

SURVEY CONTROL SHEET R-2514C

GPS Calibration Report

Project : R2514 calibrated

TIP Number	R-2514	Date & Time	2:01:53 PM 8/21/2008
User name	breigner	Zone	North Carolina 3200
Coordinate System	US State Plane 1983(at ground)	Geoid Model	Geoid03 (Comus) NC Sub Grid
Horizontal Datum	NAD 1983 (Comus)		
Vertical Datum	NAVD 88		
Coordinate Units	US survey feet		
Distance Units	US survey feet		
Height Units	US survey feet		

LOCAL SITE INFORMATION

Localized around	R2514-9
Latitude	34°58'38.28832"N
Longitude	77°14'28.40172"W
Site Scale Factor	1.0001120526
Height	-82.978sft

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	448950.369sft
Easting coordinate of rotation center	2529467.657sft
Rotation about the center point	0°00'00"
Translation north	0.013sft
Translation east	0.036sft
Scale factor	1.00000000

Vertical Adjustment Parameters

Northing coordinate of origin point	407827.968sft
Easting coordinate of origin point	2519418.699sft
Vertical separation at origin	-0.080sft
Slope north	1.441ppm
Slope east	-1.370ppm

Geoid Model Definition

Geoid03 (Comus) NC Sub Grid

Residual Differences Between GPS (WGS84) And Local Coordinates

Summary			
	Maximum error	Root Mean Square error	Point
Horizontal	0.044sft	0.006	R2514-11_GPS
Vertical	0.067sft	0.006	R2514-8_GPS
Three-dimensional	0.067sft	0.008	R2514-8_GPS

Point Residuals

WGS84 Coordinates		Calculated point FOR DISPLAY ONLY		Local Coordinates	
Point	R2514-1_GPS	Northing	407827.968sft	Point R2514-1	
Latitude	34°51'29.31483"N	Easting	2519418.699sft	Northing	407827.974sft
Longitude	77°16'06.35983"W	Elevation	43.564sft	Easting	2519418.713sft
Height	-78.235sft	Horz error	0.015sft	Elevation	43.599sft
		Vert error	0.035sft	Utilized	Horz and Vert
		3D error	0.038sft	Quality	Control quality
Point	R2514-2_GPS	Northing	408945.433sft	Point R2514-2	
Latitude	34°51'40.14315"N	Easting	2520708.019sft	Northing	408945.434sft
Longitude	77°15'50.65691"W	Elevation	43.503sft	Easting	2520708.029sft
Height	-78.318sft	Horz error	0.010sft	Elevation	43.506sft
		Vert error	0.003sft	Utilized	Horz and Vert
		3D error	0.011sft	Quality	Adjusted quality
Point	R2514-3_GPS	Northing	418524.531sft	Point R2514-3	
Latitude	34°53'14.34116"N	Easting	2523780.188sft	Northing	418524.533sft
Longitude	77°15'11.77526"W	Elevation	41.639sft	Easting	2523780.196sft
Height	-80.263sft	Horz error	0.008sft	Elevation	41.637sft
		Vert error	0.002sft	Utilized	Horz and Vert
		3D error	0.008sft	Quality	Adjusted quality
Point	R2514-4_GPS	Northing	417924.703sft	Point R2514-4	
Latitude	34°53'08.13703"N	Easting	2525342.246sft	Northing	417924.702sft
Longitude	77°14'53.15509"W	Elevation	39.040sft	Easting	2525342.253sft
Height	-82.883sft	Horz error	0.007sft	Elevation	39.040sft
		Vert error	0.000sft	Utilized	Horz and Vert
		3D error	0.007sft	Quality	Adjusted quality
Point	R2514-5_GPS	Northing	430538.609sft	Point R2514-5	
Latitude	34°55'12.87095"N	Easting	2525393.067sft	Northing	430538.608sft
Longitude	77°14'49.87198"W	Elevation	36.480sft	Easting	2525393.069sft
Height	-85.455sft	Horz error	0.002sft	Elevation	36.480sft
		Vert error	0.000sft	Utilized	Horz and Vert
		3D error	0.002sft	Quality	Adjusted quality
Point	R2514-6_GPS	Northing	429038.515sft	Point R2514-6	
Latitude	34°54'57.80480"N	Easting	2526715.834sft	Northing	429038.512sft

Longitude	77°14'34.30907"W	Elevation	35.502sft	Easting	2526715.836sft
Height	-86.455sft	Horz error	0.004sft	Elevation	35.502sft
		Vert error	0.000sft	Utilized	Horz and Vert
		3D error	0.004sft	Quality	Adjusted quality
Point	R2514-7_GPS	Northing	438055.893sft	Point R2514-7	
Latitude	34°56'26.77905"N	Easting	2527863.322sft	Northing	438055.890sft
Longitude	77°14'18.61136"W	Elevation	41.766sft	Easting	2527863.319sft
Height	-80.199sft	Horz error	0.004sft	Elevation	41.764sft
		Vert error	0.001sft	Utilized	Horz and Vert
		3D error	0.004sft	Quality	Adjusted quality
Point	R2514-8_GPS	Northing	439750.202sft	Point R2514-8	
Latitude	34°56'43.65198"N	Easting	2527193.599sft	Northing	439750.198sft
Longitude	77°14'26.29372"W	Elevation	40.123sft	Easting	2527193.598sft
Height	-81.825sft	Horz error	0.004sft	Elevation	40.056sft
		Vert error	0.067sft	Utilized	Horz and Vert
		3D error	0.067sft	Quality	Control quality
Point	R2514-9_GPS	Northing	451335.456sft	Point R2514-9	
Latitude	34°58'38.28827"N	Easting	2526812.792sft	Northing	451335.448sft
Longitude	77°14'28.40192"W	Elevation	38.949sft	Easting	2526812.771sft
Height	-82.951sft	Horz error	0.023sft	Elevation	38.950sft
		Vert error	0.001sft	Utilized	Horz and Vert
		3D error	0.023sft	Quality	Adjusted quality
Point	R2514-10_GPS	Northing	450596.123sft	Point R2514-10	
Latitude	34°58'30.78091"N	Easting	2527929.733sft	Northing	450596.117sft
Longitude	77°14'15.13979"W	Elevation	37.739sft	Easting	2527929.718sft
Height	-84.186sft	Horz error	0.017sft	Elevation	37.738sft
		Vert error	0.001sft	Utilized	Horz and Vert
		3D error	0.017sft	Quality	Adjusted quality
Point	R2514-12_GPS	Northing	459392.719sft	Point R2514-12	
Latitude	34°59'57.63114"N	Easting	2528733.702sft	Northing	459392.709sft
Longitude	77°14'03.60057"W	Elevation	30.746sft	Easting	2528733.674sft
Height	-91.132sft	Horz error	0.030sft	Elevation	30.745sft
		Vert error	0.000sft	Utilized	Horz and Vert
		3D error	0.030sft	Quality	Adjusted quality
Point	R2514-11_GPS	Northing	459319.015sft	Point R2514-11	
Latitude	34°59'57.21553"N	Easting	2526949.865sft	Northing	459319.001sft
Longitude	77°14'25.05454"W	Elevation	25.752sft	Easting	2526949.823sft
Height	-96.095sft	Horz error	0.044sft	Elevation	25.768sft
		Vert error	0.016sft	Utilized	Horz and Vert
		3D error	0.047sft	Quality	Control quality
Point	R2514-13_GPS	Northing	469303.134sft	Point R2514-13	
Latitude	35°01'34.93473"N	Easting	2532710.956sft	Northing	469303.132sft
Longitude	77°13'13.66659"W	Elevation	37.360sft	Easting	2532710.950sft
Height	-84.483sft	Horz error	0.007sft	Elevation	37.359sft
		Vert error	0.001sft	Utilized	Horz and Vert
		3D error	0.007sft	Quality	Adjusted quality
Point	R2514-14_GPS	Northing	468754.272sft	Point R2514-14	
Latitude	35°01'29.23639"N	Easting	2534234.861sft	Northing	468754.269sft

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "R2514-9"
 WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
 NORTHING: 451335.4480 (ft) EASTING: 2526812.771 (ft)
 ELEVATION: 38.950 (ft)
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999887960
 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS R2514-9" TO L- STATION 10+00.00 IS
 S04°09'54.41"E 22,449.166'
 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
 VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE