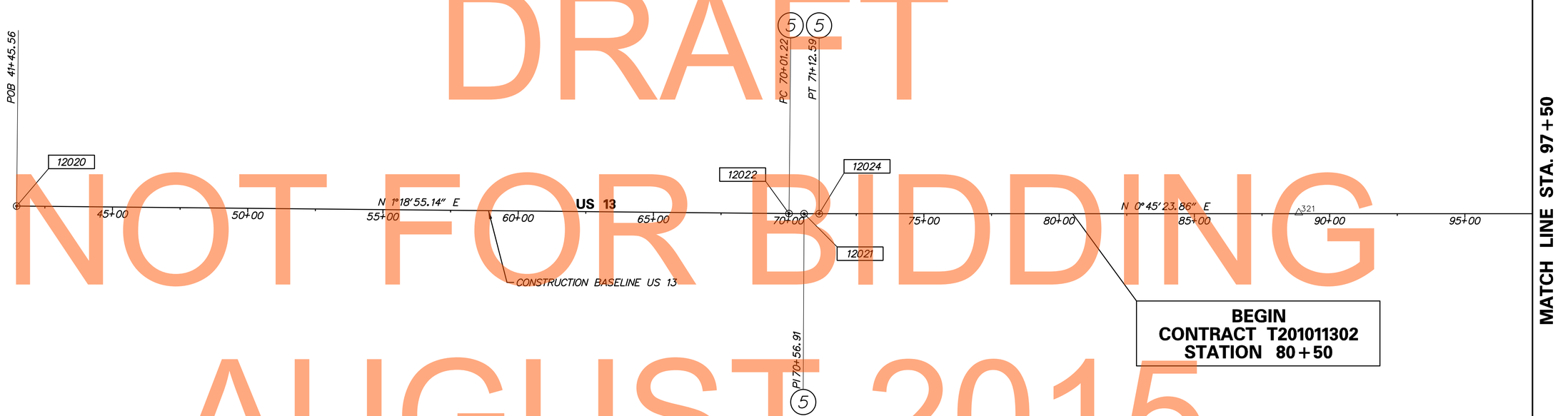
CONSTRUCTION ALIGNMENT CONTROL

POINT	STATION	OFFSET	NORTHING	EASTING
12020	41+45.56	0.00'	546426.5076	590490.4833
12050	45+00.00	0.00'	546780.8543	590498.6193
12051	50+00.00	0.00'	547280.7225	590510.0966
12052	55+00.00	0.00'	547780.5908	590521.5739
12053	60+00.00	0.00'	548280.4590	590533.0513
12054	65+00.00	0.00'	548780.3273	590544.5286
12055	75+00.00	0.00'	549780.1428	590563.1633
12056	80+00.00	0.00'	550280.0992	590569.7660
12057	85+00.00	0.00'	550780.0556	590576.3686
12058	90+00.00	0.00'	551280.0120	590582.9712
12059	95+00.00	0.00'	551779.9684	590589.5739

CIRCULAR CURVE NO. 5 – US 13

	STATION	NORTHING	EASTING
PC (12022)	70+01.22	549281.4198	590556.0340
PI (12021)	70+56.91	549337.0893	590557.3122
CC (12023)		549543.5880	579137.8833
PT (12024)	71+12.59	549392.7686	590558.0475

Radius:	11421.1600
Design Speed(mph):	65.0000
Superelevation:	N/A
Delta:	0° 33' 31.2819" Left
Degree of Curvature(Arc):	0° 30' 05.9882"
Length:	111.3674
Tangent:	55.6841
Chord:	111.3669
Middle Ordinate:	0.1357
External:	0.1357
Tangent Direction:	N 1° 18' 55.1430" E
Radial Direction:	S 88° 41' 04.8570" E
Chord Direction:	N 1° 02' 09.5021" E
Radial Direction:	S 89° 14' 36.1389" E
Tangent Direction:	N 0° 45' 23.8611" E



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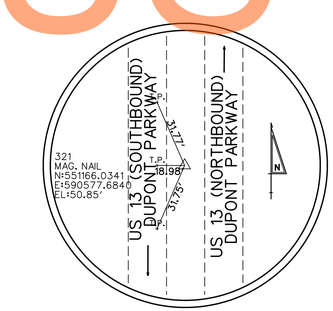
AUGUST 2015



TRAVERSE POINT #321
MAG. NAIL

HORIZONTAL / VERTICAL CONTROL DATA

POINT	STATION	OFFSET	NORTHING	EASTING	ELEVATION
321	88+85.96	3.78' LT	551166.0341	590577.6840	50.85

DATUM REFERENCE:
HORIZONTAL - THIS PROJECT IS REFERENCED TO THE DELAWARE STATE PLANE COORDINATE SYSTEM (NAD 83/91).
VERTICAL - THIS PROJECT IS REFERENCED TO NAVD 88, BASED ON STATE OF DELAWARE BENCHMARK JU2197 - ELEV. 27.71 FEET.

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DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

SCALE 0 200 400 600 FEET

US 13 & PORT PENN RD INTERSECTION

CONTRACT	BRIDGE NO.
T201011302	DESIGNED BY: KAH
COUNTY	
NEW CASTLE	CHECKED BY: BRT

HORIZONTAL AND VERTICAL CONTROL

HV-01

SHEET NO. 21

TOTAL SHTS. 179

CONSTRUCTION ALIGNMENT CONTROL

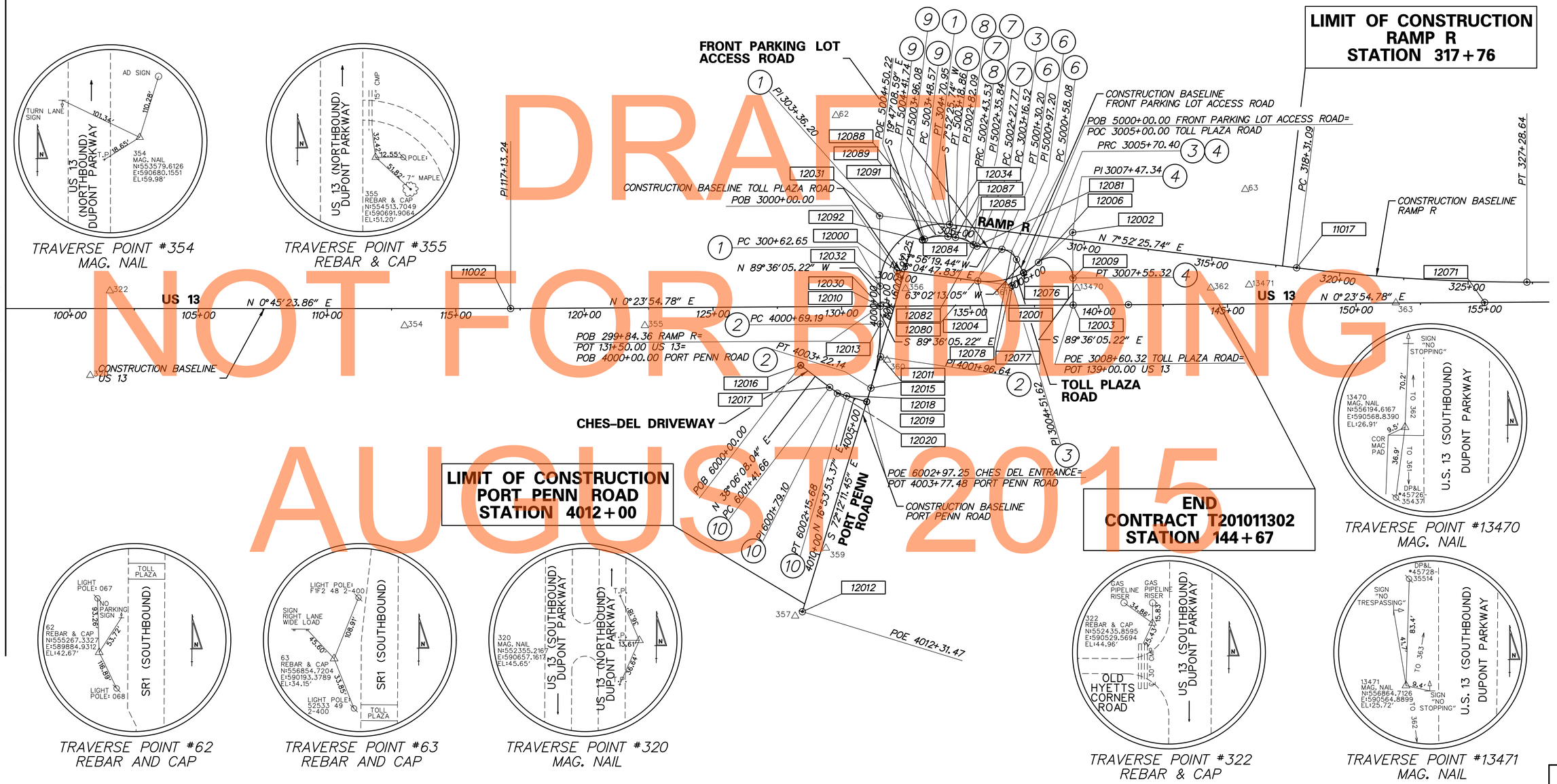
POINT	STATION	OFFSET	NORTHING	EASTING
11002	117+13.24	0.00′	553993.0180	590618.8003
11017	318+31.09	0.00′	557050.4700	590500.7698
12000	3000+00.00	0.00′	555496.9430	590490.8712
12003	3008+60.32	0.00′	556179.7225	590634.0113
12010	4000+00.00	0.00′	555429.7407	590628.7944
12012	4012+31.47	0.00′	555111.4859	591812.6086
12016	6000+00.00	0.00′	555117.6940	590854.3797
12019	6002+97.25	0.00′	555372.5007	590999.4877
12030	299+84.36	0.00′	555429.7407	590628.7944
12060	100+00.00	0.00′	552279.9248	590596.1765
12061	105+00.00	0.00′	552779.8812	590602.7791
12062	110+00.00	0.00′	553279.8376	590609.3818
12063	115+00.00	0.00′	553779.7940	590615.9844

CONSTRUCTION ALIGNMENT CONTROL

POINT	STATION	OFFSET	NORTHING	EASTING
12064	120+00.00	0.00′	554279.7685	590620.7950
12065	125+00.00	0.00′	554779.7564	590624.2730
12066	130+00.00	0.00′	555279.7443	590627.7510
12067	135+00.00	0.00′	555779.7322	590631.2289
12068	140+00.00	0.00′	556279.7201	590634.7069
12069	145+00.00	0.00′	556779.7080	590638.1849
12070	150+00.00	0.00′	557279.6959	590641.6629
12071	155+00.00	0.00′	557779.6838	590645.1409
12076	5000+00.00	0.00′	555988.5073	590505.7268
12092	5004+50.22	0.00′	555596.9683	590373.4440

HORIZONTAL / VERTICAL CONTROL DATA

POINT	STATION	OFFSET	NORTHING	EASTING	ELEVATION
62	129+82.42	-742.72′	555267.3327	589884.9312	42.67′
63	145+71.92	-445.32′	556854.7204	590193.3789	34.15′
320	100+78.73	259.97′	552355.2167	590657.1617	45.65′
322	101+55.04	-68.66′	552435.8595	590529.5694	44.96′
354	113+00.68	66.81′	553579.6126	590680.1551	59.98′
355	122+34.43	69.48′	554513.7049	590691.9064	51.20′
356	132+48.96	-67.56′	555529.1717	590561.9288	33.36′
357	128+11.82	1202.62′	555083.2007	591829.0338	47.31′
359	4009+67.91	-14.62′	555206.2078	591566.1988	45.20′
360	4002+03.79	-36.83′	555453.7811	590838.0980	33.28′
361	136+39.60	-77.04′	555919.8710	590555.1580	29.48′
362	144+35.70	-63.23′	556715.8453	590574.5225	26.21′
363	151+54.64	-1.04′	557434.3376	590641.7036	20.43′
13470	139+14.44	-65.27′	556194.6167	590568.8390	26.91′
13471	145+84.49	-73.89′	556864.7126	590564.8899	25.72′



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AUGUST 2015

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DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

SCALE 0 200 400 600 FEET

US 13 & PORT PENN RD INTERSECTION

CONTRACT	BRIDGE NO.
T201011302	DESIGNED BY: KAH
COUNTY	
NEW CASTLE	CHECKED BY: BRT

HORIZONTAL AND VERTICAL CONTROL

HV-02

SHEET NO. 22

TOTAL SHTS. 179

CIRCULAR CURVE NO. ① – RAMP R

	STATION	NORTHING	EASTING
PC (12032)	300+62.65	555430.2852	590550.5101
PI (12031)	303+36.20	555432.1880	590276.9683
CC (12033)		555670.2794	590552.1795
PT (12034)	304+70.95	555703.1575	590314.4422

Radius:	240.0000
Design Speed(mph):	30.0000
Superelevation:	5.9000%
Delta:	97° 28′ 30.9613″ Right
Degree of Curvature(Arc):	23° 52′ 23.6693″
Length:	408.3034
Tangent:	273.5484
Chord:	360.8148
Middle Ordinate:	81.7181
External:	123.9076
Tangent Direction:	N 89° 36′ 05.2175″ W
Radial Direction:	N 0° 23′ 54.7825″ E
Chord Direction:	N 40° 51′ 49.7368″ W
Radial Direction:	S 82° 07′ 34.2561″ E
Tangent Direction:	N 7° 52′ 25.7438″ E

CIRCULAR CURVE NO. ② – PORT PENN ROAD

	STATION	NORTHING	EASTING
PC (12013)	4000+69.19	555429.2594	590697.9823
PI (12011)	4001+96.64	555428.3728	590825.4333
CC (12014)		554596.2795	590692.1880
PT (12015)	4003+22.14	555389.4175	590946.7882

Radius:	833.0000
Design Speed(mph):	60.0000
Superelevation:	2.0000%
Delta:	17° 23′ 53.7659″ Right
Degree of Curvature(Arc):	6° 52′ 41.6814″
Length:	252.9463
Tangent:	127.4540
Chord:	251.9756
Middle Ordinate:	9.5827
External:	9.6942
Tangent Direction:	S 89° 36′ 05.2174″ E
Radial Direction:	S 0° 23′ 54.7826″ W
Chord Direction:	S 80° 54′ 08.3345″ E
Radial Direction:	S 17° 47′ 48.5483″ W
Tangent Direction:	S 72° 12′ 11.4515″ E

CIRCULAR CURVE NO. ③ – TOLL PLAZA

	STATION	NORTHING	EASTING
PC (12004)	3003+16.52	555810.3162	590535.3590
PI (12001)	3004+51.62	555944.0760	590554.3481
CC (12005)		555852.4826	590238.3371
PRC (12006)	3005+70.40	556046.9489	590466.7728

Radius:	300.0000
Design Speed(mph):	20.0000
Superelevation:	N/A
Delta:	48° 29′ 15.2182″ Left
Degree of Curvature(Arc):	19° 05′ 54.9353″
Length:	253.8803
Tangent:	135.1010
Chord:	246.3719
Middle Ordinate:	26.4580
External:	29.0171
Tangent Direction:	N 8° 04′ 47.8328″ E
Radial Direction:	S 81° 55′ 12.1671″ E
Chord Direction:	N 16° 09′ 49.7764″ W
Radial Direction:	N 49° 35′ 32.6144″ E
Tangent Direction:	N 40° 24′ 27.3854″ W

CIRCULAR CURVE NO. ④ – TOLL PLAZA

	STATION	NORTHING	EASTING
PRC (12006)	3005+70.40	556046.9489	590466.7728
PI (12002)	3007+47.34	556181.6837	590352.0736
CC (12008)		556099.4549	590528.4504
PT (12009)	3007+55.32	556180.4529	590529.0138

Radius:	81.0000
Design Speed(mph):	20.0000
Superelevation:	N/A
Delta:	130° 48′ 22.1812″ Right
Degree of Curvature(Arc):	70° 44′ 07.9089″
Length:	184.9229
Tangent:	176.9445
Chord:	147.2999
Middle Ordinate:	47.2852
External:	113.6031
Tangent Direction:	N 40° 24′ 27.3986″ W
Radial Direction:	N 49° 35′ 32.6014″ E
Chord Direction:	N 24° 59′ 43.6919″ E
Radial Direction:	S 0° 23′ 54.7826″ W
Tangent Direction:	S 89° 36′ 05.2174″ E

CIRCULAR CURVE NO. ⑥ – FRONT PARKING LOT ACCESS ROAD

	STATION	NORTHING	EASTING
PC (12077)	5000+58.08	555962.1728	590453.9599
PI (12078)	5000+97.20	555944.4332	590419.0885
CC (12079)		555895.3254	590487.9661
PT (12080)	5001+30.20	555905.6839	590413.6848

Radius:	75.0000
Design Speed(mph):	20.0000
Superelevation:	N/A
Delta:	55° 05′ 53.6105″ Left
Degree of Curvature(Arc):	76° 23′ 39.7417″
Length:	72.1234
Tangent:	39.1243
Chord:	69.3763
Middle Ordinate:	8.5039
External:	9.5914
Tangent Direction:	S 63° 02′ 13.0474″ W
Radial Direction:	N 26° 57′ 46.9526″ W
Chord Direction:	S 35° 29′ 16.2421″ W
Radial Direction:	N 82° 03′ 40.5632″ W
Tangent Direction:	S 7° 56′ 19.4368″ W

CIRCULAR CURVE NO. ⑦ – FRONT PARKING LOT ACCESS ROAD

	STATION	NORTHING	EASTING
PC (12081)	5002+27.77	555809.0567	590400.2101
PI (12082)	5002+35.84	555801.0630	590399.0954
CC (12083)		555813.2002	590370.4976
PRC (12084)	5002+43.53	555794.7076	590394.1202

Radius:	30.0000
Design Speed(mph):	20.0000
Superelevation:	N/A
Delta:	30° 06′ 58.7806″ Right
Degree of Curvature(Arc):	190° 59′ 09.3542″
Length:	15.7689
Tangent:	8.0711
Chord:	15.5880
Middle Ordinate:	1.0301
External:	1.0668
Tangent Direction:	S 7° 56′ 19.4368″ W
Radial Direction:	N 82° 03′ 40.5632″ W
Chord Direction:	S 22° 59′ 48.8272″ W
Radial Direction:	N 51° 56′ 41.7825″ W
Tangent Direction:	S 38° 03′ 18.2175″ W

CIRCULAR CURVE NO. ⑧ – FRONT PARKING LOT ACCESS ROAD

	STATION	NORTHING	EASTING
PC (12084)	5002+43.53	555794.7076	590394.1202
PI (12085)	5002+82.09	555764.3453	590370.3516
CC (12086)		555706.5598	590506.7211
PT (12087)	5003+18.86	555726.1496	590365.0693

Radius:	143.0000
Design Speed(mph):	20.0000
Superelevation:	N/A
Delta:	30° 10′ 52.4736″ Left
Degree of Curvature(Arc):	40° 04′ 01.1233″
Length:	75.3270
Tangent:	38.5593
Chord:	74.4591
Middle Ordinate:	4.9313
External:	5.1074
Tangent Direction:	S 38° 03′ 18.2175″ W
Radial Direction:	N 51° 56′ 41.7825″ W
Chord Direction:	S 22° 57′ 51.9807″ W
Radial Direction:	N 82° 07′ 34.2561″ W
Tangent Direction:	S 7° 52′ 25.7439″ W

CIRCULAR CURVE NO. ⑨ – FRONT PARKING LOT ACCESS ROAD

	STATION	NORTHING	EASTING
PC (12088)	5003+48.57	555696.7188	590360.9991
PI (12089)	5003+96.08	555649.6551	590354.4904
CC (12090)		555670.2794	590552.1795
PT (12091)	5004+41.74	555604.9483	590370.5733

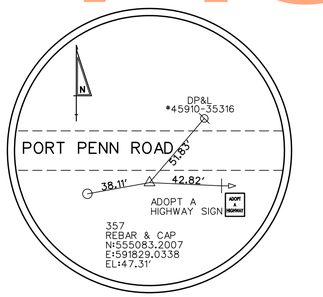
Radius:	193.0000
Design Speed(mph):	20.0000
Superelevation:	N/A
Delta:	27° 39′ 34.3276″ Left
Degree of Curvature(Arc):	29° 41′ 12.9566″
Length:	93.1707
Tangent:	47.5117
Chord:	92.2687
Middle Ordinate:	5.5950
External:	5.7621
Tangent Direction:	S 7° 52′ 25.7426″ W
Radial Direction:	N 82° 07′ 34.2574″ W
Chord Direction:	S 5° 57′ 21.4212″ E
Radial Direction:	N 70° 12′ 51.4150″ W
Tangent Direction:	S 19° 47′ 08.5850″ E

CIRCULAR CURVE NO. ⑩ – CHES-DEL DRIVEWAY

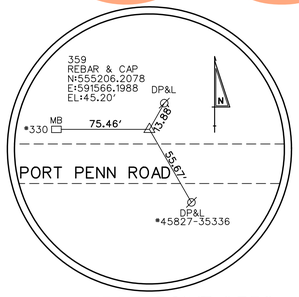
	STATION	NORTHING	EASTING
PC (12017)	6001+41.66	555229.1679	590941.7935
PI (12020)	6001+79.10	555258.6270	590964.8942
CC (12021)		555352.5812	590784.4113
PT (12018)	6002+15.68	555294.4469	590975.7759

Radius:	200.0000
Design Speed(mph):	25.0000
Superelevation:	N/A
Delta:	21° 12′ 14.6701″ Left
Degree of Curvature(Arc):	28° 38′ 52.4031″
Length:	74.0162
Tangent:	37.4363
Chord:	73.5945
Middle Ordinate:	3.4142
External:	3.4735
Tangent Direction:	N 38° 06′ 08.0425″ E
Radial Direction:	S 51° 53′ 51.9575″ E
Chord Direction:	N 27° 30′ 00.7075″ E
Radial Direction:	S 73° 06′ 06.6276″ E
Tangent Direction:	N 16° 53′ 53.3724″ E

TRAVERSE POINT #356
REBAR & CAP



TRAVERSE POINT #357
REBAR & CAP



TRAVERSE POINT #359
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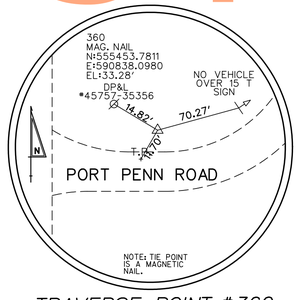
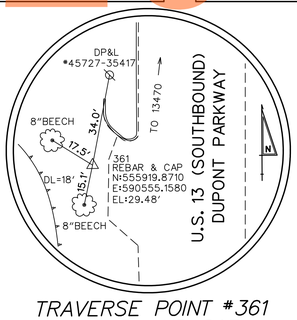
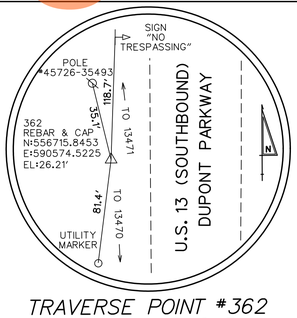


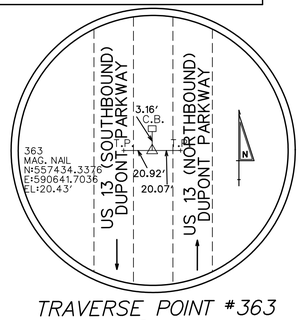
TRAVERSE POINT #360
MAG. NAIL



TRAVERSE POINT #361
REBAR AND CAP



TRAVERSE POINT #362
REBAR AND CAP



TRAVERSE POINT #363
MAG. NAIL

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AUGUST 2015

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DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

NOT TO SCALE

US 13 & PORT PENN RD INTERSECTION

CONTRACT	BRIDGE NO.
T201011302	DESIGNED BY: KAH
COUNTY	
NEW CASTLE	CHECKED BY: BRT

HORIZONTAL AND VERTICAL CONTROL

HV-03

SHEET NO.
23
TOTAL SHTS.
179