1/24/13

PROJECT REFERENCE NO.	SHEET NO.
R-2707F	1C-4
LOCATION AND SURVEYS	

SURVEY CONTROL SHEET

(GPS CALIBRATION SHEET FROM R-2707AA)

GPS CALIBRATION REPORT

GPS CALIBRATION REPORT PROJECT : R2707AA

TIP NUMBER R2707AA
USER NAME RDWOODS DATE & TIME 9:23:27 AM 6/29/2010
COORDINATE SYSTEM SITE(AT GROUND) ZONE NORTH CAROLINA 3200
HORIZONTAL DATUMNAD 1983 (CONUS)
VERTICAL DATUM NAVD 88 GEOID MODEL G99NC
COORDINATE UNITS US SURVEY FEET
DISTANCE UNITS US SURVEY FEET
HEIGHT UNITS US SURVEY FEET

LOCAL SITE INFORMATION
LOCALIZED AROUND M-77

LATITUDE 35° 17'53.47519"N
LONGITUDE 81° 32'14.87764"W
SITE SCALE FACTOR 1.0001559240
HEIGHT 747.565SFT

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 564891.530SFT
EASTING COORDINATE OF ROTATION CENTER 1248940.722SFT
ROTATION ABOUT THE CENTER POINT 0°00'00"
TRANSLATION NORTH -1.241SFT
TRANSLATION EAST 0.938SFT
SCALE FACTOR 1.00015517

VERTICAL ADJUSTMENT PARAMETERS

NORTHING COORDINATE OF ORIGIN POINT 568742.403SFT
EASTING COORDINATE OF ORIGIN POINT 1203773.275SFT
VERTICAL SEPARATION AT ORIGIN 0.211SFT
SLOPE NORTH -5.123PPM
SLOPE EAST -1.547PPM

GEOID MODEL DEFINITION

G99NC

RESIDUAL DIFFERENCES BETWEEN GPS (WGS84) AND LOCAL COORDINATES

SUMMARY

MAXIMUM	ERROR	ROOT MEAN SQUARE	POINT
HORIZONTAL	0.050SFT	0.009	GPS15
VERTICAL	0.045SFT	0.008	MCBRAYER
THREE-DIMENL	0.057SFT	0.012	MCBRAYER

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "M 77"
WITH NAD 83/95 STATE PLANE GRID COORDINATES OF
NORTHING: 573127.522(ft) EASTING: 124297.658(ft)
ELEVATION: 852.279'(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99984410
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "M 77" TO -L- L STATION 5+03.30 IS N 75°36' 14" W 3868.1352'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

Point Residuals

	WGS84 Coordinates	Calculated point	Local
	Latitude 35° 16'59.95696"N Longitude 81° 40'06.15783"W Height 751.773sft	Point MCBRAYER Easting 1203773.275sft Elevation 856.819sft Horz error 0.035sft Vert error 0.045sft 3D error 0.057sft	Point McBrayer_Local Northing 568742.428sft Easting 1203773.299sft Elevation 856.774sft Utilized Horz and Vert Quality Survey quality
Point LATT-2 Latitude 35° 19'02.46223"N Longitude 81° 39'42.94665"W Height 820.821sft	Northing 581073.131sft Easting 1206029.125sft Elevation 925.966sft Horz error 0.009sft Vert error 0.004sft 3D error 0.010sft	Point LATT-2_Local Northing 581073.122sft Easting 1206029.126sft Elevation 925.970sft Utilized Horz and Vert Quality Survey quality
Point GPS4 Latitude 35° 18'17.64678"N Longitude 81° 37'04.79740"W Height 770.106sft	Northing 576194.767sft Easting 1219011.564sft Elevation 875.093sft Horz error 0.024sft Vert error 0.017sft 3D error 0.029sft	Point R2707-4_Local Northing 576194.769sft Easting 1219011.540sft Elevation 875.110sft Utilized Horz and Vert Quality Survey quality
Point M77 Latitude 35° 17'53.47450"N Longitude 81° 32'14.87790"W Height 747.535sft	Northing 573127.494sft Easting 1242971.651sft Elevation 852.249sft Horz error 0.029sft Vert error 0.030sft 3D error 0.042sft	Point M77_Local Northing 573127.522sft Easting 1242971.658sft Elevation 852.279sft Utilized Horz and Vert Quality Survey quality
Point WALLACE Latitude 35° 21'21.03039"N Longitude 81° 30'27.11508"W Height 863.861sft	Northing 593880.476sft Easting 1252431.750sft Elevation 968.736sft Horz error 0.018sft Vert error 0.001sft 3D error 0.018sft	Point WALLACE_Local Northing 593880.490sft Easting 1252431.739sft Elevation 968.735sft Utilized Horz and Vert Quality Survey quality
Point GPS15 Latitude 35° 18'48.68592"N Longitude 81° 29'24.43979"W Height 832.090sft	Northing 578350.583sft Easting 1257235.473sft Elevation 936.723sft Horz error 0.050sft Vert error 0.024sft 3D error 0.056sft	Point R2707-15_Local Northing 578350.547sft Easting 1257235.438sft Elevation 936.747sft Utilized Horz and Vert Quality Survey quality
Point 2JSI3 Latitude 35° 14'52.39137"N Longitude 81° 25'26.08075"W Height 770.050sft	Northing 553976.489sft Easting 1276400.935sft Elevation 874.121sft Horz error 0.021sft Vert error 0.044sft 3D error 0.049sft	Point 2-JS-13_Local Northing 553976.474sft Easting 1276400.950sft Elevation 874.077sft Utilized Horz and Vert Quality Survey quality
Point GPS23 Latitude 35° 14'49.16395"N Longitude 81° 25'35.37802"W Height 763.346sft	Northing 553669.095sft Easting 1275622.024sft Elevation 867.424sft Horz error 0.017sft Vert error 0.007sft 3D error 0.018sft	Point R2707-23_Local Northing 553669.094sft Easting 1275622.041sft Elevation 867.417sft Utilized Horz and Vert Quality Survey quality
Point R26254 Latitude 35° 13'23.79431"N Longitude 81° 23'00.98772"W Height 846.141sft	Northing 544729.486sft Easting 1288217.128sft Elevation 949.783sft Horz error 0.031sft Vert error 0.017sft 3D error 0.036sft	Point R2625-4_Local Northing 544729.474sft Easting 1288217.099sft Elevation 949.766sft Utilized Horz and Vert Quality Survey quality
Point W200 Latitude 35° 10'05.36224"N Longitude 81° 27'02.08704"W Height 776.498sft	Northing 525158.972sft Easting 1267723.676sft Elevation 880.183sft Horz error 0.036sft Vert error 0.039sft 3D error 0.053sft	Point W200_Local Northing 525158.975sft Easting 1267723.712sft Elevation 880.222sft Utilized Horz and Vert 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 MAYBE 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/

   THE FILES TO BE FOUND ARE AS FOLLOWS:

   R2707A_LS_GPSCALIB_100701.PDF
   R2707A_LS_WGS84_100701.TXT
   R2707A_LS_LOCAL_100701.TXT
   R2707A_LS_CONTROL_100701.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.

08-DEC-2017 13:47
\Roadway\Proj\R2707F_ls_1C-4.dgn
HNTB