

# GPS Calibration Report

*Project : R2510AS*

<b>TIP Number</b>	R-2510A	<b>Date &amp; Time</b>	8:08:01 AM 8/14/2003
<b>User name</b>	breigner	<b>Zone</b>	North Carolina 3200
<b>Coordinate System</b>	US State Plane 1983	<b>Geoid Model</b>	GEOID99 (Conus)
<b>Horizontal Datum</b>	NAD 1983 (Conus)		
<b>Vertical Datum</b>	NAVD88		
<b>Coordinate Units</b>	US survey feet		
<b>Distance Units</b>	US survey feet		
<b>Height Units</b>	US survey feet		

## LOCAL SITE INFORMATION

Localized around

Latitude	N/A
Longitude	N/A
Site Scale Factor	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

<b>Northing coordinate of rotation center</b>	638753.152sft
<b>Easting coordinate of rotation center</b>	2560248.737sft
<b>Rotation about the center point</b>	0°00'00"
<b>Translation north</b>	-2.835sft
<b>Translation east</b>	-0.989sft
<b>Scale factor</b>	1.00010736

## Vertical Adjustment Parameters

Northing coordinate of origin point	702368.588sft
Easting coordinate of origin point	2486939.757sft
Vertical separation at origin	0.126sft
Slope north	-0.114ppm
Slope east	-1.080ppm

## Geoid Model Definition

GEOID99 (Conus)

## Residual Differences Between GPS (WGS84) And Local Coordinates

### Summary

	Maximum error	Root Mean Square error	Point
Horizontal	0.010sft	0.002	MCKREED - WGS84
Vertical	0.053sft	0.008	R2510A-6 - WGS84
Three-dimensional	0.054sft	0.008	R2510A-6 - WGS84

### Point Residuals

WGS84 Coordinates		Calculated point FOR DISPLAY ONLY		Local Coordinates	
<b>Point</b>	<a href="#">MIDDLE - WGS84</a>	<b>Northing</b>	702368.588sft	<b>Point</b>	<a href="#">MIDDLE - Local</a>
<b>Latitude</b>	35°40'07.69972"N	<b>Easting</b>	2486939.757sft	<b>Northing</b>	702368.584sft
<b>Longitude</b>	77°21'37.60140"W	<b>Elevation</b>	42.102sft	<b>Easting</b>	2486939.754sft
<b>Height</b>	-75.377sft	<b>Horz error</b>	0.004sft	<b>Elevation</b>	42.064sft
		<b>Vert error</b>	0.038sft	<b>Utilized</b>	Horz and Vert
		<b>3D error</b>	0.038sft	<b>Quality</b>	Survey quality
<b>Point</b>	<a href="#">GROVE - WGS84</a>	<b>Northing</b>	727662.515sft	<b>Point</b>	<a href="#">GROVE - Local</a>
<b>Latitude</b>	35°43'58.69914"N	<b>Easting</b>	2592422.700sft	<b>Northing</b>	727662.517sft
<b>Longitude</b>	77°00'13.30912"W	<b>Elevation</b>	36.663sft	<b>Easting</b>	2592422.706sft
<b>Height</b>	-82.526sft	<b>Horz error</b>	0.006sft	<b>Elevation</b>	36.674sft
		<b>Vert error</b>	0.011sft	<b>Utilized</b>	Horz and Vert

<b>3D error</b>	0.013sft
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<b>Quality</b>	Survey quality
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<b>Point</b>	<a href="#">TEE - WGS84</a>
<b>Latitude</b>	35°24'59.40821"N
<b>Longitude</b>	77°15'40.02676"W
<b>Height</b>	-79.583sft

<b>Northing</b>	611044.350sft
<b>Easting</b>	2518048.598sft
<b>Elevation</b>	40.213sft
<b>Horz error</b>	0.009sft
<b>Vert error</b>	0.024sft
<b>3D error</b>	0.026sft

<b>Point</b>	<a href="#">TEE - Local</a>
<b>Northing</b>	611044.343sft
<b>Easting</b>	2518048.603sft
<b>Elevation</b>	40.237sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Survey quality

<b>Point</b>	<a href="#">CAYTON - WGS84</a>
<b>Latitude</b>	35°15'40.10785"N
<b>Longitude</b>	76°59'25.02715"W
<b>Height</b>	-91.171sft

<b>Northing</b>	556029.427sft
<b>Easting</b>	2599879.407sft
<b>Elevation</b>	30.321sft
<b>Horz error</b>	0.008sft
<b>Vert error</b>	0.035sft
<b>3D error</b>	0.036sft

<b>Point</b>	<a href="#">CAYTON - Local</a>
<b>Northing</b>	556029.426sft
<b>Easting</b>	2599879.399sft
<b>Elevation</b>	30.286sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Survey quality

<b>Point</b>	<a href="#">R2510AW-2 - WGS8</a>
<b>Latitude</b>	35°33'45.20023"N
<b>Longitude</b>	77°05'05.91014"W
<b>Height</b>	-116.598sft

<b>Northing</b>	665164.189sft
<b>Easting</b>	2569499.835sft
<b>Elevation</b>	3.368sft
<b>Horz error</b>	0.001sft
<b>Vert error</b>	0.001sft
<b>3D error</b>	0.002sft

<b>Point</b>	<a href="#">R2510AW-2 - Local</a>
<b>Northing</b>	665164.189sft
<b>Easting</b>	2569499.835sft
<b>Elevation</b>	3.367sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Survey quality

<b>Point</b>	<a href="#">R2510A-7 - WGS84</a>
<b>Latitude</b>	35°30'20.00930"N
<b>Longitude</b>	77°06'10.14123"W
<b>Height</b>	-81.299sft

<b>Northing</b>	644318.613sft
<b>Easting</b>	2564590.467sft
<b>Elevation</b>	38.893sft
<b>Horz error</b>	0.005sft
<b>Vert error</b>	0.021sft
<b>3D error</b>	0.021sft

<b>Point</b>	<a href="#">R2510A-7 - Local</a>
<b>Northing</b>	644318.617sft
<b>Easting</b>	2564590.464sft
<b>Elevation</b>	38.872sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Survey quality

<b>Point</b>	<a href="#">PITTMAN - WGS84</a>
<b>Latitude</b>	35°30'06.21209"N
<b>Longitude</b>	77°06'10.95348"W
<b>Height</b>	-78.973sft

<b>Northing</b>	642922.518sft
<b>Easting</b>	2564549.980sft
<b>Elevation</b>	41.233sft
<b>Horz error</b>	0.001sft
<b>Vert error</b>	0.022sft
<b>3D error</b>	0.022sft

<b>Point</b>	<a href="#">PITTMAN - Local</a>
<b>Northing</b>	642922.518sft
<b>Easting</b>	2564549.981sft
<b>Elevation</b>	41.211sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Survey quality

<b>Point</b>	<a href="#">MCKREED - WGS84</a>
<b>Latitude</b>	35°29'02.51477"N
<b>Longitude</b>	77°02'57.96732"W
<b>Height</b>	-87.034sft

<b>Northing</b>	636792.404sft
<b>Easting</b>	2580630.185sft
<b>Elevation</b>	33.448sft
<b>Horz error</b>	<b>0.010sft</b>
<b>Vert error</b>	<b>0.032sft</b>

<b>Point</b>	<a href="#">MCKREED - Local</a>
<b>Northing</b>	636792.412sft
<b>Easting</b>	2580630.179sft
<b>Elevation</b>	33.416sft
<b>Utilized</b>	Horz and Vert

<b>3D error</b>	<b>0.033sft</b>
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<b>Quality</b>	Survey quality
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<b>Point</b>	<a href="#">R2510A-6 - WGS84</a>
<b>Latitude</b>	35°28'59.88014"N
<b>Longitude</b>	77°06'43.62562"W
<b>Height</b>	-73.924sft

<b>Northing</b>	636165.281sft
<b>Easting</b>	2561976.585sft
<b>Elevation</b>	46.309sft
<b>Horz error</b>	<b>0.002sft</b>
<b>Vert error</b>	<b>0.053sft</b>
<b>3D error</b>	<b>0.054sft</b>

<b>Point</b>	<a href="#">R2510A-6 - Local</a>
<b>Northing</b>	636165.279sft
<b>Easting</b>	2561976.587sft
<b>Elevation</b>	46.362sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Survey quality

<b>Point</b>	<a href="#">R2510A-5 - WGS84</a>
<b>Latitude</b>	35°28'49.76373"N
<b>Longitude</b>	77°06'51.33671"W
<b>Height</b>	-72.060sft

<b>Northing</b>	635130.457sft
<b>Easting</b>	2561358.410sft
<b>Elevation</b>	48.173sft
<b>Horz error</b>	0.005sft
<b>Vert error</b>	0.036sft
<b>3D error</b>	0.037sft

<b>Point</b>	<a href="#">R2510A-5 - Local</a>
<b>Northing</b>	635130.455sft
<b>Easting</b>	2561358.415sft
<b>Elevation</b>	48.209sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Survey quality

<b>Point</b>	<a href="#">R2510AW-1 - WGS8</a>
<b>Latitude</b>	35°27'56.77524"N
<b>Longitude</b>	77°05'18.02592"W
<b>Height</b>	-85.840sft

<b>Northing</b>	629921.299sft
<b>Easting</b>	2569177.394sft
<b>Elevation</b>	34.557sft
<b>Horz error</b>	0.003sft
<b>Vert error</b>	0.001sft
<b>3D error</b>	0.003sft

<b>Point</b>	<a href="#">R2510AW-1 - Loca</a>
<b>Northing</b>	629921.302sft
<b>Easting</b>	2569177.393sft
<b>Elevation</b>	34.558sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Survey quality

<b>Point</b>	<a href="#">R2510A-4 - WGS84</a>
<b>Latitude</b>	35°27'27.20684"N
<b>Longitude</b>	77°07'19.74574"W
<b>Height</b>	-64.662sft

<b>Northing</b>	626739.970sft
<b>Easting</b>	2559167.172sft
<b>Elevation</b>	55.614sft
<b>Horz error</b>	0.002sft
<b>Vert error</b>	0.026sft
<b>3D error</b>	0.026sft

<b>Point</b>	<a href="#">R2510A-4 - Local</a>
<b>Northing</b>	626739.970sft
<b>Easting</b>	2559167.174sft
<b>Elevation</b>	55.640sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Survey quality

<b>Point</b>	<a href="#">R2510A-3 - WGS84</a>
<b>Latitude</b>	35°27'14.60892"N
<b>Longitude</b>	77°07'21.83552"W
<b>Height</b>	-63.205sft

<b>Northing</b>	625463.139sft
<b>Easting</b>	2559018.406sft
<b>Elevation</b>	57.079sft
<b>Horz error</b>	0.003sft
<b>Vert error</b>	0.012sft
<b>3D error</b>	0.012sft

<b>Point</b>	<a href="#">R2510A-3 - Local</a>
<b>Northing</b>	625463.136sft
<b>Easting</b>	2559018.408sft
<b>Elevation</b>	57.067sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Survey quality

<b>Point</b>	<a href="#">R2510A-2 - WGS84</a>
<b>Latitude</b>	35°26'35.57313"N
<b>Longitude</b>	77°07'30.86874"W
<b>Height</b>	-62.461sft

<b>Northing</b>	621502.775sft
<b>Easting</b>	2558345.743sft
<b>Elevation</b>	57.846sft
<b>Horz error</b>	0.001sft
<b>Vert error</b>	0.014sft

<b>Point</b>	<a href="#">R2510A-2 - Local</a>
<b>Northing</b>	621502.775sft
<b>Easting</b>	2558345.742sft
<b>Elevation</b>	57.832sft
<b>Utilized</b>	Horz and Vert

<b>3D error</b>	0.014sft
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<b>Quality</b>	Survey quality
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<b>Point</b>	<a href="#">R2510A-1 - WGS84</a>
<b>Latitude</b>	35°26'21.04579"N
<b>Longitude</b>	77°07'34.03443"W
<b>Height</b>	-59.944sft

<b>Northing</b>	620029.220sft
<b>Easting</b>	2558111.579sft
<b>Elevation</b>	60.371sft
<b>Horz error</b>	0.002sft
<b>Vert error</b>	0.023sft
<b>3D error</b>	0.023sft

<b>Point</b>	<a href="#">R2510A-1 - Local</a>
<b>Northing</b>	620029.221sft
<b>Easting</b>	2558111.577sft
<b>Elevation</b>	60.394sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Survey quality