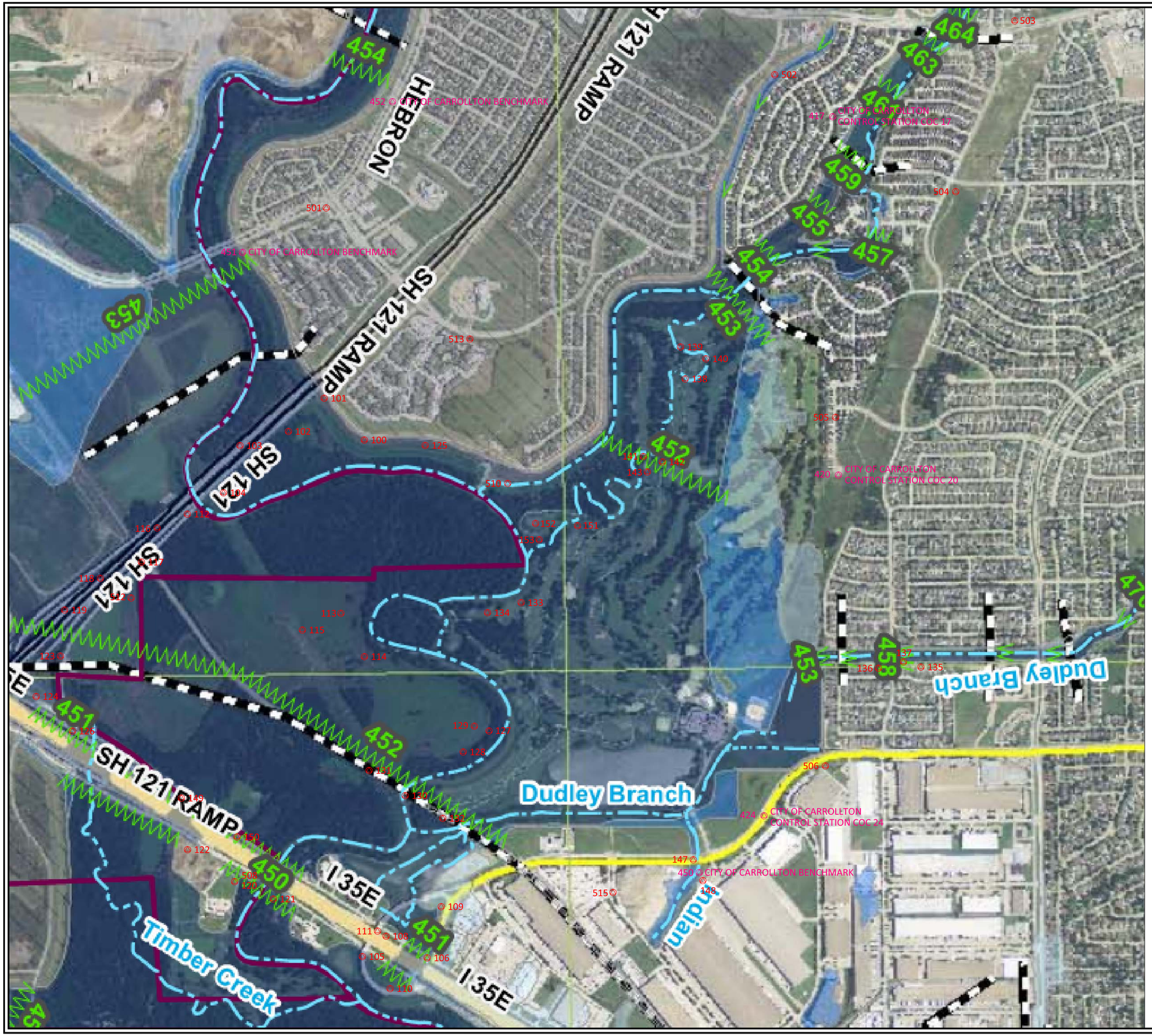


0 250 500 1000
(FEET)
1 inch =500ft.

LOWER DUDLEY PRIMARY CONTROL TABLE				
POINT	NORTHING	EASTING	ELEV.	DESCRIPTION
100	7053049.85	2445157.39	462.39	EBG CONTROL 1/2" REBAR RED CAP
101	7053526.26	2444699.71	457.53	EBG CONTROL 1/2" REBAR YELLOW CAP
102	7053147.00	2444292.48	450.46	EBG CONTROL 1/2" REBAR RED CAP
103	7052985.97	2443739.34	451.93	EBG CONTROL 1/2" REBAR RED CAP
104	7052447.33	2443551.61	449.59	EBG CONTROL 1/2" REBAR RED CAP
105	7047157.10	2445134.68	458.82	EBG CONTROL 1/2" REBAR RED CAP
106	7047141.67	2445873.86	443.59	EBG CONTROL 1/2" REBAR RED CAP
107	7047726.24	2446034.03	457.93	EBG CONTROL 1/2" REBAR RED CAP
108	7047388.76	2445405.31	456.88	EBG CONTROL 1/2" REBAR RED CAP
109				POINT NUMBER NOT USED
110	7046791.27	2445451.36	438.21	EBG CONTROL 1/2" REBAR RED CAP
111	7047447.97	2445307.79	456.93	EBG CONTROL 1/2" REBAR RED CAP
112	7052204.01	2443139.13	446.35	EBG CONTROL 1/2" REBAR RED CAP
113	7051072.69	2444891.04	449.68	EBG CONTROL 1/2" REBAR RED CAP
114	7050578.44	2445158.44	448.47	EBG CONTROL 1/2" REBAR RED CAP
115	7050882.28	2444451.05	448.04	EBG CONTROL 1/2" REBAR RED CAP
116	7052046.69	2442795.41	450.30	EBG CONTROL 1/2" REBAR RED CAP
117	7051656.76	2442615.60	450.46	EBG CONTROL 1/2" REBAR RED CAP
118	7051471.87	2442146.93	448.33	EBG CONTROL 1/2" REBAR RED CAP
119	7051110.11	2441739.52	447.32	EBG CONTROL 1/2" REBAR RED CAP
120	7048011.88	2443677.93	454.65	EBG CONTROL 1/2 REBAR RED CAP
121	7047813.31	2444119.29	443.34	EBG CONTROL 1/2" REBAR RED CAP
122	7048376.26	2443141.85	456.29	EBG CONTROL 1/2" REBAR RED CAP
123	7050584.75	2441693.22	445.31	EBG CONTROL 1/2" REBAR RED CAP
124	7050123.66	2441415.24	462.70	EBG CONTROL 1/2" REBAR RED CAP
125	7052987.83	2445851.22	458.34	EBG CONTROL 1/2" REBAR RED CAP
126	7049729.19	2441828.88	458.87	EBG CONTROL 1/2" REBAR RED CAP
127	7049730.61	2446579.69	446.35	EBG CONTROL 1/2" REBAR RED CAP
128	7049490.80	2446284.50	445.72	EBG CONTROL 1/2" REBAR RED CAP
129	7049782.94	2446411.28	446.74	EBG CONTROL 1/2" REBAR RED CAP
130	7048992.77	2445622.92	444.77	EBG CONTROL 1/2" REBAR RED CAP
131	7049279.90	2445211.33	447.64	EBG CONTROL 1/2" REBAR RED CAP
132	7048733.98	2446051.25	446.51	EBG CONTROL 1/2" REBAR RED CAP
133	7051194.68	2446945.42	442.07	EBG CONTROL H&T
134	7051080.06	2446562.19	449.51	EBG CONTROL NAIL
135	7050459.20	2451504.08	449.37	EBG CONTROL 1/2" REBAR RED CAP
136	7050446.24	2451020.02	448.21	EBG CONTROL 1/2" REBAR RED CAP
137	7050518.76	2451305.82	448.67	EBG CONTROL 1/2" REBAR RED CAP
138	7053746.06	2448815.94	455.22	EBG CONTROL 60D
139	7054110.73	2448763.05	450.40	EBG CONTROL 60D
140	7053976.01	2449051.44	452.55	EBG CONTROL 60D
141	7052861.20	2448338.32	452.55	EBG CONTROL 60D
142	7052799.41	2448555.63	442.10	EBG CONTROL NAIL
143	7052684.93	2448385.03	453.94	EBG CONTROL NAIL
147	7048261.46	2448909.01	452.28	EBG CONTROL 1/2" REBAR RED CAP
148	7048023.60	2449017.73	454.98	EBG CONTROL 1/2" REBAR RED CAP
149	7048964.18	2443070.86	446.71	EBG CONTROL 1/2" REBAR RED CAP
150	7048521.74	2443705.99	456.89	EBG CONTROL 1/2" REBAR RED CAP
151	7052072.05	2447588.66	449.74	EBG CONTROL NAIL
152	7052098.15	2447109.70	456.63	EBG CONTROL NAIL
153	7051912.38	2447151.31	454.59	EBG CONTROL NAIL
402	7037934.45	2445117.43	448.90	CITY OF CARROLLTON STATION COC 2
403	7046282.50	2439893.65	447.66	CITY OF CARROLLTON STATION COC 3
417	7056737.55	2450498.16	462.85	CITY OF CARROLLTON STATION COC 17
420	7052649.49	2450563.70	465.87	CITY OF CARROLLTON STATION COC 20
423	7048909.21	2455303.61	511.26	CITY OF CARROLLTON STATION COC 23
424	7048762.73	2449714.95	455.49	CITY OF CARROLLTON STATION COC 24
450	7048114.75	2448976.88	452.09	CITY OF CARROLLTON BENCHMARK FRANKFORD RD/INDIAN CREEK G.C.
451	7055190.85	2443767.22	465.88	CITY OF CARROLLTON BENCHMARK HEBRON PARKWAY/TRINITY RIVER
452	7056915.38	2445479.82	451.83	CITY OF CARROLLTON BENCHMARK HEBRON PARKWAY/HAMILTON DRIVE
500	7035299.43	2482531.98	650.62	NGS STATION CS1314
501	7055697.11	2444723.18	451.60	LIDAR TARGET 1/2" REBAR RED CAP
502	7057216.23	2449837.81	467.42	LIDAR TARGET 1/2" REBAR RED CAP
503	7057831.98	2452574.27	480.65	LIDAR TARGET 1/2" REBAR RED CAP
504	7055883.17	2451901.50	487.38	LIDAR TARGET 1/2" REBAR RED CAP
505	7053308.47	2450530.95	454.32	LIDAR TARGET 'X' CUT
506	7049331.97	2450414.87	454.07	LIDAR TARGET 1/2" REBAR RED CAP
507	7044406.05	2446598.29	444.94	LIDAR TARGET 1/2" REBAR RED CAP
508	7048011.88	2443677.93	454.65	LIDAR TARGET 1/2" REBAR RED CAP
509	7049720.45	2439166.46	446.82	LIDAR TARGET 1/2" REBAR RED CAP
510	7052554.32	2446791.86	449.21	LIDAR TARGET 1/2" REBAR RED CAP
511	7050677.30	2440312.42	460.12	LIDAR TARGET 1/2" REBAR RED CAP
512	7051247.59	2442498.13	448.29	LIDAR TARGET 1/2" REBAR RED CAP
513	7054201.78	2446360.88	450.19	LIDAR TARGET 1/2" REBAR RED CAP
514				POINT NUMBER NOT USED
515	7047888.67	2447993.21	452.69	LIDAR TARGET 'X' CUT

NOTES:

1. COORDINATES SHOWN HEREON ARE BASED ON THE STATE PLANE COORDINATE SYSTEM, TEXAS NORTH CENTRAL ZONE 4202, NAD 83, MEASURED FROM THE WESTERN DATA SYSTEMS GPS VIRTUAL REFERENCE SYSTEM NETWORK. COORDINATES SHOWN ARE SURFACE VALUES AND MAY BE CONVERTED TO GRID BY DIVIDING BY A SCALE FACTOR OF 1.00014428586192.

2. ELEVATIONS SHOWN HEREON ARE BASED ON THE ELEVATION OF NGS STATION CS1314, HAVING A PUBLISHED ELEVATION OF 650.62 FEET. STATION CS1314 IS A BRONZE DISK IN THE SOUTH BRICK WALL OF THE MAGIC TIME MACHINE RESTAURANT ADDRESSED AT 5003 Beltline Road, Dallas, Texas 75254.

INSET "A"
VICINITY MAP OF NGS STATION CS1314

INITIALS	REVISIONS	DATE
CTM	Scale control point symbols, add City of Carrollton control points, add add Lidar target points	1/7/2013

LOWER DUDLEY WATERSHED
SUPPLEMENTAL
TOPOGRAPHIC SURVEY
CONTROL MAP
CITY OF CARROLLTON, COLLIN COUNTY, TEXAS

EBG ENGINEERING, LLC
CONSULTING ENGINEERS & SURVEYORS
10300 N CENTRAL EXPWY, STE 160
DALLAS, TEXAS 75231
PHONE: (214) 327-2861 FAX: (214)361-2131

DATE: MARCH 9, 2012
SCALE: 1" = 500'
JOB NO.: 11028
DWG NAME: CONTROL EXHIBIT
DRAWN BY: LJG
CLIENT NAME: BROWN & GAY

January 4, 2013

Mr. Jeff Whanger, PE, SIT, CPM
Brown & Gay Engineers, Inc.
2595 Dallas Parkway, Suite 204
Frisco, Texas 75034

Re: Survey Control
Lower Dudley Branch Flood Study
Carrollton, Texas

Mr. Whanger:

EBG Engineering researched public records (NGS, FEMA, and City of Carrollton) for survey control points in or near the area of the Lower Dudley Branch project. We located the following NGS monument and City of Carrollton benchmarks.

NGS	City of Carrollton
Monument CS1314	Benchmark COC 2
	Benchmark COC 3
	Benchmark COC 17
	Benchmark COC 20
	Benchmark COC 23
	Benchmark COC 24

Utilizing GPS technology and the WDS Virtual Reference System network, we measured the horizontal and vertical locations of each of the listed monuments. State plane coordinates, Texas North Central Zone 4202, North American Datum (NAD) 83, were used for horizontal measurements. Our surveyor analyzed the measured horizontal coordinates against the published horizontal coordinates for each of the monuments. The surveyor performed a site calibration for all of the monuments collectively to create a local survey control network having horizontal coordinate values matching the published coordinate values within 0.08 of a foot. Our surveyor held the elevation published for NGS Monument CS1314, being 650.62 feet on North American Vertical Datum (NAVD) 88, as the elevation basis of the survey.

Following the site calibration for the local survey control network, our surveyor converted the state plane coordinates to surface coordinates my multiplying by a scale factor of 1.00014428586192.

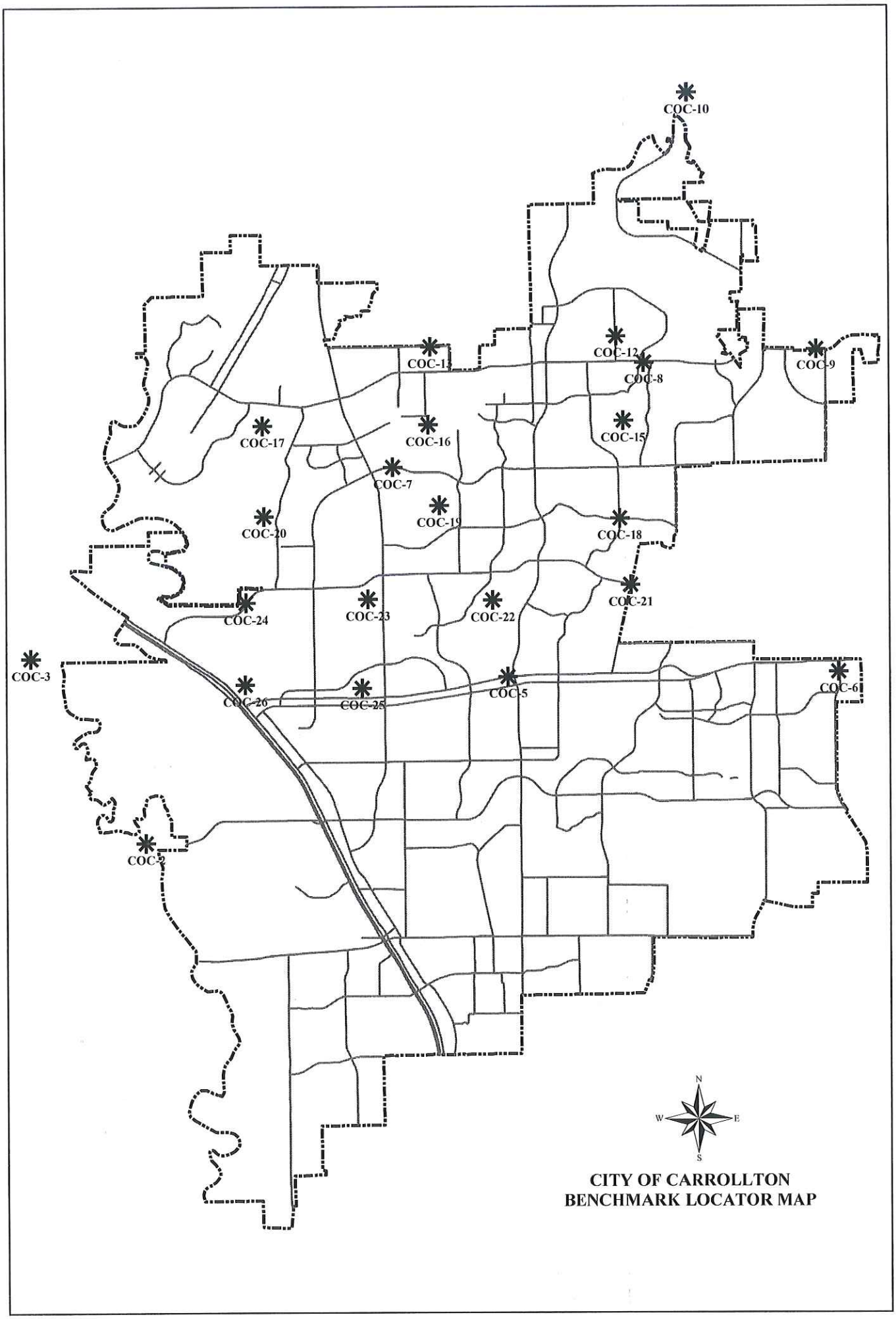
The surveyor set aerial targets at locations within the project area in accordance with the needs of the LIDAR data collection. Each of the aerial targets have horizontal coordinates (surface values) and elevations measured from the local survey control network, therefore having the same coordinate system and datum. The coordinates and elevations of the aerial targets were measured prior to performing the LIDAR data collection which eliminated any need for translations. Upon completion of LIDAR data collection, the coordinates and elevations of the scanned aerial targets were verified with the field measured coordinates and elevations to confirm accuracy of the LIDAR. Additionally, coordinates and elevations of additional topography features scanned in the LIDAR data collection were verified by field measurements for quality control.

Please don't hesitate to call me at 214-321-3862 if you have any questions or need additional information regarding the survey of this project.

Respectfully submitted,

EBG Engineering, LLC.
Christopher Maman, RPLS
Survey Manager

Attachments: Site calibration report of measurements from NGS monument and City of Carrollton benchmarks
NGS CS1314 data sheet
City of Carrollton benchmark map
City of Carrollton benchmark COC 2 data sheet
City of Carrollton benchmark COC 3 data sheet
City of Carrollton benchmark COC 17 data sheet
City of Carrollton benchmark COC 20 data sheet
City of Carrollton benchmark COC 23 data sheet
City of Carrollton benchmark COC 24 data sheet



CITY OF CARROLLTON
BENCHMARK LOCATOR MAP

Project Information		Coordinate System	
Name:	W:\2011\11028 Lower Dudley\Survey\FIELD\01TBC\11028 BASE.vce	Name:	US State Plane 1983
Size:	329 KB	Datum:	NAD 1983 (Conus)
Modified:	3/2/2012 7:11:29 AM (UTC:-6)	Zone:	Texas North Central 4202
Time zone:	Central Standard Time	Geoid:	GEOID09 (US)
Reference number:		Vertical datum:	
Description:			

Additional Coordinate System Details

Local Site Settings			
Project latitude:	N32°59'35.97362"	Ground scale factor:	1.00014428586192
Project longitude:	W96°56'09.52559"	False northing offset:	0.000 ft
Project height:	364.575 ft	False easting offset:	0.000 ft

Inverse Results

From	To	Geodetic Azimuth	Ellipsoid Distance (US survey foot)	Grid Azimuth	Grid Distance (US survey foot)	Ground Distance (US survey foot)	Δ Elevation (US survey foot)
900	500	199° 13'44"	0.076	198° 18'57"	0.076	0.076	0.000
902	402	16°43'11"	0.086	15°52'20"	0.086	0.086	0.067
903	403	233° 02'44"	0.031	232° 12'26"	0.031	0.031	-0.439
924	424	106° 39'23"	0.083	105° 48'01"	0.083	0.083	-0.337
923	423	41°51'32"	0.028	40°59'35"	0.028	0.028	-0.065
920	420	246° 06'37"	0.051	245° 15'10"	0.051	0.051	-0.111
917	417	70°43'56"	0.056	69°52'29"	0.056	0.056	0.023
950	450	79°01'48"	0.007	78°10'30"	0.007	0.007	-0.293
951	451	61°01'22"	0.026	60°10'38"	0.026	0.026	-0.215
952	452	71°40'56"	0.028	70°50'01"	0.028	0.028	-0.157

Date: 1/4/2013 7:33:12 AM	Project: W:\2011\11028 Lower Dudley\Survey\FIELD\01TBC\11028 BASE.vce	Trimble Business Center

The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

```
DATABASE = NGSIDB , PROGRAM = datasheet95, VERSION = 7.87.4
1         National Geodetic Survey,   Retrieval Date = AUGUST  8, 2011
 CS1314
***********************************************************************
 CS1314  DESIGNATION -  E 921
 CS1314  PID         -  CS1314
 CS1314  STATE/COUNTY-  TX/DALLAS
 CS1314  USGS QUAD   -  ADDISON (1981)
 CS1314
 CS1314                        *CURRENT SURVEY CONTROL
 CS1314  ___________________________________________________________________
 CS1314* NAD 83(1986)-  32 57 16.16   (N)    096 49 30.77   (W)     HD_HELD1
 CS1314* NAVD 88     -       198.309  (meters)     650.62   (feet)  ADJUSTED
 CS1314  ___________________________________________________________________
 CS1314  GEOID HEIGHT-         -26.51  (meters)                     GEOID09
 CS1314  DYNAMIC HT  -         198.085 (meters)     649.88  (feet)  COMP
 CS1314  MODELED GRAV-     979,503.7   (mgal)                       NAVD 88
 CS1314
 CS1314  VERT ORDER  -  SECOND    CLASS 0
 CS1314
 CS1314.The horizontal coordinates were established by differentially
corrected
 CS1314.hand held GPS obs and have an estimated accuracy of +/- 3 meters.
 CS1314
 CS1314.The orthometric height was determined by differential leveling and
 CS1314.adjusted in June 1991.
 CS1314
 CS1314.Photographs are available for this station.
 CS1314
 CS1314.The geoid height was determined by GEOID09.
 CS1314
 CS1314.The dynamic height is computed by dividing the NAVD 88
 CS1314.geopotential number by the normal gravity value computed on the
 CS1314.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 CS1314.degrees latitude (g = 980.6199 gals.).
 CS1314
 CS1314.The modeled gravity was interpolated from observed gravity values.
 CS1314
 CS1314;                    North         East    Units  Estimated Accuracy
 CS1314;SPC TXNC     - 2,144,054.2     756,568.1     MT  (+/- 3 meters HH1
GPS)
 CS1314
 CS1314                          SUPERSEDED SURVEY CONTROL
 CS1314
 CS1314  NGVD 29 (??/??/92)  198.306  (m)          650.61   (f) ADJ UNCH    2
0
 CS1314
 CS1314.Superseded values are not recommended for survey control.
 CS1314.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 CS1314.See file dsdata.txt to determine how the superseded data were
derived.
```

```
CS1314
CS1314_U.S. NATIONAL GRID SPATIAL ADDRESS: 14SQB0328348340(NAD 83)
CS1314_MARKER: DB = BENCH MARK DISK
CS1314_SETTING: 36 = SET IN A MASSIVE STRUCTURE
CS1314_SP_SET: BUILDING
CS1314_STAMPING: E 921 1946
CS1314_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
CS1314_SATELLITE: THE SITE LOCATION WAS REPORTED AS NOT SUITABLE FOR
CS1314+SATELLITE: SATELLITE OBSERVATIONS - January 09, 2009
CS1314
CS1314  HISTORY     - Date     Condition        Report By
CS1314  HISTORY     - 1946     MONUMENTED       CGS
CS1314  HISTORY     - 1966     GOOD             NGS
CS1314  HISTORY     - 19910615 GOOD             USPSQD
CS1314  HISTORY     - 20010730 GOOD             NGS
CS1314  HISTORY     - 20020813 GOOD             GEOCAC
CS1314  HISTORY     - 20090109 GOOD             GEOCAC
CS1314
CS1314                          STATION DESCRIPTION
CS1314
CS1314'DESCRIBED BY COAST AND GEODETIC SURVEY 1946
CS1314'IN ADDISON.
CS1314'THE MARK IS SET VERTICALLY IN THE SOUTH WALL OF THE BRICK GRADE
SCHOOL
CS1314'AT ADDISON.  4 FEET EAST OF THE CENTER OF THE ENTRANCE, 4.7 FEET
ABOVE
CS1314'THE GROUND.  A BRONZE DISK SET VERTICALLY IN THE SOUTH WALL OF A
BRICK
CS1314'SCHOOL BUILDING.
CS1314
CS1314                          STATION RECOVERY (1966)
CS1314
CS1314'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1966
CS1314'RECOVERED IN GOOD CONDITION.
CS1314
CS1314                          STATION RECOVERY (1991)
CS1314
CS1314'RECOVERY NOTE BY US POWER SQUADRON 1991 (HLO)
CS1314'RECOVERED IN GOOD CONDITION.
CS1314
CS1314                          STATION RECOVERY (2001)
CS1314
CS1314'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 2001 (DB)
CS1314'THIS RECOVERY WAS REPORTED BY THE US POWER SQUADRONS.
CS1314
CS1314                          STATION RECOVERY (2002)
CS1314
CS1314'RECOVERY NOTE BY GEOCACHING 2002 (RLW)
CS1314'RECOVERED IN GOOD CONDITION.
CS1314
CS1314                          STATION RECOVERY (2009)
CS1314
CS1314'RECOVERY NOTE BY GEOCACHING 2009 (LPC)
CS1314'THE OLD ADDISON TX SCHOOL IS NOW THE MAGIC TIME MACHINE RESTAURANT.

*** retrieval complete.
Elapsed Time = 00:00:07
```

Google earth

feet 3000

meters 900

TEXAS DEPARTMENT OF TRANSPORTATION
GPS SATELLITE STATION
HORIZONTAL - VERTICAL CONTROL DATA
UNITS US SURVEY FEET

STATION INFORMATION

NAME OF STATION: COC 2
SURVEYED FROM: DALLAS RRP, ARLINGTON RRP
DATE: OCT. 21, 2002
LOCALITY: SANDY LAKE RD. AND CITY LIMITS COPPELL
COUNTY: DALLAS

STATE PLANE COORDINATES	ORTHO ELEVATION	ADJ. FACTOR SURFACE	TEXAS ZONE
N: 7037935.799 E: 2445117.820	Z: 448.836	1.000136506	4202

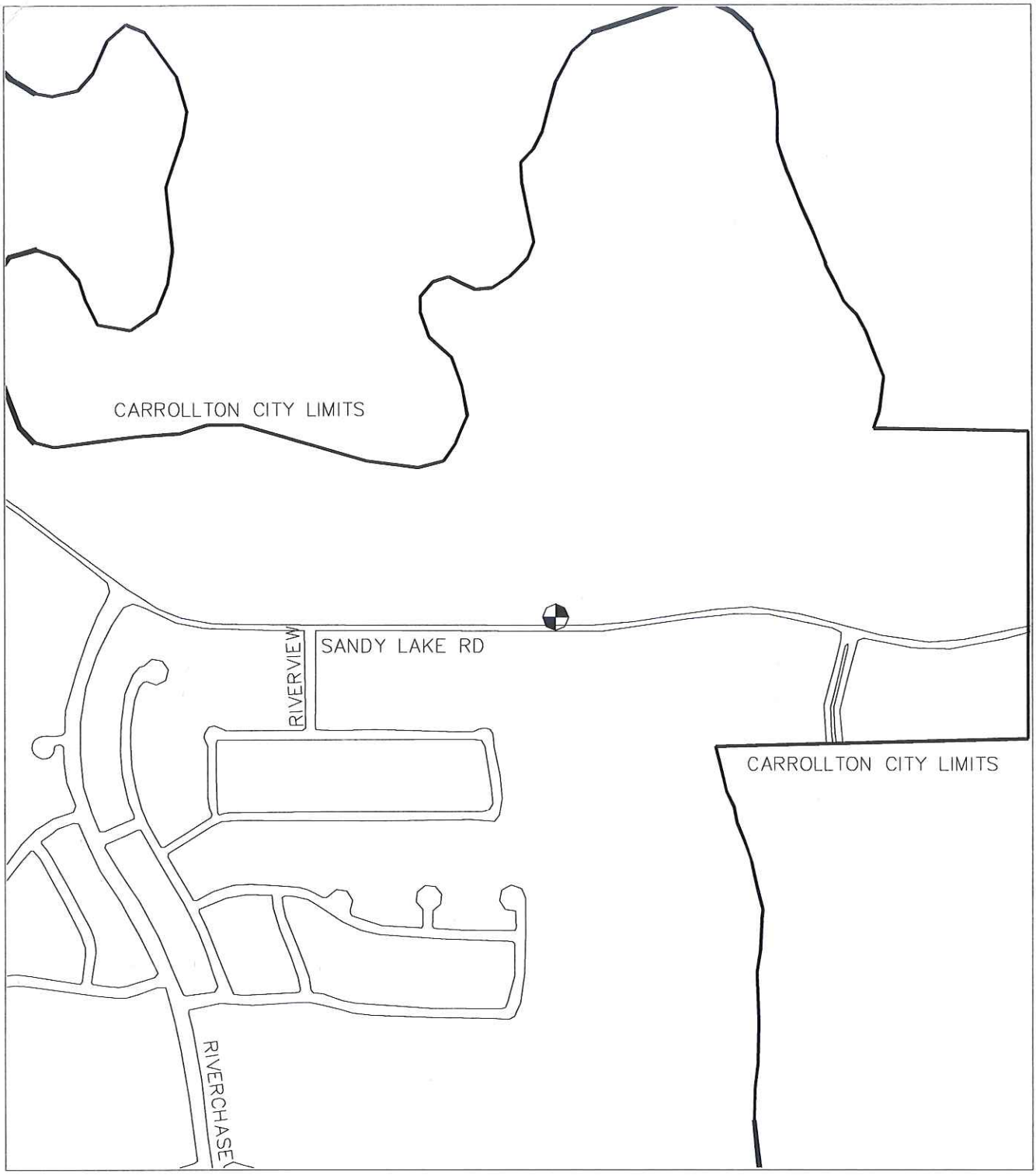
LATITUDE	LONGITUDE	ELLIP. HEIGHT
32°57'57.92077"N	96°56'45.01380"W	E.H. 360.891

DESCRIPTION OF SATELLITE STATION

STATION IS A ROUND 2" BRASS DISK SET IN CONCRETE ON TOP OF A CURB INLET AND IS STAMPED COC-2

DISCLAIMER: USING THE VERTICAL DATA IS AT YOUR OWN RISK. SHOULD BE FIELD VERIFIED.

THIS GPS CONTROL POINT IS ON DALLAS MAPSCO PAGE 1B-Y. THE STATION IS LOCATED 930' EAST OF THE INTERSECTION OF SANDY LAKE ROAD AND RIVERVIEW DRIVE IN COPPELL. STATION IS 32' NORTH OF THE CENTERLINE OF SANDY LAKE ROAD.



BENCHMARK COC 2
NORTHING 7037935.799
EASTING 2445117.820
ELEVATION 448.836

SCALE: N.T.S.
DATE:
SHEET: 1 OF 1

PUBLIC WORKS DEPARTMENT

1945 E. JACKSON ROAD CARROLLTON, TEXAS 75006 WWW.CITYOFCARROLLTON.COM (972) 466-3225

TEXAS DEPARTMENT OF TRANSPORTATION
GPS SATELLITE STATION
HORIZONTAL - VERTICAL CONTROL DATA
UNITS US SURVEY FEET

STATION INFORMATION

NAME OF STATION: COC 3
SURVEYED FROM: DALLAS RRP, ARLINGTON RRP
DATE: OCT. 21, 2002
LOCALITY: LAKE VISTA DRIVE
COUNTY: DENTON

STATE PLANE COORDINATES	ORTHO ELEVATION	ADJ. FACTOR SURFACE	TEXAS ZONE
N: 7046282.754 E: 2439894.844	Z: 448.095	1.000136506	4202

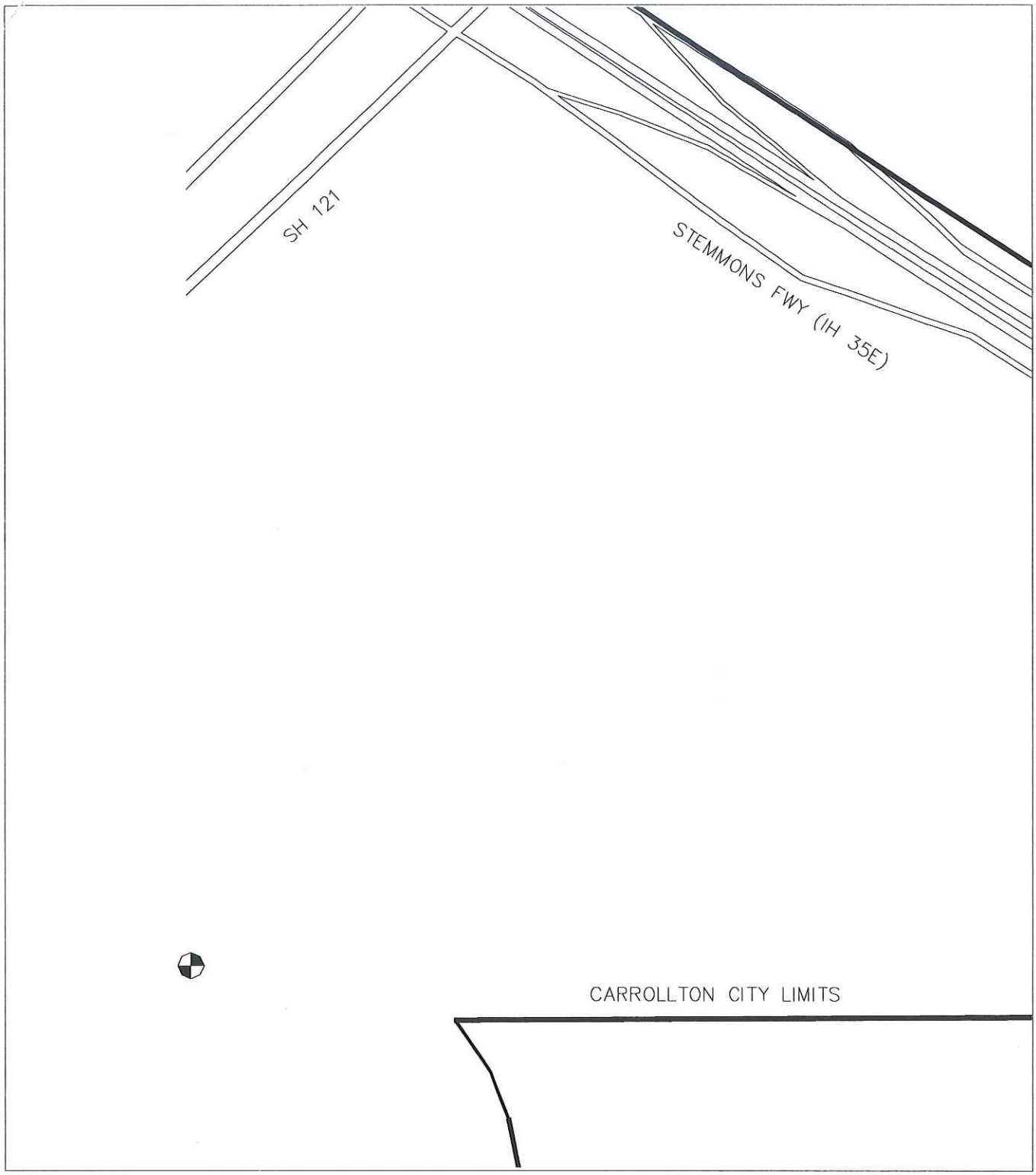
LATITUDE	LONGITUDE	ELLIP. HEIGHT
32°59'21.26733"N	96°57'44.88321"W	E.H. 360.054

DESCRIPTION OF SATELLITE STATION

STATION IS A ROUND 2" BRASS DISK SET IN CONCRETE ON TOP OF A CURB INLET AND IS STAMPED COC-3

DISCLAIMER: USING THE VERTICAL DATA IS AT YOUR OWN RISK. SHOULD BE FIELD VERIFIED.

THIS GPS CONTROL POINT IS ON DALLAS MAPSCO PAGE 1B-J. THE STATION IS LOCATED WEST OF THE INTERSECTION OF LAKE VISTA DRIVE AND THE ENTRANCE TO VISTA RIDGE DRIVE ATHLETIC COMPLEX; STATION IS 0.2 MILES WEST FROM THIS INTERSECTION. STATION IS 66' SOUTH OF A POWER POLE NUMBER 19 AND 69' SOUTHEAST OF A FIRE HYDRANT. STATION IS 28' SOUTH OF THE CENTERLINE OF LAKE VISTA DRIVE.



BENCHMARK COC 3
NORTHING 7046282.754
EASTING 2439894.844
ELEVATION 448.095

SCALE: N.T.S.
DATE:
SHEET: 1 OF 1

PUBLIC WORKS
DEPARTMENT

1945 E. JACKSON ROAD CARROLLTON, TEXAS 75006 WWW.CITYOFCARROLLTON.COM (972) 466-3225

TEXAS DEPARTMENT OF TRANSPORTATION
GPS SATELLITE STATION
HORIZONTAL - VERTICAL CONTROL DATA
UNITS US SURVEY FEET

STATION INFORMATION

NAME OF STATION: COC 20
SURVEYED FROM: DALLAS RRP, ARLINGTON RRP
DATE: OCT. 21, 2002
LOCALITY: CIMARRON DR.
COUNTY: DENTON

STATE PLANE COORDINATES	ORTHO ELEVATION	ADJ. FACTOR SURFACE	TEXAS ZONE
N: 7052648.820 E: 2450563.374	Z: 465.977	1.000136506	4202

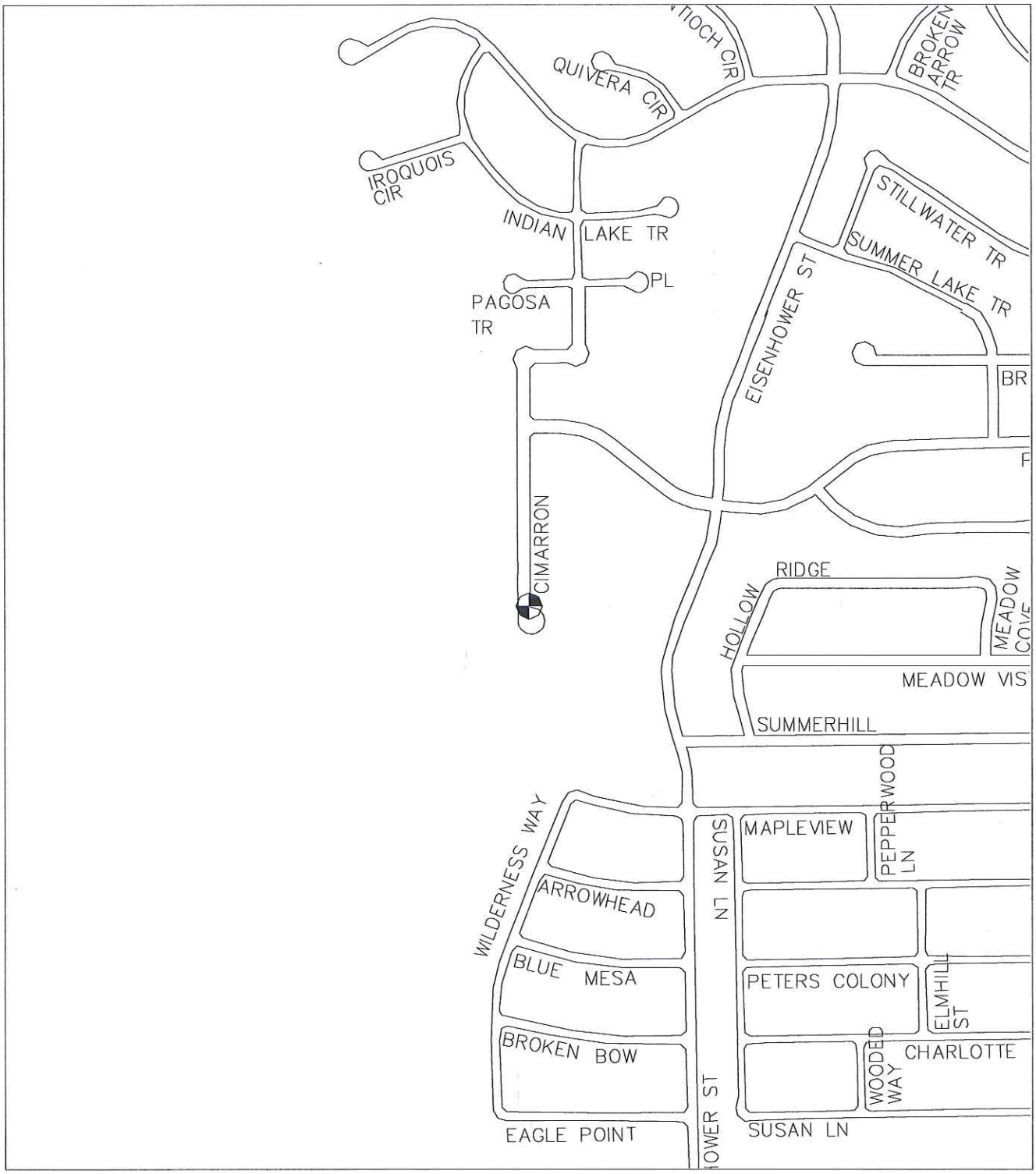
LATITUDE	LONGITUDE	ELLIP. HEIGHT
33°00'22.69132 "N	96°55'38.51300"W	E.H. 378.367

DESCRIPTION OF SATELLITE STATION

STATION IS A ROUND 2" BRASS DISK SET IN A CONCRETE CYLINDER BEHIND THE BACK OF CURB.

DISCLAIMER: USING THE VERTICAL DATA IS AT YOUR OWN RISK. SHOULD BE FIELD VERIFIED.

THIS GPS CONTROL POINT IS ON DALLAS MAPSCO PAGE 2-A. THE STATION IS LOCATED 3' BEHIND THE CURB LINE OF THE NORTHEAST CORNER OF THE CIMMARRON DRIVE CUL DE SAC.



BENCHMARK COC 20
NORTHING 7052648.820
EASTING 2450563.374
ELEVATION 465.977

SCALE: N.T.S.
DATE:
SHEET: 1 OF 1

PUBLIC WORKS DEPARTMENT

1945 E. JACKSON ROAD CARROLLTON, TEXAS 75006 WWW.CITYOFCARROLLTON.COM (972) 466-3225

TEXAS DEPARTMENT OF TRANSPORTATION
GPS SATELLITE STATION
HORIZONTAL - VERTICAL CONTROL DATA
UNITS US SURVEY FEET

STATION INFORMATION

NAME OF STATION: COC 23
SURVEYED FROM: DALLAS RRP, ARLINGTON RRP
DATE: OCT. 21, 2002
LOCALITY: STAFFORDSHIRE DR. AND MAGNOLIA DR.
COUNTY: DENTON

STATE PLANE COORDINATES	ORTHO ELEVATION	ADJ. FACTOR SURFACE	TEXAS ZONE
N: 7048909.043 E: 2455302.539	Z: 511.325	1.000136506	4202

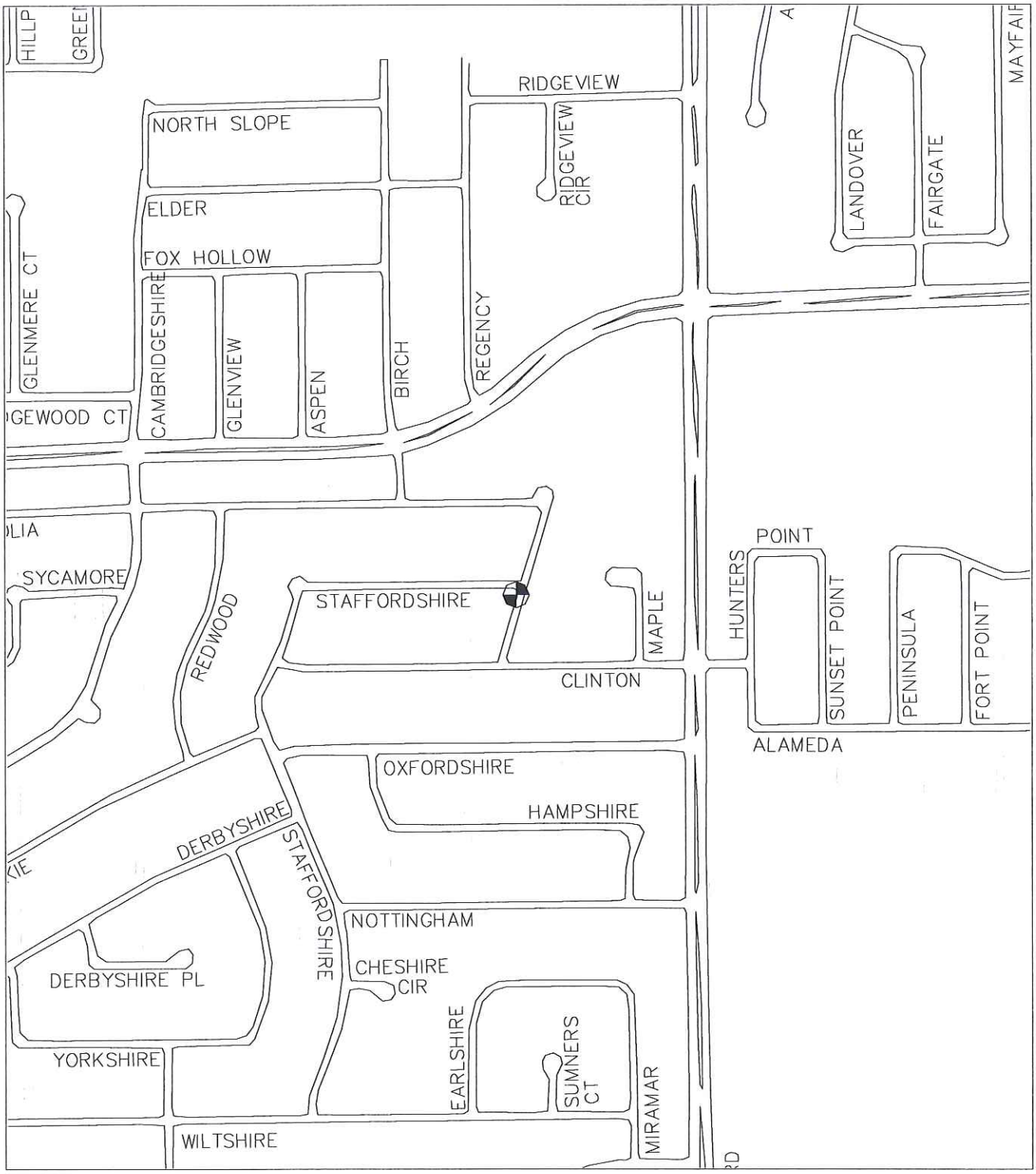
LATITUDE	LONGITUDE	ELLIP. HEIGHT
32°59'44.98430"N	96°54'43.52717"W	E.H. 423.847

DESCRIPTION OF SATELLITE STATION

STATION IS A ROUND 2" BRASS DISK SET IN A CONCRETE CYLINDER BEHIND THE BACK OF CURB.

DISCLAIMER: USING THE VERTICAL DATA IS AT YOUR OWN RISK. SHOULD BE FIELD VERIFIED.

THIS GPS CONTROL POINT IS ON DALLAS MAPSCO PAGE 2-F. THE STATION IS LOCATED 3' BEHIND THE CURB AT THE SOUTHWEST CORNER OF STAFFORDSHIRE DRIVE AND MAGNOLIA DRIVE.



BENCHMARK COC 23
NORTHING 7048909.043
EASTING 2455302.539
ELEVATION 511.325

SCALE: N.T.S.
DATE:
SHEET: 1 OF 1

PUBLIC WORKS DEPARTMENT

1945 E. JACKSON ROAD CARROLLTON, TEXAS 75006 WWW.CITYOFCARROLLTON.COM (972) 466-3225

TEXAS DEPARTMENT OF TRANSPORTATION
GPS SATELLITE STATION
HORIZONTAL - VERTICAL CONTROL DATA
UNITS US SURVEY FEET

STATION INFORMATION

NAME OF STATION: COC 17
SURVEYED FROM: DALLAS RRP, ARLINGTON RRP
DATE: OCT. 21, 2002
LOCALITY: CREEKSIDE LN. AND CREEK VALLEY BLVD.
COUNTY: DENTON

STATE PLANE COORDINATES	ORTHO ELEVATION	ADJ. FACTOR SURFACE	TEXAS ZONE
N: 7056736.256 E: 2450497.746	Z: 462.824	1.000136506	4202

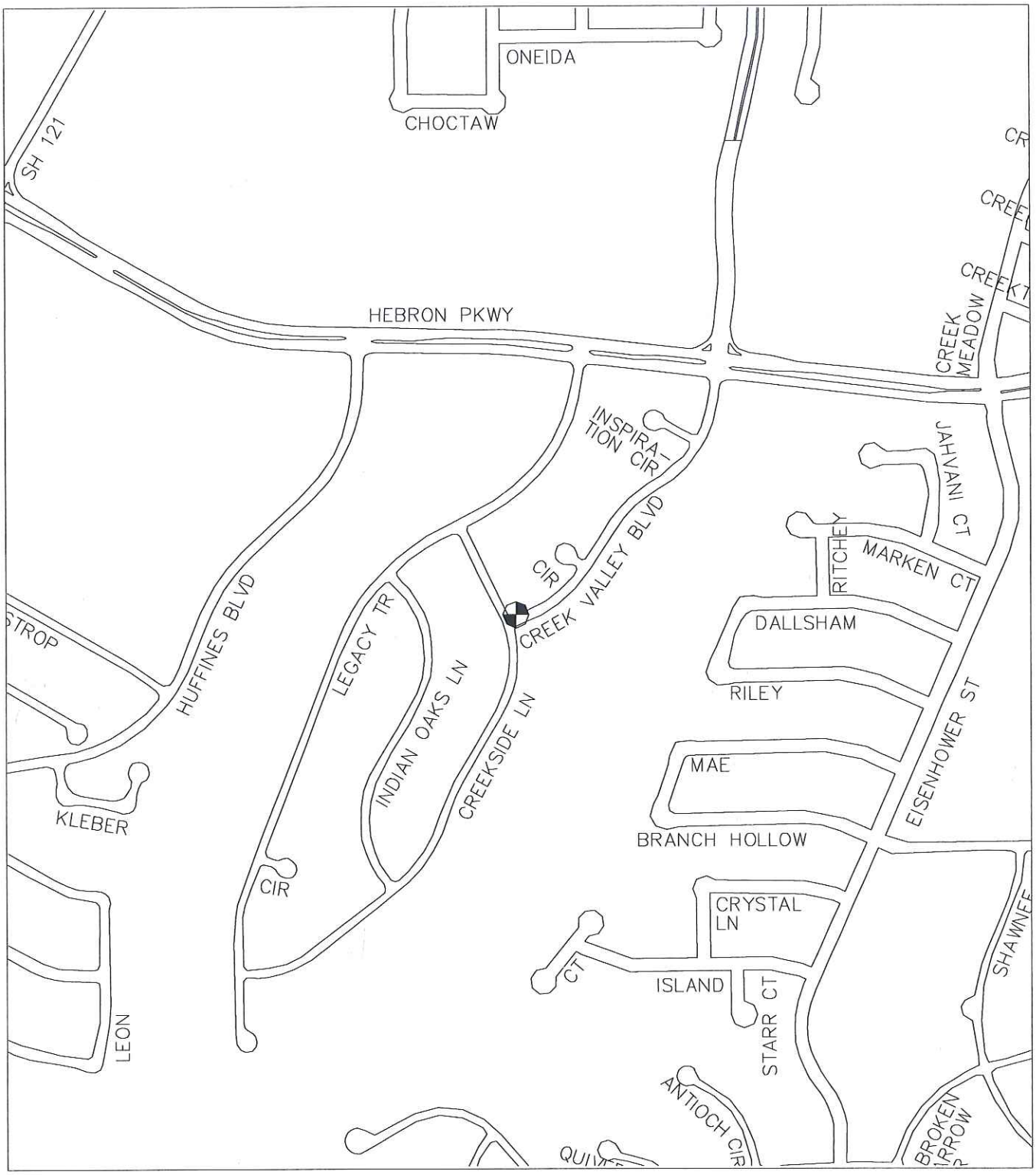
LATITUDE	LONGITUDE	ELLIP. HEIGHT
33°01'03.14243"N	96°55'38.56508"W	E.H. 375.262

DESCRIPTION OF SATELLITE STATION

STATION IS A ROUND 2" BRASS DISK SET IN A CONCRETE CYLINDER BEHIND THE BACK OF CURB.

DISCLAIMER: USING THE VERTICAL DATA IS AT YOUR OWN RISK. SHOULD BE FIELD VERIFIED.

THIS GPS CONTROL POINT IS ON DALLAS MAPSCO PAGE 653-W. THE STATION IS LOCATED 3' BEHIND THE CURB AT THE INTERSECTION OF CREEKSIDE LANE AND CREEK VALLEY BOULEVARD.



BENCHMARK COC 17
NORTHING 7056736.256
EASTING 2450497.746
ELEVATION 462.824

SCALE: N.T.S.
DATE:
SHEET: 1 OF 1

PUBLIC WORKS DEPARTMENT

1945 E. JACKSON ROAD CARROLLTON, TEXAS 75006 WWW.CITYOFCARROLLTON.COM (972) 466-3225

TEXAS DEPARTMENT OF TRANSPORTATION
GPS SATELLITE STATION
HORIZONTAL - VERTICAL CONTROL DATA
UNITS US SURVEY FEET

STATION INFORMATION

NAME OF STATION: COC 24
SURVEYED FROM: DALLAS RRP, ARLINGTON RRP
DATE: OCT. 21, 2002
LOCALITY: FRANKFORD RD. AND COMMODORE DR.
COUNTY: DENTON

STATE PLANE COORDINATES	ORTHO ELEVATION	ADJ. FACTOR SURFACE	TEXAS ZONE
N: 7048762.623 E: 2449714.625	Z: 455.826	1.000136506	4202

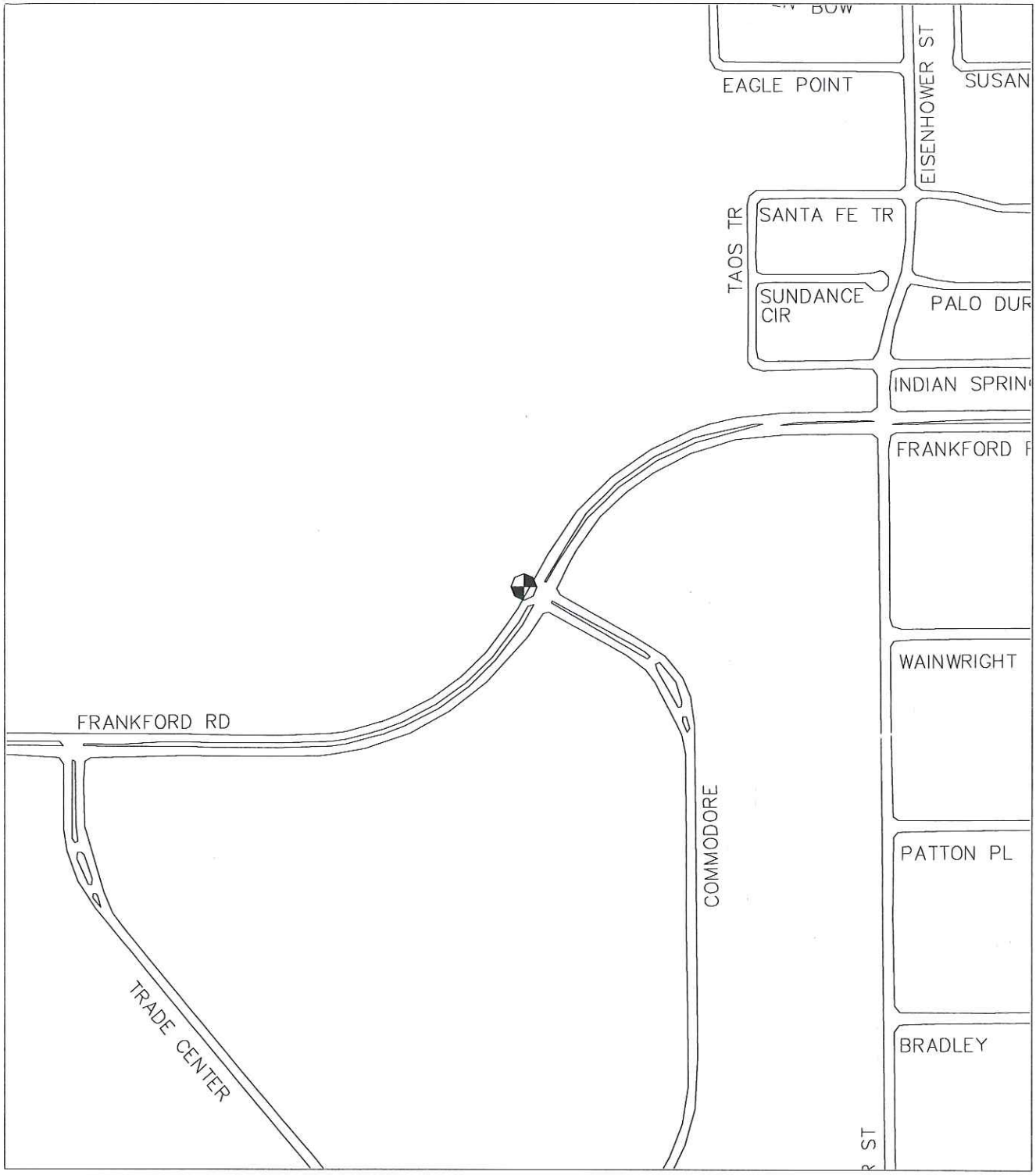
LATITUDE	LONGITUDE	ELLIP. HEIGHT
32°59'44.36655"N	96°55'49.16135"W	E.H. 368.142

DESCRIPTION OF SATELLITE STATION

STATION IS A ROUND 2" BRASS DISK SET IN A CONCRETE CYLINDER BEHIND THE BACK OF CURB.

DISCLAIMER: USING THE VERTICAL DATA IS AT YOUR OWN RISK. SHOULD BE FIELD VERIFIED.

THIS GPS CONTROL POINT IS ON DALLAS MAPSCO PAGE 1B-H. THE STATION IS LOCATED 3' BEHIND THE NORTH CURB LINE AT THE INTERSECTION OF FRANKFORD ROAD AND COMMODORE ROAD.

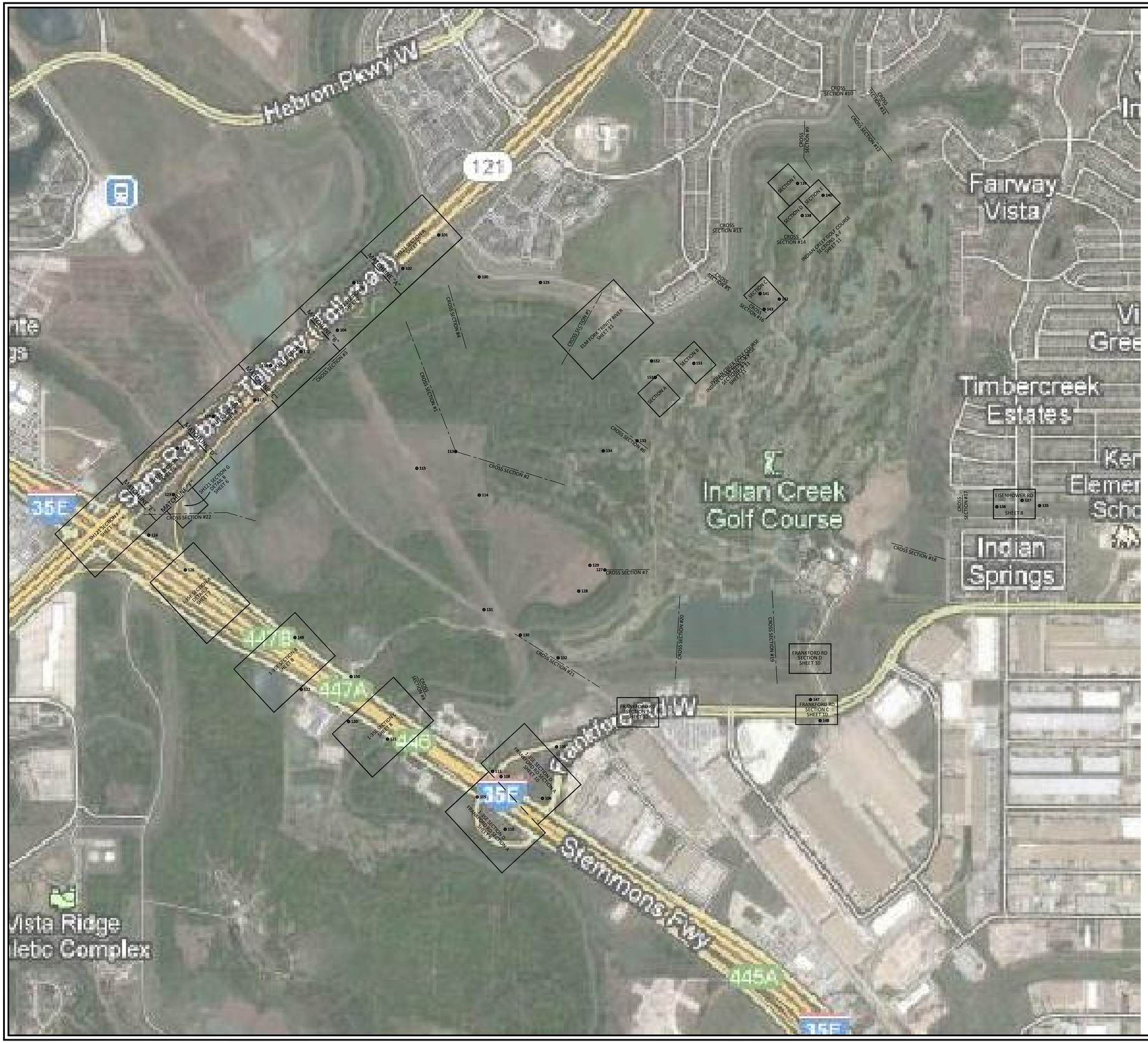


BENCHMARK COC 24
NORTHING 7048762.623
EASTING 2449714.625
ELEVATION 455.826

SCALE: N.T.S.
DATE:
SHEET: 1 OF 1

PUBLIC WORKS DEPARTMENT

1945 E. JACKSON ROAD CARROLLTON, TEXAS 75006 WWW.CITYOFCARROLLTON.COM (972) 466-3225



0 250 500 1000

(FEET)
1 inch =500ft.

SHEET INDEX

SHEET 1	COVER SHEET
SHEET 2	SH121 SECTION A
	SH121 SECTION B
SHEET 3	SH121 SECTION C
SHEET 4	SH121 SECTION D
SHEET 5	SH121 SECTION E
SHEET 6	SH121 SECTION F
	SH121 SECTION G
SHEET 7	I35-E SECTION A
SHEET 8	I35-E SECTION B
	I35-E SECTION C
	I35-E SECTION D
	EISENHOWER
SHEET 9	I35-E SECTION D
	FRANKFORD RD SECTION A
SHEET 10	I35-E SECTION D
	FRANKFORD RD SECTION A
	FRANKFORD RD SECTION B
	FRANKFORD RD SECTION C
	FRANKFORD RD SECTION D
SHEET 11	ELM FORK TRINITY RIVER
	INDIAN CREEK GOLF COURSE SECTION A
	INDIAN CREEK GOLF COURSE SECTION B
	INDIAN CREEK GOLF COURSE SECTION C
	INDIAN CREEK GOLF COURSE SECTION D
	INDIAN CREEK GOLF COURSE SECTION E
	INDIAN CREEK GOLF COURSE SECTION F

LOWER DUDLEY PRIMARY CONTROL TABLE

POINT	NORTHING	EASTING	ELEV.	DESCRIPTION
100	7053049.85	2445157.39	462.39	EBG CONTROL
101	7053526.26	2444699.71	457.53	EBG CONTROL 1/2 REBAR YELLOW CAP
102	7053147.00	2444292.48	450.46	EBG CONTROL
103	7052985.97	2443739.34	451.93	EBG CONTROL 1/2" REBAR RED CAP
104	7052447.33	2443551.61	449.59	EBG CONTROL 1/2" REBAR RED CAP
105	7047157.10	2445134.68	458.82	EBG CONTROL 1/2" REBAR RED CAP
106	7047141.67	2445873.86	443.59	EBG CONTROL 1/2" REBAR RED CAP
108	7047388.76	2445405.31	456.88	EBG CONTROL 1/2" REBAR RED CAP
110	7046791.27	2445451.36	438.21	EBG CONTROL 1/2" REBAR RED CAP
111	7047447.97	2445307.79	456.93	EBG CONTROL 1/2" REBAR RED CAP
112	7052204.01	2443139.13	446.35	EBG CONTROL 1/2" REBAR RED CAP
113	7051072.69	2444891.04	449.68	EBG CONTROL 1/2" REBAR RED CAP
114	7050578.44	2445158.44	448.47	EBG CONTROL 1/2" REBAR RED CAP
115	7050882.28	2444451.05	448.04	EBG CONTROL 1/2" REBAR RED CAP
116	7052046.69	2442795.41	450.30	EBG CONTROL 1/2" REBAR RED CAP
117	7051656.76	2442615.60	450.46	EBG CONTROL 1/2" REBAR RED CAP
118	7051471.87	2442146.93	448.33	EBG CONTROL 1/2" REBAR RED CAP
119	7051110.11	2441739.52	447.32	EBG CONTROL 1/2" REBAR RED CAP
120	7048011.88	2443677.93	454.65	EBG CONTROL 1/2 REBAR RED CAP
121	7047813.31	2444119.29	443.34	EBG CONTROL 1/2" REBAR RED CAP
122	7048376.26	2443141.85	456.29	EBG CONTROL 1/2" REBAR RED CAP
123	7050584.75	2441693.22	445.31	EBG CONTROL 1/2" REBAR RED CAP
124	7050123.66	2441415.24	462.70	EBG CONTROL 1/2" REBAR RED CAP
125	7052987.83	2445851.22	458.34	EBG CONTROL 1/2" REBAR RED CAP
126	7049729.19	2441828.88	458.87	EBG CONTROL 1/2" REBAR RED CAP
127	7049730.61	2446579.69	446.35	EBG CONTROL 1/2" REBAR RED CAP
128	7049490.80	2446284.50	445.72	EBG CONTROL 1/2" REBAR RED CAP
129	7049782.94	2446411.28	446.74	EBG CONTROL 1/2" REBAR RED CAP
130	7048992.77	2445622.92	444.77	EBG CONTROL 1/2" REBAR RED CAP
131	7049279.90	2445211.33	447.64	EBG CONTROL 1/2" REBAR RED CAP
132	7048733.98	2446051.25	446.51	EBG CONTROL 1/2" REBAR RED CAP
133	7051194.68	2446945.42	442.07	EBG CONTROL H&T
134	7051080.06	2446562.19	449.51	EBG CONTROL NAIL
135	7050459.20	2451504.08	449.37	EBG CONTROL 1/2" REBAR RED CAP
136	7050446.24	2451020.02	448.21	EBG CONTROL 1/2" REBAR RED CAP
137	7050518.76	2451305.82	448.67	EBG CONTROL 1/2" REBAR RED CAP
138	7053746.06	2448815.94	455.22	EBG CONTROL 60D
139	7054110.73	2448763.05	450.40	EBG CONTROL 60D
140	7053976.01	2449051.44	452.55	EBG CONTROL 60D
141	7052861.20	2448338.32	452.55	EBG CONTROL 60D
142	7052799.41	2448555.63	442.10	EBG CONTROL NAIL
143	7052684.93	2448385.03	453.94	EBG CONTROL NAIL
147	7048261.46	2448909.01	452.28	EBG CONTROL 1/2" REBAR RED CAP
148	7048023.60	2449017.73	454.98	EBG CONTROL 1/2" REBAR RED CAP
149	7048964.18	2443070.86	446.71	EBG CONTROL 1/2" REBAR RED CAP
150	7048521.74	2443705.99	456.89	EBG CONTROL 1/2" REBAR RED CAP
151	7052072.05	2447588.66	449.74	EBG CONTROL Nail
152	7052098.15	2447109.70	456.63	EBG CONTROL NAIL
153	7051912.38	2447151.31	454.59	EBG CONTROL NAIL

LEGEND

114 .....PRIMARY CONTROL

— – — .....CROSS SECTION

INITIALS	REVISIONS	DATE
		00/00/00

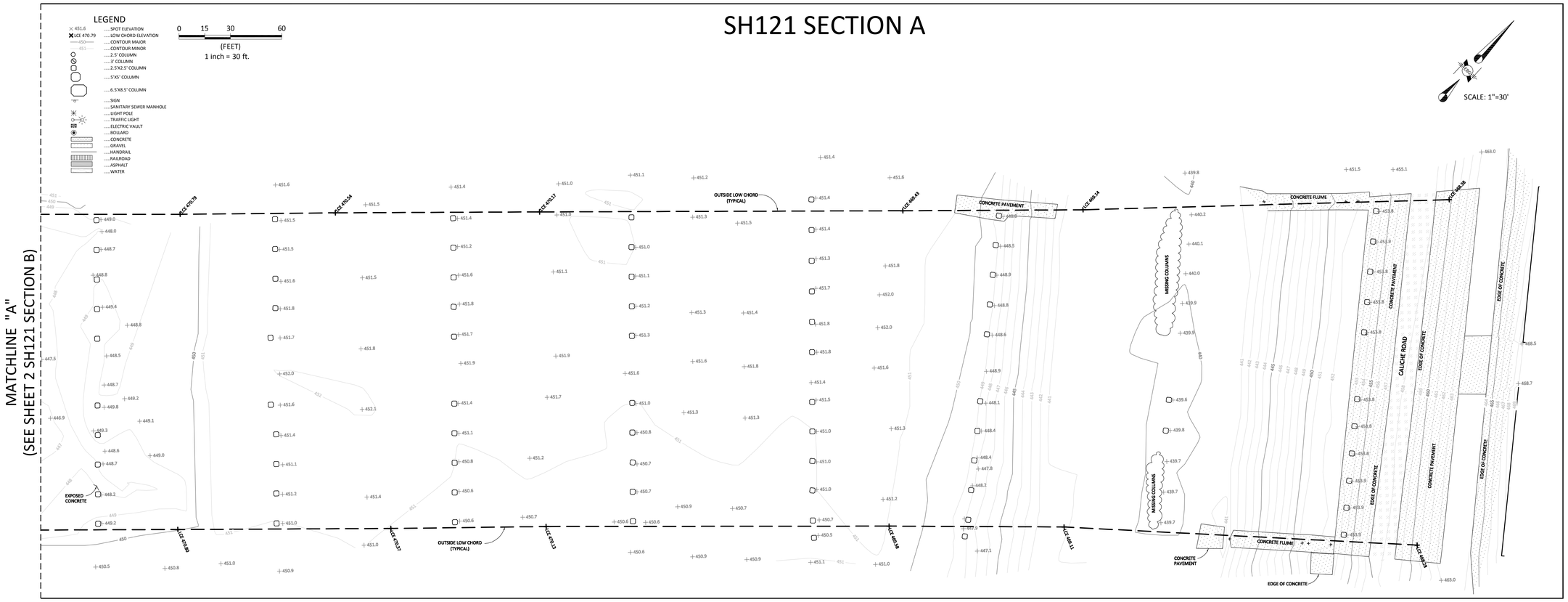
LOWER DUDLEY WATERSHED SUPPLEMENTAL TOPOGRAPHIC SURVEY CONTROL MAP

CITY OF CARROLLTON, COLLIN COUNTY, TEXAS

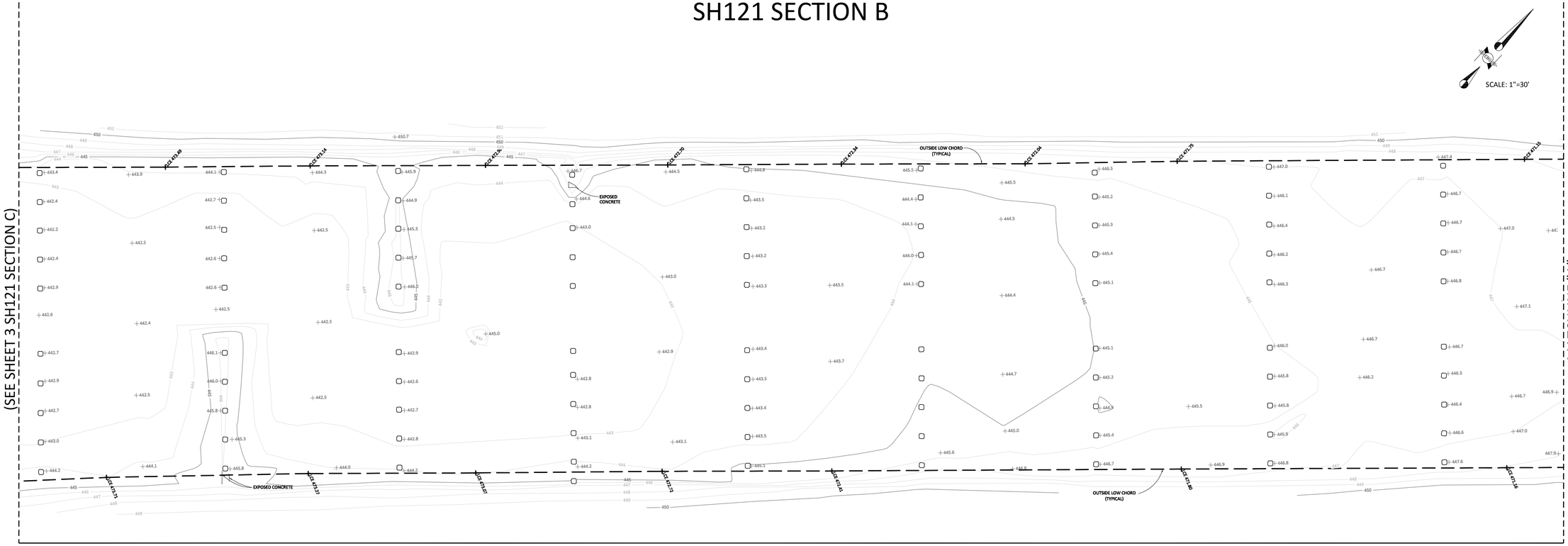
EBG ENGINEERING, LLC
CONSULTING ENGINEERS & SURVEYORS
10300 N CENTRAL EXPWY, STE 160
DALLAS, TEXAS 75231
PHONE: (214) 321-3861 FAX: (214)361-2311

DATE: FEBRUARY 9, 2012
SCALE: 1" = 500'
JOB NO.: 11028
DWG NAME: CONTROL EXHIBIT
DRAWN BY: LJG
CLIENT NAME: BROWN & GAY

SH121 SECTION A



SH121 SECTION B



PRELIMINARY

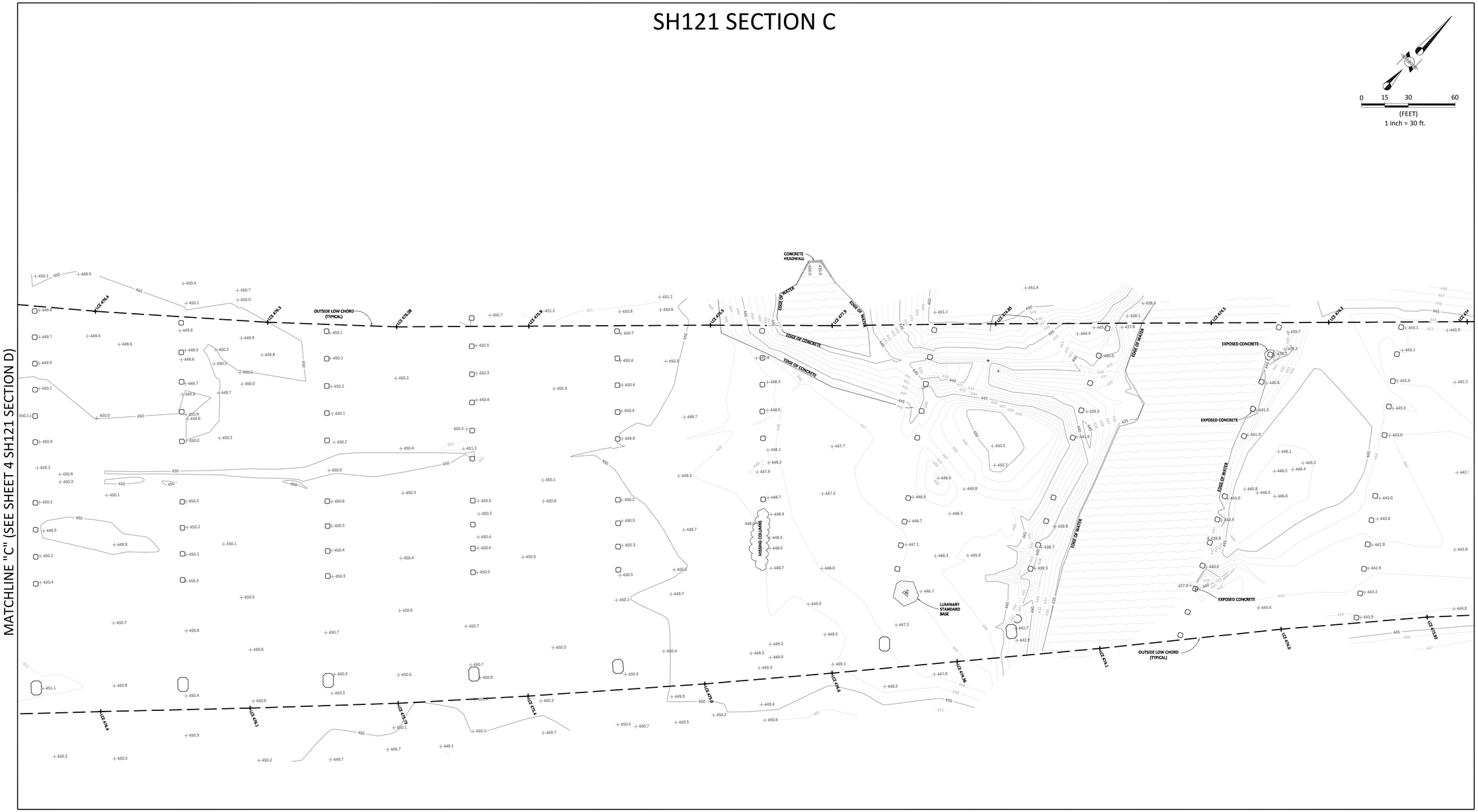
INITIALS	REVISIONS	DATE
		00/00/00

LOWER DUDLEY WATERSHED
SUPPLEMENTAL TOPOGRAPHIC SURVEY
CITY OF CARROLLTON, COLLIN COUNTY, TEXAS

EBG ENGINEERING, LLC
CONSULTING ENGINEERS & SURVEYORS
10300 N CENTRAL EXPWY, STE 160
DALLAS, TEXAS 75231
PHONE: (214) 325-3861 FAX: (214)361-2131

DATE: FEBRUARY 9, 2012
SCALE: 1" = 30'
JOB NO.: 11028
DWG NAME: SH121 SECTION A
DRAWN BY: LJG
CLIENT NAME: BROWN & GAY

SH121 SECTION C



LEGEND

451.6	....SPOT ELEVATION
LCE 470.79	....LOW CHORD ELEVATION
450	....CONTOUR MAJOR
451	....CONTOUR MINOR
	....2.5" COLUMN
	....3" COLUMN
	....2.5"X2.5" COLUMN
	....5"X5" COLUMN
	....6.5"X8.5" COLUMN
	....SIGN
	....SANITAIRY SEWER MANHOLE
	....LIGHT POLE
	....TRAFFIC LIGHT
	....ELECTRIC VAULT
	....BOLLARD
	....CONCRETE
	....GRAVEL
	....HANDRAIL
	....RAILROAD
	....ASPHALT
	....WATER

PRELIMINARY

INITIALS	REVISIONS	DATE
		00/00/00

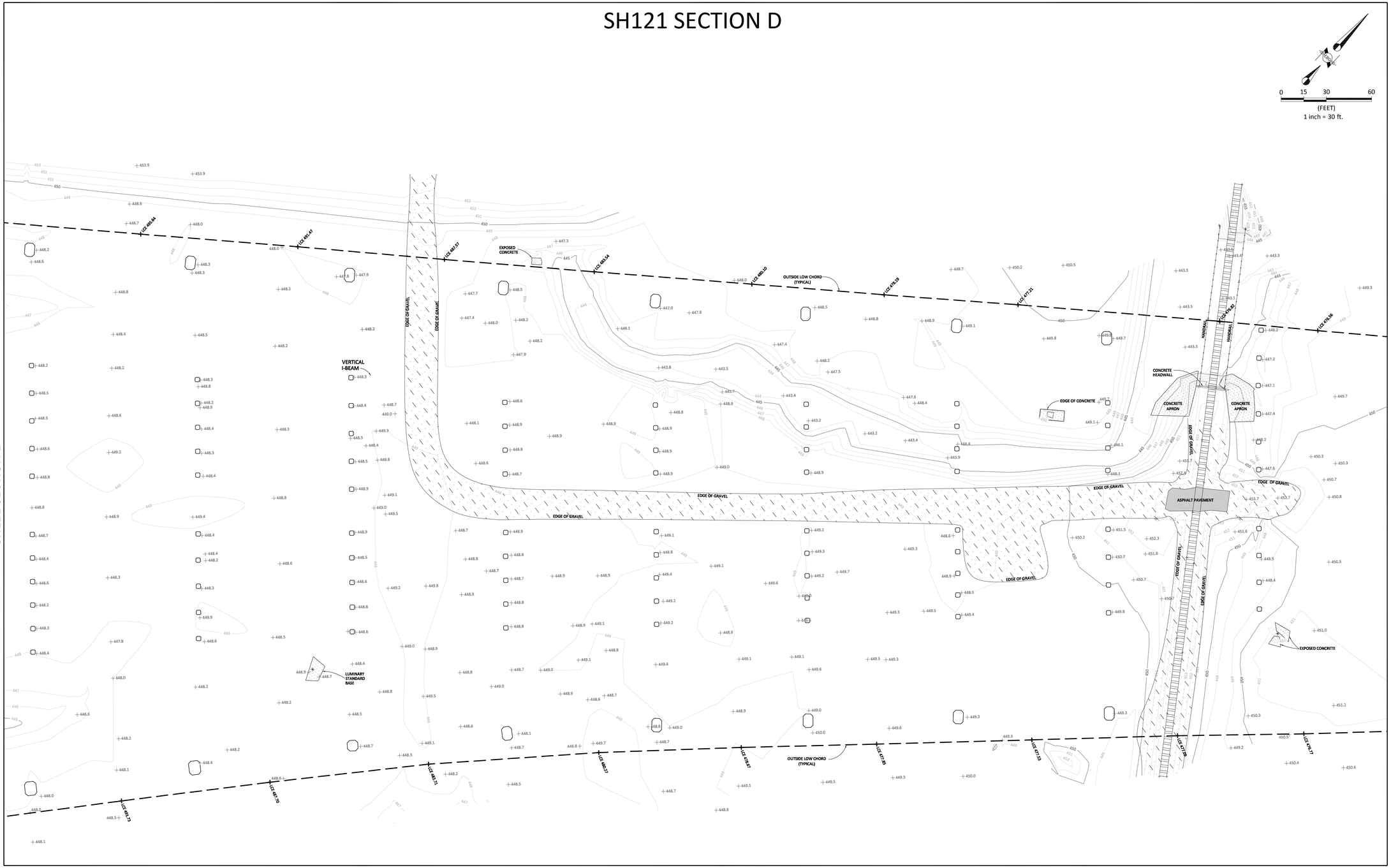
LOWER DUDLEY WATERSHED
SUPPLEMENTAL TOPOGRAPHIC SURVEY
CITY OF CARROLLTON, COLLIN COUNTY, TEXAS

EBG ENGINEERING, LLC
CONSULTING ENGINEERS & SURVEYORS
10300 N CENTRAL EXPWY, STE 160
DALLAS, TEXAS 75231
PHONE: (214) 321-3861 FAX: (214)361-2131

DATE: FEBRUARY 9, 2012
SCALE: 1" = 30'
JOB NO.: 11028
DWG NAME: SH121 SECTION C
DRAWN BY: LJG
CLIENT NAME: BROWN & GAY

SH121 SECTION D

MATCHLINE "D" SEE SHEET 5
SH121 SECTION E



MATCHLINE "C" SEE SHEET 3
SH121 SECTION C

LEGEND

451.6	....SPOT ELEVATION
LCE 470.79	....LOW CHORD ELEVATION
450	....CONTOUR MAJOR
451	....CONTOUR MINOR
	....2.5' COLUMN
	....3' COLUMN
	....2.5'X2.5' COLUMN
	....5'X5' COLUMN
	....6.5'X8.5' COLUMN
	....SIGN
	....SANITARY SEWER MANHOLE
	....LIGHT POLE
	....TRAFFIC LIGHT
	....ELECTRIC VAULT
	....BOLLARD
	....CONCRETE
	....GRAVEL
	....HANDRAIL
	....RAILROAD
	....ASPHALT
	....WATER

PRELIMINARY

INITIALS	REVISIONS	DATE
		00/00/00

LOWER DUDLEY WATERSHED
SUPPLEMENTAL TOPOGRAPHIC SURVEY
CITY OF CARROLLTON, COLLIN COUNTY, TEXAS

EBG ENGINEERING, LLC
CONSULTING ENGINEERS & SURVEYORS
10300 N CENTRAL EXPWY, STE 160
DALLAS, TEXAS 75231
PHONE: (214) 327-3861 FAX: (214)361-2131

DATE: FEBRUARY 9, 2011
SCALE: 1" = 30'
JOB NO.: 11028
DWG NAME: SH121 SECTION D
DRAWN BY: LJG
CLIENT NAME: BROWN & GAY

SH121 SECTION E

MATCHLINE "E"
(SEE SHEET 6 SH121 SECTION F)

MATCHLINE "D"
(SEE SHEET 4 SH121 SECTION D)

MATCHLINE "F"
(SEE SHEET 6 SH121 SECTION G)

PRELIMINARY

INITIALS	REVISIONS	DATE
		00/00/00

LOWER DUDLEY WATERSHED
SUPPLEMENTAL TOPOGRAPHIC SURVEY
CITY OF CARROLLTON, COLLIN COUNTY, TEXAS

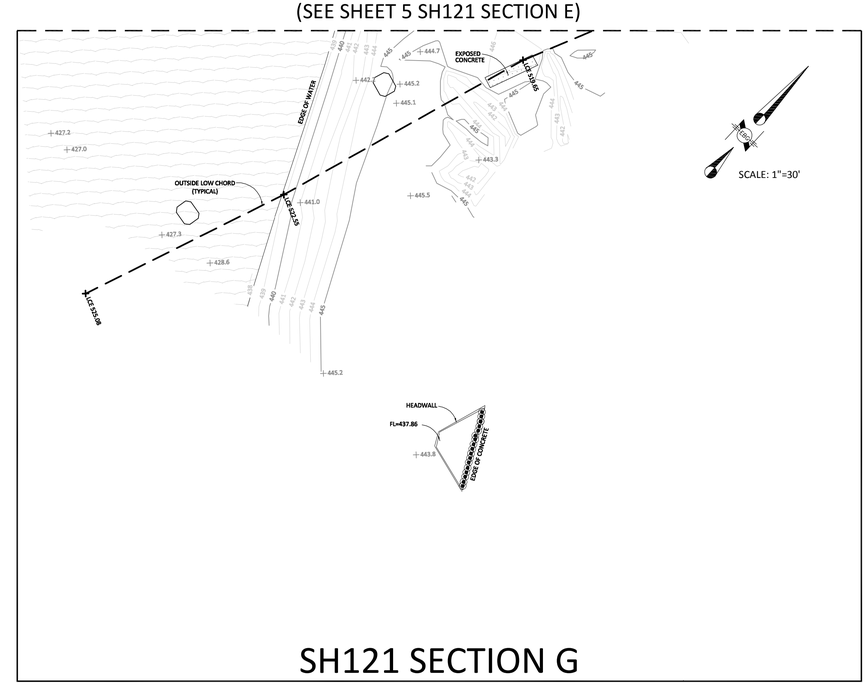
EBG ENGINEERING, LLC
CONSULTING ENGINEERS & SURVEYORS
10300 N CENTRAL EXPWY, STE 160
DALLAS, TEXAS 75231
PHONE: (214) 327-3861 FAX: (214)361-2131

DATE: FEBRUARY 9, 2012
SCALE: 1" = 30'
JOB NO.: 11028
DWG NAME: SH121 SECTION E
DRAWN BY: LJG
CLIENT NAME: BROWN & GAY

SH121 SECTION F

MATCHLINE "E"
(SEE SHEET 5 SH121 SECTION E)

MATCHLINE "F"
(SEE SHEET 5 SH121 SECTION E)



SH121 SECTION G

LEGEND

- 451.6 ..... SPOT ELEVATION
- LCE 470.79 ..... LOW CHORD ELEVATION
- 450 ..... CONTOUR MAJOR
- 451 ..... CONTOUR MINOR
- ..... 2.5' COLUMN
- ..... 3' COLUMN
- ..... 2.5'X2.5' COLUMN
- ..... 5'X5' COLUMN
- ..... 6.5'X8.5' COLUMN
- ..... SIGN
- ..... SANITARY SEWER MANHOLE
- ..... LIGHT POLE
- ..... TRAFFIC LIGHT
- ..... ELECTRIC VAULT
- ..... BOLLARD
- ..... CONCRETE
- ..... GRAVEL
- ..... HANDRAIL
- ..... RAILROAD
- ..... ASPHALT
- ..... WATER

0 15 30 60
(FEET)
1 inch = 30 ft.

PRELIMINARY

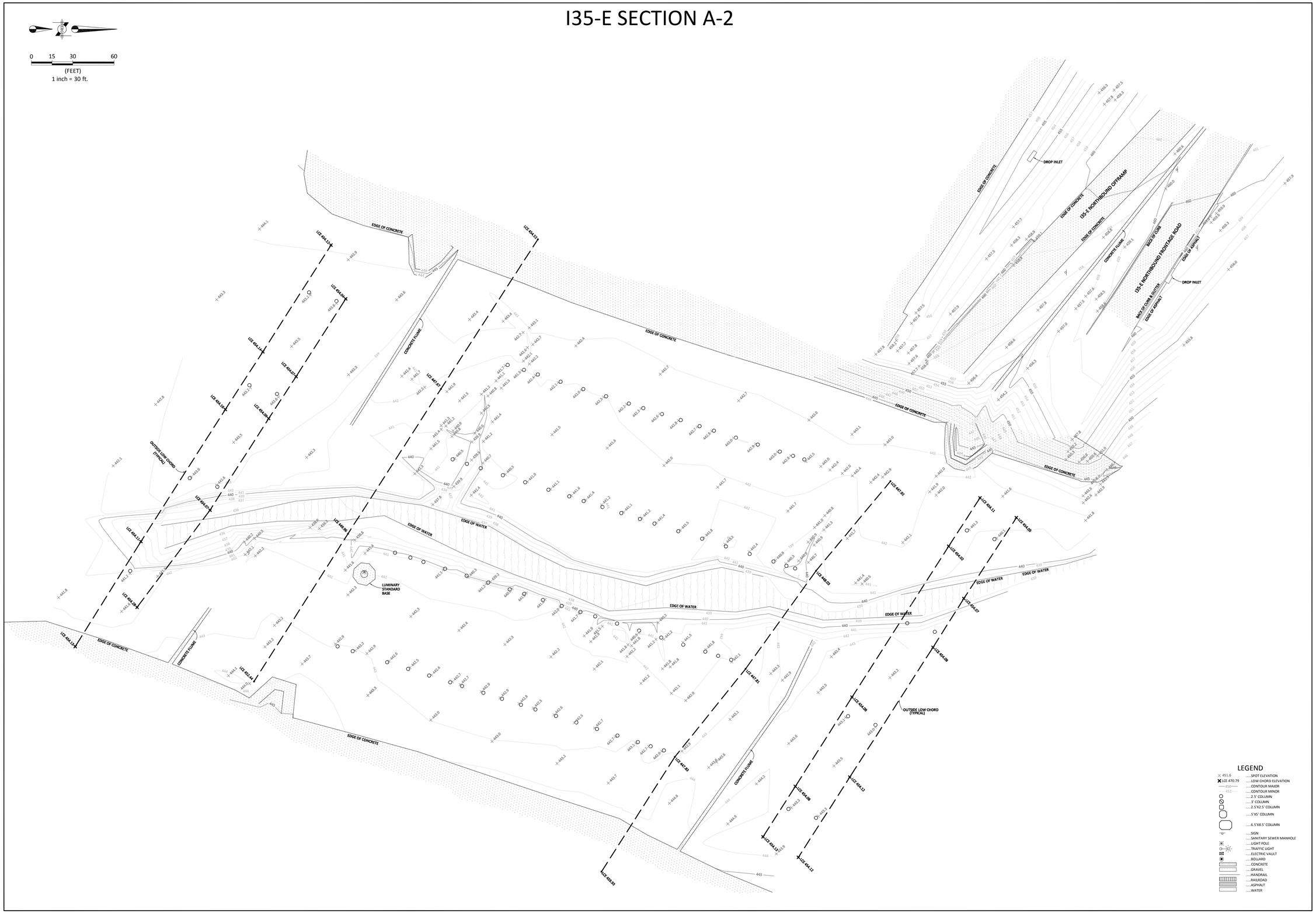
INITIALS	REVISIONS	DATE
		00/00/00

LOWER DUDLEY WATERSHED
SUPPLEMENTAL TOPOGRAPHIC SURVEY
CITY OF CARROLLTON, COLLIN COUNTY, TEXAS

EBG ENGINEERING, LLC
CONSULTING ENGINEERS & SURVEYORS
10300 N CENTRAL EXPWY, STE 160
DALLAS, TEXAS 75231
PHONE: (214) 321-3861 FAX: (214)361-2311

DATE: FEBRUARY 9, 2012
SCALE: 1" = 30'
JOB NO.: 11028
DWG NAME: SH121 SECTION F
DRAWN BY: LJG
CLIENT NAME: BROWN & GAY

I35-E SECTION A-2



PRELIMINARY

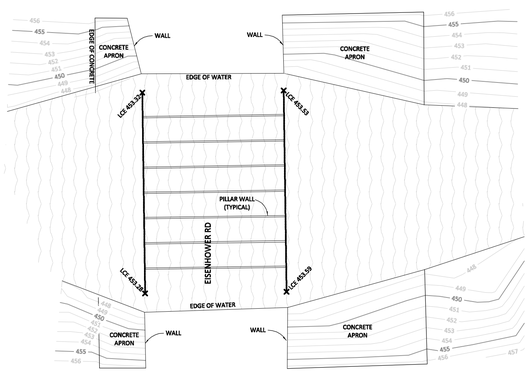
INITIALS	REVISIONS	DATE
		00/00/00

LOWER DUDLEY WATERSHED
SUPPLEMENTAL TOPOGRAPHIC SURVEY
CITY OF CARROLLTON, COLLIN COUNTY, TEXAS

EBG ENGINEERING, LLC
CONSULTING ENGINEERS & SURVEYORS
10300 N CENTRAL EXPWY., STE 160
DALLAS, TEXAS 75231
PHONE: (214) 321-3861 FAX: (214)361-0131

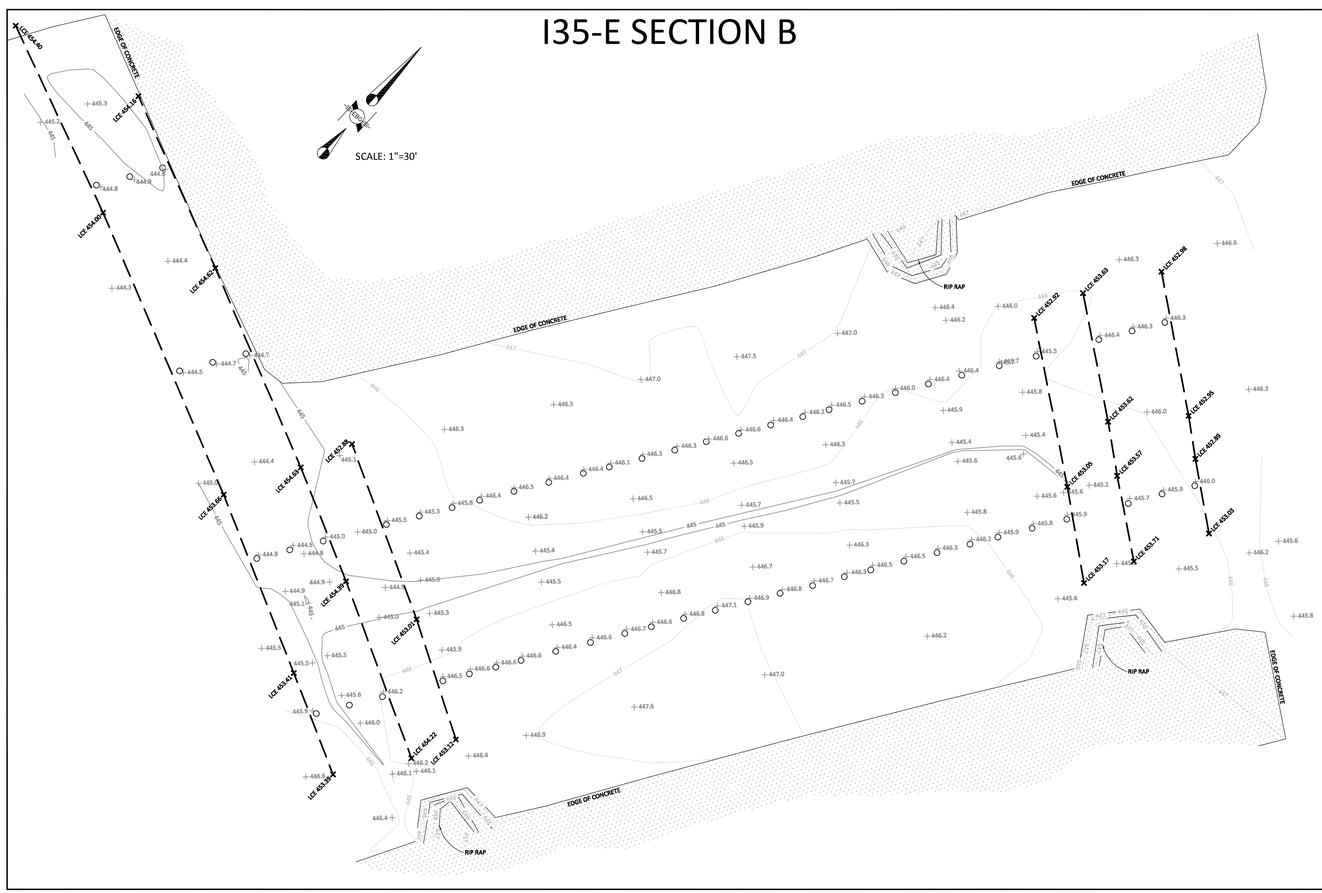
DATE: FEBRUARY 9, 2012
SCALE: 1" = 30'
JOB NO.: 11028
DWG NAME: I35-E SECTION A-2
DRAWN BY: LJG
CLIENT NAME: BROWN & GAY

EISENHOWER



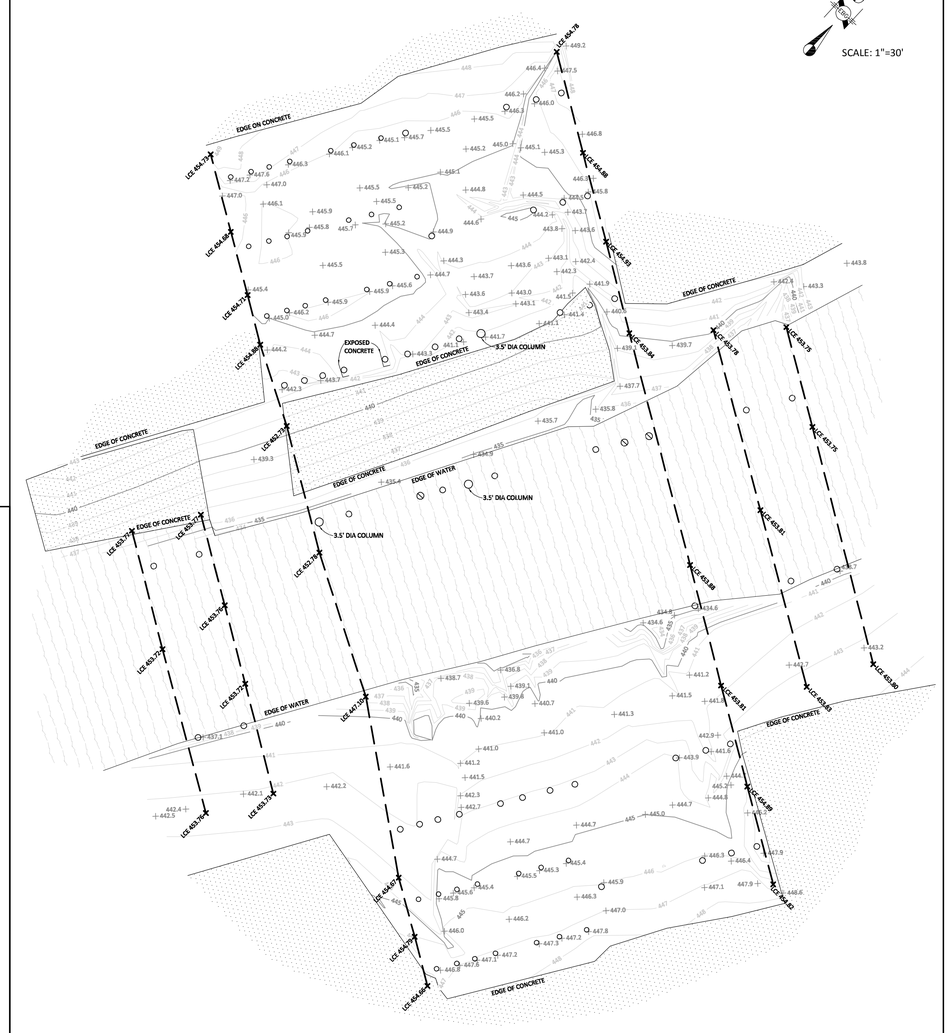
SCALE: 1"=30'

I35-E SECTION B



SCALE: 1"=30'

I35-E SECTION C



SCALE: 1"=30'

LEGEND

- 451.6 .....SPOT ELEVATION
- LCE 470.79 .....LOW CHORD ELEVATION
- 450 .....CONTOUR MAJOR
- 451 .....CONTOUR MINOR
- .....2.5' COLUMN
- .....3' COLUMN
- .....2.5'X2.5' COLUMN
- .....5'X5' COLUMN
- .....6.5'X8.5' COLUMN
- .....SIGN
- .....SANITARY SEWER MANHOLE
- .....LIGHT POLE
- .....TRAFFIC LIGHT
- .....ELECTRIC VAULT
- .....BOLLARD
- .....CONCRETE
- .....GRAVEL
- .....HANDRAIL
- .....RAILROAD
- .....ASPHALT
- .....WATER

0 15 30 60

(FEET)
1 inch = 30 ft.

PRELIMINARY

INITIALS	REVISIONS	DATE
		00/00/00

LOWER DUDLEY WATERSHED
SUPPLEMENTAL TOPOGRAPHIC SURVEY
CITY OF CARROLLTON, COLLIN COUNTY, TEXAS

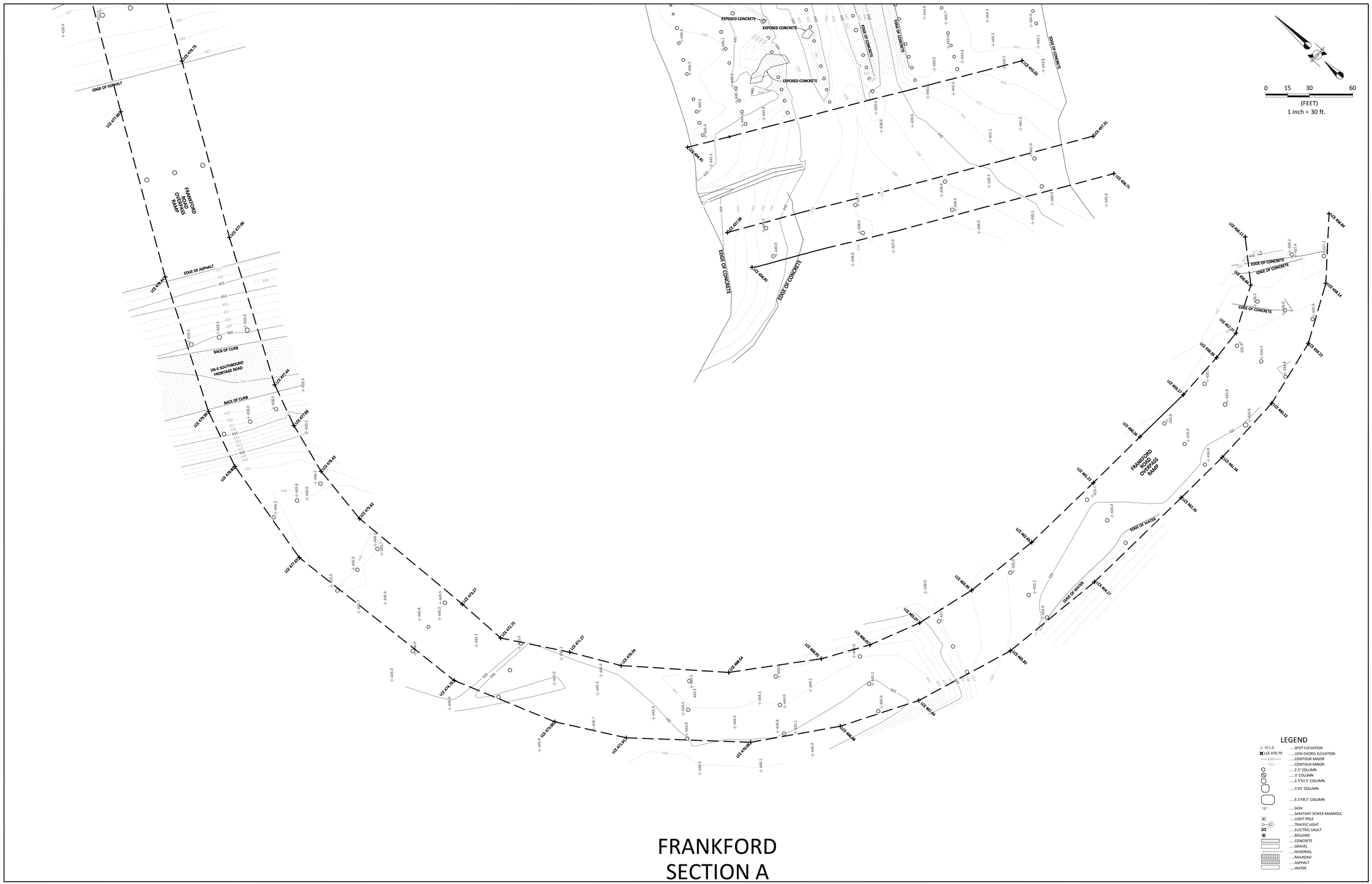
EBG ENGINEERING, LLC
CONSULTING ENGINEERS & SURVEYORS
10300 N CENTRAL EXPWY, STE 160
DALLAS, TEXAS 75231
PHONE: (214) 321-3661 FAX: (214)361-2311

DATE: FEBRUARY 9, 2012
SCALE: 1" = 30'
JOB NO.: 11028
DWG NAME: I35-E SECTION B
DRAWN BY: LJG
CLIENT NAME: BROWN & GAY

I35-E SECTION D

MATCHLINE "G"
(SEE SHEET 10 FRANKFORD SECTION A)

MATCHLINE "G"
(SEE SHEET 10 I35-E SECTION D)



FRANKFORD
SECTION A

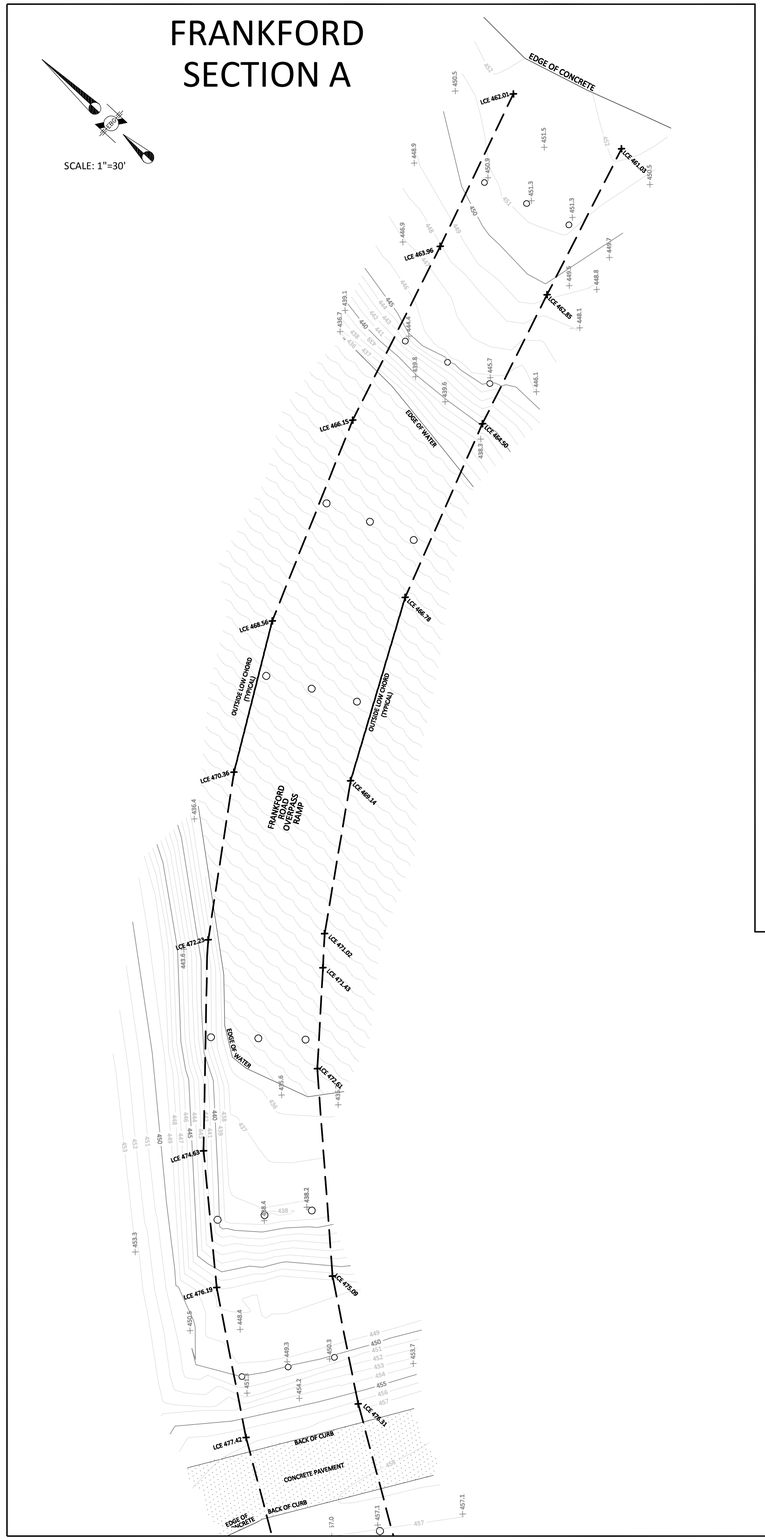
PRELIMINARY

INITIALS	REVISIONS	DATE
		00/00/00

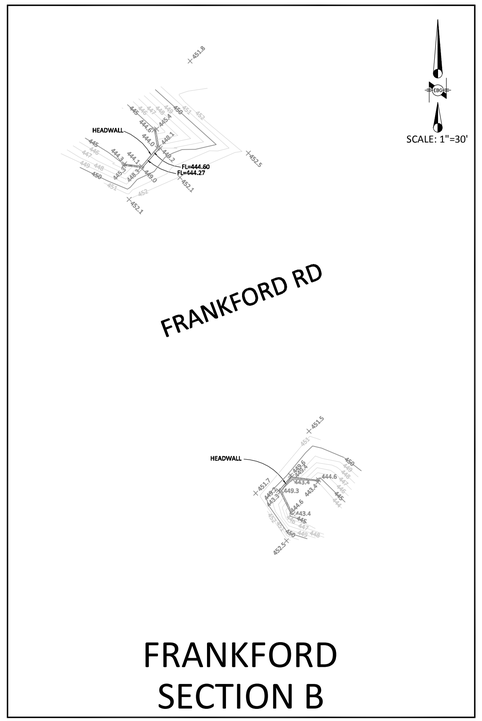
LOWER DUDLEY WATERSHED
SUPPLEMENTAL TOPOGRAPHIC SURVEY
CITY OF CARROLLTON, COLLIN COUNTY, TEXAS

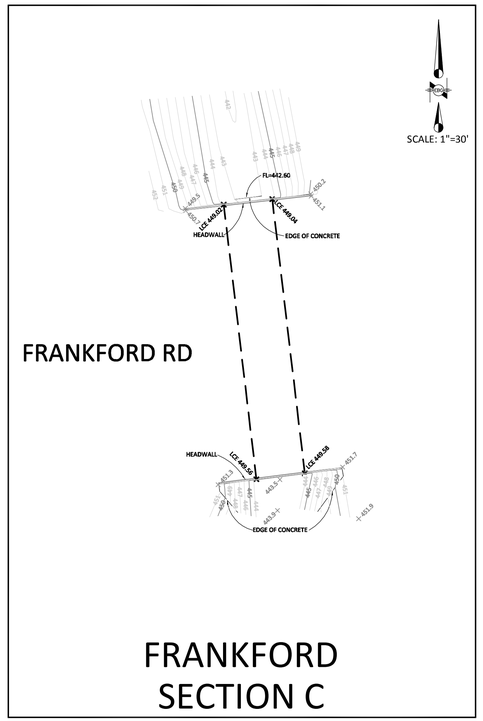
EBG ENGINEERING, LLC
CONSULTING ENGINEERS & SURVEYORS
10300 N CENTRAL EXPWY., STE 160
DALLAS, TEXAS 75231
PHONE: (214) 321-3861 FAX: (214)361-2131

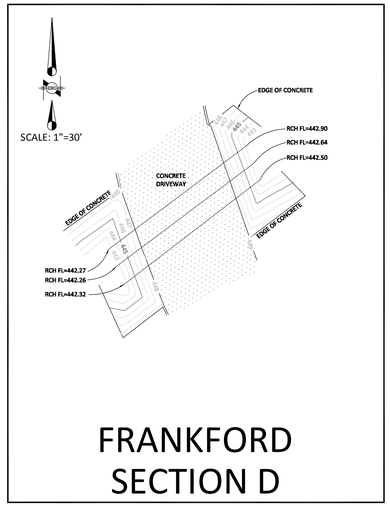
DATE: FEBRUARY 9, 2012
SCALE: 1" = 30'
JOB NO.: 11028
DWG NAME: I35-E SD./FRANKFORD SA
DRAWN BY: MWC
CLIENT NAME: BROWN & GAY

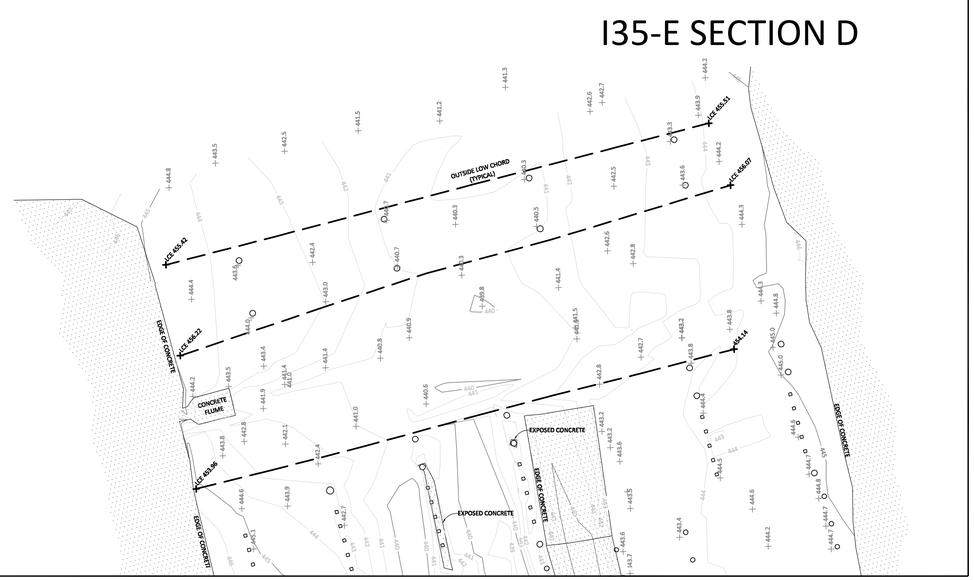


MATCHLINE "G"
(SEE SHEET 11 FRANKFORD SECTION A)









MATCHLINE SEE SHEET 11
I35-E SECTION D

LEGEND

- ....SPOT ELEVATION
- ....LOW CHORD ELEVATION
- ....CONTOUR MAJOR
- ....CONTOUR MINOR
- ....2.5' COLUMN
- ....3' COLUMN
- ....2.5'X2.5' COLUMN
- ....5'X5' COLUMN
- ....6.5'X8.5' COLUMN
- ....SIGN
- ....SANITARY SEWER MANHOLE
- ....LIGHT POLE
- ....TRAFFIC LIGHT
- ....ELECTRIC VAULT
- ....BOLLARD
- ....CONCRETE
- ....GRAVEL
- ....HANDRAIL
- ....RAILROAD
- ....ASPHALT
- ....WATER

0 15 30 60
(FEET)
1 inch = 30 ft.

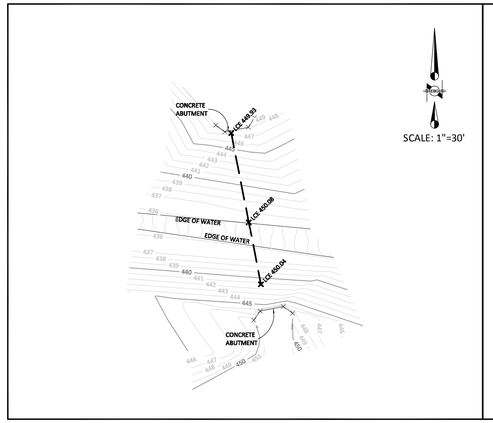
PRELIMINARY

INITIALS	REVISIONS	DATE
		00/00/00

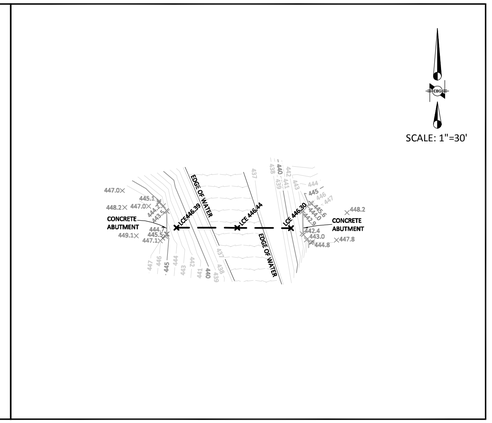
LOWER DUDLEY WATERSHED
SUPPLEMENTAL TOPOGRAPHIC SURVEY
CITY OF CARROLLTON, COLLIN COUNTY, TEXAS

EBG ENGINEERING, LLC
CONSULTING ENGINEERS & SURVEYORS
10300 N CENTRAL EXPWY, STE 160
DALLAS, TEXAS 75231
PHONE: (214) 321-3861 FAX: (214)361-2131

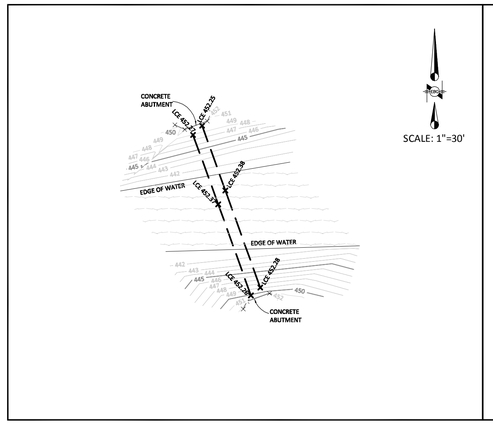
DATE: FEBRUARY 9, 2012
SCALE: 1" = 30'
JOB NO.: 11028
DWG NAME: 135-E SD/FRANKFORD SA
DRAWN BY: MWC
CLIENT NAME: BROWN & GAY



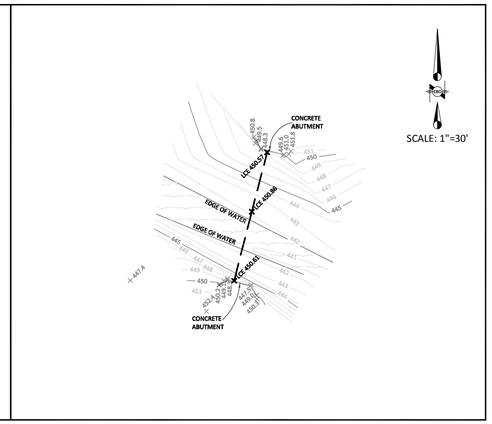
INDIAN CREEK GOLF COURSE
SECTION A



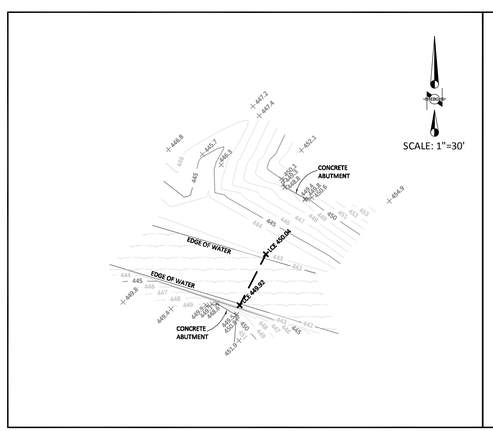
INDIAN CREEK GOLF COURSE
SECTION B



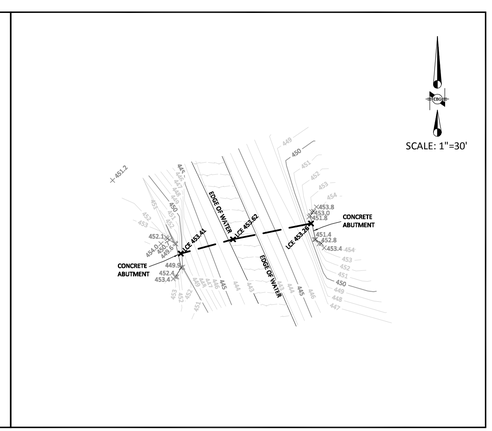
INDIAN CREEK GOLF COURSE
SECTION C



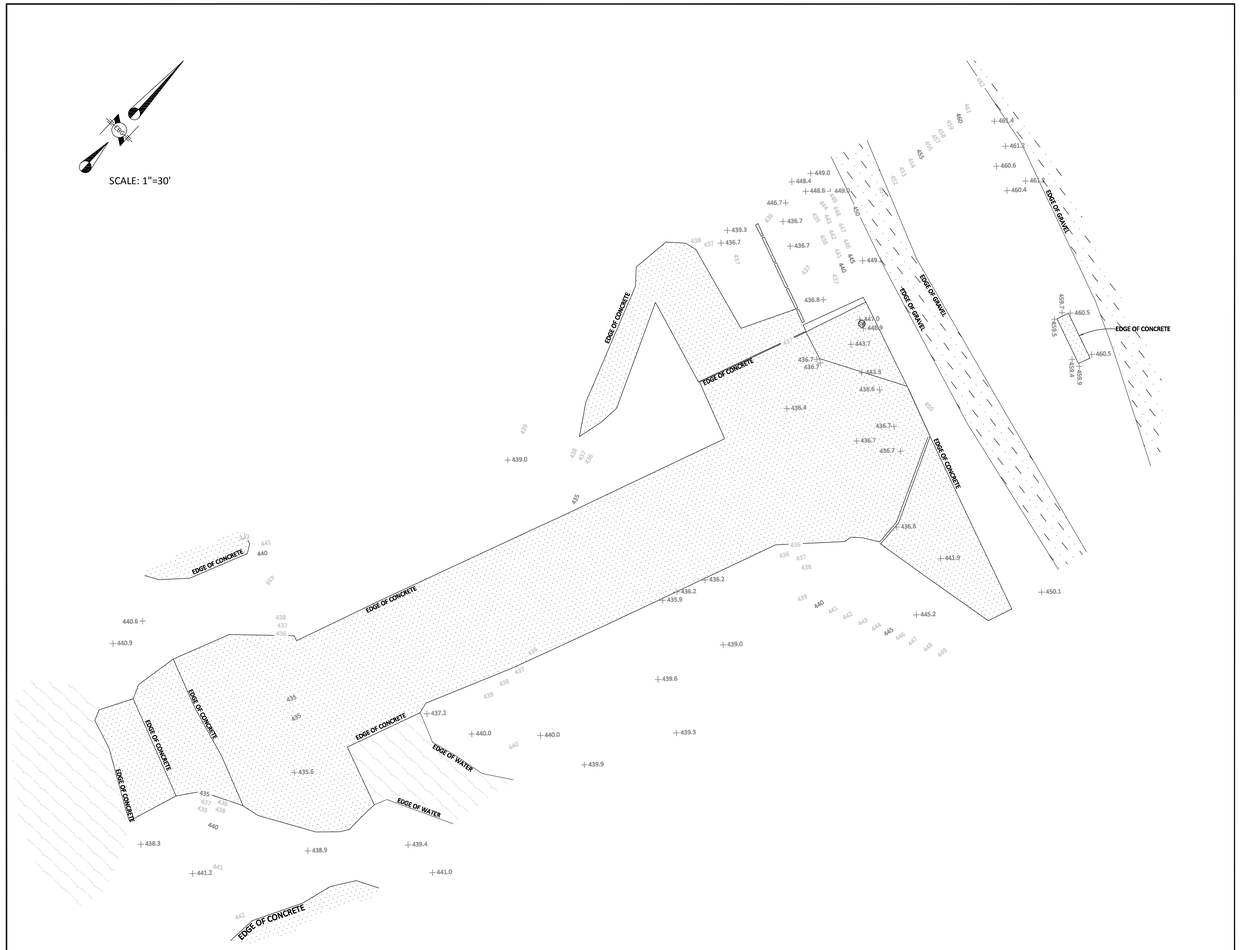
INDIAN CREEK GOLF COURSE
SECTION D



INDIAN CREEK GOLF COURSE
SECTION E



INDIAN CREEK GOLF COURSE
SECTION F



ELM FORK TRINITY RIVER

LEGEND

- 451.6 .....SPOT ELEVATION
- LCE 470.79 .....LOW CHORD ELEVATION
- 450 .....CONTOUR MAJOR
- 451 .....CONTOUR MINOR
- .....2.5' COLUMN
- .....3' COLUMN
- .....2.5'X2.5' COLUMN
- .....5'X5' COLUMN
- .....6.5'X8.5' COLUMN
- .....SIGN
- .....SANITARY SEWER MANHOLE
- .....LIGHT POLE
- .....TRAFFIC LIGHT
- .....ELECTRIC VAULT
- .....BOLLARD
- .....CONCRETE
- .....GRAVEL
- .....HANDRAIL
- .....RAILROAD
- .....ASPHALT
- .....WATER

0 15 30 60
(FEET)
1 inch = 30 ft.

PRELIMINARY

DATE	REVISIONS	INITIALS
00/00/00		

LOWER DUDLEY WATERSHED
SUPPLEMENTAL TOPOGRAPHIC SURVEY
CITY OF CARROLLTON, COLLIN COUNTY, TEXAS

EBG ENGINEERING, LLC
CONSULTING ENGINEERS & SURVEYORS
10300 N CENTRAL EXPWY., STE 160
DALLAS, TEXAS 75231
PHONE: (214) 387-3861 FAX: (214)387-0131

DATE: FEBRUARY 9, 2012
SCALE: 1" = 30'
JOB NO.: 11028
DWG NAME: INDIAN CREEK
DRAWN BY: LJG
CLIENT NAME: BROWN & GAY

EXHIBIT "B"
AREA LIDAR SURVEY

N

Exhibit D LIDAR Helicopter Scope and Tolerance

Project Resolution

We will achieve vertical accuracy of 95% at 0.3' (<9.25cm) and 90% at 0.25' (7.5cm), horizontal accuracy of 1.0' (30cm), 1 sigma. This meets or exceeds FEMA guidelines for 1.0' contour interval mapping.

Resolution	Flying Altitude	FEMA Contour Interval	Typical Combined LiDAR Spot Spacing	NSSDA Accuracy 95% Confidence	NSSDA RMSE (68% CL)	NMAS-VMAS 90% Confidence
High	1000'	1.0' (30cm)	1.0' (0.3m)	0.3' (9.25cm)	0.15' (4.6cm)	0.25' (7.5cm)

The accuracy is defined and derived from ground checks on flat, open, smooth surfaces. This level of accuracy is not stated for areas of dense vegetation or sudden breaks. The accuracy will degrade in areas of vegetation and steep slopes, and/or if impacted by artifacts and/or sudden breaks. Any gridding or interpolation of the raw data will naturally diminish the accuracy of the terrain representation.

Data to Support 1.0' Contour Generation

The DTM used as the basis for contour generation does not include breaklines, which are in certain conditions, required to meet certain 1.0' contour map accuracy specifications.

In some cases contours may not represent the exact configuration of terrain on the ground. DAS will generate 1.0' contours with the LiDAR data, however, in areas of steep slope and/or heavy vegetation, the accuracy will degrade.

Laser Reflection

For surfaces such as water, lava, wet asphalt and tar-coated roofs, the LiDAR signal return will be very weak and potentially cause signal dropouts. In areas of both dense trees and dense underbrush, there is the possibility that the deliverable file will be void, containing no points in that area.

Survey Control

EBG will set fifteen (15) survey control points within the project area. X, Y, and Z data will be delivered to DAS in ASCII, XLS, or similar format.

Deliverables

Deliverables for this project will include the following:

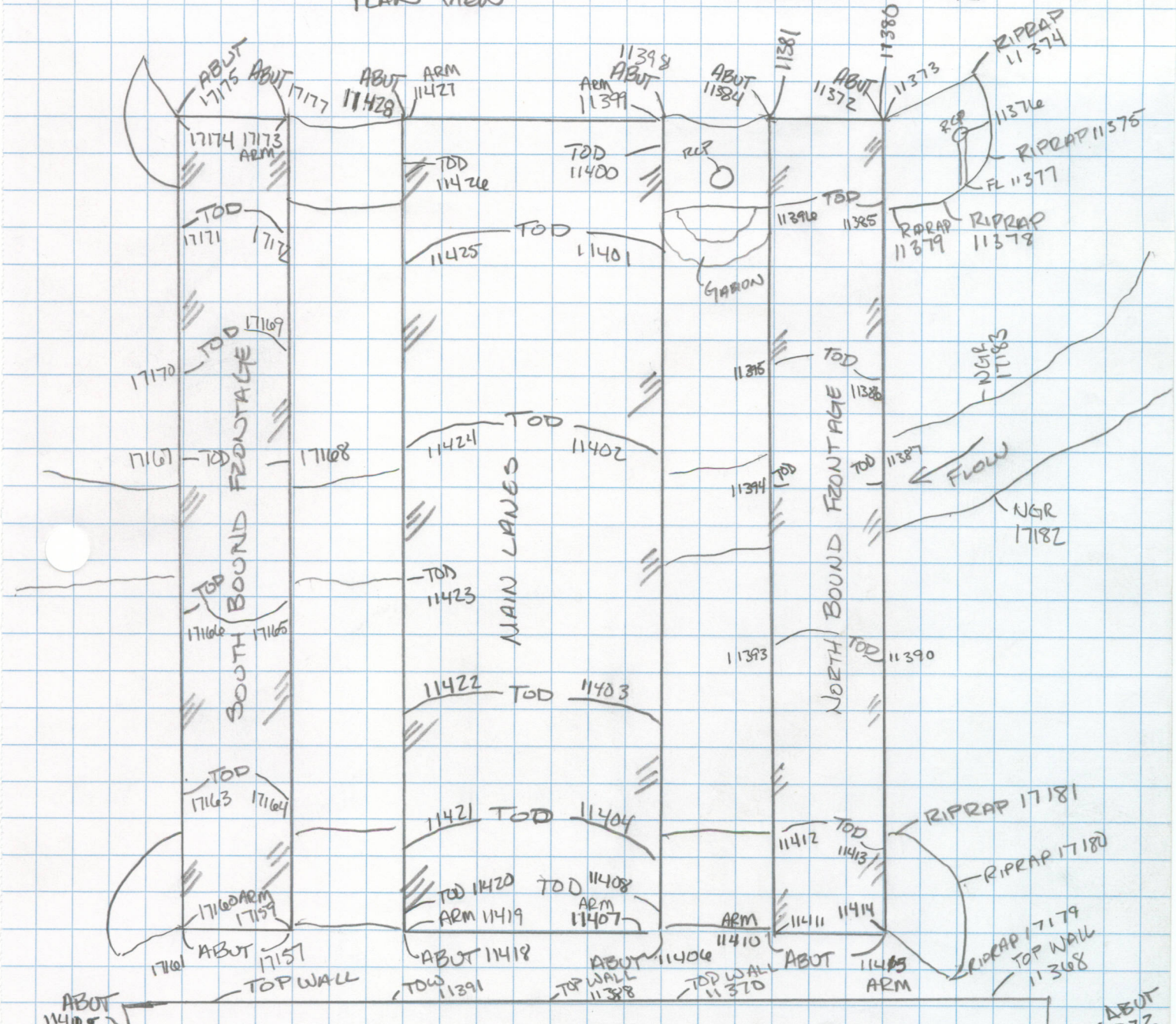
- Classified Bare Earth Ground (stripped of > 90% of vegetation/features) ASCII files in customer preferred projection and file size.
- First Pulse Extracted Features (vegetation, structures) ASCII files in customer preferred project and file size.
- Last Pulse Extracted Features (vegetation, structures) ASCII files in customer preferred projection and file size.

All LiDAR points files will be provided in the NAD 83 Datum for horizontal and the NAVD 88 Datum for vertical, unless otherwise requested. Any scale, rotation, or translation of the LiDAR data points into other systems is an additional cost item.

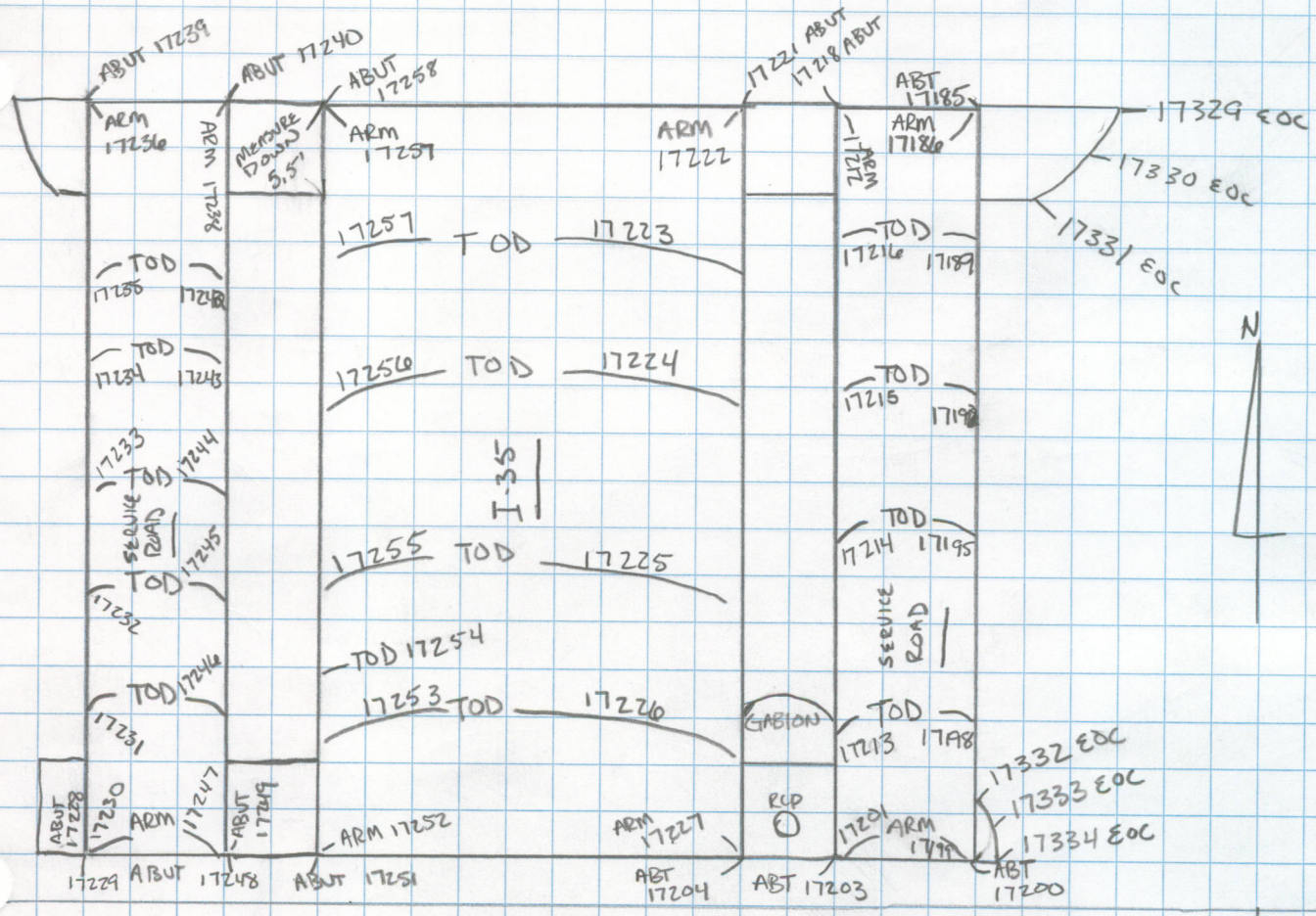
IH 35E BRIDGE 'A'

TOD = TOP OF DECK 120
ABUT = ABUTMENT 119
BOD = BOTTOM OF DECK 118
TOR = TOP OF RAIL 117
ARM = ARMOR JOINT 116

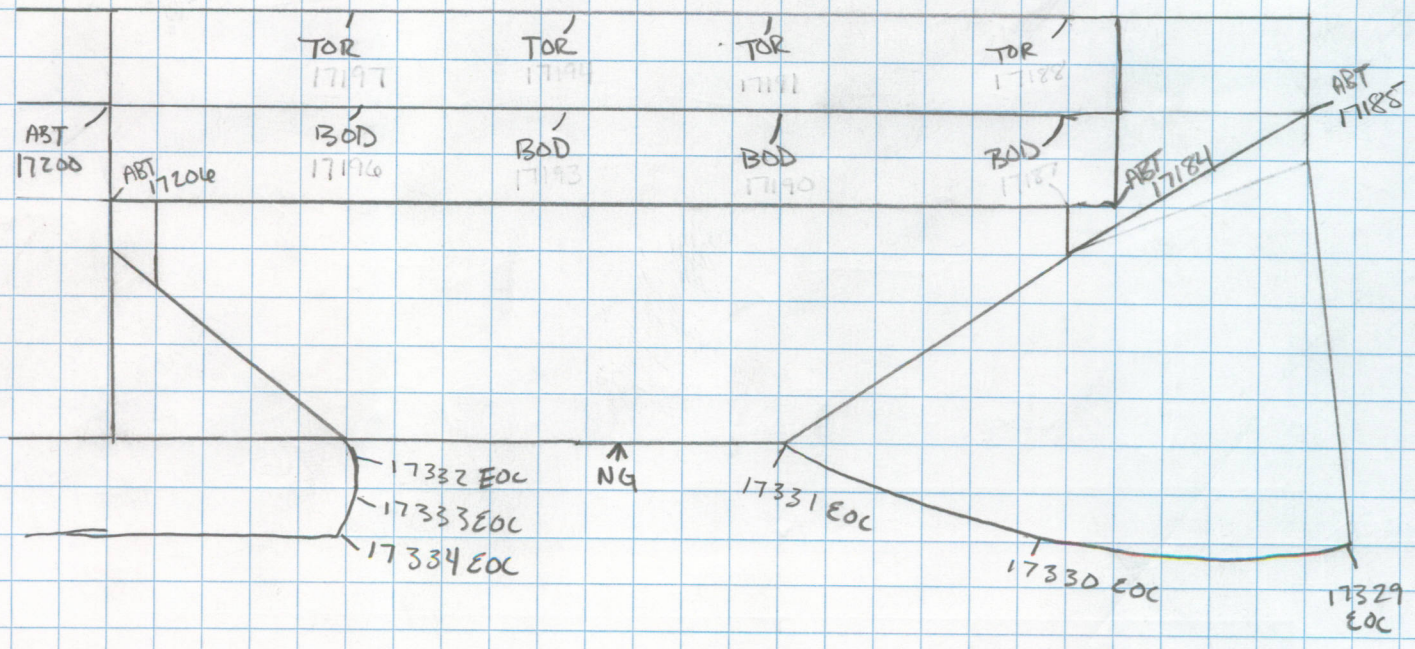
PLAN VIEW



PLAN VIEW

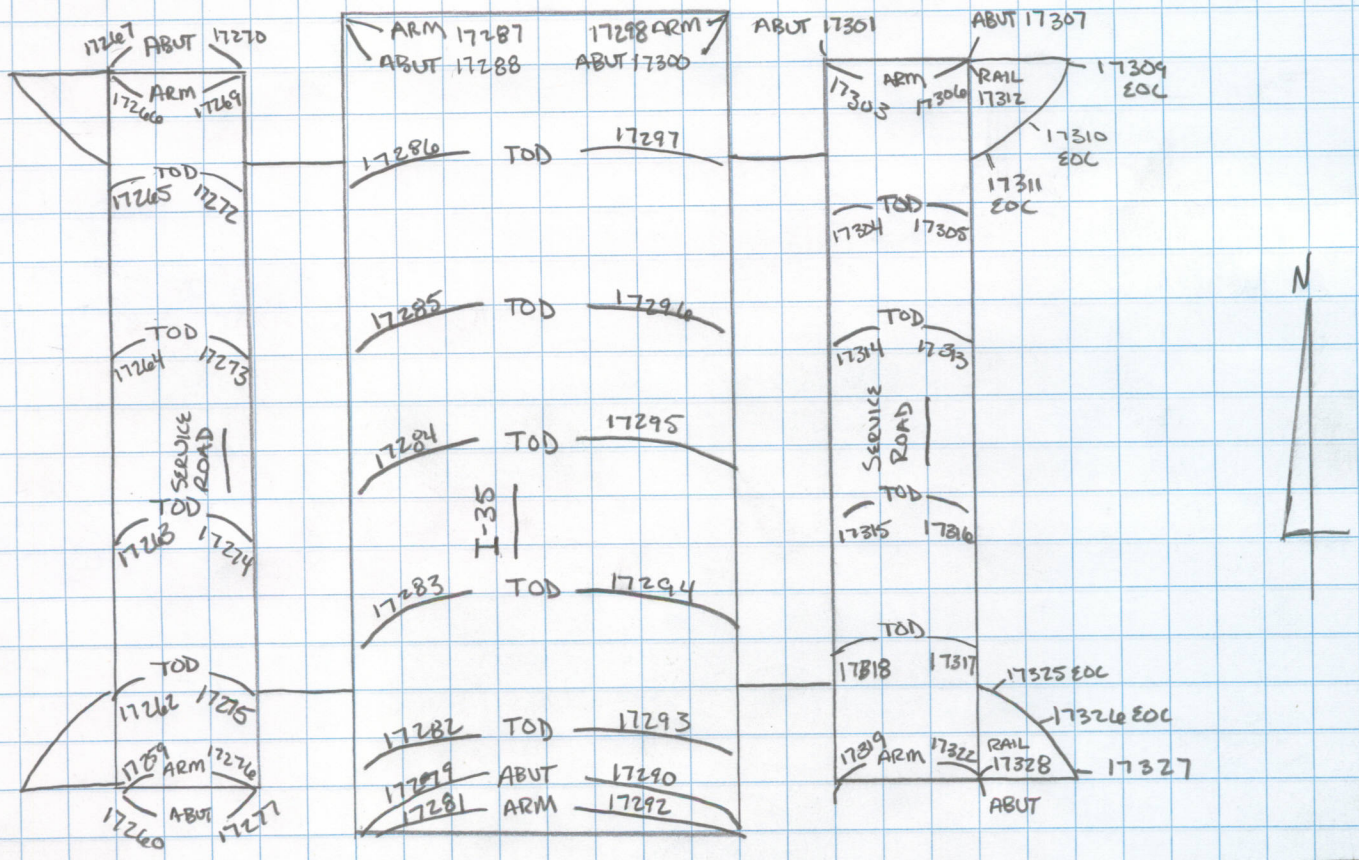


PROFILE VIEW

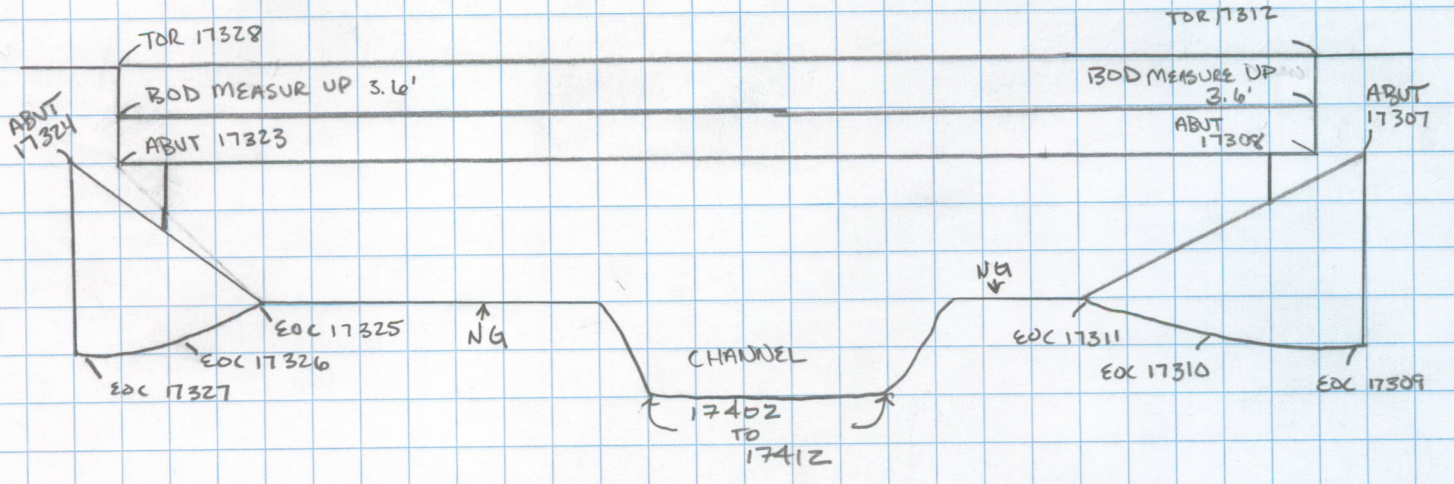


11028 LOWER DUDLEY BRIDGE "B" I-35

PLAN VIEW



PROFILE VIEW



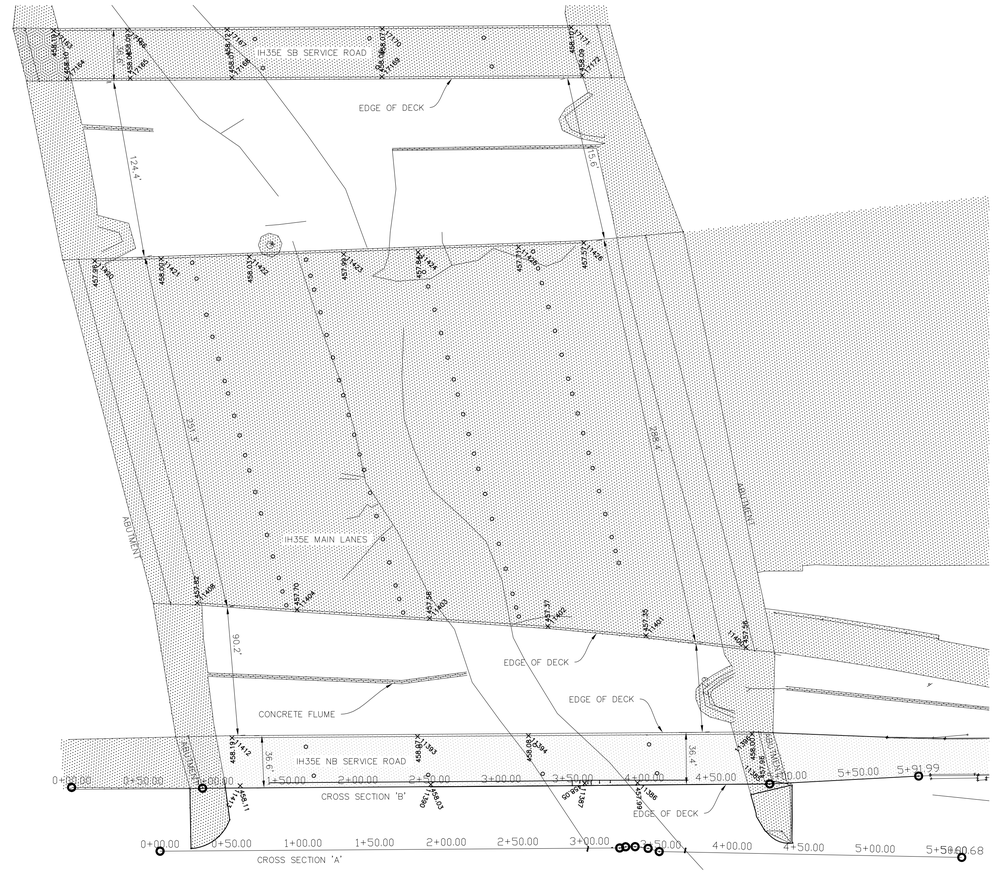
11028 LOWER DUDLEY I-35 BRIDGE "C"

0 25 50 100
(FEET)
1 inch = 50ft.

NOTE:

HORIZONTAL AND VERTICAL VALUES ARE BASED ON THE CITY OF CARROLLTON'S PUBLISHED GPS NETWORK. ALL VALUES ARE AT GRID WITH A GRID TO SURFACE PROJECT SCALE FACTOR OF 1.0001442859.

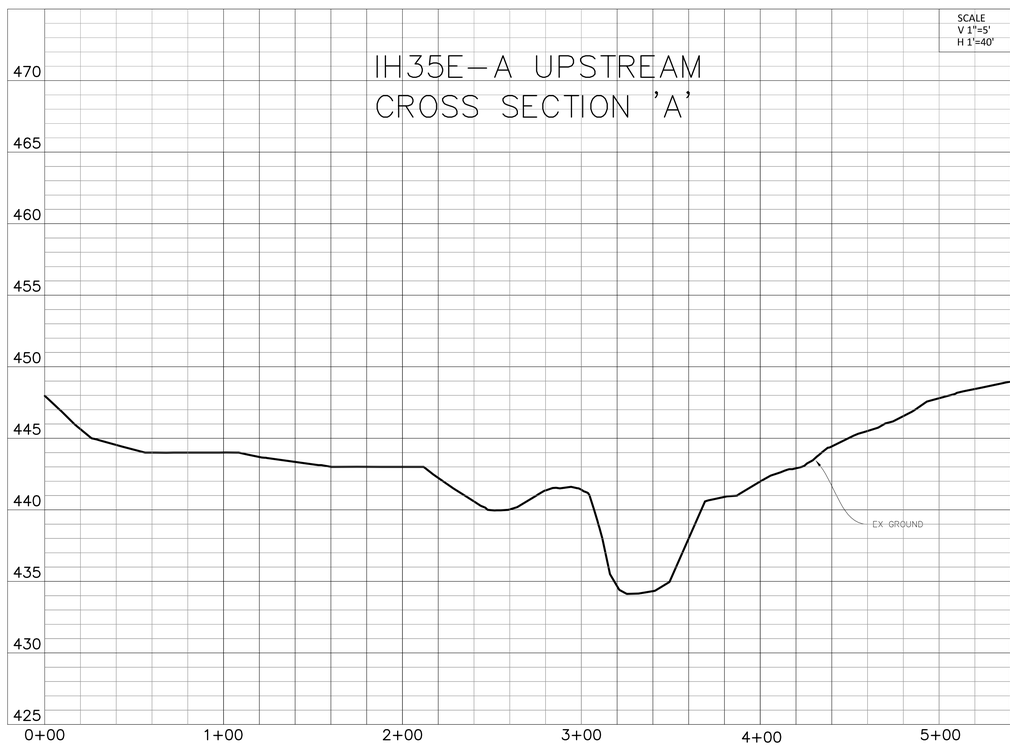
HORIZONTAL DATUM: NAD83 NORTH CENTRAL ZONE (4202)
VERTICAL DATUM: NAVD88

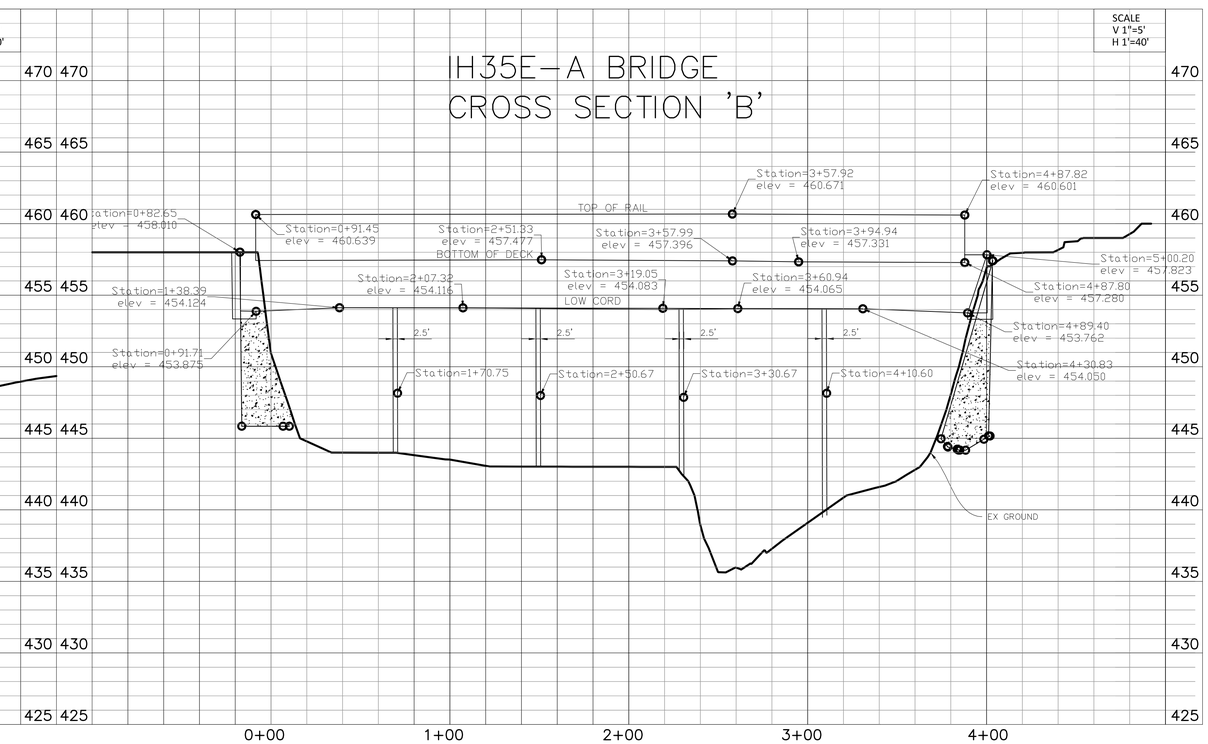


IH35E BRIDGE 'A'
PHOTOGRAPH INVENTORY

CROSS SECTION 'A'
IH35E_A_CS_A_DNS.JPG
IH35E_A_CS_A_UPS.JPG

CROSS SECTION 'B'
IH35E_A_CS_B_DNF.JPG
IH35E_A_CS_B_DVT.JPG
IH35E_A_CS_B_UPS.JPG
IH35E_A_CS_B_USF.JPG

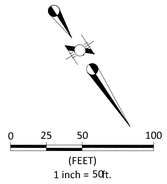




LOWER DUDLEY
IH35E BRIDGE 'A'
CROSS SECTIONS 'A' AND 'B'
CITY OF CARROLLTON, DENTON COUNTY, TEXAS

EBG ENGINEERING, LLC
CONSULTING ENGINEERS & SURVEYORS
10300 N CENTRAL EXPWY, SUITE 160
DALLAS, TEXAS 75231
PHONE: (214) 321-3861 FAX: (214)361-2131

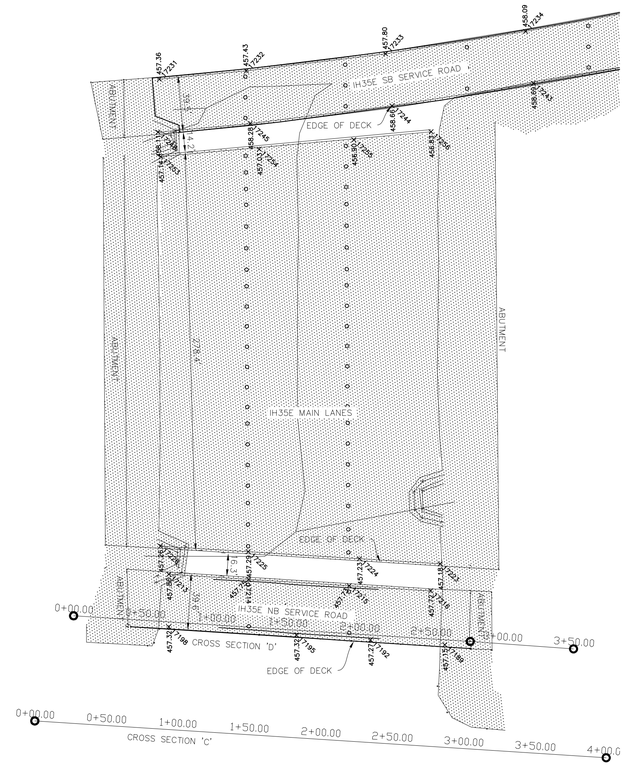
DATE: MAY 29, 2012
SCALE: PLAN 1" = 50'
JOB NO.: 11028
DWG NAME: 11028 BRIDGES
DRAWN BY: MWC
CLIENT NAME: BROWN & GAY



NOTE:

HORIZONTAL AND VERTICAL VALUES ARE BASED ON THE CITY OF CARROLLTON'S PUBLISHED GPS NETWORK. ALL VALUES ARE AT GRID WITH A GRID TO SURFACE PROJECT SCALE FACTOR OF 1.0001442859.

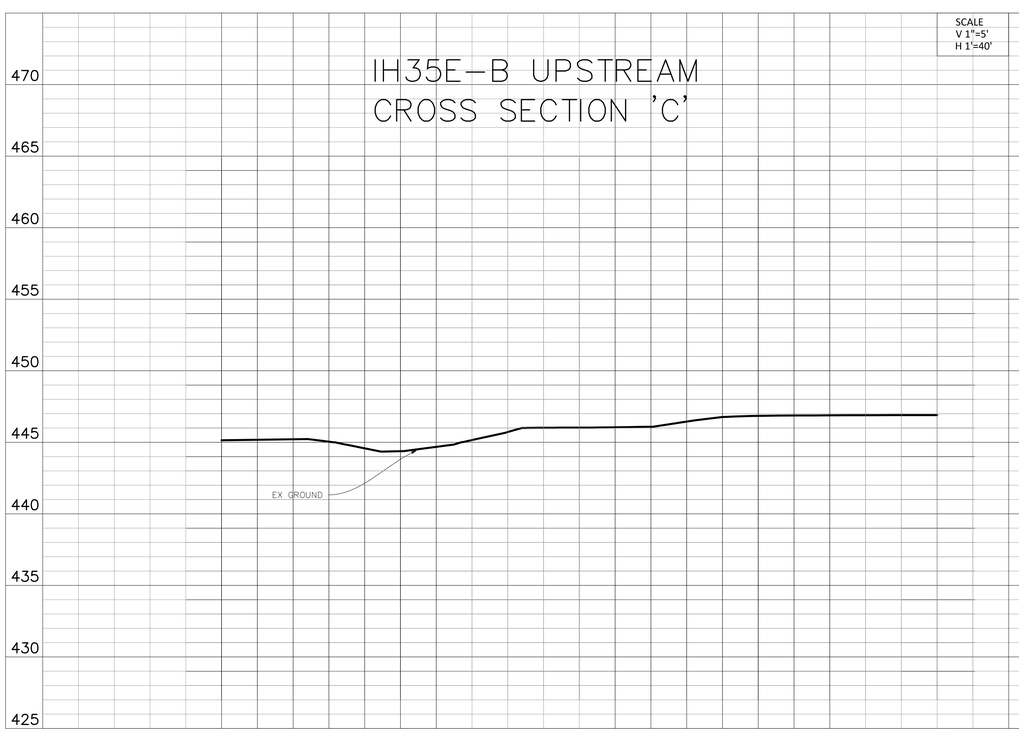
HORIZONTAL DATUM: NAD83 NORTH CENTRAL ZONE (4202)
VERTICAL DATUM: NAVD88

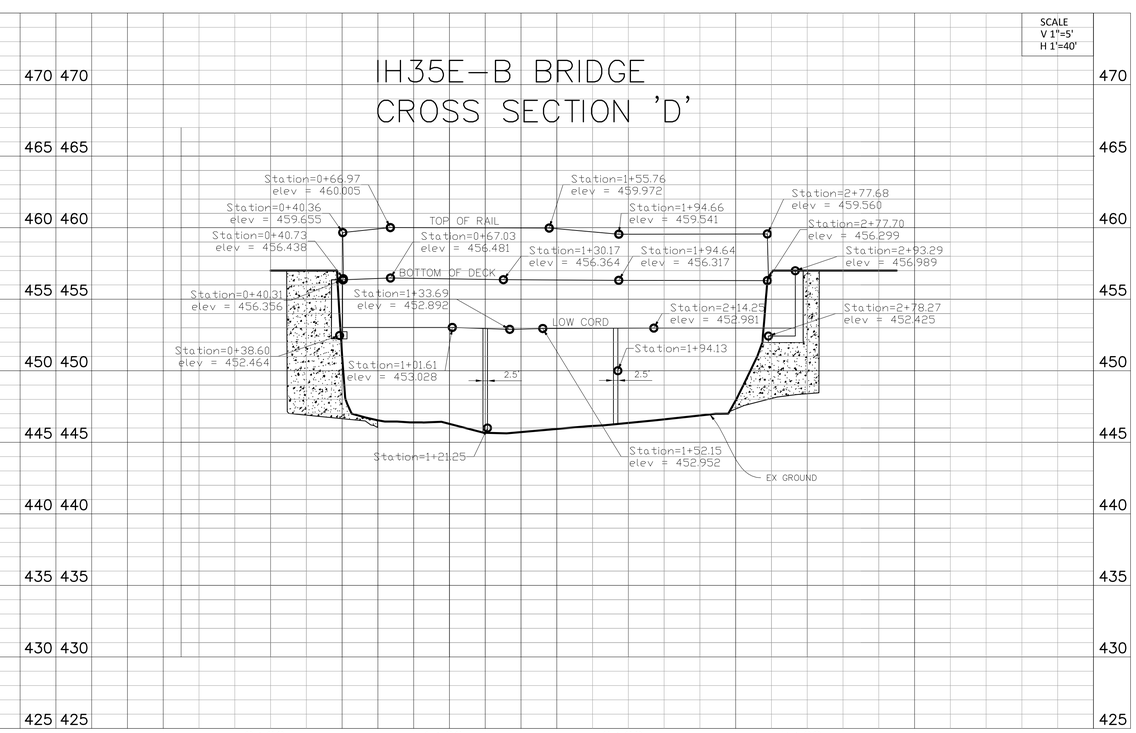


IH35E BRIDGE 'B'
PHOTOGRAPH INVENTORY

CROSS SECTION 'C'
IH35E_B_CS_C_DNS.JPG
IH35E_B_CS_C_UPS.JPG

CROSS SECTION 'D'
IH35E_B_CS_D_DNF.JPG
IH35E_B_CS_D_OVT.JPG
IH35E_B_CS_D_UPS.JPG
IH35E_B_CS_D_USF.JPG

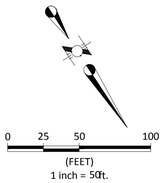




LOWER DUDLEY
IH35E BRIDGE 'B'
CROSS SECTIONS 'C' AND 'D'
CITY OF CARROLLTON, DENTON COUNTY, TEXAS

EBG ENGINEERING, LLC
CONSULTING ENGINEERS & SURVEYORS
10300 N CENTRAL EXPWY, SUITE 160
DALLAS, TEXAS 75231
PHONE: (214) 321-3861 FAX: (214)361-2131

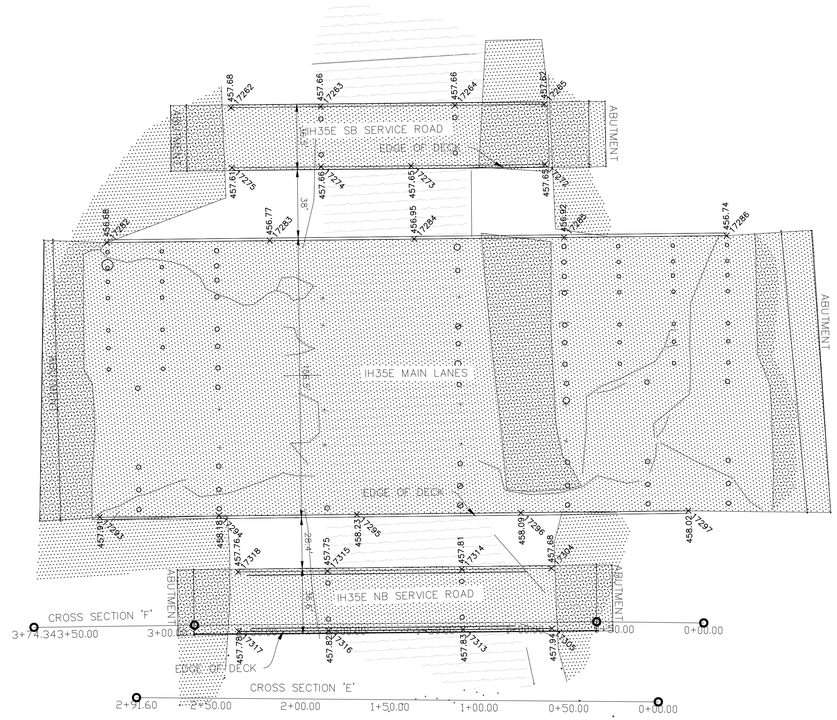
DATE: MAY 29, 2012
SCALE: PLAN 1" = 50'
JOB NO.: 11028
DWG NAME: 11028 BRIDGES
DRAWN BY: MWC
CLIENT NAME: BROWN & GAY



NOTE:

HORIZONTAL AND VERTICAL VALUES ARE BASED ON THE CITY OF CARROLLTON'S PUBLISHED GPS NETWORK. ALL VALUES ARE AT GRID WITH A GRID TO SURFACE PROJECT SCALE FACTOR OF 1.0001442859.

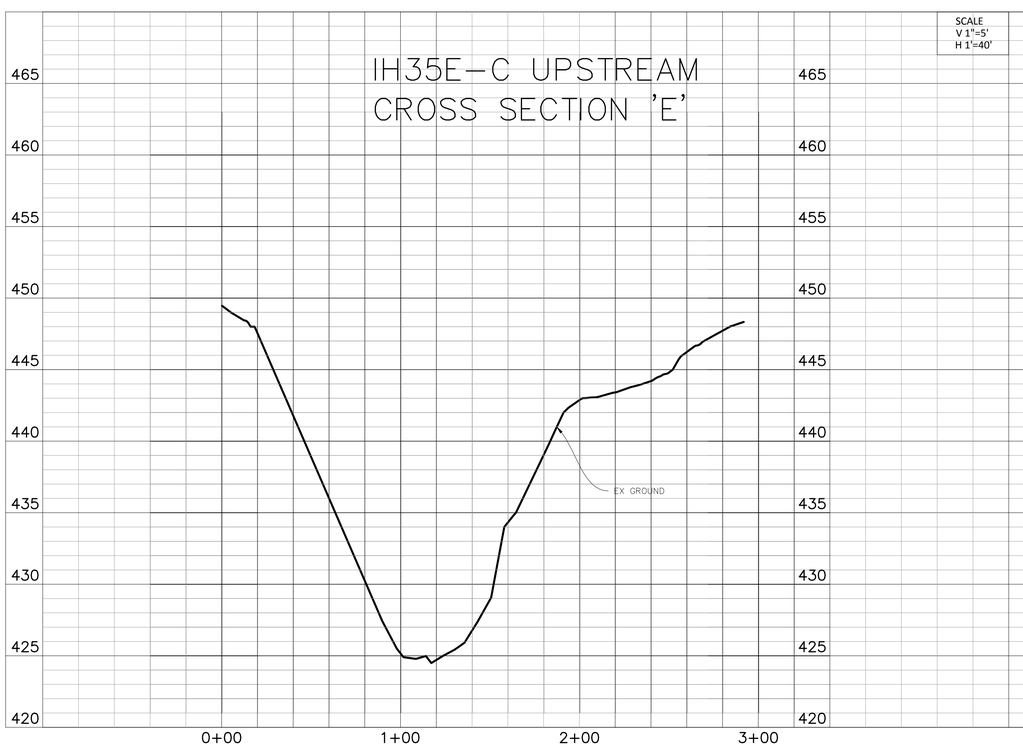
HORIZONTAL DATUM: NAD83 NORTH CENTRAL ZONE (4202)
VERTICAL DATUM: NAVD88

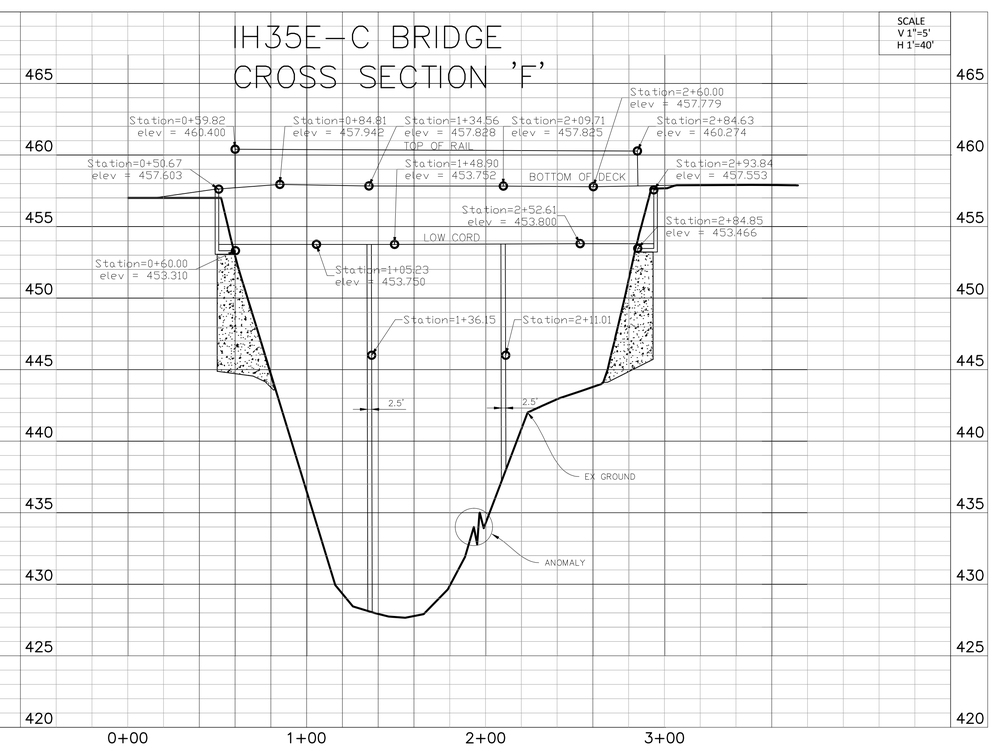


IH35E BRIDGE 'C'
PHOTOGRAPH INVENTORY

CROSS SECTION 'E'
IH35E_C_CS_E_DNS.JPG
IH35E_C_CS_E_UPS.JPG

CROSS SECTION 'F'
IH35E_C_CS_F_DNF.JPG
IH35E_C_CS_F_OVT.JPG
IH35E_C_CS_F_UPS.JPG
IH35E_C_CS_F_USF.JPG





LOWER DUDLEY
IH35E BRIDGE 'C'
CROSS SECTIONS 'E' AND 'F'
CITY OF CARROLLTON, DENTON COUNTY, TEXAS

EBG ENGINEERING, LLC
CONSULTING ENGINEERS & SURVEYORS
10300 N CENTRAL EXPWY, SUITE 160
DALLAS, TEXAS 75231
PHONE: (214) 321-3861 FAX: (214)361-2131

DATE: MAY 29, 2012
SCALE: PLAN 1" = 50'
JOB NO.: 11028
DWG NAME: 11028 BRIDGES
DRAWN BY: MWC
CLIENT NAME: BROWN & GAY