

GPS Calibration Report

Project : u4007az

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|--------------------------|--------------------------------|------------------------|-----------------------------|
| TIP Number | U-4007 | | |
| User name | breigner | Date & Time | 10:28:05 AM 10/26/2006 |
| Coordinate System | US State Plane 1983(at ground) | Zone | North Carolina 3200 |
| Horizontal Datum | NAD 1983 (Conus) | | |
| Vertical Datum | NAVD88 | Geoid Model | Geoid03 (Conus) NC Sub Grid |
| Coordinate Units | US survey feet | | |
| Distance Units | US survey feet | | |
| Height Units | US survey feet | | |

LOCAL SITE INFORMATION

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|-------------------|------------------|
| Localized around | U4007-3 |
| Latitude | 34°46'23.06985"N |
| Longitude | 77°23'53.56573"W |
| Site Scale Factor | 1.0000887360 |
| Height | -82.738sft |

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

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|---|----------------|
| Northing coordinate of rotation center | 380114.336sft |
| Easting coordinate of rotation center | 2482514.103sft |
| Rotation about the center point | 0°00'00" |
| Translation north | -0.018sft |
| Translation east | -0.008sft |
| Scale factor | 1.00000000 |

Vertical Adjustment Parameters

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|--|----------------|
| Northing coordinate of origin point | 382744.641sft |
| Easting coordinate of origin point | 2478475.734sft |
| Vertical separation at origin | 0.144sft |
| Slope north | -1.149ppm |
| Slope east | -0.100ppm |

Geoid Model Definition

Geoid03 (Conus) NC Sub Grid

Residual Differences Between GPS (WGS84) And Local Coordinates

| Summary | | | |
|-------------------|---------------|------------------------|--------------|
| | Maximum error | Root Mean Square error | Point |
| Horizontal | 0.020sft | 0.002 | TEN MILE_GPS |
| Vertical | 0.069sft | 0.009 | COBLE_GPS |
| Three-dimensional | 0.069sft | 0.009 | COBLE_GPS |

Point Residuals

| WGS84 Coordinates | | Calculated point FOR DISPLAY ONLY | | Local Coordinates | |
|-------------------|------------------|--------------------------------------|-----------------|-------------------|------------------|
| Point | U4007-1_GPS | Northing | 382744.641sft | Point | U4007-1 |
| Latitude | 34°47'27.95510"N | Easting | 2478475.734sft | Northing | 382744.644sft |
| Longitude | 77°24'22.47564"W | Elevation | 46.845sft | Easting | 2478475.735sft |
| Height | -74.826sft | Horz error | 0.003sft | Elevation | 46.844sft |
| | | Vert error | 0.000sft | Utilized | Horz and Vert |
| | | 3D error | 0.003sft | Quality | Adjusted quality |
| Point | U4007-2_GPS | Northing | 381810.865sft | Point | U4007-2 |
| Latitude | 34°47'18.59553"N | Easting | 2479260.196sft | Northing | 381810.867sft |
| Longitude | 77°24'13.25144"W | Elevation | 49.142sft | Easting | 2479260.197sft |
| Height | -72.534sft | Horz error | 0.002sft | Elevation | 49.142sft |
| | | Vert error | 0.000sft | Utilized | Horz and Vert |
| | | 3D error | 0.002sft | Quality | Adjusted quality |
| Point | COBLE_GPS | Northing | 380014.747sft | Point | COBLE |
| Latitude | 34°46'59.86752"N | Easting | 2485287.965sft | Northing | 380014.747sft |
| Longitude | 77°23'01.34295"W | Elevation | 43.842sft | Easting | 2485287.965sft |
| Height | -77.859sft | Horz error | 0.000sft | Elevation | 43.911sft |
| | | Vert error | 0.069sft | Utilized | Horz and Vert |
| | | 3D error | 0.069sft | Quality | Adjusted quality |
| Point | u4007-3_GPS | Northing | 376224.375sft | Point | u4007-3 |
| Latitude | 34°46'23.07002"N | Easting | 2480992.507sft | Northing | 376224.375sft |
| Longitude | 77°23'53.56565"W | Elevation | 38.800sft | Easting | 2480992.509sft |
| Height | -82.894sft | Horz error | 0.002sft | Elevation | 38.806sft |
| | | Vert error | 0.005sft | Utilized | Horz and Vert |
| | | 3D error | 0.006sft | Quality | Adjusted quality |
| Point | U4007-4_GPS | Northing | 374746.719sft | Point | U4007-4 |
| Latitude | 34°46'08.35451"N | Easting | 2481629.500sft | Northing | 374746.718sft |
| Longitude | 77°23'46.21715"W | Elevation | 60.327sft | Easting | 2481629.501sft |
| Height | -61.374sft | Horz error | 0.001sft | Elevation | 60.334sft |
| | | Vert error | 0.007sft | Utilized | Horz and Vert |
| | | 3D error | 0.007sft | Quality | Adjusted quality |
| Point | u4007-5_GPS | Northing | 371782.960sft | Point | u4007-5 |
| Latitude | 34°45'38.35070"N | Easting | 2485945.495sft | Northing | 371782.957sft |

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| Longitude | 77°22'55.06964"W |
| Height | -85.759sft |

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|-------------------|-----------|
| Elevation | 35.962sft |
| Horz error | 0.003sft |
| Vert error | 0.008sft |
| 3D error | 0.008sft |

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| Easting | 2485945.494sft |
| Elevation | 35.970sft |
| Utilized | Horz and Vert |
| Quality | Adjusted quality |

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| Point | U4007-6_GPS |
| Latitude | 34°45'38.91489"N |
| Longitude | 77°22'41.36386"W |
| Height | -84.977sft |

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|-------------------|----------------|
| Northing | 371858.652sft |
| Easting | 2487087.968sft |
| Elevation | 36.747sft |
| Horz error | 0.004sft |
| Vert error | 0.007sft |
| 3D error | 0.008sft |

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| Point | U4007-6 |
| Northing | 371858.649sft |
| Easting | 2487087.965sft |
| Elevation | 36.754sft |
| Utilized | Horz and Vert |
| Quality | Adjusted quality |

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|------------------|------------------|
| Point | U4007-7_GPS |
| Latitude | 34°45'34.53239"N |
| Longitude | 77°23'40.82016"W |
| Height | -90.123sft |

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|-------------------|----------------|
| Northing | 371335.005sft |
| Easting | 2482134.993sft |
| Elevation | 31.591sft |
| Horz error | 0.002sft |
| Vert error | 0.011sft |
| 3D error | 0.011sft |

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| Point | U4007-7 |
| Northing | 371335.003sft |
| Easting | 2482134.995sft |
| Elevation | 31.602sft |
| Utilized | Horz and Vert |
| Quality | Adjusted quality |

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| Point | u4007-8_GPS |
| Latitude | 34°45'18.53496"N |
| Longitude | 77°23'41.62694"W |
| Height | -70.750sft |

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|-------------------|----------------|
| Northing | 369716.778sft |
| Easting | 2482093.837sft |
| Elevation | 50.971sft |
| Horz error | 0.003sft |
| Vert error | 0.013sft |
| 3D error | 0.013sft |

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| Point | u4007-8 |
| Northing | 369716.775sft |
| Easting | 2482093.838sft |
| Elevation | 50.983sft |
| Utilized | Horz and Vert |
| Quality | Adjusted quality |

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|------------------|------------------|
| Point | TEN MILE_GPS |
| Latitude | 35°03'21.28051"N |
| Longitude | 77°12'22.64169"W |
| Height | -87.866sft |

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|-------------------|-----------------|
| Northing | 480135.771sft |
| Easting | 2536763.392sft |
| Elevation | 33.927sft |
| Horz error | 0.020sft |
| Vert error | 0.026sft |
| 3D error | 0.032sft |

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|------------------|-----------------|
| Point | TEN MILE |
| Northing | 480135.789sft |
| Easting | 2536763.399sft |
| Elevation | 33.901sft |
| Utilized | Horz and Vert |
| Quality | Control quality |

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|------------------|------------------|
| Point | RUSSELL 2 RM A_G |
| Latitude | 34°39'27.06524"N |
| Longitude | 77°11'40.38696"W |
| Height | -85.452sft |

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|-------------------|----------------|
| Northing | 335222.597sft |
| Easting | 2542912.695sft |
| Elevation | 36.531sft |
| Horz error | 0.010sft |
| Vert error | 0.054sft |
| 3D error | 0.055sft |

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|------------------|-----------------|
| Point | RUSSELL 2 RM A |
| Northing | 335222.588sft |
| Easting | 2542912.692sft |
| Elevation | 36.476sft |
| Utilized | Horz and Vert |
| Quality | Control quality |

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| Point | PINHOOK_GPS |
| Latitude | 34°44'55.72435"N |
| Longitude | 77°46'34.43032"W |
| Height | -45.345sft |

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|-------------------|----------------|
| Northing | 365778.707sft |
| Easting | 2367584.854sft |
| Elevation | 74.904sft |
| Horz error | 0.007sft |
| Vert error | 0.039sft |
| 3D error | 0.039sft |

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|------------------|-----------------|
| Point | PINHOOK |
| Northing | 365778.703sft |
| Easting | 2367584.848sft |
| Elevation | 74.865sft |
| Utilized | Horz and Vert |
| Quality | Control quality |