

GPS Calibration Report

Project : r2510a calibration

TIP Number	R-2510A	Date & Time	2:23:33 PM 12/14/2005
User name	breigner	Zone	North Carolina 3200
Coordinate System	US State Plane 1983(at ground)	Geoid Model	Geoid99 NC Sub Grid
Horizontal Datum	NAD 1983 (Conus)		
Vertical Datum	NAVD88		
Coordinate Units	US survey feet		
Distance Units	US survey feet		
Height Units	US survey feet		

LOCAL SITE INFORMATION

Localized around	R2510AW-2
Latitude	35°33'45.20023"N
Longitude	77°05'05.91014"W
Site Scale Factor	1.0001071910
Height	-116.597sft

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	638750.321sft
Easting coordinate of rotation center	2560247.746sft
Rotation about the center point	0°00'00"
Translation north	-0.004sft
Translation east	0.002sft

Scale factor 1.00000000

Vertical Adjustment Parameters

Northing coordinate of origin point 702368.576sft
 Easting coordinate of origin point 2486939.769sft
 Vertical separation at origin 0.126sft
 Slope north -0.114ppm
 Slope east -1.080ppm

Geoid Model Definition

Geoid99 NC Sub Grid

Residual Differences Between GPS (WGS84) And Local Coordinates

Summary

	Maximum error	Root Mean Square error	Point
Horizontal	0.021sft	0.003	GROVE - WGS84
Vertical	0.053sft	0.008	R2510A-6 - WGS84
Three-dimensional	0.054sft	0.009	R2510A-6 - WGS84

Point Residuals

WGS84 Coordinates		Calculated point FOR DISPLAY ONLY		Local Coordinates	
Point	MIDDLE - WGS84	Northing	702368.576sft	Point	MIDDLE - Grid
Latitude	35°40'07.69972"N	Easting	2486939.769sft	Northing	702368.584sft
Longitude	77°21'37.60140"W	Elevation	42.102sft	Easting	2486939.754sft
Height	-75.377sft	Horz error	0.016sft	Elevation	42.064sft
		Vert error	0.038sft	Utilized	Horz and Vert
		3D error	0.041sft	Quality	Survey quality
Point	GROVE - WGS84	Northing	727662.500sft	Point	GROVE - Grid
Latitude	35°43'58.69914"N	Easting	2592422.694sft	Northing	727662.518sft
Longitude	77°00'13.30912"W	Elevation	36.663sft	Easting	2592422.706sft

Height	-82.526sft
---------------	------------

Horz error	0.021sft
Vert error	0.011sft
3D error	0.024sft

Elevation	36.674sft
Utilized	Horz and Vert
Quality	Survey quality

Point	R2510AW-2 - WGS84
Latitude	35°33'45.20023"N
Longitude	77°05'05.91014"W
Height	-116.598sft

Northing	665164.184sft
Easting	2569499.834sft
Elevation	3.368sft
Horz error	0.005sft
Vert error	0.001sft
3D error	0.005sft

Point	R2510AW-2 - Grid
Northing	665164.189sft
Easting	2569499.835sft
Elevation	3.367sft
Utilized	Horz and Vert
Quality	Survey quality

Point	TEE - WGS84
Latitude	35°24'59.40821"N
Longitude	77°15'40.02676"W
Height	-79.583sft

Northing	611044.355sft
Easting	2518048.605sft
Elevation	40.213sft
Horz error	0.012sft
Vert error	0.024sft
3D error	0.027sft

Point	TEE - Grid
Northing	611044.342sft
Easting	2518048.603sft
Elevation	40.237sft
Utilized	Horz and Vert
Quality	Survey quality

Point	CAYTON - WGS84
Latitude	35°15'40.10785"N
Longitude	76°59'25.02715"W
Height	-91.171sft

Northing	556029.441sft
Easting	2599879.400sft
Elevation	30.321sft
Horz error	0.015sft
Vert error	0.035sft
3D error	0.038sft

Point	CAYTON - Grid
Northing	556029.426sft
Easting	2599879.399sft
Elevation	30.286sft
Utilized	Horz and Vert
Quality	Survey quality

Point	R2510A-7 - WGS84
Latitude	35°30'20.00930"N
Longitude	77°06'10.14123"W
Height	-81.299sft

Northing	644318.612sft
Easting	2564590.466sft
Elevation	38.893sft
Horz error	0.005sft
Vert error	0.021sft
3D error	0.022sft

Point	R2510A-7 - Grid
Northing	644318.617sft
Easting	2564590.464sft
Elevation	38.872sft
Utilized	Horz and Vert
Quality	Survey quality

Point	PITTMAN - WGS84
Latitude	35°30'06.21209"N
Longitude	77°06'10.95348"W
Height	-78.973sft

Northing	642922.517sft
Easting	2564549.979sft
Elevation	41.233sft
Horz error	0.002sft
Vert error	0.022sft
3D error	0.022sft

Point	PITTMAN - Grid
Northing	642922.518sft
Easting	2564549.980sft
Elevation	41.211sft
Utilized	Horz and Vert
Quality	Survey quality

Point	MCKREED - WGS84
Latitude	35°29'02.51477"N
Longitude	77°02'57.96732"W

Northing	636792.404sft
Easting	2580630.181sft
Elevation	33.448sft

Point	MCKREED - Grid
Northing	636792.412sft
Easting	2580630.179sft

Height	-87.034sft
---------------	------------

Horz error	0.008sft
Vert error	0.032sft
3D error	0.033sft

Elevation	33.416sft
Utilized	Horz and Vert
Quality	Survey quality

Point	R2510AW-1 - WGS84
Latitude	35°27'56.77524"N
Longitude	77°05'18.02592"W
Height	-85.840sft

Northing	629921.301sft
Easting	2569177.392sft
Elevation	34.557sft
Horz error	0.002sft
Vert error	0.001sft
3D error	0.002sft

Point	R2510AW-1 - Grid
Northing	629921.302sft
Easting	2569177.393sft
Elevation	34.558sft
Utilized	Horz and Vert
Quality	Survey quality

Point	R2510A-5 - WGS84
Latitude	35°28'49.76373"N
Longitude	77°06'51.33671"W
Height	-72.060sft

Northing	635130.458sft
Easting	2561358.410sft
Elevation	48.173sft
Horz error	0.005sft
Vert error	0.036sft
3D error	0.037sft

Point	R2510A-5 - Grid
Northing	635130.455sft
Easting	2561358.414sft
Elevation	48.209sft
Utilized	Horz and Vert
Quality	Survey quality

Point	R2510A-6 - WGS84
Latitude	35°28'59.88014"N
Longitude	77°06'43.62562"W
Height	-73.924sft

Northing	636165.281sft
Easting	2561976.585sft
Elevation	46.309sft
Horz error	0.003sft
Vert error	0.053sft
3D error	0.054sft

Point	R2510A-6 - Grid
Northing	636165.279sft
Easting	2561976.587sft
Elevation	46.362sft
Utilized	Horz and Vert
Quality	Survey quality

Point	R2510A-4 - WGS84
Latitude	35°27'27.20684"N
Longitude	77°07'19.74574"W
Height	-64.662sft

Northing	626739.972sft
Easting	2559167.172sft
Elevation	55.614sft
Horz error	0.003sft
Vert error	0.026sft
3D error	0.026sft

Point	R2510A-4 - Grid
Northing	626739.970sft
Easting	2559167.174sft
Elevation	55.640sft
Utilized	Horz and Vert
Quality	Survey quality

Point	R2510A-3 - WGS84
Latitude	35°27'14.60892"N
Longitude	77°07'21.83552"W
Height	-63.205sft

Northing	625463.141sft
Easting	2559018.407sft
Elevation	57.079sft
Horz error	0.005sft
Vert error	0.012sft
3D error	0.013sft

Point	R2510A-3 - Grid
Northing	625463.136sft
Easting	2559018.408sft
Elevation	57.067sft
Utilized	Horz and Vert
Quality	Survey quality

Point	R2510A-2 - WGS84
Latitude	35°26'35.57313"N
Longitude	77°07'30.86874"W

Northing	621502.778sft
Easting	2558345.744sft
Elevation	57.846sft

Point	R2510A-2 - Grid
Northing	621502.775sft
Easting	2558345.743sft

Height	-62.461sft

Horz error	0.003sft
Vert error	0.014sft
3D error	0.014sft

Elevation	57.832sft
Utilized	Horz and Vert
Quality	Survey quality

Point	R2510A-1 - WGS84
Latitude	35°26'21.04579"N
Longitude	77°07'34.03443"W
Height	-59.944sft

Northing	620029.224sft
Easting	2558111.579sft
Elevation	60.371sft
Horz error	0.003sft
Vert error	0.023sft
3D error	0.023sft

Point	R2510A-1 - Grid
Northing	620029.221sft
Easting	2558111.577sft
Elevation	60.394sft
Utilized	Horz and Vert
Quality	Survey quality