

# GPS Calibration Report

*Project : U4020add*

<b>TIP Number</b>	U-4020	<b>Date &amp; Time</b>	10:04:28 AM 3/24/2004
<b>User name</b>	rgmiller	<b>Zone</b>	North Carolina 3200
<b>Coordinate System</b>	US State Plane 1983	<b>Geoid Model</b>	Geoid99 NC Sub Grid
<b>Horizontal Datum</b>	NAD 1983 (Conus)		
<b>Vertical Datum</b>			
<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 N/A

Longitude N/A

Site Scale Factor N/A

Height N/A

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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 911680.371sft

Easting coordinate of rotation center 1225213.033sft

Rotation about the center point 0°00'00"

Translation north 0.458sft

Translation east 1.908sft

Scale factor 1.00013420

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## Vertical Adjustment Parameters

Northing coordinate of origin point 908436.220sft

Easting coordinate of origin point 1210342.929sft

Vertical separation at origin -0.150sft

Slope north 0.878ppm

Slope east 5.850ppm

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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	0.009sft	0.002	BLUE - WGS84
Vertical	0.297sft	0.058	WILLOWDALE - WGS
Three-dimensional	0.297sft	0.058	WILLOWDALE - WGS

### Point Residuals

WGS84 Coordinates		Calculated point FOR DISPLAY ONLY		Local Coordinates	
<b>Point</b>	U4020-1 - WGS84	<b>Northing</b>	908436.220sft	<b>Point</b> U4020-1 - Local	
<b>Latitude</b>	36°13'00.14318"N	<b>Easting</b>	1210342.929sft	<b>Northing</b>	908436.219sft
<b>Longitude</b>	81°40'37.50215"W	<b>Elevation</b>	3211.710sft	<b>Easting</b>	1210342.927sft
<b>Height</b>	3109.574sft	<b>Horz error</b>	0.002sft	<b>Elevation</b>	3211.520sft
		<b>Vert error</b>	0.190sft	<b>Utilized</b>	Horz and Vert
		<b>3D error</b>	0.190sft	<b>Quality</b>	Control quality
<b>Point</b>	U4020-2 - WGS84	<b>Northing</b>	908308.283sft	<b>Point</b> U4020-2 - Local	
<b>Latitude</b>	36°12'59.04905"N	<b>Easting</b>	1210982.153sft	<b>Northing</b>	908308.279sft
<b>Longitude</b>	81°40'29.66339"W	<b>Elevation</b>	3204.515sft	<b>Easting</b>	1210982.152sft
<b>Height</b>	3102.356sft	<b>Horz error</b>	0.005sft	<b>Elevation</b>	3204.328sft
		<b>Vert error</b>	0.187sft	<b>Utilized</b>	Horz and Vert
		<b>3D error</b>	0.187sft	<b>Quality</b>	Control quality
<b>Point</b>	U4020-3 - WGS84	<b>Northing</b>	908218.160sft	<b>Point</b> U4020-3 - Local	
<b>Latitude</b>	36°12'58.64084"N	<b>Easting</b>	1212795.671sft	<b>Northing</b>	908218.162sft
<b>Longitude</b>	81°40'07.51418"W	<b>Elevation</b>	3259.192sft	<b>Easting</b>	1212795.669sft
<b>Height</b>	3156.975sft	<b>Horz error</b>	0.003sft	<b>Elevation</b>	3259.026sft
		<b>Vert error</b>	0.166sft	<b>Utilized</b>	Horz and Vert
		<b>3D error</b>	0.166sft	<b>Quality</b>	Control quality
<b>Point</b>	U4020-4 - WGS84	<b>Northing</b>	908614.378sft	<b>Point</b> U4020-4 - Local	
<b>Latitude</b>	36°13'02.92500"N	<b>Easting</b>	1214181.773sft	<b>Northing</b>	908614.379sft
<b>Longitude</b>	81°39'50.73749"W	<b>Elevation</b>	3180.928sft	<b>Easting</b>	1214181.771sft
<b>Height</b>	3078.678sft	<b>Horz error</b>	0.002sft	<b>Elevation</b>	3180.785sft
		<b>Vert error</b>	0.143sft	<b>Utilized</b>	Horz and Vert
		<b>3D error</b>	0.143sft	<b>Quality</b>	Control quality
<b>Point</b>	HAPPY - WGS84	<b>Northing</b>	826747.799sft	<b>Point</b> HAPPY - Local	
<b>Latitude</b>	35°59'41.21489"N	<b>Easting</b>	1242955.940sft	<b>Northing</b>	826747.796sft
<b>Longitude</b>	81°33'34.00960"W	<b>Elevation</b>	1230.187sft	<b>Easting</b>	1242955.938sft
<b>Height</b>	1124.273sft	<b>Horz error</b>	0.004sft	<b>Elevation</b>	1230.405sft
		<b>Vert error</b>	0.218sft	<b>Utilized</b>	Horz and Vert
		<b>3D error</b>	0.218sft	<b>Quality</b>	Survey quality
<b>Point</b>	THREE TOP - WGS8	<b>Northing</b>	982320.275sft	<b>Point</b> THREE TOP - Loca	
<b>Latitude</b>	36°25'15.16759"N	<b>Easting</b>	1228574.838sft	<b>Northing</b>	982320.271sft

<b>Longitude</b>	81°37'18.92978"W
<b>Height</b>	2780.959sft

<b>Elevation</b>	2882.394sft
<b>Horz error</b>	0.008sft
<b>Vert error</b>	0.186sft
<b>3D error</b>	0.187sft

<b>Easting</b>	1228574.844sft
<b>Elevation</b>	2882.580sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Survey quality

<b>Point</b>	WILLOWDALE - WGS
<b>Latitude</b>	36°15'16.54369"N
<b>Longitude</b>	81°46'15.37959"W
<b>Height</b>	2637.452sft

<b>Northing</b>	922986.328sft
<b>Easting</b>	1183047.037sft
<b>Elevation</b>	2738.953sft
<b>Horz error</b>	<b>0.003sft</b>
<b>Vert error</b>	<b>0.297sft</b>
<b>3D error</b>	<b>0.297sft</b>

<b>Point</b>	WILLOWDALE - Loc
<b>Northing</b>	922986.328sft
<b>Easting</b>	1183047.040sft
<b>Elevation</b>	2739.250sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Survey quality

<b>Point</b>	BLUE - WGS84
<b>Latitude</b>	36°16'33.96228"N
<b>Longitude</b>	81°22'43.68430"W
<b>Height</b>	3364.977sft

<b>Northing</b>	927815.182sft
<b>Easting</b>	1298839.193sft
<b>Elevation</b>	3470.379sft
<b>Horz error</b>	<b>0.009sft</b>
<b>Vert error</b>	<b>0.015sft</b>
<b>3D error</b>	<b>0.018sft</b>

<b>Point</b>	BLUE - Local
<b>Northing</b>	927815.191sft
<b>Easting</b>	1298839.192sft
<b>Elevation</b>	3470.364sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Survey quality