Appendix A: Traffic Count Data

Unit Number:

DLZ
8169 West Bryn Mawr Ave

Chicago, Illinois, United States 60631
(773) 283-2600

Count Name: High St & Village Green Dr South TMC
Site Code:
Start Date: 05/20/2015

Turning Movement Data

Start Time	Southbound Approach Southbound						Westbound Approach Westbound						Northbound Approach Northbound						Eastbound Approach Eastbound						
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Int. Total
7:00 AM	3	106	0	0	0	109	0	0	0	0	0	0	0	93	0	0	0	93	0	0	0	0	1	0	202
7:15 AM	0	111	0	0	0	111	0	0	0	0	0	0	0	160	0	0	0	160	0	0	0	0	3	0	271
7:30 AM	1	116	0	0	0	117	0	0	0	0	0	0	0	167	0	1	0	168	0	0	0	0	3	0	285
7:45 AM	0	122	0	0	0	122	0	0	0	0	0	0	0	212	0	1	0	213	0	0	0	0	2	0	335
Hourly Total	4	455	0	0	0	459	0	0	0	0	0	0	0	632	0	2	0	634	0	0	0	0	9	0	1093
8:00 AM	0	149	1	0	0	150	0	0	0	0	0	0	0	153	0	0	0	153	0	0	0	0	0	0	303
8:15 AM	0	155	0	0	0	155	0	0	0	0	0	0	0	156	0	0	4	156	0	0	0	0	2	0	311
8:30 AM	1	135	2	0	0	138	0	0	0	0	0	0	0	166	0	1	2	167	0	0	0	0	6	0	305
8:45 AM	0	151	1	0	0	152	0	0	0	0	0	0	0	162	0	0	0	162	0	0	0	0	11	0	314
Hourly Total	1	590	4	0	0	595	0	0	0	0	0	0	0	637	0	1	6	638	0	0	0	0	19	0	1233
9:00 AM	0	108	5	0	0	113	0	0	0	0	0	0	0	129	0	0	1	129	0	0	0	0	3	0	242
9:15 AM	2	119	3	0	0	124	0	0	0	0	0	0	2	139	0	1	1	142	0	0	0	0	1	0	266
9:30 AM	1	96	5	0	0	102	0	0	0	0	0	0	1	146	1	0	0	148	0	0	0	0	2	0	250
9:45 AM	3	139	8	0	0	150	0	0	0	0	0	0	4	136	0	0	3	140	0	0	0	0	0	0	290
Hourly Total	6	462	21	0	0	489	0	0	0	0	0	0	7	550	1	1	5	559	0	0	0	0	6	0	1048
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	3	127	1	0	0	131	0	0	0	0	0	0	3	131	0	0	0	134	0	0	0	0	5	0	265
11:15 AM	1	168	0	0	0	169	0	0	0	0	0	0	2	143	1	0	0	146	0	0	0	0	0	0	315
11:30 AM	2	205	1	0	0	208	0	0	0	0	0	0	1	156	0	0	2	157	0	0	0	0	0	0	365
11:45 AM	4	199	3	0	0	206	0	0	0	0	0	0	0	145	0	0	4	145	0	0	0	0	4	0	351
Hourly Total	10	699	5	0	0	714	0	0	0	0	0	0	6	575	1	0	6	582	0	0	0	0	9	0	1296
12:00 PM	4	185	1	0	0	190	1	0	0	0	0	1	0	167	0	0	1	167	0	0	0	0	8	0	358
12:15 PM	1	175	1	0	0	177	0	0	0	0	0	0	0	163	1	0	3	164	0	0	0	0	3	0	341
12:30 PM	0	181	0	0	0	181	1	0	0	0	0	1	1	193	1	0	4	195	0	0	0	0	4	0	377
12:45 PM	1	210	1	0	0	212	0	0	0	0	0	0	0	171	0	0	3	171	0	0	0	0	0	0	383
Hourly Total	6	751	3	0	0	760	2	0	0	0	0	2	1	694	2	0	11	697	0	0	0	0	15	0	1459
1:00 PM	1	186	3	0	0	190	0	0	0	0	0	0	1	182	1	0	6	184	0	0	0	0	6	0	374
1:15 PM	0	154	0	0	0	154	0	0	0	0	0	0	1	168	0	0	1	169	0	0	0	0	2	0	323
1:30 PM	4	159	0	0	0	163	1	0	0	0	0	1	1	180	1	0	0	182	0	0	0	0	4	0	346
1:45 PM	2	154	1	0	0	157	0	0	0	0	0	0	0	177	0	0	1	177	0	0	0	0	7	0	334
Hourly Total	7	653	4	0	0	664	1	0	0	0	0	1	3	707	2	0	8	712	0	0	0	0	19	0	1377
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	0	149	1	0	0	150	0	0	0	0	0	0	0	173	0	0	0	173	0	0	0	0	2	0	323
3:15 PM	1	156	0	0	0	157	0	0	0	0	0	0	2	169	0	0	4	171	0	0	0	0	10	0	328
3:30 PM	1	154	2	0	0	157	0	0	0	0	0	0	1	176	1	1	6	179	0	0	0	0	7	0	336
3:45 PM	2	162	2	1	0	167	0	0	0	0	0	0	1	187	0	0	2	188	0	0	0	0	5	0	355
Hourly Total	4	621	5	1	0	631	0	0	0	0	0	0	4	705	1	1	12	711	0	0	0	0	24	0	1342
4:00 PM	0	153	4	0	0	157	0	0	0	0	0	0	3	182	0	0	6	185	0	0	0	0	3	0	342
4:15 PM	3	141	2	0	0	146	0	0	0	0	0	0	2	153	0	0	1	155	0	0	0	0	4	0	301
4:30 PM	0	152	0	0	0	152	0	0	0	0	0	0	0	191	0	0	1	191	0	0	0	0	4	0	343

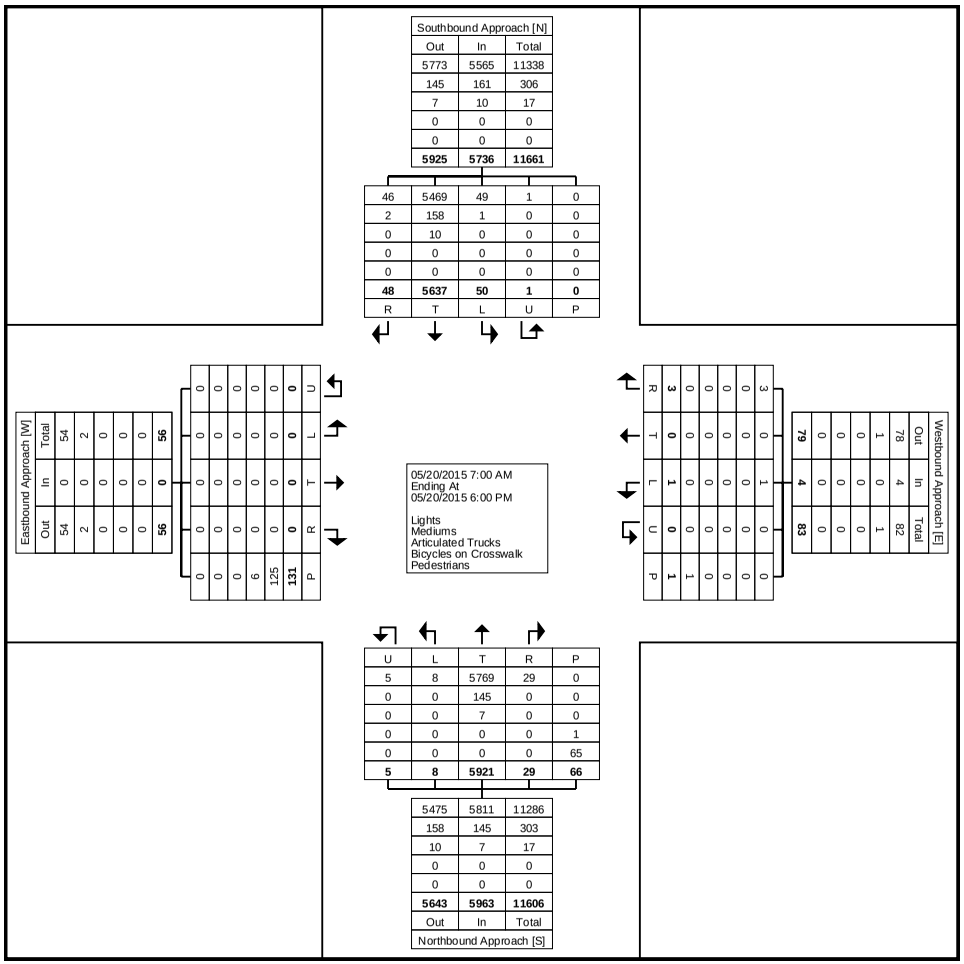
4:45 PM	0	202	1	0	0	203	0	0	0	0	1	0	0	160	1	0	3	161	0	0	0	0	6	0	364
Hourly Total	3	648	7	0	0	658	0	0	0	0	1	0	5	686	1	0	11	692	0	0	0	0	17	0	1350
5:00 PM	1	178	0	0	0	179	0	0	0	0	0	0	1	185	0	0	1	186	0	0	0	0	6	0	365
5:15 PM	2	183	0	0	0	185	0	0	1	0	0	1	1	185	0	0	1	186	0	0	0	0	1	0	372
5:30 PM	0	197	1	0	0	198	0	0	0	0	0	0	1	175	0	0	5	176	0	0	0	0	1	0	374
5:45 PM	4	200	0	0	0	204	0	0	0	0	0	0	0	190	0	0	0	190	0	0	0	0	5	0	394
Hourly Total	7	758	1	0	0	766	0	0	1	0	0	1	3	735	0	0	7	738	0	0	0	0	13	0	1505
Grand Total	48	5637	50	1	0	5736	3	0	1	0	1	4	29	5921	8	5	66	5963	0	0	0	0	131	0	11703
Approach %	0.8	98.3	0.9	0.0	-	-	75.0	0.0	25.0	0.0	-	-	0.5	99.3	0.1	0.1	-	-	NaN	NaN	NaN	NaN	-	-	-
Total %	0.4	48.2	0.4	0.0	-	49.0	0.0	0.0	0.0	0.0	-	0.0	0.2	50.6	0.1	0.0	-	51.0	0.0	0.0	0.0	0.0	-	0.0	-
Lights	46	5469	49	1	-	5565	3	0	1	0	-	4	29	5769	8	5	-	5811	0	0	0	0	-	0	11380
% Lights	95.8	97.0	98.0	100.0	-	97.0	100.0	-	100.0	-	-	100.0	100.0	97.4	100.0	100.0	-	97.5	-	-	-	-	-	-	97.2
Mediums	2	158	1	0	-	161	0	0	0	0	-	0	0	145	0	0	-	145	0	0	0	0	-	0	306
% Mediums	4.2	2.8	2.0	0.0	-	2.8	0.0	-	0.0	-	-	0.0	0.0	2.4	0.0	0.0	-	2.4	-	-	-	-	-	-	2.6
Articulated Trucks	0	10	0	0	-	10	0	0	0	0	-	0	0	7	0	0	-	7	0	0	0	0	-	0	17
% Articulated Trucks	0.0	0.2	0.0	0.0	-	0.2	0.0	-	0.0	-	-	0.0	0.0	0.1	0.0	0.0	-	0.1	-	-	-	-	-	-	0.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	6	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	1.5	-	-	-	-	-	4.6	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	65	-	-	-	-	-	125	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	98.5	-	-	-	-	-	95.4	-	-

Unit Number:

DLZ
8169 West Bryn Mawr Ave

Chicago, Illinois, United States 60631
(773) 283-2600

Count Name: High St & Village Green Dr South
TMC
Site Code:
Start Date: 05/20/2015



Turning Movement Data Plot

Unit Number:

DLZ
8169 West Bryn Mawr Ave

Chicago, Illinois, United States 60631
(773) 283-2600

Count Name: High St & Village Green Dr South
TMC
Site Code:
Start Date: 05/20/2015

Turning Movement Peak Hour Data (7:45 AM)

Start Time	Southbound Approach Southbound						Westbound Approach Westbound						Northbound Approach Northbound						Eastbound Approach Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
7:45 AM	0	122	0	0	0	122	0	0	0	0	0	0	0	212	0	1	0	213	0	0	0	0	2	0	335
8:00 AM	0	149	1	0	0	150	0	0	0	0	0	0	0	153	0	0	0	153	0	0	0	0	0	0	303
8:15 AM	0	155	0	0	0	155	0	0	0	0	0	0	0	156	0	0	4	156	0	0	0	0	2	0	311
8:30 AM	1	135	2	0	0	138	0	0	0	0	0	0	0	166	0	1	2	167	0	0	0	0	6	0	305
Total	1	561	3	0	0	565	0	0	0	0	0	0	0	687	0	2	6	689	0	0	0	0	10	0	1254
Approach %	0.2	99.3	0.5	0.0	-	-	NaN	NaN	NaN	NaN	-	-	0.0	99.7	0.0	0.3	-	-	NaN	NaN	NaN	NaN	-	-	-
Total %	0.1	44.7	0.2	0.0	-	45.1	0.0	0.0	0.0	0.0	-	0.0	0.0	54.8	0.0	0.2	-	54.9	0.0	0.0	0.0	0.0	-	0.0	-
PHF	0.250	0.905	0.375	0.000	-	0.911	0.000	0.000	0.000	0.000	-	0.000	0.000	0.810	0.000	0.500	-	0.809	0.000	0.000	0.000	0.000	-	0.000	0.936
Lights	1	534	3	0	-	538	0	0	0	0	-	0	0	652	0	2	-	654	0	0	0	0	-	0	1192
% Lights	100.0	95.2	100.0	-	-	95.2	-	-	-	-	-	-	-	94.9	-	100.0	-	94.9	-	-	-	-	-	-	95.1
Mediums	0	26	0	0	-	26	0	0	0	0	-	0	0	35	0	0	-	35	0	0	0	0	-	0	61
% Mediums	0.0	4.6	0.0	-	-	4.6	-	-	-	-	-	-	-	5.1	-	0.0	-	5.1	-	-	-	-	-	-	4.9
Articulated Trucks	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1
% Articulated Trucks	0.0	0.2	0.0	-	-	0.2	-	-	-	-	-	-	-	0.0	-	0.0	-	0.0	-	-	-	-	-	-	0.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	10.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	6	-	-	-	-	-	9	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	90.0	-	-

Unit Number:

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Count Name: High St & Village Green Dr South
TMC
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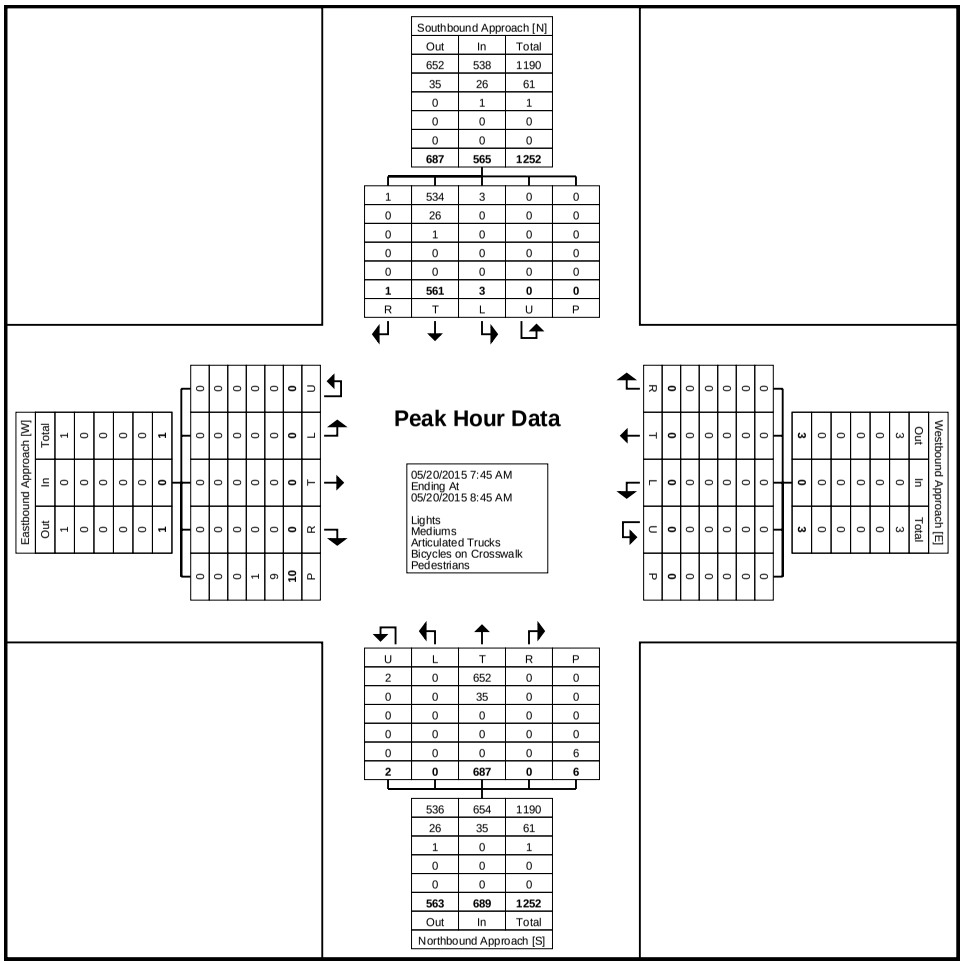
Start Date: 05/20/2015
Page No: 5



Turning Movement Peak Hour Data Plot (7:45 AM)

Unit Number:

DLZ
8169 West Bryn Mawr Ave

Chicago, Illinois, United States 60631
(773) 283-2600

Count Name: High St & Village Green Dr South TMC
Site Code:
Start Date: 05/20/2015

Turning Movement Peak Hour Data (11:00 AM)

Start Time	Southbound Approach Southbound						Westbound Approach Westbound						Northbound Approach Northbound						Eastbound Approach Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
11:00 AM	3	127	1	0	0	131	0	0	0	0	0	0	3	131	0	0	0	134	0	0	0	0	5	0	265
11:15 AM	1	168	0	0	0	169	0	0	0	0	0	0	2	143	1	0	0	146	0	0	0	0	0	0	315
11:30 AM	2	205	1	0	0	208	0	0	0	0	0	0	1	156	0	0	2	157	0	0	0	0	0	0	365
11:45 AM	4	199	3	0	0	206	0	0	0	0	0	0	0	145	0	0	4	145	0	0	0	0	4	0	351
Total	10	699	5	0	0	714	0	0	0	0	0	0	6	575	1	0	6	582	0	0	0	0	9	0	1296
Approach %	1.4	97.9	0.7	0.0	-	-	NaN	NaN	NaN	NaN	-	-	1.0	98.8	0.2	0.0	-	-	NaN	NaN	NaN	NaN	-	-	-
Total %	0.8	53.9	0.4	0.0	-	55.1	0.0	0.0	0.0	0.0	-	0.0	0.5	44.4	0.1	0.0	-	44.9	0.0	0.0	0.0	0.0	-	0.0	-
PHF	0.625	0.852	0.417	0.000	-	0.858	0.000	0.000	0.000	0.000	-	0.000	0.500	0.921	0.250	0.000	-	0.927	0.000	0.000	0.000	0.000	-	0.000	0.888
Lights	9	679	5	0	-	693	0	0	0	0	-	0	6	558	1	0	-	565	0	0	0	0	-	0	1258
% Lights	90.0	97.1	100.0	-	-	97.1	-	-	-	-	-	-	100.0	97.0	100.0	-	-	97.1	-	-	-	-	-	-	97.1
Mediums	1	16	0	0	-	17	0	0	0	0	-	0	0	17	0	0	-	17	0	0	0	0	-	0	34
% Mediums	10.0	2.3	0.0	-	-	2.4	-	-	-	-	-	-	0.0	3.0	0.0	-	-	2.9	-	-	-	-	-	-	2.6
Articulated Trucks	0	4	0	0	-	4	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	4
% Articulated Trucks	0.0	0.6	0.0	-	-	0.6	-	-	-	-	-	-	0.0	0.0	0.0	-	-	0.0	-	-	-	-	-	-	0.3
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	11.1	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	6	-	-	-	-	-	8	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	88.9	-	-

Unit Number:

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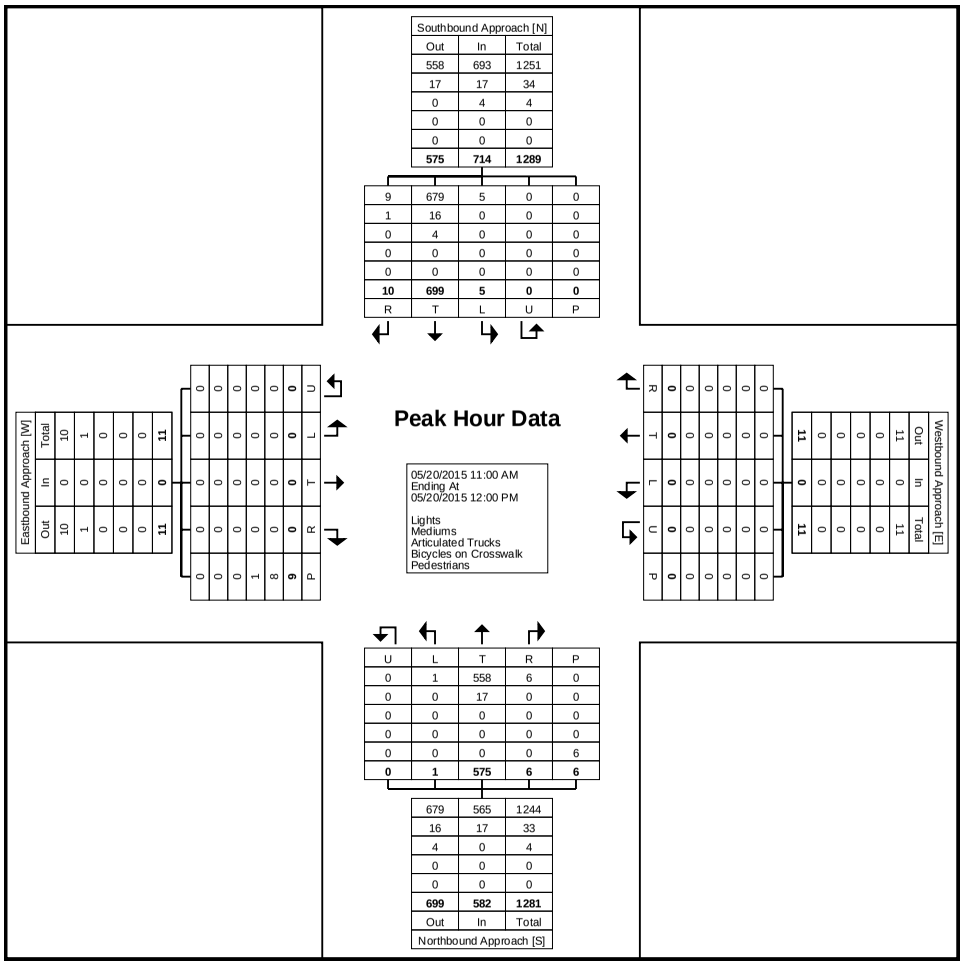
Start Date: 05/20/2015



Turning Movement Peak Hour Data Plot (11:00 AM)

Unit Number:

DLZ
8169 West Bryn Mawr Ave

Chicago, Illinois, United States 60631
(773) 283-2600

Count Name: High St & Village Green Dr South TMC
Site Code:
Start Date: 05/20/2015

Turning Movement Peak Hour Data (12:15 PM)

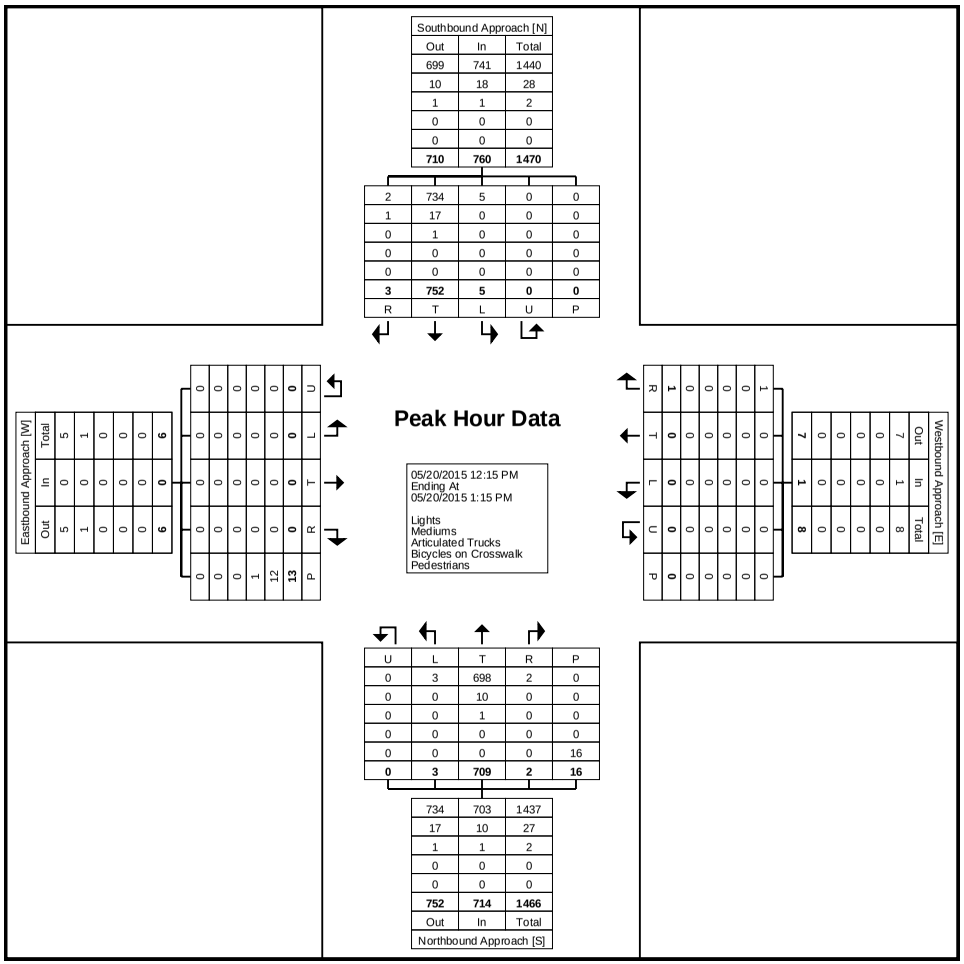
Start Time	Southbound Approach Southbound						Westbound Approach Westbound						Northbound Approach Northbound						Eastbound Approach Eastbound						
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Int. Total
12:15 PM	1	175	1	0	0	177	0	0	0	0	0	0	0	163	1	0	3	164	0	0	0	0	3	0	341
12:30 PM	0	181	0	0	0	181	1	0	0	0	0	1	1	193	1	0	4	195	0	0	0	0	4	0	377
12:45 PM	1	210	1	0	0	212	0	0	0	0	0	0	0	171	0	0	3	171	0	0	0	0	0	0	383
1:00 PM	1	186	3	0	0	190	0	0	0	0	0	0	1	182	1	0	6	184	0	0	0	0	6	0	374
Total	3	752	5	0	0	760	1	0	0	0	0	1	2	709	3	0	16	714	0	0	0	0	13	0	1475
Approach %	0.4	98.9	0.7	0.0	-	-	100.0	0.0	0.0	0.0	-	-	0.3	99.3	0.4	0.0	-	-	NaN	NaN	NaN	NaN	-	-	-
Total %	0.2	51.0	0.3	0.0	-	51.5	0.1	0.0	0.0	0.0	-	0.1	0.1	48.1	0.2	0.0	-	48.4	0.0	0.0	0.0	0.0	-	0.0	-
PHF	0.750	0.895	0.417	0.000	-	0.896	0.250	0.000	0.000	0.000	-	0.250	0.500	0.918	0.750	0.000	-	0.915	0.000	0.000	0.000	0.000	-	0.000	0.963
Lights	2	734	5	0	-	741	1	0	0	0	-	1	2	698	3	0	-	703	0	0	0	0	-	0	1445
% Lights	66.7	97.6	100.0	-	-	97.5	100.0	-	-	-	-	100.0	100.0	98.4	100.0	-	-	98.5	-	-	-	-	-	-	98.0
Mediums	1	17	0	0	-	18	0	0	0	0	-	0	0	10	0	0	-	10	0	0	0	0	-	0	28
% Mediums	33.3	2.3	0.0	-	-	2.4	0.0	-	-	-	-	0.0	0.0	1.4	0.0	-	-	1.4	-	-	-	-	-	-	1.9
Articulated Trucks	0	1	0	0	-	1	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	2
% Articulated Trucks	0.0	0.1	0.0	-	-	0.1	0.0	-	-	-	-	0.0	0.0	0.1	0.0	-	-	0.1	-	-	-	-	-	-	0.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	7.7	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	16	-	-	-	-	-	12	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	92.3	-	-

Unit Number:

DLZ
8169 West Bryn Mawr Ave

Chicago, Illinois, United States 60631
(773) 283-2600

Count Name: High St & Village Green Dr South
TMC
Site Code:
Start Date: 05/20/2015



Turning Movement Peak Hour Data Plot (12:15 PM)

Unit Number:

DLZ
8169 West Bryn Mawr Ave

Chicago, Illinois, United States 60631
(773) 283-2600

Count Name: High St & Village Green Dr South TMC
Site Code:
Start Date: 05/20/2015

Turning Movement Peak Hour Data (5:00 PM)

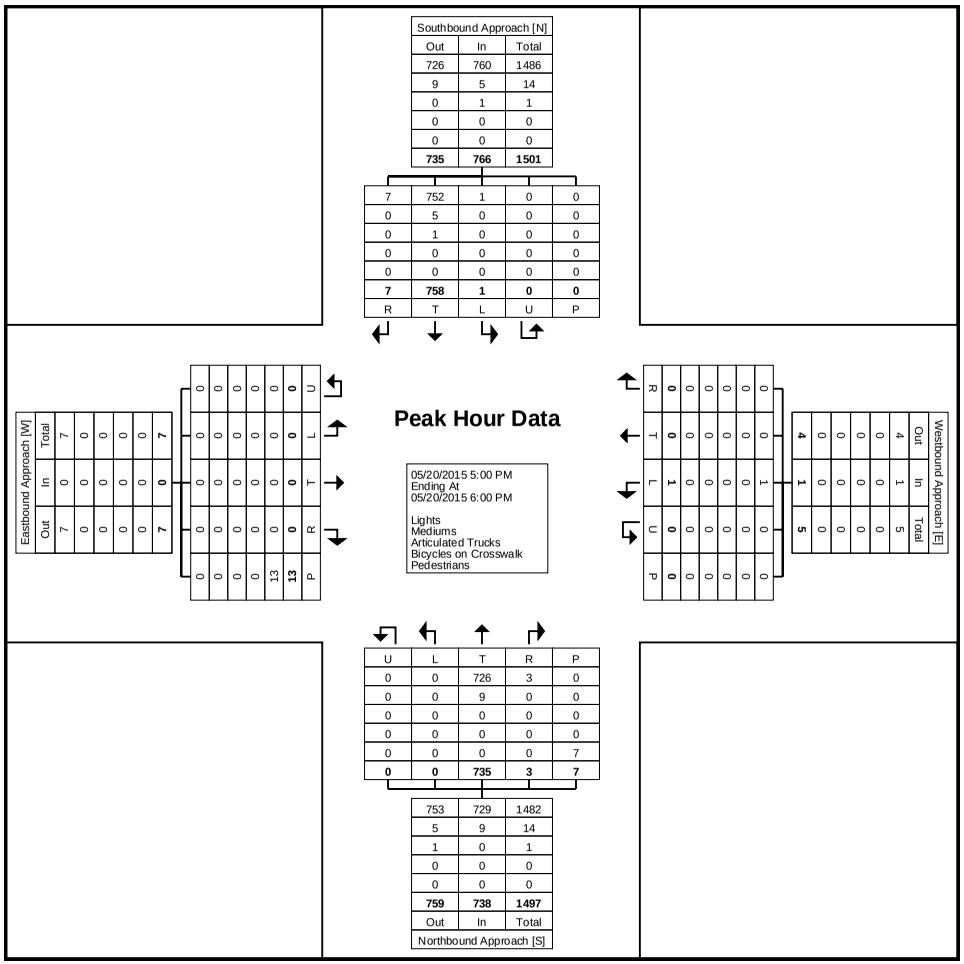
Start Time	Southbound Approach Southbound						Westbound Approach Westbound						Northbound Approach Northbound						Eastbound Approach Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
5:00 PM	1	178	0	0	0	179	0	0	0	0	0	0	1	185	0	0	1	186	0	0	0	0	6	0	365
5:15 PM	2	183	0	0	0	185	0	0	1	0	0	1	1	185	0	0	1	186	0	0	0	0	1	0	372
5:30 PM	0	197	1	0	0	198	0	0	0	0	0	0	1	175	0	0	5	176	0	0	0	0	1	0	374
5:45 PM	4	200	0	0	0	204	0	0	0	0	0	0	0	190	0	0	0	190	0	0	0	0	5	0	394
Total	7	758	1	0	0	766	0	0	1	0	0	1	3	735	0	0	7	738	0	0	0	0	13	0	1505
Approach %	0.9	99.0	0.1	0.0	-	-	0.0	0.0	100.0	0.0	-	-	0.4	99.6	0.0	0.0	-	-	NaN	NaN	NaN	NaN	-	-	-
Total %	0.5	50.4	0.1	0.0	-	50.9	0.0	0.0	0.1	0.0	-	0.1	0.2	48.8	0.0	0.0	-	49.0	0.0	0.0	0.0	0.0	-	0.0	-
PHF	0.438	0.948	0.250	0.000	-	0.939	0.000	0.000	0.250	0.000	-	0.250	0.750	0.967	0.000	0.000	-	0.971	0.000	0.000	0.000	0.000	-	0.000	0.955
Lights	7	752	1	0	-	760	0	0	1	0	-	1	3	726	0	0	-	729	0	0	0	0	-	0	1490
% Lights	100.0	99.2	100.0	-	-	99.2	-	-	100.0	-	-	100.0	100.0	98.8	-	-	-	98.8	-	-	-	-	-	-	99.0
Mediums	0	5	0	0	-	5	0	0	0	0	-	0	0	9	0	0	-	9	0	0	0	0	-	0	14
% Mediums	0.0	0.7	0.0	-	-	0.7	-	-	0.0	-	-	0.0	0.0	1.2	-	-	-	1.2	-	-	-	-	-	-	0.9
Articulated Trucks	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1
% Articulated Trucks	0.0	0.1	0.0	-	-	0.1	-	-	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	-	-	-	-	-	-	0.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	7	-	-	-	-	-	13	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Unit Number:

DLZ
8169 West Bryn Mawr Ave

Chicago, Illinois, United States 60631
(773) 283-2600

Count Name: High St & Village Green Dr South
TMC
Site Code:
Start Date: 05/20/2015



Turning Movement Peak Hour Data Plot (5:00 PM)

Unit Number:

DLZ
8169 West Bryn Mawr Ave

Chicago, Illinois, United States 60631
(773) 283-2600

Count Name: High St & Village Green Dr South
TMC
Site Code:
Start Date: 05/20/2015

Unit Number:

DLZ
8169 West Bryn Mawr Ave

Chicago, Illinois, United States 60631
(773) 283-2600

Count Name: High St & Short St TMC
Site Code:
Start Date: 05/20/2015

Turning Movement Data

Start Time	Southbound Approach Southbound					Northbound Approach Northbound					Eastbound Approach Eastbound					
	Right	Thru	U-Turn	Peds	App. Total	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Int. Total
7:00 AM	2	98	0	0	100	88	3	0	0	91	0	0	0	0	0	191
7:15 AM	4	101	0	0	105	139	4	0	0	143	0	0	0	3	0	248
7:30 AM	3	117	0	0	120	143	10	0	0	153	0	0	0	3	0	273
7:45 AM	8	133	0	0	141	207	11	0	0	218	0	0	0	1	0	359
Hourly Total	17	449	0	0	466	577	28	0	0	605	0	0	0	7	0	1071
8:00 AM	6	135	0	0	141	128	7	0	0	135	0	0	0	0	0	276
8:15 AM	12	140	0	0	152	128	9	0	0	137	0	0	0	2	0	289
8:30 AM	7	126	0	2	133	136	5	0	0	141	0	1	0	0	1	275
8:45 AM	17	133	0	1	150	125	3	0	0	128	0	0	0	1	0	278
Hourly Total	42	534	0	3	576	517	24	0	0	541	0	1	0	3	1	1118
9:00 AM	10	97	0	0	107	124	7	0	0	131	0	0	0	3	0	238
9:15 AM	10	108	0	0	118	134	8	0	0	142	0	0	0	2	0	260
9:30 AM	10	79	0	0	89	135	5	0	0	140	0	0	0	5	0	229
9:45 AM	12	115	0	0	127	121	5	0	0	126	0	0	0	1	0	253
Hourly Total	42	399	0	0	441	514	25	0	0	539	0	0	0	11	0	980
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	12	104	0	0	116	132	5	0	0	137	0	1	0	5	1	254
11:15 AM	18	132	0	0	150	140	12	0	0	152	0	0	0	3	0	302
11:30 AM	15	162	0	0	177	158	14	0	0	172	0	0	0	6	0	349
11:45 AM	12	148	0	0	160	131	6	0	0	137	0	0	0	0	0	297
Hourly Total	57	546	0	0	603	561	37	0	0	598	0	1	0	14	1	1202
12:00 PM	20	168	0	0	188	157	2	0	0	159	0	0	0	3	0	347
12:15 PM	17	167	0	0	184	142	6	0	0	148	0	0	0	2	0	332
12:30 PM	16	163	0	0	179	183	6	0	0	189	0	0	0	4	0	368
12:45 PM	15	191	0	0	206	146	10	0	0	156	0	0	0	5	0	362
Hourly Total	68	689	0	0	757	628	24	0	0	652	0	0	0	14	0	1409
1:00 PM	20	162	0	0	182	165	8	0	0	173	0	0	0	4	0	355
1:15 PM	13	140	0	1	153	136	10	0	0	146	0	0	0	5	0	299
1:30 PM	22	141	0	0	163	170	7	0	0	177	0	0	0	5	0	340
1:45 PM	12	131	0	0	143	156	9	0	0	165	0	0	0	4	0	308
Hourly Total	67	574	0	1	641	627	34	0	0	661	0	0	0	18	0	1302
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	14	140	0	0	154	157	14	0	0	171	0	1	0	1	1	326
3:15 PM	10	155	0	0	165	146	10	0	0	156	1	0	0	0	1	322
3:30 PM	10	152	0	0	162	184	5	0	0	189	0	0	0	5	0	351
3:45 PM	14	172	0	0	186	165	11	0	0	176	0	0	0	5	0	362
Hourly Total	48	619	0	0	667	652	40	0	0	692	1	1	0	11	2	1361
4:00 PM	21	139	0	0	160	161	3	0	0	164	1	0	0	6	1	325
4:15 PM	15	138	0	2	153	147	9	0	0	156	0	0	0	9	0	309
4:30 PM	22	146	0	1	168	169	10	0	0	179	0	0	0	7	0	347
4:45 PM	12	189	0	2	201	152	12	0	0	164	0	0	0	4	0	365

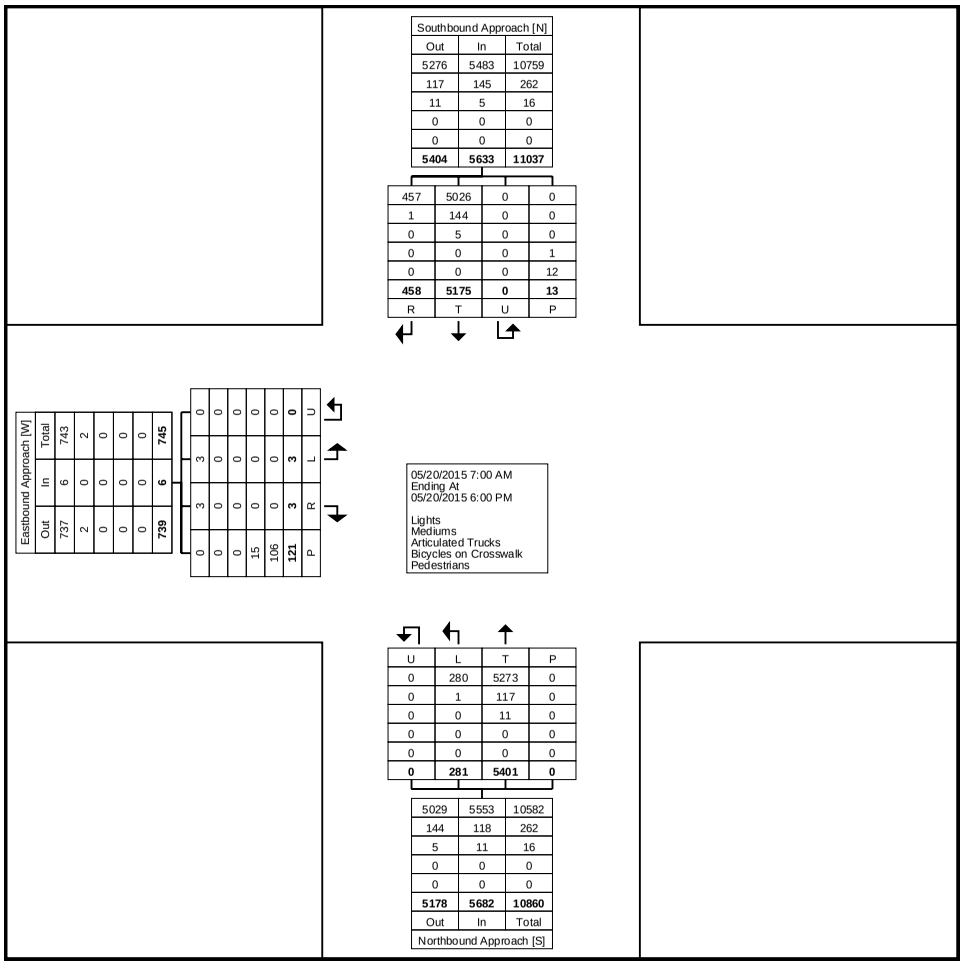
Hourly Total	70	612	0	5	682	629	34	0	0	663	1	0	0	26	1	1346
5:00 PM	12	183	0	0	195	189	8	0	0	197	1	0	0	1	1	393
5:15 PM	12	193	0	0	205	172	12	0	0	184	0	0	0	4	0	389
5:30 PM	14	180	0	3	194	168	9	0	0	177	0	0	0	4	0	371
5:45 PM	9	197	0	1	206	167	6	0	0	173	0	0	0	8	0	379
Hourly Total	47	753	0	4	800	696	35	0	0	731	1	0	0	17	1	1532
Grand Total	458	5175	0	13	5633	5401	281	0	0	5682	3	3	0	121	6	11321
Approach %	8.1	91.9	0.0	-	-	95.1	4.9	0.0	-	-	50.0	50.0	0.0	-	-	-
Total %	4.0	45.7	0.0	-	49.8	47.7	2.5	0.0	-	50.2	0.0	0.0	0.0	-	0.1	-
Lights	457	5026	0	-	5483	5273	280	0	-	5553	3	3	0	-	6	11042
% Lights	99.8	97.1	-	-	97.3	97.6	99.6	-	-	97.7	100.0	100.0	-	-	100.0	97.5
Mediums	1	144	0	-	145	117	1	0	-	118	0	0	0	-	0	263
% Mediums	0.2	2.8	-	-	2.6	2.2	0.4	-	-	2.1	0.0	0.0	-	-	0.0	2.3
Articulated Trucks	0	5	0	-	5	11	0	0	-	11	0	0	0	-	0	16
% Articulated Trucks	0.0	0.1	-	-	0.1	0.2	0.0	-	-	0.2	0.0	0.0	-	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	1	-	-	-	-	0	-	-	-	-	15	-	-
% Bicycles on Crosswalk	-	-	-	7.7	-	-	-	-	-	-	-	-	-	12.4	-	-
Pedestrians	-	-	-	12	-	-	-	-	0	-	-	-	-	106	-	-
% Pedestrians	-	-	-	92.3	-	-	-	-	-	-	-	-	-	87.6	-	-

Unit Number:

DLZ
8169 West Bryn Mawr Ave

Chicago, Illinois, United States 60631
(773) 283-2600

Count Name: High St & Short St TMC
Site Code:
Start Date: 05/20/2015
Page No: 3



Turning Movement Data Plot

Unit Number:

DLZ
8169 West Bryn Mawr Ave

Chicago, Illinois, United States 60631
(773) 283-2600

Count Name: High St & Short St TMC
Site Code:
Start Date: 05/20/2015

Turning Movement Peak Hour Data (7:45 AM)

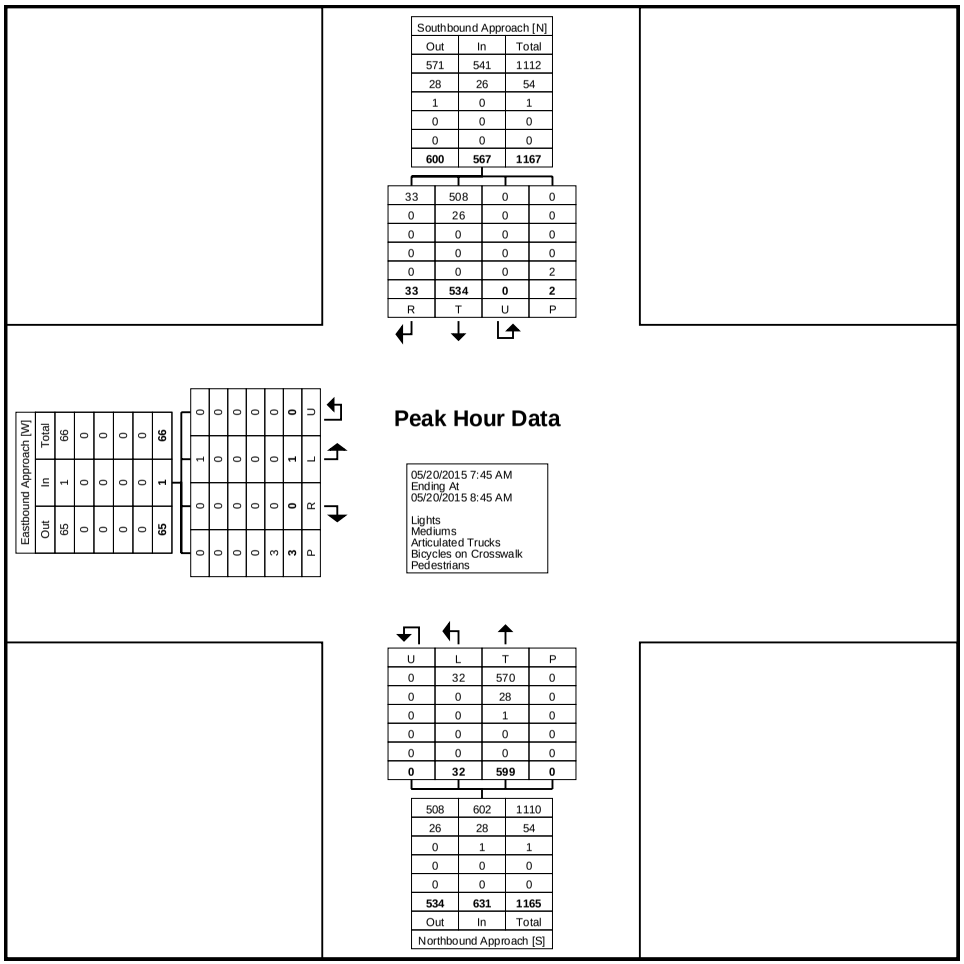
Start Time	Southbound Approach Southbound					Northbound Approach Northbound					Eastbound Approach Eastbound					
	Right	Thru	U-Turn	Peds	App. Total	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Int. Total
7:45 AM	8	133	0	0	141	207	11	0	0	218	0	0	0	1	0	359
8:00 AM	6	135	0	0	141	128	7	0	0	135	0	0	0	0	0	276
8:15 AM	12	140	0	0	152	128	9	0	0	137	0	0	0	2	0	289
8:30 AM	7	126	0	2	133	136	5	0	0	141	0	1	0	0	1	275
Total	33	534	0	2	567	599	32	0	0	631	0	1	0	3	1	1199
Approach %	5.8	94.2	0.0	-	-	94.9	5.1	0.0	-	-	0.0	100.0	0.0	-	-	-
Total %	2.8	44.5	0.0	-	47.3	50.0	2.7	0.0	-	52.6	0.0	0.1	0.0	-	0.1	-
PHF	0.688	0.954	0.000	-	0.933	0.723	0.727	0.000	-	0.724	0.000	0.250	0.000	-	0.250	0.835
Lights	33	508	0	-	541	570	32	0	-	602	0	1	0	-	1	1144
% Lights	100.0	95.1	-	-	95.4	95.2	100.0	-	-	95.4	-	100.0	-	-	100.0	95.4
Mediums	0	26	0	-	26	28	0	0	-	28	0	0	0	-	0	54
% Mediums	0.0	4.9	-	-	4.6	4.7	0.0	-	-	4.4	-	0.0	-	-	0.0	4.5
Articulated Trucks	0	0	0	-	0	1	0	0	-	1	0	0	0	-	0	1
% Articulated Trucks	0.0	0.0	-	-	0.0	0.2	0.0	-	-	0.2	-	0.0	-	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	2	-	-	-	-	0	-	-	-	-	3	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	100.0	-	-

Unit Number:

DLZ
8169 West Bryn Mawr Ave

Chicago, Illinois, United States 60631
(773) 283-2600

Count Name: High St & Short St TMC
Site Code:
Start Date: 05/20/2015
Page No: 5



Turning Movement Peak Hour Data Plot (7:45 AM)

Unit Number:

DLZ
8169 West Bryn Mawr Ave

Chicago, Illinois, United States 60631
(773) 283-2600

Count Name: High St & Short St TMC
Site Code:
Start Date: 05/20/2015

Turning Movement Peak Hour Data (11:00 AM)

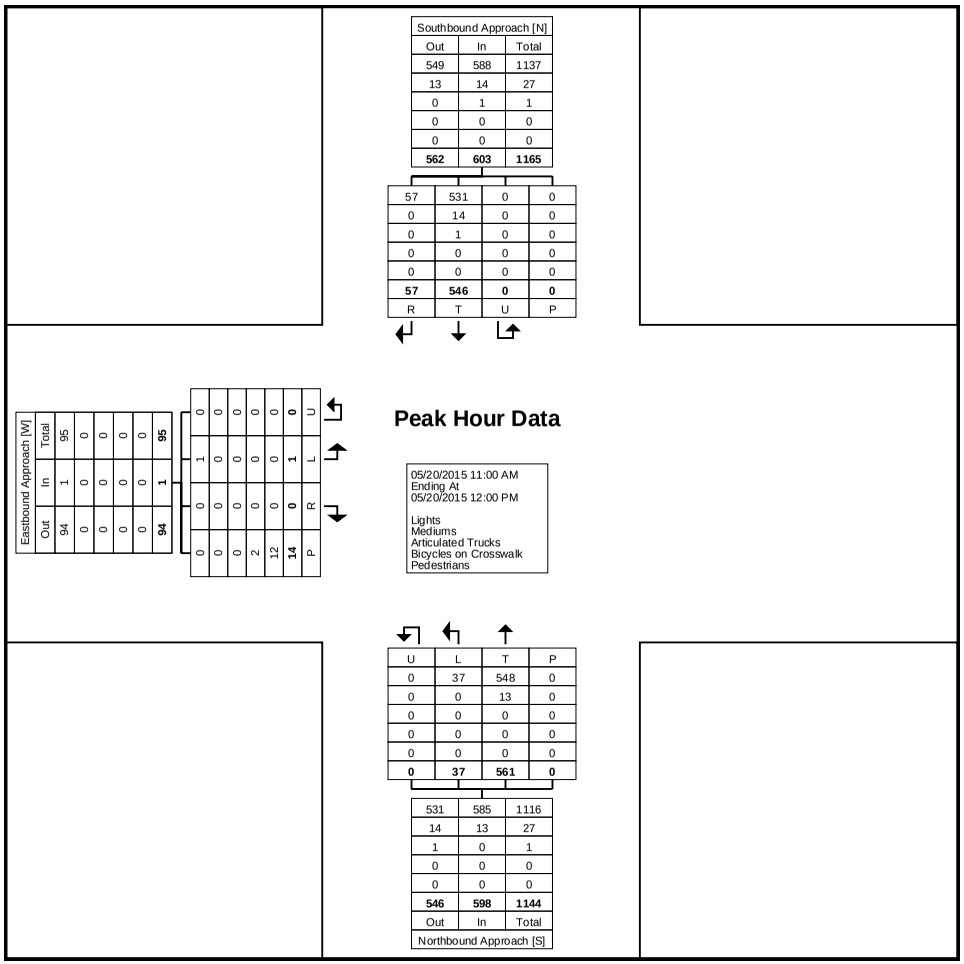
Start Time	Southbound Approach Southbound					Northbound Approach Northbound					Eastbound Approach Eastbound					
	Right	Thru	U-Turn	Peds	App. Total	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Int. Total
11:00 AM	12	104	0	0	116	132	5	0	0	137	0	1	0	5	1	254
11:15 AM	18	132	0	0	150	140	12	0	0	152	0	0	0	3	0	302
11:30 AM	15	162	0	0	177	158	14	0	0	172	0	0	0	6	0	349
11:45 AM	12	148	0	0	160	131	6	0	0	137	0	0	0	0	0	297
Total	57	546	0	0	603	561	37	0	0	598	0	1	0	14	1	1202
Approach %	9.5	90.5	0.0	-	-	93.8	6.2	0.0	-	-	0.0	100.0	0.0	-	-	-
Total %	4.7	45.4	0.0	-	50.2	46.7	3.1	0.0	-	49.8	0.0	0.1	0.0	-	0.1	-
PHF	0.792	0.843	0.000	-	0.852	0.888	0.661	0.000	-	0.869	0.000	0.250	0.000	-	0.250	0.861
Lights	57	531	0	-	588	548	37	0	-	585	0	1	0	-	1	1174
% Lights	100.0	97.3	-	-	97.5	97.7	100.0	-	-	97.8	-	100.0	-	-	100.0	97.7
Mediums	0	14	0	-	14	13	0	0	-	13	0	0	0	-	0	27
% Mediums	0.0	2.6	-	-	2.3	2.3	0.0	-	-	2.2	-	0.0	-	-	0.0	2.2
Articulated Trucks	0	1	0	-	1	0	0	0	-	0	0	0	0	-	0	1
% Articulated Trucks	0.0	0.2	-	-	0.2	0.0	0.0	-	-	0.0	-	0.0	-	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	14.3	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	12	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	85.7	-	-

Unit Number:

DLZ
8169 West Bryn Mawr Ave

Chicago, Illinois, United States 60631
(773) 283-2600

Count Name: High St & Short St TMC
Site Code:
Start Date: 05/20/2015
Page No: 7



Turning Movement Peak Hour Data Plot (11:00 AM)

Unit Number:

DLZ
8169 West Bryn Mawr Ave

Chicago, Illinois, United States 60631
(773) 283-2600

Count Name: High St & Short St TMC
Site Code:
Start Date: 05/20/2015

Turning Movement Peak Hour Data (12:15 PM)

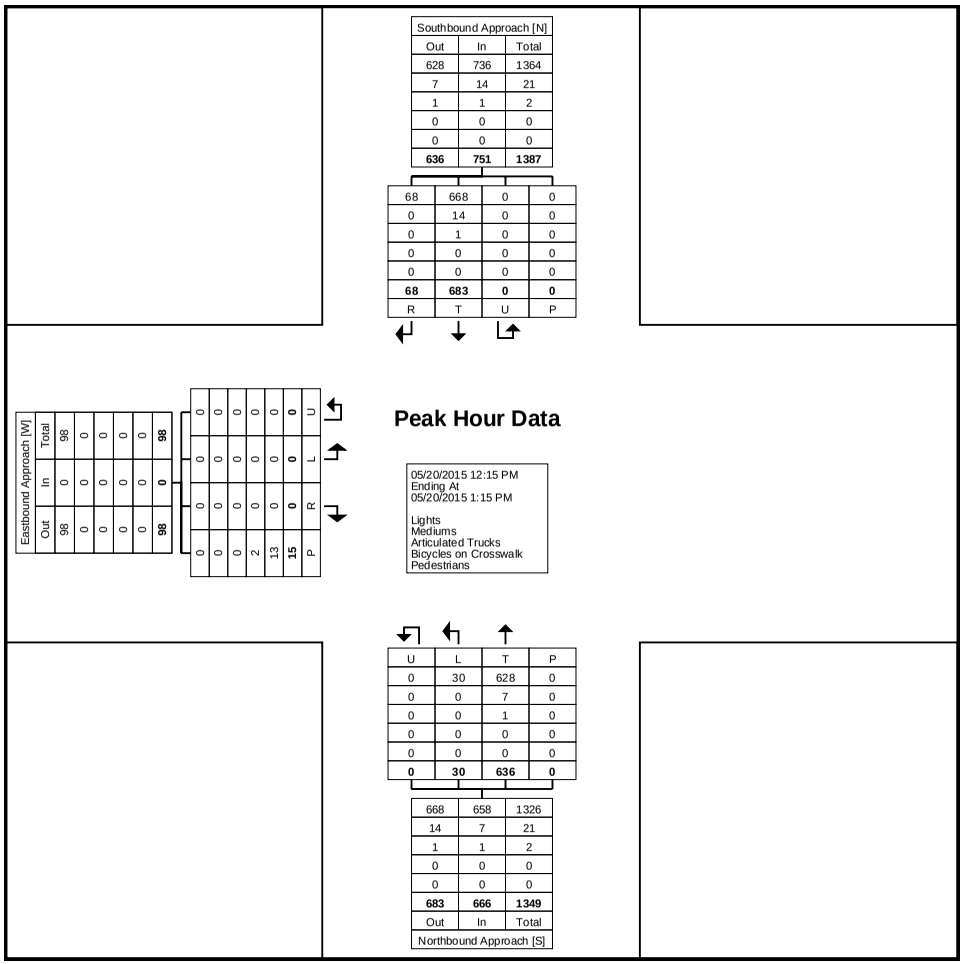
Start Time	Southbound Approach Southbound Right	Thru	U-Turn	Peds	App. Total	Northbound Approach Northbound Thru	Left	U-Turn	Peds	App. Total	Eastbound Approach Eastbound Right	Left	U-Turn	Peds	App. Total	Int. Total
12:15 PM	17	167	0	0	184	142	6	0	0	148	0	0	0	2	0	332
12:30 PM	16	163	0	0	179	183	6	0	0	189	0	0	0	4	0	368
12:45 PM	15	191	0	0	206	146	10	0	0	156	0	0	0	5	0	362
1:00 PM	20	162	0	0	182	165	8	0	0	173	0	0	0	4	0	355
Total	68	683	0	0	751	636	30	0	0	666	0	0	0	15	0	1417
Approach %	9.1	90.9	0.0	-	-	95.5	4.5	0.0	-	-	NaN	NaN	NaN	-	-	-
Total %	4.8	48.2	0.0	-	53.0	44.9	2.1	0.0	-	47.0	0.0	0.0	0.0	-	0.0	-
PHF	0.850	0.894	0.000	-	0.911	0.869	0.750	0.000	-	0.881	0.000	0.000	0.000	-	0.000	0.963
Lights	68	668	0	-	736	628	30	0	-	658	0	0	0	-	0	1394
% Lights	100.0	97.8	-	-	98.0	98.7	100.0	-	-	98.8	-	-	-	-	-	98.4
Mediums	0	14	0	-	14	7	0	0	-	7	0	0	0	-	0	21
% Mediums	0.0	2.0	-	-	1.9	1.1	0.0	-	-	1.1	-	-	-	-	-	1.5
Articulated Trucks	0	1	0	-	1	1	0	0	-	1	0	0	0	-	0	2
% Articulated Trucks	0.0	0.1	-	-	0.1	0.2	0.0	-	-	0.2	-	-	-	-	-	0.1
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	13.3	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	13	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	86.7	-	-

Unit Number:

DLZ
8169 West Bryn Mawr Ave

Chicago, Illinois, United States 60631
(773) 283-2600

Count Name: High St & Short St TMC
Site Code:
Start Date: 05/20/2015
Page No: 9



Turning Movement Peak Hour Data Plot (12:15 PM)

Unit Number:

DLZ
8169 West Bryn Mawr Ave

Chicago, Illinois, United States 60631
(773) 283-2600

Count Name: High St & Short St TMC
Site Code:
Start Date: 05/20/2015

Turning Movement Peak Hour Data (5:00 PM)

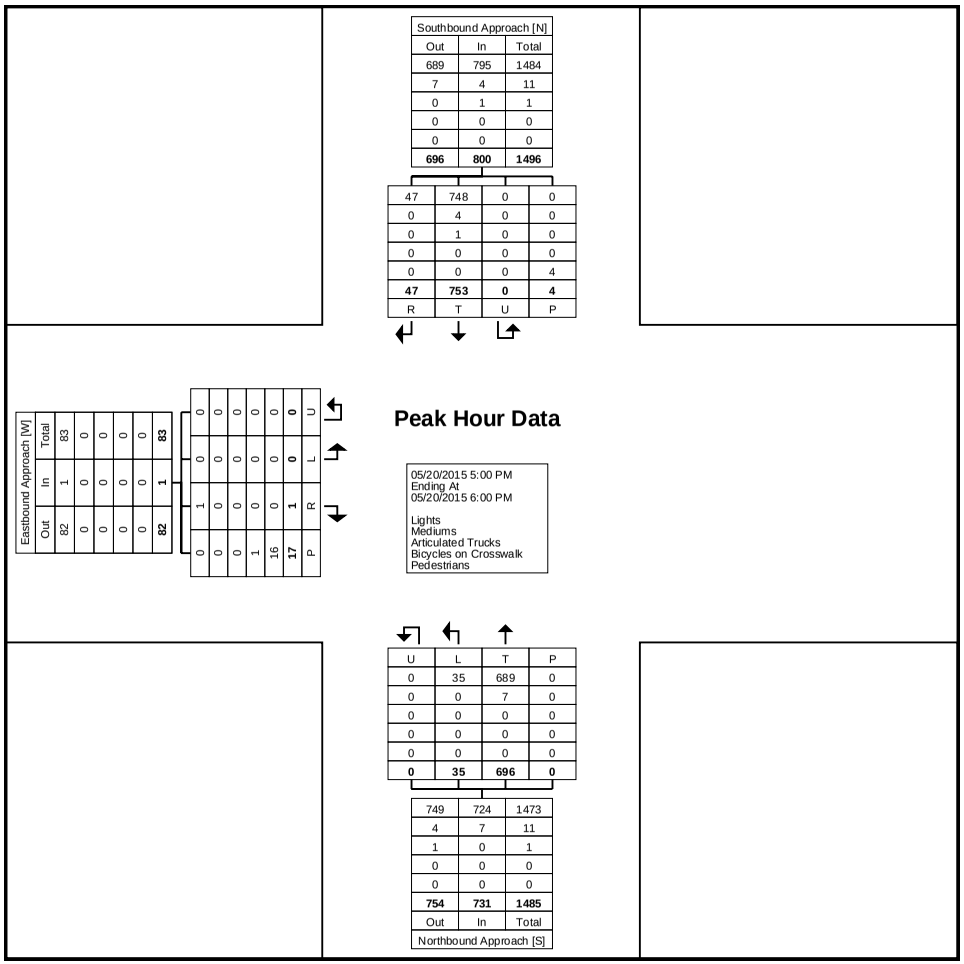
Start Time	Southbound Approach Southbound Right	Thru	U-Turn	Peds	App. Total	Northbound Approach Northbound Thru	Left	U-Turn	Peds	App. Total	Eastbound Approach Eastbound Right	Left	U-Turn	Peds	App. Total	Int. Total
5:00 PM	12	183	0	0	195	189	8	0	0	197	1	0	0	1	1	393
5:15 PM	12	193	0	0	205	172	12	0	0	184	0	0	0	4	0	389
5:30 PM	14	180	0	3	194	168	9	0	0	177	0	0	0	4	0	371
5:45 PM	9	197	0	1	206	167	6	0	0	173	0	0	0	8	0	379
Total	47	753	0	4	800	696	35	0	0	731	1	0	0	17	1	1532
Approach %	5.9	94.1	0.0	-	-	95.2	4.8	0.0	-	-	100.0	0.0	0.0	-	-	-
Total %	3.1	49.2	0.0	-	52.2	45.4	2.3	0.0	-	47.7	0.1	0.0	0.0	-	0.1	-
PHF	0.839	0.956	0.000	-	0.971	0.921	0.729	0.000	-	0.928	0.250	0.000	0.000	-	0.250	0.975
Lights	47	748	0	-	795	689	35	0	-	724	1	0	0	-	1	1520
% Lights	100.0	99.3	-	-	99.4	99.0	100.0	-	-	99.0	100.0	-	-	-	100.0	99.2
Mediums	0	4	0	-	4	7	0	0	-	7	0	0	0	-	0	11
% Mediums	0.0	0.5	-	-	0.5	1.0	0.0	-	-	1.0	0.0	-	-	-	0.0	0.7
Articulated Trucks	0	1	0	-	1	0	0	0	-	0	0	0	0	-	0	1
% Articulated Trucks	0.0	0.1	-	-	0.1	0.0	0.0	-	-	0.0	0.0	-	-	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	-	-	-	-	-	5.9	-	-
Pedestrians	-	-	-	4	-	-	-	-	0	-	-	-	-	16	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	94.1	-	-

Unit Number:

DLZ
8169 West Bryn Mawr Ave

Chicago, Illinois, United States 60631
(773) 283-2600

Count Name: High St & Short St TMC
Site Code:
Start Date: 05/20/2015
Page No: 11



Turning Movement Peak Hour Data Plot (5:00 PM)

Unit Number:

DLZ
8169 West Bryn Mawr Ave

Chicago, Illinois, United States 60631
(773) 283-2600

Count Name: High St & Short St TMC
Site Code:
Start Date: 05/20/2015

Appendix B: Observation Notes & Photos

High Street & Village Green South Drive/Short Street Observation Report

- **Village Green South Drive - AM Observation (7:35 – 7:55 AM)**
  - Northbound vehicle queue is often 200' south of the crosswalk.
  - No pedestrians utilized crossing during the observation period.
- **Village Green South Drive – Mid-Day Observation (12:00 – 12:25 PM)**
  - 5 Pedestrians Crossed during Observations
    - Overhead sign flashed for 30 seconds each time
    - 1 pedestrian crossed at 12:05
    - 1 pedestrian crossed at 12:10
    - 1 pedestrian crossed at 12:20
    - 1 pedestrian crossed at 12:22
    - 1 pedestrian crossed at 12:25
- **Village Green South Drive - PM Observations (3:25 – 3:55 PM)**
  - Northbound queues from S.R. 161 backed up through the crossing; vehicles did not stop on crosswalk.
  - Northbound vehicles parked in outside travel/parking lane caused a bottleneck for northbound traffic (there are restricted parking hours in outside travel lane; parking is allowed from 4 – 6 PM Mondays through Fridays)
    - 2 pedestrians crossed mid-block from parked cars to west side of High Street
    - 1 pedestrian crossed mid-block going eastbound. Pedestrian had to weave through moving traffic as vehicles did not yield.

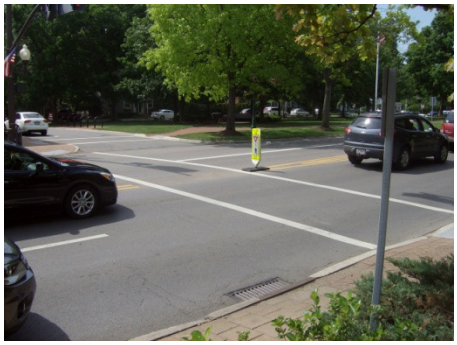


Figure 1: Northbound Vehicles Stopped Before Crosswalk

  - At times the northbound queue backed up past New England Street (northbound queue caused by signal at S.R. 161 and bottleneck with parked vehicles).
  - No pedestrians were observed utilizing the crossing during observation period.
  - Southbound vehicle using the inside travel lane stopped to turn left into U.S. Bank parking lot caused vehicles to backup through the crossing, with one vehicle stopping in the middle of the crosswalk.

- **Short Street - AM Observation (7:35 – 7:55 AM)**
  - No pedestrians witnessed utilizing the crossing.
  - Northbound queue backed up from the signal at New England through the intersection, vehicles stopped on crosswalk.
- **Short Street - Mid-Day Observation (12:00 – 12:25 PM)**
  - 3 total pedestrians observed crossing High Street.
    - 2 pedestrians crossed at 12:20 PM. Vehicles yielded to the pedestrians in the crosswalk; 1 drive in the inside travel lane did not. Pedestrians came from the parking lot adjacent to the Methodist Church.
  - Crossing time seemed shorter than 30 seconds when the crossing was activated.

Figure 2: Northbound Vehicles Stopped on Crosswalk

- **Short Street - PM Observation (3:55 – 4:25 PM)**
  - Numerous students observed crossing Short Street (southbound) on the west side of High Street.
  - No pedestrians observed utilizing the crossing.
  - Vehicles mostly yielded when I used the crossing; vehicles slowed until I was out of the travel lane, then vehicles proceeded through the crossing. Other vehicles did not yield at all and I had to stop in the middle of the crosswalk.
  - Northbound vehicle turning left onto Short Street caused minimal queues.
  - Numerous southbound vehicles parked in front of the Post Office (on-street parking is present) then left soon after.

FARMER'S MARKET FIELD OBSERVATION VISIT

DATE: July 20, 2015

OBSERVATIONS BY: David Addison, E.I.

PROJECT: Worthington Mobility Study – 1521-1009-00

Remarks

WEATHER CONDITIONS Clear & Sunny

- **High Street at Short Street Crossing (8:00 – 8:30 AM)**
  - Northbound pedestrian light-up sign was not working correctly.
  - "Yield to Pedestrians Crosswalk" flashed when pushbutton was activated.
  - When pushbutton was activated, the overhead sign and the pedestrian signal head "cross with caution" indicators came on for twenty (20) seconds.
  - Vehicular traffic was light with numerous gaps. Northbound vehicles appeared to be travelling faster than the posted speed limit of 25 MPH.

Figure 1: NB Sign Not Working

  - Vehicles yielded > 90% when pedestrians were in the crosswalk (even when the pedestrian failed to activate the pushbutton which was often, and the yield indicator remained dark). If no pedestrians were in vehicle lane the vehicle continued thru the crosswalk.
  - Very few pedestrians exited the southbound COTA Bus at the bus stop just south of Short Street.
  - 60 total pedestrians observed utilizing the crossing.
  - Five (5) pedestrians observed crossing High Street mid-block between Short Street and New England Avenue Street.
  - At 8:00 AM the church parking lot was half full. From 8:15 – 8:30 there was a constant line of vehicles attempting to enter the church parking lot.

- **South Village Green Crossing (8:35 – 9:05 AM)**
  - Extremely congested with vehicular and pedestrian traffic.
  - Over 400 pedestrians observed crossing High Street at the crossing. The overhead yield sign was constantly flashing during the 30 minute observation period (the warning sign never turned dark). This caused long vehicle queues for northbound (only 1 travel lane; queue would be >5 vehicles in length consistently and would back up to New England Avenue at times) and southbound (2 travel lanes; queues > 5 vehicles in length in both lanes consistently and would back up to SR 161 and affect turning traffic of off SR 161).

Figure 2: SB Queue Backs Up to SR 161

  - Vehicles stopped in the queue a few cars back would not yield to pedestrians at times when the vehicular traffic was able to move (potential driver frustration with waiting).
  - Southbound traffic getting a green light at SR 161 would have to stop for the crossing, negatively affecting progression on High Street.
  - Vehicles on High Street would yield unless no pedestrian was in the travel lane. A few times, vehicles in the queue would not yield and cause pedestrians to wait to cross.
  - If a COTA bus was in the outside southbound travel lane, the vehicle in the inside southbound travel lane could not see a pedestrian crossing. I was almost hit by a passenger car that did not yield to me as I crossed High Street eastbound (the COTA bus did yield).
  - Farmers Market booths came up to the crosswalk, creating a small area for pedestrians to wait at in order to cross High Street; pedestrians were standing on the Village Green South Drives waiting to cross High Street consistently.

- **Other Observations (Parking, Pedestrian Activity, & Bicycle Activity in the Study Area)**
  - By 9:15 AM, the Church Parking Lot was full, including numerous vehicles parked in an unmarked parking stall and on the side of the alleyway behind the church.
  - The Huntington Bank parking lot just north of SR 161 was half full.
  - The Griswold Center parking lot was full.
  - The Old Worthington Library lots were all half full.
  - The Middle School parking lot was ¾ full.
  - The public parking lots in the downtown area

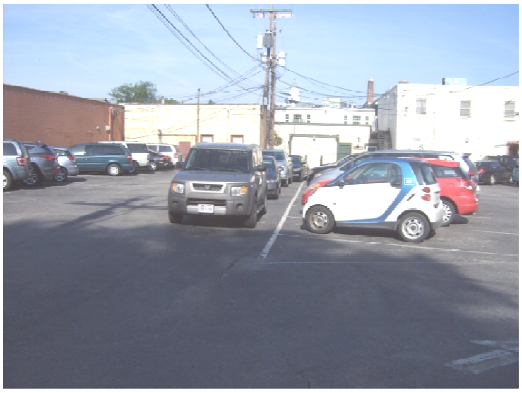


Figure 3: Public Parking Lot East of High Street

were full, with vehicles parking in unmarked parking stalls.

- The on-street parking spots on Hartford Street and Stafford near the baseball field just east of the library were all full.
- The U.S. Bank parking lot was ¾ full (signs stating Bank Parking Only displayed).
- The parking stalls around the Village Green were all taken.
- On-Street parking was utilized on the following streets (mostly full):
  - Oxford Street (west side only).
  - Evening Street (east side only).
  - New England Avenue (north side of the street West of High Street and between High Street and Hartford Street, & south side of the street East of Hartford Street).
  - Short Street (1-way westbound; parking on the north side only)
  - Hartford Street (no parking on Hartford Street between SR 161 and New England Avenue on Saturdays from 8:00 AM – 1:00 PM May-October).
  - Stafford Avenue on the south side East of High Street.
  - Morning Street (west side of the street, between New England Avenue and South Street all parking spots taken). North of SR 161, on the west side all parking spots taken. Between SR 161 and New England Avenue, no spots were taken.
  - South Street (south side of the street East of High Street and north side of the street West of High Street), all spots taken between High Street and Hartford Street; all parking spots taken between High Street and Oxford Street.
- Bicycle Racks located on the north side of New England Avenue, just east of High Street were full of bicycles. There was an additional bike rack located in the public parking lot on the north side of New England Avenue (east of High Street) that was also full of bicycles. Numerous bicyclists were observed on High Street and on New England Avenue during observation period.

Figure 4: Existing Bicycle Racks on New England Avenue East of High Street

CC: Click here to enter names/initials of other receiving this document

Appendix C: Crash Data

- - (-) From // to //

	Number
Total	**14**

CRASH_SEVERITY	Number	%
Injury Crash	**5**	35.7%
Property Damage Crash	**9**	64.3%
Grand Total	**14**	**100.0%**

TRAFFIC_CRASH_YEAR	Number	%
2009	**4**	28.6%
2010	**2**	14.3%
2011	**1**	7.1%
2012	**2**	14.3%
2013	**3**	21.4%
2014	**1**	7.1%
2015	**1**	7.1%
Grand Total	**14**	**100.0%**

DAY_OF_WEEK	Number	%
Saturday	**5**	35.7%
Sunday	**3**	21.4%
Monday	**3**	21.4%
Friday	**2**	14.3%
Thursday	**1**	7.1%
Grand Total	**14**	**100.0%**

HOUR_OF_DAY	Number	%
9	**1**	7.1%
12	**2**	14.3%
13	**2**	14.3%
14	**2**	14.3%
15	**2**	14.3%
16	**1**	7.1%
18	**2**	14.3%
19	**1**	7.1%
23	**1**	7.1%
Grand Total	**14**	**100.0%**

TYPE_OF_CRASH	Number	%
Rear End	**9**	64.3%
Parked Vehicle	**3**	21.4%
Sideswipe - Passing	**1**	7.1%
Pedalcycles	**1**	7.1%
Grand Total	**14**	**100.0%**

Village Green South Drive Crash Data

- - (-) From // to //

WEATHER_CONDITION	Number	%
Clear	8	57.1%
Cloudy	4	28.6%
Other/Unknown	1	7.1%
Rain	1	7.1%
Grand Total	**14**	**100.0%**

ROAD_CONDITION	Number	%
Road - Dry	12	85.7%
Road Condition Not Stated	1	7.1%
Road - Wet	1	7.1%
Grand Total	**14**	**100.0%**

LIGHT_CONDITION	Number	%
Daylight	12	85.7%
Dark - Lighted	2	14.3%
Grand Total	**14**	**100.0%**

NUMBER_OF_VEHICLES	Number	%
(blank)	14	100.0%
Grand Total	**14**	**100.0%**

LOCATION	Number	%
Not An Intersection	14	100.0%
Grand Total	**14**	**100.0%**

CRASH_MONTH_NBR	Number	%
2	1	7.1%
3	1	7.1%
4	4	28.6%
6	2	14.3%
8	1	7.1%
10	3	21.4%
11	1	7.1%
12	1	7.1%
Grand Total	**14**	**100.0%**

ROAD_CONTOUR	Number	%
Straight - Level	14	100.0%
Grand Total	**14**	**100.0%**

SPECIAL_AREA	Number	%
Unknown or Not in Work Zone	14	100.0%
Grand Total	**14**	**100.0%**

ANIMAL_TYPE	Number	%
Animal Not Stated	14	100.0%
Grand Total	**14**	**100.0%**

- - (-) From // to //

ACTION1	Number	%
Straight Ahead	**12**	85.7%
Entering Traffic Lane	**2**	14.3%
Grand Total	**14**	**100.0%**

CONTRIBUTING_FACTOR1	Number	%
Followed Too Closely/ACDA	**9**	64.3%
Failure To Control	**3**	21.4%
Improper Lane Change/Passing/Offroad	**1**	7.1%
Failure To Obey Signs/Signals/Officer	**1**	7.1%
Grand Total	**14**	**100.0%**

OBJECT_STRUCK1	Number	%
(blank)	**14**	100.0%
Grand Total	**14**	**100.0%**

TRAFFIC_CONTROL1	Number	%
Pavement Markings	**11**	78.6%
Not Reported	**1**	7.1%
Crosswalk Lines	**1**	7.1%
Traffic Signal	**1**	7.1%
Grand Total	**14**	**100.0%**

DRIVER_ALCOHOL1	Number	%
None	**12**	85.7%
0	**1**	7.1%
Yes - Alcohol Suspected	**1**	7.1%
Grand Total	**14**	**100.0%**

DRIVER_DRUGS1	Number	%
(blank)	**14**	100.0%
Grand Total	**14**	**100.0%**

- - (-) From // to //

DIRECTION_FROM1	Number	%
South	**10**	71.4%
North	**4**	28.6%
Grand Total	**14**	**100.0%**

DIRECTION_TO1	Number	%
North	**10**	71.4%
South	**4**	28.6%
Grand Total	**14**	**100.0%**

POSTED_SPEED1	Number	%
Posted Speed 21-25	**14**	100.0%
Grand Total	**14**	**100.0%**

ESTIMATED_SPEED1	Number	%
Unit Speed 20 and Under	**10**	71.4%
Unit Speed Not Stated	**2**	14.3%
Unit Speed 21-25	**2**	14.3%
Grand Total	**14**	**100.0%**

VEHICLE_TYPE1	Number	%
Compact	**4**	28.6%
Mid Size	**3**	21.4%
Sport Utility Vehicle	**2**	14.3%
Minivan	**1**	7.1%
Full Size	**1**	7.1%
Single Unit Truck Or Van 2 Axle, 6 Tires	**1**	7.1%
Pickup	**1**	7.1%
Sub-Compact	**1**	7.1%
Grand Total	**14**	**100.0%**

VEHICLE_TYPE2	Number	%
Sport Utility Vehicle	**5**	35.7%
Mid Size	**5**	35.7%
Bicycle/Pedacyclist	**1**	7.1%
Full Size	**1**	7.1%
Motorcycle	**1**	7.1%
Sub-Compact	**1**	7.1%
Grand Total	**14**	**100.0%**

- - (-) From // to //

ACTION2	Number	%
Slowing Or Stopped In Traffic	7	50.0%
Straight Ahead	3	21.4%
Parked	3	21.4%
Entering Or Crossing Specified Location	1	7.1%
Grand Total	**14**	**100.0%**

CONTRIBUTING_FACTOR2	Number	%
None	13	92.9%
Improper Crossing	1	7.1%
Grand Total	**14**	**100.0%**

DIRECTION_FROM2	Number	%
South	9	64.3%
North	4	28.6%
East	1	7.1%
Grand Total	**14**	**100.0%**

DIRECTION_TO2	Number	%
North	9	64.3%
South	4	28.6%
West	1	7.1%
Grand Total	**14**	**100.0%**

DRIVER_ALCOHOL2	Number	%
None	11	78.6%
0	3	21.4%
Grand Total	**14**	**100.0%**

DRIVER_DRUGS2	Number	%
(blank)	14	100.0%
Grand Total	**14**	**100.0%**

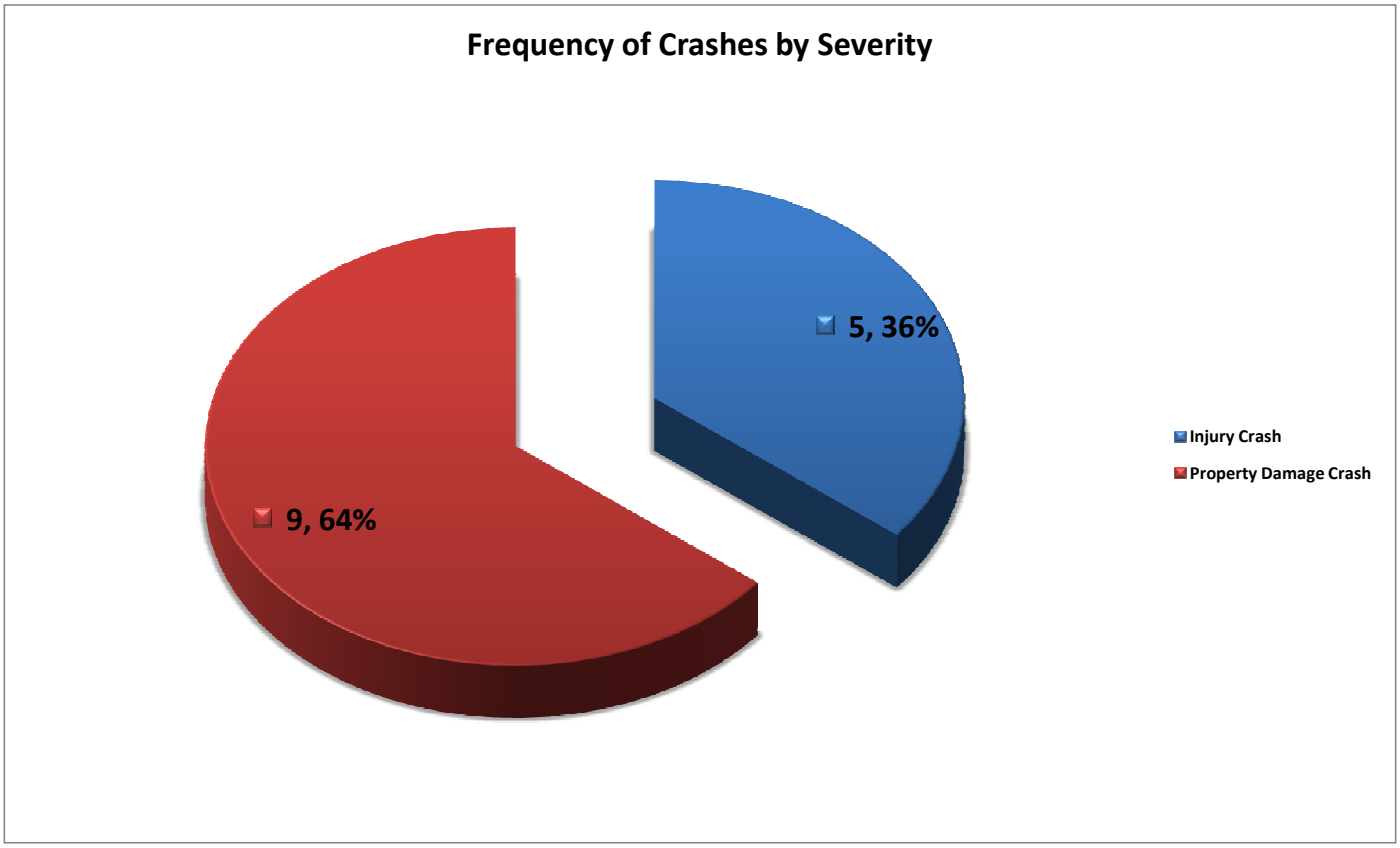
- - (-) From // to //

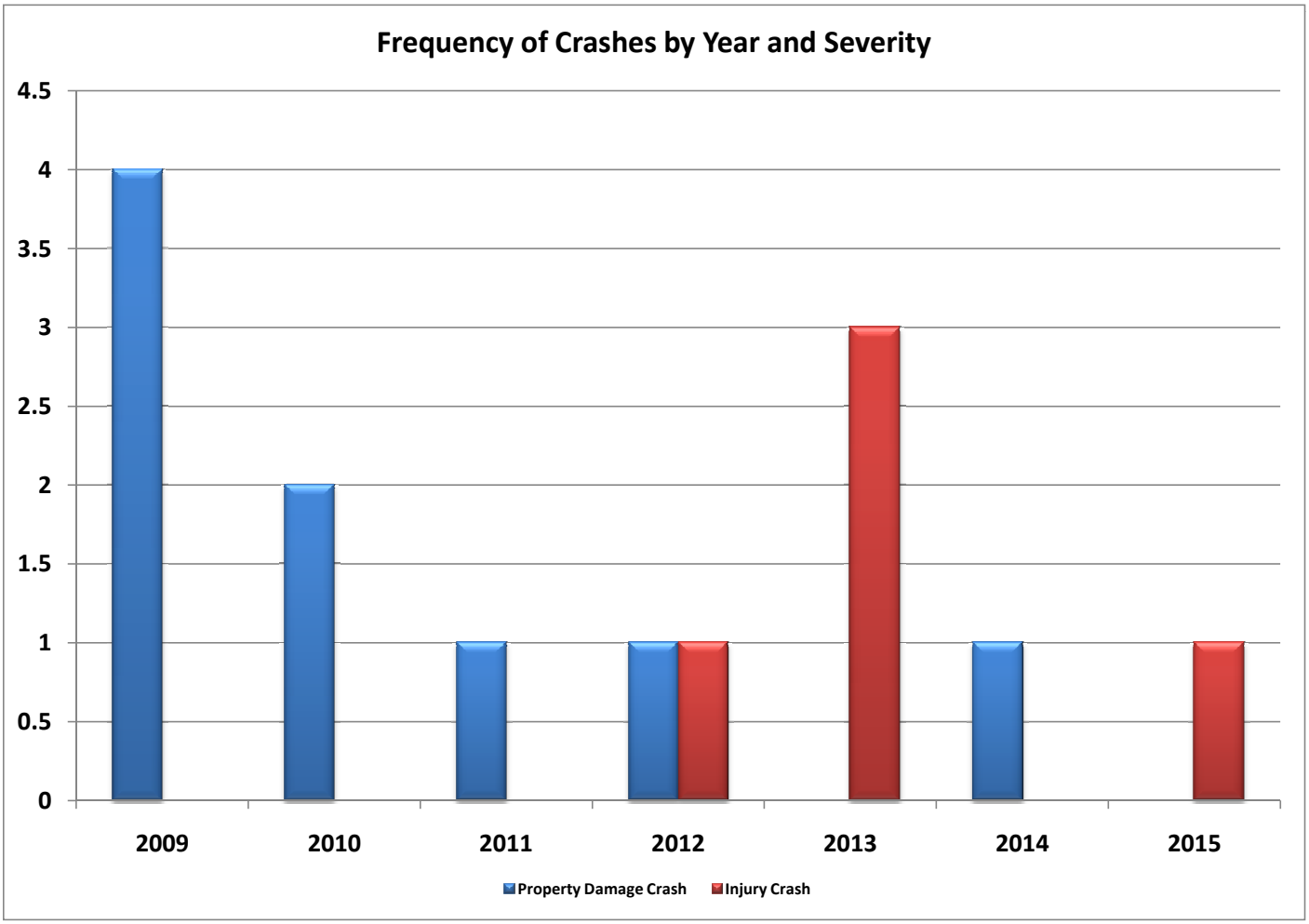
SEVERITY	CRASH_SEVERITY	
TRAFFIC_CRASH_YEAR	Property Damage Crash	Injury Crash
2009	4	0
2010	2	0
2011	1	0
2012	1	1
2013	0	3
2014	1	0
2015	0	1
Grand Total	**9**	**5**

TRAFFIC_CRASH_YEAR	Fatalities	Incapacitating Injuries
2009	0	0
2010	0	0
2011	0	0
2012	0	0
2013	0	0
2014	0	0
2015	0	0
Grand Total	**0**	**0**

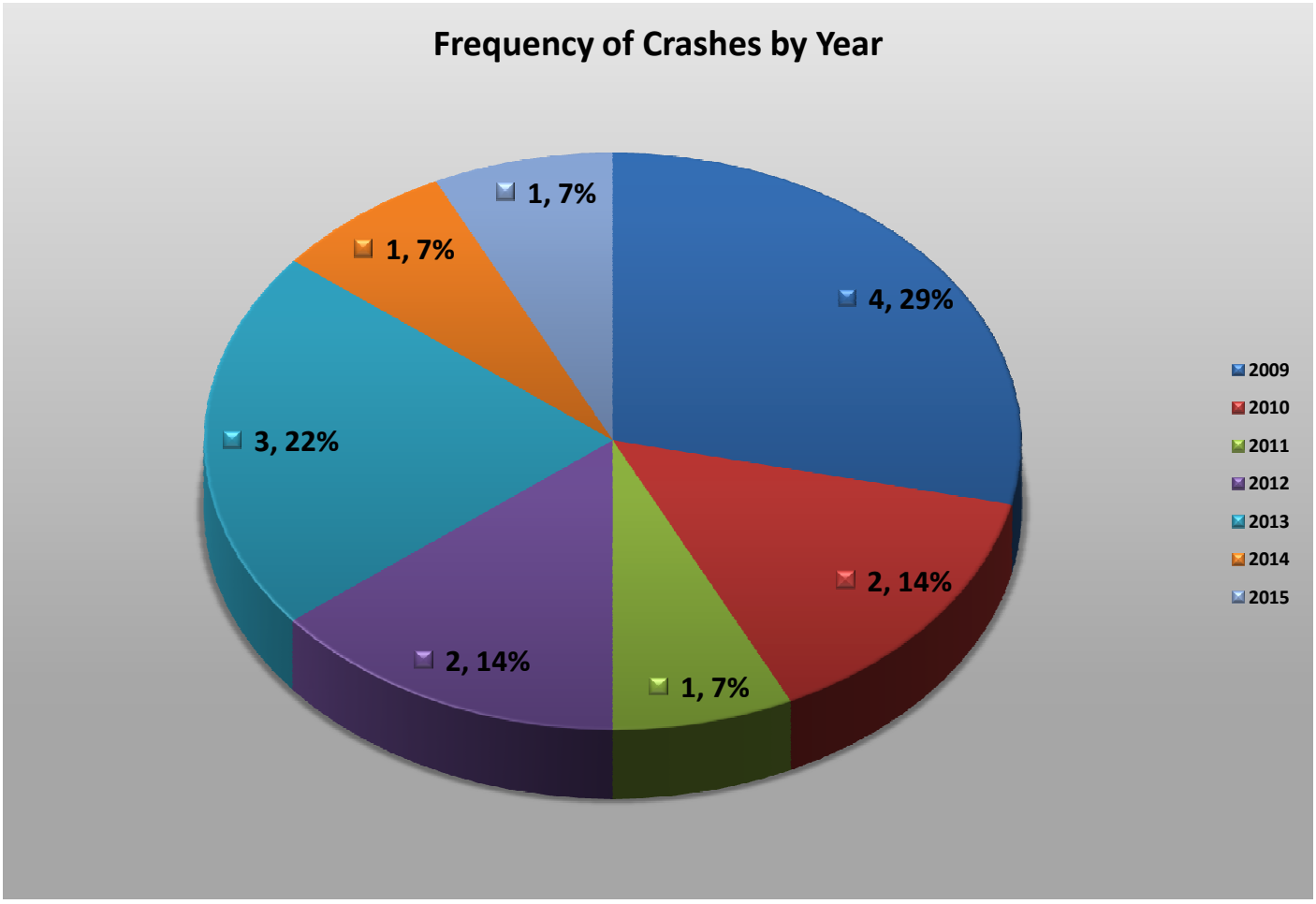
TRAFFIC_CRASH_YEAR	INJ_TYPE2_SERIOUS_VISIBLE	INJ_TYPE3_MINOR_VISIBLE	INJ_TYPE4_NO_VISIBLE
2009	0	0	0
2010	0	0	0
2011	0	0	0
2012	0	0	1
2013	0	1	5
2014	0	0	0
2015	0	0	1
Grand Total	**0**	**1**	**7**

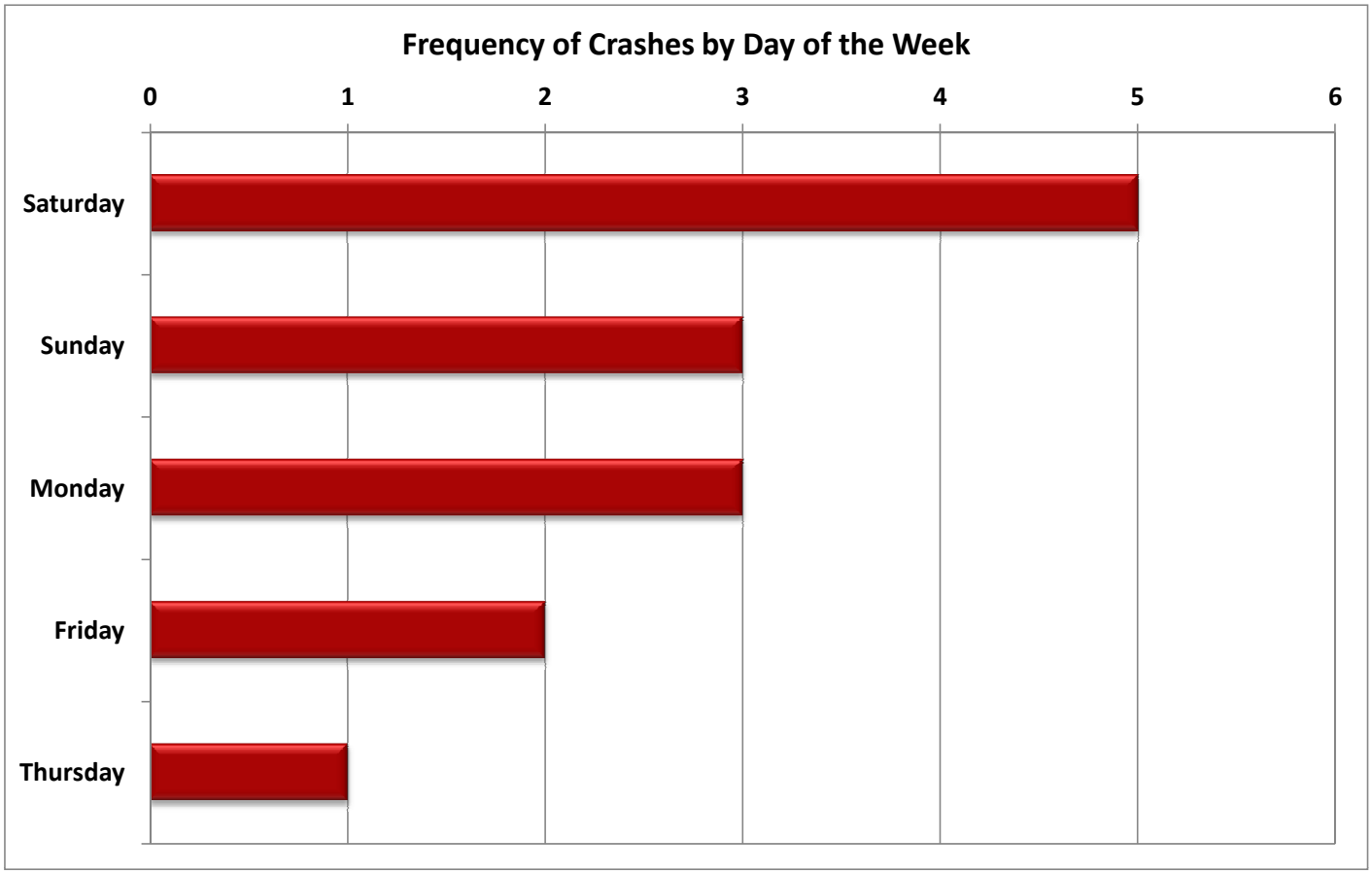
- - (-) From // to //


Frequency of Crashes by Severity
5, 36%
9, 64%
Injury Crash
Property Damage Crash

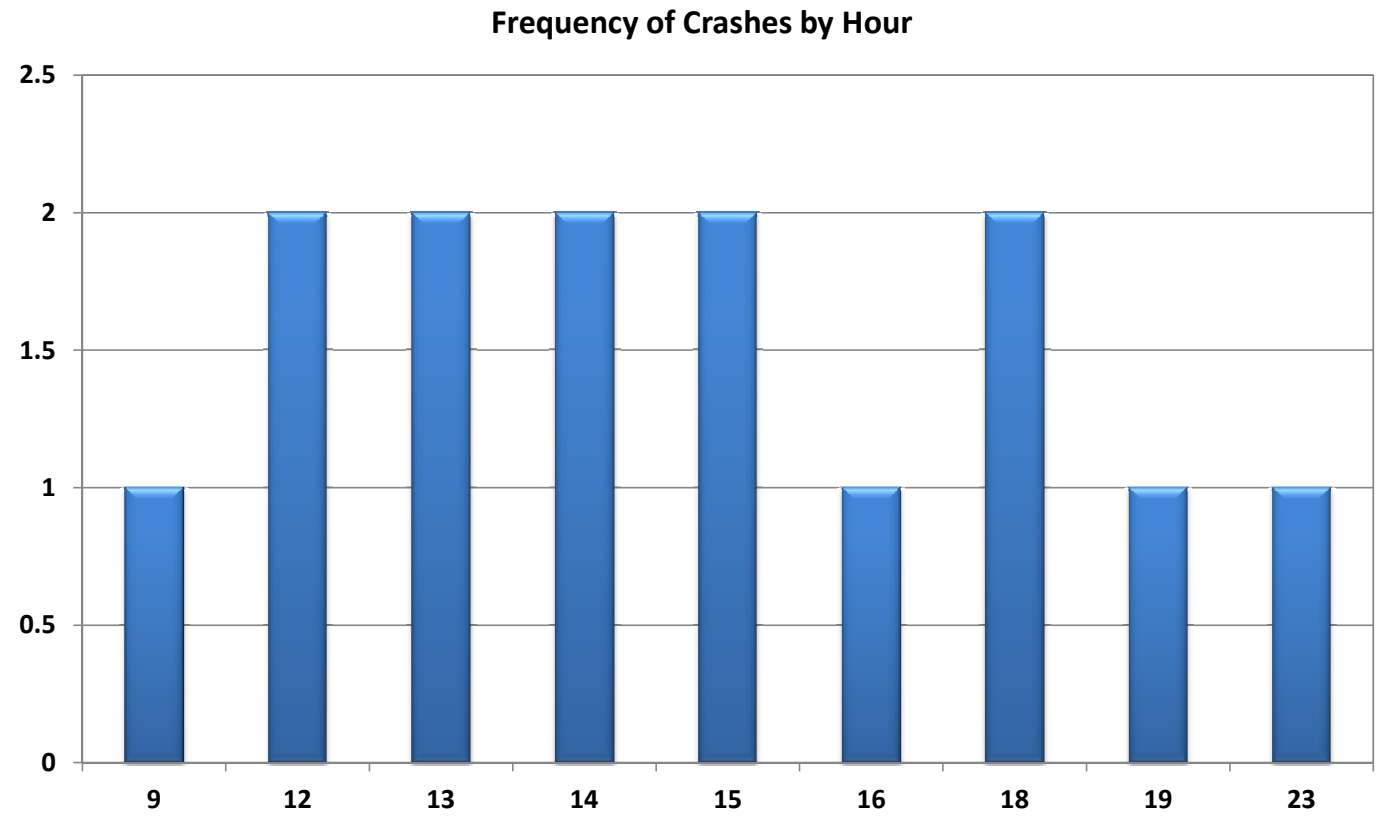

Frequency of Crashes by Year and Severity
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
2009
2010
2011
2012
2013
2014
2015
Property Damage Crash
Injury Crash

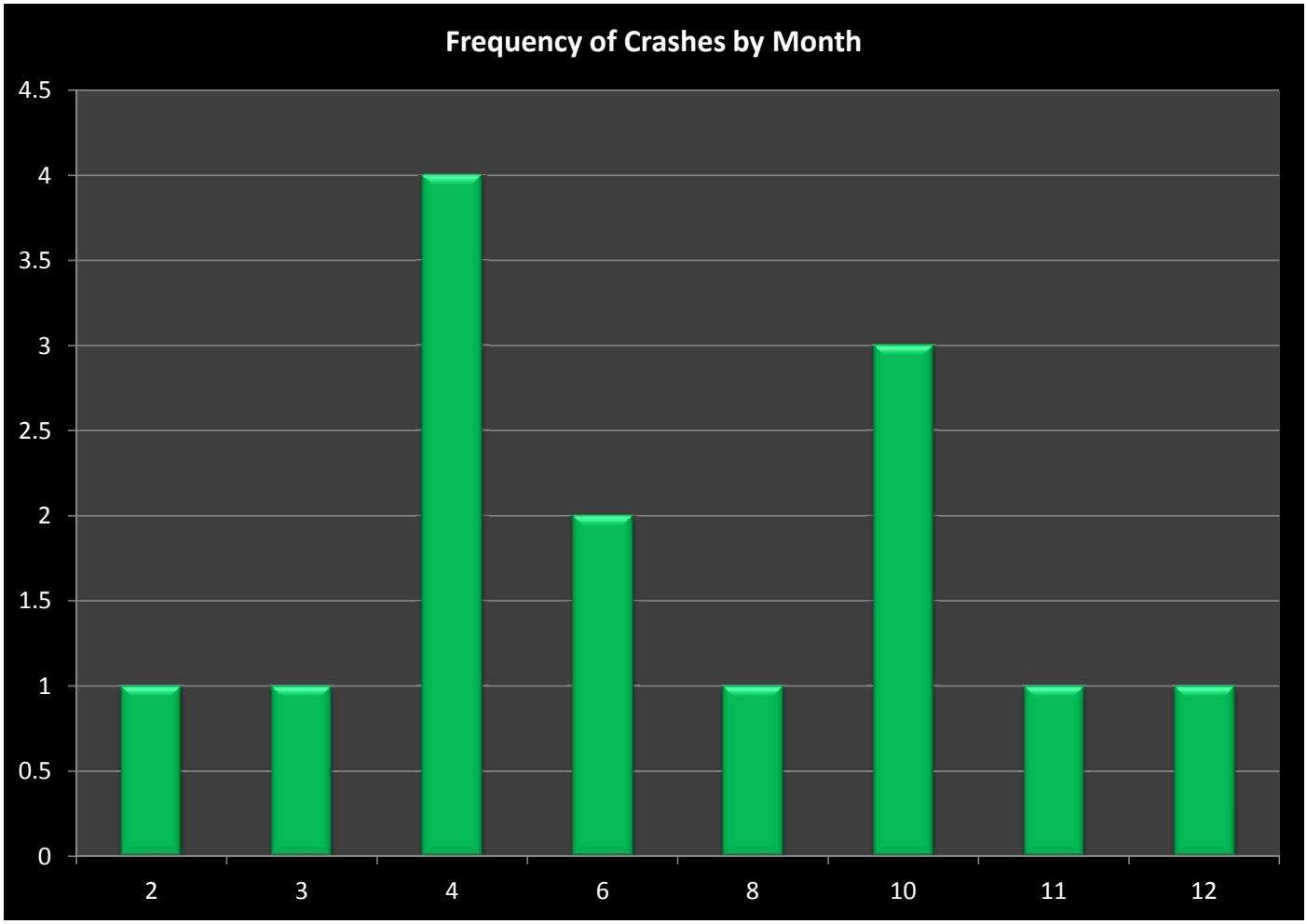
- - (-) From // to //


Frequency of Crashes by Year
1, 7%
1, 7%
4, 29%
3, 22%
2, 14%
2, 14%
1, 7%
2009
2010
2011
2012
2013
2014
2015

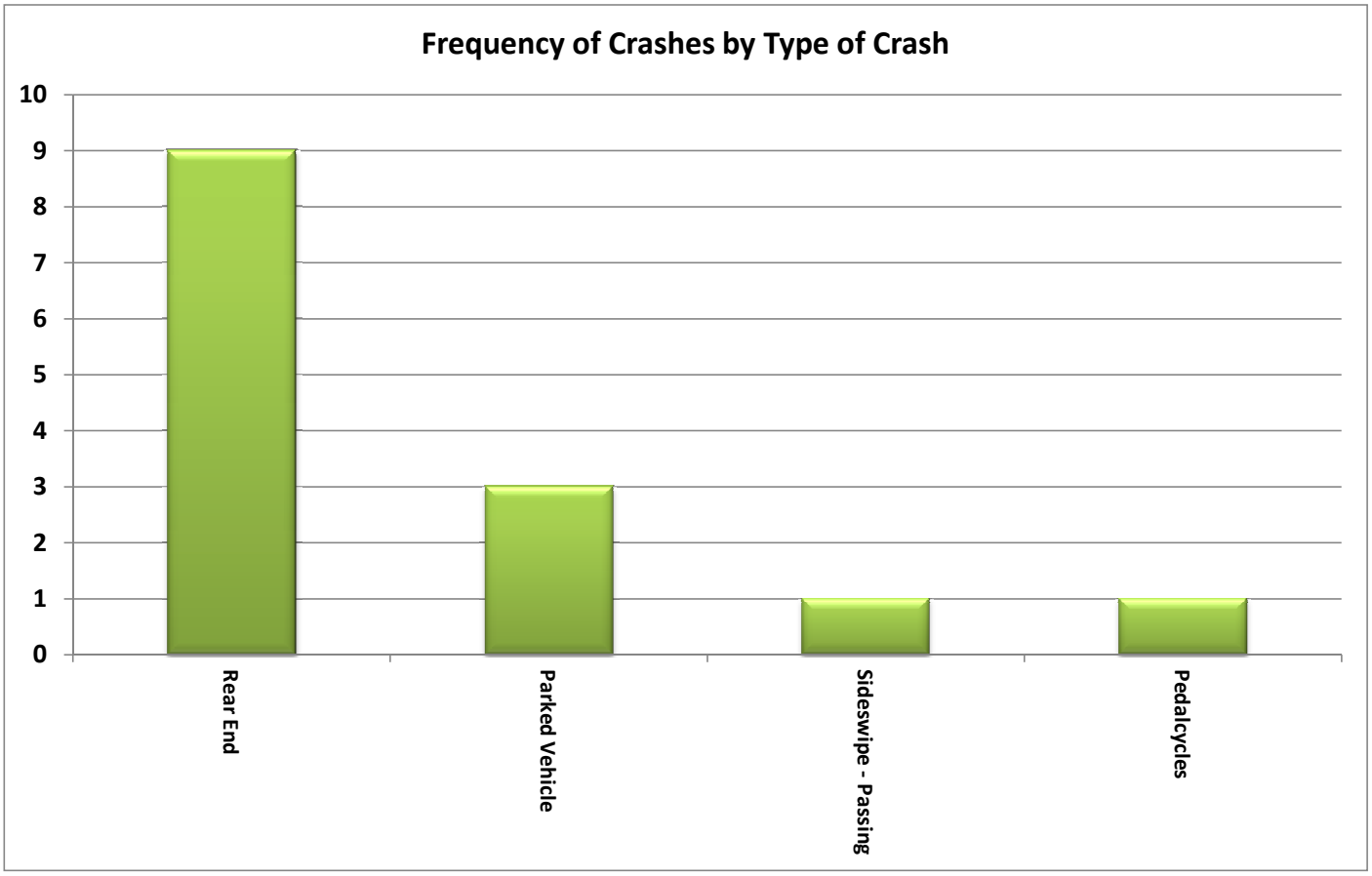

Frequency of Crashes by Day of the Week
0
1
2
3
4
5
6
Saturday
Sunday
Monday
Friday
Thursday

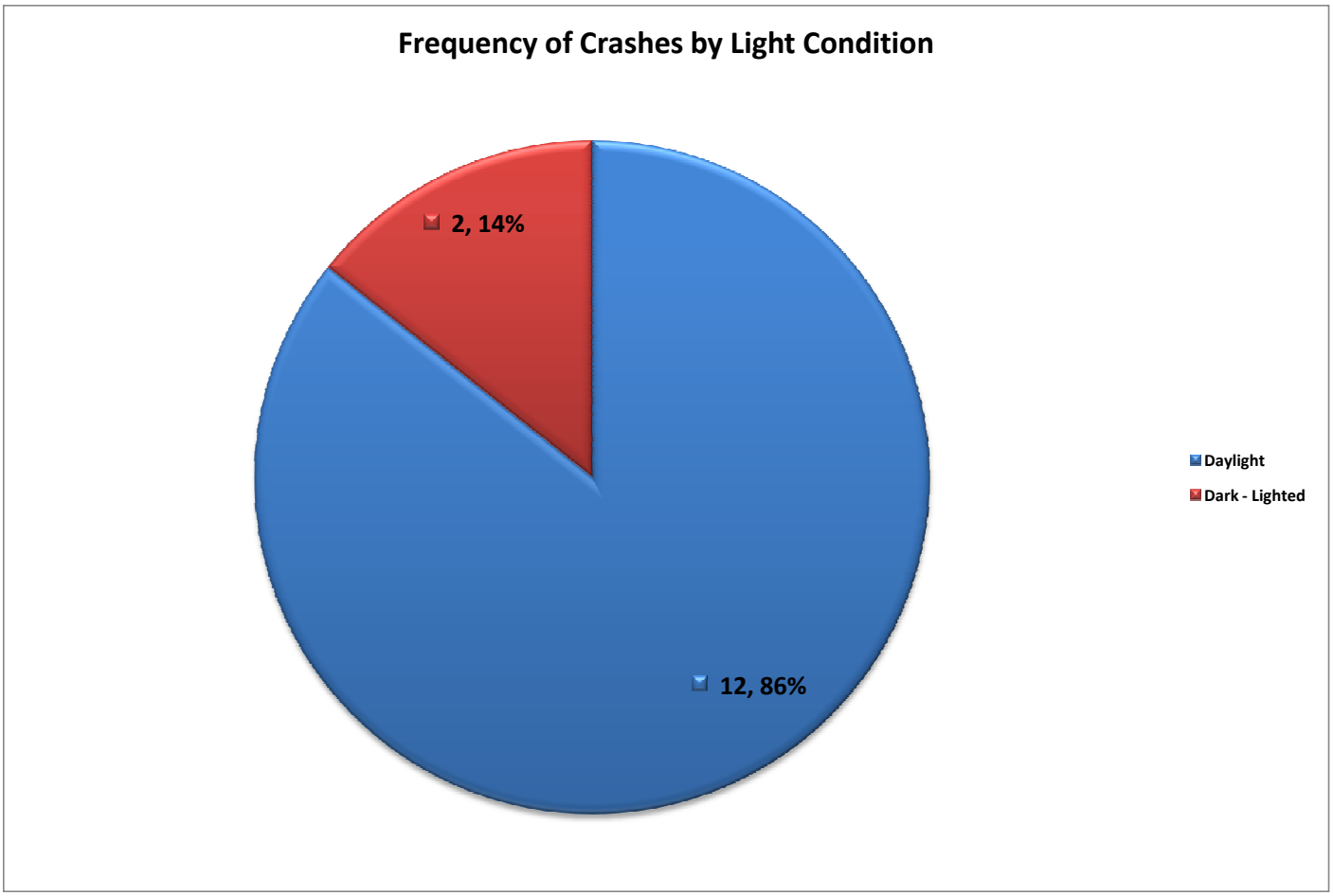
- - (-) From // to //


Frequency of Crashes by Hour
2.5
2
1.5
1
0.5
0
9
12
13
14
15
16
18
19
23

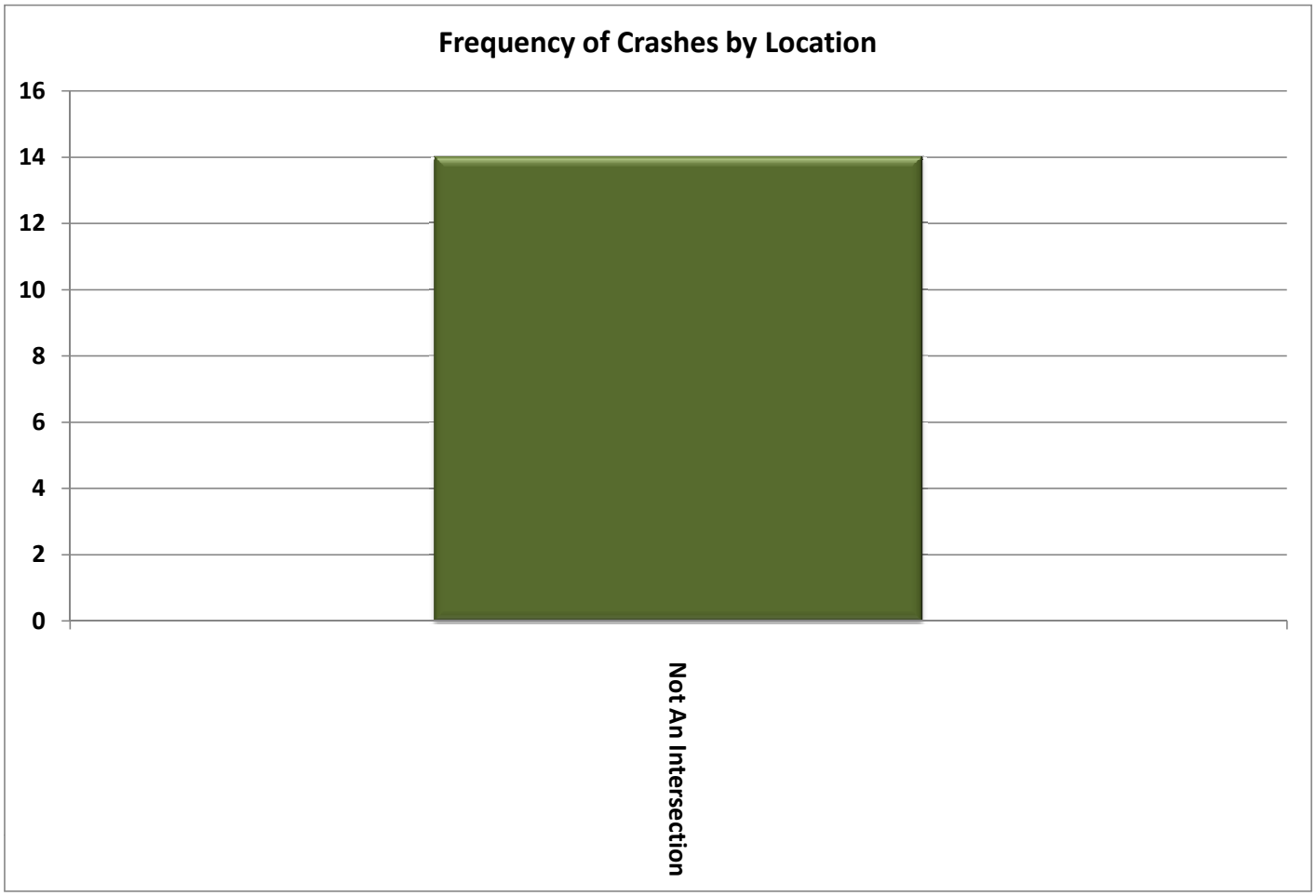

Frequency of Crashes by Month
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
2
3
4
6
8
10
11
12

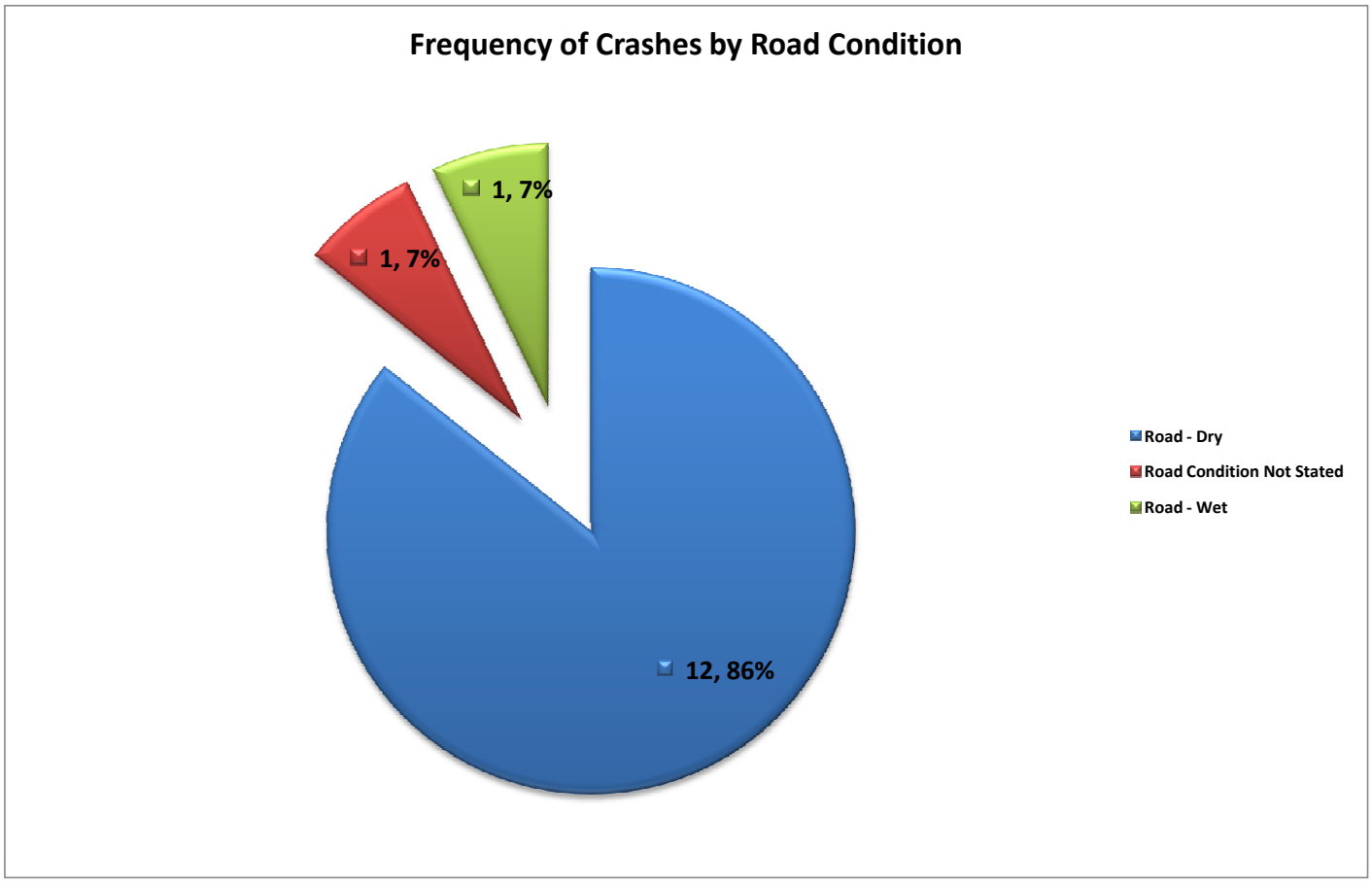
- - (-) From // to //


Frequency of Crashes by Type of Crash
10
9
8
7
6
5
4
3
2
1
0
Rear End
Parked Vehicle
Sideswipe - Passing
Pedalcycles

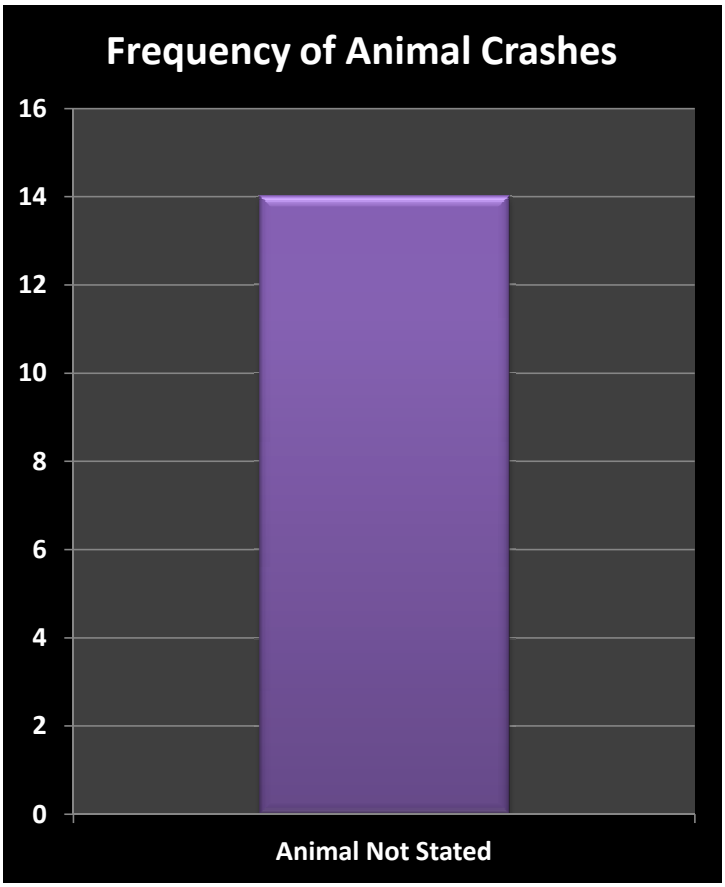

Frequency of Crashes by Light Condition
2, 14%
12, 86%
Daylight
Dark - Lighted

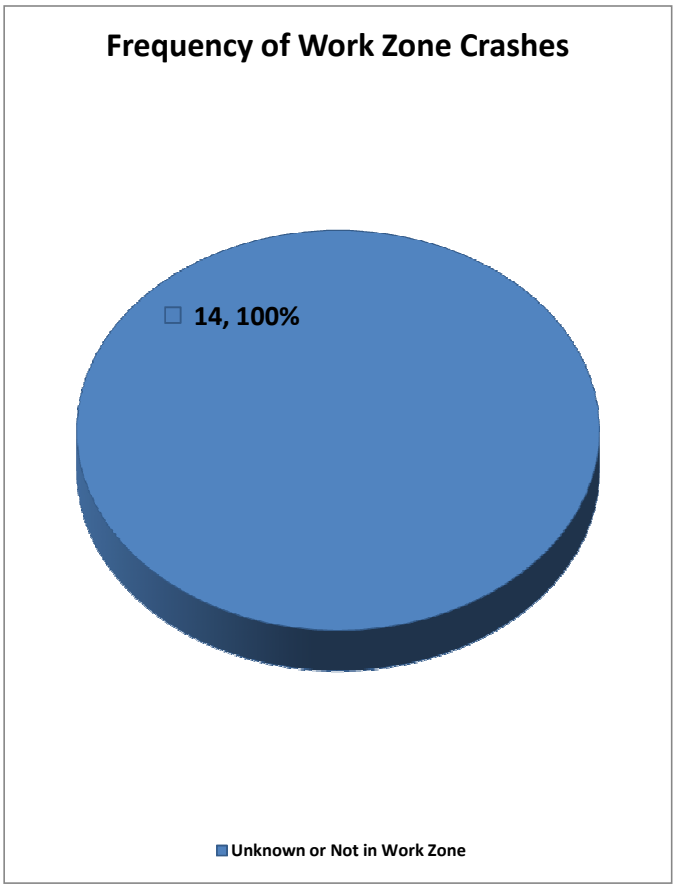
- - (-) From // to //

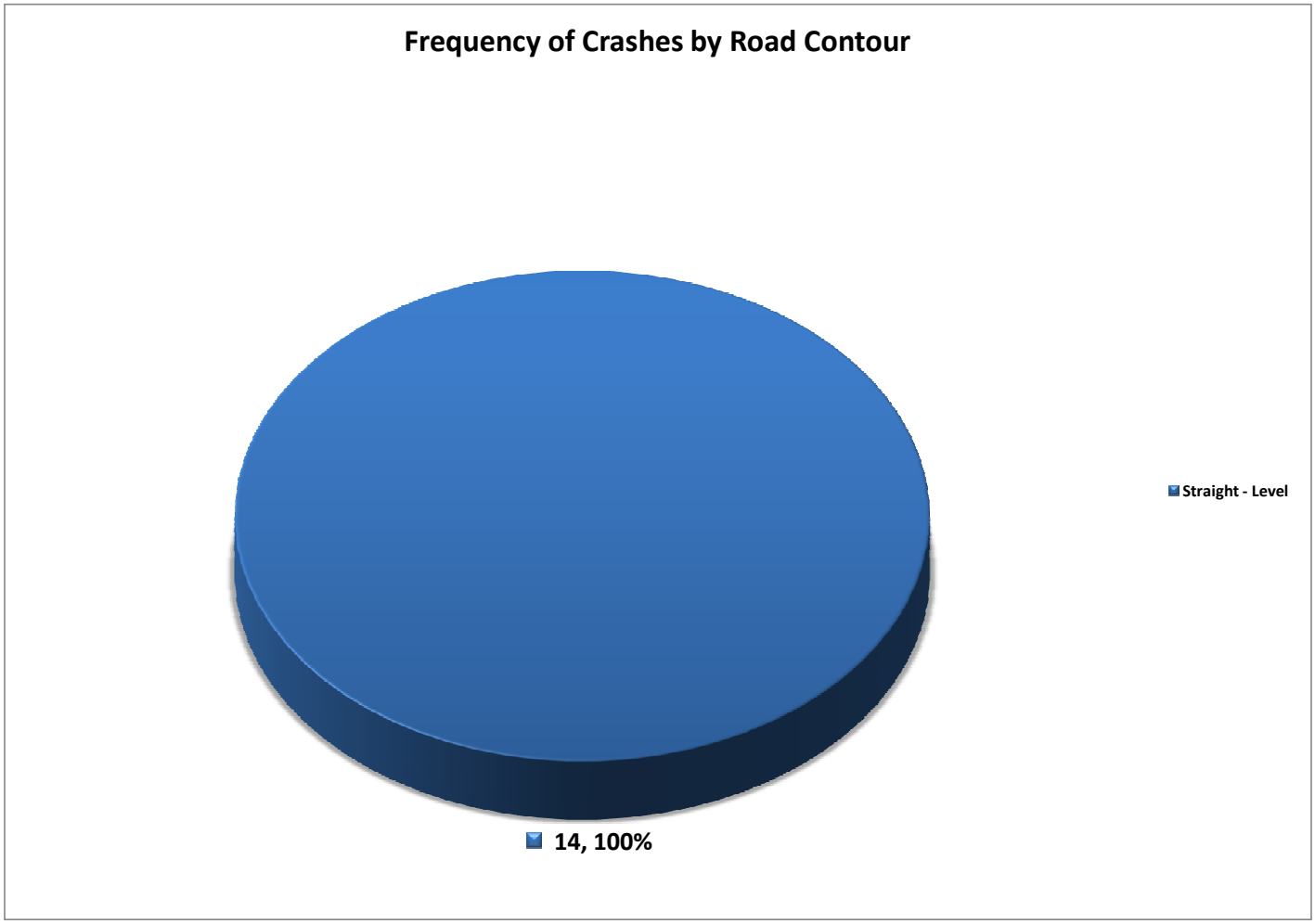

Frequency of Crashes by Location
16
14
12
10
8
6
4
2
0
Not An Intersection


Frequency of Crashes by Road Condition
1, 7%
1, 7%
12, 86%
Road - Dry
Road Condition Not Stated
Road - Wet

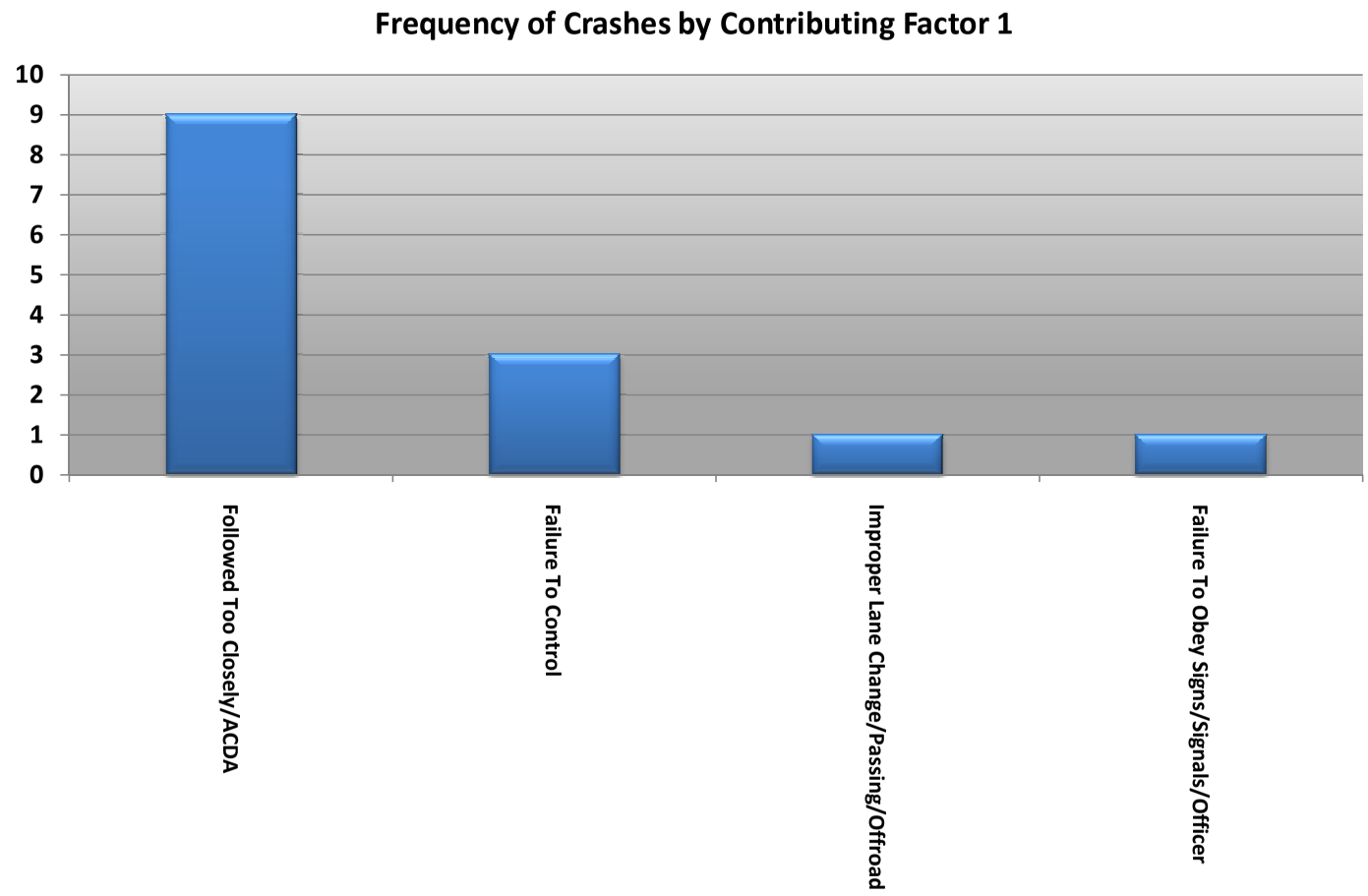
- - (-) From // to //

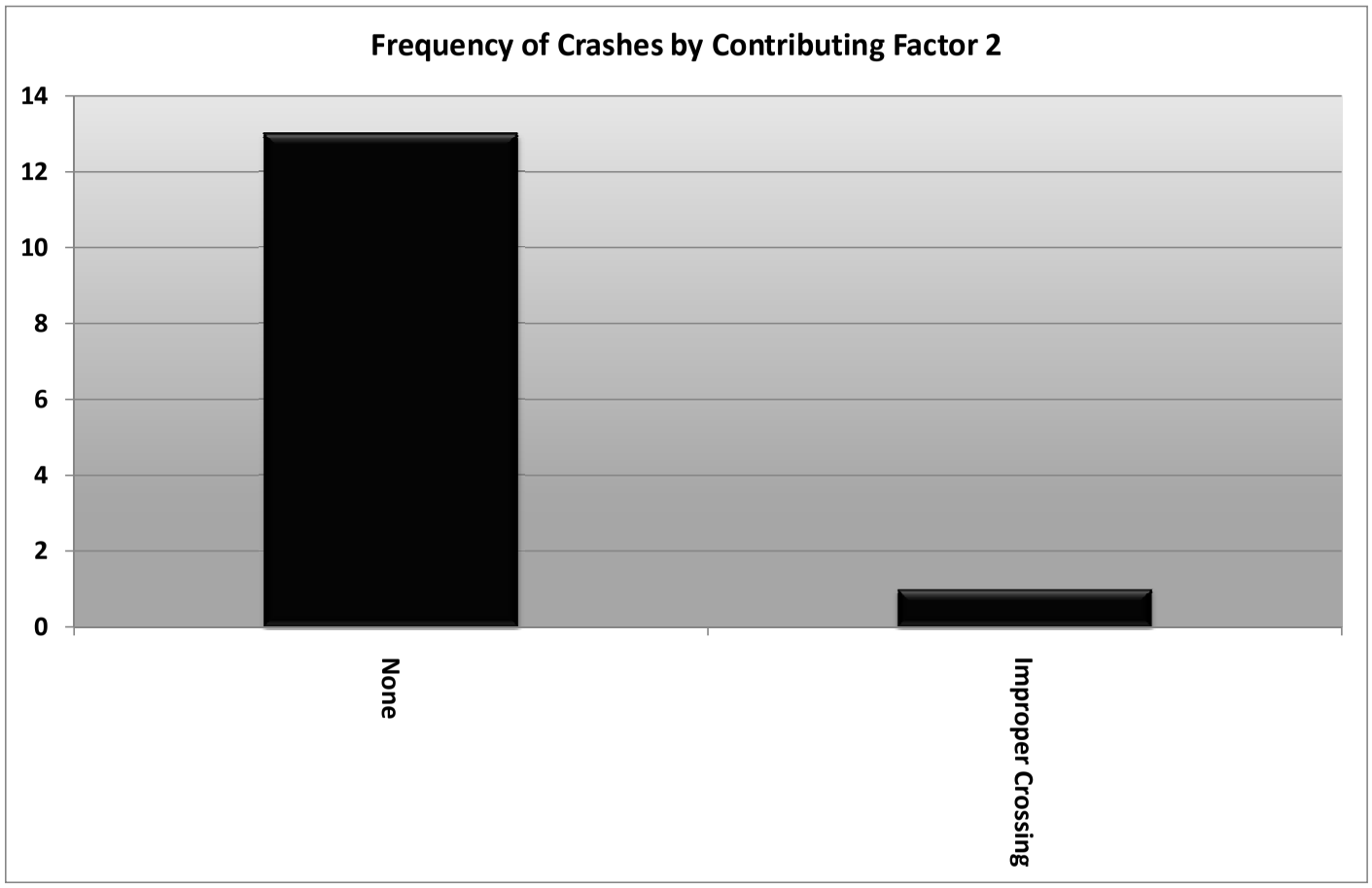

Frequency of Animal Crashes
16
14
12
10
8
6
4
2
0
Animal Not Stated


Frequency of Work Zone Crashes
14, 100%
Unknown or Not in Work Zone

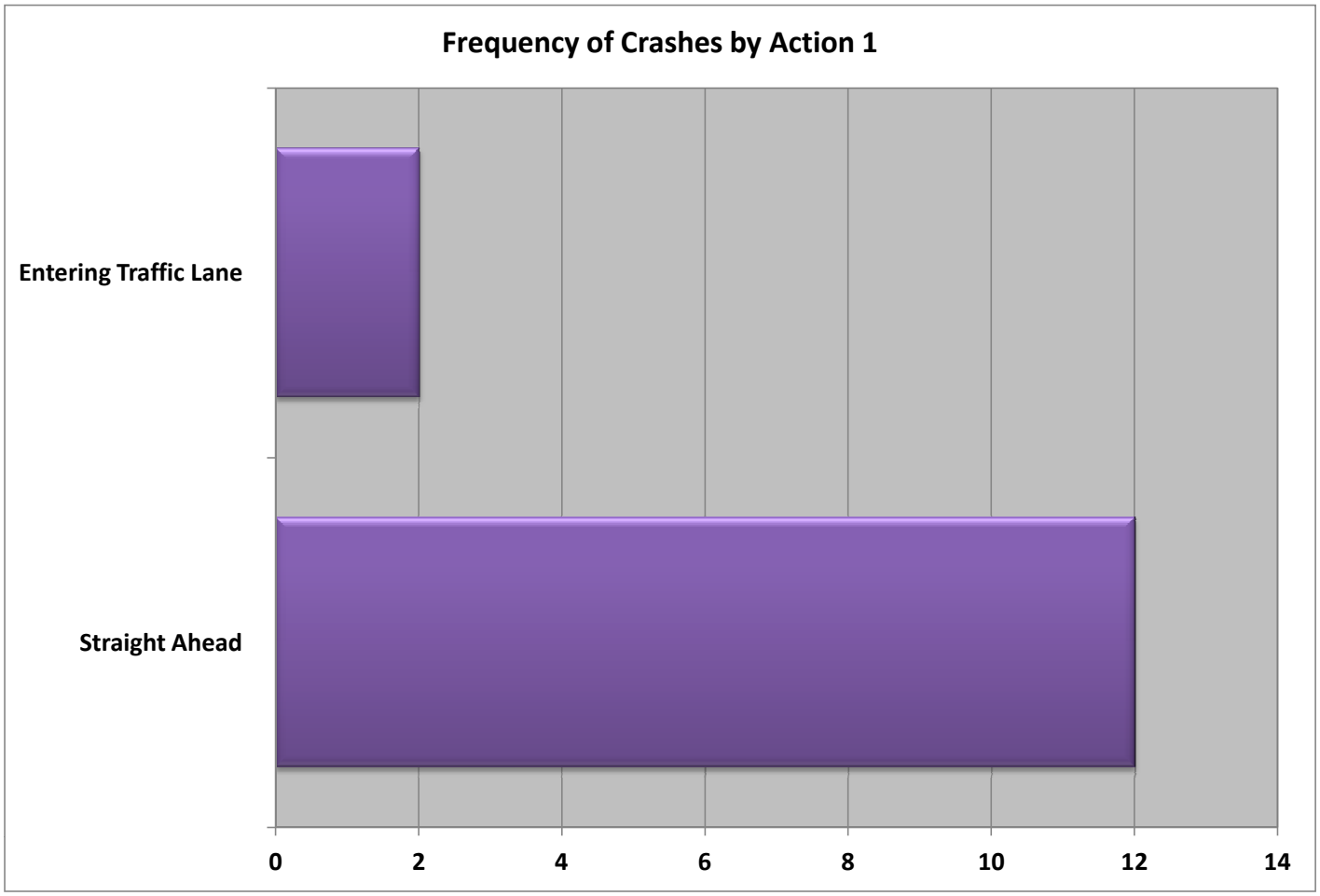

Frequency of Crashes by Road Contour
Straight - Level
14, 100%

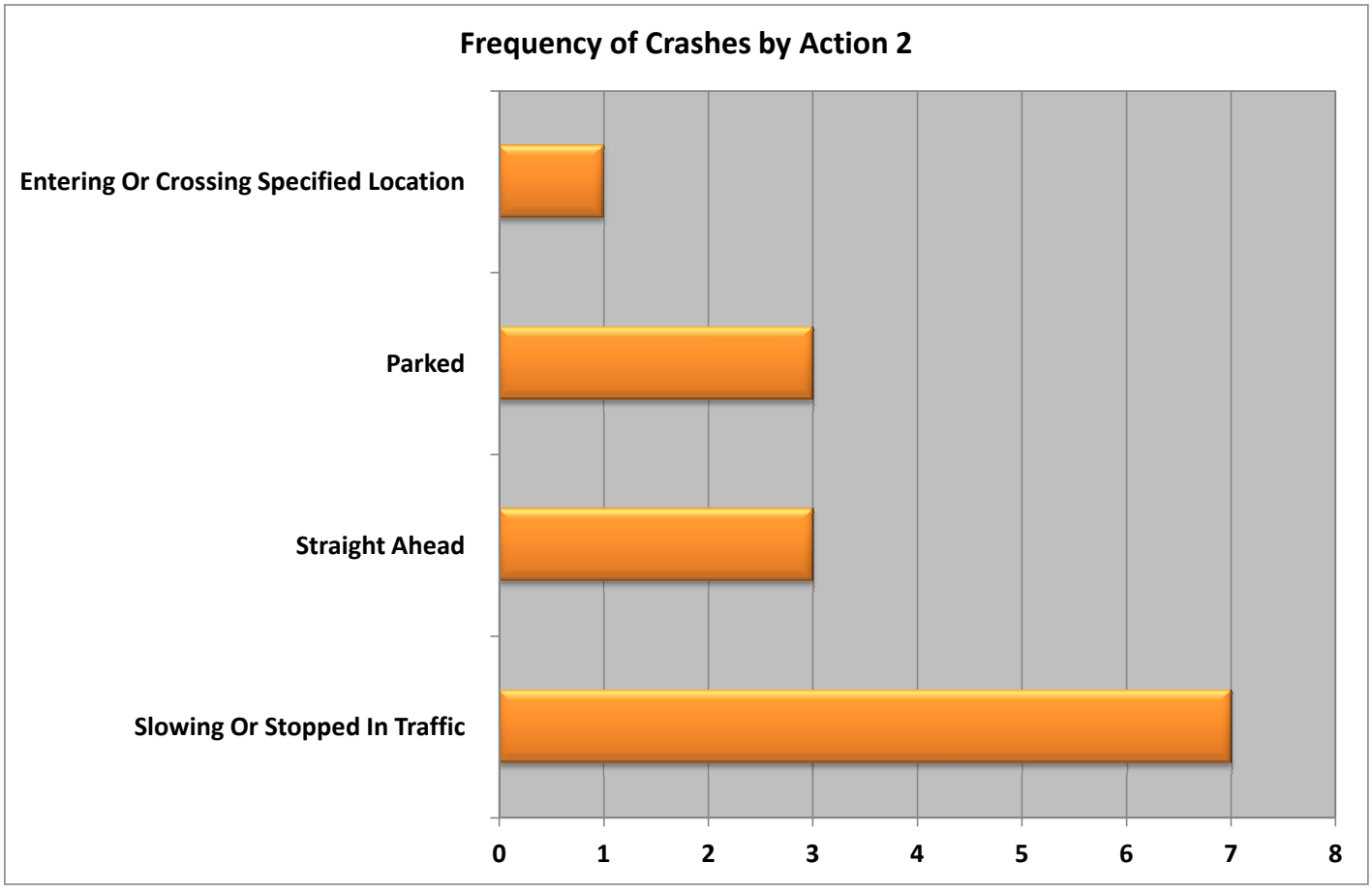
- - (-) From // to //


Frequency of Crashes by Contributing Factor 1
10
9
8
7
6
5
4
3
2
1
0
Followed Too Closely/ACDA
Failure To Control
Improper Lane Change/Passing/Offroad
Failure To Obey Signs/Signals/Officer

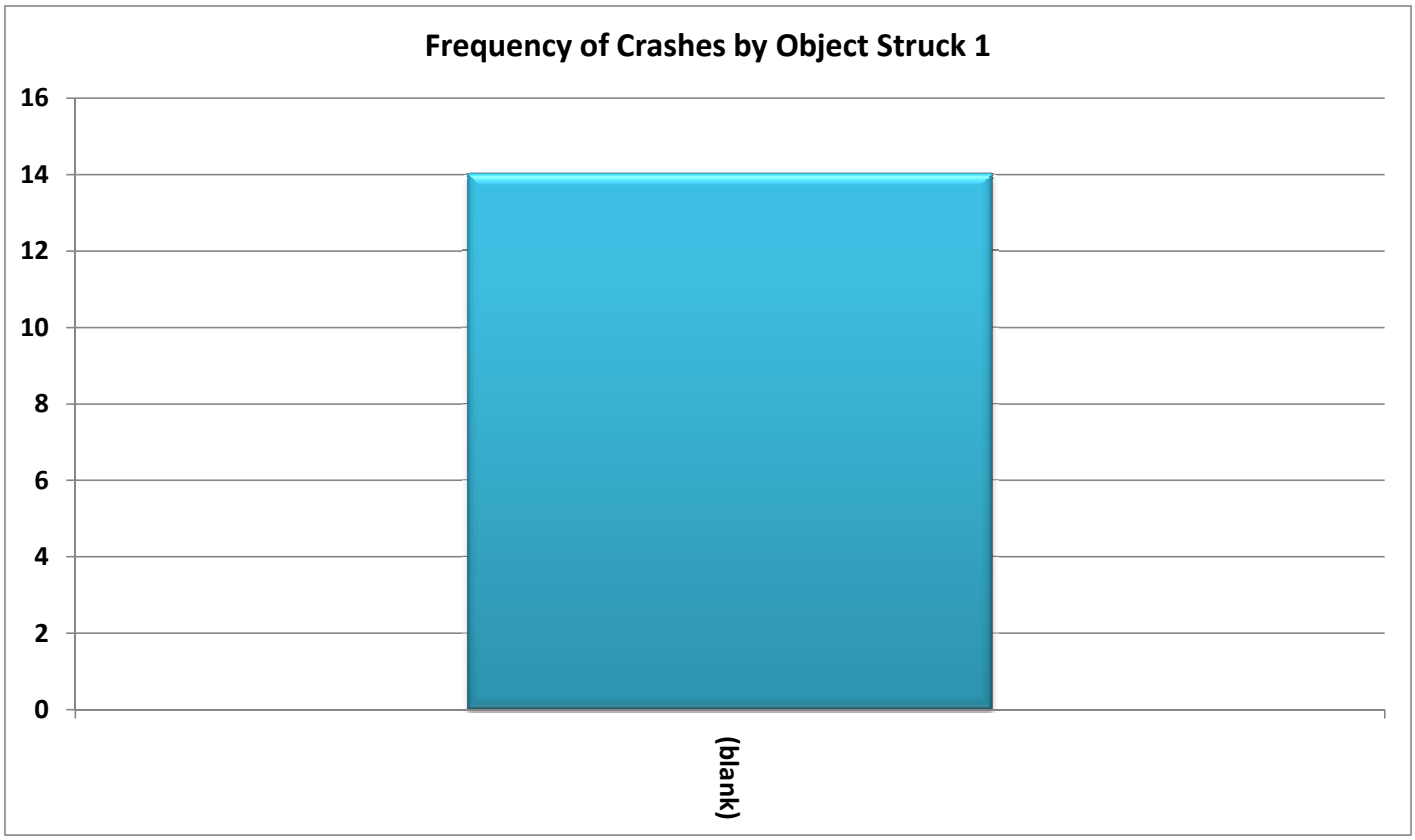

Frequency of Crashes by Contributing Factor 2
14
12
10
8
6
4
2
0
None
Improper Crossing

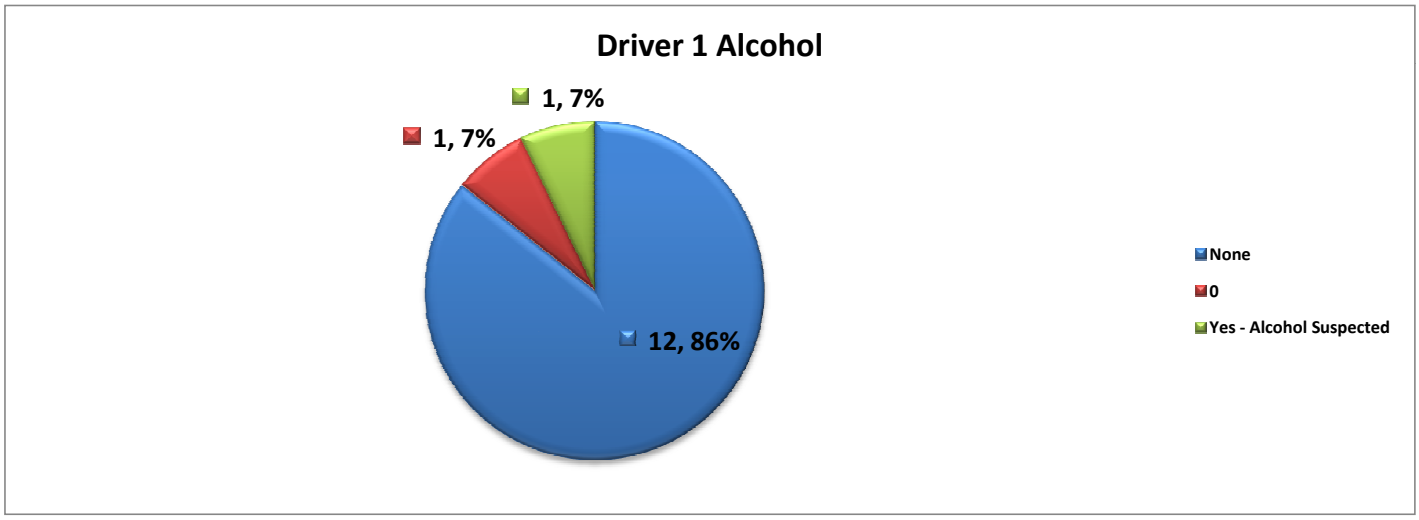
- - (-) From // to //

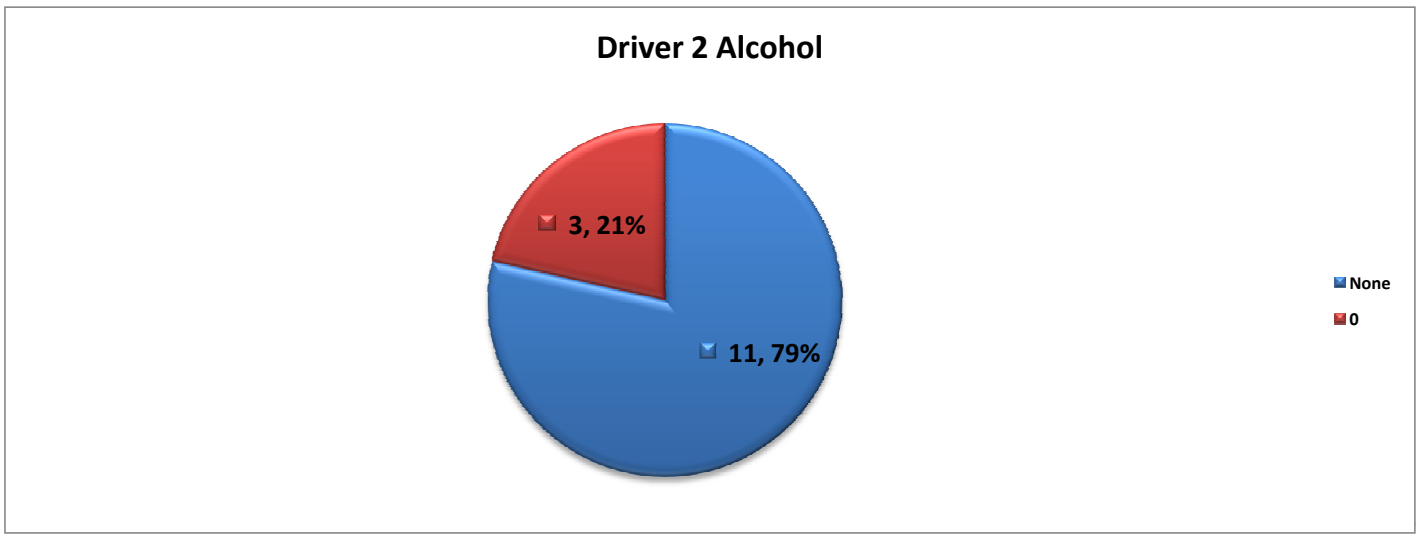

Frequency of Crashes by Action 1
Entering Traffic Lane
Straight Ahead
0
2
4
6
8
10
12
14


Frequency of Crashes by Action 2
Entering Or Crossing Specified Location
Parked
Straight Ahead
Slowing Or Stopped In Traffic
0
1
2
3
4
5
6
7
8

- - (-) From // to //


Frequency of Crashes by Object Struck 1
16
14
12
10
8
6
4
2
0
(blank)


Driver 1 Alcohol
1, 7%
1, 7%
12, 86%
None
0
Yes - Alcohol Suspected


Driver 2 Alcohol
3, 21%
11, 79%
None
0

Short Street Crash Data

- - (-) From // to //

	Number
Total	**29**

CRASH_SEVERITY	Number	%
Injury Crash	**2**	6.9%
Property Damage Crash	**27**	93.1%
Grand Total	**29**	**100.0%**

TRAFFIC_CRASH_YEAR	Number	%
2009	**6**	20.7%
2010	**2**	6.9%
2011	**8**	27.6%
2012	**1**	3.4%
2013	**5**	17.2%
2014	**4**	13.8%
2015	**3**	10.3%
Grand Total	**29**	**100.0%**

DAY_OF_WEEK	Number	%
Wednesday	**7**	24.1%
Thursday	**5**	17.2%
Monday	**4**	13.8%
Sunday	**4**	13.8%
Tuesday	**4**	13.8%
Friday	**3**	10.3%
Saturday	**2**	6.9%
Grand Total	**29**	**100.0%**

HOUR_OF_DAY	Number	%
0	**1**	3.4%
7	**1**	3.4%
8	**2**	6.9%
9	**1**	3.4%
11	**4**	13.8%
12	**3**	10.3%
13	**4**	13.8%
14	**5**	17.2%
15	**2**	6.9%
16	**1**	3.4%
17	**1**	3.4%
18	**2**	6.9%
21	**1**	3.4%
22	**1**	3.4%
Grand Total	**29**	**100.0%**

TYPE_OF_CRASH	Number	%
Sideswipe - Passing	**11**	37.9%
Parked Vehicle	**8**	27.6%
Rear End	**7**	24.1%
Fixed Object	**2**	6.9%
Angle	**1**	3.4%
Grand Total	**29**	**100.0%**

- - (-) From // to //

WEATHER_CONDITION	Number	%
Clear	21	72.4%
Cloudy	6	20.7%
Snow	1	3.4%
Rain	1	3.4%
Grand Total	**29**	**100.0%**

ROAD_CONDITION	Number	%
Road - Dry	26	89.7%
Road - Snow	2	6.9%
Road - Wet	1	3.4%
Grand Total	**29**	**100.0%**

LIGHT_CONDITION	Number	%
Daylight	26	89.7%
Dark - Lighted	3	10.3%
Grand Total	**29**	**100.0%**

NUMBER_OF_VEHICLES	Number	%
(blank)	29	100.0%
Grand Total	**29**	**100.0%**

LOCATION	Number	%
Not An Intersection	25	86.2%
T-Intersection	2	6.9%
Four-Way Intersection	1	3.4%
Driveway/Alley Access	1	3.4%
Grand Total	**29**	**100.0%**

CRASH_MONTH_NBR	Number	%
1	4	13.8%
2	3	10.3%
4	1	3.4%
5	3	10.3%
6	3	10.3%
7	7	24.1%
8	1	3.4%
9	2	6.9%
10	1	3.4%
11	2	6.9%
12	2	6.9%
Grand Total	**29**	**100.0%**

ROAD_CONTOUR	Number	%
Straight - Level	27	93.1%
Straight - Grade	2	6.9%
Grand Total	**29**	**100.0%**

SPECIAL_AREA	Number	%
Unknown or Not in Work Zone	29	100.0%
Grand Total	**29**	**100.0%**

ANIMAL_TYPE	Number	%
Animal Not Stated	29	100.0%
Grand Total	**29**	**100.0%**

- - (-) From // to //

ACTION1	Number	%
Straight Ahead	**17**	58.6%
Changing Lanes	**6**	20.7%
Entering Traffic Lane	**5**	17.2%
Unknown	**1**	3.4%
Grand Total	**29**	**100.0%**

CONTRIBUTING_FACTOR1	Number	%
Followed Too Closely/ACDA	**9**	31.0%
Failure To Control	**7**	24.1%
Unknown	**5**	17.2%
Improper Lane Change/Passing/Offroad	**4**	13.8%
Improper Start From Parked Position	**3**	10.3%
Failure To Yield	**1**	3.4%
Grand Total	**29**	**100.0%**

OBJECT_STRUCK1	Number	%
(blank)	**29**	100.0%
Grand Total	**29**	**100.0%**

TRAFFIC_CONTROL1	Number	%
Pavement Markings	**22**	75.9%
No Controls	**6**	20.7%
Traffic Signal	**1**	3.4%
Grand Total	**29**	**100.0%**

DRIVER_ALCOHOL1	Number	%
None	**25**	86.2%
0	**3**	10.3%
Yes - Alcohol Suspected	**1**	3.4%
Grand Total	**29**	**100.0%**

DRIVER_DRUGS1	Number	%
(blank)	**29**	100.0%
Grand Total	**29**	**100.0%**

- - (-) From // to //

DIRECTION_FROM1	Number	%
South	12	41.4%
North	12	41.4%
East	4	13.8%
West	1	3.4%
Grand Total	**29**	**100.0%**

DIRECTION_TO1	Number	%
North	12	41.4%
South	12	41.4%
West	4	13.8%
East	1	3.4%
Grand Total	**29**	**100.0%**

POSTED_SPEED1	Number	%
Posted Speed 21-25	28	96.6%
Posted Speed Not Stated	1	3.4%
Grand Total	**29**	**100.0%**

ESTIMATED_SPEED1	Number	%
Unit Speed 20 and Under	19	65.5%
Unit Speed 21-25	7	24.1%
Unit Speed Not Stated	2	6.9%
Unit Speed 26-30	1	3.4%
Grand Total	**29**	**100.0%**

VEHICLE_TYPE1	Number	%
Sport Utility Vehicle	10	34.5%
Mid Size	6	20.7%
Minivan	3	10.3%
Bus (16+ Seats, Inc Driver)	2	6.9%
Unknown Or Hit/Skip	1	3.4%
Compact	1	3.4%
Pickup	1	3.4%
Single Unit Truck Or Van 2 Axle, 6 Tires	1	3.4%
Single Unit Truck/Trailer	1	3.4%
Full Size	1	3.4%
Van	1	3.4%
Sub-Compact	1	3.4%
Grand Total	**29**	**100.0%**

VEHICLE_TYPE2	Number	%
Mid Size	8	27.6%
Sport Utility Vehicle	7	24.1%
Minivan	4	13.8%
Full Size	3	10.3%
Compact	3	10.3%
	2	6.9%
Bus (16+ Seats, Inc Driver)	1	3.4%
Pickup	1	3.4%
Grand Total	**29**	**100.0%**

- - (-) From // to //

ACTION2	Number	%
Straight Ahead	13	44.8%
Slowing Or Stopped In Traffic	7	24.1%
Parked	5	17.2%
	2	6.9%
Negotiating A Curve	1	3.4%
Making Right Turn	1	3.4%
Grand Total	**29**	**100.0%**

CONTRIBUTING_FACTOR2	Number	%
None	23	79.3%
Unknown	3	10.3%
	2	6.9%
Improper Lane Change/Passing/Offroad	1	3.4%
Grand Total	**29**	**100.0%**

DIRECTION_FROM2	Number	%
North	13	44.8%
South	12	41.4%
	2	6.9%
East	2	6.9%
Grand Total	**29**	**100.0%**

DIRECTION_TO2	Number	%
North	12	41.4%
South	12	41.4%
West	3	10.3%
	2	6.9%
Grand Total	**29**	**100.0%**

DRIVER_ALCOHOL2	Number	%
None	21	72.4%
0	6	20.7%
	2	6.9%
Grand Total	**29**	**100.0%**

DRIVER_DRUGS2	Number	%
(blank)	29	100.0%
Grand Total	**29**	**100.0%**

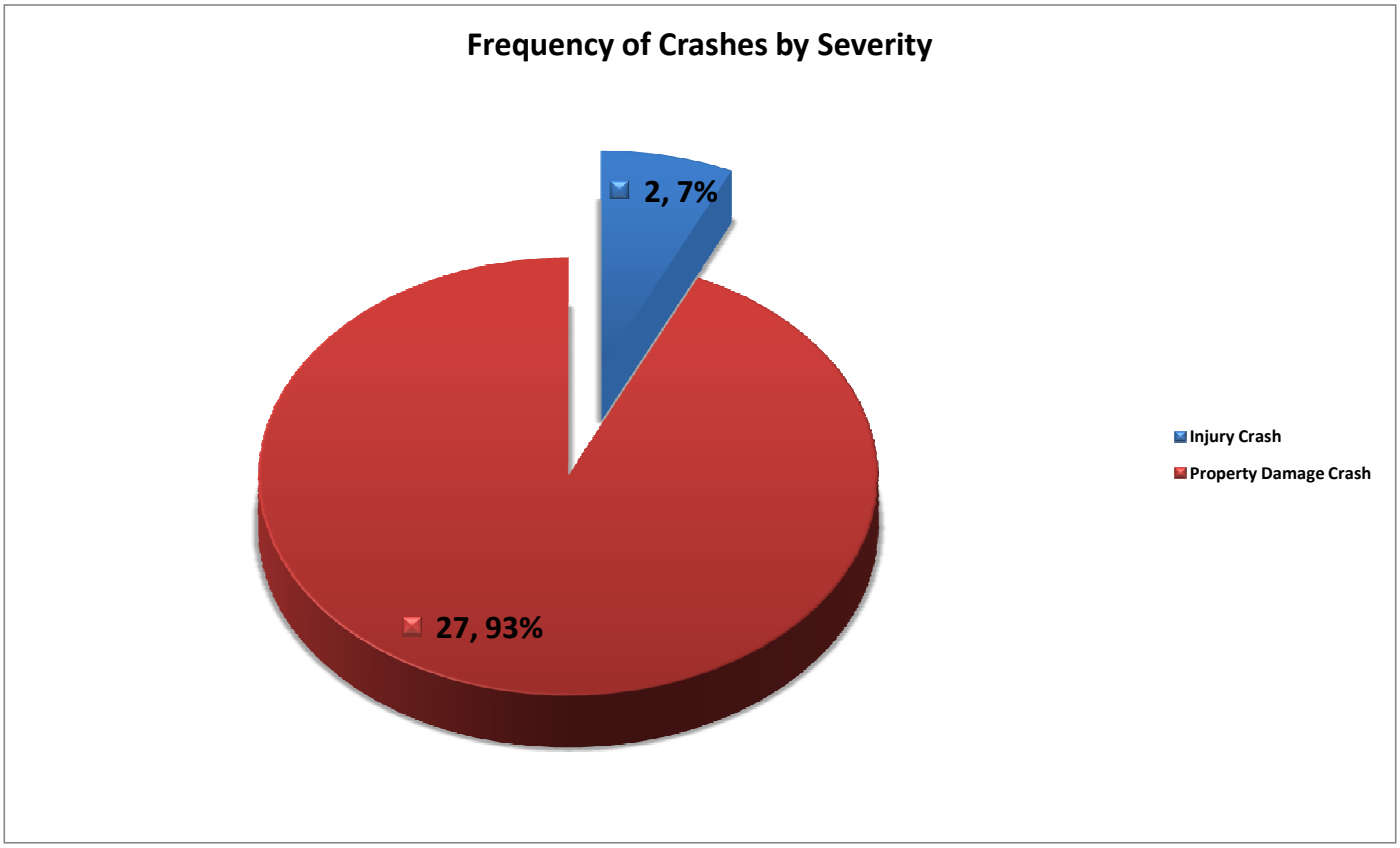
- - (-) From // to //

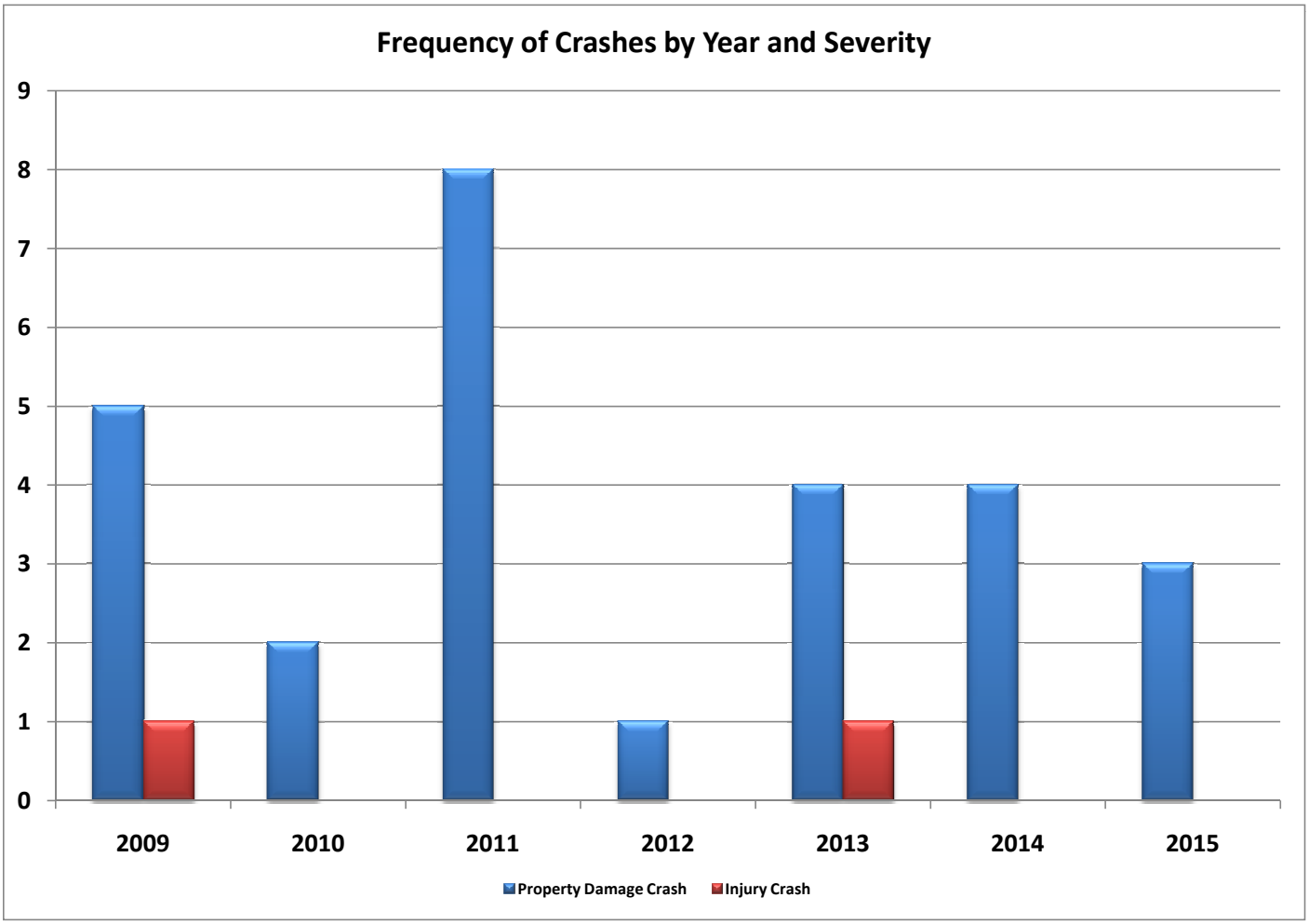
SEVERITY	CRASH_SEVERITY	
TRAFFIC_CRASH_YEAR	Property Damage Crash	Injury Crash
2009	5	1
2010	2	0
2011	8	0
2012	1	0
2013	4	1
2014	4	0
2015	3	0
Grand Total	**27**	**2**

TRAFFIC_CRASH_YEAR	Fatalities	Incapacitating Injuries
2009	0	0
2010	0	0
2011	0	0
2012	0	0
2013	0	0
2014	0	0
2015	0	0
Grand Total	**0**	**0**

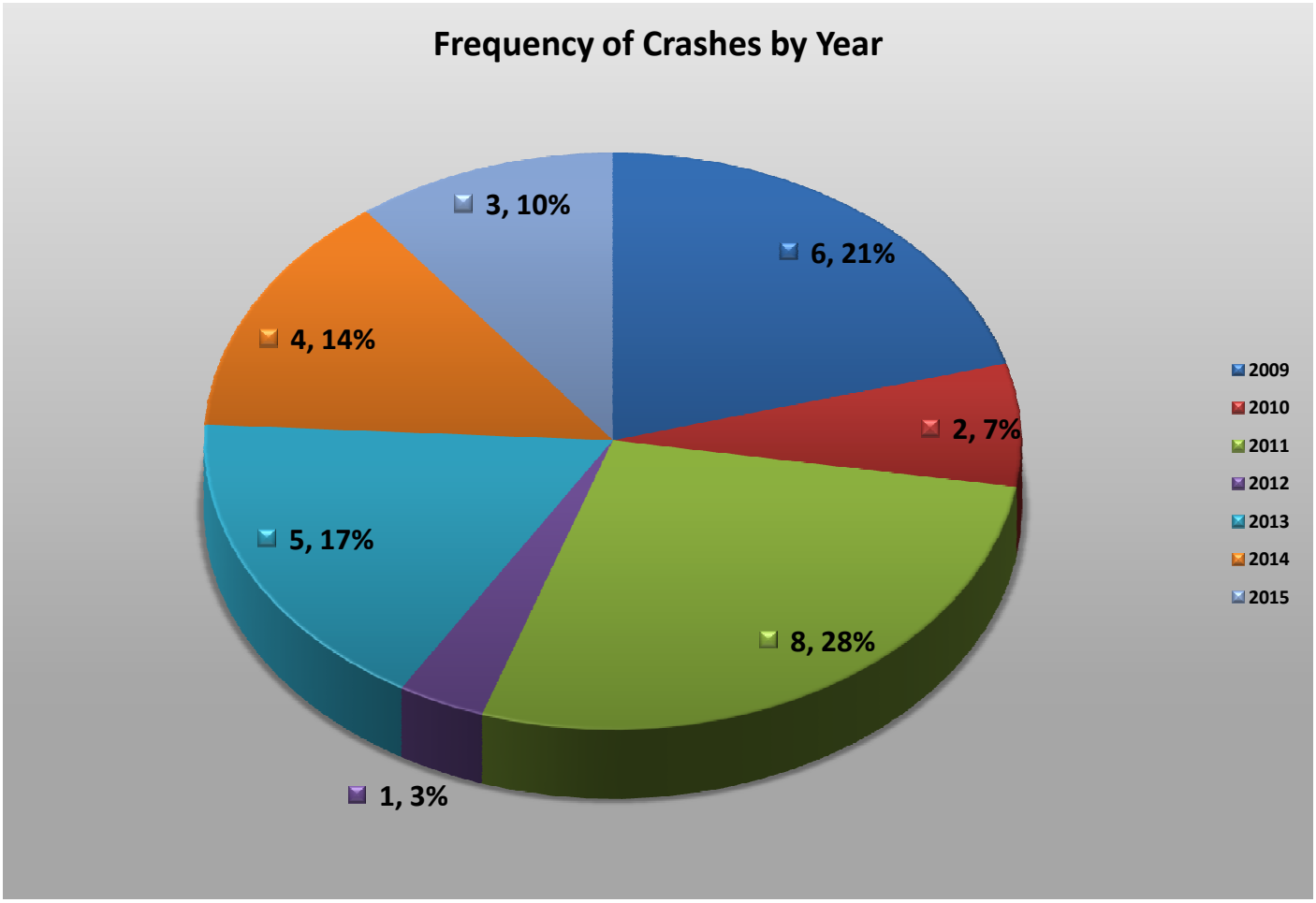
TRAFFIC_CRASH_YEAR	INJ_TYPE2_SERIOUS_VISIBLE	INJ_TYPE3_MINOR_VISIBLE	INJ_TYPE4_NO_VISIBLE
2009	0	0	1
2010	0	0	0
2011	0	0	0
2012	0	0	0
2013	0	1	0
2014	0	0	0
2015	0	0	0
Grand Total	**0**	**1**	**1**

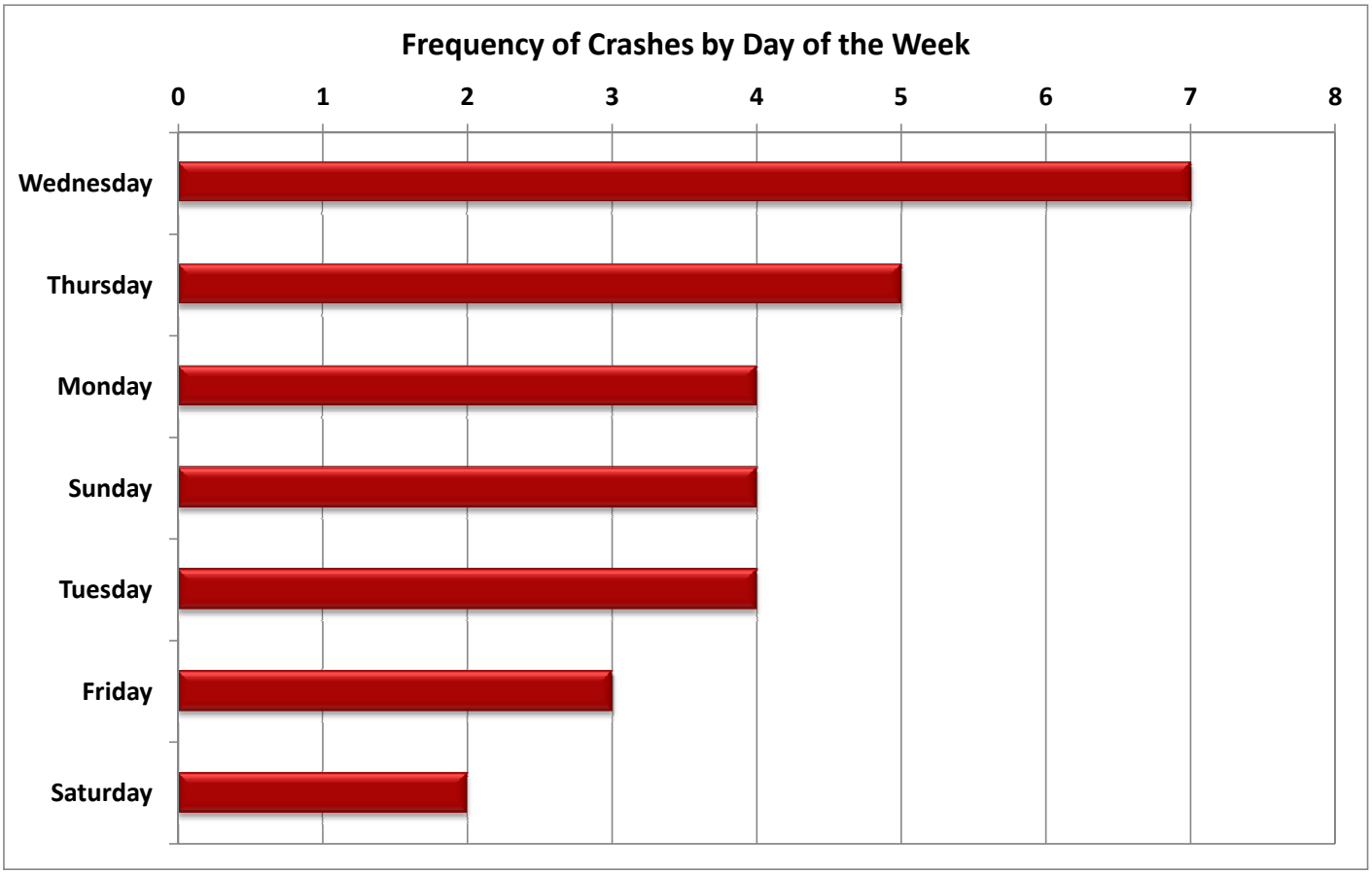
- - (-) From // to //


Frequency of Crashes by Severity
2, 7%
27, 93%
Injury Crash
Property Damage Crash

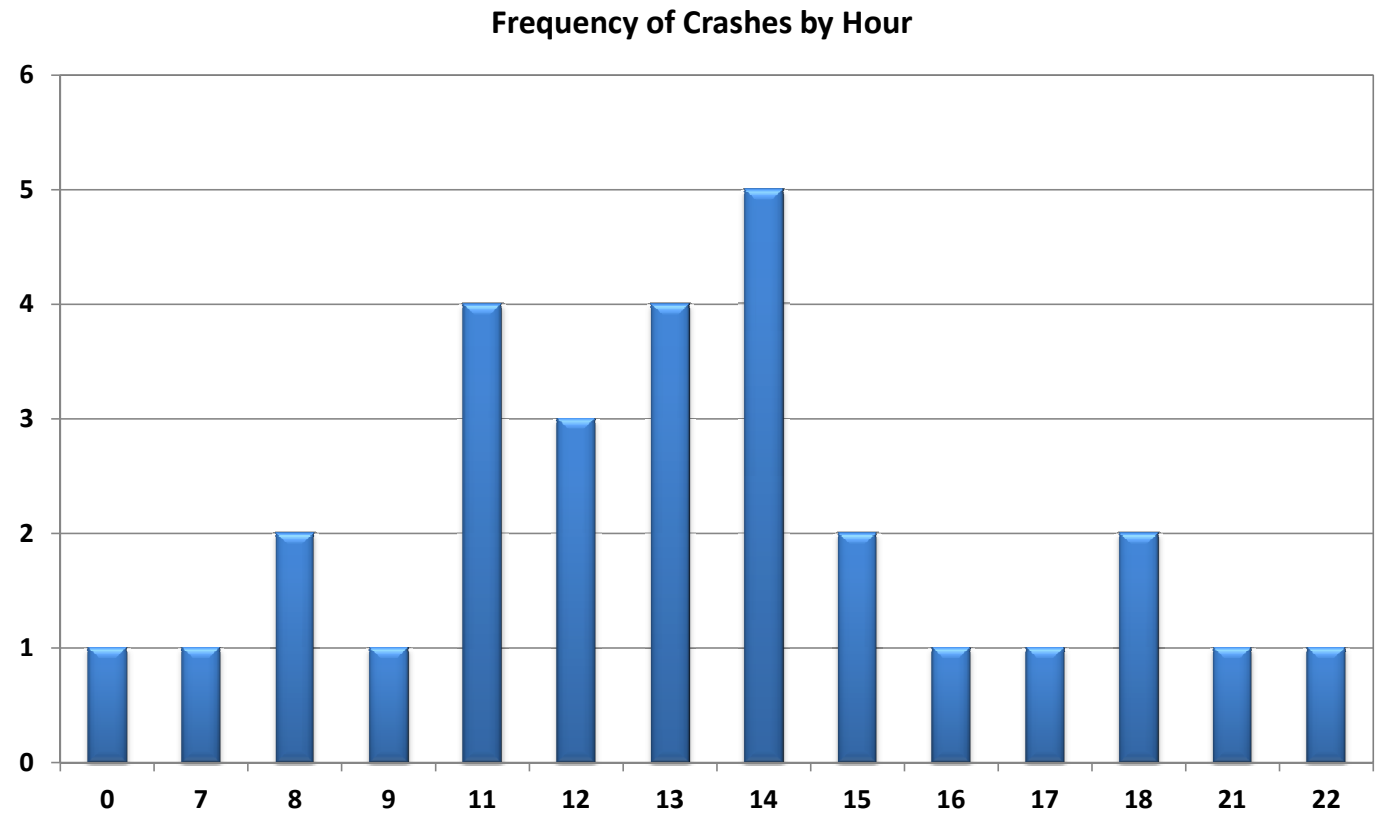

Frequency of Crashes by Year and Severity
9
8
7
6
5
4
3
2
1
0
2009
2010
2011
2012
2013
2014
2015
Property Damage Crash
Injury Crash

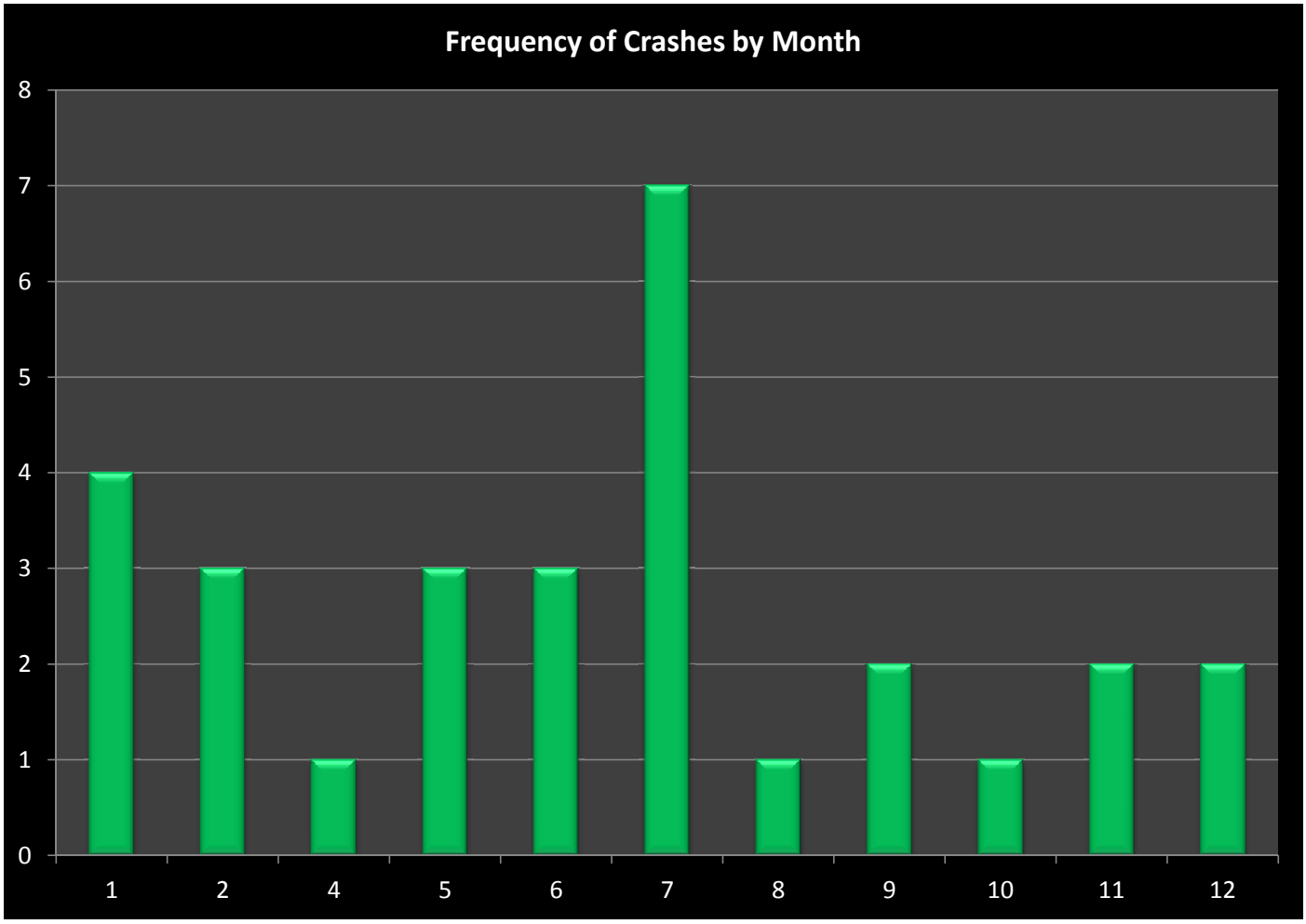
- - (-) From // to //


Frequency of Crashes by Year
3, 10%
6, 21%
4, 14%
2, 7%
5, 17%
8, 28%
1, 3%
2009
2010
2011
2012
2013
2014
2015

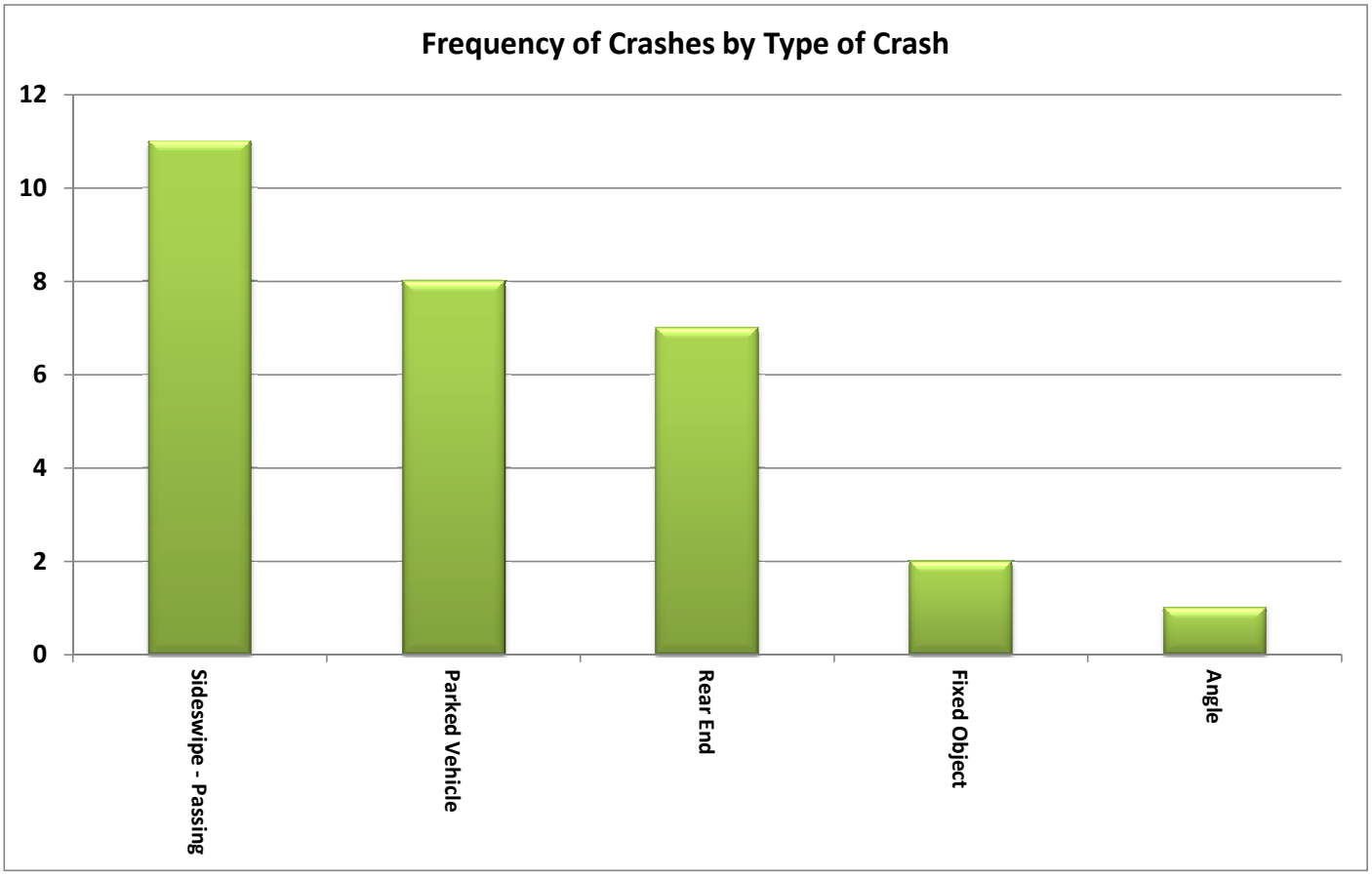

Frequency of Crashes by Day of the Week
0
1
2
3
4
5
6
7
8
Wednesday
Thursday
Monday
Sunday
Tuesday
Friday
Saturday

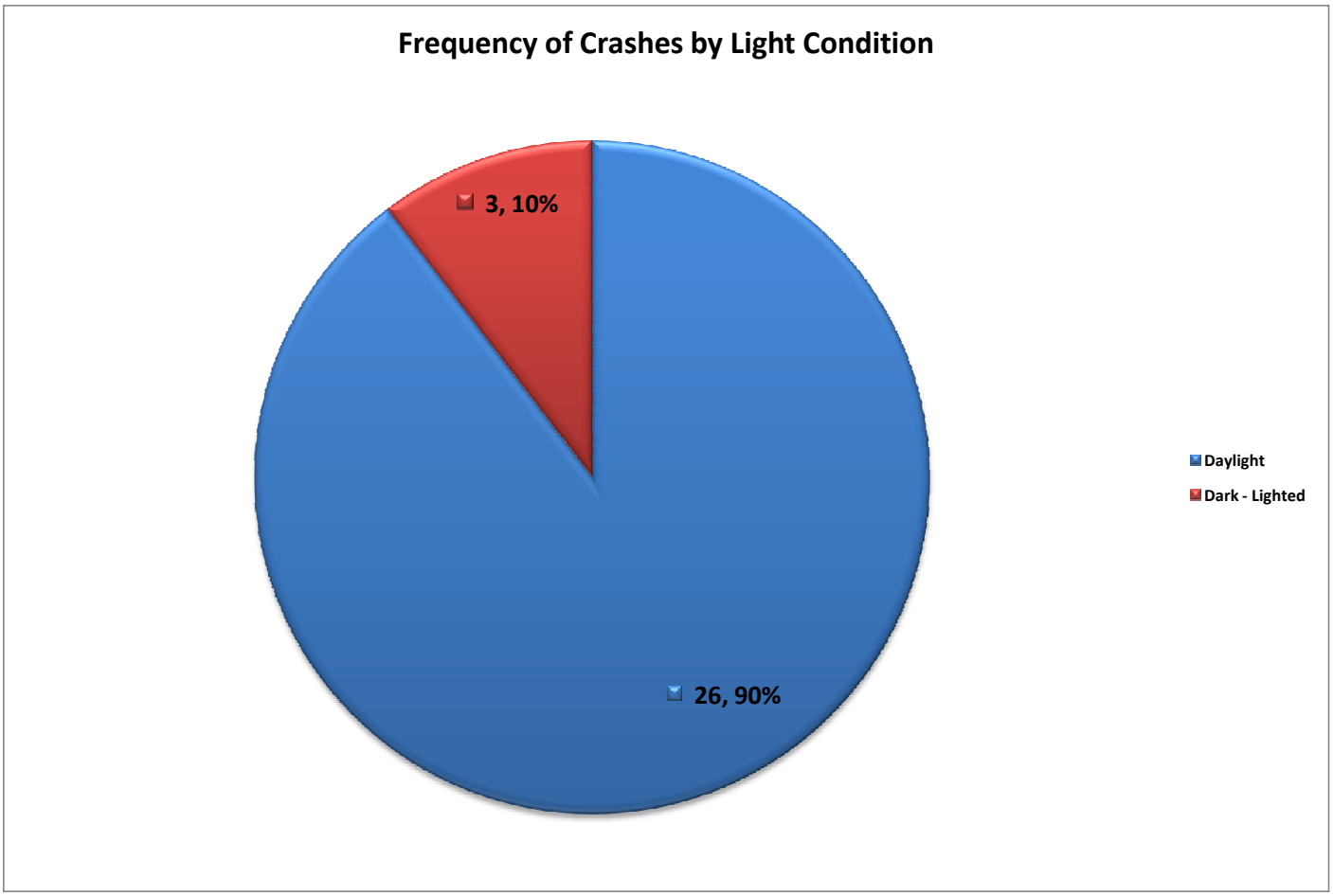
- - (-) From // to //


Frequency of Crashes by Hour
6
5
4
3
2
1
0
0
7
8
9
11
12
13
14
15
16
17
18
21
22

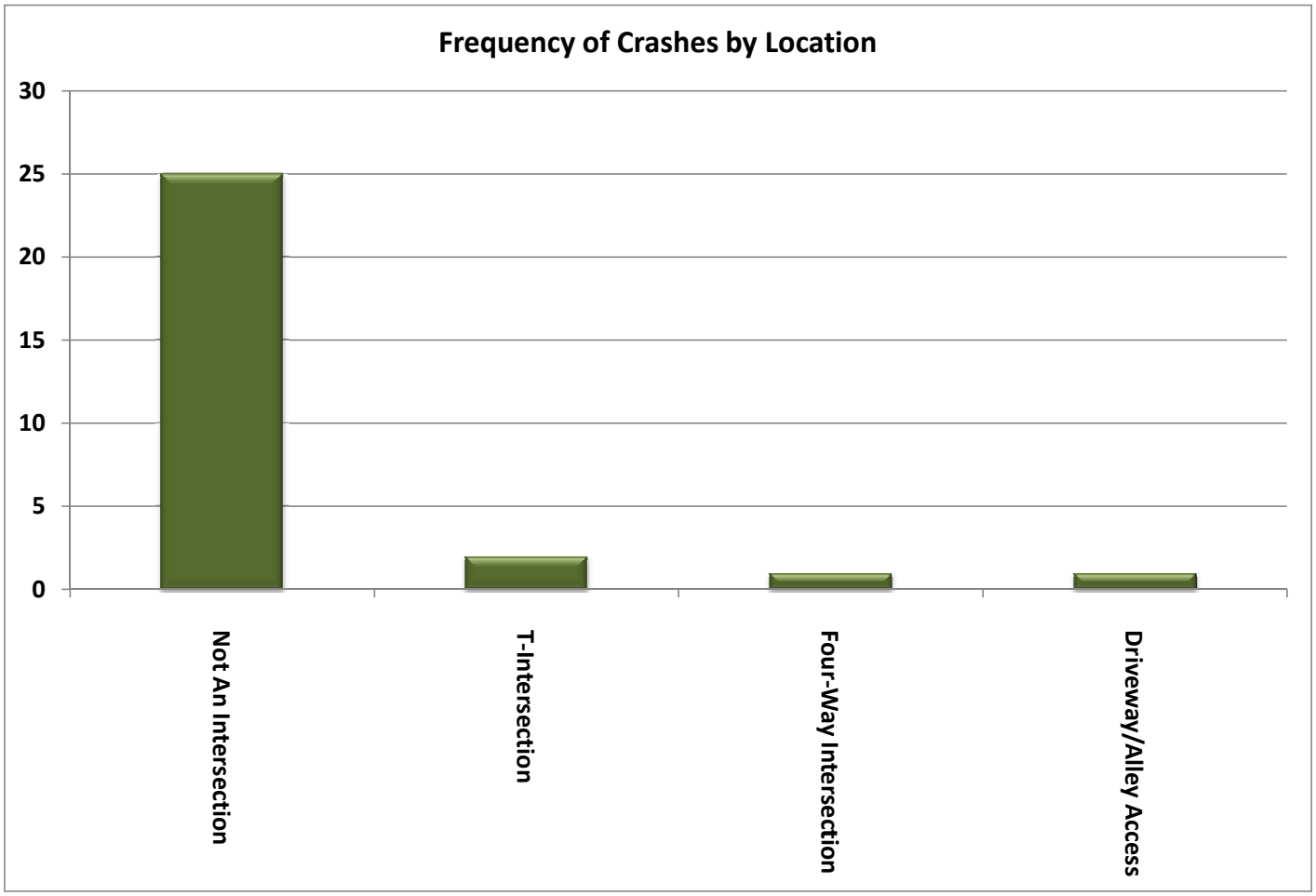

Frequency of Crashes by Month
8
7
6
5
4
3
2
1
0
1
2
4
5
6
7
8
9
10
11
12

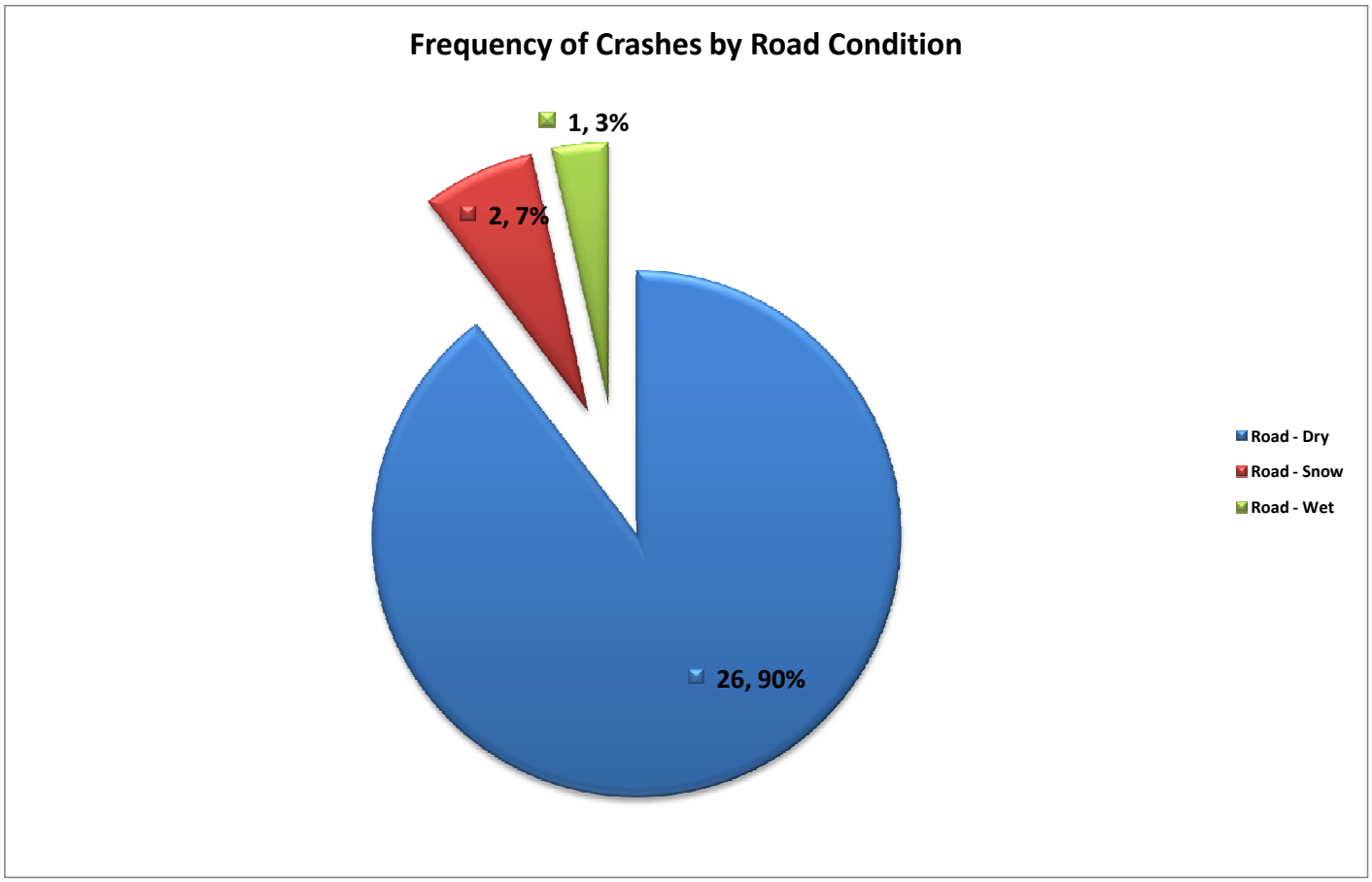
- - (-) From // to //


Frequency of Crashes by Type of Crash
12
10
8
6
4
2
0
Sideswipe - Passing
Parked Vehicle
Rear End
Fixed Object
Angle

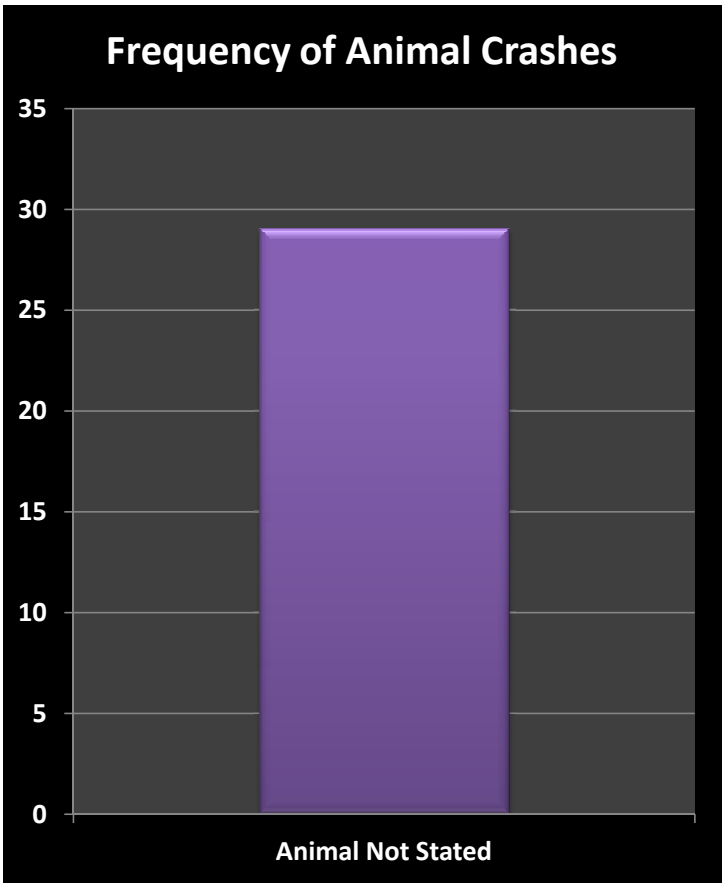

Frequency of Crashes by Light Condition
3, 10%
26, 90%
Daylight
Dark - Lighted

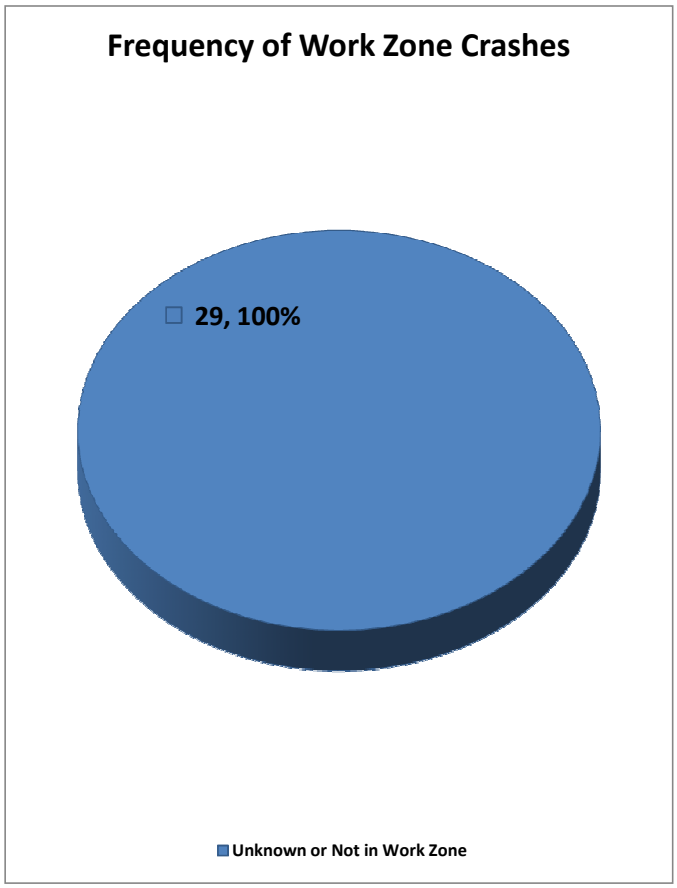
- - (-) From // to //

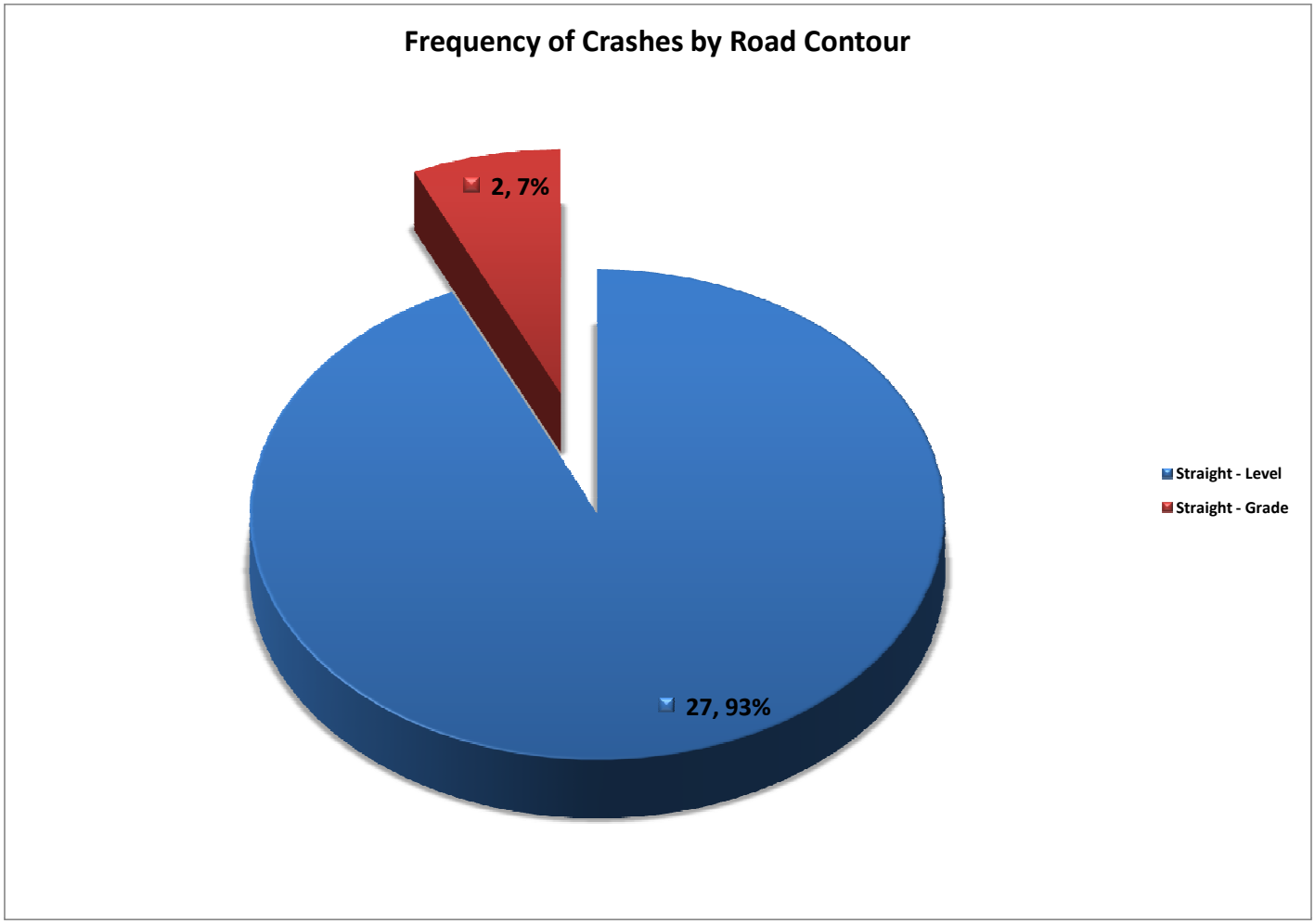

Frequency of Crashes by Location
30
25
20
15
10
5
0
Not An Intersection
T-Intersection
Four-Way Intersection
Driveway/Alley Access


Frequency of Crashes by Road Condition
1, 3%
2, 7%
26, 90%
Road - Dry
Road - Snow
Road - Wet

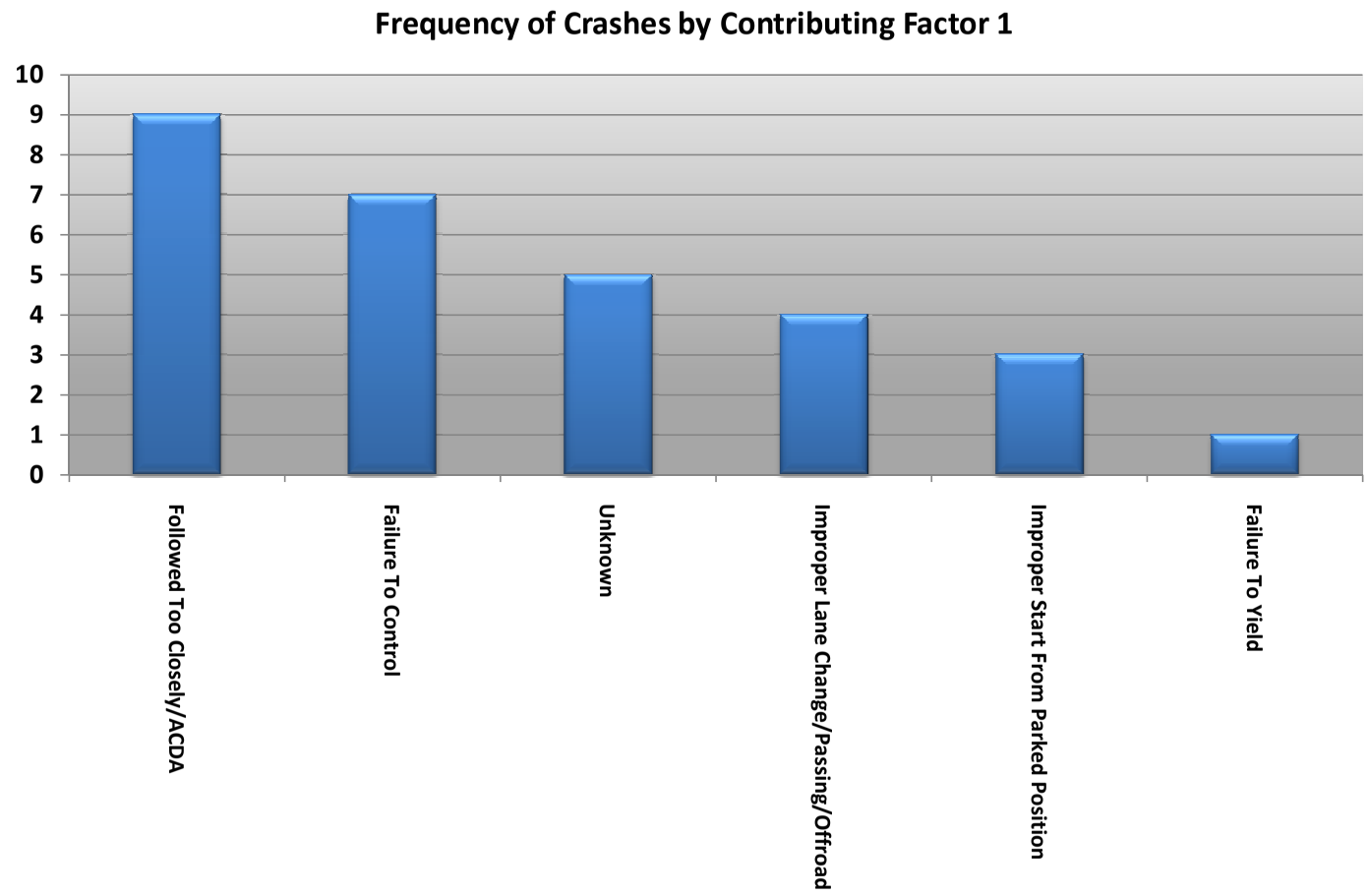
- - (-) From // to //

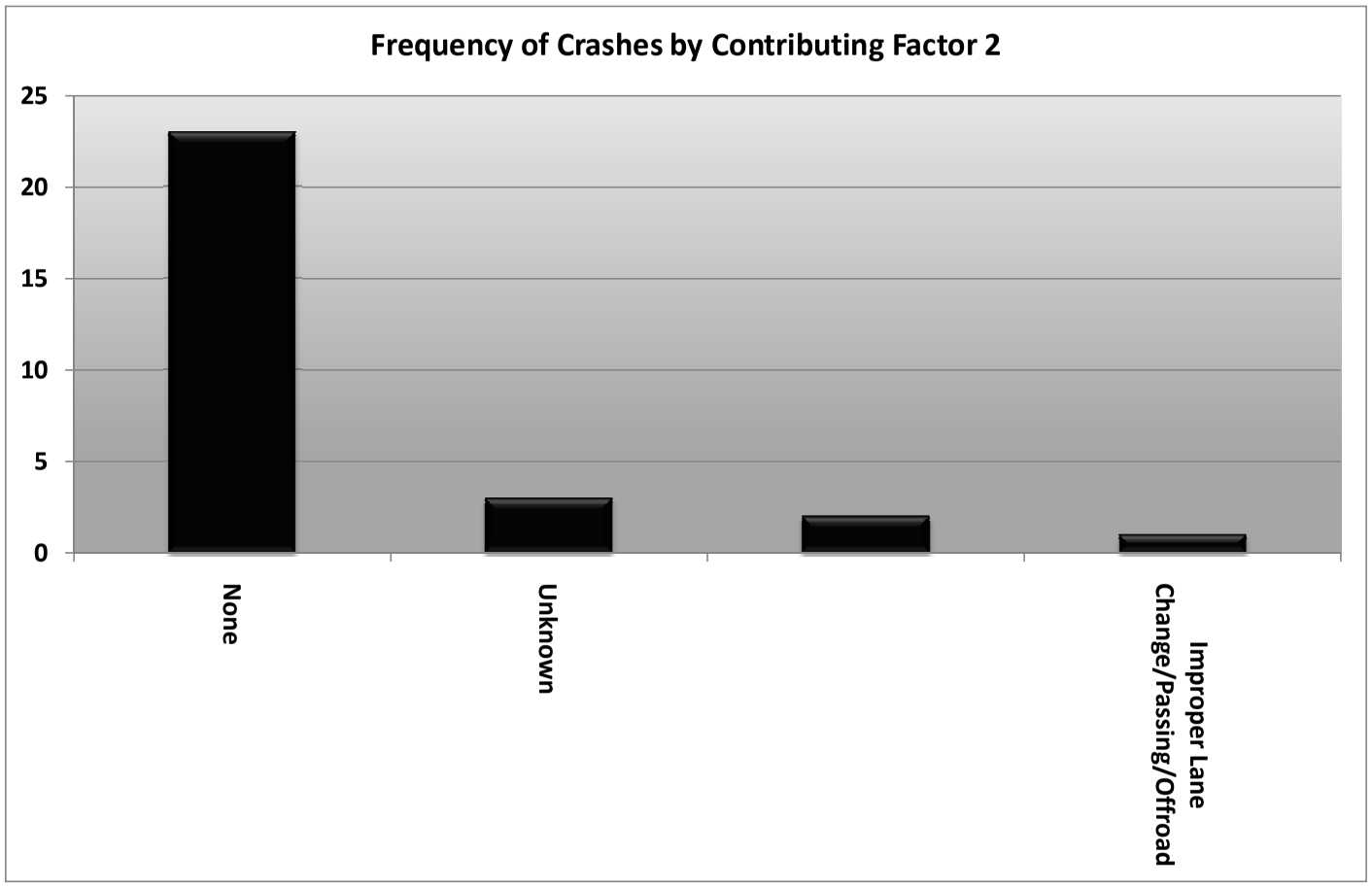

Frequency of Animal Crashes
35
30
25
20
15
10
5
0
Animal Not Stated


Frequency of Work Zone Crashes
29, 100%
Unknown or Not in Work Zone

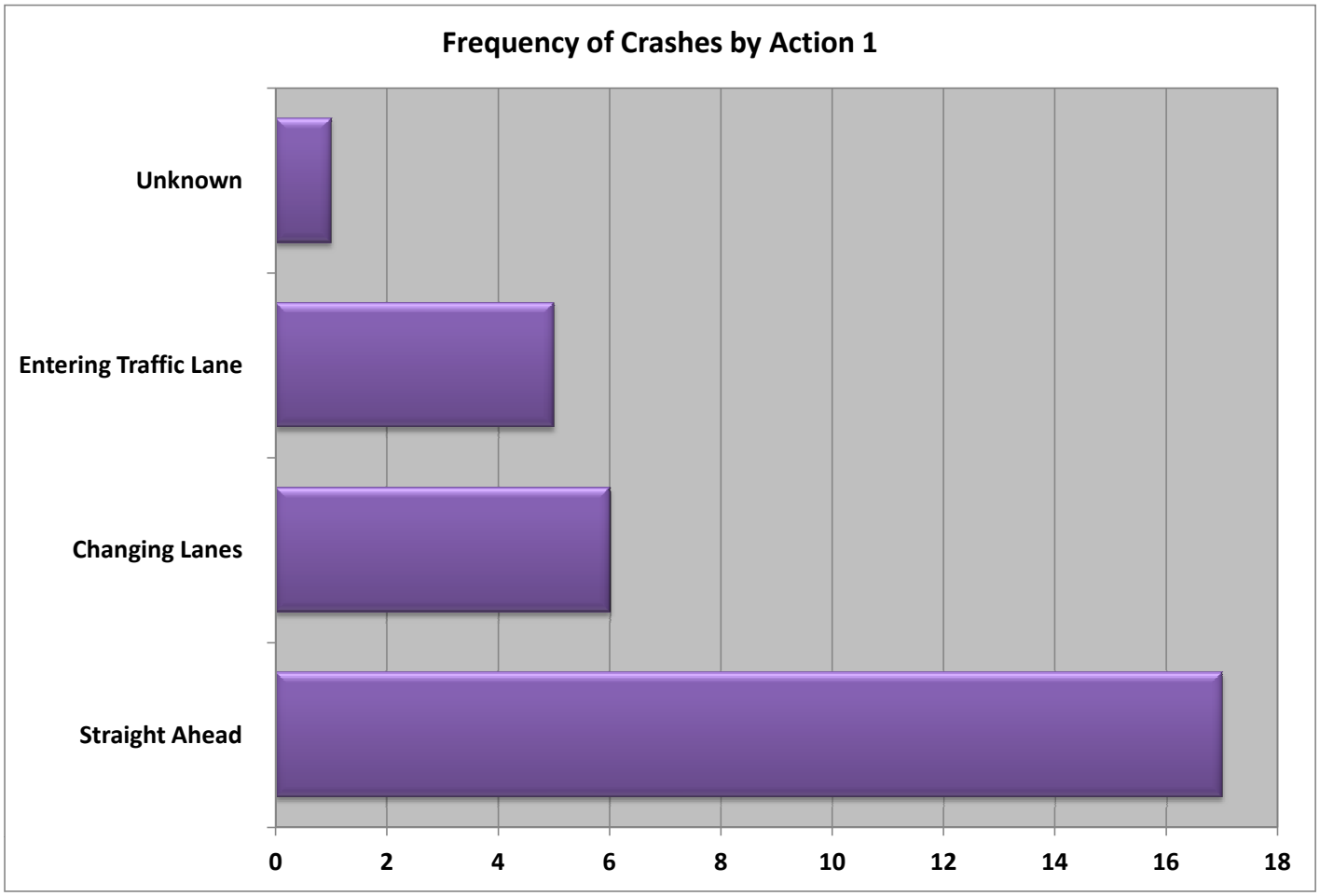

Frequency of Crashes by Road Contour
2, 7%
27, 93%
Straight - Level
Straight - Grade

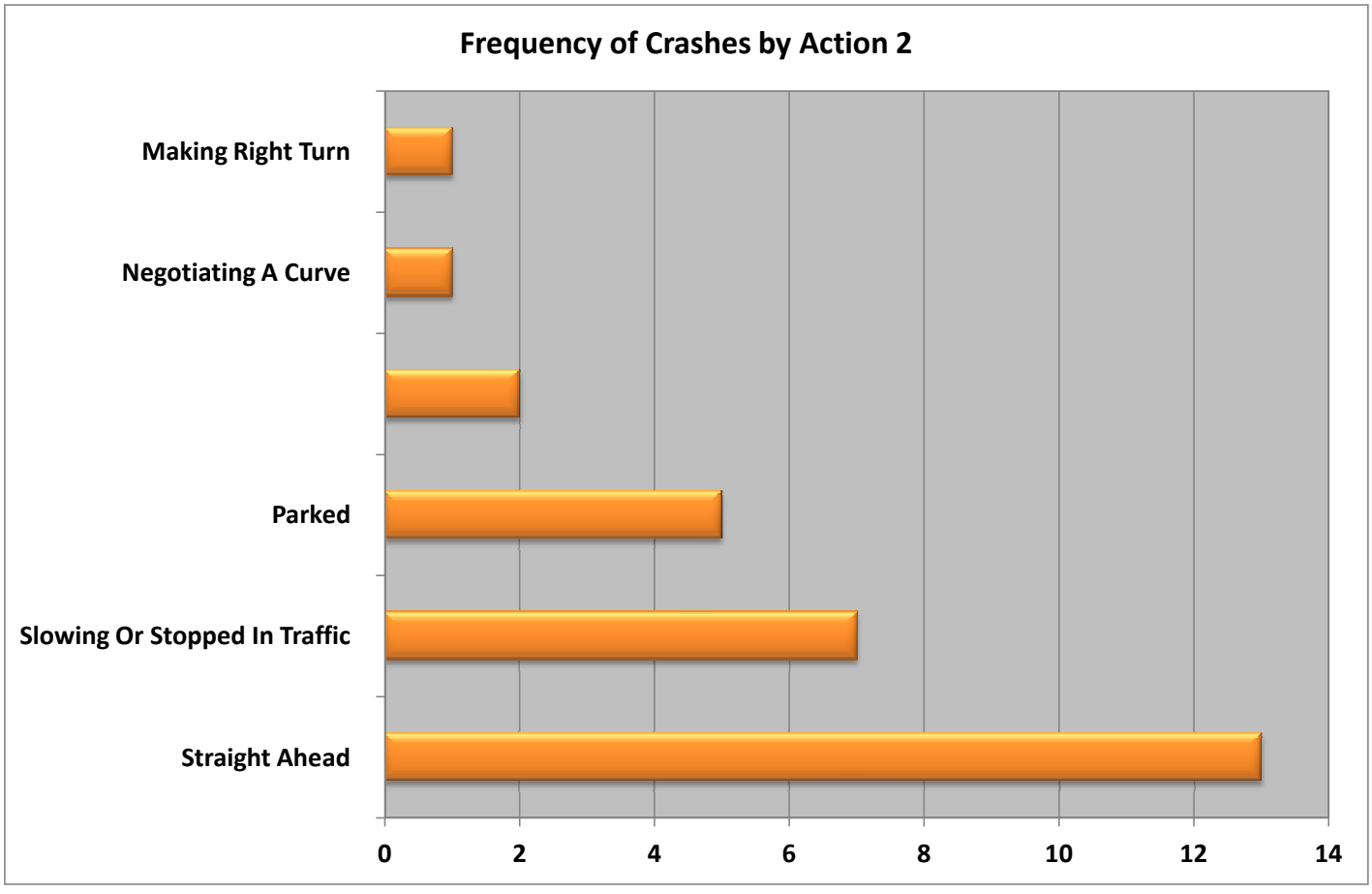
- - (-) From // to //


Frequency of Crashes by Contributing Factor 1
10
9
8
7
6
5
4
3
2
1
0
Followed Too Closely/ACDA
Failure To Control
Unknown
Improper Lane Change/Passing/Offroad
Improper Start From Parked Position
Failure To Yield

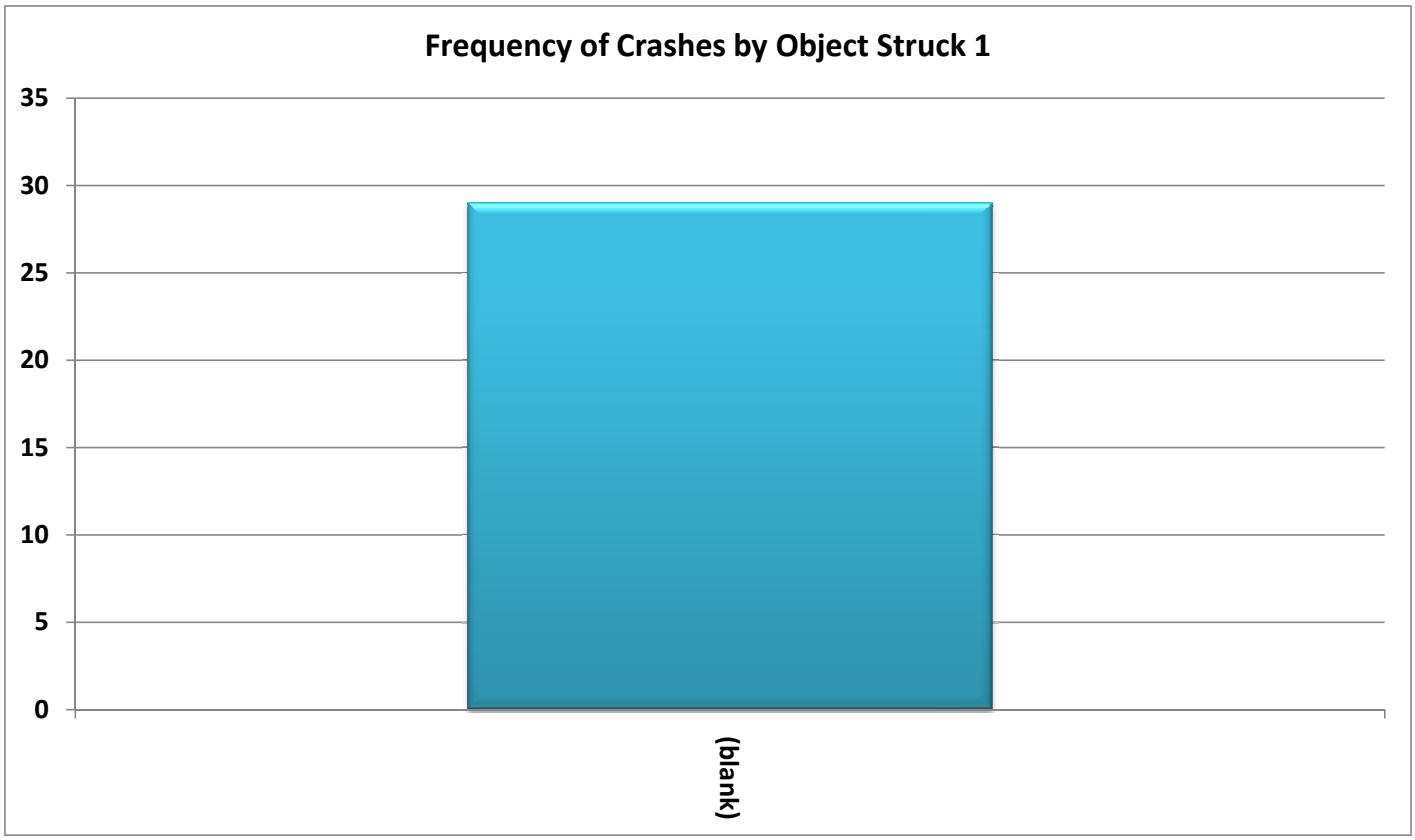

Frequency of Crashes by Contributing Factor 2
25
20
15
10
5
0
None
Unknown
Improper Lane Change/Passing/Offroad

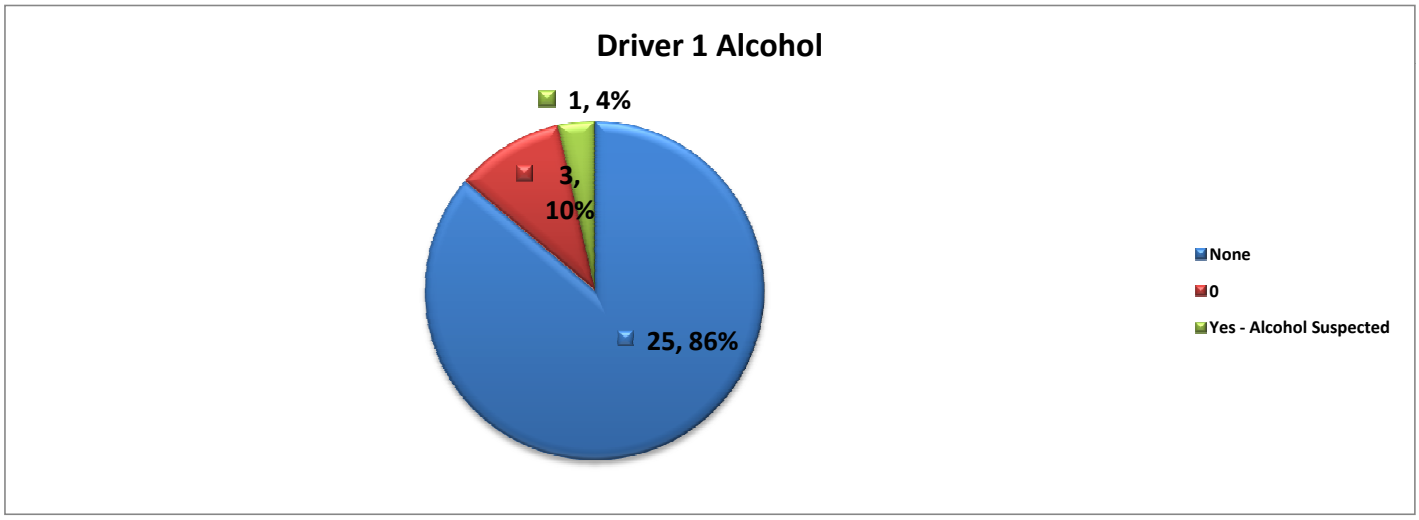
- - (-) From // to //

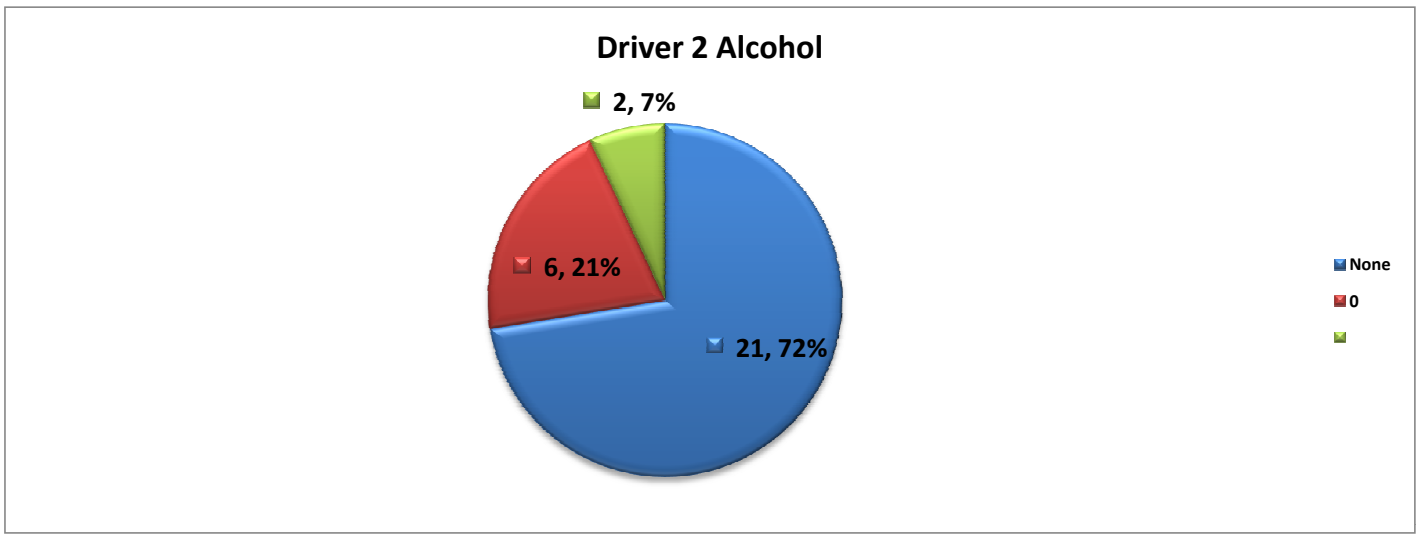

Frequency of Crashes by Action 1
Unknown
Entering Traffic Lane
Changing Lanes
Straight Ahead
0
2
4
6
8
10
12
14
16
18


Frequency of Crashes by Action 2
Making Right Turn
Negotiating A Curve
Parked
Slowing Or Stopped In Traffic
Straight Ahead
0
2
4
6
8
10
12
14

- - (-) From // to //


Frequency of Crashes by Object Struck 1
35
30
25
20
15
10
5
0
(blank)


Driver 1 Alcohol
1, 4%
3, 10%
25, 86%
None
0
Yes - Alcohol Suspected


Driver 2 Alcohol
2, 7%
6, 21%
21, 72%
None
0

Appendix D: Pedestrian Hybrid Beacon (PHB) Information

CHAPTER 4F. PEDESTRIAN HYBRID BEACONS

Section 4F.01 Application of Pedestrian Hybrid Beacons

Support:

01 A pedestrian hybrid beacon is a special type of hybrid beacon used to warn and control traffic at an unsignalized location to assist pedestrians in crossing a street or highway at a marked crosswalk.

Option:

02 A pedestrian hybrid beacon may be considered for installation to facilitate pedestrian crossings at a location that does not meet traffic signal warrants (see Chapter 4C), or at a location that meets traffic signal warrants under Sections 4C.05 and/or 4C.06 but a decision is made to not install a traffic control signal.

Standard:

03 **If used, pedestrian hybrid beacons shall be used in conjunction with signs and pavement markings to warn and control traffic at locations where pedestrians enter or cross a street or highway. A pedestrian hybrid beacon shall only be installed at a marked crosswalk.**

Guidance:

04 *If one of the signal warrants of Chapter 4C is met and a traffic control signal is justified by an engineering study, and if a decision is made to install a traffic control signal, it should be installed based upon the provisions of Chapters 4D and 4E.*

05 *If a traffic control signal is not justified under the signal warrants of Chapter 4C and if gaps in traffic are not adequate to permit pedestrians to cross, or if the speed for vehicles approaching on the major street is too high to permit pedestrians to cross, or if pedestrian delay is excessive, the need for a pedestrian hybrid beacon should be considered on the basis of an engineering study that considers major-street volumes, speeds, widths, and gaps in conjunction with pedestrian volumes, walking speeds, and delay.*

06 *For a major street where the posted or statutory speed limit or the 85th-percentile speed is 35 mph or less, the need for a pedestrian hybrid beacon should be considered if the engineering study finds that the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding total of all pedestrians crossing the major street for 1 hour (any four consecutive 15-minute periods) of an average day falls above the applicable curve in Figure 4F-1 for the length of the crosswalk.*

07 *For a major street where the posted or statutory speed limit or the 85th-percentile speed exceeds 35 mph, the need for a pedestrian hybrid beacon should be considered if the engineering study finds that the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding total of all pedestrians crossing the major street for 1 hour (any four consecutive 15-minute periods) of an average day falls above the applicable curve in Figure 4F-2 for the length of the crosswalk.*

08 *For crosswalks that have lengths other than the four that are specifically shown in Figures 4F-1 and 4F-2, the values should be interpolated between the curves.*

Section 4F.02 Design of Pedestrian Hybrid Beacons

Standard:

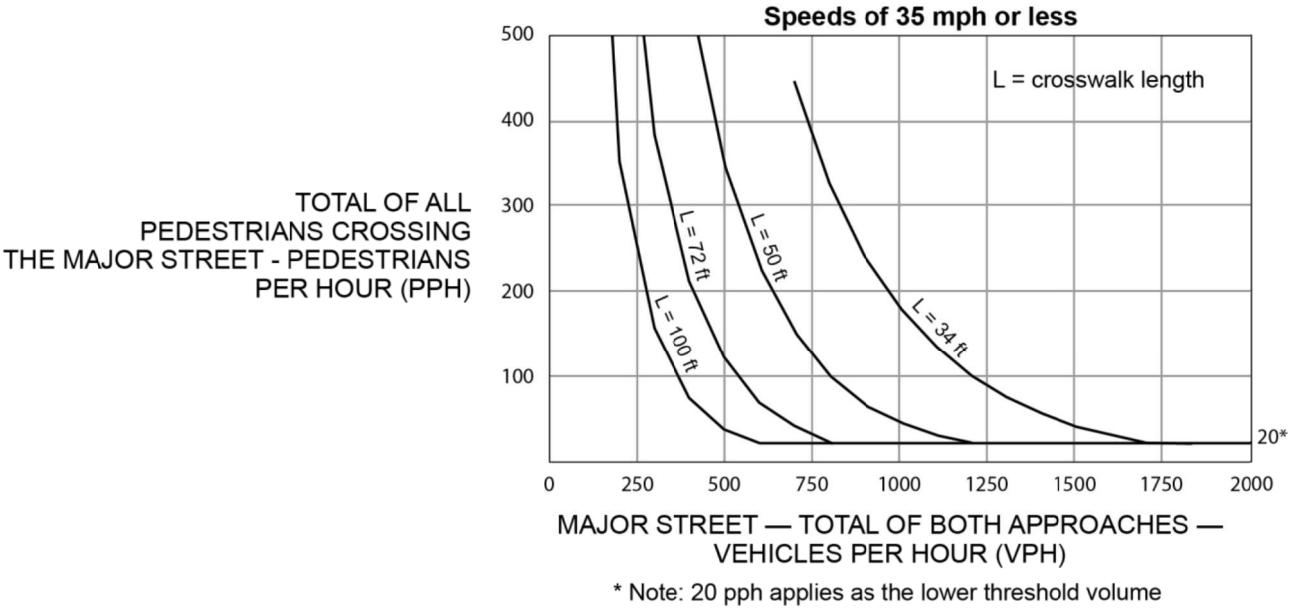
01 **Except as otherwise provided in this Section, a pedestrian hybrid beacon shall meet the provisions of Chapters 4D and 4E.**

02 **A pedestrian hybrid beacon face shall consist of three signal sections, with a CIRCULAR YELLOW signal indication centered below two horizontally aligned CIRCULAR RED signal indications (see Figure 4F-3).**

03 **When an engineering study finds that installation of a pedestrian hybrid beacon is justified, then:**

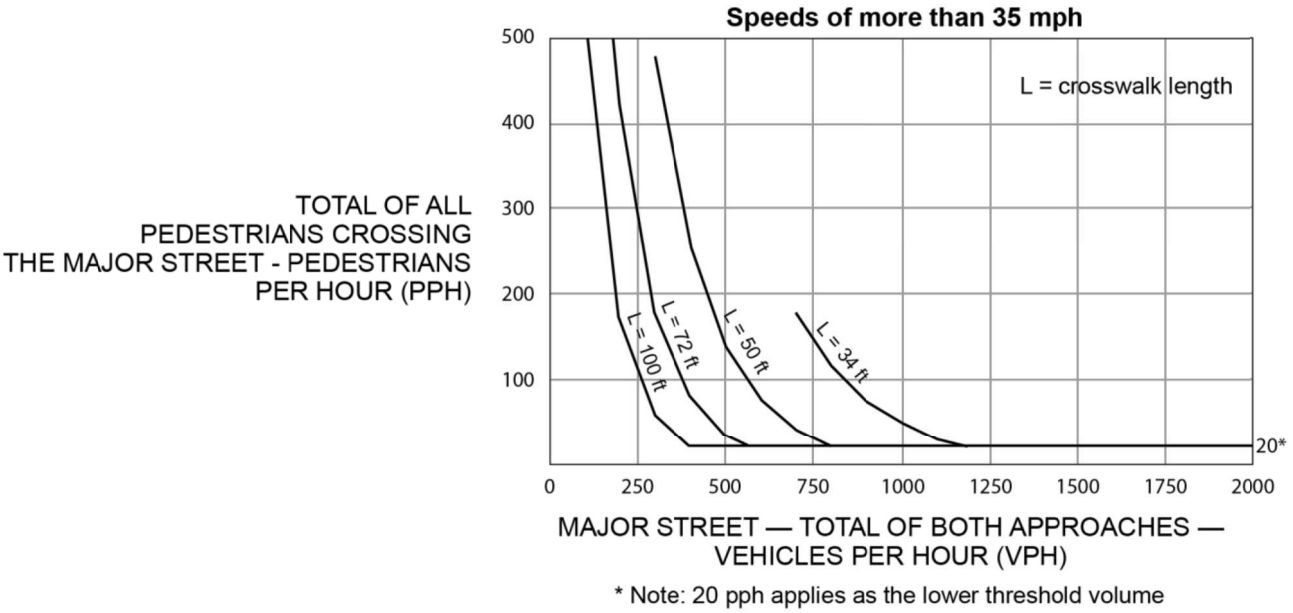
- **A. At least two pedestrian hybrid beacon faces shall be installed for each approach of the major street,**
- **B. A stop line shall be installed for each approach to the crosswalk,**
- **C. A pedestrian signal head conforming to the provisions set forth in Chapter 4E shall be installed at each end of the marked crosswalk, and**
- **D. The pedestrian hybrid beacon shall be pedestrian actuated.**

Figure 4F-1. Guidelines for the Installation of Pedestrian Hybrid Beacons on Low-Speed Roadways



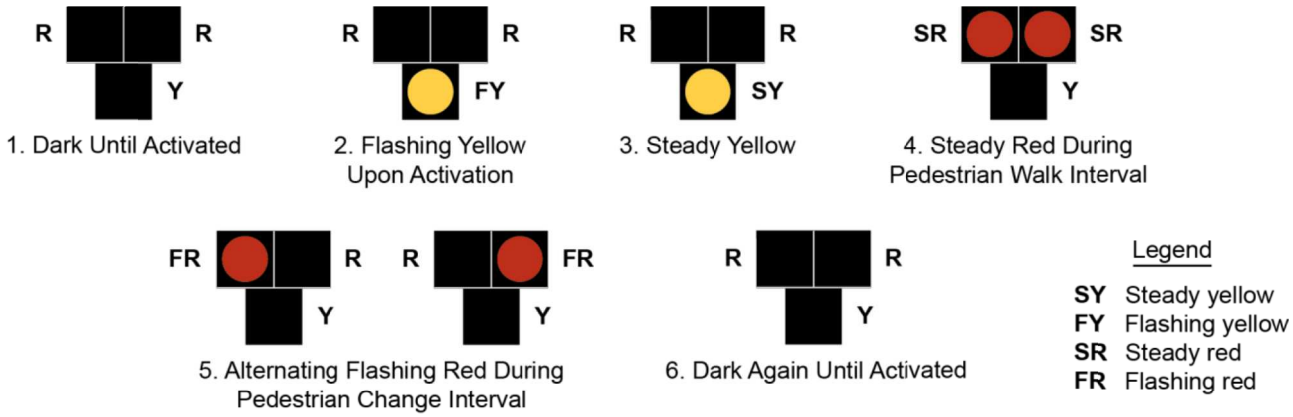
* Note: 20 pph applies as the lower threshold volume

Figure 4F-2. Guidelines for the Installation of Pedestrian Hybrid Beacons on High-Speed Roadways



* Note: 20 pph applies as the lower threshold volume

Figure 4F-3. Sequence for a Pedestrian Hybrid Beacon



Guidance:

04 *When an engineering study finds that installation of a pedestrian hybrid beacon is justified, then:*

A. The pedestrian hybrid beacon should be installed at least 100 feet from side streets or driveways that are controlled by STOP or YIELD signs,

B. Parking and other sight obstructions should be prohibited for at least 100 feet in advance of and at least 20 feet beyond the marked crosswalk, or site accommodations should be made through curb extensions or other techniques to provide adequate sight distance,

C. The installation should include suitable standard signs and pavement markings, and

D. If installed within a signal system, the pedestrian hybrid beacon should be coordinated.

05 *On approaches having posted or statutory speed limits or 85th-percentile speeds in excess of 35 mph and on approaches having traffic or operating conditions that would tend to obscure visibility of roadside hybrid beacon face locations, both of the minimum of two pedestrian hybrid beacon faces should be installed over the roadway.*

06 *On multi-lane approaches having a posted or statutory speed limits or 85th-percentile speeds of 35 mph or less, either a pedestrian hybrid beacon face should be installed on each side of the approach (if a median of sufficient width exists) or at least one of the pedestrian hybrid beacon faces should be installed over the roadway.*

07 *A pedestrian hybrid beacon should comply with the signal face location provisions described in Sections 4D.11 through 4D.16.*

Standard:

08 **A CROSSWALK STOP ON RED (symbolic circular red) (R10-23) sign (see Section 2B.53) shall be mounted adjacent to a pedestrian hybrid beacon face on each major street approach. If an overhead pedestrian hybrid beacon face is provided, the sign shall be mounted adjacent to the overhead signal face.**

Option:

09 A Pedestrian (W11-2) warning sign (see Section 2C.50) with an AHEAD (W16-9P) supplemental plaque may be placed in advance of a pedestrian hybrid beacon. A warning beacon may be installed to supplement the W11-2 sign.

Guidance:

10 *If a warning beacon supplements a W11-2 sign in advance of a pedestrian hybrid beacon, it should be programmed to flash only when the pedestrian hybrid beacon is not in the dark mode.*

Standard:

11 **If a warning beacon is installed to supplement the W11-2 sign, the design and location of the warning beacon shall comply with the provisions of Sections 4L.01 and 4L.03.**

Section 4F.03 Operation of Pedestrian Hybrid Beacons

Standard:

01 **Pedestrian hybrid beacon indications shall be dark (not illuminated) during periods between actuations.**

02 **Upon actuation by a pedestrian, a pedestrian hybrid beacon face shall display a flashing CIRCULAR YELLOW signal indication, followed by a steady CIRCULAR YELLOW signal indication, followed by both steady CIRCULAR RED signal indications during the pedestrian walk interval, followed by alternating flashing CIRCULAR RED signal indications during the pedestrian change interval (see Figure 4F-3). Upon termination of the pedestrian change interval, the pedestrian hybrid beacon faces shall revert to a dark (not illuminated) condition.**

03 **Except as provided in Paragraph 4, the pedestrian signal heads shall continue to display a steady UPRAISED HAND (symbolizing DONT WALK) signal indication when the pedestrian hybrid beacon faces are either dark or displaying flashing or steady CIRCULAR YELLOW signal indications. The pedestrian signal heads shall display a WALKING PERSON (symbolizing WALK) signal indication when the pedestrian hybrid beacon faces are displaying steady CIRCULAR RED signal indications. The pedestrian signal heads shall display a flashing UPRAISED HAND (symbolizing DONT WALK) signal indication when the pedestrian hybrid beacon faces are displaying alternating flashing CIRCULAR RED signal indications. Upon termination of the pedestrian change interval, the pedestrian signal heads shall revert to a steady UPRAISED HAND (symbolizing DONT WALK) signal indication.**

Option:

04 Where the pedestrian hybrid beacon is installed adjacent to a roundabout to facilitate crossings by pedestrians with visual disabilities and an engineering study determines that pedestrians without visual disabilities can be allowed to cross the roadway without actuating the pedestrian hybrid beacon, the pedestrian signal heads may be dark (not illuminated) when the pedestrian hybrid beacon faces are dark.

Guidance:

05 *The duration of the flashing yellow interval should be determined by engineering judgment.*

Standard:

06 **The duration of the steady yellow change interval shall be determined using engineering practices.**

Guidance:

07 *The steady yellow interval should have a minimum duration of 3 seconds and a maximum duration of 6 seconds (see Section 4D.26). The longer intervals should be reserved for use on approaches with higher speeds.*

The Pedestrian & Bicyclist Hybrid Beacon is a new tool to help pedestrians and bicyclists cross busy streets. This new beacon is different from a standard traffic signal in that the major street's signal is generally dark, or off, and there is no traffic signal for cross street motorists so cut through traffic is not encouraged on the side street. Pedestrians and bicyclists on the side street each have their own signals.

Here is how it works. This is shown pictorially on the inside of this brochure.

When a pedestrian on the sidewalk or a bicyclist on the street wants to cross, they push a button to activate the beacon to stop the major street traffic.

The beacon on the major street will first flash yellow then display solid yellow and finally solid red indicating the stop requirement.

When the major street traffic is stopped by the red signal, the side street pedestrians will have a walk signal and the bicyclists will have a green bicycle signal.

After an appropriate clearance interval for pedestrians and bicyclists to complete their crossing, the major street signal will flash red, with the usual meaning of stop (or stay stopped) and then go if clear.

Finally, the major street signal will go back to being dark.

For more information about the Pedestrian & Bicyclist Hybrid Beacon, or other traffic issues, contact:

City of Madison
Traffic Engineering
215 Martin Luther King, Jr. Blvd, Suite 100
PO Box 2986
Madison, WI 53701-2986

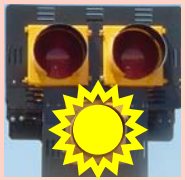
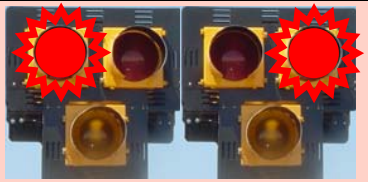
608-266-4761 (voice)
866-704-3215 (TTY)
608-267-1158 (fax)

http://www.cityofmadison.com/trafficengineering/

CITY OF MADISON
TRAFFIC ENGINEERING DIVISION
Signals & Lighting
Planning & Design
Operations & Safety

Pedestrian & Bicyclist Hybrid Beacon

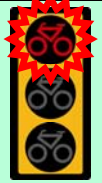
Drivers

See This	Do This
 Dark	**Proceed with caution.** Yield to pedestrians in crosswalks
 Flashing Yellow	**Slow down and prepare to Stop** Pedestrian or Bicyclist has activated the signal.
 Steady Yellow	**Stop if safe to do so.**
 Steady Red	**Stop and stay stopped.** Pedestrian &/or bicyclist crossing.
 Flashing Red	**Stop.** Then Proceed with caution if clear.
 Dark	**Proceed with caution.** Yield to pedestrians in crosswalks

Pedestrians

See This	Do This
 Dark	**Cross in crosswalk normally,** watching to make sure drivers are slowing down to yield or stop, or **Push the button** to activate the pedestrian signal.
 Solid Red Hand	**Do not start to cross.** Wait for the white walking person signal before starting to cross.
 Solid Red Hand	**Do not start to cross.** Wait for the white walking person signal before starting to cross
 Walk, then Countdown	**Start crossing** on the Walk signal, and continue crossing on the countdown signal
 Solid Red Hand	**Do not start to cross.** Push button and wait for Walk signal.
 Dark	**Cross in crosswalk normally,** watching to make sure drivers are slowing down to yield or stop, or **Push the button** to activate the pedestrian signal.

Bicyclists

See This	Do This
 Flashing Red	**Stop.** Yield to any cross street traffic and / or pedestrians before going, or **Push the button** to activate the bicycle signal.
 Steady Red	**Stop and stay stopped.** Signal is about to change to green. Cross street traffic does not have Red yet.
 Steady Red	**Stop and stay stopped.** Signal is about to change to green. Cross street traffic does not have Red yet.
 Green, Yellow, Red	**Standard traffic signal meanings,** for bicyclists only. Motorists still follow the Stop sign.
 Flashing Red	**Stop.** Yield to any cross street traffic and / or pedestrians before going, or **Push the button** to activate the bicycle signal.
 Flashing Red	**Stop.** Yield to any cross street traffic and / or pedestrians before going, or **Push the button** to activate the bicycle signal.

BENEFITS OF PEDESTRIAN HYBRID BEACON SIGNALS

There are several main benefits of Pedestrian Hybrid Beacon (PHB) signals:

- PHB signals have been shown to increase safety by reducing crash rates at pedestrian crossings.
- PHB signals cause a decrease in dangerous driver violations at pedestrian crossings.
- With a typical "Red/Yellow/Green" pedestrian crossing signal, there can be a tendency for the signal to "blend in" to the background. However, PHB signals eliminate this concern, since they only turn on when a pedestrian wishes to cross the street.
- PHB signals can eliminate driver delay and frustration, as they allow drivers to proceed through the crossing once it is clear of pedestrians (rather than having to wait for a green light).

City of Omaha
Public Works Department
Traffic Engineering Division

1819 Farnam Street
Omaha, NE 68183-0603

Phone: (402) 444-5160
E-mail:
PublicWorks.Reception@ci.omaha.ne.us

For additional information on Pedestrian Hybrid Beacon signals, or for a copy of this brochure in electronic format, visit the Traffic Engineering Division website at http://bit.ly/NVSKMV
-or-
http://cityofomaha.org/
Keyword Search: PHB

Pedestrian Hybrid Beacon Signal

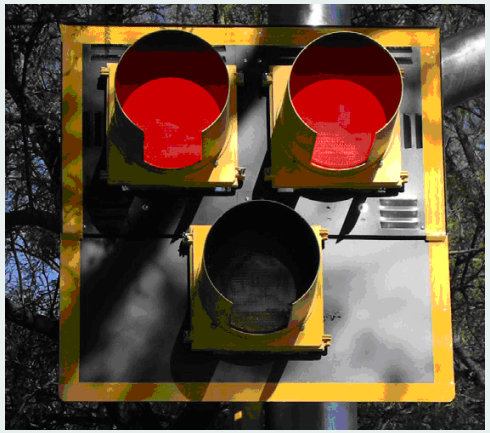
City of Omaha
Public Works Department - *Traffic Engineering*

User's Guide

WHAT IS A PEDESTRIAN HYBRID BEACON SIGNAL?

A Pedestrian Hybrid Beacon (PHB) signal is a type of traffic signal which creates a safer and more efficient environment for pedestrians to cross busy streets. PHB signals replace traditional "Red/Yellow/Green" pedestrian crossing signals. PHB signals are in line with Federal standards and have been around since the late 1990s; in fact, they are already in use in many cities around the country.

The first PHB signal to be installed in Omaha will be on 50th Street between "G" Street and "I" Street, where the new South Omaha trail crosses 50th Street. Trail users will be able to cross 50th Street by using the PHB signal, which will help alert drivers to their presence and provide for a safe and efficient crossing. PHB signals will continue to be considered at other locations around the City.



HOW PEDESTRIAN HYBRID BEACON SIGNALS WORK

	DRIVERS		PEDESTRIANS	
	Will See...	Will Do...	Will See...	Will Do...
1		Proceed with caution.		Push the button to activate the system.
2	 FLASHING	Slow down, prepare to stop. A pedestrian has activated the system.		Wait.
3		Stop if it is safe to do so.		Continue to wait.
4		STOP. A pedestrian is in the crosswalk.		Start crossing when all vehicles are stopped.
5	 FLASHING 	STOP. Proceed with caution if the crosswalk is clear.		Continue crossing; the signal will count down.
6		Proceed with caution.		Push the button to activate the system.

WHAT TO DO AS A DRIVER

When approaching a Pedestrian Hybrid Beacon (PHB) signal in a vehicle, the signals will be dark when not in use. However, if the yellow light begins flashing, then begin to slow down and prepare to stop. When the yellow light changes to a steady indication, stop if it is safe to do so. Once the PHB signal changes from steady yellow to two solid red indications, stop and remain stopped. When the two red lights begin an alternating flash pattern, stop or remain stopped until pedestrians have finished crossing the street. If the crosswalk is clear while the two red signals are still in the alternating flash pattern, then drivers may proceed with caution. The signal will then return to its unlit condition when not in use by pedestrians.

WHAT TO DO AS A PEDESTRIAN

As a pedestrian wishing to use a Pedestrian Hybrid Beacon (PHB) signal, use the signal as you would a normal traffic signal. Push the button on

the signal and watch the pedestrian signal head across the street. When it changes from a Don't Walk symbol (orange solid hand) to a Walk symbol (walking person), begin crossing the street in the crosswalk. When the Walk symbol changes to a Flashing Don't Walk with Countdown Timer, continue crossing if you are already in the crosswalk, but do not begin crossing if you have not already done so.

Appendix E: Synchro Capacity Analysis Results

Synchro Capacity Analysis – AM Existing Conditions

Timings
159: High St & Village Green South

10/16/2015

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	0	2	687	0	3	561	1
Future Volume (vph)	0	0	0	0	0	0	2	687	0	3	561	1
Satd. Flow (prot)	0	1676	0	0	1676	0	0	3185	0	0	3185	0
Flt Permitted								0.954			0.953	
Satd. Flow (perm)	0	1676	0	0	1676	0	0	3039	0	0	3035	0
Satd. Flow (RTOR)												
Lane Group Flow (vph)	0	0	0	0	0	0	0	749	0	0	614	0
Turn Type							Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		20.0	20.0		20.0	20.0	
Minimum Split (s)	23.0	23.0		23.0	23.0		24.0	24.0		24.0	24.0	
Total Split (s)	27.0	27.0		27.0	27.0		93.0	93.0		93.0	93.0	
Total Split (%)	22.5%	22.5%		22.5%	22.5%		77.5%	77.5%		77.5%	77.5%	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Ped	Ped		Ped	Ped		Max	Max		Max	Max	
Act Effct Green (s)								89.0			89.0	
Actuated g/C Ratio								0.77			0.77	
v/c Ratio								0.32			0.26	
Control Delay								4.6			4.3	
Queue Delay								0.5			0.9	
Total Delay								5.1			5.2	
LOS								A			A	
Approach Delay								5.1			5.2	
Approach LOS								A			A	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 116
Natural Cycle: 50
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.32
Intersection Signal Delay: 5.1 — Intersection LOS: A
Intersection Capacity Utilization 45.1% — ICU Level of Service A
Analysis Period (min) 15

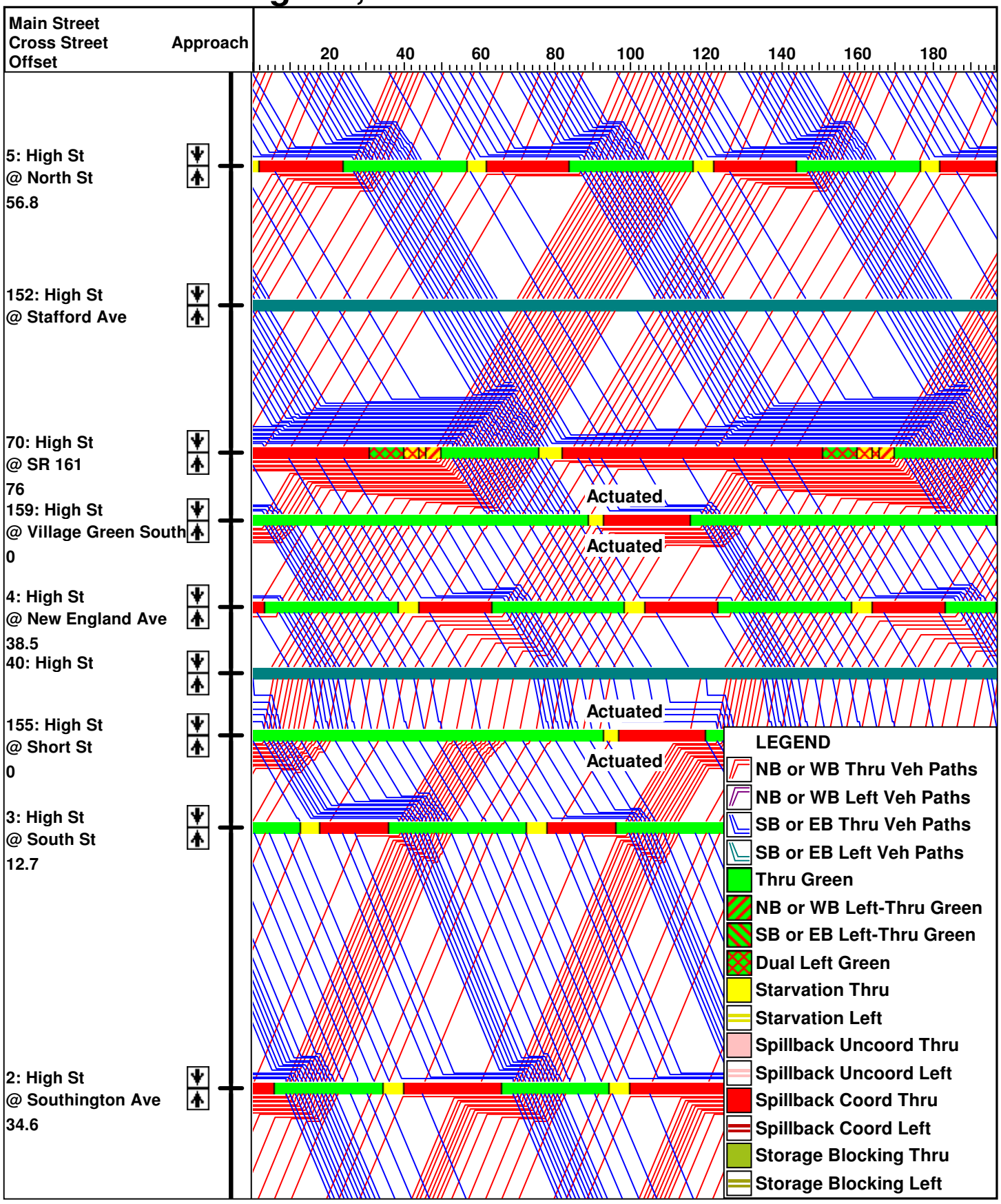
Splits and Phases: 159: High St & Village Green South

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	1	0	32	599	534	33
Future Volume (vph)	1	0	32	599	534	33
Satd. Flow (prot)	1593	0	0	3176	3153	0
Flt Permitted	0.950			0.895		
Satd. Flow (perm)	1587	0	0	2851	3153	0
Satd. Flow (RTOR)					17	
Lane Group Flow (vph)	1	0	0	686	616	0
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Detector Phase	4		2	2	6	
Switch Phase						
Minimum Initial (s)	10.0		20.0	20.0	20.0	
Minimum Split (s)	23.0		24.0	24.0	24.0	
Total Split (s)	23.0		97.0	97.0	97.0	
Total Split (%)	19.2%		80.8%	80.8%	80.8%	
Yellow Time (s)	3.5		3.5	3.5	3.5	
All-Red Time (s)	0.5		0.5	0.5	0.5	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	4.0			4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Ped		Max	Max	Max	
Act Effct Green (s)	19.0			93.0	93.0	
Actuated g/C Ratio	0.16			0.78	0.78	
v/c Ratio	0.00			0.31	0.25	
Control Delay	43.0			4.4	3.9	
Queue Delay	0.0			0.4	0.6	
Total Delay	43.0			4.8	4.5	
LOS	D			A	A	
Approach Delay	43.0			4.8	4.5	
Approach LOS	D			A	A	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Natural Cycle: 50	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.31	
Intersection Signal Delay: 4.7	Intersection LOS: A
Intersection Capacity Utilization 55.4%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 155: High St & Short St

Time-Space Diagram - High St
Traffic Flow Diagram, 90th Percentile Flow and Green Times



Worthington Mobility Study AM Existing **DKA**

Timing Plan: AM **10/16/2015**

High St

Direction	NB	SB	All
Control Delay / Veh (s/v)	13	23	18
Total Delay / Veh (s/v)	15	23	19
Total Delay (hr)	41	68	109
Stops (#)	4295	5400	9695
Average Speed (mph)	18	15	16
Total Travel Time (hr)	96	128	223
Distance Traveled (mi)	1736	1870	3606
Performance Index	53.2	82.7	135.9

Synchro Capacity Analysis – Mid-Day Existing Conditions

Timings
157: High St & Village Green South

10/18/2015

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	0	3	709	2	5	752	3
Future Volume (vph)	0	0	0	0	0	0	3	709	2	5	752	3
Satd. Flow (prot)	0	1676	0	0	1676	0	0	3185	0	0	3182	0
Flt Permitted								0.953			0.951	
Satd. Flow (perm)	0	1676	0	0	1676	0	0	3036	0	0	3026	0
Satd. Flow (RTOR)								1			1	
Lane Group Flow (vph)	0	0	0	0	0	0	0	776	0	0	825	0
Turn Type							Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		20.0	20.0		20.0	20.0	
Minimum Split (s)	23.0	23.0		23.0	23.0		24.0	24.0		24.0	24.0	
Total Split (s)	23.0	23.0		23.0	23.0		97.0	97.0		97.0	97.0	
Total Split (%)	19.2%	19.2%		19.2%	19.2%		80.8%	80.8%		80.8%	80.8%	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Ped	Ped		Ped	Ped		Max	Max		Max	Max	
Act Effct Green (s)								93.0			93.0	
Actuated g/C Ratio								0.78			0.78	
v/c Ratio								0.33			0.35	
Control Delay								4.5			4.6	
Queue Delay								0.6			1.5	
Total Delay								5.1			6.2	
LOS								A			A	
Approach Delay								5.1			6.2	
Approach LOS								A			A	

Intersection Summary

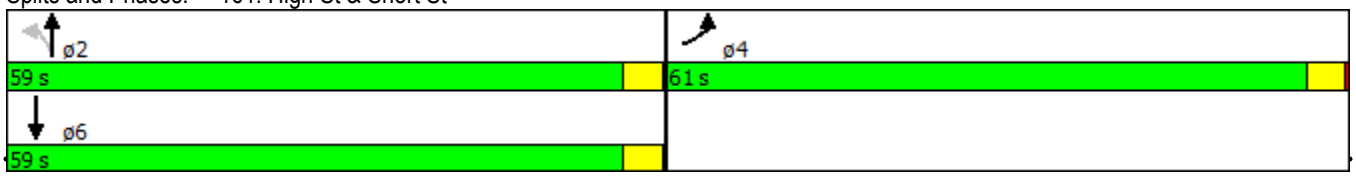
Cycle Length: 120
Actuated Cycle Length: 120
Natural Cycle: 50
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.35
Intersection Signal Delay: 5.6 — Intersection LOS: A
Intersection Capacity Utilization 49.6% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 157: High St & Village Green South

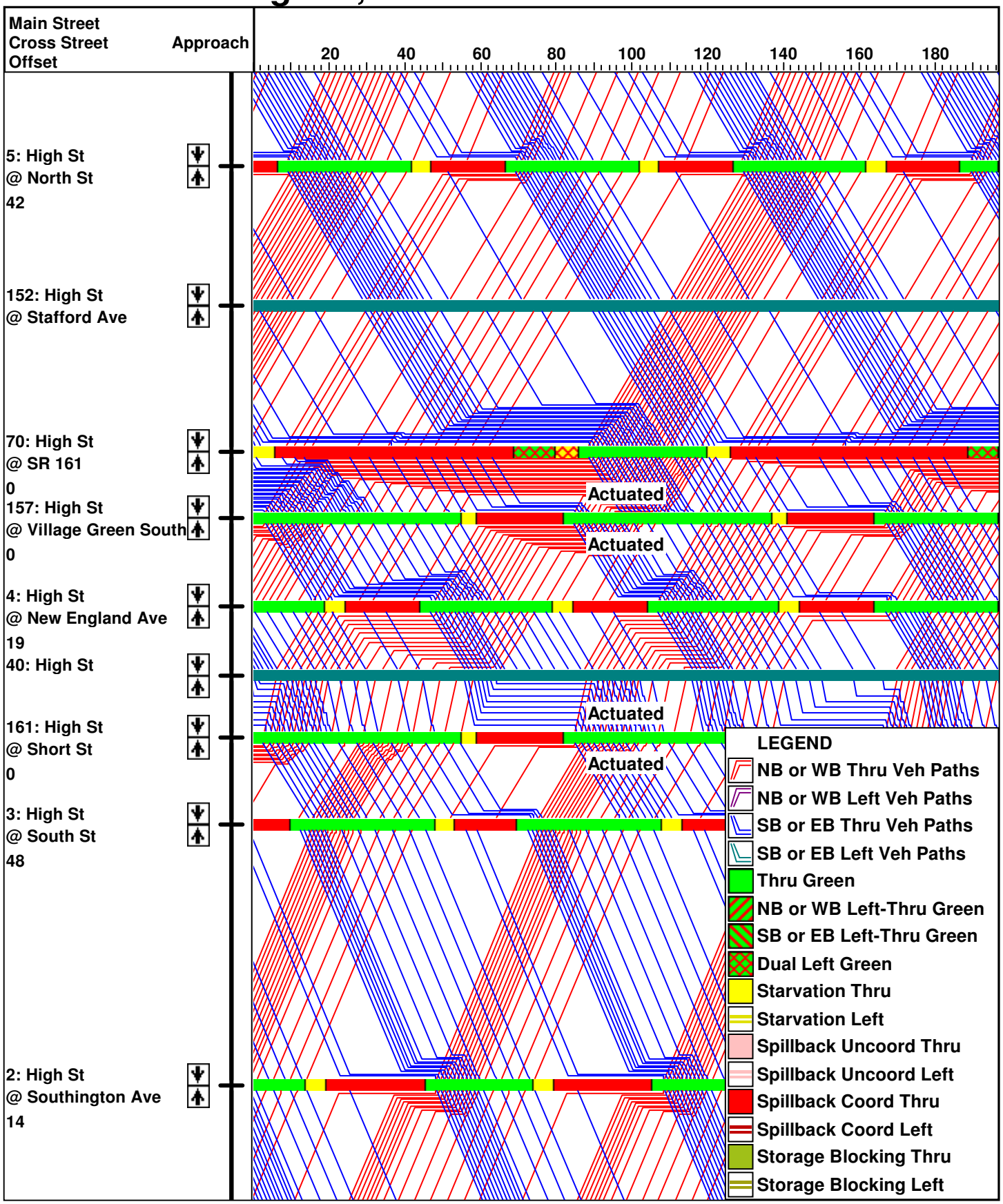
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	30	636	683	68
Future Volume (vph)	0	0	30	636	683	68
Satd. Flow (prot)	1509	0	0	3176	2974	0
Flt Permitted				0.879		
Satd. Flow (perm)	1509	0	0	2799	2974	0
Satd. Flow (RTOR)					12	
Lane Group Flow (vph)	0	0	0	771	847	0
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Detector Phase	4		2	2	6	
Switch Phase						
Minimum Initial (s)	10.0		20.0	20.0	20.0	
Minimum Split (s)	23.0		24.0	24.0	24.0	
Total Split (s)	61.0		59.0	59.0	59.0	
Total Split (%)	50.8%		49.2%	49.2%	49.2%	
Yellow Time (s)	3.5		3.5	3.5	3.5	
All-Red Time (s)	0.5		0.5	0.5	0.5	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	4.0			4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Ped		Max	Max	Max	
Act Effct Green (s)				55.0	55.0	
Actuated g/C Ratio				0.67	0.67	
v/c Ratio				0.41	0.42	
Control Delay				6.9	6.9	
Queue Delay				0.2	0.3	
Total Delay				7.2	7.2	
LOS				A	A	
Approach Delay				7.2	7.2	
Approach LOS				A	A	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 82	
Natural Cycle: 50	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.42	
Intersection Signal Delay: 7.2	Intersection LOS: A
Intersection Capacity Utilization 47.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 161: High St & Short St



Time-Space Diagram - High St
Traffic Flow Diagram, 90th Percentile Flow and Green Times



MID Existing **DKA**

Timing Plan: Mid (12-1) **10/16/2015**

High St

Direction	NB	SB	All
Control Delay / Veh (s/v)	10	12	11
Total Delay / Veh (s/v)	11	12	12
Total Delay (hr)	29	35	64
Stops (#)	3704	4244	7948
Average Speed (mph)	20	19	20
Total Travel Time (hr)	82	92	174
Distance Traveled (mi)	1678	1746	3424
Performance Index	39.8	46.7	86.4

Synchro Capacity Analysis – PM Existing Conditions

Timings
157: High St & Village Green South

10/18/2015

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	0	0	735	3	1	758	7
Future Volume (vph)	0	0	0	0	0	0	0	735	3	1	758	7
Satd. Flow (prot)	0	1676	0	0	1676	0	0	3182	0	0	3174	0
Flt Permitted											0.954	
Satd. Flow (perm)	0	1676	0	0	1676	0	0	3182	0	0	3028	0
Satd. Flow (RTOR)								1			5	
Lane Group Flow (vph)	0	0	0	0	0	0	0	762	0	0	814	0
Turn Type								NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		20.0	20.0		20.0	20.0	
Minimum Split (s)	23.0	23.0		23.0	23.0		24.0	24.0		24.0	24.0	
Total Split (s)	23.0	23.0		23.0	23.0		97.0	97.0		97.0	97.0	
Total Split (%)	19.2%	19.2%		19.2%	19.2%		80.8%	80.8%		80.8%	80.8%	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Ped	Ped		Ped	Ped		Max	Max		Max	Max	
Act Effct Green (s)								93.0			93.0	
Actuated g/C Ratio								0.78			0.78	
v/c Ratio								0.31			0.35	
Control Delay								4.4			4.6	
Queue Delay								0.6			1.5	
Total Delay								5.0			6.1	
LOS								A			A	
Approach Delay								5.0			6.1	
Approach LOS								A			A	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Natural Cycle: 50
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.35
Intersection Signal Delay: 5.6 — Intersection LOS: A
Intersection Capacity Utilization 46.8% — ICU Level of Service A
Analysis Period (min) 15

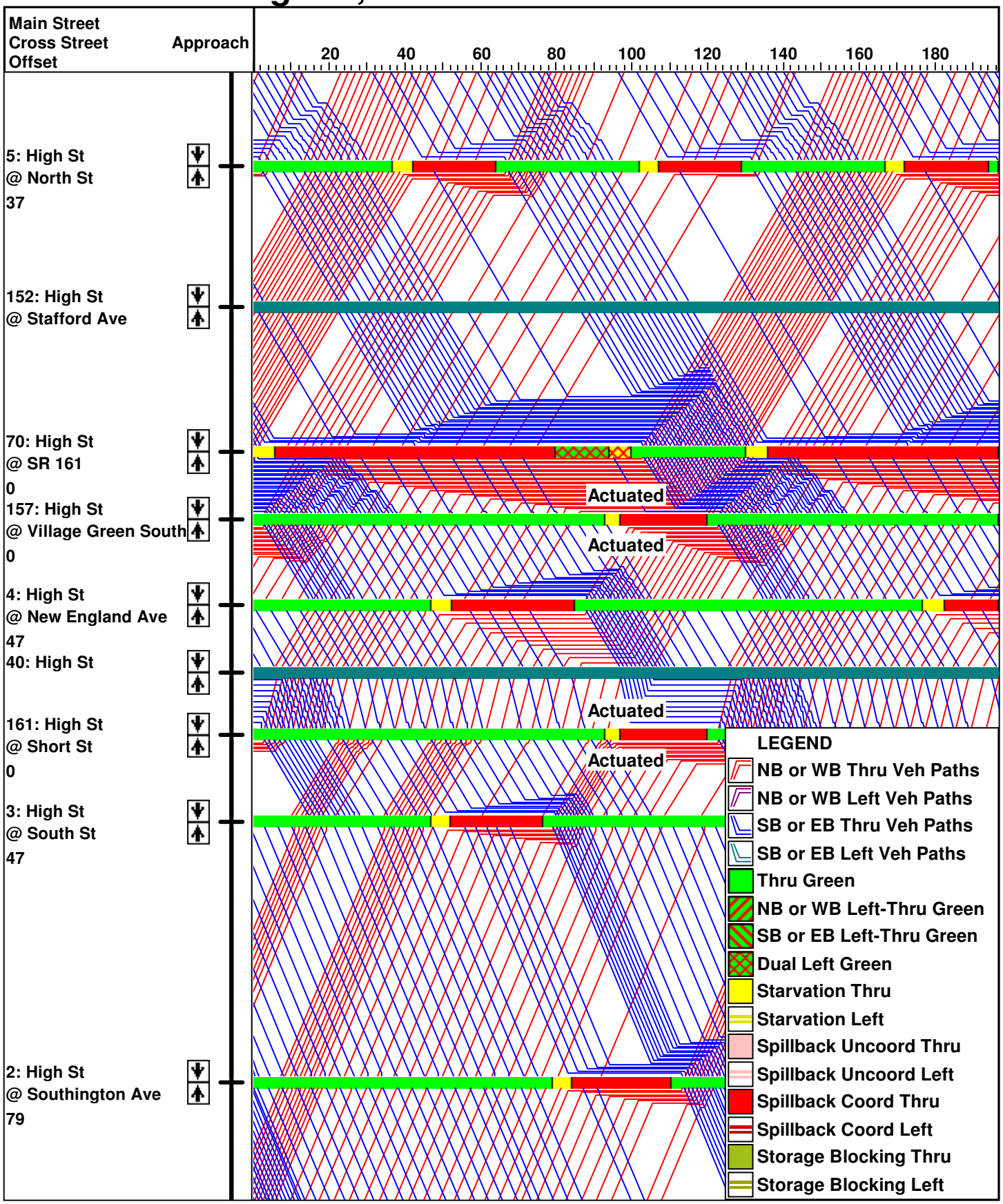
Splits and Phases: 157: High St & Village Green South

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	1	35	696	753	47
Future Volume (vph)	0	1	35	696	753	47
Satd. Flow (prot)	1450	0	0	3176	2990	0
Flt Permitted				0.846		
Satd. Flow (perm)	1450	0	0	2694	2990	0
Satd. Flow (RTOR)	276				19	
Lane Group Flow (vph)	1	0	0	805	840	0
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Detector Phase	4		2	2	6	
Switch Phase						
Minimum Initial (s)	10.0		20.0	20.0	20.0	
Minimum Split (s)	23.0		24.0	24.0	24.0	
Total Split (s)	23.0		97.0	97.0	97.0	
Total Split (%)	19.2%		80.8%	80.8%	80.8%	
Yellow Time (s)	3.5		3.5	3.5	3.5	
All-Red Time (s)	0.5		0.5	0.5	0.5	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	4.0			4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Ped		Max	Max	Max	
Act Effct Green (s)	19.0			93.0	93.0	
Actuated g/C Ratio	0.16			0.78	0.78	
v/c Ratio	0.00			0.39	0.36	
Control Delay	0.0			4.9	4.6	
Queue Delay	0.0			0.6	0.6	
Total Delay	0.0			5.6	5.2	
LOS	A			A	A	
Approach Delay	0.0			5.6	5.2	
Approach LOS	A			A	A	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Natural Cycle: 50	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.39	
Intersection Signal Delay: 5.4	Intersection LOS: A
Intersection Capacity Utilization 65.2%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 161: High St & Short St

Time-Space Diagram - High St
Traffic Flow Diagram, 90th Percentile Flow and Green Times



PM Existing **DKA**

Timing Plan: PM (5-6) **10/16/2015**

High St

Direction	NB	SB	All
Control Delay / Veh (s/v)	14	15	15
Total Delay / Veh (s/v)	17	15	16
Total Delay (hr)	54	54	108
Stops (#)	4555	5857	10412
Average Speed (mph)	17	18	17
Total Travel Time (hr)	115	128	243
Distance Traveled (mi)	1960	2283	4243
Performance Index	66.9	70.0	137.0

Synchro Capacity Analysis – AM PHB Condition

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	0	0	687	0	3	561	1
Future Volume (vph)	0	0	0	0	0	0	0	687	0	3	561	1
Satd. Flow (prot)	0	1863	0	0	1863	0	0	3539	0	0	3539	0
Flt Permitted											0.953	
Satd. Flow (perm)	0	1863	0	0	1863	0	0	3539	0	0	3373	0
Satd. Flow (RTOR)												
Lane Group Flow (vph)	0	0	0	0	0	0	0	747	0	0	614	0
Turn Type								NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	26.5	26.5		26.5	26.5		21.5	21.5		21.5	21.5	
Total Split (s)	26.5	26.5		26.5	26.5		93.5	93.5		93.5	93.5	
Total Split (%)	22.1%	22.1%		22.1%	22.1%		77.9%	77.9%		77.9%	77.9%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.5			5.5			5.5			5.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Ped	Ped		Ped	Ped		C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)								88.0			88.0	
Actuated g/C Ratio								0.73			0.73	
v/c Ratio								0.29			0.25	
Control Delay								3.4			2.1	
Queue Delay								0.3			0.5	
Total Delay								3.7			2.6	
LOS								A			A	
Approach Delay								3.7			2.6	
Approach LOS								A			A	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 105 (88%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 50
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.29
Intersection Signal Delay: 3.2 Intersection LOS: A
Intersection Capacity Utilization 45.7% ICU Level of Service A
Analysis Period (min) 15

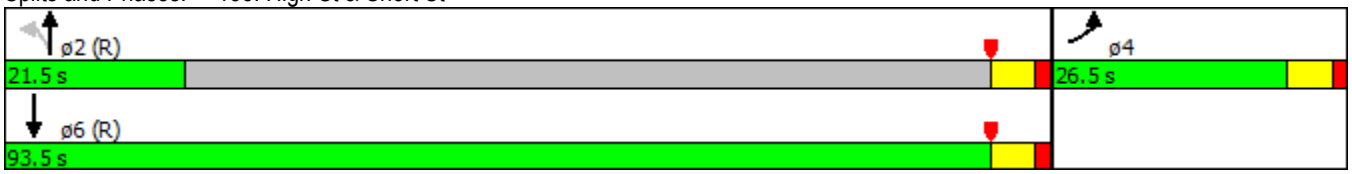
Splits and Phases: 158: High St & Village Green South

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	1	0	32	599	534	33
Future Volume (vph)	1	0	32	599	534	33
Satd. Flow (prot)	1593	0	0	3176	3153	0
Flt Permitted	0.950			0.892		
Satd. Flow (perm)	1587	0	0	2841	3153	0
Satd. Flow (RTOR)					14	
Lane Group Flow (vph)	1	0	0	686	616	0
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Total Split (s)	26.5		21.5	21.5	93.5	
Total Lost Time (s)	5.5			5.5	5.5	
Act Effct Green (s)	21.0			88.0	88.0	
Actuated g/C Ratio	0.18			0.73	0.73	
v/c Ratio	0.00			0.33	0.27	
Control Delay	41.0			3.6	3.3	
Queue Delay	0.0			0.2	0.3	
Total Delay	41.0			3.8	3.6	
LOS	D			A	A	
Approach Delay	41.0			3.8	3.6	
Approach LOS	D			A	A	
Queue Length 50th (ft)	1			45	33	
Queue Length 95th (ft)	6			36	41	
Internal Link Dist (ft)	575			391	1	
Turn Bay Length (ft)						
Base Capacity (vph)	278			2083	2315	
Starvation Cap Reductn	0			671	979	
Spillback Cap Reductn	0			123	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.00			0.49	0.46	

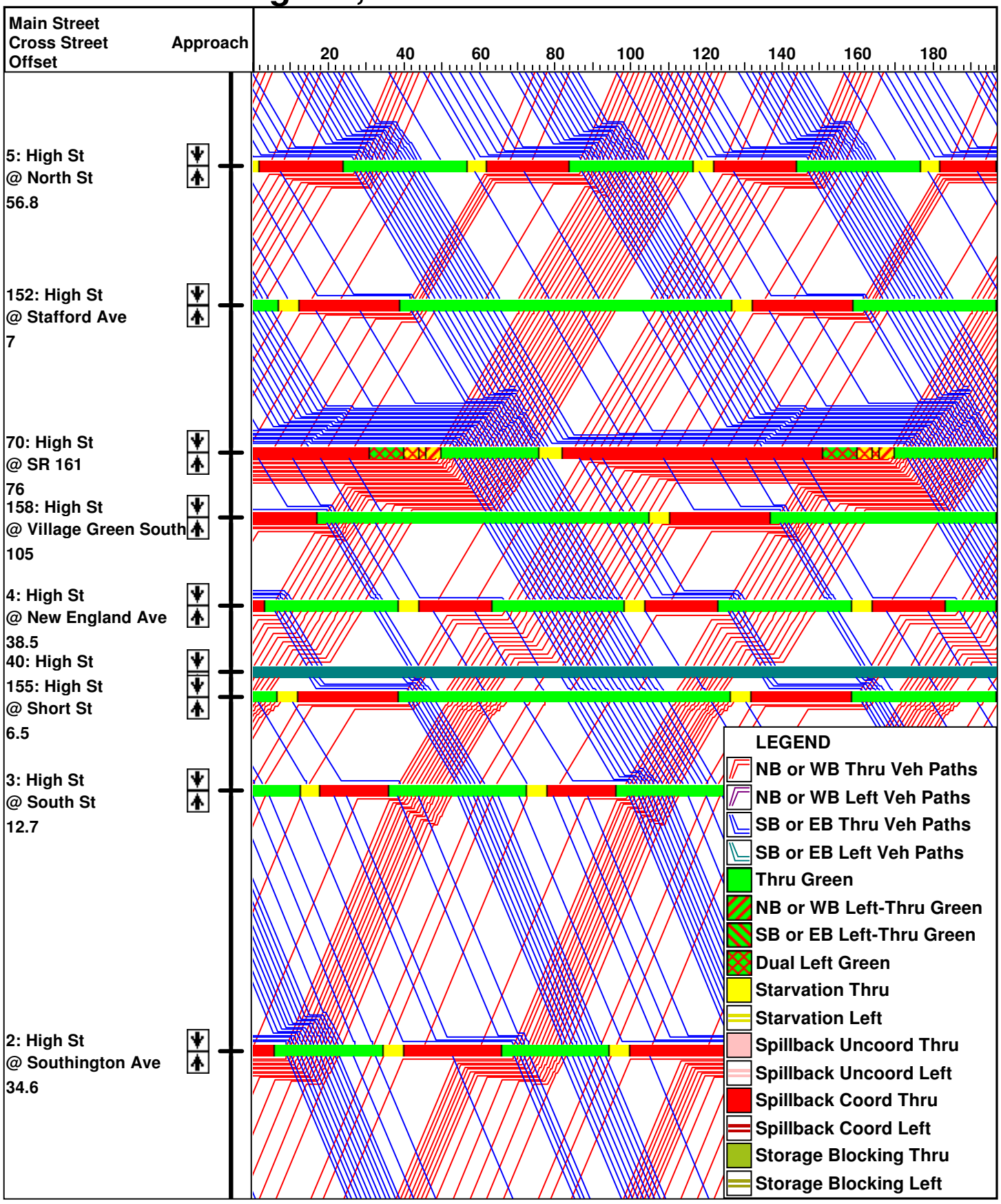
Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 6.5 (5%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.33
Intersection Signal Delay: 3.7 Intersection LOS: A
Intersection Capacity Utilization 56.6% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 155: High St & Short St



Time-Space Diagram - High St
Traffic Flow Diagram, 90th Percentile Flow and Green Times



Worthington Mobility Study AM Alt 3 - PHB

DKA

9/10/2015

High St

Direction	NB	SB	All
Control Delay / Veh (s/v)	14	22	18
Total Delay / Veh (s/v)	15	22	19
Total Delay (hr)	42	66	108
Stops (#)	4735	4871	9606
Average Speed (mph)	18	15	16
Total Travel Time (hr)	96	126	222
Distance Traveled (mi)	1736	1870	3605
Performance Index	55.0	79.4	134.4

Synchro Capacity Analysis – Mid-Day PHB Condition

Timings
157: High St & Village Green South

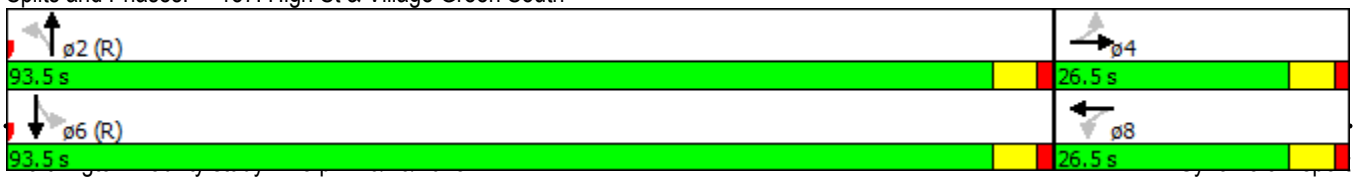
10/18/2015

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	0	3	709	2	5	752	3
Future Volume (vph)	0	0	0	0	0	0	3	709	2	5	752	3
Satd. Flow (prot)	0	1676	0	0	1676	0	0	3185	0	0	3182	0
Flt Permitted								0.953			0.951	
Satd. Flow (perm)	0	1676	0	0	1676	0	0	3036	0	0	3026	0
Satd. Flow (RTOR)								1			1	
Lane Group Flow (vph)	0	0	0	0	0	0	0	776	0	0	825	0
Turn Type							Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		20.0	20.0		20.0	20.0	
Minimum Split (s)	24.5	24.5		24.5	24.5		25.5	25.5		25.5	25.5	
Total Split (s)	26.5	26.5		26.5	26.5		93.5	93.5		93.5	93.5	
Total Split (%)	22.1%	22.1%		22.1%	22.1%		77.9%	77.9%		77.9%	77.9%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.5			5.5			5.5			5.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Ped	Ped		Ped	Ped		C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)								90.0			90.0	
Actuated g/C Ratio								0.75			0.75	
v/c Ratio								0.34			0.36	
Control Delay								4.4			3.3	
Queue Delay								0.3			0.9	
Total Delay								4.6			4.1	
LOS								A			A	
Approach Delay								4.6			4.1	
Approach LOS								A			A	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 98 (82%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 50
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.36
Intersection Signal Delay: 4.4 Intersection LOS: A
Intersection Capacity Utilization 52.1% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 157: High St & Village Green South



Timings
161: High St & Short St

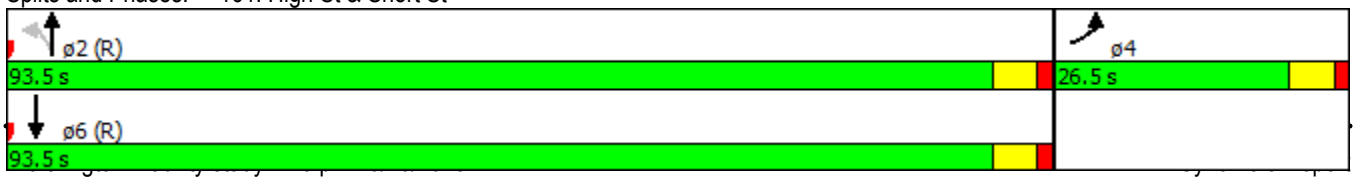
10/18/2015

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	30	636	683	68
Future Volume (vph)	0	0	30	636	683	68
Satd. Flow (prot)	1509	0	0	3176	2975	0
Flt Permitted				0.861		
Satd. Flow (perm)	1509	0	0	2742	2975	0
Satd. Flow (RTOR)					25	
Lane Group Flow (vph)	0	0	0	771	847	0
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Detector Phase	4		2	2	6	
Switch Phase						
Minimum Initial (s)	10.0		20.0	20.0	20.0	
Minimum Split (s)	24.5		25.5	25.5	25.5	
Total Split (s)	26.5		93.5	93.5	93.5	
Total Split (%)	22.1%		77.9%	77.9%	77.9%	
Yellow Time (s)	4.0		4.0	4.0	4.0	
All-Red Time (s)	1.5		1.5	1.5	1.5	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	5.5			5.5	5.5	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Ped		C-Max	C-Max	C-Max	
Act Effct Green (s)				90.0	90.0	
Actuated g/C Ratio				0.75	0.75	
v/c Ratio				0.38	0.38	
Control Delay				3.5	5.4	
Queue Delay				0.3	0.3	
Total Delay				3.8	5.7	
LOS				A	A	
Approach Delay				3.8	5.7	
Approach LOS				A	A	

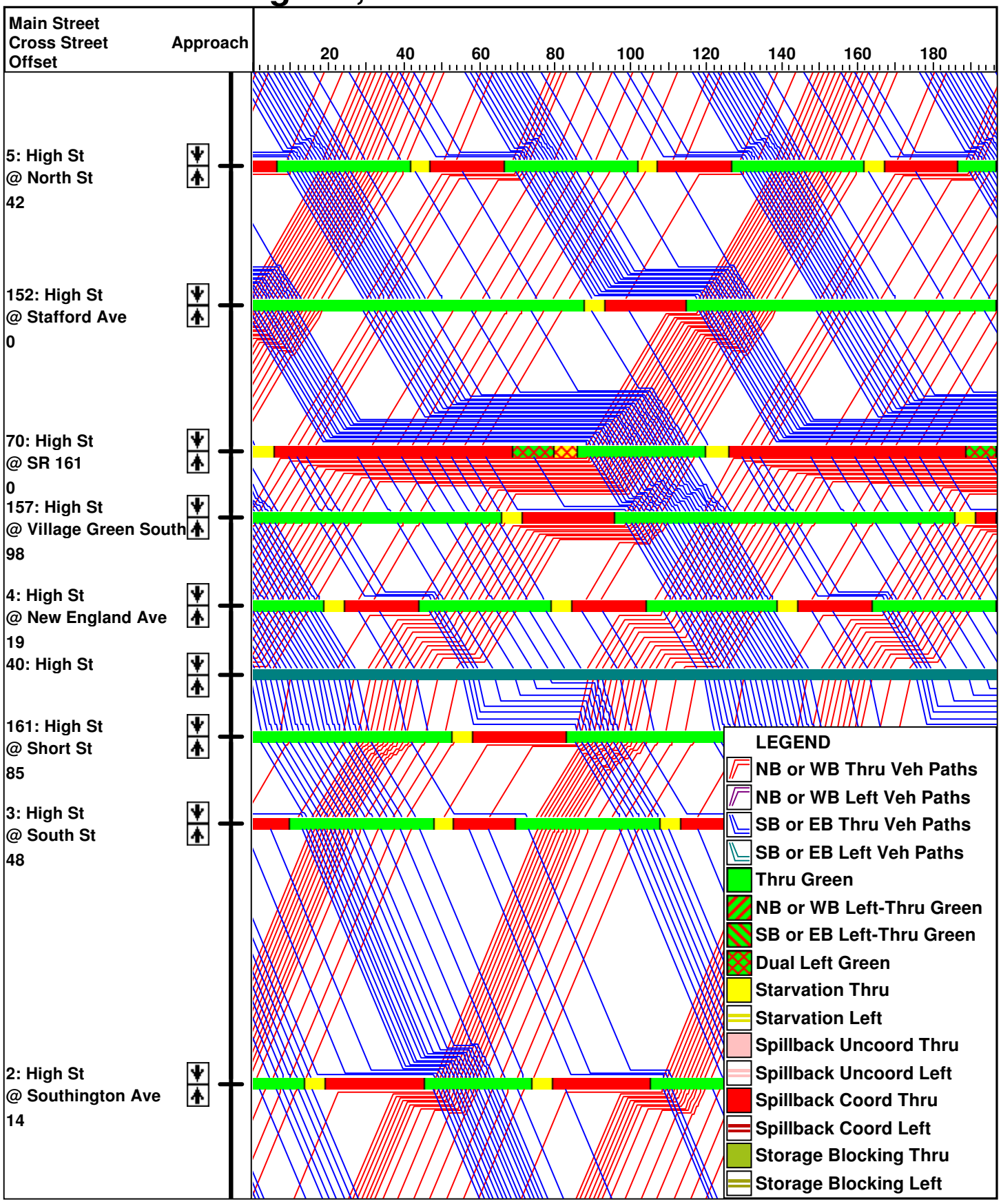
Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 85 (71%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 50
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.38
Intersection Signal Delay: 4.8 Intersection LOS: A
Intersection Capacity Utilization 48.7% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 161: High St & Short St



Time-Space Diagram - High St
Traffic Flow Diagram, 90th Percentile Flow and Green Times



MID PHB **DKA**

Timing Plan: Mid (12:15-1:15) **10/16/2015**

High St

Direction	NB	SB	All
Control Delay / Veh (s/v)	11	13	12
Total Delay / Veh (s/v)	11	13	12
Total Delay (hr)	30	37	67
Stops (#)	3942	4083	8025
Average Speed (mph)	20	19	19
Total Travel Time (hr)	83	94	177
Distance Traveled (mi)	1678	1746	3424
Performance Index	41.4	48.4	89.8

Synchro Capacity Analysis – PM PHB Condition

Timings

157: High St & Village Green South

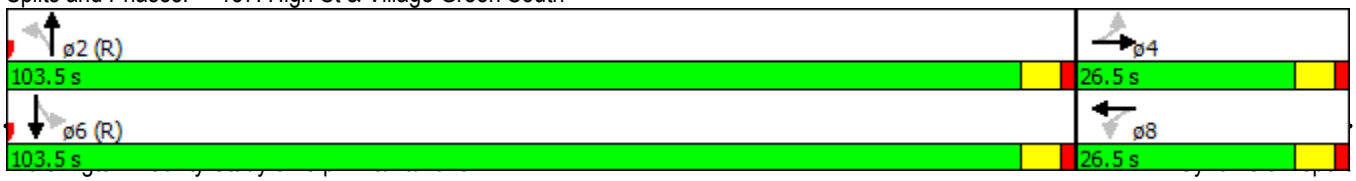
10/18/2015

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	0	0	735	3	1	758	7
Future Volume (vph)	0	0	0	0	0	0	0	735	3	1	758	7
Satd. Flow (prot)	0	1676	0	0	1676	0	0	3182	0	0	3174	0
Flt Permitted											0.954	
Satd. Flow (perm)	0	1676	0	0	1676	0	0	3182	0	0	3028	0
Satd. Flow (RTOR)								1			4	
Lane Group Flow (vph)	0	0	0	0	0	0	0	762	0	0	814	0
Turn Type								NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		20.0	20.0		20.0	20.0	
Minimum Split (s)	26.5	26.5		26.5	26.5		25.5	25.5		31.5	31.5	
Total Split (s)	26.5	26.5		26.5	26.5		103.5	103.5		103.5	103.5	
Total Split (%)	20.4%	20.4%		20.4%	20.4%		79.6%	79.6%		79.6%	79.6%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.5			5.5			5.5			5.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Ped	Ped		Ped	Ped		C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)								98.0			98.0	
Actuated g/C Ratio								0.75			0.75	
v/c Ratio								0.32			0.36	
Control Delay								4.1			1.9	
Queue Delay								0.2			1.2	
Total Delay								4.3			3.1	
LOS								A			A	
Approach Delay								4.3			3.1	
Approach LOS								A			A	

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 99 (76%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.36
Intersection Signal Delay: 3.7 Intersection LOS: A
Intersection Capacity Utilization 51.0% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 157: High St & Village Green South



Timings
161: High St & Short St

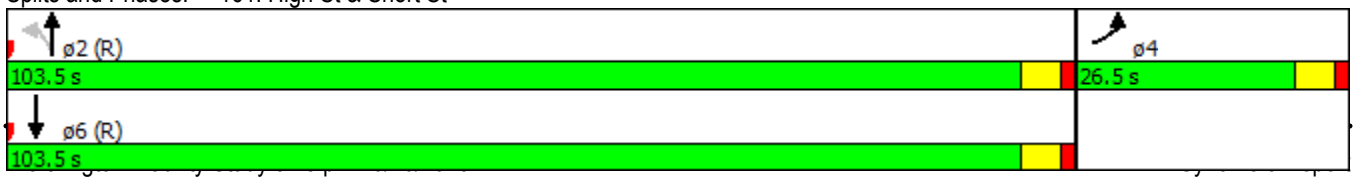
10/18/2015

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	1	35	696	753	47
Future Volume (vph)	0	1	35	696	753	47
Satd. Flow (prot)	1450	0	0	3176	2990	0
Flt Permitted				0.838		
Satd. Flow (perm)	1450	0	0	2669	2990	0
Satd. Flow (RTOR)	265				16	
Lane Group Flow (vph)	1	0	0	805	840	0
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Detector Phase	4		2	2	6	
Switch Phase						
Minimum Initial (s)	10.0		20.0	20.0	20.0	
Minimum Split (s)	26.5		25.5	25.5	25.5	
Total Split (s)	26.5		103.5	103.5	103.5	
Total Split (%)	20.4%		79.6%	79.6%	79.6%	
Yellow Time (s)	4.0		4.0	4.0	4.0	
All-Red Time (s)	1.5		1.5	1.5	1.5	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	5.5			5.5	5.5	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Ped		C-Max	C-Max	C-Max	
Act Effct Green (s)	21.0			98.0	98.0	
Actuated g/C Ratio	0.16			0.75	0.75	
v/c Ratio	0.00			0.40	0.37	
Control Delay	0.0			6.1	4.1	
Queue Delay	0.0			0.2	0.2	
Total Delay	0.0			6.3	4.2	
LOS	A			A	A	
Approach Delay	0.0			6.3	4.2	
Approach LOS	A			A	A	

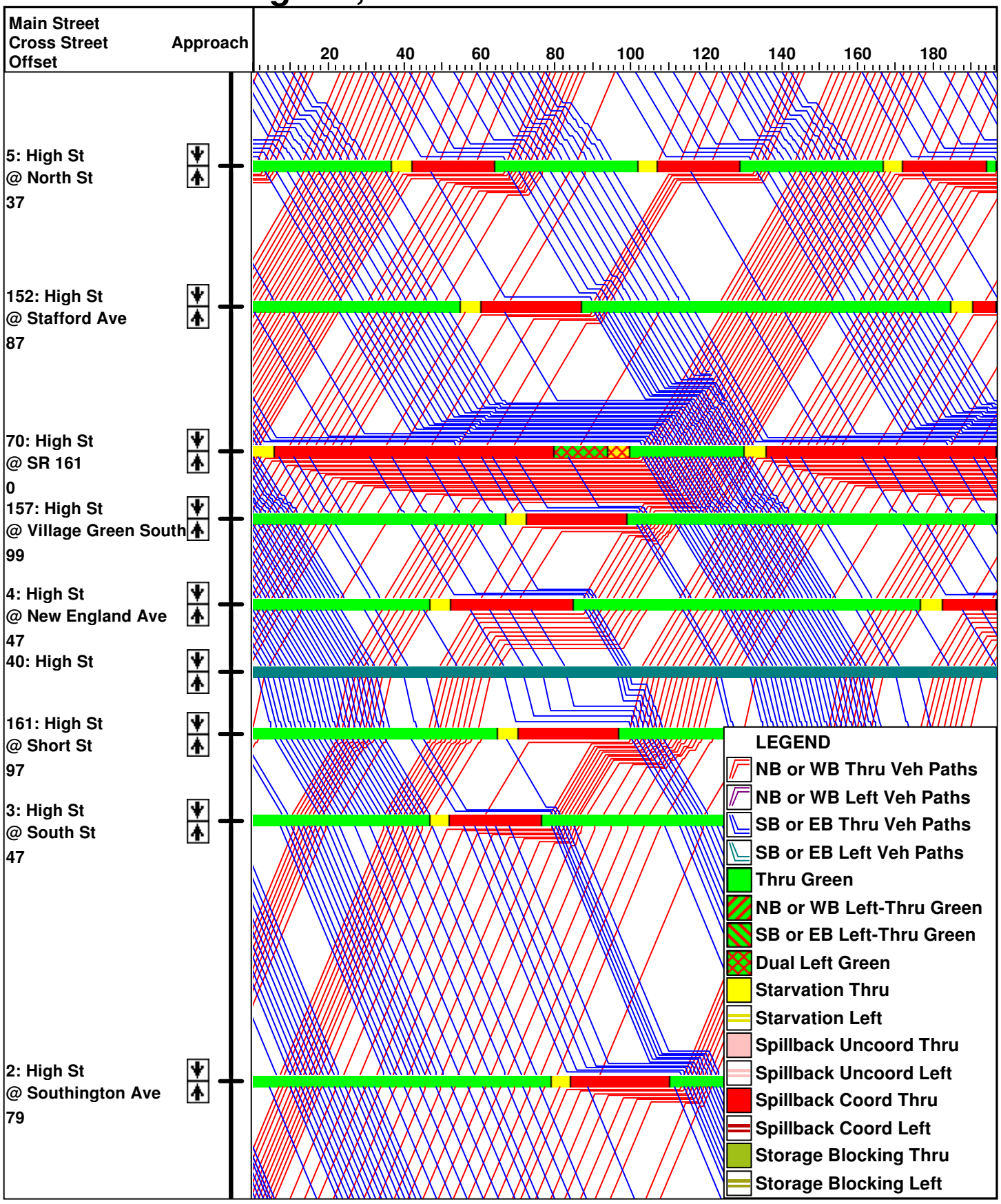
Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 97 (75%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 55
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.40
Intersection Signal Delay: 5.3 Intersection LOS: A
Intersection Capacity Utilization 67.7% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 161: High St & Short St



Time-Space Diagram - High St
Traffic Flow Diagram, 90th Percentile Flow and Green Times



PM PHB **DKA**

Timing Plan: PM (5-6) **10/16/2015**

High St

Direction	NB	SB	All
Control Delay / Veh (s/v)	16	15	15
Total Delay (hr)	52	52	104
Stops / Veh	0.44	0.41	0.42
Stops (#)	4967	5165	10132
Average Speed (mph)	17	18	18
Total Travel Time (hr)	113	126	239
Distance Traveled (mi)	1960	2283	4243
Performance Index	66.0	66.5	132.5

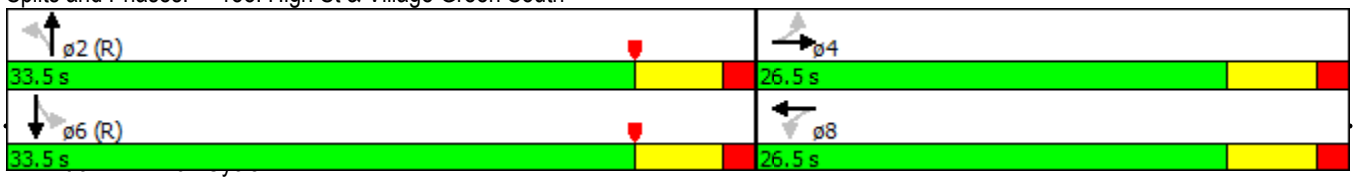
Synchro Capacity Analysis – AM PHB Half-Cycle Condition

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	0	0	687	0	3	561	1
Future Volume (vph)	0	0	0	0	0	0	0	687	0	3	561	1
Satd. Flow (prot)	0	1863	0	0	1863	0	0	3539	0	0	3539	0
Flt Permitted											0.952	
Satd. Flow (perm)	0	1863	0	0	1863	0	0	3539	0	0	3369	0
Satd. Flow (RTOR)												
Lane Group Flow (vph)	0	0	0	0	0	0	0	747	0	0	614	0
Turn Type								NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	26.5	26.5		26.5	26.5		21.5	21.5		21.5	21.5	
Total Split (s)	26.5	26.5		26.5	26.5		33.5	33.5		33.5	33.5	
Total Split (%)	44.2%	44.2%		44.2%	44.2%		55.8%	55.8%		55.8%	55.8%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.5			5.5			5.5			5.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Ped	Ped		Ped	Ped		C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)								28.0			28.0	
Actuated g/C Ratio								0.47			0.47	
v/c Ratio								0.45			0.39	
Control Delay								9.9			5.0	
Queue Delay								0.0			0.0	
Total Delay								9.9			5.0	
LOS								A			A	
Approach Delay								9.9			5.0	
Approach LOS								A			A	

Intersection Summary

Cycle Length: 60
Actuated Cycle Length: 60
Offset: 25 (42%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 50
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.45
Intersection Signal Delay: 7.7 Intersection LOS: A
Intersection Capacity Utilization 45.7% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 158: High St & Village Green South



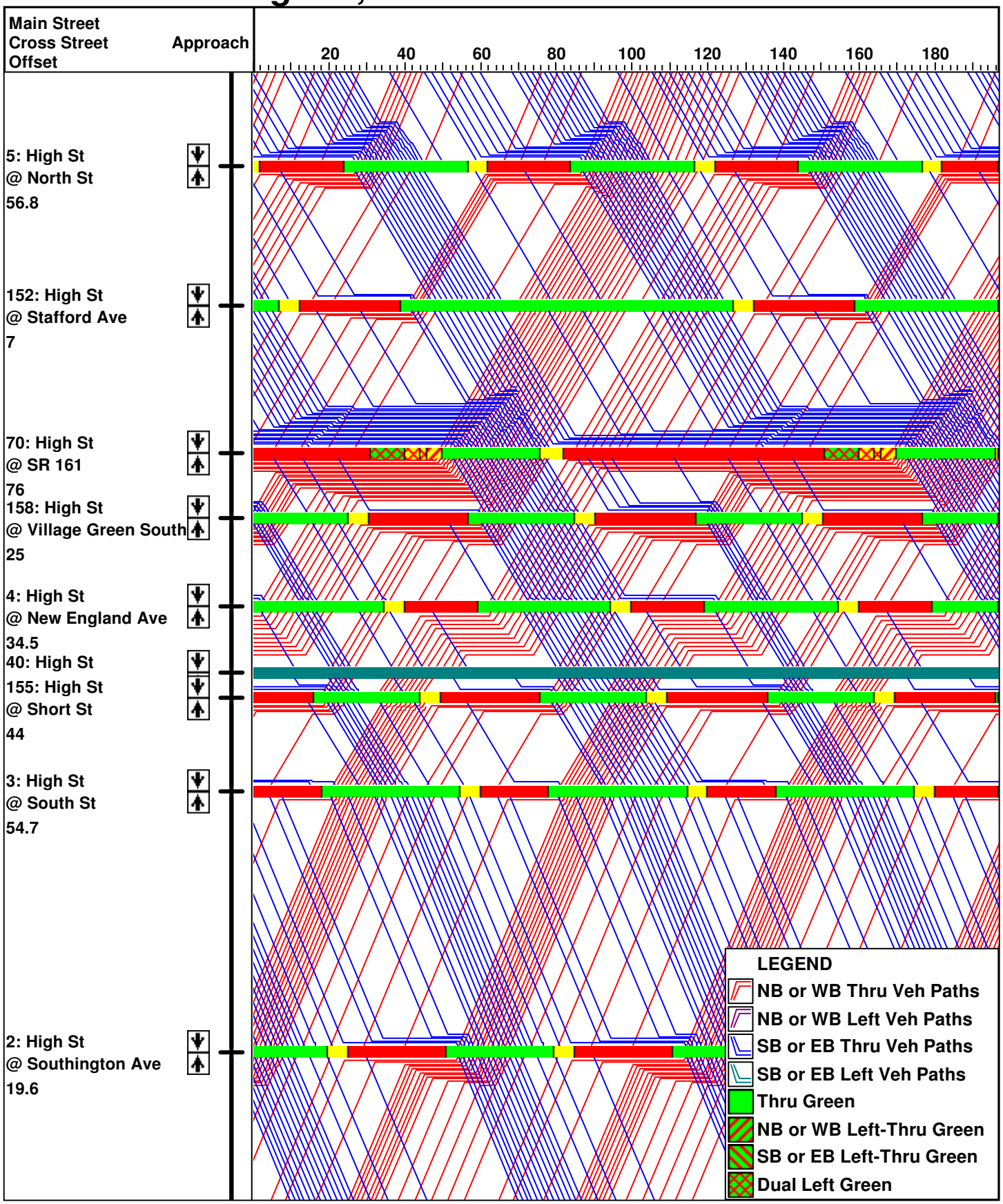
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	1	0	32	599	534	33
Future Volume (vph)	1	0	32	599	534	33
Satd. Flow (prot)	1593	0	0	3176	3152	0
Flt Permitted	0.950			0.902		
Satd. Flow (perm)	1590	0	0	2873	3152	0
Satd. Flow (RTOR)					14	
Lane Group Flow (vph)	1	0	0	686	616	0
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Detector Phase	4		2	2	6	
Switch Phase						
Minimum Initial (s)	7.0		10.0	10.0	10.0	
Minimum Split (s)	26.5		21.5	21.5	21.5	
Total Split (s)	26.5		33.5	33.5	33.5	
Total Split (%)	44.2%		55.8%	55.8%	55.8%	
Yellow Time (s)	4.0		4.0	4.0	4.0	
All-Red Time (s)	1.5		1.5	1.5	1.5	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	5.5			5.5	5.5	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Ped		C-Max	C-Max	C-Max	
Act Effct Green (s)	21.0			28.0	28.0	
Actuated g/C Ratio	0.35			0.47	0.47	
v/c Ratio	0.00			0.51	0.42	
Control Delay	13.0			7.8	3.8	
Queue Delay	0.0			0.0	0.0	
Total Delay	13.0			7.8	3.8	
LOS	B			A	A	
Approach Delay	13.0			7.8	3.8	
Approach LOS	B			A	A	

Intersection Summary

Cycle Length: 60
Actuated Cycle Length: 60
Offset: 44 (73%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow
Natural Cycle: 50
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.51
Intersection Signal Delay: 5.9 Intersection LOS: A
Intersection Capacity Utilization 56.6% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 155: High St & Short St

Time-Space Diagram - High St
Traffic Flow Diagram, 90th Percentile Flow and Green Times



AM Alt 3 - PHB Half Cycle
Timing Plan: AM (7:45-8:45)

DKA
10/20/2015

High St

Direction	NB	SB	All
Control Delay / Veh (s/v)	15	22	19
Total Delay / Veh (s/v)	15	22	19
Total Delay (hr)	43	66	109
Stops (#)	4864	4796	9660
Average Speed (mph)	18	15	16
Total Travel Time (hr)	97	126	223
Distance Traveled (mi)	1736	1870	3605
Performance Index	56.0	79.3	135.3

Synchro Capacity Analysis – Mid-Day PHB Half-Cycle Condition

Timings
157: High St & Village Green South

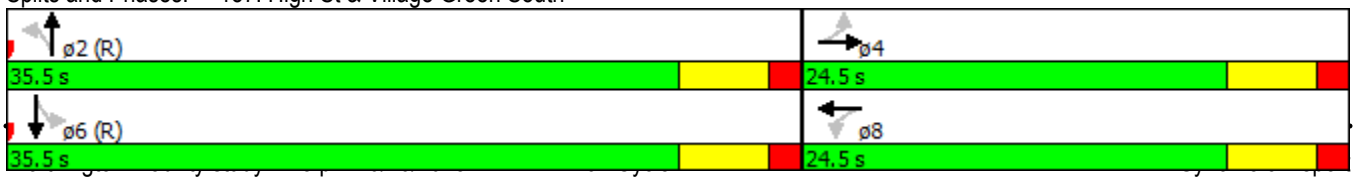
10/20/2015

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	0	3	709	2	5	752	3
Future Volume (vph)	0	0	0	0	0	0	3	709	2	5	752	3
Satd. Flow (prot)	0	1676	0	0	1676	0	0	3185	0	0	3182	0
Flt Permitted								0.952			0.951	
Satd. Flow (perm)	0	1676	0	0	1676	0	0	3032	0	0	3026	0
Satd. Flow (RTOR)								1			1	
Lane Group Flow (vph)	0	0	0	0	0	0	0	776	0	0	825	0
Turn Type							Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		20.0	20.0		20.0	20.0	
Minimum Split (s)	24.5	24.5		24.5	24.5		25.5	25.5		25.5	25.5	
Total Split (s)	24.5	24.5		24.5	24.5		35.5	35.5		35.5	35.5	
Total Split (%)	40.8%	40.8%		40.8%	40.8%		59.2%	59.2%		59.2%	59.2%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.5			5.5			5.5			5.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Ped	Ped		Ped	Ped		C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)								30.0			30.0	
Actuated g/C Ratio								0.50			0.50	
v/c Ratio								0.51			0.55	
Control Delay								11.4			6.5	
Queue Delay								0.0			0.2	
Total Delay								11.4			6.7	
LOS								B			A	
Approach Delay								11.4			6.7	
Approach LOS								B			A	

Intersection Summary

Cycle Length: 60
Actuated Cycle Length: 60
Offset: 34 (57%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 50
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.55
Intersection Signal Delay: 9.0 Intersection LOS: A
Intersection Capacity Utilization 52.1% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 157: High St & Village Green South



Timings
161: High St & Short St

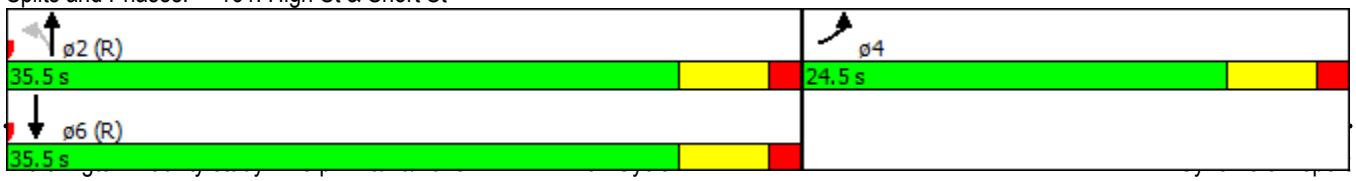
10/20/2015

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	30	636	683	68
Future Volume (vph)	0	0	30	636	683	68
Satd. Flow (prot)	1509	0	0	3176	2974	0
Flt Permitted				0.877		
Satd. Flow (perm)	1509	0	0	2793	2974	0
Satd. Flow (RTOR)					26	
Lane Group Flow (vph)	0	0	0	771	847	0
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Detector Phase	4		2	2	6	
Switch Phase						
Minimum Initial (s)	10.0		20.0	20.0	20.0	
Minimum Split (s)	24.5		25.5	25.5	25.5	
Total Split (s)	24.5		35.5	35.5	35.5	
Total Split (%)	40.8%		59.2%	59.2%	59.2%	
Yellow Time (s)	4.0		4.0	4.0	4.0	
All-Red Time (s)	1.5		1.5	1.5	1.5	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	5.5			5.5	5.5	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Ped		C-Max	C-Max	C-Max	
Act Effct Green (s)				30.0	30.0	
Actuated g/C Ratio				0.50	0.50	
v/c Ratio				0.55	0.56	
Control Delay				10.5	7.6	
Queue Delay				0.0	0.0	
Total Delay				10.5	7.6	
LOS				B	A	
Approach Delay				10.5	7.6	
Approach LOS				B	A	

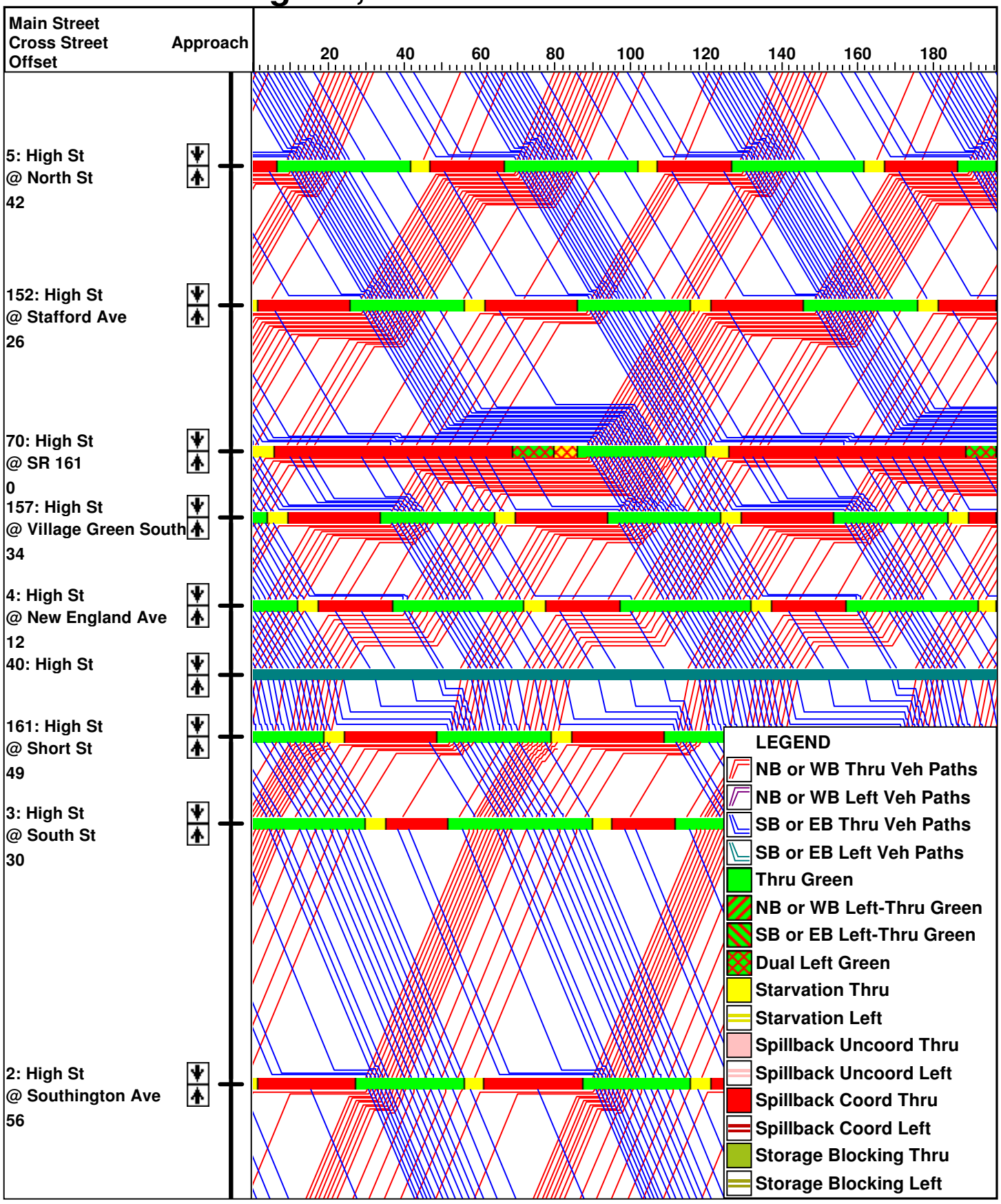
Intersection Summary

Cycle Length: 60
Actuated Cycle Length: 60
Offset: 49 (82%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 50
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.56
Intersection Signal Delay: 9.0 — Intersection LOS: A
Intersection Capacity Utilization 48.7% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 161: High St & Short St



Time-Space Diagram - High St
Traffic Flow Diagram, 90th Percentile Flow and Green Times



MID PHB Half Cycle
Timing Plan: Mid (12:15-1:15)

DKA
10/20/2015

High St

Direction	NB	SB	All
Control Delay / Veh (s/v)	12	12	12
Total Delay / Veh (s/v)	12	12	12
Total Delay (hr)	34	34	68
Stops (#)	4775	4050	8825
Average Speed (mph)	19	19	19
Total Travel Time (hr)	86	91	177
Distance Traveled (mi)	1678	1746	3424
Performance Index	46.9	45.4	92.3

Synchro Capacity Analysis – PM PHB Half-Cycle Condition

Timings
157: High St & Village Green South

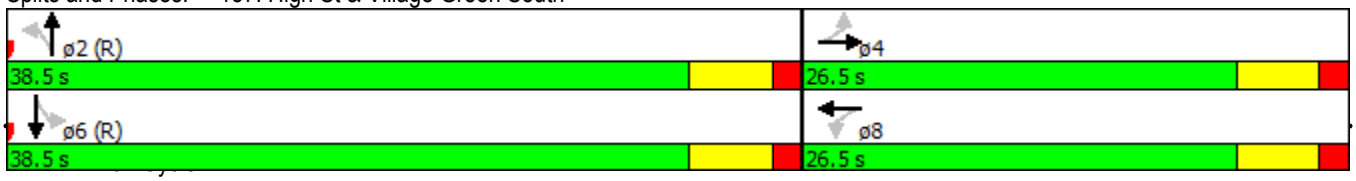
10/20/2015

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	0	0	735	3	1	758	7
Future Volume (vph)	0	0	0	0	0	0	0	735	3	1	758	7
Satd. Flow (prot)	0	1676	0	0	1676	0	0	3182	0	0	3174	0
Flt Permitted											0.954	
Satd. Flow (perm)	0	1676	0	0	1676	0	0	3182	0	0	3028	0
Satd. Flow (RTOR)								1			4	
Lane Group Flow (vph)	0	0	0	0	0	0	0	762	0	0	814	0
Turn Type								NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		20.0	20.0		20.0	20.0	
Minimum Split (s)	26.5	26.5		26.5	26.5		25.5	25.5		31.5	31.5	
Total Split (s)	26.5	26.5		26.5	26.5		38.5	38.5		38.5	38.5	
Total Split (%)	40.8%	40.8%		40.8%	40.8%		59.2%	59.2%		59.2%	59.2%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.5			5.5			5.5			5.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Ped	Ped		Ped	Ped		C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)								33.0			33.0	
Actuated g/C Ratio								0.51			0.51	
v/c Ratio								0.47			0.53	
Control Delay								7.8			5.0	
Queue Delay								0.0			0.3	
Total Delay								7.8			5.3	
LOS								A			A	
Approach Delay								7.8			5.3	
Approach LOS								A			A	

Intersection Summary

Cycle Length: 65
Actuated Cycle Length: 65
Offset: 38 (58%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.53
Intersection Signal Delay: 6.5 Intersection LOS: A
Intersection Capacity Utilization 51.0% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 157: High St & Village Green South



Timings
161: High St & Short St

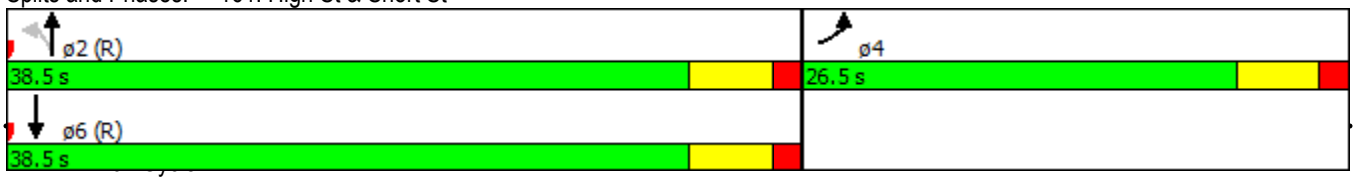
10/20/2015

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	1	35	696	753	47
Future Volume (vph)	0	1	35	696	753	47
Satd. Flow (prot)	1450	0	0	3176	2988	0
Flt Permitted				0.860		
Satd. Flow (perm)	1450	0	0	2739	2988	0
Satd. Flow (RTOR)	130				16	
Lane Group Flow (vph)	1	0	0	805	840	0
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Detector Phase	4		2	2	6	
Switch Phase						
Minimum Initial (s)	10.0		20.0	20.0	20.0	
Minimum Split (s)	26.5		25.5	25.5	25.5	
Total Split (s)	26.5		38.5	38.5	38.5	
Total Split (%)	40.8%		59.2%	59.2%	59.2%	
Yellow Time (s)	4.0		4.0	4.0	4.0	
All-Red Time (s)	1.5		1.5	1.5	1.5	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	5.5			5.5	5.5	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Ped		C-Max	C-Max	C-Max	
Act Effct Green (s)	21.0			33.0	33.0	
Actuated g/C Ratio	0.32			0.51	0.51	
v/c Ratio	0.00			0.58	0.55	
Control Delay	0.0			12.9	6.7	
Queue Delay	0.0			0.0	0.0	
Total Delay	0.0			12.9	6.7	
LOS	A			B	A	
Approach Delay	0.0			12.9	6.7	
Approach LOS	A			B	A	

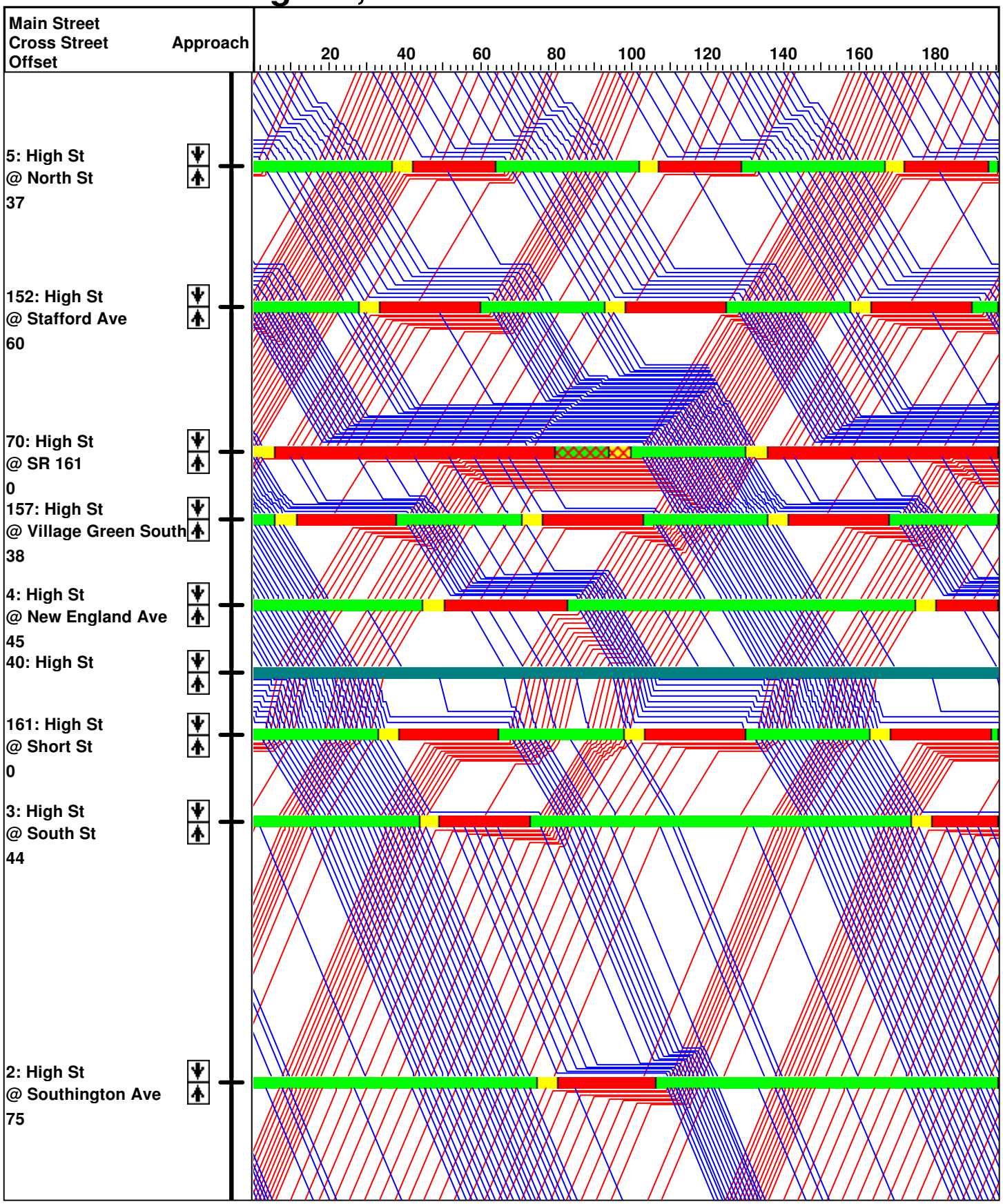
Intersection Summary

Cycle Length: 65
Actuated Cycle Length: 65
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 55
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.58
Intersection Signal Delay: 9.7 — Intersection LOS: A
Intersection Capacity Utilization 67.7% — ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 161: High St & Short St



Time-Space Diagram - High St
Traffic Flow Diagram, 90th Percentile Flow and Green Times



PM PHB Half Cycle **DKA**

Timing Plan: PM (5-6) **10/20/2015**

High St

Direction	NB	SB	All
Control Delay / Veh (s/v)	14	17	15
Total Delay (hr)	44	60	104
Stops / Veh	0.44	0.51	0.48
Stops (#)	4880	6531	11411
Average Speed (mph)	19	17	18
Total Travel Time (hr)	105	134	239
Distance Traveled (mi)	1960	2283	4243
Performance Index	57.5	78.3	135.8

Appendix F: NCUTCD Proposed Changes to PHB in the MUTCD

TAttachment No. 4
Approved by National Committee Council

National Committee on
Uniform Traffic Control Devices

17200 West Bell Road No.1135 * Surprise, Ariz. 85374
Telephone (623) 214-2403 * e-mail: ncutcd@aol.com

The Signals Technical Committee distributed a technical committee recommendation to sponsors concerning pedestrian hybrid beacons following the January 2011 meeting. Sponsor comments were reviewed and discussed at the June 2011 meeting. Based on the sponsor comments, minor wording changes were made by the STC and presented to the National Committee Council at the June 23, 2011 meeting. The recommended changes to the MUTCD, as modified by the STC at the June meeting, were approved by the National Committee Council.

The recommended changes to the text of Section 4F.02 approved by the National Committee Council are shown below with existing MUTCD text to be deleted shown in ~~red strikethrough~~ and new text to be added shown in underline blue.)

Section 4F.02 Design of Pedestrian Hybrid Beacons

Standard:

01 **Except as otherwise provided in this Section, a pedestrian hybrid beacon shall meet the provisions of Chapters 4D and 4E.**

02 **A pedestrian hybrid beacon face shall consist of three signal sections, with a CIRCULAR YELLOW signal indication centered below two horizontally aligned CIRCULAR RED signal indications (see Figure 4F-3).**

03 **When an engineering study finds that installation of a pedestrian hybrid beacon is justified, then:**

- **A. At least two pedestrian hybrid beacon faces shall be installed for each approach of the major street,**
- **B. A stop line shall be installed for each approach to the crosswalk,**
- **C. A pedestrian signal head conforming to the provisions set forth in Chapter 4E shall be installed at each end of the marked crosswalk, and**
- **D. The pedestrian hybrid beacon shall be pedestrian actuated.**
- **E. If a pedestrian hybrid beacon is installed at or immediately adjacent to an intersection with a side road, vehicular traffic on the side road shall be controlled by STOP signs.**

Guidance:

04 *When an engineering study finds that installation of a pedestrian hybrid beacon is justified, then:*

- ~~*A. The pedestrian hybrid beacon should be installed at least 100 feet from side streets or driveways that are controlled by STOP or YIELD signs,*~~
- *A~~B~~. Parking and other sight obstructions should be prohibited for at least 100 feet in advance of and at least 20 feet beyond the marked crosswalk, or site accommodations should be made through curb extensions or other techniques to provide adequate sight distance,*
- *B~~C~~. The installation should include suitable standard signs and pavement markings, and*
- *C~~D~~. If installed within a signal system, the pedestrian hybrid beacon should be coordinated.*

05 *On approaches having posted or statutory speed limits or 85th-percentile speeds in excess of 35 mph and on approaches having traffic or operating conditions that would tend to obscure visibility of roadside hybrid beacon face locations, both of the minimum of two pedestrian hybrid beacon faces should be installed over the roadway.*

06 *On multi-lane approaches having a posted or statutory speed limits or 85th-percentile speeds of 35 mph or less, either a pedestrian hybrid beacon face should be installed on each side of the approach (if a median of sufficient width exists) or at least one of the pedestrian hybrid beacon faces should be installed over the roadway.*

07 *A pedestrian hybrid beacon should comply with the signal face location provisions described in Sections 4D.11 through 4D.16.*

Standard:

08 **A CROSSWALK STOP ON RED (symbolic circular red) (R10-23) sign (see Section 2B.53) shall be mounted adjacent to a pedestrian hybrid beacon face on each major street approach. If an overhead pedestrian hybrid beacon face is provided, the sign shall be mounted adjacent to the overhead signal face.**

Option:

09 A Pedestrian (W11-2) warning sign (see Section 2C.50) with an AHEAD (W16-9P) supplemental plaque may be placed in advance of a pedestrian hybrid beacon. A warning beacon may be installed to supplement the W11-2 sign.

Guidance:

10 *If a warning beacon supplements a W11-2 sign in advance of a pedestrian hybrid beacon, it should be programmed to flash only when the pedestrian hybrid beacon is not in the dark mode.*

Standard:

11 **If a warning beacon is installed to supplement the W11-2 sign, the design and location of the warning beacon shall comply with the provisions of Sections 4L.01 and 4L.03.**

For reference, the item as distributed to sponsors and including the reason for proposed changes is on the following pages. The changes made by the STC at the June meeting were the deletion of "or driveway" in two places in proposed new item E in paragraph 03 as shown:

E. If a pedestrian hybrid beacon is installed at or immediately adjacent to an intersection with a side road ~~or driveway~~, vehicular traffic on the side road ~~or driveway~~ shall be controlled by STOP signs.

National Committee on
Uniform Traffic Control Devices

17200 West Bell Road No.1135 * Surprise, Ariz. 85374
Telephone (623) 214-2403 * e-mail: ncutcd@aol.com

TECHNICAL COMMITTEE: **Signals Technical Committee**

TOPIC: **Pedestrian Hybrid Beacon (HAWK)**

STATUS/DATE OF ACTION: Send for Sponsor Comments

Signals Approval: 2011 (and previously 2007)
Transmitted to Sponsors: 2011
Council Approval: _____

ORIGIN OF REQUEST: STC, January 2011 Meeting

AFFECTED SECTIONS OF MUTCD: **4F.02**

SUMMARY:

The Signals Technical Committee previously recommended that a pedestrian hybrid beacon be added to Part 4 of the MUTCD. This was submitted to sponsors for comments, approved by the National Committee Council, and forwarded to FHWA as a National Committee recommendation. This recommendation did not include any restrictions, either as a standard or as guidance, on where such devices could or should be installed on a roadway.

The Notice of Proposed Amendment (NPA) for the 2009 MUTCD included the pedestrian hybrid beacon (although the name was changed to pedestrian hybrid signal) using basically the language as submitted by the National Committee. When the Final Rule was issued, the name was again pedestrian hybrid beacon but the language included new guidance that *"the pedestrian hybrid beacon should be installed at least 100 feet from side streets or driveways that are controlled by STOP or YIELD signs".* It indicated that this modification was made based on comments to the docket.

Although the National Committee and public had an opportunity to comment on the published NPA, there was no opportunity to comment on this significant change to the language included in the MUTCD Final Rule. The language included in the MUTCD is inconsistent with the experimentation that was performed for the use of this traffic control device and with the application as approved and recommended by the National Committee. The STC recommends a return to the language for pedestrian hybrid

beacons that was included in the NPA that permits installation at intersections or driveways where the side road or driveway traffic is controlled by STOP signs.

DISCUSSION

The proposed addition of the pedestrian hybrid beacon was approved in 2007 by the STC and National Committee and forwarded to FHWA. At the January 2011 meeting, the STC discussed what was included in the MUTCD Final Rule versus what the National Committee had recommended and what was included in the NPA. The STC voted to recommend a return to the design and application of these beacons as listed in the NPA thus removing the guidance statement against installation within 100 feet of an intersection or driveway. This proposed change is being sent for sponsor review and comment.

The SC feels that the addition of guidance language that these beacons should be at least 100 feet from a side street or driveway (Section 4F.02) is a significant change from what was reviewed and approved by the National Committee and from what was proposed in the NPA. Following are several concerns about the final MUTCD language:

- The result of the added guidance, if followed, is that these beacons could not be used at intersections or driveways. The NPA language did not include any limitations (either standard or guidance) on the locations for use. This change was not subject to public review and comment.
- The 100 foot offset listed in the guidance is not supported by research or experimentation with this device.
- Most sites used for experimentation when the pedestrian hybrid beacon was being tested were intersection or driveway locations. Therefore, the typical use of the device as tested, which ultimately proved to be successful, is recommended against in the 2009 MUTCD.
- A FHWA publication, Safety Effectiveness of the HAWK Pedestrian Crossing Treatment (http://www.fhwa.dot.gov/publications/research/safety/10042/10042.pdf) includes the results of an evaluation of the effectiveness of these devices at several locations. The conclusion indicates that intersections with pedestrian hybrid beacons experienced a 29% reduction in all vehicular crashes and a 69% reduction in pedestrian crashes. The study notes that “all 21 HAWKs included in this safety study were located either at a minor intersection (where the minor street was controlled by a STOP sign) or at a major driveway (where the driveway was controlled by a STOP sign).” The study was performed before the publication of the 2009 MUTCD and notes that the 2009 MUTCD includes a guidance statement recommending installation at least 100 feet from intersections or driveways.
- The guidance, if followed, causes increased mobility difficulties and discomfort for pedestrians with disabilities and forces all pedestrians to experience

increased inconvenience if they must divert away from their desired crossing location at an intersection or driveway to a different crossing point.

The STC feels that the use of pedestrian hybrid beacons at intersections or driveways has been adequately evaluated and operational problems associated with being installed at such locations have not been experienced. Therefore, the STC recommends that the National Committee recommend to FHWA that the guidance for installing a pedestrian hybrid beacon at least 100 feet from an intersection or driveway be deleted and that related text regarding installation at an intersection or driveway be added.

RECOMMENDED CHANGES TO THE MUTCD (Section 4F.02)

Note: Existing MUTCD text to be deleted is shown in ~~red strikethrough~~. New text to be added is shown in underline blue.

Section 4F.02 Design of Pedestrian Hybrid Beacons

Standard:

01 **Except as otherwise provided in this Section, a pedestrian hybrid beacon shall meet the provisions of Chapters 4D and 4E.**

02 **A pedestrian hybrid beacon face shall consist of three signal sections, with a CIRCULAR YELLOW signal indication centered below two horizontally aligned CIRCULAR RED signal indications (see Figure 4F-3).**

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- **C. A pedestrian signal head conforming to the provisions set forth in Chapter 4E shall be installed at each end of the marked crosswalk, and**
- **D. The pedestrian hybrid beacon shall be pedestrian actuated.**
- **E. If a pedestrian hybrid beacon is installed at or immediately adjacent to an intersection with a side road or driveway, vehicular traffic on the side road or driveway shall be controlled by STOP signs.**

Guidance:

04 *When an engineering study finds that installation of a pedestrian hybrid beacon is justified, then:*

- *~~A. The pedestrian hybrid beacon should be installed at least 100 feet from side streets or driveways that are controlled by STOP or YIELD signs.~~*
- *A~~B~~. Parking and other sight obstructions should be prohibited for at least 100 feet in advance of and at least 20 feet beyond the marked crosswalk, or site accommodations should be made through curb extensions or other techniques to provide adequate sight distance,*
- *B~~C~~. The installation should include suitable standard signs and pavement markings, and*
- *C~~D~~. If installed within a signal system, the pedestrian hybrid beacon should be coordinated.*

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Standard:

08 **A CROSSWALK STOP ON RED (symbolic circular red) (R10-23) sign (see Section 2B.53) shall be mounted adjacent to a pedestrian hybrid beacon face on each major street approach. If an overhead pedestrian hybrid beacon face is provided, the sign shall be mounted adjacent to the overhead signal face.**

Option:

09 A Pedestrian (W11-2) warning sign (see Section 2C.50) with an AHEAD (W16-9P) supplemental plaque may be placed in advance of a pedestrian hybrid beacon. A warning beacon may be installed to supplement the W11-2 sign.

Guidance:

10 *If a warning beacon supplements a W11-2 sign in advance of a pedestrian hybrid beacon, it should be programmed to flash only when the pedestrian hybrid beacon is not in the dark mode.*

Standard:

11 **If a warning beacon is installed to supplement the W11-2 sign, the design and location of the warning beacon shall comply with the provisions of Sections 4L.01 and 4L.03.**

VOTE: Unanimous “FOR” with 1 abstention

Appendix G: Conceptual PHB Cost Estimate

PHB Installation			COST	Contingency	Total
				25%	
1)	Support Poles & Foundations		$17,500	$4,375	$21,875
2)	Pedestrian Signal Heads		$1,400	$350	$1,750
3)	Vehicular Signal Heads		$2,900	$725	$3,625
4)	Signing		$2,000	$500	$2,500
5)	Signal Cable & Conduit		$7,200	$1,800	$9,000
6)	Controller & Cabinet		$1,200	$300	$1,500
7)	Power Service and Cable		$2,000	$500	$2,500
8)	Pedestrian Pushbuttons		$450	$113	$563
9)	Crosswalk Striping		$1,000	$250	$1,250
10)	Systems Timing (Coordination)		$1,500	$375	$1,875
11)	Maintaining Traffic (5%)		$1,858	$464	$2,322
12)	Construction Layout Stakes (3%)		$1,115	$279	$1,394
13)	Mobilization		$4,000	$1,000	$5,000
		TOTAL =	$44,122	$11,031	**$55,153**