

# GPS Calibration Report

*Project : U2211Beng*

<b>TIP Number</b>	U-2211B	<b>Date &amp; Time</b>	2:02:38 PM 10/6/2004
<b>User name</b>	rgmiller	<b>Zone</b>	North Carolina 3200
<b>Coordinate System</b>	US State Plane 1983(at ground)	<b>Geoid Model</b>	Geo99nc.ggf
<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	
Latitude	35°53'11.57181"N
Longitude	81°31'29.29517"W
Site Scale Factor	1.0001220224
Height	1198.537sft

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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>	788528.236sft
<b>Easting coordinate of rotation center</b>	1254266.257sft
<b>Rotation about the center point</b>	0°00'00"
<b>Translation north</b>	0.005sft
<b>Translation east</b>	-0.004sft
<b>Scale factor</b>	1.00000006

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## Vertical Adjustment Parameters

<b>Northing coordinate of origin point</b>	787110.281sft
<b>Easting coordinate of origin point</b>	1252194.355sft
<b>Vertical separation at origin</b>	-0.064sft
<b>Slope north</b>	-0.656ppm
<b>Slope east</b>	1.295ppm

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# Geoid Model Definition

Geo99nc.ggf

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

Summary			
	Maximum error	Root Mean Square error	Point
Horizontal	0.001sft	0.000	U2211B-2_GPS
Vertical	0.000sft	0.000	U2211B-1_GPS
Three-dimensional	0.001sft	0.000	U2211B-2_GPS

### Point Residuals

WGS84 Coordinates		Calculated point FOR DISPLAY ONLY		Local Coordinates	
<b>Point</b>	U2211B-1_GPS	<b>Northing</b>	787110.281sft	<b>Point U2211B-1</b>	
<b>Latitude</b>	35°53'11.57177"N	<b>Easting</b>	1252194.355sft	<b>Northing</b>	787110.281sft
<b>Longitude</b>	81°31'29.29514"W	<b>Elevation</b>	1304.697sft	<b>Easting</b>	1252194.354sft
<b>Height</b>	1198.538sft	<b>Horz error</b>	0.000sft	<b>Elevation</b>	1304.697sft
		<b>Vert error</b>	0.000sft	<b>Utilized</b>	Horz and Vert
		<b>3D error</b>	0.000sft	<b>Quality</b>	Adjusted quality
<b>Point</b>	U2211B-2_GPS	<b>Northing</b>	787563.049sft	<b>Point U2211B-2</b>	
<b>Latitude</b>	35°53'16.20663"N	<b>Easting</b>	1252826.929sft	<b>Northing</b>	787563.048sft
<b>Longitude</b>	81°31'21.75049"W	<b>Elevation</b>	1287.719sft	<b>Easting</b>	1252826.930sft
<b>Height</b>	1181.555sft	<b>Horz error</b>	<b>0.001sft</b>	<b>Elevation</b>	1287.719sft
		<b>Vert error</b>	<b>0.000sft</b>	<b>Utilized</b>	Horz and Vert
		<b>3D error</b>	<b>0.001sft</b>	<b>Quality</b>	Adjusted quality
<b>Point</b>	U2211B-3_GPS	<b>Northing</b>	790205.717sft	<b>Point U2211B-3</b>	
<b>Latitude</b>	35°53'43.09988"N	<b>Easting</b>	1255894.038sft	<b>Northing</b>	790205.717sft
<b>Longitude</b>	81°30'45.30358"W	<b>Elevation</b>	1331.186sft	<b>Easting</b>	1255894.038sft
<b>Height</b>	1224.998sft	<b>Horz error</b>	0.001sft	<b>Elevation</b>	1331.186sft
		<b>Vert error</b>	0.000sft	<b>Utilized</b>	Horz and Vert
		<b>3D error</b>	0.001sft	<b>Quality</b>	Adjusted quality
<b>Point</b>	U2211B-4_GPS	<b>Northing</b>	790327.942sft	<b>Point U2211B-4</b>	
<b>Latitude</b>	35°53'44.52627"N	<b>Easting</b>	1256766.154sft	<b>Northing</b>	790327.943sft
<b>Longitude</b>	81°30'34.74556"W	<b>Elevation</b>	1358.283sft	<b>Easting</b>	1256766.155sft
<b>Height</b>	1252.091sft	<b>Horz error</b>	0.001sft	<b>Elevation</b>	1358.283sft
		<b>Vert error</b>	0.000sft	<b>Utilized</b>	Horz and Vert
		<b>3D error</b>	0.001sft	<b>Quality</b>	Adjusted quality
<b>Point</b>	U2211B-5_GPS	<b>Northing</b>	791463.295sft	<b>Point U2211B-5</b>	
<b>Latitude</b>	35°53'54.80323"N	<b>Easting</b>	1252989.046sft	<b>Northing</b>	791463.295sft
<b>Longitude</b>	81°31'20.98529"W	<b>Elevation</b>	1218.791sft	<b>Easting</b>	1252989.046sft
<b>Height</b>	1112.610sft	<b>Horz error</b>	0.000sft	<b>Elevation</b>	1218.791sft
		<b>Vert error</b>	0.000sft	<b>Utilized</b>	Horz and Vert
		<b>3D error</b>	0.000sft	<b>Quality</b>	Adjusted quality
<b>Point</b>	U2211B-6_GPS	<b>Northing</b>	790371.094sft	<b>Point U2211B-6</b>	
<b>Latitude</b>	35°53'44.05949"N	<b>Easting</b>	1253200.828sft	<b>Northing</b>	790371.094sft

<b>Longitude</b>	81°31'18.07505"W
<b>Height</b>	1165.263sft

<b>Elevation</b>	1271.441sft
<b>Horz error</b>	0.000sft
<b>Vert error</b>	0.000sft
<b>3D error</b>	0.000sft

<b>Easting</b>	1253200.828sft
<b>Elevation</b>	1271.441sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Adjusted quality

<b>Point</b>	U2211B-7_GPS
<b>Latitude</b>	35°53'02.03213"N
<b>Longitude</b>	81°30'56.44358"W
<b>Height</b>	1209.045sft

<b>Northing</b>	786077.266sft
<b>Easting</b>	1254872.464sft
<b>Elevation</b>	1315.212sft
<b>Horz error</b>	0.000sft
<b>Vert error</b>	0.000sft
<b>3D error</b>	0.000sft

<b>Point</b>	U2211B-7
<b>Northing</b>	786077.266sft
<b>Easting</b>	1254872.464sft
<b>Elevation</b>	1315.212sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Adjusted quality

<b>Point</b>	U2211B-8_GPS
<b>Latitude</b>	35°52'52.57205"N
<b>Longitude</b>	81°30'49.90444"W
<b>Height</b>	1151.278sft

<b>Northing</b>	785107.288sft
<b>Easting</b>	1255386.206sft
<b>Elevation</b>	1257.443sft
<b>Horz error</b>	0.000sft
<b>Vert error</b>	0.000sft
<b>3D error</b>	0.000sft

<b>Point</b>	U2211B-8
<b>Northing</b>	785107.288sft
<b>Easting</b>	1255386.205sft
<b>Elevation</b>	1257.443sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Adjusted quality