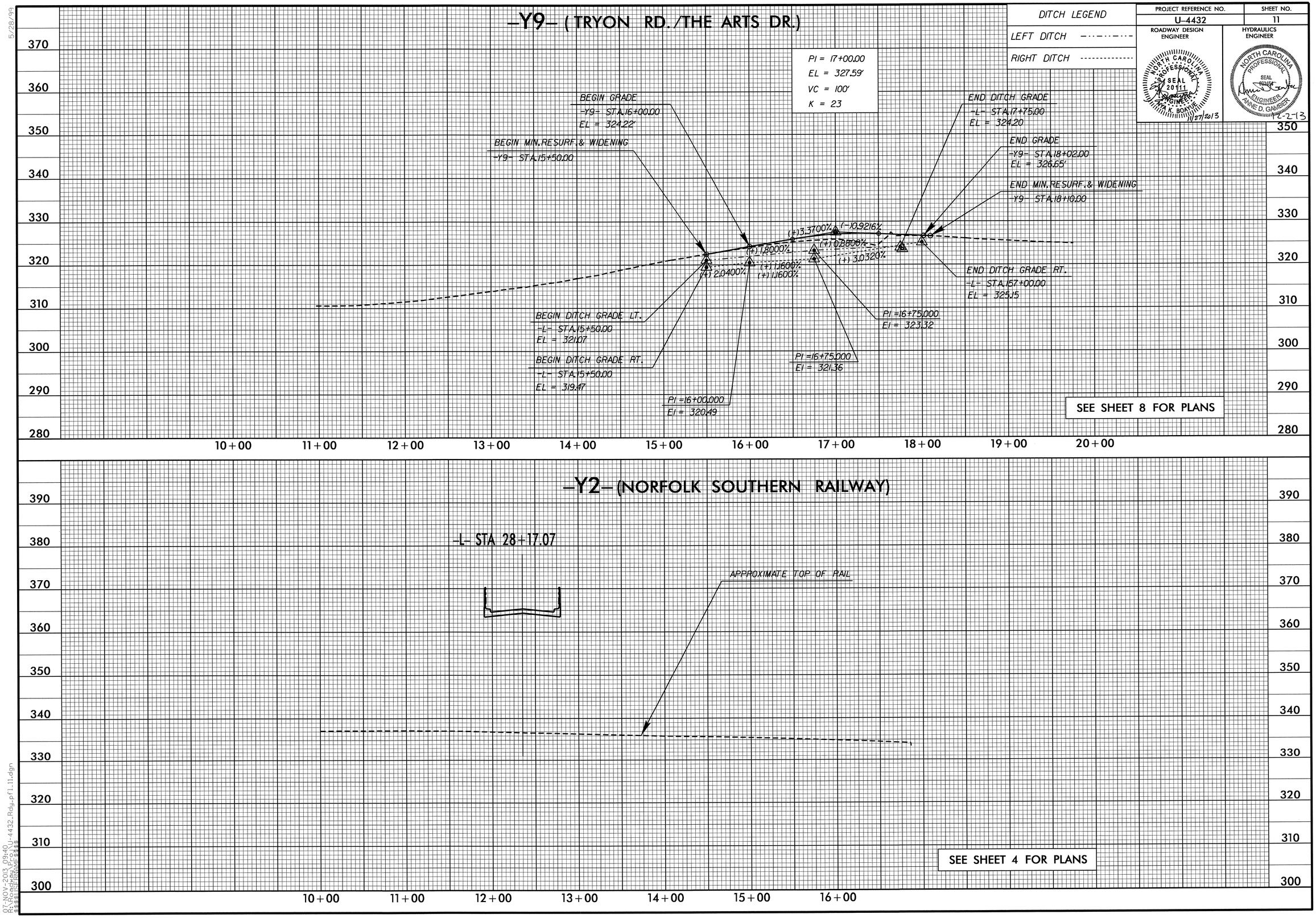
HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 023454 ENGINEER ANNE D. GAMBER 12-2-13

DITCH LEGEND

LEFT DITCH —·—·—·—

RIGHT DITCH ----------



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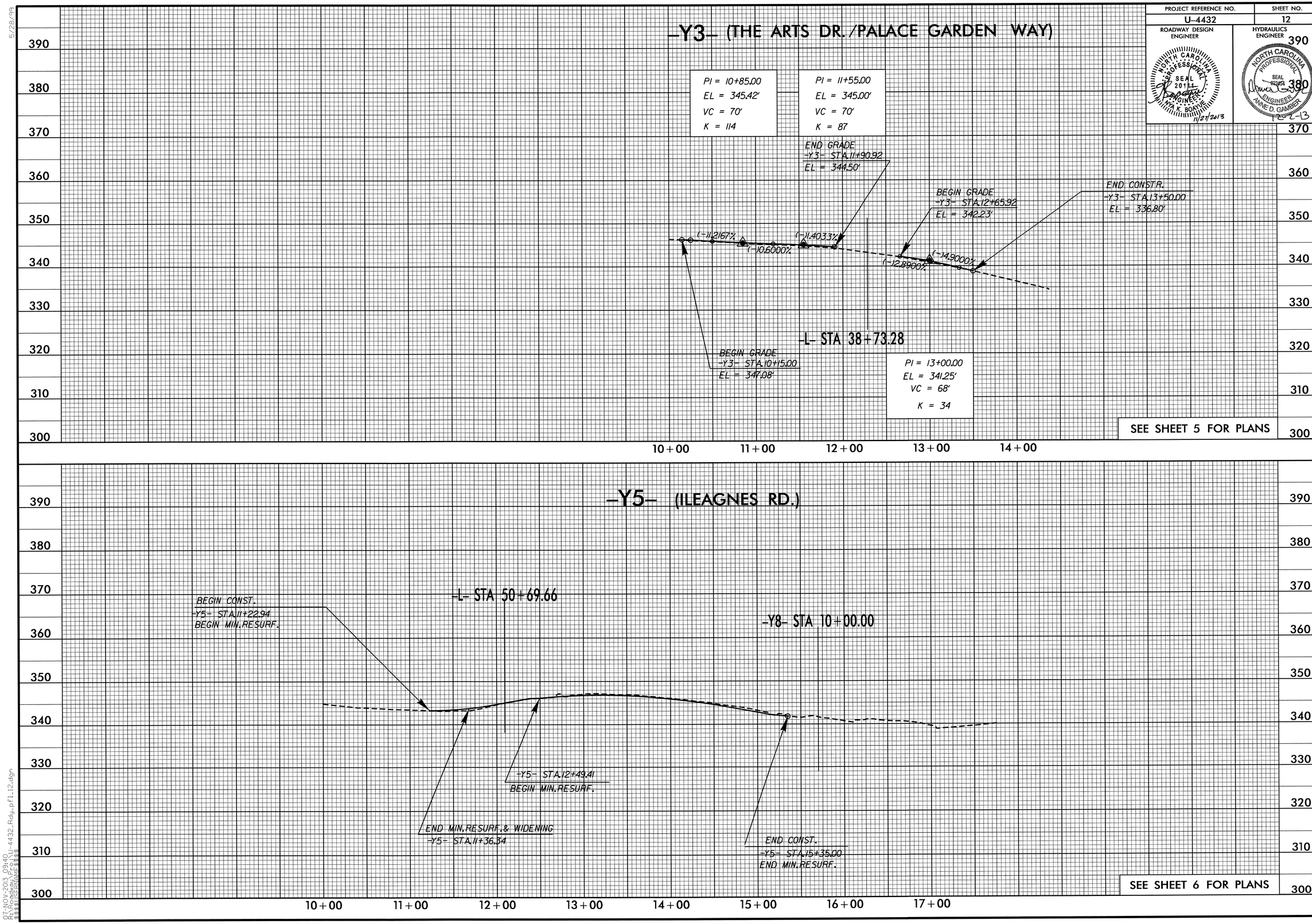
PROJECT REFERENCE NO.	SHEET NO.
U-4432	12

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 20111 ENGINEER TONYA K. BOATE 11/27/2013

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022459 ENGINEER ANNIE D. GAMBER 11/27/2013



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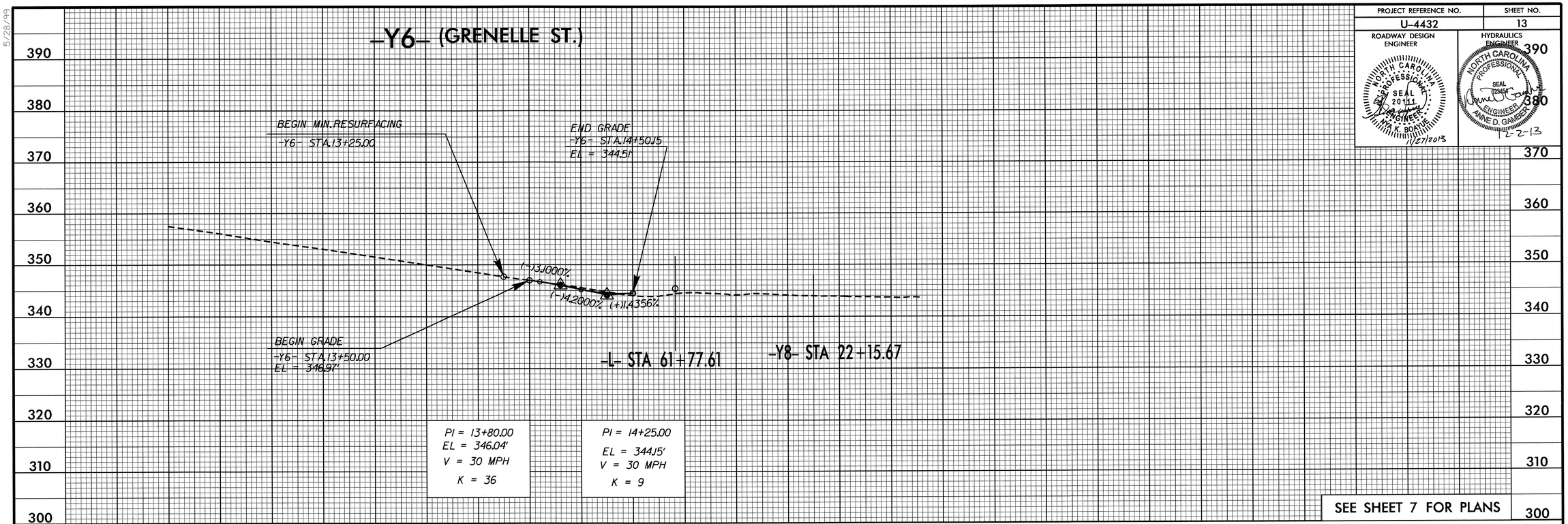
PROJECT REFERENCE NO.	SHEET NO.
U-4432	13

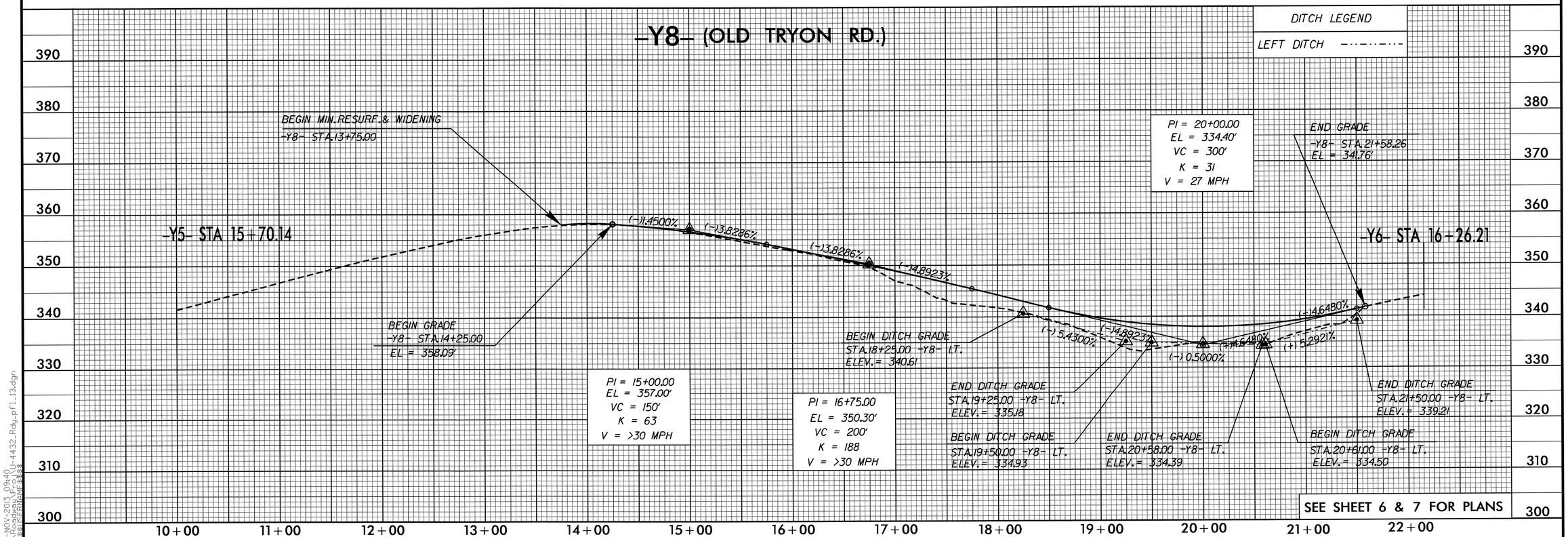
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 20111 ENGINEER MARK K. BOWLES 11/27/2013

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022456 ENGINEER ANNE D. GAMMER 12-2-13





5/28/99

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PROJECT REFERENCE NO.	SHEET NO.
U-4432	14

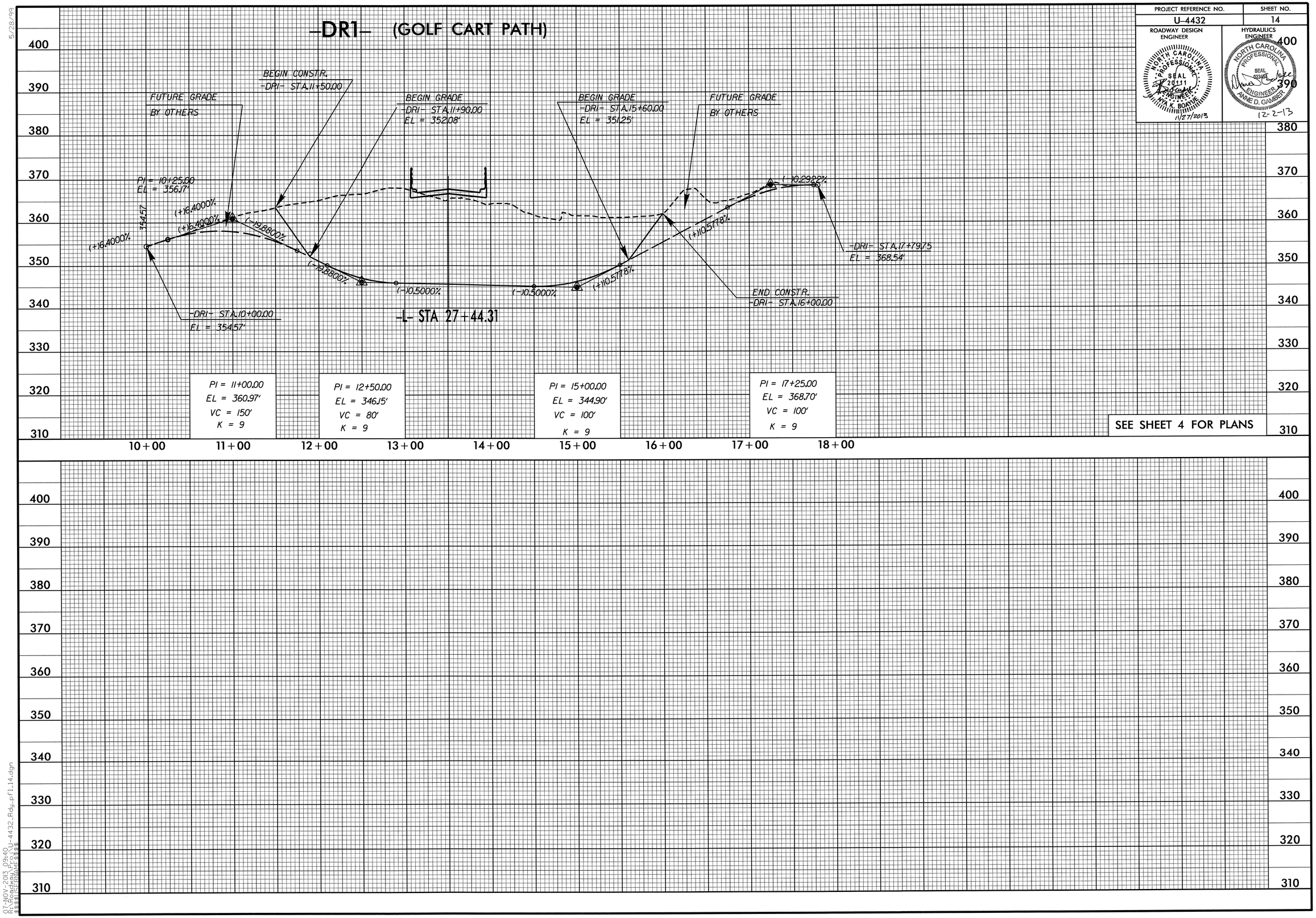
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 20111 ENGINEER MARK K. BOATWRIGHT 11/27/2013

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 023495 ENGINEER ANNE D. GAMBER 12-2-13

-DR1- (GOLF CART PATH)



SEE SHEET 4 FOR PLANS

5/28/99
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