Appendix G
Projected Conditions During Construction

LOS Analysis Worksheets

This appendix contains the following:

The CLV calculations are summarized in Table G-1. Figure G-1 presents the traffic volumes and turning movements at the study intersections during the AM and PM peak hours. Figure G-2 shows added construction traffic only.

Table G- 1 – Intersection LOS: Construction Peak (2016) Conditions

Intersection	*CLV*		*LOS*	
	AM	*PM*	*AM*	*PM*
MD 2/MD 4 diverge	**1879**	**1946**	**F**	**F**
MD 231 & MD 2/MD 4	1331	**1640**	D	**F**
Calvert Beach/Ball Road & MD 2/MD 4	**1764**	**1757**	**F**	**F**
Calvert Cliffs Parkway & MD 2/MD 4	888	**1592**	A	**E**
White Sands Drive & MD 2/MD 4	782	1400	A	D
Nursery Road & MD 2/MD 4	1008	1268	B	C
Pardoe Road & MD 2/MD 4	1162	1261	C	C
Cove Point Road & MD 2/MD 4	997	1329	A	D

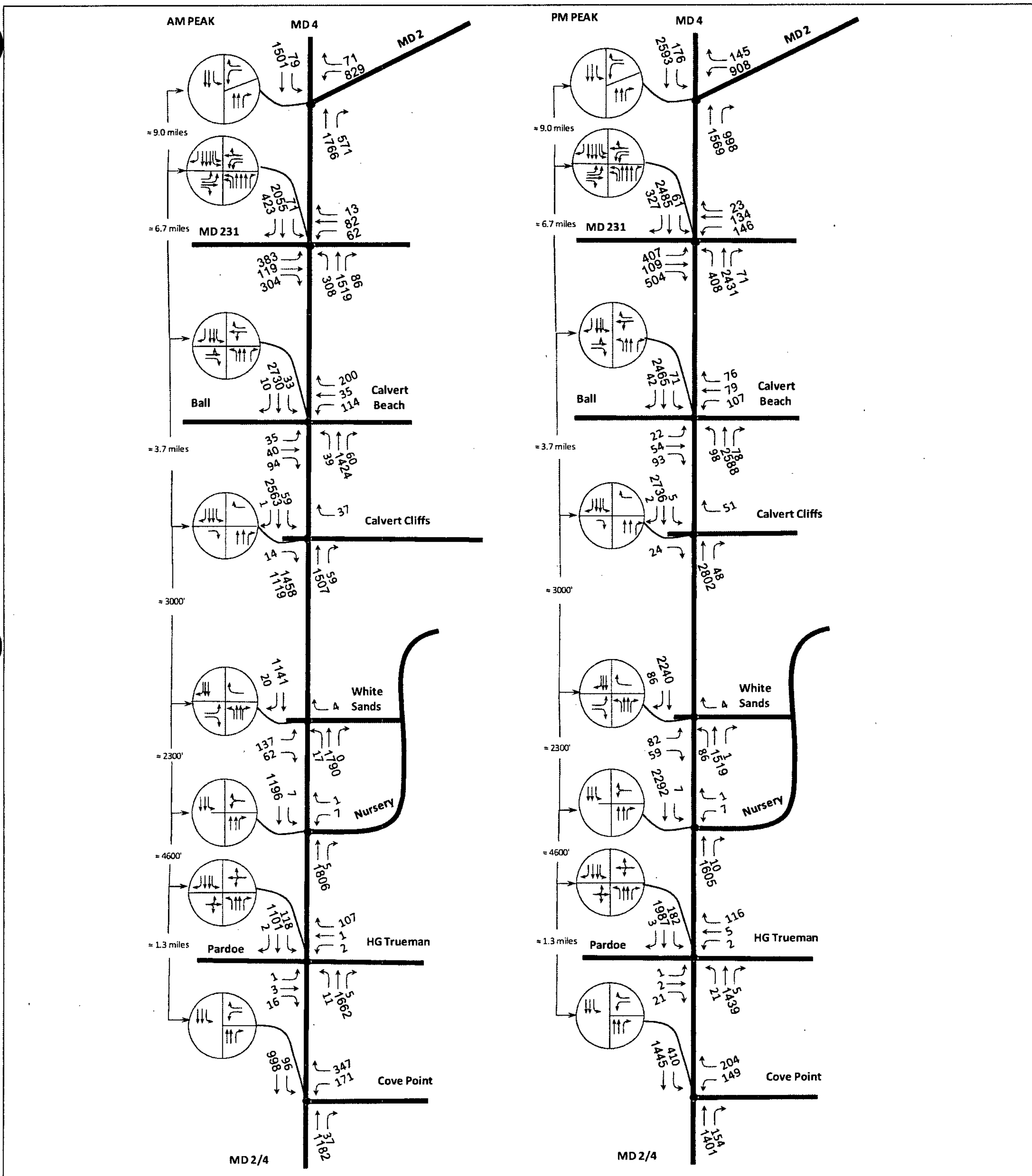


Figure G-1 – Peak Hour Traffic for Conditions During Construction

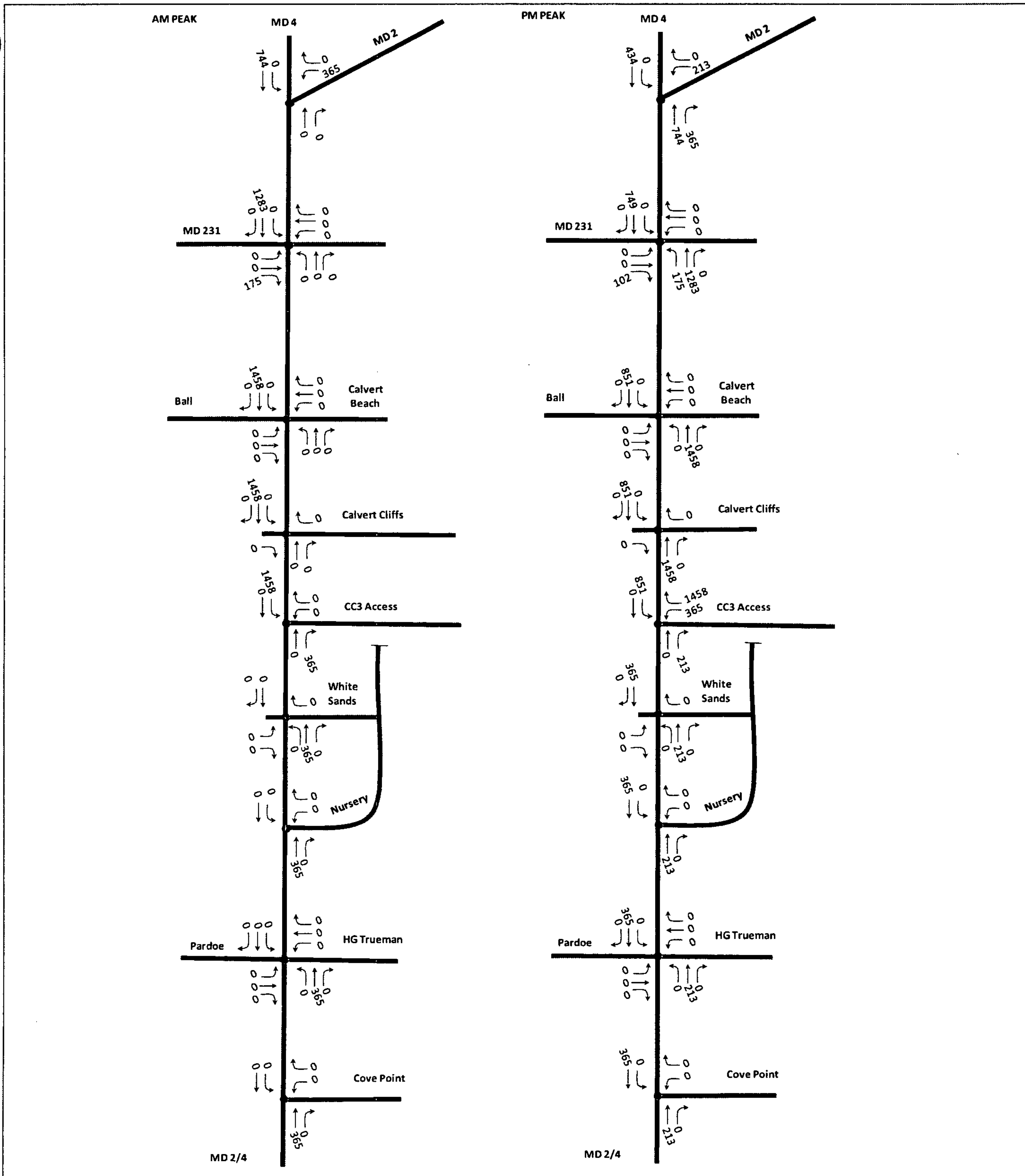
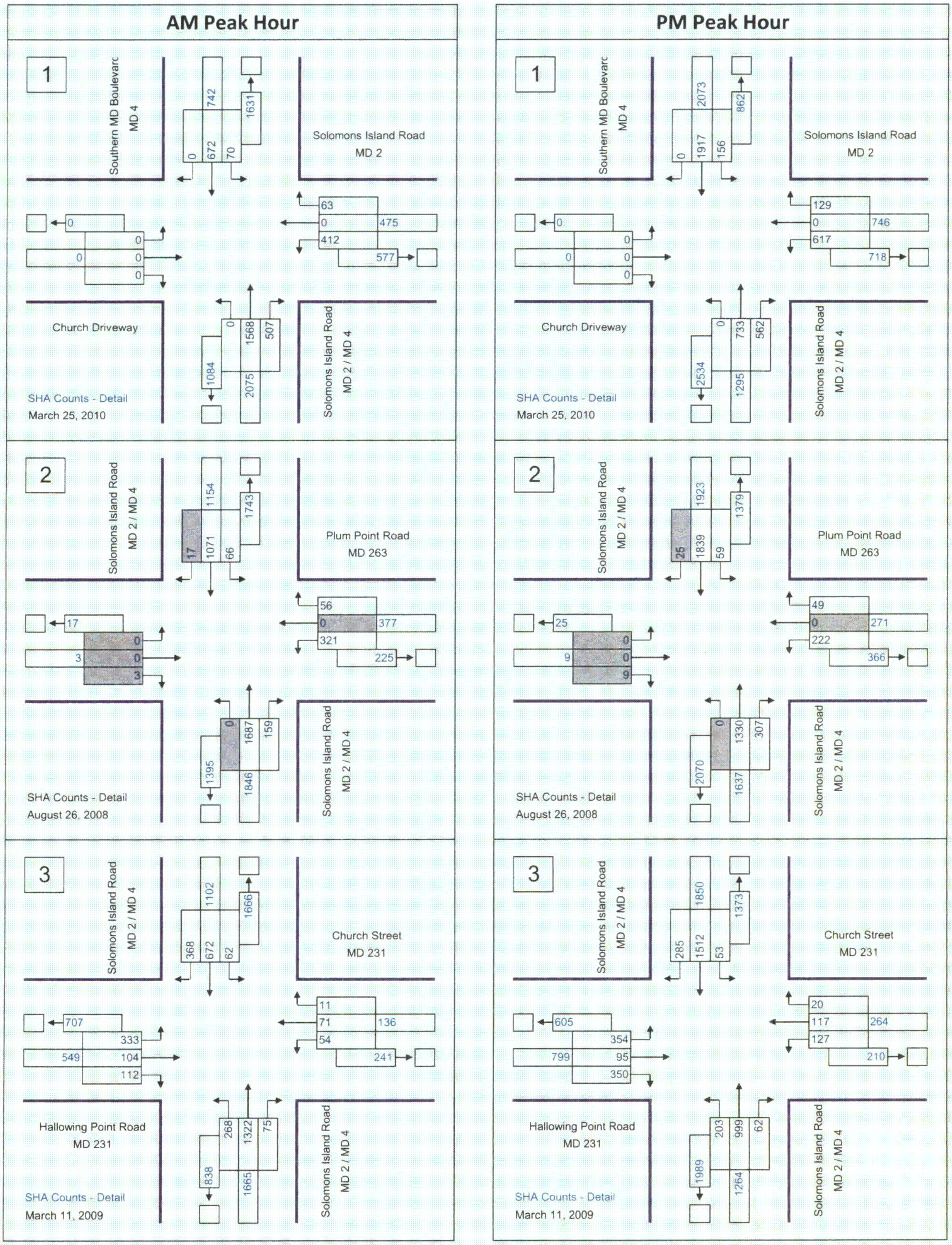
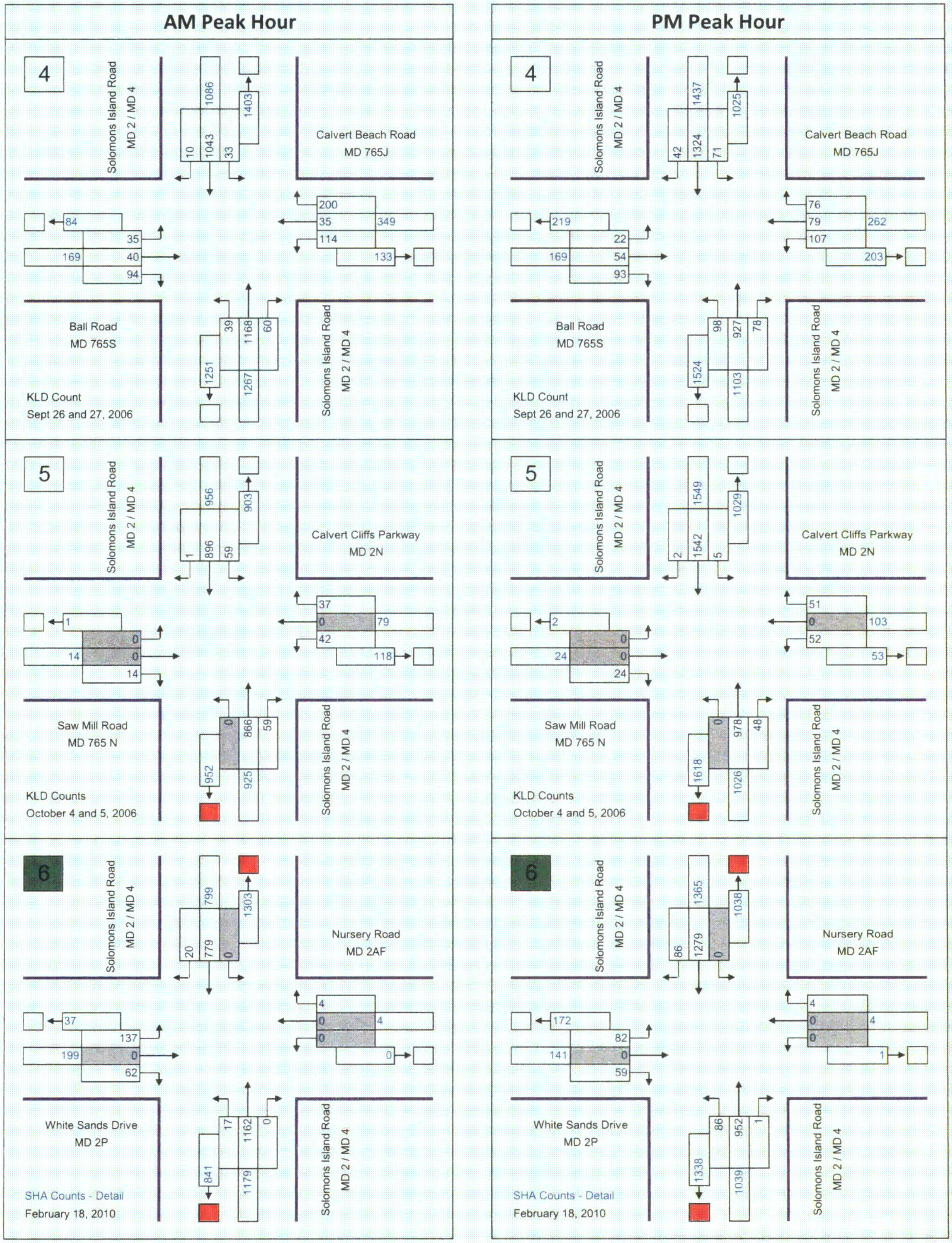


Figure G-2 – Peak Hour Volumes – Additional Construction Traffic Only

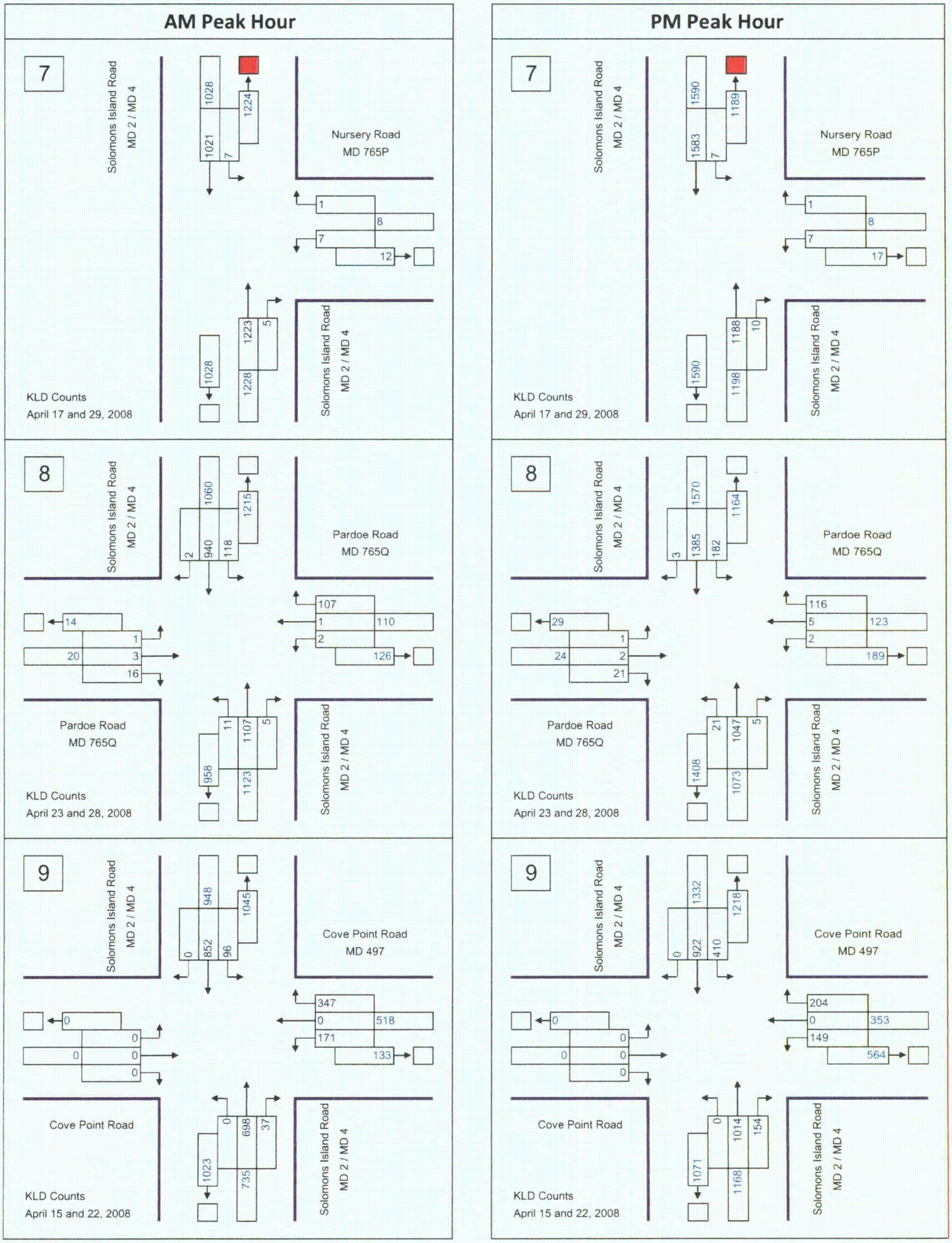
Count Data


AM Peak Hour
PM Peak Hour
1
Southern MD Boulevarc
MD 4
742
0
672
70
1631
Solomons Island Road
MD 2
0
0
0
0
0
63
0
475
412
577
Church Driveway
1084
0
1568
507
2075
Solomons Island Road
MD 2 / MD 4
SHA Counts - Detail
March 25, 2010
2073
0
1917
156
862
129
0
746
617
718
2534
0
733
562
1295
2
Solomons Island Road
MD 2 / MD 4
1154
17
1071
66
1743
Plum Point Road
MD 263
17
0
3
0
3
56
0
377
321
225
1395
0
1687
159
1846
SHA Counts - Detail
August 26, 2008
1923
25
1839
59
1379
25
0
9
0
9
49
0
271
222
366
2070
0
1330
307
1637
3
1102
368
672
62
1666
Church Street
MD 231
707
333
549
104
112
11
71
136
54
241
Hallowing Point Road
MD 231
838
268
1322
75
1665
March 11, 2009
1850
285
1512
53
1373
605
354
799
95
350
20
117
264
127
210
1989
203
999
62
1264

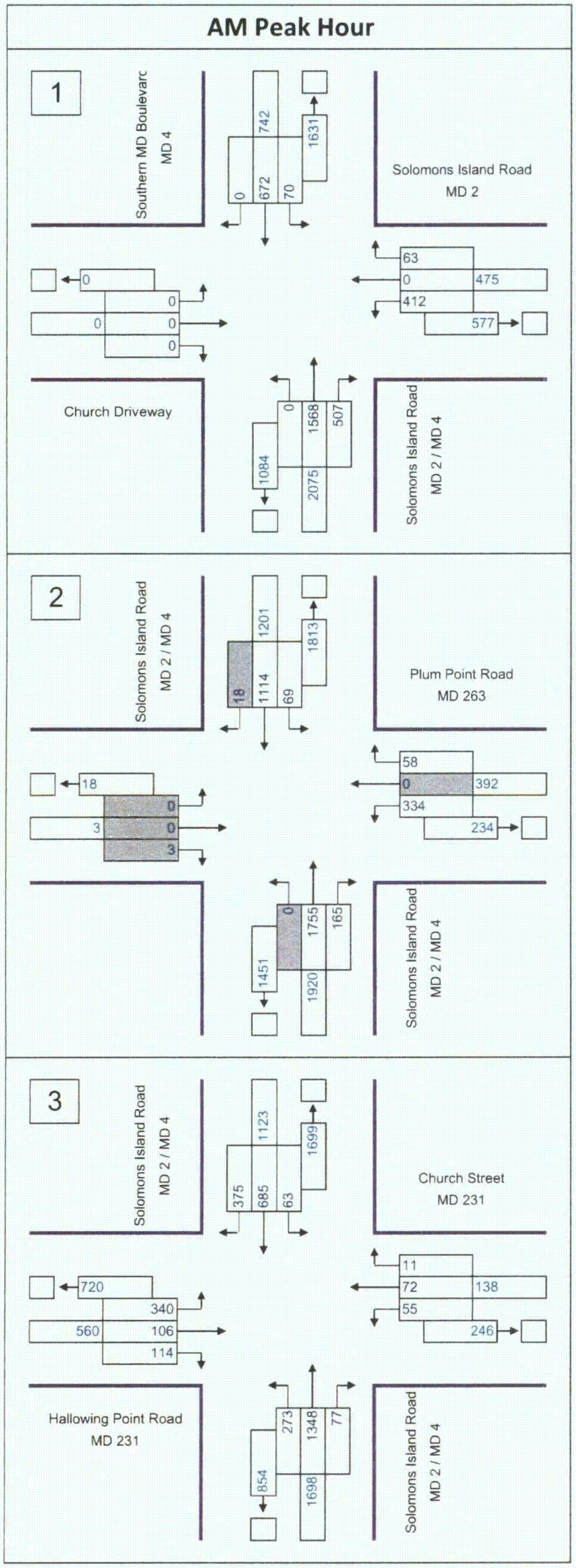
Count Data

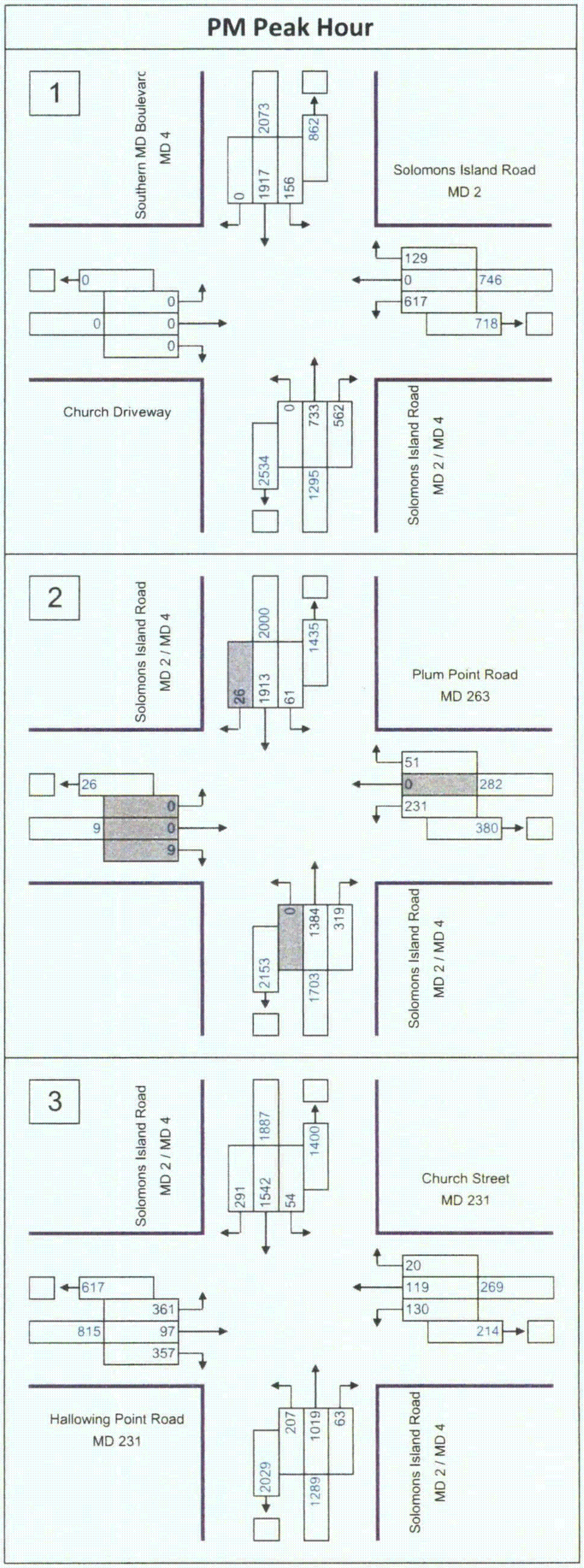

AM Peak Hour
PM Peak Hour
4
Solomons Island Road MD 2 / MD 4
Calvert Beach Road MD 765J
Ball Road MD 765S
KLD Count
Sept 26 and 27, 2006
AM: 1086 1403 10 1043 33 84 35 169 40 94 200 35 349 114 133 39 1168 60 1251 1267
PM: 1437 1025 42 1324 71 219 22 169 54 93 76 79 262 107 203 98 927 78 1524 1103
5
Calvert Cliffs Parkway MD 2N
Saw Mill Road MD 765 N
KLD Counts
October 4 and 5, 2006
AM: 956 903 1 896 59 1 0 14 0 14 37 0 79 42 118 0 866 59 952 925
PM: 1549 1029 2 1542 5 2 0 24 0 24 51 0 103 52 53 0 978 48 1618 1026
6
Nursery Road MD 2AF
White Sands Drive MD 2P
SHA Counts - Detail
February 18, 2010
AM: 799 1303 20 779 0 37 137 199 0 62 4 0 4 0 0 17 1162 0 841 1179
PM: 1365 1038 86 1279 0 172 82 141 0 59 4 0 4 0 1 86 952 1 1338 1039

Count Data


AM Peak Hour
PM Peak Hour
7
Solomons Island Road
MD 2 / MD 4
Nursery Road
MD 765P
1028
1224
1021
7
1
8
7
12
1223
5
1028
1228
KLD Counts
April 17 and 29, 2008
7
Solomons Island Road
MD 2 / MD 4
Nursery Road
MD 765P
1590
1189
1583
7
1
8
7
17
1188
10
1590
1198
KLD Counts
April 17 and 29, 2008
8
Solomons Island Road
MD 2 / MD 4
Pardoe Road
MD 765Q
1060
1215
2
940
118
107
1
110
2
126
14
1
20
3
16
Pardoe Road
MD 765Q
11
1107
5
958
1123
KLD Counts
April 23 and 28, 2008
8
Solomons Island Road
MD 2 / MD 4
Pardoe Road
MD 765Q
1570
1164
3
1385
182
116
5
123
2
189
29
1
24
2
21
Pardoe Road
MD 765Q
21
1047
5
1408
1073
KLD Counts
April 23 and 28, 2008
9
Solomons Island Road
MD 2 / MD 4
Cove Point Road
MD 497
948
1045
0
852
96
347
0
518
171
133
0
0
0
0
0
Cove Point Road
0
698
37
1023
735
KLD Counts
April 15 and 22, 2008
9
Solomons Island Road
MD 2 / MD 4
Cove Point Road
MD 497
1332
1218
0
922
410
204
0
353
149
564
0
0
0
0
0
Cove Point Road
0
1014
154
1071
1168
KLD Counts
April 15 and 22, 2008

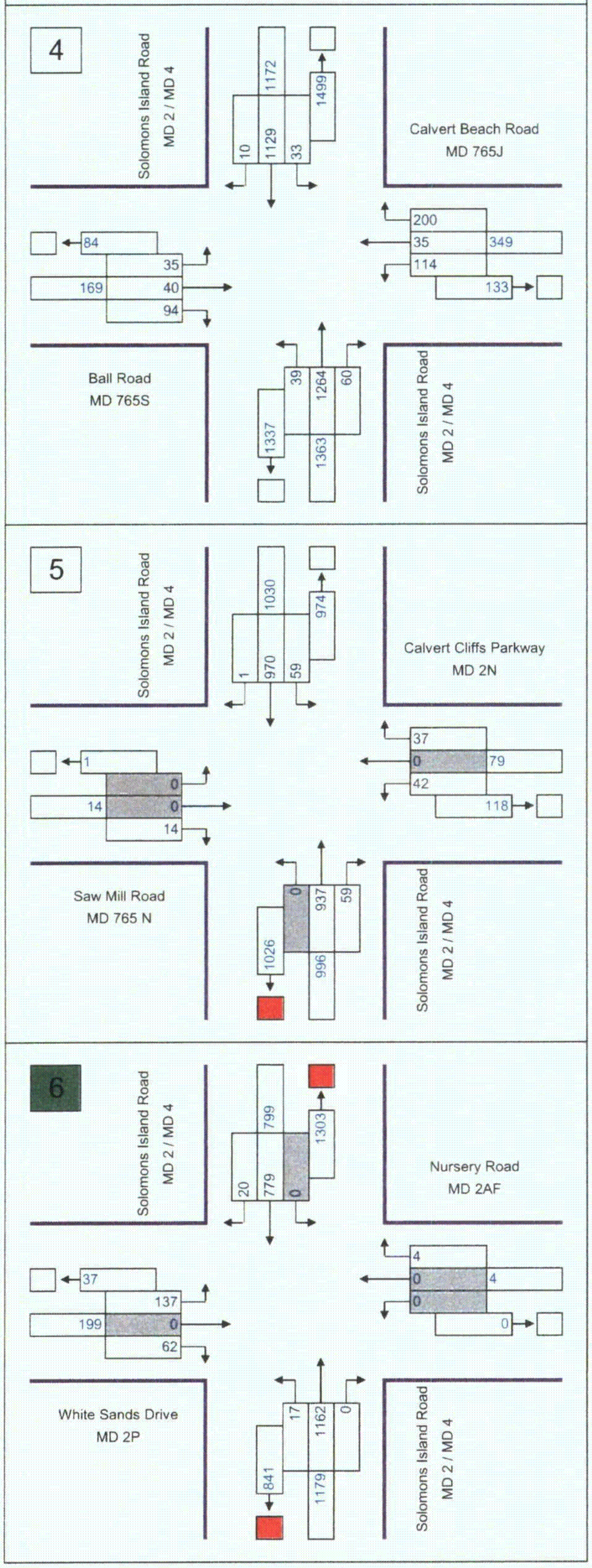
Grown to 2010



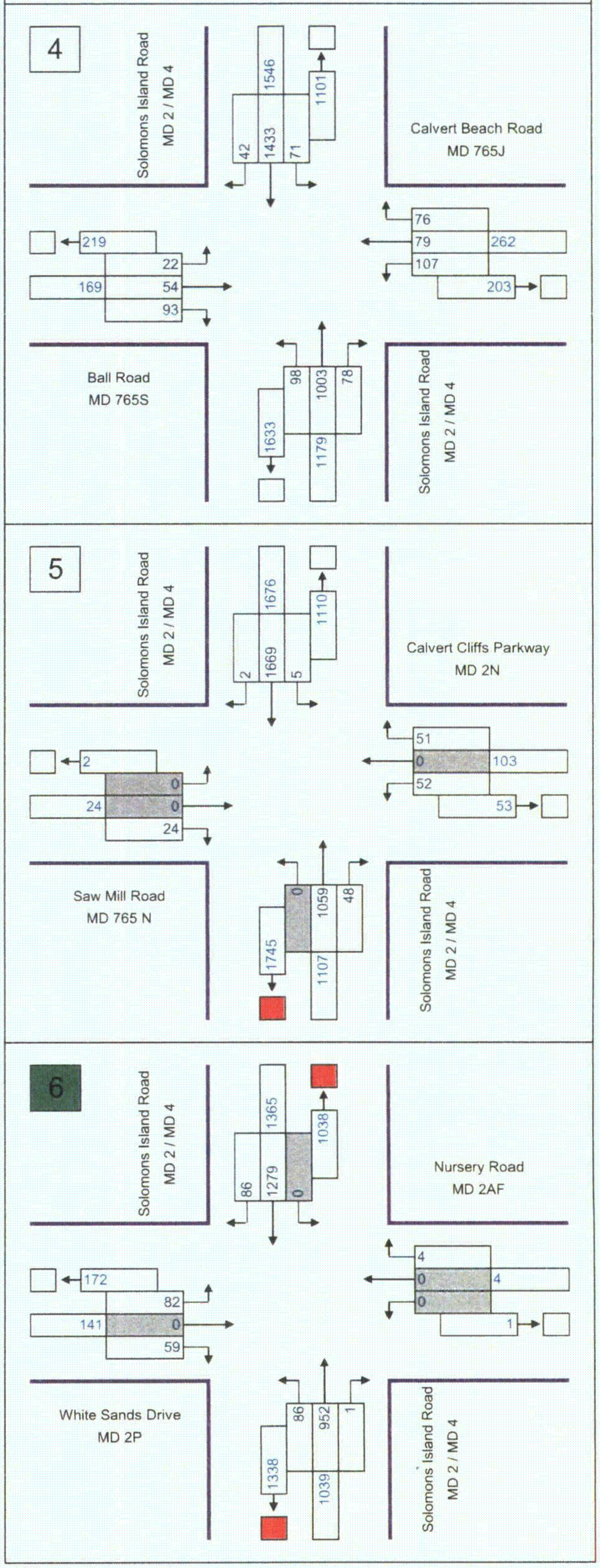


Grown to 2010

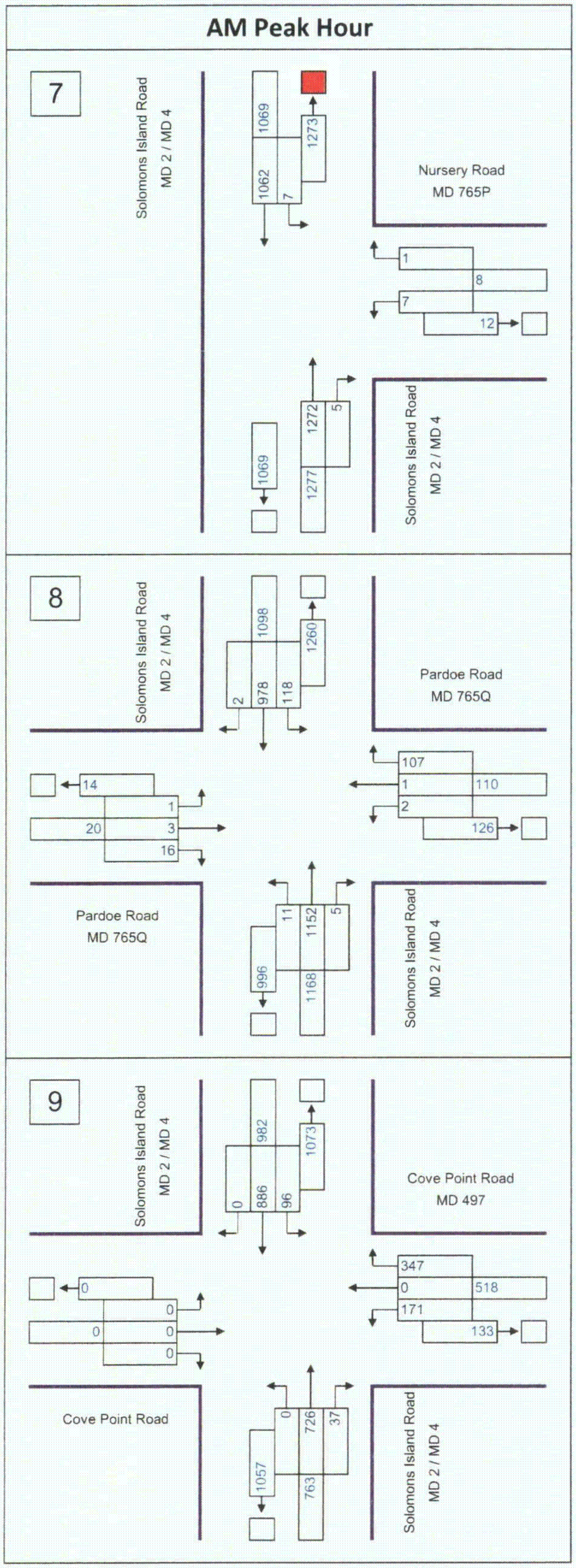
AM Peak Hour

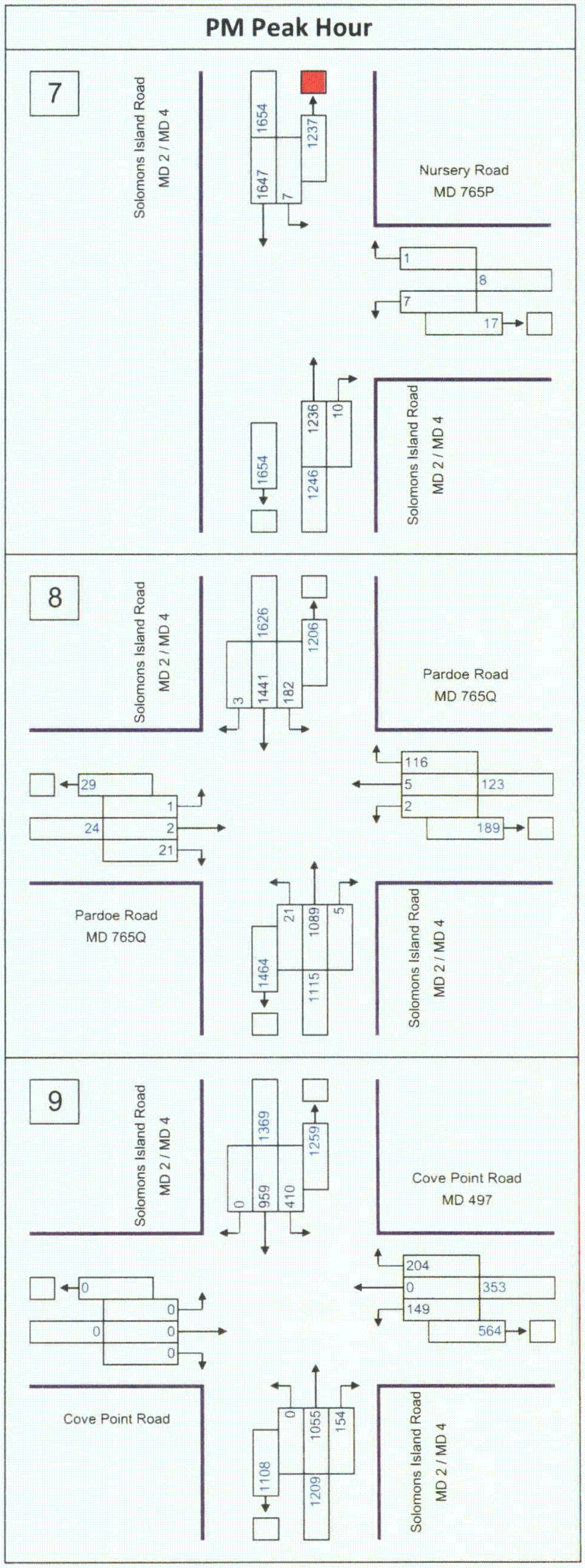


PM Peak Hour



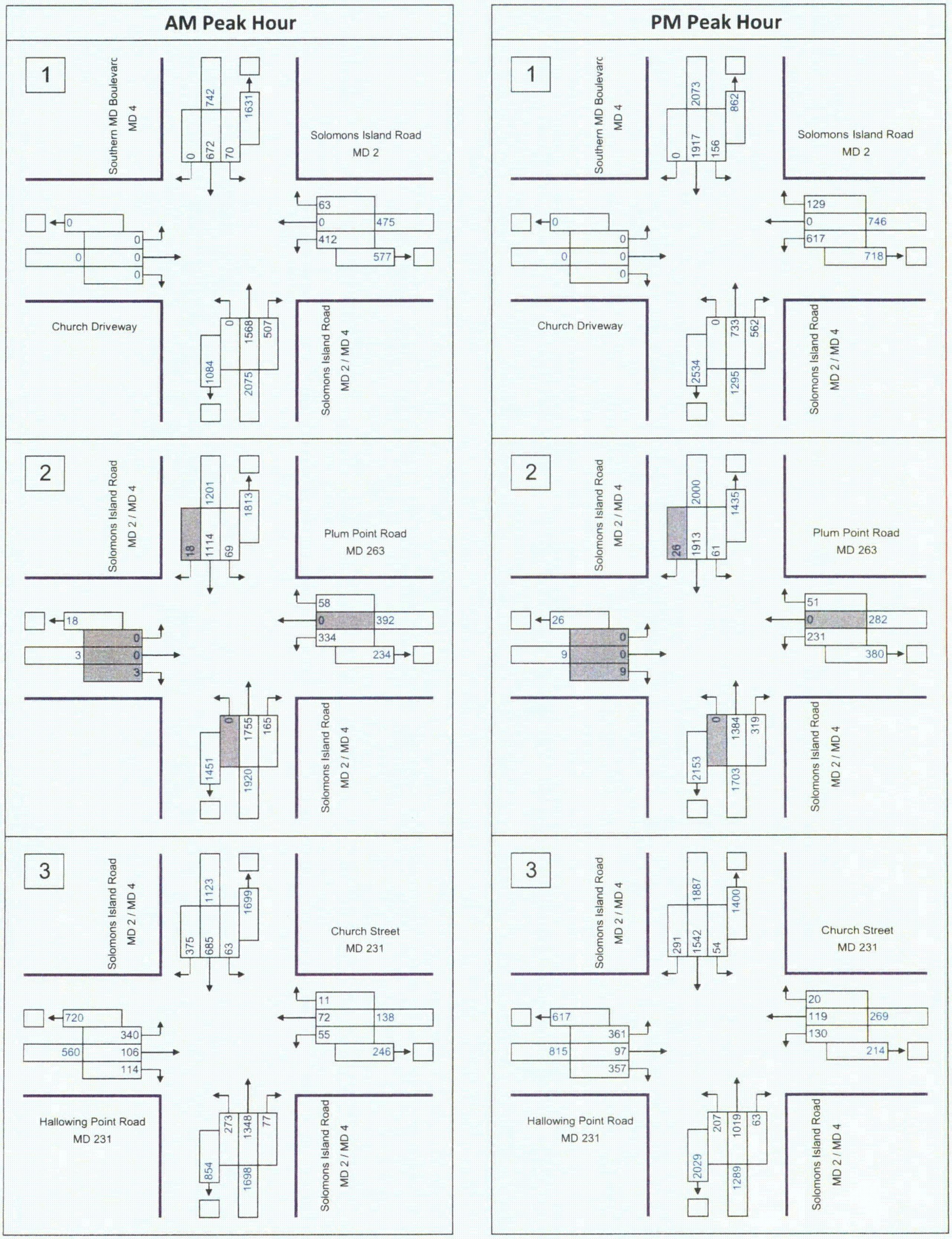
Grown to 2010



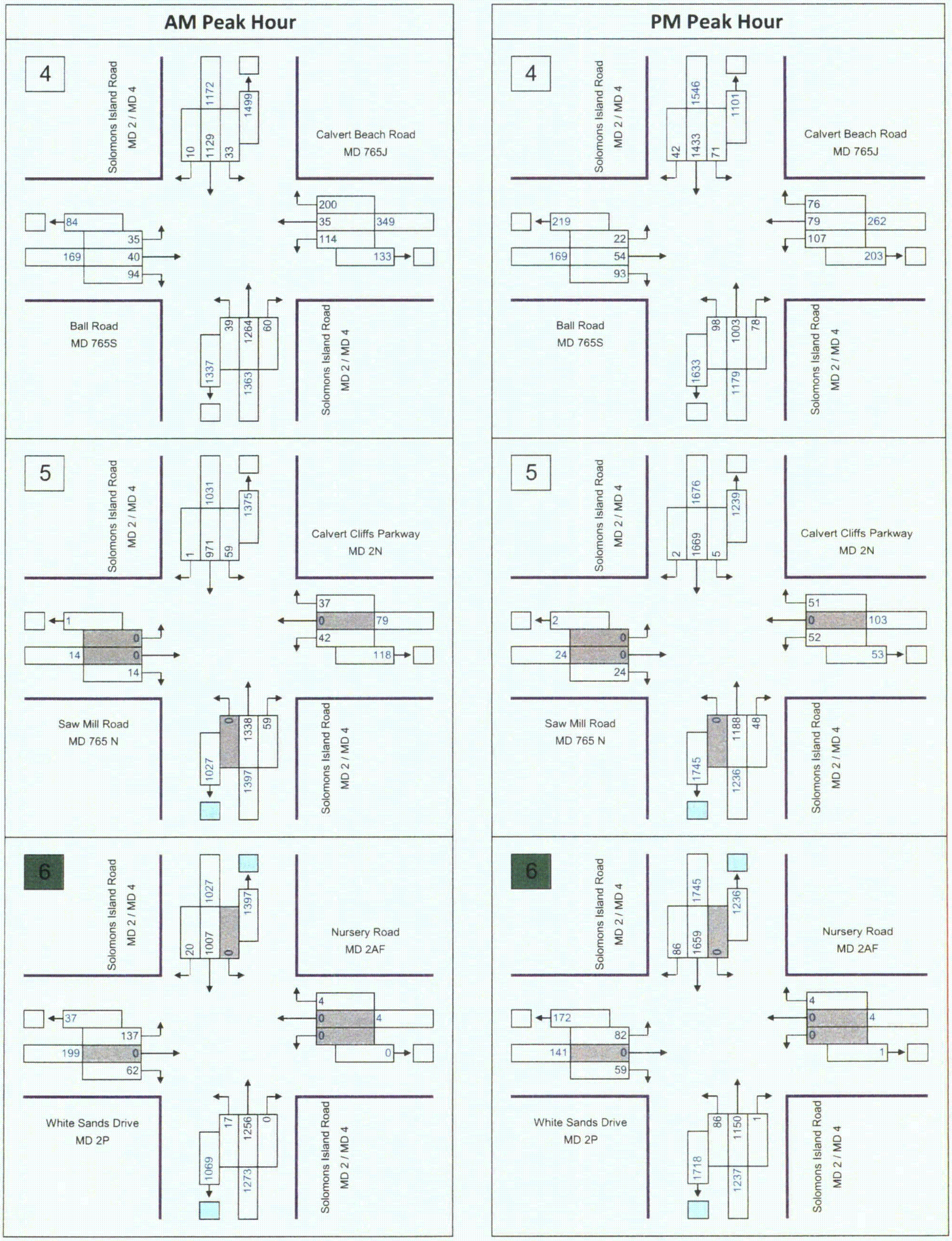


Grow thru volumes at 2% annual to 2010

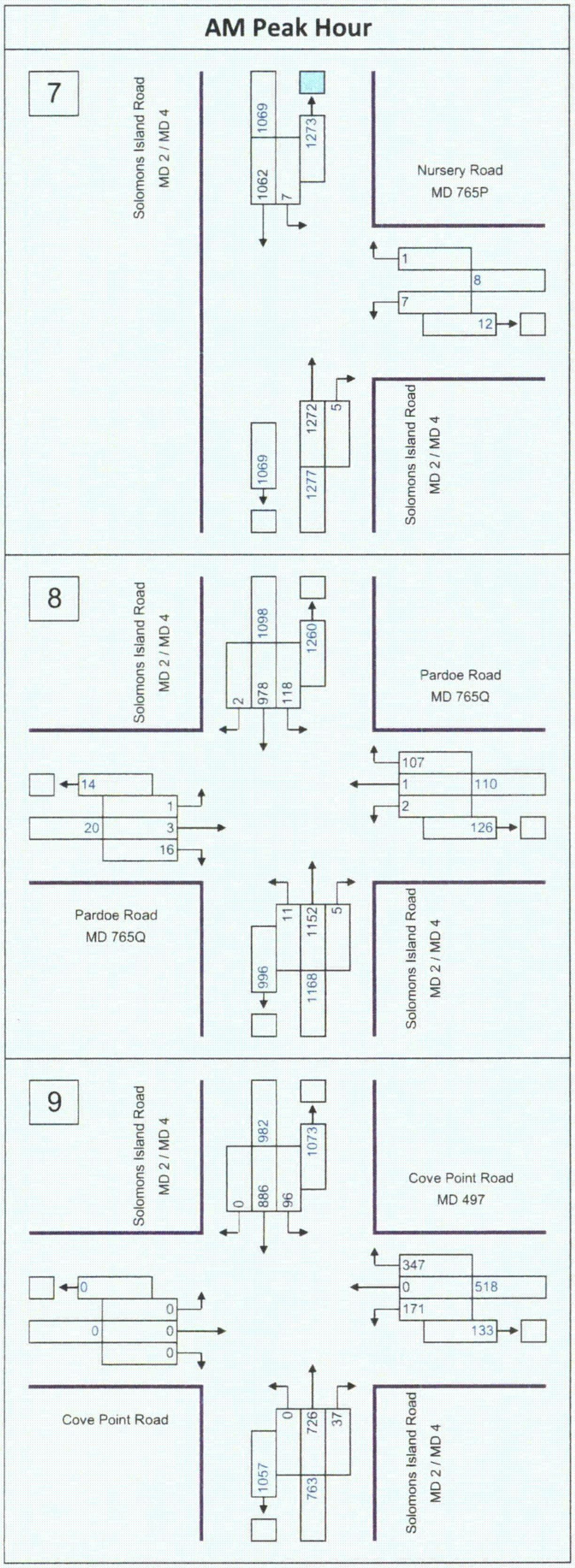
Existing (2010) Balanced

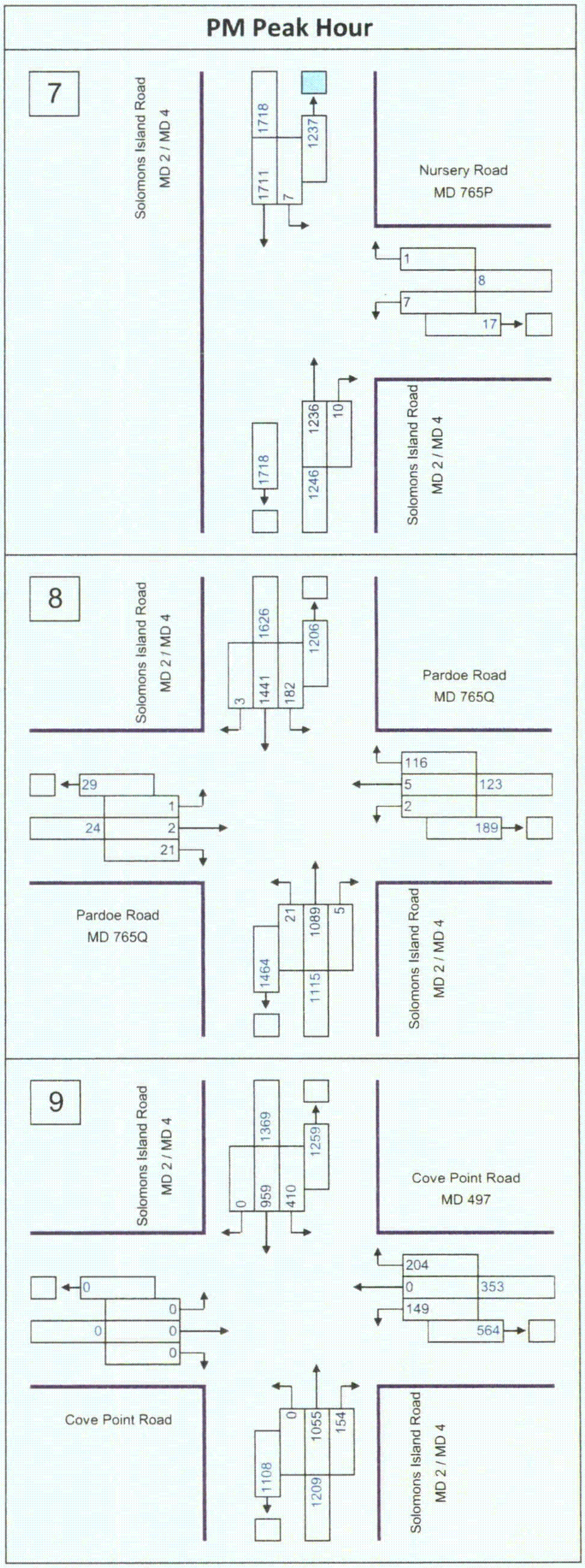


Existing (2010) Balanced



Existing (2010) Balanced



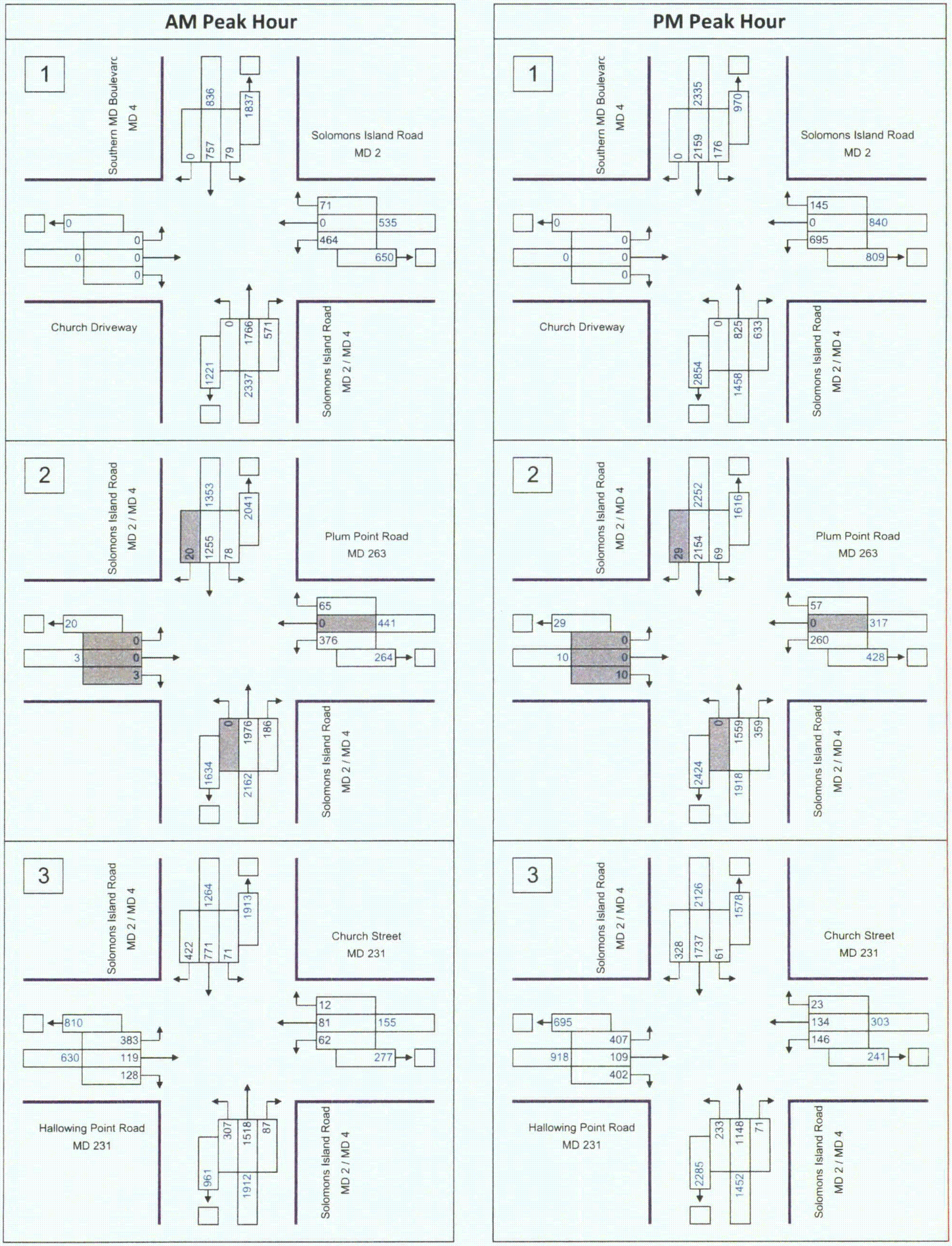


Balanced grown volumes

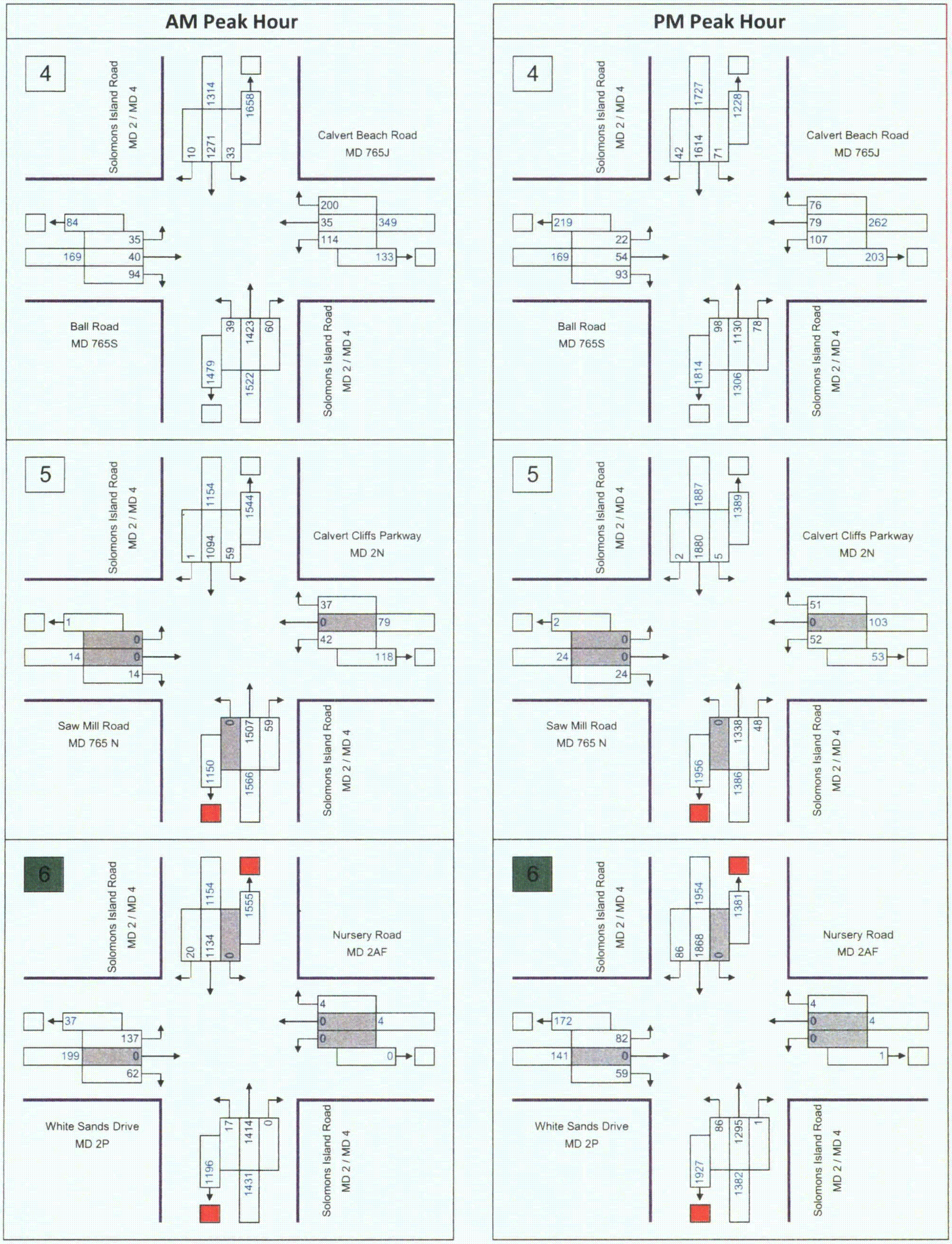
Adjusted thrus only

Higher values rule

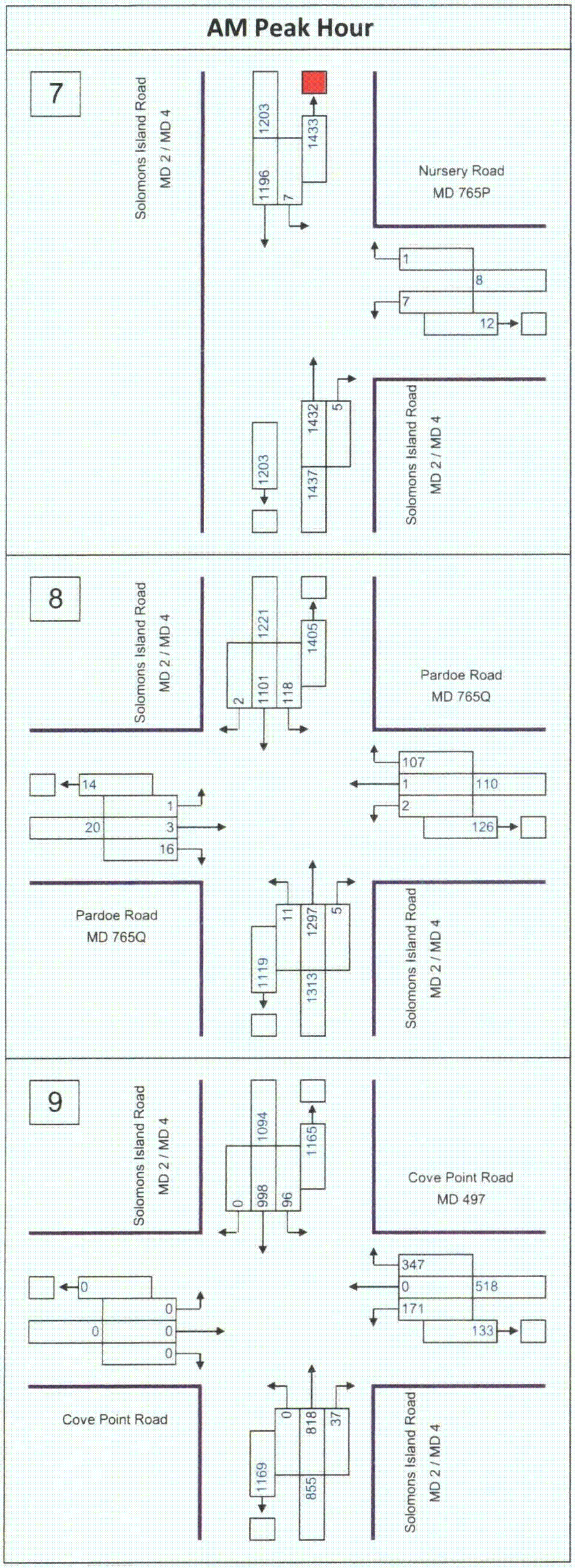
Grown to 2016

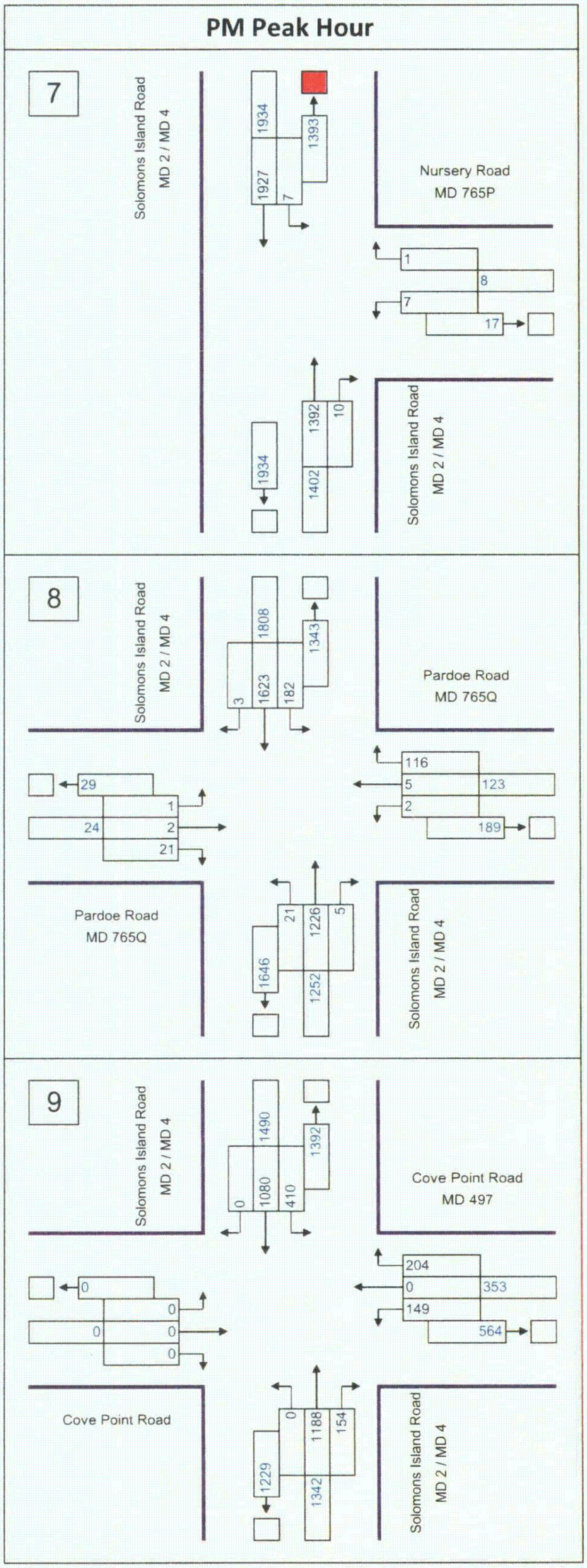


Grown to 2016



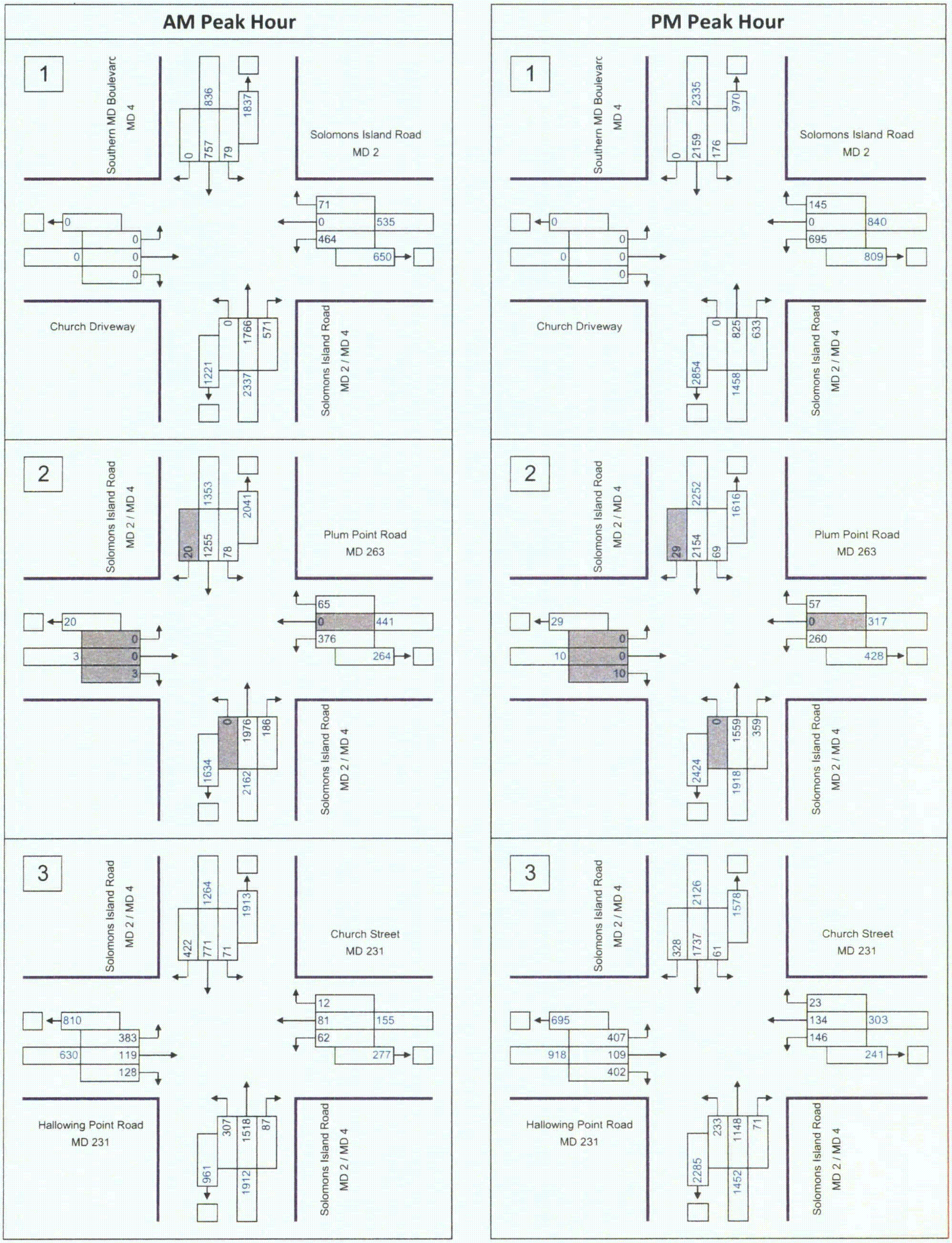
Grown to 2016



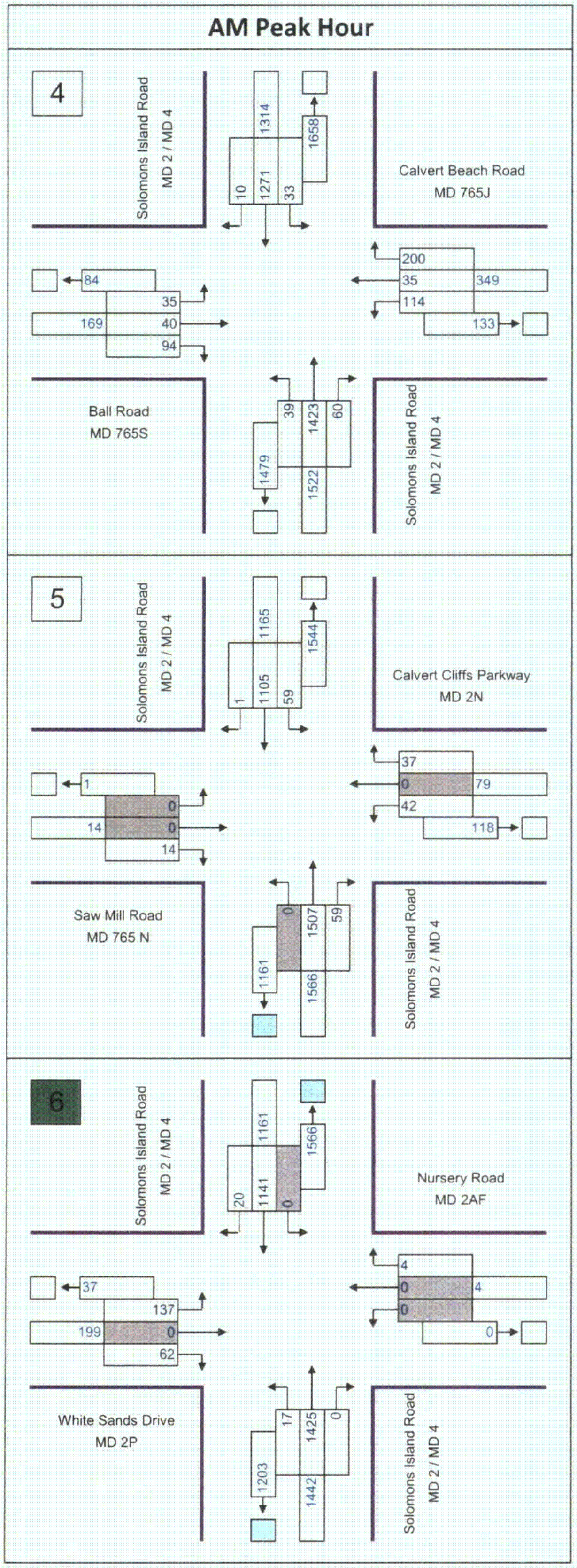


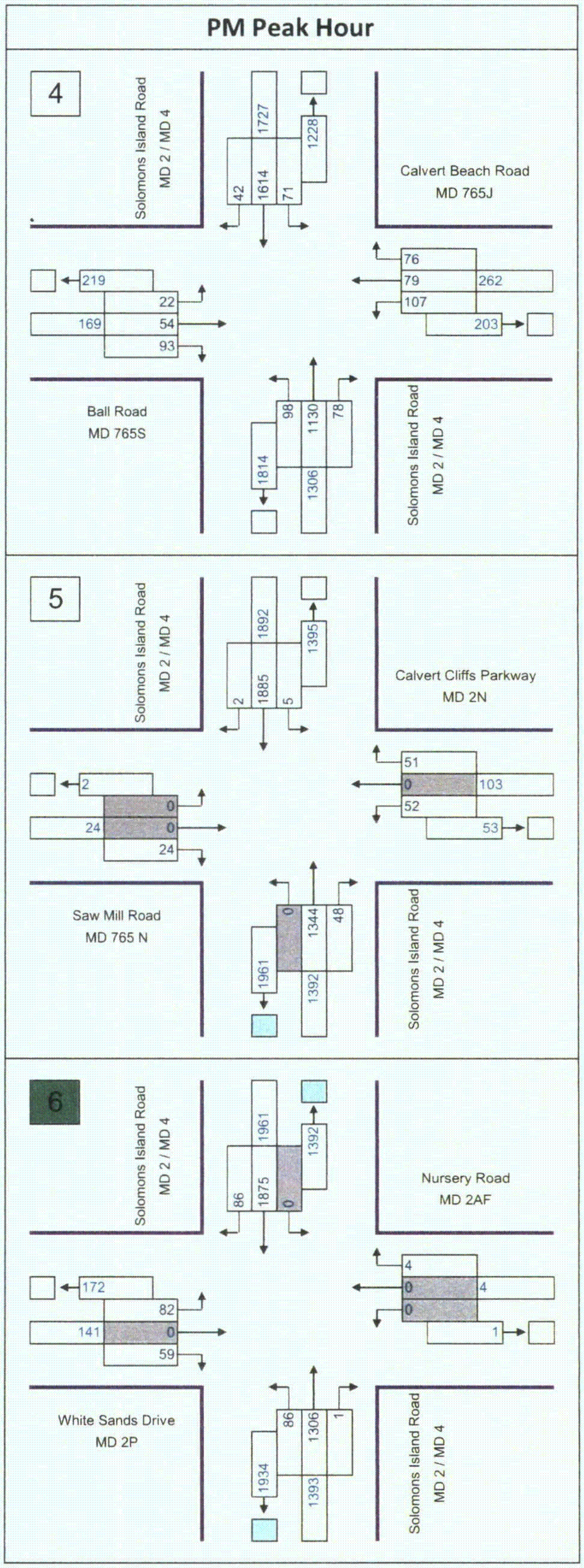
Grow thru volumes at 2% annual to 2015

Background (2016) Balanced

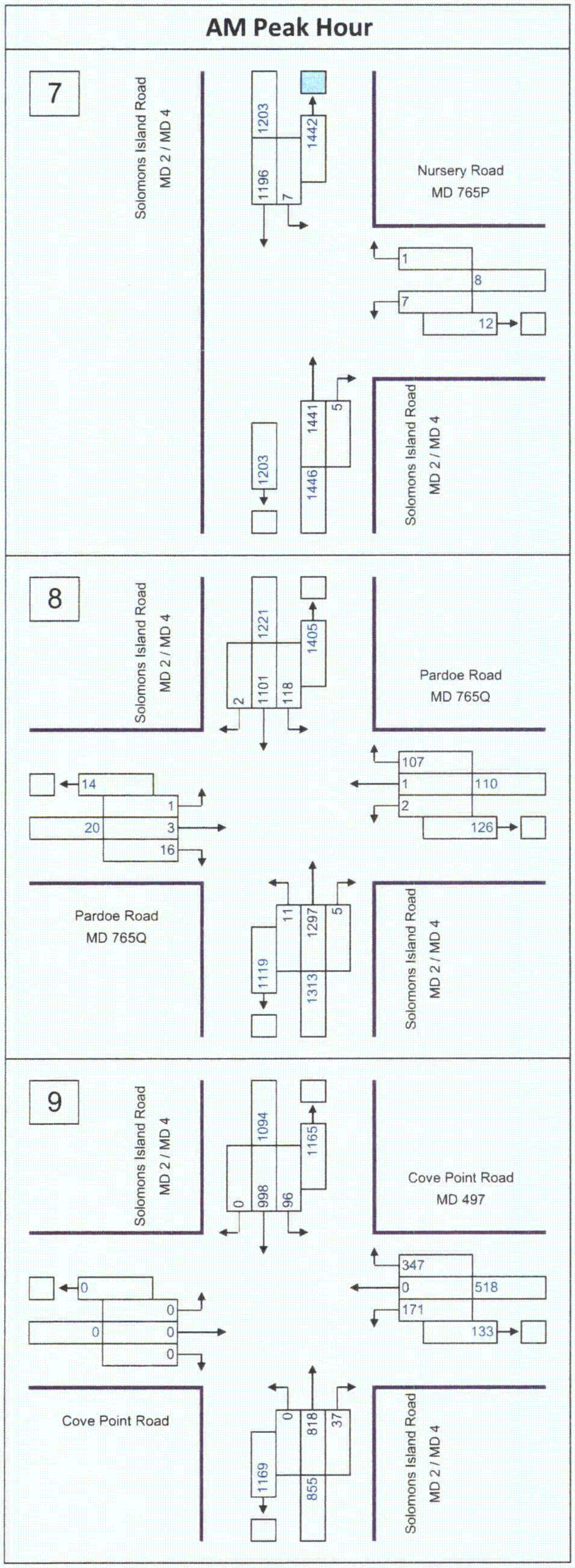


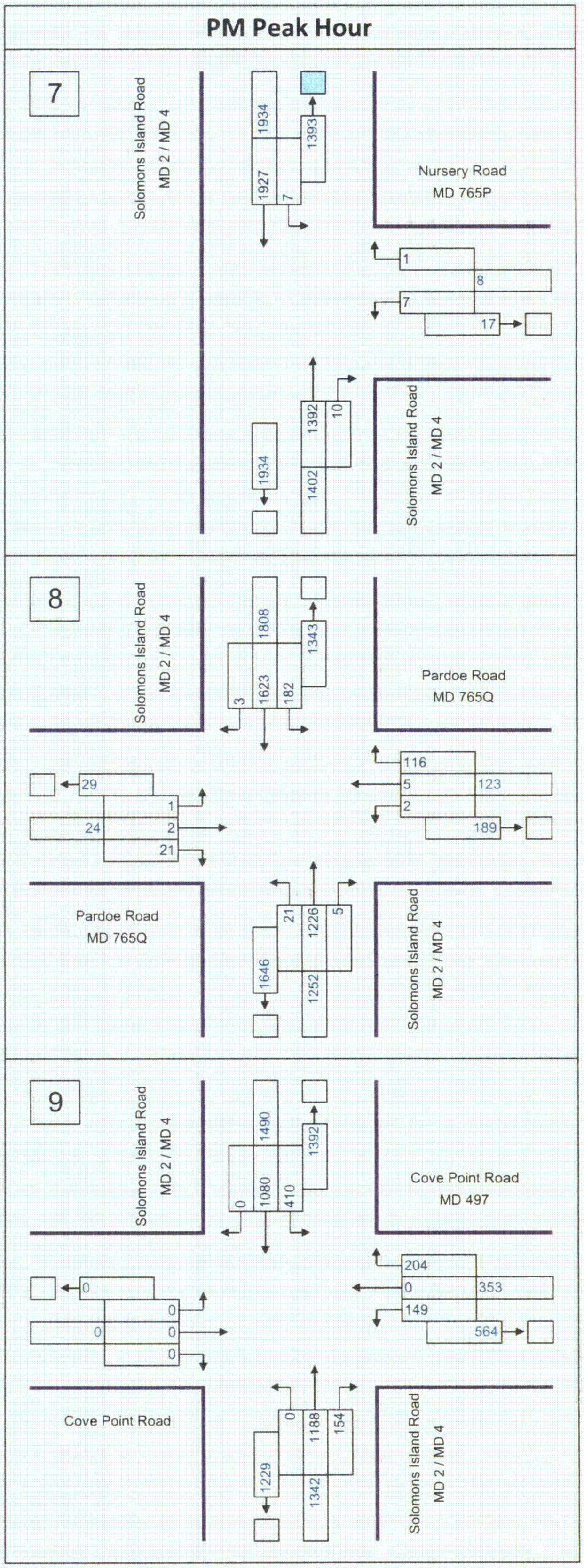
Background (2016) Balanced





Background (2016) Balanced





Balanced grown volumes

Adjusted thrus only

Higher values rule

In reply, please refer to: 20834532

MEMORANDUM

TO:	Ed Miller, PE Principal Environmental Engineer Constellation Energy CPG – Environmental Services
FROM:	Tim Ryan, PE, PTOE Senior Traffic Engineer URS Corporation
DATE:	September 21, 2010
RE:	Meeting Summary UniStar CC3 Traffic Issues Meeting September 7, 2010

A meeting for the topic referenced above was held in the offices of the Maryland State Highway Administration (SHA) on September 7, 2010, starting at 11:00 AM. The following individuals attended:

Frank Coxon	SHA Engineering and Access Permits Division (EAPD)
Steven Foster	SHA EAPD
Jim Holls	SHA EAPD (WBCM)
Mike Milbradt	UniStar
Ed Miller	UniStar
Dimitri Lutchenkov	UniStar
Wayne McFall	URS
Rebecca Myrick	URS
Tim Ryan	URS

On the phone, from SHA District 5, were the following individuals:

Kim Tran	SHA
Greg Phillips	SHA
Michelle Vrikkis	SHA

The following points were discussed:

1. SHA's letter, responding to the July 30, 2010 Technical Memorandum for the Calvert Cliffs Nuclear Power Plant, was the first topic of discussion. UniStar expressed concern over one of the comments (discussed further below). There were no concerns with the other SHA comments; they will be incorporated into future traffic analyses.

2. One of SHA's comments was that 10% trucks should be assumed to enter the site from southbound MD 2/4 during the AM peak hour. Given UniStar's ability to control access to the site by any vehicle, at any time, UniStar feels that the 2% value (used in the July 30, 2010 Technical Memorandum) is more realistic. SHA expressed concern about the impacts on intersection operations and queuing on southbound MD2/4, if more trucks than anticipated arrive at the site during the peak hour. SHA also expressed concern that queuing of vehicles at UniStar's gate could extend back into MD 2/4, particularly if some vehicles are denied entry.

   It was agreed that URS would perform additional Synchro/SimTraffic analyses, to determine the sensitivity of the assumed truck percentage to intersection operations, queuing on southbound MD 2/4 and queuing at the UniStar gate. The proposed gate layout and operation will be designed to minimize queues and avoid any impacts to MD 2/4. The proposed gate location will be over 4,000 feet from the White Sands/ MD 2/4 intersection. Potential mitigation strategies to accommodate unforeseen queuing will be developed. These strategies could include a truck "holding area" on the CC3 Access Road between MD 2/4 and the UniStar gate as well as "squared off" left turn lanes on southbound MD 2/4.

3. With regard to other parameters to be used in the Traffic Study:

   a. At the intersection of MD 2/4 and White Sands Drive, SHA is open to either two or three southbound left turn lanes, provided that the queuing/delay criteria agreed upon at the June 11, 2010 meeting are met.
   b. The intersection of MD 2/4 and MD 263 does not need to be addressed.
   c. If widening to provide an additional thru lane is needed at an intersection, that additional thru lane should be carried downstream of the intersection in accordance with Figure 2C-6a of the Maryland Manual on Uniform Traffic Control Devices. The length of the additional through lane on the upstream side of the intersection should be long enough to handle the 95th percentile queue. Beyond this, additional mainline widening of MD 2/4 does not need to be considered.
   d. SHA is still considering the trip distribution to be used north of the project site. SHA's final recommendations about this topic will be provided in about a week.

e. Critical lane analyis should be used for all intersections, with the exception of the intersection of MD 2/4 and White Sands Drive, where Synchro/SimTraffic can be used.
f. The Traffic Study should identify improvements necessary to provide level of service (LOS) D at all study area intersections for "2015 Build" conditions. If it appears that the extent of those improvements is unrealistic, the Traffic Study should also identify improvements that provide as close to LOS D as possible. For those intersections which are forecast to operate at LOS E or F under "2015 No Build" conditions, the Traffic Study should also identify improvements which would mitigate "Build" traffic such that the "2015 No Build" critical lane volume is maintained.

4. For "half signals" (such as the signal currently in operation at the MD 2 junction with MD 4), if a second left turn lane is proposed from the minor approach, the currently unsignalized thru movement should be signalized.

5. URS will provide plots of the vehicle turning templates for the proposed White Sands Road/ MD 2/4 intersection to the SHA.

6. In terms of formal agreements, SHA would strongly prefer a Letter of Intent between SHA and UniStar, rather than a Memorandum of Agreement (MOA).

URS believes that this is an accurate summary of our meeting. However, we understand that others in attendance may have different recollections. We would appreciate receiving any comments you might have within 10 calendar days of your receipt of this document. If we receive no comments within that period, we will move ahead based on the premise that this summary is completely accurate.

MEMORANDUM

TO: Ed Miller, PE
Principal Environmental Engineer
Constellation Energy
CPG – Environmental Services

FROM: Wayne McFall, PE
Project Manager
URS Corporation

DATE: December 10, 2010

RE: Draft Meeting Summary
UniStar CC3 Traffic Issues Meeting
December 8, 2010

A meeting for the topic referenced above was held in the offices of the Maryland State Highway Administration (SHA) on December 8, 2010, starting at 10:00 AM. The following individuals attended:

Frank Coxon	SHA Engineering and Access Permits Division (EAPD)
Steven Foster	SHA EAPD
Jim Holls	SHA EAPD (WBCM)
Mike Milbradt	UniStar
Ed Miller	UniStar
Dimitri Lutchenkov	UniStar
Tim Ryan	URS
Wayne McFall	URS

The following points were discussed:

1. UniStar explained that the project is still moving forward, despite the changes in corporate management of the project. The owner-applicant identified in previous submissions to various agencies has not changed.

2. SHA has reservations about the triple left turn lane proposed at White Sands Drive, because it is, in effect, a U-turn movement. SHA's research indicates that the efficiency of the movement could be decreased by as much as 55 percent, with resulting negative impacts on operations on MD 2/4. In addition, SHA is concerned about the possibility of sideswipe collisions due to the geometric constraints. As a result, the SHA developed a concept for a temporary at-grade intersection relocated to a point where the left turn does not result in a U-turn. The SHA provided a concept plan for this option to UniStar on December 3, 2010.

3. The SHA requested that UniStar consider a flyover ramp/bridge to provide the southbound left turn movement as an alternative to the temporary at-grade intersection. URS presented very preliminary results of analyses of a flyover, which revealed a number of complications such as potential right-of-way impacts, impacts to buildings on the east side of MD 2/4, utility impacts and the close proximity of the ramp terminus to the Saw Mill Road intersection. In addition, the construction and long term maintenance costs of providing a flyover are expected to be significantly higher than those related to providing a temporary at-grade intersection. The SHA requested a concept study of the flyover option, including an evaluation of the impacts and costs of this option versus the at-grade intersection option.

4. With specific regard to the relocated temporary at-grade intersection, the following points were discussed:

   a. A break on the controlled-access line is acceptable for this location, provided the intersection will be closed after construction of CC3 is completed. An SHA administrative approval is all that is required for this temporary break.
   b. SHA District 5, the Office of Traffic and Safety, and the SHA Administrator have agreed that this concept is feasible.
   c. The existing left turn movement from Calvert Cliffs Parkway onto southbound MD 2/4 would need to be accommodated during the life of the temporary access intersections in one of the following ways:
      i. Full signalization of the MD 2/4 at Calvert Cliffs Parkway intersection
      ii. Requiring southbound left turners from Calvert Cliffs Parkway to actually turn right, and make a U-turn in the median of MD 2/4
      iii. Internal connections on the Calvert Cliffs site, to allow those vehicles to use the temporary at-grade intersection to turn left onto southbound MD 2/4.
   d. Any one of these three approaches would be acceptable. Unistar will investigate the corporate feasibility of the third approach.

5. Submission of both a Traffic Impact Study (TIS) and "Design Concepts" is now required. The Design Concepts should reflect the changes in intersection configurations proposed in the TIS. The Design Concepts for construction conditions should include a flyover, including an evaluation of the impacts and costs of this option versus the at-grade intersection option. The fly-over concept can be evaluated in two dimensions for the purposes of this study.

6. It was agreed that the TIS will be reviewed and approved in two parts. The first would deal only with construction conditions, and will be submitted first. The second, which will deal only with post-construction conditions, will be submitted at a later date.

7. Under "post-construction" conditions, it will be necessary for the relocated temporary at-grade intersection to be closed. As a result, access/egress for the CC3 site after construction is complete will need to be provided at White Sands Drive (with a full traffic signal), <u>or</u> at Nursery Road (perhaps with a partial signal), <u>or</u> at Calvert Cliffs Parkway (if shared access from MD 2/4 is a corporate possibility between the owners of CC1/CC2 and CC3).

8. The Letter of Intent (LOI) was then discussed. The SHA requested that UniStar prepare a draft LOI that will be the basis of the final Memorandum of Agreement (MOA) The SHA will prepare the final Memorandum of Agreement. Some of the issues that will be addressed in the MOA include:
   - Liability – use standard language in sample MOA's
   - Roles and Responsibilities of SHA and UniStar
   - Schedule – when do MD 2/4 improvements have to be complete?
   - Design submittal requirements - # of review submittals?
   - SHA review response times
   - Permits
   - Construction cost responsibility (including utility relocations)
   - SHA inspection cost reimbursement (requires a surety for 15% of construction cost)
   - Right-of-way acquisition

9. Since the proposed MD 2/4 Split intersection improvements will require right-of-way acquisition, UniStar requested that the MD 2/4 Split intersection improvements be an SHA project in which UniStar would contribute their share of the construction cost.

URS believes that this is an accurate summary of our meeting. However, we understand that others in attendance may have different recollections. We would appreciate receiving any comments you might have within 10 calendar days of your receipt of this document. If we receive no comments within that period, we will move ahead based on the premise that this summary is completely accurate.

PEAK HOUR VOLUMES

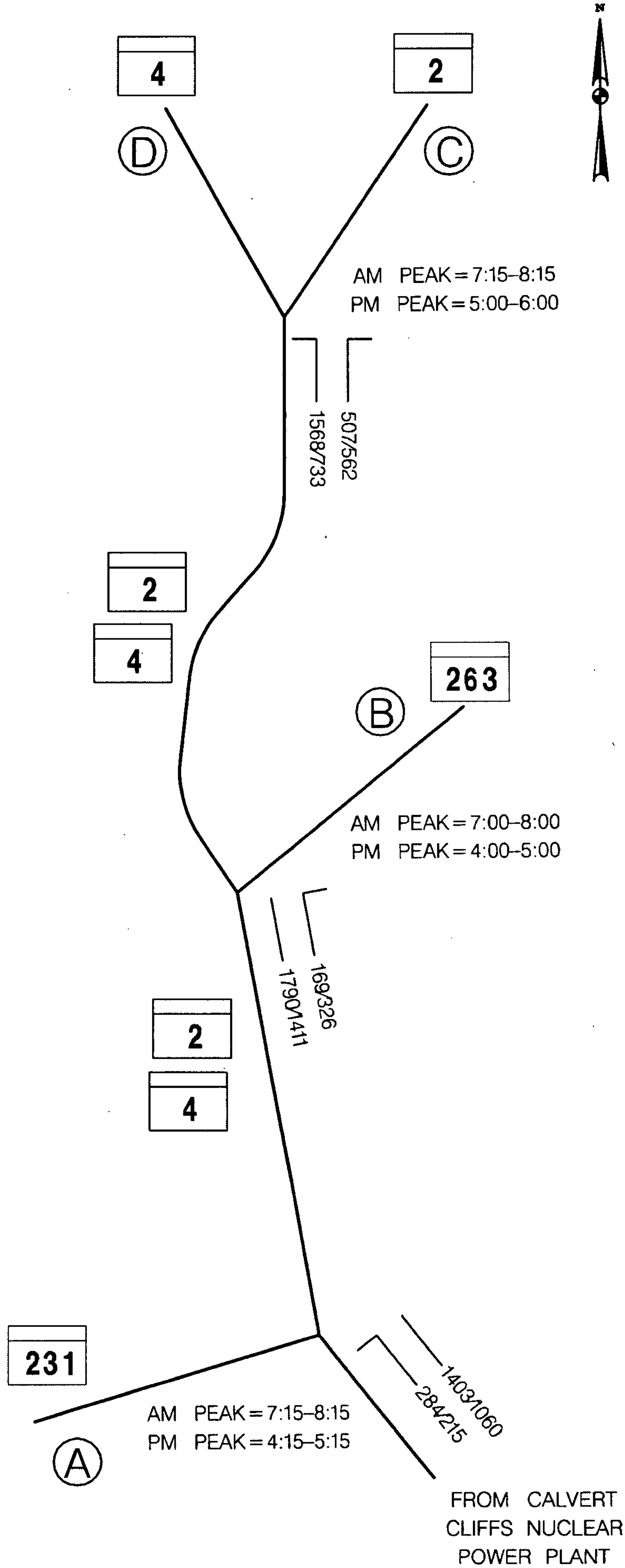
A = 284/215
B = 169/326
C = 507/562
D = 1568/733
2528/1836

PEAK HOUR DISTRIBUTIONS

A = 11%/12%
B = 7%/18%
C = 20%/30%
D = 62%/40%

AVERAGE DISTRIBUTION FOR DESIGN

A = 12%
B = 12%
C = 25%
D = 51%



CALVERT CLIFFS NUCLEAR POWER PLANT
NB DISTRIBUTION AT
MD 231, MD 263, MD 2 AND MD 4

Satya Muthuswamy

From: Wayne_McFall@URSCorp.com
Sent: Tuesday, October 26, 2010 3:31 PM
To: Satya Muthuswamy
Cc: 'Bill__McShane' <bmcshane@kldcompanies.com/O=, Rebecca_Myrick@URSCorp.com, 'PEPTOETimothyA.Ryan' <timothy_ryan
Subject: Fw: Calvert Cliffs CC3 - gate queue analysis

fyi

Thanks,
Wayne

<<<<<<<<<<<<<>>>>>>>>>>>>>
M. Wayne McFall, P.E.
URS
4 North Park Drive, Suite 300
Hunt Valley, MD 21030
Office Phone: (410) 891-9205
Cell Phone: (443) 326-1192
Fax: (410) 785-6818
email: wayne_mcfall@urscorp.com
<<<<<<<<<<<<<>>>>>>>>>>>>>
scc

----- Forwarded by Wayne McFall/HuntValley/URSCorp on 10/26/2010 03:28 PM -----

Wayne McFall/HuntValley/URSCorp

10/07/2010 03:02 PM

To Frank Coxon <FCoxon@sha.state.md.us>

cc JHOLLS@WBCM.com, 'Greg Phillips' <GPhillips@sha.state.md.us>, Kimberly Tran <ktran@sha.state.md.us>, "'Timothy_Ryan@URSCorp.com'" <Timothy_Ryan@URSCorp.com>, Rebecca Myrick/HuntValley/URSCorp@URSCorp, "Miller, Edward A" <Edward.Miller@constellation.com>, Stephanie Huck/HuntValley/URSCorp@URSCORP, sfoster1@sha.state.md.us

Subject Calvert Cliffs CC3 - gate queue analysis

Frank,
As discussed in our meeting with the SHA on 9-7-10, URS has performed a Gate Queue Analysis, using SimTraffic, for the proposed gate for the Calvert Cliffs construction site. The SimTraffic files are too big to email. See instructions below for downloading these files.

UniStar plans to construct a gate that provides 3 lanes for entering traffic at the CC3 Gate, with a provision for widening to provide additional capacity, if required. Only workers with a permit on their vehicle will be allowed to enter the site during the AM peak period. Delivery and construction trucks and visitors will not be allowed to pass through the gate during the AM peak period. A pull-off parking area will be provided upstream of the gate, to provide waiting trucks and visitors with a separate holding area. After the AM peak period, trucks and visitors will utilize the gates.

The gate will be located approximately 3,100 feet from the proposed White Sands/ MD 2/4 intersection. One of the key parameters is the processing time for each vehicle. Unistar's proposed gate operation for workers with permits on their vehicles will involve a quick check of the permit on the vehicle as they pass through the gate without stopping. This is expected to be less than a 7 second delay per vehicle. Even though there will be no trucks allowed through the gate 'uring the AM peak period, the analyses includes 2% trucks, which provides a higher factor of safety for determining the queue length. Using these parameters, the analysis shows that the queue will not backup to MD 2/4.

Please use the following FTP site information for downloading the SimTraffic files.

address: https://moveitdmz102.urscorp.com/
username: ursftp@gmail.com
password: huntvalley01

Thanks,
Wayne

<<<<<<<<<<<<<<>>>>>>>>>>>>
M. Wayne McFall, P.E.
URS
4 North Park Drive, Suite 300
Hunt Valley, MD 21030
Office Phone: (410) 891-9205
Cell Phone: (443) 326-1192
Fax: (410) 785-6818
email: wayne_mcfall@urscorp.com
<<<<<<<<<<<<<<>>>>>>>>>>>>>
scc

Brian Damiani

From: Satya Muthuswamy [satya@kldcompanies.com]
Sent: Friday, December 17, 2010 1:50 PM
To: Brian Damiani
Subject: Fw: Direction from UniStar to KLD

Flag Status: Flagged

Fyi

Satya Muthuswamy, PE (OH), PTOE
Senior Traffic Engineer
KLD
(631) 617-5650 x 216

From: Rebecca_Myrick@URSCorp.com
Date: Fri, 17 Dec 2010 13:05:39 -0500
To: <satya@kldcompanies.com>
Cc: 'Bill McShane'<bmcshane@kldcompanies.com>; 'Miller, Edward A'<Edward.Miller@constellation.com>; <Timothy_Ryan@URSCorp.com>; <Wayne_McFall@URSCorp.com>
Subject: RE: Direction from UniStar to KLD

We did the gate queue analysis for the relocated entrance. The gate needs 4 lanes, if we assume 7 second service times.

Thanks.

Rebecca L. Myrick, PE, PTOE (formerly Rebecca L. Thomas)

URS Corporation
4 North Park Drive, Suite 300 * Hunt Valley, Maryland 21030
Office Tel: 410-785-7220 * Fax: 410-785-6818
Direct Tel: 410-891-9527 * Cell: 443-275-8083

Satya Muthuswamy <satya@kldcompanies.com>

12/17/2010 12:58 PM

Please respond to
satya@kldcompanies.com

To Wayne_McFall@URSCorp.com
cc 'Bill McShane' <bmcshane@kldcompanies.com>, "'Miller, Edward A'" <Edward.Miller@constellation.com>, Timothy_Ryan@URSCorp.com, Rebecca_Myrick@URSCorp.com
Subject RE: Direction from UniStar to KLD

Intersection: 9: CC3 Access Road & Gate

Movement	EB	EB	EB	EB
Directions Served	T	T	T	T
Maximum Queue (ft)	436	408	372	362
Average Queue (ft)	286	264	259	269
95th Queue (ft)	415	386	358	356
Link Distance (ft)	1200	1200	1200	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				500
Storage Blk Time (%)				
Queuing Penalty (veh)				


CALVERT CLIFFS PKWY
NEW CCS ACCESS ROAD
MARYLAND
2 4
NURSERY ROAD
LAURA LN
SAW MILL ROAD
CONCEPT PLAN
NOT FOR CONSTRUCTION
UniStar
LEGEND
Calvert Cliffs Parkway
New Access Road
Banner NAR
December 2010

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	2	2	2	1	3	2
Volume (vph)	42	0	1566	365	1458	1119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		7.0	7.0	6.0	7.0
Lane Util. Factor	0.97		0.95	1.00	0.94	0.95
Frt	1.00		1.00	0.85	1.00	1.00
Flt Protected	0.95		1.00	1.00	0.95	1.00
Satd. Flow (prot)	3183		3539	1468	4627	3539
Flt Permitted	0.95		1.00	1.00	0.95	1.00
Satd. Flow (perm)	3183		3539	1468	4627	3539
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	46	0	1702	397	1585	1216
RTOR Reduction (vph)	0	0	0	75	0	0
Lane Group Flow (vph)	46	0	1702	322	1585	1216
Heavy Vehicles (%)	10%	10%	2%	10%	10%	2%
Turn Type		pm+ov		Perm	Prot	
Protected Phases	8	1	2		1	6
Permitted Phases		8		2		
Actuated Green, G (s)	8.0		91.2	91.2	62.8	160.0
Effective Green, g (s)	8.0		91.2	91.2	62.8	160.0
Actuated g/C Ratio	0.04		0.51	0.51	0.35	0.89
Clearance Time (s)	5.0		7.0	7.0	6.0	7.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	141		1793	744	1614	3146
v/s Ratio Prot	c0.01		c0.48		c0.34	0.34
v/s Ratio Perm				0.22		
v/c Ratio	0.33		0.95	0.43	0.98	0.39
Uniform Delay, d1	83.4		42.2	28.0	58.0	1.7
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4		12.2	1.8	11.9	0.0
Delay (s)	84.7		54.4	29.9	70.0	1.7
Level of Service	F		D	C	E	A
Approach Delay (s)	84.7		49.8			40.3
Approach LOS	F		D			D

Intersection Summary			
HCM Average Control Delay	44.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	94.4%	ICU Level of Service	F
Analysis Period (min)	15		

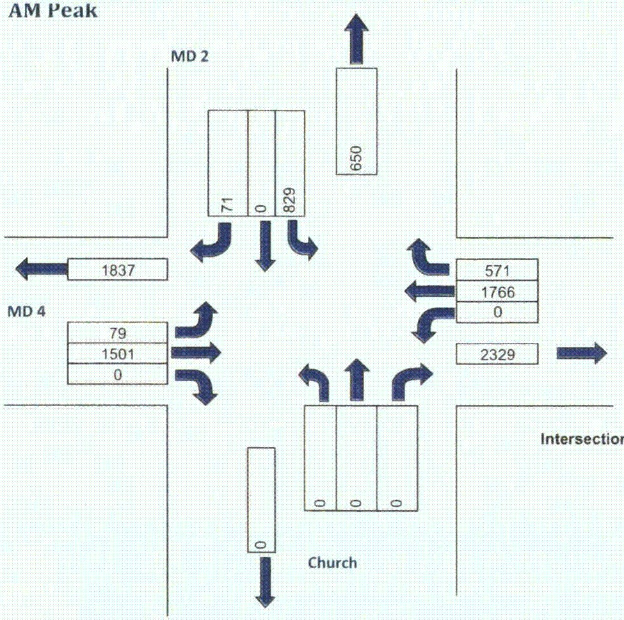
c Critical Lane Group

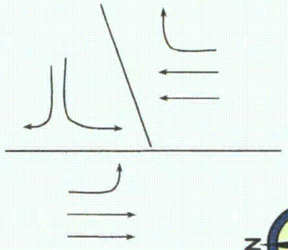
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	2	2	2	1	3	2
Volume (vph)	417	1458	1392	213	851	1909
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0	7.0	7.0	6.0	7.0
Lane Util. Factor	0.97	0.88	0.95	1.00	0.94	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3183	2584	3539	1468	4627	3539
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3183	2584	3539	1468	4627	3539
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	453	1585	1513	232	925	2075
RTOR Reduction (vph)	0	0	0	57	0	0
Lane Group Flow (vph)	453	1585	1513	175	925	2075
Heavy Vehicles (%)	10%	10%	2%	10%	10%	2%
Turn Type		pm+ov		Perm	Prot	
Protected Phases	8	1	2		1	6
Permitted Phases		8		2		
Actuated Green, G (s)	38.0	66.0	69.0	69.0	28.0	103.0
Effective Green, g (s)	38.0	66.0	69.0	69.0	28.0	103.0
Actuated g/C Ratio	0.25	0.43	0.45	0.45	0.18	0.67
Clearance Time (s)	5.0	6.0	7.0	7.0	6.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	791	1115	1596	662	847	2382
v/s Ratio Prot	0.14	c0.26	c0.43		0.20	0.59
v/s Ratio Perm		0.35		0.12		
v/c Ratio	0.57	1.42	0.95	0.26	1.09	0.87
Uniform Delay, d1	50.4	43.5	40.3	26.2	62.5	19.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.0	195.0	12.2	0.2	59.1	3.8
Delay (s)	51.4	238.5	52.5	26.4	121.6	23.6
Level of Service	D	F	D	C	F	C
Approach Delay (s)	196.9		49.0			53.8
Approach LOS	F		D			D

Intersection Summary			
HCM Average Control Delay	95.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	153.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	101.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

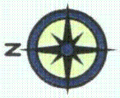
AM Peak



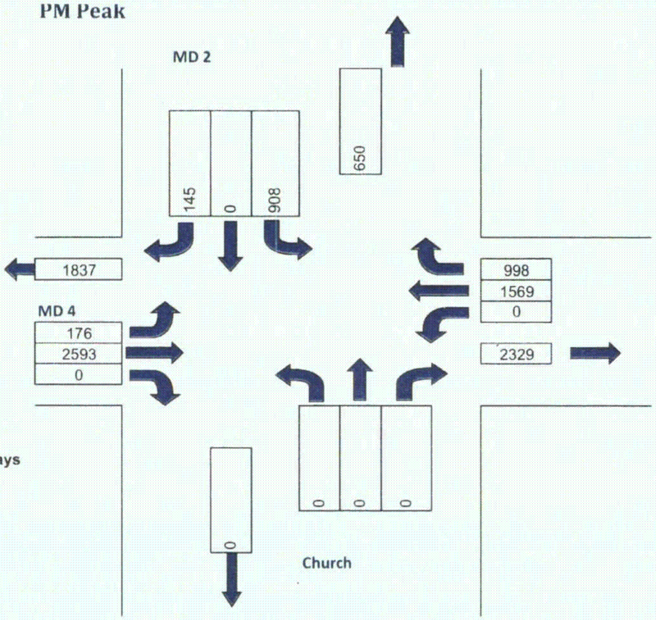


Intersection Control :

_X_ Signal ______ Stop ______ Ways



PM Peak



MD 2/MD 4 Diverge

Construction, 2016, No Mitigation

KLD Engineering, P.C.

Lanes	LUF	CLV	LOS	Opposing Volume	PCE
1	1	0	A		
2	0.55	1000	B	0	1.1
3	0.4	1150	C	200	2
4	0.3	1300	D	600	3
Dbl LT	0.6	1450	E	800	4
		1600	F	1000	5

AM Peak

Movement	Volume (1)	LUF (2)	Lane Volume (1) X (2) = (3)	Opposing Lefts (4)	LUF (5)	Opposing CLV (4)X(5) = (6)	CLV (5)+(6)=(7)
NBT	1,766	0.55	971	79	1	79	1,050
WBL	829	1	829	0	1	0	829

Remarks:
NBR has RTOR, is concurrent with WBL

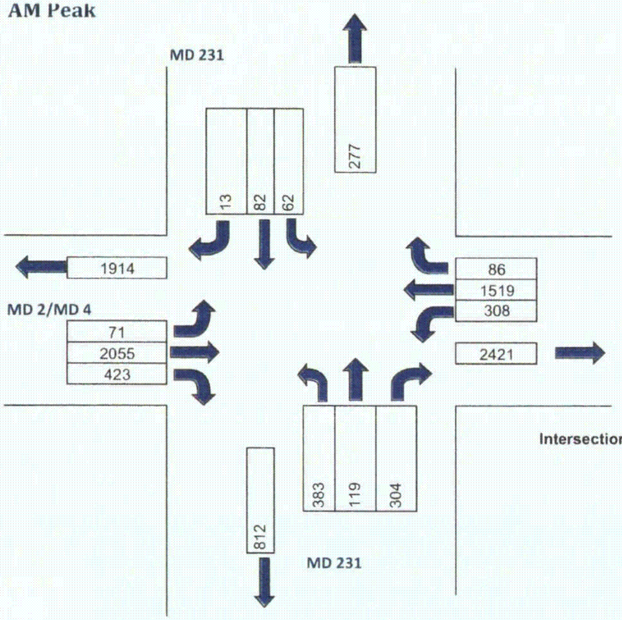
Critical Lane Volume — Total 1,879 — LOS F

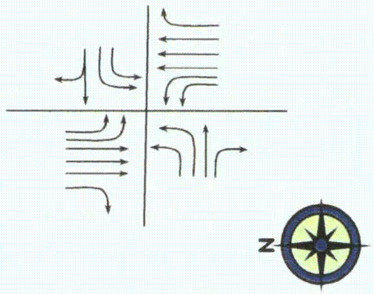
PM Peak

Movement	Volume (1)	LUF (2)	Lane Volume (1) X (2) = (3)	Opposing Lefts (4)	LUF (5)	Opposing CLV (4)X(5) = (6)	CLV (5)+(6)=(7)
NBT	1,569	0.55	863	176	1	176	1,039
WBL	908	1	908	0	1	0	908

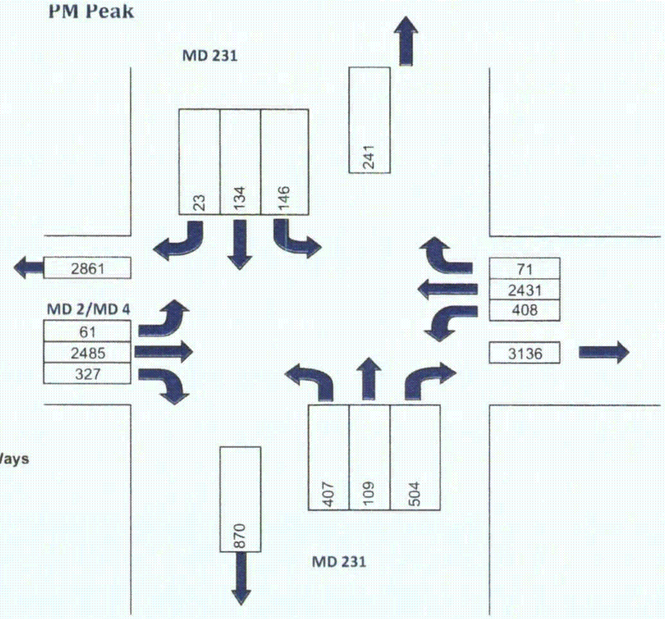
Remarks:
NBR has RTOR, is concurrent with WBL

Critical Lane Volume — Total 1,946 — LOS F





Intersection Control :
X Signal ______ Stop ______ Ways



MD 231 & MD 2/MD 4

Construction, 2016, No Mitigation

KLD Engineering, P.C.

Lanes	LUF	CLV	LOS	Opposing Volume	PCE
1	1	0	A		
2	0.55	1000	B	0	1.1
3	0.4	1150	C	200	2
4	0.3	1300	D	600	3
Dbl LT	0.6	1450	E	800	4
		1600	F	1000	5

Movement	Volume (1)	LUF (2)	Lane Volume (1) X (2) = (3)	Opposing Lefts (4)	LUF (5)	Opposing CLV (4)X(5) = (6)	CLV (5)+(6)=(7)
NBT	1,519	0.40	607	71	0.6	43	650
SBT	2,055	0.40	822	308	0.6	185	1,007
EBL	383	0.60	230	0	1	0	230
WBTR	94	1	94	0	1	0	94

Remarks: Split Phase, EB & WB
Right turns with a dedicated lane >150 ft are excluded

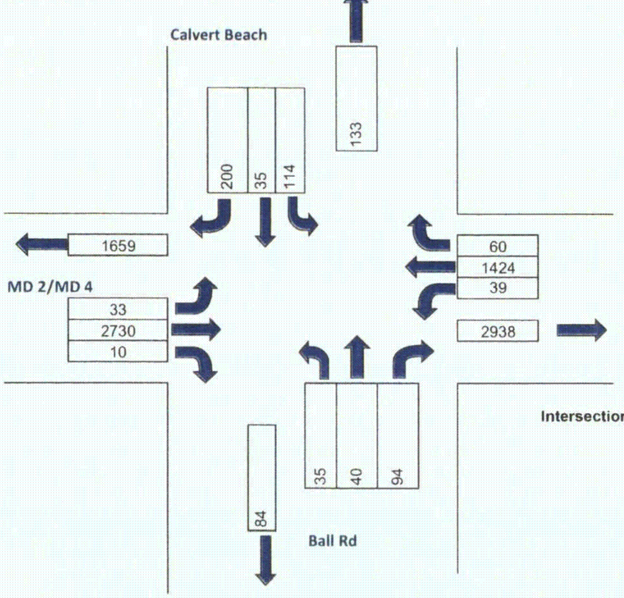
Critical Lane Volume — Total 1,331 — LOS D

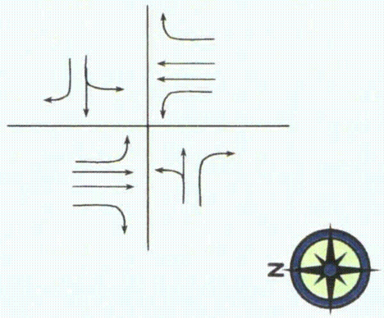
Movement	Volume (1)	LUF (2)	Lane Volume (1) X (2) = (3)	Opposing Lefts (4)	LUF (5)	Opposing CLV (4)X(5) = (6)	CLV (5)+(6)=(7)
NBT	2,431	0.4	972	61	0.6	37	1,009
SBT	2,485	0.4	994	408	0.6	245	1,239
EBL	407	0.6	244	0	1	0	244
WBTR	157	1	157	0	1	0	157

Remarks: Split Phase, EB & WB
Right turns with a dedicated lane >150 ft are excluded

Critical Lane Volume — Total 1,640 — LOS F

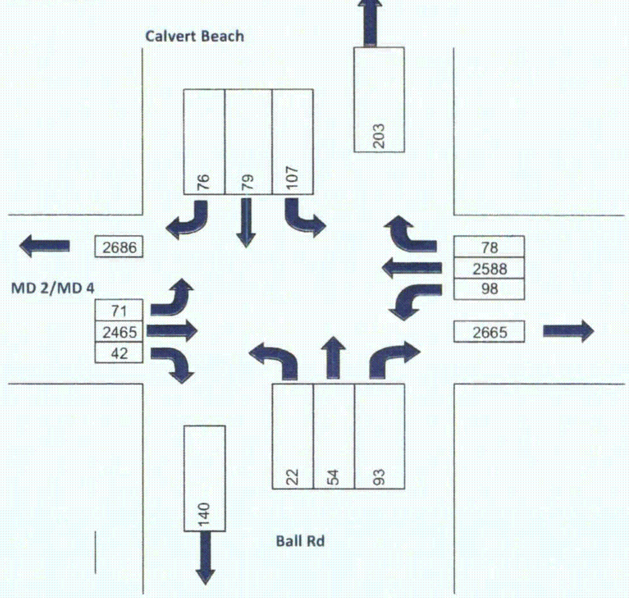
AM Peak





Intersection Control :
__X__ Signal ______ Stop ________ Ways

PM Peak



Calvert Beach/Ball Road & MD 2/MD 4
Construction, 2016, No Mitigation

KLD Engineering, P.C.

Lanes	LUF	CLV	LOS	Opposing Volume	PCE
1	1	0	A		
2	0.55	1000	B	0	1.1
3	0.4	1150	C	200	2
4	0.3	1300	D	600	3
Dbl LT	0.6	1450	E	800	4
		1600	F	1000	5

Movement	Volume (1)	LUF (2)	Lane Volume (1) X (2) = (3)	Opposing Lefts (4)	LUF (5)	Opposing CLV (4)X(5) = (6)	CLV (5)+(6)=(7)
NBT	1,424	0.55	783	33	1	33	816
SBT	2,730	0.55	1,501	39	1	39	1,540
EBTL	75	1.00	75	0	1	0	75
WBTL	149	1	149	0	1	0	149

Remarks: Split Phase, EB & WB
Right turns with a dedicated lane >150 ft are excluded

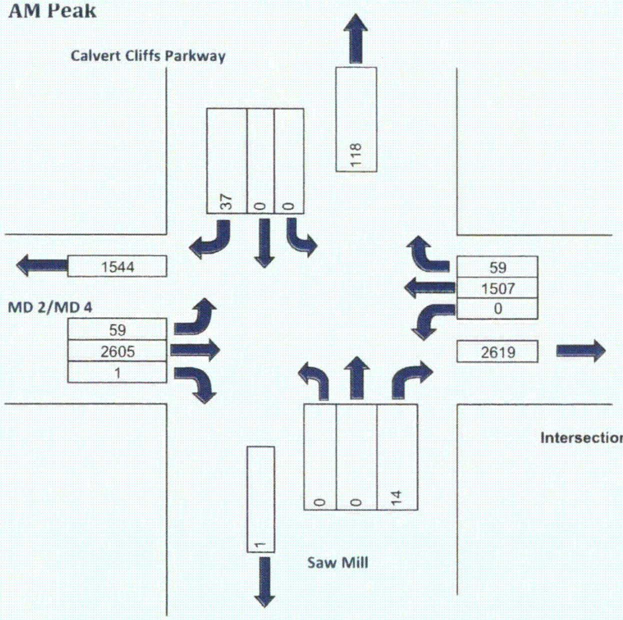
Critical Lane Volume — Total 1,764; LOS F

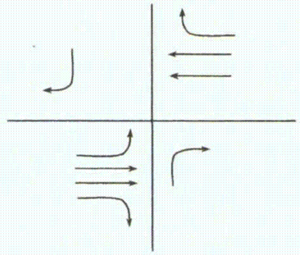
Movement	Volume (1)	LUF (2)	Lane Volume (1) X (2) = (3)	Opposing Lefts (4)	LUF (5)	Opposing CLV (4)X(5) = (6)	CLV (5)+(6)=(7)
NBT	2,588	0.55	1424	71	1	71	1,495
SBT	2,465	0.55	1356	98	1	98	1,454
EBTL	76	1	76	0	1	0	76
WBTL	186	1	186	0	1	0	186

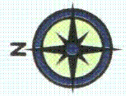
Remarks: Split Phase, EB & WB
Right turns with a dedicated lane >150 ft are excluded

Critical Lane Volume — Total 1,757; LOS F

AM Peak

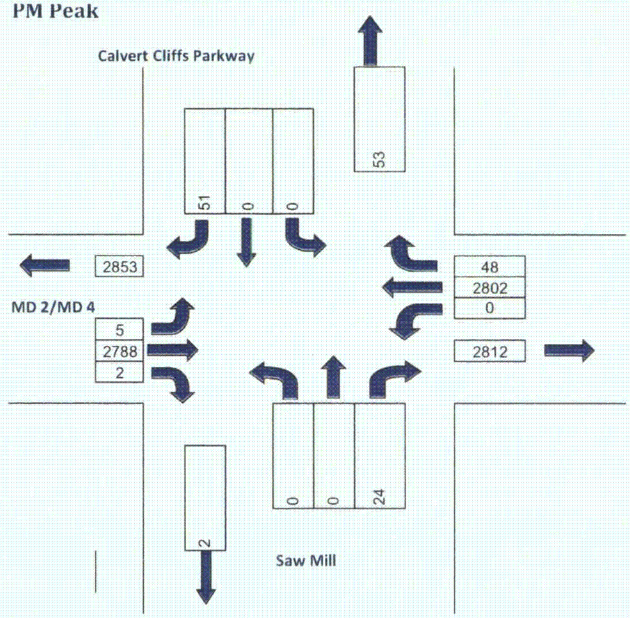






Intersection Control :
X Signal ______ Stop ________ Ways

PM Peak



	Lanes	LUF	CLV	LOS	Opposing Volume	PCE
	1	1	0	A		
	2	0.55	1000	B	0	1.1
	3	0.4	1150	C	200	2
	4	0.3	1300	D	600	3
Dbl LT		0.6	1450	E	800	4
			1600	F	1000	5

Calvert Cliffs Parkway & MD 2/MD 4

Construction, 2016, No Mitigation

KLD Engineering, P.C.

	Movement	Volume (1)	LUF (2)	Lane Volume (1) X (2) = (3)	Opposing Lefts (4)	LUF (5)	Opposing CLV (4)X(5) = (6)	CLV (5)+(6)=(7)
	NBT	1,507	0.55	829	59	1	59	888
	WBR	0	1	0	0	1	0	0
	WBL	0	1	0	0	1	0	0

Remarks: WBR = 37 - 59 < 0
Right turns with a dedicated lane >150 ft are excluded

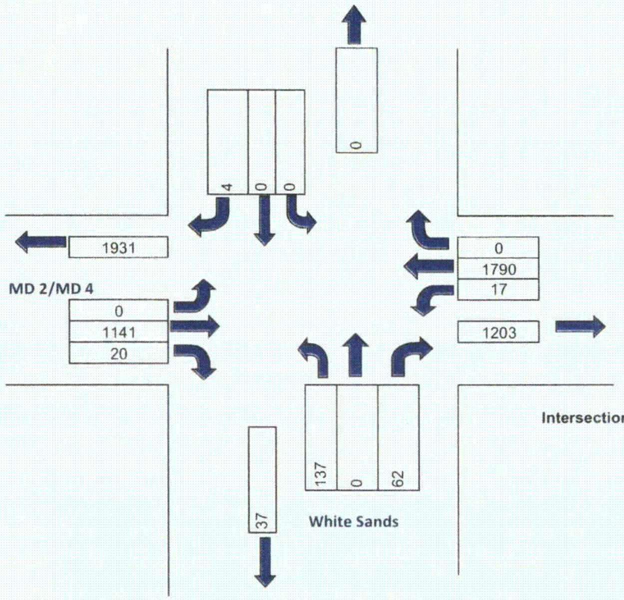
Critical Lane Volume — Total 888, LOS A

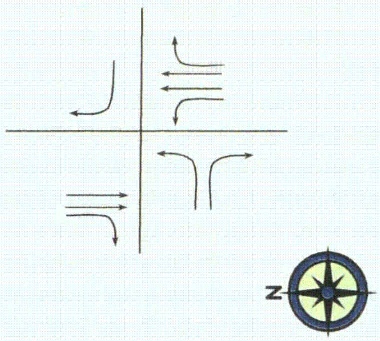
	Movement	Volume (1)	LUF (2)	Lane Volume (1) X (2) = (3)	Opposing Lefts (4)	LUF (5)	Opposing CLV (4)X(5) = (6)	CLV (5)+(6)=(7)
	NBT	2,802	0.55	1541	5	1	5	1,546
	WBR	46	1	46	0	1	0	46
	WBL	0	1	0	0	1	0	0

Remarks: WBR = 51 - 5
Right turns with a dedicated lane >150 ft are excluded

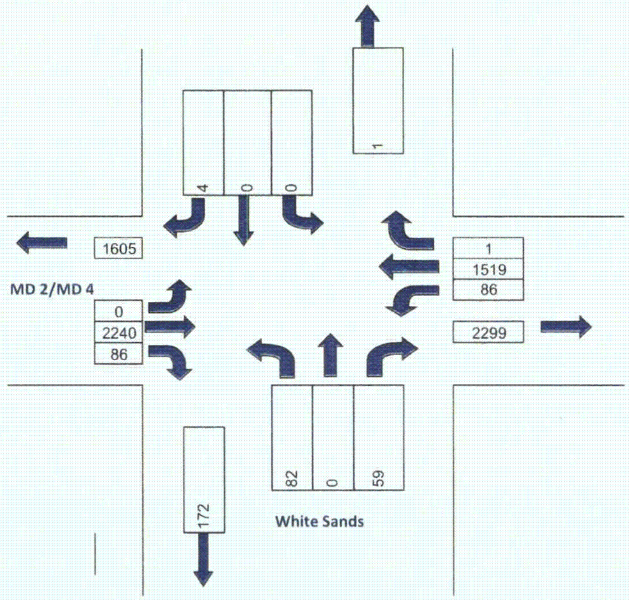
Critical Lane Volume — Total 1,592, LOS E

AM Peak





PM Peak



Intersection Control :
X Signal ______ Stop ______ Ways

White Sands Drive & MD 2/MD 4

Construction, 2016, No Mitigation

KLD Engineering, P.C.

	Lanes	LUF	CLV	LOS	Opposing Volume	PCE
	1	1	0	A		
	2	0.55	1000	B	0	1.1
	3	0.4	1150	C	200	2
	4	0.3	1300	D	600	3
Dbl LT		0.6	1450	E	800	4
			1600	F	1000	5

	Movement	Volume (1)	LUF (2)	Lane Volume (1) X (2) = (3)	Opposing Lefts (4)	LUF (5)	Opposing CLV (4)X(5) = (6)	CLV (5)+(6)=(7)
	SBT	1,141	0.55	628	17	1	17	645
	EBTL	137	1.00	137	0	1	0	137

Remarks:
Right turns with a dedicated lane >150 ft are excluded

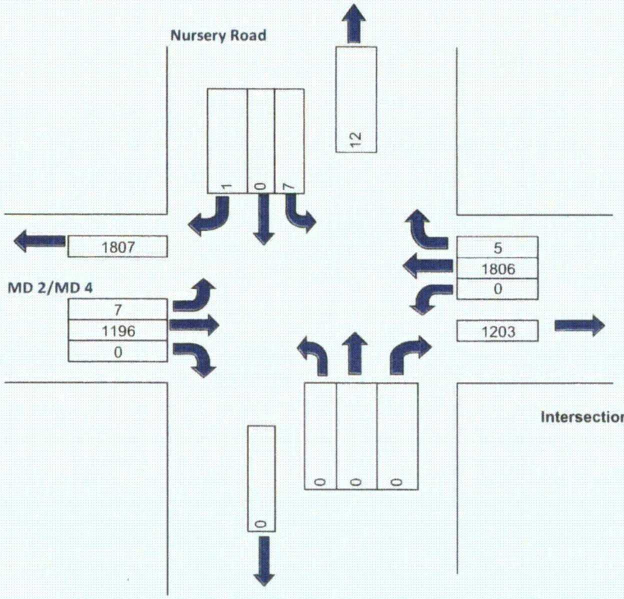
Critical Lane Volume — Total 782, LOS A

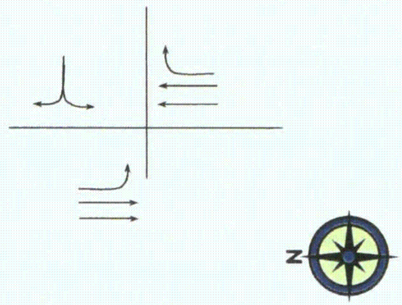
	Movement	Volume (1)	LUF (2)	Lane Volume (1) X (2) = (3)	Opposing Lefts (4)	LUF (5)	Opposing CLV (4)X(5) = (6)	CLV (5)+(6)=(7)
	SBT	2,240	0.55	1232	86	1	86	1,318
	EBTL	82	1	82	0	1	0	82

Remarks:
Right turns with a dedicated lane >150 ft are excluded

Critical Lane Volume — Total 1,400, LOS D

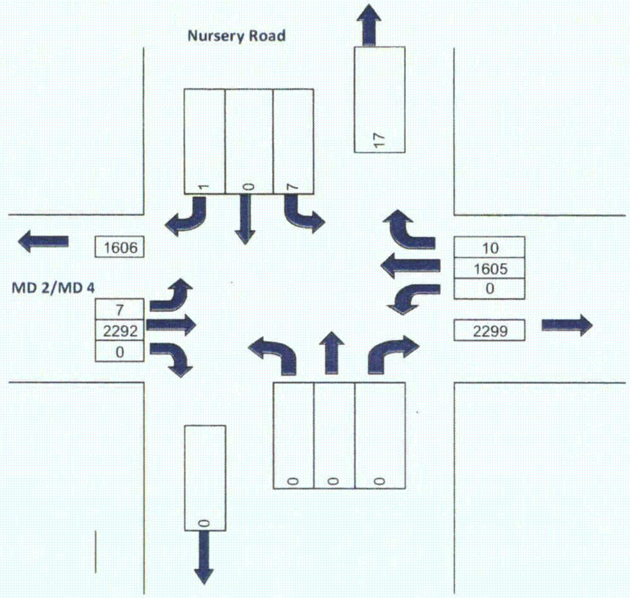
AM Peak





Intersection Control :
____ Signal ___X___ Stop ______1 Ways

PM Peak



Nursery Road & MD 2/MD 4

Construction, 2016, No Mitigation

KLD Engineering, P.C.

	Lanes	LUF	CLV	LOS	Opposing Volume	PCE
	1	1	0	A		
	2	0.55	1000	B	0	1.1
	3	0.4	1150	C	200	2
	4	0.3	1300	D	600	3
Dbl LT		0.6	1450	E	800	4
			1600	F	1000	5

Movement	Volume (1)	LUF (2)	Lane Volume (1) X (2) = (3)	Opposing Lefts (4)	LUF (5)	Opposing CLV (4)X(5) = (6)	CLV (5)+(6)=(7)
NBT	1,806	0.55	993	7	1	7	1,000
SBT	1,196	0.55	658	0	1	0	658
WBLR	8	1	8	0	1	0	8

Remarks:
Right turns with a dedicated lane >150 ft are excluded

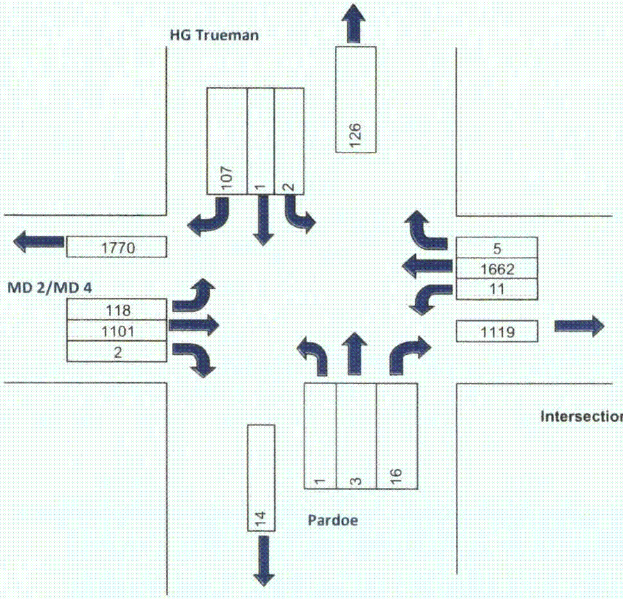
Critical Lane Volume — Total 1,008; LOS B

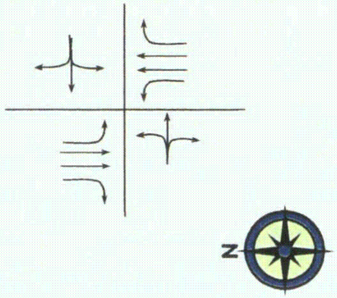
Movement	Volume (1)	LUF (2)	Lane Volume (1) X (2) = (3)	Opposing Lefts (4)	LUF (5)	Opposing CLV (4)X(5) = (6)	CLV (5)+(6)=(7)
NBT	1,605	0.55	883	7	1	7	890
SBT	2,292	0.55	1260	0	1	0	1,260
WBLR	8	1	8	0	1	0	8

Remarks:
Right turns with a dedicated lane >150 ft are excluded

Critical Lane Volume — Total 1,268; LOS C

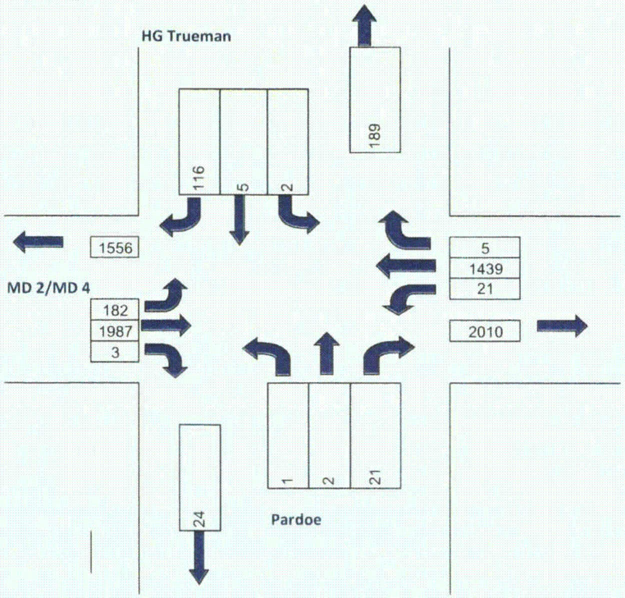
AM Peak





Intersection Control :
_____ Signal   __X__ Stop   ______2 Ways

PM Peak



HG Trueman/Pardoe & MD 2/MD 4

Construction, 2016, No Mitigation

KLD Engineering, P.C.

Lanes	LUF	CLV	LOS	Opposing Volume	PCE
1	1	0	A		
2	0.55	1000	B	0	1.1
3	0.4	1150	C	200	2
4	0.3	1300	D	600	3
Dbl LT	0.6	1450	E	800	4
		1600	F	1000	5

	Movement	Volume (1)	LUF (2)	Lane Volume (1) X (2) = (3)	Opposing Lefts (4)	LUF (5)	Opposing CLV (4)X(5) = (6)	CLV (5)+(6)=(7)
	NBT	1,662	0.55	914	118	1	118	1,032
	SBT	1,101	0.55	606	11	1	11	617
	EBLTR	20	1	20	0	1	0	20
	WBLTR	110	1	110	0	1	0	110

Remarks:
Right turns with a dedicated lane >150 ft are excluded

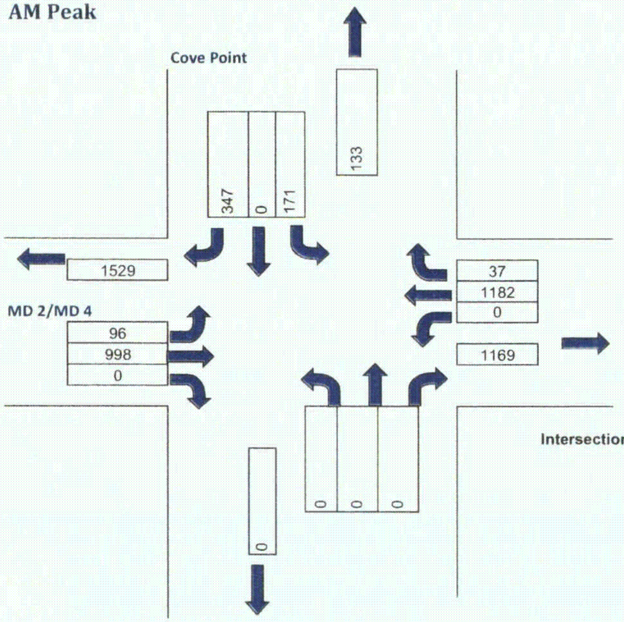
Critical Lane Volume Total 1,162
LOS C

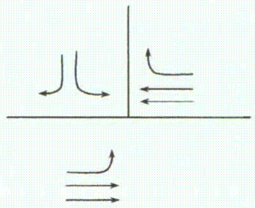
	Movement	Volume (1)	LUF (2)	Lane Volume (1) X (2) = (3)	Opposing Lefts (4)	LUF (5)	Opposing CLV (4)X(5) = (6)	CLV (5)+(6)=(7)
	NBT	1,439	0.55	792	182	1	182	974
	SBT	1,987	0.55	1093	21	1	21	1,114
	EBLTR	24	1	24				24
	WBLTR	123	1	123	0	1	0	123

Remarks:
Right turns with a dedicated lane >150 ft are excluded

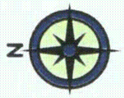
Critical Lane Volume Total 1,261
LOS C

AM Peak

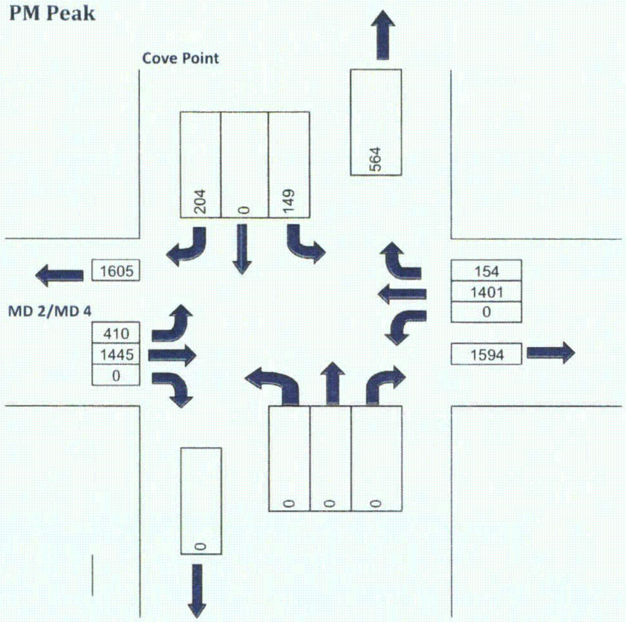




Intersection Control : _____ Signal ___X___ Stop ______1 Ways



PM Peak



Cove Point Road & MD 2/MD 4

Construction, 2016, No Mitigation

KLD Engineering, P.C.

Lanes	LUF	CLV	LOS	Opposing Volume	PCE
1	1	0	A		
2	0.55	1000	B	0	1.1
3	0.4	1150	C	200	2
4	0.3	1300	D	600	3
Dbl LT	0.6	1450	E	800	4
		1600	F	1000	5

AM Peak

	Movement	Volume (1)	LUF (2)	Lane Volume (1) X (2) = (3)	Opposing Lefts (4)	LUF (5)	Opposing CLV (4)X(5) = (6)	CLV (5)+(6)=(7)
	NBT	1,182	0.55	650	96	1	96	746
	SBT	998	0.55	549	0	1	0	549
	WBL	171	1	171	0	1	0	171
	WBR	251	1	251	0	1	0	251

Remarks:
Some WBR Coincide with SBL
Right turns with a dedicated lane >150 ft are excluded

Critical Lane Volume — Total 997; LOS A

PM Peak

	Movement	Volume (1)	LUF (2)	Lane Volume (1) X (2) = (3)	Opposing Lefts (4)	LUF (5)	Opposing CLV (4)X(5) = (6)	CLV (5)+(6)=(7)
	NBT	1,401	0.55	770	410	1	410	1,180
	SBT	1,445	0.55	795	0	1	0	795
	WBL	149	1	149	0	1	0	149
	WBR	0	1	0	0	1	0	0

Remarks:
Some WBR Coincide with SBL
Right turns with a dedicated lane >150 ft are excluded

Critical Lane Volume — Total 1,329; LOS D

Maryland SHA Queuing Analysis

Location: MD 2/MD 4 Diverge

Scenario	Year	Peak Hour	Level of Service	Number of Phases per Cycle	Cycle Length (sec)	Volume	Lane Use Factor	Critical Lane Volume	Average Vehicles per Cycle per Lane	Maximum Vehicles per Cycle per Lane	Max Queue Length per Cycle per Lane (ft)
Construction, 2016, No Mitigation											
SBL	2016	AM	F	3	165	79	1.00	79	3.6	5.1	126
SBL	2016	PM	F	3	165	176	1.00	176	8.1	11.3	282
800 feet of storage available (approximately)											
WBL	2016	AM	F	3	165	829	1.00	829	38.0	53.2	1329
WBL	2016	PM	F	3	165	908	1.00	908	41.6	58.2	1456
450 feet of storage available (approximately)											
NBT	2016	AM	F	3	165	1766	0.55	971	44.5	62.3	1558
NBT	2016	PM	F	3	165	1569	0.55	863	39.6	55.4	1385
630 feet of storage available (approximately) before NBT blocks NBR bypass lane											
	Queue length exceeds available storage										

Maryland SHA Queuing Analysis

Location: MD 2/MD 4 and MD 231

Scenario	Year	Peak Hour	Level of Service	Number of Phases per Cycle	Cycle Length (sec)	Volume	Lane Use Factor	Critical Lane Volume	Average Vehicles per Cycle per Lane	Maximum Vehicles per Cycle per Lane	Max Queue Length per Cycle per Lane (ft)
Construction, 2016, No Mitigation											
NBL	2016	AM	D	5	135	308	0.60	185	6.9	9.7	242
NBL	2016	PM	F	5	165	408	0.60	245	11.2	15.7	393
400 feet of storage available (approximately)											
SBL	2016	AM	D	5	135	71	0.60	43	1.6	2.2	56
SBL	2016	PM	F	5	165	61	0.60	37	1.7	2.3	59
400 feet of storage available (approximately)											
EBL	2016	AM	D	5	135	383	0.60	230	8.6	12.0	301
EBL	2016	PM	F	5	165	407	0.60	244	11.2	15.7	391
385 feet of storage available (approximately)											
WBL	2016	AM	D	5	135	62	0.60	37	1.4	2.0	49
WBL	2016	PM	F	5	165	146	0.60	88	4.0	5.6	140
360 feet of storage available (approximately)											
	Queue length exceeds available storage										

Maryland SHA Queuing Analysis

Location: MD 2/MD 4 and Calvert Beach Road

Scenario	Year	Peak Hour	Level of Service	Number of Phases per Cycle	Cycle Length (sec)	Volume	Lane Use Factor	Critical Lane Volume	Average Vehicles per Cycle per Lane	Maximum Vehicles per Cycle per Lane	Max Queue Length per Cycle per Lane (ft)
Construction, 2016, No Mitigation											
NBL	2016	AM	F	5	165	39	1.00	39	1.8	2.5	63
NBL	2016	PM	F	5	165	98	1.00	98	4.5	6.3	157
500 feet of storage available (approximately)											
SBL	2016	AM	F	5	165	33	1.00	33	1.5	2.1	53
SBL	2016	PM	F	5	165	71	1.00	71	3.3	4.6	114
575 feet of storage available (approximately)											
EBTL	2016	AM	F	5	165	75	1.00	75	3.4	4.8	120
EBTL	2016	PM	F	5	165	76	1.00	76	3.5	4.9	122
300 feet of storage available (approximately) before EBTL blocks the EBR bypass lane											
WBTL	2016	AM	F	5	165	149	1.00	149	6.8	9.6	239
WBTL	2016	PM	F	5	165	186	1.00	186	8.5	11.9	298
350 feet of storage available (approximately) before WBTL blocks the WBR bypass lane											
NBT	2016	AM	F	5	165	1424	0.55	783	35.9	50.2	1256
NBT	2016	PM	F	5	165	2588	0.55	1424	65.3	91.4	2284
SBT	2016	AM	F	5	165	2730	0.55	1501	68.8	96.3	2409
SBT	2016	PM	F	5	165	2465	0.55	1356	62.1	87.0	2175
	Queue length exceeds available storage										

Maryland SHA Queuing Analysis

Location: MD 2/MD 4 and Calvert Cliffs Parkway

Scenario	Year	Peak Hour	Level of Service	Number of Phases per Cycle	Cycle Length (sec)	Volume	Lane Use Factor	Critical Lane Volume	Average Vehicles per Cycle per Lane	Maximum Vehicles per Cycle per Lane	Max Queue Length per Cycle per Lane (ft)
Construction, 2016, No Mitigation											
SBL	2016	AM	A	3	100	59	1.00	59	1.6	2.3	57
SBL	2016	PM	E	3	150	5	1.00	5	0.2	0.3	7
600 feet of storage available (approximately)											
NBT	0	AM	0	3	100	1507	0.55	829	23.0	32.2	806
NBT	0	PM	0	3	150	2802	0.55	1541	64.2	89.9	2248
2950 feet available prior to next intersection (approximately)											
	Queue length exceeds available storage										

Maryland SHA Queuing Analysis

Location: MD 2/MD 4 and White Sands Drive

Scenario	Year	Peak Hour	Level of Service	Number of Phases per Cycle	Cycle Length (sec)	Volume	Lane Use Factor	Critical Lane Volume	Average Vehicles per Cycle per Lane	Maximum Vehicles per Cycle per Lane	Max Queue Length per Cycle per Lane (ft)
Construction, 2016, No Mitigation											
NBL	2016	AM	A	3	100	17	1.00	17	0.5	0.7	17
NBL	2016	PM	D	3	135	86	1.00	86	3.2	4.5	113
550 feet of storage available (approximately)											
EBTL	2016	AM	A	3	100	137	1.00	137	3.8	5.3	133
EBTL	2016	PM	D	3	135	82	1.00	82	3.1	4.3	108
80 feet of storage available (approximately)											
SBT	2016	AM	A	3	100	1141	0.55	628	17.4	24.4	610
SBT	2016	PM	D	3	135	2240	0.55	1232	46.2	64.7	1617
500 feet of storage available (approximately) before SBT blocks SBR bypass lane											
	Queue length exceeds available storage										

Maryland SHA Queuing Analysis

Location: MD 2/MD 4 and Nursery Road

Scenario	Year	Peak Hour	Level of Service	Number of Phases per Cycle	Cycle Length (sec)	Volume	Lane Use Factor	Critical Lane Volume	Average Vehicles per Cycle per Lane	Maximum Vehicles per Cycle per Lane	Max Queue Length per Cycle per Lane (ft)
Construction, 2016, No Mitigation											
SBL	2016	AM	B	3	100	7	1.00	7	0.2	0.3	7
SBL	2016	PM	C	3	120	0	1.00	0	0.0	0.0	0
570 feet of storage available (approximately)											
	Queue length exceeds available storage										

Maryland SHA Queuing Analysis

Location: MD 2/MD 4 and Pardoe Road

Scenario	Year	Peak Hour	Level of Service	Number of Phases per Cycle	Cycle Length (sec)	Volume	Lane Use Factor	Critical Lane Volume	Average Vehicles per Cycle per Lane	Maximum Vehicles per Cycle per Lane	Max Queue Length per Cycle per Lane (ft)
Construction, 2016, No Mitigation											
SBL	2016	AM	C	5	120	118	1.00	118	3.9	5.5	138
SBL	2016	PM	C	5	120	182	1.00	182	6.1	8.5	212
570 feet of storage available (approximately)											
NBL	2016	AM	C	5	120	11	1.00	11	0.4	0.5	13
NBL	2016	PM	C	5	120	21	1.00	21	0.7	1.0	25
600 feet of storage available (approximately)											
	Queue length exceeds available storage										

Maryland SHA Queuing Analysis

Location: MD 2/MD 4 and Cove Point Road

Scenario	Year	Peak Hour	Level of Service	Number of Phases per Cycle	Cycle Length (sec)	Volume	Lane Use Factor	Critical Lane Volume	Average Vehicles per Cycle per Lane	Maximum Vehicles per Cycle per Lane	Max Queue Length per Cycle per Lane (ft)
Construction, 2016, No Mitigation											
SBL	2016	AM	A	3	100	96	1.00	96	2.7	3.7	93
SBL	2016	PM	D	3	135	410	1.00	410	15.4	21.5	538
550 feet of storage available (approximately)											
WBL	2016	AM	A	3	100	171	1.00	171	4.8	6.7	166
WBL	2016	PM	D	3	135	149	1.00	149	5.6	7.8	196
300 feet of storage available (approximately)											
	Queue length exceeds available storage										