August 14, 2014

Survey Report of Ground Control & Aerial Targets

I-20 & I-77 Widening – South Carolina

Photo Science Project No. 22087

South Carolina Department of Transportation

Presented by

A Quantum Spatial Company

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Contents of Report

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Project Introduction

GMR Aerial Surveys, Inc. d/b/a Photo Science, a Quantum Spatial Company, entered into a contract with the South Carolina Department of Transportation to provide LiDAR, low-altitude mapping, and survey services for an approximate 14 mile section of Interstate 20 and an 8.5 mile section of Interstate 77 in Richland and Lexington County, SC.

This report includes a summary of the survey procedures used to establish control for the project, detailed location and coordinate information for the survey control points, and final coordinates for the aerial control points established during the course of the project.

The field work was accomplished from May 2014 to July 2014. Coordinates and elevations are presented in NAD83(2011) South Carolina (3900) state plane coordinates and NAVD88 elevations using GEOID12A where applicable. The units for both horizontal coordinates and elevations are International Feet.

The survey control points are 5/8" rebar with plastic caps, recessed below the ground surface, set in inter-visible pairs. The aerial targets are PK nails set in the asphalt at the tip of painted chevron targets placed on both sides of the Interstate so that they are visible from the air.

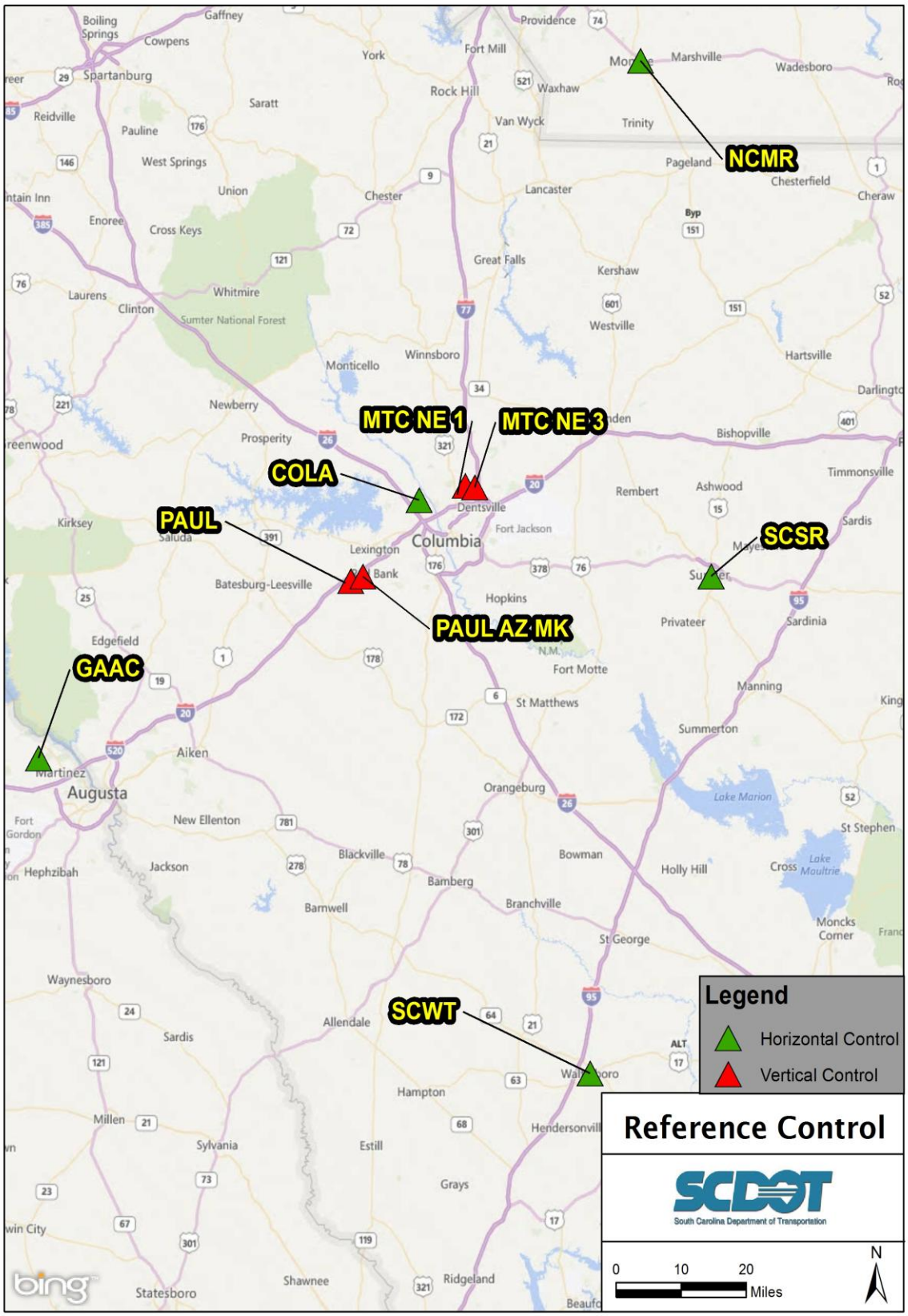
The field data was processed in 3 phases, which are detailed throughout this report.

Phase 1 consisted of a static GPS Survey to establish horizontal coordinates on primary control points at either end of each site. The primary control point numbers are 2000 & 2027 for I-20, and 2028 & 2048 for I-77. Each primary control point was occupied simultaneously, for periods greater than 4 hours, on two different days using Trimble R8 dual-frequency GNSS GPS receivers. Static GPS data was downloaded from National Geodetic Survey (NGS) for 5 Continuously Operating Reference Stations (CORS). The reference stations are COLA, GACC, NCMR, SCSR, and SCWT. Baselines were processed from each of the CORS stations to each of the primary control points and among the primary control points themselves. The subsequent network adjustment yielded a horizontal (2D) error of 0.023 foot at the 95% confidence level for the primary control points.

Phase 2 consisted of static, rapid static, and post-processed kinematic GPS surveys on each site to establish horizontal coordinates for the secondary survey and aerial control points. Further details are provided in sections 3A & 4A of this report.

Phase 3 consisted of differential leveling networks, using Leica Sprinter digital levels, to establish elevations on the survey and aerial control points. Further details are provided in sections 3A & 4A of this report.

Section 2a – Project Reference Control Map



Section 2B - NGS Data Sheets for Horizontal Reference Control

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AH6714 ****************************************************************************
 AH6714  HT_MOD      -  This is a Height Modernization Survey Station.
 AH6714  CORS        -  This is a GPS Continuously Operating Reference Station.
 AH6714  DESIGNATION -  COLUMBIA CORS ARP
 AH6714  CORS_ID     -  COLA
 AH6714  PID         -  AH6714
 AH6714  STATE/COUNTY-  SC/RICHLAND
 AH6714  COUNTRY     -  US
 AH6714  USGS QUAD   -  COLUMBIA NORTH (1997)
 AH6714
 AH6714                        *CURRENT SURVEY CONTROL
 AH6714  ______________________________________________________________________________
 AH6714* NAD 83(2011) POSITION- 34 04 51.55796(N) 081 07 18.01513(W)   ADJUSTED
 AH6714* NAD 83(2011) ELLIP HT-    82.989 (meters)        (08/??/11)   ADJUSTED
 AH6714* NAD 83(2011) EPOCH    -  2010.00
 AH6714* NAVD 88 ORTHO HEIGHT -   113.82  (meters)      373.4   (feet) GPS OBS
 AH6714  ______________________________________________________________________________
 AH6714  NAVD 88 orthometric height was determined with an earlier geoid model
 AH6714  NAD 83(2011) X  -    816,178.516 (meters)                    COMP
 AH6714  NAD 83(2011) Y  - -5,224,935.566 (meters)                    COMP
 AH6714  NAD 83(2011) Z  -  3,553,937.155 (meters)                    COMP
 AH6714  GEOID HEIGHT    -        -30.80  (meters)                    GEOID12A
 AH6714
 AH6714  FGDC Geospatial Positioning Accuracy Standards (95% confidence, cm)
 AH6714  Type                                           Horiz  Ellip  Dist(km)
 AH6714  ----------------------------------------------------------------------
 AH6714  NETWORK                                         1.58   5.49
 AH6714  ----------------------------------------------------------------------
 AH6714  NOTE: Click here for information on individual local accuracy
 AH6714  values and other accuracy information.
 AH6714
 AH6714
 AH6714.The coordinates were established by GPS observations
 AH6714.and adjusted by the National Geodetic Survey in August 2011.
 AH6714
 AH6714.NAD 83(2011) refers to NAD 83 coordinates where the reference
 AH6714.frame has been affixed to the stable North American Tectonic Plate.
 AH6714
 AH6714.The coordinates are valid at the epoch date displayed above
 AH6714.which is a decimal equivalence of Year/Month/Day.
 AH6714
 AH6714.The orthometric height was determined by GPS observations and a
 AH6714.high-resolution geoid model using precise GPS observation and
 AH6714.processing techniques.
 AH6714
 AH6714.The PID for the CORS L1 Phase Center is DI3466.
 AH6714
 AH6714.The XYZ, and position/ellipsoidal ht. are equivalent.
 AH6714
 AH6714.The ellipsoidal height was determined by GPS observations
 AH6714.and is referenced to NAD 83.
 AH6714
```

AH6714. The following values were computed from the NAD 83(2011) position.
AH6714
AH6714;   North   East   Units Scale Factor Converg.
AH6714;SPC SC   -   249,263.440   598,372.173   MT 0.99981938   -0 04 02.8
AH6714;SPC SC   -   817,793.44 1,963,163.30   iFT 0.99981938   -0 04 02.8
AH6714;UTM 17   - 3,771,142.540   488,774.630   MT 0.99960155   -0 04 05.4
AH6714
AH6714!   - Elev Factor x Scale Factor =   Combined Factor
AH6714!SPC SC   -   0.99998697 x   0.99981938 =   0.99980635
AH6714!UTM 17   -   0.99998697 x   0.99960155 =   0.99958853
AH6714
AH6714   SUPERSEDED SURVEY CONTROL
AH6714
AH6714 ELLIP H (06/27/12)   83.004 (m)   GP(2010.00)
AH6714 NAD 83(2011)- 34 04 51.55761(N)   081 07 18.01497(W) AD(2010.00) c
AH6714 ELLIP H (02/10/07)   83.038 (m)   GP(2002.00)
AH6714 NAD 83(2007)- 34 04 51.55742(N)   081 07 18.01579(W) AD(2002.00) c
AH6714 NAD 83(CORS)- 34 04 51.55742(N)   081 07 18.01579(W) AD(2002.00) c
AH6714 ELLIP H (03/??/02)   83.038 (m)   GP(2002.00) c c
AH6714 NAD 83(CORS)- 34 04 51.55746(N)   081 07 18.01569(W) AD(1997.00) c
AH6714 ELLIP H (01/??/99)   83.040 (m)   GP(1997.00) c c
AH6714 NAVD 88 (05/16/11) 113.78   (m) UNKNOWN model used   GPS OBS
AH6714 NAVD 88 (05/04/06) 113.82   (m) GEOID03 model used   GPS OBS
AH6714 NAVD 88 (09/22/99) 113.8   (m) UNKNOWN model used   GPS OBS
AH6714
AH6714.Superseded values are not recommended for survey control.
AH6714
AH6714.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
AH6714.See file dsdata.txt to determine how the superseded data were derived.
AH6714
AH6714_U.S. NATIONAL GRID SPATIAL ADDRESS: 17SMT8877471142(NAD 83)
AH6714
AH6714_MARKER: STATION IS THE ANTENNA REFERENCE POINT OF THE GPS ANTENNA
AH6714
AH6714   STATION DESCRIPTION
AH6714
AH6714'DESCRIBED BY NATIONAL GEODETIC SURVEY 2011
AH6714'STATION IS A GPS CORS. LATEST INFORMATION INCLUDING POSITIONS AND
AH6714'VELOCITIES ARE AVAILABLE IN THE COORDINATE AND LOG FILES ACCESSIBLE
AH6714'BY ANONYMOUS FTP OR THE WORLDWIDE WEB.
AH6714'   ftp://cors.ngs.noaa.gov/cors/README.txt
AH6714'   ftp://cors.ngs.noaa.gov/cors/coord/coord_08
AH6714'   ftp://cors.ngs.noaa.gov/cors/station_log
AH6714'   http://geodesy.noaa.gov/CORS

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DF9211 ***********************************************************************
 DF9211  HT_MOD      -  This is a Height Modernization Survey Station.
 DF9211  CORS        -  This is a GPS Continuously Operating Reference Station.
 DF9211  DESIGNATION -  COLUMBIA COUNTY CORS ARP
 DF9211  CORS_ID     -  GACC
 DF9211  PID         -  DF9211
 DF9211  STATE/COUNTY-  GA/COLUMBIA
 DF9211  COUNTRY     -  US
 DF9211  USGS QUAD   -  EVANS (1980)
 DF9211
 DF9211                        *CURRENT SURVEY CONTROL
 DF9211  ______________________________________________________________________
 DF9211* NAD 83(2011) POSITION- 33 32 44.70595(N) 082 08 01.70058(W)   ADJUSTED
 DF9211* NAD 83(2011) ELLIP HT-    99.892 (meters)        (08/??/11)   ADJUSTED
 DF9211* NAD 83(2011) EPOCH    -  2010.00
 DF9211* NAVD 88 ORTHO HEIGHT -   129.53  (meters)      425.0   (feet) GPS OBS
 DF9211  ______________________________________________________________________
 DF9211  NAVD 88 orthometric height was determined with geoid model    GEOID03
 DF9211  GEOID HEIGHT    -        -29.62  (meters)                     GEOID03
 DF9211  GEOID HEIGHT    -        -29.65  (meters)                     GEOID12A
 DF9211  NAD 83(2011) X  -    728,280.544 (meters)                     COMP
 DF9211  NAD 83(2011) Y  - -5,271,278.491 (meters)                     COMP
 DF9211  NAD 83(2011) Z  -  3,504,619.915 (meters)                     COMP
 DF9211
 DF9211  FGDC Geospatial Positioning Accuracy Standards (95% confidence, cm)
 DF9211  Type                                          Horiz  Ellip  Dist(km)
 DF9211  ----------------------------------------------------------------------
 DF9211  NETWORK                                        0.42   1.42
 DF9211  ----------------------------------------------------------------------
 DF9211  NOTE: Click here for information on individual local accuracy
 DF9211  values and other accuracy information.
 DF9211
 DF9211
 DF9211.The coordinates were established by GPS observations
 DF9211.and adjusted by the National Geodetic Survey in August 2011.
 DF9211
 DF9211.NAD 83(2011) refers to NAD 83 coordinates where the reference
 DF9211.frame has been affixed to the stable North American Tectonic Plate.
 DF9211
 DF9211.The coordinates are valid at the epoch date displayed above
 DF9211.which is a decimal equivalence of Year/Month/Day.
 DF9211
 DF9211.The orthometric height was determined by GPS observations and a
 DF9211.high-resolution geoid model using precise GPS observation and
 DF9211.processing techniques.
 DF9211
 DF9211.The PID for the CORS L1 Phase Center is DN2106.
 DF9211
 DF9211.The XYZ, and position/ellipsoidal ht. are equivalent.
 DF9211
 DF9211.The ellipsoidal height was determined by GPS observations
 DF9211.and is referenced to NAD 83.
 DF9211
 DF9211. The following values were computed from the NAD 83(2011) position.
 DF9211
 DF9211;                    North         East     Units Scale Factor Converg.
 DF9211;SPC GA E     -   393,124.760   203,051.611   MT  0.99990011   +0 01 05.4
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DF9211;SPC GA E      - 1,289,776.82    666,178.49   sFT  0.99990011   +0 01 05.4
DF9211;UTM  17       - 3,712,367.255   394,738.770   MT  0.99973660   -0 37 35.8
DF9211
DF9211!              -  Elev Factor  x  Scale Factor =   Combined Factor
DF9211!SPC GA E      -   0.99998432  x   0.99990011  =   0.99988443
DF9211!UTM  17       -   0.99998432  x   0.99973660  =   0.99972092
DF9211
DF9211                          SUPERSEDED SURVEY CONTROL
DF9211
DF9211  ELLIP H (06/27/12)   99.884  (m)                      GP(2010.00)
DF9211  NAD 83(2011)-  33 32 44.70591(N)    082 08 01.70051(W) AD(2010.00) c
DF9211  ELLIP H (02/10/07)   99.894  (m)                      GP(2002.00)
DF9211  NAD 83(2007)-  33 32 44.70580(N)    082 08 01.70107(W) AD(2002.00) c
DF9211  NAD 83(CORS)-  33 32 44.70580(N)    082 08 01.70107(W) AD(2002.00) c
DF9211  ELLIP H (12/??/03)   99.894  (m)                      GP(2002.00) c c
DF9211
DF9211.Superseded values are not recommended for survey control.
DF9211
DF9211.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
DF9211.See file dsdata.txt to determine how the superseded data were derived.
DF9211
DF9211_U.S. NATIONAL GRID SPATIAL ADDRESS: 17SLT9473812367(NAD 83)
DF9211
DF9211_MARKER: STATION IS THE ANTENNA REFERENCE POINT OF THE GPS ANTENNA
DF9211
DF9211                          STATION DESCRIPTION
DF9211
DF9211'DESCRIBED BY NATIONAL GEODETIC SURVEY 2011
DF9211'STATION IS A GPS CORS.  LATEST INFORMATION INCLUDING POSITIONS AND
DF9211'VELOCITIES ARE AVAILABLE IN THE COORDINATE AND LOG FILES ACCESSIBLE
DF9211'BY ANONYMOUS FTP OR THE WORLDWIDE WEB.
DF9211'   ftp://cors.ngs.noaa.gov/cors/README.txt
DF9211'   ftp://cors.ngs.noaa.gov/cors/coord/coord_08
DF9211'   ftp://cors.ngs.noaa.gov/cors/station_log
DF9211'   http://geodesy.noaa.gov/CORS
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DF5880 ***********************************************************************
 DF5880  HT_MOD      -  This is a Height Modernization Survey Station.
 DF5880  CORS        -  This is a GPS Continuously Operating Reference Station.
 DF5880  DESIGNATION -  MONROE CORS ARP
 DF5880  CORS_ID     -  NCMR
 DF5880  PID         -  DF5880
 DF5880  STATE/COUNTY-  NC/UNION
 DF5880  COUNTRY     -  US
 DF5880  USGS QUAD   -  MONROE (1988)
 DF5880
 DF5880                        *CURRENT SURVEY CONTROL
 DF5880  ______________________________________________________________________
 DF5880* NAD 83(2011) POSITION- 34 58 54.77687(N) 080 31 25.79009(W)   ADJUSTED
 DF5880* NAD 83(2011) ELLIP HT-   144.332 (meters)        (08/??/11)   ADJUSTED
 DF5880* NAD 83(2011) EPOCH   -  2010.00
 DF5880* NAVD 88 ORTHO HEIGHT -   174.60  (meters)      572.8   (feet) GPS OBS
 DF5880  ______________________________________________________________________
 DF5880  GEOID HEIGHT    -        -30.32  (meters)                     GEOID12A
 DF5880  NAD 83(2011) X  -    861,332.970 (meters)                     COMP
 DF5880  NAD 83(2011) Y  - -5,160,306.812 (meters)                     COMP
 DF5880  NAD 83(2011) Z  -  3,636,303.006 (meters)                     COMP
 DF5880
 DF5880  FGDC Geospatial Positioning Accuracy Standards (95% confidence, cm)
 DF5880  Type                                           Horiz  Ellip  Dist(km)
 DF5880  ----------------------------------------------------------------------
 DF5880  NETWORK                                         1.08   3.68
 DF5880  ----------------------------------------------------------------------
 DF5880  NOTE: Click here for information on individual local accuracy
 DF5880  values and other accuracy information.
 DF5880
 DF5880
 DF5880.The coordinates were established by GPS observations
 DF5880.and adjusted by the National Geodetic Survey in August 2011.
 DF5880
 DF5880.NAD 83(2011) refers to NAD 83 coordinates where the reference
 DF5880.frame has been affixed to the stable North American Tectonic Plate.
 DF5880
 DF5880.The coordinates are valid at the epoch date displayed above
 DF5880.which is a decimal equivalence of Year/Month/Day.
 DF5880
 DF5880.The orthometric height was determined by GPS observations and a
 DF5880.high-resolution geoid model using precise GPS observation and
 DF5880.processing techniques.
 DF5880
 DF5880.The PID for the CORS L1 Phase Center is DK4291.
 DF5880
 DF5880.The XYZ, and position/ellipsoidal ht. are equivalent.
 DF5880
 DF5880.The ellipsoidal height was determined by GPS observations
 DF5880.and is referenced to NAD 83.
 DF5880
 DF5880. The following values were computed from the NAD 83(2011) position.
 DF5880
 DF5880;                    North         East     Units Scale Factor Converg.
 DF5880;SPC NC       -   137,720.671   470,484.517   MT  0.99988362   -0 52 46.2
 DF5880;SPC NC       -   451,838.57  1,543,581.29   sFT  0.99988362   -0 52 46.2
 DF5880;UTM  17      - 3,871,137.442   543,460.995   MT  0.99962328   +0 16 22.8
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DF5880
DF5880!             -  Elev Factor   x  Scale Factor =   Combined Factor
DF5880!SPC NC       -   0.99997735   x   0.99988362  =   0.99986097
DF5880!UTM  17      -   0.99997735   x   0.99962328  =   0.99960063
DF5880
DF5880                          SUPERSEDED SURVEY CONTROL
DF5880
DF5880  ELLIP H (06/27/12)  144.343  (m)                       GP(2010.00)
DF5880  NAD 83(2011)-  34 58 54.77679(N)    080 31 25.79053(W) AD(2010.00) c
DF5880  ELLIP H (02/10/07)  144.357  (m)                       GP(2002.00)
DF5880  NAD 83(2007)-  34 58 54.77685(N)    080 31 25.79081(W) AD(2002.00) c
DF5880  NAD 83(CORS)-  34 58 54.77685(N)    080 31 25.79081(W) AD(2002.00) c
DF5880  ELLIP H (06/??/03)  144.357  (m)                       GP(2002.00) c c
DF5880  NAVD 88 (05/31/05)  174.65   (m)  GEOID03 model used   GPS OBS
DF5880
DF5880.Superseded values are not recommended for survey control.
DF5880
DF5880.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
DF5880.See file dsdata.txt to determine how the superseded data were derived.
DF5880
DF5880_U.S. NATIONAL GRID SPATIAL ADDRESS: 17SNU4346071137(NAD 83)
DF5880
DF5880_MARKER: STATION IS THE ANTENNA REFERENCE POINT OF THE GPS ANTENNA
DF5880_MAGNETIC: O = OTHER; SEE DESCRIPTION
DF5880
DF5880                          STATION DESCRIPTION
DF5880
DF5880'DESCRIBED BY NATIONAL GEODETIC SURVEY 2011
DF5880'STATION IS A GPS CORS.  LATEST INFORMATION INCLUDING POSITIONS AND
DF5880'VELOCITIES ARE AVAILABLE IN THE COORDINATE AND LOG FILES ACCESSIBLE
DF5880'BY ANONYMOUS FTP OR THE WORLDWIDE WEB.
DF5880'   ftp://cors.ngs.noaa.gov/cors/README.txt
DF5880'   ftp://cors.ngs.noaa.gov/cors/coord/coord_08
DF5880'   ftp://cors.ngs.noaa.gov/cors/station_log
DF5880'   http://geodesy.noaa.gov/CORS
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DK7756 ***********************************************************************
 DK7756  HT_MOD      -  This is a Height Modernization Survey Station.
 DK7756  CORS        -  This is a GPS Continuously Operating Reference Station.
 DK7756  DESIGNATION -  ED OWENS CORS ARP
 DK7756  CORS_ID     -  SCSR
 DK7756  PID         -  DK7756
 DK7756  STATE/COUNTY-  SC/SUMTER
 DK7756  COUNTRY     -  US
 DK7756  USGS QUAD   -  SUMTER EAST (1982)
 DK7756
 DK7756                        *CURRENT SURVEY CONTROL
 DK7756  ______________________________________________________________________
 DK7756* NAD 83(2011) POSITION- 33 55 22.01090(N) 080 20 26.57979(W)   ADJUSTED
 DK7756* NAD 83(2011) ELLIP HT-    36.556 (meters)        (08/??/11)   ADJUSTED
 DK7756* NAD 83(2011) EPOCH   -  2010.00
 DK7756* NAVD 88 ORTHO HEIGHT -    68.46  (meters)      224.6   (feet) GPS OBS
 DK7756  ______________________________________________________________________
 DK7756  NAVD 88 orthometric height was determined with geoid model    GEOID09
 DK7756  GEOID HEIGHT    -        -31.89  (meters)                     GEOID09
 DK7756  GEOID HEIGHT    -        -31.90  (meters)                     GEOID12A
 DK7756  NAD 83(2011) X  -    888,957.706 (meters)                     COMP
 DK7756  NAD 83(2011) Y  - -5,222,962.503 (meters)                     COMP
 DK7756  NAD 83(2011) Z  -  3,539,362.797 (meters)                     COMP
 DK7756
 DK7756.Formal positional accuracy estimates are not available for this CORS
 DK7756.because its coordinates were determined in part using modeled
 DK7756.velocities. Approximate one-sigma accuracies for latitude, longitude,
 DK7756.and ellipsoid height can be obtained from the short-term time series.
 DK7756.Additional information regarding modeled velocities is available on
 DK7756.the CORS Coordinates and Multi-Year CORS Solution FAQ web pages.
 DK7756
 DK7756.The coordinates were established by GPS observations
 DK7756.and adjusted by the National Geodetic Survey in August 2011.
 DK7756
 DK7756.NAD 83(2011) refers to NAD 83 coordinates where the reference
 DK7756.frame has been affixed to the stable North American Tectonic Plate.
 DK7756
 DK7756.The coordinates are valid at the epoch date displayed above
 DK7756.which is a decimal equivalence of Year/Month/Day.
 DK7756
 DK7756.The orthometric height was determined by GPS observations and a
 DK7756.high-resolution geoid model using precise GPS observation and
 DK7756.processing techniques.
 DK7756
 DK7756.The PID for the CORS L1 Phase Center is DK7757.
 DK7756
 DK7756.The XYZ, and position/ellipsoidal ht. are equivalent.
 DK7756
 DK7756.The ellipsoidal height was determined by GPS observations
 DK7756.and is referenced to NAD 83.
 DK7756
 DK7756. The following values were computed from the NAD 83(2011) position.
 DK7756
 DK7756;                    North         East     Units Scale Factor Converg.
 DK7756;SPC SC       -   231,905.802   670,550.414   MT  0.99980340   +0 21 55.8
 DK7756;SPC SC       -   760,845.81  2,199,968.55   iFT  0.99980340   +0 21 55.8
 DK7756;UTM  17      - 3,753,789.788   560,938.939   MT  0.99964578   +0 22 04.6
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DK7756
DK7756!             -  Elev Factor   x  Scale Factor =   Combined Factor
DK7756!SPC SC       -   0.99999426  x   0.99980340  =   0.99979766
DK7756!UTM  17      -   0.99999426  x   0.99964578  =   0.99964004
DK7756
DK7756                          SUPERSEDED SURVEY CONTROL
DK7756
DK7756  ELLIP H (06/27/12)   36.569  (m)                        GP(2010.00)
DK7756  NAD 83(2011)-  33 55 22.01072(N)    080 20 26.57994(W) AD(2010.00) c
DK7756  NAD 83(CORS)-  33 55 22.01120(N)    080 20 26.58067(W) AD(2002.00) c
DK7756  ELLIP H (12/??/08)   36.559  (m)                        GP(2002.00) c c
DK7756
DK7756.Superseded values are not recommended for survey control.
DK7756
DK7756.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
DK7756.See file dsdata.txt to determine how the superseded data were derived.
DK7756
DK7756_U.S. NATIONAL GRID SPATIAL ADDRESS: 17SNT6093853789(NAD 83)
DK7756
DK7756_MARKER: STATION IS THE ANTENNA REFERENCE POINT OF THE GPS ANTENNA
DK7756
DK7756                          STATION DESCRIPTION
DK7756
DK7756'DESCRIBED BY NATIONAL GEODETIC SURVEY 2011
DK7756'STATION IS A GPS CORS.  LATEST INFORMATION INCLUDING POSITIONS AND
DK7756'VELOCITIES ARE AVAILABLE IN THE COORDINATE AND LOG FILES ACCESSIBLE
DK7756'BY ANONYMOUS FTP OR THE WORLDWIDE WEB.
DK7756'   ftp://cors.ngs.noaa.gov/cors/README.txt
DK7756'   ftp://cors.ngs.noaa.gov/cors/coord/coord_08
DK7756'   ftp://cors.ngs.noaa.gov/cors/station_log
DK7756'   http://geodesy.noaa.gov/CORS
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DH8997 ***********************************************************************
 DH8997  HT_MOD      -  This is a Height Modernization Survey Station.
 DH8997  CORS        -  This is a GPS Continuously Operating Reference Station.
 DH8997  DESIGNATION -  WALTERBORO CORS ARP
 DH8997  CORS_ID     -  SCWT
 DH8997  PID         -  DH8997
 DH8997  STATE/COUNTY-  SC/COLLETON
 DH8997  COUNTRY     -  US
 DH8997  USGS QUAD   -  WALTERBORO (1988)
 DH8997
 DH8997                        *CURRENT SURVEY CONTROL
 DH8997  ______________________________________________________________________
 DH8997* NAD 83(2011) POSITION- 32 54 12.35304(N) 080 40 06.27377(W)   ADJUSTED
 DH8997* NAD 83(2011) ELLIP HT-    -1.964 (meters)        (08/??/11)   ADJUSTED
 DH8997* NAD 83(2011) EPOCH   -  2010.00
 DH8997* NAVD 88 ORTHO HEIGHT -    29.75  (meters)       97.6   (feet) GPS OBS
 DH8997  ______________________________________________________________________
 DH8997  NAVD 88 orthometric height was determined with geoid model    GEOID09
 DH8997  GEOID HEIGHT    -        -31.68  (meters)                     GEOID09
 DH8997  GEOID HEIGHT    -        -31.69  (meters)                     GEOID12A
 DH8997  NAD 83(2011) X  -    869,161.204 (meters)                     COMP
 DH8997  NAD 83(2011) Y  - -5,289,362.843 (meters)                     COMP
 DH8997  NAD 83(2011) Z  -  3,444,970.665 (meters)                     COMP
 DH8997
 DH8997  FGDC Geospatial Positioning Accuracy Standards (95% confidence, cm)
 DH8997  Type                                          Horiz  Ellip  Dist(km)
 DH8997  ----------------------------------------------------------------------
 DH8997  NETWORK                                        1.06   3.75
 DH8997  ----------------------------------------------------------------------
 DH8997  NOTE: Click here for information on individual local accuracy
 DH8997  values and other accuracy information.
 DH8997
 DH8997
 DH8997.The coordinates were established by GPS observations
 DH8997.and adjusted by the National Geodetic Survey in August 2011.
 DH8997
 DH8997.NAD 83(2011) refers to NAD 83 coordinates where the reference
 DH8997.frame has been affixed to the stable North American Tectonic Plate.
 DH8997
 DH8997.The coordinates are valid at the epoch date displayed above
 DH8997.which is a decimal equivalence of Year/Month/Day.
 DH8997
 DH8997.The orthometric height was determined by GPS observations and a
 DH8997.high-resolution geoid model using precise GPS observation and
 DH8997.processing techniques.
 DH8997
 DH8997.The PID for the CORS L1 Phase Center is DI3732.
 DH8997
 DH8997.The XYZ, and position/ellipsoidal ht. are equivalent.
 DH8997
 DH8997.The ellipsoidal height was determined by GPS observations
 DH8997.and is referenced to NAD 83.
 DH8997
 DH8997. The following values were computed from the NAD 83(2011) position.
 DH8997
 DH8997;                    North         East     Units Scale Factor Converg.
 DH8997;SPC SC       -   118,723.957   640,618.219   MT  0.99988231   +0 11 01.8
```

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DH8997;SPC SC       -   389,514.29  2,101,765.81   iFT  0.99988231   +0 11 01.8
DH8997;UTM  17      - 3,640,630.167   531,009.586   MT  0.99961186   +0 10 48.5
DH8997
DH8997!             -  Elev Factor  x  Scale Factor =   Combined Factor
DH8997!SPC SC       -   1.00000031  x   0.99988231  =   0.99988262
DH8997!UTM  17      -   1.00000031  x   0.99961186  =   0.99961217
DH8997
DH8997                          SUPERSEDED SURVEY CONTROL
DH8997
DH8997  ELLIP H (06/27/12)   -1.956  (m)                      GP(2010.00)
DH8997  NAD 83(2011)-  32 54 12.35314(N)    080 40 06.27377(W) AD(2010.00) c
DH8997  NAD 83(CORS)-  32 54 12.35317(N)    080 40 06.27433(W) AD(2002.00) c
DH8997  ELLIP H (03/??/06)   -1.975  (m)                      GP(2002.00) c c
DH8997  NAVD 88 (05/04/06)   29.74   (m)  GEOID03 model used   GPS OBS
DH8997
DH8997.Superseded values are not recommended for survey control.
DH8997
DH8997.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
DH8997.See file dsdata.txt to determine how the superseded data were derived.
DH8997
DH8997_U.S. NATIONAL GRID SPATIAL ADDRESS: 17SNS3100940630(NAD 83)
DH8997
DH8997_MARKER: STATION IS THE ANTENNA REFERENCE POINT OF THE GPS ANTENNA
DH8997
DH8997                          STATION DESCRIPTION
DH8997
DH8997'DESCRIBED BY NATIONAL GEODETIC SURVEY 2011
DH8997'STATION IS A GPS CORS.  LATEST INFORMATION INCLUDING POSITIONS AND
DH8997'VELOCITIES ARE AVAILABLE IN THE COORDINATE AND LOG FILES ACCESSIBLE
DH8997'BY ANONYMOUS FTP OR THE WORLDWIDE WEB.
DH8997'   ftp://cors.ngs.noaa.gov/cors/README.txt
DH8997'   ftp://cors.ngs.noaa.gov/cors/coord/coord_08
DH8997'   ftp://cors.ngs.noaa.gov/cors/station_log
DH8997'   http://geodesy.noaa.gov/CORS
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Section 2c - NGS Data Sheets for Vertical Reference Control

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DE1750 ************************************************************************
 DE1750  DESIGNATION -  PAUL
 DE1750  PID         -  DE1750
 DE1750  STATE/COUNTY-  SC/LEXINGTON
 DE1750  COUNTRY     -  US
 DE1750  USGS QUAD   -  BARR LAKE (1986)
 DE1750
 DE1750                        *CURRENT SURVEY CONTROL
 DE1750  ______________________________________________________________________
 DE1750* NAD 83(2011) POSITION- 33 55 30.42476(N) 081 17 22.78061(W)   ADJUSTED
 DE1750* NAD 83(2011) ELLIP HT-   102.366 (meters)        (06/27/12)   ADJUSTED
 DE1750* NAD 83(2011) EPOCH    -  2010.00
 DE1750* NAVD 88 ORTHO HEIGHT -   133.193 (meters)      436.98   (feet) ADJUSTED
 DE1750  ______________________________________________________________________
 DE1750  NAD 83(2011) X  -    802,322.303 (meters)                     COMP
 DE1750  NAD 83(2011) Y  - -5,236,879.566 (meters)                     COMP
 DE1750  NAD 83(2011) Z  -  3,539,614.642 (meters)                     COMP
 DE1750  LAPLACE CORR    -         -2.67  (seconds)                    DEFLEC12A
 DE1750  GEOID HEIGHT    -        -30.83  (meters)                     GEOID12A
 DE1750  DYNAMIC HEIGHT  -        133.055 (meters)      436.53   (feet) COMP
 DE1750  MODELED GRAVITY -    979,594.7   (mgal)                       NAVD 88
 DE1750
 DE1750  VERT ORDER      -  FIRST     CLASS II
 DE1750
 DE1750  FGDC Geospatial Positioning Accuracy Standards (95% confidence, cm)
 DE1750  Type                                           Horiz  Ellip  Dist(km)
 DE1750  ----------------------------------------------------------------------
 DE1750  NETWORK                                         1.00   1.23
 DE1750  ----------------------------------------------------------------------
 DE1750  MEDIAN LOCAL ACCURACY AND DIST (009 points)    1.22   1.78      4.89
 DE1750  ----------------------------------------------------------------------
 DE1750  NOTE: Click here for information on individual local accuracy
 DE1750  values and other accuracy information.
 DE1750
 DE1750
 DE1750.The horizontal coordinates were established by GPS observations
 DE1750.and adjusted by the National Geodetic Survey in June 2012.
 DE1750
 DE1750.NAD 83(2011) refers to NAD 83 coordinates where the reference
 DE1750.frame has been affixed to the stable North American tectonic plate. See
 DE1750.NA2011 for more information.
 DE1750
 DE1750.The horizontal coordinates are valid at the epoch date displayed above
 DE1750.which is a decimal equivalence of Year/Month/Day.
 DE1750
 DE1750.The orthometric height was determined by differential leveling and
 DE1750.adjusted by the NATIONAL GEODETIC SURVEY
 DE1750.in May 1997.
 DE1750
 DE1750.The X, Y, and Z were computed from the position and the ellipsoidal ht.
 DE1750
 DE1750.The Laplace correction was computed from DEFLEC12A derived deflections.
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DE1750
DE1750.The ellipsoidal height was determined by GPS observations
DE1750.and is referenced to NAD 83.
DE1750
DE1750.The dynamic height is computed by dividing the NAVD 88
DE1750.geopotential number by the normal gravity value computed on the
DE1750.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
DE1750.degrees latitude (g = 980.6199 gals.).
DE1750
DE1750.The modeled gravity was interpolated from observed gravity values.
DE1750
DE1750. The following values were computed from the NAD 83(2011) position.
DE1750
DE1750;                    North         East     Units Scale Factor Converg.
DE1750;SPC SC       -   232,008.110   582,821.542   MT  0.99980358   -0 09 38.1
DE1750;SPC SC       -   761,181.46  1,912,144.17   iFT  0.99980358   -0 09 38.1
DE1750;UTM  17      - 3,753,891.030   473,226.916   MT  0.99960884   -0 09 42.0
DE1750
DE1750!             -  Elev Factor  x  Scale Factor =   Combined Factor
DE1750!SPC SC       -   0.99998393  x   0.99980358  =   0.99978751
DE1750!UTM  17      -   0.99998393  x   0.99960884  =   0.99959278
DE1750
DE1750|---------------------------------------------------------------------|
DE1750| PID    Reference Object                     Distance      Geod. Az  |
DE1750|                                                           dddmmss.s |
DE1750| DE1751 PAUL AZ MK                         391.298 METERS 34819     |
DE1750|---------------------------------------------------------------------|
DE1750
DE1750                          SUPERSEDED SURVEY CONTROL
DE1750
DE1750  NAD 83(2007)-  33 55 30.42485(N)    081 17 22.78104(W) AD(2002.00) 0
DE1750  ELLIP H (02/10/07)  102.394  (m)                       GP(2002.00)
DE1750  NAD 83(2001)-  33 55 30.42467(N)    081 17 22.78142(W) AD(       ) 1
DE1750  ELLIP H (03/13/03)  102.394  (m)                       GP(       ) 4 2
DE1750  NAD 83(1986)-  33 55 30.43897(N)    081 17 22.78245(W) AD(       ) 1
DE1750  NAD 83(1995)-  33 55 30.42474(N)    081 17 22.78055(W) AD(       ) 1
DE1750  ELLIP H (12/20/99)  102.416  (m)                       GP(       ) 4 1
DE1750  NAD 83(1986)-  33 55 30.43941(N)    081 17 22.78223(W) AD(       ) 1
DE1750  NAVD 88 (08/08/00)  133.19   (m)          437.0    (f) LEVELING    3
DE1750  NGVD 29 (02/20/88)  133.6    (m)  RAPOU78 model used   GPS OBS
DE1750
DE1750.Superseded values are not recommended for survey control.
DE1750
DE1750.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
DE1750.See file dsdata.txt to determine how the superseded data were derived.
DE1750
DE1750_U.S. NATIONAL GRID SPATIAL ADDRESS: 17SMT7322653891(NAD 83)
DE1750
DE1750_MARKER: DH = HORIZONTAL CONTROL DISK
DE1750_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
DE1750_SP_SET: SET IN TOP OF CONCRETE MONUMENT
DE1750_STAMPING: PAUL 1985
DE1750_MARK LOGO: NGS
DE1750_PROJECTION: FLUSH
DE1750_MAGNETIC: M = MARKER EQUIPPED WITH BAR MAGNET
DE1750_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
DE1750+STABILITY: SURFACE MOTION
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DE1750_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
DE1750+SATELLITE: SATELLITE OBSERVATIONS - July 02, 2010
DE1750
DE1750  HISTORY     - Date     Condition        Report By
DE1750  HISTORY     - 1985     MONUMENTED       SCGS
DE1750  HISTORY     - 19951002 GOOD             SCGS
DE1750  HISTORY     - 19951127 GOOD             SCDOT
DE1750  HISTORY     - 19960615 GOOD             USPSQD
DE1750  HISTORY     - 20020604 GOOD             SCGS
DE1750  HISTORY     - 20100702 GOOD             SCGS
DE1750
DE1750                          STATION DESCRIPTION
DE1750
DE1750'DESCRIBED BY SOUTH CAROLINA GEODETIC SURVEY 1985 (DDW)
DE1750'THE STATION IS LOCATED ABOUT 8.0 KM (5.0 MI)
DE1750'SOUTHWEST OF LEXINGTON,
DE1750'9.6 KM (6.0 MI) EAST OF GILBERT, AT THE JUNCTION OF INTERSTATE
DE1750'HIGHWAY 20 AND S-32-204, IN A TRAFFIC ISLAND AT THE ENTRANCE RAMP
DE1750'FOR EASTBOUND TRAFFIC TO THE INTERSTATE HIGHWAY.
DE1750'OWNERSHIP--SOUTH CAROLINA DEPARTMENT OF HIGHWAYS.
DE1750'
DE1750'TO REACH THE STATION FROM THE JUNCTION OF INTERSTATE HIGHWAY 20 AND
DE1750'S-32-204, GO SOUTH FOR 0.2 KM (0.1 MI) ON S-32-204 TO THE MARK ON
DE1750'THE LEFT.
DE1750'
DE1750'THE STATION IS A STANDARD NGS DISK
DE1750'STAMPED---PAUL 1985---,
DE1750'SET INTO THE TOP OF A ROUND CONCRETE MONUMENT
DE1750'30 CM IN DIAMETER FLUSH WITH GROUND.  LOCATED
DE1750'11.9 METERS (39.0 FT) EAST FROM THE CENTER OF CONCRETE MEDIAN OF
DE1750'S-32-204,
DE1750'0.5 METERS (1.6 FT) NORTH FROM A FIBERGLASS WITNESS POST,
DE1750'12.6 METERS (41.3 FT) SOUTHEAST FROM THE NORTHWEST CORNER OF THE
DE1750'GRASS TRAFFIC ISLAND,
DE1750'13.0 METERS (42.7 FT) WEST-SOUTHWEST FROM THE NORTHEAST CORNER,
DE1750'16.5 METERS (54.1 FT) NORTH-NORTHEAST FROM THE SOUTH CORNER.
DE1750'THE UNDERGROUND MARK IS A STANDARD NGS DISK
DE1750'STAMPED---PAUL 1985---,
DE1750'SET INTO AN IRREGULAR MASS OF CONCRETE 1.2 METERS BELOW THE SURFACE.
DE1750'
DE1750'AZIMUTH MARK NO. 1 IS A STANDARD NGS DISK
DE1750'STAMPED---PAUL 1985---,
DE1750'SET INTO THE TOP OF A ROUND CONCRETE MONUMENT
DE1750'30 CM IN DIAMETER FLUSH WITH GROUND.  LOCATED
DE1750'15.1 METERS (49.5 FT) WEST FROM THE CENTER OF THE CONCRETE MEDIAN
DE1750'OF S-32-204,
DE1750'2.0 METERS (6.6 FT) EAST-NORTHEAST FROM A FIBERGLASS WITNESS POST
DE1750'AT A YIELD SIGN,
DE1750'5.6 METERS (18.4 FT) EAST-NORTHEAST FROM THE SOUTHWEST CORNER OF
DE1750'THE GRASS TRAFFIC ISLAND,
DE1750'8.8 METERS (28.9 FT) WEST-NORTHWEST FROM THE SOUTHEAST CORNER,
DE1750'16.1 METERS (52.8 FT) SOUTHWEST FROM THE NORTHEAST CORNER.
DE1750'TO REACH THE AZIMUTH FROM THE STATION,
DE1750'GO NORTH FOR 0.2 KM (0.1 MI) ON S-32-204 TO THE JUNCTION OF
DE1750'INTERSTATE HIGHWAY 20 AND S-32-204,
DE1750'CONTINUE STRAIGHT AHEAD AND GO NORTH FOR 0.19 KM (0.1 MI) ON
DE1750'S-32-204 TO THE MARK ON THE LEFT, IN A TRAFFIC ISLAND.
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DE1750'THE UNDERGROUND MARK IS A STANDARD NGS DISK
DE1750'STAMPED---PAUL 1985---,
DE1750'SET INTO AN IRREGULAR MASS OF CONCRETE 1.2 METERS BELOW THE SURFACE.
DE1750'
DE1750'NO REFERENCE MARKS WERE ESTABLISHED FOR THIS STATION.
DE1750
DE1750 STATION RECOVERY (1995)
DE1750
DE1750'RECOVERY NOTE BY SOUTH CAROLINA GEODETIC SURVEY 1995 (DDW)
DE1750'STATION IS LOCATED 5.95 MILES (9.58 KM) EAST OF GILBERT, 5.0 MILES
DE1750'(8.0 KM) SOUTHWEST OF LEXINGTON. OWNERSHIP--SCDOT, DIRECTOR OF
DE1750'PRECONSTRUCTION, P.O. BOX 191, COLUMBIA, SC 29202, PHONE
DE1750'803-737-1350. TO REACH THE STATION FROM THE JUNCTION OVERPASS OF
DE1750'INTERSTATE 20 AND STATE ROAD 204 (LONGS POND ROAD) , 5.0 MILES (8.0
DE1750'KM) SOUTHWEST OF LEXINGTON, GO SOUTH ON ROAD 204 FOR 0.1 MILE (0.2 KM)
DE1750'TO THE STATION ON THE LEFT IN A GRASSY TRAFFIC ISLAND AT THE ENTRANCE
DE1750'RAMP TO INTERSTATE 20 EAST. STATION IS INTERVISIBLE WITH PAUL AZ MK.
DE1750'STATION IS A CONCRETE MONUMENT FLUSH WITH THE GROUND AND 1.0 FOOT (0.3
DE1750'M) ABOVE THE ROAD, 39.0 FEET (11.9 M) EAST OF THE CENTER OF THE ROAD,
DE1750'28.6 FEET (8.7 M) SOUTH SOUTHWEST OF THE SOUTH EDGE OF THE NORTH CURB
DE1750'OF THE ISLAND, 36.2 FEET (11.0 M) SOUTH SOUTHEAST OF A WITNESS POST AT
DE1750'A SIGN FOR INTERSTATE 20 EAST AT THE NORTHWEST CORNER OF THE ISLAND,
DE1750'16.8 FEET (5.1 M) EAST OF THE EAST EDGE OF THE WEST CURB OF THE
DE1750'ISLAND, AND 15.0 FEET (4.6 M) WEST NORTHWEST OF THE NORTHWEST EDGE OF
DE1750'THE SOUTHEAST CURB OF THE ISLAND. DESCRIBED BY C.E. GEOGHEGAN.
DE1750
DE1750 STATION RECOVERY (1995)
DE1750
DE1750'RECOVERY NOTE BY SC DEPT OF TRANSP 1995 (DGB)
DE1750'RECOVERED AS DESCRIBED.
DE1750
DE1750 STATION RECOVERY (1996)
DE1750
DE1750'RECOVERY NOTE BY US POWER SQUADRON 1996
DE1750'RECOVERED IN GOOD CONDITION.
DE1750
DE1750 STATION RECOVERY (2002)
DE1750
DE1750'RECOVERY NOTE BY SOUTH CAROLINA GEODETIC SURVEY 2002 (DDW)
DE1750'STATION IS LOCATED 4.95 MILES SOUTHWEST OF LEXINGTON, 5.95 MILES EAST
DE1750'OF GILBERT. OWNERSHIP--SCDOT, DIRECTOR OF PRECONSTRUCTION, P.O. BOX
DE1750'191, COLUMBIA, SC 29201, PHONE 803-737-1350. TO REACH THE STATION
DE1750'FROM THE JUNCTION OVERPASS OF INTERSTATE 20 (EXIT 51) AND STATE ROAD
DE1750'204 (LONGS POND ROAD), 4.85 MILES SOUTHWEST OF LEXINGTON, GO SOUTH ON
DE1750'ROAD 204 FOR 0.1 MILE TO THE STATION ON THE LEFT IN A GRASSY TRAFFIC
DE1750'ISLAND AT THE EAST BOUND ENTRANCE RAMP TO INTERSTATE 20. STATION IS A
DE1750'CONCRETE POST FLUSH WITH THE GROUND AND 1.0 FOOT ABOVE THE ROAD, 14.3
DE1750'FEET SOUTH OF A TRAFFIC LIGHT SUPPORT POST WITH TWO GUY WIRES, 38.4
DE1750'FEET EAST OF THE CENTER OF ROAD 204, 28.7 FEET SOUTH SOUTHWEST OF THE
DE1750'SOUTH EDGE OF THE CURB AT THE NORTH END OF THE TRAFFIC ISLAND, 53.2
DE1750'FEET NORTH NORTHEAST OF THE NORTH EDGE OF THE CURB AT THE SOUTH END
DE1750'POINT OF THE TRAFFIC ISLAND, 2.9 FEET SOUTH SOUTHEAST OF A WITNESS
DE1750'POST. NOTE-STATION IS NOT INTERVISIBLE WITH AZIMUTH MARK PAUL AZ MK.
DE1750'RECOVERED BY T. HALL.
DE1750
DE1750 STATION RECOVERY (2010)
DE1750

DE1750'RECOVERY NOTE BY SOUTH CAROLINA GEODETIC SURVEY 2010 (DDW)
DE1750'STATION IS LOCATED 7.6 MI (12.3 KM) EAST OF SUMMIT, 6.0 MI (9.6 KM)
DE1750'EAST OF GILBERT, 4.9 MI (7.9 KM) SOUTHWEST OF LEXINGTON.
DE1750'OWNERSHIP--SCDOT, DIRECTOR OF PRECONSTRUCTION, P.O. BOX 191, COLUMBIA,
DE1750'SC 29202, PHONE 803-737-1350. TO REACH THE STATION FROM THE JUNCTION
DE1750'OVERPASS OF INTERSTATE 20 (EXIT 51) AND STATE ROAD 204 (LONGS POND
DE1750'ROAD), 4.85 MI (7.8 KM) SOUTHWEST OF LEXINGTON, GO SOUTH ON ROAD 204
DE1750'FOR 0.1 MI (0.2 KM) TO THE STATION ON THE LEFT IN A GRASSY TRAFFIC
DE1750'TRIANGLE AT THE EASTBOUND ENTRANCE RAMP TO INTERSTATE 20. STATION IS A
DE1750'CONCRETE POST FLUSH WITH THE GROUND AND 1.0 FT (0.3 M) ABOVE THE ROAD,
DE1750'14.3 FT (4.4 M) SOUTH OF A TRAFFIC LIGHT SUPPORT POST WITH TWO GUY
DE1750'WIRES, 38.4 FT (11.7 M) EAST OF THE CENTER OF ROAD 204, 28.7 FT (8.7
DE1750'M) SOUTH-SOUTHWEST OF THE SOUTH EDGE OF THE CURB AT THE NORTH END OF
DE1750'THE TRAFFIC ISLAND, 53.2 FT (16.2 M) NORTH-NORTHEAST OF THE NORTH EDGE
DE1750'OF THE CURB AT THE SOUTH END OF THE TRAFFIC ISLAND, 2.9 FT (0.9 M)
DE1750'SOUTHEAST OF A WITNESS POST. NOTE-STATION IS INTERVISIBLE WITH
DE1750'AZIMUTH MARK PAUL AZ MARK. RECOVERED BY T. HALL.

DE1751 **********

DE1751 DESIGNATION - PAUL AZ MK
DE1751 PID - DE1751
DE1751 STATE/COUNTY- SC/LEXINGTON
DE1751 COUNTRY - US
DE1751 USGS QUAD - BARR LAKE (1986)
DE1751
DE1751 *CURRENT SURVEY CONTROL
DE1751 ---
DE1751* NAD 83(2011) POSITION- 33 55 42.86115(N) 081 17 25.86718(W) ADJUSTED
DE1751* NAD 83(2011) ELLIP HT- 107.240 (meters) (06/27/12) ADJUSTED
DE1751* NAD 83(2011) EPOCH - 2010.00
DE1751* NAVD 88 ORTHO HEIGHT - 138.060 (meters) 452.95 (feet) ADJUSTED
DE1751 ---
DE1751 NAD 83(2011) X - 802,212.165 (meters) COMP
DE1751 NAD 83(2011) Y - -5,236,684.165 (meters) COMP
DE1751 NAD 83(2011) Z - 3,539,935.314 (meters) COMP
DE1751 LAPLACE CORR - -2.69 (seconds) DEFLEC12A
DE1751 GEOID HEIGHT - -30.83 (meters) GEOID12A
DE1751 DYNAMIC HEIGHT - 137.917 (meters) 452.48 (feet) COMP
DE1751 MODELED GRAVITY - 979,595.2 (mgal) NAVD 88
DE1751
DE1751 VERT ORDER - FIRST CLASS II
DE1751
DE1751 FGDC Geospatial Positioning Accuracy Standards (95% confidence, cm)

DE1751 Type	Horiz	Ellip	Dist(km)
DE1751 NETWORK	1.19	1.33	
DE1751 MEDIAN LOCAL ACCURACY AND DIST (002 points)	1.00	1.00	0.82

DE1751 NOTE: Click here for information on individual local accuracy
DE1751 values and other accuracy information.
DE1751
DE1751
DE1751.The horizontal coordinates were established by GPS observations
DE1751.and adjusted by the National Geodetic Survey in June 2012.
DE1751
DE1751.NAD 83(2011) refers to NAD 83 coordinates where the reference
DE1751.frame has been affixed to the stable North American tectonic plate. See
DE1751.NA2011 for more information.
DE1751
DE1751.The horizontal coordinates are valid at the epoch date displayed above
DE1751.which is a decimal equivalence of Year/Month/Day.
DE1751
DE1751.The orthometric height was determined by differential leveling and
DE1751.adjusted by the NATIONAL GEODETIC SURVEY
DE1751.in May 1997.
DE1751
DE1751.The X, Y, and Z were computed from the position and the ellipsoidal ht.
DE1751
DE1751.The Laplace correction was computed from DEFLEC12A derived deflections.
DE1751
DE1751.The ellipsoidal height was determined by GPS observations
DE1751.and is referenced to NAD 83.
DE1751
DE1751.The dynamic height is computed by dividing the NAVD 88

```
DE1751.geopotential number by the normal gravity value computed on the
DE1751.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
DE1751.degrees latitude (g = 980.6199 gals.).
DE1751
DE1751.The modeled gravity was interpolated from observed gravity values.
DE1751
DE1751. The following values were computed from the NAD 83(2011) position.
DE1751
DE1751;                    North         East     Units Scale Factor Converg.
DE1751;SPC SC       -   232,391.439   582,743.356   MT  0.99980385   -0 09 39.8
DE1751;SPC SC       -   762,439.10  1,911,887.65   iFT  0.99980385   -0 09 39.8
DE1751;UTM  17      - 3,754,274.285   473,148.753   MT  0.99960889   -0 09 43.8
DE1751
DE1751!             -  Elev Factor  x  Scale Factor =   Combined Factor
DE1751!SPC SC       -   0.99998317  x   0.99980385  =   0.99978702
DE1751!UTM  17      -   0.99998317  x   0.99960889  =   0.99959206
DE1751
DE1751|---------------------------------------------------------------------|
DE1751| PID    Reference Object                      Distance      Geod. Az  |
DE1751|                                                                dddmmss.s |
DE1751| DE1750 PAUL                                391.298 METERS 16819     |
DE1751|---------------------------------------------------------------------|
DE1751
DE1751                          SUPERSEDED SURVEY CONTROL
DE1751
DE1751  NAD 83(2007)-  33 55 42.86124(N)    081 17 25.86764(W) AD(2002.00) 1
DE1751  ELLIP H (11/18/10)  107.268  (m)                       GP(2002.00) 3 1
DE1751  NAD 83(2001)-  33 55 42.86120(N)    081 17 25.86808(W) AD(       ) 2
DE1751  NAD 83(1986)-  33 55 42.87598(N)    081 17 25.86861(W) AD(       ) 2
DE1751  NAVD 88 (11/18/10)  138.06   (m)          453.0    (f) LEVELING    3
DE1751
DE1751.Superseded values are not recommended for survey control.
DE1751
DE1751.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
DE1751.See file dsdata.txt to determine how the superseded data were derived.
DE1751
DE1751_U.S. NATIONAL GRID SPATIAL ADDRESS: 17SMT7314854274(NAD 83)
DE1751
DE1751_MARKER: DZ = AZIMUTH MARK DISK
DE1751_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
DE1751_SP_SET: SET IN TOP OF CONCRETE MONUMENT
DE1751_STAMPING: PAUL 1985
DE1751_MARK LOGO: NGS
DE1751_PROJECTION: FLUSH
DE1751_MAGNETIC: M = MARKER EQUIPPED WITH BAR MAGNET
DE1751_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
DE1751+STABILITY: SURFACE MOTION
DE1751_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
DE1751+SATELLITE: SATELLITE OBSERVATIONS - July 02, 2010
DE1751
DE1751  HISTORY     - Date     Condition        Report By
DE1751  HISTORY     - 1985     MONUMENTED       SCGS
DE1751  HISTORY     - 19951002 GOOD             SCGS
DE1751  HISTORY     - 19960615 GOOD             USPSQD
DE1751  HISTORY     - 20020604 GOOD             SCGS
DE1751  HISTORY     - 20100702 GOOD             SCGS
DE1751
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DE1751                          STATION DESCRIPTION
DE1751
DE1751'DESCRIBED BY SOUTH CAROLINA GEODETIC SURVEY 1985 (DDW)
DE1751'THE STATION IS LOCATED ABOUT 8.0 KM (5.0 MI)
DE1751'SOUTHWEST OF LEXINGTON,
DE1751'9.6 KM (6.0 MI) EAST OF GILBERT, AT THE JUNCTION OF INTERSTATE
DE1751'HIGHWAY 20 AND S-32-204, IN A GRASS TRAFFIC ISLAND AT THE ENTRANCE
DE1751'RAMP FOR THE WESTBOUND TRAFFIC TO THE INTERSTATE HIGHWAY.
DE1751'OWNERSHIP--SOUTH CAROLINA DEPARTMENT OF HIGHWAYS.
DE1751'
DE1751'TO REACH THE STATION FROM THE JUNCTION OF INTERSTATE HIGHWAY 20 AND
DE1751'S-32-204, GO NORTH FOR 0.19 KM (0.1 MI) ON S-32-204 TO THE TRAFFIC
DE1751'ISLAND AND THE STATION ON THE LEFT.
DE1751'
DE1751'THE STATION IS A STANDARD NGS DISK
DE1751'STAMPED---PAUL 1985---,
DE1751'SET INTO THE TOP OF A ROUND CONCRETE MONUMENT
DE1751'30 CM IN DIAMETER FLUSH WITH GROUND.  LOCATED
DE1751'15.1 METERS (49.5 FT) WEST FROM THE CENTER OF THE CONCRETE MEDIAN
DE1751'OF S-32-204,
DE1751'2.0 METERS (6.6 FT) EAST-NORTHEAST FROM A FIBERGLASS WITNESS POST
DE1751'AT A YIELD SIGN,
DE1751'5.6 METERS (18.4 FT) EAST-NORTHEAST FROM THE SOUTHWEST CORNER OF
DE1751'THE TRAFFIC ISLAND,
DE1751'8.8 METERS (28.9 FT) WEST-NORTHWEST FROM THE SOUTHWEST CORNER,
DE1751'16.1 METERS (52.8 FT) SOUTHWEST FROM THE NORTHEAST CORNER.
DE1751'THE UNDERGROUND MARK IS A STANDARD NGS DISK
DE1751'STAMPED---PAUL 1985---,
DE1751'SET INTO AN IRREGULAR MASS OF CONCRETE 1.2 METERS BELOW THE SURFACE.
DE1751'
DE1751'DESCRIPTIVE TEXT TYPED BY CKP.
DE1751
DE1751                          STATION RECOVERY (1995)
DE1751
DE1751'RECOVERY NOTE BY SOUTH CAROLINA GEODETIC SURVEY 1995 (DDW)
DE1751'STATION IS LOCATED 5.9 MILES (9.5 KM) EAST OF GILBERT, 4.8 MILES (7.7
DE1751'KM) SOUTHWEST OF LEXINGTON.  OWNERSHIP--SCDOT, DIRECTOR OF
DE1751'PRECONSTRUCTION, P.O.  BOX 191, COLUMBIA, SC 29202, PHONE
DE1751'803-737-1350.  TO REACH THE STATION FROM THE JUNCTION OVERPASS OF
DE1751'INTERSTATE 20 AND STATE ROAD 204 (LONGS POND ROAD) , 5.0 MILES (8.0
DE1751'KM) SOUTHWEST OF LEXINGTON, GO NORTH ON ROAD 204 FOR 0.1 MILE (0.2 KM)
DE1751'TO THE STATION ON THE LEFT IN A GRASSY TRAFFIC ISLAND AT THE ENTRANCE
DE1751'RAMP TO INTERSTATE 20 WEST.  STATION IS INTERVISIBLE WITH STATION
DE1751'PAUL.  STATION IS A CONCRETE MONUMENT FLUSH WITH GROUND AND 0.5 FOOT
DE1751'(15.2 CM) BELOW THE ROAD, 49.6 FEET (15.1 M) WEST OF THE CENTER OF THE
DE1751'ROAD, 25.1 FEET (7.7 M) WEST OF THE WEST EDGE OF THE EAST CURB OF THE
DE1751'ISLAND, 8.1 FEET (2.5 M) NORTH OF THE NORTH EDGE OF THE SOUTH CURB OF
DE1751'THE ISLAND, 7.1 FEET (2.2 M) SOUTHEAST OF THE SOUTHEAST EDGE OF THE
DE1751'NORTHWEST CURB OF THE ISLAND, 6.8 FEET (2.1 M) NORTHEAST OF A WITNESS
DE1751'POST NEAR A YIELD SIGN AT THE WEST CORNER OF THE ISLAND.  DESCRIBED BY
DE1751'C.E GEOGHEGAN.
DE1751
DE1751                          STATION RECOVERY (1996)
DE1751
DE1751'RECOVERY NOTE BY US POWER SQUADRON 1996
DE1751'RECOVERED IN GOOD CONDITION.
DE1751
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DE1751                          STATION RECOVERY (2002)
DE1751
DE1751'RECOVERY NOTE BY SOUTH CAROLINA GEODETIC SURVEY 2002 (DDW)
DE1751'STATION IS LOCATED 4.8 MILES SOUTHWEST OF LEXINGTON, 5.95 MILES EAST
DE1751'OF GILBERT.  OWNERSHIP--SCDOT, DIRECTOR OF PRECONSTRUCTION, P.O. BOX
DE1751'191, COLUMBIA, SC 29201, PHONE  803-737-1350. TO REACH THE STATION
DE1751'FROM THE JUNCTION OVERPASS OF INTERSTATE 20 (EXIT 51) AND STATE  ROAD
DE1751'204 (LONGS POND ROAD), 4.85 MILES SOUTHWEST OF LEXINGTON, GO NORTH ON
DE1751'ROAD  204 FOR 0.1 MILE TO THE STATION ON THE LEFT IN A GRASSY TRAFFIC
DE1751'ISLAND AT THE  WEST BOUND LANES INTERSTATE 20. STATION IS A CONCRETE
DE1751'POST FLUSH WITH THE GROUND AND 0.5 FOOT ABOVE THE ROAD, 49.0  FEET
DE1751'WEST OF THE CENTER OF ROAD 204, 6.8 FEET SOUTHEAST OF THE SOUTHEAST
DE1751'EDGE OF THE  CONCRETE CURB AT THE WEST BOUND ENTRANCE RAMP, 62.3 FEET
DE1751'SOUTH SOUTHWEST OF THE  SOUTH EDGE OF THE CONCRETE CURB AT THE NORTH
DE1751'POINT OF THE TRAFFIC ISLAND, 6.8 FEET  EAST NORTHEAST OF A WITNESS
DE1751'POST. NOTE-STATION IS NOT INTERVISIBLE WITH HORIZONTAL STATION PAUL.
DE1751'RECOVERED BY T. HALL.
DE1751
DE1751                          STATION RECOVERY (2010)
DE1751
DE1751'RECOVERY NOTE BY SOUTH CAROLINA GEODETIC SURVEY 2010 (DDW)
DE1751'STATION IS LOCATED 7.6 MI (12.2 KM) EAST OF SUMMIT, 5.9 MI (9.5 KM)
DE1751'EAST OF GILBERT, 4.8 MI (7.7 KM) SOUTHWEST OF LEXINGTON.
DE1751'OWNERSHIP--SCDOT, DIRECTOR OF PRECONSTRUCTION, P.O. BOX 191, COLUMBIA,
DE1751'SC 29202, PHONE 803-737-1350. TO REACH THE STATION FROM THE JUNCTION
DE1751'OVERPASS OF INTERSTATE 20 (EXIT 51) AND STATE ROAD 204 (LONGS POND
DE1751'ROAD), 4.85 MI (7.8 KM) SOUTHWEST OF LEXINGTON, GO NORTH ON ROAD 204
DE1751'FOR 0.1 MI (0.2 KM) TO THE STATION ON THE LEFT IN A GRASSY TRAFFIC
DE1751'ISLAND AT THE ENTRANCE RAMP TO WEST BOUND INTERSTATE 20. STATION IS A
DE1751'CONCRETE POST FLUSH WITH THE GROUND AND 0.5 FT (0.2 M) ABOVE THE ROAD,
DE1751'49.0 FT (14.9 M) WEST OF THE CENTER OF ROAD 204, 6.8 FT (2.1 M)
DE1751'SOUTHEAST OF THE SOUTHEAST EDGE OF THE CURB OF THE TRAFFIC ISLAND
DE1751'TRIANGLE, 17.8 FT (5.4 M) NORTHEAST OF THE WESTERN MOST TIP OF THE
DE1751'CONCRETE TRAFFIC ISLAND TRIANGLE, 16.9 FT (5.2 M) WEST OF A WOODEN
DE1751'TRAFFIC LIGHT SUPPORT POLE WITH TWO GUY WIRES, 1.7 FT (0.5 M) WEST OF
DE1751'A WITNESS POST.  NOTE-STATION IS INTERVISIBLE WITH HORIZONTAL STATION
DE1751'PAUL. RECOVERED BY T. HALL.
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DO7024 ***********************************************************************
 DO7024  HT_MOD      -  This is a Height Modernization Survey Station.
 DO7024  DESIGNATION -  MTC NE 1
 DO7024  PID         -  DO7024
 DO7024  STATE/COUNTY-  SC/RICHLAND
 DO7024  COUNTRY     -  US
 DO7024  USGS QUAD   -  FORT JACKSON NORTH (1990)
 DO7024
 DO7024                        *CURRENT SURVEY CONTROL
 DO7024
 DO7024* NAD 83(2011) POSITION- 34 05 57.02310(N) 080 58 17.33211(W)   ADJUSTED
 DO7024* NAD 83(2011) ELLIP HT-    71.606 (meters)        (04/03/13)   ADJUSTED
 DO7024* NAD 83(2011) EPOCH    -  2010.00
 DO7024* NAVD 88 ORTHO HEIGHT -   102.53  (meters)      336.4   (feet) GPS OBS
 DO7024
 DO7024  GEOID HEIGHT    -        -30.94  (meters)                     GEOID12A
 DO7024  NAD 83(2011) X  -    829,692.947 (meters)                     COMP
 DO7024  NAD 83(2011) Y  - -5,221,652.257 (meters)                     COMP
 DO7024  NAD 83(2011) Z  -  3,555,601.294 (meters)                     COMP
 DO7024  LAPLACE CORR    -         -1.67  (seconds)                    DEFLEC12A
 DO7024
 DO7024  FGDC Geospatial Positioning Accuracy Standards (95% confidence, cm)
 DO7024  Type                                          Horiz  Ellip  Dist(km)
 DO7024  ----------------------------------------------------------------------
 DO7024  NETWORK                                        0.74   0.61
 DO7024  ----------------------------------------------------------------------
 DO7024  MEDIAN LOCAL ACCURACY AND DIST (002 points)   0.69   0.63      0.65
 DO7024  ----------------------------------------------------------------------
 DO7024  NOTE: Click here for information on individual local accuracy
 DO7024  values and other accuracy information.
 DO7024
 DO7024
 DO7024.The horizontal coordinates were established by GPS observations
 DO7024.and adjusted by the SOUTH CAROLINA GEODETIC SURVEY in April 2013.
 DO7024
 DO7024.NAD 83(2011) refers to NAD 83 coordinates where the reference
 DO7024.frame has been affixed to the stable North American tectonic plate. See
 DO7024.NA2011 for more information.
 DO7024
 DO7024.The horizontal coordinates are valid at the epoch date displayed above
 DO7024.which is a decimal equivalence of Year/Month/Day.
 DO7024
 DO7024.The orthometric height was determined by GPS observations and a
 DO7024.high-resolution geoid model using precise GPS observation and
 DO7024.processing techniques.
 DO7024
 DO7024.The X, Y, and Z were computed from the position and the ellipsoidal ht.
 DO7024
 DO7024.The Laplace correction was computed from DEFLEC12A derived deflections.
 DO7024
 DO7024.The ellipsoidal height was determined by GPS observations
 DO7024.and is referenced to NAD 83.
 DO7024
 DO7024. The following values were computed from the NAD 83(2011) position.
 DO7024
 DO7024;                   North         East      Units Scale Factor Converg.
 DO7024;SPC SC       -   251,273.959   612,231.174   MT  0.99982171   +0 00 56.9
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DO7024;SPC SC       -   824,389.63  2,008,632.46   iFT  0.99982171   +0 00 56.9
DO7024;UTM  17      - 3,773,152.548   502,630.590   MT  0.99960009   +0 00 57.6
DO7024
DO7024!             -  Elev Factor  x  Scale Factor =   Combined Factor
DO7024!SPC SC       -   0.99998876  x   0.99982171  =   0.99981047
DO7024!UTM  17      -   0.99998876  x   0.99960009  =   0.99958885
DO7024
DO7024|-----------------------------------------------------------------------|
DO7024| PID    Reference Object                      Distance      Geod. Az   |
DO7024|                                                            dddmmss.s |
DO7024| DO7025 MTC NE 2                              43.139 METERS 27140      |
DO7024|-----------------------------------------------------------------------|
DO7024
DO7024                          SUPERSEDED SURVEY CONTROL
DO7024
DO7024.No superseded survey control is available for this station.
DO7024
DO7024_U.S. NATIONAL GRID SPATIAL ADDRESS: 17SNT0263073152(NAD 83)
DO7024
DO7024_MARKER: DD = SURVEY DISK
DO7024_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
DO7024_STAMPING: MTC NE 1 2012
DO7024_MARK LOGO: SCGS
DO7024_PROJECTION: FLUSH
DO7024_MAGNETIC: M = MARKER EQUIPPED WITH BAR MAGNET
DO7024_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
DO7024_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
DO7024+SATELLITE: SATELLITE OBSERVATIONS - September 24, 2012
DO7024
DO7024  HISTORY     - Date     Condition        Report By
DO7024  HISTORY     - 20120924 MONUMENTED       SCGS
DO7024
DO7024                          STATION DESCRIPTION
DO7024
DO7024'DESCRIBED BY SOUTH CAROLINA GEODETIC SURVEY 2012 (DDW)
DO7024'STATION IS LOCATED 9.4 MI (15.2 KM) NORTHEAST OF WEST COLUMBIA, 7.9 MI
DO7024'(12.7 KM) SOUTH OF BLYTHEWOOD, 7.7 MI (12.4 KM) NORTH-NORTHEAST OF
DO7024'COLUMBIA.  OWNERSHIP--MIDLANDS TECHNICAL COLLEGE, NORTHEAST CAMPUS,
DO7024'151 POWELL ROAD, COLUMBIA, SC 29203. TO REACH THE STATION FROM THE
DO7024'JUNCTION OVERPASS OF INTERSTATE 77 (EXIT 19) AND STATE HIGHWAY 555
DO7024'(FARROW ROAD), 7.9 MI (12.7 KM) SOUTH OF BLYTHEWOOD, GO SOUTHWEST ON
DO7024'HIGHWAY 555 FOR 0.8 MI (1.3 KM) TO THE JUNCTION OF STATE ROAD 34
DO7024'(PISGAH CHURCH ROAD), BEAR RIGHT ON ROAD 34 FOR 0.2 MI (0.3 KM) TO THE
DO7024'JUNCTION OF STATE ROAD 1560 (POWELL ROAD), TURN RIGHT ON ROAD 1560 FOR
DO7024'0.3 MI (0.5 KM) TO THE STATION ON THE LEFT NEAR A BRICK AND METAL SIGN
DO7024'(MIDLANDS TECHNICAL COLLEGE IN THE SOUTHWEST ANGLE OF GATEWAY
DO7024'PLANTATION ROAD. STATION IS A CONCRETE POST FLUSH WITH THE GROUND AND
DO7024'5.0 FT (1.5 M) ABOVE GATEWAY PLANTATION ROAD, 141.4 FT (43.1 M) EAST
DO7024'OF SURVEY STATION MTC NORTHEAST 2, 67.5 FT (20.6 M) WEST-NORTHWEST OF
DO7024'THE WEST CORNER OF THE SIGN, 54.0 FT (16.5 M) SOUTH-SOUTHWEST OF THE
DO7024'SOUTH EDGE OF THE CONCRETE CURB OF GATEWAY PLANTATION ROAD, 80.2 FT
DO7024'(24.4 M) SOUTH-SOUTHEAST OF A FIRE HYDRANT, 67.3 FT (20.5 M)
DO7024'EAST-NORTHEAST OF A POWER POLE NUMBER 623734, 73.0 FT (22.3 M) EAST OF
DO7024'THE NORTHEAST CORNER OF THE CONCRETE CURB OF A PARKING LOT.
DO7024'NOTE-STATION IS INTERVISIBLE WITH SURVEY STATION MTC NE 3. DESCRIBED
DO7024'BY R.P. MCKEOWN.
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DO7026 ************************************************************************
 DO7026  HT_MOD      -  This is a Height Modernization Survey Station.
 DO7026  DESIGNATION -  MTC NE 3
 DO7026  PID         -  DO7026
 DO7026  STATE/COUNTY-  SC/RICHLAND
 DO7026  COUNTRY     -  US
 DO7026  USGS QUAD   -  FORT JACKSON NORTH (1990)
 DO7026
 DO7026                        *CURRENT SURVEY CONTROL
 DO7026  ______________________________________________________________________
 DO7026* NAD 83(2011) POSITION- 34 05 49.39949(N) 080 58 19.50230(W)   ADJUSTED
 DO7026* NAD 83(2011) ELLIP HT-    82.296 (meters)        (04/03/13)   ADJUSTED
 DO7026* NAD 83(2011) EPOCH   -  2010.00
 DO7026* NAVD 88 ORTHO HEIGHT -   113.22  (meters)      371.5   (feet) GPS OBS
 DO7026  ______________________________________________________________________
 DO7026  GEOID HEIGHT    -        -30.94  (meters)                     GEOID12A
 DO7026  NAD 83(2011) X  -    829,660.061 (meters)                     COMP
 DO7026  NAD 83(2011) Y  - -5,221,799.787 (meters)                     COMP
 DO7026  NAD 83(2011) Z  -  3,555,412.768 (meters)                     COMP
 DO7026  LAPLACE CORR    -         -1.70  (seconds)                    DEFLEC12A
 DO7026
 DO7026  FGDC Geospatial Positioning Accuracy Standards (95% confidence, cm)
 DO7026  Type                                          Horiz  Ellip  Dist(km)
 DO7026  ----------------------------------------------------------------------
 DO7026  NETWORK                                        0.94   0.67
 DO7026  ----------------------------------------------------------------------
 DO7026  MEDIAN LOCAL ACCURACY AND DIST (002 points)   0.74   0.67      1.98
 DO7026  ----------------------------------------------------------------------
 DO7026  NOTE: Click here for information on individual local accuracy
 DO7026  values and other accuracy information.
 DO7026
 DO7026
 DO7026.The horizontal coordinates were established by GPS observations
 DO7026.and adjusted by the SOUTH CAROLINA GEODETIC SURVEY in April 2013.
 DO7026
 DO7026.NAD 83(2011) refers to NAD 83 coordinates where the reference
 DO7026.frame has been affixed to the stable North American tectonic plate. See
 DO7026.NA2011 for more information.
 DO7026
 DO7026.The horizontal coordinates are valid at the epoch date displayed above
 DO7026.which is a decimal equivalence of Year/Month/Day.
 DO7026
 DO7026.The orthometric height was determined by GPS observations and a
 DO7026.high-resolution geoid model using precise GPS observation and
 DO7026.processing techniques.
 DO7026
 DO7026.The X, Y, and Z were computed from the position and the ellipsoidal ht.
 DO7026
 DO7026.The Laplace correction was computed from DEFLEC12A derived deflections.
 DO7026
 DO7026.The ellipsoidal height was determined by GPS observations
 DO7026.and is referenced to NAD 83.
 DO7026
 DO7026. The following values were computed from the NAD 83(2011) position.
 DO7026
 DO7026;                    North         East      Units Scale Factor Converg.
 DO7026;SPC SC       -   251,039.085   612,175.619   MT  0.99982143   +0 00 55.7
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DO7026;SPC SC       -   823,619.05  2,008,450.19   iFT  0.99982143   +0 00 55.7
DO7026;UTM  17      - 3,772,917.726   502,575.049   MT  0.99960008   +0 00 56.3
DO7026
DO7026!             -  Elev Factor  x  Scale Factor =   Combined Factor
DO7026!SPC SC       -   0.99998708  x   0.99982143  =   0.99980851
DO7026!UTM  17      -   0.99998708  x   0.99960008  =   0.99958717
DO7026
DO7026|-----------------------------------------------------------------------|
DO7026| PID    Reference Object                      Distance      Geod. Az   |
DO7026|                                                            dddmmss.s |
DO7026| DO7025 MTC NE 2                            236.486 METERS 00302      |
DO7026|-----------------------------------------------------------------------|
DO7026
DO7026                          SUPERSEDED SURVEY CONTROL
DO7026
DO7026.No superseded survey control is available for this station.
DO7026
DO7026_U.S. NATIONAL GRID SPATIAL ADDRESS: 17SNT0257572917(NAD 83)
DO7026
DO7026_MARKER: DD = SURVEY DISK
DO7026_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
DO7026_STAMPING: MTC NE 3 2012
DO7026_MARK LOGO: SCGS
DO7026_PROJECTION: FLUSH
DO7026_MAGNETIC: M = MARKER EQUIPPED WITH BAR MAGNET
DO7026_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
DO7026_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
DO7026+SATELLITE: SATELLITE OBSERVATIONS - September 24, 2012
DO7026
DO7026  HISTORY     - Date     Condition        Report By
DO7026  HISTORY     - 20120924 MONUMENTED       SCGS
DO7026
DO7026                          STATION DESCRIPTION
DO7026
DO7026'DESCRIBED BY SOUTH CAROLINA GEODETIC SURVEY 2012 (DDW)
DO7026'STATION IS LOCATED 9.3 MI (15.0 KM) NORTHEAST OF WEST COLUMBIA, 8.0 MI
DO7026'(12.9 KM) SOUTH OF BLYTHEWOOD, 7.5 MI (12.1 KM) NORTH-NORTHEAST OF
DO7026'COLUMBIA.  OWNERSHIP--MIDLANDS TECHNICAL COLLEGE, NORTHEAST CAMPUS,
DO7026'151 POWELL ROAD, COLUMBIA, SC 29203. TO REACH THE STATION FROM THE
DO7026'JUNCTION OVERPASS OF INTERSTATE 77 (EXIT 19) AND STATE HIGHWAY 555
DO7026'(FARROW ROAD), 7.9 MI (12.7 KM) SOUTH OF BLYTHEWOOD, GO SOUTHWEST ON
DO7026'HIGHWAY 555 FOR 0.8 MI (1.3 KM) TO THE JUNCTION OF STATE ROAD 34
DO7026'(PISGAH CHURCH ROAD), BEAR RIGHT ON ROAD 34 FOR 0.2 MI (0.3 KM) TO THE
DO7026'JUNCTION OF STATE ROAD 1560 (POWELL ROAD), TURN RIGHT ON ROAD 1560 FOR
DO7026'0.15 MI (0.2 KM) TO THE STATION ON THE LEFT IN AN OPEN AREA, BETWEEN
DO7026'THE SOUTH ENTRANCE DRIVE TO MIDLANDS TECHNICAL COLLEGE AND A PARKING
DO7026'LOT. STATION IS A CONCRETE POST FLUSH WITH THE GROUND AND 1.0 FT (0.3
DO7026'M) BELOW POWELL ROAD, 158.5 FT (48.3 M) WEST-NORTHWEST OF THE CENTER
DO7026'OF POWELL ROAD, 82.1 FT (25.0 M) SOUTH-SOUTHEAST OF THE SOUTH EDGE OF
DO7026'THE CONCRETE CURB OF THE PARKING LOT, 21.8 FT (6.6 M) EAST-NORTHEAST
DO7026'OF THE SOUTHEAST CORNER BOLT OF AN ELECTRIC ACCESS COVER, 74.7 FT
DO7026'(22.8 M) SOUTHEAST OF A METAL LIGHT POLE, 125.1 FT (38.1 M) WEST OF
DO7026'THE NORTHWEST CORNER OF A BRICK AND METAL SIGN (MIDLANDS TECHNICAL
DO7026'COLLEGE). NOTE-STATION IS INTERVISIBLE WITH SURVEY STATIONS MTC NE 1
DO7026'AND MTC  NE 2. DESCRIBED BY R.P MCKEOWN.
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Section 3A - Interstate 20 Procedure Summary

Horizontal Coordinates

The horizontal coordinates for both the survey and aerial control for Interstate 20 were established through a combination of static, rapid-static, and post-processed kinematic GPS surveys referencing coordinates established on point numbers 2000 & 2027 detailed on the Project Introduction at the beginning of this report.

Real-time kinematic and/or static base stations were set on survey control points throughout the corridor. Rapid-static baselines were processed to the survey control points not used as static bases. Each survey control point was connected to at least 2 other survey control points. The aerial targets were located either through real-time kinematic or rapid-static GPS procedures referencing base stations on the survey control points.

Also included in this network were two NGS Survey Monuments, Paul and Paul Azimuth Mark. The network was adjusted, being constrained to Paul, Paul Azimuth Mark, 2000, and 2027.

The GPS equipment used was Trimble R8 dual-frequency GNSS GPS receivers on 2 meter fixed height poles.

The coordinates are NAD83 (2011) South Carolina (3900) State Plane Zone and are reported in International Feet.

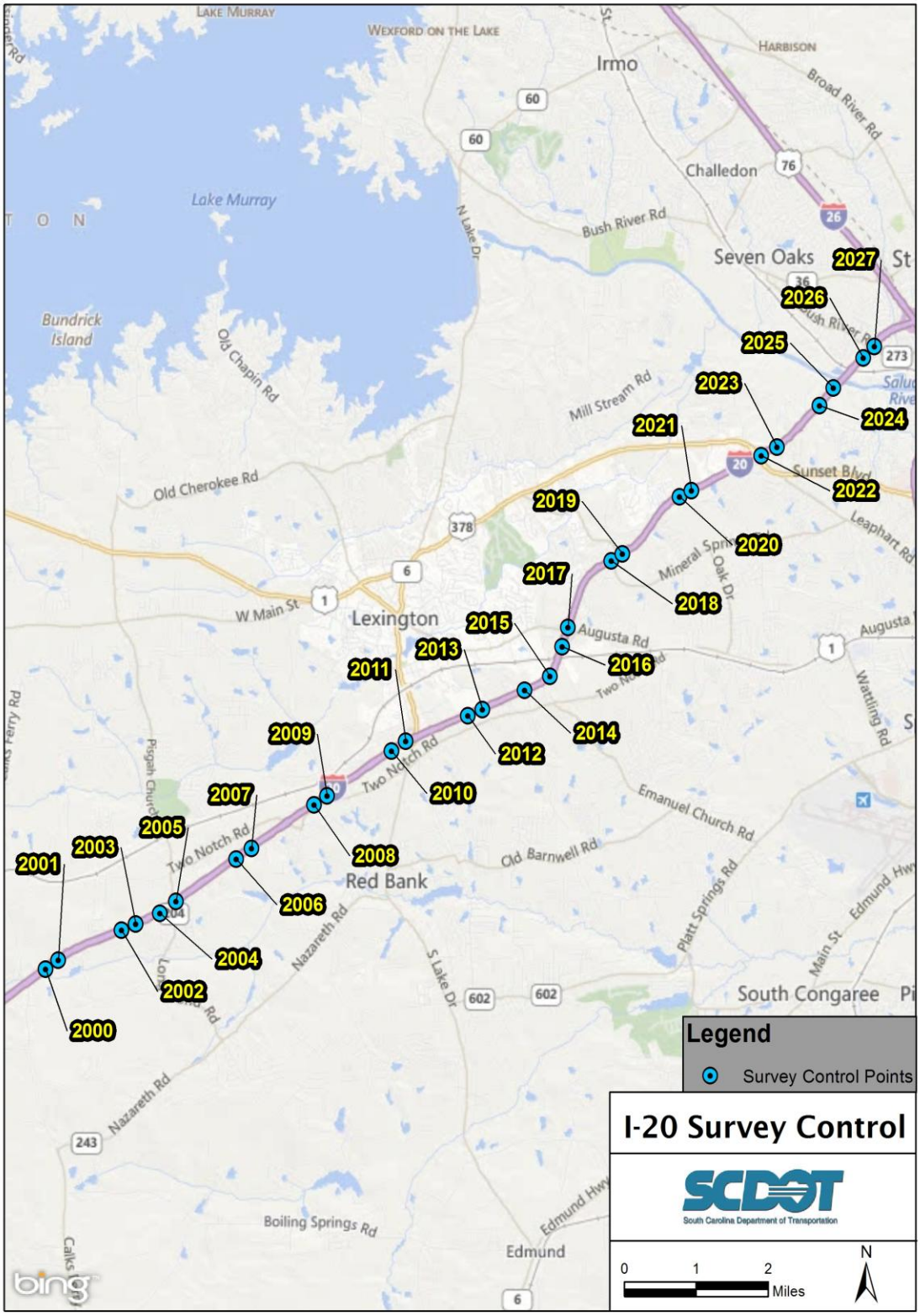
Elevations

The elevations for both the survey and aerial control were established through a differential leveling network, consisting of 18 interconnected loops, resulting in an overall combined FGCS precision of First Order Class I. The reference elevations for the network were the Ortho Heights reported for NGS monuments Paul and Paul Azimuth Mark. Both monuments are reported to be of the First Order Class II vertical precision.

The leveling was performed using Leica Sprinter digital levels.

The elevations are NAVD88 and are reported in International Feet.

Section 3B – I-20 Survey Control Map



Section 3c – I-20 Survey Control Coordinate Report

Coordinate System:
Horizontal Datum – SPC South Carolina (3900)
Vertical Datum – NAVD 88
International Feet
Geoid12A

POINT	NORTHING	EASTING	ELEVATION
2000	757250.63	1902617.82	385.59
2001	757894.87	1903551.28	431.77
2002	759952.05	1908191.72	381.13
2003	760351.47	1909235.32	365.17
2004	761091.13	1911015.93	399.52
2005	761917.88	1912193.02	423.35
2006	764815.53	1916605.27	374.87
2007	765559.17	1917745.87	397.03
2008	768529.61	1922347.34	396.2
2009	769144.06	1923298.15	390.09
2010	772231.11	1928033.79	418.65
2011	772910.15	1929059.2	399.96
2012	774648.88	1933642.77	420.28
2013	775077.54	1934695.29	408.18
2014	776388.03	1937794.58	380.51
2015	777361.78	1939679.17	412.26
2016	779379.04	1940577.17	372.49
2017	780697.6	1940994.56	350.02
2018	785264.39	1944186.11	360.97
2019	785762.43	1944984.32	346.5
2020	789658.52	1949188.77	306.38
2021	790080.21	1950053.39	317.59
2022	792499.43	1955194.87	362.79
2023	793065.72	1956347.46	358.58
2024	795928.27	1959477.64	246.4
2025	797124.43	1960489.79	193.65
2026	799183.3	1962682.18	216.62
2027	799993.2	1963497.54	230.98

Section 3d – I-20 Survey Control Data Sheets

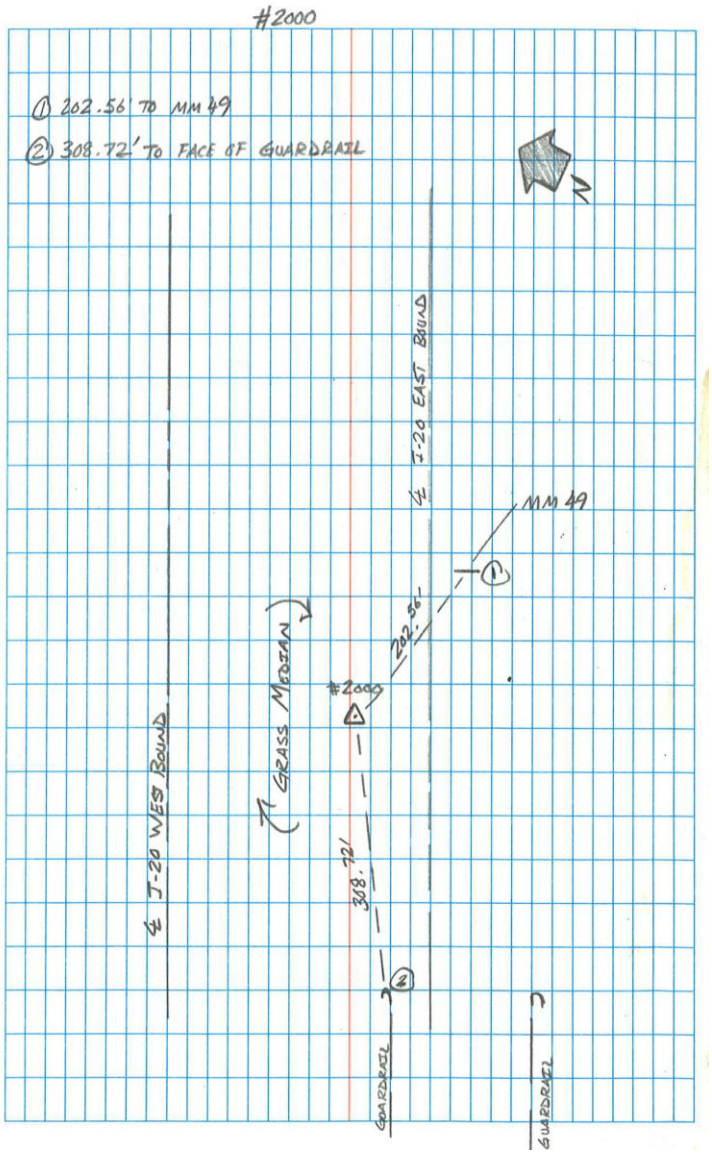
Point ID	2000
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	757250.63	1902617.82	385.59	

PHOTOS:



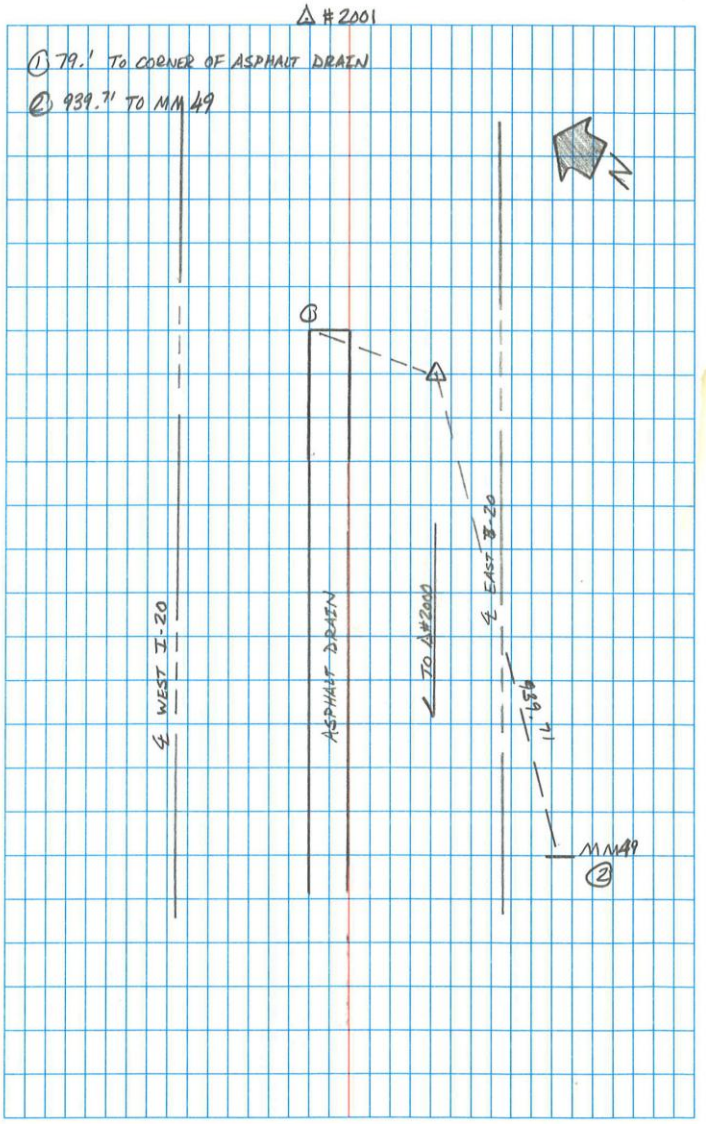
Point ID	2001
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	757894.87	1903551.28	431.77	

PHOTOS:



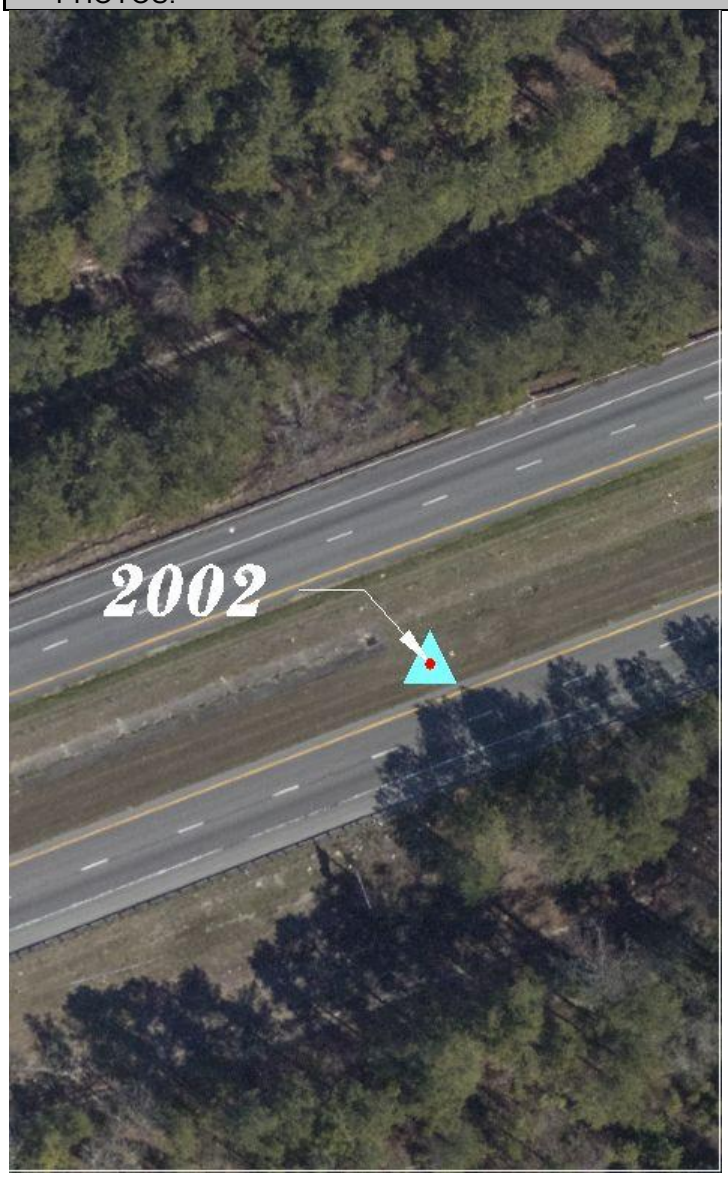
Point ID	2002
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

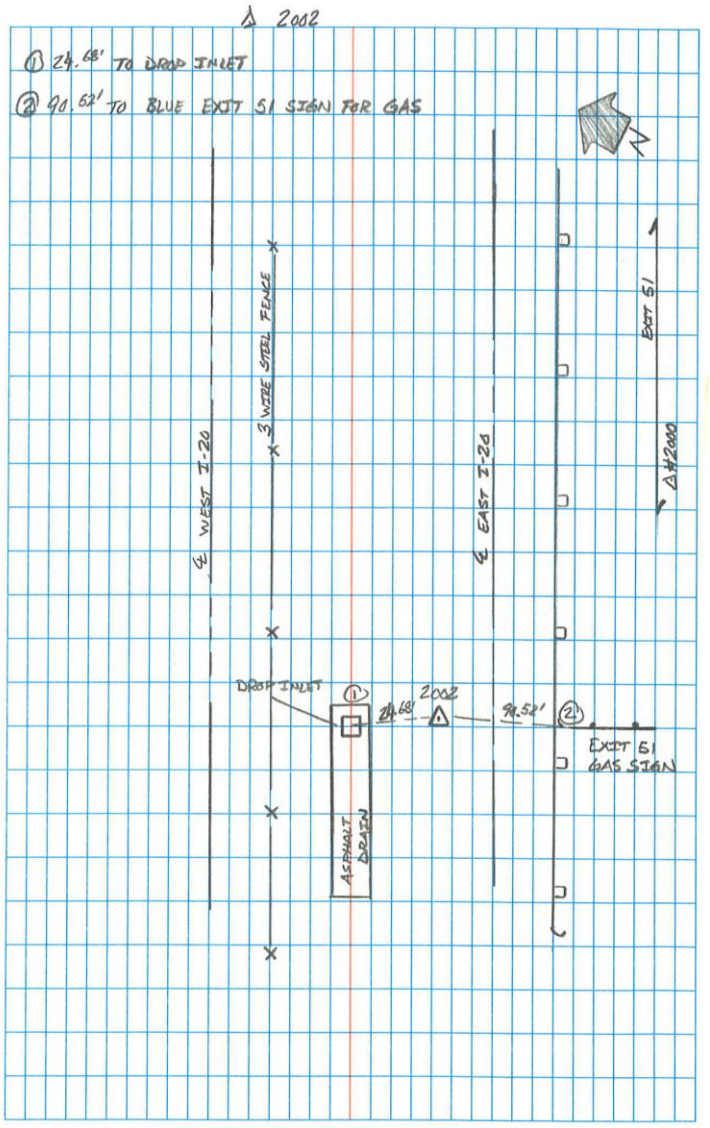
	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	759952.05	1908191.72	381.13	

PHOTOS:





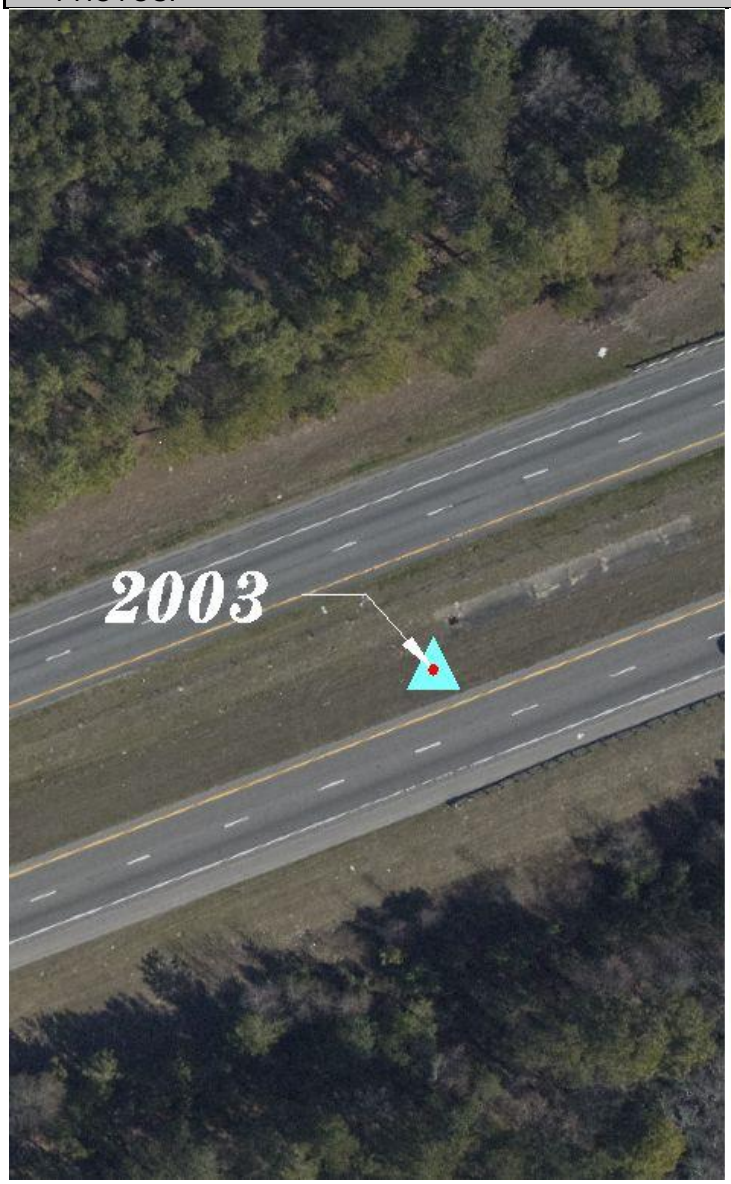
Point ID	2003
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

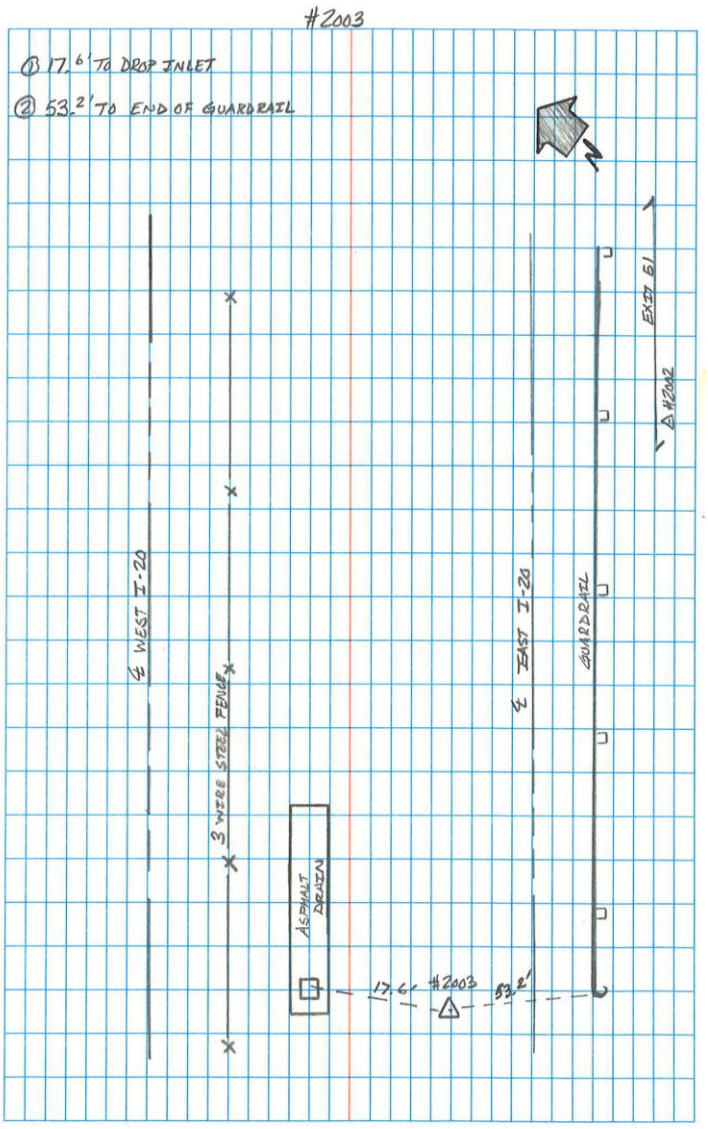
	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	760351.47	1909235.32	365.17	

PHOTOS:





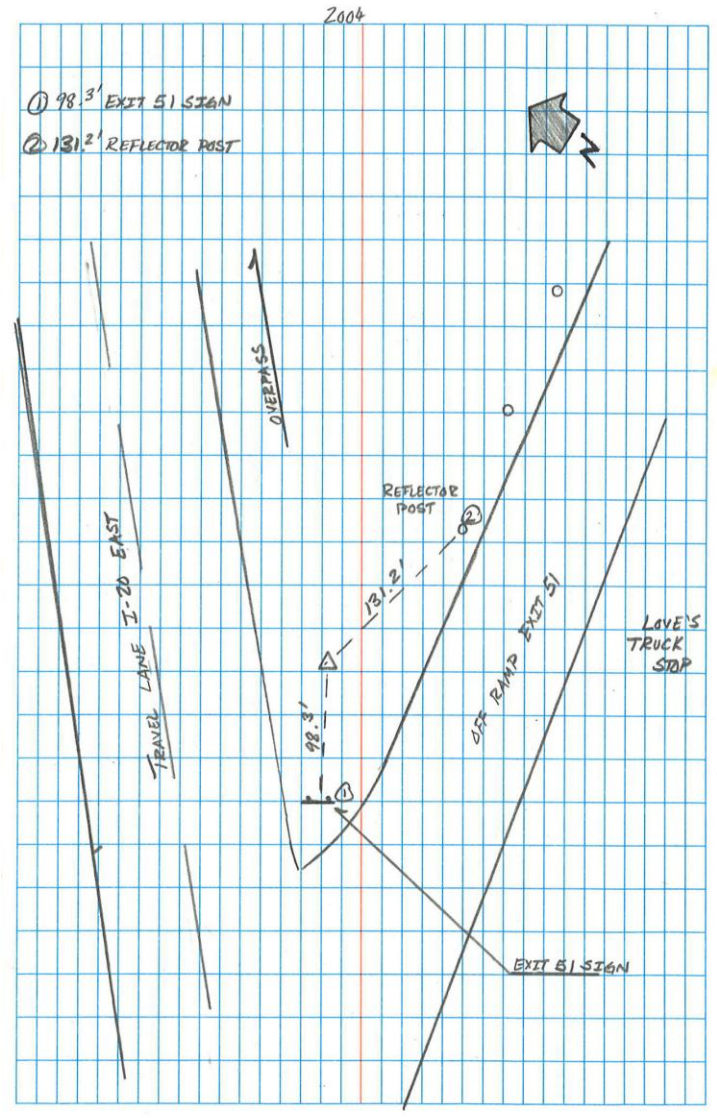
Point ID	2004
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	761091.13	1911015.93	399.52	

PHOTOS:



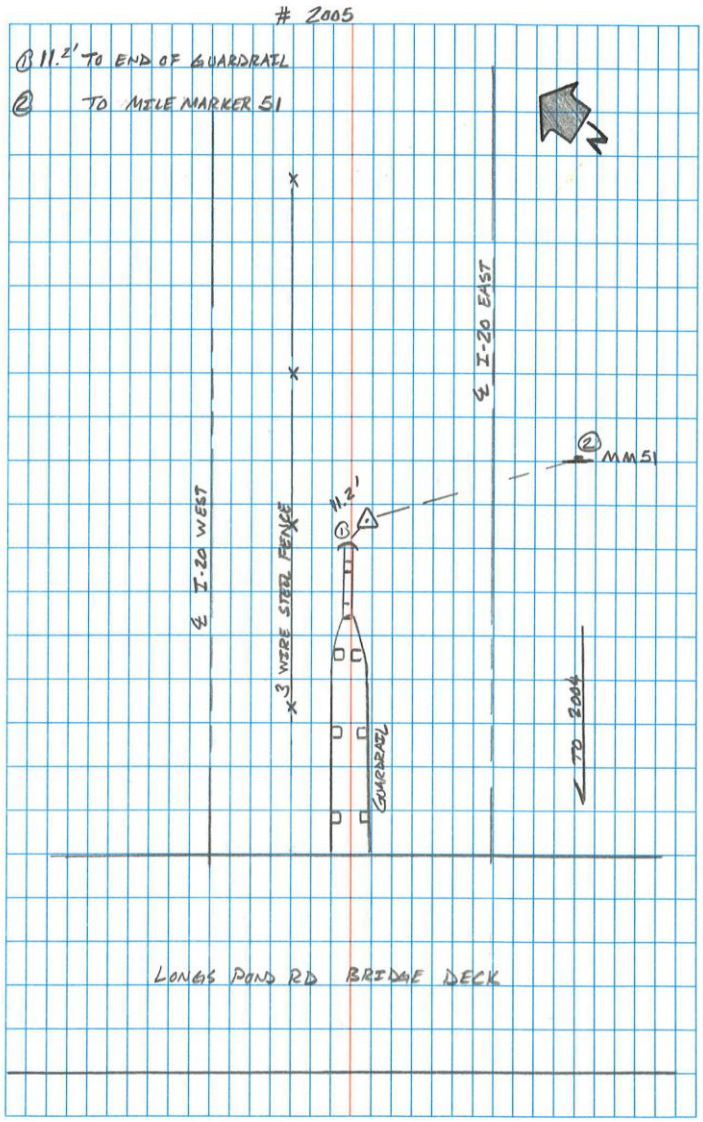
Point ID	2005
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	761917.88	1912193.02	423.35	

PHOTOS:



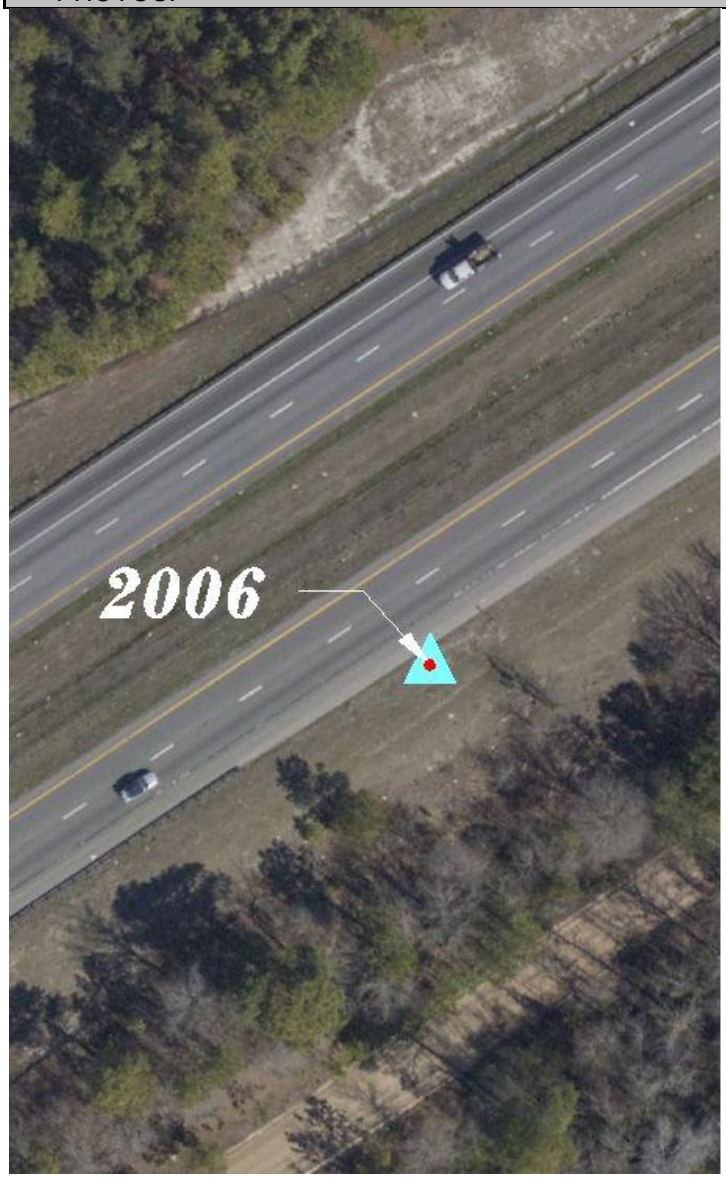
Point ID	2006
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

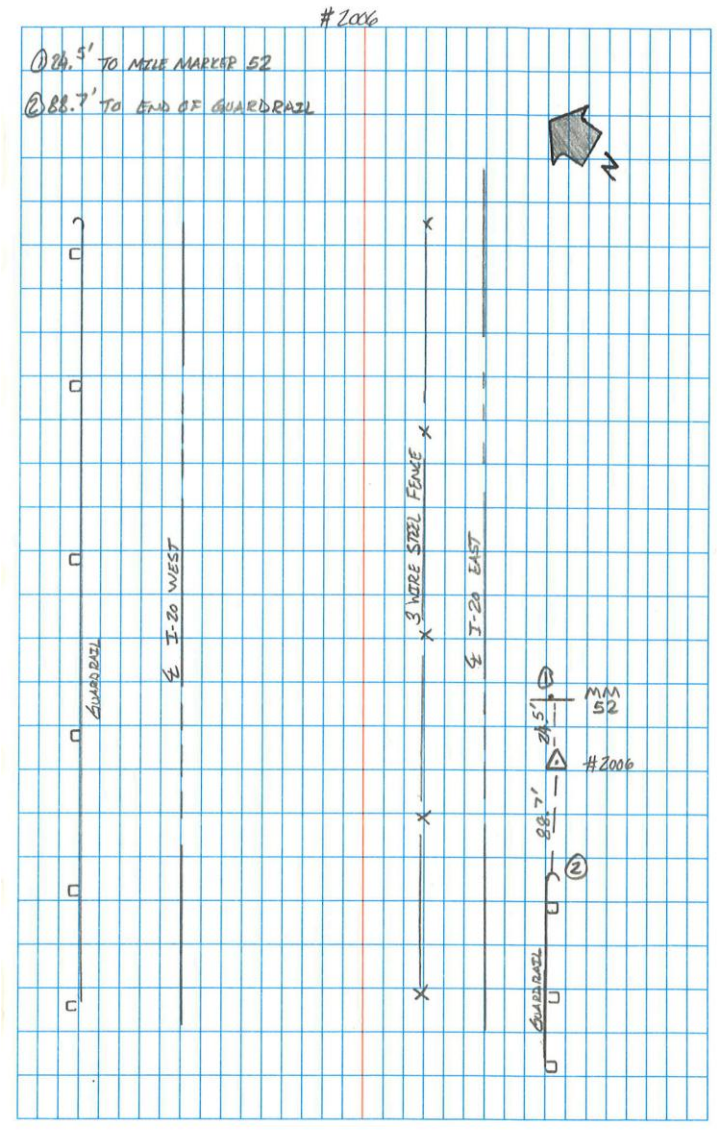
	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	764815.53	1916605.27	374.87	

PHOTOS:





Quantum Spatial, Inc. – 1410 Indian Trail Rd., Norcross, GA 30093 – Ph. 770-564-9843 - www.quantumspatial.com

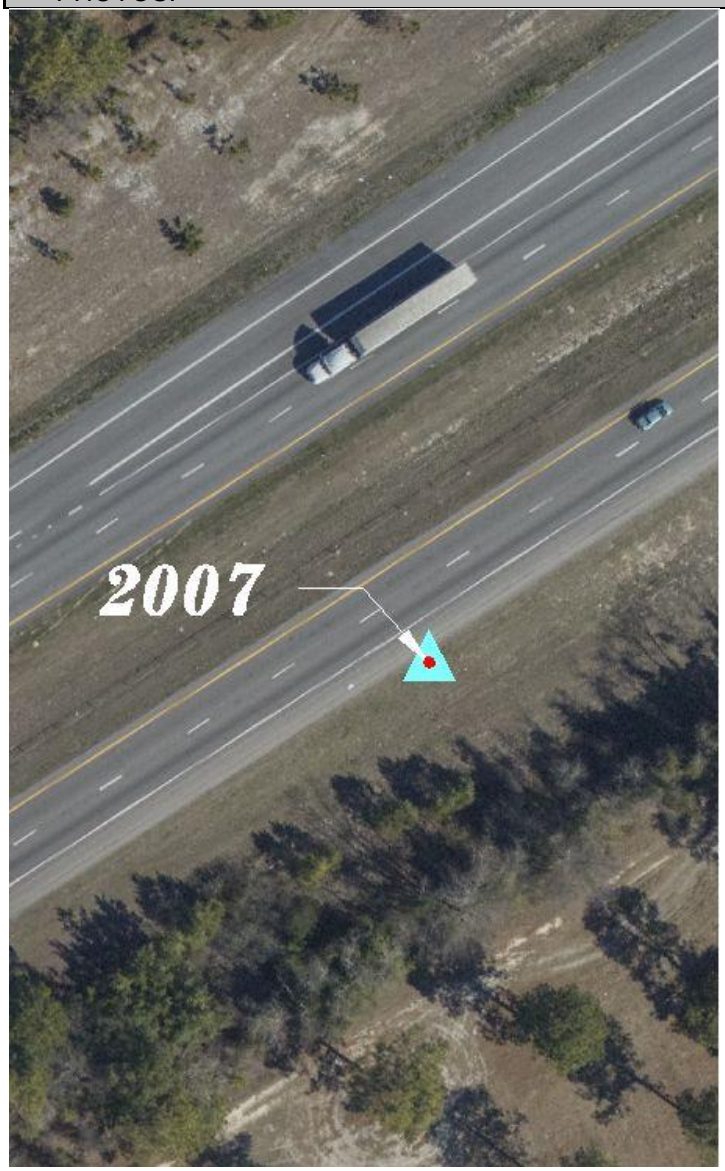
Point ID	2007
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

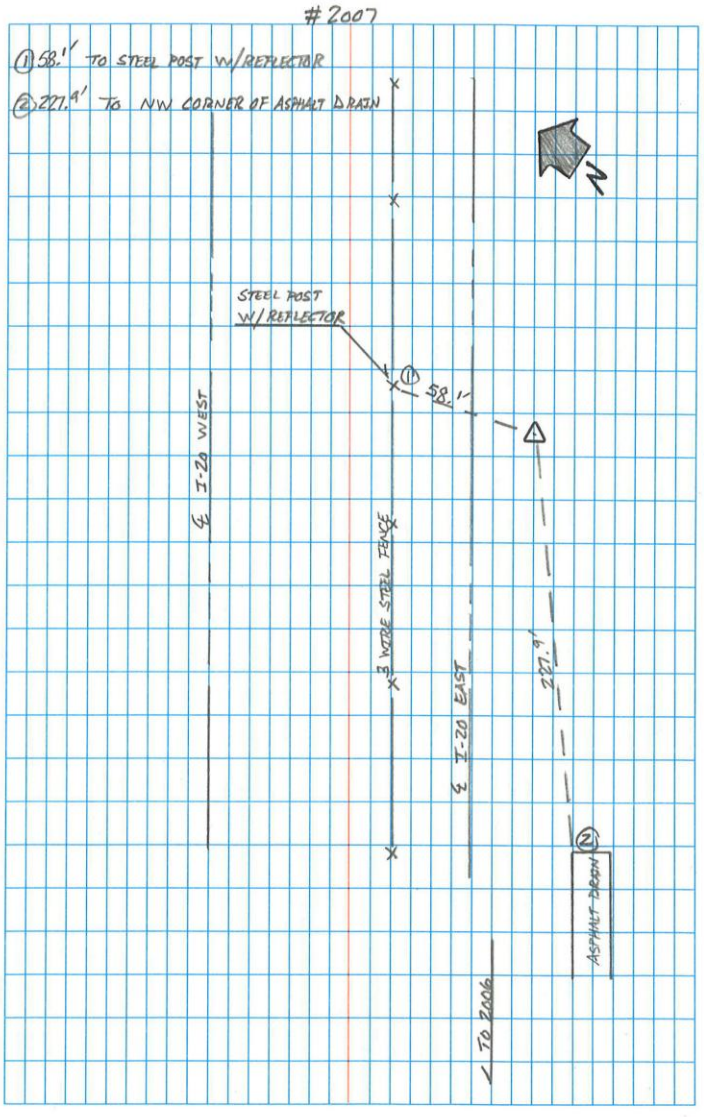
	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	765559.17	1917745.87	397.03	

PHOTOS:





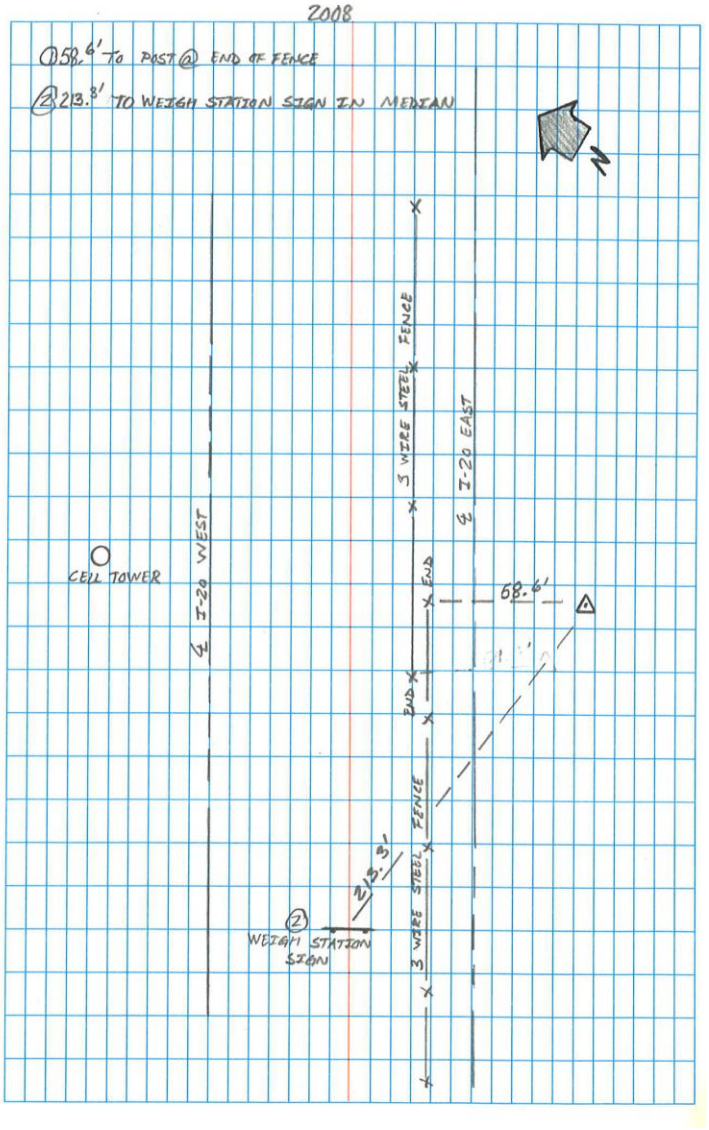
Point ID	2008
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	768529.61	1922347.34	396.20	

PHOTOS:



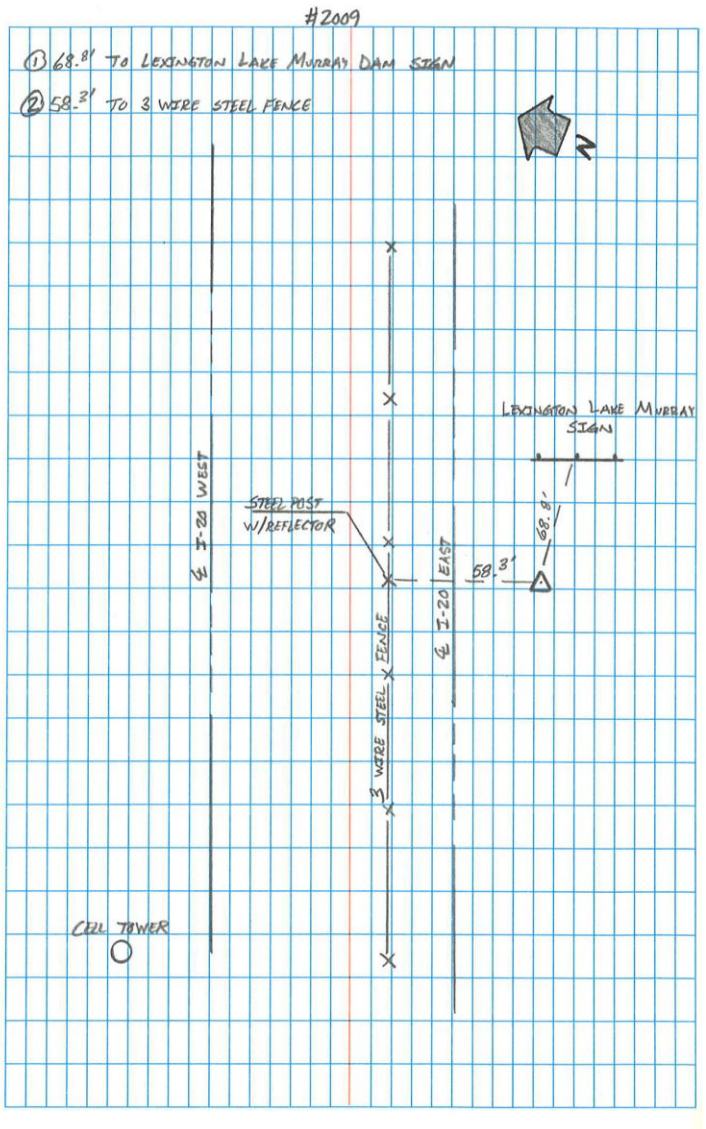
Point ID	2009
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	769144.06	1923298.15	390.09	

PHOTOS:



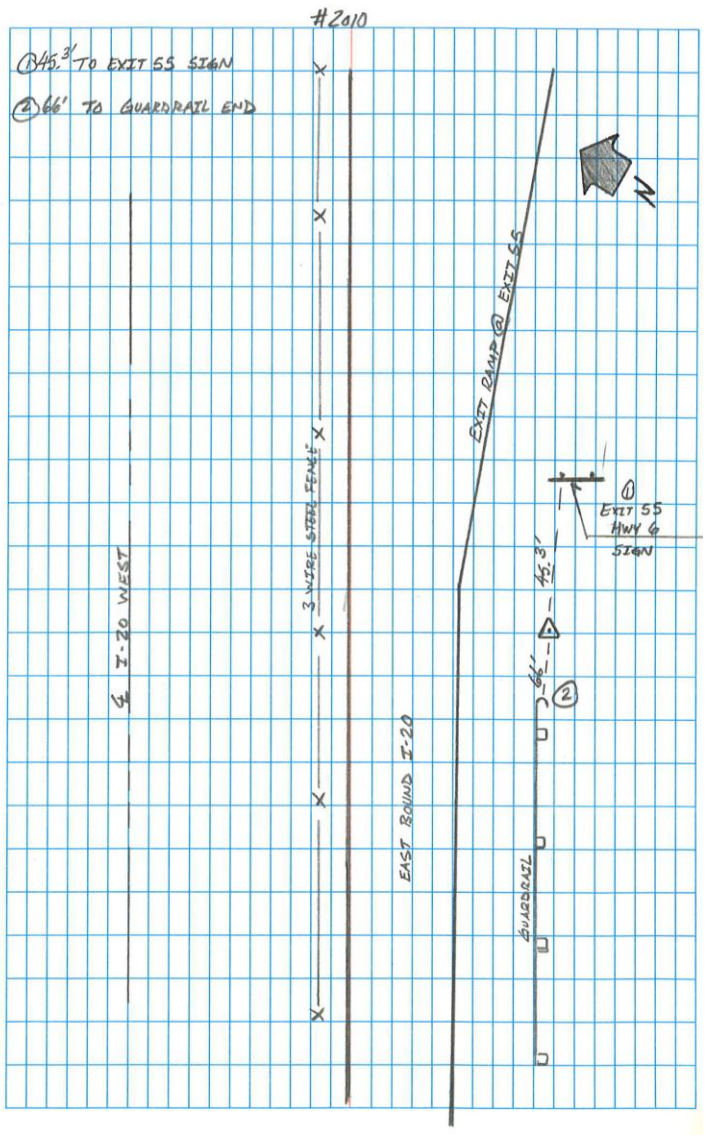
Point ID	2010
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	772231.11	1928033.79	418.65	

PHOTOS:



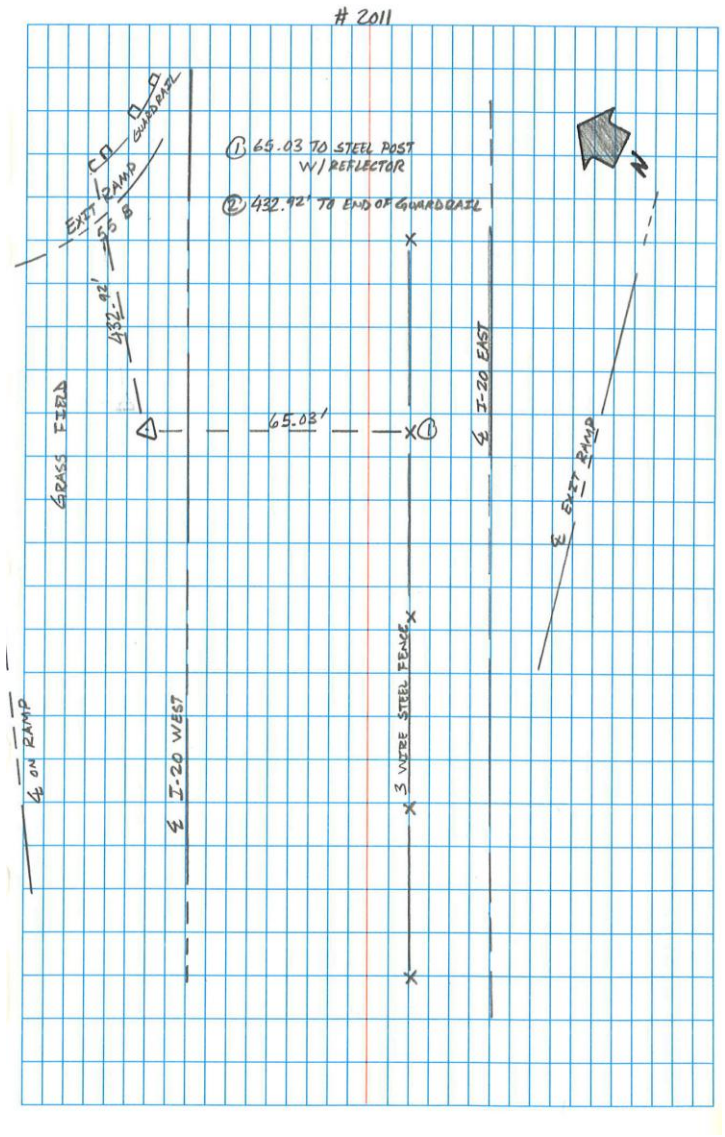
Point ID	2011
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	772910.15	1929059.20	399.96	

PHOTOS:



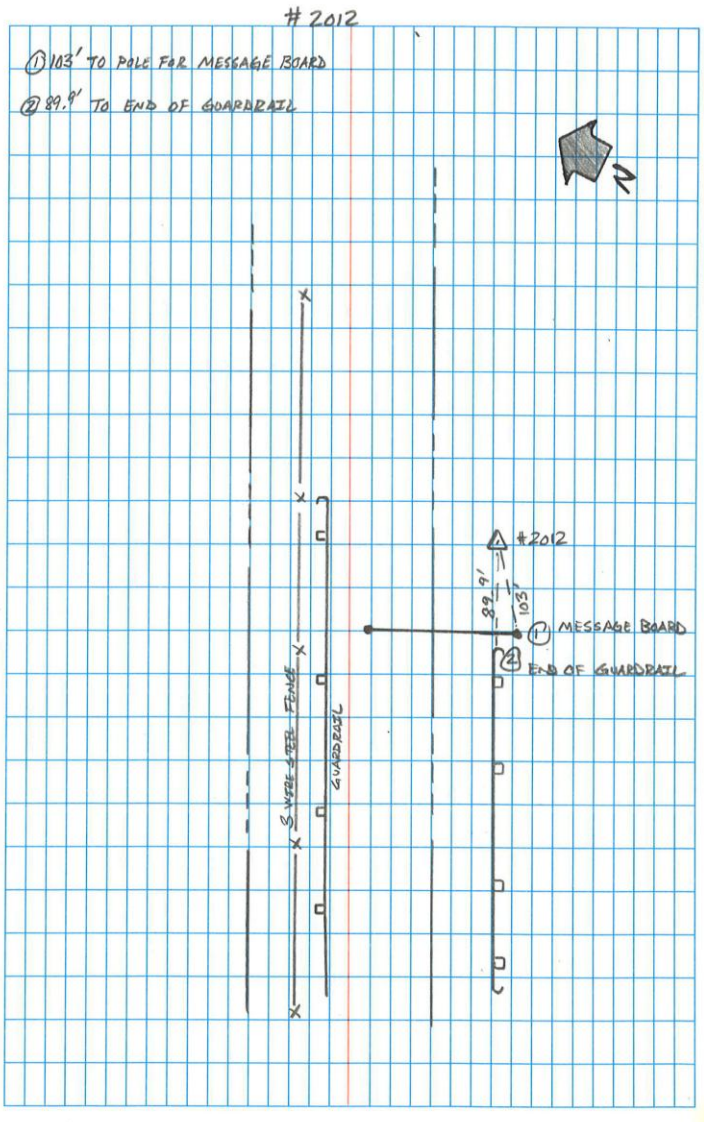
Point ID	2012
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	774648.88	1933642.77	420.28	

PHOTOS:



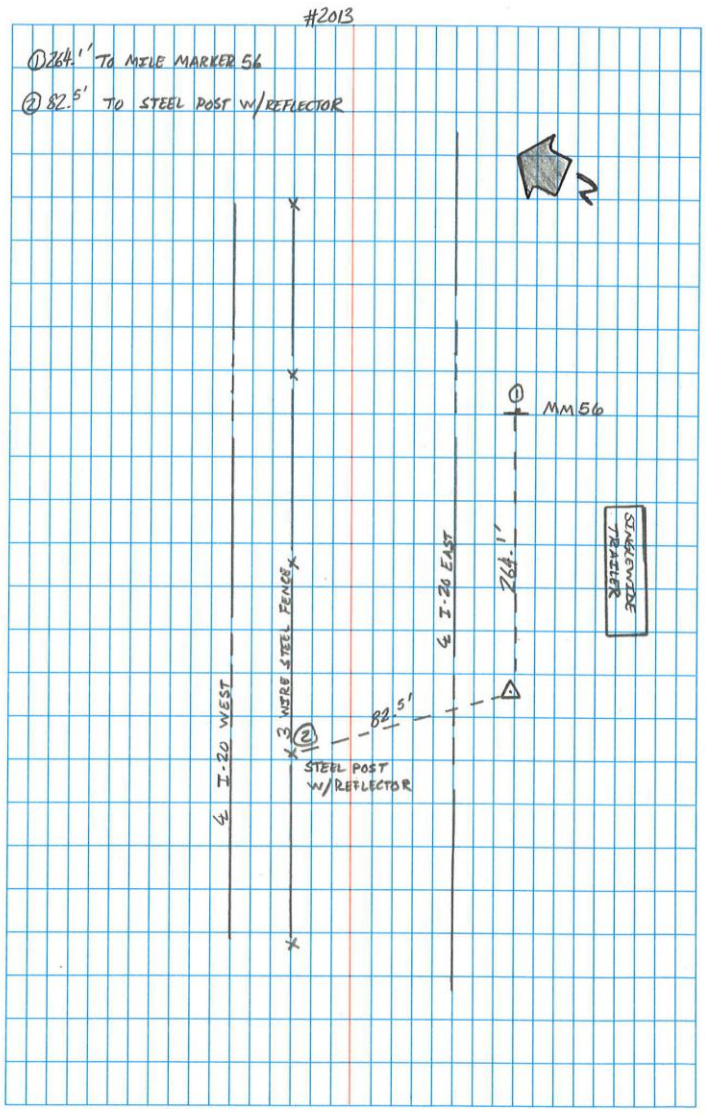
Point ID	2013
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	775077.54	1934695.29	408.18	

PHOTOS:



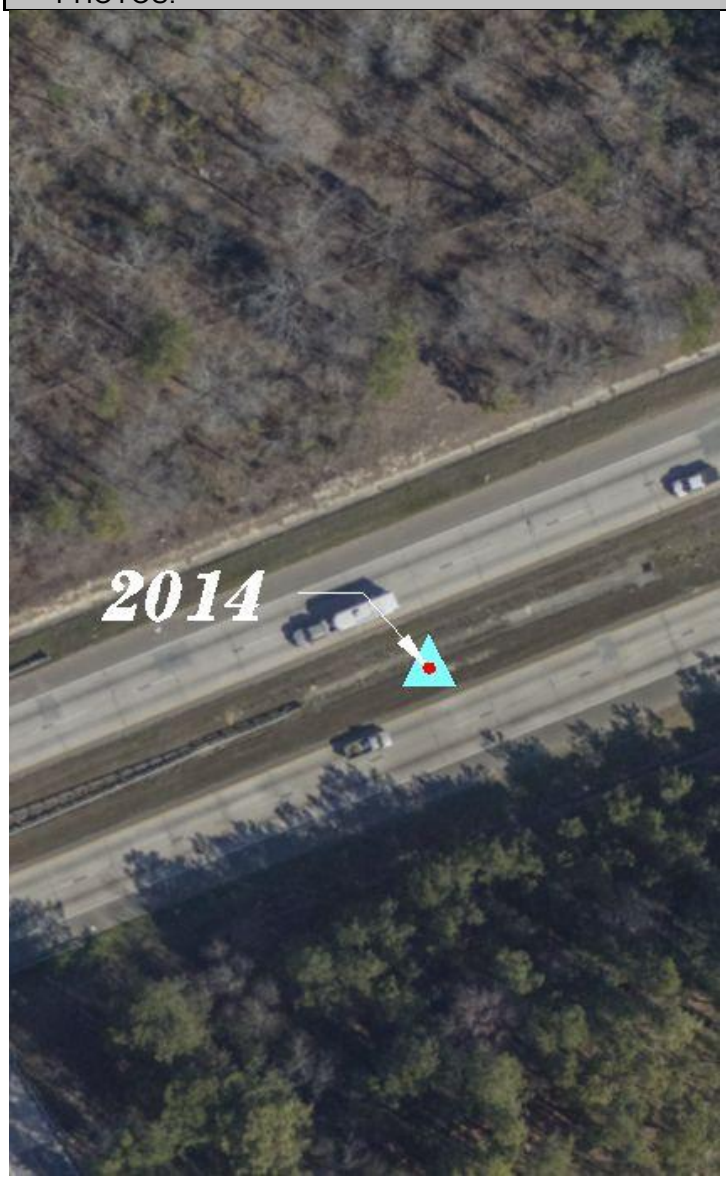
Point ID	2014
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

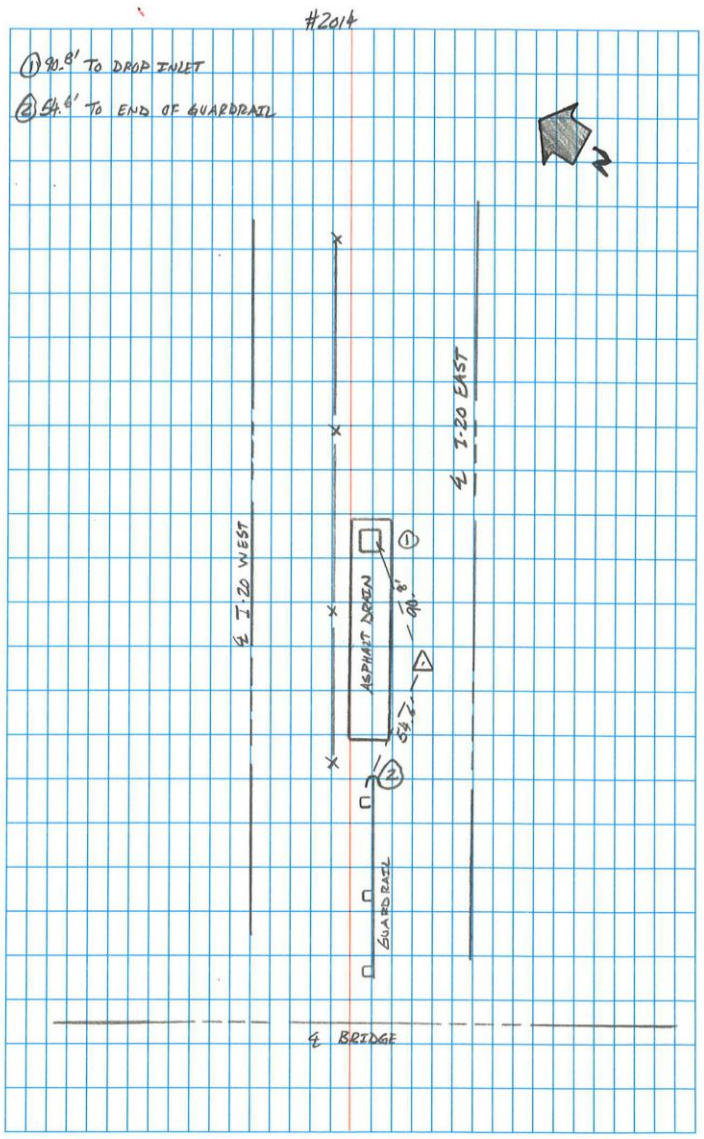
	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	776388.03	1937794.58	380.51	

PHOTOS:





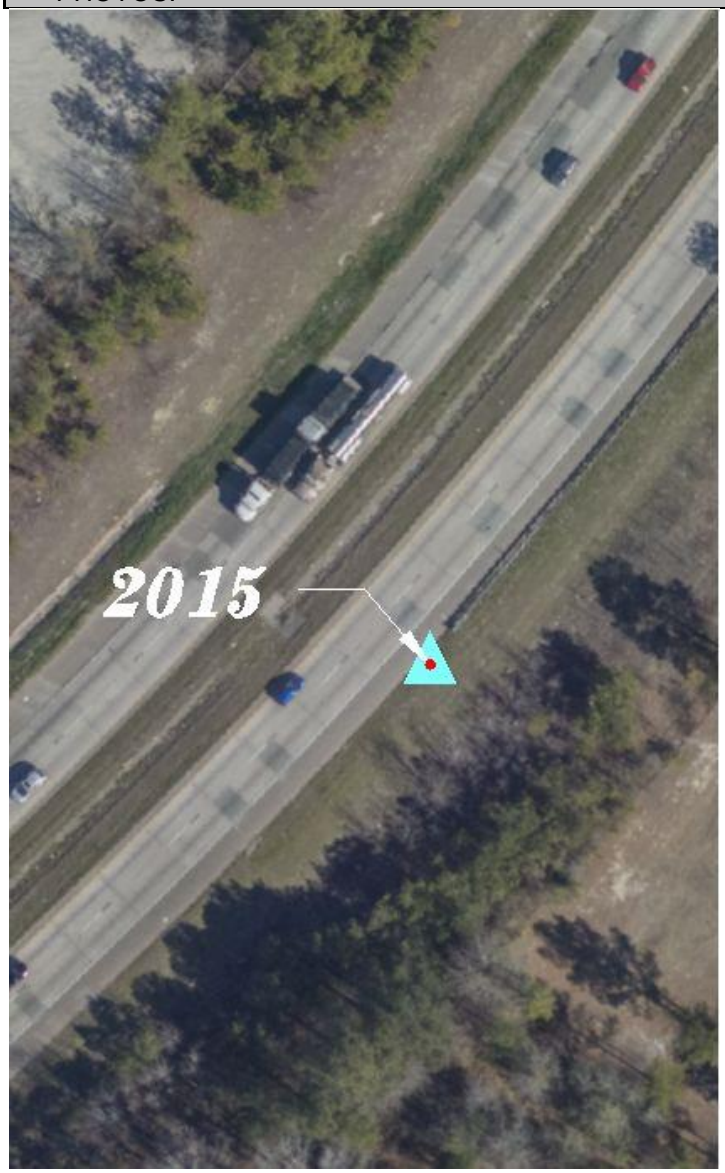
Point ID	2015
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

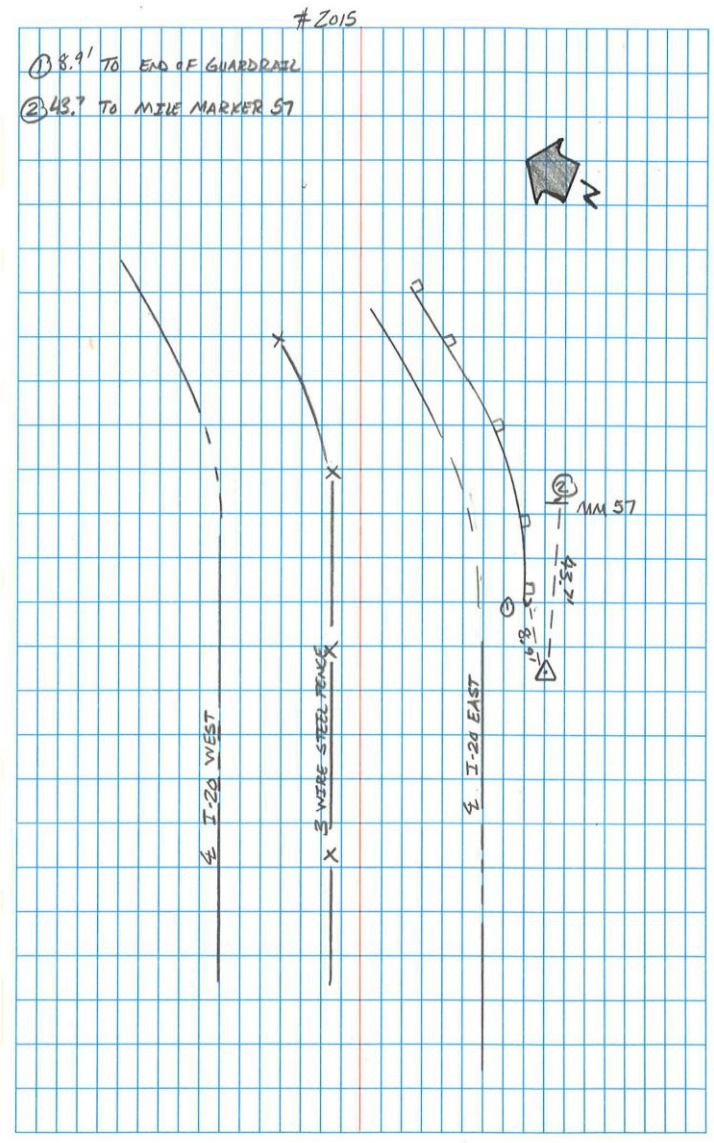
	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	777361.78	1939679.17	412.26	

PHOTOS:





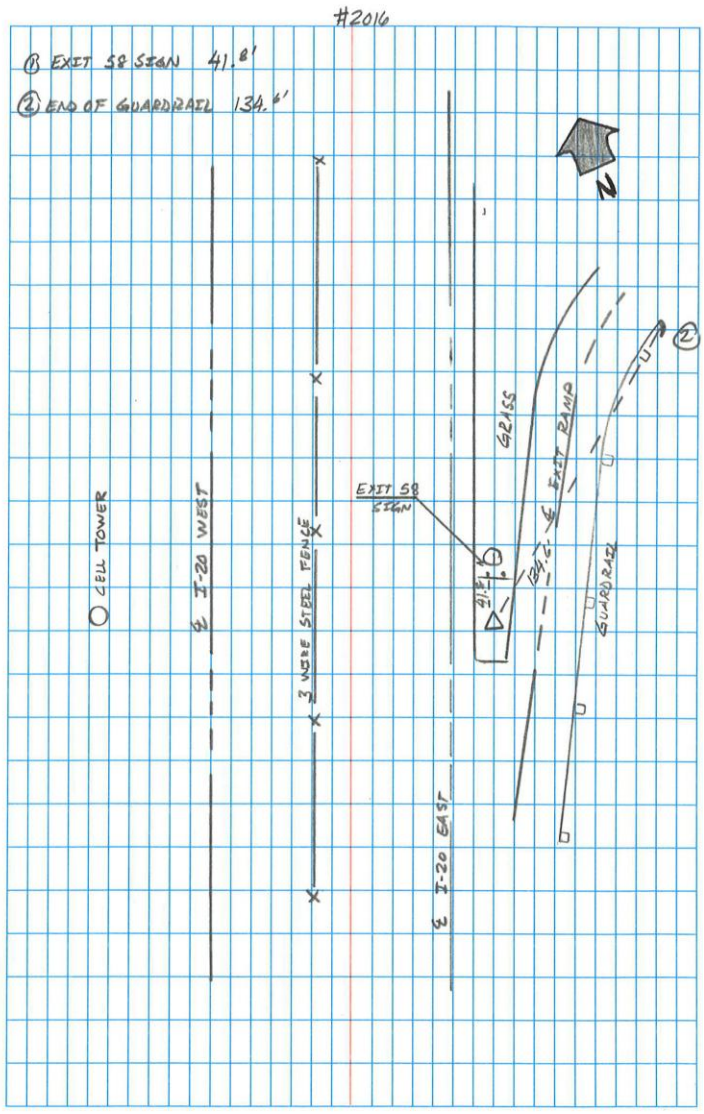
Point ID	2016
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	779379.04	1940577.17	372.49	

PHOTOS:



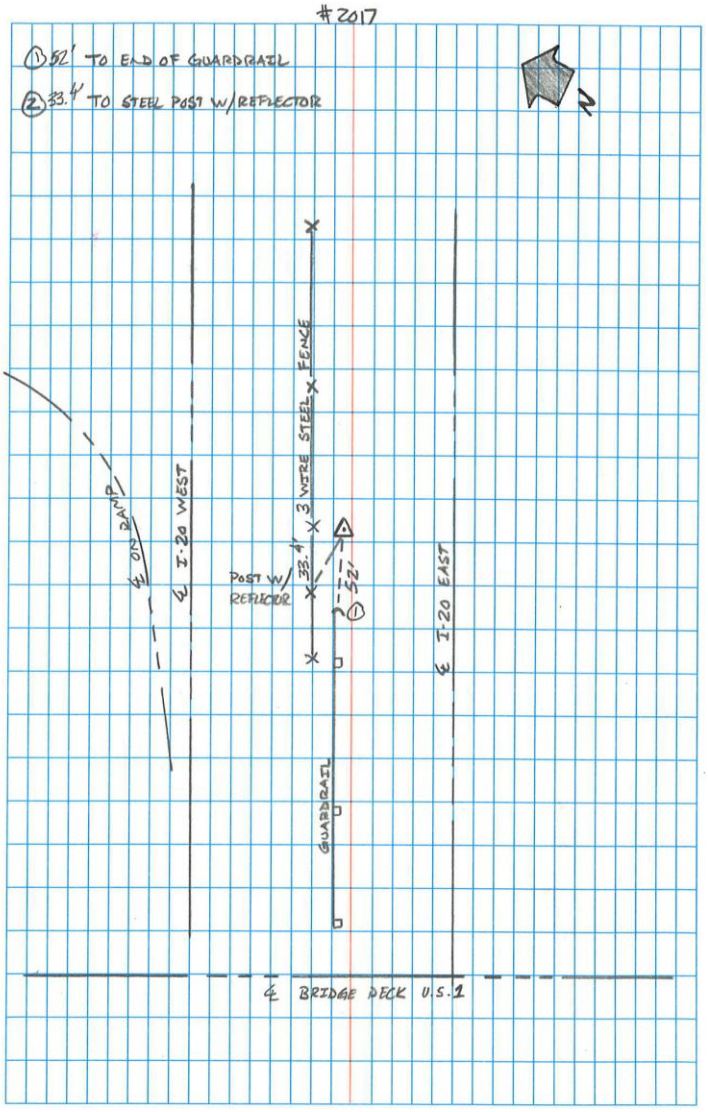
Point ID	2017
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	780697.60	1940994.56	350.02	

PHOTOS:



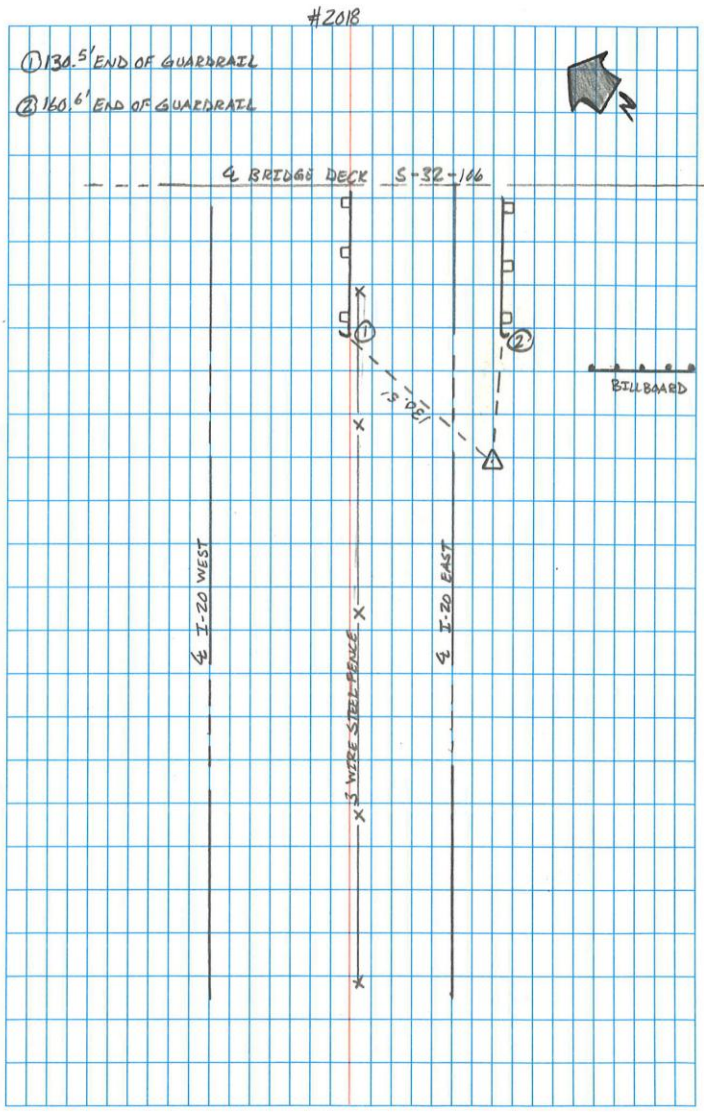
Point ID	2018
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	785264.39	1944186.11	360.97	

PHOTOS:



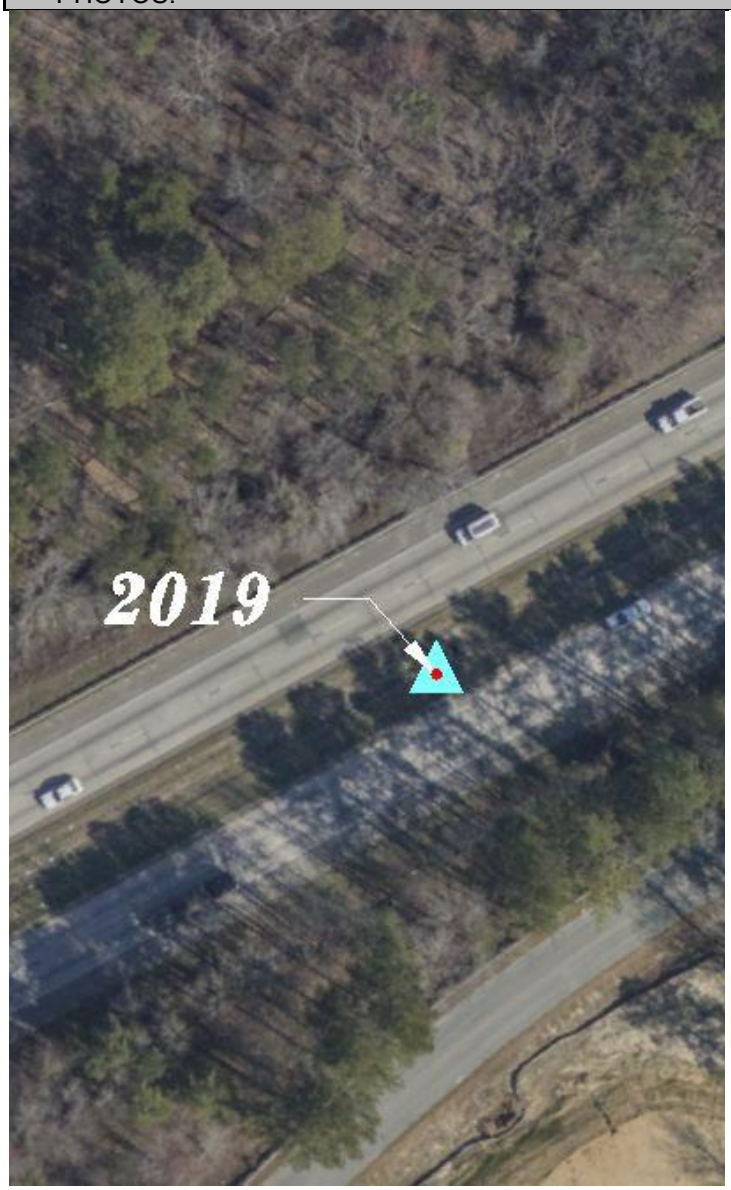
Point ID	2019
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

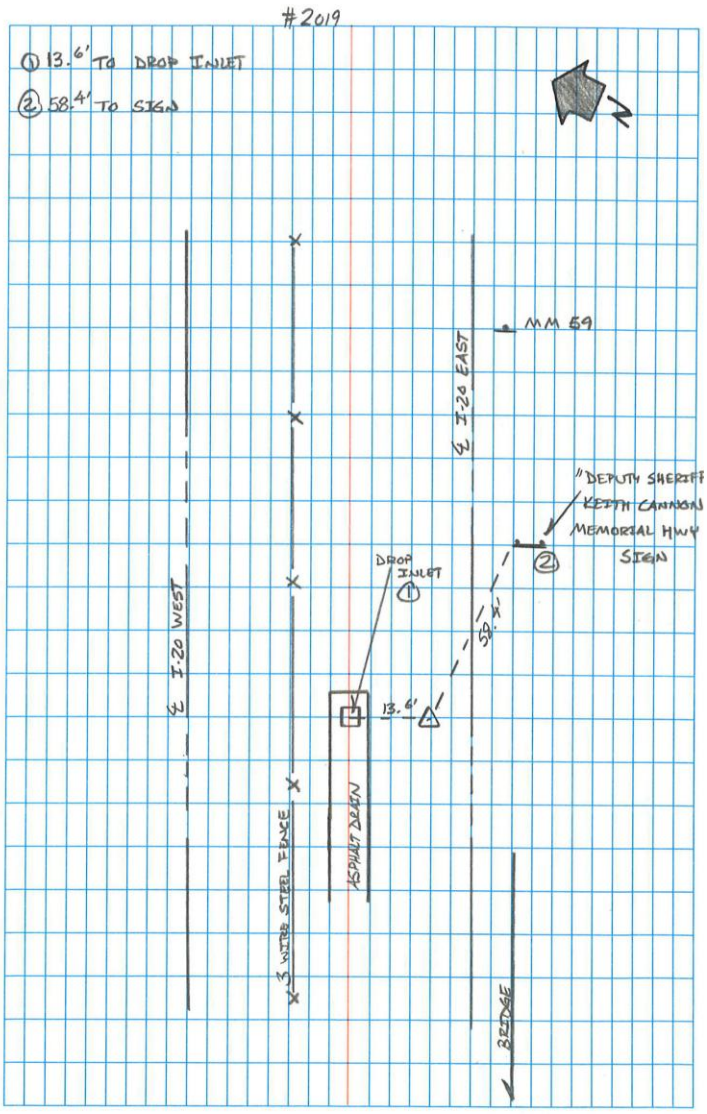
	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	785762.43	1944984.32	346.50	

PHOTOS:





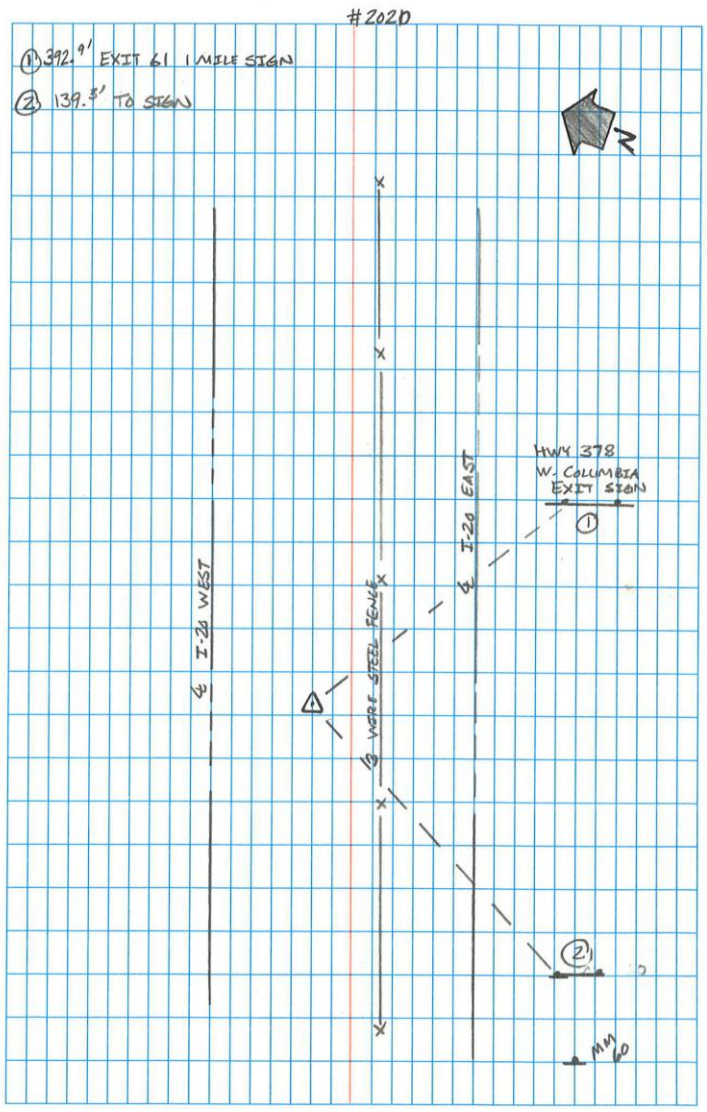
Point ID	2020
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	789658.52	1949188.77	306.38	

PHOTOS:



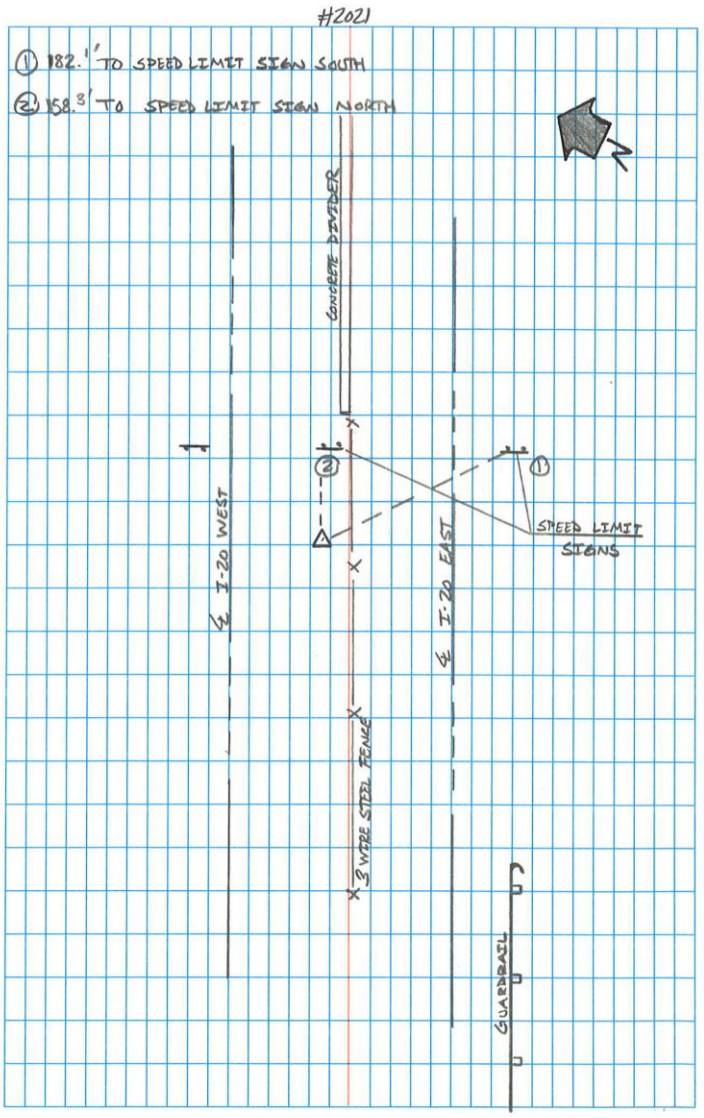
Point ID	2021
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	790080.21	1950053.39	317.59	

PHOTOS:



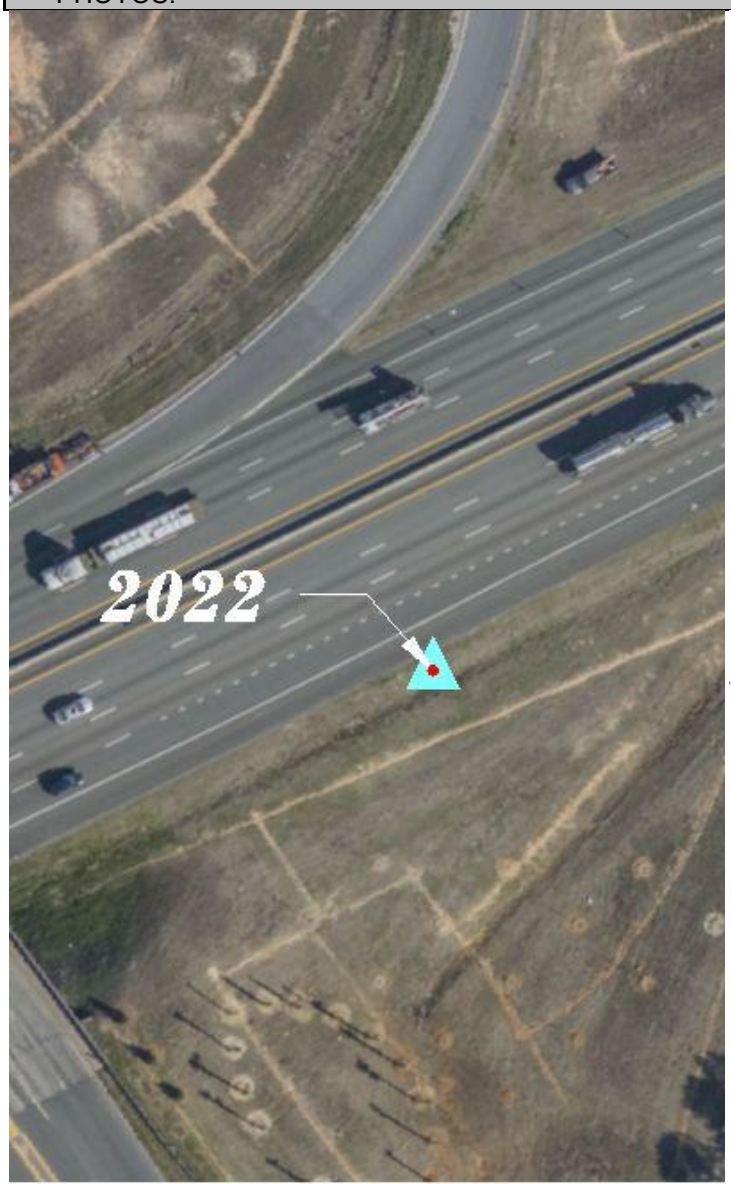
Point ID	2022
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

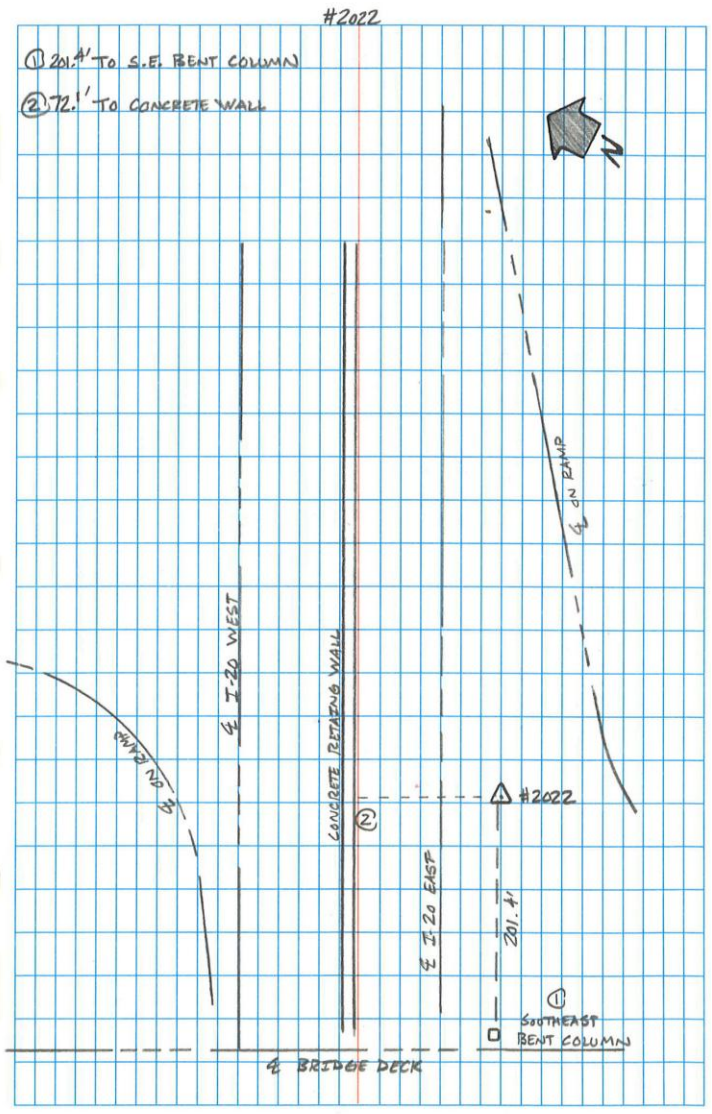
	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	792499.43	1955194.87	362.79	

PHOTOS:





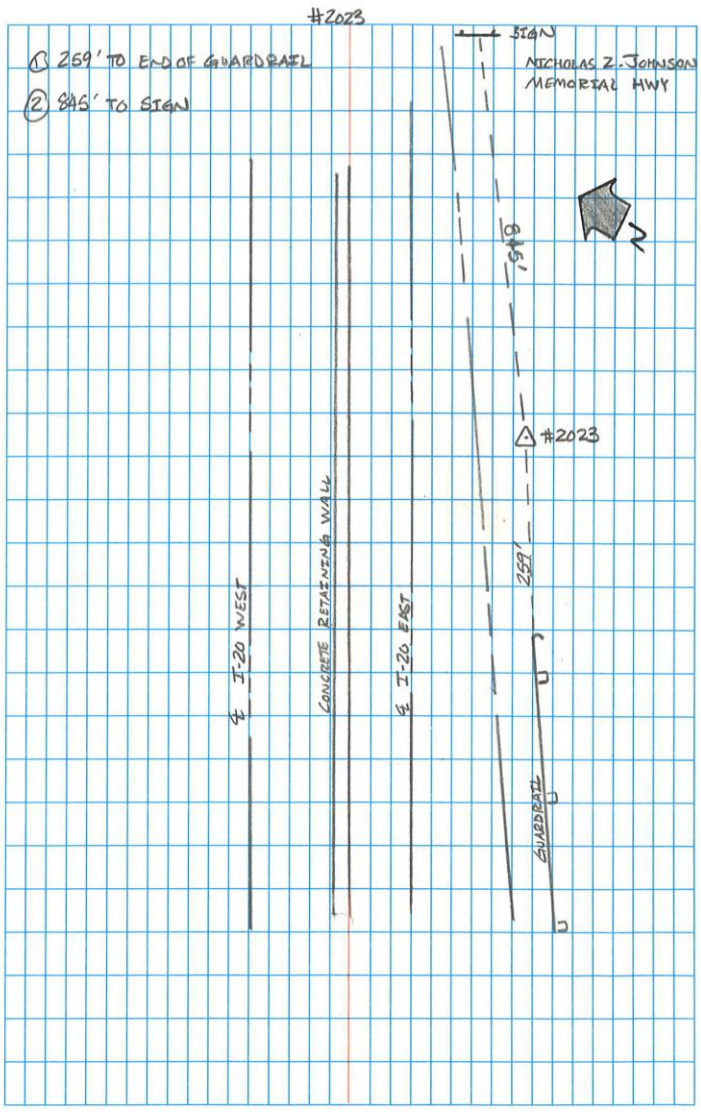
Point ID	2023
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	793065.72	1956347.46	358.58	

PHOTOS:



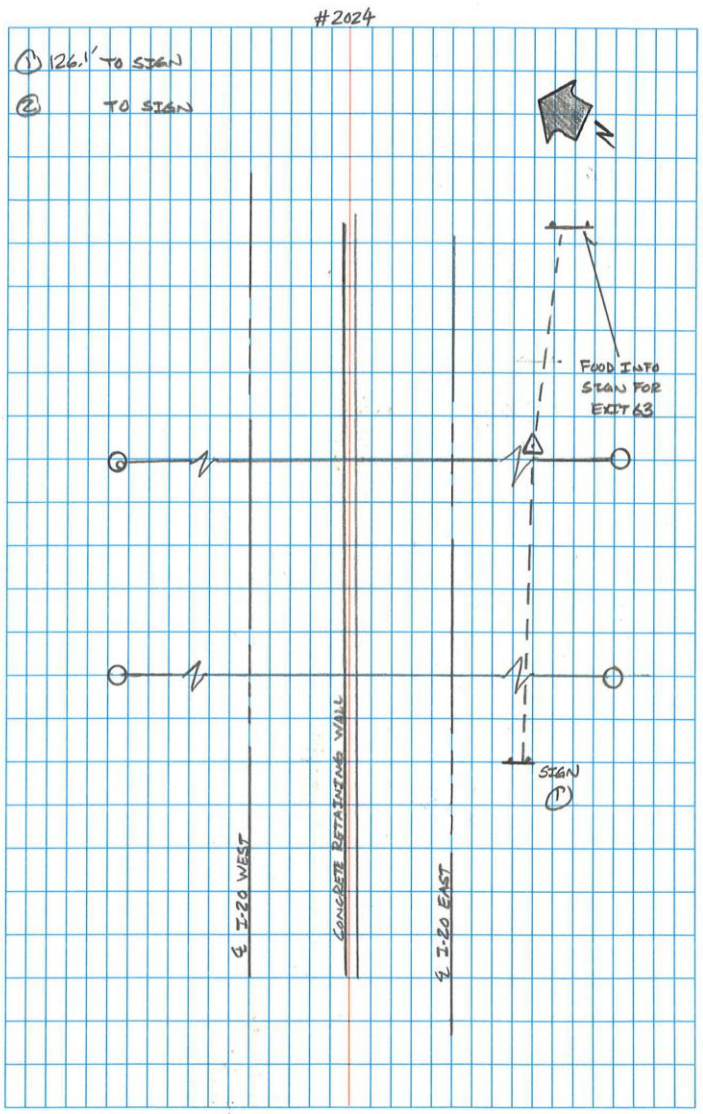
Point ID	2024
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	795928.27	1959477.64	246.40	

PHOTOS:



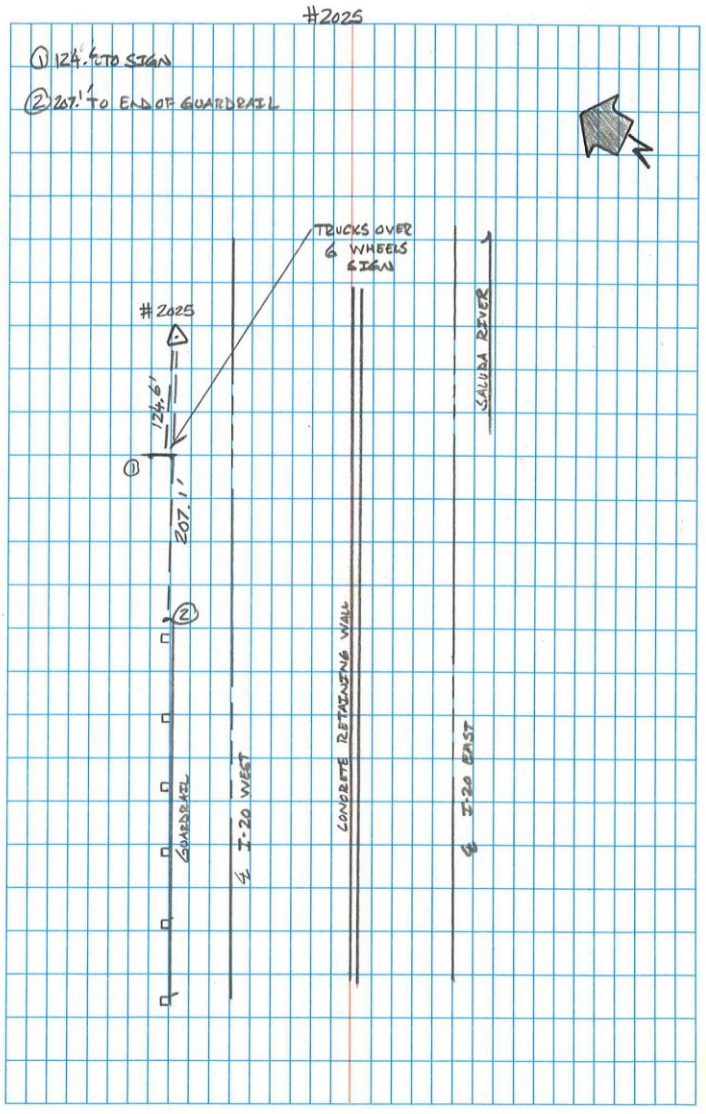
Point ID	2025
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	797124.43	1960489.79	193.65	

PHOTOS:



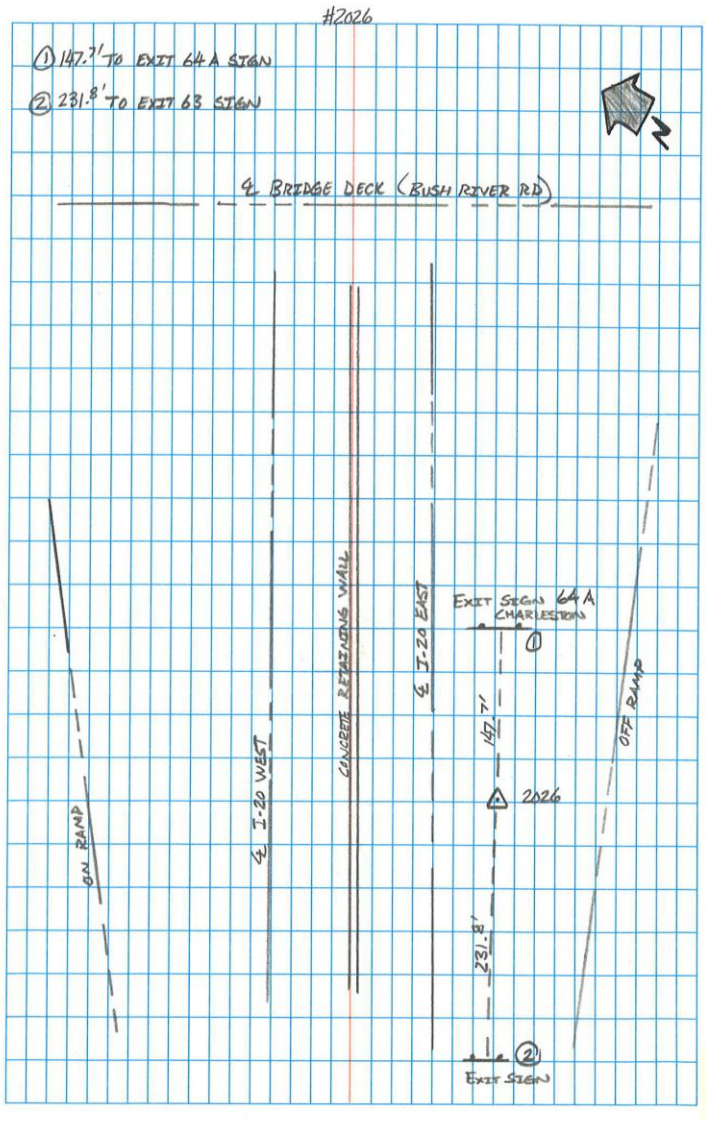
Point ID	2026
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	799183.30	1962682.18	216.62	

PHOTOS:



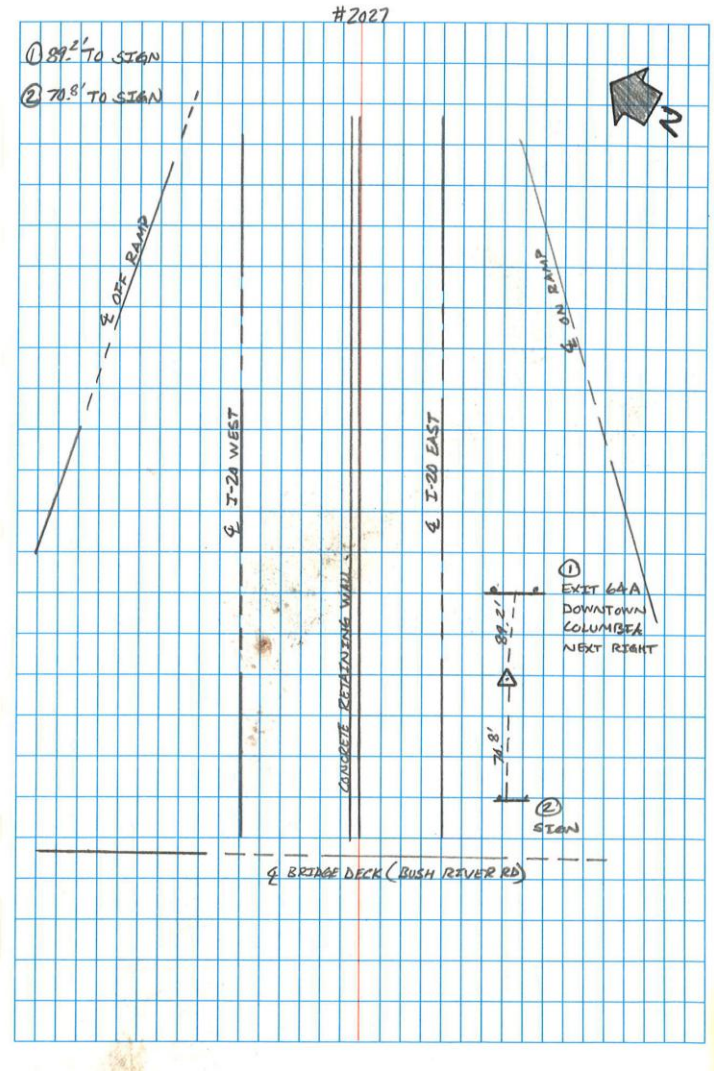
Point ID	2027
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	799993.20	1963497.54	230.98	

PHOTOS:



Section 3E – I-20 Aerial Control Coordinate Report

Coordinate System:
Horizontal Datum – SPC South Carolina (3900)
Vertical Datum – NAVD 88
International Feet
Geoid12A

POINT	NORTHING	EASTING	ELEVATION
8001	757359.33	1902844.55	396.69
8002	757637.03	1903243.62	416.10
8003	757906.61	1903644.58	434.57
8004	758161.89	1904060.96	445.21
8005	758396.57	1904482.65	446.13
8006	758626.86	1904938.15	443.48
8007	758832.36	1905396.29	440.75
8008	759013.49	1905853.92	438.36
8009	759219.89	1906391.25	435.60
8010	759325.03	1906336.53	435.60
8011	759150.38	1905878.06	438.36
8012	758975.08	1905425.67	441.56
8013	758792.30	1904982.05	444.30
8014	758584.38	1904532.29	447.00
8015	758351.00	1904081.77	447.04
8016	758112.54	1903667.26	439.51
8017	757861.22	1903265.33	424.52
8018	757550.51	1902811.08	401.58
8019	759405.83	1906879.55	431.33
8020	759579.70	1907334.11	419.19
8021	759765.19	1907822.03	398.75
8022	759964.86	1908340.44	376.61
8023	760143.50	1908812.10	363.15
8024	760326.30	1909287.98	367.12
8025	760503.28	1909742.51	376.41
8026	760695.77	1910190.55	384.91
8027	760931.84	1910379.97	388.06
8028	760714.66	1909933.89	379.60
8029	760531.40	1909498.20	371.37
8029A	760348.92	1909017.01	363.38
8030	760162.65	1908532.26	367.77
8031	760002.53	1908111.09	384.54
8032	759835.50	1907672.10	403.30

8033	759653.27	1907195.14	422.40
8034	759474.18	1906727.25	432.97
8035	761951.95	1912121.42	424.54
8036	761686.31	1911726.29	415.55
8037	761432.24	1911328.86	407.20
8038	761189.86	1910855.95	397.15
8039	761014.21	1910832.99	397.43
8040	761279.51	1911306.56	406.96
8041	761573.62	1911771.82	416.69
8042	761863.97	1912206.22	424.86
8043	765576.63	1917493.65	394.97
8044	765310.83	1917100.13	387.40
8045	765022.29	1916677.75	379.47
8046	764746.94	1916267.91	371.58
8047	764461.04	1915840.53	373.45
8048	764193.41	1915443.72	384.69
8049	763924.48	1915046.03	396.10
8050	763637.32	1914620.56	408.32
8051	763365.29	1914218.98	419.94
8052	763081.93	1913797.21	430.89
8053	762804.89	1913376.02	436.83
8054	762499.02	1912930.15	437.58
8055	762228.07	1912531.55	433.06
8056	762156.95	1912640.76	433.56
8057	762510.51	1913198.24	437.57
8058	762814.35	1913632.10	434.78
8059	763098.13	1914035.88	426.79
8060	763369.30	1914438.41	415.28
8061	763640.67	1914839.63	403.78
8062	763908.32	1915235.71	392.47
8063	764187.64	1915650.56	380.56
8064	764455.16	1916045.30	370.61
8065	764740.57	1916469.43	373.83
8066	765021.52	1916894.56	382.09
8067	765286.73	1917302.12	390.02
8068	765550.19	1917710.52	397.87
8069	765835.91	1918152.79	405.71
8070	766103.16	1918565.85	405.78
8071	766380.76	1918996.15	396.46
8072	766634.14	1919388.35	384.77
8073	766931.57	1919849.23	376.84
8074	767223.85	1920301.91	380.78
8075	767526.58	1920769.30	385.49

8076	767806.42	1921202.31	389.95
8077	768094.18	1921649.40	394.47
8078	768362.43	1922065.21	397.81
8079	768641.80	1922497.49	396.32
8080	768929.65	1922944.13	393.49
8081	769227.94	1923183.12	391.63
8082	768962.82	1922773.36	394.20
8083	768705.57	1922375.39	396.66
8084	768449.05	1921976.96	397.81
8085	768188.13	1921572.97	394.67
8086	767927.24	1921169.81	390.57
8087	767664.16	1920761.82	386.38
8088	767393.49	1920343.72	382.20
8089	767124.11	1919926.16	377.92
8090	766861.25	1919499.34	379.68
8091	766597.20	1919109.38	391.27
8092	766322.63	1918685.71	403.10
8093	766064.69	1918285.33	407.04
8094	765849.65	1917897.70	402.64
8095	772843.18	1928948.30	403.52
8096	772618.30	1928444.75	414.21
8097	772324.60	1927962.29	420.55
8098	772069.24	1927564.21	424.17
8099	771781.81	1927139.07	428.65
8100	771523.79	1926740.95	431.83
8101	771259.80	1926332.77	427.81
8102	771021.95	1925964.85	419.04
8103	770768.21	1925572.02	409.74
8104	770500.78	1925155.94	400.50
8105	770241.81	1924756.56	396.26
8106	769983.29	1924353.90	393.61
8107	769722.90	1923950.92	390.85
8108	769465.97	1923552.35	389.67
8109	769189.26	1923345.56	391.03
8110	769435.22	1923725.93	389.65
8111	769710.53	1924152.31	391.76
8112	769969.59	1924553.03	394.47
8113	770242.68	1924976.45	397.35
8114	770500.69	1925375.92	403.43
8115	770762.21	1925779.45	413.00
8116	771029.25	1926187.67	422.95
8117	771287.97	1926580.05	430.52
8118	771563.30	1926995.89	430.37

8119	771854.15	1927433.30	426.17
8120	772155.62	1927896.32	420.49
8121	775034.86	1934302.91	413.60
8122	774832.76	1933803.91	419.89
8123	774633.50	1933311.92	424.01
8124	774438.33	1932829.66	426.99
8125	774247.82	1932357.30	430.06
8126	774046.08	1931861.39	433.18
8127	773846.40	1931366.15	428.99
8128	773572.99	1930685.41	415.93
8129	773341.58	1930086.54	404.21
8130	773059.34	1929412.55	395.73
8131	772863.40	1929216.60	396.92
8132	773033.49	1929610.24	394.86
8133	773240.71	1930124.60	404.39
8134	773431.64	1930667.12	414.41
8135	773655.31	1931192.51	424.70
8136	773857.53	1931663.93	432.45
8137	774055.68	1932142.81	431.62
8138	774274.33	1932683.68	428.13
8139	774482.32	1933197.99	424.75
8140	774671.82	1933665.34	421.56
8141	774874.29	1934166.61	415.66
8142	775069.21	1934648.01	409.51
8143	775259.74	1935117.37	404.49
8144	775456.05	1935605.12	402.09
8145	775664.44	1936120.81	399.72
8146	775869.32	1936628.29	397.60
8147	776060.57	1937100.66	394.63
8148	776287.48	1937659.25	384.57
8149	776483.42	1938146.75	375.41
8150	776689.63	1938657.21	381.54
8151	776910.76	1939123.69	395.47
8152	777261.33	1939570.27	408.65
8153	777664.01	1939891.75	419.42
8154	778127.95	1940117.67	419.08
8155	778702.91	1940323.97	402.04
8156	779442.92	1940589.12	369.79
8157	779964.99	1940776.68	357.06
8158	779892.33	1941289.06	371.90
8159	780210.26	1941482.73	372.81
8160	780662.63	1941041.15	350.95
8161	781166.91	1941220.17	346.85

8162	781659.53	1941397.29	341.61
8163	782183.93	1941572.40	334.96
8164	782682.79	1941750.95	331.51
8165	783186.22	1941931.64	340.31
8166	783682.78	1942152.93	350.97
8167	784103.04	1942446.14	359.34
8168	784487.22	1942839.05	362.10
8169	784760.77	1943247.83	365.49
8170	785019.74	1943719.35	366.90
8171	785315.31	1944256.89	361.01
8172	785657.09	1944876.93	351.43
8173	785938.53	1945391.34	332.18
8174	786232.22	1945854.27	312.99
8175	786633.70	1946316.15	290.31
8176	787109.64	1946714.20	266.43
8177	787555.04	1947026.52	252.38
8178	788006.86	1947343.81	260.95
8179	788482.67	1947690.30	274.16
8180	788983.10	1948182.06	287.19
8181	789306.17	1948629.73	295.78
8182	789563.08	1949117.96	305.69
8183	789775.40	1949550.90	313.15
8184	790008.32	1950031.72	318.51
8185	790229.34	1950482.37	311.78
8186	790464.29	1950962.88	293.89
8187	790680.52	1951405.98	281.46
8188	790888.96	1951835.74	286.35
8189	791101.11	1952270.72	304.69
8190	791296.35	1952671.48	322.06
8191	791508.71	1953105.06	335.66
8192	791675.74	1953451.35	344.12
8193	791884.60	1953880.08	354.81
8194	792126.20	1954372.91	365.47
8195	792331.13	1954837.32	365.94
8196	792562.44	1955290.47	363.98
8197	791853.77	1954791.28	369.19
8198	791889.53	1955305.98	387.59
8199	792318.56	1955322.36	376.00
8200	792795.67	1955746.15	361.31
8201	793024.27	1956252.27	359.99
8202	793293.46	1956696.40	349.50
8203	793601.81	1957123.96	333.59
8204	793947.58	1957514.12	327.12

8205	794298.65	1957863.16	323.30
8206	794632.36	1958190.53	317.77
8207	794945.26	1958498.49	303.15
8208	795285.32	1958832.31	284.14
8209	795634.61	1959176.05	264.38
8210	795985.13	1959520.27	244.72
8211	796349.30	1959878.22	224.22
8212	796688.72	1960211.58	205.31
8213	797037.89	1960554.37	194.72
8214	797366.88	1960877.28	191.80
8215	797898.61	1961399.53	198.65
8216	798253.11	1961749.24	212.57
8217	798289.68	1961654.13	211.38
8218	797996.98	1961365.63	199.92
8219	797402.79	1960780.71	191.96
8220	797039.40	1960422.66	195.82
8221	796693.67	1960082.97	208.65
8222	796339.95	1959734.57	228.54
8223	795988.94	1959389.36	248.28
8224	795635.10	1959042.85	268.22
8225	795278.56	1958691.87	288.32
8226	794942.90	1958362.28	307.15
8227	794595.96	1958021.17	320.62
8228	794251.21	1957681.65	323.58
8229	793831.44	1957240.99	326.90
8230	793535.25	1956861.24	338.47
8231	793280.18	1956450.97	352.40
8232	793041.64	1956029.65	359.21
8233	792834.83	1955606.66	361.95
8234	792636.13	1955199.02	364.29
8235	793094.40	1955025.18	372.03
8236	792897.03	1954608.50	379.29
8237	792619.66	1954513.66	371.23
8238	792444.86	1954779.40	366.37
8239	792216.21	1954329.83	365.33
8240	792014.81	1953867.66	354.85
8241	791781.82	1953418.97	344.38
8242	791562.53	1952998.30	333.85
8243	791355.85	1952575.82	319.67
8244	791124.50	1952102.81	298.89
8245	790922.49	1951689.18	283.45
8246	790659.03	1951146.80	285.43
8247	790454.44	1950728.21	301.21

8248	790240.86	1950290.41	315.35
8249	790058.27	1949916.50	318.23
8250	789800.98	1949387.74	310.75
8251	789528.32	1948827.59	302.83
8252	789222.93	1948336.20	294.50
8253	788867.59	1947913.12	286.10
8254	788425.32	1947521.31	273.37
8255	787954.91	1947189.28	257.26
8256	787423.90	1946818.69	255.17
8257	786976.81	1946494.85	272.55
8258	786545.37	1946087.04	294.86
8259	786279.07	1945755.32	310.98
8260	785951.15	1945213.52	336.48
8261	785653.96	1944676.87	355.09
8262	785341.81	1944103.87	362.28
8263	785095.91	1943657.69	367.04
8264	784827.17	1943171.75	367.99
8265	784534.41	1942745.05	366.66
8266	784168.28	1942375.90	363.98
8267	783738.61	1942075.04	355.72
8268	783222.15	1941843.63	342.38
8269	782738.35	1941669.97	331.90
8270	782289.02	1941509.37	334.05
8271	781579.43	1941247.34	343.27
8272	781023.19	1941055.30	348.60
8273	781035.41	1940538.43	362.98
8274	780573.83	1940326.45	366.07
8275	780384.10	1940813.58	353.74
8276	779948.62	1940656.34	357.26
8277	779509.19	1940499.69	368.35
8278	778971.66	1940319.87	391.56
8279	778429.39	1940126.73	412.36
8280	777807.16	1939867.36	414.86
8281	777344.86	1939517.55	403.18
8282	777025.10	1939125.28	391.18
8283	776815.23	1938709.73	381.79
8284	776620.94	1938227.52	374.87
8285	776400.95	1937686.07	383.32
8286	776202.05	1937193.62	392.88
8287	776015.73	1936730.46	397.09
8288	775822.31	1936250.57	399.11
8289	775626.88	1935769.40	401.22
8290	775433.92	1935290.40	403.36

8291	775230.45	1934786.36	407.41
8900	772616.02	1928707.94	408.23
8901	773735.34	1929259.86	408.04
9000	762403.91	1912444.62	442.26
9001	762424.45	1911944.32	453.63
9002	762059.03	1911640.49	436.48
9003	761157.35	1911604.14	417.40
9004	761213.59	1912099.81	436.29
9005	761631.37	1912433.92	433.90
9006	772686.27	1929197.21	407.64
9007	772662.05	1929614.12	420.75
9008	772965.28	1930055.19	412.57
9009	773542.00	1930182.79	414.77
9010	773553.79	1929880.37	418.20
9011	773743.17	1929804.29	411.52
9012	773346.82	1928952.22	404.14
9013	772877.31	1928729.51	406.01

Section 4A - Interstate 77 Procedure Summary

Horizontal Coordinates

The horizontal coordinates for both the survey and aerial control for Interstate 77 were established through a combination of static, rapid-static, and post-processed kinematic GPS surveys referencing coordinates established on point numbers 2028 & 2048 detailed on the Project Introduction at the beginning of this report.

Real-time kinematic and/or static base stations were set on survey control points throughout the corridor. Rapid-static baselines were processed to the survey control points not used as static bases. Each survey control point was connected to at least 2 other survey control points. The aerial targets were located either through real-time kinematic or rapid-static GPS procedures referencing base stations on the survey control points.

Also included in this network were two NGS Survey Monuments, MTC NE 1 and MTC NE 3. The network was adjusted, being constrained to MTC NE 1, MTC NE 3, 2028, and 2048.

The GPS equipment used was Trimble R8 dual-frequency GNSS GPS receivers on 2 meter fixed height poles.

The coordinates are NAD83 (2011) South Carolina (3900) State Plane Zone and are reported in International Feet.

Elevations

The elevations for both the survey and aerial control were established through a differential leveling network, consisting of 17 interconnected loops, resulting in an overall combined FGCS precision of First Order Class I.

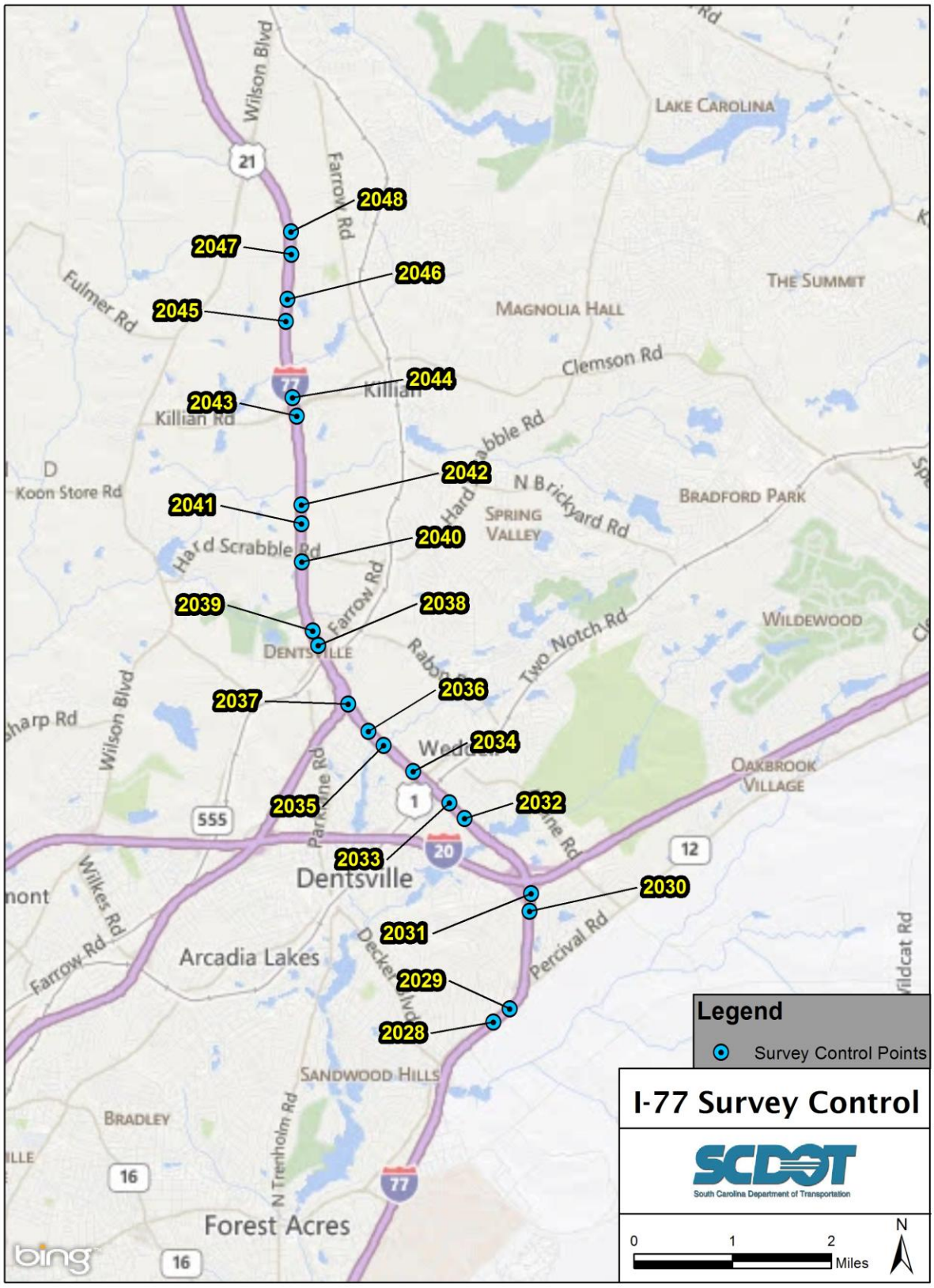
No published vertical monument was found onsite, so the elevations were derived from static GPS baselines from MTC NE 1 and MTC NE 3 to 4 of the survey control points. During the course of the network analysis, it was discovered that, while the GEOID separation reported for GEOID12A is correct on the data sheet, its application to the ellipsoidal height value results in a different orthometric height than what is reported. It is assumed that this is a result of rounding and significant digits. Therefore, the ellipsoidal values for the NGS reference monuments were held, since differential leveling was not used by NGS to establish the orthometric height. The orthometric height was determined with GEOID12A. A comparison from the GPS derived elevations to the differential levels was performed to ensure that the application of the reference elevation is of the highest precision. The results are below.

2037 ΔZ = 0.001 m
2038 ΔZ = 0.000 m - Held as reference elevation for levels
2039 ΔZ = 0.000 m
2040 ΔZ = 0.001 m

The leveling was performed using Leica Sprinter digital levels.

The elevations are NAVD88 and are reported in International Feet.

Section 4b – I-77 Survey Control Map



Section 4c – I-77 Survey Control Coordinate Report

Coordinate System:
Horizontal Datum – SPC South Carolina (3900)
Vertical Datum – NAVD 88
International Feet
Geoid12A

POINT	NORTHING	EASTING	ELEVATION
2028	805662.77	2021703.82	249.00
2029	806362.15	2022577.46	260.72
2030	811414.65	2023639.23	323.70
2031	812346.48	2023731.89	342.78
2032	816231.00	2020160.72	250.74
2033	817040.02	2019352.42	257.75
2034	818674.68	2017418.26	277.53
2035	820028.41	2015814.47	257.32
2036	820765.25	2015002.59	258.15
2037	822179.98	2013938.25	276.28
2038	825220.88	2012332.39	323.50
2039	825957.05	2012041.03	319.20
2040	829553.60	2011449.09	318.60
2041	831522.98	2011429.20	326.96
2042	832508.30	2011425.98	307.61
2043	837119.53	2011172.51	348.04
2044	838064.55	2010945.80	347.11
2045	842025.01	2010601.84	364.48
2046	843169.58	2010672.21	385.96
2047	845513.97	2010887.06	424.03
2048	846669.45	2010857.43	436.35

Quantum Spatial, Inc. – 1410 Indian Trail Rd., Norcross, GA 30093 – Ph. 770-564-9843 - www.quantumspatial.com

Section 4d – I-77 Survey Control Data Sheets

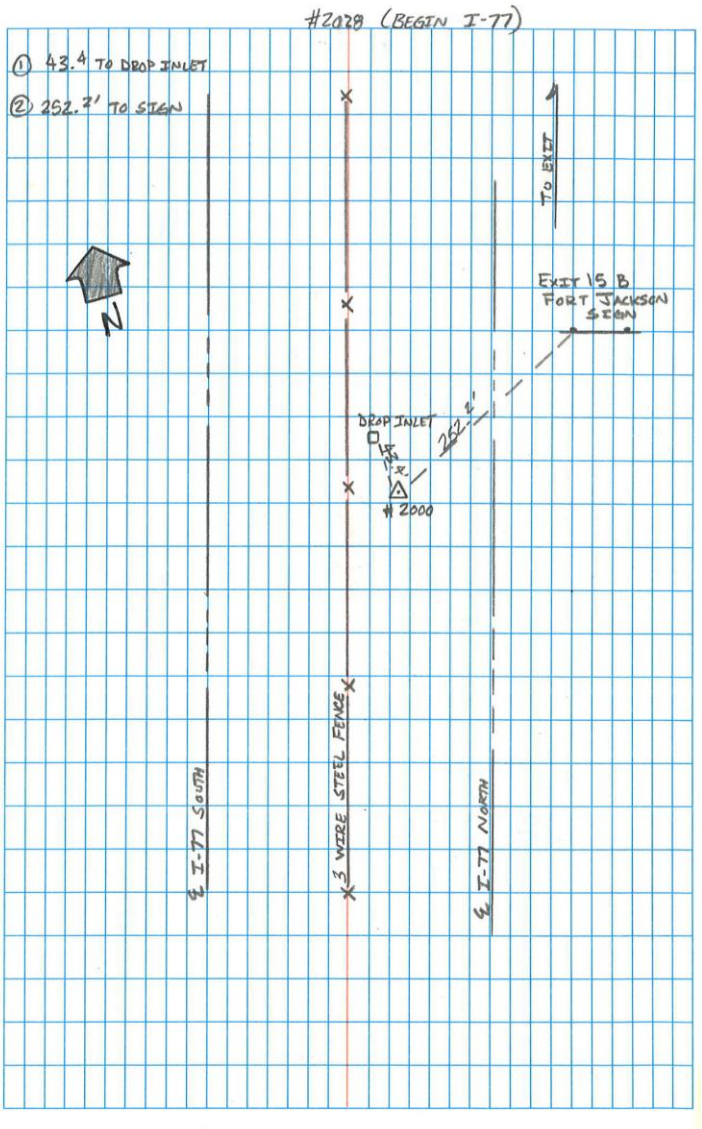
Point ID	2028
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	805662.77	2021703.82	249.00	

PHOTOS:



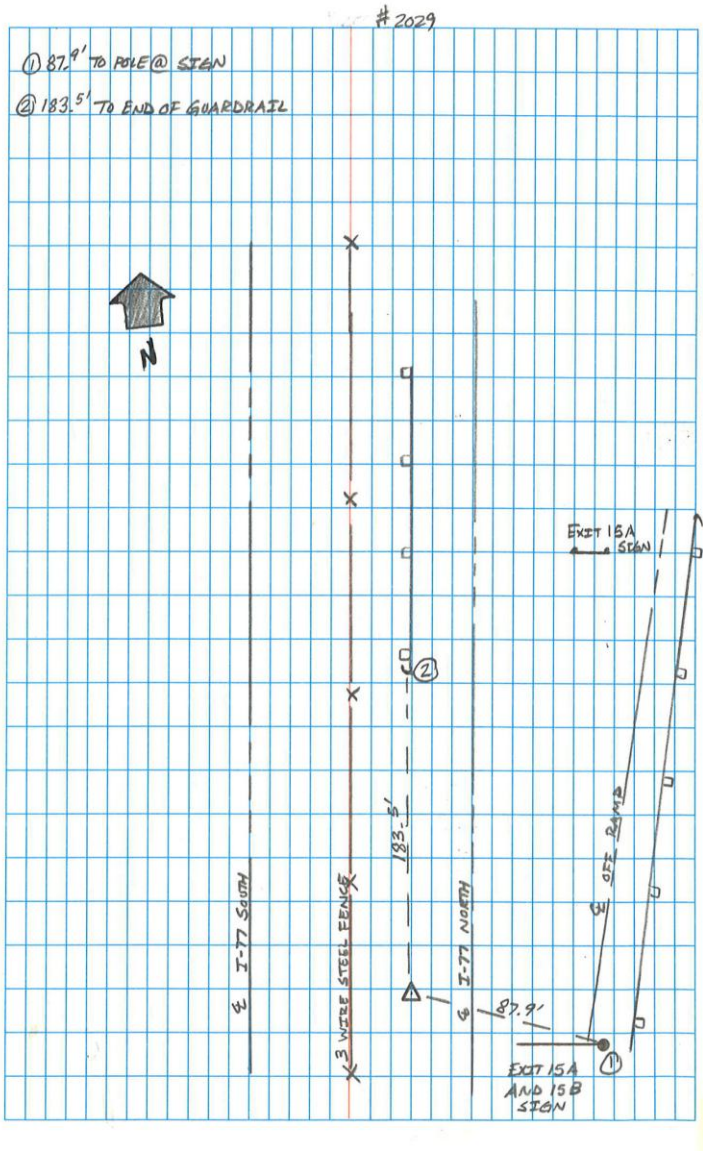
Point ID	2029
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	806362.15	2022577.46	260.72	

PHOTOS:



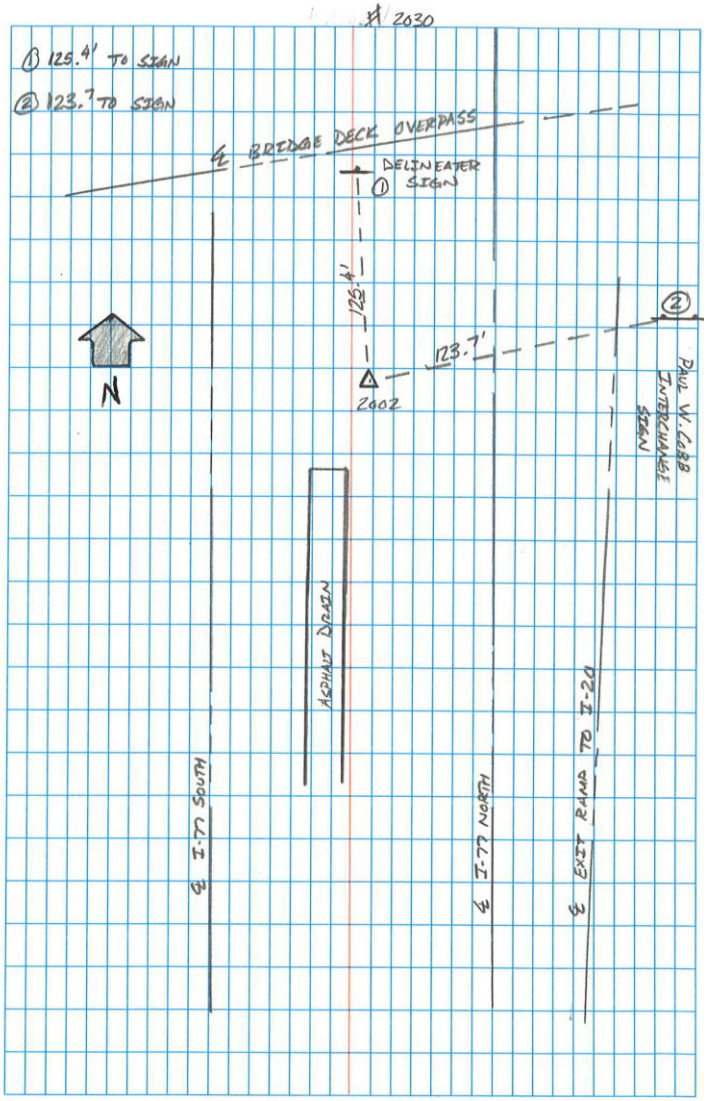
Point ID	2030
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	811414.65	2023639.23	323.70	

PHOTOS:



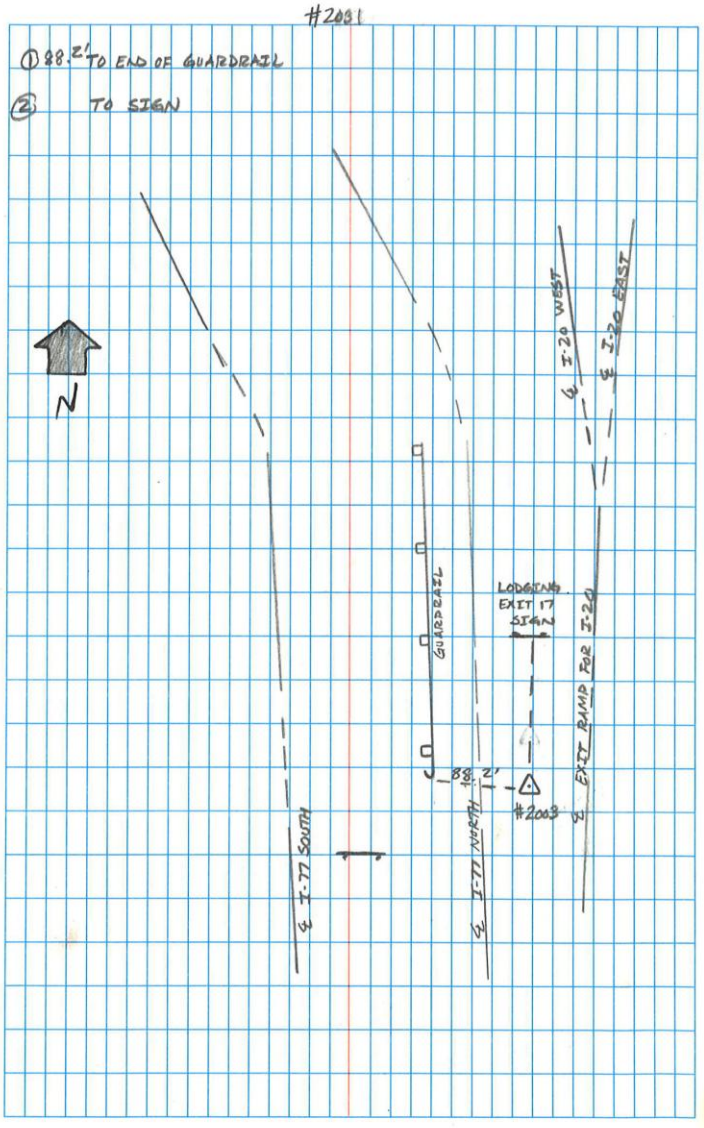
Point ID	2031
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	812346.48	2023731.89	342.78	

PHOTOS:



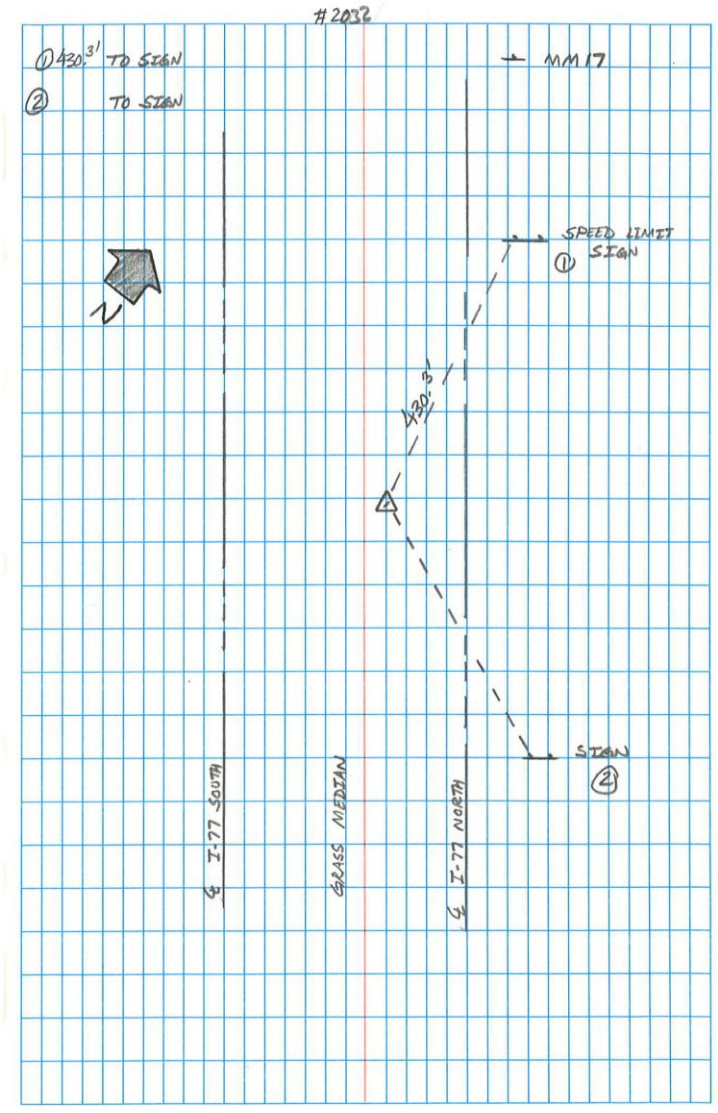
Point ID	2032
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	816231.00	2020160.72	250.74	

PHOTOS:



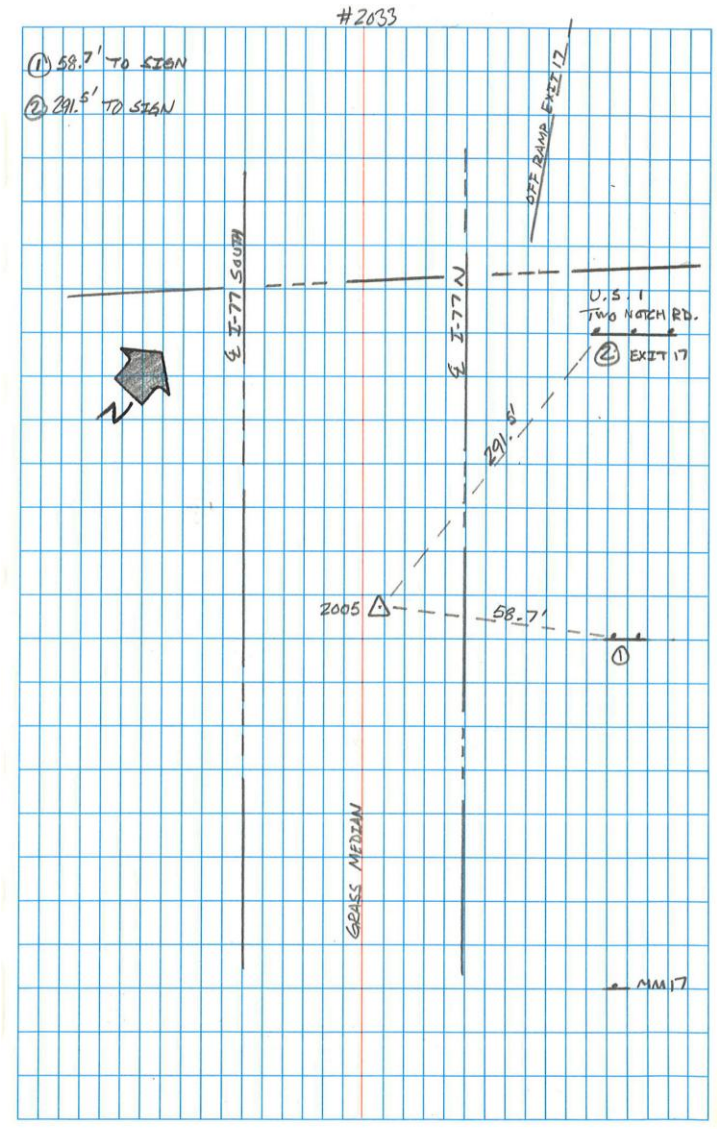
Point ID	2033
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	817040.02	2019352.42	257.75	

PHOTOS:



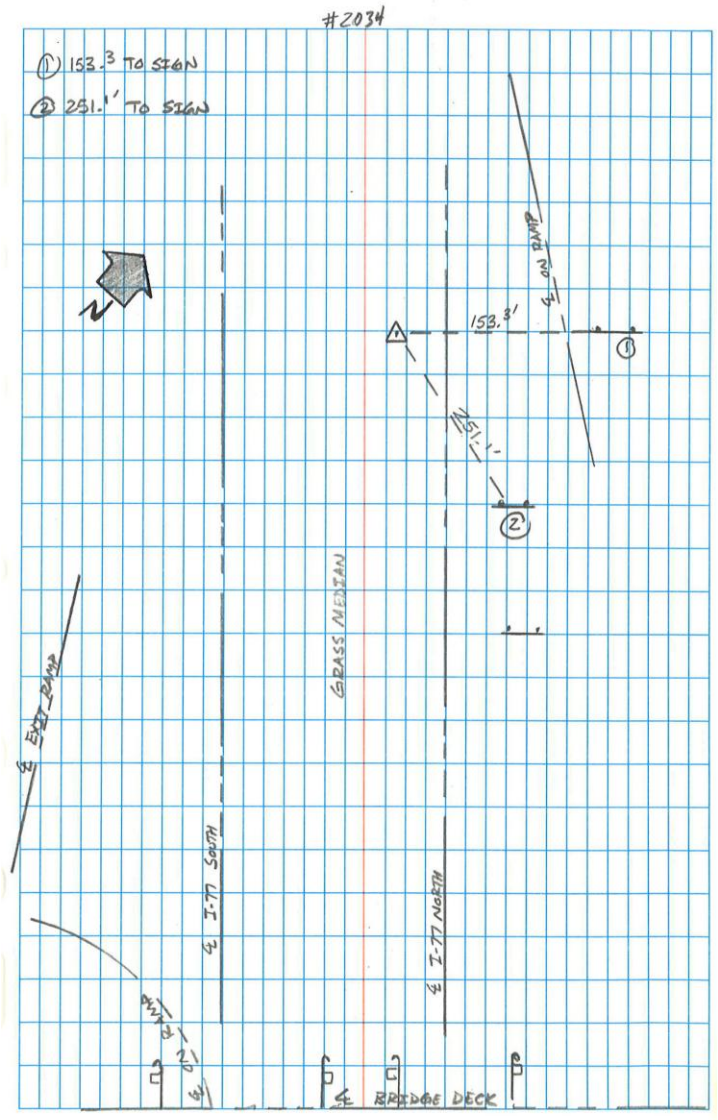
Point ID	2034
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	818674.68	2017418.26	277.53	

PHOTOS:



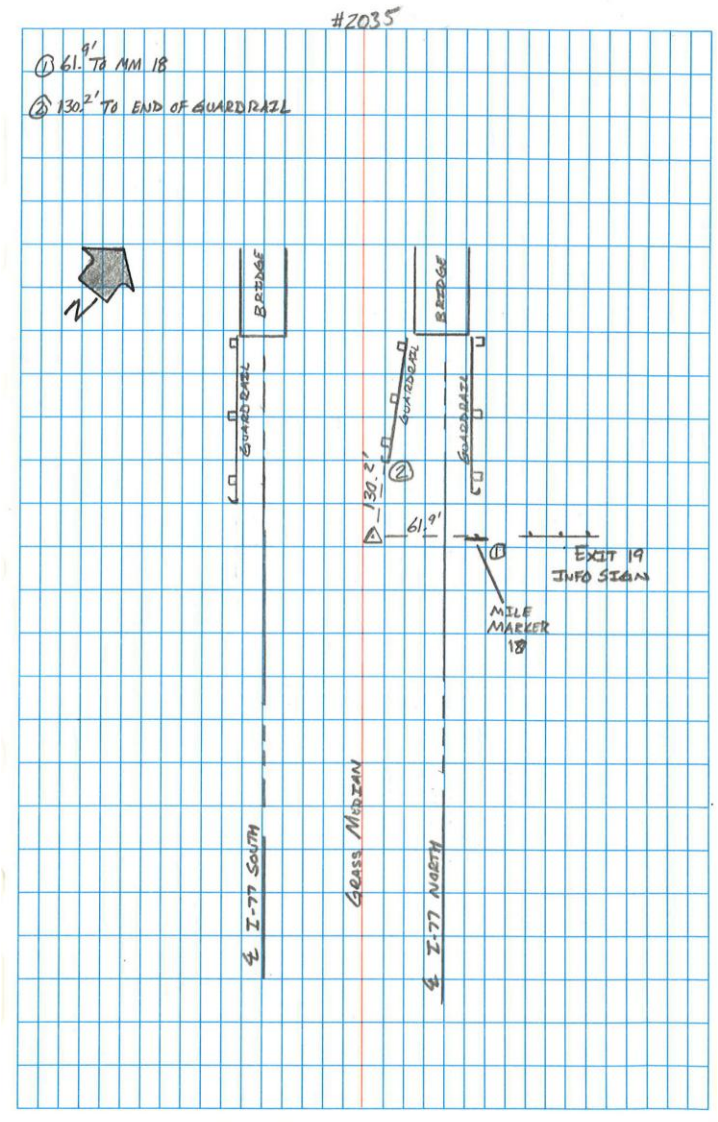
Point ID	2035
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	820028.41	2015814.47	257.32	

PHOTOS:



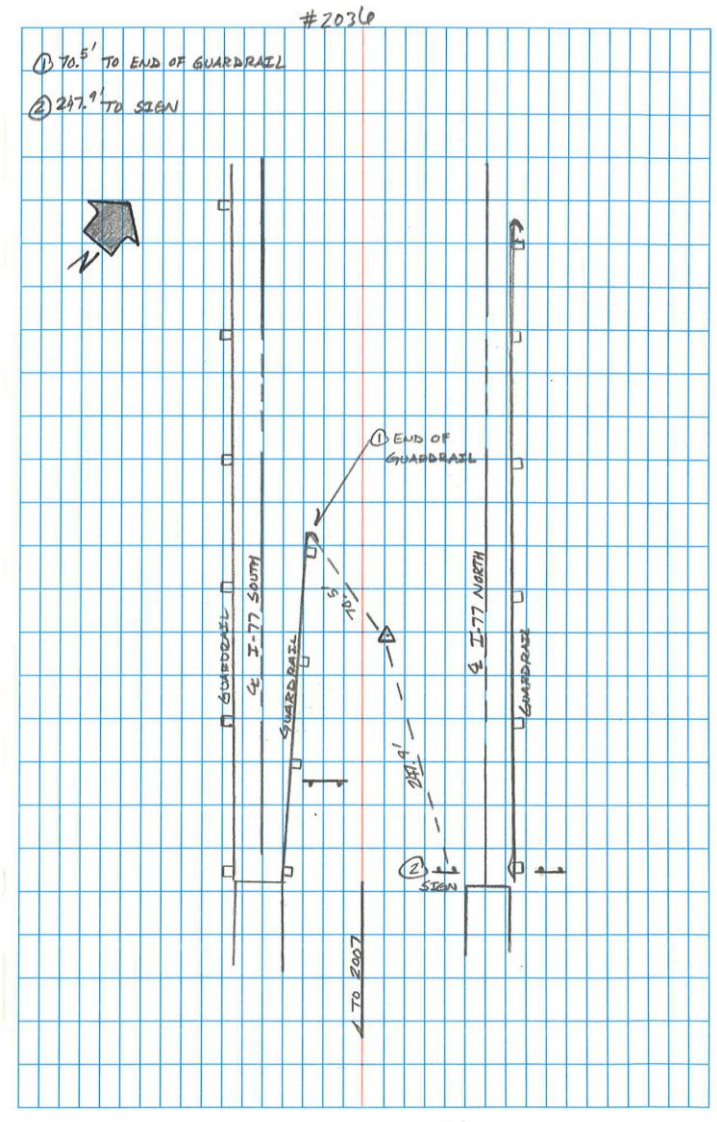
Point ID	2036
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	820765.25	2015002.59	258.15	

PHOTOS:



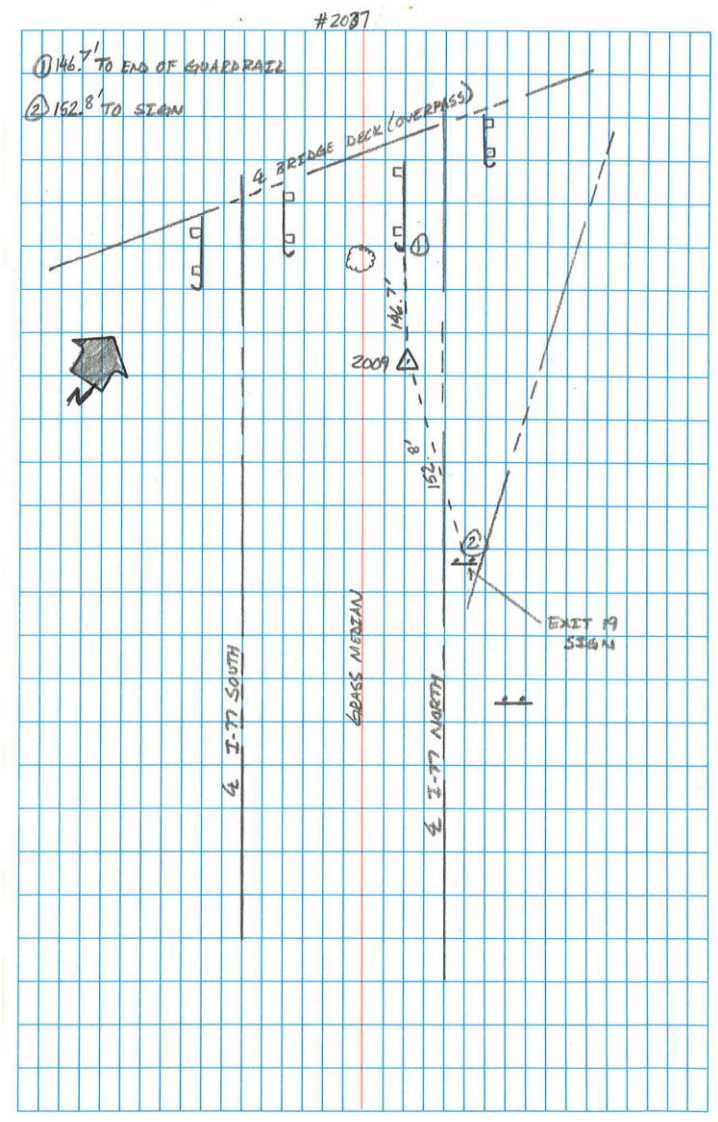
Point ID	2037
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	822179.98	2013938.25	276.28	

PHOTOS:



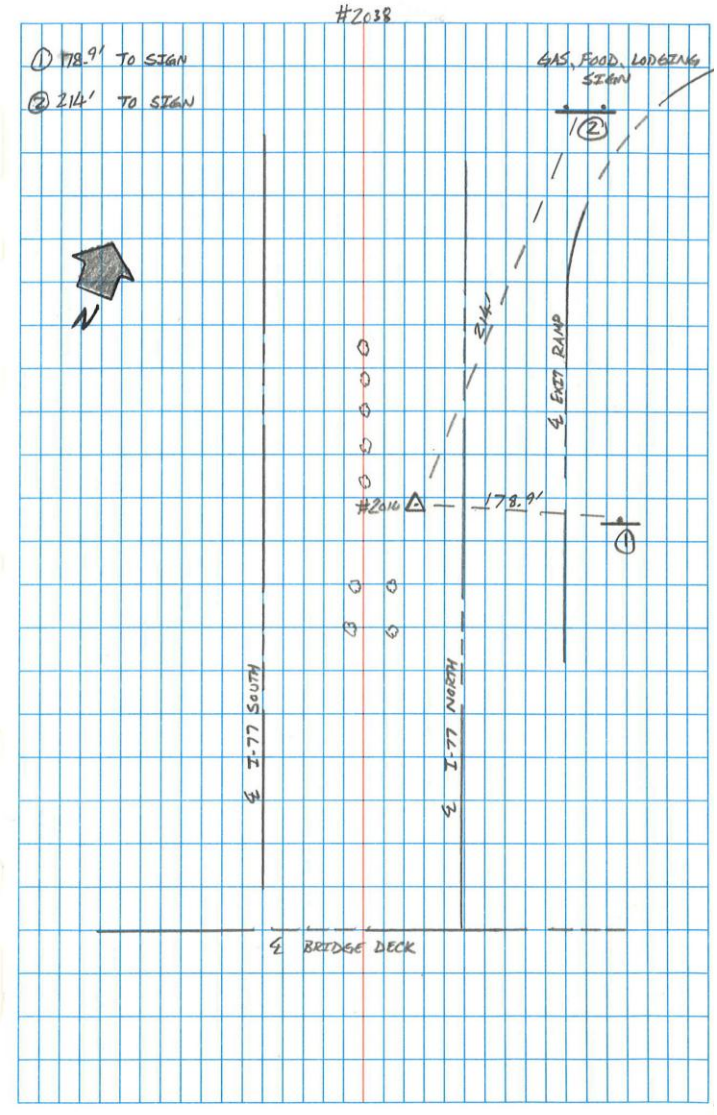
Point ID	2038
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	825220.88	2012332.39	323.50	

PHOTOS:



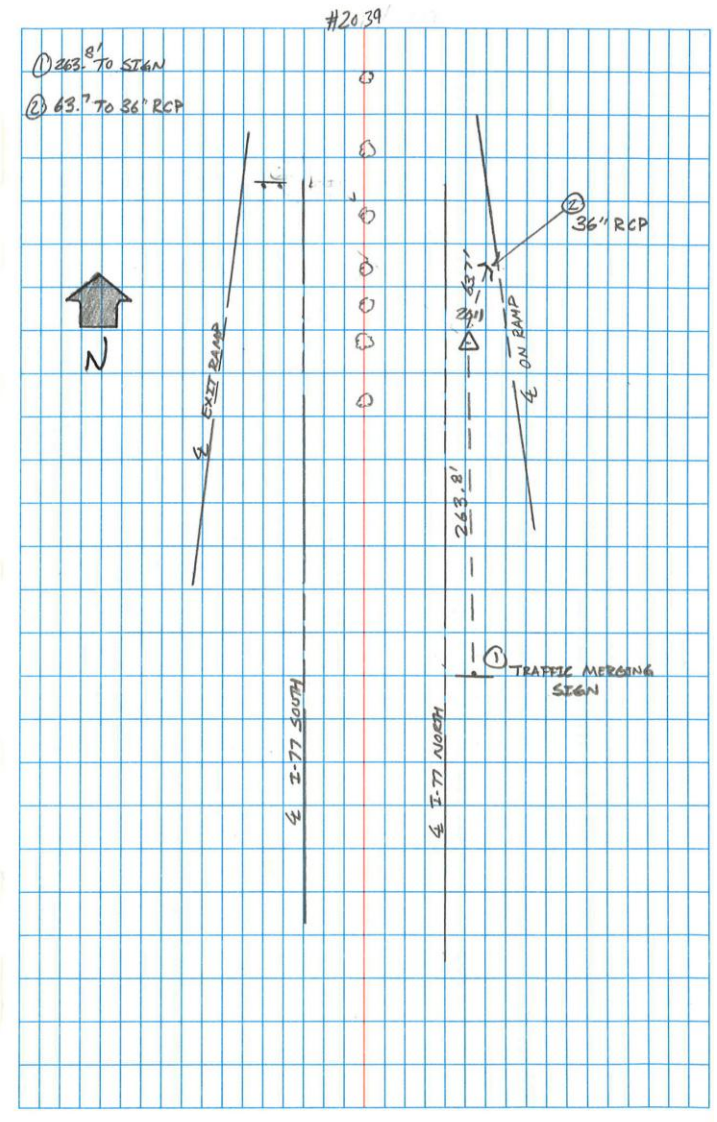
Point ID	2039
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	825957.05	2012041.03	319.20	

PHOTOS:



Quantum Spatial, Inc. – 1410 Indian Trail Rd., Norcross, GA 30093 – Ph. 770-564-9843 - www.quantumspatial.com

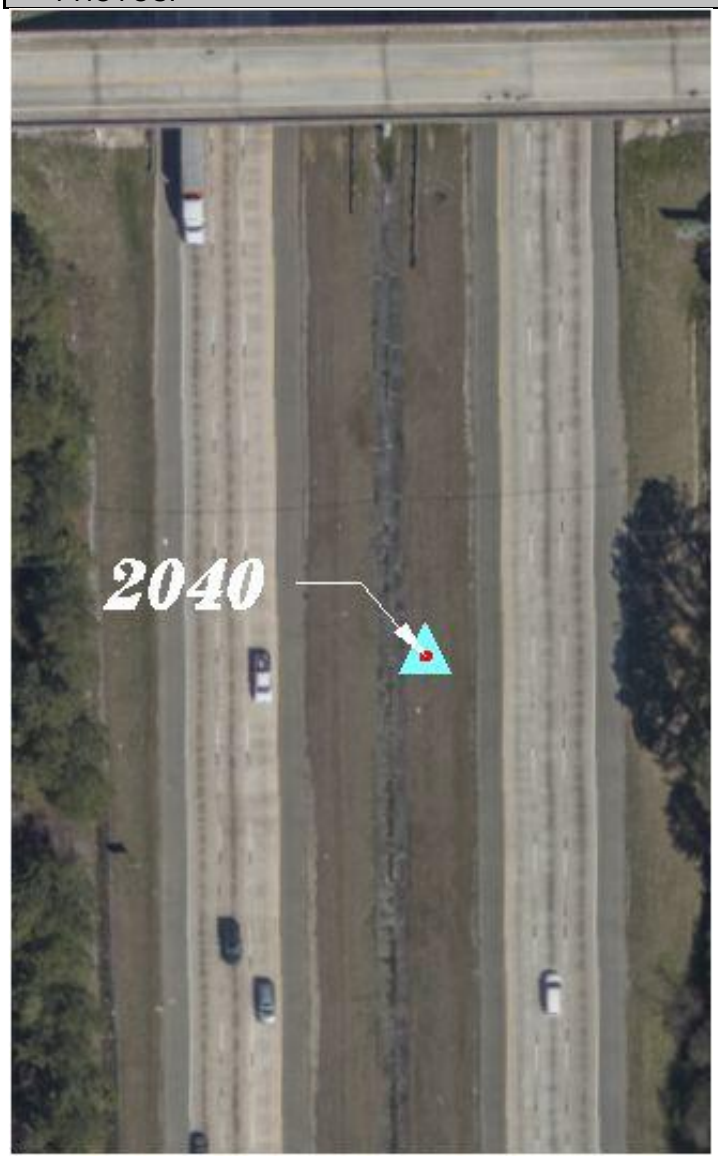
Point ID	2040
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

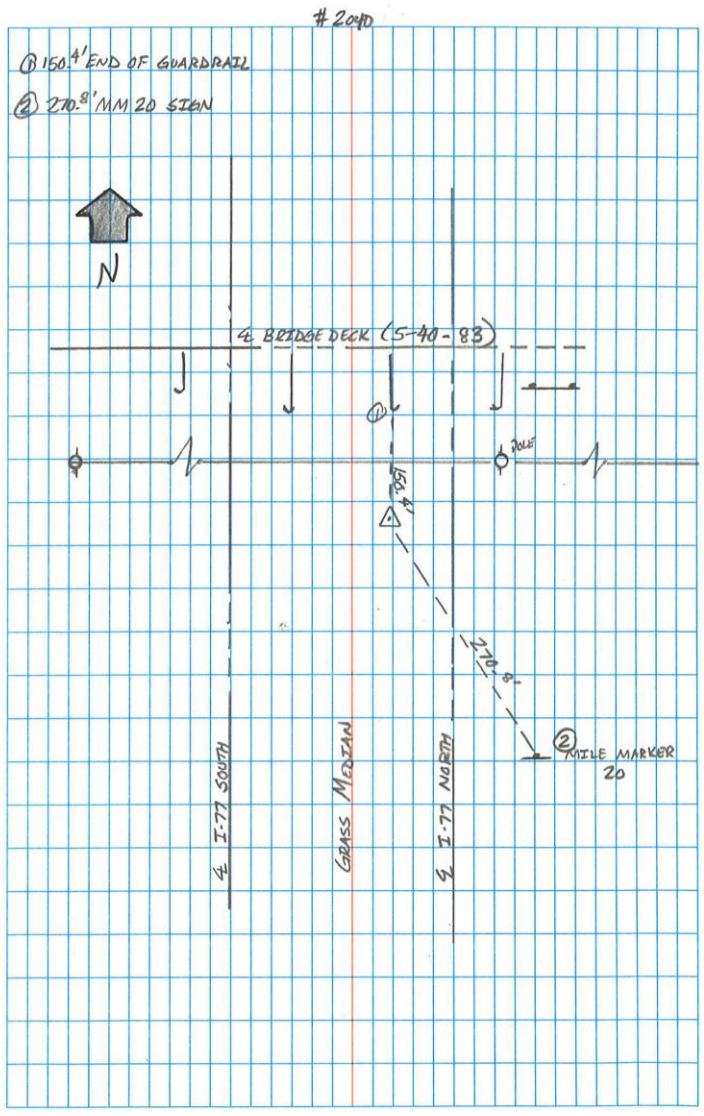
	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	829553.60	2011449.09	318.60	

PHOTOS:





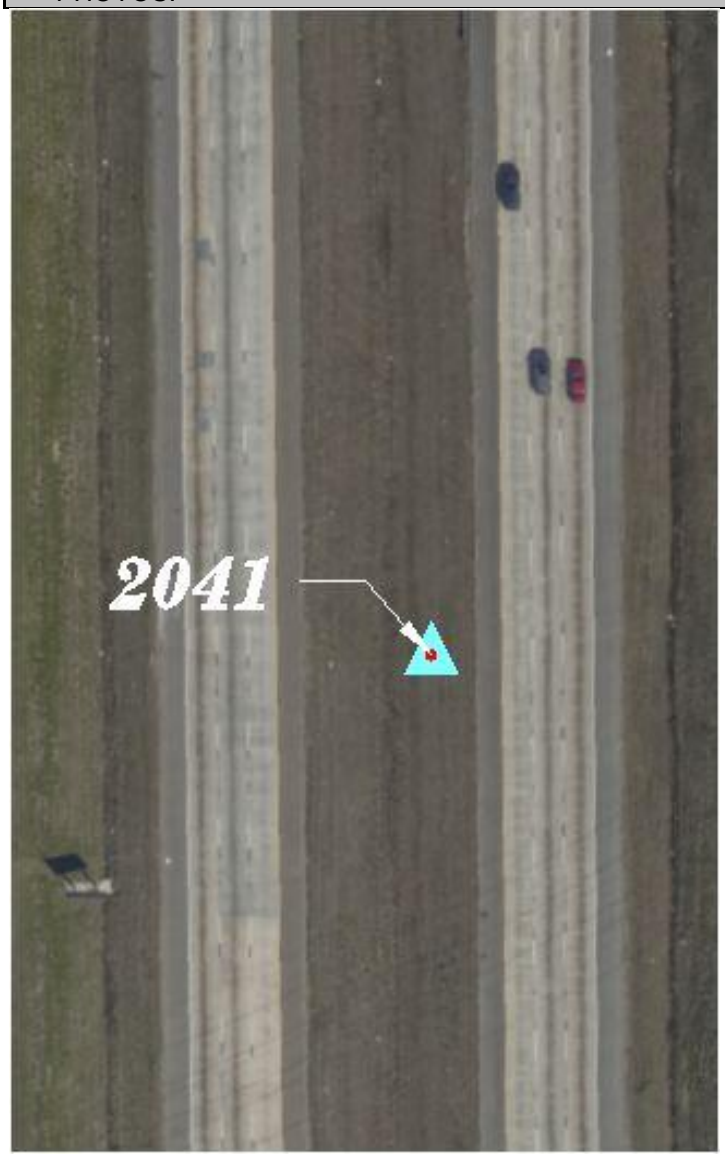
Point ID	2041
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

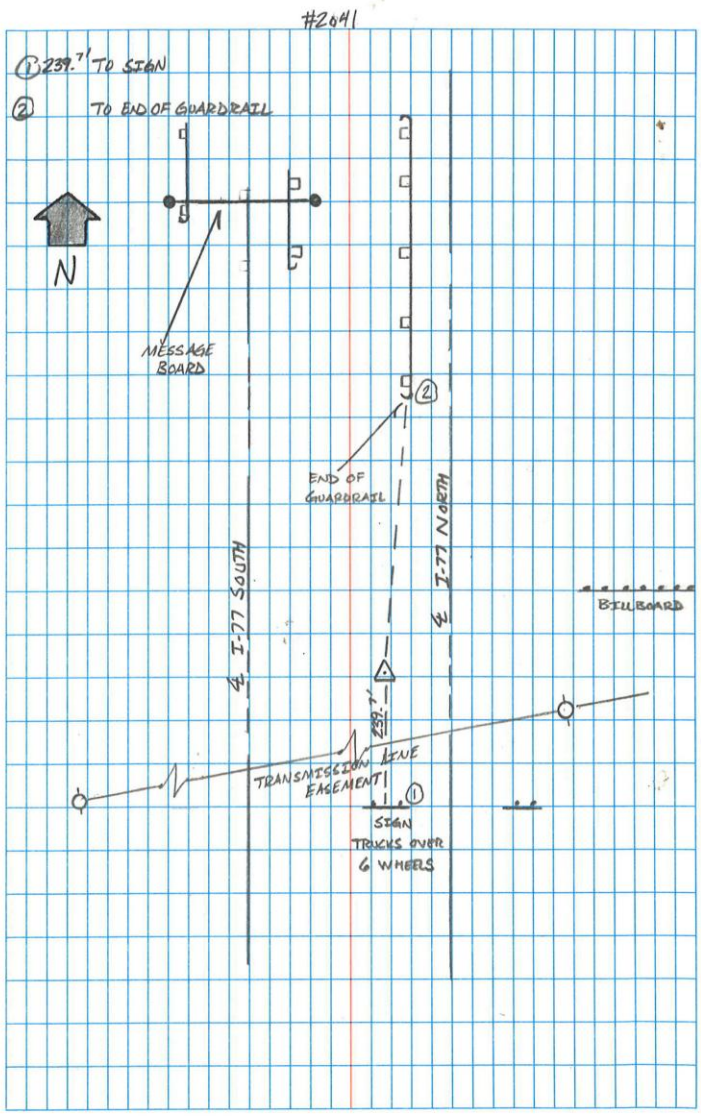
	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	831522.98	2011429.20	326.96	

PHOTOS:





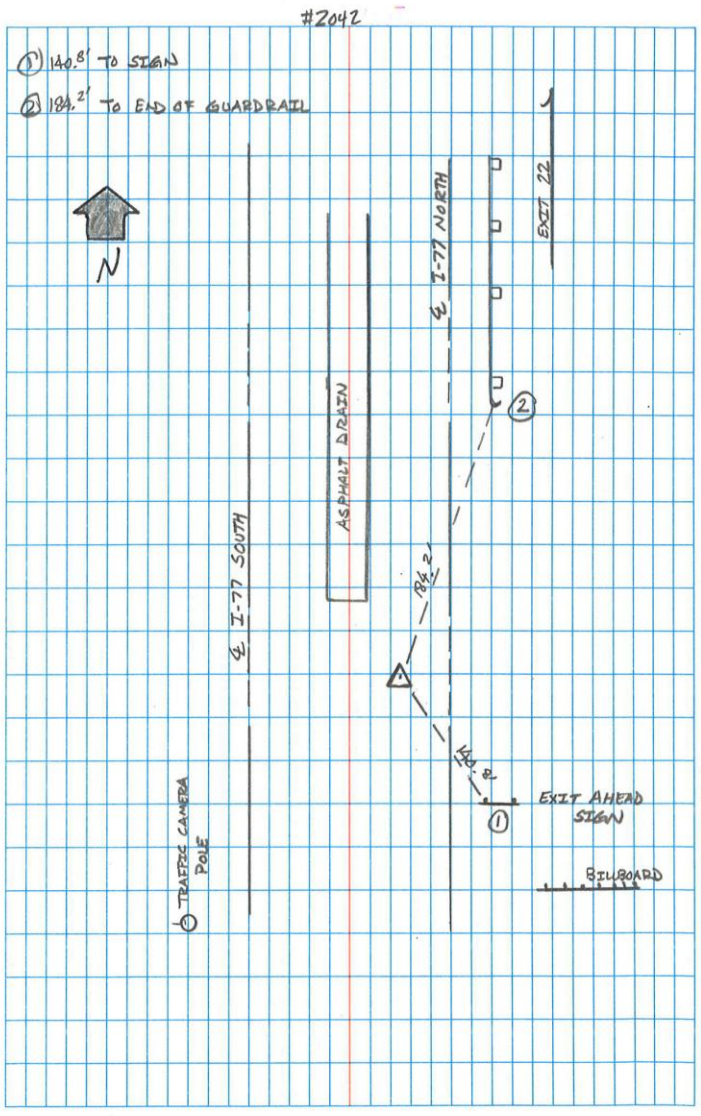
Point ID	2042
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	832508.30	2011425.98	307.61	

PHOTOS:



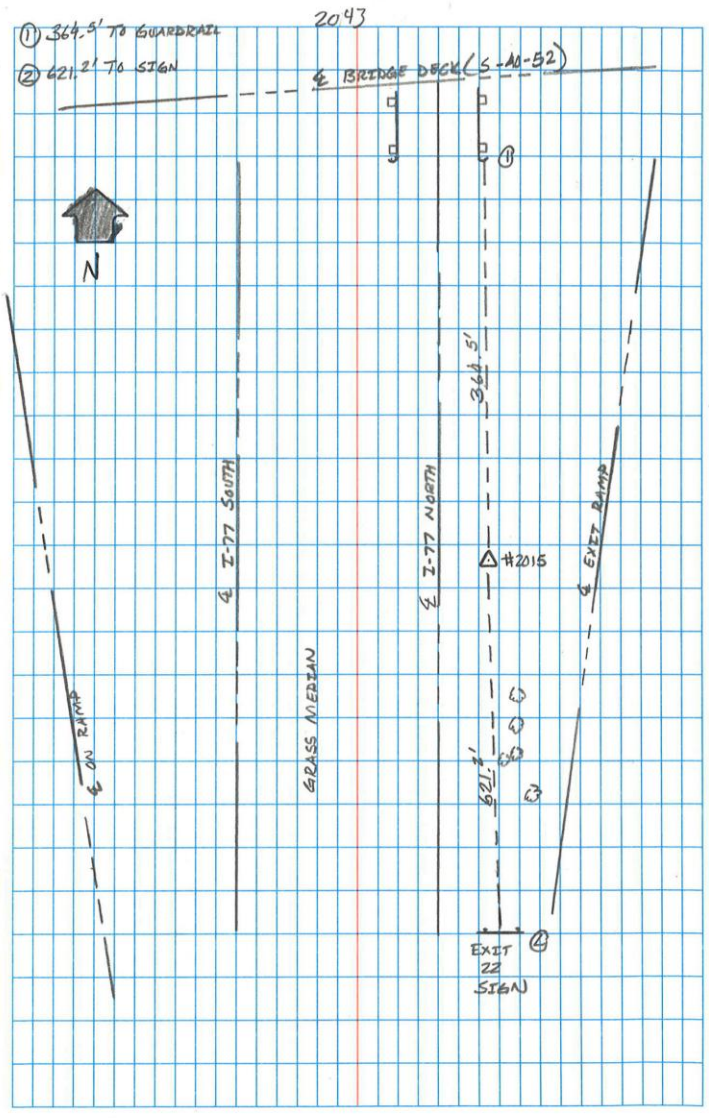
Point ID	2043
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	837119.53	2011172.51	348.04	

PHOTOS:



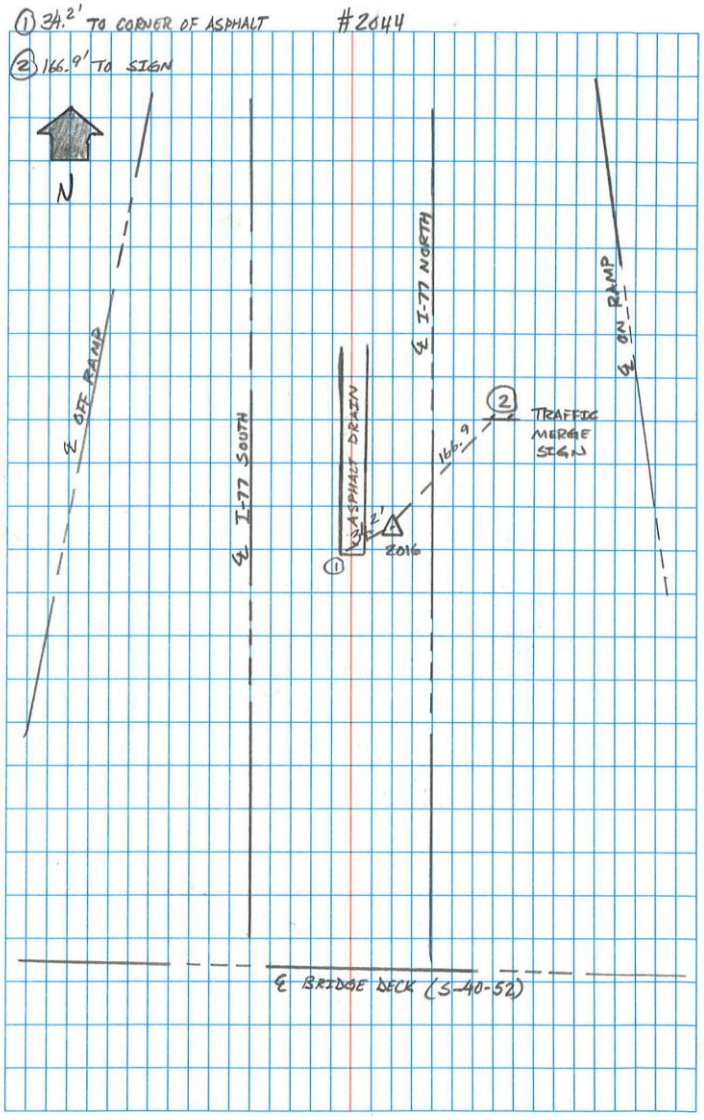
Point ID	2044
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	838064.55	2010945.80	347.11	

PHOTOS:



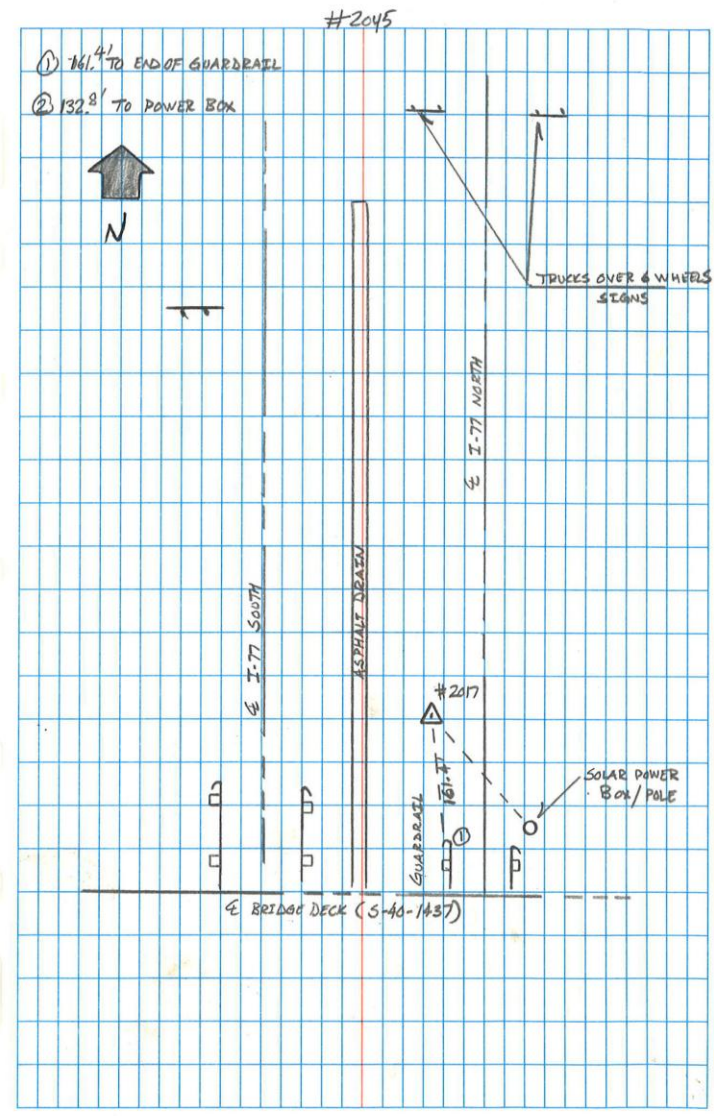
Point ID	2045
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	842025.01	2010601.84	364.48	

PHOTOS:



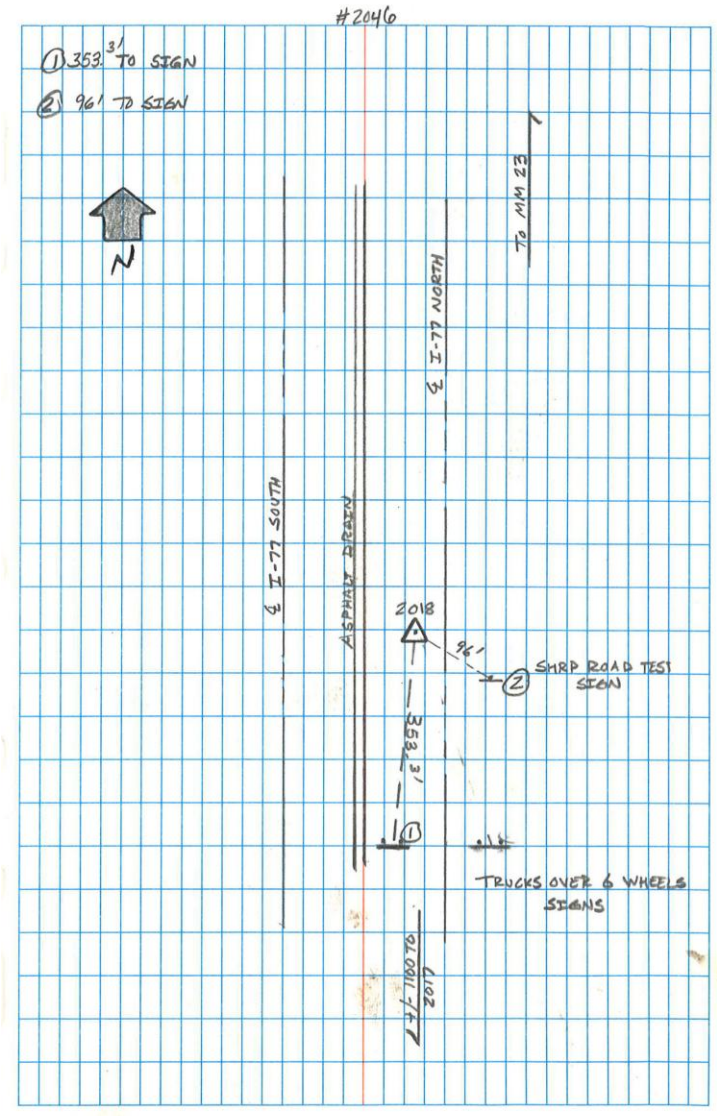
Point ID	2046
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	843169.58	2010672.21	385.96	

PHOTOS:



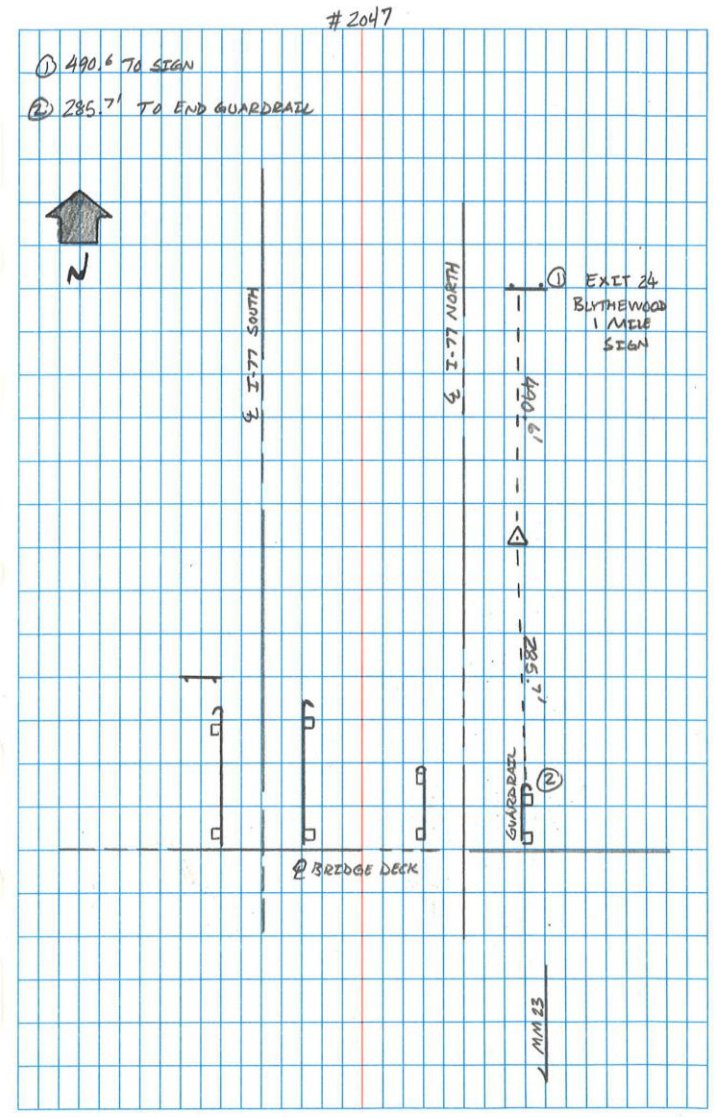
Point ID	2047
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	845513.97	2010887.06	424.03	

PHOTOS:



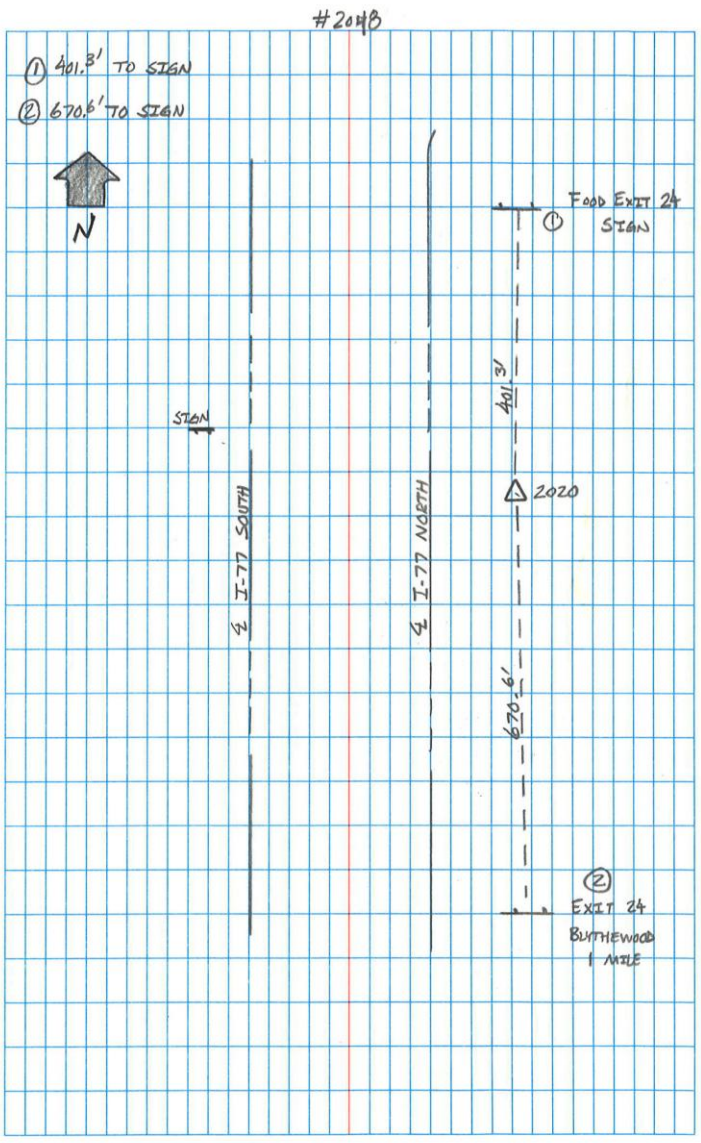
Point ID	2048
Project No.	22087
Project Name	SCDOT I-20 & I-77 Widening
State	South Carolina

	Aerial Target
X	New Control
	Photo ID
	Published Control

Coordinate System
NAD83(2011)
NAVD88
GEOID 12A

SPC – South Carolina (3900)	Northing	Easting	Elevation	5/8" Rebar w/cap set below ground surface
Units - International Feet	846669.45	2010857.43	436.35	

PHOTOS:



Section 4e – I-77 Aerial Control Coordinate Report

Coordinate System:
Horizontal Datum – SPC South Carolina (3900)
Vertical Datum – NAVD 88
International Feet
Geoid12A

POINT	NORTHING	EASTING	ELEVATION
8417	838136.12	2010994.17	346.74
8479	814031.57	2023087.56	300.25
8451	820269.63	2015611.72	253.71
8292	805857.36	2022047.10	253.76
8293	806137.44	2022396.93	258.56
8294	806488.87	2022838.31	267.99
8295	806838.43	2023141.43	276.67
8296	807769.80	2023422.47	267.93
8297	806950.65	2023334.00	261.96
8298	807430.83	2023636.65	259.40
8299	807774.69	2023915.64	274.68
8300	808134.84	2023621.98	260.48
8301	808217.94	2023453.77	258.84
8302	808678.20	2023508.48	256.83
8303	809151.41	2023534.63	263.25
8304	809583.11	2023558.75	270.19
8305	810033.66	2023590.96	278.19
8306	810459.97	2023636.61	290.52
8307	810852.36	2023668.16	304.51
8308	811304.45	2023714.53	320.05
8309	811789.33	2023721.08	335.01
8310	812255.90	2023730.63	342.50
8311	812716.02	2023661.54	341.93
8312	813207.22	2023504.90	334.36
8313	813709.47	2023235.24	317.88
8314	807852.10	2023043.16	255.64
8315	807411.34	2022791.04	244.33
8316	806970.22	2022909.67	238.90
8317	812774.20	2023884.16	332.04
8318	812483.81	2023943.06	327.81
8319	812903.17	2024329.10	305.02
8320	813089.82	2024766.99	306.95
8321	813283.23	2025217.07	320.07

8322	813557.89	2025667.55	332.60
8323	813865.42	2026195.52	335.26
8324	814165.60	2025863.03	295.75
8325	813898.65	2025438.41	294.80
8326	813672.55	2024935.15	306.85
8327	813627.96	2024518.50	303.23
8328	813657.52	2024004.38	292.76
8329	813774.19	2023484.33	287.79
8330	813989.31	2022771.31	293.53
8331	813509.69	2022603.85	313.26
8332	813340.48	2022176.07	286.37
8333	813350.47	2021676.69	260.54
8334	813546.14	2021167.23	250.77
8335	813423.85	2021126.83	251.43
8336	813191.61	2021579.18	265.11
8337	812979.33	2022026.82	282.13
8338	812775.53	2022460.08	303.73
8339	812438.87	2022815.81	328.09
8340	812089.63	2023181.72	334.73
8341	811660.44	2023464.06	326.80
8342	819003.75	2016837.94	275.56
8343	818614.77	2017146.75	271.77
8344	818172.92	2017283.41	278.12
8345	817805.93	2017603.44	295.89
8346	818130.16	2018296.36	280.43
8347	818484.45	2018020.43	300.85
8348	818725.97	2017584.12	284.65
8349	822334.60	2013437.78	304.98
8350	821814.91	2013353.72	302.09
8351	821448.02	2013159.13	299.56
8352	821072.95	2012805.65	298.38
8353	820979.44	2012932.62	298.25
8354	821371.61	2013302.54	303.12
8355	821748.32	2013612.71	307.47
8356	822059.09	2013752.54	308.98
8357	813108.09	2024054.43	292.38
8358	813043.29	2022950.67	299.05
8402	842949.20	2010719.21	382.55
8403	843423.74	2010748.56	391.51
8404	843899.18	2010778.43	400.40
8405	844370.70	2010807.98	409.00
8406	844882.40	2010836.64	416.71
8407	845348.15	2010867.14	422.18

8408	845844.32	2010892.29	429.54
8409	846267.77	2010884.32	434.06
8410	844368.03	2010633.00	408.77
8411	843889.66	2010602.76	399.89
8412	843400.88	2010573.23	390.65
8413	842936.35	2010544.75	381.92
8414	842454.05	2010515.01	372.88
8415	837192.30	2011151.35	349.54
8416	837676.72	2011069.97	351.18
8418	839101.86	2010857.10	328.41
8419	839588.21	2010768.64	323.80
8420	840095.02	2010696.32	327.81
8421	840602.99	2010653.69	337.24
8422	841091.43	2010636.61	346.48
8423	841575.01	2010640.43	355.68
8424	831761.55	2011493.60	325.03
8425	832230.04	2011488.39	314.73
8426	832718.05	2011482.11	302.95
8427	833199.50	2011477.68	293.79
8428	833674.23	2011472.51	291.73
8429	834132.62	2011462.46	296.04
8430	834603.41	2011441.47	304.42
8431	835106.22	2011408.45	313.39
8432	835541.24	2011370.03	321.14
8433	835953.32	2011332.80	328.64
8434	836285.72	2011316.91	334.12
8435	836703.04	2011228.32	342.07
8436	836792.33	2011309.68	345.34
8437	825610.09	2012201.25	324.46
8438	826026.62	2011999.44	319.26
8439	826192.17	2011986.70	315.24
8441	827028.26	2011682.99	307.59
8442	827530.75	2011581.57	306.89
8443	827977.90	2011538.36	308.44
8444	828422.57	2011529.25	312.88
8445	828912.19	2011523.68	315.82
8446	829349.66	2011519.12	318.54
8447	829838.55	2011513.37	321.43
8448	830299.91	2011509.00	324.20
8449	830778.21	2011503.74	327.11
8450	831276.49	2011499.11	329.22
8452	820641.65	2015206.43	255.09
8453	820958.24	2014903.00	259.48

8454	821304.57	2014606.12	264.26
8455	821689.21	2014323.69	268.82
8456	822084.01	2014054.35	273.81
8457	822572.95	2013769.42	280.94
8458	822987.25	2013553.75	288.14
8459	823383.92	2013348.05	294.49
8460	823769.93	2013146.29	300.88
8461	824062.83	2013035.98	304.09
8462	824393.54	2012902.99	308.82
8463	824750.20	2012664.26	315.78
8464	825182.93	2012430.62	322.87
8465	816473.58	2019989.67	252.26
8466	816811.25	2019652.22	255.65
8467	817155.88	2019296.30	259.79
8468	817551.41	2018846.88	264.54
8469	817730.54	2018705.60	264.56
8470	817869.66	2018472.16	266.91
8471	818158.19	2018128.32	270.63
8472	818465.04	2017763.06	274.58
8473	818782.34	2017382.02	278.39
8474	818997.63	2017158.21	278.19
8475	819303.96	2016781.10	273.01
8476	819619.37	2016395.18	266.77
8477	819910.54	2016040.28	261.10
8478	814048.21	2022969.79	303.57
8480	814445.94	2022560.30	284.93
8481	814685.63	2022189.40	266.18
8482	814979.89	2021719.58	247.61
8483	815288.11	2021266.39	240.66
8484	815590.34	2020890.40	244.08
8485	815860.15	2020598.98	246.81
8486	816198.26	2020264.69	250.02
8487	808107.15	2023294.97	260.82
8488	807685.40	2023262.94	267.34
8489	806354.11	2022467.95	260.11
8490	806050.01	2022086.18	255.42
8491	837285.26	2011387.58	363.02
8492	837747.27	2011455.93	375.51
8493	838150.43	2011179.60	361.24
8494	838589.83	2010968.06	339.47
8495	822264.17	2014045.41	273.58
8496	822735.18	2013960.60	278.43
8497	823216.32	2013803.13	284.94

8498	823632.63	2013513.51	291.98
8499	823993.68	2013189.65	299.05
8500	846735.32	2010663.23	433.08
8501	846271.45	2010709.31	429.96
8502	845781.82	2010715.73	424.91
8503	845333.56	2010691.95	421.79
8504	844864.02	2010663.23	416.35
8505	841963.36	2010484.98	364.36
8506	841470.86	2010464.20	355.62
8507	840993.51	2010463.87	346.75
8508	840507.26	2010485.06	337.69
8509	840035.98	2010525.62	329.12
8510	839583.40	2010581.43	325.62
8511	839064.31	2010655.65	328.69
8512	838548.70	2010750.65	338.54
8513	838049.70	2010833.49	347.66
8514	837630.84	2010903.28	351.16
8515	837171.58	2010978.98	349.68
8516	836694.50	2011054.88	342.46
8517	836274.78	2011084.15	333.75
8518	835820.30	2011146.39	326.11
8519	835324.22	2011205.43	317.43
8520	834820.63	2011252.98	308.49
8521	834364.54	2011278.93	300.31
8523	833456.26	2011303.90	291.92
8524	832968.68	2011307.75	297.42
8525	832479.45	2011311.64	308.74
8526	831944.83	2011317.48	321.64
8527	831440.50	2011322.64	328.67
8528	831024.73	2011327.09	328.75
8529	830540.27	2011332.24	325.85
8530	830051.98	2011337.56	322.86
8531	829597.74	2011342.69	320.06
8532	829125.28	2011347.76	317.19
8533	828654.40	2011352.49	314.38
8534	828179.36	2011358.78	313.02
8535	827701.72	2011386.79	311.47
8536	827234.88	2011451.73	311.38
8537	826765.41	2011557.95	313.63
8538	826331.42	2011677.45	318.37
8539	825912.65	2011859.87	324.27
8540	825479.94	2012073.13	326.02
8541	825106.31	2012266.34	322.97

8542	824849.36	2012400.95	319.15
8543	824484.46	2012591.56	313.31
8544	824102.16	2012788.32	307.15
8545	823736.21	2012971.70	301.05
8546	822952.93	2013403.73	288.74
8547	822515.41	2013631.36	283.03
8548	822165.49	2013828.27	278.32
8549	821748.19	2014071.08	273.95
8550	821355.99	2014364.89	268.97
8551	821030.24	2014642.06	264.31
8552	820593.91	2015049.38	258.20
8553	820259.38	2015400.31	255.29
8554	819937.83	2015775.27	258.29
8555	819630.20	2016142.56	264.31
8556	819312.49	2016517.21	270.44
8557	818948.08	2016952.38	277.43
8558	818601.95	2017367.27	277.48
8559	818404.67	2017601.23	275.57
8560	818155.68	2017880.82	272.03
8561	817836.93	2018263.16	268.15
8562	817524.25	2018642.84	263.84
8563	817207.93	2019016.91	259.77
8564	816885.42	2019363.84	256.62
8565	816539.99	2019710.50	254.29
8566	816235.49	2020014.46	251.76
8567	815892.01	2020357.57	249.23
8568	815576.57	2020685.35	247.95
8569	815260.73	2021058.54	244.97
8570	814905.80	2021557.33	246.83
8571	814666.46	2021924.49	258.67
8572	814173.75	2022626.56	286.66
8573	813816.73	2022973.03	304.41
8574	813404.05	2023246.31	321.66
8575	812503.81	2023546.31	337.02
8576	812020.71	2023581.76	334.55
8577	811635.46	2023558.88	329.38
8578	811244.69	2023506.25	317.48
8579	810834.68	2023480.79	302.89
8580	810346.64	2023453.57	286.29
8581	809832.04	2023421.96	273.45
8582	809345.75	2023385.50	265.90
8583	808885.80	2023351.11	259.17
8584	808506.07	2023307.74	256.54

8585	838342.15	2010715.88	342.50
8586	837819.25	2010637.43	360.35
8587	837340.46	2010554.63	371.61
8588	836897.60	2010840.47	355.59
8589	826152.80	2011728.03	320.57
8590	825667.76	2011857.18	323.41
8591	825142.54	2011819.10	326.42
8592	824605.23	2011785.82	329.04
8593	824150.49	2011933.70	332.26
8594	824508.90	2012241.16	340.15
8595	823241.71	2012839.19	303.32
8596	822783.75	2013057.33	288.79
8597	822522.71	2013386.26	280.36
8700	825763.57	2013201.71	327.20
8701	825771.89	2012852.33	323.83
8702	825875.57	2012374.60	321.63
8703	823407.67	2013119.55	295.19
8704	825353.60	2012893.42	335.50
8400	842007.73	2010661.35	364.58
8401	842477.27	2010690.94	373.53