

# GPS Calibration Report

**Project : U4412Calibrate081209**

<b>TIP Number</b>	U-4412	<b>Date &amp; Time</b>	10:36:39 AM 12/9/2008
<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 (Conus) NC Sub Grid
<b>Horizontal Datum</b>	NAD 1983 (Conus)		
<b>Vertical Datum</b>	NAVD88		
<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	GPS103
Latitude	35°30'23.22434"N
Longitude	82°58'44.51517"W
Site Scale Factor	1.0002140060
Height	2545.023sft

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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>	656738.678sft
<b>Easting coordinate of rotation center</b>	814549.370sft
<b>Rotation about the center point</b>	0°00'00"
<b>Translation north</b>	0.004sft
<b>Translation east</b>	-0.004sft
<b>Scale factor</b>	1.00000012

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## Vertical Adjustment Parameters

<b>Northing coordinate of origin point</b>	660205.617sft
<b>Easting coordinate of origin point</b>	813941.851sft
<b>Vertical separation at origin</b>	-0.472sft
<b>Slope north</b>	-11.230ppm
<b>Slope east</b>	-5.716ppm

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# Geoid Model Definition

Geoid99 (Conus) NC Sub Grid

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

Summary			
	Maximum error	Root Mean Square error	Point
Horizontal	0.002sft	0.001	GPS105_WGS84
Vertical	0.693sft	0.089	HAYWOOD TECH_WGS
Three-dimensional	0.693sft	0.089	HAYWOOD TECH_WGS

### Point Residuals

WGS84 Coordinates		Calculated point FOR DISPLAY ONLY		Local Coordinates	
<b>Point</b>	GPS101_WGS84	<b>Northing</b>	660205.617sft	<b>Point</b> GPS101_Local	
<b>Latitude</b>	35°29'54.94151"N	<b>Easting</b>	813941.851sft	<b>Northing</b>	660205.619sft
<b>Longitude</b>	82°59'09.49464"W	<b>Elevation</b>	2632.009sft	<b>Easting</b>	813941.850sft
<b>Height</b>	2537.892sft	<b>Horz error</b>	0.002sft	<b>Elevation</b>	2631.744sft
		<b>Vert error</b>	0.265sft	<b>Utilized</b>	Horz and Vert
		<b>3D error</b>	0.265sft	<b>Quality</b>	Survey quality
<b>Point</b>	GPS102_WGS84	<b>Northing</b>	661491.943sft	<b>Point</b> GPS102_Local	
<b>Latitude</b>	35°30'07.29717"N	<b>Easting</b>	813049.194sft	<b>Northing</b>	661491.942sft
<b>Longitude</b>	82°59'20.90541"W	<b>Elevation</b>	2655.866sft	<b>Easting</b>	813049.194sft
<b>Height</b>	2561.753sft	<b>Horz error</b>	0.001sft	<b>Elevation</b>	2655.642sft
		<b>Vert error</b>	0.224sft	<b>Utilized</b>	Horz and Vert
		<b>3D error</b>	0.224sft	<b>Quality</b>	Survey quality
<b>Point</b>	GPS103_WGS84	<b>Northing</b>	662980.513sft	<b>Point</b> GPS103_Local	
<b>Latitude</b>	35°30'23.22431"N	<b>Easting</b>	816120.476sft	<b>Northing</b>	662980.512sft
<b>Longitude</b>	82°58'44.51513"W	<b>Elevation</b>	2639.898sft	<b>Easting</b>	816120.475sft
<b>Height</b>	2545.707sft	<b>Horz error</b>	0.001sft	<b>Elevation</b>	2639.729sft
		<b>Vert error</b>	0.169sft	<b>Utilized</b>	Horz and Vert
		<b>3D error</b>	0.169sft	<b>Quality</b>	Survey quality
<b>Point</b>	GPS104_WGS84	<b>Northing</b>	661858.297sft	<b>Point</b> GPS104_Local	
<b>Latitude</b>	35°30'12.22543"N	<b>Easting</b>	816346.963sft	<b>Northing</b>	661858.299sft
<b>Longitude</b>	82°58'41.23450"W	<b>Elevation</b>	2604.522sft	<b>Easting</b>	816346.963sft
<b>Height</b>	2510.339sft	<b>Horz error</b>	0.002sft	<b>Elevation</b>	2604.323sft
		<b>Vert error</b>	0.199sft	<b>Utilized</b>	Horz and Vert
		<b>3D error</b>	0.199sft	<b>Quality</b>	Survey quality
<b>Point</b>	GPS105_WGS84	<b>Northing</b>	664608.144sft	<b>Point</b> GPS105_Local	
<b>Latitude</b>	35°30'40.64158"N	<b>Easting</b>	819493.153sft	<b>Northing</b>	664608.144sft
<b>Longitude</b>	82°58'04.54579"W	<b>Elevation</b>	2583.133sft	<b>Easting</b>	819493.155sft
<b>Height</b>	2488.863sft	<b>Horz error</b>	<b>0.002sft</b>	<b>Elevation</b>	2583.050sft
		<b>Vert error</b>	<b>0.083sft</b>	<b>Utilized</b>	Horz and Vert
		<b>3D error</b>	<b>0.083sft</b>	<b>Quality</b>	Survey quality
<b>Point</b>	GPS106_WGS84	<b>Northing</b>	663125.037sft	<b>Point</b> GPS106_Local	
<b>Latitude</b>	35°30'26.19647"N	<b>Easting</b>	820023.491sft	<b>Northing</b>	663125.037sft

<b>Longitude</b>	82°57'57.42028"W
<b>Height</b>	2500.038sft

<b>Elevation</b>	2594.301sft
<b>Horz error</b>	0.002sft
<b>Vert error</b>	0.126sft
<b>3D error</b>	0.126sft

<b>Easting</b>	820023.493sft
<b>Elevation</b>	2594.175sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Survey quality

<b>Point</b>	HAYWOOD TECH_WGS
<b>Latitude</b>	35°31'42.03001"N
<b>Longitude</b>	82°55'29.84359"W
<b>Height</b>	2596.845sft

<b>Northing</b>	670302.730sft
<b>Easting</b>	832519.515sft
<b>Elevation</b>	2691.376sft
<b>Horz error</b>	<b>0.000sft</b>
<b>Vert error</b>	<b>0.693sft</b>
<b>3D error</b>	<b>0.693sft</b>

<b>Point</b>	HAYWOOD TECH_Loc
<b>Northing</b>	670302.730sft
<b>Easting</b>	832519.515sft
<b>Elevation</b>	2692.069sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Survey quality

<b>Point</b>	MILE HIGH_WGS84
<b>Latitude</b>	35°31'09.38669"N
<b>Longitude</b>	83°10'42.37198"W
<b>Height</b>	5136.236sft

<b>Northing</b>	670082.620sft
<b>Easting</b>	757009.633sft
<b>Elevation</b>	5229.740sft
<b>Horz error</b>	0.002sft
<b>Vert error</b>	0.253sft
<b>3D error</b>	0.253sft

<b>Point</b>	MILE HIGH_Local
<b>Northing</b>	670082.618sft
<b>Easting</b>	757009.632sft
<b>Elevation</b>	5229.993sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Survey quality

<b>Point</b>	WHITETAIL_WGS84
<b>Latitude</b>	35°19'31.59962"N
<b>Longitude</b>	82°52'54.78322"W
<b>Height</b>	5715.874sft

<b>Northing</b>	595993.232sft
<b>Easting</b>	842440.022sft
<b>Elevation</b>	5810.820sft
<b>Horz error</b>	0.002sft
<b>Vert error</b>	0.120sft
<b>3D error</b>	0.120sft

<b>Point</b>	WHITETAIL_Local
<b>Northing</b>	595993.232sft
<b>Easting</b>	842440.020sft
<b>Elevation</b>	5810.940sft
<b>Utilized</b>	Horz and Vert
<b>Quality</b>	Survey quality