

# GPS Calibration Report

*Project : R3324\_c*

<b>TIP Number</b>	R3324		
<b>User name</b>	jneal	<b>Date &amp; Time</b>	11:52:31 AM 10/10/2005
<b>Coordinate System</b>	US State Plane 1983(at ground)	<b>Zone</b>	North Carolina 3200
<b>Horizontal Datum</b>	NAD 1983 (Conus)		
<b>Vertical Datum</b>	NAVD 88	<b>Geoid Model</b>	Geoid03 (Conus) NC Sub Grid
<b>Coordinate Units</b>	US survey feet		
<b>Distance Units</b>	US survey feet		
<b>Height Units</b>	US survey feet		

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## LOCAL SITE INFORMATION

Localized around	
Latitude	33°57'07.08872"N
Longitude	78°02'51.95161"W
Site Scale Factor	0.9999000100
Height	-87.8847sft

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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.

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## Datum Transformation Parameters

Datum Transformation computation not requested

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## Updated Default Projection (Transverse Mercator) Definition

Updated default projection not requested

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## Horizontal Adjustment Parameters

<b>Northing coordinate of rotation center</b>	76973.8767sft
<b>Easting coordinate of rotation center</b>	2288670.7106sft
<b>Rotation about the center point</b>	0°00'00"
<b>Translation north</b>	-0.0018sft
<b>Translation east</b>	-0.0220sft
<b>Scale factor</b>	1.00000183

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## Vertical Adjustment Parameters

<b>Northing coordinate of origin point</b>	86560.1485sft
<b>Easting coordinate of origin point</b>	2294460.6210sft
<b>Vertical separation at origin</b>	-0.0522sft
<b>Slope north</b>	-5.209ppm
<b>Slope east</b>	0.521ppm

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# 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	0.041sft	0.007	K 216_GPS
Vertical	0.006sft	0.001	R3324-3_GPS
Three-dimensional	0.041sft	0.007	K 216_GPS

### Point Residuals

WGS84 Coordinates		Calculated point FOR DISPLAY ONLY		Local Coordinates	
<b>Point</b>	W3408-11_GPS	<b>Northing</b>	86560.1485sft	<b>Point</b> W3408-11	
<b>Latitude</b>	33°59'01.92596"N	<b>Easting</b>	2294460.6210sft	<b>Northing</b>	86560.1335sft
<b>Longitude</b>	78°01'43.60234"W	<b>Elevation</b>	36.8964sft	<b>Easting</b>	2294460.6221sft
<b>Height</b>	-84.5267sft	<b>Horz error</b>	0.015sft	<b>Elevation</b>	36.8963sft
		<b>Vert error</b>	0.000sft	<b>Utilized</b>	Horz and Vert
		<b>3D error</b>	0.015sft	<b>Quality</b>	Adjusted quality
<b>Point</b>	J 216_GPS	<b>Northing</b>	86318.0862sft	<b>Point</b> J 216	
<b>Latitude</b>	33°58'59.62175"N	<b>Easting</b>	2293527.0193sft	<b>Northing</b>	86318.0651sft
<b>Longitude</b>	78°01'54.71623"W	<b>Elevation</b>	39.4448sft	<b>Easting</b>	2293527.0187sft
<b>Height</b>	-81.9499sft	<b>Horz error</b>	0.021sft	<b>Elevation</b>	39.4455sft
		<b>Vert error</b>	0.001sft	<b>Utilized</b>	Horz and Vert
		<b>3D error</b>	0.021sft	<b>Quality</b>	Control quality
<b>Point</b>	E 117_GPS	<b>Northing</b>	84538.1043sft	<b>Point</b> E 117	
<b>Latitude</b>	33°58'42.01259"N	<b>Easting</b>	2293548.4460sft	<b>Northing</b>	84538.0924sft
<b>Longitude</b>	78°01'54.66794"W	<b>Elevation</b>	35.9634sft	<b>Easting</b>	2293548.4502sft
<b>Height</b>	-85.4793sft	<b>Horz error</b>	0.013sft	<b>Elevation</b>	35.9678sft
		<b>Vert error</b>	0.004sft	<b>Utilized</b>	Horz and Vert
		<b>3D error</b>	0.013sft	<b>Quality</b>	Control quality
<b>Point</b>	D 117_GPS	<b>Northing</b>	78695.5268sft	<b>Point</b> D 117	
<b>Latitude</b>	33°57'44.16419"N	<b>Easting</b>	2294122.0299sft	<b>Northing</b>	78695.5292sft
<b>Longitude</b>	78°01'48.53524"W	<b>Elevation</b>	31.0203sft	<b>Easting</b>	2294122.0391sft
<b>Height</b>	-90.5931sft	<b>Horz error</b>	0.010sft	<b>Elevation</b>	31.0175sft
		<b>Vert error</b>	0.003sft	<b>Utilized</b>	Horz and Vert
		<b>3D error</b>	0.010sft	<b>Quality</b>	Adjusted quality
<b>Point</b>	R3324-4_GPS	<b>Northing</b>	77658.0739sft	<b>Point</b> R3324-4	
<b>Latitude</b>	33°57'33.90333"N	<b>Easting</b>	2294108.6372sft	<b>Northing</b>	77658.0872sft
<b>Longitude</b>	78°01'48.81454"W	<b>Elevation</b>	30.8585sft	<b>Easting</b>	2294108.6471sft
<b>Height</b>	-90.7804sft	<b>Horz error</b>	0.017sft	<b>Elevation</b>	30.8559sft
		<b>Vert error</b>	0.003sft	<b>Utilized</b>	Horz and Vert
		<b>3D error</b>	0.017sft	<b>Quality</b>	Adjusted quality
<b>Point</b>	K 216_GPS	<b>Northing</b>	70153.6678sft	<b>Point</b> K 216	
<b>Latitude</b>	33°56'19.55166"N	<b>Easting</b>	2295355.3399sft	<b>Northing</b>	70153.7066sft

<b>Longitude</b>	78°01'34.88894"W
<b>Height</b>	-99.2481sft

<b>Elevation</b>	22.6212sft
<b>Horz error</b>	<b>0.041sft</b>
<b>Vert error</b>	<b>0.000sft</b>
<b>3D error</b>	<b>0.041sft</b>

<b>Easting</b>	2295355.3525sft
<b>Elevation</b>	22.6213sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Control quality

<b>Point</b>	Southport EB_GPS
<b>Latitude</b>	33°57'07.08872"N
<b>Longitude</b>	78°02'51.95161"W
<b>Height</b>	-87.8941sft

<b>Northing</b>	74896.0158sft
<b>Easting</b>	2288816.4465sft
<b>Elevation</b>	33.6079sft
<b>Horz error</b>	0.023sft
<b>Vert error</b>	0.006sft
<b>3D error</b>	0.024sft

<b>Point</b>	Southport EB
<b>Northing</b>	74896.0215sft
<b>Easting</b>	2288816.4689sft
<b>Elevation</b>	33.6023sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Control quality

<b>Point</b>	R3324-3_GPS
<b>Latitude</b>	33°56'37.39808"N
<b>Longitude</b>	78°03'24.33096"W
<b>Height</b>	-85.9584sft

<b>Northing</b>	71868.6673sft
<b>Easting</b>	2286117.3215sft
<b>Elevation</b>	35.5067sft
<b>Horz error</b>	<b>0.006sft</b>
<b>Vert error</b>	<b>0.006sft</b>
<b>3D error</b>	<b>0.009sft</b>

<b>Point</b>	R3324-3
<b>Northing</b>	71868.6731sft
<b>Easting</b>	2286117.3230sft
<b>Elevation</b>	35.5132sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Adjusted quality

<b>Point</b>	R3324-2_GPS
<b>Latitude</b>	33°56'28.56678"N
<b>Longitude</b>	78°03'33.52993"W
<b>Height</b>	-102.4122sft

<b>Northing</b>	70968.5914sft
<b>Easting</b>	2285350.7807sft
<b>Elevation</b>	19.0419sft
<b>Horz error</b>	0.014sft
<b>Vert error</b>	0.001sft
<b>3D error</b>	0.014sft

<b>Point</b>	R3324-2
<b>Northing</b>	70968.5936sft
<b>Easting</b>	2285350.7670sft
<b>Elevation</b>	19.0429sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Adjusted quality

<b>Point</b>	Southport Az Mk_
<b>Latitude</b>	33°55'30.52359"N
<b>Longitude</b>	78°04'44.27846"W
<b>Height</b>	-104.3983sft

<b>Northing</b>	65045.3128sft
<b>Easting</b>	2279444.5691sft
<b>Elevation</b>	16.9423sft
<b>Horz error</b>	0.038sft
<b>Vert error</b>	0.000sft
<b>3D error</b>	0.038sft

<b>Point</b>	Southport Az Mk
<b>Northing</b>	65045.3104sft
<b>Easting</b>	2279444.5312sft
<b>Elevation</b>	16.9422sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Control quality

<b>Point</b>	ROAD_GPS
<b>Latitude</b>	33°57'59.35969"N
<b>Longitude</b>	78°06'28.50573"W
<b>Height</b>	-69.3078sft

<b>Northing</b>	80010.4292sft
<b>Easting</b>	2270526.3631sft
<b>Elevation</b>	51.3332sft
<b>Horz error</b>	0.020sft
<b>Vert error</b>	0.001sft
<b>3D error</b>	0.020sft

<b>Point</b>	ROAD
<b>Northing</b>	80010.4111sft
<b>Easting</b>	2270526.3545sft
<b>Elevation</b>	51.3319sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Adjusted quality