

GPS Calibration Report

Project : I4406-01-26-05

TIP Number	I-4406	Date & Time	9:50:32 AM 2/2/2006
User name	scranford	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	NAVD88		
Coordinate Units	US survey feet		
Distance Units	US survey feet		
Height Units	US survey feet		

LOCAL SITE INFORMATION

Localized around	R2107B-1
Latitude	35°21'32.83910"N
Longitude	79°47'30.70440"W
Site Scale Factor	1.0001493723
Height	496.336sft

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	583199.351sft
Easting coordinate of rotation center	1775403.247sft
Rotation about the center point	0°00'00"
Translation north	0.004sft
Translation east	0.008sft
Scale factor	1.00000008

Vertical Adjustment Parameters

Northing coordinate of origin point	543224.571sft
Easting coordinate of origin point	1783934.909sft
Vertical separation at origin	-0.046sft
Slope north	1.777ppm
Slope east	0.316ppm

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	0.024sft	0.002	WHYNOT AZ MK_GPS
Vertical	0.033sft	0.005	WHYNOT AZ MK_GPS
Three-dimensional	0.040sft	0.005	WHYNOT AZ MK_GPS

Point Residuals

WGS84 Coordinates		Calculated point FOR DISPLAY ONLY		Local Coordinates	
Point	I4406-1_GPS	Northing	543224.571sft	Point	I4406-1
Latitude	35°14'25.67170"N	Easting	1783934.909sft	Northing	543224.570sft
Longitude	79°43'25.13273"W	Elevation	685.050sft	Easting	1783934.906sft
Height	583.962sft	Horz error	0.003sft	Elevation	685.038sft
		Vert error	0.013sft	Utilized	Horz and Vert
		3D error	0.013sft	Quality	Adjusted quality
Point	I4406-2_GPS	Northing	545161.713sft	Point	I4406-2
Latitude	35°14'44.84456"N	Easting	1784140.679sft	Northing	545161.711sft
Longitude	79°43'22.82230"W	Elevation	685.315sft	Easting	1784140.675sft
Height	584.250sft	Horz error	0.004sft	Elevation	685.305sft
		Vert error	0.010sft	Utilized	Horz and Vert
		3D error	0.011sft	Quality	Adjusted quality
Point	I4406-3_GPS	Northing	568504.197sft	Point	I4406-3
Latitude	35°18'35.55334"N	Easting	1782161.433sft	Northing	568504.195sft
Longitude	79°43'48.75323"W	Elevation	709.692sft	Easting	1782161.429sft
Height	608.935sft	Horz error	0.004sft	Elevation	709.698sft
		Vert error	0.006sft	Utilized	Horz and Vert
		3D error	0.007sft	Quality	Adjusted quality
Point	I4406-4_GPS	Northing	570196.252sft	Point	I4406-4
Latitude	35°18'52.23482"N	Easting	1781441.369sft	Northing	570196.250sft
Longitude	79°43'57.59152"W	Elevation	703.787sft	Easting	1781441.366sft
Height	603.056sft	Horz error	0.004sft	Elevation	703.792sft
		Vert error	0.005sft	Utilized	Horz and Vert
		3D error	0.006sft	Quality	Adjusted quality
Point	I4406-5_GPS	Northing	627995.172sft	Point	I4406-5
Latitude	35°28'22.72847"N	Easting	1766732.304sft	Northing	627995.172sft
Longitude	79°47'00.57076"W	Elevation	583.801sft	Easting	1766732.301sft
Height	483.587sft	Horz error	0.003sft	Elevation	583.819sft
		Vert error	0.017sft	Utilized	Horz and Vert
		3D error	0.018sft	Quality	Adjusted quality
Point	I4406-6_GPS	Northing	630300.663sft	Point	I4406-6
Latitude	35°28'45.55887"N	Easting	1767124.806sft	Northing	630300.670sft

Longitude	79°46'56.04534"W
Height	515.849sft

Elevation	616.057sft
Horz error	0.007sft
Vert error	0.021sft
3D error	0.022sft

Easting	1767124.804sft
Elevation	616.078sft
Utilized	Horz and Vert
Quality	Adjusted quality

Point	I4406-7_GPS
Latitude	35°16'13.83574"N
Longitude	79°43'36.63733"W
Height	576.044sft

Northing	554167.864sft
Easting	1783060.675sft
Elevation	676.968sft
Horz error	0.005sft
Vert error	0.005sft
3D error	0.008sft

Point	I4406-7
Northing	554167.862sft
Easting	1783060.670sft
Elevation	676.963sft
Utilized	Horz and Vert
Quality	Adjusted quality

Point	I4406-8_GPS
Latitude	35°16'10.04395"N
Longitude	79°43'21.92290"W
Height	568.967sft

Northing	553775.572sft
Easting	1784278.000sft
Elevation	669.924sft
Horz error	0.005sft
Vert error	0.002sft
3D error	0.006sft

Point	I4406-8
Northing	553775.570sft
Easting	1784277.996sft
Elevation	669.922sft
Utilized	Horz and Vert
Quality	Adjusted quality

Point	I4406-9_GPS
Latitude	35°17'49.40327"N
Longitude	79°43'43.63437"W
Height	654.448sft

Northing	563834.869sft
Easting	1782551.424sft
Elevation	755.255sft
Horz error	0.006sft
Vert error	0.003sft
3D error	0.006sft

Point	I4406-9
Northing	563834.866sft
Easting	1782551.419sft
Elevation	755.257sft
Utilized	Horz and Vert
Quality	Adjusted quality

Point	I4406-10_GPS
Latitude	35°17'53.38778"N
Longitude	79°43'24.61629"W
Height	623.941sft

Northing	564226.208sft
Easting	1784130.819sft
Elevation	724.774sft
Horz error	0.006sft
Vert error	0.008sft
3D error	0.010sft

Point	I4406-10
Northing	564226.205sft
Easting	1784130.814sft
Elevation	724.782sft
Utilized	Horz and Vert
Quality	Adjusted quality

Point	I4406-11_GPS
Latitude	35°20'03.49022"N
Longitude	79°44'55.97586"W
Height	509.288sft

Northing	577436.974sft
Easting	1776657.131sft
Elevation	609.897sft
Horz error	0.003sft
Vert error	0.002sft
3D error	0.004sft

Point	I4406-11
Northing	577436.973sft
Easting	1776657.134sft
Elevation	609.895sft
Utilized	Horz and Vert
Quality	Adjusted quality

Point	I4406-12_GPS
Latitude	35°20'13.01745"N
Longitude	79°44'50.73252"W
Height	496.071sft

Northing	578396.997sft
Easting	1777098.819sft
Elevation	596.680sft
Horz error	0.007sft
Vert error	0.000sft
3D error	0.007sft

Point	I4406-12
Northing	578396.994sft
Easting	1777098.826sft
Elevation	596.680sft
Utilized	Horz and Vert
Quality	Adjusted quality

Point	I4406-13_GPS
Latitude	35°23'16.95644"N
Longitude	79°46'03.62774"W
Height	477.755sft

Northing	597041.219sft
Easting	1771203.145sft
Elevation	578.173sft
Horz error	0.002sft
Vert error	0.000sft
3D error	0.002sft

Point	I4406-13
Northing	597041.219sft
Easting	1771203.147sft
Elevation	578.173sft
Utilized	Horz and Vert
Quality	Adjusted quality

Point	I4406-14_GPS
Latitude	35°23'10.86807"N

Northing	596413.119sft
Easting	1772820.496sft

Point	I4406-14
Northing	596413.116sft

Longitude	79°45'44.03736"W
Height	461.745sft

Elevation	562.190sft
Horz error	0.004sft
Vert error	0.004sft
3D error	0.006sft

Easting	1772820.500sft
Elevation	562.194sft
Utilized	Horz and Vert
Quality	Adjusted quality

Point	I4406-15_GPS
Latitude	35°24'26.04121"N
Longitude	79°46'41.25276"W
Height	524.242sft

Northing	604050.704sft
Easting	1768142.560sft
Elevation	624.585sft
Horz error	0.002sft
Vert error	0.002sft
3D error	0.003sft

Point	I4406-15
Northing	604050.701sft
Easting	1768142.561sft
Elevation	624.583sft
Utilized	Horz and Vert
Quality	Adjusted quality

Point	I4406-16_GPS
Latitude	35°24'28.58900"N
Longitude	79°46'14.55886"W
Height	506.014sft

Northing	604291.075sft
Easting	1770354.285sft
Elevation	606.386sft
Horz error	0.002sft
Vert error	0.005sft
3D error	0.006sft

Point	I4406-16
Northing	604291.073sft
Easting	1770354.285sft
Elevation	606.391sft
Utilized	Horz and Vert
Quality	Adjusted quality

Point	I4406-17_GPS
Latitude	35°26'05.22171"N
Longitude	79°46'25.89865"W
Height	537.744sft

Northing	614069.058sft
Easting	1769491.754sft
Elevation	638.057sft
Horz error	0.003sft
Vert error	0.012sft
3D error	0.012sft

Point	I4406-17
Northing	614069.055sft
Easting	1769491.752sft
Elevation	638.069sft
Utilized	Horz and Vert
Quality	Adjusted quality

Point	I4406-18_GPS
Latitude	35°26'08.03836"N
Longitude	79°46'11.64585"W
Height	513.829sft

Northing	614344.683sft
Easting	1770673.411sft
Elevation	614.156sft
Horz error	0.004sft
Vert error	0.016sft
3D error	0.016sft

Point	I4406-18
Northing	614344.680sft
Easting	1770673.409sft
Elevation	614.172sft
Utilized	Horz and Vert
Quality	Adjusted quality

Point	I4406-19_GPS
Latitude	35°27'05.21587"N
Longitude	79°46'49.85189"W
Height	499.382sft

Northing	620150.703sft
Easting	1767557.271sft
Elevation	599.641sft
Horz error	0.003sft
Vert error	0.012sft
3D error	0.013sft

Point	I4406-19
Northing	620150.701sft
Easting	1767557.270sft
Elevation	599.653sft
Utilized	Horz and Vert
Quality	Adjusted quality

Point	I4406-20_GPS
Latitude	35°27'43.36330"N
Longitude	79°46'37.93348"W
Height	530.805sft

Northing	624000.140sft
Easting	1768573.541sft
Elevation	631.061sft
Horz error	0.003sft
Vert error	0.019sft
3D error	0.019sft

Point	I4406-20
Northing	624000.138sft
Easting	1768573.539sft
Elevation	631.079sft
Utilized	Horz and Vert
Quality	Adjusted quality

Point	R2107B-1_GPS
Latitude	35°21'32.83894"N
Longitude	79°47'30.70449"W
Height	496.337sft

Northing	586570.497sft
Easting	1763909.243sft
Elevation	596.705sft
Horz error	0.010sft
Vert error	0.026sft
3D error	0.028sft

Point	R2107B-1
Northing	586570.507sft
Easting	1763909.244sft
Elevation	596.679sft
Utilized	Horz and Vert
Quality	Control quality

Point	R2107B-2_GPS
Latitude	35°21'35.07929"N

Northing	586773.675sft
Easting	1766855.722sft

Point	R2107B-2
Northing	586773.680sft

Longitude	79°46'55.15302"W
Height	507.141sft

Elevation	607.548sft
Horz error	0.005sft
Vert error	0.026sft
3D error	0.027sft

Easting	1766855.725sft
Elevation	607.522sft
Utilized	Horz and Vert
Quality	Control quality

Point	R2107B-3_GPS
Latitude	35°21'39.77710"N
Longitude	79°45'49.32795"W
Height	461.170sft

Northing	587206.224sft
Easting	1772311.569sft
Elevation	561.653sft
Horz error	0.009sft
Vert error	0.024sft
3D error	0.025sft

Point	R2107B-3
Northing	587206.224sft
Easting	1772311.578sft
Elevation	561.629sft
Utilized	Horz and Vert
Quality	Control quality

Point	R2107B-4_GPS
Latitude	35°21'36.37887"N
Longitude	79°45'30.85028"W
Height	459.225sft

Northing	586850.893sft
Easting	1773839.398sft
Elevation	559.733sft
Horz error	0.016sft
Vert error	0.030sft
3D error	0.034sft

Point	R2107B-4
Northing	586850.886sft
Easting	1773839.412sft
Elevation	559.704sft
Utilized	Horz and Vert
Quality	Control quality

Point	BAPTIST_GPS
Latitude	35°17'50.21188"N
Longitude	79°44'45.02964"W
Height	638.675sft

Northing	563954.427sft
Easting	1777462.826sft
Elevation	739.390sft
Horz error	0.007sft
Vert error	0.011sft
3D error	0.013sft

Point	BAPTIST
Northing	563954.425sft
Easting	1777462.820sft
Elevation	739.401sft
Utilized	Horz and Vert
Quality	Control quality

Point	PEE DEE 2_GPS
Latitude	35°15'31.92108"N
Longitude	80°01'57.47133"W
Height	337.988sft

Northing	550738.993sft
Easting	1691736.958sft
Elevation	437.931sft
Horz error	0.009sft
Vert error	0.007sft
3D error	0.012sft

Point	PEE DEE 2
Northing	550738.990sft
Easting	1691736.966sft
Elevation	437.939sft
Utilized	Horz and Vert
Quality	Control quality

Point	GRANNY_GPS
Latitude	35°08'07.61749"N
Longitude	79°41'14.58431"W
Height	455.442sft

Northing	504923.343sft
Easting	1794499.266sft
Elevation	557.360sft
Horz error	0.009sft
Vert error	0.021sft
3D error	0.023sft

Point	GRANNY
Northing	504923.348sft
Easting	1794499.274sft
Elevation	557.381sft
Utilized	Horz and Vert
Quality	Control quality

Point	CULDEE_GPS
Latitude	35°15'00.73577"N
Longitude	79°28'11.40736"W
Height	426.395sft

Northing	546314.267sft
Easting	1859746.111sft
Elevation	529.178sft
Horz error	0.008sft
Vert error	0.004sft
3D error	0.009sft

Point	CULDEE
Northing	546314.266sft
Easting	1859746.102sft
Elevation	529.182sft
Utilized	Horz and Vert
Quality	Control quality

Point	WHYNOT AZ MK_GPS
Latitude	35°31'39.82331"N
Longitude	79°45'32.07452"W
Height	514.272sft

Northing	647867.248sft
Easting	1774204.469sft
Elevation	614.457sft
Horz error	0.024sft
Vert error	0.033sft
3D error	0.040sft

Point	WHYNOT AZ MK
Northing	647867.272sft
Easting	1774204.469sft
Elevation	614.425sft
Utilized	Horz and Vert
Quality	Control quality