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09/08/49

TIP PROJECT: R–2248G

CONTRACT: C203590

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

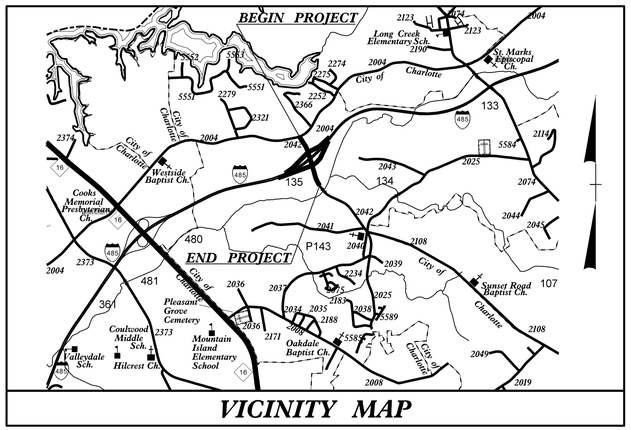
MECKLENBURG COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R–2248G	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34410.1.S27	N/A	PE
34410.2.S27	N/A	R/W
34410.3.S29	N/A	CONST

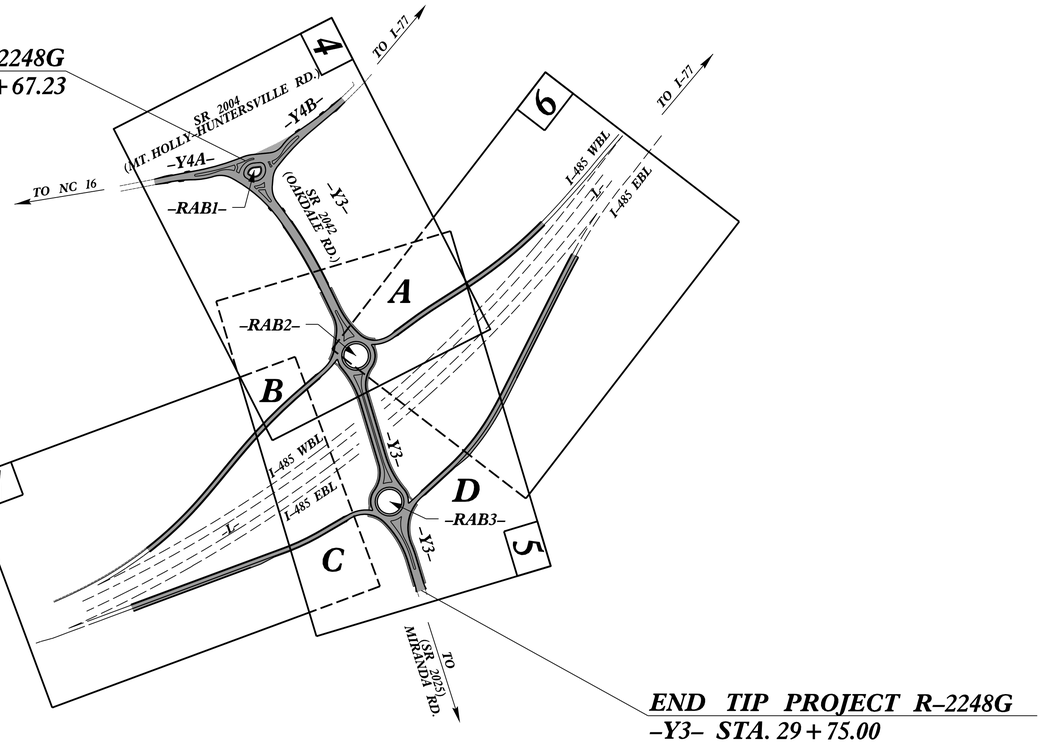
LOCATION: I–485 CHARLOTTE OUTER LOOP INTERCHANGE WITH SR 2042 (OAKDALE ROAD)

TYPE OF WORK: GRADING, DRAINAGE & PAVING



VICINITY MAP

BEGIN TIP PROJECT R–2248G
–Y3– STA. 9+67.23



END TIP PROJECT R–2248G
–Y3– STA. 29+75.00

NAD 83/NA 2011

THIS IS A CONTROLLED–ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.

GRAPHIC SCALES

PLANS: 50 25 0 50 100
PROFILE (HORIZONTAL): 50 25 0 50 100
PROFILE (VERTICAL): 10 5 0 10 20

DESIGN DATA

ADT 2015 = 9,700
ADT 2035 = 14,000
K = 11 %
D = 60 %
T = 5 % *
V = 50 MPH
* TTST = 1% DUAL = 4%
FUNC. CLASS = URBAN COLLECTOR
SUB–REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R–2248G = 0.380 MILES
TOTAL LENGTH TIP PROJECT R–2248G = 0.380 MILES

–Y3– ALIGNMENT USED TO DETERMINE PROJECT LENGTH.

Prepared for the North Carolina Department of Transportation in the Office of:

WETHERILL ENGINEERING
559 JONES FRANKLIN ROAD
SUITE 164
Raleigh, N.C. 27606
License No. F–0377
Bus: 919 851 8077
Fax: 919 851 8107

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: OCTOBER 31, 2014

LETTING DATE: JUNE 16, 2015

NCDOT CONTACT: RON E. McCOLLUM, PE
ROADWAY DESIGN: ENGINEERING COORDINATION SECTION ENGINEER

EDWARD G. WETHERILL, PE
PROJECT ENGINEER

BOB A. MAY, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER Karen Hefner
NORTH CAROLINA PROFESSIONAL SEAL 31025 ENGINEER KAREN HEFNER
P.E. 4/21/2015
SIGNATURE:

ROADWAY DESIGN ENGINEER Bob A. May
NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A MAY
P.E. 4/21/2015
SIGNATURE:

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION ·

4/14/2015
i:\Proj\R2248G_rdy_psh_01_tsh.dgn
USER:jhefner

8/17/99

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
R-2248G	1-A

ROADWAY DESIGN ENGINEER
Bob A. May
NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A MAY
4/21/2015

INDEX OF SHEETS

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
1C-1 THRU 1C-2	SURVEY CONTROL SHEETS
2A-1 THRU 2A-2	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2B-1 THRU 2B-3	ROADWAY DETAILS
2C-1 THRU 2C-2	SPECIAL DETAILS
3B-1	ROADWAY SUMMARIES
3D-1 THRU 3D-3	DRAINAGE SUMMARIES
3G-1	GEOTECHNICAL SUMMARIES
3P-1	PARCEL INDEX SHEET
4 THRU 12	PLAN & PROFILE SHEETS
TMP-1 THRU TMP-15	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-7	PAVEMENT MARKING PLANS
E-1 THRU E-3	ELECTRICAL PLANS
EC-1 THRU EC-11	EROSION CONTROL PLANS
RF-1	REFORESTATION PLANS
SIGN-1 THRU SIGN-15	SIGNING PLANS
UC-1 THRU UC-4	UTILITY CONSTRUCTION PLANS
UO-1 THRU UO-3	UTILITIES BY OTHERS PLANS
X-1A	CROSS-SECTION INDEX
X-1B	CROSS SECTION SUMMARY SHEET
X-1 THRU X-31	CROSS SECTIONS

LIST OF STANDARD DRAWINGS

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
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
225.06	Method of Grading Sight Distance at Intersections
225.09	Guide for Shoulder and Ditch Transition at Grade Separations
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 7 - CONCRETE PAVEMENTS AND SHOULDERS	
700.05	Tying Proposed Pavement to Existing
DIVISION 8 - INCIDENTALS	
815.02	Subsurface Drain
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
840.20	Frames and Wide Slot Flat Grates
840.22	Frames and Wide Slot Sag Grates
840.24	Frames and Narrow Slot Sag Grates
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.45	Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
848.01	Concrete Sidewalk
848.03	Driveway Turnout - Drop Curb Type
848.04	Street Turnout
848.05	Curb Ramp - Proposed Curb & Gutter
852.01	Concrete Islands
862.01	Guardrail Placement
862.02	Guardrail Installation
876.02	Guide for Rip Rap at Pipe Outlets

GENERAL NOTES

GENERAL NOTES: 2012 SPECIFICATIONS
EFFECTIVE: 01-17-2012
REVISED: 10-31-2014

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 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:

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

SIDE ROADS:

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

SUBSURFACE DRAINS:

SUBSURFACE DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.02 AT LOCATIONS DIRECTED BY THE ENGINEER.

DRIVEWAYS:

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.03 AT LOCATIONS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER.

STREET TURNOUT:

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

GUARDRAIL:

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

TEMPORARY SHORING:

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

SUBSURFACE PLANS:

NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE:

CITY OF CHARLOTTE, PIEDMONT NATURAL GAS, AT&T, DUKE ENERGY.

TIME WARNER CABLE, AND NCDOT.

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

CURB RAMPS

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

4/14/2015
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USER:tharper

12/05/11

PROJECT REFERENCE NO.	SHEET NO.
R-2248G	1-B

Note: Not to Scale

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

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

8/17/99

SURVEY CONTROL SHEET –Final–

PROJECT REFERENCE NO.	SHEET NO.
R-2248G	IC-1
Location and Surveys	

BL1

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
18	BL-18	580873.8120	1428480.3640	692.60	937+33.35	84.69 LT
19	BL-19	581183.2380	1429038.9910	699.19	943+82.44	96.85 LT
E12	BL-12	581856.9250	1429707.0330	691.84	953+49.10	250.49 LT
20	BL-20	582204.0610	1430256.3360	703.44	960+06.68	117.74 LT
21	BL-21	582741.3530	1430728.3350	695.92	967+31.37	94.74 LT

BL2

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
17	BL-17	580709.7170	1428553.4840	696.95	937+31.39	94.95 RT
16	BL-16	580992.2270	1429115.0420	697.51	943+49.39	106.07 RT
E11	BL-11	581245.8060	1429892.4680	679.74	951+04.73	338.90 RT
24	BL-24	581731.0880	1430359.6940	698.76	957+41.95	285.18 RT
23	BL-23	582125.8480	1430456.5500	709.64	960+83.72	83.02 RT
22	BL-22	582626.9110	1430865.8530	697.50	967+24.68	84.05 RT

BY3

POINT	DESC.	NORTH	EAST	ELEVATION	Y3 STATION	OFFSET
1	BY3-01	582750.5370	1429222.6500	728.92	OUTSIDE PROJECT LIMITS	
13	BL-13	582476.9030	1429409.8330	716.16	12+71.74	28.50 LT
12	BL-12	581856.9250	1429707.0330	691.84	19+53.79	29.30 LT
11	BL-11	581245.8060	1429892.4680	679.74	25+92.42	31.64 LT
10	BL-10	580582.8400	1430097.5980	667.01	OUTSIDE PROJECT LIMITS	
31	M031	580270.6930	1430195.3830	663.19	OUTSIDE PROJECT LIMITS	
5	BY3-05	580276.1010	1430228.8240	662.36	OUTSIDE PROJECT LIMITS	

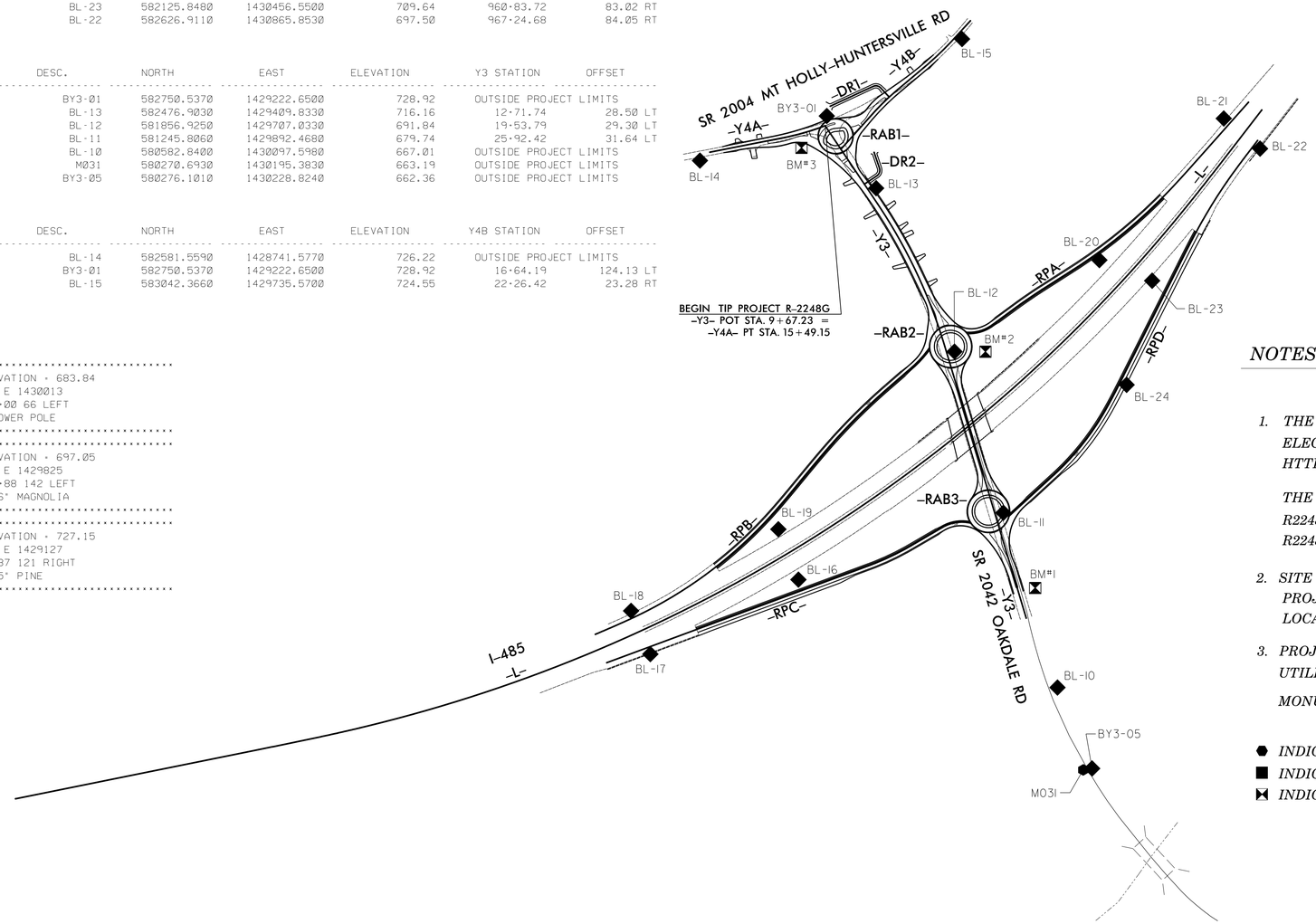
BY4

POINT	DESC.	NORTH	EAST	ELEVATION	Y4B STATION	OFFSET
14	BL-14	582581.5590	1428741.5770	726.22	OUTSIDE PROJECT LIMITS	
E1	BY3-01	582750.5370	1429222.6500	728.92	16+64.19	124.13 LT
15	BL-15	583042.3660	1429735.5700	724.55	22+26.42	23.28 RT

BM1 ELEVATION = 683.84
N 580961 E 1430013
Y3 STATION 29+00 66 LEFT
RR SPIKE IN POWER POLE

BM2 ELEVATION = 697.05
N 581857 E 1429825
Y3 STATION 19+88 142 LEFT
RR SPIKE IN 36" MAGNOLIA

BM3 ELEVATION = 727.15
N 582630 E 1429127
Y3 STATION 9+87 121 RIGHT
RR SPIKE IN 15" PINE



NC GRID
NAD 83 NA 2011

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "M-031"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 580270.693(ft) EASTING: 1430195.383(ft)
ELEVATION: 663.19(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999844
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "M-031" TO -Y3- STATION 9+67.23 IS
N 21°50'00.9" W 2632.005
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:
   R2248G_LS_CONTROL.TXT
   R2248G_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*

NOTE: DRAWING NOT TO SCALE

4/14/2015
...\R2248G_rdy_psh_01c-1.dgn
User:Peter

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2248G	1C-2
Location and Surveys	

SURVEY CONTROL SHEET *–Final–*

L

TYPE	STATION	NORTH	EAST
POT	912+73.07	580161.2368	1426146.1224
TS	922+11.54	580347.2468	1427065.9674
SC	926+05.24	580429.6814	1427450.9194
CS	963+14.35	582356.0107	1430545.2498
ST	967+08.05	582665.0483	1430789.1335
POT	968+44.90	582773.4354	1430872.6773

Y3

TYPE	STATION	NORTH	EAST
POT	9+67.23	582713.8989	1429216.5092
PC	13+24.12	582417.5299	1429415.3454
PT	19+24.10	581876.9633	1429670.4523
POT	30+00.00	580846.2798	1429979.0767

Y4A

TYPE	STATION	NORTH	EAST
POT	10+00.00	582594.3365	1428681.1854
PC	13+78.76	582667.1096	1429052.8892
PT	15+49.15	582713.8989	1429216.5092

Y4B

TYPE	STATION	NORTH	EAST
POT	16+06.35	582624.5931	1429276.4251
PC	17+88.11	582759.8872	1429397.7976
PT	19+18.61	582850.6061	1429491.4623
PC	20+46.61	582932.9934	1429589.4231
PT	22+11.24	583046.8736	1429708.1445
POT	22+99.30	583111.8536	1429767.5820

RAB1

TYPE	STATION	NORTH	EAST
PC	10+00.00	582729.6551	1429220.8505
PT	14+14.69	582729.6552	1429220.8506

RAB2

TYPE	STATION	NORTH	EAST
PC	10+00.00	581946.7639	1429730.5227
PT	15+02.65	581946.7638	1429730.5229

RAB3

TYPE	STATION	NORTH	EAST
PC	10+00.00	581327.8321	1429812.9609
PT	15+02.65	581327.8322	1429812.9611

DR1

TYPE	STATION	NORTH	EAST
POT	9+76.45	582822.4417	1429459.4906
PC	10+23.86	582857.2885	1429427.3463
PT	10+55.35	582863.0217	1429398.4614
POT	12+34.33	582787.7821	1429236.0552

DR2

TYPE	STATION	NORTH	EAST
POT	10+00.00	582492.1200	1429365.3024
PC	10+57.26	582524.0240	1429412.8559
PT	10+89.91	582552.7928	1429422.6101
POT	11+53.17	582612.7196	1429402.3461

RPA

TYPE	STATION	NORTH	EAST
POT	10+00.00	582803.1071	1430822.2283
TS	12+82.02	582592.2952	1430634.8984
SC	14+78.87	582447.3631	1430501.7219
PT	19+23.57	582167.8663	1430157.0494
PC	20+63.57	582092.5064	1430039.0627
PT	21+83.08	582024.8800	1429940.5519
PC	22+95.08	581958.4625	1429850.3704
PT	24+00.16	581930.5474	1429751.3988

RPB

TYPE	STATION	NORTH	EAST
TS	10+00.00	580784.8854	1428345.0272
SC	11+96.85	580865.5220	1428524.5690
CS	17+88.33	581217.9734	1428995.5755
SRS	19+85.18	581367.4759	1429123.5854
SC	21+82.03	581517.7219	1429250.7458
PT	24+69.14	581718.9956	1429455.2318
PC	25+89.14	581797.6757	1429545.8378
PT	26+89.58	581872.3184	1429612.6599

RPC

TYPE	STATION	NORTH	EAST
POT	10+00.00	580677.1260	1428388.4063
PC	20+62.31	581046.2191	1429384.5400
PT	22+35.49	581120.1115	1429540.9171
PC	23+75.49	581190.6462	1429661.8503
PT	24+87.06	581206.4760	1429769.5746

RPD

TYPE	STATION	NORTH	EAST
TS	10+00.00	582657.7178	1430856.8025
SC	11+96.85	582499.7945	1430739.3244
CS	13+66.33	582356.3573	1430649.1485
ST	15+63.18	582182.0369	1430557.7522
TS	20+29.67	581765.2522	1430348.2344
SC	22+26.52	581592.4435	1430254.1400
PT	24+90.62	581390.4024	1430085.2430
POT	27+23.25	581233.1220	1429913.8413

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "M-031" WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 580270.693(ft) EASTING: 1430195.383(ft) ELEVATION: 663.19(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999844
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "M-031" TO -Y3- STATION 9+67.23 IS N 21°50'00.9" W 2632.005
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

PERMANENT EASEMENT

ALIGN	STATION	OFFSET	NORTH	EAST
Y3	11+63.57	-69.57	582589.6078	1429383.6689
Y3	11+66.00	-81.27	582594.1106	1429394.7420
Y3	11+75.69	-68.95	582579.1974	1429389.9062
Y3	11+77.75	-78.83	582582.9938	1429399.2622

PERMANENT EASEMENT

ALIGN	STATION	OFFSET	NORTH	EAST
Y4A	11+70.00	-29.83	582656.2762	1428842.2861
Y4A	11+70.00	-38.00	582664.2914	1428840.7169
Y4A	12+20.00	-38.00	582673.8982	1428889.7853
Y4A	12+20.00	-30.12	582666.1619	1428891.2999
Y4A	13+41.48	-46.47	582705.5509	1429007.3746
Y4A	13+44.36	-30.89	582690.8171	1429013.1939

PERMANENT EASEMENT

ALIGN	STATION	OFFSET	NORTH	EAST
Y4B	16+77.29	-159.12	582783.6532	1429205.3523
Y4B	16+78.05	-161.96	582786.1154	1429203.7458
Y4B	16+84.35	-155.56	582786.5311	1429212.7167
Y4B	16+84.86	-160.12	582789.9558	1429209.6629
Y4B	17+96.58	-82.51	582821.8219	1429342.5697
Y4B	17+99.22	-65.31	582812.3045	1429357.1751
Y4B	18+02.52	-95.97	582835.7246	1429337.0684
Y4B	18+05.01	-77.99	582825.4904	1429352.1002
Y4B	18+40.00	-52.68	582834.8371	1429396.3178
Y4B	18+75.00	-115.00	582906.2084	1429380.6916
Y4B	18+88.63	62.84	582784.1780	1429510.8081
Y4B	18+90.95	43.97	582799.6941	1429499.8507
Y4B	19+00.00	-39.43	582868.1466	1429451.3623
Y4B	19+00.00	-97.00	582911.4567	1429413.4322
Y4B	19+01.43	64.16	582791.0947	1429520.6126
Y4B	19+03.62	44.01	582807.6414	1429508.9359

SEE SHEET 1C-1 FOR NOTES.

4/14/2015
I:\2248G_R2248G_rdy.psh.01c-2.dgn
USER:peter

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2248G	2A-1

ROADWAY DESIGN ENGINEER
Bob A. May
NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY
4/21/2015

PAVEMENT DESIGN ENGINEER
Clark Morrison
NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON
4/22/2015

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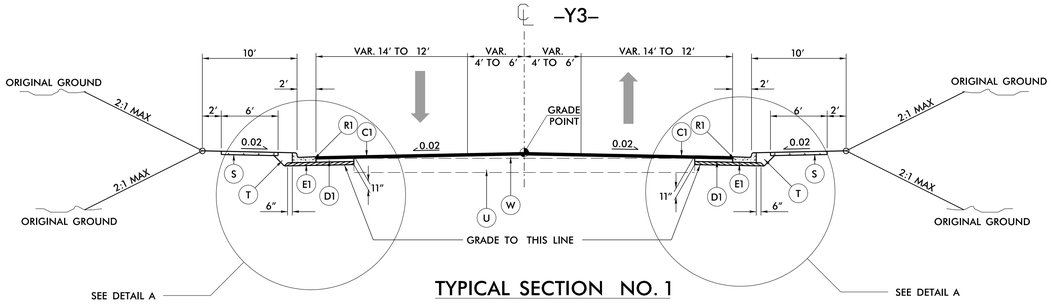
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

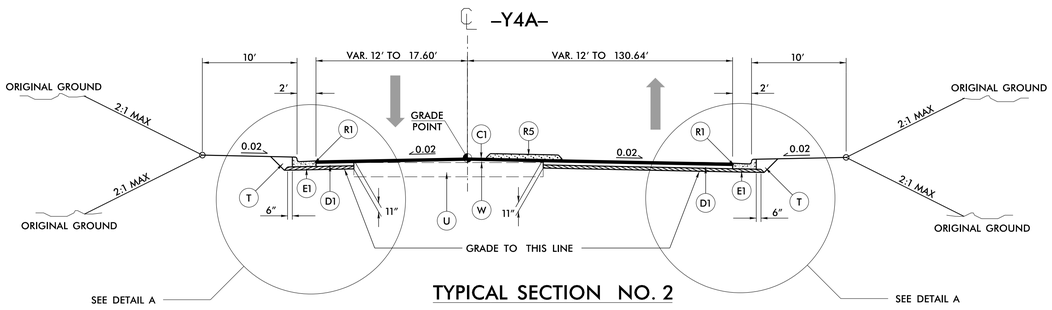
PAVEMENT SCHEDULE

(FINAL)

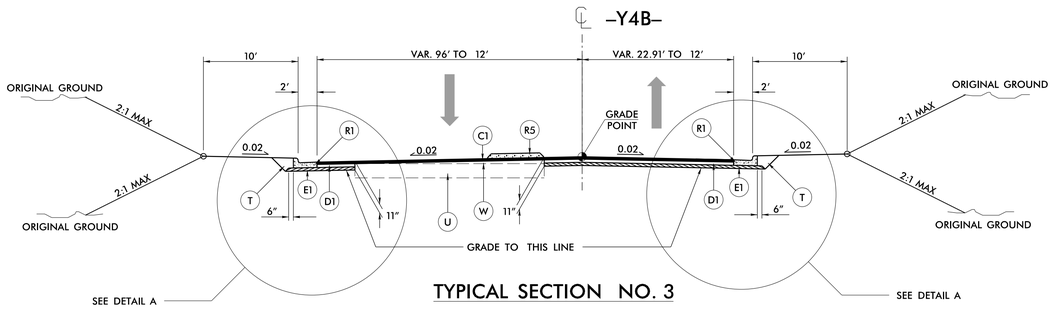
C1	PROP. APPROX. 3″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	J2	VARIABLE DEPTH AGGREGATE BASE COURSE.	R5	5″ MONOLITHIC ISLAND, KEYED IN
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2″ IN DEPTH.	K	BASE TO BE TREATED WITH LIME TO A DEPTH OF 8″, AT A RATE OF 20 LBS. PER SQ. YD. AS DIRECTED BY THE ENGINEER.	R6	SHOULDER BERM GUTTER (SBG)
D1	PROP. APPROX. 4″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.		BASE TO BE TREATED WITH CEMENT TO A DEPTH OF 7″, AT A RATE OF 55 LBS. PER SQ. YD. AS DIRECTED BY THE ENGINEER.	S	4″ CONCRETE SIDEWALK
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½″ IN DEPTH OR GREATER THAN 4″ IN DEPTH.	R1	2′-6″ CONCRETE CURB AND GUTTER.	T	EARTH MATERIAL.
E1	PROP. APPROX. 4″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R2	1′-6″ CONCRETE CURB AND GUTTER.	U	EXISTING PAVEMENT.
E2	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.	R3	12″ JOINTED CONCRETE APRON	W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL)
J1	PROP. 8″ AGGREGATE BASE COURSE.	R4	8″ X 18″ CONCRETE CURB	NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.	



TYPICAL SECTION NO. 1



TYPICAL SECTION NO. 2



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 1

–Y3– STA. 10+87.67 TO –Y3– STA. 18+54.17 *
–Y3– STA. 20+08.23 TO –Y3– STA. 24+93.84 **
–Y3– STA. 26+48.23 TO –Y3– STA. 29+75.00

* PLACE 3″ OVERLAY ALONG –Y3–, AS SHOWN ON THE PLANS, AT THE FOLLOWING LOCATIONS:

–Y3– STA. 13+25.00 TO –Y3– STA. 16+00.00

** PLACE 3″ OVERLAY ALONG –Y3–, WITH NEW CURB AND GUTTER, AS SHOWN ON THE PLANS, AT THE FOLLOWING LOCATIONS:

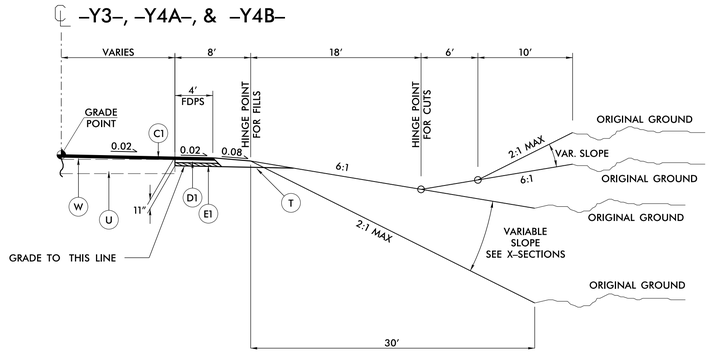
–Y3– STA. 21+10.00 TO –Y3– STA. 23+90.00

USE TYPICAL SECTION NO. 2

–Y4A– STA. 11+50.00 TO –Y4A– STA. 15+30.91

USE TYPICAL SECTION NO. 3

–Y4B– STA. 16+74.84 TO –Y4B– STA. 21+10.00

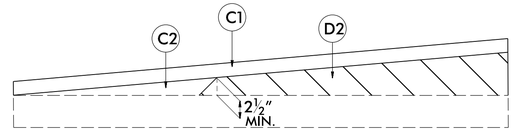


DETAIL A

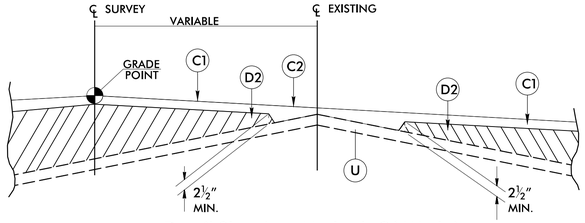
FDPS = FULL DEPTH PAVED SHOULDER

USE DETAIL A IN CONJUNCTION WITH TYPICAL SECTION NO. 1, NO. 2, & NO. 3

–Y3– STA. 13+00.00 TO –Y3– STA. 15+95.32 LT
–Y3– STA. 13+00.00 TO –Y3– STA. 15+95.32 RT
–Y4A– STA. 11+50.00 TO –Y4A– STA. 12+25.22 LT
–Y4A– STA. 11+50.00 TO –Y4A– STA. 12+00.00 RT
–Y4B– STA. 20+60.00 TO –Y4A– STA. 21+10.00 LT & RT



Wedging Detail For Resurfacing



Detail Showing Method Of Wedging

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2248G	2A-2

ROADWAY DESIGN ENGINEER
Bob A. May
NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY
4/21/2015

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Clark Harrison
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4/22/2015

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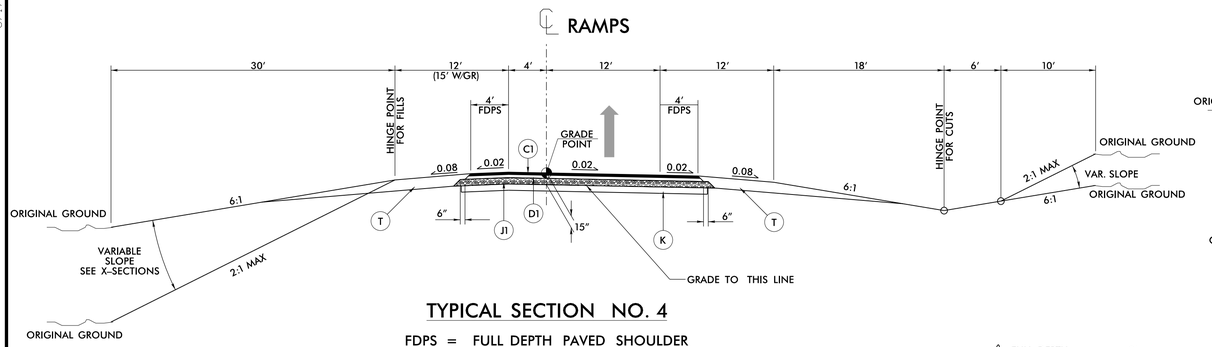
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

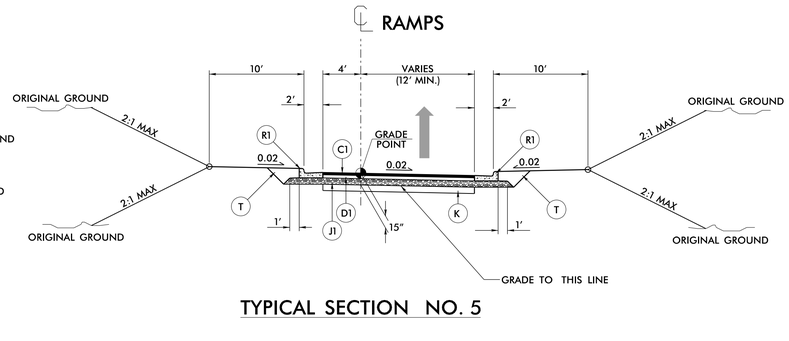


TYPICAL SECTION NO. 4

FDPS = FULL DEPTH PAVED SHOULDER

USE TYPICAL SECTION NO. 4

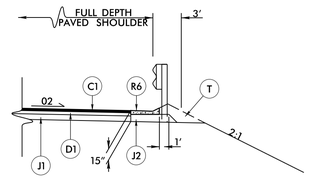
–RPA– STA. 14+86.00 TO –RPA– STA. 22+70.10
–RPB– STA. 15+27.00 TO –RPB– STA. 25+64.16
–RPC– STA. 13+63.30 TO –RPC– STA. 23+50.51
–RPD– STA. 14+18.00 TO –RPD– STA. 26+30.08



TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5

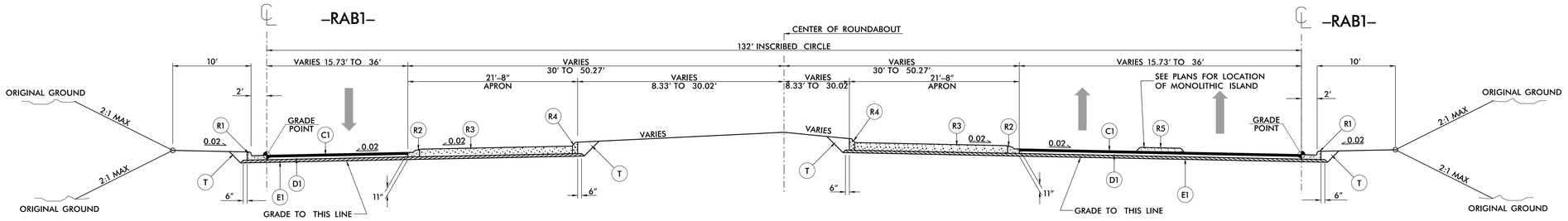
–RPA– STA. 22+70.10 TO –RPA– STA. 24+00.16
–RPB– STA. 25+64.16 TO –RPB– STA. 26+89.58
–RPC– STA. 23+50.51 TO –RPC– STA. 24+87.06
–RPD– STA. 26+30.08 TO –RPD– STA. 27+23.25



PARTIAL TYPICAL SECTION NO. 4A

USE PARTIAL TYPICAL SECTION NO. 4A IN CONJUNCTION WITH TYPICAL SECTION NOS. 4 & 5 AS FOLLOWS:
–RPC– STA. 13+63.30 TO –RPC– STA. 19+00.00 RT.
–RPD– STA. 14+18.00 TO –RPD– STA. 20+00.00 LT.

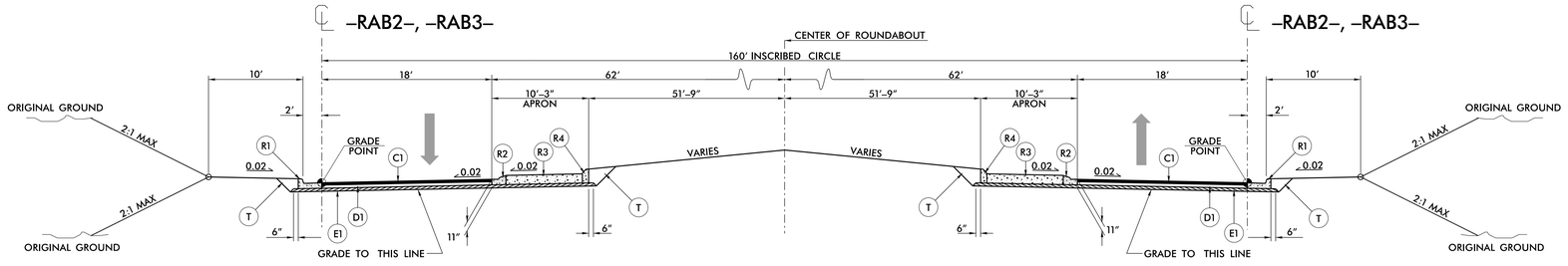
PAVEMENT SCHEDULE (PRELIMINARY)	
C1	3″ S9.5B
C2	VAR. S9.5B
D1	4″ I19.0B
D2	VAR. I19.0B
E1	4″ B25.0B
E2	VAR. B25.0B
J1	8″ ABC
J2	VAR. DEPTH ABC
K	SUBGRADE STABIL.
R1	2′-6″ C & G
R2	1′-6″ C & G
R3	12″ CONC. APRON
R4	8″x18″ CURB
R5	5″ MCI
R6	SBG
S	4″ SW
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W	WEDGING



TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO. 6

–RAB1– STA. 10+00.00 TO –RAB1– STA. 14+14.69

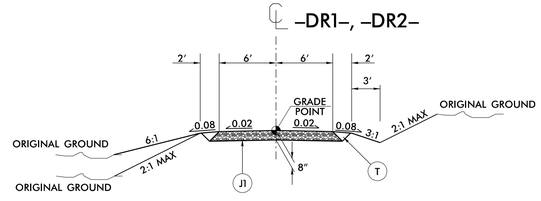


TYPICAL SECTION NO. 7

USE TYPICAL SECTION NO. 7

–RAB2– STA. 10+00.00 TO –RAB2– STA. 15+02.65
–RAB3– STA. 10+00.00 TO –RAB3– STA. 15+02.65

NOTE: EXISTING ASPHALT PAVEMENT IS TO BE REMOVED FROM WITHIN THE CENTER OF PROPOSED ROUNDABOUTS.



TYPICAL SECTION NO. 8

USE TYPICAL SECTION NO. 8

–DR1– STA. 10+00.00 TO –DR1– STA. 12+34.33
–DR2– STA. 10+16.00 TO –DR2– STA. 11+50.00

8/17/99

REVISIONS

WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
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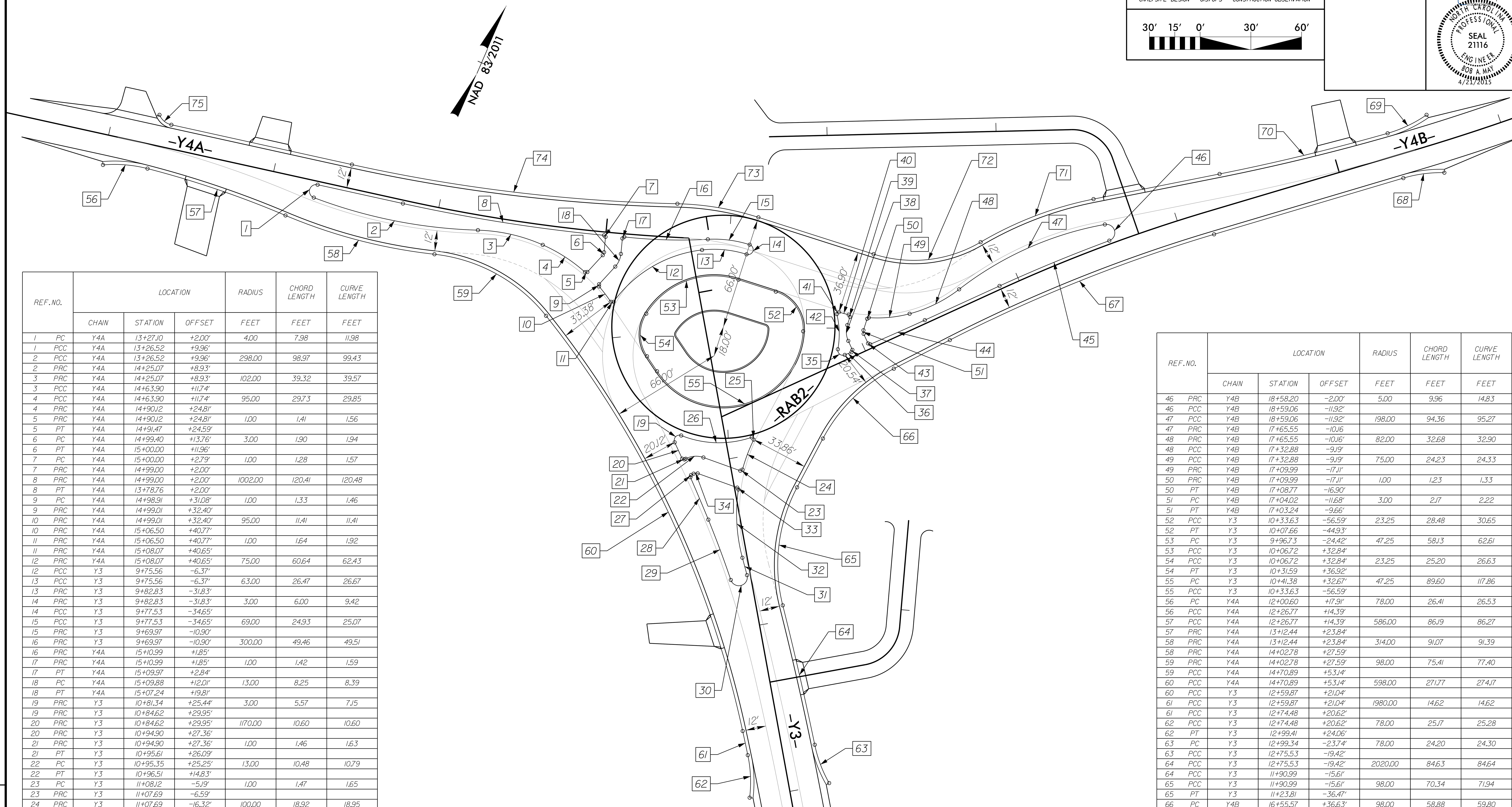
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
R-2248G	2B-1

R/W SHEET NO.

ROADWAY DESIGN ENGINEER
DocuSigned by: Bob A. May
NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY
4/21/2015

ROUNDABOUT 1 DETAIL



REF.NO.		LOCATION			RADIUS	CHORD LENGTH	CURVE LENGTH
		CHAIN	STATION	OFFSET	FEET	FEET	FEET
1	PC	Y4A	13+27.10	+2.00'	4.00	7.98	11.98
1	PCC	Y4A	13+26.52	+9.96'			
2	PCC	Y4A	13+26.52	+9.96'	298.00	98.97	99.43
2	PRC	Y4A	14+25.07	+8.93'			
3	PRC	Y4A	14+25.07	+8.93'	102.00	39.32	39.57
3	PCC	Y4A	14+63.90	+11.74'			
4	PCC	Y4A	14+63.90	+11.74'	95.00	29.73	29.85
4	PRC	Y4A	14+90.12	+24.81'			
5	PRC	Y4A	14+90.12	+24.81'	1.00	1.41	1.56
5	PT	Y4A	14+91.47	+24.59'			
6	PC	Y4A	14+99.40	+13.76'	3.00	1.90	1.94
6	PT	Y4A	15+00.00	+11.96'			
7	PC	Y4A	15+00.00	+2.79'	1.00	1.28	1.57
7	PRC	Y4A	14+99.00	+2.00'			
8	PRC	Y4A	14+99.00	+2.00'	1002.00	120.41	120.48
8	PT	Y4A	13+78.76	+2.00'			
9	PC	Y4A	14+98.91	+31.08'	1.00	1.33	1.46
9	PRC	Y4A	14+99.01	+32.40'			
10	PRC	Y4A	14+99.01	+32.40'	95.00	11.41	11.41
10	PRC	Y4A	15+06.50	+40.77'			
11	PRC	Y4A	15+06.50	+40.77'	1.00	1.64	1.92
11	PRC	Y4A	15+08.07	+40.65'			
12	PRC	Y4A	15+08.07	+40.65'	75.00	60.64	62.43
12	PCC	Y3	9+75.56	-6.37'			
13	PCC	Y3	9+75.56	-6.37'	63.00	26.47	26.67
13	PRC	Y3	9+82.83	-31.83'			
14	PRC	Y3	9+82.83	-31.83'	3.00	6.00	9.42
14	PCC	Y3	9+77.53	-34.65'			
15	PCC	Y3	9+77.53	-34.65'	69.00	24.93	25.07
15	PRC	Y3	9+69.97	-10.90'			
16	PRC	Y3	9+69.97	-10.90'	300.00	49.46	49.51
16	PRC	Y4A	15+10.99	+1.85'			
17	PRC	Y4A	15+10.99	+1.85'	1.00	1.42	1.59
17	PT	Y4A	15+09.97	+2.84'			
18	PC	Y4A	15+09.88	+12.01'	13.00	8.25	8.39
18	PT	Y4A	15+07.24	+19.81'			
19	PRC	Y3	10+81.34	+25.44'	3.00	5.57	7.15
19	PRC	Y3	10+84.62	+29.95'			
20	PRC	Y3	10+84.62	+29.95'	1170.00	10.60	10.60
20	PRC	Y3	10+94.90	+27.36'			
21	PRC	Y3	10+94.90	+27.36'	1.00	1.46	1.63
21	PT	Y3	10+95.61	+26.09'			
22	PC	Y3	10+95.35	+25.25'	13.00	10.48	10.79
22	PT	Y3	10+96.51	+14.83'			
23	PC	Y3	11+08.12	-5.19'	1.00	1.47	1.65
23	PRC	Y3	11+07.69	-6.59'			
24	PRC	Y3	11+07.69	-16.32'	100.00	18.92	18.95
24	PRC	Y3	10+91.46	-16.32'			
25	PRC	Y3	10+91.46	-16.32'	1.00	1.85	2.35
25	PRC	Y3	10+89.88	-15.37'			
26	PRC	Y3	10+89.88	-15.37'	60.00	41.69	42.58
26	PRC	Y3	10+81.34	25.44'			
27	PC	Y3	11+05.40	+23.87'	1.00	1.37	1.50
27	PRC	Y3	11+06.58	+24.54'			
28	PRC	Y3	11+06.58	+24.54'	1170.00	27.27	27.27
28	PCC	Y3	11+33.19	+18.59'			
29	PCC	Y3	11+33.19	+18.59'	602.00	38.11	38.12
29	PRC	Y3	11+70.71	+11.90'			
30	PRC	Y3	11+70.71	+11.90'	5.00	10.00	15.37
30	PRC	Y3	11+69.61	+1.97'			
31	PRC	Y3	11+69.61	+1.97'	2004.00	10.65	10.65
31	PCC	Y3	11+58.99	+2.81'			
32	PCC	Y3	11+58.99	+2.81'	100.00	40.48	40.76
32	PRC	Y3	11+18.81	-2.08'			
33	PRC	Y3	11+18.81	-2.08'	1.00	1.27	1.37
33	PT	Y3	11+17.62	-1.64'			

REF.NO.		LOCATION			RADIUS	CHORD LENGTH	CURVE LENGTH
		CHAIN	STATION	OFFSET	FEET	FEET	FEET
34	PC	Y3	11+05.16	+19.85'	3.00	2.42	2.49
34	PT	Y3	11+04.89	+22.26'			
35	PRC	Y4B	16+85.56	-7.72'	3.00	5.27	6.43
35	PRC	Y4B	16+87.91	-3.00'			
36	PRC	Y4B	16+87.91	-3.00'	1330.00	4.30	4.30
36	PRC	Y4B	16+92.20	-2.84'			
37	PRC	Y4B	16+92.20	-2.84'	1.00	1.44	1.61
37	PT	Y4B	16+93.24	-3.84'			
38	PC	Y4B	16+93.24	-9.66'	13.00	9.38	9.60
38	PT	Y4B	16+96.62	-18.41'			
39	PC	Y4B	17+00.05	-22.18'	1.00	1.47	1.65
39	PRC	Y4B	16+99.92	-23.64'			

REF.NO.		LOCATION			RADIUS	CHORD LENGTH	CURVE LENGTH
		CHAIN	STATION	OFFSET	FEET	FEET	FEET
40	PRC	Y4B	16+99.92	-23.64'	75.00	5.98	5.98
40	PRC	Y4B	16+95.33	-27.47'			
41	PRC	Y4B	16+95.33	-27.47'	1.00	1.74	2.12
41	PRC	Y4B	16+93.67	-26.92'			
42	PRC	Y4B	16+93.67	-26.92'	50.00	20.85	21.00
42	PRC	Y4B	16+85.56	-7.72'			
43	PC	Y4B	17+03.24	-3.47'	1.00	1.40	1.54
43	PRC	Y4B	17+04.21	-2.47'			
44	PRC	Y4B	17+04.21	-2.47'	1330.00	35.32	35.32
44	PT	Y4B	17+39.53	-2.00'			
45	PC	Y4B	17+88.11	-2.00	932.00	70.22	70.24
45	PRC	Y4B	18+58.20	-2.00			

REF.NO.		LOCATION			RADIUS	CHORD LENGTH	CURVE LENGTH
		CHAIN	STATION	OFFSET	FEET	FEET	FEET
46	PRC	Y4B	18+58.20	-2.00'	5.00	9.96	14.83
46	PCC	Y4B	18+59.06	-11.92'			
47	PCC	Y4B	18+59.06	-11.92'	198.00	94.36	95.27
47	PRC	Y4B	17+65.55	-10.16			
48	PRC	Y4B	17+65.55	-10.16'	82.00	32.68	32.90
48	PCC	Y4B	17+32.88	-9.19'			
49	PCC	Y4B	17+32.88	-9.19'	75.00	24.23	24.33
49	PRC	Y4B	17+09.99	-17.11'			
50	PRC	Y4B	17+09.99	-17.11'	1.00	1.23	1.33
50	PT	Y4B	17+08.77	-16.90'			
51	PC	Y4B	17+04.02	-11.68'	3.00	2.17	2.22
51	PT	Y4B	17+03.24	-9.66'			
52	PCC	Y3	10+33.63	-56.59'	23.25	28.48	30.65
52	PT	Y3	10+07.66	-44.93'			
53	PC	Y3	9+96.73	-24.42'	47.25	58.13	62.61
53	PCC	Y3	10+06.72	+32.84'			
54	PCC	Y3	10+06.72	+32.84'	23.25	25.20	26.63
54	PT	Y3	10+31.59	+36.92'			
55	PC	Y3	10+41.38	+32.67'	47.25	89.60	117.86
55	PCC	Y3	10+33.63	-56.59'			
56	PC	Y4A	12+00.60	+17.91'	78.00	26.41	26.53
56	PCC	Y4A	12+26.77	+14.39'			
57	PCC	Y4A	12+26.77	+14.39'	586.00	86.19	86.27
57	PRC	Y4A	13+12.44	+23.84'			
58	PRC	Y4A	13+12.44	+23.84'	314.00	91.07	91.39
58	PRC	Y4A	14+02.78	+27.59'			
59	PRC	Y4A	14+02.78	+27.59'	98.00	75.41	77.40
59	PCC	Y4A	14+70.89	+53.14'			
60	PCC	Y4A	14+70.89	+53.14'	598.00	271.77	274.17
60	PCC	Y3	12+59.87	+21.04'			
61	PCC	Y3	12+59.87	+21.04'	1980.00	14.62	14.62
61	PCC	Y3	12+74.48	+20.62'			
62	PCC	Y3	12+74.48	+20.62'	78.00	25.17	25.28
62	PT	Y3	12+99.41	+24.06'			
63	PC	Y3	12+99.34	-23.74'	78.00	24.20	24.30
63	PCC	Y3	12+75.53	-19.42'			
64	PCC	Y3	12+75.53	-19.42'	2020.00	84.63	84.64
64	PCC	Y3	11+90.99	-15.61'			
65	PCC	Y3	11+90.99	-15.61'	98.00	70.34	71.94
65	PT	Y3	11+23.81	-36.47'			
66	PC	Y4B	16+55.57	+36.63'	98.00	58.88	59.80
66	PT	Y4B	17+10.90	+16.50'			
67	PC	Y4B	17+48.04	+14.88'	916.00	168.38	168.62
67	PT	Y4B	19+18.61	+14.00'			
68	PC	Y4B	20+35.41	+14.00'	78.00	24.44	24.54
68	PT	Y4B	20+59.37	+17.90'			
69	PC	Y4B	20+59.39	-17.91'	78.00	25.48	25.59
69	PCC	Y4B	20+34.03	-14.06'			
70	PCC	Y4B	20+34.03	-14.06'	1246.00	102.29	102.32
70	PT	Y4B	19+31.87	-19.29'			
71	PC	Y4B	18+58.00	-28.33'	214.00	71.47	71.81
71	PRC	Y4B	17+88.71	-30.25'			
72	PRC	Y4B	17+88.71	-30.25'	78.00	63.71	65.63
72	PT	Y4B	17+28.21	-50.15'			
73	PC	Y4B	16+75.31	-98.29'	170.00	48.57	48.74
73	PRC	Y4A	15+41.25	-19.93'			
74	PRC	Y4A	15+41.25	-19.93'	998.00	193.90	194.20
74	PT	Y4A	13+44.34	-14.00'			
75	PC	Y4A	12+35.00	-14.00'	10.00	9.17	9.53
75	PT	Y4A	12+26.85	-18.20'			

4/14/2015
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USER:jhefner

8/17/99

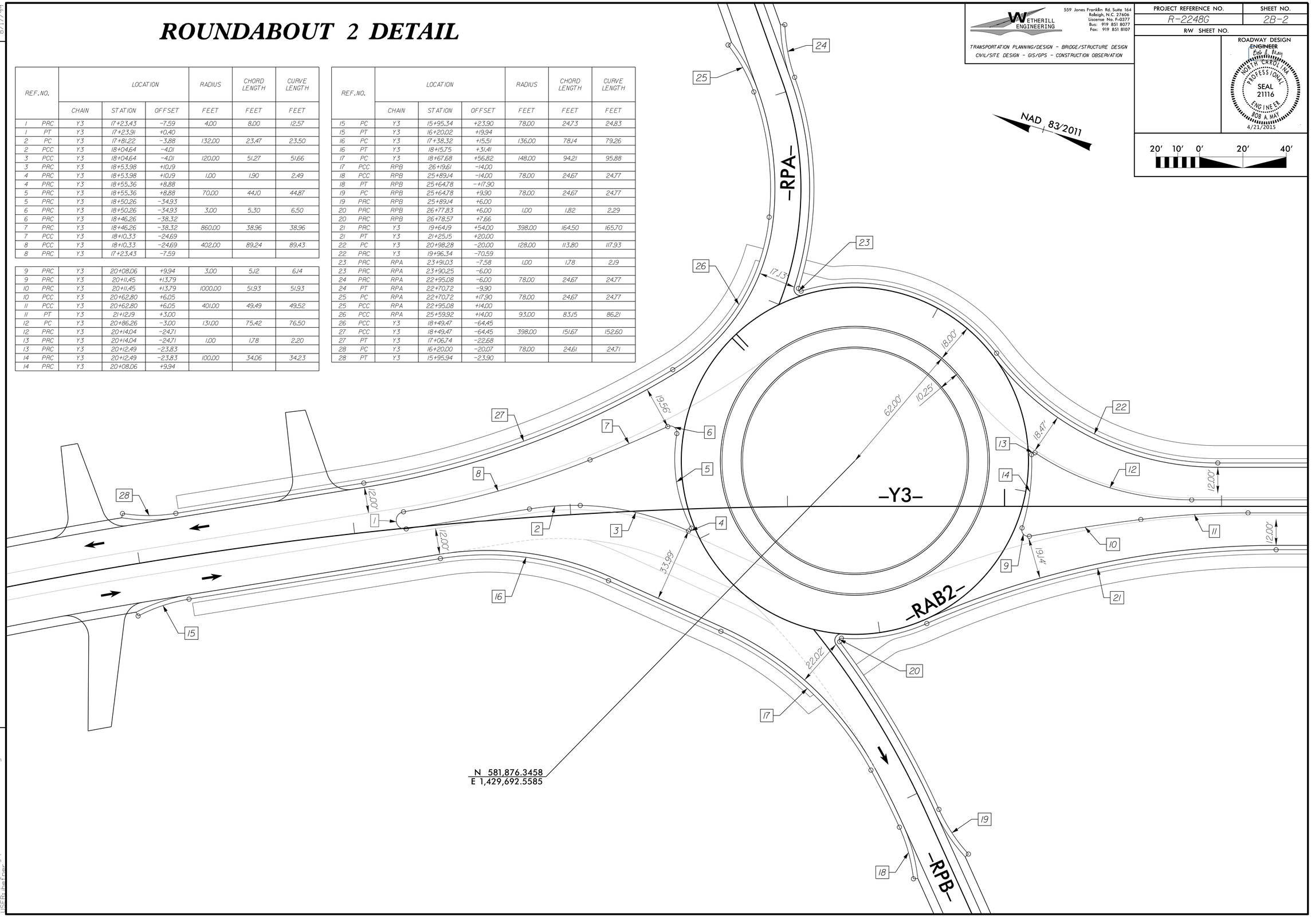
REVISIONS

ROUNDABOUT 2 DETAIL

REF.NO.		LOCATION			RADIUS	CHORD LENGTH	CURVE LENGTH
		CHAIN	STATION	OFFSET	FEET	FEET	FEET
1	PRC	Y3	17+23.43	-7.59	4.00	8.00	12.57
1	PT	Y3	17+23.91	+0.40			
2	PC	Y3	17+81.22	-3.88	132.00	23.47	23.50
2	PCC	Y3	18+04.64	-4.01			
3	PCC	Y3	18+04.64	-4.01	120.00	51.27	51.66
3	PRC	Y3	18+53.98	+10.19			
4	PRC	Y3	18+53.98	+10.19	1.00	1.90	2.49
4	PRC	Y3	18+55.36	+8.88			
5	PRC	Y3	18+55.36	+8.88	70.00	44.10	44.87
5	PRC	Y3	18+50.26	-34.93			
6	PRC	Y3	18+50.26	-34.93	3.00	5.30	6.50
6	PRC	Y3	18+46.26	-38.32			
7	PRC	Y3	18+46.26	-38.32	860.00	38.96	38.96
7	PCC	Y3	18+10.33	-24.69			
8	PCC	Y3	18+10.33	-24.69	402.00	89.24	89.43
8	PRC	Y3	17+23.43	-7.59			

REF.NO.		LOCATION			RADIUS	CHORD LENGTH	CURVE LENGTH
		CHAIN	STATION	OFFSET	FEET	FEET	FEET
9	PRC	Y3	20+08.06	+9.94	3.00	5.12	6.14
9	PRC	Y3	20+11.45	+13.79			
10	PRC	Y3	20+11.45	+13.79	1000.00	51.93	51.93
10	PCC	Y3	20+62.80	+6.05			
11	PCC	Y3	20+62.80	+6.05	401.00	49.49	49.52
11	PT	Y3	21+12.19	+3.00			
12	PC	Y3	20+86.26	-3.00	131.00	75.42	76.50
12	PRC	Y3	20+14.04	-24.71			
13	PRC	Y3	20+14.04	-24.71	1.00	1.78	2.20
13	PRC	Y3	20+12.49	-23.83			
14	PRC	Y3	20+12.49	-23.83	100.00	34.06	34.23
14	PRC	Y3	20+08.06	+9.94			

REF.NO.		LOCATION			RADIUS	CHORD LENGTH	CURVE LENGTH
		CHAIN	STATION	OFFSET	FEET	FEET	FEET
15	PC	Y3	15+95.34	+23.90	78.00	24.73	24.83
15	PT	Y3	16+20.02	+19.94			
16	PC	Y3	17+38.32	+15.51	136.00	78.14	79.26
16	PT	Y3	18+15.75	+31.41			
17	PC	Y3	18+67.68	+56.82	148.00	94.21	95.88
17	PCC	RPB	26+19.61	-14.00			
18	PCC	RPB	25+89.14	-14.00	78.00	24.67	24.77
18	PT	RPB	25+64.78	-+17.90			
19	PC	RPB	25+64.78	+9.90	78.00	24.67	24.77
19	PRC	RPB	25+89.14	+6.00			
20	PRC	RPB	26+77.83	+6.00	1.00	1.82	2.29
20	PRC	RPB	26+78.57	+7.66			
21	PRC	Y3	19+64.19	+54.00	398.00	164.50	165.70
21	PT	Y3	21+25.15	+20.00			
22	PC	Y3	20+98.28	-20.00	128.00	113.80	117.93
22	PRC	Y3	19+96.34	-70.59			
23	PRC	RPA	23+91.03	-7.58	1.00	1.78	2.19
23	PRC	RPA	23+90.25	-6.00			
24	PRC	RPA	22+95.08	-6.00	78.00	24.67	24.77
24	PT	RPA	22+70.72	-9.90			
25	PC	RPA	22+70.72	+17.90	78.00	24.67	24.77
25	PCC	RPA	22+95.08	+14.00			
26	PCC	RPA	25+59.92	+14.00	93.00	83.15	86.21
26	PCC	Y3	18+49.47	-64.45			
27	PCC	Y3	18+49.47	-64.45	398.00	151.67	152.60
27	PT	Y3	17+06.74	-22.68			
28	PC	Y3	16+20.00	-20.07	78.00	24.61	24.71
28	PT	Y3	15+95.94	-23.90			



WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
R-2248G	2B-2
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
Bob A. May
NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY
4/21/2015

4/14/2015
R-2248G_rdy_psh_02b-2_detail_RAB2.dgn
USER:bamay

ROUNDABOUT 3 DETAIL

WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
License No. F-0277
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
R-2248G	2B-3
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
Bob A. May
NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY
4/21/2015

20' 10' 0' 20' 40'

NAD 83/2011

REVISIONS
8/17/99

4/14/2015
R-2248G_rdy_psh_02b-3_detail_RAB3.dgn
USER: thefnar

N 581,251.1942
E 1,429,835.9093

25+00

-RPD-
-Y3-
-RAB3-
-RPC-

16.00'
24.62'
19.90'
14.00'
32.07'
12.00'
14.00'
19.32'
62.00'
20.04'
18.00'
10.25'
18.24'
16.00'

REF. NO.		LOCATION			RADIUS	CHORD LENGTH	CURVE LENGTH
		CHAIN	STATION	OFFSET	FEET	FEET	FEET
1	PC	Y3	24+15.81	+3.00	131.00	75.42	76.50
1	PRC	Y3	24+88.03	+24.71			
2	PRC	Y3	24+88.03	+24.71	1.00	1.78	2.20
2	PRC	Y3	24+89.58	+23.83			
3	PRC	Y3	24+89.58	+23.83	100.00	34.06	34.23
3	PRC	Y3	24+94.01	-9.94			
4	PRC	Y3	24+94.01	-9.94	3.00	5.12	6.14
4	PRC	Y3	24+90.62	-13.79			
5	PRC	Y3	24+90.62	-13.79	1000.00	51.93	51.93
5	PCC	Y3	24+39.27	-6.05			
6	PCC	Y3	24+39.27	-6.05	401.00	49.49	49.52
6	PT	Y3	23+89.87	-3.00			

7	PC	Y3	28+26.41	-4.00	410.00	86.47	86.63
7	PRC	Y3	27+40.42	+5.12			
8	PRC	Y3	27+40.42	+5.12	132.00	35.80	35.91
8	PCC	Y3	27+04.72	+7.81			
9	PCC	Y3	27+04.72	+7.81	125.00	58.75	59.31
9	PRC	Y3	26+48.56	-9.44			
10	PRC	Y3	26+48.56	-9.44	1.00	1.91	2.53
10	PRC	Y3	26+47.14	-8.16			
11	PRC	Y3	26+47.14	-8.16	75.00	45.68	46.42
11	PRC	Y3	26+52.44	+37.21			
12	PRC	Y3	26+52.44	+37.21	3.00	5.27	6.44
12	PRC	Y3	26+56.50	+40.57			
13	PRC	Y3	26+56.50	+40.57	1000.00	36.77	36.77
13	PCC	Y3	26+90.88	+27.54			
14	PCC	Y3	26+90.88	+27.54	402.00	137.56	138.24
14	PT	Y3	28+26.41	+4.00			

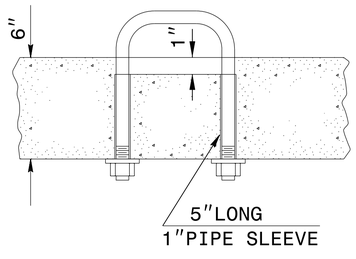
REF. NO.		LOCATION			RADIUS	CHORD LENGTH	CURVE LENGTH
		CHAIN	STATION	OFFSET	FEET	FEET	FEET
15	PC	Y3	24+03.79	+20.00	128.00	113.80	117.93
15	PRC	Y3	25+05.73	+70.59			
16	PRC	RPC	24+77.93	-7.57	1.00	1.77	2.19
16	PRC	RPC	24+77.15	-6.00			
17	PRC	RPC	23+75.49	-6.00	78.00	24.67	24.77
17	PT	RPC	23+51.13	-9.90			

18	PC	RPC	23+51.13	+17.90	78.00	24.67	24.77
18	PCC	RPC	23+75.49	+14.00			
19	PCC	RPC	23+97.66	+14.00	118.00	129.13	136.64
19	PCC	Y3	26+50.71	+68.35			
20	PCC	Y3	26+50.71	+68.35	398.00	196.18	198.22
20	PT	Y3	28+40.83	+20.00			
21	PC	Y3	29+50.02	+20.00	78.00	24.67	24.77
21	PT	Y3	29+74.38	+23.90			

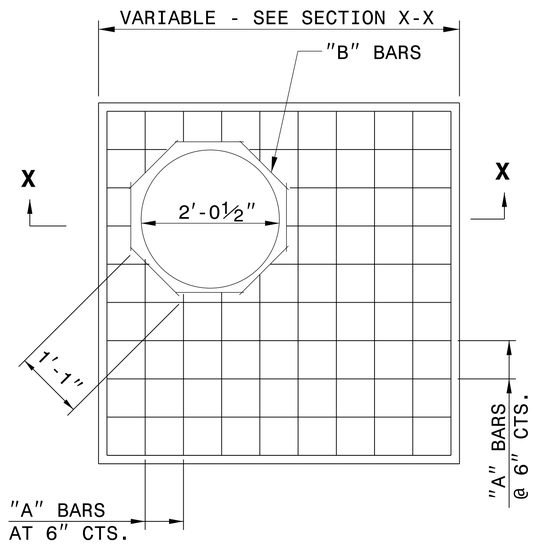
22	PC	Y3	29+74.38	-23.90	78.00	24.67	24.77
22	PT	Y3	29+50.02	-20.00			
23	PC	Y3	28+26.41	-20.00	426.00	51.38	51.41
23	PRC	Y3	27+75.13	-16.90			
24	PRC	Y3	27+75.13	-16.90	178.00	206.84	220.71
24	PCC	RPD	26+55.06	-14.00			
25	PCC	RPD	26+55.06	-14.00	78.00	24.67	24.77
25	PT	RPD	26+30.70	-17.90			

26	PC	RPD	26+30.70	+9.90	78.00	24.67	24.77
26	PT	RPD	26+55.06	+6.00			
27	PC	RPD	27+10.08	+6.00	1.00	1.83	2.36
27	PRC	RPD	27+10.83	+7.67			
28	PRC	Y3	25+37.87	-54.00	398.00	164.50	165.70
28	PT	Y3	23+76.92	-20.00			

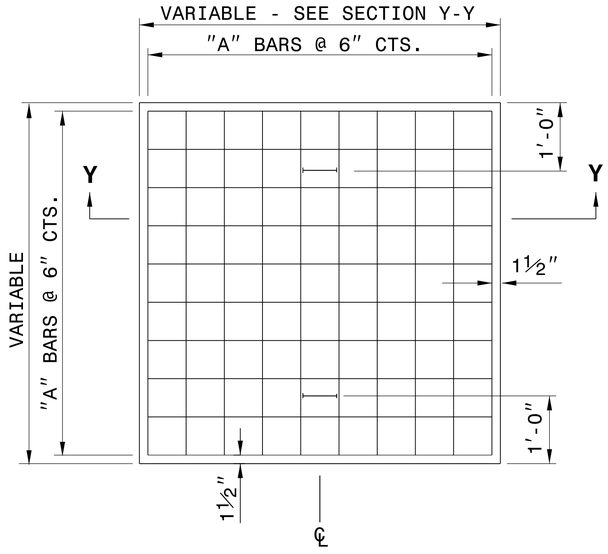
PROJECT REFERENCE NO.	SHEET NO.
R-2248G	2C-1



PARTIAL SECTION



PLAN



PLAN

GENERAL NOTES:

CONSTRUCT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.

THE DIMENSIONS FOR THE EXISTING BOXES ARE APPROXIMATE AND MAY VARY SLIGHTLY.

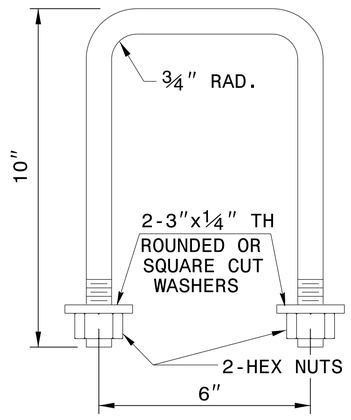
DETAIL INTENDED FOR NON-TRAFFIC BEARING DRAINAGE STRUCTURES.

BILL OF MATERIALS

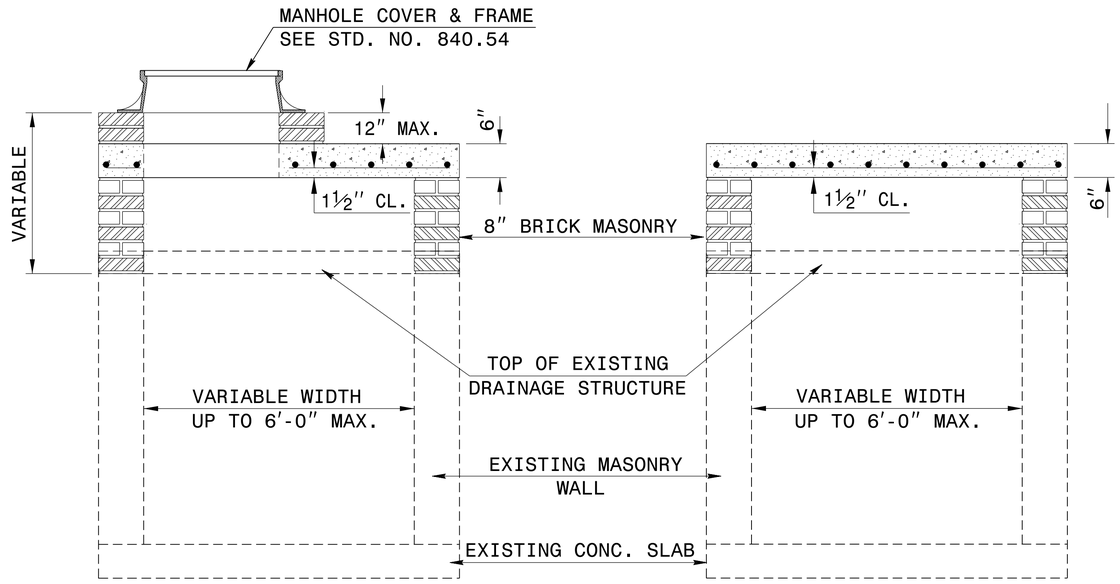
REINFORCING STEEL

CODE	SIZE	QTY.	LENGTH	REINF. STEEL LBS.
A	#4	20	4'-6"	60.12
B	#4	8	1'-1"	5.79
TOTAL				65.91 *
MASONRY				CU YDS
TOP SLAB CONCRETE CLASS "B"				.4326 *
BRICK MASONRY PER FT HT (MIN)				.4111

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



DETAIL OF HANDLE



SECTION X-X

SECTION Y-Y

DocuSigned by: Joel Howerton
NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton
4/24/2015

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

DETAIL TO CONVERT EXISTING DI, CB, OTCB or GI TO JUNCTION BOX (MANHOLE OPTIONAL)

ORIGINAL BY: T.S.S. DATE: NOV.1997
MODIFIED BY: T.S.S. DATE: FEB.2000
CHECKED BY: DATE:
FILE SPEC.: ds174:/usr/details/stand/boxtojbe.dgn

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-2248G	2C-2

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

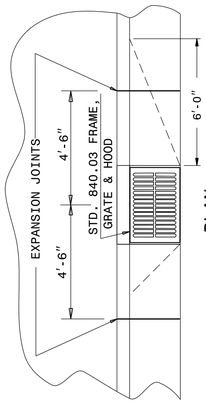
ENGLISH DETAIL DRAWING FOR

MINIMUM DEPTH CONCRETE CATCH BASIN

12" THRU 24" PIPE

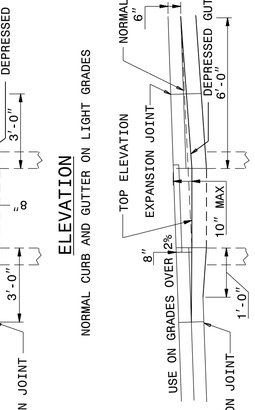
SHEET 1 OF 1 **840D02**

GENERAL NOTES:
USE CLASS "B" CONCRETE THROUGHOUT.
OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.
USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.
IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.
USE TYPE "E", "F" AND "G" GRATES UNLESS OTHERWISE INDICATED.
CONSTRUCT WITH PIPE CROWNS MATCHING.
CHAMFER ALL EXPOSED CORNERS 1".
DRAWING NOT TO SCALE.



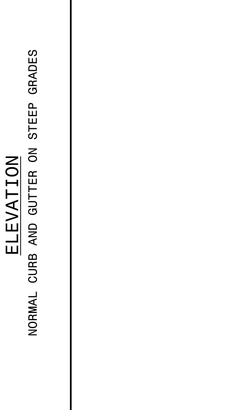
PLAN

CURB AND GUTTER WITH CATCH BASIN ON STEEP GRADES



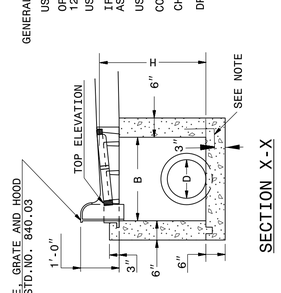
ELEVATION

NORMAL CURB AND GUTTER ON LIGHT GRADES

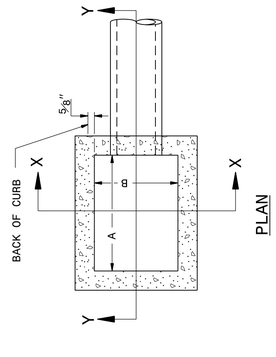


ELEVATION

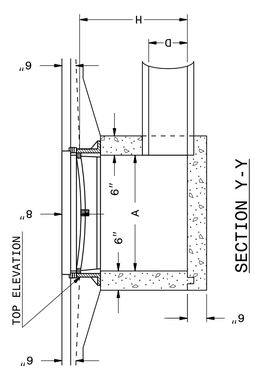
NORMAL CURB AND GUTTER ON STEEP GRADES



SECTION X-X



PLAN



SECTION Y-Y

MINIMUM DIMENSIONS AND QUANTITIES FOR CONCRETE CATCH BASIN

DIMENSIONS OF BOX AND PIPE				CU. YDS. CONC. IN BOX		DEDUCTIONS ONE PIPE	
PIPE D	SPAN A	WIDTH B	MIN. HEIGHT H	BOTTOM SLAB	CONCRETE IN WALLS	TOTAL CONC.	C.M.	R.C.
12"	3'-0"	2'-2"	1'-9"	0.235	0.343	0.578	0.015	0.026
15"	3'-0"	2'-2"	1'-11"	0.235	0.400	0.635	0.023	0.036
18"	3'-0"	2'-2"	2'-2"	0.235	0.457	0.692	0.033	0.049
24"	3'-0"	2'-2"	2'-9"	0.235	0.590	0.825	0.059	0.085

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

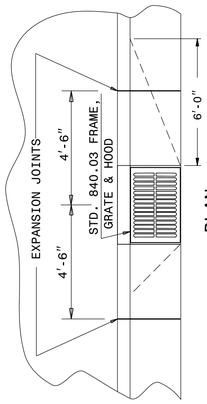
ENGLISH DETAIL DRAWING FOR

MINIMUM DEPTH BRICK CATCH BASIN

12" THRU 24" PIPE

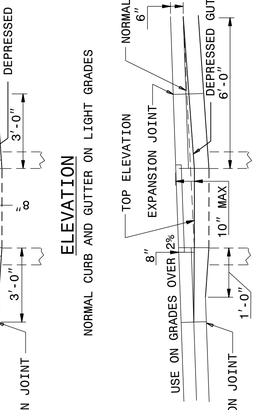
SHEET 1 OF 1 **840D01**

GENERAL NOTES:
MORTAR JOINTS ½" TO ⅛" THICK.
USE CLASS "B" CONCRETE THROUGHOUT.
USE FORMS FOR CONSTRUCTION OF THE BOTTOM SLAB.
DEDUCT FOR PIPE(S) FROM TOTAL CU. YDS. OF BRICK MASONRY.
USE TYPE "E", "F" AND "G" GRATES UNLESS OTHERWISE INDICATED.
USE BRICK OR CONCRETE BLOCK WHICH COMPLIES WITH THE REQUIREMENTS OF SECTION 840 OF THE STANDARD SPECIFICATIONS.
IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.
CONSTRUCT WITH PIPE CROWNS MATCHING.
CHAMFER ALL EXPOSED CORNERS 1".
DRAWING NOT TO SCALE.



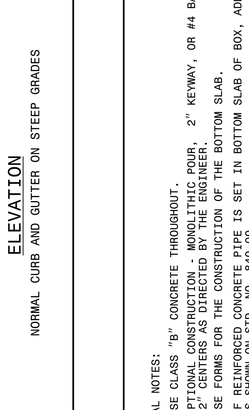
PLAN

CURB AND GUTTER WITH CATCH BASIN ON STEEP GRADES



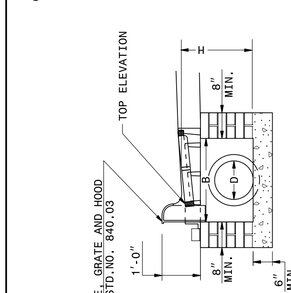
ELEVATION

NORMAL CURB AND GUTTER ON LIGHT GRADES

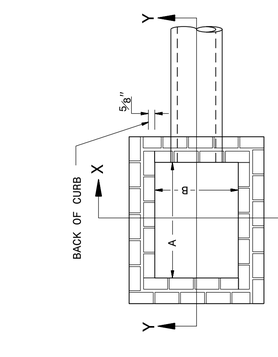


ELEVATION

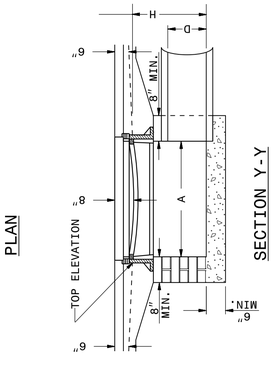
NORMAL CURB AND GUTTER ON STEEP GRADES



SECTION X-X



PLAN



SECTION Y-Y

MINIMUM DIMENSIONS AND QUANTITIES FOR BRICK CATCH BASIN

DIMENSIONS OF BOX AND PIPE				CU. YDS. CONC. IN BOX	BRICK MASONRY		DEDUCTIONS ONE PIPE	
PIPE D	SPAN A	WIDTH B	MIN. HEIGHT H	BOTTOM SLAB	TOTAL CONC.	BRICK MASNR. IN WALLS	TOTAL BRICK AND CONCRETE	C.M.	R.C.
12"	3'-0"	2'-2"	1'-9"	0.281	0.281	0.481	0.762	0.020	0.042
15"	3'-0"	2'-2"	1'-11"	0.281	0.281	0.562	0.843	0.031	0.047
18"	3'-0"	2'-2"	2'-2"	0.281	0.281	0.642	0.923	0.044	0.065
24"	3'-0"	2'-2"	2'-9"	0.281	0.281	0.828	1.109	0.078	0.121

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

SEE PLATE FOR TITLE

ORIGINAL BY: 2002 STD. 840.01 DATE:
MODIFIED BY: E.E. WARD DATE: 3-1-02
CHECKED BY: DATE:
FILE SPEC.:

$$$$$$SYSTIME$$$$$$
$$$$$$SYSNAME$$$$$$
$$$$$$USERNAME$$$$$$

8/17/99

COMPUTED BY: J. HEFNER DATE: 2014-06-08
CHECKED BY: B. MAY DATE: 2014-06-09

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
R-2248G	3B-1

WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
Liscense No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

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

SUMMARY OF EARTHWORK

IN CUBIC YARDS

STATION	STATION	UNCL. EXCAV.	EMBANK. +%	BORROW	WASTE
–Y3– STA. 11+00.00	–Y3– STA. 16+00.00	41	1328	1287	
–Y4A– STA. 11+50.00	–Y4A– STA. 15+40.00	81	710	629	
–Y4B– STA. 16+50.00	–Y4B– STA. 21+10.00	79	4884	4805	
–Y3– STA. 16+00.00	–Y3– STA. 22+50.00	155	3719	3564	
–RPA– STA. 14+86.00	–RPA– STA. 24+00.16	1275	407		868
–RPB– STA. 15+27.00	–RPB– STA. 26+89.58	2492	317		2175
–Y3– STA. 22+50.00	–Y3– STA. 29+75.00	130	3212	3082	
–RPC– STA. 13+63.30	–RPC– STA. 24+87.06	1513	808		705
–RPD– STA. 14+18.00	–RPD– STA. 27+23.25	1327	546		781
TOTAL:		7093	15931	13367	4529
MATERIAL FOR SHOULDER CONSTRUCTION				5100	
LOSS DUE TO CLEARING & GRUBBING		–1300		1300	
WASTE TO REPLACE BORROW				–4529	–4529
PROJECT TOTAL:		5793		15238	
EST 5% TO REPLACE TOP SOIL ON BORROW PIT				762	
GRAND TOTAL:		5793		16000	
SAY:		6000		16300	

GEOTEXTILE FOR SOIL STABILIZATION = 2,000 SY + 18,000 SY = 20,000 SY
EST. SHALLOW UNDERCUT = 6,000 CY
CLASS IV SUBGRADE STABILIZATION = 12,000 TONS
SELECT GRANULAR MATERIAL = 2,000 CY
UNDERCUT EXCAVATION = 2,000 CY
STABILIZER AGGREGATE = 500 TON
BLOTTING SAND = 10 TON

SHOULDER BERM GUTTER SUMMARY

SURVEY LINE	STATION	STATION	LENGTH
–RPC–	13+65.00	19+00.00	535.00
–RPD–	14+18.00	20+00.00	582.00
		TOTAL:	1117.00
		SAY:	1120.00

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.

PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD²
–Y4B–	16+71.67	19+31.17	LT.	338.50
–Y4A–	12+32.97	12+83.26	RT.	15.15
–Y3–	11+44.10	12+99.48	LT.	96.05
–Y3–	12+08.90	13+00.00	RT.	26.32
–Y3–	15+95.32	17+19.94	LT.	46.63
–Y3–	15+94.71	18+01.94	RT.	139.17
–Y3–	20+63.39	24+37.64	LT.	178.38
–Y3–	20+66.31	24+40.87	RT.	194.65
–Y3–	26+99.49	29+75.00	LT.	145.26
–Y3–	27+76.00	29+75.00	RT.	91.06
			TOTAL:	1271.17
			SAY:	1300.00

Note: Approximate quantities only. Unclassified Excavation, Borrow Excavation, Fine Grading, Clearing and Grubbing, and Removal of Existing Pavement will be paid for at the contract lump sum price for "Grading."

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

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH: STRAIGHT	LENGTH: SHOP CURVED	LENGTH: DOUBLE FACED	WARRANT POINT: APPROACH END	WARRANT POINT: TRAILING END	"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH: APPROACH END	FLARE LENGTH: TRAILING END	W: APPROACH END	W: TRAILING END	ANCHORS: XI MOD	XI	GRAU 350 TL3	M-350	III	III SHOP CURVED	VI MOD	BIC	CAT-1	IMPACT ATTENUATOR TYPE 350: EA	G	NG	SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
–RPC–	13+64.00 +/–	19+45.25	RT	581.25					12'–0"	15'–0"													1							
–RPD–	14+19.00 +/–	23+90.00	LT	975					12'–0"	15'–0"	50.00'		1.00'				1													
–L–			RT	306.25					13'–0"	16'–0"	50.00'		1.00'				1						1							SEE SIGNING PLANS FOR GUARDRAIL LOCATION
			TOTAL	1862.50													2						2							

DEDUCTIONS FOR ANCHOR UNITS			
	CAT-1	2 @ 6.25' =	12.50
	GRAU-350 TL-3	2 @ 50' =	100.00
		TOTAL	1750.00
		SAY	1775.00

ADDITIONAL GUARDRAIL POSTS = 5

4/14/2015
R-2248G_rdy_psh_03b-1_combo_summary.dgn
USER:tharper

COMPUTED BY: J. HEFNER DATE: 1/26/2015
CHECKED BY: B. MAY DATE: 1/27/2015

PROJECT REFERENCE NO.	SHEET NO.
R-2248G	3D-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

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

STATION (SIZE / THICKNESS OR GAUGE)	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109	R.C. PIPE (CLASS III) 15"	18"	24"	30"	36"	42"	48"	R.C. PIPE (CLASS IV) 12"	15"	18"	24"	30"	36"	42"	48"	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. FRAME WITH TWO GRATES STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	MAHOLE FRAME & GRATE STD. 840.54	CONVERT DI TO JB W/ MANHOLE	PIPE REMOVAL LIN. FT.	REMARKS
SHEET 4																																																																	
Y4A 12+36	LT	0420		729.00	726.67																																									1			1		1											32	Use Min. Depth CB, See Sheet 2C-2
		0420	0428		726.67	726.50																															64																												
Y4A 12+63	RT																																																													52	
Y4A 12+92	LT																																																													28	
Y4B 16+76	LT																																																													16	
Y4A 15+31	LT	0427		729.40	726.40																																									1			1			1											
Y4A 14+84.50	LT	0404		728.76	725.76																																									1			1	1													
		0427	0404		726.40	725.76																															44																												
Y4A 14+75.95	LT	0405		728.76	722.50																																									1	1.26		1	1													
		0404	0405		725.76	725.50																															8																												
Y4A 14+71	RT	0407		727.64	722.00																																									1	0.64		1	1													
		0405	0407		722.50	722.00																															68																												
Y4A 14+78	RT	0406		727.64	721.90																																									1	0.74		1	1													
		0407	0406		722.00	721.90																															8																												
Y3 10+74	RT	0410		726.70	721.00																																									1	0.7		1			1											
		0406	0410		721.90	721.50																															76																												
Y3 10+86	LT	0409		726.60	723.50																																									1			1	1				1									
		0409	0410		723.50	723.25																							64																																			
Y3 10+88	LT	0408		726.60	723.60																																									1			1	1				1									
		0408	0409		723.60	723.50																															8																												
Y3 11+76	RT	0414		724.00	712.68																																																							1	1		
		0410	0414		721.00	720.50																															104																												
Y3 10+68	LT	0418		726.82	723.82																																									1			1	1													
Y3 10+72	LT	0419		726.82	723.72																																									1			1	1													
		0418	0419		723.82	723.72																															8																												
Y3 11+80	LT	0412		718.50	715.75																																									1									1			1					
		0419	0412		723.72	715.75																															112																												
Y3 11+80	LT	0413		717.20	714.18																																																							1	1		
		0412	0413		715.75	714.18																							4																																			
Y3 12+18	LT	0411		716.85	714.93																																									1									1			1					
		0411	0412		714.93	715.75																							36																																			
Y4B 18+52	LT	0402		722.35	719.60																																									1									1			1					
		0402	0403		719.60	717.00																							52																																			
Y4B 20+48	LT	0400		724.95	721.95																																									1			1			1											
		0400	0401		721.95	721.50																							48																																			
Y3 12+98	LT	0421		712.00	709.25																																									1									1			1					
Y3 14+18	LT	0422		707.90	705.15																																									1									1			1					
		0421	0422		709.25	705.15																							120																																	24	
Y3 14+60	LT	0423			EX																																																									1	1		TOP = EX. PIPE INVERT +3.65'
		0422	0423		705.15	EX																							40																																	30	
Y3 13+24	RT	0415		710.50	705.59																																																							1	1		
Y3 15+44	RT	0416		699.20	694.75																																									1									1			1					
Y3 15+56	RT	0417		?	694.19																																																							1	1		
		0416	0417		694.75	694.30																							12																																			
Y3 15+46	LT	0424		701.40	698.65																																									1									1			1					
Y3 15+58	LT	0425		?	695.48																																																							1	1		
		0424	0425		698.65	696.00																							12																																			
						SHEET TOTALS																						388								500											19	3.34		12	8	1	3		2	7			7		6	6	182	

ABBREVIATIONS

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

4/4/2015 ...\R2248G_rdy_psh_03d-1_drainage_summary.dgn

COMPUTED BY: J. HEFNER DATE: 1/26/2015
CHECKED BY: B. MAY DATE: 1/27/2015

PROJECT REFERENCE NO. R-2248G | SHEET NO. 3D-2

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

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

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109	R.C. PIPE (CLASS III) 15"	18"	24"	30"	36"	42"	48"	R.C. PIPE (CLASS IV) 12"	15"	18"	24"	30"	36"	42"	48"
SHEET 5																																										
Y3 16+48	LT	0500		698.50	695.00																																					
Y3 16+70	LT	0501		698.10	691.91																																					
		0500	0501		695.00	691.91															20																					
Y3 17+80	LT	0502		695.68	692.68																																					
Y3 17+70	LT	0503		695.68	692.50																																					
		0502	0503		692.68	692.50																														8						
Y3 17+72	RT	0504		694.65	691.65																																					
		0503	0504		692.50	691.65																														28						
Y3 17+83.50	RT	0505		694.65	691.50																																					
		0504	0505		691.65	691.50																														12						
		0505	0505A		691.50	EX															24																					
Y3 18+45	LT	0510		691.00	688.50																																					
Y3 18+45	LT	0511		695.80	688.72																																					
		0510	0511		688.50	688.72																									12											
RPA 23+66	RT	0508		694.85	691.85																																					
RPA 23+76	RT	0507		694.85	691.75																																					
		0508	0507		691.85	691.75																														8						
Y3 19+30	LT	0512		692.61	688.34																																					
		0507	0512		691.75	689.59																														76						
Y3 21+07	LT	0515		688.77	683.02																																					
		0512	0515		688.34	683.52																																	180			
Y3 20+64	LT	0513		686.00	684.08																																					
		0513	0515		684.08	683.75																									44													
Y3 24+67	LT	0540		681.88	678.88																																					
Y3 24+75	LT	0541		681.88	678.78																																					
		0540	0541		678.88	678.78																														8						
Y3 25+07	LT	0525		682.00	677.95																																					
		0541	0525		678.78	678.00																														32						
Y3 19+83	RT	0516		691.20	681.27																																					
Y3 19+91	RT	0517		691.20	688.20																																					
		0517	0516		688.20	688.00																														8						
Y3 24+22.50	RT	0519		681.70	678.70																																					
Y3 24+31.50	RT	0520		681.70	678.60																																					
		0519	0520		678.70	678.60																														8						
Y3 24+62.50	RT	0521		683.25	678.00																																					
		0520	0521		678.60	678.00																														32						
Y3 25+01	RT	0522		682.80	677.75																																					
		0521	0522		678.00	677.75																														40						
Y3 24+51	RT	0536		680.80	678.88																																					
		0536	0521		678.88	678.00																									20													
Y3 26+32	RT	0532		680.21	677.21																																					
Y3 26+60	RT	0533		679.00	677.08																																					
		0532	0533		677.21	677.08																														28						
Y3 27+06	RT	0531		679.19	669.83																																					
		0533	0531	677.08	676.19																									56													
SHEET TOTALS																					44							120		12						288			180			

STATION	STRUCTURE NO. FROM	STRUCTURE NO. TO	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01, 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. FRAME WITH TWO GRATES STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	MAHOLE FRAME & GRATE STD. 840.54	CONVERT DI TO JB W/ MANHOLE	PIPE REMOVAL LIN. FT.	REMARKS
SHEET 5																								
Y3 16+48	0500						1									1			1					
Y3 16+70	0501																				1	1		
	0500	0501																						
Y3 17+80	0502						1			1	1				1									
Y3 17+70	0503						1			1	1				1									
	0502	0503																						
Y3 17+72	0504						1			1	1													
	0503	0504																						
Y3 17+83.50	0505						1			1	1													
	0504	0505																						
	0505	0505A																						
Y3 18+45	0510						1									1		1						
Y3 18+45	0511						1	2.08												1	1			
	0510	0511																					20	
RPA 23+66	0508						1			1	1													
RPA 23+76	0507						1			1	1													
	0508	0507																						
Y3 19+30	0512						1													1				W/ SLAB LID
	0507	0512																					24	
Y3 21+07	0515																				1	1		
	0512	0515																						
Y3 20+64	0513						1									1		1						
	0513	0515																					44	
Y3 24+67	0540						1			1	1													
Y3 24+75	0541						1			1	1													
	0540	0541																						
Y3 25+07	0525						1			1			1											
	0541	0525																						
Y3 19+83	0516						1	4.93		1	1													
Y3 19+91	0517						1			1	1													
	0517	0516																						
Y3 24+22.50	0519						1			1	1													
Y3 24+31.50	0520						1			1	1													
	0519	0520																						
Y3 24+62.50	0521						1	0.25		1	1													
	0520	0521																						
Y3 25+01	0522																				1	1		
	0521	0522																						
Y3 24+51	0536						1									1		1						
	0536	0521																						
Y3 26+32	0532						1			1	1													
Y3 26+60	0533						1									1		1						
	0532	0533																						
Y3 27+06	0531						1	4.36		1	1													
	0533	0531																						
SHEET TOTALS							23	11.62		16	15		1		2	5		4	1	2	4	3	88	

ABBREVIATIONS

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

4/04/06
4/14/2015
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USER: jhefner

4/04/06

COMPUTED BY: J. HEFNER DATE: 1/26/2015
CHECKED BY: B. MAY DATE: 1/27/2015

PROJECT REFERENCE NO.	SHEET NO.
R-2248G	3D-3

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

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

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT, RT, OR CL)'	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
SHEET 5 CONTINUED																			
Y3 26+54	RT	0529		680.20	677.10														
Y3 26+54	RT	0530		680.20	677.20														
		0530	0529		677.20	677.10													
Y3 26+86	RT	0528		680.50	675.50														
		0529	0528		677.10	676.85													
Y3 26+68	LT	0526		678.95	675.95														
Y3 26+76	LT	0527		678.95	675.85														
		0526	0527		675.95	675.85													
		0527	0528		675.85	675.50													
		0528	0531		675.50	669.83													
Y3 27+61	RT	0534		678.30	676.38														
Y3 27+61	RT	0535		680.00	669.62														
		0534	0535		676.38	676.00													
SHEET 6																			
RPD 14+26	LT	0601		704.51	701.76														
		0601	0601A		701.76	EX			16										
RPD 16+90	LT	0602		707.10	704.35														
		0602	0602A		704.35	EX			12										
RPD 18+64	LT																		
RPD 20+01	LT	0603		700.54	697.79														
		0603	0603A		697.79	EX			12										
RPD 20+80	LT																		
RPD 22+33	RT																		
SHEET 7																			
RPC 13+67	RT	0701		699.50	696.75														
		0701	0701A		696.75	EX			12										
RPC 18+50	RT	0700		696.70	693.95														
		0700	0700A		693.95	EX			20										
RPC 20+03	RT																		
RPC 21+93	RT																		
TOTAL THIS SHEET									72										
TOTAL FROM SHEET 3D-1																			
TOTAL FROM SHEET 3D-2																			
PROJECT TOTALS									72										
SAY																			

STATION	FROM	TO	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109	R.C. PIPE (CLASS III) 15"	18"	24"	30"	36"	42"	48"	R.C. PIPE (CLASS IV) 12"	15"	18"	24"	30"	36"	42"	48"	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.
	0530	0529																	8										
	0529	0528																	32										
	0526	0527																	8										
	0527	0528																	52										
	0528	0531																	28										
	0534	0535									8																		
TOTAL THIS SHEET											8								128										
TOTAL FROM SHEET 3D-1											388								500										
TOTAL FROM SHEET 3D-2				44							120		12						288				180						
PROJECT TOTALS				44							516		12						916				180						
SAY																													

STATION	FROM	TO	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. FRAME WITH TWO GRATES STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	MAHOLE FRAME & GRATE STD. 840.54	CONVERT DI TO JB W/ MANHOLE	PIPE REMOVAL LIN. FT.	REMARKS
SHEET 5 CONTINUED																				
Y3 26+54	0529		1			1	1				1									
Y3 26+54	0530		1			1	1				1									
	0530	0529																		
Y3 26+86	0528		1													1				W/ SLAB LID
	0529	0528																		
Y3 26+68	0526		1			1	1													
Y3 26+76	0527		1			1	1													
	0526	0527																		
	0527	0528																		
	0528	0531																		
Y3 27+61	0534		1									1		1						
Y3 27+61	0535		1	5	0.38											1				W/ SLAB LID
	0534	0535																		
SHEET 6																				
RPD 14+26	0601		1									1	1							
	0601	0601A																	12	
RPD 16+90	0602		1									1	1							
	0602	0602A																	16	
RPD 18+64																			16	
RPD 20+01	0603		1									1	1							
	0603	0603A																		
RPD 20+80																			24	
RPD 22+33																			16	
SHEET 7																				
RPC 13+67	0701		1									1	1							
	0701	0701A																	12	
RPC 18+50	0700		1									1	1							
	0700	0700A																	20	
RPC 20+03																			20	
RPC 21+93																			40	
TOTAL THIS SHEET			12	5	0.38	4	4				2	6	5	1		2			176	
TOTAL FROM SHEET 3D-1			19	3.34		12	8	1	3		2	7			7		6	6	182	
TOTAL FROM SHEET 3D-2			23	11.62		16	15		1		2	5		4	1	2	4	3	88	
PROJECT TOTALS			54	19.96	0.38	32	27	1	4		6	18	5	5	8	4	10	9	446	
SAY				21																

ABBREVIATIONS

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

4/14/2015
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USER: jhefner

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				SD	2500
				TOTAL LF:	2500

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

SUMMARY OF BRIDGE WAITING PERIODS

Bridge Description	End Bent/ Bent No.	MONTHS

SUMMARY OF SETTLEMENT GAUGES

Gauge No.	LINE	Approx. Station	Approx. Offset
		TOTAL GAUGES (EACH):	

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
							TOTAL SY:	0

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

SUMMARY OF EMBANKMENT WAITING PERIODS

LINE	Station	Station	MONTHS

SUMMARY OF SURCHARGES AND SURCHARGE WAITING PERIODS

LINE	Station	Station	Surcharge Height FT	MONTHS

SUMMARY OF REINFORCED SOIL SLOPES (RSS)

LINE	Beginning Slope	Approx. Station	Ending Slope	Approx. Station	Location LT/RT	SY
					TOTAL SY:	0

SUMMARY OF GEOTEXTILE FOR PAVEMENT STABILIZATION

LINE	Station	Station	SY
CONTINGENCY			
		TOTAL SY:	0

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		6000	12000	18000		
				TOTAL CY/TONS/SY:	6000	12000	18000*	0	0

ASU = Aggregate Subgrade, AST = Aggregate Stabilization
*Total square yards of Geotextile for Soil Stabilization is only the estimated quantity for ASU/AST and may only represent a portion of the geotextile quantity shown in the Item Sheets of the Proposal.

8/17/99

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
R-2248G	3P-1

WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
Liscense No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

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

PARCEL INDEX SHEET

IN CUBIC YARDS

PARCEL NO.	SHEET NO.	PROPERTY OWNER NAME
1	4	STAVROS G. KOUTROULAKIS BRENDA PITTS KOUTROULAKIS
2	4	DAVID R. GORMAN
3	4	JOHNNIE L. SNIPES
4	4	ALVIN DILLON PRIMM JO SNIPES PRIMM
5	4	G. R. WARREN MILDRED L. WARREN
6	4	RANDY CHARLES STRICKLAND
7	4	CRAIG G. REAMES ANNE I. REAMES

4/14/2015
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USER:jhafner

WETHERILL ENGINEERING
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Raleigh, N.C. 27606
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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
R-2248G	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
Bob A. May
NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY
4/21/2015

HYDRAULICS ENGINEER
Karen Hefner
NORTH CAROLINA PROFESSIONAL SEAL 31025 ENGINEER KAREN HEFNER
4/24/2015

REVISIONS

8/17/99

NAD 83/2011

END CONSTRUCTION
–Y4B– STA. 21+10.00

BEGIN TIP PROJECT R–2248G
–Y3– POT STA. 9+67.23 =
–Y4A– PT STA. 15+49.15

BEGIN CONSTRUCTION
–Y4A– STA. 11+50.00

MATCHLINE SEE SHEET 5
–Y3– STA. 16+00.00

–Y4– SR 2004 — 11,600 / 15,800 — 5,700 / 7,900 — 4,000 / 6,100 — 9,900 / 14,000 — –Y4– SR 2004

2015 / 2035 — 9,700 / 14,000 — –Y3– SR 2042

–RAB1– CURVE DATA

PI Sta 10+00.00
Δ = 360° 00' 00.0" (LT)
D = 86° 48' 42.4"
L = 414.69'
T = 0.00'
R = 66.00'
SE = 0.02

–Y3– CURVE DATA	–Y4A– CURVE DATA
PI Sta 16+26.38 Δ = 17° 11' 18.0" (RT) D = 2° 51' 53.2" L = 599.99' T = 302.26' R = 2,000.00' SE = SEE PLANS DS = 50 MPH	PI Sta 14+64.16 Δ = 9° 45' 44.3" (LT) D = 5° 43' 46.5" L = 170.38' T = 85.40' R = 1,000.00' SE = SEE PLANS DS = 20 MPH
–Y4B– CURVE DATA	
PI Sta 18+53.47 Δ = 8° 02' 24.2" (RT) D = 6° 09' 39.0" L = 130.50' T = 65.36' R = 930.00' SE = SEE PLANS DS = 35 MPH	PI Sta 21+29.04 Δ = 7° 29' 09.8" (LT) D = 4° 32' 50.2" L = 164.63' T = 82.43' R = 1,260.00' SE = SEE PLANS DS = 35 MPH
–DR1– CURVE DATA	**–DR2– CURVE DATA**
PI Sta 10+42.08 Δ = 72° 10' 03.0" (LT) D = 229° 10' 59.2" L = 31.49' T = 18.22' R = 25.00' SE = NC	PI Sta 10+76.39 Δ = 74° 49' 29.4" (LT) D = 229° 10' 59.2" L = 32.65' T = 19.12' R = 25.00' SE = NC

NOTE: ALL MONOLITHIC ISLANDS ARE 5" KEYED–IN.

SEE SHEET 8 FOR –Y3– PROFILE
SEE SHEET 9 FOR –Y4A– & –Y4B– PROFILES
SEE SHEET 12 FOR –RAB1– PROFILE
SEE SHEET 12 FOR –DR1– & –DR2– PROFILE
SEE SHEET 2B–1 FOR ROUNDABOUT DETAIL

PAVEMENT REMOVAL

4/14/2015
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USER: tharper

–Y3– CURVE DATA	–L– CURVE DATA	–RPA– CURVE DATA	–RPB– CURVE DATA		–RPC– CURVE DATA	–RPD– CURVE DATA
PI Sta 16+26.38	PI Sta 945+27.10	PI Sta 23+50.01	PI Sta 23+25.77	PI Sta 26+39.63	PI Sta 24+34.16	PI Sta 23+59.34
Δ = 17° 11' 18.0" (RT)	Δ = 37° 00' 51.6" (LT)	Δ = 41° 14' 23.7" (RT)	Δ = 7° 09' 08.2" (RT)	Δ = 14° 23' 16.8" (LT)	Δ = 43° 47' 12.4" (RT)	Δ = 15° 07' 55.5" (RT)
D = 2° 51' 53.2"	D = 0° 59' 52.6"	D = 39° 14' 37.3"	D = 2° 29' 28.0"	D = 14° 19' 26.2"	D = 39° 14' 37.3"	D = 5° 43' 46.5"
L = 599.99'	L = 3,709.11'	L = 105.09'	L = 287.11'	L = 100.45'	L = 111.58'	L = 264.10'
T = 302.26'	T = 1,921.86'	T = 54.94'	T = 143.74'	T = 50.49'	T = 58.67'	T = 132.83'
R = 2,000.00'	R = 5,741.46'	R = 146.00'	R = 2,300.00'	R = 400.00'	R = 146.00'	R = 1,000.00'
SE = SEE PLANS	SE = EXIST.	SE = SEE PLANS	SE = 0.05	SE = SEE PLANS	SE = SEE PLANS	SE = 0.07
		DS = 15 MPH	DS = 50 MPH	DS = 15 MPH	DS = 15 MPH	DS = 45 MPH

–RAB2– CURVE DATA	–RAB3– CURVE DATA
PI Sta 10+00.00	PI Sta 10+00.00
Δ = 360° 00' 00.0" (LT)	Δ = 360° 00' 00.0" (LT)
D = 71° 37' 11.0"	D = 71° 37' 11.0"
L = 502.65'	L = 502.65'
T = 0.00'	T = 0.00'
R = 80.00'	R = 80.00'
SE = 0.02	SE = 0.02

WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
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TRANSPORTATION PLANNING/DESIGN – BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN – GIS/GPS – CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
R–2248G	5
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
Bob A. May
NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A MAY
4/21/2015

HYDRAULICS ENGINEER
Karen Hefner
NORTH CAROLINA PROFESSIONAL SEAL 31025 ENGINEER KAREN HEFNER
4/24/2015

8/17/99

REVISIONS

NAD 83/2011

MATCHLINE SEE SHEET 6
–RPA– STA. 22+00.00

MATCHLINE SEE SHEET 6
–RPD– STA. 23+00.00

MATCHLINE SEE SHEET 4
–Y3– STA. 16+00.00

MATCHLINE SEE SHEET 7
–RPB– STA. 23+00.00

MATCHLINE SEE SHEET 7
–RPC– STA. 23+00.00

END TIP PROJECT R–2248G
–Y3– STA. 29+75.00

–Y3– POT Sta. 30+00.00

–RPA– PC Sta.22+95.08

–RPA– PT Sta.24+00.16

–RAB2– PC Sta. 10+00.00

–RAB2– PT Sta. 15+02.65

–Y3– PT Sta.19+24.10

–RPD– PT Sta.24+90.62

–RPD– POT Sta.27+23.25

–RPB– PRC Sta.26+89.58

–RPB– PC Sta.25+89.14

–RPB– PT Sta.24+69.14

–RAB3– PC Sta. 10+00.00

–RAB3– PT Sta. 15+02.65

–RPC– PT Sta.24+87.06

–RPC– PC Sta.23+75.49

–Y3– S 16° 40' 10.7" E

–RPA– S 53° 37' 43.8" W

–RPD– S 47° 27' 36.4" W

–RPB– N 49° 01' 47.0" E

–RPC– N 59° 44' 49" E

955+00 –L–

950+00 –L–

20+00

25+00

BOYCE D. NIXON
GRACE K. NIXON
DB 4458 PG 603

STEPHEN W. McCLURE
WILLIAM R. McCLURE
DB 27573 PG 614

DON DAVIES ROBINSON
RONALD ALLEN ROBINSON
DB 2782 PG 471

EUGENE DAVIS BIRMINGHAM
REVOCABLE TRUST
DB 15294 PG 345

MIDNIGHT NIXON, LLC
DB 24520 PG 100
DB 25605 PG 171

DUKE ENERGY CAROLINAS, LLC
DB 23840 PG 899
DB 24255 PG 785

NCDOT
DB 12654 PG 472

SR–2042 OAKDALE ROAD

REMOVE 12" HDPE

REMOVE 30" RCP

BEG. SIDEWALK
+21.33 LT. & RT.

END 4' P.S.
BEGIN 2'–6" C&G
RT. & LT.

END C&G
+75.00 RT.

NOTE: ALL MONOLITHIC ISLANDS ARE 5" KEYED–IN.

SEE SHEET 8 FOR –Y3– PROFILE
SEE SHEET 10 FOR –RPA– & –RPB– PROFILES
SEE SHEET 11 FOR –RPC– & –RPD– PROFILES
SEE SHEET 12 FOR –RAB2– & –RAB3– PROFILES
SEE SHEETS 2B–2 & 2B–3 FOR ROUNDABOUT DETAILS

2015 / 2035	–L– I–485	
	66,700 / 96,200	
A		D
2,400 / 6,400		3,800 / 6,600
		7,900 / 10,200
–Y3– SR 2042		–Y3– SR 2042
9,700 / 14,000		
B		C
3,700 / 4,600		500 / 600
	64,700 / 88,400	
	–L– I–485	

4/14/2015
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8/17/99

REVISIONS

–RPA– CURVE DATA

PIs Sta 14+13.27 Θs = 2° 51' 53.2" Ls = 196.85' LT = 131.25' ST = 65.63'	PI ST A.17+02.17 △ = 12° 56' 36.8" (RT) D = 2° 54' 38.3" L = 444.70' T = 223.30' R = 1,968.50' SE = SEE PLANS DS = 50 MPH	PI ST A.21+23.34 △ = 3° 48' 15.0" (LT) D = 3° 10' 59.2" L = 119.51' T = 59.78' R = 1,800.00' SE = SEE PLANS DS = 40 MPH

–RPD– CURVE DATA

PIs Sta 11+31.25 Θs = 2° 56' 17.7" Ls = 196.85' LT = 131.25' ST = 65.63'	PI ST A.12+81.65 △ = 5° 03' 34.3" (LT) D = 2° 59' 06.9" L = 169.48' T = 84.80' R = 1,919.29' SE = SEE PLANS DS = 50 MPH	PIs Sta 14+31.97 Θs = 2° 56' 17.7" Ls = 196.85' LT = 131.25' ST = 65.63'	PIs Sta 21+60.97 Θs = 5° 38' 08.3" Ls = 196.85' LT = 131.30' ST = 65.68'	PI ST A.23+59.34 △ = 15° 07' 55.5" (RT) D = 5° 43' 46.5" L = 264.10' T = 132.83' R = 1,000.00' SE = 0.07 DS = 45 MPH

–L– CURVE DATA

PI Sta 945+27.10 △ = 37° 00' 51.6" (LT) D = 0° 59' 52.6" L = 3,709.11' T = 1,921.86' R = 5,741.46' SE = EXIST.	PIs Sta 964+45.60 Θs = 1° 57' 51.9" Ls = 393.70' LT = 262.48' ST = 131.25'

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PROJECT REFERENCE NO.	SHEET NO.
R-2248G	6
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
Bob A. May
NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A MAY
4/21/2015

HYDRAULICS ENGINEER
Karen Hefner
NORTH CAROLINA PROFESSIONAL SEAL 31025 ENGINEER KAREN HEFNER
4/24/2015

BEGIN CONSTRUCTION
–RPD– STA. 14+18.00

NAD 83/2011

OAK HILLS INC.
DB 3054 PG 217
DB 3729 PG 416
DB 4092 PG 428
DB 15431 PG 220
DB 22239 PG 406

NCDOT
DB 12516 PG 062

BOYCE D. NIXON
GRACE K. NIXON
DB 4458 PG 603

–RPD– ST Sta.10+00.00
–RPD– SC Sta.11+96.85
–RPD– CS Sta.13+66.33
–RPD– ST Sta.15+63.18
15+00 –RPD–
20+00 –RPD–
–RPD– TS Sta.20+29.67
–RPD– SC Sta.22+26.52

BL-22
BL-23
BL-24

TIE TO EXIST. GR
–RPD– 14+19.00 +/–

SHOULDER BERM GUTTER
–RPD– STA. 14+18 TO 20+00 LT.

REMOVE
RETAIN
EXISTING R/W
APPROXIMATE LOCATION
NO MANHOLE
PIPE PLUGGED

S 26° 41' 19.3" W

NCDOT FIBER OPTIC
I-485 EBL
I-485 WBL
18" RCP
15" RCP
36" RCP

MATCHLINE SEE SHEET 5
–RPA– STA. 23+00.00

N 37° 37' 28.9" E

–L– POT Sta. 968+44.90
–L– ST Sta. 967+08.05
–L– CS Sta. 963+14.35

965+00 –L–
960+00 –L–

S 41° 37' 28.8" W

BL-20
BL-21

–RPA– POT Sta.10+00.00
–RPA– TS Sta.12+82.02
–RPA– SC Sta.14+78.87
15+00 –RPA–
20+00 –RPA–
–RPA– PT Sta.19+23.57
–RPA– PC Sta.20+63.57
–RPA– PT Sta.21+83.08

S 57° 25' 58.8" W
S 53° 37' 43.8" W

BEGIN CONSTRUCTION
–RPA– STA. 14+86.00

ROBERT C. SPIVEY, Jr.
PATSY C. SPIVEY
DB 5706 PG 375

EUGENE DAVIS BIRMINGHAM REVOCABLE TRUST
DB 15294 PG 345

MATCHLINE SEE SHEET 5
–RPA– STA. 22+00.00

SEE SHEET 10 FOR –RPA– PROFILE
SEE SHEET 11 FOR –RPD– PROFILE

4/14/2015
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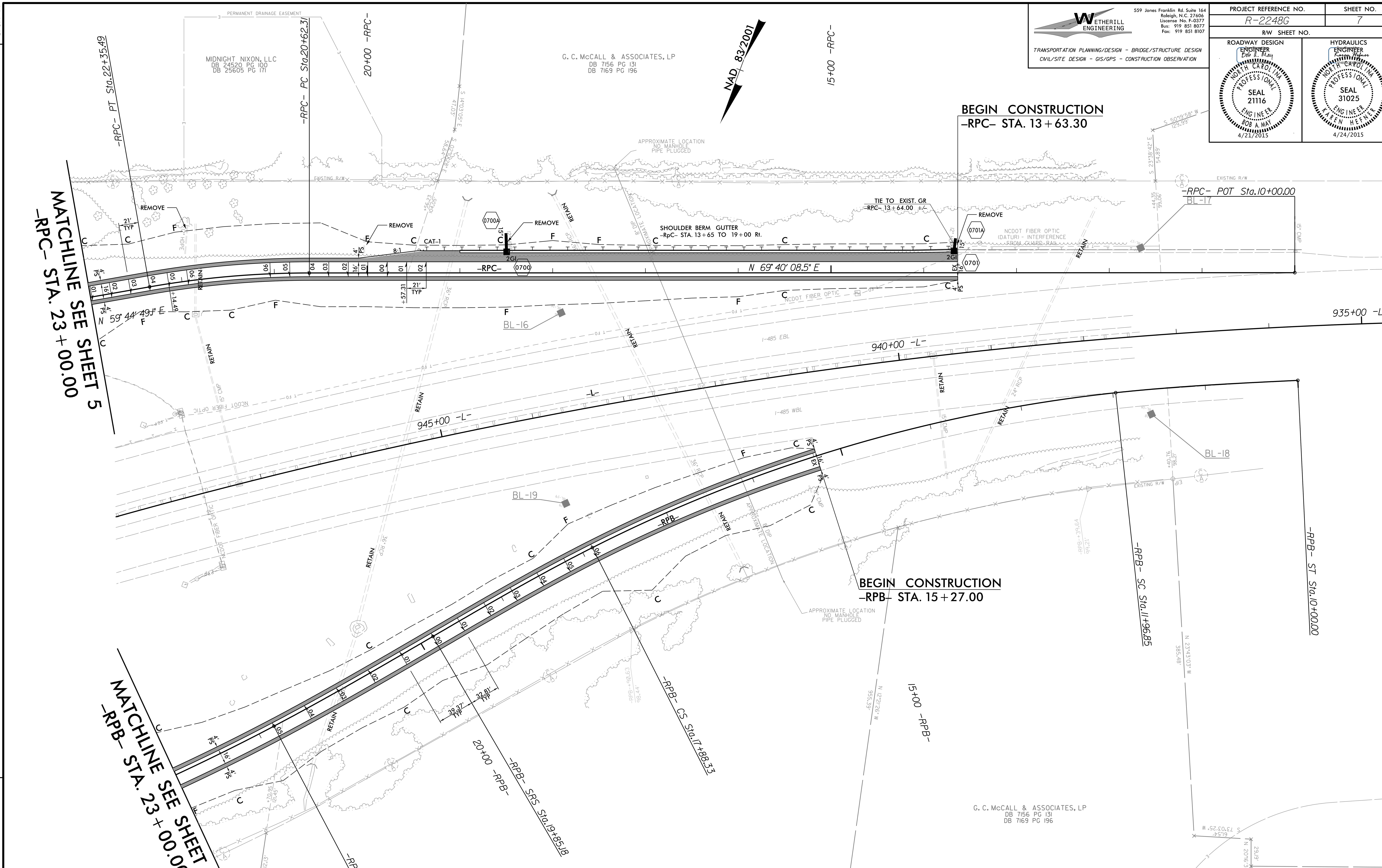
PROJECT REFERENCE NO.	SHEET NO.
R-2248G	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER Bob A. May NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY 4/21/2015	HYDRAULICS ENGINEER Karen Hefner NORTH CAROLINA PROFESSIONAL SEAL 31025 ENGINEER KAREN HEFNER 4/24/2015

REVISIONS



SEE SHEET 10 FOR -RPB- PROFILE
SEE SHEET 11 FOR -RPC- PROFILE

-L- CURVE DATA	-RPB- CURVE DATA					-RPC- CURVE DATA
PI Sta 945+27.10 Δ = 37° 00' 51.6" (LT) D = 0° 59' 52.6" L = 3,709.11' T = 1,921.86' R = 5,741.46' SE = EXIST.	PIs Sta 11+31.26 Θs = 3° 26' 15.9" Ls = 196.85' LT = 131.26' ST = 65.64'	PI STA.14+95.83 Δ = 20° 39' 31.7" (LT) D = 3° 29' 33.9" L = 591.48' T = 298.98' R = 1,640.42' SE = SEE PLANS DS = 50 MPH	PIs Sta 18+53.96 Θs = 3° 26' 15.9" Ls = 196.85' LT = 131.26' ST = 65.64'	PIs Sta 21+16.42 Θs = 2° 27' 06.8" Ls = 196.85' LT = 131.25' ST = 65.63'	PI STA.23+25.77 Δ = 7° 09' 08.2" (RT) D = 2° 29' 28.0" L = 287.11' T = 143.74' R = 2,300.00' SE = 0.05 DS = 50 MPH	PI STA.21+49.12 Δ = 9° 55' 19.4" (LT) D = 5° 43' 46.5" L = 173.17' T = 86.80' R = 1,000.00' SE = SEE PLANS DS = 50 MPH

8/17/99
4/14/2015
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5/28/99

BM3
Y3 STATION 9+87.19, 121.18' RT.
RR SPIKE IN 15" PINE

–Y3–

BM2
Y3 STATION 19+87.70, 141.76' LT.
RR SPIKE IN MAGNOLIA

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PROJECT REFERENCE NO.	SHEET NO.
R-2248G	8

ROADWAY DESIGN ENGINEER
Bob A. May
NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A MAY
4/21/2015

HYDRAULICS ENGINEER
Karen Hefner
NORTH CAROLINA PROFESSIONAL SEAL 31025 ENGINEER KAREN HEFNER
4/24/2015

760 750 740 730 720 710 700 690 680 670

BEGIN GRADE
–Y3– STA.10+87.67 = –RAB1– STA.11+98.35
EL = 726.85

(–)12.8395%

PI = 11+25.00
EL = 725.79'
VC = 60'
K = 20
DS = 30 MPH

(–)5.8000%

(–)5.8000%

PI = 12+75.00
EL = 717.09'
VC = 100'
K = 111
DS = 54 MPH

(–)4.9000%

END GRADE
–Y3– STA.13+25.00
BEGIN 3" OVERLAY
EL = 714.64

3" OVERLAY OF EXISTING PAVEMENT

BEGIN GRADE
–Y3– STA.16+00.00
EL = 702.18

(–)3.5000%

END GRADE
–Y3– STA.18+54.17 = –RAB2– STA.10+85.35
EL = 694.87

(+)0.4481%

PI = 18+14.00
EL = 694.69'
VC = 80'
K = 20
DS = 22 MPH

–RAB2–

BEGIN GRADE
–Y3– STA.20+08.23 = –RAB2– STA.12+92.91
EL = 691.63

(–)0.6925%

(–)1.5000%

END GRADE
BEGIN 3" OVERLAY
–Y3– STA.21+10.00
EL = 690.36

3" OVERLAY OF EXISTING PAVEMENT

PI = 20+40.00
EL = 691.41'
VC = 60'
K = 74
DS = 47 MPH

SEE SHEETS 4 & 5 FOR –Y3– ALIGNMENT

10 11 12 13 14 15 16 17 18 19 20 21 22 23

BM1
Y3 STATION 29+00.11, 65.64' LT.
RR SPIKE IN POWER POLE

–Y3–

730 720 710 700 690 680 670 660 650

3" OVERLAY

BEGIN GRADE
–Y3– STA.23+90.00
EL = 684.00

(–)2.2000%

(+)0.4377%

PI = 24+55.00
EL = 682.57'
VC = 70'
K = 27
DS = 25 MPH

END GRADE
–Y3– STA.24+93.84 = –RAB3– STA.14+81.41
EL = 682.74

–RAB3–

BEGIN GRADE
–Y3– STA.26+48.23 = –RAB3– STA.12+72.58
EL = 680.40

(–)0.5230%

(+)0.4000%

PI = 26+75.00
EL = 680.26'
VC = 50'
K = 54
DS = 36 MPH

(+)0.4000%

(–)2.8000%

PI = 28+35.00
EL = 680.90'
VC = 150'
K = 47
DS = 40 MPH

END GRADE
TIE TO EXISTING
–Y3– STA.29+75.00
EL = 676.98

SEE SHEETS 4 & 5 FOR –Y3– ALIGNMENT

23 24 25 26 27 28 29 30

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5/28/99

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PROJECT REFERENCE NO.	SHEET NO.
R-2248G	9

ROADWAY DESIGN ENGINEER
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NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY
4/21/2015

HYDRAULICS ENGINEER
Karen Hefner
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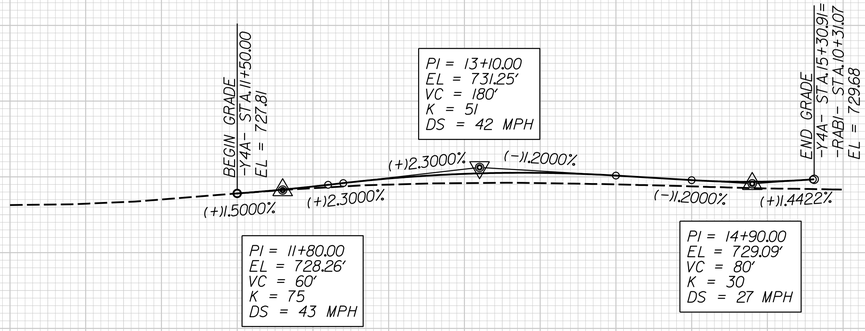
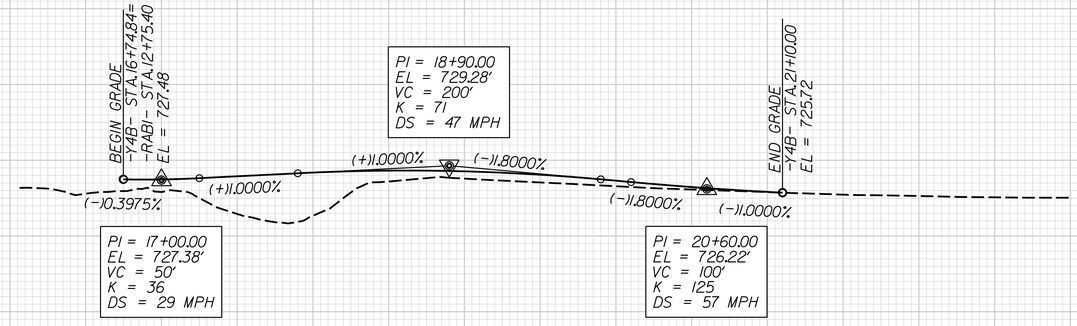
4/24/2015

-Y4A-



SEE SHEET 4 FOR -Y4A- ALIGNMENT

-Y4B-



SEE SHEETS 4 FOR -Y4B- ALIGNMENT

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–RPA–

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PROJECT REFERENCE NO.	SHEET NO.
R-2248G	10

ROADWAY DESIGN ENGINEER
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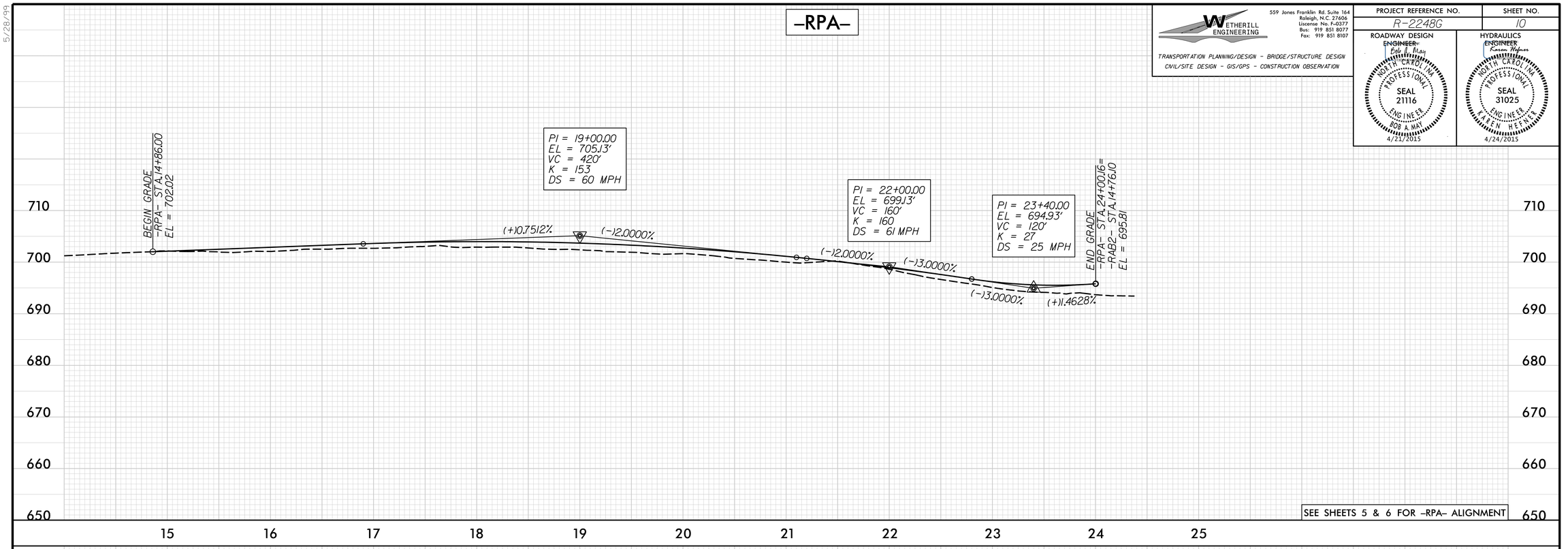
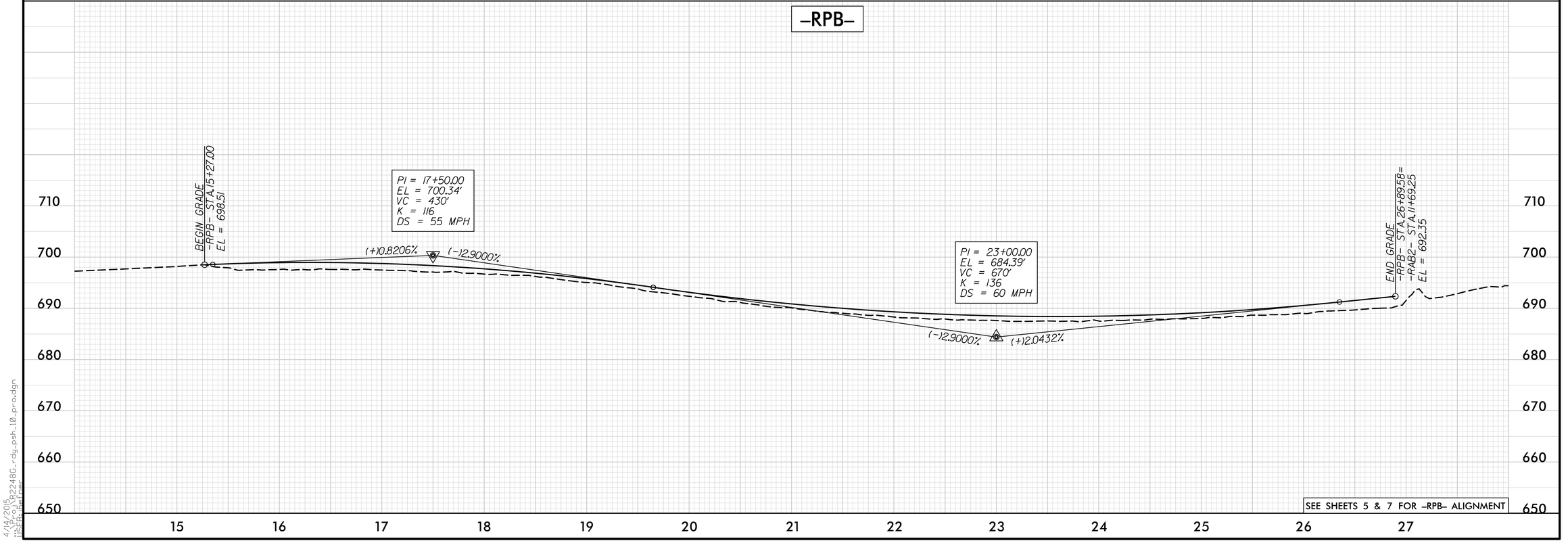


SEE SHEETS 5 & 6 FOR –RPA– ALIGNMENT

–RPB–



SEE SHEETS 5 & 7 FOR –RPB– ALIGNMENT

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–RPC–

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PROJECT REFERENCE NO.	SHEET NO.
R-2248G	11

ROADWAY DESIGN ENGINEER
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HYDRAULICS ENGINEER
Karen Hefner
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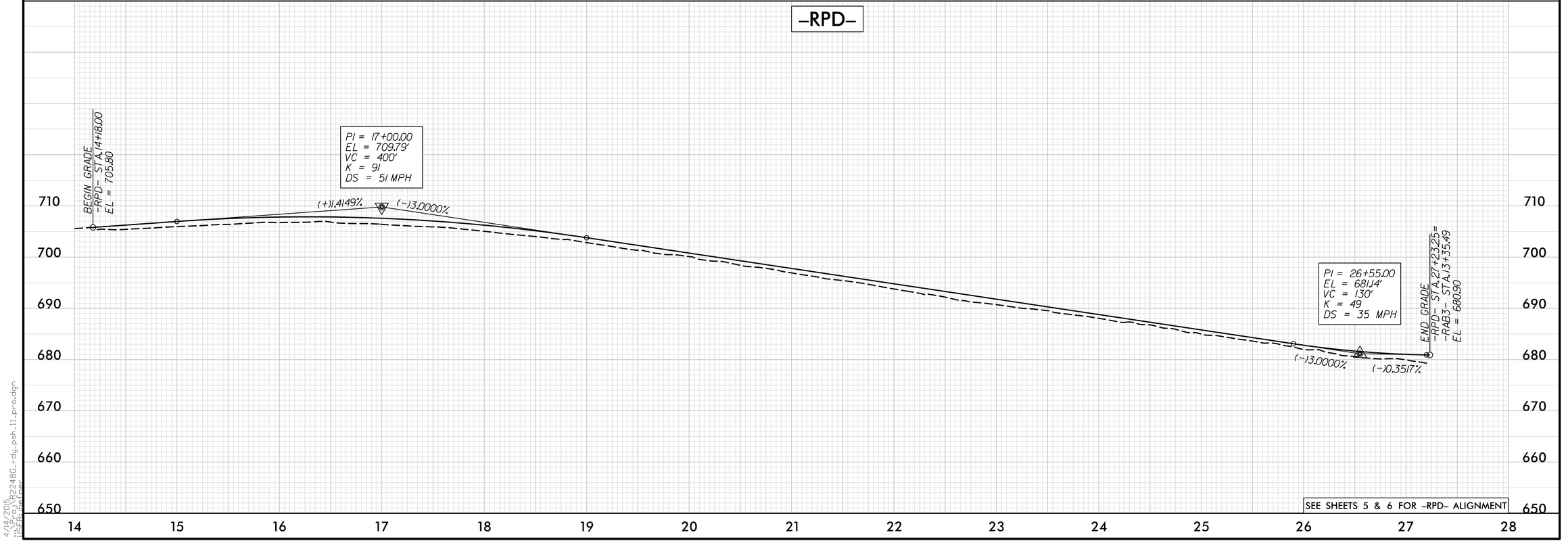
4/24/2015

SEE SHEETS 5 & 7 FOR –RPC– ALIGNMENT

–RPD–



SEE SHEETS 5 & 6 FOR –RPD– ALIGNMENT

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PROJECT REFERENCE NO.	SHEET NO.
R-2248G	12

ROADWAY DESIGN ENGINEER
Bob A. May
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4/21/2015

HYDRAULICS ENGINEER
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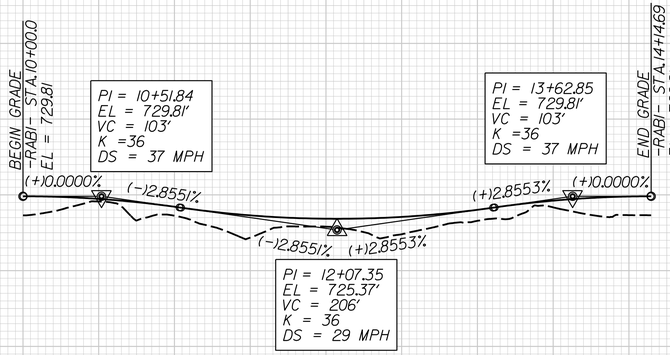
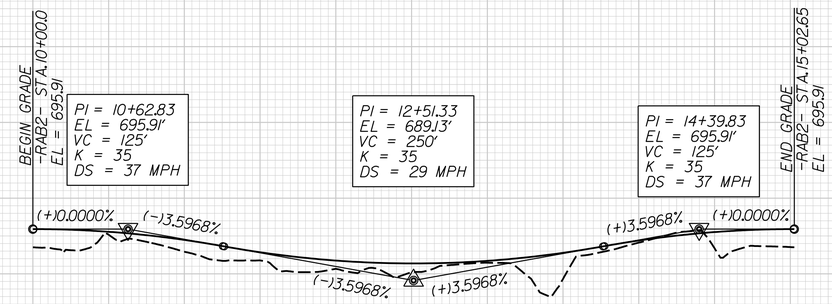
NORTH CAROLINA PROFESSIONAL SEAL 31025 ENGINEER KAREN HEFNER
4/24/2015

–RAB1–

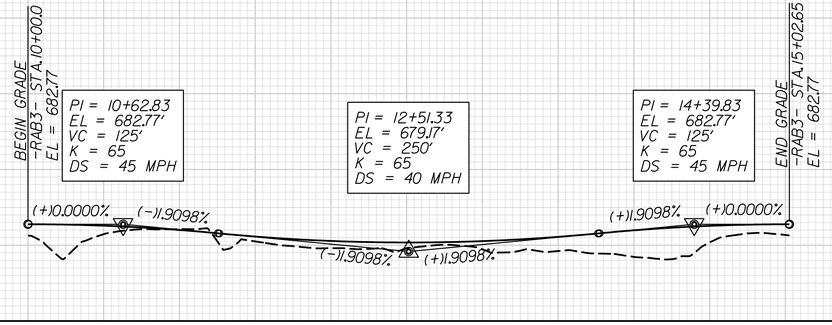


–RAB2–

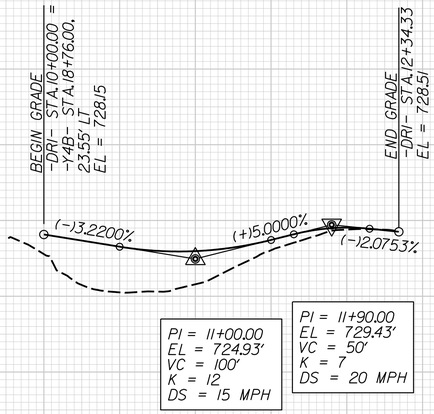


SEE SHEET 4 FOR –RAB1– ALIGNMENT
SEE SHEET 5 FOR –RAB2– ALIGNMENT

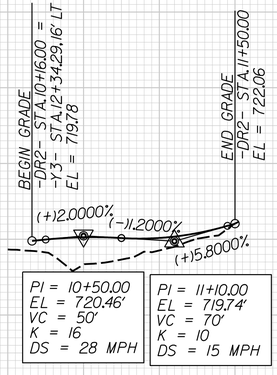
–RAB3–



–DR1–



–DR2–



SEE SHEET 5 FOR –RAB3– ALIGNMENT
SEE SHEET 4 FOR –DR1– & –DR2– ALIGNMENT