

SURVEY CONTROL SHEET R-2603

PROJECT REFERENCE NO.	SHEET NO.
R-2603	1C-2
Location and Surveys	

GPS Calibration Report

Project : r2603calLW

TIP Number	r2603		
User name	rgmiller	Date & Time	11:44:02 AM 5/2/2013
Coordinate System	US State Plane 1983(at ground)	Zone	North Carolina 3200
Horizontal Datum	calibration		
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	36°10'52.06182"N
Longitude	81°08'19.29141"W
Site Scale Factor	1.0000445600
Height	1000.315sft

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	895142.383sft
Easting coordinate of rotation center	1376437.732sft
Rotation about the center point	0°00'00"
Translation north	0.000sft
Translation east	0.000sft
Scale factor	1.00000511

Vertical Adjustment Parameters

Northing coordinate of origin point	891634.713sft
Easting coordinate of origin point	1368845.281sft
Vertical separation at origin	-108.436sft
Slope north	0.367ppm
Slope east	-0.254ppm

Geoid Model Definition

GEOID99 (Conus)

Residual Differences Between GPS (WGS84) And Local Coordinates

Summary					
	Maximum error	Root Mean Square error	Point		
Horizontal	0.002sft	0.000	GPS 6 - WGS84		
Vertical	0.002sft	0.000	GPS 2 - WGS84		
Three-dimensional	0.002sft	0.001	GPS 2 - WGS84		

Point Residuals					
	WGS84 Coordinates	Calculated point FOR DISPLAY ONLY	Local Coordinates		
Point	GPS 1 - WGS84	Northing	891634.713sft	Point GPS1	
Latitude	36°10'52.06188"N	Easting	1368845.281sft	Northing	891634.713sft
Longitude	81°08'19.29133"W	Elevation	1108.641sft	Easting	1368845.281sft
Height	1000.146sft	Horz error	0.000sft	Elevation	1108.640sft
		Vert error	0.001sft	Utilized	Horz and Vert
		3D error	0.001sft	Quality	Survey quality
Point	GPS 2 - WGS84	Northing	891899.626sft	Point GPS2	
Latitude	36°10'54.84234"N	Easting	1369604.034sft	Northing	891899.626sft
Longitude	81°08'10.10830"W	Elevation	1082.437sft	Easting	1369604.034sft
Height	973.928sft	Horz error	0.000sft	Elevation	1082.439sft
		Vert error	0.002sft	Utilized	Horz and Vert
		3D error	0.002sft	Quality	Survey quality
Point	GPS 3 - WGS84	Northing	894888.697sft	Point GPS3	
Latitude	36°11'25.58902"N	Easting	1375253.608sft	Northing	894888.697sft
Longitude	81°07'01.99156"W	Elevation	1039.693sft	Easting	1375253.609sft
Height	931.100sft	Horz error	0.001sft	Elevation	1039.693sft
		Vert error	0.000sft	Utilized	Horz and Vert
		3D error	0.001sft	Quality	Survey quality
Point	GPS 4 - WGS84	Northing	895173.715sft	Point GPS4	
Latitude	36°11'28.60280"N	Easting	1376184.149sft	Northing	895173.716sft
Longitude	81°06'50.71681"W	Elevation	998.796sft	Easting	1376184.150sft
Height	890.189sft	Horz error	0.001sft	Elevation	998.794sft
		Vert error	0.002sft	Utilized	Horz and Vert
		3D error	0.002sft	Quality	Survey quality
Point	GPS 5 - WGS84	Northing	898361.276sft	Point GPS5	
Latitude	36°12'01.84534"N	Easting	1384455.662sft	Northing	898361.276sft
Longitude	81°05'10.65378"W	Elevation	1066.164sft	Easting	1384455.664sft
Height	957.442sft	Horz error	0.001sft	Elevation	1066.163sft
		Vert error	0.001sft	Utilized	Horz and Vert
		3D error	0.002sft	Quality	Survey quality
Point	GPS 6 - WGS84	Northing	898896.272sft	Point GPS6	
Latitude	36°12'07.09858"N	Easting	1384283.657sft	Northing	898896.273sft
Longitude	81°05'12.88902"W	Elevation	1064.288sft	Easting	1384283.655sft
Height	955.576sft	Horz error	0.002sft	Elevation	1064.290sft
		Vert error	0.002sft	Utilized	Horz and Vert
		3D error	0.002sft	Quality	Survey quality

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:
[HTTP://WWW.NCDOT.ORG/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/](http://www.ncdot.org/doh/preconstruct/highway/location/project/)
 THE FILES TO BE FOUND ARE AS FOLLOWS:
 R2603_LS_GPSALIB_DATE.HTML
 R2603_LS_WGS84_DATE.TXT
 R2603_LS_LOCAL_DATE.TXT
 R2603_LS_CONTROL_DATE.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.
- © INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT 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.

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "R2603-1" WITH NAD 83/95 STATE PLANE GRID COORDINATES OF
 NORTHING: 891634.7130(±) EASTING: 1368845.2810(±) ELEVATION: 1108.64(±)
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999955442
 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R2603-1" TO -L- STATION 10+38.67 IS
 S 69°10'29" W 2127.33'
 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
 VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

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