

SURVEY CONTROL SHEET R-2915C

PROJECT REFERENCE NO. R-2915C	SHEET NO. IC-2
Location and Surveys	

GPS Calibration Report

Project : r2915abcde

TIP Number	r2915abcde	Date & Time	8:15:20 AM 3/29/2010
User name	rhwagoner	Zone	North Carolina 3200
Coordinate System	US State Plane 1983		
Horizontal Datum	NAD 1983 (Comus)		
Vertical Datum		Geoid Model	G03NC
Coordinate Units	US survey feet		
Distance Units	US survey feet		
Height Units	US survey feet		

LOCAL SITE INFORMATION

Localized around	
Latitude	N/A
Longitude	N/A
Site Scale Factor	N/A
Height	N/A

The North Carolina Department of Transportation uses a Localized Coordinate System which is very similar to North Carolina Zone 3200 from which it is derived. Please take care in utilizing these coordinates to eliminate confusion of the two systems. This file is to aid in the use of Real Time Kinematic (RTK) GPS during construction layout.

Datum Transformation Parameters

Datum Transformation computation not requested

Updated Default Projection (Transverse Mercator) Definition

Updated default projection not requested

Horizontal Adjustment Parameters

Northing coordinate of rotation center	947934.1223sf
Easting coordinate of rotation center	1262471.3754sf
Rotation about the center point	0°00'00"
Translation north	-0.6128sf
Translation east	0.7058sf
Scale factor	1.00008668

Vertical Adjustment Parameters

Northing coordinate of origin point	916355.6589sf
Easting coordinate of origin point	1255522.7706sf
Vertical separation at origin	0.0728sf
Slope north	2.018ppm
Slope east	-3.981ppm

Geoid Model Definition

G03NC

Residual Differences Between GPS (WGS84) And Local Coordinates

Summary			
	Maximum error	Root Mean Square error	Point
Horizontal	0.037sf	0.006	R2915-23_WGS84
Vertical	0.080sf	0.010	R2915-23_WGS84
Three-dimensional	0.088sf	0.011	R2915-23_WGS84

Point Residuals					
WGS84 Coordinates		Calculated point FOR DISPLAY ONLY		Local Coordinates	
Point	R2915-1_WGS84	Northing	916355.6589sf	Point R2915-1 Local	
Latitude	36°14'30.16499"N	Easting	1255522.7706sf	Northing	916355.6590sf
Longitude	81°30'54.37263"W	Elevation	3142.3037sf	Easting	1255522.7760sf
Height	3038.5989sf	Horz error	0.005sf	Elevation	3142.2840sf
		Vert error	0.020sf	Utilized	Horz and Vert
		3D error	0.020sf	Quality	Survey quality
Point	R2915-2_WGS84	Northing	915243.5295sf	Point R2915-2 Local	
Latitude	36°14'19.87328"N	Easting	1258316.3057sf	Northing	915243.5260sf
Longitude	81°30'54.37263"W	Elevation	3035.6772sf	Easting	1258316.3100sf
Height	2931.8298sf	Horz error	0.006sf	Elevation	3035.6720sf
		Vert error	0.005sf	Utilized	Horz and Vert
		3D error	0.008sf	Quality	Survey quality
Point	R2915-3_WGS84	Northing	919149.7074sf	Point R2915-3 Local	
Latitude	36°14'59.39661"N	Easting	1261969.9588sf	Northing	919149.7040sf
Longitude	81°30'10.99416"W	Elevation	2977.4067sf	Easting	1261969.9680sf
Height	2873.5914sf	Horz error	0.010sf	Elevation	2977.4070sf
		Vert error	0.000sf	Utilized	Horz and Vert
		3D error	0.010sf	Quality	Survey quality
Point	R2915-4_WGS84	Northing	920506.4892sf	Point R2915-4 Local	
Latitude	36°15'13.02239"N	Easting	1262832.0488sf	Northing	920506.4880sf
Longitude	81°30'09.89092"W	Elevation	2956.9814sf	Easting	1262832.0570sf
Height	2853.1869sf	Horz error	0.008sf	Elevation	2956.9900sf
		Vert error	0.009sf	Utilized	Horz and Vert
		3D error	0.012sf	Quality	Survey quality
Point	R2915-5_WGS84	Northing	927532.5716sf	Point R2915-5 Local	
Latitude	36°16'22.33517"N	Easting	1262287.7805sf	Northing	927532.5780sf
Longitude	81°30'09.69521"W	Elevation	2902.2729sf	Easting	1262287.7910sf
Height	2798.7405sf	Horz error	0.012sf	Elevation	2902.2770sf
		Vert error	0.004sf	Utilized	Horz and Vert
		3D error	0.013sf	Quality	Survey quality
Point	R2915-6_WGS84	Northing	929551.4461sf	Point R2915-6 Local	
Latitude	36°16'43.07571"N	Easting	1265372.0745sf	Northing	929551.4520sf

Longitude	81°29'32.66468"W	Elevation	3037.6229sf	Easting	1265372.0870sf
Height	2934.0460sf	Horz error	0.014sf	Elevation	3037.6360sf
		Vert error	0.013sf	Utilized	Horz and Vert
		3D error	0.019sf	Quality	Survey quality
Point	R2915-7_WGS84	Northing	934301.5436sf	Point R2915-7 Local	
Latitude	36°17'29.48965"N	Easting	1263283.7338sf	Northing	934301.5570sf
Longitude	81°29'59.61899"W	Elevation	2870.4241sf	Easting	1263283.7320sf
Height	2767.0788sf	Horz error	0.014sf	Elevation	2870.4170sf
		Vert error	0.007sf	Utilized	Horz and Vert
		3D error	0.015sf	Quality	Survey quality
Point	R2915-8_WGS84	Northing	935627.2416sf	Point R2915-8 Local	
Latitude	36°17'42.92890"N	Easting	1264633.5337sf	Northing	935627.2530sf
Longitude	81°29'43.54539"W	Elevation	2872.3172sf	Easting	1264633.5310sf
Height	2768.9685sf	Horz error	0.012sf	Elevation	2872.3310sf
		Vert error	0.014sf	Utilized	Horz and Vert
		3D error	0.018sf	Quality	Survey quality
Point	R2915-9_WGS84	Northing	940641.1693sf	Point R2915-9 Local	
Latitude	36°18'31.45715"N	Easting	1260499.6148sf	Northing	940641.1850sf
Longitude	81°30'35.56934"W	Elevation	2893.9308sf	Easting	1260499.6170sf
Height	2790.8934sf	Horz error	0.016sf	Elevation	2893.9060sf
		Vert error	0.025sf	Utilized	Horz and Vert
		3D error	0.029sf	Quality	Survey quality
Point	R2915-10_WGS84	Northing	941223.4149sf	Point R2915-10 Local	
Latitude	36°18'37.24430"N	Easting	1260628.2994sf	Northing	941223.4310sf
Longitude	81°30'34.17760"W	Elevation	2992.8526sf	Easting	1260628.3040sf
Height	2889.8302sf	Horz error	0.017sf	Elevation	2992.8370sf
		Vert error	0.016sf	Utilized	Horz and Vert
		3D error	0.023sf	Quality	Survey quality
Point	R2915-11_WGS84	Northing	946476.2925sf	Point R2915-11 Local	
Latitude	36°19'28.64133"N	Easting	1258539.4421sf	Northing	946476.3110sf
Longitude	81°31'01.31448"W	Elevation	2961.5603sf	Easting	1258539.4520sf
Height	2858.7761sf	Horz error	0.021sf	Elevation	2961.5280sf
		Vert error	0.032sf	Utilized	Horz and Vert
		3D error	0.039sf	Quality	Survey quality
Point	R2915-12_WGS84	Northing	947042.3574sf	Point R2915-12 Local	
Latitude	36°19'34.13447"N	Easting	1258133.1858sf	Northing	947042.3510sf
Longitude	81°31'06.45218"W	Elevation	2976.4319sf	Easting	1258133.1700sf
Height	2873.6799sf	Horz error	0.017sf	Elevation	2976.4580sf
		Vert error	0.026sf	Utilized	Horz and Vert
		3D error	0.031sf	Quality	Survey quality
Point	R2915-13_WGS84	Northing	951569.5121sf	Point R2915-13 Local	
Latitude	36°20'18.04952"N	Easting	1254826.4800sf	Northing	951569.5120sf
Longitude	81°31'48.25253"W	Elevation	3052.2178sf	Easting	1254826.4650sf
Height	2949.7070sf	Horz error	0.015sf	Elevation	3052.2240sf
		Vert error	0.006sf	Utilized	Horz and Vert
		3D error	0.016sf	Quality	Survey quality
Point	R2915-14_WGS84	Northing	952360.7067sf	Point R2915-14 Local	
Latitude	36°20'25.72331"N	Easting	1254245.9924sf	Northing	952360.7080sf

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "R2915-15"

WITH NAD 83/CORS STATE PLANE GRID COORDINATES OF
 NORTHING: 954880.7810(ft) EASTING: 1254012.2870(ft)
 ELEVATION: 3097.5210(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99991292

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R2915-15" TO -L- STATION 254+36.94 IS
 S 27°41'53" E 21307.8051

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
 VERTICAL DATUM USED IS NAVD 88

NOTES:

- THE SITE CALIBRATION SHOWN IS BASED UPON A NETWORK TIED TO THE HARN (HIGH ACCURACY REFERENCE NETWORK) NAD 83/95 ADJUSTMENT. THIS CALIBRATION WILL ALLOW THE END USER TO WORK WITHIN THE SAME COORDINATE SYSTEM WHEN USING RTK (REAL TIME KINEMATIC) GPS AND A LOCAL BASE STATION. IF ANOTHER SYSTEM SUCH AS VRS (VIRTUAL REFERENCE STATION) IS USED, ADDITIONAL FIELD TIES MAY BE NEEDED TO REDUCE POSSIBLE ERRORS OR BIASES.
 - THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
[HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION](https://connect.ncdot.gov/resources/location)
 THE FILES TO BE FOUND ARE AS FOLLOWS:
 R2915C_LS_GPS.CALIBR.HTML
 R2915C_LS_WGS84.TXT
 R2915C_LS_LOCAL.TXT
 R2915C_LS_CONTROL.TXT
 THE WGS84 AND LOCAL FILES ARE COMMA DELIMITED AND CAN BE USED TO REPRODUCE THE SITE CALIBRATION FOR THE END USER'S GPS EQUIPMENT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
- © INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
 PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
 SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

NOTE: DRAWING NOT TO SCALE

6/2/99

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