

GPS Calibration Report

Project : R2814BE VRS

TIP Number	R-2814B	Date & Time	12:58:30 PM 1/7/2008
User name	ggreen	Zone	North Carolina 3200
Coordinate System	US State Plane 1983(at ground)	Geoid Model	GEOID03 (Conus) NC Sub Grid
Horizontal Datum	NAD 1983 (Conus)		
Vertical Datum	NGVD88		
Coordinate Units	US survey feet		
Distance Units	US survey feet		
Height Units	US survey feet		

LOCAL SITE INFORMATION

Localized around	
Latitude	35°58'56.17528"N
Longitude	78°22'57.32950"W
Site Scale Factor	1.0000557231
Height	297.012sft

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.

Datum Transformation Parameters

Datum Transformation computation not requested

Updated Default Projection (Transverse Mercator) Definition

Updated default projection not requested

Horizontal Adjustment Parameters

Northing coordinate of rotation center	806225.345sft
Easting coordinate of rotation center	2174650.275sft
Rotation about the center point	0°00'00"
Translation north	0.001sft
Translation east	0.006sft
Scale factor	1.00000030

Vertical Adjustment Parameters

Northing coordinate of origin point	783595.150sft
Easting coordinate of origin point	2153317.093sft
Vertical separation at origin	-0.091sft
Slope north	4.390ppm
Slope east	-4.007ppm

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	0.013sft	0.001	DERWARD_GPS
Vertical	0.038sft	0.003	R2814-12_GPS
Three-dimensional	0.039sft	0.003	R2814-12_GPS

Point Residuals					
WGS84 Coordinates		Calculated point FOR DISPLAY ONLY		Local Coordinates	
Point	R2814B-1_GPS	Northing	783595.150sft	Point	R2814B-1
Latitude	35°54'06.92524"N	Easting	2153317.093sft	Northing	783595.151sft
Longitude	78°28'56.30653"W	Elevation	360.107sft	Easting	2153317.095sft
Height	251.025sft	Horz error	0.002sft	Elevation	360.095sft
		Vert error	0.013sft	Utilized	Horz and Vert
		3D error	0.013sft	Quality	Adjusted quality
Point	R2814B-2_GPS	Northing	782514.199sft	Point	R2814B-2
Latitude	35°53'56.15084"N	Easting	2154950.277sft	Northing	782514.200sft
Longitude	78°28'36.52479"W	Elevation	371.777sft	Easting	2154950.278sft
Height	262.603sft	Horz error	0.002sft	Elevation	371.768sft
		Vert error	0.009sft	Utilized	Horz and Vert
		3D error	0.009sft	Quality	Adjusted quality
Point	R2814B-3_GPS	Northing	788498.005sft	Point	R2814B-3
Latitude	35°54'54.92665"N	Easting	2162423.613sft	Northing	788498.005sft
Longitude	78°27'05.28968"W	Elevation	423.457sft	Easting	2162423.612sft
Height	314.125sft	Horz error	0.001sft	Elevation	423.455sft
		Vert error	0.002sft	Utilized	Horz and Vert
		3D error	0.002sft	Quality	Adjusted quality
Point	R2814B-4_GPS	Northing	786739.982sft	Point	R2814B-4
Latitude	35°54'37.47874"N	Easting	2163565.245sft	Northing	786739.982sft
Longitude	78°26'51.53004"W	Elevation	410.149sft	Easting	2163565.244sft
Height	300.731sft	Horz error	0.001sft	Elevation	410.151sft
		Vert error	0.002sft	Utilized	Horz and Vert
		3D error	0.002sft	Quality	Adjusted quality
Point	R2814B-10_GPS	Northing	786360.571sft	Point	R2814B-10
Latitude	35°54'33.84393"N	Easting	2161420.569sft	Northing	786360.571sft
Longitude	78°27'17.62613"W	Elevation	375.014sft	Easting	2161420.568sft
Height	265.672sft	Horz error	0.000sft	Elevation	375.012sft
		Vert error	0.002sft	Utilized	Horz and Vert
		3D error	0.002sft	Quality	Adjusted quality
Point	R2814B-20_GPS	Northing	791186.779sft	Point	R2814B-20
Latitude	35°55'21.34627"N	Easting	2165503.665sft	Northing	791186.777sft

Longitude	78°26'27.66217"W
Height	273.266sft

Elevation	382.661sft
Horz error	0.002sft
Vert error	0.000sft
3D error	0.002sft

Easting	2165503.663sft
Elevation	382.661sft
Utilized	Horz and Vert
Quality	Adjusted quality

Point	R2814B-5_GPS
Latitude	35°55'32.11248"N
Longitude	78°25'40.53037"W
Height	284.327sft

Northing	792297.525sft
Easting	2169373.918sft
Elevation	393.854sft
Horz error	0.002sft
Vert error	0.005sft
3D error	0.006sft

Point	R2814B-5
Northing	792297.525sft
Easting	2169373.916sft
Elevation	393.859sft
Utilized	Horz and Vert
Quality	Adjusted quality

Point	R2814B-6_GPS
Latitude	35°55'30.12070"N
Longitude	78°25'24.85126"W
Height	271.891sft

Northing	792103.580sft
Easting	2170664.624sft
Elevation	381.475sft
Horz error	0.003sft
Vert error	0.008sft
3D error	0.008sft

Point	R2814B-6
Northing	792103.579sft
Easting	2170664.621sft
Elevation	381.483sft
Utilized	Horz and Vert
Quality	Adjusted quality

Point	R2814-23_GPS
Latitude	35°56'13.83323"N
Longitude	78°25'43.80179"W
Height	254.973sft

Northing	796514.724sft
Easting	2169080.584sft
Elevation	364.396sft
Horz error	0.003sft
Vert error	0.000sft
3D error	0.003sft

Point	R2814-23
Northing	796514.723sft
Easting	2169080.582sft
Elevation	364.396sft
Utilized	Horz and Vert
Quality	Adjusted quality

Point	r2814b-7_GPS
Latitude	35°56'51.25561"N
Longitude	78°25'18.77025"W
Height	286.898sft

Northing	800310.758sft
Easting	2171116.984sft
Elevation	396.322sft
Horz error	0.003sft
Vert error	0.000sft
3D error	0.003sft

Point	r2814b-7
Northing	800310.756sft
Easting	2171116.981sft
Elevation	396.322sft
Utilized	Horz and Vert
Quality	Adjusted quality

Point	R2814B-8_GPS
Latitude	35°56'42.12310"N
Longitude	78°25'12.15337"W
Height	273.138sft

Northing	799390.459sft
Easting	2171666.440sft
Elevation	382.605sft
Horz error	0.004sft
Vert error	0.002sft
3D error	0.004sft

Point	R2814B-8
Northing	799390.457sft
Easting	2171666.437sft
Elevation	382.607sft
Utilized	Horz and Vert
Quality	Adjusted quality

Point	r2814-11_GPS
Latitude	35°57'32.05455"N
Longitude	78°24'51.80806"W
Height	249.751sft

Northing	804449.319sft
Easting	2173309.562sft
Elevation	359.177sft
Horz error	0.004sft
Vert error	0.001sft
3D error	0.004sft

Point	r2814-11
Northing	804449.317sft
Easting	2173309.560sft
Elevation	359.176sft
Utilized	Horz and Vert
Quality	Adjusted quality

Point	R2814-12_GPS
Latitude	35°57'23.13250"N
Longitude	78°24'44.95125"W
Height	255.356sft

Northing	803550.455sft
Easting	2173878.610sft
Elevation	364.825sft
Horz error	0.007sft
Vert error	0.038sft
3D error	0.039sft

Point	R2814-12
Northing	803550.456sft
Easting	2173878.618sft
Elevation	364.787sft
Utilized	Horz and Vert
Quality	Adjusted quality

Point	ACADEMY_GPS
Latitude	35°58'03.23586"N

Northing	807619.512sft
Easting	2176173.046sft

Point	ACADEMY
Northing	807619.509sft

Longitude	78°24'16.74736"W
Height	270.373sft

Elevation	379.854sft
Horz error	0.004sft
Vert error	0.001sft
3D error	0.004sft

Easting	2176173.044sft
Elevation	379.855sft
Utilized	Horz and Vert
Quality	Adjusted quality

Point	R2814-15_GPS
Latitude	35°58'07.10599"N
Longitude	78°23'57.58353"W
Height	251.388sft

Northing	808020.350sft
Easting	2177745.997sft
Elevation	360.926sft
Horz error	0.004sft
Vert error	0.003sft
3D error	0.005sft

Point	R2814-15
Northing	808020.347sft
Easting	2177745.994sft
Elevation	360.929sft
Utilized	Horz and Vert
Quality	Adjusted quality

Point	R2814-9_GPS
Latitude	35°59'36.87827"N
Longitude	78°22'12.90798"W
Height	236.173sft

Northing	817151.473sft
Easting	2186292.897sft
Elevation	345.897sft
Horz error	0.002sft
Vert error	0.007sft
3D error	0.007sft

Point	R2814-9
Northing	817151.472sft
Easting	2186292.894sft
Elevation	345.904sft
Utilized	Horz and Vert
Quality	Adjusted quality

Point	R2814-13_GPS
Latitude	35°58'56.17482"N
Longitude	78°22'57.32996"W
Height	297.013sft

Northing	813012.583sft
Easting	2182668.072sft
Elevation	406.657sft
Horz error	0.004sft
Vert error	0.006sft
3D error	0.008sft

Point	R2814-13
Northing	813012.580sft
Easting	2182668.070sft
Elevation	406.663sft
Utilized	Horz and Vert
Quality	Adjusted quality

Point	R2814-14_GPS
Latitude	35°58'46.25669"N
Longitude	78°22'40.93396"W
Height	288.094sft

Northing	812018.071sft
Easting	2184021.904sft
Elevation	397.812sft
Horz error	0.005sft
Vert error	0.010sft
3D error	0.011sft

Point	R2814-14
Northing	812018.067sft
Easting	2184021.900sft
Elevation	397.822sft
Utilized	Horz and Vert
Quality	Adjusted quality

Point	R2814-16_GPS
Latitude	36°00'54.03488"N
Longitude	78°21'26.22488"W
Height	268.743sft

Northing	824978.221sft
Easting	2190078.611sft
Elevation	378.492sft
Horz error	0.002sft
Vert error	0.003sft
3D error	0.004sft

Point	R2814-16
Northing	824978.220sft
Easting	2190078.609sft
Elevation	378.495sft
Utilized	Horz and Vert
Quality	Adjusted quality

Point	R2814-17_GPS
Latitude	36°00'48.74911"N
Longitude	78°21'16.10433"W
Height	265.354sft

Northing	824449.112sft
Easting	2190913.532sft
Elevation	375.146sft
Horz error	0.001sft
Vert error	0.005sft
3D error	0.006sft

Point	R2814-17
Northing	824449.112sft
Easting	2190913.531sft
Elevation	375.152sft
Utilized	Horz and Vert
Quality	Adjusted quality

Point	R2814-18_GPS
Latitude	36°03'08.64891"N
Longitude	78°20'29.09275"W
Height	170.524sft

Northing	838621.452sft
Easting	2194681.938sft
Elevation	280.244sft
Horz error	0.004sft
Vert error	0.000sft
3D error	0.004sft

Point	R2814-18
Northing	838621.456sft
Easting	2194681.940sft
Elevation	280.244sft
Utilized	Horz and Vert
Quality	Adjusted quality

Point	R2814-19_GPS
Latitude	36°03'26.48467"N

Northing	840428.996sft
Easting	2195262.485sft

Point	R2814-19
Northing	840429.001sft

Longitude	78°20'21.87675"W
Height	181.561sft

Elevation	291.275sft
Horz error	0.006sft
Vert error	0.001sft
3D error	0.007sft

Easting	2195262.489sft
Elevation	291.274sft
Utilized	Horz and Vert
Quality	Adjusted quality

Point	R2814-21_GPS
Latitude	36°05'02.34239"N
Longitude	78°18'54.74746"W
Height	200.697sft

Northing	850170.949sft
Easting	2202349.874sft
Elevation	310.542sft
Horz error	0.006sft
Vert error	0.001sft
3D error	0.006sft

Point	R2814-21
Northing	850170.954sft
Easting	2202349.878sft
Elevation	310.543sft
Utilized	Horz and Vert
Quality	Adjusted quality

Point	R2814-22_GPS
Latitude	36°05'08.61421"N
Longitude	78°19'09.86394"W
Height	215.351sft

Northing	850796.649sft
Easting	2201104.709sft
Elevation	325.138sft
Horz error	0.005sft
Vert error	0.002sft
3D error	0.006sft

Point	R2814-22
Northing	850796.653sft
Easting	2201104.713sft
Elevation	325.136sft
Utilized	Horz and Vert
Quality	Adjusted quality

Point	DERWARD_GPS
Latitude	35°50'23.37672"N
Longitude	78°34'45.40202"W
Height	231.857sft

Northing	760854.788sft
Easting	2124692.767sft
Elevation	340.142sft
Horz error	0.013sft
Vert error	0.015sft
3D error	0.020sft

Point	DERWARD
Northing	760854.794sft
Easting	2124692.778sft
Elevation	340.157sft
Utilized	Horz and Vert
Quality	Adjusted quality