

SURVEY CONTROL SHEET U2524BC

GPS Calibration Report

Project : U2524BC_LS_0712026

TIP Number	U2524BC	Date & Time	8:42:33 AM 11/18/2014
User name	khudson	Zone	North Carolina 3200
Coordinate System	US State Plane 1983(at ground)	Geoid Model	G09NC
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	R2413-10
Latitude	36°10'05.55674"N
Longitude	79°56'44.02451"W
Site Scale Factor	1.0000364200
Height	781.391sft

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	862157.519sft
Easting coordinate of rotation center	1722906.371sft
Rotation about the center point	-0°00'01"
Translation north	-0.028sft
Translation east	-0.013sft
Scale factor	1.00000049

Vertical Adjustment Parameters

Northing coordinate of origin point	863373.849sft
Easting coordinate of origin point	1713366.161sft
Vertical separation at origin	0.183sft
Slope north	2.625ppm
Slope east	3.221ppm

Geoid Model Definition

G09NC

Residual Differences Between GPS (WGS84) And Local Coordinates

	Maximum error	Root Mean Square error	Point
Horizontal	0.067sft	0.012	BY1-151_GNSS
Vertical	0.044sft	0.008	U2524BC-10_GNSS
Three-dimensional	0.067sft	0.014	BY1-151_GNSS

Point Residuals

WGS84 Coordinates	Calculated point FOR DISPLAY ONLY	Local Coordinates
Point BY1-151_GNSS	Northing 863373.849sft	Point BY1-151
Latitude 36°07'05.98147"N	Easting 1713366.161sft	Northing 863373.806sft
Longitude 79°58'13.62670"W	Elevation 959.500sft	Easting 1713366.213sft
Height 854.890sft	Horz error 0.067sft	Elevation 959.500sft
	Vert error 0.000sft	Utilized Horz and Vert
	3D error 0.067sft	Quality Control quality
Point BY5-169_GNSS	Northing 870815.068sft	Point BY5-169
Latitude 36°08'19.63916"N	Easting 1714173.694sft	Northing 870815.126sft
Longitude 79°58'04.66905"W	Elevation 910.830sft	Easting 1714173.681sft
Height 805.895sft	Horz error 0.060sft	Elevation 910.850sft
	Vert error 0.020sft	Utilized Horz and Vert
	3D error 0.063sft	Quality Control quality
Point R2413-1_GNSS	Northing 853277.661sft	Point R2413-1
Latitude 36°05'26.28963"N	Easting 1714836.090sft	Northing 853277.636sft
Longitude 79°57'54.51644"W	Elevation 870.753sft	Easting 1714836.099sft
Height 766.694sft	Horz error 0.026sft	Elevation 870.780sft
	Vert error 0.027sft	Utilized Horz and Vert
	3D error 0.037sft	Quality Control quality
Point R2413-3_GNSS	Northing 859578.336sft	Point R2413-3
Latitude 36°06'28.78840"N	Easting 1716883.045sft	Northing 859578.354sft
Longitude 79°57'30.31907"W	Elevation 897.057sft	Easting 1716883.025sft
Height 792.775sft	Horz error 0.027sft	Elevation 897.030sft
	Vert error 0.027sft	Utilized Horz and Vert
	3D error 0.038sft	Quality Control quality
Point I5110-1_GNSS	Northing 864389.959sft	Point I5110-1
Latitude 36°07'16.85279"N	Easting 1722022.362sft	Northing 864389.962sft
Longitude 79°56'28.24846"W	Elevation 867.711sft	Easting 1722022.347sft
Height 763.408sft	Horz error 0.015sft	Elevation 867.670sft
	Vert error 0.041sft	Utilized Horz and Vert
	3D error 0.043sft	Quality Control quality
Point I5110-4_GNSS	Northing 863626.475sft	Point I5110-4
Latitude 36°07'09.96603"N	Easting 1729186.534sft	Northing 863626.487sft
Longitude 79°55'00.84725"W	Elevation 876.132sft	Easting 1729186.501sft
Height 772.170sft	Horz error 0.036sft	Elevation 876.120sft
	Vert error 0.012sft	Utilized Horz and Vert
	3D error 0.038sft	Quality Control quality

Point U2524BC-5_GNSS	Northing 862102.417sft	Point U2524BC-5
Latitude 36°06'55.27919"N	Easting 1733419.275sft	Northing 862102.417sft
Longitude 79°54'09.09193"W	Elevation 829.783sft	Easting 1733419.270sft
Height 726.085sft	Horz error 0.005sft	Elevation 829.760sft
	Vert error 0.023sft	Utilized Horz and Vert
	3D error 0.023sft	Quality Control quality
Point U2524BC-8_GNSS	Northing 856205.551sft	Point U2524BC-8
Latitude 36°05'56.64337"N	Easting 1729816.084sft	Northing 856205.568sft
Longitude 79°54'52.34173"W	Elevation 844.728sft	Easting 1729816.100sft
Height 741.187sft	Horz error 0.023sft	Elevation 844.740sft
	Vert error 0.012sft	Utilized Horz and Vert
	3D error 0.026sft	Quality Control quality
Point U2524BC-10_GNSS	Northing 866048.112sft	Point U2524BC-10
Latitude 36°07'34.20821"N	Easting 1732453.970sft	Northing 866048.070sft
Longitude 79°54'21.29463"W	Elevation 908.206sft	Easting 1732453.979sft
Height 804.255sft	Horz error 0.043sft	Elevation 908.250sft
	Vert error 0.044sft	Utilized Horz and Vert
	3D error 0.062sft	Quality Control quality

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "R2413-10" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 881462.071(++) EASTING: 1720890.584(++) ELEVATION: 886.31'(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9999635813 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R2413-10" TO -L- STATION 13+73.50 IS S 22°39'59" E 18,799.87' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

NOTES

1. 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 SYSTEM) IS USED, ADDITIONAL FIELD TIES MAY BE NEEDED TO REDUCE POSSIBLE ERRORS OR BIASES.
2. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
[HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/PAGES/DEFAULT.ASPX](https://connect.ncdot.gov/resources/location/pages/default.aspx)

THE FILES TO BE FOUND ARE AS FOLLOWS:
 U2524BC_LS_GPSCALIB_141118.HTML
 U2524BC_LS_WGS84_141118.TXT
 U2524BC_LS_LOCAL_141118.TXT
 U2524BC_LS_CONTROL_141118.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.

PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM. NETWORK ESTABLISHED FROM EXISTING MONUMENTATION.

NOTE: DRAWING NOT TO SCALE