

TRAFFIC IMPACT STUDY

For

**Wayne Medical, LLC
Proposed Assisted Living & Urgent Care Facility**

Property Located at:

**1777 Hamburg Turnpike (CR 689)
Block 3305 – Lot 3
Township of Wayne, Passaic County, NJ**

Prepared by:



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2849-99-001TE

INTRODUCTION

It is proposed to construct an urgent care center and an assisted living facility on a parcel of land currently developed with a medical office, located along the southbound side of Hamburg Turnpike (CR 689) in Wayne Township, Passaic County, New Jersey, see Figure 1, in Appendix A. The site is designated as Block 3305 – Lot 3 on the Township of Wayne Tax Maps. The existing use consists of a 3-story building containing 30,477 SF of medical office space. The development proposal includes the construction of a 4,102 SF urgent care center and an 80 bed assisted living facility on the site in addition to the existing medical office use (The Project). Access to the site is currently provided via one full movement driveway which provides a channelized right-turn exit along Hamburg Turnpike. The existing driveway will remain to serve the proposed development.

Dynamic Traffic LLC has been retained to prepare this study to assess the traffic impact associated with the construction of The Project on the adjacent roadway network. This study documents the methodology, analyses, findings and conclusions of our study and includes:

- A detailed field inspection was conducted to obtain an inventory of existing roadway geometry, traffic control, and location and geometry of existing driveways and intersections.
- Existing traffic data was collected via manual turning movement (MTM) counts during the weekday AM and PM peak periods at the intersections of Hamburg Turnpike with Colfax Road the existing site driveway.
- Estimates of traffic to be generated by the proposed development were prepared utilizing trip generation data as published by the Institute of Transportation Engineers. Site traffic was then assigned to the adjacent street system based upon the anticipated directional distribution.
- Capacity analyses were conducted for the Existing, No Build, and Build conditions for the study intersections.
- The proposed points of ingress and egress were inspected for adequacy of geometric design, spacing and/or alignment to streets and driveways on the opposite side of the street, relationship to other driveways adjacent to the development, and conformance with accepted design standards.
- The site plan as designed was reviewed for sufficiency in accommodating large wheel base vehicles such as delivery trucks, refuse trucks, and emergency vehicles.
- The parking layout and supply was assessed based on accepted design standards and demand experienced at similar developments.

EXISTING CONDITIONS

A review of the existing roadway conditions near the proposed site was conducted to provide the basis for assessing the traffic impact of the development. This included field investigations of the surrounding roadways and intersections, collection of traffic volume data, and extensive analyses.

Existing Roadway Conditions

The following are descriptions of the roadways in the study area:

Hamburg Turnpike (CR 689) is an Urban Principal Arterial roadway under Passaic County jurisdiction. In the vicinity of the site the posted speed limit is 45 MPH and the roadway provides two travel lanes in each direction. On-street parking is not permitted along both sides of the roadway, while sidewalk is provided along both sides of the roadway in sections. Hamburg Turnpike provides a relatively straight horizontal alignment and a relatively flat vertical alignment. The land uses along Hamburg Turnpike in the vicinity of The Project are a mixture of commercial, residential and institutional.

Colfax Road (CR 687) is an Urban Major Collector roadway under Passaic County jurisdiction. In the vicinity of the site the posted speed limit is 35 MPH and the roadway provides one travel lane in each direction. On-street parking is not permitted along both sides of the roadway, while sidewalk is not provided. Colfax Road provides a relatively straight horizontal alignment and a relatively flat vertical alignment. The land uses along Colfax Road in the vicinity of The Project are primarily residential.

Existing Traffic Volumes

Manual turning movement (MTM) counts were conducted on Thursday, December 13, 2018 between 7:00 and 9:00 AM and Tuesday, December 18, 2018 between 4:30 PM and 6:30 PM at the intersections of the existing site driveway/gas station driveway with Hamburg Turnpike and at Colfax Road with Hamburg Turnpike. Review of the collected traffic data reveals that the weekday morning network peak street hour (PSH) occurs between 7:30 AM – 8:30 AM and the weekday evening network PSH occurs between 4:45 PM – 5:45 PM. Figure 2, located in Appendix A, shows the existing peak hour traffic volumes at the study intersections. All MTM counts are contained in Appendix B.

Existing Capacity Analysis

The methodology utilized in the capacity analyses is described in the *Highway Capacity Manual 2010*, published by the Transportation Research Board. In general, the term Level of Service (LOS) is used to provide a “qualitative” evaluation of capacity based upon certain “quantitative” calculations related to empirical values, such as traffic volume and intersection control.

At the signalized intersections, factors that affect the various approach capacities include width of approach, number of lanes, signal “green time”, turning percentages, truck volumes, etc. However, delays cannot be related to capacity in a simple one-to-one fashion. For example, it is possible to have delays in the Level of Service “F” range without exceeding roadway capacity. Substantial delays can exist without exceeding capacity if one or more of the following conditions exist: long signal cycle lengths; a particular traffic movement experiences a long red time; or progressive movement for a particular lane group is poor. Table I describes the Level of Service ranges for signalized intersections

Table I
Level of Service Criteria
for Signalized Intersections

Level of Service	Average Control Delay (seconds per vehicle)
A	0.0 to 10.0
B	10.1 to 20.0
C	20.1 to 35.0
D	35.1 to 55.0
E	55.1 to 80.0
F	greater than 80.0

When analyzing an unsignalized intersection, it is assumed that both the major street through and right turn movements are unimpeded and have the right-of-way over all side street traffic and left turns from the major street. All other turning movements in the intersection cross, merge with, or are otherwise impeded by major street movements. Traffic delays at unsignalized intersections are determined by sequentially processing these impeded movements. Table II describes the Level of Service ranges for unsignalized (stop controlled) intersections.

Table II
Level of Service Criteria
for Unsignalized Intersections

Level of Service	Average Control Delay (seconds per vehicle)
a	0.0 to 10.0
b	10.1 to 15.0
c	15.1 to 25.0
d	25.1 to 35.0
e	35.1 to 50.0
f	greater than 50.0

All capacity analyses were performed utilizing the Synchro Software package. Table III summarizes the existing Levels of Service (LOS) and delay in seconds per vehicle.

**Table III
Existing Levels of Service**

Intersection	Direction/ Movement	AM PSH	PM PSH	
Hamburg Turnpike and Colfax Road/Church Driveway	EB	L	D (43)	D (43)
		TR	C (23)	C (33)
	WB	L	D (50)	D (50)
		TR	A (9)	A (1)
	NB	LT	A (10)	A (7)
		R	A (3)	A (2)
	SB	LT	B (11)	A (7)
		R	A (0)	A (0)
	Overall		B (16)	A (10)
	Hamburg Turnpike and Gas Station Driveway/Site Driveway	EB	L	c (25)
R			b (11)	b (10)
WB		LR	b (12)	c (16)
NB		LT	a (9)	a (9)
SB		LT	a (0)	a (0)

a (#) - Unsignalized Intersection Level of Service (seconds of delay per vehicle)

A (#) - Signalized Intersection Level of Service (seconds of delay per vehicle)

The following are discussions pertaining to each of the existing intersections analyzed. All capacity analysis calculation worksheets are contained in Appendix C.

Hamburg Turnpike and Colfax Road/Church Driveway

Hamburg Turnpike intersects Colfax Road and the Our Lady of Consolation Church driveway to form a four leg signalized intersection. The northbound approach of Hamburg Turnpike provides a shared left turn/through lane, a dedicated through lane and a dedicated right turn lane. The southbound approach of Hamburg Turnpike provides a shared left turn/through lane, a dedicated through lane and a dedicated right turn lane. The eastbound church driveway approach provides a dedicated left turn lane and a shared through/right turn lane. The westbound Colfax Road approach provides a dedicated left turn lane and a shared through/right turn lane.

A review of the existing analysis indicates that the intersection operates at overall Level of Service “B” or better during the analyzed peak periods. See Table III for the individual movement Levels of Service and delays.

Hamburg Turnpike and Site Driveway/Gas Station Driveway

The site driveway intersects Hamburg Turnpike opposite the gas station driveway to form a four leg unsignalized intersection with the eastbound and westbound driveway approaches under stop control. The eastbound approach of the site driveway provides a dedicated lane for left and right turn movements. The westbound gas station driveway approach provides one lane for left and right turn movements. The northbound and southbound approaches of Hamburg Turnpike provide a shared left turn/through lane and a shared through/ right turn lane.

A review of the existing analysis reveals that the individual intersection movements operate at Level of Service “C” or better during the analyzed peak periods. See Table III for the individual movement Levels of Service and delays.

FUTURE CONDITIONS

Traffic volumes and operational analyses were developed for both the No Build and Build conditions. The no build conditions provide a baseline for assessing the impact of site development traffic on the roadway system. The process of developing the No Build and Build traffic volumes and the subsequent analyses is outlined below.

Regardless of whether the subject site is developed or not, traffic volumes on the surrounding roadways are expected to increase as a result of developments throughout the region. A growth rate for roadways within the study area was obtained from the NJDOT Annual Background Growth Rate Table, which indicates a growth rate of 1.0% per year.

Future No Build traffic volumes were developed by applying the background growth rate of 1.0% for two (2) years to the study area roadways existing traffic volumes. Figure 3, in Appendix A, shows the No Build traffic volumes.

Traffic Generation

Trip generation projections for The Project were made utilizing trip generation research data as published under Land Use Code (LUC) 720 – Medical-Dental Office Building and LUC 257 – Assisted Living in the Institute of Transportation Engineers’ (ITE) publication, *Trip Generation, 10th Edition*. This publication sets forth trip generation rates based on traffic counts conducted at research sites throughout the country. The Table IV shows the anticipated trip generation for The Project during the weekday AM and weekday PM PSH.

**Table IV
Trip Generation**

Use	AM PSH			PM PSH		
	In	Out	Total	In	Out	Total
Proposed 34,579 Square Foot of Medical Office	68	19	87	33	86	119
Proposed 80 Bed Assisted Living Facility	9	6	15	8	13	21
Total	77	25	102	41	99	140

Table V below details the trip generation associated with the existing use of the property and provides a comparison to the trip generation of the proposed development.

Table V
Trip Generation Comparison

Use	AM PSH			PM PSH		
	In	Out	Total	In	Out	Total
Existing 30,477 Square Foot of Medical Office	61	17	78	29	76	105
Proposed Development	77	25	102	41	99	140
Net Increase	16	8	24	12	13	25

It should be noted that the number of new trips falls below the industry accepted standard of a significant increase in traffic of 100 trips in a peak hour. Additionally, NJDOT has determined that the same 100 trip threshold is considered a “significant increase in traffic,” hence, it is not anticipated that the change in use have any perceptible impact on the traffic operation of the adjacent roadway network.

Located in Appendix A, Figure 4 illustrates the “New” site generated volumes assigned to the study area network. The site “New” generated volumes were added to the No Build traffic volumes to generate the Build traffic volumes, which are shown in Figure 5.

Future Capacity Analysis

Operational conditions at the study intersections were analyzed under the No Build and Build conditions and are summarized in Table VI below.

Table VI
Future Levels of Service

Intersection	Direction/ Movement		AM PSH		PM PSH	
			No Build	Build	No Build	Build
Hamburg Turnpike and Colfax Road/Church Driveway	EB	L	D (43)	D (43)	D (43)	D (43)
		TR	C (23)	C (23)	C (33)	C (33)
	WB	L	D (50)	D (50)	D (50)	D (50)
		TR	A (9)	A (9)	A (1)	A (1)
	NB	LT	B (10)	B (10)	A (7)	A (7)
		R	A (3)	A (3)	A (2)	A (2)
	SB	LT	B (11)	B (11)	A (7)	A (7)
		R	A (0)	A (0)	A (0)	A (0)
	Overall		B (17)	B (17)	A (10)	A (10)
	Hamburg Turnpike and Gas Station Driveway/Site Driveway	EB	L	d (26)	d (28)	c (25)
R			b (11)	b (11)	b (10)	b (10)
WB		LR	b (12)	b (12)	c (17)	c (17)
NB		LT	a (10)	a (10)	a (9)	a (9)
SB		LT	a (0)	a (0)	a (0)	a (0)

a (#) - Unsignalized Intersection Level of Service (seconds of delay per vehicle)

A (#) - Signalized Intersection Level of Service (seconds of delay per vehicle)

Hamburg Turnpike and Colfax Road/Church Driveway

With the consideration of the additional site traffic, the intersection will continue to operate with overall Levels of Service “B” or better during the AM and PM peak hours, maintaining the No Build Levels of Service. See Table VI for the individual movement Levels of Service and delays.

Hamburg Turnpike and Site Driveway/Gas Station Driveway

With the consideration of the additional site traffic, the individual intersection movements will operate with Levels of Service “D” or better during the AM and PM peak hours. See Table VI for the individual movement Levels of Service and delays. Level of Service “D” translates to a 95th percentile queue of approximately one vehicle which will not negatively impact site circulation.

SITE PLAN

Site Access and Circulation

The site plan was reviewed with respect to the site access and on-site circulation design. As noted previously, access to The Project will be provided via the existing full movement driveway along Hamburg Turnpike.

The newly constructed portions of the parking lot will be serviced by parking aisles with widths of 24 feet, which meet the Ordinance’s requirement of 24 feet. These aisles will allow for two-way circulation to accommodate the proposed 90 degree parking. Review of the site plan design indicates that the site can sufficiently accommodate, within paved areas, a large wheel base vehicle, such as a single unit truck (SU), along with the automobile traffic anticipated.

ITE Parking Demand Analysis

National parking demand data has been collected by the Institute of Transportation Engineers (ITE) within their publication *Parking Generation, 4th Edition*. This publication establishes peak parking demands for multiple land uses based upon different independent variables, such as GFA and employees. For Land Use Code (LUC) 720 – Medical-Dental Office Building, ITE sets forth an average peak demand of 3.20 vehicles per 1,000 SF of GFA. This equates to a peak demand of 111 parking spaces. For LUC 254 – Assisted Living, ITE sets forth an average peak demand of 0.41 vehicles per Dwelling Unit. This equates to a peak demand of 33 parking spaces. Table VII provides a shared parking analysis of the medical office and assisted living components for a typical weekday based on the time of day distribution data published by the ITE for each land use.

**Table VII
Shared Parking Analysis**

Hour Beginning	34,579 SF Medical Office		Units Assisted Living		Development Total
	Percent of Peak	Parking Demand	Percent of Peak	Parking Demand	
7:00 AM	18%	20	65%	22	42
8:00 AM	64%	71	78%	26	97
9:00 AM	85%	94	81%	27	121
10:00 AM	100%	111	87%	29	140
11:00 AM	100%	111	100%	33	144
12:00 PM	88%	98	95%	31	129
1:00 PM	81%	90	97%	32	122
2:00 PM	90%	100	92%	30	130
3:00 PM	93%	103	86%	28	135
4:00 PM	86%	95	81%	27	124
5:00 PM	52%	58	87%	29	87
6:00 PM	63%	70	77%	25	95

Consequently, the ITE parking shared parking analysis calculates an overall peak demand of 144 spaces for the site which translates to an 80% occupancy and therefore, the proposed 180 spaces will be sufficient to support the project.

FINDINGS & CONCLUSIONS

Findings

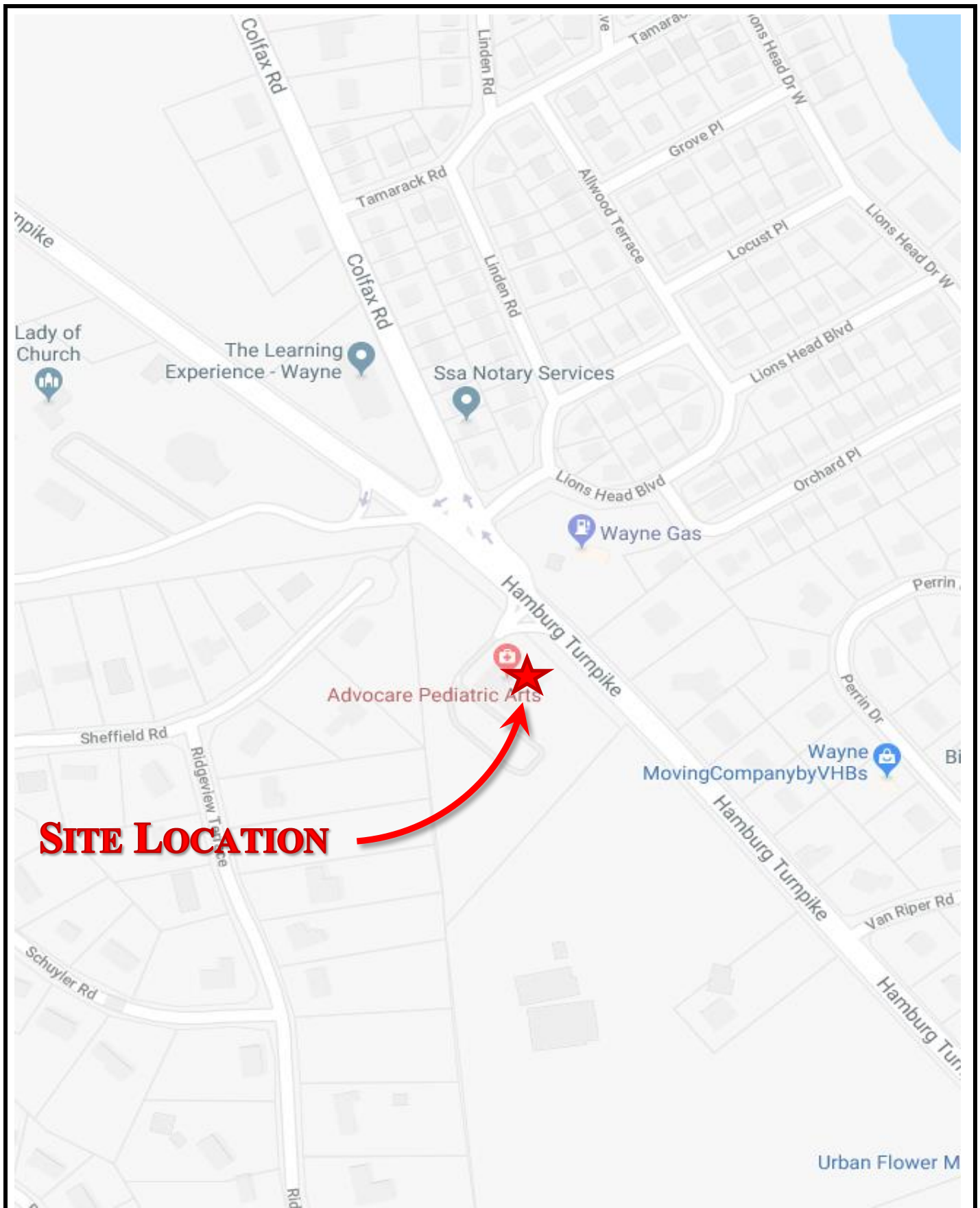
Based upon the detailed analyses as documented herein, the following findings are noted:

- The proposed assisted living and urgent care facility will generate the following additional trips on the adjacent roadway network when compared to the existing medical office; 16 entering trips and 9 exiting trips during the morning peak hour and 12 entering trips and 13 exiting trips during the evening peak hour.
- Access to the site will be provided via the existing full movement driveway along Hamburg Turnpike.
- With the consideration of the additional site generated traffic, the intersection of Hamburg Turnpike with Colfax Road and the church site driveway will continue to operate at overall Level of Service “B” or better during the peak hours studied, maintaining the No Build Levels of Service.
- With the consideration of the additional site generated traffic, the intersection of Hamburg Turnpike with the site driveway and gas station driveway will operate at Level of Service “D” or better during the peak hours studied.
- As proposed, The Project’s site driveways and internal circulation have been designed to provide for safe and efficient movement of automobile and large wheel base vehicles.
- The proposed parking supply and design is sufficient to support the projected demand.

Conclusions

Based upon our Traffic Impact Study as detailed in the body of this report, it is the professional opinion of Dynamic Traffic LLC that the adjacent street system of the Township of Wayne and Passaic County will not experience any significant degradation in operating conditions with the construction of The Project. The site driveway is located to provide safe and efficient access to the adjacent roadway system. The site plan as proposed provides for good circulation throughout the site and provides adequate parking to accommodate The Project’s needs.

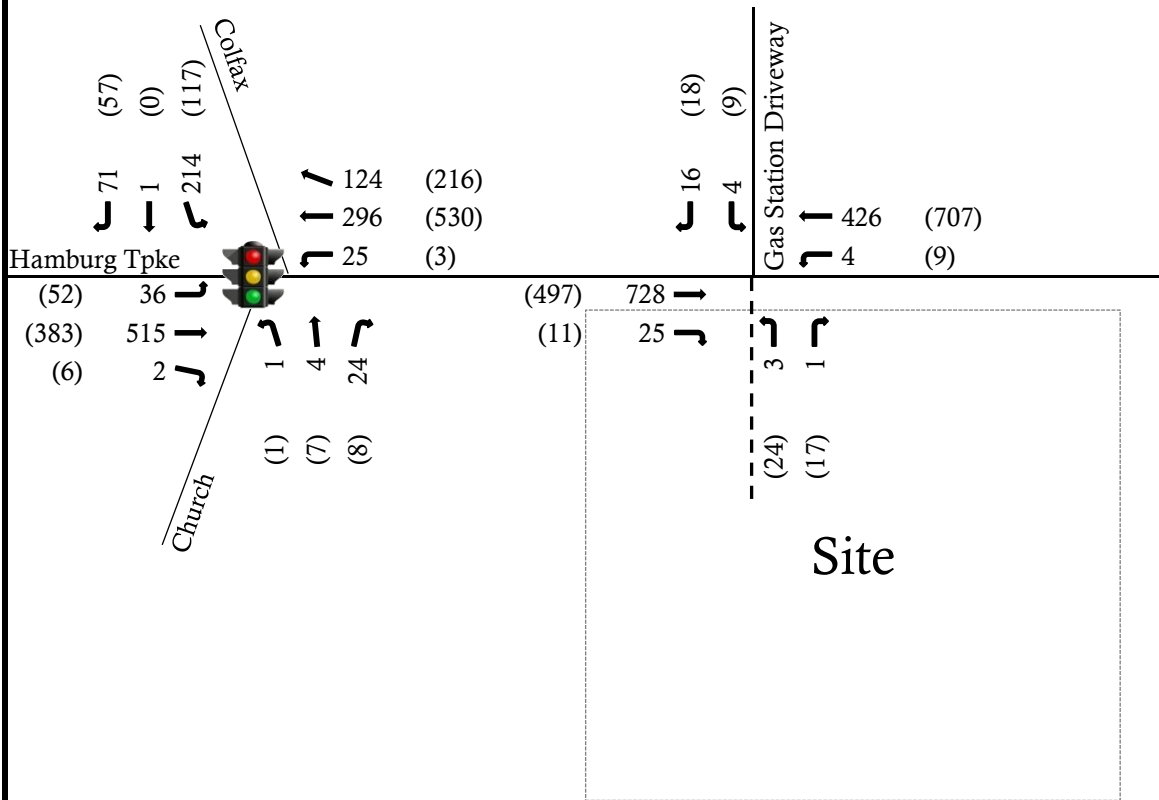
Appendix A
Volume Figures







Proposed Residential Development
Traffic Impact Study
2849-99-001TE
12/27/2018

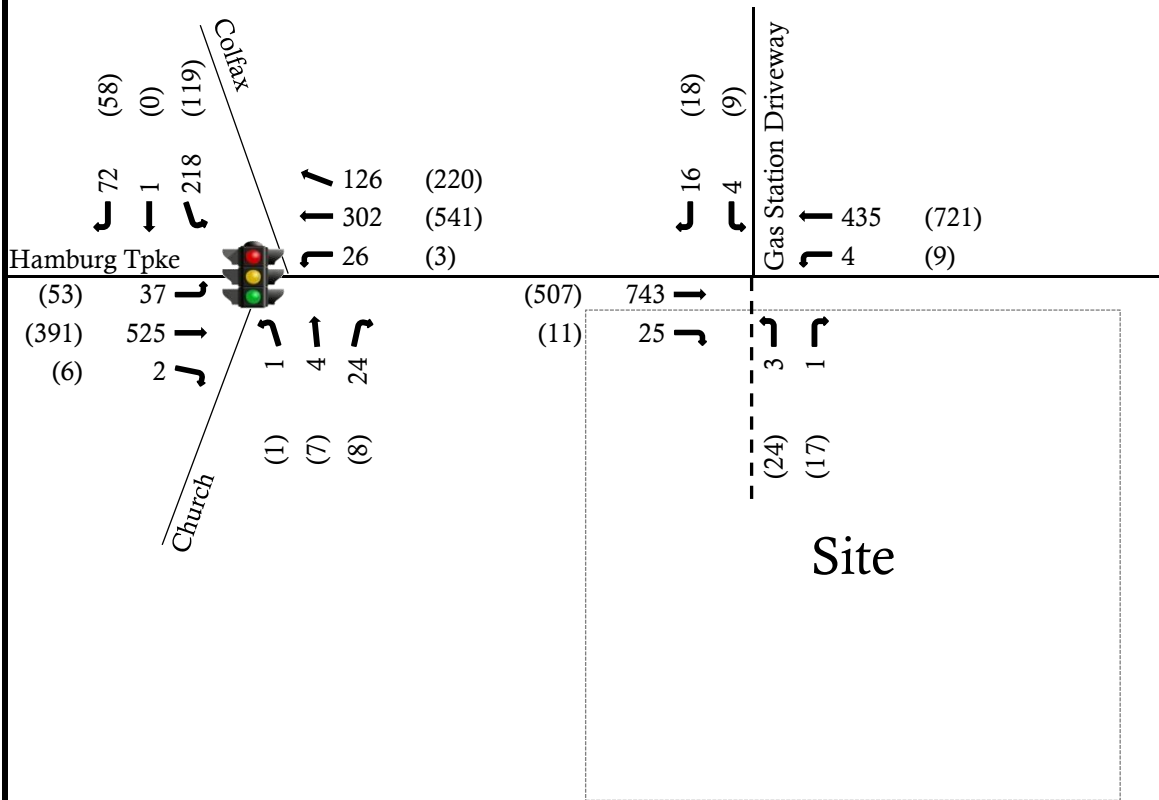
Figure 1

Site Location Map







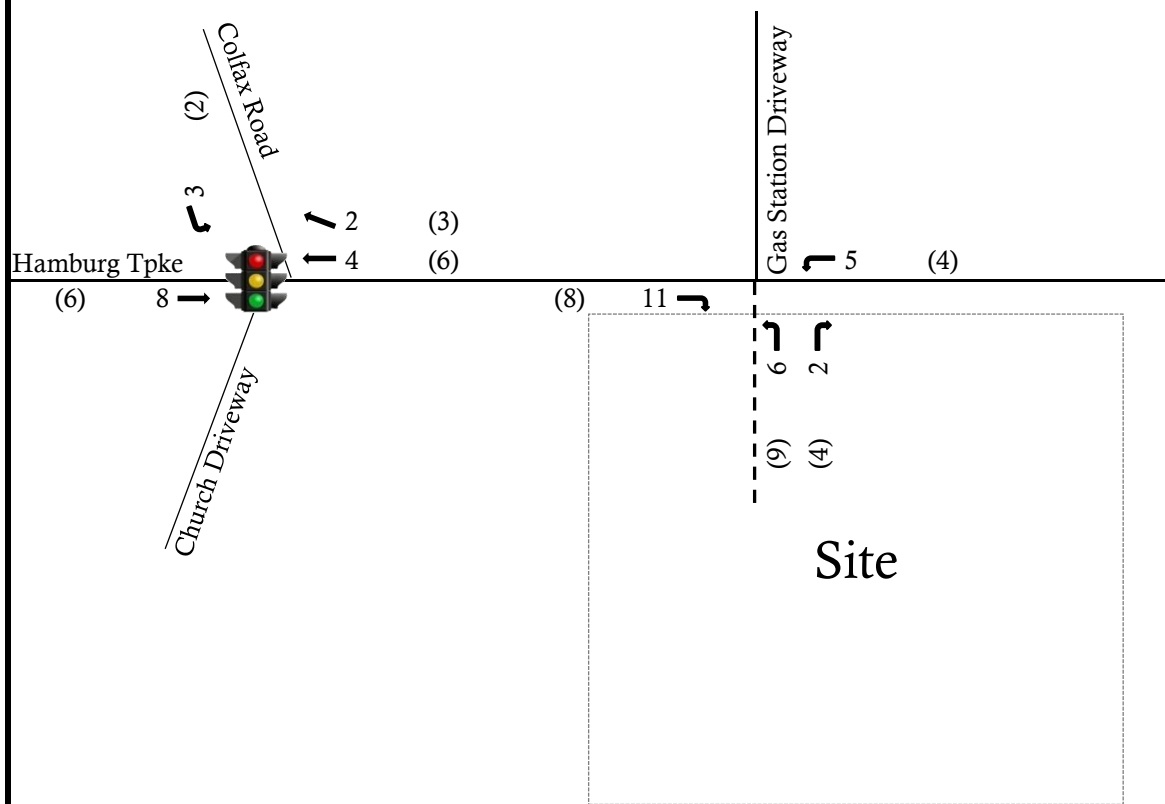
LEGEND

-  Existing Roadway
-  Proposed Roadway
-  AM (PM)
-  Signalized Intersection



LEGEND

-  Existing Roadway
-  Proposed Roadway
-  AM (PM)
-  Signalized Intersection



LEGEND


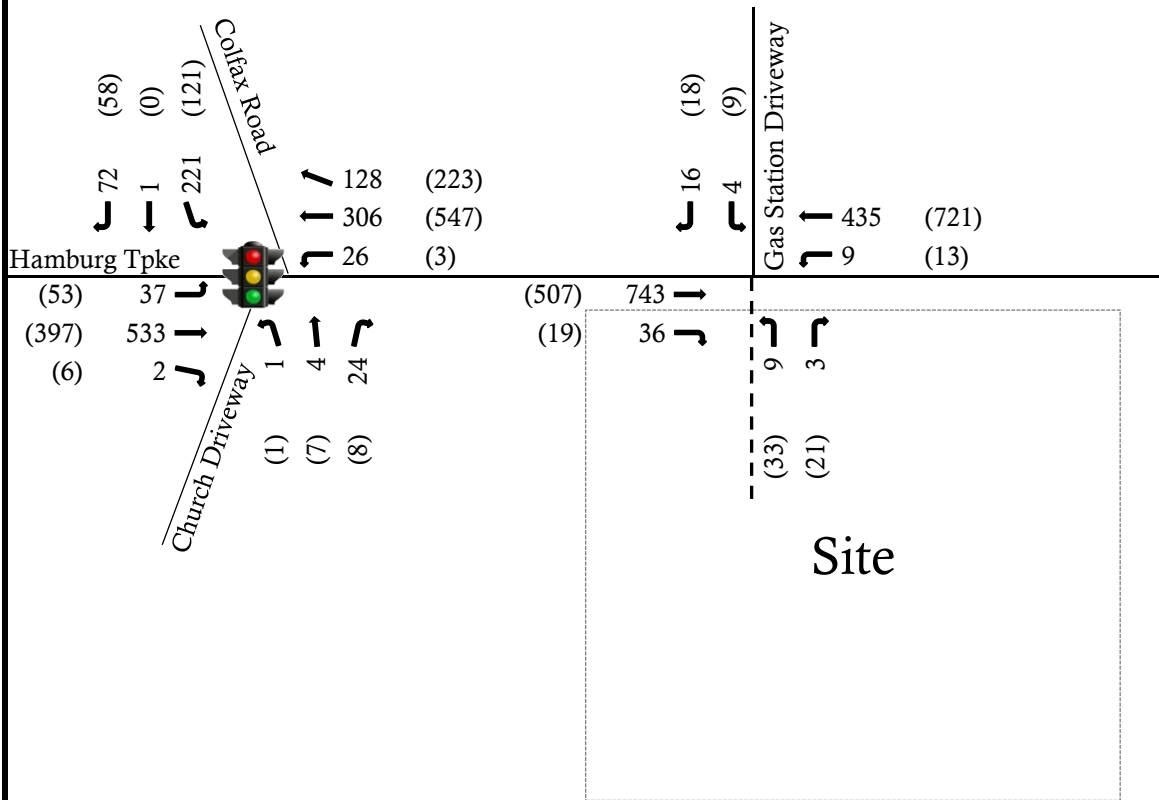
- Existing Roadway
- - - Proposed Roadway
- ← AM (PM)
-  Signalized Intersection







Figure 4

New Site Generated Trips



LEGEND

-  Existing Roadway
-  Proposed Roadway
-  AM (PM)
-  Signalized Intersection



Appendix B
Traffic Counts

Dynamic Traffic, LLC

1904 Main Street, Lake Como, NJ 07719
 245 Main Street - Suite 110, Chester, NJ 07930
 732-681-0760

E/W: Church Driveway/Colfax Rd
 N/S: Hamburg Tpke
 Town/County: Wayne/Passaic
 Job #: 2849-99-001TE

File Name : Hamburg Tpke & Church Driveway & Colfax Rd - AM
 Site Code : 00000000
 Start Date : 12/13/2018
 Page No : 1

Groups Printed- Cars - Single Unit Trucks - Tractor Trailers

Start Time	Church Driveway Eastbound					Colfax Road Westbound					Hamburg Turnpike Northbound					Hamburg Turnpike Southbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Right to Lions Head Blvd	App. Total	Left	Thru	Right	Peds	App. Total	
07:00 AM	0	1	2	0	3	53	0	16	0	69	0	49	16	1	66	3	93	0	0	96	234
07:15 AM	0	1	2	0	3	46	0	20	0	66	0	62	23	3	88	6	115	0	0	121	278
07:30 AM	0	1	3	0	4	68	0	15	0	83	3	57	34	0	94	5	134	0	0	139	320
07:45 AM	0	1	8	0	9	66	0	13	0	79	12	79	27	2	120	13	127	0	0	140	348
Total	0	4	15	0	19	233	0	64	0	297	15	247	100	6	368	27	469	0	0	496	1180
08:00 AM	0	1	10	0	11	41	1	23	0	65	9	86	25	1	121	9	113	0	0	122	319
08:15 AM	1	1	3	0	5	39	0	20	0	59	1	74	38	1	114	9	141	2	0	152	330
08:30 AM	0	1	4	0	5	54	0	16	0	70	2	64	38	2	106	13	117	0	0	130	311
08:45 AM	0	0	1	0	1	59	0	16	0	75	1	71	41	0	113	6	106	1	0	113	302
Total	1	3	18	0	22	193	1	75	0	269	13	295	142	4	454	37	477	3	0	517	1262
Grand Total	1	7	33	0	41	426	1	139	0	566	28	542	242	10	822	64	946	3	0	1013	2442
Apprch %	2.4	17.1	80.5	0		75.3	0.2	24.6	0		3.4	65.9	29.4	1.2		6.3	93.4	0.3	0		
Total %	0	0.3	1.4	0	1.7	17.4	0	5.7	0	23.2	1.1	22.2	9.9	0.4	33.7	2.6	38.7	0.1	0	41.5	
Cars	1	7	32	0	40	420	1	138	0	559	28	512	235	9	784	62	894	2	0	958	2341
% Cars	100	100	97	0	97.6	98.6	100	99.3	0	98.8	100	94.5	97.1	90	95.4	96.9	94.5	66.7	0	94.6	95.9
Single Unit Trucks	0	0	1	0	1	6	0	1	0	7	0	27	7	1	35	2	49	1	0	52	95
% Single Unit Trucks	0	0	3	0	2.4	1.4	0	0.7	0	1.2	0	5	2.9	10	4.3	3.1	5.2	33.3	0	5.1	3.9
Tractor Trailers	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	3	0	0	3	6
% Tractor Trailers	0	0	0	0	0	0	0	0	0	0	0	0.6	0	0	0.4	0	0.3	0	0	0.3	0.2

Dynamic Traffic, LLC

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E/W: Church Driveway/Colfax Rd
 N/S: Hamburg Tpke
 Town/County: Wayne/Passaic
 Job #: 2849-99-001TE

File Name : Hamburg Tpke & Church Driveway & Colfax Rd - PM
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Start Time	Church Driveway Eastbound					Colfax Road Westbound					Hamburg Turnpike Northbound					Hamburg Turnpike Southbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
04:30 PM	0	0	1	0	1	38	0	8	0	46	0	119	36	5	160	11	91	0	0	102	309
04:45 PM	0	2	2	0	4	32	0	14	0	46	0	144	45	6	195	13	79	2	0	94	339
Total	0	2	3	0	5	70	0	22	0	92	0	263	81	11	355	24	170	2	0	196	648
05:00 PM	0	3	3	0	6	25	0	14	0	39	2	138	67	2	209	12	96	0	0	108	362
05:15 PM	0	2	2	0	4	34	0	8	0	42	0	131	54	2	187	11	115	1	0	127	360
05:30 PM	1	0	1	0	2	26	0	21	0	47	1	117	50	3	171	16	93	3	0	112	332
05:45 PM	0	3	1	0	4	36	0	21	0	57	2	129	39	1	171	9	93	1	0	103	335
Total	1	8	7	0	16	121	0	64	0	185	5	515	210	8	738	48	397	5	0	450	1389
06:00 PM	0	0	8	0	8	29	0	6	0	35	2	92	51	3	148	11	70	0	0	81	272
06:15 PM	0	1	0	0	1	27	0	7	0	34	1	114	50	4	169	10	61	0	0	71	275
Grand Total	1	11	18	0	30	247	0	99	0	346	8	984	392	26	1410	93	698	7	0	798	2584
Apprch %	3.3	36.7	60	0		71.4	0	28.6	0		0.6	69.8	27.8	1.8		11.7	87.5	0.9	0		
Total %	0	0.4	0.7	0	1.2	9.6	0	3.8	0	13.4	0.3	38.1	15.2	1	54.6	3.6	27	0.3	0	30.9	
Cars	1	11	18	0	30	247	0	99	0	346	8	976	392	26	1402	91	692	7	0	790	2568
% Cars	100	100	100	0	100	100	0	100	0	100	100	99.2	100	100	99.4	97.8	99.1	100	0	99	99.4
Single Unit Trucks	0	0	0	0	0	0	0	0	0	0	0	8	0	0	8	2	5	0	0	7	15
% Single Unit Trucks	0	0	0	0	0	0	0	0	0	0	0	0.8	0	0	0.6	2.2	0.7	0	0	0.9	0.6
Tractor Trailers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
% Tractor Trailers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0	0.1	0

Appendix C
Capacity Analysis

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	4	24	214	1	71	25	296	124	36	515	2
Future Volume (vph)	1	4	24	214	1	71	25	296	124	36	515	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	14	14	14	10	10	13	10	10	10
Storage Length (ft)	0		0	0		40	0		150	0		107
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			45			45			45	
Link Distance (ft)		259			214			86			339	
Travel Time (s)		7.1			3.2			1.3			5.1	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	2%	0%	1%	0%	4%	3%	0%	6%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	1	29	0	225	76	0	0	338	131	0	580	2
Turn Type	Split	NA		Split	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	4	4		8	8			2			6	
Permitted Phases							2		2	6		6
Detector Phase	4	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		45.0	45.0	45.0	45.0	45.0	45.0
Minimum Split (s)	13.0	13.0		12.0	12.0		52.0	52.0	52.0	52.0	52.0	52.0
Total Split (s)	13.0	13.0		35.0	35.0		52.0	52.0	52.0	52.0	52.0	52.0
Total Split (%)	13.0%	13.0%		35.0%	35.0%		52.0%	52.0%	52.0%	52.0%	52.0%	52.0%
Yellow Time (s)	3.0	3.0		3.0	3.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	3.0	3.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0		5.0	5.0			7.0	7.0		7.0	7.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Min	C-Min	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	7.0	7.0		17.2	17.2			63.0	63.0		63.0	63.0
Actuated g/C Ratio	0.07	0.07		0.17	0.17			0.63	0.63		0.63	0.63
v/c Ratio	0.01	0.21		0.69	0.21			0.19	0.12		0.32	0.00
Control Delay	43.0	23.1		49.7	9.4			9.9	2.5		11.0	0.0
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay	43.0	23.1		49.7	9.4			9.9	2.5		11.0	0.0
LOS	D	C		D	A			A	A		B	A
Approach Delay		23.7			39.5			7.8			10.9	
Approach LOS		C			D			A			B	
Queue Length 50th (ft)	1	2		136	1			50	0		95	0
Queue Length 95th (ft)	6	31		201	36			86	28		152	0
Internal Link Dist (ft)		179			134			6			259	
Turn Bay Length (ft)									150			107
Base Capacity (vph)	126	139		566	565			1810	1068		1822	981
Starvation Cap Reductn	0	0		0	0			0	0		0	0
Spillback Cap Reductn	0	0		0	0			0	0		0	0
Storage Cap Reductn	0	0		0	0			0	0		0	0

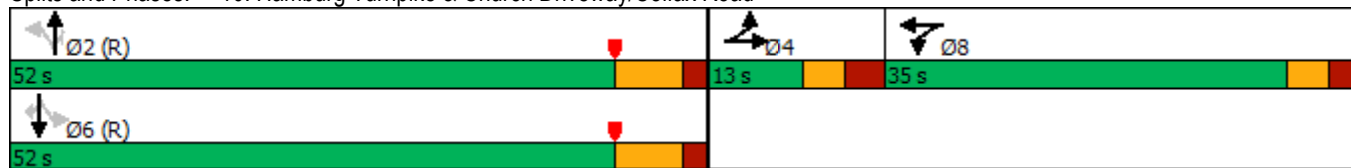


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.01	0.21		0.40	0.13			0.19	0.12		0.32	0.00

Intersection Summary

Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	100
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle:	80
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.69
Intersection Signal Delay:	16.4
Intersection LOS:	B
Intersection Capacity Utilization	97.5%
ICU Level of Service	F
Analysis Period (min)	15

Splits and Phases: 10: Hamburg Turnpike & Church Driveway/Colfax Road



Intersection												
Int Delay, s/veh	0.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔			↔			↔	
Traffic Vol, veh/h	3	0	1	4	0	16	4	426	0	0	728	25
Future Vol, veh/h	3	0	1	4	0	16	4	426	0	0	728	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0	0	4	0	0	5	4
Mvmt Flow	3	0	1	4	0	17	4	458	0	0	783	27

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1034	1263	405	858	1276	229	810	0	0	458	0	0
Stage 1	797	797	-	466	466	-	-	-	-	-	-	-
Stage 2	237	466	-	392	810	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	189	171	601	254	168	780	825	-	-	1114	-	-
Stage 1	351	401	-	551	566	-	-	-	-	-	-	-
Stage 2	751	566	-	610	396	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	184	170	601	252	167	780	825	-	-	1114	-	-
Mov Cap-2 Maneuver	184	170	-	252	167	-	-	-	-	-	-	-
Stage 1	349	401	-	547	562	-	-	-	-	-	-	-
Stage 2	729	562	-	609	396	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	21.4		11.8		0.1		0	
HCM LOS	C		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	825	-	-	184	601	550	1114	-	-
HCM Lane V/C Ratio	0.005	-	-	0.018	0.002	0.039	-	-	-
HCM Control Delay (s)	9.4	0	-	24.9	11	11.8	0	-	-
HCM Lane LOS	A	A	-	C	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0.1	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	7	8	117	0	57	3	530	216	52	383	6
Future Volume (vph)	1	7	8	117	0	57	3	530	216	52	383	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	14	14	14	10	10	13	10	10	10
Storage Length (ft)	0		0	0		40	0		150	0		107
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			45			45			45	
Link Distance (ft)		259			214			86			339	
Travel Time (s)		7.1			3.2			1.3			5.1	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	0%	2%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	1	15	0	122	59	0	0	555	225	0	453	6
Turn Type	Split	NA		Split	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	4	4		8	8			2			6	
Permitted Phases							2		2	6		6
Detector Phase	4	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		45.0	45.0	45.0	45.0	45.0	45.0
Minimum Split (s)	13.0	13.0		12.0	12.0		52.0	52.0	52.0	52.0	52.0	52.0
Total Split (s)	13.0	13.0		35.0	35.0		52.0	52.0	52.0	52.0	52.0	52.0
Total Split (%)	13.0%	13.0%		35.0%	35.0%		52.0%	52.0%	52.0%	52.0%	52.0%	52.0%
Yellow Time (s)	3.0	3.0		3.0	3.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	3.0	3.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0		5.0	5.0			7.0	7.0		7.0	7.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Min	C-Min	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	7.0	7.0		11.7	11.7			71.1	71.1		71.1	71.1
Actuated g/C Ratio	0.07	0.07		0.12	0.12			0.71	0.71		0.71	0.71
v/c Ratio	0.01	0.12		0.54	0.12			0.25	0.18		0.23	0.01
Control Delay	43.0	32.6		50.0	0.5			6.7	1.6		6.7	0.0
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay	43.0	32.6		50.0	0.5			6.7	1.6		6.7	0.0
LOS	D	C		D	A			A	A		A	A
Approach Delay		33.2			33.9			5.2			6.7	
Approach LOS		C			C			A			A	
Queue Length 50th (ft)	1	4		74	0			43	0		35	0
Queue Length 95th (ft)	6	25		126	0			116	29		97	0
Internal Link Dist (ft)		179			134			6			259	
Turn Bay Length (ft)									150			107
Base Capacity (vph)	126	129		577	750			2260	1251		1954	1096
Starvation Cap Reductn	0	0		0	0			0	0		0	0
Spillback Cap Reductn	0	0		0	0			0	0		0	0
Storage Cap Reductn	0	0		0	0			0	0		0	0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.01	0.12		0.21	0.08			0.25	0.18		0.23	0.01

Intersection Summary

Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	100
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle:	80
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.54
Intersection Signal Delay:	9.6
Intersection LOS:	A
Intersection Capacity Utilization	97.5%
ICU Level of Service	F
Analysis Period (min)	15

Splits and Phases: 10: Hamburg Turnpike & Church Driveway/Colfax Road

Ø2 (R) 52 s	Ø4 13 s	Ø6 (R) 52 s	Ø8 35 s
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Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕			↕↗			↕↗	
Traffic Vol, veh/h	24	0	17	9	0	18	9	707	0	0	497	11
Future Vol, veh/h	24	0	17	9	0	18	9	707	0	0	497	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	1	0
Mvmt Flow	26	0	18	10	0	19	10	752	0	0	529	12

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	931	1307	271	1037	1313	376	541	0	0	752	0	0
Stage 1	535	535	-	772	772	-	-	-	-	-	-	-
Stage 2	396	772	-	265	541	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	225	161	733	188	160	627	1038	-	-	867	-	-
Stage 1	502	527	-	363	412	-	-	-	-	-	-	-
Stage 2	606	412	-	723	524	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	215	158	733	181	157	627	1038	-	-	867	-	-
Mov Cap-2 Maneuver	215	158	-	181	157	-	-	-	-	-	-	-
Stage 1	493	527	-	357	405	-	-	-	-	-	-	-
Stage 2	578	405	-	705	524	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	18.2		16.4		0.2		0	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1038	-	-	215	733	344	867	-	-
HCM Lane V/C Ratio	0.009	-	-	0.119	0.025	0.083	-	-	-
HCM Control Delay (s)	8.5	0.1	-	24	10	16.4	0	-	-
HCM Lane LOS	A	A	-	C	B	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.1	0.3	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	4	24	218	1	72	26	302	126	37	525	2
Future Volume (vph)	1	4	24	218	1	72	26	302	126	37	525	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	14	14	14	10	10	13	10	10	10
Storage Length (ft)	0		0	0		40	0		150	0		107
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			45			45			45	
Link Distance (ft)		259			214			86			339	
Travel Time (s)		7.1			3.2			1.3			5.1	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	2%	0%	1%	0%	4%	3%	0%	6%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	1	29	0	229	77	0	0	345	133	0	592	2
Turn Type	Split	NA		Split	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	4	4		8	8			2			6	
Permitted Phases							2		2	6		6
Detector Phase	4	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		45.0	45.0	45.0	45.0	45.0	45.0
Minimum Split (s)	13.0	13.0		12.0	12.0		52.0	52.0	52.0	52.0	52.0	52.0
Total Split (s)	13.0	13.0		35.0	35.0		52.0	52.0	52.0	52.0	52.0	52.0
Total Split (%)	13.0%	13.0%		35.0%	35.0%		52.0%	52.0%	52.0%	52.0%	52.0%	52.0%
Yellow Time (s)	3.0	3.0		3.0	3.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	3.0	3.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0		5.0	5.0			7.0	7.0		7.0	7.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Min	C-Min	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	7.0	7.0		17.4	17.4			62.8	62.8		62.8	62.8
Actuated g/C Ratio	0.07	0.07		0.17	0.17			0.63	0.63		0.63	0.63
v/c Ratio	0.01	0.21		0.70	0.21			0.19	0.12		0.33	0.00
Control Delay	43.0	23.1		49.6	9.3			10.1	2.5		11.2	0.0
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay	43.0	23.1		49.6	9.3			10.1	2.5		11.2	0.0
LOS	D	C		D	A			B	A		B	A
Approach Delay		23.7			39.5			7.9			11.1	
Approach LOS		C			D			A			B	
Queue Length 50th (ft)	1	2		138	1			52	0		99	0
Queue Length 95th (ft)	6	31		203	37			88	28		156	0
Internal Link Dist (ft)		179			134			6			259	
Turn Bay Length (ft)									150			107
Base Capacity (vph)	126	139		566	566			1796	1066		1811	978
Starvation Cap Reductn	0	0		0	0			0	0		0	0
Spillback Cap Reductn	0	0		0	0			0	0		0	0
Storage Cap Reductn	0	0		0	0			0	0		0	0

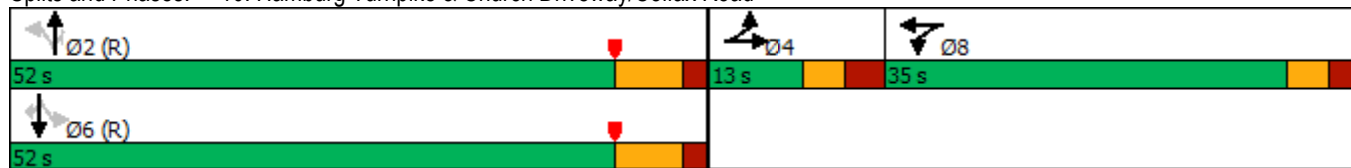


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.01	0.21		0.40	0.14			0.19	0.12		0.33	0.00

Intersection Summary

Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	100
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle:	80
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.70
Intersection Signal Delay:	16.5
Intersection LOS:	B
Intersection Capacity Utilization	97.5%
ICU Level of Service	F
Analysis Period (min)	15

Splits and Phases: 10: Hamburg Turnpike & Church Driveway/Colfax Road



Intersection												
Int Delay, s/veh	0.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕			↕			↕	
Traffic Vol, veh/h	3	0	1	4	0	16	4	435	0	0	743	25
Future Vol, veh/h	3	0	1	4	0	16	4	435	0	0	743	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0	0	4	0	0	5	4
Mvmt Flow	3	0	1	4	0	17	4	468	0	0	799	27

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1055	1289	413	876	1302	234	826	0	0	468	0	0
Stage 1	813	813	-	476	476	-	-	-	-	-	-	-
Stage 2	242	476	-	400	826	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	183	165	594	246	162	774	813	-	-	1104	-	-
Stage 1	343	395	-	544	560	-	-	-	-	-	-	-
Stage 2	746	560	-	603	389	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	178	164	594	244	161	774	813	-	-	1104	-	-
Mov Cap-2 Maneuver	178	164	-	244	161	-	-	-	-	-	-	-
Stage 1	341	395	-	540	556	-	-	-	-	-	-	-
Stage 2	724	556	-	602	389	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	22		11.9		0.1		0	
HCM LOS	C		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	813	-	-	178	594	540	1104	-	-
HCM Lane V/C Ratio	0.005	-	-	0.018	0.002	0.04	-	-	-
HCM Control Delay (s)	9.5	0	-	25.6	11.1	11.9	0	-	-
HCM Lane LOS	A	A	-	D	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0.1	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	7	8	119	0	58	3	541	220	53	391	6
Future Volume (vph)	1	7	8	119	0	58	3	541	220	53	391	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	14	14	14	10	10	13	10	10	10
Storage Length (ft)	0		0	0		40	0		150	0		107
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			45			45			45	
Link Distance (ft)		259			214			86			339	
Travel Time (s)		7.1			3.2			1.3			5.1	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	0%	2%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	1	15	0	124	60	0	0	567	229	0	462	6
Turn Type	Split	NA		Split	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	4	4		8	8			2			6	
Permitted Phases							2		2	6		6
Detector Phase	4	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		45.0	45.0	45.0	45.0	45.0	45.0
Minimum Split (s)	13.0	13.0		12.0	12.0		52.0	52.0	52.0	52.0	52.0	52.0
Total Split (s)	13.0	13.0		35.0	35.0		52.0	52.0	52.0	52.0	52.0	52.0
Total Split (%)	13.0%	13.0%		35.0%	35.0%		52.0%	52.0%	52.0%	52.0%	52.0%	52.0%
Yellow Time (s)	3.0	3.0		3.0	3.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	3.0	3.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0		5.0	5.0			7.0	7.0		7.0	7.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Min	C-Min	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	7.0	7.0		11.8	11.8			71.0	71.0		71.0	71.0
Actuated g/C Ratio	0.07	0.07		0.12	0.12			0.71	0.71		0.71	0.71
v/c Ratio	0.01	0.12		0.55	0.12			0.25	0.18		0.24	0.01
Control Delay	43.0	32.6		49.9	0.5			6.8	1.6		6.8	0.0
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay	43.0	32.6		49.9	0.5			6.8	1.6		6.8	0.0
LOS	D	C		D	A			A	A		A	A
Approach Delay		33.2			33.8			5.3			6.7	
Approach LOS		C			C			A			A	
Queue Length 50th (ft)	1	4		76	0			44	0		36	0
Queue Length 95th (ft)	6	25		128	0			120	29		100	0
Internal Link Dist (ft)		179			134			6			259	
Turn Bay Length (ft)									150			107
Base Capacity (vph)	126	129		577	746			2256	1251		1944	1094
Starvation Cap Reductn	0	0		0	0			0	0		0	0
Spillback Cap Reductn	0	0		0	0			0	0		0	0
Storage Cap Reductn	0	0		0	0			0	0		0	0

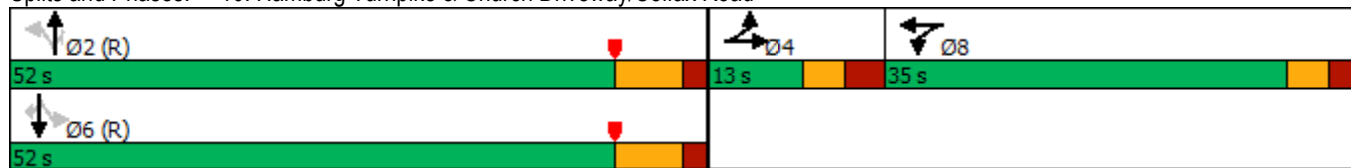


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.01	0.12		0.21	0.08			0.25	0.18		0.24	0.01

Intersection Summary

Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	100
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle:	80
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.55
Intersection Signal Delay:	9.7
Intersection LOS:	A
Intersection Capacity Utilization	97.5%
ICU Level of Service	F
Analysis Period (min)	15

Splits and Phases: 10: Hamburg Turnpike & Church Driveway/Colfax Road



Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕			↕↗			↕↗	
Traffic Vol, veh/h	24	0	17	9	0	18	9	721	0	0	507	11
Future Vol, veh/h	24	0	17	9	0	18	9	721	0	0	507	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	1	0
Mvmt Flow	26	0	18	10	0	19	10	767	0	0	539	12

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	949	1332	276	1057	1338	384	551	0	0	767	0	0
Stage 1	545	545	-	787	787	-	-	-	-	-	-	-
Stage 2	404	787	-	270	551	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	218	156	727	182	154	620	1029	-	-	856	-	-
Stage 1	495	522	-	355	406	-	-	-	-	-	-	-
Stage 2	600	406	-	718	519	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	209	153	727	175	151	620	1029	-	-	856	-	-
Mov Cap-2 Maneuver	209	153	-	175	151	-	-	-	-	-	-	-
Stage 1	487	522	-	349	399	-	-	-	-	-	-	-
Stage 2	572	399	-	700	519	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.6	16.7	0.2	0
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1029	-	-	209	727	336	856	-	-
HCM Lane V/C Ratio	0.009	-	-	0.122	0.025	0.085	-	-	-
HCM Control Delay (s)	8.5	0.1	-	24.6	10.1	16.7	0	-	-
HCM Lane LOS	A	A	-	C	B	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.1	0.3	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	4	24	221	1	72	26	306	128	37	533	2
Future Volume (vph)	1	4	24	221	1	72	26	306	128	37	533	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	14	14	14	10	10	13	10	10	10
Storage Length (ft)	0		0	0		40	0		150	0		107
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			45			45			45	
Link Distance (ft)		259			214			86			339	
Travel Time (s)		7.1			3.2			1.3			5.1	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	2%	0%	1%	0%	4%	3%	0%	6%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	1	29	0	233	77	0	0	349	135	0	600	2
Turn Type	Split	NA		Split	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	4	4		8	8			2			6	
Permitted Phases							2		2	6		6
Detector Phase	4	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		45.0	45.0	45.0	45.0	45.0	45.0
Minimum Split (s)	13.0	13.0		12.0	12.0		52.0	52.0	52.0	52.0	52.0	52.0
Total Split (s)	13.0	13.0		35.0	35.0		52.0	52.0	52.0	52.0	52.0	52.0
Total Split (%)	13.0%	13.0%		35.0%	35.0%		52.0%	52.0%	52.0%	52.0%	52.0%	52.0%
Yellow Time (s)	3.0	3.0		3.0	3.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	3.0	3.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0		5.0	5.0			7.0	7.0		7.0	7.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Min	C-Min	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	7.0	7.0		17.7	17.7			62.5	62.5		62.5	62.5
Actuated g/C Ratio	0.07	0.07		0.18	0.18			0.62	0.62		0.62	0.62
v/c Ratio	0.01	0.21		0.70	0.21			0.19	0.13		0.33	0.00
Control Delay	43.0	23.1		49.5	9.2			10.2	2.5		11.3	0.0
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay	43.0	23.1		49.5	9.2			10.2	2.5		11.3	0.0
LOS	D	C		D	A			B	A		B	A
Approach Delay		23.7			39.5			8.0			11.3	
Approach LOS		C			D			A			B	
Queue Length 50th (ft)	1	2		141	1			53	0		101	0
Queue Length 95th (ft)	6	31		207	37			90	28		161	0
Internal Link Dist (ft)		179			134			6			259	
Turn Bay Length (ft)									150			107
Base Capacity (vph)	126	139		566	566			1790	1063		1805	975
Starvation Cap Reductn	0	0		0	0			0	0		0	0
Spillback Cap Reductn	0	0		0	0			0	0		0	0
Storage Cap Reductn	0	0		0	0			0	0		0	0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.01	0.21		0.41	0.14			0.19	0.13		0.33	0.00

Intersection Summary

Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	100
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle:	80
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.70
Intersection Signal Delay:	16.6
Intersection LOS:	B
Intersection Capacity Utilization	97.5%
ICU Level of Service	F
Analysis Period (min)	15

Splits and Phases: 10: Hamburg Turnpike & Church Driveway/Colfax Road





















Ø2 (R) 52 s	Ø4 13 s	Ø8 35 s
Ø6 (R) 52 s		

Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔			↔			↔	
Traffic Vol, veh/h	9	0	3	4	0	16	9	435	0	0	743	36
Future Vol, veh/h	9	0	3	4	0	16	9	435	0	0	743	36
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	4	0	0	5	4
Mvmt Flow	10	0	3	4	0	17	10	473	0	0	808	39

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1085	1321	424	897	1340	237	847	0	0	473	0	0
Stage 1	828	828	-	493	493	-	-	-	-	-	-	-
Stage 2	257	493	-	404	847	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	174	158	584	238	154	771	799	-	-	1099	-	-
Stage 1	336	389	-	532	550	-	-	-	-	-	-	-
Stage 2	731	550	-	600	381	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	168	155	584	234	151	771	799	-	-	1099	-	-
Mov Cap-2 Maneuver	168	155	-	234	151	-	-	-	-	-	-	-
Stage 1	330	389	-	523	541	-	-	-	-	-	-	-
Stage 2	702	541	-	597	381	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	23.6		12.1		0.3		0	
HCM LOS	C		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	799	-	-	168	584	528	1099	-	-
HCM Lane V/C Ratio	0.012	-	-	0.058	0.006	0.041	-	-	-
HCM Control Delay (s)	9.6	0.1	-	27.7	11.2	12.1	0	-	-
HCM Lane LOS	A	A	-	D	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0	0.1	0	-	-

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	7	8	121	0	58	3	547	223	53	397	6
Future Volume (vph)	1	7	8	121	0	58	3	547	223	53	397	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	14	14	14	10	10	13	10	10	10
Storage Length (ft)	0		0	0		40	0		150	0		107
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			45			45			45	
Link Distance (ft)		259			214			86			339	
Travel Time (s)		7.1			3.2			1.3			5.1	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	0%	2%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	1	15	0	126	60	0	0	573	232	0	469	6
Turn Type	Split	NA		Split	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	4	4		8	8			2			6	
Permitted Phases							2		2	6		6
Detector Phase	4	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		45.0	45.0	45.0	45.0	45.0	45.0
Minimum Split (s)	13.0	13.0		12.0	12.0		52.0	52.0	52.0	52.0	52.0	52.0
Total Split (s)	13.0	13.0		35.0	35.0		52.0	52.0	52.0	52.0	52.0	52.0
Total Split (%)	13.0%	13.0%		35.0%	35.0%		52.0%	52.0%	52.0%	52.0%	52.0%	52.0%
Yellow Time (s)	3.0	3.0		3.0	3.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	3.0	3.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0		5.0	5.0			7.0	7.0		7.0	7.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Min	C-Min	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	7.0	7.0		11.9	11.9			70.9	70.9		70.9	70.9
Actuated g/C Ratio	0.07	0.07		0.12	0.12			0.71	0.71		0.71	0.71
v/c Ratio	0.01	0.12		0.55	0.12			0.25	0.19		0.24	0.01
Control Delay	43.0	32.6		50.0	0.5			6.9	1.6		6.9	0.0
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay	43.0	32.6		50.0	0.5			6.9	1.6		6.9	0.0
LOS	D	C		D	A			A	A		A	A
Approach Delay		33.2			34.0			5.3			6.8	
Approach LOS		C			C			A			A	
Queue Length 50th (ft)	1	4		77	0			45	0		37	0
Queue Length 95th (ft)	6	25		129	0			122	30		102	0
Internal Link Dist (ft)		179			134			6			259	
Turn Bay Length (ft)									150			107
Base Capacity (vph)	126	129		577	743			2253	1250		1941	1093
Starvation Cap Reductn	0	0		0	0			0	0		0	0
Spillback Cap Reductn	0	0		0	0			0	0		0	0
Storage Cap Reductn	0	0		0	0			0	0		0	0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.01	0.12		0.22	0.08			0.25	0.19		0.24	0.01

Intersection Summary

Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	100
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle:	80
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.55
Intersection Signal Delay:	9.7
Intersection LOS:	A
Intersection Capacity Utilization	97.5%
ICU Level of Service	F
Analysis Period (min)	15

Splits and Phases: 10: Hamburg Turnpike & Church Driveway/Colfax Road

Ø2 (R) 52 s	Ø4 13 s	Ø8 35 s
Ø6 (R) 52 s		

Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔			↔			↔	
Traffic Vol, veh/h	33	0	21	9	0	18	13	721	0	0	507	19
Future Vol, veh/h	33	0	21	9	0	18	13	721	0	0	507	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	1	0
Mvmt Flow	36	0	23	10	0	20	14	784	0	0	551	21

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	982	1374	286	1088	1384	392	572	0	0	784	0	0
Stage 1	562	562	-	812	812	-	-	-	-	-	-	-
Stage 2	420	812	-	276	572	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	206	147	717	173	145	613	1011	-	-	843	-	-
Stage 1	484	513	-	343	395	-	-	-	-	-	-	-
Stage 2	587	395	-	712	508	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	196	143	717	164	141	613	1011	-	-	843	-	-
Mov Cap-2 Maneuver	196	143	-	164	141	-	-	-	-	-	-	-
Stage 1	472	513	-	334	385	-	-	-	-	-	-	-
Stage 2	554	385	-	689	508	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	20.7		17.3		0.3		0	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1011	-	-	196	717	321	843	-	-
HCM Lane V/C Ratio	0.014	-	-	0.183	0.032	0.091	-	-	-
HCM Control Delay (s)	8.6	0.1	-	27.4	10.2	17.3	0	-	-
HCM Lane LOS	A	A	-	D	B	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.7	0.1	0.3	0	-	-