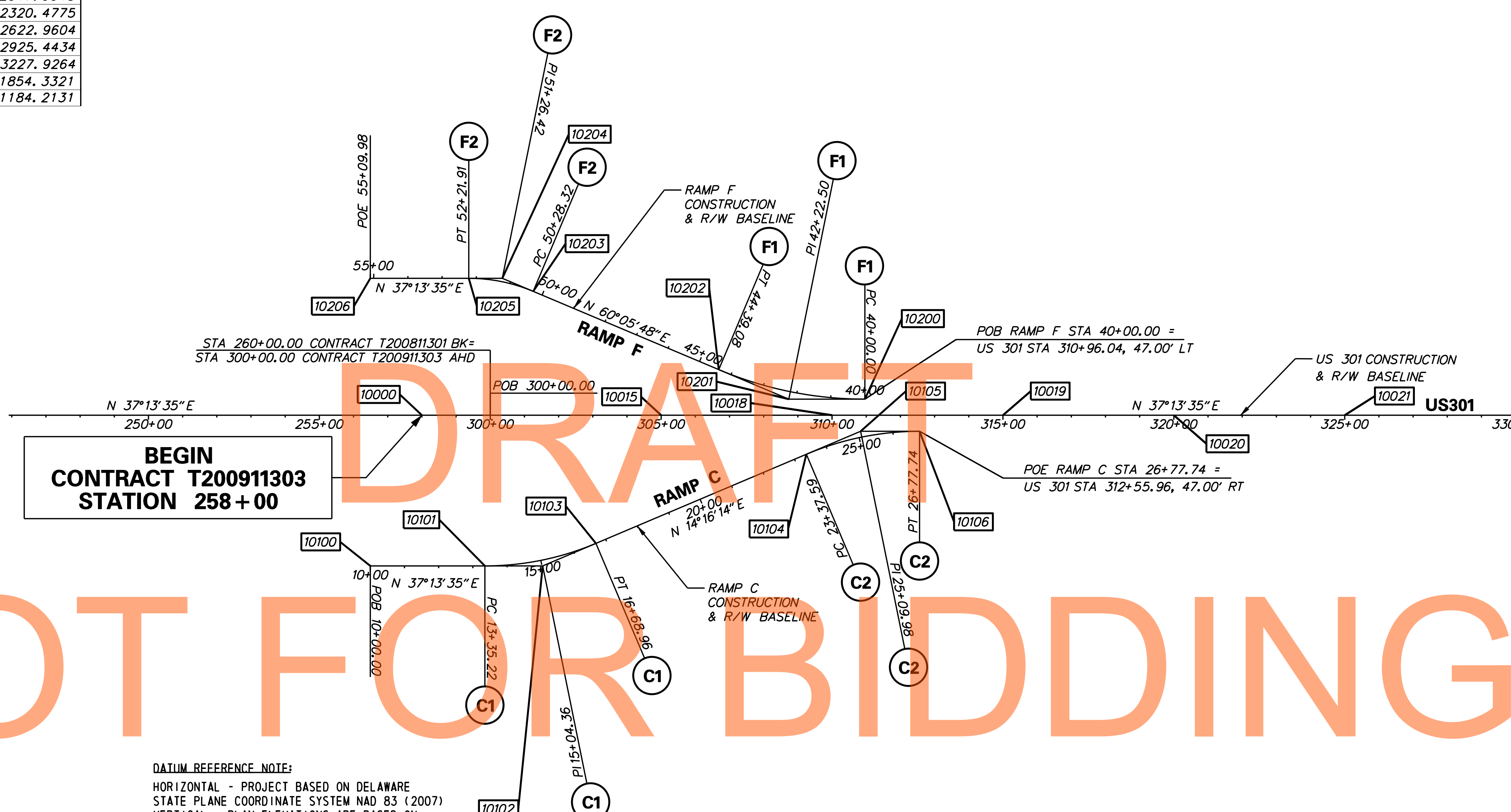
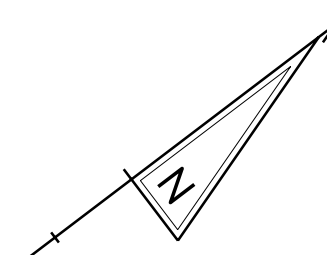


CONSTRUCTION ALIGNMENT CONTROL				
POINT	STATION	OFFSET	NORTHING	EASTING
10000	258+00.00	0.0000	526551.8613	561594.5184
10015	305+00.00	0.0000	527109.2373	562017.9945
10018	310+00.00	0.0000	527507.3629	562320.4775
10019	315+00.00	0.0000	527905.4886	562622.9604
10020	320+00.00	0.0000	528303.6143	562925.4434
10021	325+00.00	0.0000	528701.7400	563227.9264
10100	10+00.00	0.0000	526164.8860	561854.3321
10206	55+09.98	0.0000	526674.0207	561184.2131



NOT FOR BIDDING

**BEGIN  
CONTRACT T200911303  
STATION 258 + 00**

MATCHLINE STA 330 + 00 SEE SHEET HV02

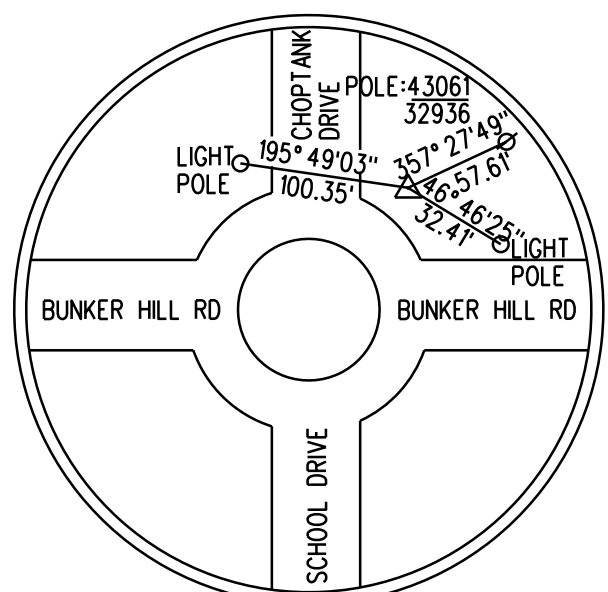
**DATUM REFERENCE NOTE:**  
 HORIZONTAL - PROJECT BASED ON DELAWARE STATE PLANE COORDINATE SYSTEM NAD 83 (2007)  
 VERTICAL - PLAN ELEVATIONS ARE BASED ON N.G.S. SURVEY DATUM (NAVD 88)

AUGUST 2015

CIRCULAR CURVE NO. (C1)	CIRCULAR CURVE NO. (C2)	CIRCULAR CURVE NO. (F1)	CIRCULAR CURVE NO. (F2)
Element: Circular STATION      NORTHING      EASTING PC ( 10101)    13+35.22    526431.8022    562057.1264 PI ( 10102)    15+04.36    526566.4815    562159.4514 CC ( 10150)               526935.7389    561393.8490 PT ( 10103)    16+68.96    526730.4039    562201.1449 Radius:            833.0000 Delta:             22° 57' 21.1030" Left Degree of Curvature(Arc): 6° 52' 41.6814" Length:            333.7459 Tangent:            169.1417 Chord:             331.5181 Middle Ordinate: 16.6588 External:         16.9988 Tangent Direction: N 37° 13' 35.0000" E Radial Direction: S 52° 46' 25.0000" E Chord Direction: N 25° 44' 54.4485" E Radial Direction: S 75° 43' 46.1030" E Tangent Direction: N 14° 16' 13.8970" E	Element: Circular STATION      NORTHING      EASTING PC ( 10104)    23+37.59    527378.3982    562365.9616 PI ( 10105)    25+09.98    527545.4691    562408.4559 CC ( 10151)               527169.1192    563188.7637 PT ( 10106)    26+77.74    527682.7353    562512.7463 Radius:            849.0000 Delta:             22° 57' 21.1030" Right Degree of Curvature(Arc): 6° 44' 55.0302" Length:            340.1564 Tangent:            172.3905 Chord:             337.8858 Middle Ordinate: 16.9788 External:         17.3253 Tangent Direction: N 14° 16' 13.8970" E Radial Direction: S 75° 43' 46.1030" E Chord Direction: N 25° 44' 54.4485" E Radial Direction: S 52° 46' 25.0000" E Tangent Direction: N 37° 13' 35.0000" E	Element: Circular STATION      NORTHING      EASTING PC ( 10200)    40+00.00    527612.2680    562341.1543 PI ( 10201)    42+22.50    527435.1001    562206.5480 CC ( 10250)               528277.7305    561465.2778 PT ( 10202)    44+39.08    527324.1747    562013.6676 Radius:            1100.0000 Delta:             22° 52' 13.4895" Right Degree of Curvature(Arc): 5° 12' 31.3460" Length:            439.0804 Tangent:            222.5024 Chord:             436.1712 Middle Ordinate: 21.8355 External:         22.2777 Tangent Direction: S 37° 13' 35.0000" W Radial Direction: N 52° 46' 25.0000" W Chord Direction: S 48° 39' 41.7447" W Radial Direction: N 29° 54' 11.5105" W Tangent Direction: S 60° 05' 48.4895" W	Element: Circular STATION      NORTHING      EASTING PC ( 10203)    50+28.32    527030.4191    561502.8770 PI ( 10204)    51+26.42    526981.5111    561417.8343 CC ( 10251)               526609.9877    561744.6670 PT ( 10205)    52+21.91    526903.3962    561358.4851 Radius:            485.0000 Delta:             22° 52' 13.4895" Left Degree of Curvature(Arc): 11° 48' 48.8260" Length:            193.5946 Tangent:            98.1033 Chord:             192.3119 Middle Ordinate: 9.6275 External:         9.8225 Tangent Direction: S 60° 05' 48.4895" W Radial Direction: N 29° 54' 11.5105" W Chord Direction: S 48° 39' 41.7447" W Radial Direction: N 52° 46' 25.0000" W Tangent Direction: S 37° 13' 35.0000" W

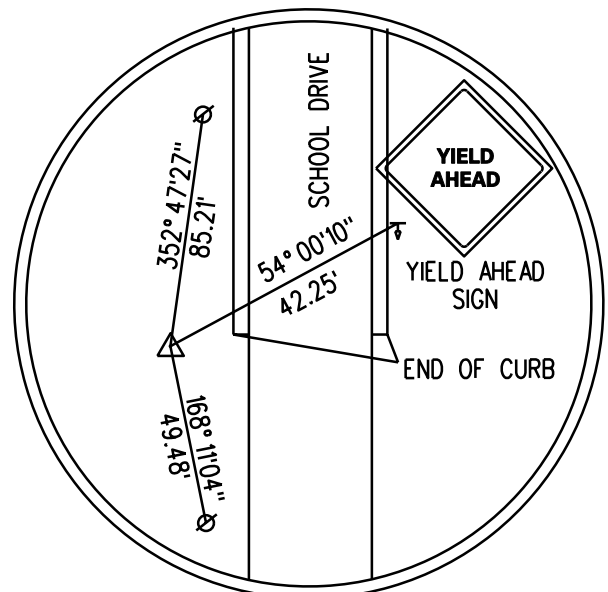
	ADDENDUMS / REVISIONS	SCALE 0      200      400      600 FEET	<b>US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD</b>	CONTRACT T200911303 COUNTY NEW CASTLE	BRIDGE NO. DESIGNED BY: SS      JW CHECKED BY: AM      SF	<b>HORIZONTAL AND VERTICAL CONTROL</b>	HV-01 SHEET NO. 56 TOTAL SHTS. 1256

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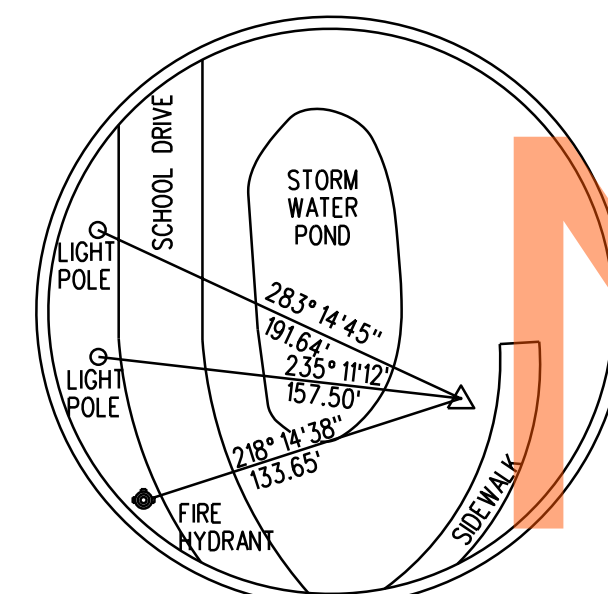
**TRAVERSE 238 (Concrete Monument)**

BACK SIGHT @ Δ 237  
 NORTHING: 531074.4969  
 EASTING: 563980.5389  
 ELEVATION: 57.24'



**TRAVERSE 239 (Capped Rebar)**

BACK SIGHT @ Δ 238  
 NORTHING: 530937.7214  
 EASTING: 563573.4820  
 ELEVATION: 56.03'



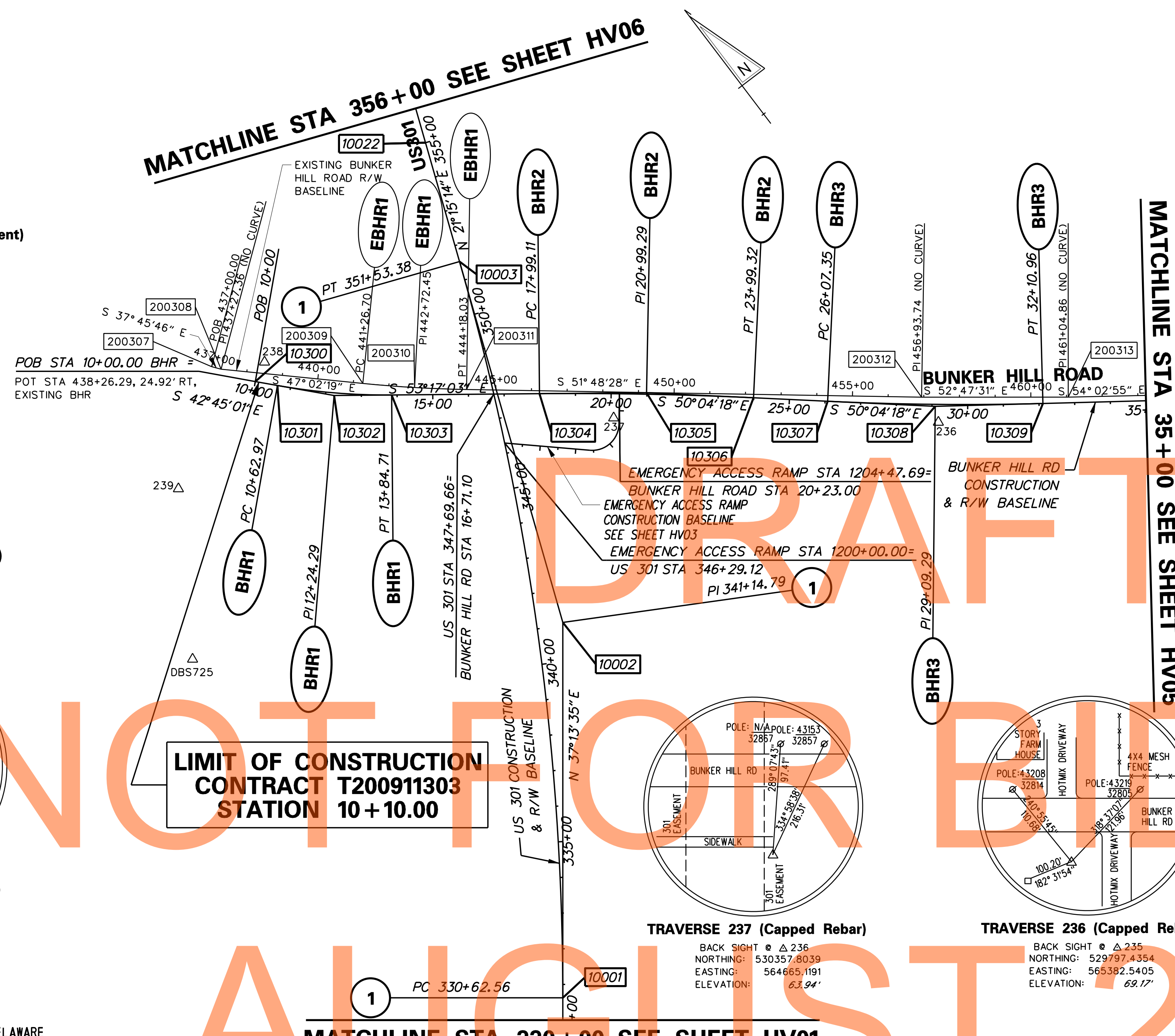
**DBS725 (Stainless Steel Rod)**

BACK SIGHT @ Δ 239  
 NORTHING: 530533.3583  
 EASTING: 563316.0828  
 ELEVATION: 53.91'

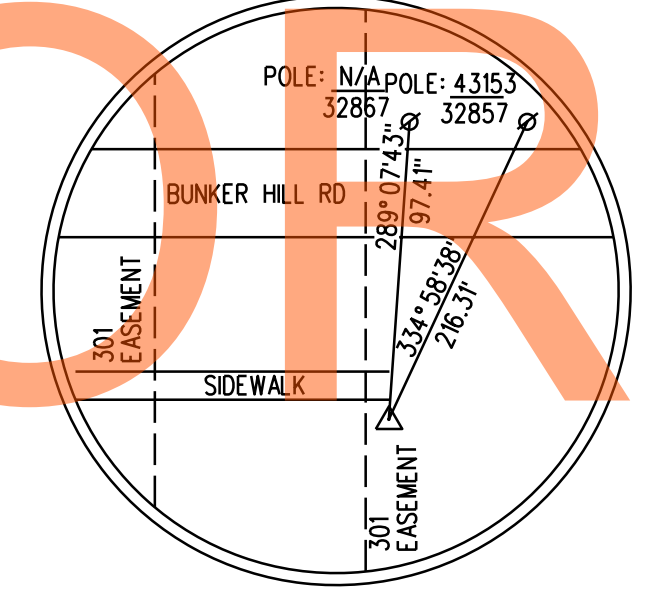
**DATUM REFERENCE NOTE:**

HORIZONTAL - PROJECT BASED ON DELAWARE STATE PLANE COORDINATE SYSTEM NAD 83 (2007)  
 VERTICAL - PLAN ELEVATIONS ARE BASED ON N.G.S. SURVEY DATUM (NAVD 88)

CONSTRUCTION ALIGNMENT CONTROL				
POINT	STATION	OFFSET	NORTHING	EASTING
10022	355+00.00	0.0000	531291.2306	564711.9044
10300	10+00.00	0.0000	531046.6504	563926.9230
200307	437+00.00	0.0000	531153.9413	563854.7531
200308	437+27.36	0.0000	531132.3117	563871.5082
200312	456+93.74	0.0000	529881.9353	565387.5929
200313	461+04.86	0.0000	529633.3257	565715.0268

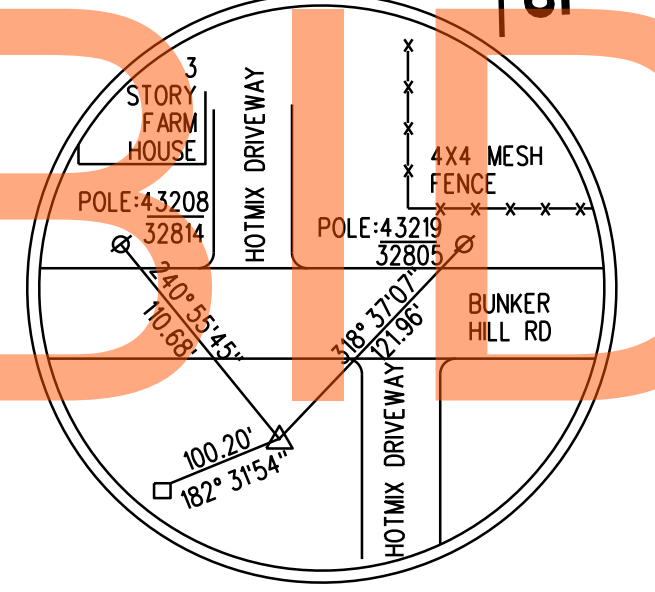


**LIMIT OF CONSTRUCTION  
 CONTRACT T200911303  
 STATION 10+10.00**



**TRAVERSE 237 (Capped Rebar)**

BACK SIGHT @ Δ 236  
 NORTHING: 530357.8039  
 EASTING: 564665.1191  
 ELEVATION: 63.94'



**TRAVERSE 236 (Capped Rebar)**

BACK SIGHT @ Δ 235  
 NORTHING: 529797.4354  
 EASTING: 565382.5405  
 ELEVATION: 69.17'

HORIZONTAL / VERTICAL CONTROL DATA					
POINT	STATION	OFFSET	NORTHING	EASTING	ELEVATION
DBS725	341+56.39	-968.5321	530533.3583	563316.0828	53.91
239	347+02.22	-920.9452	530937.7214	563573.4820	56.03
238	350+22.37	-602.0029	531074.4969	563980.5389	57.24
237	346+34.36	313.4646	530357.8039	564665.1191	63.94
236	344+60.90	1203.5939	529797.4354	565382.5405	69.17

**CIRCULAR CURVE NO. (E-BHR1)**

Element: Circular  
 STATION NORTHING EASTING  
 PC (200309) 441+26.70 530860.1587 564163.7498  
 PI (200310) 442+72.45 530760.8290 564270.4114  
 CC (200350) 533421.4992 566549.0244  
 PT (200311) 444+18.03 530670.7112 564384.9621  
 Radius: 3500.0000  
 Delta: 4° 46' 09.0000" Left  
 Degree of Curvature(Arc): 1° 38' 13.2802"  
 Length: 291.3318  
 Tangent: 145.7501  
 Chord: 291.2477  
 Middle Ordinate: 3.0308  
 External: 3.0334  
 Tangent Direction: S 47° 02' 18.5279" E  
 Radial Direction: S 42° 57' 41.4721" W  
 Chord Direction: S 49° 25' 23.0279" E  
 Radial Direction: S 38° 11' 32.4721" W  
 Tangent Direction: S 51° 48' 27.5279" E

**CIRCULAR CURVE NO. (BHR1)**

Element: Circular  
 STATION NORTHING EASTING  
 PC ( 10301) 10+62.97 531000.4118 563969.6661  
 PI ( 10302) 12+24.29 530881.9486 564079.1735  
 CC ( 10350) 532188.3200 565254.7240  
 PT ( 10303) 13+84.71 530785.5016 564208.4924  
 Radius: 1750.0000  
 Delta: 10° 32' 01.9026" Left  
 Degree of Curvature(Arc): 3° 16' 26.5604"  
 Length: 321.7385  
 Tangent: 161.3239  
 Chord: 321.2856  
 Middle Ordinate: 7.3888  
 External: 7.4201  
 Tangent Direction: S 42° 45' 01.1144" E  
 Radial Direction: S 47° 14' 58.8856" W  
 Chord Direction: S 48° 01' 02.0657" E  
 Radial Direction: S 36° 42' 56.9830" W  
 Tangent Direction: S 53° 17' 03.0170" E

**CIRCULAR CURVE NO. (BHR2)**

Element: Circular  
 STATION NORTHING EASTING  
 PC ( 10304) 17+99.11 530537.7535 564540.6804  
 PI ( 10305) 20+99.29 530358.2887 564781.3122  
 CC ( 10351) 521956.5130 558140.7323  
 PT ( 10306) 23+99.32 530165.6212 565011.5087  
 Radius: 10705.0000  
 Delta: 3° 12' 44.9593" Right  
 Degree of Curvature(Arc): 0° 32' 06.8081"  
 Length: 600.2133  
 Tangent: 300.1853  
 Chord: 600.1347  
 Middle Ordinate: 4.2064  
 External: 4.2080  
 Tangent Direction: S 53° 17' 03.0170" E  
 Radial Direction: S 36° 42' 56.9830" W  
 Chord Direction: S 51° 40' 40.5374" E  
 Radial Direction: S 39° 55' 41.9423" W  
 Tangent Direction: S 50° 04' 18.0577" E

**CIRCULAR CURVE NO. (BHR3)**

Element: Circular  
 STATION NORTHING EASTING  
 PC ( 10307) 26+07.35 530032.1011 565171.0367  
 PI ( 10308) 29+09.29 529838.3078 565402.5782  
 CC ( 10352) 536320.2549 570434.0321  
 PT ( 10309) 32+10.96 529662.0678 565647.7451  
 Radius: 8200.0000  
 Delta: 4° 13' 03.2485" Left  
 Degree of Curvature(Arc): 0° 41' 55.4245"  
 Length: 603.6058  
 Tangent: 301.9393  
 Chord: 603.4696  
 Middle Ordinate: 5.5533  
 External: 5.5571  
 Tangent Direction: S 50° 04' 18.0577" E  
 Radial Direction: S 39° 55' 41.9423" W  
 Chord Direction: S 52° 10' 49.6820" E  
 Radial Direction: S 35° 42' 38.6938" W  
 Tangent Direction: S 54° 17' 21.3062" E

**CIRCULAR CURVE NO. (1)**

Element: Circular  
 STATION NORTHING EASTING  
 PC ( 10001) 330+62.56 529149.6820 563568.2581  
 PI ( 10002) 341+14.79 529987.5214 564204.8213  
 CC ( 10050) 533686.9263 557596.3729  
 PT ( 10003) 351+53.38 530968.1828 564586.2537  
 Radius: 7500.0000  
 Delta: 15° 58' 21.4784" Left  
 Degree of Curvature(Arc): 0° 45' 50.1974"  
 Length: 2090.8128  
 Tangent: 1052.2298  
 Chord: 2084.0490  
 Middle Ordinate: 72.7404  
 External: 73.4528  
 Tangent Direction: N 37° 13' 35.0000" E  
 Radial Direction: S 52° 46' 25.0000" E  
 Chord Direction: N 29° 14' 24.2608" E  
 Radial Direction: S 68° 44' 46.4784" E  
 Tangent Direction: N 21° 15' 13.5216" E

**ADDENDUMS / REVISIONS**



**DELAWARE DEPARTMENT OF TRANSPORTATION**

**US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD**

CONTRACT	BRIDGE NO.	<b>HORIZONTAL AND VERTICAL CONTROL</b>
T200911303	DESIGNED BY: SS JW	
COUNTY	CHECKED BY: AM SF	
NEW CASTLE		

HV-02
SHEET NO.
57
TOTAL SHTS.
1256

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# DRAFT

# NOT FOR BIDDING

# AUGUST 2015



**DATUM REFERENCE NOTE:**  
 HORIZONTAL - PROJECT BASED ON DELAWARE STATE PLANE COORDINATE SYSTEM NAD 83 (2007)  
 VERTICAL - PLAN ELEVATIONS ARE BASED ON N. G. S. SURVEY DATUM (NAVD 88)

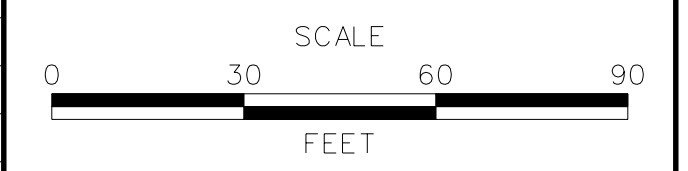
CONSTRUCTION ALIGNMENT CONTROL				
POINT	STATION	OFFSET	NORTHING	EASTING
10280	1200+00.00	0.0000	530486.6207	564379.2958
10284	1204+47.69	0.0000	530402.0331	564718.7423

CIRCULAR CURVE NO. <b>EAR</b>			
Element:	Circular		
STATION	NORTHING	EASTING	
PC (10281)	1202+39.97	530325.8112	564557.4081
PI (10285)	1203+20.62	530271.7596	564617.2755
CC (10282)		530381.4792	564607.6682
PT (10283)	1203+63.23	530335.3931	564666.8381
Radius:	75.0000		
Delta:	94° 09' 47.8320" Left		
Degree of Curvature (Arc):	76° 23' 39.7417"		
Length:	123.2595		
Tangent:	80.6578		
Chord:	109.8487		
Middle Ordinate:	23.9283		
External:	35.1394		
Tangent Direction:	S 47° 55' 21.2051" E		
Radial Direction:	S 42° 04' 38.7949" W		
Chord Direction:	N 84° 59' 44.8789" E		
Radial Direction:	S 52° 05' 09.0370" E		
Tangent Direction:	N 37° 54' 50.9630" E		

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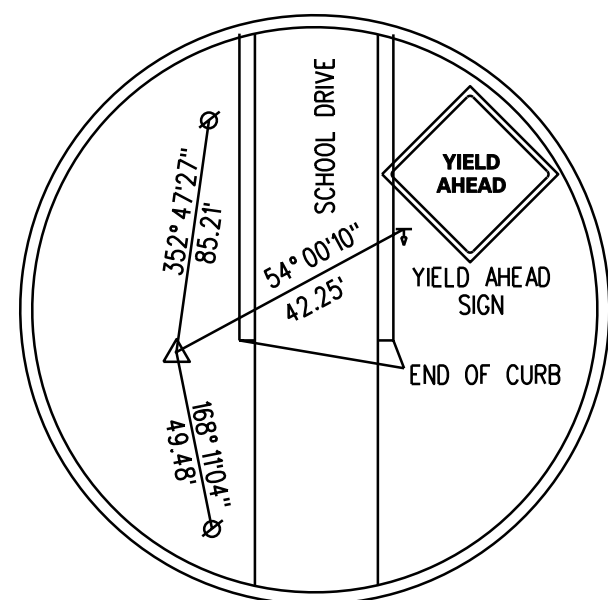
ADDENDUMS / REVISIONS	



**US 301  
LEVELS ROAD  
TO SUMMIT BRIDGE ROAD**

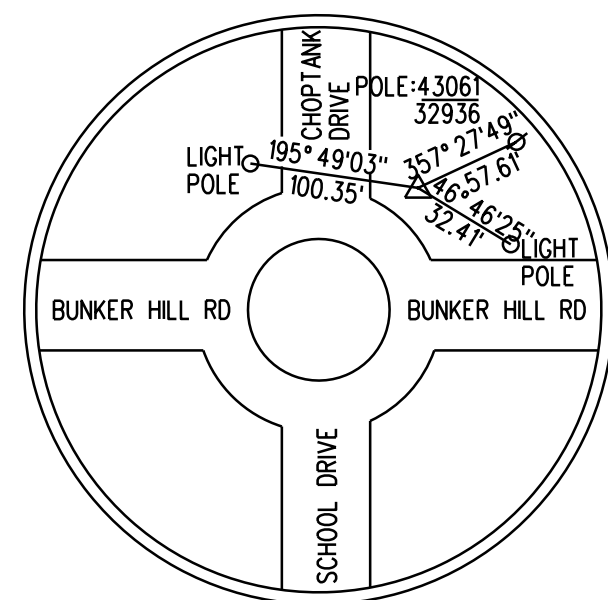
CONTRACT	BRIDGE NO.	<b>HORIZONTAL AND VERTICAL CONTROL</b>
T20091303	DESIGNED BY: SS JW	
COUNTY	CHECKED BY: AM SF	
NEW CASTLE		

HV-03
SHEET NO.
58
TOTAL SHTS.
1256



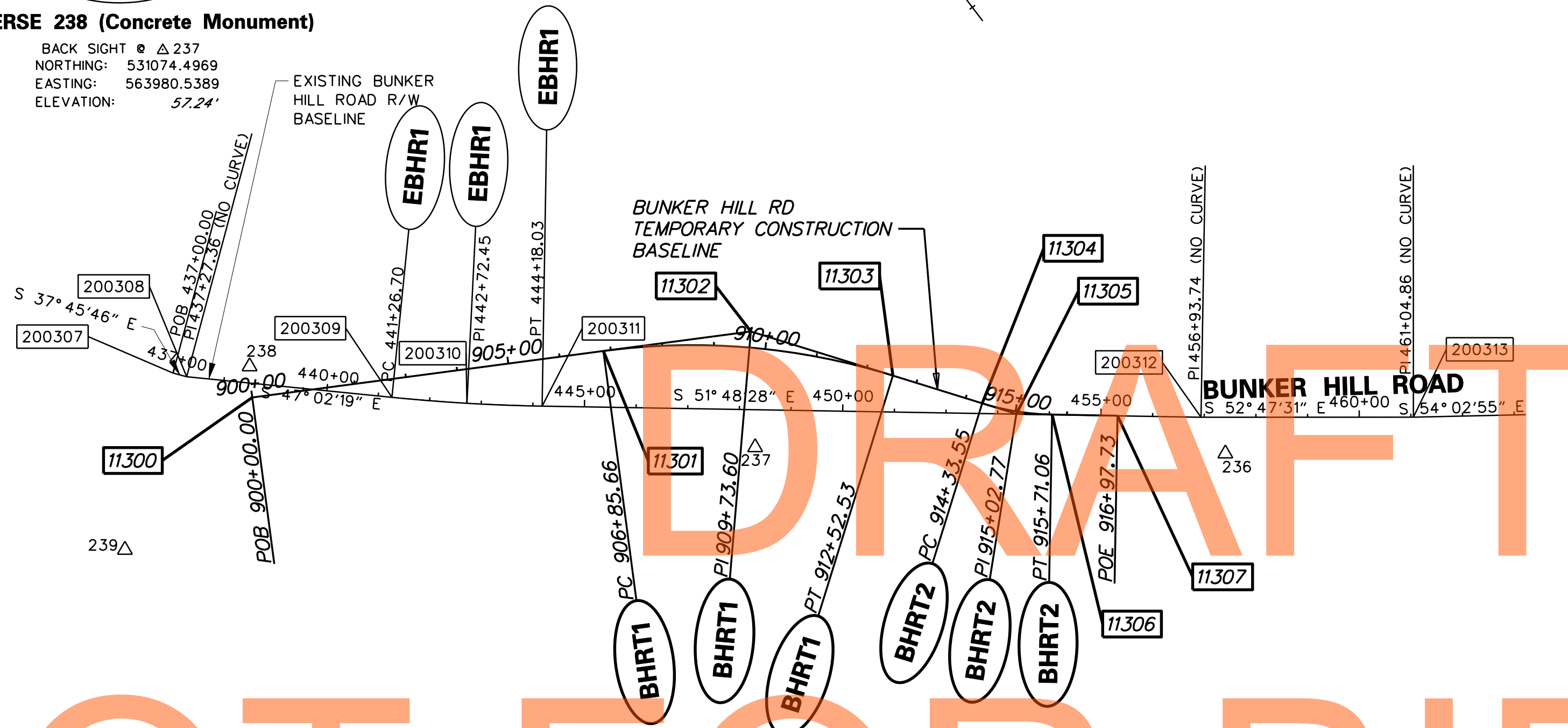
**TRAVERSE 239 (Capped Rebar)**

BACK SIGHT @ Δ 238  
 NORTHING: 530937.7214  
 EASTING: 563573.4820  
 ELEVATION: 56.03'



**TRAVERSE 238 (Concrete Monument)**

BACK SIGHT @ Δ 237  
 NORTHING: 531074.4969  
 EASTING: 563980.5389  
 ELEVATION: 57.24'



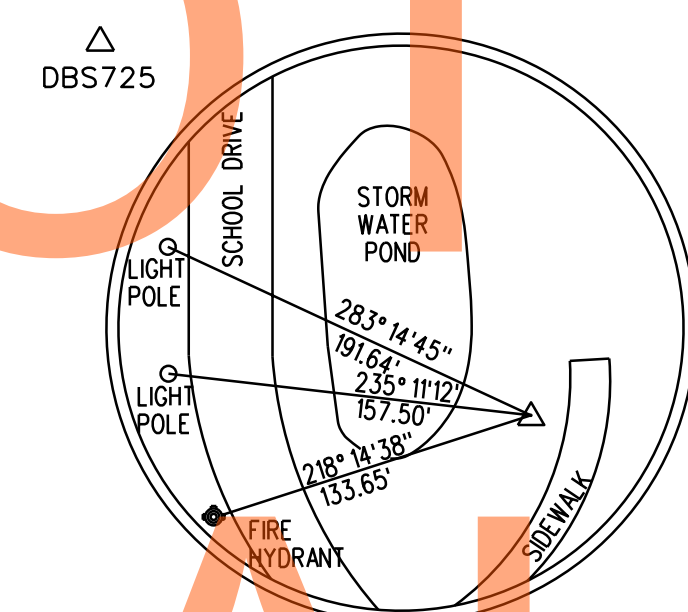
HORIZONTAL / VERTICAL CONTROL DATA					
POINT	STATION	OFFSET	NORTHING	EASTING	ELEVATION
DBS725	341+56.39	-968.5321	530533.3583	563316.0828	53.91
239	347+02.22	-920.9452	530937.7214	563573.4820	56.03
238	350+22.37	-602.0029	531074.4969	563980.5389	57.24
237	346+34.36	313.4646	530357.8039	564665.1191	63.94
236	344+60.90	1203.5939	529797.4354	565382.5405	69.17

CONSTRUCTION ALIGNMENT CONTROL					
POINT	STATION	OFFSET	NORTHING	EASTING	ELEVATION
200307	437+00.00	0.0000	531153.9413	563854.7531	
200308	437+27.36	0.0000	531132.3117	563871.5082	
200312	456+93.74	0.0000	529881.9353	565387.5929	
200313	461+04.86	0.0000	529633.3257	565715.0268	
11300	900+00.00	0.0000	531023.5311	563948.2945	
11301	906+85.66	0.0000	530683.9606	564543.9658	
11302	909+73.60	-31.2714	530541.3603	564794.1139	
11303	912+52.53	0.0000	530307.0060	564961.4071	
11304	914+33.55	0.0000	530159.6729	565066.5804	
11305	915+02.77	4.9150	530103.3326	565106.7987	
11306	915+71.06	0.0000	530060.4932	565161.1727	
11307	916+97.73	0.0000	529982.1014	565260.6714	

NOT FOR BIDDING

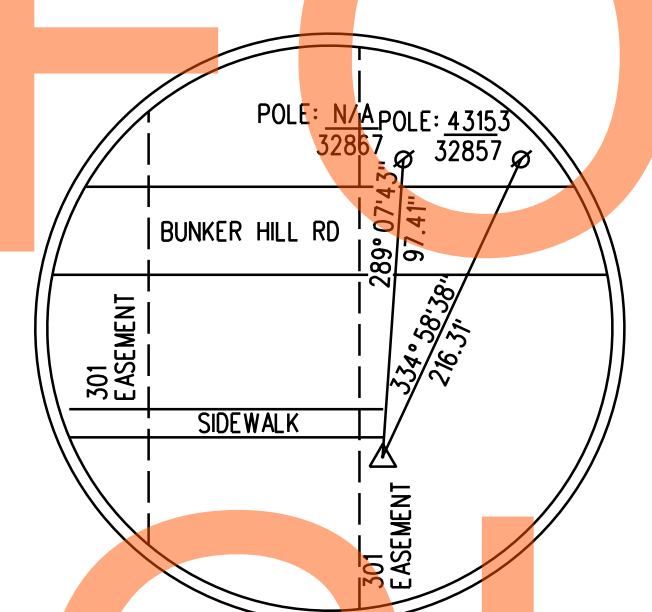
AUGUST 2015

**DATUM REFERENCE NOTE:**  
 HORIZONTAL - PROJECT BASED ON DELAWARE STATE PLANE COORDINATE SYSTEM NAD 83 (2007)  
 VERTICAL - PLAN ELEVATIONS ARE BASED ON N. G. S. SURVEY DATUM (NAVD 88)



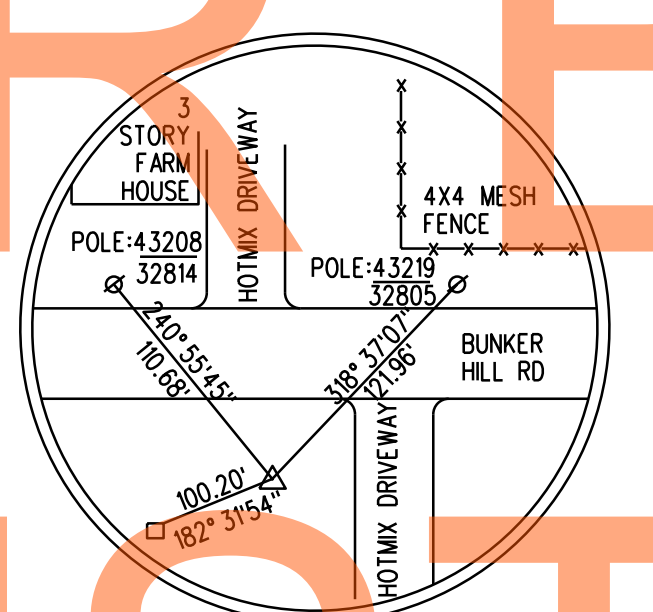
**DBS725 (Stainless Steel Rod)**

BACK SIGHT @ Δ 239  
 NORTHING: 530533.3583  
 EASTING: 563316.0828  
 ELEVATION: 53.91'



**TRAVERSE 237 (Capped Rebar)**

BACK SIGHT @ Δ 236  
 NORTHING: 530357.8039  
 EASTING: 564665.1191  
 ELEVATION: 63.94'



**TRAVERSE 236 (Capped Rebar)**

BACK SIGHT @ Δ 235  
 NORTHING: 529797.4354  
 EASTING: 565382.5405  
 ELEVATION: 69.17'

CIRCULAR CURVE NO. (E-BHRT)			
Element:	STATION	NORTHING	EASTING
PC (200309)	441+26.70	530860.1587	564163.7498
PI (200310)	442+72.45	530760.8290	564270.4114
CC (200350)		533421.4992	566549.0244
PT (200311)	444+18.03	530670.7112	564384.9621
Radius:		3500.0000	
Delta:		4° 46' 09.0000" Left	
Degree of Curvature(Arc):		1° 38' 13.2802"	
Length:		291.3318	
Tangent:		145.7501	
Chord:		291.2477	
Middle Ordinate:		3.0308	
External:		3.0334	
Tangent Direction:		S 47° 02' 18.5279" E	
Radial Direction:		S 42° 57' 41.4721" W	
Chord Direction:		S 49° 25' 23.0279" E	
Radial Direction:		S 38° 11' 32.4721" W	
Tangent Direction:		S 51° 48' 27.5279" E	

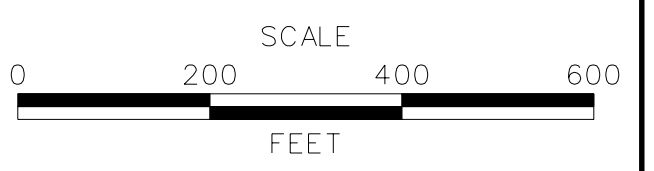
CIRCULAR CURVE NO. (BHRT)			
Element:	STATION	NORTHING	EASTING
PC (11301)	906+85.66	530683.9606	564543.9658
PI (11302)	909+73.60	530541.3603	564794.1139
CC (11350)		529545.8935	563895.1952
PT (11303)	912+52.53	530307.0060	564961.4071
Radius:		1310.0000	
Delta:		24° 47' 35.0643" Right	
Degree of Curvature(Arc):		4° 22' 25.4051"	
Length:		566.8642	
Tangent:		287.9392	
Chord:		562.4519	
Middle Ordinate:		30.5423	
External:		31.2714	
Tangent Direction:		S 60° 18' 50.8005" E	
Radial Direction:		S 29° 41' 09.1995" W	
Chord Direction:		S 47° 55' 03.2683" E	
Radial Direction:		S 54° 28' 44.2638" W	
Tangent Direction:		S 35° 31' 15.7362" E	

CIRCULAR CURVE NO. (BHRT2)			
Element:	STATION	NORTHING	EASTING
PC (11304)	914+33.55	530159.6729	565066.5804
PI (11305)	915+02.77	530103.3326	565106.7987
CC (11351)		530441.4588	565461.3230
PT (11306)	915+71.06	530060.4932	565161.1727
Radius:		485.0000	
Delta:		16° 14' 43.9448" Left	
Degree of Curvature(Arc):		11° 48' 48.8260"	
Length:		137.5160	
Tangent:		69.2224	
Chord:		137.0558	
Middle Ordinate:		4.8657	
External:		4.9150	
Tangent Direction:		S 35° 31' 15.7362" E	
Radial Direction:		S 54° 28' 44.2638" W	
Chord Direction:		S 43° 38' 37.7086" E	
Radial Direction:		S 38° 14' 00.3190" W	
Tangent Direction:		S 51° 45' 59.6810" E	

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ADDENDUMS / REVISIONS	

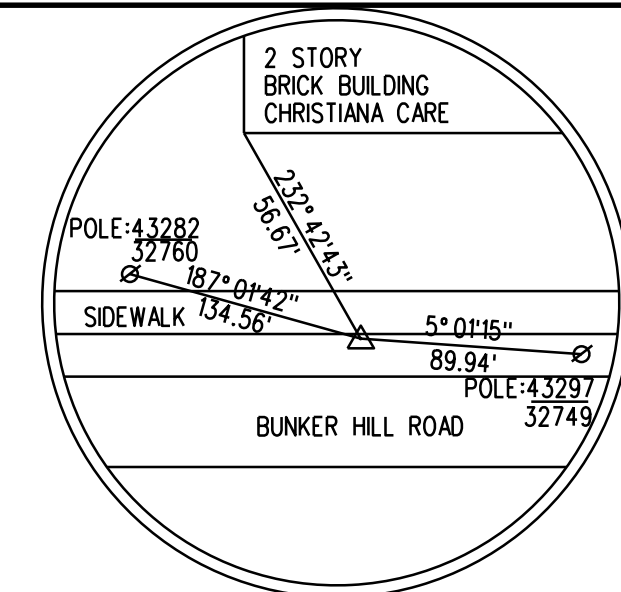


**US 301  
 LEVELS ROAD  
 TO SUMMIT BRIDGE ROAD**

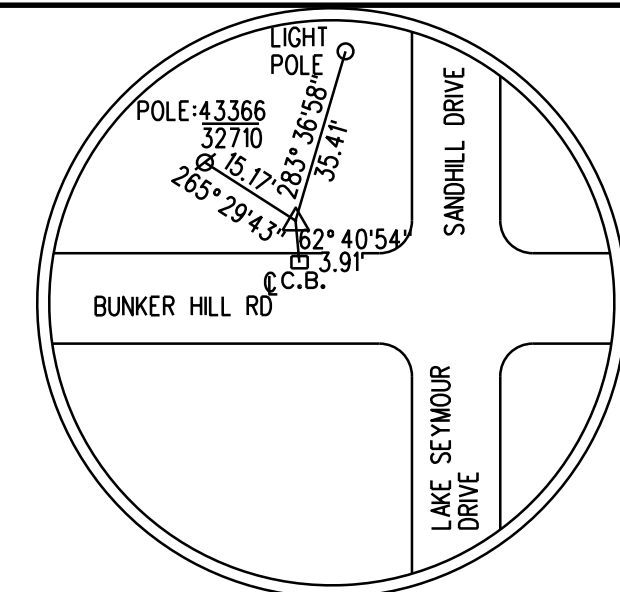
CONTRACT	BRIDGE NO.	<b>HORIZONTAL AND VERTICAL CONTROL</b>
T200911303	DESIGNED BY: SS JW	
COUNTY	CHECKED BY: AM SF	
NEW CASTLE		

HV-04
SHEET NO.
59
TOTAL SHTS.
1256

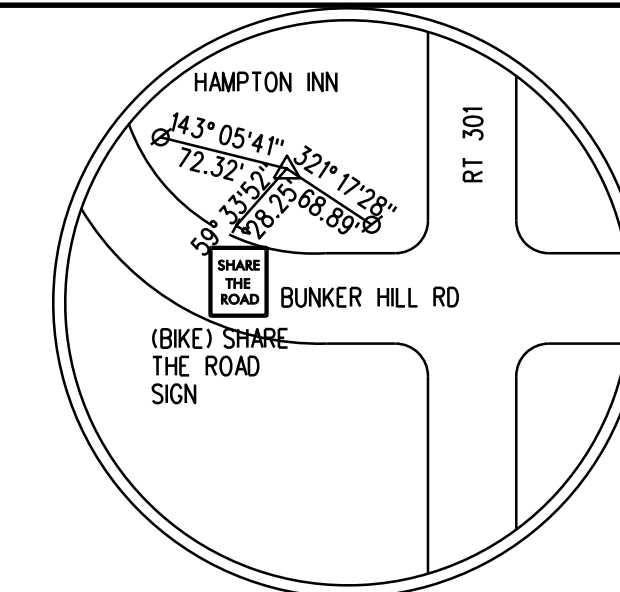
CONSTRUCTION ALIGNMENT CONTROL				
POINT	STATION	OFFSET	NORTHING	EASTING
200314	465+64.53	0.0000	529363.4532	566087.1361
200321	482+02.01	0.0000	528484.8012	567408.1468



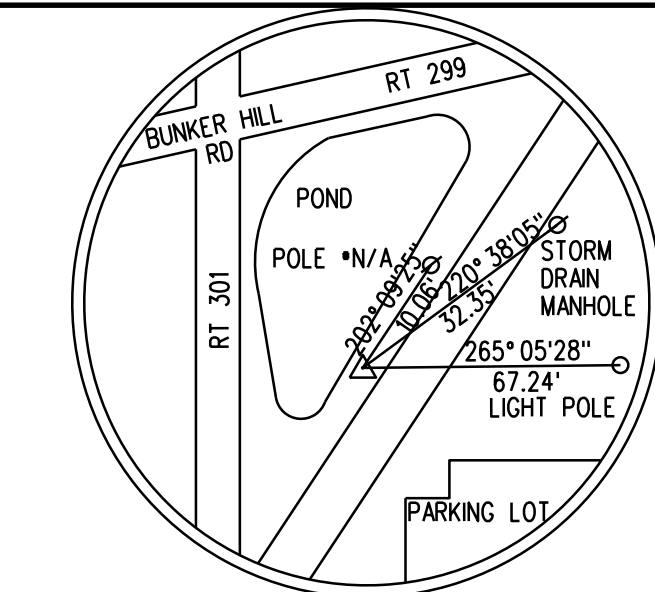
**TRAVERSE 235 (Capped Rebar)**  
 BACK SIGHT @ Δ 234  
 NORTHING: 529209.2707  
 EASTING: 566345.0501  
 ELEVATION: 65.96'



**TRAVERSE 234 (Capped Rebar)**  
 BACK SIGHT @ Δ 233  
 NORTHING: 528723.5280  
 EASTING: 567134.6404  
 ELEVATION: 66.08'



**TRAVERSE 233 (Capped Rebar)**  
 BACK SIGHT @ Δ 232  
 NORTHING: 528390.5175  
 EASTING: 567845.3067  
 ELEVATION: 63.41'



**TRAVERSE 232 (Capped Rebar)**  
 BACK SIGHT @ Δ 231  
 NORTHING: 527907.6615  
 EASTING: 568360.0445  
 ELEVATION: 62.42'

HORIZONTAL / VERTICAL CONTROL DATA					
POINT	STATION	OFFSET	NORTHING	EASTING	ELEVATION
235	343+87.60	2327.9541	529209.2707	566345.0501	65.96
234	343+36.93	3252.3891	528723.5280	567134.6404	66.08
233	343+58.15	4036.5763	528390.5175	567845.3067	63.41
232	342+39.88	4717.0590	527907.6615	568360.0445	62.42
231	337+12.32	4310.6430	527382.3992	567583.5759	63.54
AUTOMALL	331+80.29	4173.3221	526771.7307	567000.9738	58.27

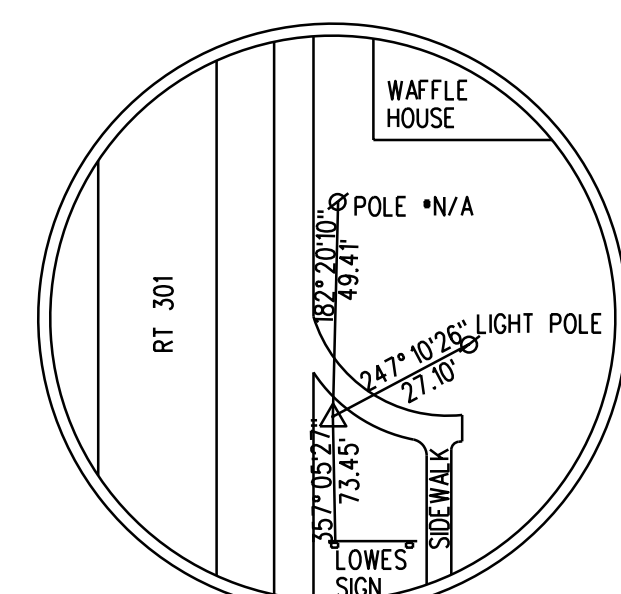
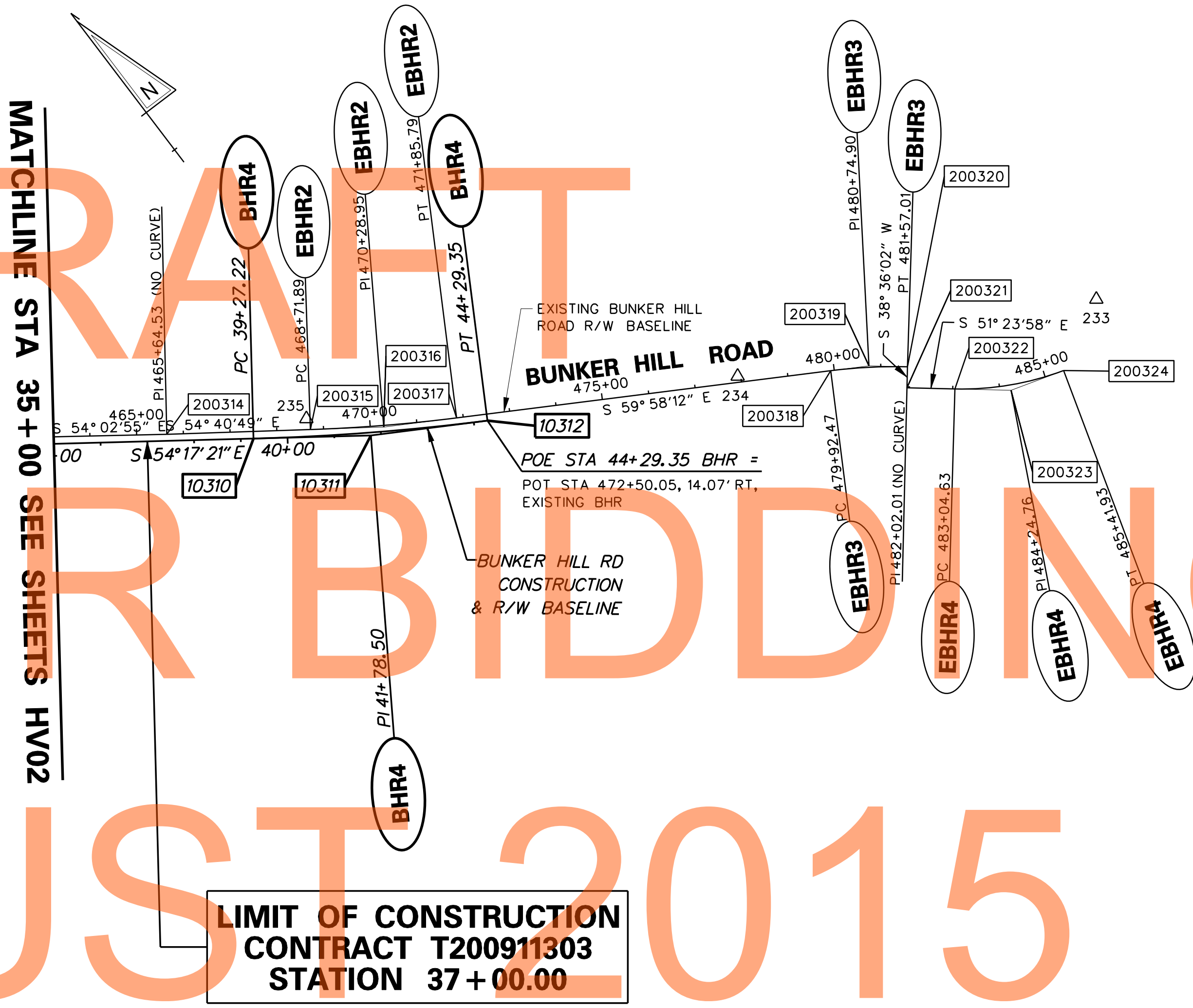
**DATUM REFERENCE NOTE:**  
 HORIZONTAL - PROJECT BASED ON DELAWARE STATE PLANE COORDINATE SYSTEM NAD 83 (2007)  
 VERTICAL - PLAN ELEVATIONS ARE BASED ON N.G.S. SURVEY DATUM (NAVD 88)

CIRCULAR CURVE NO. (BHR4)				
Element:	Station	Northing	Easting	
PC ( 10310)	39+27.22	529243.9888	566229.3332	
PI ( 10311)	41+78.50	529097.3205	566433.3630	
CC ( 10353)		533316.0386	569156.5563	
PT ( 10312)	44+29.35	528971.7813	566651.0318	
Radius:	5015.0000			
Delta:	5° 44' 12.4985" Left			
Degree of Curvature(Arc):	1° 08' 32.9573"			
Length:	502.1326			
Tangent:	251.2763			
Chord:	501.9229			
Middle Ordinate:	6.2833			
External:	6.2911			
Tangent Direction:	S 54° 17' 21.3062" E			
Radial Direction:	S 35° 42' 38.6938" W			
Chord Direction:	S 57° 09' 27.5555" E			
Radial Direction:	S 29° 58' 26.1953" W			
Tangent Direction:	S 60° 01' 33.8047" W			

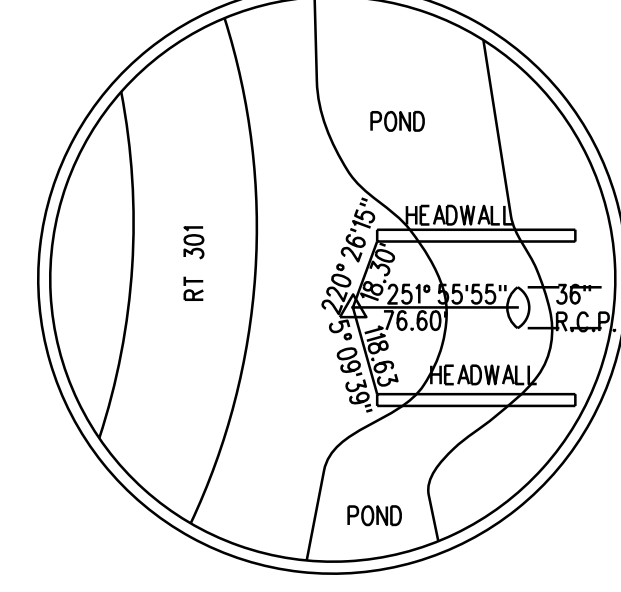
CIRCULAR CURVE NO. (E-BHR2)				
Element:	Station	Northing	Easting	
PC (200315)	468+71.89	529185.7560	566337.9226	
PI (200316)	470+28.95	529094.9528	566466.0743	
CC (200351)		531959.9428	568303.5999	
PT (200317)	471+85.79	529016.3509	566602.0517	
Radius:	3400.0000			
Delta:	5° 17' 23.0000" Left			
Degree of Curvature(Arc):	1° 41' 06.6119"			
Length:	313.8984			
Tangent:	157.0608			
Chord:	313.7870			
Middle Ordinate:	3.6219			
External:	3.6257			
Tangent Direction:	S 54° 40' 48.5279" E			
Radial Direction:	S 35° 19' 11.4721" W			
Chord Direction:	S 57° 19' 30.0279" E			
Radial Direction:	S 30° 01' 48.4721" W			
Tangent Direction:	S 59° 58' 11.5279" E			

CIRCULAR CURVE NO. (E-BHR3)				
Element:	Station	Northing	Easting	
PC (200318)	479+92.47	528612.6435	567300.4448	
PI (200319)	480+74.90	528571.3934	567371.8054	
CC (200352)		527660.3050	566749.9439	
PT (200320)	481+57.01	528519.9692	567436.2218	
Radius:	1100.0000			
Delta:	8° 34' 14.0000" Right			
Degree of Curvature(Arc):	5° 12' 31.3460"			
Length:	164.5429			
Tangent:	82.4252			
Chord:	164.3895			
Middle Ordinate:	3.0752			
External:	3.0838			
Tangent Direction:	S 59° 58' 11.5279" E			
Radial Direction:	S 30° 01' 48.4721" W			
Chord Direction:	S 55° 41' 04.5279" E			
Radial Direction:	S 38° 36' 02.4721" W			
Tangent Direction:	S 51° 23' 57.5279" E			

CIRCULAR CURVE NO. (E-BHR4)				
Element:	Station	Northing	Easting	
PC (200322)	483+04.63	528420.7777	567488.3456	
PI (200323)	484+24.76	528345.8317	567582.2265	
CC (200353)		528903.7527	567873.9091	
PT (200324)	485+41.93	528311.5114	567697.3466	
Radius:	618.0000			
Delta:	22° 00' 00.0278" Left			
Degree of Curvature(Arc):	9° 16' 16.1822"			
Length:	237.2950			
Tangent:	120.1271			
Chord:	235.8400			
Middle Ordinate:	11.3544			
External:	11.5669			
Tangent Direction:	S 51° 23' 57.5140" E			
Radial Direction:	S 38° 36' 02.4860" W			
Chord Direction:	S 62° 23' 57.5279" E			
Radial Direction:	S 16° 36' 02.4582" W			
Tangent Direction:	S 73° 23' 57.5418" E			



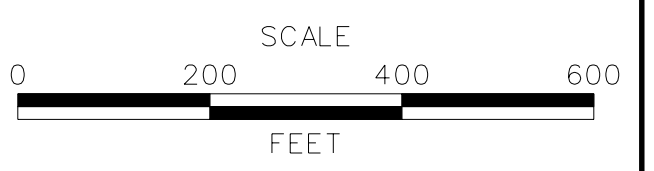
**TRAVERSE 231 (Capped Rebar)**  
 BACK SIGHT @ Δ AUTOMALL  
 NORTHING: 527382.3992  
 EASTING: 567583.5759  
 ELEVATION: 63.54'



**Automall (NGS Concrete Monument)**  
 BACK SIGHT @ Δ 229  
 NORTHING: 526771.7307  
 EASTING: 567000.9738  
 ELEVATION: 58.27'



ADDENDUMS / REVISIONS	



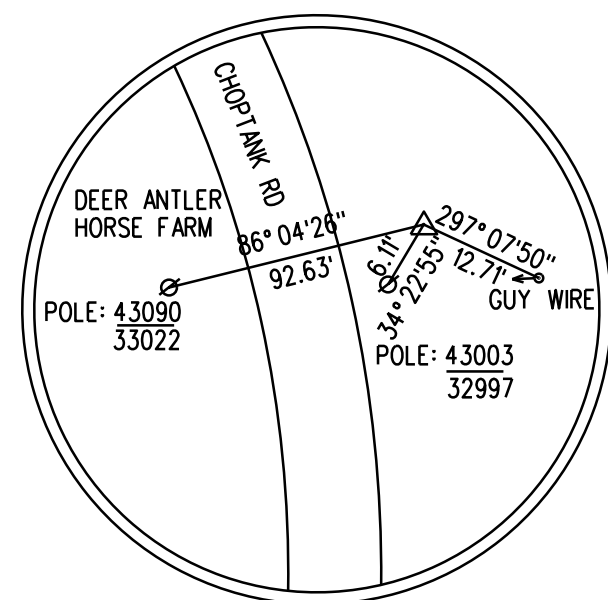
**US 301  
 LEVELS ROAD  
 TO SUMMIT BRIDGE ROAD**

CONTRACT	T200911303
COUNTY	NEW CASTLE
BRIDGE NO.	
DESIGNED BY:	SS JW
CHECKED BY:	AM SF

**HORIZONTAL AND VERTICAL CONTROL**

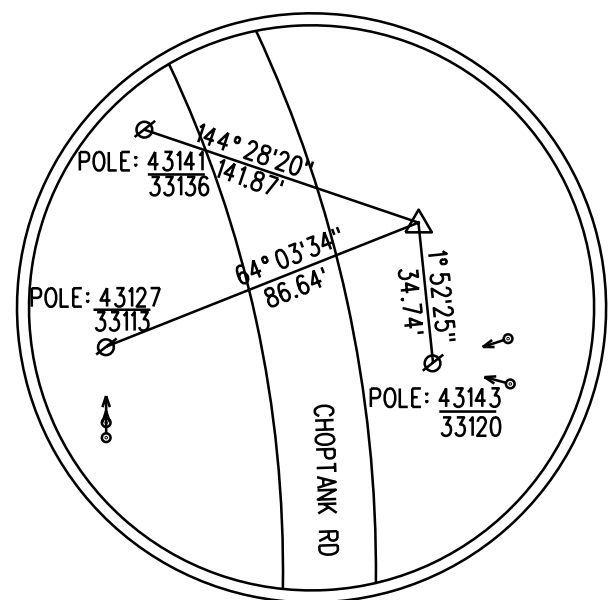
HV-05	SHEET NO.	60
	TOTAL SHTS.	1256

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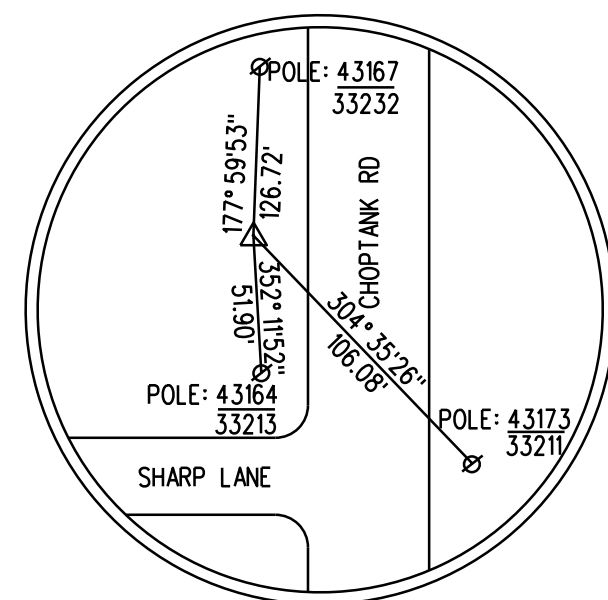
**TRAVERSE 241 (Concrete Monument)**

BACK SIGHT @ Δ 238  
 NORTHING: 531936.0967  
 EASTING: 564453.4827  
 ELEVATION: 60.26'



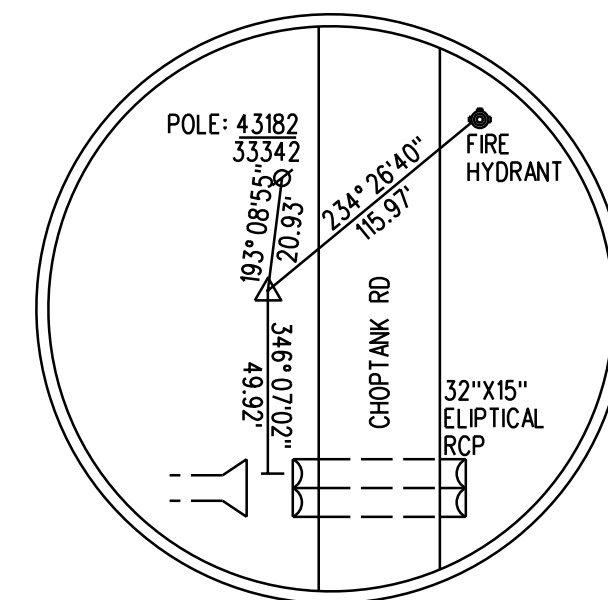
**TRAVERSE 242 (Capped Rebar)**

BACK SIGHT @ Δ 241  
 NORTHING: 532910.4720  
 EASTING: 564806.7804  
 ELEVATION: 63.21'



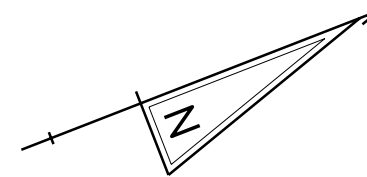
**E45 (NGS Concrete Monument)**

BACK SIGHT @ Δ 242  
 NORTHING: 533886.3878  
 EASTING: 565000.7343  
 ELEVATION: 64.01'



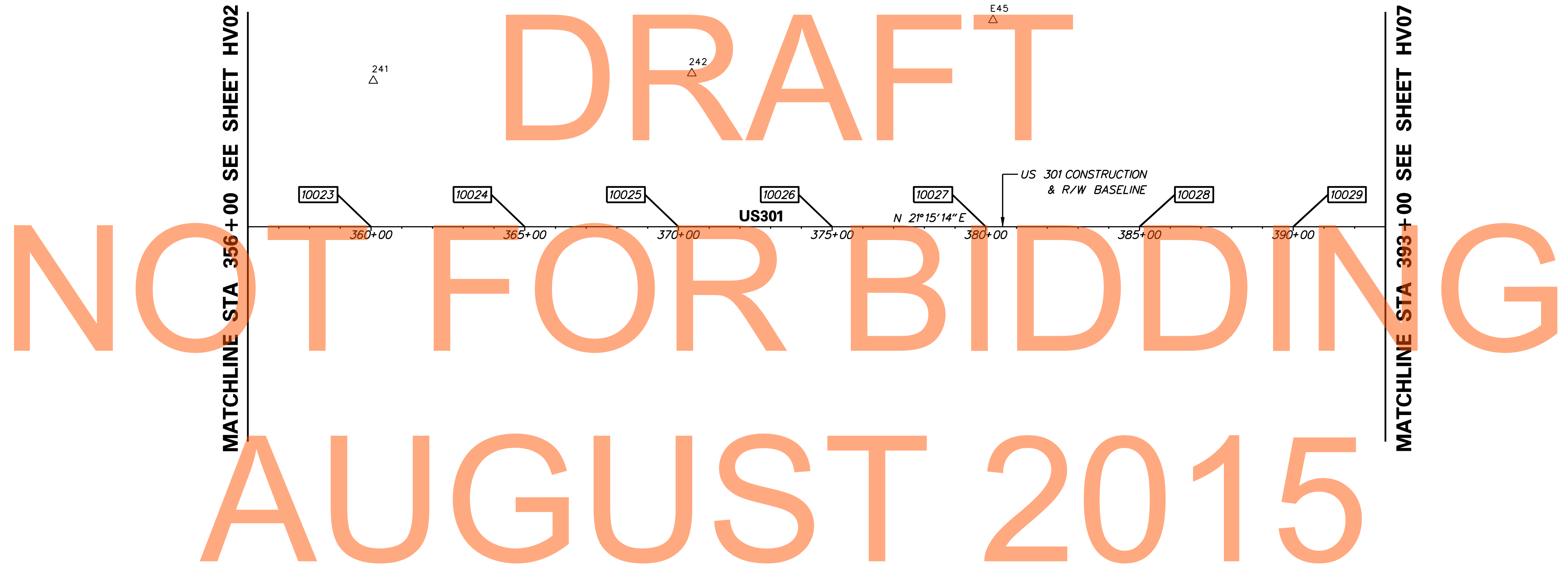
**TRAVERSE 244 (Capped Rebar)**

BACK SIGHT @ Δ E45  
 NORTHING: 535094.5516  
 EASTING: 565155.2603  
 ELEVATION: 60.81'



MATCHLINE STA 356+00 SEE SHEET HV02

MATCHLINE STA 393+00 SEE SHEET HV07



DRAFT  
NOT FOR BIDDING  
AUGUST 2015

CONSTRUCTION ALIGNMENT CONTROL				
POINT	STATION	OFFSET	NORTHING	EASTING
10023	360+00.00	0.0000	531757.2226	564893.1540
10024	365+00.00	0.0000	532223.2147	565074.4036
10025	370+00.00	0.0000	532689.2067	565255.6531
10026	375+00.00	0.0000	533155.1988	565436.9027
10027	380+00.00	0.0000	533621.1909	565618.1523
10028	385+00.00	0.0000	534087.1829	565799.4019
10029	390+00.00	0.0000	534553.1750	565980.6514

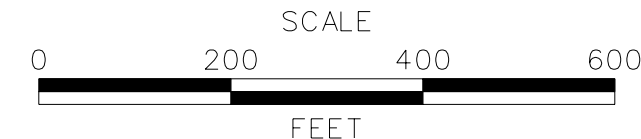
HORIZONTAL / VERTICAL CONTROL DATA					
POINT	STATION	OFFSET	NORTHING	EASTING	ELEVATION
241	360+07.33	-474.6084	531936.0967	564453.4827	60.26
242	370+43.50	-498.5507	532910.4720	564806.7804	63.21
E45	380+23.35	-671.5574	533886.3878	565000.7343	64.01
244	392+05.35	-965.5000	535094.5516	565155.2603	60.81

**DATUM REFERENCE NOTE:**

HORIZONTAL - PROJECT BASED ON DELAWARE STATE PLANE COORDINATE SYSTEM NAD 83 (2007)  
 VERTICAL - PLAN ELEVATIONS ARE BASED ON N. G. S. SURVEY DATUM (NAVD 88)



ADDENDUMS / REVISIONS



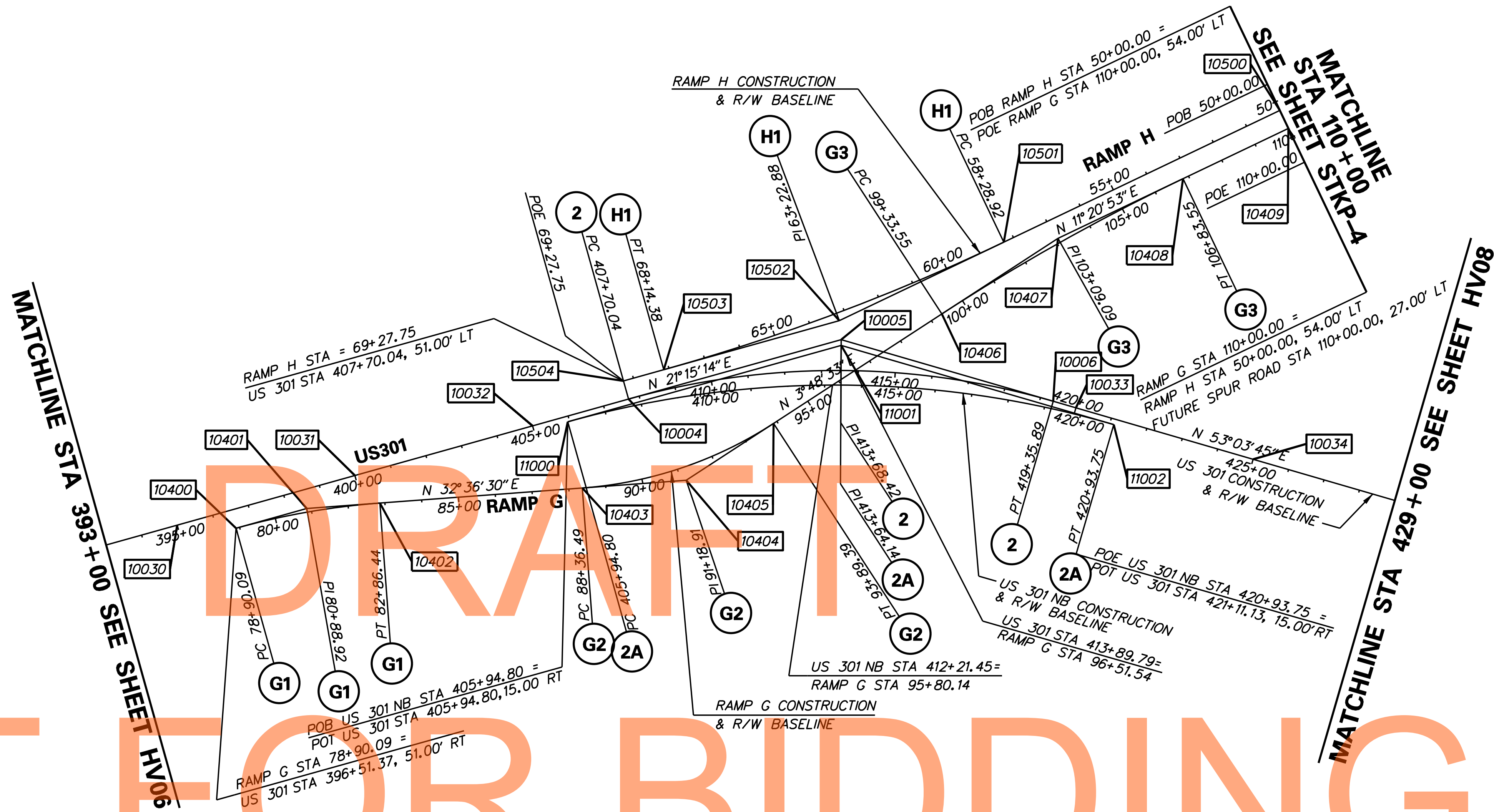
**US 301  
LEVELS ROAD  
TO SUMMIT BRIDGE ROAD**

CONTRACT	BRIDGE NO.	
T20091303	DESIGNED BY:	SS JW
COUNTY	CHECKED BY:	AM SF
NEW CASTLE		

**HORIZONTAL AND VERTICAL CONTROL**

HV-06
SHEET NO.
61
TOTAL SHTS.
1256

CONSTRUCTION ALIGNMENT CONTROL				
POINT	STATION	OFFSET	NORTHING	EASTING
10030	395+00.00	0.0000	535019.1670	566161.9010
10031	400+00.00	0.0000	535485.1591	566343.1506
10032	405+00.00	0.0000	535951.1511	566524.4001
10033	420+00.00	0.0000	537158.6144	567368.7154
10034	425+00.00	0.0000	537459.0861	567768.3612
10409	110+00.00	0.0000	538073.7284	567108.1595
10500	50+00.00	0.0000	538084.3539	567055.2152
10504	69+27.75	0.0000	536221.3132	566574.7588



**DATUM REFERENCE NOTE:**  
 HORIZONTAL - PROJECT BASED ON DELAWARE STATE PLANE COORDINATE SYSTEM NAD 83 (2007)  
 VERTICAL - PLAN ELEVATIONS ARE BASED ON N.G.S. SURVEY DATUM (NAVD 88)

NOT FOR BIDDING  
 AUGUST 2015

CIRCULAR CURVE NO. (G1)				CIRCULAR CURVE NO. (G2)				CIRCULAR CURVE NO. (G3)			
Element: Circular				Element: Circular				Element: Circular			
STATION	NORTHING	EASTING		STATION	NORTHING	EASTING		STATION	NORTHING	EASTING	
PC ( 10400)	78+90.09	535141.7555	566264.3042	PC ( 10403)	88+36.49	535957.8905	566739.9418	PC ( 10406)	99+33.55	537020.5480	566947.0493
PI ( 10401)	80+88.92	535327.0578	566336.3784	PI ( 10404)	91+18.91	536195.7974	566892.1383	PI ( 10407)	103+09.09	537395.2604	566971.9972
CC ( 10450)		534416.7572	568128.2725	CC ( 10451)		536550.6729	565813.5302	CC ( 10452)		536641.8868	572634.4578
PT ( 10402)		535494.5434	566443.5242	PT ( 10405)		536477.5979	566910.9003	PT ( 10408)		537763.4606	567045.8916
Radius:	2000.0000			Radius:	1100.0000			Radius:	5700.0000		
Delta:	11° 21' 16.4324" Right			Delta:	28° 47' 57.3145" Left			Delta:	7° 32' 20.1061" Right		
Degree of Curvature(Arc):	2° 51' 53.2403" Right			Degree of Curvature(Arc):	5° 12' 31.3460" Left			Degree of Curvature(Arc):	1° 00' 18.6808" Right		
Length:	396.3491			Length:	552.9060			Length:	750.0000		
Tangent:	198.8257			Tangent:	282.4244			Tangent:	375.5420		
Chord:	395.7008			Chord:	547.1039			Chord:	749.4591		
Middle Ordinate:	9.8103			Middle Ordinate:	34.5567			Middle Ordinate:	12.3311		
External:	9.8586			External:	35.6776			External:	12.3578		
Tangent Direction:	N 21° 15' 13.5216" E			Tangent Direction:	N 32° 36' 29.9540" E			Tangent Direction:	N 3° 48' 32.6395" E		
Radial Direction:	S 68° 44' 46.4784" E			Radial Direction:	S 57° 23' 30.0460" E			Radial Direction:	S 86° 11' 27.3605" E		
Chord Direction:	N 26° 55' 51.7378" E			Chord Direction:	N 18° 12' 31.2968" E			Chord Direction:	N 7° 34' 42.6925" E		
Radial Direction:	S 57° 23' 30.0460" E			Radial Direction:	S 86° 11' 27.3605" E			Radial Direction:	S 78° 39' 07.2544" E		
Tangent Direction:	N 32° 36' 29.9540" E			Tangent Direction:	N 3° 48' 32.6395" E			Tangent Direction:	N 11° 20' 52.7456" E		

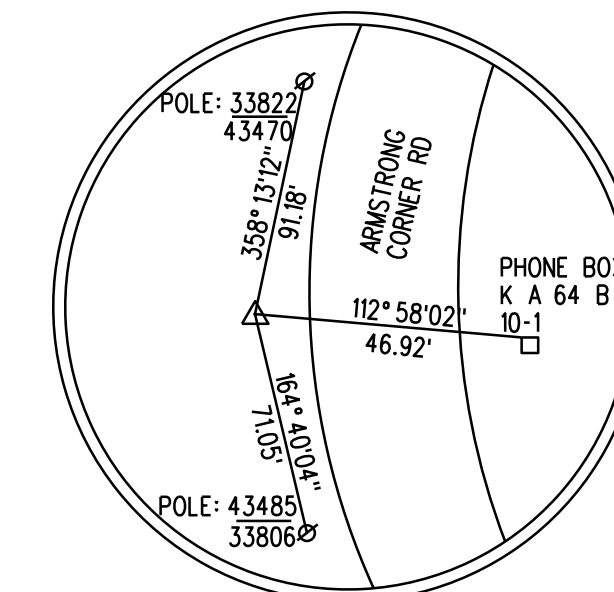
CIRCULAR CURVE NO. (2)				CIRCULAR CURVE NO. (2A)				CIRCULAR CURVE NO. (H1)			
Element: Circular				Element: Circular				Element: Circular			
STATION	NORTHING	EASTING		STATION	NORTHING	EASTING		STATION	NORTHING	EASTING	
PC ( 10004)	407+70.04	536202.8258	566622.2900	PC ( 11000)	405+94.80	536034.0692	566572.7461	PC ( 10501)	58+28.92	537271.6410	566892.1112
PI ( 10005)	413+68.42	536760.5008	566839.2001	PI ( 11001)	413+64.14	536751.0799	566851.6305	PI ( 10502)	63+22.88	536787.3351	566794.9154
CC ( 10051)		535441.5776	568579.4567	CC ( 11050)		535055.3215	569089.1032	CC ( 10550)		538393.2148	561303.5450
PT ( 10006)		537120.0898	567317.4753	PT ( 11002)		537213.4075	567466.5544	PT ( 10503)		536326.9697	566615.8544
Radius:	2100.0000			Radius:	2700.0000			Radius:	5700.0000		
Delta:	31° 48' 31.4784" Right			Delta:	31° 48' 31.4784" Right			Delta:	9° 54' 20.7760" Right		
Degree of Curvature(Arc):	2° 43' 42.1336" Right			Degree of Curvature(Arc):	2° 07' 19.4373" Right			Degree of Curvature(Arc):	1° 00' 18.6808" Right		
Length:	1165.8514			Length:	1498.9517			Length:	985.4634		
Tangent:	598.3740			Tangent:	769.3380			Tangent:	493.9627		
Chord:	1150.9369			Chord:	1479.7761			Chord:	984.2366		
Middle Ordinate:	80.3872			Middle Ordinate:	103.3549			Middle Ordinate:	21.2836		
External:	83.5868			External:	107.4688			External:	21.3634		
Tangent Direction:	N 21° 15' 13.5216" E			Tangent Direction:	N 21° 15' 13.5216" E			Tangent Direction:	S 11° 20' 52.7456" W		
Radial Direction:	S 68° 44' 46.4784" E			Radial Direction:	S 68° 44' 46.4784" E			Radial Direction:	N 78° 39' 07.2544" W		
Chord Direction:	N 37° 09' 29.2608" E			Chord Direction:	N 37° 09' 29.2608" E			Chord Direction:	S 16° 18' 03.1336" W		
Radial Direction:	S 36° 56' 15.0000" E			Radial Direction:	S 36° 56' 15.0000" E			Radial Direction:	N 68° 44' 46.4784" W		
Tangent Direction:	N 53° 03' 45.0000" E			Tangent Direction:	N 53° 03' 45.0000" E			Tangent Direction:	S 21° 15' 13.5216" W		

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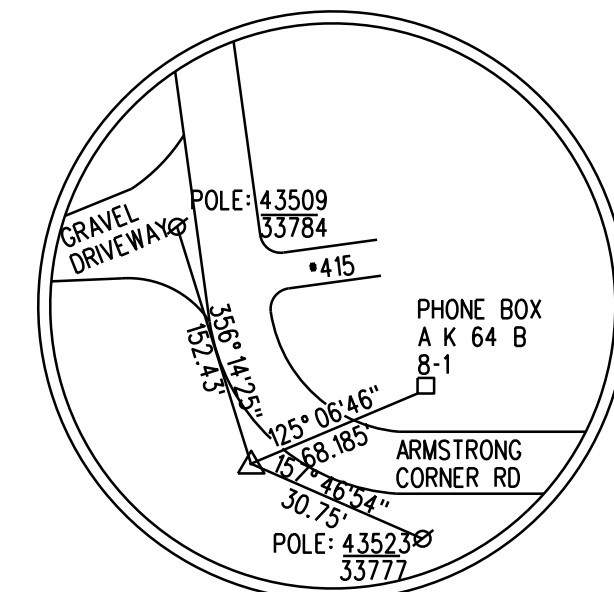
	ADDENDUMS / REVISIONS		<b>US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD</b>		CONTRACT	BRIDGE NO. DESIGNED BY: SS JW CHECKED BY: AM SF	<b>HORIZONTAL AND VERTICAL CONTROL</b>	HV-07
					T20091303			SHEET NO.
					NEW CASTLE			62
								TOTAL SHTS.
								1256

CONSTRUCTION ALIGNMENT CONTROL				
POINT	STATION	OFFSET	NORTHING	EASTING
10035	430+00.00	0.0000	537759.5579	568168.0069
10036	450+00.00	0.0000	539334.5512	569359.1157
10037	455+00.00	0.0000	539784.9109	569576.3165
11200	110+76.36	0.0000	539365.5321	569571.9585
11210	110+23.95	0.0000	539371.3790	569519.8708
200115	135+17.71	0.0000	539481.5131	568449.6527

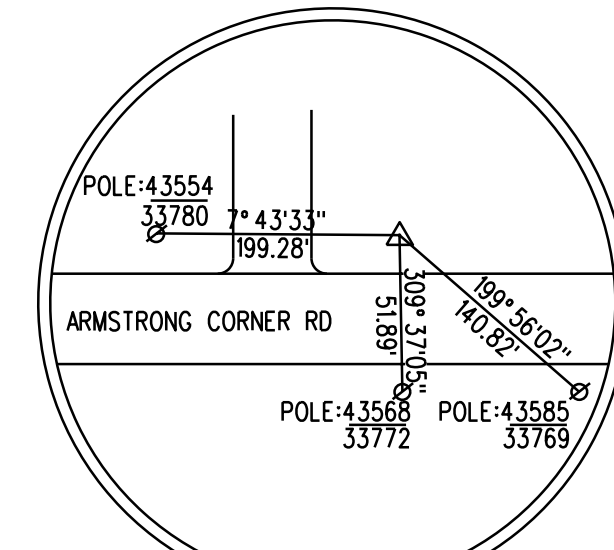
HORIZONTAL / VERTICAL CONTROL DATA					
POINT	STATION	OFFSET	NORTHING	EASTING	ELEVATION
251	449+34.45	-1337.6034	539856.5645	568125.8347	72.40
252	447+66.93	-792.2339	539468.7672	568544.2888	71.91
C45	449+83.12	-277.1533	539439.7396	569102.1440	68.64
254	451+88.28	410.1857	539325.9520	569810.3663	69.83



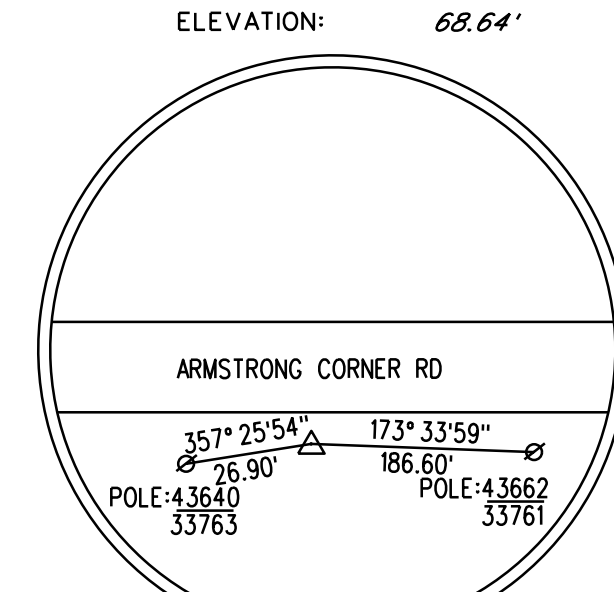
**TRAVERSE 251 (Capped Rebar)**  
 BACK SIGHT @ Δ 250  
 NORTHING: 539856.5645  
 EASTING: 568125.8347  
 ELEVATION: 72.40'



**TRAVERSE 252 (Capped Rebar)**  
 BACK SIGHT @ Δ 251  
 NORTHING: 539468.7672  
 EASTING: 568544.2888  
 ELEVATION: 71.91'



**C45 (NGS Concrete Monument)**  
 BACK SIGHT @ Δ 252  
 NORTHING: 539439.7396  
 EASTING: 569102.1440  
 ELEVATION: 68.64'



**TRAVERSE 254 (Capped Rebar)**  
 BACK SIGHT @ Δ C45  
 NORTHING: 539325.9520  
 EASTING: 569810.3663  
 ELEVATION: 69.83'

**CIRCULAR CURVE NO. (E-ACR1)**

Element: Circular

STATION	NORTHING	EASTING	
PC (300192)	147+68.97	539351.1709	569694.1098
PI (300195)	149+93.95	539327.7349	569917.8677
CC (300167)	543150.1104	570092.0038	
PT (300193)	152+18.41	539330.7286	570142.8298

Radius: 3819.7200  
 Delta: 6° 44' 30.0000" Left  
 Degree of Curvature(Arc): 1° 29' 59.9981"  
 Length: 449.4446  
 Tangent: 224.9819  
 Chord: 449.1854  
 Middle Ordinate: 6.6085  
 External: 6.6200  
 Tangent Direction: S 84° 01' 14.6822" E  
 Radial Direction: S 5° 58' 45.3178" W  
 Chord Direction: S 87° 23' 29.6822" E  
 Radial Direction: S 0° 45' 44.6822" E  
 Tangent Direction: N 89° 14' 15.3178" E

**CIRCULAR CURVE NO. (ACR1)**

Element: Circular

STATION	NORTHING	EASTING	
PC (11201)	113+64.44	539333.3970	569858.2385
PI (11202)	114+92.35	539319.1280	569985.3556
CC (11250)	541817.7940	570137.1140	
PCC (11203)	116+20.05	539317.9077	570113.2651

Radius: 2500.0000  
 Delta: 5° 51' 29.1603" Left  
 Degree of Curvature(Arc): 2° 17' 30.5922"  
 Length: 255.6078  
 Tangent: 127.9154  
 Chord: 255.4965  
 Middle Ordinate: 3.2661  
 External: 3.2703  
 Tangent Direction: S 83° 35' 43.1319" E  
 Radial Direction: S 6° 24' 16.8681" W  
 Chord Direction: S 86° 31' 27.7121" E  
 Radial Direction: S 0° 32' 47.7078" W  
 Tangent Direction: S 89° 27' 12.2922" E

**CIRCULAR CURVE NO. (ACR2)**

Element: Circular

STATION	NORTHING	EASTING	
PCC (11203)	116+20.05	539317.9077	570113.2651
PI (11204)	117+54.40	539316.6260	570247.6135
CC (11251)	543997.6948	570157.9103	
PT (11205)	118+88.68	539323.0539	570381.8141

Radius: 4680.0000  
 Delta: 3° 17' 19.7407" Left  
 Degree of Curvature(Arc): 1° 13' 27.3677"  
 Length: 268.6352  
 Tangent: 134.3545  
 Chord: 268.5983  
 Middle Ordinate: 1.9273  
 External: 1.9281  
 Tangent Direction: S 89° 27' 12.2922" E  
 Radial Direction: S 0° 32' 47.7078" W  
 Chord Direction: N 88° 54' 07.8374" E  
 Radial Direction: S 2° 44' 32.0329" E  
 Tangent Direction: N 87° 15' 27.9671" E

**CIRCULAR CURVE NO. (3)**

Element: Circular

STATION	NORTHING	EASTING	
PC (10007)	430+45.13	537786.6767	568204.0766
PI (10008)	438+47.00	538268.5546	568845.0036
CC (10052)	540424.3387	566220.9631	
PT (10009)	446+18.37	538990.8134	569193.3368

Radius: 3300.0000  
 Delta: 27° 18' 55.0000" Left  
 Degree of Curvature(Arc): 1° 44' 10.4487"  
 Length: 1573.2471  
 Tangent: 801.8689  
 Chord: 1558.3905  
 Middle Ordinate: 93.3109  
 External: 96.0262  
 Tangent Direction: N 53° 03' 45.0000" E  
 Radial Direction: S 36° 56' 15.0000" E  
 Chord Direction: N 39° 24' 17.5000" E  
 Radial Direction: S 64° 15' 10.0000" E  
 Tangent Direction: N 25° 44' 50.0000" E

**CIRCULAR CURVE NO. (K2)**

Element: Circular

STATION	NORTHING	EASTING	
PC (10804)	73+14.46	540015.2686	569581.1914
PI (10805)	75+70.55	539767.6646	569515.8183
CC (10851)	540696.8529	566999.6525	
PT (10806)	78+25.07	539537.0006	569404.5731

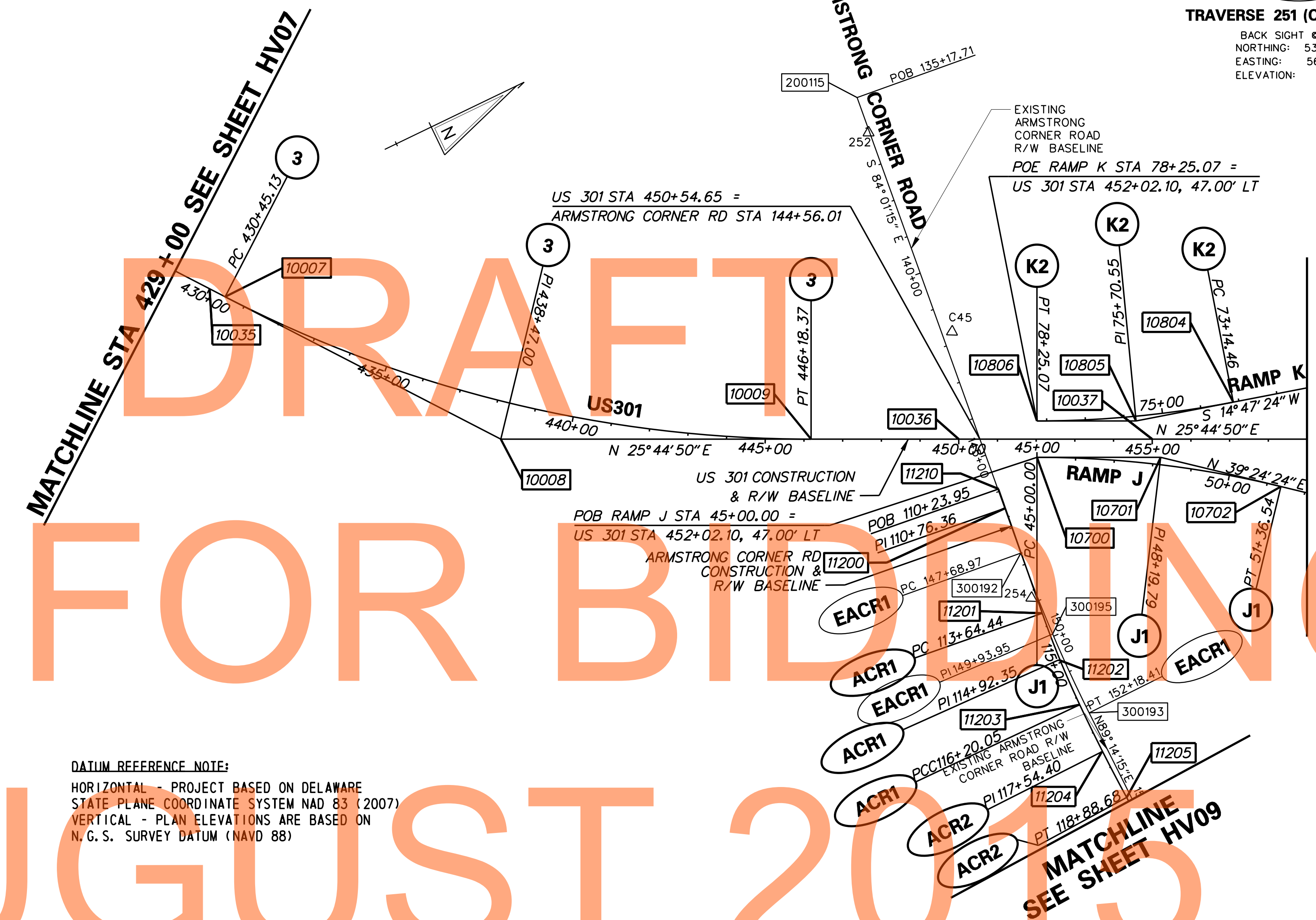
Radius: 2670.0000  
 Delta: 10° 57' 26.4250" Right  
 Degree of Curvature(Arc): 2° 08' 45.2736"  
 Length: 510.6152  
 Tangent: 256.0886  
 Chord: 509.8375  
 Middle Ordinate: 12.1971  
 External: 12.2530  
 Tangent Direction: S 14° 47' 23.5750" W  
 Radial Direction: N 75° 12' 36.4250" W  
 Chord Direction: S 20° 16' 06.7875" W  
 Radial Direction: N 64° 15' 10.0000" W  
 Tangent Direction: S 25° 44' 50.0000" W

**CIRCULAR CURVE NO. (J1)**

Element: Circular

STATION	NORTHING	EASTING	
PC (10700)	45+00.00	539496.1669	569489.2407
PI (10701)	48+19.79	539784.2039	569628.1560
CC (10750)	538336.3146	571894.1612	
PT (10702)	51+36.54	540031.2890	569831.1629

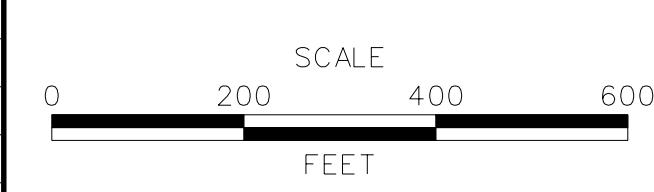
Radius: 2670.0000  
 Delta: 13° 39' 34.3826" Right  
 Degree of Curvature(Arc): 2° 08' 45.2736"  
 Length: 636.5390  
 Tangent: 319.7856  
 Chord: 635.0327  
 Middle Ordinate: 18.9467  
 External: 19.0822  
 Tangent Direction: N 25° 44' 50.0000" E  
 Radial Direction: S 64° 15' 10.0000" E  
 Chord Direction: N 32° 34' 37.1912" E  
 Radial Direction: S 50° 35' 35.6175" E  
 Tangent Direction: N 39° 24' 24.3825" E



**DATUM REFERENCE NOTE:**  
 HORIZONTAL - PROJECT BASED ON DELAWARE STATE PLANE COORDINATE SYSTEM NAD 83 (2007)  
 VERTICAL - PLAN ELEVATIONS ARE BASED ON N.G.S. SURVEY DATUM (NAVD 88)



ADDENDUMS / REVISIONS	



**US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD**

CONTRACT	T200911303
COUNTY	NEW CASTLE
BRIDGE NO.	
DESIGNED BY:	SS JW
CHECKED BY:	AM SF

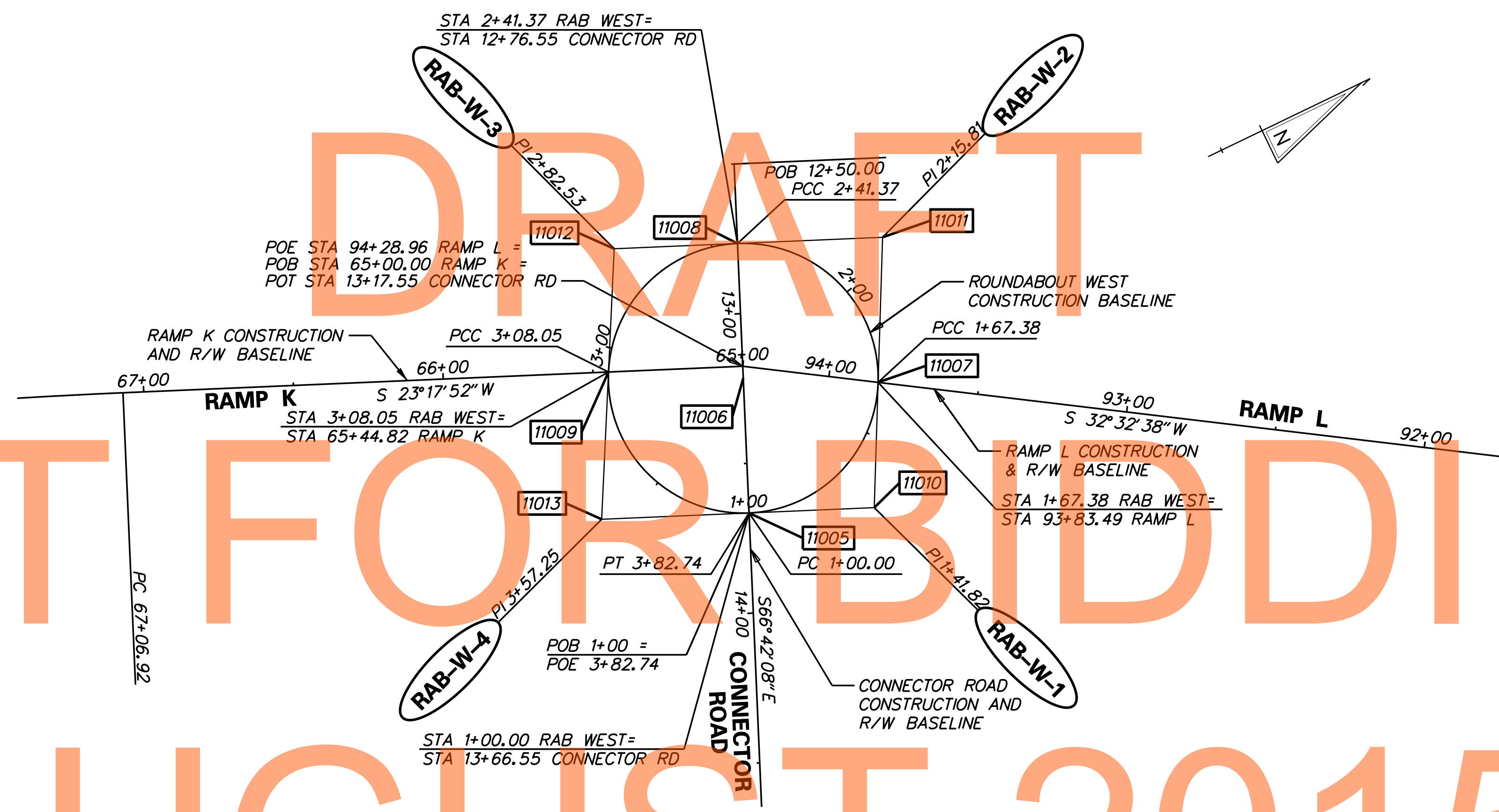
<b>HORIZONTAL AND VERTICAL CONTROL</b>	HV-08
	SHEET NO. 63
	TOTAL SHTS. 1256

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AUGUST 2015



**DATUM REFERENCE NOTE:**  
 HORIZONTAL - PROJECT BASED ON DELAWARE STATE PLANE COORDINATE SYSTEM NAD 83 (2007)  
 VERTICAL - PLAN ELEVATIONS ARE BASED ON N. G. S. SURVEY DATUM (NAVD 88)

CONSTRUCTION ALIGNMENT CONTROL				
POINT	STATION	OFFSET	NORTHING	EASTING
11005	1+00.00	0.0000	540766.6747	569884.1254
11006		-45.0000	540784.4726	569842.7946
11007	1+67.38	0.0000	540824.3842	569863.5808
11008	2+41.37	0.0000	540802.2706	569801.4638
11009	3+08.05	0.0000	540744.8875	569821.3933
11010	1+41.81	16.4234	540805.0729	569900.6605
11011	2+15.81	21.1144	540846.7579	569820.6210
11012	2+82.53	15.9868	540764.4640	569785.1835
11013	3+57.25	21.6717	540721.4912	569864.6684

CIRCULAR CURVE NO. (RAB-W-1)			
Element	STATION	NORTHING	EASTING
PC (11005)	1+00.00	540766.6747	569884.1254
PI (11010)	1+41.81	540805.0729	569900.6605
CC (11006)		540784.4726	569842.7946
PCC (11007)	1+67.38	540824.3842	569863.5808
Radius:		45.0000	
Delta:		85° 47' 13.3526" Left	
Degree of Curvature (Arc):		127° 19' 26.2361"	
Length:		67.3770	
Tangent:		41.8071	
Chord:		61.2574	
Middle Ordinate:		12.0321	
External:		16.4234	
Tangent Direction:		N 23° 17' 51.9557" E	
Radial Direction:		S 66° 42' 08.0443" E	
Chord Direction:		N 19° 35' 44.7206" W	
Radial Direction:		N 27° 30' 38.6031" E	
Tangent Direction:		N 62° 29' 21.3969" W	

CIRCULAR CURVE NO. (RAB-W-2)			
Element	STATION	NORTHING	EASTING
PCC (11007)	1+67.38	540824.3842	569863.5808
PI (11011)	2+15.81	540846.7579	569820.6210
CC (11006)		540784.4726	569842.7946
PCC (11008)	2+41.37	540802.2706	569801.4638
Radius:		45.0000	
Delta:		94° 12' 46.6474" Left	
Degree of Curvature (Arc):		127° 19' 26.2361"	
Length:		73.9947	
Tangent:		48.4367	
Chord:		65.9358	
Middle Ordinate:		14.3713	
External:		21.1144	
Tangent Direction:		N 62° 29' 21.3969" W	
Radial Direction:		N 27° 30' 38.6031" E	
Chord Direction:		S 70° 24' 15.2794" W	
Radial Direction:		N 66° 42' 08.0443" W	
Tangent Direction:		S 23° 17' 51.9557" W	

CIRCULAR CURVE NO. (RAB-W-3)			
Element	STATION	NORTHING	EASTING
PCC (11008)	2+41.37	540802.2706	569801.4638
PI (11012)	2+82.53	540764.4640	569785.1835
CC (11006)		540784.4726	569842.7946
PCC (11009)	3+08.05	540744.8875	569821.3933
Radius:		45.0000	
Delta:		84° 54' 01.1199" Left	
Degree of Curvature (Arc):		127° 19' 26.2361"	
Length:		66.6805	
Tangent:		41.1629	
Chord:		60.7454	
Middle Ordinate:		11.7961	
External:		15.9868	
Tangent Direction:		S 23° 17' 51.9557" W	
Radial Direction:		N 66° 42' 08.0443" E	
Chord Direction:		S 19° 09' 08.6042" E	
Radial Direction:		S 28° 23' 50.8359" W	
Tangent Direction:		S 61° 36' 09.1641" E	

CIRCULAR CURVE NO. (RAB-W-4)			
Element	STATION	NORTHING	EASTING
PCC (11009)	3+08.05	540744.8875	569821.3933
PI (11013)	3+57.25	540721.4912	569864.6684
CC (11006)		540784.4726	569842.7946
PT (11005)	3+82.74	540766.6747	569884.1254
Radius:		45.0000	
Delta:		95° 05' 58.8801" Left	
Degree of Curvature (Arc):		127° 19' 26.2361"	
Length:		74.6911	
Tangent:		49.1947	
Chord:		66.4078	
Middle Ordinate:		14.6273	
External:		21.6717	
Tangent Direction:		S 61° 36' 09.1641" E	
Radial Direction:		S 28° 23' 50.8359" W	
Chord Direction:		N 70° 50' 51.3958" E	
Radial Direction:		S 66° 42' 08.0443" E	
Tangent Direction:		N 23° 17' 51.9557" E	

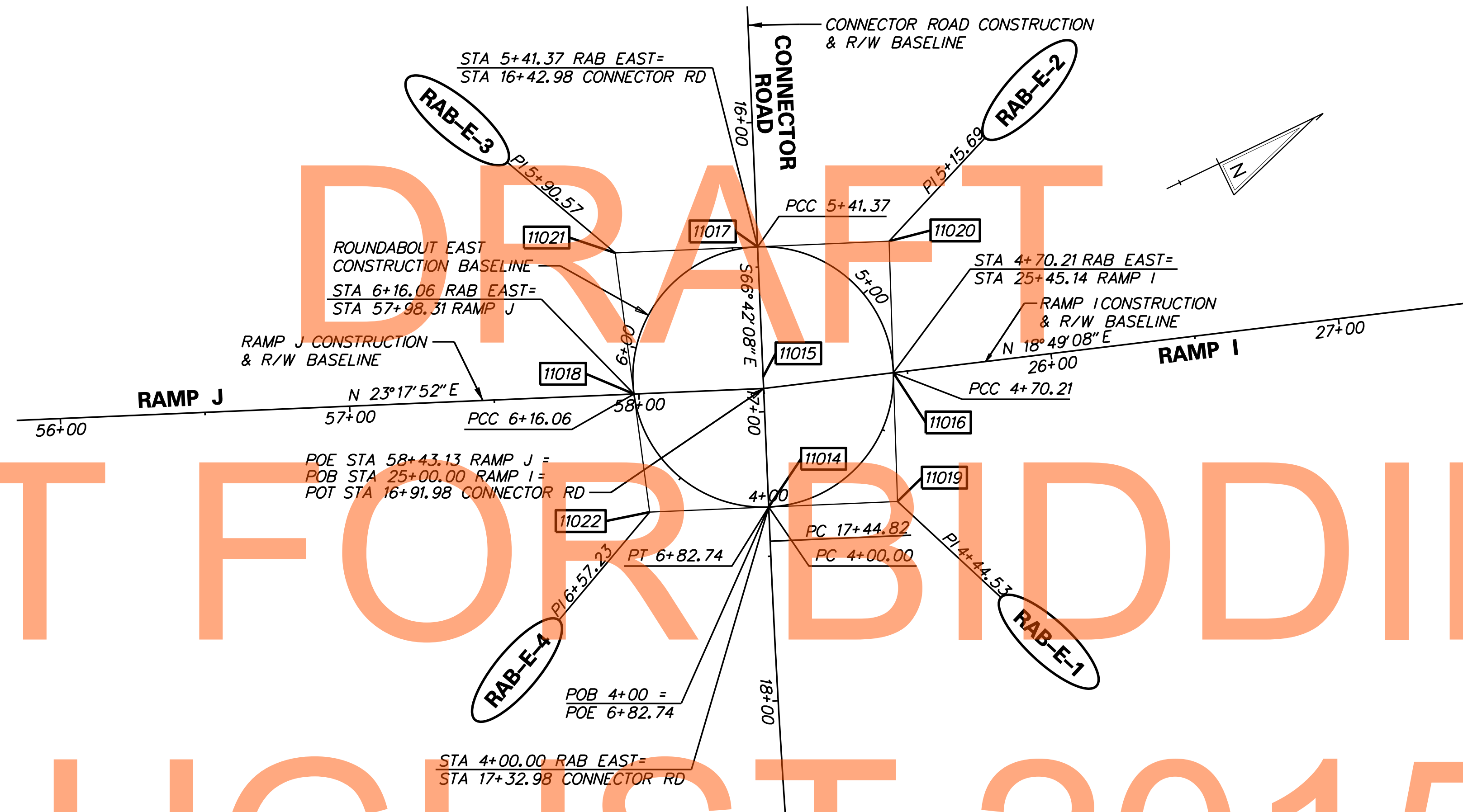
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<p><b>DELAWARE DEPARTMENT OF TRANSPORTATION</b></p>	ADDENDUMS / REVISIONS		<p><b>US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD</b></p>	CONTRACT T20091303	BRIDGE NO.	<p><b>HORIZONTAL AND VERTICAL CONTROL</b></p>	SHEET NO. 65
				COUNTY NEW CASTLE	DESIGNED BY: SS JW CHECKED BY: AM SF		TOTAL SHTS. 1256

DRAFT

NOT FOR BIDDING

AUGUST 2015



**DATUM REFERENCE NOTE:**  
 HORIZONTAL - PROJECT BASED ON DELAWARE STATE PLANE COORDINATE SYSTEM NAD 83 (2007)  
 VERTICAL - PLAN ELEVATIONS ARE BASED ON N. G. S. SURVEY DATUM (NAVD 88)

CONSTRUCTION ALIGNMENT CONTROL				
POINT	STATION	OFFSET	NORTHING	EASTING
11014	4+00.00	0.0000	540621.7509	570220.6708
11015		-45.0000	540639.5488	570179.3400
11016	4+70.21	0.0000	540680.6893	570197.5736
11017	5+41.37	0.0000	540657.3468	570138.0092
11018	6+16.06	0.0000	540596.7996	570165.2864
11019	4+44.53	18.3061	540662.6473	570238.2817
11020	5+15.69	18.9785	540699.1165	570155.9962
11021	5+90.57	21.6717	540612.1633	570118.5523
11022	6+57.23	15.9868	540583.9443	570204.3905

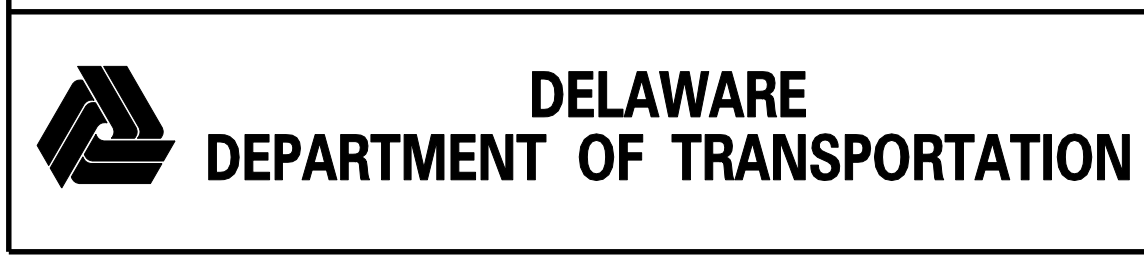
CIRCULAR CURVE NO. <b>RAB-E-1</b>			
Element	Station	Northing	Easting
PC (11014)	4+00.00	540621.7509	570220.6708
PI (11019)	4+44.53	540662.6473	570238.2817
CC (11015)		540639.5488	570179.3400
PCC (11016)	4+70.21	540680.6893	570197.5736
Radius:		45.0000	
Delta:		89° 23' 40.8790" Left	
Degree of Curvature (Arc):		127° 19' 26.2361"	
Length:		70.2104	
Tangent:		44.5271	
Chord:		63.3026	
Middle Ordinate:		13.0126	
External:		18.3061	
Tangent Direction:		N 23° 17' 51.9558" E	
Radial Direction:		S 66° 42' 08.0442" E	
Chord Direction:		N 21° 23' 58.4837" W	
Radial Direction:		N 23° 54' 11.0768" E	
Tangent Direction:		N 66° 05' 48.9232" W	

CIRCULAR CURVE NO. <b>RAB-E-2</b>			
Element	Station	Northing	Easting
PCC (11016)	4+70.21	540680.6893	570197.5736
PI (11020)	5+15.69	540699.1165	570155.9962
CC (11015)		540639.5488	570179.3400
PCC (11017)	5+41.37	540657.3468	570138.0092
Radius:		45.0000	
Delta:		90° 36' 19.1210" Left	
Degree of Curvature (Arc):		127° 19' 26.2361"	
Length:		71.1612	
Tangent:		45.4779	
Chord:		63.9749	
Middle Ordinate:		13.3487	
External:		18.9785	
Tangent Direction:		N 66° 05' 48.9232" W	
Radial Direction:		N 23° 54' 11.0768" E	
Chord Direction:		S 68° 36' 01.5163" W	
Radial Direction:		N 66° 42' 08.0442" W	
Tangent Direction:		S 23° 17' 51.9558" W	

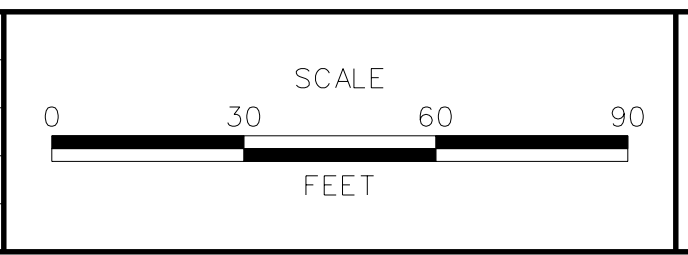
CIRCULAR CURVE NO. <b>RAB-E-3</b>			
Element	Station	Northing	Easting
PCC (11017)	5+41.37	540657.3468	570138.0092
PI (11021)	5+90.57	540612.1633	570118.5523
CC (11015)		540639.5488	570179.3400
PCC (11018)	6+16.06	540596.7996	570165.2864
Radius:		45.0000	
Delta:		95° 05' 58.8801" Left	
Degree of Curvature (Arc):		127° 19' 26.2361"	
Length:		74.6911	
Tangent:		49.1947	
Chord:		66.4078	
Middle Ordinate:		14.6273	
External:		21.6717	
Tangent Direction:		S 23° 17' 51.9558" W	
Radial Direction:		N 66° 42' 08.0442" E	
Chord Direction:		S 24° 15' 07.4843" E	
Radial Direction:		S 18° 11' 53.0757" W	
Tangent Direction:		S 71° 48' 06.9243" E	

CIRCULAR CURVE NO. <b>RAB-E-4</b>			
Element	Station	Northing	Easting
PCC (11018)	6+16.06	540596.7996	570165.2864
PI (11022)	6+57.23	540583.9443	570204.3905
CC (11015)		540639.5488	570179.3400
PT (11014)	6+82.74	540621.7509	570220.6708
Radius:		45.0000	
Delta:		84° 54' 01.1199" Left	
Degree of Curvature (Arc):		127° 19' 26.2361"	
Length:		66.6805	
Tangent:		41.1629	
Chord:		60.7454	
Middle Ordinate:		11.7961	
External:		15.9868	
Tangent Direction:		S 71° 48' 06.9243" E	
Radial Direction:		S 18° 11' 53.0757" W	
Chord Direction:		N 65° 44' 52.5157" E	
Radial Direction:		S 66° 42' 08.0442" E	
Tangent Direction:		N 23° 17' 51.9558" E	

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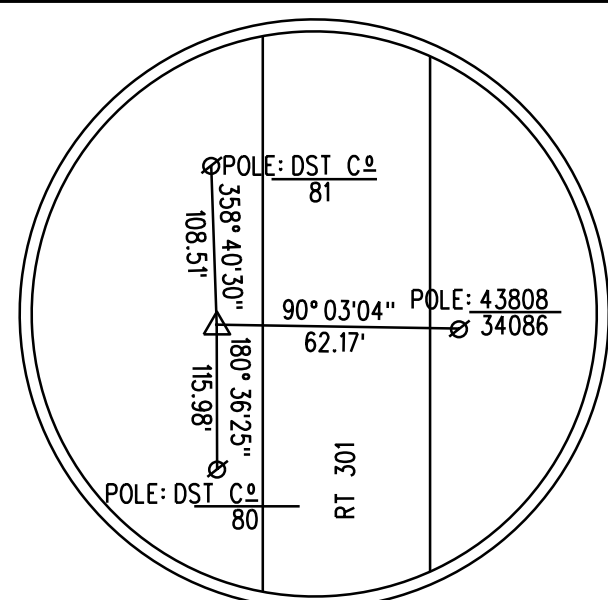
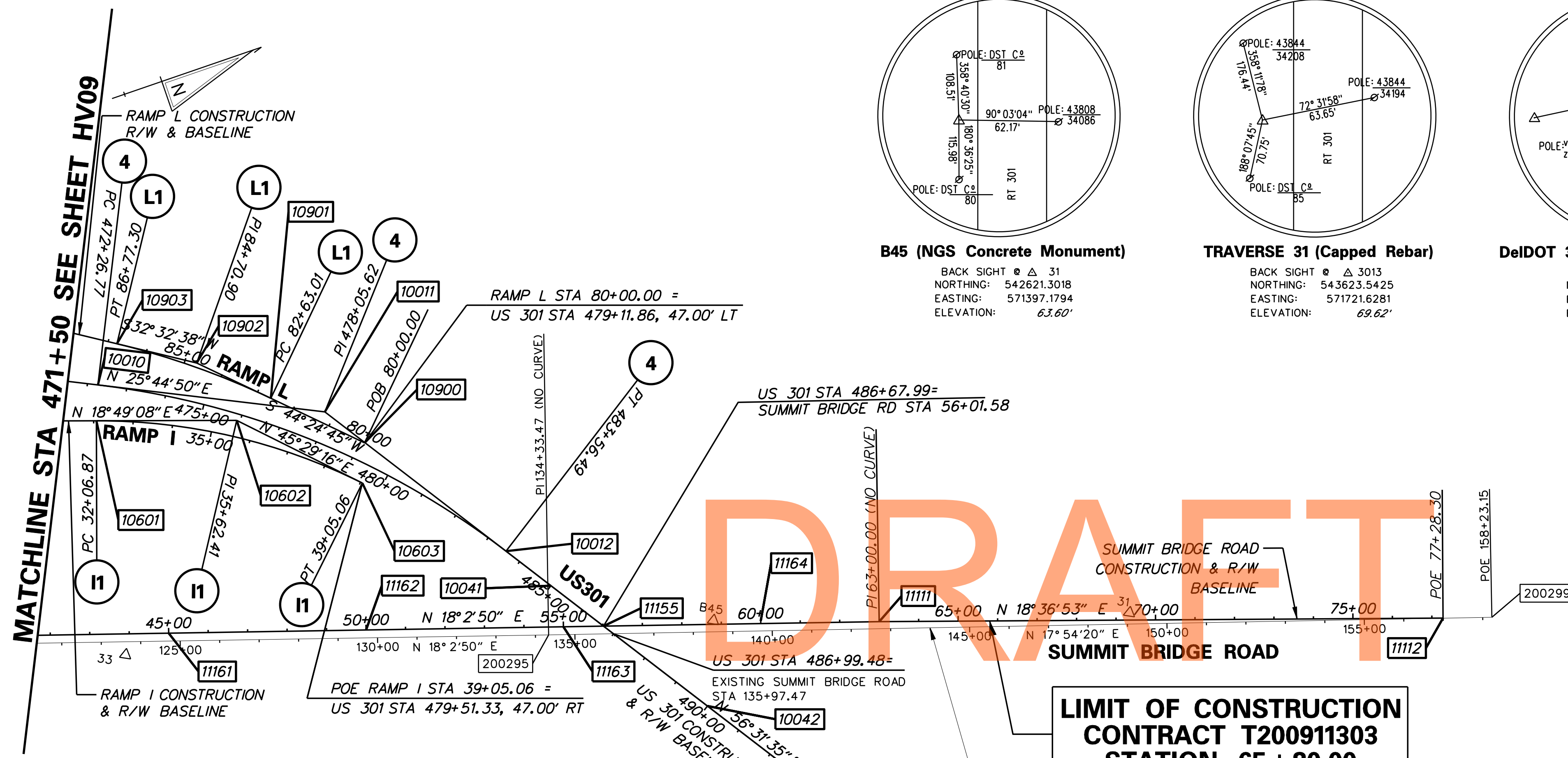
ADDENDUMS / REVISIONS



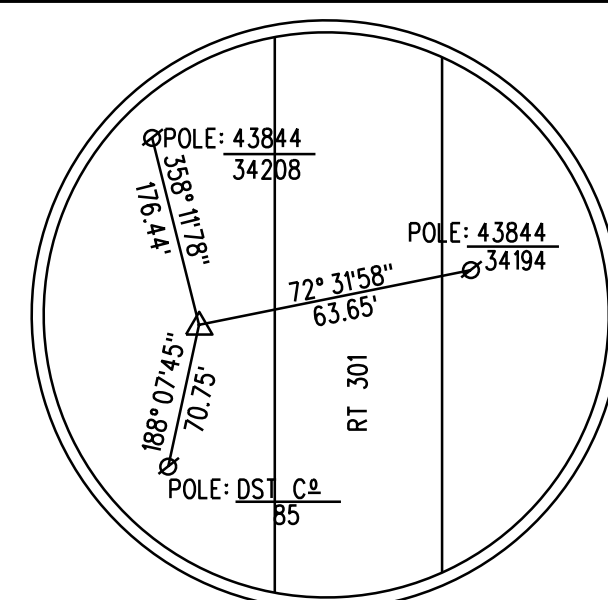
**US 301  
LEVELS ROAD  
TO SUMMIT BRIDGE ROAD**

CONTRACT	BRIDGE NO.	<b>HORIZONTAL AND VERTICAL CONTROL</b>
T20091303	DESIGNED BY: SS JW	
COUNTY	CHECKED BY: AM SF	
NEW CASTLE		

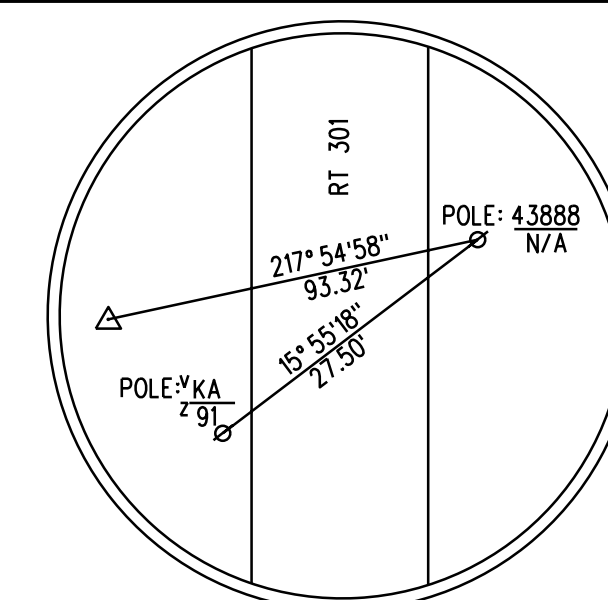
HV-11	SHEET NO.
	66
	TOTAL SHTS.
	1256



**B45 (NGS Concrete Monument)**  
 BACK SIGHT @ Δ 31  
 NORTHING: 542621.3018  
 EASTING: 571397.1794  
 ELEVATION: 63.60'



**TRAVERSE 31 (Capped Rebar)**  
 BACK SIGHT @ Δ 3013  
 NORTHING: 543623.5425  
 EASTING: 571721.6281  
 ELEVATION: 69.62'



**DeIDOT 3013 (Concrete Monument)**  
 BACK SIGHT @ Δ 29  
 NORTHING: 544828.2617  
 EASTING: 572116.0746  
 ELEVATION: 70.09'

HORIZONTAL / VERTICAL CONTROL DATA					
POINT	STATION	OFFSET	NORTHING	EASTING	ELEVATION
33	474+46.19	662.5974	541184.1316	570995.4651	67.31
B45	488+80.05	-181.7891	542621.3018	571397.1794	63.60
31	497+03.48	-838.8475	543623.5425	571721.6281	69.62

CONSTRUCTION ALIGNMENT CONTROL					
POINT	STATION	OFFSET	NORTHING	EASTING	ELEVATION
10041	485+00.00	0.0000	542260.0445	571180.4275	
10042	490+00.00	0.0000	542535.8209	571597.4975	
10043	495+00.00	0.0000	542811.5973	572014.5675	
10900	80+00.00	0.0000	541931.3096	570684.8526	
11161	45+00.00	0.0000	541305.3181	570979.2864	
11162	50+00.00	0.0000	541780.7189	571134.1866	
11163	55+00.00	0.0000	542256.1197	571289.0868	
11164	60+00.00	0.0000	542731.5206	571443.9870	
200295	134+33.47	0.0000	542214.0149	571296.4036	
11155	56+01.58	0.0000	542352.7005	571320.5558	
11111	63+00.00	0.0000	543016.7610	571536.9271	
11112	77+28.30	0.0000	544370.3371	571992.8455	
200299	158+23.15	0.0000	544487.9497	572031.1082	

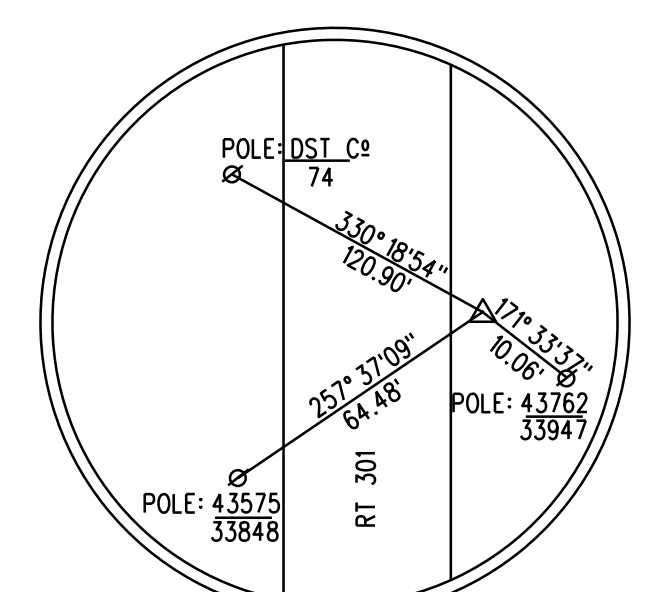
NOT FOR BIDDING

AUGUST 2015

**END CONTRACT T200911303 STATION 495 + 10.00**

**LIMIT OF CONSTRUCTION CONTRACT T200911303 STATION 65 + 80.00**

**DATUM REFERENCE NOTE:**  
 HORIZONTAL - PROJECT BASED ON DELAWARE STATE PLANE COORDINATE SYSTEM NAD 83 (2007)  
 VERTICAL - PLAN ELEVATIONS ARE BASED ON N. C. S. SURVEY DATUM (NAVD 88)



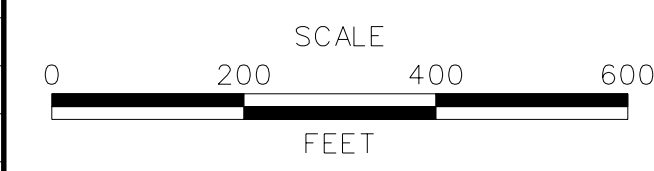
**TRAVERSE 33 (Concrete Monument)**  
 BACK SIGHT @ Δ B45  
 NORTHING: 541184.1316  
 EASTING: 570995.4651  
 ELEVATION: 67.31'

CIRCULAR CURVE NO. ④					CIRCULAR CURVE NO. ⑪					CIRCULAR CURVE NO. ⑪				
Element: Circular					Element: Circular					Element: Circular				
PC (	STATION	NORTHING	EASTING		PC (	STATION	NORTHING	EASTING		PC (	STATION	NORTHING	EASTING	
10010)	472+26.77	541340.2441	570326.4272		10601)	32+06.87	541307.0513	570411.0364		10901)	82+63.01	541743.4387	570500.7954	
PI (	478+05.62	541861.6267	570577.8812		PI (	35+62.41	541643.5812	570525.7251		PI (	84+70.90	541594.9394	570355.3105	
CC (	10053)	540426.6975	572220.6399		CC (	10650)	540823.1818	571830.8499		CC (	10950)	540343.7996	571929.4347	
PT (	10012)	483+56.49	542180.8938	571060.7242	PT (	10603)	39+05.06	541892.8337	570779.2584	PT (	10903)	86+77.30	541419.6933	570243.4772
Radius:	2103.0000				Radius:	1500.0000				Radius:	2000.0000			
Delta:	30° 46' 45.0000" Right				Delta:	26° 40' 07.6919" Right				Delta:	11° 52' 06.7757" Left			
Degree of Curvature (Arc):	2° 43' 28.1220"				Degree of Curvature (Arc):	3° 49' 10.9871"				Degree of Curvature (Arc):	2° 51' 53.2403"			
Length:	1129.7270				Length:	698.1876				Length:	414.2905			
Tangent:	578.8514				Tangent:	355.5361				Tangent:	207.8891			
Chord:	1116.1918				Chord:	691.9020				Chord:	413.5502			
Middle Ordinate:	75.4059				Middle Ordinate:	40.4391				Middle Ordinate:	10.7177			
External:	78.2102				External:	41.5596				External:	10.7754			
Tangent Direction:	N 25° 44' 50.0000" E				Tangent Direction:	N 18° 49' 08.4062" E				Tangent Direction:	S 44° 24' 45.1021" W			
Radial Direction:	S 64° 15' 10.0000" E				Radial Direction:	S 71° 10' 51.5938" E				Radial Direction:	N 45° 35' 14.8979" W			
Chord Direction:	N 41° 08' 12.5000" E				Chord Direction:	N 32° 09' 12.2522" E				Chord Direction:	S 38° 28' 41.7143" W			
Radial Direction:	S 33° 28' 25.0000" E				Radial Direction:	S 44° 30' 43.9019" E				Radial Direction:	N 57° 27' 21.6736" W			
Tangent Direction:	N 56° 31' 35.0000" E				Tangent Direction:	N 45° 29' 16.0981" E				Tangent Direction:	S 32° 32' 38.3264" W			

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ADDENDUMS / REVISIONS	



**US 301  
LEVELS ROAD  
TO SUMMIT BRIDGE ROAD**

CONTRACT	BRIDGE NO.	<b>HORIZONTAL AND VERTICAL CONTROL</b>
T200911303	DESIGNED BY: SS JW	
COUNTY	CHECKED BY: AM SF	
NEW CASTLE		

HV-12
SHEET NO.
67
TOTAL SHTS.
1256