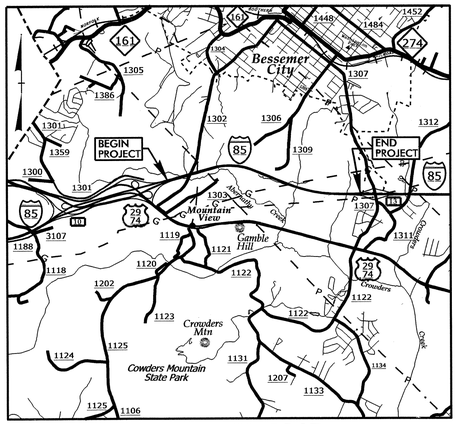
See Sheet 1-A For Index of Sheets



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

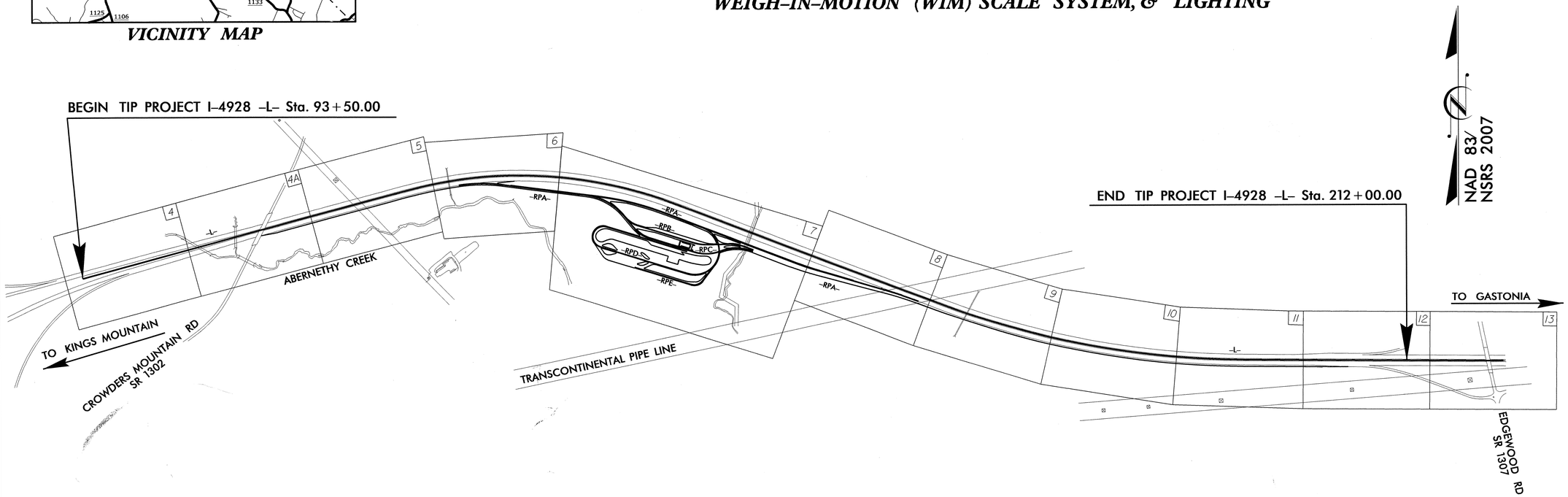
GASTON COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-4928	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
41188.1.1	IMS-85-1(106)3	P.E.
41188.2.1	IMS-85-1(106)3	R/W UTIL.
41188.3.FS1	IMS-85-1(106)3	CONST.

LOCATION: NEW I-85 NBL WEIGH STATION FROM SR 1302 (CROWDERS MOUNTAIN RD) TO SR 1307 (EDGEWOOD ROAD)

TYPE OF WORK: GRADING, PAVING, DRAINAGE, CULVERT, WEIGH STATION BUILDINGS, STATIC SCALES, COMMERCIAL VEHICLE INFORMATION SYSTEMS NETWORKS (CVISN) WEIGH-IN-MOTION (WIM) SCALE SYSTEM, & LIGHTING



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

TIP PROJECT: I-4928

CONTRACT: C203357

GRAPHIC SCALES

40 20 0 40 80 PLANS

40 20 0 40 80 PROFILE (HORIZONTAL)

8 0 8 16 PROFILE (VERTICAL)

DESIGN DATA

ADT 2014 = 74,224
ADT 2035 = 98,500
DHV = 10 %
D = 55 %
T = 23 % *
V = 70 MPH

* TTST 18% DUAL 5 %
STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT I-4928 = 2.244 MILES
TOTAL LENGTH TIP PROJECT I-4928 = 2.244 MILES

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: September 20, 2012

LETTING DATE: MARCH 18, 2014

Christopher K. Haire, PE
PROJECT ENGINEER

Mohammed E. Mahjoub, EI
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 31025 ENGINEER KAREN H. GOLLEDGE 12-17-13
SIGNATURE: Karen H. Golledge P.E.

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 19740 ENGINEER CHRISTOPHER KENT HAIRE 12-16-13
SIGNATURE: Christopher K. Haire P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

12-DEC-2013 09:34
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09/08/99

PROJECT REFERENCE NO.	SHEET NO.
I-4928	I-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19740 ENGINEER CHRISTOPHER KENT HAWK 2-10-2014

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1-C THRU 1-D	SURVEY CONTROL
1-E	CENTERLINE COORDINATE LIST
2 THRU 2-C	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS
2-D	SITE DETAILS FOR WEIGH STATION
2-E	CURVE DATA
2-F	SHEAR POINT DIAGRAM
2-G	HYDRO DETAILS
2-H	ROCK PLATING DETAIL
2-I	SPECIAL JUNCTION BOX WITH SLAB LID
2-J	CONVERT EXISTING TRAFFIC BEARING DROP INLET OR CATCH BASIN TO TRAFFIC BEARING JUNCTION BOX
3-A THRU 3-H	SUMMARY OF DRAINAGE QUANTITIES SUMMARY OF GUARDRAIL, EARTHWORK SUMMARY, AND ASPHALT PAVEMENT REMOVAL SUMMARY, FENCE, SHOULDER BERM GUTTER, SHOULDER DRAINS.
3-I	SUMMARY OF ROCK PLATING, GEOTEXTIL FOR PAVEMENT STABILIZATION, SUBSURFACE DRAINAGE, AGGREGATE SUBGRADE/STABILIZATION
4 THRU 13	PLAN SHEET
14 THRU 27	PROFILE SHEET
TMP-1 THRU TMP-5	TRANSPORTATION MANAGEMENT PLANS
PMP-1 THRU PMP-11	PAVEMENT MARKING PLANS
EC-1 THRU EC-22	EROSION CONTROL PLANS
SIGN-1 THRU	SIGN-15SIGNING PLANS
UC-1 THRU UC-7	UTILITIES PLANS
UO-1 THRU UO-6	UTILITIES BY OTHERS
ITS-1 THRU FS-5	INTELLIGENT TRANSPORTATION SYSTEMS PLANS
LE1 THRU LE-15	LIGHTING AND ITS POWER PLANS
T-1 THRU U-2	BUILDING PLANS
X-1 THRU X-63	CROSS-SECTIONS
S-1 THRU S-5	STRUCTURE PLANS
C-1 THRU C-5	CULVERT 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 STD. No 560.01

UNDERDRAINS:

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

SHOULDER DRAINS:

SHOULDER DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. AND DETAILS IN PLANS AT LOCATIONS DIRECTED BY THE ENGINEER.

GUARDRAIL:

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

TEMPORARY SHORING:

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE

Duke Energy

Williams Gas Pipeline Co.

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.
UTILITIES BY OTHERS PLANS INCLUDED IN THE PROJECT.)
RIGHT-OF-WAY MARKERS:

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

EFF. 01-17-2012
REV. 10-30-2012

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
225.01	Guide for Grading Subgrade - Interstate and Freeway
225.03	Deceleration and Acceleration Lanes
225.04	Method of Obtaining Superelevation - Two Lane Pavement
225.05	Method of Obtaining Superelevation - Divided Highways
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
560.02	Method of Shoulder Construction - High Side of Superelevated Curve - Method II (Sheet 2 of 3 is no longer applicable)
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
665.01	Asphalt Shoulders - Milled Rumble Strips
DIVISION 7 - CONCRETE PAVEMENTS AND SHOULDERS	
700.01	Concrete Pavement Joints - Construction and Contraction Joints
700.03	Dowel Assembly
700.04	Concrete Pavement Header Board
DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
806.03	Concrete Contol of Access Marker
815.03	Pipe Underdrain and Blind Drain
816.01	Concrete Pads - for Shoulder Drain Installation
816.02	Aggregate Shoulder Drain
816.04	Markers for Drainage Structure and Concrete Pad
838.01	Concrete Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.02	Concrete Endwall and Sluice Gate - 15" thru 36" Pipe 90 Skew
838.11	Brick Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.80	Precast Endwalls - 12" thru 72" Pipe 90 Skew
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.19	Concrete Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.20	Frames and Wide Slot Flat Grates
840.22	Frames and Wide Slot Sag Grates
840.24	Frames and Narrow Slot Sag Grates
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.28	Brick Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.34	Traffic Bearing Junction Box - for Use with Pipes 42" and Under
840.45	Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
840.71	Concrete and Brick Pipe Plug
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
848.01	Concrete Sidewalk
852.05	Median Curb for Catch Basin - for Use with 1'-6" Curb and Gutter
857.01	Precast Reinforced Concrete Barrier - 41" Single Faced
862.01	Guardrail Placement
862.02	Guardrail Installation
862.04	Anchoring End of Guardrail - B-77 and B-83 Anchor Units
866.02	Woven Wire Fence - with Wood Post
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

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PROJECT REFERENCE NO.	SHEET NO.
I-4928	I-B

12/05/11

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 R/W Marker — RW
- Proposed Control of Access Line with Concrete C/A Marker — CA
- 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:

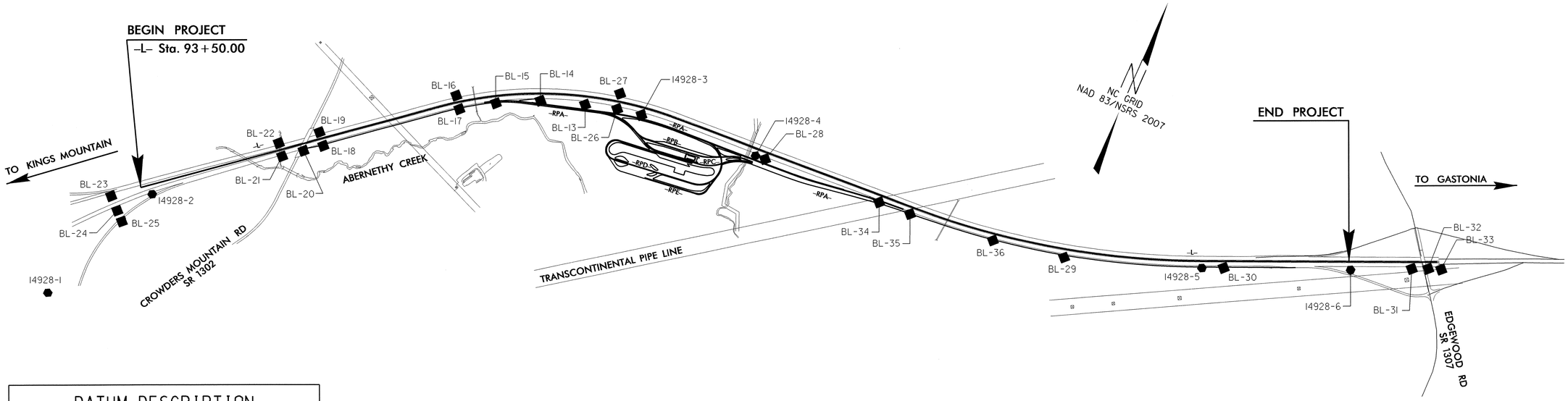
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

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.
I-4928	1-C
Location and Surveys	

SURVEY CONTROL SHEET –Final–



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "DIXON"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
NORTHING: 535925.460(ft) EASTING: 1292218.277(ft)
ELEVATION: 914.0(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999834
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "DIXON" TO -L- STATION 93+50.00 IS
N 49°50'41.7" E 29677.549
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:
   I4928_LS_CONTROL.TXT
   I4928_LS_LOCAL.TXT

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

3. *PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM, UTILIZING THE NCGS RTN SYSTEM (VRS).*

   MONUMENTS USED OR SET FOR PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT:

● *INDICATES GEODETIC CONTROL MONUMENTS FOR HORIZONTAL CONTROL*
■ *INDICATES BASELINE MONUMENTS FOR HORIZONTAL PROJECT CONTROL*
⧗ *INDICATES BENCHMARKS FOR VERTICAL CONTROL*

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
GPS1	I4928-1	553779.1030	1314514.1180	890.89	OUTSIDE PROJECT LIMITS	
25	BL-25	554694.3832	1314870.1631	828.76	OUTSIDE PROJECT LIMITS	
GPS2	I4928-2	555051.0350	1315025.3750	809.68	94+37.96	88.95 RT
21	BL-21	555893.7537	1315997.9086	764.14	107+24.53	61.72 RT
20	BL-20	556027.8318	1316162.3480	759.86	109+36.70	63.59 RT
18	BL-18	556147.7330	1316314.1435	761.28	111+30.08	68.29 RT
17	BL-17	556999.9848	1317347.1539	767.80	124+73.23	65.18 RT
15	BL-15	557194.1203	1317639.9743	771.71	128+30.80	65.85 RT
14	BL-14	557392.9225	1318016.3290	779.36	132+64.06	65.12 RT
13	BL-13	557535.5570	1318417.1675	781.47	136+97.63	77.64 RT
26	BL-26	557626.3695	1318710.7262	781.34	140+10.91	69.60 RT
GPS3	I4928-3	557673.4700	1318944.6160	778.09	142+53.96	70.22 RT
GPS4	I4928-4	557772.7380	1320089.2520	776.45	154+10.73	66.49 RT
28	BL-28	557779.5789	1320185.3964	779.66	155+07.11	65.87 RT
34	BL-34	557854.4623	1321343.9999	820.21	166+68.13	65.99 RT
35	BL-35	557874.1080	1321658.5286	824.38	169+83.27	66.70 RT
36	BL-36	557967.0988	1322481.7283	819.11	178+05.52	65.37 RT
29	BL-29	558098.0885	1323166.2654	807.16	184+96.02	79.62 RT
GPS5	I4928-5	558549.1990	1324401.5220	788.89	198+00.34	66.12 RT
30	BL-30	558635.6234	1324588.2515	787.16	200+06.09	63.88 RT
GPS6	I4928-6	559119.1380	1325695.5030	800.34	212+14.23	77.03 RT
31	BL-31	559368.4575	1326220.2609	795.21	217+95.08	64.86 RT
32	BL-32	559434.7524	1326362.8117	791.46	219+52.28	62.86 RT
33	BL-33	559479.1497	1326477.8857	787.81	OUTSIDE PROJECT LIMITS	

BL1

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
24	BL-24	554771.6928	1314786.0187	822.44	OUTSIDE PROJECT LIMITS	
23	BL-23	554873.3774	1314676.0521	819.91	OUTSIDE PROJECT LIMITS	
22	BL-22	555993.7609	1315917.8520	763.80	107+26.81	66.36 LT
19	BL-19	556248.2111	1316227.5436	760.86	111+27.62	64.33 LT
16	BL-16	557103.8474	1317267.8165	770.84	124+70.88	65.50 LT
27	BL-27	557768.6704	1318675.8058	783.38	140+09.82	76.92 LT

L

TYPE	STATION	NORTH	EAST
POT	93+50.00	555063.2900	1314900.8782
TS	121+25.00	556835.7672	1317036.0479
SC	123+70.00	556990.2332	1317226.2052
CS	145+34.18	557779.8687	1319210.4336
ST	147+79.18	557798.2956	1319454.7285
PC	170+43.18	557944.5360	1321714.0005
PT	197+80.17	558601.2275	1324356.0103
POT	220+38.04	559527.2589	1326415.2419

RPA

TYPE	STATION	NORTH	EAST
PC	10+00.00	557154.0646	1317536.9645
PT	13+82.77	557315.7680	1317882.6753
PC	22+17.02	557566.7013	1318678.2917
PT	28+19.22	557677.2538	1319268.7800
PC	40+52.94	557756.9446	1320499.9256
PT	42+46.21	557776.8675	1320692.1173
PC	48+37.53	557860.5212	1321277.4851
CS	49+94.45	557878.6492	1321433.3404
ST	51+44.45	557889.5850	1321582.9371

RPB

TYPE	STATION	NORTH	EAST
PC	10+00.00	557537.5068	1318585.7266
PT	13+59.35	557514.7173	1318936.1685
PC	13+89.64	557501.9383	1318963.6401
PT	15+22.90	557482.0472	1319093.6075
PC	20+34.23	557549.1753	1319600.5123
PT	21+45.09	557580.7473	1319706.2992
PC	23+35.98	557663.5015	1319878.3130
PT	24+89.49	557702.2104	1320025.8872
POT	25+57.57	557706.6085	1320093.8341

RPC

TYPE	STATION	NORTH	EAST
POT	10+00.00	557501.9399	1318963.6368
PC	11+41.48	557442.2675	1319091.9175
PT	12+74.74	557422.3764	1319221.8849
PC	16+90.03	557476.8958	1319633.5772
PT	19+08.90	557569.4575	1319827.9952
PC	19+33.31	557586.2213	1319845.7382
PT	22+10.27	557694.6327	1320094.6053

RPD

TYPE	STATION	NORTH	EAST
PC	10+00.00	557700.0416	1319620.8305
PT	16+41.60	557284.9272	1319661.7053
PC	24+38.18	557180.3504	1318872.0155
PT	27+20.92	557358.7926	1318848.3848
POT	34+54.80	557455.1366	1319575.9086

NOTE: DRAWING NOT TO SCALE

2/04/14
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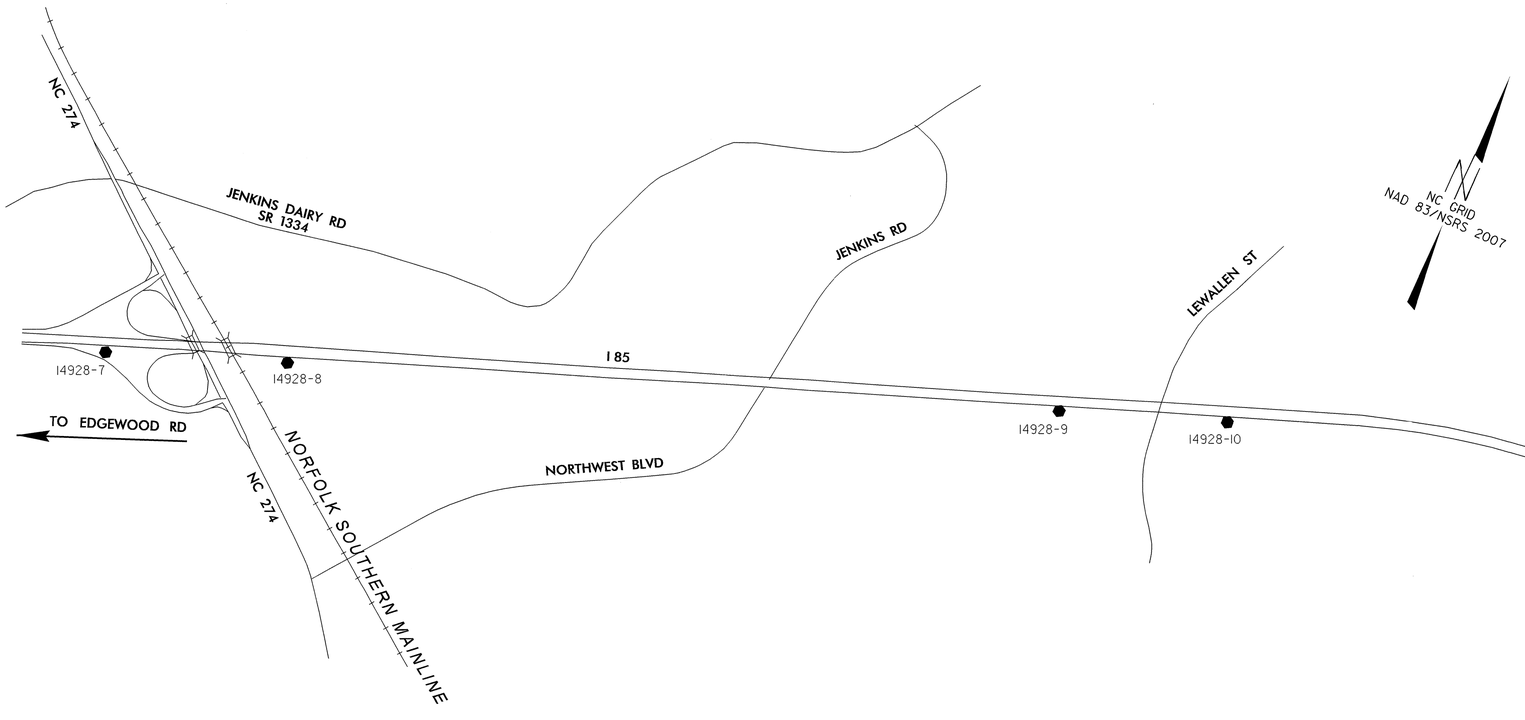
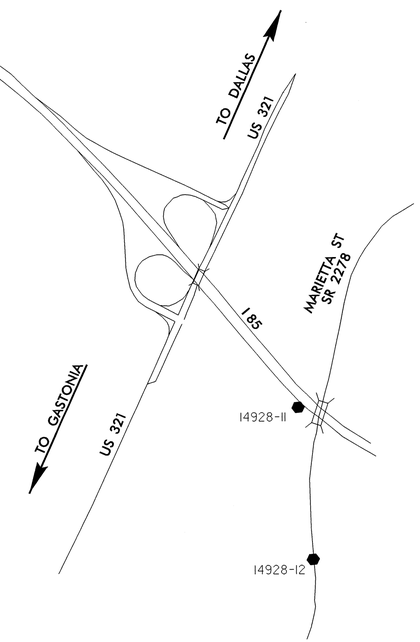
PROJECT REFERENCE NO.	SHEET NO.
I-4928	1-D
Location and Surveys	

SURVEY CONTROL SHEET –Final–



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "DIXON"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
NORTHING: 535925.460(ft) EASTING: 1292218.277(ft)
ELEVATION: 914.0(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999834
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "DIXON" TO -L- STATION 93+50.00 IS
N 49°50'41.7" E 29677.549
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88



ROW MARKER CONCRETE OR GRANITE

ALIGN	STATION	OFFSET	NORTH	EAST
L	166+99.83	130.30	557792.3340	1321379.7873
L	169+00.00	130.38	557805.1827	1321579.5418
L	169+37.70	140.00	557798.0151	1321617.7848
L	179+37.49	140.61	557916.0103	1322626.4259
L	184+32.84	178.73	557986.1535	1323128.5924
L	184+36.76	142.36	558022.3942	1323123.5922
L	190+84.90	130.57	558221.8269	1323752.3451
L	190+85.75	179.47	558175.8730	1323769.0850

ROW MARKER CONCRETE OR GRANITE

ALIGN	STATION	OFFSET	NORTH	EAST
RPA	14+80.00	112.00	557238.2004	1318009.0912
RPA	35+00.00	180.00	557541.6037	1319959.7624
RPA	43+02.00	175.00	557611.5196	1320772.0990

ROW MARKER CONCRETE OR GRANITE

ALIGN	STATION	OFFSET	NORTH	EAST
RPD	15+35.00	-230.00	557140.5868	1319897.1564
RPD	24+22.00	-180.00	557004.0324	1318911.6859

PERMANENT EASEMENT MARKER IRON PIN & CAP

ALIGN	STATION	OFFSET	NORTH	EAST
L	152+72.22	-274.77	558104.3366	1319928.9903
L	152+89.53	-174.85	558005.7467	1319952.7223
L	153+01.78	-279.89	558111.3575	1319958.1572
L	201+27.00	128.16	558626.5938	1324724.8906
L	201+27.00	200.00	558561.0705	1324754.3563
L	205+18.00	163.00	558755.1783	1325095.7830
L	205+18.00	129.18	558786.0263	1325081.9107

PERMANENT EASEMENT MARKER IRON PIN & CAP

ALIGN	STATION	OFFSET	NORTH	EAST
RPD	13+82.37	-140.05	557423.5765	1319976.3021
RPD	13+83.33	-105.54	557428.9055	1319942.1682
RPD	14+00.17	-142.98	557393.8760	1319972.0563
RPD	14+03.09	-108.36	557399.2645	1319937.5407

EXISTING ROW MARKER

ALIGN	STATION	OFFSET	NORTH	EAST
L	114+43.11	129.70	556300.4224	1316594.2229
L	123+42.93	130.31	556871.2074	1317285.5624
L	123+42.95	150.19	556855.6078	1317297.8927
L	129+42.43	148.32	557177.3177	1317775.2163
L	153+19.60	-177.02	558009.8499	1319982.5915
L	153+62.14	-186.88	558022.4458	1320024.4031
L	169+38.33	244.64	557693.6312	1321625.1757
L	174+36.96	-218.87	558197.4733	1322080.7645
L	175+37.37	144.44	557849.1315	1322224.4048
L	175+37.79	246.07	557748.4083	1322237.9332
L	179+37.49	140.61	557916.0103	1322626.4259
L	184+32.84	178.73	557986.1535	1323128.5924
L	184+36.76	142.36	558022.3942	1323123.5922
L	190+84.90	130.57	558221.8269	1323752.3451
L	190+85.75	179.47	558175.8730	1323769.0850
L	206+80.44	129.60	558852.2641	1325230.2384

EXISTING ROW MARKER

ALIGN	STATION	OFFSET	NORTH	EAST
RPA	12+29.68	102.10	557168.5112	1317780.1724

ADDITIONAL GPS CONTROL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
GPS7	I4928-7	562770.8000	1333960.7770	818.88	OUTSIDE PROJECT LIMITS	
GPS8	I4928-8	563222.2220	1335132.0200	811.58	OUTSIDE PROJECT LIMITS	
GPS9	I4928-9	565126.2620	1340106.9860	763.72	OUTSIDE PROJECT LIMITS	
GPS10	I4928-10	565537.4040	1341193.4530	739.48	OUTSIDE PROJECT LIMITS	
GPS11	I4928-11	564853.0670	1348118.1860	731.41	OUTSIDE PROJECT LIMITS	
GPS12	I4928-12	563937.1450	1348649.8440	735.23	OUTSIDE PROJECT LIMITS	

NOTES: SEE SHEET 1C

NOTE: DRAWING NOT TO SCALE

2/04/14
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PROJ. REFERENCE NO.	SHEET NO.
I-4928	1-E

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CENTERLINE COORDINATE LIST

Point #	Chain	Station	Northing (Y)	Easting (X)
1	L	93+50.00	555063.2900	1314900.8782
2	L	94+50.00	555127.1631	1314977.8212
3	L	95+50.00	555191.0361	1315054.7643
4	L	96+50.00	555254.9092	1315131.7073
5	L	97+50.00	555318.7822	1315208.6504
6	L	98+50.00	555382.6553	1315285.5934
7	L	99+50.00	555446.5283	1315362.5365
8	L	100+50.00	555510.4014	1315439.4796
9	L	101+50.00	555574.2744	1315516.4226
10	L	102+50.00	555638.1475	1315593.3657
11	L	103+50.00	555702.0205	1315670.3087
12	L	104+50.00	555765.8936	1315747.2518
13	L	105+50.00	555829.7666	1315824.1948
14	L	106+50.00	555893.6397	1315901.1379
15	L	107+50.00	555957.5127	1315978.0809
16	L	108+50.00	556021.3858	1316055.0240
17	L	109+50.00	556085.2588	1316131.9670
18	L	110+50.00	556149.1319	1316208.9101
19	L	111+50.00	556213.0049	1316285.8531
20	L	112+50.00	556276.8780	1316362.7962
21	L	113+50.00	556340.7511	1316439.7392
22	L	114+50.00	556404.6241	1316516.6823
23	L	115+50.00	556468.4972	1316593.6253
24	L	116+50.00	556532.3702	1316670.5684
25	L	117+50.00	556596.2433	1316747.5114
26	L	118+50.00	556660.1163	1316824.4545
27	L	119+50.00	556723.9894	1316901.3975
28	L	120+50.00	556787.8624	1316978.3406
29	L	121+50.00	556851.7333	1317055.2854
30	L	122+50.00	556915.3414	1317132.4473
31	L	123+50.00	556977.9166	1317210.4477
32	L	124+50.00	557038.6774	1317289.8678
33	L	125+50.00	557097.3481	1317370.8443
34	L	126+50.00	557153.8875	1317453.3229
35	L	127+50.00	557208.2573	1317537.2477
36	L	128+50.00	557260.4204	1317622.5614
37	L	129+50.00	557310.3415	1317709.2062
38	L	130+50.00	557357.9865	1317797.1231
39	L	131+50.00	557403.3231	1317886.2524
40	L	132+50.00	557446.3205	1317976.5334
41	L	133+50.00	557486.9493	1318067.9048
42	L	134+50.00	557525.1821	1318160.3044
43	L	135+50.00	557560.9928	1318253.6694
44	L	136+50.00	557594.3570	1318347.9364
45	L	137+50.00	557625.2521	1318443.0412
46	L	138+50.00	557653.6570	1318538.9193
47	L	139+50.00	557679.5525	1318635.5053
48	L	140+50.00	557702.9209	1318732.7336
49	L	141+50.00	557723.7464	1318830.5382
50	L	142+50.00	557742.0148	1318928.8525
51	L	143+50.00	557757.7136	1319027.6096
52	L	144+50.00	557770.8323	1319126.7425
53	L	145+50.00	557781.3625	1319226.1837
54	L	146+50.00	557789.5699	1319325.8448
55	L	147+50.00	557796.4064	1319425.6106
56	L	148+50.00	557802.8702	1319525.4014
57	L	149+50.00	557809.3296	1319625.1926
58	L	150+50.00	557815.7889	1319724.9838
59	L	151+50.00	557822.2483	1319824.7749
60	L	152+50.00	557828.7077	1319924.5661
61	L	153+50.00	557835.1671	1320024.3573
62	L	154+50.00	557841.6265	1320124.1484
63	L	155+50.00	557848.0859	1320223.9396
64	L	156+50.00	557854.5452	1320323.7307
65	L	157+50.00	557861.0046	1320423.5219
66	L	158+50.00	557867.4640	1320523.3131
67	L	159+50.00	557873.9234	1320623.1042
68	L	160+50.00	557880.3828	1320722.8954
69	L	161+50.00	557886.8422	1320822.6866
70	L	162+50.00	557893.3015	1320922.4777
71	L	163+50.00	557899.7609	1321022.2689
72	L	164+50.00	557906.2203	1321122.0601
73	L	165+50.00	557912.6797	1321221.8512
74	L	166+50.00	557919.1391	1321321.6424
75	L	167+50.00	557925.5985	1321421.4335
76	L	168+50.00	557932.0578	1321521.2247
77	L	169+50.00	557938.5172	1321621.0159
78	L	170+50.00	557944.9796	1321720.8068
79	L	171+50.00	557952.1804	1321820.5465
80	L	172+50.00	557960.6849	1321920.1835
81	L	173+50.00	557970.4919	1322019.7008
82	L	174+50.00	557981.5995	1322119.0812

Point #	Chain	Station	Northing (Y)	Easting (X)
83	L	175+50.00	557994.0058	1322218.3079
84	L	176+50.00	558007.7089	1322317.3639
85	L	177+50.00	558022.7063	1322416.2322
86	L	178+50.00	558038.9954	1322514.8959
87	L	179+50.00	558056.5735	1322613.3381
88	L	180+50.00	558075.4375	1322711.5420
89	L	181+50.00	558095.5843	1322809.4908
90	L	182+50.00	558117.0103	1322907.1677
91	L	183+50.00	558139.7120	1323004.5560
92	L	184+50.00	558163.6854	1323101.6392
93	L	185+50.00	558188.9265	1323198.4004
94	L	186+50.00	558215.4309	1323294.8233
95	L	187+50.00	558243.1940	1323390.8914
96	L	188+50.00	558272.2112	1323486.5881
97	L	189+50.00	558302.4775	1323581.8971
98	L	190+50.00	558333.9877	1323676.8021
99	L	191+50.00	558366.7364	1323771.2870
100	L	192+50.00	558400.7180	1323865.3354
101	L	193+50.00	558435.9266	1323958.9314
102	L	194+50.00	558472.3564	1324052.0589
103	L	195+50.00	558510.0010	1324144.7020
104	L	196+50.00	558548.8540	1324236.8448
105	L	197+50.00	558588.9087	1324328.4716
106	L	198+50.00	558629.8679	1324419.6984
107	L	199+50.00	558670.8815	1324510.9009
108	L	200+50.00	558711.8950	1324602.1034
109	L	201+50.00	558752.9085	1324693.3058
110	L	202+50.00	558793.9220	1324784.5083
111	L	203+50.00	558834.9356	1324875.7108
112	L	204+50.00	558875.9491	1324966.9132
113	L	205+50.00	558916.9626	1325058.1157
114	L	206+50.00	558957.9762	1325149.3182
115	L	207+50.00	558998.9897	1325240.5207
116	L	208+50.00	559040.0032	1325331.7231
117	L	209+50.00	559081.0167	1325422.9256
118	L	210+50.00	559122.0303	1325514.1281
119	L	211+50.00	559163.0438	1325605.3305
120	L	212+50.00	559204.0573	1325696.5330
121	L	213+50.00	559245.0708	1325787.7355
122	L	214+50.00	559286.0844	1325878.9379
123	L	215+50.00	559327.0979	1325970.1404
124	L	216+50.00	559368.1114	1326061.3429
125	L	217+50.00	559409.1250	1326152.5454
126	L	218+50.00	559450.1385	1326243.7478
127	L	219+50.00	559491.1520	1326334.9503
128	L	220+38.04	559527.2589	1326415.2419
129	RPA	10+00.00	557154.0646	1317536.9645
130	RPA	11+00.00	557205.0400	1317622.9735
131	RPA	12+00.00	557249.9673	1317712.2908
132	RPA	13+00.00	557288.6329	1317804.4917
133	RPA	14+00.00	557320.9506	1317899.1075
134	RPA	15+00.00	557351.0295	1317994.4766
135	RPA	16+00.00	557381.1084	1318089.8456
136	RPA	17+00.00	557411.1874	1318185.2147
137	RPA	18+00.00	557441.2663	1318280.5838
138	RPA	19+00.00	557471.3452	1318375.9528
139	RPA	20+00.00	557501.4241	1318471.3219
140	RPA	21+00.00	557531.5030	1318566.6910
141	RPA	22+00.00	557561.5819	1318662.0600
142	RPA	23+00.00	557590.3430	1318757.8288
143	RPA	24+00.00	557615.3072	1318854.6557
144	RPA	25+00.00	557636.3795	1318952.4035
145	RPA	26+00.00	557653.5259	1319050.9157
146	RPA	27+00.00	557666.7193	1319150.0349
147	RPA	28+00.00	557675.9383	1319249.6023
148	RPA	29+00.00	557682.4715	1319349.3885
149	RPA	30+00.00	557688.9309	1319449.1797
150	RPA	31+00.00	557695.3902	1319548.9708
151	RPA	32+00.00	557701.8496	1319648.7620
152	RPA	33+00.00	557708.3090	1319748.5532
153	RPA	34+00.00	557714.7684	1319848.3443
154	RPA	35+00.00	557721.2278	1319948.1355
155	RPA	36+00.00	557727.6872	1320047.9267
156	RPA	37+00.00	557734.1465	1320147.7178
157	RPA	38+00.00	557740.6059	1320247.5090
158	RPA	39+00.00	557747.0653	1320347.3002
159	RPA	40+00.00	557753.5247	1320447.0913
160	RPA	41+00.00	557760.4258	1320546.8511
161	RPA	42+00.00	557770.7528	1320646.3097
162	RPA	43+00.00	557784.4766	1320745.3618
163	RPA	44+00.00	557798.6237	1320844.3561

Point #	Chain	Station	Northing (Y)	Easting (X)
164	RPA	45+00.00	557812.7707	1320943.3503
165	RPA	46+00.00	557826.9178	1321042.3446
166	RPA	47+00.00	557841.0648	1321141.3388
167	RPA	48+00.00	557855.2119	1321240.3330
168	RPA	49+00.00	557868.7144	1321339.4148
169	RPA	50+00.00	557879.1407	1321438.8652
170	RPA	51+00.00	557886.6811	1321538.5786
171	RPA	51+44.45	557889.5850	1321582.9371
172	RPB	10+00.00	557537.5068	1318585.7266
173	RPB	11+00.00	557557.5759	1318683.5114
174	RPB	12+00.00	557557.2007	1318783.3336
175	RPB	13+00.00	557536.3971	1318880.9647
176	RPB	14+00.00	557497.7786	1318973.1234
177	RPB	15+00.00	557480.1508	1319070.7926
178	RPB	16+00.00	557492.1686	1319170.0376
179	RPB	17+00.00	557505.2968	1319269.1721
180	RPB	18+00.00	557518.4249	1319368.3066
181	RPB	19+00.00	557531.5530	1319467.4411
182	RPB	20+00.00	557544.6811	1319566.5757
183	RPB	21+00.00	557563.8661	1319664.5184
184	RPB	22+00.00	557604.5509	1319755.7776
185	RPB	23+00.00	557647.9038	1319845.8915
186	RPB	24+00.00	557686.5313	1319937.9759
187	RPB	25+00.00	557702.8896	1320036.3802
188	RPB	25+57.57	557706.6085	1320093.8341
189	RPC	10+00.00	557501.9399	1318963.6368
190	RPC	11+00.00	557459.7627	1319054.3070
191	RPC	12+00.00	557424.4123	1319147.4878
192	RPC	13+00.00	557425.6926	1319246.9268
193	RPC	14+00.00	557438.8208	1319346.0613
194	RPC	15+00.00	557451.9489	1319445.1958
195	RPC	16+00.00	557465.0770	1319544.3303
196	RPC	17+00.00	557478.3459	1319643.4448
197	RPC	18+00.00	557508.0845	1319738.5646
198	RPC	19+00.00	557563.4263	1319821.4467
199	RPC	20+00.00	557627.7762	1319897.7967
200	RPC	21+00.00	557672.5291	1319986.9325
201	RPC	22+00.00	557693.8381	1320084.3695
202	RPC	22+10.27	557694.6327	1320094.6053
203	RPD	10+00.00	557700.0416	1319620.8305
204	RPD	11+00.00	557682.8004	1319718.3642
205	RPD	12+00.00	557622.5308	1319796.9623
206	RPD	13+00.00	557532.8102	1319838.9184
207	RPD	14+00.00	557433.8507	1319834.7806
208	RPD	15+00.00	557347.9458	1319785.4811
209	RPD	16+00.00	557294.4480	1319702.1260
210	RPD	17+00.00	557277.2598	1319603.8064
211	RPD	18+00.00	557264.1316	1319504.6719
212	RPD	19+00.00	557251.0035	1319405.5374
213	RPD	20+00.00	557237.8753	1319306.4029
214	RPD	21+00.00	557224.7472	1319207.2684
215	RPD	22+00.00	557211.6190	1319108.1339
216	RPD	23+00.00	557198.4909	1319008.9994
217	RPD	24+00.00	557185.3627	1318909.8649
218	RPD	25+00.00	557193.0913	1318812.7577
219	RPD	26+00.00	557278.1574	1318770.6106
220	RPD	27+00.00	557353.6702	1318828.1469
221	RPD	28+00.00	557369.1739	1318926.7773
222	RPD	29+00.00	557382.3020	1319025.9118
223	RPD	30+00.00	557395.4301	1319125.0463
224	RPD	31+00.00	557408.5582	1319224.1808
225	RPD	32+00.00	557421.6864	1319323.3153
226	RPD	33+00.00	557434.8145	1319422.4498
227	RPD	34+00.00	557447.9426	1319521.5844
228	RPD	34+54.80	557455.1366	1319575.9086
229	RPE	10+00.00	557448.7796	1319838.5055
230	RPE	11+00.00	557350.9273	1319817.8914
231	RPE	12+00.00	557254.4076	1319793.1371
232	RPE	13+00.00	557207.5672	1319709.7675
233	RPE	14+00.00	557194.4391	1319610.6330
234	RPE	15+00.00	557181.3110	1319511.4985
235	RPE	16+00.00	557168.1828	1319412.3640
236	RPE	17+00.00	557155.0547	1319313.2295
237	RPE	17+95.89	557142.4655	1319218.1648

Point #	Chain	Station	Northing (Y)	Easting (X)

Point #	Chain	Station	Northing (Y)	Easting (X)

PROJECT REFERENCE NO.	SHEET NO.
I-4928	2

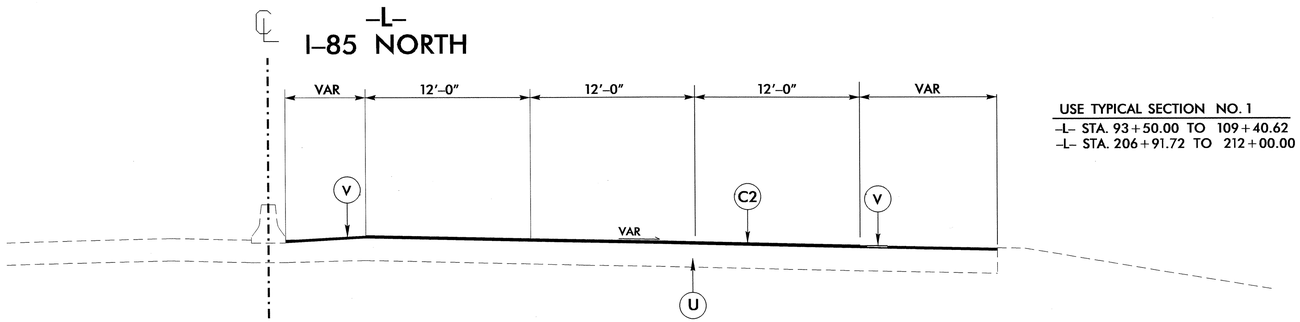
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 19740 ENGINEER CHRISTOPHER KENT HUNE
Christopher K. Hune

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER DIAN-CHI CHEN
12/16/13

PAVEMENT SCHEDULE

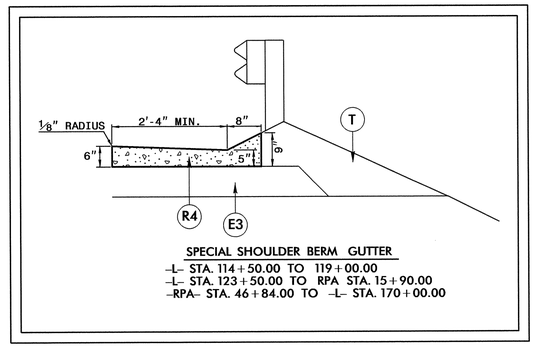
A1	11.5" PORTLAND CEMENT CONCRETE PAVEMENT (WITH DOWELS).	E3	PROP. APPROX. 9" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	R3	9" x 18" CONCRETE CURB AND GUTTER.
C1	PROP. APPROX. 1¼" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 138 LBS. PER SQ. YD.	E4	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.	R4	SPECIAL CONCRETE SHOULDER BERM GUTTER (See Detail)
C2	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	F	NONWOVEN GEOTEXTILE LAYER	R5	4" CONCRETE ISLAND COVER.
C3	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5D, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	J1	PROP. 8" AGGREGATE BASE COURSE.	S	4" CONCRETE SIDEWALK.
D1	PROP. APPROX. 3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0D, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.	K	SUBGRADE TO BE STABLIZED TO A DEPTH OF 8" WITH LIME AT RATE OF APPROX. 20 LBS. PER SQ.yd. @ 8" DEPTH AS DIRECTED BY THE ENGINEER. OR SUBGRADE TO BE STABLIZED TO A DEPTH OF 7" WITH PORTLAND CEMENT AT RATE OF APPROX. 55 LBS. PER SQ.yd. @ 7" DEPTH AS DIRECTED BY THE ENGINEER.	T	EARTH MATERIAL
E1	PROP. APPROX. 3" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.			U	EXISTING PAVEMENT
E2	PROP. APPROX. 5½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD. IN EACH OF ONE LAYER.	R1	2'-6" CONCRETE CURB AND GUTTER.	V	MILLED RUMBLE STRIP STANDARD 665.01
		R2	1'-6" CONCRETE CURB AND GUTTER.		

ALL PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE

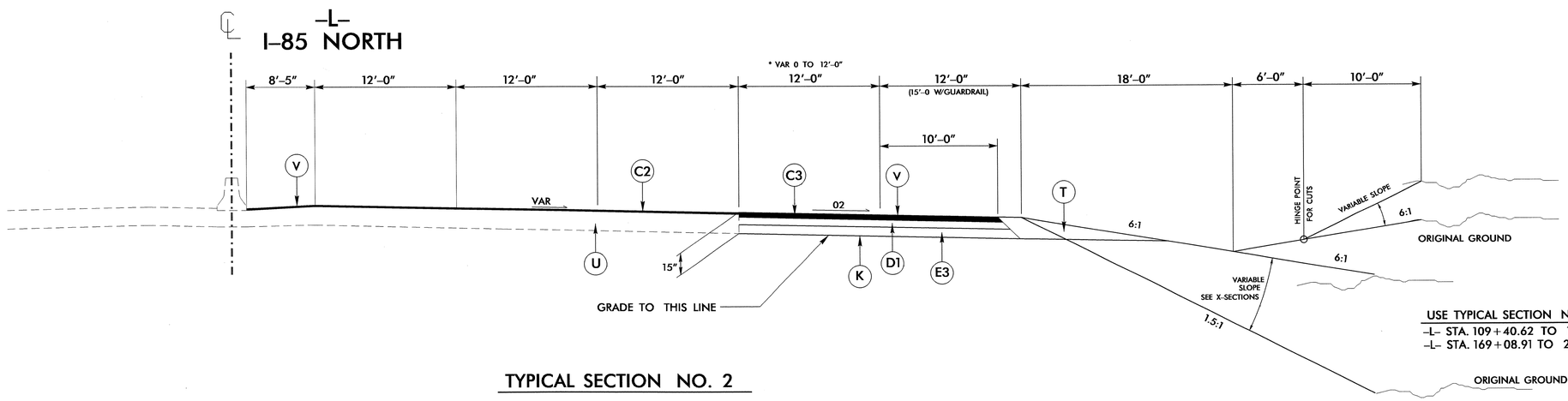


USE TYPICAL SECTION NO. 1
-L- STA. 93+50.00 TO 109+40.62
-L- STA. 206+91.72 TO 212+00.00

TYPICAL SECTION NO. 1



SPECIAL SHOULDER BERM GUTTER
-L- STA. 114+50.00 TO 119+00.00
-L- STA. 123+50.00 TO RPA STA. 15+90.00
-RPA- STA. 46+84.00 TO -L- STA. 170+00.00



USE TYPICAL SECTION NO. 2
-L- STA. 109+40.62 TO 127+20.54
-L- STA. 169+08.91 TO 206+91.72

TYPICAL SECTION NO. 2

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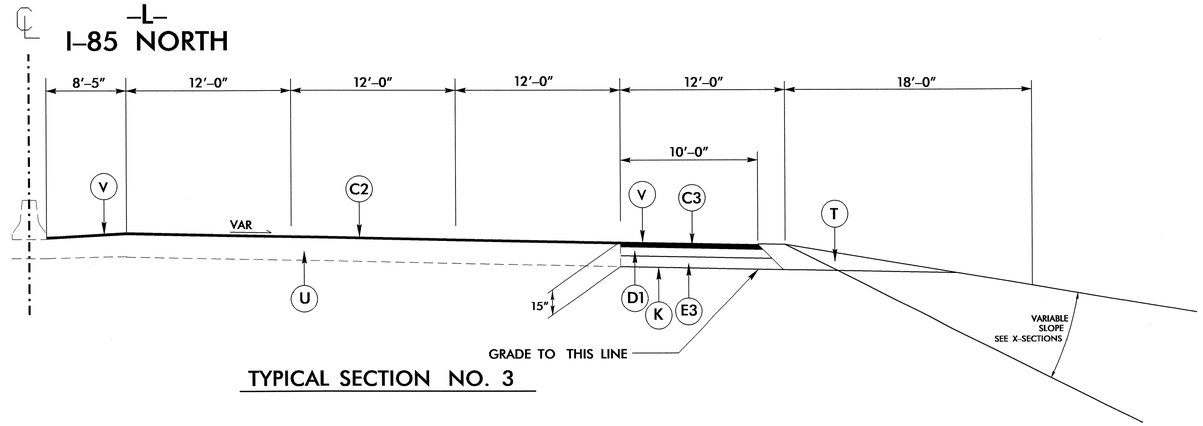
PROJECT REFERENCE NO.	SHEET NO.
I-4928	2-A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

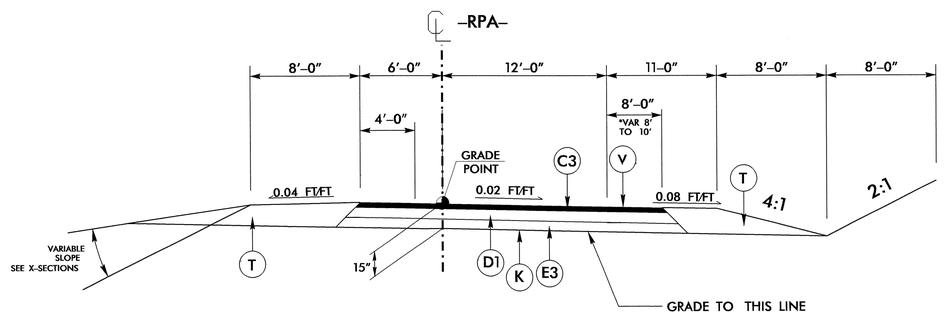
NORTH CAROLINA PROFESSIONAL SEAL 19740 12-6-13 ENGINEER CHRISTOPHER KENT HARE

NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER HUNG-CHI CHEN 12/16/13



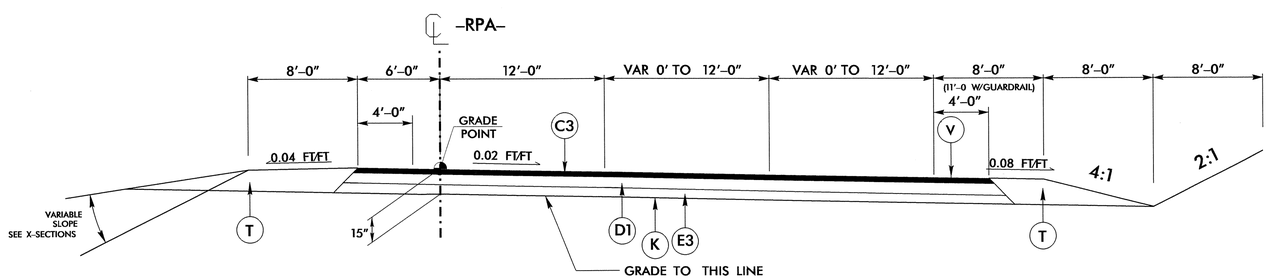
TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3
-L- STA. 127+20.54 TO 169+08.91



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4
-RPA- STA. 10+00 TO 14+18.00



TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5
-RPA- STA. 45+70.61 TO 51+44.45

PAVEMENT SCHEDULE

A1	11.5" PORTLAND CEMENT CONCRETE PAVEMENT (WITH DOWELS)
C1	PROP APPROX 1¼" ASPHALT CONC. SURFACE COURSE, TYPE SF9.5A
C2	PROP APPROX 1½" ASPHALT CONC. SURFACE COURSE, TYPE S9.5D
C3	PROP APPROX 3" ASPHALT CONC. SURFACE COURSE, TYPE S9.5D
D1	PROP APPROX 3" ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0D
E1	PROP APPROX 3" ASPHALT CONC. BASE COURSE, TYPE B25.0B
E2	PROP APPROX 5½" ASPHALT CONC. BASE COURSE, TYPE B25.0B
E3	PROP APPROX 9" ASPHALT CONC. BASE COURSE, TYPE B25.0C
E4	PROP VAR. DEPTH ASPHALT CONC. BASE COURSE, TYPE B25.0B
F	NONWOVEN GEOTEXTILE LAYER
J1	PROP. 8" AGGREGATE BASE COURSE.
K	STABILIZE SUBGRADE
R1	2'-6" CONC. CURB AND GUTTER
R2	1'-6" CONC. CURB AND GUTTER
R3	9"-18" CONC. CURB AND GUTTER
R4	SPECIAL CONCRETE SHOULDER BERM GUTTER (See Detail)
R5	4" CONC. ISLAND COVER
S	4" CONC. SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLED RUMBLE STRIP

ALL PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE

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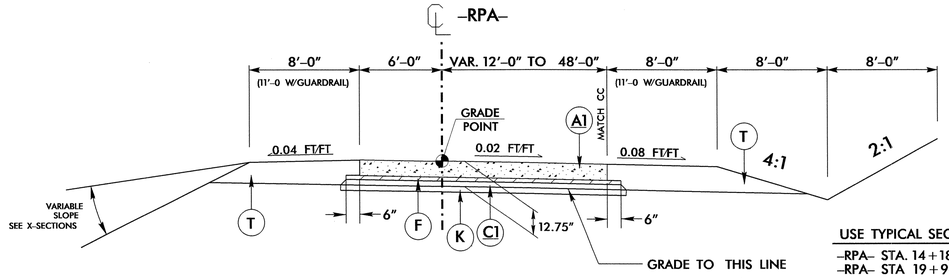
PROJECT REFERENCE NO.	SHEET NO.
I-4928	2-B
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19730 ENGINEER CHRISTOPHER KENT HAWE 12-16-13

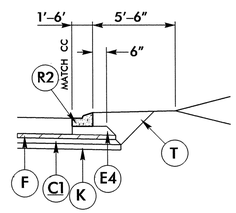
NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER DON-CHI CHEN 12/16/13



USE TYPICAL SECTION NO. 6

-RPA- STA. 14+18.00 TO 16+96.96
-RPA- STA 19+96.96 TO 45+70.61

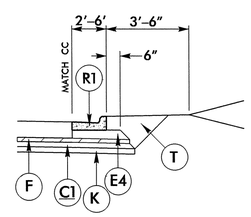
TYPICAL SECTION NO. 6



TYPICAL SECTION NO. 6A

USE TYPICAL SECTION NO. 6A
IN CONJUNCTION WITH TYPICAL SECTION 6

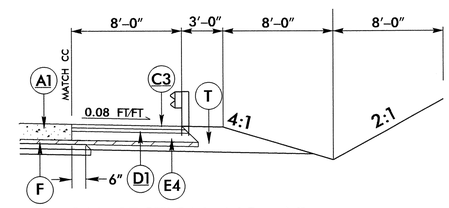
-RPA- STA 32+79.67 TO 35+19.95



TYPICAL SECTION NO. 6B

USE TYPICAL SECTION NO. 6B
IN CONJUNCTION WITH TYPICAL SECTION 6

-RPA- STA 28+86.27 TO 31+72.01
-RPA- STA 36+44.45 TO 39+94.45



TYPICAL SECTION NO. 6C

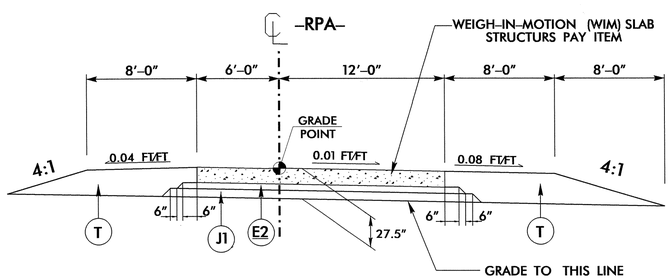
USE TYPICAL SECTION NO. 6C
IN CONJUNCTION WITH TYPICAL SECTION 6

-RPA- STA 14+18.00 TO 16+81.23
-RPA- STA 43+69.61 TO 45+70.61

PAVEMENT SCHEDULE

A1	11.5" PORTLAND CEMENT CONCRETE PAVEMENT (WITH DOWELS)
C1	PROP APPROX 1¼" ASPHALT CONC. SURFACE COURSE, TYPE SF9.5A
C2	PROP APPROX 1½" ASPHALT CONC. SURFACE COURSE, TYPE S9.5D
C3	PROP APPROX 3" ASPHALT CONC. SURFACE COURSE, TYPE S9.5D
D1	PROP APPROX 3" ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0D
E1	PROP APPROX 3" ASPHALT CONC. BASE COURSE, TYPE B25.0B
E2	PROP APPROX 5½" ASPHALT CONC. BASE COURSE, TYPE B25.0B
E3	PROP APPROX 9" ASPHALT CONC. BASE COURSE, TYPE B25.0C
E4	PROP VAR. DEPTH ASPHALT CONC. BASE COURSE, TYPE B25.0B
F	NONWOVEN GEOTEXTILE LAYER
J1	PROP. 8" AGGREGATE BASE COURSE.
K	STABILIZE SUBGRADE
R1	2'-6" CONC. CURB AND GUTTER
R2	1'-6" CONC. CURB AND GUTTER
R3	9"-18" CONC. CURB AND GUTTER
R4	SPECIAL CONCRETE SHOULDER BERM GUTTER (See Detail)
R5	4" CONC. ISLAND COVER
S	4" CONC. SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLED RUMBLE STRIP

ALL PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE

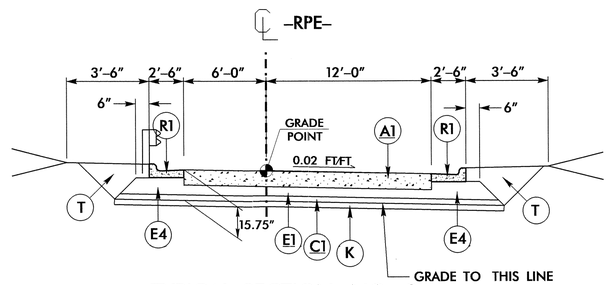


WEIGH-IN-MOTION (WIM) SLAB

TYPICAL SECTION NO. 7

USE TYPICAL SECTION NO. 7

-RPA- STA. 16+96.96 TO 19+96.96 (WIM SLAB)



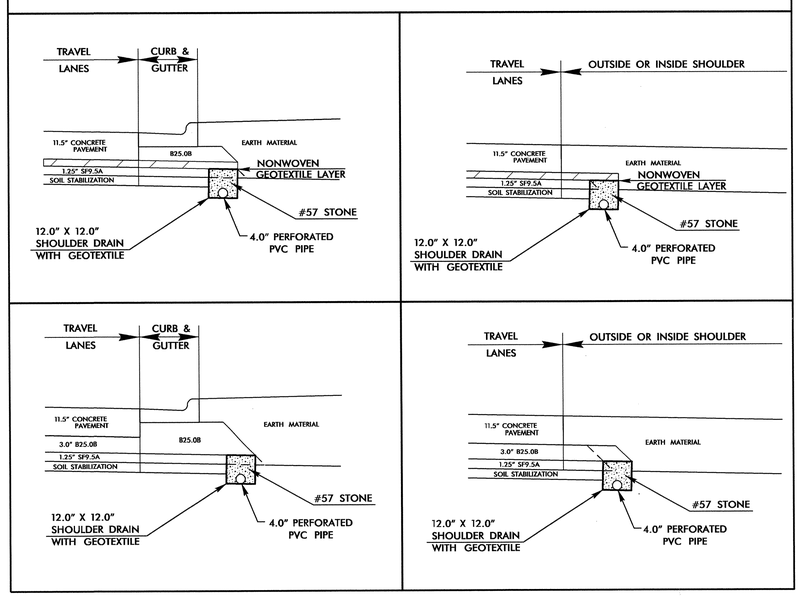
TYPICAL SECTION NO. 8

USE TYPICAL SECTION NO. 8

-RPE- STA. 11+02.36 TO 17+12.32

SHOULDER DRAIN DETAIL

SEE SHOULDER DRAIN SUMMARY ON SHEET 3-F.
NOTE: USE IN CONJUNCTION WITH TYPICAL SECTION NOS. 6 ,8 ,& 9.



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PROJECT REFERENCE NO.	SHEET NO.
I-4928	2-C

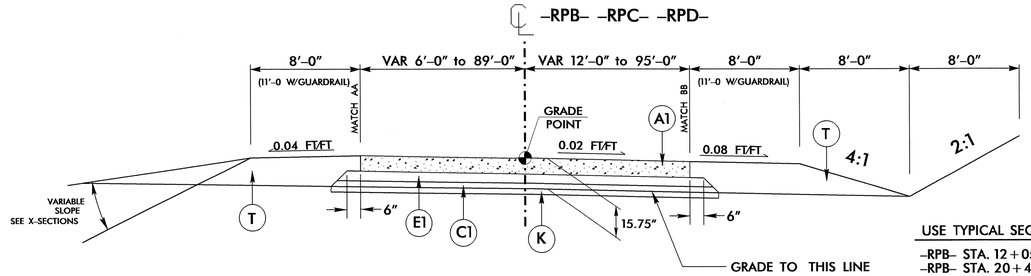
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19740 ENGINEER CHRISTOPHER KENT HARE 12-6-13

Christopher K. Hare

PAVEMENT DESIGN ENGINEER

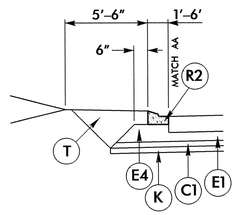
NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER DONG-CHI CHEN 12/16/13



TYPICAL SECTION NO. 9

USE TYPICAL SECTION NO. 9

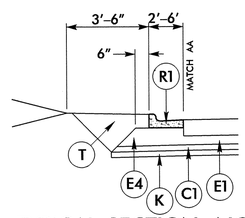
-RPB- STA. 12+05.35 TO 17+89.16
-RPB- STA. 20+41.81 TO 24+89.49
-RPC- STA. 10+92.57 TO 14+20.80
-RPC- STA. 16+75.78 TO 21+45.68
-RPD- STA 11+12.19 TO 30+55.27



TYPICAL SECTION NO. 9A

USE TYPICAL SECTION NO. 9A
IN CONJUNCTION WITH TYPICAL SECTION 9 & 10

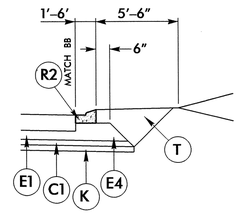
-RPB- STA 18+63.89 TO 24+35.55
-RPD- STA 10+86.06 TO 11+92.11



TYPICAL SECTION NO. 9B

USE TYPICAL SECTION NO. 9B
IN CONJUNCTION WITH TYPICAL SECTION 9

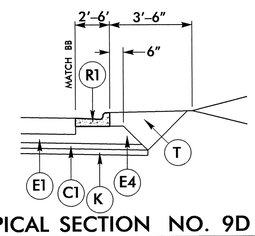
-RPB- STA 22+71.36 TO 22+28.47
-RPD- STA 12+73.64 TO 30+21.65



TYPICAL SECTION NO. 9C

USE TYPICAL SECTION NO. 9C
IN CONJUNCTION WITH TYPICAL SECTION 9

-RPB- STA 22+93.87 TO 24+42.04



TYPICAL SECTION NO. 9D

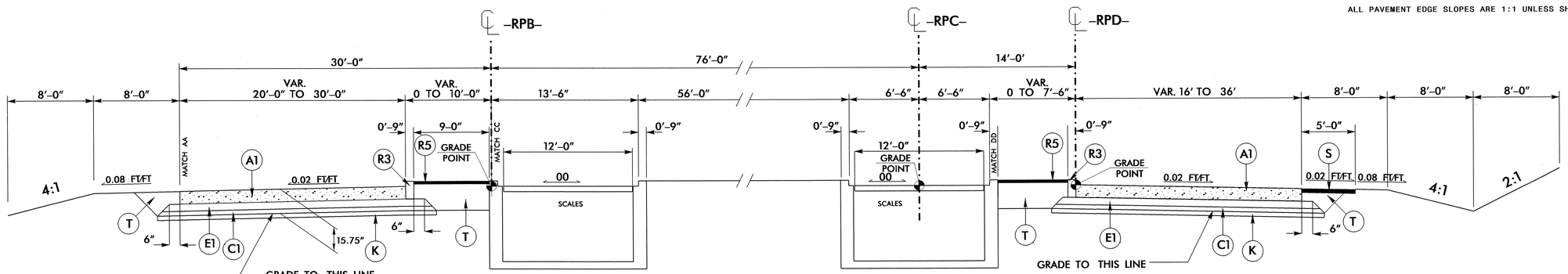
USE TYPICAL SECTION NO. 9D
IN CONJUNCTION WITH TYPICAL SECTION 9

-RPC- STA 11+41.48 TO 12+00.65
-RPC- STA 19+22.19 TO 22+10.26
-RPD- STA 10+00.00 TO 11+85.68
-RPD- STA 21+13.85 TO 29+35.98

PAVEMENT SCHEDULE

A1	11.5" PORTLAND CEMENT CONCRETE PAVEMENT (WITH DOWELS)
C1	PROP APPROX 1¼" ASPHALT CONC. SURFACE COURSE, TYPE SF9.5A
C2	PROP APPROX 1½" ASPHALT CONC. SURFACE COURSE, TYPE S9.5D
C3	PROP APPROX 3" ASPHALT CONC. SURFACE COURSE, TYPE S9.5D
D1	PROP APPROX 3" ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0D
E1	PROP APPROX 3" ASPHALT CONC. BASE COURSE, TYPE B25.0B
E2	PROP APPROX 5½" ASPHALT CONC. BASE COURSE, TYPE B25.0B
E3	PROP APPROX 9" ASPHALT CONC. BASE COURSE, TYPE B25.0C
E4	PROP VAR. DEPTH ASPHALT CONC. BASE COURSE, TYPE B25.0B
F	NONWOVEN GEOTEXTILE LAYER
J1	PROP. 8" AGGREGATE BASE COURSE.
K	STABILIZE SUBGRADE
R1	2'-6" CONC. CURB AND GUTTER
R2	1'-6" CONC. CURB AND GUTTER
R3	9"-18" CONC. CURB AND GUTTER
R4	CONCRETE CONDITIONER SUBGRADE TREATMENT (GUARDRAIL Detail)
R5	4" CONC. ISLAND COVER
S	4" CONC. SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLED RUMBLE STRIP

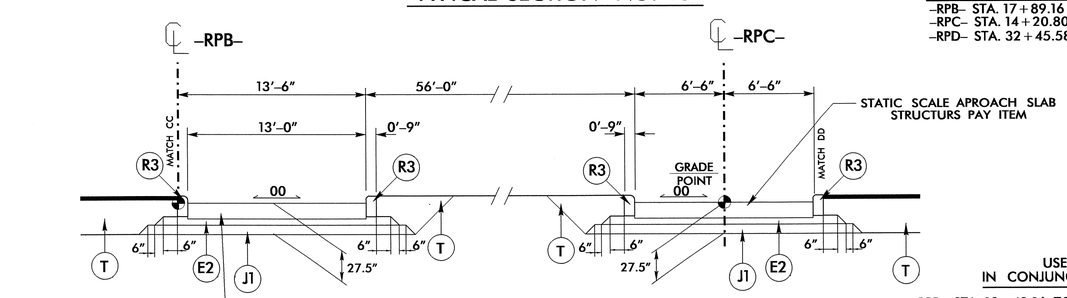
ALL PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE



TYPICAL SECTION NO. 10

USE TYPICAL SECTION NO. 10

-RPB- STA. 17+89.16 TO 20+41.81
-RPC- STA. 14+20.80 TO 16+75.78
-RPD- STA. 32+45.58 TO 34+10.45



TYPICAL SECTION NO. 11

STATIC SCALE APROACH SLAB

USE TYPICAL SECTION NO. 11
IN CONJUNCTION WITH TYPICAL SECTION 10

-RPB- STA. 18+42.16 TO 18+54.16 (STATIC SCALE APROACH SLAB)
-RPB- STA. 19+36.58 TO 19+48.58 (STATIC SCALE APROACH SLAB)
-RPC- STA. 14+74.66 TO 14+86.66 (STATIC SCALE APROACH SLAB)
-RPC- STA. 15+69.08 TO 15+81.08 (STATIC SCALE APROACH SLAB)

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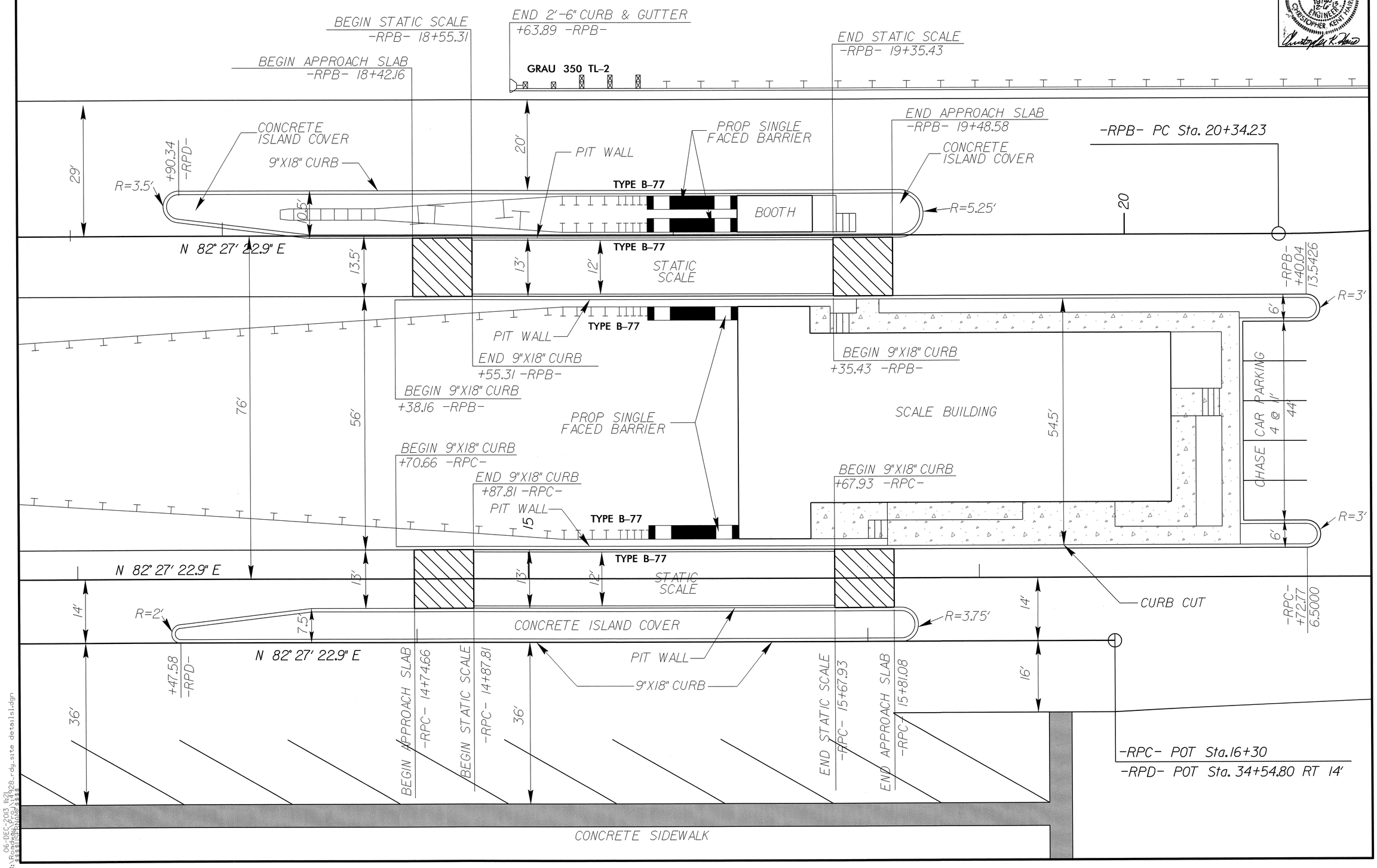
PROJECT REFERENCE NO.	SHEET NO.
I-4928	2-D
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19740 12-6-13 ENGINEER CHRISTOPHER KENT HAIRE

WEIGH STATION SCALE BUILDING & STATIC SCALE LAYOUT



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PROJECT REFERENCE NO.	SHEET NO.
I-4928	2-E
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19740 ENGINEER CHRISTOPHER KENT HARE

12-6-13

Christopher K. Hare

-L-

PIs Sta 122+88.34	PI Sta 134+81.75	PIs Sta 146+15.85
Θs = 1° 49' 48.6"	Δ = 32° 20' 00.0" (RT)	Θs = 1° 49' 48.6"
Ls = 245.00'	D = 1° 29' 38.5"	Ls = 245.00'
LT = 163.34'	L = 2,164.18'	LT = 163.34'
ST = 81.67'	T = 1,111.75'	ST = 81.67'
	R = 3,835.00'	
	SE = EXISTING	

-RPA-

PI Sta 25+19.59	PI Sta 41+49.63	PI Sta 49+16.01	PIs Sta 50+44.46
Δ = 13° 48' 05.3" (RT)	Δ = 4° 25' 45.9" (LT)	Δ = 2° 59' 49.3" (RT)	Θs = 1° 25' 56.6"
D = 2° 17' 30.6"	D = 2° 17' 30.6"	D = 1° 54' 35.5"	Ls = 150.00'
L = 602.20'	L = 193.27'	L = 156.92'	LT = 100.00'
T = 302.57'	T = 96.68'	T = 78.48'	ST = 50.00'
R = 2,500.00'	R = 2,500.00'	R = 3,000.00'	
SE = SEE PLANS	SE = SEE PLANS	SE = SEE PLANS	

-RPB-

PI Sta 11+88.37	PI Sta 14+58.12	PI Sta 20+90.13	PI Sta 24+13.69	PI Sta 29+09.81
Δ = 42° 27' 05.3" (RT)	Δ = 32° 29' 24.4" (LT)	Δ = 18° 08' 53.2" (LT)	Δ = 21° 59' 17.6" (RT)	Δ = 4° 28' 27.3" (LT)
D = 11° 48' 48.8"	D = 24° 22' 52.3"	D = 16° 22' 12.8"	D = 14° 19' 26.2"	D = 2° 16' 51.2"
L = 359.35'	L = 133.26'	L = 110.86'	L = 153.51'	L = 196.16'
T = 188.37'	T = 68.47'	T = 55.90'	T = 77.71'	T = 98.13'
R = 485.00'	R = 235.00'	R = 350.00'	R = 400.00'	R = 2,512.00'
SE = SEE PLANS	SE = SEE PLANS	SE = SEE PLANS	SE = SEE PLANS	SE = SEE PLANS

-RPC-

PI Sta 12+09.95	PI Sta 18+03.18	PI Sta 20+77.60
Δ = 32° 29' 24.4" (LT)	Δ = 35° 49' 50.3" (LT)	Δ = 39° 40' 14.7" (RT)
D = 24° 22' 52.3"	D = 16° 22' 12.8"	D = 14° 19' 26.2"
L = 133.26'	L = 218.88'	L = 276.95'
T = 68.47'	T = 113.15'	T = 144.29'
R = 235.00'	R = 350.00'	R = 400.00'
SE = SEE PLANS	SE = SEE PLANS	SE = SEE PLANS

-RPD-

PI Sta 72+24.75	PI Sta 24+38.18
Δ = 176° 09' 35.6" (RT)	Δ = 180° 00' 00.0" (RT)
D = 27° 27' 23.5"	D = 63° 39' 43.1"
L = 641.60'	L = 282.74'
T = 6,224.75'	T = 928,191,623.85'
R = 208.68'	R = 90.00'
SE = SEE PLANS	SE = SEE PLANS

-RPE-

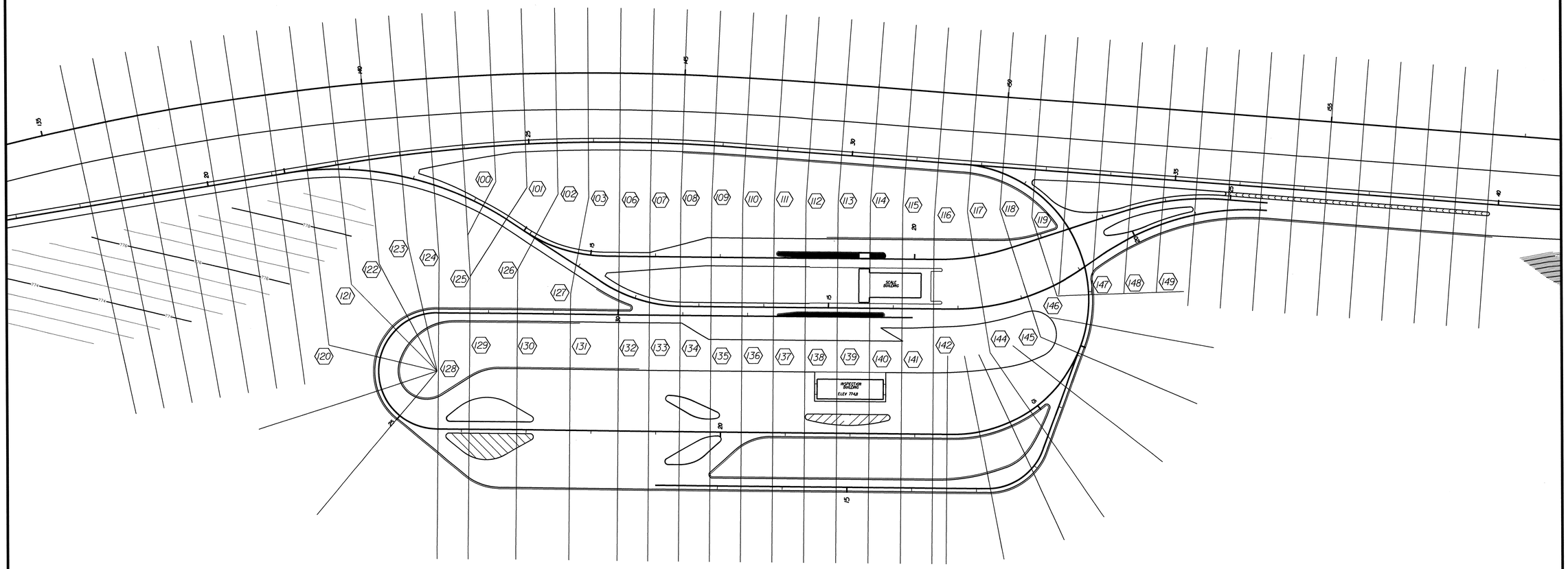
PI Sta 12+35.66
Δ = 70° 33' 36.4" (RT)
D = 63° 39' 43.1"
L = 110.84'
T = 63.68'
R = 90.00'
SE = SEE PLANS

5/14/99
06-DEC-2013 11:21
R:\Roadway\Proj\I4928_rdy_SHEET_7_CURVE_DATA.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
1-4928	2-F
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 19740 ENGINEER CHRISTOPHER KENT HARE
12-4-13
Christopher K. Hare

NAD 83/NSRS 2007



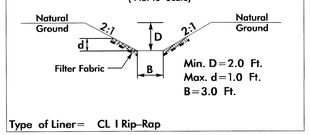
SHEAR POINT DIAGRAM

5/14/99
06-DEC-2013 14:21
R:\Roadway\Proj\4928_rdy_spd.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
1-4928	2-G
R/W SHEET NO.	

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 31025 ENGINEER KAREN H. GULLEDGE
12-18-13
Karen H. Gulledge

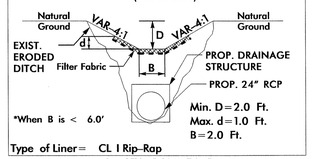
DETAIL A
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= CL I Rip-Rap

FROM –L– STA. 132+00 TO STA. 132+20 Rt.
FROM –L– STA. 199+84.12 TO STA. 199+92.90 Rt.

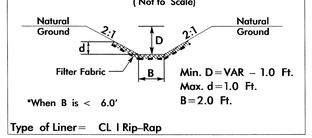
DETAIL B1
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= CL I Rip-Rap

–L– STA. 140+50 Rt.

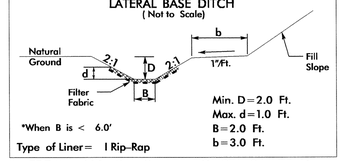
DETAIL B2
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= CL I Rip-Rap

–L– STA. 140+50 Rt.

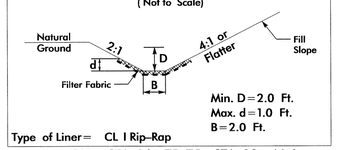
DETAIL C
LATERAL BASE DITCH
(Not to Scale)



Type of Liner= I Rip-Rap

FROM –RPD– STA. 25+75 TO STA. 26+75 Lt.

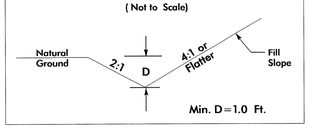
DETAIL D
SPECIAL LATERAL BASE DITCH
(Not to Scale)



Type of Liner= CL I Rip-Rap

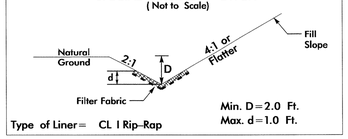
FROM –RPD– STA. 26+75 TO STA. 28+44 Lt.

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



FROM –RPB– STA. 17+82 TO STA. 19+31 Lt.

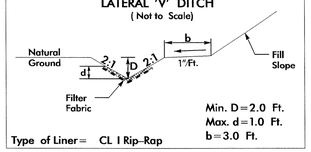
DETAIL F
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Type of Liner= CL I Rip-Rap

FROM –L– STA. 147+00 TO STA. 147+50 Rt.

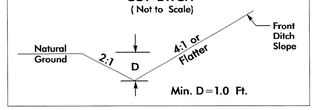
DETAIL G
LATERAL 'V' DITCH
(Not to Scale)



Type of Liner= CL I Rip-Rap

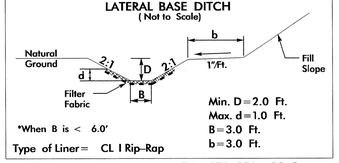
FROM –L– STA. 147+50 TO STA. 149+50 Rt.

DETAIL H
CUT DITCH
(Not to Scale)



FROM –RPB– STA. 15+43 TO STA. 17+82 Lt.

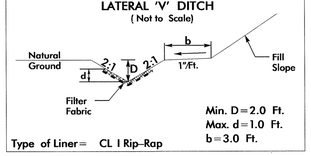
DETAIL I
LATERAL BASE DITCH
(Not to Scale)



Type of Liner= CL I Rip-Rap

FROM –L– STA. 152+00 TO STA. 153+33 Rt.
FROM –L– STA. 153+53 TO STA. 157+50 Rt.
FROM –L– STA. 203+30 TO STA. 204+84 Rt.

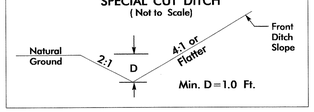
DETAIL J
LATERAL 'V' DITCH
(Not to Scale)



Type of Liner= CL I Rip-Rap

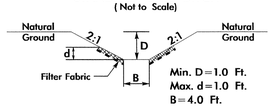
FROM –L– STA. 165+20 TO STA. 166+80 Rt.

DETAIL K
SPECIAL CUT DITCH
(Not to Scale)



FROM –L– STA. 167+00

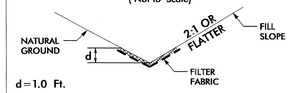
DETAIL L
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= CL I Rip-Rap

FROM –L– STA. 192+20 Rt.

DETAIL M
TOE PROTECTION
(Not to Scale)

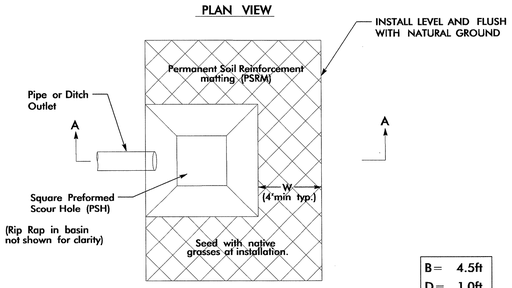


Type of Liner= CL I Rip-Rap

FROM –L– STA. 201+00 TO STA. 202+00 Rt.

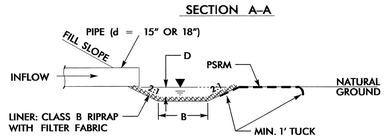
DETAIL N
PREFORMED SCOUR HOLE
*NOT TO SCALE

PLAN VIEW



B=	4.5ft
D=	1.0ft
W=	4.0ft

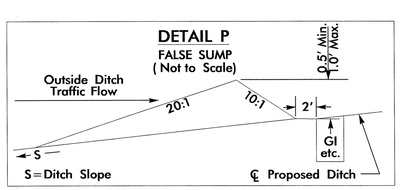
SECTION A–A



3/08

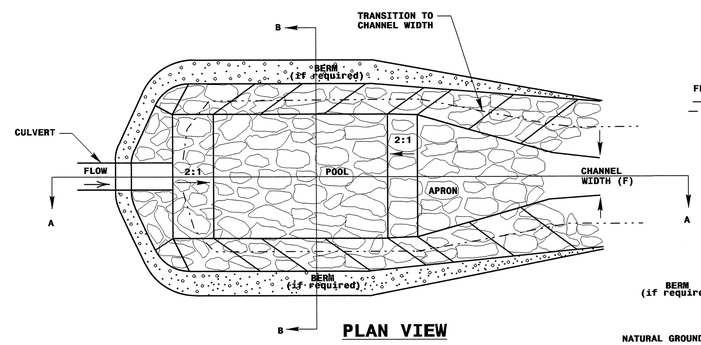
FROM –RPE– STA. 14+30 Lt.
FROM –RPE– STA. 11+00 Lt.

DETAIL P
FALSE SUMP
(Not to Scale)

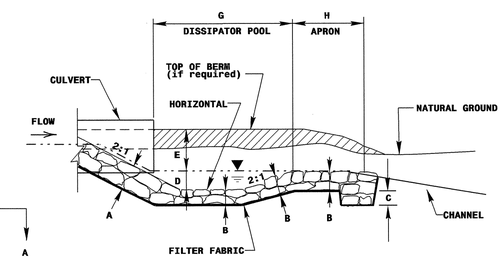


FROM –L– STA. 140+50 Rt.

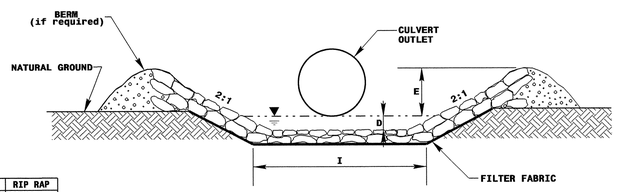
DETAIL O
ROCK ENERGY DISSIPATOR BASIN DETAIL
NOT TO SCALE



PLAN VIEW



SECTION A-A



SECTION B-B

	RIP RAP BASIN NUMBER							
DIM.	1	2	3	4	5	6	7	8
A	2.0							
B	1.0							
C	1.0							
D	2.0							
E	2.0							
F	4.0							
G	18.0							
H	9.0							
I	10.0							

ALL DIMENSIONS APPROXIMATE IN FEET

BASIN #	LOCATION (AT OUTLET)	RIP RAP
1	-L- STA. 202+00 Rt	CLASS I
2		
3		
4		
5		
6		
7		
8		

5/14/99

06-DEC-2013 14:08
R:\Roadway\Proj\4928_Rdy-psh_hydrodetails.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET
I-4928	2-H

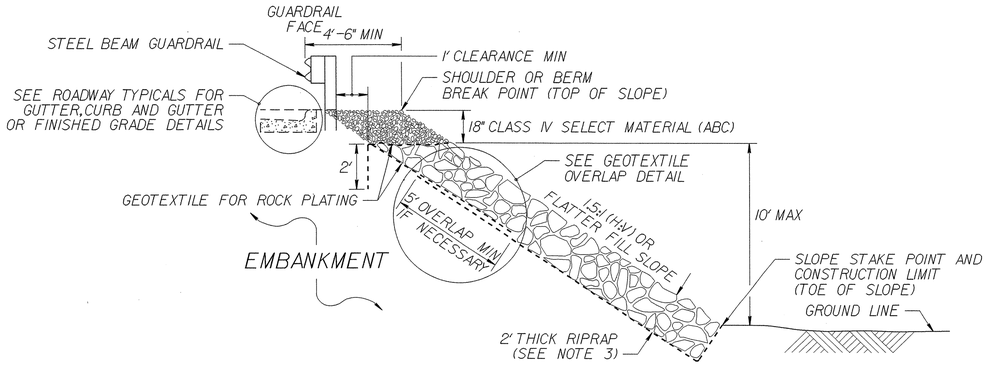
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

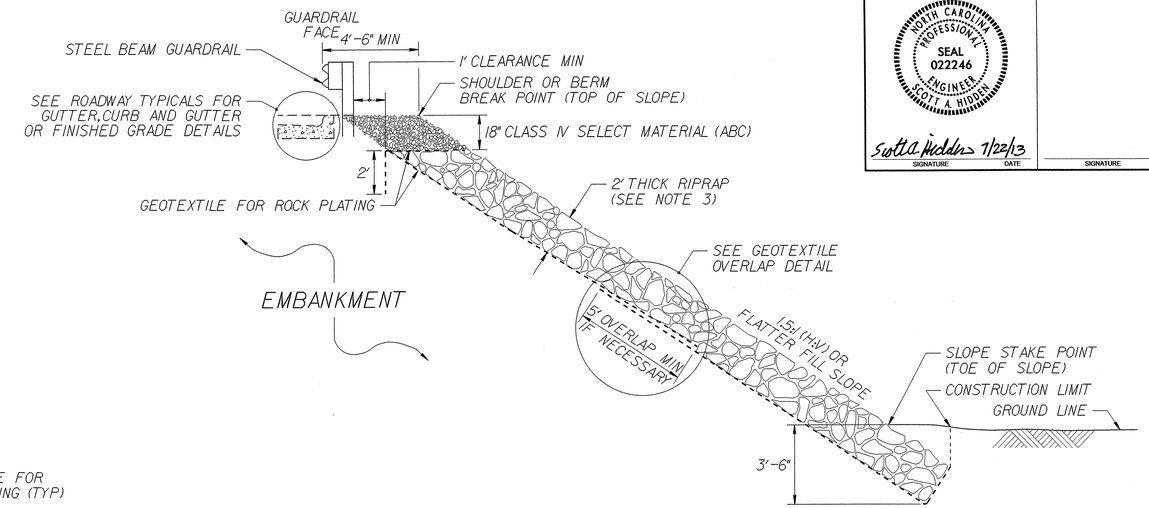
Scott A. Hidden 7/22/13
SIGNATURE DATE

ENGINEER

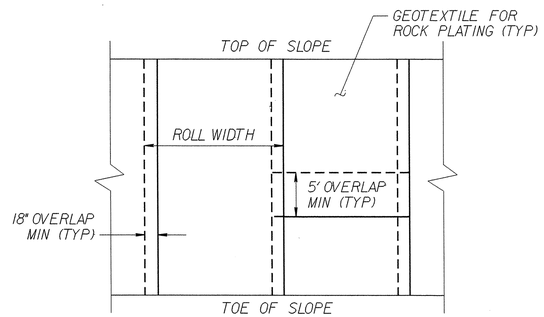
SIGNATURE DATE



ROCK PLATING DETAIL NO. 1 – TYPICAL SECTION

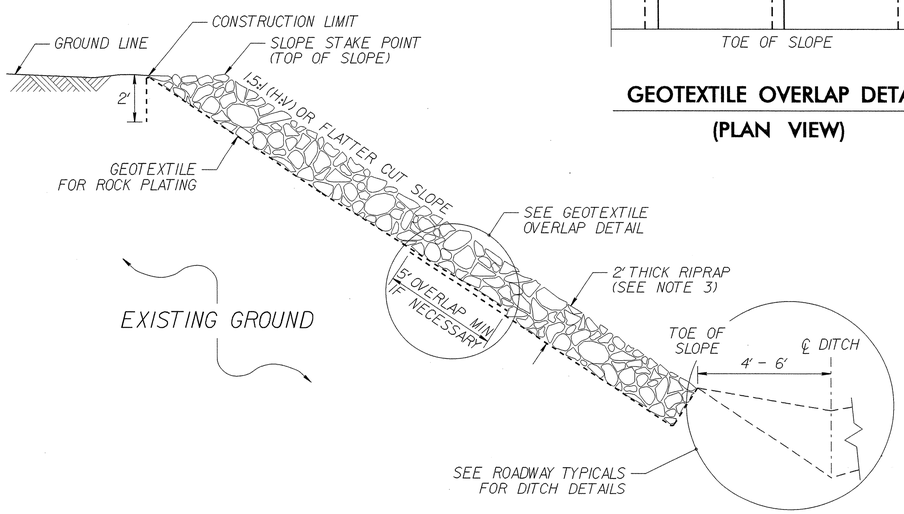


ROCK PLATING DETAIL NO. 2 – TYPICAL SECTION

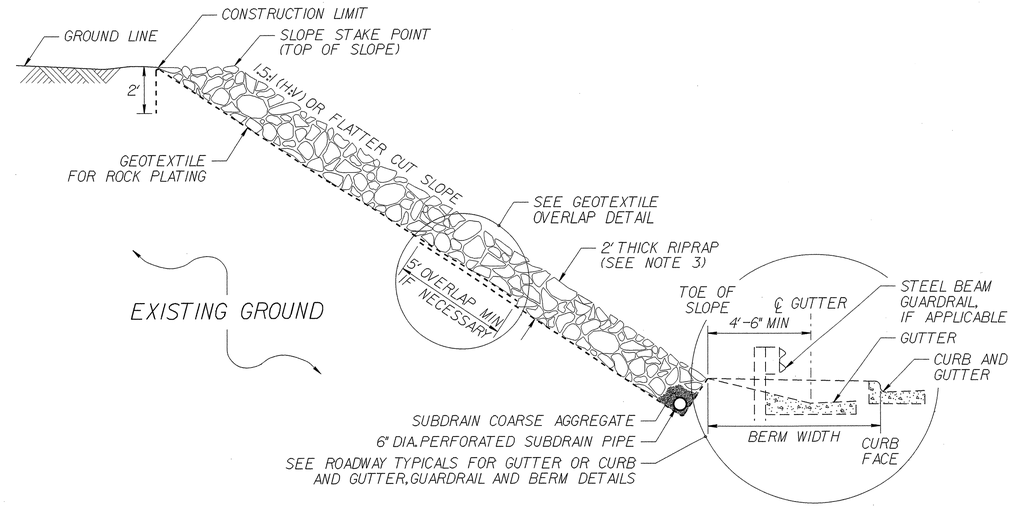


GEOTEXTILE OVERLAP DETAIL

(PLAN VIEW)



ROCK PLATING DETAIL NO. 3 – TYPICAL SECTION



ROCK PLATING DETAIL NO. 4 – TYPICAL SECTION

NOTES:

1. SEE ROADWAY PLANS AND SUMMARY SHEETS FOR ROCK PLATING LOCATIONS.
2. FOR STANDARD ROCK PLATING, SEE SECTION 275 OF THE STANDARD SPECIFICATIONS.
3. USE CLASS I, 2 OR B RIPRAP UNLESS REQUIRED OTHERWISE IN THE ROADWAY SUMMARY SHEETS.

GEOTECHNICAL ENGINEERING UNIT

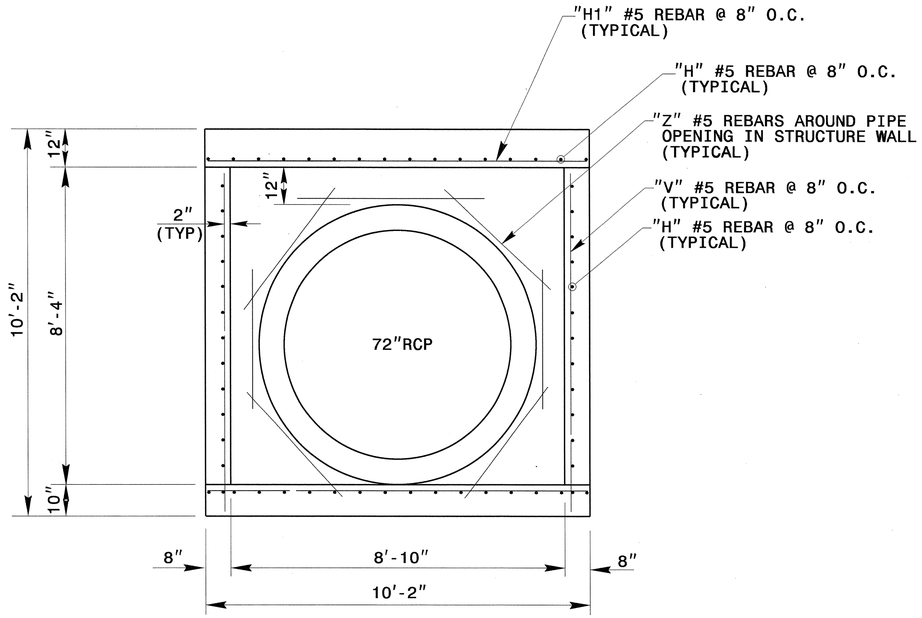
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

STANDARD DRAWING NO. 1802.01

STANDARD ROCK PLATING

DATE: 2-19-13

PROJECT REFERENCE NO.	SHEET NO.
1-4928	2-1



SECTION A-A

GENERAL NOTES:

USE CLASS "B" CONCRETE THROUGHOUT.

OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS OR BRICK/BLOCK WALLS AS DIRECTED BY THE ENGINEER.

USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.

BOX DIMENSIONS MAY BE FIELD ADJUSTED AS DIRECTED BY THE ENGINEER.

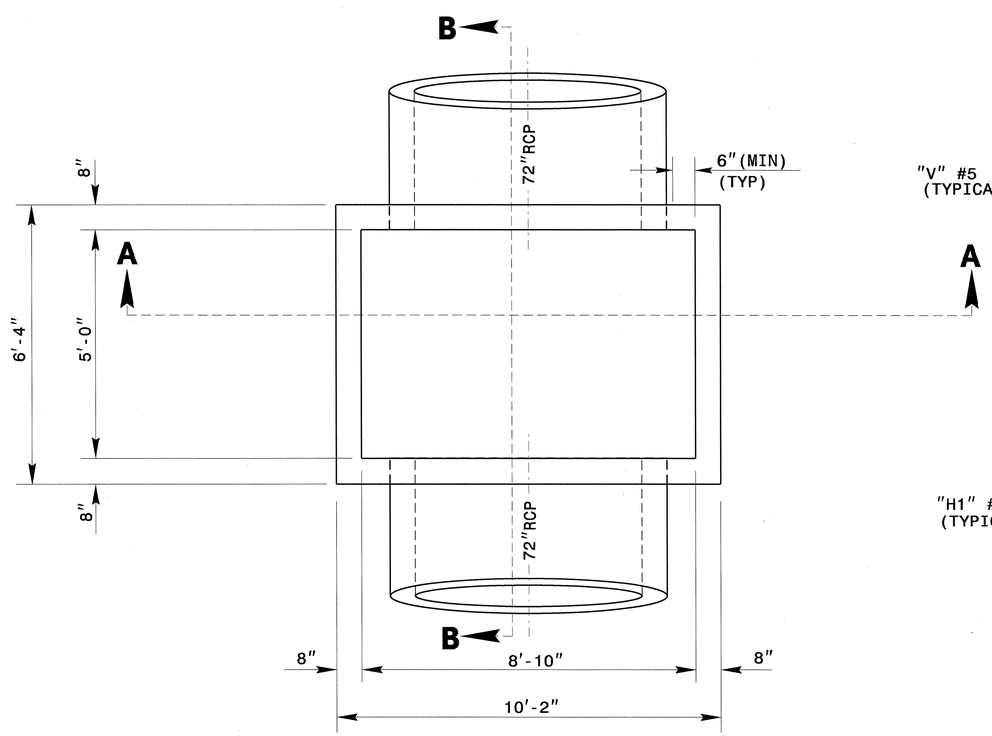
2" MINIMUM CONCRETE COVERAGE ON ALL REBAR.

BILL OF MATERIALS

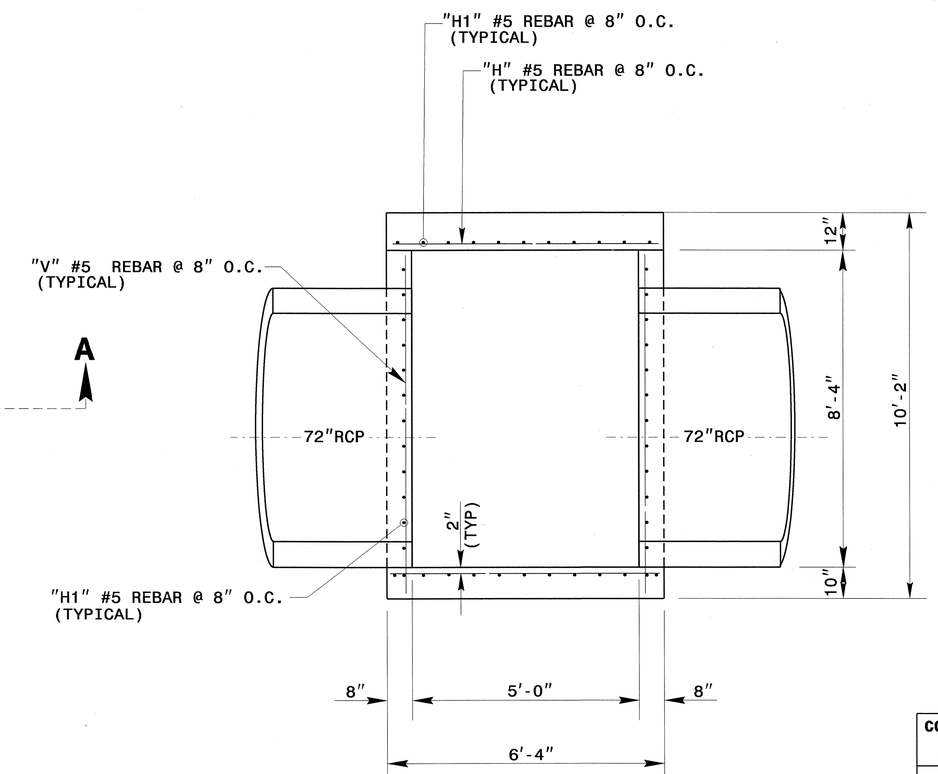
BAR	NO.	SIZE	LENGTH	WEIGHT
H	42	#5	8'-10"	387
H1	48	#5	8'-6"	426
V	54	#5	7'-6"	423
Z	14	#5	5'-0"	74
TOTAL REINF. STEEL (LBS.)				1310
TOTAL CONC. (CU. YDS.)				* 11.8

* NO DEDUCTION HAS BEEN MADE FOR PIPES

* 2.00 CU. YD. DEDUCTION FOR 2-72" RC PIPE



PLAN VIEW



SECTION B-B

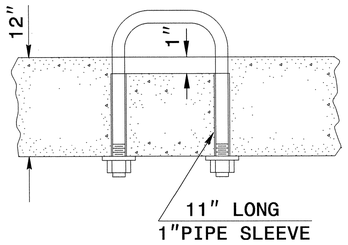
NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER
12/11/13

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

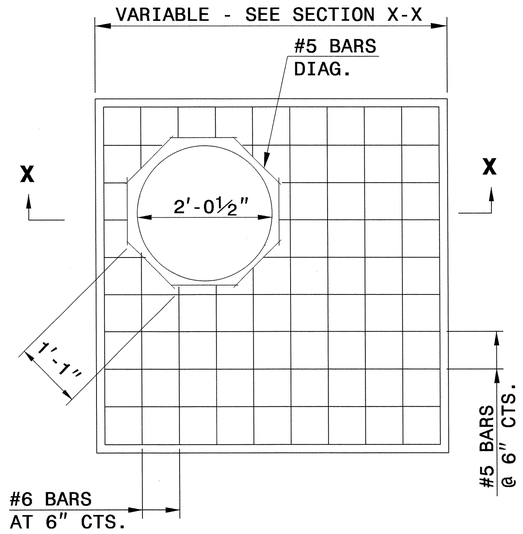
SPECIAL JUNCTION BOX WITH SLAB LID

ORIGINAL BY: DATE:
MODIFIED BY: nbritt DATE: 04/17/09
CHECKED BY: DATE: 12/10/13
FILE SPEC.: detail/nbritt/english/rural/r2417c72jb.dgn

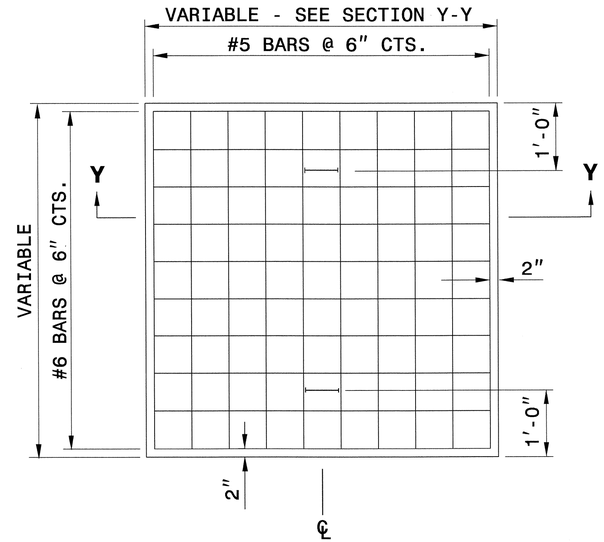
PROJECT REFERENCE NO.	SHEET NO.
1-4928	2-J



PARTIAL SECTION



PLAN



PLAN

GENERAL NOTES:

CONSTRUCT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.

FIELD VERIFY THE DIMENSIONS FOR THE EXISTING BOXES.

BILL OF MATERIALS

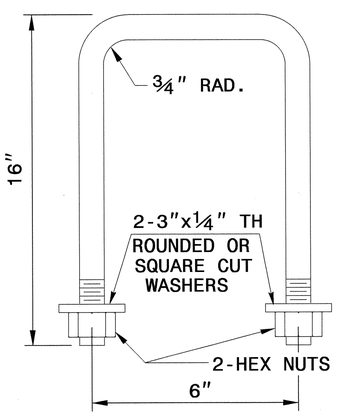
MASONRY	
TOP SLAB CONCRETE CLASS "A"	.037YDS^3 PER FT^2
BRICK MASONRY	.025YDS^3 PER FT^2
REINFORCING STEEL	7.64LBS PER FT^2

MANHOLE OPTION QUANTITIES

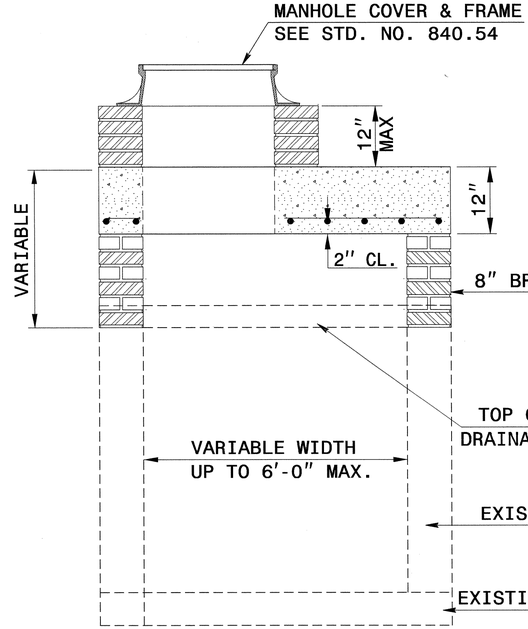
SIZE	QTY.	LENGTH	REINF. STEEL LBS.
#5 DIAG.	8	1'-1"	9.04

NOTE:
CONCRETE AND REINFORCING STEEL QUANTITIES BASED ON SQUARE FOOT AREA OF THE PROPOSED TOP SLAB FOR THE EXISTING DRAINAGE STRUCTURE.

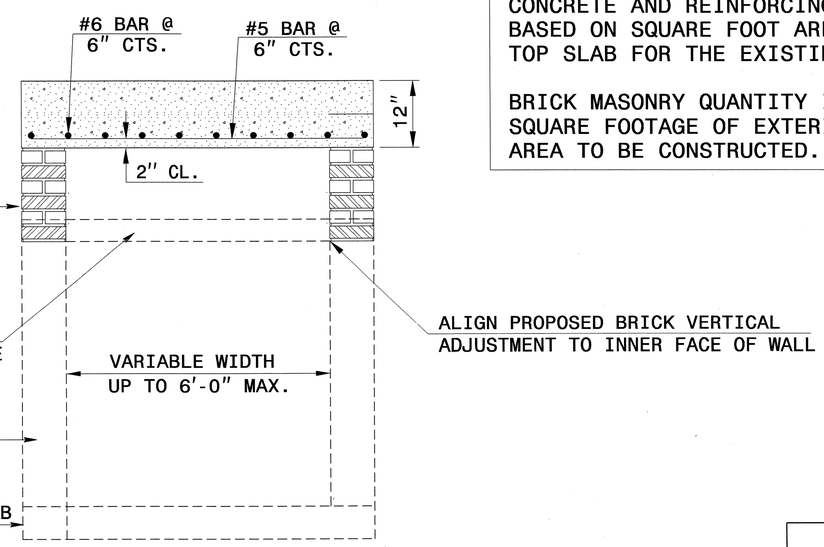
BRICK MASONRY QUANTITY IS BASED ON THE TOTAL SQUARE FOOTAGE OF EXTERIOR WALL SURFACE AREA TO BE CONSTRUCTED.



DETAIL OF HANDLE



SECTION X-X



SECTION Y-Y

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER
12/11/13

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

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

ORIGINAL BY:	T.S.S.	DATE:	FEB.2000
MODIFIED BY:	E.E.W.	DATE:	NOV.2001
CHECKED BY:		DATE:	12/10/13
FILE SPEC.:	w:ericward/usr/details/stand/boxtotbjbe.dgn		

COMPUTED BY: SLM DATE: 12/4/2013

CHECKED BY: BB DATE: 12/4/2013

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
I-4928	3-A

RD244542

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	SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE	THICKNESS OR GAUGE	C.S. PIPE SIZE	THICKNESS OR GAUGE	R.C. PIPE CLASS III SIZE	R.C. PIPE CLASS IV SIZE	12" R.C. PIPE (CLASS V)	36" R.C. PIPE (CLASS V)	**** RC PIPE CULVERTS, CONTRACTOR DESIGN	15" SIDE DRAIN PIPE	4" CAAP	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	ENDWALLS CU. YARDS C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. "A" + (1.3 X COL."B") PER EACH (0' THRU 5.0')	LIN. FT. A 5.0' THRU 10.0'	LIN. FT. B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	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 TWO GRATES STD. 840.22	J.B. STD. 840.31 OR 840.32	T.B.J.B.STD 840.34	CONV. EXIST T.B.D.I. TO T.B.J.B. WITH MANHOLE	M.H. FRAME & COVER STD.840.54	OIL/WATER SEPARATOR	G.D.I FRAME WITH TWO NARROW GRATES STD. 840.24	G.D.I FRAME WITH TWO GRATES STD. 840.20	SLUICE GATE	SIDE DRAIN PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
-L- 114+50.09	RT	501		763.17	760.42																	1									1									1								
-L- 114+50.09	RT	501	504		760.42	755.9				26																																							
-L- 114+67.83	RT	505	506		756.08	754.75						8																																		0.399		
-L- 116+43.92	RT	507	512		742.67	742.5							4																																0.5526		
-L- 116+54.92	RT	502		764.02	758.58																	1	0.44								1									1							12	REMOVE DI
-L- 116+54.92	RT	508	513		745.43	743				8																																				0.399		
-L- 119+15.4	RT	509	510		754.07	750.5						4																																		0.399		
-L- 122+66.95	RT	503		766.6	763.85																	1									1									1								
-L- 122+66.95	RT	503	511		763.85	761.31						76																																					
-L- 123+41.48	RT	511		766.45	761.31																	1	0.14								1									1							10	REMOVE DI
-L- 123+46.01	RT	514	515		755.16	749				16																																				0.399		
-L- 123+47.8	RT	516	517		754.81	749				12																																				0.399		
-L- 126+03.4	RT	601		767.62	761.16																	1	1.46								1									1							12	REMOVE DI
-L- 128+65.17	RT	602		770.42	766																	1									1									1							13	REMOVE DI
-L- 130+45.32	RT	603		744.8	740.08																	1											1														
-L- 130+45.32	RT	603			741.78																																												EXISTING PIPE TIE INVERT
-L- 130+45.32	RT	603	604		740.08	740.3						12																																					
-RPA- 13+46.59	LTRT																																															84	REMOVE DI
-RPA- 14+24.24	RT	605	606		738.5	772.9						60																																					
-RPA- 14+24.24	RT	606		776.48	772.9																	1									1									1								
-RPA-14+25	LT/R	606	607		772.9	773.17						36																																					
-RPA-14+25	LT/R	607		775.92	773.17																	1									1		1														
-RPA- 16+70	LT	607	608		773.17	774.75						244																																					
-RPA- 16+70	LT	608		777.5	774.75	773.17																1									1		1														
-RPA- 16+70	LT	608			776.02																																												EXISTING PIPE TIE INVERT
-RPA- 18+63.42	LT	608	609		774.75	775.05						192																																					
-RPA- 18+63.42	LT	609	608	777.8	775.05																	1									1		1														
-RPA- 15+15.93	RT	610		740.96	736.5																	1											1														
-RPA- 15+15.93	RT	610			736.69																																												EXISTING PIPE TI INVEERT
-RPA- 15+15.93	RT	610	611		736.5	736													32																														
-RPA- 22+91.88	LTRT	702		772.28	773.25																	1											1														
-RPA- 22+91.88	LT	702			773.51																																												EXISTING PIPE TIE INVERT
-RPA- 22+91.88	LTRT	702	701		773.25	769							99.6																																				
-RPA- 22+91.88	RT	701		772.8	765																	1	2.8										1														
-RPA- 22+91.88	RT	701	774		765	760							116																																				
-RPA- 22+91.88	RT	774		763.8	755																	1	3.8										1														
-RPA- 22+91.88	RT	774	775	755									24																																				
-RPA- 23+99.94	LT	703		776.76	774.01																	1									1		1														
-RPA- 23+99.94	LT	703	704		774.01	770.4						244																																					
-RPA-26+39.88	LT	704		773.15	770.4																	1									1		1												0.7			REMOVE DI
-RPA-26+39.88	LT	704	705		770.4	766.29						244																																					
-RPA-28+85.27	LTRT	705		769.04	766.29																	1									1		1														
-RPA-28+85.27	LTRT	705	706		766.29	766.47						60																																					
-RPA-28+85.27	RT	706		770.3	765.95																	1									1		1														
-RPA-28+85.27	RT	706	707		765.95	765.5							28																																				
SHEET TOTALS										62		1180	28	244					32			19	8.64								14		7	5						7				0.7		2.5476	131	

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: SLM DATE: 12/4/2013

CHECKED BY: BB DATE: 12/4/2013

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
I-4928	3-B

R0253070

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	SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE	SIDE DRAIN PIPE THICKNESS OR GAUGE	C.S. PIPE SIZE	C.S. PIPE THICKNESS OR GAUGE	R.C. PIPE CLASS III SIZE	R.C. PIPE CLASS IV SIZE	12" R.C. PIPE (CLASS V)	36" R.C. PIPE (CLASS V)	**** RC PIPE CULVERTS, CONTRACTOR DESIGN	15" SIDE DRAIN PIPE	4" CAAP	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	ENDWALLS CU. YARDS C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. "A" + (1.3 X COL."B") PER EACH (0' THRU 5.0')	LIN. FT. A 5.0' THRU 10.0'	LIN. FT. B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	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 TWO GRATES STD. 840.22	J.B. STD. 840.31 OR 840.32	T.B.J.B.STD 840.34	CONV. EXIST T.B.D.I. TO T.B.J.B. WITH MANHOLE	M.H. FRAME & COVER STD.840.54	OIL/WATER SEPARATOR	G.D.I FRAME WITH TWO NARROW GRATES STD. 840.24	G.D.I FRAME WITH TWO GRATES STD. 840.20	SLUICE GATE	SIDE DRAIN PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
-RPA-29+91.83	LT/R	708		766.97	763.6																	1																												
-RPA-29+91.83	LT	708			763.7																																												EXISTING PIPE TIE INVERT
-RPA-29+91.83	LT/R	708	709	766.97	763.6	763.5					68																																						
-L- 149+67.01	RT	710		769.4	763.71																													1	1														
-RPA- 32+00.62	LT	711		766.2	758.9																	1	2.3							1		1																31	
-RPA- 32+00.62	LT	711	712		758.9	758.8						8																																					
-RPA-31+91.50	LT	712		766.2	758.8																	1	2.4							1		1																	
-RPA-31+91.50	LT	712	719		758.8	757.3						44																																					
-RPC- 19+54.18	RT	713		772.32	769.32																	1			1	1																							
-RPC- 19+54.18	RT	713	714		769.32	769.22						8																																					
-RPC- 19+62.52	RT	714		772.32	769.22																	1			1	1																							
-RPC- 19+62.52	RT	714	715		769.22	769						36																																					
-RPC- 19+98.11	RT	715		772.42	769																	1			1		1																						
-RPC- 19+98.11	RT	715	716		769	768.77						40																																					
-RPB- 23+33.18	RT	716		771.77	768.77																	1			1			1																					
-RPB- 23+33.18	RT	716	717		768.77	766.65						168																																					
-RPA- 32+63.66	RT	717		769.9	766.65																	1			1	1																							
-RPA- 32+63.66	RT	717	718		766.65	766.55						8																																					
-RPA- 32+54.48	RT	718		769.9	766.55																	1			1	1																							
-RPA- 32+54.48	RT	718	719		766.55	757.30						72																																					
-RPA- 31+85.18	RT	719		770.03	756.76																	1	5	3.27	1		1																						
-RPA- 31+85.18	RT	719	720		756.76	756.66							8																																				
-RPA- 31+74.93	RT	720		770.03	756.66																	1	5	3.37	1		1																						
-RPA- 31+74.93	RT	720	721		756.66	752.71							44																																				
-RPB- 21+51.15	LT	722		772.96	769.96																	1			1			1																					
-RPB- 21+51.15	LT	722	717		769.96	766.65						76																																					
-RPB- 21+05.65	LT/RT	723	724		752	735									272																																		
-RPC- 19+40.55	RT	724		740.4	735																	1	0.4											1															
-RPC- 19+40.55	RT	724	725		735	734.9								8																																			
-RPD- 13+98.92	RT	726	727		766	726.5					168																																						
-RPD- 14+93.85	LT	728		772.72	769.72																	1			1			1																					
-RPD- 14+93.85	LT	728	729		769.72	768.82						84																																					
-RPE- 11+98.75	RT	729		771.82	768.82																	1			1		1																						
-RPE- 11+98.75	RT	729	730		768.82	768.35						16																																					
-RPD- 16+99.62	LT	731		773.05	770.05																	1			1		1																						
-RPD- 16+99.62	LT	731	732		770.05	766.2						31.8																																					
-RPE- 14+33.40	RT	733	734		766.18	749.44					104																																						
-RPE- 14+62.26	RT	735	736	770.77	767.77	767.67																1			1	1																							
-RPE- 14+67.93	RT	736		770.77	767.67																	1			1	1																							
-RPE- 14+67.93	RT	736	737		767.67	766.21						28.1																																					
SHEET TOTALS											340	488	132	52	272			8				18	15.1	6.64	14	6	5	3			2		2	2		1	1										31	

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

RD253070

COMPUTED BY: SLM DATE: 12/4/2013

CHECKED BY: BB DATE: 12/4/2013

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
I-4928	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	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
-RPD- 20+54.87	LT	738		771.34	768.34														
-RPD- 20+54.87	LT	738	739		768.34	767.83													
-RPD- 21+49.19	LT	739		770.83	767.83														
-RPD- 21+49.19	LT	739	740		767.83	767.58													
-RPD- 21+99.23	LT	740		770.58	767.58														
-RPD- 21+99.23	LT	740	741		767.58	767													
-RPD- 22+49.13	LT	741		770.33	767														
-RPD- 22+49.13	LT	741	742		767	766													
-RPD- 23+49.48	LT	742		770.43	766														
-RPD- 23+49.48	LT	742	743		766	765.5													
-RPD- 24+30.78	LT	743		772.05	765.5														
-RPD- 24+30.78	LT	743	745		765.5	765													
-RPD- 24+87.18	LT	744		771.53	768.53														
-RPD- 24+87.18	LT	744	745		768.53	768.43													
-RPD- 24+82.67	LT/RT	745		771.53	765														
-RPD- 24+82.67	LT/RT	745	746		765	764													
-RPD- 24+70,66	RT	746		770.65	763.46														
-RPD- 24+70,66	RT	746	747		763.46	758.2													
-RPD- 25+50	LT/RT	748	749		757.35	749													
-RPB- 14+25.00	LT/RT	752	753		773.07	772.58													
-RPA- 31+91.16	RT	754																	
-RPD- 13+98.92	RT	755																	
-RPE- 14+33.40	RT	756																	
-RPD- 25+50	LT	757																	
-RPA- 36+20.84	LT/RT	759		772.12	769.12														
-RPA- 36+20.84	LT/RT	759	758		769.12	728.1													
-RPA- 39+33.42	LT	760		783.12	780.37														
-RPA- 39+33.42	LT	760	759		780.37	769.37													
-RPA- 42+35.35	LT	801		796.13	793.38														
-RPA- 42+35.35	LT	801	760		793.38	780.37													
-RPA- 37+93.07	RT	762		750.37	746.6														
-RPA- 37+93.07	RT	762	761		746.6	743.17													
-RPA- 40+00.14	RT	764		789.27	786.52														
-RPA- 40+00.14	RT	764	763		786.52	785.2													
-RPA- 40+35.10	RT	802		798.69	795.94														
-RPA- 40+35.10	RT	802	764		795.94	786.52													
-RPB- 18+88.55	RT	765	766		768.16	767.9													
-RPC- 15+21.05	LT	767	766		768.16	767.9													
-RPB-18+88.55	RT	766			767.75														
-RPB-18+88.55	RT	766	768		767.75	766.6													
-RPB-16+42.79	RT	768		773.51	766.6														
-RPB-16+42.79	RT	768	769		766.6	766													
SHEET TOTALS																			

STATION	STRUCTURE NO. 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"
-RPD- 20+54.87	738																									
-RPD- 20+54.87	738	739										96														
-RPD- 21+49.19	739																									
-RPD- 21+49.19	739	740										48														
-RPD- 21+99.23	740																									
-RPD- 21+99.23	740	741										48														
-RPD- 22+49.13	741																									
-RPD- 22+49.13	741	742										100														
-RPD- 23+49.48	742																									
-RPD- 23+49.48	742	743										96														
-RPD- 24+30.78	743																									
-RPD- 24+30.78	743	745										68														
-RPD- 24+87.18	744																									
-RPD- 24+87.18	744	745										4														
-RPD- 24+82.67	745																									
-RPD- 24+82.67	745	746										56														
-RPD- 24+70,66	746																									
-RPD- 24+70,66	746	747											32													
-RPD- 25+50	748	749																				120				
-RPB- 14+25.00	752	753										64														
-RPA- 31+91.16	754																									
-RPD- 13+98.92	755																									
-RPE- 14+33.40	756																									
-RPD- 25+50	757																									
-RPA- 36+20.84	759																									
-RPA- 36+20.84	759	758			168																					
-RPA- 39+33.42	760																									
-RPA- 39+33.42	760	759										312														
-RPA- 42+35.35	801																									
-RPA- 42+35.35	801	760										300														
-RPA- 37+93.07	762																									
-RPA- 37+93.07	762	761												100												
-RPA- 40+00.14	764																									
-RPA- 40+00.14	764	763										36														
-RPA- 40+35.10	802																									
-RPA- 40+35.10	802	764										260														
-RPB- 18+88.55	765	766																								
-RPC- 15+21.05	767	766																								
-RPB-18+88.55	766																									
-RPB-18+88.55	766	768									240															
-RPB-16+42.79	768																									
-RPB-16+42.79	768	769									96															
SHEET TOTALS					168						336	1488	32	100								120				

STATION	STRUCTURE NO. FROM	TO	12" R.C. PIPE (CLASS V)	36" R.C. PIPE (CLASS V)	*** RC PIPE CULVERTS, CONTRACTOR DESIGN	15" SIDE DRAIN PIPE	4" CAAP	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
-RPD- 20+54.87	738									1			1			1		
-RPD- 20+54.87	738	739																
-RPD- 21+49.19	739									1			1			1		
-RPD- 21+49.19	739	740																
-RPD- 21+99.23	740									1			1			1		
-RPD- 21+99.23	740	741																
-RPD- 22+49.13	741									1			1			1		
-RPD- 22+49.13	741	742																
-RPD- 23+49.48	742									1			1			1		
-RPD- 23+49.48	742	743																
-RPD- 24+30.78	743									1	1.55		1			1		
-RPD- 24+30.78	743	745																
-RPD- 24+87.18	744									1			1	1				
-RPD- 24+87.18	744	745																
-RPD- 24+82.67	745									1	1.53		1	1				
-RPD- 24+82.67	745	746																
-RPD- 24+70,66	746									1	2.19		1	1				
-RPD- 24+70,66	746	747																
-RPD- 25+50	748	749																
-RPB- 14+25.00	752	753																
-RPA- 31+91.16	754							3.4										
-RPD- 13+98.92	755								1									
-RPE- 14+33.40	756								1									
-RPD- 25+50	757							1.5										
-RPA- 36+20.84	759									1								
-RPA- 36+20.84	759	758																
-RPA- 39+33.42	760									1								
-RPA- 39+33.42	760	759																
-RPA- 42+35.35	801									1								
-RPA- 42+35.35	801	760																
-RPA- 37+93.07	762									1								
-RPA- 37+93.07	762	761																
-RPA- 40+00.14	764									1								
-RPA- 40+00.14	764	763																
-RPA- 40+35.10	802									1								
-RPA- 40+35.10	802	764																
-RPB- 18+88.55	765	766					26											
-RPC- 15+21.05	767	766					27											
-RPB-18+88.55	766																	
-RPB-18+88.55	766	768																
-RPB-16+42.79	768									1	1.91							
-RPB-16+42.79	768	769																
SHEET TOTALS							53	4.9	2	16	7.18		9	3		6		

STATION	STRUCTURE NO. FROM	TO	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 TWO GRATES STD. 840.22	J.B. STD. 840.31 OR 840.32	T.B.J.B.STD 840.34	CONV. EXIST T.B.D.I. TO T.B.J.B. WITH MANHOLE	M.H. FRAME & COVER STD.840.54	OIL/WATER SEPARATOR	G.D.I FRAME WITH TWO NARROW GRATES STD. 840.24	G.D.I FRAME WITH TWO GRATES STD. 840.20		SLUICE GATE			SIDE DRAIN PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
-RPD- 20+54.87	738																				
-RPD- 20+54.87	738	739																			
-RPD- 21+49.19	739																				
-RPD- 21+49.19	739	740																			
-RPD- 21+99.23	740																				
-RPD- 21+99.23	740	741																			
-RPD- 22+49.13	741																				
-RPD- 22+49.13	741	742																			
-RPD- 23+49.48	742																				
-RPD- 23+49.48	742	743																			
-RPD- 24+30.78	743																				
-RPD- 24+30.78	743	745																			
-RPD- 24+87.18	744																				
-RPD- 24+87.18	744	745																			
-RPD- 24+82.67	745																				
-RPD- 24+82.67	745	746																			
-RPD- 24+70,66	746																				
-RPD- 24+70,66	746	747																			
-RPD- 25+50	748	749																			
-RPB- 14+25.00	752	753																			
-RPA- 31+91.16	754													1-36"							
-RPD- 13+98.92	755													1-18"							
-RPE- 14+33.40	756													1-18"							
-RPD- 25+50	757													1-24"							
-RPA- 36+20.84	759		1		1																
-RPA- 36+20.84	759	758																		76	
-RPA- 39+33.42	760		1		1																
-RPA- 39+33.42	760	759																			
-RPA- 42+35.35	801		1		1																
-RPA- 42+35.35	801	760																			
-RPA- 37+93.07	762					1															
-RPA- 37+93.07	762	761																			
-RPA- 40+00.14	764		1		1																
-RPA- 40+00.14	764	763																			
-RPA- 40+35.10	802		1		1																
-RPA- 40+35.10	802	764																			
-RPB- 18+88.55	765	766																			
-RPC- 15+21.05	767	766																			
-RPB-18+88.55	766									1											
-RPB-18+88.55	766	768																			
-RPB-16+42.79	768		1								1										
-RPB-16+42.79	768	769																			
SHEET TOTALS			6		5	1				1	1									76	

ABBREVIATIONS

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

RD253070

COMPUTED BY: SLM	DATE: 12/4/2013
CHECKED BY: BB	DATE: 12/4/2013

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
I-4928	3-D

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
-RPC- 12+73.05		769		768.73	766.6		
-RPC- 12+73.05		769	770		766.6	765.5	
-RPC-16+64.35	RT	771		776.3	771.3		
-RPC-16+64.35	RT	771	772		771.3	766	
-RPA- 43+99.71	LT	803		804	800		
-RPA- 46+74.65	RT	804		811.37	808.29		
-RPA- 46+74.65	RT	804	805		808.29	808	
-RPA- 46+84.50	RT	805		813.84	808		
-RPA- 46+84.50	RT	805	806		808	802.5	
-RPA- 47+10.61	CL						
-RPA- 47+64.52	RT	807		815.7	812.7		
-RPA- 47+64.52	RT	807	808		812.7	795.3	
-L- 167+18.02	RT	809	810		815.53	815	
-L- 181+06.91	RT	1001		811.7	809.78		
-L- 181+06.91	RT	1001	1002		809.78	809.83	
-L- 184+55.71	RT	1003		806.67	803.92		
-L- 184+55.71	RT	1003	1004		803.92	803.73	
-L- 187+59.91	RT	1005		801.94	800		
-L- 187+59.91	RT	1005	1006		800	799.32	
-L- 191+51.14	RT	1007		796.19	793.44		
-L- 191+51.14	RT	1007	1101		793.44	792	
-L- 192+18.35	RT	1102		791.59	786.32		
-L- 192+18.35	RT	1102	1103		786.32	786	
-L- 192+18.35	RT	1102			786.86		
-L- 196+00.44	RT	1104		789.6	786.85		
-L- 196+00.44	RT	1104	1105		786.85	786.53	
-L- 199+01.51	RT	1106		784.5	782.58		
-L- 199+01.51	RT	1106	1107		782.58	782	
-L- 199+79.73	RT	1108		777.1	772.83		
-L- 199+79.73	RT	1108	1109		772.83	772	
-L- 199+79.73	RT	1108			773.91		
SHEET TOTALS							

STATION	SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109
-RPC- 12+73.05																				
-RPC- 12+73.05																				
-RPC-16+64.35																				
-RPC-16+64.35																				
-RPA- 43+99.71																				
-RPA- 46+74.65																				
-RPA- 46+74.65																				
-RPA- 46+84.50																				
-RPA- 46+84.50														28						
-RPA- 47+10.61																				
-RPA- 47+64.52																				
-RPA- 47+64.52																				
-L- 167+18.02																				
-L- 181+06.91																				
-L- 181+06.91																				
-L- 184+55.71																				
-L- 184+55.71																				
-L- 187+59.91																				
-L- 187+59.91																				
-L- 191+51.14																				
-L- 191+51.14																				
-L- 192+18.35																				
-L- 192+18.35																				
-L- 192+18.35																				
-L- 196+00.44																				
-L- 196+00.44																				
-L- 199+01.51																				
-L- 199+01.51																				
-L- 199+79.73																				
-L- 199+79.73																				
-L- 199+79.73																				
SHEET TOTALS														28						

STATION	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"
-RPC- 12+73.05																
-RPC- 12+73.05	152															
-RPC-16+64.35																
-RPC-16+64.35																
-RPA- 43+99.71																
-RPA- 46+74.65																
-RPA- 46+74.65		24														
-RPA- 46+84.50																
-RPA- 46+84.50																
-RPA- 47+10.61																
-RPA- 47+64.52																
-RPA- 47+64.52			48													
-L- 167+18.02		32														
-L- 181+06.91																
-L- 181+06.91		12														
-L- 184+55.71																
-L- 184+55.71		12														
-L- 187+59.91																
-L- 187+59.91		12														
-L- 191+51.14																
-L- 191+51.14		56														
-L- 192+18.35																
-L- 192+18.35							4									
-L- 192+18.35																
-L- 196+00.44																
-L- 196+00.44		12														
-L- 199+01.51																
-L- 199+01.51		52														
-L- 199+79.73																
-L- 199+79.73					8											
-L- 199+79.73																
SHEET TOTALS	152	212	48		8		4									

STATION	12 " R.C. PIPE (CLASS V)	36 " R.C. PIPE (CLASS V)	*** RC PIPE CULVERTS, CONTRACTOR DESIGN	15" SIDE DRAIN PIPE	4" CAAP	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
-RPC- 12+73.05								1			
-RPC- 12+73.05											
-RPC-16+64.35								1			
-RPC-16+64.35	116										
-RPA- 43+99.71								1			
-RPA- 46+74.65								1			
-RPA- 46+74.65											
-RPA- 46+84.50								1	0.84		
-RPA- 46+84.50											
-RPA- 47+10.61											
-RPA- 47+64.52								1			
-RPA- 47+64.52											
-L- 167+18.02											
-L- 181+06.91								1			
-L- 181+06.91											
-L- 184+55.71								1			
-L- 184+55.71											
-L- 187+59.91								1			
-L- 187+59.91											
-L- 191+51.14								1			
-L- 191+51.14											
-L- 192+18.35								1	0.27		
-L- 192+18.35											
-L- 192+18.35											
-L- 196+00.44								1			
-L- 196+00.44											
-L- 199+01.51								1			
-L- 199+01.51											
-L- 199+79.73								1			
-L- 199+79.73											
-L- 199+79.73											
SHEET TOTALS	116							14	1.11		

STATION	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	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 TWO GRATES STD. 840.22	J.B. STD. 840.31 OR 840.32	T.B.J.B.STD 840.34	CONV. EXIST T.B.D.I. TO T.B.J.B. WITH MANHOLE	M.H. FRAME & COVER STD.840.54	OIL/WATER SEPARATOR	G.D.I FRAME WITH TWO NARROW GRATES STD. 840.24	G.D.I FRAME WITH TWO GRATES STD. 840.20		SLUICE GATE		
-RPC- 12+73.05						1								1					
-RPC- 12+73.05																			
-RPC-16+64.35									1			1							
-RPC-16+64.35																			
-RPA- 43+99.71						1		1											
-RPA- 46+74.65									1										
-RPA- 46+74.65																			
-RPA- 46+84.50						1									1				
-RPA- 46+84.50																			
-RPA- 47+10.61																			
-RPA- 47+64.52						1									1				
-RPA- 47+64.52																			
-L- 167+18.02																			
-L- 181+06.91							1	1											
-L- 181+06.91																			
-L- 184+55.71						1		1											
-L- 184+55.71																			
-L- 187+59.91						1		1											
-L- 187+59.91																			
-L- 191+51.14						1		1											
-L- 191+51.14																			
-L- 192+18.35									1										
-L- 192+18.35																			
-L- 192+18.35																			
-L- 196+00.44						1		1											
-L- 196+00.44																			
-L- 199+01.51							1	1											
-L- 199+01.51																			
-L- 199+79.73									1										
-L- 199+79.73																			
-L- 199+79.73																			
SHEET TOTALS						8	2	7	4			1		1	2				

STATION	SIDE DRAIN PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
-RPC- 12+73.05					
-RPC- 12+73.05					
-RPC-16+64.35					
-RPC-16+64.35					
-RPA- 43+99.71				8	Remove D.I.
-RPA- 46+74.65					
-RPA- 46+74.65					
-RPA- 46+84.50					
-RPA- 46+84.50					
-RPA- 47+10.61				37	Remove D.I.
-RPA- 47+64.52				8	
-RPA- 47+64.52					
-L- 167+18.02			0.399		
-L- 181+06.91					REMOVE D.I.
-L- 181+06.91			0.399		
-L- 184+55.71					REMOVE D.I.
-L- 184+55.71			0.399		
-L- 187+59.91					
-L- 187+59.91			0.399		
-L- 191+51.14					
-L- 191+51.14					
-L- 192+18.35					
-L- 192+18.35					
-L- 192+18.35				4	REMOVE SEPARATED 4' SECTION
-L- 196+00.44					Remove D.I.
-L- 196+00.44			0.399		
-L- 199+01.51					
-L- 199+01.51					
-L- 199+79.73					
-L- 199+79.73					
-L- 199+79.73					
SHEET TOTALS			1.995	57	

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: SLM DATE: 12/4/2013

CHECKED BY: BB DATE: 12/4/2013

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
I-4928	3-E

R0253070

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	SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
SIZE																			
THICKNESS OR GAUGE																			
-L- 200+82.24	RT	1110		786.7	780.53														
-L- 200+93.10	RT	1111	1112		775.99	773.5													
-L- 203+48.68	RT	1201	1202		752.85	752.65													
SHEET TOTAL																			
TOTAL SHEET 1																			
TOTAL SHEET 2																			
TOTAL SHEET 3																			
TOTAL SHEET 4																			
TOTAL SHEET 5																			
TOTAL																			
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																
-L- 200+82.24																								
-L- 200+93.10			12																					
-L- 203+48.68														12										
SHEET TOTAL			12											12										
TOTAL SHEET 1		62								1180	28	244										32		
TOTAL SHEET 2			340							488	132	52		8										
TOTAL SHEET 3			168						336	1488	32	100								120				
TOTAL SHEET 4		28							152	212	48		8		4									
TOTAL SHEET 5			12											12										
TOTAL		**90**	**520**						**488**	**3368**	**240**	**396**	**8**	**20**	**4**					**120**		**32**		
SAY		**90**	**520**						**488**	**3368**	**240**	**396**	**8**	**20**	**4**					**120**		**32**		

STATION	12" R.C. PIPE (CLASS V)	36" R.C. PIPE (CLASS V)	**** RC PIPE CULVERTS, CONTRACTOR DESIGN	15" SIDE DRAIN PIPE	4" CAAP	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 *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') PER EACH (0' THRU 5.0')	LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	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 TWO GRATES STD. 840.22	J.B. STD. 840.31 OR 840.32	T.B.J.B.STD 840.34	CONV. EXIST T.B.D.I. TO T.B.J.B. WITH MANHOLE	M.H. FRAME & COVER STD.840.54	OIL/WATER SEPARATOR	G.D.I FRAME WITH TWO NARROW GRATES STD. 840.24	G.D.I FRAME WITH TWO GRATES STD. 840.20	SLUICE GATE			SIDE DRAIN PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
-L- 200+82.24								1	1.17																															Remove D.I.
-L- 200+93.10																																						0.399		
-L- 203+48.68																																						0.764		
SHEET TOTAL								1	1.17																	1		1										1.163		
TOTAL SHEET 1								19	8.64									14		7	5								7							0.7	2.5476	131	
TOTAL SHEET 2		272						18	15.1	6.64	14	6	5	3				2		2	2		1	1														31	
TOTAL SHEET 3					53	4.9	2	16	7.18		9	3		6				6		5	1				1	1		1-36"										76	
																												2-18"											
																												1-24"											
TOTAL SHEET 4	116							14	1.11									8	2	7	4			1		1	2										1.995	57	
TOTAL SHEET 5								1	1.17														1	1													1.163		
TOTAL	**116**	**272**			**53**	**4.9**	**2**	**68**	**33.2**	**6.64**	**23**	**9**	**5**	**9**				**30**	**2**	**21**	**12**	**1**	**1**	**3**	**1**	**2**	**9**	**1-36"**								**0.7**	**5.7056**	**295**	
										8.63																		**2-18"**											
				TOTAL		**6.9**			**41.83**																			**1-24"**											
SAY	**116**	**272**			**56**	**7**		**68**	**42**		**23**	**9**	**5**	**9**				**30**	**2**	**21**	**12**	**1**	**1**	**3**	**1**	**2**	**9**									**1**	**6**	**295**	

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: SLM DATE: 12/4/2013

CHECKED BY: BB DATE: 12/4/2013

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
I-4928	3-F

R0244542

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 54" & OVER)

STATION	LOCATION (LT. RT. OR CL)'	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 54"	60"	66"	72"	78"	84"	C.S. PIPE 54" .109	54" .138	54" .168	54" SHOP ELON-GATED .138	54" SHOP ELON-GATED .168	60" .138	60" .168	66" .138	66" .168	72" .139	72" .168	STRUCTURAL PLATE PIPE 60" 12	60" 10	66" 12	66" 10	72" 12	72" 10	REINFORCED ENDWALLS WITH R.C. - C.Y.	REINFORCED ENDWALLS WITH C.S. - C.Y.	MASONRY DRAINAGE STRUCTURES CUBIC YARDS	C.B. STD. 840.01 OR 840.02	FRAMES, GRATES & HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	Juction Box (See Special Junction Box With Slab Lid Sheet 2)	NCDOT Approved Pipe Liner	REINF. CONC. FLARED END SECTIONS NO. & SIZE	CORR. STEEL FLARED END SECTIONS NO. & Size	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
-L- 202+03.77	CL	1113				748.78																																		253								
-L- 202+03.77	RT	1113	1114	756.27	748.5	748					24																					11.8							1								
SHEET TOTALS											24																					11.8							1	253							

ABBREVIATIONS

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

COMPUTED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
I-4928	3-G

PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD³
-L-	109+40.62	206+91.72	RT	15,323.76
			TOTAL:	15,323.76
			SAY:	15,330

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

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS								IMPACT ATTENUATOR TYPE 350			SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	GRAU 350 TYPE 2	GRAU 350 TYPE 3		M-350	XIII	CAT-1	VI MOD	B-77	AT-1	EA	G	NG				
				168.75					12		50		1			1				1										I-85 NORTH OF US-74 E EXIT
-L-	112+08.04	127+20.54	RT	1512.50			115+00.00	127+20.54	12		50		1			1												362		
-RPA-	10+00.00	16+31.25	RT	631.25			10+00.00	16+21.68	12											1										
-L-	122+05.39	133+99.36	RT																									1193.97		
-L-	134+27.50	136+21.25	RT	193.75			135+90.00	136+06.00	12		50		1			1				1										
-L-	146+25.89	178+02.10	RT																									3176.21		
-RPA-	44+17.32	51+44.45	RT	725.00			46+84.93	51+44.45	8							1														
-L-	169+08.91	176+15.16	RT	706.25			169+08.91	176+00.00	12											1										
-L-	180+67.50	182+36.25	RT	168.75			182+30.00		12		50		1			1				1										
-L-	198+08.74	207+51.67	RT	943.75			201+00.00	207+45.42	12							1				1								665.61		
-RPA-	17+69.96	18+76.21	LT	106.25			18+69.96		6		50		1			1				1										
-RPA-	20+46.00	21+52.25	LT	106.25			21+46.00		6		50		1			1				1										
-RPA-	20+46.00	21+52.25	RT	106.25			21+46.00		6		50		1			1				1										
-RPA- /-RPB-	27+38.03	18+67.85	RT /LT	887.50	50.00		30+33.00	19+81.00							1	1														
-RPB-	16+75.41	18+94.16	RT	218.75			18+94.16				200		13					1				1								
-RPB-	18+16.91	18+94.16	LT	137.50			18+94.16				50		2.72									2		1						
-RPC-	13+07.91	15+26.66	LT	218.75			15+26.66				200		13					1				1								
-RPD-	20+92.31	29+34.97	RT	468.75	275.00		22+32.00	29+25.67							1					1										
-RPD-	23+95.00	26+56.25	LT	143.75	175.00		23+95.00	26+50.00												1										
-RPD-	21+00.00	23+95.00	LT	250.00	62.50		21+00.00	23+95.00																						
-RPE-	10+00.00	17+95.86	LT	700.00	125.00		10+00.00	17+95.86																						
-RPD-	12+83.82	13+84.61	LT	112.50			12+83.82	13+84.61																						
-RPA-	33+89.94	39+97.73	RT	631.25	25.00		33+89.94	39+83.42												1										
			SUBTOTAL	9137.50	712.50										2	10		2		12		4		1				5397.79		

ANCHOR DEDUCTIONS

2	GRAU-350 TYPE 2 @ 25'	50
10	GRAU-350 TYPE 3 @ 50'	500
2	M-350 @ 37.5'	75
12	CAT-1 @ 6.25'	75
4	B-77 @ 18.75'	75
	TOTAL	8362.50 712.50
	SAY	8550 750

ADDITIONAL GUARDRAIL POST = 15

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SHOULDER BERM GUTTER SUMMARY

SURVEY LINE	STATION	STATION	LENGTH
-L-	114+50.00	119+00.00	450.0
-L-	123+50.00	127+50.54	370.5
-RPA-	10+00.00	15+90.00	590.0
-RPA-	46+84.00	51+44.45	460.5
-L-	169+.09.91	170+00.00	91.1
		TOTAL	1962.1
		SAY:	1963

SHOULDER DRAIN SUMMARY

SURVEY LINE	STATION	STATION	LENGTH	OUTLET PIPE	OUTLET
-RPA-	14+18.00	16+96.00	278	16	14+18.00 14+25.00 (2GI) STRU. 606
-RPA-	19+96.96	21+20.00	123	16	19+96.96
-RPA-	21+20.00	-RPB- 13+16.00	316	16	-RPB- 13+16.00
-RPA-	23+28.00	32+64.00	936	16	28+85.00 (2GI) STRU. 707 31+76.00 (CB IN SAG) STRU. 720 32+64.00 (CB) STRU. 718
-RPA-	32+00.00	43+15.00	1115	66	32+00.00 (2GI) STRU. 711 36+19.00 (2GI) STRU. 759 39+33.00 (2GI) STRU. 760
-RPA-	36+44.45	39+87.00	343	16	36+44.45
-RPA-	42+90.00	45+70.61	281	16	42+90.00 (2GI) STRU. 802
-RPB-	13+75.00	18+00.00	425	32	15+43.00
-RPD-	24+00.00	29+35.00	535	60	24+81.00 (CB) STRU. 746
-RPE-	11+10.00	16+50.00	540		12+05.00 (CB) STRU 729 14+66.00 (CB) STRU 735
		TOTAL:	4892	254	
		SAY:	5000	260	

SUMMARY OF EARTHWORK

IN CUBIC YARDS

STATION	STATION	UNCL. EXCAV.	EMBANK. +%	BORROW	WASTE
-L- 109+00	-L- 139+00	73,650	17,874		55,776
-L- 139+00	-L- 169+00	43,954	133,889	89,935	
-L- 169+00	-L- 196+00	92,320	2,249		90,071
-L- 196+00	-L- 212+00	6,397	3,272		3,125
SUBTOTAL		216,321	157,284	89,935	148,972
-RPB- 13+15.70	-RPB- 21+95.70	2,523	47,127	44,604	
-RPD- 13+04.68	-RPD- 29+26.53	35	211,491	211,456	
FILL FOR DITCH RT STA. 22+80.16			690	690	
SUBTOTAL		2,558	256,174	253,616	
TOTAL		218,879	416,592	346,685	148,972
WASTE TO BE USED IN LIEU OF BORROW				-148,972	-148,972
SHOULDER MATERIAL			8,119	8,119	
LOSS DUE TO CLEARING AND GRUBBING		-8,250		8,250	
PROJECT TOTAL		210,629	424,711	214,082	
5% TO RELACE TOPSOIL					
ON BORROW PIT				10,705	
GRAND TOTAL		210,629	424,711	224,787	
SAY:		210,900		225,000	

UNDERCUT 3,500 CUYD
SELECT GRANULAR MATERIAL 3,500 CUYD
DRAINAGE DITCH EXCAVATION 1,840 CUYD
PAVMENT STRUCTURE VOLUME 11,000 CUYD

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.

WOVEN WIRE FENCE SUMMARY

STATION	STATION	A FABRIC L.F.	B END BRACE	C CORNER BRACE	D LINE BRACE	E 4" POSTS	F 5" POSTS
-L- 108+82.52	-L- 115.49+00	697.11	1	1	2	42	11
-L- 115+49.00	-L- 117+50.00	201.00				14	
-L- 117+50.00	-L- 125+00.00	760.45		2	2	48	12
-L- 125+00.00	-L- 126+27.97	136.03	1	1		7	5
-L- 126+49.36	-L- 129+42.44	307.39	1	2		18	8
-RPA- 12+29.68	-RPA- 14+80.00	241.29		1		16	3
-RPA- 14+80.00	-RPD- 24+22.00	932.48		1		60	12
-RPD- 15+35.00	-RPD- 24+22.00	994.89		1	3	64	12
-RPD- 15+35.00	-RPA- 35+54.50	474.54	1	2	1	28	11
-RPA- 35+89.44	-RPA- 49+31.70	1,380.41	1	2	4	88	20
-L- 166+99.83	-L- 169+00.00	200.17		1		13	3
-L- 169+00.00	-L- 169+37.70	38.91		1		1	3
-L- 169+37.70	-L- 172+88.05	460.85	1	2	1	27	11
-L- 173+09.69	-L- 177+20.00	532.97	1	2		34	8
-L- 177+20.00	-L- 205+18.00	2,930.04		4	8	190	36
TOTAL		10,262.54				648	155
SAY:		10,270				649	155

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CHECKED BY: _____ DATE: _____

PROJECT NO.	SHEET NO.
I-4928	3-I

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF SUBSURFACE DRAINAGE

LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
CONTINGENCY				UD	1000
				TOTAL LF:	1000

*UD = Underdrain
*BD = Blind Drain
*SD = Subsurface Drain

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type* ASU/AST	Aggregate Thickness INCHES	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
CONTINGENCY			ASU		1500	3000	8000		
	ROADSIDE ENVIRON.						900		
			TOTAL CY/TONS/SY:		1500	3000	8900	0	0

*ASU = Aggregate Subgrade
*AST = Aggregate Stabilization

SUMMARY OF ROCK PLATING

LINE	Beginning Slope	Approx. Station	Ending Slope	Approx. Station	Location LT/RT	Rock Plating Detail No. 1/2/3/4	Riprap Class* 1/2/B	SY
L	1.5:1	125+00.00	1.5:1	133+33.00	RT	2	1	3350
L RPD	1.5:1	13+00.00	1.5:1	154+ 00.00	RT	2	1	4500
L	1.5:1	170+50.00	1.5:1	171+ 50.00	RT	2	1	250
L	1.5:1	174+00.00	1.5:1	175+ 50.00	RT	2	1	400
							TOTAL SY:	8500

*Use Class 1, 2 or B riprap if riprap class is not shown for rock plating location.

SUMMARY OF GEOTEXTILE FOR PAVEMENT STABILIZATION

LINE	Station	Station	SY
CONTINGENCY			4000
		TOTAL SY:	4000

PROJECT REFERENCE NO.	SHEET NO.
I-4928	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

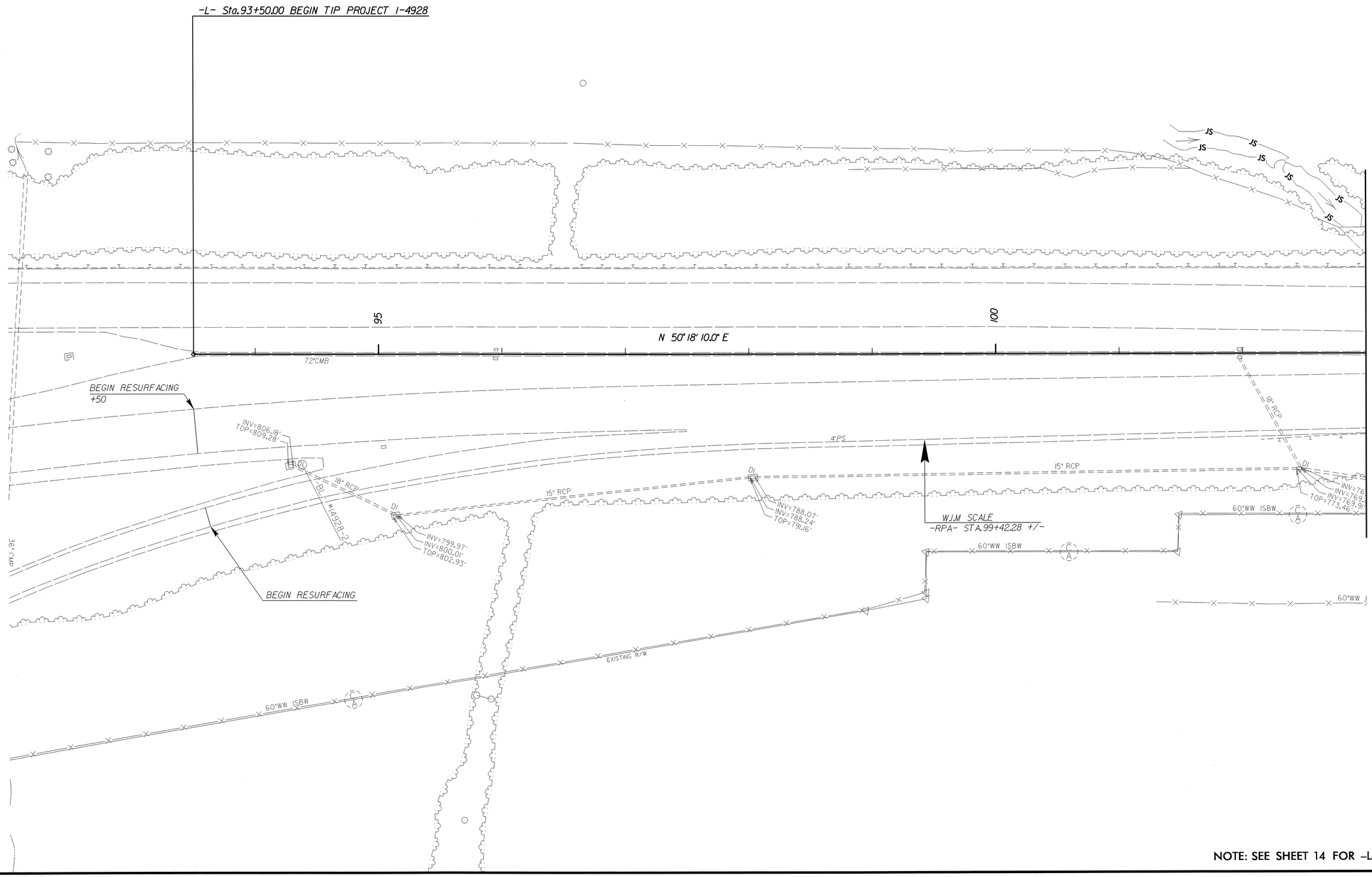
NORTH CAROLINA PROFESSIONAL SEAL 19740 ENGINEER CHRISTOPHER KENT HAIRE 12-6-13

Christopher K. Haire

NORTH CAROLINA PROFESSIONAL SEAL 31025 ENGINEER KAREN H. GULLEDGE 12-17-13

Karen H. Gulledge

NAD 83/NSRS 2007



MATCH LINE -L- Sta. 103+00 SEE SHEET 04A

NOTE: SEE SHEET 14 FOR -L- PROFILE

REVISIONS

8/17/99

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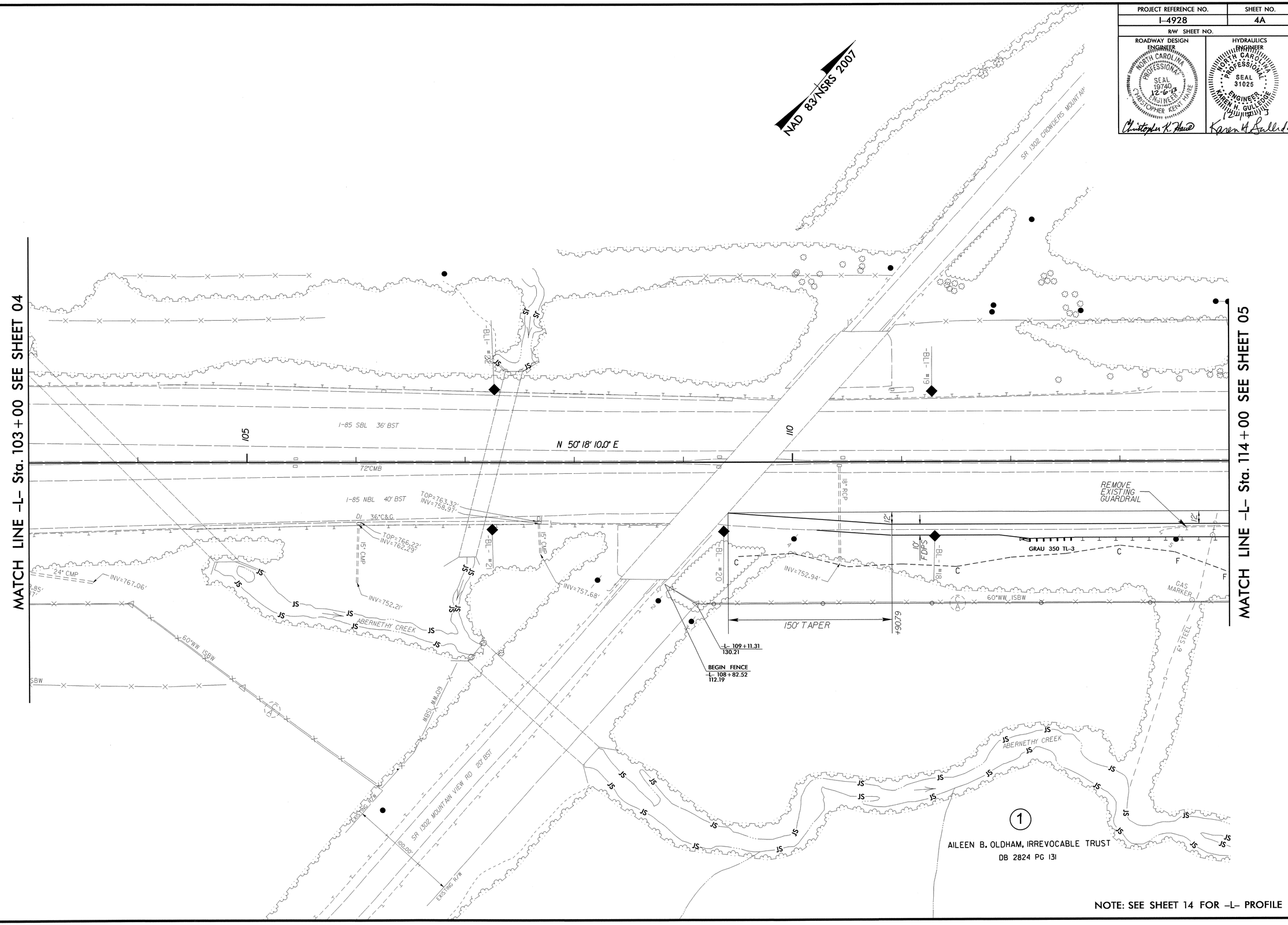
PROJECT REFERENCE NO.	SHEET NO.
I-4928	4A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 19740 12-6-13 ENGINEER CHRISTOPHER KENT HAUE	NORTH CAROLINA PROFESSIONAL SEAL 31025 ENGINEER KAREN H. GULLEDGE 12/11/13
Christopher K. Haue	Karen H. Galledge

REVISIONS

8/17/99



NOTE: SEE SHEET 14 FOR -L- PROFILE

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PROJECT REFERENCE NO.	SHEET NO.
I-4928	5
R/W SHEET NO.	

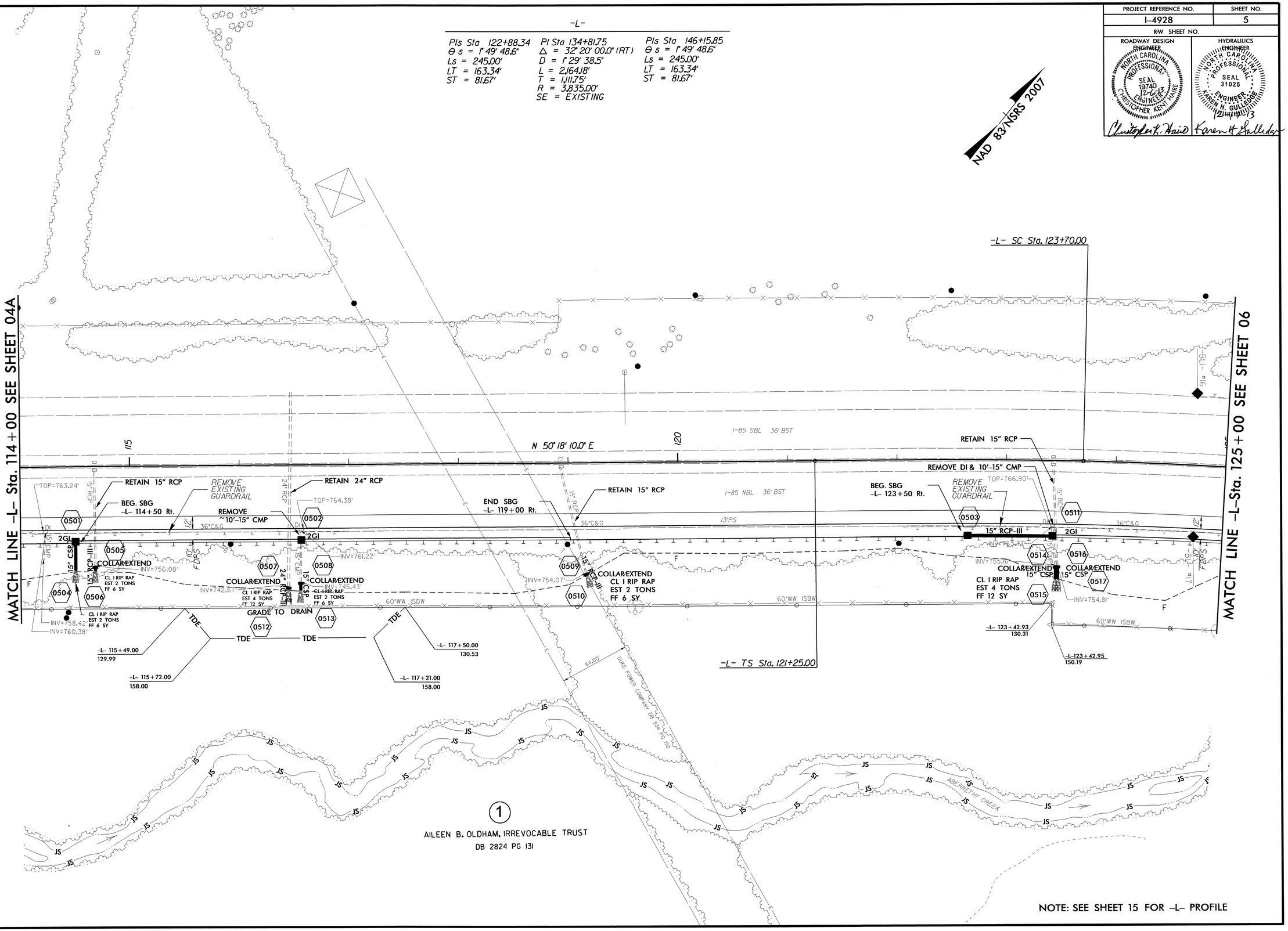
ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 19740 ENGINEER CHRISTOPHER KENT HAVIL 12-6-13

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 31025 ENGINEER KAREN H. GULLEDGE 12/11/13

-L-

PIs Sta 122+88.34	PI Sta 134+81.75	PIs Sta 146+15.85
Θs = 1° 49' 48.6"	Δ = 32° 20' 00.0" (RT)	Θs = 1° 49' 48.6"
Ls = 245.00'	D = 1° 29' 38.5"	Ls = 245.00'
LT = 163.34'	L = 2,164.18'	LT = 163.34'
ST = 81.67'	T = 1,111.75'	ST = 81.67'
	R = 3,835.00'	
	SE = EXISTING	

NAD 83/NSRS 2007



NOTE: SEE SHEET 15 FOR -L- PROFILE

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PROJECT REFERENCE NO.	SHEET NO.
I-4928	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19740 12-10-13 ENGINEER CHRISTOPHER KENT HAIRE

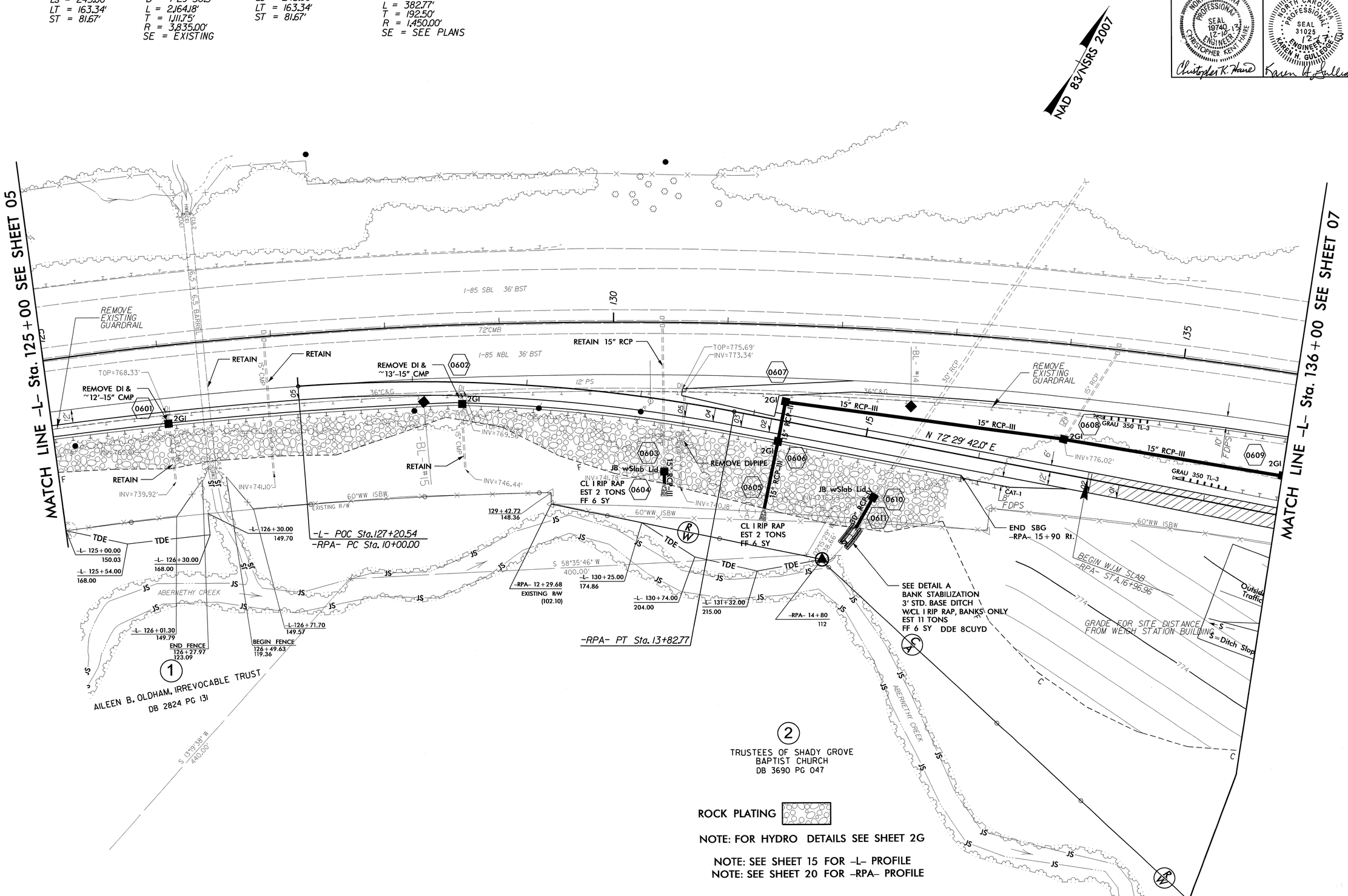
NORTH CAROLINA PROFESSIONAL SEAL 31025 12-17 ENGINEER KAREN H. GULLEDGE

Christopher K. Haire

Karen H. Gulledge

-L-		
PIs Sta 122+88.34	PI Sta 134+81.75	PIs Sta 146+15.85
Θ s = 1° 49' 48.6"	Δ = 32° 20' 00.0" (RT)	Θ s = 1° 49' 48.6"
Ls = 245.00'	D = 1° 29' 38.5"	Ls = 245.00'
LT = 163.34'	L = 2,164.18'	LT = 163.34'
ST = 81.67'	T = 1,111.75'	ST = 81.67'
	R = 3,835.00'	
	SE = EXISTING	

-RPA-
PI Sta 11+92.50
Δ = 15° 07' 29.6" (RT)
D = 3° 57' 05.2"
L = 382.77'
T = 192.50'
R = 1,450.00'
SE = SEE PLANS



ROCK PLATING

NOTE: FOR HYDRO DETAILS SEE SHEET 2G

NOTE: SEE SHEET 15 FOR -L- PROFILE

NOTE: SEE SHEET 20 FOR -RPA- PROFILE

REVISIONS

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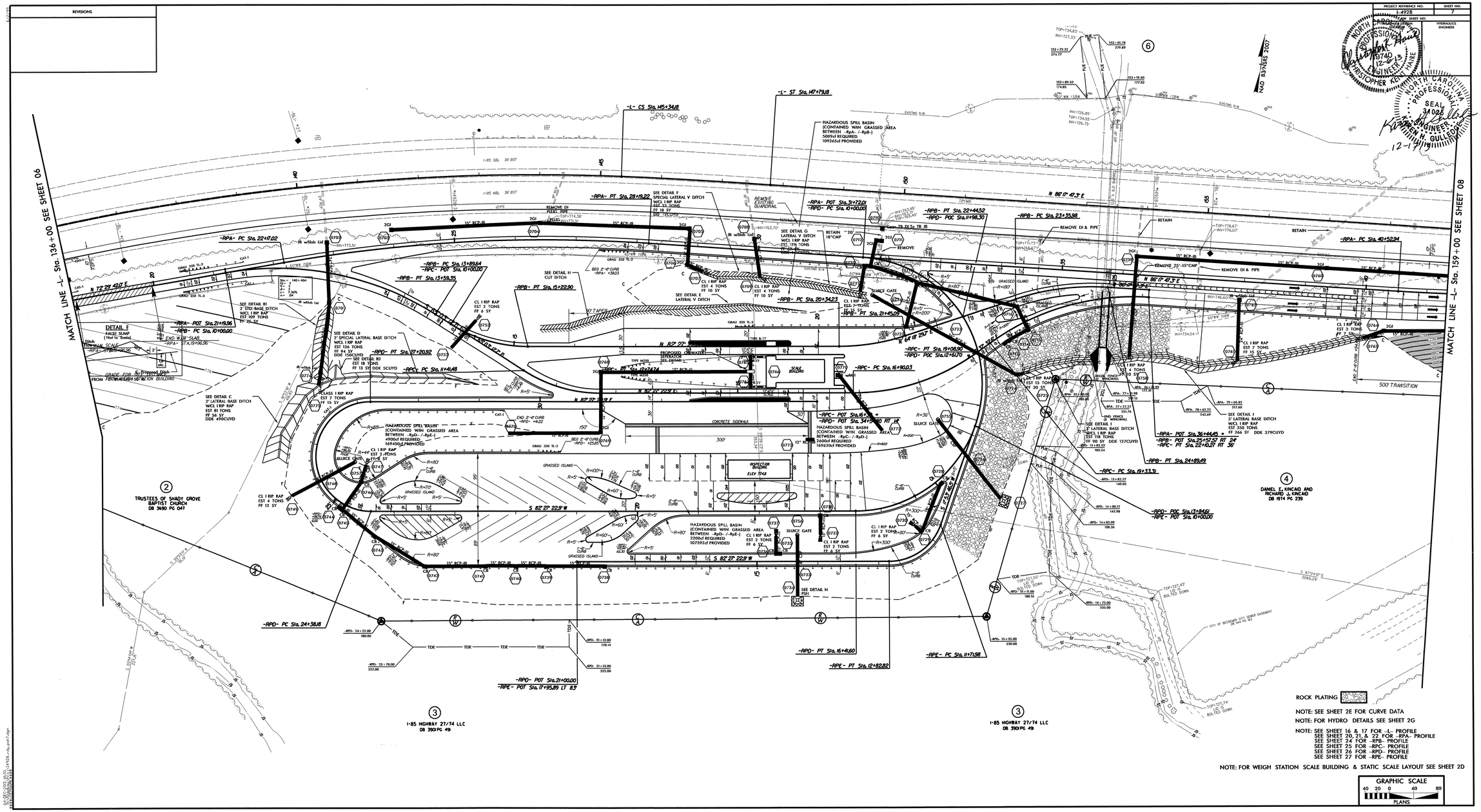
REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
I-4928	7
R/W SHEET NO.	
	HYDRAULICS ENGINEER



NOTE: SEE SHEET 2E FOR CURVE DATA

NOTE: FOR HYDRO DETAILS SEE SHEET 2G

NOTE: SEE SHEET 16 & 17 FOR -L- PROFILE
SEE SHEET 20, 21, & 22 FOR -RPA- PROFILE
SEE SHEET 24 FOR -RPB- PROFILE
SEE SHEET 25 FOR -RPC- PROFILE
SEE SHEET 26 FOR -RPD- PROFILE
SEE SHEET 27 FOR -RPE- PROFILE

NOTE: FOR WEIGH STATION SCALE BUILDING & STATIC SCALE LAYOUT SEE SHEET 2D

GRAPHIC SCALE
40 20 0 40 80
PLANS

PROJECT REFERENCE NO.	SHEET NO.
I-4928	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19740 ENGINEER CHRISTOPHER KENT HAIRE 12-6-13

NORTH CAROLINA PROFESSIONAL SEAL 31025 ENGINEER KAREN H. GULLEDGE 12-17-13

Christopher K. Haire

Karen H. Gulledge

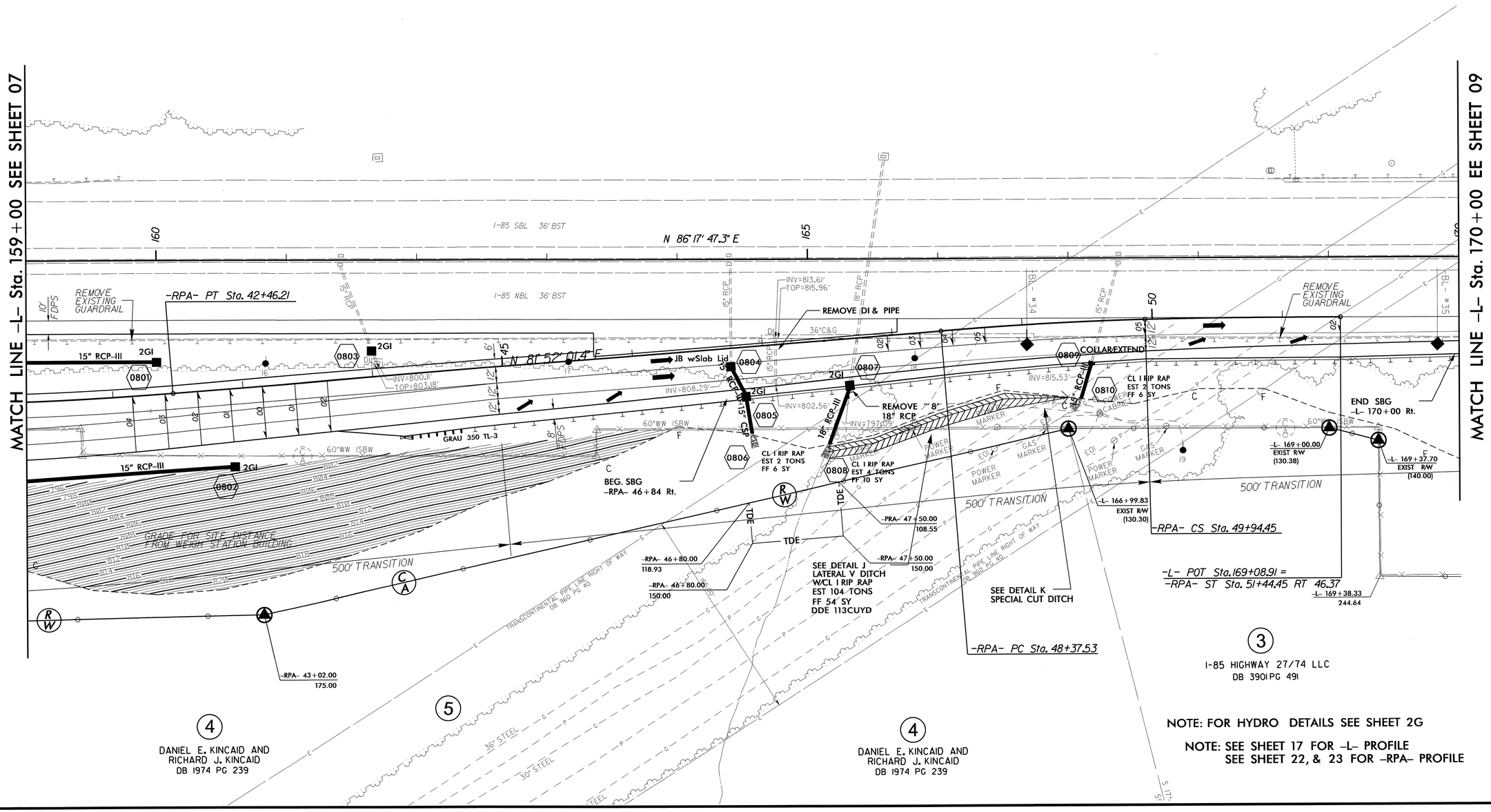
-RPA-

PI Sta 49+16.01	PIs Sta 50+44.46
Δ = 2° 59' 49.3" (RT)	Θs = 1° 25' 56.6"
D = 1° 54' 35.5"	Ls = 150.00'
L = 156.92'	LT = 100.00'
T = 78.48'	ST = 50.00'
R = 3,000.00'	
SE = SEE PLANS	

-L-

PI Sta 184+26.48
Δ = 20° 30' 35.3" (LT)
D = 0° 44' 57.7"
L = 2,736.99'
T = 1,383.30'
R = 7,646.00'
SE = EXISTING

NAD 83/NSRS 2007



3
I-85 HIGHWAY 27/74 LLC
DB 3901 PG 491

4
DANIEL E. KINCAID AND RICHARD J. KINCAID
DB 1974 PG 239

5

4
DANIEL E. KINCAID AND RICHARD J. KINCAID
DB 1974 PG 239

NOTE: FOR HYDRO DETAILS SEE SHEET 2G

NOTE: SEE SHEET 17 FOR -L- PROFILE
SEE SHEET 22, & 23 FOR -RPA- PROFILE

REVISIONS

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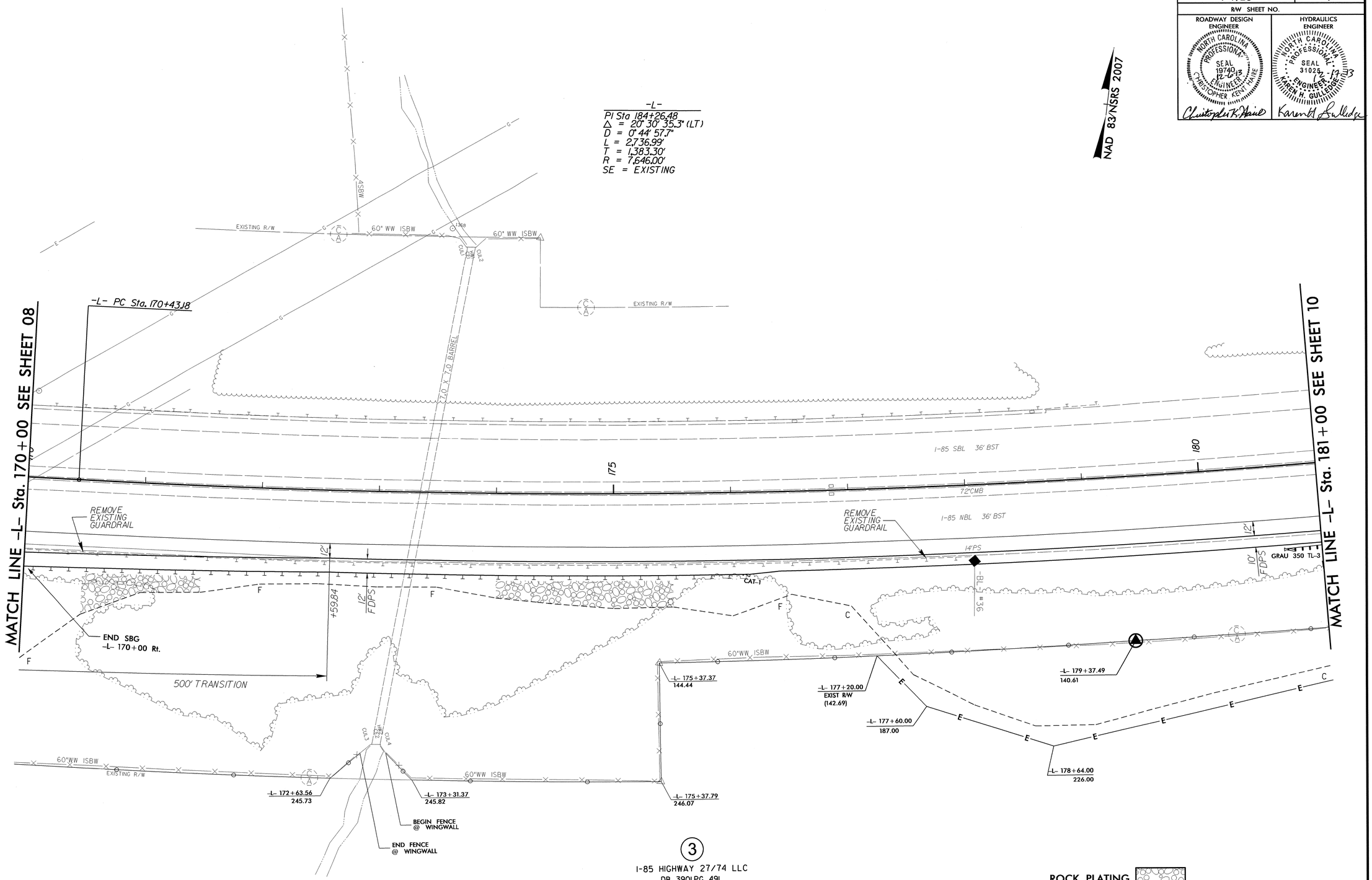
PROJECT REFERENCE NO.	SHEET NO.
I-4928	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19740 ENGINEER CHRISTOPHER KENT HAIRE 12-6-13

NORTH CAROLINA PROFESSIONAL SEAL 31025 ENGINEER KAREN H. GULLEDGE 12-17-13



NOTE: SEE SHEET 17 & 18 FOR -L- PROFILE

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
I-4928	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19740 ENGINEER CHRISTOPHER KENT HAWKE 12-6-13

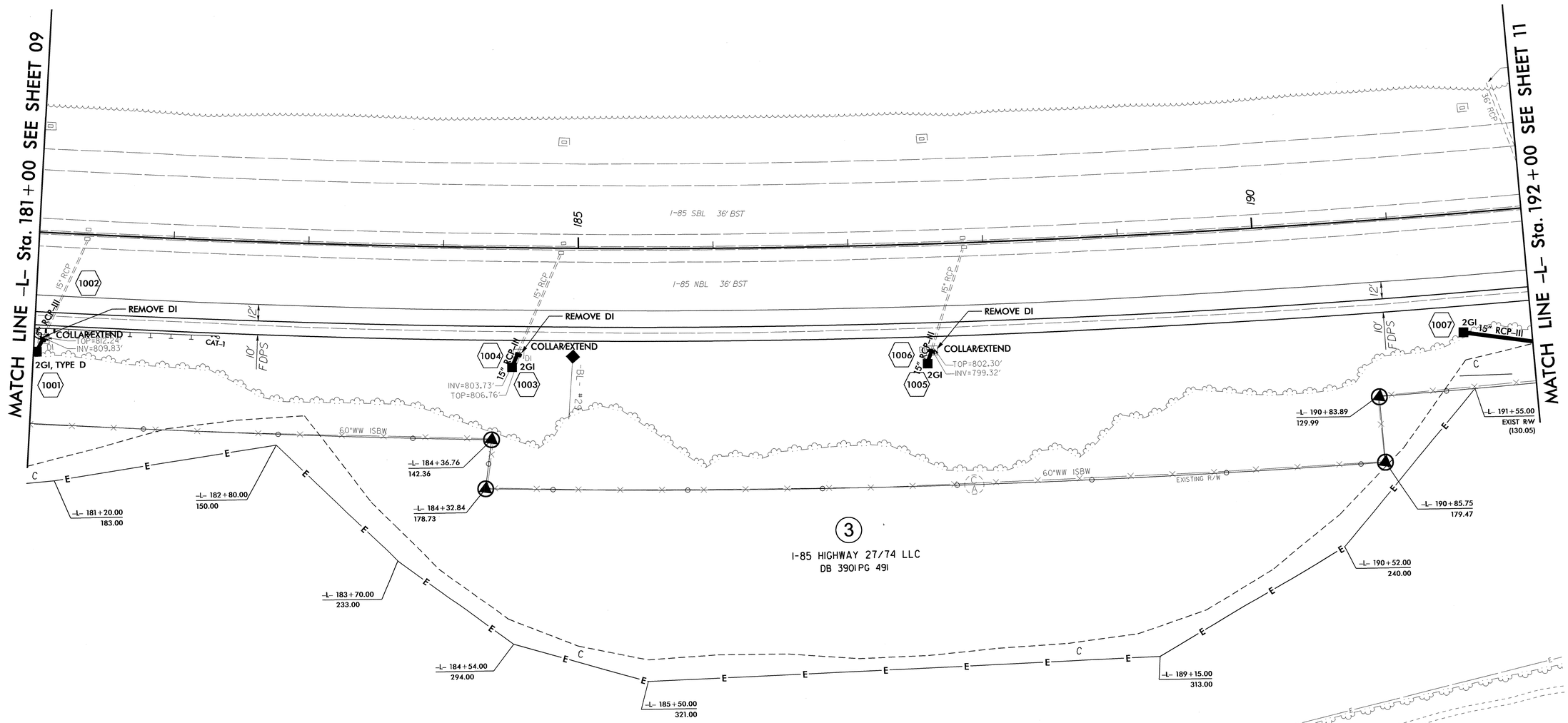
NORTH CAROLINA PROFESSIONAL SEAL 31025 ENGINEER KAREN H. GULLEDGE 12-6-13

REVISIONS

8/17/99

-L-
PI Sta 184+26.48
Δ = 20° 30' 35.3" (LT)
D = 0° 44' 57.7"
L = 2,736.99'
T = 1,383.30'
R = 7,646.00'
SE = EXISTING

NAD 83/NSRS 2007



NOTE: SEE SHEET 18 FOR -L- PROFILE

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PROJECT REFERENCE NO.	SHEET NO.
I-4928	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19740 1-14-14 ENGINEER CHRISTOPHER KENT HAIRE

NORTH CAROLINA PROFESSIONAL SEAL 31025 ENGINEER KAREN H. GULLEDGE

01/14/2014

Christopher K. Haire

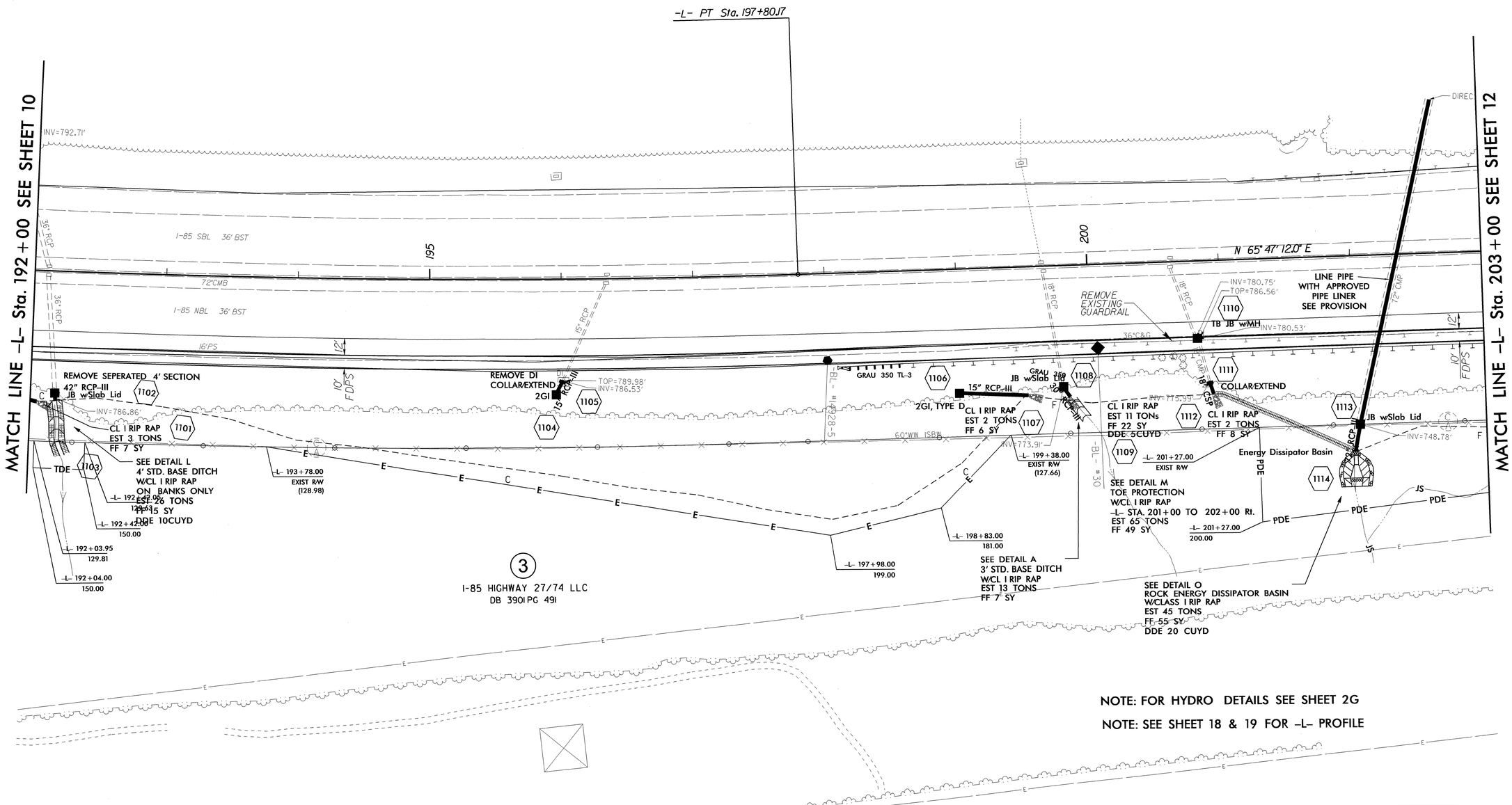
Karen H. Gulledge

8/17/99

REVISIONS

-L-
PI Sta 184+26.48
Δ = 20° 30' 35.3" (LT)
D = 0° 44' 57.7"
L = 2,736.99'
T = 1,383.30'
R = 7,646.00'
SE = EXISTING

NAD 83/NSRS 2007



NOTE: FOR HYDRO DETAILS SEE SHEET 2G

NOTE: SEE SHEET 18 & 19 FOR -L- PROFILE

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PROJECT REFERENCE NO.	SHEET NO.
I-4928	12
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19740 ENGINEER CHRISTOPHER KENT HAIRE 12-17-13

Christopher K. Haire

HYDRAULICS ENGINEER

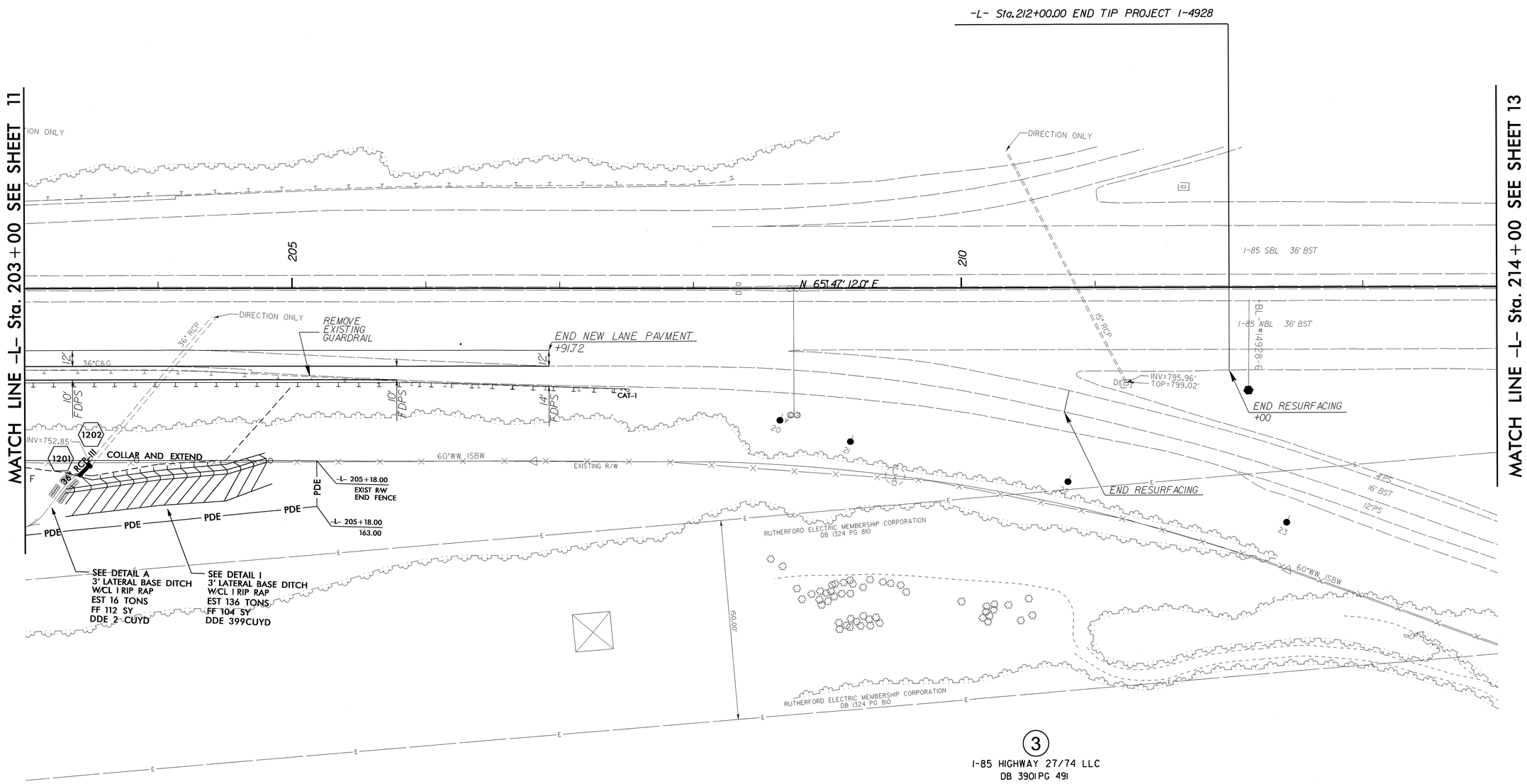
NORTH CAROLINA PROFESSIONAL SEAL 31025 ENGINEER KAREN H. GULLEDGE 12-17-13

Karen H. Gulledge

NAD 83/NSRS 2007

REVISIONS

8/17/99



NOTE: FOR HYDRO DETAILS SEE SHEET 2G

NOTE: SEE SHEET 19 FOR -L- PROFILE

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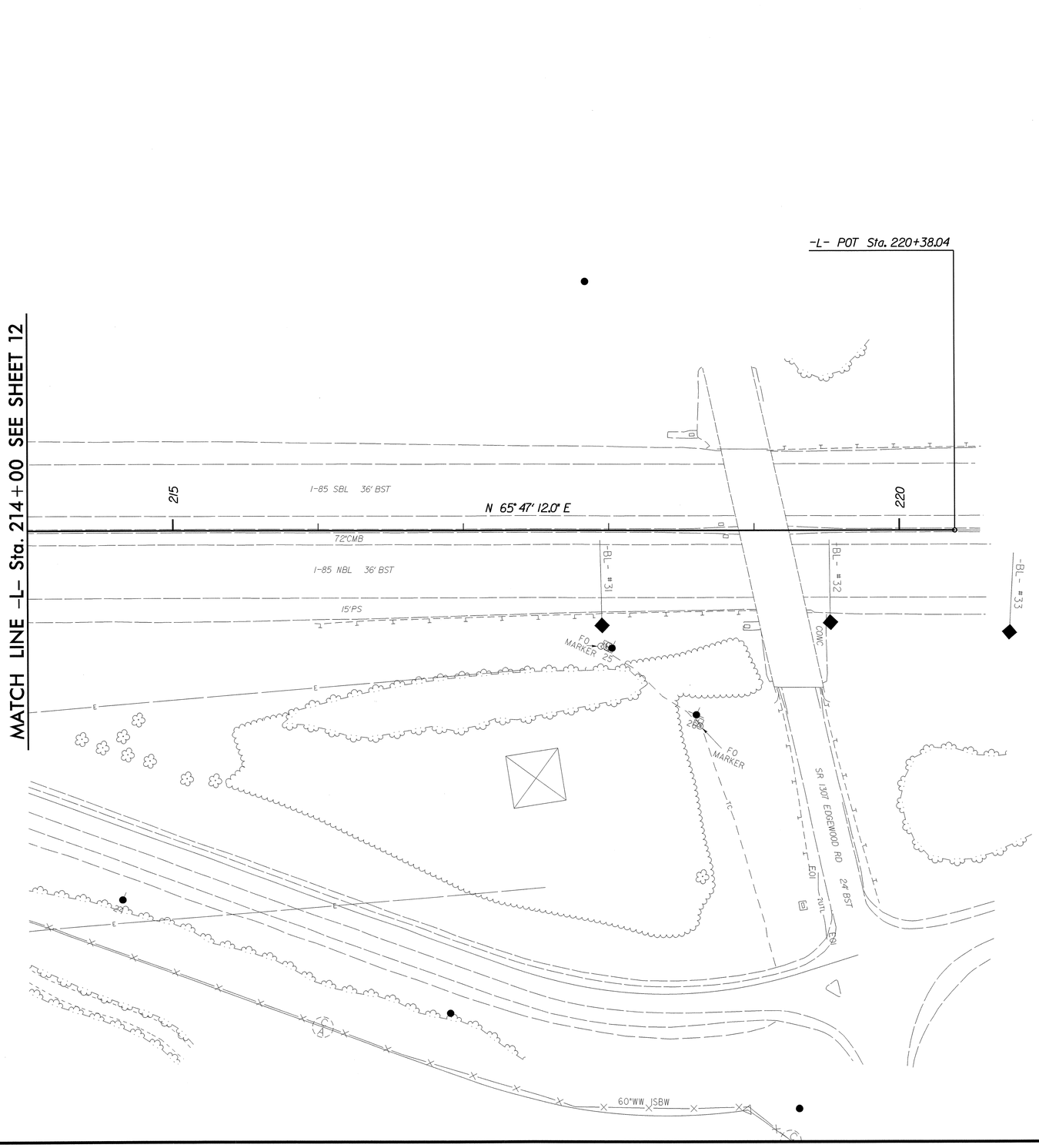
PROJECT REFERENCE NO.	SHEET NO.
I-4928	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



NOTE: SEE SHEET 19 FOR -L- PROFILE

REVISIONS

8/17/99

04-DEC-2013 14:30
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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
I-4928	14

ROADWAY DESIGN ENGINEER

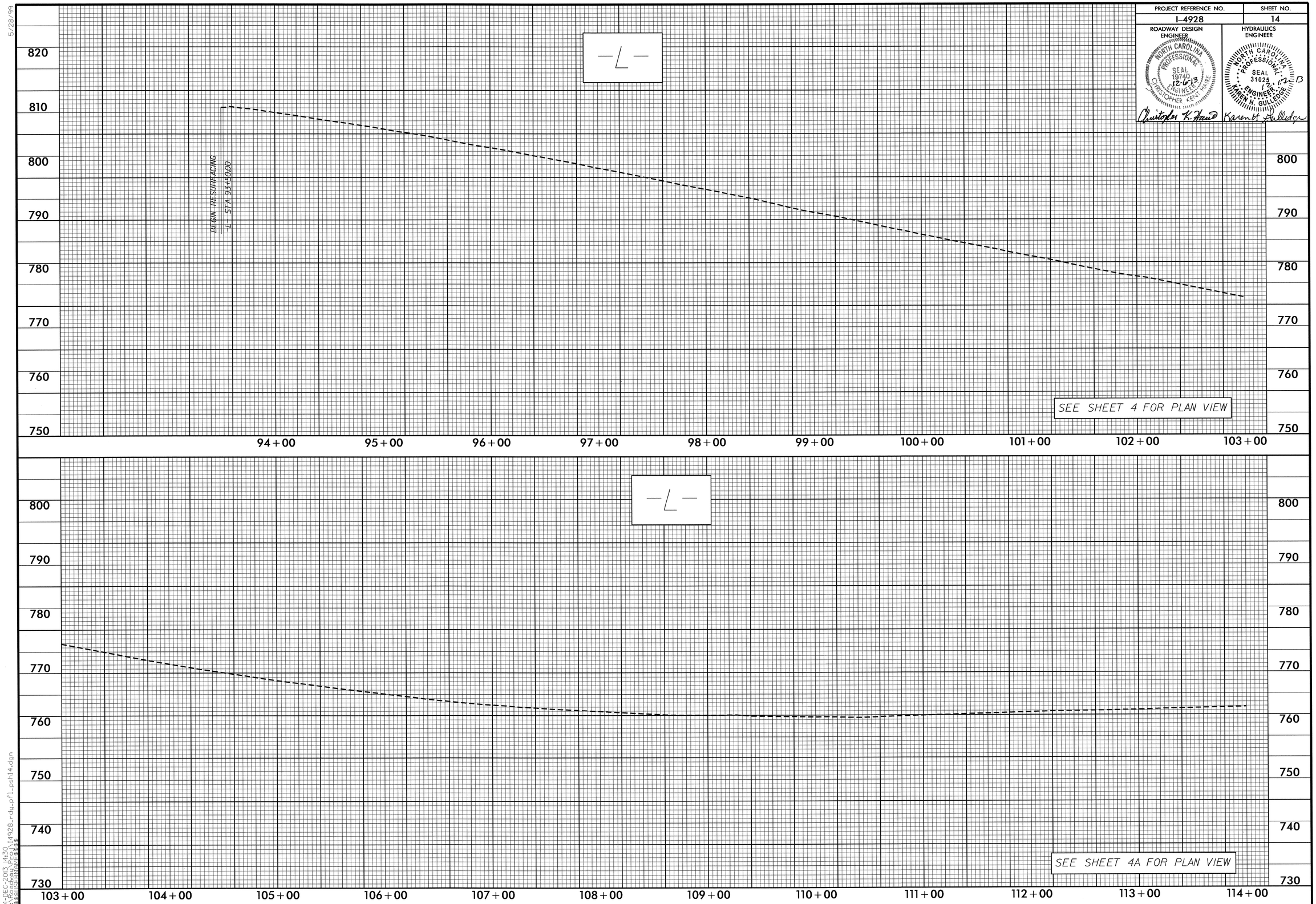
NORTH CAROLINA PROFESSIONAL SEAL 19740 ENGINEER CHRISTOPHER KENT HEARD 12-6-13

Christopher K. Heard

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 31025 ENGINEER KAREN H. GULLEDGE 12-12-13

Karen H. Gulledge



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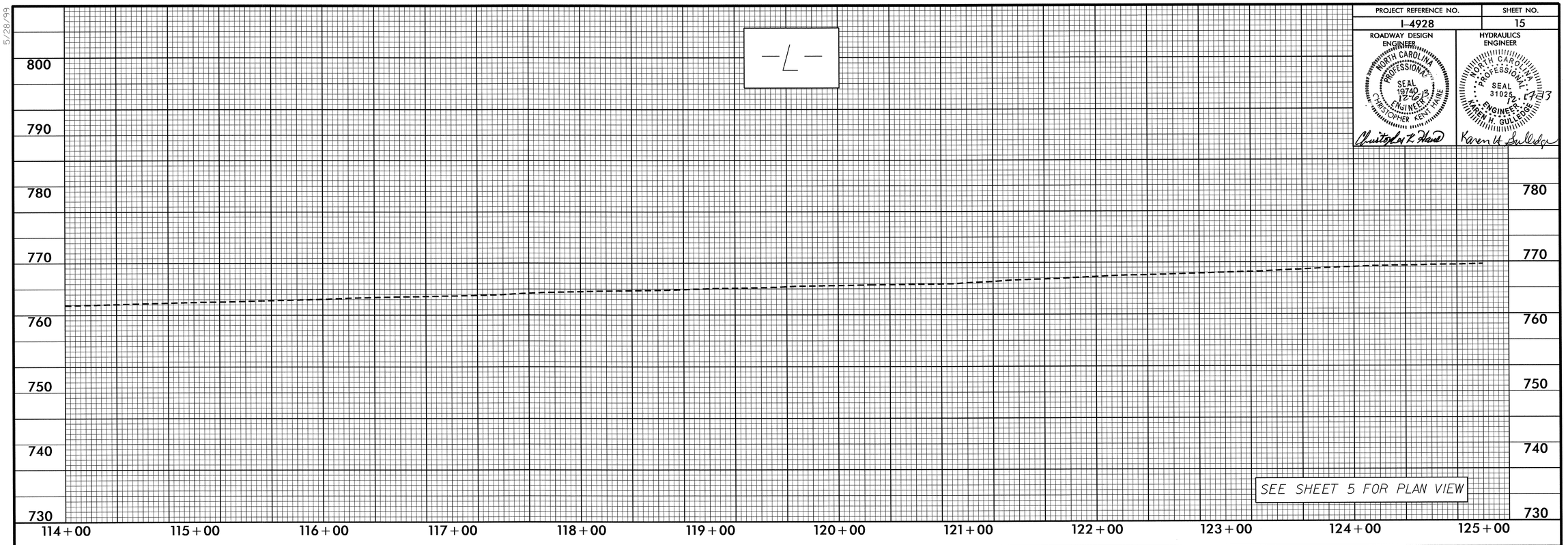
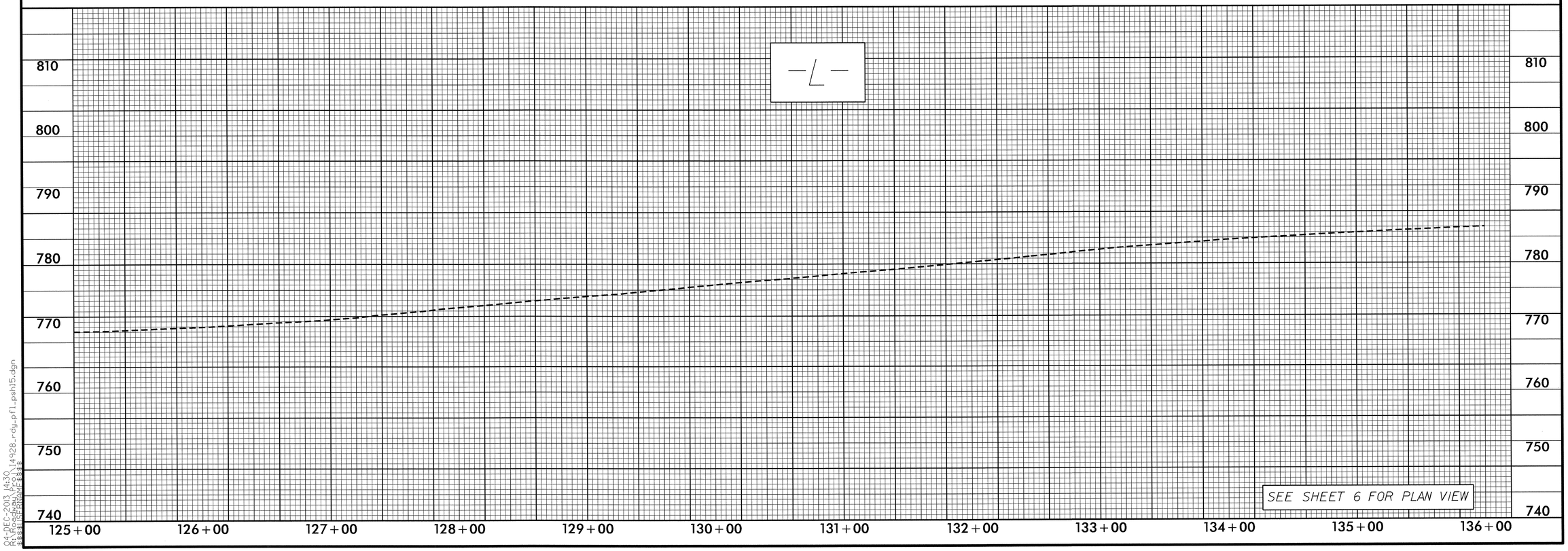
PROJECT REFERENCE NO.	SHEET NO.
I-4928	15

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 19740 ENGINEER CHRISTOPHER KENT HERNE 12-6-13
Christopher K. Herne

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 31025 ENGINEER KAREN H. GULLEDGE 12-17-13
Karen H. Gulledge





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PROJECT REFERENCE NO.	SHEET NO.
I-4928	16

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 12640 ENGINEER CHRISTOPHER KENT HARE

12-6-13

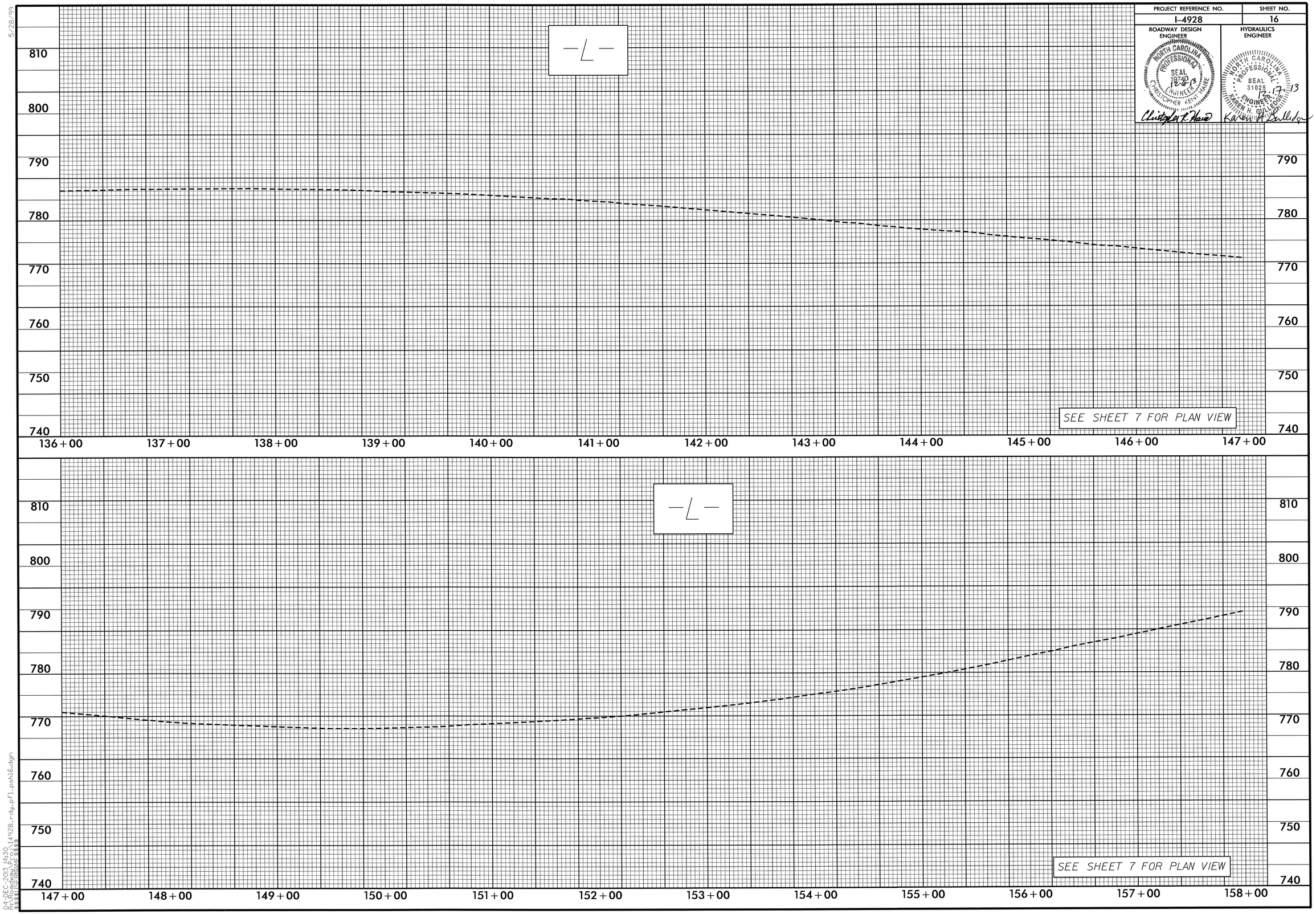
Christopher K. Hare

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 31025 ENGINEER KAREN H. GULLEDGE

12-17-13

Karen H. Gulledge



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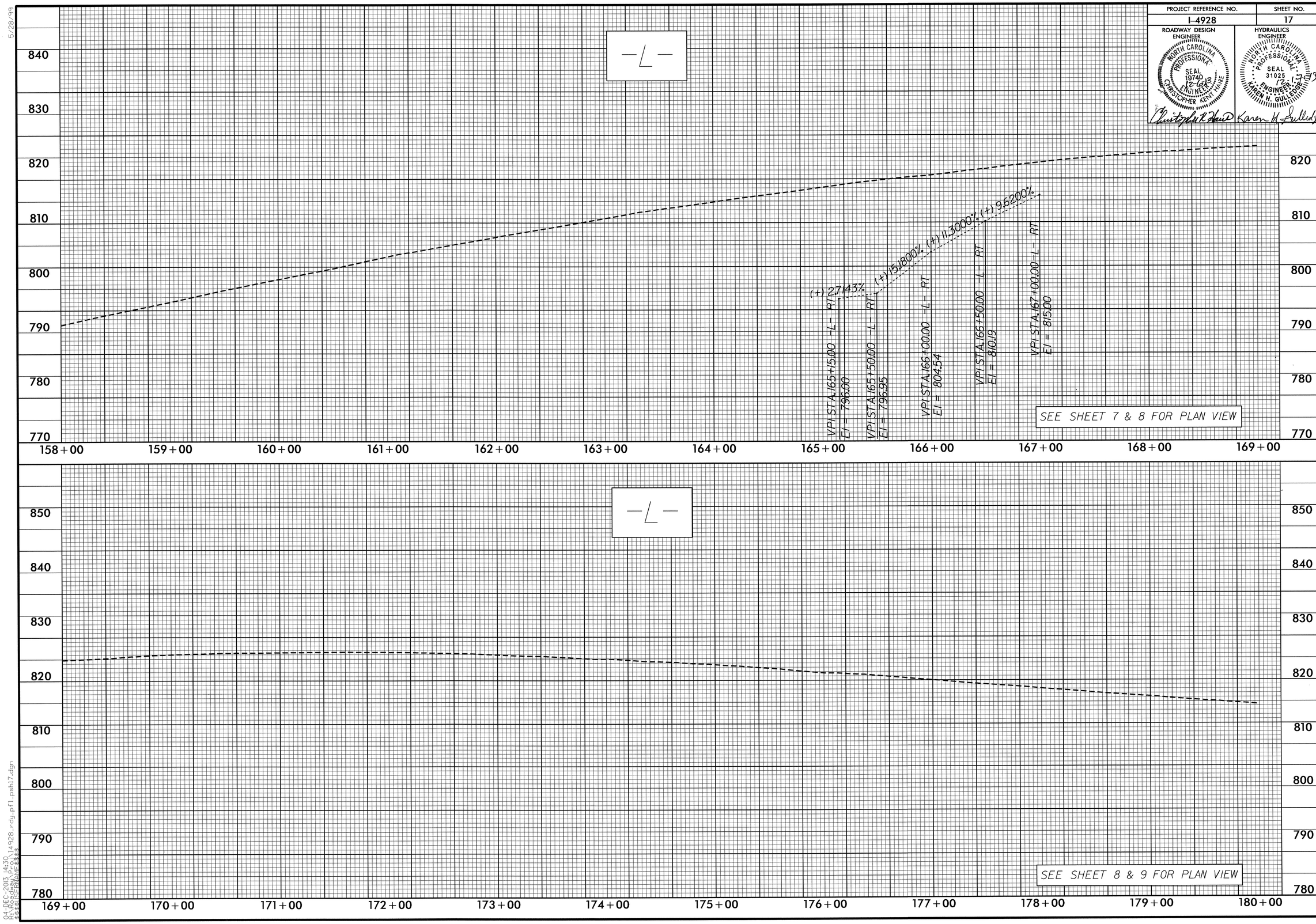
PROJECT REFERENCE NO.	SHEET NO.
I-4928	17

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 19740 ENGINEER CHRISTOPHER KENT THIRE
12-6-13

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 31025 ENGINEER KAREN H. GULLEDGE
12-6-13



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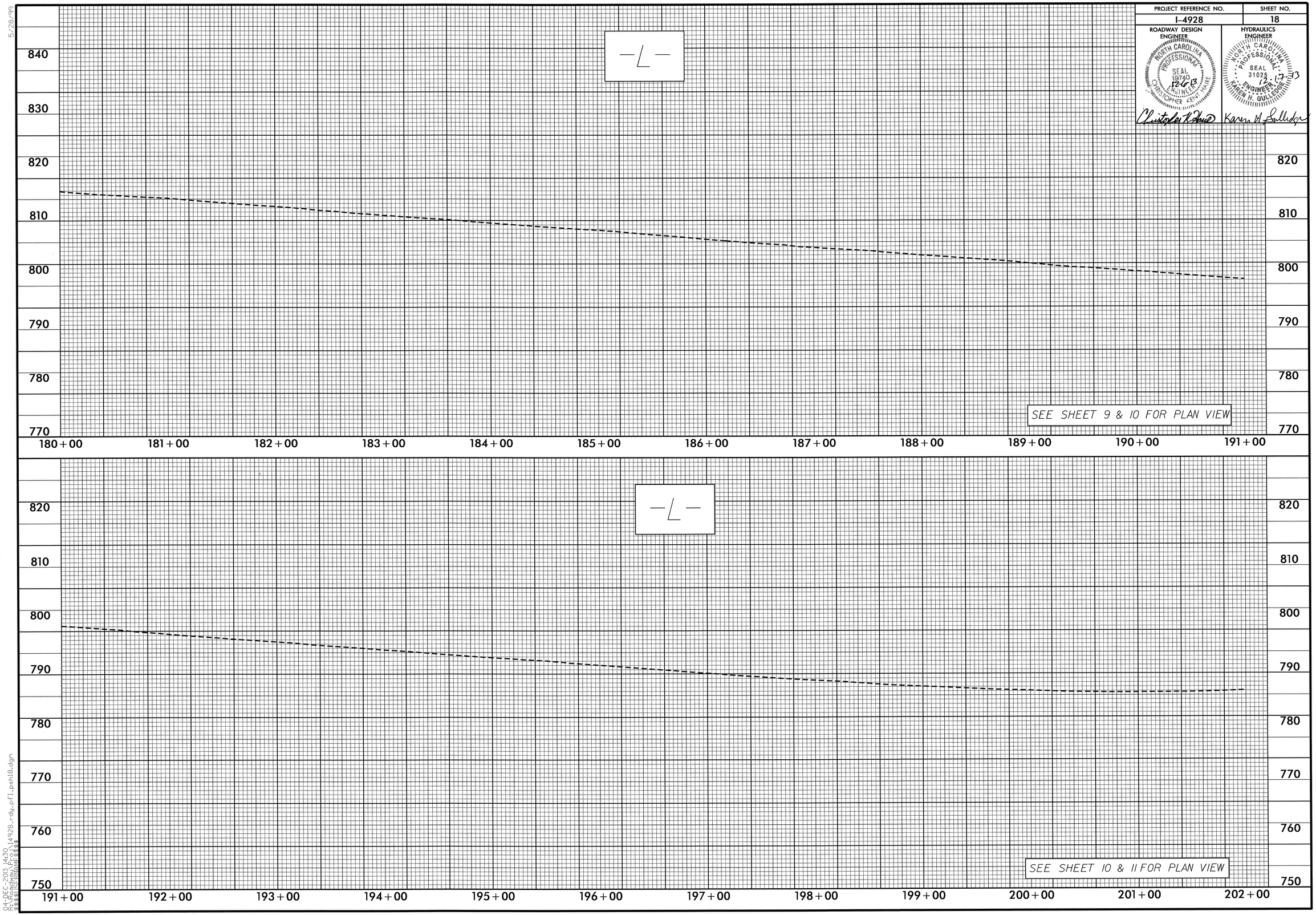
PROJECT REFERENCE NO.	SHEET NO.
I-4928	18

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 19740 ENGINEER CHRISTOPHER KENT HUNT
12-6-13
Christopher K Hunt

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 31025 ENGINEER KAREN H. GULLEDGE
12-17-13
Karen H Gulledge



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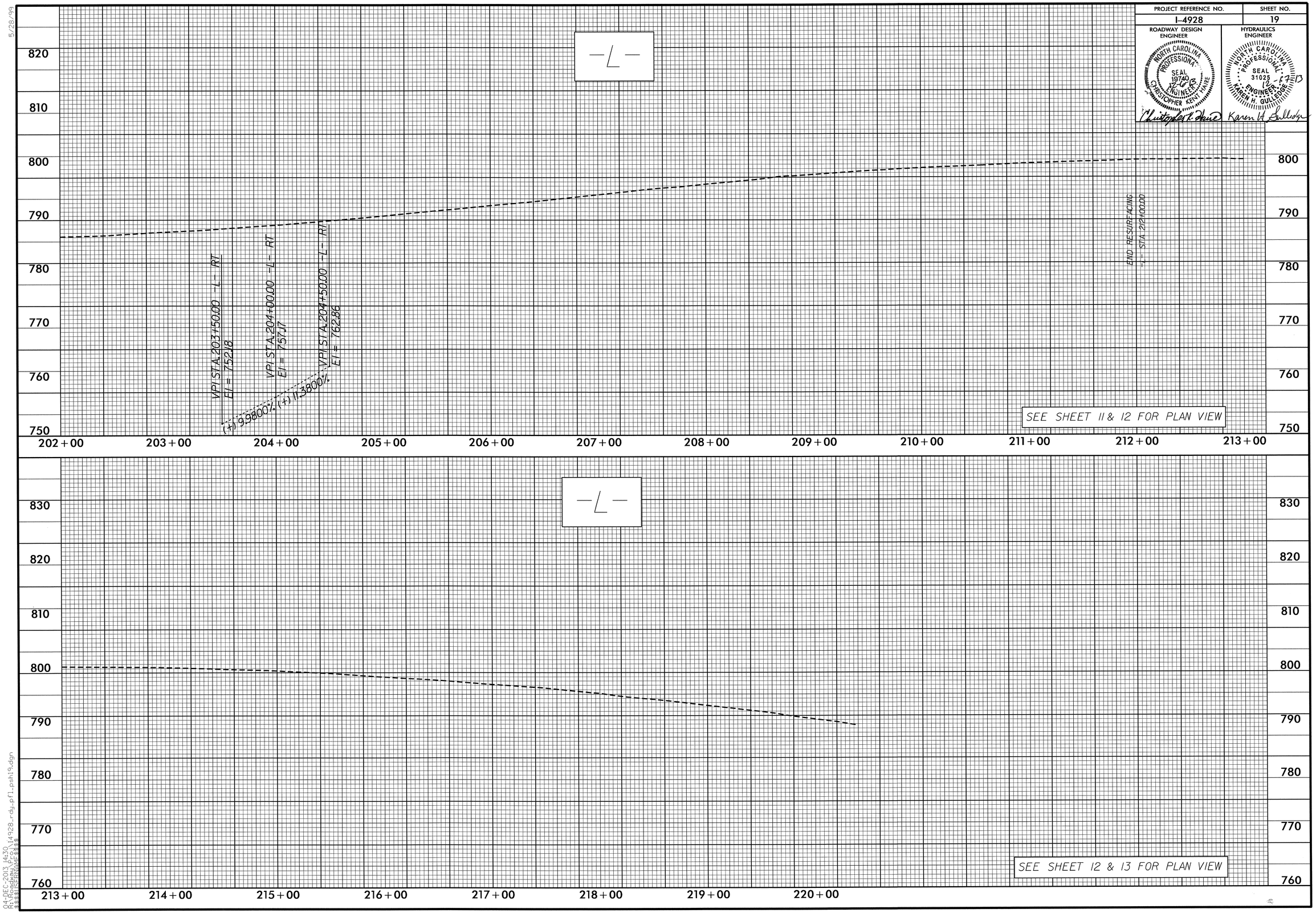
PROJECT REFERENCE NO.	SHEET NO.
I-4928	19

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 19740 ENGINEER CHRISTOPHER KENT MORE
Christopher K. More

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 31025 ENGINEER KAREN H. GULLEDGE
Karen H. Gulledge



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PROJECT REFERENCE NO.	SHEET NO.
I-4928	20

ROADWAY DESIGN ENGINEER

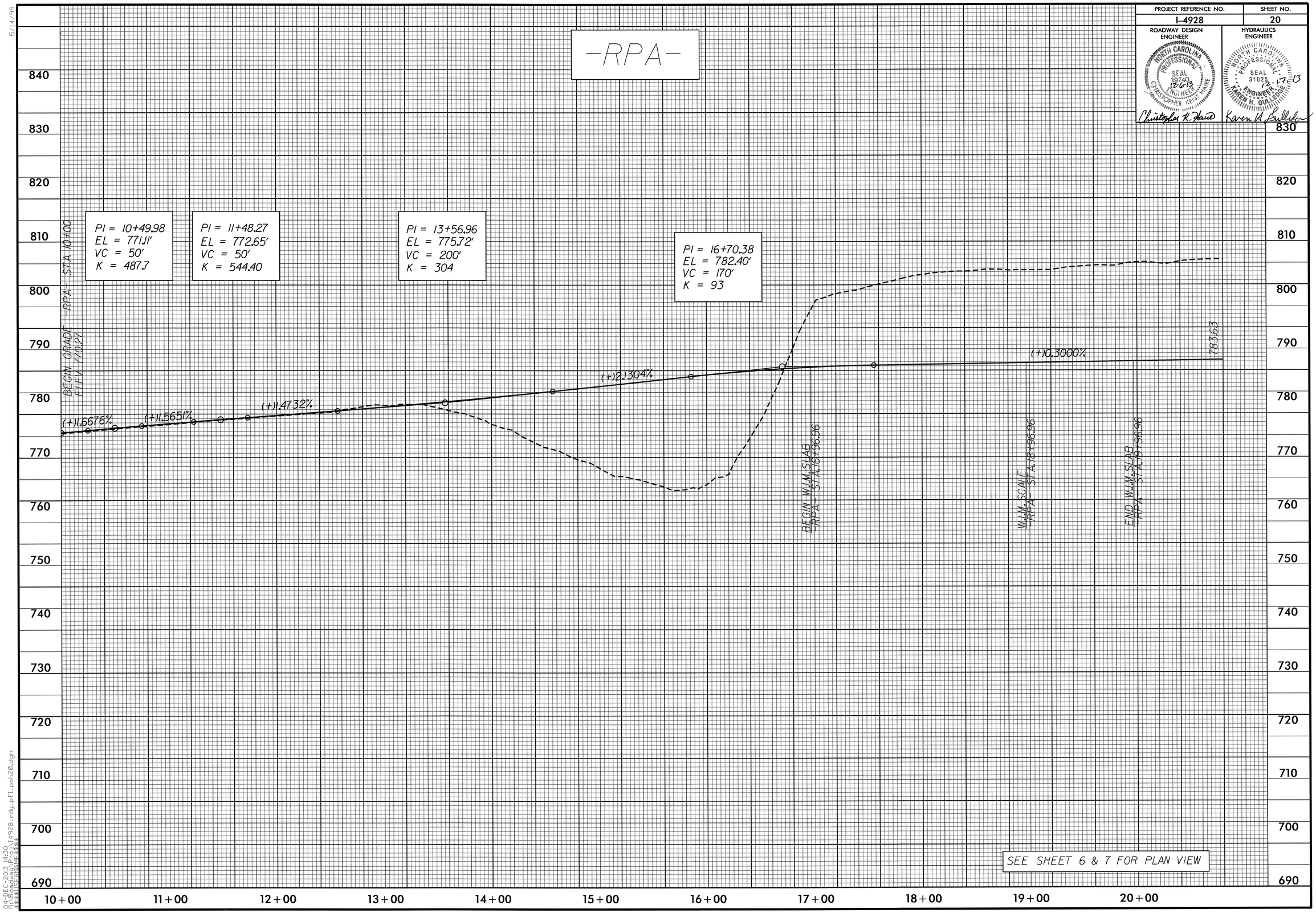
NORTH CAROLINA PROFESSIONAL SEAL 19740 ENGINEER CHRISTOPHER KEITH HARE 12-6-13

Christopher K. Hare

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 31025 ENGINEER KAREN H. GULLEDGE 12-17-13

Karen H. Gulledge



SEE SHEET 6 & 7 FOR PLAN VIEW

5/14/99

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PROJECT REFERENCE NO.	SHEET NO.
I-4928	21

ROADWAY DESIGN ENGINEER

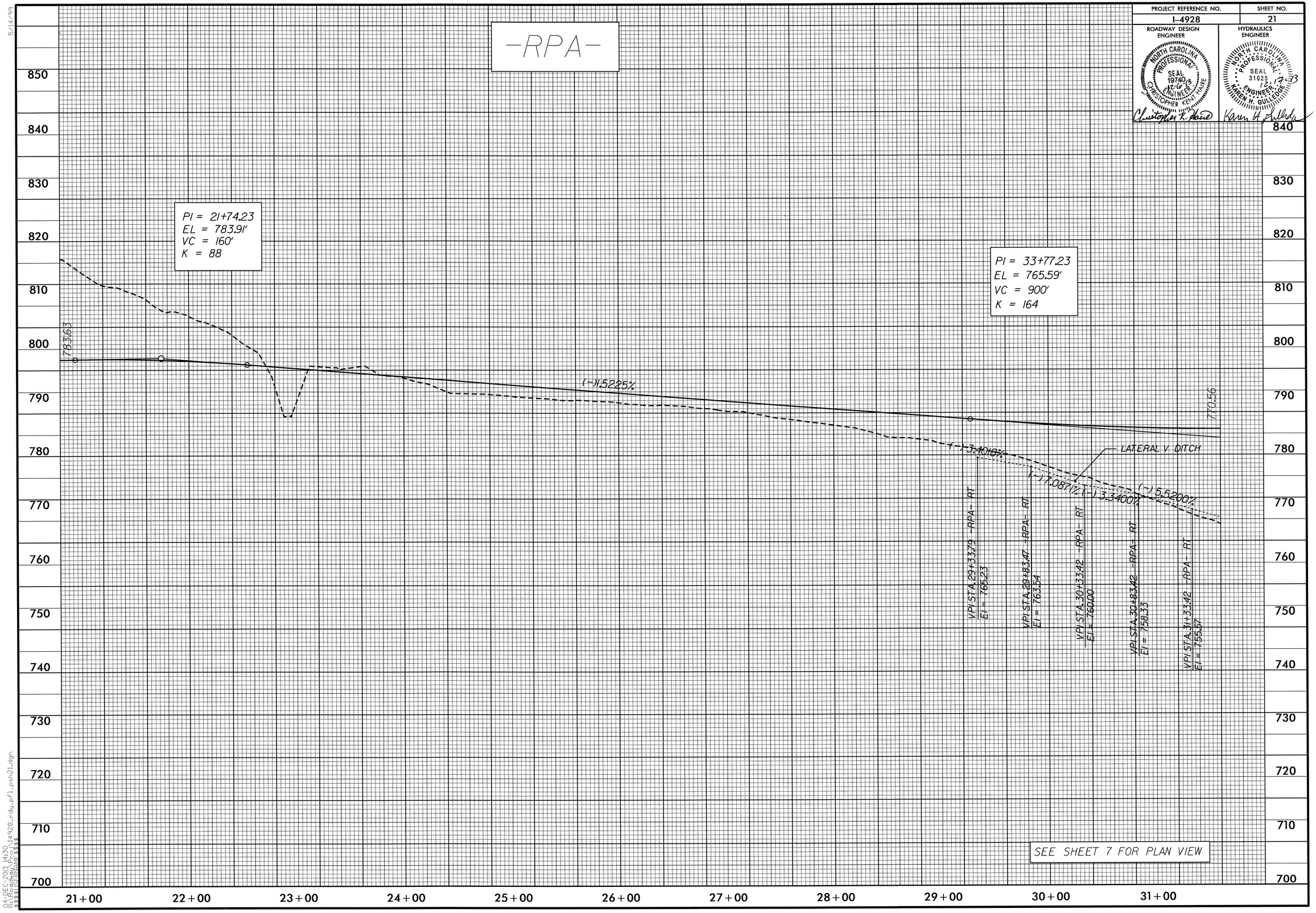
NORTH CAROLINA PROFESSIONAL SEAL 19740 ENGINEER CHRISTOPHER KENT HAIRE 12-6-13

Christopher K. Haire

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 31025 ENGINEER KAREN H. GULLEDGE 12-17-13

Karen H. Gulledge



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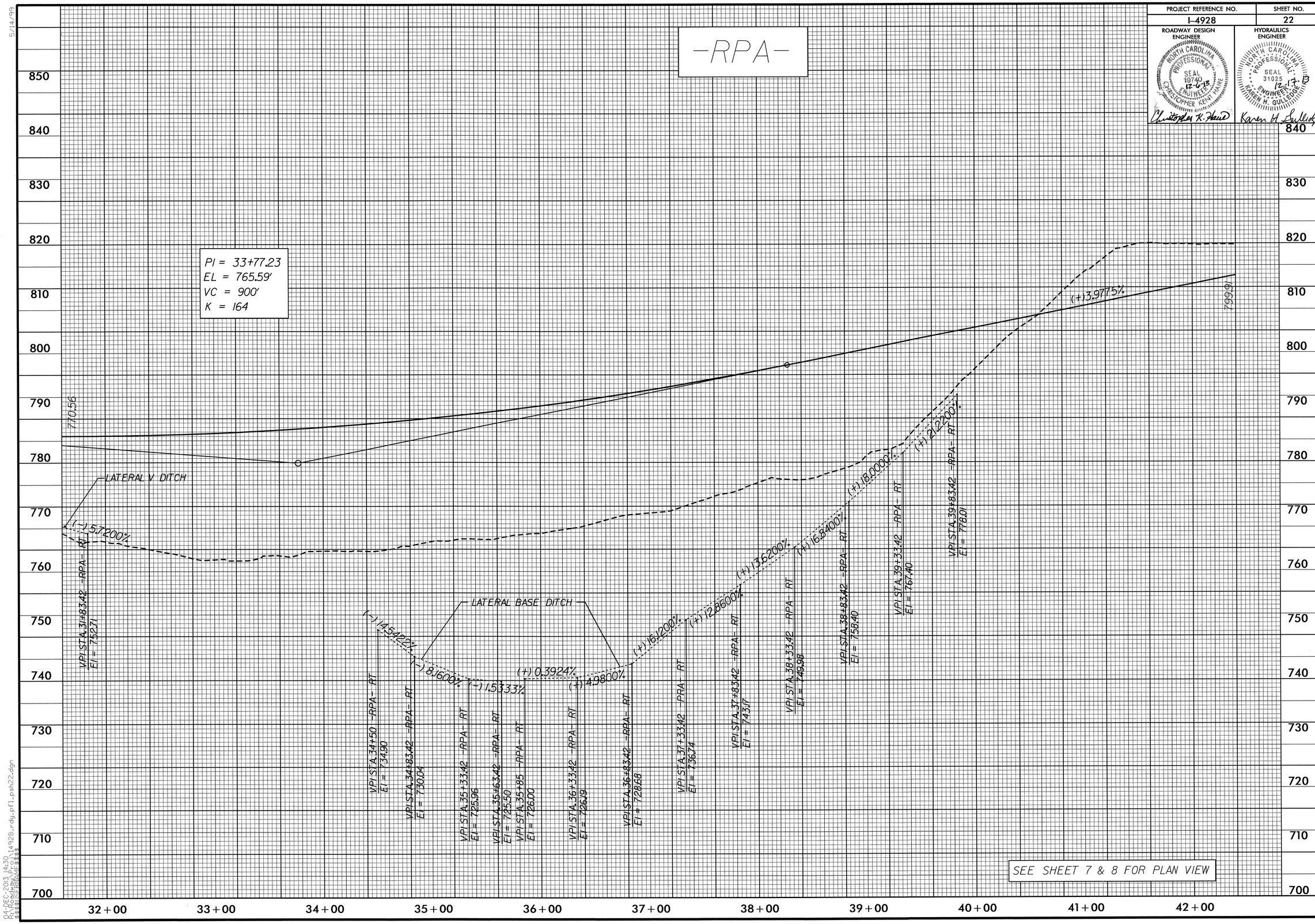
PROJECT REFERENCE NO.	SHEET NO.
I-4928	22

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 19740 ENGINEER CHRISTOPHER KENT HARE 12-6-13
Christopher K. Hare

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 31025 ENGINEER KAREN H. GULLEDGE 12-17-13
Karen H. Gulledge



SEE SHEET 7 & 8 FOR PLAN VIEW

5/14/99

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PROJECT REFERENCE NO.	SHEET NO.
I-4928	23

ROADWAY DESIGN ENGINEER

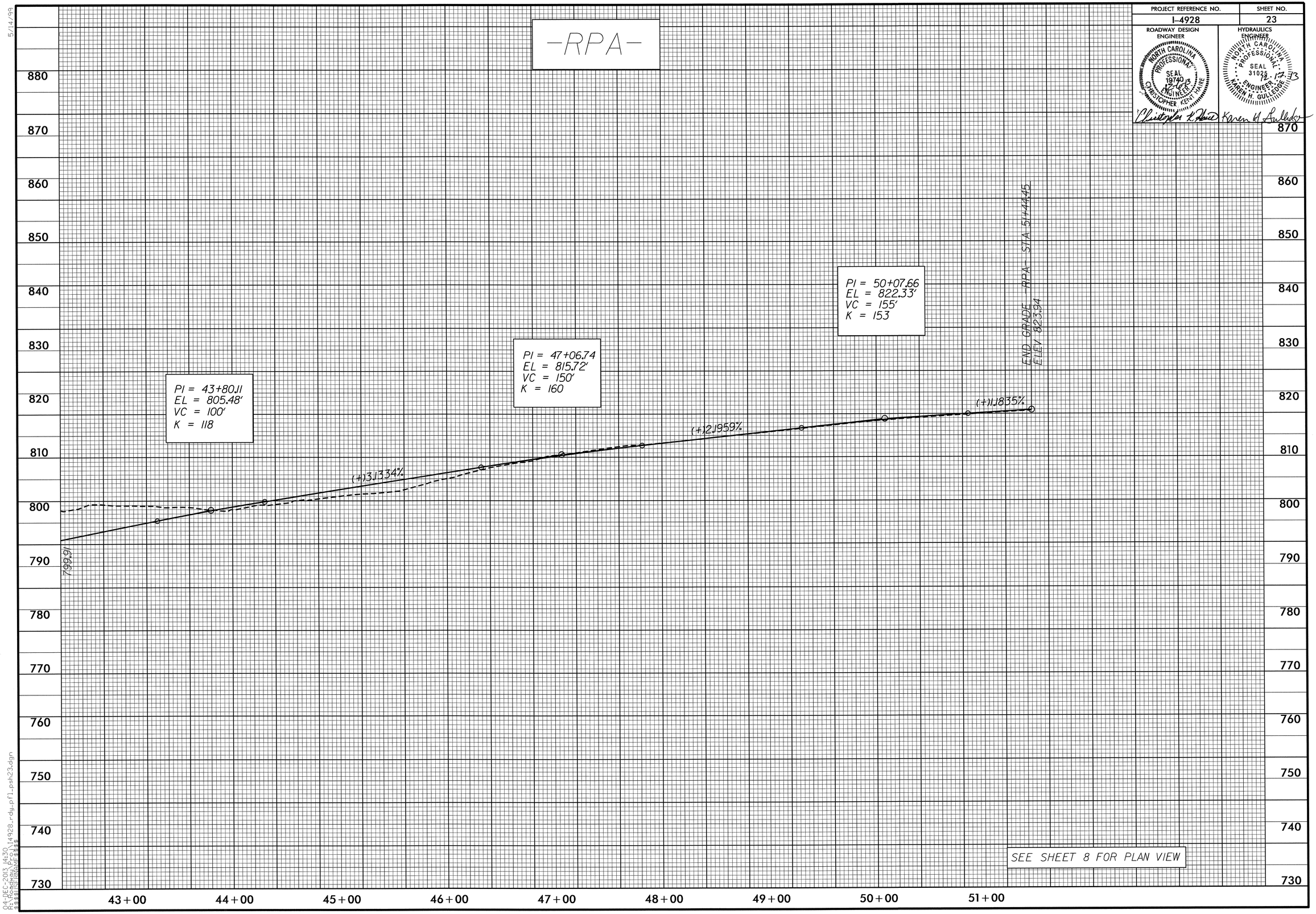
NORTH CAROLINA PROFESSIONAL SEAL 19740 ENGINEER CHRISTOPHER KENT HAIRE 12-17-13

Christopher K. Haire

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 31033 ENGINEER KAREN H. GULLEDGE 12-17-13

Karen H. Gulledge



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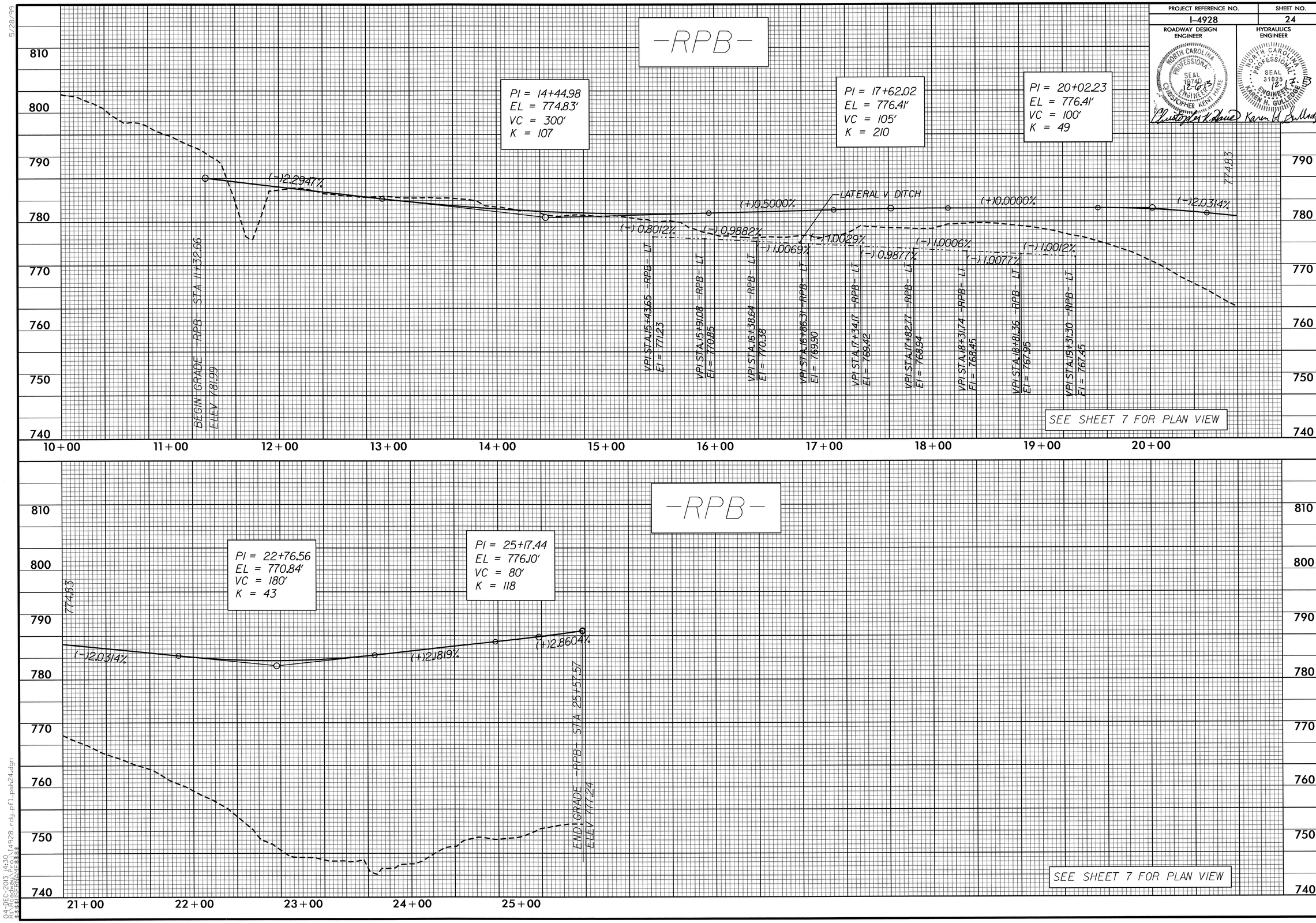
PROJECT REFERENCE NO.	SHEET NO.
I-4928	24

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19740 ENGINEER CHRISTOPHER KENT HAYES 12-6-13

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 31025 ENGINEER KAREN H. GULLEDGE 12-17-13



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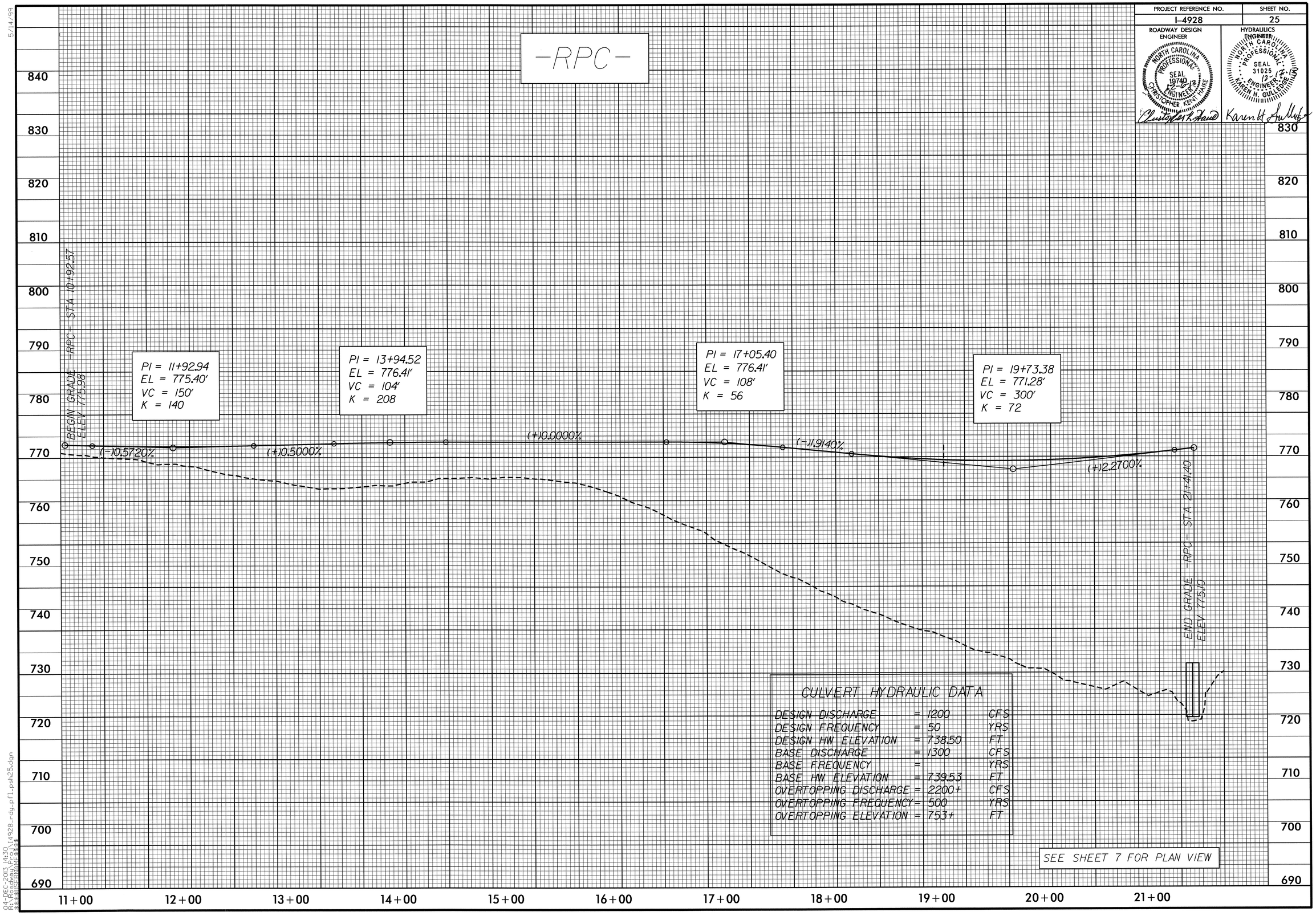
PROJECT REFERENCE NO.	SHEET NO.
I-4928	25

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19740 ENGINEER CHRISTOPHER KENT HARE 12-20-13

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 31025 ENGINEER KAREN H. GULLEDGE 12-17-13



CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	=	1200	CFS
DESIGN FREQUENCY	=	50	YRS
DESIGN HW ELEVATION	=	738.50	FT
BASE DISCHARGE	=	1300	CFS
BASE FREQUENCY	=		YRS
BASE HW ELEVATION	=	739.53	FT
OVERTOPPING DISCHARGE	=	2200+	CFS
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING ELEVATION	=	753+	FT

SEE SHEET 7 FOR PLAN VIEW

5/14/99
04-DEC-2013 14:30
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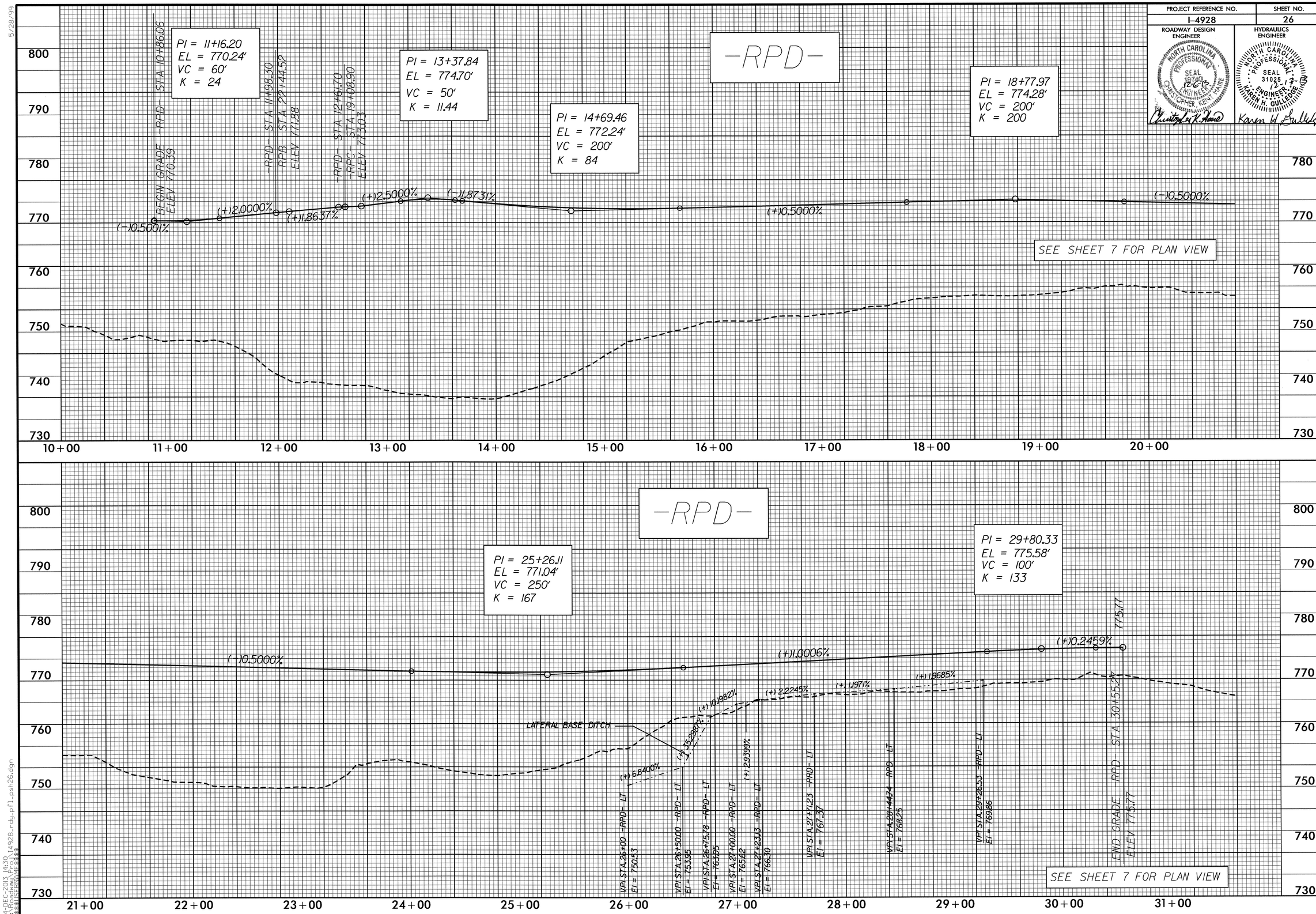
PROJECT REFERENCE NO.	SHEET NO.
I-4928	26

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 16740 ENGINEER CHRISTOPHER KENT HAWK 12-6-12

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 31025 ENGINEER KAREN H. GULLEDGE 12-7-12



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PROJECT REFERENCE NO.	SHEET NO.
I-4928	27

ROADWAY DESIGN ENGINEER

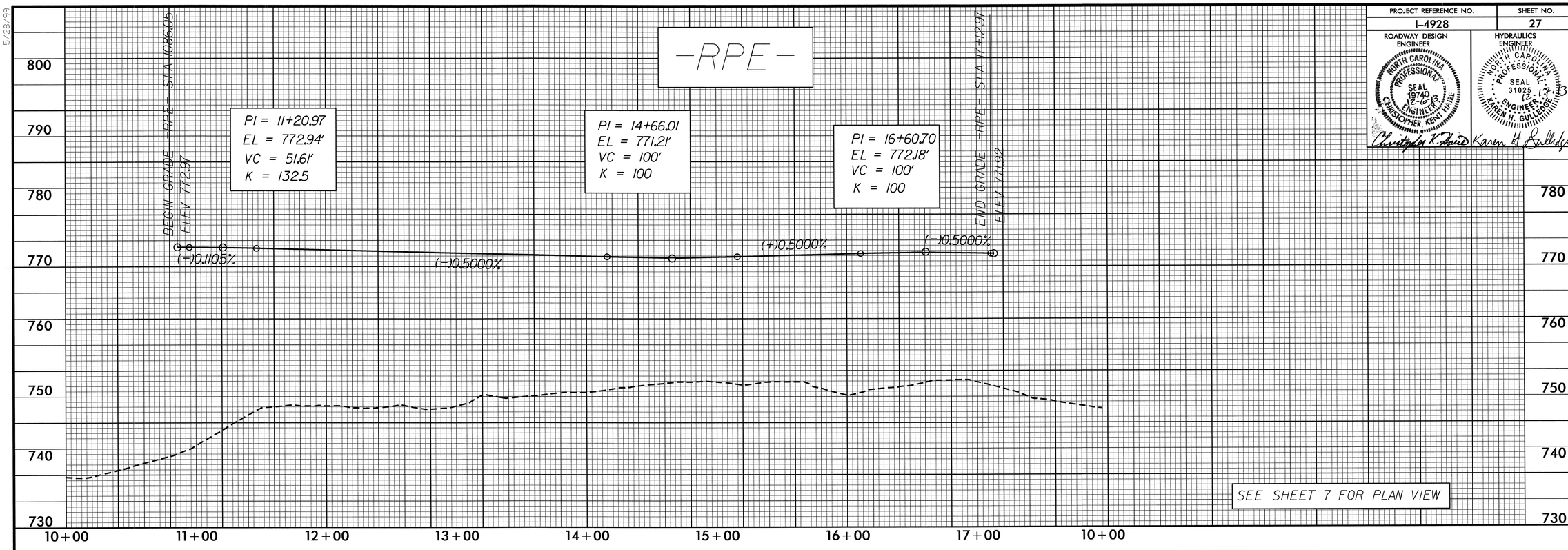
NORTH CAROLINA PROFESSIONAL SEAL 19740 12-18-13 ENGINEER CHRISTOPHER KENT HARR

Christopher K. Harr

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 31025 12-18-13 ENGINEER KAREN H. GULLEDGE

Karen H. Gulledge



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