

GPS Calibration Report

Project : Us19

TIP Number	R-2519A	Date & Time	9:50:38 AM 7/10/03
User name	jpgordon	Zone	North Carolina 3200
Coordinate System	US State Plane 1983(at ground)	Geoid Model	GEOID99 (Conus)
Horizontal Datum	NAD 1983 (Conus)		
Vertical Datum			
Coordinate Units	Meters		
Distance Units	Meters		
Height Units	Meters		

LOCAL SITE INFORMATION

Localized around	
Latitude	35°54'40.40569"N
Longitude	82°21'10.08524"W
Site Scale Factor	1.0001780300

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	242970.986m
Easting coordinate of rotation center	307548.408m
Rotation about the center point	0°00'01"
Translation north	0.182m
Translation east	0.134m
Scale factor	0.99999376

Vertical Adjustment Parameters

Northing coordinate of origin point	250378.278m
Easting coordinate of origin point	288404.211m
Vertical separation at origin	-0.164m
Slope north	-6.147ppm
Slope east	2.750ppm

Geoid Model Definition

GEOID99 (Conus)

Residual Differences Between GPS (WGS84) And Local Coordinates

Summary

	Maximum error	Root Mean Square error	Point
Horizontal	0.051m	0.022	McELROY WGS84
Vertical	0.058m	0.019	R2519-1 WGS84
Three-dimensional	0.070m	0.030	R2519-1 WGS84

Point Residuals

WGS84 Coordinates		Calculated point FOR DISPLAY ONLY		Local Coordinates	
Point	1002 WGS84	Northing	250378.278m	Point	1002 Local
Latitude	35°57'18.23692"N	Easting	288404.211m	Northing	250378.282m
Longitude	82°33'40.58624"W	Elevation	1168.476m	Easting	288404.209m
Height	1138.290m	Horz error	0.005m	Elevation	1168.505m
		Vert error	0.029m	Utilized	Horz and Vert
		3D error	0.029m	Quality	Survey quality
Point	MORRISON WGS84	Northing	248185.080m	Point	MORRISON Local
Latitude	35°57'01.20615"N	Easting	338836.069m	Northing	248185.061m
Longitude	82°00'06.61923"W	Elevation	816.593m	Easting	338836.110m
Height	785.629m	Horz error	0.045m	Elevation	816.631m
		Vert error	0.038m	Utilized	Horz and Vert

		3D error	0.059m	Quality	Survey quality
Point	P138os_WGS84	Northing	235083.000m	Point 138O_Local	
Latitude	35°49'07.57718"N	Easting	292933.378m	Northing	235082.994m
Longitude	82°30'18.43879"W	Elevation	639.625m	Easting	292933.422m
Height	609.483m	Horz error	0.044m	Elevation	639.601m
		Vert error	0.024m	Utilized	Horz and Vert
		3D error	0.050m	Quality	Survey quality
Point	McELROY_WGS84	Northing	235206.669m	Point McELROY_Local	
Latitude	35°49'08.34324"N	Easting	290114.142m	Northing	235206.667m
Longitude	82°32'10.84083"W	Elevation	653.216m	Easting	290114.193m
Height	623.054m	Horz error	0.051m	Elevation	653.234m
		Vert error	0.018m	Utilized	Horz and Vert
		3D error	0.054m	Quality	Survey quality
Point	A29_WGS84	Northing	235336.974m	Point A29_Local	
Latitude	35°49'12.60019"N	Easting	290142.022m	Northing	235336.956m
Longitude	82°32'09.91589"W	Elevation	654.993m	Easting	290142.011m
Height	624.831m	Horz error	0.021m	Elevation	654.996m
		Vert error	0.003m	Utilized	Horz and Vert
		3D error	0.021m	Quality	Survey quality
Point	WHIT_WGS84	Northing	235890.954m	Point WHIT_Local	
Latitude	35°49'30.74194"N	Easting	290298.490m	Northing	235890.937m
Longitude	82°32'04.47281"W	Elevation	677.098m	Easting	290298.480m
Height	646.937m	Horz error	0.019m	Elevation	677.107m
		Vert error	0.009m	Utilized	Horz and Vert
		3D error	0.021m	Quality	Survey quality
Point	R2518A-1_WGS84	Northing	237389.661m	Point BOLT_Local	
Latitude	35°50'20.53533"N	Easting	291341.410m	Northing	237389.656m
Longitude	82°31'25.07228"W	Elevation	700.142m	Easting	291341.441m
Height	669.985m	Horz error	0.031m	Elevation	700.155m
		Vert error	0.013m	Utilized	Horz and Vert
		3D error	0.034m	Quality	Survey quality
Point	CALIFORNIA_WGS84	Northing	237420.463m	Point CALIFORNIA_Local	
Latitude	35°50'21.68963"N	Easting	291476.622m	Northing	237420.447m
Longitude	82°31'19.73202"W	Elevation	681.461m	Easting	291476.613m
Height	651.305m	Horz error	0.018m	Elevation	681.471m
		Vert error	0.010m	Utilized	Horz and Vert

		3D error	0.020m	Quality	Survey quality
Point	R2518A-2_WGS84	Northing	237475.809m	Point R2518A-2_Local	
Latitude	35°50'23.87123"N	Easting	291813.177m	Northing	237475.804m
Longitude	82°31'06.40928"W	Elevation	681.859m	Easting	291813.199m
Height	651.704m	Horz error	0.023m	Elevation	681.867m
		Vert error	0.008m	Utilized	Horz and Vert
		3D error	0.024m	Quality	Survey quality
Point	CROOKED_WGS84	Northing	239073.796m	Point CROOKED_Local	
Latitude	35°51'18.87216"N	Easting	294600.777m	Northing	239073.799m
Longitude	82°29'17.64808"W	Elevation	682.436m	Easting	294600.792m
Height	652.295m	Horz error	0.015m	Elevation	682.427m
		Vert error	0.009m	Utilized	Horz and Vert
		3D error	0.018m	Quality	Survey quality
Point	BUCKNER_WGS84	Northing	240600.343m	Point BUCKNER_Local	
Latitude	35°52'08.98706"N	Easting	295146.303m	Northing	240600.347m
Longitude	82°28'58.05598"W	Elevation	704.322m	Easting	295146.315m
Height	674.185m	Horz error	0.013m	Elevation	704.323m
		Vert error	0.001m	Utilized	Horz and Vert
		3D error	0.013m	Quality	Survey quality
Point	WILJOR_WGS84	Northing	241419.904m	Point WILJOR_Local	
Latitude	35°52'35.84055"N	Easting	295394.039m	Northing	241419.908m
Longitude	82°28'49.33304"W	Elevation	710.821m	Easting	295394.042m
Height	680.686m	Horz error	0.005m	Elevation	710.827m
		Vert error	0.006m	Utilized	Horz and Vert
		3D error	0.008m	Quality	Survey quality
Point	RAY_WGS84	Northing	239402.005m	Point RAY_Local	
Latitude	35°51'33.46645"N	Easting	298087.976m	Northing	239402.005m
Longitude	82°26'59.21916"W	Elevation	717.120m	Easting	298087.989m
Height	687.007m	Horz error	0.013m	Elevation	717.098m
		Vert error	0.022m	Utilized	Horz and Vert
		3D error	0.026m	Quality	Survey quality
Point	CLYDE_WGS84	Northing	245250.038m	Point CLYDE_Local	
Latitude	35°54'41.56352"N	Easting	296754.060m	Northing	245250.044m
Longitude	82°28'00.48532"W	Elevation	869.810m	Easting	296754.070m
Height	839.678m	Horz error	0.012m	Elevation	869.833m
		Vert error	0.023m	Utilized	Horz and Vert

		3D error	0.026m	Quality	Survey quality
--	--	-----------------	--------	----------------	----------------

Point	DOANE_WGS84	Northing	245627.891m	Point	DOANE_Local
Latitude	35°54'54.30626"N	Easting	297188.804m	Northing	245627.896m
Longitude	82°27'43.68444"W	Elevation	856.001m	Easting	297188.809m
Height	825.867m	Horz error	0.008m	Elevation	856.029m
		Vert error	0.028m	Utilized	Horz and Vert
		3D error	0.029m	Quality	Survey quality

Point	31-JS-5_WGS84	Northing	245399.784m	Point	31-JS-5_Local
Latitude	35°54'50.87911"N	Easting	300716.558m	Northing	245399.793m
Longitude	82°25'22.76679"W	Elevation	786.076m	Easting	300716.546m
Height	755.917m	Horz error	0.015m	Elevation	786.099m
		Vert error	0.023m	Utilized	Horz and Vert
		3D error	0.027m	Quality	Survey quality

Point	HARDSCRABBLE_WGS	Northing	245306.248m	Point	HARDSCRABBLE_Loc
Latitude	35°54'48.93389"N	Easting	301690.259m	Northing	245306.258m
Longitude	82°24'43.83053"W	Elevation	777.820m	Easting	301690.250m
Height	747.653m	Horz error	0.014m	Elevation	777.842m
		Vert error	0.022m	Utilized	Horz and Vert
		3D error	0.026m	Quality	Survey quality

Point	CANE_WGS84	Northing	245563.151m	Point	CANE_Local
Latitude	35°55'00.14153"N	Easting	304282.501m	Northing	245563.159m
Longitude	82°23'00.86249"W	Elevation	755.785m	Easting	304282.495m
Height	725.587m	Horz error	0.010m	Elevation	755.793m
		Vert error	0.008m	Utilized	Horz and Vert
		3D error	0.013m	Quality	Survey quality

Point	R2519A-1_WGS84	Northing	244860.726m	Point	R2519A-1_Local
Latitude	35°54'40.39980"N	Easting	307037.912m	Northing	244860.731m
Longitude	82°21'10.09045"W	Elevation	780.787m	Easting	307037.904m
Height	750.582m	Horz error	0.009m	Elevation	780.782m
		Vert error	0.005m	Utilized	Horz and Vert
		3D error	0.011m	Quality	Survey quality

Point	R2519A-2_WGS84	Northing	244894.425m	Point	R2519A-2_Local
Latitude	35°54'41.74954"N	Easting	307272.698m	Northing	244894.435m
Longitude	82°21'00.77825"W	Elevation	774.967m	Easting	307272.681m
Height	744.760m	Horz error	0.020m	Elevation	774.952m
		Vert error	0.015m	Utilized	Horz and Vert

3D error	0.025m
-----------------	--------

Quality	Survey quality
----------------	----------------

Point	BALLPARK WGS84
Latitude	35°54'23.14085"N
Longitude	82°20'53.15029"W
Height	770.452m

Northing	244314.688m
Easting	307444.525m
Elevation	800.648m
Horz error	0.012m
Vert error	0.007m
3D error	0.014m

Point	BALL Local
Northing	244314.694m
Easting	307444.514m
Elevation	800.641m
Utilized	Horz and Vert
Quality	Survey quality

Point	HERITAGE WGS84
Latitude	35°54'44.06027"N
Longitude	82°19'56.65147"W
Height	806.938m

Northing	244911.491m
Easting	308882.232m
Elevation	837.158m
Horz error	0.023m
Vert error	0.020m
3D error	0.030m

Point	HERITAGE Local
Northing	244911.502m
Easting	308882.212m
Elevation	837.138m
Utilized	Horz and Vert
Quality	Survey quality

Point	R2519A-16 WGS84
Latitude	35°54'45.48704"N
Longitude	82°19'37.49878"W
Height	793.841m

Northing	244939.338m
Easting	309363.708m
Elevation	824.066m
Horz error	0.021m
Vert error	0.024m
3D error	0.032m

Point	R2519A-16 Local
Northing	244939.348m
Easting	309363.689m
Elevation	824.042m
Utilized	Horz and Vert
Quality	Survey quality

Point	LHT-820os WGS84
Latitude	35°54'18.88995"N
Longitude	82°17'39.37039"W
Height	807.636m

Northing	244021.155m
Easting	312297.024m
Elevation	837.877m
Horz error	0.016m
Vert error	0.026m
3D error	0.031m

Point	820os Local
Northing	244021.161m
Easting	312297.009m
Elevation	837.851m
Utilized	Horz and Vert
Quality	Survey quality

Point	R2519A-44 WGS84
Latitude	35°54'53.02476"N
Longitude	82°17'59.95512"W
Height	827.195m

Northing	245089.920m
Easting	311816.058m
Elevation	857.448m
Horz error	0.018m
Vert error	0.013m
3D error	0.022m

Point	R2519A-44 Local
Northing	245089.927m
Easting	311816.041m
Elevation	857.435m
Utilized	Horz and Vert
Quality	Survey quality

Point	JORDAN WGS84
Latitude	35°54'57.30402"N
Longitude	82°18'00.92167"W
Height	824.227m

Northing	245222.561m
Easting	311796.220m
Elevation	854.482m
Horz error	0.042m
Vert error	0.024m

Point	JORDAN Local
Northing	245222.580m
Easting	311796.183m
Elevation	854.458m
Utilized	Horz and Vert

3D error	0.048m
-----------------	--------

Quality	Survey quality
----------------	----------------

Point	LHT-810_WGS84
Latitude	35°55'01.87607"N
Longitude	82°17'58.53327"W
Height	827.717m

Northing	245361.425m
Easting	311860.760m
Elevation	857.975m
Horz error	0.020m
Vert error	0.015m
3D error	0.025m

Point	LHT-810_Local
Northing	245361.432m
Easting	311860.741m
Elevation	857.960m
Utilized	Horz and Vert
Quality	Survey quality

Point	R2519A-59_WGS84
Latitude	35°54'57.65527"N
Longitude	82°16'53.76324"W
Height	771.098m

Northing	245177.559m
Easting	313479.638m
Elevation	801.378m
Horz error	0.018m
Vert error	0.020m
3D error	0.027m

Point	R2519A-59_Local
Northing	245177.565m
Easting	313479.621m
Elevation	801.358m
Utilized	Horz and Vert
Quality	Survey quality

Point	R2519A-62_WGS84
Latitude	35°55'01.06695"N
Longitude	82°16'42.80063"W
Height	768.420m

Northing	245273.584m
Easting	313757.846m
Elevation	798.707m
Horz error	0.018m
Vert error	0.025m
3D error	0.030m

Point	R2519A-62_Local
Northing	245273.592m
Easting	313757.830m
Elevation	798.682m
Utilized	Horz and Vert
Quality	Survey quality

Point	R2519A-77_WGS84
Latitude	35°54'50.61398"N
Longitude	82°15'45.86324"W
Height	756.966m

Northing	244904.511m
Easting	315174.158m
Elevation	787.276m
Horz error	0.016m
Vert error	0.022m
3D error	0.027m

Point	R2519A-77_Local
Northing	244904.517m
Easting	315174.143m
Elevation	787.254m
Utilized	Horz and Vert
Quality	Survey quality

Point	R2519A-78_WGS84
Latitude	35°54'47.40597"N
Longitude	82°15'33.47902"W
Height	759.246m

Northing	244795.477m
Easting	315481.283m
Elevation	789.561m
Horz error	0.016m
Vert error	0.014m
3D error	0.022m

Point	R2519A-78_Local
Northing	244795.484m
Easting	315481.268m
Elevation	789.547m
Utilized	Horz and Vert
Quality	Survey quality

Point	WINDOM_WGS84
Latitude	35°54'54.05602"N
Longitude	82°14'24.97990"W
Height	736.954m

Northing	244944.128m
Easting	317204.715m
Elevation	767.316m
Horz error	0.016m
Vert error	0.011m

Point	WINDOM_Local
Northing	244944.136m
Easting	317204.701m
Elevation	767.305m
Utilized	Horz and Vert

3D error	0.020m
-----------------	--------

Quality	Survey quality
----------------	----------------

Point	CRABTREE WGS84
Latitude	35°54'38.82413"N
Longitude	82°13'51.01720"W
Height	728.854m

Northing	244447.099m
Easting	318040.600m
Elevation	759.236m
Horz error	0.016m
Vert error	0.012m
3D error	0.020m

Point	CRABTREE Local
Northing	244447.108m
Easting	318040.587m
Elevation	759.224m
Utilized	Horz and Vert
Quality	Survey quality

Point	R2519A-118 WGS84
Latitude	35°54'30.02196"N
Longitude	82°13'00.52932"W
Height	725.077m

Northing	244134.802m
Easting	319297.196m
Elevation	755.499m
Horz error	0.004m
Vert error	0.010m
3D error	0.011m

Point	R2519A-118 Local
Northing	244134.800m
Easting	319297.192m
Elevation	755.489m
Utilized	Horz and Vert
Quality	Survey quality

Point	R2519A-119 WGS84
Latitude	35°54'33.84966"N
Longitude	82°12'48.23409"W
Height	717.739m

Northing	244242.743m
Easting	319609.183m
Elevation	748.172m
Horz error	0.007m
Vert error	0.001m
3D error	0.007m

Point	R2519A-119 Local
Northing	244242.737m
Easting	319609.180m
Elevation	748.171m
Utilized	Horz and Vert
Quality	Survey quality

Point	MICA SCHOOL WGS84
Latitude	35°54'21.33548"N
Longitude	82°12'55.79738"W
Height	720.561m

Northing	243863.339m
Easting	319407.125m
Elevation	750.985m
Horz error	0.009m
Vert error	0.003m
3D error	0.009m

Point	MICA SCHOOL Local
Northing	243863.330m
Easting	319407.124m
Elevation	750.982m
Utilized	Horz and Vert
Quality	Survey quality

Point	COXCOMB WGS84
Latitude	35°54'07.61367"N
Longitude	82°09'47.14351"W
Height	804.762m

Northing	243288.591m
Easting	324122.253m
Elevation	835.346m
Horz error	0.014m
Vert error	0.008m
3D error	0.016m

Point	COXCOMB Local
Northing	243288.579m
Easting	324122.259m
Elevation	835.354m
Utilized	Horz and Vert
Quality	Survey quality

Point	ARBUCKLE WGS84
Latitude	35°54'06.69143"N
Longitude	82°09'33.55389"W
Height	803.741m

Northing	243249.325m
Easting	324461.991m
Elevation	834.337m
Horz error	0.015m
Vert error	0.003m

Point	ARBUCKLE Local
Northing	243249.312m
Easting	324461.998m
Elevation	834.340m
Utilized	Horz and Vert

	3D error	0.015m	Quality	Survey quality
--	-----------------	--------	----------------	----------------

Point	1-JS-3_WGS84
Latitude	35°55'28.51772"N
Longitude	82°04'44.51009"W
Height	741.764m

Northing	245542.637m
Easting	331785.627m
Elevation	772.570m
Horz error	0.037m
Vert error	0.014m
3D error	0.040m

Point	1-JS-3_Local
Northing	245542.613m
Easting	331785.655m
Elevation	772.584m
Utilized	Horz and Vert
Quality	Survey quality

Point	R2519-1_WGS84
Latitude	35°53'14.14677"N
Longitude	82°03'45.84036"W
Height	758.812m

Northing	241357.144m
Easting	333128.111m
Elevation	789.778m
Horz error	0.039m
Vert error	0.058m
3D error	0.070m

Point	R-2519-1_Local
Northing	241357.118m
Easting	333128.140m
Elevation	789.836m
Utilized	Horz and Vert
Quality	Survey quality