

# GPS Calibration Report

*Project : A0011BBSiteCalibrationUse*

<b>TIP Number</b>	A0011BB	<b>Date &amp; Time</b>	1:47:23 PM 12/12/2005
<b>User name</b>	rmcdonald	<b>Zone</b>	North Carolina 3200
<b>Coordinate System</b>	US State Plane 1983(at ground)	<b>Geoid Model</b>	Geoid99 NC Sub Grid
<b>Horizontal Datum</b>	NAD 1983 (Conus)		
<b>Vertical Datum</b>	NAVD 88		
<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	GPS108
Latitude	35°02'20.01114"N
Longitude	83°46'57.90283"W
Site Scale Factor	1.0001772510
Height	1781.827sft

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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	499362.072sft
Easting coordinate of rotation center	564327.859sft
Rotation about the center point	0°00'00"
Translation north	-0.008sft
Translation east	0.006sft
Scale factor	0.99999996

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## Vertical Adjustment Parameters

Northing coordinate of origin point	561901.863sft
Easting coordinate of origin point	547896.399sft
Vertical separation at origin	-0.035sft
Slope north	-0.832ppm
Slope east	1.147ppm

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# Geoid Model Definition

Geoid99 NC Sub Grid

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

Summary			
	Maximum error	Root Mean Square error	Point
Horizontal	0.029sft	0.002	FAA 46A A_WGS84
Vertical	0.079sft	0.011	GPS103_WGS84
Three-dimensional	0.079sft	0.011	GPS103_WGS84

### Point Residuals

WGS84 Coordinates		Calculated point FOR DISPLAY ONLY		Local Coordinates	
<b>Point</b>	AIRPORT_WGS84	<b>Northing</b>	561901.863sft	<b>Point</b>	AIRPORT_Local
<b>Latitude</b>	35°11'46.18493"N	<b>Easting</b>	547896.399sft	<b>Northing</b>	561901.876sft
<b>Longitude</b>	83°51'45.29266"W	<b>Elevation</b>	1695.723sft	<b>Easting</b>	547896.388sft
<b>Height</b>	1602.313sft	<b>Horz error</b>	0.017sft	<b>Elevation</b>	1695.758sft
		<b>Vert error</b>	0.035sft	<b>Utilized</b>	Horz and Vert
		<b>3D error</b>	0.039sft	<b>Quality</b>	Survey quality
<b>Point</b>	FAA 46A A_WGS84	<b>Northing</b>	439383.502sft	<b>Point</b>	FAA 46A A_Local
<b>Latitude</b>	34°51'12.42406"N	<b>Easting</b>	499977.563sft	<b>Northing</b>	439383.476sft
<b>Longitude</b>	84°00'07.54713"W	<b>Elevation</b>	1898.506sft	<b>Easting</b>	499977.575sft
<b>Height</b>	1804.225sft	<b>Horz error</b>	<b>0.029sft</b>	<b>Elevation</b>	1898.488sft
		<b>Vert error</b>	<b>0.018sft</b>	<b>Utilized</b>	Horz and Vert
		<b>3D error</b>	<b>0.034sft</b>	<b>Quality</b>	Survey quality
<b>Point</b>	LARRYAKERS_WGS84	<b>Northing</b>	492179.476sft	<b>Point</b>	LARRYAKERS_Local
<b>Latitude</b>	34°59'30.19138"N	<b>Easting</b>	453151.969sft	<b>Northing</b>	492179.492sft
<b>Longitude</b>	84°10'01.54388"W	<b>Elevation</b>	1611.869sft	<b>Easting</b>	453151.975sft
<b>Height</b>	1517.399sft	<b>Horz error</b>	0.017sft	<b>Elevation</b>	1611.851sft
		<b>Vert error</b>	0.018sft	<b>Utilized</b>	Horz and Vert
		<b>3D error</b>	0.024sft	<b>Quality</b>	Survey quality
<b>Point</b>	RAPER_WGS84	<b>Northing</b>	534815.451sft	<b>Point</b>	RAPER_Local
<b>Latitude</b>	35°06'23.16536"N	<b>Easting</b>	437458.771sft	<b>Northing</b>	534815.454sft
<b>Longitude</b>	84°13'36.85137"W	<b>Elevation</b>	1680.811sft	<b>Easting</b>	437458.779sft
<b>Height</b>	1586.070sft	<b>Horz error</b>	0.009sft	<b>Elevation</b>	1680.814sft
		<b>Vert error</b>	0.003sft	<b>Utilized</b>	Horz and Vert
		<b>3D error</b>	0.009sft	<b>Quality</b>	Survey quality
<b>Point</b>	STANINDIAN_WGS84	<b>Northing</b>	498855.763sft	<b>Point</b>	STANINDIAN_Local
<b>Latitude</b>	35°02'07.45357"N	<b>Easting</b>	642100.253sft	<b>Northing</b>	498855.757sft
<b>Longitude</b>	83°32'16.77757"W	<b>Elevation</b>	5499.720sft	<b>Easting</b>	642100.257sft
<b>Height</b>	5407.430sft	<b>Horz error</b>	0.007sft	<b>Elevation</b>	5499.707sft
		<b>Vert error</b>	0.013sft	<b>Utilized</b>	Horz and Vert
		<b>3D error</b>	0.015sft	<b>Quality</b>	Survey quality
<b>Point</b>	TRAY RESET_WGS84	<b>Northing</b>	415790.064sft	<b>Point</b>	TRAY RESET_Local
<b>Latitude</b>	34°48'04.91549"N	<b>Easting</b>	594435.778sft	<b>Northing</b>	415790.064sft

<b>Longitude</b>	83°41'02.16970"W
<b>Height</b>	4327.662sft

<b>Elevation</b>	4422.201sft
<b>Horz error</b>	0.002sft
<b>Vert error</b>	0.035sft
<b>3D error</b>	0.035sft

<b>Easting</b>	594435.776sft
<b>Elevation</b>	4422.236sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Survey quality

<b>Point</b>	GPS101_WGS84
<b>Latitude</b>	35°02'07.59221"N
<b>Longitude</b>	83°49'02.63795"W
<b>Height</b>	1825.780sft

<b>Northing</b>	502810.021sft
<b>Easting</b>	558542.764sft
<b>Elevation</b>	1919.367sft
<b>Horz error</b>	0.002sft
<b>Vert error</b>	0.062sft
<b>3D error</b>	0.063sft

<b>Point</b>	GPS101_Local
<b>Northing</b>	502810.023sft
<b>Easting</b>	558542.765sft
<b>Elevation</b>	1919.429sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Survey quality

<b>Point</b>	GPS102_WGS84
<b>Latitude</b>	35°01'47.20911"N
<b>Longitude</b>	83°48'44.18483"W
<b>Height</b>	1740.416sft

<b>Northing</b>	500677.079sft
<b>Easting</b>	559975.719sft
<b>Elevation</b>	1834.005sft
<b>Horz error</b>	0.002sft
<b>Vert error</b>	0.001sft
<b>3D error</b>	0.002sft

<b>Point</b>	GPS102_Local
<b>Northing</b>	500677.077sft
<b>Easting</b>	559975.719sft
<b>Elevation</b>	1834.006sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Survey quality

<b>Point</b>	GPS103_WGS84
<b>Latitude</b>	35°02'03.88176"N
<b>Longitude</b>	83°48'54.80618"W
<b>Height</b>	1776.588sft

<b>Northing</b>	502403.707sft
<b>Easting</b>	559175.126sft
<b>Elevation</b>	1870.170sft
<b>Horz error</b>	<b>0.002sft</b>
<b>Vert error</b>	<b>0.079sft</b>
<b>3D error</b>	<b>0.079sft</b>

<b>Point</b>	GPS103_Local
<b>Northing</b>	502403.705sft
<b>Easting</b>	559175.126sft
<b>Elevation</b>	1870.249sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Survey quality

<b>Point</b>	GPS104_WGS84
<b>Latitude</b>	35°02'03.91371"N
<b>Longitude</b>	83°48'36.99253"W
<b>Height</b>	1728.665sft

<b>Northing</b>	502335.138sft
<b>Easting</b>	560655.008sft
<b>Elevation</b>	1822.229sft
<b>Horz error</b>	0.002sft
<b>Vert error</b>	0.048sft
<b>3D error</b>	0.048sft

<b>Point</b>	GPS104_Local
<b>Northing</b>	502335.140sft
<b>Easting</b>	560655.008sft
<b>Elevation</b>	1822.277sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Survey quality

<b>Point</b>	GPS105_WGS84
<b>Latitude</b>	35°02'14.04158"N
<b>Longitude</b>	83°47'37.51135"W
<b>Height</b>	1831.998sft

<b>Northing</b>	503118.789sft
<b>Easting</b>	565645.386sft
<b>Elevation</b>	1925.483sft
<b>Horz error</b>	0.001sft
<b>Vert error</b>	0.027sft
<b>3D error</b>	0.027sft

<b>Point</b>	GPS105_Local
<b>Northing</b>	503118.788sft
<b>Easting</b>	565645.387sft
<b>Elevation</b>	1925.456sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Survey quality

<b>Point</b>	GPS106_WGS84
<b>Latitude</b>	35°02'40.48573"N
<b>Longitude</b>	83°47'24.89260"W
<b>Height</b>	1787.076sft

<b>Northing</b>	505738.841sft
<b>Easting</b>	566822.536sft
<b>Elevation</b>	1880.507sft
<b>Horz error</b>	0.003sft
<b>Vert error</b>	0.002sft
<b>3D error</b>	0.004sft

<b>Point</b>	GPS106_Local
<b>Northing</b>	505738.840sft
<b>Easting</b>	566822.533sft
<b>Elevation</b>	1880.509sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Survey quality

<b>Point</b>	GPS107_WGS84
<b>Latitude</b>	35°02'25.47093"N
<b>Longitude</b>	83°47'15.22803"W
<b>Height</b>	1767.926sft

<b>Northing</b>	504183.686sft
<b>Easting</b>	567552.062sft
<b>Elevation</b>	1861.365sft
<b>Horz error</b>	0.001sft
<b>Vert error</b>	0.033sft
<b>3D error</b>	0.034sft

<b>Point</b>	GPS107_Local
<b>Northing</b>	504183.685sft
<b>Easting</b>	567552.063sft
<b>Elevation</b>	1861.332sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Survey quality

<b>Point</b>	GPS108_WGS84
<b>Latitude</b>	35°02'20.01114"N

<b>Northing</b>	503562.859sft
<b>Easting</b>	568964.541sft

<b>Point</b>	GPS108_Local
<b>Northing</b>	503562.858sft

<b>Longitude</b>	83°46'57.90283"W
<b>Height</b>	1781.827sft

<b>Elevation</b>	1875.250sft
<b>Horz error</b>	0.001sft
<b>Vert error</b>	0.024sft
<b>3D error</b>	0.024sft

<b>Easting</b>	568964.542sft
<b>Elevation</b>	1875.226sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Survey quality

<b>Point</b>	GPS109_WGS84
<b>Latitude</b>	35°01'56.51674"N
<b>Longitude</b>	83°45'20.93971"W
<b>Height</b>	1832.336sft

<b>Northing</b>	500802.789sft
<b>Easting</b>	576904.938sft
<b>Elevation</b>	1925.654sft
<b>Horz error</b>	0.002sft
<b>Vert error</b>	0.067sft
<b>3D error</b>	0.067sft

<b>Point</b>	GPS109_Local
<b>Northing</b>	500802.788sft
<b>Easting</b>	576904.936sft
<b>Elevation</b>	1925.587sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Survey quality

<b>Point</b>	GPS110_WGS84
<b>Latitude</b>	35°02'18.30938"N
<b>Longitude</b>	83°45'18.12026"W
<b>Height</b>	1865.954sft

<b>Northing</b>	502992.513sft
<b>Easting</b>	577244.660sft
<b>Elevation</b>	1959.233sft
<b>Horz error</b>	0.002sft
<b>Vert error</b>	0.037sft
<b>3D error</b>	0.037sft

<b>Point</b>	GPS110_Local
<b>Northing</b>	502992.512sft
<b>Easting</b>	577244.661sft
<b>Elevation</b>	1959.196sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Survey quality

<b>Point</b>	GPS111_WGS84
<b>Latitude</b>	35°02'32.70549"N
<b>Longitude</b>	83°45'21.26462"W
<b>Height</b>	1921.984sft

<b>Northing</b>	504458.973sft
<b>Easting</b>	577053.183sft
<b>Elevation</b>	2015.242sft
<b>Horz error</b>	0.003sft
<b>Vert error</b>	0.036sft
<b>3D error</b>	0.036sft

<b>Point</b>	GPS111_Local
<b>Northing</b>	504458.973sft
<b>Easting</b>	577053.180sft
<b>Elevation</b>	2015.206sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Survey quality

<b>Point</b>	GPS112_WGS84
<b>Latitude</b>	35°02'18.21356"N
<b>Longitude</b>	83°45'47.76345"W
<b>Height</b>	1881.627sft

<b>Northing</b>	503100.973sft
<b>Easting</b>	574781.882sft
<b>Elevation</b>	1974.951sft
<b>Horz error</b>	0.002sft
<b>Vert error</b>	0.030sft
<b>3D error</b>	0.030sft

<b>Point</b>	GPS112_Local
<b>Northing</b>	503100.973sft
<b>Easting</b>	574781.880sft
<b>Elevation</b>	1974.921sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Survey quality

<b>Point</b>	GPS113_WGS84
<b>Latitude</b>	35°02'17.30060"N
<b>Longitude</b>	83°45'34.43354"W
<b>Height</b>	1883.129sft

<b>Northing</b>	502955.620sft
<b>Easting</b>	575884.707sft
<b>Elevation</b>	1976.434sft
<b>Horz error</b>	0.004sft
<b>Vert error</b>	0.043sft
<b>3D error</b>	0.044sft

<b>Point</b>	GPS113_Local
<b>Northing</b>	502955.623sft
<b>Easting</b>	575884.708sft
<b>Elevation</b>	1976.391sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Survey quality

<b>Point</b>	GPS114_WGS84
<b>Latitude</b>	35°01'45.37535"N
<b>Longitude</b>	83°44'11.87457"W
<b>Height</b>	1859.058sft

<b>Northing</b>	499403.032sft
<b>Easting</b>	582588.568sft
<b>Elevation</b>	1952.285sft
<b>Horz error</b>	0.002sft
<b>Vert error</b>	0.021sft
<b>3D error</b>	0.021sft

<b>Point</b>	GPS114_Local
<b>Northing</b>	499403.032sft
<b>Easting</b>	582588.566sft
<b>Elevation</b>	1952.306sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Survey quality

<b>Point</b>	GPS115_WGS84
<b>Latitude</b>	35°01'34.42504"N
<b>Longitude</b>	83°44'04.27695"W
<b>Height</b>	1842.920sft

<b>Northing</b>	498266.961sft
<b>Easting</b>	583166.956sft
<b>Elevation</b>	1936.152sft
<b>Horz error</b>	0.001sft
<b>Vert error</b>	0.026sft
<b>3D error</b>	0.026sft

<b>Point</b>	GPS115_Local
<b>Northing</b>	498266.960sft
<b>Easting</b>	583166.955sft
<b>Elevation</b>	1936.178sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Survey quality

<b>Point</b>	GPS116_WGS84
<b>Latitude</b>	35°01'28.50390"N

<b>Northing</b>	497617.755sft
<b>Easting</b>	584211.385sft

<b>Point</b>	GPS116_Local
<b>Northing</b>	497617.755sft

<b>Longitude</b>	83°43'51.36206"W
<b>Height</b>	1846.499sft

<b>Elevation</b>	1939.722sft
<b>Horz error</b>	0.002sft
<b>Vert error</b>	0.029sft
<b>3D error</b>	0.029sft

<b>Easting</b>	584211.383sft
<b>Elevation</b>	1939.751sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Survey quality

<b>Point</b>	GPS117_WGS84
<b>Latitude</b>	35°01'58.30203"N
<b>Longitude</b>	83°44'01.88750"W
<b>Height</b>	1908.156sft

<b>Northing</b>	500668.972sft
<b>Easting</b>	583480.551sft
<b>Elevation</b>	2001.343sft
<b>Horz error</b>	0.001sft
<b>Vert error</b>	0.022sft
<b>3D error</b>	0.022sft

<b>Point</b>	GPS117_Local
<b>Northing</b>	500668.972sft
<b>Easting</b>	583480.550sft
<b>Elevation</b>	2001.365sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Survey quality

<b>Point</b>	GPS118_WGS84
<b>Latitude</b>	35°01'49.42748"N
<b>Longitude</b>	83°43'35.03937"W
<b>Height</b>	1966.112sft

<b>Northing</b>	499666.319sft
<b>Easting</b>	585668.169sft
<b>Elevation</b>	2059.269sft
<b>Horz error</b>	0.002sft
<b>Vert error</b>	0.004sft
<b>3D error</b>	0.005sft

<b>Point</b>	GPS118_Local
<b>Northing</b>	499666.319sft
<b>Easting</b>	585668.167sft
<b>Elevation</b>	2059.265sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Survey quality

<b>Point</b>	GPS119_WGS84
<b>Latitude</b>	35°02'02.68657"N
<b>Longitude</b>	83°43'55.62658"W
<b>Height</b>	1966.377sft

<b>Northing</b>	501086.978sft
<b>Easting</b>	584021.782sft
<b>Elevation</b>	2059.546sft
<b>Horz error</b>	0.004sft
<b>Vert error</b>	0.014sft
<b>3D error</b>	0.014sft

<b>Point</b>	GPS119_Local
<b>Northing</b>	501086.981sft
<b>Easting</b>	584021.780sft
<b>Elevation</b>	2059.560sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Survey quality

<b>Point</b>	GPS120_WGS84
<b>Latitude</b>	35°02'02.28050"N
<b>Longitude</b>	83°43'44.65422"W
<b>Height</b>	1981.194sft

<b>Northing</b>	501002.498sft
<b>Easting</b>	584931.307sft
<b>Elevation</b>	2074.344sft
<b>Horz error</b>	0.001sft
<b>Vert error</b>	0.022sft
<b>3D error</b>	0.022sft

<b>Point</b>	GPS120_Local
<b>Northing</b>	501002.498sft
<b>Easting</b>	584931.306sft
<b>Elevation</b>	2074.366sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Survey quality

<b>Point</b>	GPS121_WGS84
<b>Latitude</b>	35°02'21.80041"N
<b>Longitude</b>	83°43'50.25120"W
<b>Height</b>	1918.021sft

<b>Northing</b>	502996.109sft
<b>Easting</b>	584560.380sft
<b>Elevation</b>	2011.144sft
<b>Horz error</b>	0.002sft
<b>Vert error</b>	0.048sft
<b>3D error</b>	0.048sft

<b>Point</b>	GPS121_Local
<b>Northing</b>	502996.109sft
<b>Easting</b>	584560.378sft
<b>Elevation</b>	2011.096sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Survey quality