

SURVEY CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
R-3100A	1C-3
Location and Surveys	

GPS Calibration Report

Project : R3100AB

TIP Number R3100AB

User name rlwagone

Coordinate System US State Plane 1983(at ground)

Horizontal Datum NAD 1983 (Conus)

Vertical Datum

Coordinate Units US survey feet

Distance Units US survey feet

Height Units US survey feet

Date & Time 10:14:36 AM 1/2/2013

Zone North Carolina 3200

Geoid Model G09NC

Summary:

Residual Differences Between GPS (WGS84) And Local Coordinates

	Maximum error	Root Mean Square error	Point
Horizontal	0.003sft		R31001 GPS
	0.002sft	0.000	R31008 GPS
Three-dimensional	0.003sft	0.001	31001 GPS

LOCAL SITE INFORMATION

Localized around

Latitude 35°37'02.01571"N

Longitude 81°07'50.83708"W

Site Scale Factor 1.0001489800

Height 895.6521sft

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.

Updated Default Projection (Transverse Mercator) Definition

Updated default projection not requested

Horizontal Adjustment Parameters

Northing coordinate of rotation center 685416.7397sft
 Easting coordinate of rotation center 1366641.4640sft
 Rotation about the center point 0°00'00"
 Translation north -0.0173sft
 Translation east 0.0130sft
 Scale factor 1.00000042

Vertical Adjustment Parameters

Northing coordinate of origin point 698288.3852sft
 Easting coordinate of origin point 1347899.5503sft
 Vertical separation at origin 0.0962sft
 Slope north -1.841ppm
 Slope east 0.371ppm

Geoid Model Definition

G09NC

Datum Transformation Parameters

Datum Transformation computation not requested

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "R3100-7"

WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
 NORTHING: 686365.8891(fft) EASTING: 1366771.8845(fft)
 ELEVATION: 999.75(fft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999851042

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R3100-7" TO -L- STATION 10+00 IS
 N 60°09'29.46"W 2584.44'

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 STATION) 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/](https://connect.ncdot.gov/resources/location/)
 THE FILES TO BE FOUND ARE AS FOLLOWS:
 R3100A-R3100_LS_GPSCALIB.HTML
 R3100A-R3100_LS_WGS84.TXT
 R3100A_LS_LOCAL.TXT
 R3100A_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.

PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM. NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

WGS84 Coordinates	Calculated point FOR DISPLAY ONLY	Local Coordinates
Point R3100-7 GPS	Northing 686365.8904sft	Point R31007
Latitude 35°37'02.01588"N	Easting 1366771.8838sft	Northing 686365.8891sft
Longitude 81°07'50.83725"W	Elevation 999.7475sft	Easting 1366771.8845sft
Height 895.5255sft	Horz error 0.002sft	Elevation 999.7486sft
	Vert error 0.001sft	Utilized Horz and Vert
	3D error 0.002sft	Quality Adjusted quality
Point R3100-8 GPS	Northing 685165.4727sft	Point R31008
Latitude 35°36'50.12953"N	Easting 1366688.0008sft	Northing 685165.4724sft
Longitude 81°07'51.54087"W	Elevation 965.2971sft	Easting 1366688.0032sft
Height 861.0948sft	Horz error 0.002sft	Elevation 965.2994sft
	Vert error 0.002sft	Utilized Horz and Vert
	3D error 0.003sft	Quality Adjusted quality
Point R3100-9 GPS	Northing 682150.5600sft	Point R31009
Latitude 35°36'21.36301"N	Easting 1371616.5539sft	Northing 682150.5589sft
Longitude 81°06'51.08898"W	Elevation 1068.4959sft	Easting 1371616.5557sft
Height 964.4056sft	Horz error 0.002sft	Elevation 1068.4967sft
	Vert error 0.001sft	Utilized Horz and Vert
	3D error 0.002sft	Quality Adjusted quality
Point R3100-10 GPS	Northing 683062.7016sft	Point R310010
Latitude 35°36'30.51906"N	Easting 1372270.4329sft	Northing 683062.6982sft
Longitude 81°06'43.40765"W	Elevation 1062.9001sft	Easting 1372270.4334sft
Height 958.8020sft	Horz error 0.003sft	Elevation 1062.8996sft
	Vert error 0.000sft	Utilized Horz and Vert
	3D error 0.004sft	Quality Adjusted quality
Point R3100-11 GPS	Northing 676925.9173sft	Point R310011
Latitude 35°35'30.89715"N	Easting 1377297.0878sft	Northing 676925.9175sft
Longitude 81°05'40.98133"W	Elevation 952.1403sft	Easting 1377297.0883sft
Height 848.1903sft	Horz error 0.001sft	Elevation 952.1408sft
	Vert error 0.001sft	Utilized Horz and Vert
	3D error 0.001sft	Quality Adjusted quality
Point R3100-12 GPS	Northing 676235.3361sft	Point R310012
Latitude 35°35'24.24239"N	Easting 1378127.3178sft	Northing 676235.3369sft
Longitude 81°05'30.75551"W	Elevation 960.7134sft	Easting 1378127.3184sft
Height 856.7825sft	Horz error 0.001sft	Elevation 960.7137sft
	Vert error 0.000sft	Utilized Horz and Vert
	3D error 0.001sft	Quality Adjusted quality
Point R3100-13 GPS	Northing 670661.3210sft	Point R310013
Latitude 35°34'30.44695"N	Easting 1384475.8704sft	Northing 670661.3224sft
Longitude 81°04'12.50269"W	Elevation 943.3743sft	Easting 1384475.8690sft
Height 839.5779sft	Horz error 0.002sft	Elevation 943.3731sft
	Vert error 0.001sft	Utilized Horz and Vert
	3D error 0.002sft	Quality Adjusted quality
Point R3100-14 GPS	Northing 669878.3543sft	Point R310014
Latitude 35°34'22.80506"N	Easting 1384958.5846sft	Northing 669878.3564sft
Longitude 81°04'06.46331"W	Elevation 909.9376sft	Easting 1384958.5833sft
Height 806.1518sft	Horz error 0.002sft	Elevation 909.9366sft
	Vert error 0.001sft	Utilized Horz and Vert
	3D error 0.003sft	Quality Adjusted quality