SURVEY CONTROL SHEET R–2514D

GPS Calibration Report

Project : R2514 calibrated

TIP Number	R-2514		
User name	breigner	**Date & Time**	2:01:53 PM 8/21/2008
Coordinate System	US State Plane 1983(at ground)	**Zone**	North Carolina 3200
Horizontal Datum	NAD 1983 (Conus)		
Vertical Datum	NAVD 88	**Geoid Model**	Geoid03 (Conus) NC Sub Grid
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 Zone200 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 (Conus) 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 NCGS FOR MONUMENT "R2514-9"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 451335.4480 (ft) EASTING: 451335.4480 (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 "R2514-9" TO -L- STATION 300+00 IS N16°36'14.94"E 6342.661'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE