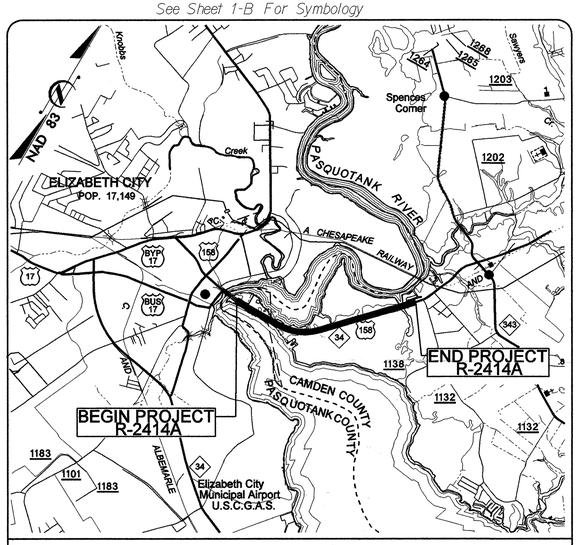
TIP PROJECT: R-2414A

CONTRACT: C202096

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Symbology



VICINITY MAP

100% PLAN SUBMITTAL

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CAMDEN COUNTY

LOCATION: US 158 – NC 34 FROM EAST OF PASQUOTANK RIVER IN ELIZABETH CITY TO NORTH OF SR 1257 (HAVENWOOD DRIVE)

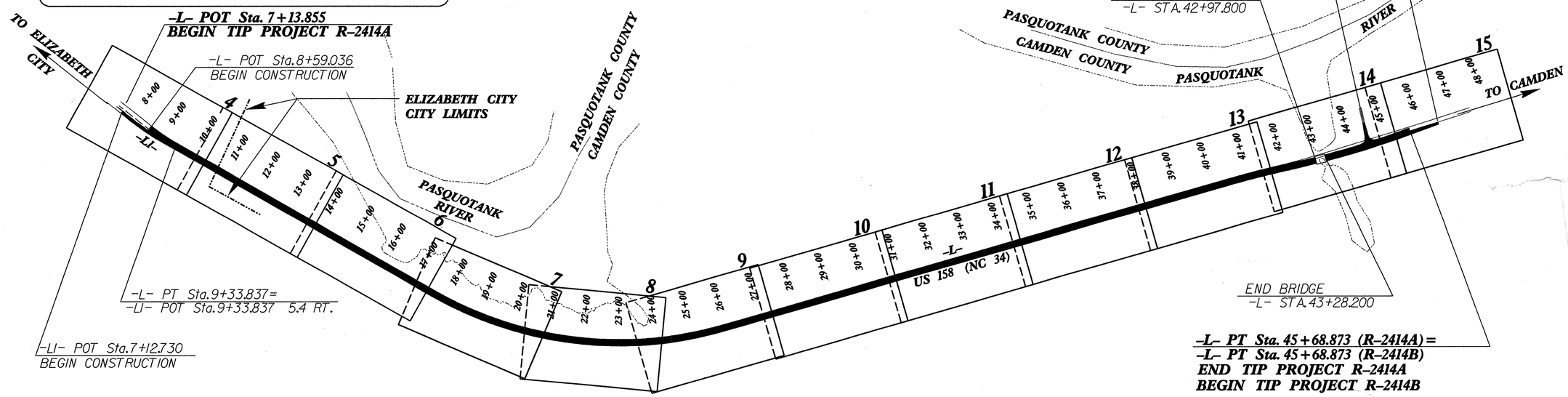
TYPE OF WORK: WIDENING, GRADING, DRAINAGE, CURB & GUTTER, PAVING AND STRUCTURE

METRIC

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2414A	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34430.1.1	STP-158(2)	PE
34430.2.4		ROW & UTILITIES
34430.3.ST1		CONST.



GRAPHIC SCALES

PLANS: 5 0 10

PROFILE (HORIZONTAL): 5 0 10

PROFILE (VERTICAL): 1 0 2

DESIGN DATA

ADT 2009	=	25990
ADT 2029	=	41510
DHV	=	12 %
D	=	60 %
T	=	6 % *
V	=	80–100 KM/H

* (TTST 2 % + DUAL 4 %)

FUNC. CLASS. = ARTERIAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2414A	=	3.825 KM
LENGTH STRUCTURE TIP PROJECT R-2414A	=	0.030 KM
TOTAL LENGTH TIP PROJECT R-2414A	=	3.855 KM

KCI Associates of North Carolina, P.A.
SUITE 200, LANDMARK CENTER I, 4601 SIX FORKS RD.
RALEIGH, NC 27609-5210 (919) 783-9214
• ENGINEERS • PLANNERS • ECOLOGISTS

Prepared In the Office of:
WETHERILL ENGINEERING
559 JONES FRANKLIN ROAD
SUITE 164
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN – BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN – GIS/GPS – CONSTRUCTION OBSERVATION
For The North Carolina Department Of Transportation

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: November 15, 2006

LETTING DATE: March 17, 2009

EDWARD G. WETHERILL, PE
PROJECT ENGINEER

BOB A. MAY, PE
PROJECT DESIGN ENGINEER

NCDOT CONTACT: DOUG TAYLOR, PE
ROADWAY DESIGN – ENGINEERING COORD. SECTION ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 026696 ENGINEER JEFFREY L. RECK

SIGNATURE: 1/16/09 P.E.

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY

SIGNATURE: 1/16/09 P.E.

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

STATE HIGHWAY DESIGN ENGINEER

09/04/99

9:43:42 AM
P:\R-2414A\Roadway\Proj\R-2414A_RDY_TSH.DGN
01/12/2009

COMPUTED BY: BAM DATE: 1-6-2009
CHECKED BY: DATE:

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 364
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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	1-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 21118 ENGINEER BOB A. MAY 1/26/09

LIST OF GENERAL NOTES

GENERAL NOTES: 2006 SPECIFICATIONS
EFFECTIVE: 07-18-06
REVISED: 07-18-06

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 II.

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

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 900 MM RADII OR RADII AS SHOWN ON THE PLANS. LOCATIONS OF DRIVES WILL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

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" OR "TEMPORARY SHORING-BARRIER SUPPORTED" DEPENDING UPON THE LOCATION OF THE SHORING.

END BENTS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE: CTT
Sprint
City of Elizabeth City

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

RIGHT-OF-WAY MARKERS:

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

LIST OF ROADWAY STANDARDS

EFF. 08-01-08
REV. 07-16-06

2006 ROADWAY METRIC STANDARD DRAWINGS

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

STD.NO. TITLE
DIVISION 2 - EARTHWORK

200.02 Method of Clearing - Method II
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 - Method 'A'
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 8 - INCIDENTALS
815.03 Pipe Underdrain and Blind Drain
840.00 Concrete Base Pad for Drainage Structures
840.01 Brick Catch Basin - 300mm thru 1350mm Pipe
840.02 Concrete Catch Basin - 300mm thru 1350mm Pipe
840.03 Frame, Grates and Hood - for Use on Standard Catch Basin
840.18 Concrete Grated Drop Inlet Type 'B' - 300mm thru 900mm Pipe
840.19 Concrete Grated Drop Inlet Type 'D' - 300mm thru 900mm Pipe
840.24 Frames and Narrow Slot Sag Grates
840.25 Anchorage for Frames - Brick or Concrete
840.27 Brick Grated Drop Inlet Type 'B' - 300mm thru 900mm Pipe
840.28 Brick Grated Drop Inlet Type 'D' - 300mm thru 900mm Pipe
840.29 Frames and Narrow Slot Flat Grates
840.45 Precast Drainage Structure
840.66 Drainage Structure Steps
846.01 Concrete Curb, Gutter and Curb & Gutter
848.02 Driveway Turnout - Radius Type
848.04 Street Turnout
852.10 Median Construction - with Curb and Gutter
862.01 Guardrail Placement
862.02 Guardrail Installation
862.03 Structure Anchor Units
866.01 Chain Link Fence - 1200mm, 1500mm and 1800mm High Fence
876.02 Guide for Rip Rap at Pipe Outlets

INDEX OF SHEETS

Sheet Number	Sheet
1	Title Sheet
1-A	Index of Sheets, General Notes and List of Standards
1-B	Conventional Symbols
1-C	Survey Control Sheet
1-D	Centerline Coordinate List
2 Thru 2-C	Typical Sections, Pavement Schedule, Wedging Detail and Miscellaneous Details not Covered by Roadway Standards
2-D Thru 2-F	Milled Rumble Strip Detail
2-G	Fabric For Embankment Stabilization Detail
2-H	Embankment Monitoring Detail
2-I	Median Construction with Curb & Gutter
3	Summary of Quantities
3-A	Earthwork Summary, Pavement Removal Summary & Guardrail Summary
3-B	Drainage Summaries
3-C	Parcel Index Sheet
4 Thru 15	Plan Sheets
16 Thru 22	Profile Sheets
TTC-1 Thru TTC-22	Traffic Control Plans
PMP-1 Thru PMP-6	Pavement Marking Plans
EC-1 Thru EC-21	Erosion Control Plans
RF-1	Reforestation Plan
Sign-1 Thru Sign-8	Signing Plans
UC-1 Thru UC-9	Utility Construction Plans
UO-1 Thru UO-13	Utility by Others Plans
X-1A	Cross-Section Index of Sheets
X-1B Thru X-1C	Cross Section Summary Sheets
X-1 Thru X-52	Cross-Section Sheets
S-1 Thru S-29	Structure Plans

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1/26/2009

PROJ. REFERENCE NO.	SHEET NO.
R-2414A	1-B

METRIC

Note: Not to Scale

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

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

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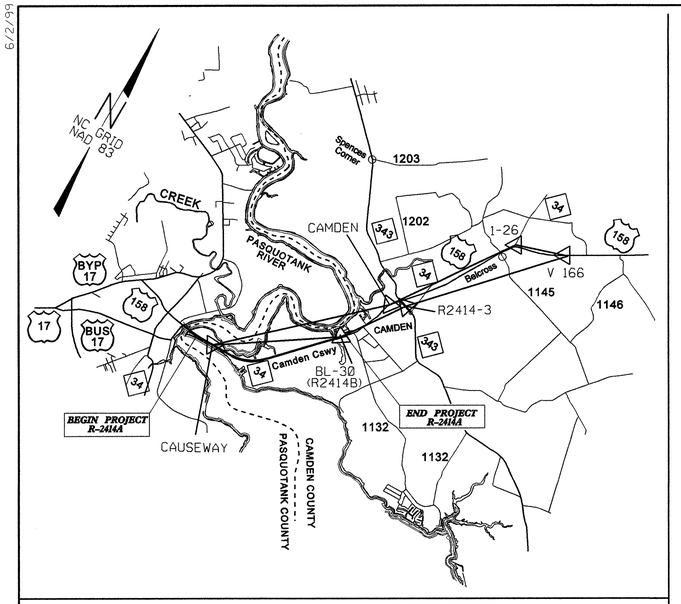
PROJECT REFERENCE NO.	SHEET NO.
R-2414A	1C
Location and Surveys	

METRIC

SURVEY CONTROL SHEET R-2414A

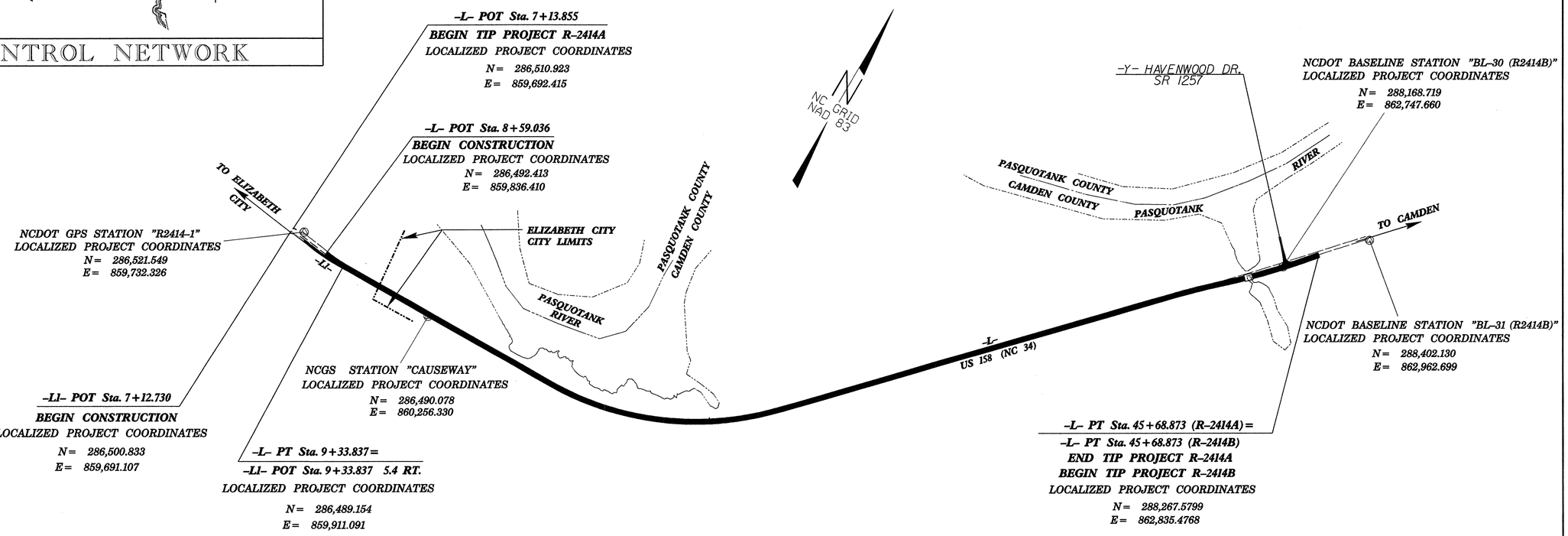


GPS CONTROL NETWORK

CONTROL DATA

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	GPS MON "R2414-1"	286521.549	859732.326	1.419	7+52.069	15.670 LT
3	BL-1	286477.687	859953.574	1.744	9+76.098	12.260 RT
2	NCGS "CAUSEWAY"	286490.078	860256.330	1.788	12+79.033	5.538 RT
4	BL-2	286492.539	860513.635	1.735	15+36.339	7.893 RT
6	BL-3	286498.096	860724.881	2.033	17+47.636	6.307 RT
7	NCGS "WOOD"	286527.426	860978.469	1.923	20+01.775	8.859 RT
8	BL-4	286643.140	861255.447	1.837	23+00.708	6.967 RT
10	BL-5	286751.157	861405.965	2.024	24+84.992	6.846 RT
11	BL-6	286910.887	861564.750	1.758	27+09.615	7.021 RT
13	BL-7	287083.998	861726.770	1.626	29+46.718	6.449 RT
14	BL-8	287292.648	861923.100	1.475	32+33.214	6.523 RT
16	BL-9	287519.692	862136.803	1.547	35+45.012	6.651 RT
17	BL-10	287679.898	862289.394	1.379	37+66.254	8.051 RT
19	BL-11	287848.817	862447.879	1.595	39+97.881	7.776 RT
20	BL-12	288075.878	862658.988	2.130	43+08.021	3.573 LT
30	BL-30 (R2414B)	288168.719	862747.660	2.274	44+36.581	2.858 LT
22	BL-13	288225.304	862799.325	2.404	45+13.244	1.007 LT
31	BL-31 (R2414B)	288402.130	862962.699	2.271	47+52.776	15.559 RT



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "R2414-1"
WITH NAD 83 STATE PLANE GRID COORDINATES OF
NORTHING: 286521.540(m) EASTING: 859732.336(m)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.0000523
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R2414-1" TO -L- STATION 8+59.036 IS
S 74°21'41.7" E 108.085m
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NGVD 29

CONTROL NETWORK STATIONS
(STATE PLANE GRID COORDINATES)

NAME	NORTH	EAST	ELEVATION
NCGS "CAUSEWAY"	286490.077	860256.333	1.788
BL-30 (R2414B)	288168.805	862747.818	2.274
NCGS "CAMDEN"	289416.757	863350.573	2.430
NCDOT GPS (R2414-3)	289581.554	863697.873	2.780
NCDOT GPS "1-26"	292128.096	865181.685	1.890
CGS "V 166"	292507.581	866305.684	3.451

NOTE: DRAWING NOT TO SCALE

NOTES:

THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
HTTP:/WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

FILE: r2414a_ls_control_051118.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.

6/2/99

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12/12/2008

PROJ. REFERENCE NO.	SHEET NO.
R-2414A	1-D

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

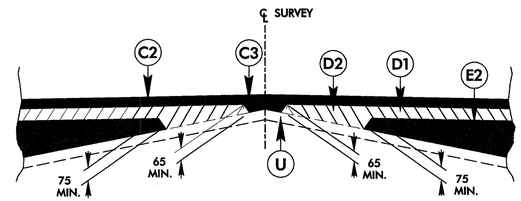
CENTERLINE COORDINATE LIST

Point #	Chain	Station	Northing (Y)	Easting (X)
1	L	8+00.005	286499.8458	859777.8496
2	L	8+40.005	286494.7027	859817.5176
3	L	8+80.005	286490.5603	859857.2957
4	L	9+20.005	286489.0542	859897.2599
5	L	9+60.005	286489.6434	859937.2547
6	L	10+00.005	286490.3921	859977.2477
7	L	10+40.005	286491.1408	860017.2407
8	L	10+80.005	286491.8895	860057.2337
9	L	11+20.005	286492.6381	860097.2267
10	L	11+60.005	286493.3868	860137.2197
11	L	12+00.005	286494.1355	860177.2126
12	L	12+40.005	286494.8842	860217.2056
13	L	12+80.005	286495.6329	860257.1986
14	L	13+20.005	286496.3815	860297.1916
15	L	13+60.005	286497.1302	860337.1846
16	L	14+00.005	286497.8789	860377.1776
17	L	14+40.005	286498.6276	860417.1706
18	L	14+80.005	286499.3762	860457.1636
19	L	15+20.005	286500.1249	860497.1566
20	L	15+60.005	286500.8736	860537.1496
21	L	16+00.005	286501.6223	860577.1426
22	L	16+40.005	286502.3710	860617.1356
23	L	16+80.005	286503.1196	860657.1286
24	L	17+20.005	286503.8683	860697.1216
25	L	17+60.005	286504.6862	860737.1131
26	L	18+00.005	286506.1586	860777.0848
27	L	18+40.005	286508.9961	860816.9816
28	L	18+80.005	286513.3655	860856.7397
29	L	19+20.005	286519.2605	860896.3005
30	L	19+60.005	286526.6722	860935.6053
31	L	20+00.005	286535.5899	860974.5960
32	L	20+40.005	286546.0002	861013.2150
33	L	20+80.005	286557.8879	861051.4052
34	L	21+20.005	286571.2352	861089.1100
35	L	21+60.005	286586.0225	861126.2737
36	L	22+00.005	286602.2278	861162.8413
37	L	22+40.005	286619.8273	861198.7587
38	L	22+80.005	286638.7949	861233.9728
39	L	23+20.005	286659.1024	861268.4315
40	L	23+60.005	286680.7200	861302.0839
41	L	24+00.005	286703.6156	861334.8802
42	L	24+40.005	286727.7554	861366.7718
43	L	24+80.005	286753.1035	861397.7116
44	L	25+20.005	286779.6227	861427.6539
45	L	25+60.005	286807.2735	861456.5543
46	L	26+00.005	286835.9008	861484.4896
47	L	26+40.005	286864.9893	861511.9459
48	L	26+80.005	286894.1276	861539.3496
49	L	27+20.005	286923.2659	861566.7532
50	L	27+60.005	286952.4042	861594.1569
51	L	28+00.005	286981.5425	861621.5605
52	L	28+40.005	287010.6808	861648.9641
53	L	28+80.005	287039.8191	861676.3678
54	L	29+20.005	287068.9574	861703.7714
55	L	29+60.005	287098.0957	861731.1750
56	L	30+00.005	287127.2340	861758.5787
57	L	30+40.005	287156.3723	861785.9823
58	L	30+80.005	287185.5106	861813.3860
59	L	31+20.005	287214.6489	861840.7896
60	L	31+60.005	287243.7872	861868.1932
61	L	32+00.005	287272.9255	861895.5969
62	L	32+40.005	287302.0638	861923.0005
63	L	32+80.005	287331.2021	861950.4042
64	L	33+20.005	287360.3404	861977.8078
65	L	33+60.005	287389.4787	862005.2114
66	L	34+00.005	287418.6170	862032.6151
67	L	34+40.005	287447.7553	862060.0187
68	L	34+80.005	287476.8936	862087.4224
69	L	35+20.005	287506.0319	862114.8260
70	L	35+60.005	287535.1702	862142.2296
71	L	36+00.005	287564.3085	862169.6333
72	L	36+40.005	287593.4468	862197.0369
73	L	36+80.005	287622.5851	862224.4406
74	L	37+20.005	287651.7234	862251.8442
75	L	37+60.005	287680.8617	862279.2478
76	L	38+00.005	287710.0000	862306.6515
77	L	38+40.005	287739.1383	862334.0551
78	L	38+80.005	287768.2766	862361.4588
79	L	39+20.005	287797.4149	862388.8624
80	L	39+60.005	287826.5532	862416.2660
81	L	40+00.005	287855.6915	862443.6697
82	L	40+40.005	287884.8199	862471.0838
83	L	40+80.005	287913.7723	862498.6835
84	L	41+20.005	287942.3170	862526.7043
85	L	41+60.005	287970.4102	862555.1778
86	L	42+00.005	287998.1320	862584.0134
87	L	42+40.005	288025.7610	862612.9381
88	L	42+80.005	288053.6040	862641.6564
89	L	43+20.005	288081.8770	862669.9514
90	L	43+60.005	288110.5991	862697.7904
91	L	44+00.005	288139.7629	862725.1663
92	L	44+40.005	288169.3609	862752.0720
93	L	44+80.005	288199.3857	862778.5008
94	L	45+20.005	288229.8294	862804.4458
95	L	45+60.005	288260.6844	862829.9005
96	L	46+00.005	288291.8216	862855.0096
97	L	46+40.005	288322.9688	862880.1065
98	L	46+80.005	288354.1159	862905.2034
99	L	47+20.005	288385.2799	862930.2794
100	L	47+60.005	288417.1799	862954.4064
101	L	48+00.005	288450.1491	862977.0505
102	L	48+40.005	288484.1186	862998.1642
103	L	48+80.005	288519.0176	863017.7036
104	L	49+20.005	288554.7729	863035.6277
105	L	49+60.005	288591.3101	863051.8991
106	L	50+00.005	288628.2711	863067.1923
107	L	50+40.005	288665.2348	863082.4792
108	L	50+80.005	288702.1984	863097.7660
109	L	51+20.005	288739.1621	863113.0529
110	L	51+60.005	288776.1257	863128.3397
111	L	52+00.005	288813.0894	863143.6266
112	L	52+40.005	288850.0531	863158.9134
113	L	52+80.005	288887.0167	863174.2003
114	L	53+20.005	288923.9804	863189.4871
115	L	53+60.005	288960.9440	863204.7740
116	L	54+00.005	288997.9077	863220.0608
117	L1	8+00.000	286489.6124	859777.6522
118	L1	8+40.000	286485.3374	859817.4181
119	L1	8+80.000	286483.3224	859857.3618
120	L1	9+20.000	286483.4956	859897.3578
121	L1	9+33.837	286483.7546	859911.1925
122	Y	10+00.000	288247.0422	862689.6574
123	Y	10+40.000	288218.0409	862717.2059
124	Y	10+80.000	288189.0395	862744.7545
125	Y	10+98.622	288175.5382	862757.5794

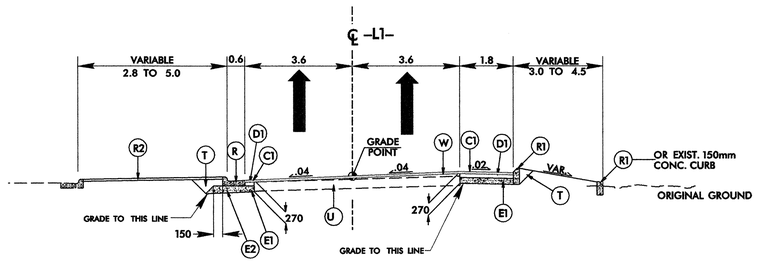
PAVEMENT SCHEDULE

A	90 mm PORTLAND CEMENT CONCRETE PAVEMENT.
C1	PROP. APPROX. 80 mm ASPHALT CONC. SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 96 kg PER SQ. METER IN EACH OF TWO LAYERS.
C2	PROP. APPROX. 40 mm ASPHALT CONC. SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 96 kg PER SQ. METER.
C3	PROP. VAR. DEPTH ASPHALT CONC. SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 2.40 kg PER SQ. METER PER 1 mm DEPTH, TO BE PLACED IN LAYERS NOT TO EXCEED 50 mm IN DEPTH.
D1	PROP. APPROX. 90 mm ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 220.5 kg PER SQ. METER.
D2	PROP. VAR. DEPTH ASPHALT CONC. INTERMEDIATE COURSE,TYPE I19.0C, AT AN AVERAGE RATE OF 2.45 kg PER SQ. METER PER 1 mm DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 65 mm OR GREATER THAN 110 mm IN DEPTH.
E1	PROP. APPROX. 100 mm ASPHALT CONC. BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 245 kg PER SQ. METER.
E2	PROP. VAR. DEPTH ASPHALT CONC. BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 2.45 kg PER SQ. METER PER 1 mm DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 75 mm IN DEPTH OR GREATER THAN 140 mm IN DEPTH.
R	750 mm CONCRETE CURB AND GUTTER.
R1	200 x 450 mm CONCRETE CURB AND GUTTER.
R2	100 mm CONCRETE ISLAND COVER
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V	MILLED RUMBLE STRIPS (ASPHALT)
W	VARIABLE DEPTH ASPHALT PAVEMENT. SEE STANDARD WEDGING DETAIL ON THIS SHEET

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

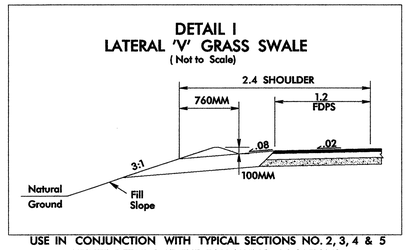


Detail Showing Method of Wedging (W)



TYPICAL SECTION NO. 1

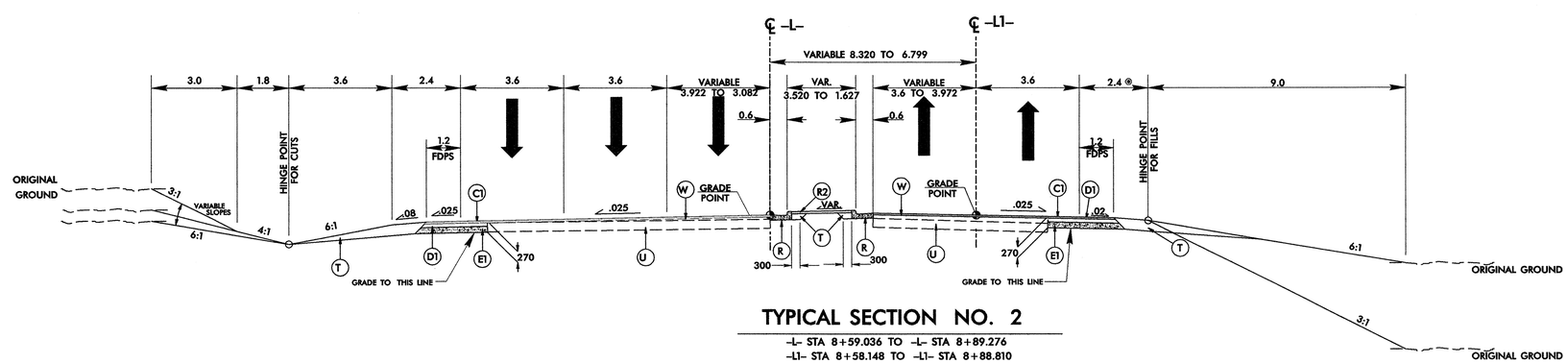
-L1- 7+12.730 TO -L1- 8+58.148



USE IN CONJUNCTION WITH TYPICAL SECTIONS NO. 2, 3, 4 & 5
UTILIZE DETAIL 1 AT THE FOLLOWING LOCATIONS:
-L- STA. 8+59.036 TO -L- STA. 9+83.259 LT.
-L- STA. 9+83.259 TO -L- STA. 42+97.800 LT. & RT.
-L- STA. 43+28.200 TO -L- STA. 44+30.628 LT. & RT.
-L- STA. 44+30.628 TO -L- STA. 44+44.798 LT.
-Y- STA. 10+40.000 TO -Y- STA. 10+72.184 LT. & RT.

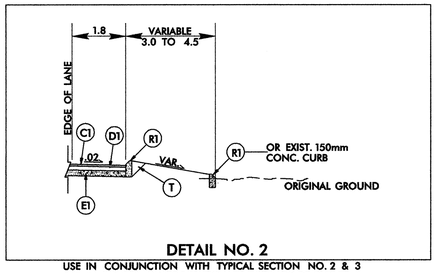
NOTE: FDPS = FULL DEPTH PAVED SHOLDER
NOTE: EXISTING PAVEMENT WIDTH VARIES

NOTE: SEE DETAIL I FOR LATERAL 'V' GRASS SWALE



TYPICAL SECTION NO. 2

-L- STA 8+59.036 TO -L- STA 8+89.276
-L1- STA 8+58.148 TO -L1- STA 8+88.810



DETAIL NO. 2

USE IN CONJUNCTION WITH TYPICAL SECTION NO. 2 & 3
-L1- STA 8+58.148 TO -L1- STA 8+88.810 RT.
-L- STA 8+89.276 TO -L- STA 9+83.259 RT.

NOTE: -L- GRADE TIES TO EXISTING PAVEMENT WITH NO RESURFACING

NOTE: FDPS = FULL DEPTH PAVED SHOLDER
NOTE: EXISTING PAVEMENT WIDTH VARIES
⊛ NOTE: ADD 1.0 M FOR GUARDRAIL

NOTE: SEE DETAIL I FOR LATERAL 'V' GRASS SWALE
SEE DETAIL NO. 2 FOR CHANNELIZATION

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	2

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 24116 ENGINEER BOB A. MAY
1/24/09

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON
1-29-09

WETHERILL ENGINEERING
559 JONES FRANKLIN ROAD
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

6/16/2009
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1/28/2009

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	2-A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

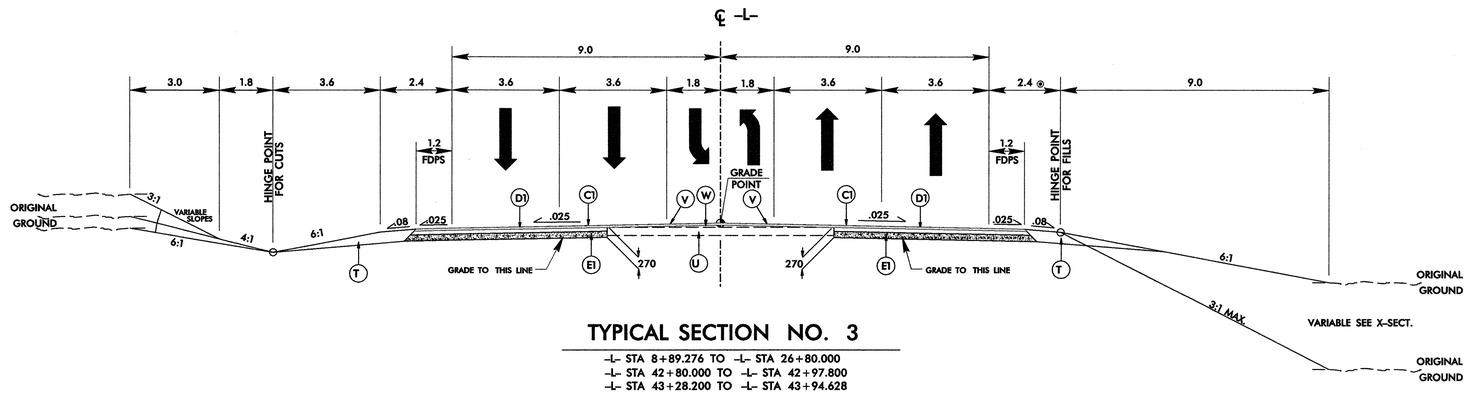
NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. WAY 1/26/09

NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON 1-29-09

WETHERILL ENGINEERING
559 JONES FRANKLIN ROAD
SUITE 164
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PAVEMENT SCHEDULE

A	90 MM PORTLAND CEMENT CONCRETE PAVEMENT
C1	80 MM S9.5C
C2	40 MM S9.5C
C3	VAR S9.5C
D1	90 MM I19.0C
D2	VAR I19.0C
E1	100 MM B25.0C
E2	VAR B25.0C
R	750mm CONCRETE CURB & GUTTER
R1	200x450mm CONC. CURB
R2	100mm CONC. ISLAND COVER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLED RUMBLE STRIPS
W	WEDGING (SEE DETAIL ON SHT. 2)



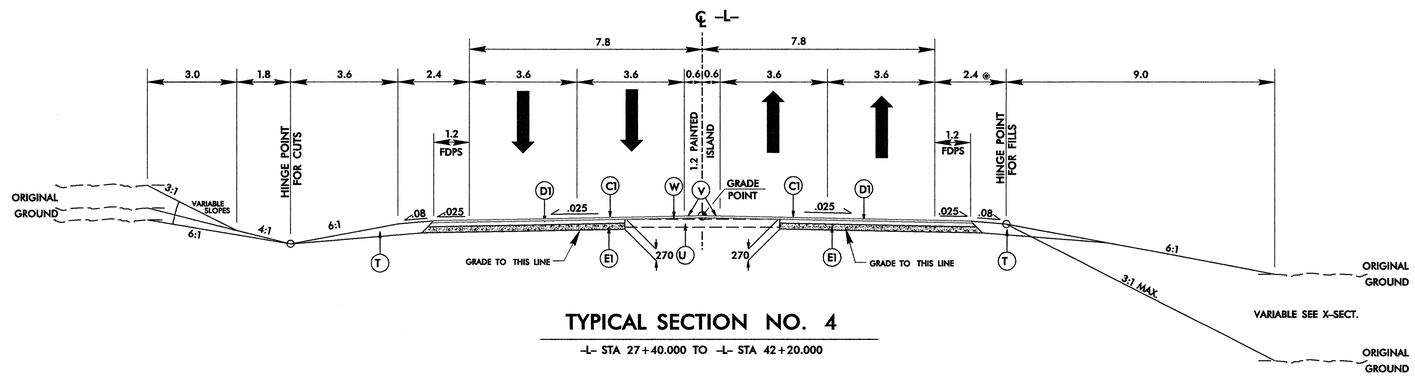
TYPICAL SECTION NO. 3

-L- STA 8+89.276 TO -L- STA 26+80.000
-L- STA 42+80.000 TO -L- STA 42+97.800
-L- STA 43+28.200 TO -L- STA 43+94.628

NOTE: TRANSITION FROM TYPICAL SECTION NO. 3 TO TYPICAL SECTION NO. 4 -L- STA. 26+80.000 TO -L- STA. 27+40.000

NOTE: TRANSITION FROM TYPICAL SECTION NO. 3 TO TYPICAL SECTION NO. 5 -L- STA. 43+94.628 TO -L- STA. 44+30.628

NOTE: FDPS = FULL DEPTH PAVED SHOLDER
NOTE: EXISTING PAVEMENT WIDTH VARIES
⊛ NOTE: ADD 1.0 M FOR GUARDRAIL
NOTE: SEE DETAIL 1 FOR LATERAL 'V' GRASS SWALE
SEE DETAIL NO. 2 FOR CHANNELIZATION

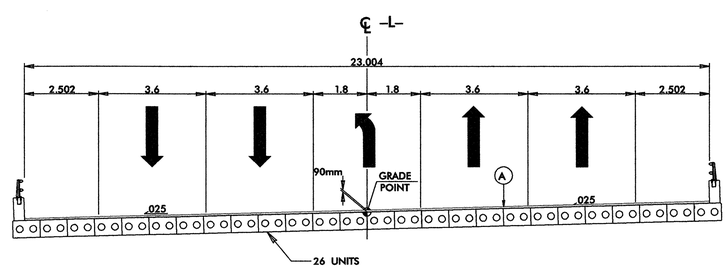


TYPICAL SECTION NO. 4

-L- STA 27+40.000 TO -L- STA 42+20.000

NOTE: TRANSITION FROM TYPICAL SECTION NO. 4 TO TYPICAL SECTION NO. 3 -L- STA. 42+20.000 TO -L- STA. 42+80.000

NOTE: FDPS = FULL DEPTH PAVED SHOLDER
NOTE: EXISTING PAVEMENT WIDTH VARIES
⊛ NOTE: ADD 1.0 M FOR GUARDRAIL
NOTE: SEE DETAIL 1 FOR LATERAL 'V' GRASS SWALE



TYPICAL SECTION NO. 5

-L- STA 42+97.800 TO -L- STA 43+28.200

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PROJECT REFERENCE NO.	SHEET NO.
R-2414A	2-B

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY

1/26/09

PAVEMENT DESIGN ENGINEER

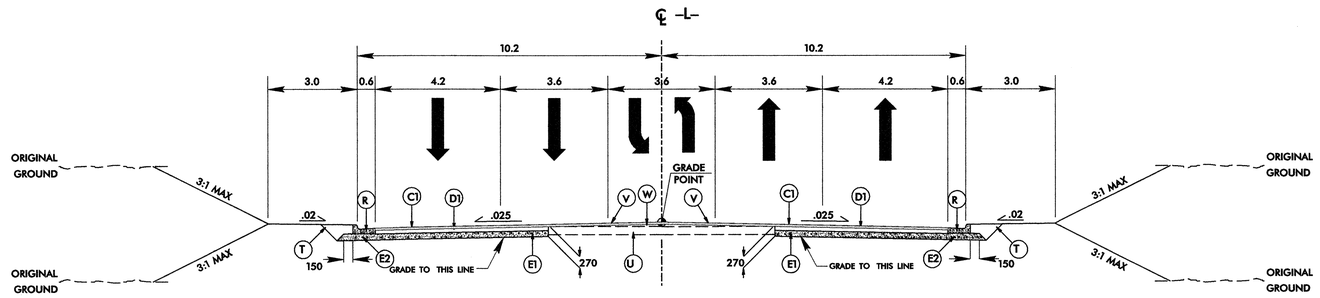
NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON

1/29/09

WETHERILL ENGINEERING
559 JONES FRANKLIN ROAD
SUITE 164
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PAVEMENT SCHEDULE

A	90 MM PORTLAND CEMENT CONCRETE PAVEMENT
C1	80 MM S9.5C
C2	40 MM S9.5C
C3	VAR S9.5C
D1	90 MM I19.0C
D2	VAR I19.0C
E1	100 MM B25.0C
E2	VAR B25.0C
R	750mm CONCRETE CURB & GUTTER
R1	200x450mm CONC. CURB
R2	100mm CONC. ISLAND COVER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLED RUMBLE STRIPS
W	WEDGING (SEE DETAIL ON SHT. 2)

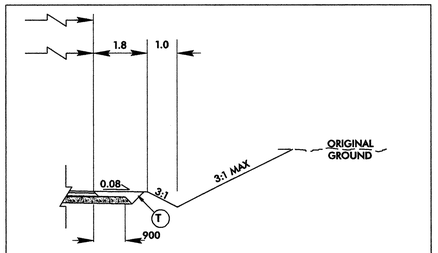


TYPICAL SECTION NO. 6

-L- STA 44+30.628 TO -L- STA 45+68.873 LT.
-L- STA 44+30.628 TO -L- STA 46+50.000 RT.

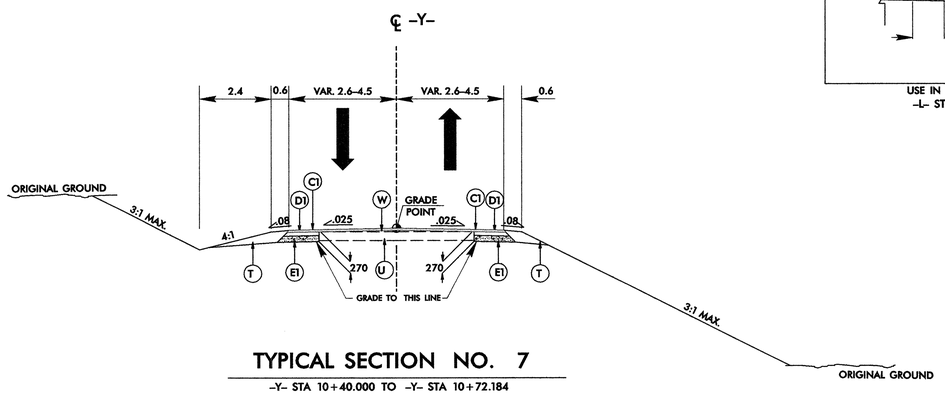
NOTE: EXISTING PAVEMENT WIDTH VARIES
NOTE: SEE DETAIL I FOR LATERAL 'V' GRASS SWALE

NOTE: FINAL LAYER OF SURFACE COURSE & FINAL PAVEMENT MARKINGS ARE TO BE PLACED UNDER NCDOT PROJECT R-2414B.
-L- STA. 44+70+/- TO -L- STA. 45+68.873



DETAIL NO. 3

USE IN CONJUNCTION WITH TYPICAL SECTION NO. 6
-L- STA. 45+68.873 TO -L- STA. 46+50.000 RT.



TYPICAL SECTION NO. 7

-Y- STA 10+40.000 TO -Y- STA 10+72.184

NOTE: EXISTING PAVEMENT WIDTH VARIES
NOTE: SEE DETAIL I FOR LATERAL 'V' GRASS SWALE

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1/26/2009

TEMPORARY ALIGNMENT SHIFT FOR TRAFFIC CONTROL PLANS PHASE II

WETHERILL ENGINEERING
559 JONES FRANKLIN ROAD
SUITE 164
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

METRIC

5 0 10

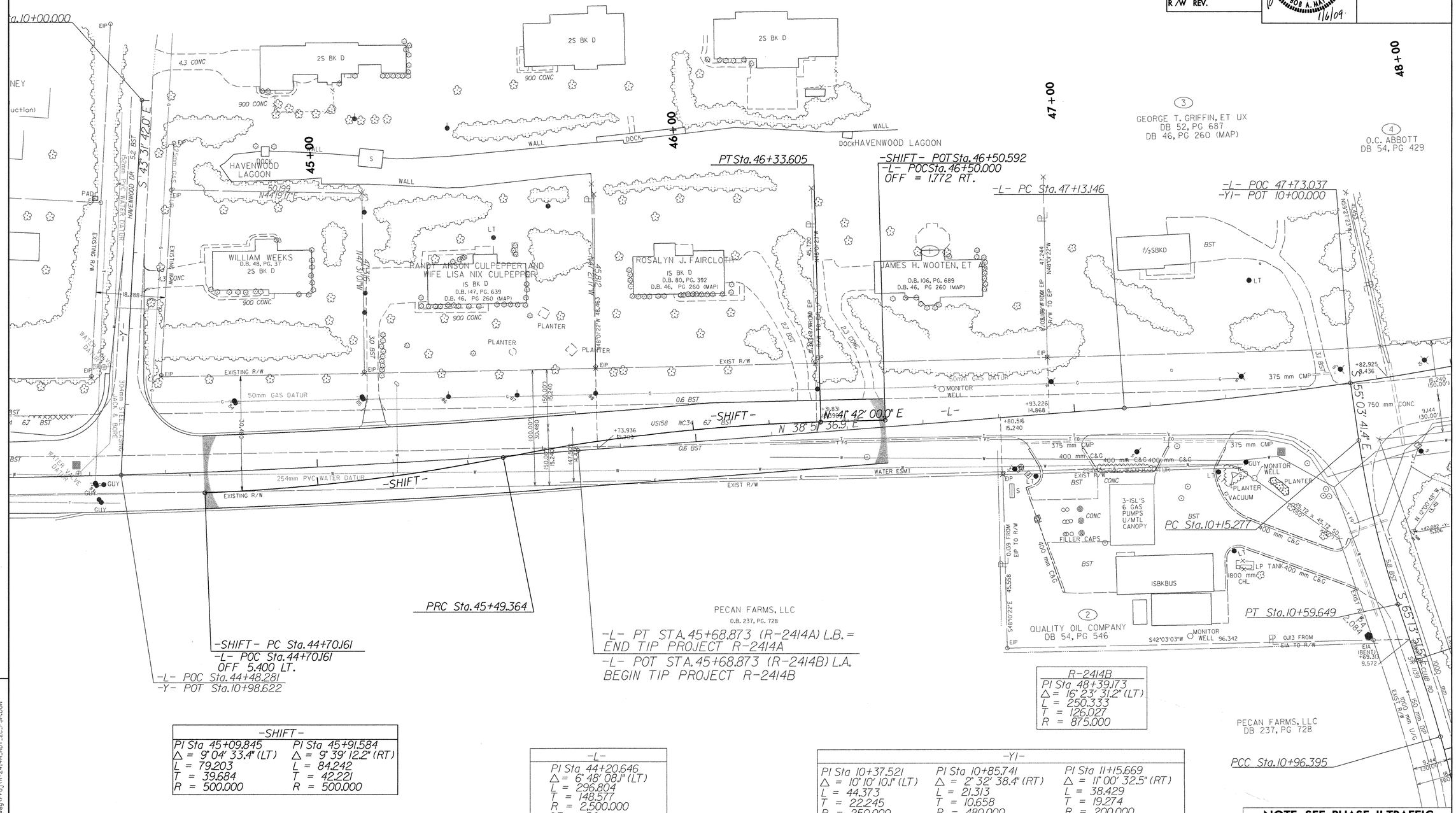
PROJECT REFERENCE NO.	SHEET NO.
R-2414A	2-C
R /W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

CONST.REV.

R /W REV.

NORTH CAROLINA PROFESSIONAL SEAL 21112 ENGINEER BOB A. MAY 1/6/09

REVISIONS



-SHIFT-	
PI Sta 45+09.845	PI Sta 45+91.584
Δ = 9° 04' 33.4" (LT)	Δ = 9° 39' 12.2" (RT)
L = 79.203	L = 84.242
T = 39.684	T = 42.221
R = 500.000	R = 500.000

-L-
PI Sta 44+20.646
Δ = 6° 48' 08.1" (LT)
L = 296.804
T = 148.577
R = 2,500.000
SE = RC
V_{DES} = 100 KPH

-Y1-		
PI Sta 10+37.521	PI Sta 10+85.741	PI Sta 11+15.669
Δ = 10° 10' 10.1" (LT)	Δ = 2° 32' 38.4" (RT)	Δ = 11° 00' 32.5" (RT)
L = 44.373	L = 21.313	L = 38.429
T = 22.245	T = 10.658	T = 19.274
R = 250.000	R = 480.000	R = 200.000

R-2414B
PI Sta 48+39.173
Δ = 16° 23' 31.2" (LT)
L = 250.333
T = 126.027
R = 875.000

NOTE: SEE PHASE II TRAFFIC CONTROL PLANS

NOTE: SEE PROFILE SHEET 22 FOR INTERMEDIATE GRADE

10:06:18 AM
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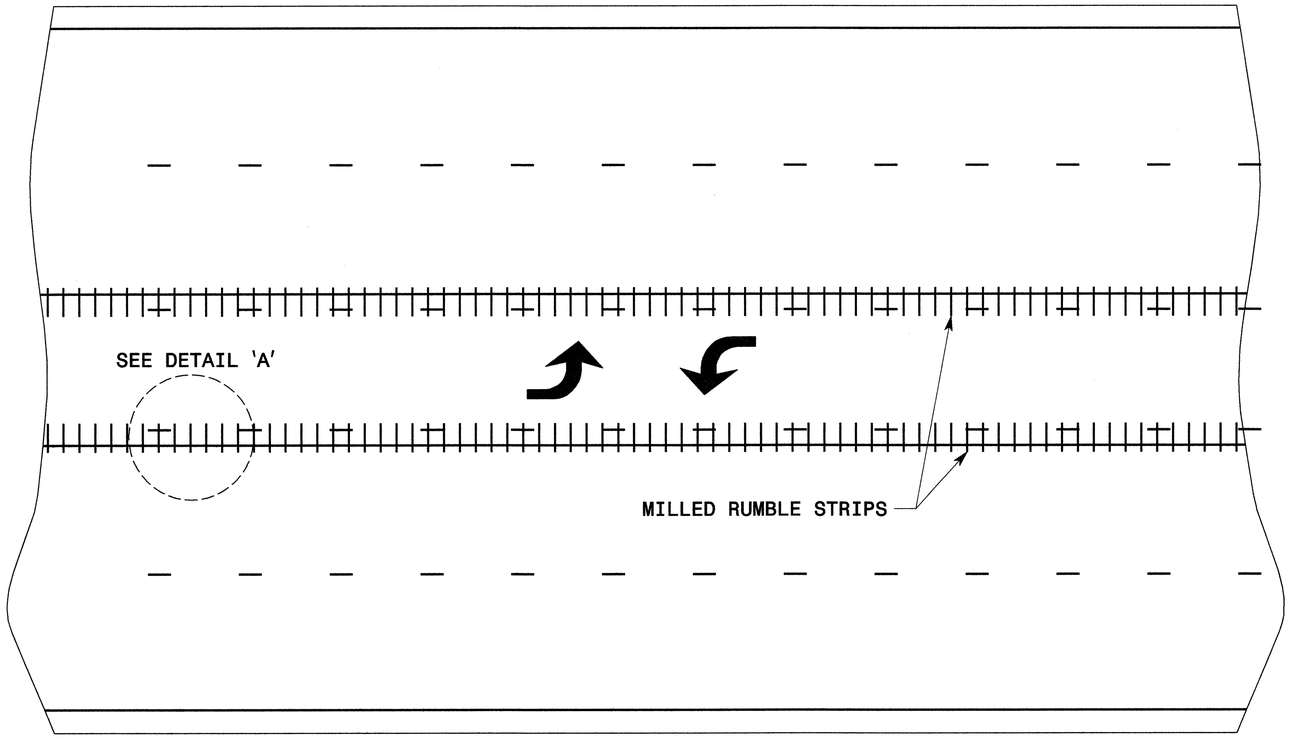
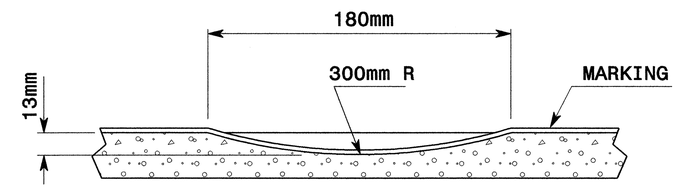
12/3/2008

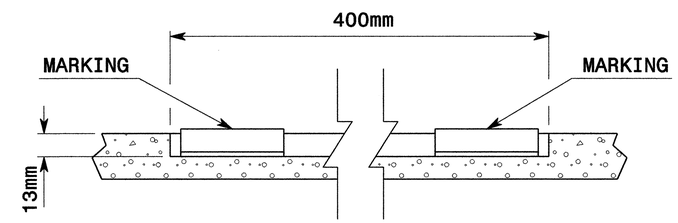
PROJ. REFERENCE NO.	SHEET NO.
R-2414A	2-D



MILLING DETAIL

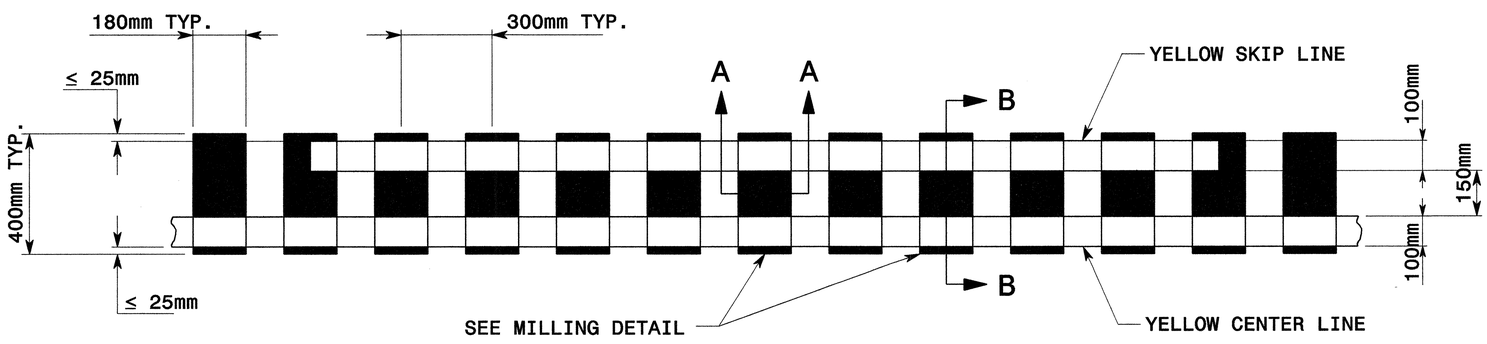


SECTION A-A



SECTION B-B

DETAIL 'A'



NOTES:

AFTER MILLING RUMBLE STRIPS, MAKE SURE ROAD SURFACE IS IN PROPER CONDITION FOR ADEQUATE BONDING OF THE NEW THERMOPLASTIC MARKINGS.

PAVEMENT MARKING LINES THAT ARE APPLIED TO THE RUMBLE STRIPS SHOULD NOT HAVE MORE THAN 13mm LATERAL DEVIATION.

APPROVED: J. W. Woolard DATE: 1/23/08

SEAL: NORTH CAROLINA PROFESSIONAL SEAL 19862 ENGINEER J. W. WOOLARD, JR.

RUMBLE STRIPE DETAILS FOR A 5-LANE SECTION

SCALE:	NONE
DATE:	12/01/08
DWG. BY:	
DESIGN BY:	
REVIEWED BY:	

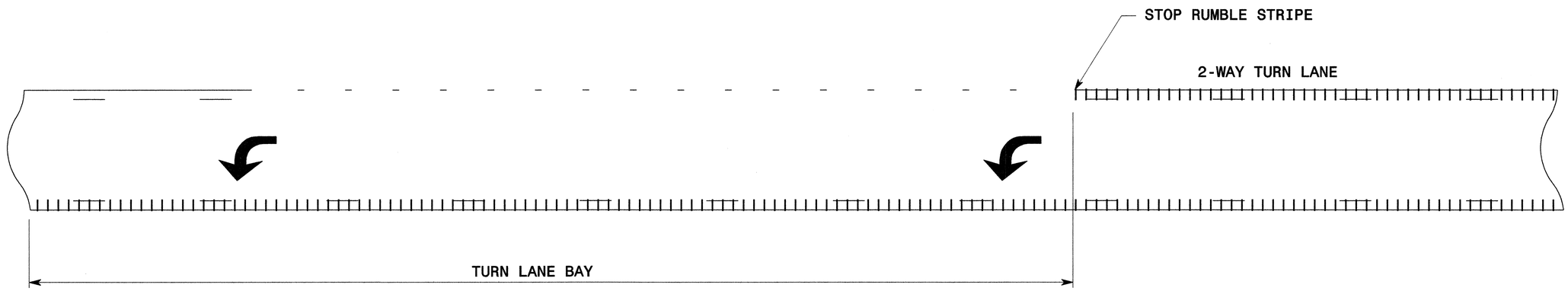
DIVISION OF HIGHWAYS — TRAFFIC ENGINEERING BRANCH — TRAFFIC CONTROL UNIT

REVISIONS

CADD FILE

10:47:57 AM
P:\R-2414A\Roadway\Proj\R-2414A_rumble-strip-dwg_Final.dgn
12/3/2008

PROJ. REFERENCE NO.	SHEET NO.
R-2414A	2-E



NOTES:

AFTER MILLING RUMBLE STRIPS, MAKE SURE ROAD SURFACE IS IN PROPER CONDITION FOR ADEQUATE BONDING OF THE NEW THERMOPLASTIC MARKINGS.

PAVEMENT MARKING LINES THAT ARE APPLIED TO THE RUMBLE STRIPS SHOULD NOT HAVE MORE THAN 13mm LATERAL DEVIATION.

APPROVED: _____ DATE: _____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 19862 ENGINEER E. W. WOOLARD, JR.

1/23/09

RUMBLE STRIPE TURN LANE DETAIL

SCALE:	NONE
DATE:	12/01/08
DWG. BY:	
DESIGN BY:	
REVIEWED BY:	

DIVISION OF HIGHWAYS
TRAFFIC ENGINEERING BRANCH
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
TRAFFIC CONTROL

REVISIONS

CADD FILE

10:47:40 AM
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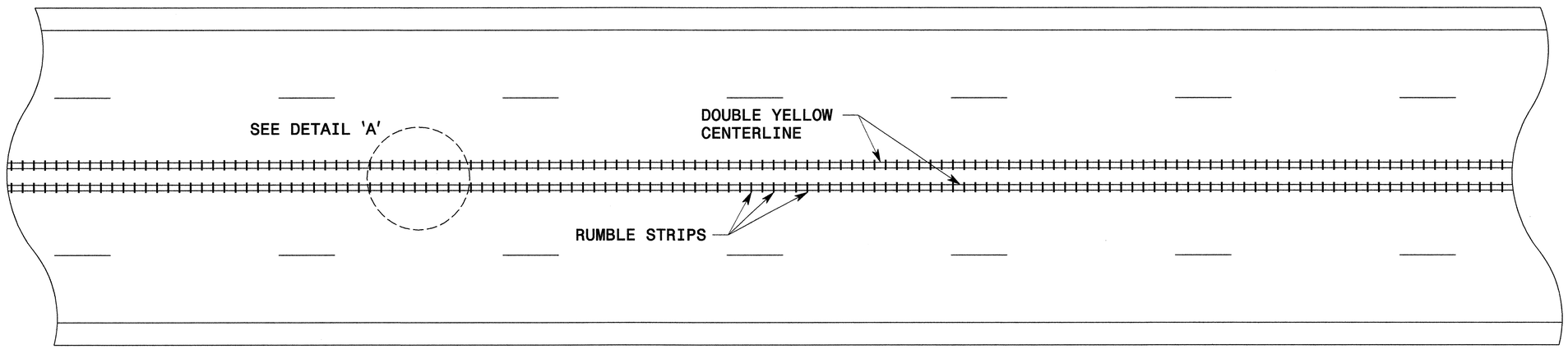
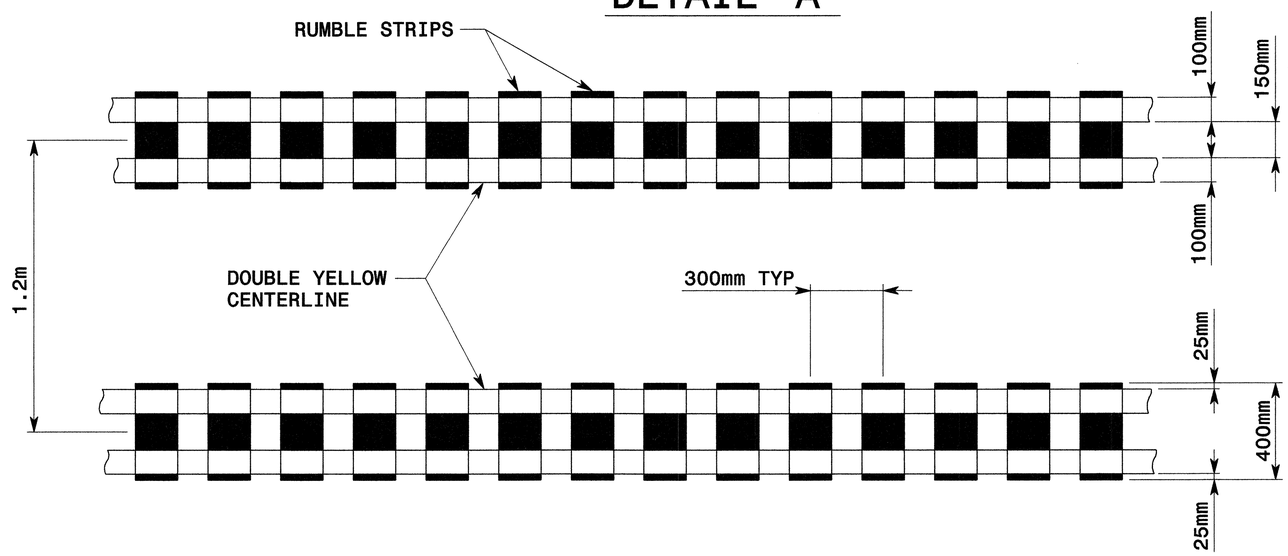
12/3/2008

PROJ. REFERENCE NO.	SHEET NO.
R-2414A	2-F



DETAIL 'A'



NOTES:

AFTER MILLING RUMBLE STRIPS, MAKE SURE ROAD SURFACE IS IN PROPER CONDITION FOR ADEQUATE BONDING OF THE NEW THERMOPLASTIC MARKINGS.

PAVEMENT MARKING LINES THAT ARE APPLIED TO THE RUMBLE STRIPS SHOULD NOT HAVE MORE THAN 13mm LATERAL DEVIATION.

APPROVED: _____ DATE: _____

SEAL — NORTH CAROLINA PROFESSIONAL SEAL 19862 ENGINEER K.W. WOOLARD, JR. — 1/23/09

RUMBLE STRIPE DETAIL FOR 4-LANE SECTION W/ 1.2M PAINTED ISLAND

SCALE:	NONE
DATE:	12/01/08
DWG. BY:	
DESIGN BY:	
REVIEWED BY:	

DIVISION OF HIGHWAYS — STATE OF NORTH CAROLINA — DEPARTMENT OF TRANSPORTATION — TRAFFIC CONTROL

REVISIONS

CADD FILE

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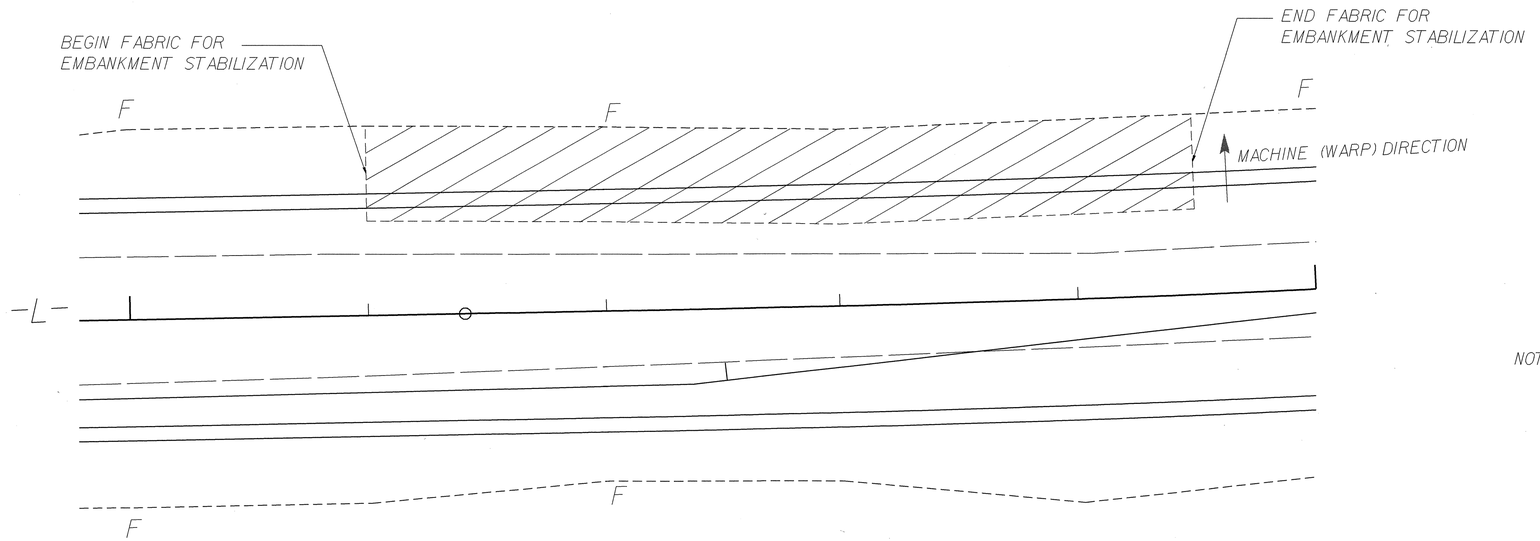
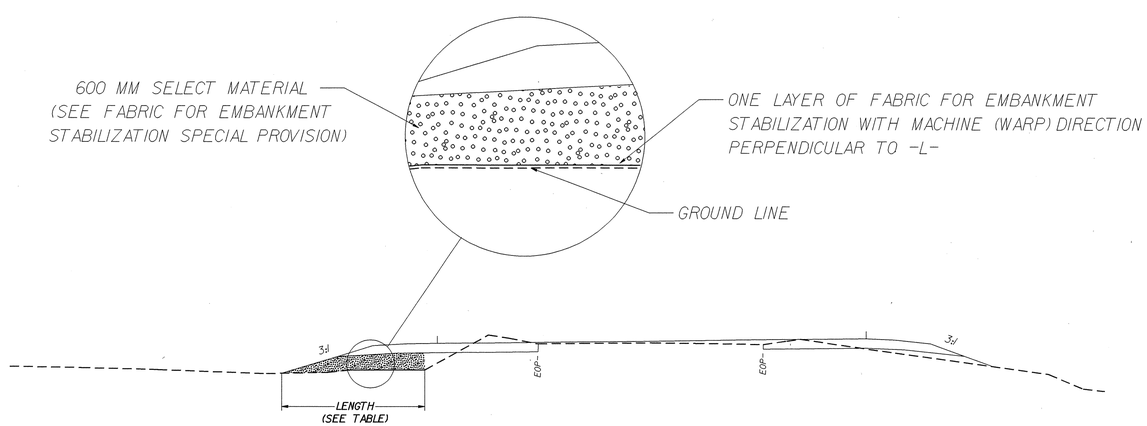
12/3/2008



PLAN VIEW
TYPICAL (OFFSET - LEFT)



CROSS SECTION
TYPICAL

SEQUENCE OF EMBANKMENT CONSTRUCTION

1. AT ALL FABRIC LOCATIONS, ALL STUMPS SHALL BE CUT CLOSE TO THE GROUND AND/OR WATER SURFACE. GRUBBING IS NOT TO BE PERFORMED IN THE FABRIC PLACEMENT AREAS.
2. PLACE THE LAYER OF FABRIC ON THE GROUND SURFACE UNDER PROPOSED EMBANKMENT FROM TOE OF PROPOSED SIDE SLOPES TO LENGTH INDICATED IN TABLE. (SEE BELOW)
3. PLACE AND COMPACT 600 MM OF CLASS III SELECT MATERIAL OVER THE FABRIC AS OUTLINED IN THE SPECIAL PROVISION ("FABRIC FOR EMBANKMENT STABILIZATION").
4. CONSTRUCT THE REMAINING EMBANKMENT WITH COMMON BORROW MATERIAL

NOTES:
(1) USE LOW GROUND PRESSURE EQUIPMENT UNTIL A MINIMUM OF 600 MM OF FILL IS PLACED OVER THE FABRIC.
(2) IF LEVELING PAD IS NEEDED, PLACE SELECT MATERIAL ACCORDING TO FABRIC FOR EMBANKMENT STABILIZATION SPECIAL PROVISION.
(3) FABRIC AND SELECT MATERIAL SHALL BE PLACED AS DIRECTED BY THE PROVISIONS, PLANS OR THE ENGINEER.

FABRIC FOR EMBANKMENT STABILIZATION

BEGIN STATION	END STATION	LENGTH	OFFSET
16+95	17+90	8.0 M	LEFT
20+10	21+50	10.0 M	RIGHT
21+50	23+60	12.0 M	RIGHT
24+40	25+90	8.0 M	RIGHT
40+80	41+70	8.0 M	RIGHT
41+70	42+00	10.0 M	RIGHT
42+00	43+00	12.0 M	RIGHT
43+20	43+50	20.0 M	RIGHT

ESTIMATED QUANTITIES

FABRIC FOR EMBANKMENT STABILIZATION _____ 8700 SM
SELECT MATERIAL _____ 5300 CM

LEGEND

FABRIC FOR EMBANKMENT STABILIZATION

NORTH CAROLINA PROFESSIONAL SEAL 26962 ENGINEER ERIC N. WILLIAMS
4/23/05

DESIGNED BY: ENW DATE: 02/05
DRAWN BY: WDF DATE: 02/05
CHECKED BY: JRB DATE: 02/05

PROJECT 34430.1.1 (R-2414A)
CAMDEN COUNTY
STATION

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FABRIC FOR EMBANKMENT STABILIZATION

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tmurray RD214516

PROJECT REFERENCE NO.	SHEET
34430.1.1 (R-2414A)	2-H

GEOTECHNICAL ENGINEER

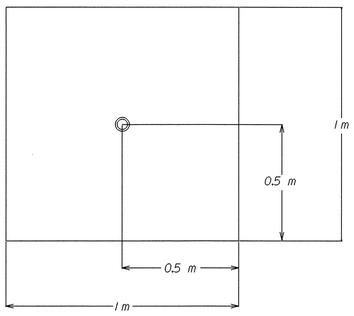
NORTH CAROLINA PROFESSIONAL SEAL 18899 ENGINEER JAMES R. BATTS, JR.

James R. Batts Jr. 4/30/09
SIGNATURE DATE

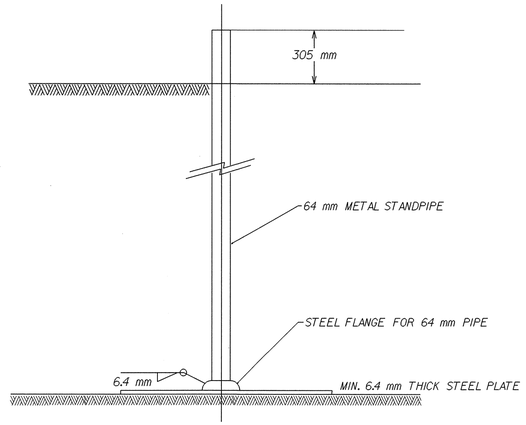
ENGINEER

SIGNATURE DATE

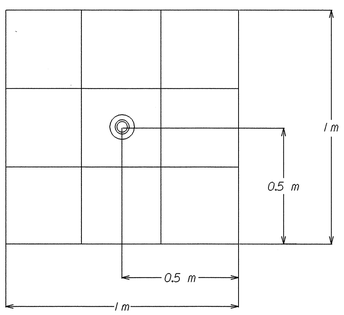
SETTLEMENT GAUGE DETAIL



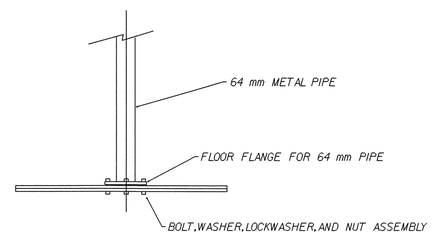
STEEL BASE



DETAIL OF STEEL BASE

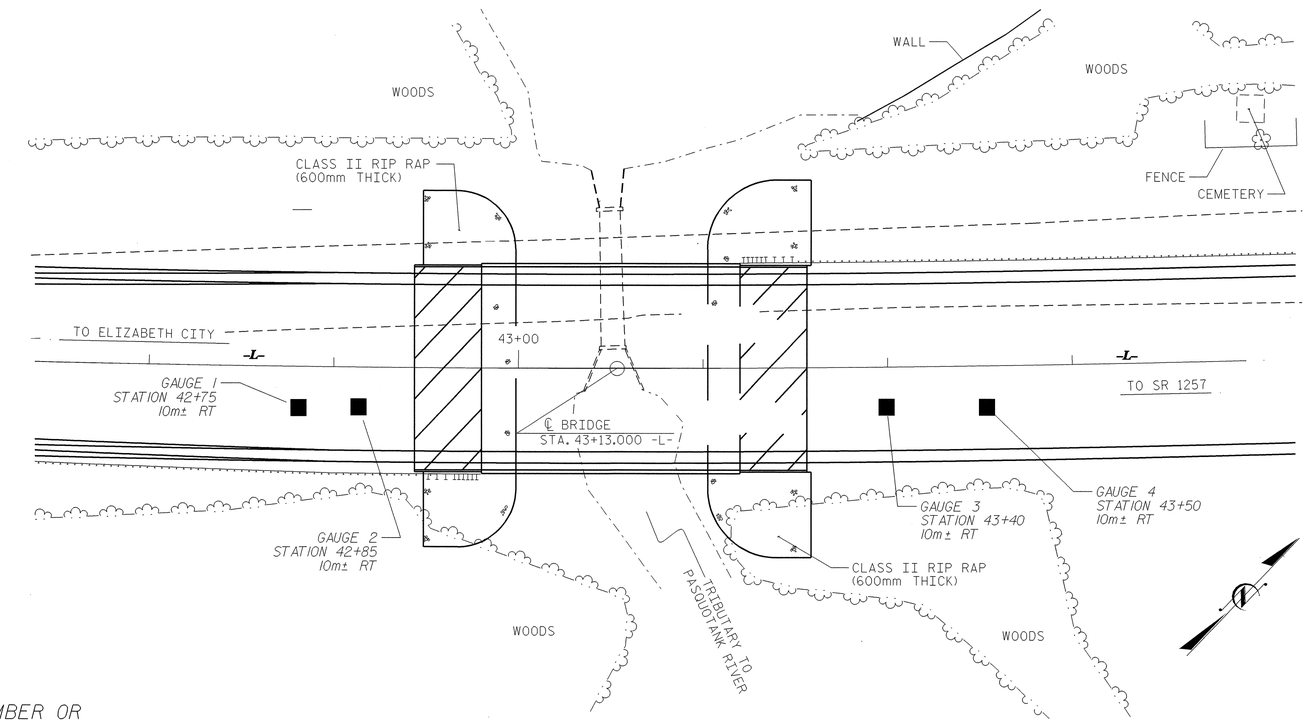


WOOD BASE



DETAIL OF WOOD BASE

SIX - .025 m X .3 m X 1 m PLANKS OF LUMBER OR TWO PIECES .025 m X 1 m X 1 m EXTERIOR GRADE PLYWOOD, SECURELY FASTENED AND THEN COATED WITH WOOD PRESERVATIVE



QUANTITIES

SETTLEMENT GAUGES.....4 EACH

NOTES

1. THE USE OF EITHER THE WOOD BASE OR THE STEEL BASE SETTLEMENT GAUGE SHALL BE THE CONTRACTOR'S OPTION.
2. SETTLEMENT GAUGES SHALL BE INSTALLED BEFORE ANY FILL IS PLACED.
3. SETTLEMENT GAUGE ELEVATIONS ARE TO BE DETERMINED AND RECORDED WEEKLY BY THE RESIDENT ENGINEER. THE INITIAL ELEVATION OF THE SETTLEMENT GAUGE PLATE (AT TOP OF PLATE) SHALL BE DETERMINED AT THE TIME OF INSTALLATION ALONG WITH THE EMBANKMENT ELEVATION. WHEN NEW SECTIONS OF THE PIPE ARE ADDED, ELEVATIONS SHALL BE RECORDED AT THE TOP OF EXISTING PIPE AND AT THE TOP OF THE NEW PIPE. THIS IS TO TAKE INTO ACCOUNT INTERIM SETTLEMENT, VARIABLE PIPE LENGTHS, AND THREAD LENGTHS IN COUPLING. RESULTS OF SETTLEMENT GAUGE READINGS SHALL BE FORWARDED TO MR. K.J. KIM, EASTERN REGIONAL GEOTECHNICAL MANAGER, WITHIN THREE DAYS.

GAUGE NOS.	LINES	STATIONS	OFFSETS
1	-L-	42+75	10 m± RT
2	-L-	42+85	10 m± RT
3	-L-	43+40	10 m± RT
4	-L-	43+50	10 m± RT

PREPARED BY: T.T. WALKER	DATE: 9/08
REVIEWED BY: J.R. BATTS	DATE: 9/08

GEOTECHNICAL ENGINEERING UNIT

- ■ EASTERN REGIONAL OFFICE
- ☐ WESTERN REGIONAL OFFICE
- ☐ CONTRACT OFFICE

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

PLANS FOR EMBANKMENT MONITORING

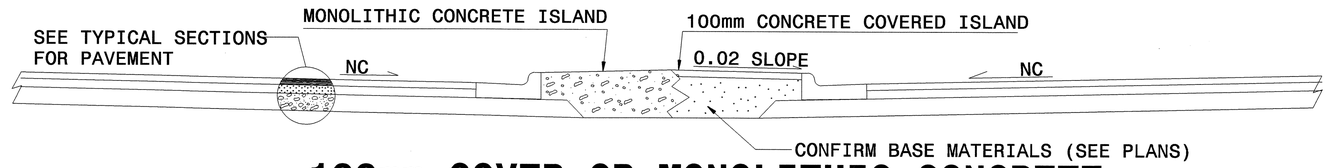
REVISIONS

NO.	BY	DATE	NO.	BY	DATE
1	JRB	1/09	3	-	-
2	-	-	4	-	-

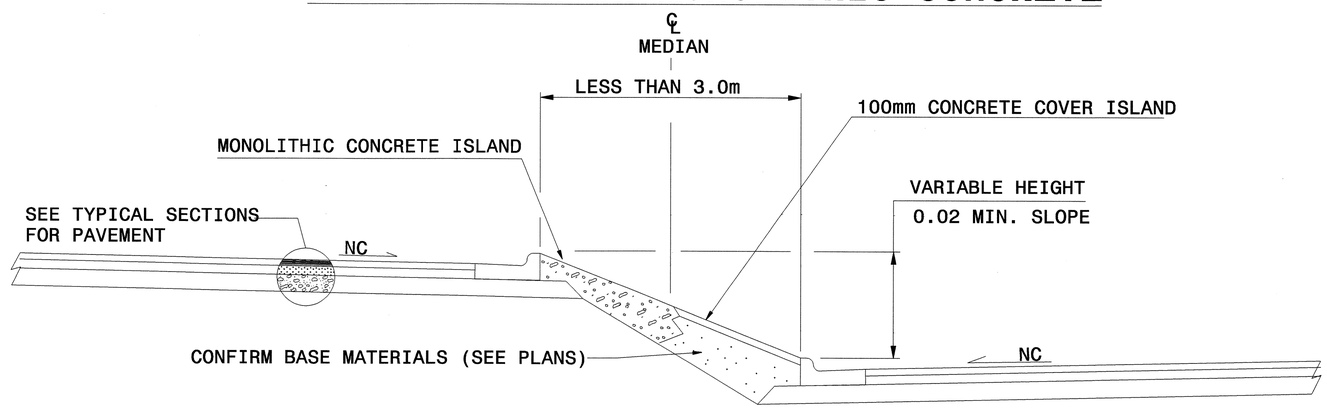
PROJECT REFERENCE NO.	SHEET NO.
R-2414A	2-I

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

ENGLISH DETAIL DRAWING FOR
MEDIAN CONSTRUCTION
WITH CURB AND GUTTER

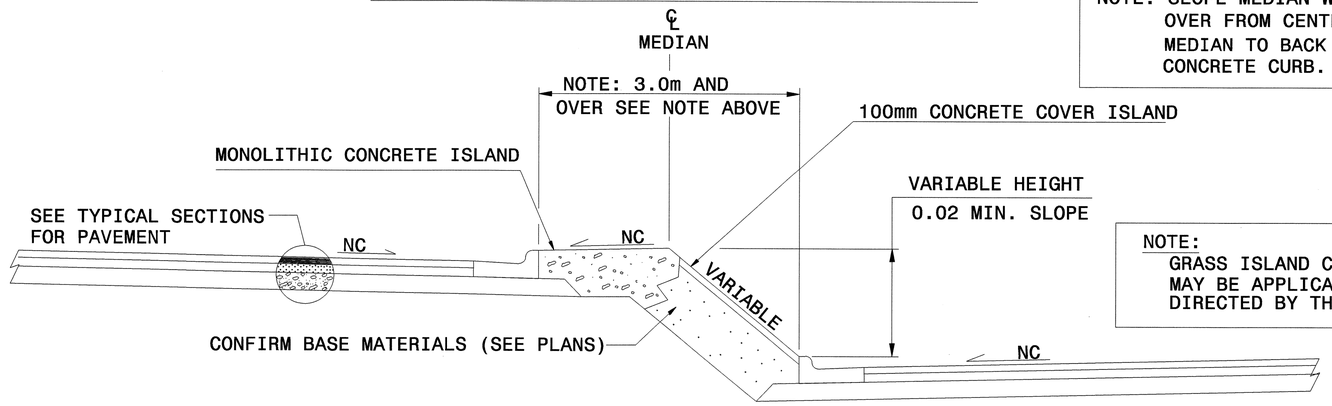


100mm COVER OR MONOLITHIC CONCRETE



100mm COVER OR MONOLITHIC CONCRETE
VARIABLE GRADE SEPARATIONS

NOTE: SLOPE MEDIAN WIDTHS 3.0m AND OVER FROM CENTERLINE OF MEDIAN TO BACK OF EACH CONCRETE CURB.



NOTE:
GRASS ISLAND CONSTRUCTION MAY BE APPLICABLE AS DIRECTED BY THE ENGINEER.

100mm COVER OR MONOLITHIC CONCRETE
VARIABLE GRADE SEPARATIONS

SHEET 1 OF 1
852D10

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

ENGLISH DETAIL DRAWING FOR
MEDIAN CONSTRUCTION
WITH CURB AND GUTTER

SHEET 1 OF 1
852D10

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER NIGEL S. HOUGHTON
1/26/09

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

SEE PLATE FOR TITLE

ORIGINAL BY: STD.NO.852.10 DATE:
MODIFIED BY: TSS DATE: 1-26-08
CHECKED BY: DATE: 1/26/09
FILE SPEC.: $:std/85210101.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	3

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C202096

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0001000000-M	200	Lump Sum		CLEARING & GRUBBING .. HECTARE(S)
0008000000-M	200	0.4	HA	SUPPLEMENTARY CLEARING & GRUBBING
0022000000-M	225	8,000	M3	UNCLASSIFIED EXCAVATION
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ********** (43+13.000)
0036000000-M	225	3,000	M3	UNDERCUT EXCAVATION
0080000000-M	SP	5,200	MTN	CLASS IV SUBGRADE STABILIZATION
0106000000-M	230	27,000	M3	BORROW EXCAVATION
0127000000-N	SP	4	EA	EMBANKMENT SETTLEMENT GAUGES
0156000000-M	250	450	M2	REMOVAL OF EXISTING ASPHALT PAVEMENT
0177000000-M	250	2,150	M2	BREAKING OF EXISTING ASPHALT PAVEMENT
0196000000-M	270	8,500	M2	FABRIC FOR SOIL STABILIZATION
0199000000-M	SP	90	M2	TEMPORARY SHORING
0234000000-M	SP	5,800	M3	GENERIC GRADING ITEM SELECT GRANULAR MATERIAL
0241000000-M	SP	8,700	M2	GENERIC GRADING ITEM FABRIC FOR EMABANKMENT STABILIZATION
0318000000-M	300	757	MTN	FOUNDATION CONDITIONING MATERIAL, MINOR STRS
0343000000-M	310	27.6	M	375MM SIDE DRAIN PIPE
0576000000-M	310	45.6	M	***MM CS PIPE CULVERTS, ****MM THICK (750MM, 1.63MM)
0995000000-M	340	7	M	PIPE REMOVAL
1011000000-N	500	Lump Sum		FINE GRADING
1110000000-M	510	800	MTN	STABILIZER AGGREGATE
1220000000-M	545	1,200	MTN	INCIDENTAL STONE BASE
1491000000-M	610	12,400	MTN	ASPHALT CONC BASE COURSE, TYPE B25.0C
1503000000-M	610	13,800	MTN	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C
1523000000-M	610	14,900	MTN	ASPHALT CONC SURFACE COURSE, TYPE S9.5C
1560000000-M	620	1,182	MTN	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22
1565000000-M	620	895	MTN	ASPHALT BINDER FOR PLANT MIX, GRADE PG 70-22
1693000000-M	654	25	MTN	ASPHALT PLANT MIX, PAVEMENT REPAIR
1840000000-M	665	5,700	M	MILLED RUMBLE STRIPS (ASPHALT CEMENT CONCRETE)
2022000000-M	815	280	M3	SUBDRAIN EXCAVATION
2033000000-M	815	210	M3	SUBDRAIN FINE AGGREGATE
2044000000-M	815	500	M	150MM PERFORATED SUBDRAIN PIPE
2055000000-M	815	50	EA	150MM SUBDRAIN PIPE WYES, TEES, & ELBOWS
2066000000-N	815	4	EA	CONCRETE PAD FOR SUBDRAIN PIPE OUTLET
2077000000-M	815	8	M	150MM OUTLET PIPE (SUBDRAINS)
2286000000-N	840	8	EA	MASONRY DRAINAGE STRUCTURES
2366000000-N	840	1	EA	FRAME WITH TWO GRATES, STD 840.24
2367000000-N	840	1	EA	FRAME WITH TWO GRATES, STD 840.29
2374000000-N	840	2	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (F)
2374000000-N	840	4	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (G)
2535000000-M	846	425	M	*** X ***MM CONCRETE CURB (200MM X 450MM)
2549000000-M	846	470	M	750MM CONCRETE CURB & GUTTER
2556000000-M	846	4	M	SHOULDER BERM GUTTER
2580000000-M	846	63	M	CONCRETE VALLEY GUTTER
2612000000-M	848	22	M2	150MM CONCRETE DRIVEWAY
2627000000-M	852	775	M2	100MM CONCRETE ISLAND COVERS
3030000000-M	862	169,545	M	STEEL BM GUARDRAIL
3150000000-N	862	5	EA	ADDITIONAL GUARDRAIL POSTS
3215000000-N	862	3	EA	GUARDRAIL ANCHOR UNITS, TYPE III
3270000000-N	SP	3	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
3533000000-M	866	60	M	CHAIN LINK FENCE, ****MM FABRIC (1800MM)
3539000000-M	866	18	EA	METAL LINE POSTS FOR ****MM CHAIN LINK FENCE (1800MM)
3545000000-M	866	2	EA	METAL TERMINAL POSTS FOR ****MM CHAIN LINK FENCE (1800MM)
3554000000-M	866	2	EA	METAL GATE POSTS FOR ****MM CHAIN LINK FENCE, DOUBLE GATE (1800MM)
3557000000-M	866	180	M	ADDITIONAL BARBED WIRE
3565000000-M	866	1	EA	DOUBLE GATES, ****MM HIGH, ****MM WIDE, ****MM OPENING (1.8M HIGH, 5.4M WIDE, 10.8M OPENING)
3628000000-M	876	50	MTN	RIP RAP, CLASS I
3656000000-M	876	2,630	M2	FILTER FABRIC FOR DRAINAGE
4048000000-M	902	1	M3	REINFORCED CONCRETE SIGN FOUNDATIONS
4060000000-M	903	136	KG	SUPPORTS, BREAKAWAY STEEL BEAM
4082000000-M	903	162	M	SUPPORTS, WOOD
4102000000-N	904	32	EA	SIGN ERECTION, TYPE E
4110000000-N	904	1	EA	SIGN ERECTION, TYPE *** (GROUND MOUNTED) (A)
4116100000-N	904	2	EA	SIGN ERECTION, RELOCATE, TYPE **** (GROUND MOUNTED) (D)
4116100000-N	904	2	EA	SIGN ERECTION, RELOCATE, TYPE **** (GROUND MOUNTED) (E)
4141000000-N	907	6	EA	DISPOSAL OF SUPPORT, WOOD
4155000000-N	907	6	EA	DISPOSAL OF SIGN SYSTEM, U-CHANNEL
4158000000-N	907	18	EA	DISPOSAL OF SIGN SYSTEM, WOOD
4400000000-M	1110	39	M2	WORK ZONE SIGNS (STATIONARY)
4405000000-M	1110	28	M2	WORK ZONE SIGNS (PORTABLE)
4410000000-M	1110	10	M2	WORK ZONE SIGNS (BARRICADE MOUNTED)
4415000000-N	1115	2	EA	FLASHING ARROW PANELS, TYPE C
4420000000-N	1120	4	EA	CHANGEABLE MESSAGE SIGN
4430000000-N	1130	312	EA	DRUMS
4435000000-N	1135	312	EA	CONES
4445000000-M	1145	30	M	BARRICADES (TYPE III)
4455000000-N	1150	600	MD	FLAGGER
4465000000-N	1160	2	EA	TEMPORARY CRASH CUSHIONS
4470000000-N	1160	1	EA	RESET TEMPORARY CRASH CUSHIONS
4480000000-N	1165	2	EA	TMIA
4485000000-M	1170	245	M	PORTABLE CONCRETE BARRIER
4500000000-M	1170	180	M	RESET PORTABLE CONCRETE BARRIER
4510000000-N	SP	40	HR	POLICE
4650000000-N	1251	1,039	EA	TEMPORARY RAISED PAVEMENT MARKERS
4685000000-M	1205	7,427	M	THERMOPLASTIC PAVEMENT MARKING LINES (100MM, 2.3MM)
4686000000-M	1205	13,282	M	THERMOPLASTIC PAVEMENT MARKING LINES (100MM, 3.1MM)
4695000000-M	1205	49	M	THERMOPLASTIC PAVEMENT MARKING LINES (200MM, 2.3MM)
4725000000-M	1205	49	EA	THERMOPLASTIC PAVEMENT MARKING SYMBOL (2.3MM)
4770000000-M	1205	499	M	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (100MM) (III)
4770000000-M	1205	970	M	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (100MM) (IV)
4780000000-M	1205	4	M	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (200MM) (III)
4810000000-M	1205	82,724	M	PAINT PAVEMENT MARKING LINES (100MM)
4820000000-M	1205	560	M	PAINT PAVEMENT MARKING LINES (200MM)
4845000000-N	1205	109	EA	PAINT PAVEMENT MARKING SYMBOL
4850000000-M	1205	4,050	M	REMOVAL OF PAVEMENT MARKING LINES (100MM)
4860000000-M	1205	25	M	REMOVAL OF PAVEMENT MARKING LINES (200MM)
4900000000-N	1251	1,000	EA	PERMANENT RAISED PAVEMENT MARKERS
5255000000-N	1413	Lump Sum		PORTABLE LIGHTING
5326000000-M	1510	1,234	M	250MM WATER LINE
5649000000-N	1515	6	EA	RECONNECT WATER METER
5871600000-M	1550	10	M	TRENCHLESS INSTALLATION OF 250MM IN SOIL
5871610000-M	1550	10	M	TRENCHLESS INSTALLATION OF 250MM NOT IN SOIL
6000000000-M	1605	13,700	M	TEMPORARY SILT FENCE
6006000000-M	1610	1,880	MTN	STONE FOR EROSION CONTROL, CLASS A
6009000000-M	1610	290	MTN	STONE FOR EROSION CONTROL, CLASS B
6012000000-M	1610	810	MTN	SEDIMENT CONTROL STONE
6015000000-M	1615	20.5	HA	TEMPORARY MULCHING
6018000000-M	1620	400	KG	SEED FOR TEMPORARY SEEDING
6021000000-M	1620	3.25	MTN	FERTILIZER FOR TEMPORARY SEEDING
6024000000-M	1622	35	M	TEMPORARY SLOPE DRAINS
6027000000-N	1622	1	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
6029000000-M	SP	4,050	M	SAFETY FENCE
6030000000-M	1630	250	M3	SILT EXCAVATION
6036000000-M	1631	7,725	M2	MATTING FOR EROSION CONTROL
6037000000-M	SP	450	M2	COIR FIBER MAT
6042000000-M	1632	625	M	6.4MM HARDWARE CLOTH
6045000000-M	SP	45	M	***MM TEMPORARY PIPE (760MM)
6048000000-M	SP	80	M2	FLOATING TURBIDITY CURTAIN
6069000000-M	1638	300	M3	STILLING BASINS
6084000000-M	1660	21	HA	SEEDING & MULCHING
6087000000-M	1660	13	HA	MOWING
6090000000-M	1661	275	KG	SEED FOR REPAIR SEEDING
6093000000-M	1661	1	MTN	FERTILIZER FOR REPAIR SEEDING
6096000000-M	1662	300	KG	SEED FOR SUPPLEMENTAL SEEDING
6108000000-M	1665	17	MTN	FERTILIZER TOPDRESSING
6111000000-M	SP	60	M	IMPERVIOUS DIKE
6114000000-N	SP	5	HR	SPECIALIZED HAND MOWING
6117000000-N	SP	54	EA	RESPONSE FOR EROSION CONTROL
6123000000-M	1670	0.2	HA	REFORESTATION
******* BEGIN SCHEDULE AA ******* ******* (2 ALTERNATES) *******				
0366000000-M AA1	310	122.4	M	375MM RC PIPE CULVERTS, CLASS III
0372000000-M AA1	310	122.4	M	450MM RC PIPE CULVERTS, CLASS III
*** OR ***				
0366000000-M AA2	310	98.4	M	375MM RC PIPE CULVERTS, CLASS III
0372000000-M AA2	310	108	M	450MM RC PIPE CULVERTS, CLASS III
0536000000-M AA2	SP	24	M	****MM HDPE PIPE CULVERTS (375MM)
0536000000-M AA2	SP	14.4	M	****MM HDPE PIPE CULVERTS (450MM)
******* END SCHEDULE AA *******				

6/10/99
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12/27/2006

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	3-A

SUMMARY OF EARTHWORK

IN CUBIC METERS

LOCATION	UNCL. EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
BEGIN SUMMARY 1					
-L- LT. STA. 8+59.036 TO 16+00.000	460		1314	854	
END SUMMARY 1	460		1314	854	
BEGIN SUMMARY 2					
-L- LT. STA. 16+00.000 TO 25+00.000	1993		1248		745
END SUMMARY 2	1993		1248		745
BEGIN SUMMARY 3					
-L- LT. STA. 25+00.000 TO 34+00.000	1026		1875	849	
END SUMMARY 3	1026		1875	849	
BEGIN SUMMARY 4					
-L- LT. STA. 34+00.000 TO 41+00.000	1122		511		611
END SUMMARY 4	1122		511		611
BEGIN SUMMARY 5					
-L- RT. STA. 38+80.000 TO 42+97.800	368		4519	4151	
END SUMMARY 5	368		4519	4151	
BEGIN SUMMARY 6					
-L- RT. STA. 43+28.200 TO 46+50.000	73		4924	4851	
END SUMMARY 6	73		4924	4851	
BEGIN SUMMARY 7					
-L- RT. STA. 7+13.855 TO 16+00.000	819		2531	1712	
END SUMMARY 7	819		2531	1712	
BEGIN SUMMARY 8					
-L- RT. STA. 16+00.000 TO 25+00.000	372		7034	6662	
END SUMMARY 8	372		7034	6662	

UNDERCUT EXCAVATION = 3000 m3 (PER GEOTECH, MEMO DATED 4-5-2005 & 1-30-2009)

PAVEMENT STRUCTURE VOLUME = 7020 CUBIC METERS

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.

LOCATION	UNCL. EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
BEGIN SUMMARY 9					
-L- RT. STA. 25+00.000 TO 34+00.000	648		2332	1684	
END SUMMARY 9	648		2332	1684	
BEGIN SUMMARY 10					
-L- RT. STA. 34+00.000 TO 38+80.000	661		447		214
END SUMMARY 10	661		447		214
BEGIN SUMMARY 11					
-L- LT. STA. 41+00.000 TO 42+97.800	9		2254	2245	
END SUMMARY 11	9		2254	2245	
BEGIN SUMMARY 12					
-L- LT. STA. 43+28.200 TO 46+50.000	29		5067	5038	
-Y- STA. 10+40.000 TO 10+88.987	73		42		31
END SUMMARY 12	102		5109	5038	31
TOTALS	7653		34098	28046	1601
SELECT MATERIAL IN LIEU OF BORROW			-5300	-5300	
WASTE IN LIEU OF BORROW				-1601	-1601
SHOULDER MATERIAL			4020	4020	
PROJECT TOTAL	7653			25165	0
5% TO REPLACE TOPSOIL ON BORROW PITS				1258	
GRAND TOTAL	7653			26423	
SAY	8000			27000	

SUMMARY OF ASPHALT PAVEMENT REMOVAL

IN SQUARE METERS

ALIGNMENT	STATION TO STATION	LOCATION	ASPHALT BREAK-UP	ASPHALT REMOVAL
-L-	41+70.000 TO 42+89.285	LT.	1002.334	
-L-	42+89.285 TO 43+36.715	LT.		405.674
-L-	43+36.715 TO 44+46.418	LT.	1080.278	
	PROJECT TOTAL		2082.612	405.674
	SAY		2150.000	450.000

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

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS								IMPACT ATTENUATOR TYPE 350			SINGLE FACED CONCRETE BARRIERS	REMOVE EXISTING GUARDRAIL		REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END		GRAU 350	TYPE III	M-350	XIII	VI MOD	XI	VI	BIC	EA	G	NG				
L	42+06.360	42+97.800	RT	91.440			42+97.800		2.482	3.482	15.240		0.300			1	1		GUARDRAIL ANCHOR DEDUCTIONS										
L	43+28.200	44+19.640	LT	91.440			43+28.200		2.482	3.482	15.240		0.300			1	1		GRAU 350 - 3 @ 15.24 = 45.720										
L	43+28.200	43+70.110	RT	41.910				43+28.200	2.482	3.482		15.240		0.300		1	1		TYPE III - 3 @ 5.715 = 17.145										
PROJECT SUBTOTAL				224.790												3	3					= 62.865							
LESS ANCHOR DEDUCTIONS				62.865																									
PROJECT TOTAL				161.925																									
SAY				169.545		ADDITIONAL GUARDRAIL POSTS = 5 EA.																							

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6/22/00

COMPUTED BY: BAM DATE: 3/27/07
CHECKED BY: DATE:

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	3-B

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

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 300	375	450	600	750	900	1050	1200	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) 300 (1.63)	400 (1.63)	450 (1.63)	600 (1.63)	800 (2.01)	900 (2.01)	1000 (2.77)	1200 (2.77)	CLASS III R.C. PIPE OR HDPE PIPE, TYPE S OR D 300	375	450	600	800	900	1000	1200
-L1- 7+17	LT	2		1.808																											
		2	1		0.376	0.376																				13.2					
-L1- 7+17	RT	3		1.895																											
		3	2		0.980	0.577			9.6																						
-L1- 8+25	LT	4		2.020																											
		4	2		0.823	0.502				106.8																					
-L1- 8+25	RT	5		2.371																											
		5	4		1.456	0.898			9.6																						
-L- 23+40	LT	6																													
-L- 23+75	LT	7																													
-L- 42+88	LT	8		3.130																											
		8	9		2.292	0.750																			13.2						
-L- 44+71	LT	12		3.185																											
		12	11		1.937	1.916																			9.6						
-L- 44+71	LT	11		2.500																											
		11	10		1.916	1.802			38.4																						
-L- 45+10	LT	13		2.934																											
		13	12		2.019	1.937			39.6																						
PROJECT TOTAL									97.2	106.8															22.8						
																										13.2					
SAY									98.4	108															24	14.4					

STATION	STRUCTURE NO. FROM	STRUCTURE NO. TO	375mm SIDE DRAIN PIPE	450mm SIDE DRAIN PIPE	600mm SIDE DRAIN PIPE	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. METERS R.C.P.	C.S.P.	QUANTITIES: STRUCTURES PER EACH (0 THRU 1.50)	FOR DRAINAGE *TOTAL M FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') METERS A 1.50 THRU 3.00	B 3.00 AND ABOVE	C.B. STD. 840.01 OR 840.02	FRAME, GRATES, AND HOOD STD. 840.03 TYPE OF GRATE E	F	G	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	J.B. STD. 840.31 OR 840.32	CORR. STEEL ELBOW NO. & SIZE	CONC. COLLARS, CL. "B" m^3 STD.840.72	CONC. & BRICK PIPE PLUG m^3 STD.840.71	PIPE REMOVAL (meters)	REMARKS
-L1- 7+17	2							1			1		1																	
	2	1																												OUTLET PIPE AT 0.00%
-L1- 7+17	3							1			1			1																
	3	2																												
-L1- 8+25	4							1			1		1																	
	4	2																												
-L1- 8+25	5							1			1			1																
	5	4																												
-L- 23+40	6		15.6																											
-L- 23+75	7		10.8																											
-L- 42+88	8							1										1						1						
	8	9																												
-L- 44+71	12							1			1			1																
	12	11																												
-L- 44+71	11							1											1				1							
	11	10																												
-L- 45+10	13							1			1			1															7	
	13	12																												
PROJECT TOTAL			26.4					8			6		2	4				1	1				1	1					7	
SAY			27.6																											

ABBREVIATIONS

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

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

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 300	375	450	600	750	900	1050	1200	C.S. PIPE 300 (1.63)	400 (1.63)	450 (1.63)	750 (1.63)	800 (2.01)	900 (2.01)	1000 (2.77)	1200 (2.77)
-L- 43+10	CL																		45.6				
TOTAL																			45.6				

STATION	375mm SIDE DRAIN PIPE	450mm SIDE DRAIN PIPE	600mm SIDE DRAIN PIPE	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. METERS R.C.P.	C.S.P.	QUANTITIES: STRUCTURES PER EACH (0 THRU 1.50)	FOR DRAINAGE *TOTAL M FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') METERS A 1.50 THRU 3.00	B 3.00 AND ABOVE	C.B. STD. 840.01 OR 840.02	FRAME, GRATES, AND HOOD STD. 840.03 TYPE OF GRATE E	F	G	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & GRATE STD. 840.16	M.D.I. TYPE "A" STD. 840.17 OR 840.26	M.D.I. TYPE "B" STD. 840.18 OR 840.27	M.D.I. TYPE "D" STD. 840.19 OR 840.28	M.D.I. FRAME WITH GRATE STD. 840.22	M.D.I. FRAME WITH TWO GRATES STD. 840.22	M.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	M.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	CORR. STEEL ELBOW NO. & SIZE	CONC. COLLARS, CL. "B" m^3 STD.840.72	CONC. & BRICK PIPE PLUG m^3 STD.840.71	PIPE REMOVAL (meters)	REMARKS
-L- 43+10																											SEE STRUCTURE PHASING PLANS FOR LOCATION
TOTAL																											

ABBREVIATIONS

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

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PROJ. REFERENCE NO.	SHEET NO.
R-2414A	3-C

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
07	4	RUTH M. LOWRY
08	4,5	ANTHONY WOODISSE
09	5	FIRST UNION NATIONAL BANK
13	5,6	CITY OF ELIZABETH CITY
14	5,6	CITY OF ELIZABETH CITY
2	6	WILLIAM PEFLEY
10	6	CAMDEN COUNTY
03	13,14,15	PECAN FARMS, LLC
5	14	WINIFRED WOOD
6	14,15	WILLIAM WEEKS

PARCEL No.	SHEET No.	PROPERTY OWNER NAME

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	4
R /W SHEET NO.	

METRIC 5 0 10

CONST.REV.

R /W REV.

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 20718 ENGINEER BOB A. MAY — 1/6/09

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 026986 ENGINEER JEFFREY L. RECK — 1-16-09

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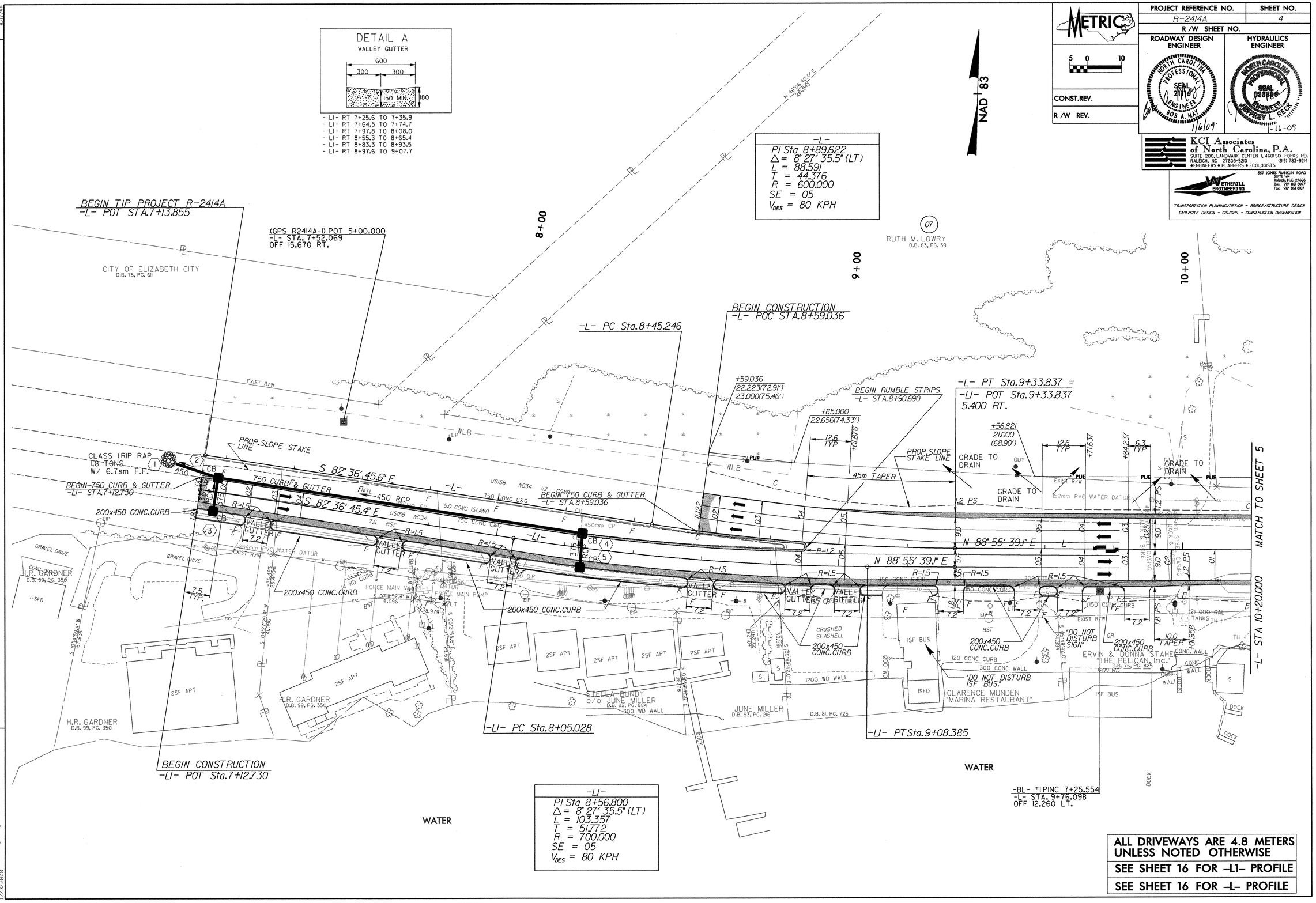
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

REVISIONS

8/17/98



ALL DRIVEWAYS ARE 4.8 METERS UNLESS NOTED OTHERWISE

SEE SHEET 16 FOR -L1- PROFILE

SEE SHEET 16 FOR -L- PROFILE

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12/31/2008

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	5
R/W SHEET NO.	

METRIC

5 0 10

CONST. REV.

R/W REV.

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. NAY 11/6/09

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 026696 ENGINEER JEFFREY L. PECK 11-6-09

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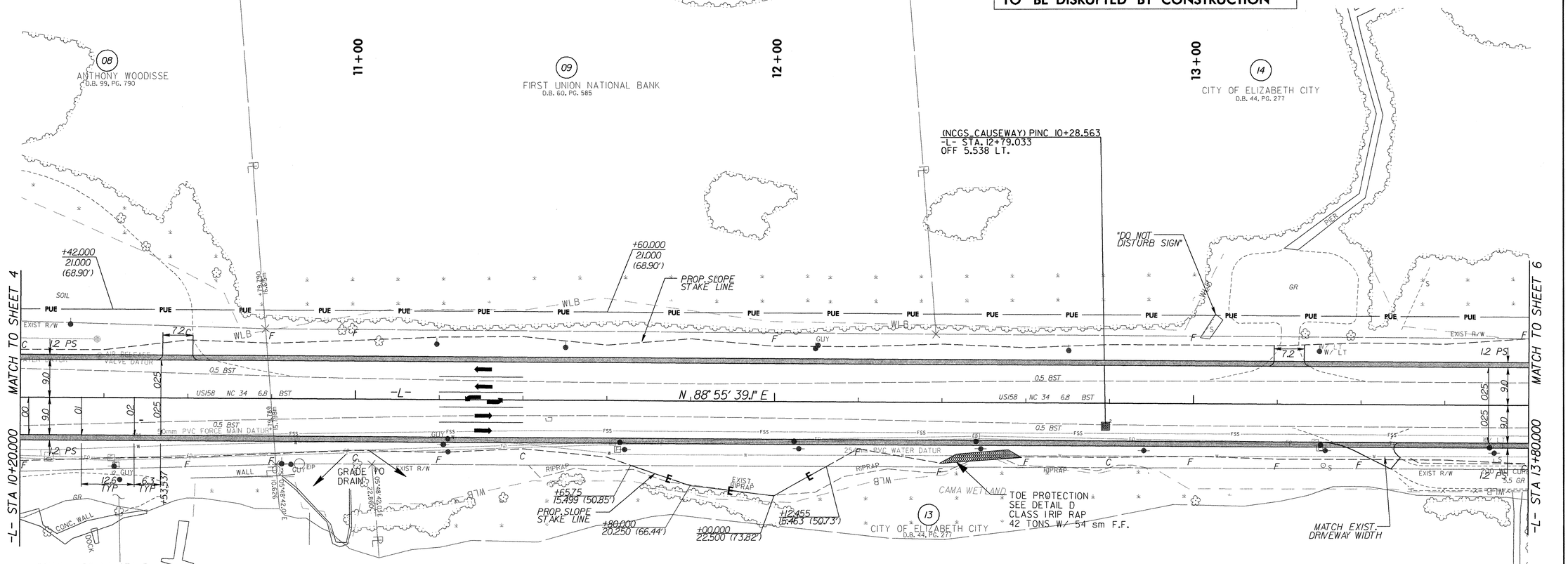
8/17/99

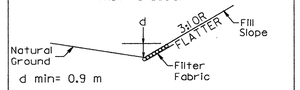
NAD 83

ACTIVITIES IN CAUSEWAY PARK ARE NOT TO BE DISRUPTED BY CONSTRUCTION



ACTIVITIES IN THE GEORGE M. WOOD MEMORIAL PARK ARE NOT TO BE DISRUPTED BY CONSTRUCTION.

DETAIL D
TOE PROTECTION
(Not to Scale)



d min= 0.9 m

Type of Liner= Class I Rip-Rap

FROM STA. 12+40 TO STA. 12+60

ALL DRIVEWAYS ARE 4.8 METERS UNLESS NOTED OTHERWISE

SEE SHEET 17 FOR -L- PROFILE

10:00:18 AM
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2/13/2008

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	6
R /W SHEET NO.	

METRIC

5 0 10

CONST.REV.

R /W REV.

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 20110 ENGINEER BOB A. MAY 1/6/09

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 026696 ENGINEER JEFFREY L. RECK 1-16-09

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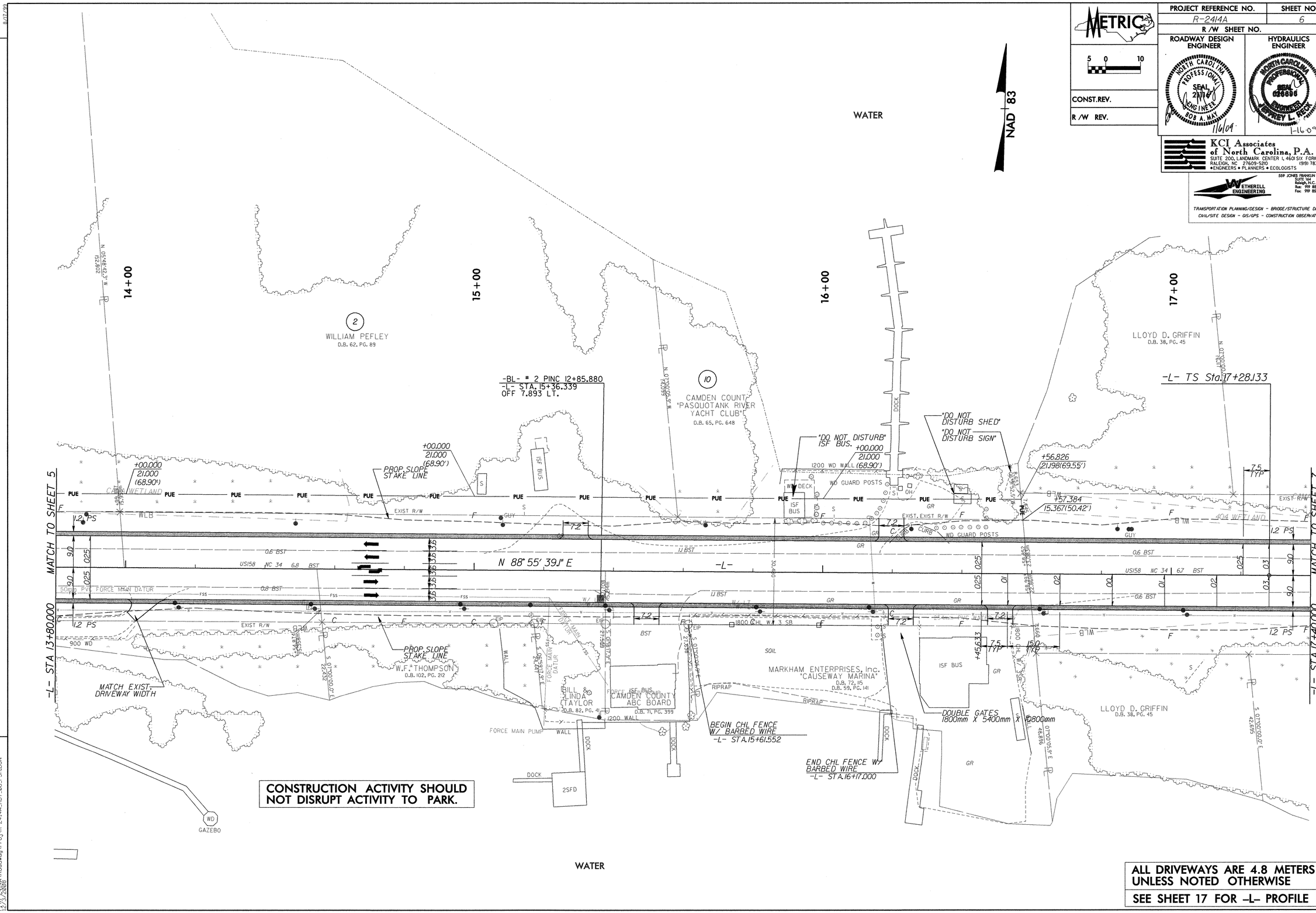
REVISIONS



ALL DRIVEWAYS ARE 4.8 METERS UNLESS NOTED OTHERWISE

SEE SHEET 17 FOR -L- PROFILE

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8/17/98

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	7
R /W SHEET NO.	

METRIC

5 0 10

CONST.REV.

R /W REV.

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 21706 ENGINEER BOB A. MAY

11/6/09

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 026696 ENGINEER JEFFREY L. BECK

11-6-09

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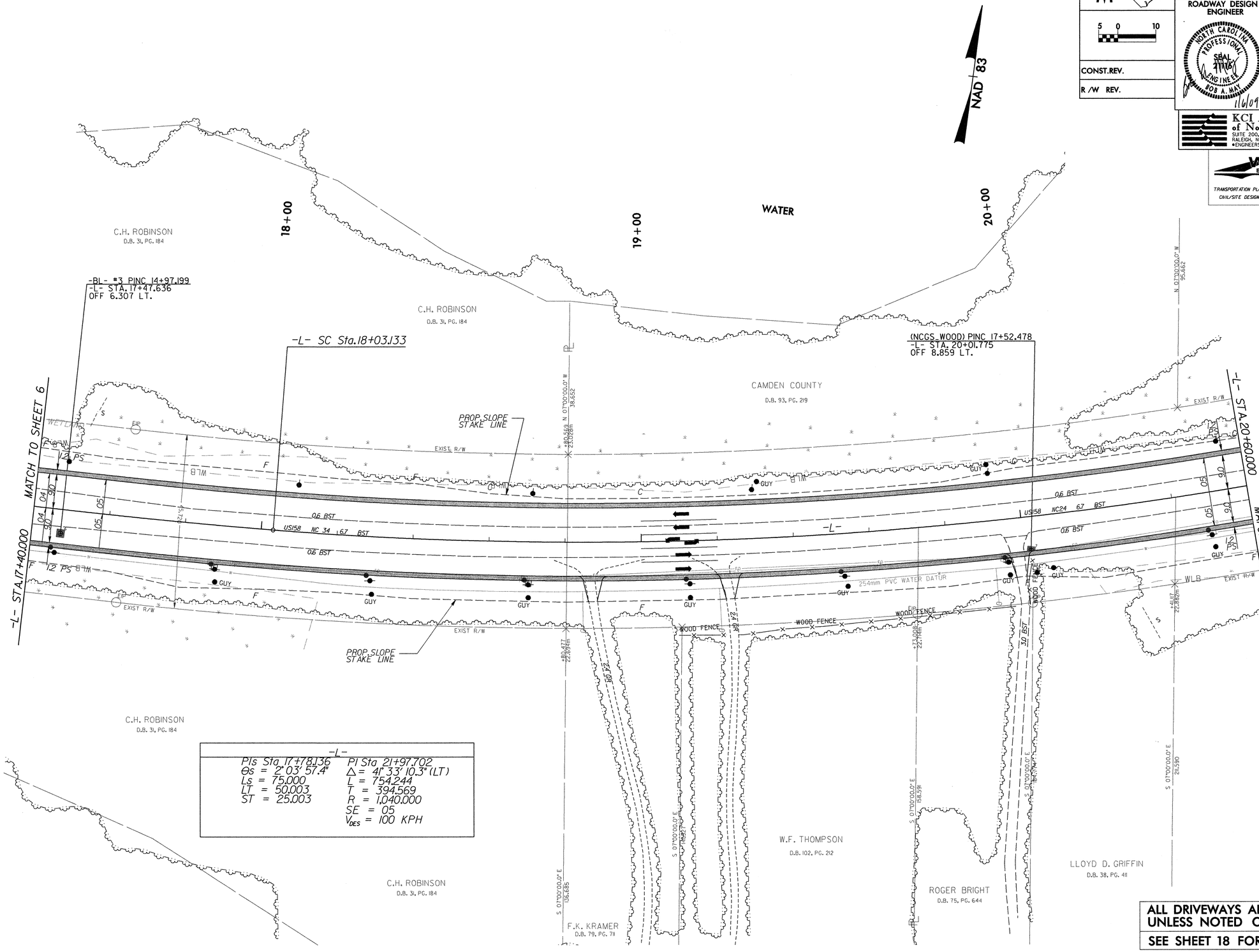

-L-	
PIs Sta 17+78.136	PI Sta 21+97.702
Θs = 2° 03' 57.4"	Δ = 41° 33' 10.3" (LT)
Ls = 75.000	L = 754.244
LT = 50.003	T = 394.569
ST = 25.003	R = 1,040.000
	SE = 05
	V_{DES} = 100 KPH

ALL DRIVEWAYS ARE 4.8 METERS UNLESS NOTED OTHERWISE

SEE SHEET 18 FOR -L- PROFILE

REVISIONS

8/17/2009

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PROJECT REFERENCE NO.	SHEET NO.
R-2414A	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC 5 0 10

CONST. REV.

R/W REV.

NORTH CAROLINA PROFESSIONAL SEAL ENGINEER ROB A. MAY 1/16/09

NORTH CAROLINA PROFESSIONAL SEAL 020606 ENGINEER JEFFREY L. PECK 1-16-09

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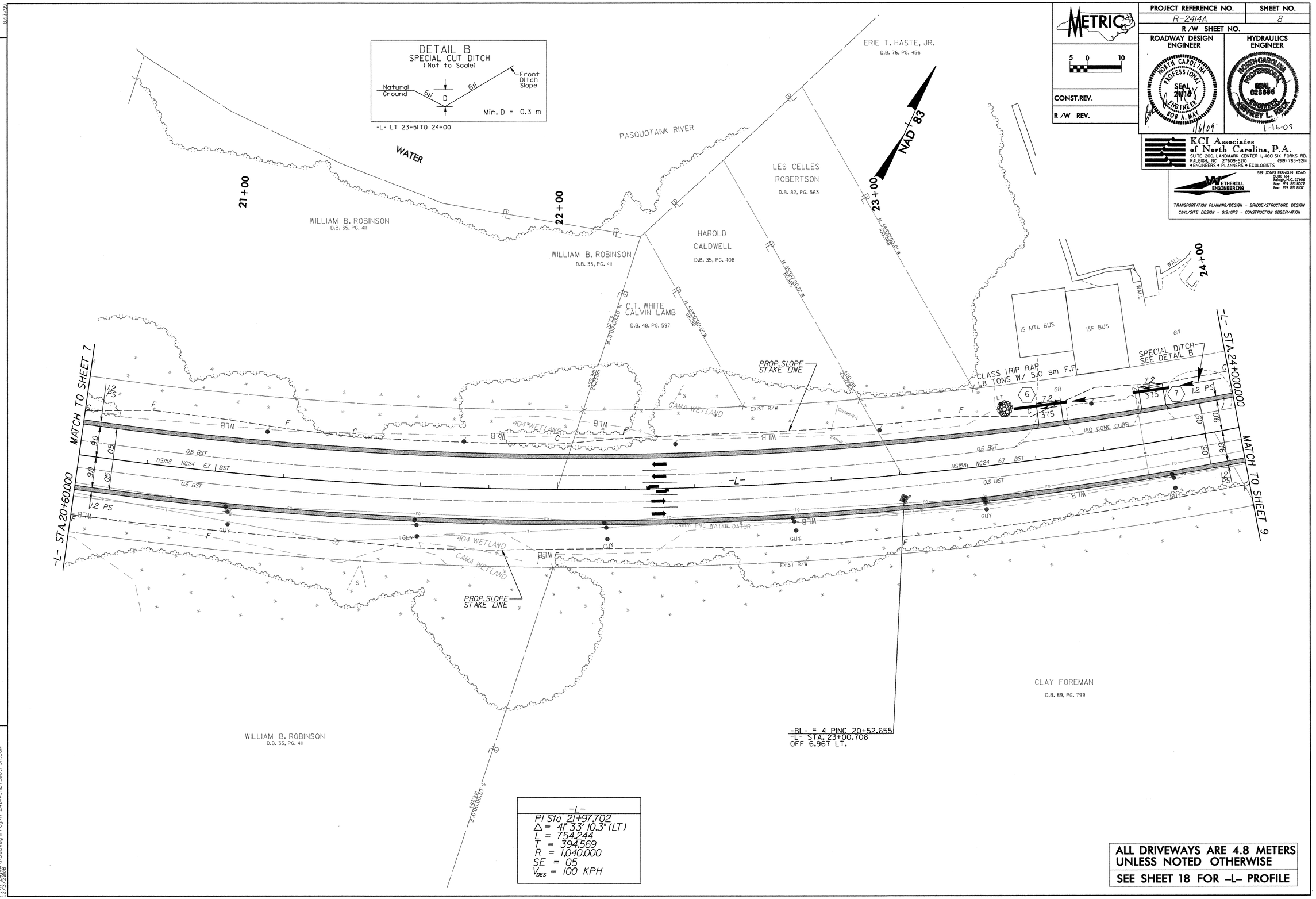
REVISIONS

8/17/98



-L-
PI Sta 21+97.702
Δ = 41° 33' 10.3" (LT)
L = 754.244
T = 394.569
R = 1,040.000
SE = 05
V_{DES} = 100 KPH

ALL DRIVEWAYS ARE 4.8 METERS UNLESS NOTED OTHERWISE

SEE SHEET 18 FOR -L- PROFILE

10:12:04 AM
R:\R-2414A\Roadway\Proj\R-2414A_RDY_08_PSH.DGN
12/31/2008

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	9
R/W SHEET NO.	

METRIC

5 0 10

CONST. REV.

R/W REV.

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 21110 ENGINEER BOB A. MAY 1/6/09

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 028006 ENGINEER JEFFREY L. PECK 1-16-09

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Fax: 919 851 6107

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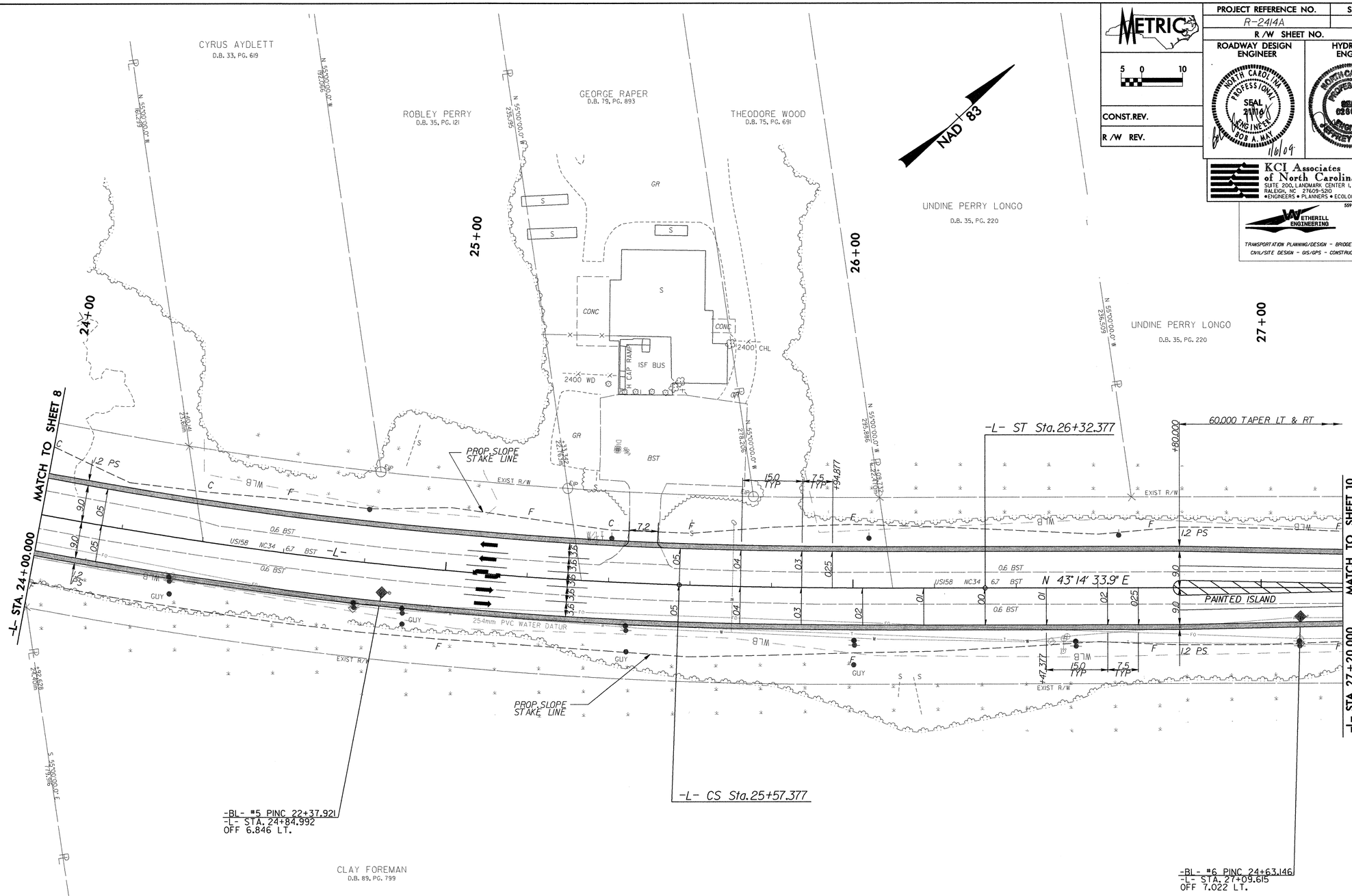
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION



-L-	
PI Sta 21+97.702	PIs Sta 25+82.380
Δ = 41° 33' 10.3" (LT)	θs = 2° 03' 57.4"
L = 754.244	Ls = 75.000
T = 394.569	LT = 50.003
R = 1,040.000	ST = 25.003
SE = .05	
V_{DES} = 100 KPH	

ALL DRIVEWAYS ARE 4.8 METERS UNLESS NOTED OTHERWISE

SEE SHEET 19 FOR -L- PROFILE

REVISIONS

8/17/99

10:12:48 AM
P:\R-2414A\Roadway\Proj\R-2414A_RDY_09_PSH.DGN
2/13/2008

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	10
R/W SHEET NO.	

METRIC

5 0 10

CONST.REV.

R/W REV.

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL ENGINEER BOB A. MAY 1/6/09

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 026696 ENGINEER JEFFREY L. BECK 1-16-09

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Raleigh, N.C. 27606
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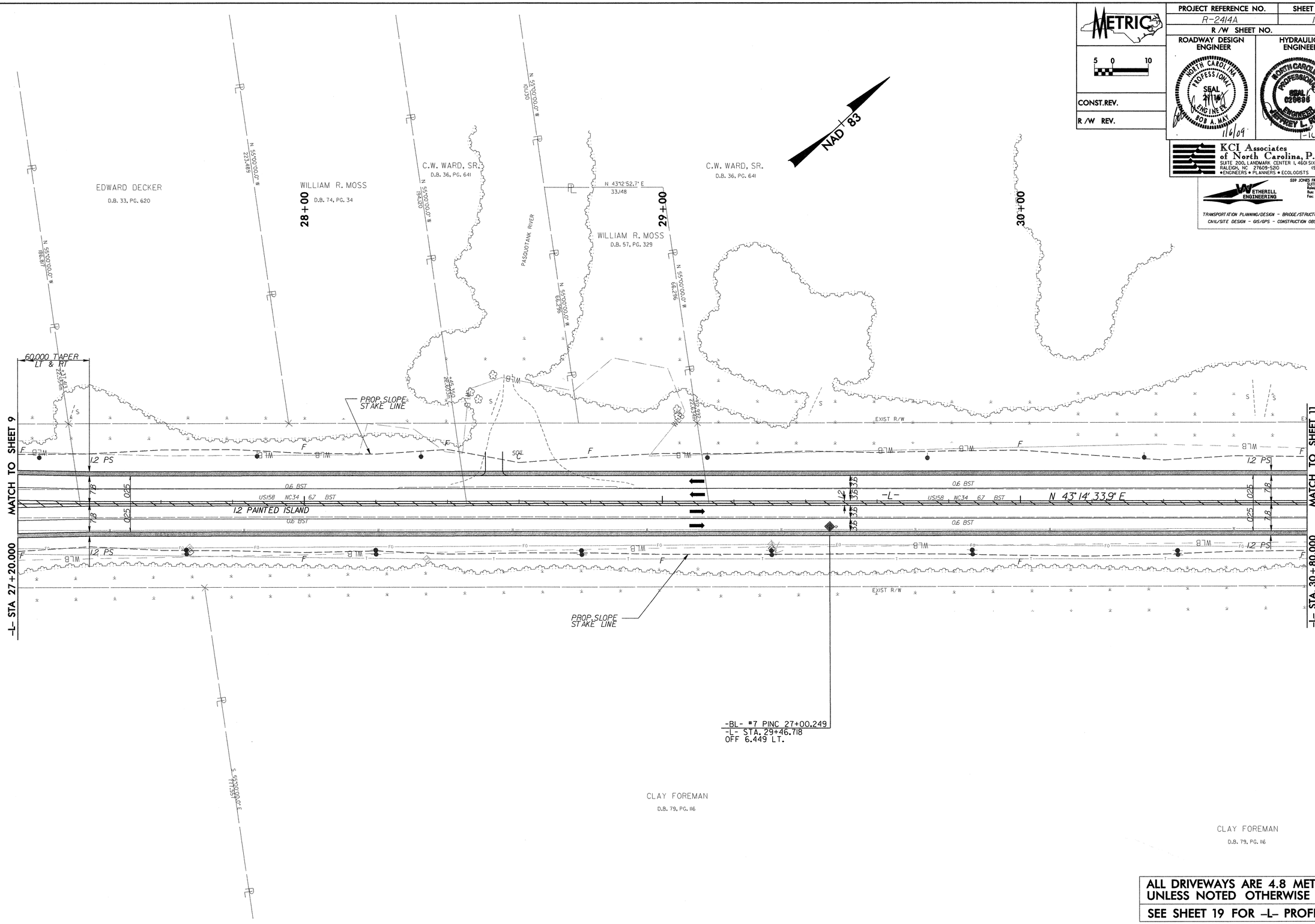
Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

REVISIONS



ALL DRIVEWAYS ARE 4.8 METERS UNLESS NOTED OTHERWISE

SEE SHEET 19 FOR -L- PROFILE

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2/13/2008

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	11
R/W SHEET NO.	

METRIC

5 0 10

CONST. REV.

R/W REV.

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 21118 ENGINEER BOB A. MAY 1/6/09

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 026696 ENGINEER JEFFREY L. BECK 1-16-09

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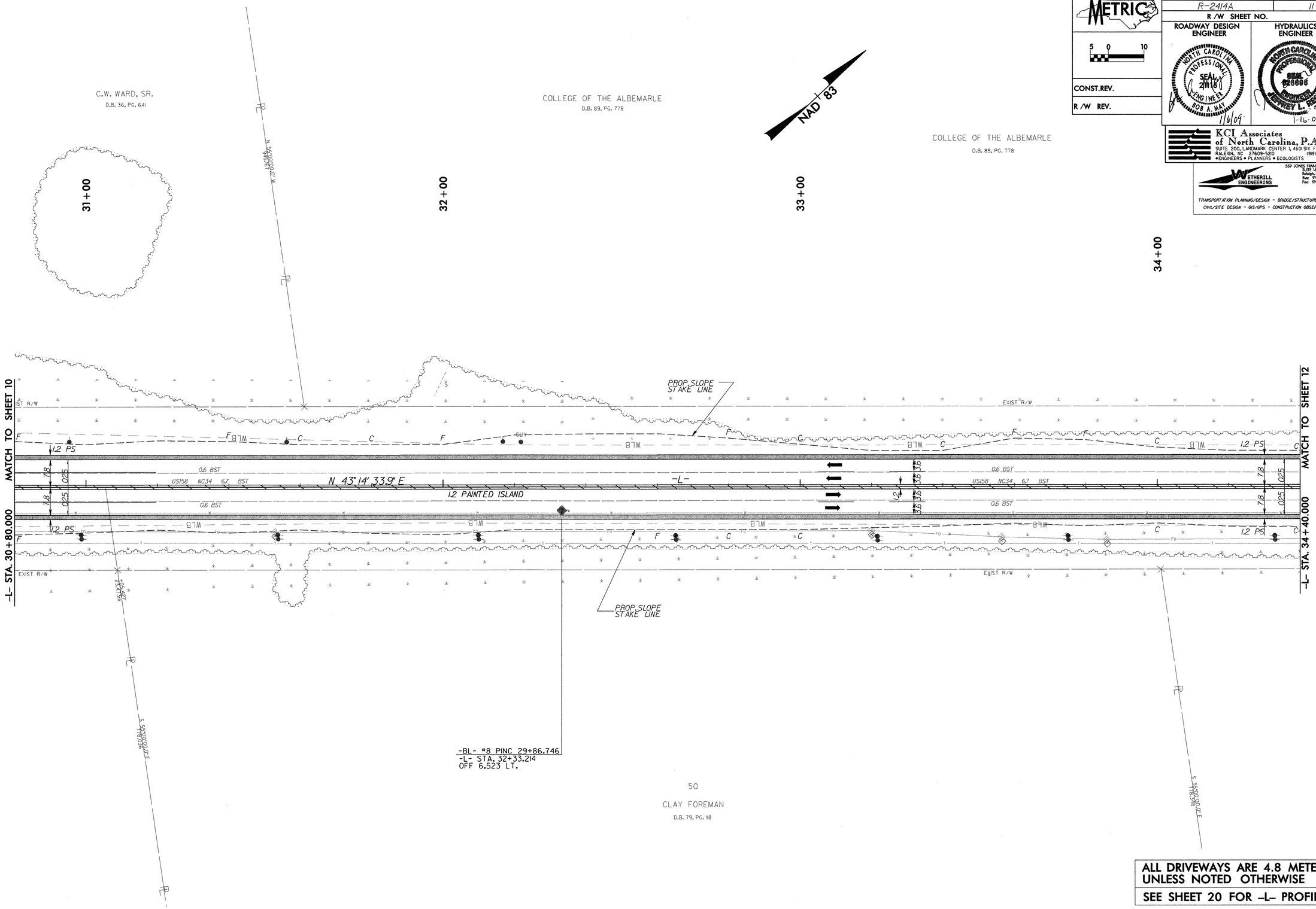
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

REVISIONS



ALL DRIVEWAYS ARE 4.8 METERS UNLESS NOTED OTHERWISE

SEE SHEET 20 FOR -L- PROFILE

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12/3/2008

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

CONST.REV.

R/W REV.

NORTH CAROLINA PROFESSIONAL SEAL 27016 ENGINEER BOB A. MAY 1/6/09

NORTH CAROLINA PROFESSIONAL SEAL 026696 ENGINEER JEFFREY L. RECK 1-16-09

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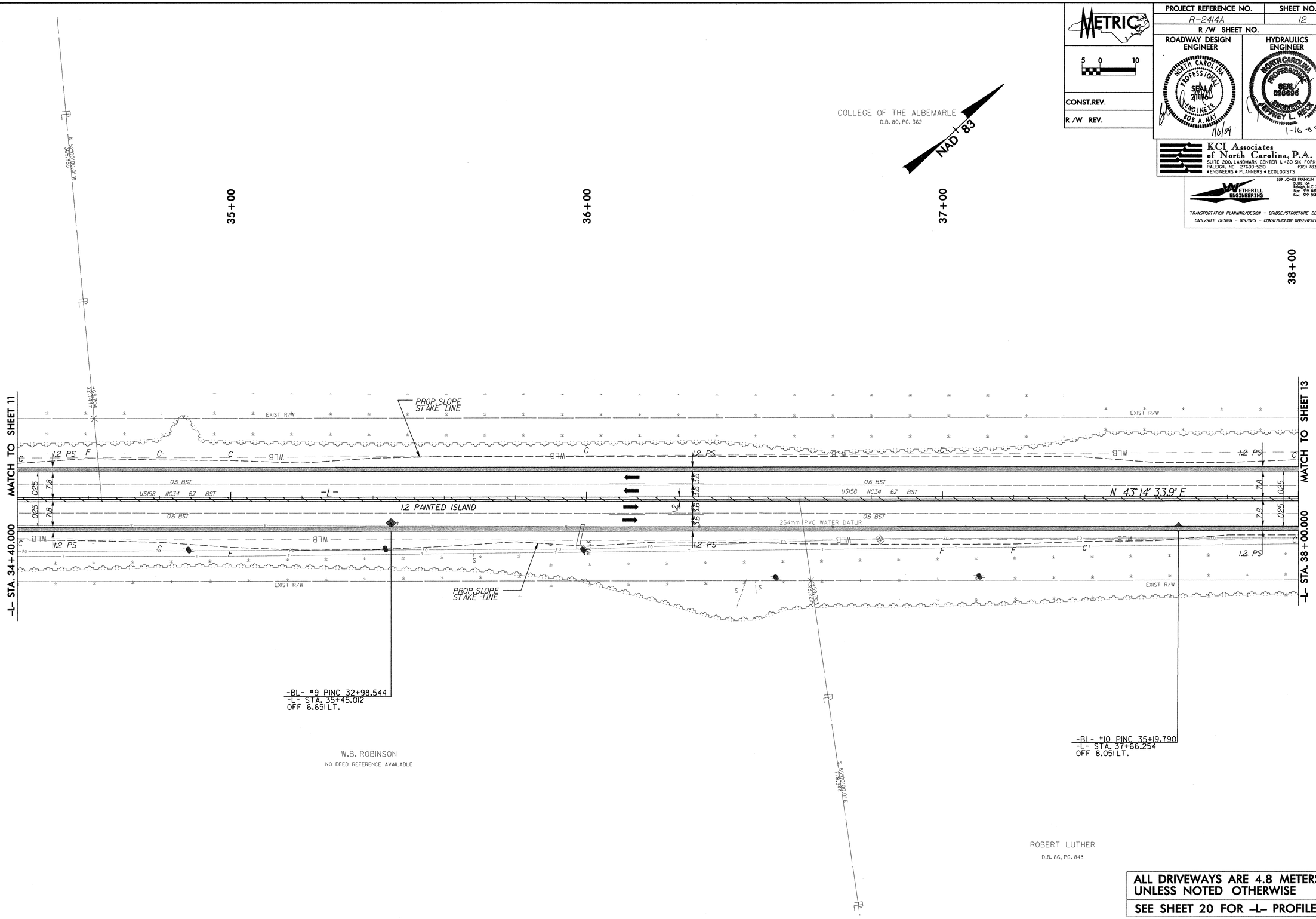
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION



ALL DRIVEWAYS ARE 4.8 METERS UNLESS NOTED OTHERWISE

SEE SHEET 20 FOR -L- PROFILE

REVISIONS

8/17/09

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12/31/2008
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PROJECT REFERENCE NO.	SHEET NO.
R-2414A	13
R/W SHEET NO.	

METRIC

5 0 10

CONST.REV.

R/W REV.

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 21716 ENGINEER BOB A. MAY 1/6/09

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 026896 ENGINEER JEFFREY L. RECK 1-16-09

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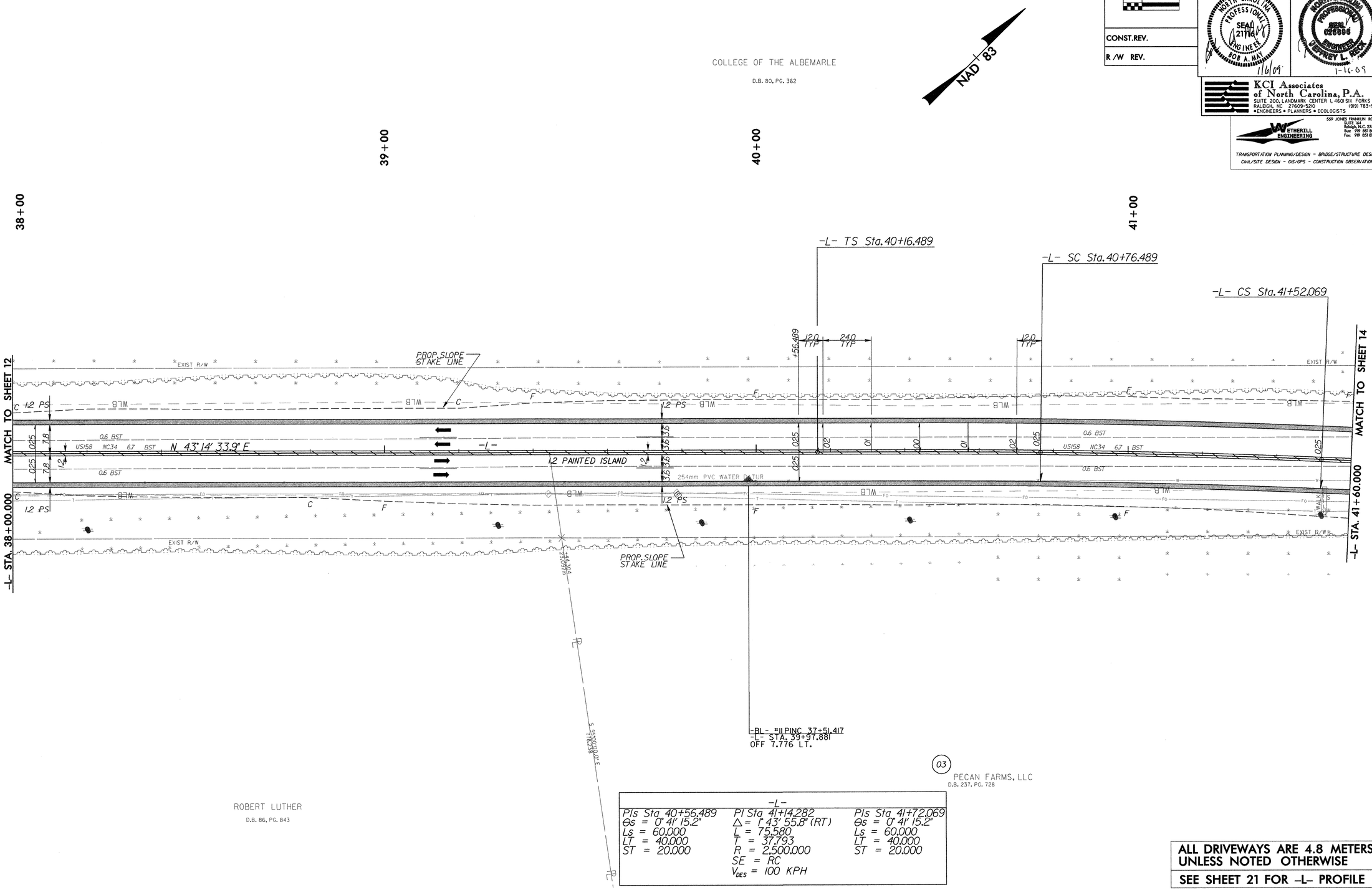
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

REVISIONS



-L-		
PIs Sta 40+56.489	PI Sta 41+14.282	PIs Sta 41+72.069
θs = 0° 41' 15.2"	Δ = 1° 43' 55.8" (RT)	θs = 0° 41' 15.2"
Ls = 60.000	L = 75.580	Ls = 60.000
LT = 40.000	T = 37.793	LT = 40.000
ST = 20.000	R = 2,500.000	ST = 20.000
	SE = RC	
	V_{DES} = 100 KPH	

ALL DRIVEWAYS ARE 4.8 METERS UNLESS NOTED OTHERWISE

SEE SHEET 21 FOR -L- PROFILE

10:15:51 AM
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8/17/99

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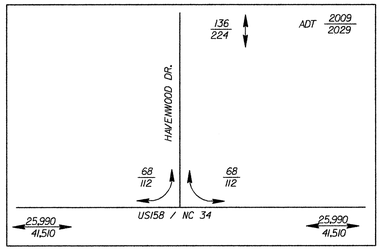
METRIC 5 0 10

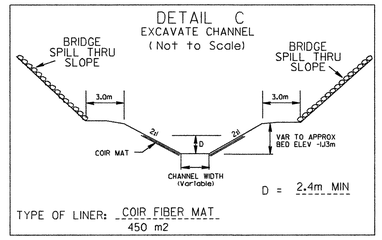
PROJECT REFERENCE NO.	SHEET NO.
R-2414A	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

CONST. REV.
R/W REV.

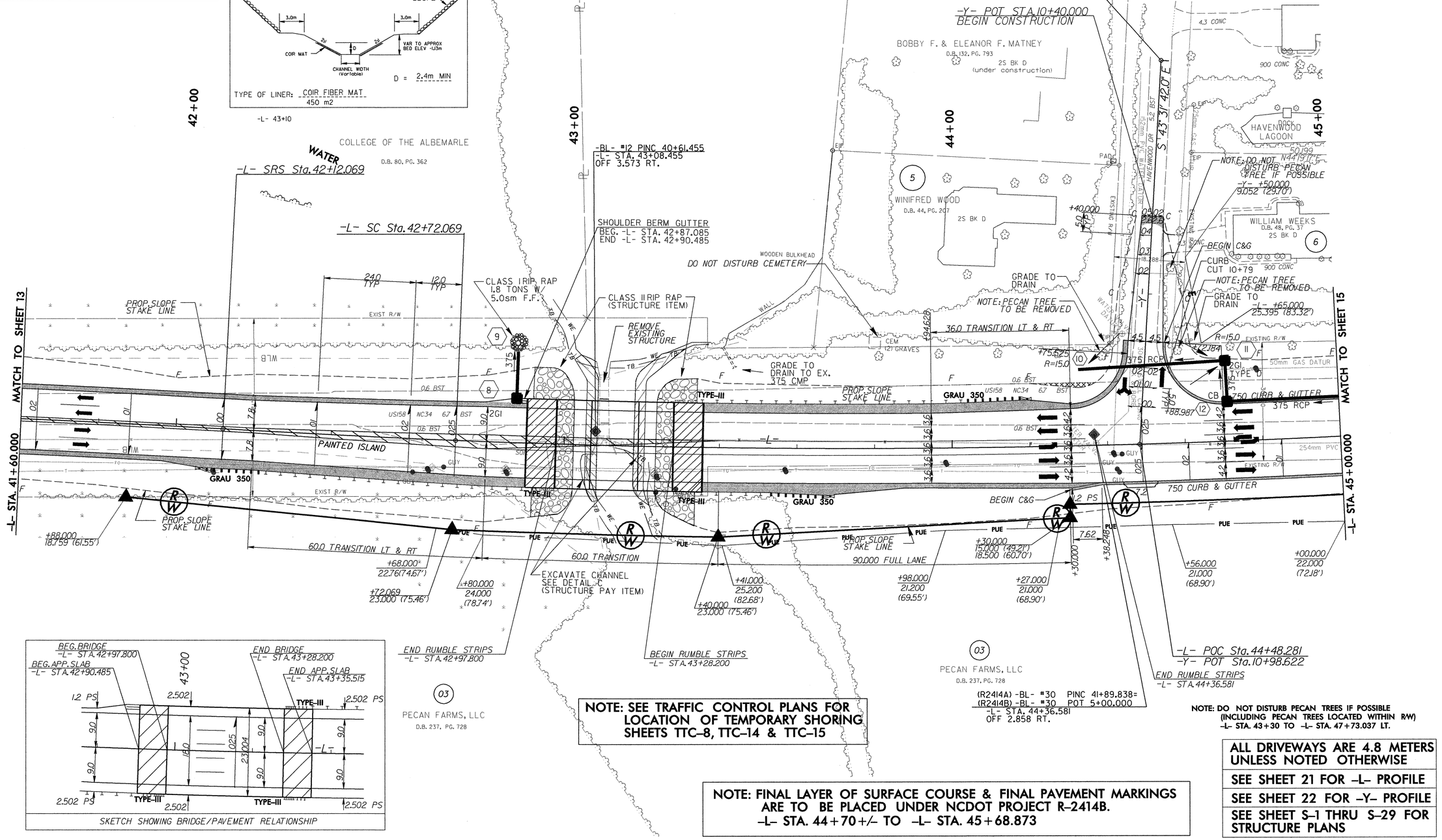


-L-

PIs Sta 41+72.069	PIs Sta 42+52.069	PI Sta 44+20.646
Θs = 0° 41' 15.2"	Θs = 0° 41' 15.2"	Δ = 6° 48' 08.1" (LT)
Ls = 60.000	Ls = 60.000	L = 296.804
LT = 40.000	LT = 40.000	T = 148.577
ST = 20.000	ST = 20.000	R = 2,500.000
		SE = RC
		V_{DES} = 100 KPH



NAD 83



SKETCH SHOWING BRIDGE/PAVEMENT RELATIONSHIP

NOTE: SEE TRAFFIC CONTROL PLANS FOR LOCATION OF TEMPORARY SHORING SHEETS TTC-8, TTC-14 & TTC-15

NOTE: FINAL LAYER OF SURFACE COURSE & FINAL PAVEMENT MARKINGS ARE TO BE PLACED UNDER NCDOT PROJECT R-2414B. -L- STA. 44+70+/- TO -L- STA. 45+68.873

NOTE: DO NOT DISTURB PECAN TREES IF POSSIBLE (INCLUDING PECAN TREES LOCATED WITHIN R/W) -L- STA. 43+30 TO -L- STA. 47+73.037 LT.

ALL DRIVEWAYS ARE 4.8 METERS UNLESS NOTED OTHERWISE

SEE SHEET 21 FOR -L- PROFILE

SEE SHEET 22 FOR -Y- PROFILE

SEE SHEET S-1 THRU S-29 FOR STRUCTURE PLANS

REVISIONS

8/17/99

7:02:00 AM
FILE: R2414A\Roadway\Proj\R-2414A_RDY_14_PSH.DGN
7/8/2009

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
BOB A. MAY 1/6/09	JEFFREY L. BEAK 1-16-09

METRIC 5 0 10

CONST. REV.

R/W REV.

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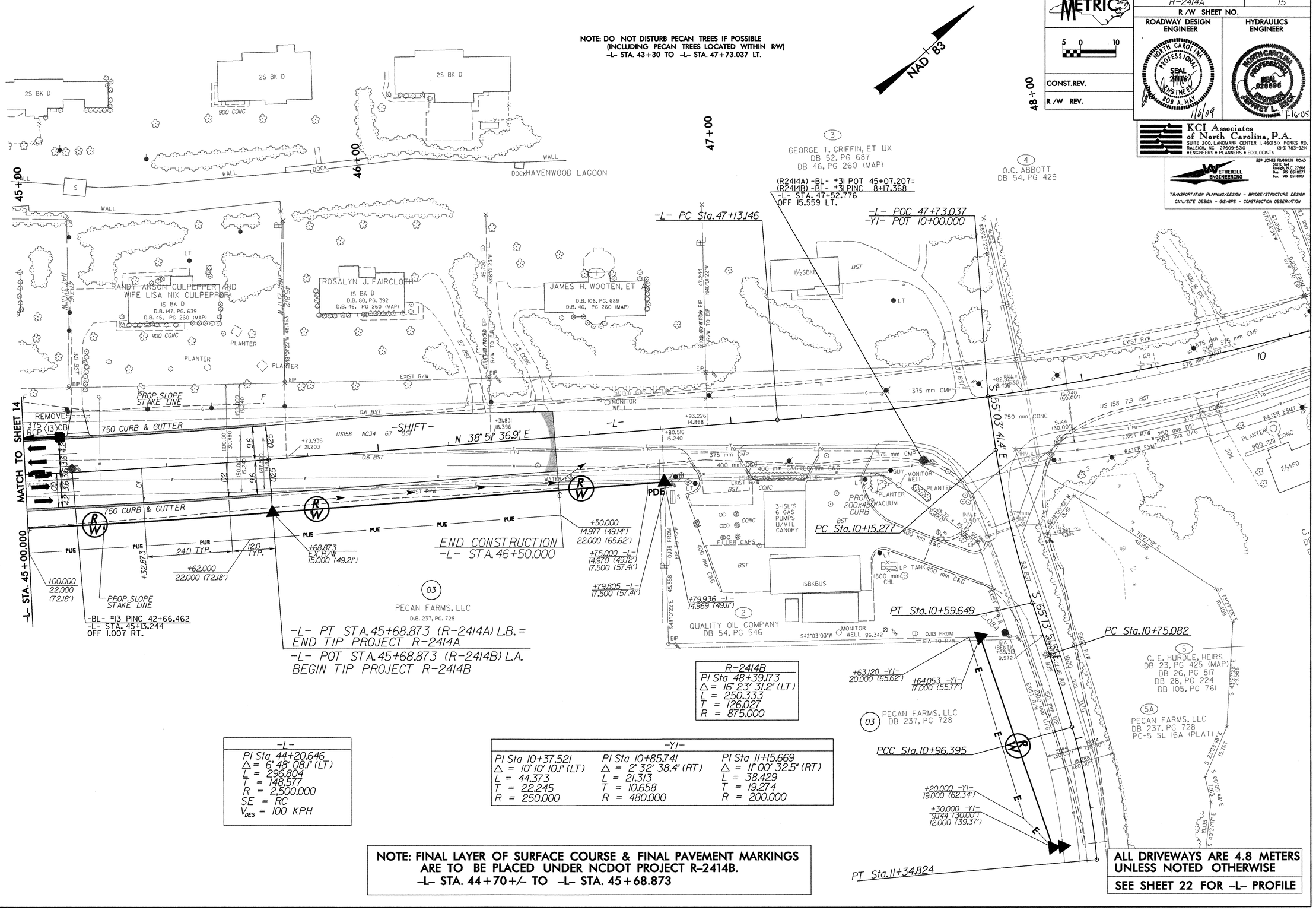
REVISIONS

NOTE: DO NOT DISTURB PECAN TREES IF POSSIBLE (INCLUDING PECAN TREES LOCATED WITHIN R/W) -L- STA. 43+30 TO -L- STA. 47+73.037 LT.



R-2414B
PI Sta 48+39.173
Δ = 16° 23' 31.2" (LT)
L = 250.333
T = 126.027
R = 875.000

-L-
PI Sta 44+20.646
Δ = 6° 48' 08.1" (LT)
L = 296.804
T = 148.577
R = 2,500.000
SE = RC
V_{DES} = 100 KPH

-Y1-		
PI Sta 10+37.521	PI Sta 10+85.741	PI Sta 11+15.669
Δ = 10° 10' 10.1" (LT)	Δ = 2° 32' 38.4" (RT)	Δ = 11° 00' 32.5" (RT)
L = 44.373	L = 21.313	L = 38.429
T = 22.245	T = 10.658	T = 19.274
R = 250.000	R = 480.000	R = 200.000

NOTE: FINAL LAYER OF SURFACE COURSE & FINAL PAVEMENT MARKINGS ARE TO BE PLACED UNDER NCDOT PROJECT R-2414B. -L- STA. 44+70+/- TO -L- STA. 45+68.873

ALL DRIVEWAYS ARE 4.8 METERS UNLESS NOTED OTHERWISE

SEE SHEET 22 FOR -L- PROFILE

10:17:15 AM
P:\R-2414A\Roadway\Proj\R-2414A_RDY_15_PSHLDGN
8/17/2006

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CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

METRIC

5 0 10

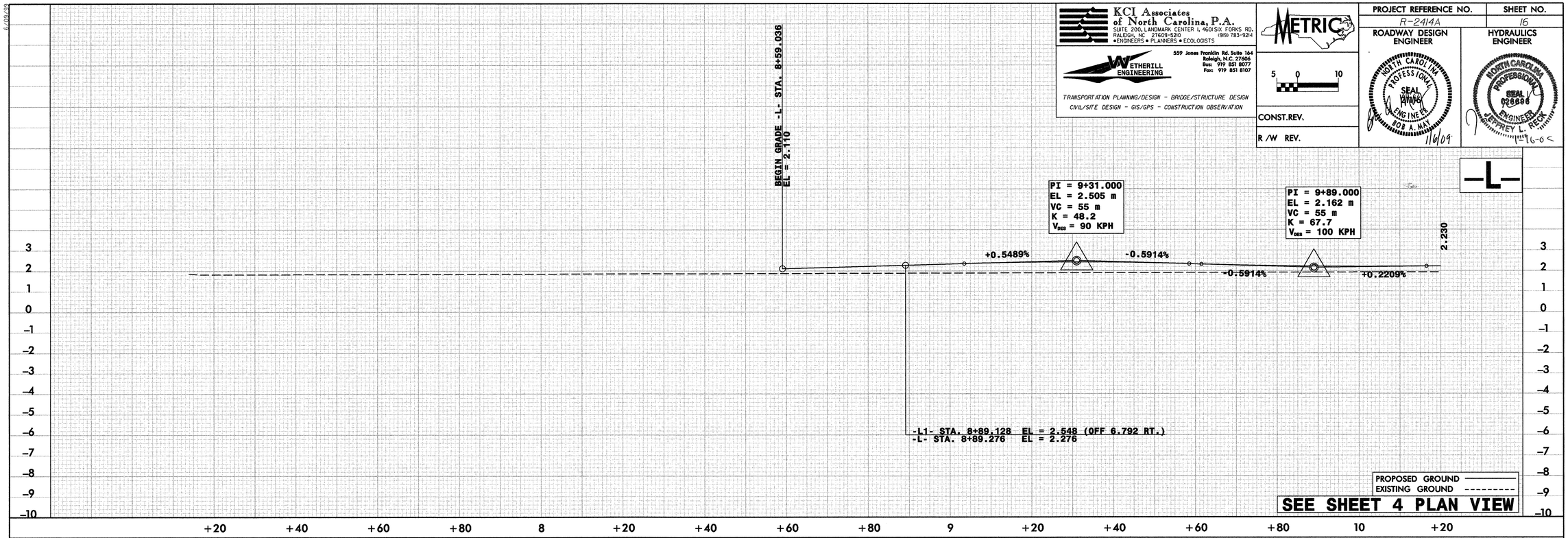
CONST.REV.

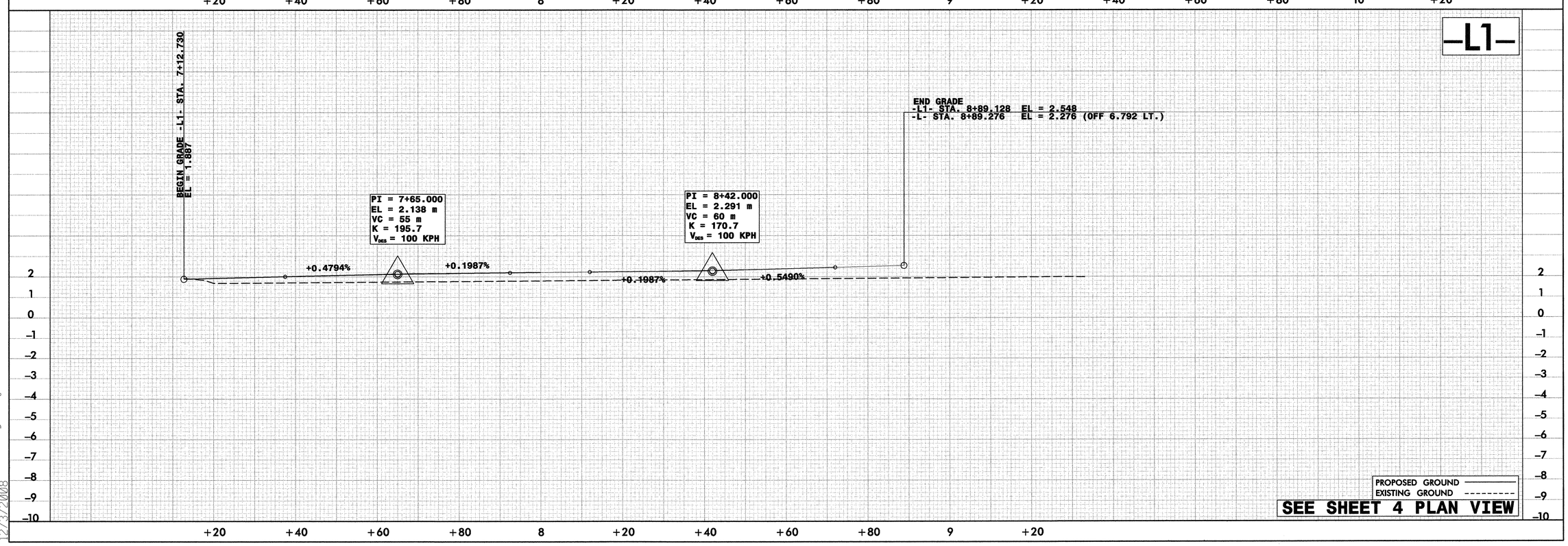
R/W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	16

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 19402 ENGINEER BOB A. MAY
11/6/09

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 028606 ENGINEER JEFFREY L. REICK
11-16-09





9:18:59 AM
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12/3/2008

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CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

METRIC

5 0 10

CONST.REV.

R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	17

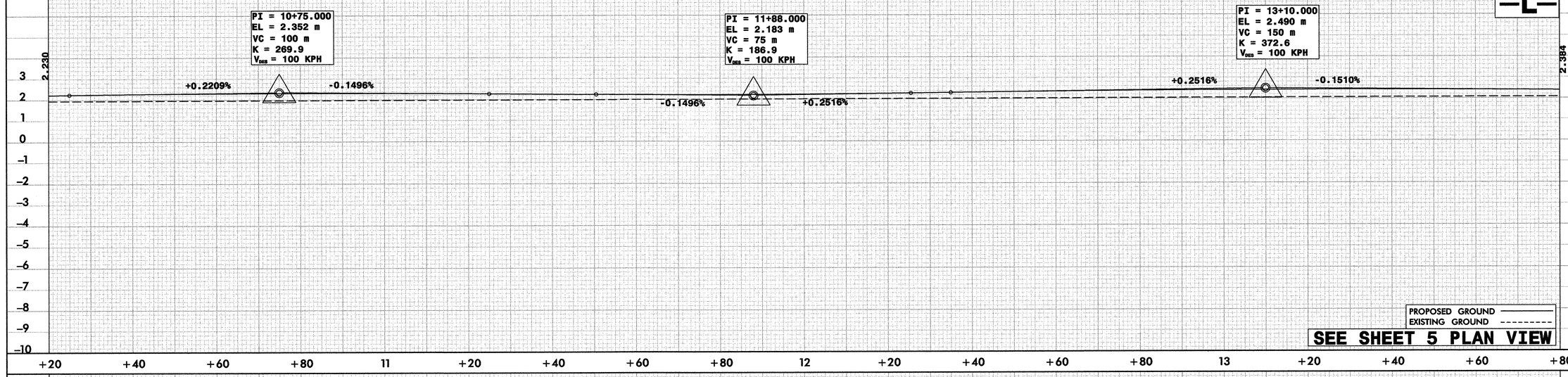
ROADWAY DESIGN ENGINEER

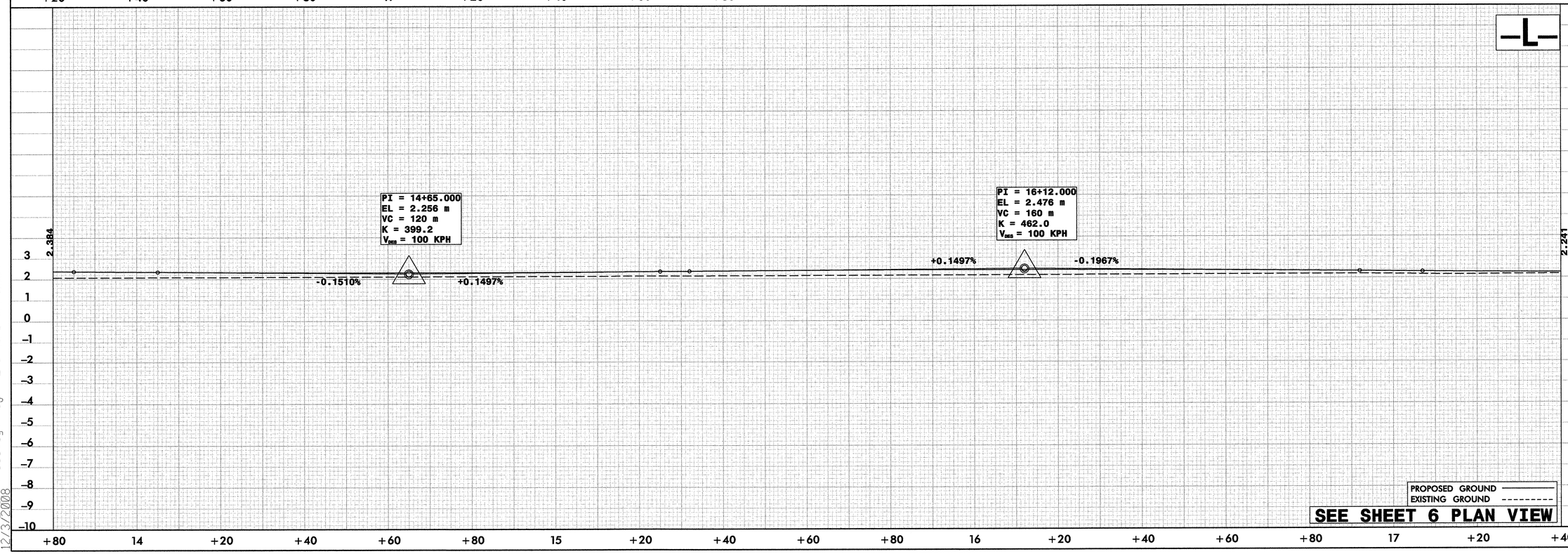
NORTH CAROLINA PROFESSIONAL SEAL 21819 ENGINEER BOB A. MAY 11/6/09

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 026666 ENGINEER JEFFREY L. RECK 11-16-09

BENCH MARK #1
NCGS MONUMENT "CAUSEWAY"
N 286490.078 E 860256.330 ELEV. 1.788
(-L- STA. 12+79.033, 5.538 RT.)





12/3/2008 9:19:29 AM
R:\R-2414A\Roadway\Proj\R-2414A_RDY_PFL.DGN

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CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

METRIC
5 0 10

CONST.REV.
R /W REV.

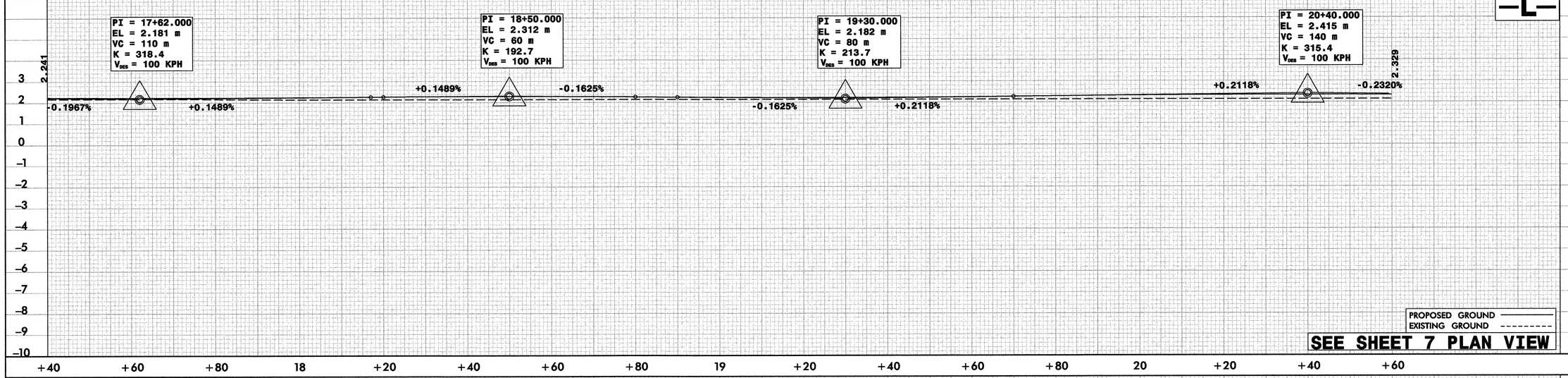
PROJECT REFERENCE NO.	SHEET NO.
R-2414A	18

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 20704 ENGINEER BOB A. MA
1/6/09

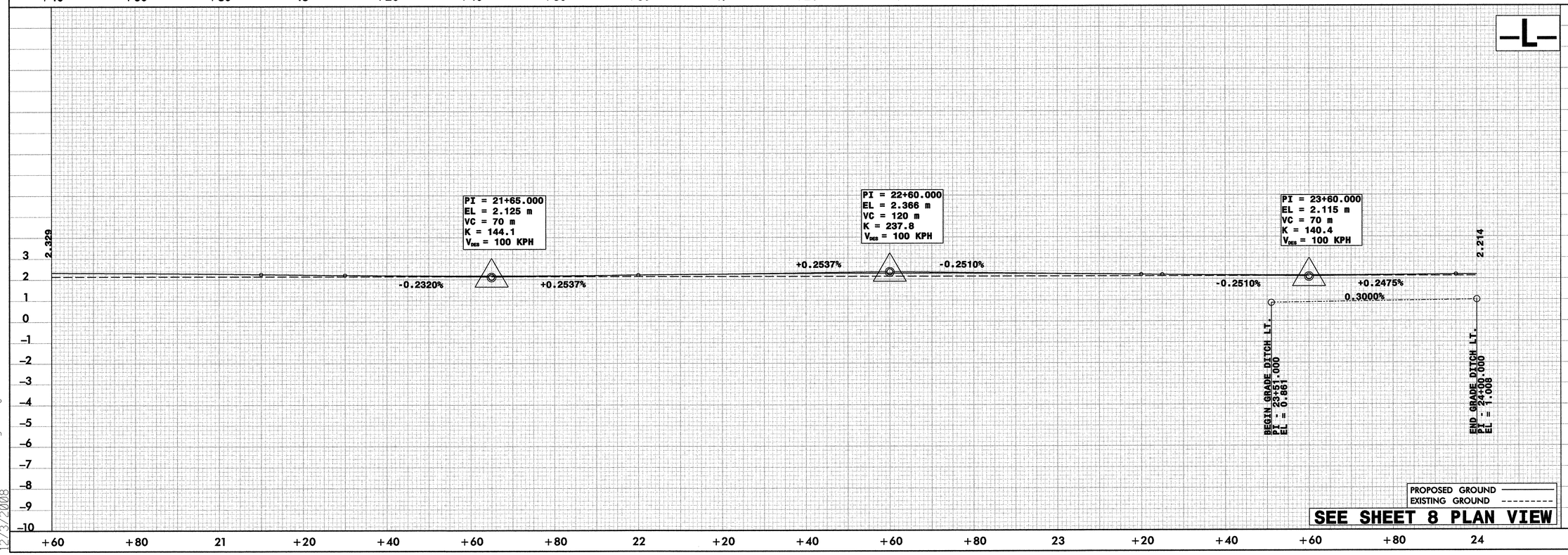
HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 026696 ENGINEER JEFFREY L. PECK
1-16-09

BENCH MARK #2
NCGS MONUMENT "WOOD"
N 286527.426 E 860978.469 ELEV. 1.923
(-L- STA. 20+01.775, 8.859 RT.)

-L-



-L-



6/19/98

9:20:02 AM
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12/3/2008

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METRIC

5 0 10

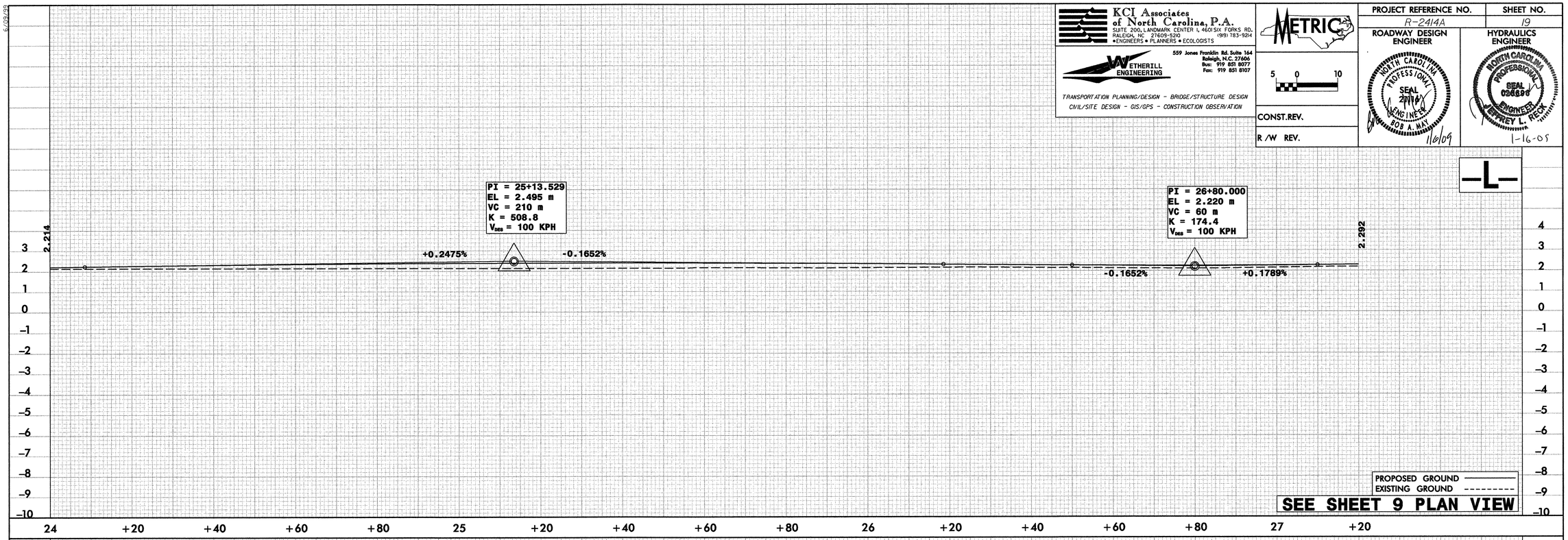
CONST.REV.

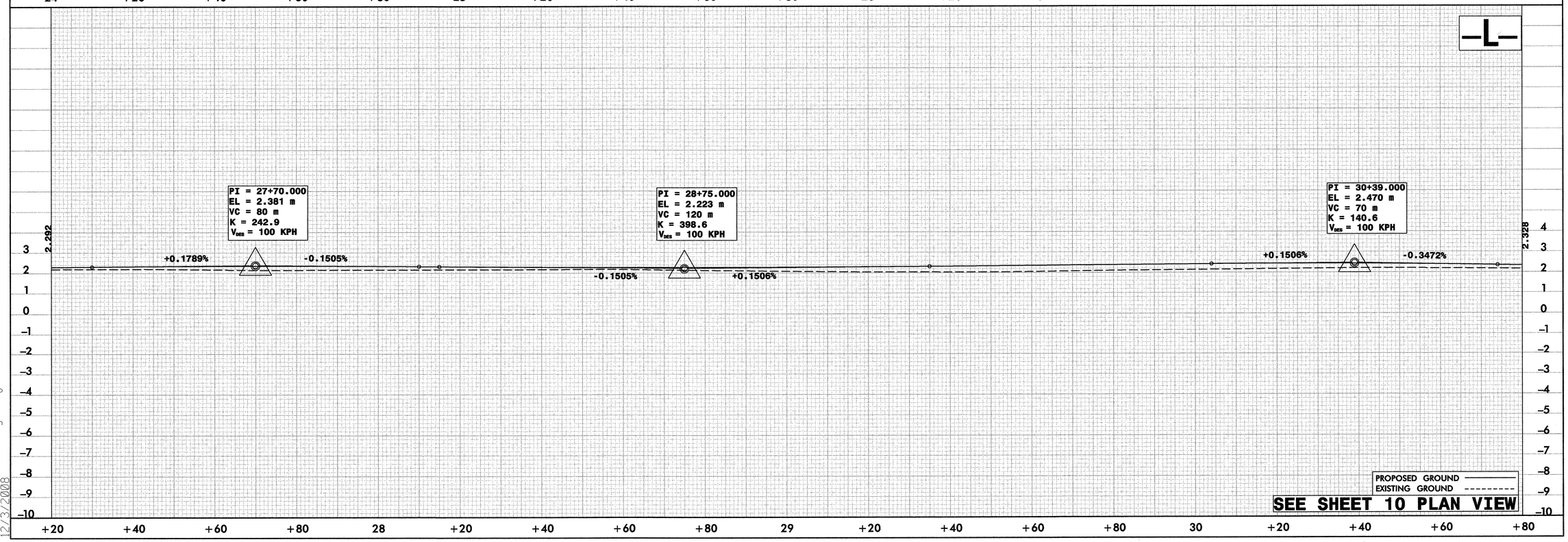
R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	19

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 24 ENGINEER BOB A. MAY
1/6/09

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 026696 ENGINEER JEFFREY L. RECK
1-16-09





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METRIC

5 0 10

CONST.REV.

R /W REV.

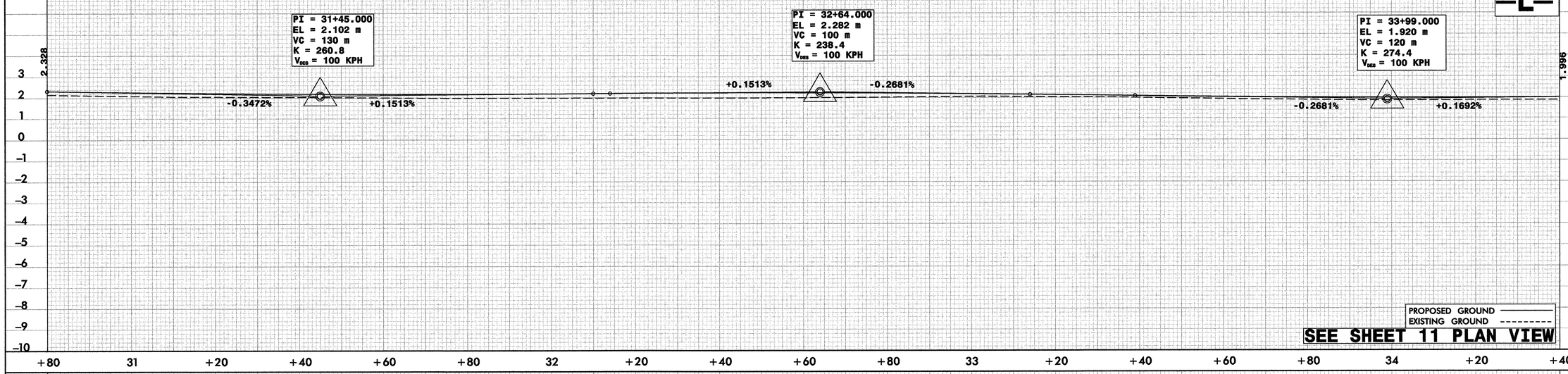
PROJECT REFERENCE NO.	SHEET NO.
R-2414A	20

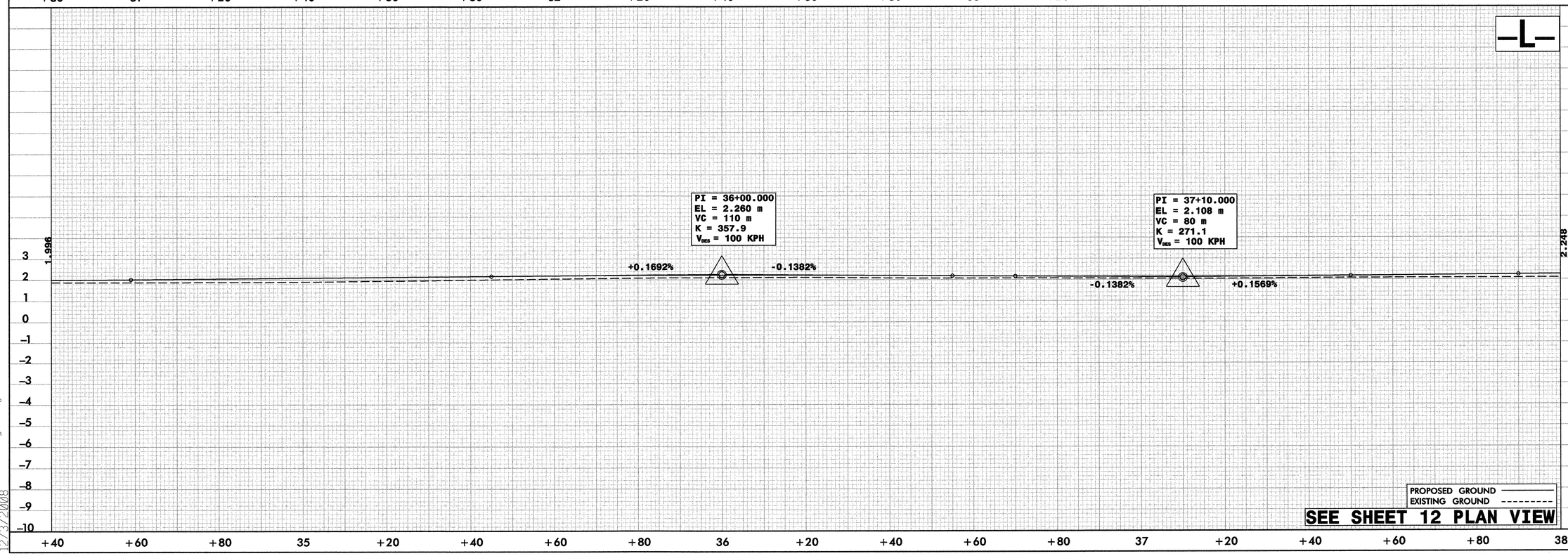
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 27014 ENGINEER BOB A. MAY
11/6/09

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 026896 ENGINEER JEFFREY L. RECK
11-6-09





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METRIC

5 0 10

CONST.REV.

R/W REV.

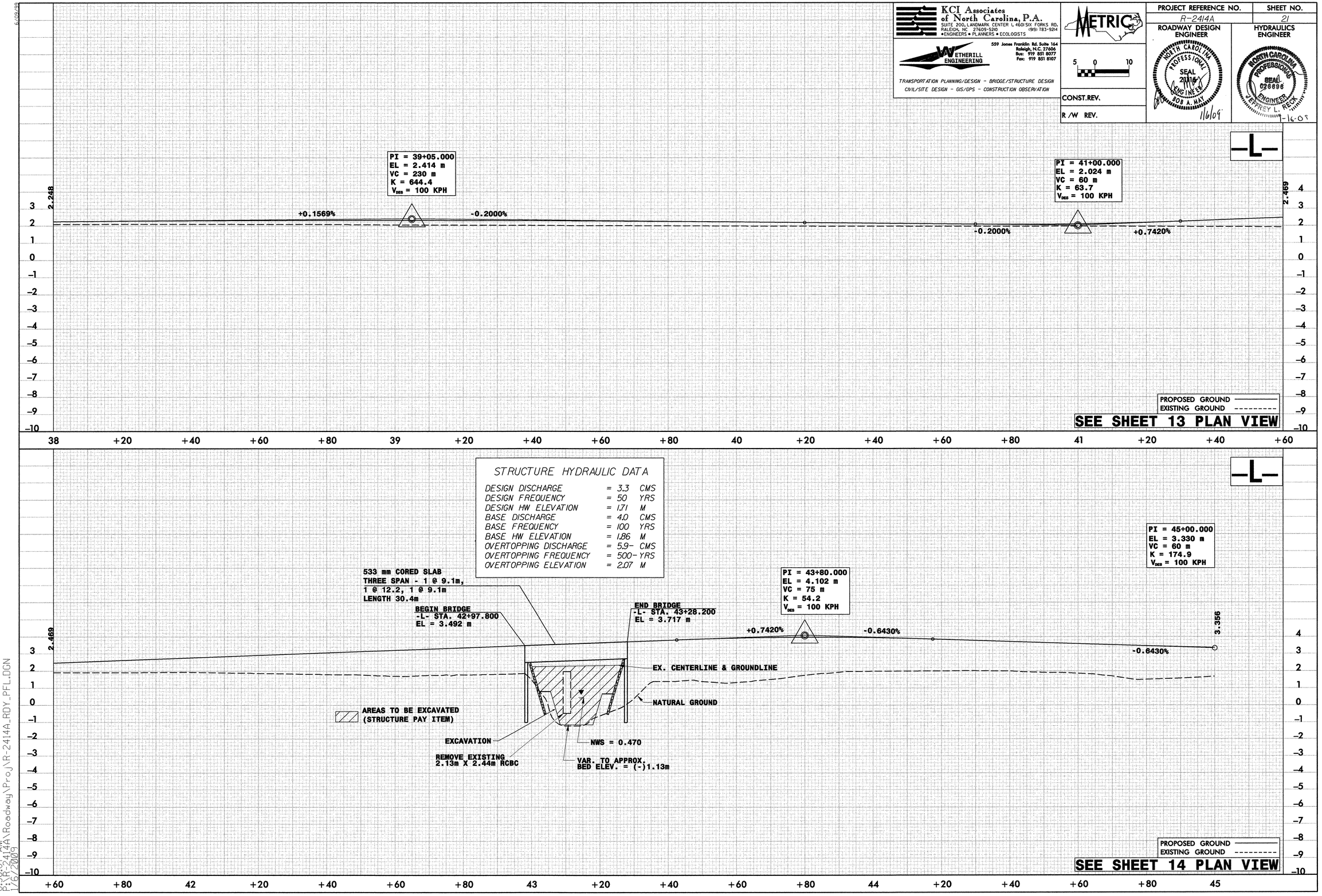
PROJECT REFERENCE NO.	SHEET NO.
R-2414A	21

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 21016 ENGINEER BOB A. MAY 1/6/09

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 026696 ENGINEER JEFFREY L. REOCH 1-16-09



6/09/98

8:56:07 AM
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1/6/2009

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CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

METRIC

5 0 10

CONST.REV.

R/W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	22

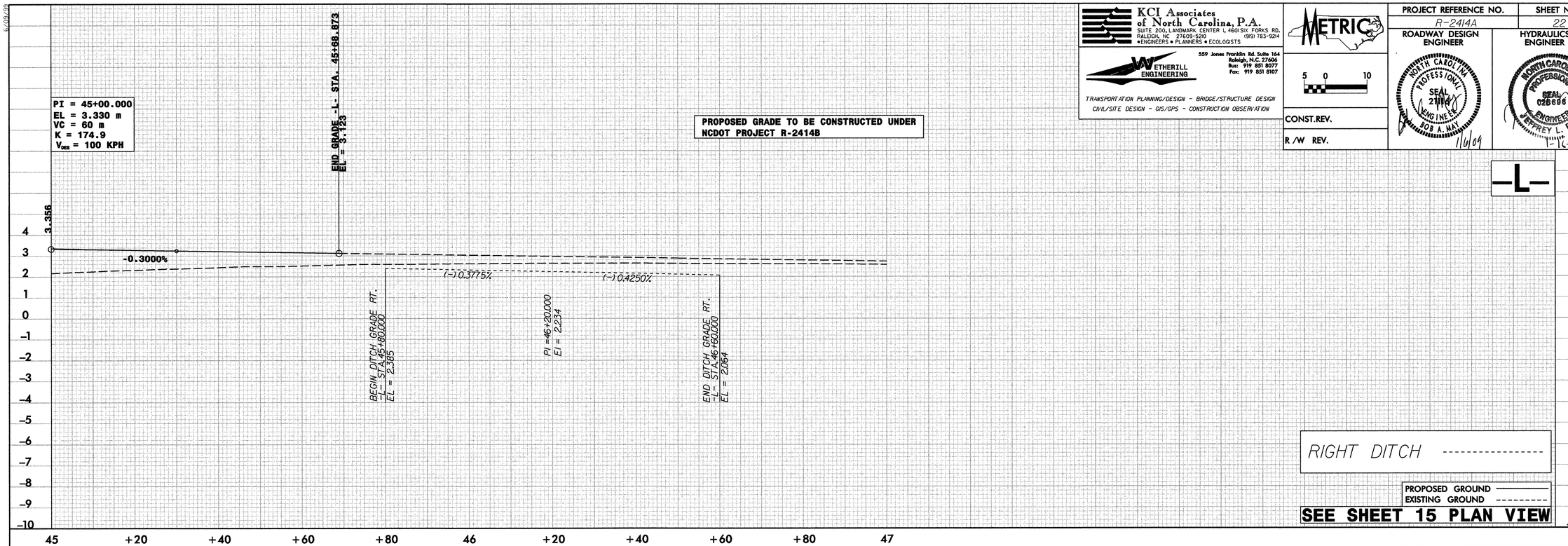
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 21119 ENGINEER BOB A. MAY 1/6/09

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 026696 ENGINEER JEFFREY L. RECK 1-12-09

-L-



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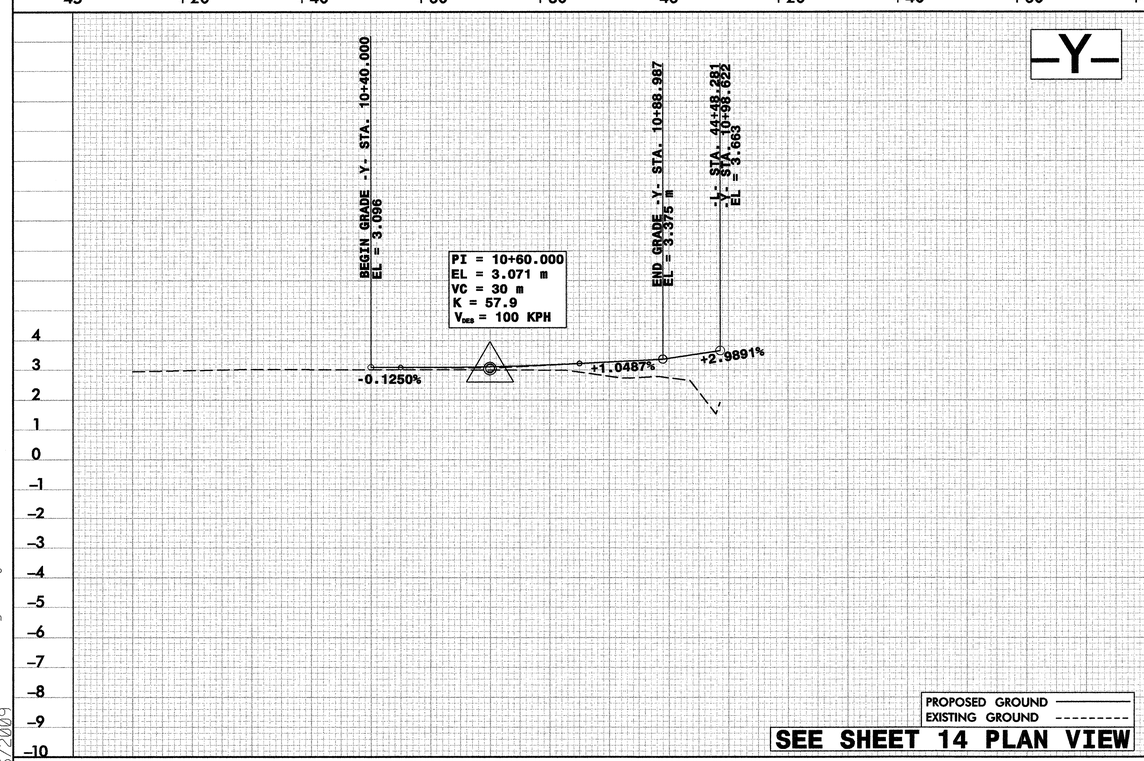

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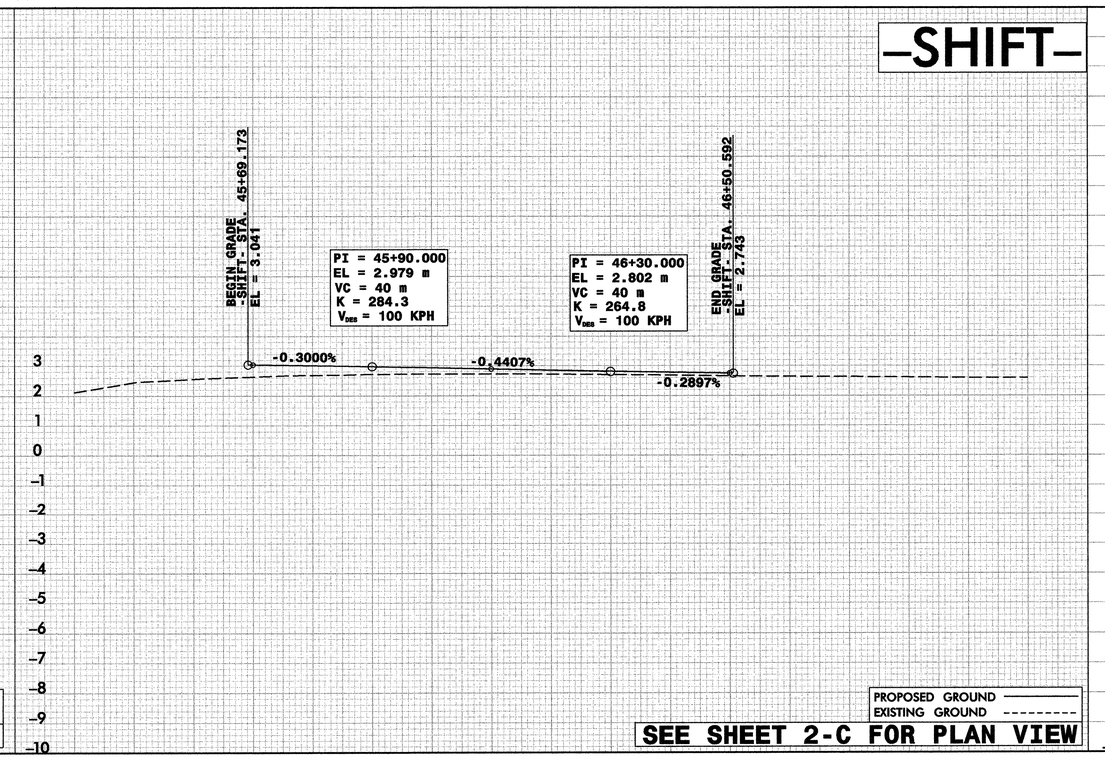

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