

August 14, 2014

Survey Report of  
Ground Control & Aerial Targets

I-20 & I-77 Widening – South Carolina  
Photo Science Project No. 22087



Presented by



**A Quantum Spatial Company**

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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.

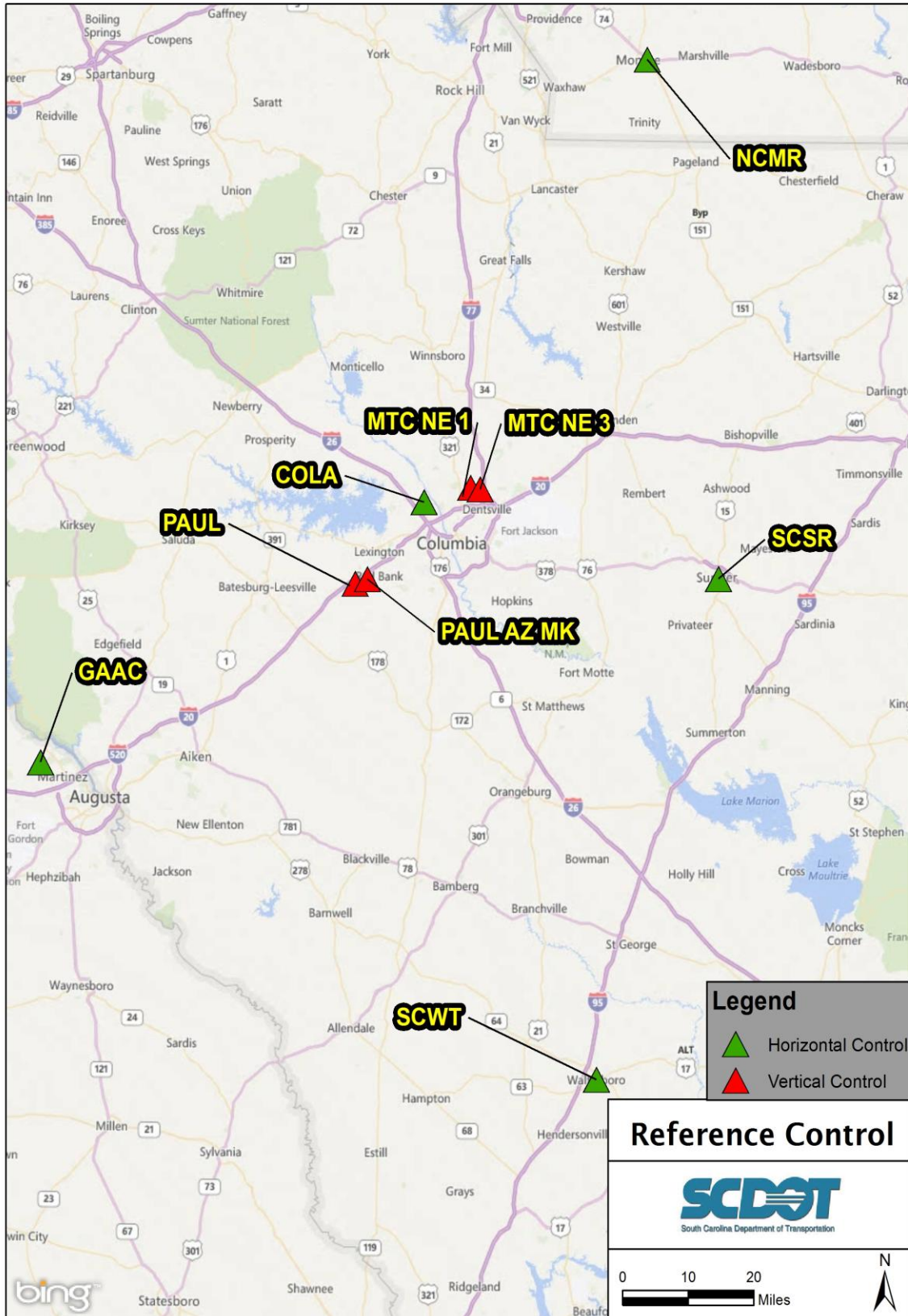
**Phase 1** consisted of a static GPS Survey to establish horizontal coordinates on primary control points at either end of each site. The primary control point numbers are 2000 & 2027 for I-20, and 2028 & 2048 for I-77. Each primary control point was occupied simultaneously, for periods greater than 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

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* | <a href="#">NAVD 88</a> 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 values and other accuracy information.

AH6714

AH6714

AH6714.The coordinates were established by GPS observations and adjusted by the National Geodetic Survey in August 2011.

AH6714

AH6714.NAD 83(2011) refers to NAD 83 coordinates where the reference frame has been affixed to the stable North American Tectonic Plate.

AH6714

AH6714.The coordinates are valid at the epoch date displayed above which is a decimal equivalence of Year/Month/Day.

AH6714

AH6714.The orthometric height was determined by GPS observations and a high-resolution geoid model using precise GPS observation and 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 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      |

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. Superseded values are not recommended for survey control.

AH6714. NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums. See file dsdata.txt to determine how the superseded data were derived.

AH6714 U.S. NATIONAL GRID SPATIAL ADDRESS: 17SMT8877471142(NAD 83)

AH6714 MARKER: STATION IS THE ANTENNA REFERENCE POINT OF THE GPS ANTENNA

STATION DESCRIPTION

AH6714

AH6714'DESCRIBED BY NATIONAL GEODETIC SURVEY 2011

AH6714'STATION IS A GPS CORS. LATEST INFORMATION INCLUDING POSITIONS AND VELOCITIES ARE AVAILABLE IN THE COORDINATE AND LOG FILES ACCESSIBLE 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>



```

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

```



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

SUPERSEDED SURVEY CONTROL

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.Superseded values are not recommended for survey control.

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\_U.S. NATIONAL GRID SPATIAL ADDRESS: 17SLT9473812367(NAD 83)

DF9211\_MARKER: STATION IS THE ANTENNA REFERENCE POINT OF THE GPS ANTENNA

STATION DESCRIPTION

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

```



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: 0 = 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>



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)

\*CURRENT SURVEY CONTROL

|         |  |                                      |          |
|---------|--|--------------------------------------|----------|
| 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* | <a href="#">NAVD 88</a> ORTHO HEIGHT                               | - 68.46 (meters) 224.6 (feet)        | GPS OBS  |
| 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. Formal positional accuracy estimates are not available for this CORS because its coordinates were determined in part using modeled velocities. Approximate one-sigma accuracies for latitude, longitude, and ellipsoid height can be obtained from the [short-term time series](#). Additional information regarding modeled velocities is available on the [CORS Coordinates](#) and [Multi-Year CORS Solution FAQ](#) web pages.

DK7756. The coordinates were established by GPS observations and adjusted by the National Geodetic Survey in August 2011.

DK7756. NAD 83(2011) refers to NAD 83 coordinates where the reference frame has been affixed to the stable North American Tectonic Plate.

DK7756. The coordinates are valid at the epoch date displayed above which is a decimal equivalence of Year/Month/Day.

DK7756. The orthometric height was determined by GPS observations and a high-resolution geoid model using precise GPS observation and processing techniques.

DK7756. The PID for the CORS L1 Phase Center is DK7757.

DK7756. The XYZ, and position/ellipsoidal ht. are equivalent.

DK7756. The ellipsoidal height was determined by GPS observations and is referenced to NAD 83.

DK7756. The following values were computed from the NAD 83(2011) position.

| 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     |



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



```

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

```



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

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

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>



## SECTION 2c - NGS DATA SHEETS FOR VERTICAL REFERENCE CONTROL

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* | <a href="#">NAVD 88</a> 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 values and other accuracy information.

DE1750

DE1750

DE1750.The horizontal coordinates were established by GPS observations and adjusted by the National Geodetic Survey in June 2012.

DE1750

DE1750.NAD 83(2011) refers to NAD 83 coordinates where the reference frame has been affixed to the stable North American tectonic plate. See [NA2011](#) for more information.

DE1750

DE1750.The horizontal coordinates are valid at the epoch date displayed above which is a decimal equivalence of Year/Month/Day.

DE1750

DE1750.The orthometric height was determined by differential leveling and adjusted by the NATIONAL GEODETIC SURVEY 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.



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 |
|                |                  |                | ddmmss.s |
| DE1750  DE1751 | PAUL AZ MK       | 391.298 METERS | 34819    |

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





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

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.



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  
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  
DE1750  
DE1750'STATION RECOVERY (1995)  
DE1750  
DE1750  
DE1750'RECOVERY NOTE BY SC DEPT OF TRANSP 1995 (DGB)  
DE1750'RECOVERED AS DESCRIBED.  
DE1750  
DE1750  
DE1750  
DE1750'STATION RECOVERY (1996)  
DE1750  
DE1750  
DE1750'RECOVERY NOTE BY US POWER SQUADRON 1996  
DE1750'RECOVERED IN GOOD CONDITION.  
DE1750  
DE1750  
DE1750  
DE1750'STATION RECOVERY (2002)  
DE1750  
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  
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.



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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 -----
DE1751 NETWORK 1.19 1.33
DE1751 -----
DE1751 MEDIAN LOCAL ACCURACY AND DIST (002 points) 1.00 1.00 0.82
DE1751 -----
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

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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|-----|  

| PID                 | Reference Object | Distance       | Geod. Az |
|---------------------|------------------|----------------|----------|
|                     |                  |                | ddmmss.s |
| DE1751  DE1750 PAUL |                  | 391.298 METERS | 16819    |

 DE1751|-----|  
 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  

| 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



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'DESRIPTIVE 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



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.



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* | <a href="#">NAVD 88</a> 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 values and other accuracy information.

DO7024

DO7024

DO7024.The horizontal coordinates were established by GPS observations and adjusted by the SOUTH CAROLINA GEODETIC SURVEY in April 2013.

DO7024

DO7024.NAD 83(2011) refers to NAD 83 coordinates where the reference frame has been affixed to the stable North American tectonic plate. See [NA2011](#) for more information.

DO7024

DO7024.The horizontal coordinates are valid at the epoch date displayed above which is a decimal equivalence of Year/Month/Day.

DO7024

DO7024.The orthometric height was determined by GPS observations and a high-resolution geoid model using precise GPS observation and 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 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  |





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

| PID    | Reference Object | Distance      | Geod. Az  |
|--------|------------------|---------------|-----------|
|        |                  |               | dddmmss.s |
| DO7024 | DO7025 MTC NE 2  | 43.139 METERS | 27140     |

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

| 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.



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

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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

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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  |



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

| PID    | Reference Object | Distance       | Geod. Az  |
|--------|------------------|----------------|-----------|
|        |                  |                | dddmmss.s |
| DO7026 | DO7025 MTC NE 2  | 236.486 METERS | 00302     |

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

| 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.



## 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

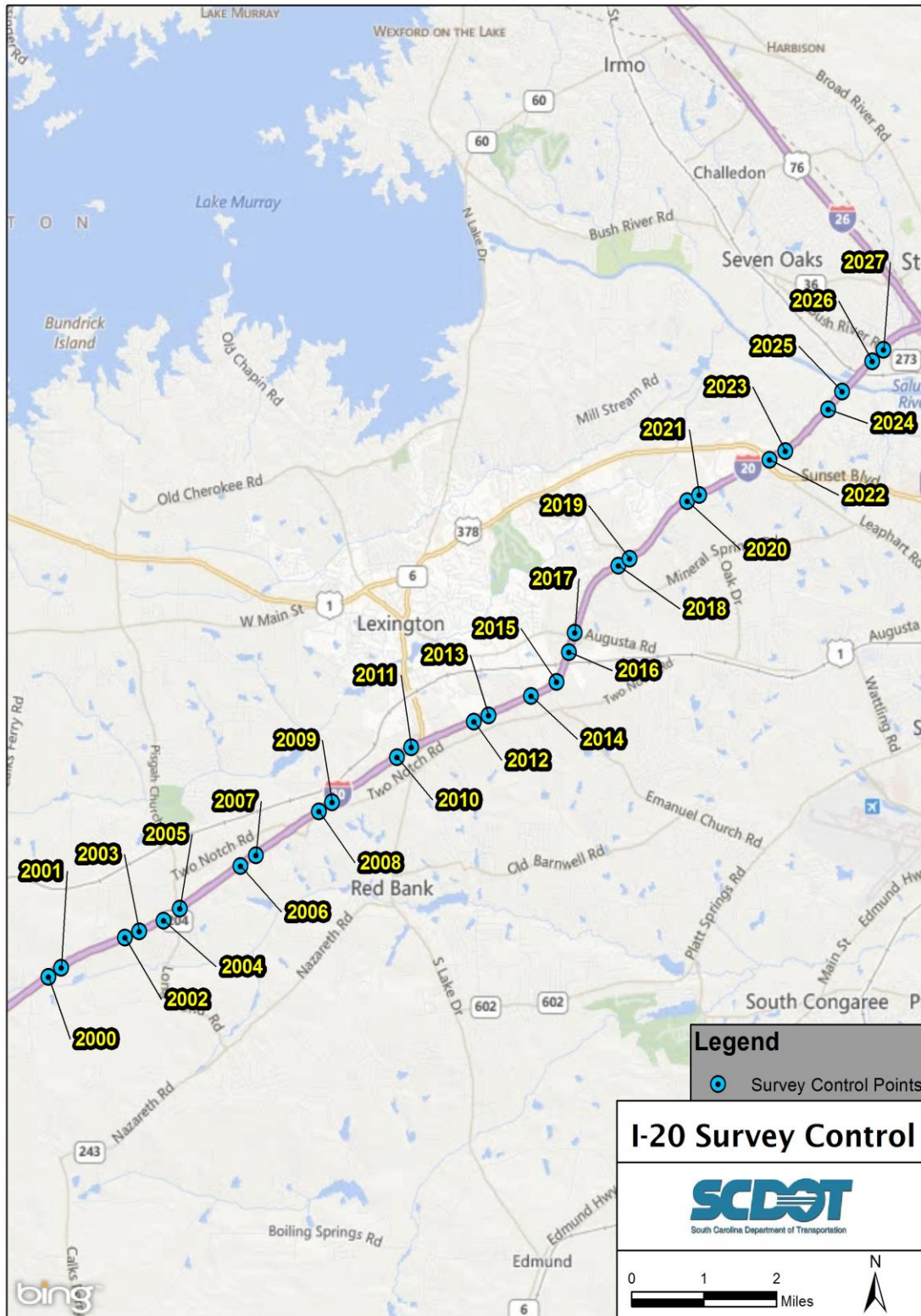
The elevations for both the survey and aerial control were established through a differential leveling network, consisting of 18 interconnected loops, resulting in an overall combined FGCS precision of First Order Class I. The reference elevations for the network were the Ortho Heights reported for NGS 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  
GEOID 12A

| 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**



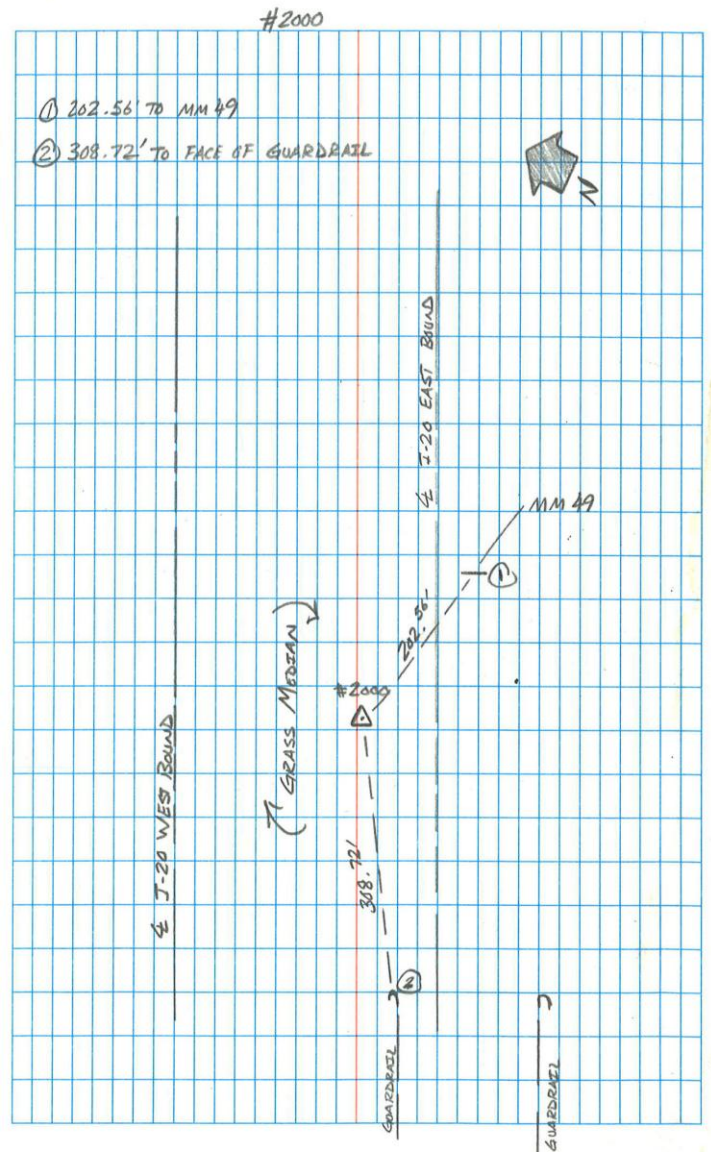
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|--------------|----------------------------|
| Point ID     | 2000                       |
| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:







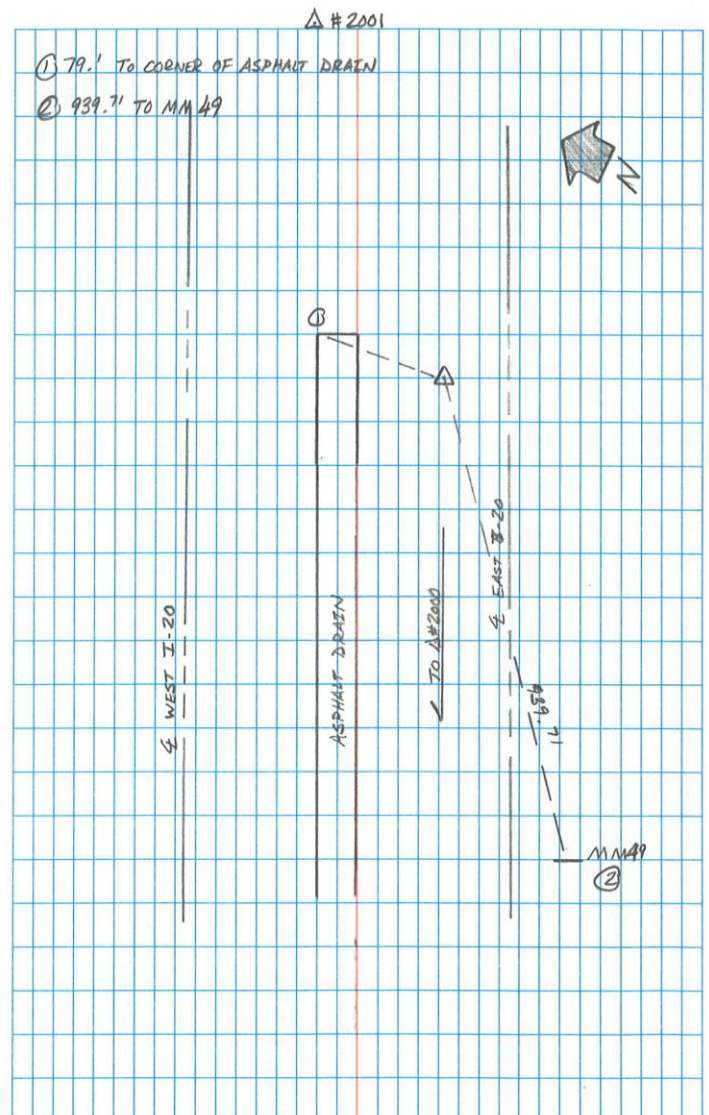
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|--------------|----------------------------|
| Point ID     | 2001                       |
| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:





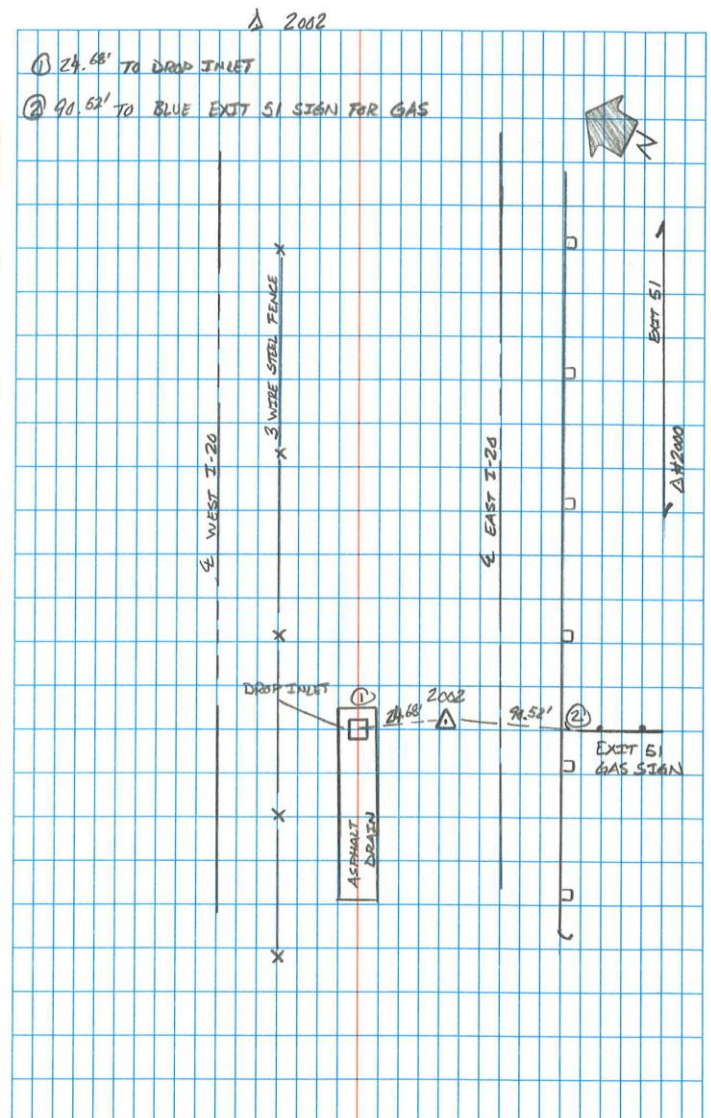
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|--------------|----------------------------|
| Point ID     | 2002                       |
| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:





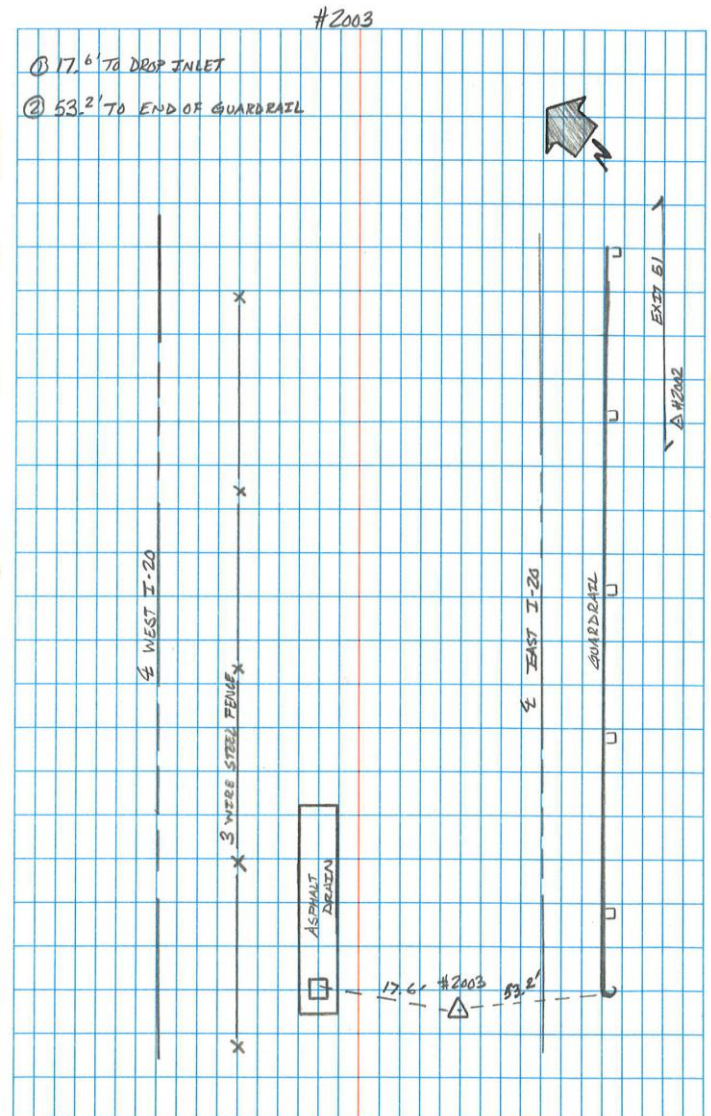
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| Point ID     | 2003                       |
| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:





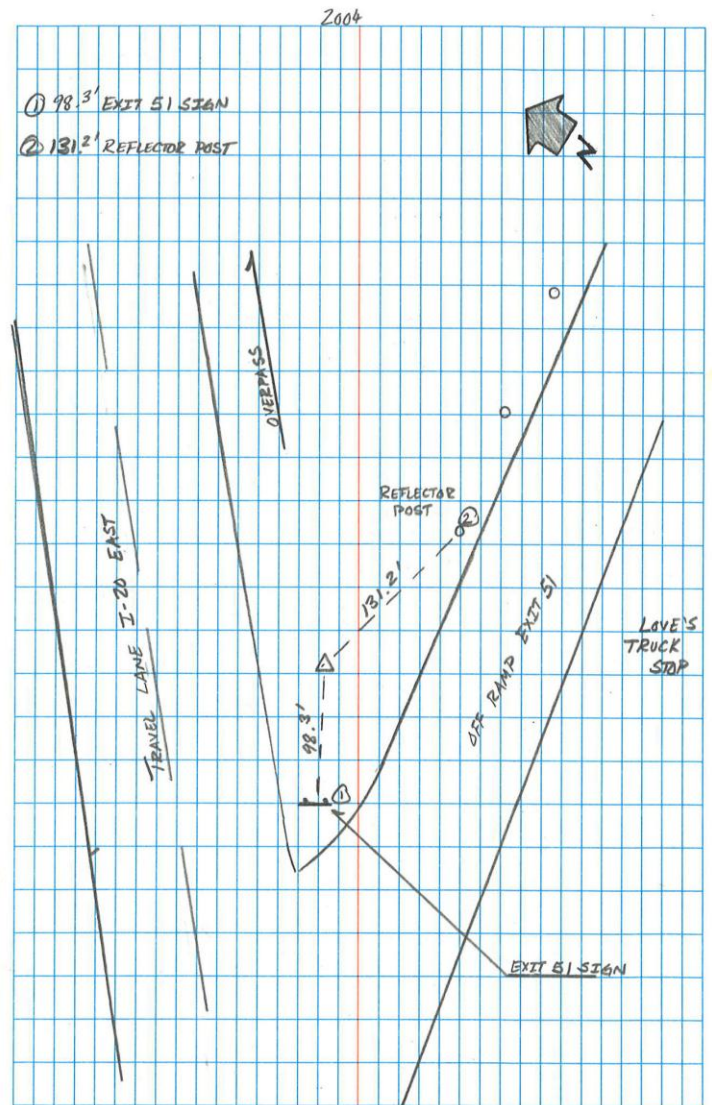
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| Point ID     | 2004                       |
| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:





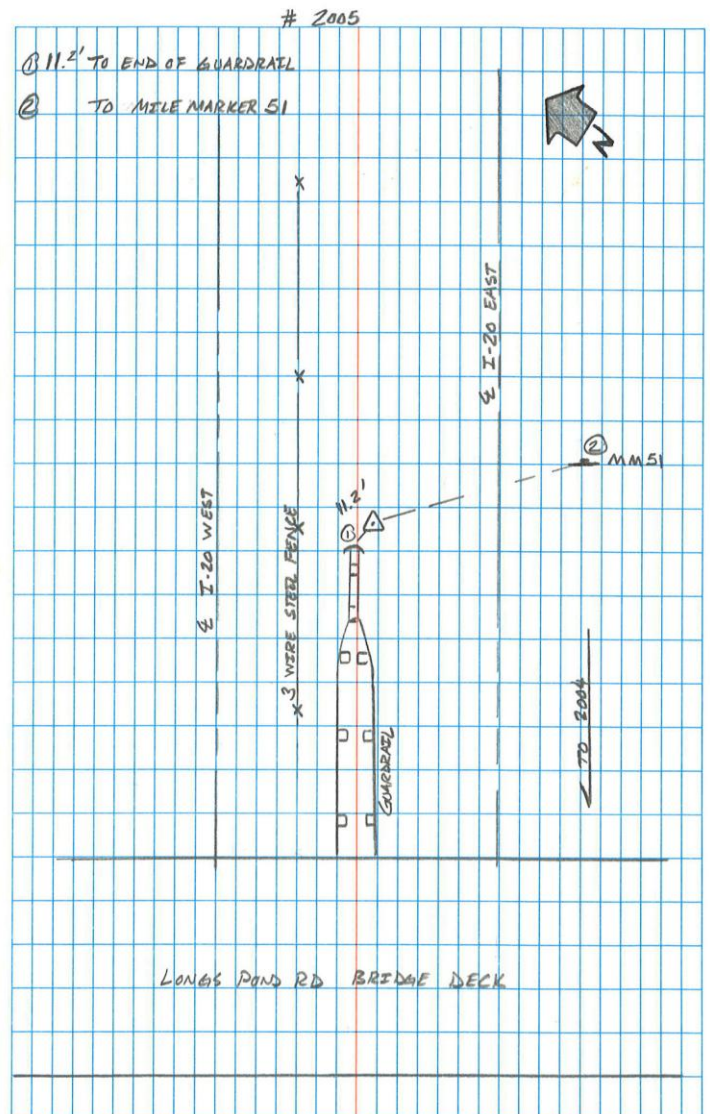
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| Point ID     | 2005                       |
| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:





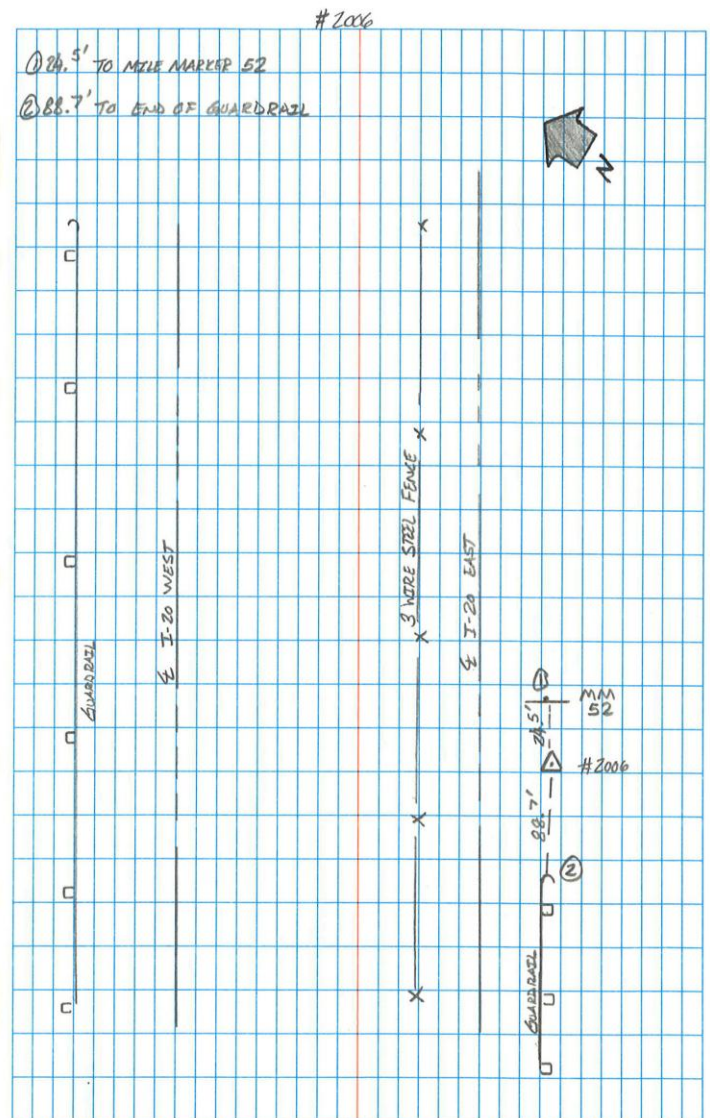
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| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:





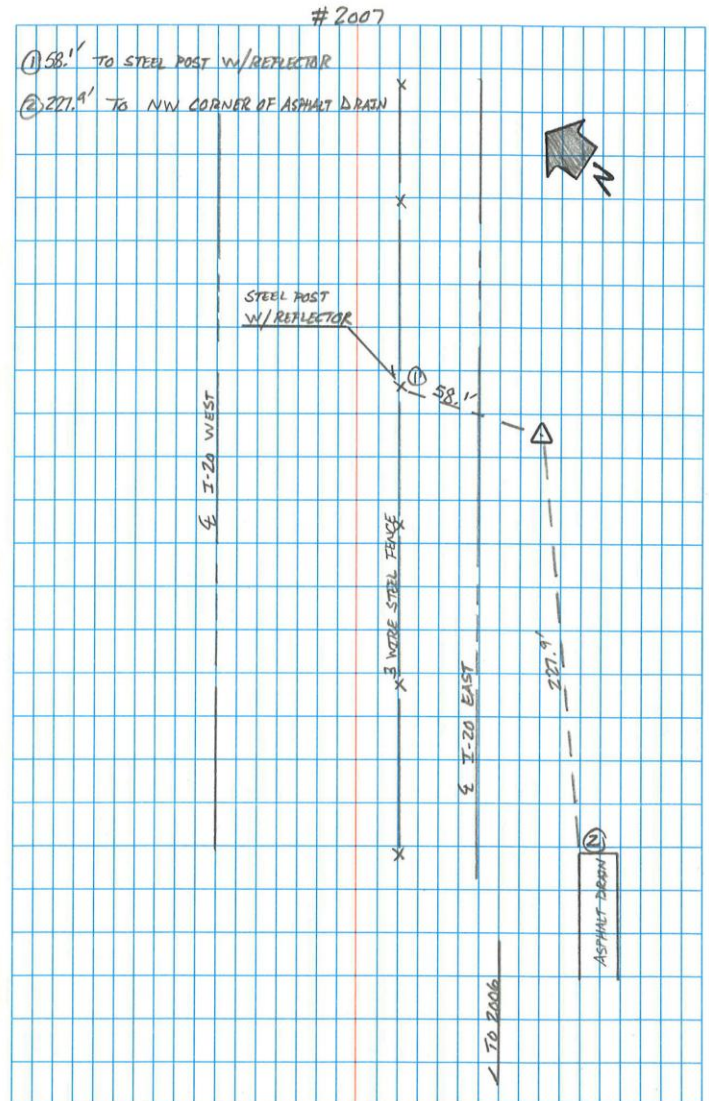
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| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:





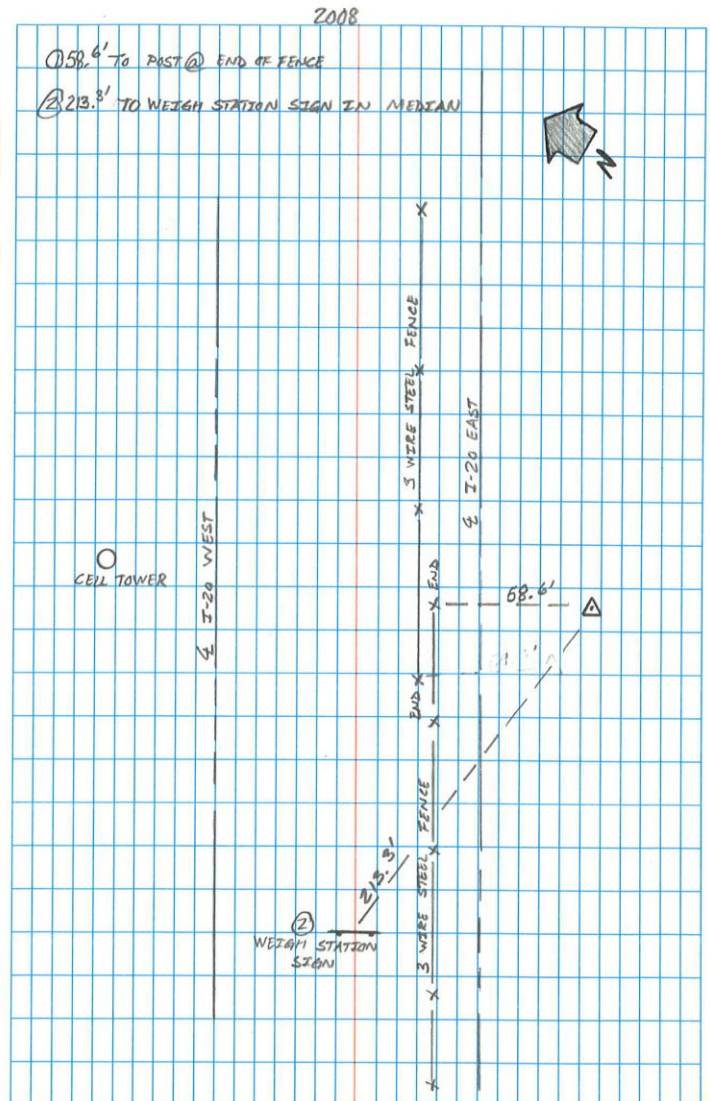
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| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:







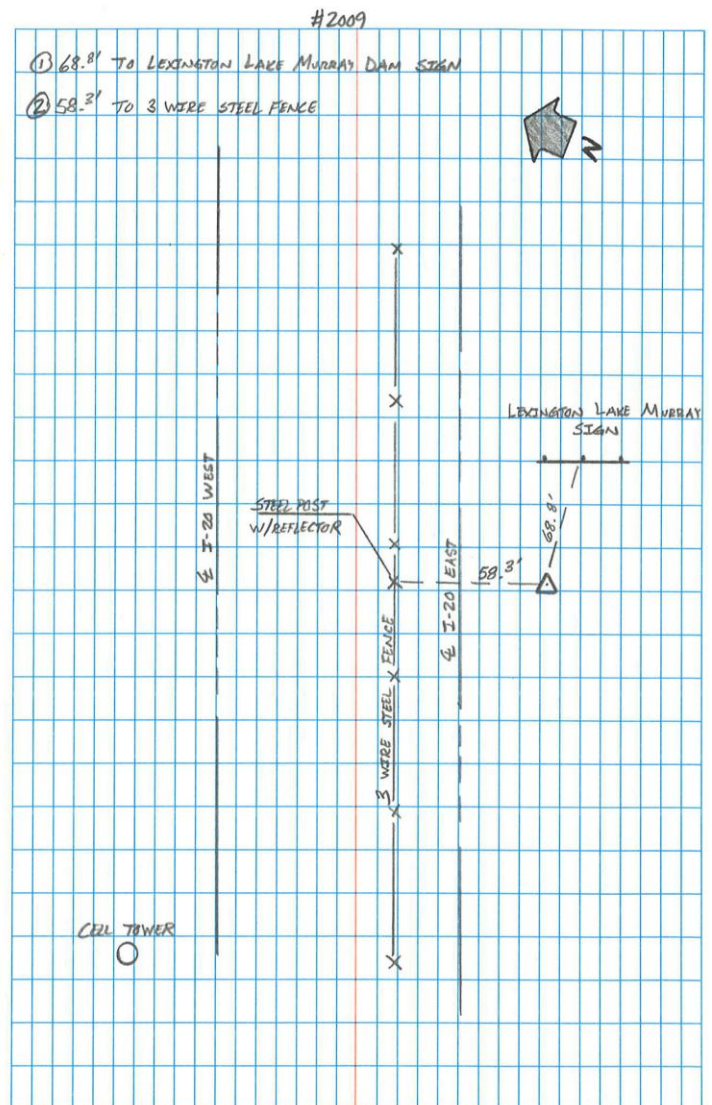
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|--------------|----------------------------|
| Point ID     | 2009                       |
| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:





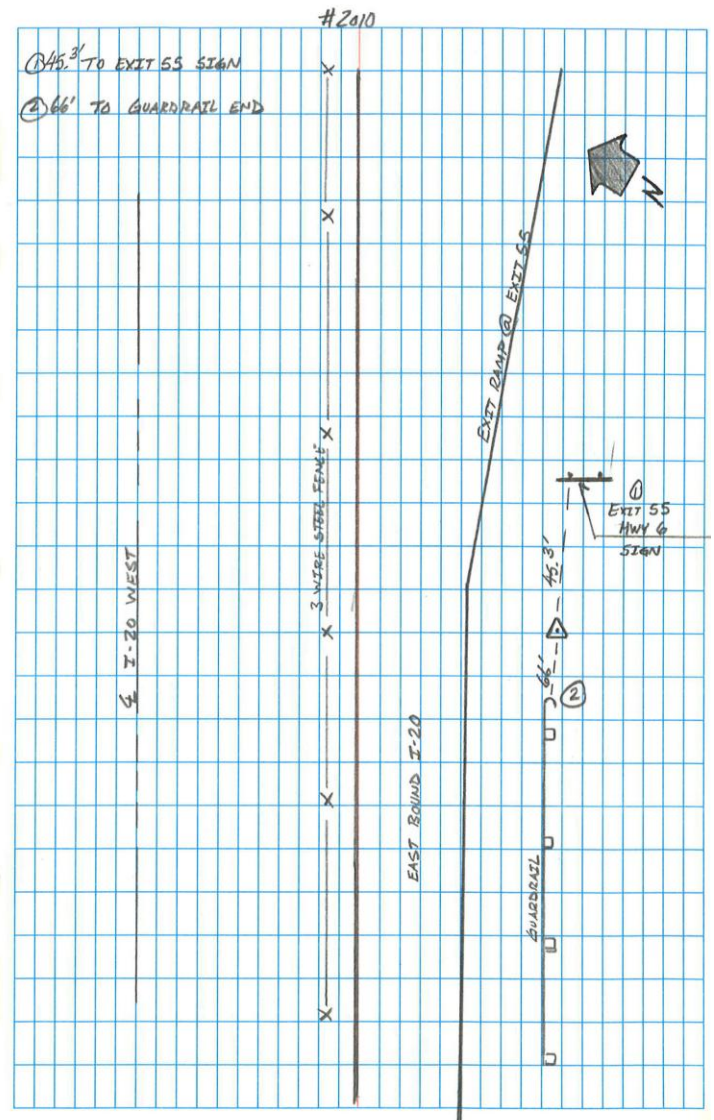
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| Point ID     | 2010                       |
| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:





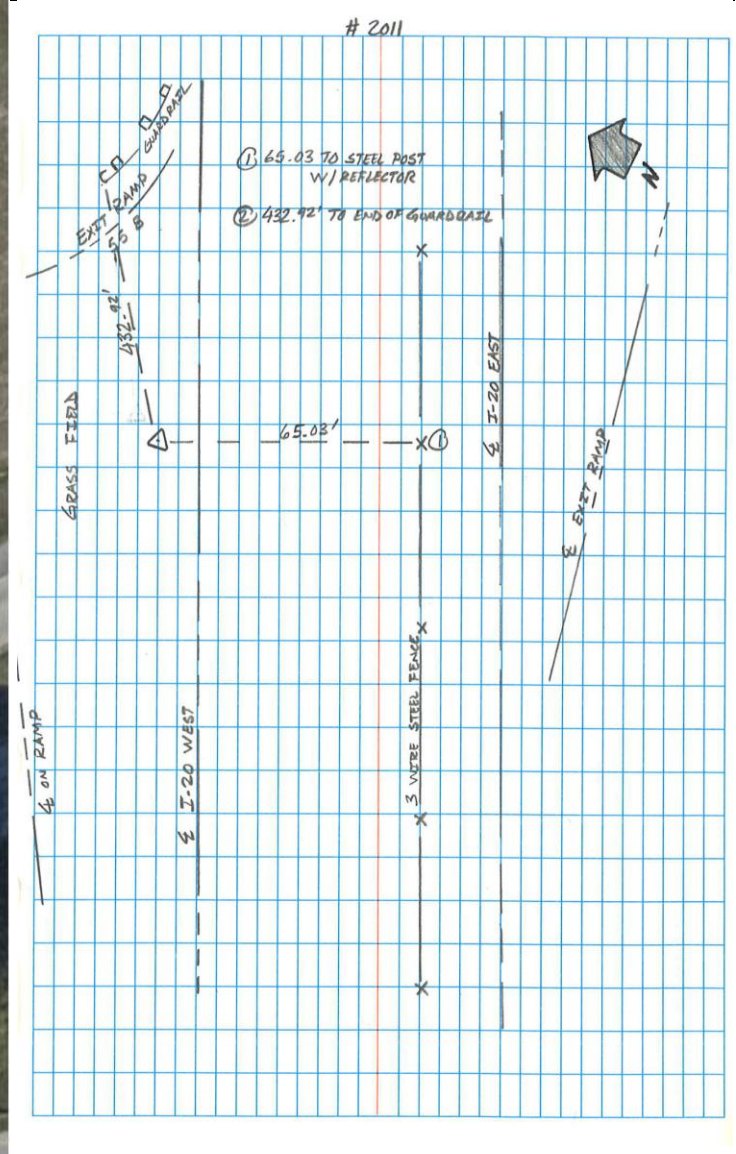
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|--------------|----------------------------|
| Point ID     | 2011                       |
| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:





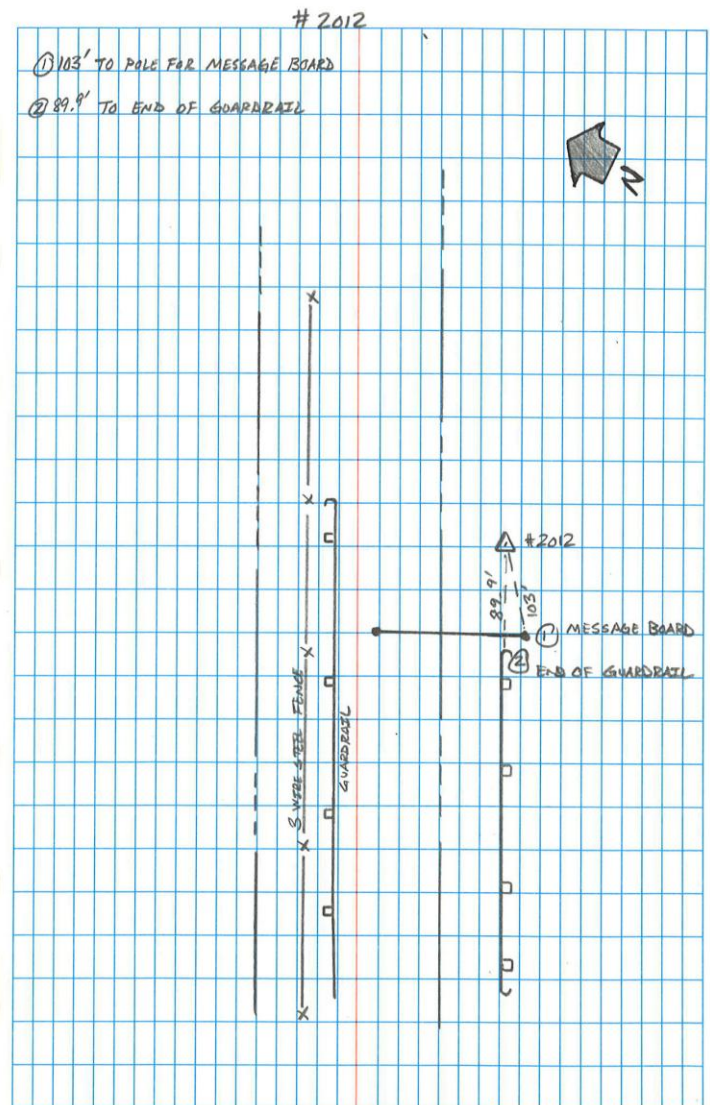
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|--------------|----------------------------|
| Point ID     | 2012                       |
| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:





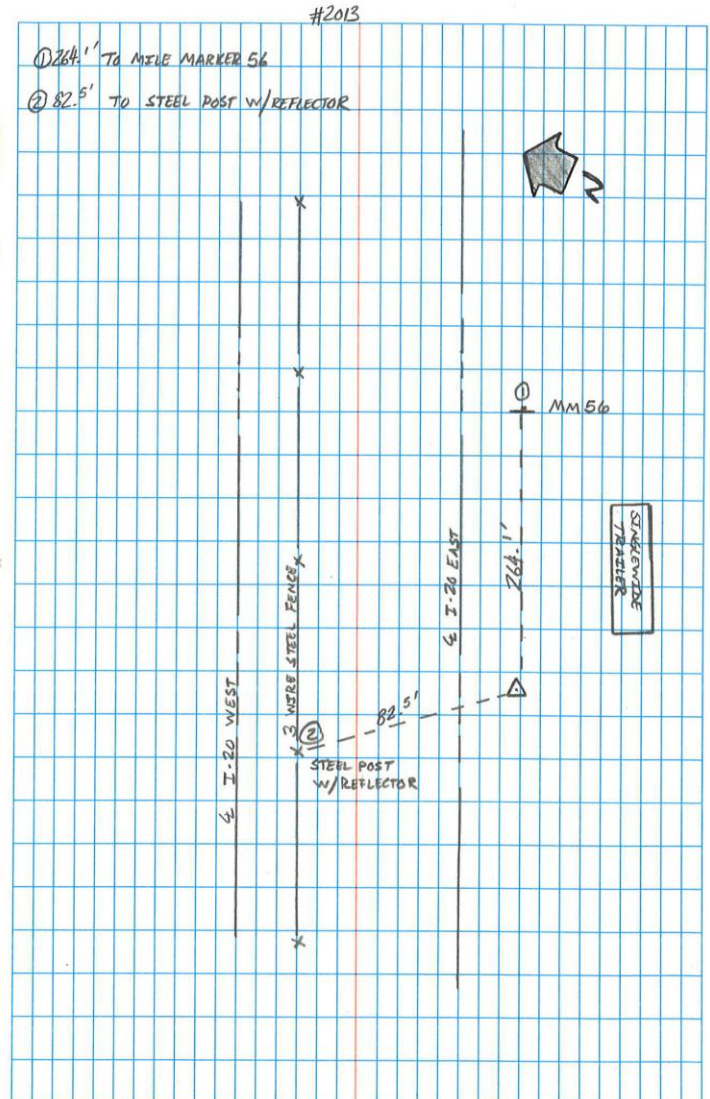
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| Point ID     | 2013                       |
| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:





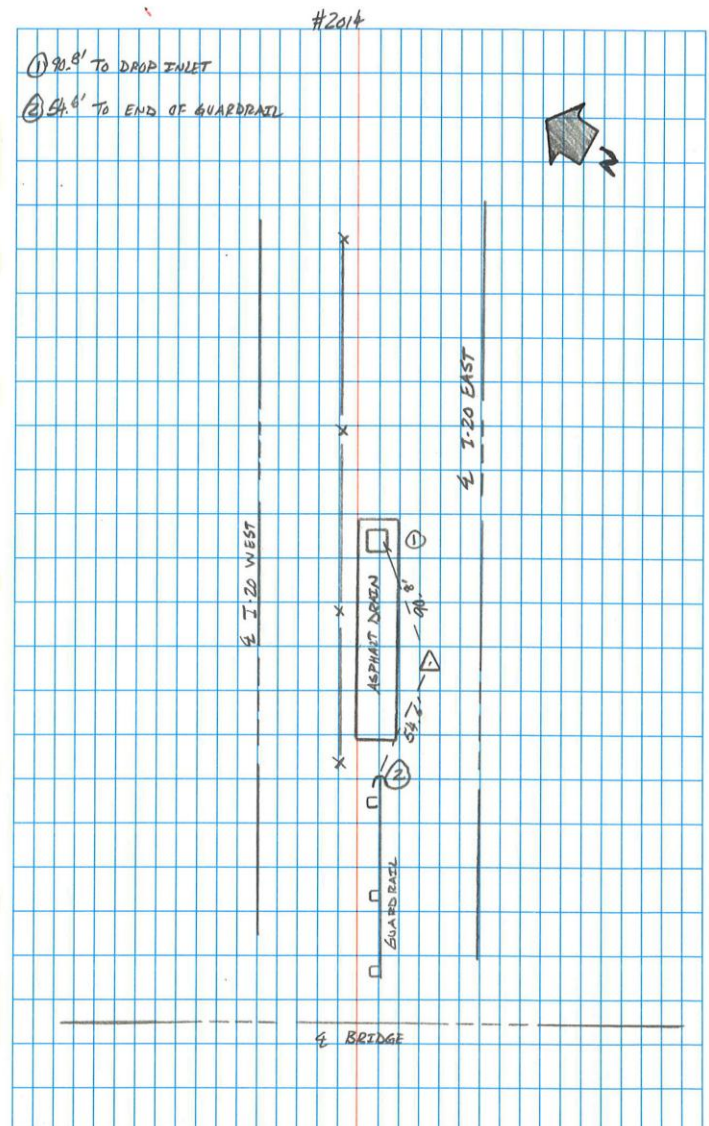
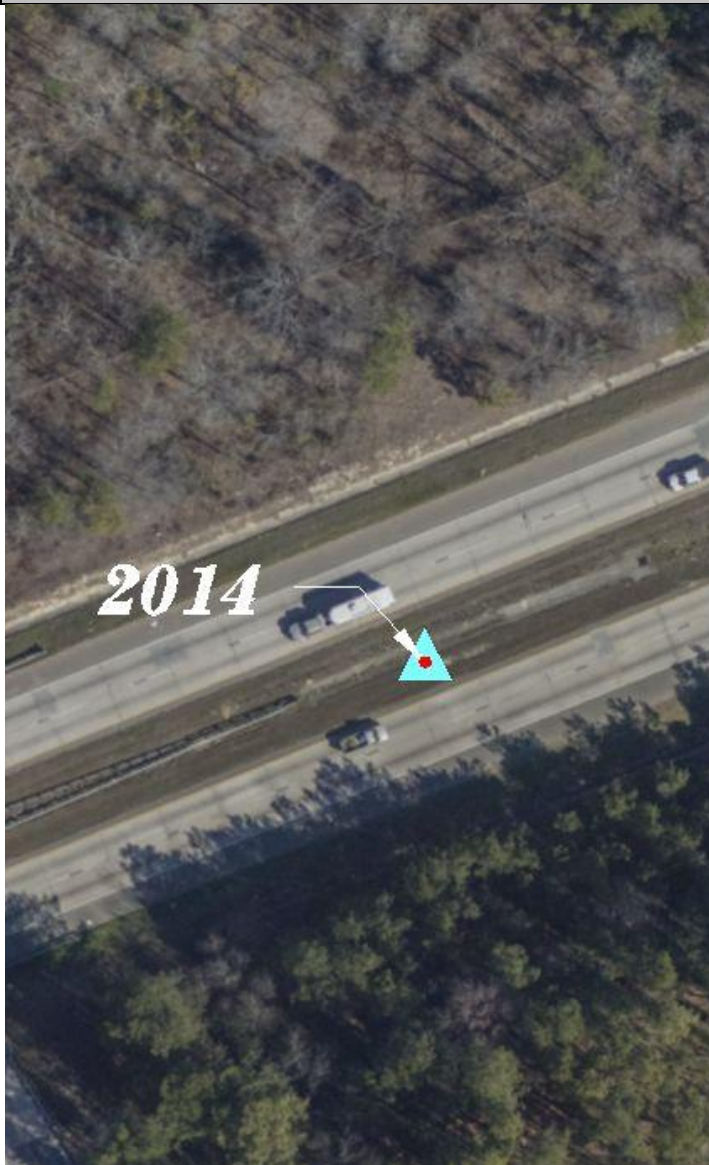
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|--------------|----------------------------|
| Point ID     | 2014                       |
| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:





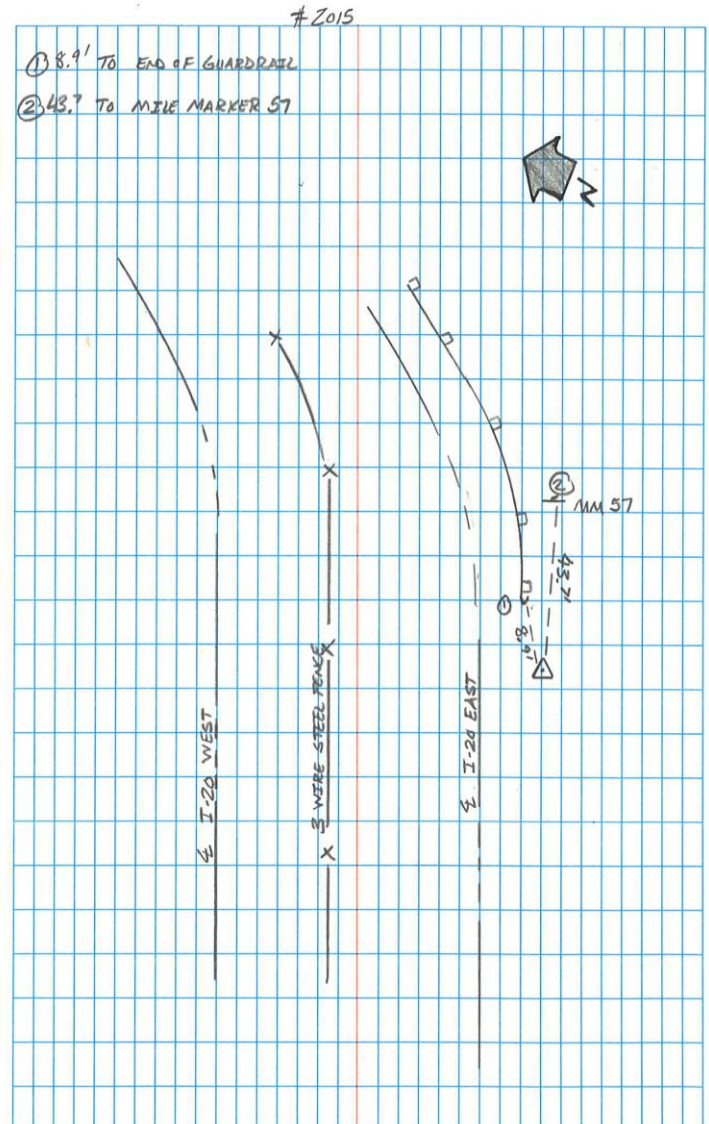
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|--------------|----------------------------|
| Point ID     | 2015                       |
| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:





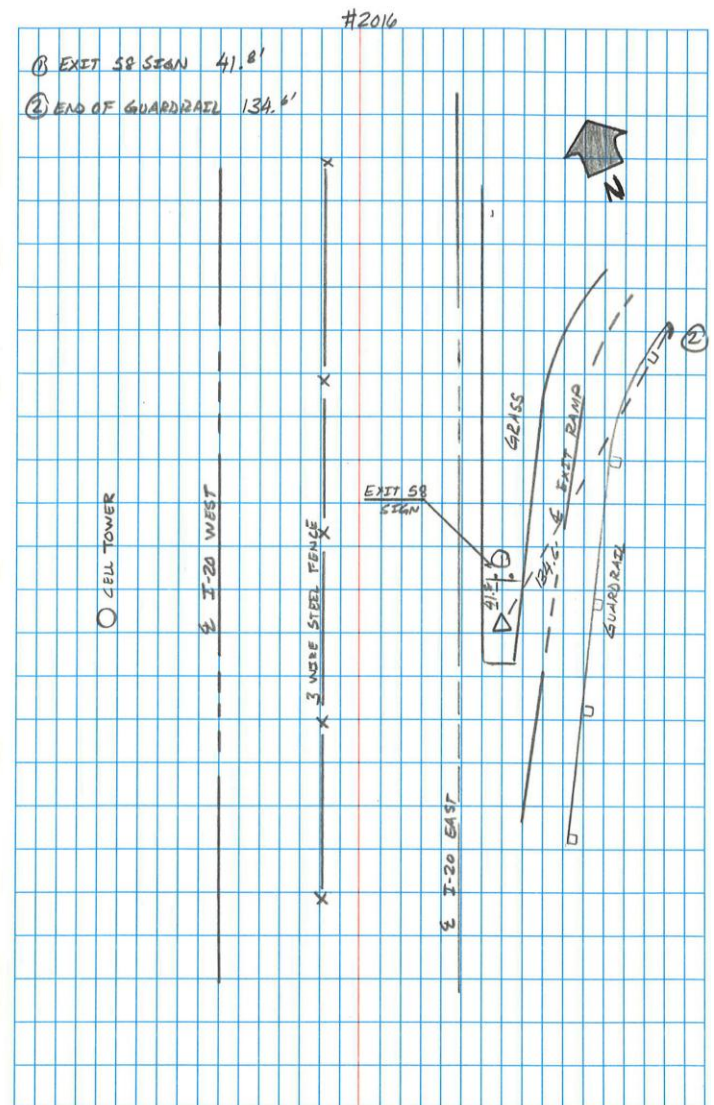
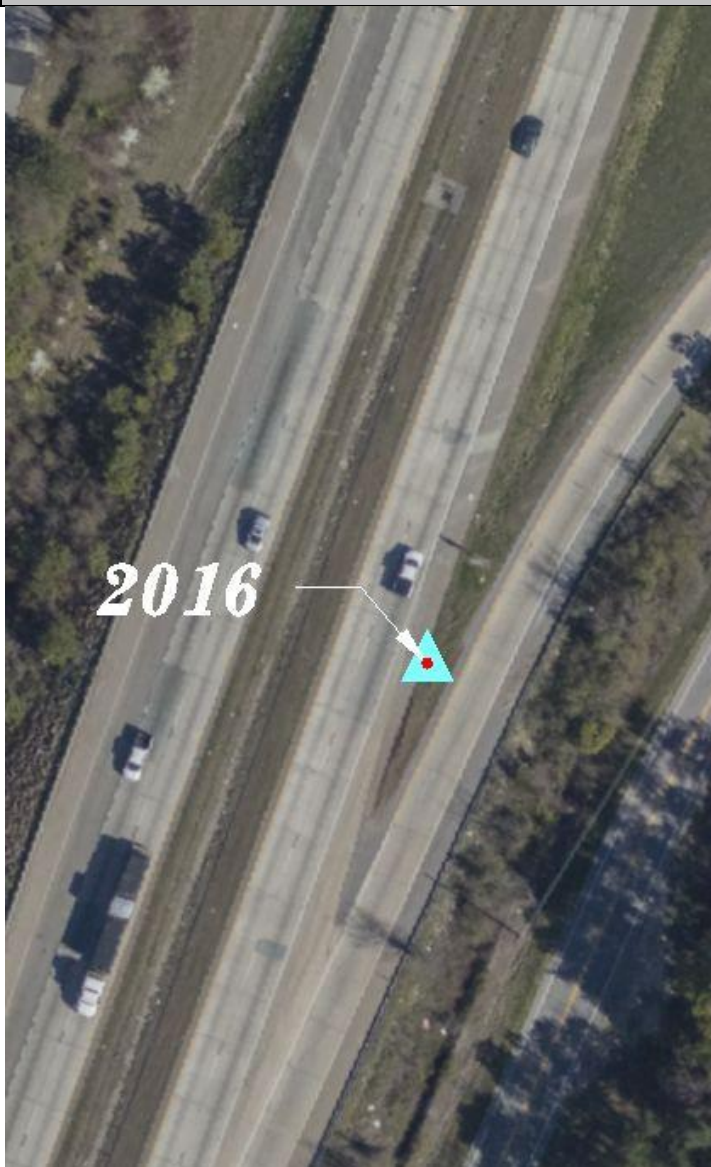
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|--------------|----------------------------|
| Point ID     | 2016                       |
| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:







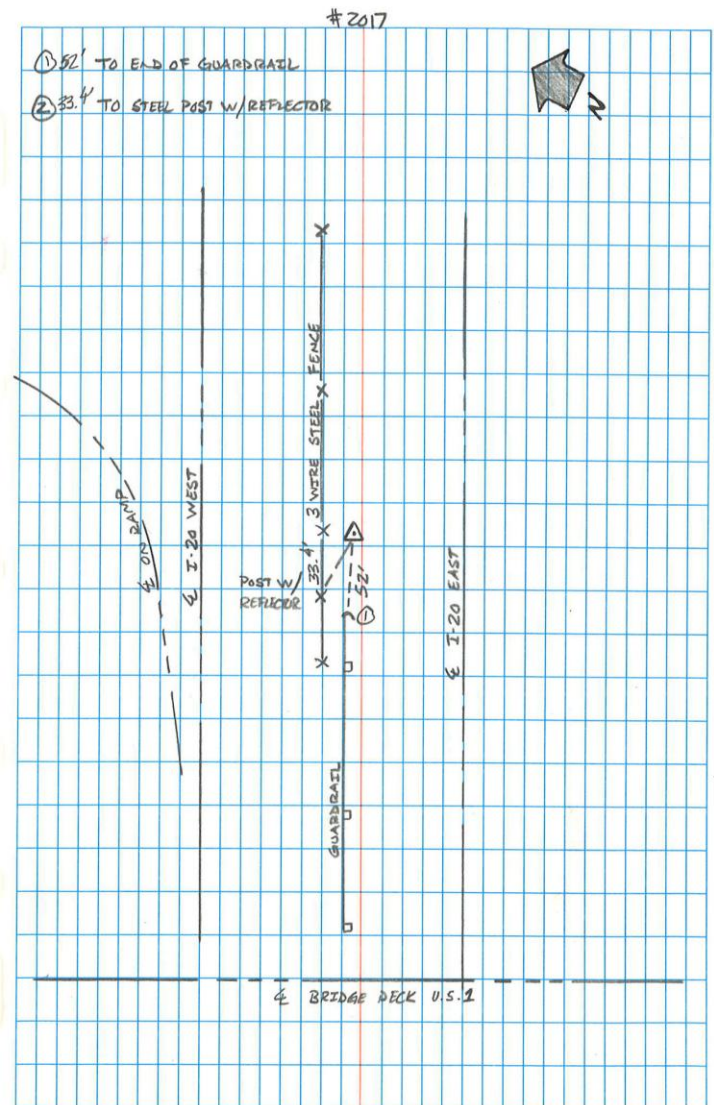
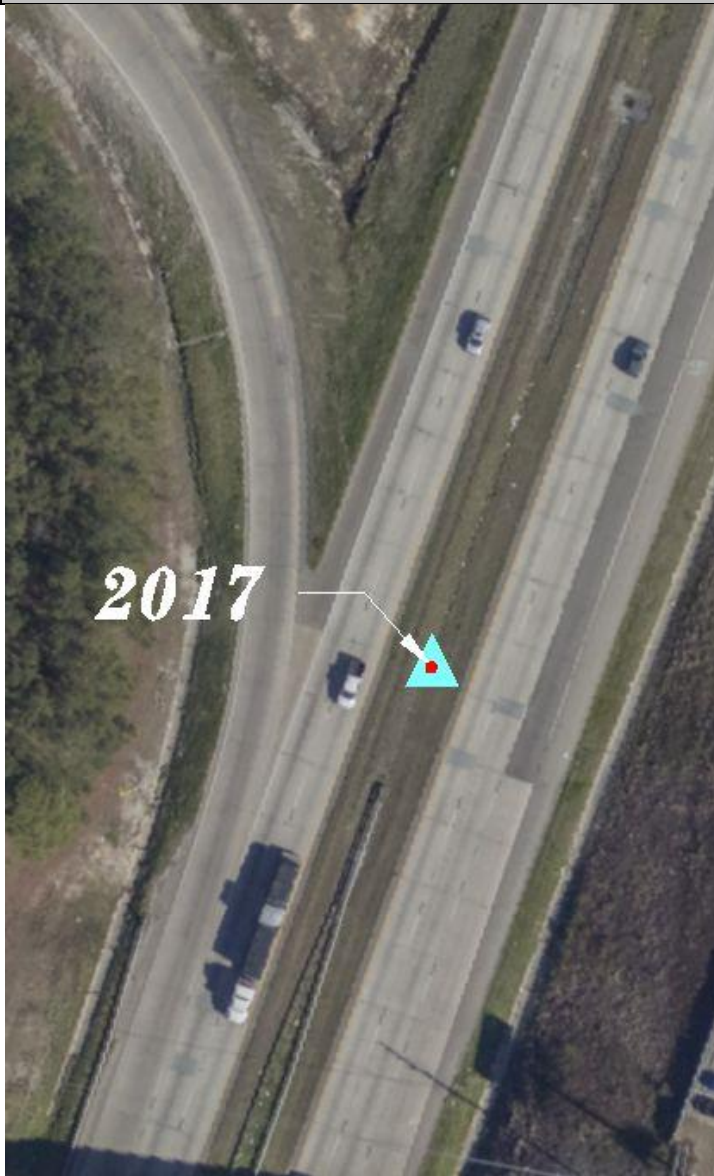
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| Point ID     | 2017                       |
| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:





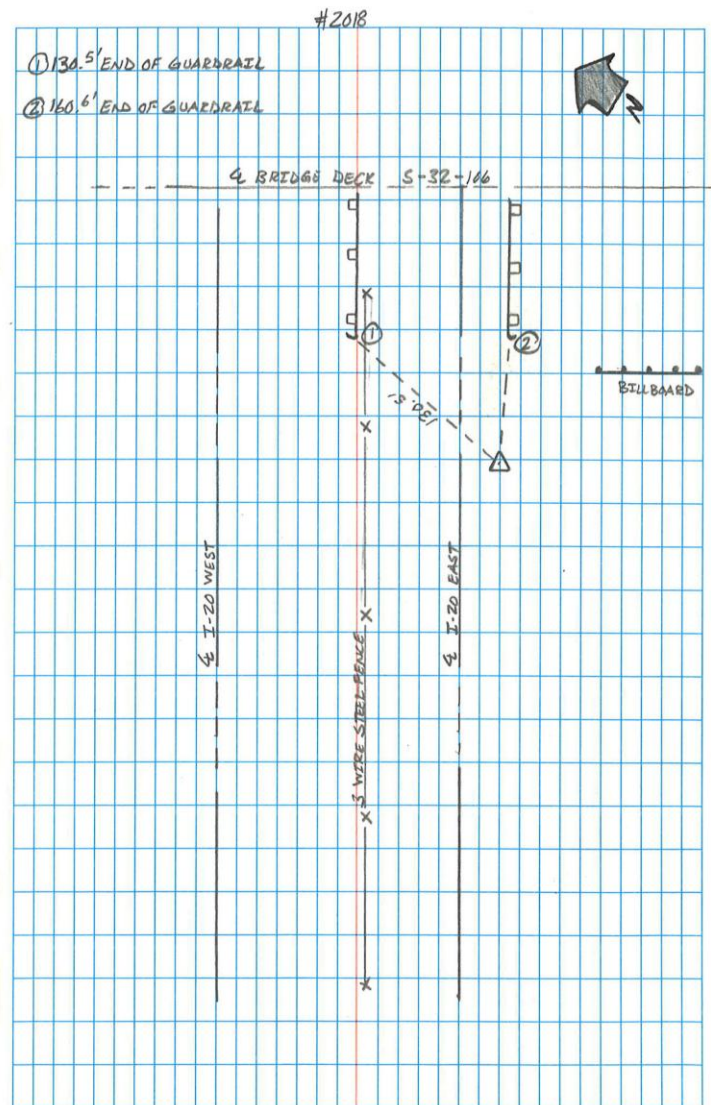
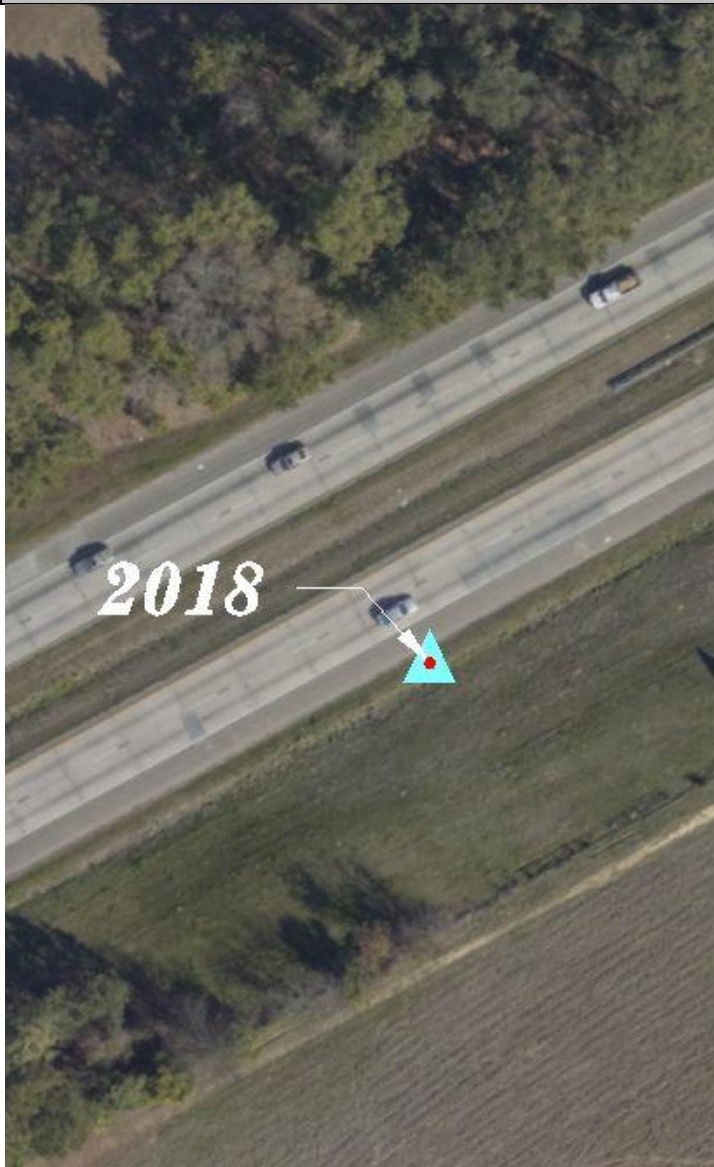
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|--------------|----------------------------|
| Point ID     | 2018                       |
| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:





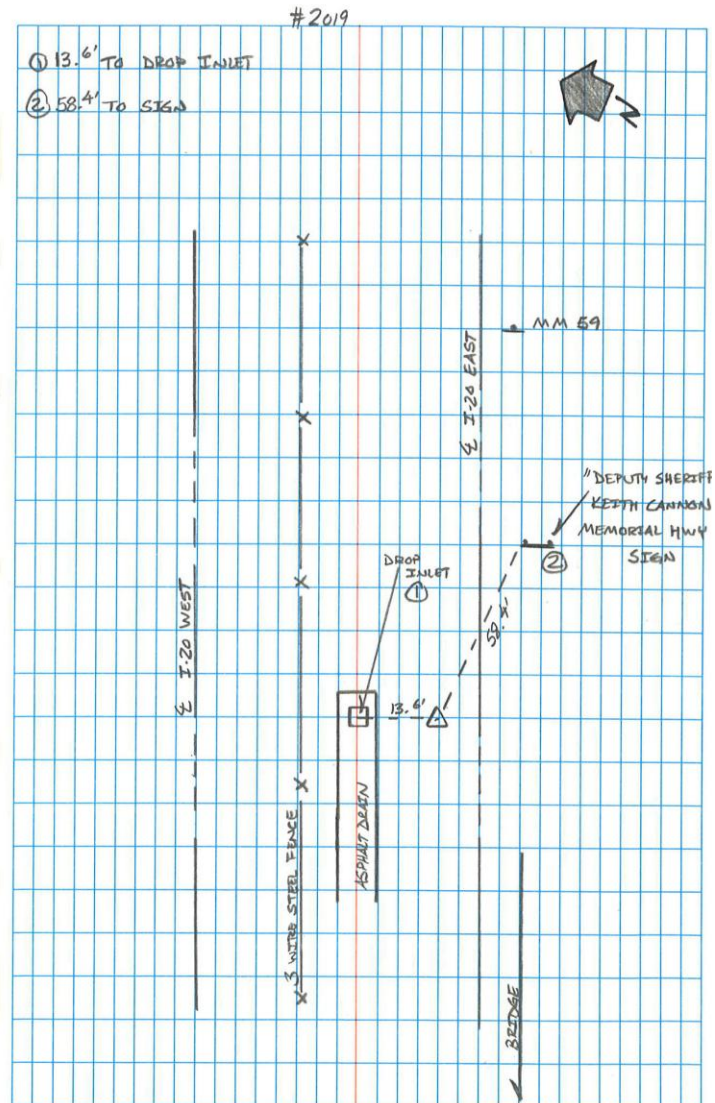
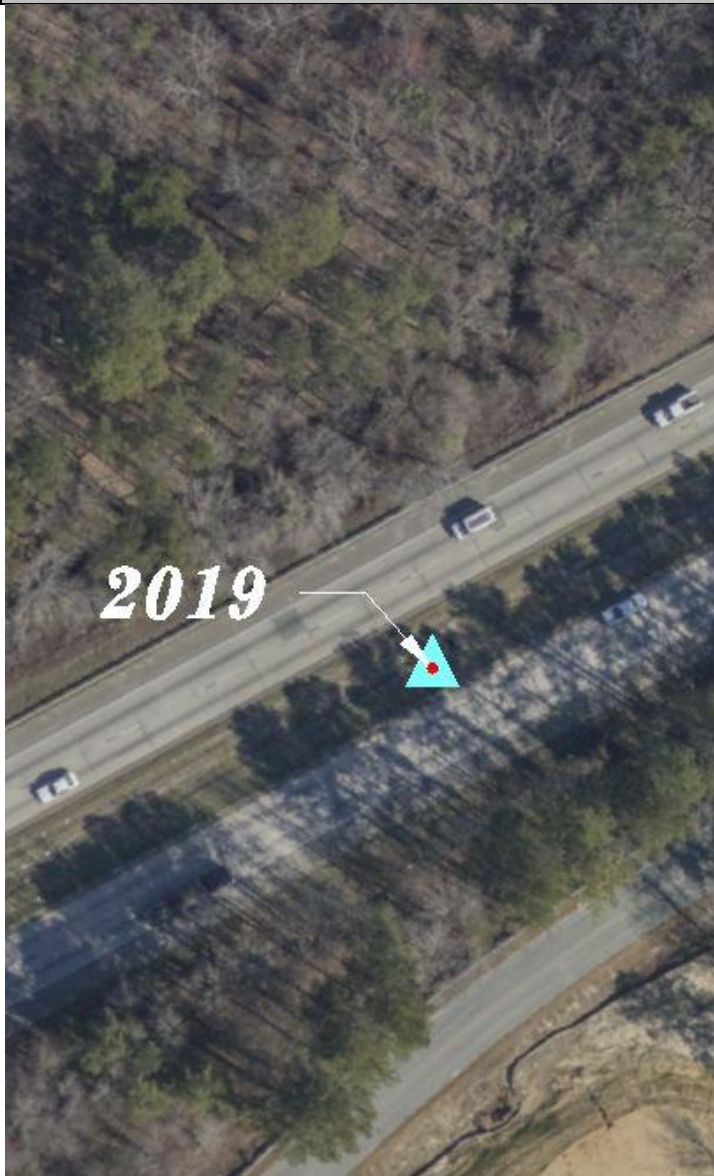
|              |                            |
|--------------|----------------------------|
| Point ID     | 2019                       |
| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:





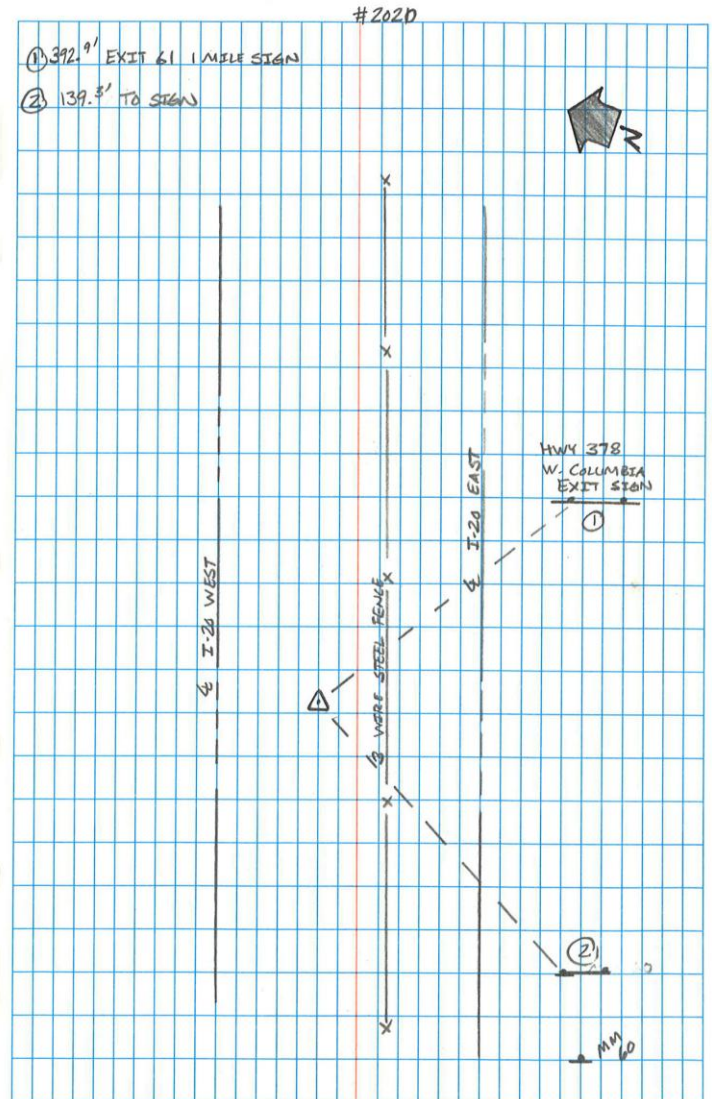
|              |                            |
|--------------|----------------------------|
| Point ID     | 2020                       |
| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:





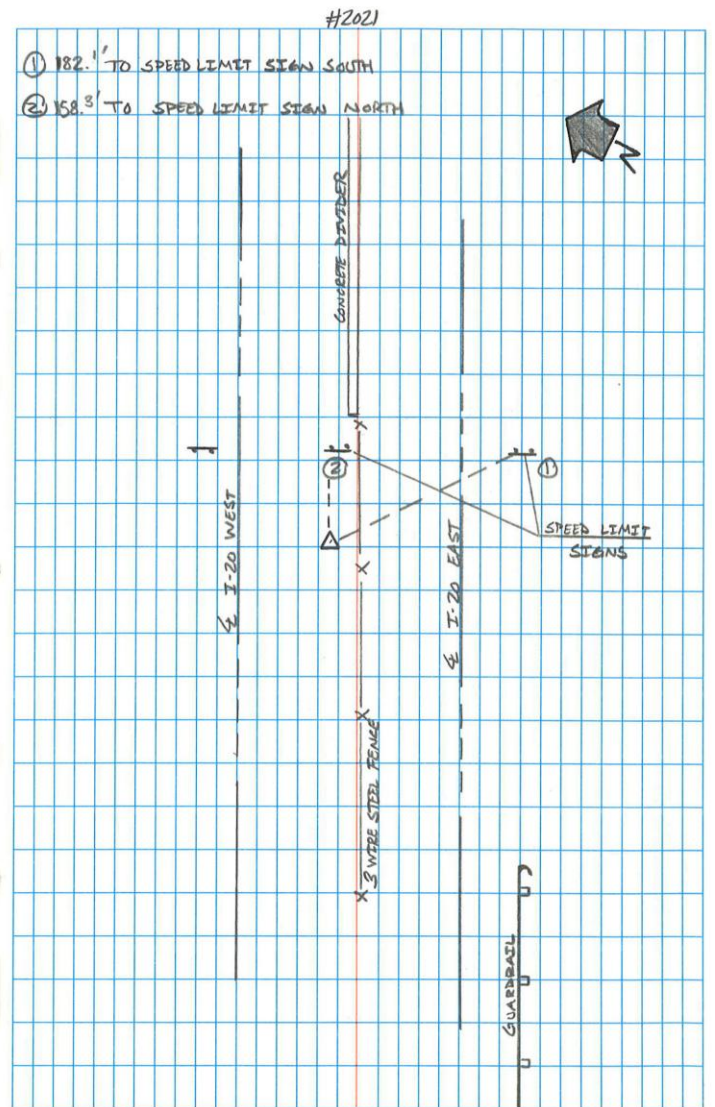
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|--------------|----------------------------|
| Point ID     | 2021                       |
| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:





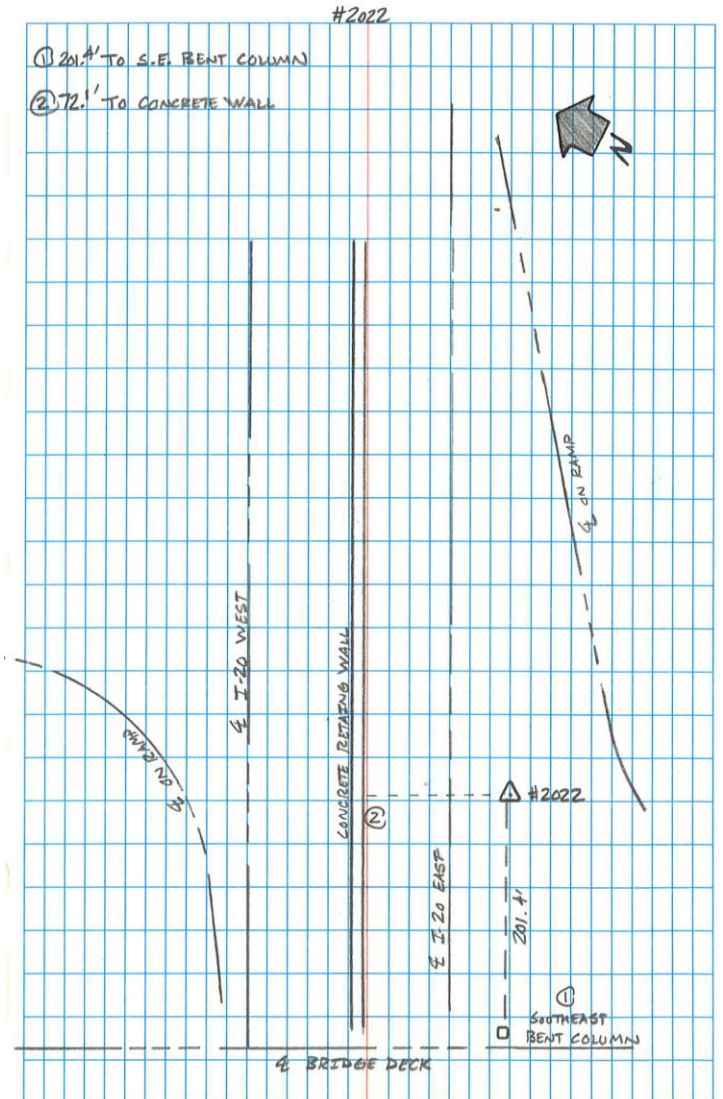
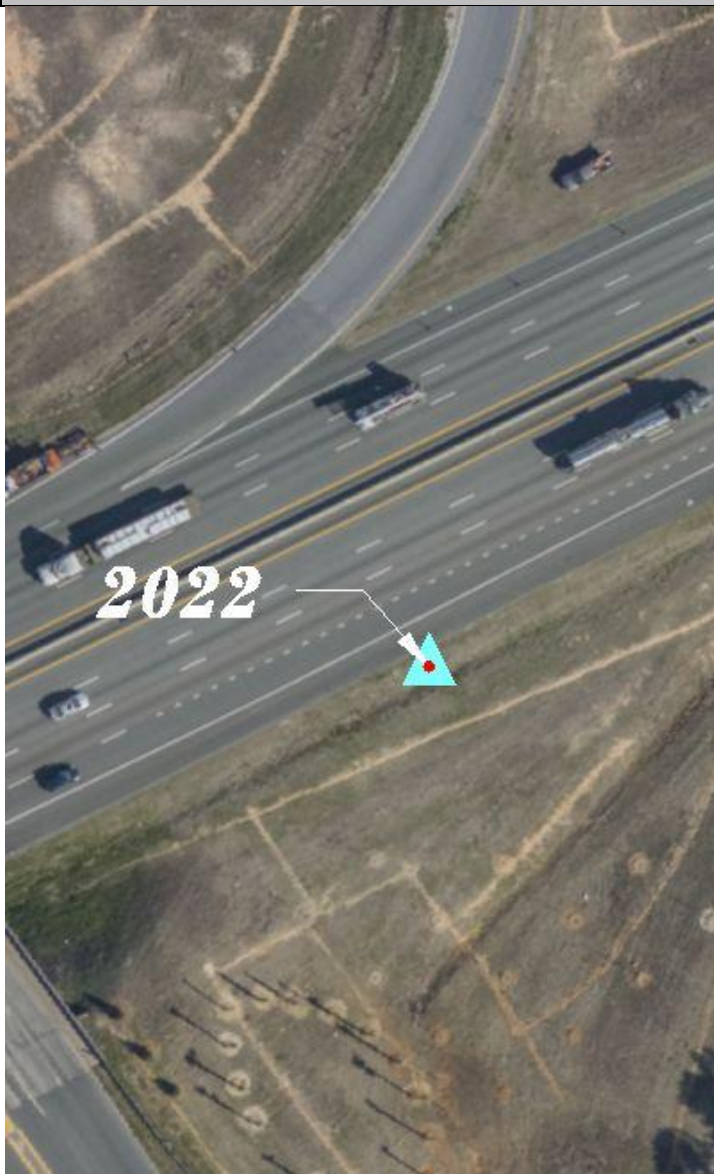
|              |                            |
|--------------|----------------------------|
| Point ID     | 2022                       |
| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:





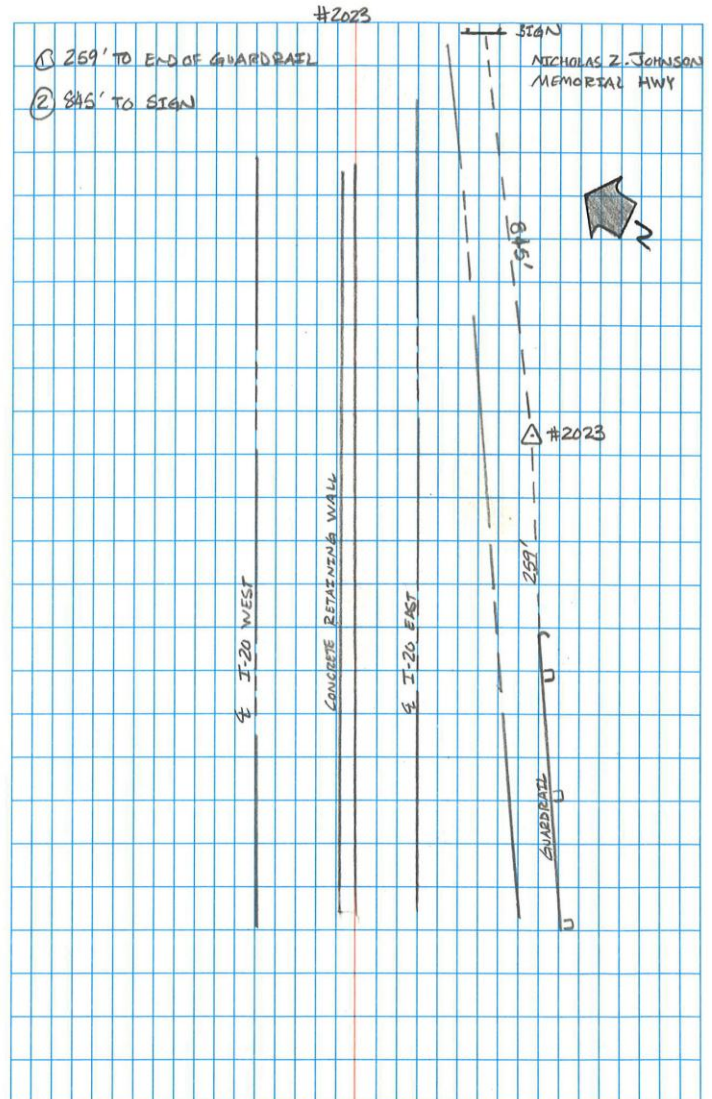
|              |                            |
|--------------|----------------------------|
| Point ID     | 2023                       |
| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:





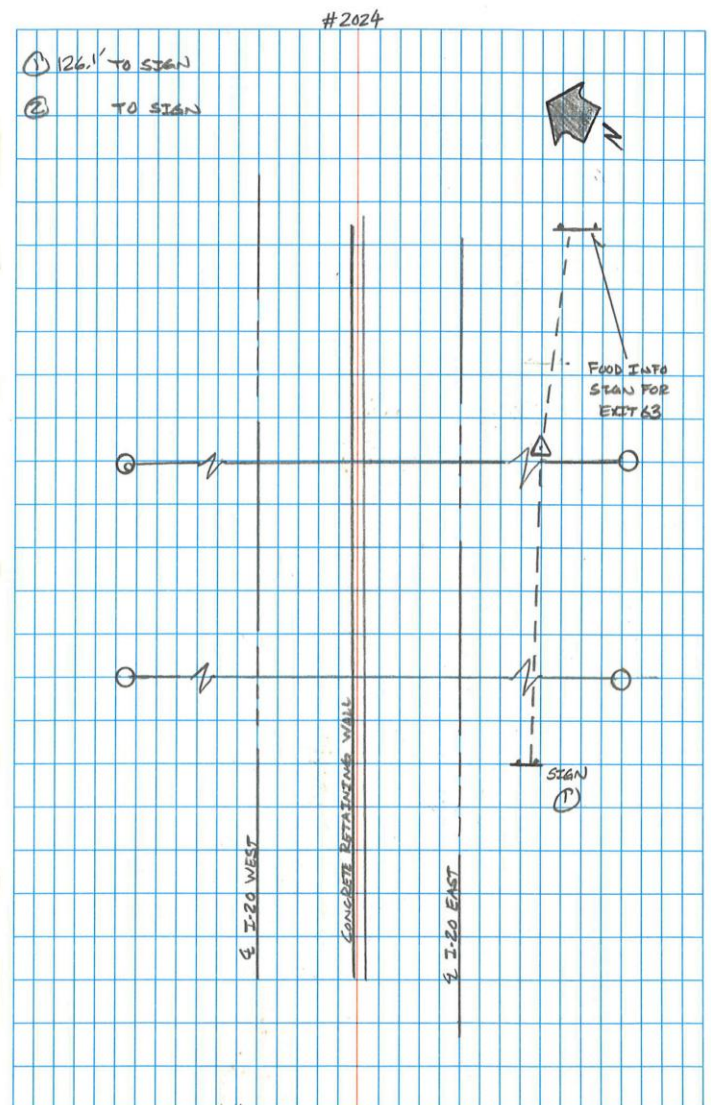
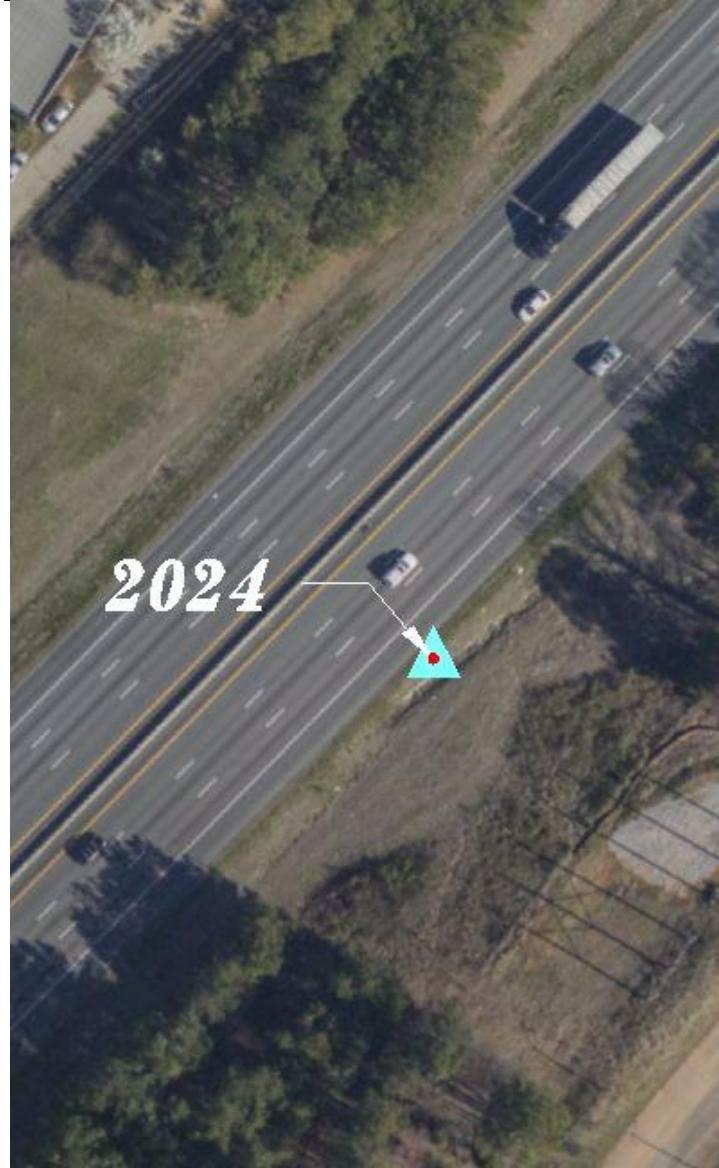
|              |                            |
|--------------|----------------------------|
| Point ID     | 2024                       |
| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:







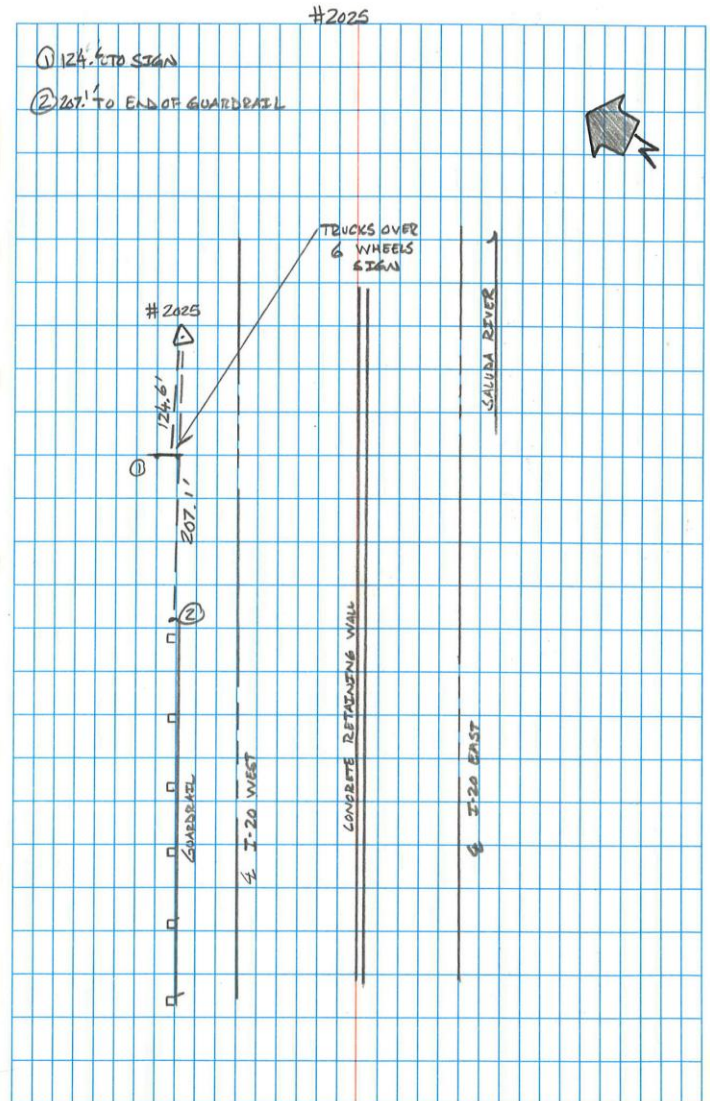
|              |                            |
|--------------|----------------------------|
| Point ID     | 2025                       |
| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:





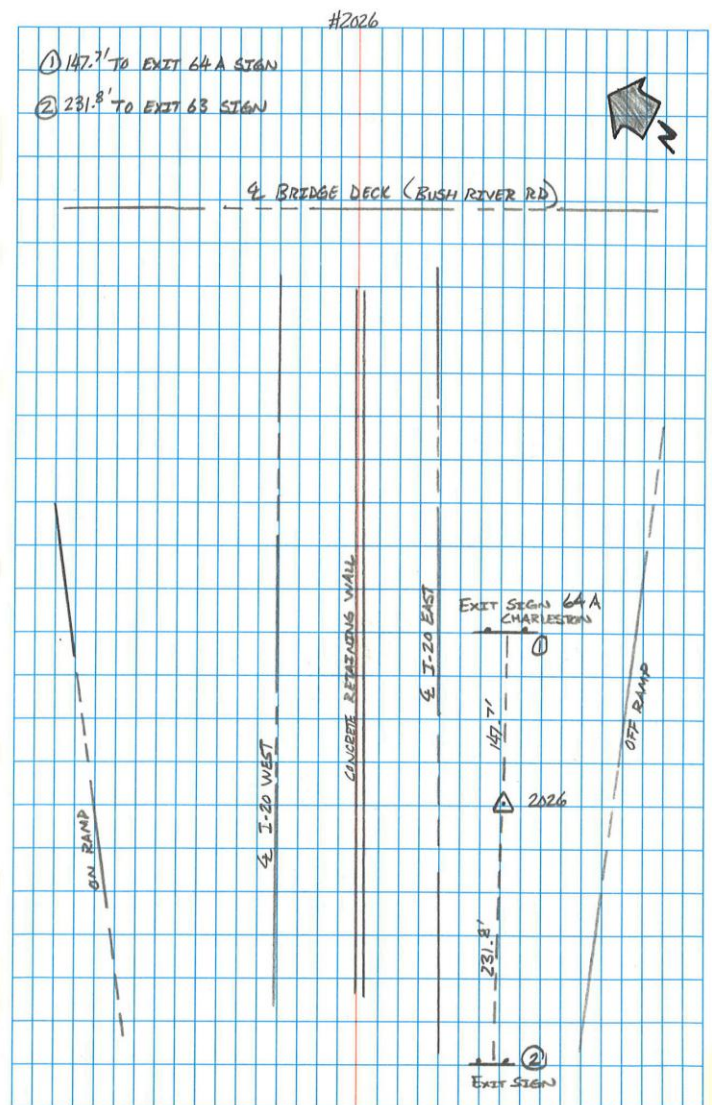
|              |                            |
|--------------|----------------------------|
| Point ID     | 2026                       |
| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:





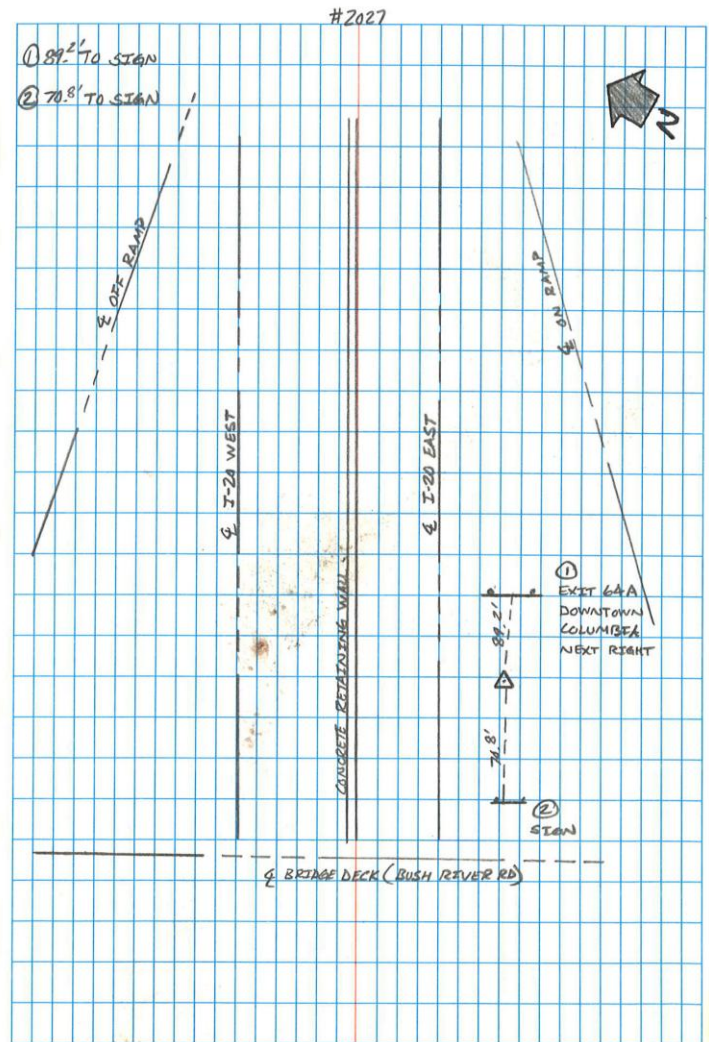
|              |                            |
|--------------|----------------------------|
| Point ID     | 2027                       |
| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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  
GEOID 12A

| 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  $\Delta Z = 0.001$  m

2038  $\Delta Z = 0.000$  m - Held as reference elevation for levels

2039  $\Delta Z = 0.000$  m

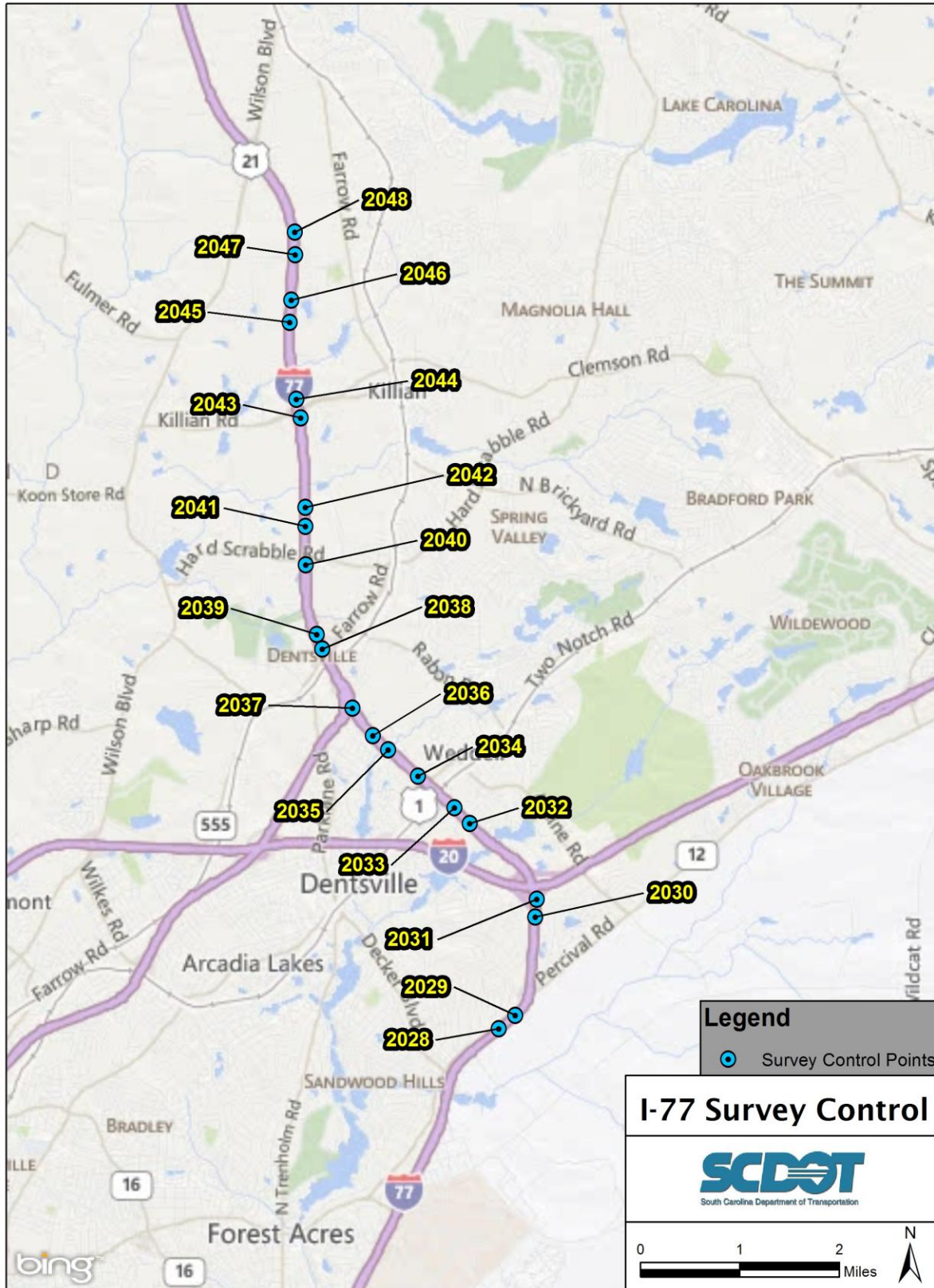
2040  $\Delta Z = 0.001$  m

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  
GEOID 12A

| 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    |



## **SECTION 4D – I-77 SURVEY CONTROL DATA SHEETS**



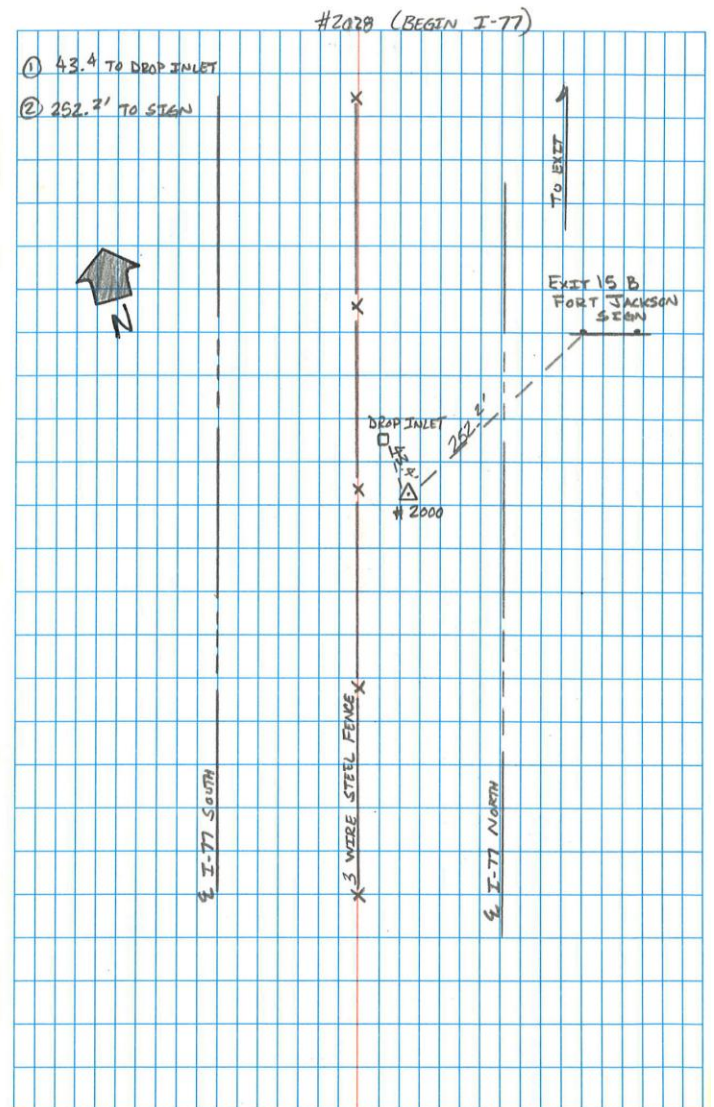
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|--------------|----------------------------|
| Point ID     | 2028                       |
| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:







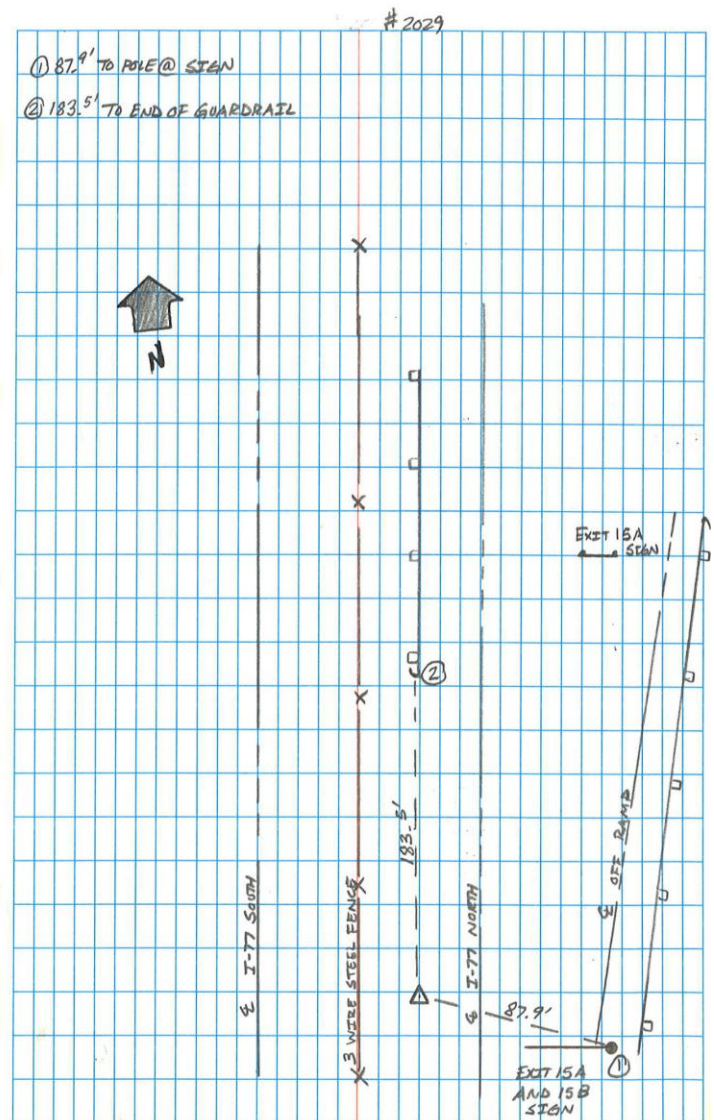
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| Point ID     | 2029                       |
| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:





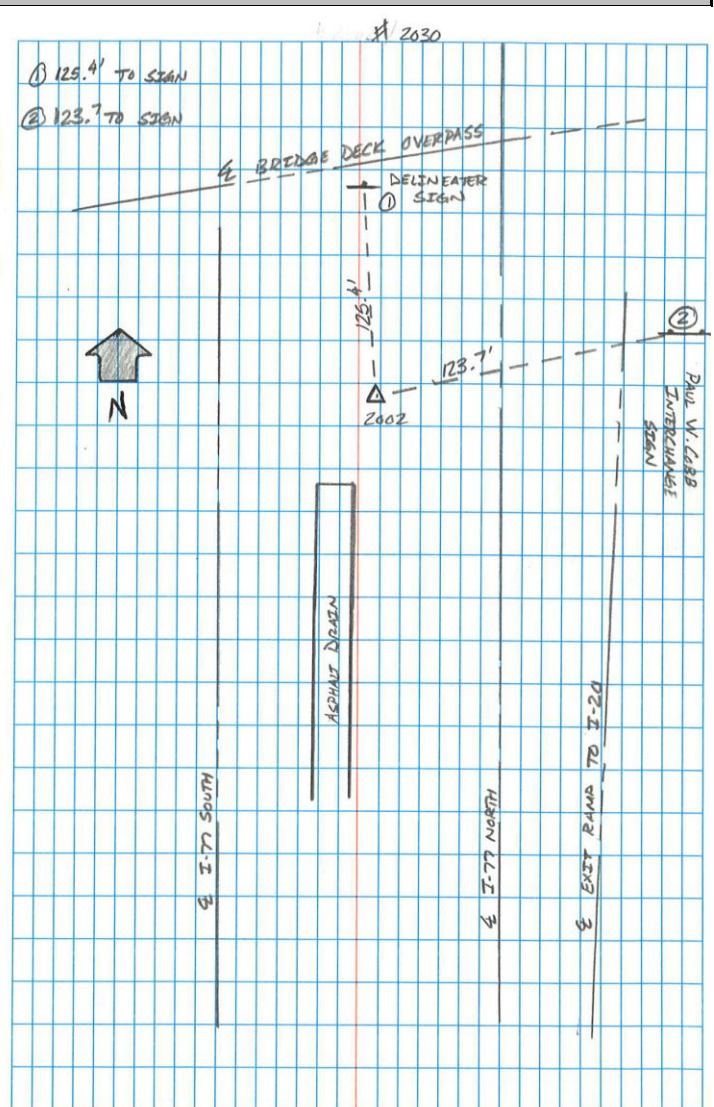
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| Point ID     | 2030                       |
| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:





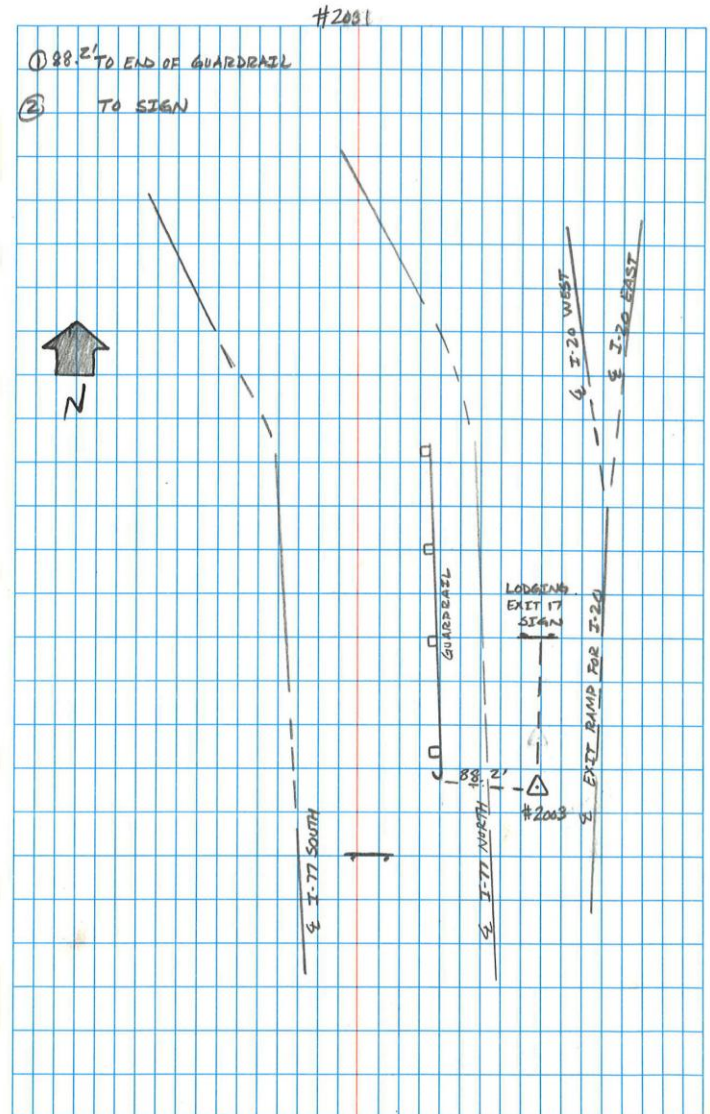
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| Point ID     | 2031                       |
| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:





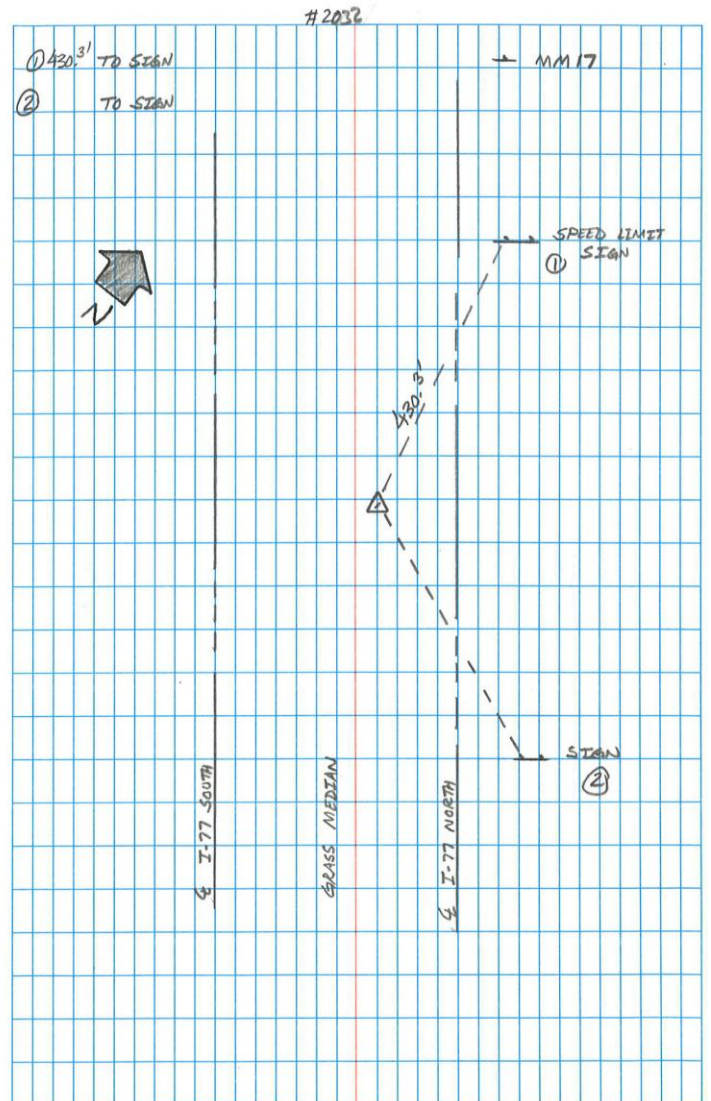
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| Point ID     | 2032                       |
| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:





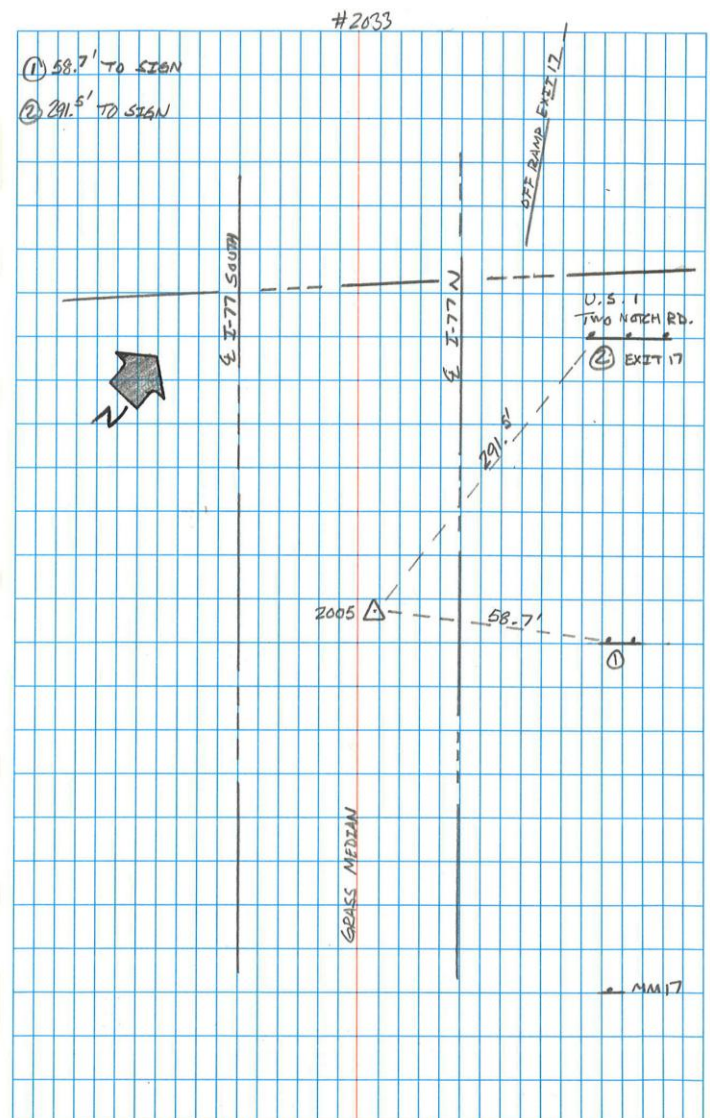
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| Point ID     | 2033                       |
| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:





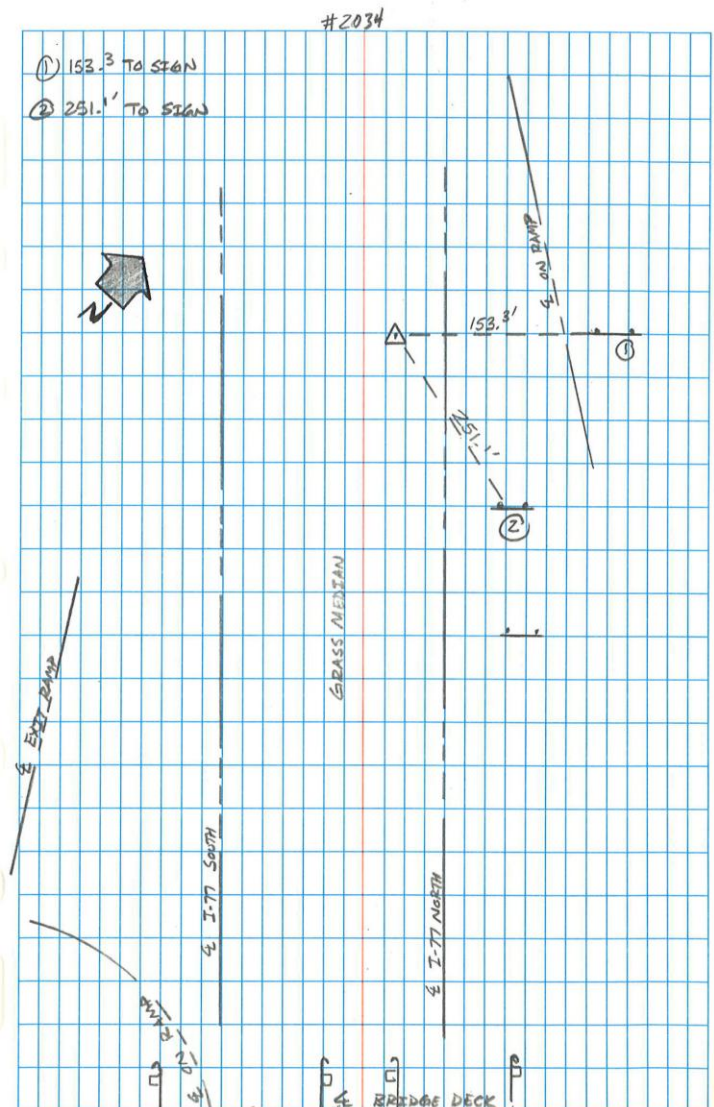
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| Point ID     | 2034                       |
| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:





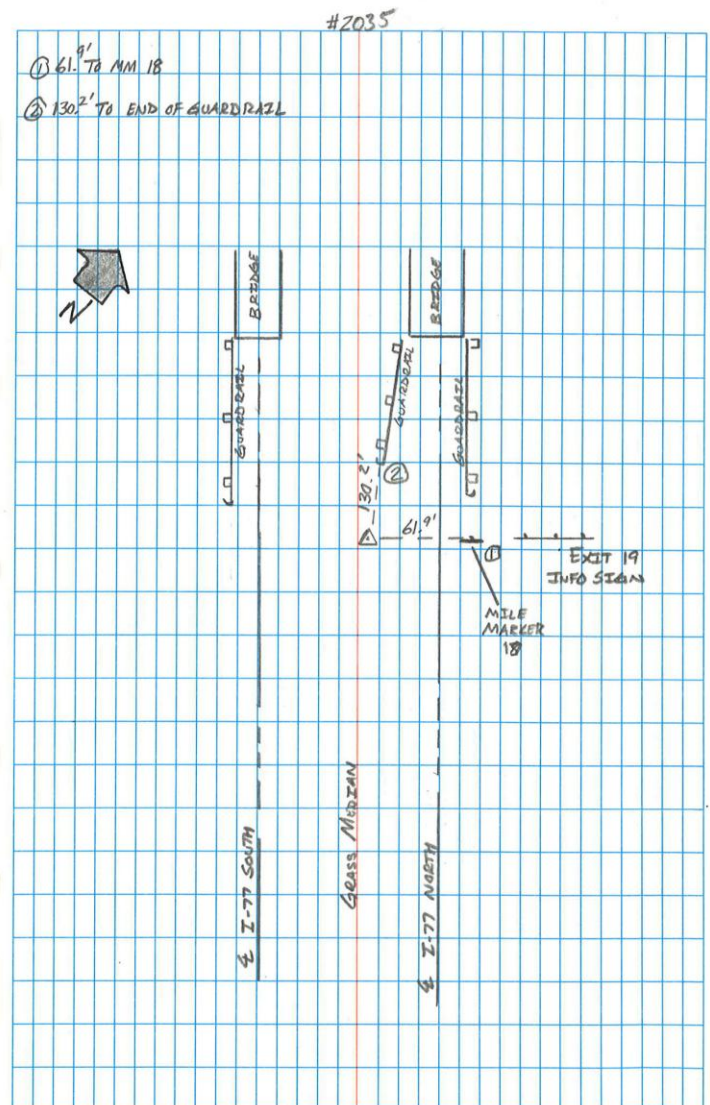
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| Point ID     | 2035                       |
| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:





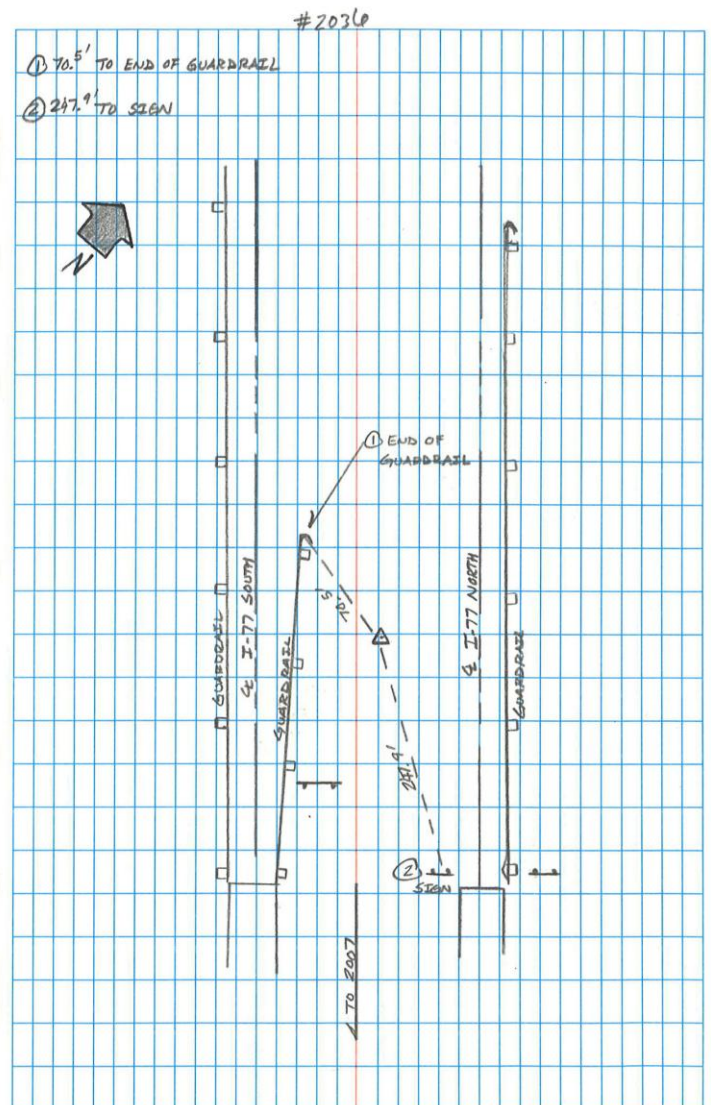
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| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:







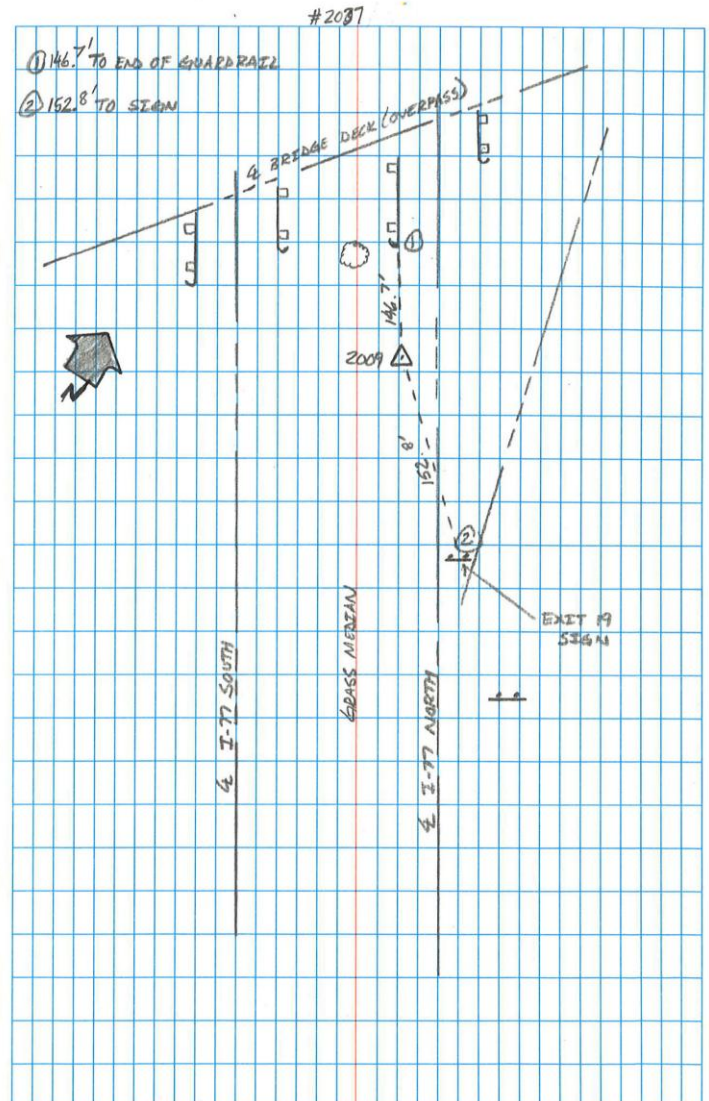
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|--------------|----------------------------|
| Point ID     | 2037                       |
| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:





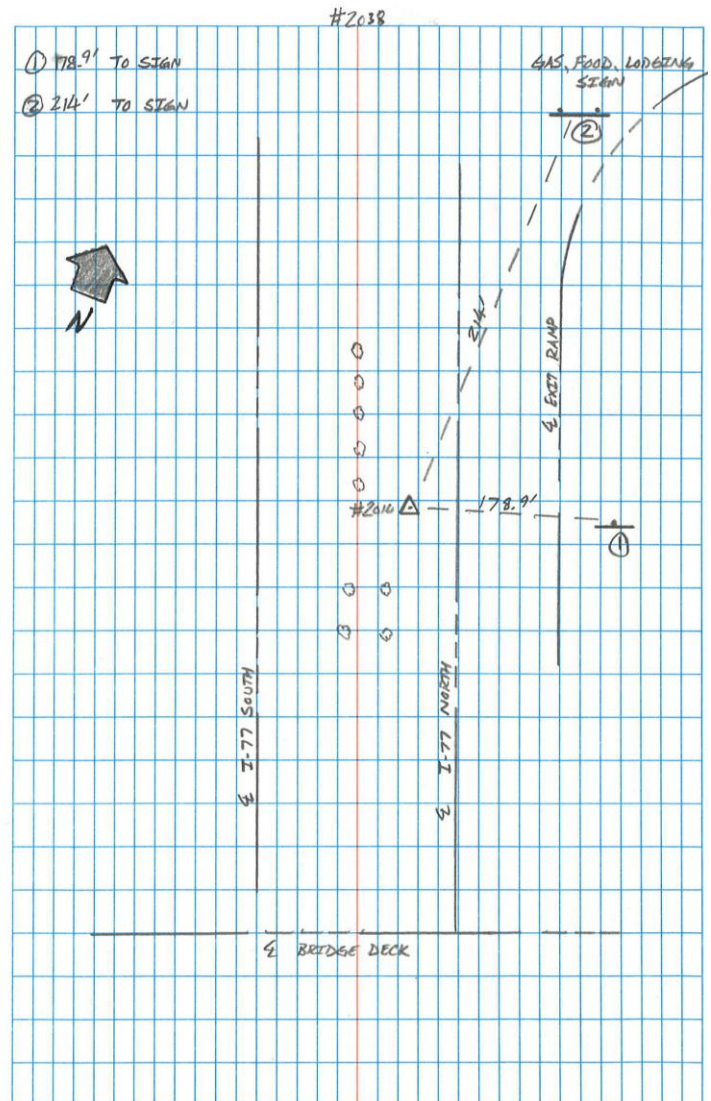
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| Point ID     | 2038                       |
| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:





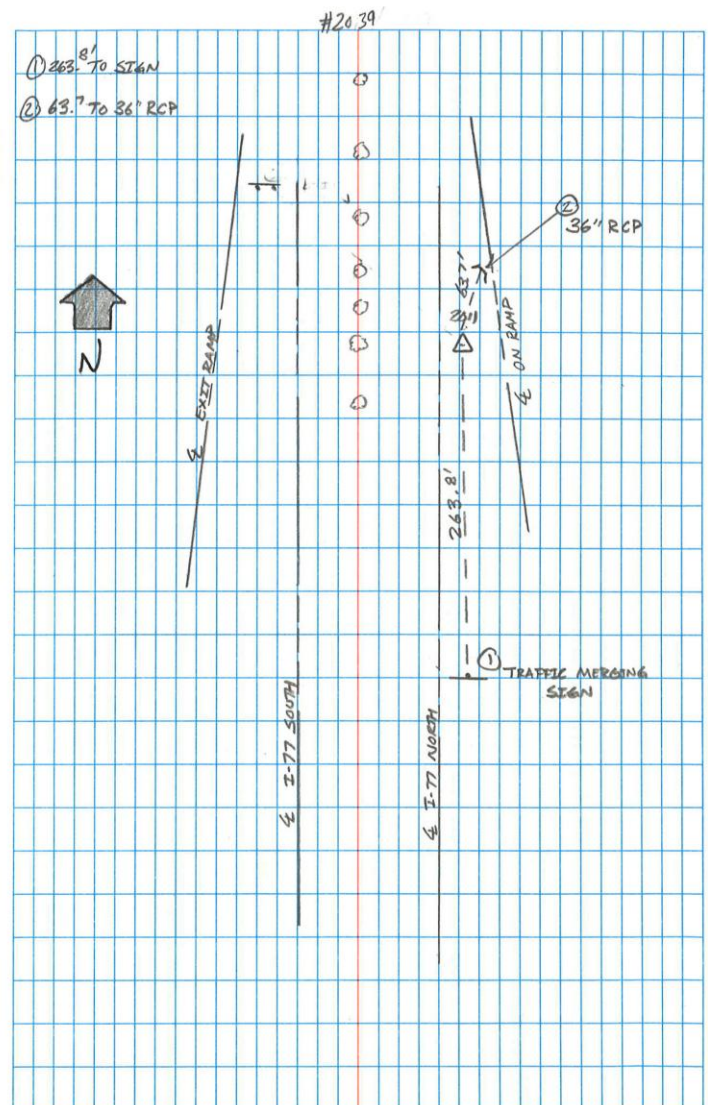
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| Point ID     | 2039                       |
| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:





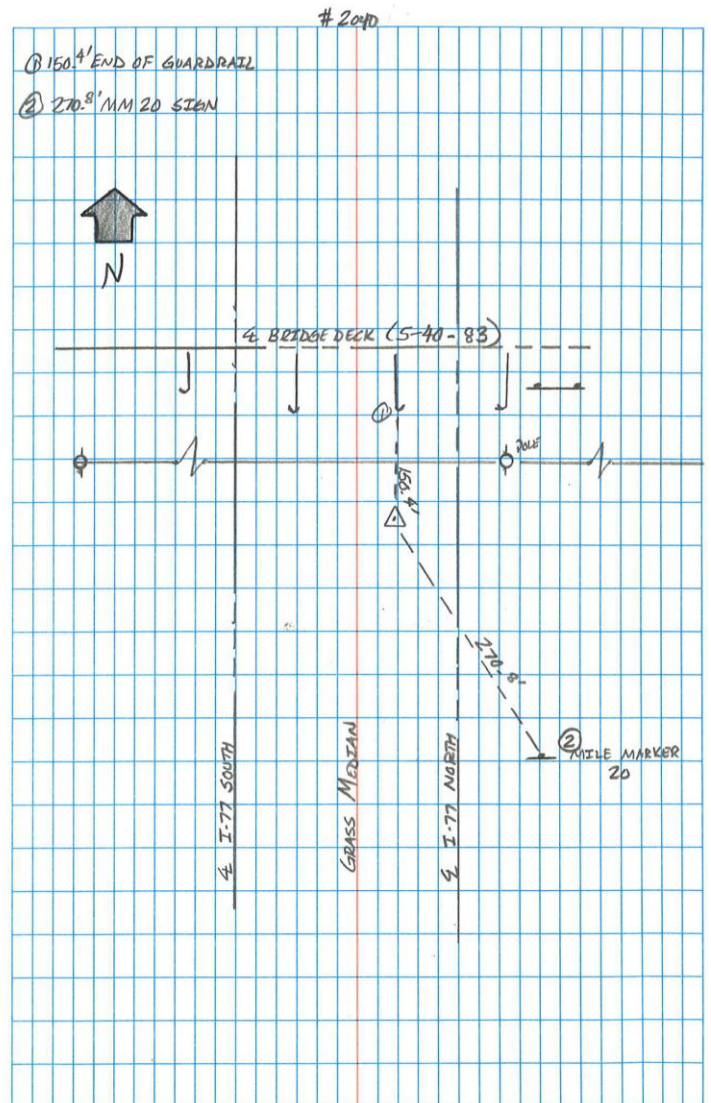
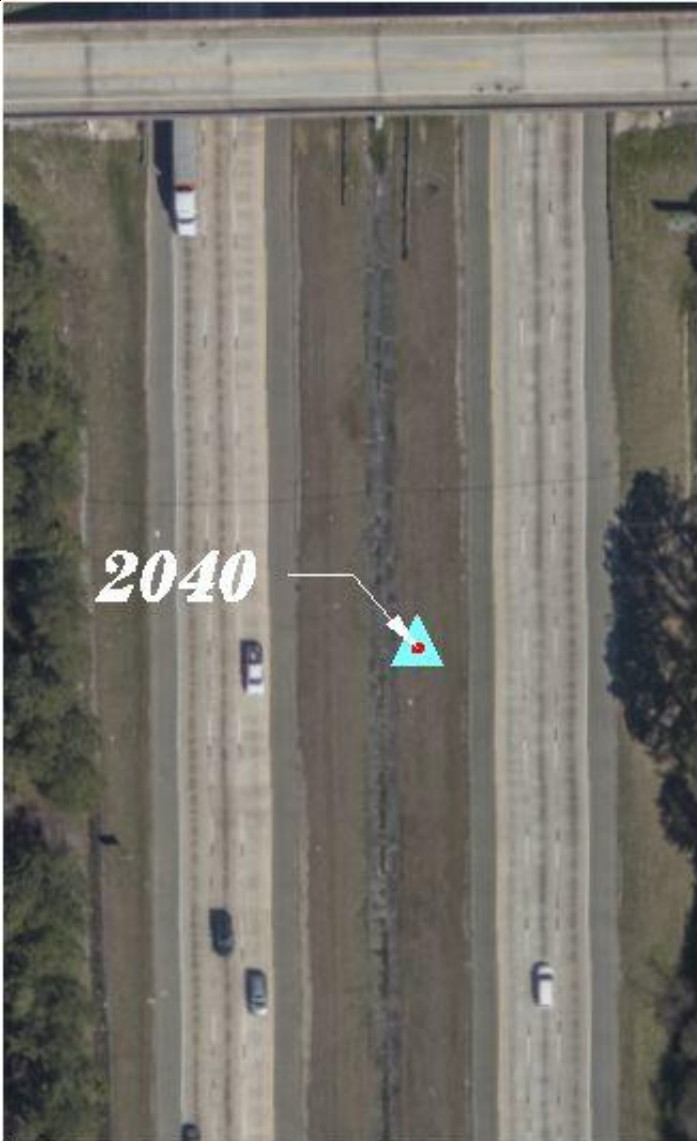
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|--------------|----------------------------|
| Point ID     | 2040                       |
| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:





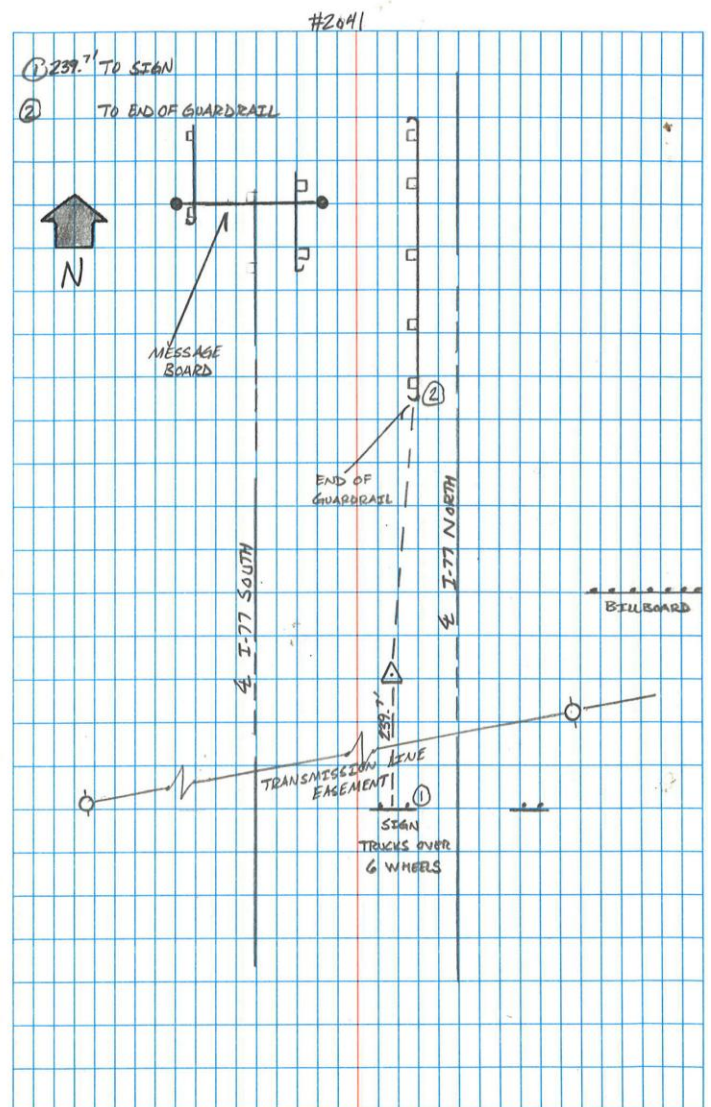
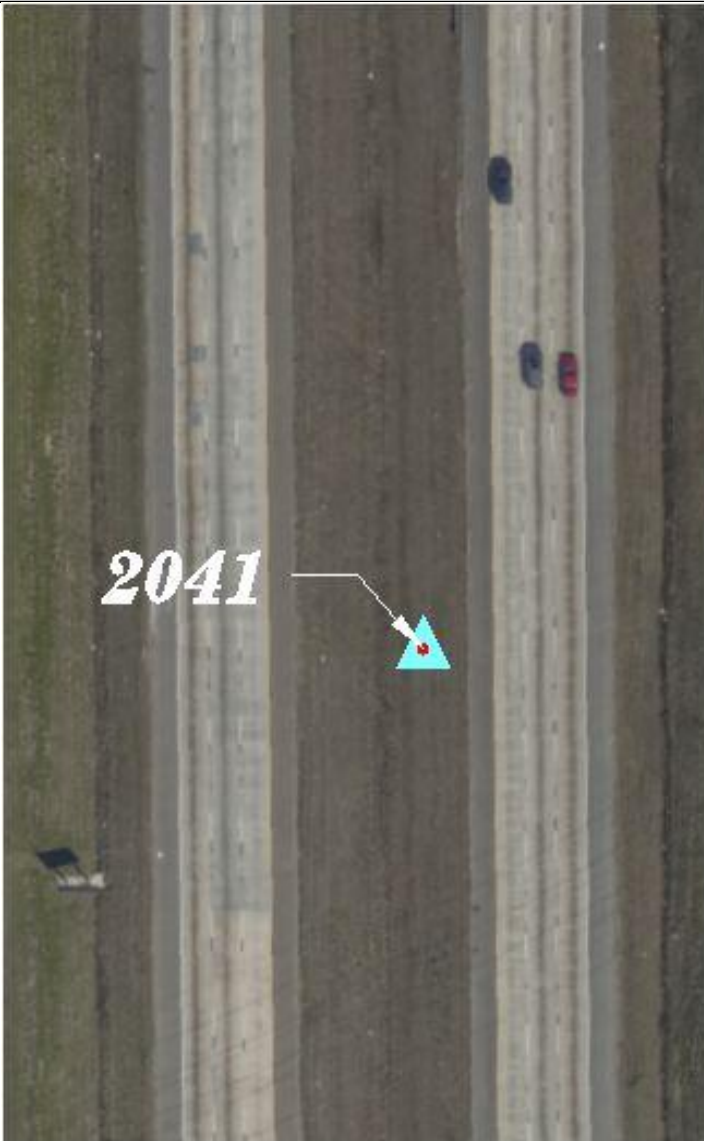
|              |                            |
|--------------|----------------------------|
| Point ID     | 2041                       |
| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:





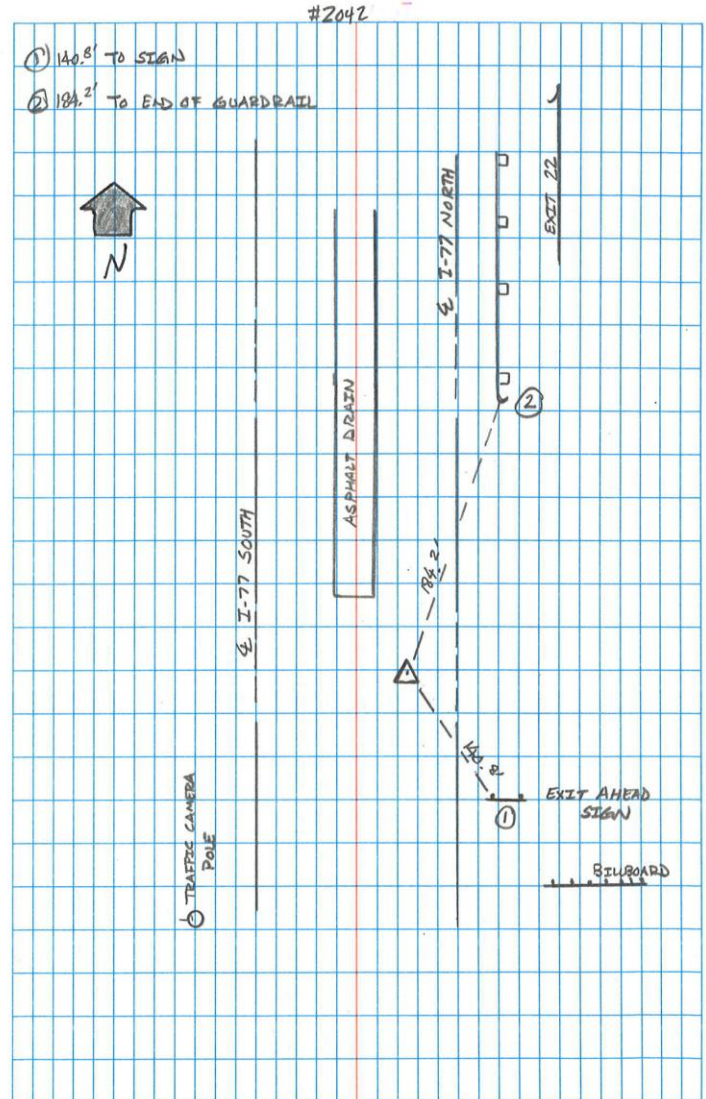
|              |                            |
|--------------|----------------------------|
| Point ID     | 2042                       |
| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:





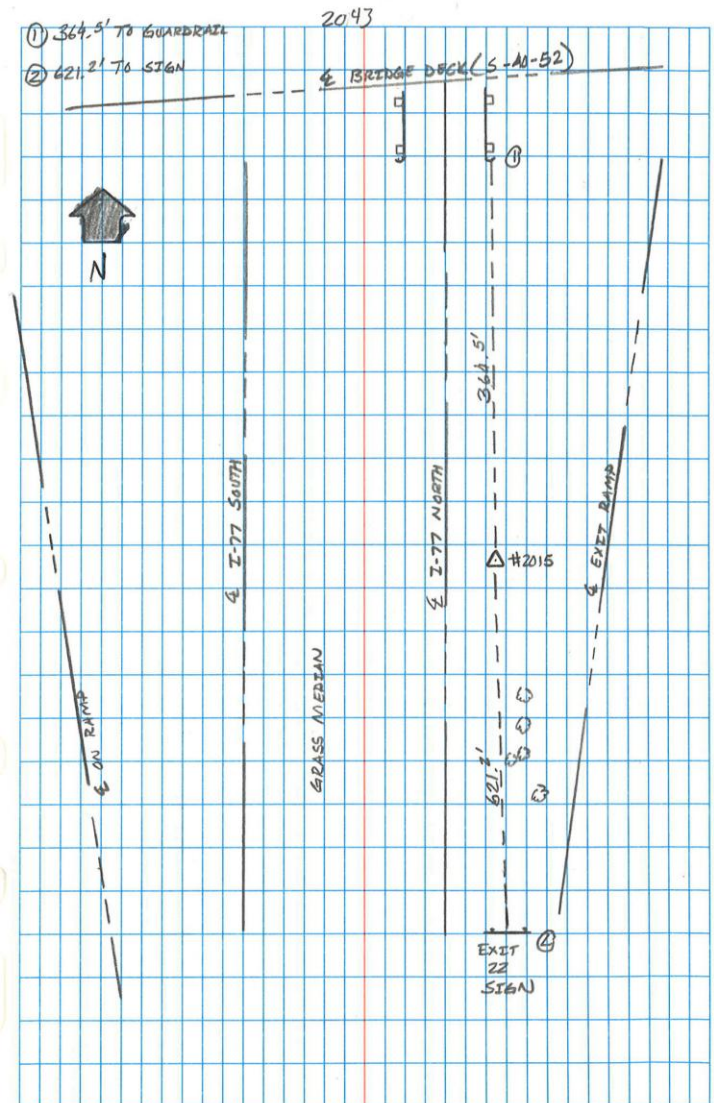
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|--------------|----------------------------|
| Point ID     | 2043                       |
| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:





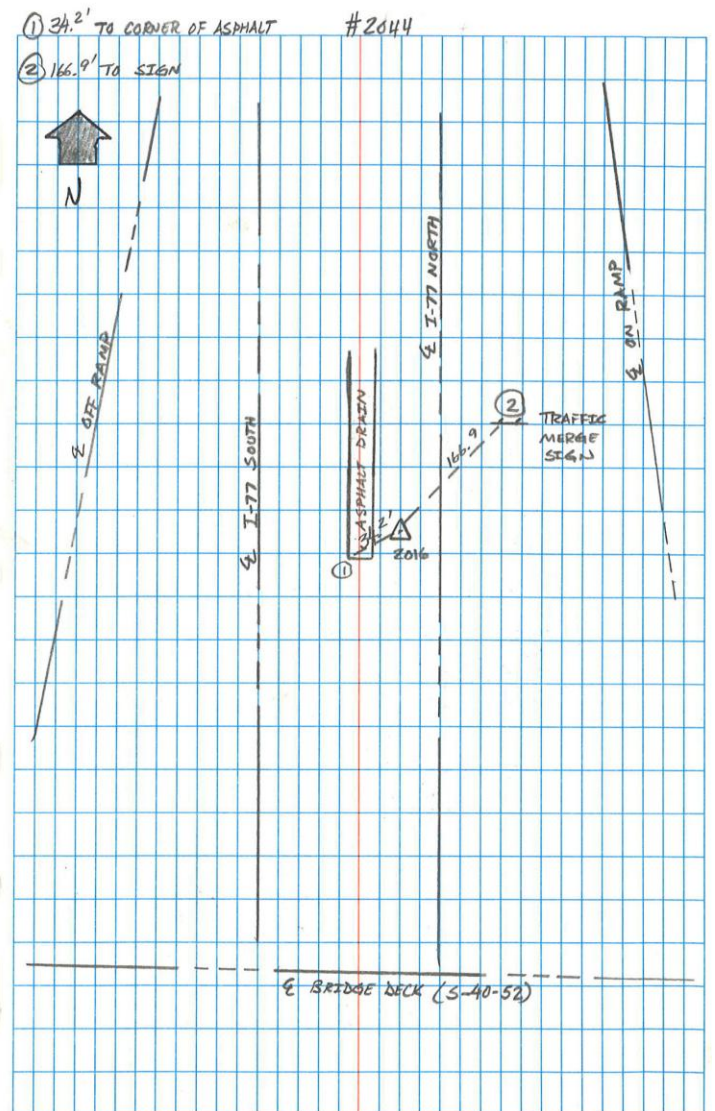
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|--------------|----------------------------|
| Point ID     | 2044                       |
| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:







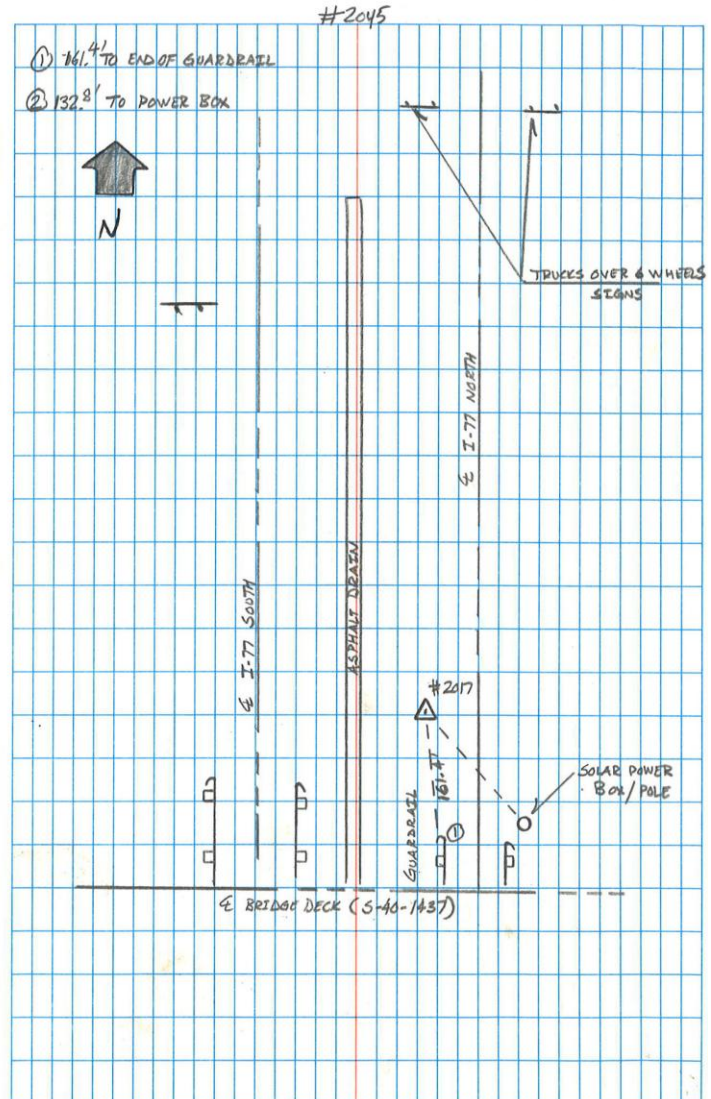
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|--------------|----------------------------|
| Point ID     | 2045                       |
| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:





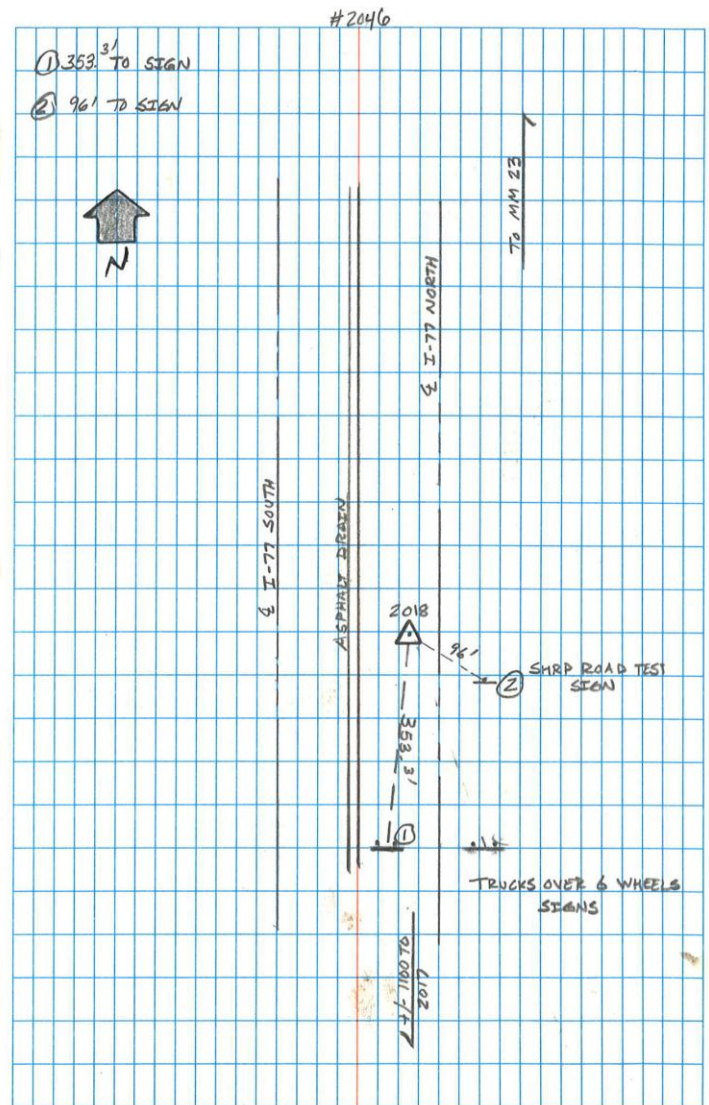
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|--------------|----------------------------|
| Point ID     | 2046                       |
| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:





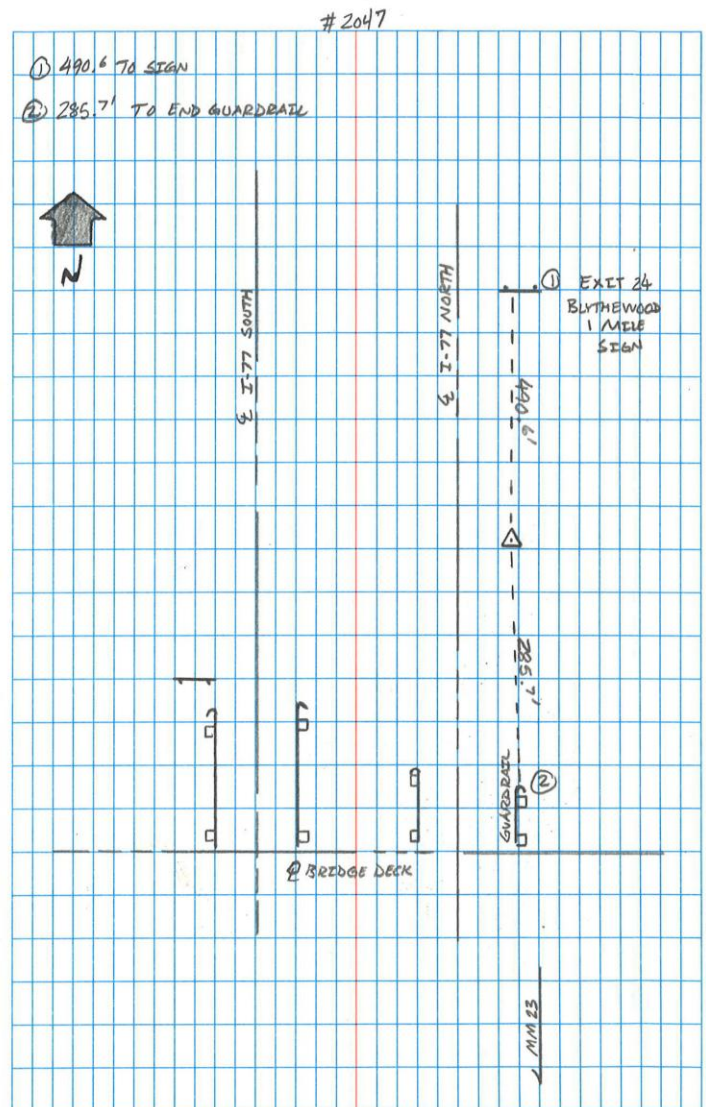
|              |                            |
|--------------|----------------------------|
| Point ID     | 2047                       |
| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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:





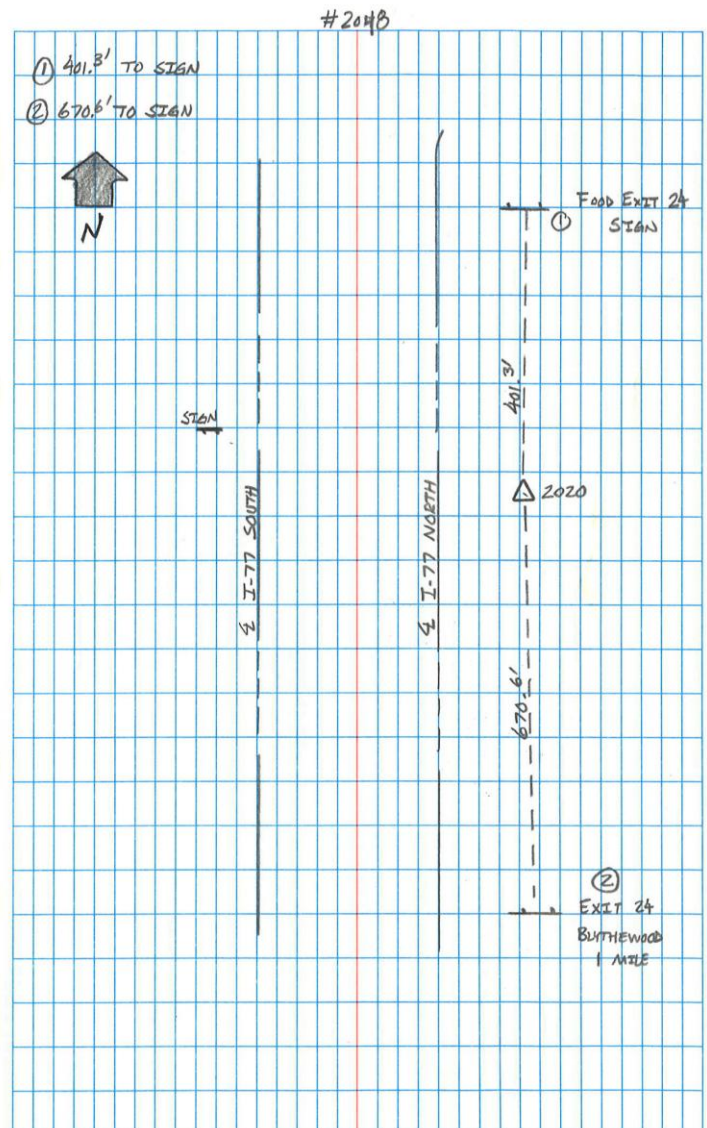
|              |                            |
|--------------|----------------------------|
| Point ID     | 2048                       |
| Project No.  | 22087                      |
| Project Name | SCDOT I-20 & I-77 Widening |
| State        | South Carolina             |

|   |                   |
|---|-------------------|
|   | 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  
GEOID 12A

| 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 |