

# GPS Calibration Report

*Project : i2304*

<b>TIP Number</b>	I-2304	<b>Date &amp; Time</b>	12:30:11 PM 6/16/2009
<b>User name</b>	jlkeaton	<b>Zone</b>	North Carolina 3200
<b>Coordinate System</b>	US State Plane 1983		
<b>Horizontal Datum</b>	NAD 1983 (Conus)		
<b>Vertical Datum</b>	NGVD 1929	<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 NCGS Mon. Potts

Latitude	32-27-42.42567
Longitude	82-47-42.04466
Site Scale Factor	1.000123045
Height	662.623sft

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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

Northing coordinate of rotation center	726576.862sft
Easting coordinate of rotation center	1595290.577sft
Rotation about the center point	0°00'00"
Translation north	0.851sft
Translation east	-0.332sft
Scale factor	1.00012137

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## Vertical Adjustment Parameters

Northing coordinate of origin point	715005.481sft
Easting coordinate of origin point	1585295.138sft
Vertical separation at origin	0.822sft
Slope north	-3.763ppm
Slope east	5.711ppm

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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	0.075sft	0.013	GPS-6
Vertical	0.072sft	0.015	GPS-78
Three-dimensional	0.104sft	0.020	GPS-6

### Point Residuals

WGS84 Coordinates		Calculated point FOR DISPLAY ONLY		Local Coordinates	
<b>Point</b>	GPS-132	<b>Northing</b>	715005.481sft	<b>Point</b>	BL-132
<b>Latitude</b>	35°42'23.64419"N	<b>Easting</b>	1585295.138sft	<b>Northing</b>	715005.464sft
<b>Longitude</b>	80°23'48.98118"W	<b>Elevation</b>	712.105sft	<b>Easting</b>	1585295.176sft
<b>Height</b>	608.889sft	<b>Horz error</b>	0.042sft	<b>Elevation</b>	712.120sft
		<b>Vert error</b>	0.015sft	<b>Utilized</b>	Horz and Vert
		<b>3D error</b>	0.045sft	<b>Quality</b>	Survey quality
<b>Point</b>	GPS-78	<b>Northing</b>	715843.566sft	<b>Point</b>	78
<b>Latitude</b>	35°42'31.91881"N	<b>Easting</b>	1585204.304sft	<b>Northing</b>	715843.617sft
<b>Longitude</b>	80°23'50.22543"W	<b>Elevation</b>	702.242sft	<b>Easting</b>	1585204.322sft
<b>Height</b>	598.979sft	<b>Horz error</b>	<b>0.054sft</b>	<b>Elevation</b>	702.170sft
		<b>Vert error</b>	<b>0.072sft</b>	<b>Utilized</b>	Horz and Vert
		<b>3D error</b>	<b>0.090sft</b>	<b>Quality</b>	Survey quality
<b>Point</b>	GPS-4	<b>Northing</b>	720359.062sft	<b>Point</b>	I2304AA-4
<b>Latitude</b>	35°43'16.63799"N	<b>Easting</b>	1585697.211sft	<b>Northing</b>	720359.044sft
<b>Longitude</b>	80°23'45.01925"W	<b>Elevation</b>	666.177sft	<b>Easting</b>	1585697.185sft
<b>Height</b>	562.715sft	<b>Horz error</b>	0.032sft	<b>Elevation</b>	666.220sft
		<b>Vert error</b>	0.043sft	<b>Utilized</b>	Horz and Vert
		<b>3D error</b>	0.053sft	<b>Quality</b>	Survey quality
<b>Point</b>	GPS-6	<b>Northing</b>	723212.856sft	<b>Point</b>	I2304AA-6
<b>Latitude</b>	35°43'45.59409"N	<b>Easting</b>	1591031.517sft	<b>Northing</b>	723212.801sft
<b>Longitude</b>	80°22'40.81658"W	<b>Elevation</b>	731.702sft	<b>Easting</b>	1591031.466sft
<b>Height</b>	628.250sft	<b>Horz error</b>	<b>0.075sft</b>	<b>Elevation</b>	731.630sft
		<b>Vert error</b>	<b>0.072sft</b>	<b>Utilized</b>	Horz and Vert
		<b>3D error</b>	<b>0.104sft</b>	<b>Quality</b>	Survey quality
<b>Point</b>	GPS-5	<b>Northing</b>	723900.085sft	<b>Point</b>	I2304AA-5
<b>Latitude</b>	35°43'52.37936"N	<b>Easting</b>	1590956.819sft	<b>Northing</b>	723900.122sft
<b>Longitude</b>	80°22'41.83816"W	<b>Elevation</b>	718.301sft	<b>Easting</b>	1590956.798sft
<b>Height</b>	614.816sft	<b>Horz error</b>	0.042sft	<b>Elevation</b>	718.370sft
		<b>Vert error</b>	0.069sft	<b>Utilized</b>	Horz and Vert
		<b>3D error</b>	0.081sft	<b>Quality</b>	Survey quality
<b>Point</b>	GPS-12	<b>Northing</b>	730973.681sft	<b>Point</b>	I2304AB-12
<b>Latitude</b>	35°45'03.48205"N	<b>Easting</b>	1599471.926sft	<b>Northing</b>	730973.708sft

<b>Longitude</b>	80°20'59.73866"W
<b>Height</b>	559.928sft

<b>Elevation</b>	663.465sft
<b>Horz error</b>	0.032sft
<b>Vert error</b>	?
<b>3D error</b>	0.032sft

<b>Easting</b>	1599471.943sft
<b>Elevation</b>	663.760sft
<b>Utilized</b>	Horizontal
<b>Quality</b>	Survey quality

<b>Point</b>	GPS-9
<b>Latitude</b>	35°44'55.47461"N
<b>Longitude</b>	80°20'49.57156"W
<b>Height</b>	574.979sft

<b>Northing</b>	730152.654sft
<b>Easting</b>	1600298.938sft
<b>Elevation</b>	678.452sft
<b>Horz error</b>	0.019sft
<b>Vert error</b>	0.018sft
<b>3D error</b>	0.027sft

<b>Point</b>	I2304AB-9
<b>Northing</b>	730152.647sft
<b>Easting</b>	1600298.920sft
<b>Elevation</b>	678.470sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Survey quality

<b>Point</b>	GPS-10
<b>Latitude</b>	35°44'53.60763"N
<b>Longitude</b>	80°20'30.49958"W
<b>Height</b>	598.398sft

<b>Northing</b>	729942.590sft
<b>Easting</b>	1601868.392sft
<b>Elevation</b>	701.809sft
<b>Horz error</b>	0.058sft
<b>Vert error</b>	0.051sft
<b>3D error</b>	0.078sft

<b>Point</b>	I2304AB-10
<b>Northing</b>	729942.582sft
<b>Easting</b>	1601868.450sft
<b>Elevation</b>	701.860sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Survey quality

<b>Point</b>	GPS-14
<b>Latitude</b>	35°46'09.73068"N
<b>Longitude</b>	80°19'40.79022"W
<b>Height</b>	565.427sft

<b>Northing</b>	737584.437sft
<b>Easting</b>	1606068.683sft
<b>Elevation</b>	669.047sft
<b>Horz error</b>	0.030sft
<b>Vert error</b>	0.007sft
<b>3D error</b>	0.031sft

<b>Point</b>	I2304AB-14
<b>Northing</b>	737584.445sft
<b>Easting</b>	1606068.654sft
<b>Elevation</b>	669.040sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Survey quality

<b>Point</b>	GPS-13
<b>Latitude</b>	35°46'21.90159"N
<b>Longitude</b>	80°19'29.57220"W
<b>Height</b>	572.452sft

<b>Northing</b>	738802.713sft
<b>Easting</b>	1607009.518sft
<b>Elevation</b>	676.095sft
<b>Horz error</b>	0.022sft
<b>Vert error</b>	0.045sft
<b>3D error</b>	0.051sft

<b>Point</b>	I2304AB-13
<b>Northing</b>	738802.696sft
<b>Easting</b>	1607009.532sft
<b>Elevation</b>	676.050sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Survey quality