Transportation Appendix

- **Trip Generation**
  - Block 11A Trip Generation
  - Assembly Square Redevelopment Full Build-out Trip Generation
- **Traffic Volume Networks**
- **Grand Union Boulevard at New Road/Revolution Drive – 2008 Special Permit / Site Plan Review A Capacity Analysis**
- **Block 11A Build Condition Capacity Analysis**
  - Signalized Capacity Analysis
  - Unsignalized Capacity Analysis
- **Assembly Square Redevelopment Full Build-out Capacity Analysis**
  - Signalized Capacity Analysis
  - Unsignalized Capacity Analysis

Trip Generation

■ Block 11A Trip Generation

FRIT - Full Build (2018) ***- Partners development - Block 11***

Trip Generation Summary :: Transit/Walk/Bike Reduction

ITE, 9th Ed.

1,155 ksf Partner's office
2,801 ksf total office

41.23% Partner's percentage of total office

Use	Residential*									Office									Retail**										EXTERNAL ONLY Total Partners Block 11 Development			TOTAL TRIPS al Partners Block 11 Developm			Shared trips			Partner retail	
	External	VOR	Person Trips	Transit Share	Transit Trips	Walk/Bike Share	Walk/Bike Trips	Remainder Person trip	Vehicle Trips	External	VOR	Person Trips	Transit Share	Transit Trips	Walk/Bike Share	Walk/Bike Trips	Remainder Person trip	Vehicle Trips	External	VOR	Person Trips	Transit Share	Transit Trips	Walk/Bike Share	Walk/Bike Trips	Remainder Person trip	Vehicle Trips	New	25% Pass-by	Total	New	Pass-by	Total	New	Pass-by	Office	Retail	Total	Partner's percentage of total retail	Total Transit Trips
Weekday Daily [a]																																						
Enter	**0**	1.49	0	47%	0	5%	0	0	**0**	**3,206**	1.11	3,558	25%	890	5%	178	2,491	**2,244**	**1,317**	1.44	1,896	5%	95	5%	95	1,707	**1,185**	**889**	**296**	**3,429**	**3,133**	**296**	**4,040**	**3,133**	**296**	201	410	**611**	19.34%	984
Exit	**0**	1.49	0	47%	0	5%	0	0	**0**	**3,073**	1.11	3,410	25%	853	5%	171	2,387	**2,151**	**1,291**	1.44	1,859	5%	93	5%	93	1,673	**1,162**	**872**	**291**	**3,313**	**3,022**	**291**	**4,083**	**3,022**	**291**	335	435	**770**	19.34%	946
Total	**0**	1.49	0	47%	0	5%	0	0	**0**	**6,278**	1.11	6,969	25%	1,742	5%	348	4,878	**4,395**	**2,608**	1.44	3,756	5%	188	5%	188	3,380	**2,347**	**1,760**	**587**	**6,742**	**6,155**	**587**	**8,123**	**6,155**	**587**	536	845	**1381**	19.34%	1,930
Weekday AM [b]																																						
Enter	**0**	1.49	0	47%	0	5%	0	0	**0**	**998**	1.17	1,168	25%	292	5%	58	818	**699**	**57**	1.55	88	5%	4	5%	4	79	**51**	**38**	**13**	**750**	**737**	**13**	**751**	**737**	**13**	0	1	**2**	29.85%	296
Exit	**0**	1.49	0	47%	0	5%	0	0	**0**	**134**	1.17	157	25%	39	5%	8	110	**94**	**47**	1.55	73	5%	4	5%	4	66	**42**	**32**	**11**	**136**	**126**	**11**	**140**	**126**	**11**	2	2	**4**	37.09%	43
Total	**0**	1.49	0	47%	0	5%	0	0	**0**	**1,133**	1.17	1,325	25%	331	5%	66	928	**793**	**104**	1.55	161	5%	8	5%	8	145	**93**	**70**	**23**	**886**	**863**	**23**	**891**	**863**	**23**	2	3	**5**	32.79%	339
Weekday PM [b]																																						
Enter	**0**	1.49	0	47%	0	5%	0	0	**0**	**207**	1.13	234	25%	58	5%	12	164	**145**	**147**	1.45	213	5%	11	5%	11	192	**132**	**99**	**33**	**277**	**244**	**33**	**331**	**244**	**33**	19	35	**54**	21.82%	69
Exit	**0**	1.49	0	47%	0	5%	0	0	**0**	**1,083**	1.13	1,224	25%	306	5%	61	857	**758**	**119**	1.45	172	5%	9	5%	9	155	**107**	**80**	**27**	**865**	**838**	**27**	**928**	**838**	**27**	17	46	**63**	20.31%	315
Total	**0**	1.49	0	47%	0	5%	0	0	**0**	**1,290**	1.13	1,458	25%	365	5%	73	1,021	**903**	**265**	1.45	385	5%	19	5%	19	346	**239**	**179**	**60**	**1,142**	**1,082**	**60**	**1,259**	**1,082**	**60**	36	82	**117**	21.07%	384
Saturday Daily [a]																																						
Enter	**0**	1.49	0	47%	0	5%	0	0	**0**	**1,002**	1.11	1,112	25%	278	5%	56	779	**701**	**1,273**	1.44	1,834	5%	92	5%	92	1,650	**1,146**	**860**	**287**	**1,847**	**1,561**	**287**	**2,424**	**1,561**	**287**	177	399	**576**	16.48%	370
Exit	**0**	1.49	0	47%	0	5%	0	0	**0**	**896**	1.11	994	25%	249	5%	50	696	**627**	**1,310**	1.44	1,886	5%	94	5%	94	1,698	**1,179**	**884**	**295**	**1,806**	**1,511**	**295**	**2,452**	**1,511**	**295**	283	363	**646**	16.48%	343
Total	**0**	1.49	0	47%	0	5%	0	0	**0**	**1,898**	1.11	2,107	25%	527	5%	105	1,475	**1,329**	**2,583**	1.44	3,720	5%	186	5%	186	3,348	**2,325**	**1,744**	**581**	**3,653**	**3,072**	**581**	**4,875**	**3,072**	**581**	460	762	**1222**	16.48%	713
Saturday Midday [b]																																						
Enter	**0**	1.49	0	47%	0	5%	0	0	**0**	**246**	1.04	255	25%	64	5%	13	179	**172**	**146**	1.44	210	5%	11	5%	11	189	**131**	**99**	**33**	**303**	**271**	**33**	**356**	**271**	**33**	23	30	**53**	16.38%	74
Exit	**0**	1.49	0	47%	0	5%	0	0	**0**	**194**	1.04	202	25%	51	5%	10	142	**136**	**144**	1.44	207	5%	10	5%	10	186	**129**	**97**	**32**	**266**	**233**	**32**	**335**	**233**	**32**	34	36	**70**	19.53%	61
Total	**0**	1.49	0	47%	0	5%	0	0	**0**	**440**	1.04	458	25%	114	5%	23	320	**308**	**290**	1.44	417	5%	21	5%	21	376	**261**	**196**	**65**	**569**	**504**	**65**	**691**	**504**	**65**	57	66	**122**	17.83%	135

* Includes hotel

	Transit Trips	Walk/Bike Trips	Subtotal	Converted equiv veh trips	Transit Trips	Walk/Bike Trips	Subtotal	Converted equiv veh trips	Transit Trips	Walk/Bike Trips	Subtotal	Converted equiv veh trips	Transit/Walk/Bike trips coverted to equivalent vehicle trips
Weekday Daily [a]													
Enter	0	0	**0**	**0**	890	178	**1,067**	**962**	95	95	**190**	**132**	**1,093**
Exit	0	0	**0**	**0**	853	171	**1,023**	**922**	93	93	**186**	**129**	**1,051**
Total	0	0	**0**	**0**	1,742	348	**2,091**	**1883**	188	188	**376**	**261**	**2,144**
Weekday AM [b]													
Enter	0	0	**0**	**0**	292	58	**350**	**299**	4	4	**9**	**6**	**305**
Exit	0	0	**0**	**0**	39	8	**47**	**40**	4	4	**7**	**5**	**45**
Total	0	0	**0**	**0**	331	66	**398**	**340**	8	8	**16**	**10**	**350**
Weekday PM [b]													
Enter	0	0	**0**	**0**	58	12	**70**	**62**	11	11	**21**	**15**	**77**
Exit	0	0	**0**	**0**	306	61	**367**	**325**	9	9	**17**	**12**	**337**
Total	0	0	**0**	**0**	365	73	**437**	**387**	19	19	**38**	**27**	**414**
Saturday Daily [a]													
Enter	0	0	**0**	**0**	278	56	**334**	**301**	92	92	**183**	**127**	**428**
Exit	0	0	**0**	**0**	249	50	**298**	**269**	94	94	**189**	**131**	**400**
Total	0	0	**0**	**0**	527	105	**632**	**569**	186	186	**372**	**258**	**828**
Saturday Midday [b]													
Enter	0	0	**0**	**0**	64	13	**77**	**74**	11	11	**21**	**15**	**88**
Exit	0	0	**0**	**0**	51	10	**61**	**58**	10	10	**21**	**14**	**73**
Total	0	0	**0**	**0**	114	23	**137**	**132**	21	21	**42**	**29**	**161**

FRIT - Build - Blocks 1-4, 10

Trip Generation Summary

ITE, 9th Ed.

DEIR size	690	1410	200	1750.000	14	0			450	
DEIR trip generation	4,300	6,090	1,630	12,090	4,100	-			11,060	**45,450**

Current 2014 program compared to MEPA approved program:

Difference - size	(242)	(1,409)	(200)	(1,656.817)	(2)	0	601	329	(177.476)	
Difference - trip generation	(1,462)	(6,078)	(1,630)	(10,846)	(590)	0	21,795	14,721	(3,986)	14,678

ITE Land Use	**Apartments++**	**Condos++**	**Hotel**	**Office****	**Cinema**	**Health Club+**	**Retail*****			**Total**
ITE LUC	**220**	**230**	**310**	**710**	**445**	**492**	**820**	**820**	**820**	
DU/rooms/ksf/screens	**448**	**1**	**0**	**93.183**	**12**	**0.000**	**601.330**	**328.806**	**272.524**	
Weekday Daily [a]										
Enter	1,419	6	***0***	622	1,755	***0***	10,898	7,361	**3,537**	**7,339**
Exit	1,419	6	***0***	622	1,755	***0***	10,898	7,361	**3,537**	**7,339**
Total	2,838	12	***0***	1,244	3,510	***0***	21,795	14,721	**7,074**	**14,678**
Weekday AM [b]										
Enter	45	0	***0***	159	0	***0***	289	200	**89**	**293**
Exit	179	1	***0***	22	0	***0***	177	122	**55**	**256**
Total	223	1	***0***	181	0	***0***	466	322	**143**	**549**
Weekday PM [b]										
Enter	172	1	***0***	31	161	***0***	957	638	**318**	**683**
Exit	92	0	***0***	152	112	***0***	1,036	692	**345**	**701**
Total	264	1	***0***	183	273	***0***	1,993	1,330	**663**	**1,384**
Saturday Daily [a]										
Enter	1,630	216	***0***	110	1,540	***0***	14,304	9,779	**4,525**	**8,022**
Exit	1,630	216	***0***	110	1,540	***0***	14,304	9,779	**4,525**	**8,022**
Total	3,261	432	***0***	221	3,080	***0***	28,609	19,558	**9,050**	**16,043**
Saturday Midday [b]										
Enter	101	23	***0***	22	173	***0***	1,459	985	**474**	**792**
Exit	101	20	***0***	18	67	***0***	1,347	910	**437**	**644**
Total	203	43	***0***	40	240	***0***	2,806	1,895	**911**	**1,436**

FRIT/IKEA DEIR*	**Difference Trips**	**Difference Percent**
22,725	**-15,386**	
22,725	**-15,386**	
45,450	**-30,772**	**-68%**
2,095	**-1,802**	
1,050	**-794**	
3,145	**-2,596**	**-83%**
1,985	**-1,302**	
2,955	**-2,254**	
4,940	**-3,556**	**-72%**
22,235	**-14,213**	
22,235	**-14,213**	
44,470	**-28,427**	**-64%**
2,195	**-1,403**	
1,840	**-1,196**	
4,035	**-2,599**	**-64%**

Residential	**Retail**	**Office**	
1,425	5,292	622	**7,339**
1,425	5,292	622	**7,339**
2,850	10,584	1,244	**14,678**
45	89	159	**293**
180	55	22	**256**
225	143	181	**549**
173	479	31	**683**
93	457	152	**701**
265	936	183	**1,384**
1,846	6,065	110	**8,022**
1,846	6,065	110	**8,022**
3,692	12,130	221	**16,043**
125	646	22	**792**
121	504	18	**644**
246	1,150	40	**1,436**

75 ksf Partner's retail
27.52% of total retail area

Partner's portion of total retail	**Health Club**	**Total Partner's Retail/Health Club**	**Partner's percentage of total retail**
973	0	**973**	18.39%
973	0	**973**	18.39%
1947	0	**1947**	18.39%
24	0	**24**	27.52%
15	0	**15**	27.52%
39	0	**39**	27.52%
88	0	**88**	18.27%
95	0	**95**	20.77%
182	0	**182**	19.49%
1245	0	**1245**	20.53%
1245	0	**1245**	20.53%
2491	0	**2491**	20.53%
130	0	**130**	20.17%
120	0	**120**	23.86%
251	0	**251**	21.79%

a vpd = vehicles per day
b vph = vehicles per hour
* Volumes taken directly from Table 5-11 of June 2008 Draft Environmental Impact Report.
** Office trip generation for proposed 93,183 sf office space.
*** Retail trip generation for proposed 307,524 sf of retail space calculated as difference between total resulting 636,330 sf of retail space (including existing 328,806 sf "mall") minus proposed 307,524 sf of retail space.
+ Trip Generation for proposed health club based on ITE Trip Generation Manual (9th Edition) LUC 492 "Health/Fitness Club".
++ Residential trip generation based on ITE LUC 220 (Apartments) and LUC 230 (Residential Condominium /Townhouse).
Apartment / Condo total: **449** units
* Cinema Sat. daily calculated based on ratio between Friday & Sat. peak hour of generator and Friday daily rates. Rate = (Sat peak/Fr peak) * Fr daily. No data available for AM - assumed to be 0.

Overall Building Program (Blocks 1-4, and 10):

93,183 sf	**office**
449 units	**residential**
272,524 sf	**retail**
0 sf	**health club**
60,000 sf	**cinema (12-screen)**
0 rooms	**hotel**

Block 11 / Partner's Building Program:

1,155,000 sf	**office**
75,000 sf	**retail**
0 sf	**health club**

	FRIT development Blocks 1-4, and 10																		Partners				Total External Project
Use	Residential									Office	Retail												
	Unadjusted trips[1]					Net trips[3]					Unadjusted trips			Net trips[8]									
ITE Land Use	Apts	Condos	Hotel	Total	Net	Apts	Condos	Apt/	Hotel	Office[5]	Cinema[1]	FRIT[6]	Total	Subtotal	Cinema[11]	FRIT			MBTA[9]	Office[4]	Retail/Health[10]			
ITE LUC	220	230	310	Trips	Total[2]	220	230	Condo	310	710	445	820	Trips	Trips[7]	445	820			Trips					
DU/rooms/ksf/screens	448	1	0			448	1	Total	0	93.183	12	272.524			12	272.524	New	Pass-By		1,155.0	75.0	New	Pass-By	
Weekday AM																								
Enter	45	0	0	45	**34**	**34**	**0**	**34**	**0**	**111**	0	89	89	**80**	**0**	**80**	**60**	**20**	**120**	**1,381**	**22**	**17**	**6**	**1,628**
Exit	179	1	0	180	**149**	**148**	**1**	**149**	**0**	**15**	0	55	55	**49**	**0**	**49**	**37**	**12**	**30**	**185**	**14**	**10**	**3**	**411**
Total	223	1	0	225	**183**	**182**	**1**	**183**	**0**	**126**	0	143	143	**129**	**0**	**129**	**97**	**32**	**150**	**1,565**	**36**	**27**	**9**	**2,039**
Weekday PM																								
Enter	172	1	0	173	**97**	**97**	**1**	**97**	**0**	**15**	161	318	479	**370**	**117**	**253**	**278**	**93**	**30**	**186**	**68**	**51**	**17**	**736**
Exit	92	0	0	93	**35**	**35**	**0**	**35**	**0**	**88**	112	345	457	**355**	**73**	**282**	**266**	**89**	**95**	**1,090**	**74**	**55**	**18**	**1,642**
Total	264	1	0	265	**132**	**132**	**1**	**132**	**0**	**103**	273	663	936	**725**	**188**	**537**	**544**	**181**	**125**	**1,276**	**141**	**106**	**35**	**2,378**

1 Source: \\MAWALD\ld\08518.04\ssheets\traffic\Trip_Generation\Partners trip_generation_analysis - without B5 7 8 9.xls - TG Summary tab

2 Source: \\MAWALD\ld\08518.04\ssheets\traffic\Trip_Generation\Partners trip_generation_analysis - without B5 7 8 9.xls - TG Summary (non-vehicle) tab

3 Net trips proportionally allocated to apartments, condos and hotel based on proportion of individual component trips compared to overall unadjusted trips.

4 Source: \\MAWALD\ld\08518.04\ssheets\traffic\Trip_Generation\Partners trip_generation_analysis.xls - TG Summary (Partners) tab.

5 Source: \\MAWALD\ld\08518.04\ssheets\traffic\Trip_Generation\Partners trip_generation_analysis.xls - TG Summary (non-vehicle) tab - Partners office trips subtracted from overall external office trips.

6 Source: \\MAWALD\ld\08518.04\ssheets\traffic\Trip_Generation\Partners trip_generation_analysis.xls - TG Summary tab - Partners 75,000 sf retail trips subtracted from overall 527,024 sf retail trips.

7 Source: \\MAWALD\ld\08518.04\ssheets\traffic\Trip_Generation\Partners trip_generation_analysis.xls - TG Summary (non-vehicle) tab - Partners 75,000 sf retail trips (plus health club) subtracted from overall external 527,024 sf retail trips (plus cinema, health club).

8 Net trips proportionally allocated to cineam and 452,024 sf retail based on proportion of individual component trips compared to overall unadjusted trips.

9 Source: \\MAWALD\ld\08518.04\ssheets\traffic\Internal-Circulation-July2008\9-23-08\Internal Circulation - Site Trips - driveway changes.xlsx

10 Source: \\MAWALD\ld\08518.04\ssheets\traffic\Trip_Generation\Partners trip_generation_analysis.xls - TG Summary (Partners) tab.

Note: Retail pass-by traffic included in values shown in table. No adjustment required as all pass-by traffic drawn from Route 28 or Mystic Avenue and essentially are new trips on internal roadway network.

11 Cinema net trips taken from full-build condition - remainder of retail trips assigned to 307,524 sf FRIT retail.

Trip generation for Blocks 1-4, and 10

FRIT - Build - Blocks 1-4,10

Trip Generation Summary -including shared trips

ITE, 9th Ed.

Use	FRIT/IKEA PLAN											
	Residential*			Office			Retail**			Total**		
	Total	Internal/ shared	External no transit	Total	Internal/ shared	External no transit	Total	Internal/ shared	External no transit	Total	Internal/ shared	External no transit
Weekday Daily [a]												
Enter	1,425	483	942	622	93	529	5,292	678	4,614	7,339	1,254	6,085
Exit	1,425	542	884	622	149	473	5,292	564	4,728	7,339	1,254	6,085
Total	2,850	1,024	1,826	1,244	243	1,002	10,584	1,242	9,342	14,678	2,509	12,169
Weekday AM [b]												
Enter	45	0	44	159		159	89		89	293	0	293
Exit	180		180	22	0	21	55		55	256	0	255
Total	225	0	224	181	0	180	143		143	549	1	548
Weekday PM [b]												
Enter	173	57	116	31	10	21	479	72	408	683	138	545
Exit	93	49	44	152	25	126	457	63	394	701	138	564
Total	265	106	160	183	35	148	936	135	801	1,384	275	1,109
Saturday Daily [a]												
Enter	1,846	611	1,235	110	17	94	6,065	726	5,339	8,022	1,354	6,668
Exit	1,846	702	1,145	110	27	84	6,065	626	5,439	8,022	1,354	6,668
Total	3,692	1,313	2,379	221	43	178	12,130	1,352	10,779	16,043	2,708	13,336
Saturday Midday [b]												
Enter	125	46	79	22	8	13	646	45	601	792	99	693
Exit	121	41	80	18	4	15	504	54	450	644	99	545
Total	246	87	159	40	12	28	1,150	99	1,051	1,436	198	1,238

* Includes hotel

** Only includes FRIT retail + cinema + health club

FRIT - Build - Blocks 1-4,10

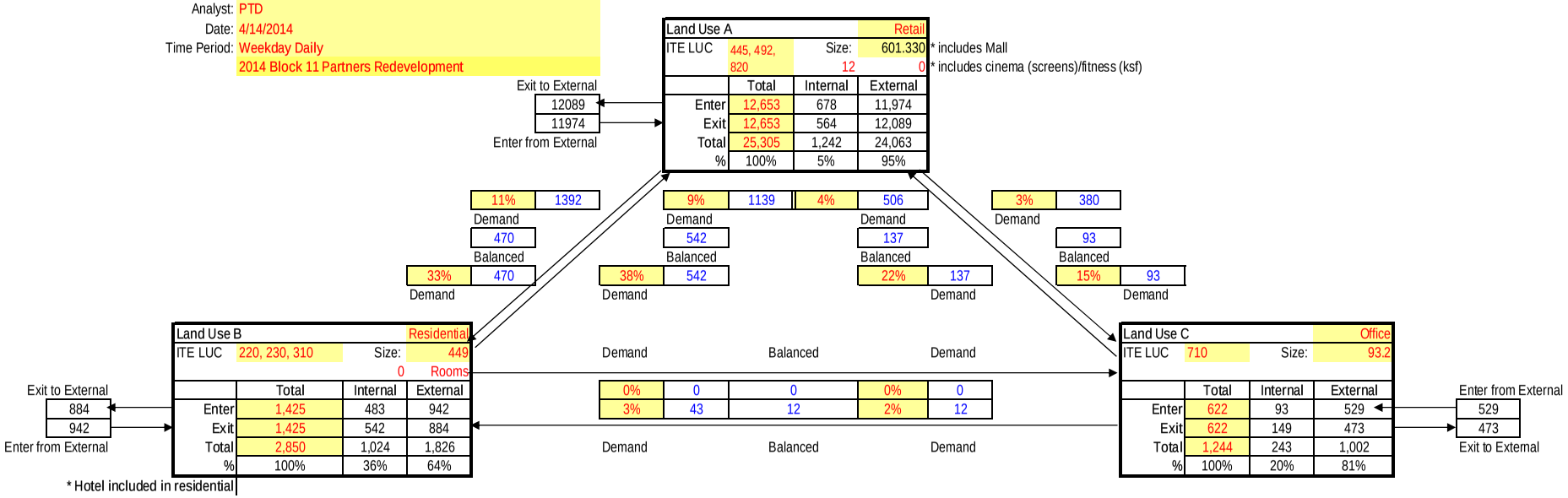
Trip Generation Summary :: Transit/Walk/Bike Reduction

ITE, 9th Ed.

Use	Residential*									Office									Retail**									New	25% Pass-by	Total FRIT Development			Total Transit Trips
	External	VOR	Person Trips	Transit Share	Transit Trips	Walk/Bike Share	Walk/Bike Trips	Remainder Person trip	Vehicle Trips	External	VOR	Person Trips	Transit Share	Transit Trips	Walk/Bike Share	Walk/Bike Trips	Remainder Person trip	Vehicle Trips	External	VOR	Person Trips	Transit Share	Transit Trips	Walk/Bike Share	Walk/Bike Trips	Remainder Person trip	Vehicle Trips			Total	New	Pass-by	
Weekday Daily [a]																																
Enter	**942**	1.49	1,404	47%	660	5%	70	674	**452**	**529**	1.11	587	25%	147	5%	29	411	**370**	**4,614**	1.44	6,643	5%	332	5%	332	5,979	**4,152**	**3,114**	**1038**	4,975	3,937	1038	1,139
Exit	**884**	1.49	1,316	47%	619	5%	66	632	**424**	**473**	1.11	525	25%	131	5%	26	367	**331**	**4,728**	1.44	6,809	5%	340	5%	340	6,128	**4,255**	**3,192**	**1064**	5,011	3,947	1064	1,090
Total	**1,826**	1.49	2,721	47%	1,279	5%	136	1,306	**876**	**1,002**	1.11	1,112	25%	278	5%	56	778	**701**	**9,342**	1.44	13,452	5%	673	5%	673	12,107	**8,408**	**6,306**	**2102**	9,985	7,883	2102	2,229
Weekday AM [b]																																
Enter	**44**	1.49	66	47%	31	5%	3	32	**21**	**159**	1.17	186	25%	47	5%	9	130	**111**	**89**	1.55	138	5%	7	5%	7	124	**80**	**60**	**20**	213	193	20	85
Exit	**180**	1.49	268	47%	126	5%	13	129	**86**	**21**	1.17	25	25%	6	5%	1	17	**15**	**55**	1.55	84	5%	4	5%	4	76	**49**	**37**	**12**	150	138	12	136
Total	**224**	1.49	334	47%	157	5%	17	160	**108**	**180**	1.17	211	25%	53	5%	11	148	**126**	**143**	1.55	222	5%	11	5%	11	200	**129**	**97**	**32**	363	331	32	221
Weekday PM [b]																																
Enter	**116**	1.49	173	47%	81	5%	9	83	**56**	**21**	1.13	24	25%	6	5%	1	17	**15**	**408**	1.45	591	5%	30	5%	30	532	**367**	**275**	**92**	438	346	92	117
Exit	**44**	1.49	65	47%	31	5%	3	31	**21**	**126**	1.13	143	25%	36	5%	7	100	**88**	**394**	1.45	571	5%	29	5%	29	514	**354**	**266**	**89**	464	375	89	95
Total	**160**	1.49	238	47%	112	5%	12	114	**77**	**148**	1.13	167	25%	42	5%	8	117	**103**	**801**	1.45	1,162	5%	58	5%	58	1,046	**721**	**541**	**180**	901	721	180	212
Saturday Daily [a]																																
Enter	**1,235**	1.49	1,840	47%	865	5%	92	883	**593**	**94**	1.11	104	25%	26	5%	5	73	**66**	**5,339**	1.44	7,689	5%	384	5%	384	6,920	**4,805**	**3,604**	**1201**	5,464	4,262	1201	1,275
Exit	**1,145**	1.49	1,705	47%	802	5%	85	819	**549**	**84**	1.11	93	25%	23	5%	5	65	**59**	**5,439**	1.44	7,833	5%	392	5%	392	7,049	**4,895**	**3,672**	**1224**	5,504	4,280	1224	1,216
Total	**2,379**	1.49	3,545	47%	1,666	5%	177	1,702	**1,142**	**178**	1.11	197	25%	49	5%	10	138	**124**	**10,779**	1.44	15,521	5%	776	5%	776	13,969	**9,701**	**7,276**	**2425**	10,967	8,542	2425	2,492
Saturday Midday [b]																																
Enter	**79**	1.49	117	47%	55	5%	6	56	**38**	**13**	1.04	14	25%	3	5%	1	10	**9**	**601**	1.44	866	5%	43	5%	43	779	**541**	**406**	**135**	588	453	135	102
Exit	**80**	1.49	119	47%	56	5%	6	57	**38**	**15**	1.04	15	25%	4	5%	1	11	**10**	**450**	1.44	648	5%	32	5%	32	583	**405**	**304**	**101**	454	352	101	92
Total	**159**	1.49	236	47%	111	5%	12	113	**76**	**28**	1.04	29	25%	7	5%	1	21	**20**	**1,051**	1.44	1,514	5%	76	5%	76	1,362	**946**	**709**	**236**	1,042	805	236	194

a vpd = vehicles per day
b vph = vehicles per hour
* Includes hotel
** inlcudes cinema and health club.

Job Name: Assembly Square
Job Number: 08518
Analyst: PTD
Date: 4/14/2014
Time Period: Weekday Daily
2014 Block 11 Partners Redevelopment

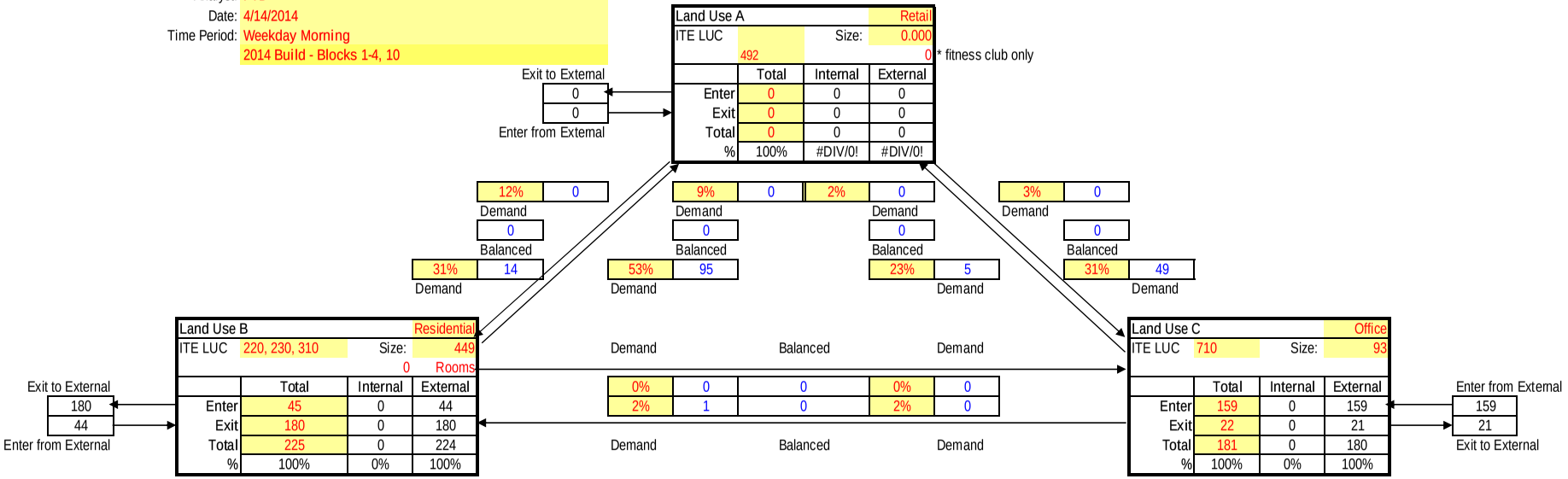


Net External Trips for Multi-Use Development

	Land Use A	Land Use B	Land Use C	Total	
Enter	11974	942	529	13445	
Exit	12089	884	473	13445	
Total	24063	1826	1002	26891	Internal Capture Rate
Single-Use Trip Gen. Est.	25,305	2850.145	1244.2269	29399.54	8.5%

Mall Trips (w/shared)		FRIT Retail w/o mall		
Enter	7,361	4614		6085
Exit	7,361	4728		6085
Total	14,721	9342		12169
SU		10,584		14678

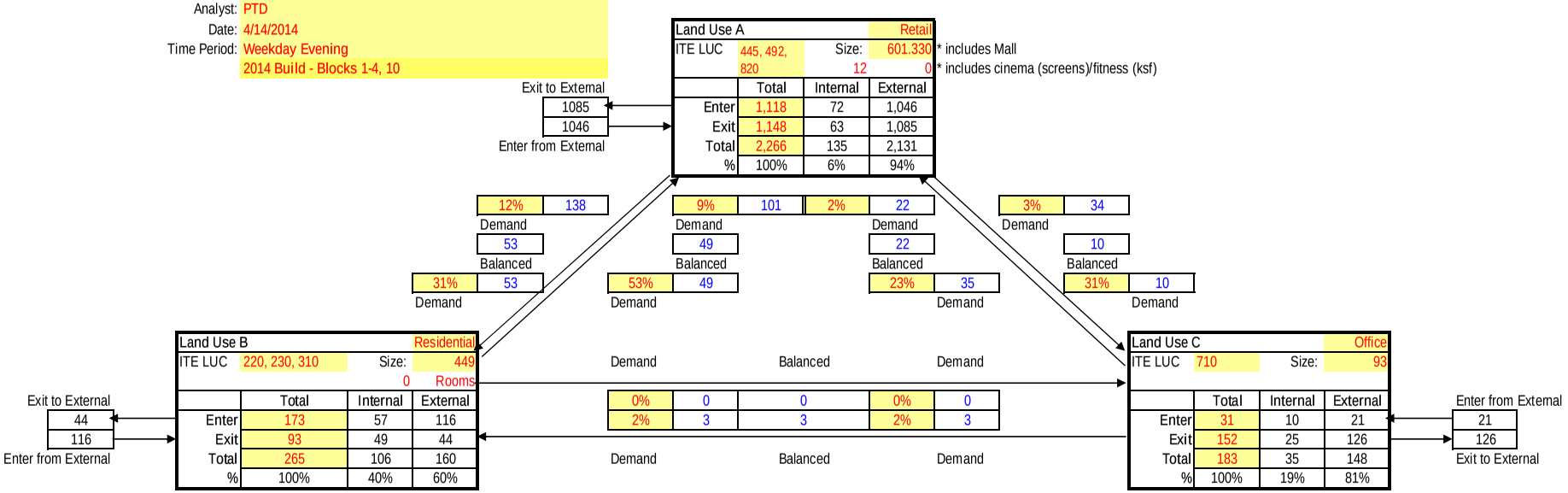
Job Name: Assembly Square
Job Number: 08518.05
Analyst: PTD
Date: 4/14/2014
Time Period: Weekday Morning
2014 Build - Blocks 1-4, 10



Net External Trips for Multi-Use Development

	Land Use A	Land Use B	Land Use C	Total	
Enter	0	44	159	204	
Exit	0	180	21	201	
Total	0	224	180	405	Internal Capture Rate
Single-Use Trip Gen. Est.	0	225	181	405	0.2%

Job Name:	Assembly Square
Job Number:	08518
Analyst:	PTD
Date:	4/14/2014
Time Period:	Weekday Evening
	2014 Build - Blocks 1-4, 10

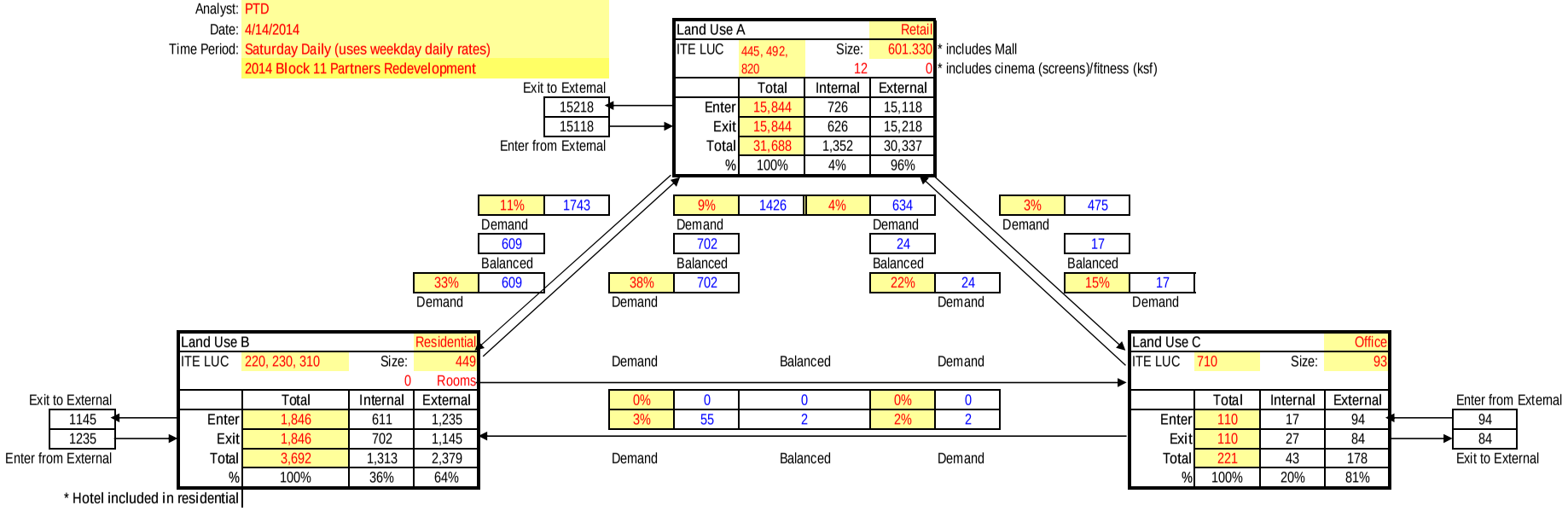


Net External Trips for Multi-Use Development

	Land Use A	Land Use B	Land Use C	Total	
Enter	1046	116	21	1184	
Exit	1085	44	126	1255	
Total	2131	160	148	2439	Internal Capture Rate
Single-Use Trip Gen. Est.	2266	265	183	2714	10.1%

Mall Trips		FRIT Retail w/o mall	
Enter	638	408	545
Exit	692	394	564
Total	1,330	801	1109
Single Use Total		936	1384

Job Name: Assembly Square
Job Number: 08518
Analyst: PTD
Date: 4/14/2014
Time Period: Saturday Daily (uses weekday daily rates)
2014 Block 11 Partners Redevelopment

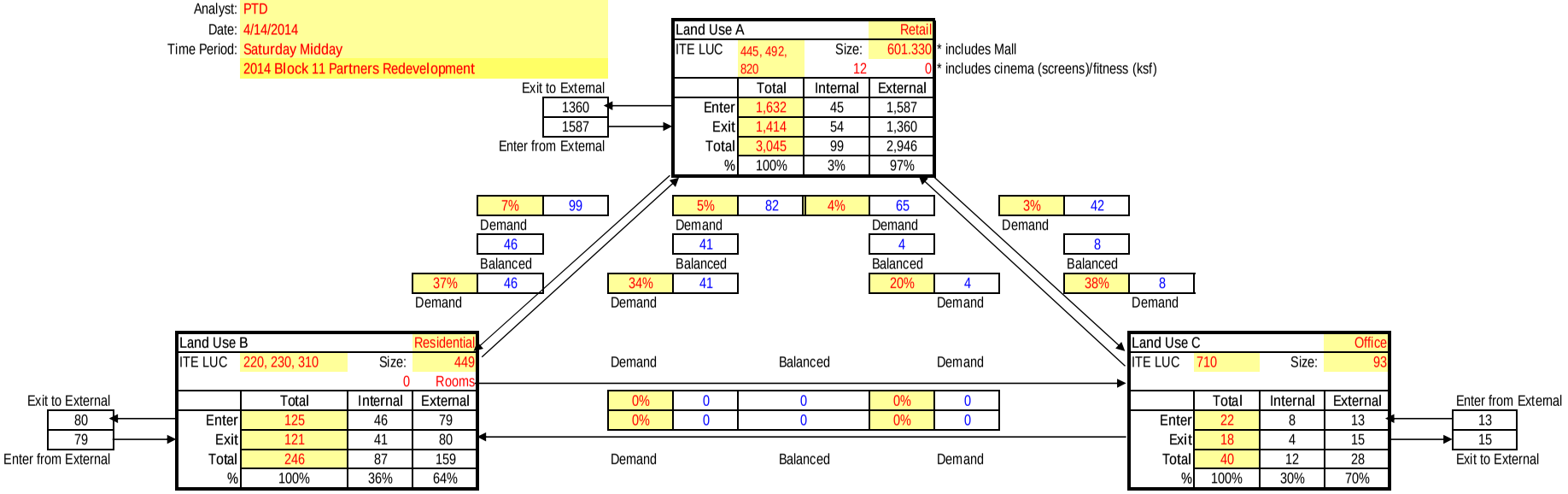


Net External Trips for Multi-Use Development

	Land Use A	Land Use B	Land Use C	Total	
Enter	15118	1235	94	16447	
Exit	15218	1145	84	16447	
Total	30337	2379	178	32894	Internal Capture Rate
Single-Use Trip Gen. Est.	31688.27	3692.16	220.9115	35601.35	7.6%

Mall Trips		FRIT Retail w/o mall	
Enter	9,779	5339	6668
Exit	9,779	5439	6668
Total	19,558	10779	13336
Single Use Total		12,130	16043

Job Name: Assembly Square
Job Number: 08518
Analyst: PTD
Date: 4/14/2014
Time Period: Saturday Midday
2014 Block 11 Partners Redevelopment



Net External Trips for Multi-Use Development

	Land Use A	Land Use B	Land Use C	Total	
Enter	1587	79	13	1679	
Exit	1360	80	15	1454	
Total	2946	159	28	3133	Internal Capture Rate
Single-Use Trip Gen. Est.	3045.439	245.83	40.06869	3331.337	6.0%

Mall Trips		FRIT Retail w/o mall	
Enter	985	601	693
Exit	910	450	545
Total	1,895	1051	1238
Single Use Total		1,150	1436

- Assembly Square Redevelopment Full Build-Out Trip Generation

FRIT - Full Build

Trip Generation Summary

ITE, 9th Ed.

DEIR size	690	1410	200	1750.000	14	0			450	
DEIR trip generation	4,300	6,090	1,630	12,090	4,100	-			11,060	**45,450**

Current 2014 program compared to MEPA approved program:

Difference - size	(86)	(171)	(30)	1,051.333	(2)	50	856	329	77.024	
Difference - trip generation	(516)	(344)	(482)	4,437	(590)	1,647	27,415	14,721	1,634	45,055

ITE Land Use	**Apartments++**	**Condos++**	**Hotel**	**Office****	**Cinema**	**Health Club+**	**Retail*****			**Total**
ITE LUC	**220**	**230**	**310**	**710**	**445**	**492**	**820**	**820**	**820**	
DU/rooms/ksf/screens	**604**	**1,239**	**170**	**2,801.333**	**12**	**50.000**	**855.830**	**328.806**	**527.024**	
Weekday Daily [a]										
Enter	1,892	2,873	**574**	8,264	1,755	**823**	13,708	7,361	**6,347**	**22,528**
Exit	1,892	2,873	**574**	8,264	1,755	**823**	13,708	7,361	**6,347**	**22,528**
Total	3,784	5,746	**1,148**	16,527	3,510	**1,647**	27,415	14,721	**12,694**	**45,055**
Weekday AM [b]										
Enter	60	66	**53**	2,422	0	**35**	358	200	**158**	**2,795**
Exit	240	321	**37**	330	0	**35**	219	122	**97**	**1,060**
Total	300	387	**90**	2,753	0	**71**	578	322	**255**	**3,855**
Weekday PM [b]										
Enter	227	317	**52**	547	161	**101**	1,212	638	**573**	**1,979**
Exit	122	156	**50**	2,669	112	**76**	1,313	692	**621**	**3,807**
Total	350	473	**102**	3,216	273	**177**	2,525	1,330	**1,195**	**5,786**
Saturday Daily [a]										
Enter	2,243	2,457	**670**	2,859	1,540	**522**	17,866	9,779	**8,087**	**18,377**
Exit	2,243	2,457	**670**	2,859	1,540	**522**	17,866	9,779	**8,087**	**18,377**
Total	4,485	4,913	**1,341**	5,718	3,080	**1,044**	35,732	19,558	**16,174**	**36,755**
Saturday Midday [b]										
Enter	133	217	**68**	650	173	**56**	1,835	985	**850**	**2,147**
Exit	133	185	**54**	554	67	**68**	1,694	910	**784**	**1,845**
Total	267	402	**122**	1,205	240	**124**	3,529	1,895	**1,634**	**3,992**

FRIT/IKEA DEIR*	**Difference Trips**	**Difference Percent**
22,725	**-197**	
22,725	**-197**	
45,450	**-395**	**-1%**
2,095	**700**	
1,050	**10**	
3,145	**710**	**23%**
1,985	**-6**	
2,955	**852**	
4,940	**846**	**17%**
22,235	**-3,858**	
22,235	**-3,858**	
44,470	**-7,715**	**-17%**
2,195	**-48**	
1,840	**5**	
4,035	**-43**	**-1%**

Residential	**Retail**	**Office**	
5,339	8,925	8,264	**22,528**
5,339	8,925	8,264	**22,528**
10,678	17,850	16,527	**45,055**
179	194	2,422	**2,795**
598	132	330	**1,060**
776	326	2,753	**3,855**
597	835	547	**1,979**
329	809	2,669	**3,807**
925	1,644	3,216	**5,786**
10,739	20,297	5,718	**36,755**
419	1,078	650	**2,147**
372	919	554	**1,845**
790	1,997	1,205	**3,992**

75 ksf Partner's retail
14.23% of total retail area

Partner's portion of total retail	**Health Club**	**Total Partner's Retail/Health Club**	**Partner's percentage of total retail**
903	823	**1726**	19.34%
903	823	**1726**	19.34%
1806	1,647	**3453**	19.34%
23	35	**58**	29.85%
14	35	**49**	37.09%
36	71	**107**	32.79%
82	101	**182**	21.82%
88	76	**164**	20.31%
170	177	**347**	21.07%
1151	522	**1673**	16.48%
1151	522	**1673**	16.48%
2302	1,044	**3345**	16.48%
121	56	**177**	16.38%
112	68	**180**	19.53%
233	124	**356**	17.83%

a vpd = vehicles per day
b vph = vehicles per hour
* Volumes taken directly from Table 5-11 of June 2008 Draft Environmental Impact Report.
** Office trip generation for proposed 1,051,333 sf office space calculated as difference between total resulting 2,801,333 sf of office space minus 1,750,000 sf approved office space.
*** Retail trip generation for proposed 527,024 sf of retail space calculated as difference between total resulting 855,830 sf of retail space (including existing 328,806 sf "mall") minus proposed 527,024 sf of retail space.
+ Trip Generation for proposed health club based on ITE Trip Generation Manual (9th Edition) LUC 492 "Health/Fitness Club".
++ Reduction in residential trip generation from 2,100 units to 1,843 units based on ITE LUC 220 (Apartments) and LUC 230 (Residential Condominium /Townhouse).
Apartment / Condo total: **1,843** units
* Cinema Sat. daily calculated based on ratio between Friday & Sat. peak hour of generator and Friday daily rates. Rate = (Sat peak/Fr peak) * Fr daily. No data available for AM - assumed to be 0.

Overall Building Program:

2,801,333 sf	**office**
1,843 units	**residential**
527,024 sf	**retail**
50,000 sf	**health club**
60,000 sf	**cinema (12-screen)**
170 rooms	**hotel**

Block 11 / Partner's Building Program:

1,155,000 sf	**office**
75,000 sf	**retail**
50,000 sf	**health club**

FRIT - Full Build (2018)

Trip Generation Summary -including shared trips

ITE, 9th Ed.

Use	FRIT/IKEA PLAN											
	Residential*			Office			Retail**			Total**		
	Total	Internal/ shared	External no transit	Total	Internal/ shared	External no transit	Total	Internal/ shared	External no transit	Total	Internal/ shared	External no transit
Weekday Daily [a]												
Enter	5,339	1,922	3,417	8,264	489	7,775	8,925	2,117	6,808	22,528	4,528	18,000
Exit	5,339	1,466	3,873	8,264	812	7,452	8,925	2,250	6,675	22,528	4,528	18,000
Total	10,678	3,388	7,290	16,527	1,300	15,227	17,850	4,368	13,483	45,055	9,055	36,000
Weekday AM [b]												
Enter	179	8	171	2,422	1	2,421	194	4	190	2,795	13	2,782
Exit	598	3	594	330	4	326	132	5	127	1,060	13	1,047
Total	776	11	766	2,753	5	2,747	326	9	317	3,855	25	3,829
Weekday PM [b]												
Enter	597	192	405	547	45	502	835	162	673	1,979	399	1,579
Exit	329	133	196	2,669	41	2,628	809	225	584	3,807	399	3,408
Total	925	325	601	3,216	86	3,130	1,644	387	1,257	5,786	798	4,987
Saturday Daily [a]												
Enter	5,370	1,829	3,540	2,859	429	2,430	10,149	2,423	7,726	18,377	4,681	13,697
Exit	5,370	1,793	3,576	2,859	686	2,173	10,149	2,201	7,948	18,377	4,681	13,697
Total	10,739	3,623	7,117	5,718	1,115	4,603	20,297	4,623	15,674	36,755	9,361	27,394
Saturday Midday [b]												
Enter	419	128	291	650	55	596	1,078	186	892	2,147	369	1,778
Exit	372	103	269	554	83	472	919	183	736	1,845	369	1,477
Total	790	231	559	1,205	137	1,067	1,997	369	1,629	3,992	737	3,255

* Includes hotel

** Only includes FRIT retail + cinema + health club

FRIT - Full Build (2018)

Trip Generation Summary :: Transit/Walk/Bike Reduction

ITE, 9th Ed.

Use	Residential*									Office									Retail**									New	25% Pass-by	Total FRIT Development			Total Transit Trips
	External	VOR	Person Trips	Transit Share	Transit Trips	Walk/Bike Share	Walk/Bike Trips	Remainder Person trip	Vehicle Trips	External	VOR	Person Trips	Transit Share	Transit Trips	Walk/Bike Share	Walk/Bike Trips	Remainder Person trip	Vehicle Trips	External	VOR	Person Trips	Transit Share	Transit Trips	Walk/Bike Share	Walk/Bike Trips	Remainder Person trip	Vehicle Trips			Total	New	Pass-by	
Weekday Daily [a]																																
Enter	**3,417**	1.49	5,091	47%	2,393	5%	255	2,444	**1,640**	**7,775**	1.11	8,630	25%	2,158	5%	432	6,041	**5,443**	**6,808**	1.44	9,803	5%	490	5%	490	8,823	**6,127**	**4,595**	**1532**	13,210	11,678	1532	5,041
Exit	**3,873**	1.49	5,771	47%	2,712	5%	289	2,770	**1,859**	**7,452**	1.11	8,272	25%	2,068	5%	414	5,790	**5,216**	**6,675**	1.44	9,612	5%	481	5%	481	8,650	**6,007**	**4,505**	**1502**	13,083	11,581	1502	5,261
Total	**7,290**	1.49	10,862	47%	5,105	5%	543	5,214	**3,499**	**15,227**	1.11	16,902	25%	4,226	5%	845	11,831	**10,659**	**13,483**	1.44	19,415	5%	971	5%	971	17,473	**12,134**	**9,101**	**3034**	26,293	23,259	3034	10,301
Weekday AM [b]																																
Enter	**171**	1.49	255	47%	120	5%	13	122	**82**	**2,421**	1.17	2,833	25%	708	5%	142	1,983	**1,695**	**190**	1.55	294	5%	15	5%	15	265	**171**	**128**	**43**	1,948	1,905	43	843
Exit	**594**	1.49	886	47%	416	5%	44	425	**285**	**326**	1.17	381	25%	95	5%	19	267	**228**	**127**	1.55	197	5%	10	5%	10	177	**114**	**86**	**29**	628	599	29	522
Total	**766**	1.49	1,141	47%	536	5%	57	547	**367**	**2,747**	1.17	3,214	25%	804	5%	161	2,250	**1,923**	**317**	1.55	491	5%	25	5%	25	442	**285**	**214**	**71**	2,575	2,504	71	1,364
Weekday PM [b]																																
Enter	**405**	1.49	603	47%	283	5%	30	289	**194**	**502**	1.13	567	25%	142	5%	28	397	**351**	**673**	1.45	976	5%	49	5%	49	878	**606**	**454**	**151**	1,151	1,000	151	474
Exit	**196**	1.49	292	47%	137	5%	15	140	**94**	**2,628**	1.13	2,969	25%	742	5%	148	2,079	**1,839**	**584**	1.45	847	5%	42	5%	42	762	**526**	**394**	**131**	2,459	2,328	131	922
Total	**601**	1.49	895	47%	421	5%	45	430	**288**	**3,130**	1.13	3,536	25%	884	5%	177	2,475	**2,191**	**1,257**	1.45	1,823	5%	91	5%	91	1,641	**1,131**	**849**	**283**	3,610	3,328	283	1,396
Saturday Daily [a]																																
Enter	**3,540**	1.49	5,275	47%	2,479	5%	264	2,532	**1,699**	**2,430**	1.11	2,698	25%	674	5%	135	1,888	**1,701**	**7,726**	1.44	11,126	5%	556	5%	556	10,013	**6,953**	**5,215**	**1738**	10,354	8,616	1738	3,710
Exit	**3,576**	1.49	5,328	47%	2,504	5%	266	2,558	**1,717**	**2,173**	1.11	2,412	25%	603	5%	121	1,688	**1,521**	**7,948**	1.44	11,445	5%	572	5%	572	10,300	**7,153**	**5,365**	**1788**	10,391	8,602	1788	3,680
Total	**7,117**	1.49	10,604	47%	4,984	5%	530	5,090	**3,416**	**4,603**	1.11	5,110	25%	1,277	5%	255	3,577	**3,222**	**15,674**	1.44	22,570	5%	1,129	5%	1,129	20,313	**14,106**	**10,580**	**3527**	20,745	17,218	3527	7,390
Saturday Midday [b]																																
Enter	**291**	1.49	433	47%	203	5%	22	208	**139**	**596**	1.04	619	25%	155	5%	31	434	**417**	**892**	1.44	1,285	5%	64	5%	64	1,156	**803**	**602**	**201**	1,359	1,159	201	423
Exit	**269**	1.49	400	47%	188	5%	20	192	**129**	**472**	1.04	490	25%	123	5%	25	343	**330**	**736**	1.44	1,061	5%	53	5%	53	954	**663**	**497**	**166**	1,122	956	166	364
Total	**559**	1.49	833	47%	392	5%	42	400	**268**	**1,067**	1.04	1,110	25%	277	5%	55	777	**747**	**1,629**	1.44	2,345	5%	117	5%	117	2,111	**1,466**	**1,099**	**366**	2,481	2,115	366	786

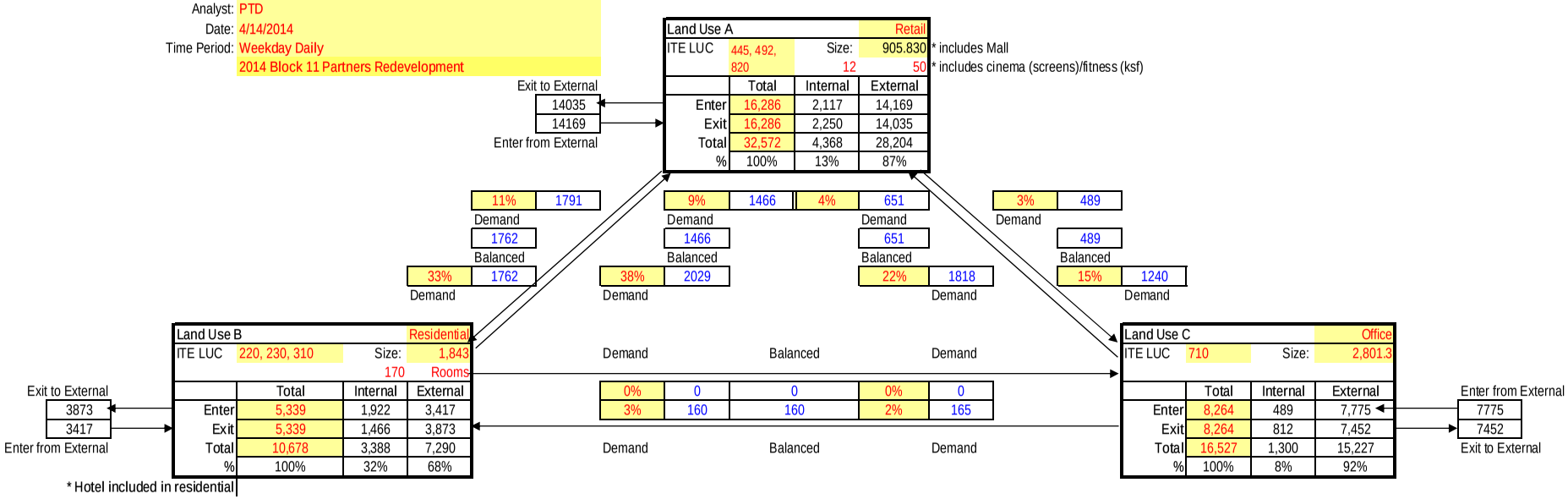
a vpd = vehicles per day

b vph = vehicles per hour

* Includes hotel

** inlcudes cinema and health club.

Job Name:	Assembly Square
Job Number:	08518
Analyst:	PTD
Date:	4/14/2014
Time Period:	Weekday Daily
	2014 Block 11 Partners Redevelopment

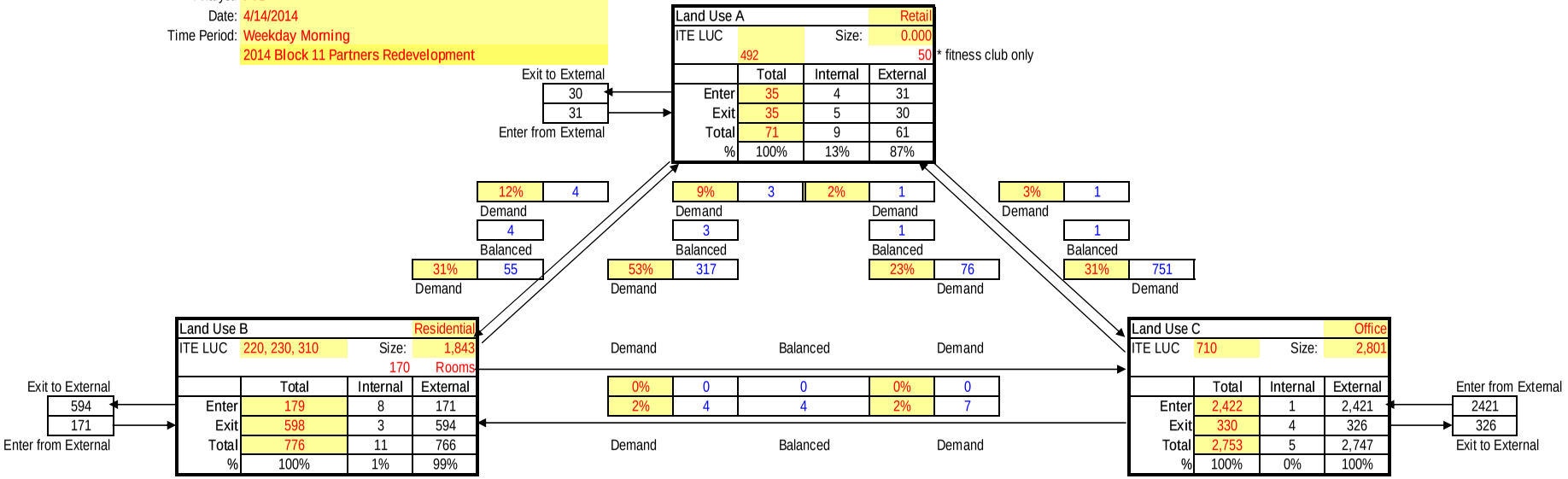


Net External Trips for Multi-Use Development

	Land Use A	Land Use B	Land Use C	Total	
Enter	14169	3417	7775	25361	
Exit	14035	3873	7452	25361	
Total	28204	7290	15227	50721	Internal Capture Rate
Single-Use Trip Gen. Est.	32,572	10677.75	16527.261	59776.54	15.1%

Mall Trips (w/shared)		FRIT Retail w/o mall		
Enter	7,361	6808		18000
Exit	7,361	6675		18000
Total	14,721	13483		36000
SU		17,850		45055

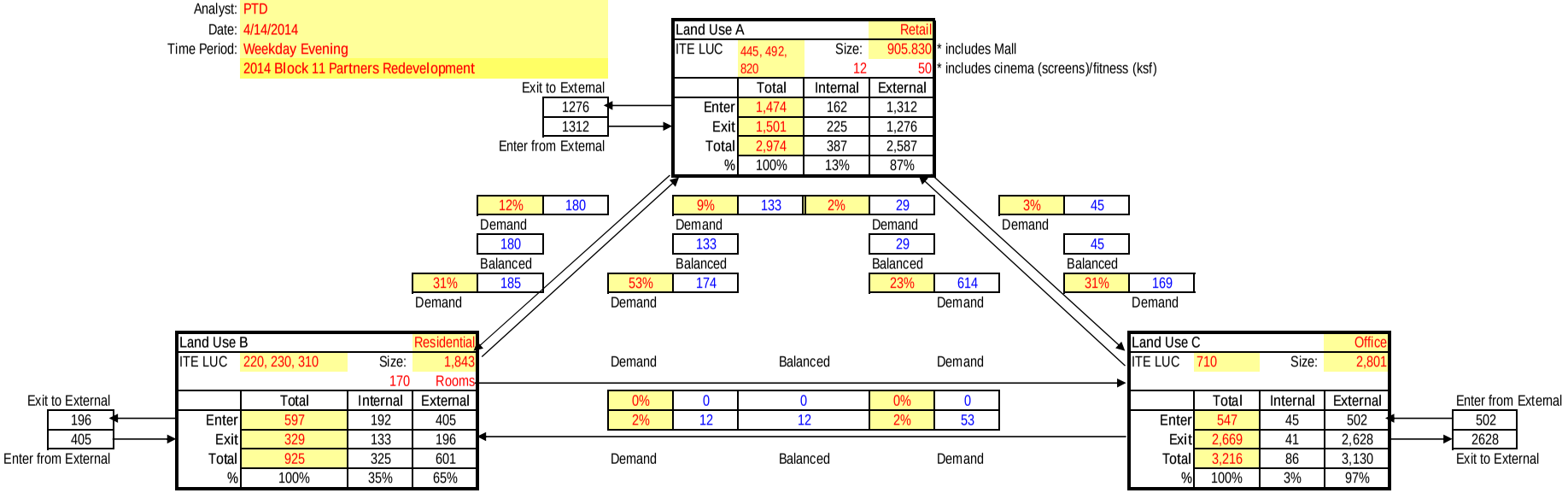
Job Name: Assembly Square
Job Number: 08518.05
Analyst: PTD
Date: 4/14/2014
Time Period: Weekday Morning
2014 Block 11 Partners Redevelopment



Net External Trips for Multi-Use Development

	Land Use A	Land Use B	Land Use C	Total	
Enter	31	171	2421	2624	
Exit	30	594	326	950	
Total	61	766	2747	3574	Internal Capture Rate
Single-Use Trip Gen. Est.	71	776	2753	3600	0.7%

Job Name:	Assembly Square
Job Number:	08518
Analyst:	PTD
Date:	4/14/2014
Time Period:	Weekday Evening
	2014 Block 11 Partners Redevelopment

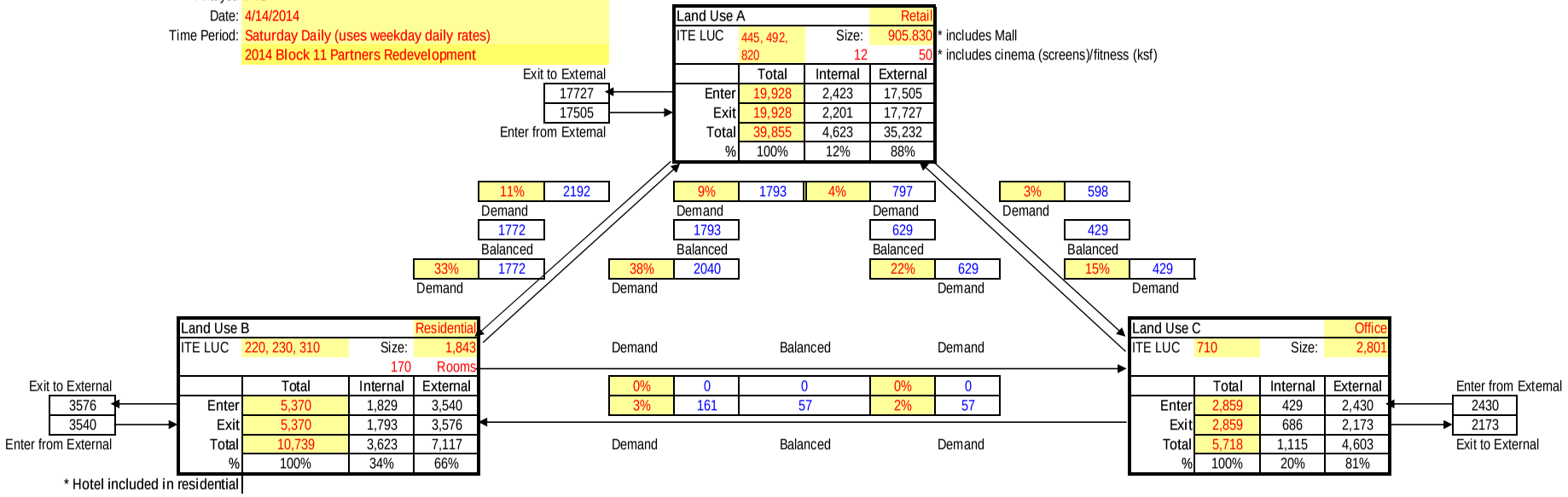


Net External Trips for Multi-Use Development

	Land Use A	Land Use B	Land Use C	Total	
Enter	1312	405	502	2218	
Exit	1276	196	2628	4099	
Total	2587	601	3130	6317	Internal Capture Rate
Single-Use Trip Gen. Est.	2974	925	3216	7116	11.2%

Mall Trips		FRIT Retail w/o mall	
Enter	638	673	1579
Exit	692	584	3408
Total	1,330	1257	4987
Single Use Total		1,644	5786

Job Name: Assembly Square
Job Number: 08518
Analyst: PTD
Date: 4/14/2014
Time Period: Saturday Daily (uses weekday daily rates)
2014 Block 11 Partners Redevelopment

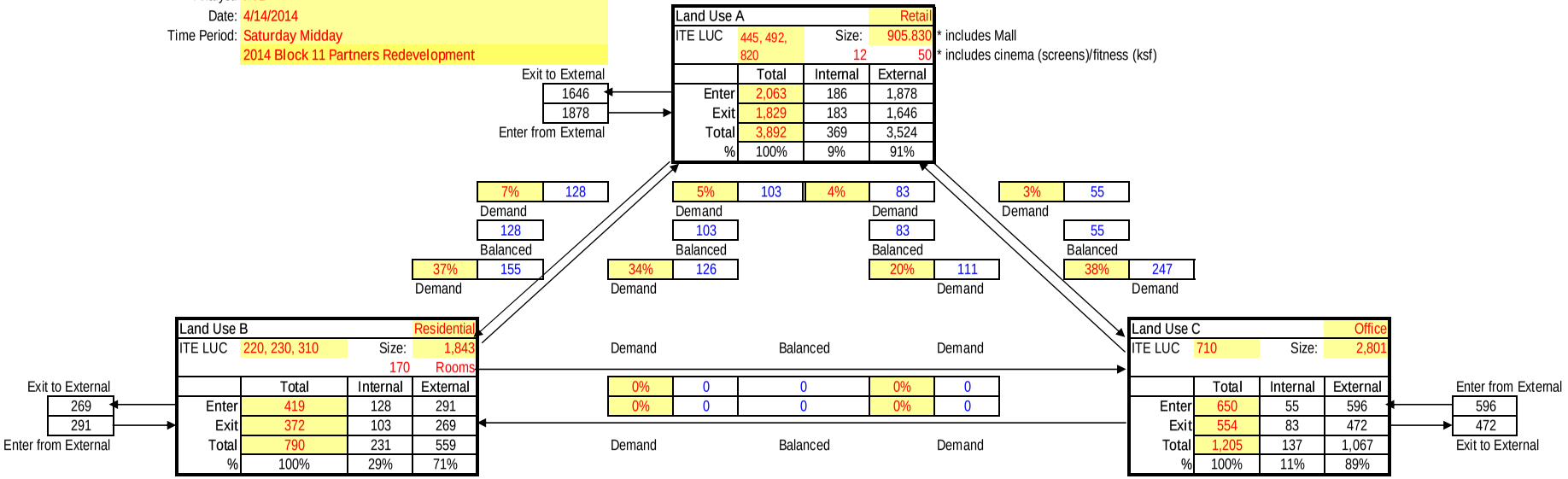


Net External Trips for Multi-Use Development

	Land Use A	Land Use B	Land Use C	Total	
Enter	17505	3540	2430	23476	
Exit	17727	3576	2173	23476	
Total	35232	7117	4603	46952	Internal Capture Rate
Single-Use Trip Gen. Est.	39855.35	10739.16	5718.456	56312.97	16.6%

Mall Trips		FRIT Retail w/o mall	
Enter	9,779	7726	13697
Exit	9,779	7948	13697
Total	19,558	15674	27394
Single Use Total		20,297	36755

Job Name: Assembly Square
Job Number: 08518
Analyst: PTD
Date: 4/14/2014
Time Period: Saturday Midday
2014 Block 11 Partners Redevelopment



Net External Trips for Multi-Use Development

	Land Use A	Land Use B	Land Use C	Total	
Enter	1878	291	596	2764	
Exit	1646	269	472	2386	
Total	3524	559	1067	5150	Internal Capture Rate
Single-Use Trip Gen. Est.	3892.411	790.43	1204.573	5887.414	12.5%

Mall Trips		FRIT Retail w/o mall	
Enter	985	892	1778
Exit	910	736	1477
Total	1,895	1629	3255
Single Use Total		1,997	3992

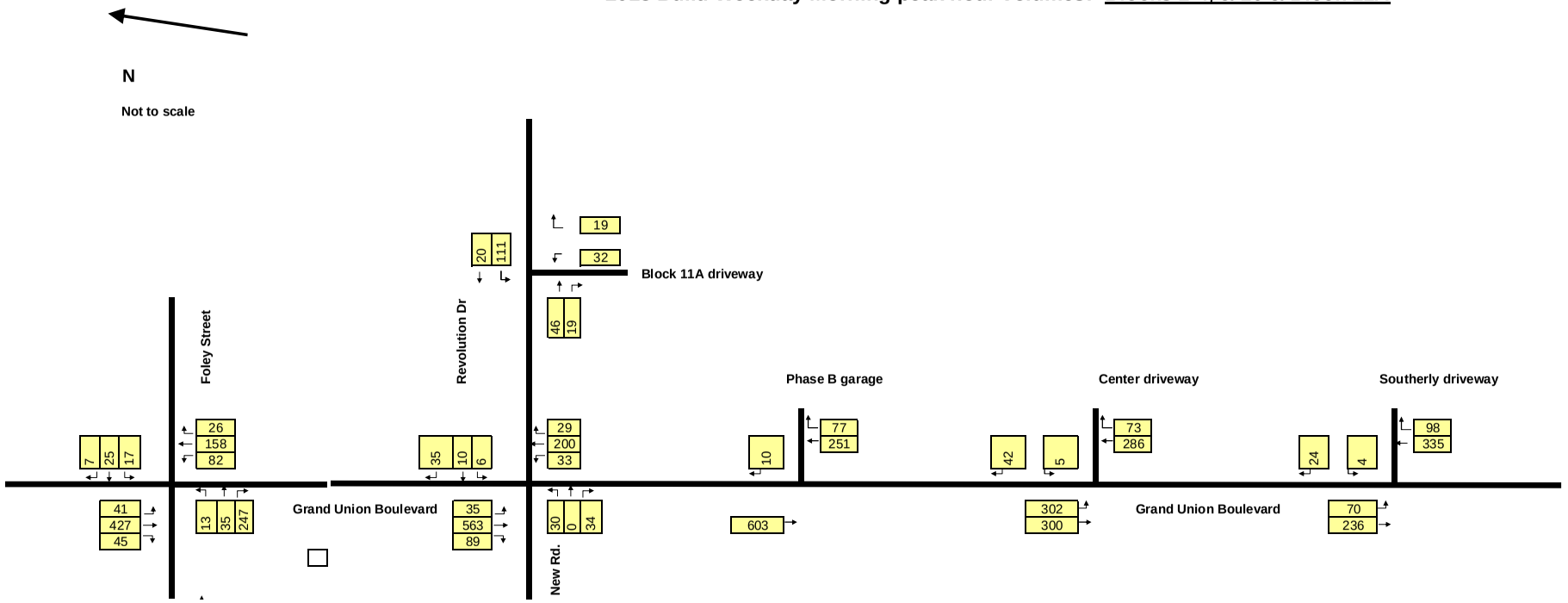
				Mid-day Peak Hour	PM Peak Hour of Adjacent Street Traffic	Daily
From	Office	to	Office	2%	1%	2%
			Retail	20%	23%	22%
			Residential	0%	2%	2%
From	Retail	to	Office	3%	3%	3%
			Retail	29%	20%	30%
			Residential	7%	12%	11%
From	Residential	to	Office	n/a	n/a	n/a
			Retail	34%	53%	38%
			Residential	n/a	n/a	n/a

				Mid-day Peak Hour	PM Peak Hour of Adjacent Street Traffic	Daily
To	Office	from	Office	6%	6%	2%
			Retail	38%	31%	15%
			Residential	0%	0%	n/a
To	Retail	from	Office	4%	2%	4%
			Retail	31%	20%	28%
			Residential	5%	9%	9%
To	Residential	from	Office	0%	2%	3%
			Retail	37%	31%	33%
			Residential	n/a	n/a	n/a

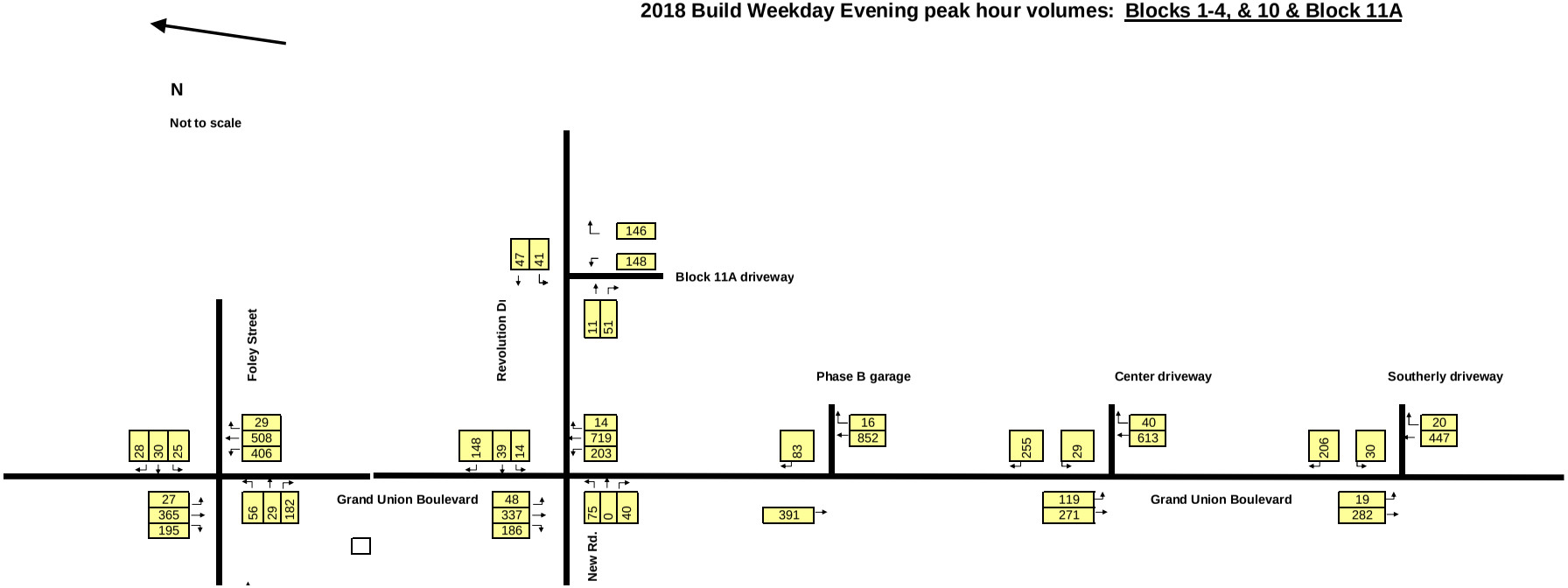
Source: Trip Generation Handbook, 7th Edition, ITE, March 2001, pp.87-88

Traffic Volume Networks

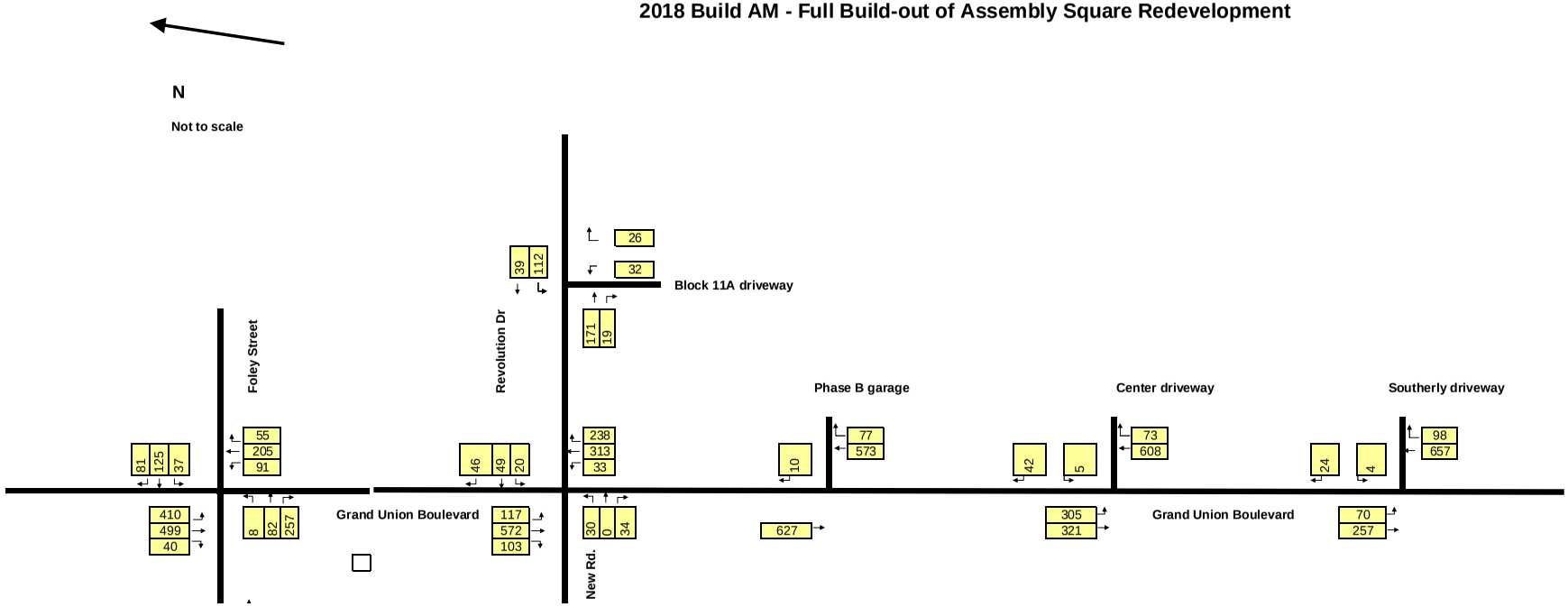
2018 Build Weekday Morning peak hour volumes: Blocks 1-4, & 10 & Block 11A



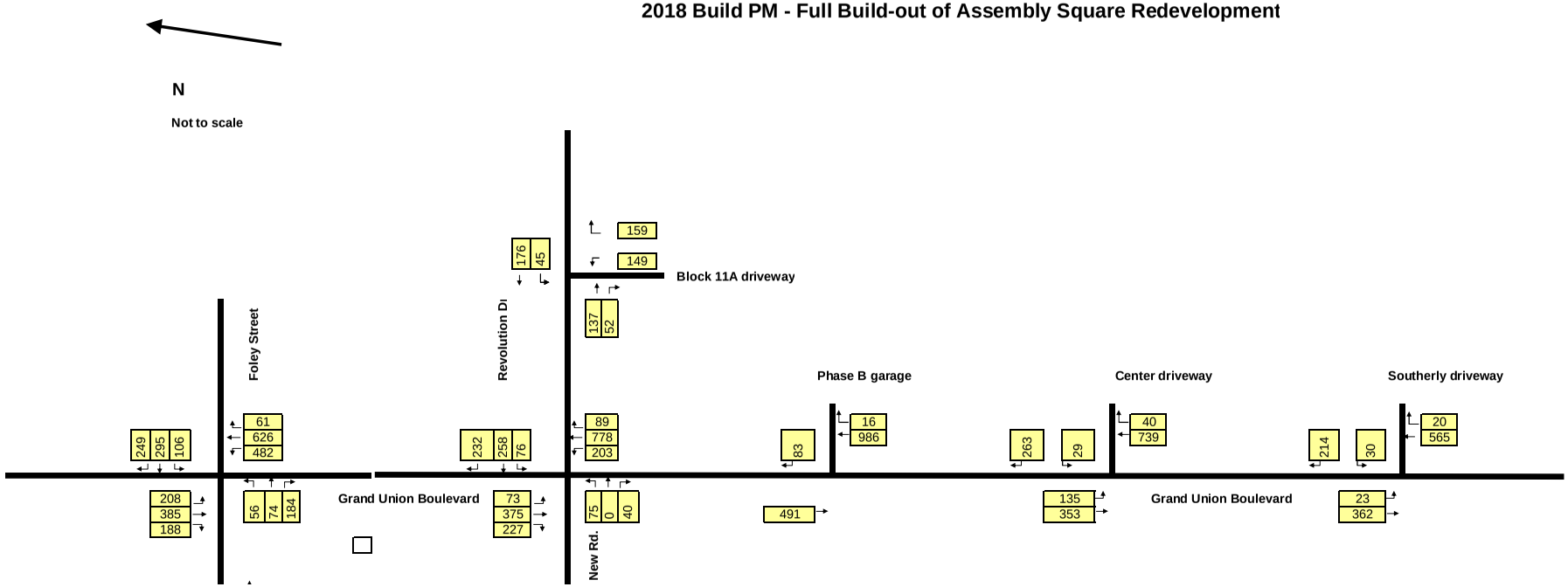
2018 Build Weekday Evening peak hour volumes: Blocks 1-4, & 10 & Block 11A



2018 Build AM - Full Build-out of Assembly Square Redevelopment



2018 Build PM - Full Build-out of Assembly Square Redevelopment



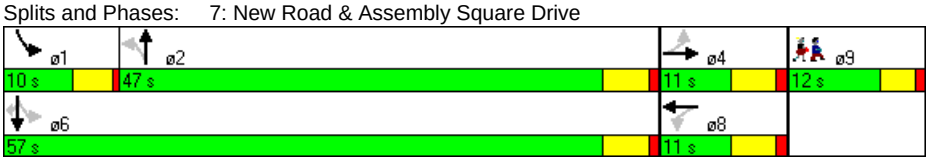
Grand Union Boulevard at New Road/Revolution Drive –2008 Special Permit Site Plan Review A Capacity Analysis

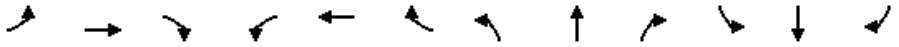
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø9
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	300		0	0		400	100		0	350		150	
Storage Lanes	1		0	1		1	1		0	1		1	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Leading Detector (ft)	50	50		50	50	50	50	50		50	50	50	
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9	
Right Turn on Red			Yes			Yes			Yes			Yes	
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		517			483			627			661		
Travel Time (s)		11.8			11.0			14.3			15.0		
Volume (vph)	30	15	30	20	55	40	25	305	280	140	175	125	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Lane Group Flow (vph)	33	49	0	22	60	43	27	636	0	152	190	136	
Turn Type	Perm			Perm		Free	Perm			pm+pt		Perm	
Protected Phases		4			8			2		1	6		9
Permitted Phases	4			8		Free	2			6		6	
Detector Phases	4	4		8	8		2	2		1	6	6	
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0
Minimum Split (s)	11.0	11.0		11.0	11.0		11.0	11.0		8.0	11.0	11.0	12.0
Total Split (s)	11.0	11.0	0.0	11.0	11.0	0.0	47.0	47.0	0.0	10.0	57.0	57.0	12.0
Total Split (%)	13.8%	13.8%	0.0%	13.8%	13.8%	0.0%	58.8%	58.8%	0.0%	12.5%	71.3%	71.3%	15%
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.5	4.0	4.0	3.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		0.5	1.0	1.0	1.0
Lead/Lag							Lag	Lag		Lead			
Lead-Lag Optimize?							Yes	Yes		Yes			
Recall Mode	None	None		None	None		Min	Min		None	C-Min	C-Min	Ped
v/c Ratio	0.24	0.25		0.16	0.32	0.03	0.04	0.63		0.35	0.15	0.12	
Control Delay	37.7	20.2		35.6	38.0	0.0	9.7	14.6		6.6	4.4	0.8	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Delay	37.7	20.2		35.6	38.0	0.0	9.7	14.6		6.6	4.4	0.8	
Queue Length 50th (ft)	15	7		10	28	0	6	190		23	29	1	
Queue Length 95th (ft)	43	39		33	66	0	18	295		28	32	5	
Internal Link Dist (ft)		437			403			547			581		
Turn Bay Length (ft)	300					400	100			350		150	
Base Capacity (vph)	137	201		138	191	1583	678	1025		436	1310	1153	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0	
Reduced v/c Ratio	0.24	0.24		0.16	0.31	0.03	0.04	0.62		0.35	0.15	0.12	

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 6:SBTL, Start of Green, Master Intersection
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 7: New Road & Assembly Square Drive





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.90		1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1675		1770	1863	1583	1770	1729		1770	1863	1583
Flt Permitted	0.72	1.00		0.73	1.00	1.00	0.64	1.00		0.25	1.00	1.00
Satd. Flow (perm)	1337	1675		1351	1863	1583	1188	1729		459	1863	1583
Volume (vph)	30	15	30	20	55	40	25	305	280	140	175	125
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	16	33	22	60	43	27	332	304	152	190	136
RTOR Reduction (vph)	0	30	0	0	0	0	0	40	0	0	0	43
Lane Group Flow (vph)	33	19	0	22	60	43	27	596	0	152	190	94
Turn Type	Perm			Perm		Free	Perm			pm+pt		Perm
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8		Free	2			6		6
Actuated Green, G (s)	6.0	6.0		6.0	6.0	80.0	42.6	42.6		54.0	54.0	54.0
Effective Green, g (s)	7.0	7.0		7.0	7.0	80.0	43.6	43.6		55.0	55.0	55.0
Actuated g/C Ratio	0.09	0.09		0.09	0.09	1.00	0.55	0.55		0.69	0.69	0.69
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	117	147		118	163	1583	647	942		437	1281	1088
v/s Ratio Prot		0.01			c0.03			c0.34		c0.03	0.10	
v/s Ratio Perm	0.02			0.02		c0.03	0.02			0.21		0.06
v/c Ratio	0.28	0.13		0.19	0.37	0.03	0.04	0.63		0.35	0.15	0.09
Uniform Delay, d1	34.1	33.7		33.9	34.4	0.0	8.5	12.6		7.3	4.3	4.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.96	0.89	0.71
Incremental Delay, d2	1.3	0.4		0.8	1.4	0.0	0.0	1.4		0.5	0.2	0.1
Delay (s)	35.5	34.1		34.6	35.8	0.0	8.5	14.0		7.5	4.1	3.1
Level of Service	D	C		C	D	A	A	B		A	A	A
Approach Delay (s)		34.6			23.3			13.8			4.9	
Approach LOS		C			C			B			A	

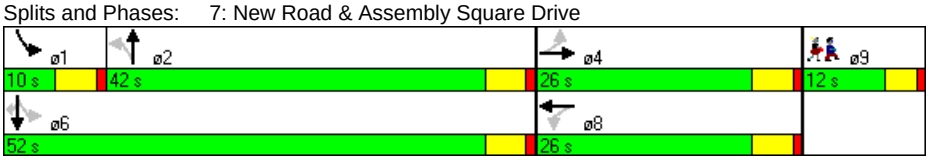
Intersection Summary			
HCM Average Control Delay	12.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	59.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

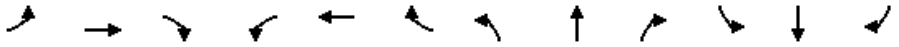
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø9
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	300		0	0		400	100		0	350		150	
Storage Lanes	1		0	1		1	1		0	1		1	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Leading Detector (ft)	50	50		50	50	50	50	50		50	50	50	
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9	
Right Turn on Red			Yes			Yes			Yes			Yes	
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		517			483			627			661		
Travel Time (s)		11.8			11.0			14.3			15.0		
Volume (vph)	75	25	40	100	290	130	85	430	105	145	200	235	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Lane Group Flow (vph)	82	70	0	109	315	141	92	581	0	158	217	255	
Turn Type	Perm			Perm		Free	Perm			pm+pt		Perm	
Protected Phases		4			8			2		1	6		9
Permitted Phases	4			8		Free	2			6		6	
Detector Phases	4	4		8	8		2	2		1	6	6	
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0
Minimum Split (s)	11.0	11.0		11.0	11.0		11.0	11.0		9.0	11.0	11.0	12.0
Total Split (s)	26.0	26.0	0.0	26.0	26.0	0.0	42.0	42.0	0.0	10.0	52.0	52.0	12.0
Total Split (%)	28.9%	28.9%	0.0%	28.9%	28.9%	0.0%	46.7%	46.7%	0.0%	11.1%	57.8%	57.8%	13%
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0	3.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0
Lead/Lag							Lag	Lag		Lead			
Lead-Lag Optimize?							Yes	Yes		Yes			
Recall Mode	None	None		None	None		Min	Min		None	C-Min	C-Min	Ped
v/c Ratio	0.68	0.18		0.38	0.78	0.09	0.18	0.71		0.48	0.20	0.25	
Control Delay	52.0	14.4		32.4	41.5	0.1	17.2	26.1		14.3	7.5	0.7	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Delay	52.0	14.4		32.4	41.5	0.1	17.2	26.1		14.3	7.5	0.7	
Queue Length 50th (ft)	42	12		52	166	0	32	266		29	41	0	
Queue Length 95th (ft)	#107	45		99	255	0	65	398		m41	m52	m1	
Internal Link Dist (ft)		437			403			547			581		
Turn Bay Length (ft)	300					400	100			350		150	
Base Capacity (vph)	136	446		324	455	1583	520	821		328	1087	1030	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0	
Reduced v/c Ratio	0.60	0.16		0.34	0.69	0.09	0.18	0.71		0.48	0.20	0.25	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 6:SBTL, Start of Green, Master Intersection
Natural Cycle: 70
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: New Road & Assembly Square Drive





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.91		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1691		1770	1863	1583	1770	1808		1770	1863	1583
Flt Permitted	0.25	1.00		0.71	1.00	1.00	0.62	1.00		0.21	1.00	1.00
Satd. Flow (perm)	465	1691		1325	1863	1583	1160	1808		386	1863	1583
Volume (vph)	75	25	40	100	290	130	85	430	105	145	200	235
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	27	43	109	315	141	92	467	114	158	217	255
RTOR Reduction (vph)	0	34	0	0	0	0	0	9	0	0	0	106
Lane Group Flow (vph)	82	36	0	109	315	141	92	572	0	158	217	149
Turn Type	Perm			Perm		Free	Perm			pm+pt		Perm
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8		Free	2			6		6
Actuated Green, G (s)	18.5	18.5		18.5	18.5	90.0	39.3	39.3		51.5	51.5	51.5
Effective Green, g (s)	19.5	19.5		19.5	19.5	90.0	40.3	40.3		52.5	52.5	52.5
Actuated g/C Ratio	0.22	0.22		0.22	0.22	1.00	0.45	0.45		0.58	0.58	0.58
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	101	366		287	404	1583	519	810		351	1087	923
v/s Ratio Prot		0.02			0.17			c0.32		c0.04	0.12	
v/s Ratio Perm	c0.18			0.08		c0.09	0.08			0.22		0.09
v/c Ratio	0.81	0.10		0.38	0.78	0.09	0.18	0.71		0.45	0.20	0.16
Uniform Delay, d1	33.5	28.2		30.1	33.2	0.0	14.9	20.1		12.4	8.8	8.6
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.09	0.74	0.17
Incremental Delay, d2	37.2	0.1		0.8	9.2	0.1	0.2	2.8		0.7	0.3	0.3
Delay (s)	70.7	28.3		30.9	42.4	0.1	15.1	22.9		14.3	6.9	1.8
Level of Service	E	C		C	D	A	B	C		B	A	A
Approach Delay (s)		51.2			29.7			21.8			6.7	
Approach LOS		D			C			C			A	

Intersection Summary			
HCM Average Control Delay	21.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Block 11A Build Condition Capacity Analysis

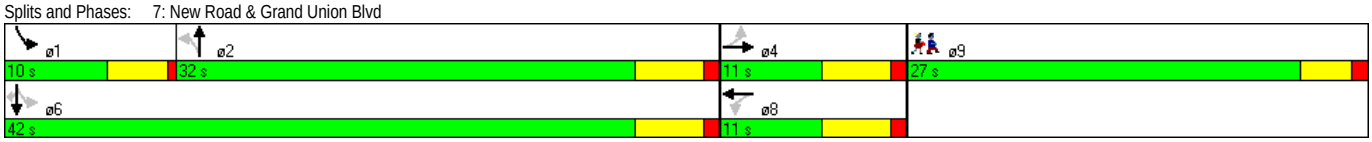
- Signalized Capacity Analysis

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø9
Lane Configurations													
Volume (vph)	30	0	34	6	10	35	33	200	29	35	563	89	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	300		0	0		400	100		0	350		150	
Storage Lanes	1		0	1		1	1		0	1		1	
Taper Length (ft)	25		25	25		25	25		25	25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.850				0.850		0.981				0.850	
Flt Protected	0.950			0.950			0.950			0.950			
Satd. Flow (prot)	1770	1583	0	1770	1863	1583	1770	1827	0	1770	1863	1583	
Flt Permitted	0.750			0.733			0.428			0.543			
Satd. Flow (perm)	1397	1583	0	1365	1863	1583	797	1827	0	1011	1863	1583	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		567				38		10				95	
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		615			607			215			675		
Travel Time (s)		14.0			13.8			4.9			15.3		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	33	0	37	7	11	38	36	217	32	38	612	97	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	33	37	0	7	11	38	36	249	0	38	612	97	
Turn Type	Perm			Perm		Free	Perm			pm+pt		Perm	
Protected Phases		4			8			2		1	6		9
Permitted Phases	4			8		Free	2			6		6	
Detector Phase	4	4		8	8		2	2		1	6	6	
Switch Phase													
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0	5.0
Minimum Split (s)	11.0	11.0		11.0	11.0		11.0	11.0		8.0	11.0	11.0	27.0
Total Split (s)	11.0	11.0	0.0	11.0	11.0	0.0	32.0	32.0	0.0	10.0	42.0	42.0	27.0
Total Split (%)	13.8%	13.8%	0.0%	13.8%	13.8%	0.0%	40.0%	40.0%	0.0%	12.5%	52.5%	52.5%	34%
Maximum Green (s)	6.0	6.0		6.0	6.0		27.0	27.0		6.0	37.0	37.0	23.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.5	4.0	4.0	3.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		0.5	1.0	1.0	1.0
Lost Time Adjust (s)	-1.0	-1.0	0.0	-1.0	-1.0	0.0	-1.0	-1.0	0.0	0.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag							Lag	Lag		Lead			
Lead-Lag Optimize?							Yes	Yes		Yes			
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		Min	Min		None	C-Min	C-Min	Ped
Walk Time (s)													3.0
Flash Dont Walk (s)													3.0
Pedestrian Calls (#/hr)													23
Act Effct Green (s)	8.5	8.5		8.4	8.4	80.0	51.5	51.5		57.8	57.8	57.8	
Actuated g/C Ratio	0.11	0.11		0.10	0.10	1.00	0.64	0.64		0.72	0.72	0.72	
v/c Ratio	0.22	0.05		0.05	0.06	0.02	0.07	0.21		0.05	0.45	0.08	
Control Delay	35.5	0.1		31.5	31.5	0.0	9.8	8.9		7.3	8.5	3.6	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Delay	35.5	0.1		31.5	31.5	0.0	9.8	8.9		7.3	8.5	3.6	
LOS	D	A		C	C	A	A	A		A	A	A	
Approach Delay		16.8			10.1			9.0			7.8		
Approach LOS		B			B			A			A		

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 6:SBTL, Start of Green, Master Intersection
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.45
Intersection Signal Delay: 8.7 Intersection LOS: A
Intersection Capacity Utilization 44.6% ICU Level of Service A
Analysis Period (min) 15

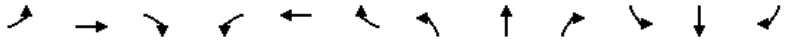
Splits and Phases: 7: New Road & Grand Union Blvd



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	33	37	7	11	38	36	249	38	612	97
v/c Ratio	0.22	0.05	0.05	0.06	0.02	0.07	0.21	0.05	0.45	0.08
Control Delay	35.5	0.1	31.5	31.5	0.0	9.8	8.9	7.3	8.5	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.5	0.1	31.5	31.5	0.0	9.8	8.9	7.3	8.5	3.6
Queue Length 50th (ft)	16	0	3	5	0	8	58	8	143	2
Queue Length 95th (ft)	40	0	14	19	0	25	111	m12	m179	m6
Internal Link Dist (ft)		535		527			135		595	
Turn Bay Length (ft)	300				400	100		350		150
Base Capacity (vph)	151	676	146	200	1583	514	1181	790	1347	1171
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.05	0.05	0.06	0.02	0.07	0.21	0.05	0.45	0.08

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



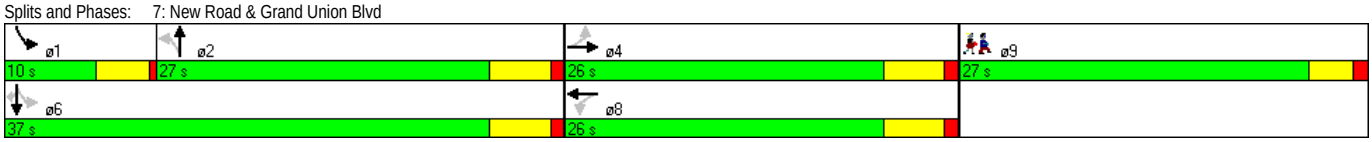
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	0	34	6	10	35	33	200	29	35	563	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.85		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1583		1770	1863	1583	1770	1827		1770	1863	1583
Flt Permitted	0.75	1.00		0.73	1.00	1.00	0.43	1.00		0.54	1.00	1.00
Satd. Flow (perm)	1398	1583		1365	1863	1583	797	1827		1012	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	0	37	7	11	38	36	217	32	38	612	97
RTOR Reduction (vph)	0	34	0	0	0	0	0	4	0	0	0	29
Lane Group Flow (vph)	33	3	0	7	11	38	36	245	0	38	612	68
Turn Type	Perm			Perm		Free	Perm			pm+pt		Perm
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8		Free	2			6		6
Actuated Green, G (s)	5.2	5.2		5.2	5.2	80.0	46.9	46.9		54.8	54.8	54.8
Effective Green, g (s)	6.2	6.2		6.2	6.2	80.0	47.9	47.9		54.8	55.8	55.8
Actuated g/C Ratio	0.08	0.08		0.08	0.08	1.00	0.60	0.60		0.68	0.70	0.70
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	108	123		106	144	1583	477	1094		730	1299	1104
v/s Ratio Prot		0.00			0.01			0.13		0.00	c0.33	
v/s Ratio Perm	c0.02			0.01		c0.02	0.05			0.03		0.04
v/c Ratio	0.31	0.02		0.07	0.08	0.02	0.08	0.22		0.05	0.47	0.06
Uniform Delay, d1	34.9	34.1		34.2	34.2	0.0	6.7	7.4		4.2	5.5	3.8
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.49	1.26	2.49
Incremental Delay, d2	1.6	0.1		0.3	0.2	0.0	0.1	0.1		0.0	0.9	0.1
Delay (s)	36.5	34.2		34.5	34.5	0.0	6.8	7.5		6.3	7.8	9.6
Level of Service	D	C		C	C	A	A	A		A	A	A
Approach Delay (s)		35.3			11.1			7.4			7.9	
Approach LOS		D			B			A			A	

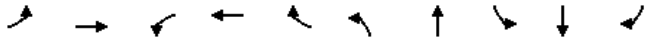
Intersection Summary				
HCM Average Control Delay	9.6	HCM Level of Service	A	
HCM Volume to Capacity ratio	0.39			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	44.6%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø9
Lane Configurations													
Volume (vph)	75	0	40	14	39	148	203	719	14	48	337	186	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	300		0	0		400	100		0	350		150	
Storage Lanes	1		0	1		1	1		0	1		1	
Taper Length (ft)	25		25	25		25	25		25	25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.850				0.850		0.997				0.850	
Flt Protected	0.950			0.950			0.950			0.950			
Satd. Flow (prot)	1770	1583	0	1770	1863	1583	1770	1857	0	1770	1863	1583	
Flt Permitted	0.730			0.729			0.543			0.182			
Satd. Flow (perm)	1360	1583	0	1358	1863	1583	1011	1857	0	339	1863	1583	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		656				161		1				202	
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		615			601			230			675		
Travel Time (s)		14.0			13.7			5.2			15.3		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	82	0	43	15	42	161	221	782	15	52	366	202	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	82	43	0	15	42	161	221	797	0	52	366	202	
Turn Type	Perm			Perm		Free	Perm			pm+pt		Perm	
Protected Phases		4			8			2		1	6		9
Permitted Phases	4			8		Free	2			6		6	
Detector Phase	4	4		8	8		2	2		1	6	6	
Switch Phase													
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0	5.0
Minimum Split (s)	11.0	11.0		11.0	11.0		11.0	11.0		8.0	11.0	11.0	27.0
Total Split (s)	26.0	26.0	0.0	26.0	26.0	0.0	27.0	27.0	0.0	10.0	37.0	37.0	27.0
Total Split (%)	28.9%	28.9%	0.0%	28.9%	28.9%	0.0%	30.0%	30.0%	0.0%	11.1%	41.1%	41.1%	30%
Maximum Green (s)	21.0	21.0		21.0	21.0		22.0	22.0		6.0	32.0	32.0	23.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.5	4.0	4.0	3.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		0.5	1.0	1.0	1.0
Lost Time Adjust (s)	-1.0	-1.0	0.0	-1.0	-1.0	0.0	-1.0	-1.0	0.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0	
Lead/Lag							Lag	Lag		Lead			
Lead-Lag Optimize?							Yes	Yes		Yes			
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		Min	Min		None	C-Min	C-Min	Ped
Walk Time (s)													3.0
Flash Dont Walk (s)													3.0
Pedestrian Calls (#/hr)													20
Act Effct Green (s)	11.7	11.7		11.6	11.6	90.0	55.9	55.9		63.5	62.5	62.5	
Actuated g/C Ratio	0.13	0.13		0.13	0.13	1.00	0.62	0.62		0.71	0.69	0.69	
v/c Ratio	0.46	0.06		0.09	0.17	0.10	0.35	0.69		0.15	0.28	0.17	
Control Delay	43.7	0.1		33.3	34.7	0.1	13.6	19.3		8.6	9.9	3.7	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Delay	43.7	0.1		33.3	34.7	0.1	13.6	19.3		8.6	9.9	3.7	
LOS	D	A		C	C	A	B	B		A	A	A	
Approach Delay		28.7			9.1			18.1			7.8		
Approach LOS		C			A			B			A		

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 6:SBTL, Start of Green, Master Intersection			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 14.5		Intersection LOS: B	
Intersection Capacity Utilization 62.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 7: New Road & Grand Union Blvd



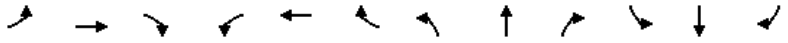


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	82	43	15	42	161	221	797	52	366	202
v/c Ratio	0.46	0.06	0.09	0.17	0.10	0.35	0.69	0.15	0.28	0.17
Control Delay	43.7	0.1	33.3	34.7	0.1	13.6	19.3	8.6	9.9	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.7	0.1	33.3	34.7	0.1	13.6	19.3	8.6	9.9	3.7
Queue Length 50th (ft)	44	0	8	22	0	67	330	11	107	9
Queue Length 95th (ft)	84	0	24	49	0	142	#635	m17	m119	m17
Internal Link Dist (ft)		535		521			150		595	
Turn Bay Length (ft)	300				400	100		350		150
Base Capacity (vph)	332	883	332	455	1583	628	1154	359	1293	1160
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.05	0.05	0.09	0.10	0.35	0.69	0.14	0.28	0.17

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	75	0	40	14	39	148	203	719	14	48	337	186
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		3.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.85		1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1583		1770	1863	1583	1770	1857		1770	1863	1583
Flt Permitted	0.73	1.00		0.73	1.00	1.00	0.54	1.00		0.18	1.00	1.00
Satd. Flow (perm)	1359	1583		1358	1863	1583	1012	1857		339	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	0	43	15	42	161	221	782	15	52	366	202
RTOR Reduction (vph)	0	38	0	0	0	0	0	0	0	0	0	64
Lane Group Flow (vph)	82	5	0	15	42	161	221	797	0	52	366	138
Turn Type	Perm			Perm		Free	Perm			pm+pt		Perm
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8		Free	2			6		6
Actuated Green, G (s)	9.5	9.5		9.5	9.5	90.0	52.3	52.3		60.5	60.5	60.5
Effective Green, g (s)	10.5	10.5		10.5	10.5	90.0	53.3	53.3		61.5	61.5	61.5
Actuated g/C Ratio	0.12	0.12		0.12	0.12	1.00	0.59	0.59		0.68	0.68	0.68
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	159	185		158	217	1583	599	1100		314	1273	1082
v/s Ratio Prot		0.00			0.02			c0.43		0.01	c0.20	
v/s Ratio Perm	c0.06			0.01		c0.10	0.22			0.10		0.09
v/c Ratio	0.52	0.03		0.09	0.19	0.10	0.37	0.72		0.17	0.29	0.13
Uniform Delay, d1	37.4	35.2		35.5	35.9	0.0	9.6	13.1		9.4	5.6	4.9
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.48	1.50	3.33
Incremental Delay, d2	2.8	0.1		0.3	0.4	0.1	0.4	2.4		0.1	0.1	0.1
Delay (s)	40.2	35.3		35.8	36.4	0.1	10.0	15.5		14.0	8.6	16.5
Level of Service	D	D		D	D	A	A	B		B	A	B
Approach Delay (s)		38.5			9.6			14.3			11.6	
Approach LOS		D			A			B			B	

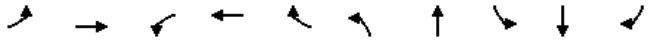
Intersection Summary				
HCM Average Control Delay	14.5	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.60			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	62.8%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	0	34	6	10	35	33	200	29	35	563	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		0	0		400	100		0	350		150
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850		0.981				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1583	0	1770	1863	1583	1770	1827	0	1770	1863	1583
Flt Permitted	0.750			0.733			0.335			0.605		
Satd. Flow (perm)	1397	1583	0	1365	1863	1583	624	1827	0	1127	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		340				38		17				95
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		615			607			215			675	
Travel Time (s)		14.0			13.8			4.9			15.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	0	37	7	11	38	36	217	32	38	612	97
Shared Lane Traffic (%)												
Lane Group Flow (vph)	33	37	0	7	11	38	36	249	0	38	612	97
Turn Type	Perm			Perm		Free	pm+pt			Perm		Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		Free	2			6		6
Detector Phase	4	4		8	8		5	2		6	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0		10.0	10.0		6.0	10.0		6.0	6.0	6.0
Minimum Split (s)	28.0	28.0		28.0	28.0		10.0	23.0		23.0	23.0	23.0
Total Split (s)	28.0	28.0	0.0	28.0	28.0	0.0	10.0	62.0	0.0	52.0	52.0	52.0
Total Split (%)	31.1%	31.1%	0.0%	31.1%	31.1%	0.0%	11.1%	68.9%	0.0%	57.8%	57.8%	57.8%
Maximum Green (s)	23.0	23.0		23.0	23.0		6.0	57.0		47.0	47.0	47.0
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-1.0	-1.0	0.0	-1.0	-1.0	0.0	-1.0	-1.0	0.0	0.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0	5.0	4.0	4.0
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None		None	C-Max		C-Max	C-Max	C-Max
Walk Time (s)	5.0	5.0		5.0	5.0			7.0		7.0	7.0	7.0
Flash Dont Walk (s)	18.0	18.0		18.0	18.0			11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	20	20		20	20			20		20	20	20
Act Effct Green (s)	15.4	15.4		16.2	16.2	90.0	69.8	69.6		62.8	63.6	63.6
Actuated g/C Ratio	0.17	0.17		0.18	0.18	1.00	0.78	0.77		0.70	0.71	0.71
v/c Ratio	0.14	0.07		0.03	0.03	0.02	0.06	0.18		0.05	0.46	0.08
Control Delay	29.2	0.2		26.2	26.4	0.0	6.4	6.5		9.3	11.2	2.6
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	29.2	0.2		26.2	26.4	0.0	6.4	6.5		9.3	11.2	2.6
LOS	C	A		C	C	A	A	A		A	B	A
Approach Delay		13.9			8.5			6.5			10.0	
Approach LOS		B			A			A			B	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.46
Intersection Signal Delay: 9.3 Intersection LOS: A
Intersection Capacity Utilization 44.6% ICU Level of Service A
Analysis Period (min) 15

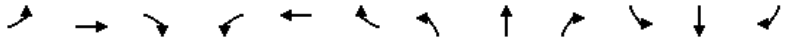
Splits and Phases: 7: New Road & Grand Union Blvd



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	33	37	7	11	38	36	249	38	612	97
v/c Ratio	0.14	0.07	0.03	0.03	0.02	0.06	0.18	0.05	0.46	0.08
Control Delay	29.2	0.2	26.2	26.4	0.0	6.4	6.5	9.3	11.2	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.2	0.2	26.2	26.4	0.0	6.4	6.5	9.3	11.2	2.6
Queue Length 50th (ft)	17	0	4	6	0	6	45	7	146	0
Queue Length 95th (ft)	37	0	14	18	0	m18	90	26	337	22
Internal Link Dist (ft)		535		527			135		595	
Turn Bay Length (ft)	300				400	100		350		150
Base Capacity (vph)	373	671	364	497	1583	573	1417	787	1317	1147
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.06	0.02	0.02	0.02	0.06	0.18	0.05	0.46	0.08

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	0	34	6	10	35	33	200	29	35	563	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	3.0	4.0		5.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.85		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1583		1770	1863	1583	1770	1827		1770	1863	1583
Flt Permitted	0.75	1.00		0.73	1.00	1.00	0.33	1.00		0.60	1.00	1.00
Satd. Flow (perm)	1398	1583		1365	1863	1583	623	1827		1126	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	0	37	7	11	38	36	217	32	38	612	97
RTOR Reduction (vph)	0	31	0	0	0	0	0	4	0	0	0	31
Lane Group Flow (vph)	33	6	0	7	11	38	36	245	0	38	612	66
Turn Type	Perm			Perm		Free	pm+pt			Perm		Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		Free	2			6		6
Actuated Green, G (s)	13.2	13.2		13.2	13.2	90.0	66.8	66.8		59.2	59.2	59.2
Effective Green, g (s)	14.2	14.2		14.2	14.2	90.0	67.8	67.8		59.2	60.2	60.2
Actuated g/C Ratio	0.16	0.16		0.16	0.16	1.00	0.75	0.75		0.66	0.67	0.67
Clearance Time (s)	5.0	5.0		5.0	5.0		4.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	221	250		215	294	1583	528	1376		741	1246	1059
v/s Ratio Prot		0.00			0.01		0.00	c0.13			c0.33	
v/s Ratio Perm	c0.02			0.01		0.02	0.05			0.03		0.04
v/c Ratio	0.15	0.02		0.03	0.04	0.02	0.07	0.18		0.05	0.49	0.06
Uniform Delay, d1	32.7	32.0		32.1	32.1	0.0	4.0	3.2		5.5	7.3	5.1
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.36	1.44		1.00	1.00	1.00
Incremental Delay, d2	0.3	0.0		0.1	0.1	0.0	0.1	0.3		0.1	1.4	0.1
Delay (s)	33.0	32.1		32.1	32.2	0.0	5.5	4.8		5.6	8.7	5.3
Level of Service	C	C		C	C	A	A	A		A	A	A
Approach Delay (s)		32.5			10.4			4.9			8.1	
Approach LOS		C			B			A			A	

Intersection Summary					
HCM Average Control Delay	8.9	HCM Level of Service		A	
HCM Volume to Capacity ratio	0.42				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)		12.0	
Intersection Capacity Utilization	44.6%	ICU Level of Service		A	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	75	0	40	14	39	148	203	719	14	48	337	186
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		0	0		400	100		0	350		150
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850		0.997				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1583	0	1770	1863	1583	1770	1857	0	1770	1863	1583
Flt Permitted	0.730			0.729			0.473			0.350		
Satd. Flow (perm)	1360	1583	0	1358	1863	1583	881	1857	0	652	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		533				161		2				202
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		615			601			230			675	
Travel Time (s)		14.0			13.7			5.2			15.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	0	43	15	42	161	221	782	15	52	366	202
Shared Lane Traffic (%)												
Lane Group Flow (vph)	82	43	0	15	42	161	221	797	0	52	366	202
Turn Type	Perm			Perm		Free	pm+pt			Perm		Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		Free	2			6		6
Detector Phase	4	4		8	8		5	2		6	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0		10.0	10.0		6.0	10.0		6.0	6.0	6.0
Minimum Split (s)	28.0	28.0		28.0	28.0		10.0	23.0		23.0	23.0	23.0
Total Split (s)	28.0	28.0	0.0	28.0	28.0	0.0	12.0	62.0	0.0	50.0	50.0	50.0
Total Split (%)	31.1%	31.1%	0.0%	31.1%	31.1%	0.0%	13.3%	68.9%	0.0%	55.6%	55.6%	55.6%
Maximum Green (s)	23.0	23.0		23.0	23.0		8.0	57.0		45.0	45.0	45.0
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-1.0	-1.0	0.0	-1.0	-1.0	0.0	-1.0	-1.0	0.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None		None	C-Max		C-Max	C-Max	C-Max
Walk Time (s)	5.0	5.0		5.0	5.0			7.0		7.0	7.0	7.0
Flash Dont Walk (s)	18.0	18.0		18.0	18.0			11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	18	18		18	18			18		18	18	18
Act Effct Green (s)	15.5	15.5		16.3	16.3	90.0	69.7	69.5		57.2	57.2	57.2
Actuated g/C Ratio	0.17	0.17		0.18	0.18	1.00	0.77	0.77		0.64	0.64	0.64
v/c Ratio	0.35	0.06		0.06	0.12	0.10	0.29	0.56		0.13	0.31	0.19
Control Delay	34.2	0.1		27.1	28.7	0.1	5.3	8.6		11.2	10.7	2.2
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	34.2	0.1		27.1	28.7	0.1	5.3	8.6		11.2	10.7	2.2
LOS	C	A		C	C	A	A	A		B	B	A
Approach Delay		22.5			7.5			7.9			8.0	
Approach LOS		C			A			A			A	

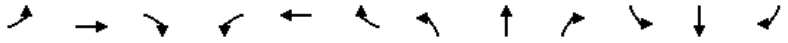
Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 86 (96%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.56
Intersection Signal Delay: 8.8 Intersection LOS: A
Intersection Capacity Utilization 64.5% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 7: New Road & Grand Union Blvd

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	82	43	15	42	161	221	797	52	366	202
v/c Ratio	0.35	0.06	0.06	0.12	0.10	0.29	0.56	0.13	0.31	0.19
Control Delay	34.2	0.1	27.1	28.7	0.1	5.3	8.6	11.2	10.7	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.2	0.1	27.1	28.7	0.1	5.3	8.6	11.2	10.7	2.2
Queue Length 50th (ft)	44	0	8	22	0	22	133	10	81	0
Queue Length 95th (ft)	74	0	22	43	0	73	376	36	185	32
Internal Link Dist (ft)		535		521			150		595	
Turn Bay Length (ft)	300				400	100		350		150
Base Capacity (vph)	363	813	362	497	1583	771	1433	414	1184	1080
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.05	0.04	0.08	0.10	0.29	0.56	0.13	0.31	0.19

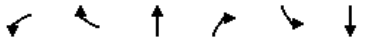
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	75	0	40	14	39	148	203	719	14	48	337	186
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	3.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.85		1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1583		1770	1863	1583	1770	1857		1770	1863	1583
Flt Permitted	0.73	1.00		0.73	1.00	1.00	0.47	1.00		0.35	1.00	1.00
Satd. Flow (perm)	1359	1583		1358	1863	1583	881	1857		652	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	0	43	15	42	161	221	782	15	52	366	202
RTOR Reduction (vph)	0	36	0	0	0	0	0	0	0	0	0	76
Lane Group Flow (vph)	82	7	0	15	42	161	221	797	0	52	366	126
Turn Type	Perm			Perm		Free	pm+pt			Perm		Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		Free	2			6		6
Actuated Green, G (s)	13.3	13.3		13.3	13.3	90.0	66.7	66.7		55.2	55.2	55.2
Effective Green, g (s)	14.3	14.3		14.3	14.3	90.0	67.7	67.7		56.2	56.2	56.2
Actuated g/C Ratio	0.16	0.16		0.16	0.16	1.00	0.75	0.75		0.62	0.62	0.62
Clearance Time (s)	5.0	5.0		5.0	5.0		4.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	216	252		216	296	1583	747	1397		407	1163	988
v/s Ratio Prot		0.00			0.02		0.03	c0.43			0.20	
v/s Ratio Perm	c0.06			0.01		0.10	0.19			0.08		0.08
v/c Ratio	0.38	0.03		0.07	0.14	0.10	0.30	0.57		0.13	0.31	0.13
Uniform Delay, d1	33.9	32.0		32.2	32.6	0.0	3.6	4.8		6.9	7.9	6.9
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.1	0.0		0.1	0.2	0.1	0.2	1.7		0.6	0.7	0.3
Delay (s)	35.0	32.0		32.3	32.8	0.1	3.8	6.5		7.5	8.6	7.2
Level of Service	C	C		C	C	A	A	A		A	A	A
Approach Delay (s)		34.0			8.6			5.9			8.0	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	8.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

- Unsignalized Capacity Analysis



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	5	42	286	73	302	300
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	46	311	79	328	326
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						403
pX, platoon unblocked						
vC, conflicting volume	1333	351			390	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1333	351			390	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	93			72	
cM capacity (veh/h)	122	693			1168	

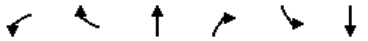
Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	5	46	390	328	326
Volume Left	5	0	0	328	0
Volume Right	0	46	79	0	0
cSH	122	693	1700	1168	1700
Volume to Capacity	0.04	0.07	0.23	0.28	0.19
Queue Length 95th (ft)	3	5	0	29	0
Control Delay (s)	35.8	10.6	0.0	9.3	0.0
Lane LOS	E	B		A	
Approach Delay (s)	13.3		0.0	4.7	
Approach LOS	B				

Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	49.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	46	19	111	20	32	19
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	50	21	121	22	35	21
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	607					
pX, platoon unblocked						
vC, conflicting volume			71		323	60
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			71		323	60
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			92		94	98
cM capacity (veh/h)			1530		618	1005

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	71	142	55
Volume Left	0	121	35
Volume Right	21	0	21
cSH	1700	1530	721
Volume to Capacity	0.04	0.08	0.08
Queue Length 95th (ft)	0	6	6
Control Delay (s)	0.0	6.5	10.4
Lane LOS		A	B
Approach Delay (s)	0.0	6.5	10.4
Approach LOS			B

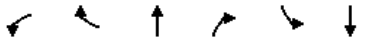
Intersection Summary			
Average Delay	5.6		
Intersection Capacity Utilization	23.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	10	251	77	0	603
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	11	273	84	0	655
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						215
pX, platoon unblocked	0.83					
vC, conflicting volume	970	315			357	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	860	315			357	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			100	
cM capacity (veh/h)	270	726			1202	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	11	357	655
Volume Left	0	0	0
Volume Right	11	84	0
cSH	726	1700	1700
Volume to Capacity	0.01	0.21	0.39
Queue Length 95th (ft)	1	0	0
Control Delay (s)	10.0	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.0	0.0	0.0
Approach LOS	B		

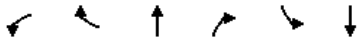
Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	35.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	4	24	335	98	70	236
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	26	364	107	76	257
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			853			974
pX, platoon unblocked	0.91	0.91			0.91	
vC, conflicting volume	826	417			471	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	761	313			371	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	96			93	
cM capacity (veh/h)	317	663			1083	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	4	26	471	76	257
Volume Left	4	0	0	76	0
Volume Right	0	26	107	0	0
cSH	317	663	1700	1083	1700
Volume to Capacity	0.01	0.04	0.28	0.07	0.15
Queue Length 95th (ft)	1	3	0	6	0
Control Delay (s)	16.5	10.6	0.0	8.6	0.0
Lane LOS	C	B		A	
Approach Delay (s)	11.5		0.0	2.0	
Approach LOS	B				

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	40.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	29	255	613	40	119	271
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	32	277	666	43	129	295
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						450
pX, platoon unblocked	0.97					
vC, conflicting volume	1241	688			710	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1234	688			710	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	81	38			85	
cM capacity (veh/h)	162	446			889	

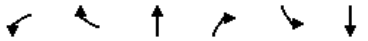
Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	32	277	710	129	295
Volume Left	32	0	0	129	0
Volume Right	0	277	43	0	0
cSH	162	446	1700	889	1700
Volume to Capacity	0.19	0.62	0.42	0.15	0.17
Queue Length 95th (ft)	17	103	0	13	0
Control Delay (s)	32.5	25.4	0.0	9.7	0.0
Lane LOS	D	D		A	
Approach Delay (s)	26.1		0.0	3.0	
Approach LOS	D				

Intersection Summary			
Average Delay	6.5		
Intersection Capacity Utilization	57.1%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	11	51	41	47	148	146
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	55	45	51	161	159
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	601					
pX, platoon unblocked						
vC, conflicting volume			67		180	40
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			67		180	40
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		80	85
cM capacity (veh/h)			1534		786	1032

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	67	96	320
Volume Left	0	45	161
Volume Right	55	0	159
cSH	1700	1534	892
Volume to Capacity	0.04	0.03	0.36
Queue Length 95th (ft)	0	2	41
Control Delay (s)	0.0	3.6	11.3
Lane LOS		A	B
Approach Delay (s)	0.0	3.6	11.3
Approach LOS			B

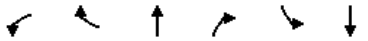
Intersection Summary			
Average Delay	8.2		
Intersection Capacity Utilization	35.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	83	852	16	0	391
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	90	926	17	0	425
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						230
pX, platoon unblocked	0.91					
vC, conflicting volume	1360	935			943	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1346	935			943	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	72			100	
cM capacity (veh/h)	152	322			727	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	90	943	425
Volume Left	0	0	0
Volume Right	90	17	0
cSH	322	1700	1700
Volume to Capacity	0.28	0.55	0.25
Queue Length 95th (ft)	28	0	0
Control Delay (s)	20.5	0.0	0.0
Lane LOS	C		
Approach Delay (s)	20.5	0.0	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	57.6%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	30	206	447	20	19	282
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	33	224	486	22	21	307
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			853			974
pX, platoon unblocked	0.90	0.90			0.90	
vC, conflicting volume	845	497			508	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	776	391			403	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	90	62			98	
cM capacity (veh/h)	325	595			1045	

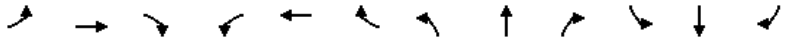
Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	33	224	508	21	307
Volume Left	33	0	0	21	0
Volume Right	0	224	22	0	0
cSH	325	595	1700	1045	1700
Volume to Capacity	0.10	0.38	0.30	0.02	0.18
Queue Length 95th (ft)	8	44	0	2	0
Control Delay (s)	17.3	14.7	0.0	8.5	0.0
Lane LOS	C	B		A	
Approach Delay (s)	15.0		0.0	0.5	
Approach LOS	B				

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	44.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	13	35	247	17	25	7	82	158	26	41	427	45
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	38	268	18	27	8	89	172	28	45	464	49
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)			6			8						
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								675				
pX, platoon unblocked												
vC, conflicting volume	945	956	489	1071	966	186	513			200		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	945	956	489	1071	966	186	513			200		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	93	83	54	78	88	99	92			97		
cM capacity (veh/h)	199	228	579	85	225	856	1052			1372		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	321	53	89	200	45	513
Volume Left	14	18	89	0	45	0
Volume Right	268	8	0	28	0	49
cSH	692	197	1052	1700	1372	1700
Volume to Capacity	0.46	0.27	0.08	0.12	0.03	0.30
Queue Length 95th (ft)	62	26	7	0	3	0
Control Delay (s)	18.1	30.6	8.7	0.0	7.7	0.0
Lane LOS	C	D	A		A	
Approach Delay (s)	18.1	30.6	2.7		0.6	
Approach LOS	C	D				

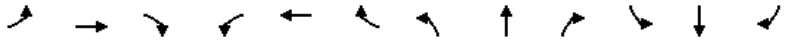
Intersection Summary					
Average Delay	7.0				
Intersection Capacity Utilization	53.8%	ICU Level of Service		A	
Analysis Period (min)	15				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	56	29	182	25	30	28	406	508	29	27	365	195
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	61	32	198	27	33	30	441	552	32	29	397	212
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)			6			8						
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								675				
pX, platoon unblocked												
vC, conflicting volume	2028	2028	503	2021	2118	568	609			584		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2028	2028	503	2021	2118	568	609			584		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	0	65	0	0	94	54			97		
cM capacity (veh/h)	0	30	569	0	27	522	970			991		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	290	90	441	584	29	609
Volume Left	61	27	441	0	29	0
Volume Right	198	30	0	32	0	212
cSH	2	5	970	1700	991	1700
Volume to Capacity	163.22	16.94	0.46	0.34	0.03	0.36
Queue Length 95th (ft)	Err	Err	60	0	2	0
Control Delay (s)	Err	Err	11.8	0.0	8.7	0.0
Lane LOS	F	F	B		A	
Approach Delay (s)	Err	Err	5.1		0.4	
Approach LOS	F	F				

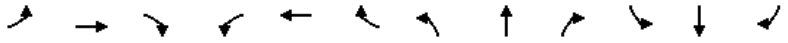
Intersection Summary				
Average Delay	1864.2			
Intersection Capacity Utilization	74.9%	ICU Level of Service	D	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	13	35	247	17	25	7	82	158	26	41	427	45
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	38	268	18	27	8	89	172	28	45	464	49

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	52	268	46	8	89	200	45	513
Volume Left (vph)	14	0	18	0	89	0	45	0
Volume Right (vph)	0	268	0	8	0	28	0	49
Hadj (s)	0.17	-0.67	0.24	-0.67	0.53	-0.06	0.53	-0.03
Departure Headway (s)	7.0	6.2	7.6	6.7	6.9	6.3	6.6	6.0
Degree Utilization, x	0.10	0.46	0.10	0.01	0.17	0.35	0.08	0.86
Capacity (veh/h)	485	551	436	488	493	540	524	586
Control Delay (s)	9.6	13.1	10.2	8.6	10.2	11.6	9.0	33.9
Approach Delay (s)	12.6		10.0		11.1		31.9	
Approach LOS	B		A		B		D	

Intersection Summary					
Delay	20.9				
HCM Level of Service	C				
Intersection Capacity Utilization	53.8%	ICU Level of Service		A	
Analysis Period (min)	15				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	56	29	182	25	30	28	406	508	29	27	365	195
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	61	32	198	27	33	30	441	552	32	29	397	212

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	92	198	60	30	441	584	29	609
Volume Left (vph)	61	0	27	0	441	0	29	0
Volume Right (vph)	0	198	0	30	0	32	0	212
Hadj (s)	0.36	-0.67	0.26	-0.67	0.53	0.00	0.53	-0.21
Departure Headway (s)	8.4	7.4	8.9	8.0	7.3	6.8	7.8	7.1
Degree Utilization, x	0.22	0.41	0.15	0.07	0.90	1.10	0.06	1.20
Capacity (veh/h)	415	463	387	430	480	544	444	511
Control Delay (s)	12.6	14.3	12.2	10.3	44.8	92.9	10.2	130.3
Approach Delay (s)	13.7		11.6		72.2		124.8	
Approach LOS	B		B		F		F	

Intersection Summary					
Delay	77.6				
HCM Level of Service	F				
Intersection Capacity Utilization	74.9%	ICU Level of Service		D	
Analysis Period (min)	15				

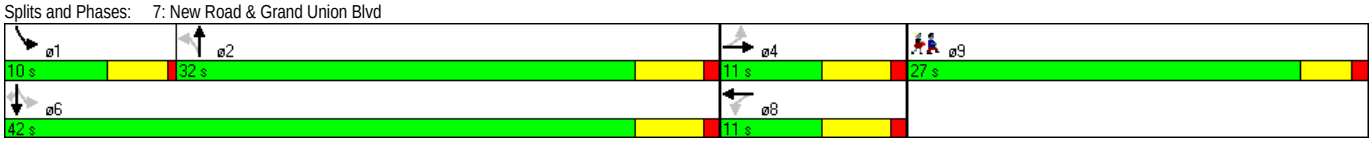
Assembly Square Redevelopment Full Build-Out Capacity Analysis

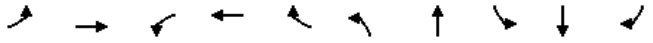
- Signalized Capacity Analysis

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø9
Lane Configurations													
Volume (vph)	30	0	34	20	49	46	33	313	238	117	572	103	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	300		0	0		400	100		0	350		150	
Storage Lanes	1		0	1		1	1		0	1		1	
Taper Length (ft)	25		25	25		25	25		25	25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.850				0.850		0.935				0.850	
Flt Protected	0.950			0.950			0.950			0.950			
Satd. Flow (prot)	1770	1583	0	1770	1863	1583	1770	1742	0	1770	1863	1583	
Flt Permitted	0.870			0.870			0.429			0.295			
Satd. Flow (perm)	1621	1583	0	1621	1863	1583	799	1742	0	550	1863	1583	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		564				50		53				108	
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		615			607			215			675		
Travel Time (s)		14.0			13.8			4.9			15.3		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	33	0	37	22	53	50	36	340	259	127	622	112	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	33	37	0	22	53	50	36	599	0	127	622	112	
Turn Type	Perm			Perm		Free	Perm			pm+pt		Perm	
Protected Phases		4			8			2		1	6		9
Permitted Phases	4			8		Free	2			6		6	
Detector Phase	4	4		8	8		2	2		1	6	6	
Switch Phase													
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0	5.0
Minimum Split (s)	11.0	11.0		11.0	11.0		11.0	11.0		8.0	11.0	11.0	27.0
Total Split (s)	11.0	11.0	0.0	11.0	11.0	0.0	32.0	32.0	0.0	10.0	42.0	42.0	27.0
Total Split (%)	13.8%	13.8%	0.0%	13.8%	13.8%	0.0%	40.0%	40.0%	0.0%	12.5%	52.5%	52.5%	34%
Maximum Green (s)	6.0	6.0		6.0	6.0		27.0	27.0		6.0	37.0	37.0	23.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.5	4.0	4.0	3.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		0.5	1.0	1.0	1.0
Lost Time Adjust (s)	-1.0	-1.0	0.0	-1.0	-1.0	0.0	-1.0	-1.0	0.0	0.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag							Lag	Lag		Lead			
Lead-Lag Optimize?							Yes	Yes		Yes			
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		Min	Min		None	C-Min	C-Min	Ped
Walk Time (s)													3.0
Flash Dont Walk (s)													3.0
Pedestrian Calls (#/hr)													23
Act Effct Green (s)	6.9	6.9		7.0	7.0	80.0	49.9	49.9		59.4	59.4	59.4	
Actuated g/C Ratio	0.09	0.09		0.09	0.09	1.00	0.62	0.62		0.74	0.74	0.74	
v/c Ratio	0.23	0.06		0.15	0.33	0.03	0.07	0.54		0.24	0.45	0.09	
Control Delay	38.4	0.2		36.5	40.0	0.0	9.6	12.3		3.8	3.9	0.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Delay	38.4	0.2		36.5	40.0	0.0	9.6	12.3		3.8	3.9	0.9	
LOS	D	A		D	D	A	A	B		A	A	A	
Approach Delay		18.2			23.4			12.2			3.5		
Approach LOS		B			C			B			A		

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 0 (0%), Referenced to phase 6:SBTL, Start of Green, Master Intersection			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.54			
Intersection Signal Delay: 8.8		Intersection LOS: A	
Intersection Capacity Utilization 55.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 7: New Road & Grand Union Blvd

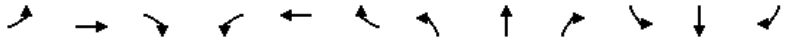




Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	33	37	22	53	50	36	599	127	622	112
v/c Ratio	0.23	0.06	0.15	0.33	0.03	0.07	0.54	0.24	0.45	0.09
Control Delay	38.4	0.2	36.5	40.0	0.0	9.6	12.3	3.8	3.9	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.4	0.2	36.5	40.0	0.0	9.6	12.3	3.8	3.9	0.9
Queue Length 50th (ft)	16	0	10	25	0	8	172	9	48	0
Queue Length 95th (ft)	42	0	33	60	0	24	300	m21	m102	m0
Internal Link Dist (ft)		535		527			135		595	
Turn Bay Length (ft)	300				400	100		350		150
Base Capacity (vph)	143	654	144	166	1583	498	1106	523	1383	1203
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.06	0.15	0.32	0.03	0.07	0.54	0.24	0.45	0.09

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



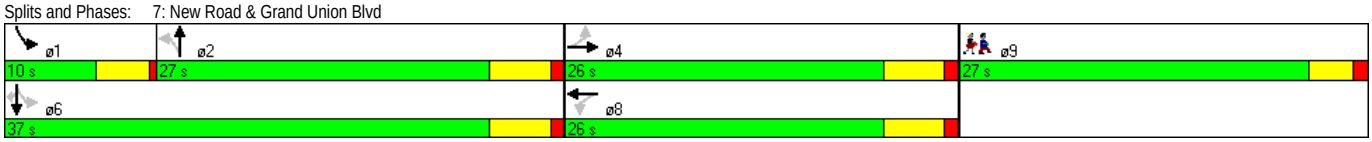
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	0	34	20	49	46	33	313	238	117	572	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.85		1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1583		1770	1863	1583	1770	1742		1770	1863	1583
Flt Permitted	0.87	1.00		0.87	1.00	1.00	0.43	1.00		0.29	1.00	1.00
Satd. Flow (perm)	1620	1583		1620	1863	1583	799	1742		549	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	0	37	22	53	50	36	340	259	127	622	112
RTOR Reduction (vph)	0	35	0	0	0	0	0	22	0	0	0	31
Lane Group Flow (vph)	33	2	0	22	53	50	36	577	0	127	622	81
Turn Type	Perm			Perm		Free	Perm			pm+pt		Perm
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8		Free	2			6		6
Actuated Green, G (s)	3.6	3.6		3.6	3.6	80.0	46.1	46.1		56.4	56.4	56.4
Effective Green, g (s)	4.6	4.6		4.6	4.6	80.0	47.1	47.1		56.4	57.4	57.4
Actuated g/C Ratio	0.06	0.06		0.06	0.06	1.00	0.59	0.59		0.70	0.72	0.72
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	93	91		93	107	1583	470	1026		483	1337	1136
v/s Ratio Prot		0.00			c0.03			c0.33		0.02	c0.33	
v/s Ratio Perm	0.02			0.01		c0.03	0.05			0.16		0.05
v/c Ratio	0.35	0.02		0.24	0.50	0.03	0.08	0.56		0.26	0.47	0.07
Uniform Delay, d1	36.3	35.6		36.0	36.6	0.0	7.1	10.1		5.7	4.8	3.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.80	0.63	0.75
Incremental Delay, d2	2.3	0.1		1.3	3.6	0.0	0.1	0.7		0.2	0.8	0.1
Delay (s)	38.6	35.7		37.3	40.2	0.0	7.2	10.8		4.8	3.8	2.6
Level of Service	D	D		D	D	A	A	B		A	A	A
Approach Delay (s)		37.1			23.6			10.6			3.8	
Approach LOS		D			C			B			A	

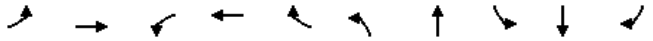
Intersection Summary				
HCM Average Control Delay	9.2	HCM Level of Service	A	
HCM Volume to Capacity ratio	0.48			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	55.8%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø9
Lane Configurations													
Volume (vph)	75	0	40	76	258	232	203	778	89	73	375	227	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	300		0	0		400	100		0	350		150	
Storage Lanes	1		0	1		1	1		0	1		1	
Taper Length (ft)	25		25	25		25	25		25	25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.850				0.850		0.985				0.850	
Flt Protected	0.950			0.950			0.950			0.950			
Satd. Flow (prot)	1770	1583	0	1770	1863	1583	1770	1835	0	1770	1863	1583	
Flt Permitted	0.303			0.729			0.523			0.087			
Satd. Flow (perm)	564	1583	0	1358	1863	1583	974	1835	0	162	1863	1583	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		633				252		6				247	
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		615			601			230			675		
Travel Time (s)		14.0			13.7			5.2			15.3		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	82	0	43	83	280	252	221	846	97	79	408	247	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	82	43	0	83	280	252	221	943	0	79	408	247	
Turn Type	Perm			Perm		Free	Perm			pm+pt		Perm	
Protected Phases		4			8			2		1	6		9
Permitted Phases	4			8		Free	2			6		6	
Detector Phase	4	4		8	8		2	2		1	6	6	
Switch Phase													
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0	5.0
Minimum Split (s)	11.0	11.0		11.0	11.0		11.0	11.0		8.0	11.0	11.0	27.0
Total Split (s)	26.0	26.0	0.0	26.0	26.0	0.0	27.0	27.0	0.0	10.0	37.0	37.0	27.0
Total Split (%)	28.9%	28.9%	0.0%	28.9%	28.9%	0.0%	30.0%	30.0%	0.0%	11.1%	41.1%	41.1%	30%
Maximum Green (s)	21.0	21.0		21.0	21.0		22.0	22.0		6.0	32.0	32.0	23.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.5	4.0	4.0	3.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		0.5	1.0	1.0	1.0
Lost Time Adjust (s)	-1.0	-1.0	0.0	-1.0	-1.0	0.0	-1.0	-1.0	0.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0	
Lead/Lag							Lag	Lag		Lead			
Lead-Lag Optimize?							Yes	Yes		Yes			
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		Min	Min		None	C-Min	C-Min	Ped
Walk Time (s)													3.0
Flash Dont Walk (s)													3.0
Pedestrian Calls (#/hr)													20
Act Effct Green (s)	18.8	18.8		18.8	18.8	90.0	43.9	43.9		54.2	53.2	53.2	
Actuated g/C Ratio	0.21	0.21		0.21	0.21	1.00	0.49	0.49		0.60	0.59	0.59	
v/c Ratio	0.69	0.05		0.29	0.72	0.16	0.47	1.05		0.32	0.37	0.24	
Control Delay	62.9	0.1		31.7	43.9	0.2	21.9	70.7		16.9	14.3	4.6	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Delay	62.9	0.1		31.7	43.9	0.2	21.9	70.7		16.9	14.3	4.6	
LOS	E	A		C	D	A	C	E		B	B	A	
Approach Delay		41.3			24.3			61.5			11.3		
Approach LOS		D			C			E			B		

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 6:SBTL, Start of Green, Master Intersection			
Natural Cycle: 140			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.05			
Intersection Signal Delay: 37.9		Intersection LOS: D	
Intersection Capacity Utilization 81.5%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 7: New Road & Grand Union Blvd





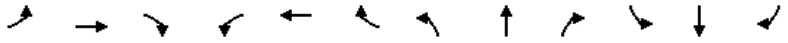
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	82	43	83	280	252	221	943	79	408	247
v/c Ratio	0.69	0.05	0.29	0.72	0.16	0.47	1.05	0.32	0.37	0.24
Control Delay	62.9	0.1	31.7	43.9	0.2	21.9	70.7	16.9	14.3	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.9	0.1	31.7	43.9	0.2	21.9	70.7	16.9	14.3	4.6
Queue Length 50th (ft)	43	0	40	148	0	85	~624	23	135	14
Queue Length 95th (ft)	#106	0	78	226	0	170	#914	m28	m135	m20
Internal Link Dist (ft)		535		521			150		595	
Turn Bay Length (ft)	300				400	100		350		150
Base Capacity (vph)	138	865	332	455	1583	475	898	247	1102	1037
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.05	0.25	0.62	0.16	0.47	1.05	0.32	0.37	0.24

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	75	0	40	76	258	232	203	778	89	73	375	227
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		3.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.85		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1583		1770	1863	1583	1770	1834		1770	1863	1583
Flt Permitted	0.30	1.00		0.73	1.00	1.00	0.52	1.00		0.09	1.00	1.00
Satd. Flow (perm)	564	1583		1358	1863	1583	974	1834		162	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	0	43	83	280	252	221	846	97	79	408	247
RTOR Reduction (vph)	0	34	0	0	0	0	0	3	0	0	0	101
Lane Group Flow (vph)	82	9	0	83	280	252	221	940	0	79	408	146
Turn Type	Perm			Perm		Free	Perm			pm+pt		Perm
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8		Free	2			6		6
Actuated Green, G (s)	17.8	17.8		17.8	17.8	90.0	42.1	42.1		52.2	52.2	52.2
Effective Green, g (s)	18.8	18.8		18.8	18.8	90.0	43.1	43.1		53.2	53.2	53.2
Actuated g/C Ratio	0.21	0.21		0.21	0.21	1.00	0.48	0.48		0.59	0.59	0.59
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	118	331		284	389	1583	466	878		223	1101	936
v/s Ratio Prot		0.01			c0.15			c0.51		0.03	c0.22	
v/s Ratio Perm	0.15			0.06		c0.16	0.23			0.18		0.09
v/c Ratio	0.69	0.03		0.29	0.72	0.16	0.47	1.07		0.35	0.37	0.16
Uniform Delay, d1	32.9	28.3		30.0	33.1	0.0	15.8	23.4		18.2	9.6	8.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.90	1.34	3.19
Incremental Delay, d2	16.3	0.0		0.6	6.3	0.2	0.8	51.1		0.2	0.2	0.1
Delay (s)	49.2	28.4		30.6	39.4	0.2	16.6	74.5		34.7	13.1	26.5
Level of Service	D	C		C	D	A	B	E		C	B	C
Approach Delay (s)		42.0			22.2			63.5			19.9	
Approach LOS		D			C			E			B	

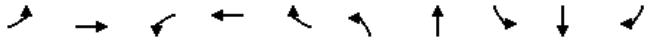
Intersection Summary			
HCM Average Control Delay	40.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	81.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	0	34	20	49	46	33	313	238	117	572	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		0	0		400	100		0	350		150
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850		0.935				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1583	0	1770	1863	1583	1770	1742	0	1770	1863	1583
Flt Permitted	0.722			0.733			0.329			0.438		
Satd. Flow (perm)	1345	1583	0	1365	1863	1583	613	1742	0	816	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		335				50		86				108
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		615			607			215			675	
Travel Time (s)		14.0			13.8			4.9			15.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	0	37	22	53	50	36	340	259	127	622	112
Shared Lane Traffic (%)												
Lane Group Flow (vph)	33	37	0	22	53	50	36	599	0	127	622	112
Turn Type	Perm			Perm		Free	pm+pt			Perm		Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		Free	2			6		6
Detector Phase	4	4		8	8		5	2		6	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0		10.0	10.0		6.0	10.0		6.0	6.0	6.0
Minimum Split (s)	28.0	28.0		28.0	28.0		10.0	23.0		23.0	23.0	23.0
Total Split (s)	28.0	28.0	0.0	28.0	28.0	0.0	10.0	62.0	0.0	52.0	52.0	52.0
Total Split (%)	31.1%	31.1%	0.0%	31.1%	31.1%	0.0%	11.1%	68.9%	0.0%	57.8%	57.8%	57.8%
Maximum Green (s)	23.0	23.0		23.0	23.0		6.0	57.0		47.0	47.0	47.0
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-1.0	-1.0	0.0	-1.0	-1.0	0.0	-1.0	-1.0	0.0	0.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0	5.0	4.0	4.0
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None		None	C-Max		C-Max	C-Max	C-Max
Walk Time (s)	5.0	5.0		5.0	5.0			7.0		7.0	7.0	7.0
Flash Dont Walk (s)	18.0	18.0		18.0	18.0			11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	20	20		20	20			20		20	20	20
Act Effct Green (s)	15.4	15.4		16.2	16.2	90.0	69.8	69.6		62.8	63.6	63.6
Actuated g/C Ratio	0.17	0.17		0.18	0.18	1.00	0.78	0.77		0.70	0.71	0.71
v/c Ratio	0.14	0.07		0.09	0.16	0.03	0.06	0.44		0.22	0.47	0.10
Control Delay	29.4	0.2		28.1	29.6	0.0	6.3	9.1		4.5	5.3	0.8
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	29.4	0.2		28.1	29.6	0.0	6.3	9.1		4.5	5.3	0.8
LOS	C	A		C	C	A	A	A		A	A	A
Approach Delay		14.0			17.5			8.9			4.6	
Approach LOS		B			B			A			A	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.47
Intersection Signal Delay: 7.5 Intersection LOS: A
Intersection Capacity Utilization 56.7% ICU Level of Service B
Analysis Period (min) 15

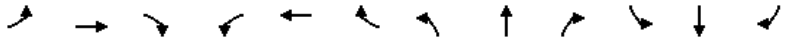
Splits and Phases: 7: New Road & Grand Union Blvd



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	33	37	22	53	50	36	599	127	622	112
v/c Ratio	0.14	0.07	0.09	0.16	0.03	0.06	0.44	0.22	0.47	0.10
Control Delay	29.4	0.2	28.1	29.6	0.0	6.3	9.1	4.5	5.3	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.4	0.2	28.1	29.6	0.0	6.3	9.1	4.5	5.3	0.8
Queue Length 50th (ft)	17	0	11	28	0	6	120	10	52	0
Queue Length 95th (ft)	37	0	28	52	0	m18	271	m27	m123	m2
Internal Link Dist (ft)		535		527			135		595	
Turn Bay Length (ft)	300				400	100		350		150
Base Capacity (vph)	359	668	364	497	1583	565	1366	569	1317	1151
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.06	0.06	0.11	0.03	0.06	0.44	0.22	0.47	0.10

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	0	34	20	49	46	33	313	238	117	572	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	3.0	4.0		5.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.85		1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1583		1770	1863	1583	1770	1742		1770	1863	1583
Flt Permitted	0.72	1.00		0.73	1.00	1.00	0.33	1.00		0.44	1.00	1.00
Satd. Flow (perm)	1346	1583		1365	1863	1583	613	1742		816	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	0	37	22	53	50	36	340	259	127	622	112
RTOR Reduction (vph)	0	31	0	0	0	0	0	21	0	0	0	36
Lane Group Flow (vph)	33	6	0	22	53	50	36	578	0	127	622	76
Turn Type	Perm			Perm		Free	pm+pt			Perm		Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		Free	2			6		6
Actuated Green, G (s)	13.2	13.2		13.2	13.2	90.0	66.8	66.8		59.2	59.2	59.2
Effective Green, g (s)	14.2	14.2		14.2	14.2	90.0	67.8	67.8		59.2	60.2	60.2
Actuated g/C Ratio	0.16	0.16		0.16	0.16	1.00	0.75	0.75		0.66	0.67	0.67
Clearance Time (s)	5.0	5.0		5.0	5.0		4.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	212	250		215	294	1583	521	1312		537	1246	1059
v/s Ratio Prot		0.00			c0.03		0.00	c0.33			c0.33	
v/s Ratio Perm	0.02			0.02		0.03	0.05			0.16		0.05
v/c Ratio	0.16	0.02		0.10	0.18	0.03	0.07	0.44		0.24	0.50	0.07
Uniform Delay, d1	32.7	32.0		32.4	32.9	0.0	4.1	4.1		6.2	7.4	5.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.33	1.61		0.40	0.44	0.28
Incremental Delay, d2	0.3	0.0		0.2	0.3	0.0	0.1	1.1		0.7	1.0	0.1
Delay (s)	33.1	32.1		32.7	33.2	0.0	5.4	7.6		3.2	4.2	1.5
Level of Service	C	C		C	C	A	A	A		A	A	A
Approach Delay (s)		32.5			19.8			7.5			3.7	
Approach LOS		C			B			A			A	

Intersection Summary					
HCM Average Control Delay	7.5	HCM Level of Service		A	
HCM Volume to Capacity ratio	0.45				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)		12.0	
Intersection Capacity Utilization	56.7%	ICU Level of Service		B	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	75	0	40	76	258	232	203	778	89	73	375	227
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		0	0		400	100		0	350		150
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850		0.985				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1583	0	1770	1863	1583	1770	1835	0	1770	1863	1583
Flt Permitted	0.319			0.729			0.420			0.226		
Satd. Flow (perm)	594	1583	0	1358	1863	1583	782	1835	0	421	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		495				252		13				247
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		615			601			230			675	
Travel Time (s)		14.0			13.7			5.2			15.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	0	43	83	280	252	221	846	97	79	408	247
Shared Lane Traffic (%)												
Lane Group Flow (vph)	82	43	0	83	280	252	221	943	0	79	408	247
Turn Type	Perm			Perm		Free	pm+pt			Perm		Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		Free	2			6		6
Detector Phase	4	4		8	8		5	2		6	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0		10.0	10.0		6.0	10.0		6.0	6.0	6.0
Minimum Split (s)	28.0	28.0		28.0	28.0		10.0	23.0		23.0	23.0	23.0
Total Split (s)	28.0	28.0	0.0	28.0	28.0	0.0	12.0	62.0	0.0	50.0	50.0	50.0
Total Split (%)	31.1%	31.1%	0.0%	31.1%	31.1%	0.0%	13.3%	68.9%	0.0%	55.6%	55.6%	55.6%
Maximum Green (s)	23.0	23.0		23.0	23.0		8.0	57.0		45.0	45.0	45.0
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-1.0	-1.0	0.0	-1.0	-1.0	0.0	-1.0	-1.0	0.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None		None	C-Max		C-Max	C-Max	C-Max
Walk Time (s)	5.0	5.0		5.0	5.0			7.0		7.0	7.0	7.0
Flash Dont Walk (s)	18.0	18.0		18.0	18.0			11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	18	18		18	18			18		18	18	18
Act Effct Green (s)	19.6	19.6		19.6	19.6	90.0	63.4	62.4		50.6	50.6	50.6
Actuated g/C Ratio	0.22	0.22		0.22	0.22	1.00	0.70	0.69		0.56	0.56	0.56
v/c Ratio	0.64	0.06		0.28	0.69	0.16	0.34	0.74		0.33	0.39	0.25
Control Delay	53.0	0.1		30.4	41.0	0.2	6.7	14.2		6.6	5.8	0.9
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	53.0	0.1		30.4	41.0	0.2	6.7	14.2		6.6	5.8	0.9
LOS	D	A		C	D	A	A	B		A	A	A
Approach Delay		34.8			22.9			12.8			4.2	
Approach LOS		C			C			B			A	

Intersection Summary

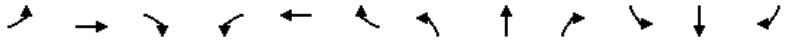
Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.74
Intersection Signal Delay: 13.8 Intersection LOS: B
Intersection Capacity Utilization 83.3% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 7: New Road & Grand Union Blvd

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	82	43	83	280	252	221	943	79	408	247
Protected Phases		4		8		5	2		6	
Permitted Phases	4		8		Free	2		6		6
Minimum Initial (s)	6.0	6.0	10.0	10.0		6.0	10.0	6.0	6.0	6.0
Minimum Split (s)	28.0	28.0	28.0	28.0		10.0	23.0	23.0	23.0	23.0
Total Split (s)	28.0	28.0	28.0	28.0	0.0	12.0	62.0	50.0	50.0	50.0
Total Split (%)	31.1%	31.1%	31.1%	31.1%	0.0%	13.3%	68.9%	55.6%	55.6%	55.6%
Maximum Green (s)	23.0	23.0	23.0	23.0		8.0	57.0	45.0	45.0	45.0
Yellow Time (s)	4.0	4.0	4.0	4.0		3.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0
Lead/Lag						Lead		Lag	Lag	Lag
Lead-Lag Optimize?										
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None		None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	5.0	5.0	5.0	5.0			7.0	7.0	7.0	7.0
Flash Dont Walk (s)	18.0	18.0	18.0	18.0			11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	18	18	18	18			18	18	18	18
v/c Ratio	0.64	0.06	0.28	0.69	0.16	0.34	0.74	0.33	0.39	0.25
Control Delay	53.0	0.1	30.4	41.0	0.2	6.7	14.2	6.6	5.8	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.0	0.1	30.4	41.0	0.2	6.7	14.2	6.6	5.8	0.9
Queue Length 50th (ft)	43	0	39	147	0	36	287	13	67	0
Queue Length 95th (ft)	90	0	76	218	0	73	532	m18	m79	m0
Internal Link Dist (ft)		535		521			150		595	
Turn Bay Length (ft)	300				400	100		350		150
Base Capacity (vph)	158	785	362	497	1583	649	1276	237	1048	999
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.05	0.23	0.56	0.16	0.34	0.74	0.33	0.39	0.25

Intersection Summary

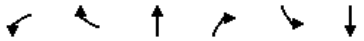
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	75	0	40	76	258	232	203	778	89	73	375	227
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	3.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.85		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1583		1770	1863	1583	1770	1834		1770	1863	1583
Flt Permitted	0.32	1.00		0.73	1.00	1.00	0.42	1.00		0.23	1.00	1.00
Satd. Flow (perm)	594	1583		1358	1863	1583	783	1834		421	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	0	43	83	280	252	221	846	97	79	408	247
RTOR Reduction (vph)	0	34	0	0	0	0	0	4	0	0	0	108
Lane Group Flow (vph)	82	9	0	83	280	252	221	939	0	79	408	139
Turn Type	Perm			Perm		Free	pm+pt			Perm		Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		Free	2			6		6
Actuated Green, G (s)	18.6	18.6		18.6	18.6	90.0	61.4	61.4		49.7	49.7	49.7
Effective Green, g (s)	19.6	19.6		19.6	19.6	90.0	62.4	62.4		50.7	50.7	50.7
Actuated g/C Ratio	0.22	0.22		0.22	0.22	1.00	0.69	0.69		0.56	0.56	0.56
Clearance Time (s)	5.0	5.0		5.0	5.0		4.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	129	345		296	406	1583	638	1272		237	1049	892
v/s Ratio Prot		0.01			c0.15		0.03	c0.51			0.22	
v/s Ratio Perm	0.14			0.06		0.16	0.21			0.19		0.09
v/c Ratio	0.64	0.03		0.28	0.69	0.16	0.35	0.74		0.33	0.39	0.16
Uniform Delay, d1	32.0	27.7		29.3	32.4	0.0	5.6	8.7		10.6	11.0	9.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.46	0.46	0.51
Incremental Delay, d2	9.8	0.0		0.5	4.8	0.2	0.3	3.9		0.3	0.1	0.0
Delay (s)	41.8	27.7		29.8	37.2	0.2	6.0	12.5		5.2	5.2	4.9
Level of Service	D	C		C	D	A	A	B		A	A	A
Approach Delay (s)		37.0			21.1			11.3			5.1	
Approach LOS		D			C			B			A	

Intersection Summary				
HCM Average Control Delay	13.1	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.73			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	83.3%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

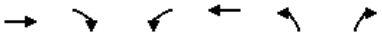
- Unsignalized Capacity Analysis



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	5	42	608	73	305	321
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	46	661	79	332	349
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						403
pX, platoon unblocked						
vC, conflicting volume	1712	701			740	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1712	701			740	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	91	90			62	
cM capacity (veh/h)	61	439			866	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	5	46	740	332	349
Volume Left	5	0	0	332	0
Volume Right	0	46	79	0	0
cSH	61	439	1700	866	1700
Volume to Capacity	0.09	0.10	0.44	0.38	0.21
Queue Length 95th (ft)	7	9	0	45	0
Control Delay (s)	69.3	14.2	0.0	11.7	0.0
Lane LOS	F	B		B	
Approach Delay (s)	20.0		0.0	5.7	
Approach LOS	C				

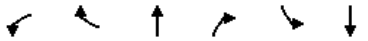
Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	171	19	112	39	32	26
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	186	21	122	42	35	28
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	607					
pX, platoon unblocked						
vC, conflicting volume			207		482	196
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			207		482	196
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			91		93	97
cM capacity (veh/h)			1365		495	845

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	207	164	63
Volume Left	0	122	35
Volume Right	21	0	28
cSH	1700	1365	608
Volume to Capacity	0.12	0.09	0.10
Queue Length 95th (ft)	0	7	9
Control Delay (s)	0.0	6.0	11.6
Lane LOS		A	B
Approach Delay (s)	0.0	6.0	11.6
Approach LOS			B

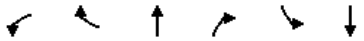
Intersection Summary			
Average Delay	4.0		
Intersection Capacity Utilization	31.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	10	573	77	0	627
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	11	623	84	0	682
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						215
pX, platoon unblocked	0.82					
vC, conflicting volume	1346	665			707	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1313	665			707	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			100	
cM capacity (veh/h)	144	460			892	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	11	707	682
Volume Left	0	0	0
Volume Right	11	84	0
cSH	460	1700	1700
Volume to Capacity	0.02	0.42	0.40
Queue Length 95th (ft)	2	0	0
Control Delay (s)	13.0	0.0	0.0
Lane LOS	B		
Approach Delay (s)	13.0	0.0	0.0
Approach LOS	B		

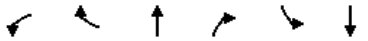
Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	44.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	4	24	657	98	70	257
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	26	714	107	76	279
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			853			974
pX, platoon unblocked	0.85	0.85			0.85	
vC, conflicting volume	1199	767			821	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1145	636			699	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	94			90	
cM capacity (veh/h)	168	405			761	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	4	26	821	76	279
Volume Left	4	0	0	76	0
Volume Right	0	26	107	0	0
cSH	168	405	1700	761	1700
Volume to Capacity	0.03	0.06	0.48	0.10	0.16
Queue Length 95th (ft)	2	5	0	8	0
Control Delay (s)	26.9	14.5	0.0	10.3	0.0
Lane LOS	D	B		B	
Approach Delay (s)	16.3		0.0	2.2	
Approach LOS	C				

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	29	263	739	40	135	353
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	32	286	803	43	147	384
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						450
pX, platoon unblocked	0.93					
vC, conflicting volume	1502	825			847	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1502	825			847	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	69	23			81	
cM capacity (veh/h)	101	372			790	

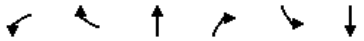
Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	32	286	847	147	384
Volume Left	32	0	0	147	0
Volume Right	0	286	43	0	0
cSH	101	372	1700	790	1700
Volume to Capacity	0.31	0.77	0.50	0.19	0.23
Queue Length 95th (ft)	30	157	0	17	0
Control Delay (s)	56.0	40.3	0.0	10.6	0.0
Lane LOS	F	E		B	
Approach Delay (s)	41.9		0.0	2.9	
Approach LOS	E				

Intersection Summary			
Average Delay	8.8		
Intersection Capacity Utilization	64.3%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	137	52	45	176	149	159
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	149	57	49	191	162	173
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	601					
pX, platoon unblocked						
vC, conflicting volume			205		466	177
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			205		466	177
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		70	80
cM capacity (veh/h)			1366		535	866

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	205	240	335
Volume Left	0	49	162
Volume Right	57	0	173
cSH	1700	1366	666
Volume to Capacity	0.12	0.04	0.50
Queue Length 95th (ft)	0	3	71
Control Delay (s)	0.0	1.8	15.7
Lane LOS		A	C
Approach Delay (s)	0.0	1.8	15.7
Approach LOS			C

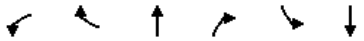
Intersection Summary			
Average Delay	7.3		
Intersection Capacity Utilization	50.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	83	986	16	0	491
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	90	1072	17	0	534
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						230
pX, platoon unblocked	0.85					
vC, conflicting volume	1614	1080			1089	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1634	1080			1089	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	66			100	
cM capacity (veh/h)	94	265			641	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	90	1089	534
Volume Left	0	0	0
Volume Right	90	17	0
cSH	265	1700	1700
Volume to Capacity	0.34	0.64	0.31
Queue Length 95th (ft)	36	0	0
Control Delay (s)	25.4	0.0	0.0
Lane LOS	D		
Approach Delay (s)	25.4	0.0	0.0
Approach LOS	D		

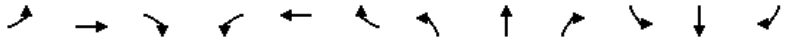
Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	64.7%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	30	214	565	20	23	362
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	33	233	614	22	25	393
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			853			974
pX, platoon unblocked	0.87	0.87			0.87	
vC, conflicting volume	1068	625			636	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1003	492			504	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	86	54			97	
cM capacity (veh/h)	227	501			920	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	33	233	636	25	393
Volume Left	33	0	0	25	0
Volume Right	0	233	22	0	0
cSH	227	501	1700	920	1700
Volume to Capacity	0.14	0.46	0.37	0.03	0.23
Queue Length 95th (ft)	12	61	0	2	0
Control Delay (s)	23.5	18.3	0.0	9.0	0.0
Lane LOS	C	C		A	
Approach Delay (s)	18.9		0.0	0.5	
Approach LOS	C				

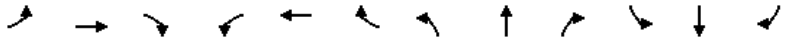
Intersection Summary			
Average Delay	4.0		
Intersection Capacity Utilization	50.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	8	82	257	37	125	81	91	205	55	410	499	40
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	89	279	40	136	88	99	223	60	446	542	43

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	98	279	176	88	99	283	446	586
Volume Left (vph)	9	0	40	0	99	0	446	0
Volume Right (vph)	0	279	0	88	0	60	0	43
Hadj (s)	0.08	-0.67	0.15	-0.67	0.53	-0.11	0.53	-0.02
Departure Headway (s)	8.4	7.6	8.6	7.9	8.7	8.0	8.0	7.5
Degree Utilization, x	0.23	0.59	0.42	0.19	0.24	0.63	0.99	1.22
Capacity (veh/h)	409	444	395	430	396	424	444	488
Control Delay (s)	12.6	20.0	16.6	11.5	13.2	22.6	68.2	138.2
Approach Delay (s)	18.1		14.9		20.2		108.0	
Approach LOS	C		B		C		F	

Intersection Summary				
Delay	63.2			
HCM Level of Service	F			
Intersection Capacity Utilization	63.2%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	56	74	184	106	295	249	482	626	61	208	385	188
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	61	80	200	115	321	271	524	680	66	226	418	204

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	141	200	436	271	524	747	226	623
Volume Left (vph)	61	0	115	0	524	0	226	0
Volume Right (vph)	0	200	0	271	0	66	0	204
Hadj (s)	0.25	-0.67	0.17	-0.67	0.53	-0.03	0.53	-0.20
Departure Headway (s)	10.7	9.8	9.8	8.9	9.8	9.2	10.2	9.4
Degree Utilization, x	0.42	0.54	1.18	0.67	1.42	1.91	0.64	1.63
Capacity (veh/h)	322	355	372	393	378	396	345	385
Control Delay (s)	20.0	22.7	135.6	27.3	230.0	440.7	28.2	318.6
Approach Delay (s)	21.6		94.1		353.8		241.2	
Approach LOS	C		F		F		F	

Intersection Summary					
Delay	229.9				
HCM Level of Service	F				
Intersection Capacity Utilization	100.1%	ICU Level of Service		G	
Analysis Period (min)	15				