

PROJECT REFERENCE NO. R-2501C	SHEET NO. IC-2
LOCATION AND SURVEYS	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

# SURVEY CONTROL SHEET R-2501C

## GPS CALIBRATION REPORT

PROJECT : R2501C

TIP NUMBER R2501C  
 USER NAME MTWOODRUFF DATE & TIME 11:30:36 AM  
 1/29/2004  
 COORDINATE SYSTEM US STATE PLANE ZONE NORTH CAROLINA  
 1983(AT GROUND) 3200  
 HORIZONTAL DATUM NAD 1983 (CONUS)  
 VERTICAL DATUM NAVD88 GEOID MODEL GEOID99 (CONUS)  
 COORDINATE UNITS US SURVEY FEET  
 DISTANCE UNITS US SURVEY FEET  
 HEIGHT UNITS US SURVEY FEET

LOCAL SITE INFORMATION  
 LOCALIZED AROUND  
 LATITUDE 34°55'20.63321"N  
 LONGITUDE 79°39'13.80534"W  
 SITE SCALE FACTOR 1.0001330980  
 HEIGHT ?

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 448991.338SFT  
 EASTING COORDINATE OF  
 ROTATION CENTER 1799836.333SFT  
 ROTATION ABOUT THE CENTER  
 POINT 0°00'00"  
 TRANSLATION NORTH 0.014SFT  
 TRANSLATION EAST -0.030SFT  
 SCALE FACTOR 0.99999937

### VERTICAL ADJUSTMENT PARAMETERS

NORTHING COORDINATE OF ORIGIN  
 POINT 438183.593SFT  
 EASTING COORDINATE OF ORIGIN  
 POINT 1780904.137SFT  
 VERTICAL SEPARATION AT ORIGIN 0.015SFT  
 SLOPE NORTH -0.867PPM  
 SLOPE EAST 3.125PPM

### GEOID MODEL DEFINITION

GEOID99 (CONUS)

### RESIDUAL DIFFERENCES BETWEEN GPS (WGS84) AND LOCAL COORDINATES

	MAXIMUM ERROR	ROOT MEAN SQUARE ERROR	POINT
HORIZONTAL	0.030SFT	0.006	R2502-1 GPS
VERTICAL	0.065SFT	0.011	U3456-4
THREE-DIMENSIONAL	0.065SFT	0.012	U3456-4

### POINT RESIDUALS

WGS84 COORDINATES	CALCULATED POINT FOR DISPLAY ONLY	LOCAL COORDINATES
POINT U3456-4 LATITUDE 34°57'06.35998"N LONGITUDE 79°43'52.27111"W HEIGHT 216.653SFT	NORTHING 438183.593SFT EASTING 1780904.137SFT ELEVATION 319.366SFT HORZ ERROR ? VERT ERROR 0.065SFT 3D ERROR 0.065SFT	POINT U3456-4 NORTHING 438183.593SFT EASTING 1780904.137SFT ELEVATION 319.301SFT UTILIZED VERTICAL QUALITY CONTROL QUALITY
POINT R2502-1 GPS LATITUDE 34°58'49.68464"N LONGITUDE 79°35'43.33496"W HEIGHT 306.334SFT	NORTHING 448358.220SFT EASTING 1821667.435SFT ELEVATION 410.382SFT HORZ ERROR 0.030SFT VERT ERROR 0.032SFT 3D ERROR 0.043SFT	POINT R2502-1 NORTHING 448358.250SFT EASTING 1821667.433SFT ELEVATION 410.350SFT UTILIZED HORZ AND VERT QUALITY CONTROL QUALITY
POINT R0000A-6 GPS LATITUDE 35°02'36.24305"N LONGITUDE 79°42'58.12557"W HEIGHT 297.322SFT	NORTHING 471503.139SFT EASTING 1785651.972SFT ELEVATION 399.724SFT HORZ ERROR 0.029SFT VERT ERROR 0.001SFT 3D ERROR 0.029SFT	POINT R0000A-6 NORTHING 471503.144SFT EASTING 1785652.000SFT ELEVATION 399.724SFT UTILIZED HORZ AND VERT QUALITY CONTROL QUALITY
POINT U3456-5 GPS LATITUDE 34°57'25.08367"N LONGITUDE 79°42'00.85071"W HEIGHT 255.765SFT	NORTHING 440009.755SFT EASTING 1790192.456SFT ELEVATION 358.793SFT HORZ ERROR 0.018SFT VERT ERROR 0.038SFT 3D ERROR 0.042SFT	POINT U3456-5 NORTHING 440009.741SFT EASTING 1790192.444SFT ELEVATION 358.831SFT UTILIZED HORZ AND VERT QUALITY CONTROL QUALITY
POINT U3456-6 GPS LATITUDE 34°57'30.26754"N LONGITUDE 79°41'38.97067"W HEIGHT 251.125SFT	NORTHING 440521.072SFT EASTING 1792017.367SFT ELEVATION 354.210SFT HORZ ERROR 0.015SFT VERT ERROR 0.038SFT 3D ERROR 0.040SFT	POINT U3456-6 NORTHING 440521.058SFT EASTING 1792017.362SFT ELEVATION 354.248SFT UTILIZED HORZ AND VERT QUALITY CONTROL QUALITY
POINT R2501C-1 GPS LATITUDE 34°58'31.43193"N LONGITUDE 79°39'12.50279"W HEIGHT 219.268SFT	NORTHING 446622.279SFT EASTING 1804249.541SFT ELEVATION 322.711SFT HORZ ERROR 0.012SFT VERT ERROR 0.022SFT 3D ERROR 0.025SFT	POINT R2501C-1 NORTHING 446622.268SFT EASTING 1804249.536SFT ELEVATION 322.733SFT UTILIZED HORZ AND VERT QUALITY ADJUSTED QUALITY
POINT R2501C-2 GPS LATITUDE 34°58'34.57577"N LONGITUDE 79°39'00.63741"W HEIGHT 260.330SFT	NORTHING 446933.650SFT EASTING 1805239.051SFT ELEVATION 363.804SFT HORZ ERROR 0.008SFT VERT ERROR 0.000SFT 3D ERROR 0.008SFT	POINT R2501C-2 NORTHING 446933.656SFT EASTING 1805239.045SFT ELEVATION 363.805SFT UTILIZED HORZ AND VERT QUALITY ADJUSTED QUALITY

## DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT  
 IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY  
 NCGS FOR MONUMENT "FRUITLAND"  
 WITH NAD 83/95 STATE PLANE GRID COORDINATES OF  
 NORTHING: 427332.498(ft) EASTING: 1804014.118(ft)  
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT  
 (GROUND TO GRID) IS: 0.99986692  
 THE N.C. LAMBERT GRID BEARING AND  
 LOCALIZED HORIZONTAL GROUND DISTANCE FROM  
 "FRUITLAND" TO -L- STATION 1141+50.00 IS  
 N 07°16'58.0" E 19767.0'  
 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES  
 VERTICAL DATUM USED IS NAVD 88

## NOTES

- THE SITE CALIBRATION SHOWN IS BASED UPON A NETWORK TIED TO THE HARN (HIGH ACCURACY REFERENCE NETWORK) NAD 83/95 ADJUSTMENT. THIS CALIBRATION WILL ALLOW THE END USER TO WORK WITHIN THE SAME COORDINATE SYSTEM WHEN USING RTK (REAL TIME KINEMATIC) GPS AND A LOCAL BASE STATION. IF ANOTHER SYSTEM SUCH AS VRS (VIRTUAL REFERENCE STATION) IS USED, ADDITIONAL FIELD TIES MAY BE NEEDED TO REDUCE POSSIBLE ERRORS, OR BIASES.
- THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING "PROJECT CONTROL DATA" AT:  
[HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION](https://connect.ncdot.gov/resources/location)  
 THE FILES TO BE FOUND ARE AS FOLLOWS:  
 r2501c\_ls\_gpscdlib\_040i29.html  
 r2501c\_ls\_wgs84\_040i29.txt  
 r2501c\_ls\_locq\_040i29.txt  
 r2501c\_ls\_control.txt

THE WGS84 AND LOCAL FILES ARE COMMA DELIMITED AND CAN BE USED TO REPRODUCE THE SITE CALIBRATION FOR THE END USER'S GPS EQUIPMENT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

8/17/99

REVISIONS

02-FEB-2018 17:43  
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 JNTB